

STUDER

A820

OPERATING AND SERVICE INSTRUCTIONS



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C A U T I O N
RISK OF ELECTRIC SHOCK DO NOT OPEN
A T T E N T I O N
RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
A C H T U N G
GEFAHR: ELEKTRISCHER SCHLAG NICHT ÖFFNEN

To reduce the risk of electric shock, do not remove covers (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

Afin de prévenir un choc électrique, ne pas enlever les couvercles (où l'arrière) de l'appareil. Il ne se trouve à l'intérieur aucune pièce pouvant être réparée par l'utilisateur.

Um die Gefahr eines elektrischen Schlages zu vermeiden, entfernen Sie keine Abdeckungen (oder Rückwand). Überlassen Sie die Wartung und Reparatur dem qualifizierten Fachpersonal.



This symbol is intended to alert the user to presence of uninsulated "**dangerous voltage**" within the apparatus that may be of sufficient magnitude to constitute a risk of electric shock to a person.

Ce symbole indique à l'utilisateur qu'il existe à l'intérieur de l'appareil des "**tensions dangereuses**". Ces tensions élevées entraînent un risque de choc électrique en cas de contact.

Dieses Symbol deutet dem Anwender an, dass im Geräteinnern die Gefahr der Berührung von "**gefährlicher Spannung**" besteht. Die Grösse der Spannung kann zu einem elektrischen Schlag führen.



This symbol is intended to alert the user to the presence of **important instructions** for operating and maintenance in the enclosed documentation.

Ce symbole indique à l'utilisateur que la documentation jointe contient d'**importantes instructions** concernant le fonctionnement et la maintenance.

Dieses Symbol deutet dem Anwender an, dass die beigelegte Dokumentation **wichtige Hinweise** für Betrieb und Wartung beinhaltet.

CAUTION:	Lithium Battery. Danger of explosion by incorrect handling. Replace by battery of the same make and type only.
ATTENTION:	Pile au lithium. Danger d'explosion en cas de manipulation incorrecte. Ne remplacer que par un modèle de même type.
ACHTUNG:	Explosionsgefahr bei unsachgemäßem Auswechseln der Lithiumbatterie. Nur durch den selben Typ ersetzen.
ADVARSEL:	Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen (DK).

FIRST AID

(in case of electric shock)

1. Separate the person as quickly as possible from the electric power source:
 - by switching off the equipment
 - or by unplugging or disconnecting the mains cable
 - pushing the person away from the power source by using dry insulating material (such as wood or plastic).
- After having sustained an electric shock, always consult a doctor.

WARNING!

DO NOT TOUCH THE PERSON OR HIS CLOTHING BEFORE THE POWER IS TURNED OFF, OTHERWISE YOU STAND THE RISK OF SUSTAINING AN ELECTRIC SHOCK AS WELL!

2. If the person is unconscious
 - check the pulse,
 - reanimate the person if respiration is poor,
 - lay the body down and turn it to one side, call for a doctor immediately.

PREMIERS SECOURS

(en cas d'électrocution)

1. Si la personne est dans l'impossibilité de se libérer:
 - Couper l'interrupteur principal
 - Couper le courant
 - Repousser la personne de l'appareil à l'aide d'un objet en matière non conductrice (matière plastique ou bois)
 - Après une électrocution, consulter un médecin.

ATTENTION!

NE JAMAIS TOUCHER UNE PERSONNE QUI EST SOUS TENSION, SOUS PEINE DE SUBIR EGALEMENT UNE ELECTROCUTION.

2. En cas de perte de connaissance de la personne électrocutée:
 - Contrôler le pouls
 - Si nécessaire, pratiquer la respiration artificielle
 - Placer l'accidenté sur le flanc et consulter un médecin.

ERSTE HILFE

(bei Stromunfällen)

1. Bei einem Stromunfall die betroffene Person so rasch wie möglich vom Strom trennen:
 - Durch Ausschalten des Gerätes
 - Ziehen oder Unterbrechen der Netzzuleitung
 - Betroffene Person mit isoliertem Material (Holz, Kunststoff) von der Gefahrenquelle wegstoßen
 - Nach einem Stromunfall sollte immer ein Arzt aufgesucht werden.

ACHTUNG!

EINE UNTER SPANNUNG STEHENDE PERSON DARF NICHT BERÜHRT WERDEN. SIE KÖNNEN DABEI SELBST ELEKTRISIERT WERDEN!

2. Bei Bewusstlosigkeit des Verunfallten:
 - Puls kontrollieren,
 - bei ausgesetzter Atmung künstlich beatmen,
 - Seitenlagerung des Verunfallten vornehmen und Arzt verständigen.

Installation, Betrieb und Entsorgung

Vor der Installation des Gerätes müssen die hier aufgeführten und auch die weiter in dieser Anleitung mit \triangle bezeichneten Hinweise gelesen und während der Installation und des Betriebes beachtet werden.

Das Gerät und sein Zubehör ist auf allfällige Transportschäden zu untersuchen.

Ein Gerät, das mechanische Beschädigung aufweist oder in welches Flüssigkeit oder Gegenstände eingedrungen sind, darf nicht ans Netz angeschlossen oder muss sofort durch Ziehen des Netzsteckers vom Netz getrennt werden. Das Öffnen und Instandsetzen des Gerätes darf nur vom Fachpersonal unter Einhaltung der geltenden Vorschriften durchgeführt werden.

Falls dem Gerät kein konfektioniertes Netzkabel beiliegt, muss dieses durch eine Fachperson unter Verwendung der mitgelieferten Kabel-Gerätesteckdose IEC320/C13 oder IEC320/C19 und unter Berücksichtigung der einschlägigen, im gewöhnlichen Lande geltenden Bestimmungen angefertigt werden; siehe Bild unten.

Vor Anschluss des Netzkabels an die Netzsteckdose muss überprüft werden, ob die Stromversorgungs- und Anschlusswerte des Gerätes (Netzspannung, Netzfrequenz) innerhalb der erlaubten Toleranzen liegen. Die im Gerät eingesetzten Sicherungen müssen den am Gerät angebrachten Angaben entsprechen.

Ein Gerät mit einem dreipoligen Gerätestecker (Gerät der Schutzklasse I) muss an eine dreipolige Netzsteckdose angeschlossen und somit das Gerätegehäuse mit dem Schutzleiter der Netzinstallation verbunden werden (Für Dänemark gelten Starkstrombestimmungen, Abschnitt 107).

Installation, Operation, and Waste Disposal

Before you install the equipment, please read and adhere to the following recommendations and all sections of these instructions marked with \triangle .

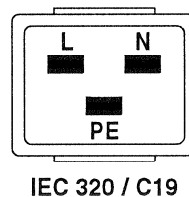
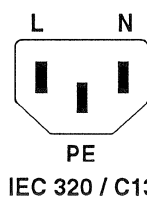
Check the equipment for any transport damage.

A unit that is mechanically damaged or which has been penetrated by liquids or foreign objects must not be connected to the AC power outlet or must be immediately disconnected by unplugging the power cable. Repairs must only be performed by trained personnel in accordance with the applicable regulations.

Should the equipment be delivered without a matching mains cable, the latter has to be prepared by a trained person using the attached female plug (IEC320/C13 or IEC320/C19) with respect to the applicable regulations in your country - see diagram below.

Before connecting the equipment to the AC power outlet, check that the local line voltage matches the equipment rating (voltage, frequency) within the admissible tolerance. The equipment fuses must be rated in accordance with the specifications on the equipment.

Equipment supplied with a 3-pole appliance inlet (equipment conforming to protection class I) must be connected to a 3-pole AC power outlet so that the equipment cabinet is connected to the protective earth conductor of the AC supply (for Denmark the Heavy Current Regulations, Section 107, are applicable).



Female plug (IEC320), view from contact side:

L	live; brown	National American Standard: black
N	neutral; blue	white
PE ...	protective earth; green and yellow	green

Connecteur femelle (IEC320), vue de la face aux contacts:

L.....	phase, brun	Standard National Américain: noir
N.....	neutre, bleu	blanc
PE....	terre protective; vert et jaune	vert

Ansicht auf Steckkontakte der Kabel-Gerätesteckdose (IEC320):

L.....	Polleiter, braun	USA-Standard: schwarz
N.....	Neutralleiter, hellblau	weiss
PE....	Schutzleiter, gelb/grün	grün

Bei der Installation des Gerätes muss **vermieden** werden, dass:

- das Gerät Regen, Feuchtigkeit, direkter Sonneneinstrahlung oder übermässiger Wärmestrahlung von Wärmequellen (Heizgeräte, Heizungen, Spotlampen) ausgesetzt wird
- die für den Betrieb des Gerätes benötigte Luftzirkulation beeinträchtigt und dadurch die zulässige maximale Lufttemperatur der Geräteumgebung überschritten wird (Wärmestau)
- die Belüftungsöffnungen des Gerätes blockiert oder abgedeckt werden.

Das Gerät und seine Verpackung darf nur sachgerecht entsorgt werden. Alle Teile des Gerätes, die gefährliche Stoffe (Quecksilber, Cadmium) enthalten, müssen als Sondermüll behandelt werden.

Verbrauchte Batterien und Akkus müssen dem Hersteller zur Entsorgung zurückgegeben oder entsprechend den spezifischen Bestimmungen Ihres Landes fachgerecht entsorgt werden.

Wartung und Reparatur

Durch Entfernen von Gehäuseteilen, Abschirmungen etc. werden stromführende Teile freigelegt. Aus diesem Grund müssen u.a. die folgenden Grundsätze beachtet werden:

Eingriffe in das Gerät dürfen nur von Fachpersonal unter Einhaltung der geltenden Vorschriften vorgenommen werden.

Vor Entfernen von Gehäuseteilen muss das Gerät ausgeschaltet und vom Netz getrennt werden.

Bei geöffnetem, vom Netz getrenntem Gerät dürfen Teile mit gefährlichen Ladungen (z. B. Kondensatoren, Bildröhren) erst nach kontrollierter Entladung, heiße Bauteile (Leistungshalbleiter, Kühlkörper etc.) erst nach deren Abkühlen berührt werden.

Bei Wartungsarbeiten am geöffneten, unter Netzspannung stehenden Gerät dürfen blanke Schaltungsteile und metallene Halbleitergehäuse weder direkt noch mit einem nichtisolierten Werkzeug berührt werden.

Zusätzliche Gefahren bestehen bei unsachgemässer Handhabung besonderer Komponenten:

- **Explosionsgefahr** bei Lithiumzellen, Elektrolyt-Kondensatoren und Leistungshalbleitern
- **Implosionsgefahr** bei evakuierten Anzeigeeinheiten
- **Strahlungsgefahr** bei Lasereinheiten (nichtionisierend), Bildröhren (ionisierend)
- **Verätzungsgefahr** bei Anzeigeeinheiten (LCD) und Komponenten mit flüssigem Elektrolyt.

Solche Komponenten dürfen nur von dafür ausgebildetem Fachpersonal unter Verwendung von vorgeschriebenen Schutzmitteln (u.a. Schutzbrille, Handschuhe) gehandhabt werden.

The equipment installation **must satisfy** the following requirements:

- Protection against rain, humidity, direct solar irradiation or strong thermal radiation from heat sources (heaters, radiators, spotlights).
- Unobstructed air circulation so that the maximum air temperature in the equipment environment will not be exceeded (no heat accumulation).
- Ventilation louvers of the equipment must not be blocked or covered.

The equipment and its packing materials should ultimately be disposed off in accordance with the applicable regulations only. All parts of the equipment that contain hazardous substances (mercury, cadmium) must be treated as toxic waste.

Weak batteries or exhausted rechargeable batteries must be returned to the manufacturer for competent disposal or must be disposed of in accordance with the environmental protection regulations applicable for your country.

Maintenance and Repair

The removal of housing parts, shields, etc. exposes energized parts. For this reason the following precautions should be observed:

Maintenance should only be performed by trained personnel in accordance with the applicable regulations. The equipment should be switched off and disconnected from the AC power outlet before any housing parts are removed.

Even after the equipment has been disconnected from the power, parts with hazardous charges (e.g. capacitors, picture tubes) should only be touched after they have been properly discharged. Hot components (power semiconductors, heat sinks, etc.) should only be touched after they have cooled off.

If maintenance is performed on a unit that is opened and switched on, no uninsulated circuit components and metallic semiconductor housings should be touched neither with your bare hands nor with uninsulated tools.

Certain components pose additional hazards:

- **Explosion hazard** from lithium batteries, electrolytic capacitors and power semiconductors
- **Implosion hazard** from evacuated display units
- **Radiation hazard** from laser units (non-ionizing), picture tubes (ionizing)
- **Caustic effect** of display units (LCD) and such components containing liquid electrolyte.

Such components should only be handled by trained personnel who are properly protected (e.g. by goggles, gloves).

Für Wartung und Reparatur der sicherheitsrelevanten Teile des Gerätes darf nur Ersatzmaterial nach Herstellerspezifikation verwendet werden.

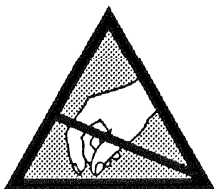
Das Gerät muss ordnungsgemäss und regelmässig gewartet und somit in sicherem Zustand erhalten werden. Bei ungenügender Wartung oder bei Änderungen der sicherheitsrelevanten Teile des Gerätes erlischt die entsprechende Produkthaftung des Herstellers.

For maintenance work and repair on components that influence the equipment safety, only replacement material conforming to the manufacturer's specifications may be used.

The equipment should be properly serviced in regular intervals and be maintained in safe operating condition. If the equipment is not properly maintained or if any modifications are made to components that influence safety, the manufacturer's product liability gets void.

Elektrostatische Entladung (ESD) bei Wartung und Reparatur

Electrostatic Discharge (ESD) during Maintenance and Repair


ATTENTION:

Observe precautions for handling devices sensitive to electrostatic discharge!

ATTENTION:

Respecter les précautions d'usage concernant la manipulation de composants sensibles à l'électricité statique!

ACHTUNG:

Vorsichtsmassnahmen bei Handhabung elektrostatisch entladungsgefährdeter Bauelemente beachten!

Viele ICs und andere Halbleiter sind empfindlich gegen elektrostatische Entladung (ESD). Unfachgerechte Behandlung von Baugruppen mit solchen Komponenten bei Wartung und Reparatur kann deren Lebensdauer drastisch vermindern.

Bei der Handhabung der ESD-empfindlichen Komponenten sind u.a. folgende Regeln zu beachten:

- ESD-empfindliche Komponenten dürfen ausschliesslich in dafür bestimmten und bezeichneten Verpackungen gelagert und transportiert werden.
- Unverpackte, ESD-empfindliche Komponenten dürfen nur in den dafür eingerichteten Schutzzonen (EPA, z.B. Gebiet für Feldservice, Reparatur- oder Serviceplatz) gehandhabt und nur von Personen berührt werden, die durch ein Handgelenkband mit Serienwiderstand mit dem Massepotential des Reparatur- oder Serviceplatzes verbunden sind. Das gewartete oder reparierte Gerät wie auch Werkzeuge, Hilfsmittel, EPA-taugliche (elektrisch leitende) Arbeits-, Ablage- und Bodenmatten müssen ebenfalls mit diesem Potential verbunden sein.
- Die Anschlüsse der ESD-empfindlichen Komponenten dürfen unkontrolliert weder mit elektrostatisch aufladbaren (Gefahr von Spannungsdurchschlag), noch mit metallischen Oberflächen (Schockentladungsfahr) in Berührung kommen.
- Um undefinierte transiente Beanspruchung der Komponenten und deren eventuelle Beschädigung durch unerlaubte Spannung oder Ausgleichsströme zu vermeiden, dürfen elektrische Verbindungen nur am abgeschalteten Gerät und nach dem Abbau allfälliger Kondensatorladungen hergestellt oder getrennt werden.

Many ICs and semiconductors are sensitive to electrostatic discharge (ESD). The life of components containing such elements can be drastically reduced by improper handling during maintenance and repair work.

Please observe the following rules when handling ESD sensitive components:

- ESD sensitive components should only be stored and transported in the packing material specifically provided for this purpose.
- Unpacked ESD sensitive components should only be handled in ESD protected areas (EPA, e.g. area for field service, repair or service bench) and only be touched by persons who wear a wristlet that is connected to the ground potential of the repair or service bench by a series resistor. The equipment to be repaired or serviced and all tools, aids, as well as electrically semiconducting work, storage and floor mats should also be connected to this ground potential.
- The terminals of ESD sensitive components must not come in uncontrolled contact with electrostatically chargeable (voltage puncture) or metallic surfaces (discharge shock hazard).
- To prevent undefined transient stress of the components and possible damage due to inadmissible voltages or compensation currents, electrical connections should only be established or separated when the equipment is switched off and after any capacitor charges have decayed.

SMD-Bauelemente

Der Austausch von SMD-Bauelementen ist ausschliesslich geübten Fachleuten vorbehalten. Für verwüstete Platinen können keine Ersatzansprüche geltend gemacht werden. Beispiele für korrekte und falsche SMD-Lötverbindungen in der Abbildung weiter unten.

Bei Studer werden keine handelsüblichen SMD-Teile bewirtschaftet. Für Reparaturen sind die notwendigen Bauteile lokal zu beschaffen. Die Spezifikationen aller Komponenten finden Sie in den Positionslisten im Schemateil.

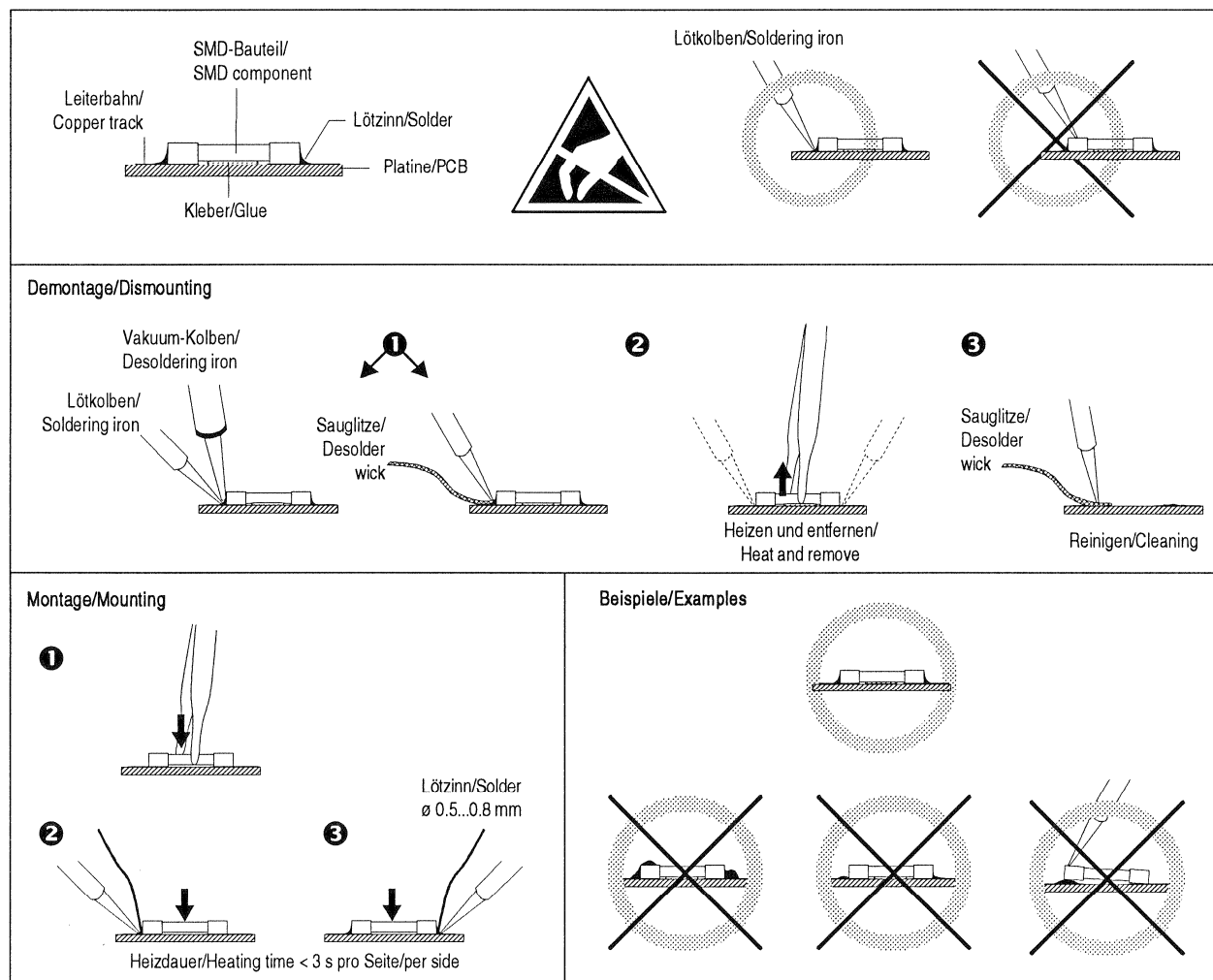
Spezialkomponenten sind in der Positionsliste mit einer Artikelnummer versehen und können bei Studer unter dieser Nummer bezogen werden.

SMD Components

SMDs should only be replaced by skilled specialists. No warranty claims will be accepted for circuit boards that have been ruined. Proper and improper SMD soldering joints are depicted below.

Studer does not keep any commercially available SMDs in stock. For repairs the corresponding devices should be purchased locally. The specifications of all components can be found in the parts lists in the diagram section.

Special components having a part number in the parts list can be ordered from Studer by specifying this number.



Störstrahlung und Störfestigkeit

Das Gerät entspricht den Schutzanforderungen auf dem Gebiet der elektromagnetischen Phänomene, die u.a. in den Richtlinien 89/336/EWG und FCC, Part 15, aufgeführt sind :

1. Die vom Gerät erzeugten elektromagnetischen Ausstrahlungen sind soweit begrenzt, dass ein bestimmungsgemässer Betrieb anderer Geräte und Systeme möglich ist.
2. Das Gerät weist eine angemessene Festigkeit gegen elektromagnetische Störungen auf, so dass sein bestimmungsgemässer Betrieb möglich ist.

Das Gerät wurde getestet und erfüllt die Bedingungen der im Kapitel "Technische Daten" aufgeführten EMV-Standards. Die Limiten dieser Standards gewährleisten mit einer angemessenen Wahrscheinlichkeit sowohl einen Schutz der Umgebung wie auch entsprechende Störfestigkeit des Gerätes. Eine absolute Garantie, dass keine unerlaubte elektromagnetische Beeinträchtigung während des Gerätebetriebes entsteht, ist jedoch nicht gegeben.

Um die Wahrscheinlichkeit solcher Beeinträchtigung weitgehend auszuschliessen, sind u.a. folgende Massnahmen zu beachten:

- Installieren Sie das Gerät gemäss den Angaben in der Bedienungsanleitung, und verwenden Sie das mitgelieferte Zubehör.
- Verwenden Sie im System und in der Umgebung, in denen das Gerät eingesetzt ist, nur Komponenten (Anlagen, Geräte), die ihrerseits die Anforderungen der obenerwähnten Standards erfüllen.
- Sehen Sie ein Erdungskonzept des Systems vor, das sowohl die Sicherheitsanforderungen (die Erdung der Geräte gemäss Schutzklasse I mit einem Schutzleiter muss gewährleistet sein), wie auch die EMV-Belange berücksichtigt. Bei der Entscheidung zwischen stern- oder flächenförmiger bzw. kombinierter Erdung sind Vor- und Nachteile gegeneinander abzuwägen.
- Benutzen Sie abgeschirmte Kabel für die Verbindungen, für welche eine Abschirmung vorgesehen ist. Achten Sie auf einwandfreie, grossflächige, korrosionsbeständige Verbindung der Abschirmung zum entsprechenden Steckeranschluss bzw. zum Steckergehäuse. Beachten Sie, dass eine nur an einem Ende angeschlossene Kabelabschirmung als Sende- bzw. Empfangsantenne wirken kann (z.B. bei wirksamer Kabellänge von 5 m oberhalb von 10 MHz), und dass die Flanken der digitalen Kommunikationssignale hochfrequente Aussendungen verursachen (z.B. LS- oder HC-Logik bis 30 MHz).
- Vermeiden Sie Bildung von Stromschleifen oder vermindern Sie deren unerwünschte Auswirkung, indem Sie deren Fläche möglichst klein halten und den darin fliessenden Strom durch Einfügen einer Impedanz (z.B. Gleichtaktrossel) reduzieren.

Electromagnetic Compatibility

The equipment conforms to the protection requirements relevant to electromagnetic phenomena that are listed in the guidelines 89/336/EC and FCC, part 15.

1. The electromagnetic interference generated by the equipment is limited in such a way that other equipment and systems can be operated normally.
2. The equipment is adequately protected against electromagnetic interference so that it can operate correctly.

The equipment has been tested and conforms to the EMC standards applicable to residential, commercial and light industry, as listed in the section "Technical Data". The limits of these standards reasonably ensure protection of the environment and corresponding noise immunity of the equipment. However, it is not absolutely warranted that the equipment will not be adversely affected by electromagnetic interference during operation.

To minimize the probability of electromagnetic interference as far as possible, the following recommendations should be followed:

- Install the equipment in accordance with the operating instructions. Use the supplied accessories.
- In the system and in the vicinity where the equipment is installed, use only components (systems, equipment) that also fulfill the above EMC standards.
- Use a system grounding concept that satisfies the safety requirements (protection class I equipment must be connected with a protective ground conductor) that also takes into consideration the EMC requirements. When deciding between radial, surface or combined grounding, the advantages and disadvantages should be carefully evaluated in each case.
- Use shielded cables where shielding is specified. The connection of the shield to the corresponding connector terminal or housing should have a large surface and be corrosion-proof. Please note that a cable shield connected only single-ended can act as a transmitting or receiving antenna (e.g. with an effective cable length of 5 m, the frequency is above 10 MHz) and that the edges of the digital communication signals cause high-frequency radiation (e.g. LS or HC logic up to 30 MHz).
- Avoid current loops or reduce their adverse effects by keeping the loop surface as small as possible, and reduce the noise current flowing through the loop by inserting an additional impedance (e.g. common-mode rejection choke).

Class A Equipment - FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Also refer to relevant information in this manual.

CE-Konformitätserklärung

Wir,

Studer Professional Audio AG,
CH-8105 Regensdorf,

erklären in eigener Verantwortung, dass das in dieser
Anleitung beschriebene Produkt

**Studer A820, Professionelles Tonbandgerät
(ab Serie-Nr. 2611),**

auf das sich diese Erklärung bezieht, entsprechend
den Bestimmungen der EU-Richtlinien und deren
Ergänzungen

- Elektromagnetische Verträglichkeit (EMV):
89/336/EWG + 92/31/EWG + 93/68/EWG
- Niederspannung:
73/23/EWG, 93/68/EWG

mit den folgenden Normen und normativen Dokumenten
übereinstimmt:

- Sicherheit:
Class I, EN 60065/1993 (IEC 65/1985)
- EMV:
EN 50081-1/1992; EN 50082-1/1992

Regensdorf, 20. November 1995



B. Hochstrasser, Geschäftsleiter



P. Fiala, Leiter QS

CE Declaration of Conformity

We,

Studer Professional Audio AG,
CH-8105 Regensdorf,

declare under our sole responsibility that the product
described in this manual

**Studer A820, professional tape recorder
(from serial No. 2611 and up),**

to which this declaration relates, according to following
regulations of EU directives and amendments

- Electromagnetic Compatibility (EMC):
89/336/EEC + 92/31/EEC + 93/68/EEC
- Low Voltage (LVD):
73/23/EEC + 93/68/EEC

is in conformity with the following standards or other
normative documents:

- Safety:
Class I, EN 60065/1993 (IEC 65/1985)
- EMC:
EN 50081-1/1992; EN 50082-1/1992

Regensdorf, November 20, 1995



B. Hochstrasser, Managing Director



P. Fiala, Manager QA

1 GENERAL INFORMATION

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1 GENERAL INFORMATION

1.1

QUICK-REFERENCE DESCRIPTION

Because of its compact and highly stable design, its system flexibility and the exceptional operating convenience made possible by multiple microprocessors, the STUDER A820 tape recorder is universally suited for all applications in broadcast or television studios, in music recording studios, for theaters, the film industry, or scientific institutes.

Some of its outstanding features are:

- Rigid die-cast aluminium alloy chassises for tape transport, head block, pinch roller unit, and other assemblies.
- Hall-commutated, brushless DC capstan motor with quartz reference and capacitive speed and rotation direction sensing for highly accurate tape speed and high acceleration and braking coefficients.
- Fast tape transport that allows high spooling speeds combined with gentle tape handling by means of electronically controlled tape tension, based on servo-controlled DC motors with disc type rotors and photoelectrical speed and rotation direction sensing, and non-contacting tape tension sensors. Switched spooling motor control for minimum power dissipation.
- Accurate electronic tape counter with real-time indication; photoelectric scanning of the guide roller rotation by means of optoswitches.
- Simple editing: variable spooling speed; the high end of the frequency response is deemphasized during cueing in fast-wind mode. The tape tension control loop is also active in the STOP position. Manual shuttling of the tape is possible in both directions on either reel. Built-in tape scissors; automatic positioning at the scissors of the tape address that is located in front of the reproduce head gap.
- Monitor speaker in the VU-meter overbridge. In versions without overbridge the speaker is built into the tape transport cover.
- Manual control of the head shield in front of the record and reproduce head; can remain closed during spooling functions.

The excellent system flexibility means that a suitable A820 configuration is available for any application:

- The basic model is available as a mono, 2-channel or stereo version (with center-track time code channel on request) for 1/4 inch tape, with or without VU-meter overbridge, or as a 2-channel/stereo version for 1/2 inch tape with VU-meter overbridge.
- Operates in horizontal or inclined position ($\pm 7,5^\circ$ or $\pm 15^\circ$). Maintenance position $+60^\circ$.
- Four tape speeds (3.75 / 7.5 / 15 / 30 ips) programmable. (Operation with time code is not possible at 3.75 ips).
- Inputs and outputs are balanced and floating, configurable with or without input/output transformers.
- Selector switch for NAB or CCIR equalization (for 7.5 and 15 ips).
- Tape selector for two types of tape with different calibration data.
- Zero locator and transfer locator for max. 5 addresses as standard feature.
- Output selector buttons on VU recorders: INP (input), REP (reproduce), and SYNC (playback via record head).

- VU-meter panel with SAFE/READY selector, level controls for record and reproduce mode, buttons for bypassing the level controls (calibrated, with line level). Level indication internally selectable: VU or PPM characteristic.
- Voltage selector: 100 to 140 V / 200 to 240 V $\pm 10\%$, 50 to 60 Hz.
- Connectors for fader start circuit, parallel and serial remote control.

The following features are available as options:

- Mono/stereo selector for stereo and 2-channel versions.
- Test generator (60, 125 Hz, 1, 10, 16 kHz)
- Interface for serial port: either RS232 interface and storage of the audio parameters (e.g. on tape) for quick recalibration of the tape recorder, or RS232 interface and SMPTE/EBU bus interface.

Maximum operating convenience by means of multiple microprocessors:

- The last operating state of the tape recorder is saved when the machine is switched off: tape counter, locator addresses, audio parameters, speed. The machine switches automatically to STOP and SAFE when the power is switched on again.
- Record drop-in by pressing the REC key in reproduce mode (internally programmable).
- Record drop-out by pressing the PLAY key in record mode.
- Reduced spooling speed (LIBRARY WIND): a lower (programmable) spooling speed can be selected for producing library tape pancakes.
- Zero locator: automatic search of the tape address (counter reading) 0.00.00.0 with the push of a button.
- Transfer locator LOC 1 to LOC 5: for automatic storage and searching of 5 tape addresses. The stored addresses can be read out without executing the command.
- Programmable function keys ("soft keys"): any of a repertoire of approximately 100 functions can be easily assigned to each function key, e.g.
 - REVERSE PLAY (playback in opposite tape direction).
 - FADER (local keys are disabled, only fader start possible)
 - TAPE DUMP (take-up motor is switched off)
 - REM CONTR (local keys are disabled, operating only via remote control)
 - REHEARSE (simulation of electronic editing)
 - SPOT ERASE (activation of the erase circuit without tape movement, tape can be transported by hand)
 - AUTO MUTE (automatic muting of the audio channels during spooling), etc.
 These keys have special recesses into which self-adhesive labels can be inserted.
- Internal standard test system for the main functions with error diagnostics: automatic power-on self test, repeated in periodic intervals.

- Audio alignments via microprocessor. With the SET/CUE-wheel functioning as a "potentiometer" the following audio parameters can be programmed (for two tape types, four tape speeds, and NAB and CCIR equalizations each):
 - Reproduction/Sync: LEVEL, TREBLE, BASS, EQUALIZATION
 - Recording: LEVEL, TREBLE, BIAS, EQUALIZATION
 Resolution 256 steps each, hexadecimal representation on the service display.

The audio parameters remain stored even when the recorder is switched off. The data can be saved by copying them via the serial interface to an external storage medium and reading them back in (also possible with the A820 tape recorder itself); automatic recalibration of the A820 tape recorder is, therefore, possible.

1.2 STANDARD VERSIONS

FULL-TRACK VERSIONS

A820-1

A820-1 Article No. 60.118.20011

- Recorder for 1/4" tape.
- Mono with full-track erase head.
- Without channel mode selector.
- Monitor speaker built into tape transport cover.
- Input and output equipped with transformers.
- Built-in tape scissors.
- Maximum reel diameter 317,5 mm (12,5").
- Three of four tape speeds (3.75; 7.5; 15 ips) selectable with push buttons.
- Chassis version.

A820-1 VU Article No. 60.118.20012

- Recorder for 1/4" tape.
- Mono with full-track erase head.
- Overbridge with:
 - VU-meter unit and channel mode selector (INPUT / SYNC / REP // READY / SAFE)
 - Monitor speaker.
- Transformerless input and output.
- Built-in tape scissors.
- Maximum reel diameter 355.6 mm (14").
- Four tape speeds (3.75; 7.5; 15; 30 ips) selectable with push buttons.
- Chassis version.

STEREO VERSIONS

A820-0.75

A820-0.75 Article No. 60.118.20021

- Recorder for 1/4" tape.
- Stereo with 0.75 mm track separation, full-track erase head.
- Without channel mode selector.
- Monitor speaker built into tape transport cover.
- Input and output equipped with transformers.
- Built-in tape scissors.
- Maximum reel diameter 317,5 mm (12,5").
- Three of four tape speeds (3.75; 7.5; 15 ips) selectable with push buttons.
- Chassis version.

A820-0.75 VU

Article No. 60.118.20022

- Recorder for 1/4" tape.
- Stereo with 0.75 mm track separation, overlapping erase head.
- Overbridge with:
 - VU-meter units and channel mode selectors (INPUT / SYNC / REP // READY / SAFE)
 - Monitor speaker.
- Transformerless inputs and outputs.
- Built-in tape scissors.
- Maximum reel diameter 355.6 mm (14").
- Four tape speeds (3.75; 7.5; 15; 30 ips) selectable with push buttons.
- Chassis version.

A820-2 F

Article No. 60.118.20030

- Recorder for 1/4" tape.
- Stereo with 2.0 mm track separation, full-track erase head.
- Without channel mode selector.
- Monitor speaker built into tape transport cover.
- Input and output equipped with transformers.
- Built-in tape scissors.
- Maximum reel diameter 317,5 mm (12,5").
- Three of four tape speeds (3.75; 7.5; 15 ips) selectable with push buttons.
- Chassis version.

TWO-TRACK VERSIONS

A820-2

A820-2

Article No. 60.118.20033

- Recorder for 1/4" tape.
- 2-Track/stereo with 2 mm track separation, with two-track erase head (no time code erasing).
- Without channel mode selector.
- Monitor speaker built into tape transport cover.
- Input and output equipped with transformers.
- Built-in tape scissors.
- Maximum reel diameter 317,5 mm (12,5").
- Three of four tape speeds (3.75; 7.5; 15 ips) selectable with push buttons.
- Chassis version.

A820-2 VU

Article No. 60.118.20034

- Recorder for 1/4" tape.
- 2-Track/stereo with 2 mm track separation, with two-track erase head (no time code erasing).
- Overbridge with:
 - VU-meter units and channel mode selectors (INPUT / SYNC / REP // READY / SAFE)
 - Monitor speaker.
- Transformerless inputs and outputs.
- Built-in tape scissors.
- Maximum reel diameter 355.6 mm (14").
- Four tape speeds (3.75; 7.5; 15; 30 ips) selectable with push buttons.
- Chassis version.

- A820-2/2 VU** Article No. 60.118.20032
- Recorder for 1/4" tape.
 - 2-Track/stereo with 2 mm track separation, with overlapping erase head.
 - Overbridge with:
 - VU-meter units and channel mode selectors (INPUT / SYNC / REP // READY / SAFE)
 - Monitor speaker.
 - Transformerless inputs and outputs.
 - Built-in tape scissors.
 - Maximum reel diameter 355.6 mm (14").
 - Four tape speeds (3.75; 7.5; 15; 30 ips) selectable with push buttons.
 - Chassis version.

TWO-TRACK VERSIONS WITH TIME CODE

A820-2 TC

- A820-2 TC** Article No. 60.118.20041
- Recorder for 1/4" tape.
 - 2-Track/stereo with 2 mm track separation, time code center track, and two-track erase head.
 - Overbridge with:
 - Channel control units (INPUT / SYNC / REP // READY / SAFE)
 - Time code channel mode selector unit (INPUT / SYNC / REP // READY / SAFE) with additional CODE indicator lamp
 - Monitor speaker.
 - Inputs and outputs equipped with transformers.
 - Built-in tape scissors.
 - Maximum reel diameter 355.6 mm (14").
 - Three tape speeds (7.5; 15; 30 ips) selectable with push buttons.
 - Chassis version.

- A820-2 TC VU** Article No. 60.118.20042
- Recorder for 1/4" tape.
 - 2-Track/stereo with 2 mm track separation, time code center track, and two-track erase head.
 - Overbridge with:
 - VU-meter units and channel mode selectors (INPUT / SYNC / REP // READY / SAFE)
 - Time code channel mode selector unit (INPUT / SYNC / REP // READY / SAFE) with additional CODE indicator lamp
 - Monitor speaker.
 - Transformerless inputs and outputs.
 - Built-in tape scissors.
 - Maximum reel diameter 355.6 mm (14").
 - Three tape speeds (7.5; 15; 30 ips) selectable with push buttons.
 - Chassis version.

HALF-INCH VERSION

A820-2/2-1/2" VU

- A820-2/2-1/2" VU** Article No. 60.118.20052
- Recorder for 1/2" tape.
 - 2-Track/stereo with 2-track erase head.
 - Overbridge with:
 - VU-meter units and channel mode selectors (INPUT / SYNC / REP // READY / SAFE)
 - Monitor speaker.
 - Transformerless inputs and outputs.
 - Built-in tape scissors.
 - Maximum reel diameter 355.6 mm (14").
 - Three tape speeds (7.5; 15; 30 ips) selectable with push buttons.
 - Chassis version.

1.3

OPTIONS

- Mono/stereo switch Part No. 20.820.340.00
- Mono/stereo switch and test generator Part No. 20.820.341.00
- RS 232 interface (for serial remote control) Part No. 20.820.342.00
 - 9-pin connector, type D, screw fastening Part No. 20.020.303.07
- SMPTE / EBU interface (RS 422 and RS 232) Part No. 20.820.343.00
 - 9-pin connector, type D, screw fastening Part No. 20.020.303.07

- Interface for noise reduction system (for 2 channels) Part No. 20.820.344.00
 - 15-pin connector, type D, screw fastening Part No. 20.020.303.08
- Interface for remote counter, serial remote control, and autolocator Part No. 20.820.345.00
- Mechanical operating hours meter Part No. 20.820.351.00

1.4 ACCESSORIES

Bypacked accessories	Part No.	20.020.302.30
1 Allen screwdriver 1,5 mm	Part No.	26.06.1015
1 Allen screwdriver 2,0 mm	Part No.	26.06.1020
1 Allen screwdriver 2,5 mm	Part No.	26.06.1025
1 Allen screwdriver 3,0 mm	Part No.	26.06.1030
1 Allen screwdriver 4,0 mm	Part No.	26.06.1040
1 Allen screwdriver 5,0 mm	Part No.	26.06.1050
1 Allen screwdriver 6,0 mm	Part No.	26.06.1060
1 Stud driver 2,5 mm	Part No.	10.258.003.09
1 Stud driver 3,0 mm	Part No.	10.258.003.10
1 Lamp extractor	Part No.	10.338.001.00
1 Keytop extractor	Part No.	10.338.002.00
1 Keytop extractor RAFI	Part No.	55.03.0359
6 LEDs yellow, diffused, dia. 3 mm	Part No.	50.04.2130
3 Bulbs T5.5, 24 V, 40 mA	Part No.	51.02.0145
2 Fuses 5x20 mm, T 2,5 A SLOW	Part No.	51.01.0121
4 Fuses 5x20 mm, T 5 A SLOW	Part No.	51.01.0124
4 Fuses 5x20 mm, T 6,3 A SLOW	Part No.	51.01.0125
6 Fuses 5x20 mm, T 10 A SLOW	Part No.	51.01.0126
1 Button Label "LIFTER"	Part No.	1.011.210.07
1 Button Label "LOC START"	Part No.	1.011.210.08
1 Button Label "FADER"	Part No.	1.011.210.09
1 Button Label "VARISPEED"	Part No.	1.011.210.10
1 Button Label "REM CONTR"	Part No.	1.011.210.11
1 Button Label "TAPE DUMP"	Part No.	1.011.210.13
1 Button Label "RESET TIMER"	Part No.	1.011.210.14
1 Button Label "ZERO LOC"	Part No.	1.011.210.15
1 Button Label "LOC 1"	Part No.	1.011.210.17
1 Button Label "LOC 2"	Part No.	1.011.210.18
1 Button Label "LOC 3"	Part No.	1.011.210.19
1 Button Label "LOC 4"	Part No.	1.011.210.20
1 Button Label "LOC 5"	Part No.	1.011.210.23
1 Button Label "TRANS"	Part No.	1.011.210.25
1 Button Label "CUT"	Part No.	1.011.210.26
1 Button Label "REV PLAY"	Part No.	1.011.210.28
1 Button Label "ROLLBACK"	Part No.	1.011.210.29
1 Button Label "RLB PLAY"	Part No.	1.011.210.30
1 Button Label "RLB REC"	Part No.	1.011.210.31
1 Button Label "SET ADDR"	Part No.	1.011.210.32
1 Button Label "SET VARISP"	Part No.	1.011.210.33
1 Button Label "REHEARSE"	Part No.	1.011.210.35
1 Button Label "LIBR WIND"	Part No.	1.011.210.41
1 Button Label "SPOT ERASE"	Part No.	1.011.210.42
1 Button Label "FADER START"	Part No.	1.011.210.43
1 Button Label "LAP"	Part No.	1.011.210.44
1 Button Label "BACK SPACE"	Part No.	1.011.210.45
1 Status indicator Label	Part No.	1.820.012.01
1 Label set	Part No.	1.820.090.25
1 Power cord 2.5 m, EU appl. inlet	Part No.	10.223.001.01
2 Ciné adapters (for 1/4" versions only)	Part No.	1.013.326.00
2 NAB adapters (for 1/2" version only)	Part No.	1.013.345.00
1 Audio connector set (per channel)	Part No.	20.020.302.02

Consoles

A820 consoles are supplied with wooden side panels. The following operating positions can be established with the tilting mechanism built into the tape transport chassis: horizontal, forward/backward inclination by 7.5° or 15°, backward inclination by 60° (maintenance position).

Consoles with traverse:

■ Height 780 mm, with floor slides	Part No.	20.020.204.00
■ Height 840 mm, with floor slides	Part No.	20.020.204.01
■ Height 900 mm, with floor slides	Part No.	20.020.204.02
■ Height 840 mm, with castors	Part No.	20.020.204.05
■ Height 900 mm, with castors	Part No.	20.020.204.06
■ Height 960 mm, with castors	Part No.	20.020.204.07

Consoles with pedestal rack (19"/3 U):

■ Height 780 mm, with floor slides	Part No.	20.020.204.10
■ Height 840 mm, with floor slides	Part No.	20.020.204.11
■ Height 900 mm, with floor slides	Part No.	20.020.204.12
■ Height 840 mm, with castors	Part No.	20.020.204.15
■ Height 900 mm, with castors	Part No.	20.020.204.16
■ Height 960 mm, with castors	Part No.	20.020.204.17

Overbridge with shelf, for A820-1, A820-0.75 und A820-2
Part No. 20.820.348.00

Overbridge with shelf and monitor speaker, for A820-1, A820-0.75 and A820-2
Part No. 20.820.349.00

Housing for TLS4000 local control unit
Part No. 20.820.350.00

Pedestal rack (19", 3 U, for retrofit instead of traverse)
Part No. 1.058.004.00

Filler panels for pedestal rack:

■ Height 1 U	Part No.	1.918.001.00
■ Height 2 U	Part No.	1.918.002.00
■ Height 3 U	Part No.	1.918.003.00

Screws for 19" rack mounting:

■ M6 x 12	Part No.	21.99.0164
■ M6 x 16	Part No.	21.99.0167

Remote controls and remote counters

Parallel tape transport remote control, table cabinet, with 15 m cable
Part No. 20.820.366.00

Varispeed kit, for installation into table cabinet of parallel remote control
Part No. 21.328.253.00

Secondary (pass-through) 25-pin D connector for installation into table cabinet of parallel remote control
Part No. 21.328.254.00

Parallel tape transport remote control, STUDER standard module, 1 unit wide, with 15 m cable
Part No. 20.820.367.00

Serial remote counter with timer and lap mode display, for installation only, with 15 m cable (option 20.820.345.00 required)
Part No. 20.820.368.00

Serial remote controller with timer and lap mode display, table cabinet with 15 m cable (option 20.820.345.00 required)
Part No. 20.820.369.00

Serial remote controller with timer and lap mode display, STUDER standard module, 5 units wide, with 15 m cable (option 20.820.345.00 required)
Part No. 20.820.370.00

Adapters

Professional NAB adapter, 1/4" Part No. 1.013.344.00

Professional NAB adapter, 1/2" Part No. 1.013.345.00

DIN Adapter, 1/4" Part No. 1.013.343.00

Reel flange for DIN adapter, 1/4" Part No. 1.013.328.00

Ciné adapter, 1/4" Part No. 1.013.326.00

REVOX tape splicing kit

Comprising a cutting and splicing block, a cutting blade, splicing tabs, and grease pen. Part No. 10.030.452.40

STUDER cleaning kit in case

Contains 1 bottle of head cleaner, 1 bottle of aluminite cleaner, lint-free nonwoven fleece sheets, buckskin. Part No. 10.496.010.00

Head cleaner, replacement bottle	Part No. 10.496.021.00
Head cleaner, 1 litre	Part No. 10.496.022.00
Aluminite cleaner, repl. bottle	Part No. 10.496.025.00
Aluminite cleaner, 1 litre	Part No. 10.496.026.00

Transport case

On request

Plastic dust covers

For recorders without overbridge	Part No. 1.058.001.10
For recorders with overbridge	Part No. 1.058.001.11

Conversion kits

Conversion kit 1/4" → 1/2"	Part No. 21.820.499.00
Conversion kit 1/2" → 1/4"-2/2	Part No. 21.820.498.00
Conversion kit 1/2" → 1/4"-0.75	Part No. 21.820.497.00

Splicing block

slides over service display	Part No. 20.820.382.00
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Maintenance aids

Tool case (basic kit) with soldering iron and demagnetizing choke for 110 V	Part No. 20.020.001.20
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Tool case (basic kit) with soldering iron and demagnetizing choke for 220 V	Part No. 20.020.001.21
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Supplementary tool kit A820	Part No. 20.020.001.36
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Extender board, 39-pin, for audio and logic modules	Part No. 1.820.799.00
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Extender board, 64-pin, for logic modules	Part No. 1.228.324.81
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Additional manuals

Operation and maintenance manual, German	Part No. 10.27.0110
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Operation and maintenance manual, English	Part No. 10.27.0230
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1.5 TECHNICAL SPECIFICATIONS A820

Tape speeds:

30 - 15 - 7.5 - 3.75 ips
(76.2 - 38.1 - 19.05 - 9.525 cm/s)

All tape speeds can be selected at the front panel (depending on the programming of the keys, either one, two, three, or four speeds can be made directly selectable).
Nominal speed adjustable $\pm 0.2\%$ in 0.025% steps.

Variable tape speed:

± 7 semitones from nominal speed (+54%, -35%), displayed in %, HT (half tones) or IPS; programmable.

Tape speed deviation:

max. $\pm 0.2\%$

Tape slip:

max. 0.1%

Tape reels:

NAB, CINÉ, DIN
max. diameter 356 mm (14"), broadcast version 318 mm (12.5")
min. hub diameter 45 mm (1.77")

Tape width:

6.35 mm (1/4")
12.7 mm (1/2"), convertible, with automatic switchover of tape tensions and audio alignment

Wow and flutter:

Peak weighted according to DIN 45507 or IEC Publ. 386, respectively. Ambient temperature 0 - 40° C (32 - 104° F)

30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
max. 0.03%	max. 0.04%	max. 0.06%	max. 0.1%

Start time:

approx. 0.5 s at 15 ips (38 cm/s) and 1000 m tape on DIN hub or 2500 ft (762 m) tape on NAB reel (to attain double value of flutter specification)

Tape timer:

6-digit LED, indicating hours, minutes, and seconds for all tape speeds. Counts past zero with leading negative sign.
Range: -9 h 59 min 59.9 s to 23 h 59 min 59.9 s.

Winding speed:

programmable, 4 - 590 ips (0.1 - 15 m/s)
automatic speed reduction at the tape end.

Winding time:

approx. 90 s for 1000 m tape;
approx. 55 s for 2500 ft (762 m) tape

Stopping time form spooling:

approx. 4 s with full 1000 m-reel (tape width 1/4")
from maximum winding speed

Tape tension (measured with Tentelometer directly at the left reel):

- 1/4" version:
 - Reproduce and record:
0.7 N (70 p) nominal, adjustable 0.5 - 1.8 N (50 - 180 p)
 - Winding:
0.8 N (80 p) nominal, adjustable 0.5 - 1.7 N (50 - 170 p)
- 1/2" version:
 - Reproduce and record:
1.2 N (120 p) nominal, adjustable 0.5 - 1.8 N (50 - 180 p)
 - Winding:
0.9 N (90 p) nominal, adjustable 0.5 - 1.7 N (50 - 170 p)

Inputs:

- Balanced and floating, with input transformer
Impedance $\geq 10 \text{ k}\Omega$, 30 Hz ... 20 kHz
- or
- electronically balanced, without input transformer
 - Impedance $\geq 20 \text{ k}\Omega$, 30 Hz ... 20 kHz (with balanced input signal)
 - Impedance $\geq 10 \text{ k}\Omega$, 30 Hz ... 20 kHz (with unbalanced input signal)

Input Level:

- nominal input level relative to reference magnetic flux:
+6, +10, +14, +16 dBm; programmable
- nominal input level relative to operating level (according to NAB):
0, +4, +8, +10 dBm; programmable
(adjustment of the operating magnetic flux with above input levels: 100 - 1000 nWb/m)

Recorders with VU-meter panel and input/output level controls:
max. 10 dB increase in input sensitivity with input level control in uncalibrated mode.

Maximum input level:

- with input transformer: +24 dBm
- without input transformer: +28 dBm (+26 dBm, if the nominal input level relative to operating level is set to 0/6 dBm)

Outputs:

- balanced and floating, with output transformer
Impedance $\leq 50 \Omega$, 30 Hz ... 20 kHz
Load $\geq 200 \Omega$
- or
- electronically balanced, without output transformer
Impedance $\leq 30 \Omega$, 30 Hz ... 20 kHz
Load $\geq 200 \Omega$

Output level:

- nominal output level relative to reference magnetic flux:
+6, +10, +14, +16 dBm; programmable
- nominal Output level relative to operating level (according to NAB):
0, +4, +8, +10 dBm; programmable
(adjustment range of reproduce gain for operating magnetic flux of 100 - 1000 nWb/m)

Recorders with VU-meter panel and input/output level controls:
max. 10 dB increase in reproduce gain with output level control in uncalibrated mode.

Maximum output level:

- with output transformer: +24 dBm (load \geq 200 Ω)
- without output transformer:
 - balanced load \geq 200 Ω : +26 dBm
 - unbalanced load \geq 200 Ω : +24 dBm
 - balanced load \geq 600 Ω : +30 dBm (+26 dBm, if the nominal output level relative to operating level is set to 0/6 dBm)
 - unbalanced load \geq 600 Ω : +24 dBm

Equalizations:

NAB and CCIR, switch-selectable

Equalization time constants:

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
CCIR	17.5/∞ μ s (AES)	35/ ∞ μ s	70/ ∞ μ s	90/3180 μ s
NAB	17.5/∞ μ s (AES)	50/3180 μ s	50/3180 μ s	90/3180 μ s

Frequency response record/reproduce:

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
± 2 dB	40 Hz ... 22 kHz	30 Hz ... 20 kHz	30 Hz ... 16 kHz	30 Hz ... 10 kHz
± 1 dB	60 Hz ... 20 kHz	30 Hz ... 18 kHz	30 Hz ... 12 kHz	30 Hz ... 8 kHz

Frequency response SYNC reproduction (from record head)

- Amplifier programmed for "narrow band":

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
± 2 dB	60 Hz ... 12 kHz	30 Hz ... 12 kHz	30 Hz ... 8 kHz	----- -----

- Amplifier programmed for "wide band":

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
± 2 dB	60 Hz ... 20 kHz	30 Hz ... 18 kHz	30 Hz ... 12 kHz	----- -----

Signal-to-noise ratios record/reproduce

CCIR [Equalization according to CCIR, or AES at 76 cm/s (30 ips), respectively. Measured with tape AGFA PER 528, BASF LGR 50 or equivalent type for 1/4" versions, with tape SCOTCH 3M 226 or equivalent type for 1/2" versions]

1/4" full track (320 nWb/m; 3.75 ips = 250 nWb/m), track width 6.3 mm

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9.5 cm/s 3.75 ips
Linear, RMS, 30 Hz - 20 kHz	63 dB	62 dB	61 dB	58 dB
Quasi-peak, weighted acc. to CCIR 468-2 (DIN 45405)	54 dB	53 dB	51 dB	48 dB
RMS, A weighted acc. to DIN 45633 as per IEC Publ. 179	68 dB	66 dB	64 dB	62 dB

1/4" stereo (510 nWb/m; 3.75 ips = 400 nWb/m), track width 2.75 mm

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9.5 cm/s 3.75 ips
Linear, RMS, 30 Hz - 20 kHz	65 dB	64 dB	62 dB	59 dB
Quasi-peak, weighted acc. to CCIR 468-2 (DIN 45405)	56 dB	54 dB	52 dB	50 dB
RMS, A weighted acc. to DIN 45633 as per IEC Publ. 179	69 dB	67 dB	65 dB	63 dB

1/4" two-track (510 nWb/m; 3.75 ips = 400 nWb/m), track width 2.0 mm

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9.5 cm/s 3.75 ips
Linear, RMS, 30 Hz - 20 kHz	63 dB	62 dB	60 dB	57 dB
Quasi-peak, weighted acc. to CCIR 468-2 (DIN 45405)	54 dB	52 dB	51 dB	48 dB
RMS, A weighted acc. to DIN 45633 as per IEC Publ. 179	68 dB	66 dB	64 dB	61 dB

1/2" two-track (510 nWb/m), track width 5.0 mm

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9.5 cm/s 3.75 ips
Linear, RMS, 30 Hz - 20 kHz	70 dB	70 dB	67 dB	-----
Quasi-peak, weighted acc. to CCIR 468-2 (DIN 45405)	65 dB	65 dB	62 dB	-----
RMS, A weighted acc. to DIN 45633 as per IEC Publ. 179	74 dB	73 dB	70 dB	-----

NAB [Equalization according to NAB, or AES at 30 ips (76 cm/s), respectively. Measured with tape SCOTCH 3M 226 or equivalent type)

1/4" full track (1040 nWb/m; 3.75 ips = 510 nWb/m), track width 6.3 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	75 dB	72 dB	74 dB	65 dB
RMS, weighted acc. to ASA-A	78 dB	76 dB	77 dB	69 dB

1/4" stereo (1040 nWb/m; 3.75 ips = 510 nWb/m), track width 2.75 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	72 dB	69 dB	70 dB	62 dB
RMS, weighted acc. to ASA-A	75 dB	73 dB	74 dB	65 dB

1/4" two-track (1040 nWb/m; 3.75 ips = 510 nWb/m), track width 2.0 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	70 dB	68 dB	69 dB	60 dB
RMS, weighted acc. to ASA-A	75 dB	72 dB	73 dB	64 dB

1/2" two-track (1040 nWb/m), track width 5.0 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	74 dB	72 dB	73 dB	-----
RMS, weighted acc. to ASA-A	77 dB	75 dB	76 dB	-----

Signal-to-noise ratios record/SYNC reproduction

Amplifier programmed for "narrow band":

NAB [Equalization according to NAB, or AES at 30 ips (76 cm/s), respectively. Measured with tape SCOTCH 3M 226 or equivalent type)

1/4" full track (1040 nWb/m), track width 6.3 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	75 dB	72 dB	74 dB	-----
RMS, weighted acc. to ASA-A	78 dB	76 dB	77 dB	-----

1/4" stereo (1040 nWb/m), track width 2.75 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	72 dB	69 dB	70 dB	-----
RMS, weighted acc. to ASA-A	75 dB	70 dB	74 dB	-----

1/4" two track (1040 nWb/m), track width 2.0 mm

	30 ips 76 cm/s	15 ips 38 cm/s	7.5 ips 19 cm/s	3.75 ips 9.5 cm/s
Linear	70 dB	68 dB	69 dB	-----
RMS, weighted acc. to ASA-A	75 dB	72 dB	73 dB	-----

Distortion: (Record/reproduce, 1 kHz, measured with tape AGFA PER 528)

	76 cm/s 30 ips	38 cm/s 15 ips	19 cm/s 7.5 ips	9.5 cm/s 3.75 ips
CCIR, full track (320 nWb/m)	≤ 1,0 %	≤ 1,0 %	≤ 1,5 %	≤ 2,0 %
CCIR, stereo and 2-track (510 nWb/m)	≤ 1,0 %	≤ 1,0 %	≤ 1,5 %	≤ 2,0 %

Distortion: (Record/reproduce, 1 kHz, measured with tape SCOTCH 3M 226)

	30 ips 76 cm/s (510 nWb/m)	15 ips 38 cm/s (510 nWb/m)	7.5 ips 19 cm/s (510 nWb/m)	3.75 ips 9.5 cm/s (400 nWb/m)
NAB, full track	≤ 0,5 %	≤ 0,5 %	≤ 0,5 %	≤ 0,5 %
NAB, stereo/2-track	≤ 0,5 %	≤ 0,5 %	≤ 0,5 %	≤ 0,5 %

Cross-talk attenuation: (at 1 kHz, according to DIN 45521)

Stereo recorders: ≥ 55 dB
Two-track recorders: ≥ 65 dB

Erase efficiency: at 1 kHz and 510 nWb/m, 15 ips (38 cm/s)

Stereo recorders with full-track erase head: ≥ 80 dB
Two-track recorders with overlapping erasure: ≥ 75 dB

Erase and bias frequency:

153.6 kHz for all tape speeds

VU-meter:

Switchable between VU indication (according to IEC recommendation 268, Part 10, Section 4) and PPM (peak programme meter; according to IEC recommendation 268, Part 10, Section 3, except for 24, 1, scale division)

Power supply: (switch selectable)

100 V - 140 V or 200 V - 240 V; ±10% ; 50 or 60 Hz

Power consumption (at nominal voltage):

Stop (no tape loaded): 80 W
Recording on 2 channels, without TC: 130 W
Spooling: 160 W
Max. power consumption: 450 W

Disturbed operation: (transient line voltage failure)

Operating status unaffected by line voltage failures up to 100 ms

Ambient temperatures:

0° C ... +40° C (+32° F ... +104° F)

Relative humidity:

20% ... 90%, non-condensing

Safety standard:

According to IEC recommendation, publication 65, degree of protection I (line filter, power switch, power fuse, power transformers and line voltage selector conform to type I and II).

Weight:

■ 1/4" versions:

net: 53 kg ... 91 kg, depending on configuration
gross: 73 kg ... 119 kg, depending on configuration (air freight)
73 kg ... 119 kg, depending on configuration (sea freight)

■ 1/2" versions:

net: 53 kg ... 91 kg, depending on configuration
gross: 73 kg ... 119 kg, depending on configuration (air freight)
73 kg ... 119 kg, depending on configuration (sea freight)

TECHNICAL SPECIFICATION OF THE TIME CODE CHANNEL

The time code channel conforms to IEC publication 461, DIN 45511, part 7.

Track width/location:

0.38 mm, center of tape

Code format:

SMPT E/EBU 80 bits address code (selectable 24/25/29.97/30 frames/second)

Tape speeds:

30 - 15 - 7.5 ips
(76.2 - 38.1 - 19.05 cm/s)

Magnetic flux of the time code track:

729 nWb/m pp \pm 3 dB

Time code channel line input:

balanced and floating, with transformer.
Input impedance \geq 10 k Ω

Input level:

nom.: 2 V pp
min.: 0.25 V pp
max.: 4 V pp

Time code channel line output:

balanced and floating, with transformer
Output impedance \leq 40 Ω

Output level:

2 V pp, Load \geq 200 Ω

Cross talk attenuation code channel to audio:

\geq 90 dB for all components of the time code signal, relative to 510 nWb/m magnetic flux of audio track.

Tape travel time compensation electronics (TIME CODE DELAY UNIT):

switchable tape travel time compensation for:

- coincident time code and audio channel recording and reproducing, resp., at 24/25/29.97/30 frames/second
- M15A-TC compatible time code and audio channel recording and reproducing, resp., at 24/25/29.97/30 frames/second

Coincidence error between code and audio track: (if TIME CODE DELAY UNIT in coincident mode)

max. \pm 2 ms at 15 ips (38 cm/s)

1.5.1
Dimensions (in mm)

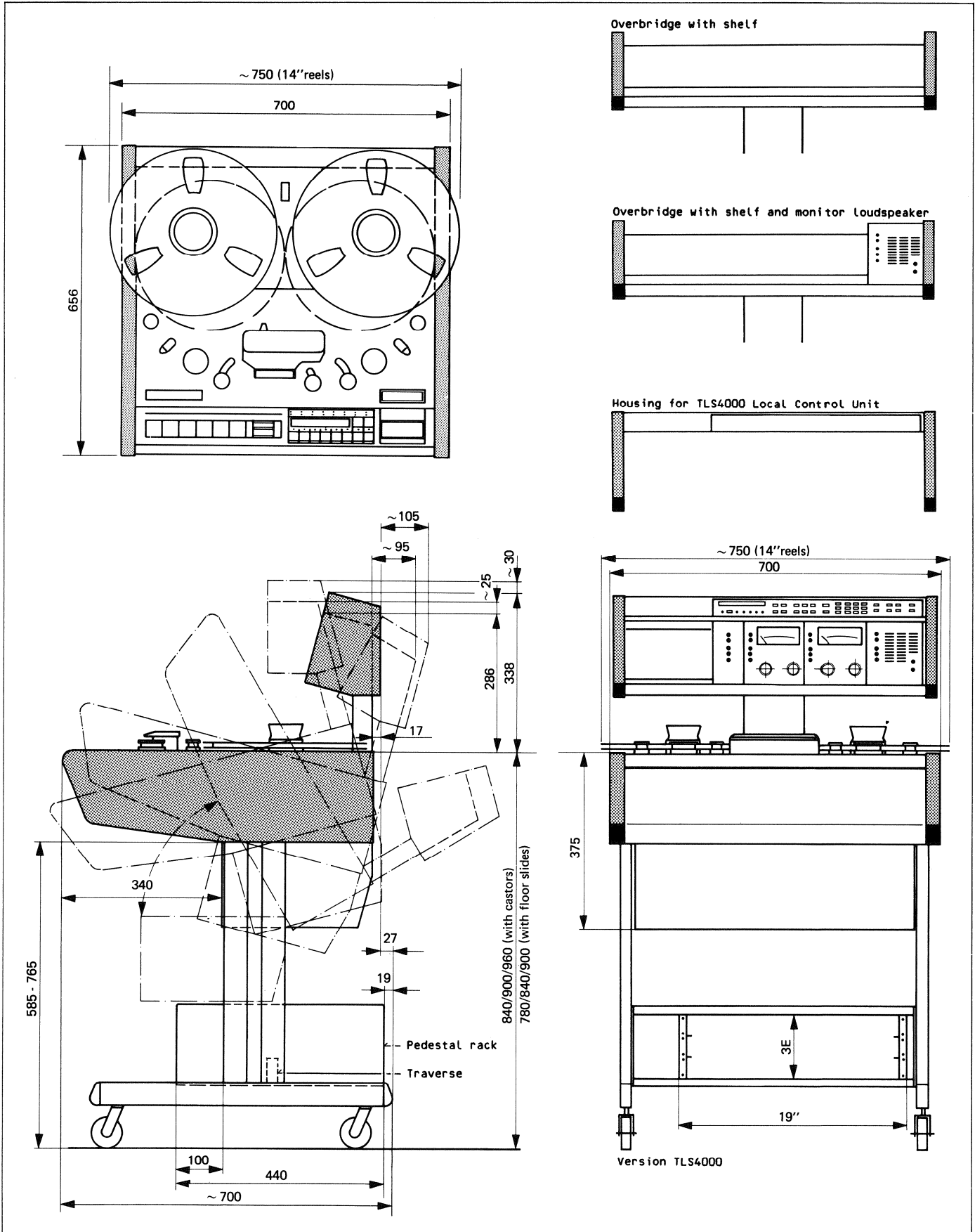


Fig. 1.5.1

1.5.2 Packing

Recorders with VU-meter panel:

Carton 82 x 84 x 120/126/132 cm (depending on console height)

Recorders without VU-meter panel:

Carton 82 x 84 x 93/99/105 cm (depending on console height)

Gross weight: 73 kg - 119 kg (depending on configuration)

1.5.3 Level diagrams

Refer to Section 7 (diagrams audio).

1.6 STANDARD CALIBRATION DATA

These data are values that are transferred from the ROM into the RAM and the latches of the audio amplifiers in the event that the RAM data are lost. These values ensure that the recorder can still be used despite this loss of data, albeit possibly with a minor degradation in audio quality. They are not intended as a substitute for individual calibration through which component and manufacturing tolerances can be compensated.

The data are represented as hexadecimal numbers, i.e. in the same form they also appear on the service display.

These data apply to 2 mm 2-channel machines, reference level (operating level) 320 nWb/m (or 257 nWb/m for 3.75 ips), tape type 3M 226.

Speed	Mode	Equal.	Level	Treble	Bass	Equal.
3.75	REPRO		82	70	90	95
3.75	RECORD		26	80	30	BB
3.75	SYNC		00	00	00	00
7.5	REPRO	CCIR	66	39	80	87
7.5	RECORD	CCIR	30	A0	3E	75
7.5	SYNC	CCIR	62	50	96	87
7.5	REPRO	NAB	66	39	80	61
7.5	RECORD	NAB	30	A0	3E	99
7.5	SYNC	NAB	62	50	96	61
15	REPRO	CCIR	66	30	6A	44
15	RECORD	CCIR	30	54	46	BA
15	SYNC	CCIR	62	50	88	44
15	REPRO	NAB	66	30	6A	61
15	RECORD	NAB	30	54	46	99
15	SYNC	NAB	62	50	88	61
30	REPRO		66	38	48	26
30	RECORD		30	1B	50	DE
30	SYNC		62	50	60	26
Speed	Mode	Equal.	Level	Treble	Bass	Equal.

1.7
MAINTENANCE HINTS FOR THE SERVICE PERSONNEL

1.7.1
Abbreviations

A	assembly
ANT	antenna
B	bulb
BA	battery, accumulator
BR	optocoupler (bulb --> LDR)
C	capacitor
D	diode, DIAC
DL	LED
DLQ	optocoupler (LED --> phototransistor)
DLR	optocoupler (LED --> LDR)
DLZ	LED array, 7 segment display
DP	photodiode
DZ	rectifier
E	electronic part
EF	headphones
F	fuse
FL	filter
H	head (sound-, erase-)
HC	hybrid circuit (thick/thin film)
HE	hall element
IC	integrated circuit
J	jack (female)
JS	jumper
K	relay, contactor
L	inductor
LS	loudspeaker
M	motor
ME	meter
MIC	microphone
MP	mechanical part
P	plug (male)
PU	pick up
Q	transistor, FET, thyristor, TRIAC
QP	phototransistor
QPZ	phototransistor array
R	resistor
RP	light depending resistor (LDR)
RT	temperature sensitive resistor
RZ	resistor array
S	switch
T	transformer
TL	delay line
TP	test point
W	wire, stranded wire
X	socket, holder
XB	lamp socket
XF	fuse holder
XIC	IC-socket
Y	quartz, piezoelectric element
Z	network, array

These abbreviations may be combined (max. 3 characters).

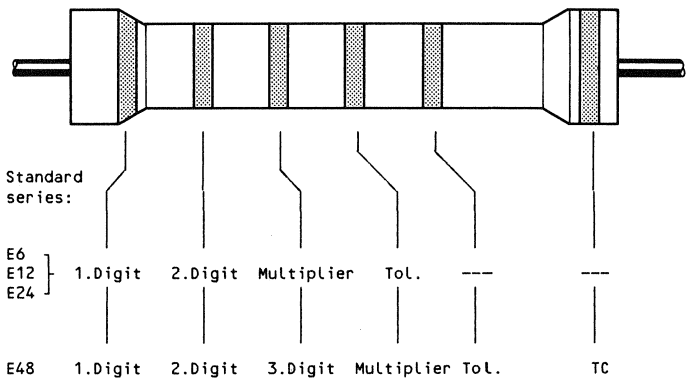
1.7.2
Powers of ten

Name	Abbreviation	Value
Tera-	T	10**12
Giga-	G	10**9
Mega-	M	10**6
Kilo-	k	10**3
Milli-	m	10**-3
Mikro-	μ	10**-6
Nano-	n (mμ#)	10**-9
Pico-	p (μμ#)	10**-12
Femto-	f	10**-15

frequently used in the United States

1.7.3
Code letters and colors

Resistors



Color	Digit	Multiplier	Tolerance	Temp.-coefficient
gold	-	0,01	5 %	-
silver	-	0,1	10 %	-
black	0	1	-	-
brown	1	10	1 %	100 * 10 ** -6 / K
red	2	100	2 %	50 * 10 ** -6 / K ##
orange	3	1 k	-	15 * 10 ** -6 / K
yellow	4	10 k	-	25 * 10 ** -6 / K
green	5	100 k	0,5 %	-
blue	6	1 M	0,25 %	-
violet	7	10 M	0,1 %	-
grey	8	-	-	-
white	9	-	-	-

either no mark for temperature coefficient, or red

Capacitors

The tolerance category is sometimes specified by a letter after the rated capacitance.

- D = 0,5 %
- F = 1 %
- G = 2 %
- J = 5 %
- K = 10 %
- M = 20 %

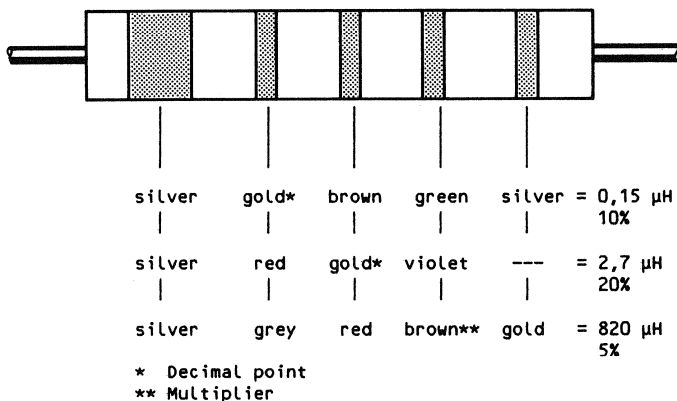
Inductors, transformers

Molded RF coils

A wide silver-colored ring and 4 thin, differently colored rings identify molded RF coils. The wide silver ring indicates the start of the counting direction. The second, third, and fourth ring indicate the inductance in micro Henry (μH), where two of the three rings represent the numeric value, the third one either a multiplier or the decimal point. In the latter case it has a golden color. The fifth ring identifies the tolerance in percent (\pm).

Color	Digit	Multiplier	Tolerance
black	0	1	-
brown	1	10	1 %
red	2	100	2 %
orange	3	10**3	-
yellow	4	10**4	-
green	5	10**5	0,5 %
blue	6	10**6	-
violet	7	10**7	-
grey	8	10**8	-
white	9	10**9	-
gold	.	-	5 %
silver	-	-	10 %
any (nat).	-	-	20 %

Examples:



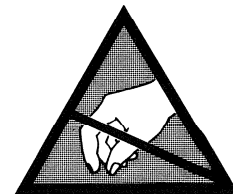
Inductors, transformers on ferrite cores

Inductors and transformers on ferrite cores are marked with three colored dots (for color codes, refer to the table in the section "Resistors", the two left-hand columns). These dots represent the last three digits of the STUDER standard number, the largest of them identifying the start. The first digits of the standard number (1.022.---) are always the same.

E.g.: Driver Transformer, 150 kHz.
Standard number: 1.022.211
Color code: red (large dot), brown, brown

Terminal 1 of the winding form is usually identified by a lobe; if not the winding form features a yellow dot near terminal No. 1.

1.7.4 Electrostatically sensitive semiconductor devices



MOS (Metal oxide semiconductor) devices are very sensitive to electrostatic charges. The following precautions should, therefore, be observed:

1. Electrostatically sensitive semiconductor devices and assemblies are stored and shipped in protective packing material. This protective packing is identified with the label illustrated above.
2. Strictly avoid contact of the connector pins with plastic bags and foils or other statically chargeable materials.
3. Ensure that your wrist is grounded before touching the connector pins.
4. Use a grounded, conductive plastic pad as a work surface.
5. Never unplug or insert printed circuit boards while the equipment is under power! The equipment must have been switched off for at least 5 seconds before any PCBs are pulled out or inserted!

2 **INSTALLATION, OPERATING**

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2. INSTALLATION, OPERATING

2.1 UNPACKING AND TESTING

The A820 tape recorder is delivered in special packing material which protects it from damage in transit. Care should be exercised when unpacking the recorder so that the equipment surfaces will not become marred.

Compare the content with the packing slip to ensure that the equipment is complete. Save the original packing material since it provides the best protection for your recorder for subsequent shipment.

Examine the complete content for possible transit damage. The forwarding company and the nearest STUDER dealer should be notified immediately in the event of damage.

2.2 PLACE OF INSTALLATION

The A820 tape recorder should be installed in a well ventilated location that is as dust-free as possible. The recorder specifications are guaranteed for ambient temperatures ranging from 0 to 40°C. The relative humidity (non condensing) should range between 20 and 90%.

Install the recorder in such a place that there is sufficient space for unrestricted ventilation. Particularly when a recorder is installed in a recess, localization of heat can occur. The air circulation zone should not be used as a storage area for manuals etc. when the recorder is being used.

The recorder must not be placed in close proximity to strong electromagnetic fields. General sources of such interference are: strong load fluctuations on adjacent power lines, high-power transformers, elevator motors, as well as nearby radio and television transmitters.

The back of the recorder should remain accessible for maintenance purposes. If the recorder is installed in a recess, sufficient clearance for shifting the recorder should remain even after the cables are attached.

2.3 INSTALLING THE TAPE RECORDER

The equipment specifications are guaranteed for any operating position between horizontal or $\pm 7.5^\circ$ and $\pm 15^\circ$ inclination.

2.3.1 Installation of console

The recorder is shipped in the disassembled condition. First the console side panels with mounted rollers or floor slides are to be screwed (Allen key 5 mm) to the traverse (or the rack base) after which the tape deck can be placed on top and fastened (Allen key 6 mm). Secure the wooden side panels with 4 screws each (Allen key 4 mm).

CAUTION !
DURING FAST WIND OPERATIONS THE CONSOLE TILTING MECHANISM MUST NOT BE ACTUATED - TAPE, REELS, REEL ADAPTORS, AND TAPE TRANSPORT COVER MAY BE SERIOUSLY DAMAGED AS A RESULT OF THE HIGH GYRO FORCES !

2.4 CONNECTOR PANEL

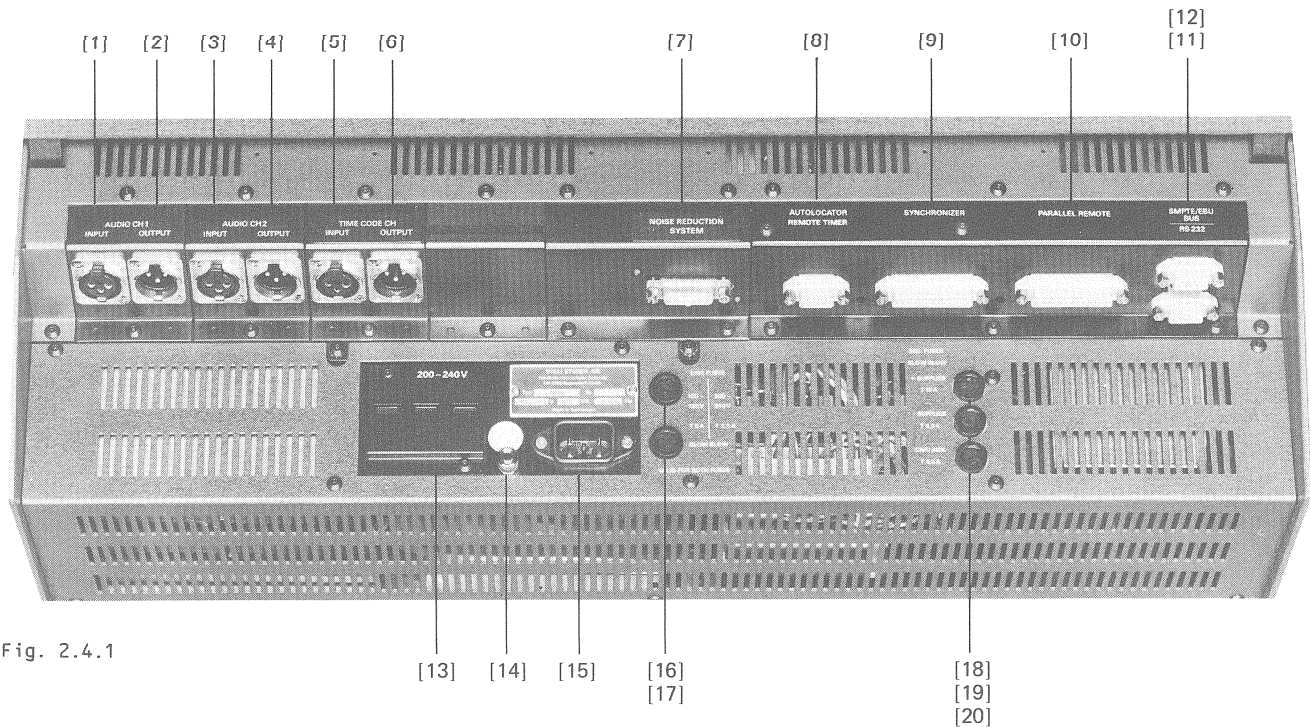


Fig. 2.4.1

- | | |
|---|--|
| [1]- CH1 line in- and output | [11], [12] Parallel-connected terminals for SMPTE/EBU bus, RS232 interface or data back-up on external medium (option) |
| [2]- CH1 line in- and output | [13] Line voltage selector |
| [3]- CH2 line in- and output | [14] Ground terminal |
| [4]- CH2 line in- and output | [15] AC power connection (appliance inlet) |
| [5]- Time code channel line in- and output | [16] Primary fuse (audio) |
| [6]- Time code channel line in- and output | [17] Primary fuse (tape transport) |
| [7] Socket for noise reduction system (option) | [18] Secondary fuse, +power supply |
| [8] Socket for serial remote control, remote counter and autoLocator (option) | [19] Secondary fuse, -power supply |
| [9] Socket for synchronizer (only for TC versions) | [20] Secondary fuse, capstan motor |
| [10] Socket for parallel remote control | |

2.4.1
AC power, voltage selector

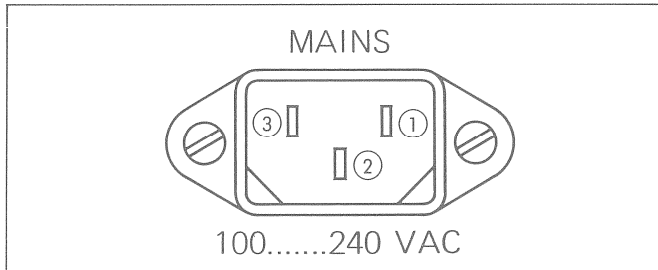


Fig. 2.4.2

- No. 1 Phase
- No. 2 Protector ground
- No. 3 Neutral

Caution

Before the recorder is connected for the first time, verify that the setting of the voltage selector on the rear panel of the recorder matches the local line voltage. The following line voltages can be set: 100...140 or 200...240 VAC, ±10%.

Disconnect the recorder from the AC supply before making any changes! Unfasten the cover of the voltage selector (2 screws, Allen key No. 2.5), change over three switches and reinstall the cover, rotated by 180°.

After the voltage selector setting has been changed, the power fuses have to be replaced with those of the correct rating.

- 100...140 VAC: T 5 A (slow)
- 200...240 VAC: T 2.5 A (slow)

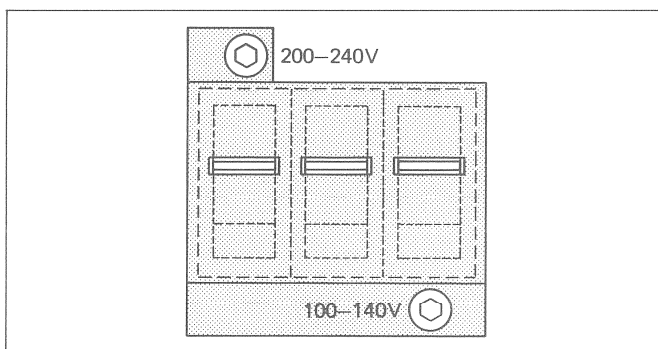


Fig. 2.4.3

2.4.2
Line input and output

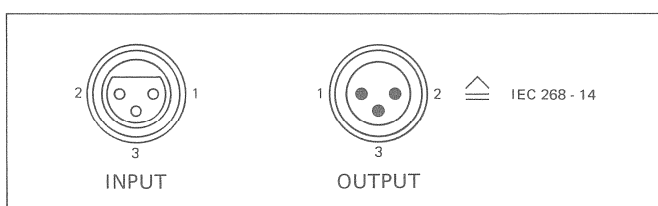


Fig. 2.4.4

The balanced inputs and outputs are terminated on XLR male or female sockets (described in the IEC recommendation 268-14).

- No. 1 Audio ground
- No. 2 A-line (hot) *
- No. 3 B-line (cold)

* The A-line is hot if the recorder is connected to an unbalanced source.

2.4.3
Remote control connectors

Connector PARALLEL REMOTE CONTROL

A 25-pin connector (female, type D) permits connection of a parallel remote control with the following features:

- Remote control of tape transport functions with acknowledgment (<, >, PLAY, STOP, REC)
- RESET TIMER (resetting of the tape counter)
- ZERO LOC (automatic searching of the tape counter address 0.00.00.0)
- LOC START (automatic searching of the tape counter address at which the last PLAY command was entered)
- LIFTER (cancellation of the tape lift during spooling for as long as the key is pressed)
- FADER (enabling of fader start circuit)
- VARISPEED (variable tape speed)

- Connector set Part No. 20.020.303.16
- Connector housing, 25-pin Part No. 54.13.7022
- Connector, 25-pin, coded Part No. 10.217.001.06

Pin assignment of the PARALLEL REMOTE CONTROL connector:

Pin	Signal name	Designation
01	+0.0	Ground
02	BR-REW *	Acknowledgment Lamp, REWIND
03	BR-FORW *	Acknowledgment Lamp, FORWARD
04	BR-VRSPD *	Acknowledgment Lamp, VARISPEED (if active, alternating LOW and HIGH)
05	SR-VRSPD +	Switch for VARISPEED command
06	SR-FADRY +	Switch for FADER START READY command
07	BR-LOCST *	Acknowledgment Lamp LOC START
08	BR-FADRY *	Acknowledgment Lamp FADER START READY
09	BR-REC *	Acknowledgment Lamp RECORD
10	SR-RESET +	Switch for RESET TIMER command
11	FAD1	Input FADER START command, line A
12	FAD2	Input FADER START command, line B (FADER START active if 5 to 24 V AC or DC between pins 11 and 12)
13	IR-REFEX	Input for ext. capstan PLL reference (nominal 9.6 kHz, TTL level recommended; max. input voltage = +10 V)
14	SR-OLOC +	Switch for ZERO LOC command
15	BR-PLAY *	Acknowledgment Lamp, PLAY
16	BR-STOP *	Acknowledgment Lamp, STOP
17	SR-LIFT +	Switch for LIFTER command
18	SR-LOCST +	Switch for LOC START command
19	SR-REC +	Switch for RECORD command
20	SR-REW +	Switch for REWIND command
21	SR-FORW +	Switch for FORWARD command
22	SR-PLAY +	Switch for PLAY command
23	SR-STOP +	Switch for STOP command
24	KEY	Coding
25	+24.0	Supply +24 V (300 mA max.)

- * Open collector output, active LOW. No internal pull-up resistor, max. HIGH level = 30 V. Sink current 200 mA max., internal current limit resistor 22 Ω.
- + Switch input, LOW level activates command. Internal pull-up resistor 4.7 kΩ connected to +24 V, max. HIGH input level = 30 V. Logic levels: LOW: 0 V to 4 V; HIGH: 7.5 V to 30 V.

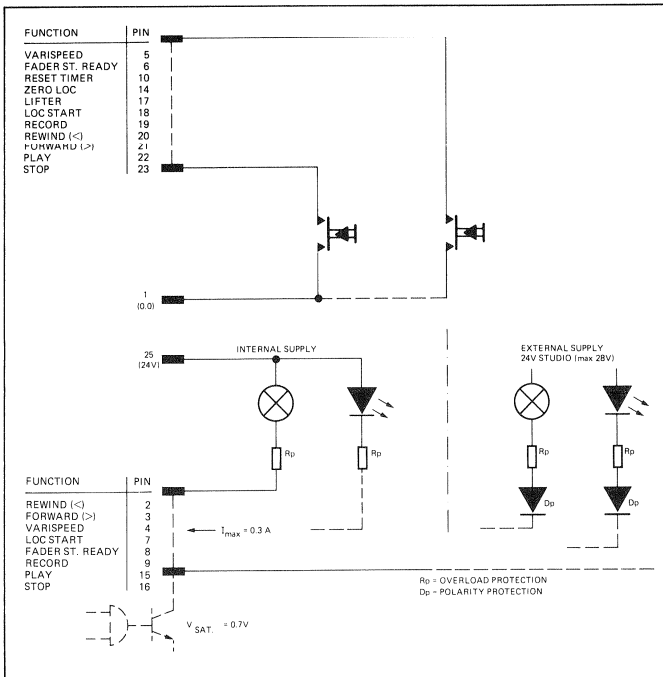


Fig. 2.4.5 REMOTE CONTROL CIRCUIT

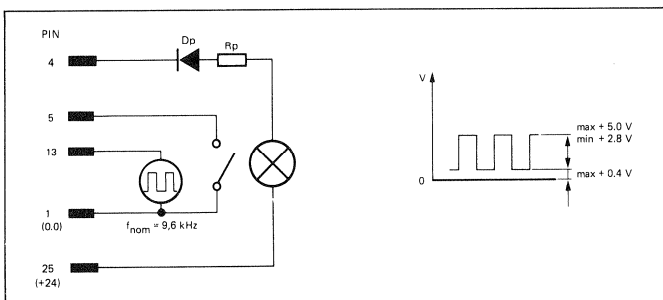


Fig. 2.4.6 VARISPEED CONTROL CIRCUIT

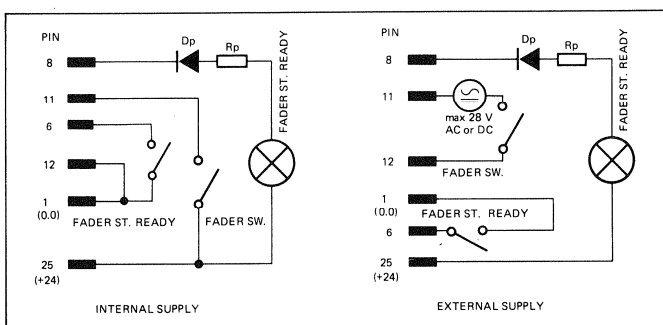


Fig. 2.4.7 FADER START CIRCUIT

Connector EXTERNAL SYNCHRONIZER

A 25-pin connector (female, type D) is available for connecting an external synchronizer.

Only for time code versions.

Connector set Part No. 20.020.303.15
 Connector housing, 25-pin Part No. 54.13.7022
 Connector, 25-pin, coded Part No. 10.217.001.05

Pin assignment of the EXTERNAL SYNCHRONIZER connector:

Pin	Signal name	Designation
01	+0.0	Ground
02	BR-REW *	Acknowledgment lamp, REWIND
03	BR-FORW *	Acknowledgment lamp, FORWARD
04	BR-VRSPD *	Acknowledgment lamp, VARISPEED (if active, alternating LOW and HIGH)
05	SR-VRSPD +	Switch for VARISPEED command
06	SR-REHSL +	Switch for REHEARSAL command
07	OR-MVCLK *	Output for TAPE MOVE CLOCK signal (512 pulses/15", on/off ratio 50 %)
08	KEY	Coding
09	BR-REC *	Acknowledgment lamp RECORD
10	OR-MVDIR *	Output for signal TAPE MOVE DIRECTION (Rewind = LOW, forward = HIGH)
11	OR-CMCLK *	Output f. signal CAPST. M. MOVE CLOCK (1200 pulses/sec. @ 7.5 ips)
12	OR-SYENB	Output for signal SYNCHRONIZER ENABLE (LOW if tape loaded & recorder ready; HIGH if tape not tensioned)
13	IR-REFEX	Input for ext. capstan PLL reference (nominal 9.6 kHz, TTL level recommended; max. input voltage = +30 V)
14	+0.0	Ground
15	BR-PLAY *	Acknowledgment lamp, PLAY
16	BR-STOP *	Acknowledgment lamp, STOP
17	SR-LIFT +	Switch for LIFTER command (TC channel not affected)
19	SR-REC +	Switch for RECORD command
20	SR-REW +	Switch for REWIND command
21	SR-FORW +	Switch for FORWARD command
22	SR-PLAY +	Switch for PLAY command
23	SR-STOP +	Switch for STOP command
24	KEY	Coding
25	+24.0	Supply +24 V (300 mA max.)

* Open collector output, active LOW. No internal pull-up resistor, max. HIGH level = 30 V. Sink current 200 mA max., internal current limiting resistor 22 Ω.
 + Switch input, LOW level activates command. Internal pull-up resistor 4.7 kΩ connected to +24 V, max. HIGH input level = 30 V. Logic levels: LOW: 0 V to 4 V; HIGH: 7.5 V to 30 V.

Caution!
 If light bulbs are used as acknowledgment lamps, their inrush current must not exceed 0.3 A.

Connector for RS232 interface and SMPTE/EBU BUS, or RS232 interface and data save

This 9-pin connector (female, type D) permits connection of either a terminal with RS232 interface (ASCII protocol) or a tape recorder for saving the Audio parameters (option 1.810.751.00), or of a terminal with RS232 interface (binary protocol) or the SMPTE/EBU bus (RS422) (option 1.820.751.20).

Connector set part No. 20.020.303.07

■ Pin assignment of the RS232 or SMPTE/EBU bus connector (option 1.820.751.00)

RS232		RS422	
Pin	Signal name	Pin	Signal name
01	SHIELD	01	SHIELD
02	---	02	TRANSMIT A
03	RX	03	RECEIVE B
04	0.0 V	04	RECEIVE COM.
05	---	05	---
06	0.0 V	06	TRANSMIT COM.
07	TX	07	TRANSMIT B
08	---	08	RECEIVE A
09	SHIELD	09	SHIELD

■ Pin assignment of the RS232 or data save connector (option 1.810.751.00)

Pin	Signal name
01	FRMGND
02	TRANSA
03	RECEIVB
04	FRMGND
05	SPARE
06	TRANSCM
07	TRANSB
08	RECEIVA
09	FRAMGND

Connector AUTOLOCATOR/REMOTE TIMER

The 9-pin connector (female, type D) permits connection of a serial remote control, of a remote counter, or an auto-locator.

The keys of the serial remote control can be programmed by the user as desired. All functions can be operated with the remote control that are available on the local keyboard. The functions programmed for the serial remote control do not necessarily have to be the same as those on the local keyboard!

Pin assignment of the AUTOLOCATOR/REMOTE TIMER connector:

Pin	Signal name
01	SHIELD
02	N.C.
03	TR-A
04	KEY
05	+0.0
06	N.C.
07	TR-B
08	SIG.GND
09	+REMSUP

Connector NOISE REDUCTION SYSTEM

The 15-pin connector allows the remote control of the record/reproduce switchover of a two-channel noise reduction system (DOLBY <R> or TELCOM <R>).

Connector set part No. 20.020.303.08

Pin assignment of the NOISE REDUCTION SYSTEM connector:

Pin	Signal name	Designation
01	B-BDY-01 *	Control signal for DOLBY system, CH1
02	B-BDY-02 *	Control signal for DOLBY system, CH2
03	N.C.	
04	N.C.	
05	N.C.	
06	N.C.	
07	N.C.	
08	N.C.	
09	N.C.	
10	N.C.	
11	B-TCL-01 +	Control signal for TELCOM system, CH1
12	N.C.	
13	B-TCL-02 +	Control signal for TELCOM system, CH2
14	+24.0	
15	+0.0	

* Open collector output, active LOW. No internal pull-up resistor. Max. HIGH level 30 V, max. current 200 mA.
+ Open collector output, as above, but active HIGH.

2.4.4 Headphones socket

TIP = left-hand
RING = right-hand
SLEEVE = ground

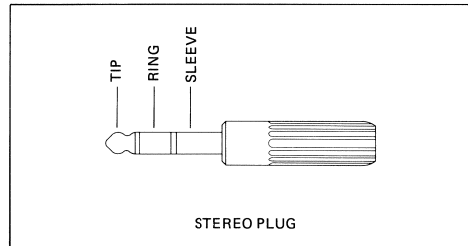
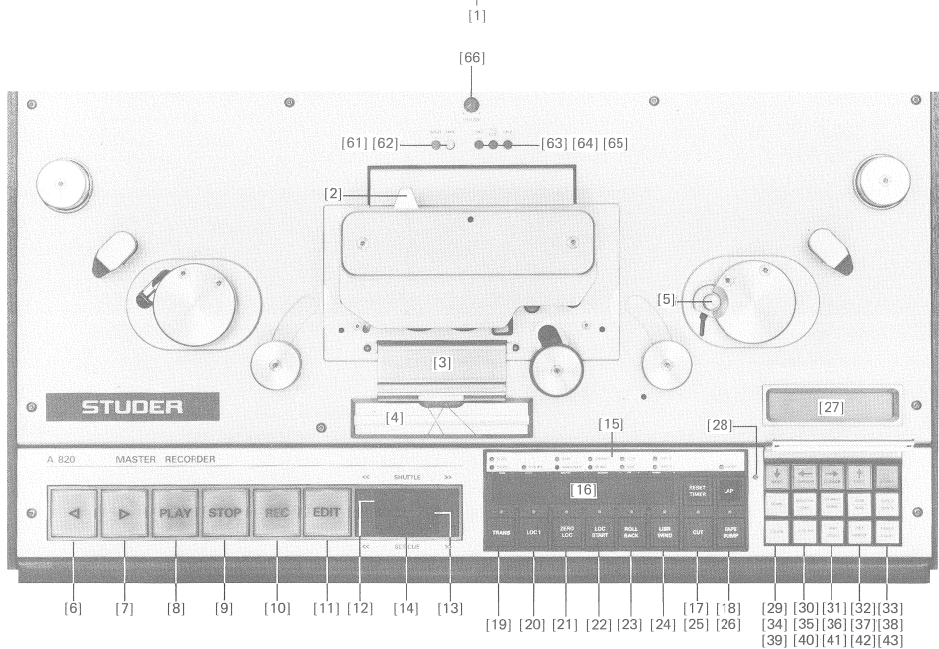
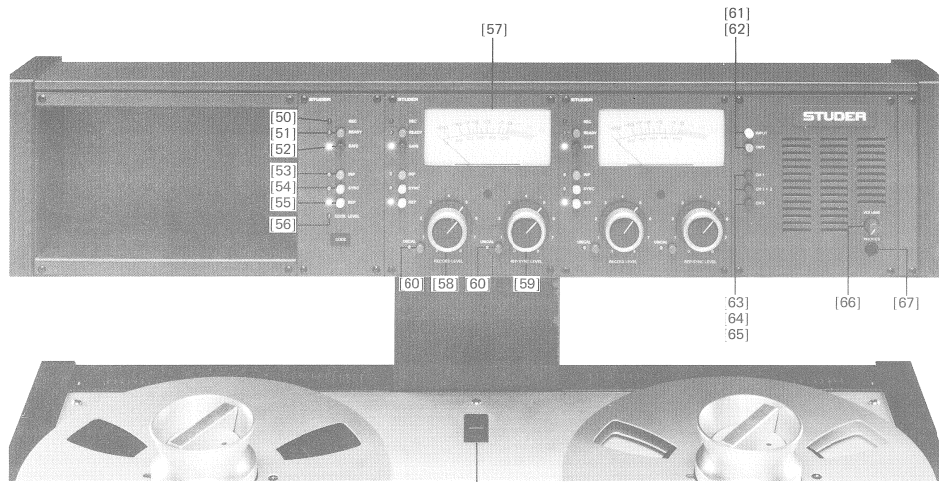


Fig. 2.4.8

2.5
OPERATING INSTRUCTIONS



There are four standard versions with differently programmed (and correspondingly labeled) key sets which in the following are referred to with the Letters A...D.

Version A

Recorder types: A820-0.75, A820-2, A820-2 F, A820-1

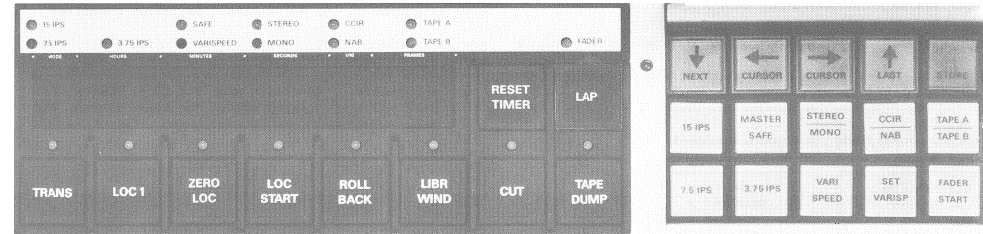


Fig. 2.5.1

Version B

Recorder types: A820-0.75 VU, A820-2/2 VU, A820-2 VU, A820-1 VU

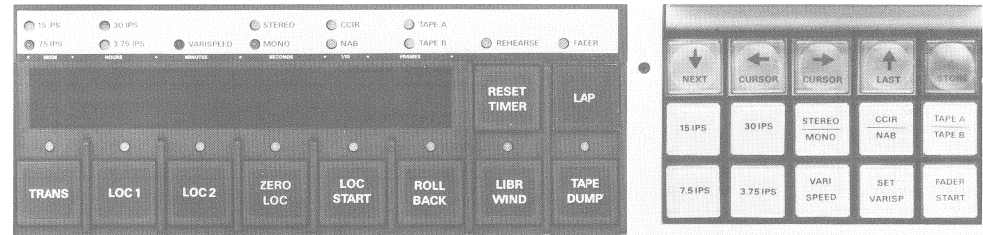


Fig. 2.5.2

Version C

Recorder types: A820-2 TC, A820-2 TC VU



Fig. 2.5.3

Version D

Recorder type: A820-2/2-1/2" VU

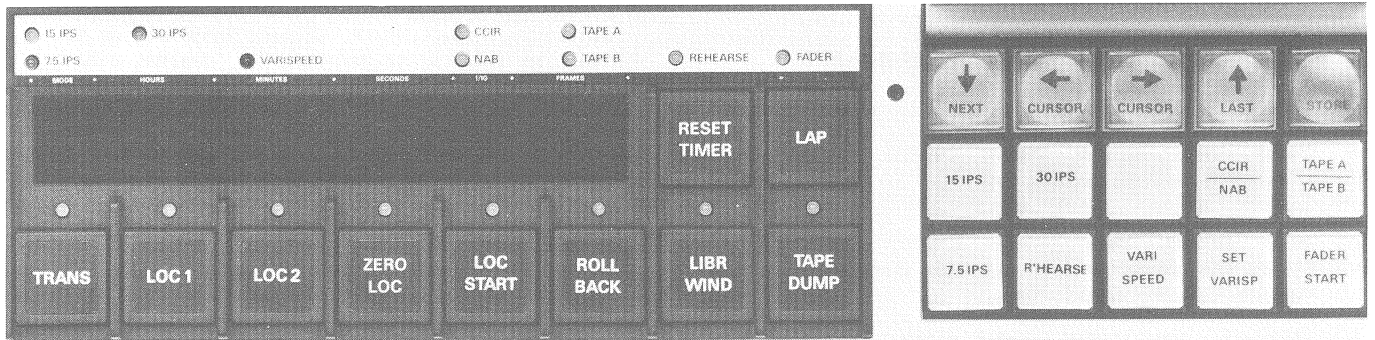


Fig. 2.5.4

A self-adhesive status indication label with the complete labeling is bypacked in the accessories. It can be used if the keys need to be assigned differently than has been programmed for the standard version.

After the existing status indication label has been removed, the still vacant lamp sockets can be fitted with the bypacked LEDs after which the new status indication label can be glued on and the recorder programmed as desired.

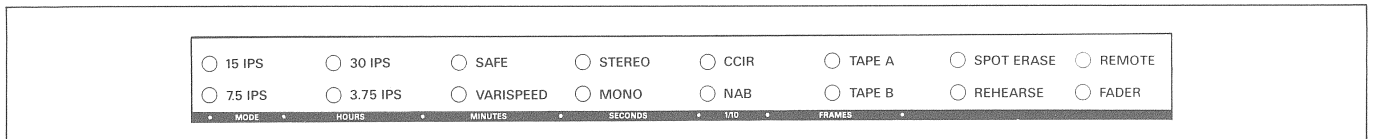


Fig. 2.5.5

2.5.1 Controls

- [1] Power switch
- [2] Tape lift slider
- [3] Head shield, can be closed or opened manually
- [4] Splicing block
- [5] Tape scissors

Main key field:

- [6] <: Rewind key
- [7] >: Fast forward key
- [8] PLAY: reproduce key
- [9] STOP: has priority over all tape command keys and cancels a synchronizer loop.
If STOP is pressed together with LOC START or LOC1...5, the stored locator addresses will be displayed.
Certain function keys (e.g. STEREO/MONO, CCIR/NAB, TAPE A/TAPE B, FRAME/S SELECT, OFFSET ON/OFF) can only be operated if STOP is pressed simultaneously.
- [10] REC: record key, only effective together with PLAY. In reproduce mode it is possible to switch directly to record (RECORD B) by pressing REC, or by pressing PLAY + REC (RECORD A), depending on the programming.
- [11] EDIT: editing function, activates the SET/CUE wheel. On the other hand, the position of the anti-scrape flutter roller is adjusted in a way that the tape can easily be gripped on the left-hand side of the head block.
- [12] SHUTTLE wheel: permits positioning of the tape with continuously variable speed. Center position = STOP, left-hand limit position = maximum SHUTTLE rewind speed, right-hand limit position = maximum SHUTTLE fast forward speed.
- [13] SHUTTLE BAR: bar between SHUTTLE wheel [12] and SET/CUE wheel [14]. The spooling speed selected with the SHUTTLE wheel can be stored by pressing the SHUTTLE BAR.
- [14] SET/CUE wheel: multifunction wheel:
 - In conjunction with EDIT [12] key: permits positioning of the tape; the tape moves in synchronism with the SET/CUE wheel. In the case of a time code version, the code is read generally with the right-hand code head and without delay compensation as long as EDIT is active.
 - In conjunction with the service display [27] and cursor keys [28] through [32]: either for "paging" in the menu or as a potentiometer knob for adjusting the audio and several tape transport parameters.
 - In conjunction with the VARISPEED function: knob for adjusting the desired tape speed.
 - In conjunction with the functions SET ADDRESS and SET TIMER for entering the locator addresses and for setting the tape counter display.

Secondary key field:

- [15] Display field for keys [33] through [42].
- [16] LED tape counter display. Real-time indication for all tape speeds in hours, minutes, seconds, and tenths of seconds; switchable to indication of a second counter with arbitrarily selectable reference.
- [17] RESET TIMER: reset button for tape counter display [16].
- [18] LAP: switch for changing over the (main) tape counter to a second counter with arbitrarily selectable reference. As long as the content of the second counter is indicated, the display shows an "L".
- [19] TRANS: The momentary tape address is stored (transferred) in the corresponding memory location. The actual tape address is stored by pressing one of the keys LOC1 through LOC5.
Pressed together with PLAY: reproduction in reverse direction.

- [20] LOC1: the address stored with [19] is searched automatically. The LOCATE address is displayed for as long as this key is pressed. The internal memory is referred to the tape position, i.e. if the tape counter is set to zero with the RESET TIMER button, the new LOCATE address is automatically calculated.
- [21] ■ LOC ZERO (version A): the tape address corresponding to the counter reading 0.00.00.0 is searched automatically. Is referred in normal tape counter mode as well as in LAP mode to the current zero position.
 - LOC2 (versions B, C, D): analogous to LOC1 [20].
- [22] ■ LOC START (version A): automatically searches the tape address at which the last PLAY command was entered during standstill of the tape, followed by STOP (function LOC START STOP), PLAY (function LOC START PLAY) or RECORD (function LOC START REC).
Default programming: LOC START PLAY.
 - LOC ZERO (versions B, C, D): see [21].
- [23] ■ ROLLBACK (version A): rewinds the tape by a programmable distance from 1 to 59 seconds. Default value: 15 sec. Followed by three programmable possibilities: STOP (ROLLBACK-A), PLAY (ROLLBACK-B) or RECORD (ROLLBACK-C).
Default: ROLLBACK-B.
- [24] ■ LIBRARY WIND (version A): Reduced spooling speed for library tapes. Preselection key, activates spooling with reduced speed together with one of the spooling keys [6] or [7]. Pressing the LIBRARY WIND button a second time cancels the function.
Programmable from 0.1 to 15 m/s in steps of 0.1 m/s.
Default value 5 m/s.
 - ROLLBACK (versions B, C, D): see [23]
- [25] ■ CUT (version A): positions the tape address that is currently located in front of the reproduce head gap to the tape scissors.
 - LIBRARY WIND (versions B, C, D): see [24].
- [26] TAPE DUMP: waste basket mode. Four programmable possibilities: TAPE DUMP-A, tape counter enabled; TAPE DUMP-B, tape counter disabled; TAPE DUMP-C, waste basket mode is prepared by pressing the TAPE DUMP key, start with PLAY, interruption with STOP, tape counter enabled; TAPE DUMP-D, same as TAPE DUMP-C, tape counter disabled.
- [27] LCD service display; alphanumeric display for indicating the software status, speed deviations in vari-speed mode, error messages, programming of audio and tape transport parameters, etc.

Function and programming key field (below cover):

- [28] Switch for activating the programming key field (to protect the functions and parameters from being altered inadvertently this key field is controlled with an Allen key No. 2.5).
Screw in the counterclockwise limit position: programming enabled, screw in the clockwise limit position: programming disabled. Only the first six tape deck parameters (hub diameter left/right, reduced spooling speed, maximum spooling speed, ROLLBACK time, and maximum reel diameter) can be altered and stored. The audio parameters can be modified but not stored. I.e. after switching the recorder off and on again, the previous audio parameters are loaded. The acknowledgement of receipt of an error messages is possible by pressing STORE.

- [29] Ψ /NEXT: } keys for paging through the menu
 [30] CURSOR/ \leftarrow : } and for moving the cursor on the
 [31] CURSOR/ \rightarrow : } service display
 [32] \uparrow /LAST: }
- [33] STORE: button for storing a changed audio or tape transport parameter, for changing over a function that is not assigned to a specific key, for reprogramming a push button function (when pressed together with the corresponding button) or for acknowledging receipt of an error message.
- [34] 15 IPS: speed selection (15 ips, 38 cm/s).
- [35] ■ MASTER SAFE (version A): record inhibition for recorders without SAFE/READY switch.
 ■ 30 IPS (versions B, C,D): speed selection (30 ips, 76 cm/s).
- [36] ■ STEREO/MONO (versions A, B): Stereo/mono selector (only together with STOP!).
 ■ FRAMES/S SELECT (only version C): selection of time code type (24/25/29.97/30 frames/s). Only together with STOP!
 ■ --- (version D): "no function" key, key not assigned.
- [37] CCIR-NAB: Selector for equalization standard (only together with STOP!).
- [38] TAPE A - TAPE B: selector for two tape types (only together with STOP!).
- [39] 7.5 IPS: speed selection (7.5 ips, 19 cm/s).
- [40] ■ 3.75 IPS (versions A, B): speed selection (3.75 ips, 9.5 cm/s).
 ■ REHEARSE (versions C, D): simulation of electronic editing. After record mode has been activated, the channels with SYNC status are automatically switched to INPUT (Prerequisite: function IN-OUT DEL = ON, refer to 2.6.3).
- [41] VARISP. ON/OFF: on/off switch for variable tape speed.
- [42] SET VARISP.: enables VARISPEED input through SET/CUE wheel.
- [43] FADER: disables the local keyboard, fader start circuit is given priority. Four programmable possibilities:
 ■ FADER A: FADER START without enable key. After FADER START has been performed, the local keyboard is disabled and the built-in monitor speaker (but not the headphones socket) is muted. When the fader is restored (= no voltage on the remote control socket), the recorder switches to STOP, muting of the monitor speaker is only cancelled when the tape stands still.
 ■ FADER B: FADER START with enable key (FADER START READY), local keyboard remains active when FADER START is enabled. After FADER START has been performed, the local keyboard is disabled; default programming.
 ■ FADER C: same as FADER START B, however local keyboard is disabled when FADER START is enabled.
 ■ FADER D: FADER START with enable key (FADER START READY), the local keyboard remains active even when FADER START is enabled. After FADER START has been performed, the built-in monitor speaker (however not the headphones socket) is muted. If after FADER START has been performed one of the buttons of the local keyboard is pressed in PLAY mode, muting of the monitor speaker is cancelled. If FADER START is not enabled, actuation of the FADER switch does not change the operating state of the tape recorder.
 If the tape should be torn during FADER START mode, the tape transport has to be reactivated with the FADER switch.

Controls in the overbridge (if configured):

- [50] REC: record indicator lamp; turned on when the channel is switched to record.

- [51] SAFE: channel disabled for recording.
 [52] READY: channel ready for recording.
 [53] INP: input signal is connected to the output.
 [54] SYNC: sync signal is connected to the output
 [55] REP: reproduce signal is connected to the output.
 [56] CODE LEVEL (on code channel control only): time code indication; turns on when the time code is reproduced from the tape or when the time code level on the input of the recorder is large enough (depending on the setting of the input selector INP/SYNC/REP).
 [57] Output meter: VU meter or PPM instrument, internally switchable.
 [58] RECORD LEVEL: level control for record mode.
 [59] REPRO/SYNC LEVEL: level control for reproduce or sync reproduce mode.
 [60] UNCAL: activates the level control. Switched off: calibrated Line level.

Controls for the monitor speaker (in overbridge or in the tape transport cover):

- [61] INPUT: the input signal of the recorder can be heard via the monitor speaker.
 [62] TAPE: the output signal of the recorder can be heard via the monitor speaker.
 [63] CH1: Channel 1 is connected to the monitor speaker.
 [64] 1+2/CUE: the sum of both channels (or the CUE channel, for TC versions only) is connected to the monitor speaker. Function programmable with jumpers.
 [65] CH2: Channel 2 is connected to the monitor speaker.
 [66] VOLUME: volume control for the monitor speaker.
 [67] PHONES: headphones socket (on versions with overbridge = adjacent to the monitor speaker, on versions without overbridge = on the left-hand side above the flap of the amplifier bay).

2.5.2

Power switch

CAUTION!

Before switching on the recorder for the first time, check that the setting of the AC voltage selector on the back of the recorder matches the local line voltage. If the setting of the AC voltage selector is changed, check also the rating of the power fuse. The power switch is located at the top edge of the tape transport cover.

The last operating state is automatically reestablished and indicated after the power is switched on.

Exceptions: the recorder always enters STOP mode (the STOP button flashes if no tape is mounted or if the tape is mounted loosely). Recorders equipped with a SAFE/READY switch are switched to SAFE; the function MASTER SAFE is not affected.

When the recorder is switched on, the microprocessor automatically tests the main functions; any error is indicated on the service display.

2.5.3 Pilot lamps

During the power-on sequence, i.e. while the processor is being started, certain keys and indicator lamps may turn on, i.e. also READY and REC. However, the record function is electronically inhibited during this time. After power-on the following keys or pilot lamps (LEDs) turn on and indicate the current operating state of the recorder:

- STOP: the STOP function is active. If this key flashes this means that both tape tension sensors are in their limit positions (no tape, or tape mounted loosely).
- CCIR or NAB: indication of the selected equalization.
- STEREO or MONO
- TAPE A or TAPE B: indication of the selected tape type.
- Tape speed: indication of the selected tape speed, e.g. 15 or 7.5 ips (38 or 19 cm/s).

Depending on the configuration of the tape recorder, the following may also turn on:

- Level meters
- On the track selector: SAFE
- UNCAL (if the button is pressed).
- On the output selector, the selected signal (INP, SYNC, or REC) connected to the output is indicated.

For a few seconds, the service display indicates the software status of the tape recorder (creation date of the master software, calendar week / year), followed by a list of options with which the recorder can be equipped plus possible error messages in plain text, or the message "no errors detected" and subsequently the current machine status (Line level, for TC versions also offset and selected time code type).

On the right above the amplifier bay, six green LEDs indicate that the supply voltages are available (+5.6 V, +24 V, +15 V, -15 V, +26 V, -26 V). The three secondary fuses are also checked. If they are in order, one green LED each (+SUPPLIES, -SUPPLIES, CAP./AUX) is turned on.

2.5.4 Mounting the tape

Adapters for three-pronged (ciné) reels and for DIN hubs are engaged in the spindle mounting; adapters for NAB reels or hubs are inserted in the spindle mounting and secured by pressing on the round button in the center of the adapter. All adapters can be released by lightly pressing against the rim of the spindle.

Three-pronged reel with flange: (DIN 45514, 45517)

Mount adapter for three-pronged reels. Mount reels on the spindles. Pull out the three-pronged guide and lock it by rotating it 60°.

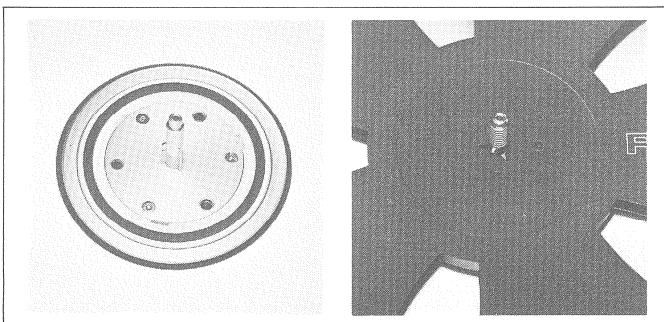


Fig. 2.5.6

NAB reel:

Mount NAB adapter. LOCK THE ADAPTERS BY PRESSING THE ROUND BUTTON IN THE CENTER ! Use NAB reel or, if self-supporting pancakes are used, place an NAB hub on the adapter and turn the upper section of the adapter clockwise until it engages.

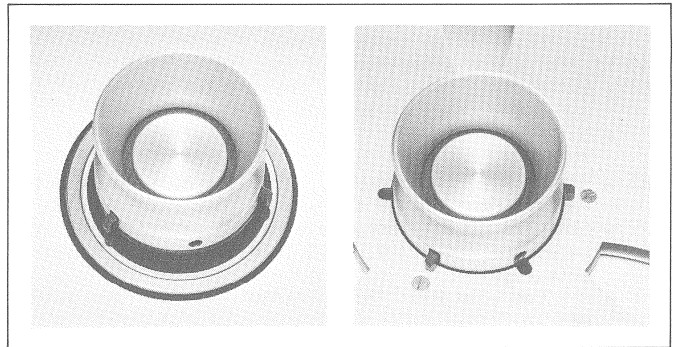


Fig. 2.5.7

Self-supporting pancakes:

(Hub according to DIN 45515)

Mount DIN adapter, place pancake platters on the adapters and engage the driving lugs of the platter in the holes of the adapter.

Mount the pancake and the pancake platter in a way that the white driving lugs engage. Lift the flap and rotate it by 90° until it rests on the white driving lugs.

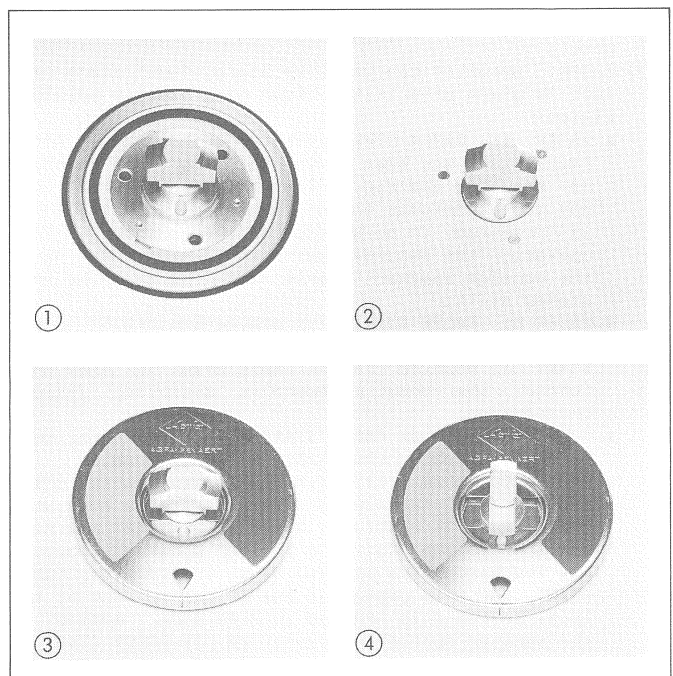


Fig. 2.5.8

Threading the tape

Important!

The shield of the soundheads must be opened before the tape is threaded.

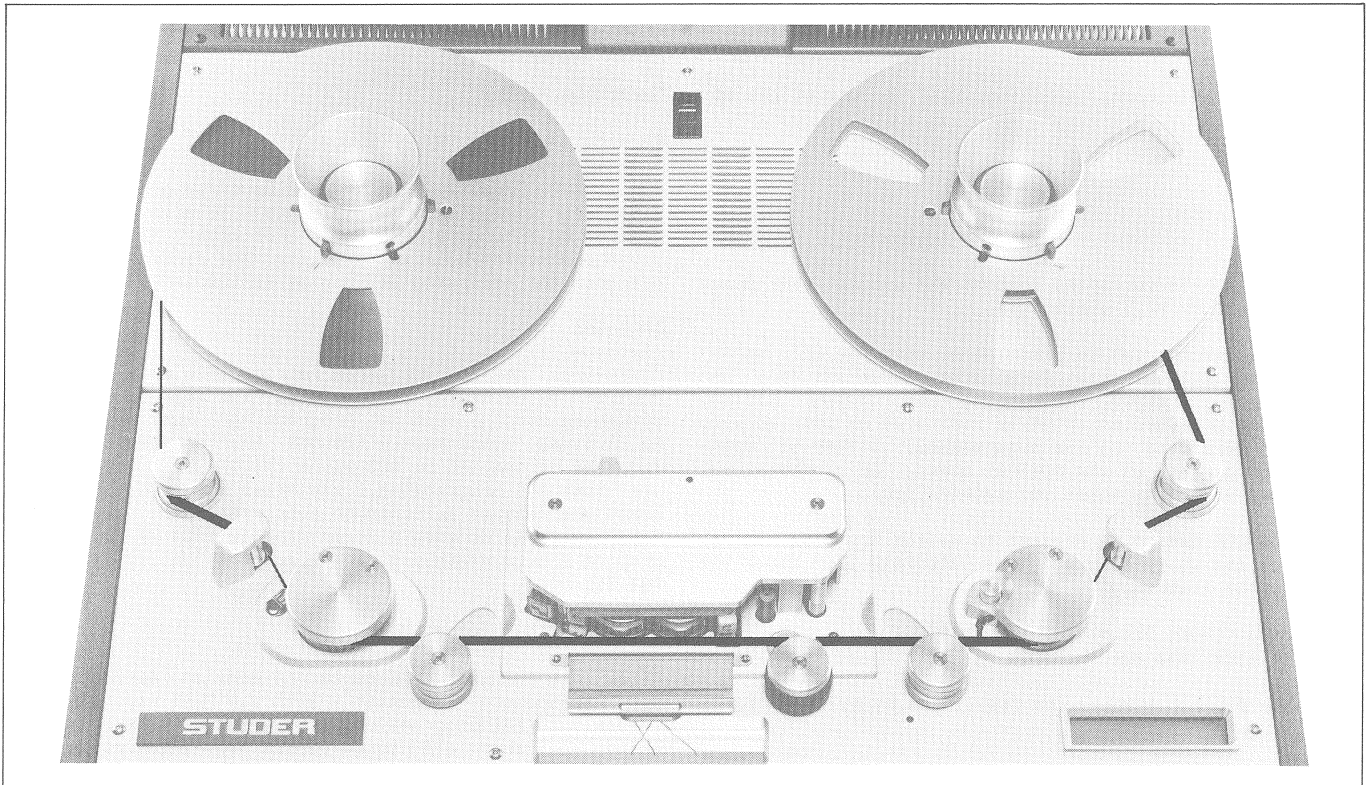


Fig. 2.5.9

Thread the tape as shown in the illustration. The leading end of the tape is placed on the empty reel and secured with a few counterclockwise rotations. As soon as the tape is tensioned, the tape transport starts up and the STOP key flashes. When one of the tape command keys is pressed, the tape tension circuit is enabled and the A820 is ready for operation.

Set tape counter to zero by pressing the RESET TIMER key. Also raise the shield over the soundheads if necessary.

2.5.5 Tape speeds

Up to four tape speeds are available; various versions are programmed for the three most frequently used tape speeds (e.g. the lowest tape speed is not programmed for the time code versions, because time code operation with 3.75 ips is not possible).

The tape speed is selected by pressing the corresponding speed button below the hinged cover. The corresponding pilot lamp turns on.

2.5.6 Play mode

The recorder is switched to PLAY mode either with the built-in PLAY key, the PLAY key on a remote control, or a fader start device. The PLAY button turns on.

The PLAY function can be cancelled by pressing the STOP key.

If PLAY is pressed while a recording is in progress, the recorder switches to PLAY mode immediately. If PLAY is pressed during spooling, braking will be initiated, the PLAY functions is preselected, and the PLAY key flashes. As soon as the tape has reached the nominal speed, the recorder switches automatically to reproduce mode and the light in the PLAY key is steady.

It is possible to switch from reproduce mode directly to spooling mode or a locator function.

2.5.7 Reverse play

A tape location can be searched by switching the recorder to REVERSE PLAY by pressing TRANS and PLAY together. If programmed, the same function is activated by the REVERSE PLAY key.

From reverse play mode it is possible to switch directly to normal reproduction, spooling, EDIT, or one of the Locator functions.

2.5.8 Varispeed control

With the built-in varispeed control the nominal tape speed can be varied by ± 7.5 semitones.

The speed change can be preselected with the SET VARISP key and the SET/CUE wheel (the latter functions as a potentiometer), without influencing the current nominal speed. The preselected speed is indicated on the service display, depending on the programming, either in semitones, in percent of the nominal speed, or as the actual tape speed value in inches per second (ips).

The VARISPEED button is pressed to switch from the nominal speed to the changed speed - the VARISPEED lamp above the tape counter flashes.

If the functions SET VARISP and VARISPEED are active at the same time, the speed change is implemented immediately

(with the SET/CUE wheel). The result can be heard directly during playback.

The time-delay compensation for record drop-in and drop-out (refer to 2.5.9) is adjusted for nominal speed only. When recording in VARISPEED mode corresponding displacements occur.

2.5.9 Recording

The A820 is put into record mode by simultaneously pressing PLAY and REC. The lamps above these two keys turn on.

If PLAY and REC are pressed during spooling, braking of the tape is initiated. The record function is preselected and the REC and PLAY keys flash. As soon as the tape has reached the nominal speed, the A820 automatically enters record mode and the illumination of the two keys is steady.

It is possible to switch from record mode directly to spooling or a Locator function.

Recorders with SAFE/READY keys:

Recording on the corresponding channel can be disabled by pressing the SAFE key. The yellow SAFE lamp turns on. When PLAY and REC are subsequently pressed, the tape transport starts, however, the audio signals recorded on the track protected with SAFE are retained and can be monitored (REP or SYNC).

In order to prepare a channel for a recording, the corresponding READY key must be pressed. The green pilot lamp turns on. When the recording function is activated with PLAY and REC, the red REC lamp turns on and signals that recording mode has been activated.

During a recording the channels can be protected directly with SAFE. In order to reenoble them for recording, the READY buttons must be pressed first; after the READY lamps turn on, either the PLAY and the REC keys or only the REC key must be pressed, depending on the internal programming.

On 2-channel recorders the internal programming determines whether the channel mode selectors work on both channels in parallel or separately for each channel (function CH CONTR PAR/INDIV).

Recorders with MASTER SAFE key:

The MASTER SAFE function is used as erase protection for recorders without SAFE/READY keys. It also can be programmed on recorders with SAFE/READY keys. Then it is an erase protection with top priority. The recorder cannot be prepared for recording as long as MASTER SAFE is active.

Drop-in:

Click-free change-over from reproduction or sync reproduction to recording is possible. Two methods can be implemented through internal programming: PLAY and REC must be pressed concurrently (RECORD A), or the recording function is enabled by REC alone (RECORD B). Depending on the internal programming, the erase head and the record head are either switched on concurrently or the record head switches on with a speed-dependent delay so that the drop-in occurs exactly at the same location (function IN-OUT DEL Y/N).

Drop-out from record mode:

Click-free change-over from record mode to reproduction or sync reproduction is possible with the PLAY key. Depending on the internal programming, the erase and the record are either switched off concurrently or the record head switches off with a speed-dependent delay so that the drop-out occurs exactly at the same tape location (function IN-OUT DEL. Y/N).

Drop-out with STOP or SAFE always switches record and erase heads off concurrently.

Overlapping drop-in, mechanical (FADE IN/FADE OUT):

If, for example, an applause is to be faded in at the end of a production, the tape can be lifted off the record head and the erase head with the tape lift slider [2]. The A820 is subsequently started in record mode. When the slider is slowly released, the tape contacts the record head first; the new modulation is added to the existing signals (e.g. end of a music selection). After the music selection has faded out, the tape lift slider is to be released completely so that the tape comes in contact with the erase head. Unwanted noise will be erased and only the applause is recorded.

2.5.10 Sync reproduction

Sync reproduction is activated by pressing the SYNC key. In this mode the tape induces an audio signal in the record head. This signal is amplified and equalized in the reproduce amplifier. Accurate drop-in is possible in sync reproduction mode since there is no speed-dependent time offset between the record and the reproduce head.

Sync reproduction is not advisable at a speed of 3.75 ips (quality generally inadequate!). For this reason all sync audio parameters for this speed have been set to 00. However, it is still possible to calibrate the tape recorder also for 3.75 ips and sync reproduction if the user is willing to accept the degraded quality.

The reproduce bandwidth in sync mode is limited to approximately 12 kHz. For special mixdowns the bandwidth can be extended to 20 kHz (refer to Section 4.9.2). At frequencies above 12 kHz, strong cross talk from the recording channel to the sync reproduction channel must, however, be expected.

Sync preselection:

Sync reproduction mode can be preselected on a channel switched to record mode. If the SYNC button is pressed during a recording, the output of the corresponding channel is connected to the input (INP). This channel is automatically switched to sync reproduction when the recording mode is canceled (PLAY, SAFE, STOP).

2.5.11 Spooling mode

Fast forward or rewind is activated by pressing > and <. The recorder spools with the programmed speed (max. 15 m/s). The corresponding pilot lamp turns on.

The spooling functions are canceled by STOP, PLAY, REC+PLAY, SHUTTLE, LOC functions, CUE, and by spooling in the opposite direction.

Direct change-over from rewind to fast forward and vice versa or from playback or recording to spooling is possible.

It is possible to switch from spooling mode directly to record and play. The pilot lamp of the preselected function flashes, the tape is braked, and the new function is activated as soon as the tape travels at the nominal speed.

Tape lift off:

During spooling the tape is automatically lifted off the soundheads in order to reduce the wear on the soundheads.

The tape transport assembly can be engaged by pressing the LIFTER button.

CAUTION !!
DURING FAST WIND OPERATIONS THE CONSOLE TILTING MECHANISM MUST NOT BE ACTUATED - TAPE, REELS, REEL ADAPTORS, AND TAPE TRANSPORT COVER MAY BE SERIOUSLY DAMAGED AS A RESULT OF THE HIGH GYRO FORCES !!

2.5.12 LIBRARY WIND (reduced spooling speed)

The reduced spooling speed available with the LIBRARY WIND function is intended for tapes that are to be stored in a library. The speed ranges between 0.1 and 15 m/s and can be programmed in increments of 0.1 m/s (default: 5 m/s). Spooling with reduced speed is initiated by pressing the LIBRARY WIND key and one of the spooling keys < or >.

This function is stopped by pressing LIBRARY WIND a second time.

2.5.13 Stop mode

The STOP key has top priority and cancels all other operating modes such as reproduction, recording, spooling, and autolocator. After this key has been pressed, the STOP pilot lamp turns on and tape braking is initiated; the STOP key flashes until the tape stands still after which the illumination of the STOP key becomes steady.

When the tape stands still the tape tension control loop, however, is active (exception: tape torn or unthreaded). This makes it easier to shuttle the tape by hand for editing purposes.

Any new operating mode entered while the tape is being decelerated will be stored and activated as soon as the tape reaches the nominal speed.

If STOP is pressed and (while STOP is held) also one of the keys LOC1...LOC5, the corresponding locator addresses are displayed on the tape counter.

Some of the function keys can only be used if they are pressed together with STOP (e.g. tape type selection (TAPE A/TAPE B), equalization selection (CCIR/NAB), mono/stereo changeover (STEREO/MONO), switchover of the time code standard (FRAMES/S and OFFSET ON/OFF)).

2.5.14 Locator

The following modes are supported by the Locator function:

- ZERO LOC: zerolocator. This key initiates a rewind (or fast forward) to the tape address that corresponds to the counter reading 0.00.00.0, as well for the main or the second counter display.
- LOC START (programmable): this key initiates a rewind (or fast forward) to the tape address at which the last play command was entered during standstill of the tape. Depending on the programming either STOP (function LOC START STOP), reproduce (function LOC START PLAY) or recording (function LOC START REC) is activated. Default programming: LOC START PLAY.
- LOC1...LOC5 (programmable): transfer locator. Up to five tape positions can be stored and automatically searched in spooling mode by pressing one of these keys.

The locate procedure can be interrupted with: <, >, STOP, EDIT, or 2 x PLAY.

Programming:

Search the desired tape address and press the TRANS key when the approximate position has been reached. The address can be stored as long as the TRANS pilot lamp is on. As soon as the exact position has been found, press one of the corresponding LOC keys. The TRANS pilot lamp turns off to acknowledge that the address has been transferred into memory. The TRANS key must be pressed again before a new address can be stored.

Reading out an address:

During a LOC operation: by pressing the corresponding LOC button again. In STOP mode: press STOP and corresponding LOC button.

PLAY or REC preselection:

If the PLAY key is pressed (or PLAY + REC) while a locate function is in progress (ZERO LOC, LOC START, LOC1...5), the recorder switches automatically to reproduction or to recording after the corresponding tape address has been found. All locate addresses are retained in memory even after the recorder has been switched off.

CAUTION!

Since the stored tape addresses relate to the actual tape positions, any undesirable offsets can occur if the RESET TIMER button is pressed inadvertently!

2.5.15

Tape counter

The electronic tape counter always displays the real time in hours, minutes, seconds, and tenths of seconds, regardless of the selected nominal speed.

The display capacity is -9 h 59 min 59.9 s to 23 h 59 min 59.9 s. Values outside the display capacity are indicated with "U" (underflow) and "O" (overflow) in the tens-of-hours position; e.g. ⁰4.00.00.0 or ^U9.59.58.0. Fractional tenths of seconds are rounded to the nearest second. The timer can be reset to 0.00.00.0 by pressing the RESET TIMER key.

When the end of the tape is reached or if a tape tears, the tape counter is automatically stopped. In dump edit mode (TAPE DUMP) the tape counter is either stopped automatically or it continues to count, depending on which of the four TAPE DUMP modes has been programmed (standard programming: TAPE DUMP A, the counter continues to count with the information obtained from the capstan motor tachometer).

2.5.16

LAP mode

By pressing the LAP key the tape counter display can be switched over from the main counter to indication of a second tape counter with arbitrarily selectable reference. An "L" appears in the first position of the display.

The second counter can be set to zero at any tape address (with RESET TIMER button) and can, for example, be used for measuring the exact playing time of a selection without having to compute the difference between the starting and the ending time.

The display is switched back to normal mode by pressing the LAP key a second time. The "L" in the first position disappears.

Locator addresses are referred to the tape positions and are preserved when switching to LAP mode (and back to normal tape counter mode).

2.5.17

Remote controls

The following functions can be activated from the parallel remote control: reproduction, recording, spooling, stop, RESET TIMER, ZERO LOC, LOC START, RECAP (rewind for as long as this key is pressed, followed by PLAY) or LIFTER (canceling of the tape lift during spooling), and FADER (FADER START ready).

It is possible to assign all the functions to the keys of the serial remote control that can be programmed for the local keyboard, but independent of the programming of the local keyboard. I.e. on the serial remote control there may be programmed different key functions as on the local keyboard. In addition the serial remote control features a tape counter and a SHUTTLE wheel. The programming of the key functions is executed in the same way as for the local keyboard.

- Operation with programmable function REMOTE A:
When the REMOTE key is pressed, the corresponding pilot lamp turns on and the local keyboard is disabled. When the REMOTE key is pressed a second time, the local keyboard is reenabled and the pilot lamp turns off. In the latter condition the keys on the remote control have no effect.
- Operation with programmable function REMOTE B:
When the REMOTE key is pressed, the corresponding pilot lamp turns on; the remote control buttons and the local keys have the equal priority. When the REMOTE key is pressed a second time, only the local keys are active and the pilot lamp turns off. In the latter condition the keys on the remote control have no effect.
- Operation without the functions REMOTE A and REMOTE B:
The REMOTE LED always turned on, the keys on the local and on the remote keyboards are always active.

With the fader start circuit the tape recorder can be switched to reproduction from the remote control device. The FADER START mode can be prepared (FADER START READY) by a switch that interconnects contact 6 (signal SR-FADRY) and contact 1 (ground). Applying an AC or DC voltage from 5 V to 24 V to contacts 11 and 12 switches the tape recorder to reproduce mode. This preparation can also be made with the programmable FADER key on the local keyboard or the serial remote control, or with the FADER key on the parallel remote control. The same function as is related to the local FADER key - FADER A, B, C, or D - is activated.

- Operation with the programmable function FADER A:
FADER START without preparation key. After the FADER START has been performed, the local and the remote control keyboards are disabled; the built-in monitor speaker (but not the headphones socket) is muted. When the fader is retracted (fader switch opens), the recorder is switched to STOP, however, muting of the monitor speaker is only canceled when the tape has come to a standstill.

- Operation with the programmable function FADER B: FADER START with enable key (FADER START READY). The local and the remote control keyboards are also active when FADER START is enabled. After the fader start has been performed, the local keyboard is blocked, = default programming.
- Operation with the programmable function FADER C: Same as FADER START B, but in this function the local and the remote control keyboards are disabled when FADER START is enabled.
- Operation with the programmable function FADER D: FADER START with enable button (FADER START READY), the local and the remote control keyboard are also active when FADER START is enabled. After the FADER START has been performed, the built-in monitor speaker (but not the headphones socket) is muted. Muting of the monitor speaker is canceled, if, after FADER START, one of the buttons of the local or remote keyboard is pressed. If FADER START is not enabled, actuation of the fader switch does not change the operating state of the recorder.

2.5.18 VU-meter panel

The level indicator can be switched internally to function as a peak program meter (PPM) or a VU-meter.

UNCAL: when this key is pressed, the corresponding level control is activated and the pilot lamp turns on. When the UNCAL key is released, the level control is bypassed and the input or the output level is set to line level.

Output selector:

INP: connects the input signal to the output and to the VU-meter of the recorder.

SYNC: connects the sync reproduction signal (from the record head) to the output and the VU-meter of the recorder. This mode can be preselected for the record function. (As long as the corresponding channel is in record mode it is switched to INPUT because reproduction with the record head is not feasible during a recording. SYNC reproduction is automatically activated as soon as the channel is switched to READY or SAFE).

REP: connects the reproduce signal to the output and the VU-meter of the recorder.

Source/tape monitoring can be conveniently activated during recording by pressing the INP and REP keys.

INP, SYNC and REP always cancel each other.

In 2-channel models the operating procedure is determined by internal programming, i.e. it affects either both channels together or each individual channel (function CH CONTR PAR/INDIV).

2.5.19 Monitor speaker

In models without overbridge, the monitor speaker is built into the tape transport cover, in models with overbridge it is built into the monitor panel. On models with overbridge the headphones socket is located on the monitor panel, on models without overbridge it is located on the left above the amplifier bay.

With the (mutually releasing) switches INPUT and TAPE the operator can switch between the input and the output of the recorder (before the corresponding level controls).

Monitoring of channel 1 (CH 1) and channel 2 (CH 2) is possible. In addition either the sum of both channels or the CUE channel (time code) can be monitored (1+2/CUE), depending on the position of the jumpers on the monitor amplifier. Refer to section 4.9.6. When the jumpers on the monitor amplifier are plugged into the CUE position, the sum of both channels can still be monitored by simultaneously pressing the keys CH1 and CH2.

The volume can be adjusted with the VOLUME knob.

2.5.20 Mono/stereo switch (option)

Stereo recorders can be configured with a mono/stereo switch. This switch is also retrofittable. The last operating mode will be automatically reestablished and indicated after the recorder is switched on.

Simultaneous pressing of STOP and STEREO/MONO switches from stereo to mono mode and vice versa.

If the mono/stereo module is not installed, the corresponding pilot lamps STEREO and MONO remain dark.

2.5.21 Test generator (option)

The controls for the test generator are located on the front edge of the test generator module. For operating the generator it is necessary to open the flap of the amplifier bay!

The test generator is switched on by pressing the upper key (REF lamp turns on, i.e. the reference frequency, normally 1 kHz, is selected). Repetitive pressing of this key changes over the frequencies as follows:

- 60 Hz - 125 Hz - REF - 10 kHz - 16 kHz - OFF - REF - 60 Hz - etc.

With the lower button the generator level can be switched over from nominal level to nominal level -10 dB. If -10 dB is selected, the gain in the reproduce branch of the mono/stereo switch is automatically boosted by 10 dB; this means that the reference value of the VU-meter display is again 0 dB for measurements with tape.

The lower button is only enabled if the test generator has previously been switched on with the upper button. After switching the generator off and on again with the upper button always nominal level is present at its output.

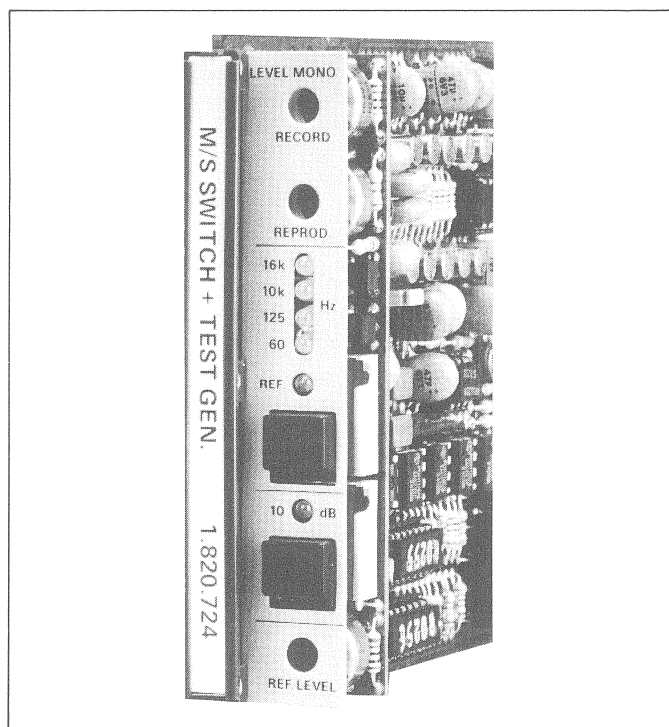


Fig. 2.5.10

2.5.22 Time code channel (only for TC versions)

Time code recording

Press the READY button on the time code channel control unit; the READY lamp turns on. Start the A820 in record mode with REC and PLAY; the REC lamp turns on. Or, while a recording is in progress, press READY and, depending on the programming, press REC + PLAY or just REC.

Time code reproduction

Press REP or SYNC and start the A820 in record mode by pressing PLAY.

Depending on the position of the input selector the green CODE LEVEL lamp turns on if a time code signal is available on the TC line input (INPUT position) or read from the tape (REP or SYNC), respectively.

2.5.23 Editing, tape splicing

Searching a tape location with spooling:

If the desired tape address is approximately known (e.g. the beginning or the end of a selection), it can be approached with the spooling function. Press the programmable LIFTER key so that the tape lift pin is pushed behind the soundheads and the modulation can be cued. As soon as the cue point is reached, the tape can be fine-positioned by repeatedly pressing < and >, by actuating the SHUTTLE wheel or by pressing EDIT and turning the SET/CUE wheel. Press STOP and bring the tape by hand in the exact splicing position by carefully rotating one of the two reel flanges by hand.

Search with PLAY:

If certain segments with unknown locations are to be cut out of a program, they can be searched with normal PLAY mode. When one of these segments has been located, press the STOP key and position the tape into the correct cutting position by carefully rotating one of the two reel flanges by hand.

Search with autolocator

The tape address 0.00.000 can be automatically searched with the spooling function. The start of a program is programmatically stored in memory and can be automatically searched with the LOC START key if the recording has not been interrupted.

While a program is being recorded, 1 to 5 tape addresses can be stored directly, depending on the programming of the recorder, by pressing TRANS and LOC1 (...5) in the desired tape position. When the corresponding LOC button is pressed, the desired tape address is automatically searched; the exact editing position can now be adjusted manually.

Cutting with built-in tape scissors (only 1/4" versions)

Pressing the programmable CUT key positions the location in which the tape is to be cut exactly to the built-in scissors. The tape is cut by pressing a button. By pressing the TAPE DUMP key a segment of tape that is to be discarded can be played into the waste basket (see TAPE DUMP mode).

Cutting at the reproduce head

With magnetically neutral scissors that tape can be easily lifted off the reproduce head and cut in front of the head gap (center of head face).

Marking the tape, cutting in splicing block

Mark the center of the reproduce head face on the tape with the aid of a soft pencil or a grease pencil.

The marked position is placed into the splicing block (in front of the headblock) and cut with a razor blade.

Splicing the tape

Place the two tape segments with the marked side facing upward into the splicing block. Butt the two ends together (without overlapping!) and secure it with an approximately 20 mm long 1/4" (or 1/2", resp.) wide piece of adhesive tape.

2.5.24

Dump edit mode

In dump edit mode the right-hand spooling motor is switched off. Unwanted tape segments can be played into the waste basket by activating this mode.

When the TAPE DUMP key is pressed, the recorder switches either to PLAY, or TAPE DUMP mode is preselected - see below. The right-hand spooling motor remains switched off. Four versions of this mode are available:

- TAPE DUMP A (default programming for all four standard versions): tape counter active, function to be canceled with STOP or by pressing TAPE DUMP again.
- TAPE DUMP B: same as TAPE DUMP A, however the tape counter is blocked.
- TAPE DUMP C: pressing TAPE DUMP preselects dump edit mode; activation by pressing PLAY, interruption only in STOP mode, by pressing TAPE DUMP again.
- TAPE DUMP D: same as TAPE DUMP C, however the tape counter is blocked.

Winding up a loose piece of tape

In the event that too much tape is played into the waste basket in tape dump mode it is not necessary to laboriously rewind the tape by hand. Simply thread the tape (or let it be threaded) as illustrated in Fig. 2.5.11 and carefully tension the loose tape end with two fingers. Keep the rewind key pressed: the left-hand (supply) reel turns clockwise and rewinds the tape. This operation can be canceled by releasing the REWIND key.

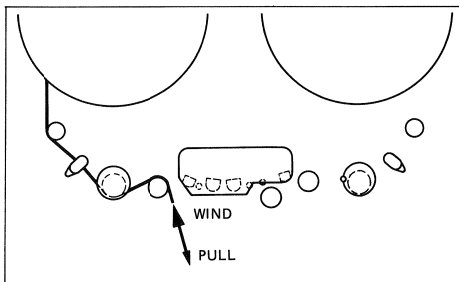


Fig. 2.5.11

The torque of the motor is limited and controlled in such a way that the tape can be easily braked by hand. If you let loose of the tape end, the motor turns very slowly. Its speed can be increased by lightly pulling on the tape.

The same applies analogously to winding a piece of tape with the right-hand (take-up) motor. The only thing that is important is that the tape segment to be wound is threaded around the tape tension sensor and its adjacent guide rollers to ensure that the tape tension control loop can function correctly.

Playing a dumped tape segment

After some editing work it may happen that many individual tape segments have been dumped into the waste basket but the operator is not sure whether or not they contain any usable audio material. Such tape sections can easily be played with the A820 without having to be spliced first and wound onto a reel.

Procedure: Press EDIT button, the tape transport and the pinch roller start up. The EDIT button turns on, STOP flashes. Thread the tape segment according to Fig. 2.5.12.

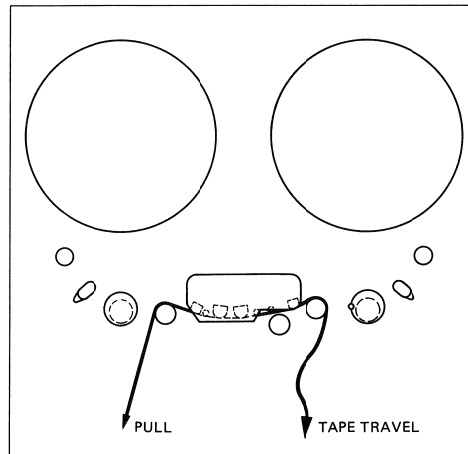
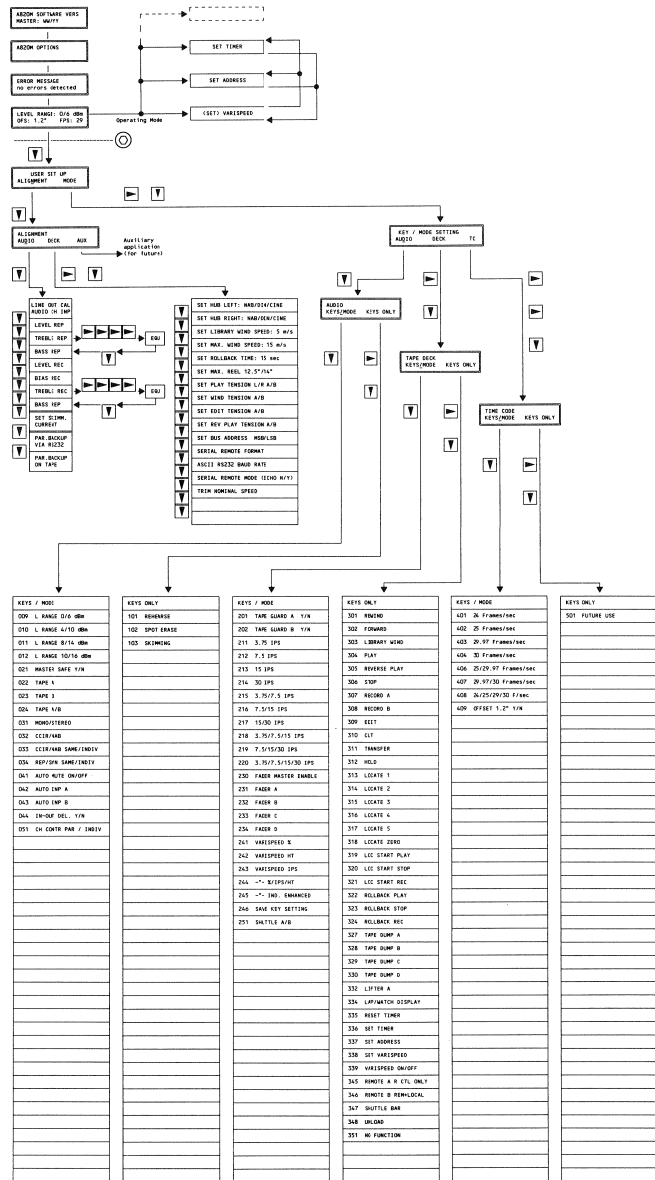


Fig. 2.5.12

With your left hand lightly tension the tape segment on the left-hand side of the headblock. The tape is cued by running over the reproduce head. If a small amount of backtension is produced with the left hand, the contact between tape and head is improved (better reproduction) and the tape is cleaned from possible dust particles that may have been picked up in the waste basket.

Pressing EDIT interrupts the procedure. To cancel the function press STOP.

STATUS TREE DIAGRAM (enlarged view at the end of this Section)



2.6 SOFT KEYS

Except for the four blue keys and the red key of the function and programming key field below the hinged cover, all operating keys of the A820 tape recorder can be assigned to any of some 100 possible functions or operating modes. There are two types of functions/operating modes, referred to as "KEYS ONLY" or "K", and "KEYS/MODE" or "K/M". "KEYS ONLY" stands for functions to be operated only if assigned to a key. Operating modes labeled "KEYS/MODE" may be activated not only by a key but also by the programming key field without a key being allocated to the operating mode.

This function assignment procedure is simplified by the service display [27] (alphanumeric LC display, on the right front of the tape transport) as well as by the top-down tree structure diagram illustrated on the opposite page.

This diagram consists of blocks and setting positions

Programming examples: see 2.6.4. Caution: Programming is not possible if the recorder is switched to VARISPEED mode!

After the recorder has been switched on, the first four (or possibly five) blocks appear consecutively on the service display for a few seconds each:

A820M SOFTWARE VERS
MASTER: WW/YY

Creation date of the software of the MASTER MPU, calendar week/year.

A820M OPTIONS

List of the options with which the recorder has been configured.

```

=====
| DEFAULT AUDIO |
| PARAMETERS LOADED |
=====

```

If this message is displayed, the standard audio parameters are loaded after a RAM error. These parameters can differ slightly from the recorder-specific parameters. Operation of the recorder is possible, certain deviations from the optimum specifications must, however, be expected. If the recorder-specific parameters have been written down or stored on tape they can be reentered or loaded, respectively.

ERROR LIST:EXX

Possible error messages resulting from the automatic test, either in plain text or the message "no errors detected", and

L RANGE 0/6 dBm
OFS: . " FPS:

Line level with which the recorder is operating. The second line of the display is only used if the recorder is equipped with a time code headblock assembly; OFS = offset between time code and audio channel in inches, FPS = number of frames per second.

The sequence stops here. In normal operating mode, the above four (or five) blocks can be retrieved by pressing ↑/LAST.

If the programming enable switch [28] is closed (actuated with Allen screwdriver No. 2.5, clockwise limit position), the STORE key is disabled for certain operations. E.g. the audio parameters can be modified but not stored, after switching the recorder off and on again the previous parameters are written into the registers of the audio amplifiers. The following tape deck parameters can be modified and stored: Hub diameter left/right, reduced and maximum spooling speed, ROLLBACK time, and maximum reel diameter. The acknowledgement of error messages (if any) is also permitted if the programming enable switch is closed.

Reprogramming of the keys is not possible when the switch is in the disable position; should any attempt be made, the message "program mode not enabled" will appear on the service display. Opening the programming enable switch: turn the screw 2...3 turns counterclockwise.

With the keys ↓/NEXT, ←/CURSOR, →/CURSOR, and ↑/LAST it is possible to move up and down in the tree diagram. In branching points the cursor is positioned under the desired menu.

2.6.1 Numbering of the keys

The operating keyboard is designed as a matrix consisting of five rows of up to 10 keys.

Numbering:

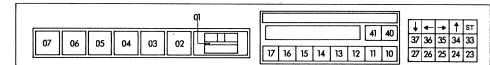


Fig. 2.6.1

2.6.2

Available functions

No.	Function	Typ	Standard programming: No. of key at version:			
			A	B	C	D
009	L RANGE 0/ 6 dBm Y/N	K/M	---	---	---	---
010	L RANGE 4/10 dBm Y/N	K/M	---	---	---	---
011	L RANGE 8/14 dBm Y/N	K/M	---	---	---	---
012	L RANGE 10/16 dBm Y/N	K/M	---	---	---	---
021	MASTER SAFE Y/N	K/M	36	---	---	---
022	TAPE A	K/M	---	---	---	---
023	TAPE B	K/M	---	---	---	---
024	TAPE A/B	K/M	33	33	33	33
031	MONO/STEREO	K/M	35	35	---	---
032	CCIR/NAB	K/M	34	34	34	34
033	CCIR/NAB SAME/INDIV	K/M	---	---	---	---
034	REP/SYN SAME/INDIV	K/M	---	---	---	---
041	AUTO MUTE ON/OFF	K/M	---	---	---	---
042	AUTO INP A	K/M	---	---	---	---
043	AUTO INP B	K/M	---	---	---	---
044	IN-OUT DEL. Y/N	K/M	---	---	---	---
051	CH CONTR PAR/INDIV	K/M	---	---	---	---
101	REHEARSE	K	---	---	26	26
102	SPOT ERASE	K	---	---	---	---
103	SKIMMING	K	---	---	---	---
201	TAPE GUARD A NO/RED	K/M	---	---	---	---
202	TAPE GUARD B NO/STOP	K/M	---	---	---	---
211	3.75 IPS	K/M	26	26	---	---
212	7.5 IPS	K/M	27	27	27	27
213	15 IPS	K/M	37	37	37	37
214	30 IPS	K/M	---	36	36	36
215	3.75/7.5 IPS	K/M	---	---	---	---
216	7.5/15 IPS	K/M	---	---	---	---
217	15/30 IPS	K/M	---	---	---	---
218	3.75/7.5/15 IPS	K/M	---	---	---	---
219	7.5/15/30 IPS	K/M	---	---	---	---
220	3.75/7.5/15/30 IPS	K/M	---	---	---	---
231	FADER A	K/M	---	---	---	---
232	FADER B	K/M	23	23	23	23
233	FADER C	K/M	---	---	---	---
234	FADER D	K/M	---	---	---	---
241	VARISPEED %	K/M	---	---	---	---
242	VARISPEED HT	K/M	---	---	---	---
243	VARISPEED IPS	K/M	---	---	---	---
244	VARISPEED %/IPS/HT	K/M	---	---	---	---
245	VARISPEED IND. ENH.	K/M	---	---	---	---
246	SAVE KEY SETTING Y/N	K/M	---	---	---	---
301	REWIND (<)	K	07	07	07	07
302	FORWARD (>)	K	06	06	06	06
303	LIBRARY WIND	K	12	11	11	11
304	PLAY	K	05	05	05	05
305	REVERSE PLAY	K	---	---	---	---
306	STOP	K	04	04	04	04
307	RECORD A	K	03	---	---	---
308	RECORD B	K	---	03	03	03
309	EDIT	K	02	02	02	02
310	CUT	K	11	---	---	---
311	TRANSFER	K	17	17	17	17
312	HOLD	K	---	---	---	---
313	LOC1	K	16	16	16	16
314	LOC2	K	---	15	15	15
315	LOC3	K	---	---	---	---
316	LOC4	K	---	---	---	---
317	LOC5	K	---	---	---	---
318	LOC ZERO	K	15	14	14	14
319	LOC START PLAY	K	14	13	13	13
320	LOC START STOP	K	---	---	---	---
321	LOC START REC	K	---	---	---	---
322	ROLLBACK PLAY	K	13	12	12	12
323	ROLLBACK STOP	K	---	---	---	---
324	ROLLBACK REC	K	---	---	---	---
327	TAPE DUMP A	K	10	10	10	10
328	TAPE DUMP B	K	---	---	---	---
329	TAPE DUMP C	K	---	---	---	---
330	TAPE DUMP D	K	---	---	---	---
332	LIFTER A	K	---	---	---	---
334	LAP/WATCH DISPLAY	K	40	40	40	40
335	RESET TIMER	K	41	41	41	41
336	SET TIMER	K	---	---	---	---
337	SET ADDRESS	K	---	---	---	---
338	SET VARISPEED	K	24	24	24	24
339	VARISPEED ON/OFF	K	25	25	25	25
345	REMOTE A R.CTL ONLY	K	---	---	---	---
346	REMOTE B REM+LOCAL	K	---	---	---	---
347	SHUTTLE BAR	K	01	01	01	01
351	NO FUNCTION	K	---	---	---	36
401	24 FRAMES/SEC	K/M	---	---	---	---
402	25 FRAMES/SEC	K/M	---	---	---	---
403	29.97 FRAMES/SEC	K/M	---	---	---	---
404	30 FRAMES/SEC	K/M	---	---	---	---
406	25/29.97 FRAMES/SEC	K/M	---	---	---	---
407	29.97/30 FRAMES/SEC	K/M	---	---	35	---
408	24/25/29/30 F/SEC	K/M	---	---	---	---
409	OFFSET 1.2" Y/N	K/M	---	---	---	---

2.6.3

Description of functions

L RANGE 0/ 6 dBm Y/N	(No. 009) KEYS/MODE
L RANGE 4/10 dBm Y/N	(No. 010) KEYS/MODE
L RANGE 8/14 dBm Y/N	(No. 011) KEYS/MODE
L RANGE 10/16 dBm Y/N	(No. 012) KEYS/MODE

Setting of the line level at which the recorder operates. The first of the two level indications of every function is used when the VU-meters are programmed for VU characteristic, the second for PEAK indication.

The range between the two indications is used when the line level used in the studio deviates from the four existing gradations.

In this case the value should be selected that comes closest to the line level used in the studio and the internal record and reproduce levels are to be adjusted in such a way that the recorder operates with the desired magnetization. (Example: see 4.2.6).

MASTER SAFE Y/N	(No. 021) KEYS/MODE
-----------------	---------------------

Record inhibition for recorders without SAFE/READY switch, or higher ranking SAFE key for recorders with SAFE/READY switch.

TAPE A Y/N	(No. 022) KEYS/MODE
TAPE B Y/N	(No. 023) KEYS/MODE
TAPE A/B	(No. 024) KEYS/MODE

Tape type selector, either two individual, mutually canceling keys (functions 022 and 023), or a changeover key. The last selected tape type is automatically selected when the recorder is switched on.

The keys can only be operated when pressed together with STOP.

MONO/STEREO	(No. 031) KEYS/MODE
-------------	---------------------

Mono/Stereo changeover.

On stereo recorders the last existing status is reactivated when the recorder is switched on.

This key can only be operated together with STOP.

CCIR/NAB	(No. 032) KEYS/MODE
----------	---------------------

Equalization changeover. When the recorder is switched on, the following are established, depending on the version:

CCIR for: A820-1, -0.75, -2/2, -2/2 TC.

NAB for: A820-1 VU, -0.75 VU, -2/2 VU, -2/2 TC VU.

For all other versions the status is reactivated that existed before the recorder was switched off.

This key can only be operated together with STOP.

CCIR/NAB SAME/INDIV	(No. 033) KEYS/MODE
---------------------	---------------------

Changeover to same audio parameters for both equalization standards.

If for both standards the same parameters are required, page to the desired parameter and press STORE; the parameter is automatically copied for the second equalization standard.

Exceptions: Record and reproduce time constants (EQU REC and EQU REP).

REP/SYN SAME INDIV	(No. 034) KEYS/MODE
--------------------	---------------------

Changeover to same audio parameters for normal and sync reproduction. The process is identical with that of function 033. This function is at present not implemented!

AUTO MUTE ON/OFF	(No. 041) KEYS/MODE
------------------	---------------------

Automatic muting in spooling mode (exception: tape lifter engaged for cueing) and during the start phase (until nominal speed is attained).

Default: OFF.

AUTO INP A	(No. 042) KEYS/MODE
AUTO INP B	(No. 043) KEYS/MODE

Selection of the function AUTO INPUT. All channels in SYNC (AUTO INP A) or in SYNC and READY (AUTO INP B) status are switched to INPUT in the operating modes STOP, REWIND, FORWARD, LOC and ROLLBACK functions.

Default: AUTO INP B.

IN-OUT DEL. Y/N	(No. 044) KEYS/MODE
-----------------	---------------------

Time delay compensation. Delayed ON/OFF switching (with respect to erase head) of the record head during drop-in and drop-out.

IN-OUT DEL. = ON (i.e. YES) is a precondition for the REHEARSE function.

Default: YES.

CH CONTR PAR/INDIV	(No. 051) KEYS/MODE
--------------------	---------------------

For stereo recorders: the channels can either be operated in parallel or individually from either of the two channel mode selectors.

Default: INDIV.

REHEARSE	(No. 101) KEYS ONLY
----------	---------------------

Simulation of electronic cutting. The PLAY and the REC keys flash in reproduce mode. When REC + PLAY are selected, SYNC is switched over to INPUT at the correct time, however, recording mode is not activated. Pressing PLAY switches back to SYNC.

Preconditions for REHEARSE: the corresponding channel must be switched to SYNC and READY, and IN-OUT DEL = ON (function 044).

Canceling the function: by pressing REHEARSE again.

SPOT ERASE	(No. 102) KEYS ONLY
------------	---------------------

NOT IMPLEMENTED YET !

SKIMMING	(No. 103) KEYS ONLY
----------	---------------------

NOT IMPLEMENTED YET !

TAPE GUARD A NO/RED	(No. 201) KEYS/MODE
---------------------	---------------------

Reduction of the spooling speed shortly before the tape is unthreaded.

From the speed difference between the two reels the recorder can detect that the corresponding supply reel contains only a small amount of tape. The spooling speed is reduced under the following conditions:

- The hub diameters in the ALIGNMENT DECK block are defined correctly (refer to 2.6.4, example 2)
- The function TAPE GUARD A is switched on.

The function can be suppressed by pressing < or > continuously.

TAPE GUARD B NO/STOP	(No. 202) KEYS/MODE
----------------------	---------------------

STOP shortly before the tape is unthreaded.

From the speed difference between the two reels the recorder can detect that the corresponding supply reel contains only a small amount of tape. STOP is activated under the following conditions:

- The hub diameters in the ALIGNMENT DECK block are defined correctly (refer to 2.6.4, example 2)
- The function TAPE GUARD B is switched on.

The function can be suppressed by pressing < or > continuously.

3.75 IPS	(NO. 211) KEYS/MODE
7.5 IPS	(NO. 212) KEYS/MODE
15 IPS	(NO. 213) KEYS/MODE
30 IPS	(NO. 214) KEYS/MODE
3.75/7.5 IPS	(NO. 215) KEYS/MODE
7.5/15 IPS	(NO. 216) KEYS/MODE
15/30 IPS	(NO. 217) KEYS/MODE
3.75/7.5/15 IPS	(NO. 218) KEYS/MODE
7.5/15/30 IPS	(NO. 219) KEYS/MODE
3.75/7.5/15/30 IPS	(NO. 220) KEYS/MODE

Speed changeover keys. It is possible to program either one key for each desired speed (functions 211...214) or combination keys (changeover whenever a key is pressed (functions 215...217), or "ring keys" (whenever the key is pressed it advances by one position, functions 218...220).

FADER A	(No. 231) KEYS/MODE
FADER B	(No. 232) KEYS/MODE
FADER C	(No. 233) KEYS/MODE
FADER D	(No. 234) KEYS/MODE

With the fader start circuit it is possible to switch the recorder remotely to reproduce mode. FADER START mode can be prepared (FADER START READY) with a switch that interconnects pin 6 (signal SR-FADRY) with pin 1 (ground) of the parallel control socket. An AC or DC voltage from 5 V to 24 V can be applied to pins 11 and 12; the recorder is switched to reproduce mode. Preparation is also possible with the programmable FADER key on the local keyboard or on the serial remote control, or with the FADER key on the parallel remote control.

Four programmable possibilities:

- FADER A: without preparation key (FADER START READY). The local keyboard is disabled with the exception of the speed selection keys. After unthreading the tape the FADER switch must be activated again.
- FADER B: FADER START with enable key (FADER START READY), local keyboard also active as long as FADER START enabled. The local keyboard will be disabled after FADER START; default programming.

- FADER C: Same as FADER START B, except local keyboard disabled when FADER START enabled.
- FADER D: FADER START with enable key (FADER START READY), local keyboard also active when FADER START enabled. After the FADER START, the built-in monitor speaker (however not the headphones socket) is muted. If one of the local keys is operated in PLAY mode after the FADER START operation has been performed, muting of the monitor speaker is canceled. If FADER START is not enabled, actuation of the FADER switch does not change the operating mode of the recorder. During recording neither the enable key nor the FADER switch can influence the tape transport.

VARISPEED %	(No. 241) KEYS/MODE
VARISPEED HT	(No. 242) KEYS/MODE
VARISPEED IPS	(No. 243) KEYS/MODE
VARISPEED %/IPS/HT	(No. 244) KEYS/MODE

Keys for defining the VARISPEED display format. Indication of the deviation in percent of the nominal speed or in semitones, or of the actual tape speed in inches per second. Either an individual key (functions 241...243) or a "ring key" (advances one step whenever the key is pressed, function 244) can be programmed for each format. Input of the desired variable tape speed and switching VARISPEED on/off: see functions No. 338, 339.

VARISPEED IND. ENH.	(No. 245) KEYS/MODE
---------------------	---------------------

If desired, flashing of the spooling keys < and > in VARISPEED mode can be selected with this function.

SAVE KEY SETTING Y/N	(Nr. 246) KEYS/MODE
----------------------	---------------------

When converting the recorder (e.g. from 1/4" to 1/2" tape) the programming of the keys is adapted automatically if function No. 246 is switched off, i.e. "NO". If the specific programming of the keys is to be preserved, the function must be switched to "YES".

REWIND (<)	(No. 301) KEYS/MODE
------------	---------------------

Rewind with maximum (programmed) spooling speed. Selecting the function: from FORWARD, STOP, PLAY/RE SHUTTLE stored, all LOC functions, and CUT. Canceling the function: by pressing FORWARD, STOP, PLAY, SHUTTLE, SHUTTLE BAR, all LOC functions; in synchronizer mode by pressing LOCK. The spooling speed can be defined in the ALIGNMENT DECK block; default: 15 m/s.

FORWARD (>)	(No. 302) KEYS ONLY
-------------	---------------------

Fast forward with maximum (programmed) spooling speed. Selecting/canceling conditions: same as REWIND.

LIBRARY WIND	(No. 303) KEYS ONLY
--------------	---------------------

Preselection of this function causes, in conjunction with FORWARD or REWIND, spooling with reduced, defined speed (preselectable from 0.1 to 15 m/s, in steps of 0.1 m/s). Canceling the function: by pressing LIBRARY WIND again. The reduced spooling speed can be defined in the ALIGNMENT DECK block; default: 5 m/s.

PLAY (No. 304) KEYS ONLY

Playback with the selected tape speed.
 Canceling the function: by REC+PLAY, FORWARD, REWIND, STOP, SHUTTLE, SHUTTLE BAR, all LOC functions.

REVERSE PLAY (No. 305) KEYS ONLY

Playback in reverse direction.
 Selecting the function: either with a key that has been programmed with this function, or by simultaneously pressing TRANS and PLAY.
 Canceling the function: see PLAY.

STOP (No. 306) KEYS ONLY

All tape transport functions are canceled by this function.

RECORD A (No. 307) KEYS ONLY

Record mode, only possible in conjunction with PLAY.
 Selection of the function: by simultaneously pressing REC and PLAY.
 Canceling the function: see PLAY, drop-out by pressing PLAY also possible (recorder reenters PLAY mode without interruption).
 Function is not activated and illumination of the key is inhibited if:

- MASTER SAFE is switched on,
- No HF driver is installed,
- On versions with SAFE/READY switches if none of the channels is switched to READY.

RECORD B (No. 308) KEYS ONLY

Record mode, only possible in conjunction with PLAY. Analogous to RECORD A, except: if the recorder is already in reproduce mode, recording can be activated by pressing only REC.

EDIT (No. 309) KEYS ONLY

Activation of the SET/CUE wheel. With the SET/CUE wheel the tape can be fine-positioned by means of the spooling motors.
 Selecting the function: from STOP, FORWARD, REWIND, PLAY.
 Canceling the function: with STOP, FORWARD, REWIND, PLAY, CUT, SET TIMER, SET ADDR, SET VARISPEED, SHUTTLE BAR, all LOC functions.
 When the tape is unthreaded in EDIT mode, the tape guide assembly remains in the EDIT position. When the STOP key flashes after power-on, the tape guide assembly can be moved into the EDIT position by pressing the EDIT key. The EDIT position is reached by pressing EDIT regardless of whether the tape is threaded or not.
 (See "Playing a dumped tape segment", 2.5.24).

CUT (No. 310) KEYS ONLY

Automatic positioning of the tape address located at the CUE point (reproduce head gap) to the position of the scissors. The tape is held tight between the pinch roller and the inoperative capstan shaft. After having cut the tape with the built-in tape scissors, the recorder enters STOP mode. If, however, the tape is not to be cut at this position, the CUT function can be cancelled by either pressing STOP. The recorder automatically enters STOP mode if any cut has been performed during approx. 10 seconds.
 Selecting the function: from STOP or EDIT.

Canceling the function: by pressing STOP, by cutting the tape (tape out), or automatically after approx. 10 seconds.

TRANSFER (No. 311) KEYS ONLY

Multifunction key.

- Preparation for storing the current tape counter address. The buffered tape address is transferred into the corresponding LOC memory by pressing one of the keys LOC1...5, independent of which tape counter display mode (normal or LAP mode) is selected.
 Selecting the function: possible at any time.
 Canceling the function: by storing in the LOC memory or by pressing TRANSFER again.
- Pressed together with PLAY: reproduce mode in opposite direction, see REVERSE PLAY.

HOLD (No. 312) KEYS ONLY

Key for "freezing" the current tape counter reading in any condition (also functions when the tape counter is switched to LAP mode). The frozen counter reading can be transferred into one of the LOC memories by pressing one of the keys LOC1...5. The counter continues to advance. By pressing the same LOC key again the tape is positioned at the stored address.
 If the TRANSFER key is pressed after HOLD, and subsequently one of the keys LOC1...5, the tape counter reading remains frozen (as if only HOLD would have been pressed).
 Canceling the function: by pressing HOLD again, or storing in LOC1...5.

LOC1	(No. 313) KEYS ONLY
LOC2	(No. 314) KEYS ONLY
LOC3	(No. 315) KEYS ONLY
LOC4	(No. 316) KEYS ONLY
LOC5	(No. 317) KEYS ONLY

Automatic searching of the stored address in spooling mode; preselection of PLAY or PLAY + REC is possible (keys of the preselected function flash for as long as the LOC process is not yet terminated).
 Indication of target address: in STOP status by simultaneously pressing STOP and the corresponding LOC key; during a LOC operation: by continuously pressing the corresponding LOC key.
 All LOC addresses remain stored even after the recorder has been switched off!
 Selecting the function: from PLAY/REC, REWIND, FORWARD, LOC, SHUTTLE, EDIT.
 Canceling the function: with STOP, LOC, REWIND, FORWARD, SHUTTLE, SHUTTLE BAR.

LOC ZERO (No. 318) KEYS ONLY

Automatic searching of the tape address 0.00.00.0 in spooling mode; preselection of PLAY or PLAY + REC possible.
 Selecting/canceling the function: see LOC1...LOC5.

LOC START-PLAY	(No. 319) KEYS ONLY
LOC START-STOP	(No. 320) KEYS ONLY
LOC START-REC	(No. 321) KEYS ONLY

Automatic searching of the tape address where the last PLAY command (during standstill of the tape) was given. The LOC START address is stored automatically at any PLAY command if the tape does not move (only PLAY is accepted, but not PLAY+REC). PLAY or STOP or RECORD is automatically initiated when the target address is reached. Selecting/canceling the function: see LOC1...LOC5.

ROLLBACK-PLAY	(No. 322) KEYS ONLY
ROLLBACK-STOP	(No. 323) KEYS ONLY
ROLLBACK-REC	(No. 324) KEYS ONLY

Recorder spools automatically backward by a preselectable amount. ROLLBACK always relates to the current tape counter reading (also in other indication modes). PLAY or STOP or RECORD is automatically initiated after the target address has been reached. Selecting the function: from STOP, PLAY, RECORD, EDIT. Canceling the function: by pressing STOP, REWIND, FORWARD, PLAY, PLAY + REC, SHUTTLE, SHUTTLE BAR, all LOC functions. The ROLLBACK time can be defined in the ALIGNMENT DECK block.

TAPE DUMP A	(No. 327) KEYS ONLY
TAPE DUMP B	(No. 328) KEYS ONLY

Dump edit mode, take-up motor stopped. Tape counter active and supplied with information by the tachometer of the capstan motor (TAPE DUMP A), or tape counter blocked (TAPE DUMP B). Selecting the function: only possible from STOP or EDIT mode. Canceling the function: by pressing TAPE DUMP a second time or with any tape transport command.

TAPE DUMP C	(No. 329) KEYS ONLY
TAPE DUMP D	(No. 330) KEYS ONLY

Tape dump mode with preparation, take-up motor stopped. Tape counter active and supplied with information by the tachometer of the capstan motor (TAPE DUMP C), or tape counter blocked (TAPE DUMP D). Selecting the function: only possible from STOP or EDIT mode. Preparation by means of TAPE DUMP, start of tape dump mode with PLAY, interruption with STOP. Canceling the function: by pressing TAPE DUMP a second time (only possible in STOP mode).

LIFTER A	(No. 332) KEYS ONLY
----------	---------------------

During spooling causes resetting of the tape lift pins and engagement of the tape guide assembly so that the tape is pressed against the reproduce head and the modulation becomes audible. Momentary push button. If AUTO MUTE is selected, muting will be canceled for as long as the tape is in contact with the head. Selecting the function: during REWIND, FORWARD, LOC and ROLLBACK functions. Canceling the function: by releasing the LIFTER key.

LAP/WATCH DISPLAY	(No. 334) KEYS ONLY
-------------------	---------------------

Changeover of tape display to a second counter which (like the normal tape counter) is supplied with pulses from the tachometer. When LAP/WATCH is active, an "L" is shown in the first position of the tape counter display.

The LAP counter, too, is reset to zero with RESET TIMER. In LAP/WATCH mode, LOC ZERO relates to the zero position of the LAP/WATCH counter. Canceling the function: by pressing LAP/WATCH a second time.

RESET TIMER	(No. 335) KEYS ONLY
-------------	---------------------

Key for resetting the tape counter display or the LAP/WATCH display. Only the counter reading shown on the display will be set to zero. The corresponding counter reading remains at zero until the key is released.

SET TIMER	(No. 336) KEYS ONLY
-----------	---------------------

When this key is pressed the momentary content of the tape counter (or of the second counter, refer to LAP/WATCH, function 334) is transferred into a buffer. With the CURSOR keys the display position (h, min, s, 1/10 s) is selected which can subsequently be increased or decreased continually by turning the SET/CUE wheel clockwise or counterclockwise respectively. When STORE is pressed the changed counter reading is transferred to the tape counter. Canceling the function: by pressing SET TIMER a second time or with SET ADDR, SET VARISP, or VARISPEED.

SET ADDRESS	(No. 337) KEYS ONLY
-------------	---------------------

Setting locator addresses:

- When this key is pressed the momentary content of the tape counter (or of the second counter, refer to LAP/WATCH, function 334) is transferred into a buffer. With the CURSOR keys the display position (h, min, s, 1/10 s) can be selected which can subsequently be continually increased or decreased by turning the SET/CUE wheel clockwise or counterclockwise respectively. The set address is stored in a LOC register by pressing TRANSFER and one of the LOC keys. The original content of the tape counter reappears when the store function has been completed.
 - It is also possible to transfer a locator address to the tape counter display by pressing SET ADDRESS, and STOP together with one of the LOC-keys afterwards. Then, the address can be modified as described above, and stored again with TRANS and one of the LOC keys.
- Canceling the function (only if store function has not been performed): by pressing SET ADDRESS a second time, a LOC or ROLLBACK function, SET TIMER, SET VARISPEED.

SET VARISPEED	(No. 338) KEYS ONLY
---------------	---------------------

Input of varispeed. Switches the service display over to VARISPEED indication. The deviation from the nominal speed is indicated in the desired format. The indicated value can be varied with the SET/CUE wheel. The format is entered with one of the VARISPEED DISPLAY functions 241...245. SET VARISPEED is not possible during audio alignment (SET/CUE wheel is needed for alignment). Canceling the function: by pressing SET VARISPEED a second time, or by pressing SET TIMER.

VARISPEED ON/OFF	(No. 339) KEYS ONLY
------------------	---------------------

Activates the variable tape speed. Switches the service display over to VARISPEED indication. The deviation from the nominal tape speed is indicated in the desired format. The VARISPEED feedback lamp flashes.

The display format is input with one of the VARISPEED DISPLAY FORMAT functions No. 241...245.

If SET VARISPEED is selected at the same time, the tape speed can also be varied during playback by means of the SET/CUE wheel.

If EDIT is also selected it is no longer possible to vary the speed with the SET/CUE wheel because the function of the SET/CUE wheel is required for the EDIT function.

Canceling the function: by pressing VARISPEED ON/OFF a second time.

REMOTE A R. CTL ONLY	(No. 345) KEYS ONLY
----------------------	---------------------

Activates the parallel and/or serial remote control; the local keyboard is disabled.

Selecting the function: only from STOP mode, if the STOP key does not flash.

Canceling the function: by pressing the key again, or by switching off the recorder.

If neither REMOTE A nor REMOTE B are assigned to a key, the local and the remote keyboards are equivalent, corresponding to "REMOTE B active".

REMOTE B REM+LOCAL	(No. 346) KEYS ONLY
--------------------	---------------------

Activates the parallel and/or serial remote control. The local keyboard remains enabled.

Selecting the function: only from STOP mode, if the STOP key does not flash.

Canceling the function: by pressing the key again, or by switching off the recorder.

If neither REMOTE A nor REMOTE B are assigned to a key, the local and the remote keyboards are equivalent, corresponding to "REMOTE B active".

Default setting.

SHUTTLE BAR	(No. 347) KEYS ONLY
-------------	---------------------

Key for storing a SHUTTLE speed that has been selected with the SHUTTLE wheel.

Selecting the function: while actuating the SHUTTLE wheel (if the SHUTTLE wheel is in its center position: SHUTTLE BAR equals STOP).

Canceling the function: with all tape transport commands, LOC and ROLLBACK functions.

UNLOAD	(No. 348) KEYS ONLY
--------	---------------------

Key for resetting the tape guide assembly.

NO FUNCTION	(No. 351) KEYS ONLY
-------------	---------------------

"Function" for programming a blank key without function.

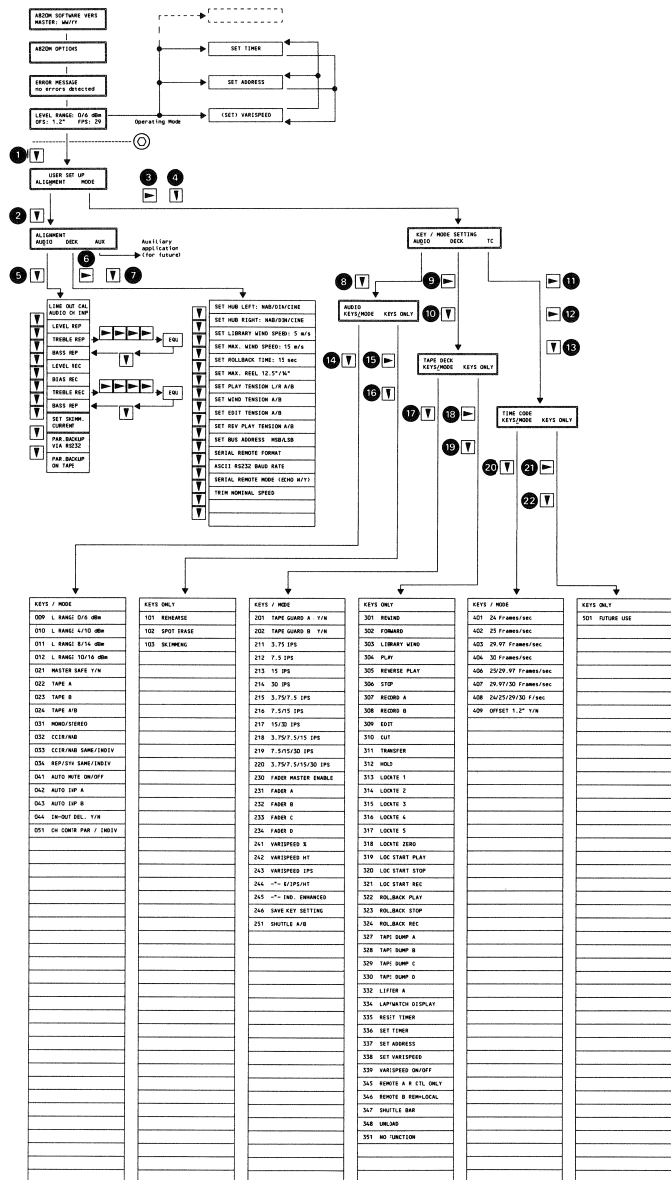
24 FRAMES/SEC	(No. 401) KEYS/MODE
25 FRAMES/SEC	(No. 402) KEYS/MODE
29.97 FRAMES/SEC	(No. 403) KEYS/MODE
30 FRAMES/SEC	(No. 404) KEYS/MODE
25/29.97 FRAMES/SEC	(No. 406) KEYS/MODE
29.97/30 FRAMES/SEC	(No. 407) KEYS/MODE
24/25/29.97/30 F/SEC	(No. 408) KEYS/MODE

Changeover of the time code standard (only for time code versions). Either one specific key for each standard (functions 401...404) or combination keys (changeover each time the key is pressed, functions 406 and 407) or a "ring key" (advances one step each time the key is pressed, function 405) can be programmed.

OFFSET 1/2" Y/N	(No. 409) KEYS ONLY
-----------------	---------------------

ON/OFF key for adjusting the internal time offset to a different standard (only for time code versions). Normal situation: no offset ("Electrically in Line").

2.6.4 Programming examples



Example 1:
Setting the audio parameter level reproduce, tape speed 7.5 ips, CCIR equalization, tape type A, channel 2:

Action	Service display indic.
Turn programming enable switch (28) to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ . dBm
1) ∇ /NEXT	USER SET UP ALIGNMENT MODE
2) ∇ /NEXT	ALIGNMENT AUDIO DECK AUX
3) ∇ /NEXT	LINE OUT CALIBRATION AUDIO CHANNELS INPUT
∇ /NEXT	LVL. REP 15.0 CCIR A CH1 72 CH2 72
Press speed selector key 7.5 ips	LVL. REP 7.50 CCIR A CH1 66 CH2 66
∇ /CURSOR (switchover to CH 2)	LVL. REP 7.50 CCIR A CH1 66 CH2 66
Select desired level with SET/CUE wheel (indication in HEX)	LVL. REP 7.50 CCIR A CH1 66 CH2 69
Save with STORE	L RANGE ./ . dBm
Press \uparrow four times	
or:	
with ∇ to the next setting	TRB. REP 1.50 CCIR A CH1 59 CH2 59

Example 3:
Switching the AUTO MUTE function (No. 041) on without a key being assigned:

Action	Service display indic.
Turn programming enable switch (28) to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ . dBm
1) ∇ /NEXT	USER SET UP ALIGNMENT MODE
2) ∇ /CURSOR	USER SET UP ALIGNMENT MODE
3) ∇ /NEXT	KEY / MODE SETTING AUDIO DECK TC
4) ∇ /NEXT	AUDIO KEYS/MODE KEYS ONLY
5) ∇ /NEXT	FODD 1/0 no key AUTO MUTE ON/OFF
Page with SET/CUE wheel to function 041	FD41 0/1 no key AUTO MUTE ON/OFF
Change over with STORE	FODD 1/0 no key AUTO MUTE ON/OFF
press \uparrow four times	L RANGE ./ . dBm

Example 5:
Reprogramming the RESET TIMER key (key 41, function No. 335) to REVERSE PLAY function (function No. 305):

Action	Service display indic.
Turn programming enable switch (28) to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ . dBm
1) ∇ /NEXT	USER SET UP ALIGNMENT MODE
2) ∇ /CURSOR	USER SET UP ALIGNMENT MODE
3) ∇ /NEXT	KEY / MODE SETTING AUDIO DECK TC
4) ∇ /NEXT	KEY / MODE SETTING AUDIO DECK TC
5) ∇ /CURSOR	TAPE DECK KEYS/MODE KEYS ONLY
6) ∇ /NEXT	F301 REMIND
Page with SET/CUE wheel to function 305	F305 REVERSE PLAY no key
Press STORE	F305 PRESS 2nd KEY REVERSE PLAY
Continue to hold down STORE, and in addition press RESET TIMER	F305 key assigned REVERSE PLAY
Change keytop Label	
press \uparrow four times	L RANGE ./ . dBm

Example 2:
Setting the hub diameter of the take-up reel to 50 mm (Cine B):

Action	Service display indic.
Turn programming enable switch (28) to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ . dBm
1) ∇ /NEXT	USER SET UP ALIGNMENT MODE
2) ∇ /NEXT	ALIGNMENT AUDIO DECK AUX
3) ∇ /CURSOR	ALIGNMENT AUDIO DECK AUX
4) ∇ /NEXT	HUB DIAMETER LEFT SET: MAB (118mm)
5) ∇ /NEXT	HUB DIAMETER RIGHT SET: MAB (118mm)
Set desired diameter with SET/CUE wheel	HUB DIAMETER RIGHT SET: CINE B (50mm)
Save with STORE	
Press \uparrow four times	L RANGE ./ . dBm
or:	
with ∇ to the next setting	SET LIBR. WIND SPEED 08.0 w/s

Example 4:
Reprogramming of the FADER START key (key No. 23, function No. 231) to AUTO MUTE function (function No. 041):

Action	Service display indic.
Turn programming enable switch (28) to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ . dBm
1) ∇ /NEXT	USER SET UP ALIGNMENT MODE
2) ∇ /CURSOR	USER SET UP ALIGNMENT MODE
3) ∇ /NEXT	KEY / MODE SETTING AUDIO DECK TC
4) ∇ /NEXT	AUDIO KEYS/MODE KEYS ONLY
5) ∇ /NEXT	FODD 1/0 no key AUTO MUTE ON/OFF
Page with SET/CUE wheel to function 041	FD41 0/1 no key AUTO MUTE ON/OFF
Press STORE	FD41 PRESS 2nd KEY AUTO MUTE ON/OFF
Continue to hold down STORE, and in addition press START	FD41 key assigned AUTO MUTE ON/OFF
Change keytop Label	
press \uparrow four times	L RANGE ./ . dBm

2.7 DEGRADED OPERATION

This Section describes the extent to which the A820 tape recorder can still be operated in the event of a malfunction in an individual assembly.

2.7.1 Error messages of the service display

The errors are classified in three categories:

- Errors of the first category are the ones preventing a normal operation of the recorder (above all hardware errors). A corresponding error message can be cancelled only by switching off the recorder for 10 seconds at least and then on again. If the error message reappears the malfunction must be repaired. Else, the tape recorder can be operated again.
- Errors of the second category can affect the operation of the recorder, however degraded operation is possible. Corresponding error messages are held in the display for information, even if the source of error should disappear. The message can be cancelled by acknowledgement (pressing the STORE key). If the source of error still exists, the message will reappear and can be cancelled again as above, if required. Apart from that, the recorder can be operated.
- Category three errors also can affect the operation. The error message will be cancelled automatically if the source of error disappears. If the LC Display should be used for another purpose (e.g. VARISPEED display) the error message can be cancelled by pressing STORE. The source of error might, however, be persisting.

Error messages of the first category:

ERR: SUPPLY
VOLTAGE

RECORDER: Switches to STOP, no reaction if keyboard is operated.

CAUSE: At least one of the supply voltages is missing.
ACTION: The FUSE/SUPPLY VOLTAGE FAILURE DETECTOR indicates which voltage(s) is/are missing.

- Switch recorder off.
- Check secondary fuses and replace them if necessary.
- Repair or replace SWITCHING STABILIZER PCB.

ERR: DATA
LOST

CAUSE: Audio and tape deck data lost.

ACTION: ■ Switch recorder off and on again. The standard parameters are loaded, the error message disappears.
■ Check buffer battery on MASTER MPU, replace it if necessary!
■ Either go on working with standard data (minor deviations from the optimum frequency response must be accepted), or
■ Reload stored parameters (on tape or floppy disk) via RS232 interface, or
■ Reload parameters put down in a protocol, or
■ Recalibrate the tape recorder.

ERR: EPROM 1

ERR: EPROM 2

ERR: EPROM 3

CAUSE: Error in one of the three EPROMs on MASTER MPU.

ACTION: ■ Switch recorder off and on again. If the message does not reappear, the recorder can be operated again.
■ Replace software.

ERR: MOVE-SENSOR
HARDWARE

RECORDER: switches to STOP.

CAUSE: MOVE SENSOR PCB defective, or too many direction changes detected.

ACTION: Replace, repair or readjust.

Error messages of the second category:

ERR: POWER
DROP OUT

RECORDER: switches to STOP.

CAUSE: Short power line failure ≥ 100 ms.

ACTION: Acknowledge with STORE.

ERR: AUDIO
CHANNEL 1

ERR: AUDIO
CHANNEL 2

CAUSE: Error in one of the audio channels (e.g. RECORD AMPLIFIER not inserted, HF DRIVER defective or not inserted, excessive erase current because wrong type of erase head is mounted).
Reproduction with the concerned channel is, however, possible !!

ACTION: ■ Insert or replace the concerned audio assemblies (recorder switched off !)
■ Check erase head.

Error messages of the third category:

ERR: MOTOR SUPPLY
VOLTAGE LOW

CAUSE: Spooling motor supply voltage is missing.

ACTION: Wait for 10 seconds. If the message is still present:
■ Switch recorder off.
■ Check the lower one of the two primary fuses, replace it if necessary.
■ Repair or replace SPOOLING MOTOR SUPPLY or SPOOLING MOTOR DRIVE AMPLIFIER(s).

**ERR: NO COMMUNICAT.
MASTER-TAPE DECK**

- CAUSE: ■ No reply to status request.
 ■ Software of MASTER MPU and TAPE DECK MPU in-
 compatible.
- ACTION: ■ Replace MASTER SERIAL INTERFACE and/or TAPE
 DECK SERIAL INTERFACE.
 ■ Replace software.

**ERR: TACHO
SENSOR**

- RECORDER: switches to STOP.
- CAUSE: No output signal of one of the three tacho sen-
 sors (spooling motors, move sensor), or diffe-
 rent sense of rotation of the three sensors, or
 no spooling motor tacho signal while the the
 spooling motor supply current exceeds 4 A.
- ACTION: ■ Check flat cable connectors on the tacho
 sensors.
 ■ Check tacho sensors, replace if necessary.
 ■ Check the tape spindles as well as the move
 roller for free rotation.

**ERR: TAPE TENSION
CONTROL**

- CAUSE: Difference between actual and nominal tape ten-
 sion too large for more than 1 second.
- ACTION: Check tape path and tape spindles for excessive
 friction.

**ERR: NO COMMUNICAT.
CAPSTAN-TAPE DECK**

- RECORDER: switches to STOP.
- CAUSE: ■ No data transfer via the parallel interface
 of the CAPSTAN INTERFACE.
 ■ Capstan processor does not start up.
- ACTION: Replace CAPSTAN INTERFACE.

**ERR: INCORRECT
RADIUS MEASUREMENT**

- RECORDER: switches to STOP.
- CAUSE: ■ Computed radius of the tape rolls beyond per-
 mitted limits.
 ■ Tacho sensors defective.
- ACTION: ■ Switch recorder to PLAY for several seconds
 (with tape). In general the error message
 disappears as soon as enough tacho pulses are
 present to compute the tape roll radii.
 ■ Check tacho sensors, repair or replace.

**ERR: SHUTTLE
VALUE INVALID**

- CAUSE: During the start-up period the SHUTTLE
 potentiometer delivered wrong values.
- ACTION: ■ SHUTTLE wheel may not be deflected during the
 start-up period.
 ■ Readjust SHUTTLE potentiometer.

**ERR: PINCH ROLLER
SLIPPING**

- RECORDER: switches to STOP.
- CAUSE: Pinch roller has excessive slip, capstan speed
 does not correspond with the tape speed.
- ACTION: ■ Clean pinch roller and capstan shaft, replace
 pinch roller if necessary.
 ■ Readjust pinch force correctly.

**ERR: INCORRECT
INERTIA**

- RECORDER: switches to STOP.
- CAUSE: The three last computations of the tape roll
 inertia did not produce any admissible results.
- ACTION: Check all rollers and motors as well as the
 tape path for low friction.

**WARN: REFERENCE
FREQUENCY WRONG**

- RECORDER: Cannot reach the requested nominal speed in
 PLAY.
- CAUSE: The external varispeed reference frequency is
 outside of the permissible range (6.4 kHz to
 14.4 kHz), or the signal is missing.
- ACTION: Correct or connect the reference signal.

**ERR: NOT
IDENTIFIED**

- CAUSE: Unidentifiable error.
- ACTION: ■ Switch recorder off and on again. If the mes-
 sage does not reappear, the recorder can be
 operated.
 ■ Unplug the RAM on the MASTER MPU an reinsert
 it.
 CAUTION: The audio and tape deck parameters
 are lost, the standard parameters are re-
 loaded instead !
 • Either work on with standard data (minor
 deviations from the optimum frequency re-
 sponse must be accepted), or
 • Reload stored parameters (on tape or floppy
 disk) via RS232 interface, or
 • Reload parameters that have been put down
 in a protocol, or
 • Recalibrate the tape recorder.

Internal error messages:

The following messages are warnings that exist for the
internal status field only and are not displayed:

**WARN: HUB DIAMETER
SETTING TOO HIGH**

- CAUSE: Computed hub diameter diverges from the
 programmed value.

**WARN: REEL DIAMETER
SETTING TOO SMALL**

- CAUSE: Computed reel diameter diverges from the pro-
 grammed value.

THE LIST ABOVE CLAIMS NOT TO BE COMPLETE AND CAN BE
ENLARGED AS REQUIRED.

2.7.2

Additional messages of the service display

After having converted the recorder (e.g. from 1/4"-mono to 1/2"-2 channel) the recorder automatically changes its audio and tape tension parameters. The programming of the keys is also adapted. The display indicates:

```
WARN: DEFAULT
      KEYS LOADED
```

If the programming of the keys is to be preserved, the function No. 246 "SAVE KEY SETTING" must be switched on, i.e. "YES".

After a data loss (message: "ERR: DATA LOST", see above) and the consecutive switching off and on again the following message is displayed:

```
WARN: DEFAULT KEYS
      & PARAMETER LOADED
```

The recorder can be operated with standard parameters (or it has to be recalibrated) as described above.

- After having reprogrammed one of the key functions this message is modified to:

```
WARN: DEFAULT
      PARAMETER LOADED
```

- After having reprogrammed one of the parameters, this message is modified to:

```
WARN: DEFAULT
      KEYS LOADED
```

2.8
OPERATION WITH SERIAL INTERFACE

Two different interface types are available:
Version 1.810.751 is designed for operation with a terminal (RS 232, ASCII format) or for storing the audio parameters for backup purposes on an external storage medium such as tape or a Personal Computer.
Version 1.820.751 is designed for operation with a terminal (RS 232, binary format) or for connection to an SMPTE/EBU bus according to the SMPTE standard.

2.8.1
SMPTE/EBU bus

The SMPTE/EBU bus is a facility for transmitting data and permits interconnection of several individual units to a flexible and powerful system (for example remote control of several recorders).

2.8.2
Data backup

The audio parameters stored in RAM can be copied to tape or to a Personal Computer via the 9-pin connector of the serial interface 1.810.751, or new audio parameters can be loaded into the tape recorder (see Section 4.8).

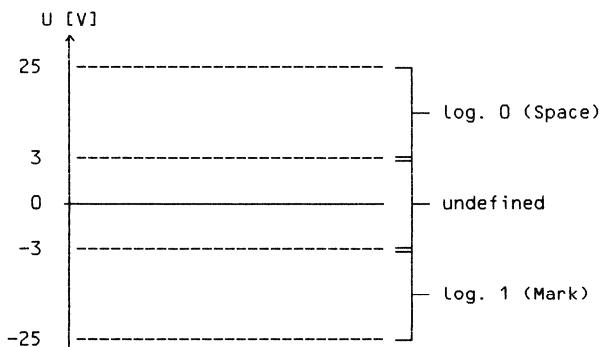
2.8.3
RS 232 interface standards

The term "RS232" defines a connection between a "terminal" and a "modem". In addition this standard defines the:

- electrical characteristics (level, lines),
- mechanical characteristics (connectors),
- signal descriptions, and
- standard connections.

The interface operates with data rates up to 20 kbit/s and a cable length of up to 15 m.

The signal levels are defined as follows:



The 25-pin connector supports diverse interface structures, however, full utilization of all the pins is found rarely today. Modern systems frequently use the minimum structures illustrated in Fig. 2.8.1 for the connection between terminal and mode or terminal and terminal.

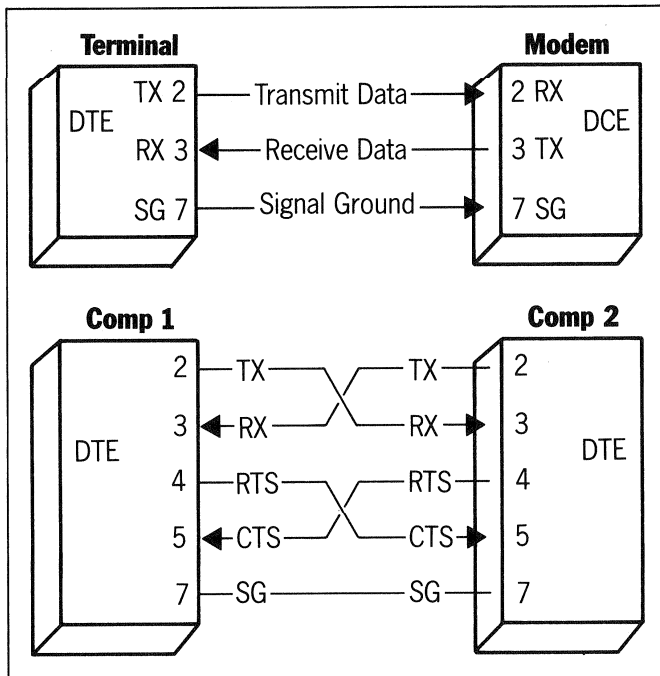


Fig. 2.8.1

All extensions (e.g. baud rate, code, synchronous/asynchronous connection, number of start/stop bits, parity, hardware/software handshake) are defined by the corresponding manufacturer.

2.8.4
The serial ASCII interface of the A820

The serial interface of the A820 recorder uses a 9-pin connector according to SMP1E instead of the 25-pin connector. The user can decide by means of an adapter cable whether the unit is to be a terminal or a modem.

Recorder 9-pin		Terminal 25-pin		Modem 25-pin	
Signal	Pin No.	Signal	Pin No.	Signal	Pin No.
SNDATA	2	Trans.Data	2	Trans.Data	3
RCVDATA	8	Rec. Data	3	Rec. Data	2
GROUND	9	Sig. Ground	7	Sig. Ground	7

No additional handshake lines are used. A software handshake (X ON/X OFF protocol) is implemented for all baud rates, however only required for 9.6 kbaud.

X ON = 0001 0001 (ASCII DC1) $\hat{=}$ continue

X OFF = 0001 0011 (ASCII DC3) $\hat{=}$ interrupt

After reception of X OFF the recorder transmits no more than 2 additional characters. After the recorder has transmitted X OFF, it can still receive five characters without losing an instruction.

The following data are fixed:

- 1 Start bit
- 1 Stop bit
- 8 Data bits
- No parity bit.

The following baud rates can be set: 300, 1200, or 9600.

Only ASCII characters are accepted as data.

2.8.5
Putting the serial interface 1.810.751 of the A820 into operation

- Adjust Personal Computer or terminal as follows: 1 start bit, 8 data bits, 1 stop bit (no parity bit), baud rate 300, 1200 or 9600. No echo mode. Connect handshake Lines CTS and RTS to "LOW".
 - SERIAL REMOTE CONTROLLER 1.810.751: The PCB contains receiver and the driver for the STUDER interface for data backup on tape or on a Personal Computer and the RS232 interface. Switchover by means of a jumper JS1, (position X: switchover with DIL switch 2, OFF = RS232) or automatically (position H). The automatic switchover is implemented, therefore the jumper should be in position H. Insert the PCB, switch the LED monitor display on with DIL switch 1; both LEDs RX and TX are illuminated.
 - Connect the Personal Computer or the terminal with an adapter cable to one of the two nine pole connectors RS232. If the connection works, both LEDs RX and TX become dark.
 - Program the baud rate according to the Personal Computer or the terminal.
- After a RESET (switch the A820 off and on again) the screen indicates:

***** A820 MONITOR *****
 ***** ALL PROCESSES STARTED *****

Now the desired commands (see list below) can be entered via the keyboard of the Personal computer or the terminal. Commands are executed after having pressed ENTER or LINE FEED, respectively.

Instruction set

TAPE DECK COMMANDS		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
STP*	<CR><LF>	Stop
RWD*	<CR><LF>	Rewind
FWD*	<CR><LF>	Fast forward
PLY*	<CR><LF>	Play
REC*	<CR><LF>	Record (directly, without preceding PLAY command)
EDI*	<CR><LF>	Edit
SSA*	<CR><LF>	Set speed to 3,75 ips (9,5 cm/s)
SSB*	<CR><LF>	Set speed to 7,5 ips (19 cm/s)
SSC*	<CR><LF>	Set speed to 15 ips (38 cm/s)
SSD*	<CR><LF>	Set speed to 30 ips (76 cm/s)
WNR<XXXX>	<CR><LF>	Rewind with selectable speed (0 \leq XXXX \leq 5FFF)
WNF<XXXX>	<CR><LF>	Forward wind with selectable speed (0 \leq XXXX \leq 5FFF)
NS?*	3.75 IPS <CR> <LF>, or 7.5 IPS<CR> <LF>, or 15 IPS<CR><LF> or 30 IPS<CR><LF>	Request for nominal speed
VEN*	<CR><LF>	Vari-Speed external on
VEF*	<CR><LF>	Vari-Speed external off
FEN*	<CR><LF>	FADER START ENABLE on
FEF*	<CR><LF>	FADER START ENABLE off
LOC<address>	<CR><LF>	Wind to <(-)hh(:)()mm(:)()ss(:)()n (n = 1/10 seconds) e.g. LOC_01:20:15:0 LOC_-00_35_25_1
LMV<move roll pulse count>	<CR><LF>	Fast wind to move roll pulse count <XXXXXXXX> 4 bytes HEX e.g. LMV_00AE4F00
MV?*	XX XX XX XX <CR><LF> 4 bytes HEX	Request for move roll pulses count
STM<address>	<CR><LF>	Set timer to <(-)hh(:)()mm(:)()ss(:)()nnn (nnn = milli seconds) (-9:59:59:999 \leq address \leq 23:59:59:999) e.g. STM_01_20_15_000 STM_-00:35:25:125
TM?*	_hh:mm:ss:z <CR><LF>, or _hh:mm:ss:z <CR><LF> z = 1/10 sec	Tape timer request
DST*	<CR><LF><_hh:m m:ss:z_Y_XXXXX XXXXXXXXXXXXXX> z = 1/10 sec. Y= status, 1 byte HEX X = status in clear, e.g. PLAY ACHIEVED	Display machine status on the screen, will be repeated (cancel with CTRL X)

continued on next page

TAPE DECK COMMANDS (continued)		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
ST7*	XX<CR><LF> X = 1 byte HEX	Status request e.g.: TAPE OUT TAPE OUT ACHIEVED STOP NOT ACHIEVED STOP ACHIEVED REWIND NOT ACHIEVED REWIND ACHIEVED FORWARD NOT ACHIEVED FORWARD ACHIEVED PLAY NOT ACHIEVED PLAY ACHIEVED PLAY VARISPEED NOT ACHIEVED PLAY VARISPEED ACHIEVED PLAY INT. REF. NOT ACHIEVED PLAY INT. REF. ACHIEVED PLAY EXT. REF. NOT ACHIEVED PLAY EXT. REF. ACHIEVED RECORD ACHIEVED REVERSE PLAY ACHIEVED EDIT NOT ACHIEVED EDIT ACHIEVED SHUTTLE REVERSE ACHIEVED SHUTTLE FORWARD ACHIEVED LOCATE WIND REVERSE LOCATE WIND REVERSE ACHIEVED LOCATE WIND FORWARD LOCATE WIND FORWARD ACHIEVED LOCATE PLAY REVERSE ACHIEVED LOCATE PLAY FORWARD ACHIEVED CUEING REVERSE ACHIEVED CUEING FORWARD ACHIEVED POSITION PLAY REVERSE ACHIEVED POSITION PLAY FORWARD ACHIEVED TAPE DUMP TAPE DUMP ACHIEVED CUT WITH DISTANCE NOT ACHIEVED CUT WITH DISTANCE ACHIEVED

AUDIO COMMANDS (continued)		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
AP?_i_j*	XX<CR><LF> XX=1 byte HEX	Request for audio parameter, channel i, D/A converter j (i = 1 or 2; j = 0: LEVEL REPRO j = 1: TREBLE REPRO j = 2: BASS REPRO j = 3: EQUALIZATION REPRO j = 4: LEVEL RECORD j = 5: TREBLE RECORD j = 6: BIAS j = 7: EQUALIZATION RECORD)

MACHINE AND TAPE DECK COMMANDS		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
LCE*	<CR><LF>	Local keyboard enabled
LCD*	<CR><LF>	Local keyboard disabled
RME*	<CR><LF>	Remote keyboard enabled
RMD*	<CR><LF>	Remote keyboard disabled
TDN*	<CR><LF>	Time code delay on
TDF*	<CR><LF>	Time code delay off (bypass)
TH?*	0<CR><LF>, or 1<CR><LF>, or 2<CR><LF>, or 3<CR><LF>	Request for time code source (0 = left head; 1 = right head wide; 2 = right head narrow; 3 = line input)
SBA_<address>	<CR><LF>	Set bus address to <XXXX> (4 digits HEX, 82FF ≤ XXXX ≤ FFFF)
BA?*	<XXXX><CR><LF>	Display bus address

SPECIAL COMMANDS		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
D108_227*	see examples	Display RAM content on screen
UAP_<HEX addr, data>*	see examples	Update audio parameter

The above list is not completed and will be enlarged as required.

Examples:

- FWD* = Fast forward
- LOC_-01:43:00:8 = Autolocator to address - 1.43.0.8
- SAF_3/ = Time code channel SAFE (Recording inhibited)
- AP?_1_4* = Request for audio parameter channel 1, D/A converter 4 (LEVEL RECORD); answer of the recorder e.g. A9 HEX
- SAP_1_4_A3* = Set audio parameter channel 1, D/A converter 4 (LEVEL RECORD); new value A3 (old value A9 from the foregoing example will be overwritten!)
CAUTION! All other parameters such as SYNC or REPRO, tape speed, tape type, equalization, must be selected on the recorder's controls!

AUDIO COMMANDS		
Command (_ = blank, / = CR, * = blank or CR)	Answer of the tape recorder	Meaning
SMN*	<CR><LF>	Set MONO mode (if MONO/STEREO SWITCH present)
SST*	<CR><LF>	Set STEREO mode (if MONO/STEREO SWITCH pres.)
SNB*	<CR><LF>	Set NAB equalization
SCR*	<CR><LF>	Set CCIR equalization
STA*	<CR><LF>	Set tape type A
STB*	<CR><LF>	Set tape type B
MSN*	<CR><LF>	MASTER SAFE on
MSF*	<CR><LF>	MASTER SAFE off
SRH*	<CR><LF>	REHEARSAL mode on
CRH*	<CR><LF>	REHEARSAL mode off
DDN*	<CR><LF>	Drop in/out delay on
DDF*	<CR><LF>	Drop in/out-delay off
REA_i/ SAF_i/ INP_i/ SYN_i/ REP_i/ MTN_i/ MTF_i/	<CR><LF>	Channel i READY (i = 1, 2, 3, or F) Channel i SAFE (i = 1, 2, 3, or F) Channel i INPUT (i = 1, 2, 3, or F) Channel i SYNC (i = 1, 2, 3, or F) Channel i REPRO (i = 1, 2, 3, or F) Channel i MUTE (i = 1, 2, or F) Channel i MUTING OFF (i = 1, 2, or F) (F = all channels)
SAP_i_j_k*	<CR><LF>	Set D/A converter j, channel i, to k (i = 1 or 2; j = 0: LEVEL REPRO 1: TREBLE REPRO 2: BASS REPRO 3: EQUALISATION REPRO 4: LEVEL RECORD 5: TREBLE RECORD 6: BIAS 7: EQUALISATION RECORD; k = 2 digits HEX, corresponds to the number appearing on the service display during audio adjustments) e.g. SAP_1_0_FF

- D108_227* = ALL audio and tape tension parameters are displayed on the terminal in hexadecimal format, e.g.

```

0 1 2 3 4 5 6 7 8 9 A B C D E F
0100 xx xx xx xx xx xx xx xx 82 70 90 95 26 80 30 BB ... .....800;
0110 00 00 00 00 66 39 80 87 30 A0 3E 75 62 50 96 87 .....9..0 >..P..
0120 66 39 80 61 .. .. .. ..
0130 .. .. .. ..
.....
.....
.....
    
```

The address of a parameter can be computed as a decimal value by means of the formula below (and must subsequently be translated to a hexadecimal value!):

$$RADR = ARAM - 12 + IDAC + ISYNC * 8 + CCAB * 12 + SPEED * 24 + CHNL * 72 + TAPE * 144$$

where:

- RADR = address of the parameter (in decimal form)
- ARAM = 264 (108 hex), start address of the parameter range in the RAM
- IDAC = 0 for LEVEL REPRO
= 1 for TREBLE REPRO
= 2 for BASS REPRO
= 3 for EQUALIZATION REPRO
= 4 for LEVEL RECORD
= 5 for TREBLE RECORD
= 6 for BIAS RECORD
= 7 for EQUALIZATION RECORD
- ISYNC = 0 for REPRO MODE
= 1 for SYNC MODE
- CCAB = 0 for CCIR equalization (automatically = 0 at 30 ips)
= 1 for NAB equalization (automatically = 1 at 3.75 ips)
- SPEED = 0 for 3.75 ips (9,5 cm/s)
= 1 for 7.5 ips (19 cm/s)
= 2 for 15 ips (38 cm/s)
= 3 for 30 ips (76 cm/s)
- CHNL = 0 for channel 1
= 1 for channel 2
- TAPE = 0 for tape type A
= 1 for tape type B

The address of TREBLE REPRO, SYNC, NAB, 15 ips, channel 1, tape type A is thus computed as follows:

$$264 - 12 + 1 + 1 * 8 + 1 * 12 + 2 * 24 + 0 * 72 + 1 * 144 = 465 = 01D1 \text{ (hex)}$$

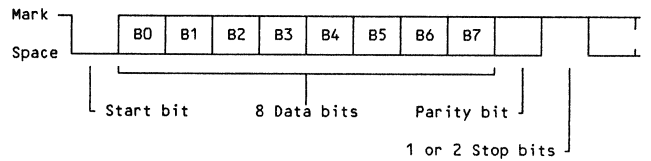
- UAP_01D1_5C = Update above parameter to 5C

2.8.6

Putting the serial interface 1.820.751 of the A820 into operation

Hardware definitions:

- Electrical standards according to RS232C or RS422A (adaptable by means of jumpers).
- Full duplex
- Asynchronous data transfer, bit and word serial according to the following diagram:



Odd or even parity as well as the number of stop bits (1 or 2) are programmable.

- For RS232C as well as RS422, the baud rates are programmable to 9600 or 1200 Baud. For operation with an SMPTE bus it is fixed to 38.400 kBaud.
- Standard factory adjustments:
 - RS232C
 - 1 Start bit
 - 8 Data bits
 - even Parity
 - 1 Stop bit
 - 9600 Baud.

Pin assignment:

Pin	RS232	RS422
1	SHIELD	SHIELD
2	---	TRANSMIT A
3	RX	RECEIVE B
4	0,0 V	RECEIVE COMMON
5	---	---
6	0,0 V	TRANSMIT COMMON
7	TX	TRANSMIT B
8	---	RECEIVE A
9	SHIELD	SHIELD

Jumpers:

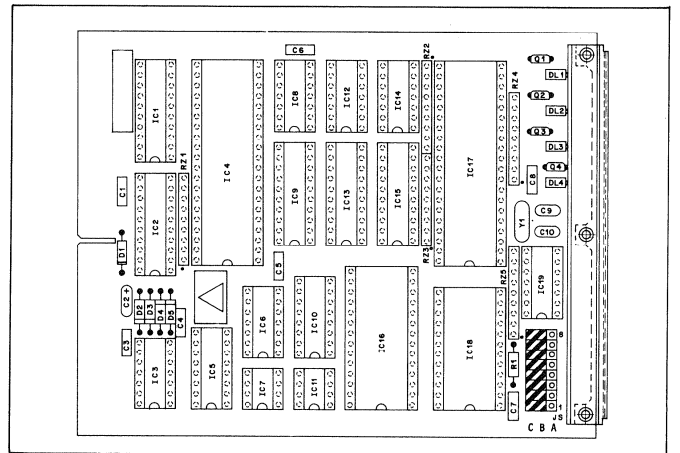


Fig. 2.8.1

■ Switchover of operating modes and of electrical configurations:

	J8	J7	J6	J5	J4	J3	J2	J1
SMPTE BUS	BC	BC	BC	BC	BC		BC	BC
SERIAL RS232	AB	AB	AB	AB	AB		AB	AB
SERIAL RS422	AB	BC	BC	BC	AB		BC	BC

■ Selecting the baud rates:

		J3
SMPTE BUS	38,4 kBd	BC
RS232/RS422	9600 Bd	BC
	1200 Bd	AB

■ Standard adjustments:

	J8	J7	J6	J5	J4	J3	J2	J1
SMPTE BUS	BC	BC	BC	BC	BC	BC	BC	BC
SERIAL RS232 9600 Baud	AB	AB	AB	AB	AB	BC	AB	AB

Pilot Lamps

The four LEDs on the front bracket of the assembly 1.820.751 are used for different purposes depending on if the assembly is configured as a serial interface (RS232/RS422) or as a SMPTE/EBU bus interface (programmable with jumpers, see above).

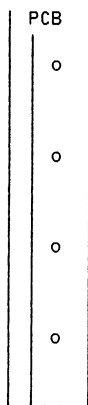
SMPTE/EBU-Bus:

INTERFACE SELECTED —
Is on as long as the interface receives a SEL ADDR and as long as it is in the SELECT status.

INTERFACE POLLED —
Is on when the interface receives a POLL ADDR and as long as it is in the POLL status.

INTERFACE IDLE/ACTIVE —
Is on as long as the interface is waiting for a BREAK signal or for its own address.

FIFO TX/RX ACTIVE —
Is on as long as the interface receives or sends data from or to the FIFO.



RS232/RS422:

RX ACTIVE
Is on as soon as the interface receives STX (control byte) or a message.

TX ACTIVE
Is on as long as the interface sends a message.

INTERFACE ACTIVE
Is on as long as the interface waits for STX (control byte).

FIFO TX/RX ACTIVE
Is on as long as the interface receives or sends data from or to the FIFO.

Software protocol:

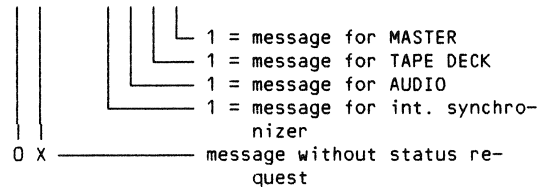
The control system can transmit commands (function or parameter commands) or status requests to the A820. The A820 acknowledges the commands and transmits status reports on request.

■ Commands from the control system to the A820:

STX	BC	CB	CC	CPs....	CS
-----	----	----	----	---------	----

- **STX** is a control character transmitted as start signal (according to SMPTE proposal: STX = 02_H).
- **BC** (Byte Count): contains the number of the following bytes without checksum.
- **CB** (Control Byte):

Bit No. 7 6 5 4 3 2 1 0



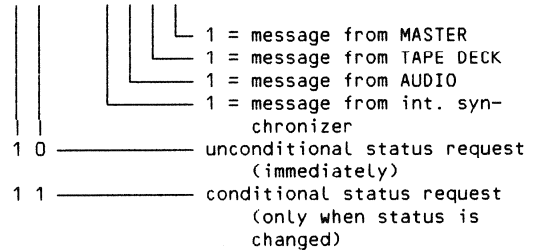
- **CC** (Command Code): function or parameter command; refer to the instruction set.
- **CP** (Parameter Bytes): for parameter commands only; in case of several parameters the MSB is transmitted first.
- **CS** (Checksum): two's complement of the sum of all the transmitted data before the checksum except STX.

■ Status requests from control system to A820:

STX	BC	CB	SBA	SBC	CS
-----	----	----	-----	-----	----

- **STX** is a control character transmitted as start signal (according to SMPTE proposal: STX = 02_H).
- **BC** (Byte Count): = 3 (fixed).
- **CB** (Control Byte):

Bit No. 7 6 5 4 3 2 1 0



- **SBA, SBC** (Status request bytes): SBA contains the basic address, SBC contains the number of bytes of the desired status.
- **CS** (Checksum): two's complement of the sum of all the transmitted data before the checksum except STX.

■ Acknowledgments and status reports from A820 to control system:

After having sent a block of commands and before sending the next, the control system has to wait for an acknowledgment of the A820. This acknowledgment can consist of a control character or of a status report.

If any acknowledgment arrives during a "time-out" the control system considers the data transmission faulty. Possible acknowledgments:

- Acknowledgment after faultless data transmission, or conditional status request (status report only if status changes) but unchanged status:

ACK (= 04_H according to SMPTE proposal)

- Acknowledgment after the following errors:
 - Transmission errors (Framing, Parity Overrun)
 - Invalid command codes
 - Time-out (2 s) during transmission of the command

NAK (= 05_H according to SMPTE proposal)

- Status report as acknowledgement of:
 - unconditional status request
 - conditional status request, and changed status

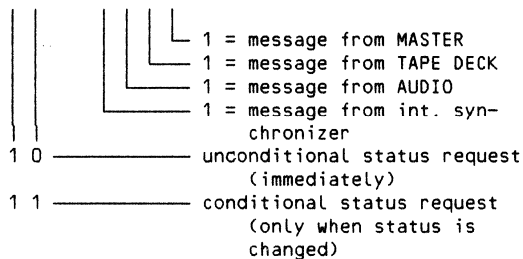
STX	BC	CB	SBA	SBC	STATUS	CS
-----	----	----	-----	-----	--------	----

STX: is a control character transmitted as start signal (according to SMPTE proposal: STX = 02_H).

BC (Byte Count): contains the number of the following bytes without checksum.

CB (Control Byte):

Bit No. 7 6 5 4 3 2 1 0



SBA, SBC (Status request bytes): SBA contains the basic address, SBC contains the number of bytes of the desired status.

STATUS: Table with the desired status bytes.

CS (Checksum): two's complement of the sum of all the transmitted data before the checksum except STX.

■ Instruction set
IN PREPARATION.

2.9

MAINTENANCE HINTS

Daily care is limited to cleaning the soundheads, the capstan shaft, and the tape guidance elements.

Dust and oxide particles from the magnetic tape coating tend to accumulate on the soundheads and the tape guidance elements. This can lead to so-called dropouts in recording mode.

Cleaning should be performed daily or more frequently if contamination is visible.

Cleaning is best performed with a STUDER cleaning kit (part No. 10.496.010.00). It contains all necessary utensils and a special soundhead cleaning fluid as well as aluminite cleaner.

Procedure

Moisten the yellow cloth with cleaning fluid and clean all tape guidance elements. Subsequently dry the cleaned parts with a dry section of the yellow cloth.

The grooves of the right-hand time code head can be cleaned preferably by means of a hard paint-brush whose bristles are cut to a length of approx. 5 mm.

The capstan normally stands still if the recorder is not switched to PLAY. A special function activates the capstan for cleaning purposes. The tape has to be unthreaded, then press PLAY.

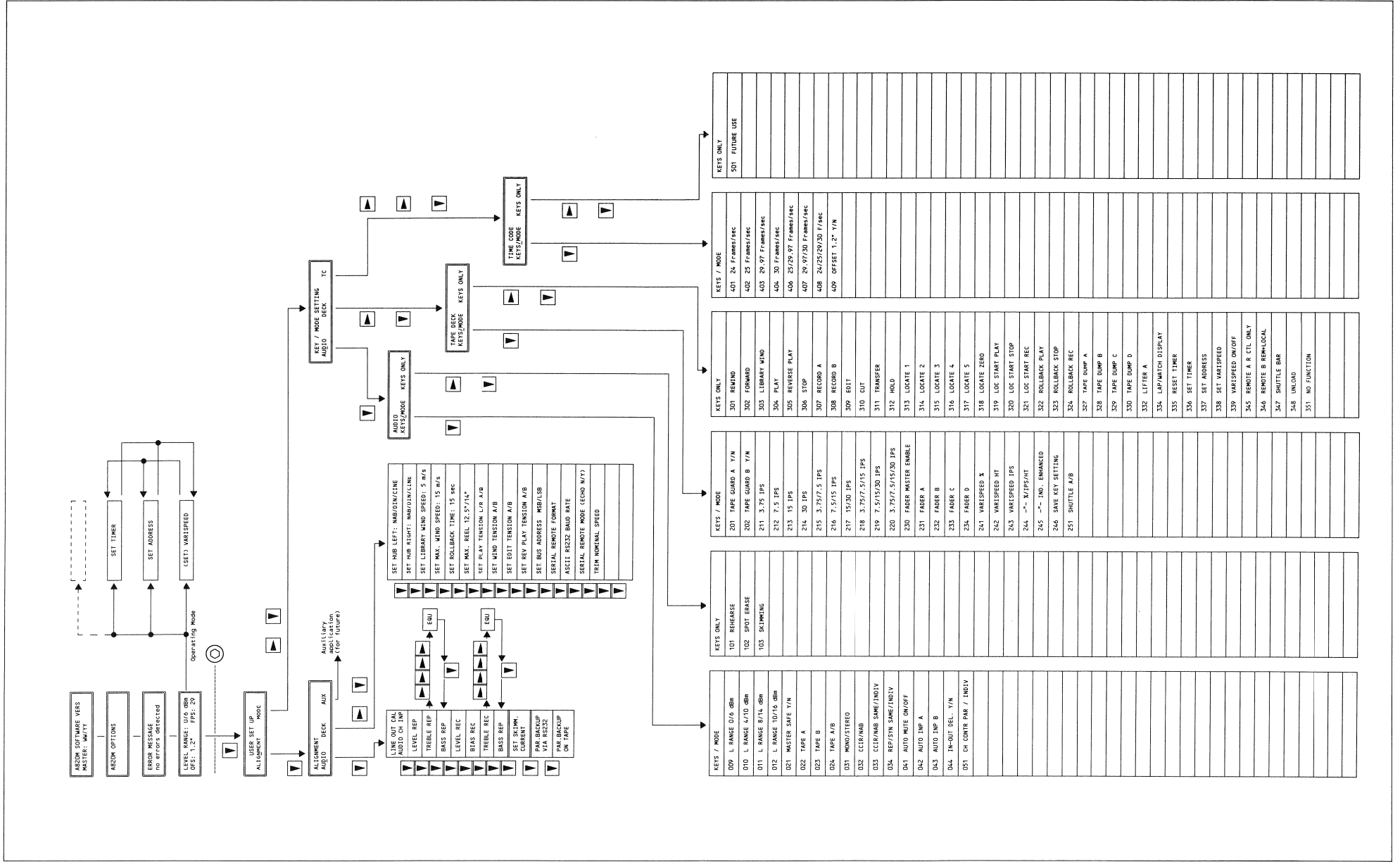
Caution!

Ensure that no cleaning fluid drips into the bearing when cleaning the capstan! The cleaning fluid can damage the windows of the VU-meters!

Lubricating the capstan bearing

The capstan motor is carefree; to increase its service life, lubricating the capstan bearing once a year is recommended. For this purpose, apply one drop of oil (type PDP 65, order No. 20.020.401.04).

STATUS TREE DIAGRAM



3 POWER SUPPLY, TAPE DECK CONTROL

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3 POWER SUPPLY, TAPE DECK CONTROL

**3.1
CIRCUIT DESCRIPTIONS**

General:

The section 3.1 is divided as follows: At the beginning (3.1.1), the circuit descriptions of the general assemblies (e.g. power supply) can be found. These are followed by descriptions of the control and tape deck assemblies, in which the functions have been broken down by two blocks

(3.1.2 and 3.1.3), so that the purpose of the individual assemblies within the functional modules and their interaction can be presented. The criterion for this breakdown is the corresponding common data bus. Each block diagram explains the function of a block and is followed by the circuit descriptions of the individual assemblies.

Utilized abbreviations:	
ACIA	Asynchronous communication interface adapter
ADC	Analog to digital converter
CMOS	Complementary metal oxide semiconductor
DAC	Digital to analog converter
FIFO	First in, first out
IRQ	Interrupt request
LSB	Least significant bit
MPU	Microprocessor unit
MSB	Most significant bit

Utilized abbreviations (continued):	
NMOS	N-channel metal oxide semiconductor
NMI	Non maskable interrupt
PIA	Peripheral interface adapter
PIO	Parallel input/output
PROM	Programmable read only memory
RAM	Random access memory
ROM	Read only memory
SSDA	Synchronous serial data adapter
VMOS	Vertical metal oxide semiconductor

**3.1.1
Power supply**

**3.1.1.1
Power supply electronics 1.820.510 GRP01 - GRP12**

Function:

- Supply of the GRP32 (SWITCHING STABILIZER PCB 1.820.790) with a filtered DC voltage (approx. 50 to 60 V), and the GRP31 (SPOOLING MOTOR SUPPLY PCB 1.820.777) with an AC voltage (approx. 35 to 45 V).

Circuit description:

The line voltage is applied to a 3-pin power inlet (GRP01/ELM01). The insulation of the power supply corresponds to IEC65, protection category 1; the protective ground terminal is connected to chassis (GRP02/ELM01). From the power inlet the AC voltage is taken via the power switch (GRP03/ELM01), the interference suppression filter (GRP04), the primary fuse (GRP05), and the 220 V/110 V voltage selector (GRP07) to two identical power transformers, GRP08 and GRP09. Each primary winding (ELM01 and ELM02) consists of a 100 V and a 10 V winding that are connected in series (interconnection of PNT01 with PNT04 on ELM01, as well as PNT06 with PNT07 on ELM02). The 6 identical secondary windings (ELM03 and ELM04) of GRP08 are all connected in parallel and connected to GRP31/ELM02 (SPOOLING MOTOR SUPPLY PCB 1.820.777 GRP31).

These 6 identical secondary windings (ELM03 and ELM04) of GRP09 are combined in three units:

- The first unit comprises three parallel-connected windings and supplies the positive section of the SWITCHING STABILIZER PCB via the fuse (GRP10/ELM01), the bridge rectifier (GRP11/ELM01), and the filter capacitors (GRP12/ELM01 and GRP12/ELM02).
 - The second unit comprises two parallel-connected windings and supplies the negative section of the SWITCHING STABILIZER via the fuse (GRP10/ELM02), the bridge rectifier (GRP11/ELM02), and the filter capacitor (GRP12/ELM03). The AC voltages ACPWE-B1 and ACPWE-D1 are tapped on the input to the bridge rectifier and are also taken to the SWITCHING STABILIZER.
 - The third section comprises the remaining winding and supplies the capstan motor control via the fuse (GRP10/ELM03), the bridge rectifier (GRP11/ELM03), and the charging capacitor.
- The three DC output voltages are approx. 50 to 60 V each, without connected load.

3.1.1.2

SWITCHING STABILIZER PCB 1.820.790 GRP32
(incl. STABILIZER/LIMITER PCB 1.820.792)Function:

- Producing all regulated voltages required by the tape recorder:
 - +5.6 V for the logic circuits
 - +15 V and
 - -15 V for the audio section
 - +24 V for the incandescent lamps of the tape command keyboard and the brake solenoids,
 - +26 V and
 - -26 V for the positioning motors of the pressure unit, as well as
 - the supply voltage (+REMSUP) for a serial remote control (approx. 50 V, current limitation at approx. 1 A).

The +24 V supply voltage of the terminals for the parallel remote control and the synchronizer is produced on the PARALLEL REMOTE INTERFACE with a preset linear voltage regulator (IC15) from +REMSUP.

Circuit description:

■ SWITCHING STABILIZER PCB 1.820.790 GRP32:

By means of a voltage regulator this circuit produces the +5.6 V and ±15 V from the input voltages +STABIN and -STABIN. The three switching regulator components (IC1, 2, 3) are fed by one of the two linear voltage regulators for +26 V (IC103) and +24 V (IC8). IC103 and IC8 are mutually decoupled by D101 and D15. The three switching regulators operate synchronously with a clock frequency of 76 kHz (TD-C76K) which is generated by the MP UNIT TAPE DECK CONTROL 1.820.785 GRP20/ELM46. This clock is checked for correct frequency by IC7.1/7.2, the parallel oscillator circuit L4/C37, and the DUAL ONE SHOT IC6, and noise is thereby filtered out.

- +5.6 V control: From +STABIN the switching regulator produces the +5.6 V supply voltage. The clock of IC6/pin 5 is taken to IC1 (REGULATING PULSE WIDTH MODULATOR). IC1 contains the reference voltage source, oscillator (not used in this application), error amplifier, and current limiting circuit. The output of IC1 (CA/CB) controls the driver transistor Q1, and via driver transformer T1 also the switching transistor Q4.

From the pulsating voltage produced with Q4 and the free-wheeling diode D22 a new mean is formed with L5 and C28.

This DC voltage is refiltered with L1 and C26. The voltage fluctuations across L1 increase with rising output current and are used as information for the current limitation in IC5.2. The attack point of the limitation is approx. 7 A.

The output voltage of the switching regulator can be adjusted with trimmer potentiometer R21.

- ±15 V control: functions analogously; the two switching regulators produce the +15 V and the -15 V from +STABIN and -STABIN respectively. The +15 V regulator comprises the following components: IC3, Q2, T2, Q5, D23, L6, C35, L3, C30, AND IC5.1. The -15 V regulator comprises the following components: IC2, Q3, T3, Q6, D24, L7, C36, L2, C31, and IC4.1. The -15 V regulator is wired in such a way that its output voltage is of the same magnitude as the one of the +15 V regulator (TRACKING MODE) which means that no -15 V can be present when the +15 V are missing. The reference value of the output voltage is adjusted in common with trimmer potentiometer R6.
- +24 V control: The +24 V are produced from +STABIN with a preset linear voltage regulator (IC8).

■ STABILIZER/LIMITER PCB 1.820.792:

- The +26 V and the -26 V are produced by a preset linear voltage regulators (IC103, IC104) from +STABIN and -STABIN.
- The supply voltage for a serial remote control (approx. +50 V, unregulated) is produced from +CAPMOT. Two linear voltage regulators are used for limiting the current. IC101 is wired as a current source, the max. current is approx. 1 A. IC102 limits the input voltage of IC101 to approx. 35 V in the event of a short circuit.
- The comparator IC100 monitors the secondary voltage (ACPWE-D1, ACPWE-B1) of the power transformer; in the event of a power failure it signals T-PWRON = LOW to both CPUs. The machine is switched to STOP and SAFE after 120 ms. If the power failure is shorter than 120 ms, the logic state of the equipment does not change.
- The crowbar circuits comprising Q101 and Q100 respectively monitor the +5.6 V and the ±15 V switching regulator. If one of these voltages is exceeded by approximately 3 V, the corresponding triac fires and short-circuits the +5.6 V to ground and the +15 V to -15 V.

3.1.1.3

FUSE/SUPPLY FAILURE DETECTOR 1.820.737 GRP59Functions:

- Monitoring of all supply voltages in the machine (+5.6 V, +15 V, -15 V, +24 V, +26 V, -26 V, +STABIN, -STABIN, +CAPMOT).
- Indication of supply voltage availability by means of a LED.
- Message (Signal T-SUPVON = LOW on the TAPE DECK PERIPHERY CONTROLLER 1.820.762 (GRP20/ELM43), if one of the supply voltages is too low or missing.

Circuit description:

This circuit can be supplied by three different voltages: by +CAPMOT, by +STABIN or by +26 V; the circuit remains operational even if one or two of these voltages fail.

+CAPMOT and +STABIN are decoupled by D2 and D4. Since these two voltages are unregulated and can amount up to 63 V, they are first stepped down to 24 V by IC2. These 24 V and the +26 V are decoupled by D1 and D3 and are regulated by IC1 to 5.0 V ± 0.1 V (adjustable with R2). This voltage is used to supply the comparators and gates on the circuit board. In addition, it is regulated by IC12 to 2.00 V ± 0.01 V (adjustable with R47) and serves as a reference to the comparator.

The nine supply voltages are monitored by one comparator each (IC4, 5, 7, 9, 11). The output signals of the comparators are AND-gated (IC6, 3) → T-SUPVON and also buffered for controlling the LEDs (IC8, 10).

Adjustments and test points: refer to 3.3.1

3.1.1.4

SPOOLING MOTOR SUPPLY PCB 1.820.777 GRP 31

Functions:

- Supplies approx. 30 V to the SPOOLING MOTOR DRIVE AMPLIFIERS 1.820.775 GRP30/33.
- Absorbs the energy released by the spooling motors during the deceleration phase.
- Limits the charging current of the filter capacitor (GRP34) when power is switched on.
- Continuously monitors the current of the spooling motors.

Circuit description:

■ Power ON procedure:

- Initially the phase angle control circuits IC2, and consequently the three parallel-connected triacs Q4-6, are blocked. The filter capacitor (GRP34) slowly charges via R52//R53//R54, however, only when the load on the output (\pm PSVTMOT) is minimal.
 - The output voltage (\pm PSVTMOT) is symmetrized by the resistors R20, 21. The differential amplifier IC4/1 derives an asymmetrical voltage from \pm PSVTMOT and divides it by 10. This voltage is called +Y-SUP.
 - IC2 is supplied via ACPWM-B1...B6 and ACPWM-A2,A5. The DC supply voltage is available between pins 11 and 15.
 - Since DLQ1 initially blocks the voltages on pins 9 and 13 are identical (approx. 4 V). The Schmitt trigger with open collector output in IC2 is wired as a flip-flop (pins 5, 6, 7). Its output carries approx. 7 V across R36 because the flip-flop has been forced to this state by C9 on pin6 when the power was switched on. C9 slowly charges via R18 to UREF (voltage on pin 14 of IC2, approx. 2 V) and remains in this condition.
 - The main current flows through D4 and D5 into the base of the phototransistor of DLQ2. The phototransistor becomes conductive, pulls the control input pin 17/IC2 to low, and thereby prevents triggering of IC2.
 - As soon as +Y-SUP exceeds the voltage on pin 6 of IC3/2 (UREF2), UREF1 (node R24,26,29) is suddenly connected to pin 5 of IC4/2. This can be checked by TD-PWENB and requires active LOW; TD-PWENB has priority.
 - The current which now flows through DLQ1 and DL1 produces a secondary current in the emitter of DLQ1 in a sudden burst. Q1 becomes conductive and makes Q2 also conductive. Q2 remains conductive because of R23.
 - The soft start now begins because Q2 is conductive; D4, 5, and the phototransistor in DLQ2 block; the output of IC2 (pin 2) is enabled via pin 17. The soft-start time is determined by R15, 17 and C6.
 - The current across DLQ1 drops slowly. When PSVTMOT or +Y-SUP respectively attains the value (approx. 30 V or 3 V respectively) determined by UREF1 (node R24,26,29), the current through DLQ1 and the control LED DL1 has attained the nominal value. The emitter current of DLQ1 is converted to a proportional voltage in IC2 and actuates the voltage-controlled phase shifter (IC2, pin 13).
 - The control loop is now closed because the declining voltage resulting from the rising load on the output (+PSVTMOT) causes earlier triggering of the triacs and makes more power available to the filter capacitor (GRP34).
- Overvoltage protection:
During spooling functions much power is briefly drawn from the SPOOLING MOTOR SUPPLY. During the deceleration phase the spooling motors function as generators and consequently supply electrical energy. This energy is stored in the filter capacitor (GRP34). The voltage across the latter's terminals rises sharply. However, as soon as \pm PSVTMOT becomes greater than approx. 32 V, the discrete power Z-diode (IC5, D9, Q7-9) becomes conductive. The released energy is dissipated in the form of heat. DL2 (red) turns on, DLQ2 is enabled and via pin 17 blocks the output driver of IC2 with the result that no additional power from the mains is supplied to the filter capacitor during the deceleration phase.
- Overcurrent protection
If the voltage \pm PSVTMOT drops below approx. 17 V because of an overload, IC2 is blocked via IC4/1, IC3/2, IC4/2, and DLQ1; the triacs no longer receive triggering pulses and block. In this case the voltage on IC2/pin 13 is approx. 4 V.

3.1.2
First block

Consisting of:

MP UNIT MASTER	1.820.786	GRP20/ELM49
MASTER SERIAL INTERFACE	1.820.753	GRP20/ELM48
MASTER PERIPHERY CONTROLLER	1.820.728	GRP20/ELM51
PARALLEL REMOTE INTERFACE	1.820.738	GRP27
SERIAL REMOTE INTERFACE	1.820.729	GRP26
SMPTE/EBU INTERFACE	1.820.751	GRP20/ELM50
TAPE DECK DISPLAY DRIVER	1.820.768	GRP50
PUSH BUTTON ASSEMBLY	1.820.240	GRP48
- TAPE DECK INDICATOR PCB	1.820.766	
- TAPE DECK PUSHBUTTON PCB	1.820.769	
OPERATING ASSEMBLY	1.820.230	
- PUSHBUTTON/DISPLAY PCB	1.820.767	GRP51
LCD UNIT	1.820.233	GRP52
- LCD MODULE	73.01.0125	
- LCD CONNECTOR PCB	1.820.797	
EDIT ASSEMBLY	1.820.250	GRP49
- CUE SENSOR PCB	1.820.765	
- SHUTTLE CONTROL PCB	1.820.776	
CHANNEL MODE SELECTOR UNIT	1.810.335	
- CHANNEL CONTROL PCB	1.820.732	
TC CHANNEL MODE SELECTOR UNIT	1.810.337	
- TC CHANNEL CONTROL PCB	1.820.735	
HEAD ASSEMBLY IDENTIFIER PCB	1.820.795	GRP60/ELM02

three assemblies. The same applies to the system clock (TM-ENB), the write/read signal (TM-RW), and three of the five SELECT signals (TM-SL2, TM-SL3, TM-SL6). For the other two assemblies these signals are buffered and output via the MASTER SERIAL INTERFACE. The same applies to the required SELECT signals TM-SL4 and TM-SL5.

The MP UNIT MASTER consequently has direct access to these five assemblies. The assignment of the SELECT signals is as follows:

- TM-SL2 -> MASTER SERIAL INTERFACE
- TM-SL3 -> SMPTE/EBU BUS INTERFACE
- TM-SL4 -> TAPE DECK DISPLAY DRIVER
- TM-SL5 -> PARALLEL REMOTE INTERFACE
- TM-SL6 -> MASTER PERIPHERY CONTROLLER

To ensure that the MP UNIT MASTER services an interface request as quickly as possible, the interrupt processing method is used. For this purpose an interrupt decoder has been integrated in the MASTER SERIAL INTERFACE. All external interrupt requests (TM-SEIR, TM-REMIR, TM-SHIR, TM-KBIR, AND TA-AUIR) are transmitted to this assembly. On request the latter outputs an interrupt (TM-IRQ) to the MP UNIT MASTER. Via the decoder the MP UNIT MASTER can now determine the unit that needs to be served more quickly than would be possible in polling mode.

Functional description according to block diagram

Fig. 3.1.1:

The 8-bit data bus of the MP UNIT MASTER is connected directly to the SMPTE/EBU BUS INTERFACE, the PARALLEL REMOTE INTERFACE, the TAPE DECK DISPLAY DRIVER, the MASTER PERIPHERY CONTROLLER, and the MASTER SERIAL INTERFACE. However, the 4-bit address bus is directly connected only to

The POWER ON RESET of the MP UNIT MASTER (TM-RESMP) is transmitted via the MASTER SERIAL INTERFACE, from where a reset (TM-RESET) is also initiated when the MP UNIT MASTER does not correctly process the program because of a malfunction.

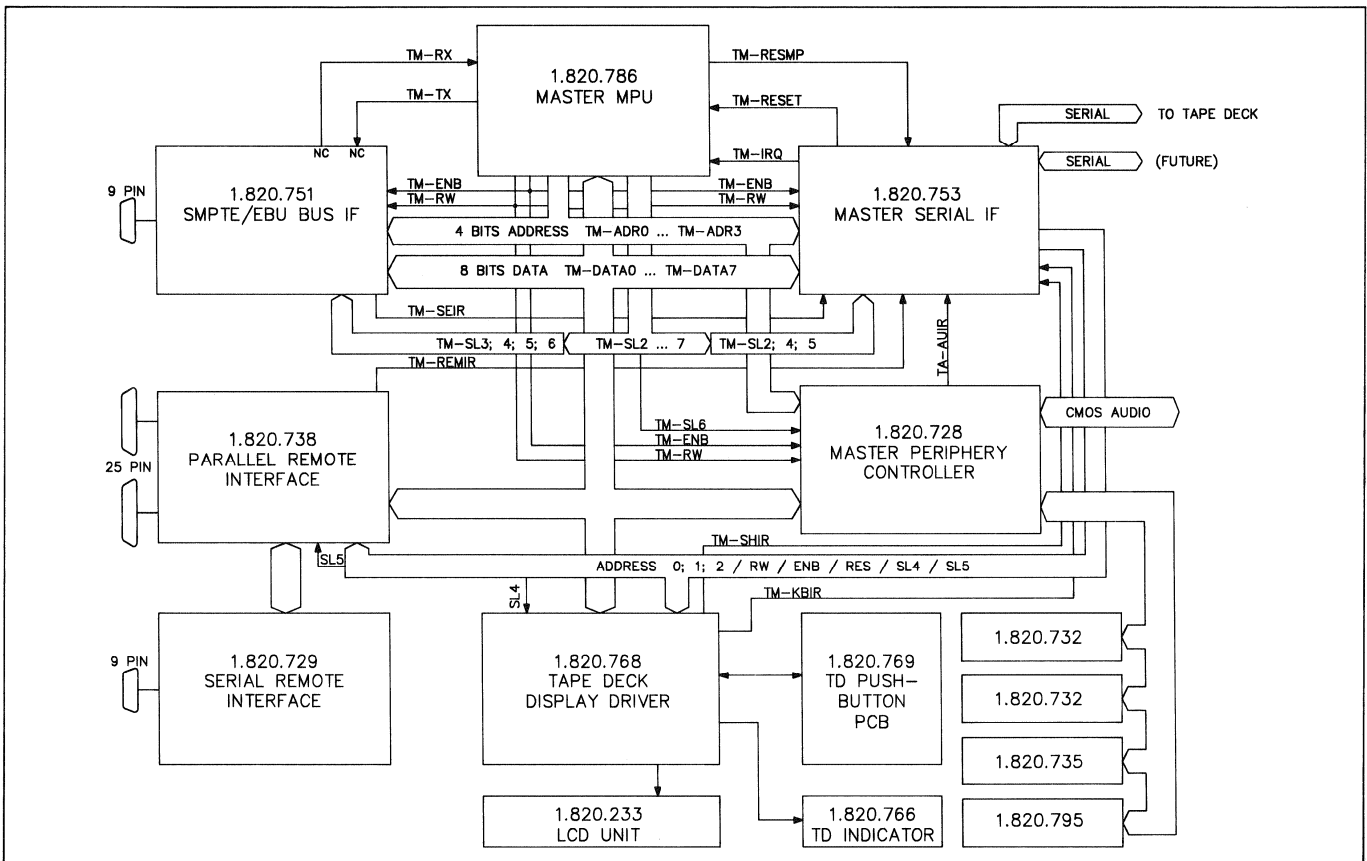


Fig. 3.1.1

3.1.2.1

MP UNIT MASTER 1.820.786 GRP20/ELM49

Functions:

- Central control for the entire A820.
- All parameters (audio data, tape tensions, etc.) are stored here.

Circuit description:

IC17 is an 8-bit NMOS processor type MC6803-1. The control program comprising 48 K-bytes is stored in three ROMs (IC5, IC16, and IC18). IC8 is a CMOS RAM with a capacity of 8 K-bytes. This RAM is buffered by a lithium battery which means that the data are retained even after the A820 is switched off.

Note: The life of the lithium battery is marked on the battery itself. It should be replaced timely in order to prevent loss of data in the RAM when the recorder is switched off.

The addresses A0...A7 of the multiplexed data/address bus are assigned to the address bus with the 8-bit D-latch IC13. The system clock E (ENABLE PULSE) is generated internally by IC17 with quartz accuracy. The binary counter IC7 generates eight reference frequencies from the inverted (IC9) pulse.

The frequency of IC7, pin6, is output as clock frequency (TM-C76K) via the 8-bit bus driver (IC2) but is not used in this application (spare).

The clock signal TM-C307K (buffered with IC2) can be selected with a jumper (JS7, JS8, and JS9) from three frequencies. This signal is not used (spare).

To minimize the power consumption, the system clock E is also applied to the OE (OUTPUT ENABLE) inputs of the ROM and RAM (IC8, IC15, IC16, and IC18).

IC12 blocks the RAMSL signal when the RESET signal is available. This prevents access to the RAM during the reset phase.

IC4 and IC6 combine the R/W signal with the system clock E for correct timing during read/write access.

IC14 monitors the 5 V supply and produces a defined reset pulse during power on as well as after transient power failures having occurred during operation. With key S1, the system can be reset manually.

With the TM-RESET signal the MASTER SERIAL INTERFACE can also trigger a reset on the MP UNIT MASTER.

The jumpers JS12...JS17 define the operating mode of the MP UNIT MASTER IC17.

These jumper settings are fixed.

The address decoder IC11 (two 2-bit binary decoders) produces the CHIP SELECT signals from the addresses A13, A14, and A15 for the ROMs, the RAM, and also supplies the enable signal for IC3. IC3 is a bidirectional data bus buffer, the direction of which is determined by the read/write signal R/W.

An additional address decoder IC5 (3-bit binary decoder) produces the SELECT signals TM-SL2...SL7 depending on the addresses A10...A15. The SELECT signals TM-SL2...5 are used for the interface assemblies which are addressed by means of memory mapping (see Fig. 3.1.2).

The control bus is buffered by an 8-bit bus driver (IC1) and one of the gates of IC6. JS3, JS4, JS5, and JS6 are inserted and connect the signals TM-BUSSW and TM-DRENB to the serial interface.

IC12 buffers the serial inputs/outputs for a terminal.

IC2 buffers the address and clock signals as well as the reset for the peripheral devices.

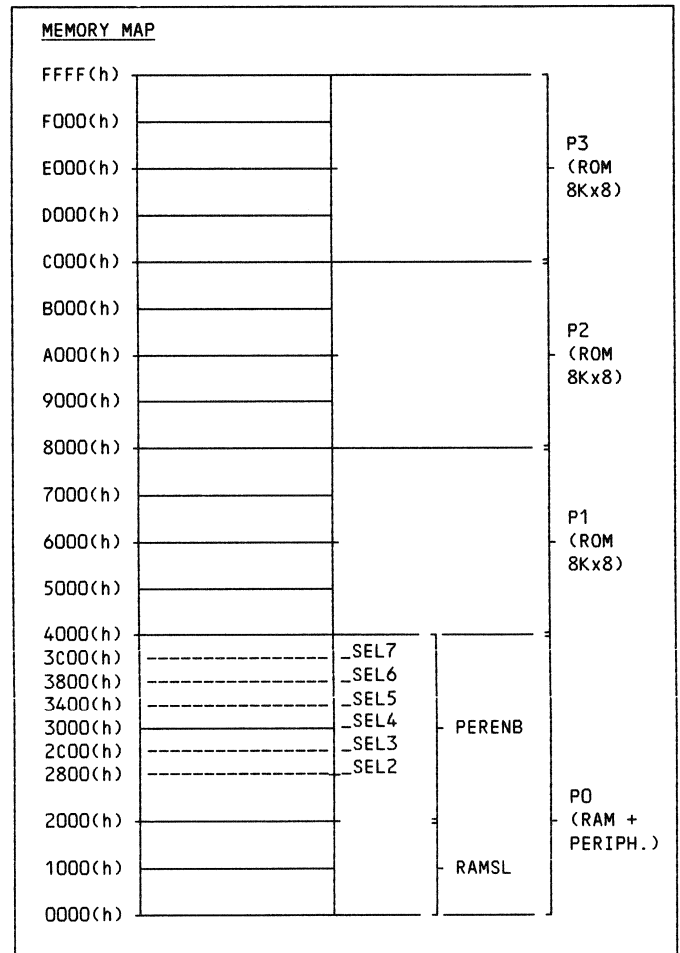


Fig. 3.1.2

3.1.2.2

MASTER SERIAL INTERFACE 1.820.753 GRP20/ELM48

Functions:

- Interface to the TAPE DECK SERIAL INTERFACE and the (future) INTERNAL SYNCHRONIZER.
- Buffering of the address bus and control bus to the PARALLEL REMOTE INTERFACE as well as to the TAPE DECK DISPLAY DRIVER.
- IRQ triggering in the MP UNIT MASTER 1.820.786 as well as decoding of the interface requesting an IRQ.

Circuit description:

IC5, a PIA (PERIPHERAL INTERFACE ADAPTER) and the two SSDAs IC6 and IC9 (SYNCHRONOUS SERIAL DATA ADAPTER) are integrated in the data and address bus of the MP UNIT MASTER and permit direct access by the processor. The required address decoding is performed by IC11 (2-bit binary decoder).

The communication with the INTERNAL SYNCHRONIZER and the TAPE DECK SERIAL INTERFACE takes place through serial data transmission. The required parallel/serial or serial/parallel conversion is performed by the two SSDAs (IC6 and IC9). Data is transmitted by means of a hardware handshake. The required data clock is derived from the system

clock "E" by means of frequency division with a twin 4-bit binary counter (IC12) and after buffering by IC3 (8-bit bus driver) it is input to the two units. The serial signals are buffered by IC4 (8-bit bus driver).

With the two RS422 line drivers (IC1 and IC2) the control bus and the address bus are connected to the PARALLEL REMOTE INTERFACE and to the TAPE DECK DISPLAY DRIVER with symmetrical voltage. They also fulfill an output function, like IC5, IC6, and IC9.

Two retriggerable monoflops (IC13) must be retriggered in regular intervals by the MP UNIT MASTER which is always the case as long as the processor executes its program correctly. In the event that a malfunction occurs or the program "hangs", a LOW pulse that reinitializes the processor (RESET) is output by IC13.

IC8, IC7, IC10 and part of IC5, constitute a priority decoder for IRQ requests. For this purpose the five IRQ sources TM-SEIR, TM-REMIR, TA-AUIR, TM-SHIR, TM-KBIR as well as those of the two SSDAs IC6 and IC9 are logically combined by IC7 and IC10 with an 8-bit word from port PA (IC5) and input to the 8-to-3 priority encoder IC8. The 3-bit word on the output of IC8 (A0, A1, A2) is read via the port PB (IC5), after IC8 has triggered an IRQ. If several IRQs are triggered at the same time, the 3-bit word on the output of IC8 contains the three bits that correspond to the most significant input of IC8.

Like Q1, IC3 (8-bit bus driver) also serves as a buffer.

3.1.2.3
MASTER PERIPHERY CONTROLLER 1.820.728 GRP20/ELM51

Functions:

- Interface to the AUDIO section, including the required TTL/CMOS level conversion.
- Connection to the channel control units CHANNEL MODE SELECTOR CH1/CH2/CODE, as well as to the HEAD ASSEMBLY IDENTIFIER PCB.

Circuit description:

The two PIAs (IC1 and IC2) are connected to the address, data, and control bus of the MP UNIT MASTER and consequently to the latter's direct access. The connection to the three CHANNEL MODE SELECTORS (CH1, CH2, CODE) and to the HEAD ASSEMBLY IDENTIFIER PCB is established with IC1, via the AUDIO COMMAND BUS. The bi-directional data bus is buffered with IC10, port PB (IC1) is the interface. IC11 (8-bit bus driver) buffers the control bus as well as the two 1-bit data signals supplied to the four assemblies CHANNEL MODE SELECTOR CH1/CH2/CODE and HEAD ASSEMBLY IDENTIFIER PCB. Via the audio command bus and the PIA (IC1) the MP UNIT MASTER receives the information from the channel selectors (SAFE/READY), the output selectors (INP, SYNC, REC), as well as from the solder bridges on the HEAD ASSEMBLY IDENTIFIER. These switches are connected to the audio command bus via 8-to-1 multiplexers. The feedbacks for the pilot lamps are transmitted to the lamp drivers (binary 3-to-8 decoder) by the MP UNIT MASTER via the PIA and the audio command bus. (See Fig. 3.1.3).

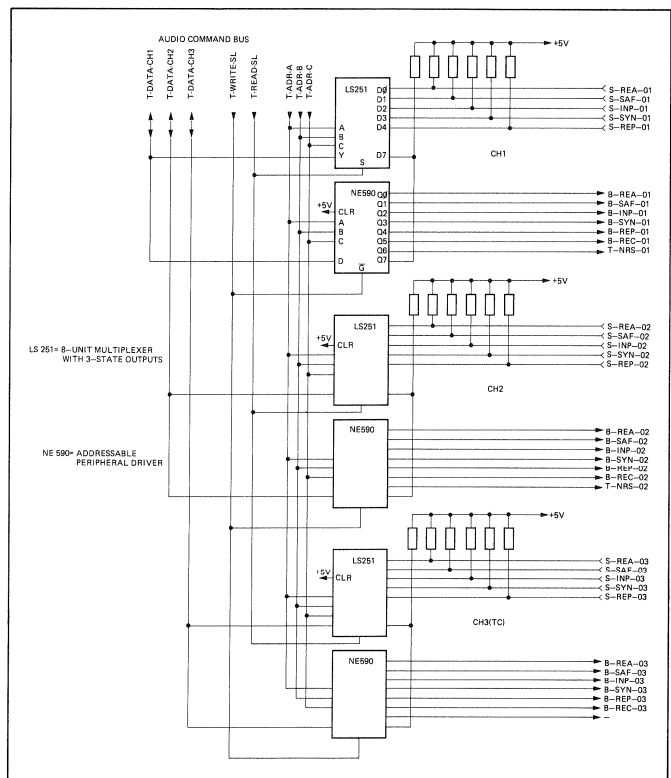


Fig. 3.1.3

The connection to the AUDIO section is established with the second PIA (IC2). Also in this case the PB port is used for the data BUS, however, the latter is only uni-directional in the output direction. The address bus (PA4...PA7) and the control bus are output by the PA port. IC7, IC5, and IC6 act not only as buffers but also perform the required conversion from TTL to CMOS level.

The audio parameters are written into the audio amplifiers by the MP UNIT MASTER via the PIA (IC2) and the BUS converter (Fig. 3.1.4).

- With 8-way D-flip-flop:
 - Input and output level 0, 4, 8 or 10 dBm
 - Changeover INP, SYNC, REP
 - MUTING
 - Equalization 3180 μs
 - Erase current
 - Record drop-in or drop-out
- With 8-bit digital/analog converter (256-step attenuator):
 - Reproduce level
 - Reproduce frequency response (treble, bass)
 - Reproduce equalization
 - Record level
 - Record frequency response (treble)
 - Record equalization
 - Bias current

The signals TA-ACT01, TA-ACT02, and TA-ACTTC from the audio section are logically combined with the PIA outputs CA2 and CB2 by three triple NAND gates (IC4) and returned as the control signals CA-CHS01, CA-CHS02, and CA-CHSTC to the audio section for address decoding. Through port PA3 the desired operating mode MONO or STEREO is output as CA-MONO via the D-flip-flop IC9 and the buffer IC7, and subsequently read back as the feedback TA-ACTMO via port A3.

IC8, a retriggerable monoflop, is continually retriggered by the program via CA2. The output signal CA-SAFE is, therefore, only active (LOW) if continuous retriggering takes place.

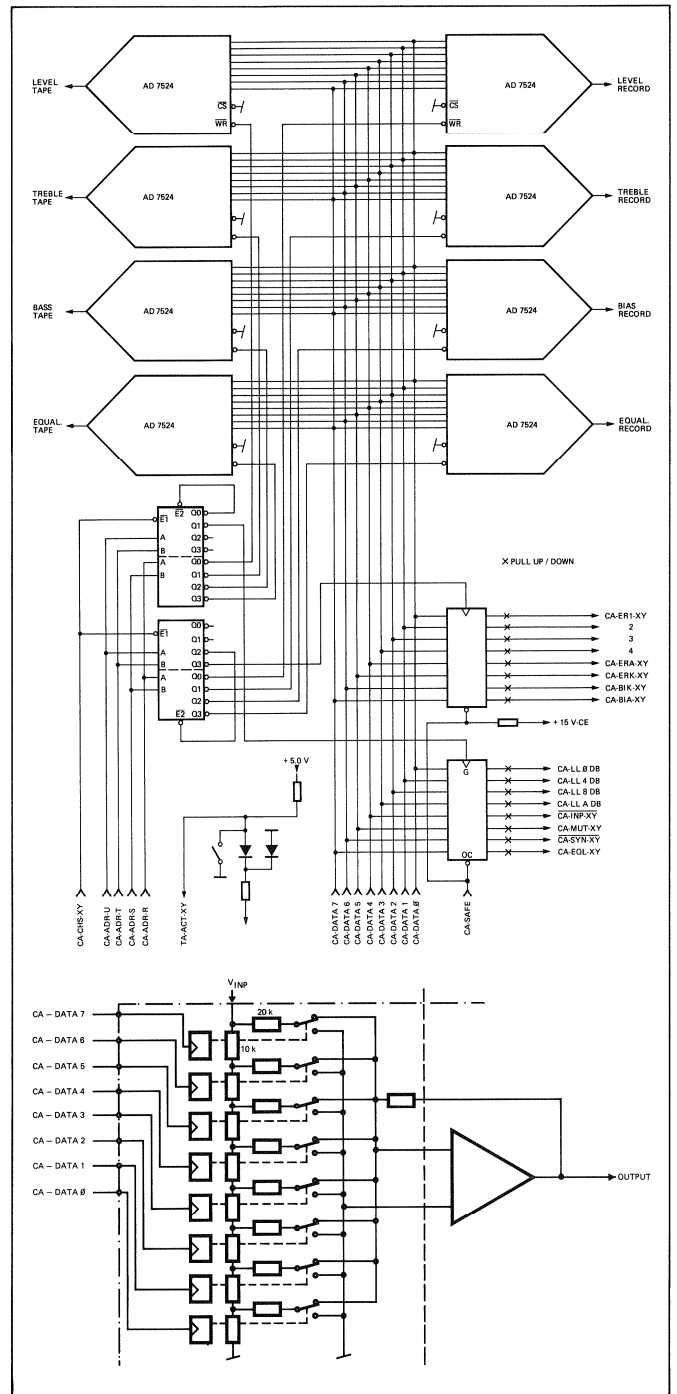


Fig. 3.1.4

3.1.2.4

PARALLEL REMOTE INTERFACE 1.820.738 GRP27

Function:

- Interface between MP UNIT MASTER and
- Parallel remote control.
 - SERIAL REMOTE INTERFACE PCB.
 - Synchronizer port.

Circuit description:

IC3, a KEYBOARD DISPLAY INTERFACE, establishes the connection between the SERIAL REMOTE INTERFACE, the parallel remote control (control and acknowledgement lines), the synchronizer port, and the MP UNIT MASTER. The bidirectional data bus is connected directly to the MP UNIT MASTER. However, the control signals for IC3 (CHIP SELECT, read/write, CLOCK, address 0 and RESET) arrive via the MASTER SERIAL INTERFACE. These signals are brought to TTL level by the two RS422 line receivers IC4 and IC2. These signals are preprocessed for IC3 by IC7, IC8, IC1B (2-bit binary decoder) and IC2.

3.1.2.5

SERIAL REMOTE INTERFACE 1.820.729 GRP26

Functions:

- Serial/parallel and parallel/serial conversion from/to the SERIAL REMOTE port.
- Transfer/acceptance of data from/to the PARALLEL REMOTE INTERFACE.

Circuit description:

The SERIAL REMOTE INTERFACE is connected directly to the PARALLEL REMOTE INTERFACE and establishes the connection to the serial port.

IC9, an RS422 transceiver, establishes the connection between the serial port and the MPU IC8. The latter performs the serial/parallel conversion. The data are transmitted to the PARALLEL REMOTE INTERFACE via IC4 and IC1. Both 8-bit D-registers are used as 1-byte memories in order to permit asynchronous transmission. For this purpose the MPL (IC8) writes the byte into IC4 and connects it via the

3.1.2.6

SMPT/EBU BUS INTERFACE 1.820.751 GRP20/ELM50

Function:

- Interface between the MP UNIT MASTER and the SMPT/EBU bus connector.

Circuit description:

IC17 is an 8-bit NMOS microprocessor with a clock frequency of 4 MHz; the corresponding control program is stored in ROM IC16. The addresses A0...A7 are assigned to the address bus by IC15 (8-bit D-latch). IC5 (binary decoder) is the address decoder. IC18 is an ACIA (ASYNCHRONOUS COMMUNICATION INTERFACE ADAPTER) for serial communication. This adapter is designed not only for RS232 but also RS422. The driver for the RS232 output is IC3; IC11 is used for RS422. The corresponding operating mode is selected with jumper JS2. IC7 is the serial receiver; the selection between RS232 and RS422 is made with the jumpers JS5, JS6, and JS7.

The eight inputs RLO...RL7 of IC3 are connected to the SERIAL REMOTE INTERFACE to ensure that the data from the serial remote port are accepted when the signals ROW0...ROW5 (OE) of IC5 are active. But also the inputs from the PARALLEL REMOTE or SYNCHRONIZER ports are connected to the inputs RLO...RL7 of IC3 after they have been buffered by comparators via IC10 or IC6 respectively, when IC10/IC6 are enabled by the signals ROW6 or ROW7 of IC5. The PARALLEL REMOTE as well as the SYNCHRONIZER ports are scanned by IC3 with the latter's outputs SLO...SL3 via the binary decoder IC5.

The outputs B0...B3 and A0...A3 of IC3 are connected by IC3 to a 6-bit D-register (IC9) and an 8-bit D-register (IC14), and are stored by the latter after the data have been accepted. For this purpose the data transfer signals L6 and L7 are decoded by IC1A (binary decoder). The outputs of IC9/IC14 are transmitted through buffers to the PARALLEL REMOTE and SYNCHRONIZER ports.

address decoder IC2 to the output (IC4). The pulse shaper (EXOR IC3) forms a clock pulse from the T-SLO signal, IC1 now accepts the data from IC4. With the T-OE signal these data are connected to the output of IC1 and accepted by the PARALLEL REMOTE INTERFACE (IC3). Since the T-SLO signal is also read by the MPU (IC8) via the input P10, the MPU knows when the last data have been accepted so that it can output the next byte from the internal RAM. The data transfer is thus controlled by the MP UNIT MASTER.

The data to be transmitted are already latched in the PARALLEL REMOTE INTERFACE and are read by the MPU (IC8) via IC5. IC7 is a ROM whose addresses are controlled by IC6. The parallel/serial conversion is again performed by IC8, the output via IC9.

	RS232	RS422
JS2	B-A	B-C
JS5	B-A	B-C
JS6	B-A	B-C
JS7	B-A	B-C

The clock required for serial output is derived from the system clock TM-ENE of the MP UNIT MASTER via IC19 (4-bit binary counter). Two baud rates can be jumper-selected:

JS3 A-B = 1200 baud
 JS3 C-B = 38400 baud for SMPT/EBU bus or
 9600 baud for RS232/RS422 interface

IC10 is a 14-bit counter that is used for detecting the BREAK character on the SMPTE bus. Via pin11 the counter is reset by each transmitted or received signal. If signals are missing for a certain period (468.75 μ s or 576 E-signal pulses), IC6 outputs L level. If jumper JS8 is set to B-C, the DCD signal is produced for IC18 which means that an interrupt is signalled to IC17 via the IRQ1 line. The interrupt program of the CPU (IC17) reads the status register IC18 and a BREAK character is detected. The corresponding software subsequently sets the bus interface to the active state.

IC4 is a DUAL PORTED FIFO chip with a storage capacity of 128 bytes. It is used as a bidirectional data buffer for exchanging information between the two MPUs.

The data are written by the MPU IC17 via IC9 (8-bit D-flip-flop) into IC4 from where they are read by IC13 (8-bit bus driver). The second port of IC4 is connected to the data bus of the MP UNIT MASTER via IC2 (8-bit D-flip-flop) and IC1 (8-bit bus driver).

3.1.2.7

TAPE DECK DISPLAY DRIVER 1.820.768 GRP50

With:

PUSH BUTTON ASSEMBLY	1.820.240	GRP48
- TAPE DECK PUSHBUTTON PCB	1.820.769	
- TAPE DECK INDICATOR PCB	1.820.766	
OPERATING ASSEMBLY	1.820.230	
- PUSHBUTTON/DISPLAY PCB	1.820.767	GRP51
LC DISPLAY UNIT	1.820.233	GRP52
- LCD MODULE	73.01.0125	
- LCD CONNECTOR PCB	1.820.797	
EDIT ASSEMBLY	1.820.250	GRP49
- CUE SENSOR PCB	1.820.765	
- SHUTTLE CONTROL PCB	1.820.776	

Functions:

- Interface for display and keyboard.
- Analog/digital conversion of the analog signals from the SHUTTLE CONTROL potentiometer.
- Evaluation of the CUE SENSOR pulses.

Circuit description:

The analog signal ANM-SH2 from the wiper of the SHUTTLE CONTROL potentiometer is transformed by IC7/IC9 (ADC) to an 8-bit data word and placed on the data bus of the MP UNIT MASTER.

The CUE SENSOR is located in the EDIT assembly. The dual forked light barrier of the CUE SENSOR supplies the two TTL pulses TM-CUE1/TM-CUE2. The edge steepness of the two pulses is refreshed by the two inverting Schmitt triggers (IC14) and placed on the 4-bit D-register IC8. Two NAND gates (IC6) form an RS flip-flop that determines the counting direction (UP/DOWN) for the two 4-bit up/down counters IC10 and IC12, based on the phase relation of the two pulses TM-CUE1, TM-CUE2, by means of the EXOR gates (IC5). The register outputs of the two up/down counters IC10 and IC12 are placed on the data bus of the MP UNIT MASTER. The required ENABLE signal is supplied by the address decoder IC18.

IC21, an RS422 line receiver, transfers the SELECT signal TM-SL4 and the three addresses A0...A2 to the MP UNIT MASTER 1.820.786 via the address decoder (IC18).

The read/write signal (W), the reset pulse (RES), and the clock (ENB) are accepted by the MP UNIT MASTER via the second RS422 line receiver (IC22), and after logical combination are made available to IC9, IC8, and IC13.

The LC DISPLAY UNIT is linked to the TAPE DECK DISPLAY DRIVER by connector P4.

The keyboard/display interface IC13 establishes the connection between the MP UNIT MASTER and the following units:

a) TAPE DECK INDICATOR PCB 1.820.766

IC23 is wired as a constant-current source (approx. 200 mA) and is used for limiting the inrush current of the incandescent lamps. The incandescent lamps are switched on by the dual NAND drivers IC1, IC2, and IC3. These are controlled by IC13 via a 6-bit D-register (IC4).

b) PUSHBUTTON/DISPLAY PCB 1.820.767

The ten 7-segment displays (with common anode) on the PUSHBUTTON/DISPLAY PCB as well as the LED matrix DL1.0...1.7, DL4.0...4.7, DL5.0...5.7) are controlled in multiplex mode.

All segments, the decimal points, and all cathodes of the LED matrix are controlled by LED segment driver IC11.

The common anodes of the corresponding 7-segment display (DLZ1...DLZ10) are controlled by the signals TM-D0...TM-D9; the anodes of the LED matrix are controlled by the signals TM-L4 and TM-L5: These signals are produced by two binary demultiplexers IC19 and IC20 based on the specifications of IC13, and are buffered by the transistors Q1...Q15.

c) TAPE DECK PUSHBUTTON PCB 1.820.769

The Hall-effect buttons on the PUSHBUTTON/DISPLAY PCB are wired in a matrix. Scanning for a pressed button is performed by IC 14, an addressable 8-bit latch, in four rows (TM-EN1...TM-EN4). The TM-EN0 signal is responsible for the buttons of the TAPE DECK PUSHBUTTON PCB.

The keyboard/display driver IC13 periodically outputs the five signals TM-EN0...EN4 and each time reads via its inputs RLO...RL7 the corresponding column of the keyboard in order to determine whether or not a button has been pressed. If this is the case, the IRQ TM-KBIR is triggered.

3.1.2.8**CHANNEL MODE SELECTOR UNIT 1.820.732**

- CHANNEL CONTROL PCB 1.820.732

TC CHANNEL MODE SELECTOR UNIT 1.820.735

- TC CHANNEL CONTROL PCB 1.820.735

Functions:

- Reading the five buttons (READY/SAFE, INPUT/REPRO/SYNC) and transferring the information to the MPU MASTER CONTROL.
- Driving the six pilot LEDs (REC/READY/SAFE, INPUT/REPRO/SYNC) or the seven pilot LEDs (REC/READY/SAFE, INPUT/REPRO/SYNC, CODE LEVEL), resp.

Circuit description:

The control signals T-SADA, T-SADB, T-SADC, T-READSL, T-WRTSL, and the data signal T-DT-XY are connected to the data bus of the MP UNIT MASTER via the MASTER PERIPHERY CONTROLLER. The five push buttons are scanned by the 8-to-1 data selector (IC2).

The acknowledgements from the MP UNIT MASTER are produced by a binary 3-to-8 decoder (IC1) by driving the corresponding six/seven LEDs.

The 5 V supply is derived from the +15 V supply by means of a series regulator (IC3).

3.1.2.9**HEAD ASSEMBLY IDENTIFIER PCB 1.820.795 GRP60/ELMO2**Function:

- Transmitting the equipment type to the MP UNIT MASTER based on up to 7 solder bridges on the circuit board in the headblock.

Circuit description:

The controls signals T-SADB, T-SADC, T-READSL, and the data signal T-DT-MP are connected to the data bus of the MP UNIT MASTER via the MASTER PERIPHERY CONTROLLER. IC1 (8-to-1 data selector) transmits to the MP UNIT MASTER the information for determining which of the seven solder bridges JS1...JS7 are set.

3.1.3
Second block

Consisting of:

MP UNIT TAPE DECK CONTROL	1.820.785	GRP20/ELM46
TAPE DECK SERIAL INTERFACE	1.820.763	GRP20/ELM47
TAPE DECK PERIPHERY CONTROLLER	1.820.762	GRP20/ELM43
TAPE LIFTER CONTROL	1.820.773	GRP46,47
OPTO SENSOR	1.820.793	GRP44
TAPE DECK COUNTER/TIMER	1.820.761	GRP20/ELM44
MOVE SENSOR	1.820.770	GRP45
MOTOR TACHO	1.820.771	GRP36,37
SPOOLING MOTOR CONTROLLER	1.820.760	GRP20/ELM45
SPOOLING MOTOR DRIVER	1.820.759	GRP20/ELM40
SPOOLING MOTOR DRIVE AMPLIFIER	1.820.775	GRP30,33
TAPE TENSION SENSOR	1.820.772	GRP42,43
CAPSTAN CONTROL UNIT	1.820.764	GRP20/ELM41
CAPSTAN INTERFACE	1.820.727	GRP20/ELM42
TACHO SENSOR ELECTRONICS	1.021.695	GRP38
CAPSTAN MOTOR DRIVE AMPLIFIER	1.820.774	GRP39

When power is switched on, a reset (TD-RESMP) is output to the TAPE DECK SERIAL INTERFACE. The TAPE DECK SERIAL INTERFACE is reset and supplies a reset (TD-RES) to the remaining four assemblies.

The communication between the MPU MASTER CONTROL and the MP UNIT TAPE DECK CONTROL is performed via the TAPE DECK SERIAL INTERFACE by means of a serial link to the MASTER SERIAL INTERFACE.

An interrupt can be triggered by the TAPE DECK SERIAL IF, the TAPE DECK COUNTER/TIMER, and the CAPSTAN INTERFACE. These are ORed and serviced in polling mode by the MPU.

The communication between the MP UNIT TAPE DECK CONTROL and the CAPSTAN MOTOR CONTROL UNIT takes place via the CAPSTAN IF. For this purpose the two data buses TD-DATA and TC-DATA are interconnected via two PIOs. The communication is performed in IRQ mode.

Functional description according to the block diagram Fig. 3.1.5:

The 8-bit data bus, the address bus, and the control bus are connected to five periphery assemblies. An address decoder in the MPU TD CONTROL produces the SELECT signals that are assigned as follows:

- TD-SL2 -> not used
- TD-SL3 -> TAPE DECK PERIPHERY CONTROLLER
- TD-SL4 -> SPOOLING MOTOR CONTROLLER
- TD-SL5 -> TAPE DECK SERIAL INTERFACE
- TD-SL6 -> TAPE DECK COUNTER/TIMER
- TD-SL7 -> CAPSTAN INTERFACE

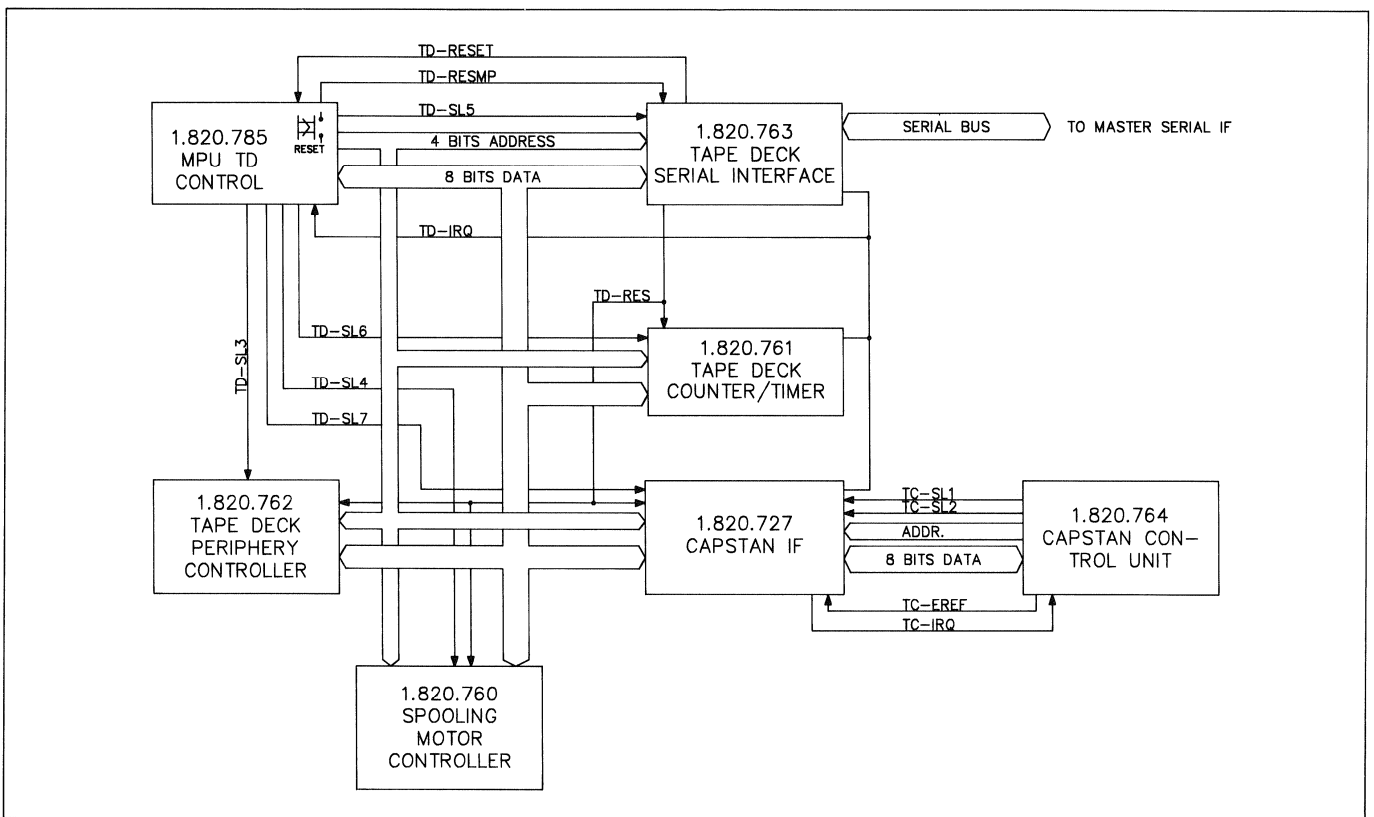


Fig. 3.1.5

3.1.3.1

MP UNIT TAPE DECK CONTROL 1.820.785 GRP20/ELM46

Functions:

- Slave processor of the MP UNIT MASTER for function-oriented control of the two spooling motors and the capstan motor.
- The status field of the tape deck is buffered in the RAM and on request transmitted to the MP UNIT MASTER.

Circuit description:

IC17 is an 8-bit NMOS processor type MC 6803-1. The control program comprising 48 K-bytes is stored in three ROMs (IC15, IC16, and IC18). IC8, a CMOS with a capacity of 2 K-bytes serves as the RAM.

The 8-bit D-latch IC13 assigns the addresses A0...A7 of the multiplexed data/address bus to the address bus. The system clock E (ENABLE PULSE) is generated internally by IC17 with quartz accuracy. The binary counter IC7 generates eight reference frequencies from the inverted (IC9) pulse.

The frequency of pin6 (IC7) is output as clock frequency (TD-C76K) via the 8-bit bus driver (IC2) to the CAPSTAN MOTOR DRIVE AMPLIFIER, the SWITCHING STABILIZER, and the SPOOLING MOTOR CONTROLLER. One of three frequencies for the clock signal TD-C307K can be selected (after having been buffered by IC2) with a jumper (JS7, JS8, and JS9).

To minimize the power consumption, the system clock E is also applied to the OE inputs (OUTPUT ENABLE) of the ROM and RAM (IC8, IC15, IC16, and IC18).

IC12 blocks the RAMSL signal when the RESET signal is available in order to prevent access to the RAM during the reset phase.

With IC4 and IC6 the R/W signal is logically combined with the system clock E for correct timing during read/write access.

3.1.3.2

TAPE DECK SERIAL INTERFACE 1.820.763 GRP20/ELM46

Functions:

- Serial communication between MP UNIT MASTER and MP UNIT TAPE DECK CONTROL.
- Analog/digital conversion of the output signals of the TAPE TENSION SENSORS and the SPOOLING MOTOR DRIVE AMPLIFIERS (motor current).

Circuit description:

The serial TTL bus (TDS-RX, TDS-TX, TDS-DTR, TDS-CTS) from/to the MASTER SERIAL INTERFACE is buffered by the 8-bit bus driver IC1 and connected to IC6, an SSDA (SYNCHRONOUS SERIAL DATA ADAPTER). The serial/parallel conversion (receive) or the parallel/serial conversion (send) is performed synchronously by IC6. For this purpose the MASTER SERIAL INTERFACE supplies the send/receive clock TDS-CLK, which is buffered by IC1. When a byte is received, IC6 triggers an IRQ (TD-IRQ) via IC12 at the processor of the MP UNIT TAPE DECK CONTROL.

An 8-bit bus transceiver (IC2) buffers the data bus in both directions that leads from IC6/IC7 to the MP UNIT TAPE DECK CONTROL.

A special address decoder has been implemented with IC8, a quad 2-to-1 data selector with inverting outputs. The switching direction (A or B to Y) is determined by the level of the address TD-ADR3. The Y outputs are activated by the signal TD-SL5 which is the select signal of this assembly.

In this way IC2 receives an enable signal from IC8 only when the TAPE DECK SERIAL INTERFACE is selected by the

IC14 monitors the 5 V supply and produces a defined reset pulse during power on as well after transient power failures in operation. The system can be reset manually with key S1.

With the TD-RESET signal the TAPE DECK SERIAL INTERFACE can also trigger a reset on the MPU. For this purpose the signal is ORed with button S1 through the two resistors R6 and R7. The TD-RESET signal is active LOW and via R6 pulls pin2 of IC14 to LOW potential.

The jumpers JS12...JS17 define the operating mode of the MPU IC17. These jumper settings are fixed.

The address decoder IC11 (two 2-bit binary decoders) produces the CHIP SELECT signals from the addresses A13, A14, and A15 for the ROMs, the RAM, and also produces the enable signal for IC3. IC3 is a bidirectional data bus buffer, the direction of which is determined by the read/write signal R/W.

An additional address decoder IC5 (3-bit binary decoder) produces the SELECT signals TD-SL2...SL7, depending on the addresses A10...A15. The SELECT signals TD-SL2...5 are used for the interface assemblies which are addressed by means of memory mapping.

The control bus is buffered by an 8-bit bus driver (IC1). IC2 buffers the address signal and clock signals as well as the reset (TD-RESMP) for the TAPE DECK SERIAL IF.

signal TD-SL5. In all other cases IC2 has high impedance on the output side, and the data bus of the MP UNIT TAPE DECK CONTROL is in the correct state.

The analog voltage of the left and right tape tension sensors (AN-TTL and AN-TTR) are converted by the analog/digital converter IC7. The analog signals AN-ICL and AN-ICR (voltage proportional to the actual spooling motor current) also need to be digitized. Because the actual voltage ranges from -5 V...+5 V, these voltages must first be transformed to the range required by IC7 (0...+5 V) by means of IC3. IC4 and IC5 are also designed for such level conversion, however, they are not required in this application (spare).

Two retriggerable monoflops (IC11) are retriggered in regular intervals by the START SIGNAL for IC7. Should this retriggering fail, a reset (TD-RESET) is initiated by the MP UNIT TAPE DECK CONTROL and the peripheral equipment is reset at the same time by TD-RES. The TD-RESMP signal is output by the MP UNIT TAPE DECK CONTROL based on a POWER ON RESET or manual resetting with S1, and it is NORed by a gate of IC10 in order to reset the peripheral equipment.

3.1.3.3 TAPE DECK PERIPHERY CONTROLLER 1.820.762 GRP20/ELM43

Functions:

- Controlling the brake solenoids and the two TAPE LIFTER CONTROLS.
- Reading the sensor signals.

Circuit description:

The two PIOs (PARALLEL INPUT/OUTPUT) IC1 and IC2 are connected to the data bus, address bus, and control bus of the MP UNIT TAPE DECK CONTROL and consequently to the direct access of the MPU.

The following signals are read in through port A (PA0...PA7) of the first PIO (IC1):

TAPE LIFTER POSITION SENSOR, left:	TD-RALP1, TD-RALP2
TAPE LIFTER POSITION SENSOR, right:	TD-RARP1, TD-RARP2
TRANSPARENT LEADER SENSOR:	TD-TRSP
SUPPLY VOLTAGE ON:	TD-SUPVON

The signals T-IRES1 and TD-SHLD are not used.

Port B of the PIO (IC1) is an 8-bit output. Following the buffering with IC12, the enable signal for the spooling motor control (TD-PENBL, TD-PENBR), the enable signal of the spooling motor power supply (TD-PWENB), and the reset (TD-CRES) are output to THE CAPSTAN CONTROL UNIT.

3.1.3.4 TAPE LIFTER CONTROL 1.820.773 GRP46,47 Tape lifter motor assembly (left) 1.820.140 GRP46 Tape lifter motor assembly (right) 1.820.141 GRP47

Functions:

- Transmission of the current position of the pinch roller assembly (2 bits per unit) to the TAPE DECK PERIPHERY CONTROLLER 1.820.762 (GRP20/ELM43).
- Control of the motor as specified by the TAPE DECK PERIPHERY CONTROLLER.

Circuit description:

(This description relates to the left-hand motor, signal names for the right-hand motor are indicated in braces {}).

- The position of the pinch roller assembly is determined by two forked IR light barriers in one housing (DLQ1) between which a specially designed shutter moves. The output signals of the light barriers are converted by IC1 (DUAL DIFFERENTIAL LINE RECEIVER with Schmitt trigger characteristic) to TTL signals: TD-RALP1/TD-RALP2 {TD-RARP1/ TD-RARP2} and transmitted to the TAPE DECK PERIPHERY CONTROLLER (GRP20/ELM43).

3.1.3.5 OPTO SENSOR PCB 1.820.793 GRP44

Function:

- Checks whether or not a tape is threaded and supplies a message to the TAPE DECK PERIPHERY CONTROLLER 1.820.762 (GRP20/ELM43) by means of the TTL signal TD-TRSP.

Circuit description:

The sensor consists of a double light barrier implemented with two phototransistors in one housing (QP1) and two LEDs (DL1, infrared / DL2, red). In the absence of tape the two phototransistors are supplied with light not only by the two light sources but also by ambient light; no current flows from the node between the two transistors to the inverting input of the opamp IC3/pin 2 (manufacturing

The tape transport assembly is controlled with PB0...PB3. The timer chip IC10 is wired as a free running oscillator with a frequency of approx. 240 Hz. IC9 (two-way JK flip-flop) produces two square-wave signals with a frequency of 60 Hz and 90° phase shift. IC and IC6 (quad NAND each) constitute an electronic changeover switch that is controlled by PB0 or PB1 respectively via the D-register (IC5). As a result either the output Q2 or the inverted output Q2 is connected to one NOR gate (IC8) each. PB2 and PB3 are connected to one NOR gate (IC8) each after being delayed by three D-registers. The transfer signal for the octo D-register (IC5) is supplied by the inverted Q2 output of IC9. Buffer IC11 transfers the gated signals to the two TAPE LIFTER CONTROLS.

Port PB of the PIO (IC2) controls the brake solenoids. The level is matched by IC13, IC14, and IC15 (dual OR drivers).

The two comparators (IC3) digitize the +YSUP signal which is read in via PA0 and PA1. PA2...PA7 are not used.

- Motor control: A 3-phase delta-connected synchronous motor is used. Terminals b and c are connected to ground, terminals a and f as well as d and e are connected to two switching output stages (Q8, 9, and Q10, 11 respectively). These switch between + and -26 V with a frequency of 60 Hz. The phase shift of + or -90° between the control signals TR-RALC1 and TD-RALC2 {TD-RARC1, TD-RARC2} determine the sense of the motor rotation. The motor moves the assembly out, when the TD-RALC2 signal leads relative to TD-RALC1 {TD-RALC2, TD RALC1}. When the enable signal TD-RALEN {TD-RAREN} changes to HIGH, the switching output stages are blocked and the motor stops. The two control signals TD-RACL2 and TD-RALC1 {TD-RARC2 and TD-RARC1} as well as the enable signal TD-RALEN {TD-RAREN} are supplied by the TAPE DECK PERIPHERY CONTROLLER 1.820.76 (GRP20/ELM43).

tolerances are compensated with R28). When tape is present, the upper phototransistor is dark, its impedance changes to high, and the current equilibrium is upset, i.e. a differential current flows to the input of the op-amp (IC3/pin 2). The output pin 3 of IC3 changes to positive (gain adjustable with R26). The Schmitt trigger IC2/1 (comparator with open-collector output) buffers the output signal of IC3/1 and pulls it to TTL level. It is transmitted as the TD-TRSP signal to the TAPE DECK PERIPHERY CONTROLLER 1.820.762 (GRP20/ELM43).

Adjustments and test points: refer to 3.3.2.

3.1.3.6

TAPE DECK COUNTER/TIMER 1.820.761 GRP20/ELM44

Functions:

- Evaluation of the output signals from the (spooling) MOTOR TACHO PCBs and the MOVE SENSOR.
- Supporting the MPU TAPE DECK CONTROL in the computations by means of a programmable timer.

Circuit description:

The MP UNIT TAPE DECK CONTROL has direct access to this unit via the data bus, address bus, and control bus. The two signals TD-MOVE1 and TD-MOVE2 originate from the dual forked light barrier in the MOVE SENSOR. These are two square-wave TTL signals with a phase shift of 90° which are buffered with IC1 (six inverting Schmitt triggers) and are taken to one D-register (IC5) each. The transfer to the output 8Q/7Q is effected with the positive edge of the processor clock (TD-ENB). IC5 and IC6 (4 EXORs) constitute a four-edge evaluator. The transfer value of TD-MOVE2 (7Q) is shifted through via 6D, 6Q, 5D to the output 5Q by means of two clock pulses. Via an EXOR it is gated with the actual level of TD-MOVE1 and taken as the data signal to IC12 (D-flip-flop). The data signal identifies the running direction (H = forward, L = reverse). The D-flip-flop IC12 together with two NAND gates (IC11) constitutes an electronic change-over switch for the 8-bit up/down counter (IC19 and IC18).

The input signals TD-MOVE1 and TD-MOVE2 are also EXORed and shifted through via 4D to 1Q by means of four clock pulses or to 2Q by three clock pulses. The logical combi-

nation with a second EXOR produces the counting pulses (TD-MVCLK) which are now transferred via the two NAND gates (IC11) to the up/down counter and after inversion with IC7 to the SYNCHRONIZER port. The TD-MVCLK signal is a pulse with a duration of 0.8 μs and is delayed relative to the direction signal (TD-MVDIR) by an additional 0.8 μs. Only when 4D and 4Q (IC5) have different levels is the NAND gate (IC11) enabled for connecting the processor clock (TD-ENB). This is necessary for the data signal to be accepted by IC12.

The 8-bit counting value of IC19 and IC18 is connected by IC17 (8-bit bus driver) to the 8-bit bus transceiver when an enable is available from the address decoder IC15. This counter value is read by the MP UNIT TAPE DECK CONTROL which computes the actual value from it.

The signals of the two spooling motor tachos are also processed by a four-edge evaluator (IC2, IC3, IC4, IC9, IC10). However, a PROGRAMMABLE COUNTER/TIMER (IC14) is used. The sense of rotation is transferred to IC16 via two D-flip-flops (IC10). The MPU thus reads the sense of rotation of the two spooling motors and the tape counter via IC16. The counter value for the spooling motors is read out of IC14.

IC8, a dual OR driver, retransmits the interrupt of IC14 to the MPU.

3.1.3.7

MOVE SENSOR PCB 1.820.770 GRP45

Function:

- Scanning and transmitting of the speed and rotation direction of the tape move sensor to the TAPE DECK COUNTER/TIMER 1.820.761 (GRP20/ELM44) in the form of two square-wave TTL signals with 90° phase shift.

Circuit description:

The optical coding disc is rigidly connected to the MOVE roller (idler roller at the tape scissors). The coding disc rotates between a dual, forked light barrier DLQ1.

The output signals of the light barrier are converted to TTL signals by IC1 (DUAL DIFFERENTIAL LINE RECEIVER with Schmitt trigger characteristic). The two trimmer potentiometers R2 and R9 are used for adjusting the duty cycle to 50%. The output signals of IC1 are buffered by IC2 (HEX SCHMITT TRIGGERS) and transmitted to the TAPE DECK COUNTER/TIMER 1.820.761 (GRP20/ELM44); (signals TD-MOVE1, TD-MOVE2).

Adjustments: refer to 3.3.3

3.1.3.8

MOTOR TACHO PCB 1.820.771 GRP36 (Left), GRP37 (right)

Function:

- Scanning and transmitting of the speed and rotation direction of the spooling motor to the TAPE DECK COUNTER/TIMER 1.820.761 (GRP20/ELM44) in the form of two square-wave TTL signals with 90° phase shift.

Circuit description:

The optical coding disc is rigidly connected to the motor shaft. It rotates between a forked light barrier DLQ1. The output signals of the light barrier are converted to TTL signals by IC2 (DUAL DIFFERENTIAL LINE RECEIVER with

Schmitt trigger characteristic). The two trimmer potentiometers R11 and R12 are used for adjusting the duty cycle to 50%. The output signals of IC2 are buffered by IC1 (HEX SCHMITT TRIGGERS) and transmitted to the TAPE DECK COUNTER/TIMER 1.820.761 (GRP20/ELM44); (left: TD-TML1/TD-TML-2; right: TD-TMR1/TD-TMR2).

Adjustments: refer to 3.3.11.

3.1.3.9

SPOOLING MOTOR CONTROLLER PCB 1.820.760 GRP20/ELM45

Function:

■ Based on the settings of the MPU TAPE DECK CONTROL (1.820.785; GRP20/ELM46), the SPOOLING MOTOR CONTROLLER produces the analog output signals of the TAPE TENSION SENSORS (1.820.772, GRP42/43) as well as analog control signals for the SPOOLING MOTOR DRIVER (1.820.759, GRP20/ELM40) and that for each operating mode of the tape transport (STOP, PLAY, spooling, EDIT, SHUTTLE, TAPE DUMP, etc.).

Basically the following applies:

- The tape tensions of the supply and take-up reels are controlled when the tape speed is predetermined by the capstan motor (e.g. PLAY, REV PLAY);
- The back tension is controlled only when the pinch roller is released (e.g. <, >, EDIT, SHUTTLE). The torque of the take-up motor is also controlled. The reference value in this case is not the tape tension but the spooling speed of the tape.
- The tape tension control loops are also enabled in STOP mode. The correcting variables (difference between desired and actual tape tension) of the left-hand and right-hand reel are effective on both sides so that the tape can be shuttled in either direction by manually turning one of the reels.

Circuit description:

The PARALLEL INTERFACE IC2 receives the tape tension reference values from the MPU TAPE DECK CONTROL (1.820.785; GRP20/ELM46) via the tape deck TTL bus and transmits these values to one of the 6 multiplying D/A converter chips IC5, 8, 11, 13, 16, 17. Port A of IC2 transmits the 8 data bits; the individual D/A converters are addressed via port B.

The D/A converters fulfill different functions:

- The tape tension reference values are produced by IC5 (left) and IC 13 (right); IC4 pins 5,6,7 and IC12, pins 5,6,7 are responsible for converting the output currents from IC5 and IC13 respectively into voltages; the comparison between the actual value and the reference value is performed by IC4, pins 1,2,3 and IC12, pins 1,2,3.
- IC11 and IC17 multiply the difference between the reference value and the actual tape tension by a weigh-

ing factor that can vary depending on the tape transport mode and which takes into consideration the diameter of the reel and the corresponding pancake size. The output currents of IC11 and IC17 respectively are converted to voltages by IC6, pins 1,2,3 and IC14, pins 1,2,3.

- IC8 and IC7, pins 5,6,7 or IC17 and IC15, pins 5,6,7 produce a control voltage for the SPOOLING MOTOR DRIVER so that the controlling error can be minimized. This requires small corrections which in turn leads to greater system dynamics of the closed loop.
- PLAY mode:
The tape speed is determined by the capstan motor, both spooling motors control the tape tension. Active are: IC5 and IC13 for the reference value as well as IC11 and IC17 for multiplying the correcting variable (difference between desired and actual tape tension) by the weighing factor. IC8 and IC16 supply the expected control component to the control signals AN-IRL and AN-IRR.
- Spooling mode "fast forward": (rewind functions analogously)
The speed of the take-up motor is determined by the spooling motor control loop (set point defined by MPU TAPE DECK CONTROL via IC16); IC17 does not contribute to the control signal AN-IRR; the speed is measured by the SPOOLING MOTOR TACHO and reported to the TAPE DECK CONTROL 1.820.785 (GRP20/ELM46) via the TAPE DECK COUNTER/TIMER 1.820.761 (GRP20/ELM44); the MPU TAPE DECK CONTROL regulates the nominal motor current via IC16). The supply motor controls the back tension as described under "PLAY mode".
- STOP:
The tape stands still. Both spooling motors control the tape tension, but the correcting variables of the two sides are interchanged via the analog switch IC9. As a consequence the right-hand motor takes up tape when the tape tension is decreased on the left-hand side (e.g. by turning the left-hand reel in the supply direction).
- TAPE OUT (tape unthreaded):
Neither spooling motor receives control signals because the analog switch IC3 connects the AN-IRL and AN-IRR signals to ground.

3.1.3.10

SPOOLING MOTOR DRIVER PCB 1.820.759 GRP20/ELM40

Functions:

- Producing a pulse-width-modulated square-wave signal with a frequency of 76 kHz (PWMPL-H1 and PWMPR-H1) for each spooling motor output stage (SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775, GRP30/33). The duty cycle of this signal depends on the input signal AN-IRL or AN-IRR respectively which is supplied by the SPOOLING MOTOR CONTROLLER (1.820.760, GRP20/ELM44), as well as on the signal AN-ICLD or AN-ICRD which is proportional to the motor current.
- Since isolating transformers are located in the signal path on the SPOOLING MOTOR DRIVE AMPLIFIER, the duty cycle must not be greater than approx. 98% and no less than approx. 2%.

Circuit description:

The input signals AN-IRL and AN-ICLD (AN-IRR and IC-ICRD respectively) are subtracted from each other and amplified (IC4, IC3).

The input signal TD-C76K (clock frequency of MP UNIT TAPE DECK CONTROL) is inverted (IC10) and applied to the input of an integrator which reshapes it into a symmetrical triangular signal.

The triangular signal is compared with the output signals

of IC3 by two high-speed comparators (IC7, IC8). The result is two square-wave TTL signals with variable duty cycle.

From the inverted input signal TD-C76K, the NAND gates of IC10 and IC11 produce narrow pulses of identical frequency which are added to the output signal of the two comparators. Should the comparator outputs be continually LOW or HIGH, their output signal is replaced by the aforementioned pulses. The minimum and the maximum pulse width are, therefore, adhered to.

Transistors Q4 and Q5 bring the control pulse level to CMOS level; the inverters in IC6 buffer these pulses. The output signals PWMPL-H1 and PWMPR-H1 are taken to the input of the two SPOOLING MOTOR DRIVE AMPLIFIERS 1.820.775 (GRP30/33).

The reset generator TL7705 (IC1) monitors the ± 15 V voltages and enables the RESET outputs if the voltages drop too strongly or if the TD-PENBR signal (from TAPE DECK PERIPHERY CONTROLLER 1.820.762, GR20/ELM43) is set to HIGH. In this case the outputs RESET (pin 5), RESET (pin 6), and Q5 block both output signals PWMPL-H1 and PWMPR-H1.

3.1.3.11

SPOOLING MOTOR DRIVE AMPLIFIER PCB 1.820.775 GRP30,GRP33Functions:

- Controlling a DC spooling motor in either sense of rotation based on a pulse-width-modulated control signal (left: PWMPL-H1; right: PWMPR-H1) from the SPOOLING MOTOR DRIVER 1.820.759 GRP20/ELM40). Supply voltage: approx. 30 V. Maximum supply current: approx. 6 A.

Circuit description: (refers to the left-hand motor)

Misprint in block diagram page 5/111: T3 → T2; T2 → T1; T1 → L3; C13,14 → C16,17.

The pulse-width-modulated signal PWMPL-H1 (from the SPOOLING MOTOR DRIVER 1.820.759, GRP20/ELM40) is buffered and inverted (IC1). The inverted and noninverted signals are taken to the driver stages Q3, 4, 7, 8 or Q1, 2, 5, 6 respectively) via a edge delay circuit with different delay for the positive and the negative edges (R3, D1, C4, IC1 or R10 respectively, D2, C10, IC1).

Two pulse transformers T2 and T1 provide electrical in-

sulation between the driver stages and the output stages. A VMOS power transistor is controlled by each winding (by T2 → Q12 and Q9, by T1 → Q10 and Q11). These four transistors are arranged in a bridge circuit.

The aforementioned edge delay circuit prevents that a branch of the bridge is enabled before the other is disabled. The spooling motor is connected to the bridge circuit via a low-pass filter (L3, C16,17) and the current-to-voltage converter (R13-42, IC2).

The output signal of the current-to-voltage converter (AN-ICLD, 312.5 mV ± 1 A) is returned to the input of the SPOOLING MOTOR DRIVER 1.820.759 GRP20/ELM40 and serves as a negative feedback.

Test points: Refer to 3.3.14.

3.1.3.12

TAPE TENSION SENSOR PCB 1.820.772

(Tape tension sensor assembly 1.820.150 GRP42 <left>, tape tension sensor assembly 1.820.151 GRP43 <right>)

Function:

- Measuring the tape tension. The angle by which the sensor lever is deflected is converted to an analog voltage (AN-TTL and AN-TTR respectively) and transmitted to the SPOOLING MOTOR CONTROLLER 1.820.760 (GRP20/ELM47) as well as to the TAPE DECK SERIAL INTERFACE 1.820.763 (GRP20/ELM47).

Circuit description:

The angle sensor is a noncontacting Hall effect potentiometer (part No. 1.820.153.00). The negative voltage on the "wiper" is buffered by IC1/1. IC1/2 is an inverting amplifier. Its offset can be adjusted with trimmer potentiometer R7, its gain with trimmer potentiometer R9.

Adjustments and test points: See 3.3.5.

3.1.3.13

CAPSTAN CONTROL UNIT 1.820.764 GRP20/ELM41Function:

- Autonomous control of the capstan motor

Circuit description:

IC16 is an 8-bit NMOS processor type MC 6803-1. The control program comprises 16 K-bytes and is stored in ROM (IC17). IC15 is a CMOS RAM with a capacity of 2 K-bytes.

With the 8-bit D-latch IC14, IC16 assigns the addresses A0...A7 of the multiplexed data/address bus to the address bus. The system clock E (ENABLE PULSE) is generated internally by IC16 with quartz accuracy and, after inversion (IC11), is applied to the retriggerable monoflop (IC8). After a second inversion, the clock is output as TC-ENB to the CAPSTAN INTERFACE and (for future) to the internal synchronizer.

For correct timing the system clock E is also applied to the OE (OUTPUT ENABLE) input of ROM and RAM (IC17 and IC15).

IC18 monitors the 5 V supply and produces a defined reset pulse during power on as well after transient power failures in operation. With key S1 the CAPSTAN CONTROL UNIT can be reset manually.

With the TD-CRES signal the TAPE DECK PERIPHERY CONTROLLER can also trigger a reset on the MPU.

The jumpers JS1...JS3 define the operating mode of the MPU IC16.

These jumper settings are fixed.

The address decoder IC12 (two 2-bit binary decoders) produces the CHIP SELECT signals from the addresses A13, A14, and A15 for the ROM, the RAM, and also produces the enable signal for IC3 and IC2, and the signals TC-SL1...-SL4. IC3 is a bidirectional data bus buffer, the direction of which is determined by the read/write signal RW.

The control bus is buffered by an 8-bit bus driver (IC2).

3.1.3.14

CAPSTAN INTERFACE 1.820.727 GRP20/ELM42

Functions:

- BUS interface between MP UNIT TAPE DECK CONTROL and CAPSTAN MOTOR CONTROL for communication between the two MPUs.
- Digital/analog conversion for controlling the CAPSTAN MOTOR DRIVE AMPLIFIER.
- Switchover and processing of the signals from the internal or the external varispeed control.

Circuit description:

This assembly is connected to the data, address, and control buses of the MPU TAPE DECK CONTROL (signals with TD-...) and of the CAPSTAN CONTROL UNIT (signals with TC-...). With TD-SL7 the MP UNIT TAPE DECK CONTROL selects the PIO chip IC6. An 8-bit bus transceiver IC2 performs the required bus separation and buffering. IC11 is selected by the CAPSTAN CONTROL UNIT via TC-SL1. The communication of the two MPUs is performed in interrupt mode. For this purpose the interrupt is always triggered on the opposite PIO. The buffering is performed by IC12.

Interrupts from IC11, IC14 and those that are triggered by the CAPSTAN CONTROL UNIT (TC-EREF) itself are NORed (IC10) to a single IRQ. Scanning determines which unit has triggered the IRQ.

A NAND gate of IC5 combines the two SELECT signals TC-SL1 and TC-SL2 as a logical OR and supplies the enable signal to the 8-bit bus transceiver IC1.

8 bits are transferred to the DAC (IC17) via IC13 (8-bit D-register). The reference voltage for the DAC is set with IC16. The analog voltage (0...10 V) is supplied to the CAPSTAN MOTOR DRIVE AMPLIFIER (AN-CSPDC) via IC15.

3.1.3.15

TACHO SENSOR ELECTRONICS PCB 1.021.695 GRP 38

Functions:

- Producing the capstan motor tacho signals TD-TCM1 and TCM2 (90° phase-shifted square-wave signals with TTL level) and transmission of these via the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP39) to the CAPSTAN INTERFACE 1.820.727 (GRP20/ELM42).
- Preparation of the output signals of the three Hall-effect sensors on the HALL SENSOR PCB 1.021.697 (built into the capstan motor, not accessible for service purposes) and transmission of these signals to the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP39).

Circuit description:

- The capstan motor tacho consists of two insulating plastic rings. The inner circumference of these has teeth made of conductive plastic. The externally serrated flywheel (90 teeth) is rigidly coupled to the capstan motor shaft. Each plastic ring is subdivided into 6 segments of 14 teeth each. The teeth within each segment are electrically interconnected. These six segments form two electrically interconnected groups in which each of the 3 segments is offset by 120°. These two groups of 3 segments with the serrated flywheel in between can be considered as a variable capacitor whose capacitance fluctuates when the flywheel rotates (refer to Fig. 3.1.6). The frequency of the capacitance variation is 90 times greater than the rotational frequency of the capstan shaft. The two rings are mutually offset by half a tooth which means that not only the speed but also the sense of rotation can be detected with these rings.

The tacho signals TD-TCM1/TD-TCM2 produced by the TACHO SENSOR PCB are two square-wave TTL signals with 90° phase shift. The rotation direction signals TC-TCDIR (for the synchronizer) and TC-CDIRI for the CAPSTAN CONTROL UNIT are produced by the D-flip-flop IC9.

The two tacho signals TD-TCM1 and TD-TCM2 and transformed by two AND/OR/INVERT gates with 2 x 2 inputs (IC4) to a signal with double the frequency (TC-TCMV, TC-TCMVI). The momentary speed is determined by the CAPSTAN CONTROL UNIT with TC-TCMVI. By contrast TCMV is intended for a synchronizer.

The changeover between the internal or external varispeed control is performed with the TC-INEX signal. The two signals T-REFINT (from the internal) and T-REFEXT (from an optional external varispeed control) are buffered in IC14 and are logically combined with the TC-INEX signal to the TC-REF signal by the second AND/OR/INVERT gate in IC14. This output signal is processed in the CAPSTAN CONTROL UNIT and is returned as TC-REFP.

The D-flip-flop IC9 divides the TC-REFP signal by two and supplies the result to the programmable divider IC14. The MPU of the CAPSTAN CONTROL UNIT can now determine the desired (setpoint) speed based on the selected nominal speed and the reference frequency from the varispeed control.

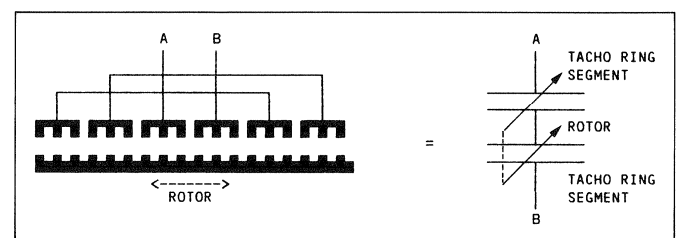


Fig. 3.1.6

- The master oscillator (approx. 5.5 MHz) is implemented with Q1, L1 and C1. Its output signal is connected to the input of IC6 and IC7 (FM-IF amplifiers/demodulators). Together with the tuning coils L2 (of IC6) and L3 (of IC7), the variable capacitances inside the capstan motor form two parallel resonant circuits, which are also tuned to the frequency of the master oscillator. When the capstan motor turns, the tuning of the two parallel resonant circuits changes. The output of the two FM demodulators are AF signals of the same frequency as those of the capacitance change of the capstan motor tacho, with a phase shift of 90°. These two signals are first amplified by IC2/1 and IC5/1 respectively and subsequently converted to square-wave signals by the Schmitt triggers IC2/2 and IC5/2 respectively. The edge steepness is ultimately increased with two comparators (IC1). The open-collector outputs of the comparators (signals TD-TCM1 and TD-TCM2) are looped via the CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774 (GRP39) to the CAPSTAN INTERFACE 1.820.727 (GRP20/ELM42); the two pull-up resistors are also located there.

- The output signals of the three Hall effect sensors on the HALL SENSOR PCB 1.021.697 are taken via the connector P2 to the TACHO SENSOR ELECTRONICS PCB 1.021.695 (GRP38). The comparators IC3 and IC4/1 analyze the signals. The open-collector outputs of the comparators

(signals TC-HALL1, TC-HALL2, and TC-HALL3) are connected to the inputs pin 10, 11 and 12 respectively of the CAPSTAN MOTOR DRIVE AMPLIFIER PCB 1.820.774 (GRP39); the three pull-up resistors are also located there.

Adjustments and test points: refer to 3.3.10

3.1.3.16

CAPSTAN MOTOR DRIVE AMPLIFIER PCB 1.820.774 GRP39

The capstan motor is a 3-phase motor with a multipole, permanent-field rotor, and a stator that is made up of 24 windings. Commutation is effected by Hall-effect sensors in the motor and by logical gating of the output signals from the Hall elements. The motor speed is determined solely by the operating voltage. The nominal operating voltage is 40 VDC.

Functions:

- Low-loss control of the motor speed via the operating voltage by means of switching voltage regulator (76 kHz) based on the analog input signal AN-CSPDC from the CAPSTAN INTERFACE 1.820.727 (GRP020/ELM42).
- Control of each of the three stator windings by means of a sine wave signal approximated by a three-stage (+, high impedance, ground) square-wave, as a function of the output signals TC-HALL1...3 from the TACHO SENSOR ELECTRONICS PCB 1.021.695 (GRP38) and the "rotation direction bit" TC-CAPDC from the CAPSTAN CONTROL UNIT PCB 1.820.764 (GRP20/ELM41).

Circuit description:

- The voltage regulator is implemented by IC4. It receives its clock frequency (TD-C76K, 76 kHz) from the MP UNIT TAPE DECK CONTROL 1.820.785 (GRP20/ELM46). The clock frequency is monitored in the band-pass filter around IC6/2 and shaped into a square-wave signal by Schmitt trigger IC6/1 and subsequently with IC3 (ONE SHOT) to dirac pulses of the same frequency. These pulses control the internal oscillator of IC4. If they fail, IC4 produces its own clock pulses.

The reference value in the form of the signal AN-CSPDC (0 to 10 V) is produced by the CAPSTAN INTERFACE 1.820.727 (GRP20/ELM42), buffered by IC1/1, and compared by IC1/2 with the actual value. Voltage divider R14,38/R44 determines the factor by which the operating voltage of the motor is greater than AN-CSPDC (approx. 4). The correcting variable is taken via IC2/2 to the switching regulator chip IC4.

The output of IC4 is connected to a high-speed switching stage with MOSFETs (Q1...8) which, together with L3 and C10, produces the capstan motor supply voltage (approx. 5...40 V, depending on the speed) from the +CAPMOT voltage.

- The 6 outputs of the LOGIC CONTROL ICs, IC5, control one Darlington transistor each (Q10, Q12, Q14, Q16, Q18, Q20). Any two of these Darlington circuits can be regarded as a 3-position switch. Position 1: supply voltage; position 2: open; position 3: ground. These three switches produce the aforementioned sinusoidal signals C-PHASE-R, -S, and -T which are phase shifted by 120° each.

The chronological order of the three phases is determined by the signal TC-CAPDC; this means that also fast braking as well as reversing of the capstan motor is possible.

The supply voltage of the LOGIC CONTROL IC (IC5) is monitored by IC2/1. If it drops below approx. 4 V, the correct functioning of IC5 is no longer ensured (the switching transistors might become damaged). For this reason the output of IC2/1 blocks the pulse width modulator; its output voltage drops to 0 V.

3.2 REMOVING THE ASSEMBLIES

- Open the flap on the amplifier bay: unfasten the stop screw (Allen screwdriver No. 3). Open flap with a sharp pull.
- Folding down the amplifier bay: unfasten two stop screws (Allen screwdriver No. 3). Lightly lift the amplifier bay and press the button in the middle of the bay to release the catch. We recommend to manually cushion the amplifier bay as it swings out. When closing the bay it is necessary to lightly lift the latter and to push the stop lever back so that the bay can be engaged with some momentum.

FOR MEASURING THE WEIGHTED AND LINEAR SIGNAL-TO-NOISE RATIO AND THE RF RATIOS, THE AMPLIFIER BAY MUST BE CLOSED AND THE THREE STOP SCREWS TIGHTENED.

WARNING

DISCONNECT THE POWER PLUG BEFORE YOU REMOVE ANY HOUSING PANELS.

3.2.1 Headblock assembly

Head cover

- Unfasten two screws [A] (Allen screwdriver No. 3).

Headblock (with headblock cover)

IMPORTANT! TO PREVENT UNWANTED MAGNETIZATION OF THE SOUNDHEADS, THE RECORDER MUST BE SWITCHED OFF WHEN THE HEADBLOCK IS BEING REMOVED.

It is not necessary to remove the head cover for removing the headblock.

- Remove pinch roller (Allen screwdriver No. 3).
- Unfasten three screws (accessible through holes [B] in the soundhead or headblock cover) with the aid of the Allen screwdriver No. 3.
- Carefully lift off the headblock so that the capstan shaft will not become damaged.

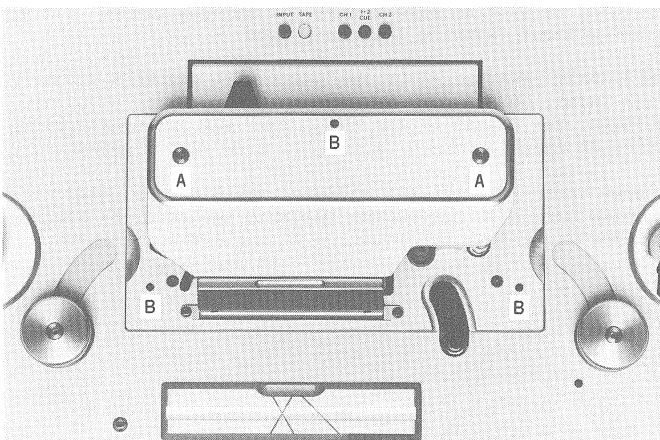


Fig. 3.2.1

3.2.2 Covers

Upper tape transport cover, rear section

- Unfasten seven screws (Allen screwdriver No. 2.5).
- Lift off cover.

Upper tape transport cover, front section

- Remove pinch roller, prestabilizer roller (left), and guide roller (on the right of the headblock) by unfastening one screw each (Allen screwdriver No. 3). **IMPORTANT:** The height of the rollers might be adjusted with shims - neither confuse or lose the shims, if any.
- Remove headblock (refer to 3.2.1).
- Unfasten seven screws (Allen screwdriver No. 2.5).
- Lift off cover.

Please note during reinstallation procedure:

- Install prestabilizer roller (heavy) on the left-hand side, guide roller (light) on the right-hand side of the headblock.
- The covers of the prestabilizer roller and the guide roller must be mounted correctly: protected against orientation confusion.

Tape transport cover, bottom

- Unfasten eleven screws (one below the release lever for console swiveling mechanism; Allen screwdriver No. 2.5).

Rear panel

- Unfasten five screws (Allen screwdriver No. 2.5).

Power supply cover

- Unfasten ten screws (Allen screwdriver No. 2.5).

Wooden side panels

- Unfasten four screws each (Allen screwdriver No. 4).

3.2.3 Push button rail

- Unscrew front section of upper tape transport cover as well as the lower tape transport cover (refer to 3.2.2).
- Disconnect 40-pin flat-cable connector on TAPE DECK DISPLAY DRIVER PCB.
- Unfasten two screws (Allen screwdriver No. 2.5).
- Carefully lift off push button rail.

3.2.4 Tape transport push button assembly

- Remove push button rail (3.2.3).
- Disconnect flat-cable connector on the left-hand edge of the TAPE DECK DISPLAY DRIVER PCB. Open cable clamp in which the flat cables are secured.
- Unfasten two screws [C] (Allen screwdriver No. 3).

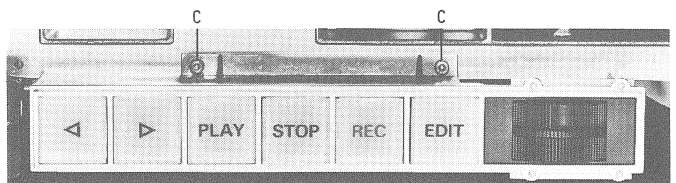


Fig. 3.2.2

3.2.5 Service display

- Remove push button rail (3.2.3).
- Detach flat-cable connector on the top edge of the TAPE DECK DISPLAY DRIVER PCB.
- Unfasten two screws [D] (Allen screwdriver No. 2.5).

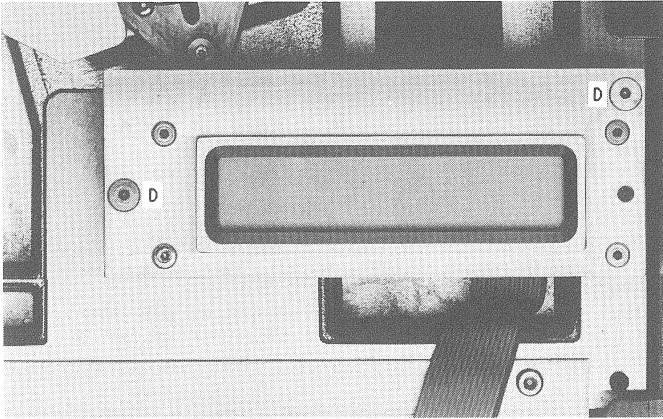


Fig. 3.2.3

3.2.6 Tape guide assembly

- Remove front section of upper tape transport cover (3.2.2).
 - Slide two slot covers [E] over the shaft stubs of the prestabilizer roller and guide roller and slide them as far as possible in the direction of the brake solenoids.
 - Unfasten three screws [F] (Allen screwdriver No. 3).
 - Remove assembly. Do not turn upside down, otherwise the three screws will drop out.
- Please note during reinstallation procedure:
- Manually turn the two cam discs (on the shafts of the synchronous motors) to their clockwise limit positions.
 - Lightly twist clockwise the swivel arm of the prestabilizer roller and the one of the ceramic tape guide as well as counterclockwise the swivel arm of the guide roller, and carefully insert the tape guide assembly.
 - Lift the two slot covers over the shaft stubs and ensure that the shaft end [G] of each swivel arm fits into the small hole [H] of the shields.

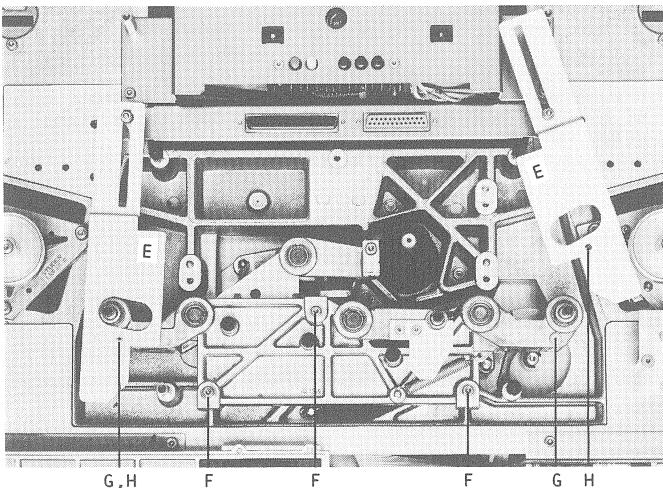


Fig. 3.2.4

3.2.7 Tape tension sensors

- Remove headblock (3.2.1), front section of upper tape transport cover, and lower tape transport cover (3.2.3).
- Detach flat-cable connector on the underside of the tape tension sensor.
- Unfasten three special screws for each tape tension sensor (ball head Allen screwdriver No. 3), accessible through the cutout at the sleeve edge of the guide roller.

3.2.8 Tape end sensor (light barrier) with guide roller

- Remove headblock (3.2.1) and front section of upper tape transport cover (3.2.3).
- Detach flat-cable connector on the sensor PCB.
- Unfasten three special screws (Allen screwdriver No. 3).

3.2.9 Tape move sensor

- Remove headblock (3.2.1) and front section of upper tape transport cover as well as lower tape transport cover (3.2.2).
- Detach flat cable connector on the underside.
- Unfasten three special screws (Allen screwdriver No. 3).

3.2.10 Spindle (incl. brake roller)

- Remove rear section of upper tape transport cover.
- Disengage adapter by pressing down the ring at the edge of the spindle and remove it.
- Unfasten screw in the center of the spindle (Allen screwdriver No. 4).
- By pressing against the armature of the brake solenoid (see arrow), release the brake band from the brake lining to such an extent that the spindle can be lifted off without twisting the brake band.

IMPORTANT! THE HEIGHT OF THE BRAKE DRUM HAS BEEN ADJUSTED WITH SHIMS. DO NOT LOSE OR CONFUSE THE SHIMS. NEITHER THE INSIDE OF THE BRAKE BAND NOR THE BRAKE LINING (REDDISH FABRIC) SHOULD BE TOUCHED WITH YOUR FINGERS.

- When reinstalling the spindle, also ensure that the brake band does not become twisted: release the band by pressing against the armature of the brake solenoid.

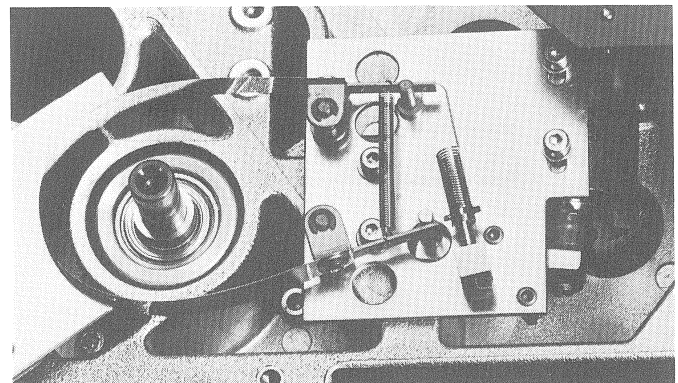


Fig. 3.2.5

3.2.11 Tape brakes

- Remove spindle (3.2.10).
 - Detach the supply cable to the brake solenoid.
 - Unfasten two screws (Allen screwdriver No. 3).
 - During removal, guide the supply cable of the brake solenoid through the tape transport chassis.
- Please note during reinstallation procedure:
- Insert supply cable of the brake solenoid.
 - Adjust brake chassis (refer to 3.3.4).

3.2.12 Spooling motors

- Remove spindle (3.2.10).
- Remove stop plate for brake band (2 screws [J], (Allen screwdriver No. 3).
- Remove lower tape transport cover (3.2.2).
- Detach motor supply cables on SPOOLING MOTOR DRIVE AMPLIFIER PCB and flat cable on MOTOR TACHO PCB (behind motor).
- Unfasten three screws [K] (Allen screwdriver No. 4). To prevent the motor from falling out, it must be supported from the bottom while the screws are being unfastened.
- Ensure that the polarity is correct when you reinstall the motor. Red $\hat{=}$ "+" (or "B" on the left-hand spooling motor, "A" on the right-hand spooling motor).

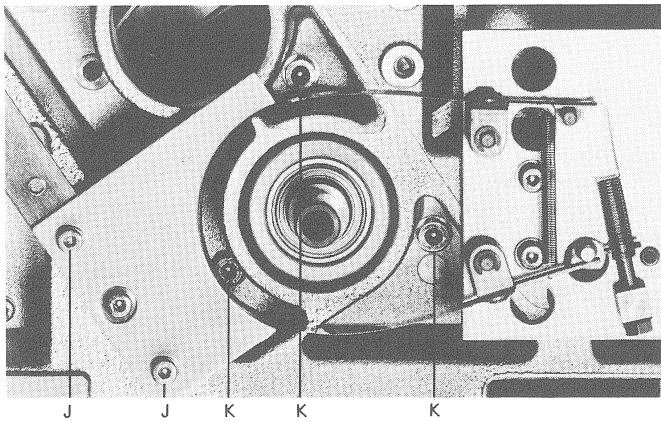


Fig. 3.2.6

3.2.13 Capstan motor

The capstan motor 1.021.601.00 operates under the control of the CAPSTAN CONTROL UNIT 1.820.764.00/.20. The assembly 1.820.764.21/.22 is used in conjunction with the motor 1.021.601.81.

- Remove front section of upper tape transport cover and lower tape transport cover (3.2.2).
- Detach multipin connector (MOLEX) on CAPSTAN MOTOR DRIVE AMPLIFIER.
- Unfasten three special screws (Allen screwdriver No. 3). To prevent the motor from dropping out, it must be supported from the bottom while the screws are being unfastened.

3.2.14 Power supply

- Remove power supply cover, rear section of upper tape transport cover, and lower tape transport cover (3.2.2).
 - Unscrew power switch (Allen screwdriver No. 3).
 - Detach one cable harness each (in a gray plastic tube) from the STABILIZER/LIMITER PCB, from the SPOOLING MOTOR SUPPLY PCB and from the power switch. Unfasten cable clamp of the cable harness to the power switch (Allen screwdriver No. 3).
 - Open and empty cable duct.
 - Detach connectors of the two stranded ground wires (blk).
 - Unfasten eleven screws (Allen screwdriver No. 2.5) at the lower edge of the connector panels. Remove remote-control connector panel by unfastening three additional screws.
 - Unplug stranded ground wire blk (connector on PARALLEL REMOTE INTERFACE PCB).
 - Detach flat-cable connection on PARALLEL REMOTE INTERFACE, pull circuit board out of the guide rails, detach second flat-cable connection.
 - Unfasten three screws each on the left-hand and right-hand side panel of the amplifier bay. Hold the power supply unit while you unfasten the screws.
 - Carefully lift out the power supply unit.
- Reinstallation procedure
- All still existing connector panels and filler panels are to be removed completely before commencing with the reinstallation (6 additional screws, Allen screwdriver No. 2.5).
 - The reinstallation procedure can subsequently be started by performing the foregoing steps in the reverse order.
 - Reconnecting the power switch: 2 x blu in the middle, 2 x brn on the narrow side of the power switch.

3.2.15 Monitor unit (built into tape deck)

Monitor speaker

- Remove rear section of upper tape transport cover and lower tape transport cover (3.2.2).
- Disconnect speaker supply cable on MONITOR AMPLIFIER (CIS connector).
- Unfasten three screws (Allen screwdriver No. 3).

Monitor amplifier unit

- Unfasten two hexagon stud bolts (width across flats 7 mm) and two screws (Allen screwdriver No. 3) as well as a flat-cable and three CIS connectors on the MONITOR AMPLIFIER.

3.2.16 SPOOLING MOTOR DRIVE AMPLIFIER (2 x), SPOOLING MOTOR SUPPLY AND STABILIZER/LIMITER PCBs

- Remove rear cover (3.2.2), swing down amplifier bay, and set recorder into the service position.
- Connections:
 - SPOOLING MOTOR DRIVE AMPLIFIER: Two motor supply conductors (AMP terminals; red = "+", blk = "-"), one flat-cable connector and one MOLEX connector.
 - SPOOLING MOTOR SUPPLY: Detach one flat-cable connector and three MOLEX connectors.
 - STABILIZER/LIMITER: Detach two MOLEX connectors.
- Each of the four assemblies is secured on the back of the recorder by means of a screw (Allen screwdriver No. 3). The assembly can be removed toward the rear after this screw has been unfastened.
- Upon reinstallation, the two pins (on each assembly) must fit into the corresponding holes of the recorder chassis.

**3.3
CHECKS, ADJUSTMENTS**

Required aids:

- Digital Multimeter
- Oscilloscope
- Frequency counter
- Spring dynamometer 0 - 5 N (0 to 500 g)
Part No. 10.249.001.01
- Spring dynamometer 0 - 20 N (0 to 2 kg)
Part No. 10.249.001.03
- Gauge for adjusting the tape tension sensors
Part No. 10.010.001.30
- Device for adjusting the tape tension springs incl. 2 weights
Part No. 10.010.001.31
- Tentelometer 1/4" - 1" Part No. 10.300.001.01
- Audio head alignment gauge A80/A820 1/4" Part No. 10.010.001.02
- Reference block A80/A800/A820 Part No. 10.010.001.01
- Tape guidance gauge Part No. 10.xxx.xxx.xx
- Extender board Part No. 1.820.799.00
- Grease pen Part No. 10.401.001.01

**3.3.1
Power supply**

Checking the supply voltages:

- Swing down amplifier bay.
- On FUSE/SUPPLY FAILURE DETECTOR PCB 1.820.737 measure the voltage to ground (TP3) on the following test points (from left to right):
 - TP11: +5.6 V ± 0.1 V (adjustable with R21 on SWITCHING STABILIZER PCB 1.820.790)
 - TP10: +24 V ± 1 V
 - TP9: +15 V ± 0.1 V (adjustable with R6 on SWITCHING STABILIZER PCB 1.820.790)
 - TP8: -15 V ± 0.1 V
 - TP7: +26 V ± 1 V
 - TP6: -26 V ± 1 V
 - TP5: STABIN+ } unregulated voltages, variable
 - TP2: STABIN- } between 30 V and 63 V, depending
 - TP1: CAPMOT } on load and equipment of recorder

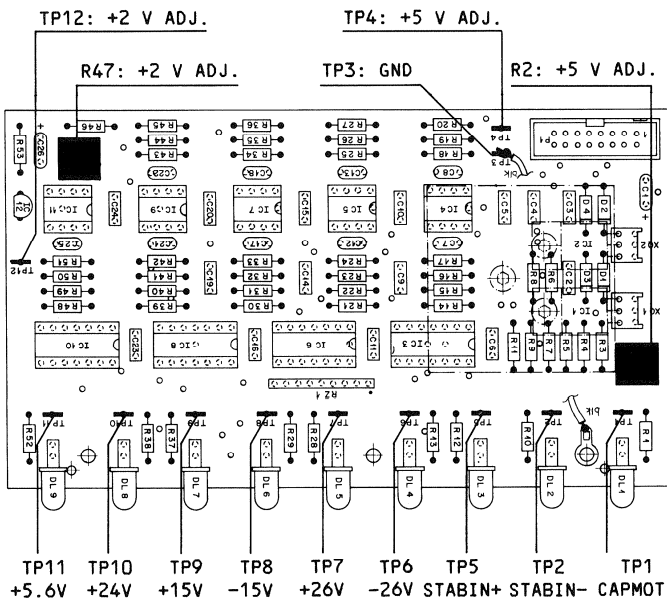


Fig. 3.3.1

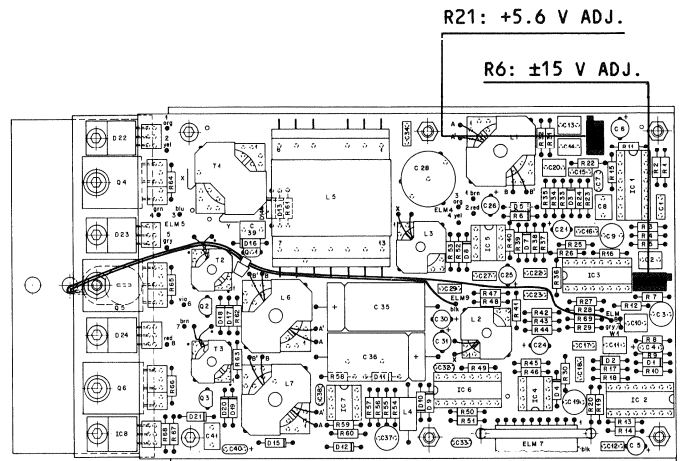


Fig. 3.3.2

Adjusting the reference voltages:

- Adjust the reference voltages on the FUSE/SUPPLY FAILURE DETECTOR PCB 1.820.737 (as a rule, only required after repairs have been made on the circuit board):
 - TP4: +5.0 V ± 100 mV (adjustable with R2)
 - TP12: +2.0 V ± 20 mV (adjustable with R47).

Checking the spooling motor supply voltage:

- In normal operation of the recorder, approx. + 30 V are available between the test points TP2 ("+") and TP1 ("-") on the SPOOLING MOTOR SUPPLY PCB 1.820.777.
- The yellow LED (DL1) is dark after power on. After approx. 4 seconds it is illuminated brightly, afterwards its brightness slowly decreases to a dim glow (in normal operation).
- The red LED (DL2) is only on if the spooling motors are acting as generators and deliver energy to be dissipated by the "power Z diode" on the spooling motor control.

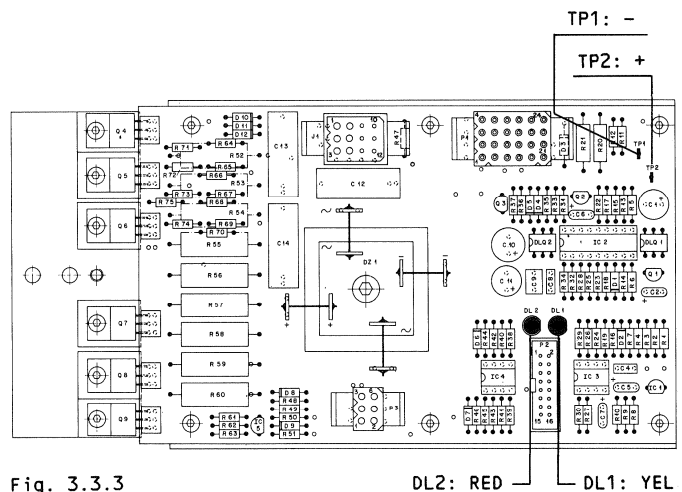


Fig. 3.3.3

3.3.2 OPTO SENSOR (light barrier) 1.820.793 GRP44

Checking and adjusting the switching threshold:

- Remove front half of upper tape transport cover. Then reinstall the headblock and the guide rollers.
- Connect voltmeter (range 15 VDC) to TP2 and ground (TP1).
- Switch recorder on, no tape mounted.
- If the measurement does not indicate $0\text{ V} \pm 0.1\text{ V}$, adjust with R27.
- Mount tape and spool forward past the leader so that magnetic tape is located in the light barrier.
- Switch recorder to STOP.
- If the measurement does not indicate 12 V at least, adjust with R26.

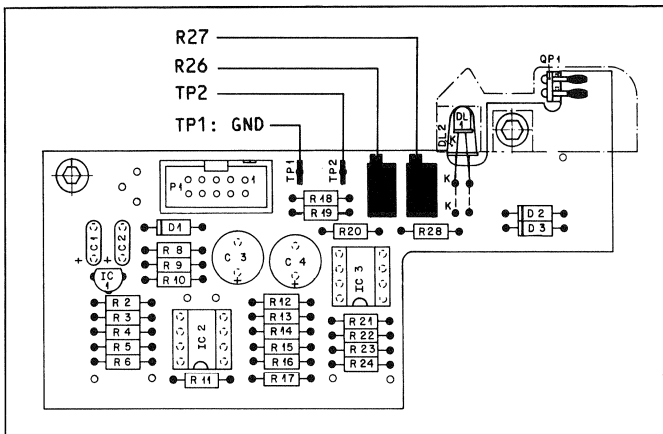


Fig. 3.3.4

3.3.3 MOVE SENSOR (tape move sensor) 1.820.770 GRP45

Checking and adjusting the duty cycle

- Switch recorder off.
- Remove TAPE DECK COUNTER/TIMER 1.820.761 and reinsert it via the extender board (1.820.799.00).
- Switch recorder on.
- Connect oscilloscope to terminal 7 or 8 (ground to terminal 21) of the extender board.
- Mount tape and select highest tape speed.
- Check symmetry of curve shape. The duty cycle of the two signals must be $50\% \pm 10\%$. If there are any deviations, adjust to a symmetrical square-wave signal with R3 (R3 is located next to the connector) on the MOVE SENSOR PCB (signal on terminal 7 of the extender board) or R9 respectively (signal on terminal 8).

Phase shift of the two MOVE signals

- The phase shift of the two square-wave signals ($90^\circ \pm 10^\circ$) cannot be adjusted.

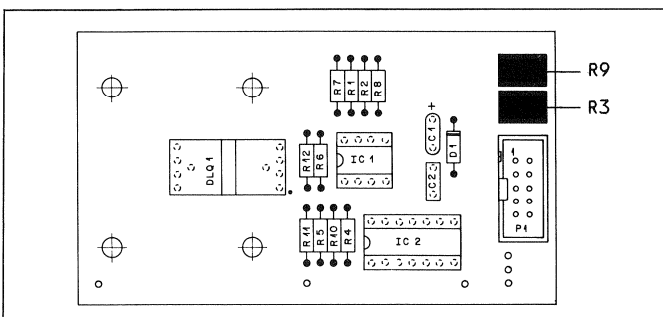


Fig. 3.3.5

3.3.4 Mechanical brakes GRP40 (left), GRP41 (right)

Checking the brake assembly: (recorder switched off)

The correct functioning of the brakes can be checked by briefly turning the spindle forward and backward. Whenever the direction changes, one of the two brake levers audibly contacts the lifting pin or the stop pin.

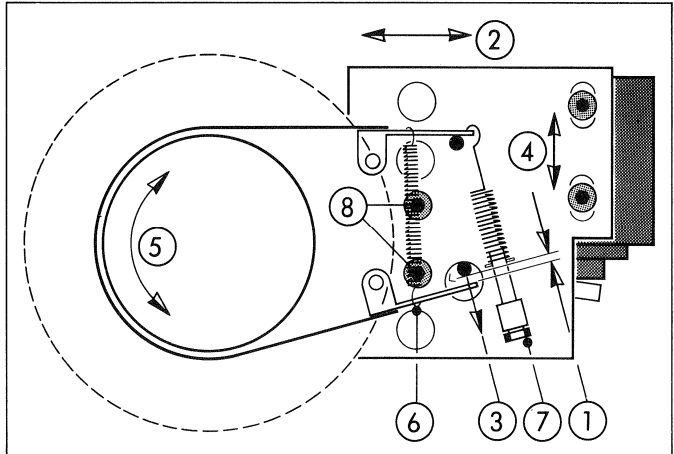


Fig. 3.3.6

Adjusting the brake assembly:

- Switch recorder off.
- Remove rear section of upper tape transport cover.
- The play [1] between the brake lever and its lifting pin must be 1 to 1.5 mm. Adjustment procedure:
 - Remove reel adapters.
 - Remove spindle without brake roller, (3 screws, Allen screwdriver No. 3).
 - Unfasten two mounting screws [8] of the brake assembly (Allen screwdriver No. 3), shift brake assembly sideways in parallel until the required play is attained. Retighten the mounting screws.
- The travel [3] of the lifting pin should be 4 to 5 mm. Check by pressing from the front against the armature of the brake solenoid. The travel can be adjusted after the two mounting screws of the brake assembly [4] (Allen screwdriver No. 3) have been lightly loosened, the travel can then be adjusted by shifting the brake solenoid. Retighten the fixing screws.
- Reinstall spindle.

Adjusting the retarding torque:

- Retarding torque in take-up direction (weak braking):
 - Mount empty reel with 2 to 3 m of tape in direction opposite the normal operating position.
 - Hook spring dynamometer 0 - 5 N (0 to 500 p) into a loop at the start of the tape; unwind tape slowly and evenly. The retarding torque can be adjusted to the value specified in the following table by rehooking the spring [6].
- Retarding torque in supply direction (strong braking):
 - Mount empty reel with 2 to 3 m of tape in normal operating position.
 - Hook spring dynamometer 0 - 5 N (0 to 500 p) into a loop at the start of the tape; unwind tape slowly and evenly. The retarding torque can be adjusted by means of screw (7) to the value specified in the table below.

The retarding torque should be uniform throughout the entire length of the tape, otherwise the brake roller and the brake band need to be replaced. Before installing the brake band be sure to clean its inner surface thoroughly with spirit.

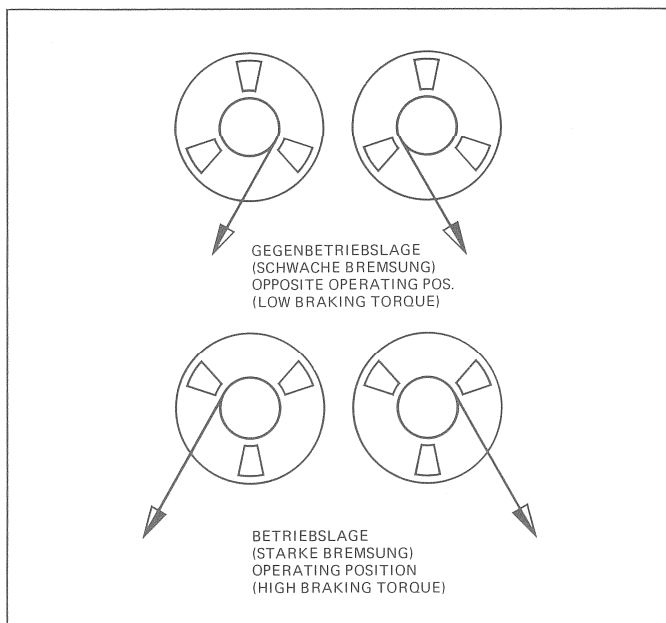


Fig. 3.3.7

	Left-hand reel		Right-hand reel	
	Take-up direction (opposite op. pos.)	Supply direction (operating position)	Take-up direction (opposite op. pos.)	Supply direction (operating position)
1/4"	< 0,9 N (< 90 p)	2 N ± 0,15 N (200 p ± 15 p)	< 0,9 N (< 90 p)	2 N ± 0,15 N (200 p ± 15 p)
1/2"	< 0,9 N (< 90 p)	2 N ± 0,15 N (200 p ± 15 p)	< 0,9 N (< 90 p)	2 N ± 0,15 N (200 p ± 15 p)

3.3.5 TAPE TENSION SENSOR 1.820.772 GRP42 (left), GRP43 (right)

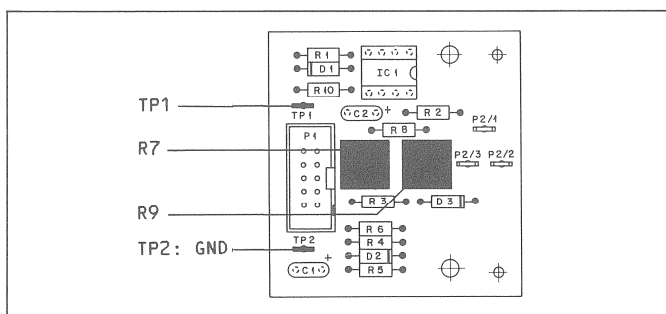


Fig. 3.3.8

Checking the tape tension sensor:

- Remove lower tape transport cover.
- Remove guide roller and prestabilizer roller (left) or tacho roller (right), respectively.
- Connect digital voltmeter to the two test points TP1 ("+") and TP2 (ground).
- Switch recorder on.
- In the neutral position of the tape tension sensor (without tape) the measured voltage should be 0.000 V (+ 15 mV/- 0 mV) (Offset).
- Insert gauge for adjusting the tape tension sensors according to Fig. 3.3.9 (part No. 10.010.001.30) into the tape tension sensor; the voltage should be 2.700 V ± 10 mV (Gain).

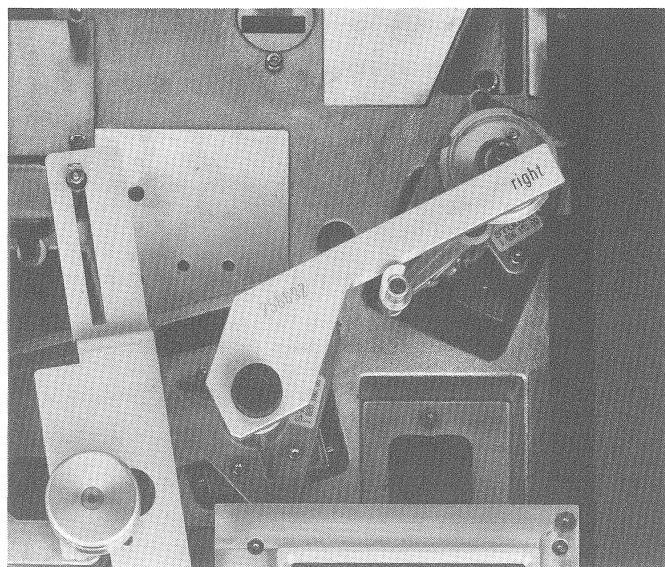


Fig. 3.3.9

Checking the tape tension spring:

Before this check the offset and gain adjustment must be checked (see above) and adjusted, if necessary (see below).

- Install guide and prestabilizer/tacho rollers.
 - Insert adjusting device (part No. 10.010.001.31) on the tape transport according to Fig. 3.3.10 (it is not necessary to remove the tape transport covers for this check).
 - Connect digital voltmeter to the two test points (as above).
 - Hook on small weight (20 g). The reading of the digital voltmeter should be 50 mV ± 20 mV.
 - Hook on the large weight (220 g). The reading of the digital voltmeter should be 3.200 V ± 50 mV.
- If these values are not attained, the tape tension spring has to be adjusted (see below).

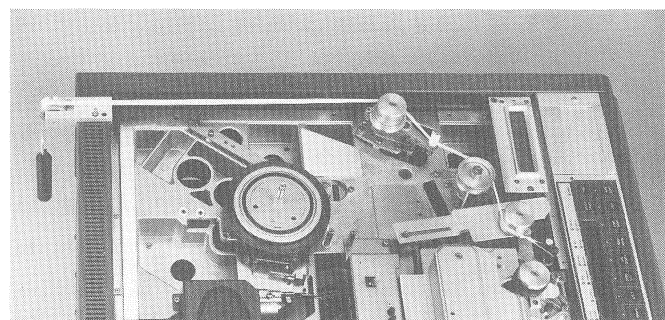


Fig. 3.3.10

Adjusting the tape tension sensor:

- Remove guide roller and prestabilizer roller (left) or tacho roller (right), respectively.
- Neutral position: adjust offset with R7 on TAPE TENSION SENSOR PCB (closer to the connector) to a voltage of 0.000 V (+15 mV/-0 mV).
- Insert gauge for adjusting the tape tension sensors according to Fig. 3.3.9, adjust gain with R9 to a voltage of 2.700 V ± 10 mV.
- Secure both potentiometer settings with locking paint.

Adjusting the tape tension spring [A]:

- The offset and the gain must be checked and aligned, if necessary, before this adjustment is made (see above).
- Remove front section of upper tape transport cover.
 - Install guide and prestabilizer/tacho rollers.
 - Install adjusting device on the tape transport (refer to Fig. 3.3.10).

- Connect digital voltmeter to the two test points (as above).
- * Loosen locknut [B] of threaded pin [C].
- * Hook on small weight (20 g).
- * Adjust the voltage to 50 mV \pm 20 mV by turning the threaded pin [C] (voltage increases when turning out the threaded pin).
- * Tighten the locknut [B], the voltage must remain between the indicated limits.
- * Hook on the large weight (220 g).
- * Adjust the voltage to 3.200 V \pm 50 mV by turning the adjusting pin [D] (voltage rises when the spring is elongated).

The adjustments identified with "*" influence each other and must be repeated several times in the same sequence, if necessary.

- Secure threaded pin [C] (locknut [B]) and adjusting pin [D] with locking paint.
- Reinstall tape transport covers.

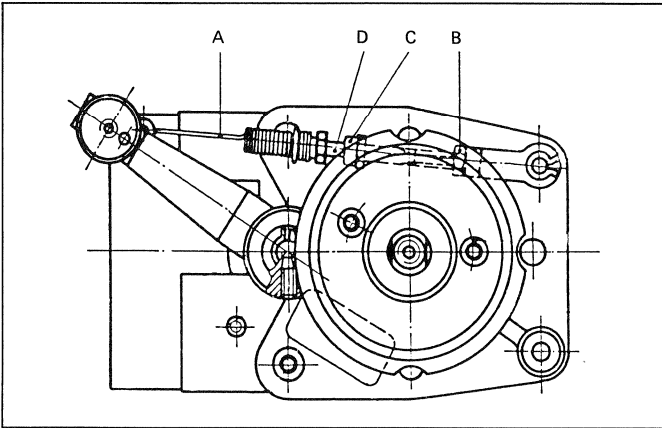


Fig. 3.3.11

3.3.6 Pinch unit

Checking the distance between capstan shaft and pinch roller:

- Mount tape, switch recorder on, select STOP mode.
- The distance between capstan shaft and pinch roller must measure between 0.5 and 1.0 mm.

If this value is not attained, the distance is to be adjusted.

Adjusting the distance between capstan shaft and pinch roller:

- Remove lower tape transport cover, tilt recorder to service position.
- Loosen locknut (opening between flats 7 mm) on the tie rod of the pinch unit and turn tie rod until the required distance between capstan shaft and pinch roller is attained.
- Retighten locknut and secure with locking paint.
- The pinch roller spring must be adjusted afterwards.

Checking the pinching force:

- Remove front section of upper tape transport cover.
- Reinstall headblock and pinch roller (without cover), unscrew fixing screw from the pinch roller cover and turn it into the tapped hole of the pinch roller shaft by 3 to 4 turns.
- Mount tape, switch recorder on, select PLAY mode.
- Hook spring dynamometer 0 - 20 N to the screw, and pull in the direction of the connecting line between the centers of the capstan shaft and the pinch roller. While pulling, lightly brake the pinch roller with your finger.
- The spring dynamometer should indicate 9 N \pm 1 N (0.9 kp \pm 0.1 kp) at the point where the pinch roller just lifts off the tape (and consequently stops).

Adjusting the pinching force:

If this value is not attained, the pinch roller spring has to be readjusted.

- Remove lower tape transport cover, tilt recorder to service position.
- Switch recorder to PLAY.
- The adjusting nut (prevailing torque type nut, opening across flats 7 mm) of the pinch unit is accessible through a hole in the cast chassis. Adjust until the requested value is attained.
- Reinstall pinch roller cover after the adjustment.

3.3.7 Lifting pin

The lifting pin (between reproduce head and capstan shaft) should touch the tape only lightly in PLAY mode.

Checking and adjustment:

- Remove soundhead cover (refer to 3.2.1).
- Switch recorder to PLAY mode and press on the lifting pin from the front. The pin should be lifted off the tape by a few tenths of a millimeter.
- Should this not be the case, loosen the locknut (opening across flats 5.5 mm) and adjusting screw (opening across flats 5.5 mm) to such a point where the pin just touches the tape in play mode.
- Retighten locknut.
- Reinstall soundhead cover.

3.3.8 Tape tension

Check measurements:

The tape tensions are measured with a Tentelometer (part No. 10.300.001.01) which is calibrated for a tape tension of 1.0 N (100 p) with 1/4" tape of the same brand used for the tape tension adjustment. The Tentelometer is to be arranged as close to the reels as possible. The tape should run perpendicularly over the center of the Tentelometer. The rear section of the upper tape transport cover may possibly have to be removed (depending on the type of Tentelometer used) in order to gain unobstructed access to the tape.

- Switch tape recorder on, select tape speed 15 ips as well as corresponding tape type (the tape tension values are also changed over when a different tape type is selected).
- Mount tape and spool forward until the tape pancakes are the same size on both reels.
- **PLAY and REVERSE tape tension:**
The values specified in the table below must be attained. When the pinch roller is manually lifted slightly off the tape, the reels should stand still after one full revolution at the most. The service display should indicate the following message:

ERR: PINCH ROLLER
SLIPPING

(After having released the pinch roller, this message disappears)

- **Spooling tension:**
To check the tape tension in spooling mode, the winding speed is to be set to 0.5 m/s:
 - Open the programming lock (Allen screwdriver No. 2.5, approx. one turn in the counterclockwise direction).
 - Starting with the display status "L RANGE ./. dBm", press Ψ /NEXT twice, $\>$ /CURSOR once, and Ψ /NEXT four times in order to page forward to the block "SET MAX WIND SPEED".

- Set the parameter to 0.5 m/s with the SET/CUE wheel.
- Press STORE.
- Press ↑/LAST six times.
- Measure on the left-hand reel, function >. The values specified in the following table should be attained.
- Restore the original winding speed (same procedure as above).
- Close programming lock (turn to the clockwise stop).
- STOP and EDIT tape tension:
 - Switch tape recorder to STOP.
 - Measure on left-hand reel. During the measurement, manually turn the right-hand reel counterclockwise slowly and evenly.

	1/4"		1/2"	
	Left	Right	Left	Right
PLAY	0,7 N ±0,1 N 70 p ± 10 p	1,1 N ±0,1 N 110 p ± 10 p	1,2 N ±0,1 N 120 p ± 10 p	2,0 N ±0,1 N 200 p ± 10 p
REV. PLAY	1,1 N ±0,1 N 110 p ± 10 p	0,7 N ±0,1 N 70 p ± 10 p	2,0 N ±0,1 N 200 p ± 10 p	1,2 N ±0,1 N 120 p ± 10 p
>	0,8 N ±0,1 N 80 p ± 10 p	----	0,9 N ±0,1 N 90 p ± 10 p	----
STOP EDIT	1,0 N ±0,1 N 100 p ± 10 p	----	1,3 N ±0,1 N 130 p ± 10 p	----

Tape tension adjustments:

- These values must be corrected if they are not attained.
- Open the programming lock (Allen screwdriver No. 2.5, approx. one turn in the counterclockwise direction).
 - Starting with the display status "L RANGE ./ dBm", press ψ/NEXT twice, >/CURSOR once, and ψ/NEXT seven times for the PLAY tape tension, eight times for the spooling tape tensions, nine times for the STOP/EDIT tape tension, and ten times for the REVERSE PLAY tape tension, in order to page to the desired programming blocks. Changeover right/left with >/CURSOR or </CURSOR (indication in the LC display). The selected tape type is also displayed (upper right section of the LC display), the changeover is performed by pressing STOP and TAPE A/TAPE B at the same time (changeover from 1/4" to 1/2" tension takes place automatically when the headblock is exchanged, i.e. a 1/4" headblock must be installed for adjusting the 1/4" tape tensions).
 - Set the parameter to the desired value with the aid of the SET/CUE wheel.
 - Press STORE.
 - Press ↑/LAST as often as required so that the service display indicates "L RANGE ./ dBm".
 - Close programming lock (turn to the clockwise stop).

3.3.9 Exchanging and adjusting the soundheads

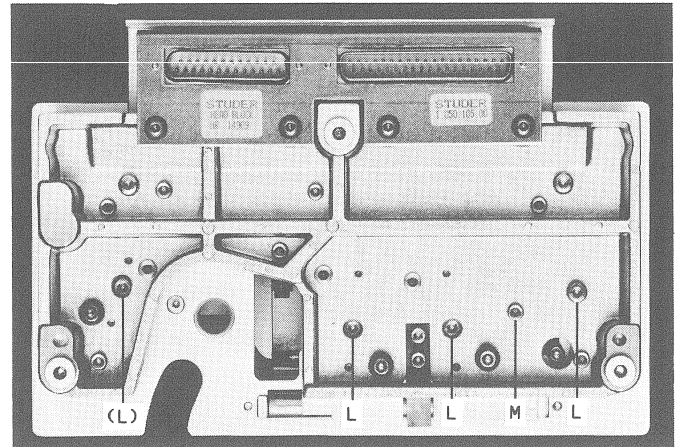


Fig. 3.3.12

IMPORTANT: To prevent unwanted magnetization of the soundheads, the recorder must be switched off before the headblock is removed or reinstalled.

Exchanging the soundheads:

- Remove pinch roller and headblock (1 + 3 screws, Allen screwdriver No. 3).
- Remove soundhead cover (2 screws, Allen screwdriver No. 3).
- Unscrew connector carrier (4 screws, Allen screwdriver No. 2.5).
- Unsolder connecting cable of the corresponding head.

Pin assignment GRP60 ELM01 (connector in headblock):

	Erase head/TC repro h.			Record head		Reprod. head		Code head		Preamp.		
	CH1	CH2	TC	CH1	CH2	CH1	CH2	Era	Rec	CH1	CH2	Sup ply
A820-1 Mono	#16 grn	---	---	5 brn	---	*12 brn	---	---	---	1 blk	---	9 red
A820-0.75 A820-2 F Stereo	#16 grn	---	---	5 brn	24 brn	*12 brn	*14 brn	---	---	1 blk	20 blk	9 red
A820-0.75 VU Stereo	#16 grn	#34 grn	---	5 brn	24 brn	*12 brn	*14 brn	---	---	1 blk	20 blk	9 red
A820-2 2 Channel 1/4"	#16 grn	#34 grn	---	5 brn	24 brn	*12 brn	*14 brn	---	---	1 blk	20 blk	9 red
A820-2 TC 2CH + TC	#16 grn	#34 grn	#13 org	5 brn	24 brn	*12 brn	*14 brn	15 grn	14 org	1 blk	20 blk	9 red
A820-2 2 Channel 1/2"	#18 grn	#36 grn	---	5 brn	24 brn	*12 brn	*14 brn	---	---	1 blk	20 blk	9 red

* Connected to preamplifier in headblock.
Connected to ERASE HEAD CONNECTION PCB in headblock.

- The soundhead can be removed after the screw [L], accessible from the bottom, has been unfastened (Allen screwdriver No. 3).

IMPORTANT: The black swivel plate must not be shifted when exchanging a soundhead. The distance between the soundhead support and the face of the head has been milled to the same dimensions for all soundheads which means that no adjustments are necessary.

- After the soundheads have been exchanged, the perpendicularity of the head can be checked by means of the soundhead alignment gauge A80/A820 1/4" (part No. 10.010.001.02) on the reference block A80/A800/A820 (part No. 10.010.001.01). The headshield flap must be removed for this check (2 screws, Allen screwdriver No. 2). The headblock and the gauges should be set on a levelling plate (or by way of expedient on a flat glass plate).

Aligning the face of the record and the reproduce head

PREREQUISITE: TAPE TENSION ADJUSTED ACCORDING TO 3.3.7 .

- Mark the face of the record and the reproduce head with a grease pen (part No. 10.401.001.01).
- Mount tape, select highest tape speed, and allow the recorder to run in PLAY mode for approximately two minutes.
- Stop recorder and lift the tape carefully off the head. The head face is aligned correctly if the colour has been polished off symmetrically on both sides of the headgap (if necessary check with magnifying glasses). Should this not be the case, the head must be brought into the correct position by turning it; recheck head gap position afterwards, as described above.

Aligning the head face of the erase head

(For time code versions also refer to 4.7.6 and 4.7.7)

Method A:

- Remove soundhead cover (2 screws, Allen screwdriver No. 3).
- Mount tape and start recorder in PLAY mode.
- Look at the erase head vertically from the top and align the head in such a way that the spacings from the left-hand and the right-hand edge of the head to the tape are identical.

Method B:

- Mark the black (ferrite) surfaces of the erase head with a grease pen (part No. 10.401.001.01). The light (ceramic) parts of the head are difficult to clean.
- Mount tape, select highest speed, and allow the recorder to run in PLAY mode for approximately 2 minutes.
- Stop recorder and lift the tape carefully off the head. The head face is aligned correctly if the colour has been polished off symmetrically on both sides of the headgap (if necessary check with magnifying glasses). Should this not be the case, the head must be brought into the correct position by turning it; recheck head gap position afterwards, as described above.

Azimuth alignment of the record and the reproduce head

Refer to 4.3.3 or 4.4.3 and 4.4.5 respectively.

Scrape flutter roller

The scrape flutter roller can be removed after the screw [M] accessible from the bottom (Allen screwdriver No. 2.5) has been unfastened. The height adjustment of the scrape flutter roller does not need to be checked after removal of the roller because the height has been aligned exactly by the factory.

Adjusting the tape guidance elements

Check the left-hand ceramic tape guide (between the erase and the record head) with the aid of the tape guidance alignment gauge (part No. 10.xxx.xxx.xx).

3.3.10

Capstan motor GRP38

The capstan motor 1.021.601.00 operates under the control of the CAPSTAN CONTROL UNIT 1.820.764.00/20. The assembly 1.820.764.21/.22 is used in conjunction with the motor 1.021.601.81.

Capstan motor tachometer

The capacitive scanners as well as the three Hall effect sensors can only be adjusted in the factory.

TACHO SENSOR ELECTRONICS PCB 1.021.695.81

- Remove capstan motor (refer to 3.2.13), but leave it connected. Remove the TACHO SENSOR ELECTRONICS PCB 1.021.695.81 from the capstan motor (2 screws, Allen screwdriver No. 2.5)
- Switch recorder on, without tape. Tape speed 15 ips.
- Start capstan motor by pressing PLAY.
- Connect frequency counter to TP2 (ground lead to TP1).
- Set oscillator frequency with L1 to 5.5 MHz \pm 500 kHz.
- Connect oscilloscope (possibly AF voltmeter) to TP4 (ground lead to TP1).
- Adjust for maximum amplitude with L3.
- Connect oscilloscope (possibly AF voltmeter) to TP3 (ground lead to TP1).
- Adjust for maximum amplitude with L2.
- Connect oscilloscope to signal TD-TCM2 (IC1/pin 2) and adjust with R41 to duty cycle of 50%.

The following adjustments can or have to be executed with the capstan motor installed (trimmer potentiometer R41 is accessible from below if the bottom cover is removed):

- If a wow-and-flutter meter is available, reinstall the capstan motor. Minimize the linear wow and flutter with R41.
- By way of expedient this adjustment can also be made in one of the two following ways:
 - With oscilloscope (with removed capstan motor only): Connect oscilloscope to TP3 (ground lead to TP1). Adjust signal with R41 to minimum jitter.
 - By ear (also possible with reinserted capstan motor): Press blade of a large screwdriver (approx. No. 6) against the capstan motor housing. With one ear listen to the motor noise on the screwdriver handle and minimize loudness with R41.

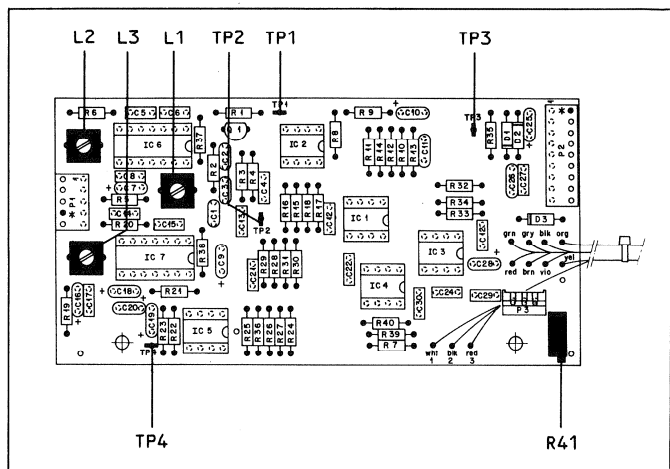


Fig. 3.3.13

3.3.11
SPOOLING MOTOR TACHO 1.820.771 GRP36 (Left), GRP37 (right)

Checking and adjusting the duty cycle

- Plug in the TAPE DECK COUNTER/TIMER PCB 1.820.761 via the extender board (Part No. 1.820.799.00).
- Connect oscilloscope to terminal 1 or 2 (left-hand motor), terminal 3 or 4 (right-hand motor), and ground lead to terminal 21 of the extender board.
- Mount tape, switch recorder to spooling mode.
- Check symmetry of wave form. The duty cycle of the signals (two for each motor) should be $50\% \pm 10\%$. Corrections to a symmetric square-wave signal can be made with the trimmer potentiometers on the corresponding SPOOLING MOTOR TACHO PCB (see table).

	Left-hand motor tachometer		Right-hand motor tachometer	
Trimmer potentiometer	R11	R12	R11	R12
Pin on extender board	1	2	3	4

Phase shift of the two signals

The phase shift (90°) of the two square-wave signals is factory aligned and cannot be adjusted.

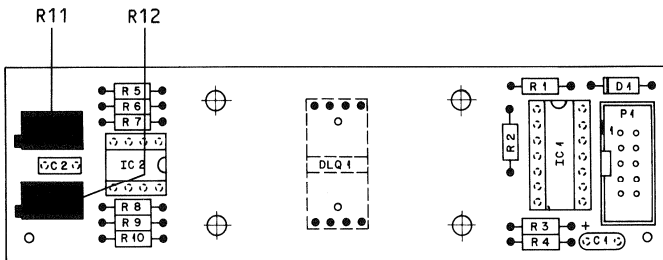


Fig. 3.3.14

3.3.12
CUE SENSOR (Edit assembly) 1.820.765 GRP49

SET/CUE wheel, check and adjustment of the duty cycle

- Remove lower tape transport cover.
- Connect oscilloscope to TP1 or TP2 respectively, ground lead to TP3 of the CUE SENSOR PCB.
- Switch recorder on.
- Turn SET/CUE wheel as steadily as possible.
- Check the symmetry of the wave form. The duty cycle of the two signals should be $50\% \pm 10\%$. Corrections to a symmetric square-wave signal can be made with R1 on the CUE SENSOR PCB (signal on TP1 of the CUE SENSOR PCB) or R12 (signal on TP2).

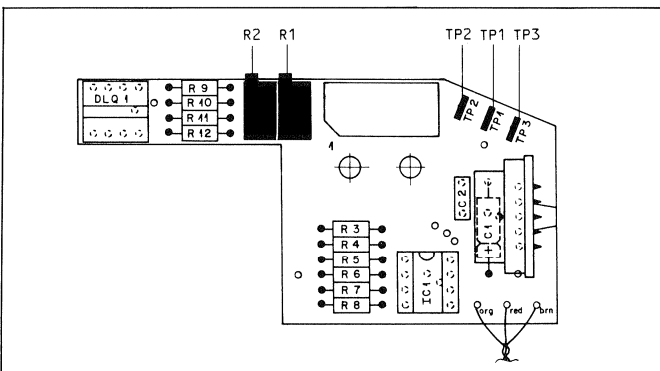


Fig. 3.3.15

SHUTTLE wheel, check of the center position

Prerequisite: The SHUTTLE wheel returns easily to its center position from both directions.

- Remove lower tape transport cover.
- Mount tape, switch recorder on.
- Check that the "dead" range of the SHUTTLE wheel is symmetrical to the neutral position.
 - For this behalf, connect digital multimeter (range 10 V DC, display capacity at least two digits on the right of the decimal point) to the SHUTTLE potentiometer (+ $\hat{=}$ red wire; ground $\hat{=}$ brn wire).
 - Turn SHUTTLE wheel to the right until the tape starts moving, note the multimeter reading.
 - Turn SHUTTLE wheel to the left until the tape starts moving, note the multimeter reading.
 - Compute the mean value of the two readings.
 - Measure the voltage in the center position of the SHUTTLE wheel. The reading must correspond to the computed value.

Should this not be the case, the assembly must be removed, but reconnected for adjustment.

SHUTTLE wheel, adjustment of the center position

- Lightly loosen the headless screw on the small toothed wheel (on the potentiometer shaft).
- Hold the SHUTTLE wheel in the center position and turn the potentiometer shaft with the aid of a screwdriver until the correct value is attained.
- Recheck after the headless screw has been tightened.
- Reinstall the assembly.

3.3.13
LC DISPLAY UNIT 1.820.233 GRP52

The contrast of the LC display can be optimized for different viewing angles.

- Remove front half of top cover (see 3.2.2).
- Optimize the contrast for the preferred viewing angle with the trimmer potentiometer R1 on the connector PCB 1.820.797 (if the front half of the top cover is removed, R1 is accessible from above or, for preceding assemblies, respectively, from the tape tension sensor).

3.3.14
Adjustments and test points on the PCBs of the tape transport control

Reference voltages for D/A converters:

As a rule, these adjustments are only necessary after the corresponding PCBs have been repaired. Component arrangement drawings can be found in the diagram Section.

- TAPE DECK SERIAL INTERFACE PCB 1.820.763:
 With R36, adjust TP2 to $+5.0 \text{ V} \pm 10 \text{ mV}$ (relative to TP1).
- SPOOLING MOTOR CONTROLLER 1.820.760:
 With R34, adjust TP2 to $-5.0 \text{ V} \pm 10 \text{ mV}$ (relative to TP1).
- CAPSTAN INTERFACE PCB 1.820.727:
 With R12 adjust TP1 to $+10.0 \text{ V} \pm 10 \text{ mV}$ (relative to TP2).

Test points:

- TAPE DECK PERIPHERY CONTROLLER 1.820.762:
The two test points TP1 and TP2 are only used during production for checking the assembly.
- SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775
 - TP1: Ground.
 - TP2: Voltage proportional to the motor current ($16 \text{ A} \hat{=} 5 \text{ V}$ or $1 \text{ A} \hat{=} 312.5 \text{ mV}$).
 - TP3: Ground.
 - TP4: Pulse-width-modulated control signal for motor power stage.
- CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774:
 - TP1: Ground.
 - TP2: Dirac pulse, TTL level, 76 kHz.
 - TP3: Pulse-width-modulated signal, amplitude 0 to 50 V (relative to ground), voltage depends on capstan motor speed, 76 kHz.
 - TP4: DC voltage, mean value of the voltage on TP 3, 0 - 50 V.
 - TP5, TP6, TP7: 120° phase-shifted AC voltages. Waveform: sinusoidal, approximated by means of trapezoides.
 - TP8: Square-wave signal, TTL level, combination of the output signals of the three Hall effect sensors (triple frequency).

4 AUDIO

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SECTION 4 AUDIO

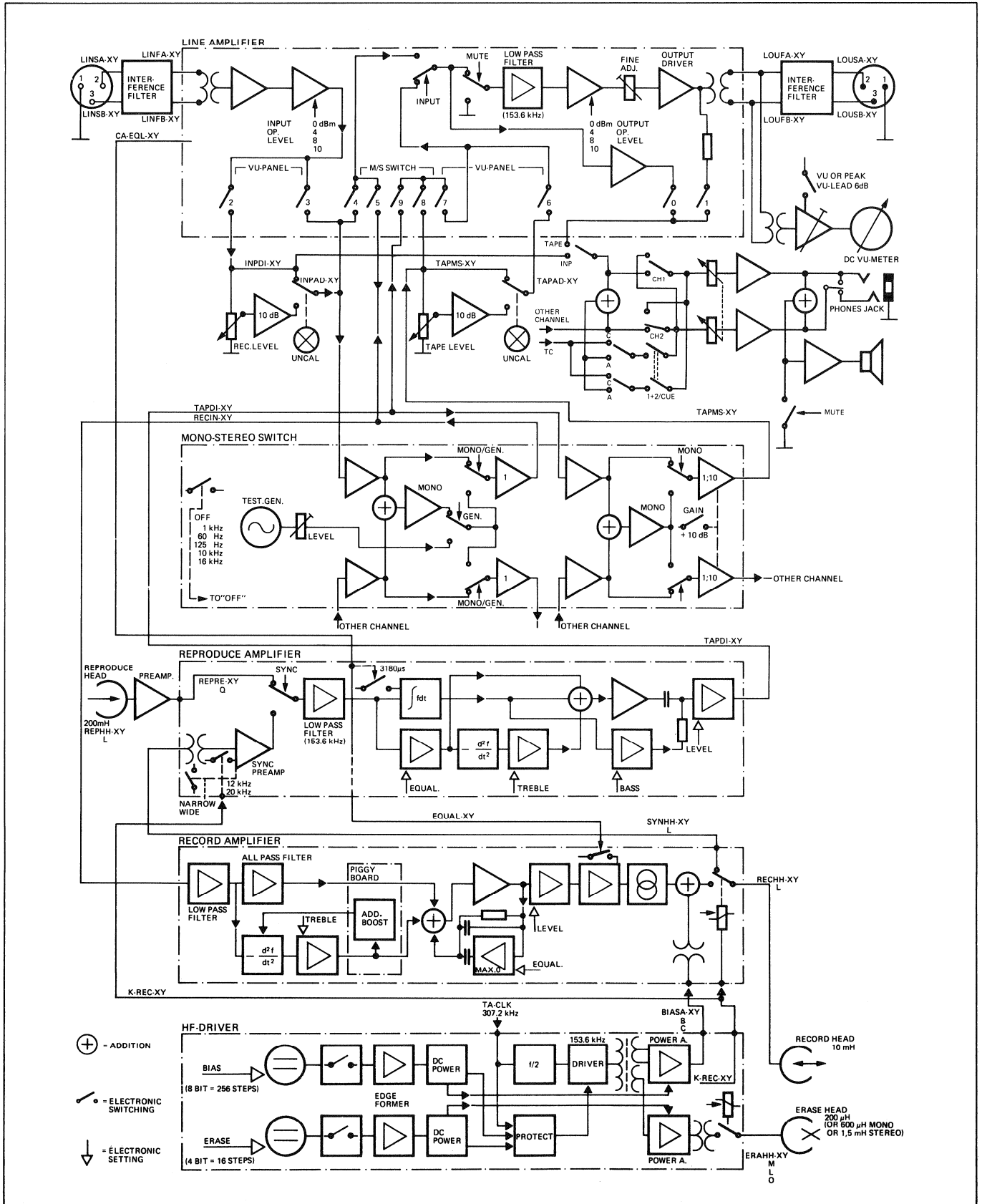


Fig. 4.1.1

4.1 CIRCUIT DESCRIPTIONS

The audio section comprises:

- LINE AMPLIFIER
- REPRODUCE AMPLIFIER
- MONO/STEREO SWITCH (option)
- RECORD AMPLIFIER
- HF DRIVER

The following peripheral assemblies are also included:

- Headblock
 - Level meters
 - Monitor amplifier
 - Level controls for record and reproduce
 - Time code channel (CODE READ/WRITE UNIT and CODE DELAY UNIT)
- } depending on version

4.1.1 Input and output sockets (GRP22/GRP23/GRP24) LINE AMPLIFIER (GRP21 ELM45/ELM50);

- 1.820.749
- 1.820.714 (with input/output transformers)
- 1.820.715 (+ 1.820.862) (transformerless)

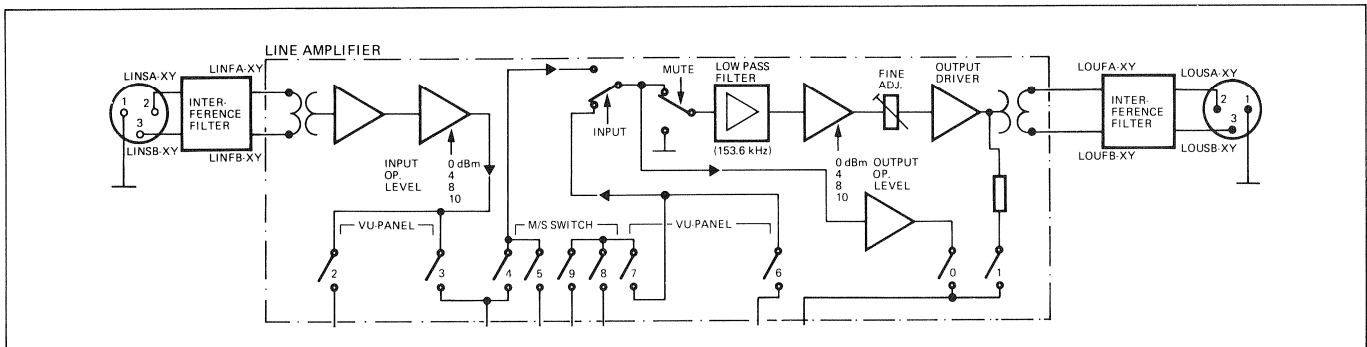


Fig. 4.1.2

LINE AMPLIFIER 1.820.714 (with input/output transformers)
The input signal is taken from the input socket via an interference filter to the line amplifier. The interference filter prevents that radio-frequency voltages from nearby transmitter installations can enter into the tape recorder.

The microprocessor makes the following settings via an 8-way D-type flip-flop (IC1):

- CA-DATA0...3 (Internal signals: CA-LL0DB, CA-LL4DB, CA-LL8DB, CA-LLADB) switch the line level of the input and output to 0, 4, 8, or 10 dBm.
- CA-DATA4 (CA-INPXY) switches from REP/SYNC to INP.
- CA-DATA5 (CA-MUTXY) mutes the line output.
- CA-DATA6 (CA-SYNXY) switches the REPRODUCE AMPLIFIER from REP to SYNC.
- CA-DATA7 (CA-EQLXY) switches the NAB equalization (3180 μ s) on.

The flip-flop transmits the data at the D inputs with the leading clock edge to the Q outputs.

A low-pass filter before the input transformer eliminates parasitic frequencies.

The input amplifier with IC3/2 is followed by the trimmer potentiometer R52 for compensating the manufacturing tolerances of the input transformer. The gain of IC3/1 is switched to the desired line level via the flip-flop outputs and Q1, Q2, and Q3.

DIL switch S1 allows to match the line amplifier to the applicable recorder configuration: with or without VU-meter panel, with or without mono/stereo switch.

IC4, IC5, and IC7 switch the input of the line amplifier from REP/SYNC to INP; IC2, IC6, and IC8 mute the output. The input change-over/muting circuit is followed by a low-pass filter with IC10/2. With trimmer C25 the filter is aligned for maximum attenuation of the 153.6 kHz erase frequency. The gain of IC10/1 is switched by the flip-flop outputs and Q6, Q7, and Q8 to the desired line level. The output level is fine-adjusted with R81. IC9/2 drives the complementary output transistors. The signal is taken to the output socket via the balancing transformer and an additional interference filter.

The signal for the headphones socket and for the internal monitor amplifier is tapped before the transformer. The VU-meter is driven with the balanced output signal.

JS0 and JS1 of DIL switch S1 allow to tap the headphones/monitor signal at the output of IC9/1 (before output muting circuit; JS0 ON, JS1 OFF; monitor level independent of the selected line level and the muting of the output) or at the line output (after output muting circuit; JS0 OFF, JS1 ON).

LINE AMPLIFIER 1.820.715 + LINE OUTPUT AMPLIFIER 1.820.862 (transformerless)

The input signal is taken from the input socket via an interference filter to the line amplifier. The interference filter prevents that radio-frequency voltages from nearby transmitter installations can enter into the tape recorder.

The microprocessor makes the following settings via an 8-way D-type flip-flop (IC1):

CA-DATA0...3 (Internal signals: CA-LL0DB, CA-LL4DB, CA-LL8DB, CA-LLADB) switch the line level of the input and output to 0, 4, 8, or 10 dBm. Also, the monitor level is kept constant independent of the selected line level.

CA-DATA4 (CA-INPXY) switches from REP/SYNC to INP.

CA-DATA5 (CA-MUTXY) mutes the line output.

CA-DATA6 (CA-SYNXY) switches the REPRODUCE AMPLIFIER from REP to SYNC.

CA-DATA7 (CA-EQLXY) switches the NAB equalization (3180 μ s) on.

The flip-flop transmits the data at the D inputs with the leading clock edge to the Q outputs.

A low-pass filter before the input amplifier (IC2, IC10/2) eliminates parasitic frequencies. The common-mode input impedance can be reduced with jumper JS1 (position "N").

The CMRR (common mode rejection ratio) adjustment is executed with trimmer potentiometer R78 for low frequencies and with trimmer capacitor C18 for high frequencies. The gain of IC10/1 is switched to the desired line level via the flip-flop outputs and Q1, Q2, and Q3.

DIL switch S1 allows to match the line amplifier to the applicable recorder configuration: with or without VU-meter panel, with or without mono/stereo switch; monitor connected before the muting circuit or to the line output.

IC4, IC5, and IC8 switch the input of the line amplifier from REP/SYNC to INP; IC3, IC6, and IC9 mute the output. The input change-over/muting circuit is followed by a low-pass filter with IC12/2. The gain of IC12/1 is switched by the flip-flop outputs and Q4, Q5, and Q6 to the desired line level. The output level is fine-adjusted with R93.

The signal is taken to the LINE OUTPUT AMPLIFIER PCB where it is inverted (IC203/1). The inverted as well as the non-inverted signals are fed into a complementary output stage each (IC202/1, Q203, 206, 207, 219, 220 or IC202/2, Q201, 202, 205, 213, 214). From the two balanced output signals an unbalanced signal is created in IC204/2 which is fed to the monitor path on the LINE AMPLIFIER PCB.

The AF output currents of the two output stages pass two of the three windings of L201, whose winding directions are identical. Normally, these currents are equal with opposite direction. As soon as the currents are different (e.g. one of the output lines connected to ground) an AF control signal is induced in the third winding of L201 which is amplified in IC204/1. Via the analog switch IC201, it is fed into the two output stages as an additional AF input signal. It causes a gain reduction of the output stage connected to ground, so that no output current can flow. On the other hand, the gain of the second output stage is increased in such a manner that the AF output signals on the two output lines become unbalanced but, however, the differential voltage remains the same as if there was no connection to ground. The large gain in the control loop causes a negligible voltage drop over the windings of L201. Thanks to this, no magnetic flux is built up and no distortion is added through L201.

A voltage doubler circuit each is controlled by both output stages (Q215, D201, C220, Q216, D203, C221 or Q217, D202, C222, Q218, D204, C223). If a large positive output voltage swing of the output stage with Q213, 214 is required, the darlington transistor Q215 turns on and switches the positive supply rail to the negative pole of C220. Its positive pole has been charged to approx. +15 V through D201, now it is raised to about +25 V. A high positive supply voltage is made available for the output stage for a short while. If an increased negative supply voltage is required, an analogous operation takes place.

The heat sink of the output transistors is in thermal contact with R252 (NTC). If the output transistors dissipate excessive heat, the comparator IC7/2 on the LINE AMPLIFIER PCB mutes the input signal via IC3, 6, and 9 until the temperature has dropped to a permissible value.

After power on, the delay circuit around IC7/1, and IC201 suppress the compensation signal for several seconds in order to avoid uncontrolled transient effects at the line output until the quiescent output voltage of IC204/1 has reached a stable condition.

The signal is taken to the output socket via an additional interference filter. The VU-meter is driven with the balanced output signal.

JS0 and JS1 of DIL switch S1 allow to tap the headphones/monitor signal at the output of IC11/1 (before output muting circuit; JS0 ON, JS1 OFF) or at the output of IC11/2 (corresponds to the line output, after output muting circuit; JS0 OFF, JS1 ON).

4.1.2
 Preamp in headblock (GRP60 ELM02)
 REPRODUCE AMPLIFIER (GRP21 ELM44/ELM49)

1.810.720/.711/.712
 1.820.710

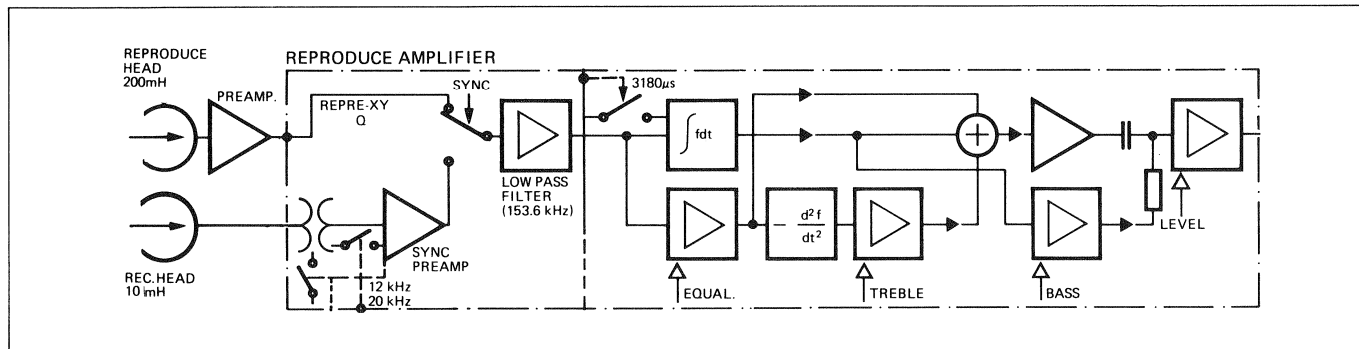


Fig. 4.1.3

A reproduce preamplifier 1.810.710/.711/.712 (GRP60 ELM02) is arranged between the reproduce head and the reproduce amplifier. This preamplifier which is arranged directly on the headblock (GRP60) produces a gain of approximately 28 dB. Q1 and Q4 are low-noise transistors; IC 1 is a low-noise, internally compensated dual opamp. The preamplifier is linear up to approximately 25 kHz. Only when both supply voltages are present (± 15 V) is the preamplifier switched on (D1, Q2). This prevents current from flowing through the head winding when one of the supply voltages is missing and thus magnetization of the reproduce head. In two-channel and stereo recorders, cross talk between the two channels is minimized with the trimmer potentiometer R14.

The reproduce signal REPRE-XY is taken via screened conductors to the reproduce amplifier.

The reproduce amplifier is laid out in such a way that the reproduce signal or the SYNC signal can be processed. The signal is changed over from normal reproduction to SYNC with the signal CA-SYN01 (O2) via IC10 and the FET switches IC5 and IC6. The SYNC signal (SYNHH-XY/SYNHL-XY) is taken via the input transformer T1 and the SYNC amplifier comprising Q2 and IC7/2. The bandwidth of the SYNC amplifier can be switched from 12 kHz (NARROW) to approximately 20 kHz (WIDE) by means of a jumper in which case strong cross talk between the record and the SYNC reproduce channel is to be expected for 2-channel recorders.

The reproduce signal is taken via a low-pass filter with IC14/2. This filter is aligned with trimmer potentiometer C31 to achieve maximum attenuation of the 153.6 kHz erase frequency.

The signal CA-EQL01 (O2) connects the 3180 μ s time constant (IC4/1) via IC9 and FET switch IC4.

A signal of the auxiliary path (inverting two-fold differentiating circuit) is added to the signal of the main path (integrator with IC14/1) for phase-linear correction of the air gap loss in the reproduce head.

The equalization time constant is set with IC16, IC15/1; the frequency response is set with IC13, IC 15/2 (treble) and IC8, IC 7/1 (bass). The data stored in RAM are transmitted from the MPU to the corresponding 256-step attenuators.

The reproduce level is set with IC11, IC12/2 (resolution 256 steps).

IC2 (DUAL BINARY TO 1-OF-4 DECODER/DEMULTIPLEXER) decodes the address of the corresponding digital/analog converter IC8, 11, 13 or 16 from the address lines of the CMOS bus (CA-ADR-R, -S, -T, -U) and activates this address for data transmission.

4.1.3 MONO/STEREO SWITCH or MONO/STEREO SWITCH WITH TEST GENERATOR (GRP21 ELM46)

1.820.720
1.820.724

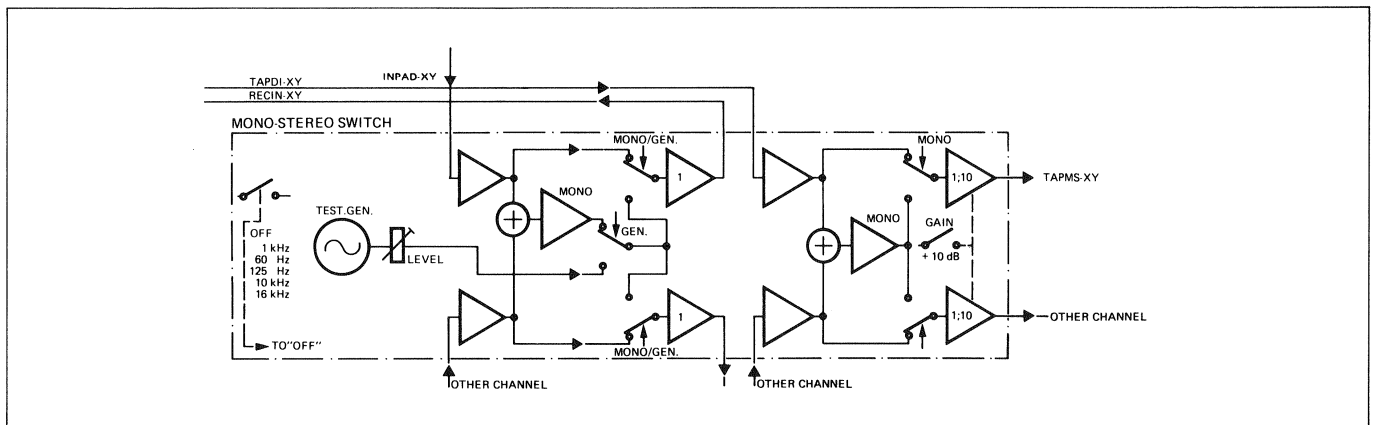


Fig. 4.1.4

The mono/stereo switch processes the two input signals and the two reproduce signals in two separate branches. The input signals INPAD-01, 02 are taken from the outputs of the two line input amplifiers with internal reference level 0 dBm to the mono/stereo switch. The signals buffered by the voltage followers IC3/1, 3/2 are taken directly to IC6/1, 6/2 in stereo mode, or added in mono mode via the resistors R42 and R37 and amplified in IC25/1. The level of the mono signal is matched with R205. Mono/stereo changeover is effected via IC 19 (PROM) and the comparators IC13/1, 16/2 by means of FET switches. The operating mode is selected with the jumper JS2: mono signal from INPAD-01 + INPAD-02 or only from INPAD-01. The output signals from IC6/1 and IC6/2 (RECIN-01, -02) are taken with internal reference level to the record and the line output amplifiers.

The reproduce signals TAPDI-01, 02 are taken from the reproduce amplifiers to the inputs of the voltage followers IC10/1, 10/2; they are decoupled and added by R81 and R80 to a mono signal. The mono signal is amplified in IC31/1, the level can be adjusted with R206. The mono/stereo changeover is implemented with FET switches. The operating mode can be selected with jumper JS3: the mono signal can either be connected to channels 1 + 2 (TAPMS-01, -02) or to channel 1 only (TAPMS-01). The signals TAPMS-01, -02 are transmitted to the line output amplifiers.

Test generator (only 1.820.724)

The test frequencies are produced by the function generator IC2. The balance is adjusted with R8, the sine shape with R20. The frequencies are changed over with IC20 (PROM) and Q1 ... Q5.

When the upper button (FREQ) is pressed, the test generator is switched on (REF pilot lamp [DL205] is on, i.e. the reference frequency, normally 1 kHz, is selected). If this button is pressed repetitively, the frequency changes as follows:

60 Hz - 125 Hz - REF - 10 kHz - 16 kHz - OFF - REF - etc.

With the lower button (LEVEL) the generator level can be switched to a level that is 10 dB lower than the nominal level. When "-10 dB" is selected, the gain in the reproduce branch of the mono/stereo switch is automatically boosted by 10 dB; this means that the set value of the VU-meter display is the same as for nominal level when measurements are made in record/reproduce mode.

The lower button (LEVEL) is only effective when the test generator has previously been enabled with the upper button (FREQ). After the test generator has been switched off and on again with the upper button, nominal level is available on the test generator output.

The output signal of the function generator is taken via IC31/2 and IC25/2 to the mono branch. The output signals of IC7/1 23/2 decide whether the input signals (INPAD-01, -02) or the test signal are taken to the record amplifiers (RECIN-01, -02). This changeover is implemented with FET switches.

The generator level can be adjusted with R208.

4.1.4 HF DRIVER (GRP21 ELM42/ELM47)

1.820.713

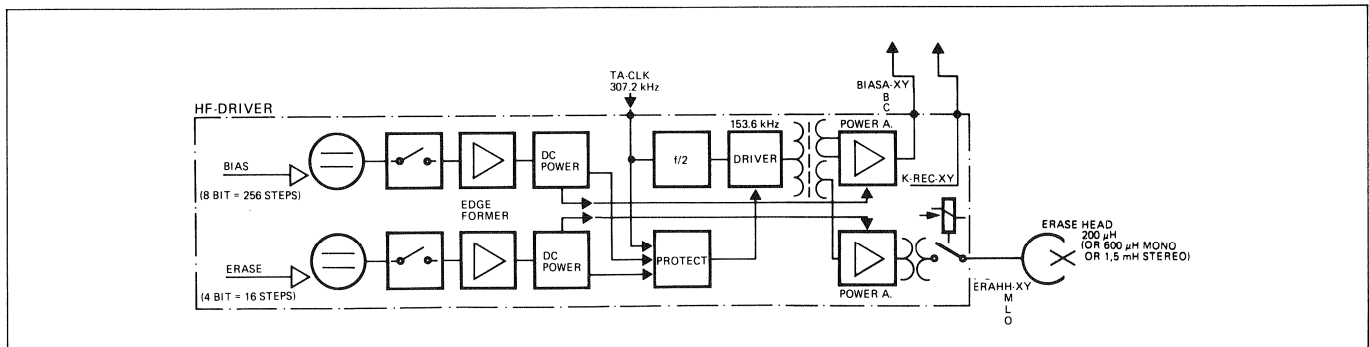


Fig. 4.1.5

The erase and bias currents are prepared on the HF driver.

The quartz reference of the microprocessor TA-CLK with 307.2 kHz is divided in IC3 (DUAL JK NEGATIVE EDGE-TRIGGERED FLIP-FLOP) to 153.6 kHz. The IC outputs are taken to the HF driver stage IC11.

The erase and bias output stages are driven by the windings of the transformer T2.

The DC voltage reference for the erase current is defined (in 16 steps) by IC1 (OCTAL D-TYPE FLIP-FLOP) through data lines CA-DATA-0 ... 3. The DC voltage reference for the bias current is defined by the MASTER MPU via the 256-step attenuator IC2.

IC1 also decodes the commands for switching on the erase and bias current. CA-SAFE = 0 activates IC1.

The DC voltage references defined by the microprocessor are switched on or off by Q1 (erase current) and Q2 (bias current). IC9/1 or IC10/1 respectively shapes the ON- and OFF-switching edge in such a way that click-free record drop-in and drop-out is possible. The DC currents supplied by IC9/2, Q13, and IC10/2, Q12 to the corresponding power amplifier stages are proportional to the required output

currents. Q11 and Q10 respectively control these currents and in the event of an overload switch the HF driver stage IC11 off via D12 and comparator IC8/1.

The clock signal (IC3, PIN 9) is checked; the HF driver stage is also switched off via IC8/1 if the clock is missing or corrupted.

The standby signal TA-ACT-01 (-02) is connected via IC8/2 in order to signal to the microprocessor that channel 1 or 2 is ready. The TA-ACT signals check whether or not record amplifiers are plugged in.

The erase current is switched to the primary windings of T1 alternately by Q5 and Q8 in time with the erase frequency. The erase current obtains its sine-wave form through the parallel-resonant circuit consisting of the inductance of the secondary winding of T1 and C3. A second resonant circuit consisting of the inductance of the erase head and a capacitor (built into the head block) is loosely coupled to a part of the secondary winding of T1 via R4.

IC7, IC4 and relay K1 switch the erase current on or off.

The bias current is generated by means of Q3 and Q4 in the same way as the erase current and taken to the output transformer on the RECORD AMPLIFIER PCB.

4.1.5 RECORD AMPLIFIER (GRP21 ELM42/ELM48)

1.820.712

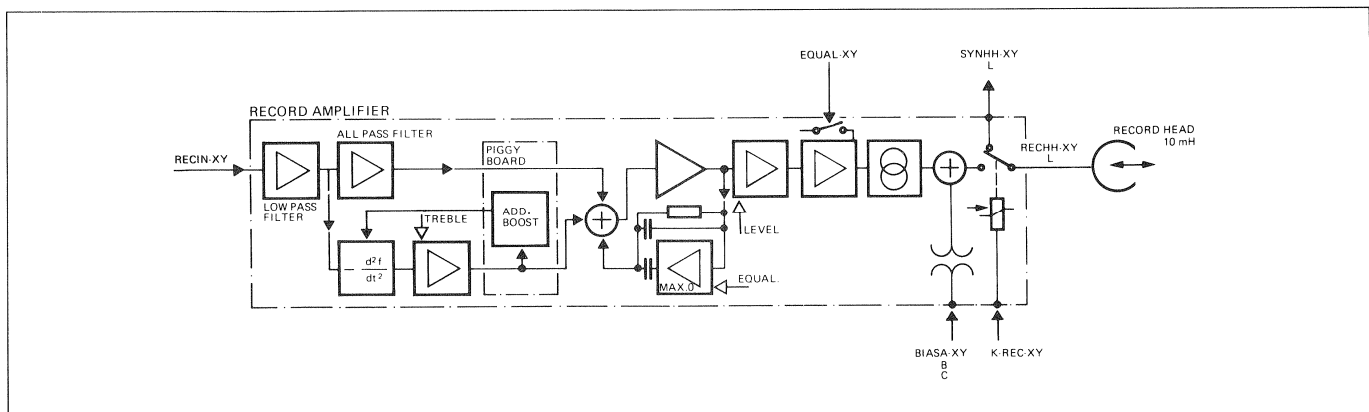


Fig. 4.1.6

The audio signal RECIN-01 (-02) from the line amplifier is taken via a low-pass filter including IC7/1. The low-pass filter is laid out for maximum attenuation of the 153.6 kHz erase frequency.

The treble losses of the record head air gap are compensated with phase-linear correction elements. The inverting two-fold differentiating circuit (IC10) is followed by the control element for treble adjustment IC8, IC9/1 (record frequency response). A portion of the audio signal is mixed via the plug-in ADAPTATION board as a positive feedback into the input of IC 10/2. The summed components of the corrected record signal are amplified by IC9/2.

The equalization time constant is set with IC5, IC6/1, the record level is set with IC3, IC6/2. The audio parameters stored in the RAM are transmitted from the MPU to the corresponding 256-step attenuators. The 3180 μ s time constant is switched by EQUAL-01 (-02) via the FET switch IC2..

The record signal is taken to opamp IC4/2 wired as a current source.

The signal AFCSW-01 (-02) controls the record current via Q1. The record and bias current are added via T1. The two HF filters with L3 and L4 prevent stray pickup of the bias frequency by the other circuit elements. The bias current is drained via the series resonant circuit with L2; a closed bias current loop is thus formed via the two windings of T1 and the winding of the record head.

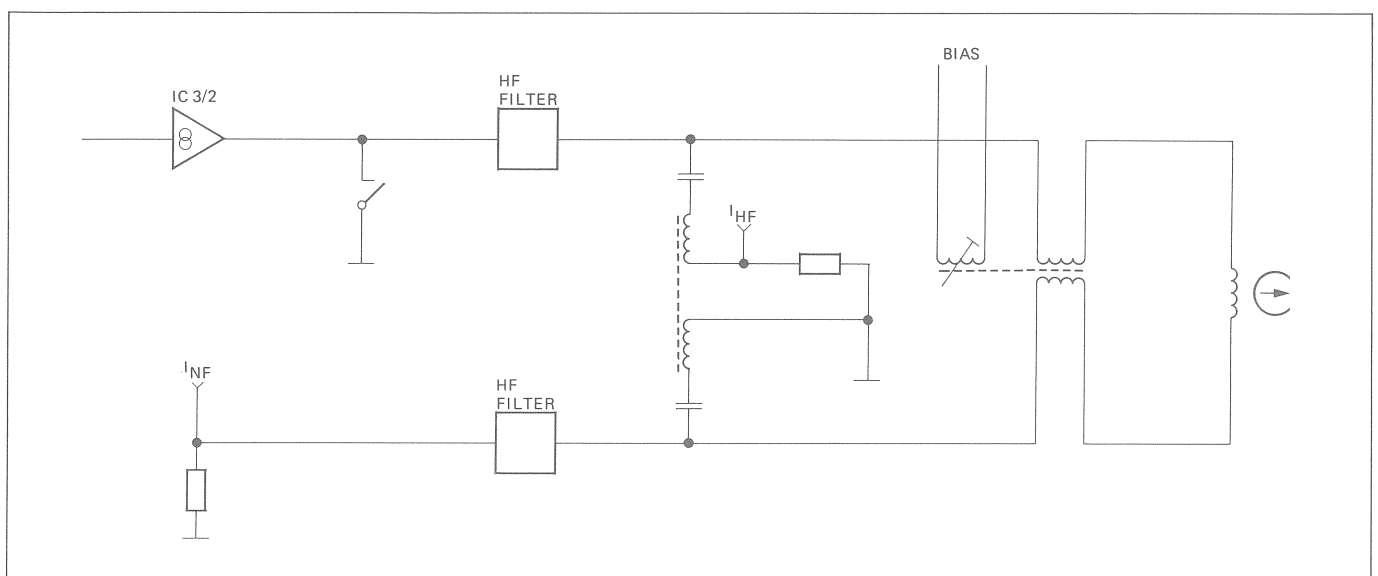


Fig. 4.1.7

4.1.6 Time code channel

General

Two-channel recorders can be equipped with a time code channel. The 0.38 mm wide code track is located between the two audio tracks. The time code (80 bits per full frame according to SMPTE) is recorded with bias as a bi-phase modulated signal.

The tape flux is 729 nWb/m peak-to-peak ± 3 dB. A reproduce (read) head is integrated in the audio erase head {A}. This head "reads" during audio reproduction/recording and slow forward editing. A second time code head is arranged on the far right of the headblock {B}. This is a combined erase/reproduce/record head (read/write head).

This head "reads" during spooling and slow reverse editing and is able to record the time code signal.

Time code heads:

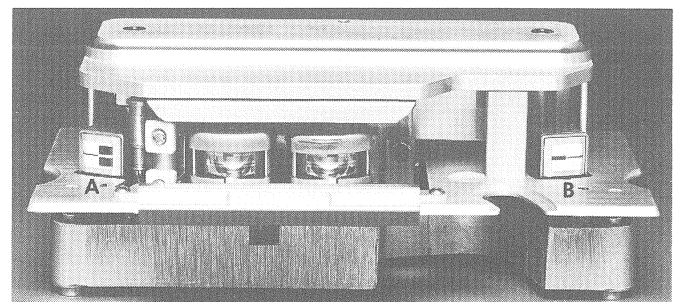


Fig. 4.1.8

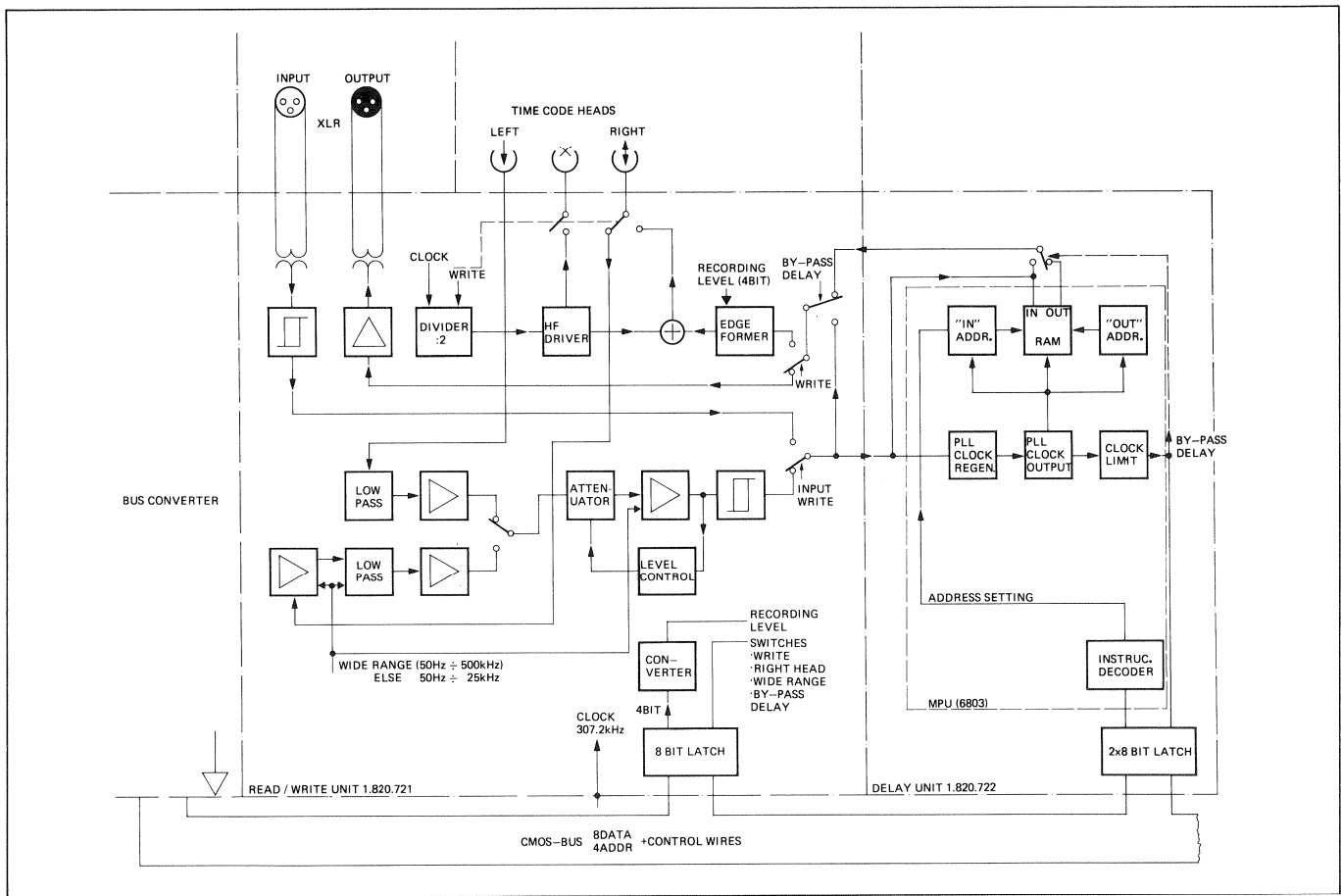


Fig. 4.1.9.

CODE READ/WRITE UNIT (GRP21 ELM40)

1.820.721

Time code reproduction:

The signal of the left-hand head REPHH-TC, REPHL-TC (active during audio reproduction or recording) is taken via a low-pass filter/amplifier with IC15/1. The low-pass filter suppresses the 153.6 kHz erase frequency (cross talk audio-erase frequency → time code reproduction). The signal of the right-hand code head RECHH-TC is taken to a low-pass filter/amplifier IC12, IC16. The bandwidth of the filter is automatically switched over with Q7. The bandwidth is large during spooling and small during slow reverse editing.

The outputs of the two filters/amplifiers (signal of the left-hand or right-hand code head) are connected with FET switches Q10, Q11 to the limiter (IC13, changeover switch IC4/2, IC11, IC14, Q9). Even for variable speeds this limiter supplies a constant-level output signal which is shaped into a square-wave signal in a Schmitt trigger (IC6/1, IC10, IC7). The time code reproduce signal is taken either directly or via the CODE DELAY UNIT (jumper JS2 or changeover switch IC4/1) to the line output amplifier IC2, the line balancing transformer T2, and as the signal LOUFA-TC, LOUFB-TC to the balanced and floating output socket.

Time code recording:

The recording signal LINFA-TC, LINFB-TC is taken via the balanced and floating input connector to the input transformer T1 and the changeover switch IC4/2 to a Schmitt trigger (IC6/1, IC10, IC7) and to the CODE DELAY UNIT. The output signal of the CODE DELAY UNIT is connected

with the changeover switch IC4/3 to the input of the record amplifier. With Q5, IC9 the signal edges are shaped in such a way that a trapezoidal recording signal is attained.

The signal TA-CLK from the MPU is divided by the MPU in IC8 from 307.2 kHz to 153.6 kHz and converted in the HF driver IC5 to an erase and a bias signal. The erase current is decoupled via T3 and taken via screened lines as signal ERAHH-TC/ERAHL-TC to the erase head. The bias current (from the secondary winding of T3, via the trimmer capacitor C9) is added to the trapezoidal recording signal. The changeover relay K1 determines whether the combination head operates as a reproduce or record head. The output signal RECHH-TC, RECHL-TC is taken via screened lines to the combination head.

The MASTER MPU establishes the following settings via the CMOS bus (via 8-way flip-flop IC1, address decoder IC3):

- Record Level (4 bits, of which 3 are used), adjustable with R2 (7.5 ips), R8 (15 ips), and R10 (30 ips).
- Record function (CA-WRTTC = 1)
- Slow reverse editing, right-hand code channel, narrow-band (CA-RS2TC = 1)
- Spooling, right-hand code head, wide-band (CA-RS1TC = 1)
- Bypassing the DELAY UNIT (CA-BPDC = 1)
- INPUT, input signal to output (CA-RS1TC = 1, CA-RS2TC = 1, CA-BPDC = 1)

For bias and record level adjustment refer to Section 4.7.

CODE DELAY UNIT (GRP21 ELM41)

1.820.722

The time code signal is delayed in the CODE DELAY UNIT in such a way that the audio and time code signals on the tape coincide, i.e. the head spacing is automatically compensated.

An additional microprocessor (6803) is used for this purpose.

A PLL (PHASE LOCKED LOOP) with clock regeneration is implemented by the programming (software).

The external microprocessor memory comprises 2K PROM (IC18) and 8K RAM (IC14). The RAM can hold 8192 half-bits, $\hat{=}$ 51 full frames.

Information from the MASTER MPU (1.820.786) is transmitted via the TTL bus, the bus converter and the CMOS bus to two 8-bit latches IC8, IC9 of the DELAY UNIT and comprises:

- required delay
- direction of tape travel
- bypass command.

4.2 CALIBRATION

The audio parameters are copied from RAM and loaded into the registers of the audio amplifiers each time the recorder is switched on, after a microprocessor reset, or when changing the tape speed, the tape type or the equalization.

When new parameters are entered through the SET/CUE wheel or the serial interface, the old parameters stored in the RAM and in the registers of the audio amplifiers are overwritten with the new data.

If the parameters in the RAM are lost, the standard parameters are automatically loaded from the PROM.

4.2.1 Introduction

General

It is assumed that all mechanical adjustments of the recorder to be calibrated are correct (especially with respect to tape tensions and tape guidance).

The soundheads and the tape guidance elements should be cleaned and demagnetized before the recorder is calibrated.

The calibration steps should always be performed in the following sequence:

REPRODUCE ADJUSTMENTS

With preferred studio tape speed:

- Level
- Azimuth alignment of the reproduce head (note 1)
- Frequency response (note 2)

For all other tape speeds:

- Level
- Frequency response (note 2)

Note 1: Depending on the type of reference tape used, minor deviations between the different speeds can occur. In this case the final azimuth alignment should be made with the preferred studio speed.

Note 2: Studio tape recorders are usually calibrated with full-track calibration tapes. Fringing effects can cause frequency response errors at low frequencies in stereo and two-channel recorders. It is, therefore, recommended to align the response for low frequencies with tape present, i.e. to repeat the reproduce frequency alignment after the record alignment with tape if no calibration tapes with correct guard track width are available.

RECORD ADJUSTMENTS

With preferred studio tape speed:

- Record level prealignment
- Azimuth alignment of the record head gap (bias parameters to approximately the same values for both channels!)
- Bias
- Record level
- Frequency response

For all other tape speeds:

- Record level prealignment
- Bias
- Record level
- Frequency response

SYNC REPRODUCTION

ALL tape speeds (except 3 3/4 ips):

- Level
- Frequency response

4.2.2 Level definitions

Voltage level 0 dBm = 0,775 V

Voltage level 0 dBm (= 0.775 V):

Is deduced from the power level of 1 mW in a load of any value. If applied to a resistance of 600 Ω, a voltage drop of 0.775 V occurs. This voltage is defined as voltage level 0 dBm (without referring to any load).

0 dBu (= 0.775 V):

Corresponds to 0.775 V without referring to any load resistance. [dBu] is used now and then instead of voltage level [dBm].

Line level:

- The level available at the output of a tape recorder when reproducing a recording with reference flux density, or
- the level producing a recording with reference flux density when fed in the input of a tape recorder.

Voltage "Bezugspegel":

CCIR designation for line level. This level produces an indication of 0 dB on a quasi peak reading meter.

Standard Reference Level (Operating Level):

Designation common in USA for the reference flux density of 250 nWb/m (for high output tapes) or 200 nWb/m, resp. (for standard tapes). This level produces an indication of 0 VU on a VU-meter.

Peak Level:

Designation common in USA for a level that is as a rule 8 to 10 dB greater than operating level. To simplify matters, a "peak level" of +6 dB (twice the voltage level) relative to operating level is used for tape recorder alignment.

NAB alignment:

Definition	Line Level [dBm]	VU-meter indic., Jumper in "VU" position [VU]
OPERATING LEVEL	+ 4	0
"PEAK LEVEL"	+10	+6

Reproduce reference level = operating level

CCIR/IEC alignment:

Definition	Line Level [dBm]	VU-meter indic., Jumper in "PEAK" position [dB]
"BEZUGSPEGEL"	+ 6	0

4.2.3

Equalizations

Equalization networks have been built into the reproduce paths for correcting the frequency response.

The attack points are referred to as transition frequencies or transition time constants respectively ($1 / 2 \pi f$) and have been standardized by various organizations (IEC, NAB, AES, CCIR).

TAPE SPEED	TRANSITION FREQUENCIES, LOW AND HIGH (TRANSITION TIME CONSTANTS)		
	IEC-1968	NAB-1965	NAB-1975
9,53 cm/s 3,75 ips	50 Hz; 1800 Hz (3180 us; 90 us)	50 Hz; 1800 Hz (3180 us; 90 us)	- (-)
19,05 cm/s 7,5 ips	0 Hz; 2240 Hz (∞ ; 70 us)	50 Hz; 3150 Hz (3180 us; 50 us)	0 Hz; 3150 Hz (∞ ; 50 us)
38,10 cm/s 15 ips	0 Hz; 4500 Hz (∞ ; 35 us)	50 Hz; 3150 Hz (3180 us; 50 us)	- (-)
76,20 cm/s 30 ips	0 Hz; 9000 Hz (∞ ; 17.5 us)	AES 1971 0 Hz; 9000 Hz (∞ ; 17.5 us)	- (-)

4.2.4

Magnetic reference flux, standard calibration data

A tape recording made with reference level should produce line level on the output in play mode.

The following standard settings are made at the factory:

NAB settings:

- Line voltage: 220 V
- Line frequency: 50 Hz
- Line level: +4 dBm
- Indication of VU-meter at Line Level: 0 VU
- Load impedance: 600 Ω
- Tape type: Scotch 3M 226
- Tape flux at Line level: 3 3/4 ips: 200 nWb/m
- 7 1/2 ips: 250 nWb/m
- 15 ips: 250 nWb/m
- 30 ips: 250 nWb/m

CCIR settings:

- Line voltage: 220 V
- Line frequency: 50 Hz
- Line level: +6 dBm
- Indication of VU-meter at Line Level: +6 VU
- Load impedance: 600 Ω
- Tape type: AGFA PER 528
- Tape flux at Line level: 3 3/4 ips, stereo: 400 nWb/m
- 3 3/4 ips, mono: 250 nWb/m
- 7 1/2 ips, stereo: 510 nWb/m
- 7 1/2 ips, mono: 320 nWb/m
- 15 ips, stereo: 510 nWb/m
- 15 ips, mono: 320 nWb/m
- 30 ips, stereo: 510 nWb/m
- 30 ips, mono: 320 nWb/m

The recorders are calibrated for one of the two types of equalization optionally until further notice.

4.2.5

Calibration tapes

Calibration tapes are used for aligning the reproduce path of tape recorders. Such tapes are magnetized across their full width. A separate tape is used for each speed.

IMPORTANT

To prevent unintentional erasure of valuable tapes, all channels should be switched to SAFE while adjustments are being made! On recorders without a SAFE button, MASTER SAFE is to be switched on.

Calibration tapes are divided into the following test sections:

Reference Level Section

(Reference flux = 320 nWb/m for 7 1/2, 15, and 30 ips, 257 nWb/m for 3 3/4 ips) should produce line level on the output of the tape recorder.

The output level is to be adjusted to the required line level during the reproduction of this test section which has a length of approximately 60 to 180 seconds.

NAB calibration tapes with a reference flux of 200 nWb/m should produce an output level of -4 dB relative to 320 nWb/m; CCIR calibration tapes with a reference flux of 320 nWb/m produce on stereo recorders an output level of -4 dB relative to line level and 510 nWb/m.

Reference frequencies: 333 Hz or 500 Hz at 3 3/4 ips; 1 kHz at 7 1/2 to 30 ips (there are also NAB calibration tapes with 700 Hz reference frequency).

Azimuth Alignment Section

For adjusting the vertical ("azimuth") alignment of the reproduce head gap. This test section is divided into a short segment containing the reference frequency (for coarse adjustment) and a long segment with 10 kHz for fine adjustment. NAB calibration tapes may be formatted differently. The level of this section is normally 10 dB below the line level.

The head is aligned to maximum output voltage with the azimuth adjustment screw. On two-channel and stereo recorders it is possible to align to minimum phase difference of the two channels with the aid of a 2-channel oscilloscope or an AF millivoltmeter with two inputs and summation.

Important: If significant changes in the reproduce head azimuth are made, other voltage maxima with lower levels will occur!

With correct equalization of the reproduce amplifier, the reproduce level is identical for recordings that are made with reference frequency and with 10 (8; 16) kHz.

Frequency Response Section

For determining and adjusting the reproduce response at specific frequencies. NAB calibration tapes exist that produce frequencies other than those listed in the following table.

pa

REFERENCE TAPE	CCIR				NAB			
	9,5	19	38	76	3,75	7,5	15	30 (AES)
TAPE SPEED [cm/s]; [ips]								
REF.LEV. SECTION: REF. FREQUENCY REF. FLUX DENSITY	333 Hz 257	1 kHz 320 nWb/m			500 Hz 200	1 kHz (700 Hz) 200 nWb/m		
AZIMUTH ALIGNMENT SECTION: (-10 dB)	333 Hz 10 kHz	1 kHz 10 kHz			250 Hz 4 kHz 8 kHz	500 (700) Hz 8 kHz 16 kHz		
FREQUENCY RESPONSE SECTION: (CCIR: -20 dB) (NAB : -10 dB)	333 Hz 31,5 40 63 125 250 500 1 kHz 2 4 6,3 8 10 12,5 14 16 333 Hz	1 kHz 31,5 Hz 40 63 125 250 500 1 kHz 2 4 6,3 8 10 12,5 14 16 18 1 kHz			31,5 Hz 63 125 250 500 1 kHz 2 4 5 8 10 500 Hz	31,5 Hz 63 125 250 500 1 kHz 2 4 8 16 20 1 kHz		

4.2.6 Preparatory steps

Before the calibration is started, the parameters of the recorder must be programmed for the desired application. Also refer to Section 2.6, "SOFT KEYS".

Line Level:

Set required level:

OPERATING LEVEL (NAB)	"BEZUGSPEGEL" (CCIR)	FUNCTION No.
0 dBm	6 dBm	009
4 dBm	10 dBm	010
8 dBm	14 dBm	011
10 dBm	16 dBm	012

These four functions (009 to 012) are applicable to match the tape recorder to the line level used in the studio. Operating level as well as "Bezugspegel" is indicated on the service display. The first (smaller) of the two level indications is referred to NAB standards, the second to CCIR.

In case that any of the four gradations is adequate, that value should be selected that comes closest to the studio level, and the internal record and reproduce levels should be adjusted in such a way that the recorder operates with the desired bias.

Examples:

- Function 011, CCIR equalization, "Bezugspegel" = 14 dBm, VU-meter amplifier set to PPM characteristic (jumper on VU-meter amplifier), PPM reading at "Bezugspegel" 0 VU.

Reading of service display when recorder ready:

L RANGE: 8/14 dBm

- Function 010, NAB equalization, operating level = 4 dBm, VU-meter amplifier set to VU characteristic (with jumper on VU-meter amplifier), VU-meter reading at operating level 0 dB.

Reading of the service display when recorder ready:

L RANGE: 4/10 dBm

- Function 012, CCIR equalization, line level 15 dBm, selected "Bezugspegel" = 16 dBm (record and reproduce levels internally adjusted to match the required line level), VU-meter amplifier set to PPM characteristic (jumper on VU-meter amplifier), PPM reading at "Bezugspegel" 0 VU.

Reading of service display when recorder ready:

L RANGE: 10/16 dBm

Checking the output level and the VU-meter reading

Connect AF generator to the line inputs (channels 1 and 2) and feed 1 kHz with line level.

Connect AF millivoltmeter to line output channel 1 and load the output with 600 Ω (standard) or with 200 Ω (minimum).

Switch the recorder on and press the INP buttons of channels 1 and 2. Release all UNCAL buttons (calibrated level). Or, also possible for recorders without VU-meter panels or channel mode selector units: The first position of the AUDIO ALIGNMENT block (refer to 2.6, SOFT KEYS) is used for switching all audio channels to INPUT; press Ψ three times. The LC display indicates:

LINE OUT CALIBRATION
AUDIO CHANNELS INPUT

As long as this message is present, the audio channels of the recorder are switched to INPUT (if VU-meters or channel mode selector units are installed, the yellow INPUT LEDs are on).

Adjust output level to line level with the aid of the trimmer potentiometer on every LINE AMPLIFIER, accessible from the front.

Check VU-meter reading:

- VU characteristic: Line level should give a reading of 0 VU (NAB).
- PPM characteristic: Line level should give a reading of -6 dB (NAB) or 0 dB (CCIR).

The VU-meter reading can be corrected with the trimmer potentiometer on the back of the VU-meter amplifier.

Adjusting the CMRR of the line inputs:

(CMRR = common mode rejection ratio)
This adjustment is required only after repairs on the LINE AMPLIFIER TRANSFORMERLESS 1.820.715.00 .

- Interconnect the two lines A and B at the line input of the concerned channel. Connect AF generator to both lines and feed in 1 kHz or 20 kHz, resp., with line level, relative to ground.
- Connect AF millivoltmeter to the line output of the concerned channel.
- Switch recorder to INPUT (see above).
- Adjust AF generator to 1 kHz, adjust minimum output level with trimmer potentiometer R78 (\leq -40 dB, typ. -50 dB).
- Adjust AF generator to 20 kHz, adjust minimum output level by means of trimmer capacitor C18 (\leq -40 dB, typ. -50 dB).
- Because of the minor mutual action these adjustments should be repeated at either frequency.

CCIR/NAB equalizations

Select the desired equalization on the function and programming key field: CCIR or NAB (press changeover button together with STOP).

If the same calibration data (level, frequency response, bias) are desired for both types of equalization, proceed as follows:

- Select preferred equalization.
- Set and check all audio parameters according to the alignment instructions.
- Switch on function O33 (CCIR/NAB SAME; same parameters for both equalizations, refer to Section 2.6, SOFT KEYS).
- Retrieve and re-store all previously set parameters.

The same parameters are now programmed for both equalizations.

The equalization time constants can be changed selectively for special situations. In this case it is essential that the function CCIR/NAB SAME is switched off!

Tape type A/B

Set tape type selector to the desired position (press together with STOP key!)

NOTE: Repeat the reproduce and record adjustments step by step for the second tape formulation and for each tape speed!

4.2.7 Input procedure

The procedure may be simplified by folding out the status tree diagram (Section 2.6).

Reprogramming of the audio parameters is also possible when the programming lock is closed (switch [28], however, the selected parameters will be lost when the recorder is switched off and on again since they are replaced by the previously stored parameters.

Example

Setting of the audio parameter "reproduce level": tape speed 15 ips, CCIR equalization, tape type A, channel 2:

Action	Service display indic.
Turn programming enable switch [28] to counterclockwise stop (Allen key No. 2.5)	
Recorder in STOP mode	L RANGE ./ dBm
Ψ /NEXT	USER SET UP ALIGNMENT MODE
Ψ /NEXT	ALIGNMENT AUDIO DECK AUX
Ψ /NEXT	LINE OUT CALIBRATION AUDIO CHANNELS INPUT
Ψ /NEXT	LVL REP 15.0 CCIR A CH1 <u>66</u> CH2 66
\gg /CURSOR (switchover to CH 2)	LVL REP 15.0 CCIR A CH1 66 CH2 <u>66</u>
Select desired level with SET/CUE wheel (indication in HEX)	LVL REP 15.0 CCIR A CH1 66 CH2 <u>F9</u>
Save with STORE	
Press \uparrow four times	L RANGE ./ dBm
or:	or:
with Ψ to the next setting	TRB REP 15.0 CCIR A CH1 39 CH2 <u>39</u>

4.3 REPRODUCE ADJUSTMENTS

4.3.1 Preparatory steps

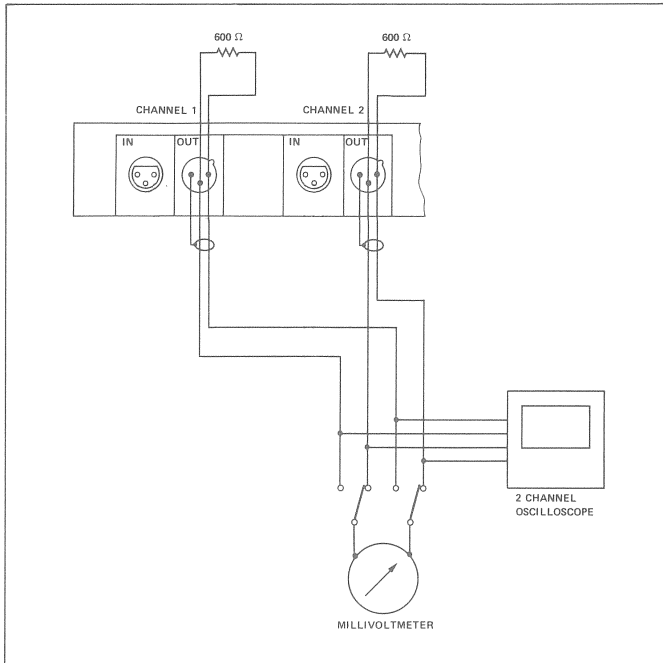


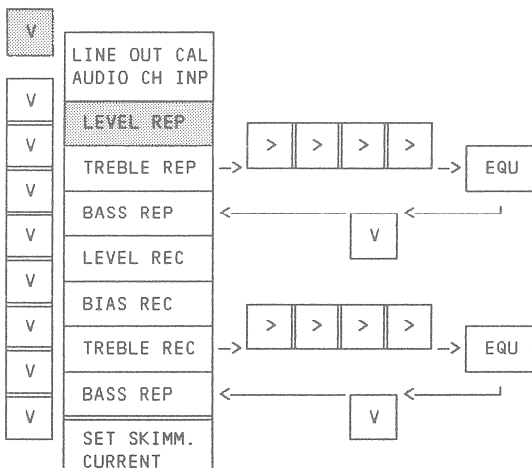
Fig. 4.3.1

Connect AF millivoltmeter to line output channel 1. Load the line outputs for all measurements with 600 Ω (or 200 Ω).
 Switch recorder ON.
 Select preferred studio tape speed.
 Press SAFE and REP keys of channels 1 and 2. Release all UNCAL buttons (calibrated level). On recorders without VU-meter panel press MASTER SAFE.

Mount calibration tape for the corresponding equalization and speed and spool forward to the Reference Level Section.

4.3.2 Level adjustment LEVEL REPRO

LVL REP 15.0 NAB B
 CH1 66 CH2 66



Page to the LVL REP position with the keys ↓/NEXT, >/CURSOR, </CURSOR, and ↑/LAST (possibly with the aid of the status tree diagram, Section 2.6, where also a step-by-step programming example can be found).

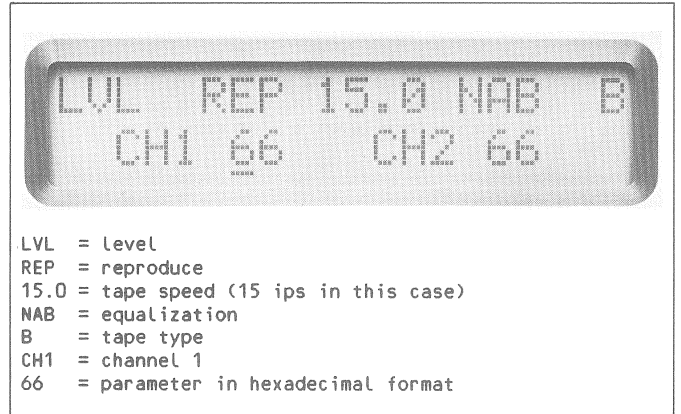


Fig. 4.3.2

Initially the cursor is located below the parameter for channel 1.
 Start recorder in PLAY mode.
 The reproduce level can be set to the desired line level by turning the SET/CUE wheel. Press STORE.

On stereo recorders switch the millivoltmeter to the line output channel 2. The cursor can be positioned below the parameter for channel 2 with >/CURSOR.
 The reproduce level can be set to the desired line level by turning the SET/CUE wheel.
 Press STORE.

4.3.3 Azimuth alignment of the reproduce head

Spool calibration tape forward to the Azimuth Alignment Section. The level of this section is approximately 10 dB lower than in the level tone section. Connect millivoltmeter to channel 1.
 Start recorder in PLAY mode.

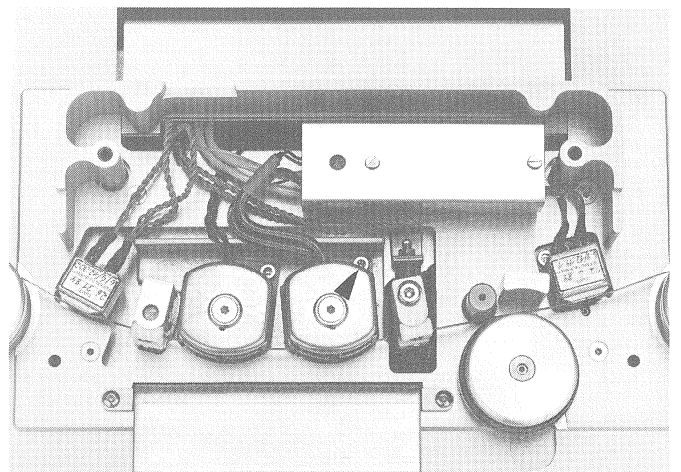


Fig. 4.3.3

Coarse adjustment:

While a recording with reference frequency is played, correct the azimuth of the reproduce head until the maximum output level is attained.

Fine-adjustment:

Align the line outputs of the two channels either

- by connecting them to the inputs of a 2-channel oscilloscope while playing a recording with 8, 10 or 16 kHz and by further correcting with the azimuth alignment screw for minimum phase difference of the line output signals

or

- connect them to the inputs of an AF millivoltmeter with summing facility while playing a recording with 8, 10 or 16 kHz and by further correcting with the azimuth alignment screw to maximum level of the sum of both line output signals.

Important:

Always align to maximum level first and then to minimum phase difference! If the inclination of the reproduce head is significantly modified, additional maxima, but with lower level, can occur. To make shure, check phase with a slightly different frequency.

Level check:

Rewind reference tape to the test section "LEVEL TONE" and start recorder in reproduce mode. Check level of channels 1 and 2 and correct, if necessary.

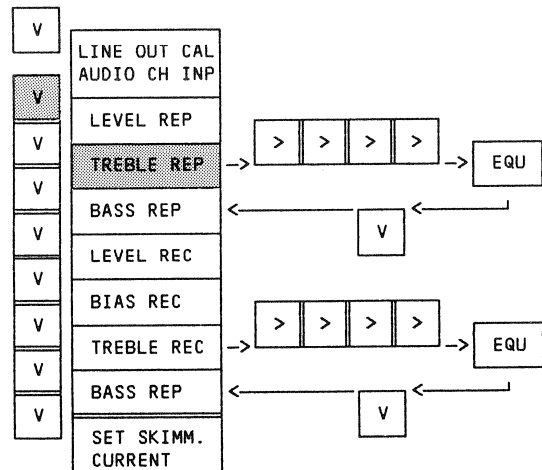
4.3.4

Reproduce frequency response alignment

Treble alignment TREBLE REPRO:	TRB REP 15.0 NAB B CH1 31 CH2 31
---------------------------------------	-------------------------------------

Spool calibration tape forward to the "FREQUENCY RESPONSE 16 kHz" test section (applies to 30 ips; 14 kHz for 15 ips, 12.5 kHz for 7 1/2 ips). The level of this test section is approximately 20 dB (CCIR) lower than in the Reference Level Section. Connect millivoltmeter to line output channel 1.

Paging to the TRB REP position is possible with the key Ψ /NEXT.



Initially the cursor is positioned under the parameter for channel 1.

Start recorder in PLAY mode.

Align for optimum frequency response by turning the SET/CUE wheel. Press STORE.

On stereo recorders switch the millivoltmeter to the line output channel 2. The cursor can be positioned below parameter 2 with Ψ /Cursor.

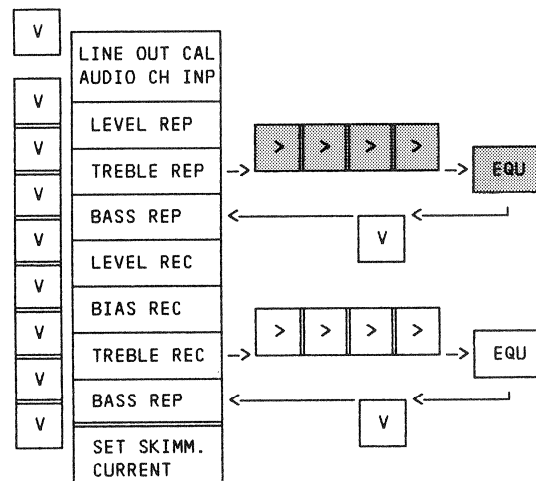
Align for optimum frequency response by turning the SET/CUE wheel. Press STORE.

Changing the reproduce standard equalization EQU REPRO:

EQU REP 15.0 NAB B
CH1 61 CH2 61

For special situations it is possible to modify the reproduce frequency response by slightly shifting the time constant for the reproduce standard equalization. If no change in the equalization is necessary, press Ψ /NEXT for paging to BASS REPRO.

The reproduce standard equalization is changed as follows: Starting from the TRB REP position, cursor below the parameter for CH2, press Ψ /CURSOR four times. The service display indicates EQU REP.



The equalization time constant is set for both channels in common (both parameters modified at the same time). Start recorder in PLAY mode.

The time constant can be increased by turning the SET/CUE wheel clockwise, i.e. the transition frequency is shifted toward lower frequencies. Press STORE after the optimum frequency response has been found.

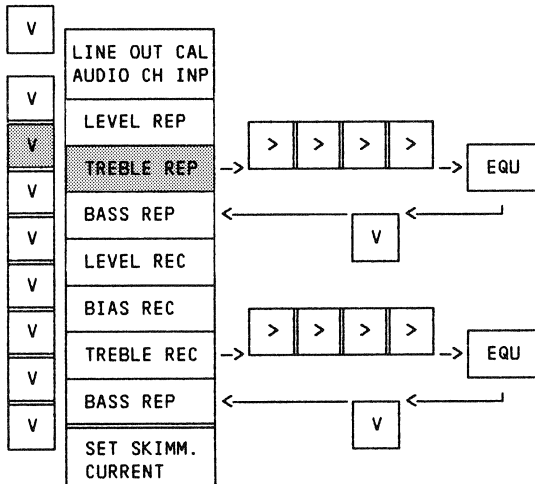
THEORETICAL STANDARD EQUALIZATION ADJUSTMENTS		
STANDARD TIME CONSTANT [μs]	TRANSITION FREQU. [kHz]	REPRODUCE HEX. VALUE
120	1.326	E5
90	1.768	A3
70	2.273	87
50	3.150	61
35	4.547	44
17.5	9.094	26

Bass alignment BASS REPRO:

BAS	REP	15.0	NAB	B
CH1	6A	CH2	6A	

(For explanation, refer to 4.2.1, note 2).
 Spool the calibration tape to the "FREQUENCY RESPONSE 63 Hz" test section. The level of this section is approximately 10 dB lower than in the Level tone section. Connect millivoltmeter to line output channel 1.

Page to BAS REP with the key Ψ /NEXT.



Initially the cursor is positioned below the parameter for CH1.

Start recorder in PLAY mode.
 Align for optimum frequency response by turning the SET/CUE wheel. Press STORE.

On stereo recorders, switch the millivoltmeter to the line output channel 2. Move the cursor to the parameter for channel 2 with \Rightarrow /CURSOR.

Align for optimum frequency response by turning the SET/CUE wheel. Press STORE.

Note:

If mono calibration tapes are used for the reproduce alignment of stereo recorders, strong fringing effects can occur at low frequencies. To ensure that a linear reproduce frequency response is attained, the reproduce adjustment of the bass frequencies must either be repeated with tape present (after the record alignment) or if no record adjustments are planned, a calibration tape with correct track separation should be used!

4.3.5

Alignments for other tape speeds

The alignments for other tape speeds are basically performed in the same manner as outlined in Sections 4.3.2 through 4.3.4:

- Select desired speed
- Change over the equalization and tape type if necessary
- Mount corresponding calibration tape.

Exceptions:

The alignment of the reproduce frequency response is made with different frequencies, depending on the tape speed:

[ips]	ADJUSTMENT FOR	
	TREBLE REPRO [kHz]	BASS REPRO [Hz]
3.75	8	63
7.5	12,5	63
15	14	63
30	16	63

4.4 RECORD ADJUSTMENTS

4.4.1 Preparatory steps

Mount practically new unrecorded tape.

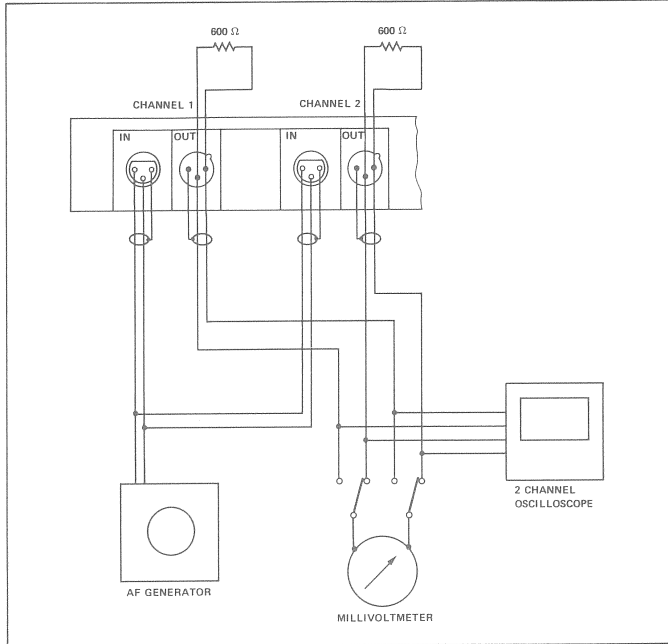


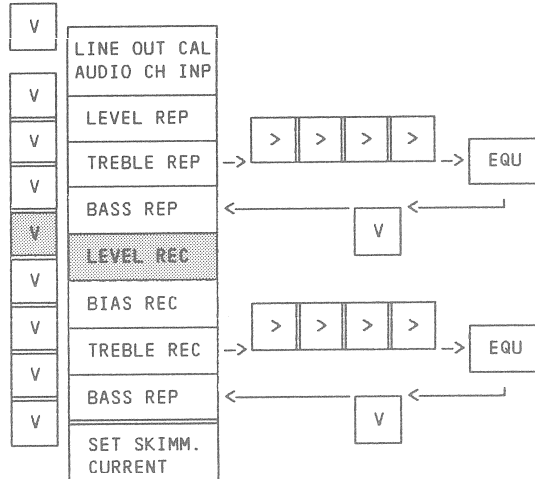
Fig. 4.4.1

Connect AF generator with 1 kHz and line level to the line input channel 1 (channels 1 + 2 on stereo models) and the millivoltmeter to the line output channel 1. A reference frequency of 700 Hz can be fed when aligning to NAB standards.

Switch recorder on and press the READY and REP keys of channels 1 and 2. Release all UNCAL buttons (calibrated line level). Select preferred studio tape speed.

4.4.2	LVL REC 15.0 NAB B
Record level prealignment LEVEL REC	CH1 30 CH2 30

Page to the position LVL REC with the keys ψ/NEXT, >/CURSOR, </CURSOR, and ↑/LAST (possibly with the aid of the status tree diagram, Section 2.6, where also a step-by-step programming example can be found).



Initially the cursor is positioned below the parameter for channel 1. Start recorder in PLAY mode. The record level can be set to the desired line level by turning the SET/CUE wheel. Press STORE.

On stereo recorders switch the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel 2 with >/CURSOR. Set the desired line level by turning the SET/CUE wheel. Press STORE.

4.4.3 Azimuth alignment of the record head

If the bias has not be set yet, the parameters should be set to the same or similar values for both channels of two-channel or stereo recorders, refer to Section 4.4.4 (reason: the mechanical and the "electrical" head gap of the record head are not in the same position; their distance depends on the magnitude of the bias current. For this reason an azimuth correction must be made after the final bias alignment).

Set AF generator to 10 kHz and decrease level by 20 dB. Connect millivoltmeter to channel 1. Start recorder in PLAY mode.

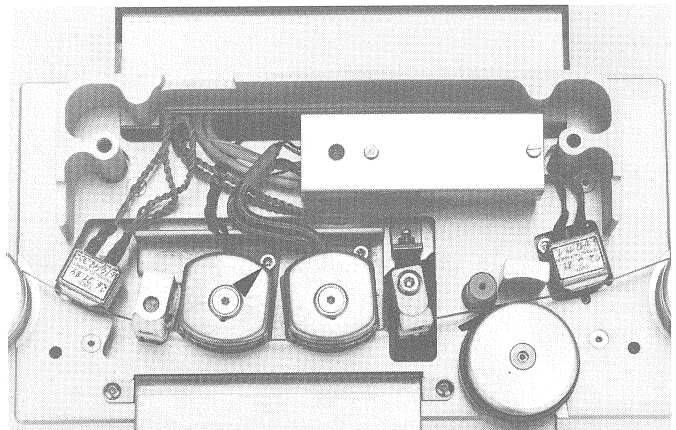


Fig. 4.4.2

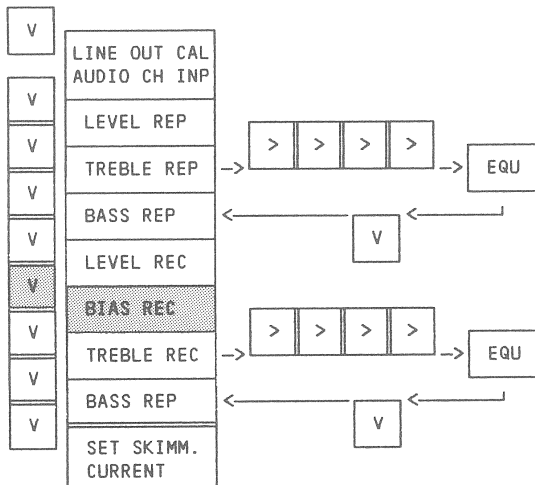
Correct the azimuth of the record head by means of the azimuth alignment screw until the highest output voltage and simultaneously the lowest level fluctuations are attained.

If significant corrections of the azimuth alignment have been made, repeat the record level prealignment (Section 4.4.2)!

4.4.4 Bias adjustment BIAS RECORD

BIA REC 15.0 NAB B
CH1 46 CH2 46

Set AF generator to 10 kHz and the level 20 dB below line level.
Connect millivoltmeter to the line output channel 1.
Page to the position BIA REC by pressing ψ /NEXT.



Initially the cursor is positioned below the parameter for channel 1.
Start unit in RECORD mode.
The bias current is set to zero by turning the SET/CUE wheel counterclockwise.
Turn the SET/CUE wheel clockwise in order to attain the maximum output voltage, write down the value. Continue to turn clockwise until the output voltage drops by ΔU .
 ΔU depends on the tape speed and formulation and can be determined from the BIAS table at the end of this Section.
Press STORE.

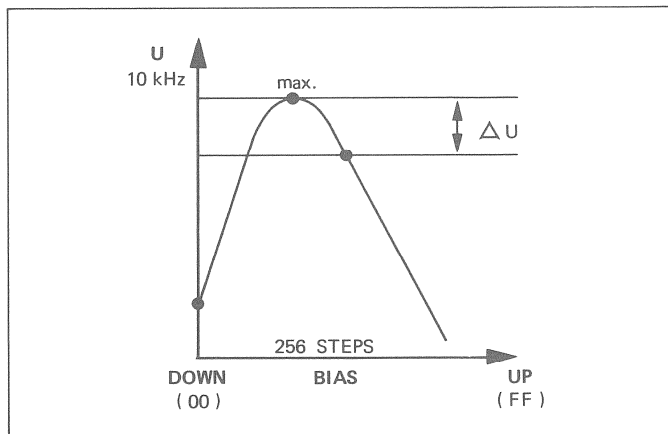


Fig. 4.4.3

On stereo recorders, switch the millivoltmeter to line output channel 2. Position the cursor below the parameter for channel 2 by pressing \Rightarrow /CURSOR. Adjust bias as for channel 1.
Press STORE.

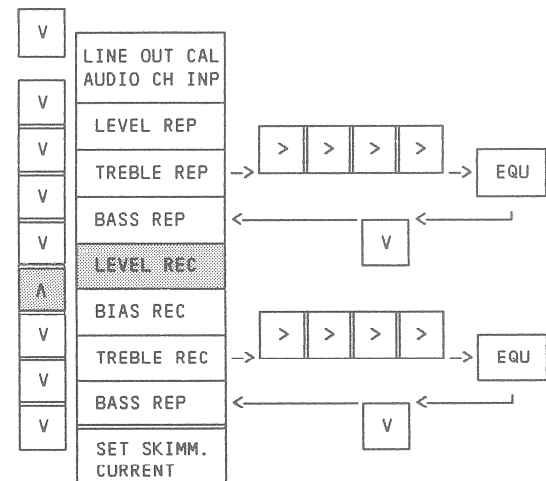
4.4.5 Azimuth correction (for stereo and two-channel models)

On stereo and two-channel models align for minimum phase difference of the output signals of channels 1 and 2 with the aid of an oscilloscope and by carefully turning the azimuth adjustment screw of the record head.

4.4.6 Record level adjustment LEVEL REC

LVL REC 15.0 NAB B
CH1 30 CH2 30

Set AF generator to 1 kHz (700 Hz) and line level.
Connect millivoltmeter to line output channel 1.
Page to the position LVL REC by pressing \uparrow /LAST.



Initially the cursor is positioned below the parameter for channel 1.
Start machine in RECORD mode.
Set the desired line level by turning the SET/CUE wheel.
Press STORE.

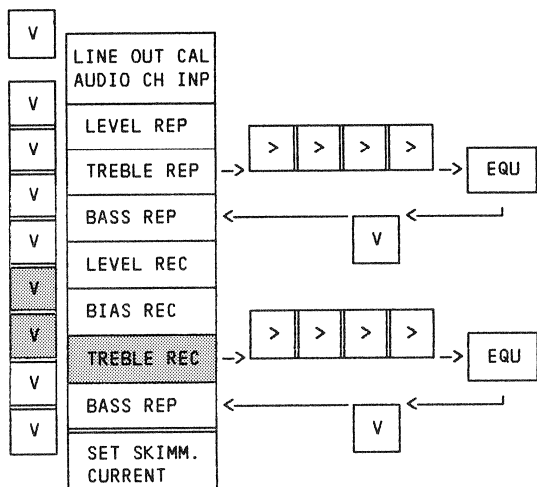
On stereo recorders, connect the millivoltmeter to line output channel 2. Position the cursor below the parameter for channel 2 with \Rightarrow /CURSOR. The record level can be adjusted to the desired line level by turning the SET/CUE wheel.
Press STORE.

4.4.7 Record frequency response alignment

Set AF generator to line level - 20 dB.
Connect millivoltmeter to line output channel 1.

Treble adjustment TREBLE RECORD: TRB REC 15.0 NAB B
CH1 54 CH2 54

Page to the position TRB REC by pressing Ψ /NEXT twice.



Initially the cursor is positioned below the parameter for channel 1.
Start recorder in PLAY mode.
Align for optimum frequency response by turning the SET/CUE wheel:

TAPE SPEED [cm/s]	TAPE SPEED [ips]	ADJUSTING FREQU. [kHz]
9,5	3.75	8
19	7.5	10
38	15	12,5
76	30	16

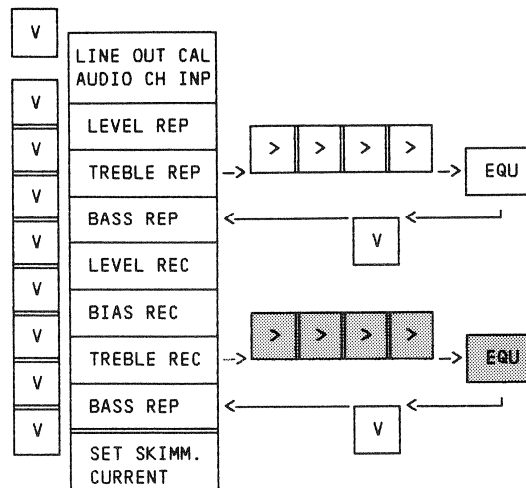
Press STORE.

On stereo recorders switch the millivoltmeter to line output channel 2. Position the cursor below the parameter for channel 2 by pressing \Rightarrow /CURSOR. Align for optimum treble frequency response by turning the SET/CUE wheel. Press STORE.

Changing the record standard equalization EQU RECORD: EQU REC 15.0 NAB B
CH1 99 CH2 99

In special situations it is possible to correct the record frequency response by shifting the standard time constant for the record equalization.
If no correction is necessary, press Ψ /NEXT to page to the BASS REPRO adjustment.

Proceed as follows to change the record standard equalization:
Starting from the position TREBLE REC, cursor below the parameter for channel 2, press \Rightarrow /CURSOR four times. The service display indicates EQU REC.



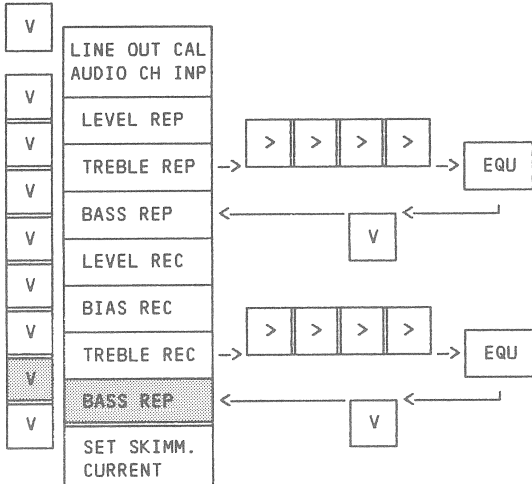
The equalization time constant is set for both channels in common (both parameters changed at the same time). Start unit in RECORD mode.
By turning the SET/CUE wheel clockwise, the time constant can be made smaller, i.e. the transition frequency is shifted toward higher frequencies. Press STORE after the optimum frequency response has been found.

THEORETICAL STANDARD EQUALIZATION ADJUSTMENTS		
STANDARD TIME CONSTANT [μs]	TRANSITION FREQU. [kHz]	RECORD HEX. VALUE
120	1.326	0E
90	1.768	4C
70	2.273	75
50	3.150	82
35	4.547	BA
17.5	9.094	DE

Bass adjustment BASS REPRO
(via tape):

BAS REP 15.0 NAB B
CH1 6A CH2 6A

Connect millivoltmeter to channel 1. Page to the BAS REP position with ψ /NEXT.



Initially the cursor is positioned below the parameter for CH1. Start recorder in PLAY mode. Align for optimum frequency response (below approximately 200 Hz) by turning the SET/CUE wheel. Press STORE.

On stereo recorders, connect the millivoltmeter to the line output channel 2. Position the cursor below the parameter for channel two by pressing \triangleright /CURSOR. Align for optimum frequency response (below approximately 200 Hz) by turning the SET/CUE wheel. Press STORE.

4.4.8 Cross talk adjustment (only 2-channel and stereo models)

Connect AF generator (line level, 1 kHz) to the line input channel 1, and connect millivoltmeter to the line output channel 2. Switch both channels to READY; start machine in RECORD mode. Adjust for minimum output voltage with the aid of the CROSSTALK potentiometer (preamplifier in headblock, R14, Fig. 4.4.4). Repeat the same measurement with swapped channels. If pronounced differences occur, an optimum value has to be found for both channels.

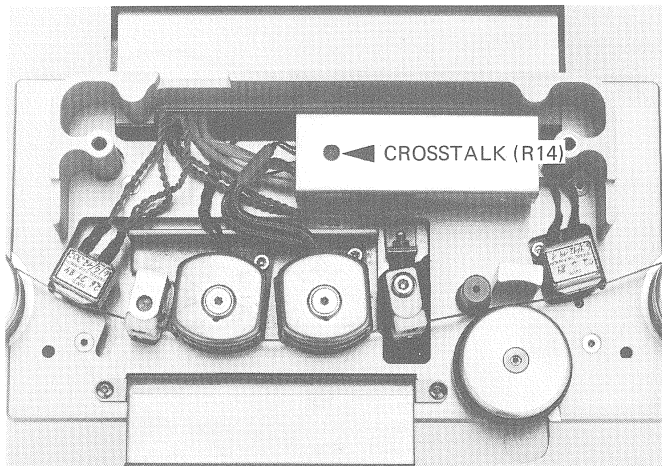


Fig. 4.4.4

4.5 SYNC REPRODUCTION ADJUSTMENTS

Sync reproduction is not recommended for 3 3/4 ips. It is possible, however, if reduced reproduction quality can be accepted. All SYNC parameters are set to 00 for this tape speed in the factory.

Switch recorder off and wait 5 seconds. Set the jumper of the REPRODUCE AMPLIFIER to NARROW (or to WIDE if a wider frequency response is desired - however considerable cross talk from the recording channel into the SYNC reproduce channel must be expected in this case).

The SYNC reproduce adjustments are analogous to the reproduce adjustments with the following exceptions:

- On the VU-meter select SYNC instead of REP (the service display indicates e.g. LVL SYN instead of LVL REP). The channel controls are now connected in parallel, even if they can normally be operated individually (function CH CONTR PAR/INDIV set to "INDIV").
- No soundheads need to be aligned.

Level adjustment LEVEL SYNC:

LVL SYN 15.0 NAB B
CH1 62 CH2 62

Treble adjustment TREBLE SYNC:

TRB SYN 15.0 NAB B
CH1 50 CH2 50

- Alignment frequencies with jumper in NARROW position: 8 kHz for for 7 1/2 ips, 10 kHz for higher tape speeds.

Altering the reproduce standard equalization EQU SYNC:

EQU SYN 15.0 NAB B
CH1 61 CH2 61

- The following table shows the theoretical equalization values:

THEORETICAL STANDARD EQUALIZATION ADJUSTMENTS		
STANDARD TIME CONSTANT [μs]	TRANSITION FREQU. [kHz]	SYNC REPRO HEX. VALUE
120	1.326	E5
90	1.768	A3
70	2.273	87
50	3.150	61
35	4.547	44
17.5	9.094	26

Bass adjustment BASS SYNC:

BAS SYN 15.0 NAB B
CH1 88 CH2 88

Studio tape recorders are normally calibrated with full-track reference tapes. Frequency response errors are caused by fringing effects in stereo and two-channel models at low frequencies.

For this reason it is recommended to adjust the SYNC reproduce frequency response for low frequencies via tape i.e. the sync reproduce frequency response adjustment should be repeated with a test tape prepared by the user if no reference tape with the correct track separation is available (approximately 3 minutes each: 1 kHz (NAB 700 Hz), 10 kHz (8 kHz for 7 1/2 ips), 50 Hz).

4.6 TIME CODE REPRODUCTION

No electrical adjustments are basically necessary for time code reproduction.

The adjustments are limited to the mechanical alignment of the left-hand and right-hand code soundhead and are only necessary after the code soundheads have been replaced. A soundhead alignment gauge A80/A820 1/4" with reference gauge A80/A800/A820 are available (Order Nos. 10.010.001.02 and 10.010.001.01). Because the width of the code track is very small (0.38 mm), accurate alignment of the heads is absolutely essential.

4.6.1 Preparatory steps

Check the heads for contamination and clean them if necessary. The head height is to be aligned to maximum reproduce level by means of a reference tape (in preparation). The CODE READ/WRITE amplifier must be mounted on the extender board (Order No. 1.820.799.00) for this purpose.

CAUTION

Switch the recorder off and wait at least 5 seconds before inserting or unplugging the circuit boards.

Time code reproduction is not possible as long as the CODE READ/WRITE UNIT is mounted on the extender board!

The reproduce level is measured (preferably with an oscilloscope) before the limiter on test point TP; the ground terminal of the scope probe must be connected to plug No. 21 on the extender board.

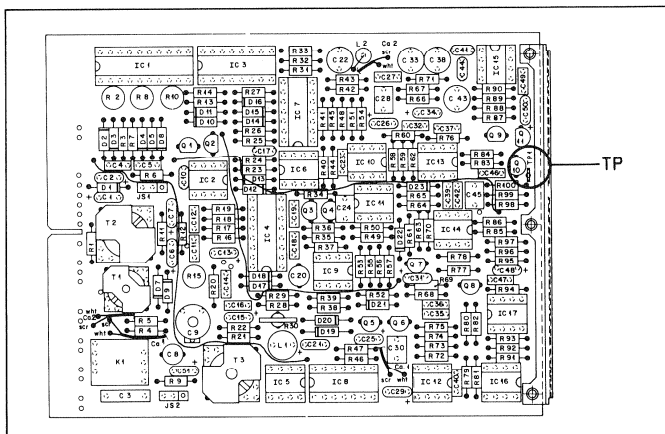


Fig. 4.6.1

Mount time code reference tape, recording inhibited (SAFE). Start recorder in PLAY mode.

4.6.2 Checking the code soundhead height

THIS PROCEDURE IS ONLY NECESSARY AFTER THE SOUNDHEADS HAVE BEEN REPLACED!

- Visually check the code soundhead height, then measure the voltage on the measuring point TP.

- Alternately press with your finger from the top and the bottom lightly against the tape edge on the left of the left-hand code soundhead (audio erase head). The height is correct if the voltage becomes smaller while the tape is being pressed in either direction.
- By pressing TRANS and PLAY for as long as TRANS is held, start recorder in reverse play mode and measure the voltage on test point TP. Alternately press with your finger lightly from the top and the bottom against the tape edge on the right of the right-hand code soundhead (combination head). The height is correct if the voltage becomes smaller while the tape is being pressed in either direction.

Should the measured voltage rise when the tape edge is pressed, the height of the heads must be corrected:

- on the left-hand code soundhead with the aid of spacer shims (0.1 mm, Order No. 1.062.210.08);
- on the right-hand code soundhead by adjusting the swivel plate.

4.6.3 Tape guidance

The right-hand time code soundhead (combination head) must be perpendicular to the plane of the tape path. Lateral or forward/backward tilt detected after the height alignment has been performed must be corrected by adjusting the swivel plate with the aid of the soundhead alignment gauge A80/A820 1/4" with reference gauge A80/A800/A820 are available (Order Nos. 10.010.001.02 and 10.010.001.01). Recheck the height alignment afterwards!

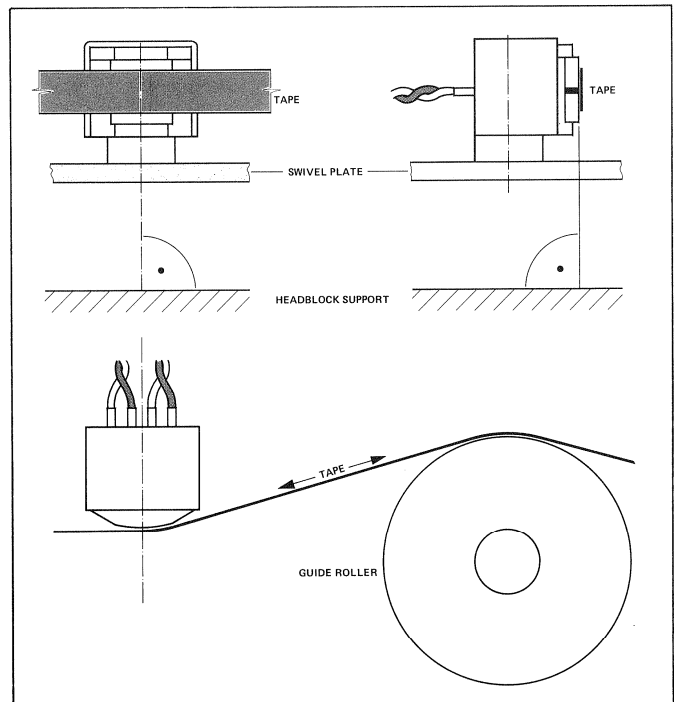


Fig. 4.6.2

4.7 TIME CODE RECORDING

4.7.1 Preparatory steps

The record alignments can be executed with a time code signal as well as with a square-wave signal. The adjustment with a square-wave signal has the advantage of a stationary pattern on the oscilloscope screen. For that purpose, however, the TIME CODE DELAY UNIT must be unplugged and the jumper JS2 on the TIME CODE READ/WRITE UNIT must be plugged to position "BYPASS".

- Mount the CODE READ/WRITE PCB on the extender board (Order No. 1.820.799.00).

CAUTION: Switch recorder off and wait for at least 5 seconds before unplugging or inserting any PCB!
Time code reproduction is not possible during spooling mode as long as the CODE READ/WRITE UNIT is mounted on the extender board!

- Switch recorder on.
- Set trigger level for time code line input:
 - Connect square-wave generator, frequency 1 kHz, or time code generator to the time code line input. The output voltage of the generator should be at the lowest value at which the line level input and the CODE LEVEL indicator lamp are still supposed to work (factory setting: 0.5 Vpp, minimum value approx. 150 mVpp).
 - Turn trimmer potentiometer R15 on the TIME CODE READ/WRITE UNIT clockwise until the CODE LEVEL lamp just turns on.

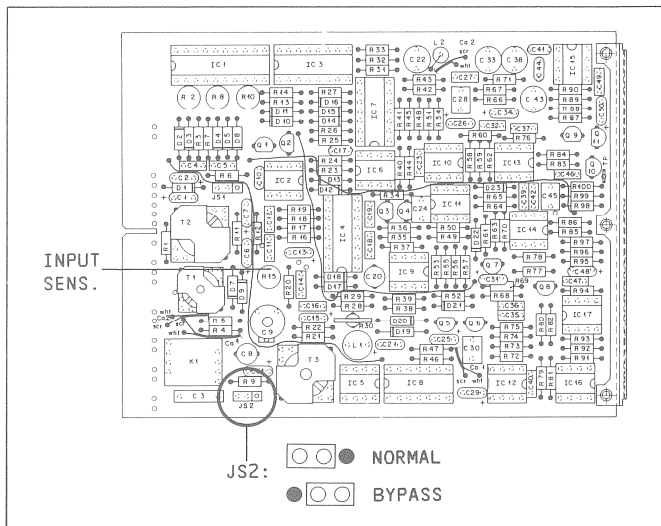


Fig. 4.7.1

- Check code soundheads for contamination and clean them, if necessary.

4.7.2 Adjusting the head height of the right-hand code soundhead (combination head)

THIS PROCEDURE IS ONLY NECESSARY AFTER THE TIME CODE HEADS HAVE BEEN REPLACED!

- Mount practically new, unrecorded tape.
- Set bias trimmer C9 to the center position.
- Turn record level trimmers R2 (7 1/2 ips), R8 (15 ips) and R10 (30 ips) clockwise by 1/3 of the angle of rotation (approximately 90°).
- Unplug CODE DELAY UNIT, set jumper JS2 on CODE READ/WRITE UNIT to position "BYPASS" (see Fig. 4.7.1).
- Select tape speed 15 ips.
- Connect square-wave generator 2 Vpp, 1 kHz to all three line inputs and make a recording with a duration of approximately 10 to 20 seconds.
- Apply iron oxide spray (MAGNETIC IRON OXIDE by AEROSOLS INTERNATIONAL LTD., Order No. 10.555.001.00) to a few centimeters of the recorded tape, coated side facing upward.
- After the suspension has dried, measure the track symmetry with the aid of a measuring magnifier (Order No. 10.258.006.00).
Align the head height if the deviation is greater than ± 0.05 mm. Repeat recording and measurement until track symmetry is achieved.

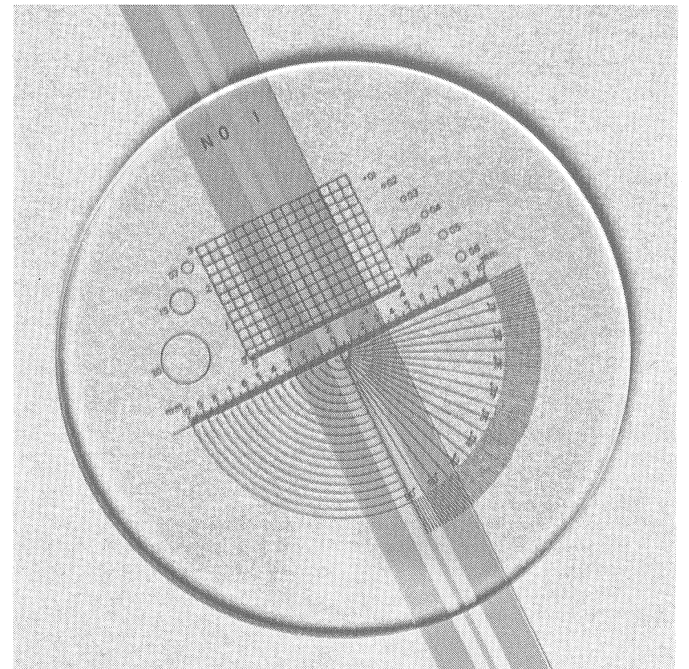


Fig. 4.7.2

- It is necessary to check the tape guidance after the head height has been corrected (4.6.3).

4.7.3
Preparatory steps

Press time code SAFE button (audio recording inhibited = SAFE).

- Connect oscilloscope to test point TP. The ground terminal of the scope probe must be connected to plug No. 21 on the extender board.
- Mount time code reference tape (in preparation), spool forward to the second test section (time code, 729 nWb/m pp), start recorder in PLAY mode, and measure the signal magnitude (amplitude, peak-to-peak) with an oscilloscope on test point TP. Note the measured value. (Approximate value: 180 - 300 mVpp at 15 ips)

If no time code reference tape is available this measurement can be made on a make-shift basis with the aid of a full-track audio test tape. Procedure:

- Connect oscilloscope to the test point TP via an RC element as illustrated in Fig. 4.7.3.

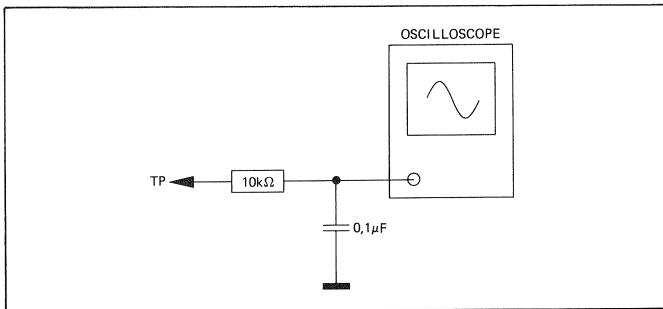


Fig. 4.7.3

- Play level tone section, 1 kHz, measure and write down the measured value (amplitude, peak-to-peak).
- Multiply measured value with factor
 $k = 1.3$ if a reference tape with a flux of 200 nWb/m is used,
 $k = 0.81$ if a reference tape with a flux of 320 nWb/m is used,
 to obtain the time code reproduce level (peak-to-peak) for a tape flux of 729 nWb/m pp.
- Write down computed value.

4.7.4
Bias adjustment

- Mount unrecorded, new quality tape.
- Set bias trimmer C9 to minimum capacitance.
- Turn record level trimmers R2 (7 1/2 ips), R8 (15 ips) and R10 (30 ips) clockwise by 1/3 of the angle of rotation (approximately 90°).
- Press time code READY.

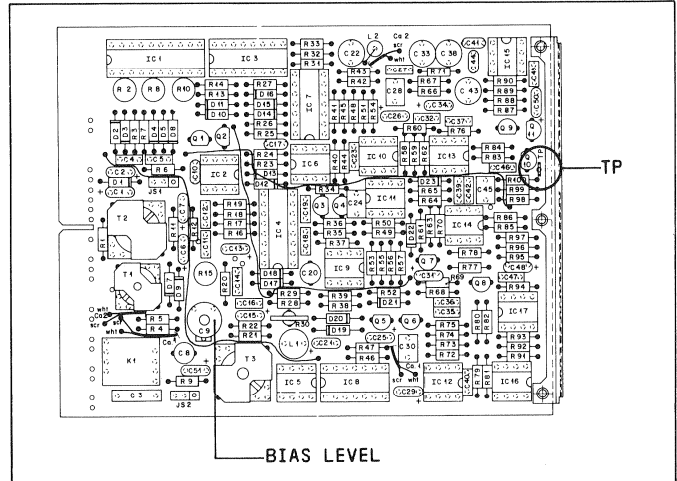


Fig. 4.7.4

- Connect square-wave generator (1 kHz; CODE DELAY UNIT removed, jumper JS2 on CODE READ/WRITE UNIT in position "BYPASS") or time code generator with approximately 2 Vpp to the time code line input.
- Start machine in RECORD mode. During recording increase the capacitance of C9 step by step in intervals of 10 seconds until the rotor is plunged in approximately 90°. A recording with different bias values is produced in this manner.

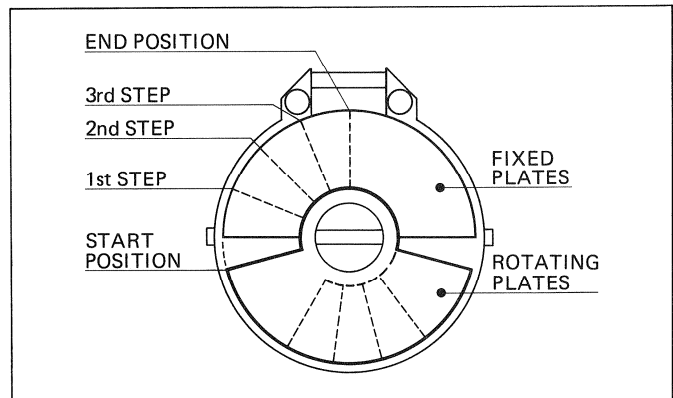


Fig. 4.7.5

- Rewind to the start of the recording.
- Connect oscilloscope to test point TP. The ground terminal of the scope probe must be connected to plug No. 21 on the extender board.
- Start recorder in PLAY mode.
- During the playback note the position at which the output amplitude is the highest.
- Set C9 to this position.
- Restart the machine in RECORD mode, adjust C9 in small increments near the previously found position.
- Determine the optimum position of C9 (maximum amplitude and steepest signal slope) through repetitive tests.

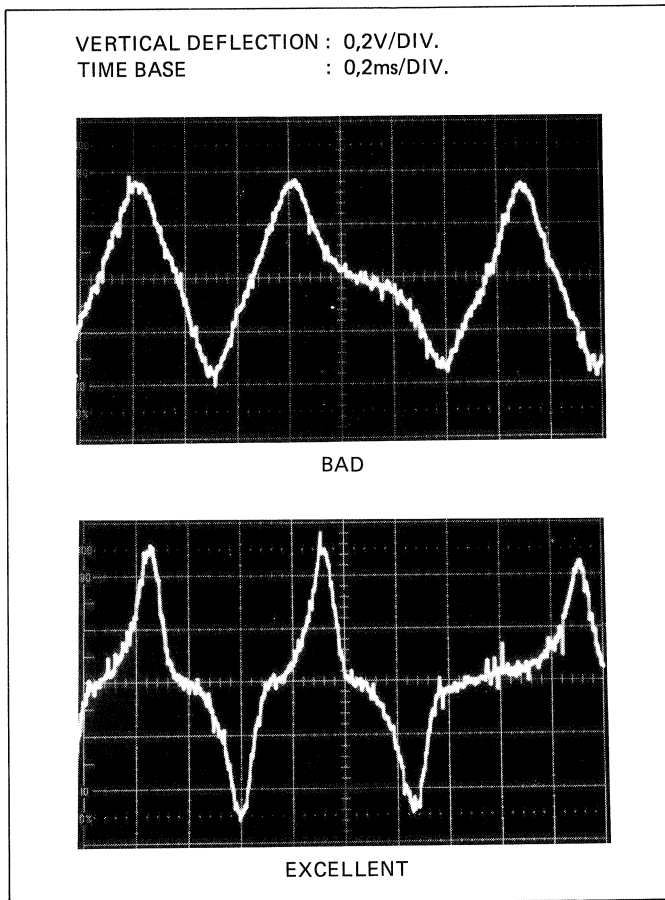


Fig. 4.7.6

4.7.5 Record level adjustment

The record level is adjusted with the trimmer potentiometers R2 (7 1/2 ips), R8 (15 ips) and R10 (30 ips) in such a way that the reproduce level determined and noted according to Section 4.7.3 becomes available on test point TP.

Procedure (for each tape speed):

- Mount unrecorded, new quality tape.
- Connect oscilloscope to test point TP. The ground terminal of the scope probe must be connected to plug No. 21 on the extender board.
- Start machine in RECORD mode and record a square-wave signal (1 kHz, 2 Vpp; CODE DELAY UNIT removed, jumper JS2 on CODE READ/WRITE UNIT in position "BYPASS"), or a time code signal for 20 seconds.
- Rewind to the start of the recording, switch recorder to PLAY mode. The voltage on test point TP should be the same as the value determined according to 4.7.3.
- Repeat this procedure several times until this value is attained.

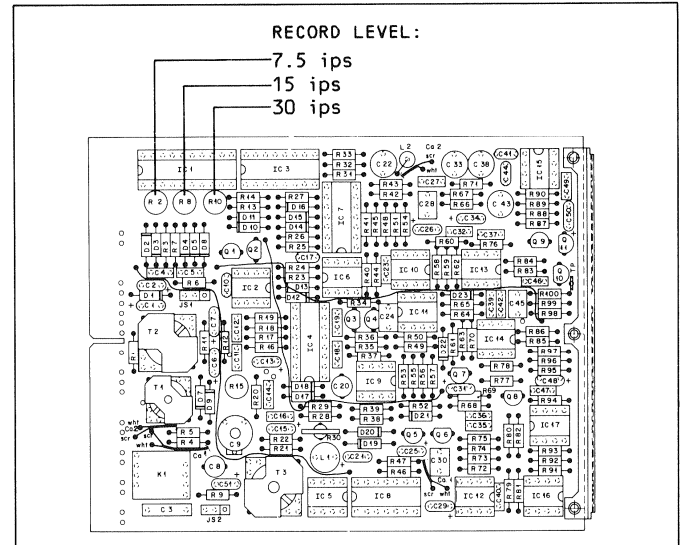


Fig. 4.7.7

4.7.6 Checking the head gap position, reproduce

- Insert CODE DELAY UNIT.
- Connect time code line output and line output of one of the two audio channels to the MASTER or the SLAVE input, resp., of a STUDER TLS4000 synchronizer (or a time code reader with offset indication facility).
- Mount time code reference tape (in preparation), spool to the first section (full-track time code) and start recorder in PLAY mode, tape speed 15 ips.
- Measure the offset between the audio channel and the time code channel.
- The offset should not exceed 4 ms (for 15 ips), 2 ms (for 30 ips), or 8 ms (for 7.5 ips), resp. Should the offset be greater than these values, it can be decreased by turning the left-hand combination head.
- After this adjustment has been made it is necessary to check the erase depth of the audio channels! A compromise between maximum erase efficiency and minimum time code offset may have to be made.

If no equipment for measuring the offset is available, it can be assumed that the offset is less than 4 ms (for 15 ips), 2 ms (for 30 ips), or 8 ms (for 7.5 ips), resp. if the erase efficiency of the audio channels is adequate and if the head gaps of the record and reproduce head have been adjusted correctly.

4.7.7 Checking the head gap position, via tape

- Connect time code generator in parallel to an audio channel and the time code channel. Make a recording with a duration of approximately one minute.
- Rewind to the start of the recording and measure the offset between the audio channel and the time code channel with the same equipment as in 4.7.6.
- The offset should not exceed 4 ms (for 15 ips), 2 ms (for 30 ips), or 8 ms (for 7.5 ips), resp. Should the offset be larger, it can be decreased by turning the right-hand combination head.

IMPORTANT!

After the right-hand combination head has been corrected (time code record head) a new recording must be made for checking the head gap position!

The tape must touch the head face approximately symmetrically, it should not be drawn across one of the edges!

4.7.8

Checking the time code reading performance during fast wind mode

- Insert CODE DELAY UNIT or, if not available, set jumper JS2 on CODE READ/WRITE UNIT to position "BYPASS".
- Insert CODE READ WRITE UNIT without extender board.
- Connect time code generator to the TC line input.
- Select tape speed 7.5 ips.
- Make a recording for approx. 10 minutes.
- Connect time code reader to the TC line output.
- Switch recorder to maximum spooling speed. The recorded time code must be perfectly read in either direction.

Important: In spooling mode the CODE DELAY UNIT is automatically bypassed, i.e. the offset inevitably amounts more than the specified value (max. 8 ms for 7.5 ips nominal speed), no matter if the CODE DELAY UNIT is inserted or not.

4.8 EXTERNAL STORAGE OF THE AUDIO PARAMETERS

For copying the audio and tape tension parameters of the RAM to an external storage medium the tape recorder must be equipped with the serial interface 1.810.751. There exist two possibilities: either by means of a suited Personal Computer directly to a floppy disk, or to tape (preferably via the tape recorder itself).

With a special command the external data can be compared with the ones stored in the recorder's RAM in order to check the correct data transmission.

In the following the expressions SAVE (for external storage of the recorder's RAM data), VERIFY (for comparing the externally stored data with those in the recorder's RAM), and LOAD (for writing the externally stored data into the recorder's RAM) will be used.

4.8.1 Storing the parameters on tape (SAVE)

If the recorder receives the command "SAVE" the microprocessor transmits all the stored audio and tape tension parameters in serial format to the pins 4 and 6 of the SMPTE/EBU BUS / RS232 connector. These pins are balanced and floating, the output level is approximately 30 Vpp. In order to reduce the output level of the current source to about 2 Vpp, a 47 Ω load resistor must be connected between the pins 4 and 6.

Three complete copies of the parameters are transmitted each time for safety reasons, however, one correct transmission is sufficient when reloading. The complete save process takes approximately 30 seconds.

Procedure:

- Connect the input of the tape recorder to the SMPTE/EBU BUS / RS232 connector:

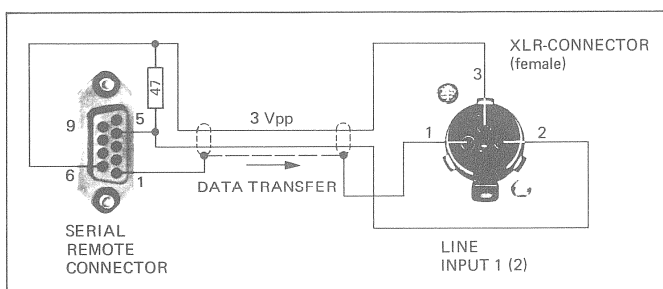


Fig. 4.8.1

- Select tape speed.
- Mount tape of sufficient length (recording time at least 30 seconds)
- Adjust recording level: Press UNCAL button of the RECORD LEVEL control. Adjust the PPM or VU-meter indication to zero during the first data save process. If necessary, mark the position of the RECORD LEVEL control with the marker ring or write it down. (After that, repeat the data save process with the correct level).
- Press READY button of the desired recording channel.
- Bring the programming enable switch [28] to its counter-clockwise end position (with Allen key No. 2.5).
- Press ψ /NEXT several times until the service display

shows the following menu:

```
PARAM BACKUP ON TAPE
↑_ψ VERIFY SAVE LOAD
```

The cursor is between the two arrows in a safe position.

- Press \Rightarrow /CURSOR two times, the cursor stands now below the word "SAVE".

- Start recorder with PLAY+REC in record mode.
- Press STORE, the service display shows:

```
DATA TRANSMISSION IN
PROGRESS - PLS WAIT
```

The data are written to the tape.

- After a successful data transmission, the following message appears:

```
DATA TRANSMISSION
COMPLETED
```

- If data transmission errors have occurred (e.g. caused by a transient system voltage failure), the following message appears:

```
DATA TRANSMISSION
FAILED
```

- Pressing \uparrow /NEXT or ψ /LAST switches over in both cases to the following menu:

```
PARAM BACKUP ON TAPE
↑_ψ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing \uparrow /LAST several times.

4.8.2 Comparing the data on tape (VERIFY)

If the tape recorder receives the command "VERIFY" the microprocessor receives all audio and tape tension parameters in serial format on the pins 4 and 6 of the SMPTE/EBU BUS / RS232 connector. These pins are balanced and floating, the input level should be about 2 Vpp.

Procedure:

- Connect the tape recorder's output to the SMPTE/EBU BUS / RS232 connector:

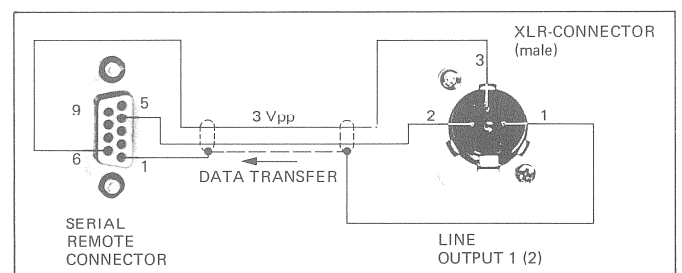


Fig. 4.8.2

- Select the same tape speed as was used for the SAVE procedure.
- Mount tape with the recorded parameters.
- Adjust reproduce level: Press UNCAL button of the REP/SYNC LEVEL control. Adjust the PPM or VU-meter indication to zero during the first data verify process. If necessary, mark the position of the REP/SYNC LEVEL control with the marker ring or write it down. (After that, repeat the verify process with the correct level).
- Bring the programming enable switch [28] to its counter-clockwise end position (with Allen key No. 2.5).
- Press Ψ /NEXT several times until the service display shows the following menu:

```
PARAM BACKUP ON TAPE
↑_Ψ VERIFY SAVE LOAD
```

The cursor is between the two arrows in a safe position.

- Press \Rightarrow /CURSOR once, the cursor stands now below the word "VERIFY".
- Press STORE, the service display shows:

```
WAITING FOR DATA INP
PLS SEND DATA
```

- Switch recorder with PLAY to reproduce mode. As soon as valid data are recognized, the service display indicates:

```
VERIFYING DATA
PLEASE WAIT
```

- After successful data comparison, the following message appears:

```
VERIFICATION SUCCESS-
FULLY COMPLETED
```

- If the data are not identical, the following message appears:

```
VERIFICATION FAILED
PLEASE REPEAT
```

- The following message appears:

- after about 15 seconds, if no reproduction took place, or
- after about 30 seconds, if no valid data could be found:

```
NO DATA FOUND
```

- In all cases, pressing \uparrow /LAST switches back to the following menu:

```
PARAM BACKUP ON TAPE
↑_Ψ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing \uparrow /LAST several times.

4.8.3

Loading the data from tape (LOAD)

If the recorder receives the command "LOAD" the microprocessor receives all audio and tape tension parameters in serial format and loads them into the RAM. The same cable can be used as for the VERIFY procedure. Generally, the first of the three identical data blocks is sufficient for the LOAD procedure. If errors should occur during LOAD, the microprocessor can read from one of the two following data blocks.

Procedure:

- Analogous to 4.8.2, until the following menu is indicated:

```
PARAM BACKUP ON TAPE
↑_Ψ VERIFY SAVE LOAD
```

- Press \Rightarrow /CURSOR three times, the cursor stands now below the word "LOAD".
- Press STORE, the service display shows:

```
WAITING FOR DATA
PLS SEND DATA
```

- Switch recorder with PLAY to reproduce mode. As soon as valid data are recognized, the service display indicates:

```
DATA LOADING IN
PROGRESS - PLS WAIT
```

- After successful data loading, the following message appears:

```
DATA LOADING
COMPLETED
```

- If the microprocessor detects a data error (e.g. caused by a transient system voltage failure or contaminated soundheads), the following message appears:

```
DATA LOADING FAILED
DEFAULT PARAM LOADED
```

Repeat the procedure, or, if requested, go on working with the standard parameters.

- The following message appears:

- after about 15 seconds, if no reproduction took place, or
- after about 30 seconds, if no valid data could be found:

```
NO DATA FOUND
```

The previous audio and tape tension parameters are still present in the RAM.

- In all cases, pressing \uparrow /LAST switches back to the following menu:

```
PARAM BACKUP ON TAPE
↑_Ψ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing \uparrow /LAST several times.

4.8.4

Storing the parameters with Personal Computer (SAVE)

If the recorder receives the command "SAVE" the microprocessor transmits all the stored audio and tape tension parameters in serial format to the SMPTE/EBU BUS / RS232 connector. Three complete copies of the parameters are transmitted each time for safety reasons.

Procedure:

- Putting the Personal Computer into operation and connecting it to the connector SMPTE/EBU BUS / RS232: As described in 2.8.5. In addition, the software handshake mode (X ON/X OFF protocol) must be switched on.
- Bring the programming enable switch [28] to its counter-clockwise end position (with Allen key No. 2.5).
- Press ψ /NEXT several times until the service display shows the following menu:

```
PARAM BACKUP RS 232
↑_ψ VERIFY SAVE LOAD
```

The cursor is between the two arrows in a safe position.

- Press \Rightarrow /CURSOR two times, the cursor stands now below the word "SAVE".
- Press STORE, the service display shows:

```
DATA TRANSMISSION IN
PROGRESS - PLS WAIT
```

The data are transmitted to the computer.

- After a successful data transmission, the following message appears:

```
DATA TRANSMISSION
COMPLETED
```

The transmitted data can be stored on the floppy disk.

- If data transmission errors have occurred (e.g. caused by a transient system voltage failure), the following message appears:

```
DATA TRANSMISSION
FAILED
```

- Pressing \uparrow /NEXT or ψ /LAST switches over in both cases to the following menu:

```
PARAM BACKUP RS 232
↑_ψ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing \uparrow /LAST several times.

4.8.5

Verification of the data in the Personal Computer (VERIFY)

If the tape recorder receives the command "VERIFY" the microprocessor receives all audio and tape tension parameters in serial format via the SMPTE/EBU BUS / RS232 connector.

Procedure:

- Putting the Personal Computer into operation and connecting it to the SMPTE/EBU BUS / RS232 connector: As described in 2.8.5. In addition, the software handshake mode (X ON/X OFF protocol) must be switched on.
- Bring the programming enable switch [28] to its counter-clockwise end position (with Allen key No. 2.5).
- Press ψ /NEXT several times until the service display shows the following menu:

```
PARAM BACKUP RS 232
↑_ψ VERIFY SAVE LOAD
```

The cursor is between the two arrows in a safe position.

- Press \Rightarrow /CURSOR once, the cursor stands now below the word "VERIFY".
- Press STORE, the service display shows:

```
WAITING FOR DATA INP
PLS SEND DATA
```

- Activate data transmission from the Personal Computer to the tape recorder. As soon as valid data are recognized, the service display indicates:

```
VERIFYING DATA
PLEASE WAIT
```

- After successful data comparison, the following message appears:

```
VERIFICATION SUCCES-
FULLY COMPLETED
```

- If the data are not identical, the following message appears:

```
VERIFICATION FAILED
PLEASE REPEAT
```

- The following message appears:

- after about 15 seconds, if no data transmission took place, or
- after about 30 seconds, if no valid data could be found:

```
NO DATA FOUND
```

- In all cases, pressing \uparrow /LAST switches back to the following menu:

```
PARAM BACKUP RS 232
↑_ψ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing \uparrow /LAST several times.

4.8.6

Loading the data from the Personal Computer (LOAD)

If the recorder receives the command "LOAD" the microprocessor receives all audio and tape tension parameters in serial format and loads them into the RAM. Generally, the first of the three identical data blocks is sufficient for the LOAD procedure. If errors should occur during LOAD, the microprocessor can read from one of the two following data blocks.

Procedure:

- Analogous to 4.8.5, until the following menu is indicated:

```
PARAM BACKUP RS 232
↑_↓ VERIFY SAVE LOAD
```

- Press >/CURSOR three times, the cursor stands now below the word "LOAD".
- Press STORE, the service display shows:

```
WAITING FOR DATA
PLS SEND DATA
```

- Activate data transmission from the Personal Computer to the tape recorder. As soon as valid data are recognized, the service display indicates:

```
DATA LOADING IN
PROGRESS - PLS WAIT
```

- After successful data loading, the following message appears:

```
DATA LOADING
COMPLETED
```

- If the microprocessor detects a data error (e.g. caused by a transient system voltage failure), the following message appears:

```
DATA LOADING FAILED
DEFAULT PARAM LOADED
```

Repeat the procedure, or, if requested, go on working with the standard parameters.

- The following message appears:
 - after about 15 seconds, if no data transmission took place, or
 - after about 30 seconds, if no valid data could be found:

```
NO DATA FOUND
```

The previous audio and tape tension parameters are still present in the RAM.

- In all cases, pressing ↑/LAST switches back to the following menu:

```
PARAM BACKUP RS 232
↑_↓ VERIFY SAVE LOAD
```

- If required, the procedure can be repeated. If not, page back to the starting position by pressing ↑/LAST several times.

4.9 PROGRAMMING THE OPERATING PARAMETERS

4.9.1 Program switches LINE AMPLIFIER

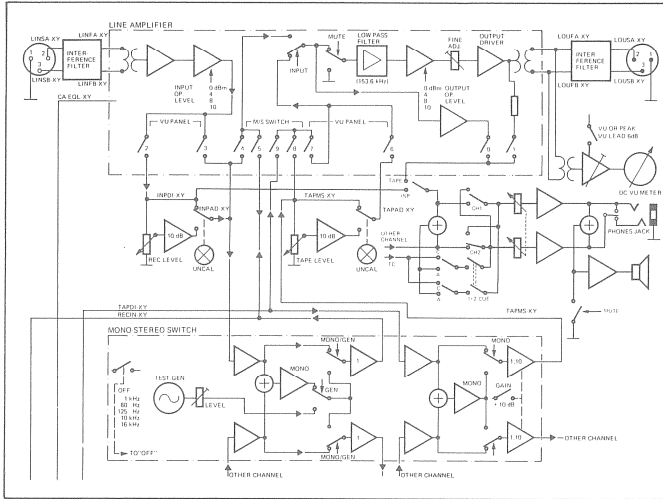


Fig. 4.9.1

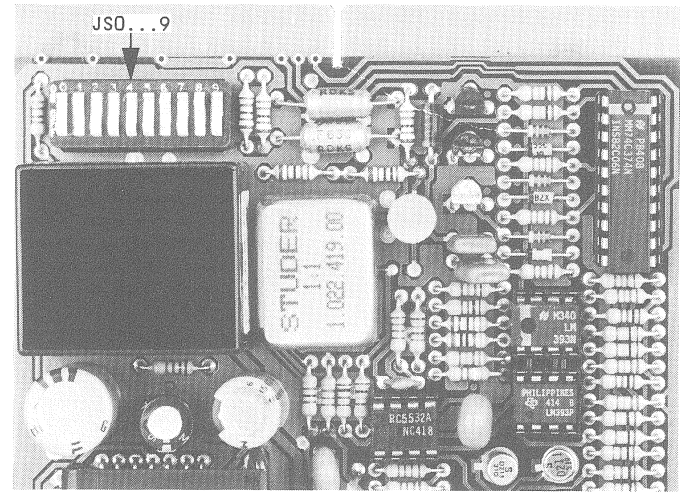


Fig. 4.9.2

JS0, JS1: Connection of internal monitor and phones output:

Connected to output amplifier:
 JS0 = 0
 JS1 = 1

Connected before muting circuit:
 JS0 = 1
 JS1 = 0

Monitor speaker and headphones switched off permanently:
 JS0 = 0
 JS1 = 0

JS2...JS9: VU-meter panel, mono/stereo switch:

EQUIPMENT	JS2	JS3	JS4	JS5	JS6	JS7	JS8	JS9
NO VU PANEL, NO M/S SWITCH	1**	1	1	1	0	1	0	1
WITH VU PANEL, NO M/S SWITCH	1	0	1	1	1	0	1	1
NO VU PANEL, WITH M/S SWITCH	1**	1	0*	1*	0	1	1	0
WITH VU PANEL, WITH M/S SWITCH	1	0	0*	1*	1	0	0	0

* The indicated switch position means that the output RECIN of the mono/stereo switch will be heard if the output selector is in the INP position. If the input signal is to be tapped before the mono/stereo switch, it is necessary to set JS4 to 1 and JS5 to 0.

** JS2 must be 0 for recorders without VU panel and without monitor speaker.

4.9.2 Jumper REPRODUCE AMPLIFIER

The SYNC reproduce frequency range can be switched from 12 kHz ("N = narrow) to 20 kHz ("W = wide) by means of a jumper.

Note

Significant record-to-sync channel cross talk must be expected above 12 kHz!

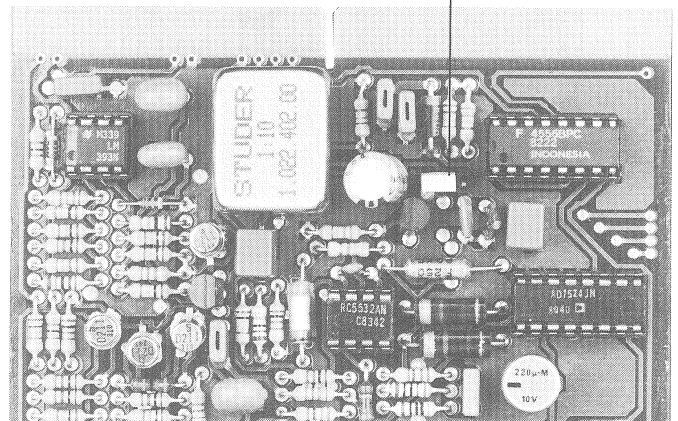
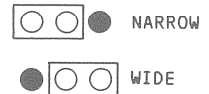


Fig. 4.9.3

4.9.3
Jumper VU-meter amplifier

The display characteristic (VU-meter or peak program meter, PPM) of each of the level indicators can be selected by means of a jumper on the back of the VU-meter panel. VU indication according to IEC recommendation 268, part 10, Section 4; peak program indication (PPM) according to IEC recommendation 268, part 10, Section 3 (except 24, 1, scale division).

Remove VU-meters by unfastening the 4 mounting screws.

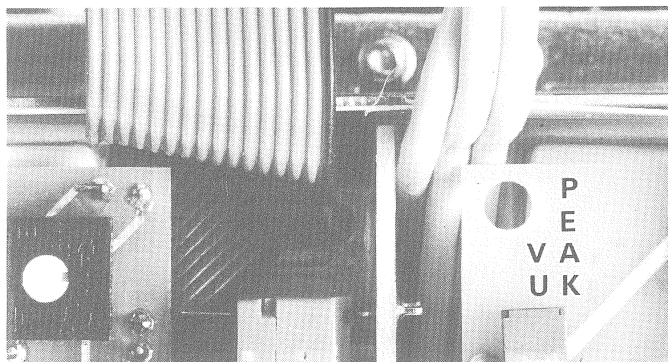


Fig. 4.9.4

4.9.4
Jumpers and potentiometers MONO/STEREO SWITCH and/or TEST GENERATOR

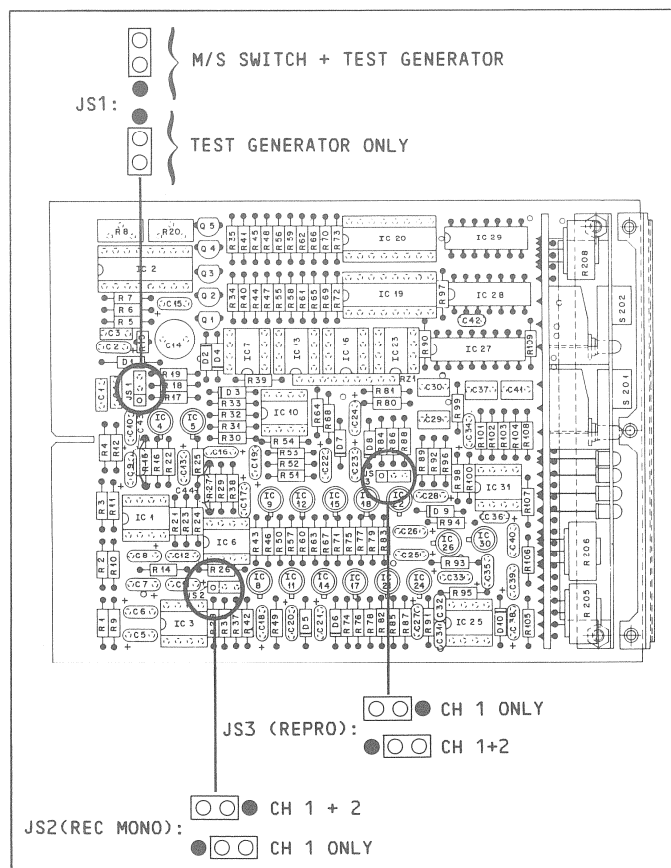


Fig. 4.9.5

Jumpers:

If the mono/stereo switch is retrofitted, the setting of the program switches on the LINE AMPLIFIER must be altered correspondingly (refer to 4.9.1). In addition the function 031 "STEREO/MONO" is to be assigned to a key selected by the user (as shown in example 4, Section 2.6.4), the key label is to be changed, and the status indication label is to be replaced by the one with complete labeling. Self-adhesive labels and plug-in LEDs are bypacked in the accessories of the recorder.

In machines for which a test generator is desired but the mono/stereo switch is not needed or unusable (e.g. full-track versions), the electronics of the mono/stereo switch is required, however. In this case the signal TA-ACTMO must be pulled to ground with jumper JS1 (jumper in position "TEST GENERATOR ONLY"); as a result operation without mono/stereo switch is simulated so that the mono/stereo switch cannot be accessed by the software.

The operating mode for RECORD can be selected with jumper JS2: Mono signal either only from input channel 1, or aggregate signal of inputs channel 1+2.

The operating mode for PLAY can be selected with jumper JS3: The aggregate signal of channel 1+2 can either be connected only to the output channel 1 or to both outputs channel 1 and 2.

Potentiometers:

(Prerequisite: recorder calibrated according to Section 4.2).

- Alignment of LEVEL MONO, reproduce:
 - Mount test tape.
 - Select MONO mode (simultaneously press STOP and STEREO-MONO).
 - Set level for the desired magnetization with the potentiometer "LEVEL MONO REPROD".
 - Select setting that is 1.1 dB below the MONO level in order to compensate the guard track loss (not taken into consideration in the factory setting).
- Alignment of LEVEL MONO, record:
 - Feed nominal level 1 kHz.
 - Select MONO mode (simultaneously press STOP and STEREO-MONO).
 - Set nominal level on the output by means of potentiometer "LEVEL MONO RECORD".
- Alignment TEST GENERATOR:
 - Switch recorder to INPUT.
 - Press "REF" button on MONO/STEREO SWITCH circuit board; set "REF LEVEL" potentiometer to reference level of 0 dB-VU.

4.9.5
Jumpers TIME CODE READ/WRITE UNIT

The CODE LEVEL LED can be disabled with jumper JS1.

If the code channel is operated without CODE DELAY UNIT 1.820.722, the delay input and output must be interconnected. This can be done through the serial interface, if available, or with jumper JS2 on the CODE READ/WRITE amplifier. In the second case no CODE DELAY UNIT must be installed!

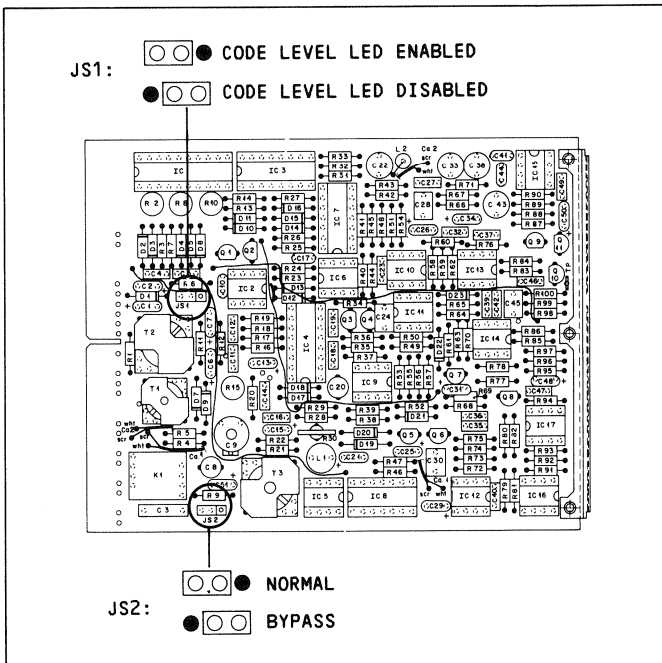


Fig. 4.9.6

4.9.6
Jumpers MONITOR AMPLIFIER

MONITOR AMPLIFIER PCB (refer to Fig. 4.9.7):

- Jumper JS1 in position "S": both channels are connected to the headphones socket
- Jumper JS1 in position "M": only channel 1 is connected to channel 1 ("tip") of the headphones socket; channel 2 ("ring") of the headphones socket is not connected.

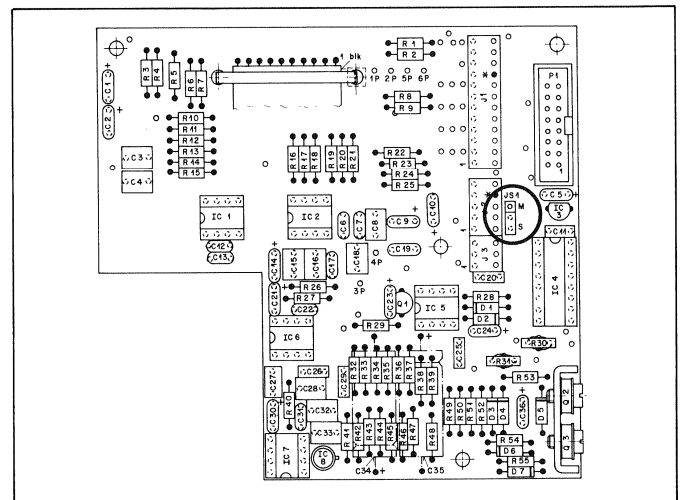


Fig. 4.9.7

SOURCE SELECTOR PCB (refer to Fig. 4.9.8):

- Jumpers JS1 and JS2 must either be both in position "A" or "C"!
- Jumpers JS1 and JS2 in position "A": when switch "1+2/CUE" is pressed, the aggregate signal of both audio channels is taken to the monitor speaker or to the headphones socket respectively.
- Jumpers JS1 and JS2 in position "C": if switch "1+2/CUE" is pressed, the time code signal is taken to the monitor speaker or to the headphones socket respectively.

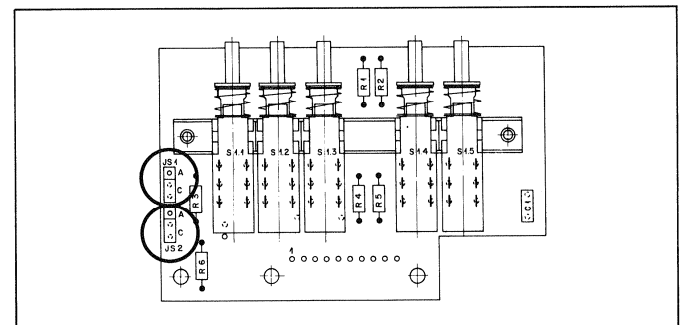


Fig. 4.9.8

4.10

Bias adjustment parameters ("Delta U" values)

Bandsorte Type of tape	ΔU [dB]			
	9,5 cm/s 3.75 ips	19 cm/s 7.5 ips	38 cm/s 15 ips	76 cm/s 30 ips
Agfa PEM 468	6	6	3.5	1.5
Agfa PEM 469	7	7	5	2
Agfa PER 525	6	6	3	1
Agfa PER 528	6	6	3.5	1.5
Ampex 406	6	5	3	1.5
Ampex 456 GRAND MASTER	5	6.5	3.5	1.5
BASF LGR 30P	6	6	4	1.5
BASF LGR 50P	6	6	4	1.5
BASF SPR 50LH/50LHL	6	5.5	3.5	1.5
BASF STUDIO MASTER 910	5	6	4.5	1.5
EMI 816/817	6	6.5	4	1.5
PYRAL CJ90	6	6.5	3.5	1.5
SCOTCH (3M) 206	5.5	5.5	3	1.5
SCOTCH (3M) 226	6	6	3.5	1.5
SCOTCH (3M) 250	5	6	3.5	1
SCOTCH (3M) 256	6	6.5	3.5	1
SCOTCH (3M) 263	6	6	3	1

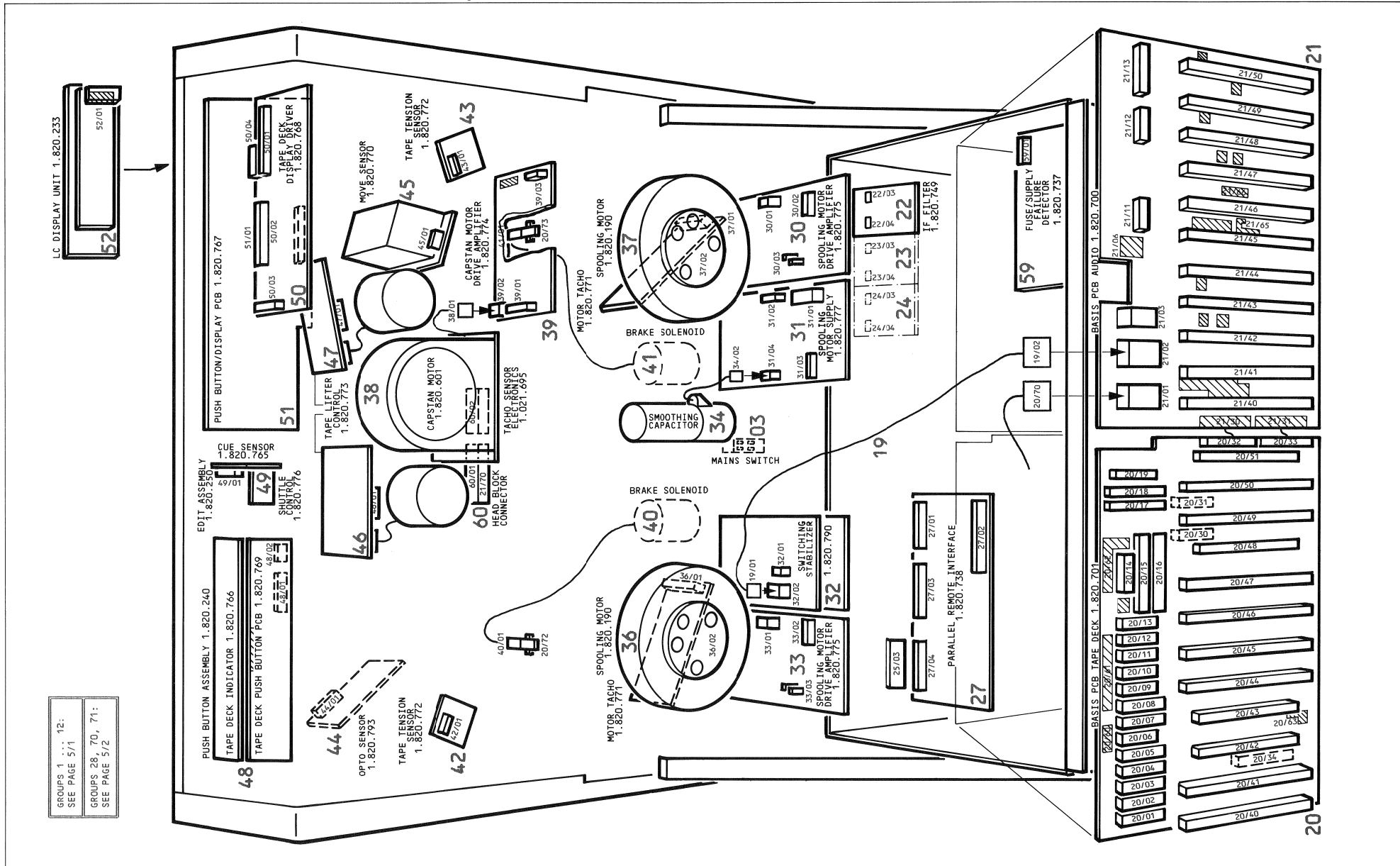
5 GENERAL DIAGRAMS

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SURVEY OF GROUPS (PART 1, TAPE DECK & AUDIO SECTIONS)

GRP, GRP/ELN, designation of assemblies



GROUPS 1 ... 12:
SEE PAGE 5/1

GROUPS 28, 70, 71:
SEE PAGE 5/2

GRP/ELM to GRP/ELM (see page left)

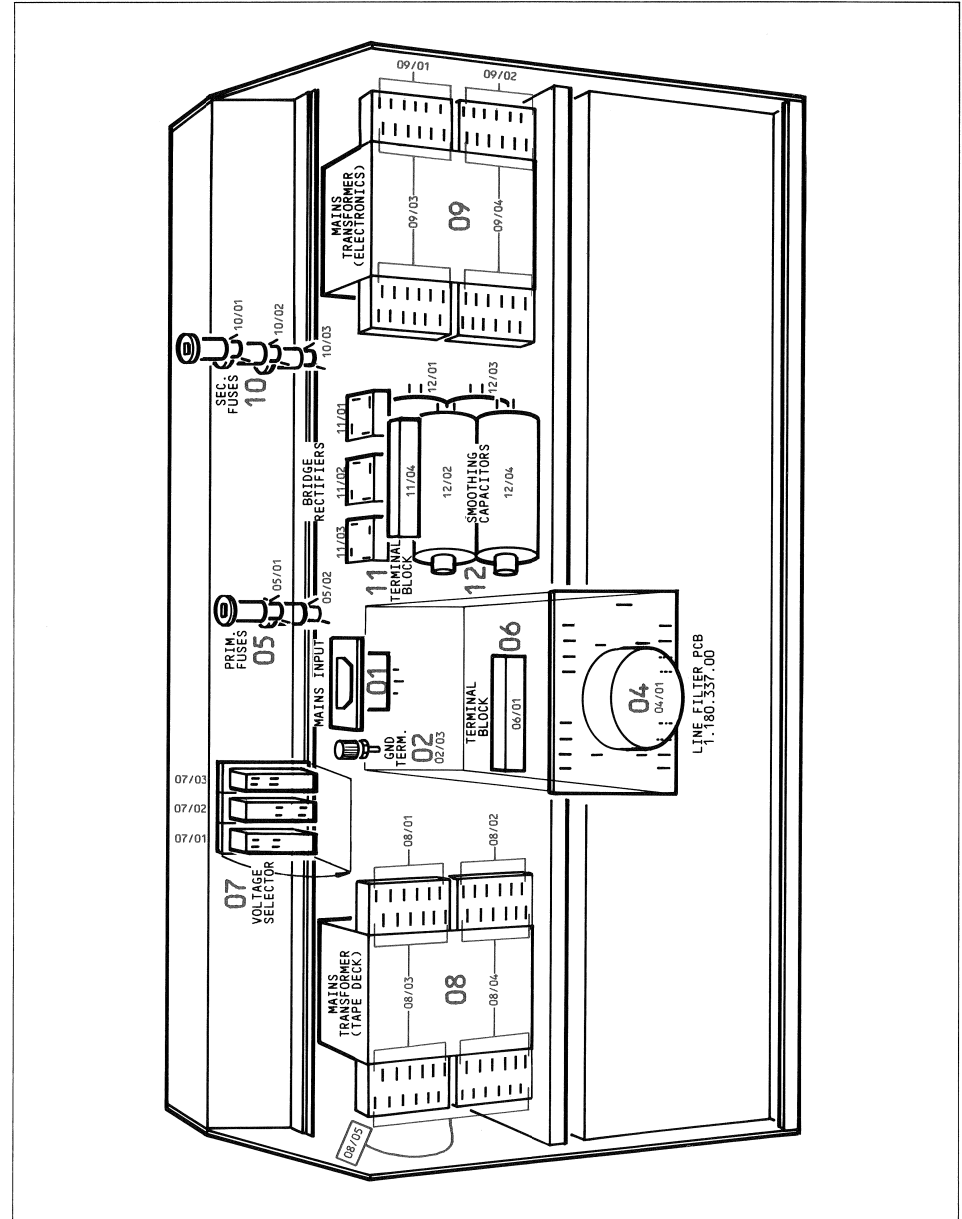
03	to 04/01	22/03	to 21/45
19/01	to 32/02	22/04	to 21/45
19/02	to 21/02	23/03	to 21/50
		23/04	to 21/50
20/01	to 33/02	24/03	to 21/40
20/02	to 30/02	24/04	to 21/40
20/03	to 39/01		
20/04	Spare	25/01	to Option
20/05	to 31/03	25/02	to Option
20/06	to 44/01	25/03	to 27/04
20/07	to 46/01	25/04	to Option
20/08	to 47/01	25/05	to Option
20/09	to 36/01		
20/10	to 37/01	27/01	to Option
20/11	to 45/01	27/02	to 20/16
20/12	to 42/01	27/03	to Option
20/13	to 43/01	27/04	to 25/03
20/14	to 59/01		
20/15	to 50/01	28/06	to 28/05
20/16	to 27/02	30/01	to 31/01
20/17	to 60/02	30/02	and 33/01
20/18	to 70/01	30/02	to 20/02
20/19	to 28/02	30/03	to 37/02
	or 71/02		
20/30	to Option	31/01	to 30/01
20/31	to Option	31/02	and 33/01
20/32	to 21/30	31/02	to 08/05
20/33	to 21/31	31/03	to 20/05
20/34	to Option	31/04	to 34
20/40	to SPOOLING MOTOR DRIVER 1.820.759	32/01	to 12/05
20/41	to CAPSTAN CONTROL UNIT 1.820.764	32/02	to 19/01
20/42	to CAPSTAN INTERFACE 1.820.727		
20/43	to TAPE DECK PERIPHERY CONTROLLER 1.820.762	33/01	to 30/01
20/44	to TAPE DECK COUNTER/TIMER 1.820.761	33/02	and 31/01
20/45	to SPOOLING MOTOR CONTROLLER 1.820.760	33/02	to 20/01
20/46	to MP UNIT TAPE DECK CONTROL 1.820.785	33/03	to 36/02
20/47	to TAPE DECK SERIAL INTERFACE 1.820.763		
20/48	to MASTER SERIAL INTERFACE 1.820.753	34/02	to 31/04
20/49	to MP UNIT MASTER 1.820.786		
20/50	to "SERIAL REMOTE CONTROLLER" 1.810.751		
	or SMTES/FSU INTERFACE 1.820.751	36/01	to 20/09
20/51	to MASTER PERIPHERY CONTROLLER 1.820.728	36/02	to 33/03
20/60	to 20/70		
20/61	to 20/70	37/01	to 20/10
20/62	to 20/70	37/02	to 30/03
	and 39/03		
20/63	to 20/72	38/01	to 39/02
	and 20/73		
20/70	to 20/60,61,62	39/01	to 20/03
20/72	to 20/63	39/02	to 38/01
20/73	to 20/63	39/03	to 20/62
21/01	to 20/60,61		
21/02	to 19/02	40/01	to 20/72
21/03	Spare		
21/06	Spare	41/01	to 20/73
21/11	to 70/09	42/01	to 20/12
21/12	to 70/11	43/01	to 20/13
21/13	to 28/01		
	or 70/12	44/01	to 20/06
	or 71/01		
21/30	to 20/32	45/01	to 20/11
21/31	to 20/35	46/01	to 20/07
21/40	to TIME CODE READ/WRITE UNIT 1.820.721	47/01	to 20/08
	and 21/70, 24/03,04		
21/41	to TIME CODE DELAY UNIT 1.820.722	48/01	to 50/03
21/42	to HF DRIVER 1.820.713	48/02	to 49/01
	and 21/70		
21/43	to RECORD AMPLIFIER 1.820.712	49/01	to 48/02
	and 21/70		
21/44	to REPRODUCE AMPLIFIER 1.820.710	50/01	to 20/15
	and 21/70	50/02	to 51/01
21/45	to LINE AMPLIFIER 1.820.714 or	50/03	to 48/01
	to LINE AMPLIFIER 1.820.715	50/04	to 52/01
	and 22/03,04		
21/46	to MONO/STEREO SWITCH 1.820.720 or	51/01	to 50/02
	to MONO/STEREO SWITCH W. TEST GEN. 1.820.724	52/01	to 50/04
21/47	to HF DRIVER 1.820.713	59/01	to 20/14
	and 21/70		
21/48	to RECORD AMPLIFIER 1.820.712		
	and 21/70	60/01	via 21/70 to:
21/49	to REPRODUCE AMPLIFIER 1.820.710		21/40,43,44,
	and 21/70		48,49,65,66
21/50	to LINE AMPLIFIER 1.820.714 or	60/02	to 20/17
	to LINE AMPLIFIER 1.820.715		
	and 23/03,04		
21/65	to 21/70		
21/66	to 21/70		
21/70	to 60/01		

GRP/ELM to GRP/ELM (see page right)

01	to 04/01
02/03	to Ground
04/01	to 03,01, 06,05
05/01	to 04/01, to 06/01
05/02	to 04/01, to 06/01
06/01	to 04,05, 07,08,09
07/01	to 06
07/02	to 06
07/03	to 06
08/01	to 06/01
08/02	to 06/01
08/03	to 08/05
08/04	to 08/05
08/05	to 31/02
09/01	to 06/01
09/02	to 06/01
09/03	to 11/03,04
09/04	to 11/03,04
10/01	to 11/04
10/02	to 11/02,04
10/03	to 09/03, 11/03
11/01	to 11/04, 12/01,02
11/02	to 11/04, 12/03
11/03	to 11/04, 12/04
11/04	to 09,10,11
12/01	to 11/01
12/02	to 11/01
12/03	to 11/02
12/04	to 11/03

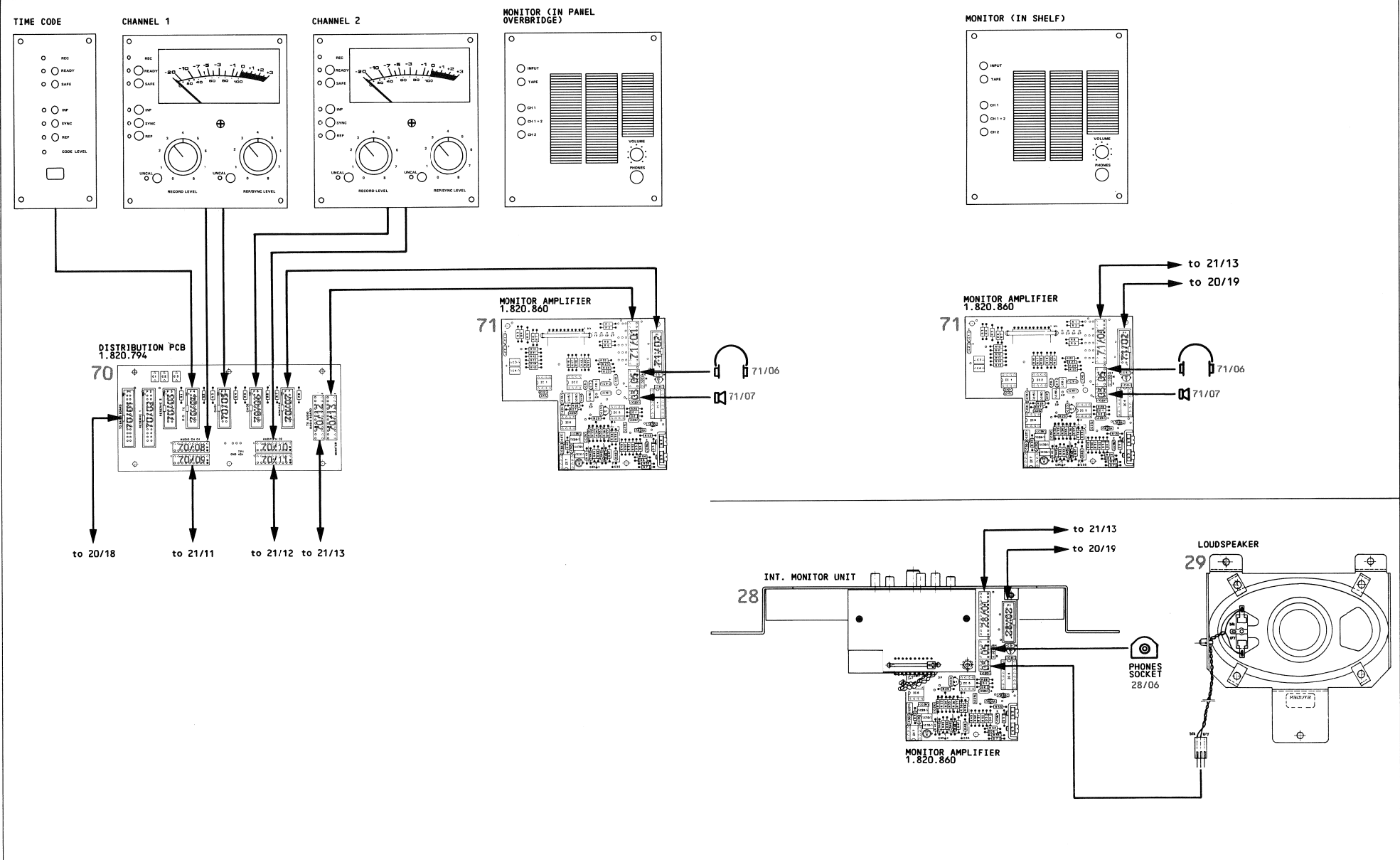
SURVEY OF GROUPS (PART 2, POWER SUPPLY SECTION)

GRP, GRP/ELM, designation of assemblies



SURVEY OF GROUPS (PART 3, PANEL SECTION)

GRP, GRP/ELM, designation of assemblies



5.1 WIRING

Wiring diagrams for equipment with complex electronic circuitry are difficult to follow and can lead to misinterpretations. Our documentation is, therefore, based on computer-generated wiring lists. They give complete information on each electrical connection within the equipment.

To make the documentation more understandable, the power supply, the controls, the tape transport control, and the audio section have been split into groups (GRP) and the groups into elements (ELM) and connecting points (PNT).

The signals are referred to by names that have been constructed from various abbreviations and from which the corresponding function can be recognized.

5.1.1 Groups

The electrical hardware of the A820 tape recorder is subdivided into groups (GRP01...GRP71). These groups are interconnected by cables and connectors that are identified with the corresponding group number. The group arrangement and the main interconnections are listed in the survey of groups (fold-out pages on the left) and the block diagram (at the beginning of the diagrams section).

5.1.2 Elements, Points

Groups that comprise multiple PCBs or other elements are subdivided into elements (ELM). The connecting points (PNT) are located on the elements.

5.1.3 Main connection types:

Typ	Description	STUDER No.
A	Connector, D-type, crimp:	
AA	Contact pin, for thin stranded wire	54.02.0451
B	Contact pin, for heavy stranded wire	54.02.0455
BB	Contact socket, for thin stranded wire	54.02.0450
	Contact socket, for heavy stranded wire	54.02.0454
C	CIS connector:	
D	Contact socket	54.01.0402
	Contact pin	54.01.0401
F	MOLEX connector	
FF	Contact socket, for thin stranded wire	54.02.0412
	Contact socket, for heavy stranded wire	54.02.0413
G	Solder hook	29.21.6002
H	Wire/stranded wire, tinned (6 mm)	---.---.----
I	Connector, D-type, crimp, contact pin	54.02.1112
JM	Flat connector, AMP FASTON, crimp, 0.8 x 6.3 mm:	
J	Contact, female, for thin stranded wire	54.02.0337
JJ	Contact, female, for heavy stranded wire	54.02.0332
	Contact, fem., for very heavy stranded w.	54.02.0338
K	Wire/stranded wire, stripped 8 mm, tinned 1 mm	---.---.----
L	Wire/stranded wire, tinned 4 mm	---.---.----
M	MOLEX contact pin, for thin stranded wire	54.02.0411
MM	MOLEX contact pin, for heavy stranded w.	54.02.0410
MY	AMP flat connector (blade)	54.02.0344
N	CIS connector, contact pin	54.01.0225
O	Contact spring to EURO card conn. strip	54.01.0376
P	PCB contact strip:	
PP	Contact strip, for thin stranded wire	54.06.4512
	Contact strip, for heavy stranded wire	54.06.4510
Q	Socket strip, contact socket	54.01.0451
R	Connector, D-type, crimp, contact socket	54.02.1111
S	Wire/stranded wire, stripped 4 mm/tinned	---.---.----
T	TERMI-POINT connector on WIRE WRAP post	---.---.----
U	Detent-spring solder contact, crimp	54.03.0201
UU	Detent-spring solder contact, crimp	54.34.6002
V	Contact, female, for heavy stranded wire	54.02.0432
VV	Contact, female, for thin stranded wire	54.02.0474
W	Wrapped	---.---.----
X	Flat connector AMP FASTON, crimp, 0.5 x 2.8 mm:	
XX	Contact, female, for thin stranded wire	54.02.0325
	Contact, female, for heavy stranded wire	54.02.0329
Y	Flat connector AMP FASTON, crimp, 0.8 x 2.8 mm:	
YY	Contact, female, for thin stranded wire	54.02.0326
	Contact, female, for heavy stranded wire	54.02.0327
Z	Not tinned	---.---.----

5.1.6

Explanations to SIGNAL WIRE LIST

This list is arranged in alphabetic order by signal name (the signal names of the neutrals and the supply voltages are located at the top of the list). If the signal name is known, further information can be obtained by consulting this list. If only the group designation or the group number are known, consult the LOCATION PIN LIST (refer to 5.1.5).

The signal names are listed in the first column (SIGNAL NAME). The wire color can be found in the second column (COLOR). The fourth column specifies groups, elements, and connecting points on which the signal concerned is available (GRP ELM PNT). This column is arranged in numerical order by group number, it does not give any information on the way of the signal through the recorder.

Example (refer to SIGNAL WIRE LIST p. 58)

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
+CAPMOT	2			11	3	3			L	RECTIFIER	OZ03	70.01.0231
	2			12	4	1			L	CAPACITOR	C04	59.26.7103
	2			12	5	7			M	CONNECTOR TO GRP32, ELM01	P01	
	2			19	1	24			F	FROM GRP32, ELM02	J01	
	2			19	2	24			M	TO GRP21, ELM02	P01	
				20	14	1				FUSE FAILURE DETECTOR	P14	
				20	14	2				FUSE FAILURE DETECTOR	P14	
	2			20	62	6			L	WIRE FIELD		
	2			20	62	7			L	WIRE FIELD		
	2			2C	70	24			F	FROM GRP21, ELM01	J13	
	2			2C	71	6			F	TO CAPSTAN MOTOR DRIVE AMP.		
				21	1	24			M	TO GRP20, ELM70	P01	
				21	2	24			F	FROM GRP19, ELM02	J01	
				32	1	7			F	INPUT FROM GRP12, ELM05	J01	
				32	2	24			M	OUTPUT	P01	
				39	3	6			M	FROM GRP20, ELM71	P03	
				59	1	1				FROM GRP20, ELM14	P01	
				59	1	2				FROM GRP20, ELM14	P01	

Signal name: +CAPMOT

Color: 2 (red) or none (flat cable)

Connection type:

- M (MOLEX contact pin for thin stranded wire), or
- F (MOLEX contact socket for thin stranded wire, or
- L (soldered directly to a PCB)

Part of the signal path:

GRP	ELM	PNT	
11	03	03	Rectifier bridge, "+" connection point, soldered. From here, a red wire leads to the
12	04	01	Smoothing capacitor, "+" connection point, soldered. In addition, a
12	05	07	Wire harness with MOLEX connector leads on to the
32	01	07	MOLEX socket on the SWITCHING STABILIZER. The signal is looped through to the
32	02	24	MOLEX plug on the SWITCHING STABILIZER, there the
19	01	24	Wire harness with MOLEX socket is inserted.
19	02	24	MOLEX plug at the other end of the wire harness is connected to
21	02	24	MOLEX socket on the BASIS PCB AUDIO. Here, the signal is looped through to the
21	01	24	MOLEX plug on the BASIS PCB AUDIO, where the
20	70	24	Wire harness with MOLEX socket is plugged in. The other end of the wire harness is soldered to the
20	62	06	Wire field on the BASIS PCB TAPE DECK, the signal is looped through to the
*20	62	07	Wire field on the BASIS PCB TAPE DECK. At the other end of the wire harness that is soldered here to the PCB there is a
20	71	06	MOLEX socket, plugged to the
39	03	06	MOLEX socket on the CAPSTAN MOTOR DRIVE AMPLIFIER

* Here the signal is branched out. This is shown by the group number appearing more than two times in the SIGNAL WIRE LIST.

GRP 1 54.04.0111
 POWER INPUT
 =====

ELM 1
 POWER CONNECTOR P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LINE1	1		J	
2	LINE2	6		J	
3	GND	5-4		J	

GRP 2
 EARTH CONNECTORS
 =====

ELM 1
 EARTH CONTACT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	5-4		J	

ELM 2
 EARTH CONTACT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	4		J	

ELM 3 1.010.001.53
 EARTH CONTACT

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND				

GRP 3 55.12.0001
 POWER SWITCH
 =====

ELM 1
 POWER SWITCH

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	LINE1	1		J	
2	LINE2	6		J	
3	S-LINE1	1		J	
4	S-LINE2	6		J	

<-- <-- <-- CONTINUATION

GRP 4 1.180.337.00
 LINE FILTER
 =====

ELM 1
 LINE FILTER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	S-LINE1	1		Y	
2	S-LINE1	0		L	
3					
4	LINE1	1		Y	
5	LINE1	1		Y	
6					
7					
8	SF-LINE1	1		Y	
9	SF-LINE1	8		L	
10	SF-LINE1	1		Y	
11	GND	4		Y	
12	S-LINE2	0		L	
13					
14	LINE2	6		Y	
15	LINE2	6		Y	
16	S-LINE2	6		Y	
17					
18					
19	SF-LINE2	8		L	
20	SF-LINE2	4		Y	
21	SF-LINE2	8		Y	

GRP 5
 FUSES (LINE)
 =====

ELM 1 53.03.0106
 FUSE HOLDER, F01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	SF-LINE1	1		L	
2	PRIMV-2	1		L	

ELM 2 53.03.0106
 FUSE HOLDER, F02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	SF-LINE1	1		L	
2	PRIMV-2	1		L	

GRP 6
 DISTRIBUTOR
 =====

ELM 1
 DISTRIBUTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1A	PRIMV-2	1		K	
1B					
1C	PRIMV-2	1		K	
1D	PRIMV-2	1		K	
2A	PRIMV-3	2		K	
2B					
2C	PRIMV-3	2		K	
2D	PRIMV-3	2		K	
3A	PRIMV-5	3		K	
3B					
3C	PRIMV-5	3		K	
3D	PRIMV-5	3		K	
4A	SF-LINE2	4		K	
4B					
4C	SF-LINE2	4		K	
4D	SF-LINE2	4		K	
5A	PRIMV-2	5		K	
5B					
5C	PRIMV-2	5		K	
5D	PRIMV-2	5		K	
6A	PRIMV-3	6		K	
6B					
6C	PRIMV-3	6		K	
6D	PRIMV-3	6		K	
7A	PRIMV-5	7		K	
7B					
7C	PRIMV-5	7		K	
7D	PRIMV-5	7		K	
8A	SF-LINE2	8		K	
8B					
8C	SF-LINE2	8		K	
8D	SF-LINE2	8		K	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 6 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

GRP 7 1.820.520.00
 VOLTAGE SELECTOR
 =====

ELM 1 55.12.0001
 VOLTAGE SELECTOR S01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMV-2	1	J		
2	PRIMV-3	2	J		
3	PRIMV-5	3	J		
4	SF-LINE2	4	J		

ELM 2 55.12.0001
 VOLTAGE SELECTOR S02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMV-3	2	J		
2	PRIMV-3	6	J		
3	PRIMV-5	3	J		
4	PRIMV-5	7	J		

ELM 3 55.12.0001
 VOLTAGE SELECTOR S03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMV-2	5	J		
2	PRIMV-3	6	J		
3	PRIMV-5	7	J		
4	SF-LINE2	8	J		

GRP 8 1.820.520.00
 MAIN TRANSFORMER (SPOOLING MOTORS)
 =====

ELM 1 1.820.521.00
 PRIMARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMW-1	0	Y		
2	PRIMW-2	5	Y		
3	PRIMW-3	6	Y		
4	PRIMW-1	0	Y		

ELM 2 1.820.522.00
 PRIMARY 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
5	PRIMW-5	7	Y		
6	PRIMW-6	0	Y		
7	PRIMW-6	0	Y		
8	SF-LINE2	8	Y		

ELM 3 1.820.523.00
 SECONDARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
9	ACPWM-A6	6	Y		
10	ACPWM-A5	5	Y		
11	ACPWM-A4	4	Y		
12	ACPWM-A3	3	Y		
13	ACPWM-A2	2	Y		
14	ACPWM-A1	1	Y		
15	ACPWM-C1	0	Y		
16	ACPWM-C2	0	Y		
17	ACPWM-C3	0	Y		
18	ACPWM-C4	0	Y		
19	ACPWM-C5	0	Y		
20	ACPWM-C6	0	Y		

GRP 8 1.820.520.00
 <-- <-- <-- CONTINUATION
 =====

ELM 4 1.820.524.00
 SECONDARY 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
9	ACPWM-C6	0	Y		
10	ACPWM-C5	0	Y		
11	ACPWM-C4	0	Y		
12	ACPWM-C3	0	Y		
13	ACPWM-C2	0	Y		
14	ACPWM-C1	0	Y		
15	ACPWM-B1	9	Y		
16	ACPWM-B2	9	Y		
17	ACPWM-B3	9	Y		
18	ACPWM-B4	9	Y		
19	ACPWM-B5	9	Y		
20	ACPWM-B6	9	Y		

ELM 5
 CONNECTOR TO SPOOLING MOTOR SUPPLY

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWM-A1	1	M		
2	ACPWM-A2	2	M		
3	ACPWM-A3	3	M		
4	ACPWM-A4	4	M		
5	ACPWM-A5	5	M		
6	ACPWM-A6	6	M		
7	ACPWM-B1	9	F		
8	ACPWM-B2	9	F		
9	ACPWM-B3	9	F		
10	ACPWM-B4	9	F		
11	ACPWM-B5	9	F		
12	ACPWM-B6	9	F		

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 7 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

GRP 9 1.820.520.00
 MAIN TRANSFORMER
 =====

ELM 1 1.820.521.00
 PRIMARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	PRIMV-1	0	Y		
2	PRIMV-2	1	Y		
3	PRIMV-3	2	Y		
4	PRIMV-1	0	Y		

ELM 2 1.820.522.00
 PRIMARY 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
5	PRIMV-5	3	Y		
6	PRIMV-6	0	Y		
7	PRIMV-6	0	Y		
8	SF-LINE2	4	Y		

ELM 3 1.820.523.00
 SECONDARY 1

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
9	ACPWE-A6	7	Y		
10	ACPWE-A5	1	Y		
11	ACPWE-A4	1	Y		
12	ACPWE-A3	6	Y		
13	ACPWE-A2	6	Y		
14	ACPWE-A1	6	Y		
15	ACPWE-C1	0	Y		
16	ACPWE-C2	0	Y		
17	ACPWE-C3	0	Y		
18	ACPWE-C4	0	Y		
19	ACPWE-C5	0	Y		
20	ACPWE-C6	0	Y		

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GRP 9 1.820.520.00
 <-- <-- <-- CONTINUATION
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ELM 4 1.820.524.00
 SECONDARY 2

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
9	ACPWE-C6	0	Y		
10	ACPWE-C5	0	Y		
11	ACPWE-C4	0	Y		
12	ACPWE-C3	0	Y		
13	ACPWE-C2	0	Y		
14	ACPWE-C1	0	Y		
15	ACPWE-B1	5	Y		
16	ACPWE-B2	5	Y		
17	ACPWE-B3	5	Y		
18	ACPWE-B4	4	Y		
19	ACPWE-B5	4	Y		
20	ACPWE-B6	0	Y		

GRP 10
 FUSES (SECONDARY)
 =====

ELM 1 53.03.0106
 FUSE F01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWE-A1	6	L		
2	ACPWE-D1	9	L		

ELM 2 53.03.0106
 FUSE F02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWE-A4	1	L		
2	ACPWE-D4	5	L		

ELM 3 53.03.0106
 FUSE F03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPWE-A6	7	L		
2	ACPWE-D6	8	L		

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 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 19 1.820.591.00
 SUPPLY CABLE, ELECTRONICS
 =====

ELM 1
 FROM GRP32, ELM02 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6	3		F	
2	+ 5.6	3		F	
3	+5.6SENS	4		F	
4	TD-C76K	9		F	
5	+ 0.0	0		F	
6	+ 0.0	0		F	
7	T-PWRON	5		F	
8	+ 0.0	0		F	
9	+ 0.0	0		F	
10	+ 0.0	0		F	
11	+15.0	2		F	
12	-15.0	6		F	
13	+ 0.0	0		F	
14	+ 0.0	0		F	
15	+24.0	7		F	
16	+REMSUP	8		F	
17	+STABSNS	3		F	
18	-STABSNS	5		F	
19	-26.0	9		F	
20	+26.0	1		F	
21	+ 0.0	0		F	
22	+0.0SENS	0		F	
23	OCAPMOT	4		F	
24	+CAPMOT	2		F	

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GRP 19 1.820.591.00
 <-- <-- <-- CONTINUATION
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ELM 2
 TO GRP21, ELM02 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6	3		M	
2	+ 5.6	3		M	
3	+5.6SENS	4		M	
4	TD-C76K	9		M	
5	+ 0.0	0		M	
6	+ 0.0	0		M	
7	T-PWRON	5		M	
8	+ 0.0	0		M	
9	+ 0.0	0		M	
10	+ 0.0	0		M	
11	+15.0	2		M	
12	-15.0	6		M	
13	+ 0.0	0		M	
14	+ 0.0	0		M	
15	+24.0	7		M	
16	+REMSUP	8		M	
17	+STABSNS	3		M	
18	-STABSNS	5		M	
19	-26.0	9		M	
20	+26.0	1		M	
21	+ 0.0	0		M	
22	+0.0SENS	0		M	
23	OCAPMOT	4		M	
24	+CAPMOT	2		M	

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GRP 20 1.820.701.00
 BASIS BOARD TAPE DECK
 =====

ELM 1
 SPOOLING MOTOR DRIVE AMP. LEFT P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	PWMPL-L1				
8	PWMPL-L2				
9	PWMPL-H1				
10	PWMPL-H2				
11	PWMPL-L3				
12	PWMPL-L4				
13	AN-ICLD				
14	PWMPL-L5				
15	PWMPL-L6				
16	+ 0.0				

ELM 2
 SPOOLING MOTOR DRIVE AMP. RIGHT P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	PWMPL-L1				
8	PWMPL-L2				
9	PWMPL-H1				
10	PWMPL-H2				
11	PWMPL-L3				
12	PWMPL-L4				
13	AN-ICRD				
14	PWMPL-L5				
15	PWMPL-L6				
16	+ 0.0				

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 * WILLI STUDER AG * L O C A T I O N P I N N L I S T * 86/05/14 * 11:48 * P A G E 11 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
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ELM 3
 CAPSTAN MOTOR DRIVE AMPLIFIER P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-CSPDC				
8	TD-TCM1				
9	+ 0.0				
10	TD-TCM2				
11	+ 0.0				
12	+ 0.0				
13	TC-CPREF				
14	TC-CAPDC				
15	TD-C76K				
16	+ 0.0				

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION
 =====

ELM 5
 SPOOLING MOTOR SUPPLY P05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	TD-C307K				
8	TD-PWENB				
9	+YSUP				
10	-YSUP				
11					
12					
13					
14					
15					
16					

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION
 =====

ELM 7
 TAPE LIFT MOTOR, LEFT P07

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+26.0				
6	-26.0				
7					
8					
9					
10					
11	TD-RALP1				
12	TD-RALC2				
13	TD-RALP2				
14	TD-RALC1				
15	TD-RALEN				
16					

ELM 4
 PAR. CONT. INT. SYNCHRONIZER P04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8	TC-TCDIR				
9	+ 0.0				
10	TC-TCMV				
11	+ 0.0				
12	T-REFINT				
13	TD-CAPSY				
14	TD-MVDIR				
15	TD-MVCLK				
16	+ 0.0				

 -./.

ELM 6
 EXT. SENSORS P06

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	TD-YTRSP				
8	TD-SHLD				
9	TD-TRSP				
10	TD-TRSPR				

 -./.

ELM 8
 TAPE LIFT MOTOR, RIGHT P08

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+26.0				
6	-26.0				
7					
8					
9					
10					
11	TD-RARP1				
12	TD-RARC2				
13	TD-RARP2				
14	TD-RARC1				
15	TD-RARFN				
16					

 -./.

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 12 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 9
 TACHO SENSOR (SPOOLING M. LEFT) P09

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-RES1				
8	TD-TML2				
9	TD-TML1				
10					

ELM 10
 TACHO SENSOR (SPOOLING M. RIGHT) P10

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-RES2				
8	TD-TMR2				
9	TD-TMR1				
10					

ELM 11
 MOVE SENSOR P11

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-RES3				
8	TD-MOVE2				
9	TD-MOVE1				
10					

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 12
 TAPE TENSION SENSOR, LEFT P12

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8					
9	AN-TTL				
10					

ELM 13
 TAPE TENSION SENSOR, RIGHT P13

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8					
9	AN-TTR				
10					

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 14
 FUSE FAILURE DETECTOR P14

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+CAPMOT				
2	+CAPMOT				
3					
4	+24.0				
5	-STABSNS				
6	T-SUPVON				
7	+STABSNS				
8	+STABSNS				
9	+ 5.6				
10	+ 5.6				
11	+ 0.0				
12	+ 0.0				
13	-15.0				
14	+15.0				
15	+26.0				
16	-26.0				

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 13 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 15
 DISPLAY DRIVER P15

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+24.0				
6	+24.0				
7	TM-DSL4				
8	TM-ISL4				
9	TM-DRES				
10	TM-IRRES				
11	TM-DRW				
12	TM-IRW				
13	TM-DENB				
14	TM-ICNB				
15	TM-DADR2				
16	TM-IADR2				
17	TM-DADR1				
18	TM-IADR1				
19	TM-DADRO				
20	TM-IADRO				
21	TM-SHIR				
22	0.0 VCU				
23	TM-KBIR				
24	0.0 VCU				
25	TM-DATA7				
26	0.0 VCU				
27	TM-DATA6				
28	0.0 VCU				
29	TM-DATA5				
30	0.0 VCU				
31	TM-DATA4				
32	0.0 VCU				
33	TM-DATA3				
34	0.0 VCU				
35	TM-DATA2				
36	0.0 VCU				
37	TM-DATA1				
38	0.0 VCU				
39	TM-DATA0				
40	0.0 VCU				

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 16
 PARALLEL REMOTE CONTROL P16

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+REMSUP				
6	+REMSUP				
7	TM-DSL5				
8	TM-ISL5				
9	TM-DRES				
10	TM-IRRES				
11	TM-DRW				
12	TM-IRW				
13	TM-DENB				
14	TM-IENB				
15	T-REFEXT				
16	0.0 VCU				
17	TC-TCMV				
18	TC-TCDIR				
19	TM-DADRO				
20	TM-IADRO				
21	TM-REMI				
22	0.0 VCU				
23	TD-MVCLK				
24	TD-MVDIR				
25	TM-DATA7				
26	0.0 VCU				
27	TM-DATA6				
28	0.0 VCU				
29	TM-DATA5				
30	0.0 VCU				
31	TM-DATA4				
32	0.0 VCU				
33	TM-DATA3				
34	0.0 VCU				
35	TM-DATA2				
36	0.0 VCU				
37	TM-DATA1				
38	0.0 VCU				
39	TM-DATA0				
40	0.0 VCU				

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 17
 TO HEAD BLOCK ASSEMBLY P17

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-RP1				
13	T-DT-RP2				
14	T-DT-SJM				
15	T-DT-MP				
16	T-DT-RES				
17					
18					
19					
20	+ 0.0				
21					
22	+ 0.0				
23					
24	+24.0				
25	+ 0.0				
26	+ 0.0				

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 14 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
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ELM 18				P18
VU-METER PANEL, EXTERNAL				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	+ 0.0			
2	+ 0.0			
3	+ 5.6			
4	+ 5.6			
5	+15.0			
6	-15.0			
7	T-SADA			
8	T-SADB			
9	T-SADC			
10	T-READSL			
11	T-WRTSL			
12	T-DT-CH1			
13	T-DT-CH2			
14	T-DT-CH3			
15	T-DT-MP			
16	T-DT-RES			
17				
18				
19				
20	+ 0.0			
21	T-VARSPD			
22	+ 0.0			
23				
24	+24.0			
25	+ 0.0			
26	+ 0.0			

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GRP 20 1.820.701.00
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ELM 19				P19
SOURCE SELECTOR				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	+ 0.0			
2	+ 0.0			
3	+ 5.6			
4	+ 5.6			
5	+15.0			
6	-15.0			
7	T-SADA			
8	T-SADB			
9	T-SADC			
10	T-READSL			
11	T-WRTSL			
12	T-DT-CH1			
13	T-DT-CH2			
14	T-DT-CH3			
15	T-DT-MP			
16	T-DT-RES			

ELM 30				P20
SSDA INT. SYNCHRONIZER				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	GND			
2	TDS-CLK			
3	SYS-CTS			
4	SYS-RX			
5	SYS-DTR			
6	SYS-TX			
7				
8	GND			
9				
10				

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GRP 20 1.820.701.00
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ELM 31				P21
TO GRP25, FLM04/05				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	FRMGND			
2	TRANSCM			
3	TRANSA			
4	TRANSB			
5	RECEIVB			
6	RECEIVA			
7	RECEIVCM			
8	FRMGND			
9	SPARE			
10				

ELM 32				P22
TO AUDIO BASIS BOARD, FLM30				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	+ 0.0			
2	TD-MVCLK			
3	+ 0.0			
4	TD-MVDIR			
5	+ 0.0			
6				
7	+ 0.0			
8	TA-ACTMO			
9	+ 0.0			
10	TA-ACTO1			
11	+ 0.0			
12	TA-ACTTC			
13	+ 0.0			
14	TA-ACTO2			
15	+ 0.0			
16	TD-C307K			
17	+ 0.0			
18	CA-CHSTC			
19	+ 0.0			
20	CA-CHS01			
21	+ 0.0			
22	CA-MONO			
23	+ 0.0			
24	CA-CHS02			
25	+ 0.0			
26				

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 15 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
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ELM 33				P23
TO AUDIO BASIS BOARD, ELM31				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	+ 0.0			
2	CA-SAFE			
3	+ 0.0			
4	CA-ADR-R			
5	+ 0.0			
6	CA-ADR-S			
7	+ 0.0			
8	CA-ADR-T			
9	+ 0.0			
10	CA-ADR-U			
11	+ 0.0			
12	CA-DATA0			
13	+ 0.0			
14	CA-DATA1			
15	+ 0.0			
16	CA-DATA2			
17	+ 0.0			
18	CA-DATA3			
19	+ 0.0			
20	CA-DATA4			
21	+ 0.0			
22	CA-DATA5			
23	+ 0.0			
24	CA-DATA6			
25	+ 0.0			
26	CA-DATA7			

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GRP 20 1.820.701.00
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ELM 34				P24
INT. SYNCHRONIZER				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	TC-SL3			
2	+ 0.0			
3	TC-SL4			
4	+ 0.0			
5	TC-IRQ			
6	+ 0.0			
7	TC-ENBG			
8	+ 0.0			
9	TC-RESMP			
10	+ 0.0			
11	+ 0.0			
12	+ 0.0			
13	+ 0.0			
14	+ 0.0			
15	TC-RW			
16	+ 0.0			
17	TC-ENB			
18	+ 0.0			
19	TC-ADR2			
20	+ 0.0			
21	TC-ADR1			
22	+ 0.0			
23	TC-ADRO			
24	+ 0.0			
25	TC-DATA7			
26	+ 0.0			
27	TC-DATA6			
28	+ 0.0			
29	TC-DATA5			
30	+ 0.0			
31	TC-DATA4			
32	+ 0.0			
33	TC-DATA3			
34	+ 0.0			
35	TC-DATA2			
36	+ 0.0			
37	TC-DATA1			
38	+ 0.0			
39	TC-DATA0			
40	+ 0.0			

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GRP 20 1.820.701.00
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ELM 40				J01
SPOOLING MOTOR DRIVER				
PNT	SIGNAL NAME	COLOR	LV TYPE	F
1	AN-ICR			
2	AN-IRR			
3	AN-ICR			
4	AN-IRR			
5				
6				
7	PWMPR-H1			
8	PWMPR-L3			
9	AN-ICRD			
10	PWMPR-L6			
11				
12				
13				
14				
15	TD-PENBR			
16				
17	TD-C76K			
18	+15.0			
19	KEY			
20	+ 5.6			
21	+ 0.0			
22	-15.0			
23	TD-PENBL			
24				
25				
26	AN-ICL			
27	AN-IRL			
28	PWMPR-H1			
29	PWMPR-L3			
30	AN-ICLD			
31	PWMPR-L6			
32	PWMPR-L5			
33	PWMPR-L4			
34	PWMPR-H2			
35	PWMPR-L1			
36	PWMPR-L5			
37	PWMPR-L4			
38	PWMPR-H2			
39	PWMPR-L1			

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* MILLI STUDER AG * L O C A T I O N P I N L I S T * 06/05/14 * 11:48 * P A G E 16 *

* 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00

GRP 20 1.820.701.00 CONTINUATION
ELM 41 1.820.764.00 CAPSTAN CONTROL UNIT J02
PNT SIGNAL NAME COLOR LV TYPE F
1 TD-TCM1
2 TD-TCM2
3 TC-REFP
4 TC-CAPDC
5 TC-TCMVI
6 TC-COIRI
7 TD-CAPSY
8 TC-REF
9 TC-INEX
10 TC-RESMP
11 TC-ENBG
12
13 TC-IRQ
14 TC-EREF
15 TC-SL4
16 TC-SL3
17
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 -15.0
23 TC-SL2
24 TC-SL1
25
26 TD-CRES
27 TC-RW
28 TC-ENB
29 TC-ADR2
30 TC-ADR1
31 TC-ADRO
32 TC-DATA7
33 TC-DATA6
34 TC-DATA5
35 TC-DATA4
36 TC-DATA3
37 TC-DATA2
38 TC-DATA1
39 TC-DATA0

GRP 20 1.820.701.00 CONTINUATION
ELM 42 1.820.727.00 CAPSTAN INTERFACE J03
PNT SIGNAL NAME COLOR LV TYPE F
1A TC-COIRI
1B TD-TCM1
2A TC-TCMVI
2B TD-TCM2
3A AN-CSPDC
3B AN-CSPDC
4A
4B TC-REFP
5A TC-TCMV
5B TC-TCMV
6A TC-TCDIR
6B TC-TCDIR
7A
7B
8A TC-RESMP
8B TC-ENBG
9A TC-IRQ
9B
10A
10B TC-EREF
11A TC-REF
11B T-REFINT
12A TC-INEX
12B T-REFEXT
13A TC-SL1
13B TD-IRQ
14A TC-SL2
14B TD-SL7
15A +15.0
15B +15.0
16A + 5.6
16B + 5.6
17A + 0.0
17B + 0.0
18A -15.0
18B -15.0
19A
19B TD-RES
20A TC-RW
20B TD-RW
21A TC-ENB
21B TD-ENB
22A TC-ADR2
22B
23A TC-ADR1
23B TD-ADR1
24A TC-ADRO

GRP 20 1.820.701.00 CONTINUATION
ELM 42 1.820.727.00 CONTINUATION
PNT SIGNAL NAME COLOR LV TYPE F
24B TD-ADRO
25A TC-DATA7
25B TD-DATA7
26A TC-DATA6
26B TD-DATA6
27A TC-DATA5
27B TD-DATA5
28A TC-DATA4
28B TD-DATA4
29A TC-DATA3
29B TD-DATA3
30A TC-DATA2
30B TD-DATA2
31A TC-DATA1
31B TD-DATA1
32A TC-DATA0
32B TD-DATA0

* MILLI STUDER AG * L O C A T I O N P I N L I S T * 06/05/14 * 11:48 * P A G E 17 *

* 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00

GRP 20 1.820.701.00 CONTINUATION
ELM 43 1.820.762.00 TAPE DECK PERIPHERY CONTR. J04
PNT SIGNAL NAME COLOR LV TYPE F
1A TD-RALEN
1B TD-RALC1
2A TD-RALP2
2B TD-RALC2
3A TD-RALP1
3B TD-RARP1
4A TD-MOVE
4B TD-RARP2
5A
5B TD-RAREN
6A TD-CRES
6B TD-RARC1
7A
7B TD-RARC2
8A TD-SHLD
8B
9A TD-TRSP
9B TD-HEACT
10A TD-PWENB
10B T-SURPVGN
11A -YSUP
11B
12A +YSUP
12B
13A
13B
14A
14B TD-SL3
15A +15.0
15B +15.0
16A + 5.6
16B + 5.6
17A + 0.0
17B + 0.0
18A -15.0
18B -15.0
19A
19B TD-RES
20A TD-PENBL
20B TD-RW
21A TD-PENBR
21B TD-ENB
22A
22B TD-ADR2
23A
23B TD-ADR1
24A

GRP 20 1.820.701.00 CONTINUATION
ELM 43 1.820.762.00 CONTINUATION
PNT SIGNAL NAME COLOR LV TYPE F
24B TD-ADRO
25A
25B TD-DATA7
26A
26B TD-DATA6
27A
27B TD-DATA5
28A
28B TD-DATA4
29A
29B TD-DATA3
30A
30B TD-DATA2
31A K-BRAKEL
31B TD-DATA1
32A K-BRAKER
32B TD-DATA0

GRP 20 1.820.701.00 CONTINUATION
ELM 44 1.820.761.00 TAPE DECK COUNTER / TIMER J05
PNT SIGNAL NAME COLOR LV TYPE F
1 TD-TML1
2 TD-TML2
3 TD-TMR1
4 TD-TMR2
5
6 TD-ADR3
7 TD-MOVE1
8 TD-MOVE2
9 TD-ICRE1
10
11 TD-ICRE2
12 TD-MVCLK
13 TD-IRO
14 TD-MVDIR
15
16 TD-ICRE3
17 TD-ICRE4
18 +15.0
19 KEY
20 + 5.6
21 + 0.0
22 -15.0
23 TD-ICRE5
24
25 TD-SL6
26 TD-RES
27 TD-RW
28 TD-ENB
29 TD-ADR2
30 TD-ADR1
31 TD-ADRO
32 TD-DATA7
33 TD-DATA6
34 TD-DATA5
35 TD-DATA4
36 TD-DATA3
37 TD-DATA2
38 TD-DATA1
39 TD-DATA0

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 18 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 45	1.820.760.00		J06
SPOOLING MOTOR CONTROLLER			
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	AN-TTL		
2	AN-TTR		
3	AN-TTL		
4	AN-TTR		
5			
6	AN-IRL		
7			
8	AN-IRR		
9			
10			
11			
12			
13			
14			
15			
16			
17			
18	+15.0		
19	KEY		
20	+ 5.6		
21	+ 0.0		
22	-15.0		
23	TD-SL4		
24			
25			
26	TD-RES		
27	TD-RW		
28	TD-ENB		
29	TD-ADR2		
30	TD-ADR1		
31	TD-ADRO		
32	TD-DATA7		
33	TD-DATA6		
34	TD-DATA5		
35	TD-DATA4		
36	TD-DATA3		
37	TD-DATA2		
38	TD-DATA1		
39	TD-DATA0		

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 46	1.820.785.00		J07
MP-UNIT TD CONTROL			
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	TD-P14B		
2	TD-P15B		
3	TD-SL3		
4	TD-SL2		
5	TD-RESMP		
6	TD-ADR3		
7	TD-C614K		
8	TD-P17B		
9	TD-NMI		
10	TD-RX		
11	TD-TX		
12	TD-P16B		
13	TD-IRQ		
14	T-PWRON		
15	TD-SL7		
16	TD-C76K		
17	TD-9600		
18	+15.0		
19	KEY		
20	+ 5.6		
21	+ 0.0		
22	TD-C307K		
23	TD-SL4		
24	TD-SL5		
25	TD-SL6		
26	TD-RESET		
27	TD-RW		
28	TD-ENB		
29	TD-ADR2		
30	TD-ADR1		
31	TD-ADRO		
32	TD-DATA7		
33	TD-DATA6		
34	TD-DATA5		
35	TD-DATA4		
36	TD-DATA3		
37	TD-DATA2		
38	TD-DATA1		
39	TD-DATA0		

GRP 20 1.820.701.00
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ELM 47	1.820.763.00		J08
TAPE DECK SERIAL INTERFACF			
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	AN-TTL		
2	AN-TTR		
3	AN-TCL		
4	AN-ICR		
5	AN-TTL		
6	AN-TTR		
7	AN-RES1		
8	AN-RFS2		
9	AN-RES3		
10	AN-RES4		
11	TD-RESMP		
12	TD-IRQ		
13	TDS-RX		
14	TDS-TX		
15	TDS-DTR		
16	TDS-CTS		
17	TDS-CLK		
18	+15.0		
19	KEY		
20	+ 5.6		
21	+ 0.0		
22	-15.0		
23	TD-RESFT		
24	TD-ADR3		
25	TD-SL5		
26	TD-RES		
27	TD-RW		
28	TD-ENB		
29	TD-ADR2		
30	TD-ADR1		
31	TD-ADRO		
32	TD-DATA7		
33	TD-DATA6		
34	TD-DATA5		
35	TD-DATA4		
36	TD-DATA3		
37	TD-DATA2		
38	TD-DATA1		
39	TD-DATA0		

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 19 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 48	1.820.753.00		J09
MASTER SERIAL INTERFACE			
PNT	SIGNAL NAME	COLOR LV TYPE	F
1A	TM-DSL4		
1B	TM-ISL4		
2A	TM-DSL5		
2B	TM-ISL5		
3A	TM-DRES		
3B	TM-IRFS		
4A	TM-DRW		
4B	TM-IRW		
5A	TM-DENB		
5B	TM-IENB		
6A	TM-DADR2		
6B	TM-IADR2		
7A	TM-DADR1		
7B	TM-IADR1		
8A	TM-DADRO		
8B	TM-IADRO		
9A	TM-SL4		
9B	TM-SL5		
10A	TDS-RX		
10B	TDS-TX		
11A	TDS-DTR		
11B	TDS-CTS		
12A	SYS-RX		
12B	SYS-TX		
13A	SYS-DTR		
13B	SYS-CTS		
14A	TM-SHIR		
14B	TM-KBIR		
15A	+15.0		
15B	+15.0		
16A	+ 5.6		
16B	+ 5.6		
17A	+ 0.0		
17B	+ 0.0		
18A	-15.0		
18B	-15.0		
19A	TDS-CLK		
19B	TM-REMI		
20A	TD-HEACT		
20B	TM-SEIR		
21A	TD-MOVE		
21B	TA-AUIR		
22A	TD-CAFSY		
22B	TM-SL2		
23A	TM-RESMP		
23B	TM-ADR3		
24A	TM-RES		

GRP 20 1.820.701.00
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ELM 48	1.820.753.00		J09
CONTINUATION			
PNT	SIGNAL NAME	COLOR LV TYPE	F
24B	TM-IRQ		
25A	TD-MVDIR		
25B	TD-MVCLK		
26A	TM-RESET		
26B	TM-RW		
27A	TM-ENB		
27B	TM-ADR2		
28A	TM-ADR1		
28B	TM-ADRO		
29A	TM-DATA7		
29B	TM-DATA6		
30A	TM-DATA5		
30B	TM-DATA4		
31A	TM-DATA3		
31B	TM-DATA2		
32A	TM-DATA1		
32B	TM-DATA0		

GRP 20 1.820.701.00
 <-- <-- <-- CONTINUATION

ELM 49	1.820.786.00		J10
MP-UNIT MASTER			
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	TM-P14B		
2	TM-P15B		
3	TM-SL3		
4	TM-SL2		
5	TM-RESMP		
6	TM-ADR3		
7	TM-C614K		
8	TM-BUSSW		
9	TM-NMI		
10	TM-RX		
11	TM-TX		
12	TM-DRENB		
13	TM-IRQ		
14	T-PWRON		
15	TM-SL7		
16	TM-C76K		
17	TM-C9600		
18	+15.0		
19	KFY		
20	+ 5.6		
21	+ 0.0		
22	TM-C307K		
23	TM-SL4		
24	TM-SL5		
25	TM-SL6		
26	TM-RESET		
27	TM-RW		
28	TM-ENB		
29	TM-ADR2		
30	TM-ADR1		
31	TM-ADRO		
32	TM-DATA7		
33	TM-DATA6		
34	TM-DATA5		
35	TM-DATA4		
36	TM-DATA3		
37	TM-DATA2		
38	TM-DATA1		
39	TM-DATA0		

***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 20 *
***** 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *****
<-- <-- <-- CONTINUATION

GRP 20 1.820.701.00
<-- <-- <-- CONTINUATION

ELM 50 1.820.751.00
SMPT/EBU INTERFACE J11

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include FRMGND, TRANSCM, TRANSA, TRANSB, RECEIVB, RECEIVA, RECEIVCH, etc.

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GRP 20 1.820.701.00
<-- <-- <-- CONTINUATION

ELM 51 1.820.728.00
MASTER PERIPHERY CONTROLLER J12

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include T-SADA, T-SADB, T-SADC, T-READSL, T-WRTSL, etc.

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GRP 20 1.820.701.00
<-- <-- <-- CONTINUATION

ELM 51 1.820.728.00
<-- <-- <-- CONTINUATION

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include CA-ADR-U, TM-DATA7, CA-DATA0, TM-DATA6, etc.

ELM 60 WIRE FIELD (FROM GRP20, FLM70)

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 + 0.0, 2 + 0.0, 3 + 0.0.

ELM 61 WIRE FIELD (FROM GRP20, FLM70)

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 -26.0, 2 +26.0, 3 + 0.0, 4 + 0.0, 5 +0.0SENS, 6 + 0.0, 7 + 0.0, 8 + 0.0, 9 -15.0, 10 +15.0.

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***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 21 *
***** 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *****
<-- <-- <-- CONTINUATION

GRP 20 1.820.701.00
<-- <-- <-- CONTINUATION

ELM 62 WIRE FIELD

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 + 5.6, 2 + 5.6, 3 +5.6SENS, 4 +STABSNS, 5 -STABSNS, 6 +CAPNOT, 7 +CAPNOT, 8 OCAPNOT, 9 OCAPNOT, 10 +REMSUP, 11 +24.0, 12 +24.0, 13 +24.0, 14 T-PWRON, 15 TD-C76K.

ELM 63 WIRE FIELD (TO BRAKE SOLENOIDS)

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 K-BRAKEL, 2 K-BRAKER.

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GRP 20 1.820.701.00
<-- <-- <-- CONTINUATION

ELM 70 FROM GRP21, ELM01 J13

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 + 5.6, 2 + 5.6, 3 +5.6SENS, 4 TD-C76K, 5 + 0.0, 6 + 0.0, 7 T-PWRON, 8 + 0.0, 9 + 0.0, 10 + 0.0, 11 +15.0, 12 -15.0, 13 + 0.0, 14 + 0.0, 15 +24.0, 16 +REMSUP, 17 +STABSNS, 18 -STABSNS, 19 -26.0, 20 +26.0, 21 + 0.0, 22 +0.0SENS, 23 OCAPNOT, 24 +CAPNOT.

ELM 71 TO CAPSTAN MOTOR DRIVE AMP.

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 OCAPMOT, 2, 3, 4, 5, 6 +CAPMOT.

ELM 72 TO BRAKE SOLENOID, LEFT

Table with 4 columns: PNT, SIGNAL NAME, COLOR, LV TYPE. Rows include 1 +24.0, 2 K-BRAKEL, 3.

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 22 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
 BASIS BOARD AUDIO, 2 CH

GRP 21 1.820.700.00
 <-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
 <-- <-- <-- CONTINUATION

ELM 1 TO GRP20, ELM70 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6			M	
2	+ 5.6			M	
3	+5.6SENS			M	
4	TD-C76K			M	
5	+ 0.0			M	
6	+ 0.0			M	
7	T-PWRON			M	
8	+ 0.0			M	
9	+ 0.0			M	
10	+ 0.0			M	
11	+15.0			M	
12	-15.0			M	
13	+ 0.0			M	
14	+ 0.0			M	
15	+24.0			M	
16	+REMSUP			M	
17	+STABSNS			M	
18	-STABSNS			M	
19	-26.0			M	
20	+26.0			M	
21	+ 0.0			M	
22	+0.0SENS			M	
23	OCAPMOT			M	
24	+CAPMCT			M	

ELM 2 FROM GRP19, ELM02 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6			F	
2	+ 5.6			F	
3	+5.6SENS			F	
4	TD-C76K			F	
5	+ 0.0			F	
6	+ 0.0			F	
7	T-PWRON			F	
8	+ 0.0			F	
9	+ 0.0			F	
10	+ 0.0			F	
11	+15.0			F	
12	-15.0			F	
13	+ 0.0			F	
14	+ 0.0			F	
15	+24.0			F	
16	+REMSUP			F	
17	+STABSNS			F	
18	-STABSNS			F	
19	-26.0			F	
20	+26.0			F	
21	+ 0.0			F	
22	+0.0SENS			F	
23	OCAPMOT			F	
24	+CAPMCT			F	

ELM 11 TO VU-MFTER PANEL, CH 1 J02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0			S	N
2	LOUFA-C1			0	N
3	LOUFB-01			6	N
4	+ 0.0			S	N
5	INPDI-01			0	N
6	INPAD-01			6	N
7	+ 0.0			S	N
8	TAPAD-01			6	N
9	TAPMS-01			0	N
10	KEY				

ELM 12 TO VU-MFTER PANEL, CH 2 J03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0			S	N
2	LOUFA-02			0	N
3	LOUFB-02			6	N
4	+ 0.0			S	N
5	INPDI-02			0	N
6	INPAD-02			6	N
7	+ 0.0			S	N
8	TAPAD-02			6	N
9	TAPMS-02			0	N
10	KEY				

ELM 3 CONNECTOR SYNCHRONIZER P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6			F	
2	+ 5.6			F	
3	+ 0.0			F	
4	+ 0.0			F	
5	+ 0.0			F	
6	T-PWRON			F	
7	+ 0.0			F	
8	+ 0.0			F	
9	-15.0			F	
10	T-TCINDL			F	
11	T-TCOUDL			F	
12	+15.0			F	

ELM 13 TO SOURCF SELECTOR (GRP28) J04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01			9	N
2	+ 0.0			S	N
3	INPDI-01			9	N
4	+ 0.0			S	N
5	MONIT-02			9	N
6	+ 0.0			S	N
7	INPDI-02			9	N
8	+ 0.0			S	N
9	KEY				
10					
11	T-TC/RC			9	N
12	+ 0.0			S	N

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 23 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
 <-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
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GRP 21 1.820.700.00
 <-- <-- <-- CONTINUATION

ELM 30 FROM TAPE DECK BASIS BOARD J05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	TD-MVCLK				
3	+ 0.0				
4	TD-MVDIR				
5	+ 0.0				
6					
7	+ 0.0				
8	TA-ACTMO				
9	+ 0.0				
10	TA-ACTO1				
11	+ 0.0				
12	TA-ACTTC				
13	+ 0.0				
14	TA-ACTO2				
15	+ 0.0				
16	TD-C307K				
17	+ 0.0				
18	CA-CHSTC				
19	+ 0.0				
20	CA-CHS01				
21	+ 0.0				
22	CA-MONO				
23	+ 0.0				
24	CA-CHS02				
25	+ 0.0				
26					

ELM 31 FROM TAPE DECK BASIS BOARD J06

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	CA-SAFE				
3	+ 0.0				
4	CA-ADR-R				
5	+ 0.0				
6	CA-ADR-S				
7	+ 0.0				
8	CA-ADR-T				
9	+ 0.0				
10	CA-ADR-U				
11	+ 0.0				
12	CA-DATA0				
13	+ 0.0				
14	CA-DATA1				
15	+ 0.0				
16	CA-DATA2				
17	+ 0.0				
18	CA-DATA3				
19	+ 0.0				
20	CA-DATA4				
21	+ 0.0				
22	CA-DATA5				
23	+ 0.0				
24	CA-DATA6				
25	+ 0.0				
26	CA-DATA7				

ELM 40 1.820.721.81 TIME CODE WRITE/READ UNIT J07

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	T-TCINDL				
2	T-TCOUDL				
3					
4	ERAHH-TC			0	U
5	ERAHL-TC			6	U
6					
7	RECHH-TC			9	U
8	RECHL-TC			6	U
9					
10	REPHH-TC			9	U
11	REPHL-TC			6	U
12					
13					
14	T-TCPRES				
15	LINF A-TC			9	U
16	LINF B-TC			6	U
17	LOUFA-TC			9	U
18	LOUFB-TC			6	U
19	KEY				
20	TA-ACTTC				
21	+ 0.0			S	U
22	+15.0				
23	-15.0				
24	+ 5.6				
25	TD-C307K				
26	CA-SAFE				
27	CA-ADR-R				
28	CA-ADR-S				
29	CA-ADR-T				
30	CA-ADR-U				
31	CA-DATA0				
32	CA-DATA1				
33	CA-DATA2				
34	CA-DATA3				
35	CA-DATA4				
36	CA-DATA5				
37	CA-DATA6				
38	CA-DATA7				
39	CA-CHSTC				

***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 24 *
***** 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *****
-----<--<--<-- CONTINUATION

GRP 21 1.820.700.00
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GRP 21 1.820.700.00
<--<--<-- CONTINUATION

GRP 21 1.820.700.00
<--<--<-- CONTINUATION

Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 T-TCINDL. Row 2: 2 T-TCUDDL. Row 3: 3 + 0.0. Row 4: 4 TD-MVOIR. Row 5: 5 + 0.0. Row 6: 6 TD-MVCLK. Row 7: 7. Row 8: 8. Row 9: 9. Row 10: 10. Row 11: 11. Row 12: 12. Row 13: 13. Row 14: 14 T-TCPRES. Row 15: 15. Row 16: 16. Row 17: 17. Row 18: 18. Row 19: 19 KEY. Row 20: 20 TA-ACTTC. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-CHSTC.

Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 DOLBY-01. Row 2: 2 K-REC-01. Row 3: 3 + 0.0. Row 4: 4 + 0.0. Row 5: 5 BIASA-01. Row 6: 6 BIASB-01. Row 7: 7 BIASC-01. Row 8: 8. Row 9: 9 ERACS-01. Row 10: 10 AFCSW-01. Row 11: 11 + 0.0. Row 12: 12 ERAHL-01 6 U. Row 13: 13 ERAHM-01 2 U. Row 14: 14 ERAHH-01 9 U. Row 15: 15 ERAHO-01 5 U. Row 16: 16 + 0.0. Row 17: 17 CA-BAD01. Row 18: 18 CA-RSW01. Row 19: 19 KEY. Row 20: 20 TA-ACT01. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-CHS01.

Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 RFCIN-01. Row 2: 2 EQUAL-01. Row 3: 3 DOLBY-01. Row 4: 4 K-REC-01. Row 5: 5 + 0.0. Row 6: 6 BIASA-01. Row 7: 7 BIASB-01. Row 8: 8 BIASC-01. Row 9: 9 RECHL-01 6 U. Row 10: 10 RECHH-01 9 U. Row 11: 11 + 0.0 5 U. Row 12: 12 SYNHL-01. Row 13: 13 SYNHH-01. Row 14: 14 + 0.0. Row 15: 15 AFCSW-01. Row 16: 16 + 0.0. Row 17: 17 CA-BAD01. Row 18: 18 CA-RSW01. Row 19: 19 KEY. Row 20: 20 TA-ACT01. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-CHS01.

***** WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 25 *
***** 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *****
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GRP 21 1.820.700.00
<--<--<-- CONTINUATION

GRP 21 1.820.700.00
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GRP 21 1.820.700.00
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Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 TAPLI-01. Row 2: 2 EQUAL-01. Row 3: 3 SYPRE-01. Row 4: 4 K-REC-01. Row 5: 5 + 0.0 5 U. Row 6: 6 REPRE-01 9 U. Row 7: 7 REPRO-01 6 U. Row 8: 8 + 0.0. Row 9: 9 + 0.0. Row 10: 10 TAPDI-01. Row 11: 11 + 0.0. Row 12: 12 SYNHL-01. Row 13: 13 SYNHH-01. Row 14: 14 + 0.0. Row 15: 15 CA-EQL01. Row 16: 16 CA-SYN01. Row 17: 17 CA-LSW01. Row 18: 18 + 0.0. Row 19: 19 KEY. Row 20: 20 TA-ACT01. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-CHS01.

Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 MONIT-01. Row 2: 2 + 0.0 5 U. Row 3: 3 LOUFA-01 0 U. Row 4: 4 LOUFB-01 6 U. Row 5: 5 + 0.0. Row 6: 6 INPDI-01. Row 7: 7 INPAD-01. Row 8: 8 RECIN-01. Row 9: 9 + 0.0. Row 10: 10 TAPAD-01. Row 11: 11 TAPMS-01. Row 12: 12 TAPDI-01. Row 13: 13 + 0.0 5 U. Row 14: 14 LINFA-01 0 U. Row 15: 15 LINFB-01 6 U. Row 16: 16 CA-EQL01. Row 17: 17 CA-SYN01. Row 18: 18 CA-LSW01. Row 19: 19 KEY. Row 20: 20 TA-ACT01. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-CHS01.

Table with 5 columns: PNT, SIGNAL NAME, COLOR, LV, TYPE. Row 1: 1 INPAD-01. Row 2: 2 + 0.0. Row 3: 3 INPAD-02. Row 4: 4 + 0.0. Row 5: 5 TAPMS-02. Row 6: 6 + 0.0. Row 7: 7 TAPMS-01. Row 8: 8 + 0.0. Row 9: 9 TAPDI-01. Row 10: 10 + 0.0. Row 11: 11 TAPDI-02. Row 12: 12 + 0.0. Row 13: 13 RECIN-02. Row 14: 14 + 0.0. Row 15: 15 RFCIN-01. Row 16: 16. Row 17: 17. Row 18: 18. Row 19: 19 KEY. Row 20: 20 TA-ACTMD. Row 21: 21 + 0.0. Row 22: 22 +15.0. Row 23: 23 -15.0. Row 24: 24 + 5.6. Row 25: 25 TD-C307K. Row 26: 26 CA-SAFE. Row 27: 27 CA-ADR-R. Row 28: 28 CA-ADR-S. Row 29: 29 CA-ADR-T. Row 30: 30 CA-ADR-U. Row 31: 31 CA-DATA0. Row 32: 32 CA-DATA1. Row 33: 33 CA-DATA2. Row 34: 34 CA-DATA3. Row 35: 35 CA-DATA4. Row 36: 36 CA-DATA5. Row 37: 37 CA-DATA6. Row 38: 38 CA-DATA7. Row 39: 39 CA-MONO.

* WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 26 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

<-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 47 1.820.713.00
HF-DRIVER, CH 2 J14
PNT SIGNAL NAME COLOR LV TYPE F
1 DOLBY-02
2 K-REC-02
3 + 0.0
4 + 0.0
5 BIASA-02
6 BIASB-02
7 BIASC-02
8
9 ERACS-02 7 U
10 AFCSW-02
11 + 0.0
12 ERAHL-02 6 U
13 ERAHM-02 2 U
14 ERAHH-02 9 U
15 ERAHO-02 5 U
16 + 0.0
17 CA-BAD02
18 CA-RSW02
19 KEY
20 TA-ACT02
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TD-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS02

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 48 1.820.712.81
RECORD AMPLIFIER, CH 2 J15
PNT SIGNAL NAME COLOR LV TYPE F
1 RECIN-02
2 EQUAL-02
3 DOLBY-02
4 K-REC-02
5 + 0.0
6 BIASA-02
7 BIASB-02
8 BIASC-02
9 RECHL-02 6 U
10 RECHH-02 9 U
11 + 0.0 S U
12 SYNHL-02
13 SYNHH-02
14 + 0.0
15 AFCSW-02
16 + 0.0
17 CA-BAD02
18 CA-RSW02
19 KEY
20 TA-ACT02
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TD-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS02

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 49 1.820.710.81
RFPRODUCE AMPLIFIER, CH 2 J16
PNT SIGNAL NAME COLOR LV TYPE F
1 TAPLI-02
2 EQUAL-02
3 SYPRF-02
4 K-REC-02
5 + 0.0 S U
6 RFPRE-02 9 U
7 REPRO-02 6 U
8 + 0.0
9 + 0.0
10 TAPDI-02
11 + 0.0
12 SYNHL-02
13 SYNHH-02
14 + 0.0
15 CA-EQL02
16 CA-SYN02
17 CA-LSW02
18 + 0.0
19 KEY
20 TA-ACT02
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TD-C307K
26 CA-SAFF
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS02

* WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 27 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

<-- <-- <-- CONTINUATION

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 50 1.820.714.81
LINE AMPLIFIER, CH 2 J17
PNT SIGNAL NAME COLOR LV TYPE F
1 MONIT-02
2 + 0.0 S U
3 LOUFA-02 0 U
4 LOUFB-02 6 U
5 + 0.0
6 INPDI-02
7 INPAD-02
8 RECIN-02
9 + 0.0
10 TAPAD-02
11 TAPMS-02
12 TAPDI-02
13 + 0.0 S U
14 LINFA-02 0 U
15 LINF B-02 6 U
16 CA-EQL02
17 CA-SYN02
18 CA-LSW02
19 KEY
20 TA-ACT02
21 + 0.0
22 +15.0
23 -15.0
24 + 5.6
25 TD-C307K
26 CA-SAFE
27 CA-ADR-R
28 CA-ADR-S
29 CA-ADR-T
30 CA-ADR-U
31 CA-DATA0
32 CA-DATA1
33 CA-DATA2
34 CA-DATA3
35 CA-DATA4
36 CA-DATA5
37 CA-DATA6
38 CA-DATA7
39 CA-CHS02

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 60 RC-FILTER
PNT SIGNAL NAME COLOR LV TYPE F
1 T-TCINDL
2 T-TCOUDL
3 T-TC/RC
ELM 65 WIRE FIELD (TO GRP21, ELM70)
PNT SIGNAL NAME COLOR LV TYPE F
1 +15.0 2 U
2 + 0.0 0 U
3 + 5.6 3 U
ELM 66 WIRE FIELD (TO GRP21, ELM70)
PNT SIGNAL NAME COLOR LV TYPE F
1 ERACS-02 7 U
2 -15.0 6 U

GRP 21 1.820.700.00
<-- <-- <-- CONTINUATION
ELM 70 CONN. HEAD BLOCK ASSEMBLY J18
PNT SIGNAL NAME COLOR LV TYPE F
1 REPRE-01 9 B
2 REPRO-01 6 B
3 + 0.0 5 B
4
5 RECHH-01 9 B
6 RECHL-01 6 B
7
8
9 +15.0 2 B
10 + 5.6 3 B
11 ERACS-02 7 B
12 + 0.0 5 B
13 REPHL-TC 6 B
14 RECHL-TC 6 B
15 ERAHL-TC 6 B
16 FRAHM-01 2 B
17 ERAHL-01 6 B
18 ERAHH-01 9 B
19 FRAHO-01 5 B
20 RFPRE-02 9 B
21 RFPRO-02 6 B
22 + 0.0 5 B
23
24 RECHH-02 9 B
25 RECHL-02 6 B
26
27
28 -15.0 6 B
29 + 0.0 0 B
30
31 REPHH-TC 9 B
32 RECHH-TC 9 B
33 ERAHH-TC 0 B
34 FRAHM-02 2 B
35 ERAHL-02 6 B
36 FRAHH-02 9 B
37 FRAHO-02 5 B

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 28 *

 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 22 1.820.749.00
 INTERFERENCE FILTER, CH 01
 =====
 ELM 1 CONNECTOR XLR, INPUT J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LINSA-01
 3 LINSB-01

 ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LOUSA-C1
 3 LOUSB-01

 ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LINFB-01 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF A-01 0 D

 ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LOUFB-01 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-01 0 D

GRP 23 1.820.749.00
 INTERFERENCE FILTER, CH 02
 =====
 ELM 1 CONNECTOR XLR, INPUT J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LINSA-02
 3 LINSB-02

 ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LOUSA-02
 3 LOUSB-02

 ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LINFB-02 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF A-02 0 D

 ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LOUFB-02 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-02 0 D

GRP 24 1.820.749.00
 INTERFERENCE FILTER, TIMF CODE
 =====
 ELM 1 CONNECTOR XLR, INPUT J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LINSA-TC
 3 LINSB-TC

 ELM 2 CONNECTOR XLR, OUTPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 GND
 2 LOUSA-TC
 3 LOUSB-TC

 ELM 3 CONNECTOR LINE FILTER, INPUT P01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LINFB-TC 6 D
 2 KEY
 3 + 0.0 S D
 4 LINF A-TC 9 D

 ELM 4 CONNECTOR LINE FILTER, OUTPUT P02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 LOUFB-TC 6 D
 2 KEY
 3 + 0.0 S D
 4 LOUFA-TC 9 D

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 29 *

 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 25 REMOTE CONTROL PANEL
 =====
 ELM 1 CONN. AUTOLOCATOR, REMOTE TIMER J01
 PNT SIGNAL NAME COLOR LV TYPE F
 1 SHIELD B
 2 BR-REW B
 3 TR-A B
 4 KEY B
 5 + 0.0 B
 6 TR-B B
 7 SIGN.GND B
 9 +REMSUP B

 ELM 2 CONNECTOR SYNCHRONIZER J02
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0 B
 2 BR-REW B
 3 BR-FORW B
 4 BR-VRSPD B
 5 SR-VRSPD B
 6 SR-REHSL B
 7 OR-MVCLK B
 8 KEY/CDIR B
 9 BR-REC B
 10 OR-MVDIR B
 11 OR-CMCLK B
 12 OR-SYENB B
 13 IR-REFEX B
 14 + 0.0 B
 15 BR-PLAY B
 16 BR-STOP B
 17 SR-LIFT B
 18 SR-MUTE B
 19 SR-REC B
 20 SR-REW B
 21 SR-FORW B
 22 SR-PLAY B
 23 SR-STOP B
 24 KEY B
 25 +24.OREM B

GRP 25 <-- <-- <-- CONTINUATION
 =====
 ELM 3 CONN. PARALLEL REMOTE CONTROL J03
 PNT SIGNAL NAME COLOR LV TYPE F
 1 + 0.0 B
 2 BR-REW B
 3 BR-FORW B
 4 BR-VRSPD B
 5 SR-VRSPD B
 6 SR-FADRY B
 7 BR-LOCST B
 8 BR-FADRY B
 9 BR-REC B
 10 SR-RESET B
 11 FAD1 B
 12 FAD2 B
 13 IR-REFEX B
 14 SR-OLOC B
 15 BR-PLAY B
 16 BR-STOP B
 17 SR-LIFT B
 18 SR-LOCST B
 19 SR-REC B
 20 SR-REW B
 21 SR-FORW B
 22 SR-PLAY B
 23 SR-STOP B
 24 KEY B
 25 +24.OREM B

 ELM 4 CONNECTOR SMPTE/EBU BUS J04
 PNT SIGNAL NAME COLOR LV TYPE F
 1 FRMGND B
 2 TRANSA B
 3 RECEIVB B
 4 RECEIVCM B
 5 SPARE B
 6 TRANSCM B
 7 TRANSB B
 8 RECEIVA B
 9 FRMGND B

GRP 25 <-- <-- <-- CONTINUATION
 =====
 ELM 5 CONNECTOR SMPTE/EBU BUS J05
 PNT SIGNAL NAME COLOR LV TYPE F
 1 FRMGND B
 2 TRANSA B
 3 RECEIVB B
 4 RECEIVCM B
 5 SPARE B
 6 TRANSCM B
 7 TRANSB B
 8 RECEIVA B
 9 FRMGND B

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 30 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 26 1.820.729.00
 SERIAL REMOTE INTERFACE
 =====

ELM 1	FROM GRP27, ELM01	P01	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	+ 5.0		
3	+REMSUP		
4	T-RL0		
5	T-RL1		
6	T-SL3		
7	T-A3		
8	T-BD		
9	T-A1		
10	T-A2		
11	T-B3		
12	T-A0		
13	T-B1		
14	T-B2		
15	T-B0		
16	T-SL0		
17	T-SL1		
18	T-RL7		
19	T-RL6		
20	T-OE		
21	T-SL2		
22	T-RL5		
23	T-RL4		
24	T-RESET		
25	T-RL3		
26	T-RL2		

ELM 2	TO GRP25, ELM01	P02	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	SHIELD		
2			
3			
4	TR-B		
5	TR-A		
6	SIGN.GND		
7	KEY		
8	+REMSUP		
9	+ 0.0		
10			

GRP 27 1.820.738.00
 PARALLEL REMOTE INTERFACE
 =====

ELM 1	TO GRP26, ELM01	P01	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	+ 5.0		
3	+REMSUP		
4	T-RL0		
5	T-RL1		
6	T-SL3		
7	T-A3		
8	T-BD		
9	T-A1		
10	T-A2		
11	T-B3		
12	T-A0		
13	T-B1		
14	T-B2		
15	T-B0		
16	T-SL0		
17	T-SL1		
18	T-RL7		
19	T-RL6		
20	T-OE		
21	T-SL2		
22	T-RL5		
23	T-RL4		
24	T-RESET		
25	T-RL3		
26	T-RL2		

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GRP 27 1.820.738.00
 <-- <-- <-- CONTINUATION
 =====

ELM 2	FROM GRP20, ELM16	P02	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	+ 0.0		
3	+ 5.6		
4	+ 5.6		
5	+REMSUP		
6	+REMSUP		
7	TM-DSL5		
8	TM-ISL5		
9	TM-DRES		
10	TM-TRES		
11	TM-DRW		
12	TM-IRW		
13	TM-DENB		
14	TM-IENB		
15	T-REFEXT		
16	0.0 VCU		
17	TC-TCMV		
18	TC-TCDIR		
19	TM-DADRO		
20	TM-IADRO		
21	TM-REMIR		
22	0.0 VCU		
23	TD-MVCLK		
24	TD-MVDIR		
25	TM-DATA7		
26	0.0 VCU		
27	TM-DATA6		
28	0.0 VCU		
29	TM-DATA5		
30	0.0 VCU		
31	TM-DATA4		
32	0.0 VCU		
33	TM-DATA3		
34	0.0 VCU		
35	TM-DATA2		
36	0.0 VCU		
37	TM-DATA1		
38	0.0 VCU		
39	TM-DATA0		
40	0.0 VCU		

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 31 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 27 1.820.738.00
 <-- <-- <-- CONTINUATION
 =====

ELM 3	TO CONNECTOR SYNCHRONIZER	P03	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	+ 0.0		
3	BR-REW		
4	BR-PLAY		
5	BR-FORW		
6	BR-STOP		
7	BR-VRSPD		
8	SR-LIFT		
9	SR-VRSPD		
10	SR-MUTE		
11	SR-REHSL		
12	SR-REC		
13	DR-MVCLK		
14	SR-REW		
15	KEY/CDIR		
16	SR-FORW		
17	BR-REC		
18	SR-PLAY		
19	DR-MVDIR		
20	SR-STOP		
21	DR-CMCLK		
22	KEY		
23	DR-SYENB		
24	+24.0REM		
25	IR-REFEX		
26			

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GRP 27 1.820.738.00
 <-- <-- <-- CONTINUATION
 =====

ELM 4	TO CONN. PARALLEL REMOTE CONTR.	P04	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	SR-OLOC		
3	BR-REW		
4	BR-PLAY		
5	BR-FORW		
6	BR-STOP		
7	BR-VRSPD		
8	SR-LIFT		
9	SR-VRSPD		
10	SR-LOCST		
11	SR-FADRY		
12	SR-REC		
13	DR-LOGST		
14	SR-REW		
15	BR-FADRY		
16	SR-FORW		
17	BR-REC		
18	SR-PLAY		
19	SR-RESET		
20	SR-STOP		
21	FAD1		
22	KEY		
23	FAD2		
24	+24.0REM		
25	IR-REFEX		
26			

ELM 5

PNT	SIGNAL NAME	COLOR LV TYPE	F
1	GND	Y	

GRP 28 1.820.235.00
 MONITOR CONTROL UNIT
 =====

ELM 1	AUDIO INPUT (FROM GRP21, ELM13)	J01	
PNT	SIGNAL NAME	COLOR LV TYPE	F
1	MONIT-01	9 N	
2	+ 0.0	5 N	
3	INPD1-01	9 N	
4	+ 0.0	5 N	
5	MONIT-02	9 N	
6	+ 0.0	5 N	
7	INPD1-02	9 N	
8	+ 0.0	5 N	
9	KEY		
10			
11	T-TC/RC	9 N	
12	+ 0.0	5 N	

ELM 2 FROM GRP20, ELM19 P01

PNT	SIGNAL NAME	COLOR LV TYPE	F
1	+ 0.0		
2	+ 0.0		
3	+ 5.6		
4	+ 5.6		
5	+15.0		
6	-15.0		
7	T-SADA		
8	T-SADB		
9	T-SADC		
10	T-READSL		
11	T-WRTSL		
12	T-DT-CH1		
13	T-DT-CH2		
14	T-DT-CH3		
15	T-DT-MP		
16	+ 0.0		

ELM 3 CONNECTOR LOUDSPEAKER J03

PNT	SIGNAL NAME	COLOR LV TYPE	F
1		N	
2		R	
3		O	

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 32 *
 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 28 1.820.235.00
 <-- <-- <-- CONTINUATION

ELM 4
 TO POTENTIOMETER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1P	1			U	
2P	2			U	
3P	3			U	
4P	4			U	
5P	0			U	
6P	0			U	

ELM 5
 TO PHONES CONNECTOR J02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		N	
2	HEADPH-2	9		N	
3	HEADPH-1	6		N	
4	KEY				
5	S-MONMUT	2		N	

ELM 6
 PHONES CONNECTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		L	
1A	S-MONMUT	2		L	
2	HEADPH-2	9		L	
3	HEADPH-1	6		L	

GRP 29 1.820.234.00
 MONITOR LOUDSPEAKER

ELM 1
 LOUDSPEAKER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0		L	
2		8		L	

GRP 30 1.820.775.00
 SPOOLING MOTOR DRIVE AMPLIFIER RIGHT

ELM 1
 FROM GRP31, ELM01 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1				M	
2	-PSVTMOT			M	
3	+PSVTMOT			M	
4				M	
5	-PSVTMOT			M	
6	+PSVTMOT			M	
7	+ 0.0			M	
8	-PSVTMOT			M	
9	+PSVTMOT			M	
10				M	
11	-PSVTMOT			M	
12	+PSVTMOT			M	

ELM 2
 FROM GRP20, ELM02 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	PWMR-L1				
8	PWMR-L2				
9	PWMR-H1				
10	PWMR-H2				
11	PWMR-L3				
12	PWMR-L4				
13	AN-ICRD				
14	PWMR-L5				
15	PWMR-L6				
16	+ 0.0				

ELM 3 P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+VMOTRHT			J	
2	-VMOTRHT			J	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 33 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 31 1.820.777.00
 SPOOLING MOTOR SUPPLY

ELM 1
 OUTPUT P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+PSVTMOT			M	
2	+PSVTMOT			M	
3	+PSVTMOT			M	
4	+PSVTMOT			M	
5	+PSVTMOT			M	
6	+PSVTMOT			M	
7	+PSVTMOT			M	
8	+PSVTMOT			M	
9	-PSVTMOT			M	
10	-PSVTMOT			M	
11	-PSVTMOT			M	
12	-PSVTMOT			M	
13	-PSVTMOT			M	
14	-PSVTMOT			M	
15	-PSVTMOT			M	
16	-PSVTMOT			M	
17				M	
18				M	
19				M	
20				M	
21	+ 0.0			M	
22	+ 0.0			M	
23				M	
24				M	

ELM 2
 FROM GRP08, ELM05 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	ACPMM-A1			F	
2	ACPMM-A3			F	
3	ACPMM-A5			F	
4	ACPMM-A2			F	
5	ACPMM-A4			F	
6	ACPMM-A6			F	
7	ACPMM-B1			M	
8	ACPMM-B2			M	
9	ACPMM-B3			M	
10	ACPMM-B4			M	
11	ACPMM-B5			M	
12	ACPMM-B6			M	

GRP 31 1.820.777.00
 <-- <-- <-- CONTINUATION

ELM 3
 FROM GRP20, ELM05 P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	TD-C307K				
8	TD-PWENB				
9	+YSUP				
10	-YSUP				
11					
12					
13					
14					
15					
16					

ELM 4
 CONNECTOR TO CAPACITOR (GRP34) P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+PSVTMOT			F	
2	+PSVTMOT			F	
3	+PSVTMOT			F	
4	-PSVTMOT			F	
5	-PSVTMOT			F	
6	-PSVTMOT			F	

GRP 32 1.820.790.00
 SWITCHING STABILIZER

ELM 1
 INPUT FROM GRP12, ELM05 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+STABIN			F	
2	+ 0.0			F	
3	+ 0.0			F	
4	+STABIN			F	
5	+ 0.0			F	
6	-STABIN			F	
7	+CAPMOT			F	
8					
9	OCAPMOT			F	
10	ACPWE-D1			F	
11					
12	ACPWE-B1			F	

ELM 2
 OUTPUT P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.6			M	
2	+ 5.6			M	
3	+5.6SFNS			M	
4	TD-C76K			F	
5	+ 0.0			M	
6	+ 0.0			M	
7	T-PWRON			M	
8	+ 0.0			M	
9	+ 0.0			M	
10	+ 0.0			M	
11	+15.0			M	
12	-15.0			M	
13	+ 0.0			M	
14	+ 0.0			M	
15	+24.0			M	
16	+REMSUP			M	
17	+STABSNS			M	
18	-STABSNS			M	
19	-26.0			M	
20	+26.0			M	
21	+ 0.0			M	
22	+0.0SFNS			M	
23	OCAPMOT			M	
24	+CAPMOT			M	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 34 *

 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 33 1.820.775.00
 SPOOLING MOTOR DRIVE AMPLIFIER LEFT
 =====

ELM 1 FROM GRP31, ELM01 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1					
2	-PSVTMOT	M			
3	+PSVTMOT	M			
4		M			
5	-PSVTMOT	M			
6	+PSVTMOT	M			
7	+ 0.0	M			
8	-PSVTMOT	M			
9	+PSVTMOT	M			
10		M			
11	-PSVTMOT	M			
12	+PSVTMOT	M			

ELM 2 FROM GRP20, ELM01 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	PWMPL-L1				
8	PWMPL-L2				
9	PWMPL-H1				
10	PWMPL-H2				
11	PWMPL-L3				
12	PWMPL-L4				
13	AN-ICLD				
14	PWMPL-L5				
15	PWMPL-L6				
16	+ 0.0				

ELM 3 P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+VMOTLFT	J			
2	-VMOTLFT	J			

GRP 34 59.26.6223
 CAPACITOR (BELONGS TO GRP31)
 =====

ELM 1 CAPACITOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1A	+PSVTMOT	2	L		
1B	+PSVTMOT	2	L		
1C	+PSVTMOT	2	L		
2A	-PSVTMOT	6	L		
2B	-PSVTMOT	6	L		
2C	-PSVTMOT	6	L		

ELM 2 CONNECTOR (FROM GRP31) J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+PSVTMOT	2	M		
2	+PSVTMOT	2	M		
3	+PSVTMOT	2	M		
4	-PSVTMOT	6	M		
5	-PSVTMOT	6	M		
6	-PSVTMOT	6	M		

GRP 36 1.820.190.00
 TORQUE MOTOR, LEFT
 =====

ELM 1 1.820.771.00 TACHO SENSOR P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-RES1				
8	TD-TML2				
9	TD-TML1				
10					

ELM 2 FROM GRP33, ELM 03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+VMOTLFT	2			
2	-VMOTLFT	0			

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 35 *

 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 37 1.820.190.00
 TORQUE MOTOR, RIGHT
 =====

ELM 1 1.820.771.00 TACHO SENSOR P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-RES2				
8	TD-TMR2				
9	TD-TMR1				
10					

ELM 2 FROM GRP30, ELM 03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+VMOTRHT	2			
2	-VMOTRHT	0			

GRP 38 1.021.695.00
 CAPSTAN MOTOR (ELECTRONICS BOARD)
 =====

ELM 1 FROM GRP39, ELM02 J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	C PHASE-R	2	F		
2	C PHASE-T	9	F		
3	C PHASE-S	0	F		
4	TC-HALL1		F		
5					
6	+15.0		F		
7	TC-HALL2		F		
8	TD-TCM1		F		
9	+ 5V		F		
10	TC-HALL3		F		
11	TD-TCM2		F		
12	+ 0.0		F		

ELM 2 1.021.696.00 TACHO SENSOR UNIT (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		3	U		
2		4	U		
3		5	U		
4		6	U		

ELM 3 1.021.697.00 HALL SENSOR BOARD (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0	U		
2		2	U		
3		3	U		
4		4	U		
5		5	U		
6		6	U		
7		7	U		
8		8	U		

GRP 38 1.021.695.00
 <-- <-- <-- CONTINUATION
 =====

ELM 4 STATOR (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	C PHASE-R	2	L		
2	C PHASE-S	0	L		
3	C PHASE-T	9	L		

ELM 5 GROUND CONNECTION (WIRE FIELD)

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	GND	0	L		

 * WILLI STUDER AG * L O C A T I O N P I N N L I S T * 86/05/14 * 11:48 * P A G E 36 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

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GRP 39 1.820.774.00
 CAPSTAN MOTOR DRIVE AMPLIFIER

GRP 39 1.820.774.00
 <-- <-- <-- CONTINUATION

GRP 40 1.080.230.00
 BRAKE ASSEMBLY, LEFT

ELM 1 FROM GRP20, ELM03 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	AN-CSPDC				
8	TD-TCM1				
9	+ 0.0				
10	TD-TCM2				
11	T-SPDSL1				
12	T-SPDSL2				
13	TC-CAPREF				
14	TC-CAPDC				
15	TD-C76K				
16	+ 0.0				

ELM 3 FROM GRP20, ELM71 P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	OCAPMOT			M	
2					
3					
4					
5					
6	+CAPMOT			M	

ELM 1 BRAKE SOLENOID

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7		M	
2	K-BRAKEL	1		M	
3					

ELM 2 TO GRP38, ELM01 P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	CPHASE-R			M	
2	CPHASE-T			M	
3	CPHASE-S			M	
4	TC-HALL1			M	
5	-15.0			M	
6	+15.0			M	
7	TC-HALL2			M	
8	TD-TCM1			M	
9	+ 5V			M	
10	TC-HALL3			M	
11	TD-TCM2			M	
12	+ 0.0			M	

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 * WILLI STUDER AG * L O C A T I O N P I N N L I S T * 86/05/14 * 11:48 * P A G E 37 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 41 1.080.240.00
 BRAKE ASSEMBLY, RIGHT

GRP 42 1.820.772.00
 TAPE TENSION SENSOR, LEFT

GRP 43 1.820.772.00
 TAPE TENSION SENSOR, RIGHT

ELM 1 BRAKE SOLENOID

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+24.0	7		M	
2	K-BRAKER	4		M	
3					

ELM 1 FROM GRP20, ELM12 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8					
9	AN-TTL				
10					

ELM 1 FROM GRP20, ELM13 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7					
8					
9	AN-TTR				
10					

 * WILLI STUDER AG * L O C A T I O N P I N N L I S T * 86/05/14 * 11:48 * P A G E 38 *
 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 44 1.820.793.00
 OPTO SENSOR
 =====
 ELM 1
 FROM GRP20, ELM06 P01

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 TD-YTRSP
 8 TD-SHLD
 9 TD-TRSP
 10 TD-TRSPR

GRP 45 1.820.770.00
 MOVE SENSOR
 =====
 ELM 1
 FROM GRP20, ELM11 P01

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +15.0
 6 -15.0
 7 AN-RES3
 8 TD-MOVE2
 9 TD-MOVE1
 10

GRP 46 1.820.773.00
 TAPE LIFTER CONTROL, LEFT
 =====
 ELM 1
 FROM GRP20, ELM07 P01

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +26.0
 6 -26.0
 7
 8
 9
 10
 11 TD-RALP1
 12 TD-RALC2
 13 TD-RALP2
 14 TD-RALC1
 15 TD-RALEN
 16

 * WILLI STUDER AG * L O C A T I O N P I N N L I S T * 86/05/14 * 11:48 * P A G E 39 *
 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 47 1.820.773.00
 TAPE LIFTER CONTROL, RIGHT
 =====
 ELM 1
 FROM GRP20, ELM08 P01

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +26.0
 6 -26.0
 7
 8
 9
 10
 11 TD-RARP1
 12 TD-RARC2
 13 TD-RARP2
 14 TD-RARC1
 15 TD-RAREN
 16

GRP 48 1.820.240.00
 PUSHBUTTON ASSEMBLY
 =====
 ELM 1
 FROM GRP50, ELM03

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.6
 4 + 5.6
 5 +24.0L
 6 BM-0.2
 7 BM-0.3
 8 BM-0.4
 9 BM-0.5
 10 BM-0.6
 11 BM-0.7
 12 TM-ENO
 13 TM-RL7
 14 TM-RL6
 15 TM-RL5
 16 TM-RL4
 17 TM-RL3
 18 TM-RL2
 19 TM-RL1
 20 TM-CUE1
 21
 22 TM-CUE2
 23
 24 ANM-SH3
 25 ANM-SH2
 26 ANM-SH1

GRP 48 1.820.240.00
 WIRE FIELD
 <-- <-- <-- CONTINUATION
 =====
 ELM 3
 WIRE FIELD

 PNT SIGNAL NAME COLOR LV TYPE F

 1 +24.0L
 2 +24.0L
 3 BM-0.7
 4 BM-0.6
 5 BM-0.5
 6 BM-0.4
 7 BM-0.3
 8 BM-0.2
 9
 10

ELM 2
 CONNECTOR EDIT ASSEMBLY

 PNT SIGNAL NAME COLOR LV TYPE F

 1 + 0.0
 2 + 0.0
 3 + 5.0
 4 TM-ENO
 5 TM-CUE1
 6 TM-RL1
 7 TM-CUE2
 8 ANM-SH1
 9 ANM-SH3
 10 ANM-SH2

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 40 *
 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 49 1.820.250.00
 EDIT ASSEMBLY

GRP 50 1.820.768.00
 TAPE DECK DISPLAY DRIVER

GRP 50 1.820.768.00
 <-- <-- <-- CONTINUATION

ELM 1
 FROM GRP48, ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.0				
4	TM-ENO				
5	TM-CUE1				
6	TM-RL1				
7	TM-CUE2				
8	ANN-SH1				
9	ANN-SH3				
10	ANN-SH2				

ELM 1
 FROM GRP20, ELM15 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+24.0				
6	TM-DSL4				
7	TM-ISL4				
8	TM-DRES				
9	TM-IRES				
10	TM-DRW				
11	TM-IRW				
12	TM-DENB				
13	TM-IENB				
14	TM-DADR2				
15	TM-IADR2				
16	TM-DADR1				
17	TM-IADR1				
18	TM-DADRO				
19	TM-IADRO				
20	TM-SHIR				
21	0.0 VCU				
22	TM-KBIR				
23	0.0 VCU				
24	0.0 VCU				
25	TM-DATA7				
26	0.0 VCU				
27	TM-DATA6				
28	0.0 VCU				
29	TM-DATA5				
30	0.0 VCU				
31	TM-DATA4				
32	0.0 VCU				
33	TM-DATA3				
34	0.0 VCU				
35	TM-DATA2				
36	0.0 VCU				
37	TM-DATA1				
38	0.0 VCU				
39	TM-DATA0				
40	0.0 VCU				

ELM 2
 CONNECTOR COMMAND UNIT P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6	TM-FN4				
7	TM-FN3				
8	TM-FN2				
9	TM-FN1				
10	TM-RL6				
11	TM-RL7				
12	TM-RL0				
13	TM-RL1				
14	TM-RL2				
15	TM-RL3				
16	TM-RL4				
17	TM-RL5				
18	TM-B				
19	TM-DP				
20	TM-A				
21	TM-C				
22	TM-D				
23	TM-F				
24	TM-E				
25	TM-G				
26	TM-O9				
27	TM-O8				
28	TM-O7				
29	TM-O6				
30	TM-O5				
31	TM-O4				
32	TM-O3				
33	TM-O2				
34	TM-O1				
35	TM-O0				
36	TM-L2				
37	TM-L1				
38	TM-L3				
39					
40					

ELM 2
 WIRE FIELD

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 5.0				
2	TM-ENO				
3					
4	TM-RL1				
5	+ 0.0				

ELM 4
 CONNECTOR LCD DISPLAY UNIT P04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 5.0				
3	TL-CS				
4	TL-ENB				
5	TL-WR				
6	TL-A0				
7	TL-D0				
8	TL-D1				
9	TL-D2				
10	TL-D3				
11	TL-D4				
12	TL-D5				
13	TL-D6				
14	TL-D7				
15	TL-RESET				
16	0.0				

ELM 1
 FROM GRP50,ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6	TM-FN4				
7	TM-FN3				
8	TM-FN2				
9	TM-FN1				
10	TM-RL6				
11	TM-RL7				
12	TM-RL0				
13	TM-RL1				
14	TM-RL2				
15	TM-RL3				
16	TM-RL4				
17	TM-RL5				
18	TM-B				
19	TM-DP				
20	TM-A				
21	TM-C				
22	TM-D				
23	TM-F				
24	TM-E				
25	TM-G				
26	TM-O9				
27	TM-O8				
28	TM-O7				
29	TM-O6				
30	TM-O5				
31	TM-O4				
32	TM-O3				
33	TM-O2				
34	TM-O1				
35	TM-O0				
36	TM-L2				
37	TM-L1				
38	TM-L3				
39					
40					

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 41 *
 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 50 1.820.768.00
 <-- <-- <-- CONTINUATION

GRP 50 1.820.768.00
 <-- <-- <-- CONTINUATION

GRP 51 1.820.230.00
 COMMAND UNIT

ELM 3
 CONNECTOR PUSHBUTTON ASSEMBLY P02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+24.0L				
6	BM-O.2				
7	BM-O.3				
8	BM-O.4				
9	BM-O.5				
10	BM-O.6				
11	BM-O.7				
12	TM-ENC				
13	TM-RL7				
14	TM-RL6				
15	TM-RL5				
16	TM-RL4				
17	TM-RL3				
18	TM-RL2				
19	TM-RL1				
20	TM-CUE1				
21					
22	TM-CUE2				
23					
24	ANN-SH3				
25	ANN-SH2				
26	ANN-SH1				

ELM 1
 FROM GRP50,ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6	TM-FN4				
7	TM-FN3				
8	TM-FN2				
9	TM-FN1				
10	TM-RL6				
11	TM-RL7				
12	TM-RL0				
13	TM-RL1				
14	TM-RL2				
15	TM-RL3				
16	TM-RL4				
17	TM-RL5				
18	TM-B				
19	TM-DP				
20	TM-A				
21	TM-C				
22	TM-D				
23	TM-F				
24	TM-E				
25	TM-G				
26	TM-O9				
27	TM-O8				
28	TM-O7				
29	TM-O6				
30	TM-O5				
31	TM-O4				
32	TM-O3				
33	TM-O2				
34	TM-O1				
35	TM-O0				
36	TM-L2				
37	TM-L1				
38	TM-L3				
39					
40					

ELM 1
 FROM GRP50,ELM02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5					
6	TM-FN4				
7	TM-FN3				
8	TM-FN2				
9	TM-FN1				
10	TM-RL6				
11	TM-RL7				
12	TM-RL0				
13	TM-RL1				
14	TM-RL2				
15	TM-RL3				
16	TM-RL4				
17	TM-RL5				
18	TM-B				
19	TM-DP				
20	TM-A				
21	TM-C				
22	TM-D				
23	TM-F				
24	TM-E				
25	TM-G				
26	TM-O9				
27	TM-O8				
28	TM-O7				
29	TM-O6				
30	TM-O5				
31	TM-O4				
32	TM-O3				
33	TM-O2				
34	TM-O1				
35	TM-O0				
36	TM-L2				
37	TM-L1				
38	TM-L3				
39					
40					

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 42 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 52 1.820.233.00
 LCD DISPLAY UNIT

ELM 1
 FROM GRP50, ELM04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 5.0				
3	TL-CS				
4	TL-ENB				
5	TL-WR				
6	TL-A0				
7	TL-D0				
8	TL-D1				
9	TL-D2				
10	TL-D3				
11	TL-D4				
12	TL-D5				
13	TL-D6				
14	TL-D7				
15	TL-RESET				
16	0.0				

GRP 59 1.820.737.00
 FUSE/SUPPLY FAILURE DETECTOR

ELM 1
 FROM GRP20, ELM14

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+CAPMOT				
2	+CAPMOT				
3					
4	+24.0				
5	-STABSNS				
6	T-SUPVON				
7	+STABSNS				
8	+STABSNS				
9	+ 5.6				
10	+ 5.6				
11	+ 0.0				
12	+ 0.0				
13	-15.0				
14	+15.0				
15	+26.0				
16	-26.0				

GRP 60
 HEAD BLOCK ASSEMBLY. 2 CH. TIME CODE

ELM 1
 HEAD BLOCK CONNECTOR

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	REPRE-01	0		A	
2	REPRO-01	6		A	
3	+ 0.0	0		A	
4					
5	RFCHH-01	1		A	
6	RECHL-01	0		A	
7					
8					
9	+15.0	2		A	
10	+ 5.6				
11	FRACS-02				
12	+ 0.0	0		A	
13	REPHL-TC	3		A	
14	RECHL-TC	3		A	
15	ER AHL-TC	5		A	
16	ER AHH-01	5		A	
17	ER AHL-01	3		A	
18	ER AHH-01	5		A	
19	ER AHO-01				
20	REPRE-02	0		A	
21	RFPRO-02	6		A	
22	+ 0.0	0		A	
23					
24	RECHH-02	1		A	
25	RECHL-02	0		A	
26					
27					
28	-15.0	6		A	
29	+ 0.0	0		A	
30					
31	REPHH-TC	5		A	
32	RECHH-TC	5		A	
33	ER AHH-TC	3		A	
34	ER AHH-02	5		A	
35	ER AHL-02	3		A	
36	ER AHH-02	5		A	
37	ER AHO-02				

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 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 43 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 60 <-- <-- <-- CONTINUATION

ELM 2
 FROM GRP20, ELM17

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 5.6				
3	+15.0				
4	T-SADA				
5	T-SADC				
6	T-WRTSL				
7	T-DT-RP2				
8	T-DT-MP				
9					
10					
11					
12					
13	+ 0.0				
14	+ 0.0				
15	+ 5.6				
16	-15.0				
17	T-SADB				
18	T-READSL				
19	T-DT-RP1				
20	T-DT-SJM				
21	T-DT-RES				
22					
23	+ 0.0				
24	+ 0.0				
25	+24.0				

GRP 70 1.820.794.00
 DISTRIBUTION BOARD

ELM 1
 FROM GRP20, ELM18

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	T-DT-RES				
17					
18					
19					
20	+ 0.0				
21	T-VARSPD				
22	+ 0.0				
23	T-REFEXT				
24	+24.0				
25	+ 0.0				
26	+ 0.0				

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 2
 RESERVE

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	T-DT-RES				
17					
18					
19					
20	+ 0.0				
21	T-VARSPD				
22	+ 0.0				
23	T-REFEXT				
24	+24.0				
25	+ 0.0				
26	+ 0.0				

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ELM 3
 REPRODUCE PREAMPLIFIER

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+15.0	2		L	
2	REPRE-01	0		L	
3	REPRO-01	6		L	
4	+ 0.0	5		L	
5	+ 0.0	5		L	
6	REPRO-02	6		L	
7	REPRE-02	0		L	
8	-15.0	6		L	
9					
10					
11	REPHL-01	0		L	
12	REPHH-01	1		L	
13	REPHL-02	0		L	
14	REPHH-02	1		L	

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 44 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 3 RESERVE P03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-MP				
13	T-REFEXT				
14	+ 0.0				
15	T-VARSPD				
16	+24.0				

ELM 4 COMMANDS CH 03 P04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH3				
13					
14					
15					
16	+24.0				

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 5 COMMANDS CH 01 P05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13					
14					
15					
16	+24.0				

ELM 6 COMMANDS CH 02 P06

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH2				
13					
14					
15					
16	+24.0				

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 7 COMMANDS MONITOR AMPLIFIER P07

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-RFADSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	+ 0.0				

ELM 8 VU-METER CH 01, AUDIO J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	LOUFA-01				
3	LOUFB-01				
4	+ 0.0				
5	INPDI-01				
6	INPAD-01				
7	+ 0.0				
8	TAPAD-01				
9	TAPMS-01				
10	KEY				

 * WILLI STUDER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 45 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

 <-- <-- <-- CONTINUATION

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 9 AUDIO CH 01 (FROM GRP21, ELM11) J02

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	LOUFA-01				
3	LOUFB-01				
4	+ 0.0				
5	INPDI-01				
6	INPAD-01				
7	+ 0.0				
8	TAPAD-01				
9	TAPMS-01				
10	KEY				

ELM 10 VU-METER CH 02, AUDIO J03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	LOUFA-02				
3	LOUFB-02				
4	+ 0.0				
5	INPDI-02				
6	INPAD-02				
7	+ 0.0				
8	TAPAD-02				
9	TAPMS-02				
10	KEY				

ELM 11 AUDIO CH 02 (FROM GRP21, ELM12) J04

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	LOUFA-02				
3	LOUFB-02				
4	+ 0.0				
5	INPDI-02				
6	INPAD-02				
7	+ 0.0				
8	TAPAD-02				
9	TAPMS-02				
10	KEY				

GRP 70 1.820.794.00
 <-- <-- <-- CONTINUATION

ELM 12 FROM GRP21, ELM13 J05

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01				
2	+ 0.0				
3					
4					
5	MONIT-02				
6	+ 0.0				
7					
8					
9	KEY				
10					
11	T-TC/RC				
12	+ 0.0				

ELM 13 MONITOR AMPLIFIER, AUDIO J06

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01				
2	+ 0.0				
3	INPDI-01				
4	+ 0.0				
5	MONIT-02				
6	+ 0.0				
7	INPDI-02				
8	+ 0.0				
9	KEY				
10					
11	T-TC/RC				
12	+ 0.0				

GRP 71 1.820.580.00
 MONITOR UNIT

ELM 1 AUDIO INPUT J01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	MONIT-01	9		N	
2	+ 0.0	S		N	
3	INPDI-01	9		N	
4	+ 0.0	S		N	
5	MONIT-02	9		N	
6	+ 0.0	S		N	
7	INPDI-02	9		N	
8	+ 0.0	S		N	
9	KEY				
10					
11	T-TC/RC	9		N	
12	+ 0.0	S		N	

ELM 2 FROM GRP70, ELM07 P01

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0				
2	+ 0.0				
3	+ 5.6				
4	+ 5.6				
5	+15.0				
6	-15.0				
7	T-SADA				
8	T-SADB				
9	T-SADC				
10	T-READSL				
11	T-WRTSL				
12	T-DT-CH1				
13	T-DT-CH2				
14	T-DT-CH3				
15	T-DT-MP				
16	+ 0.0				

ELM 3 CONNECTOR LOUDSPEAKER J03

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1				N	
2		8		N	
3		0		N	

```

*****
* WILLI STUER AG * L O C A T I O N P I N L I S T * 86/05/14 * 11:48 * P A G E 46 *
*****
* 1.820-C90.00 * STUER A F20 * TAPE DECK & AUDIO * 83/02/23 - 00 *
*****
<-- <-- <-- CONTINUATION

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GRP 71      1.820.580.00
<-- <-- <-- CONTINUATION
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ELM 4
  TO POTENTIOMETER
-----

```

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1P		1		U	
2P		2		U	
3P		3		U	
4P		4		U	
5P		0		U	
6P		0		U	

```

ELM 5
  TO PHONES CONNECTOR
-----

```

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		N	
2	HEADPH-2	9		N	
3	HEADPH-1	6		N	
4	KEY				
5	S-MONMUT	2		N	

```

ELM 6
  PHONES CONNECTOR
-----

```

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1	+ 0.0	S-0		L	
1A	S-MONMUT	2		L	
2	HEADPH-2	9		L	
3	HEADPH-1	6		L	

```

ELM 7
  LOUDSPEAKER
-----

```

PNT	SIGNAL NAME	COLOR	LV	TYPE	F
1		0		L	
2		8		L	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
0.0				50	4	16				CONNECTOR LCD DISPLAY UNIT	P04	
				52	1	16				FROM GRP50, ELM04		
+ 0.0	0			11	1	4			L	RECTIFIER	DZ01	70.01.0231
	0			11	2	3			L	RECTIFIER	DZ02	70.01.0231
	0			12	1	2			L	CAPACITOR	C01	59.26.7103
	0			12	2	2			L	CAPACITOR	C02	59.26.7103
	0			12	3	1			L	CAPACITOR	C03	59.26.7103
	0			12	5	2			M	CONNECTOR TO GRP32, ELM01	P01	
	0			12	5	3			M	CONNECTOR TO GRP32, ELM01	P01	
	0			12	5	5			M	CONNECTOR TO GRP32, ELM01	P01	
	4			18	1	21			F	FROM GRP31, ELM01	J01	
	4			18	1	22			F	FROM GRP31, ELM01	J01	
	4			18	2	7			F	TO GRP33, ELM01	P01	
	4			18	3	7			F	TO GRP30, ELM01	P02	
	0			19	1	5			F	FROM GRP32, ELM02	J01	
	0			19	1	6			F	FROM GRP32, ELM02	J01	
	0			19	1	8			F	FROM GRP32, ELM02	J01	
	0			19	1	9			F	FROM GRP32, ELM02	J01	
	0			19	1	10			F	FROM GRP32, ELM02	J01	
	0			19	1	13			F	FROM GRP32, ELM02	J01	
	0			19	1	14			F	FROM GRP32, ELM02	J01	
	0			19	1	21			F	FROM GRP32, ELM02	J01	
	0			19	2	5			M	TO GRP21, ELM02	P01	
	0			19	2	6			M	TO GRP21, ELM02	P01	
	0			19	2	8			M	TO GRP21, ELM02	P01	
	0			19	2	9			M	TO GRP21, ELM02	P01	
	0			19	2	10			M	TO GRP21, ELM02	P01	
	0			19	2	13			M	TO GRP21, ELM02	P01	
	0			19	2	14			M	TO GRP21, ELM02	P01	
	0			19	2	21			M	TO GRP21, ELM02	P01	
	0			20	1	1				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
	0			20	1	2				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
	0			20	1	16				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
	0			20	2	1				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
	0			20	2	2				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
	0			20	2	16				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
	0			20	3	1				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	3	2				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	3	9				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	3	11				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	3	12				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	3	16				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
	0			20	4	1				PAR. CONT. INT. SYNCHRONIZER	P04	
	0			20	4	2				PAR. CONT. INT. SYNCHRONIZER	P04	
	0			20	4	9				PAR. CONT. INT. SYNCHRONIZER	P04	
	0			20	4	11				PAR. CONT. INT. SYNCHRONIZER	P04	
	0			20	4	16				PAR. CONT. INT. SYNCHRONIZER	P04	
	0			20	5	1				SPOOLING MOTOR SUPPLY	P05	
	0			20	5	2				SPOOLING MOTOR SUPPLY	P05	
	0			20	6	1				EXT. SENSORS	P06	
	0			20	6	2				EXT. SENSORS	P06	
	0			20	7	1				TAPE LIFT MOTOR, LEFT	P07	
	0			20	7	2				TAPE LIFT MOTOR, LEFT	P07	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF				20	8	1				TAPE LIFT MOTOR, RIGHT	P08	
+ 0.0				20	8	2				TAPE LIFT MOTOR, RIGHT	P08	
				20	9	1				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	9	2				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	10	1				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	10	2				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	11	1				MOVE SENSOR	P11	
				20	11	2				MOVE SENSOR	P11	
				20	12	1				TAPE TENSION SENSOR, LEFT	P12	
				20	12	2				TAPE TENSION SENSOR, LEFT	P12	
				20	13	1				TAPE TENSION SENSOR, RIGHT	P13	
				20	13	2				TAPE TENSION SENSOR, RIGHT	P13	
				20	14	11				FUSE FAILURE DETECTOR	P14	
				20	14	12				FUSE FAILURE DETECTOR	P14	
				20	15	1				DISPLAY DRIVER	P15	
				20	15	2				DISPLAY DRIVER	P15	
				20	16	1				PARALLEL REMOTE CONTROL	P16	
				20	16	2				PARALLEL REMOTE CONTROL	P16	
				20	17	1				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	2				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	20				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	22				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	25				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	26				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	1				VU-METER PANEL, EXTERNAL	P18	
				20	18	2				VU-METER PANEL, EXTERNAL	P18	
				20	18	20				VU-METER PANEL, EXTERNAL	P18	
				20	18	22				VU-METER PANEL, EXTERNAL	P18	
				20	18	25				VU-METER PANEL, EXTERNAL	P18	
				20	18	26				VU-METER PANEL, EXTERNAL	P18	
				20	19	1				SOURCE SELECTOR	P19	
				20	19	2				SOURCE SELECTOR	P19	
				20	32	1				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	3				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	5				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	7				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	9				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	11				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	13				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	15				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	17				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	19				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	21				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	23				TO AUDIO BASIS BOARD, ELM30	P22	
				20	32	25				TO AUDIO BASIS BOARD, ELM30	P22	
				20	33	1				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	3				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	5				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	7				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	9				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	11				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	13				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	15				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	17				TO AUDIO BASIS BOARD, ELM31	P23	

* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 49 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<--- CONT.OF				20	33	19				TO AUDIO BASIS BOARD, ELM31	P23	
+ 0.0				20	33	21				TO AUDIO BASIS BOARD, ELM31	P23	
				20	33	23				TO AUDIC BASIS BOARD, ELM31	P23	
				20	33	25				TO AUDIC BASIS BOARD, ELM31	P23	
				20	34	2				INT. SYNCHRONIZER	P24	
				20	34	4				INT. SYNCHRONIZER	P24	
				20	34	6				INT. SYNCHRONIZER	P24	
				20	34	8				INT. SYNCHRONIZER	P24	
				20	34	10				INT. SYNCHRONIZER	P24	
				20	34	11				INT. SYNCHRONIZER	P24	
				20	34	12				INT. SYNCHRONIZER	P24	
				20	34	13				INT. SYNCHRONIZER	P24	
				20	34	14				INT. SYNCHRONIZER	P24	
				20	34	16				INT. SYNCHRONIZER	P24	
				20	34	18				INT. SYNCHRONIZER	P24	
				20	34	20				INT. SYNCHRONIZER	P24	
				20	34	22				INT. SYNCHRONIZER	P24	
				20	34	24				INT. SYNCHRONIZER	P24	
				20	34	26				INT. SYNCHRONIZER	P24	
				20	34	28				INT. SYNCHRONIZER	P24	
				20	34	30				INT. SYNCHRONIZER	P24	
				20	34	32				INT. SYNCHRONIZER	P24	
				20	34	34				INT. SYNCHRONIZER	P24	
				20	34	36				INT. SYNCHRONIZER	P24	
				20	34	38				INT. SYNCHRONIZER	P24	
				20	34	40				INT. SYNCHRONIZER	P24	
				20	40	21				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	41	21				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	17A				CAPSTAN INTERFACE	J03	1.820.777.00
				20	42	17B				CAPSTAN INTERFACE	J03	1.820.777.00
				20	43	17A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	43	17B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	21				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	21				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	21				MP-UNIT TO CONTROL	J07	1.820.781.00
				20	47	21				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				20	48	17A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	48	17B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	21				MP-UNIT MASTER	J10	1.820.784.00
				20	50	21				SMPTE/EBU INTERFACE	J11	1.820.751.00
				20	51	16A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				20	51	16B				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
	0			20	60	1			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	60	2			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	60	3			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	61	3			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	61	4			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	61	6			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	61	7			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	61	8			L	WIRE FIELD (FROM GRP20, ELM70)		
	0			20	70	5			F	FROM GRP21, ELM01	J13	
	0			20	70	6			F	FROM GRP21, ELM01	J13	
	0			20	70	8			F	FROM GRP21, ELM01	J13	
	0			20	70	9			F	FROM GRP21, ELM01	J13	

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* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 50 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<--- CONT.OF	0			20	70	10			F	FROM GRP21, ELM01	J13	
+ 0.0	0			20	70	13			F	FROM GRP21, ELM01	J13	
	0			20	70	14			F	FROM GRP21, ELM01	J13	
	0			20	70	21			F	FROM GRP21, ELM01	J13	
				21	1	5			M	TO GRP20, ELM70	P01	
				21	1	6			M	TO GRP20, ELM70	P01	
				21	1	8			M	TO GRP20, ELM70	P01	
				21	1	9			M	TO GRP20, ELM70	P01	
				21	1	10			M	TO GRP20, ELM70	P01	
				21	1	13			M	TO GRP20, ELM70	P01	
				21	1	14			M	TO GRP20, ELM70	P01	
				21	1	21			M	TO GRP20, ELM70	P01	
				21	2	5			F	FROM GRP19, ELM02	J01	
				21	2	6			F	FROM GRP19, ELM02	J01	
				21	2	8			F	FROM GRP19, ELM02	J01	
				21	2	9			F	FROM GRP19, ELM02	J01	
				21	2	10			F	FROM GRP19, ELM02	J01	
				21	2	13			F	FROM GRP19, ELM02	J01	
				21	2	14			F	FROM GRP19, ELM02	J01	
				21	2	21			F	FROM GRP19, ELM02	J01	
				21	3	3			F	CONNECTOR SYNCHRONIZER	P02	
				21	3	4			F	CONNECTOR SYNCHRONIZER	P02	
				21	3	5			F	CONNECTOR SYNCHRONIZER	P02	
				21	3	7			F	CONNECTOR SYNCHRONIZER	P02	
				21	3	8			F	CONNECTOR SYNCHRONIZER	P02	
	S			21	11	1			N	TO VU-METER PANEL, CH 1	J02	
	S			21	11	4			N	TO VU-METER PANEL, CH 1	J02	
	S			21	11	7			N	TO VU-METER PANEL, CH 1	J02	
	S			21	12	1			N	TO VU-METER PANEL, CH 2	J03	
	S			21	12	4			N	TO VU-METER PANEL, CH 2	J03	
	S			21	12	7			N	TO VU-METER PANEL, CH 2	J03	
	S			21	13	2			N	TO SOURCE SELECTOR (GRP28)	J04	
	S			21	13	4			N	TO SOURCE SELECTOR (GRP28)	J04	
	S			21	13	6			N	TO SOURCE SELECTOR (GRP28)	J04	
	S			21	13	8			N	TO SOURCE SELECTOR (GRP28)	J04	
	S			21	13	12			N	TO SOURCE SELECTOR (GRP28)	J04	
				21	30	1				FROM TAPE DECK BASIS BOARD	J05	
				21	30	3				FROM TAPE DECK BASIS BOARD	J05	
				21	30	5				FROM TAPE DECK BASIS BOARD	J05	
				21	30	7				FROM TAPE DECK BASIS BOARD	J05	
				21	30	9				FROM TAPE DECK BASIS BOARD	J05	
				21	30	11				FROM TAPE DECK BASIS BOARD	J05	
				21	30	13				FROM TAPE DECK BASIS BOARD	J05	
				21	30	15				FROM TAPE DECK BASIS BOARD	J05	
				21	30	17				FROM TAPE DECK BASIS BOARD	J05	
				21	30	19				FROM TAPE DECK BASIS BOARD	J05	
				21	30	21				FROM TAPE DECK BASIS BOARD	J05	
				21	30	23				FROM TAPE DECK BASIS BOARD	J05	
				21	30	25				FROM TAPE DECK BASIS BOARD	J05	
				21	31	1				FROM TAPE DECK BASIS BOARD	J06	
				21	31	3				FROM TAPE DECK BASIS BOARD	J06	
				21	31	5				FROM TAPE DECK BASIS BOARD	J06	
				21	31	7				FROM TAPE DECK BASIS BOARD	J06	
				21	31	9				FROM TAPE DECK BASIS BOARD	J06	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF					21	31				FROM TAPE DECK BASIS BOARD	J06	
+ 0.0					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
					21	31				FROM TAPE DECK BASIS BOARD	J06	
	S				21	40			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41				TIME CODE DELAY UNIT	J08	1.820.722.81
					21	41				TIME CODE DELAY UNIT	J08	1.820.722.81
					21	41				TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42				HF-DRIVER, CH 1	J09	1.820.713.00
					21	42				HF-DRIVER, CH 1	J09	1.820.713.00
					21	42				HF-DRIVER, CH 1	J09	1.820.713.00
					21	42				HF-DRIVER, CH 1	J09	1.820.713.00
					21	42				HF-DRIVER, CH 1	J09	1.820.713.00
					21	43				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
	S				21	43			U	RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	43				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	43				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	43				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
	S				21	44			U	REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	44				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	44				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	44				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	44				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	44				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
	S				21	45			U	LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	45				LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	45				LINE AMPLIFIER, CH 1	J12	1.820.714.81
	S				21	45			U	LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	45				LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	46				MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47				HF-DRIVER, CH 2	J14	1.820.713.00
					21	47				HF-DRIVER, CH 2	J14	1.820.713.00
					21	47				HF-DRIVER, CH 2	J14	1.820.713.00
					21	47				HF-DRIVER, CH 2	J14	1.820.713.00
					21	47				HF-DRIVER, CH 2	J14	1.820.713.00
					21	48				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
	S				21	48			U	RECORD AMPLIFIER, CH 2	J15	1.820.712.81
					21	48				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
					21	48				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
					21	48				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
	S				21	49			U	REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	49				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF					21	49				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
+ 0.0					21	49				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	49				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	49				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
	S				21	50			U	LINE AMPLIFIER, CH 2	J17	1.820.714.81
					21	50				LINE AMPLIFIER, CH 2	J17	1.820.714.81
					21	50				LINE AMPLIFIER, CH 2	J17	1.820.714.81
	S				21	50			U	LINE AMPLIFIER, CH 2	J17	1.820.714.81
					21	50				LINE AMPLIFIER, CH 2	J17	1.820.714.81
	O				21	65			U	WIRE FIELD (TO GRP21, ELM70)	J17	1.820.714.81
	S				21	70			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	S				21	70			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	S				21	70			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	S				21	70			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	S				22	3			D	CONNECTOR LINE FILTER, INPUT	P01	
	S				22	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
	S				23	3			D	CONNECTOR LINE FILTER, INPUT	P01	
	S				23	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
	S				24	3			D	CONNECTOR LINE FILTER, INPUT	P01	
	S				24	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
					25	1			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
					25	2			B	CONNECTOR SYNCHRONIZER	J02	
					25	2			B	CONNECTOR SYNCHRONIZER	J02	
					25	3			B	CONN. PARALLEL REMOTE CONTROL	J03	
					26	1				FROM GRP27, ELM01	P01	
					26	2				TO GRP25, ELM01	P02	
					27	1				FROM GRP26, ELM16	P01	
					27	2				FROM GRP20, ELM16	P02	
					27	2				FROM GRP20, ELM16	P02	
					27	3				TO CONNECTOR SYNCHRONIZER	P03	
					27	3				TO CONNECTOR SYNCHRONIZER	P03	
					27	4				TO CONN. PARALLEL REMOTE CONTR.	P04	
	S				28	1			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
	S				28	1			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
	S				28	1			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
	S				28	1			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
	S				28	1			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
					28	2				FROM GRP20, ELM19	P01	
					28	2				FROM GRP20, ELM19	P01	
					28	2				FROM GRP20, ELM19	P01	
	S-0				28	5			N	TO PHONES CONNECTOR	J02	
	S-0				28	6			L	PHONES CONNECTOR		
					30	1			M	FROM GRP31, ELM01	J01	
					30	2				FROM GRP20, ELM02	P01	
					30	2				FROM GRP20, ELM02	P01	
					30	2				FROM GRP20, ELM02	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	3				FROM GRP20, ELM05	P02	
					31	3				FROM GRP20, ELM05	P02	
					32	1			F	INPUT FROM GRP12, ELM05	J01	
					32	1			F	INPUT FROM GRP12, ELM05	J01	
					32	1			F	INPUT FROM GRP12, ELM05	J01	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 53 *

 * 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF				32	2	5			M	OUTPUT	P01	
+ 0.0				32	2	6			M	OUTPUT	P01	
				32	2	8			M	OUTPUT	P01	
				32	2	9			M	OUTPUT	P01	
				32	2	10			M	OUTPUT	P01	
				32	2	13			M	OUTPUT	P01	
				32	2	14			M	OUTPUT	P01	
				32	2	21			M	OUTPUT	P01	
				33	1	7			M	FROM GRP31, ELM01	J01	
				33	2	1				FROM GRP20, ELM01	P01	
				33	2	2				FROM GRP20, ELM01	P01	
				33	2	16				FROM GRP20, ELM01	P01	
				36	1	1				TACHO SENSOR	P01	1.820.771.00
				36	1	2				TACHO SENSOR	P01	1.820.771.00
				37	1	1				TACHO SENSOR	P01	1.820.771.00
				37	1	2				TACHO SENSOR	P01	1.820.771.00
				38	1	12			F	FROM GRP39, ELM02	J01	
				39	1	1				FROM GRP20, ELM03	P01	
				39	1	2				FROM GRP20, ELM03	P01	
				39	1	9				FROM GRP20, ELM03	P01	
				39	1	16				FROM GRP20, ELM03	P01	
				39	2	12			M	TO GRP38, ELM01	P02	
				42	1	1				FROM GRP20, ELM12	P01	
				42	1	2				FROM GRP20, ELM12	P01	
				43	1	1				FROM GRP20, ELM13	P01	
				43	1	2				FROM GRP20, ELM13	P01	
				44	1	1				FROM GRP20, ELM06	P01	
				44	1	2				FROM GRP20, ELM06	P01	
				45	1	1				FROM GRP20, ELM11	P01	
				45	1	2				FROM GRP20, ELM11	P01	
				46	1	1				FROM GRP20, ELM07	P01	
				46	1	2				FROM GRP20, ELM07	P01	
				47	1	1				FROM GRP20, ELM08	P01	
				47	1	2				FROM GRP20, ELM08	P01	
				48	1	1				FROM GRP50, ELM03	P01	
				48	1	2				FROM GRP50, ELM03	P01	
				48	2	1				CONNECTOR EDIT ASSEMBLY		
				48	2	2				CONNECTOR EDIT ASSEMBLY		
				49	1	1				FROM GRP48, ELM02		
				49	1	2				FROM GRP48, ELM02		
				49	2	5				WIRE FIELD		
				50	1	1				FROM GRP20, ELM15	P01	
				50	1	2				FROM GRP20, ELM15	P01	
				50	2	1				CONNECTOR COMMAND UNIT	P03	
				50	2	2				CONNECTOR COMMAND UNIT	P03	
				50	3	1				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
				50	3	2				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
				50	4	1				CONNECTOR LCD DISPLAY UNIT	P04	
				51	1	1				FROM GRP50, ELM02		
				51	1	2				FROM GRP50, ELM02		
				52	1	1				FROM GRP50, ELM04		
				59	1	11				FROM GRP20, ELM14	P01	
				59	1	12				FROM GRP20, ELM14	P01	
	0			60	1	3			A	HEAD BLCKK CONNECTOR	P01	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 54 *

 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF	0			60	1	12			A	HEAD BLCKK CONNECTOR	P01	
+ 0.0	0			60	1	22			A	HEAD BLCKK CONNECTOR	P01	
	0			60	1	29			A	HEAD BLCKK CONNECTOR	P01	
				60	2	1				FROM GRP20, ELM17	P02	
				60	2	13				FROM GRP20, ELM17	P02	
				60	2	14				FROM GRP20, ELM17	P02	
				60	2	23				FROM GRP20, ELM17	P02	
				60	2	24				FROM GRP20, ELM17	P02	
	S			60	3	4			L	REPRODUCE PREAMPLIFIER		
	S			60	3	5			L	REPRODUCE PREAMPLIFIER		
				70	1	1				FROM GRP20, ELM18	P01	
				70	1	2				FROM GRP20, ELM18	P01	
				70	1	20				FROM GRP20, ELM18	P01	
				70	1	22				FROM GRP20, ELM18	P01	
				70	1	25				FROM GRP20, ELM18	P01	
				70	1	26				FROM GRP20, ELM18	P01	
				70	2	1				RESERVE	P02	
				70	2	2				RESERVE	P02	
				70	2	20				RESERVE	P02	
				70	2	22				RESERVE	P02	
				70	2	25				RESERVE	P02	
				70	2	26				RESERVE	P02	
				70	3	1				RESERVE	P03	
				70	3	2				RESERVE	P03	
				70	3	14				RESERVE	P03	
				70	4	1				COMMANDS CH 03	P04	
				70	4	2				COMMANDS CH 03	P04	
				70	5	1				COMMANDS CH 01	P05	
				70	5	2				COMMANDS CH 01	P05	
				70	6	1				COMMANDS CH 02	P06	
				70	6	2				COMMANDS CH 02	P06	
				70	7	1				COMMANDS MONITOR AMPLIFIER	P07	
				70	7	2				COMMANDS MONITOR AMPLIFIER	P07	
				70	7	16				COMMANDS MONITOR AMPLIFIER	P07	
				70	8	1				VU-METER CH 01, AUDIO	J01	
				70	8	4				VU-METER CH 01, AUDIO	J01	
				70	8	7				VU-METER CH 01, AUDIO	J01	
				70	9	1				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
				70	9	4				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
				70	9	7				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
				70	10	1				VU-METER CH 02, AUDIO	J03	
				70	10	4				VU-METER CH 02, AUDIO	J03	
				70	10	7				VU-METER CH 02, AUDIO	J03	
				70	11	1				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
				70	11	4				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
				70	11	7				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
				70	12	2				FROM GRP21, ELM13	J05	
				70	12	6				FROM GRP21, ELM13	J05	
				70	12	12				FROM GRP21, ELM13	J05	
				70	13	2				MONITOR AMPLIFIER, AUDIO	J06	
				70	13	4				MONITOR AMPLIFIER, AUDIO	J06	
				70	13	6				MONITOR AMPLIFIER, AUDIO	J06	
				70	13	8				MONITOR AMPLIFIER, AUDIO	J06	
				70	13	12				MONITOR AMPLIFIER, AUDIO	J06	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 55 *
 * 1.820.C90.00 * STUDER A 82C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF	S			71	1	2			N	AUDIO INPUT	J01	
+ 0.0	S			71	1	4			N	AUDIO INPUT	J01	
	S			71	1	6			N	AUDIO INPUT	J01	
	S			71	1	8			N	AUDIO INPUT	J01	
	S			71	1	12			N	AUDIO INPUT	J01	
				71	2	1				FROM GRP70, ELM07	P01	
				71	2	2				FROM GRP70, ELM07	P01	
				71	2	16				FROM GRP70, ELM07	P01	
	S-0			71	5	1			N	TO PHONES CONNECTOR	J02	
	S-0			71	6	1			L	PHONES CONNECTOR		
+ 5.0				26	1	2				FROM GRP27, ELM01	P01	
				27	1	2				TO GRP26, ELM01	P01	
				48	2	3				CONNECTOR EDIT ASSEMBLY		
				49	1	3				FROM GRP48, ELM02		
				49	2	1				WIRE FIELD		
				50	4	2				CONNECTOR LCD DISPLAY UNIT	P04	
				52	1	2				FROM GRP50, ELM04		
+ 5.6	3			19	1	1			F	FROM GRP32, ELM02	J01	
	3			19	1	2			F	FROM GRP32, ELM02	J01	
	3			19	2	1			M	TO GRP21, ELM02	P01	
	3			19	2	2			M	TO GRP21, ELM02	P01	
				20	1	3				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	1	4				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	2	3				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	2	4				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	3	3				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
				20	3	4				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
				20	4	3				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	4	4				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	5	3				SPOOLING MOTOR SUPPLY	P05	
				20	5	4				SPOOLING MOTOR SUPPLY	P05	
				20	6	3				EXT. SENSORS	P06	
				20	6	4				EXT. SENSORS	P06	
				20	7	3				TAPE LIFT MOTOR, LEFT	P07	
				20	7	4				TAPE LIFT MOTOR, LEFT	P07	
				20	8	3				TAPE LIFT MOTOR, RIGHT	P08	
				20	8	4				TAPE LIFT MOTOR, RIGHT	P08	
				20	9	3				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	9	4				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	10	3				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	10	4				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	11	3				MOVE SENSOR	P11	
				20	11	4				MOVE SENSOR	P11	
				20	12	3				TAPE TENSION SENSOR, LEFT	P12	
				20	12	4				TAPE TENSION SENSOR, LEFT	P12	
				20	13	3				TAPE TENSION SENSOR, RIGHT	P13	
				20	13	4				TAPE TENSION SENSOR, RIGHT	P13	
				20	14	9				FUSE FAILURE DETECTOR	P14	
				20	14	10				FUSE FAILURE DETECTOR	P14	
				20	15	3				DISPLAY DRIVER	P15	
				20	15	4				DISPLAY DRIVER	P15	
				20	16	3				PARALLEL REMOTE CONTROL	P16	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 56 *
 * 1.820.090.00 * STUDER A 82C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF				20	16	4				PARALLEL REMOTE CONTROL	P16	
+ 5.6				20	17	3				TO HEAD BLOCK ASSEMBLY	P17	
				20	17	4				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	3				VU-METER PANEL, EXTERNAL	P18	
				20	18	4				VU-METER PANEL, EXTERNAL	P18	
				20	19	3				SOURCE SELECTOR	P19	
				20	19	4				SOURCE SELECTOR	P19	
				20	40	20				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	41	20				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	16A				CAPSTAN INTERFACE	J03	1.820.727.00
				20	42	16B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	16A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	43	16B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	20				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	20				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	20				MP-UNIT TO CONTROL	J07	1.820.781.00
				20	47	20				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				20	48	16A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	48	16B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	20				MP-UNIT MASTER	J10	1.820.784.00
				20	50	20				SMPTE/EBU INTERFACE	J11	1.820.751.00
				20	51	18A				MASTER PERIPHERY CONTROLLER	J12	1.820.778.00
				20	51	18B				MASTER PERIPHERY CONTROLLER	J12	1.820.778.00
				20	62	1			L	WIRE FIELD		
				20	62	2			L	WIRE FIELD		
	3			20	70	1			F	FROM GRP21, ELM01	J13	
	3			20	70	2			F	FROM GRP21, ELM01	J13	
				21	1	1			M	TO GRP20, ELM70	P01	
				21	1	2			M	TO GRP20, ELM70	P01	
				21	2	1			F	FROM GRP19, ELM02	J01	
				21	2	2			F	FROM GRP19, ELM02	J01	
				21	3	1			F	CONNECTOR SYNCHRONIZER	P02	
				21	3	2			F	CONNECTOR SYNCHRONIZER	P02	
				21	40	24				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	24				TIME CODE DELAY UNIT	J08	1.820.722.81
				21	42	24				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	24				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	24				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
				21	45	24				LINE AMPLIFIER, CH 1	J12	1.820.714.81
				21	46	24				MONO-STEREO-SWITCH	J13	1.820.720.00
				21	47	24				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	24				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	24				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
				21	50	24				LINE AMPLIFIER, CH 2	J17	1.820.714.81
	3			21	65	3			U	WIRE FIELD (TO GRP21, ELM70)		
	3			21	70	10			B	CONN. HEAD BLOCK ASSEMBLY	J18	
				27	2	3				FROM GRP20, ELM16	P02	
				27	2	4				FROM GRP20, ELM16	P02	
				28	2	3				FROM GRP20, ELM19	P01	
				28	2	4				FROM GRP20, ELM19	P01	
				30	2	3				FROM GRP20, ELM02	P01	
				30	2	4				FROM GRP20, ELM02	P01	
				31	3	3				FROM GRP20, ELM05	P02	
				31	3	4				FROM GRP20, ELM05	P02	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * PAGE 57 *

 * 1.820.090.00 * STUDER A 82C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF					32	2			M	OUTPUT	P01	
+ 5.6					32	2			M	OUTPUT	P01	
					33	2				FROM GRP20, ELM01	P01	
					33	2				FROM GRP20, ELM01	P01	
					36	1				TACHO SENSOR	P01	1.820.771.00
					36	1				TACHO SENSOR	P01	1.820.771.00
					37	1				TACHO SENSOR	P01	1.820.771.00
					37	1				TACHO SENSOR	P01	1.820.771.00
					39	1				FROM GRP20, ELM03	P01	
					39	1				FROM GRP20, ELM03	P01	
					42	1				FROM GRP20, ELM12	P01	
					42	1				FROM GRP20, ELM12	P01	
					43	1				FROM GRP20, ELM13	P01	
					43	1				FROM GRP20, ELM13	P01	
					44	1				FROM GRP20, ELM06	P01	
					44	1				FROM GRP20, ELM06	P01	
					45	1				FROM GRP20, ELM11	P01	
					45	1				FROM GRP20, ELM11	P01	
					46	1				FROM GRP20, ELM07	P01	
					46	1				FROM GRP20, ELM07	P01	
					47	1				FROM GRP20, ELM08	P01	
					47	1				FROM GRP20, ELM08	P01	
					48	1				FROM GRP50, ELM03	P01	
					48	1				FROM GRP50, ELM03	P01	
					50	1				FROM GRP20, ELM15	P01	
					50	1				FROM GRP20, ELM15	P01	
					50	2				CONNECTOR COMMAND UNIT	P03	
					50	2				CONNECTOR COMMAND UNIT	P03	
					50	3				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					50	3				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1				FROM GRP50, ELM02	P01	
					51	1				FROM GRP50, ELM02	P01	
					59	1				FROM GRP20, ELM14	P01	
					59	1				FROM GRP20, ELM14	P01	
					60	1				HEAD BLOCK CONNECTOR	P01	
					60	2				FROM GRP20, ELM17	P02	
					60	2				FROM GRP20, ELM17	P02	
					70	1				FROM GRP20, ELM18	P01	
					70	1				FROM GRP20, ELM18	P01	
					70	2				RESERVE	P02	
					70	2				RESERVE	P02	
					70	3				RESERVE	P03	
					70	3				RESERVE	P03	
					70	4				COMMANDS CH 03	P04	
					70	4				COMMANDS CH 03	P04	
					70	5				COMMANDS CH 01	P05	
					70	5				COMMANDS CH 01	P05	
					70	6				COMMANDS CH 02	P06	
					70	6				COMMANDS CH 02	P06	
					70	7				COMMANDS MONITOR AMPLIFIER	P07	
					70	7				COMMANDS MONITOR AMPLIFIER	P07	
					71	2				FROM GRP70, ELM07	P01	
					71	2				FROM GRP70, ELM07	P01	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * PAGE 58 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
+ 5V					38	1			F	FROM GRP39, ELM02	J01	
					39	2			M	TO GRP38, ELM01	P02	
+CAPMGT	2				11	3			L	RECTIFIER	D203	70.01.0231
	2				12	4			L	CAPACITOR	C04	59.26.7103
	2				12	5			M	CONNECTOR TO GRP32, ELM01	P01	
	2				19	1			F	FROM GRP32, ELM02	J01	
	2				19	2			M	TO GRP21, ELM02	P01	
					20	14				FUSE FAILURE DETECTOR	P14	
					20	14				FUSE FAILURE DETECTOR	P14	
	2				20	62			L	WIRE FIELD		
	2				20	62			L	WIRE FIELD		
	2				20	70			F	FROM GRP21, ELM01	J13	
	2				20	71			F	TO CAPSTAN MOTOR DRIVE AMP.		
					21	1			M	TO GRP20, ELM70	P01	
					21	2			F	FROM GRP19, ELM02	J01	
					32	1			F	INPUT FROM GRP12, ELM05	J01	
					32	2			M	OUTPUT	P01	
					39	3			M	FROM GRP20, ELM71	P03	
					59	1				FROM GRP20, ELM14	P01	
					59	1				FROM GRP20, ELM14	P01	
+PSVTMGT	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	1			F	FROM GRP31, ELM01	J01	
	2				18	2			F	TO GRP33, ELM01	P01	
	2				18	2			F	TO GRP33, ELM01	P01	
	2				18	2			F	TO GRP33, ELM01	P01	
	2				18	2			F	TO GRP33, ELM01	P01	
	2				18	3			F	TO GRP30, ELM01	P02	
	2				18	3			F	TO GRP30, ELM01	P02	
	2				18	3			F	TO GRP30, ELM01	P02	
	2				18	3			F	TO GRP30, ELM01	P02	
	2				18	3			F	TO GRP30, ELM01	P02	
					30	1			M	FROM GRP31, ELM01	J01	
					30	1			M	FROM GRP31, ELM01	J01	
					30	1			M	FROM GRP31, ELM01	J01	
					30	1			M	FROM GRP31, ELM01	J01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	1			M	OUTPUT	P01	
					31	4			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
					31	4			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
					31	4			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
					33	1			M	FROM GRP31, ELM01	J01	
					33	1			M	FROM GRP31, ELM01	J01	

* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * PAGE 59 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

Table with columns: SIGNAL NAME, COLOR, MI, ASY, GRP, ELM, PNT, S, LV, TYPE, DESCRIPTION OF ELEMENT, REMARK, ELEMENT NR. Rows include +PSVTMOT, +REMSUP, +STABIN, +STABSNS, +VMOTLFT, +VMOTRHT, +YSUP.

* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * PAGE 60 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

Table with columns: SIGNAL NAME, COLOR, MI, ASY, GRP, ELM, PNT, S, LV, TYPE, DESCRIPTION OF ELEMENT, REMARK, ELEMENT NR. Rows include +G.0SENS, +15.0.

 * WILLI STUDER AG * I G N A L M I R E L I S T * 86/05/14 * 11:48 * P A G E 61 *
 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<--- CONT.OF			21	49	22					REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
+15.0			21	50	22					LINE AMPLIFIER, CH 2	J17	1.820.714.81
	2		21	65	1			U		WIRE FIELD (TO GRP21, ELM70)		
	2		21	70	9			B		CONN. HEAD BLOCK ASSEMBLY	J18	
			28	2	5					FROM GRP20, ELM19	P01	
			30	2	5					FROM GRP20, ELM02	P01	
			31	3	5					FROM GRP20, ELM05	P02	
			32	2	11			M		OUTPUT	P01	
			33	2	5					FROM GRP20, ELM01	P01	
			36	1	5					TACHO SENSOR	P01	1.820.771.00
			37	1	5					TACHO SENSOR	P01	1.820.771.00
			38	1	6			F		FROM GRP39, ELM02	J01	
			39	1	5					FROM GRP20, ELM03	P01	
			39	2	6			M		TO GRP38, ELM01	P02	
			42	1	5					FROM GRP20, ELM12	P01	
			43	1	5					FROM GRP20, ELM13	P01	
			44	1	5					FROM GRP20, ELM06	P01	
			45	1	5					FROM GRP20, ELM11	P01	
			59	1	14					FROM GRP20, ELM14	P01	
	2		60	1	9			A		HEAD BLOCK CONNECTOR	P01	
			60	2	3					FROM GRP20, ELM17	P02	
	2		60	3	1			L		REPRODUCE PREAMPLIFIER		
			70	1	5					FROM GRP20, ELM18	P01	
			70	2	5					RESERVE	P02	
			70	3	5					RESERVE	P03	
			70	4	5					COMMANDS CH 03	P04	
			70	5	5					COMMANDS CH 01	P05	
			70	6	5					COMMANDS CH 02	P06	
			70	7	5					COMMANDS MONITOR AMPLIFIER	P07	
			71	2	5					FROM GRP70, ELM07	P01	
+24.0	7		19	1	15			F		FROM GRP32, ELM02	J01	
	7		19	2	15			M		TO GRP21, ELM02	P01	
			20	14	4					FUSE FAILURE DETECTOR	P14	
			20	15	5					DISPLAY DRIVER	P15	
			20	15	6					DISPLAY DRIVER	P15	
			20	17	24					TO HEAD BLOCK ASSEMBLY	P17	
			20	18	24					VU-METER PANEL, EXTERNAL	P18	
	7		20	62	11			U		WIRE FIELD		
	7		20	62	12			U		WIRE FIELD		
	7		20	62	13			U		WIRE FIELD		
	7		20	70	15			F		FROM GRP21, ELM01	J13	
	7		20	72	1			F		TO BRAKE SOLENOID, LEFT		
	7		20	73	1			F		TO BRAKE SOLENOID, RIGHT		
			21	1	15			M		TO GRP20, ELM70		
			21	2	15			F		FROM GRP19, ELM02	P01	
			32	2	15			M		OUTPUT	P01	
	7		40	1	1			M		BRAKE SOLENOID		
	7		41	1	1			M		BRAKE SOLENOID		
			50	1	5					FROM GRP20, ELM15	P01	
			50	1	6					FROM GRP20, ELM15	P01	
			59	1	4					FROM GRP20, ELM14	P01	
			60	2	25					FROM GRP20, ELM17	P02	
			70	1	24					FROM GRP20, ELM18	P01	

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 * WILLI STUDER AG * I G N A L M I R E L I S T * 86/05/14 * 11:48 * P A G E 62 *
 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<--- CONT.OF			70	2	24					RESERVE	P02	
+24.0			70	3	16					RESERVE	P03	
			70	4	16					COMMANDS CH 03	P04	
			70	5	16					COMMANDS CH 01	P05	
			70	6	16					COMMANDS CH 02	P06	
+24.0L			48	1	5					FROM GRP50, ELM03		
			48	3	1					WIRE FIELD		
			48	3	2					WIRE FIELD		
			50	3	5					CONNECTOR PUSHBUTTON ASSEMBLY	P02	
+24.0REM			25	2	25			B		CONNECTOR SYNCHRONIZER	J02	
			25	3	25			B		CONN. PARALLEL REMOTE CONTROL	J03	
			27	3	24					TO CONNECTOR SYNCHRONIZER	P03	
			27	4	24					TO CONN. PARALLEL REMOTE CONTR.	P04	
+26.0	1		19	1	20			F		FROM GRP32, ELM02	J01	
	1		19	2	20			M		TO GRP21, ELM02	P01	
			20	7	5					TAPE LIFT MOTOR, LEFT	P07	
			20	8	5					TAPE LIFT MOTOR, RIGHT	P08	
			20	14	15					FUSE FAILURE DETECTOR	P14	
	1		20	61	2			L		WIRE FIELD (FROM GRP20, ELM70)		
	1		20	70	20			F		FROM GRP21, ELM01	J13	
			21	1	20			M		TO GRP20, ELM70	P01	
			21	2	20			F		FROM GRP19, ELM02	J01	
			32	2	20			M		OUTPUT	P01	
			46	1	5					FROM GRP20, ELM07	P01	
			47	1	5					FROM GRP20, ELM08	P01	
			59	1	15					FROM GRP20, ELM14	P01	
+5.6SENS	4		19	1	3			F		FROM GRP32, ELM02	J01	
	4		19	2	3			M		TO GRP21, ELM02	P01	
	4		20	62	3			U		WIRE FIELD		
	4		20	70	3			F		FROM GRP21, ELM01	J13	
			21	1	3			M		TO GRP20, ELM70	P01	
			21	2	3			F		FROM GRP19, ELM02	J01	
			32	2	3			M		OUTPUT	P01	
-PSVTMOT	6		18	1	9			F		FROM GRP31, ELM01	J01	
	6		18	1	10			F		FROM GRP31, ELM01	J01	
	6		18	1	11			F		FROM GRP31, ELM01	J01	
	6		18	1	12			F		FROM GRP31, ELM01	J01	
	6		18	1	13			F		FROM GRP31, ELM01	J01	
	6		18	1	14			F		FROM GRP31, ELM01	J01	
	6		18	1	15			F		FROM GRP31, ELM01	J01	
	6		18	1	16			F		FROM GRP31, ELM01	J01	
	6		18	2	2			F		TO GRP33, ELM01	P01	
	6		18	2	5			F		TO GRP33, ELM01	P01	
	6		18	2	8			F		TO GRP33, ELM01	P01	
	6		18	2	11			F		TO GRP33, ELM01	P01	
	6		18	3	2			F		TO GRP30, ELM01	P02	
	6		18	3	5			F		TO GRP30, ELM01	P02	
	6		18	3	8			F		TO GRP30, ELM01	P02	
	6		18	3	11			F		TO GRP30, ELM01	P02	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF -PSVTMOT				30	1	2			M	FROM GRP31, ELM01	J01	
				30	1	5			M	FROM GRP31, ELM01	J01	
				30	1	8			M	FROM GRP31, ELM01	J01	
				30	1	11			M	FROM GRP31, ELM01	J01	
				31	1	9			M	OUTPUT	P01	
				31	1	10			M	OUTPUT	P01	
				31	1	11			M	OUTPUT	P01	
				31	1	12			M	OUTPUT	P01	
				31	1	13			M	OUTPUT	P01	
				31	1	14			M	OUTPUT	P01	
				31	1	15			M	OUTPUT	P01	
				31	1	16			M	OUTPUT	P01	
				31	4	4			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
				31	4	5			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
				31	4	6			F	CONNECTOR TO CAPACITOR (GRP34)	P03	
				33	1	2			M	FROM GRP31, ELM01	J01	
				33	1	5			M	FROM GRP31, ELM01	J01	
				33	1	8			M	FROM GRP31, ELM01	J01	
				33	1	11			M	FROM GRP31, ELM01	J01	
	6			34	1	2A			L	CAPACITOR		
	6			34	1	2B			L	CAPACITOR		
	6			34	1	2C			L	CAPACITOR		
	6			34	2	4			M	CONNECTOR (FROM GRP31)	J01	
	6			34	2	5			M	CONNECTOR (FROM GRP31)	J01	
	6			34	2	6			M	CONNECTOR (FROM GRP31)	J01	
-STABIN	6			11	2	4			L	RECTIFIER	DZ02	70.01-0231
	6			12	3	2			L	CAPACITOR	C03	59.76-7103
	6			12	5	6			M	CONNECTOR TO GRP32, ELM01	P01	
				32	1	6			F	INPUT FROM GRP12, ELM05	J01	
-STABSNS	5			19	1	18			F	FROM GRP32, ELM02	J01	
	5			19	2	18			M	TO GRP21, ELM02	P01	
				20	14	5				FUSE FAILURE DETECTOR	P14	
	5			20	62	5			U	WIRE FIELD		
	5			20	7C	18			F	FROM GRP21, ELM01	J13	
				21	1	18			M	TO GRP20, ELM70	P01	
				21	2	18			F	FROM GRP19, ELM02	J01	
				32	2	18			M	OUTPUT	P01	
				59	1	5				FROM GRP20, ELM14	P01	
-VMOTLFT				33	3	2			J		P02	
	0			36	2	2				FROM GRP33, ELM 03		
-VMCTRHT				30	3	2			J		P02	
	0			37	2	2				FROM GRP30, ELM 03		
-YSUP				20	5	10				SPOOLING MOTOR SUPPLY	P05	
				20	43	11A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				31	3	10				FROM GRP20, ELM05	P02	
-15.0	6			19	1	12			F	FROM GRP32, ELM02	J01	
	6			19	2	12			M	TO GRP21, ELM02	P01	
				20	1	6				SPOOLING MOTOR DRIVE AMP. LEFT	P01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF -15.0				20	2	6				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	3	6				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
				20	4	6				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	5	6				SPOOLING MOTOR SUPPLY	P05	
				20	6	6				EXT. SENSORS	P06	
				20	9	6				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	10	6				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	11	6				MOVE SENSOR	P11	
				20	12	6				TAPE TENSION SENSOR, LEFT	P12	
				20	13	6				TAPE TENSION SENSOR, RIGHT	P13	
				20	14	13				FUSE FAILURE DETECTOR	P14	
				20	17	6				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	6				VU-METER PANEL, EXTERNAL	P18	
				20	19	6				SOURCE SELECTOR	P19	
				20	40	22				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	41	22				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	18A				CAPSTAN INTERFACE	J03	1.820.727.00
				20	42	18B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	18A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	43	18B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	22				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	22				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	47	22				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				20	48	18A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	48	18B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	50	22				SMPTC/EBU INTERFACE	J11	1.820.751.00
				20	51	17A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				20	51	17B				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
	6			20	61	9				WIRE FIELD (FROM GRP20, ELM70)		
	6			20	70	12			F	FROM GRP21, ELM01	J13	
				21	1	12			M	TO GRP20, ELM70	P01	
				21	2	12			F	FROM GRP19, ELM02	J01	
				21	3	9			F	CONNECTOR SYNCHRONIZER	P02	
				21	40	23				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	23				TIME CODE DELAY UNIT	J08	1.820.722.81
				21	42	23				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	23				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	23				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
				21	45	23				LINE AMPLIFIER, CH 1	J12	1.820.714.81
				21	46	23				MONO-STEREO-SWITCH	J13	1.820.720.00
				21	47	23				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	23				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	23				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
				21	50	23				LINE AMPLIFIER, CH 2	J17	1.820.714.81
	6			21	66	2			U	WIRE FIELD (TO GRP21, ELM70)		
	6			21	70	28			B	CONN. HEAD BLOCK ASSEMBLY	J18	
				28	2	6				FROM GRP20, ELM19	P01	
				30	2	6				FROM GRP20, ELM02	P01	
				31	3	6				FROM GRP20, ELM05	P02	
				32	2	12			M	OUTPUT	P01	
				33	2	6				FROM GRP20, ELM01	P01	
				36	1	6				TACHO SENSOR	P01	1.820.771.00
				37	1	6				TACHO SENSOR	P01	1.820.771.00
				39	1	6				FROM GRP20, ELM03	P01	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 65 *
 * 1.820.090.00 * STUDER A E2G * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.	
<<-- CONT.GF -15.0					39	2	5		M	TO GRP38, ELM01	P02		
					42	1	6			FROM GRP20, ELM12	P01		
					43	1	6			FROM GRP20, ELM13	P01		
					44	1	6			FROM GRP20, ELM06	P01		
					45	1	6			FROM GRP20, ELM11	P01		
					59	1	13			FROM GRP20, ELM14	P01		
		6			60	1	28		A	HEAD BLCKK CONNECTOR	P01		
					60	2	16			FROM GRP20, ELM17	P02		
		6			60	3	8		L	REPRODUCE PREAMPLIFIER			
					70	1	6			FROM GRP20, ELM18	P01		
					70	2	6			RESERVE	P02		
					70	3	6			RESERVE	P03		
					70	4	6			COMMANDS CH 03	P04		
					70	5	6			COMMANDS CH 01	P05		
					70	6	6			COMMANDS CH 02	P06		
				70	7	6			COMMANDS MONITOR AMPLIFIER	P07			
				71	2	6			FROM GRP70, ELM07	P01			
-26.0	9				19	1	19		F	FROM GRP32, ELM02	J01		
	9				19	2	19		M	TO GRP21, ELM02	P01		
					20	7	6			TAPE LIFT MOTOR, LEFT	P07		
					20	8	6			TAPE LIFT MOTOR, RIGHT	P08		
					20	14	16			FUSE FAILURE DETECTOR	P14		
		9			20	61	1		L	WIRE FIELD (FROM GRP20, ELM70)			
		9			20	70	19		F	FROM GRP21, ELM01	J13		
					21	1	19		M	TO GRP20, ELM70	P01		
					21	2	19		F	FROM GRP19, ELM02	J01		
					32	2	19		M	OUTPUT	P01		
					46	1	6			FROM GRP20, ELM07	P01		
					47	1	6			FROM GRP20, ELM08	P01		
					59	1	16			FROM GRP20, ELM14	P01		
	ACPWE-A1	5				9	3	14		Y	SECONDARY 1		1.820.523.00
		6				10	1	1		L	FUSE	F01	53.03.0106
6					11	4	1A		K	DISTRIBUTOR		52.01.0101	
6					11	4	1B		K	DISTRIBUTOR		52.01.0101	
ACPWE-A2	6				9	3	13		Y	SECONDARY 1		1.820.523.00	
	6				11	4	1D		K	DISTRIBUTOR		52.01.0101	
ACPWE-A3	6				9	3	12		Y	SECONDARY 1		1.820.523.00	
	6				11	4	1C		K	DISTRIBUTOR		52.01.0101	
ACPWE-A4	1				9	3	11		Y	SECONDARY 1		1.820.523.00	
	1				10	2	1		L	FUSE	F02	53.03.0106	
	1				11	4	5A		K	DISTRIBUTOR		52.01.0101	
ACPWE-A5	1				11	4	5B		K	DISTRIBUTOR		52.01.0101	
	1				9	3	10		Y	SECONDARY 1		1.820.523.00	
ACPWE-A6	7				11	4	5D		K	DISTRIBUTOR		52.01.0101	
	7				9	3	9		Y	SECONDARY 1		1.820.523.00	
	7				10	3	1		L	FUSE	F03	53.03.0106	

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 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ACPWE-B1	5				9	4	15		Y	SECONDARY 2		1.820.524.00
	5				11	1	2		L	RECTIFIER	DZ01	70.01.0231
	5				11	4	3A		K	DISTRIBUTOR		52.01.0101
	5				11	4	3C		K	DISTRIBUTOR		52.01.0101
	5				11	4	3D		K	DISTRIBUTOR		52.01.0101
	5				11	4	4B		K	DISTRIBUTOR		52.01.0101
	5				11	4	4C		K	DISTRIBUTOR		52.01.0101
	5				12	5	12		M	CONNECTOR TO GRP32, ELM01	P01	
ACPWE-B2	5				32	1	12		F	INPUT FROM GRP12, ELM05	J01	
	5				9	4	16		Y	SECONDARY 2		1.820.524.00
ACPWE-B3	5				11	4	3B		K	DISTRIBUTOR		52.01.0101
	5				9	4	17		Y	SECONDARY 2		1.820.524.00
ACPWE-B4	4				11	4	4D		K	DISTRIBUTOR		52.01.0101
	4				9	4	18		Y	SECONDARY 2		1.820.524.00
	4				11	2	2		L	RECTIFIER	DZ02	70.01.0231
ACPWE-B5	4				11	4	6C		K	DISTRIBUTOR		52.01.0101
	4				11	4	6D		K	DISTRIBUTOR		52.01.0101
	4				9	4	19		Y	SECONDARY 2		1.820.524.00
ACPWE-B6	0				11	4	6A		K	DISTRIBUTOR		52.01.0101
	0				9	4	20		Y	SECONDARY 2		1.820.524.00
ACPWE-C1	0				11	3	2		L	RECTIFIER	DZ03	70.01.0231
	0				9	3	15		Y	SECONDARY 1		1.820.523.00
ACPWE-C2	0				9	4	14		Y	SECONDARY 2		1.820.524.00
	0				9	3	16		Y	SECONDARY 1		1.820.523.00
ACPWE-C3	0				9	4	13		Y	SECONDARY 2		1.820.524.00
	0				9	3	17		Y	SECONDARY 1		1.820.523.00
ACPWE-C4	0				9	4	12		Y	SECONDARY 2		1.820.524.00
	0				9	3	18		Y	SECONDARY 1		1.820.523.00
ACPWE-C5	0				9	4	11		Y	SECONDARY 2		1.820.524.00
	0				9	3	19		Y	SECONDARY 1		1.820.523.00
ACPWE-C6	0				9	4	10		Y	SECONDARY 2		1.820.524.00
	0				9	3	20		Y	SECONDARY 1		1.820.523.00
ACPWE-D1	9				9	4	9		Y	SECONDARY 2		1.820.524.00
	9				10	1	2		L	FUSE	F01	53.03.0106
	9				11	1	1		L	RECTIFIER	DZ01	70.01.0231
	9				11	4	2A		K	DISTRIBUTOR		52.01.0101
	9				11	4	2B		K	DISTRIBUTOR		52.01.0101
	9				11	4	2C		K	DISTRIBUTOR		52.01.0101
	9				12	5	10		M	CONNECTOR TO GRP32, ELM01	P01	
ACPWE-D4	5				32	1	10		F	INPUT FROM GRP12, ELM05	J01	
	5				10	2	2		L	FUSE	F02	53.03.0106
	5				11	2	1		L	RECTIFIER	DZ02	70.01.0231

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ACPWE-06	8			10	3	2			L	FUSE	F03	53.03.0106
	8			11	3	1			L	RECTIFIER	DZ03	70.01.0231
ACPWM-A1	1			8	3	14			Y	SECONDARY 1		1.820.523.00
	1			8	5	1			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	1			F	FROM GRP08, ELM05	J01	
ACPWM-A2	2			8	3	13			Y	SECONDARY 1		1.820.523.00
	2			8	5	2			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	4			F	FROM GRP08, ELM05	J01	
ACPWM-A3	3			8	3	12			Y	SECONDARY 1		1.820.523.00
	3			8	5	3			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	2			F	FROM GRP08, ELM05	J01	
ACPWM-A4	4			8	3	11			Y	SECONDARY 1		1.820.523.00
	4			8	5	4			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	5			F	FROM GRP08, ELM05	J01	
ACPWM-A5	5			8	3	10			Y	SECONDARY 1		1.820.523.00
	5			8	5	5			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	3			F	FROM GRP08, ELM05	J01	
ACPWM-A6	6			8	3	9			Y	SECONDARY 1		1.820.523.00
	6			8	5	6			M	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	6			F	FROM GRP08, ELM05	J01	
ACPWM-B1	9			8	4	15			Y	SECONDARY 2		1.820.524.00
	9			8	5	7			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	7			H	FROM GRP08, ELM05	J01	
ACPWM-B2	9			8	4	16			Y	SECONDARY 2		1.820.524.00
	9			8	5	8			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	8			M	FROM GRP08, ELM05	J01	
ACPWM-B3	9			8	4	17			Y	SECONDARY 2		1.820.524.00
	9			8	5	9			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	9			M	FROM GRP08, ELM05	J01	
ACPWM-B4	9			8	4	18			Y	SECONDARY 2		1.820.524.00
	9			8	5	10			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	10			M	FROM GRP08, ELM05	J01	
ACPWM-B5	9			8	4	19			Y	SECONDARY 2		1.820.524.00
	9			8	5	11			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	11			M	FROM GRP08, ELM05	J01	
ACPWM-B6	9			8	4	20			Y	SECONDARY 2		1.820.524.00
	9			8	5	12			F	CONNECTOR TO SPOOLING MOTOR SUPPLY		
				31	2	12			M	FROM GRP08, ELM05	J01	
ACPWM-C1	0			8	3	15			Y	SECONDARY 1		1.820.523.00
	0			8	4	14			Y	SECONDARY 2		1.820.524.00
ACPWM-C2	0			8	3	16			Y	SECONDARY 1		1.820.523.00
	0			8	4	13			Y	SECONDARY 2		1.820.524.00

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
ACPWM-C3	0			8	3	17			Y	SECONDARY 1		1.820.523.00
	0			8	4	12			Y	SECONDARY 2		1.820.524.00
ACPWM-C4	0			8	3	18			Y	SECONDARY 1		1.820.523.00
	0			8	4	11			Y	SECONDARY 2		1.820.524.00
ACPWM-C5	0			8	3	19			Y	SECONDARY 1		1.820.523.00
	0			8	4	10			Y	SECONDARY 2		1.820.524.00
ACPWM-C6	0			8	3	20			Y	SECONDARY 1		1.820.523.00
	0			8	4	9			Y	SECONDARY 2		1.820.524.00
AFCSW-01				21	42	10				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	15				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
AFCSW-02				21	47	10				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	15				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
AN-CSPDC				20	3	7				CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
				20	42	3A				CAPSTAN INTERFACE	J03	1.820.727.00
				20	42	3B				CAPSTAN INTERFACE	J03	1.820.727.00
				39	1	7				FROM GRP20, ELM03	P01	
AN-ICL				20	40	26				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	47	3				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
AN-ICLD				20	1	13				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	30				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	13				FROM GRP20, ELM01	P01	
AN-ICR				20	40	1				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	40	3				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	47	4				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
AN-ICRD				20	2	13				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	9				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	13				FROM GRP20, ELM02	P01	
AN-IRL				20	40	27				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	45	6				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
AN-IRR				20	40	2				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	40	4				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	45	8				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
AN-RES1				20	9	7				TACHO SENSOR (SPOOLING M. LEFT)	P09	
				20	47	7				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				36	1	7				TACHO SENSOR	P01	1.820.771.00
AN-RES2				20	10	7				TACHO SENSOR (SPOOLING M. RIGHT)	P10	
				20	47	8				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				37	1	7				TACHO SENSOR	P01	1.820.771.00
AN-RES3				20	11	7				MOVE SENSOR	P11	
				20	47	9				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				45	1	7				FROM GRP20, ELM11	P01	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
AN-RES4				20	47	10				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
AN-TTL				20	12	9				TAPE TENSION SENSOR, LEFT	P12	
				20	45	1				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	45	3				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	47	1				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				20	47	5				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				42	1	9				FROM GRP20, ELM12	P01	
AN-TTR				20	13	9				TAPE TENSION SENSOR, RIGHT	P13	
				20	45	2				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	45	4				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	47	2				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				20	47	6				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
				43	1	9				FROM GRP20, ELM13	P01	
ANM-SH1				48	1	26				FROM GRP50, ELM03		
				48	2	8				CONNECTOR EDIT ASSEMBLY		
				49	1	8				FROM GRP48, ELM02		
				50	3	26				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
ANM-SH2				48	1	25				FROM GRP50, ELM03		
				48	2	10				CONNECTOR EDIT ASSEMBLY		
				49	1	10				FROM GRP48, ELM02		
				50	3	25				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
ANM-SH3				48	1	24				FROM GRP50, ELM03		
				48	2	9				CONNECTOR EDIT ASSEMBLY		
				49	1	9				FROM GRP48, ELM02		
				50	3	24				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BIASA-01				21	42	5				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	6				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
BIASA-02				21	47	5				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	6				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
BIASB-01				21	42	6				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	7				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
BIASB-02				21	47	6				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	7				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
BIASC-01				21	42	7				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	8				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
BIASC-02				21	47	7				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	8				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
BM-0.2				48	1	6				FROM GRP50, ELM03		
				48	3	8				WIRE FIELD		
				50	3	6				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BM-0.3				48	1	7				FROM GRP50, ELM03		
				48	3	7				WIRE FIELD		
				50	3	7				CONNECTOR PUSHBUTTON ASSEMBLY	P02	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
BM-0.4				48	1	8				FROM GRP50, ELM03		
				48	3	6				WIRE FIELD		
				50	3	8				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BM-0.5				48	1	9				FROM GRP50, ELM03		
				48	3	5				WIRE FIELD		
				50	3	9				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BM-0.6				48	1	10				FROM GRP50, ELM03		
				48	3	4				WIRE FIELD		
				50	3	10				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BM-0.7				48	1	11				FROM GRP50, ELM03		
				48	3	3				WIRE FIELD		
				50	3	11				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
BR-FADRY				25	3	8			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	4	15				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-FORW				25	2	3			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	3			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	5				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	5				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-LOCST				25	3	7			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	4	13				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-PLAY				25	2	15			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	15			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	4				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	4				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-REC				25	2	9			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	9			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	17				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	17				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-REW				25	2	2			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	2			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	3				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	3				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-STOP				25	2	16			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	16			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	6				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	6				TO CONN. PARALLEL REMOTE CONTR.	P04	
BR-VRSPD				25	2	4			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	4			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	7				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	7				TO CONN. PARALLEL REMOTE CONTR.	P04	
CA-ADR-R				20	33	4				TO AUDIC BASIS BOARD, ELM31	P23	
				20	51	218				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				21	31	4				FROM TAPE DECK BASIS BOARD	J06	

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 * 1.82C.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF CA-ADR-R										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.820.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.82C.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
										MONO-STEREO-SWITCH	J13	1.82C.720.00
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.820.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.82C.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-ADR-S										TO AUDIO BASIS BOARD, ELM31	P23	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J06	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.820.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
										MONO-STEREO-SWITCH	J13	1.820.720.00
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.82C.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.82C.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-ADR-T										TO AUDIO BASIS BOARD, ELM31	P23	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J06	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.820.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
										MONO-STEREO-SWITCH	J13	1.820.720.00
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.820.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.82C.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-ADR-U										TO AUDIO BASIS BOARD, ELM31	P23	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J06	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.82C.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.82C.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
										MONO-STEREO-SWITCH	J13	1.820.720.00
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.820.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.82C.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 72 *

 * 1.82C.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF CA-ADR-U										REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-BAD01										HF-DRIVER, CH 1	J09	1.82C.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
CA-BAD02										HF-DRIVER, CH 2	J14	1.82C.713.00
										RECORD AMPLIFIER, CH 2	J15	1.82C.712.81
CA-CHSTC										TO AUDIO BASIS BOARD, ELM30	P22	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J05	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.82C.722.81
CA-CHS01										TO AUDIO BASIS BOARD, ELM30	P22	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J05	
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.82C.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.82C.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
CA-CHS02										TO AUDIO BASIS BOARD, ELM30	P22	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J05	
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.820.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.82C.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-DATA0										TO AUDIO BASIS BOARD, ELM31	P23	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J06	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.82C.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.82C.710.81
										LINE AMPLIFIER, CH 1	J12	1.820.714.81
										MONO-STEREO-SWITCH	J13	1.820.720.00
										HF-DRIVER, CH 2	J14	1.820.713.00
										RECORD AMPLIFIER, CH 2	J15	1.820.712.81
										REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
										LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-DATA1										TO AUDIO BASIS BOARD, ELM31	P23	
										MASTER PERIPHERY CONTROLLER	J12	1.82C.728.00
										FROM TAPE DECK BASIS BOARD	J06	
										TIME CODE WRITE/READ UNIT	J07	1.820.721.81
										TIME CODE DELAY UNIT	J08	1.820.722.81
										HF-DRIVER, CH 1	J09	1.820.713.00
										RECORD AMPLIFIER, CH 1	J10	1.820.712.81
										REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 73 *
 * 1.820.090.00 * STUDER A 22C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
CA-DATA1					21	45	32			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	32			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	32			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	32			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
					21	49	32			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	50	32			LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-DATA2					20	33	16			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	27B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	16			FROM TAPE DECK BASIS BOARD	J06	
					21	40	33			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	33			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	33			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	33			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	33			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	33			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	33			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	33			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	33			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	33			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	33			LINE AMPLIFIER, CH 2	J17	1.820.714.81	
CA-DATA3					20	33	18			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	28B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	18			FROM TAPE DECK BASIS BOARD	J06	
					21	40	34			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	34			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	34			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	34			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	34			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	34			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	34			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	34			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	34			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	34			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	34			LINE AMPLIFIER, CH 2	J17	1.820.714.81	
CA-DATA4					20	33	20			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	29B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	20			FROM TAPE DECK BASIS BOARD	J06	
					21	40	35			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	35			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	35			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	35			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	35			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	35			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	35			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	35			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	35			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	35			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	35			LINE AMPLIFIER, CH 2	J17	1.820.714.81	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 74 *
 * 1.820.090.00 * STUDER A 22C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
CA-DATA5					20	33	22			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	30B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	22			FROM TAPE DECK BASIS BOARD	J06	
					21	40	36			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	36			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	36			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	36			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	36			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	36			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	36			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	36			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	36			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	36			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	36			LINE AMPLIFIER, CH 2	J17	1.820.714.81	
CA-DATA6					20	33	24			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	31B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	24			FROM TAPE DECK BASIS BOARD	J06	
					21	40	37			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	37			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	37			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	37			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	37			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	37			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	37			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	37			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	37			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	37			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	37			LINE AMPLIFIER, CH 2	J17	1.820.714.81	
CA-DATA7					20	33	26			TO AUDIO BASIS BOARD, ELM31	P23	
					20	51	32B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	31	26			FROM TAPE DECK BASIS BOARD	J06	
					21	40	38			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	38			TIME CODE DELAY UNIT	J08	1.820.722.81
					21	42	38			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	38			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	38			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	38			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	38			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	47	38			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	38			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	38			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
				21	50	38			LINE AMPLIFIER, CH 2	J17	1.820.714.81	
CA-EQL01					21	44	15			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	16			LINE AMPLIFIER, CH 1	J12	1.820.714.81
CA-EQL02					21	49	15			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	50	16			LINE AMPLIFIER, CH 2	J17	1.820.714.81
CA-LSW01					21	44	17			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	18			LINE AMPLIFIER, CH 1	J12	1.820.714.81
CA-LSW02					21	49	17			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	50	18			LINE AMPLIFIER, CH 2	J17	1.820.714.81

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
CA-MONO					20 32 22					TO AUDIC BASIS BOARD, ELM30	P22	
					20 51 13B					MASTER PERIPHERY CONTROLLER	J12	1.820-728-00
					21 30 22					FROM TAPE DECK BASIS BOARD	J05	
					21 46 39					MONO-STEREO-SWITCH	J13	1.820-720-00
CA-RSW01					21 42 18					HF-DRIVER, CH 1	J09	1.820-713-00
					21 43 18					RECORD AMPLIFIER, CH 1	J10	1.820-712-81
CA-RSW02					21 47 18					HF-DRIVER, CH 2	J14	1.820-713-00
					21 48 18					RECORD AMPLIFIER, CH 2	J15	1.820-712-81
CA-SAFE					20 33 2					TO AUDIC BASIS BOARD, ELM31	P23	
					20 51 20B					MASTER PERIPHERY CONTROLLER	J12	1.820-728-00
					21 31 2					FROM TAPE DECK BASIS BOARD	J06	
					21 40 26					TIME CODE WRITE/READ UNIT	J07	1.820-721-81
					21 41 26					TIME CODE DELAY UNIT	J08	1.820-713-00
					21 42 26					HF-DRIVER, CH 1	J09	1.820-712-81
					21 43 26					RECORD AMPLIFIER, CH 1	J10	1.820-710-81
					21 44 26					REPRODUCE AMPLIFIER, CH 1	J11	1.820-714-81
					21 45 26					LINE AMPLIFIER, CH 1	J12	1.820-720-00
					21 46 26					MONO-STEREO-SWITCH	J13	1.820-713-00
					21 47 26					HF-DRIVER, CH 2	J14	1.820-712-81
					21 48 26					RECORD AMPLIFIER, CH 2	J15	1.820-710-81
					21 49 26					REPRODUCE AMPLIFIER, CH 2	J16	1.820-714-81
					21 50 26					LINE AMPLIFIER, CH 2	J17	
CA-SYN01					21 44 16					REPRODUCE AMPLIFIER, CH 1	J11	1.820-710-81
					21 45 17					LINE AMPLIFIER, CH 1	J12	1.820-714-81
CA-SYN02					21 49 16					REPRODUCE AMPLIFIER, CH 2	J16	1.820-710-81
					21 50 17					LINE AMPLIFIER, CH 2	J17	1.820-714-81
CPHASE-R	2				38 1 1				F	FROM GRP39, ELM02	J01	
	2				38 4 1				L	STATOR (WIRE FIELD)		
					39 2 1				M	TO GRP38, ELM01	P02	
CPHASE-S	0				38 1 3				F	FROM GRP39, ELM02	J01	
	0				38 4 2				L	STATOR (WIRE FIELD)		
					39 2 3				M	TO GRP38, ELM01	P02	
CPHASE-T	9				38 1 2				F	FROM GRP39, ELM02	J01	
	9				38 4 3				L	STATOR (WIRE FIELD)		
					39 2 2				M	TO GRP38, ELM01	P02	
DCLBY-01					21 42 1					HF-DRIVER, CH 1	J09	1.820-713-00
					21 43 3					RECORD AMPLIFIER, CH 1	J10	1.820-712-81
DCLBY-02					21 47 1					HF-DRIVER, CH 2	J14	1.820-713-00
					21 48 3					RECORD AMPLIFIER, CH 2	J15	1.820-712-81
EQUAL-01					21 43 2					RECORD AMPLIFIER, CH 1	J10	1.820-712-81
					21 44 2					REPRODUCE AMPLIFIER, CH 1	J11	1.820-710-81
EQUAL-02					21 48 2					RECORD AMPLIFIER, CH 2	J15	1.820-712-81
					21 49 2					REPRODUCE AMPLIFIER, CH 2	J16	1.820-710-81

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
ERACS-01					21 42 9					HF-DRIVER, CH 1	J09	1.820-713-00
ERACS-02	7				21 47 9				U	HF-DRIVER, CH 2	J14	1.820-713-00
	7				21 66 1				U	WIRE FIELD (TO GRP21, ELM70)		
					21 70 11				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 11				A	HEAD BLOCK CONNECTOR	P01	
ERAHH-TC	0				21 40 4				U	TIME CODE WRITE/READ UNIT	J07	1.820-721-81
	0				21 70 33				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 33				A	HEAD BLOCK CONNECTOR	P01	
ERAHH-01	9				21 42 14				U	HF-DRIVER, CH 1	J09	1.820-713-00
	9				21 70 18				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 18				A	HEAD BLOCK CONNECTOR	P01	
ERAHH-02	9				21 47 14				U	HF-DRIVER, CH 2	J14	1.820-713-00
	9				21 70 36				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 36				A	HEAD BLOCK CONNECTOR	P01	
ERAHL-TC	6				21 40 5				U	TIME CODE WRITE/READ UNIT	J07	1.820-721-81
	6				21 70 15				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 15				A	HEAD BLOCK CONNECTOR	P01	
ERAHL-01	6				21 42 12				U	HF-DRIVER, CH 1	J09	1.820-713-00
	6				21 70 17				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 17				A	HEAD BLOCK CONNECTOR	P01	
ERAHL-02	6				21 47 12				U	HF-DRIVER, CH 2	J14	1.820-713-00
	6				21 70 35				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 35				A	HEAD BLOCK CONNECTOR	P01	
ERAHH-01	2				21 42 13				U	HF-DRIVER, CH 1	J09	1.820-713-00
	2				21 70 16				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 16				A	HEAD BLOCK CONNECTOR	P01	
ERAHH-02	2				21 47 13				U	HF-DRIVER, CH 2	J14	1.820-713-00
	2				21 70 34				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 34				A	HEAD BLOCK CONNECTOR	P01	
ERAHO-01	S				21 42 15				U	HF-DRIVER, CH 1	J09	1.820-713-00
	S				21 70 19				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 19				A	HEAD BLOCK CONNECTOR	P01	
ERAHO-02	S				21 47 15				U	HF-DRIVER, CH 2	J14	1.820-713-00
	S				21 70 37				B	CONN. HEAD BLOCK ASSEMBLY	J18	
					60 1 37				A	HEAD BLOCK CONNECTOR	P01	
FAD1					25 3 11				B	CONN. PARALLEL REMOTE CONTROL	J03	
					27 4 21					TO CONN. PARALLEL REMOTE CONTR.	P04	
FAD2					25 3 12				B	CONN. PARALLEL REMOTE CONTROL	J03	
					27 4 23					TO CONN. PARALLEL REMOTE CONTR.	P04	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 77 *
 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	Lv	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
FRMGND				20	31	1				TO GRP25, ELM04/05	P21	
				20	31	8				TO GRP25, ELM04/05	P21	
				20	50	1				SMPTE/EBU INTERFACE	J11	1.820.751.00
				20	50	8				SMPTE/EBU INTERFACE	J11	1.820.751.00
				25	4	1			B	CONNECTOR SMPTE/EBU BUS	J04	
				25	4	9			B	CONNECTOR SMPTE/EBU BUS	J04	
				25	5	1			B	CONNECTOR SMPTE/EBU BUS	J05	
			25	5	9			B	CONNECTOR SMPTE/EBU BUS	J05		
GND	5-4			1	1	3			J	POWER CONNECTOR	P01	
	5-4			2	1	1			J	EARTH CONTACT		
	4			2	2	1			J	EARTH CONTACT		
				2	3	1				EARTH CONTACT		1.010.001.53
	4			4	1	11			Y	LINE FILTER		
				20	30	1				SSDA INT. SYNCHRONIZER	P20	
				20	30	8				SSDA INT. SYNCHRONIZER	P20	
				22	1	1				CONNECTOR XLR, INPUT	J01	
				22	2	1				CONNECTOR XLR, OUTPUT	P01	
				23	1	1				CONNECTOR XLR, INPUT	J01	
				23	2	1				CONNECTOR XLR, OUTPUT	P01	
				24	1	1				CONNECTOR XLR, INPUT	J01	
				24	2	1				CONNECTOR XLR, OUTPUT	P01	
				27	5	1			Y	CONNECTOR XLR, OUTPUT	P05	
0			38	5	1			L	GROUND CONNECTION (WIRF FIELD)			
HEADPH-1	6			28	5	3			N	TO PHONES CONNECTOR	J02	
	6			28	6	3			L	PHONES CONNECTOR		
	6			71	5	3			N	TO PHONES CONNECTOR	J02	
	6			71	6	3			L	PHONES CONNECTOR		
HEADPH-2	9			28	5	2			N	TO PHONES CONNECTOR	J02	
	9			28	6	2			L	PHONES CONNECTOR		
	9			71	5	2			N	TO PHONES CONNECTOR	J02	
	9			71	6	2			L	PHONES CONNECTOR		
INPAD-01	6			21	11	6			N	TO VU-METER PANEL, CH 1	J02	
				21	45	7				LINE AMPLIFIER, CH 1	J12	1.820.714.81
				21	46	1				MONO-STEREO-SWITCH	J13	1.820.720.00
				70	8	6				VU-METER CH 01, AUDIO	J01	
				70	9	6				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
INPAD-02	6			21	12	6			N	TO VU-METER PANEL, CH 2	J03	
				21	46	3				MONO-STEREO-SWITCH	J13	1.820.720.00
				21	50	7				LINE AMPLIFIER, CH 2	J17	1.820.714.81
				70	10	6				VU-METER CH 02, AUDIO	J03	
				70	11	6				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
INPDI-01	0			21	11	5			N	TO VU-METER PANEL, CH 1	J02	
	9			21	13	3			N	TO SOURCE SELECTOR (GRP28)	J04	
				21	45	6				LINE AMPLIFIER, CH 1	J12	1.820.714.81
	9			28	1	3			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
				70	8	5				VU-METER CH 01, AUDIO	J01	
				70	9	5				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
				70	13	3				MONITOR AMPLIFIER, AUDIO	J06	
9			71	1	3			N	AUDIO INPUT	J01		

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 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	Lv	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
INPDI-02	0			21	12	5			N	TO VU-METER PANEL, CH 2	J03	
	9			21	13	7				TO SOURCE SELECTOR (GRP28)	J04	
				21	50	6				LINE AMPLIFIER, CH 2	J17	1.820.714.81
	9			28	1	7			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
				70	10	5				VU-METER CH 02, AUDIO	J03	
				70	11	5				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
				70	13	7				MONITOR AMPLIFIER, AUDIO	J06	
9			71	1	7			N	AUDIO INPUT	J01		
IR-REFEX				25	2	13			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	13			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	25				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	25				TO CONN. PARALLEL REMOTE CONTR.	P04	
K-BRAKEL				20	43	31A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
	1			20	63	1			U	WIRE FIELD (TO BRAKE SOLENOIDS)		
	1			20	72	2			F	TO BRAKE SOLENOID, LEFT		
	1			40	1	2			M	BRAKE SOLENOID		
K-BRAKER				20	43	32A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
	4			20	63	2			U	WIRE FIELD (TO BRAKE SOLENOIDS)		
	4			20	73	2			F	TO BRAKE SOLENOID, RIGHT		
	4			41	1	2			H	BRAKE SOLENOID		
K-REC-01				21	42	2				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	4				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	4				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
K-REC-02				21	47	2				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	4				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	4				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
KEY/CDIR				25	2	8			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	15				TO CONNECTOR SYNCHRONIZER	P03	
LINE1	1			1	1	1			J	POWER CONNECTOR	P01	
	1			3	1	1			J	POWER SWITCH		
	1			4	1	4			Y	LINE FILTER		
	1			4	1	5			Y	LINE FILTER		
LINE2	6			1	1	2			J	POWER CONNECTOR	P01	
	6			3	1	2			J	POWER SWITCH		
	6			4	1	14			Y	LINE FILTER		
	6			4	1	15			Y	LINE FILTER		
LINF A-TC	9			21	40	15			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81
	9			24	3	4			D	CONNECTOR LINE FILTER, INPUT	P01	
LINF A-01	0			21	45	14			U	LINE AMPLIFIER, CH 1	J12	1.820.714.81
	0			22	3	4			D	CONNECTOR LINE FILTER, INPUT	P01	
LINF A-02	0			21	50	14			U	LINE AMPLIFIER, CH 2	J17	1.820.714.81
	0			23	3	4			D	CONNECTOR LINE FILTER, INPUT	P01	
LINF B-TC	6			21	40	16			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81
	6			24	3	1			D	CONNECTOR LINE FILTER, INPUT	P01	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
LINFB-01	6			21	45	15			U	LINE AMPLIFIER, CH 1	J12	1.820-714.81
				22	3	1			D	CONNECTOR LINE FILTER, INPUT	P01	
LINFB-02	6			21	50	15			U	LINE AMPLIFIER, CH 2	J17	1.820-714.81
	6			23	3	1			D	CONNECTOR LINE FILTER, INPUT	P01	
LINSA-TC				24	1	2				CONNECTOR XLR, INPUT	J01	
LINSA-01				22	1	2				CONNECTOR XLR, INPUT	J01	
LINSA-02				23	1	2				CONNECTOR XLR, INPUT	J01	
LINSB-TC				24	1	3				CONNECTOR XLR, INPUT	J01	
LINSB-01				22	1	3				CONNECTOR XLR, INPUT	J01	
LINSB-02				23	1	3				CONNECTOR XLR, INPUT	J01	
LCUFA-TC	9			21	40	17			U	TIME CODE WRITE/READ UNIT	J07	1.820-721.81
	9			24	4	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
LCUFA-01	0			21	11	2			N	TO VU-METER PANEL, CH 1	J02	1.820-714.81
	0			21	45	3			U	LINE AMPLIFIER, CH 1	J12	
	0			22	4	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
				70	8	2				VU-METER CH 01, AUDIO	J01	
				70	9	2				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
LCUFA-02	0			21	12	2			N	TO VU-METER PANEL, CH 2	J03	1.820-714.81
	0			21	50	3			U	LINE AMPLIFIER, CH 2	J17	
	0			23	4	4			D	CONNECTOR LINE FILTER, OUTPUT	P02	
				70	10	2				VU-METER CH 02, AUDIO	J03	
				70	11	2				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
LCUFB-TC	6			21	40	18			U	TIME CODE WRITE/READ UNIT	J07	1.820-721.81
	6			24	4	1			D	CONNECTOR LINE FILTER, OUTPUT	P02	
LCUFB-01	6			21	11	3			N	TO VU-METER PANEL, CH 1	J02	1.820-714.81
	6			21	45	4			U	LINE AMPLIFIER, CH 1	J12	
	6			22	4	1			D	CONNECTOR LINE FILTER, OUTPUT	P02	
				70	8	3				VU-METER CH 01, AUDIO	J01	
				70	9	3				AUDIO CH 01 (FROM GRP21, ELM11)	J02	
LCUFB-02	6			21	12	3			N	TO VU-METER PANEL, CH 2	J03	1.820-714.81
	6			21	50	4			U	LINE AMPLIFIER, CH 2	J17	
	6			23	4	1			D	CONNECTOR LINE FILTER, OUTPUT	P02	
				70	10	3				VU-METER CH 02, AUDIO	J03	
				70	11	3				AUDIO CH 02 (FROM GRP21, ELM12)	J04	
LCUSA-TC				24	2	2				CONNECTOR XLR, OUTPUT	P01	
LCUSA-01				22	2	2				CONNECTOR XLR, OUTPUT	P01	
LCUSA-02				23	2	2				CONNECTOR XLR, OUTPUT	P01	
LCUSB-TC				24	2	3				CONNECTOR XLR, OUTPUT	P01	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
LCUSB-01				22	2	3				CONNECTOR XLR, OUTPUT	P01	
LOUSB-02				23	2	3				CONNECTOR XLR, OUTPUT	P01	
MONIT-01	9			21	13	1			N	TO SOURCE SELECTOR (GRP28)	J04	1.820-714.81
	9			21	45	1			N	LINE AMPLIFIER, CH 1	J12	
				28	1	1				AUDIO INPUT (FROM GRP21, ELM13)	J01	
				70	12	1				FROM GRP21, ELM13	J05	
				70	13	1				MONITOR AMPLIFIER, AUDIO	J06	
	9			71	1	1			N	AUDIO INPUT	J01	
MONIT-02	9			21	13	5			N	TO SOURCE SELECTOR (GRP28)	J04	1.820-714.81
	9			21	50	1			N	LINE AMPLIFIER, CH 2	J17	
				28	1	5				AUDIO INPUT (FROM GRP21, ELM13)	J01	
				70	12	5				FROM GRP21, ELM13	J05	
				70	13	5				MONITOR AMPLIFIER, AUDIO	J06	
	9			71	1	5			N	AUDIO INPUT	J01	
OR-CMCLK				25	2	11			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	21				TO CONNECTOR SYNCHRONIZER	P03	
OR-MVCLK				25	2	7			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	13				TO CONNECTOR SYNCHRONIZER	P03	
CR-MVDIR				25	2	10			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	19				TO CONNECTOR SYNCHRONIZER	P03	
OR-SYENB				25	2	12			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	23				TO CONNECTOR SYNCHRONIZER	P03	
PRIMV-1	0			9	1	1			Y	PRIMARY 1		1.820-521.00
	0			9	1	4			Y	PRIMARY 1		1.820-521.00
PRIMV-2	1			5	1	2			L	FUSE HOLDER,	F01	53.03.0106
	1			6	1	1A			K	DISTRIBUTOR		
	1			6	1	1C			K	DISTRIBUTOR		
	1			6	1	1D			K	DISTRIBUTOR		
	1			7	1	1			J	VOLTAGE SELECTOR	S01	55.12.0001
	1			9	1	2			Y	PRIMARY 1		1.820-521.00
PRIMV-3	2			6	1	2A			K	DISTRIBUTOR		
	2			6	1	2C			K	DISTRIBUTOR		
	2			6	1	2D			K	DISTRIBUTOR		
	2			7	1	2			J	VOLTAGE SELECTOR	S01	55.12.0001
	2			7	2	1			J	VOLTAGE SELECTOR	S02	55.12.0001
	2			9	1	3			Y	PRIMARY 1		1.820-521.00
PRIMV-5	3			6	1	3A			K	DISTRIBUTOR		
	3			6	1	3C			K	DISTRIBUTOR		
	3			6	1	3D			K	DISTRIBUTOR		
	3			7	1	3			J	VOLTAGE SELECTOR	S01	55.12.0001
	3			7	2	3			J	VOLTAGE SELECTOR	S02	55.12.0001
	3			9	2	5			Y	PRIMARY 2		1.820-522.00
PRIMV-6	0			9	2	6			Y	PRIMARY 2		1.820-522.00
	0			9	2	7			Y	PRIMARY 2		1.820-522.00

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
PRIMW-1	0			8	1	1			Y	PRIMARY 1		1.820.521.00
	0			8	1	4			Y	PRIMARY 1		1.820.521.00
PRIMW-2	1			5	2	2			L	FUSE HOLDER	F02	53.03.0106
	5			6	1	5A			K	DISTRIBUTOR		
	5			6	1	5C			K	DISTRIBUTOR		
	5			6	1	5D			K	DISTRIBUTOR		
	5			7	3	1			J	VOLTAGE SELECTOR	S03	55.12.0001
PRIMW-3	6			6	1	6A			K	DISTRIBUTOR		
	6			6	1	6C			K	DISTRIBUTOR		
	6			6	1	6D			K	DISTRIBUTOR		
	6			7	2	2			J	VOLTAGE SELECTOR	S02	55.12.0001
	6			7	3	2			J	VOLTAGE SELECTOR	S03	55.12.0001
PRIMW-5	7			6	1	7A			K	DISTRIBUTOR		
	7			6	1	7C			K	DISTRIBUTOR		
	7			6	1	7D			K	DISTRIBUTOR		
	7			7	2	4			J	VOLTAGE SELECTOR	S02	55.12.0001
	7			7	3	3			J	VOLTAGE SELECTOR	S03	55.12.0001
PRIMW-6	0			8	2	6			Y	PRIMARY 2		1.820.522.00
	0			8	2	7			Y	PRIMARY 2		1.820.522.00
PwMPL-H1				20	1	9				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	28				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	9				FROM GRP20, ELM01	P01	
PwMPL-H2				20	1	10				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	34				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	10				FROM GRP20, ELM01	P01	
PwMPL-L1				20	1	7				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	35				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	7				FROM GRP20, ELM01	P01	
PwMPL-L2				20	1	8				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				33	2	8				FROM GRP20, ELM01	P01	
PwMPL-L3				20	1	11				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	29				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	11				FROM GRP20, ELM01	P01	
PwMPL-L4				20	1	12				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	33				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	12				FROM GRP20, ELM01	P01	
PwMPL-L5				20	1	14				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	32				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	14				FROM GRP20, ELM01	P01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
PwMPL-L6				20	1	15				SPOOLING MOTOR DRIVE AMP. LEFT	P01	
				20	40	31				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				33	2	15				FROM GRP20, ELM01	P01	
PwMPL-H1				20	2	5				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	7				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	9				FROM GRP20, ELM02	P01	
PwMPL-H2				20	2	10				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	38				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	10				FROM GRP20, ELM02	P01	
PwMPL-L1				20	2	7				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	39				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	7				FROM GRP20, ELM02	P01	
PwMPL-L2				20	2	8				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				30	2	8				FROM GRP20, ELM02	P01	
PwMPL-L3				20	2	11				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	8				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	11				FROM GRP20, ELM02	P01	
PwMPL-L4				20	2	12				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	37				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	12				FROM GRP20, ELM02	P01	
PwMPL-L5				20	2	14				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	36				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	14				FROM GRP20, ELM02	P01	
PwMPL-L6				20	2	15				SPOOLING MOTOR DRIVE AMP. RIGHT	P02	
				20	40	10				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				30	2	15				FROM GRP20, ELM02	P01	
RCV-232				20	50	9				SMPTE/EBU INTERFACE	J11	1.820.751.00
RECEIVA				20	31	6				TO GRP25, ELM04/05	P21	
				20	50	6				SMPTE/EBU INTERFACE	J11	1.820.751.00
				25	4	8			B	CONNECTOR SMPTE/EBU BUS	J04	
				25	5	8			B	CONNECTOR SMPTE/EBU BUS	J05	
RECEIVB				20	31	5				TO GRP25, ELM04/05	P21	
				20	50	5				SMPTE/EBU INTERFACE	J11	1.820.751.00
				25	4	3			B	CONNECTOR SMPTE/EBU BUS	J04	
				25	5	3			B	CONNECTOR SMPTE/EBU BUS	J05	
RECEIVCM				20	31	7				TO GRP25, ELM04/05	P21	
				20	50	7				SMPTE/EBU INTERFACE	J11	1.820.751.00
				25	4	4			B	CONNECTOR SMPTE/EBU BUS	J04	
				25	5	4			B	CONNECTOR SMPTE/EBU BUS	J05	
RECHH-TC	9			21	40	7			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81
	9			21	70	32			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	5			60	1	32			A	HEAD BLOCK CONNECTOR	P01	

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.	
RECHH-01	9			21	43	10			U	RECORD AMPLIFIER, CH 1	J10	1.820.712.81	
	5			21	70	5			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	1			60	1	5			A	HEAD BLOCK CONNECTOR	P01		
RECHH-02	9			21	48	10			U	RECORD AMPLIFIER, CH 2	J15	1.820.712.81	
	9			21	70	24			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	1			60	1	24			A	HEAD BLOCK CONNECTOR	P01		
RECHL-TC	6			21	40	8			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81	
	6			21	70	14			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	3			60	1	14			A	HEAD BLOCK CONNECTOR	P01		
RECHL-01	6			21	43	9			U	RECORD AMPLIFIER, CH 1	J10	1.820.712.81	
	6			21	70	6			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	0			60	1	6			A	HEAD BLOCK CONNECTOR	P01		
RECHL-02	6			21	48	9			U	RECORD AMPLIFIER, CH 2	J15	1.820.712.81	
	6			21	70	25			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	0			60	1	25			A	HEAD BLOCK CONNECTOR	P01		
RECIN-01				21	43	1				RECORD AMPLIFIER, CH 1	J10	1.820.712.81	
				21	45	8				LINE AMPLIFIER, CH 1	J12		1.820.714.81
				21	46	15				MONO-STEREO-SWITCH	J13		
RECIN-02				21	46	13				MONO-STEREO-SWITCH	J13	1.820.720.00	
				21	48	1				RECORD AMPLIFIER, CH 2	J15		1.820.712.81
				21	50	8				LINE AMPLIFIER, CH 2	J17		
REPHH-TC	9			21	40	10			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81	
	9			21	70	31			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	5			60	1	31			A	HEAD BLOCK CONNECTOR	P01		
REPHH-01	1			60	3	12			L	REPRODUCE PREAMPLIFIER			
REPHH-02	1			60	3	14			L	REPRODUCE PREAMPLIFIER			
REPHL-TC	6			21	40	11			U	TIME CODE WRITE/READ UNIT	J07	1.820.721.81	
	6			21	70	13			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	3			60	1	13			A	HEAD BLOCK CONNECTOR	P01		
REPHL-01	0			60	3	11			L	REPRODUCE PREAMPLIFIER			
REPHL-02	0			60	3	13			L	REPRODUCE PREAMPLIFIER			
REPRE-01	9			21	44	6			U	REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81	
	9			21	70	1			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	0			60	1	1			A	HEAD BLOCK CONNECTOR	P01		
	0			60	3	2			L	REPRODUCE PREAMPLIFIER			
REPRE-02	9			21	49	6			U	REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81	
	9			21	70	20			B	CONN. HEAD BLOCK ASSEMBLY	J18		
	0			60	1	20			A	HEAD BLOCK CONNECTOR	P01		
	0			60	3	7			L	REPRODUCE PREAMPLIFIER			

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * PAGE 84 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/73 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
REPRO-01	6			21	44	7			U	REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
	6			21	70	2			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	6			60	1	2			A	HEAD BLOCK CONNECTOR	P01	
	6			60	3	3			L	REPRODUCE PREAMPLIFIER		
REPRO-02	6			21	49	7			U	REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
	6			21	70	21			B	CONN. HEAD BLOCK ASSEMBLY	J18	
	5			60	1	21			A	HEAD BLOCK CONNECTOR	P01	
	6			60	3	6			L	REPRODUCE PREAMPLIFIER		
S-LINE1	1			4	1	3			J	POWER SWITCH		
	1			4	1	1			Y	LINE FILTER		
	0			4	1	2			L	LINE FILTER		
S-LINE2	6			4	1	4			J	POWER SWITCH		
	0			4	1	12			L	LINE FILTER		
	0			4	1	16			Y	LINE FILTER		
S-MONMUT	2			28	5	5			N	TO PHONES CONNECTOR	J02	
	2			28	6	1A			L	PHONES CONNECTOR		
	2			71	5	5			N	TO PHONES CONNECTOR	J02	
	2			71	6	1A			L	PHONES CONNECTOR		
SF-LINE1	1			4	1	8			Y	LINE FILTER		
	8			4	1	9			L	LINE FILTER		
	1			4	1	10			Y	LINE FILTER		
	1			5	1	1			L	FUSE HOLDER,	F01	53.03.0106
	1			5	2	1			L	FUSE HOLDER,	F02	53.03.0106
SF-LINE2	8			4	1	19			L	LINE FILTER		
	4			4	1	20			Y	LINE FILTER		
	8			4	1	21			Y	LINE FILTER		
	4			6	1	4A			K	DISTRIBUTOR		
	4			6	1	4C			K	DISTRIBUTOR		
	4			6	1	4D			K	DISTRIBUTOR		
	8			6	1	8A			K	DISTRIBUTOR		
	8			6	1	8C			K	DISTRIBUTOR		
	8			6	1	8D			K	DISTRIBUTOR		
	4			7	1	4			J	VOLTAGE SELECTOR	S01	55.12.0001
	8			7	3	4			J	VOLTAGE SELECTOR	S03	55.12.0001
	8			8	2	8			Y	PRIMARY 2		1.820.522.00
	4			9	2	8			Y	PRIMARY 2		1.820.522.00
SHIELD				25	1	1			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
				26	2	1				TO GRP25, ELM01	P02	
SIGN.GND				25	1	8			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
				26	2	6				TO GRP25, ELM01	P02	
SND-232				20	50	14				SMPT/EBU INTERFACE	J11	1.820.751.00
SPARE				20	31	9				TO GRP25, ELM04/05	P21	
				25	4	5			B	CONNECTOR SMPT/EBU BUS	J04	
				25	5	5			B	CONNECTOR SMPT/EBU BUS	J05	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 85 *

 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
SR-FADRY				25	3	6			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	4	11				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-FORM				25	2	21			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	21			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	16				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	16				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-LIFT				25	2	17			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	17			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	8				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	8				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-LOCST				25	3	18			B	CONN. PARALLEL REMOTE CONTRCL	J03	
				27	4	10				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-MUTE				25	2	18			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	10				TO CONNECTOR SYNCHRONIZER	P03	
SR-PLAY				25	2	22			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	22			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	18				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	18				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REC				25	2	19			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	19			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	12				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	12				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REHSL				25	2	6			B	CONNECTOR SYNCHRONIZER	J02	
				27	3	11				TO CONNECTOR SYNCHRONIZER	P03	
SR-RESET				25	3	10			B	CONN. PARALLEL REMOTE CONTRCL	J03	
				27	4	19				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-REW				25	2	20			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	20			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	14				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	14				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-STOP				25	2	23			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	23			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	20				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	20				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-VRSPD				25	2	5			B	CONNECTOR SYNCHRONIZER	J02	
				25	3	5			B	CONN. PARALLEL REMOTE CONTROL	J03	
				27	3	9				TO CONNECTOR SYNCHRONIZER	P03	
				27	4	9				TO CONN. PARALLEL REMOTE CONTR.	P04	
SR-OLGC				25	3	14			B	CONN. PARALLEL REMOTE CONTRCL	J03	
				27	4	2				TO CONN. PARALLEL REMOTE CONTR.	P04	
SYNHH-01				21	43	13				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	13				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 86 *

 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
SYNHH-02				21	48	13				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	13				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
SYNHL-01				21	43	12				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	12				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
SYNHL-02				21	48	12				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	12				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
SYPRE-01				21	44	3				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
SYPRE-02				21	49	3				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
SYS-CTS				20	30	3				SSDA INT. SYNCHRONIZER	P20	
				20	48	13B				MASTER SERIAL INTERFACE	J09	1.820.753.00
SYS-DTR				20	30	5				SSDA INT. SYNCHRONIZER	P20	
				20	48	13A				MASTER SERIAL INTERFACE	J09	1.820.753.00
SYS-RX				20	30	4				SSDA INT. SYNCHRONIZER	P20	
				20	48	12A				MASTER SERIAL INTERFACE	J09	1.820.753.00
SYS-TX				20	30	6				SSDA INT. SYNCHRONIZER	P20	
				20	48	12B				MASTER SERIAL INTERFACE	J09	1.820.753.00
T-A0				26	1	12				FROM GRP27, ELM01	P01	
				27	1	12				TO GRP26, ELM01	P01	
T-A1				26	1	9				FROM GRP27, ELM01	P01	
				27	1	9				TO GRP26, ELM01	P01	
T-A2				26	1	10				FROM GRP27, ELM01	P01	
				27	1	10				TO GRP26, ELM01	P01	
T-A3				26	1	7				FROM GRP27, ELM01	P01	
				27	1	7				TO GRP26, ELM01	P01	
T-B0				26	1	8				FROM GRP27, ELM01	P01	
				27	1	8				TO GRP26, ELM01	P01	
T-B0				26	1	15				FROM GRP27, ELM01	P01	
				27	1	15				TO GRP26, ELM01	P01	
T-B1				26	1	13				FROM GRP27, ELM01	P01	
				27	1	13				TO GRP26, ELM01	P01	
T-B2				26	1	14				FROM GRP27, ELM01	P01	
				27	1	14				TO GRP26, ELM01	P01	
T-B3				26	1	11				FROM GRP27, ELM01	P01	
				27	1	11				TO GRP26, ELM01	P01	
T-DT-CH1				20	18	12				VU-METER PANEL, EXTERNAL	P18	
				20	19	12				SOURCE SELECTOR	P19	
				20	51	38				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT. OF T-DT-CH1					28	2	12			FROM GRP20, ELM19	P01	
					70	1	12			FROM GRP20, ELM18	P01	
					70	2	12			RESERVE	P02	
					70	5	12			COMMANDS CH 01	P05	
					70	7	12			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	12			FROM GRP70, ELM07	P01	
T-DT-CH2					20	18	13			VU-METER PANEL, EXTERNAL	P18	
					20	19	13			SOURCE SELECTOR	P19	
					20	51	4A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					28	2	13			FROM GRP20, ELM19	P01	
					70	1	13			FROM GRP20, ELM18	P01	
					70	2	13			RESERVE	P02	
					70	6	12			COMMANDS CH 02	P06	
					70	7	13			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	13			FROM GRP70, ELM07	P01	
T-DT-CH3					20	18	14			VU-METER PANEL, EXTERNAL	P18	
					20	19	14			SOURCE SELECTOR	P19	
					20	51	4B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					28	2	14			FROM GRP20, ELM19	P01	
					70	1	14			FROM GRP20, ELM18	P01	
					70	2	14			RESERVE	P02	
					70	4	12			COMMANDS CH 03	P04	
					70	7	14			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	14			FROM GRP70, ELM07	P01	
T-DT-MP					20	17	15			TO HEAD BLOCK ASSEMBLY	P17	
					20	18	15			VU-METER PANEL, EXTERNAL	P18	
					20	19	15			SOURCE SELECTOR	P19	
					20	51	5A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					28	2	15			FROM GRP20, ELM19	P01	
					60	2	8			FROM GRP20, ELM17	P02	
					70	1	15			FROM GRP20, ELM18	P01	
					70	2	15			RESERVE	P02	
					70	3	12			RESERVE	P03	
					70	7	15			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	15			FROM GRP70, ELM07	P01	
T-DT-RES					20	17	16			TO HEAD BLOCK ASSEMBLY	P17	
					20	18	16			VU-METER PANEL, EXTERNAL	P18	
					20	19	16			SOURCE SELECTOR	P19	
					20	51	8A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					60	2	21			FROM GRP20, ELM17	P02	
					70	1	16			FROM GRP20, ELM18	P01	
					70	2	16			RESERVE	P02	
T-DT-RP1					20	17	12			TO HEAD BLOCK ASSEMBLY	P17	
					20	51	5B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					60	2	19			FROM GRP20, ELM17	P02	
T-DT-RP2					20	17	13			TO HEAD BLOCK ASSEMBLY	P17	
					20	51	6A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					60	2	7			FROM GRP20, ELM17	P02	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
T-DT-SJM					20	17	14			TO HEAD BLOCK ASSEMBLY	P17	
					20	51	7A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					60	2	20			FROM GRP20, ELM17	P02	
T-CE					26	1	20			FROM GRP27, ELM01	P01	
					27	1	20			TO GRP26, ELM01	P01	
T-PWRON	5				19	1	7		F	FROM GRP32, ELM02	J01	
	5				19	2	7		M	TO GRP21, ELM02	P01	
					20	46	14			MP-UNIT TO CONTROL	J07	1.820.781.00
					20	49	14			MP-UNIT MASTER	J10	1.820.784.00
	5				20	62	14			WIRE FIELD		
	5				20	70	7			FROM GRP21, ELM01	J13	
					21	1	7			TO GRP20, ELM70	P01	
					21	2	7			FROM GRP19, ELM02	J01	
					21	3	6			CONNECTOR SYNCHRONIZER	P02	
					32	2	7			OUTPUT	P01	
T-READSL					20	17	10			TO HEAD BLOCK ASSEMBLY	P17	
					20	18	10			VU-METER PANEL, EXTERNAL	P18	
					20	19	10			SOURCE SELECTOR	P19	
					20	51	2B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					28	2	10			FROM GRP20, ELM19	P01	
					60	2	18			FROM GRP20, ELM17	P02	
					70	1	10			FROM GRP20, ELM18	P01	
					70	2	10			RESERVE	P02	
					70	3	10			RESERVE	P03	
					70	4	10			COMMANDS CH 03	P04	
					70	5	10			COMMANDS CH 01	P05	
					70	6	10			COMMANDS CH 02	P06	
					70	7	10			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	10			FROM GRP70, ELM07	P01	
T-REFEXT					20	16	15			PARALLEL REMOTE CONTROL	P16	
					20	42	12B			CAPSTAN INTERFACE	J03	1.820.727.00
					27	2	15			FROM GRP20, ELM16	P02	
					70	1	23			FROM GRP20, ELM18	P01	
					70	2	23			RESERVE	P02	
					70	3	13			RESERVE	P03	
T-REFINT					20	4	12			PAR. CONT. INT. SYNCHRONIZER	P04	
					20	42	11B			CAPSTAN INTERFACE	J03	1.820.727.00
T-RESET					26	1	24			FROM GRP27, ELM01	P01	
					27	1	24			TO GRP26, ELM01	P01	
T-RL0					26	1	4			FROM GRP27, ELM01	P01	
					27	1	4			TO GRP26, ELM01	P01	
T-RL1					26	1	5			FROM GRP27, ELM01	P01	
					27	1	5			TO GRP26, ELM01	P01	
T-RL2					26	1	26			FROM GRP27, ELM01	P01	
					27	1	26			TO GRP26, ELM01	P01	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 89 *

 * 1.820.090.00 * STUDER A 22C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
T-RL3				26	1	25				FROM GRP27, ELM01	P01	
				27	1	25				TO GRP26, ELM01	P01	
T-RL4				26	1	23				FROM GRP27, ELM01	P01	
				27	1	23				TO GRP26, ELM01	P01	
T-RL5				26	1	22				FROM GRP27, ELM01	P01	
				27	1	22				TO GRP26, ELM01	P01	
T-RL6				26	1	19				FROM GRP27, ELM01	P01	
				27	1	19				TO GRP26, ELM01	P01	
T-RL7				26	1	18				FROM GRP27, ELM01	P01	
				27	1	18				TO GRP26, ELM01	P01	
T-SADA				20	17	7				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	7				VU-METER PANEL, EXTERNAL	P18	
				20	19	7				SOURCE SELECTOR	P19	
				20	51	1A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				28	2	7				FROM GRP20, ELM19	P01	
				60	2	4				FROM GRP20, ELM17	P02	
				70	1	7				FROM GRP20, ELM18	P01	
				70	2	7				RESERVE	P02	
				70	3	7				RESERVE	P03	
				70	4	7				COMMANDS CH 03	P04	
				70	5	7				COMMANDS CH 01	P05	
				70	6	7				COMMANDS CH 02	P06	
				70	7	7				COMMANDS MONITOR AMPLIFIER	P07	
			71	2	7				FROM GRP70, ELM07	P01		
T-SADB				20	17	8				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	8				VU-METER PANEL, EXTERNAL	P18	
				20	19	8				SOURCE SELECTOR	P19	
				20	51	1B				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				28	2	8				FROM GRP20, ELM19	P01	
				60	2	17				FROM GRP20, ELM17	P02	
				70	1	8				FROM GRP20, ELM18	P01	
				70	2	8				RESERVE	P02	
				70	3	8				RESERVE	P03	
				70	4	8				COMMANDS CH 03	P04	
				70	5	8				COMMANDS CH 01	P05	
				70	6	8				COMMANDS CH 02	P06	
				70	7	8				COMMANDS MONITOR AMPLIFIER	P07	
			71	2	8				FROM GRP70, ELM07	P01		
T-SADC				20	17	9				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	9				VU-METER PANEL, EXTERNAL	P18	
				20	19	9				SOURCE SELECTOR	P19	
				20	51	2A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				28	2	9				FROM GRP20, ELM19	P01	
				60	2	5				FROM GRP20, ELM17	P02	
				70	1	9				FROM GRP20, ELM18	P01	
				70	2	9				RESERVE	P02	
				70	3	9				RESERVE	P03	
				70	4	9				COMMANDS CH 03	P04	

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 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 90 *

 * 1.820.090.00 * STUDER A 22C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.CF				70	5	9				COMMANDS CH 01	P05	
T-SADC				70	6	9				COMMANDS CH 02	P06	
				70	7	9				COMMANDS MONITOR AMPLIFIER	P07	
				71	2	9				FROM GRP70, ELM07	P01	
T-SL0				26	1	16				FROM GRP27, ELM01	P01	
				27	1	16				TO GRP26, ELM01	P01	
T-SL1				26	1	17				FROM GRP27, ELM01	P01	
				27	1	17				TO GRP26, ELM01	P01	
T-SL2				26	1	21				FROM GRP27, ELM01	P01	
				27	1	21				TO GRP26, ELM01	P01	
T-SL3				26	1	6				FROM GRP27, ELM01	P01	
				27	1	6				TO GRP26, ELM01	P01	
T-SPOSL1				39	1	11				FROM GRP20, ELM03	P01	
T-SPOSL2				39	1	12				FROM GRP20, ELM03	P01	
T-SUPVON				20	14	6				FUSE FAILURE DETECTOR	P14	
				20	43	1CB				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				59	1	6				FROM GRP20, ELM14	P01	
T-TC/RC	9			21	13	11			N	TO SOURCE SELECTOR (GRP20)	J04	
				21	60	3				RC-FILTER		
	9			28	1	11			N	AUDIO INPUT (FROM GRP21, ELM13)	J01	
				70	12	11				FROM GRP21, ELM13	J05	
				70	13	11				MONITOR AMPLIFIER, AUDIO	J06	
			71	1	11				N	AUDIO INPUT	J01	
T-TCINDL				21	3	10			F	CONNECTOR SYNCHRONIZER	P02	
				21	40	1				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	1				TIME CODE DELAY UNIT	J08	1.820.722.81
				21	60	1				RC-FILTER		
T-TCOUDL				21	3	11			F	CONNECTOR SYNCHRONIZER	P02	
				21	40	2				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	2				TIME CODE DELAY UNIT	J08	1.820.722.81
				21	60	2				RC-FILTER		
T-TCPRES				21	40	14				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	14				TIME CODE DELAY UNIT	J08	1.820.722.81
T-VARSPD				20	18	21				VU-METER PANEL, EXTERNAL	P18	
				70	1	21				FROM GRP20, ELM18	P01	
				70	2	21				RESERVE	P02	
				70	3	15				RESERVE	P03	
T-WRTSL				20	17	11				TO HEAD BLOCK ASSEMBLY	P17	
				20	18	11				VU-METER PANEL, EXTERNAL	P18	
				20	19	11				SOURCE SELECTOR	P19	
				20	51	3A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
												./.

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
<<-- CONT.OF T-WRTSL					28	2	11			FROM GRP20, ELM19	P01	
					60	2	6			FROM GRP20, ELM17	P02	
					7C	1	11			FROM GRP20, ELM18	P01	
					7C	2	11			RESERVE	P02	
					70	3	11			RESERVE	P03	
					70	4	11			COMMANDS CH 03	P04	
					70	5	11			COMMANDS CH 01	P05	
					70	6	11			COMMANDS CH 02	P06	
					7C	7	11			COMMANDS MONITOR AMPLIFIER	P07	
					71	2	11			FROM GRP70, ELM07	P01	
TA-ACTM0					20	32	8			TO AUDIO BASIS BOARD, ELM30	P22	
					20	51	6B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	30	8			FROM TAPE DECK BASIS BOARD	J05	
					21	46	20			MONO-STEREO-SWITCH	J13	1.820.720.00
TA-ACTTC					20	32	12			TO AUDIO BASIS BOARD, ELM30	P22	
					20	51	8B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	30	12			FROM TAPE DECK BASIS BOARD	J05	
					21	40	20			TIME CODE WRITE/READ UNIT	J07	1.820.721.81
					21	41	20			TIME CODE DELAY UNIT	J08	1.820.722.81
TA-ACT01					20	32	10			TO AUDIO BASIS BOARD, ELM30	P22	
					20	51	7B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	30	10			FROM TAPE DECK BASIS BOARD	J05	
					21	42	20			HF-DRIVER, CH 1	J09	1.820.713.00
					21	43	20			RECORD AMPLIFIER, CH 1	J10	1.820.712.81
					21	44	20			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	20			LINE AMPLIFIER, CH 1	J12	1.820.714.81
TA-ACT02					20	32	14			TO AUDIO BASIS BOARD, ELM30	P22	
					20	51	9B			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					21	30	14			FROM TAPE DECK BASIS BOARD	J05	
					21	47	20			HF-DRIVER, CH 2	J14	1.820.713.00
					21	48	20			RECORD AMPLIFIER, CH 2	J15	1.820.712.81
					21	49	20			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	50	20			LINE AMPLIFIER, CH 2	J17	1.820.714.81
TA-AUIR					2C	48	21B			MASTER SERIAL INTERFACE	J09	1.820.753.00
					2C	51	11A			MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
TAPAD-01	6				21	11	8		N	TO VU-METER PANEL, CH 1	J02	
					21	45	10			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					70	8	8			VU-METER CH 01, AUDIO	J01	
					70	9	8			AUDIO CH 01 (FROM GRP21, ELM11)	J02	
TAPAD-02	6				21	12	8		N	TO VU-METER PANEL, CH 2	J03	
					21	50	10			LINE AMPLIFIER, CH 2	J17	1.820.714.81
					70	10	8			VU-METER CH 02, AUDIO	J03	
					70	11	8			AUDIO CH 02 (FROM GRP21, ELM12)	J04	
TAPDI-01					21	44	10			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
					21	45	12			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	9			MONO-STEREO-SWITCH	J13	1.820.720.00

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TAPDI-02					21	46	11			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	49	10			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
					21	50	12			LINE AMPLIFIER, CH 2	J17	1.820.714.81
TAPLI-01					21	44	1			REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
TAPLI-02					21	49	1			REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
TAPMS-01	0				21	11	9		N	TO VU-METER PANEL, CH 1	J02	
					21	45	11			LINE AMPLIFIER, CH 1	J12	1.820.714.81
					21	46	7			MONO-STEREO-SWITCH	J13	1.820.720.00
					70	8	9			VU-METER CH 01, AUDIO	J01	
					70	9	9			AUDIO CH 01 (FROM GRP21, ELM11)	J02	
TAPMS-02	0				21	12	9		N	TO VU-METER PANEL, CH 2	J03	
					21	46	5			MONO-STEREO-SWITCH	J13	1.820.720.00
					21	50	11			LINE AMPLIFIER, CH 2	J17	1.820.714.81
					70	10	9			VU-METER CH 02, AUDIO	J03	
					70	11	9			AUDIO CH 02 (FROM GRP21, ELM12)	J04	
TC-ADRO					20	34	23			INT. SYNCHRONIZER	P24	
					20	41	31			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	24A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-ADR1					20	34	21			INT. SYNCHRONIZER	P24	
					20	41	30			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	23A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-ADR2					20	34	19			INT. SYNCHRONIZER	P24	
					20	41	29			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	22A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-CAPDC					20	3	14			CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
					20	41	4			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					39	1	14			FROM GRP20, ELM03	P01	
TC-CDIRI					20	41	6			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	1A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-CPREF					20	3	13			CAPSTAN MOTOR DRIVE AMPLIFIER	P03	
					39	1	13			FROM GRP20, ELM03	P01	
TC-DATA0					20	34	39			INT. SYNCHRONIZER	P24	
					20	41	39			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	32A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA1					20	34	37			INT. SYNCHRONIZER	P24	
					20	41	38			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	31A			CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA2					20	34	35			INT. SYNCHRONIZER	P24	
					20	41	37			CAPSTAN CONTROL UNIT	J02	1.820.764.00
					20	42	30A			CAPSTAN INTERFACE	J03	1.820.727.00

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 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TC-DATA3				20	34	33				INT. SYNCHRONIZER	P24	
				20	41	36				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	29A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA4				20	34	31				INT. SYNCHRONIZER	P24	
				20	41	35				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	28A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA5				20	34	29				INT. SYNCHRONIZER	P24	
				20	41	34				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	27A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA6				20	34	27				INT. SYNCHRONIZER	P24	
				20	41	33				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	26A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-DATA7				20	34	25				INT. SYNCHRONIZER	P24	
				20	41	32				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	25A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-ENB				20	34	17				INT. SYNCHRONIZER	P24	
				20	41	28				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	21A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-ENBG				20	34	7				INT. SYNCHRONIZER	P24	
				20	41	11				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	8B				CAPSTAN INTERFACE	J03	1.820.727.00
TC-EREF				20	41	14				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	10B				CAPSTAN INTERFACE	J03	1.820.727.00
TC-HALL1				38	1	4		F		FROM GRP39, ELM02	J01	
				39	2	4		M		TO GRP38, ELM01	P02	
TC-HALL2				38	1	7		F		FROM GRP39, ELM02	J01	
				39	2	7		M		TO GRP38, ELM01	P02	
TC-HALL3				38	1	10		F		FROM GRP39, ELM02	J01	
				39	2	10		M		TO GRP38, ELM01	P02	
TC-INEX				20	41	9				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	12A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-IRQ				20	34	5				INT. SYNCHRONIZER	P24	
				20	41	13				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	9A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-REF				20	41	8				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	11A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-REFP				20	41	3				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	4B				CAPSTAN INTERFACE	J03	1.820.727.00
TC-RESMP				20	34	9				INT. SYNCHRONIZER	P24	
				20	41	10				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	8A				CAPSTAN INTERFACE	J03	1.820.727.00

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SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TC-RW				20	34	15				INT. SYNCHRONIZER	P24	
				20	41	27				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	20A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-SL1				20	41	24				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	13A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-SL2				20	41	23				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	14A				CAPSTAN INTERFACE	J03	1.820.727.00
TC-SL3				20	34	1				INT. SYNCHRONIZER	P24	
				20	41	16				CAPSTAN CONTROL UNIT	J02	1.820.764.00
TC-SL4				20	34	3				INT. SYNCHRONIZER	P24	
				20	41	15				CAPSTAN CONTROL UNIT	J02	1.820.764.00
TC-TCDIR				20	4	8				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	16	18				PARALLEL REMOTE CONTROL	P16	
				20	42	6A				CAPSTAN INTERFACE	J03	1.820.727.00
				20	42	6B				CAPSTAN INTERFACE	J03	1.820.727.00
				27	2	18				FROM GRP20, ELM16	P02	
TC-TCMV				20	4	10				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	16	17				PARALLEL REMOTE CONTROL	P16	
				20	42	5A				CAPSTAN INTERFACE	J03	1.820.727.00
				20	42	5B				CAPSTAN INTERFACE	J03	1.820.727.00
				27	2	17				FROM GRP20, ELM16	P02	
TC-TCMVI				20	41	5				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	42	2A				CAPSTAN INTERFACE	J03	1.820.727.00
TD-ADRO				20	42	24B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	24B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	31				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	31				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	31				MP-UNIT TD CONTROL	J07	1.820.781.00
				20	47	31				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-ADR1				20	42	23B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	23B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	30				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	30				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	30				MP-UNIT TD CONTROL	J07	1.820.781.00
				20	47	30				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-ADR2				20	43	22B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	29				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	29				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	29				MP-UNIT TD CONTROL	J07	1.820.781.00
				20	47	29				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-ADR3				20	44	6				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	46	6				MP-UNIT TD CONTROL	J07	1.820.781.00
				20	47	24				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-BUSSW				20	46	8			MP-UNIT TD CONTROL	J07	1.820.781.00	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TD-CAPSY				20	4	13				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	41	7				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	48	22A				MASTER SERIAL INTERFACE	J09	1.820.753.00
TD-CRES				20	41	26				CAPSTAN CONTROL UNIT	J02	1.820.764.00
				20	43	6A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
TD-C307K				20	5	7				SPOOLING MOTOR SUPPLY	P05	
				20	32	16				TO AUDIC BASIS BOARD, ELM30	P27	
				20	46	22				MP-UNIT TD CONTROL	J07	1.820.781.00
				20	51	19B				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
				21	30	16				FROM TAPE DECK BASIS BOARD	J05	
				21	40	25				TIME CODE WRITE/READ UNIT	J07	1.820.721.81
				21	41	25				TIME CODE DELAY UNIT	J08	1.820.722.81
				21	42	25				HF-DRIVER, CH 1	J09	1.820.713.00
				21	43	25				RECORD AMPLIFIER, CH 1	J10	1.820.712.81
				21	44	25				REPRODUCE AMPLIFIER, CH 1	J11	1.820.710.81
				21	45	25				LINE AMPLIFIER, CH 1	J12	1.820.714.81
				21	46	25				MONO-STEREO-SWITCH	J13	1.820.720.00
				21	47	25				HF-DRIVER, CH 2	J14	1.820.713.00
				21	48	25				RECORD AMPLIFIER, CH 2	J15	1.820.712.81
				21	49	25				REPRODUCE AMPLIFIER, CH 2	J16	1.820.710.81
				21	50	25				LINE AMPLIFIER, CH 2	J17	1.820.714.81
			31	3	7				FROM GRP20, ELM05	P02		
TC-C614K				20	46	7				MP-UNIT TD CONTROL	J07	1.820.781.00
TD-C76K	9			19	1	4			F	FROM GRP32, ELM02	J01	
	9			19	2	4			M	TO GRP21, ELM02	P01	
				20	3	15				CAPSTAN MOTOR DRIVE AMPLIFIER	J01	1.820.759.00
				20	40	17				SPOOLING MOTOR DRIVER	J01	
				20	46	16				MP-UNIT TD CONTROL	J07	1.820.781.00
	9			20	62	15			U	WIRE FIELD		
	9			20	70	4			F	FROM GRP21, ELM01	J13	
				21	1	4			M	TO GRP20, ELM70	P01	
				21	2	4			F	FROM GRP19, ELM02	J01	
				32	2	4			M	OUTPUT	P01	
			39	1	15				FROM GRP20, ELM03	P01		
TD-DATA0				20	42	32B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	32B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	39				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	39				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	39				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	39				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA1				20	42	31B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	31B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	38				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	38				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	38				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	38				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TD-DATA2				20	42	30B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	30B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	37				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	37				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	37				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	37				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA3				20	42	29B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	29B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	36				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	36				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	36				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	36				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA4				20	42	28B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	28B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	35				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	35				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	35				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	35				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA5				20	42	27B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	27B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	34				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	34				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	34				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	34				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA6				20	42	26B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	26B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	33				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	33				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	33				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	33				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DATA7				20	42	25B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	25B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	32				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	32				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	32				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	32				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-DRENB				20	46	12				MP-UNIT TD CONTROL	J07	1.820.781.00
TD-ENB				20	42	21B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	21B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	28				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	28				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	46	28				MP-UNIT TD CONTROL	J07	1.820.781.00
			20	47	28				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00	
TD-HEACT				20	43	9B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	48	2CA				MASTER SERIAL INTERFACE	J09	1.820.753.00
TC-ICRE1				20	44	9				TAPE DECK COUNTER / TIMER	J05	1.820.761.00

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 97 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TD-ICRE2				20	44	11				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
TD-ICRE3				20	44	16				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
TD-ICRE4				20	44	17				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
TD-ICRE5				20	44	23				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
TD-IRQ				20	42	13B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	44	13				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	46	13				MP-UNIT TO CONTROL	J07	1.820.781.00
				20	47	12				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-MOVE				20	43	4A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	48	21A				MASTER SERIAL INTERFACE	J09	1.820.753.00
TD-MOVE1				20	11	9				MOVE SENSOR	P11	
				20	44	7				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				45	1	9				FROM GRP20, ELM11	P01	
TD-MOVE2				20	11	8				MOVE SENSOR	P11	
				20	44	8				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				45	1	8				FROM GRP20, ELM11	P01	
TD-MVCLK				20	4	15				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	16	23				PARALLEL REMOTE CONTROL	P16	
				20	32	2				TO AUDIO BASIS BOARD, ELM30	P22	
				20	44	12				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	48	25B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				21	30	2				FROM TAPE DECK BASIS BOARD	J05	
				21	41	6				TIME CODE DELAY UNIT	J08	1.820.722.81
				27	2	23				FROM GRP20, ELM16	P02	
TD-MVDIR				20	4	14				PAR. CONT. INT. SYNCHRONIZER	P04	
				20	16	24				PARALLEL REMOTE CONTROL	P16	
				20	32	4				TO AUDIO BASIS BOARD, ELM30	P22	
				20	44	14				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	48	25A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				21	30	4				FROM TAPE DECK BASIS BOARD	J05	
				21	41	4				TIME CODE DELAY UNIT	J08	1.820.722.81
				27	2	24				FROM GRP20, ELM16	P02	
TD-NMI				20	46	9				MP-UNIT TO CONTROL	J07	1.820.781.00
TD-PENBL				20	40	23				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	43	20A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
TD-PENBR				20	40	15				SPOOLING MOTOR DRIVER	J01	1.820.759.00
				20	43	21A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
TD-PWENB				20	5	8				SPOOLING MOTOR SUPPLY	P05	
				20	43	10A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				31	3	8				FROM GRP20, ELM05	P02	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 98 *

 * 1.820.090.00 * STUDER A 820 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TD-RALC1				20	7	14				TAPE LIFT MOTOR, LEFT	P07	
				20	43	18				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				46	1	14				FROM GRP20, ELM07	P01	
TD-RALC2				20	7	12				TAPE LIFT MOTOR, LEFT	P07	
				20	43	28				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				46	1	12				FROM GRP20, ELM07	P01	
TD-RALEN				20	7	15				TAPE LIFT MOTOR, LEFT	P07	
				20	43	1A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				46	1	15				FROM GRP20, ELM07	P01	
TD-RALP1				20	7	11				TAPE LIFT MOTOR, LEFT	P07	
				20	43	3A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				46	1	11				FROM GRP20, ELM07	P01	
TD-RALP2				20	7	13				TAPE LIFT MOTOR, LEFT	P07	
				20	43	2A				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				46	1	13				FROM GRP20, ELM07	P01	
TD-RARC1				20	8	14				TAPE LIFT MOTOR, RIGHT	P08	
				20	43	6B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				47	1	14				FROM GRP20, ELM08	P01	
TD-RARC2				20	8	12				TAPE LIFT MOTOR, RIGHT	P08	
				20	43	7B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				47	1	12				FROM GRP20, ELM08	P01	
TD-RAREN				20	8	15				TAPE LIFT MOTOR, RIGHT	P08	
				20	43	5B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				47	1	15				FROM GRP20, ELM08	P01	
TD-RARP1				20	8	11				TAPE LIFT MOTOR, RIGHT	P08	
				20	43	3B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				47	1	11				FROM GRP20, ELM08	P01	
TD-RARP2				20	8	13				TAPE LIFT MOTOR, RIGHT	P08	
				20	43	4B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				47	1	13				FROM GRP20, ELM08	P01	
TD-RES				20	42	19B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	19B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	26				TAPE DECK COUNTER / TIMER	J05	1.820.761.00
				20	45	26				SPOOLING MOTOR CONTROLLER	J06	1.820.760.00
				20	47	26				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-RESET				20	46	26				MP-UNIT TO CONTROL	J07	1.820.781.00
				20	47	23				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-RESMP				20	46	5				MP-UNIT TO CONTROL	J07	1.820.781.00
				20	47	11				TAPE DECK SERIAL INTERFACE	J08	1.820.763.00
TD-RW				20	42	20B				CAPSTAN INTERFACE	J03	1.820.727.00
				20	43	20B				TAPE DECK PERIPHERY CONTR.	J04	1.820.762.00
				20	44	27				TAPE DECK COUNTER / TIMER	J05	1.820.761.00

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<-- CONT.OF TC-RW					2C 45 27 20 46 27 2C 47 27					SPOOLING MOTOR CONTROLLER MP-UNIT TO CONTROL TAPE DECK SERIAL INTERFACE	J06 J07 J08	1.820.760.00 1.820.781.00 1.820.763.00
TD-RX					20 46 10					MP-UNIT TO CONTROL	J07	1.820.781.00
TD-SHLD					20 6 8 20 43 8A 44 1 8					EXT. SENSORS TAPE DECK PERIPHERY CONTR. FROM GRP20, ELM06	P06 J04 P01	1.820.762.00
TC-SL2					20 46 4					MP-UNIT TO CONTROL	J07	1.820.781.00
TD-SL3					20 43 14B 20 46 3					TAPE DECK PERIPHERY CONTR. MP-UNIT TO CONTROL	J04 J07	1.820.762.00 1.820.781.00
TD-SL4					2C 45 23 20 46 23					SPOOLING MOTOR CONTROLLER MP-UNIT TO CONTROL	J06 J07	1.820.760.00 1.820.781.00
TD-SL5					2C 46 24 20 47 25					MP-UNIT TO CONTROL TAPE DECK SERIAL INTERFACE	J07 J08	1.820.781.00 1.820.763.00
TC-SL6					2C 44 25 20 46 25					TAPE DECK COUNTER / TIMER MP-UNIT TO CONTROL	J05 J07	1.820.761.00 1.820.781.00
TD-SL7					20 42 14B 20 46 15					CAPSTAN INTERFACE MP-UNIT TO CONTROL	J03 J07	1.820.727.00 1.820.781.00
TD-TCM1					20 3 8 20 41 1 20 42 1B 38 1 8 39 1 8 39 2 8					CAPSTAN MOTOR DRIVE AMPLIFIER CAPSTAN CONTROL UNIT CAPSTAN INTERFACE FROM GRP39, ELM02 FROM GRP20, ELM03 TO GRP38, ELM01	P03 J02 J03 J01 P01 P02	1.820.764.00 1.820.727.00
TD-TCM2					20 3 10 20 41 2 20 42 2B 38 1 11 39 1 10 39 2 11					CAPSTAN MOTOR DRIVE AMPLIFIER CAPSTAN CONTROL UNIT CAPSTAN INTERFACE FROM GRP39, ELM02 FROM GRP20, ELM03 TO GRP38, ELM01	P03 J02 J03 J01 P01 P02	1.820.764.00 1.820.727.00
TC-TML1					20 9 9 20 44 1 36 1 9					TACHO SENSOR (SPOOLING M. LEFT) TAPE DECK COUNTER / TIMER TACHO SENSOR	P09 J05 P01	1.820.761.00 1.820.771.00
TC-TML2					20 9 8 20 44 2 36 1 8					TACHO SENSOR (SPOOLING M. LEFT) TAPE DECK COUNTER / TIMER TACHO SENSOR	P09 J05 P01	1.820.761.00 1.820.771.00
TD-TMR1					2C 10 9 20 44 3 37 1 9					TACHO SENSOR (SPOOLING M. RIGHT) TAPE DECK COUNTER / TIMER TACHO SENSOR	P10 J05 P01	1.820.761.00 1.820.771.00

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TD-TMR2					2C 10 8 20 44 4 37 1 8					TACHO SENSOR (SPOOLING M. RIGHT) TAPE DECK COUNTER / TIMER TACHO SENSOR	P10 J05 P01	1.820.761.00 1.820.771.00
TD-TRSP					20 6 9 2C 43 9A 44 1 9					EXT. SENSORS TAPE DECK PERIPHERY CONTR. FROM GRP20, ELM06	P06 J04 P01	1.820.762.00
TD-TRSPR					20 6 10 44 1 10					EXT. SENSORS FROM GRP20, ELM06	P06 P01	
TD-TX					20 46 11					MP-UNIT TO CONTROL	J07	1.820.781.00
TD-YTRSP					20 6 7 44 1 7					EXT. SENSORS FROM GRP20, ELM06	P06 P01	
TD-9600					20 46 17					MP-UNIT TO CONTROL	J07	1.820.781.00
TDS-CLK					20 30 2 20 47 17 20 48 19A					SSDA INT. SYNCHRONIZER TAPE DECK SERIAL INTERFACE MASTER SERIAL INTERFACE	P20 J08 J09	1.820.763.00 1.820.753.00
TDS-CTS					20 47 16 2C 48 11B					TAPE DECK SERIAL INTERFACE MASTER SERIAL INTERFACE	J08 J09	1.820.763.00 1.820.753.00
TDS-DTR					20 47 15 20 48 11A					TAPE DECK SERIAL INTERFACE MASTER SERIAL INTERFACE	J08 J09	1.820.763.00 1.820.753.00
TDS-RX					20 47 13 20 48 10A					TAPE DECK SERIAL INTERFACE MASTER SERIAL INTERFACE	J08 J09	1.820.763.00 1.820.753.00
TDS-TX					20 47 14 20 48 10B					TAPE DECK SERIAL INTERFACE MASTER SERIAL INTERFACE	J08 J09	1.820.763.00 1.820.753.00
TL-A0					50 4 6 52 1 6					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-CS					50 4 3 52 1 3					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-D0					50 4 7 52 1 7					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-D1					50 4 8 52 1 8					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-D2					50 4 9 52 1 9					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-D3					50 4 10 52 1 10					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
TL-D4					50 4 11 52 1 11					CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	

 * WILLI STUDDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 101 *

 * 1.820.090.00 * STUDDER A 82C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TL-D5				50	4	12				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	12						
TL-D6				50	4	13				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	13						
TL-D7				50	4	14				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	14						
TL-ENB				50	4	4				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	4						
TL-RESET				50	4	15				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	15						
TL-WR				50	4	5				CONNECTOR LCD DISPLAY UNIT FROM GRP50, ELM04	P04	
				52	1	5						
TM-A				50	2	20				CONNECTOR COMMAND UNIT FROM GRP50,ELM02	P03	
				51	1	20						
TM-ADRO				20	48	28B				MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	49	31						
				20	50	31						
				20	51	24A						
TM-ADR1				20	48	28A				MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	49	30						
				20	50	30						
				20	51	23A						
TM-ADR2				20	48	27B				MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	49	29						
				20	50	29						
				20	51	22A						
TM-ADR3				20	48	23B				MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE	J09 J10 J11	1.820.753.00 1.820.784.00 1.820.751.00
				20	49	6						
				20	50	17						
TM-B				50	2	18				CONNECTOR COMMAND UNIT FROM GRP50,ELM02	P03	
				51	1	18						
TM-BUSSW				20	49	8				MP-UNIT MASTER SMPTE/EBU INTERFACE	J10 J11	1.820.784.00 1.820.751.00
				20	50	15						
TM-C				50	2	21				CONNECTOR COMMAND UNIT FROM GRP50,ELM02	P03	
				51	1	21						
TM-CUE1				48	1	20				FROM GRP50, ELM03 CONNECTOR EDIT ASSEMBLY FROM GRP48, ELM02 CONNECTOR PUSHBUTTON ASSEMBLY	P02	
				48	2	5						
				49	1	5						
				50	3	20						

 * WILLI STUDDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 102 *

 * 1.820.090.00 * STUDDER A 82C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TM-CUE2				48	1	22				FROM GRP50, ELM03 CONNECTOR EDIT ASSEMBLY FROM GRP48, ELM02 CONNECTOR PUSHBUTTON ASSEMBLY	P02	
				48	2	7						
				49	1	7						
				50	3	22						
TM-C307K				20	49	22				MP-UNIT MASTER	J10	1.820.784.00
TM-C614K				20	49	7				MP-UNIT MASTER	J10	1.820.784.00
TM-C76K				20	49	16				MP-UNIT MASTER	J10	1.820.784.00
TM-C9600				20	49	17				MP-UNIT MASTER	J10	1.820.784.00
TM-D				50	2	22				CONNECTOR COMMAND UNIT FROM GRP50,ELM02	P03	
				51	1	22						
TM-DADRO				20	15	19				DISPLAY DRIVER PARALLEL REMOTE CONTROL MASTER SERIAL INTERFACE	P15 P16 J09	1.820.753.00
				20	16	19						
				20	48	8A						
				27	2	19						
				50	1	19						
TM-DADR1				20	15	17				DISPLAY DRIVER MASTER SERIAL INTERFACE FROM GRP20, ELM15	P15 J09 P01	1.820.753.00
				20	48	7A						
				50	1	17						
TM-DADR2				20	15	15				DISPLAY DRIVER MASTER SERIAL INTERFACE FROM GRP20, ELM15	P15 J09 P01	1.820.753.00
				20	48	6A						
				50	1	15						
TM-DATA0				20	15	39				DISPLAY DRIVER PARALLEL REMOTE CONTROL MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	P15 P16 J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	16	39						
				20	48	32B						
				20	49	39						
				20	50	39						
				20	51	32A						
				27	2	39						
				50	1	39						
TM-DATA1				20	15	37				DISPLAY DRIVER PARALLEL REMOTE CONTROL MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	P15 P16 J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	16	37						
				20	48	32A						
				20	49	38						
				20	50	38						
				20	51	31A						
				27	2	37						
				50	1	37						
TM-DATA2				20	15	35				DISPLAY DRIVER PARALLEL REMOTE CONTROL MASTER SERIAL INTERFACE MP-UNIT MASTER SMPTE/EBU INTERFACE MASTER PERIPHERY CONTROLLER	P15 P16 J09 J10 J11 J12	1.820.753.00 1.820.784.00 1.820.751.00 1.820.728.00
				20	16	35						
				20	48	31B						
				20	49	37						
				20	50	37						
				20	51	30A						
				27	2	35						
				50	1	35						

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-DATA3					20 15 33					DISPLAY DRIVER	P15	
					20 16 33					PARALLEL REMOTE CONTROL	P16	
					20 48 31A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					20 49 36					MP-UNIT MASTER	J10	1.820.784.00
					20 50 36					SMPTE/EBU INTERFACE	J11	1.820.751.00
					20 51 29A					MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					27 2 33					FROM GRP20, ELM16	P02	
				50 1 33					FROM GRP20, ELM15	P01		
TM-DATA4					20 15 31					DISPLAY DRIVER	P15	
					20 16 31					PARALLEL REMOTE CONTROL	P16	
					20 48 30B					MASTER SERIAL INTERFACE	J09	1.820.753.00
					20 49 35					MP-UNIT MASTER	J10	1.820.784.00
					20 50 35					SMPTE/EBU INTERFACE	J11	1.820.751.00
					20 51 28A					MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					27 2 31					FROM GRP20, ELM16	P02	
				50 1 31					FROM GRP20, ELM15	P01		
TM-DATA5					20 15 29					DISPLAY DRIVER	P15	
					20 16 29					PARALLEL REMOTE CONTROL	P16	
					20 48 30A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					20 49 34					MP-UNIT MASTER	J10	1.820.784.00
					20 50 34					SMPTE/EBU INTERFACE	J11	1.820.751.00
					20 51 27A					MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					27 2 29					FROM GRP20, ELM16	P02	
				50 1 29					FROM GRP20, ELM15	P01		
TM-DATA6					20 15 27					DISPLAY DRIVER	P15	
					20 16 27					PARALLEL REMOTE CONTROL	P16	
					20 48 29B					MASTER SERIAL INTERFACE	J09	1.820.753.00
					20 49 33					MP-UNIT MASTER	J10	1.820.784.00
					20 50 33					SMPTE/EBU INTERFACE	J11	1.820.751.00
					20 51 26A					MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					27 2 27					FROM GRP20, ELM16	P02	
				50 1 27					FROM GRP20, ELM15	P01		
TM-DATA7					20 15 25					DISPLAY DRIVER	P15	
					20 16 25					PARALLEL REMOTE CONTROL	P16	
					20 48 29A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					20 49 32					MP-UNIT MASTER	J10	1.820.784.00
					20 50 32					SMPTE/EBU INTERFACE	J11	1.820.751.00
					20 51 25A					MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
					27 2 25					FROM GRP20, ELM16	P02	
				50 1 25					FROM GRP20, ELM15	P01		
TM-DENB					20 15 13					DISPLAY DRIVER	P15	
					20 16 13					PARALLEL REMOTE CONTROL	P16	
					20 48 5A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					27 2 13					FROM GRP20, ELM16	P02	
				50 1 13					FROM GRP20, ELM15	P01		
TM-DP					50 2 19					CONNECTOR COMMAND UNIT	P03	
					51 1 19					FROM GRP50,ELM02		
TM-DRENB					20 49 12					MP-UNIT MASTER	J10	1.820.784.00
					20 50 12					SMPTE/EBU INTERFACE	J11	1.820.751.00

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-DRES					20 15 9					DISPLAY DRIVER	P15	
					20 16 9					PARALLEL REMOTE CONTROL	P16	
					20 48 3A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					27 2 9					FROM GRP20, ELM16	P02	
					50 1 9					FROM GRP20, ELM15	P01	
TM-DRW					20 15 11					DISPLAY DRIVER	P15	
					20 16 11					PARALLEL REMOTE CONTROL	P16	
					20 48 4A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					27 2 11					FROM GRP20, ELM16	P02	
				50 1 11					FROM GRP20, ELM15	P01		
TM-DSL4					20 15 7					DISPLAY DRIVER	P15	
					20 48 1A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					50 1 7					FROM GRP20, ELM15	P01	
TM-DSL5					20 16 7					PARALLEL REMOTE CONTROL	P16	
					20 48 2A					MASTER SERIAL INTERFACE	J09	1.820.753.00
					27 2 7					FROM GRP20, ELM16	P02	
TM-D0					50 2 35					CONNECTOR COMMAND UNIT	P03	
					51 1 35					FROM GRP50,ELM02		
TM-D1					50 2 34					CONNECTOR COMMAND UNIT	P03	
					51 1 34					FROM GRP50,ELM02		
TM-D2					50 2 33					CONNECTOR COMMAND UNIT	P03	
					51 1 33					FROM GRP50,ELM02		
TM-D3					50 2 32					CONNECTOR COMMAND UNIT	P03	
					51 1 32					FROM GRP50,ELM02		
TM-D4					50 2 31					CONNECTOR COMMAND UNIT	P03	
					51 1 31					FROM GRP50,ELM02		
TM-D5					50 2 30					CONNECTOR COMMAND UNIT	P03	
					51 1 30					FROM GRP50,ELM02		
TM-D6					50 2 29					CONNECTOR COMMAND UNIT	P03	
					51 1 29					FROM GRP50,ELM02		
TM-D7					50 2 28					CONNECTOR COMMAND UNIT	P03	
					51 1 28					FROM GRP50,ELM02		
TM-D8					50 2 27					CONNECTOR COMMAND UNIT	P03	
					51 1 27					FROM GRP50,ELM02		
TM-D9					50 2 26					CONNECTOR COMMAND UNIT	P03	
					51 1 26					FROM GRP50,ELM02		
TM-E					50 2 24					CONNECTOR COMMAND UNIT	P03	
					51 1 24					FROM GRP50,ELM02		

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 105 *

 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-ENB				20	48	27A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	28				MP-UNIT MASTER	J10	1.820.784.00
				20	50	28				SMPTE/EBU INTERFACE	J11	1.820.751.00
				20	51	21A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
TM-ENG				48	1	12				FROM GRP50, ELM03		
				48	2	4				CONNECTOR EDIT ASSEMBLY		
				49	1	4				FROM GRP48, ELM02		
				49	2	2				WIRE FIELD		
				50	3	12				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
TM-EN1				50	2	9				CONNECTOR COMMAND UNIT	P03	
				51	1	9				FROM GRP50, ELM02		
TM-EN2				50	2	8				CONNECTOR COMMAND UNIT	P03	
				51	1	8				FROM GRP50, ELM02		
TM-EN3				50	2	7				CONNECTOR COMMAND UNIT	P03	
				51	1	7				FROM GRP50, ELM02		
TM-EN4				50	2	6				CONNECTOR COMMAND UNIT	P03	
				51	1	6				FROM GRP50, ELM02		
TM-F				50	2	23				CONNECTOR COMMAND UNIT	P03	
				51	1	23				FROM GRP50, ELM02		
TM-G				50	2	25				CONNECTOR COMMAND UNIT	P03	
				51	1	25				FROM GRP50, ELM02		
TM-IADRO				20	15	20				DISPLAY DRIVER	P15	
				20	16	20				PARALLEL REMOTE CONTROL	P16	
				20	48	8B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	0				FROM GRP20, ELM16	P02	
				50	1	20				FROM GRP20, ELM15	P01	
TM-IADR1				20	15	18				DISPLAY DRIVER	P15	
				20	48	7B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				50	1	18				FROM GRP20, ELM15	P01	
TM-IADR2				20	15	16				DISPLAY DRIVER	P15	
				20	48	6B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				50	1	16				FROM GRP20, ELM15	P01	
TM-IENB				20	15	14				DISPLAY DRIVER	P15	
				20	16	14				PARALLEL REMOTE CONTROL	P16	
				20	48	5B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	14				FROM GRP20, ELM16	P02	
				50	1	14				FROM GRP20, ELM15	P01	
TM-IRES				20	15	10				DISPLAY DRIVER	P15	
				20	16	10				PARALLEL REMOTE CONTROL	P16	
				20	48	3B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	10				FROM GRP20, ELM16	P02	
				50	1	10				FROM GRP20, ELM15	P01	

 * WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 106 *

 * 1.820.090.00 * STUDER A E2C * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
TM-IRQ				20	48	24B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	13				MP-UNIT MASTER	J10	1.820.784.00
TM-IRW				20	15	12				DISPLAY DRIVER	P15	
				20	16	12				PARALLEL REMOTE CONTROL	P16	
				20	48	4B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	12				FROM GRP20, ELM16	P02	
				50	1	12				FROM GRP20, ELM15	P01	
TM-ISL4				20	15	8				DISPLAY DRIVER	P15	
				20	48	1B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				50	1	8				FROM GRP20, ELM15	P01	
TM-ISL5				20	16	8				PARALLEL REMOTE CONTROL	P16	
				20	48	2B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	8				FROM GRP20, ELM16	P02	
TM-KBIR				20	15	23				DISPLAY DRIVER	P15	
				20	48	14B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				50	1	23				FROM GRP20, ELM15	P01	
TM-L1				50	2	37				CONNECTOR COMMAND UNIT	P03	
				51	1	37				FROM GRP50, ELM02		
TM-L2				50	2	36				CONNECTOR COMMAND UNIT	P03	
				51	1	36				FROM GRP50, ELM02		
TM-L3				50	2	38				CONNECTOR COMMAND UNIT	P03	
				51	1	38				FROM GRP50, ELM02		
TM-NMI				20	49	9				MP-UNIT MASTER	J10	1.820.784.00
TM-REMI				20	16	21				PARALLEL REMOTE CONTROL	P16	
				20	48	19B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				27	2	21				FROM GRP20, ELM16	P02	
TM-RES				20	48	24A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	50	26				SMPTE/EBU INTERFACE	J11	1.820.751.00
				20	51	19A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
TM-RESET				20	48	26A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	26				MP-UNIT MASTER	J10	1.820.784.00
TM-RESHP				20	48	23A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	5				MP-UNIT MASTER	J10	1.820.784.00
TM-RLO				50	2	12				CONNECTOR COMMAND UNIT	P03	
				51	1	12				FROM GRP50, ELM02		
TM-RL1				48	1	19				FROM GRP50, ELM03		
				48	2	6				CONNECTOR EDIT ASSEMBLY		
				49	1	6				FROM GRP48, ELM02		
				49	2	4				WIRE FIELD		
				50	2	13				CONNECTOR COMMAND UNIT	P03	
				50	3	19				CONNECTOR PUSHBUTTON ASSEMBLY	P02	
				51	1	13				FROM GRP50, ELM02		

* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 107 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TM-RL2					48	1	18			FROM GRP50, ELM03		
					50	2	14			CONNECTOR COMMAND UNIT	P03	
					50	3	18			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	14			FROM GRP50, ELM02		
TM-RL3					48	1	17			FROM GRP50, ELM03		
					50	2	15			CONNECTOR COMMAND UNIT	P03	
					50	3	17			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	15			FROM GRP50, ELM02		
TM-RL4					48	1	16			FROM GRP50, ELM03		
					50	2	16			CONNECTOR COMMAND UNIT	P03	
					50	3	16			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	16			FROM GRP50, ELM02		
TM-RL5					48	1	15			FROM GRP50, ELM03		
					50	2	17			CONNECTOR COMMAND UNIT	P03	
					50	3	15			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	17			FROM GRP50, ELM02		
TM-RL6					48	1	14			FROM GRP50, ELM03		
					50	2	10			CONNECTOR COMMAND UNIT	P03	
					50	3	14			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	10			FROM GRP50, ELM02		
TM-RL7					48	1	13			FROM GRP50, ELM03		
					50	2	11			CONNECTOR COMMAND UNIT	P03	
					50	3	13			CONNECTOR PUSHBUTTON ASSEMBLY	P02	
					51	1	11			FROM GRP50, ELM02		
TM-RM				20	48	26B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	27				MP-UNIT MASTER	J10	1.820.784.00
				20	50	27				SMPT/EBU INTERFACE	J11	1.820.751.00
				20	51	20A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
TM-RX				20	49	10				MP-UNIT MASTER	J10	1.820.784.00
				20	50	10				SMPT/EBU INTERFACE	J11	1.820.751.00
TM-SEIR				20	48	20B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	50	13				SMPT/EBU INTERFACE	J11	1.820.751.00
TM-SHIR				20	15	21				DISPLAY DRIVER	P15	
				20	48	14A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				50	1	21				FROM GRP20, ELM15	P01	
TM-SL2				20	48	22B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	4				MP-UNIT MASTER	J10	1.820.784.00
TM-SL3				20	49	3				MP-UNIT MASTER	J10	1.820.784.00
				20	50	16				SMPT/EBU INTERFACE	J11	1.820.751.00
TM-SL4				20	48	9A				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	23				MP-UNIT MASTER	J10	1.820.784.00
				20	50	23				SMPT/EBU INTERFACE	J11	1.820.751.00

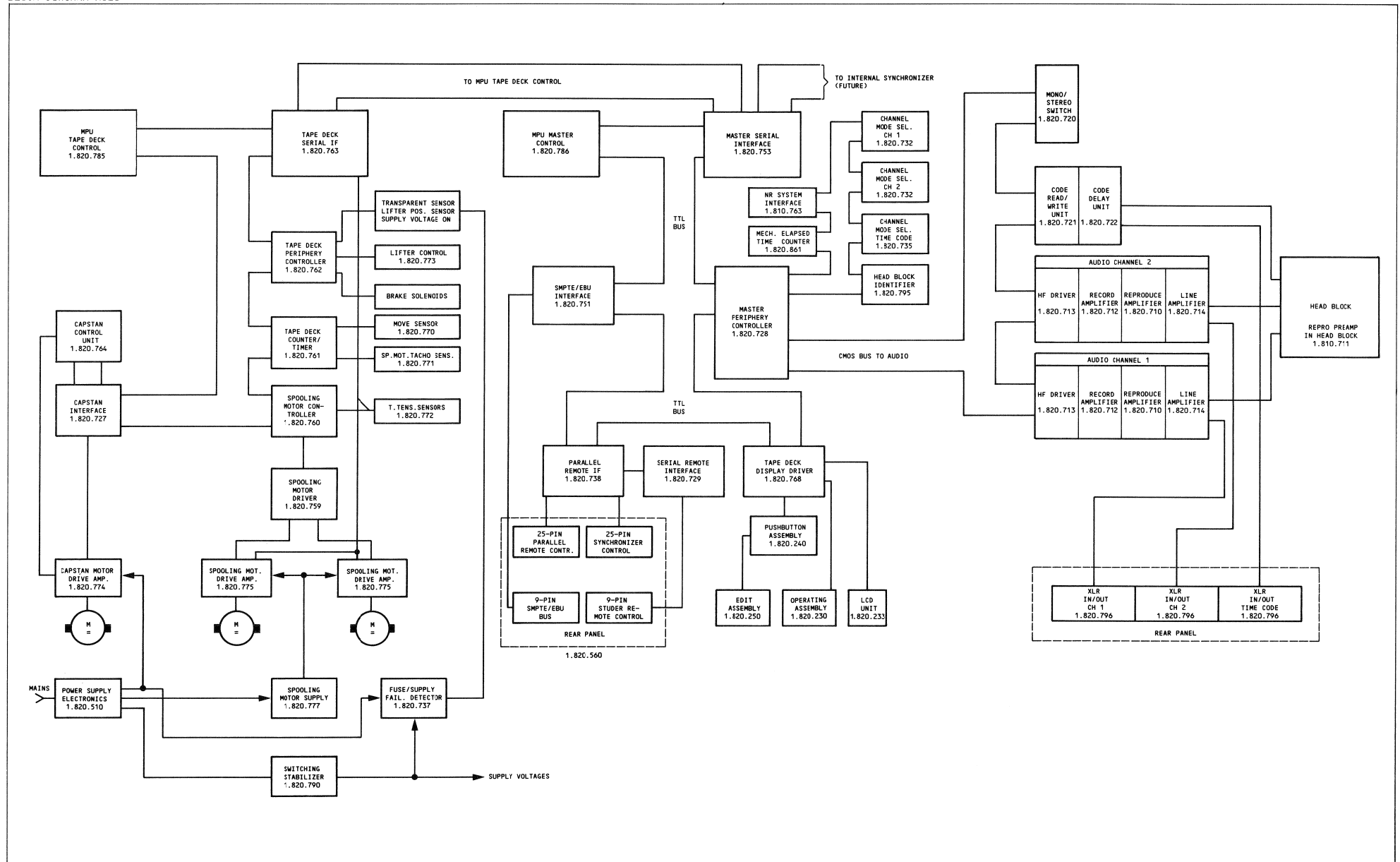
* WILLI STUDER AG * S I G N A L W I R E L I S T * 86/05/14 * 11:48 * P A G E 108 *

* 1.820.090.00 * STUDER A E20 * TAPE DECK & AUDIO * 83/02/23 - 00 *

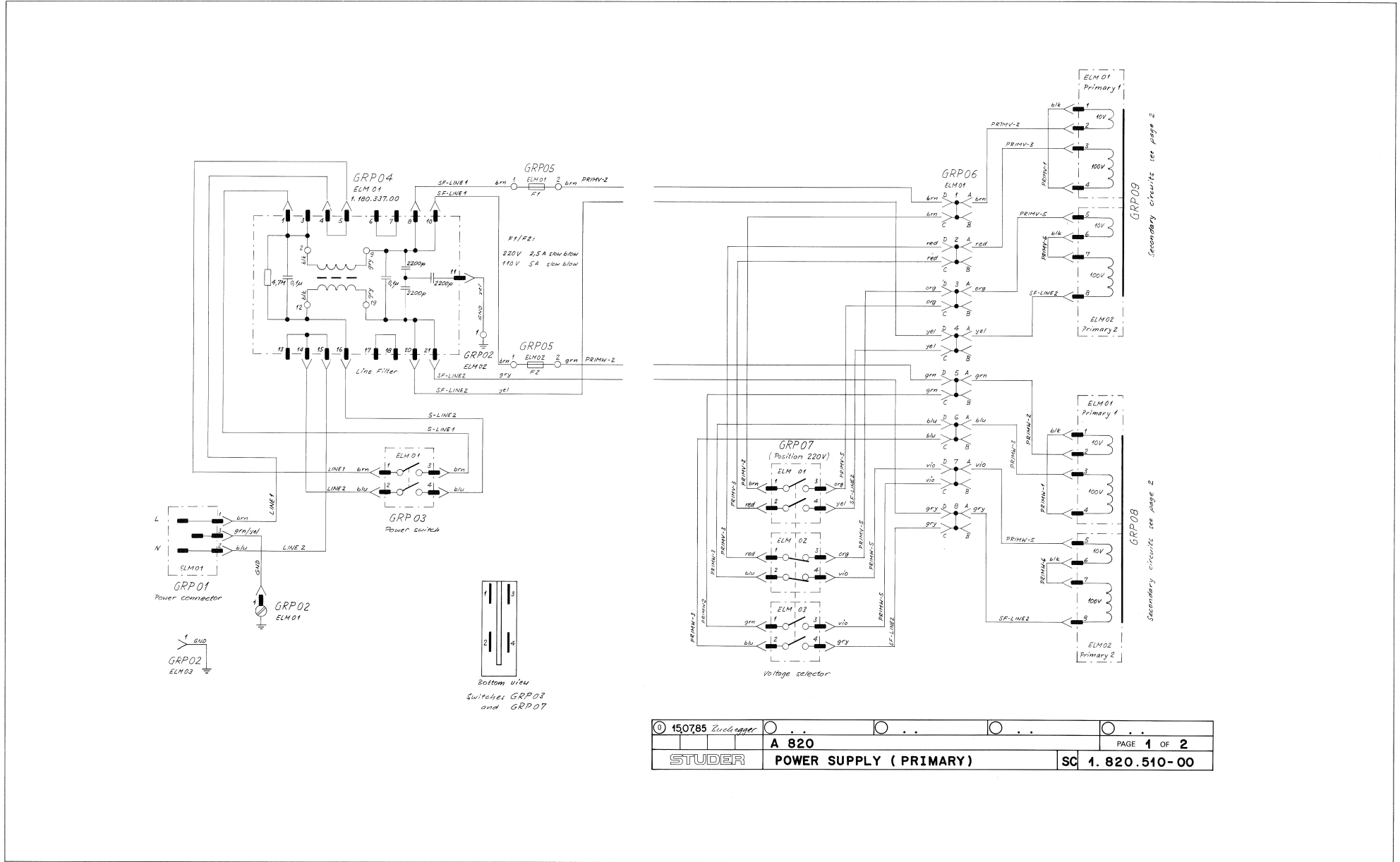
SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMNT NR.
TM-SL5				20	48	9B				MASTER SERIAL INTERFACE	J09	1.820.753.00
				20	49	24				MP-UNIT MASTER	J10	1.820.784.00
				20	50	24				SMPT/EBU INTERFACE	J11	1.820.751.00
TM-SL6				20	49	25				MP-UNIT MASTER	J10	1.820.784.00
				20	50	25				SMPT/EBU INTERFACE	J11	1.820.751.00
				20	51	14A				MASTER PERIPHERY CONTROLLER	J12	1.820.728.00
TM-SL7				20	49	15				MP-UNIT MASTER	J10	1.820.784.00
TM-TX				20	49	11				MP-UNIT MASTER	J10	1.820.784.00
				20	50	11				SMPT/EBU INTERFACE	J11	1.820.751.00
TR-A				25	1	3			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
				26	2	5				TO GRP25, ELM01	P02	
TR-B				25	1	7			B	CONN. AUTOLOCATOR, REMOTE TIMER	J01	
				26	2	4				TO GRP25, ELM01	P02	
TRANSA				20	31	3				TO GRP25, ELM04/05	P21	
				20	50	3				SMPT/EBU INTERFACE	J11	1.820.751.00
				25	4	2			B	CONNECTOR SMPT/EBU BUS	J04	
TRANSB				25	5	2			B	CONNECTOR SMPT/EBU BUS	J05	
				20	31	4				TO GRP25, ELM04/05	P21	
				20	50	4				SMPT/EBU INTERFACE	J11	1.820.751.00
TRANSCM				25	4	7			B	CONNECTOR SMPT/EBU BUS	J04	
				25	5	7			B	CONNECTOR SMPT/EBU BUS	J05	
				20	31	2				TO GRP25, ELM04/05	P21	
C.O VCU				20	50	2				SMPT/EBU INTERFACE	J11	1.820.751.00
				25	4	6			B	CONNECTOR SMPT/EBU BUS	J04	
				25	5	6			B	CONNECTOR SMPT/EBU BUS	J05	
				20	15	22				DISPLAY DRIVER	P15	
				20	15	24				DISPLAY DRIVER	P15	
				20	15	26				DISPLAY DRIVER	P15	
				20	15	28				DISPLAY DRIVER	P15	
				20	15	30				DISPLAY DRIVER	P15	
				20	15	32				DISPLAY DRIVER	P15	
				20	15	34				DISPLAY DRIVER	P15	
				20	15	36				DISPLAY DRIVER	P15	
				20	15	38				DISPLAY DRIVER	P15	
				20	15	40				DISPLAY DRIVER	P15	
				20	16	16				PARALLEL REMOTE CONTROL	P16	
				20	16	22				PARALLEL REMOTE CONTROL	P16	
				20	16	26				PARALLEL REMOTE CONTROL	P16	
				20	16	28				PARALLEL REMOTE CONTROL	P16	
			20	16	30				PARALLEL REMOTE CONTROL	P16		
			20	16	32				PARALLEL REMOTE CONTROL	P16		
			20	16	34				PARALLEL REMOTE CONTROL	P16		
			20	16	36				PARALLEL REMOTE CONTROL	P16		
			20	16	38				PARALLEL REMOTE CONTROL	P16		
			20	16	40				PARALLEL REMOTE CONTROL	P16		
			27	2	16				FROM GRP20, ELM16	P02		

SIGNAL NAME	COLOR	MI	ASY	GRP	ELM	PNT	S	LV	TYPE	DESCRIPTION OF ELEMENT	REMARK	ELEMENT NR.
<<--- COND. OF										FROM GRP20, ELM16	P02	
0-0 VCU										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM16	P02	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
										FROM GRP20, ELM15	P01	
GCAPHOT	4	11	3	4					L	RECTIFIER	D703	70-01-0231
	4	12	4	2					L	CAPACITOR	C04	59-26-7103
	4	12	5	9					M	CONNECTOR TO GRP32, ELM01	P01	
	4	19	1	23					F	FROM GRP32, ELM02	J01	
	4	19	2	23					M	TO GRP21, ELM02	P01	
	4	20	62	8					L	WIRE FIELD		
	4	20	62	9					L	WIRE FIELD		
	4	20	70	23					F	FROM GRP21, ELM01	J13	
	4	20	71	1					F	TO CAPSTAN MOTOR DRIVE AMP.		
		21	1	23					M	TO GRP20, ELM70	P01	
		21	2	23					F	FROM GRP19, ELM02	J01	
		32	1	9					F	INPUT FROM GRP12, ELM05	J01	
		32	2	23					M	OUTPUT	P01	
		39	3	1					M	FROM GRP20, ELM71	P03	

BLOCK DIAGRAM A820

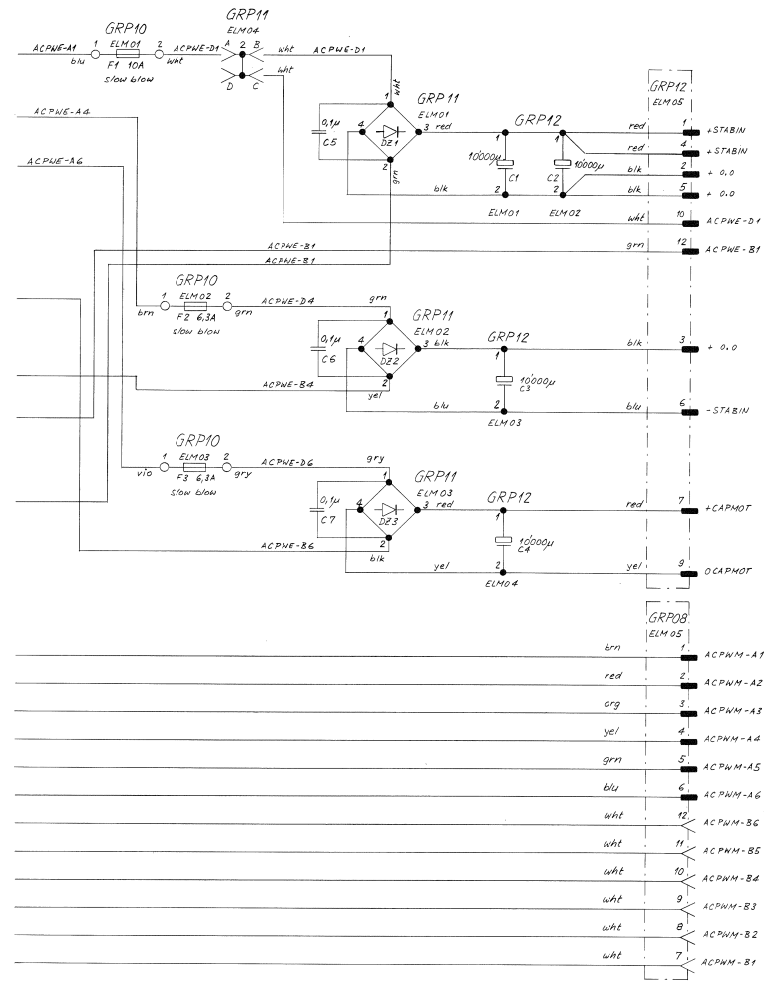
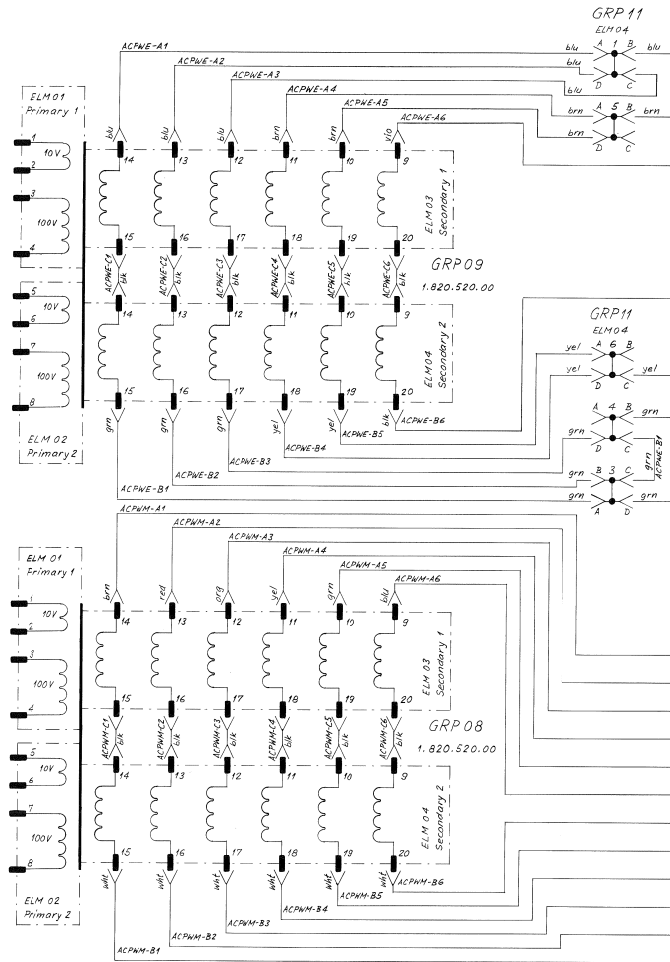


POWER SUPPLY (PRIMARY) 1.820.510.00 GRP 01...09



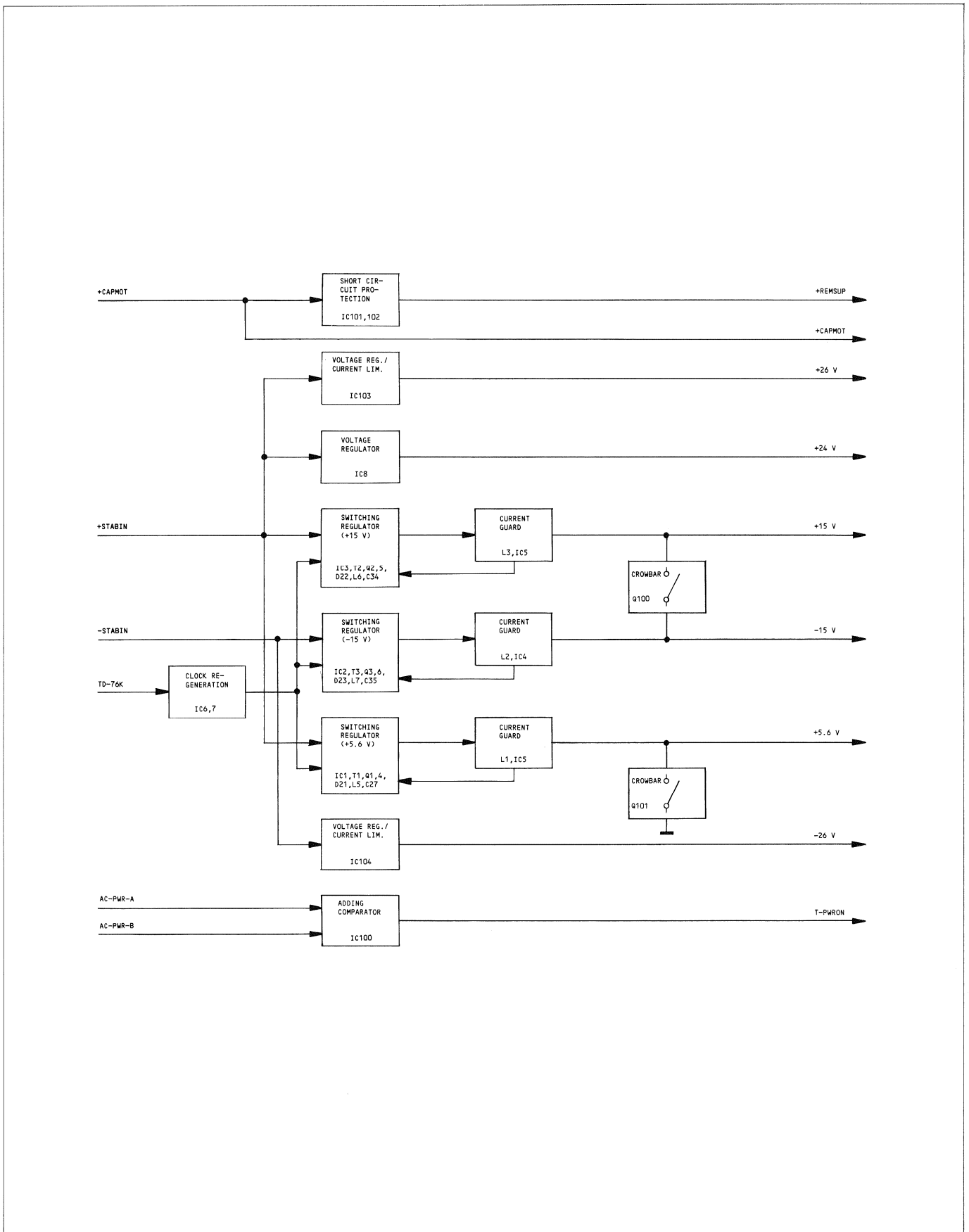
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STUDER	POWER SUPPLY (PRIMARY)	SC 1.820.510-00

POWER SUPPLY (SECONDARY) 1.820.510.00 GRP 09...12

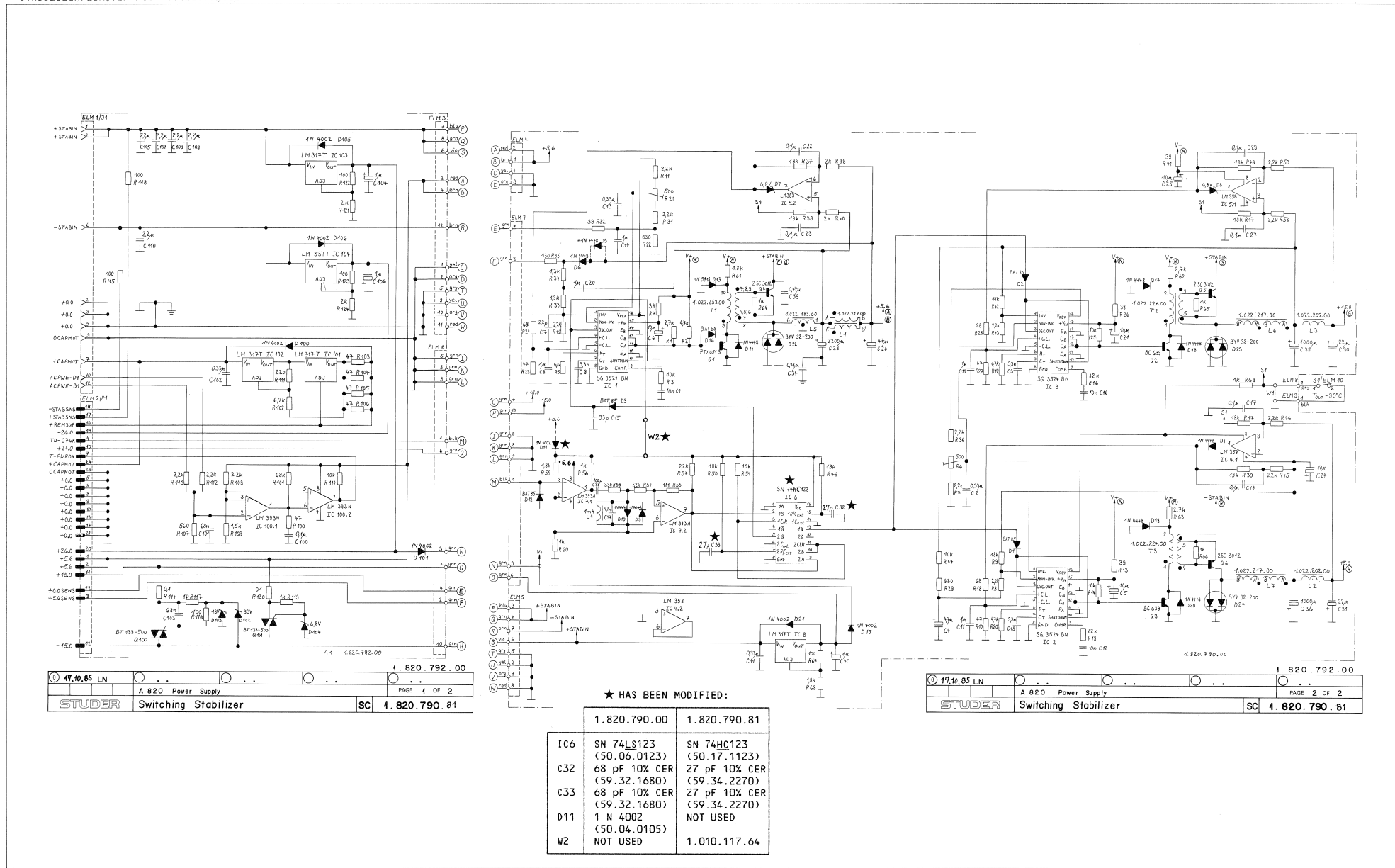


150785	Zuehopper						
A 820				PAGE 2 OF 2			
STUDER				POWER SUPPLY (SECONDARY)		SC 1.820.510-00	

BLOCK DIAGRAM SWITCHING STABILIZER PCB 1.820.790
STABILIZER/LIMITER PCB 1.820.792



SWITCHING STABILIZER PCB 1.820.790.00/.81 GRP32
 - STABILIZER/LIMITER PCB 1.820.792.00



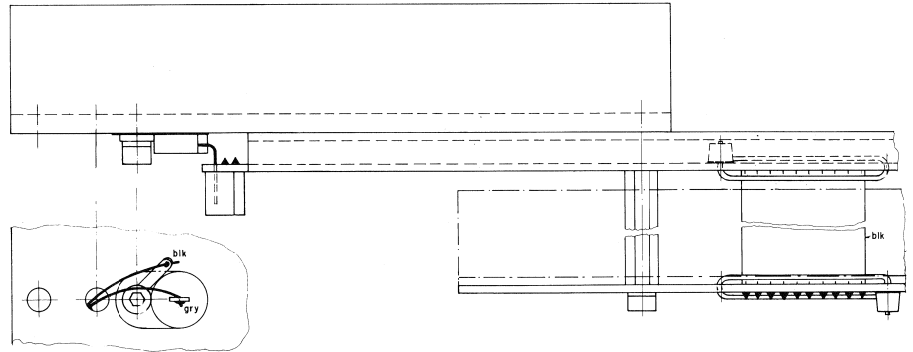
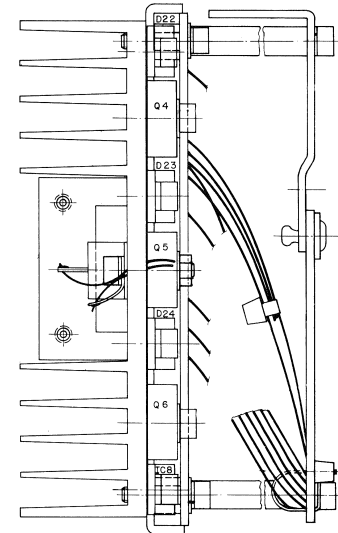
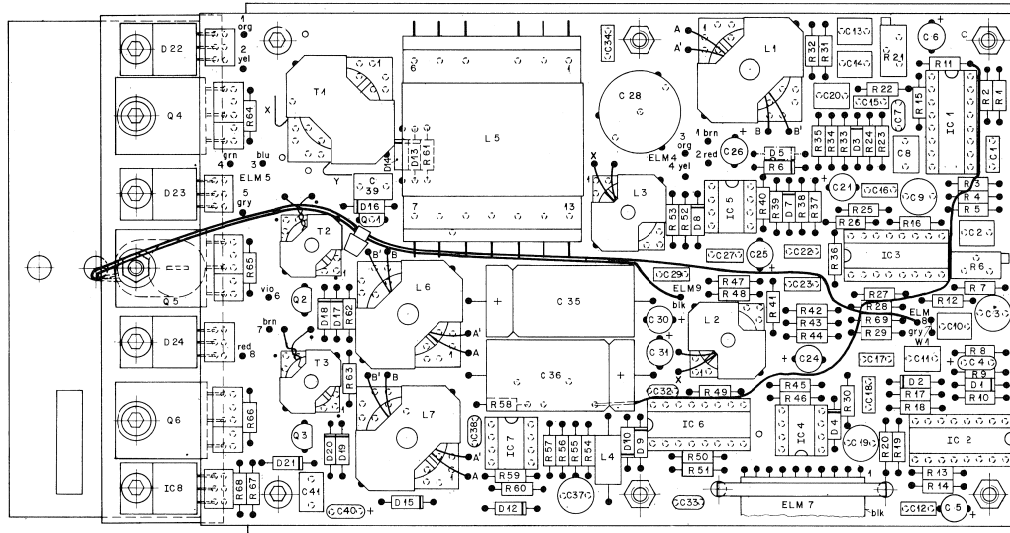
17.10.85 LN
 STUDER A 820 Power Supply SC 1.820.790.81
 PAGE 1 OF 2

17.10.85 LN
 STUDER A 820 Power Supply SC 1.820.792.81
 PAGE 2 OF 2

★ HAS BEEN MODIFIED:

	1.820.790.00	1.820.792.00
I06	SN 74LS123 (50.06.0123)	SN 74HC123 (50.17.1123)
C32	68 pF 10% CER (59.32.1680)	27 pF 10% CER (59.34.2270)
C33	68 pF 10% CER (59.32.1680)	27 pF 10% CER (59.34.2270)
D11	1 N 4002 (50.04.0105)	NOT USED
W2	NOT USED	1.010.117.64

SWITCHING STABILIZER PCB 1.820.790.81 GRP32

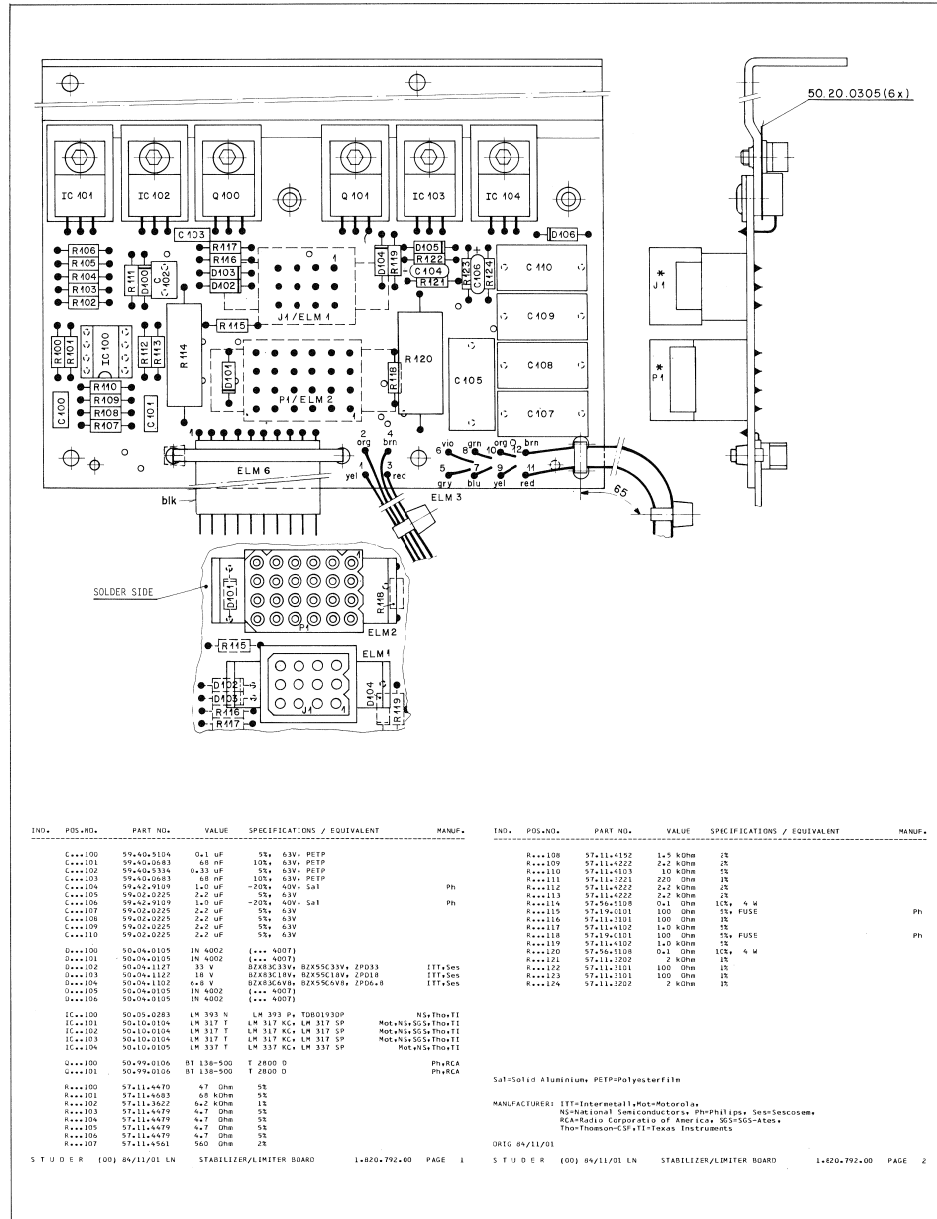


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
A.....1	1.820.792-00			Stabilizer/Limiter Board	SE
C.....1	59.06-0103	10 pF	10% 03W PEFP		
C.....2	59.06-0354	0.33 uF	10% 03W PEFP		
C.....3	59.25-2332	3.3 uF	2.5% 180V PP		
C.....4	59.26-0474	4.7 uF	20% 25V S1		Ph
C.....5	59.22-4100	10 uF	20% 25V E1		
C.....6	59.22-4100	10 uF	20% 25V E1		
C.....7	59.34-0279	2.2 uF	5% 03W Co		
C.....8	59.06-0105	1 uF	5% 03W PEFP		
C.....9	59.25-2332	3.3 uF	2.5% 180V PP		
C.....10	59.06-0105	1 uF	5% 03W PEFP		
C.....11	59.26-0105	1 uF	5% 03W PEFP		
C.....12	59.06-0103	10 pF	10% 03W PEFP		
C.....13	59.06-0354	0.33 uF	10% 03W PEFP		
C.....14	59.06-0105	1 uF	5% 03W PEFP		
C.....15	59.32-1335	33 pF	10% Co		
C.....16	59.06-0105	1 uF	10% 03W PEFP		
C.....17	59.06-0104	0.1 uF	5% 03W PEFP		

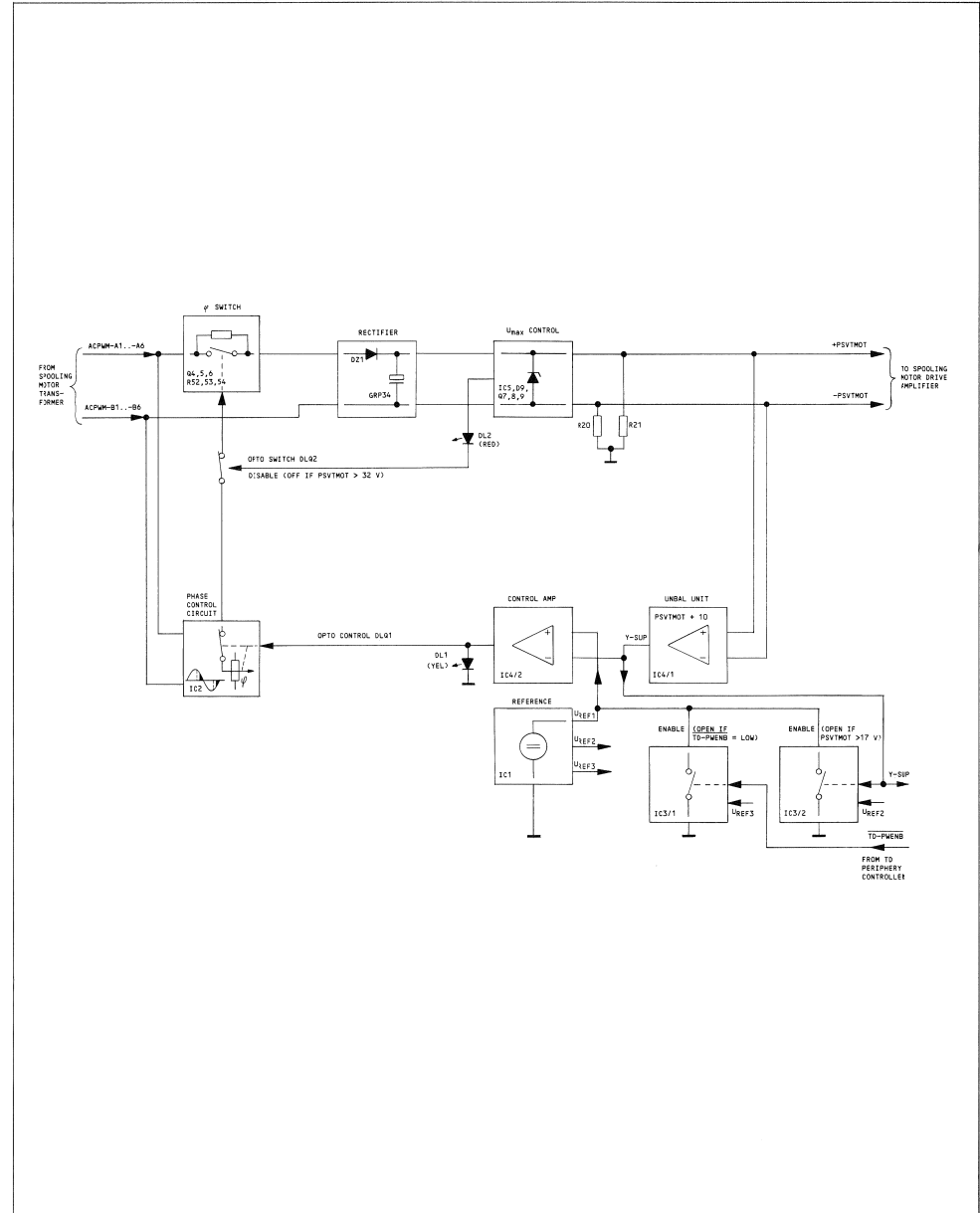
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....18	59.06-0104	0.1 uF	5% 03W PEFP		
C.....19	59.06-2332	3.3 uF	2.5% 180V PP		
C.....20	59.26-0105	1 uF	5% 03W PEFP		
C.....21	59.24-0100	10 uF	20% 25V E1		
C.....22	59.06-0104	0.1 uF	5% 03W PEFP		
C.....23	59.06-0104	0.1 uF	5% 03W PEFP		
C.....24	59.22-4100	10 uF	20% 25V E1		
C.....25	59.22-4100	10 uF	20% 25V E1		
C.....26	59.22-4100	10 uF	20% 25V E1		
C.....27	59.06-0104	0.1 uF	5% 03W PEFP		
C.....28	59.22-4222	2200 uF	20% 10V E1		
C.....29	59.06-0104	0.1 uF	5% 03W PEFP		
C.....30	59.22-2320	22 uF	20% 25V E1		
C.....31	59.22-2320	22 uF	20% 25V E1		
C.....32	59.24-0270	27 pF	10% Co		
C.....33	59.24-0270	27 pF	10% Co		
C.....34	59.06-0174	0.47 uF	10% 03W PEFP		
C.....35	59.25-0122	1.000 uF	20% 25V E1		

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....1	50.05-0279	SG 3524 BN			SG
IC.....2	50.05-0279	SG 3524 BN			SG
IC.....3	50.05-0279	SG 3524 BN			SG
IC.....4	50.05-0286	LH 358 N			LM 358 P
IC.....5	50.05-0286	LH 358 N			LM 358 P
IC.....6	50.21-1473	70 MC 323M			70 MC 323M
IC.....7	50.05-0283	LH 393 N			LM 393 P, TD0193DP
IC.....8	50.10-0104	LM 317 T			LM 317 Kc, LM 317 Sp
L.....1	1.022-217-00	11.5 uH		HF-Coil	ST
L.....2	1.022-202-00	16.5 uH		HF-Coil	ST
L.....3	1.022-202-00	16.5 uH		HF-Coil	ST
L.....4	62-01-028	1 uH		see note 1	ST
L.....5	1.022-189-00	130 uH		HF-Coil	ST
L.....6	1.022-217-00	11.5 uH		HF-Coil	ST
L.....7	1.022-217-00	11.5 uH		HF-Coil	ST
Q.....1	50.03-0515	67X 851 5		Fa	MoTePh
Q.....2	50.03-0511	8E 439		MoTePh	NEC
Q.....3	50.03-0517	Z 5C 3012		NEC	NEC
Q.....4	50.03-0517	Z 5C 3012		NEC	NEC
R.....1	57-11-472	2.7 kOhm	5%		
R.....2	57-11-3472	4.7 kOhm	5%		
R.....3	57-11-3103	10 kOhm	5%		
R.....4	57-11-4390	39 Ohm	5%		
R.....5	57-11-3472	4.7 kOhm	5%		
R.....6	58-05-0501	500 Ohm		see note 2	
R.....7	57-11-3222	2.2 kOhm	5%		
R.....8	57-11-3222	2.2 kOhm	5%		
R.....9	57-11-3470	4.7 Ohm	1%		
R.....10	57-11-3183	18 kOhm	5%		
R.....11	57-11-3222	2.2 kOhm	5%		
R.....12	57-11-3472	4.7 kOhm	5%		
R.....13	57-11-3103	39 Ohm	5%		
R.....14	57-11-3103	10 kOhm	5%		
R.....15	57-11-3222	2.2 kOhm	5%		
R.....16	57-11-4023	82 kOhm	2%		
R.....17	57-11-3183	18 kOhm	5%		
R.....18	57-11-3000	08 Ohm	1%		
R.....19	57-11-4023	82 kOhm	2%		
R.....20	57-11-3472	4.7 kOhm	5%		
R.....21	58-05-0501	500 Ohm		see note 2	
R.....22	57-11-4331	330 Ohm	2%		
R.....23	57-11-3183	18 kOhm	5%		
R.....24	57-11-3680	08 Ohm	1%		
R.....25	57-11-3183	18 kOhm	5%		
R.....26	57-11-4390	39 Ohm	5%		
R.....27	57-11-3183	18 kOhm	5%		
R.....28	57-11-3680	08 Ohm	1%		
R.....29	57-11-3183	18 kOhm	5%		
R.....30	57-11-3183	18 kOhm	5%		
R.....31	57-11-3222	2.2 kOhm	5%		
R.....32	57-11-4330	33 Ohm	2%		
R.....33	57-11-3183	1.5 kOhm	5%		
R.....34	57-11-3183	18 kOhm	5%		
R.....35	57-11-3183	18 kOhm	5%		
R.....36	57-11-3222	2.2 kOhm	5%		
R.....37	57-11-3183	18 kOhm	5%		
R.....38	57-11-3183	18 kOhm	5%		
R.....39	57-11-3183	18 kOhm	5%		
R.....40	57-11-3202	2 kOhm	5%		
R.....41	57-11-3183	18 kOhm	5%		
R.....42	57-11-3113	11 kOhm	5%		
R.....43	57-11-3222	2.2 kOhm	5%		
R.....44	57-11-3103	10 kOhm	5%		
R.....45	57-11-3222	2.2 kOhm	5%		
R.....46	57-11-3183	18 kOhm	5%		
R.....47	57-11-3183	18 kOhm	5%		
R.....48	57-11-3183	18 kOhm	5%		
R.....49	57-11-3183	18 kOhm	5%		
R.....50	57-11-3183	18 kOhm	5%		
R.....51	57-11-3103	10 kOhm	5%		
R.....52	57-11-3222	2.2 kOhm	5%		
R.....53	57-11-3222	2.2 kOhm	5%		
R.....54	57-11-4105	1 kOhm	2%		
R.....55	57-11-4105	1 kOhm	2%		
R.....56	57-11-3183	1.8 kOhm	5%		
R.....57	57-11-3222	2.2 kOhm	5%		
R.....58	57-11-3131	33 kOhm	5%		
R.....59	57-11-3182	1.8 kOhm	5%		
R.....60	57-11-4102	1 kOhm	5%		
R.....61	57-11-4772	2.7 kOhm	5%		
R.....62	57-11-4102	1 kOhm	5%		
R.....63	57-11-4772	2.7 kOhm	5%		
R.....64	57-11-4102	1 kOhm	5%		
R.....65	57-11-4102	1 kOhm	5%		
R.....66	57-11-4102	1 kOhm	5%		
R.....67	57-11-3101	100 Ohm	1%		
R.....68	57-11-3182	1.8 kOhm	5%		
R.....69	57-11-4102	1 kOhm	5%		
S.....1	59-99-0133			see note 3	
T.....1	1.022-253-00			Power Supply Drive Transformer	St
T.....2	1.022-274-00			Power Supply Transformer	St
T.....3	1.022-274-00			Power Supply Transformer	St
W.....1	1.010-117-66			wire bridge	St
W.....2				wire bridge	St
Note 1				1 - 1 mH Inductivity, 10% GamaWda Nr. 17 - 10% 1 mH 500 Ohm Nr. 164 10% 1 mH	
Note 2				500 Ohm Potentiometer 11w, 10% Bourns Nr. 3296 Z - 1 - 501 Spectrol Nr. 56 Z 501 000 Murata Nr. POF 3105 Z - 1 - 501	
Note 3				Thermoswitch, 90 degrees Celsius Electrovac Nr. 2930B2	
MANUFACTURER:				FC:Fairchild, Fo:Fairmetall, IT:Intermetall, Mo:Motorola, Ne:National Electric Corporation, N:National Semiconductor, Ph:Philips, Sp:Speskoson, SG:Silicon General, S:Studer, T:Telefunken, Th:Thomson, Te:Texas Instruments.	
DATE:				08/95/19/17	

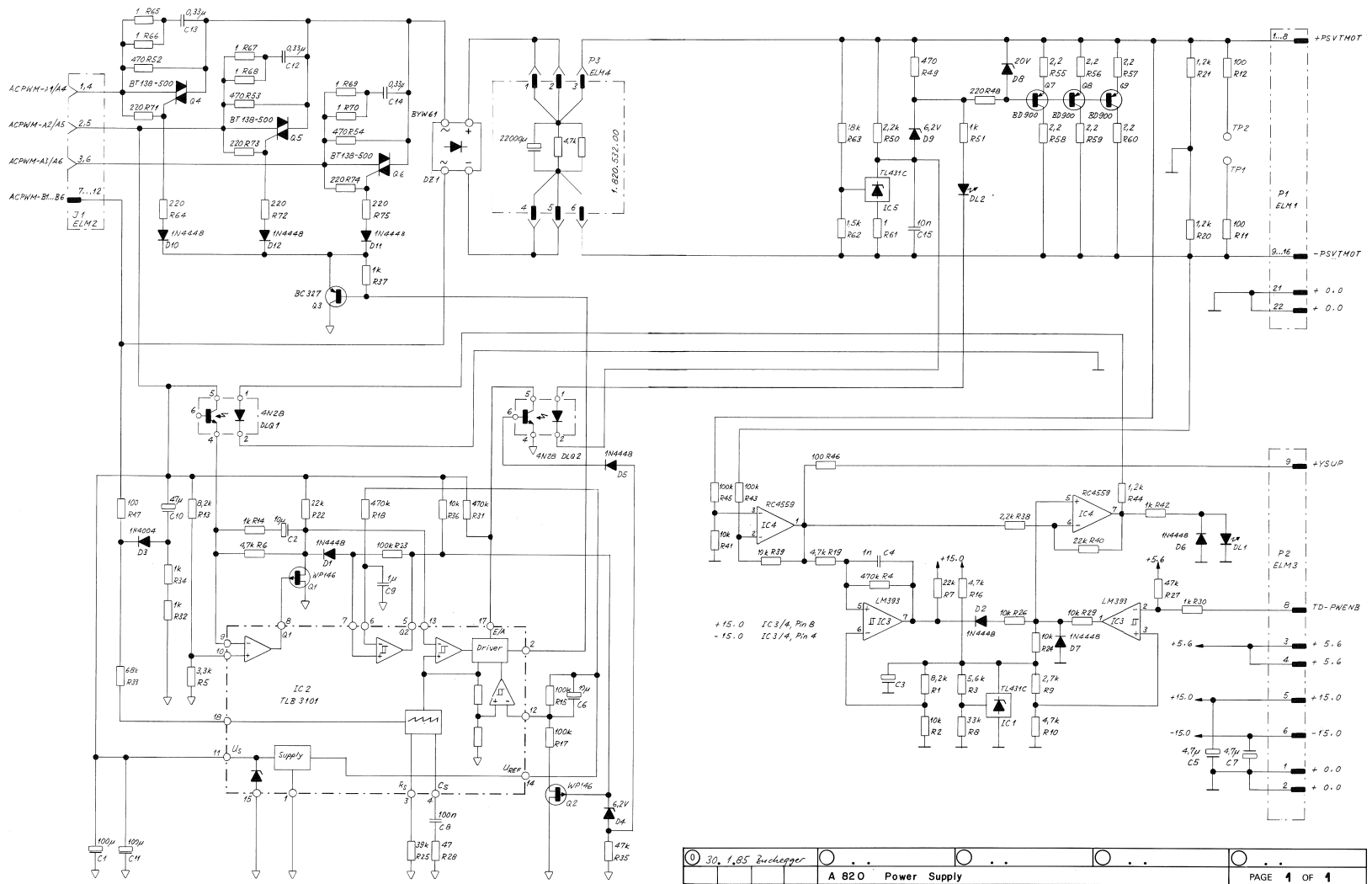
STABILIZER/LIMITER PCB 1.820.792.00



BLOCK DIAGRAM SPOOLING MOTOR SUPPLY PCB "ESE" 1.820.777

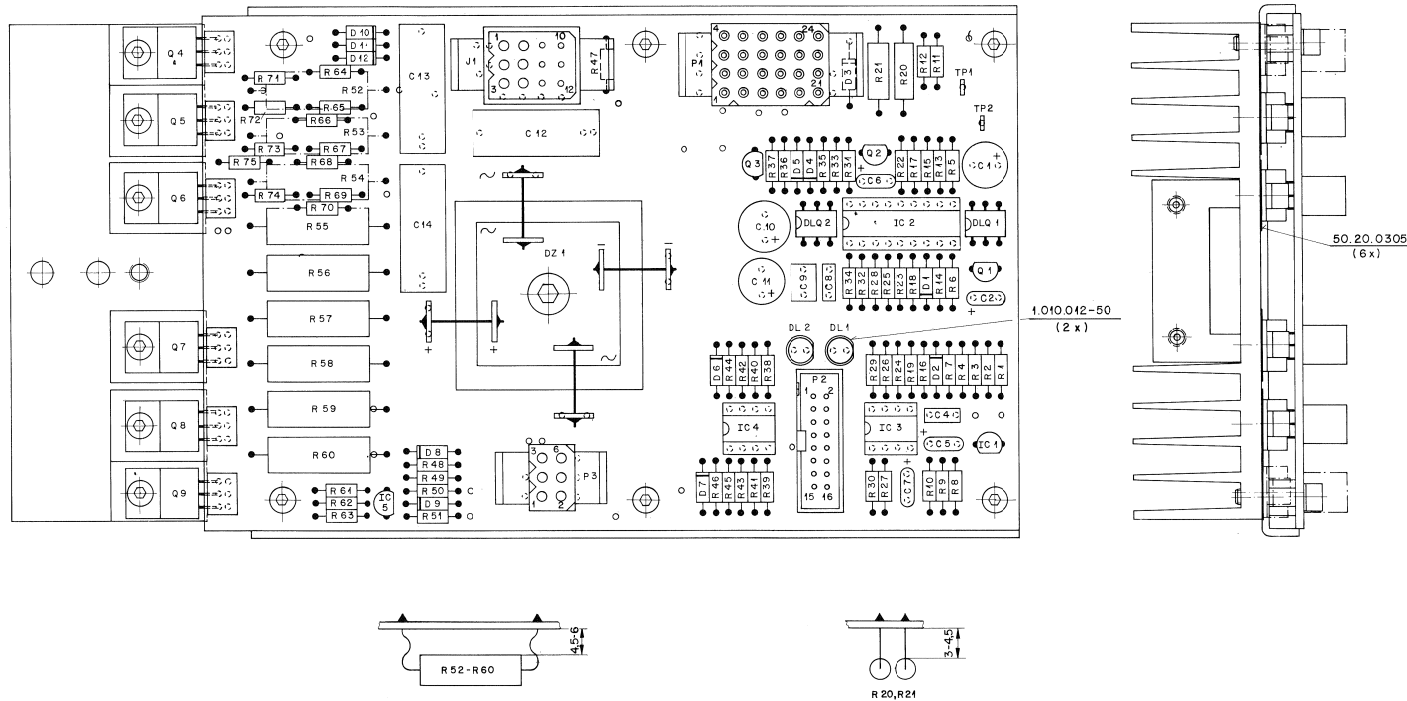


SPOOLING MOTOR SUPPLY PCB "ESE" 1.820.777.00 GRP 31



30, 1.85 Buchegger	A 820 Power Supply	PAGE 1 OF 1
STUDER	Spooling Motor Supply	SC 1.820.777.00

SPOOLING MOTOR SUPPLY PCB "ESE" 1.820.777.00 GRP 31



IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R	50	57.96.4471	470 Ohm	5%	4 W
R	51	57.96.4471	470 Ohm	5%	4 W
R	52	57.96.5229	242 Ohm	10%	4 W
R	53	57.96.5229	242 Ohm	10%	4 W
R	54	57.96.5229	242 Ohm	10%	4 W
R	55	57.96.5229	242 Ohm	10%	4 W
R	56	57.96.5229	242 Ohm	10%	4 W
R	57	57.96.5229	242 Ohm	10%	4 W
R	58	57.96.5229	242 Ohm	10%	4 W
R	59	57.96.5229	242 Ohm	10%	4 W
R	60	57.96.5229	242 Ohm	10%	4 W
R	61	57.11.4109	1 Ohm	5%	1 W
R	62	57.11.3153	1.5 kOhm	5%	1 W
R	63	57.11.3153	18 kOhm	5%	1 W
R	64	57.11.4221	220 Ohm	5%	1 W
R	65	57.11.4109	1 Ohm	5%	1 W
R	66	57.11.4109	1 Ohm	5%	1 W
R	67	57.11.4109	1 Ohm	5%	1 W
R	68	57.11.4109	1 Ohm	5%	1 W
R	69	57.11.4109	1 Ohm	5%	1 W
R	70	57.11.4221	220 Ohm	5%	1 W
R	71	57.11.4221	220 Ohm	5%	1 W
R	72	57.11.4221	220 Ohm	5%	1 W
R	73	57.11.4221	220 Ohm	5%	1 W
R	74	57.11.4221	220 Ohm	5%	1 W
R	75	57.11.4221	220 Ohm	5%	1 W

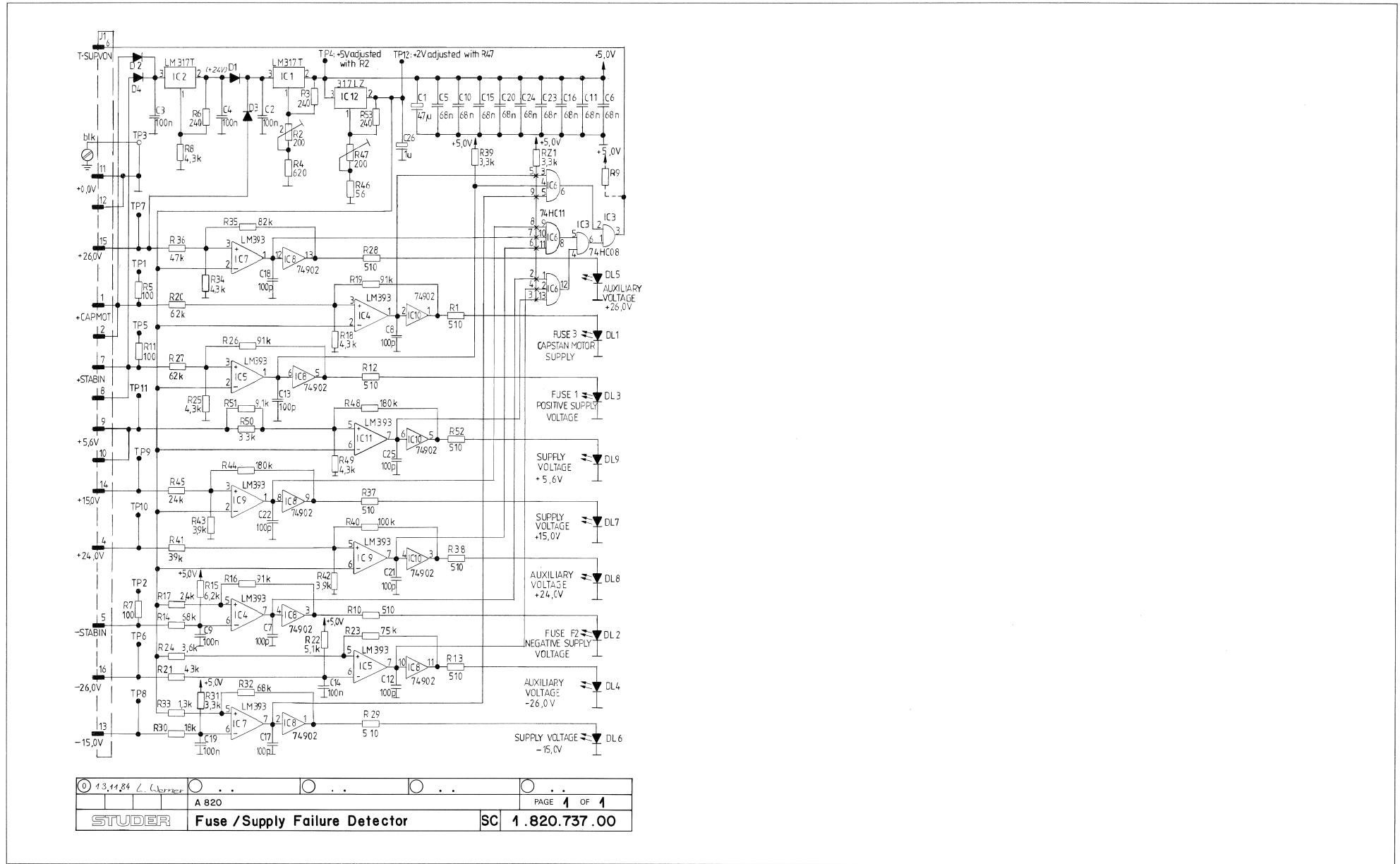
IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C	1	59.22.5101	100 uF	-20% 25V E3	
C	2	59.26.2100	10 uF	20% 16V SAI	Ph
C	3	59.26.2100	10 uF	20% 16V SAI	Ph
C	4	59.26.2100	10 uF	20% 16V SAI	Ph
C	5	59.26.2100	10 uF	20% 16V SAI	Ph
C	6	59.26.2100	10 uF	20% 16V SAI	Ph
C	7	59.26.2100	10 uF	20% 16V SAI	Ph
C	8	59.26.2100	10 uF	20% 16V SAI	Ph
C	9	59.26.2100	10 uF	20% 16V SAI	Ph
C	10	59.26.2100	10 uF	20% 16V SAI	Ph
C	11	59.22.5101	100 uF	20% 25V E3	
C	12	59.22.5101	100 uF	20% 25V E3	
C	13	59.05.4334	330 nF	10% 400V PP	
C	14	59.05.4334	330 nF	10% 400V PP	
C	15	59.05.4334	330 nF	10% 400V PP	

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC	1	50.10.0106	TL431CIP	TL431CIP	Not TI
IC	2	50.11.0130	TL8 3161	TL8 3161	Not TI
IC	3	50.05.0283	LM 393 N	LM 393 N	NS/ThomTI
IC	4	50.06.0107	RC45598B	RC45598B	KwNEC
IC	5	50.10.0106	TL431CIP	TL431CIP	Not TI

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R	16	57.11.4472	4.7 kOhm	5%	
R	17	57.11.3194	100 kOhm	5%	
R	18	57.11.4472	4.7 kOhm	5%	
R	19	57.11.4472	4.7 kOhm	5%	
R	20	57.11.4472	4.7 kOhm	5%	
R	21	57.11.4472	4.7 kOhm	5%	
R	22	57.11.4472	4.7 kOhm	5%	
R	23	57.11.4472	4.7 kOhm	5%	
R	24	57.11.4472	4.7 kOhm	5%	
R	25	57.11.4472	4.7 kOhm	5%	
R	26	57.11.4472	4.7 kOhm	5%	
R	27	57.11.4472	4.7 kOhm	5%	
R	28	57.11.4472	4.7 kOhm	5%	
R	29	57.11.4472	4.7 kOhm	5%	
R	30	57.11.4472	4.7 kOhm	5%	
R	31	57.11.4472	4.7 kOhm	5%	
R	32	57.11.4472	4.7 kOhm	5%	
R	33	57.11.4472	4.7 kOhm	5%	
R	34	57.11.4472	4.7 kOhm	5%	
R	35	57.11.4472	4.7 kOhm	5%	
R	36	57.11.4472	4.7 kOhm	5%	
R	37	57.11.4472	4.7 kOhm	5%	
R	38	57.11.4472	4.7 kOhm	5%	
R	39	57.11.3153	18 kOhm	5%	
R	40	57.11.4472	4.7 kOhm	5%	
R	41	57.11.3153	18 kOhm	5%	
R	42	57.11.4472	4.7 kOhm	5%	
R	43	57.11.3153	18 kOhm	5%	
R	44	57.11.4472	4.7 kOhm	5%	
R	45	57.11.3153	18 kOhm	5%	
R	46	57.11.4472	4.7 kOhm	5%	
R	47	57.11.3153	18 kOhm	5%	
R	48	57.11.4472	4.7 kOhm	5%	
R	49	57.11.4472	4.7 kOhm	5%	
R	50	57.11.3153	18 kOhm	5%	
R	51	57.11.4472	4.7 kOhm	5%	
R	52	57.11.3153	18 kOhm	5%	
R	53	57.11.4472	4.7 kOhm	5%	
R	54	57.11.3153	18 kOhm	5%	
R	55	57.11.4472	4.7 kOhm	5%	

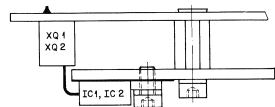
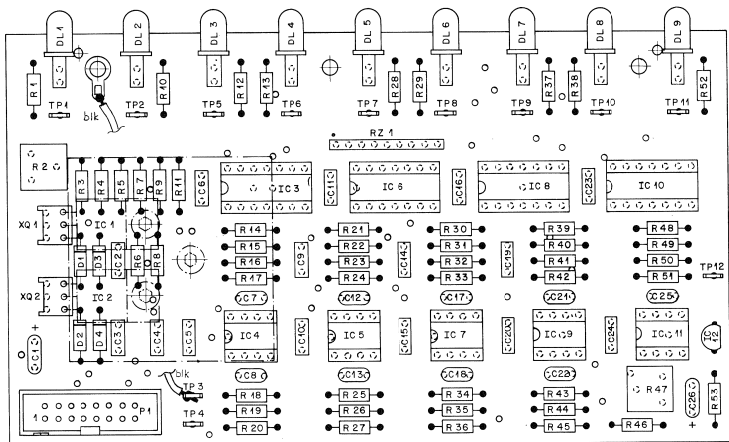
IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
DL	1	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	2	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	3	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	4	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	5	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	6	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	7	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	8	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	9	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	10	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	11	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	12	50.04.0123	1N 4448	FC:ITT-PH:Sm:TF	
DL	1	50.04.1112	MY 5353	CM 4-58% Gx WLM-3401	GL:Ch:Ph
DL	2	50.04.0113	MY 5753	CM 4-24% Gx WLM-3101	GL:Ch:Ph
DL	1	50.49.0126	4N 28	4N 28	Met
DL	2	50.49.0126	4N 28	4N 28	Met
DF	1	70.01.0231	BYV 61	3p 10 A	JR:Met

FUSE/SUPPLY FAILURE DETECTOR PCB "ESE" 1.820.737.00 GRP 59



13,1184 L. Wagner	A 820	PAGE 1 OF 1
STUDER	Fuse /Supply Failure Detector	SC 1.820.737.00

FUSE/SUPPLY FAILURE DETECTOR PCB "ESE" 1.820.737.00 GRP 59



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....1	59.26.0470	47	µF	20%, 6-3V	PH
C....2	59.26.0104	100	nF	10%	SIO
C....3	59.26.0104	100	nF	10%	SIO
C....4	59.26.0104	100	nF	10%	SIO
C....5	59.26.0683	68	nF	20%	SIO
C....6	59.26.0683	68	nF	20%	SIO
C....7	59.26.0101	100	µF	10%	PH
C....8	59.26.0101	100	µF	10%	PH
C....9	59.26.0104	100	nF	10%	SIO
C....10	59.26.0683	68	nF	20%	SIO
C....11	59.26.0683	68	nF	20%	SIO
C....12	59.26.0101	100	µF	10%	PH
C....13	59.26.0101	100	µF	10%	PH
C....14	59.26.0104	100	nF	10%	SIO
C....15	59.26.0683	68	nF	20%	SIO
C....16	59.26.0101	100	µF	10%	PH
C....17	59.26.0101	100	µF	10%	PH
C....18	59.26.0683	68	nF	20%	SIO
C....19	59.26.0104	100	nF	10%	SIO
C....20	59.26.0683	68	nF	20%	SIO
C....21	59.26.0101	100	µF	10%	PH
C....22	59.26.0101	100	µF	10%	PH
C....23	59.26.0683	68	nF	20%	SIO
C....24	59.26.0683	68	nF	20%	SIO
C....25	59.26.0101	100	µF	10%	PH
C....26	59.26.0109	1.0	µF	20%, 6-3V	PH

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
O.....1	50.26.0122	1N 4001	(FIS 4004)		MOt:Li:SoI
O.....2	50.26.0122	1N 4001	(FIS 4004)		MOt:Gi:SoI
O.....3	50.26.0122	1N 4001	(FIS 4004)		MOt:Si:SoI
O.....4	50.26.0122	1N 4001	(FIS 4004)		MOt:Li:SoI
O.....5	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....6	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....7	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....8	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....9	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP

STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
RZ....1	5T.9844332	3x3	6x3mm	10%	see note 3
TP....1	59.02.0320				Testpoint
TP....2	59.02.0320				Testpoint
TP....3	59.02.0320				Testpoint
TP....4	59.02.0320				Testpoint
TP....5	59.02.0320				Testpoint
TP....6	59.02.0320				Testpoint
TP....7	59.02.0320				Testpoint
TP....8	59.02.0320				Testpoint
TP....9	59.02.0320				Testpoint
TP....10	59.02.0320				Testpoint
TP....11	59.02.0320				Testpoint
TP....12	59.02.0320				Testpoint
XQ....1	50.20.1017				TQ 220 plug; see note 4
XQ....2	50.20.1017				TQ 220 plug; see note 4

STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
O.....0	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....1	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....2	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....3	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....4	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP

STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
O.....0	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....1	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....2	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....3	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
O.....4	50.26.0113	50	µF	M 5453JLHP 3507	Mt:Ca:MP
I.....0	50.10.0104	LN 317 T			MOt:Ca:MP
I.....1	50.10.0104	LN 317 T			MOt:Ca:MP
I.....2	50.10.0104	LN 317 T			MOt:Ca:MP
I.....3	50.10.0104	LN 317 T			MOt:Ca:MP
I.....4	50.10.0104	LN 317 T			MOt:Ca:MP
I.....5	50.10.0104	LN 317 T			MOt:Ca:MP
I.....6	50.10.0104	LN 317 T			MOt:Ca:MP
I.....7	50.10.0104	LN 317 T			MOt:Ca:MP
I.....8	50.10.0104	LN 317 T			MOt:Ca:MP
I.....9	50.10.0104	LN 317 T			MOt:Ca:MP
I.....10	50.10.0104	LN 317 T			MOt:Ca:MP
I.....11	50.10.0104	LN 317 T			MOt:Ca:MP
I.....12	50.10.0104	LN 317 T			MOt:Ca:MP
P.....0	54.14.0202				Plug; see note 1
R.....0	57.11.9511	510	Ω		2%
R.....1	57.11.9511	510	Ω		2%
R.....2	57.11.9511	510	Ω		2%
R.....3	57.11.9511	510	Ω		2%
R.....4	57.11.9511	510	Ω		2%
R.....5	57.11.9511	510	Ω		2%
R.....6	57.11.9511	510	Ω		2%
R.....7	57.11.9511	510	Ω		2%
R.....8	57.11.9511	510	Ω		2%
R.....9	57.11.9511	510	Ω		2%
R.....10	57.11.9511	510	Ω		2%
R.....11	57.11.9511	510	Ω		2%
R.....12	57.11.9511	510	Ω		2%
R.....13	57.11.9511	510	Ω		2%
R.....14	57.11.9511	510	Ω		2%
R.....15	57.11.9511	510	Ω		2%
R.....16	57.11.9511	510	Ω		2%

STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 2

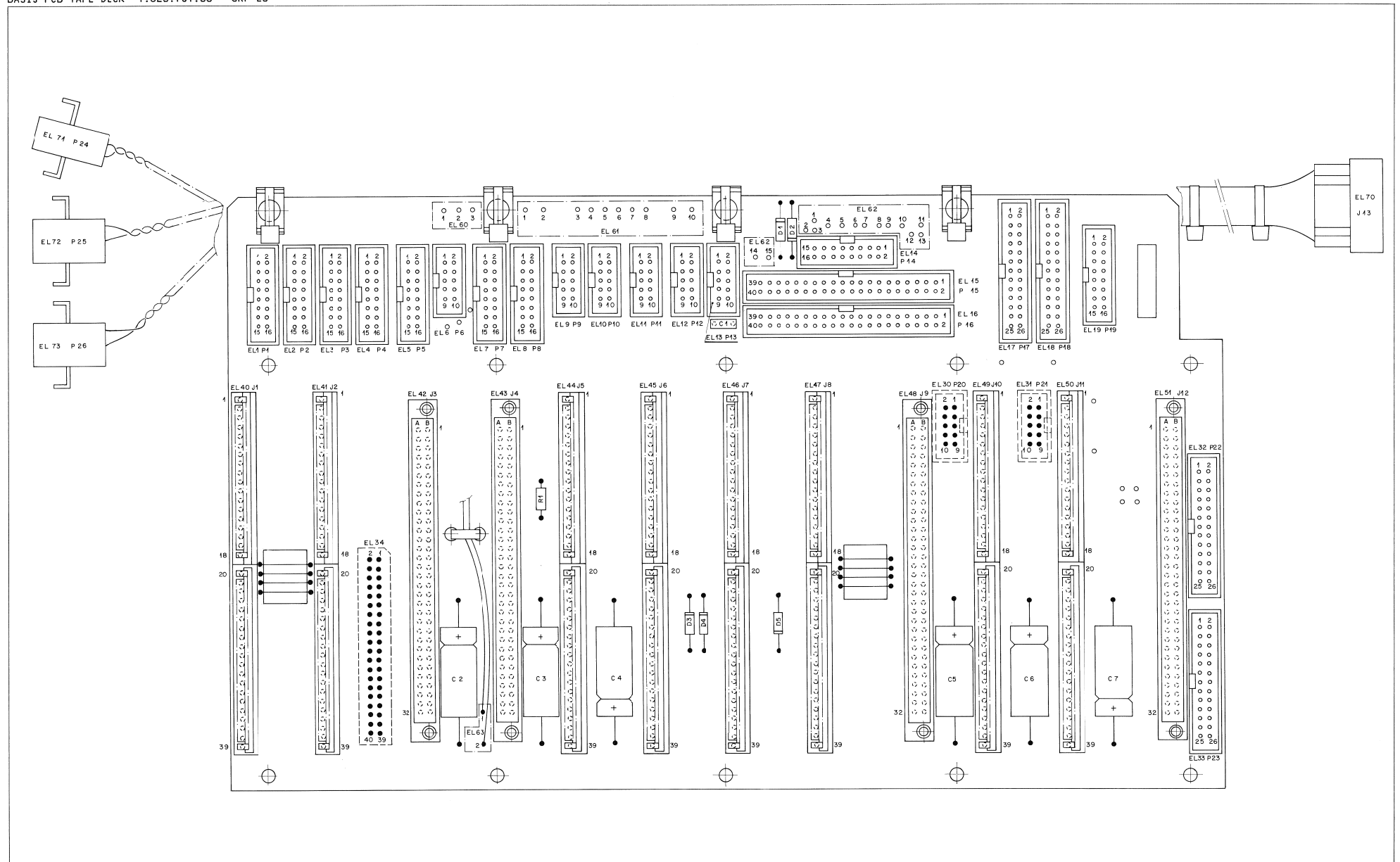
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STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 3

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....17	57.11.3262	2.4	kΩ		2%
R.....18	57.11.3432	4.3	kΩ		2%
R.....19	57.11.3913	91	kΩ		2%
R.....20	57.11.3623	62	kΩ		2%
R.....21	57.11.3633	43	kΩ		2%
R.....22	57.11.3512	5.1	kΩ		2%
R.....23	57.11.3753	75	kΩ		2%
R.....24	57.11.3627	3.6	kΩ		2%
R.....25	57.11.3432	4.3	kΩ		2%
R.....26	57.11.3913	91	kΩ		2%
R.....27	57.11.3623	62	kΩ		2%
R.....28	57.11.3911	510	Ω		2%
R.....29	57.11.9511	510	Ω		2%
R.....30	57.11.3263	2.6	kΩ		2%
R.....31	57.11.3232	3.3	kΩ		2%
R.....32	57.11.3623	62	kΩ		2%
R.....33	57.11.3132	1.3	kΩ		2%
R.....34	57.11.3622	4.3	kΩ		2%
R.....35	57.11.3873	87	kΩ		2%
R.....36	57.11.3263	2.6	kΩ		2%
R.....37	57.11.3511	510	Ω		2%
R.....38	57.11.3511	510	Ω		2%
R.....39	57.11.3232	3.3	kΩ		10%
R.....40	57.11.3264	2.6	kΩ		2%
R.....41	57.11.3393	39	kΩ		2%
R.....42	57.11.3262	2.6	kΩ		2%
R.....43	57.11.3392	3.9	kΩ		2%
R.....44	57.11.3264	2.6	kΩ		2%
R.....45	57.11.3263	2.6	kΩ		2%
R.....46	57.11.3260	2.6	kΩ		2%
R.....47	56.01.4201	200	Ω		Potentiometer; see note 2
R.....48	57.11.3264	2.6	kΩ		2%
R.....49	57.11.3432	4.3	kΩ		2%
R.....50	57.11.3233	3.3	kΩ		2%
R.....51	57.11.3912	91	kΩ		2%
R.....52	57.11.3511	510	Ω		2%
R.....53	57.11.3741	240	Ω		2%

STUDER (01) 85/07/12 WE FUSE/SUPPLY FAILURE DETECTOR L=820.737.00 PAGE 3

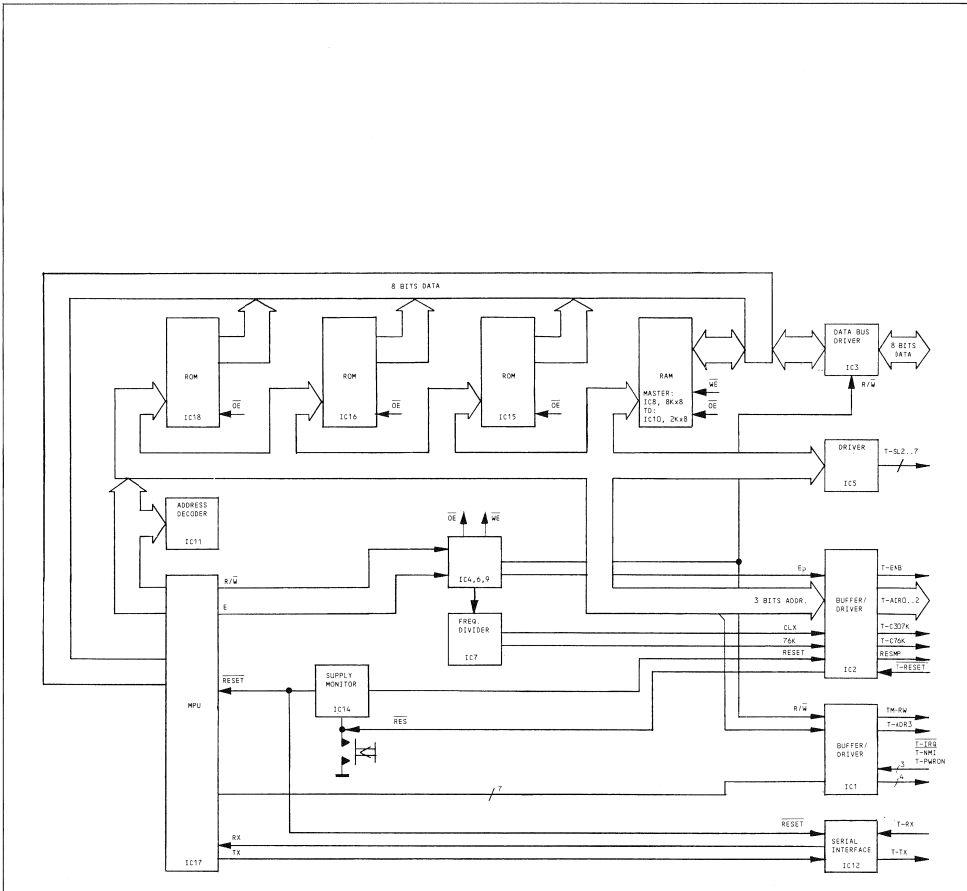
BASIS PCB TAPE DECK 1.820.701.00 GRP 20



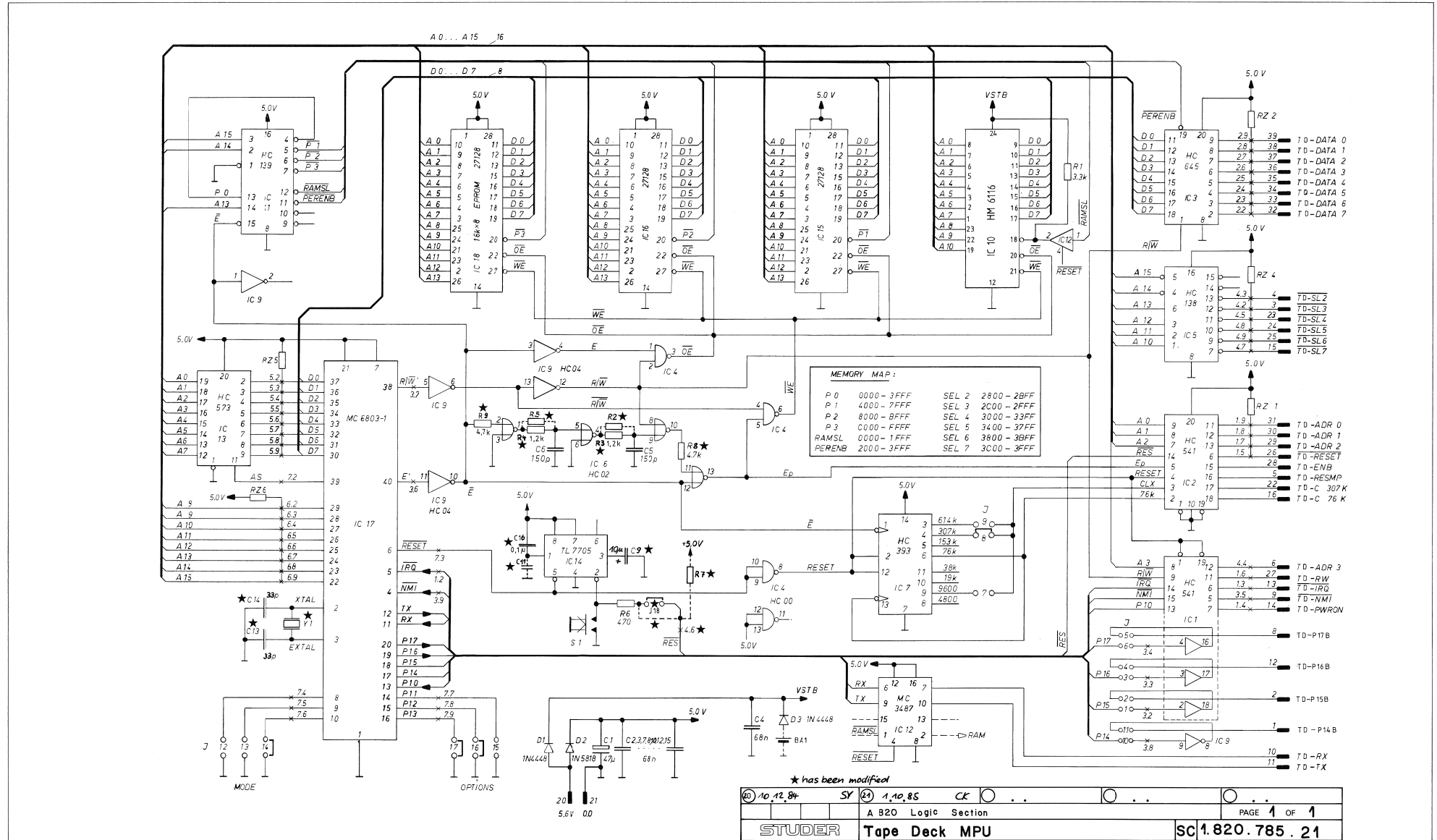
BASIS PCB TAPE DECK 1.820.701.00 GRP 20

INV.	POS.N.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L****1	59*25*0683	05 UF	20µ	NETP	
L****2	59*25*1102	1000 UF	-10% 0.3V ±1		
L****3	59*25*1071	170 UF	-10% 10V ±1		
L****4	59*25*1071	170 UF	-10% 10V ±1		
L****5	59*25*1102	1200 UF	-10% 0.3V ±1		
L****6	59*25*1071	170 UF	-10% 10V ±1		
L****7	59*25*1071	170 UF	-10% 10V ±1		
U****1	50*04*1122	1N 4001	***1A 400V	ITT*Not	
U****2	50*04*1122	1N 4001	***1A 400V	ITT*Not	
U****3	50*04*1122	1N 4001	***1A 400V	ITT*Not	
(D)	U****4	50*04*1122	1N 4001	***1A 400V	ITT*Not
(J)	U****5	50*04*1103	1N 4001	50V	ITT*Not
U****6	50*04*1102	1N 4001	***1A 400V		
J****1			10 * 20 CONTACTS; see note 1		
J****2			10 * 20 CONTACTS; see note 2		
J****3			2 * 32 CONTACTS; see note 2		
J****4			2 * 32 CONTACTS; see note 2		
J****5			19 CONTACTS; see note 2		
J****6			5 CONTACTS; see note 1		
J****7			10 * 20 CONTACTS; see note 1		
J****8			10 * 20 CONTACTS; see note 1		
J****9			2 * 32 CONTACTS; see note 2		
J****10			10 * 20 CONTACTS; see note 1		
J****11			10 * 20 CONTACTS; see note 1		
J****12			2 * 32 CONTACTS; see note 2		
J****13			24 CONTACTS; see note 3		
P****1			15 CONTACTS; see note 4		
P****2			15 CONTACTS; see note 4		
P****3			15 CONTACTS; see note 4		
P****4			15 CONTACTS; see note 4		
P****5			15 CONTACTS; see note 4		
P****6			15 CONTACTS; see note 4		
P****7			15 CONTACTS; see note 4		
P****8			15 CONTACTS; see note 4		
P****9			15 CONTACTS; see note 4		
P****10			15 CONTACTS; see note 4		
P****11			15 CONTACTS; see note 4		
P****12			15 CONTACTS; see note 4		
P****13			15 CONTACTS; see note 4		
P****14			15 CONTACTS; see note 4		
P****15			15 CONTACTS; see note 4		
P****16			15 CONTACTS; see note 4		
P****17			15 CONTACTS; see note 4		
P****18			15 CONTACTS; see note 4		
P****19			15 CONTACTS; see note 4		
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P****25			15 CONTACTS; see note 4		
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P****28			15 CONTACTS; see note 4		
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P****30			15 CONTACTS; see note 4		
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P****32			15 CONTACTS; see note 4		
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P****41			15 CONTACTS; see note 4		
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P****45			15 CONTACTS; see note 4		
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P****47			15 CONTACTS; see note 4		
P****48			15 CONTACTS; see note 4		
P****49			15 CONTACTS; see note 4		
P****50			15 CONTACTS; see note 4		
P****51			15 CONTACTS; see note 4		
P****52			15 CONTACTS; see note 4		
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P****65			15 CONTACTS; see note 4		
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P****80			15 CONTACTS; see note 4		
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P****85			15 CONTACTS; see note 4		
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P****91			15 CONTACTS; see note 4		
P****92			15 CONTACTS; see note 4		
P****93			15 CONTACTS; see note 4		
P****94			15 CONTACTS; see note 4		
P****95			15 CONTACTS; see note 4		
P****96			15 CONTACTS; see note 4		
P****97			15 CONTACTS; see note 4		
P****98			15 CONTACTS; see note 4		
P****99			15 CONTACTS; see note 4		
P****00			15 CONTACTS; see note 4		
U****7	5T11-4332	3.3 kOhm			

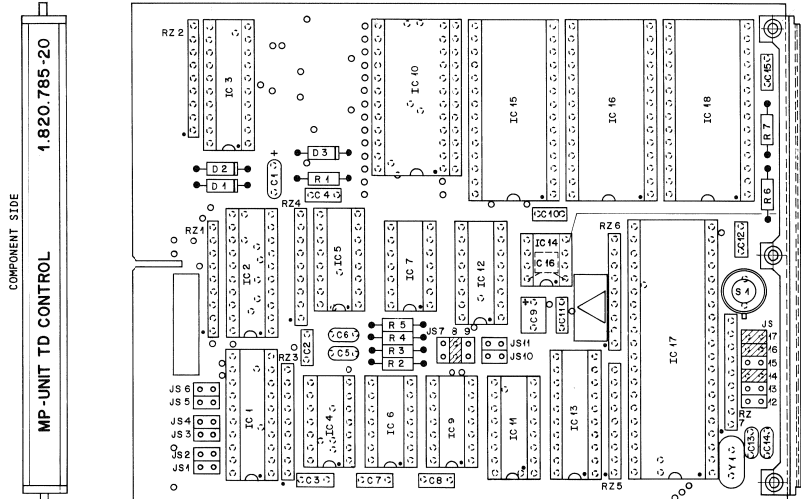
BLOCK DIAGRAM MP UNIT TAPE DECK CONTROL "ESE" 1.820.785



MP UNIT TAPE DECK CONTROL "ESE" 1.820.785.21 GRP 20/ELM 46

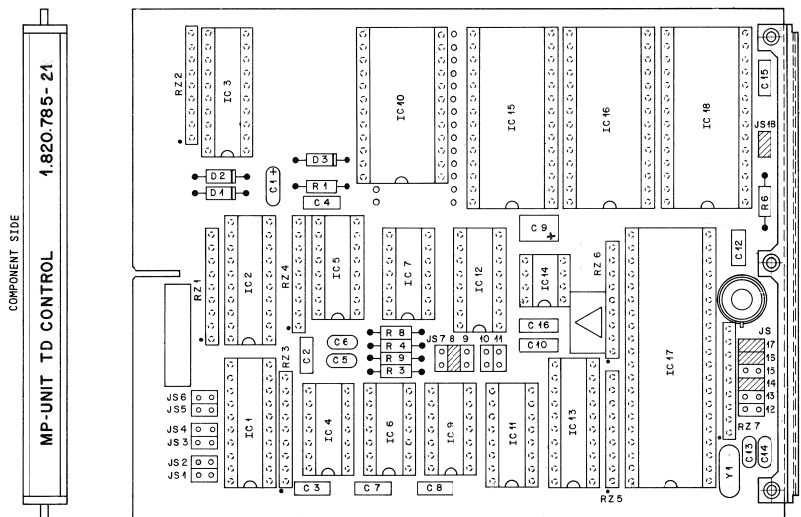


MP UNIT TAPE DECK CONTROL "ESE" 1.820.785.20/.21 GRP 20/ELM 46



1.820.785.20

INSERTED:
JS 8, 14, 16, 17



1.820.785.21

INSERTED:
JS 8, 14, 16, 17, 18

IND.	POS./NC.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	59*26+0870	82 uF	20% 6.3V * 50%	PH
(20)	C.....2	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....3	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....4	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....5	59*34+7131	150 uF	5% Cw	
(20)	C.....6	59*34+8131	150 uF	5% Cw	
(20)	C.....7	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....8	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....9	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....10	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....11	59*06+0104	100 uF	10% * 6.3V * PETP	
(20)	C.....12	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....13	59*34+1150	15 uF	5% Cw	
(20)	C.....14	59*34+2330	33 uF	5% Cw	
(20)	C.....15	59*34+1150	15 uF	5% Cw	
(20)	C.....16	59*34+2330	33 uF	5% Cw	
(20)	C.....17	59*06+0853	68 uF	10% * 6.3V * PCTP	
(20)	C.....18	59*06+0853	68 uF	10% * 6.3V * PCTP	
(21)	C.....16	59*06+0104	100 uF	10% * 6.3V * PETP	
(20)	D.....1	59*04+0127	IN 4468		Ec:111*Ph:505*Ff Not
(20)	D.....2	59*04+0127	IN 5818		Ec:111*Ph:505*Ff Not
(20)	D.....3	59*04+0127	IN 4468		Ec:111*Ph:505*Ff Not
(20)	D.....4	59*17+1041	74 HC 941		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....5	59*17+1561	74 HC 941		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....6	59*17+1048	74 HC 949		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....7	59*17+1000	74 HC 900		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....8	59*17+1138	74 HC 138		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....9	59*17+1002	74 HC 902		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....10	59*17+1393	74 HC 393		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....11	59*17+2004	74 HC 204		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....12	59*14+0107	MS* 5128-15		MS* 5128-15 MS* 5128-15
(20)	D.....13	59*17+1139	74 HC 139		Not*NS*Ph*RCA+SOS*Ti*To
(20)	D.....14	59*15+0105	MC 3487 P		Mc:MS

IND.	POS./NC.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	E.....13	59*13+3573	74 HC 573		Not*NS*Ph*RCA+SOS*Ti*To
(20)	E.....14	59*11+0122	EL77054CP		TI
(20)	E.....15	1.820.999.20	00K 5000		see note 1
(20)	E.....16	59*14+0125	27K28		Mc 46271286-3D see note 1
(20)	E.....17	59*14+0125	27K28		see note 1
(20)	E.....18	1.820.999.20	27K28		Mc 46271286-3D see note 1
(20)	J5.....1				see note 2
(20)	J5.....2				see note 2
(20)	J5.....3				see note 2
(20)	J5.....4				see note 2
(20)	J5.....5				see note 2
(20)	J5.....6				see note 2
(20)	J5.....7				see note 2
(20)	J5.....8				see note 2
(20)	J5.....9				see note 2
(20)	J5.....10				see note 2
(20)	J5.....11				see note 2
(20)	J5.....12				see note 2
(20)	J5.....13				see note 2
(20)	J5.....14				see note 2
(20)	J5.....15				see note 2
(20)	J5.....16				see note 2
(20)	J5.....17				see note 2
(20)	J5.....18				see note 2
(20)	K.....1	57*11+332	3.3 kOhm	Z1	
(20)	K.....2	57*11+333	33 kOhm	Z1	
(20)	K.....3		not used		
(20)	K.....4	57*11+382	1.0 kOhm	Z1	
(20)	K.....5	57*11+122	1.0 kOhm	Z1	
(20)	K.....6	57*11+382	1.0 kOhm	Z1	
(20)	K.....7	57*11+122	1.0 kOhm	Z1	
(20)	K.....8	57*11+333	33 kOhm	Z1	
(20)	K.....9		not used		

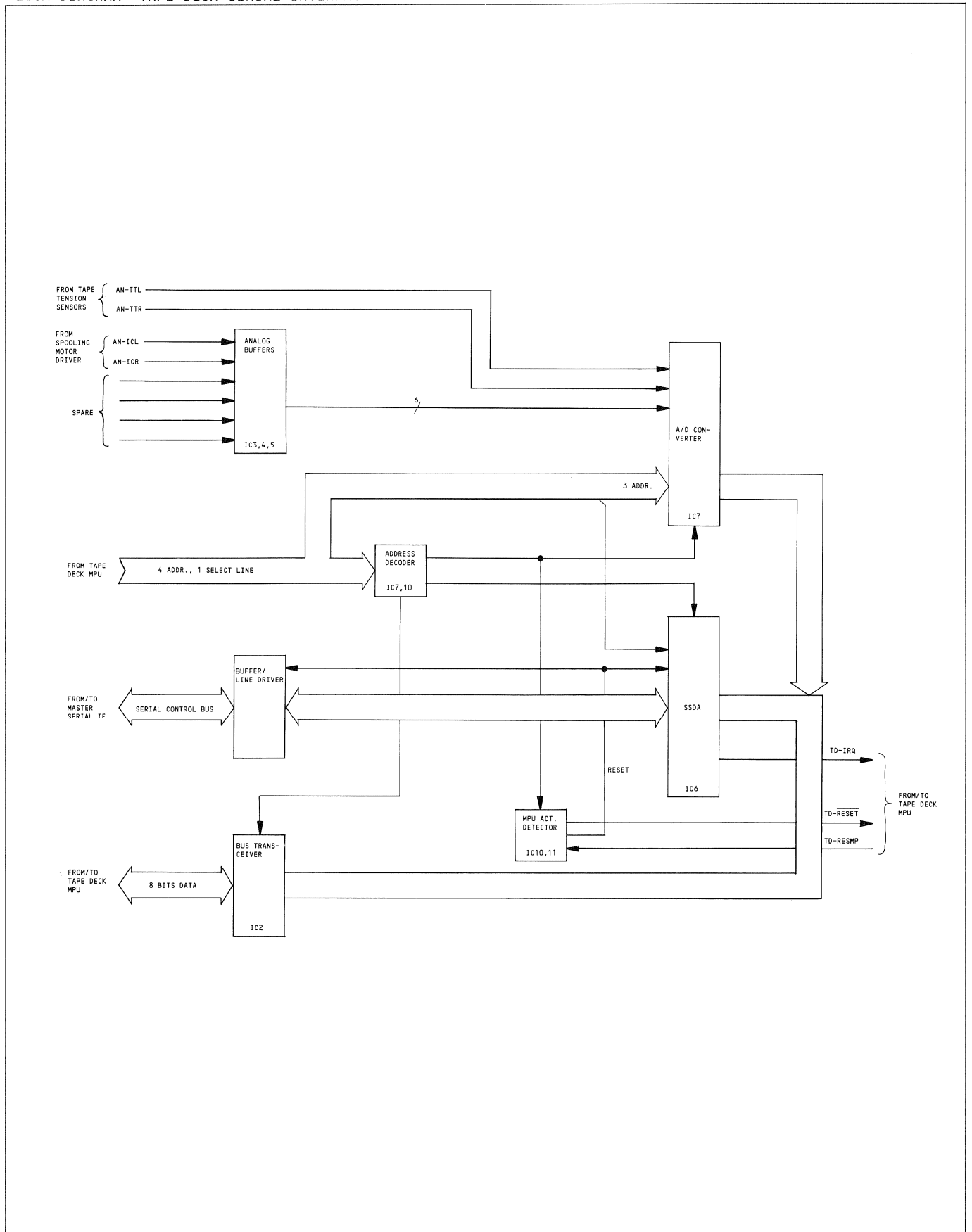
STUDER (21) 85/10/18 P3 MP-UNIT TD CONTROL 1.820.785.00 PAGE 2

IND.	POS./NC.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R.....6	57*11+4471	470 Ohm	Z6	
(20)	R.....7	57*11+4332	3.3 kOhm	Z1	
(21)	R.....7		not used		
(21)	R.....8	57*11+4472	4.7 kOhm	Z1	
(21)	R.....9	57*11+4472	4.7 kOhm	Z1	
(20)	RZ.....1	57*88+4332		see note 3	
(20)	RZ.....2	57*88+4332		see note 3	
(20)	RZ.....3	57*88+4332		see note 3	
(20)	RZ.....4	57*88+4332		see note 3	
(20)	RZ.....5	57*88+4332		see note 3	
(20)	RZ.....6	57*88+4332		see note 3	
(20)	RZ.....7	57*88+4332		see note 3	
(20)	S.....1	55*03+0122		Chicago Switch 34-950-001	
(21)	Y.....1	89*01+0553	4*9152	RH2* TD 18	
(21)	Y.....1	89*01+0560	4*9152	RH2* TD 1800 ppm	

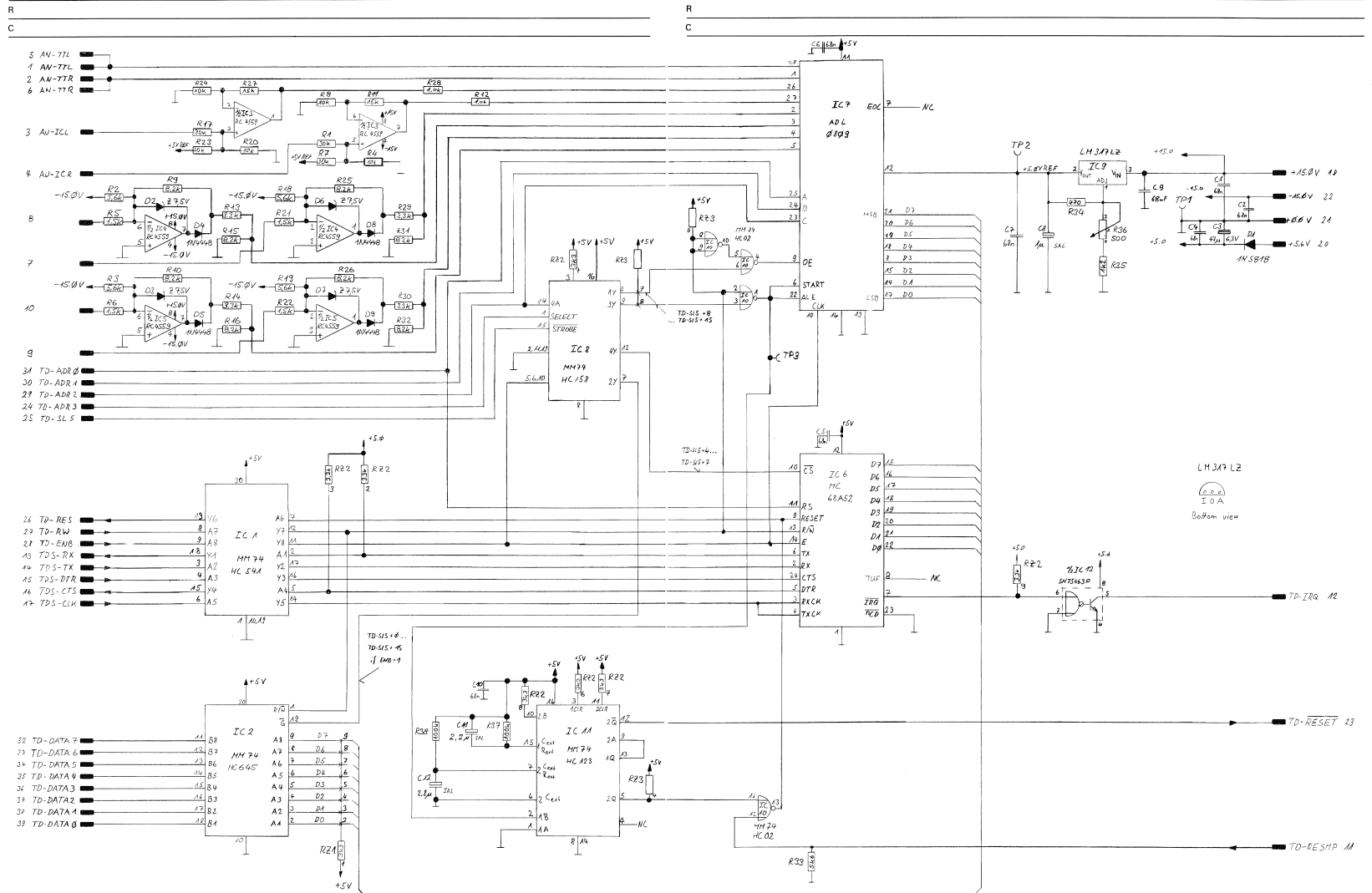
IND.	POS./NC.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(21)	85*0x10			Improved noise suppression of reset circuit and improved timing of E-pulse (PCB lay-out -12).	
(21)	85*10x18			Improved noise suppression of reset circuit and improved timing of E-pulse (PCB lay-out -12).	
(21)	85*10x18			Software is delivered in a set only.	
(21)	c = Contact print			Stuter Nr. 54*01-0020 berg Nr. 75 100-102-36 Philips Nr. 2422 035 89003 stuter Nr. 54*01-0021 berg Nr. 65 974-001 Philips Nr. 2422 024 89003	
(21)	Networks:			B 3 3.3 kOhm, 5% Socovet Nr. C98 3.3 k Ohm mettRo Nr. R08 3.3 k Ohm	
(21)				Cu=Ceramic, Sa=Solder Aluminium	
(21)				MANUFACTURER: Fcf=Fairchild, Hch=Hitachi, ITT=Intermetall, Not=Motorola, NIS=Nissens, Ssc=Semiconductors, Soc=Sony, Philips, Ssc=Semicon, TTT=Telefunken, Tfi=Texas Instruments.	
(21)				*C9: 0.47 uF replaced by: 10 uF Part No. 59.26.2100	
(21)	85*0x10	(20) 85*0x10	(21) 85*10/18		

STUDER (21) 85/10/18 P3 MP-UNIT TD CONTROL 1.820.785.00 PAGE 4

BLOCK DIAGRAM TAPE DECK SERIAL INTERFACE PCB "ESE" 1.820.763

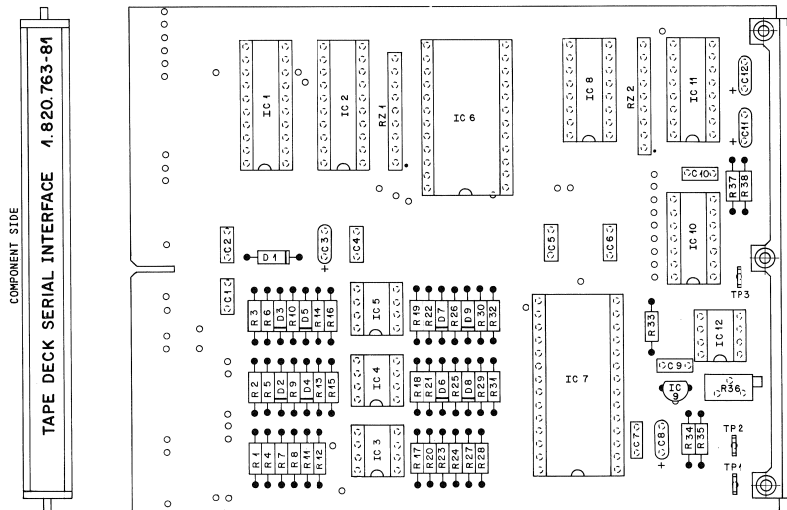


TAPE DECK SERIAL INTERFACE PCB "ESE" 1.820.763.81 GRP 20/ELM 47



R23 not used

TAPE DECK SERIAL INTERFACE PCB "ESE" 1.820.763.81 GRP 20/ELM 47



END.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.06.0683	68 nF	20X		Ns+Mot
C.....2	59.06.0683	68 nF	20X		Ns+Mot
C.....3	59.12.0370	47 uF	20X		Ph
C.....4	59.06.0683	68 nF	20X		Ns+Mot
C.....5	59.06.0683	68 nF	20X		Ns+Mot
C.....6	59.06.0683	68 nF	20X		Ns+Mot
C.....7	59.06.0683	68 nF	20X		Ns+Mot
C.....8	59.06.0683	68 nF	20X		Ns+Mot
C.....9	59.06.0683	68 nF	20X		Ns+Mot
C.....10	59.06.0683	68 nF	20X		Ns+Mot
C.....11	59.06.1330	33 uF	20X		Ph
C.....12	59.06.0683	68 nF	20X		Ph
U.....1	50.06.0512	LN 5818	LN 5819		Mot
U.....2	50.06.1103	7.5 V	5% +40v+Explanr		ITT-Sos
U.....3	50.06.1103	7.5 V	5% +40v+2ndImnr		ITT-Sos
U.....4	50.06.0125	LN 4448	51		Fc+ITT+Ph+Sos+TF
U.....5	50.06.0125	LN 4448	51		Fc+ITT+Ph+Sos+TF
U.....6	50.06.1103	7.5 V	5% +40v+Explanr		ITT-Sos
U.....7	50.06.1103	7.5 V	5% +40v+2ndImnr		ITT-Sos
U.....8	50.06.0125	LN 4448	51		Fc+ITT+Ph+Sos+TF
U.....9	50.06.0125	LN 4448	51		Fc+ITT+Ph+Sos+TF
IC.....1	50.17.1941	74HC 541			Mot+Nst+Ph+RCA+Sgs+Tf+To
IC.....2	50.17.1645	74HC 645			Mot+Nst+Ph+RCA+Sgs+Tf+To
IC.....3	50.09.0107	RC4559 NB			NEC-Ra
IC.....4	50.09.0107	RC4559 NB			NEC-Ra
IC.....5	50.09.0107	RC4559 NB			NEC-Ra
IC.....6	50.16.0114	MC68A52P	HD68A52, 568A52		AMI-Hi+Mot
IC.....7	50.16.0101	40C 0169	M 5870 P		AS
IC.....8	50.17.1158	74HC 159			Mot+Nst+Ph+RCA+Sgs+Tf+To
IC.....9	50.10.0109	LN517 LZ	V-Reg		Mot+Nst
IC.....10	50.17.1032	74HC 02			Mot+Nst+Ph+RCA+Sgs+Tf+To
IC.....11	50.17.1123	74HC LZ3			Mot+Nst+Ph+RCA+Sgs+Tf+To
IC.....12	50.09.0203	SN75463P	DS 3513 N		Ns+TI

STUDER (00) 84/12/12 ME TAPE DECK SERIAL IF 1.820-763-81 PAGE 1

END.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....2	57.11.4562	5.6 kOhm	5%		
R.....3	57.11.4562	5.6 kOhm	5%		
R.....4	57.11.4103	10 kOhm	2%		
R.....5	57.11.4152	1.5 kOhm	5%		
R.....6	57.11.4152	1.5 kOhm	5%		
R.....7	57.11.3303	30 kOhm	2%		
R.....8	57.11.4103	10 kOhm	2%		
R.....9	57.11.4822	8.2 kOhm	5%		
R.....10	57.11.4822	8.2 kOhm	5%		
R.....11	57.11.4822	8.2 kOhm	5%		
R.....12	57.11.4102	1.0 kOhm	5%		
R.....13	57.11.4332	3.3 kOhm	5%		
R.....14	57.11.4332	3.3 kOhm	5%		
R.....15	57.11.4822	8.2 kOhm	5%		
R.....16	57.11.4822	8.2 kOhm	5%		
R.....17	57.11.3303	30 kOhm	2%		
R.....18	57.11.4562	5.6 kOhm	5%		
R.....19	57.11.4562	5.6 kOhm	5%		
R.....20	57.11.4103	10 kOhm	2%		
R.....21	57.11.4152	1.5 kOhm	5%		
R.....22	57.11.4152	1.5 kOhm	5%		
R.....23	57.11.3303	30 kOhm	2%		
R.....24	57.11.4103	10 kOhm	2%		
R.....25	57.11.4822	8.2 kOhm	5%		
R.....26	57.11.4822	8.2 kOhm	5%		
R.....27	57.11.4332	3.3 kOhm	5%		
R.....28	57.11.4332	3.3 kOhm	5%		
R.....29	57.11.4822	8.2 kOhm	5%		
R.....30	57.11.4822	8.2 kOhm	5%		
R.....31	57.11.4822	8.2 kOhm	5%		
R.....32	57.11.4822	8.2 kOhm	5%		
R.....33	57.11.4822	8.2 kOhm	5%		
R.....34	57.11.4822	8.2 kOhm	5%		
R.....35	57.11.4822	8.2 kOhm	5%		
R.....36	57.11.4471	470 Ohm	2%		
R.....37	57.11.1122	1.1 kOhm	2%		
R.....38	56.09.0901	500 Ohm	2%		Potentiometer see note 1
R.....39	57.11.1104	100 kOhm	5%		
R.....40	57.11.4156	100 kOhm	5%		

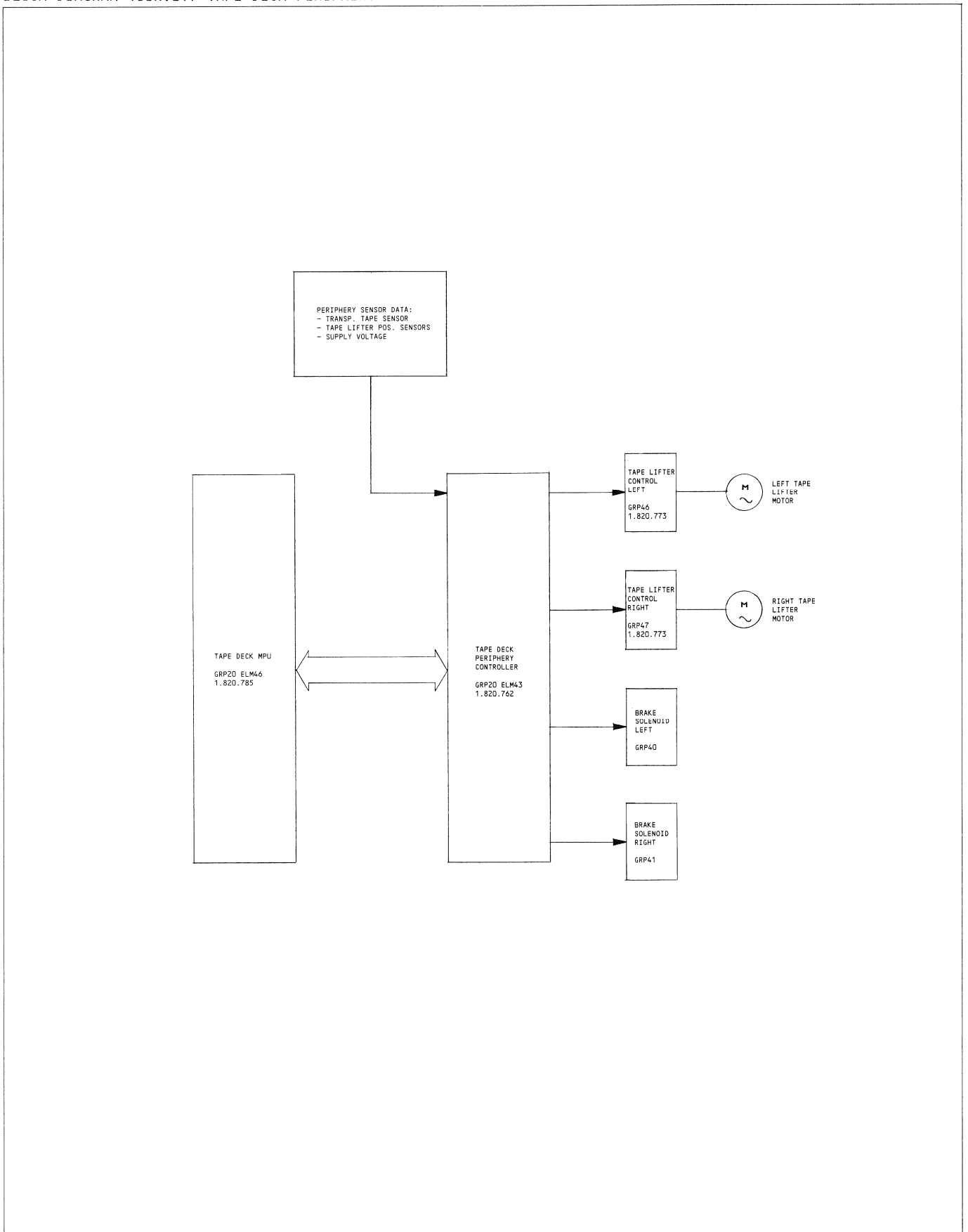
STUDER (00) 84/12/12 ME TAPE DECK SERIAL IF 1.820-763-81 PAGE 2

END.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
RZ.....1	57.08.4332	893.3kOhm	10%		
RZ.....2	57.08.4332	893.3kOhm	10%		
RZ.....3		86.10kOhm	10%		not used
TP.....1	54.02.0320	2.80 0.8		soldering test pin	
TP.....2	54.02.0320	2.80 0.8		soldering test pin	
TP.....3	54.02.0320	2.80 0.8		soldering test pin	

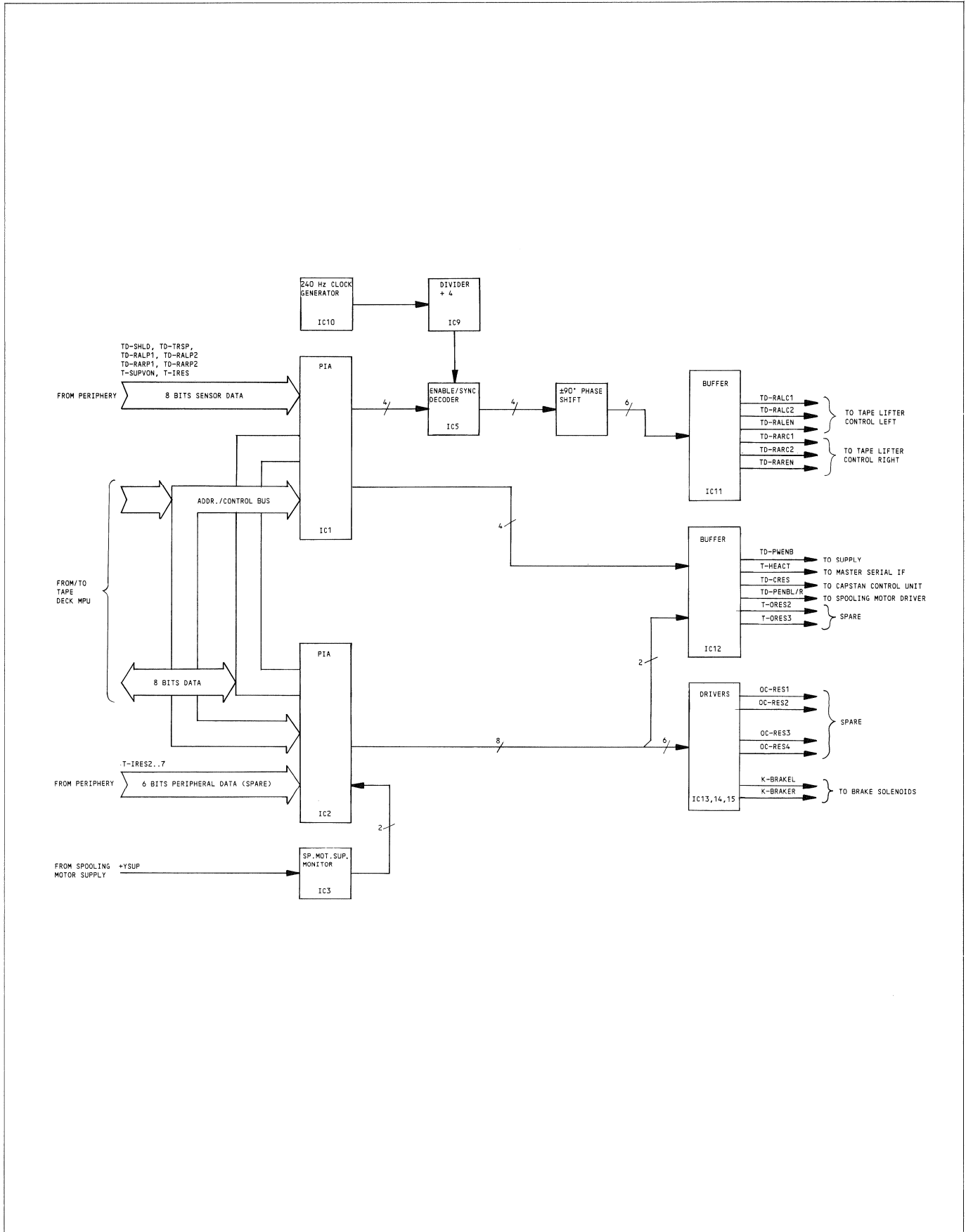
Note 1 - Potentiometer : 500 Ohm, 10%, 5W, PMG
 Bourne 3296 Z - 1 - 501
 Spectral AA 2 501 T 000
 Murata POT 3105 2 - 1 - 501
 Comtec LB3 K2 501
 Manufacturer: AMI-American Microsystems Inc., Ec-Fairchild,
 HeiTeach, Mot-Motorola, Nat-National (Matsushita),
 NEC-Nippon Electric Corp., NS-National Semiconductor,
 Ph-Philips (incl. Valvo), Ra-Raytheon,
 RCA-RCA Corporation of America, Sgs-Successor,
 Sgs-Sgs/Atos, TI-Texas Instrument, To-Toshiba.

ORIG 84/12/12
 STUDER (00) 84/12/12 ME TAPE DECK SERIAL IF 1.820-763-81 PAGE 3

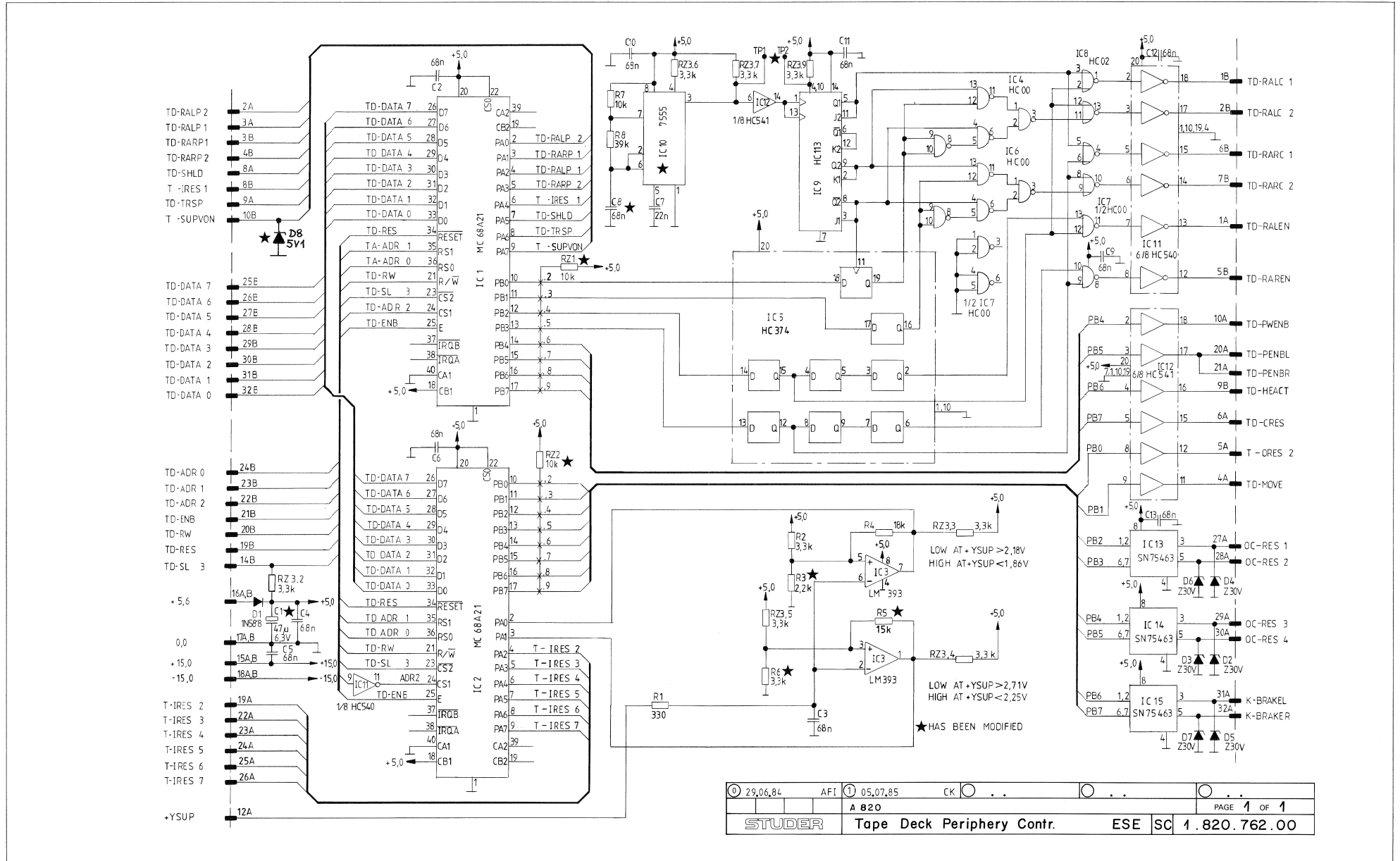
BLOCK DIAGRAM (SURVEY) TAPE DECK PERIPHERY



BLOCK DIAGRAM TAPE DECK PERIPHERY CONTROLLER PCB "ESE" 1.820.762

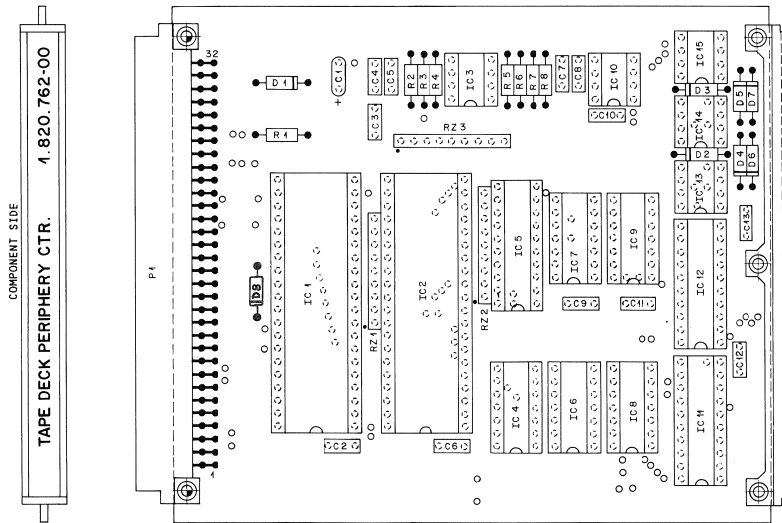


TAPE DECK PERIPHERY CONTROLLER PCB "ESE" 1.820.762.00 GRP 20/ELM 43



29.06.84	AFI	05.07.85	CK				
A 820				PAGE 1 OF 1			
STUDER		Tape Deck Periphery Contr.		ESE SC		1.820.762.00	

TAPE DECK PERIPHERY CONTROLLER PCB "ESE" 1.820.762.00 GRP 20/ELM 43



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C.....1	59-41-5101	100 uF	20% 6-3V	
(01)	C.....2	59-20-0670	47 uF	20% 6-3V	
	C.....3	59-06-0683	68 nF	20%	
	C.....4	59-06-0683	68 nF	20%	
	C.....5	59-06-0683	68 nF	20%	
	C.....6	59-06-0683	68 nF	20%	
	C.....7	59-06-0223	22 nF	10%	
(00)	C.....8	59-06-0683	68 nF	20%	
(02)	C.....9	59-06-5683	68 nF	5%	
	C.....10	59-06-0683	68 nF	20%	
	C.....11	59-06-0683	68 nF	20%	
	C.....12	59-06-0683	68 nF	20%	
	C.....13	59-06-0683	68 nF	20%	
	D.....1	50-04-0512	1N 5818	1n 5819	Not
	D.....2	50-04-1125	30 V Z	ZPO 30	ITT
	D.....3	50-04-1125	30 V Z	ZPO 30	ITT
	D.....4	50-04-1125	30 V Z	ZPO 30	ITT
	D.....5	50-04-1125	30 V Z	ZPO 30	ITT
	D.....6	50-04-1125	30 V Z	ZPO 30	ITT
	D.....7	50-04-1125	30 V Z	ZPO 30	ITT
(01)	D.....8	50-04-1112	5-1 V Z	BZX83C 5V1, BZX55C 5V1, ZPO 5-1	ITT, Sem
	IC.....1	50-16-0106	MC68 A 21P	568 A 21P	AMI/Fairchild
	IC.....2	50-16-0106	MC68 A 21P	568 A 21P	AMI/Fairchild
	IC.....3	50-05-0283	LM 393 N	LM 393 P	NS/ITT
	IC.....4	50-17-1800	74 HC 00	-- 74 HC 00 -	Not NS/ITT
	IC.....5	50-17-1376	74 HC 374	-- 74 HC 374 -	Not NS/ITT
	IC.....6	50-17-1800	74 HC 00	-- 74 HC 00 -	Not NS/ITT
	IC.....7	50-17-1800	74 HC 00	-- 74 HC 00 -	Not NS/ITT
	IC.....8	50-17-1800	74 HC 02	-- 74 HC 02 -	Not NS/ITT
	IC.....9	50-17-1113	74 HC 113	-- 74 HC 113 -	Not NS/ITT
(00)	IC.....10	50-05-0190	MC 1455 P1		ITT
(02)	IC.....11	50-07-0036	ICM7955PA	-- 555 --- MA 1555 PS	Fairchild, Motorola, Sanyo
	IC.....12	50-17-1540	74 HC 540	-- 74 HC 540 -	Not NS/ITT

STUDER (02) 85/11/06 PB TAPE DECK PERIPHERY CONTR. 1.820.762-00 PAGE 1

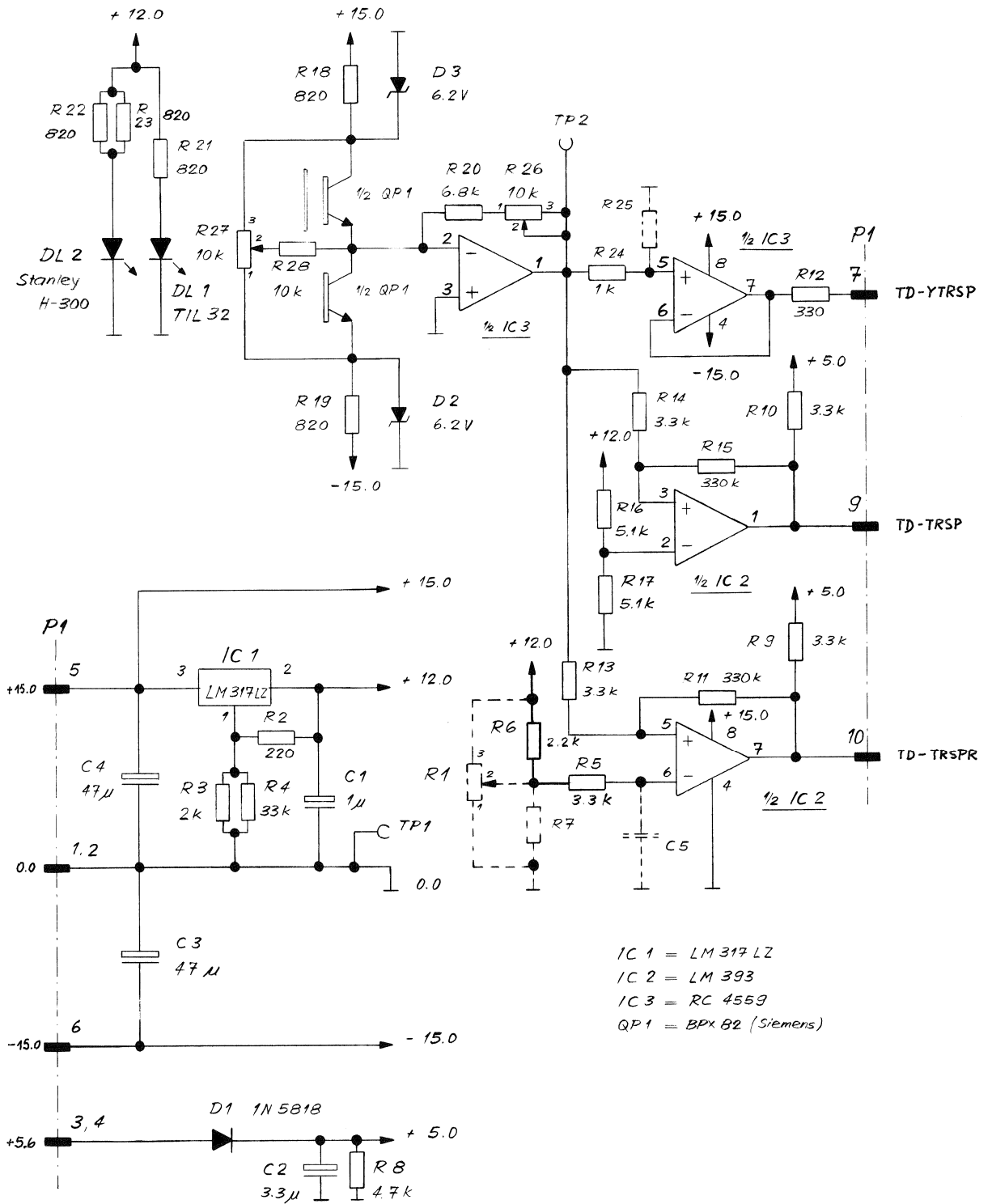
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.....12	50-17-1541	74 HC 541	-- 74 HC 541 -	Not NS/ITT
	IC.....13	50-05-0203	SN 75463 P	DS 3013 N	NS/ITT
	IC.....14	50-05-0203	SN 75463 P	DS 3013 N	NS/ITT
	IC.....15	50-05-0203	SN 75463 P	DS 3013 N	NS/ITT
	P.....1	54-11-2004		2 x 32 contacts; see note 1	
	R.....1	57-11-4331	330 Ohm	10%	
	R.....2	57-11-4332	3-3 kOhm	5%	
(00)	R.....3	57-11-4323	12 kOhm	5%	
(01)	R.....4	57-11-4422	2-2 kOhm	5%	
	R.....5	57-11-4385	18 kOhm	5%	
(00)	R.....6	57-11-4472	4-7 kOhm	5%	
(01)	R.....7	57-11-4353	15 kOhm	5%	
(00)	R.....8	57-11-4102	1-0 kOhm	5%	
(01)	R.....9	57-11-4332	3-3 kOhm	5%	
	R.....10	57-11-4103	10 kOhm	5%	
	R.....11	57-11-4393	39 kOhm	5%	
(00)	RZ.....1	1-010-014-57	10 kOhm	10%	See note 2
(01)	RZ.....2	57-06-4103	10 kOhm	10%	See note 2
(00)	RZ.....3	1-010-014-57	10 kOhm	10%	See note 2
(01)	RZ.....4	57-06-4103	10 kOhm	10%	See note 2
(02)	RZ.....5	57-06-4332	3-3 kOhm	10%	See note 3
(01)	TP.....1	54-02-0320	test pin		
(01)	TP.....2	54-02-0320	test pin		

STUDER (02) 85/11/06 PB TAPE DECK PERIPHERY CONTR. 1.820.762-00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	85-07-05			Tasking points TP1 and TP2 implemented Improved protection for IC 1, pin 9a (E88) (correction of values L1-R3-R5-R6-R11-R22 because mistake).	
(02)	85-11-06			Improved frequency accuracy IC 10.	
Note 1 - Connector:				2 x 32 Euro Print Burdury P1 64 B 20 P00 F00 Z6 Erni 9722-563-191	
Note 2 - Network:				B 8 x 10 kOhm 5%, single line Bourne 4609 K - 101 - 103 Sprague 256 C.J 103 X 2 P0 Beckmann L - 09 - 1 - R 10 k; Matsushita L - 09 - 1 - R 10 k S; Tana MEG C 09 X 10 k J	
Note 3 - Network:				B 8 x 3.3 kOhm 5%, single line Bourne 4609 K - 101 - 332 Sprague 256 C.J 332 X 2 P0 Beckmann L - 09 - 1 - R 3.3 k J Matsushita L - 09 - 1 - R 3.3 k S; Tana MEG C 09 X 3.3 k J	
Manufacturer:				AMI=American Microsystem Inc., FC=Fairchild, H=Hitachi, ITT=Intermetall, Is=Intersil, M=Maxim, Mot=Motorola, NS=National Semiconductor, P=Philips, R=Raytheon, RCA=CA Corporation of America, Sig=Signetics, TI=Texas Instruments, Ton=Toshiba.	

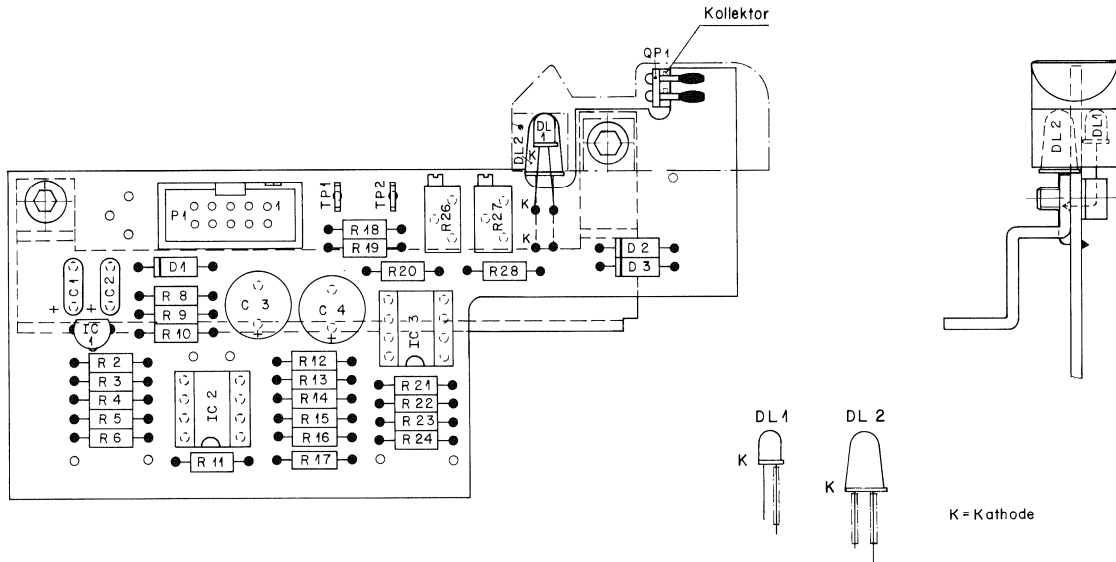
ORIG 84/06/29 (01) 85/07/05 (02) 85/11/06
STUDER (02) 85/11/06 PB TAPE DECK PERIPHERY CONTR. 1.820.762-00 PAGE 3

OPTO SENSOR PCB 1.820.793.81 GRP 44



4.4.85 Ck	A 820 Tape Transport Section		
STUDER	Opto Sensor	SC1.820.793.81	PAGE 1 OF 1

OPTO SENSOR PCB 1.820.793.81 GRP 44



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.9109	1.0 uF	20%, 40V, Sal	Ph	R....17		57.11.3512	5.1 kOhm	1%	
C.....2		59.26.2339	3.3 uF	20%, 16V, Sal	Ph	R....18		57.11.4821	820 Ohm	2%	
C.....3		59.22.5470	47 uF	20%, 25V, E1		R....19		57.11.4821	820 Ohm	2%	
C.....4		59.22.5470	47 uF	20%, 25V, E1		R....20		57.11.4682	6.8 kOhm	2%	
C.....5				not used		R....21		57.11.4821	820 Ohm	2%	
D.....1		50.04.0512	1N 5818	1N 5819	Mot	R....22		57.11.4821	820 Ohm	2%	
D.....2		50.04.1118	6.2 V	5%, .40WxZ	ITT,Ses	R....23		57.11.4821	820 Ohm	2%	
D.....3		50.04.1118	6.2 V	5%, .40WxZ	ITT,Ses	R....24		57.11.4102	1.0 kOhm	2%	
DL.....1		50.04.2110	TIL 32	OP 160	Op+TI	R....25				not used	
DL.....2		50.04.2155	H-300	LED,red	Sty	R....26		58.05.0103	10 kOhm	see note 2	
IC.....1		50.10.0108	LM 317 LZ		Mot,Nat	R....27		58.05.0103	10 kOhm	see note 2	
IC.....2		50.05.0283	LM 393 N	LM 393 P	NS,TI	R....28		57.11.4103	10 kOhm	2%	
IC.....3		50.09.0107	RC 4559NB	UPC 4559	RA,NEC	TP....1		54.02.0320		test pin	
P.....1		54.14.2001		see note 1		TP....2		54.02.0320		test pin	
QP.....1		50.04.2154	BPX 82		Sie						
R.....1				not used							
R.....2		57.11.3221	220 Ohm	1%							
R.....3		57.11.3202	2 kOhm	1%							
R.....4		57.11.4333	33 kOhm	2%							
R.....5		57.11.4332	3.3 kOhm	2%							
R.....6		57.11.4222	2.2 kOhm	2%							
R.....7				not used							
R.....8		57.11.4472	4.7 kOhm	2%							
R.....9		57.11.4332	3.3 kOhm	2%							
R.....10		57.11.4332	3.3 kOhm	2%							
R.....11		57.11.4334	330 kOhm	2%							
R.....12		57.11.4331	330 Ohm	2%							
R.....13		57.11.4332	3.3 kOhm	2%							
R.....14		57.11.4332	3.3 kOhm	2%							
R.....15		57.11.4334	330 kOhm	2%							
R.....16		57.11.3512	5.1 kOhm	1%							

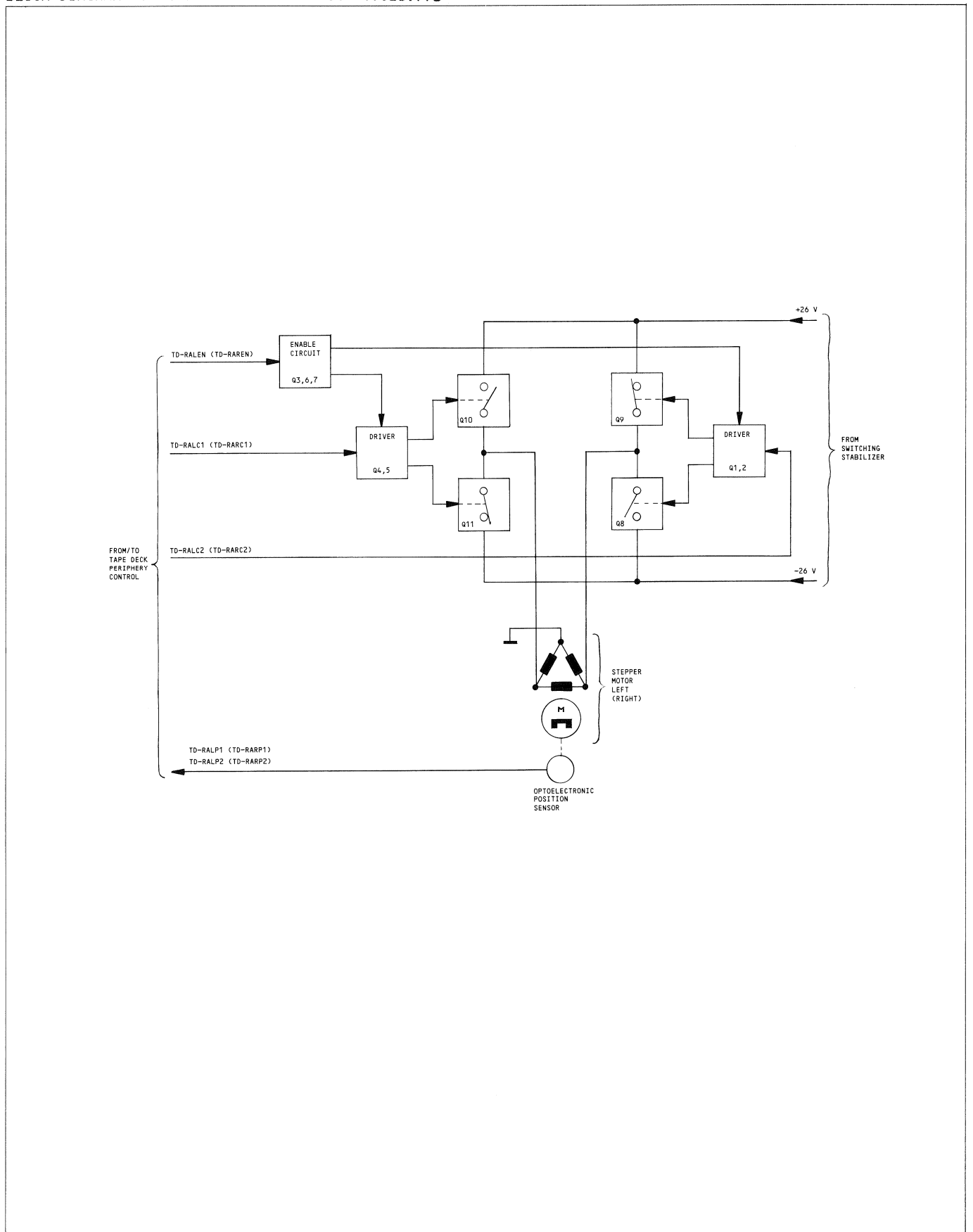
Note 1 - Connector: Yamaichi Nr. FAP-10-08-40SS
Burndy Nr. BPH 9 B 16 B00 GS

Note 2 - Potentiometer: Bourns Nr. 3296 Z - 1 - 103
Spectrol Nr. 64 Z 103 T 000

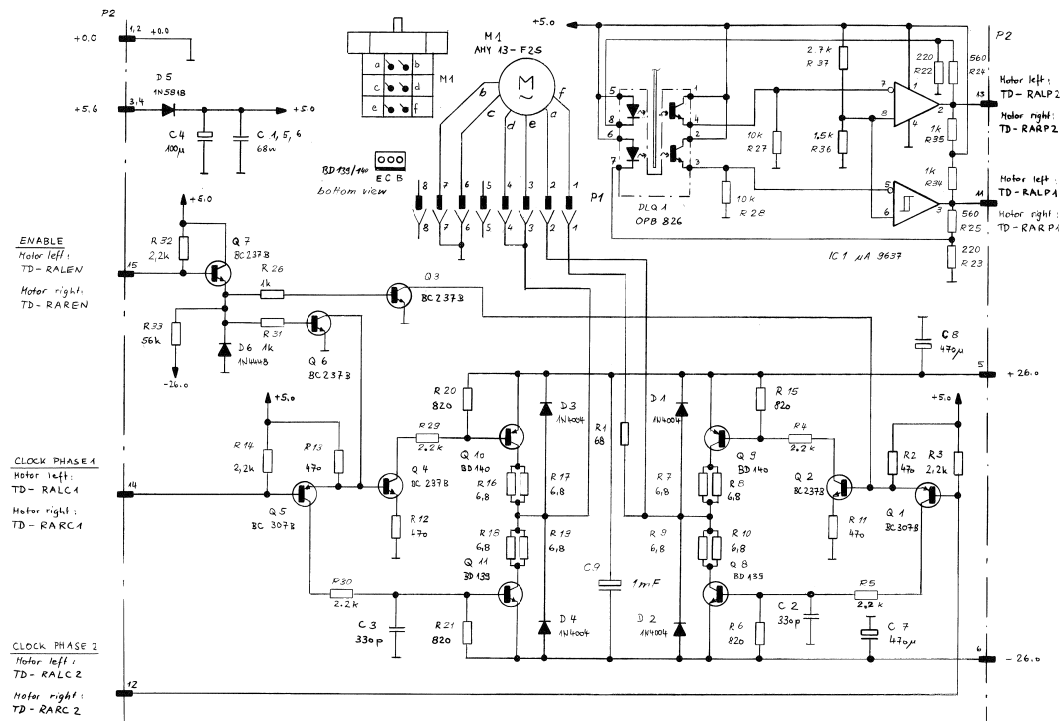
E1=Electrolytic, Sal=Solid Aluminium

Manufacturer: ITT=Intermetall, Mot=Motorola, Nat=National,
NS=National Semiconductors, NEC=Nippon Electric Corp.,
Op=Opteron, Ph=Phillips, Ra=Rohm, Ses=Secossem,
Sie=Siemens, Sty=Stanley, TI=Texas Instruments.

BLOCK DIAGRAM TAPE LIFTER CONTROL PCB 1.820.773

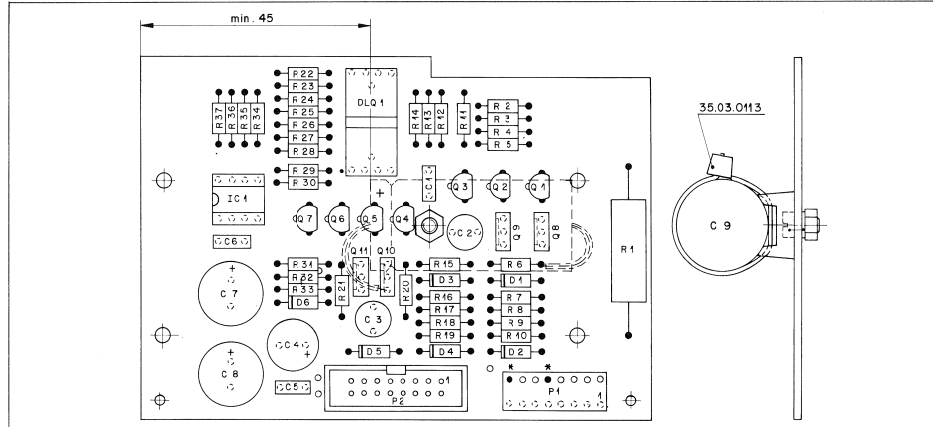


TAPE LIFTER CONTROL PCB 1.820.773.81/.82 GRP 46,47



A 820 Tape Transport Section		
STUDER	Tape Lifter Control	SC 1.820.773-82 PAGE 4 OF 4

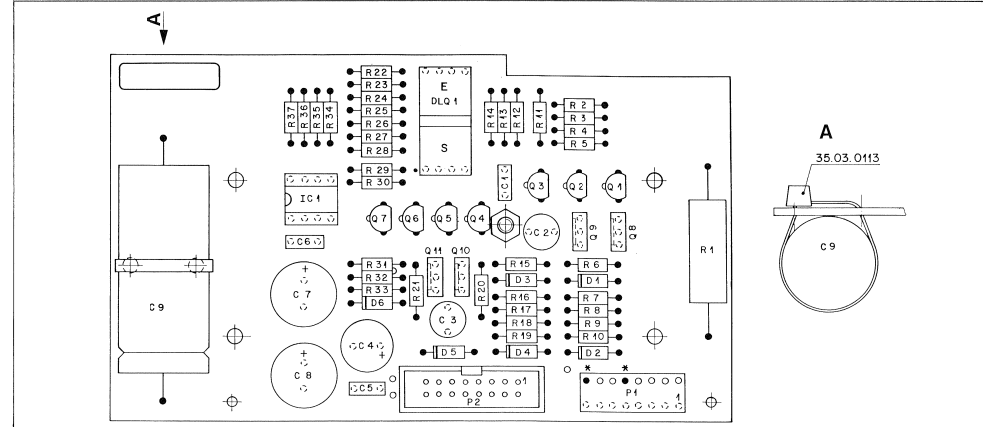
TAPE LIFTER CONTROL PCB 1.820.773.81 GRP 46,47



INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C	001	59-06-0583	68 nF	10%, 63V PETP		IC1				Improved supply voltage ripple	
C	002	59-06-2331	330 pF	2.5%, 63V PP						Manufacturer: Philips, Selenoscom, SGS/SGS-Alloc, Sian/Siamins, TFElefunke, TFElex Instruments, Tontoshiba.	
C	003	59-06-2331	330 pF	2.5%, 63V PP		Note 1 - Connector: AMP Nr. --163-080-6					
C	004	59-06-0583	68 nF	10%, 63V PETP		Note 2 - Connector: Yamaichi Nr. PAP-16-08//A Burny Nr. BPH 9 B 16 800 GS					
C	005	59-22-0471	470 uF	10%, 63V PETP		E1-Electrolytic, PPSPolypropylene					
C	006	59-22-0471	470 uF	10%, 63V PETP		Manufacturer: Ic-Fairchild, Iff-Intermetall, Mot-Motorola, Opn/Optron, Philips, Selenoscom, SGS/SGS-Alloc, Sian/Siamins, TFElefunke, TFElex Instruments, Tontoshiba.					
C	007	59-22-0471	470 uF	10%, 63V PETP							
C	008	59-22-0471	470 uF	10%, 63V PETP							
C	009	59-22-0471	470 uF	10%, 63V PETP							
C	010	59-22-0471	470 uF	10%, 63V PETP							
D	001	59-06-0122	IN 4001	...	Not						
D	002	59-06-0122	IN 4001	...	Not						
D	003	59-06-0122	IN 4001	...	Not						
D	004	59-06-0122	IN 4001	...	Not						
D	005	59-06-0122	IN 4001	...	Not						
D	006	59-06-0122	IN 4001	...	Not						
D	007	59-06-0122	IN 4001	...	Not						
D	008	59-06-0122	IN 4001	...	Not						
D	009	59-06-0122	IN 4001	...	Not						
D	010	59-06-0122	IN 4001	...	Not						
IC	001	59-19-0166	OpA 8265		OP						
IT	001	59-19-0114	uA 9637A		TI/Fc						
<p>REG 85/02/06 [01] 85/02/27</p>											

INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R	001	57-11-4471	470 Ohm	2%							
R	002	57-11-4222	242 kOhm	2%							
R	003	57-11-4222	242 kOhm	2%							
R	004	57-11-4222	242 kOhm	2%							
R	005	57-11-4222	242 kOhm	2%							
R	006	57-11-4222	242 kOhm	2%							
R	007	57-11-4222	242 kOhm	2%							
R	008	57-11-4222	242 kOhm	2%							
R	009	57-11-4222	242 kOhm	2%							
R	010	57-11-4222	242 kOhm	2%							
R	011	57-11-4222	242 kOhm	2%							
R	012	57-11-4222	242 kOhm	2%							
R	013	57-11-4222	242 kOhm	2%							
R	014	57-11-4222	242 kOhm	2%							
R	015	57-11-4222	242 kOhm	2%							
R	016	57-11-4222	242 kOhm	2%							
R	017	57-11-4222	242 kOhm	2%							
R	018	57-11-4222	242 kOhm	2%							
R	019	57-11-4222	242 kOhm	2%							
R	020	57-11-4222	242 kOhm	2%							
R	021	57-11-4222	242 kOhm	2%							
R	022	57-11-4222	242 kOhm	2%							
R	023	57-11-4222	242 kOhm	2%							
R	024	57-11-4222	242 kOhm	2%							
R	025	57-11-4222	242 kOhm	2%							
R	026	57-11-4222	242 kOhm	2%							
R	027	57-11-4222	242 kOhm	2%							
R	028	57-11-4222	242 kOhm	2%							
R	029	57-11-4222	242 kOhm	2%							
R	030	57-11-4222	242 kOhm	2%							
R	031	57-11-4222	242 kOhm	2%							
R	032	57-11-4222	242 kOhm	2%							
R	033	57-11-4222	242 kOhm	2%							
R	034	57-11-4222	242 kOhm	2%							
R	035	57-11-4222	242 kOhm	2%							
R	036	57-11-4222	242 kOhm	2%							
R	037	57-11-4222	242 kOhm	2%							
<p>REG 85/02/06 [01] 85/02/27</p>											

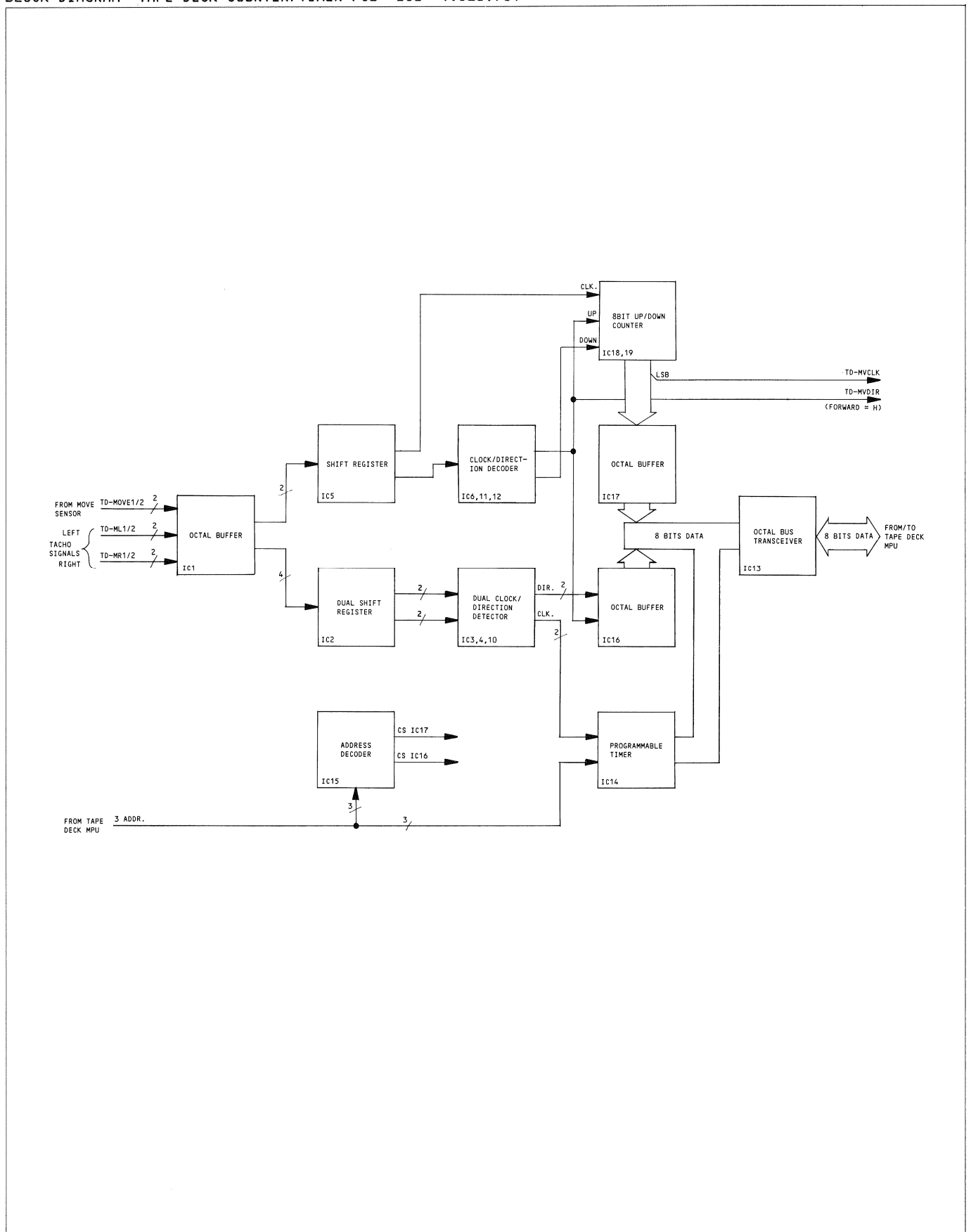
TAPE LIFTER CONTROL PCB 1.820.773.82 GRP 46,47



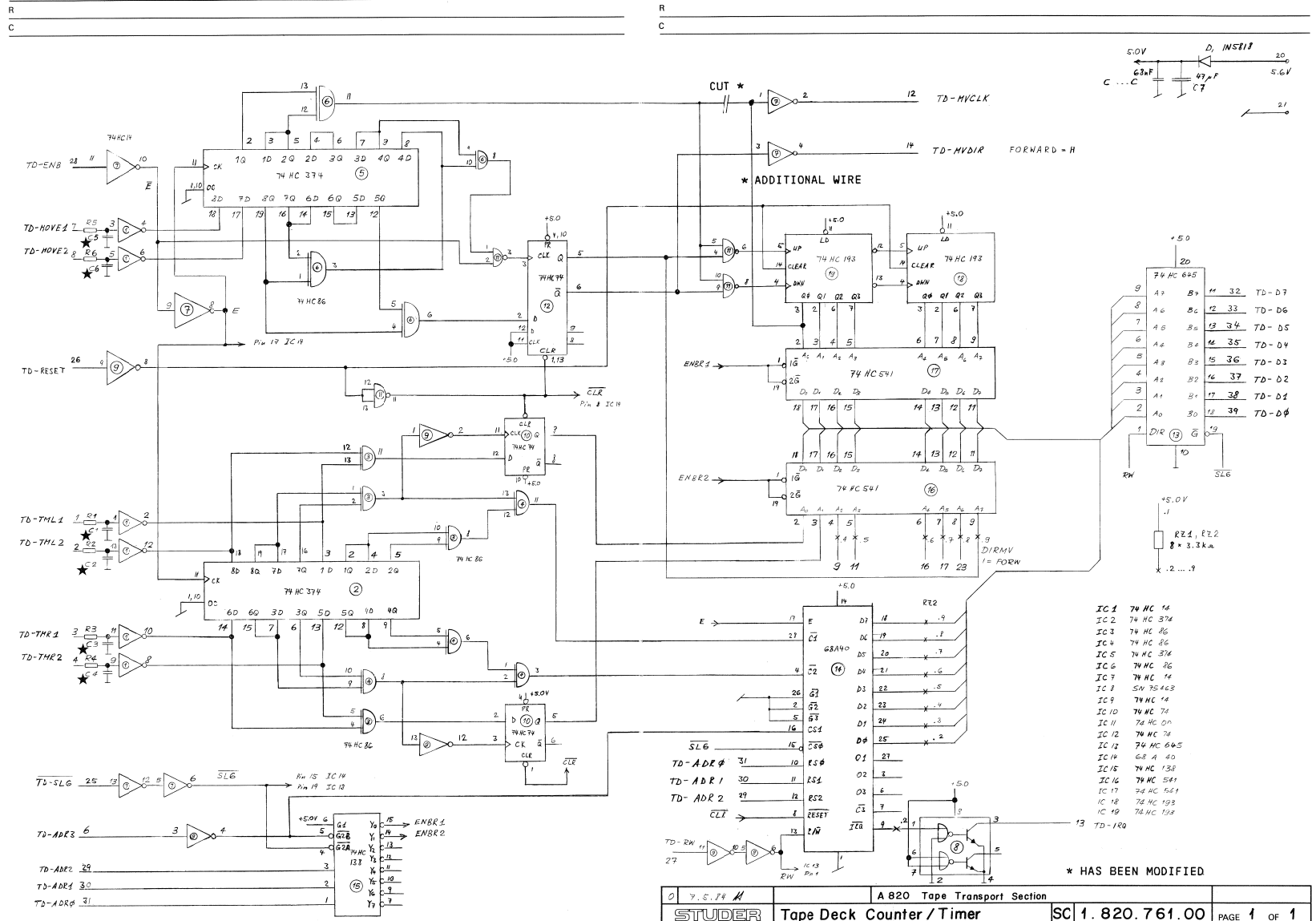
INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C	001	59-06-0583	68 nF	10%, 63V PETP		IC1				Improved supply voltage ripple	
C	002	59-06-2331	330 pF	2.5%, 63V PP						Manufacturer: Philips, Selenoscom, SGS/SGS-Alloc, Sian/Siamins, TFElefunke, TFElex Instruments, Tontoshiba.	
C	003	59-06-2331	330 pF	2.5%, 63V PP		Note 1 - Connector: AMP Nr. --163-080-6					
C	004	59-06-0583	68 nF	10%, 63V PETP		Note 2 - Connector: Yamaichi Nr. PAP-16-08//A Burny Nr. BPH 9 B 16 800 GS					
C	005	59-22-0471	470 uF	10%, 63V PETP		E1-Electrolytic, PPSPolypropylene					
C	006	59-22-0471	470 uF	10%, 63V PETP		Manufacturer: Ic-Fairchild, Iff-Intermetall, Mot-Motorola, Opn/Optron, Philips, Selenoscom, SGS/SGS-Alloc, Sian/Siamins, TFElefunke, TFElex Instruments, Tontoshiba.					
C	007	59-22-0471	470 uF	10%, 63V PETP							
C	008	59-22-0471	470 uF	10%, 63V PETP							
C	009	59-22-0471	470 uF	10%, 63V PETP							
C	010	59-22-0471	470 uF	10%, 63V PETP							
D	001	59-06-0122	IN 4001	...	Not						
D	002	59-06-0122	IN 4001	...	Not						
D	003	59-06-0122	IN 4001	...	Not						
D	004	59-06-0122	IN 4001	...	Not						
D	005	59-06-0122	IN 4001	...	Not						
D	006	59-06-0122	IN 4001	...	Not						
D	007	59-06-0122	IN 4001	...	Not						
D	008	59-06-0122	IN 4001	...	Not						
D	009	59-06-0122	IN 4001	...	Not						
D	010	59-06-0122	IN 4001	...	Not						
IC	001	59-19-0166	OpA 8265		OP						
IT	001	59-19-0114	uA 9637A		TI/Fc						
<p>REG 85/02/06 [01] 85/02/27</p>											

INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	INT.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R	001	57-11-4471	470 Ohm	2%							
R	002	57-11-4222	242 kOhm	2%							
R	003	57-11-4222	242 kOhm	2%							
R	004	57-11-4222	242 kOhm	2%							
R	005	57-11-4222	242 kOhm	2%							
R	006	57-11-4222	242 kOhm	2%							
R	007	57-11-4222	242 kOhm	2%							
R	008	57-11-4222	242 kOhm	2%							
R	009	57-11-4222	242 kOhm	2%							
R	010	57-11-4222	242 kOhm	2%							
R	011	57-11-4222	242 kOhm	2%							
R	012	57-11-4222	242 kOhm	2%							
R	013	57-11-4222	242 kOhm	2%							
R	014	57-11-4222	242 kOhm	2%							
R	015	57-11-4222	242 kOhm	2%							
R	016	57-11-4222	242 kOhm	2%							
R	017	57-11-4222	242 kOhm	2%							
R	018	57-11-4222	242 kOhm	2%							
R	019	57-11-4222	242 kOhm	2%							
R	020	57-11-4222	242 kOhm	2%							
R	021	57-11-4222	242 kOhm	2%							
R	022	57-11-4222	242 kOhm	2%							
R	023	57-11-4222	242 kOhm	2%							
R	024	57-11-4222	242 kOhm	2%							
R	025	57-11-4222	242 kOhm	2%							
R	026	57-11-4222	242 kOhm	2%							
R	027	57-11-4222	242 kOhm	2%							
R	028	57-11-4222	242 kOhm	2%							
R	029	57-11-4222	242 kOhm	2%							
R	030	57-11-4222	242 kOhm	2%							
R	031	57-11-4222	242 kOhm	2%							
R	032	57-11-4222	242 kOhm	2%							
R	033	57-11-4222	242 kOhm	2%							
R	034	57-11-4222	242 kOhm	2%							
R	035	57-11-4222	242 kOhm	2%							
R	036	57-11-4222	242 kOhm	2%							
R	037	57-11-4222	242 kOhm	2%							
<p>REG 85/02/06 [01] 85/02/27</p>											

BLOCK DIAGRAM TAPE DECK COUNTER/TIMER PCB "ESE" 1.820.761

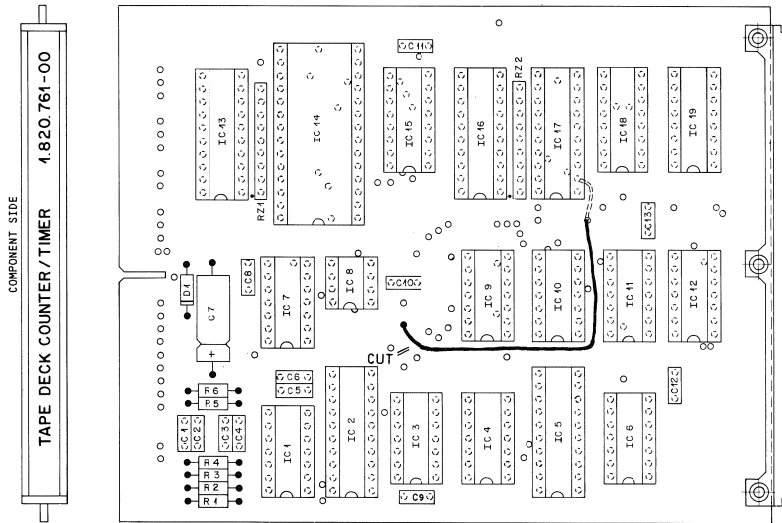


TAPE DECK COUNTER/TIMER PCB "ESE" 1.820.761.00 GRP 20/ELM 44

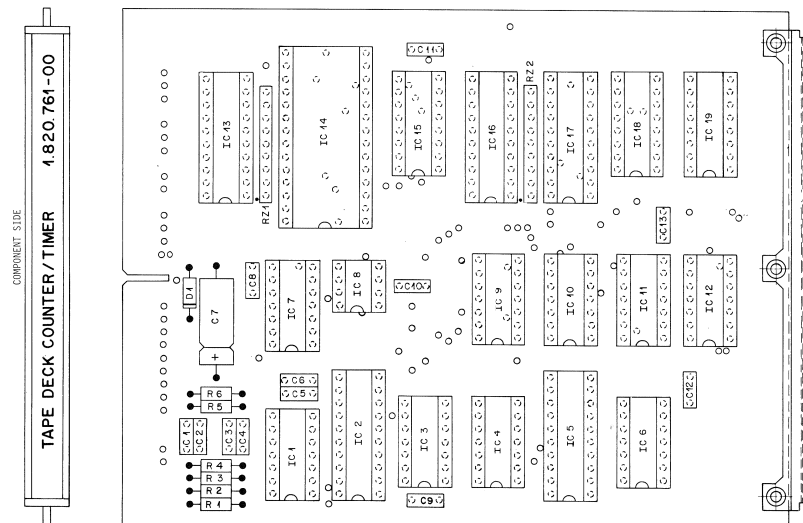


0	Y. S. 74 M	A 820 Tape Transport Section	
STUDER	Tape Deck Counter / Timer	SC 1.820.761.00	PAGE 1 OF 1

TAPE DECK COUNTER/TIMER PCB "ESE" 1.820.761.00 GRP 20/ELM 44



LAYOUT 1.820.761.12



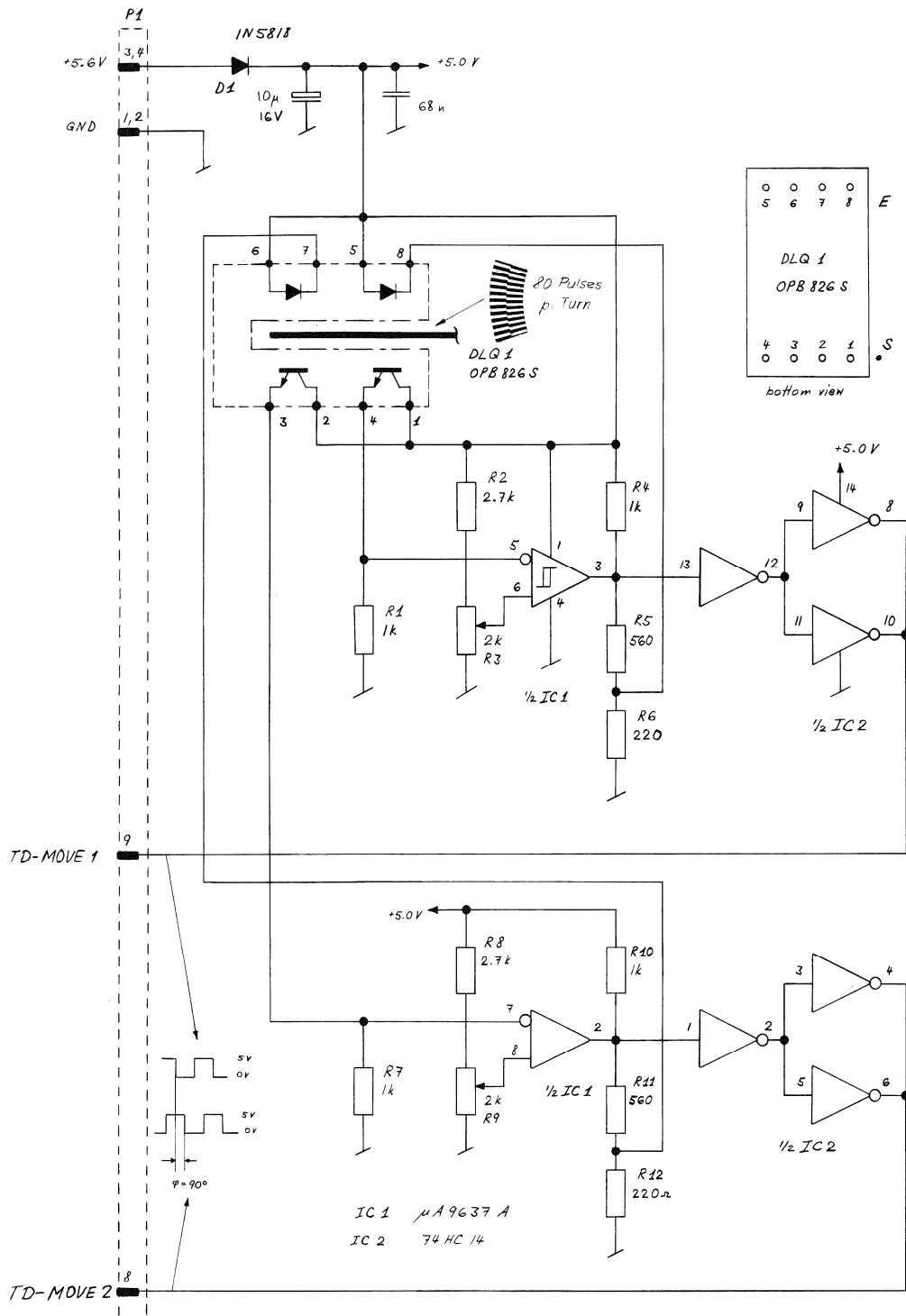
LAYOUT 1.820.761.13

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	D.....1	50-04-0512	1N 5818	1N 5819	Not
(00)	C.....1			not used	
(01)	C.....1	59-34-4331	330 pF	OR.	Cer
(00)	C.....2			not used	
(01)	C.....2	59-34-4331	330 pF	OR.	Cer
(00)	C.....3			not used	
(01)	C.....3	59-34-4331	330 pF	OR.	Cer
(00)	C.....4			not used	
(01)	C.....4	59-34-4331	330 pF	OR.	Cer
(00)	C.....5			not used	
(01)	C.....5	59-34-4331	330 pF	OR.	Cer
(00)	C.....6			not used	
(01)	C.....6	59-34-4331	330 pF	OR.	Cer
(00)	C.....7			not used	
(01)	C.....7	59-25-3670	47 uF	10%	EL
	C.....8	59-06-0083	68 nF		
	C.....9	59-06-0083	68 nF		
	C.....10	59-06-0083	68 nF		
	C.....11	59-06-0083	68 nF		
	C.....12	59-06-0083	68 nF		
	C.....13	59-06-0083	68 nF		
	IC.....1	50-17-1014	74 HC 14	-- 74 HC 14 --	Motorola
	IC.....2	50-17-1374	74 HC 374	-- 74 HC 374 --	Motorola
	IC.....3	50-17-1086	74 HC 86	-- 74 HC 86 --	Motorola
	IC.....4	50-17-1086	74 HC 86	-- 74 HC 86 --	Motorola
	IC.....5	50-17-1374	74 HC 374	-- 74 HC 374 --	Motorola
	IC.....6	50-17-1086	74 HC 86	-- 74 HC 86 --	Motorola
	IC.....7	50-17-1014	74 HC 14	-- 74 HC 14 --	Motorola
	IC.....8	50-05-0203	SN 75463 P	SN 75463 JG SN 55463 JG SN 3013 N NSIT	Motorola
	IC.....9	50-17-1014	74 HC 14	-- 74 HC 14 --	Motorola
	IC.....10	50-17-1074	74 HC 74	-- 74 HC 74 --	Motorola
	IC.....11	50-17-1000	74 HC 00	-- 74 HC 00 --	Motorola
	IC.....12	50-17-1074	74 HC 74	-- 74 HC 74 --	Motorola
	IC.....13	50-17-1065	74 HC 65	-- 74 HC 65 --	Motorola
	IC.....14	50-16-0113	MC 68A 40P	10 68A 40P	Motorola
	IC.....15	50-17-1138	74 HC 138	-- 74 HC 138 --	Motorola

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.....16	50-17-1541	74 HC 541	-- 74 HC 541 --	Motorola
	IC.....17	50-17-1541	74 HC 541	-- 74 HC 541 --	Motorola
	IC.....18	50-17-1193	74 HC 193	-- 74 HC 193 --	Motorola
	IC.....19	50-17-1193	74 HC 193	-- 74 HC 193 --	Motorola
	R.....1	57-11-1021	100 Ohm		
	R.....2	57-11-1021	100 Ohm		
	R.....3	57-11-1021	100 Ohm		
	R.....4	57-11-1021	100 Ohm		
	R.....5	57-11-1021	100 Ohm		
	R.....6	57-11-1021	100 Ohm		
	RZ.....1	57-89-4332		Networks 8 x 3x3 Kohms 5% single line	
	RZ.....2	57-89-4332		Networks 8 x 3x3 Kohms 5% single line	

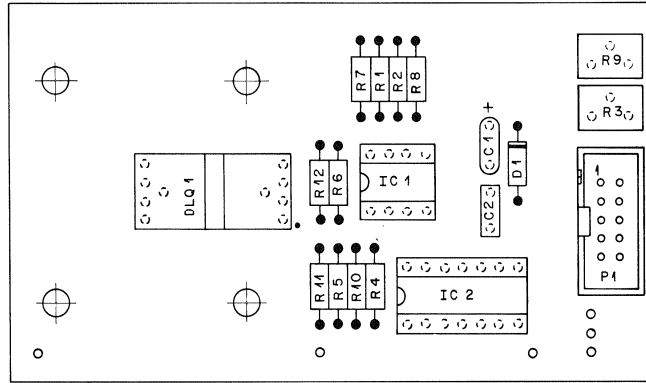
(01) 66-04-07 Improved noise suppression on tacho signals.
 Cer-Ceramic, El-Electrolytic
 MANUFACTURERS: M=Hitachi, G=Motorola, NS=National Semiconductor, P=Philips, CA=CA Corporation, SSS=SGS/Ates, E=Electron Instruments, T=Technis.
 ORIG 84/09/07 (01) 86/04/07
 STUDER (01) 86/04/07 P8 TAPE DECK COUNTER/TIMER 1.820.761.00 PAGE 2

MOVE SENSOR PCB "ESE" 1.820.770.00 GRP 45



© 11.12.84 A	A 820 Tape Transport Section		
STUDER	Move Sensor PCB	SC 1.820.770.00	PAGE 1 OF 1

MOVE SENSOR PCB "ESE" 1.820.770.00 GRP 45



IND.	POS.NU.	PART NU.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.2100	10 uF	20%, 16V, Sa1		Ph
C.....2	59.06.0683	68 nF	10%, 63V, PETP		
D.....1	90.04.0512	1N 5818	1N 5819		Mot
DLQ...1	50.99.0166	OPB 826 S			Op
IC.....1	50.15.0114	uA9637ACP	9637 ATC		Fc+Ti
IC.....2	50.17.1014	74 HC 14			Ph+Mot,NS,RCA,TI,To
P.....1	54.14.2001		see note 1		
R.....1	57.11.4102	1 kOhm	2%		
R.....2	57.11.4272	2.7 kOhm	2%		
R.....3	58.05.0202	2 kOhm	see note 2		
R.....4	57.11.4102	1 kOhm	2%		
R.....5	57.11.4561	560 Ohm	2%		
R.....6	57.11.4221	220 Ohm	2%		
R.....7	57.11.4102	1 kOhm	2%		
R.....8	57.11.4272	2.7 kOhm	2%		
R.....9	58.05.0202	2 kOhm	see note 2		
R.....10	57.11.4102	1 kOhm	2%		
R.....11	57.11.4561	560 Ohm	2%		
R.....12	57.11.4221	220 Ohm	2%		

S T U D E R (00) 84/12/11 CK MOVE SENSOR 1.820.770.00 PAGE 1

IND.	POS.NU.	PART NU.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
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Note 1 - Connector: Yamaichi Nr. FAP-10-08/ 4
Burndy Nr. BPH 7 B 10 B00 GS

Note 2 - Potentiometer: Bourns Nr. 3296 Z - 1 - 202
Spectrol Nr. 64 Z 202 T 000

Sa1=Solid aluminium

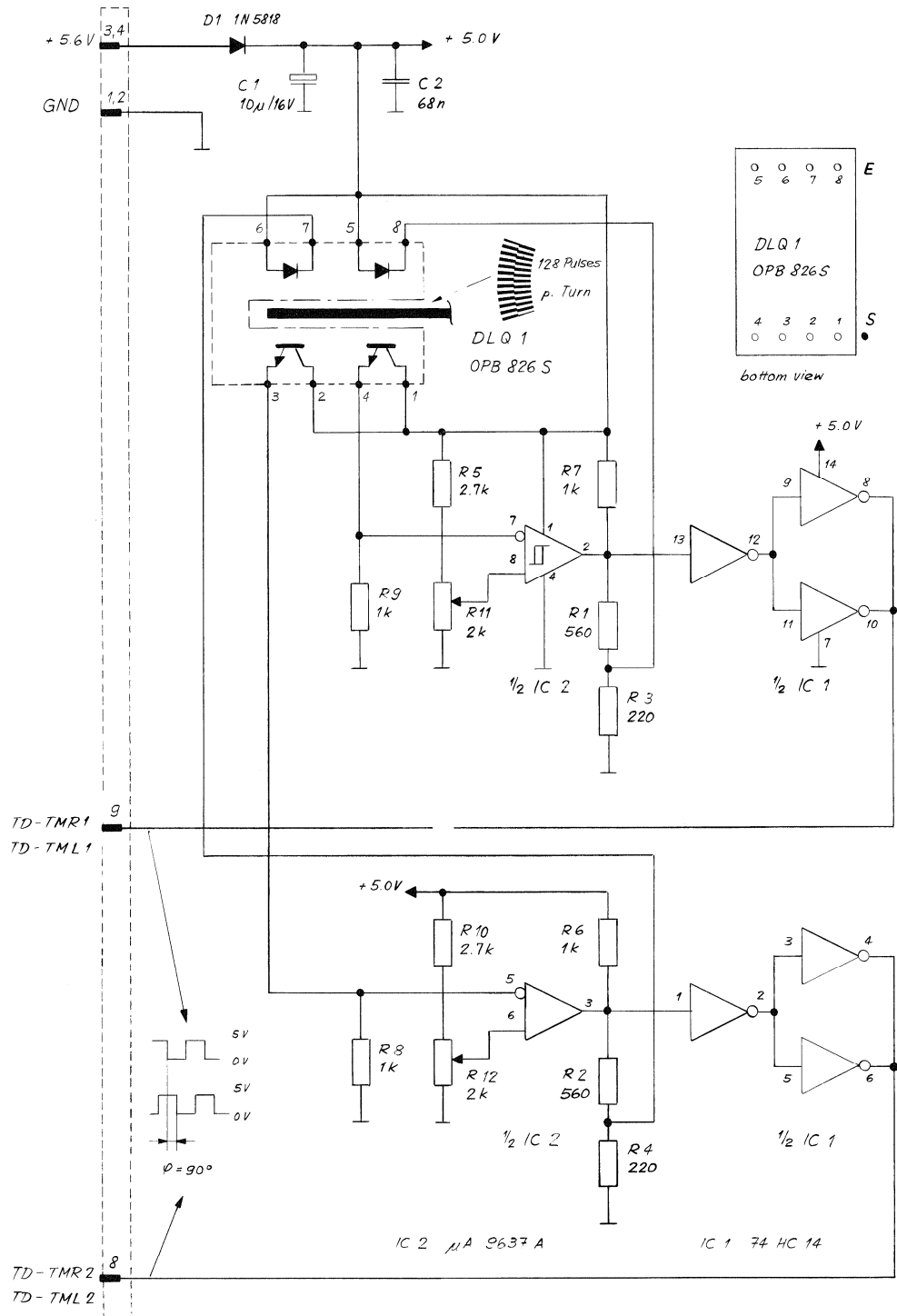
Manufacturer: Fc=Fairchild, Mot=Motorola, NS=National Semiconductors,
Op=Optron, Ph=Phillips, RCA=Radio Corporation of America,
Ti=Texas Instruments, To=Toshiba.

ORIG 84/12/11

S T U D E R (00) 84/12/11 CK MOVE SENSOR 1.820.770.00 PAGE 2

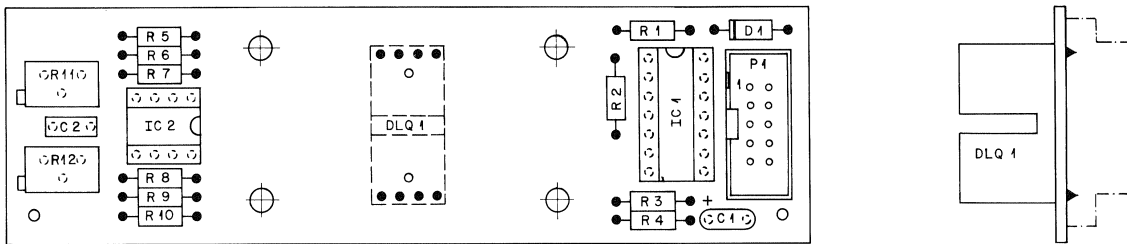
MOTOR TACHO PCB "ESE" 1.820.771.81 GRP 36,37

R	
C	



8.1.85 CK	A 820 Tape Transport Section		
STUDER	Motor Tacho PCB	SC 1.820.771.81	PAGE 1 OF 1

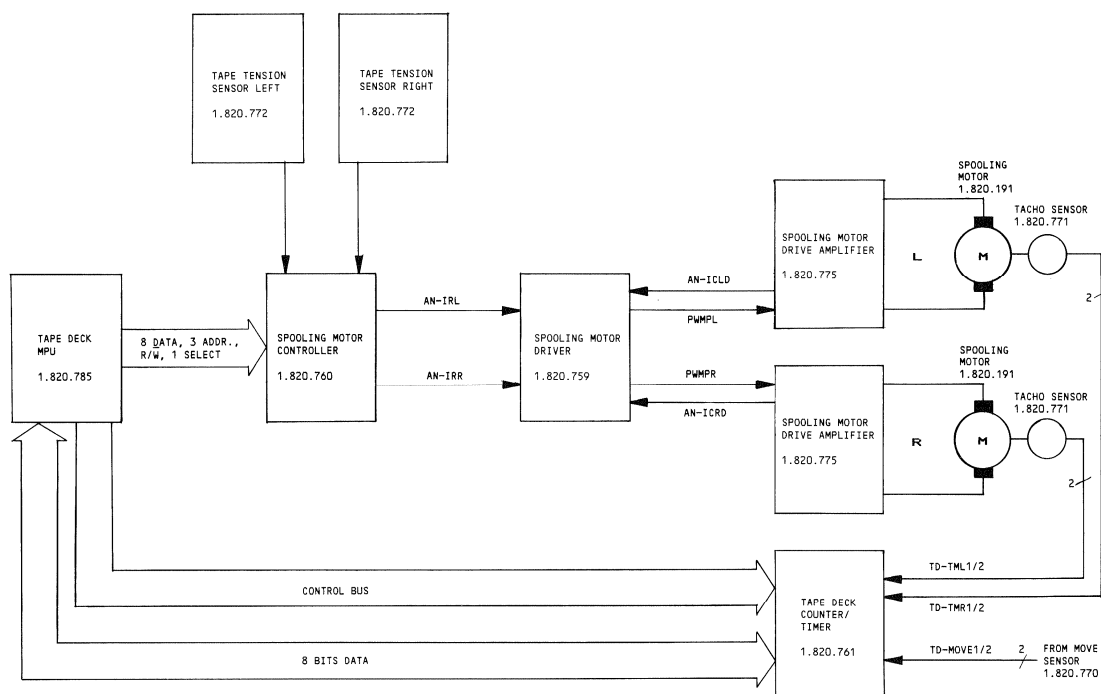
MOTOR TACHO PCB "ESE" 1.820.771.81 GRP 36,37



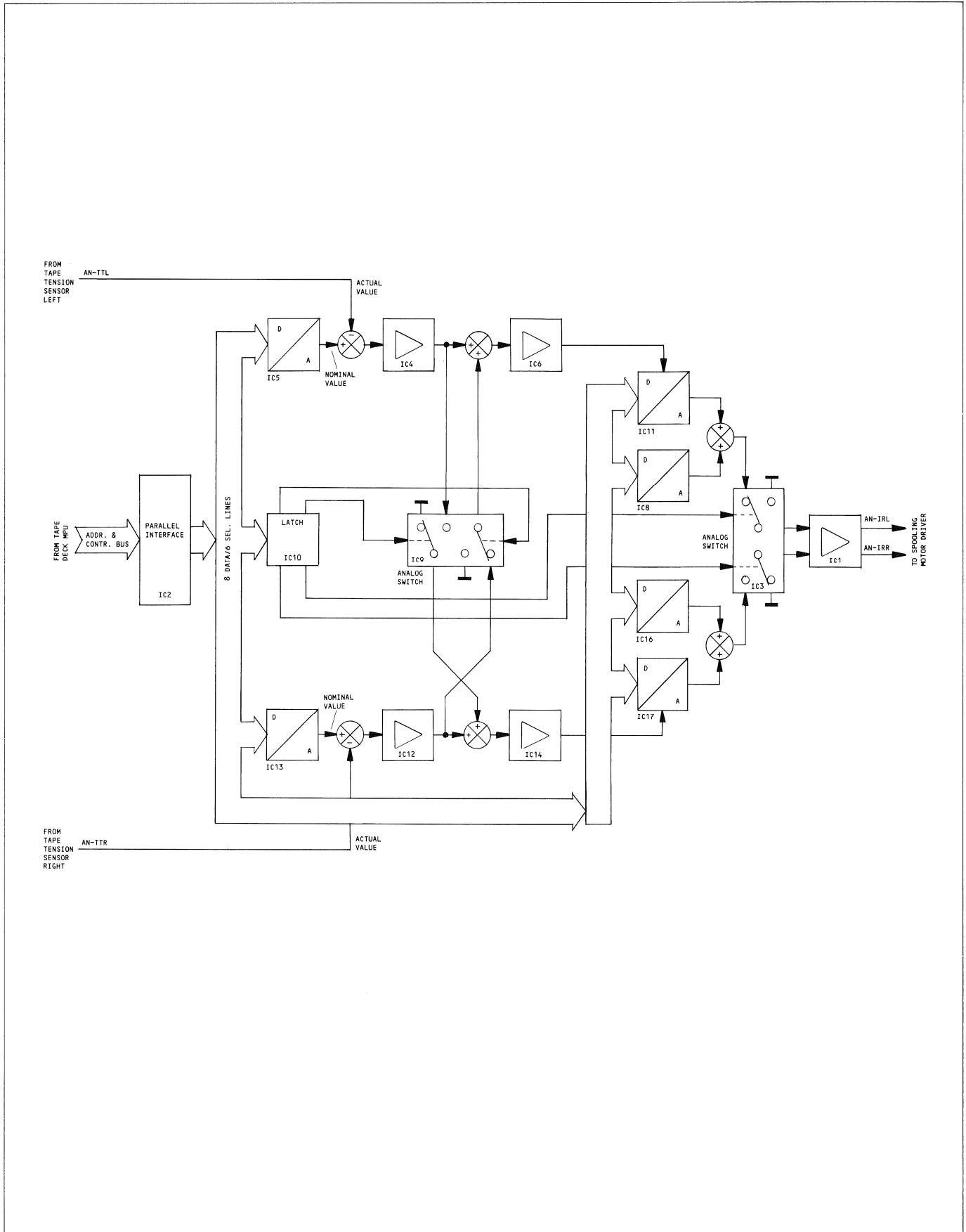
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.2100	10 uF	20%	16V, Sal	PH
C.....2	59.06.0683	68 nF	10%	63V, PETP	
D.....1	50.04.0512	1N 5818	1N	5819	Mot
DLQ....1	50.99.0166	0PB 826 S			Op
IC.....1	50.17.1014	74 HC 14			Ph,Mot,NS,RCA,Ti,To
IC.....2	50.15.0114	uA9637ACP		7637ATC	Fc,TI
P.....1	54.14.2001			see note 1	
R.....1	57.11.4561	560 Ohm	2%		
R.....2	57.11.4561	560 Ohm	2%		
R.....3	57.11.4221	220 Ohm	2%		
R.....4	57.11.4221	220 Ohm	2%		
R.....5	57.11.4272	2.7 kOhm	2%		
R.....6	57.11.4102	1.0 kOhm	2%		
R.....7	57.11.4102	1.0 kOhm	2%		
R.....8	57.11.4102	1.0 kOhm	2%		
R.....9	57.11.4102	1.0 kOhm	2%		
R.....10	57.11.4272	2.7 kOhm	2%		
R.....11	58.05.0202	2 kOhm		see note 2	
R.....12	58.05.0202	2 kOhm		see note 2	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Connector: Yamaichi Nr. FAP-10-08/ 4 Burdy Nr. BPH 7 B 10 B00 G5					
Note 2 - Potentiometer: Bourns Nr. 3296 Z - 1 - 202 Spectrol Nr. 64 Z 202 T 000					
Sal=Solid aluminium					
Manufacturer: Fc=Fairchild, Mot=Motorola, NS=National Semiconductors, Op=Optron, Ph=Philips, RCA=Radio Corporation of America, TI=Texas Instruments, To=Toshiba.					

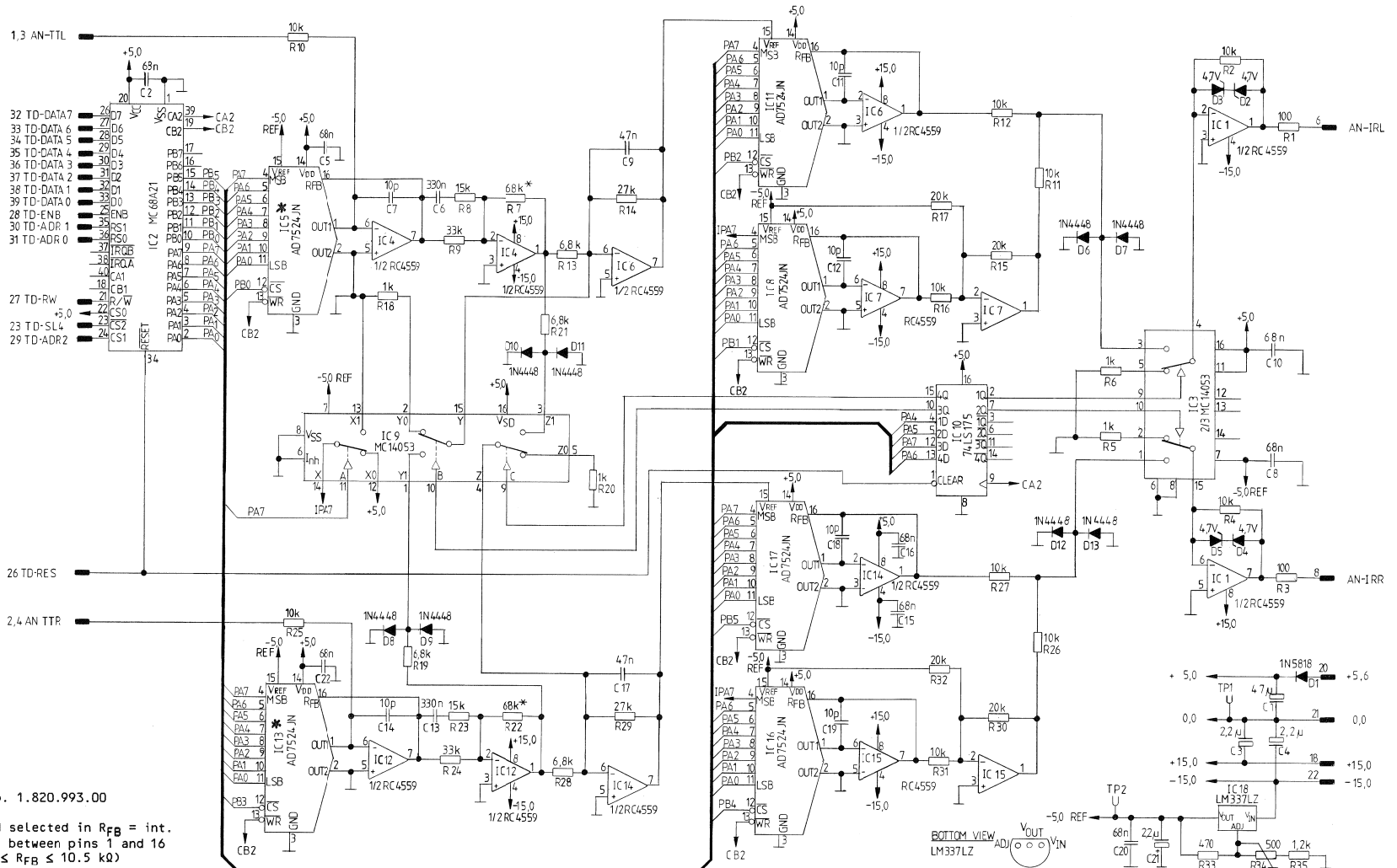
BLOCK DIAGRAM (SURVEY) SPOOLING MOTOR CONTROL



BLOCK DIAGRAM SPOOLING MOTOR CONTROLLER PCB "ESE" 1.820.760



SPOOLING MOTOR CONTROLLER PCB "ESE" 1.820.760.00 GRP 20/ELM 45

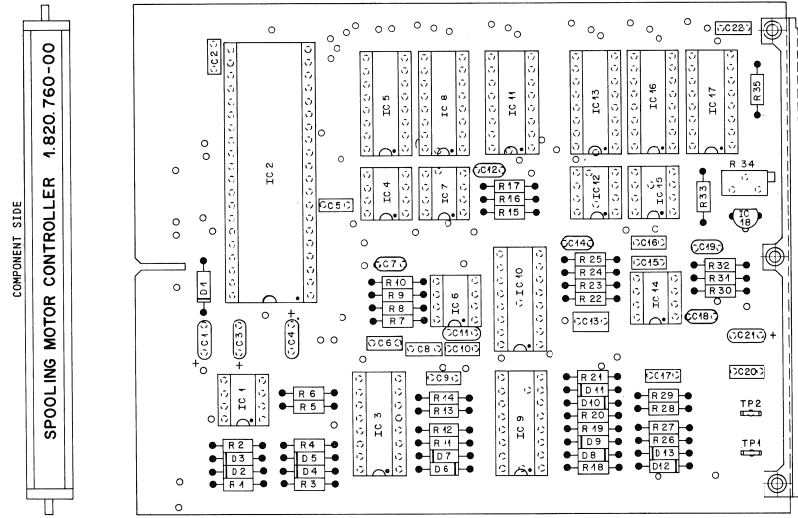


Note:
 IC5, IC13:
 ■ Order No. 1.820.993.00
 or:
 ■ AD7524JN selected in RFB = int.
 Resistor between pins 1 and 16
 (9.5 kΩ ≤ RFB ≤ 10.5 kΩ)

* HAS BEEN MODIFIED

① 20,11,84	af	① 28,03,85	ck	○ ..	○ ..	○ ..
STUDER			Spooling Motor Controller			SC 1.820.760.00
						PAGE 1 OF 1

SPOOLING MOTOR CONTROLLER PCB "ESE" 1.820.760.00 GRP 20/ELM 45



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....1		59.26.0670	4.7 uF	6.3V, Sol	
C....2		59.06.0683	30 nF		
C....3		59.26.5229	2.2 uF	25V, Sol	
C....4		59.26.5229	2.2 uF	25V, Sol	
C....5		59.06.0683	68 nF		
C....6		59.06.0334	330 nF	10% Co	
C....7		59.34.1100	10 pF	Co	
C....8		59.06.0683	30 nF		
C....9		59.06.0673	67 nF	10% Co	
C....10		59.06.0683	30 nF		
C....11		59.34.1100	10 pF	Co	
C....12		59.34.1100	10 pF	Co	
C....13		59.06.0334	330 nF	10% Co	
C....14		59.34.1100	10 pF	Co	
C....15		59.06.0683	30 nF		
C....16		59.06.0673	67 nF	10% Co	
C....17		59.34.1100	10 pF	Co	
C....18		59.06.0683	30 nF		
C....19		59.34.1100	10 pF	Co	
C....20		59.26.5229	2.2 uF	25V, Sol	
C....21		59.26.5229	2.2 uF	25V, Sol	
C....22		59.06.0683	68 nF		

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D....1		90.04.0212	1W 9819	IN 9819	NS
D....2		90.04.1123	4.7 W 2	82X83C 4V7, 0.2X55C 4V7, ZPD 4.7	ITT,SES
D....3		90.04.1123	4.7 W 2	82X83C 4V7, 0.2X55C 4V7, ZPD 4.7	ITT,SES
D....4		90.04.1123	4.7 W 2	82X83C 4V7, 0.2X55C 4V7, ZPD 4.7	ITT,SES
D....5		90.04.1123	4.7 W 2	82X83C 4V7, 0.2X55C 4V7, ZPD 4.7	ITT,SES
D....6		90.04.0225	IN 4448		
D....7		90.04.0225	IN 4448		
D....8		90.04.0225	IN 4448		
D....9		90.04.0225	IN 4448		
D....10		90.04.0225	IN 4448		
D....11		90.04.0225	IN 4448		
D....12		90.04.0225	IN 4448		
D....13		90.04.0225	IN 4448		

S T U D E R (02) 85/09/19 CK SPOOLING MOTOR CONTROLLER 1.820.760.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
I....1		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....2		90.16.0106	MC68 A ZIP	561 A ZIP, P68 A ZIP	AMI/IC-MOT
I....3		90.07.0315	MC14053BCP	--- 4053 ---	Mot,NS,PHI,CA,TO
I....4		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....5		1.820.993.00			
(01)		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....6		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....7		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....8		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....9		90.07.0315	MC14053BCP	--- 4053 ---	Mot,NS,PHI,CA,TO
I....10		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....11		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
(01)		1.820.993.00			
(02)		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....12		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....13		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....14		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....15		90.09.0107	RC 4559 NB	uPC 4559, slow rate min. 1.5 V/us	NEC-Ra
I....16		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....17		90.07.0302	AD 7524 JN	MP 7524 JN	ADI-MPS
I....18		90.10.0109	LW 337 LZ		NS

TP...1 94.02.0320 Test point
 TP...2 94.02.0320 Test point

R....1 57.11.4.01 100 Ohm
 R....2 57.11.4.03 10 kOhm 5%
 R....3 57.11.4.01 100 Ohm 5%
 R....4 57.11.4.03 10 kOhm 5%
 R....5 57.11.4.02 1 kOhm 5%
 R....6 57.11.4.02 1 kOhm 5%
 R....7 57.11.4.03 33 kOhm 5%
 (01) R....8 57.11.4.03 33 kOhm 5%
 R....9 57.11.4.03 33 kOhm 5%
 R....10 57.11.4.03 33 kOhm 5%
 R....11 57.11.4.03 10 kOhm 5%
 R....12 57.11.4.03 10 kOhm 5%

S T U D E R (02) 85/09/19 CK SPOOLING MOTOR CONTROLLER 1.820.760.00 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....13		57.11.4.082	6.8 kOhm	5%	
R....14		57.11.4.073	22 kOhm	5%	
R....15		57.11.4.203	20 kOhm	5%	
R....16		57.11.4.103	10 kOhm	5%	
R....17		57.11.4.203	20 kOhm	5%	
R....18		57.11.4.102	1 kOhm	5%	
R....19		57.11.4.082	6.8 kOhm	5%	
R....20		57.11.4.102	1 kOhm	5%	
(00)		R....21	57.11.4.082	6.8 kOhm	5%
(01)		R....22	57.11.4.083	68 kOhm	5%
R....23		57.11.4.333	33 kOhm	5%	
R....24		57.11.4.333	33 kOhm	5%	
R....25		57.11.4.103	10 kOhm	5%	
R....26		57.11.4.103	10 kOhm	5%	
R....27		57.11.4.103	10 kOhm	5%	
R....28		57.11.4.082	6.8 kOhm	5%	
R....29		57.11.4.073	22 kOhm	5%	
R....30		57.11.4.203	20 kOhm	5%	
R....31		57.11.4.103	10 kOhm	5%	
R....32		57.11.4.203	20 kOhm	5%	
R....33		57.11.4.431	4.70 Ohm	5%	
R....34		98.05.0501	300 Ohm	5%	
R....35		57.11.4.122	1.2 kOhm	5%	

S T U D E R (02) 85/09/19 CK SPOOLING MOTOR CONTROLLER 1.820.760.00 PAGE 3

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)		85.03.28		Improved response of tape tension control.	
(02)		85.09.19		Narrow of tape tension feed-back gain.	

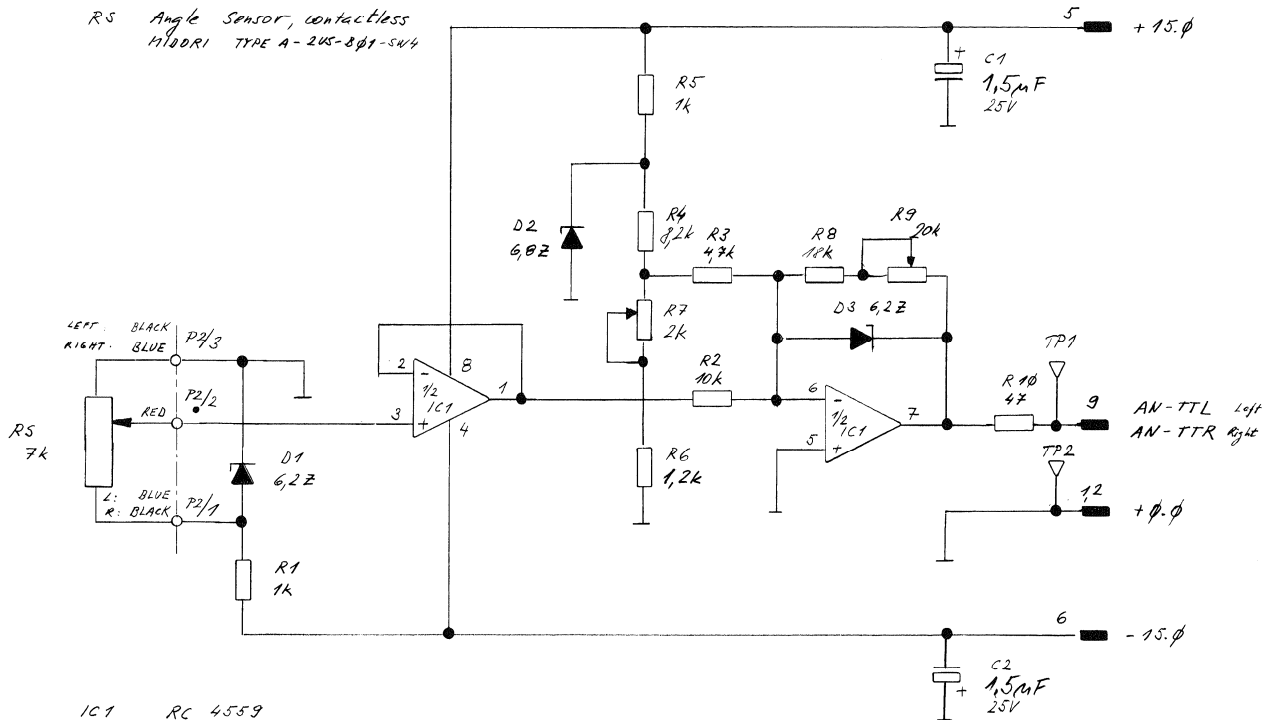
Note 1: Use 1.820.993-00 or AD 7524 JN (Studer-No 5077000) selected in REF to kOhm +-5% (1% to 10% kOhm + resistor between pins 1 and 16).

Ceramic: SoliSolid aluminium
 MANUFACTURER: ADI-Analog Devices Inc., AMI-American Microsystem Inc., Ecspairchida, Moti-Motorola, MPS-Micropower Semiconductors, NEC-Nippon Electric Corp., NS-NEOSYSTEMS, PHILIPS-Philips, RAI-Raytheon, RCA-RCA Corp. of America, SIG-Signetics, TI-Texas Instruments

DRIG 84/11/20 (01) 85/03/28 (02) 85/09/19
 S T U D E R (02) 85/09/19 CK SPOOLING MOTOR CONTROLLER 1.820.760.00 PAGE 4

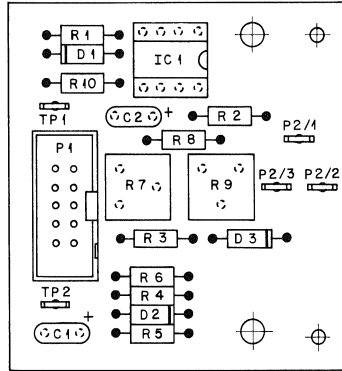
TAPE TENSION SENSOR PCB 1.820.772.00 GRP 42,43

R7 Offset Adjusting
 R9 Gain Adjusting
 RS Angle Sensor, contactless
 H100R1 TYPE A-205-801-SV4



0	18.2.85	#1	A 820 Tape Transport Section	
STUDER	Tape Tension Sensor PCB		SC 1.820.772.00	PAGE 1 OF 1

TAPE TENSION SENSOR PCB 1.820.772.00 GRP 42,43



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.5159	1.5 uF	25V, solid aluminium	Ph
C.....2		59.26.5159	1.5 uF	25V, solid aluminium	Ph
D.....1		50.04.1118	6.2 V Z	BZX83C 6V2, BZX55C 6V2, ZPD 6.2	ITT,Ses
D.....2		50.04.1102	6.8 V Z	BZX83C 6V8, BZX55C 6V8, ZPD 6.8	ITT,Ses
D.....3		50.04.1118	6.2 V Z	BZX83C 6V2, BZX55C 6V2, ZPD 6.2	ITT,Ses
IC.....1		50.09.0107	RC 4559 Nb	uPC 4559	NEC,Ra
P.....1		54.14.2001	10 cont.	See note 1	
P...2/1		54.02.0320			
P...2/2		54.02.0320			
P...2/3		54.02.0320			
R.....1		57.11.4102	1 kOhm		
R.....2		57.11.4103	10 kOhm		
R.....3		57.11.4472	4.7 kOhm		
R.....4		57.11.4822	8.2 kOhm		
R.....5		57.11.4102	1 kOhm		
R.....6		57.11.4122	1.2 kOhm		
R.....7		58.01.8202	2 kOhm	See note 2	
R.....8		57.11.4183	18 kOhm		
R.....9		58.01.8203	20 kOhm	See note 3	
R.....10		57.11.4470	47 Ohm		
TP....1		54.02.0320			
TP....2		54.02.0320			

S T U D E R (00) 85/02/18 PB TAPE TENSION SENSOR 1.820.772.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
------	---------	----------	-------	-----------------------------	--------

Note 1 - Connector
 Sundry BPH 7 B 10 B00 GS
 Yamaichi FAP-10-08//4

Note 2 - 2 kOhm Potentiometer, linear
 Allan Bradley E 2B 202
 Bourns 386 F-1-202
 Spectrol 63 M 202 T010

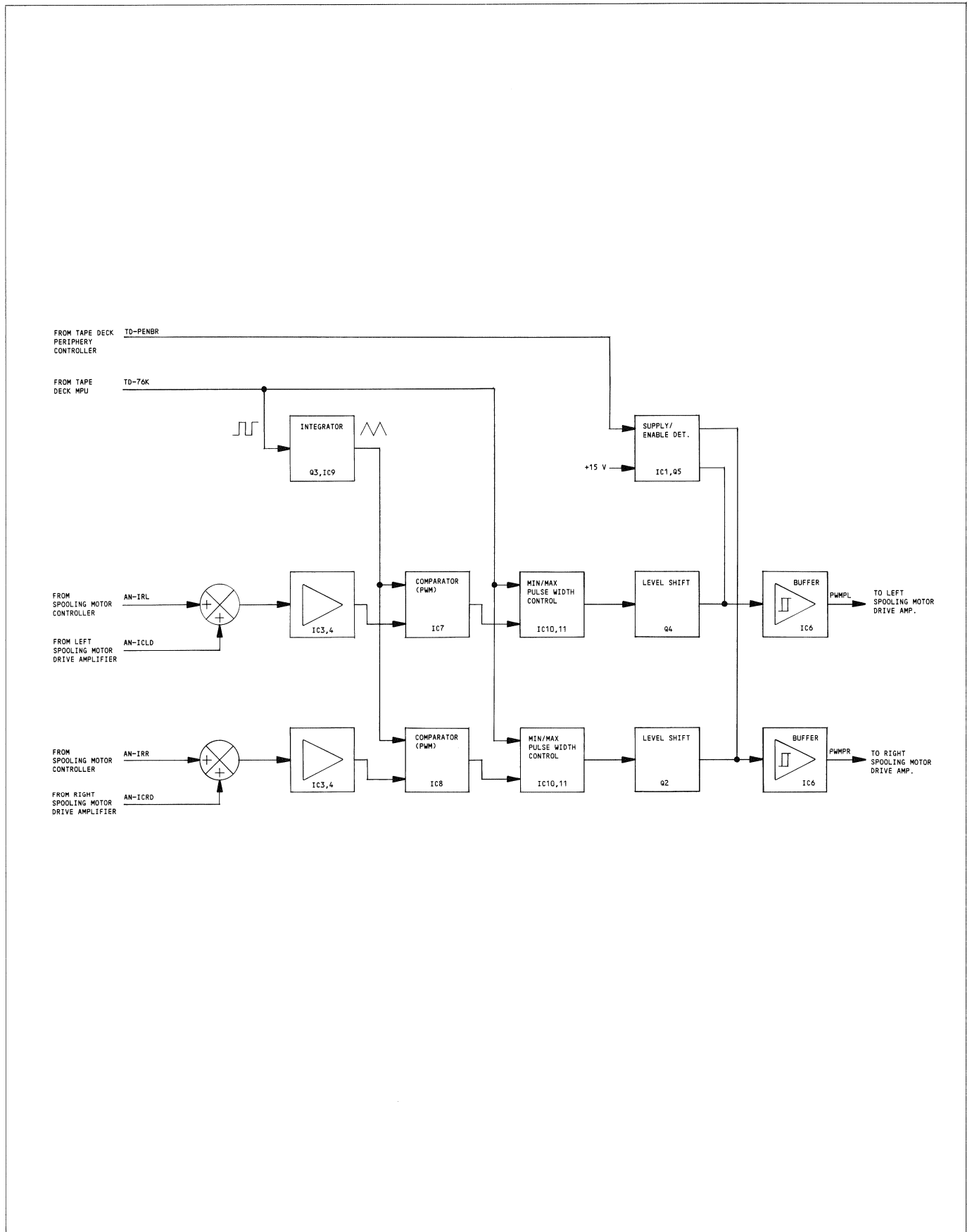
Note 3 - 20 kOhm Potentiometer, linear
 Allan Bradley E 2B 203
 Bourns 386 F-1-203
 Spectrol 63 M 203 T010

MANUFACTURER: ITT=ITT/Intermetall, NEC=Nippon Electric Corporation,
 Ph=Philips, Ra=Raytheon, Ses=Sescosem.

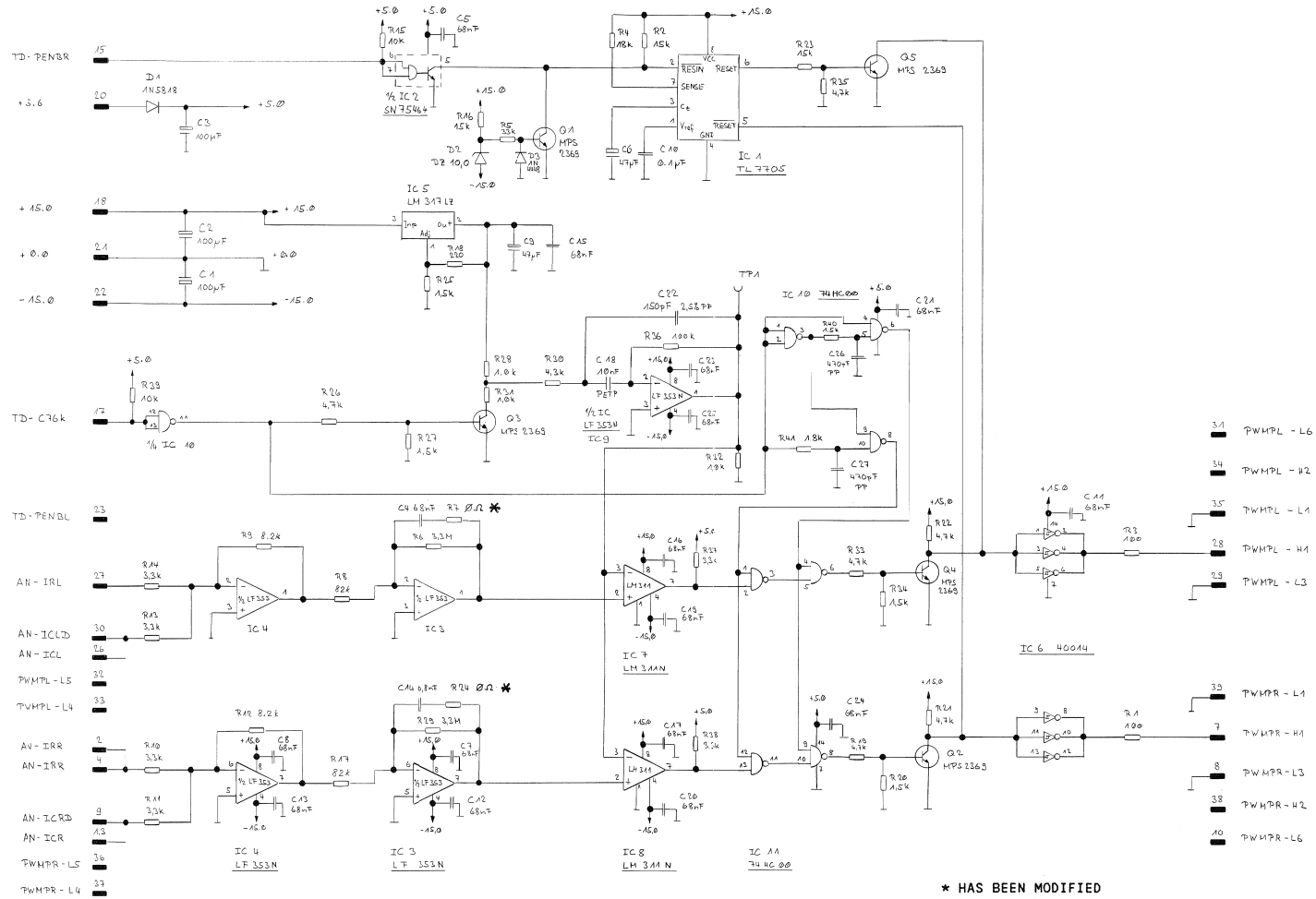
ORIG 85/02/18

S T U D E R (00) 85/02/18 PB TAPE TENSION SENSOR 1.820.772.00 PAGE 2

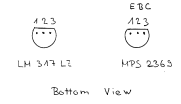
BLOCK DIAGRAM SPOOLING MOTOR DRIVER PCB "ESE" 1.820.759



SPOOLING MOTOR DRIVER PCB "ESE" 1.820.759.81/.82 GRP 20/ELM 40



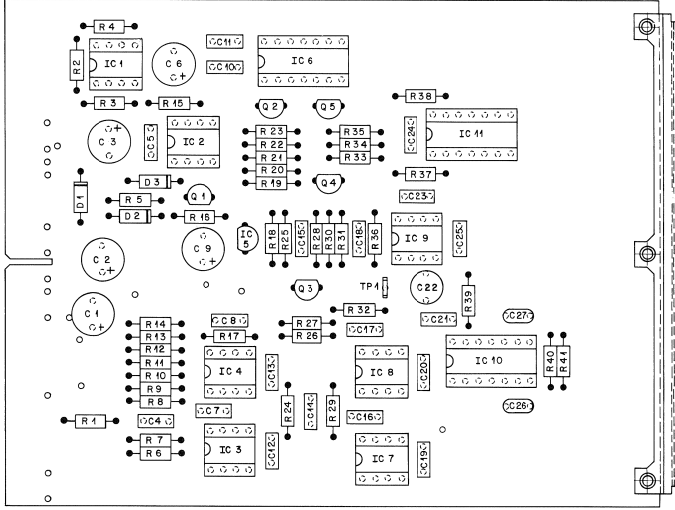
* HAS BEEN MODIFIED
 FOR 1.820.759.81, R7 AND R24 = 15 kΩ
 FOR 1.820.759.82, R7 AND R24 = 0 Ω



① 24.05.85	CK				
STUDER			A820 Tape Transport Section		PAGE 1 OF 1
Spooling Motor Driver				SC	1.820.759.82

SPOOLING MOTOR DRIVER PCB "ESE" 1.820.759.81/.82 GRP 20/ELM 40

COMPONENT SIDE
1.820.759-82
SPOOLING MOTOR DRIVER



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****1	59*22*5101	100 UF	25V		
C****2	59*22*5101	100 UF	25V		
C****3	59*22*5101	100 UF	25V		
C****4	59*08*0602	6.8 HF	10%		
C****5	59*08*0603	56 HF			
C****6	59*22*5470	47	25V		
C****7	59*08*0603	68 HF			
C****8	59*08*0603	68 HF			
C****9	59*22*5470	47 UF	25V		
C****10	59*08*0603	68 HF			
C****11	59*08*0603	68 HF			
C****12	59*08*0603	68 HF			
C****13	59*08*0603	68 HF			
C****14	59*08*0603	6.8 HF	10%		
C****15	59*08*0603	68 HF			
C****16	59*08*0603	68 HF			
C****17	59*08*0603	68 HF			
C****18	59*08*0603	68 HF			
C****19	59*08*0603	68 HF			
C****20	59*08*0603	68 HF			
C****21	59*08*0603	68 HF			
C****22	59*08*0603	68 HF			
C****23	59*08*0603	68 HF	5%		
C****24	59*08*0603	68 HF			
C****25	59*08*0603	68 HF			
C****26	59*34*5471	470 UF	5%		
C****27	59*34*5471	470 UF	5%		
D****1	50*04*0512	LN 5818	IN 5819		Not
D****2	50*04*1114	LN 311			ITT405
D****3	50*04*0125	LN 4448			Fc:ITT+Ph+Stes+Tf
IC****1	50*11*0122	TL 7705			TI
IC****2	50*09*0204	SN 7546AP	DS 7546A N		NS/IT
IC****3	50*09*0101	TL 072 CP	LF 353 N		NS/IT
IC****4	50*09*0101	TL 072 CP	LF 353 N		NS/IT
IC****5	50*10*0108	LN 317 LZ			Not/Not

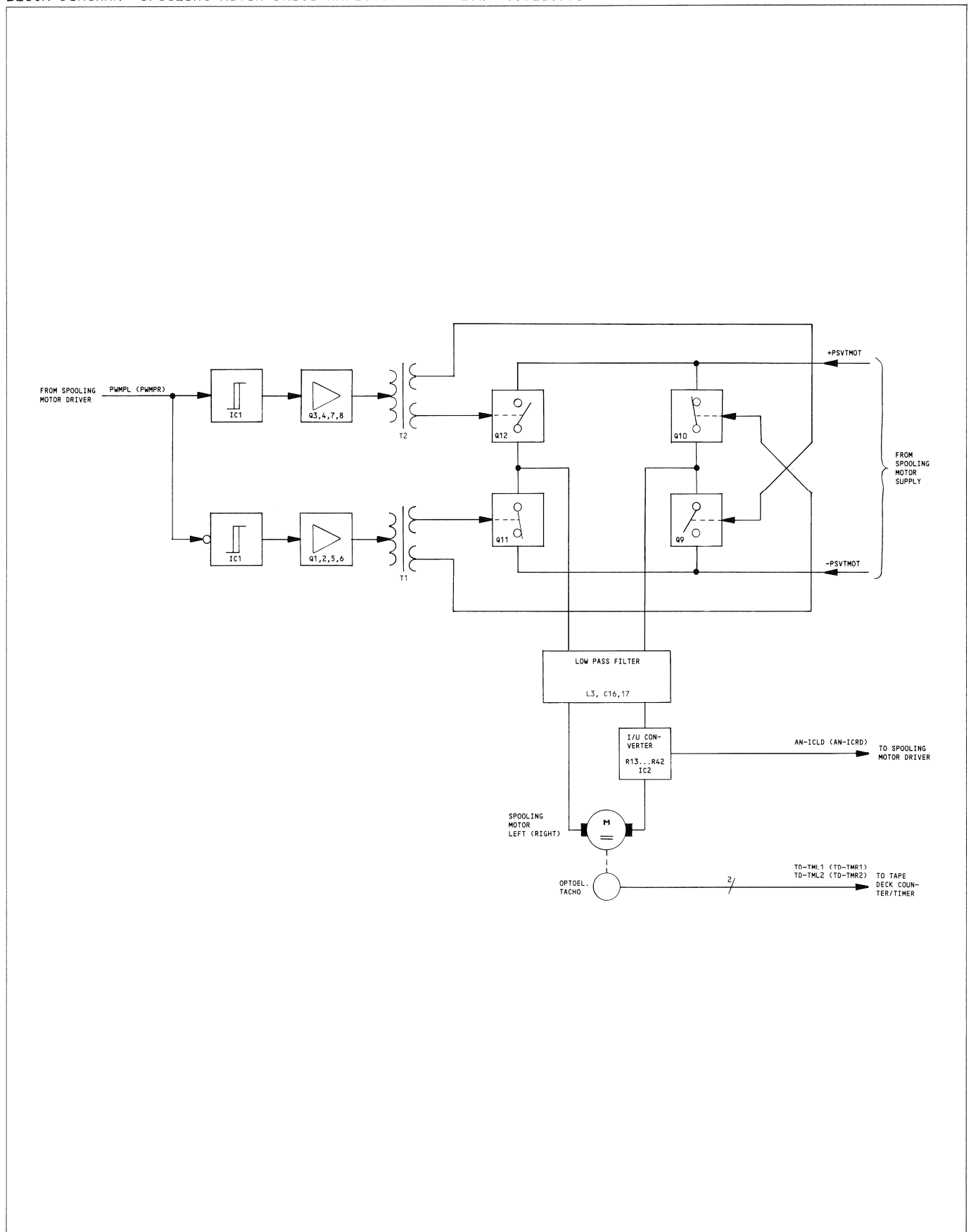
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC****6	50*07*0014	40014 BPC	MC14584 BPC		Mo+N+S+Ph+To
IC****7	50*11*0114	LN 311 N	LN 311 P		Mo+N+S
IC****8	50*11*0114	LN 311 N	LN 311 P		Mo+N+S
IC****9	50*09*0101	TL 072 CP	LF 353 N		NS/IT
IC****10	50*17*1000	74 HC 00			Mo+N+S+Ph+RCA+SOS+Tf+To
IC****11	50*17*1000	74 HC 00			Mo+N+S+Ph+RCA+SOS+Tf+To
U****1	50*03*0508	MPS 2369			Not
U****2	50*03*0508	MPS 2369			Not
U****3	50*03*0508	MPS 2369			Not
U****4	50*03*0508	MPS 2369			Not
U****5	50*03*0508	MPS 2369			Not
R****1	57*11*4101	100 Ohm			
R****2	57*11*4153	1.5 kOhm			
R****3	57*11*4101	100 Ohm			
R****4	57*11*4103	10 kOhm	5%		
R****5	57*11*4331	33 kOhm	5%		
R****6	57*11*4335	3.3 kOhm	5%		
R****7		not used			
R****8	57*11*4823	82 kOhm	5%		(replaced by wire bridge)
R****9	57*11*4822	82 kOhm	5%		
R****10	57*11*4332	3.3 kOhm	5%		
R****11	57*11*4332	3.3 kOhm	5%		
R****12	57*11*4822	82 kOhm	5%		
R****13	57*11*4332	3.3 kOhm	5%		
R****14	57*11*4332	3.3 kOhm	5%		
R****15	57*11*4103	10 kOhm	5%		
R****16	57*11*4153	1.5 kOhm	5%		
R****17	57*11*4823	82 kOhm	5%		
R****18	57*11*4221	220 Ohm	2%		
R****19	57*11*4472	4.7 kOhm	5%		
R****20	57*11*4152	1.5 kOhm	5%		
R****21	57*11*4472	4.7 kOhm	5%		
R****22	57*11*4472	4.7 kOhm	5%		
R****23	57*11*4153	1.5 kOhm	5%		
R****24		not used			(replaced by wire bridge)

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****25	57*11*4152	1.5 kOhm	2%		
R****26	57*11*4472	4.7 kOhm	5%		
R****27	57*11*4152	1.5 kOhm	5%		
R****28	57*11*4152	1.5 kOhm	2%		
R****29	57*11*4335	3.3 kOhm	2%		
R****30	57*11*4472	4.7 kOhm	1%		
R****31	57*11*4102	1.0 kOhm	2%		
R****32	57*11*4102	1.0 kOhm	2%		
R****33	57*11*4472	4.7 kOhm	5%		
R****34	57*11*4152	1.5 kOhm	5%		
R****35	57*11*4472	4.7 kOhm	5%		
R****36	57*11*4154	100 kOhm	5%		
R****37	57*11*4102	2.2 kOhm	5%		
R****38	57*11*4332	3.3 kOhm	5%		
R****39	57*11*4103	10 kOhm	5%		
R****40	57*11*4152	1.5 kOhm	2%		
R****41	57*11*4152	1.5 kOhm	2%		

* FOR 1.820.759.81, R7 AND R24 = 15 kΩ

Manufacturers: Fc=Fairchild; ITT=Intermetall; Mo=Motorola;
Na=National; NS=National Semiconductor; Ph=Philips;
RCA=Radio Corporation of America; SES=Secomem;
SGS=SGS/Ates; TF=Telefunken; TI=Texas Instruments;
To=TDK/DAI.

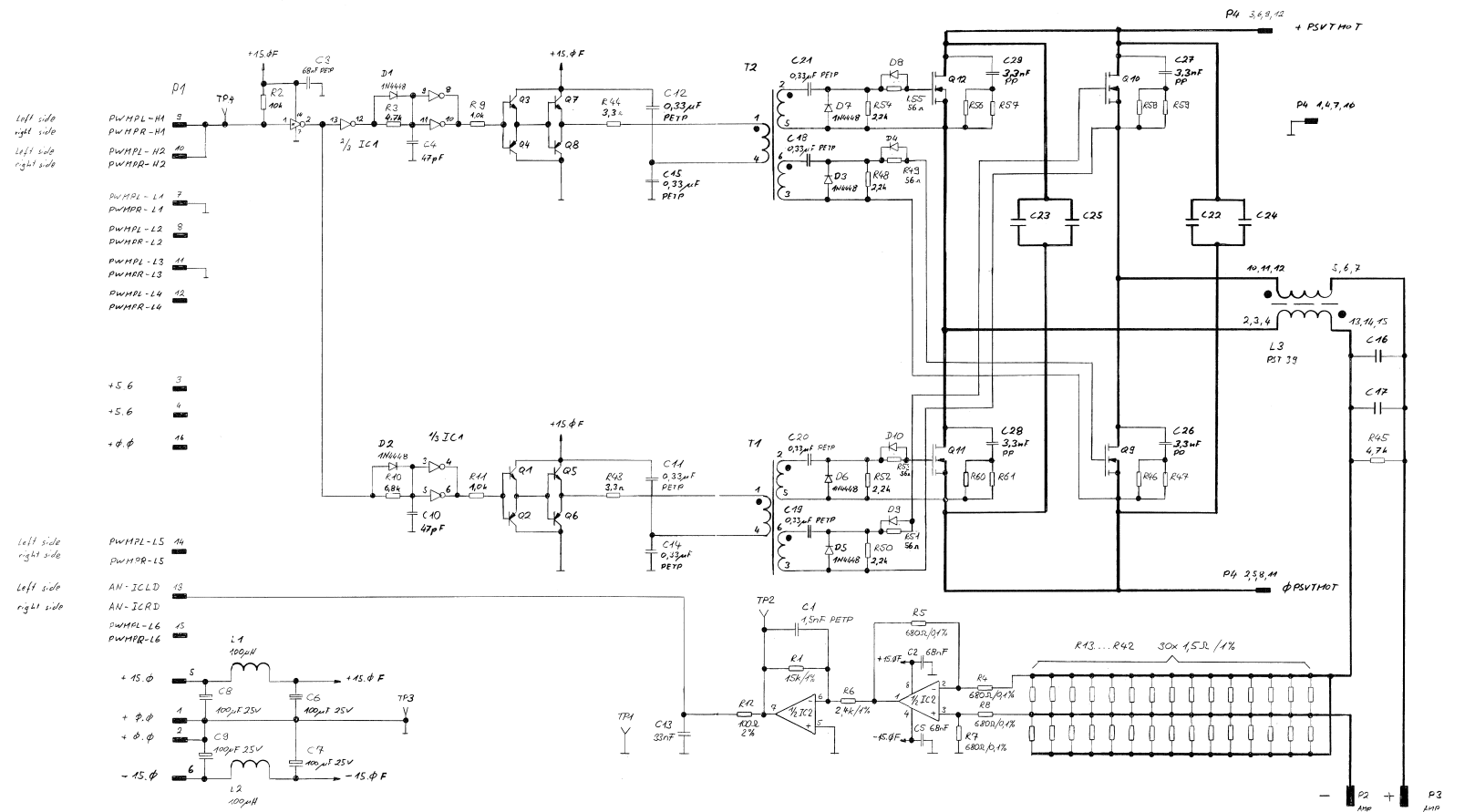
BLOCK DIAGRAM SPOOLING MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.775



SPOOLING MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.775.81 GRP 30,33

R
C

R
C



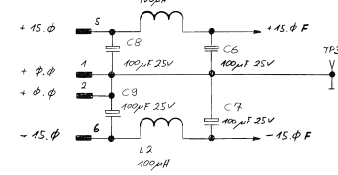
left side
right side
left side
right side

left side
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left side
right side

- PWMPL-H1
- PWMPL-H1
- PWMPL-H2
- PWMPL-H2
- PWMPL-L1
- PWMPL-L1
- PWMPL-L2
- PWMPL-L2
- PWMPL-L3
- PWMPL-L3
- PWMPL-L4
- PWMPL-L4

- +5.6
- +5.6
- +4.φ

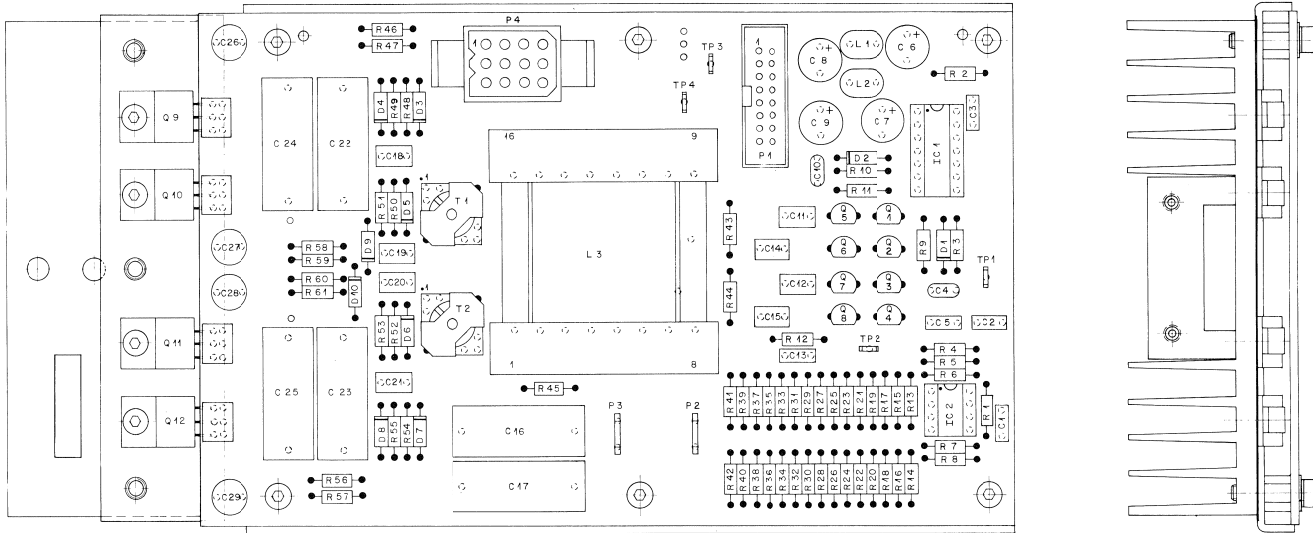
- PWMPL-L5
- PWMPL-L5
- AN-ICLD
- AN-ICLD
- PWMPL-L6
- PWMPL-L6



- IC1 : 40014 CMOS Schmitt Trigger
- IC2 : NE5532A ODE
- Q1, Q4, Q6, Q8 : BC327
- Q2, Q3, Q5, Q7 : BC327
- Q9 ... Q12 : CD5
- R46, 47, 56...61 : 4,7 Ω
- C16, C12, C21, C25 : 6,8 μF HPC
- D4, D5, D2, D10 : 1N4448

25.10.84	A 820 Tape Transport Section	
STUDER	Spooling Motor Drive Amplifier ESE SC 1.820.775.81	PAGE 1 OF 1

SPOOLING MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.775.81 GRP 30,33



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....44		57-11-6319	3.3 Ohm		10X
R....45		57-11-6472	4.7 kOhm		10X
R....46		57-11-6479	4.7 Ohm		10X
R....47		57-11-6479	4.7 Ohm		10X
R....48		57-11-6222	2.2 kOhm		10X
R....49		57-11-6500	5% Ohm		10X
R....50		57-11-6222	2.2 kOhm		10X
R....51		57-11-6500	5% Ohm		10X
R....52		57-11-6222	2.2 kOhm		10X
R....53		57-11-6500	5% Ohm		10X
R....54		57-11-6222	2.2 kOhm		10X
R....55		57-11-6500	5% Ohm		10X
R....56		57-11-6479	4.7 Ohm		10X
R....57		57-11-6479	4.7 Ohm		10X
R....58		57-11-6479	4.7 Ohm		10X
R....59		57-11-6479	4.7 Ohm		10X
R....60		57-11-6479	4.7 Ohm		10X
R....61		57-11-6479	4.7 Ohm		10X
T.....		14022-247-00		Drive transformer	5t
T.....		14022-247-00		Drive transformer	5t
TP....1		54-02-0320		Testpoint	
TP....2		54-02-0320		Testpoint	
TP....3		54-02-0320		Testpoint	
TP....4		54-02-0320		Testpoint	
X0....1		50-20-1017	TO 220	RM 2.5%	
X0....2		50-20-1017	TO 220	RM 2.5%	
X0....3		50-20-1017	TO 220	RM 2.5%	
X0....4		50-20-1017	TO 220	RM 2.5%	

S T U D E R [01] 85/03/26 CK SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.81 PAGE 4

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59-06-0192	1.5 nF	10%	
C.....2		59-06-0683	68 nF	20%	
C.....3		59-06-0683	68 nF	20%	
C.....4		59-06-0701	97 pF	5%	
C.....5		59-06-0683	68 nF	20%	
C.....6		59-22-5101	100 uF	25%	
C.....7		59-22-5101	100 uF	25%	
C.....8		59-22-5101	100 uF	25%	
C.....9		59-22-5101	100 uF	25%	
C.....10		59-06-0675	67 pF	5%	
C.....11		59-06-0334	330 nF	10%/5%	
C.....12		59-06-0334	330 nF	10%/5%	
C.....13		59-06-0333	33 nF	10%	
C.....14		59-06-0334	330 nF	10%/5%	
C.....15		59-06-0334	330 nF	10%/5%	
C.....16		59-09-0208	0.68 uF	0.3%	
C.....17		59-09-0208	0.68 uF	0.3%	
C.....18		59-06-0334	330 nF	10%/5%	
C.....19		59-06-0334	330 nF	10%/5%	
C.....20		59-06-0334	330 nF	10%/5%	
C.....21		59-06-0334	330 nF	10%/5%	
C.....22		59-09-0208	0.68 uF	0.3%/1V/us	
C.....23		59-09-0208	0.68 uF	0.3%/1V/us	
C.....24		59-09-0208	0.68 uF	0.3%/1V/us	
C.....25		59-09-0208	0.68 uF	0.3%/1V/us	
C.....26		59-05-2332	3.3 nF	0.3%/1000V/us	
C.....27		59-05-2332	3.3 nF	0.3%/1000V/us	
C.....28		59-05-2332	3.3 nF	0.3%/1000V/us	
C.....29		59-05-2332	3.3 nF	0.3%/1000V/us	
D.....1		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....2		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....3		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....4		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....5		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....6		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....7		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF

S T U D E R [01] 85/03/26 CK SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.81 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D.....8		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....9		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
D.....10		50-04-0125	1N 4448		Fc:ITT+Ph:Sem:IFF
L.....1		50-07-0014	40 014 BPC	NCLB 084 BCP	Fc:Sig:Mot:W0
L.....2		50-07-0015	NE 5532 N	XR 5532 N	Ex:Sig
L.....3		50-07-0106	NE 5532 AN	XR 5532 AN	Ex:Sig
L.....4		62-42-3101	100 uH		
L.....5		62-42-3101	100 uH		
L.....6		1-0202-246-00		Choke coil	DE
F.....1		54-14-0207			see note 1
F.....2		54-02-0335			
F.....3		54-02-0335			
F.....4		54-02-0308			see note 2
I.....1		50-03-0340	DC 337-25		ITT+Ph:Ph:Sie
I.....2		50-03-0351	AC 337-25		ITT+Ph:Ph:Sie
I.....3		50-03-0340	DC 337-25		ITT+Ph:Ph:Sie
I.....4		50-03-0351	AC 337-25		ITT+Ph:Ph:Sie
I.....5		50-03-0340	DC 337-25		ITT+Ph:Ph:Sie
I.....6		50-03-0351	AC 337-25		ITT+Ph:Ph:Sie
I.....7		50-03-0340	DC 337-25		ITT+Ph:Ph:Sie
I.....8		50-03-0351	AC 337-25		ITT+Ph:Ph:Sie
I.....9		50-03-1503	100 kOhm		10%/Ph:Ph:Sie
I.....10		50-03-1503	100 kOhm		10%/Ph:Ph:Sie
I.....11		50-03-1503	100 kOhm		10%/Ph:Ph:Sie
I.....12		50-03-1503	100 kOhm		10%/Ph:Ph:Sie
I.....13		57-11-3153	15 kOhm	1%	
I.....14		57-11-3153	15 kOhm	1%	
I.....15		57-11-6472	4.7 kOhm	2%	
I.....16		57-09-0189	600 Ohm	0.1%	
I.....17		57-09-0189	600 Ohm	0.1%	
I.....18		57-11-3152	1.2 kOhm	1%	
I.....19		57-11-3242	2.4 kOhm	1%	

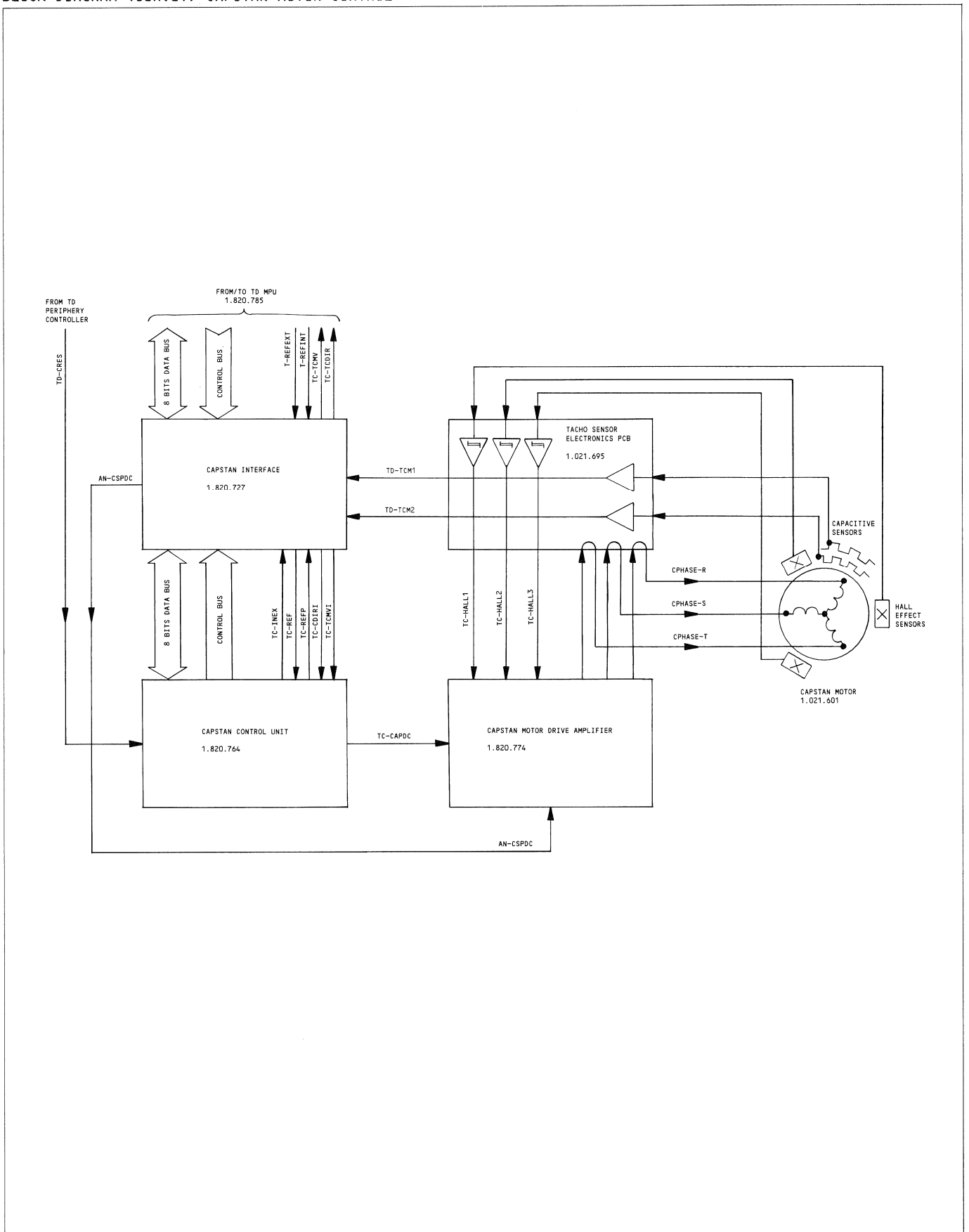
S T U D E R [01] 85/03/26 CK SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.81 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....7		57-09-0189	600 Ohm	0.1%	
R.....8		57-09-0189	600 Ohm	0.1%	
R.....9		57-11-1022	1.0 kOhm	10%	
R.....10		57-11-6482	4.8 kOhm	2%	
R.....11		57-11-1022	1.0 kOhm	10%	
R.....12		57-11-6481	100 Ohm	2%	
R.....13		57-11-3159	1.5 Ohm	1%	
R.....14		57-11-3159	1.5 Ohm	1%	
R.....15		57-11-3159	1.5 Ohm	1%	
R.....16		57-11-3159	1.5 Ohm	1%	
R.....17		57-11-3159	1.5 Ohm	1%	
R.....18		57-11-3159	1.5 Ohm	1%	
R.....19		57-11-3159	1.5 Ohm	1%	
R.....20		57-11-3159	1.5 Ohm	1%	
R.....21		57-11-3159	1.5 Ohm	1%	
R.....22		57-11-3159	1.5 Ohm	1%	
R.....23		57-11-3159	1.5 Ohm	1%	
R.....24		57-11-3159	1.5 Ohm	1%	
R.....25		57-11-3159	1.5 Ohm	1%	
R.....26		57-11-3159	1.5 Ohm	1%	
R.....27		57-11-3159	1.5 Ohm	1%	
R.....28		57-11-3159	1.5 Ohm	1%	
R.....29		57-11-3159	1.5 Ohm	1%	
R.....30		57-11-3159	1.5 Ohm	1%	
R.....31		57-11-3159	1.5 Ohm	1%	
R.....32		57-11-3159	1.5 Ohm	1%	
R.....33		57-11-3159	1.5 Ohm	1%	
R.....34		57-11-3159	1.5 Ohm	1%	
R.....35		57-11-3159	1.5 Ohm	1%	
R.....36		57-11-3159	1.5 Ohm	1%	
R.....37		57-11-3159	1.5 Ohm	1%	
R.....38		57-11-3159	1.5 Ohm	1%	
R.....39		57-11-3159	1.5 Ohm	1%	
R.....40		57-11-3159	1.5 Ohm	1%	
R.....41		57-11-3159	1.5 Ohm	1%	
R.....42		57-11-3159	1.5 Ohm	1%	
R.....43		57-11-4339	3.3 Ohm	10%	

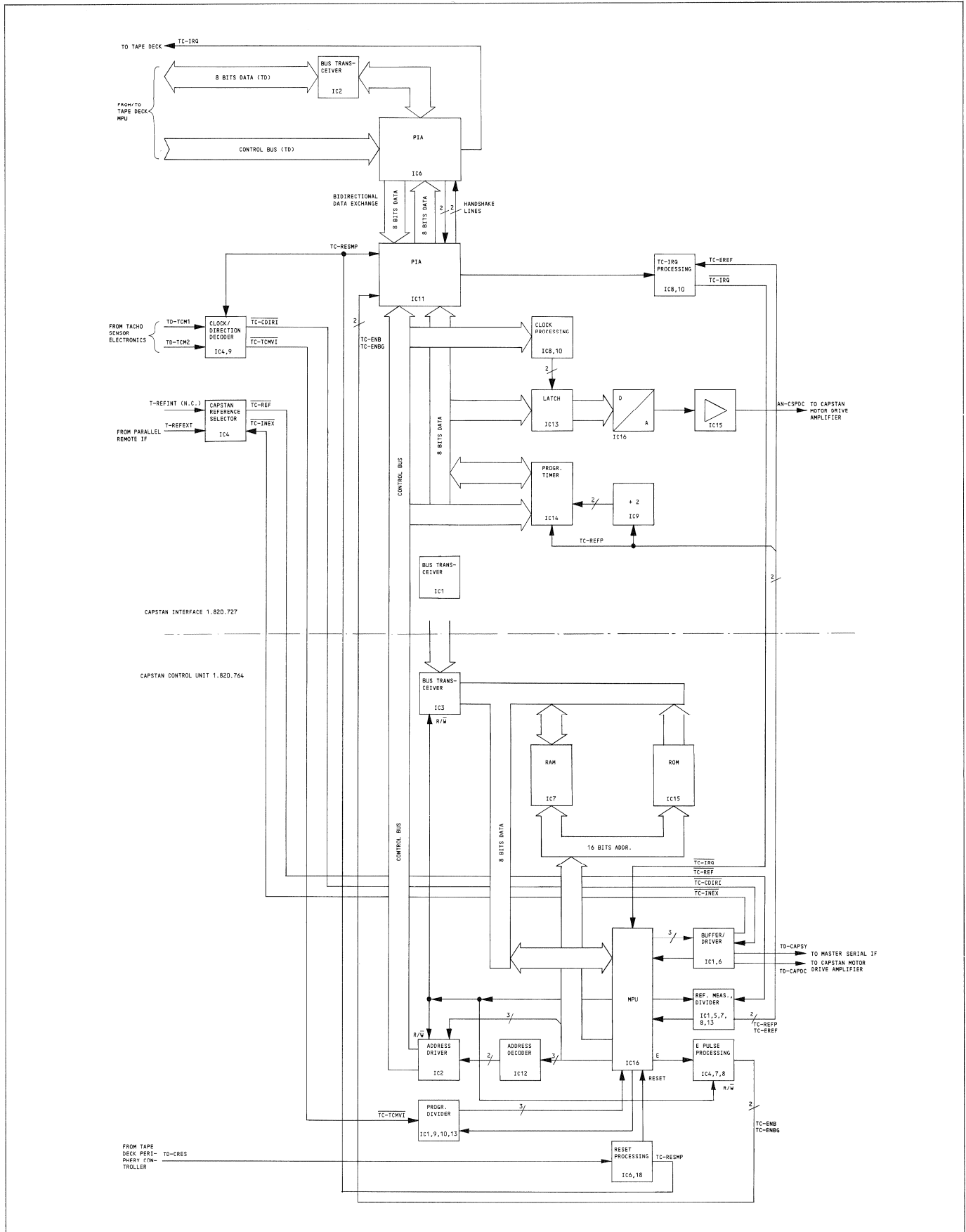
S T U D E R [01] 85/03/26 CK SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.81 PAGE 3

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(1) 85-03-26				Correction of gain of current differential amplifier.	
Note 1 - Plug 1				16 Pin Yanichi FAP-10-087/4 BPH 9 8 10 800 GS	
Note 2 - Motor plug 1				Studer 54-02-0408 with 12 pins Studer 54-02-0406	
Manufacturer:				Ex:Fairchild, IFF+Intermetall, Mot+Motorola, SG-Thomson, Semiconductors, Philips (incl. Philips), Sig+Sinetics, Siemens, S+Studer, Triluminem.	
ORIG 84/10/25				[01] 85/03/26	
S T U D E R [01] 85/03/26 CK				SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.81	PAGE 5

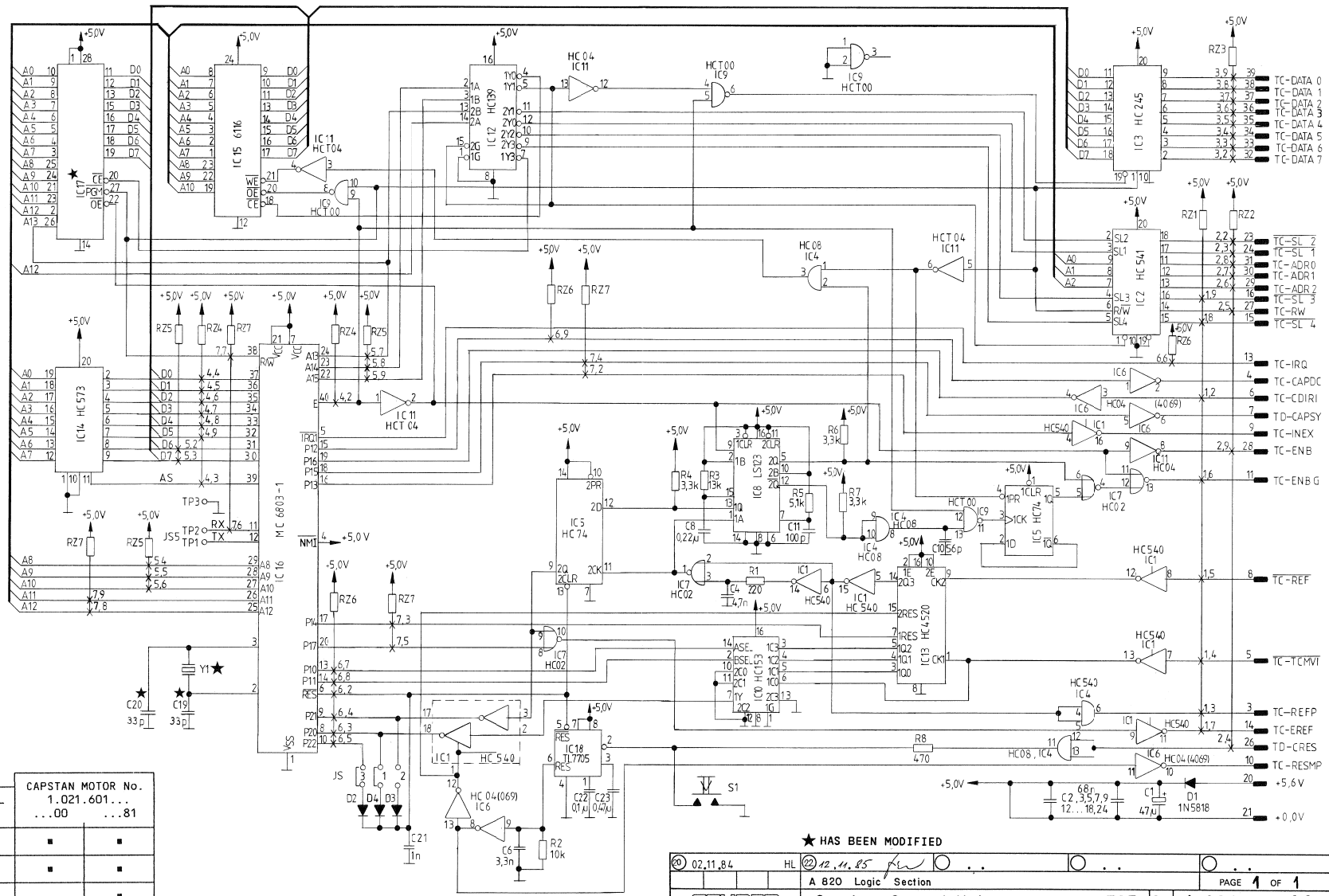
BLOCK DIAGRAM (SURVEY) CAPSTAN MOTOR CONTROL



BLOCK DIAGRAM CAPSTAN CONTROL UNIT PCB "ESE" 1.820.764
CAPSTAN INTERFACE PCB "ESE" 1.820.727



CAPSTAN CONTROL UNIT PCB "ESE" 1.820.764.22 GRP 20/ELM 41



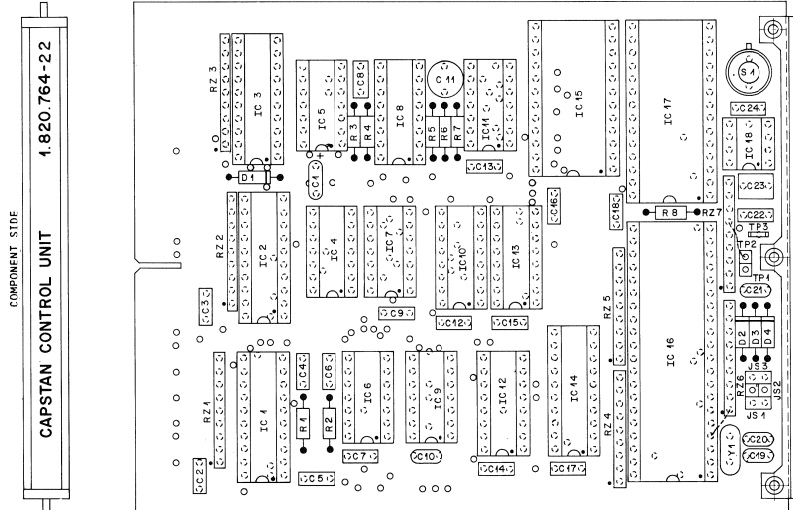
COMPATIBILITY:

CAPSTAN CONTROL UNIT No.	CAPSTAN MOTOR No.	
	1.021.601...	...81
1.820.764.00	■	■
1.820.764.20	■	■
1.820.764.21	■	■
1.820.764.22	■	■

★ HAS BEEN MODIFIED

02.11.84	HL	02.11.85	for
A 820 Logic Section			PAGE 1 OF 1			
STUDER			Capstan Control Unit			
ESE			SC 1.820.764.22			

CAPSTAN CONTROL UNIT PCB "ESE" 1.820.764.22 GRP 20/ELM 41



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C****1	59*25*0770	47 uF	201v 50x30	
(20)	C****2	59*08*0083	68 nF	201	PH
(20)	C****3	59*08*0083	68 nF	201	
(20)	C****4	59*32*2472	4.7 nF	101	
(20)	C****5	59*08*0083	68 nF	201	
(20)	C****6	59*32*2322	3.3 nF	101	
(20)	C****7	59*08*0083	68 nF	201	
(20)	C****8	59*06*5224	220 nF	51	
(20)	C****9	59*08*0083	68 nF	201	
(20)	C****10	59*65*4760	56 uF	101	
(20)	C****11	59*15*1101	100 uF	11	
(20)	C****12	59*08*0083	68 nF	201	
(20)	C****13	59*08*0083	68 nF	201	
(20)	C****14	59*08*0083	68 nF	201	
(20)	C****15	59*08*0083	68 nF	201	
(20)	C****16	59*08*0083	68 nF	201	
(20)	C****17	59*08*0083	68 nF	201	
(20)	C****18	59*08*0083	68 nF	201	
(20)	C****19	59*4*1950	15 uF	51	
(20)	C****20	59*4*1950	15 uF	51	
(22)	C****19	59*4*2130	33 uF	51	
(22)	C****20	59*4*2130	33 uF	51	
(20)	C****21	59*32*4020	1 nF	101	
(20)	C****22	59*32*4020	1 nF	101	
(20)	C****22	59*36*0104	100 nF	101	
(20)	C****23	59*08*0083	68 nF	201	
(20)	C****24	59*08*0083	68 nF	201	

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(22)	U****1	50*04*0512	1N 5819	1N 5819	Met
(22)	U****2	50*04*0512	1N 4448		ITT-PhilSeS-TT
(22)	U****3	50*04*0512	1N 4448		ITT-PhilSeS-TT
(22)	U****4	50*04*0512	1N 4448		ITT-PhilSeS-TT
(20)	IC****1	50*17*1500	74 HC 500		PhyMot-N5-RCA-ToxTI
(20)	IC****2	50*17*1541	74 HC 541		PhyMot-N5-RCA-ToxTI
(20)	IC****3	50*17*1495	74 HC 245		PhyMot-N5-RCA-ToxTI
(20)	IC****4	50*17*1408	74 HC 08		PhyMot-N5-RCA-ToxTI
(20)	IC****5	50*17*1074	74 HC 74		PhyMot-N5-RCA-ToxTI

S T U D E R (22) 85/11/12 PB CAPSTAN CONTROL UNIT 1.820.764.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	IC****6	50*17*1005	74 HC 04		PhyMot-N5-RCA-ToxTI
(20)	IC****7	50*17*1002	74 HC 02		PhyMot-N5-RCA-ToxTI
(20)	IC****8	50*06*0123	74 LS 123		Met+TI
(20)	IC****9	50*17*1000	74 HC 00		PhyMot-N5-RCA-ToxTI
(20)	IC****10	50*17*1153	74 HC 153		PhyMot-N5-RCA-ToxTI
(20)	IC****11	50*17*0004	74 HC 04		PhyMot-N5-RCA-ToxTI
(20)	IC****12	50*17*1139	74 HC 139		PhyMot-N5-RCA-ToxTI
(20)	IC****13	50*17*2000	4920 BEC	HEF 4520	PhyC
(20)	IC****14	50*17*1593	74 HC 159		PhyMot-N5-RCA-ToxTI
(20)	IC****15	50*17*2000	4920 BEC	HEF 4520	PhyC
(20)	IC****16	50*16*0107	HC6050P-1	MS9128-15	Hi+Met
(20)	IC****17	50*16*0107	HC6050P-1	MS9128-15	Hi+Met
(20)	IC****17	1.820.999.20		Software 13/85, Capstan Control	St
(21)	IC****17	1.820.999.21		Software 35/85, Capstan Control	St
(20)	IC****18	50*11*0322	TL770SACP		TI
(20)	J5****1			see note 2	
(20)	J5****2			see note 2	
(20)	J5****3			see note 2	
(20)	TP****1			see note 2	
(20)	TP****2			see note 2	
(20)	TP****3	94.02-0320		Tesipoint	
(20)	R****1	57*11*4231	220 Ohm	J1	
(20)	R****2	57*11*3193	10 Kohm	J18	
(20)	R****3	57*11*3193	10 Kohm	J18	
(20)	R****4	57*11*3192	3.3 Kohm	J2	
(20)	R****5	57*11*3512	5.1 Kohm	J2	
(20)	R****6	57*11*3192	3.3 Kohm	J2	
(20)	R****7	57*11*3192	3.3 Kohm	J2	
(20)	R****8	57*11*4021	470 Ohm	J2	
(20)	RZ****1	57*89*4193		Network 8 = 3.3 Kohm (old part 1-010-014-57)	
(20)	RZ****2	57*89*4193		Network 8 = 10 Kohm (old part 1-010-014-57)	
(20)	RZ****3	57*89*4193		Network 8 = 10 Kohm (old part 1-010-014-57)	
(20)	RZ****4	57*89*4392		Network 8 = 3.3 Kohm	

S T U D E R (22) 85/11/12 PB CAPSTAN CONTROL UNIT 1.820.764.00 PAGE 2

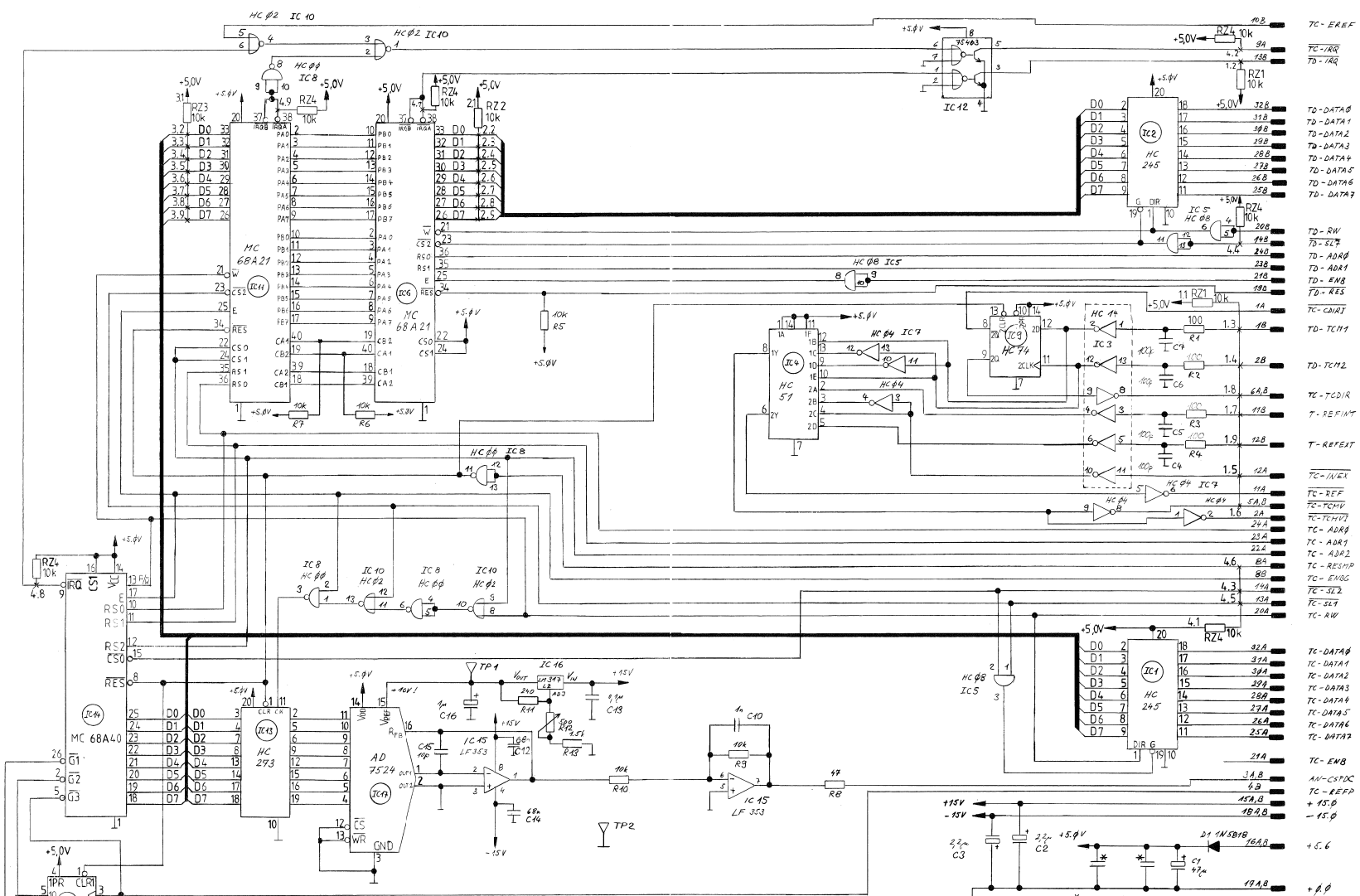
IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	RZ****5	57*89*4392		Network 8 = 3.3 Kohm	
(20)	RZ****6	57*89*4103		Network 8 = 10 Kohm (old part 1-010-014-57)	
(20)	RZ****7	57*89*4392		Network 8 = 3.3 Kohm	
(20)	Y****1	59*03*2122		Switch inputs, see note 3	
(20)	Y****1	89*03*2583		4=152 Mhz - TDR	
(22)	Y****1	89*03*0560		4=152 Mhz +- 20 ppm	

S T U D E R (22) 85/11/12 PB CAPSTAN CONTROL UNIT 1.820.764.00 PAGE 3

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(21)	85-08-12	software 35/85		(EPROM 16k x 8)	
(22)	85-11-12	Improved quartz accuracy			
Note 1	IC 17	For Software 13/85 only:			
		Studer	50*14*0113		
		HiLectri	HN 302704 G-3		
		Intel	D 2764-3		
		SGS/ATES	4 2764 F 1		
		Texas Instruments	TMS 2764-25 J-L		
		For Software 35/85 and future versions:			
		Studer	50*14*0125		
		Fujitsu	MM 27128-30		
		HiLectri	HN 302728 G-25/PH 4027128 G-30		
		Intel	27128 250ms		
Note 2	Contact point	Studer	56*01*0070		
	Bridge:	PhyTops	2422 025 89303		
		Studer	56*01*0021		
		Berg	65 474*001		
		PhyTops	2422 025 89003		
Note 3	Switch inputs:	Chicago Switch	34-550-001		
MANUFACTURER:		ELFAIRCHTOY	ITT-Intermetall	Hi+Hi+LuChL	
		Hi-Motorsortex	MicroNational	Semiconductor SA	
		Oni-DEK	Semiconductors	PhyPhilips	
		RadRadio	Corporation of America	565*565*00000	
		S55-S55-Atex	565*565*00000	TI-Texas Instruments	
		Teslababa			

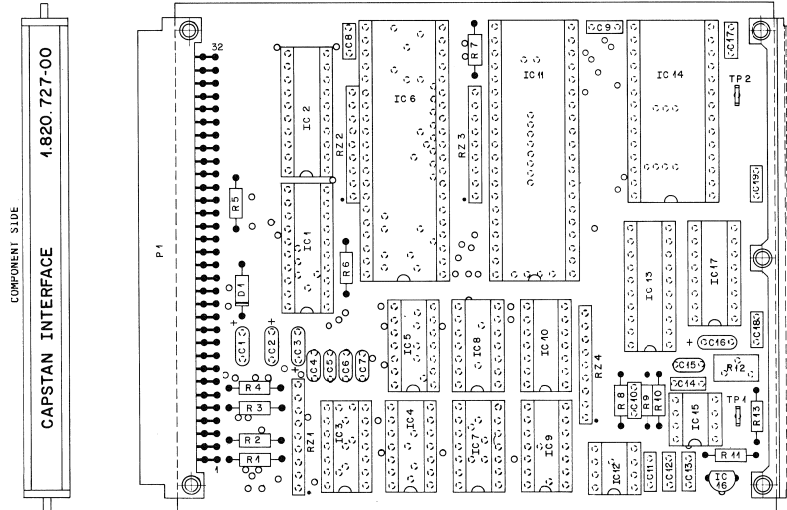
DATE 85/06/10 (20) 85/06/10 (21) 85/08/12 (22) 85/11/12 S T U D E R (22) 85/11/12 PB CAPSTAN CONTROL UNIT 1.820.764.00 PAGE 4

CAPSTAN INTERFACE PCB "ESE" 1.820.727.00 GRP 20/ELM 42



5. 3. 84 HL	A 820 Logic Section	SC 1.820.727.00	PAGE 1 OF 1
STUDER Capstan Interface			

CAPSTAN INTERFACE PCB "ESE" 1.820.727.00 GRP 20/ELM 42



IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59-26-0470		47 uF	20%, 6.3V	PH
C.....2	59-26-2229		2.2 uF	20%, 16V	PH
C.....3	59-26-2229		2.2 uF	20%, 16V	PH
C.....4	59-45-101		100 pF	20%	PH
C.....5	59-45-101		100 pF	20%	PH
C.....6	59-45-101		100 pF	20%	PH
C.....7	59-45-101		100 pF	20%	PH
C.....8	59-06-0683		68 nF	20%	SIE
C.....9	59-06-0683		68 nF	20%	SIE
C.....10	59-12-4102		1 nF	20%	PH
C.....11	59-06-0683		68 nF	20%	SIE
C.....12	59-06-0683		68 nF	20%	SIE
C.....13	59-06-0104		100 nF	20%	SIE
C.....14	59-06-0683		68 nF	20%	SIE
C.....15	59-45-1100		10 pF	10%	PH
C.....16	59-06-1109		1 uF	20%, 16V	PH
C.....17	59-06-0683		68 nF	20%	SIE
C.....18	59-06-0683		68 nF	20%	SIE
C.....19	59-06-0683		68 nF	20%	SIE
D.....1	50-04-0512	1N 5818	1N 5819		Mot
IC.....1	50-17-1245	74 HC 245			Mot+Not+To+Ph+RCA+TI
IC.....2	50-17-1245	74 HC 245			Mot+Not+To+Ph+RCA+TI
IC.....3	50-17-1014	74 HC 14			Mot+Not+To+Ph+RCA+TI
IC.....4	50-17-1091	74 HC 51			Mot+Not+To+Ph+RCA+TI
IC.....5	50-17-1008	74 HC 08			Mot+Not+To+Ph+RCA+TI
IC.....6	50-16-0106	MC68A21P		F68A21PC	Mot+AMERIC
IC.....7	50-17-1004	74 HC 04			Mot+Not+To+Ph+RCA+TI
IC.....8	50-17-1002	74 HC 02			Mot+Not+To+Ph+RCA+TI
IC.....9	50-17-1074	74 HC 74			Mot+Not+To+Ph+RCA+TI
IC.....10	50-17-1002	74 HC 02			Mot+Not+To+Ph+RCA+TI
IC.....11	50-16-0104	MC68A21P		F68A21PC	Mot+AMERIC
IC.....12	50-05-0203	SMT7403P		DS7403N	TI+US
IC.....13	50-17-1273	74 HC 273			Mot+Not+To+Ph+RCA+TI
IC.....14	50-16-0113	MC68A0		HDS68A0	Mot+HI
IC.....15	50-09-0101	FLO72CP		LF353N	TI+US

STUDER (00) 84/09/05 ME CAPSTAN INTERFACE 1.820-727-00 PAGE 1

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....16	50-10-0108	LM 317 L2			Nat+Mot
IC.....17	50-07-0002	AD7524JN			ADI+MPS
P.....1	54-11-2004		Plug	see note 1	
R.....1	57-11-4101		100 Ohm	10%	
R.....2	57-11-4101		100 Ohm	10%	
R.....3	57-11-4101		100 Ohm	10%	
R.....4	57-11-4101		100 Ohm	10%	
R.....5	57-11-4103		10 kOhm	10%	
R.....6	57-11-4103		10 kOhm	10%	
R.....7	57-11-4103		10 kOhm	10%	
R.....8	57-11-4103		10 kOhm	10%	
R.....9	57-11-4103		10 kOhm	5%	
R.....10	57-11-4103		10 kOhm	5%	
R.....11	57-11-3241		240 Ohm	10%	
R.....12	58-03-0301		500 Ohm	Potentiometer, see note 2	
R.....13	57-11-4152		1.5 kOhm	10%	
RZ.....1	1-010-014-57		8910 kOhm	10%	
RZ.....2	1-010-014-57		8910 kOhm	10%	
RZ.....3	1-010-014-57		8910 kOhm	10%	
RZ.....4	1-010-014-57		8910 kOhm	10%	
FP.....1	54-02-0320			Testpoint	
FP.....2	54-02-0320			Testpoint	

STUDER (00) 84/09/05 ME CAPSTAN INTERFACE 1.820-727-00 PAGE 2

IND. POS-NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.

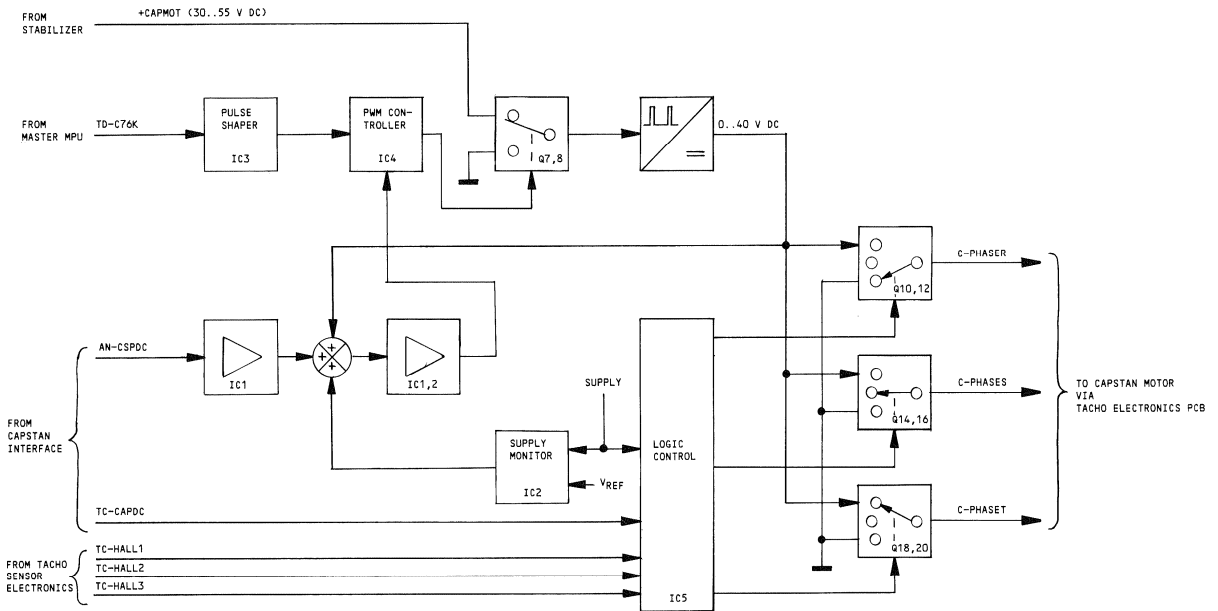
Note 1 - Plug : 2 = 32 Euro Board
Burrndy P1 04 B 20 900 F00 I0
Erit 9722-563-191

Note 2 - Potentiometer : 500 Ohm, 10%, 5W, PMG
Bourne 3296 Z - 1 - 101
Socretrol 6A 2 001 T 500

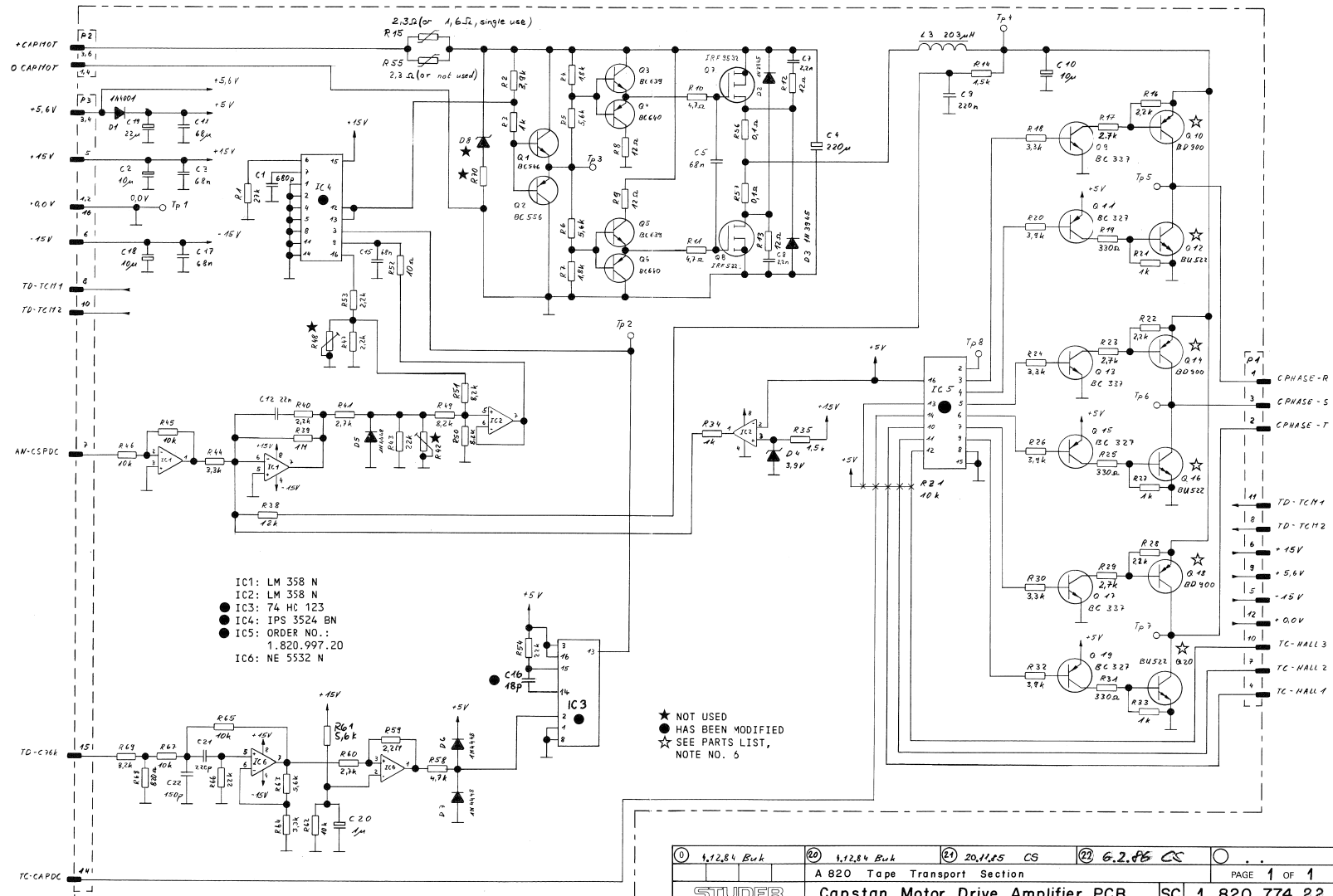
Manufacturer: ADI=Analog Devices Inc., AM=American Microsystems Inc.,
Fc=Fairchild, Hitachi, Mot=Motorola,
MPS=Micro Power Systems, Nat=National (Matsushita),
NS=National Semiconductors, Ph=Philips (incl. Valvo),
RCA=Radioc Corporation of America, TI=Texas Instruments,
To=Tohiba.

DRIG 84/09/05
STUDER (00) 84/09/05 ME CAPSTAN INTERFACE 1.820-727-00 PAGE 3

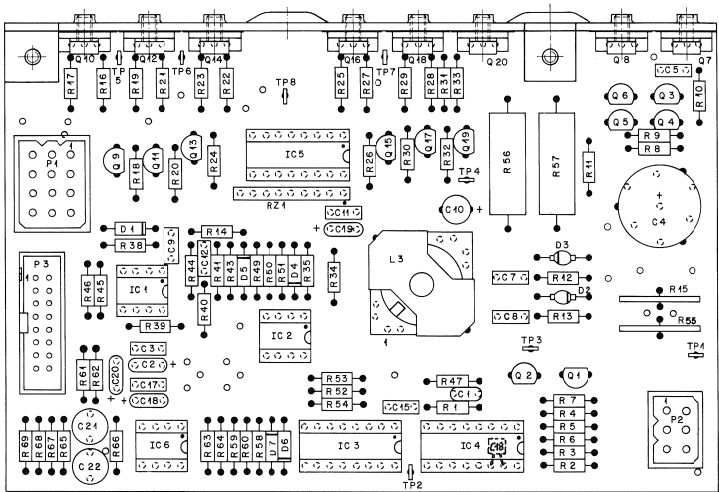
BLOCK DIAGRAM CAPSTAN MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.774



CAPSTAN MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.774.22 GRP 39



CAPSTAN MOTOR DRIVE AMPLIFIER PCB "ESE" 1.820.774.22 GRP 39



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	59.32.2401	680 pF	10%	Co
(20)	C.....2	59.26.2100	10 uF	20%	10% EI
(20)	C.....3	59.06.0403	68 nF	10%	PEEP
(20)	C.....4	59.06.0403	68 nF	10%	PEEP
(20)	C.....5	59.06.0403	68 nF	10%	PEEP
(20)	C.....7	59.06.0222	2200 pF	10%	100% PEEP
(20)	C.....8	59.06.0222	2200 pF	10%	100% PEEP
(20)	C.....9	59.06.0222	2200 pF	10%	PEEP
(20)	C.....10	59.22.2100	10 uF	20%	63V EI
(20)	C.....11	59.06.0403	68 nF	10%	PEEP
(20)	C.....12	59.06.0225	22 nF	10%	PEEP
(20)	C.....15	59.06.0403	68 nF	10%	PEEP
(20)	C.....16		not used		
(22)	C.....16	59.34.1180	18 uF	5%	Co
(20)	C.....17	59.06.0403	68 nF	10%	PEEP
(20)	C.....18	59.06.2100	10 uF	20%	10% EI
(20)	C.....19	59.26.1220	22 uF	20%	10% EI
(20)	C.....20	59.22.8109	1 uF	20%	10% EI
(20)	C.....21	59.05.1221	220 pF	2.5%	PP
(20)	C.....22	59.05.2151	150 pF	2.5%	PP
(20)	D.....1	50.04.0122	1N 4001	to 4004	ITT, Mot
(20)	D.....2	50.04.0108	1N 4955	1N 4936, RG 1 D, A 114 B	Mot, GI
(20)	D.....3	50.04.0108	1N 4955	1N 4936, RG 1 D, A 114 B	Mot, GI
(20)	D.....4	50.04.1101	3 V Z	BZ 83C 3V9; BZ 83C 3V9; ZPD 3.0	ITT, Sae
(20)	D.....5	50.04.0125	1N 4448		Fc+IT+Ph+Sae+FF
(20)	D.....6	50.04.0125	1N 4448		Fc+IT+Ph+Sae+FF
(20)	D.....7	50.04.0125	1N 4448		Fc+IT+Ph+Sae+FF
(20)	D.....8		not used	(High voltage protection)	
(20)	I.....1	50.05.0286	LW 358 N	LW 358 P	NS, Mot, TI
(20)	I.....2	50.05.0286	LW 358 N	LW 358 P	NS, Mot, TI
(20)	I.....3	50.17.1123	74 HC 123	74 HC 123	Mot, NS, Ph, RCA, SGS, TI, To
(21)	I.....3	50.05.0225	74 LS 123	74 LS 123	Mot, TI
(22)	I.....3	50.17.1123	74 HC 123	74 HC 123	Mot, NS, Ph, RCA, SGS, TI, To
(20)	I.....4	50.05.0225	56 LS248N		NS, Mot, TI
(22)	I.....4	50.05.0279	IP535248N		IPS

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 1

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	I.....5	50.05.0206	N R25123N	63 S 081 J	MH+Sig
(20)	I.....5	1.820.774.22		Commutation logic device	St
(20)	I.....6	50.04.0105	NE 5532 N	X8 5532 N, RC 532 NB	Ex+Ra+Sig
(20)	L.....3	1.022.251-00		Filtercoil1	St
(20)	P.....1		12 cont.	see Note 1	
(20)	P.....2		6 cont.	see Note 2	
(20)	P.....3	54.14.2032	16 cont.	see Note 3	
(20)	Q.....1	50.03.0491	BC 548B		ITT, Mot, Ph+Sig
(20)	Q.....2	50.03.0492	BC 548B		ITT, Mot, Ph+Sig
(20)	Q.....3	50.03.0493	BC 639		Mot, Ph+Sig
(20)	Q.....4	50.03.0629	BC 640		Mot, Ph+Sig
(20)	Q.....5	50.03.0493	BC 639		Mot, Ph+Sig
(20)	Q.....6	50.03.0629	BC 640		Mot, Ph+Sig
(20)	Q.....7	50.03.1793	IME 9532		ME 9F10
(20)	Q.....8	50.03.1307	BU 522		ME 9F10
(20)	Q.....9	50.03.0280	BC 337-25		ITT, Ph+Sig
(20)	Q.....10	50.03.0513	BU 900 A	80% 9 A, see note 6	Mot, Sig
(20)	Q.....11	50.03.0591	BC 327-25		ITT, Ph+Sig
(20)	Q.....12	50.03.0520	BU 522		see note 6
(20)	Q.....13	50.03.0513	BU 900 A	80% 9 A, see note 6	Mot, Sig
(20)	Q.....14	50.03.0591	BC 327-25		ITT, Ph+Sig
(20)	Q.....15	50.03.0520	BU 522		see note 6
(20)	Q.....16	50.03.0960	BC 337-25		ITT, NS, Ph+Sig
(20)	Q.....18	50.03.0513	BU 900 A	80% 9 A, see note 6	Mot, Sig
(20)	Q.....19	50.03.0961	BC 327-25		ITT, Ph+Sig
(20)	Q.....20	50.03.0920	BU 522		Mot, Sig

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 2

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R.....7	57.11.4182	1.8 kOhm	5%	
(20)	R.....8	57.11.4120	12 kOhm	5%	
(20)	R.....9	57.11.4120	12 kOhm	5%	
(20)	R.....10	57.11.4279	4.7 kOhm	5%	
(20)	R.....11	57.11.4120	12 kOhm	5%	
(20)	R.....12	57.11.4120	12 kOhm	5%	
(20)	R.....13	57.11.4120	12 kOhm	5%	
(20)	R.....14	57.11.4152	1.5 kOhm	5%	
(20)	R.....15	57.11.4222	2.2 kOhm	5%	
(20)	R.....16	57.11.4222	2.2 kOhm	5%	
(20)	R.....17	57.11.4222	2.2 kOhm	5%	
(20)	R.....18	57.11.4332	3.3 kOhm	5%	
(20)	R.....19	57.11.4331	330 kOhm	5%	
(20)	R.....20	57.11.4332	3.3 kOhm	5%	
(20)	R.....21	57.11.4332	3.3 kOhm	5%	
(20)	R.....22	57.11.4222	2.2 kOhm	5%	
(20)	R.....23	57.11.4332	3.3 kOhm	5%	
(20)	R.....24	57.11.4332	3.3 kOhm	5%	
(20)	R.....25	57.11.4331	330 kOhm	5%	
(20)	R.....26	57.11.4332	3.3 kOhm	5%	
(20)	R.....27	57.11.4277	2.7 kOhm	5%	
(20)	R.....28	57.11.4277	2.7 kOhm	5%	
(20)	R.....29	57.11.4331	330 kOhm	5%	
(20)	R.....30	57.11.4332	3.3 kOhm	5%	
(20)	R.....31	57.11.4331	330 kOhm	5%	
(20)	R.....32	57.11.4332	3.3 kOhm	5%	
(20)	R.....33	57.11.4332	3.3 kOhm	5%	
(20)	R.....34	57.11.4182	1.8 kOhm	5%	
(20)	R.....35	57.11.4332	3.3 kOhm	5%	
(20)	R.....36		not used		
(20)	R.....37	57.11.4123	12 kOhm	5%	
(20)	R.....38	57.11.4185	1.8 kOhm	5%	
(20)	R.....39	57.11.4222	2.2 kOhm	5%	
(20)	R.....40	57.11.4277	2.7 kOhm	5%	
(20)	R.....41	57.11.4277	2.7 kOhm	5%	
(20)	R.....42		not used		
(20)	R.....43	57.11.4223	2.2 kOhm	5%	
(20)	R.....44	57.11.4332	3.3 kOhm	5%	

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 3

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R.....45	57.11.4103	10 kOhm	5%	
(20)	R.....46	57.11.4103	10 kOhm	5%	
(20)	R.....47	57.11.4222	2.2 kOhm	5%	
(20)	R.....48		not used		
(20)	R.....49	57.11.4822	8.2 kOhm	5%	
(20)	R.....50	57.11.4822	8.2 kOhm	5%	
(20)	R.....51	57.11.4822	8.2 kOhm	5%	
(20)	R.....52	57.11.4100	10 kOhm	5%	
(20)	R.....53	57.11.4222	2.2 kOhm	5%	
(20)	R.....54	57.11.4223	2.2 kOhm	5%	
(20)	R.....55		not used		
(20)	R.....56	57.56.5108	0.1 Ohm	10%	
(20)	R.....57	57.56.5108	0.1 Ohm	10%	
(20)	R.....58	57.11.4272	4.7 kOhm	5%	
(20)	R.....59	57.11.2275	2.2 kOhm	5%	
(20)	R.....60	57.11.4272	4.7 kOhm	5%	
(20)	R.....61	57.11.4362	5.6 kOhm	5%	
(20)	R.....62	57.11.4103	10 kOhm	5%	
(20)	R.....63	57.11.4362	5.6 kOhm	5%	
(20)	R.....64	57.11.4332	3.3 kOhm	5%	
(20)	R.....65	57.11.4103	10 kOhm	5%	
(20)	R.....66	57.11.4223	2.2 kOhm	5%	
(20)	R.....67	57.11.4103	10 kOhm	5%	
(20)	R.....68	57.11.4821	820 kOhm	5%	
(20)	R.....69	57.11.4822	8.2 kOhm	5%	
(20)	R.....70		not used	(High voltage protection)	
(20)	R.....	57.88.4103		see note 5	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	
(20)	TP.....	29.21.6002		Test Point	

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 4

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(21)	85.11.20			Improved clock synchronization performance.	
(22)	86.02.06			Clock level modification for new device IV.	
Note 1 - Connector:		Studier Nr.	54.02.0408		
Case:		Notex Nr.	03-06-2121		
Contact pin:		Studier Nr.	54.02.0406		
Note 2 - Connector:		Studier Nr.	54.02.0418		
Case:		Notex Nr.	03-06-2041		
Contact pin:		Studier Nr.	54.02.0406		
Notex Nr.			02-06-8103		
Note 3 - Connector:		Yamachi Nr.	FAP-16-08-055		
		Burdyny Nr.	8P4 9 B 10 800 G5		
Note 4 - PTC resistor 1.0 Ohm Phillips Nr. 2322 604 10M1					
may be replaced by two PTC Resistors 2.0 Ohm Studier Nr. 57.59.0210					
Note 5 - Resistor networks 5K 8 * 10 kOhm		Bourns Nr.	4609 X - 101 - 10K		
		Buchmann Nr.	L 09 - 1 - R 10 A		
		Sprague Nr.	256 GJ 103 KZ PD		
		Melkotron Nr.	P X E 10 A 35		
		Tama Nr.	MRG C 09 X 10 X J		
Note 6 - For excellent use and fluxer values, at 3.75 ips the NPN -					
resistive the PNP - Transistors should be from the same					
manufacturer.					

CapCeramics: EthElectrolytic; PEET=Polyester Film; PP=Polypropylen

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 5

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R.....	57.11.4182	1.8 kOhm	5%	
(20)	R.....	57.11.4120	12 kOhm	5%	
(20)	R.....	57.11.4279	4.7 kOhm	5%	
(20)	R.....	57.11.4120	12 kOhm	5%	
(20)	R.....	57.11.4120	12 kOhm	5%	
(20)	R.....	57.11.4120	12 kOhm	5%	
(20)	R.....	57.11.4152	1.5 kOhm	5%	
(20)	R.....	57.11.4222	2.2 kOhm	5%	
(20)	R.....	57.11.4222	2.2 kOhm	5%	
(20)	R.....	57.11.4222	2.2 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....	57.11.4331	330 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....	57.11.4222	2.2 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....	57.11.4182	1.8 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	
(20)	R.....		not used		
(20)	R.....	57.11.4123	12 kOhm	5%	
(20)	R.....	57.11.4185	1.8 kOhm	5%	
(20)	R.....	57.11.4222	2.2 kOhm	5%	
(20)	R.....	57.11.4277	2.7 kOhm	5%	
(20)	R.....	57.11.4277	2.7 kOhm	5%	
(20)	R.....	57.11.4223	2.2 kOhm	5%	
(20)	R.....	57.11.4332	3.3 kOhm	5%	

MANUFACTURERS: Ea=Earr; Fc=Fairchild; GI=General Instruments;

ITT=International; IES=Integrated Power Semiconductors Ltd.;

MH=Monolithic Memories Inc.; Mgt=Motorola;

NS=National Semiconductor; Om=Philips;

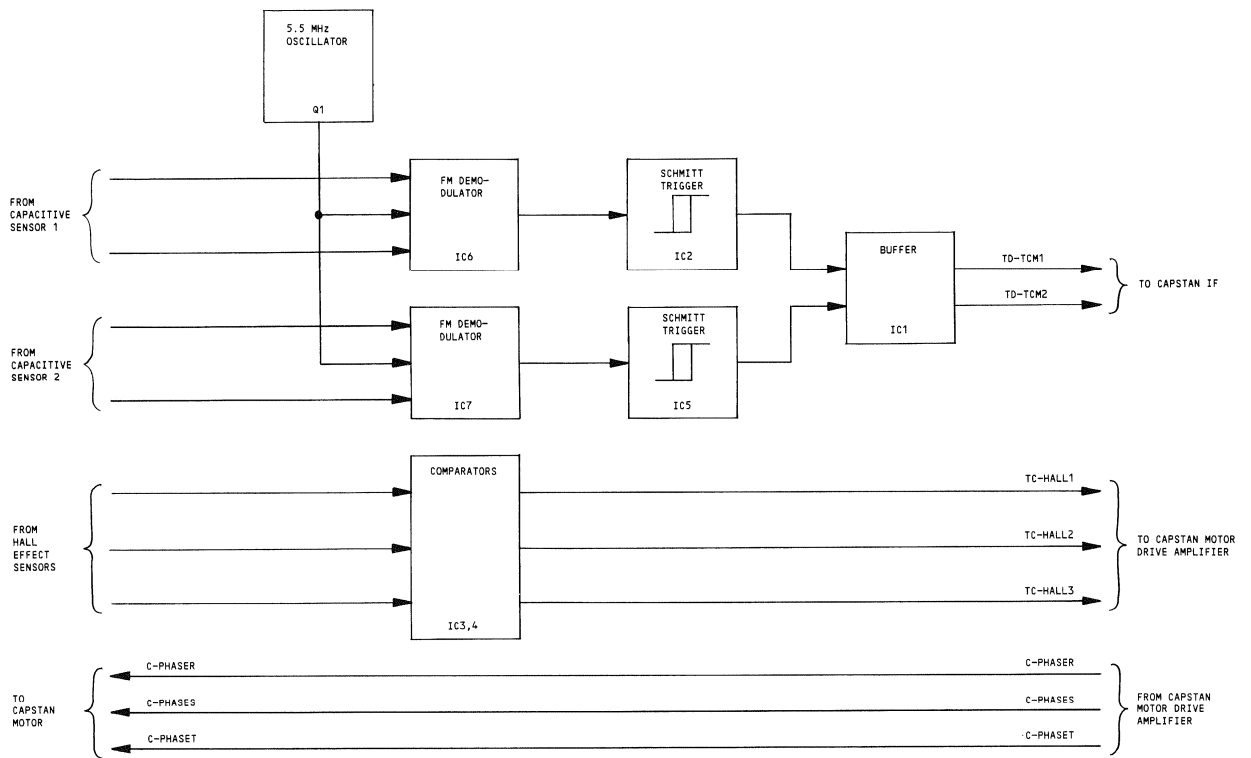
RCA=RCA Corporation of America; Sae=Siemens; Sig=Signetics;

Spr=Sprague; ST=ST-Electronics; T=Telefunken; TI=Texas Instruments; Tst=Toshiba.

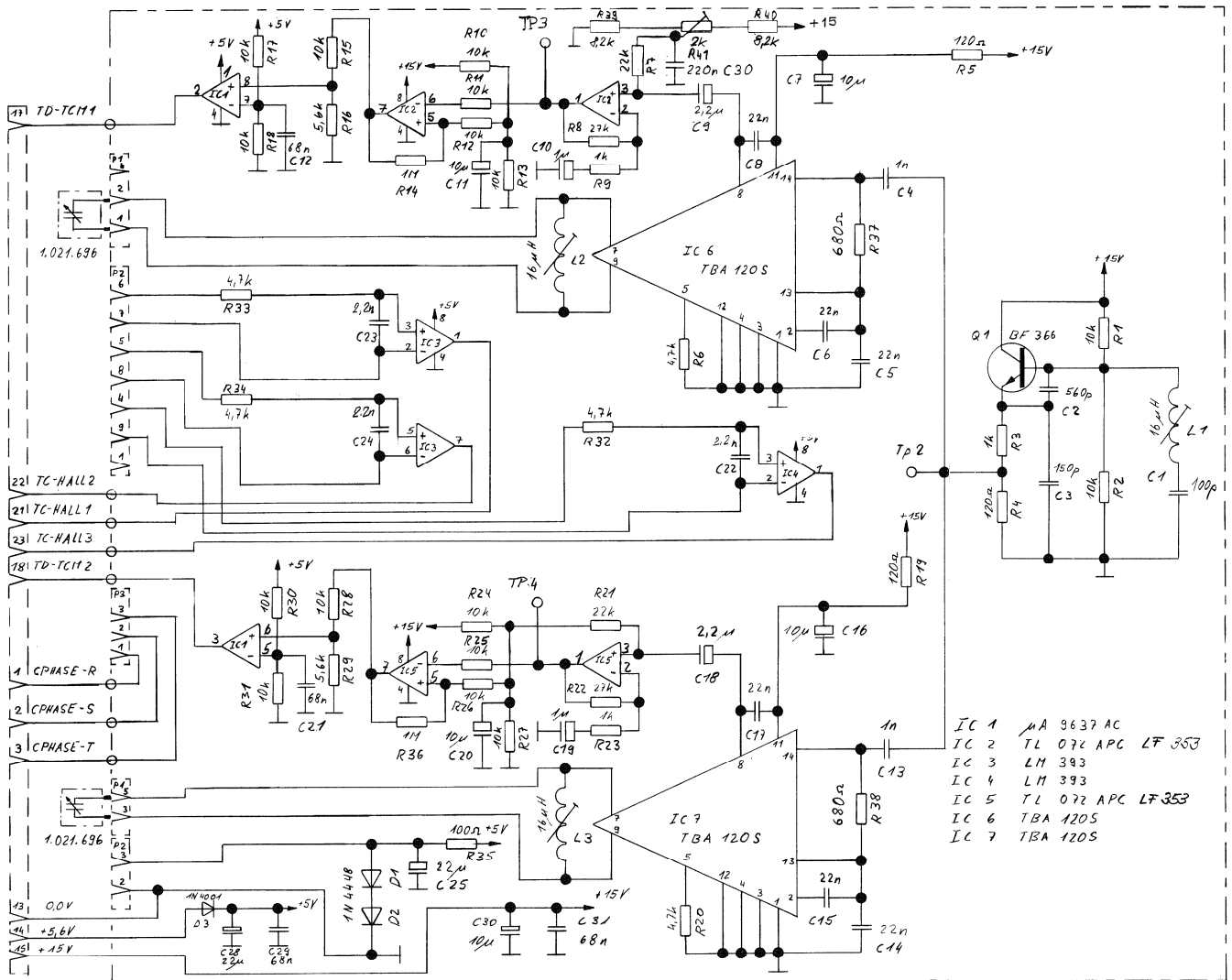
DRIG 84/12/04 (20) 84/12/04 (21) 85/11/20 (22) 86/02/06

S T U D E R (22) 86/02/06 PB CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.00 PAGE 6

BLOCK DIAGRAM TACHO SENSOR ELECTRONICS PCB "ESE" 1.021.695

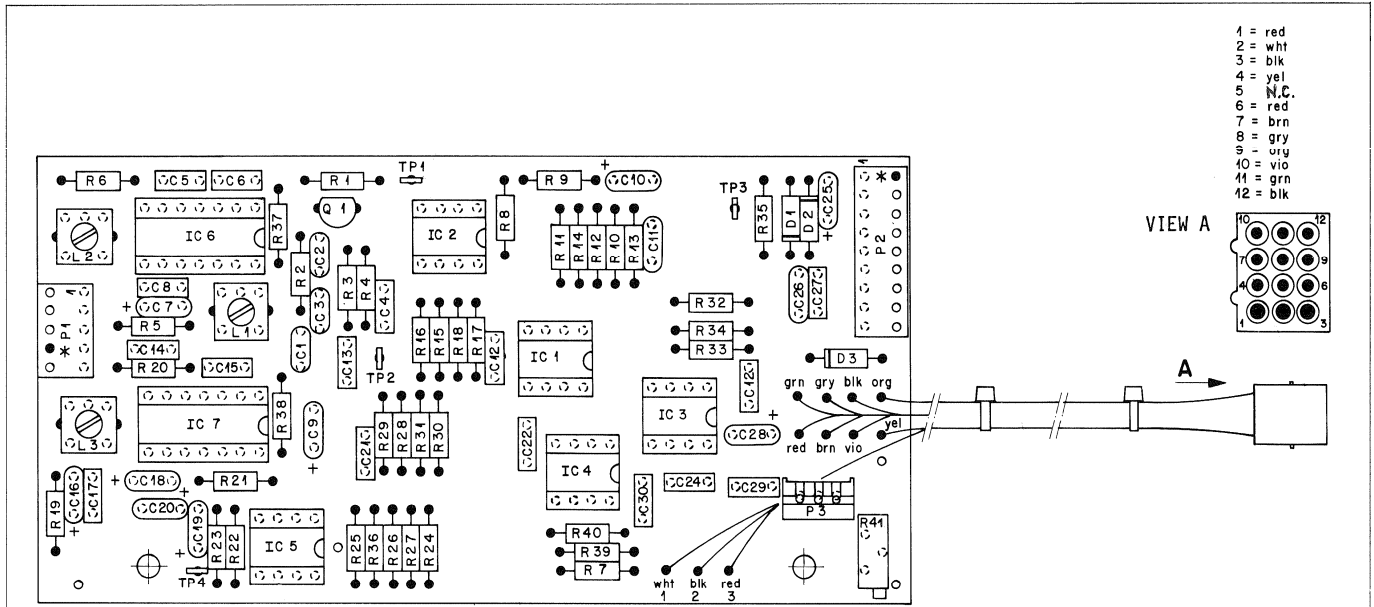


TACHO SENSOR ELECTRONICS PCB "ESE" 1.021.695.81 GRP 38



① 4.12.84 Burk	○ . .	○ . .	○ . .	○ . .
A 820 Tape Transport Section			PAGE 1 OF 1	
STUDER	Tacho Sensor Electronics PCB		SC	1.021.695.81

TACHO SENSOR ELECTRONICS PCB "ESE" 1.021.695.81 GRP 38



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.34.4101	100 pF	5%	N750, CE	
C.....2	59.34.5561	560 pF	5%	63V, CE	
C.....3	59.34.4151	150 pF	5%	N750, CE	
C.....4	59.06.0102	1 nF	10%	63V, PETP	
C.....5	59.06.0223	22 nF	10%	63V, PETP	
C.....6	59.06.0223	22 nF	10%	63V, PETP	
C.....7	59.26.2100	10 uF	20%	16V, EL	
C.....8	59.06.0223	22 nF	10%	63V, PETP	
C.....9	59.26.5229	2.2 uF	20%	25V, EL	
C.....10	59.26.9109	1 uF	20%	40V, EL	
C.....11	59.26.2100	10 uF	20%	16V, EL	
C.....12	59.06.0683	68 nF	10%	63V, PETP	
C.....13	59.06.0102	1 nF	10%	63V, PETP	
C.....14	59.06.0223	22 nF	10%	63V, PETP	
C.....15	59.06.0223	22 nF	10%	63V, PETP	
C.....16	59.26.2100	10 uF	20%	16V, EL	
C.....17	59.06.0223	22 nF	10%	63V, PETP	
C.....18	59.26.5229	2.2 uF	20%	25V, EL	
C.....19	59.26.9109	1 uF	20%	40V, EL	
C.....20	59.26.2100	10 uF	20%	16V, EL	
C.....21	59.06.0683	68 nF	10%	63V, PETP	
C.....22	59.06.0222	2.2 nF	10%	63V, PETP	
C.....23	59.06.0222	2.2 nF	10%	63V, PETP	
C.....24	59.06.0222	2.2 nF	10%	63V, PETP	
C.....25	59.26.1220	22 uF	20%	10V, EL	
C.....26	59.26.1220	22 uF	20%	10V, EL	
C.....27	59.06.0683	68 nF	10%	63V, PETP	
C.....28	59.26.2100	10 uF	20%	16V, EL	
C.....29	59.06.0683	68 nF	10%	63V, PETP	
C.....30	59.06.0224	220 nF	10%	63V, PETP	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....22	57.11.4273	27 kOhm	5%		
R.....23	57.11.4102	1 kOhm	5%		
R.....24	57.11.4103	10 kOhm	5%		
R.....25	57.11.4103	10 kOhm	5%		
R.....26	57.11.4103	10 kOhm	5%		
R.....27	57.11.4103	10 kOhm	5%		
R.....28	57.11.4103	10 kOhm	5%		
R.....29	57.11.4562	5.6 kOhm	5%		
R.....30	57.11.4103	10 kOhm	5%		
R.....31	57.11.4103	10 kOhm	5%		
R.....32	57.11.4472	4.7 kOhm	5%		
R.....33	57.11.4472	4.7 kOhm	5%		
R.....34	57.11.4472	4.7 kOhm	5%		
R.....35	57.11.4101	100 Ohm	5%		
R.....36	57.11.4105	1 MOhm	5%		
R.....37	57.11.4681	680 Ohm	5%		
R.....38	57.11.4681	680 Ohm	5%		
R.....39	57.11.4822	8.2 kOhm	5%		
R.....40	57.11.4822	8.2 kOhm	5%		
R.....41	58.05.0202	2 kOhm	10%		see Note 1
TP.....1	29.21.6002				Testpoint
TP.....2	29.21.6002				Testpoint
TP.....3	29.21.6002				Testpoint
TP.....4	29.21.6002				Testpoint

D.....1 50.04.0125 1N 4448 Fc, ITT #Phy Ses, Tf
 D.....2 50.04.0125 1N 4448 Fc, ITT #Phy Ses, Tf
 D.....3 50.04.0122 1N 4001 (to 4004) Not

IC.....1 50.15.0114 UA9637ACP 9637 ATC Fc, TI
 IC.....2 50.09.0101 LF 353 N TL 072 CP NS, TI

S T U D E R (00) 84/12/04 BUK TACHO SENS. EL. BOARD 1.021.695.81 PAGE 1

S T U D E R (00) 84/12/04 BUK TACHO SENS. EL. BOARD 1.021.695.81 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....3	50.05.0283	LM 393 N		LM 393 P	NS, TI
IC.....4	50.05.0283	LM 393 N		LM 393 P	NS, TI
IC.....5	50.09.0101	LF 353 N		TL 072 CP	NS, TI
IC.....6	50.11.0107	TBA 1205			Sie
IC.....7	50.11.0107	TBA 1205			Sie
L.....1	1.022.222.00		16 mH	HF-COIL	St
L.....2	1.022.222.00		16 mH	HF-COIL	St
L.....3	1.022.222.00		16 mH	HF-COIL	St
P.....1	54.01.0288			see Note 2	
P.....2	54.01.0217			see Note 3	
P.....3	54.14.5005			see Note 4	
Q.....1	50.03.0514	BF 366			Not
R.....1	57.11.4103	10 kOhm	5%		
R.....2	57.11.4103	10 kOhm	5%		
R.....3	57.11.4102	1 kOhm	5%		
R.....4	57.11.4121	120 Ohm	5%		
R.....5	57.11.4121	120 Ohm	5%		
R.....6	57.11.4472	4.7 kOhm	5%		
R.....7	57.11.4223	22 kOhm	5%		
R.....8	57.11.4273	27 kOhm	5%		
R.....9	57.11.4102	1 kOhm	5%		
R.....10	57.11.4103	10 kOhm	5%		
R.....11	57.11.4103	10 kOhm	5%		
R.....12	57.11.4103	10 kOhm	5%		
R.....13	57.11.4103	10 kOhm	5%		
R.....14	57.11.4105	1 MOhm	5%		
R.....15	57.11.4103	10 kOhm	5%		
R.....16	57.11.4562	5.6 kOhm	5%		
R.....17	57.11.4103	10 kOhm	5%		
R.....18	57.11.4103	10 kOhm	5%		
R.....19	57.11.4121	120 Ohm	5%		
R.....20	57.11.4472	4.7 kOhm	5%		
R.....21	57.11.4223	22 kOhm	5%		

Note 1: Pot: Bournsv. Nr.: 3296 Z-1-202
 Spectrol, Nr.: 84 Z 202 T 000
 Murata, Nr.: Pot 3105 Z-1-202

Note 2: Plug: 5-Pin AMP, Nr.: --163.680-3

Note 3: Plug: 9-Pin AMP, Nr.: --163.680-7

Note 4: Plug: 3-Pin Burndy, Nr.: MWP 3P-18

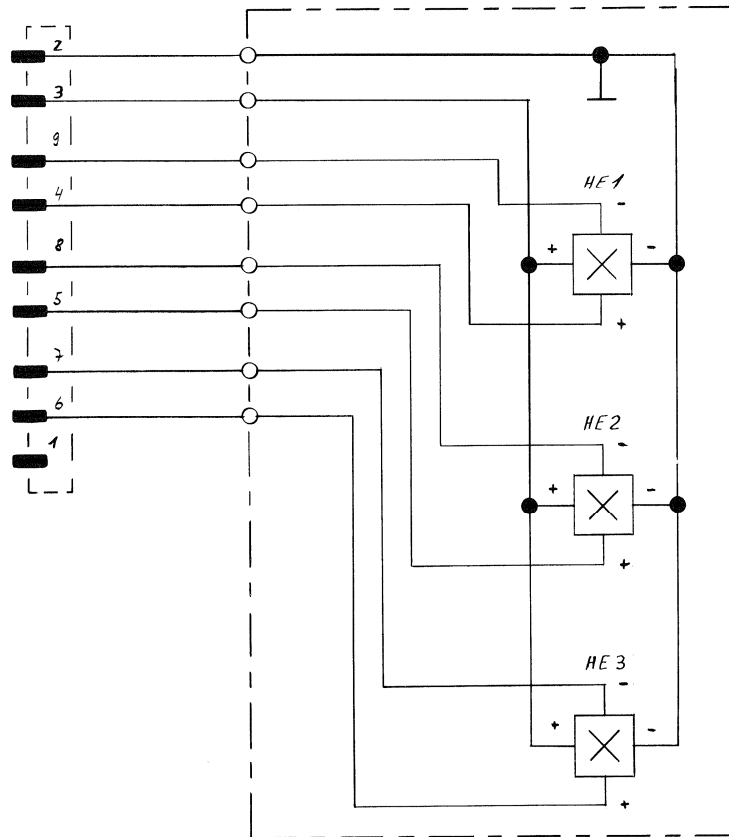
CE=Ceramic, EL=Electrolytic, PETP=Polyester Film

MANUFACTURER: Fc=Fairchild, GI=General Instruments, ITT=Intermetall,
 Mot=Motorola, NS=National Semiconductors, Ph=Philips,
 Sie=Siemens, St=Studer, TI=Texas Instruments

S T U D E R (00) 84/12/04 BUK TACHO SENS. EL. BOARD 1.021.695.81 PAGE 2

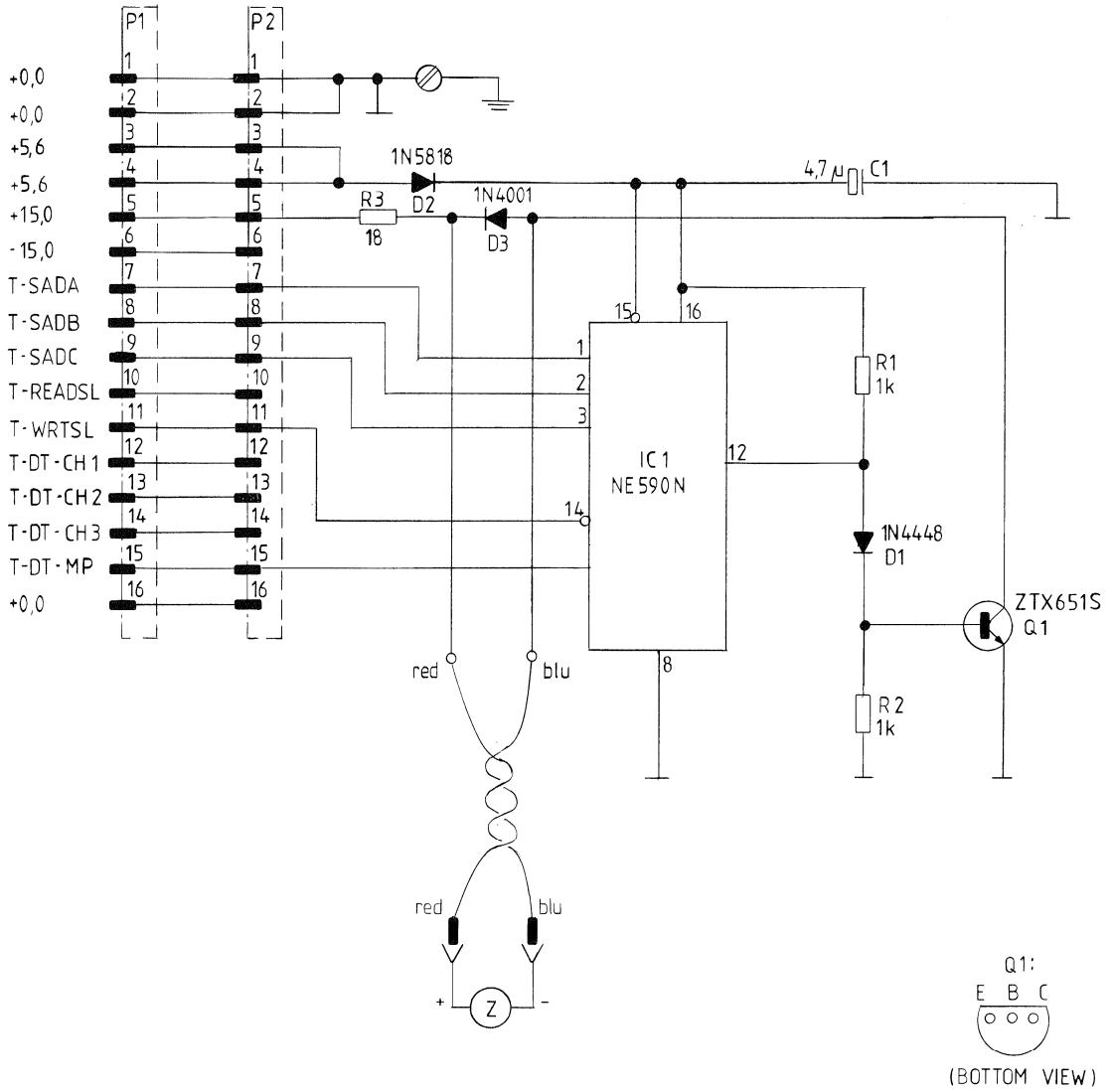
S T U D E R (00) 84/12/04 BUK TACHO SENS. EL. BOARD 1.021.695.81 PAGE 4

HALL SENSOR PCB 1.021.697.00 (INTEGRATED IN CAPSTAN MOTOR)



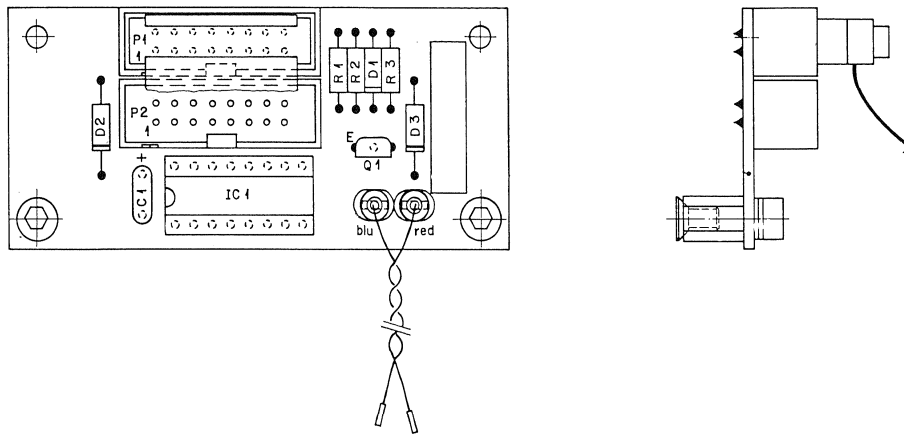
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	A 820 Tape Transport Section			PAGE 1 OF 1
STUDER	Hall Sensor PCB		SC 1.021.697.00	

TIME COUNTER CONTROL PCB (OPTION) 1.820.861.00



① 29.07.85 Fiala	○ . .	○ . .	○ . .	○ . .
	A 820 Options			PAGE 1 OF 1
STUDER	Time Counter Control		SC	1.820.861.00

TIME COUNTER CONTROL PCB (OPTION) 1.820.861.00



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.1479	4.7 uF	20%, 10V, Sa1	Ph,Ri
D.....1		50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D.....2		50.04.0512	1N 5818	1N 5819	Mot
D.....3		50.04.0122	1N 4001	...1N 4004	ITT,Mot,R-Ohm
IC.....1		50.15.0102	NE 590 N		Sig
P.....1				see note 1	
P.....2				see note 1	
P.....3		54.02.0320		(two pieces)	
Q.....1		50.03.0523	ZTX 651 S		Fe
R.....1		57.11.4102	1 kOhm	5%	
R.....2		57.11.4102	1 kOhm	5%	
R.....3		57.19.0180	10 Ohm	Fuse resistor, Philips Nr. 2322 205 13189	

Note 1 - connector, 16 contacts:

Studer Nr.	54.14.2002
Yamaichi Nr.	FAP-16-08-4055
Burnsly Nr.	BPH 9 B 16 80 GS

Sa1=Solid aluminium

MANUFACTURER: Fc=Fairchild, Fe=Ferranti, ITT=ITT Intermetall,
 Mot=Motorola, Ph=Philips, Ri=Rifa, Sig=Signetics,
 Tf=Telefunken.

ORIG 85/07/29

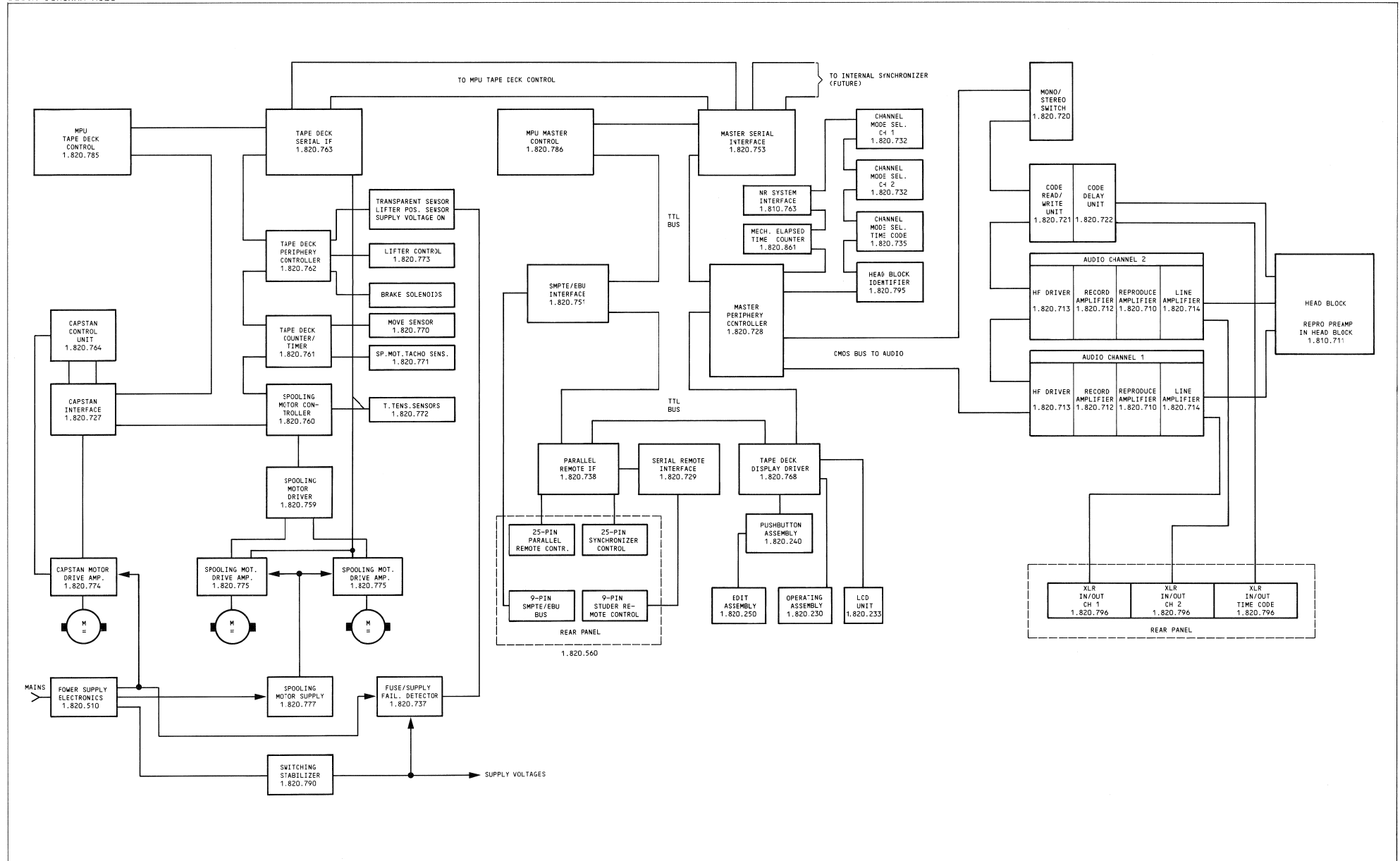
STUDER (00) 85/07/29 PR TIME COUNTER CONTROL BOARD 1.820.861.00 PAGE 1

6 DIAGRAMS MASTER SECTION

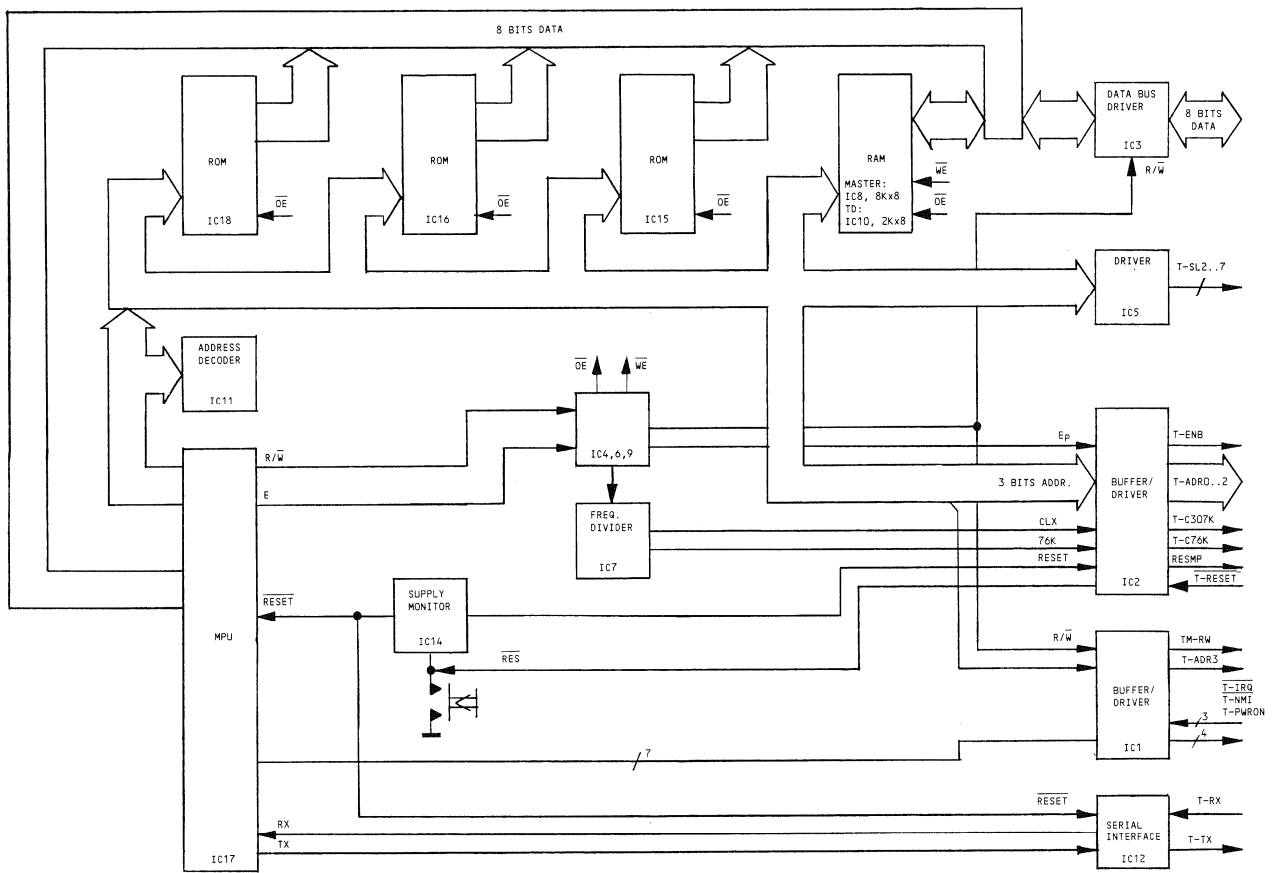
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"SERIAL REMOTE CONTROLLER" (OPTION)		
- RS232/DATA SAVE INTERFACE PCB	1.810.751.82	GRP20/ELM5D 6/13
- BUS DISPLAY PCB	1.810.757.00	6/13
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BLOCK DIAGRAM (SURVEY) DISPLAYS AND CONTROLS		6/25
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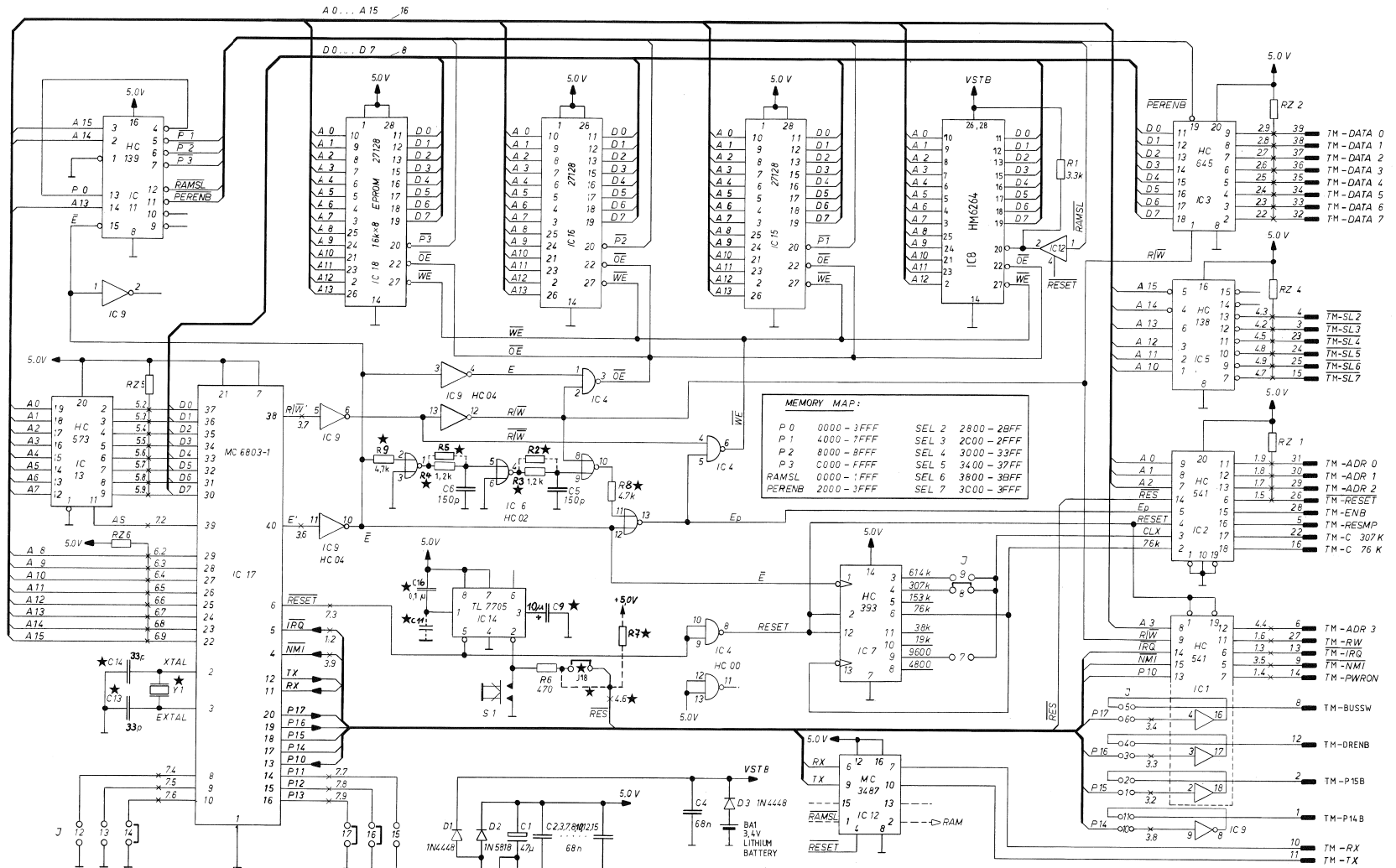
BLOCK DIAGRAM A820



BLOCK DIAGRAM MP UNIT MASTER "ESE" 1.820.786



MP UNIT MASTER "ESE" 1.820.786.21 GRP 20/ELM 49



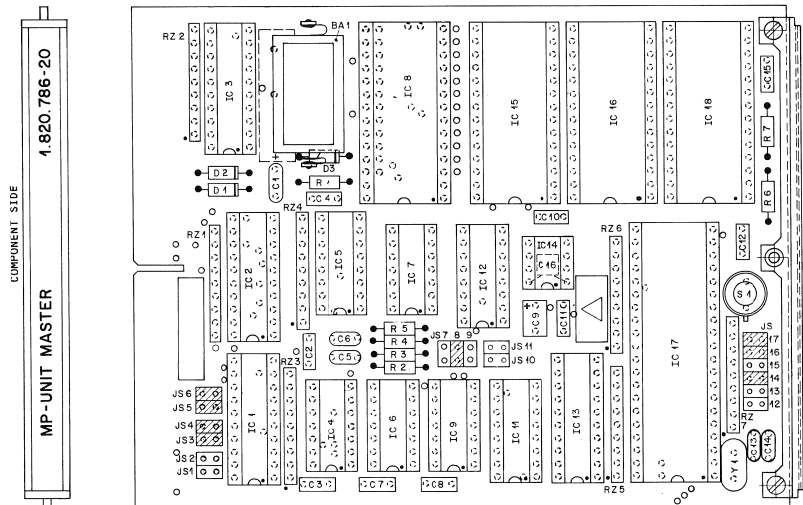
MEMORY MAP:

P 0	0000 - 3FFF	SEL 2	2800 - 2BFF
P 1	4000 - 7FFF	SEL 3	2C00 - 2FFF
P 2	8000 - BFFF	SEL 4	3000 - 33FF
P 3	C000 - FFFF	SEL 5	3400 - 37FF
RAMSL	0000 - 1FFF	SEL 6	3800 - 3BFF
PERENB	2000 - 3FFF	SEL 7	3C00 - 3FFF

★ HAS BEEN MODIFIED

10	12	84	SY	10	10	85	CK	...	...	...	...
A 820 Logic Section											
STUDER Master MPU											
										PAGE 1 OF 1	
										SC 1.820.786.21	

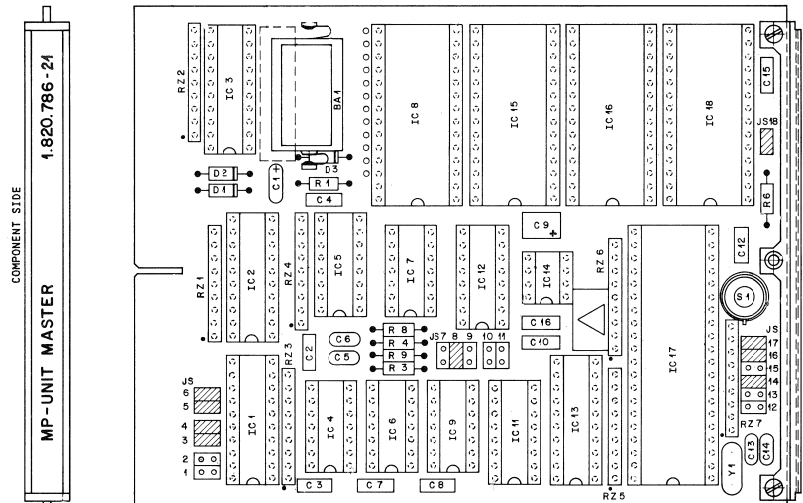
MP UNIT MASTER "ESE" 1.820.786.20/ .21 GRP 20/ELM 49



1.820.786.20

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	BA...11	89-011-0275		Rekt. Lith. 3x6V D 14x72x5	
(20)	C...11	59-26-0170	67 uF	2x2, 63V + 5% PH	
(20)	C...12	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...13	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...14	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...15	59-26-0151	150 uF	2x	
(20)	C...16	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...17	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...18	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...19	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...20	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...21	59-26-0104	100 nF	10% 63V + PEP	
(20)	C...22	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...23	59-26-0150	15 uF	2x	
(20)	C...24	59-26-0150	15 uF	2x	
(20)	C...25	59-26-0150	15 uF	2x	
(20)	C...26	59-26-0150	15 uF	2x	
(20)	C...27	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...28	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...29	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...30	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...31	59-26-0104	100 nF	10% 63V + PEP	
(20)	C...32	59-26-0150	15 uF	2x	
(20)	C...33	59-26-0150	15 uF	2x	
(20)	C...34	59-26-0150	15 uF	2x	
(20)	C...35	59-26-0150	15 uF	2x	
(20)	C...36	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...37	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...38	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...39	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...40	59-26-0053	68 nF	10% 63V + PEP	
(20)	C...41	59-26-0104	100 nF	10% 63V + PEP	
(20)	C...42	59-26-0115	1x 4468	Fc:ITT+PhSexTT	
(20)	C...43	59-26-0112	1x 5819	Fc:ITT+PhSexTT	
(20)	C...44	59-26-0119	1x 4468	Fc:ITT+PhSexTT	
(20)	IC...11	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...12	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...13	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...14	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...15	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...16	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...17	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...18	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...19	50-17-0561	74 HC 541	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...20	50-14-0133	H8626P-15	TC 556A-15	
(20)	IC...21	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...22	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...23	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...24	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...25	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...26	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...27	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...28	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...29	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...30	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...31	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...32	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...33	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...34	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...35	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...36	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...37	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...38	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...39	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...40	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...41	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...42	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...43	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...44	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...45	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...46	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...47	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...48	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...49	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...50	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...51	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...52	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...53	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...54	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...55	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...56	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...57	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...58	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...59	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...60	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...61	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...62	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...63	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...64	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...65	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...66	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...67	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...68	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...69	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...70	50-17-0004	74 HC 04	Not:NS,Phy:CA+S5G+Ti+To	

INSERTED: JS 3,4,5,6,8,14, 16,17



1.820.786.21

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	IC...11	50-17-0139	74 HC 139	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...12	50-14-0139	74 HC 139	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...13	50-17-0513	74 HC 513	DS 3407 P	
(20)	IC...14	50-17-0122	74 HC 012	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...15	1820-996-20	27128	HS #827128G-30	
(20)	IC...16	50-14-0125	74 HC 012	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...17	1820-996-20	27128	HS #827128G-30	
(20)	IC...18	50-14-0125	74 HC 012	Not:NS,Phy:CA+S5G+Ti+To	
(20)	IC...19	1820-996-20	27128	HS #827128G-30	
(20)	J5...11			see note 2	
(20)	J5...12			see note 2	
(20)	J5...13			see note 2	
(20)	J5...14			see note 2	
(20)	J5...15			see note 2	
(20)	J5...16			see note 2	
(20)	J5...17			see note 2	
(20)	J5...18			see note 2	
(20)	J5...19			see note 2	
(20)	J5...20			see note 2	
(20)	J5...21			see note 2	
(20)	J5...22			see note 2	
(20)	J5...23			see note 2	
(20)	J5...24			see note 2	
(20)	J5...25			see note 2	
(20)	J5...26			see note 2	
(20)	J5...27			see note 2	
(20)	J5...28			see note 2	
(20)	J5...29			see note 2	
(20)	J5...30			see note 2	
(20)	MP...11	29-21-0002			
(20)	MP...12	29-21-0002			
(20)	R...11	57-11-4332	3x3 kOhm 2%		
(20)	R...12	57-11-4333	33 kOhm 2%		
(20)	R...13		not used		

INSERTED: JS 3,4,5,6,8,17 16,14,18

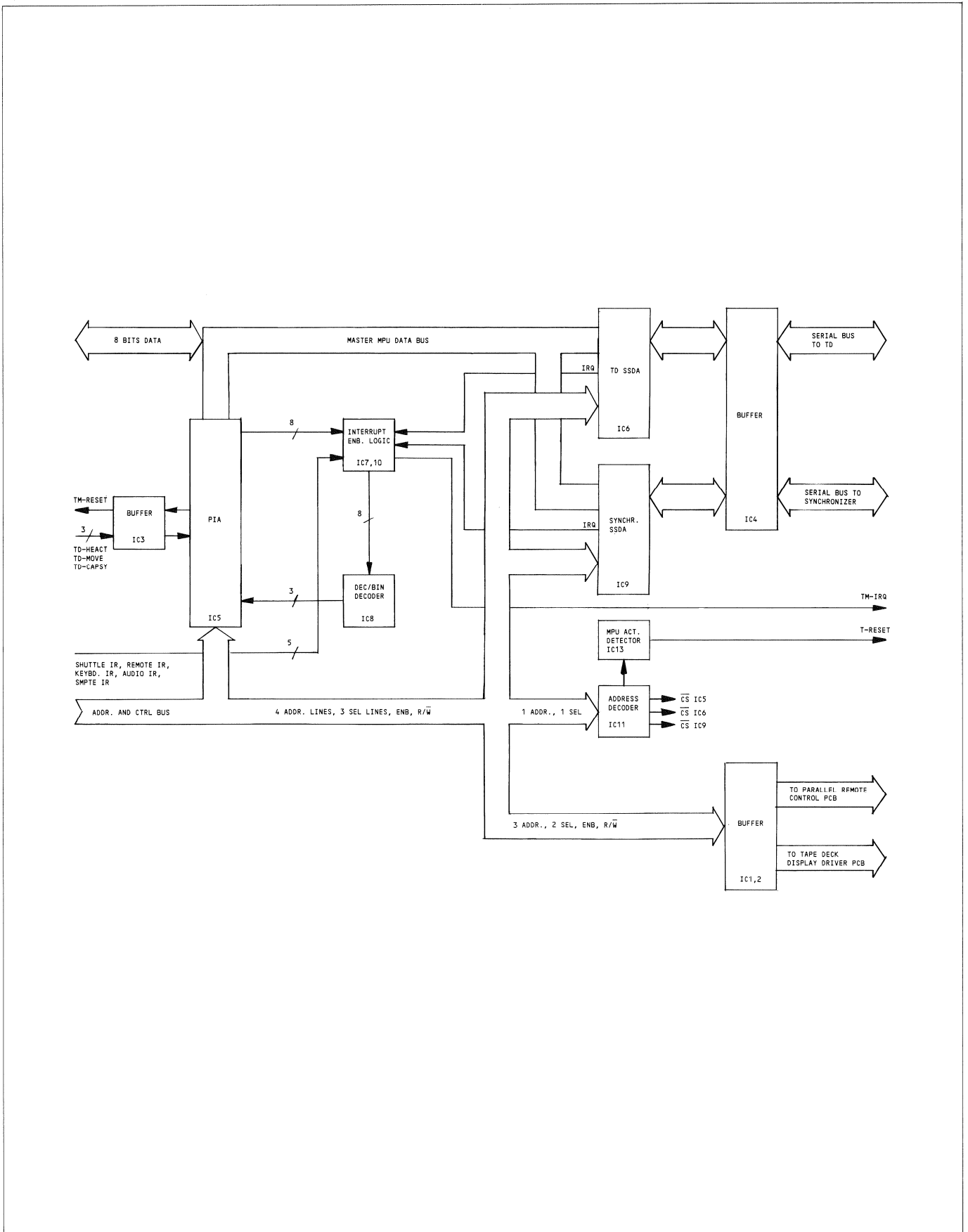
IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	R...11	57-11-3182	1x8 kOhm 1%		
(21)	R...12	57-11-3182	1x2 kOhm 1%		
(20)	R...13	57-11-3182	1x8 kOhm 1%		
(21)	R...14	57-11-3182	1x2 kOhm 1%		
(20)	R...15	57-11-4333	33 kOhm 2%		
(21)	R...16		not used		
(20)	R...17	57-11-4471	970 Ohm 2%		
(21)	R...18	57-11-4332	3x3 kOhm 2%		
(21)	R...19	57-11-4472	not used		
(21)	R...20	57-11-4472	4x2 kOhm 2%		
(20)	R...21	57-28-4332	see note 3		
(20)	R...22	57-28-4332	see note 3		
(20)	R...23	57-28-4332	see note 3		
(20)	R...24	57-28-4332	see note 3		
(20)	R...25	57-28-4332	see note 3		
(20)	R...26	57-28-4332	see note 3		
(20)	R...27	57-28-4332	see note 3		
(20)	S...11	55-03-0122	Chicago Switch 34-550-001		
(20)	V...11	89-01-0553	4x192 MHz TD 18		
(21)	V...12	89-01-0560	4x192 MHz +-100 ppm		

STUDER (21) 85/10/18 PB MP-UNIT MASTER 1.820.786.00 PAGE 3

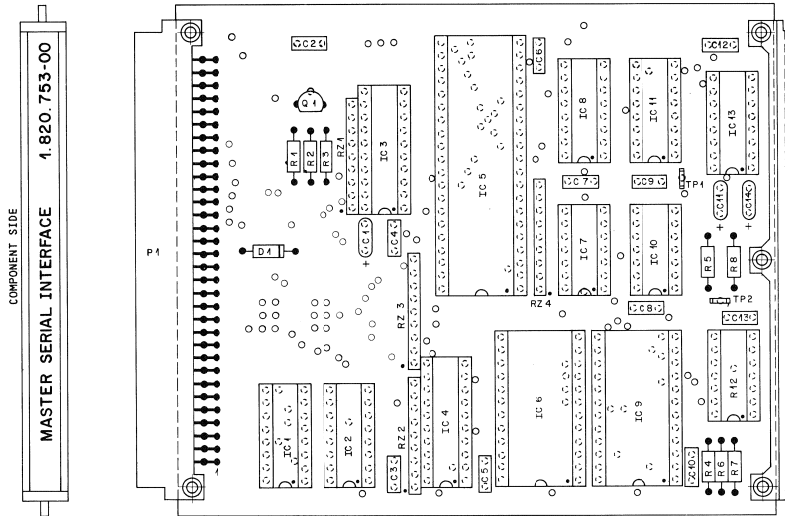
IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	85-04-10		IC8 layout - E1		
(21)	85-13-18		Improved noise suppression of reset circuit and improved timing of E-puttle (PCB layout -12).		
Note 1			IC15/16/18 : Software is delivered in a set only.		
Note 2			Contact point Studer Nr. 54-01-0020 Berg Nr. 79 180-102-30 Philips Nr. 242 025 10503 Studer Nr. 54-01-0021 Berg Nr. 65 474-001 Philips Nr. 242 024 88003		
Note 3			network: R = 3x3 kOhm 5% Silicon Nr. CD x 3x3 k J Inmetro Nr. R88 3x3 k 5%		
			Con:Ermetec; Sal+Solid Aluminium		
			MANUFACTURER: f:Fairchild, Hi:Hitachi, ITT:IntermetaIT, Mo:Motorola, v:Vishay, w:Walsky, x:Xicon, y:Yamatotech, z:Zener		
			Phil:Philips, S:Siemens, T:Telefunken, Tl:Texas Instruments.		
			★ C9: 0.47 uF replaced by: 10 uF Part No. 59.26.2100		

STUDER (21) 85/10/18 PB MP-UNIT MASTER 1.820.786.00 PAGE 4

BLOCK DIAGRAM MASTER SERIAL INTERFACE PCB "ESE" 1.820.753



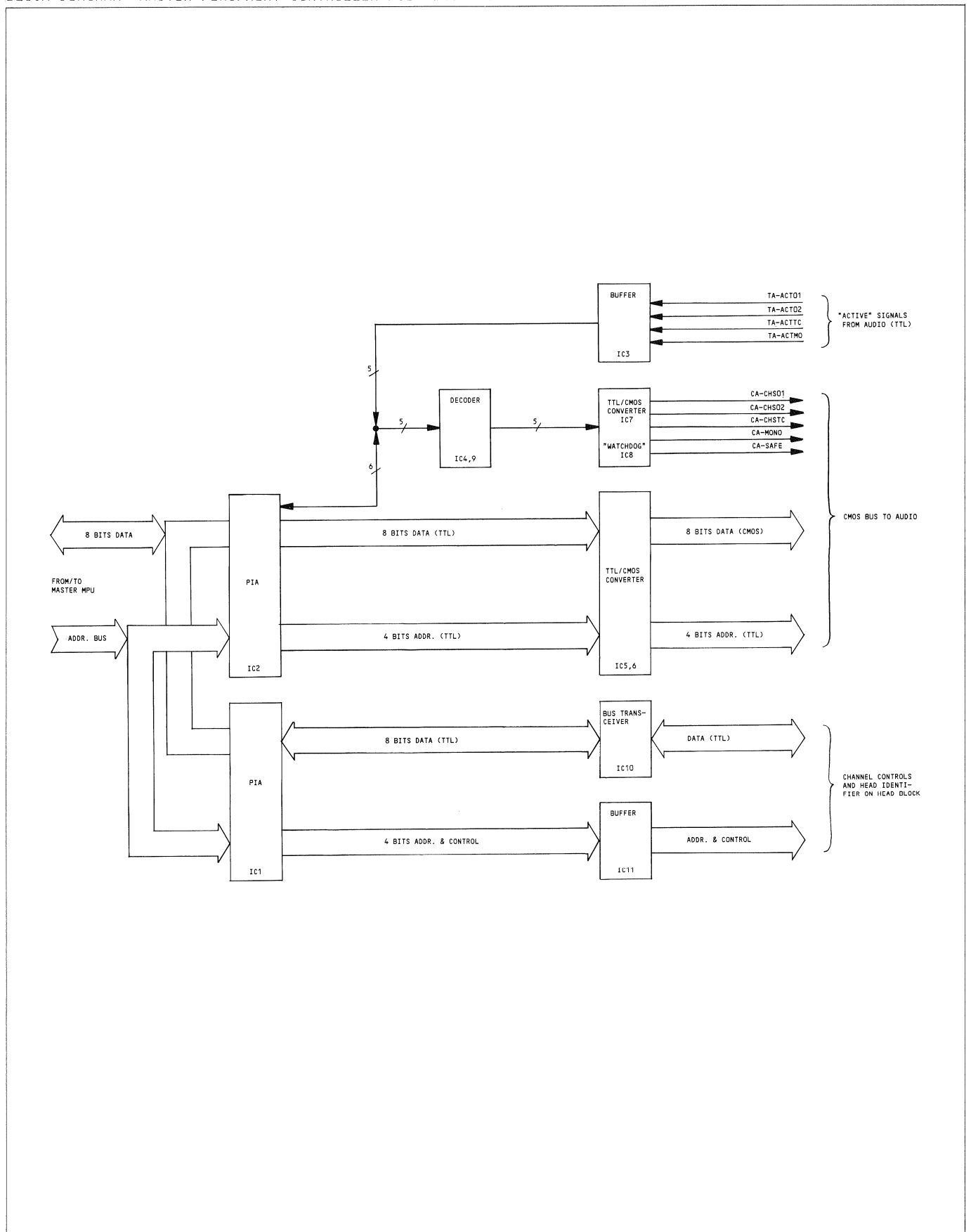
MASTER SERIAL INTERFACE PCB "ESE" 1.820.753.00 GRP 20/ELM 48



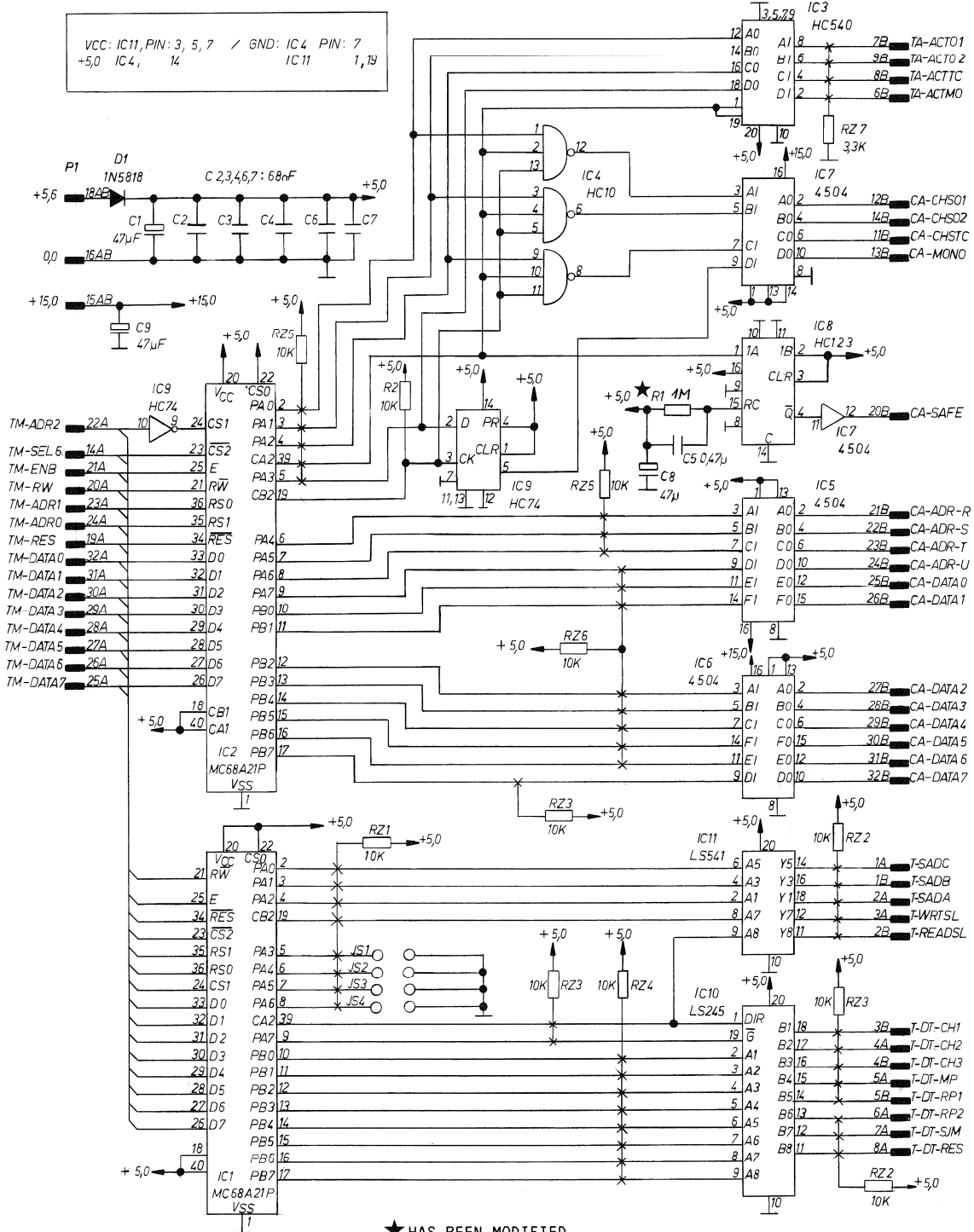
IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	50.24.0470	47 UF	20%	6.3V	Ph
C.....2	50.00.0693	68 nF	20%		
C.....3	50.00.0693	68 nF	20%		
C.....4	50.00.0693	68 nF	20%		
C.....5	50.00.0693	68 nF	20%		
C.....6	50.00.0693	68 nF	20%		
C.....7	50.00.0693	68 nF	20%		
C.....8	50.00.0693	68 nF	20%		
C.....9	50.00.0693	68 nF	20%		
C....10	50.00.0693	68 nF	20%		
C....11	50.24.5279	2.2 uF	20%	6.3V	Ph
C....12	50.00.0693	68 nF	20%		
C....13	50.00.0693	68 nF	20%		
C....14	50.24.1330	33 uF	20%	6.3V	Ph
D.....1	50.04.0512	IN 5818	IN 5819		Mot
IC.....1	50.15.0109	MC 3487 P	DS 3487 N		Sie
IC.....2	50.15.0109	MC 3487 P	DS 3487 N		Sie
IC.....3	50.17.1041	74 HC 541			Ph+Mot+Ns+RCA+To
IC.....4	50.17.1041	74 HC 541			Ph+Mot+Ns+RCA+To
IC.....5	50.16.0310	MS68 AS2P	F 68 A21PC		Mot+Am+I+C
IC.....6	50.16.0314	MS68 AS2	MS68 AS2, 56RA52		Mot+Am+I+I
IC.....7	50.17.1032	74 HC 52			Ph+Mot+Ns+RCA
IC.....8	50.17.1148	74 HC 148			Ph+Mot+Ns+RCA
IC.....9	50.16.0314	MS68 AS2	MS68 AS2, 56RA52		Mot+Am+I+I
IC....10	50.17.1032	74 HC 52			Ph+Mot+Ns+RCA
IC....11	50.17.1139	74 HC 139			Ph+Mot+Ns+RCA+To
IC....12	50.17.1199	74 HC 199			Ph+Mot+Ns+RCA+To
IC....13	50.17.1123	74 HC 123			Ph+Mot+Ns+RCA+To
P.....1	56.11.2004		Plug	see note 1	
Q.....1	50.03.0908	MPS 2369			Mot
R.....1	57.11.4472	4.7 kOhm	5%		
R.....2	57.11.4103	10 kOhm	5%		
S T U D E R (00) 84/12/18 WE MASTER SERIAL INTERFACE 1.820.753-00 PAGE 1					

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....3	57.11.4561	500 Ohm	5%		
R.....4	57.11.4103	3.3 kOhm	5%		
R.....5	57.11.4104	100 kOhm	5%		
R.....6	57.11.4103	3.3 kOhm	5%		
R.....7	57.11.4102	1.0 kOhm	5%		
R.....8	57.11.4104	100 kOhm	5%		
RZ.....1	57.08.4332	3.3 kOhm	10%	see note 2	
RZ.....2	57.08.4332	3.3 kOhm	10%	see note 2	
RZ.....3	57.08.4332	3.3 kOhm	10%	see note 2	
RZ.....4	57.08.4332	3.3 kOhm	10%	see note 2	
TP.....1	56.02.0320		Testpoint		
TP.....2	56.02.0320		Testpoint		
Note 1 - Plug : 2 x 32 Euro board Buremy PE 64 0 20 P00 F00 20 Erni 9722-565-191					
Note 2 - Network : 0 x 3.3 kOhm 5% simple line Sicocond COS X 3.3 K X Ineltra R88 3.3 K 5%					
Manufacturer: AMT=Amertcom Microsystem Inc., FC=Fairchild, HE=Heintzsch, MO=Motorola, N=National (Masushita), NS=National Semiconductors, PH=Philips (incl. Valvo), NSC=Rockwell Corporation of America, S=Siemens, To=Toshiba.					
DRG 84/12/18					
S T U D E R (00) 84/12/18 WE MASTER SERIAL INTERFACE 1.820.753-00 PAGE					

BLOCK DIAGRAM MASTER PERIPHERY CONTROLLER PCB "ESE" 1.820.728

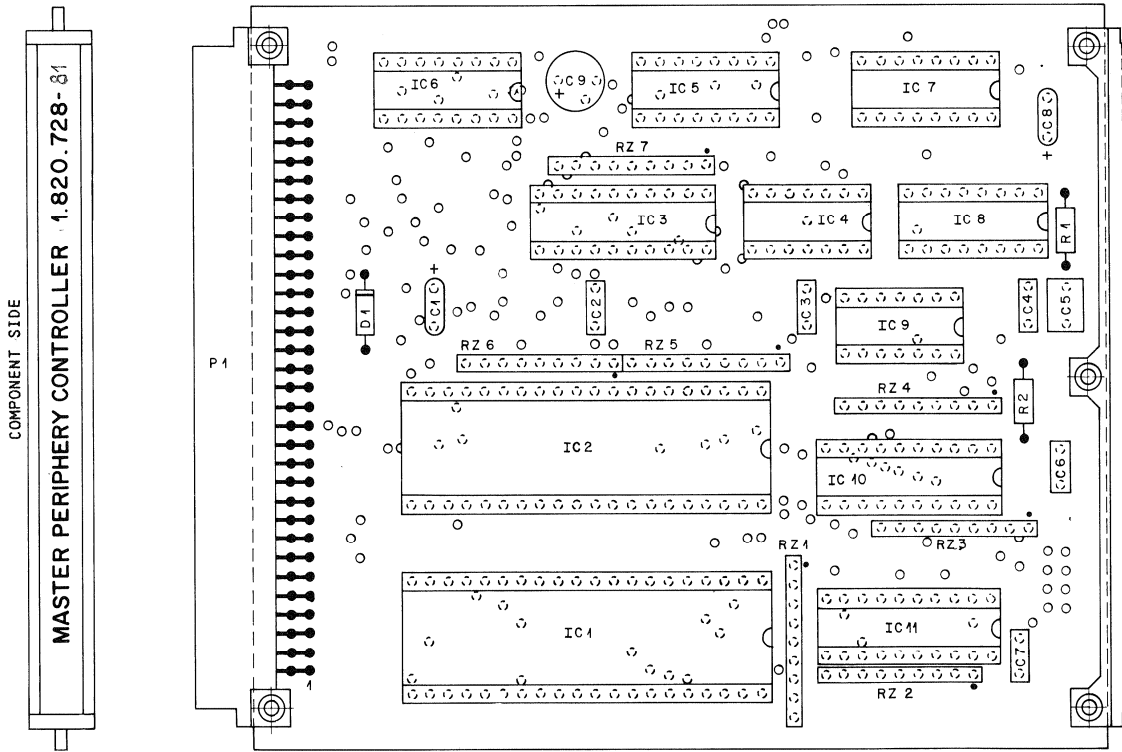


MASTER PERIPHERY CONTROLLER PCB "ESE" 1.820.728.00/.81 GRP 20/ELM 51



① 23.11.84 SU	..	..	..	..
A820 Logic Section			PAGE 1 OF 1	
STUDER	Master Periphery Controller	ESE SC	1.820.728.81	

MASTER PERIPHERY CONTROLLER PCB "ESE" 1.820.728.00/.81 GRP 20/ELM 51



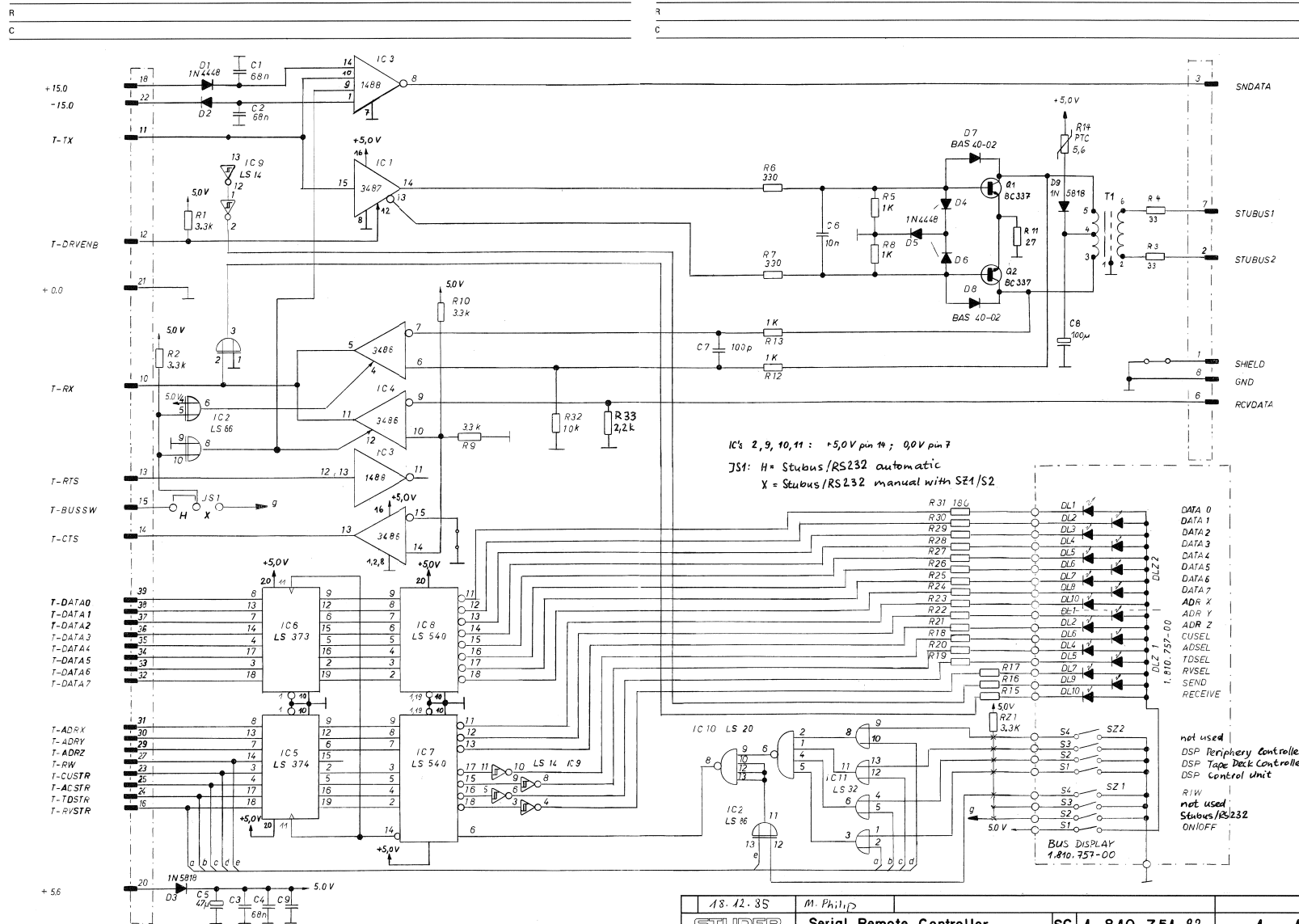
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.26.0470	47 uF	-20%, 63V, Sal		Ph
C.....2	59.06.0683	68 nF	10%, 63V, PETP		
C.....3	59.06.0683	68 nF	10%, 63V, PETP		
C.....4	59.06.0683	68 nF	10%, 63V, PETP		
C.....5	59.06.0474	470 nF	10%, 63V, PETP		
C.....6	59.06.0683	68 nF	10%, 63V, PETP		
C.....7	59.06.0683	68 nF	10%, 63V, PETP		
C.....8	59.26.0470	47 uF	-20%, 63V, Sal		Ph
C.....9	59.22.5470	47 uF	-20%, 25V, E1		
D.....1	50.04.0512	1 N 5818	1 N 5819		Mot
IC.....1	50.16.0106	MC68 A 21P	S68 A 21P, F68 A 21P		AMI+Fc+Mot
IC.....2	50.16.0106	MC68 A 21P	S68 A 21P, F68 A 21P		AMI+Fc+Mot
IC.....3	50.17.1940	r4 HC 940			Mot+NS+Ph+RCA+SGS+TI+To
IC.....4	50.17.1010	74 HC 10			Mot+NS+Ph+RCA+SGS+TI+To
IC.....5	50.15.0103	MC14504BCP			Mot
IC.....6	50.15.0103	MC14504BCP			Mot
IC.....7	50.15.0103	MC14504BCP			Mot
IC.....8	50.17.1123	74 HC 123			Mot+NS+Ph+RCA+SGS+TI+To
IC.....9	50.17.1074	74 HC 74			Mot+NS+Ph+RCA+SGS+TI+To
IC.....10	50.06.0245	SN74LS249N			TI
IC.....11	50.06.0541	SN74LS541N	74LS541PC		Fc+Mot+TI
P.....1	54.11.2004		see note 1		
R.....1	57.11.4105	1 Mohm	2%		
R.....2	57.11.4103	10 Kohm	2%		
RZ.....1	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....2	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....3	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....4	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....5	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....6	57.88.4103		Network 8 = 10 Kohm (old part 1.010.014.57)		
RZ.....7	57.88.4332		Network 8 = 3.3 Kohm		

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Connector 2532 Euro Print: Burdy Nr. PI 54 B 20 P00 F0 0 20 Ernt Nr. 9722.563.191					
E1=Electrolytic, PETP=Metallized Polyesterfilm, Sal=Solid Aluminium					
MANUFACTURER: AMI=American Microsystem Inc., Fc=Fairchild, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation, SGS=SGS/Ates, TI=Texas Instruments, To=Toshiba.					

★ FOR 1.820.728.00, R1 = 220 kΩ

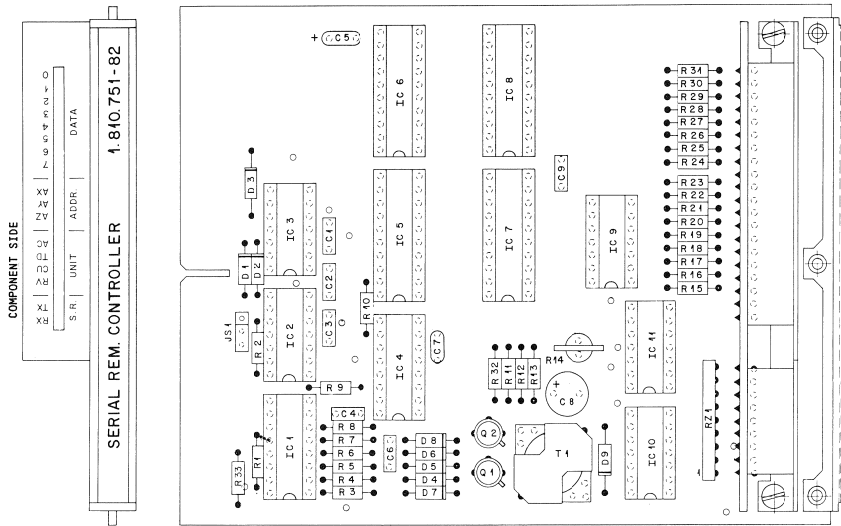
ORIG 86/03/25

"SERIAL REMOTE CONTROLLER"
 RS232/DATA SAVE INTERFACE PCB 1.810.751.82 GRP 20/ELM 50
 - BUS DISPLAY PCB 1.810.757.00



"SERIAL REMOTE CONTROLLER"
RS232/DATA SAVE INTERFACE PCB 1.810.751.82 GRP 20/ELM 50

BUS DISPLAY PCB 1.810.757.00



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
A.....1		1.810.757.00		Bus display board	
C.....1		99.99.0205	68 nF	-20%	Ce
C.....2		99.99.0205	68 nF	-20%	Ce
C.....3		99.99.0205	68 nF	-20%	Ce
C.....4		99.99.0205	68 nF	-20%	Ce
C.....5		99.26.0870	47 uF	20%, 6.3 V _{Sol}	
C.....6		99.06.0103	10 nF	10%	PETP
C.....7		99.34.1101	100 pF	2%	Ce
C.....8		99.22.1101	100 uF	10%, 10 V _{EL}	
C.....9		99.99.0205	68 nF	-20%	Ce
D.....1		90.04.0125	1N4448		ITT*Phy*Sem*TI
D.....2		90.04.0125	1N4448		ITT*Phy*Sem*TI
D.....3		90.04.0112	1N5818	1N5819	Not
D.....4		90.04.0125	1N4448		ITT*Phy*Sem*TI
D.....5		90.04.0125	1N4448		ITT*Phy*Sem*TI
D.....6		90.04.0125	1N4448		ITT*Phy*Sem*TI
D.....7		90.04.0127	DAT85	85A0-02	Phy*Sie
D.....8		90.04.0127	DAT85	85A0-02	Phy*Sie
D.....9		90.04.0112	1N5818	1N5819	Not
I.....1		90.15.0105	MC3487	DS3487	Not+SOS
I.....2		90.06.0286	SN74LS 86N	DMP4LS 86N, 74LS 86PC	Fc*NS*Sig*TI
I.....3		90.15.0106	MC1488		Not
I.....4		90.15.0104	MC2486P	DS3486	Not+NS
I.....5		90.06.0374	AM74LS374N	SN74LS374N, DM74LS374N	AMD*NS TI
I.....6		90.06.0373	SN74LS373N	DM74LS373N	MoS*Sig*TI
I.....7		90.06.0540	SN74LS540N	74LS540PC	Fc*Mo*TI
I.....8		90.06.0540	SN74LS540N	74LS540PC	Fc*Mo*TI
I.....9		90.06.0314	SN74LS 14N	DMP4LS 14N, 74LS 14PC	Fc*NS*Sig*TI
I.....10		90.06.0202	SN74LS 20N	DMP4LS 20N, 74LS 20PC	Fc*NS*Sig*TI
I.....11		90.06.0327	SN74LS 32N	DMP4LS 32N, 74LS 32PC	Fc*NS*Sig*TI

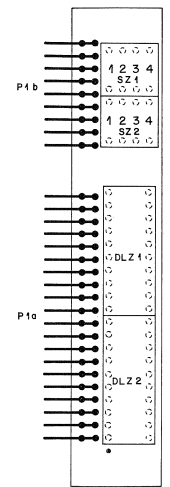
J.....1 See note 1
Q.....1 90.03.0434 BFR18 SGS

S T U D E R (00) 85/12/18 PHM SERIAL REMOTE CONTROLLER 1.810.751.82 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q.....2		90.03.0434	BFR18		SGS
R.....1		97.11.4132	3.3 kOhm	Z1	
R.....2		97.11.4132	3.3 kOhm	Z1	
R.....3		97.11.4130	33 Ohm	Z1	
R.....4		97.11.4130	33 Ohm	Z1	
R.....5		97.11.4102	1 kOhm	Z1	
R.....6		97.11.4131	330 Ohm	Z1	
R.....7		97.11.4131	330 Ohm	Z1	
R.....8		97.11.4132	3.3 kOhm	Z1	
R.....9		97.11.4132	3.3 kOhm	Z1	
R.....10		97.11.4132	3.3 kOhm	Z1	
R.....11		97.11.4270	27 Ohm	Z1	
R.....12		97.11.4102	1 kOhm	Z1	
R.....13		97.11.4102	1 kOhm	Z1	
R.....14		97.99.0209	5.4 Ohm	PTC Resistor, Philips Nr. 2322 062 91005	
R.....15		97.11.4180	180 Ohm	Z1	
R.....16		97.11.4180	180 Ohm	Z1	
R.....17		97.11.4180	180 Ohm	Z1	
R.....18		97.11.4180	180 Ohm	Z1	
R.....19		97.11.4180	180 Ohm	Z1	
R.....20		97.11.4180	180 Ohm	Z1	
R.....21		97.11.4180	180 Ohm	Z1	
R.....22		97.11.4180	180 Ohm	Z1	
R.....23		97.11.4180	180 Ohm	Z1	
R.....24		97.11.4180	180 Ohm	Z1	
R.....25		97.11.4180	180 Ohm	Z1	
R.....26		97.11.4180	180 Ohm	Z1	
R.....27		97.11.4180	180 Ohm	Z1	
R.....28		97.11.4180	180 Ohm	Z1	
R.....29		97.11.4180	180 Ohm	Z1	
R.....30		97.11.4180	180 Ohm	Z1	
R.....31		97.11.4103	10 kOhm	Z1	
R.....32		97.11.4103	10 kOhm	Z1	
R.....33		97.11.4222	2.2 kOhm	Z1	
R.....34		97.88.4332	3.3 kOhm	See note 2	

S T U D E R (00) 85/12/18 PHM SERIAL REMOTE CONTROLLER 1.810.751.82 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
T.....1		1.022.223.00		Studio Bus Transformer	St



BUS DISPLAY PCB 1.810.757
SOLDERED ONTO RS232/DATA
SAVE INTERFACE 1.810.751

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
DL2...1		90.04.2134	HV57164F	HV57164G	GI
DL2...2		90.04.2134	HV57164F	HV57164G	GI
SZ.....1		95.01.0164		Switch Array, AMP D-161 391-4, SAI 1004-692	
SZ.....2		95.01.0164		Switch Array, AMP D-161 391-4, SAI 1004-692	
P.....1a		94.01.0261	20 cont.	AMP 1-161-740-9	
P.....1b		94.01.0220	9 cont.	AMP 161-740-7	

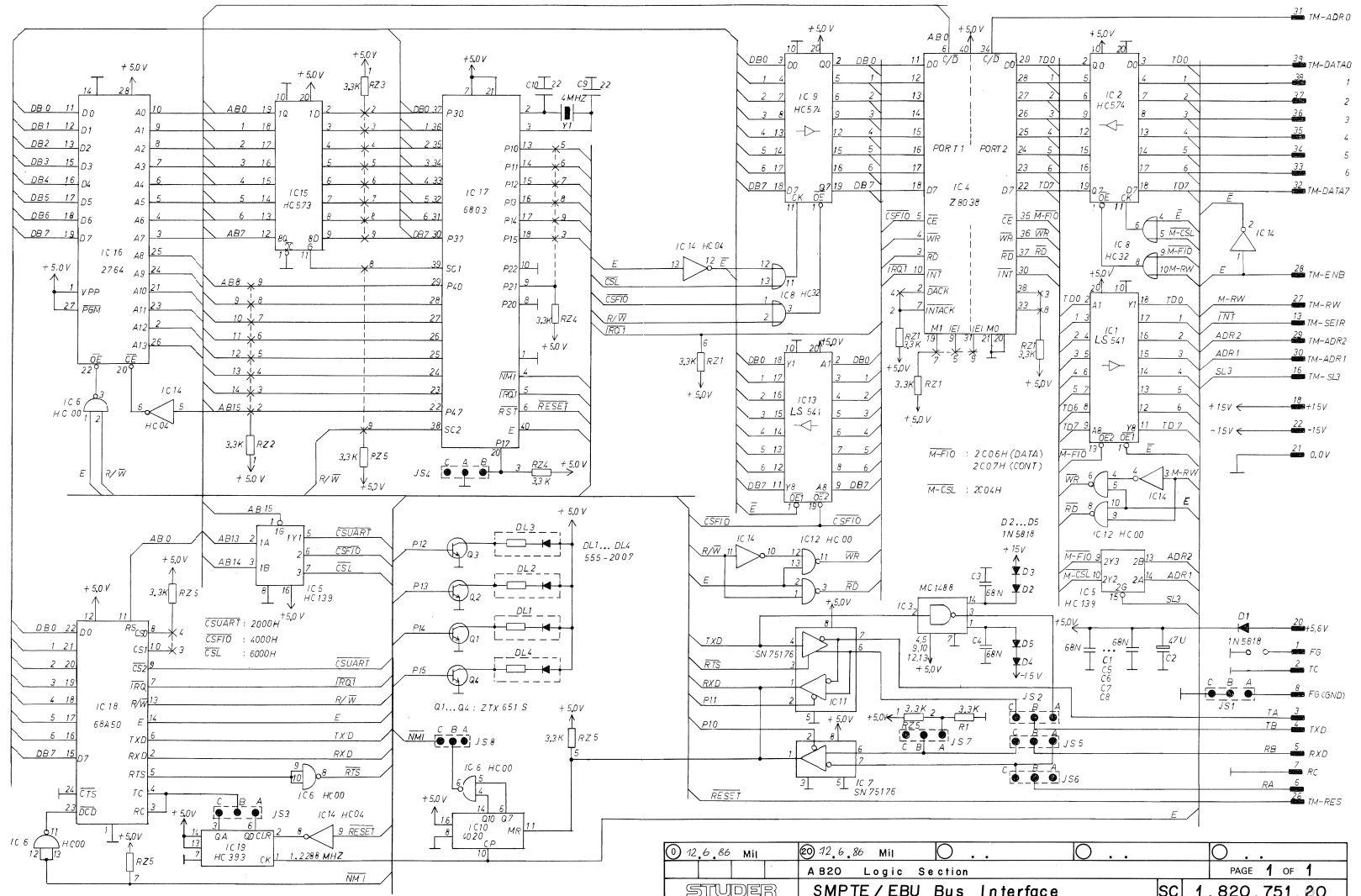
MANUFACTURER: GI=General Instruments
DRIG 02/06/23
S T U D E R (00) 02/06/23 DSC BUS DISPLAY 1.810.757.00 PAGE 1

Note 1 - Contact pin: Studer Nr. 94.11.0126
Borg Nr. 75219-316-94
Metropolest Nr. 5L 1/25/70 2
Comotel Nr. 350 0350 1 30 440
Bridge: Studer Nr. 94.01.0021
Metropolest Nr. G481 L 0
Comotel Nr. 2 030 946-B
Note 2 - Network: 8 P 3.3 kOhm, 5%
Sickend Nr. G09 x 3.3 k J
Ineltro Nr. R88 3.3 k 5%

Ce= Ceramic, El= Electrolytic, Sol= Solid aluminium, PETP= Polyester
MANUFACTURER: AMD=Advanced Micro Devices, Cc=Fairchild,
ITT=Intertek, MoS=Motorola,
NS=National Semiconductor, Ph=Philips, Sem=Semicon,
SGS=SGS-Thomson, Sig=Siemens, Sig=Signetics, St=Studer,
TI=Texas Instruments.

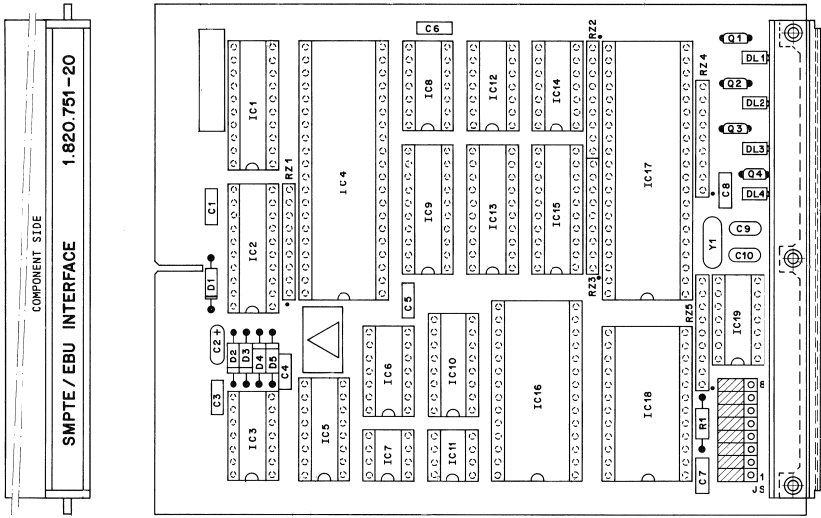
DRIG 85/12/18
S T U D E R (00) 85/12/18 PHM SERIAL REMOTE CONTROLLER 1.810.751.82 PAGE 3

SMPT/EBU INTERFACE PCB 1.820.751.20 GRP 20/ELM 50



① 12,6,86 Mil	② 12,6,86 Mil	③ . . .	④ . . .	⑤ . . .
STUDER A820 Logic Section				PAGE 1 of 1
SMPT/EBU Bus Interface				SC 1.820.751.20

SMPTE/EBU INTERFACE PCB 1.820.751.20 GRP 20/ELM 50



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	594050883	08 NF	10%	PEEP
(20)	C.....2	594050870	07 NF	20% 6-3V	SAL
(20)	C.....3	594050883	08 NF	10%	PEEP
(20)	C.....4	594050883	08 NF	10%	PEEP
(20)	C.....5	594050883	08 NF	10%	PEEP
(20)	C.....6	594050883	08 NF	10%	PEEP
(20)	C.....7	594050883	08 NF	10%	PEEP
(20)	C.....8	594050883	08 NF	10%	PEEP
(20)	C.....9	594052220	22 pF	5%	CEK
(20)	C.....10	594052220	22 pF	5%	CEK
(20)	D.....1	504050512	IN 5018		Mut
(20)	D.....2	504050125	IN 4448		Fc:ITT+PhSes+TF
(20)	D.....3	504050125	IN 4448		Fc:ITT+PhSes+TF
(20)	D.....4	504050125	IN 4448		Fc:ITT+PhSes+TF
(20)	D.....5	504050125	IN 4448		Fc:ITT+PhSes+TF
(20)	UL.....1	504052107	555-2007		DI
(20)	UL.....2	504052107	555-2007		DI
(20)	UL.....3	504052107	555-2007		DI
(20)	UL.....4	504052107	555-2007		DI
(20)	IC.....1	504050591	74 LS 941	**74 LS 941..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....2	50414574	74 HC 574	**74 HC 574..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....3	504150106	MC 1498 P		AND+V
(20)	IC.....4	504150118	Z 8038 PS	Z 8038 PS	AND+V
(20)	IC.....5	504171139	74 HC 139	**74 HC 139..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....6	504171000	74 HC 00	**74 HC 00..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....7	504150115	SN7516AP	DS 3645 N	NS+IT
(20)	IC.....8	504171037	74 HC 37	**74 HC 37..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....9	504171074	74 HC 574	**74 HC 574..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....10	504171000	74 HC 00	**74 HC 00..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....11	504150115	SN7516AP	**4020+..	NS+IT
(20)	IC.....12	504171000	74 HC 00	**74 HC 00..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....13	504050591	74 LS 941	**74 LS 941..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....14	504171004	74 HC 04	**74 HC 04..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	IC.....15	504171074	74 HC 574	**74 HC 574..	Mut+NS+Ph+RCA+SOS+TTL+IO

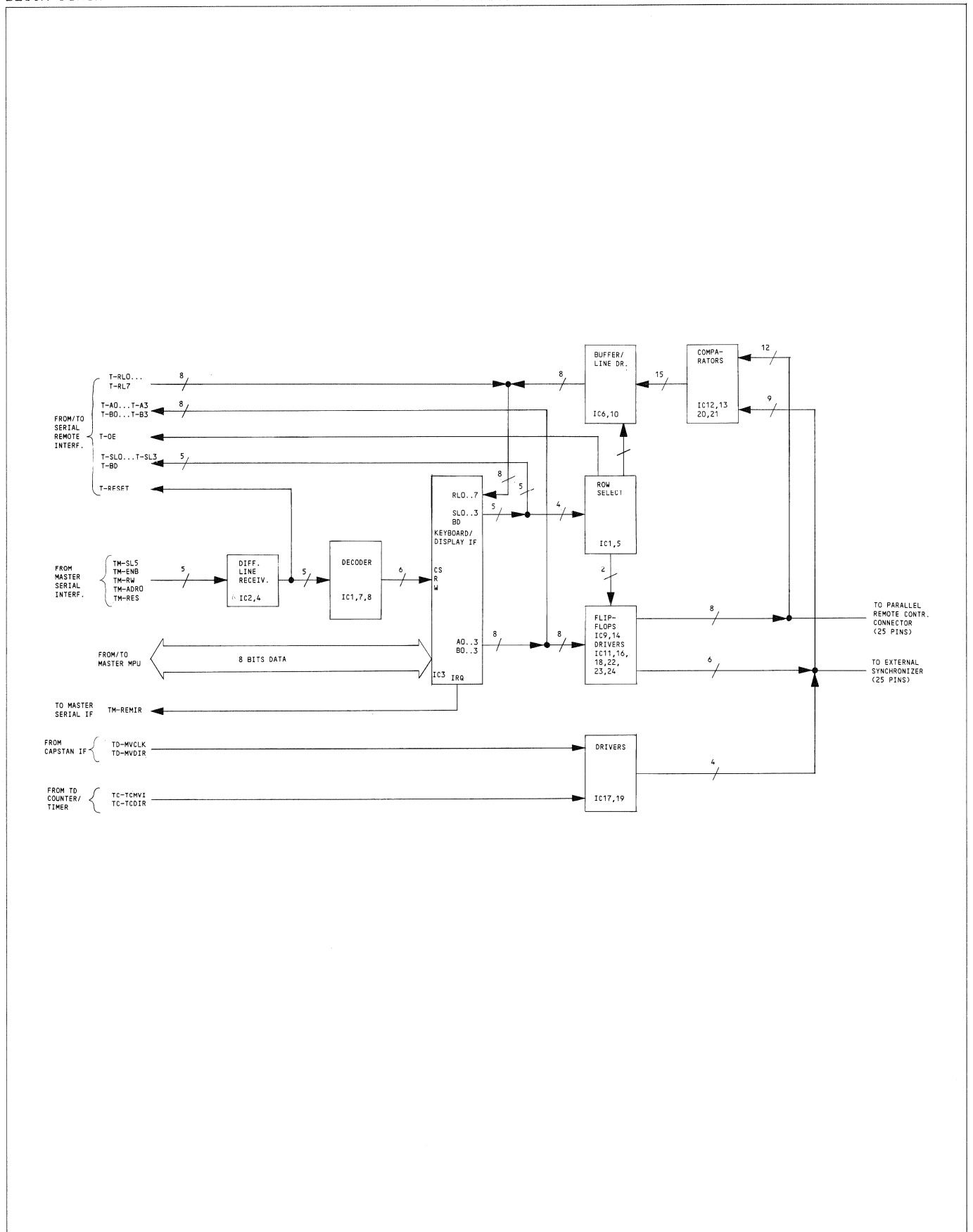
S T U D E R (20) 86/06/12 CM SMPTE / EBU INTERFACE 1.820.751.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	IC.....16	504140113	D 2764-3	.... 2764 ...	Hi+T+SOS+TI
(20)	IC.....17	1.820.998.20		Software 48/85, SMPTE/EBU IF	SE
(20)	IC.....18	504101017	MC8803 P-1	HM8803 P-1	Hi+MOT
(20)	IC.....19	504101011	MC88 A 50P	5 08 A 50	AM+MOT
(20)	IC.....19	504171393	74 HC 393	**74 HC 393..	Mut+NS+Ph+RCA+SOS+TTL+IO
(20)	J5.....1			See note 1	
(20)	J5.....2			See note 1	
(20)	J5.....3			See note 1	
(20)	J5.....4			See note 1	
(20)	J5.....5			See note 1	
(20)	J5.....6			See note 1	
(20)	J5.....7			See note 1	
(20)	J5.....8			See note 1	
(20)	G.....1	504030923	27K 051 S		Fe
(20)	G.....2	504030923	27K 051 S		Fe
(20)	G.....3	504030923	27K 051 S		Fe
(20)	G.....4	504030923	27K 051 S		Fe
(20)	R.....1	574114432	3.3 kOhm	5%	
(20)	R2.....1	574884332		see note 2	
(20)	R2.....2	574884332		see note 2	
(20)	R2.....3	574884332		see note 2	
(20)	R2.....4	574884332		see note 2	
(20)	R2.....5	574884332		see note 2	
(20)	Y.....1	894010550		4,000 MHz +- 40 ppm	

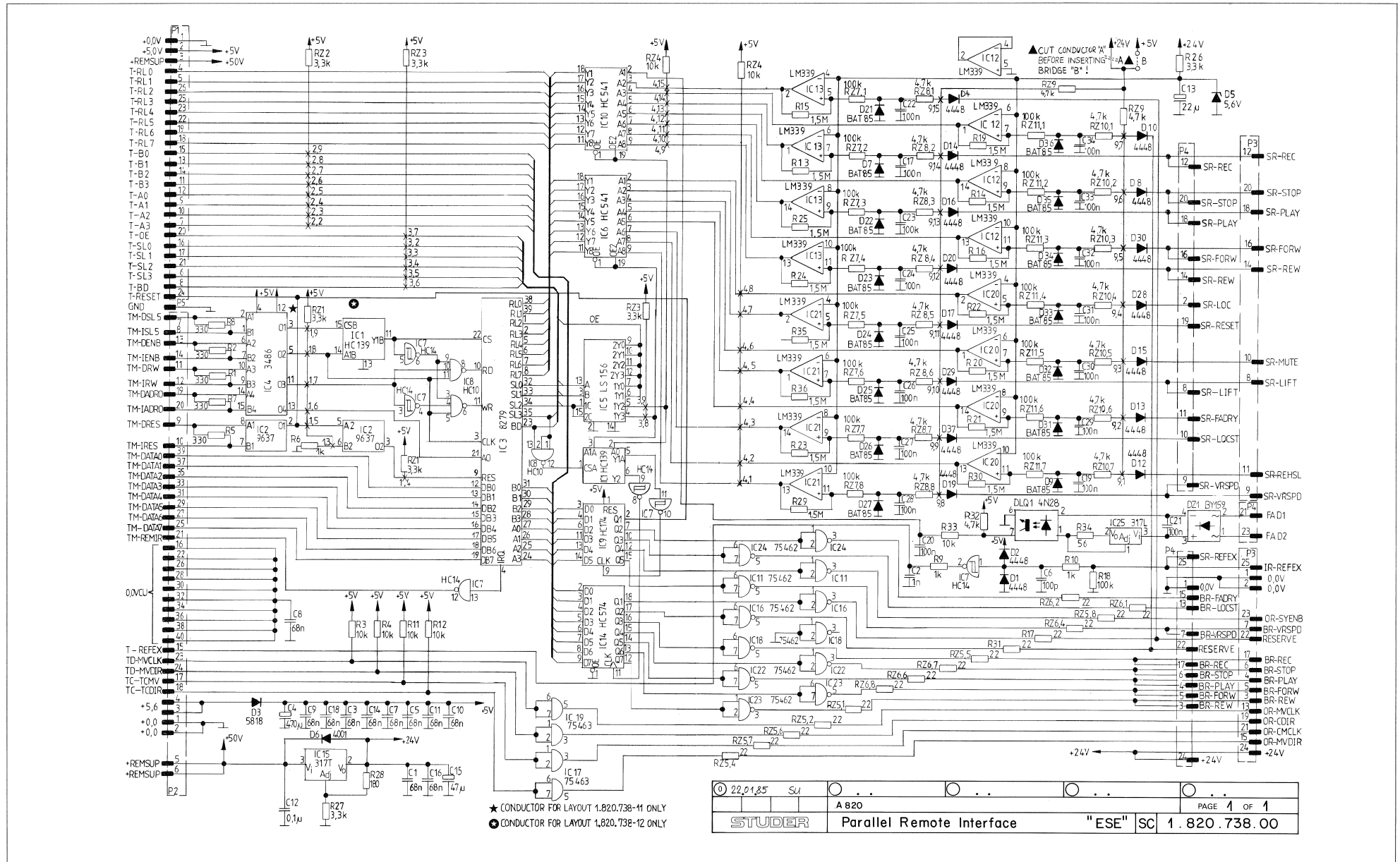
S T U D E R (20) 86/06/12 CM SMPTE / EBU INTERFACE 1.820.751.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Jumper Switch					
	Contact Point	Studer Nr.	54-01-0520		
		Berg Nr.	77 311-102-36		
		Philips Nr.	2422 002 43541		
		Faag Nr.	AS 1-054/058-36 G-0.75u Au		
	Bridge	Studer Nr.	54-01-0021		
		Berg Nr.	65 436-001		
		Philips Nr.	2422 024 88003		
		AMP Nr.	141 167-1		
Note 2 - Resistor network 8 x 3.3 kOhm 5%					
	Bouras Nr.	4609 X - 101 332			
	Boeckmann Nr.	L - 09 x 1 - A 3.3 k J			
	Sprague Nr.	296 C J 332 X 2 PD			
	Resistoflex Nr.	F 8 3.3 k 5%			
	Tana Nr.	MRC C 09 X 3.3 k J			
CEK-Ceramic, PEEP=Polyesterfilm, SAL=Solid Aluminium.					
MANUFACTURERS: AND=Advanced Micro Devices, AMI=American Microsystem Inc., U=Ultralab, FC=Fairchild, Ph=Philips, Hi=Hitachi, IC=Intel, ITT=ITT, Intermetal, Mot=Motorola, NS=National Semiconductor, Phil=Philips, RCA=CIA Corporation, Ses=Selecrom, SOS=SOS/Asus, S=Super, Tef=Telefunken, TIT=Texas Instruments, Ion=Ionics, J=Jays.					

BLOCK DIAGRAM PARALLEL REMOTE INTERFACE PCB "ESE" 1.820.738

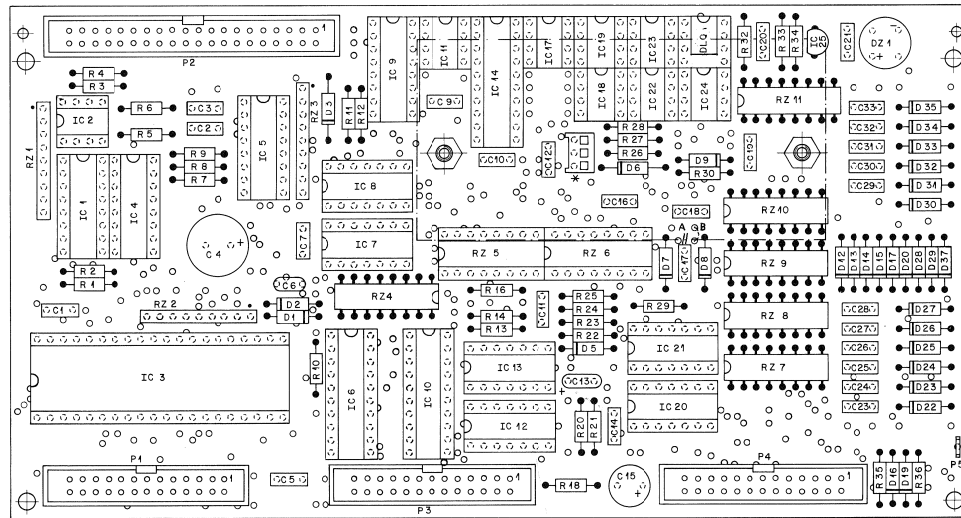


PARALLEL REMOTE INTERFACE PCB "ESE" 1.820.738.00 GRP 27



22.01.85	SU								
A 820		Parallel Remote Interface		"ESE" SC		PAGE 1 OF 1			
STUDER		Parallel Remote Interface		"ESE" SC		1.820.738.00			

PARALLEL REMOTE INTERFACE PCB "ESE" 1.820.738.00 GRP 27

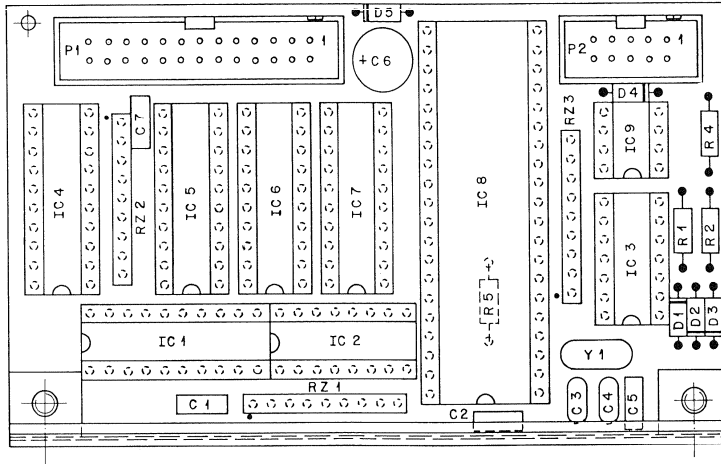


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****14	57-11-5155	L-5	100 Ohm	5%	
R****16	57-11-5155	L-5	100 Ohm	5%	
R****18	57-11-5155	L-5	100 Ohm	5%	
R****20	57-11-5155	L-5	100 Ohm	5%	
R****21	57-11-5155	L-5	100 Ohm	5%	
R****22	57-11-5155	L-5	100 Ohm	5%	
R****23	57-11-5155	L-5	100 Ohm	5%	
R****24	57-11-5155	L-5	100 Ohm	5%	
R****25	57-11-5155	L-5	100 Ohm	5%	
R****26	57-11-5322	3-3	100 Ohm	5%	
R****27	57-11-5320	3-3	100 Ohm	5%	
R****28	57-11-5181	100	100 Ohm	5%	
R****29	57-11-5155	L-5	100 Ohm	5%	
R****30	57-11-5155	L-5	100 Ohm	5%	
R****31	57-11-5155	L-5	100 Ohm	5%	
R****32	57-11-5155	L-5	100 Ohm	5%	
R****33	57-11-5155	L-5	100 Ohm	5%	
R****34	57-11-5155	L-5	100 Ohm	5%	
R****35	57-11-5155	L-5	100 Ohm	5%	
R****36	57-11-5155	L-5	100 Ohm	5%	
RZ****01	57-88-4332		Networks 8 @ 3.3 KOhms	5%, single line	
RZ****02	57-88-4332		Networks 8 @ 3.3 KOhms	5%, single line	
RZ****03	57-88-4332		Networks 8 @ 3.3 KOhms	5%, single line	
RZ****04	57-88-4332		Networks 15 @ 10 Ohms	2%, DIL IC	
RZ****05	57-88-4320		Networks 8 @ 22 Ohms	2%, DIL IC	
RZ****06	57-88-4320		Networks 8 @ 22 Ohms	2%, DIL IC	
RZ****07	57-88-4320		Networks 8 @ 100 Ohms	2%, DIL IC	
RZ****08	57-88-4322		Networks 8 @ 4.7 KOhms	2%, DIL IC	
RZ****09	57-88-4322		Networks 15 @ 4.7 KOhms	2%, DIL IC	
RZ****10	57-88-4322		Networks 8 @ 4.7 KOhms	2%, DIL IC	
RZ****11	57-88-4324		Networks 8 @ 100 Ohms	2%, DIL IC	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	END.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****01	59-40-0983	88 UF	-10%	PEPP		D****07	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****02	59-40-0107	1 nF	-10%	PEPP		D****08	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****03	59-40-0983	88 nF	-10%	PEPP		D****09	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****04	59-40-0983	88 nF	-10%	PEPP		D****10	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****05	59-40-0983	88 nF	-10%	PEPP		D****11	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****06	59-40-0983	88 nF	-10%	PEPP		D****12	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****07	59-40-0983	88 nF	-10%	PEPP		D****13	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****08	59-40-0983	88 nF	-10%	PEPP		D****14	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****09	59-40-0983	88 nF	-10%	PEPP		D****15	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****10	59-40-0983	88 nF	-10%	PEPP		D****16	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****11	59-40-0983	88 nF	-10%	PEPP		D****17	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****12	59-40-0104	8.1 uF	-10%	PEPP		D****18	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****13	59-40-1220	32 uF	-10%	PEPP		D****19	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****14	59-40-0983	88 nF	-10%	PEPP		D****20	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****15	59-40-0983	88 nF	-10%	PEPP		D****21	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****16	59-40-0983	88 nF	-10%	PEPP		D****22	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****17	59-40-0104	8.1 uF	-10%	PEPP		D****23	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****18	59-40-0983	88 nF	-10%	PEPP		D****24	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****19	59-40-0983	88 nF	-10%	PEPP		D****25	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****20	59-40-0983	88 nF	-10%	PEPP		D****26	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****21	59-40-0983	88 nF	-10%	PEPP		D****27	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****22	59-40-0983	88 nF	-10%	PEPP		D****28	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****23	59-40-0104	8.1 uF	-10%	PEPP		D****29	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****24	59-40-0104	8.1 uF	-10%	PEPP		D****30	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****25	59-40-0104	8.1 uF	-10%	PEPP		D****31	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****26	59-40-0104	8.1 uF	-10%	PEPP		D****32	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****27	59-40-0104	8.1 uF	-10%	PEPP		D****33	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****28	59-40-0104	8.1 uF	-10%	PEPP		D****34	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****29	59-40-0104	8.1 uF	-10%	PEPP		D****35	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****30	59-40-0104	8.1 uF	-10%	PEPP		D****36	50-04-0127	BAT 85	1A5 40-02	Ph+Sio	
C****31	59-40-0104	8.1 uF	-10%	PEPP		D****37	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****32	59-40-0104	8.1 uF	-10%	PEPP		D****38	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****33	59-40-0104	8.1 uF	-10%	PEPP		D****39	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****34	59-40-0104	8.1 uF	-10%	PEPP		D****40	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****35	59-40-0104	8.1 uF	-10%	PEPP		D****41	50-04-0125	IN 4448		Fc+ITTePh+Ses	
C****36	59-40-0125	15 4448				D****42	50-04-0111	1P 3275-6	90L 027P P-5	ISLM	
C****37	50-04-1108	5.0 W 2	B0883 C 5948 RZ555 C 5948 ZPD 545	ITT		D****43	50-04-0104	MC 3486 N		Mot+NS	
C****38	50-04-0122	15 4001	IM6004			D****44	50-04-0104	MC 3486 N		Mot+NS	
C****39	50-04-0122	15 4001	IM6004			D****45	50-04-0111	74 HC 541		Mot+NS+Ph+RCA+Sgs+Tt+To	
C****40	50-04-0122	15 4001	IM6004			D****46	50-04-0111	74 HC 541		Mot+NS+Ph+RCA+Sgs+Tt+To	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****41	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****07	50-17-1014	74 HC 14	74 HC 14		Mot+NS+Ph+RCA+Tt+To
C****42	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****08	50-17-1010	74 HC 10	74 HC 10		Mot+NS+Ph+RCA+Sgs+Tt+To
C****43	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****09	50-17-1174	74 HC 174	74 HC 174		Mot+NS+Ph+RCA+Sgs+Tt+To
C****44	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****10	50-17-1041	74 HC 561	74 HC 561		Mot+NS+Ph+RCA+Sgs+Tt+To
C****45	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****11	50-05-0227	SN 75462P			TI
C****46	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****12	50-11-0104	LM 339 AN	339 AUA 339		Fc+Mot+NS+Tt+To
C****47	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****13	50-11-0104	LM 339 AN	339 AUA 339		Fc+Mot+NS+Tt+To
C****48	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****14	50-11-0104	LM 339 AN	339 AUA 339		Mot+NS+Ph+RCA+Sgs+Tt+To
C****49	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****15	50-10-0104	LM 317 F	LM 317 SP		NS+Mot+Tt+To
C****50	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****16	50-04-0203	SN 75462P			TI
C****51	50-04-0125	IN 4448		Fc+ITTePh+Ses		C****17	50-05-0227	SN 75462P			TI
C****52	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****18	50-05-0227	SN 75462P			TI
C****53	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****19	50-11-0104	LM 339 AN	339 AUA 339		NS+Fc+Mot+Tt+To
C****54	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****20	50-11-0104	LM 339 AN	339 AUA 339		NS+Fc+Mot+Tt+To
C****55	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****21	50-11-0104	LM 339 AN	339 AUA 339		NS+Fc+Mot+Tt+To
C****56	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****22	50-05-0227	SN 75462P			TI
C****57	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****23	50-05-0227	SN 75462P			TI
C****58	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****24	50-05-0227	SN 75462P			TI
C****59	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		C****25	50-10-0108	LM 317 LE			NS+Mot
C****60	50-04-0125	IN 4448		Fc+ITTePh+Ses		P****01	54-14-2003		see note 2		
C****61	50-04-0125	IN 4448		Fc+ITTePh+Ses		P****02	54-14-2004		see note 1		
C****62	50-04-0125	IN 4448		Fc+ITTePh+Ses		P****03	54-14-2003		see note 2		
C****63	50-04-0125	IN 4448		Fc+ITTePh+Ses		P****04	54-14-2003		see note 2		
C****64	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****01	57-11-4331	330 Ohm	2%		
C****65	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****02	57-11-4331	330 Ohm	2%		
C****66	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****03	57-11-4103	10 Ohm	2%		
C****67	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****04	57-11-4103	10 Ohm	2%		
C****68	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****05	57-11-4331	330 Ohm	2%		
C****69	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****06	57-11-4331	330 Ohm	2%		
C****70	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****07	57-11-4331	330 Ohm	2%		
C****71	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****08	57-11-4102	1 Ohm	2%		
C****72	50-04-0127	BAT 85	1A5 40-02	Ph+Sio		R****09	57-11-4102	1 Ohm	2%		
C****73	50-04-0127	BAT 85	1A5 40-02	Ph+Sio							

SERIAL REMOTE INTERFACE PCB "ESE" (OPTION) 1.820.729.20 GRP 26



IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	C.....1	59.40.0683	68nF	10%, PETP	
(20)	C.....2	59.40.0683	68nF	10%, PETP	
(20)	C.....3	59.45.2220	22pF	5%, CER	
(20)	C.....4	59.45.2220	22pF	5%, CER	
(20)	C.....5	59.40.0683	68nF	10%, PETP	
(20)	C.....6	59.22.3221	220uF	20%, 10V EL	
(20)	C.....7	59.40.0683	68nF	10%, PETP	
(20)	D.....1	50.04.0125	1N4448		Fc+ITT, Scs+Ph
(20)	D.....2	50.04.0125	1N4448		Fc+ITT, Scs+Ph
(20)	D.....3	50.04.0125	1N4448		Fc+ITT, Scs+Ph
(20)	D.....4	50.04.0125	1N4448		Fc+ITT, Scs+Ph
(20)	D.....5	50.04.1108	5.6V Z	BZX83 C 5V6+ BZX55 C 5V6+ ZPDS+6	ITI+Ses
(20)	IC.....1	50.17.1574	74HC 574	... 74 HC 574	Ph+Mot+NS+rCA+To+TI
(20)	IC.....2	50.17.1138	74HC 138	... 74 HC 138	Mot+NS+Ph+rCA+SGS+TI
(20)	IC.....3	50.17.1086	74HC 86	... 74 HC 86	Mot+NS+Ph+rCA+SGS+TI
(20)	IC.....4	50.17.1574	74HC 574	... 74 HC 574	Ph+Mot+NS+rCA+To+TI
(20)	IC.....5	50.17.1541	74HC 541	... 74 HC 541	Ph+Mot+NS+rCA+To+TI
(20)	IC.....6	50.17.1573	74HC 573	... 74 HC 573	Ph+Mot+rCA+To+TI+SGS
(00)	IC.....7	50.14.0120	TBP28542N		TI
(20)	IC.....8	1.820.999.20	Software 13/85		St
(20)	IC.....9	50.16.0107	MC6803 P-1	HD 6803P-1	Mot+HI
(20)	IC.....9	50.15.0115	SN75176 AP	DS 3695 N	TI+NS
(20)	P.....1	54.14.2003		see note 1	
(20)	P.....2	54.14.2001		see note 2	
(20)	R.....1	57.11.4103	10 kOhm	2%	
(20)	R.....2	57.11.4102	1 kOhm	2%	
(20)	R.....4	57.11.4103	10 kOhm	2%	
(20)	R.....5	57.11.4332	3.3kOhm	2%	
(20)	R2.....1	57.88.4332	893.3kOhm	Network, 8 0 3.3 kOhm, 5%, single line	
(20)	R2.....2	57.88.4332	893.3kOhm	Network, 8 0 3.3 kOhm, 5%, single line	
(20)	R2.....3	57.88.4332	893.3kOhm	Network, 8 0 3.3 kOhm, 5%, single line	

S T U D E R (20) 85/03/21 SU SERIAL REMOTE INTERFACE 1.820.729.00 PAGE 1

IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(20)	Y.....1	89.01.0553	4.9152	MHz, TD 18	

Note 1 - Connector 26 contacts:
Yamaichi Nr. FAP-26-0824
Burndy Nr. BPH 9 B 26 B00 GS

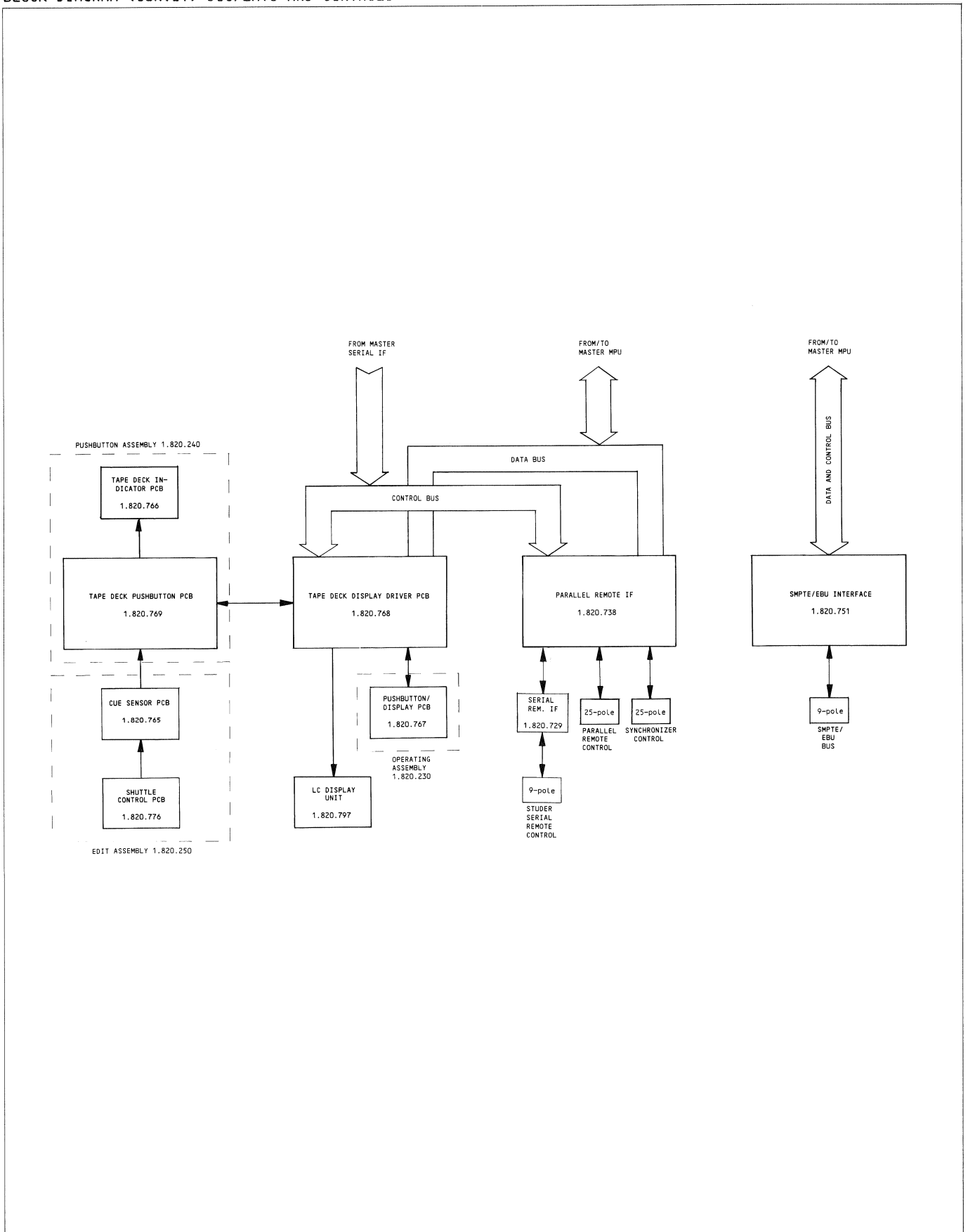
Note 2 - Connector 10 contacts:
Yamaichi Nr. FAP-10-0824
Burndy Nr. BPH 9 B 10 B00 GS

El=Electrolytic, PETP=Polyester, CER=Ceramic, SAL=Solid Aluminium

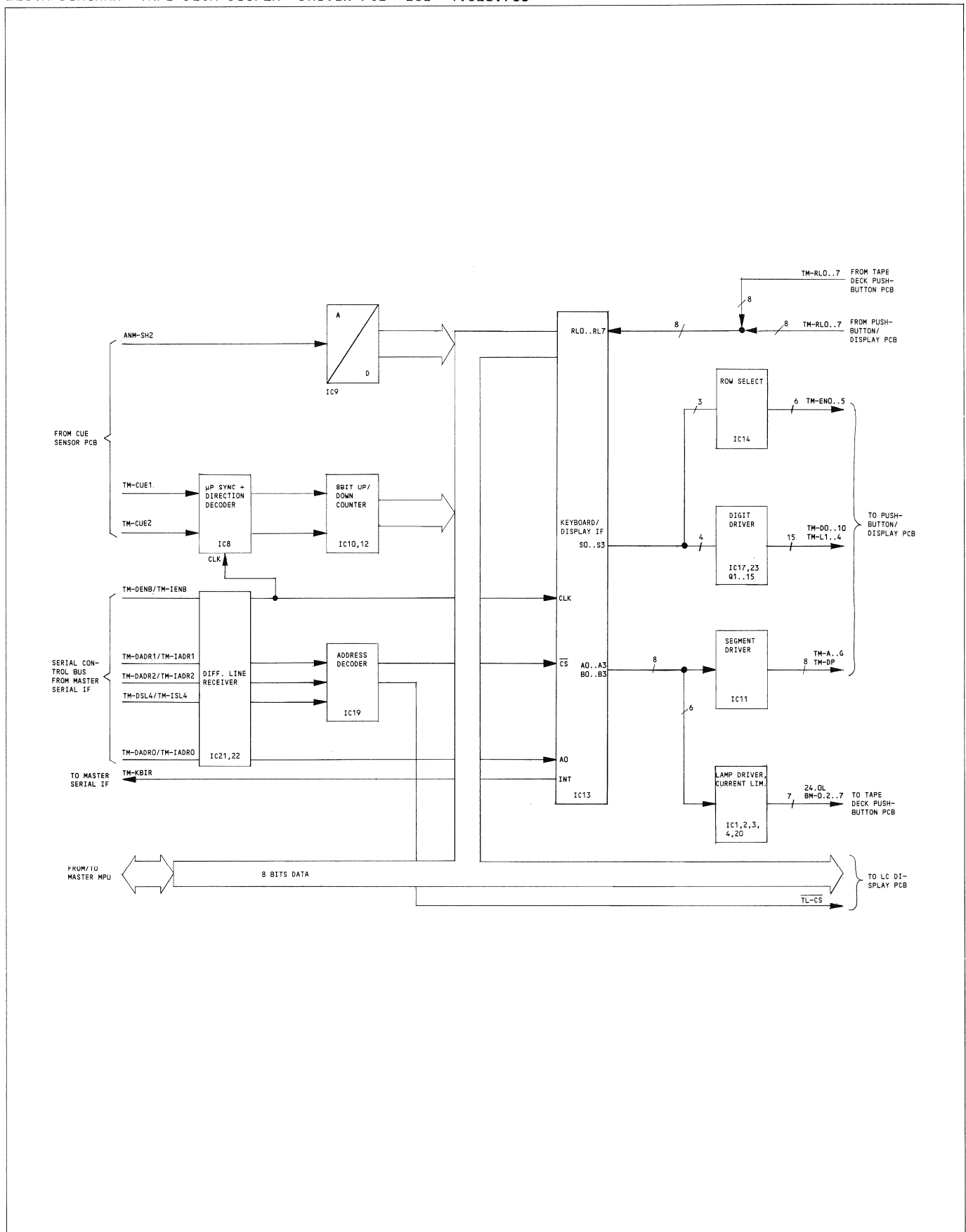
MANUFACTURERS: Fc=Ferranti, Hi=Hitachi, Is=Intersil, Mot=Motorola,
NS=National Semiconductors, Ph=Philips,
RCA=RCA Corporation, SGS=SGS/Ates, St=Studer
TI=Texas Instruments, To=Toshiba

ORIG 85/03/21 (20) 85/03/21
S T U D E R (20) 85/03/21 SU SERIAL REMOTE INTERFACE 1.820.729.00 PAGE 2

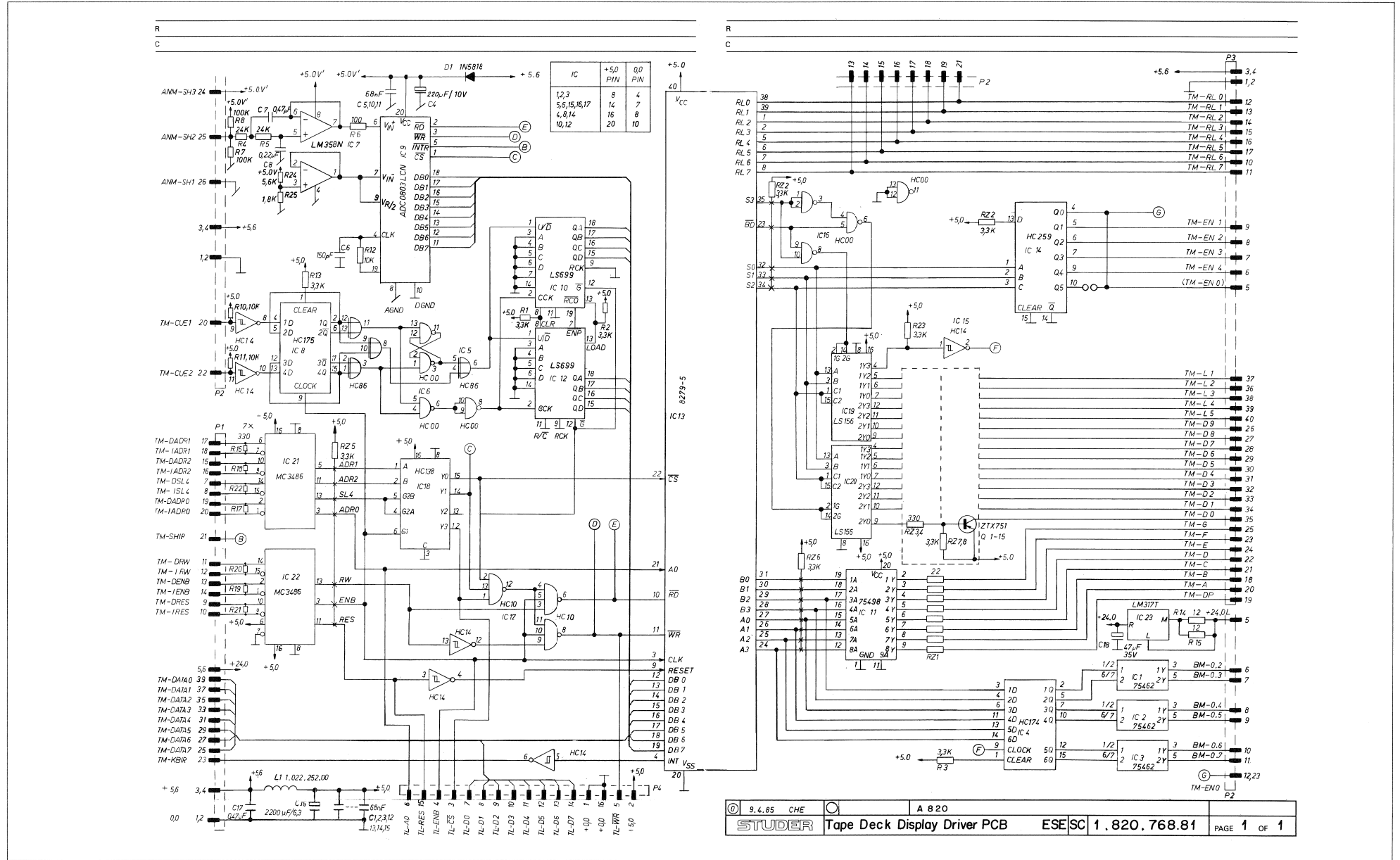
BLOCK DIAGRAM (SURVEY) DISPLAYS AND CONTROLS



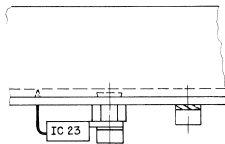
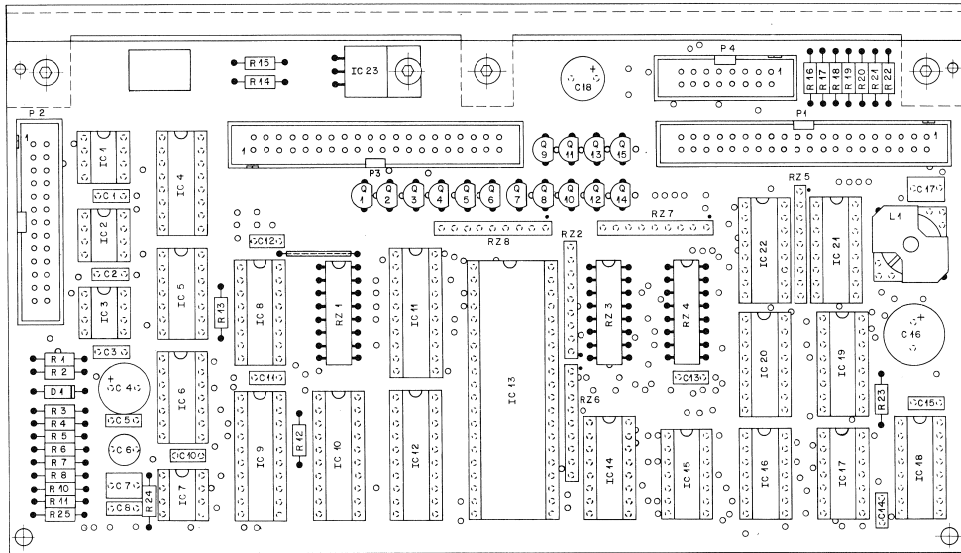
BLOCK DIAGRAM TAPE DECK DISPLAY DRIVER PCB "ESE" 1.820.768



TAPE DECK DISPLAY DRIVER PCB "ESE" 1.820.768.81 GRP 50



TAPE DECK DISPLAY DRIVER PCB "ESE" 1.820.768.81 GRP 50



IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C....1	5940-0483	68 nF	-10%	PETP	
C....2	5940-0483	68 nF	-10%	PETP	
C....3	5940-0483	68 nF	-10%	PETP	
C....4	5942-3221	220 uF	-20%	10V, E1	
C....5	5940-0483	68 nF	-10%	PETP	
C....6	5940-0151	100 nF	-20%	PP	
C....7	5940-0474	470 nF	-20%	PETP	
C....8	5940-0224	220 nF	-20%	PETP	
C....9	5940-0483	68 nF	-10%	PETP	
C....10	5940-0483	68 nF	-10%	PETP	
C....11	5940-0483	68 nF	-10%	PETP	
C....12	5940-0483	68 nF	-10%	PETP	
C....13	5940-0483	68 nF	-10%	PETP	
C....14	5940-0483	68 nF	-10%	PETP	
C....15	5940-0483	68 nF	-10%	PETP	
C....16	5942-2222	2200 uF	-20%	6.3V, E1	
C....17	5940-0476	470 nF	-10%	PETP	
C....18	5942-0470	47 uF	-10%	40V, E1	
D....1	5040-0512	IN 5818	IN 5819		Not
IC....1	5040-0227	SN 75462 P	SN 75462 JG; SN 75472 P		TI
IC....2	5040-0227	SN 75462 P	SN 75462 JG; SN 75472 P		TI
IC....3	5040-0227	SN 75462 P	SN 75462 JG; SN 75472 P		TI
IC....4	5041-1174	74 HC 174		Not NS; Ph: RCA; SGS; TI; To	
IC....5	5041-1086	74 HC 86		Not NS; Ph: RCA; TI; To	
IC....6	5041-1000	74 HC 007		Not NS; Ph: SGS; TI; To	
IC....7	5040-0286	LM 358 P		Not NS; TI	
IC....8	5041-1195	74 HC 175		Not NS; TI	
IC....9	5040-0229	ABC0801CN		Is NS	
IC....10	5040-0499	74 LS 975		Not NS; TI	
IC....11	5043-0113	SN 75498 N		Not NS; TI	
IC....12	5040-0499	74 LS 975		Not NS; TI	
IC....13	5044-0111	EP 8279-5	M 5 L 8279 P-5	TI; Ph	
IC....14	5041-1250	74 HC 159		Not NS; Ph: RCA; SGS; TI; To	
IC....15	5041-1034	74 HC 14		Not NS; Ph: RCA; TI; To	
IC....16	5041-1000	74 HC 007		Not NS; Ph: RCA; TI; To	
IC....17	5041-1030	74 HC 10		Not NS; Ph: RCA; TI; To	

S T U D E R (00) 85/03/21 CHE TAPE DECK DISPLAY DRIVER 1.820.768.81 PAGE 1

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC....18	5041-1138	74 HC 138		Not NS; Ph: RCA; SGS; TI; To	
IC....19	5040-0156	74 LS 156		PC; NS; TI	
IC....20	5040-0156	74 LS 156		PC; NS; TI	
IC....21	5041-0104	MC 3486 P	DS 3486 N	Ph; NS; TI	
IC....22	5041-0104	MC 3486 P	DS 3486 N	Ph; NS; TI	
IC....23	5041-0104	LM 317 T	***ACS ***SP	Not NS	
L....1	1022-151-00	0.32 mH		Filter Coil	SE
P....1	5444-2004	see note 1			Fe
P....2	5444-2003	see note 2			Fe
P....3	5444-2004	see note 1			Fe
P....4	5444-2002	see note 3			Fe
Q....1	5040-0352	21X 751 5			Fe
Q....2	5040-0352	21X 751 5			Fe
Q....3	5040-0352	21X 751 5			Fe
Q....4	5040-0352	21X 751 5			Fe
Q....5	5040-0352	21X 751 5			Fe
Q....6	5040-0352	21X 751 5			Fe
Q....7	5040-0352	21X 751 5			Fe
Q....8	5040-0352	21X 751 5			Fe
Q....9	5040-0352	21X 751 5			Fe
Q....10	5040-0352	21X 751 5			Fe
Q....11	5040-0352	21X 751 5			Fe
Q....12	5040-0352	21X 751 5			Fe
Q....13	5040-0352	21X 751 5			Fe
Q....14	5040-0352	21X 751 5			Fe
Q....15	5040-0352	21X 751 5			Fe
R....1	5711-4332	3.3 kOhm	2%		Fe
R....2	5711-4332	3.3 kOhm	2%		Fe
R....3	5711-4332	3.3 kOhm	2%		Fe
R....4	5711-3243	24 kOhm	1%		Fe
R....5	5711-3243	24 kOhm	1%		Fe
R....6	5711-4101	100 Ohm	2%		Fe
R....7	5711-4104	100 kOhm	2%		Fe

S T U D E R (00) 85/03/21 CHE TAPE DECK DISPLAY DRIVER 1.820.768.81 PAGE 2

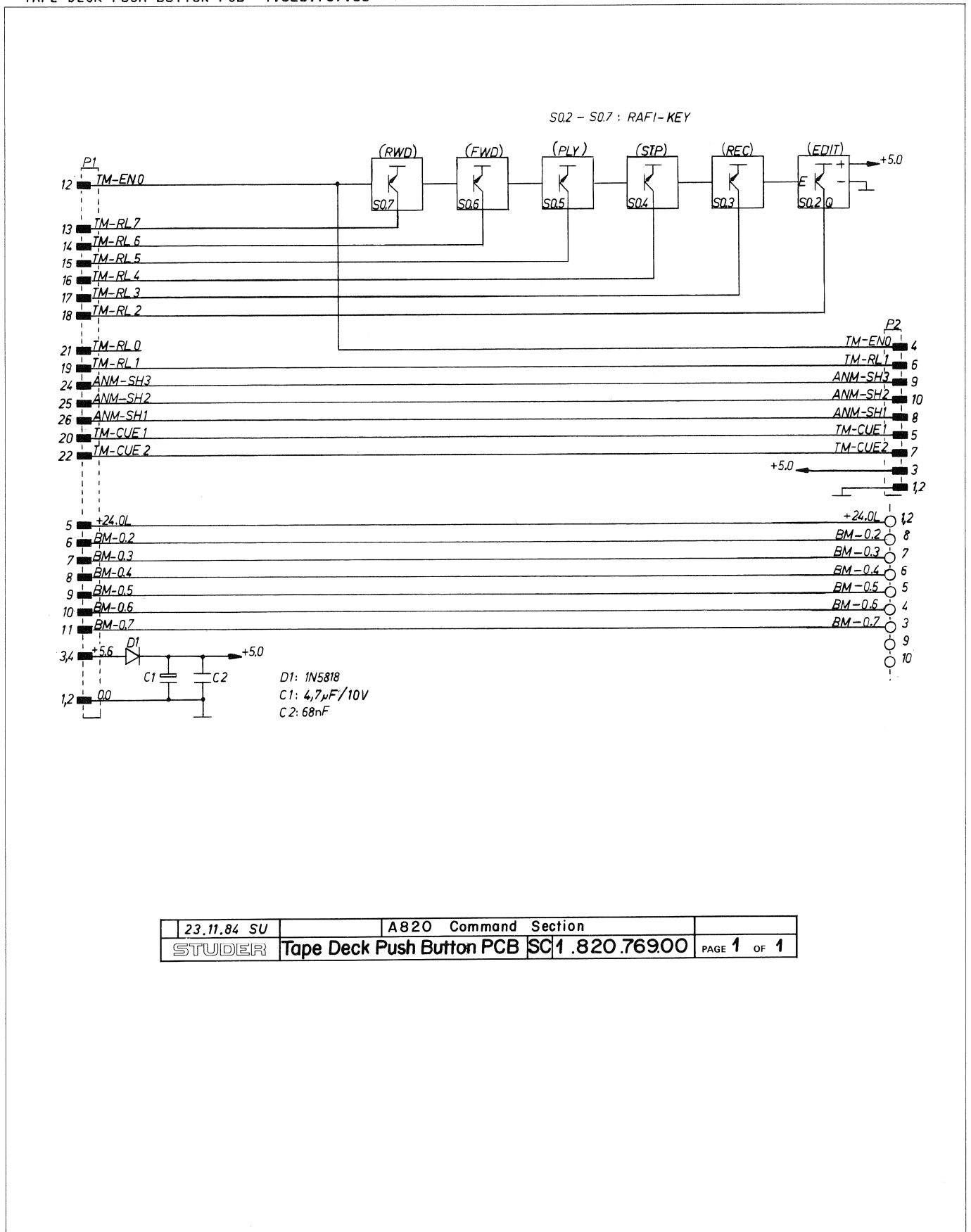
IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....8	5711-4104	100 kOhm	2%		Fe
R....9	5711-4103	10 kOhm	2%		Fe
R....10	5711-4103	10 kOhm	2%		Fe
R....11	5711-4103	10 kOhm	2%		Fe
R....12	5711-4103	10 kOhm	2%		Fe
R....13	5711-4332	3.3 kOhm	2%		Fe
R....14	5711-4100	12 Ohm	2%		Fe
R....15	5711-4120	12 Ohm	2%		Fe
R....16	5711-4331	330 Ohm	2%		Fe
R....17	5711-4331	330 Ohm	2%		Fe
R....18	5711-4331	330 Ohm	2%		Fe
R....19	5711-4331	330 Ohm	2%		Fe
R....20	5711-4331	330 Ohm	2%		Fe
R....21	5711-4331	330 Ohm	2%		Fe
R....22	5711-4331	330 Ohm	2%		Fe
R....23	5711-4332	3.3 kOhm	2%		Fe
R....24	5711-3962	5.6 kOhm	1%		Fe
R....25	5711-3182	1.6 kOhm	1%		Fe
RZ....1	5788-3220			Network: 8 x 22 Ohm 2% DIL 16	
RZ....2	5788-3332			Network: 8 x 3.3 kOhm 5% single line	
RZ....3	5788-3331			Network: 8 x 330 Ohm 2% DIL 16	
RZ....4	5788-3331			Network: 8 x 330 Ohm 2% DIL 16	
RZ....5	5788-3332			Network: 8 x 3.3 kOhm 5% single line	
RZ....6	5788-3332			Network: 8 x 3.3 kOhm 5% single line	
RZ....7	5788-3332			Network: 8 x 3.3 kOhm 5% single line	
RZ....8	5788-3332			Network: 8 x 3.3 kOhm 5% single line	

S T U D E R (00) 85/03/21 CHE TAPE DECK DISPLAY DRIVER 1.820.768.81 PAGE 3

IND.	POS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Connector 40 contacts:					
Yamaguchi Nr. FAP-40-0824					
Burns Nr. BPH 9 B 40 B00 G5					
Note 2 - Connector 26 contacts:					
Yamaguchi Nr. FAP-26-0824					
Burns Nr. BPH 9 B 26 B00 G5					
Note 3 - Connector 16 contacts:					
Yamaguchi Nr. FAP-16-0824					
Burns Nr. BPH 9 B 16 B00 G5					
Electrolytic: PETP+Polyester, PP+Polypropylene					
MANUFACTURERS: Fc=Fairchild, Fa=Fairchild, Is=Intersil, It=Intel,					
Mi=Motorola, Mo=Motorola,					
Ns=National Semiconductor, Ph=Philips,					
Rca=RCA Components, Sgs=SGS/Atome, T=Teledyne,					
Th=Thomson, Ti=Texas Instruments, To=Toshiba.					
DRG 85/03/21					

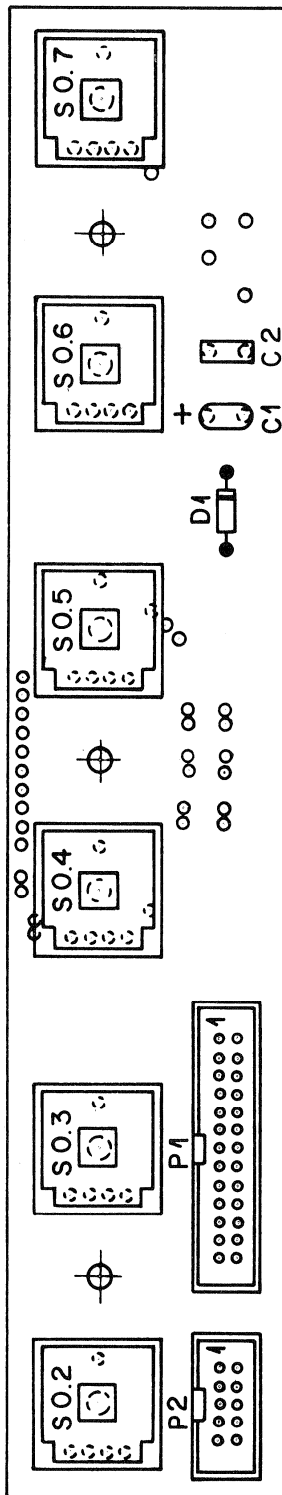
S T U D E R (00) 85/03/21 CHE TAPE DECK DISPLAY DRIVER 1.820.768.81 PAGE 4

PUSH BUTTON ASSEMBLY 1.820.240.00 GRP 48
 - TAPE DECK PUSH BUTTON PCB 1.820.769.00



23.11.84 SU	A820 Command Section	
STUDER	Tape Deck Push Button PCB SC1.820.769.00	PAGE 1 OF 1

PUSH BUTTON ASSEMBLY 1.820.240.00 GRP 48
 - TAPE DECK PUSH BUTTON PCB 1.820.769.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.1479	4.7 uF	-20%, 10V, Sa1	Ph
C.....2		59.06.0683	68 nF	-10%, 63V, PETP	
D.....1		50.04.0512	1 N 5818	1 N 5819	Mot
P.....1		54.14.2003		see note 1	
P.....2		54.14.2001		see note 2	
S...0.2		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	
S...0.3		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	
S...0.4		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	
S...0.5		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	
S...0.6		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	
S...0.7		55.03.0261		Pushbutton switch, RAFI nr. 3.13001.110	

Note 1 - connector 26 contacts: Yamaichi nr. FAP-26-0854
 Burndy nr. BPH 9 B 26 800 GS

Note 2 - connector 10 contacts: Yamaichi nr. FAP-10-0854
 Burndy nr. BPH 7 B 10 800 GS

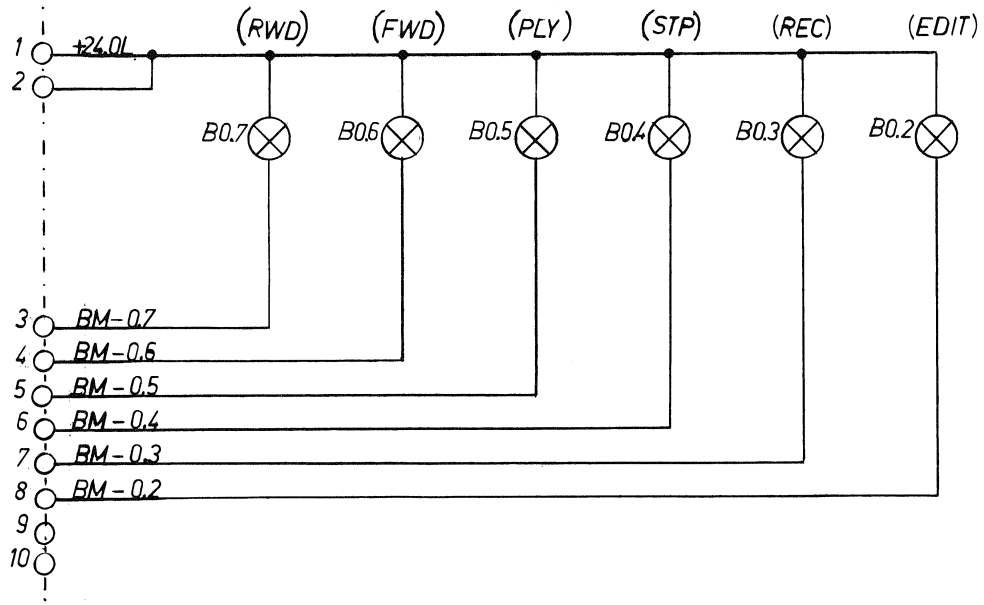
Sa1=Solid Aluminium, PETP=Metallized Polyesterfilm

MANUFACTURER: Mot=Motorola, Ph=Philips

ORIG 84/11/23

S T U D E R (00) 84/11/23 CHE TAPE DECK PUSHBUTTON BOARD 1.820.769.00 PAGE 1

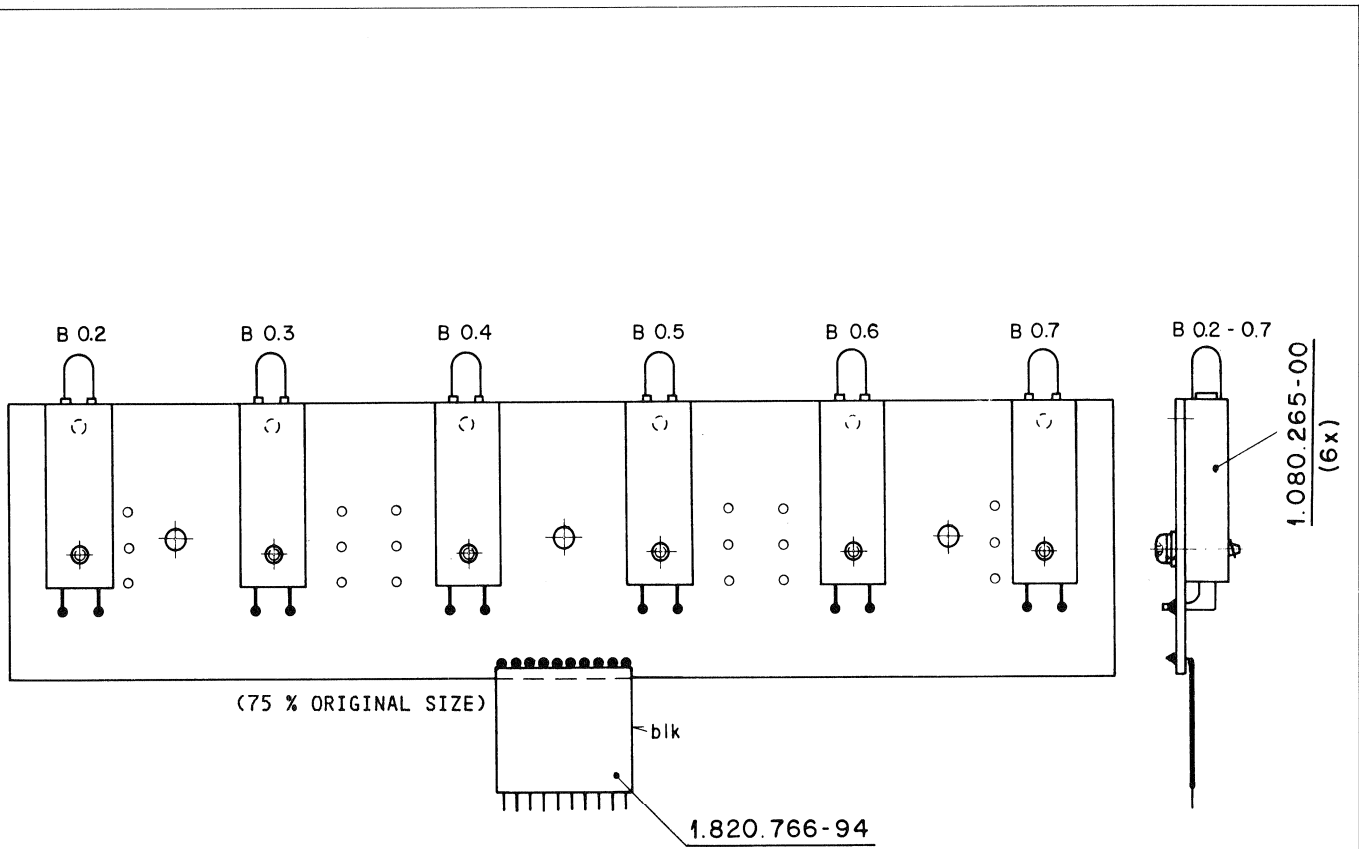
PUSH BUTTON ASSEMBLY 1.820.240.00 GRP 48
 - TAPE DECK INDICATOR PCB 1.820.766.00



B 0.2 - B 0.7: 24V / 0.04A T 5.5
 XB 0.2 - XB 0.7: LAMP HOLDER

23.11.84 R.SUTER	A 820 Command Section		
STUDIER	Tape Deck Indicator PCB	SC1.820.766.00	PAGE 1 OF 1

PUSH BUTTON ASSEMBLY 1.820.240.00 GRP 48
 - TAPE DECK INDICATOR PCB 1.820.766.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
B..0.2		51.02.0145	24 V	see note 1	
B..0.3		51.02.0145	24 V	see note 1	
B..0.4		51.02.0145	24 V	see note 1	
B..0.5		51.02.0145	24 V	see note 1	
B..0.6		51.02.0145	24 V	see note 1	
B..0.7		51.02.0145	24 V	see note 1	
XB..0.2		1.080.265.00		lamp holder	St
XB..0.3		1.080.265.00		lamp holder	St
XB..0.4		1.080.265.00		lamp holder	St
XB..0.5		1.080.265.00		lamp holder	St
XB..0.6		1.080.265.00		lamp holder	St
XB..0.7		1.080.265.00		lamp holder	St

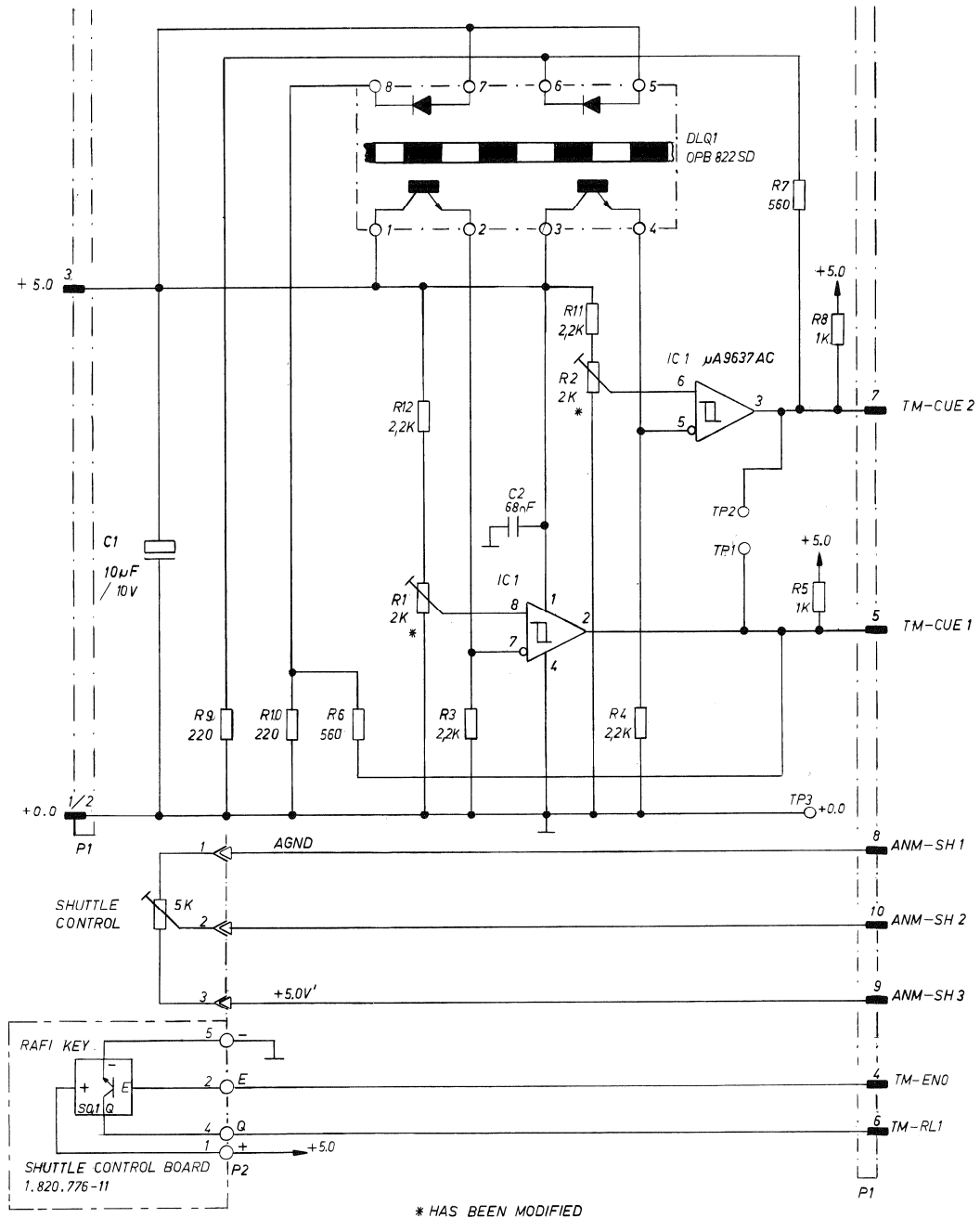
Note 1 - Indicator lamp: Taunuslicht nr. 5530 24 V, 40 mA
 Oshino nr. OL - 552440

MANUFACTURER: St=Studer

ORIG 84/11/23

S T U D E R (00) 84/11/23 CHE TAPE DECK INDICATOR BOARD 1.820.766.00 PAGE 1

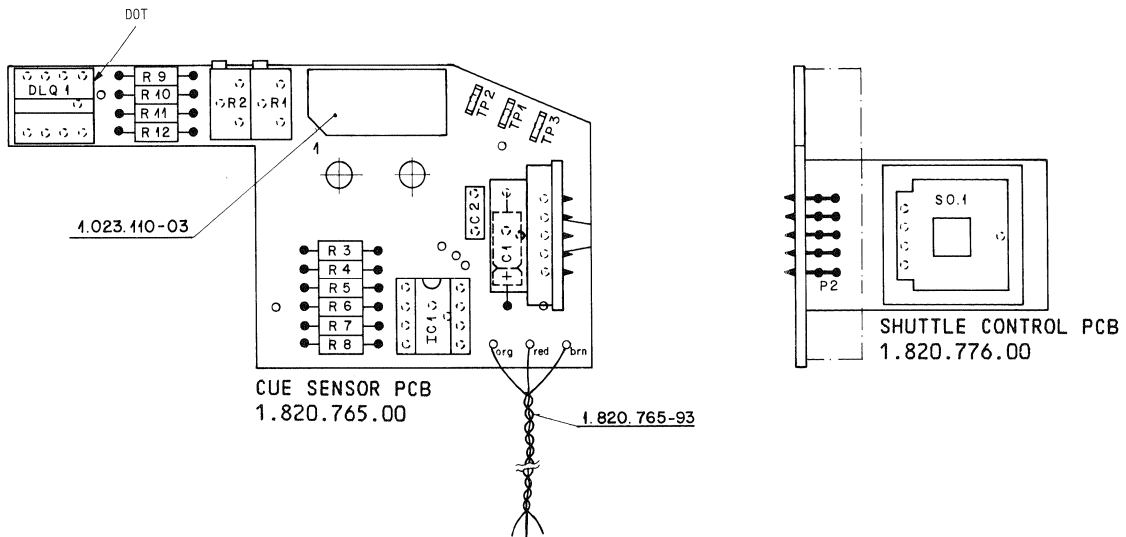
EDIT ASSEMBLY 1.820.250.00 GRP 49
 - CUE SENSOR PCB 1.820.765.00
 - SHUTTLE CONTROL PCB 1.820.776.00



* HAS BEEN MODIFIED

④ 4.12.84 CHE	① 21.01.85 CHE	A 820 Command Section	
STUDER	Cue sensor board	SC 1.820.765-00	PAGE 1 OF 1

EDIT ASSEMBLY 1.820.250.00 GRP 49
 - CUE SENSOR PCB 1.820.765.00
 - SHUTTLE CONTROL PCB 1.820.776.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.25.4100	10 uF	-20%, 10V, E1		
C.....2	59.06.0683	68 nF	-10%, 63V, PETP		
DLQ....1	1.820.765.01		Dual Optical Switch, see note 1		St
IC.....1	50.15.0114	UA9637 ATC	UA9637 ACP		Fc, TI
P.....1	1.023.110-03		Flat Cable 10 pole, see note 2		
P.....2	54.01.0269	5 cont.	AMP Nr. -163.740-3		
(00) R.....1	58.05.0501	500 Ohm	see note 3		
(01) R.....1	58.05.0202	2 kOhm	see note 3		
(00) R.....2	58.05.0501	500 Ohm	see note 3		
(01) R.....2	58.05.0202	2 kOhm	see note 3		
R.....3	57.11.4222	2.2 kOhm	2%		
R.....4	57.11.4222	2.2 kOhm	2%		
R.....5	57.11.4102	1 kOhm	2%		
R.....6	57.11.4561	560 Ohm	2%		
R.....7	57.11.4561	560 Ohm	2%		
R.....8	57.11.4102	1 kOhm	2%		
R.....9	57.11.4221	220 Ohm	2%		
R.....10	57.11.4221	220 Ohm	2%		
R.....11	57.11.4222	2.2 kOhm	2%		
R.....12	57.11.4222	2.2 kOhm	2%		
S.....1	55.03.0261	TTL-switch	1 Ø OC, Rafi Nr. 3-13001.110		
TP.....1	54.02.0320		Test Point		
TP.....2	54.02.0320		Test Point		
TP.....3	54.02.0320		Test Point		

IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
P.....1	54.01.0223		CIS MALE CONNECTOR 7 PIN		
S.....1	55.03.0261	1 Ø OC TTL	RAFI PUSHBUTTON		

S T U D E R (01) 85/01/21 CHE CUE SENSOR BOARD 1.820.765.00 PAGE 1

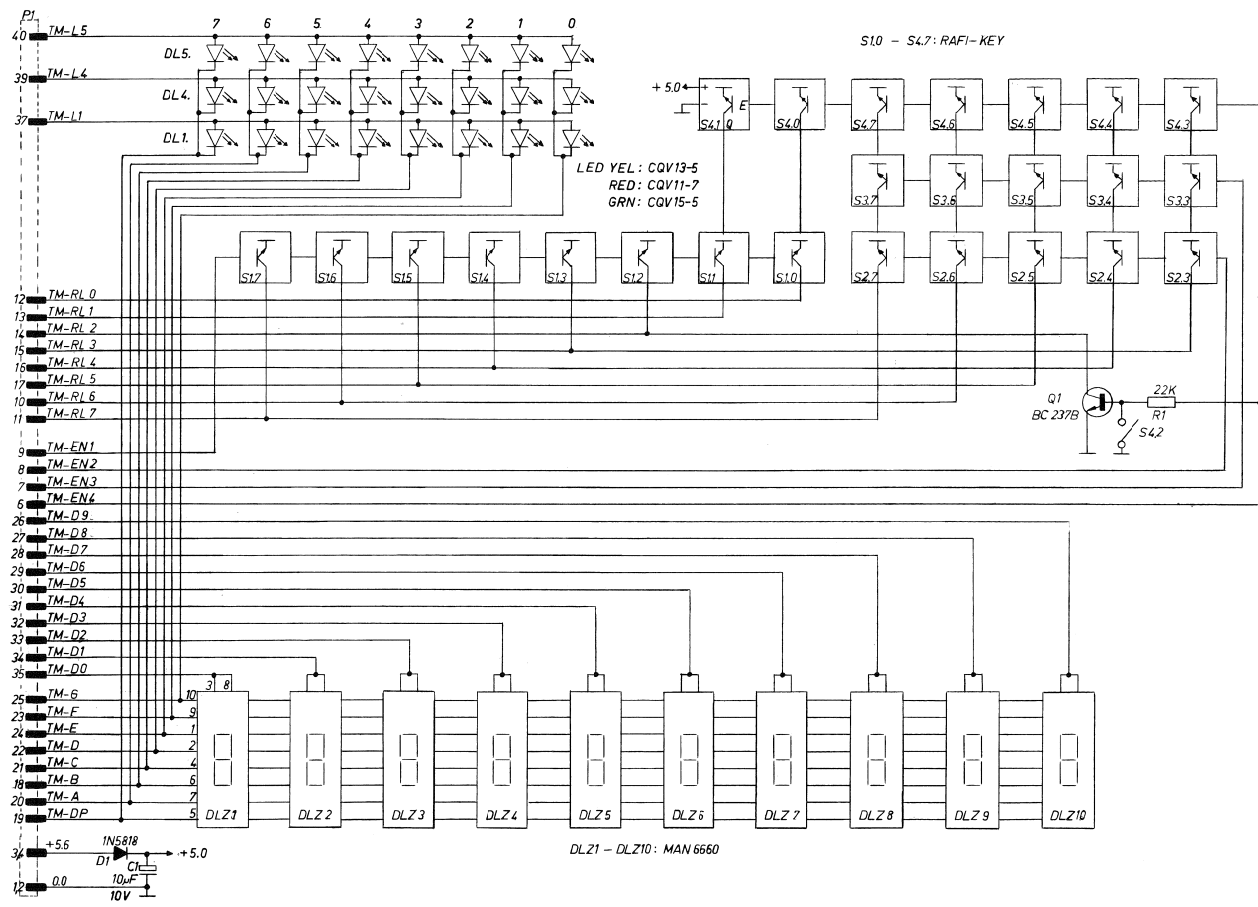
IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01) 85.01.21				Extension of adjust margin.	
Note 1				Optical switch, assembled by Studer, consist of DPB 822 50 (Optron).	
Note 2				Flat cable: Studer Nr. 64.03.0213	
				PCB Transition Header: Studer Nr. 54.14.5024	
				Yamaichi Nr. FGP-10-02	
				Burndy Nr. BPDOB 10 R00G5	
				Socket Type: Studer Nr. 54.14.5020	ORIG 84/01/04
				Yamaichi Nr. FAS-10-17	S T U D E R (00) 84/01/04 CHE SHUTTLE CONTROL BOARD
				Burndy Nr. FRS-10 BD-4P	1.820.776.00 PAGE 1
Note 3				Potentiometer 2 kOhm, 10%, 0.5W	
				Bourns Nr. 3296 J-1-202	
				Spectrol Nr. 64 Z 202 T 000	
				Contelec Nr. 183 XZ 202	
				Murata Nr. PDT 3105 Z-1-202	

E1=Electrolytic, PETP=Polyester

MANUFACTURER: Fc=Fairchild, St=Studer, TI=Texas Instruments

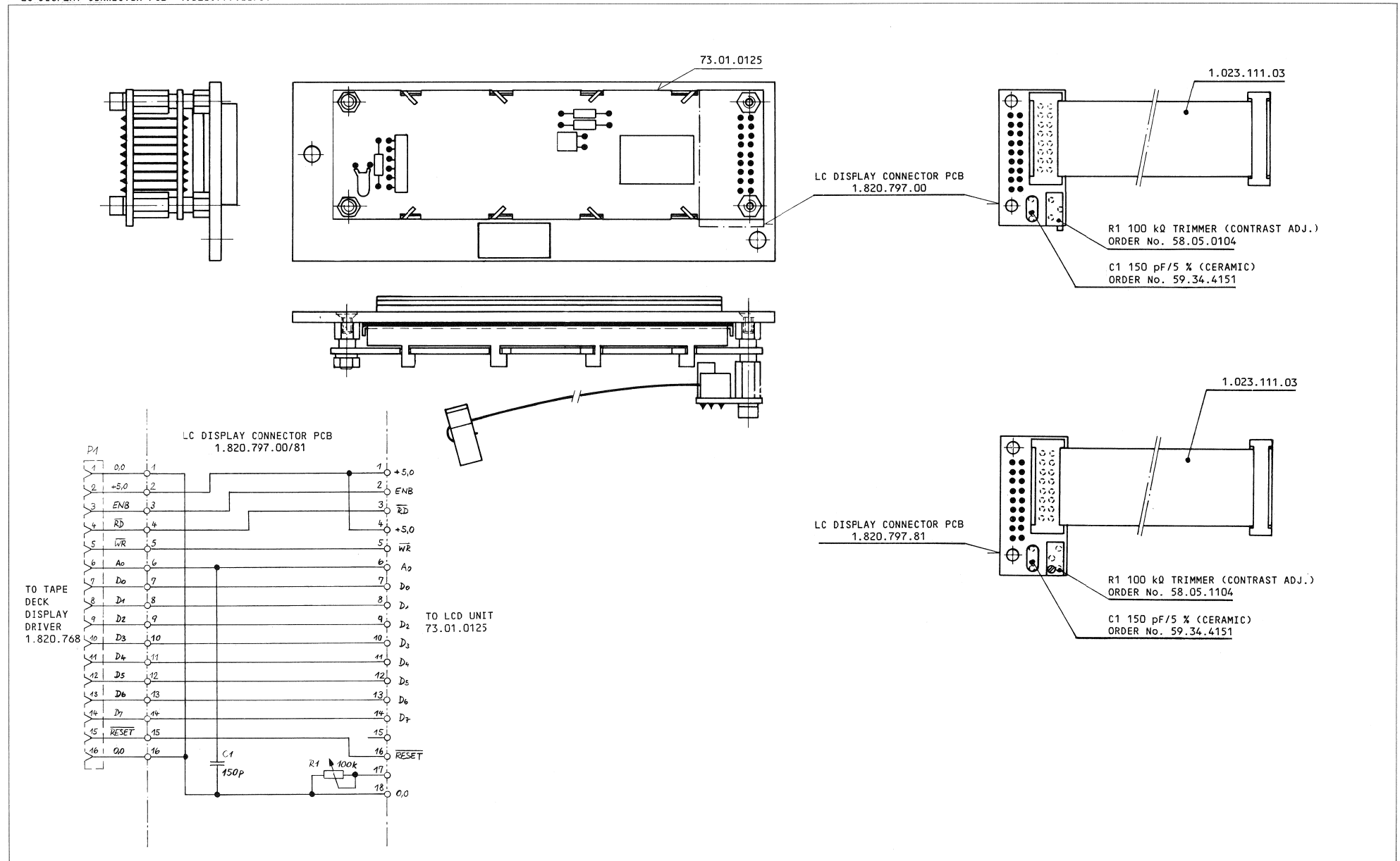
ORIG 84/12/04 (01) 85/01/21
 S T U D E R (01) 85/01/21 CHE CUE SENSOR BOARD 1.820.765.00 PAGE 2

PUSH BUTTON/DISPLAY PCB 1.820.767.00 GRP 51
FOR SERVICE: ORDER No. 1.820.238.00



28.11.84 RSUTER	A820 Command Section		
STUDER	Push Button / Display PCB	SC 1.820.767.00	PAGE 1 OF 1

LC DISPLAY UNIT 1.820.233.00/.81 GRP 52
 - LCD MODULE 73.01.0125
 - LC DISPLAY CONNECTOR PCB 1.820.797.00/81

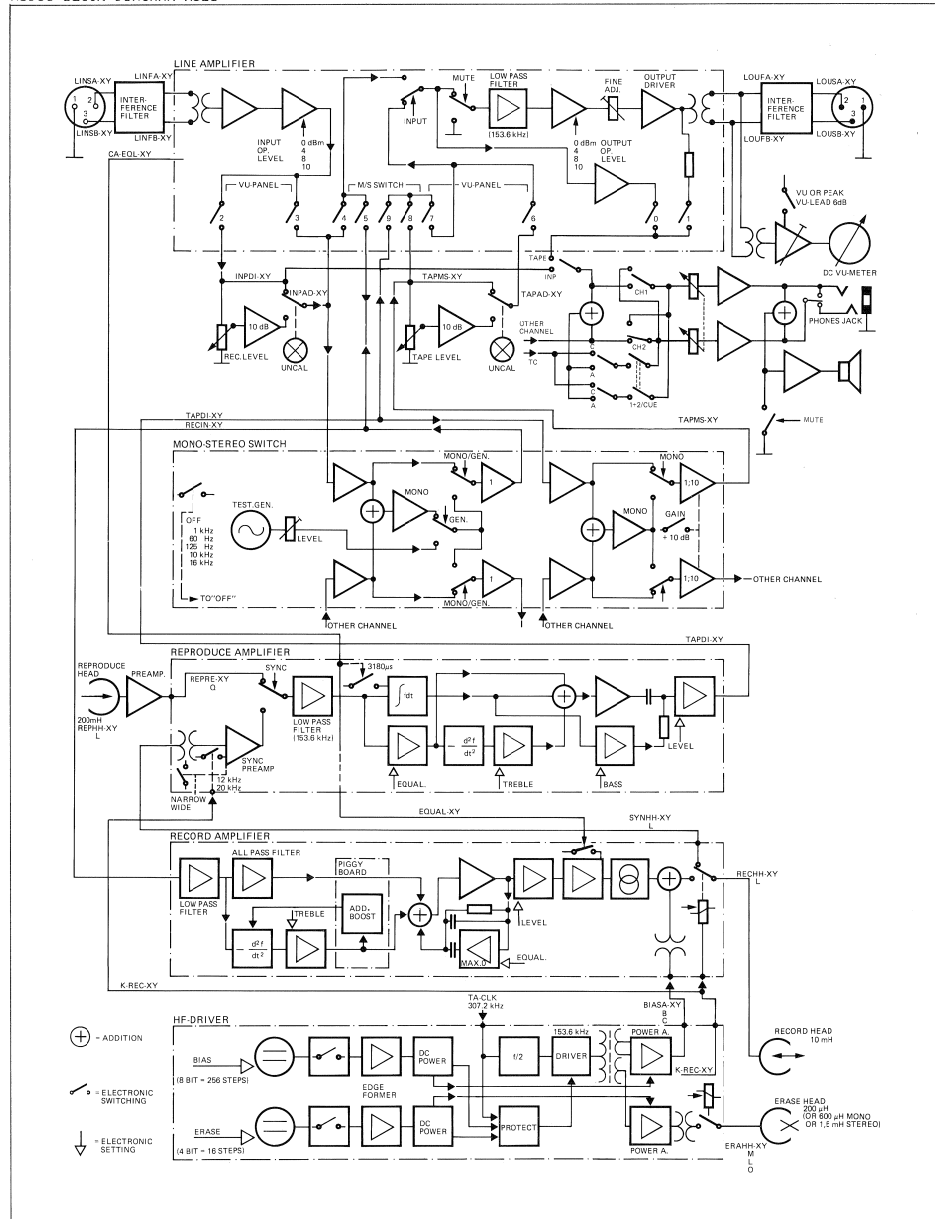


7 DIAGRAMS AUDIO SECTION

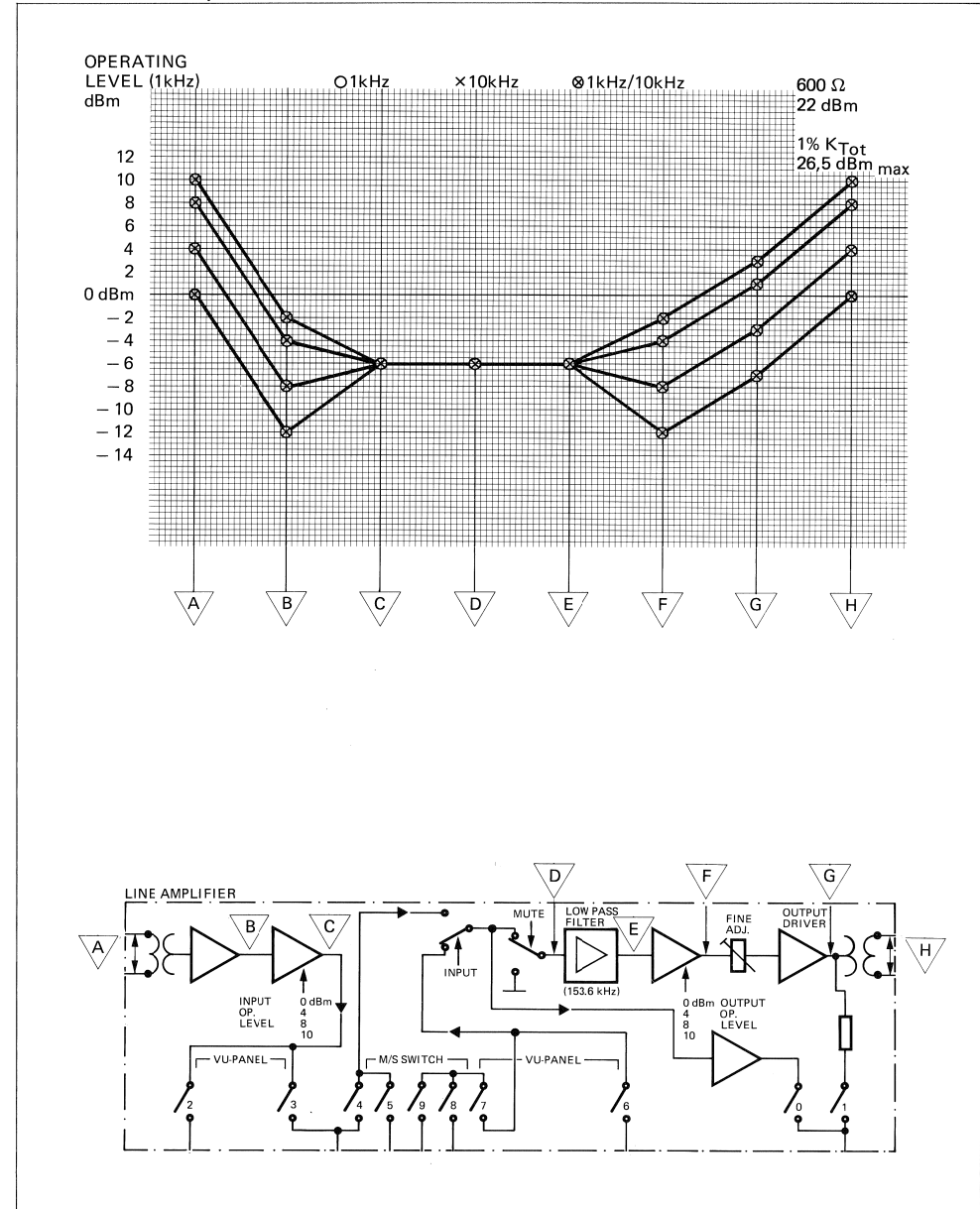
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LINE AMPLIFIER (TRANSFORMERLESS) PCB "ESE"	1.820.715.00/.81	GRP21/ELM45,50	7/9
- LINE OUTPUT AMPLIFIER PCB "ESE"	1.820.862.00		7/9
RECORD AMPLIFIER PCB "ESE"	1.820.712.81	GRP21/ELM43,48	7/13
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REPRODUCE PREAMPLIFIER PCB 2CH "ESE"	1.810.711.81	GRP60/ELM03	7/19
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1.820.776.00	- SHUTTLE CONTROL PCB (PART OF 1.820.250)	6/33
1.820.777.00	SPOOLING MOTOR SUPPLY PCB "ESE"	5/71
1.820.785.21	MP UNIT TAPE DECK CONTROL "ESE"	5/77
1.820.786.21	MP UNIT MASTER "ESE"	6/3
1.820.790.00/.81	SWITCHING STABILIZER PCB	5/67
1.820.792.00	- STABILIZER/LIMITER PCB (PART OF 1.820.790)	5/67
1.820.793.81	OPTO SENSOR PCB	5/87
1.820.794.00	DISTRIBUTION PCB	7/39
1.820.795.00	HEAD ASSEMBLY IDENTIFIER PCB	7/49
1.820.796.00	- SOURCE SELECTOR PCB (PART OF 1.820.235/.580)	7/51
1.820.797.00/.81	- LC DISPLAY CONNECTOR PCB (PART OF 1.820.233)	6/37
1.820.860.00	- MONITOR AMPLIFIER PCB "ESE" (PART OF 1.820.235/.580)	7/51
1.820.861.00	TIME COUNTER CONTROL PCB (OPTION)	5/131
1.820.862.00	- LINE OUTPUT AMPLIFIER PCB "ESE" (PART OF 1.820.715)	7/9

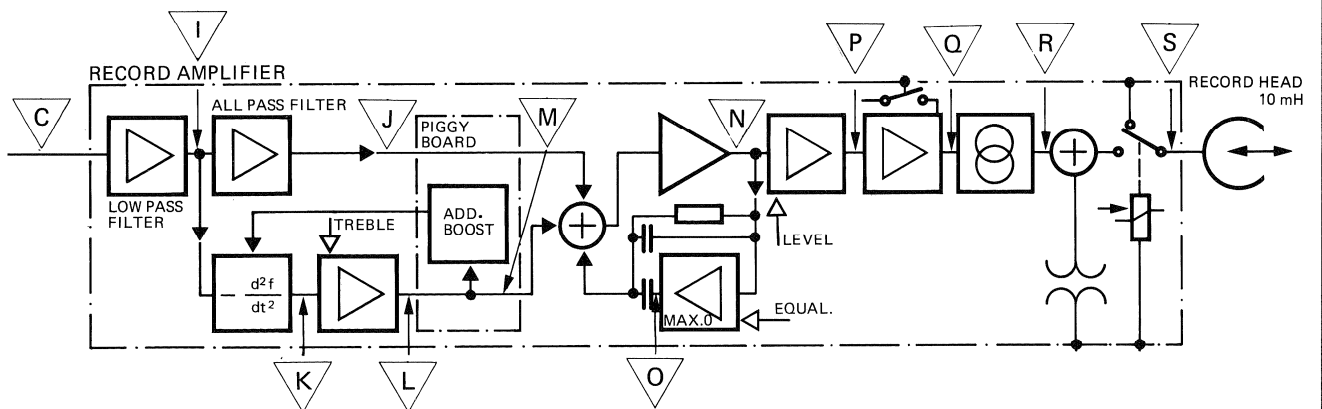
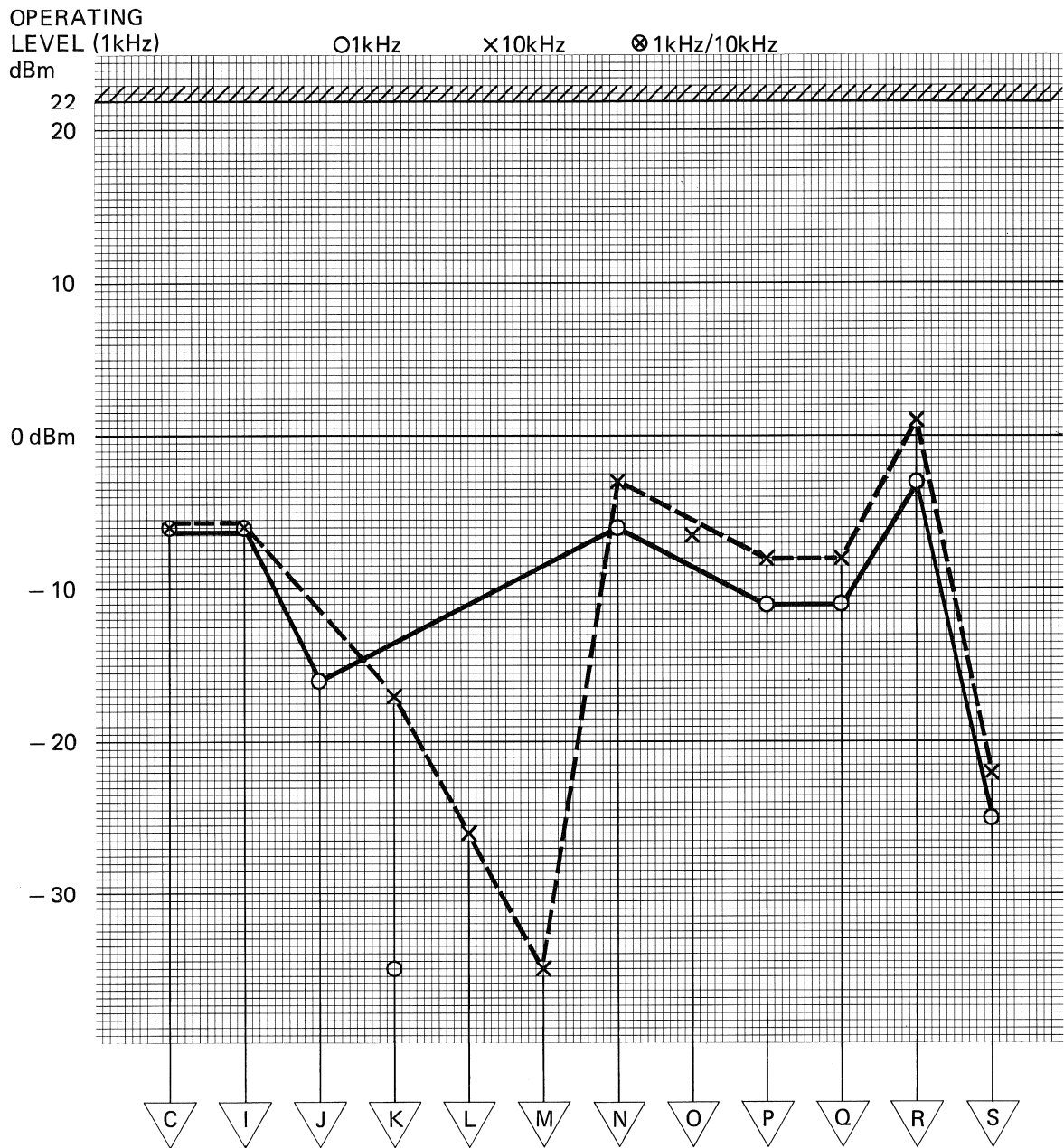
AUDIO BLOCK DIAGRAM A820



LEVEL DIAGRAMS (PART 1, LINE AMPLIFIER)

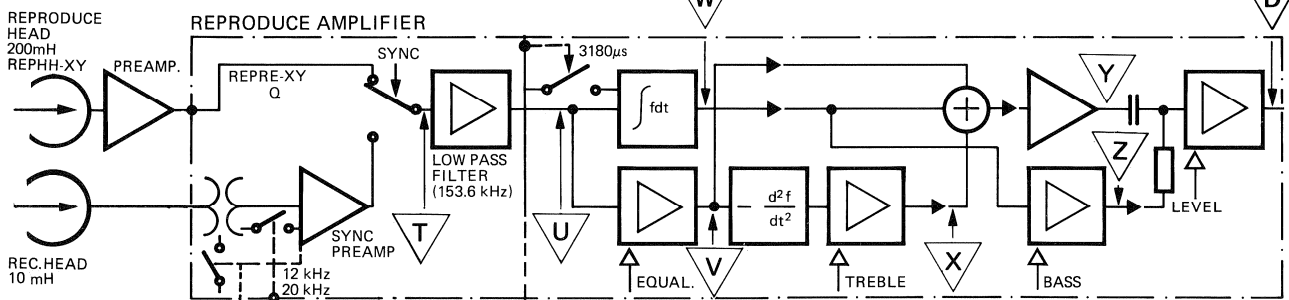
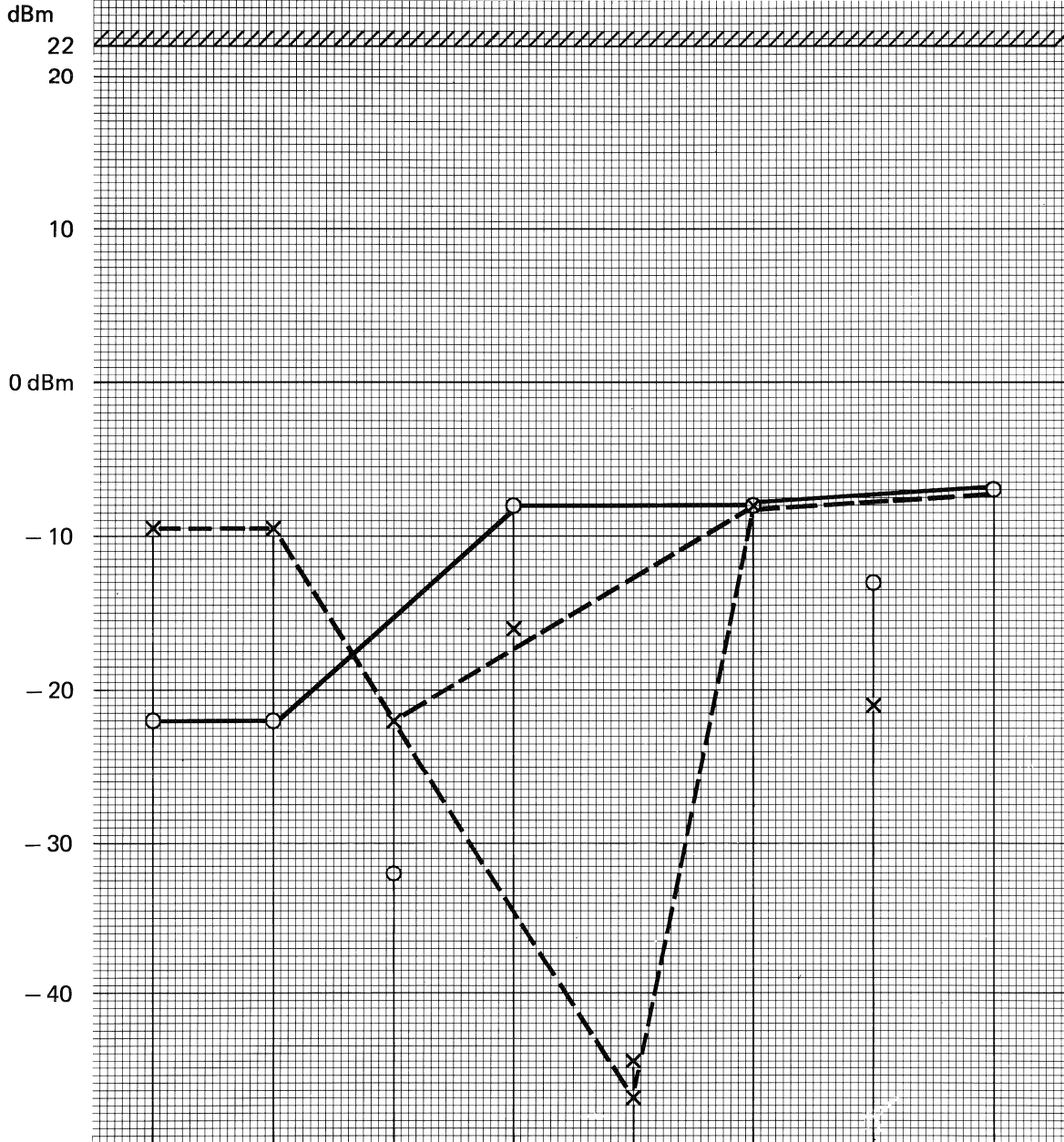


LEVEL DIAGRAMS (PART 2, RECORD AMPLIFIER)

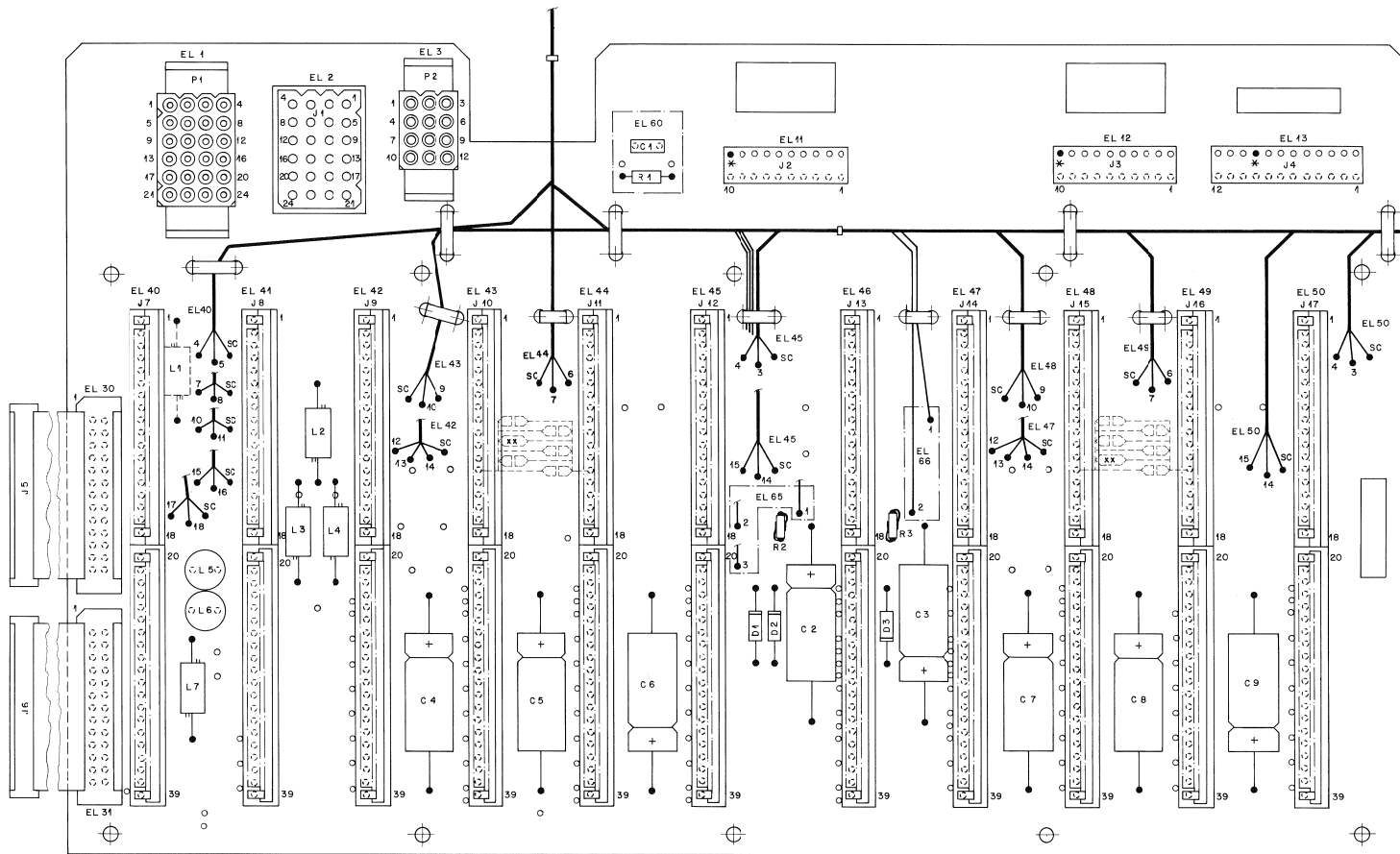


LEVEL DIAGRAMS (PART 3, REPRODUCE AMPLIFIER)

OPERATING LEVEL : 320nWb/m, EQUALIZATION : 35us (CCIR), TAPE : 3M226
 LEVEL (1kHz) ○ 1kHz × 10kHz ⊗ 1kHz/10kHz



BASIS PCB AUDIO 1.820.700.00 GRP 21 (LAYOUT 1.820.700.12)



↑
xx = SOLDER BRIDGE

↑
xx = SOLDER BRIDGE

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59.06.0102	1 nF	10%	PEEP	
C.....2	59.25.3471	470 uF	-10%	16V, E1	
C.....3	59.25.3471	470 uF	-10%	16V, E1	
C.....4	59.25.1102	1000 uF	-10%	6.3V, E1	
C.....5	59.25.3471	470 uF	-10%	16V, E1	
C.....6	59.25.3471	470 uF	-10%	16V, E1	
C.....7	59.25.1102	1000 uF	-10%	6.3V, E1	
C.....8	59.25.3471	470 uF	-10%	16V, E1	
C.....9	59.25.3471	470 uF	-10%	16V, E1	
D.....1	50.04.0122	1N 4001	...	1N 4004	ITT, Mot
D.....2	50.04.0122	1N 4001	...	1N 4004	ITT, Mot
D.....3	50.04.0122	1N 4001	...	1N 4004	ITT, Mot
J.....1	54.01.0290	24 cont.	see note 1		
J.....2	54.01.0290	10 cont.	AMP Nr. -163-680-8		
J.....3	54.01.0290	10 cont.	AMP Nr. -163-680-8		
J.....4	54.01.0215	12 cont.	AMP Nr. 1-163-680-1		
J.....5		26 cont.	see note 2		
J.....6		26 cont.	see note 2		
J.....7		18 + 20 contacts	see note 3		
J.....8		18 + 20 contacts	see note 3		
J.....9		18 + 20 contacts	see note 3		
J.....10		18 + 20 contacts	see note 3		
J.....11		18 + 20 contacts	see note 3		
J.....12		18 + 20 contacts	see note 3		
J.....13		18 + 20 contacts	see note 3		
J.....14		18 + 20 contacts	see note 3		
J.....15		18 + 20 contacts	see note 3		
J.....16		18 + 20 contacts	see note 3		
J.....17		18 + 20 contacts	see note 3		
L.....1	62.01.0115			Interference coil, Philips Nr 4312 020 36700	
L.....2	62.01.0115			Interference coil, Philips Nr 4312 020 36700	
L.....3	62.01.0115			Interference coil, Philips Nr 4312 020 36700	
L.....4	62.01.0115			Interference coil, Philips Nr 4312 020 36700	
L.....5	62.01.0122	1.2 mH		10% Nr. CSL 0912 - 122 J	

STUDER 85/02/14 PB BASIS BOARD AUDIO 2 CH 1.820.700.00 PAGE 1

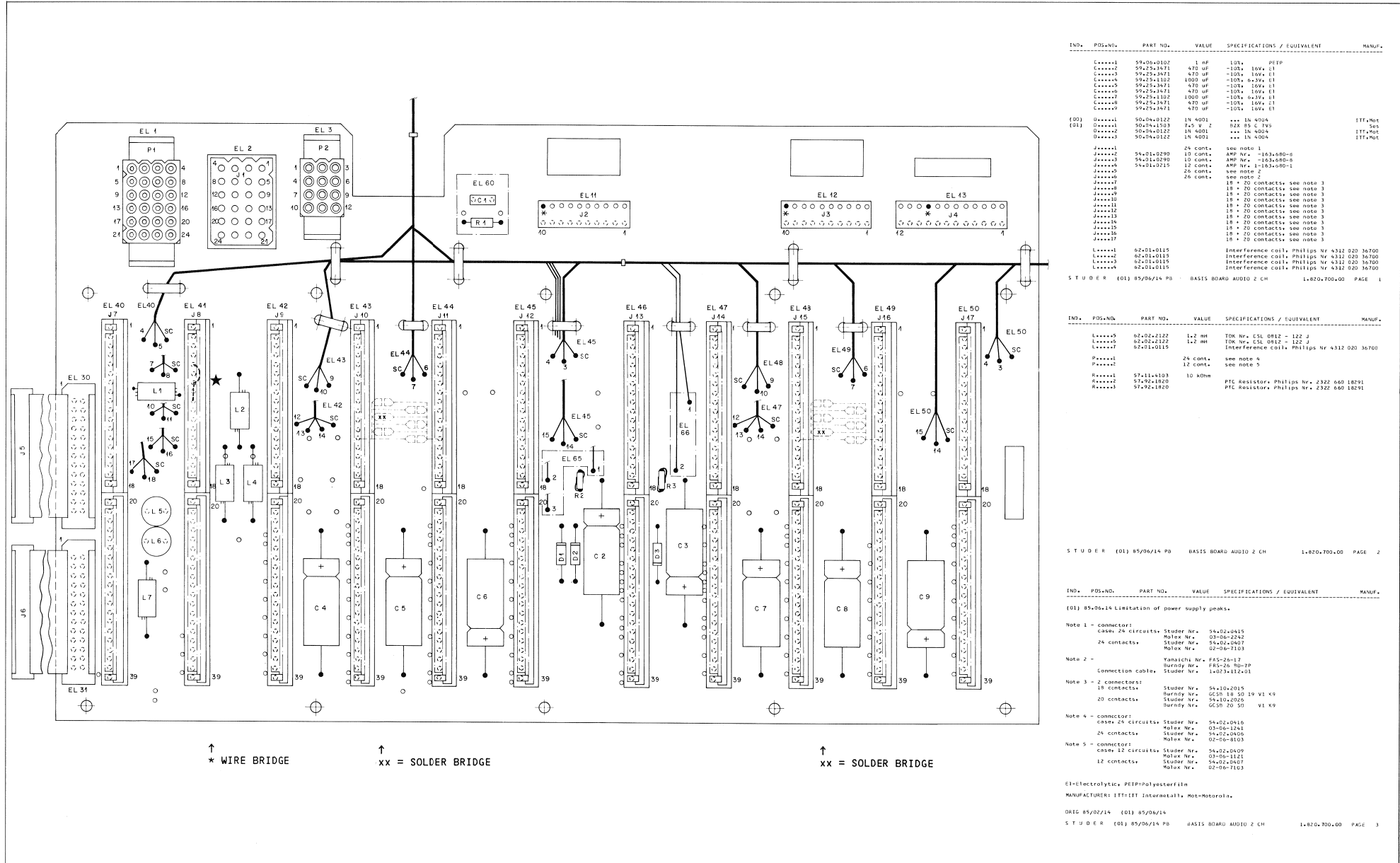
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L.....6	62.02.2132	1.2 mH		10% Nr. CSL 0912 - 122 J	
L.....7	62.01.0115			Interference coil, Philips Nr 4312 020 36700	
P.....1		24 cont.	see note 4		
P.....2		12 cont.	see note 5		
R.....1	57.11.4103		10 kOhm	PTC Resistor, Philips Nr. 2322 860 18291	
R.....2	57.92.1820			PTC Resistor, Philips Nr. 2322 860 18291	
R.....3	57.92.1820			PTC Resistor, Philips Nr. 2322 860 18291	

STUDER 85/02/14 PB BASIS BOARD AUDIO 2 CH 1.820.700.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
E1=Electrolytic, PEEP=Polystyrenfilm					
MANUFACTURER: ITT=ITT International, Mot=Motorola.					
Note 1 - connector:					
		Studer Nr.	54.02.0915		
		Molex Nr.	03-06-2242		
		24 contacts.	Studer Nr. 54.02.0406		
			Molex Nr. 02-06-8103		
Note 2 -					
		Yamachi Nr.	FAS-26-17		
		Burdyny Nr.	FRS-26 80-7P		
		Connection cable:	Studer Nr. 1-023-1113-31		
Note 3 - 2 connector:					
		18 contacts:	Studer Nr. 54.10.2015		
		Burdyny Nr.	G550 18 50 19 V1 49		
		20 contacts:	Studer Nr. 54.10.2026		
			Burdyny Nr. G550 20 50 V1 **		
Note 4 - connector:					
		Studer Nr.	54.02.0916		
		Molex Nr.	03-06-1241		
		24 contacts:	Studer Nr. 54.02.0407		
			Molex Nr. 02-06-7103		
Note 5 - connector:					
		Studer Nr.	54.02.0409		
		Molex Nr.	03-06-1121		
		12 contacts:	Studer Nr. 54.02.0407		
			Molex Nr. 02-06-7103		

DRIG 85/02/14
STUDER 85/02/14 PB BASIS BOARD AUDIO 2 CH 1.820.700.00 PAGE 3

BASIS PCB AUDIO 1.820.700.00 GRP 21 (LAYOUT 1.820.700.13)



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****1		59-06-0102	1 nF	10%	PEFP
C****2		59-25-3471	470 uF	+10% 10V, E1	
C****3		59-25-3471	470 uF	-10% 10V, E1	
C****4		59-25-1102	1000 uF	-10% 6.3V, E1	
C****5		59-25-3471	470 uF	-10% 10V, E1	
C****6		59-25-3471	470 uF	-10% 10V, E1	
C****7		59-25-1102	1000 uF	-10% 6.3V, E1	
C****8		59-25-3471	470 uF	-10% 10V, E1	
C****9		59-25-3471	470 uF	-10% 10V, E1	
(00)	D****1	50-04-0122	14 4001	... IN 4004	ITT, Mot
(01)	D****1	50-04-1503	7-5 V 2	82X 18 L 795	See
	D****2	50-04-0122	14 4001	... IN 4004	ITT, Mot
	D****3	50-04-0122	14 4001	... IN 4004	ITT, Mot

J****1		24 cont.	see note 1		
J****2		12 cont.	AMP Nr. -163-080-6		
J****3		10 cont.	AMP Nr. -163-080-6		
J****4		12 cont.	AMP Nr. -163-080-1		
J****5		26 cont.	see note 2		
J****6		26 cont.	see note 2		
J****7		18 + 20 contacts	see note 3		
J****8		18 + 20 contacts	see note 3		
J****9		18 + 20 contacts	see note 3		
J****10		18 + 20 contacts	see note 3		
J****11		18 + 20 contacts	see note 3		
J****12		18 + 20 contacts	see note 3		
J****13		18 + 20 contacts	see note 3		
J****14		18 + 20 contacts	see note 3		
J****15		18 + 20 contacts	see note 3		
J****16		18 + 20 contacts	see note 3		
J****17		18 + 20 contacts	see note 3		

L****1 02-01-0115 Interference coil, Philips Nr 4312 020 36700
 L****2 02-01-0115 Interference coil, Philips Nr 4312 020 36700
 L****3 02-01-0115 Interference coil, Philips Nr 4312 020 36700
 L****4 02-01-0115 Interference coil, Philips Nr 4312 020 36700

STUDER (01) 85/06/14 PB BASIS BOARD AUDIO 2 CH L.820.700.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L****5		02-02-2322	1.2 mH	TDK Nr. CSL 0912 - 122 J	
L****6		02-02-2322	1.2 mH	TDK Nr. CSL 0912 - 122 J	
L****7		02-01-0115		Interference coil, Philips Nr 4312 020 36700	
P****1		24 cont.	see note 4		
P****2		12 cont.	see note 5		
R****1		57-11-4103	10 kOhm	PTC Resistor, Philips Nr. 2322 640 18291	
R****2		57-92-1820		PTC Resistor, Philips Nr. 2322 640 18291	
R****3		57-92-1820		PTC Resistor, Philips Nr. 2322 640 18291	

STUDER (01) 85/06/14 PB BASIS BOARD AUDIO 2 CH L.820.700.00 PAGE 2

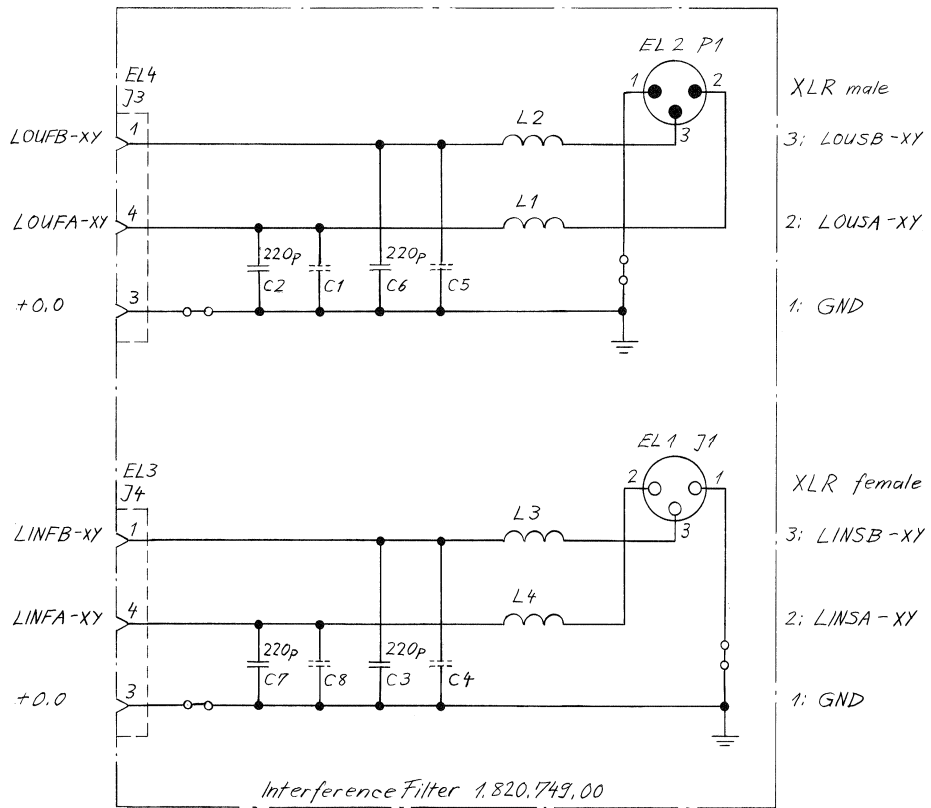
IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01) 85-06-14 Limitation of power supply peaks.					
Note 1 - connector: Case: 24 circuits: Studer Nr. 54-02-0415 Molex Nr. 03-06-2242 24 contacts: Studer Nr. 54-02-0401 Molex Nr. 02-06-7103					
Note 2 - Yamaichi Nr. FAS-26-17 Studer Nr. FAS-26-10-pp Connection cable: Studer Nr. L.82-14-12-01					
Note 3 - 2 connectors: 18 contacts: Studer Nr. 54-10-2015 Burnby Nr. 02-06-1241 20 contacts: Studer Nr. 54-10-2026 Burnby Nr. 02-06-1241 V1 K9					
Note 4 - connector: Case: 24 circuits: Studer Nr. 54-02-0416 Molex Nr. 03-06-1241 24 contacts: Studer Nr. 54-02-0406 Molex Nr. 02-06-8103					
Note 5 - connector: Case: 12 circuits: Studer Nr. 54-02-0409 Studer Nr. 03-06-1121 12 contacts: Studer Nr. 54-02-0407 Molex Nr. 02-06-7103					

E1=Electrolytic; PEFP=Polyester film
 MANUFACTURER: ITT=ITT International, Mos=Motorola.

DRG 85/02/14 (01) 85/06/14
 STUDER (01) 85/06/14 PB BASIS BOARD AUDIO 2 CH L.820.700.00 PAGE 3

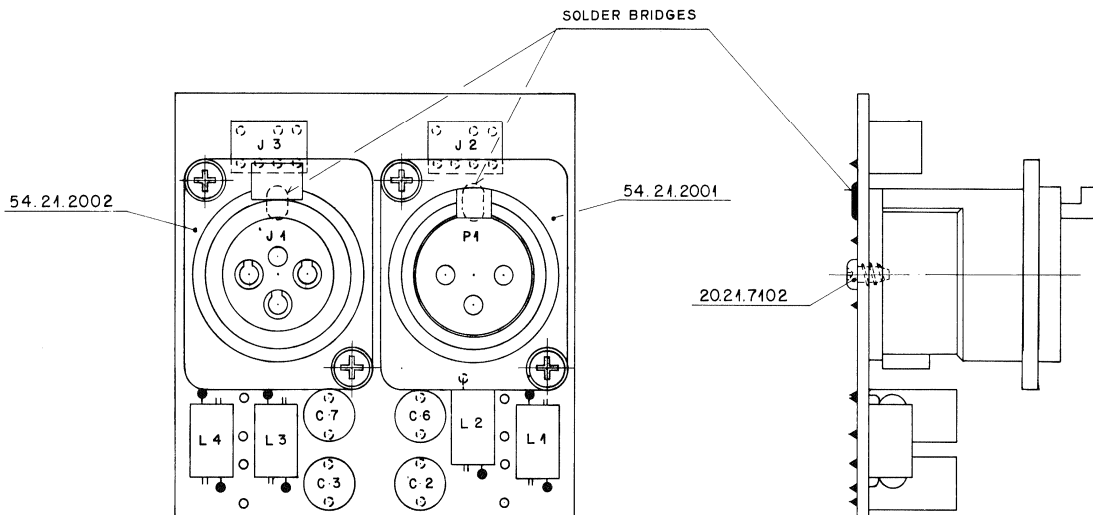
INTERFERENCE FILTER PCB 1.820.749.00 GRP 22...24

R	
C	2,7, 1,8, 6,3, 5,4



03.08.82	<i>Gimpel L5</i>	A 820 / A 810	Audio / Time Code Section	GR 35/36/37
STUDER	Interference Filter	SC	1.820.749-00	PAGE 1 OF 1

INTERFERENCE FILTER PCB 1.820.749.00 GRP 22...24



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001		not used		
C...	002	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	003	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	004		not used		
C...	005		not used		
C...	006	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	007	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	008		not used		
J...	001	54.21.2002		XLR socket, Neutrik Nr. NC 3FD-V	
J...	003	54.01.0298	4 cont.	AMP Nr. 163.681-2	
J...	004	54.01.0298	4 cont.	AMP Nr. 163.681-2	
L...	001	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	002	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	003	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
L...	004	62.01.0115		Interference-Coil, Philips Nr 4312 020 36700	
P...	001	54.21.2001		XLR plug, Neutrik Nr. NC 3MD-V	

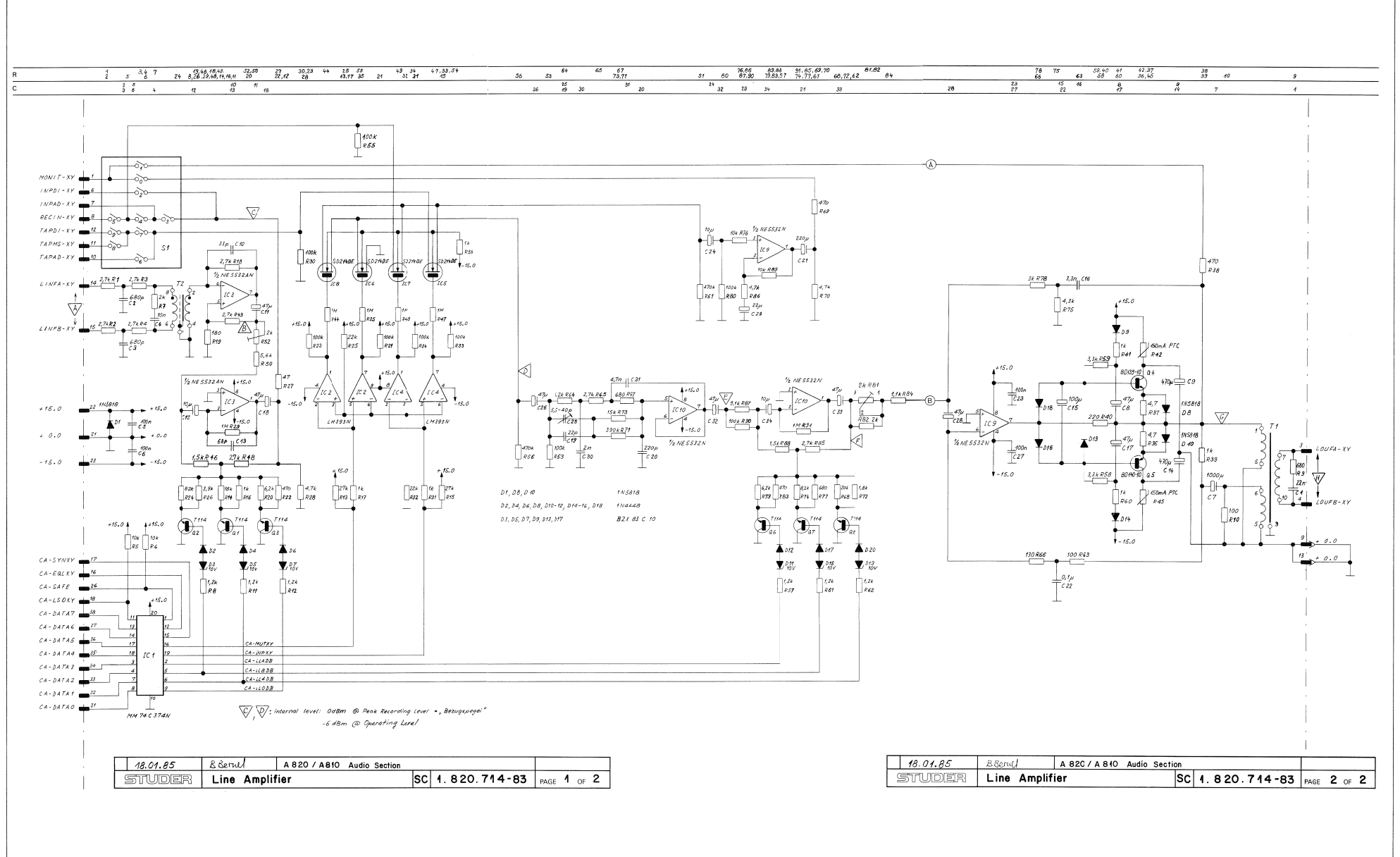
PP=Polypropylen

MANUFACTURER: ERO=E. Roederstein, NSF=AEG-Telefunken-NSF,

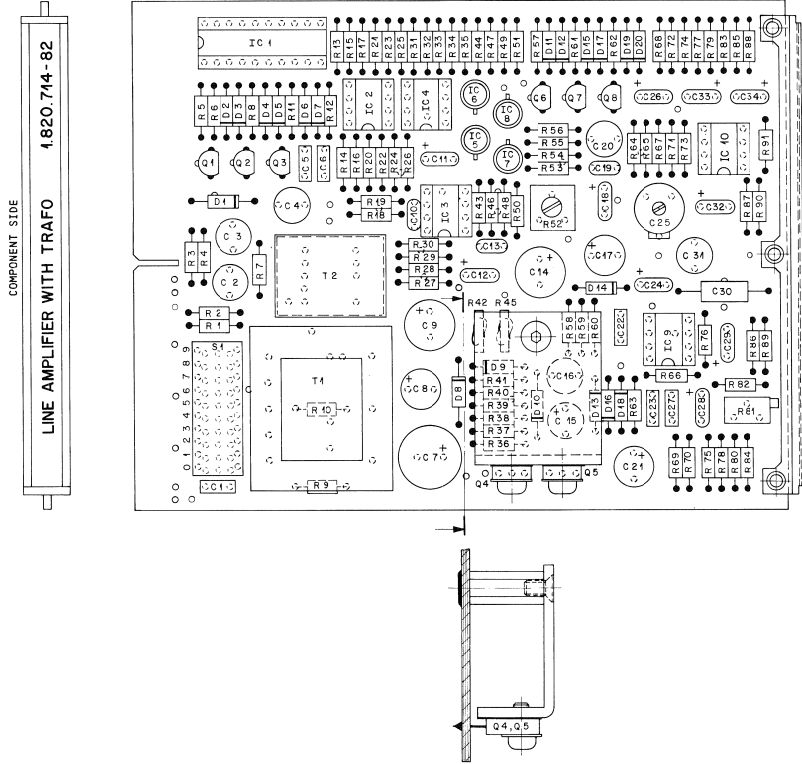
ORIG 82/08/03

S T U D E R (00) 82/08/03 GAE INTERFERENCE FILTER 1.820.749.00 PAGE 1

LINE AMPLIFIER (WITH TRANSFORMERS) PCB "ESE" 1.820.714.83 GRP 21/ELM 45,50



LINE AMPLIFIER (WITH TRANSFORMERS) PCB "ESE" 1.820.714.83 GRP 21/ELM 45,50



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	
L..0001	59.04.0233		22 nF	10%		
L..0002	59.04.0481		680 pF	1%		
L..0003	59.04.0661		680 pF	1%		
L..0004	59.04.1103		10 pF	1%		
L..0005	59.04.0104		100 nF	20%	PEFP	
L..0006	59.04.0104		100 nF	20%	PEFP	
L..0007	59.22.2102		1000 uF	-10% 6V E1		
L..0008	59.22.0470		47 uF	-10% 40V E1		
L..0009	59.22.0471		47 uF	-10% 10V E1		
L..0010	59.14.2100		33 pF	1%	NIS04 Co	
L..0011	59.26.0470		47 uF	20% 6.3V Sd1	PH	
L..0012	59.26.2100		10 uF	20% 10V Sd1	PH	
L..0013	59.14.2680		58 pF	1%	NIS04 Co	
L..0014	59.22.0471		47 uF	-10% 10V E1		
L..0015	59.22.1101		100 nF	-10% 10V E1		
L..0016	59.04.1302		3000 pF	1%		
L..0017	59.22.0470		47 uF	-10% 40V E1		
L..0018	59.26.0470		47 uF	20% 6.3V Sd1		
L..0019	59.14.0220		22 pF	1% N150 Co	PH	
L..0020	59.04.0104		220 pF	1%		
L..0021	59.22.0221		220 uF	-10% 6V E1		
L..0022	59.04.0104		104 uF	1%		
L..0023	59.04.0104		100 nF	20%	PEFP	
L..0024	59.04.0104		100 nF	20%	10V Sd1	PH
L..0025	59.18.0108		40 pF	1%	Trimmer capacitor, Philips Nr 2222 900 3240P	
L..0026	59.04.0104		47 uF	20% 6.3V Sd1	PH	
L..0027	59.04.0104		100 nF	20%	PEFP	
L..0028	59.04.0104		47 uF	20% 6.3V Sd1	PH	
L..0029	59.26.1220		22 uF	20% 10V Sd1	PH	
L..0030	59.12.0027		2 nF	1%		
L..0031	59.04.1072		4.7 nF	1%		
L..0032	59.04.0104		47 uF	20% 6.3V Sd1	PH	
L..0033	59.26.2070		47 uF	20% 10V Sd1	PH	
L..0034	59.04.0104		10 uF	20%	10V Sd1	PH
D..0001	50.04.0512		1N5818		Net	
D..0002	30.04.0125		1N4448		ITT,PhySes	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D..0003	50.04.1114		10V 2	5%	ITT,PhySes
D..0004	50.04.0125		1N4448		ITT,PhySes
D..0005	50.04.1114		10V 2	5%	ITT,PhySes
D..0006	50.04.0125		1N4448		ITT,PhySes
D..0007	50.04.1114		10V 2	5%	ITT,PhySes
D..0008	50.04.0125		1N4448		ITT,PhySes
D..0009	50.04.0125		1N4448		ITT,PhySes
D..0010	50.04.0125		1N4448		ITT,PhySes
D..0011	50.04.1114		10V 2	5%	ITT,PhySes
D..0012	50.04.0125		1N4448		ITT,PhySes
D..0013	50.04.0125		1N4448		ITT,PhySes
D..0014	50.04.0125		1N4448		ITT,PhySes
D..0015	50.04.1114		10V 2	5%	ITT,PhySes
D..0016	50.04.0125		1N4448		ITT,PhySes
D..0017	50.04.0125		1N4448		ITT,PhySes
D..0018	50.04.0125		1N4448		ITT,PhySes
D..0019	50.04.1114		10V 2	5%	ITT,PhySes
D..0020	50.04.0125		1N4448		ITT,PhySes
C..0001	50.01.0108		MS		MWACPAK
C..0002	50.04.0283		1N4934		TI,MS
L..0004	50.04.0103		N5532AN		TI,MS
L..0004	50.04.0103		N5532AN		TI,MS
L..0005	50.04.0103		N5532AN		TI,MS
L..0006	50.11.0106		50 214 0E		810 214
L..0007	50.11.0106		50 214 0E		810 214
L..0008	50.11.0106		50 214 0E		810 214
L..0009	50.04.0105		N5532N		810 214
L..0009	50.04.0105		N5532N		810 214
L..0010	50.04.0105		N5532N		810 214
G..0001	1.010.034.50		T 114 sel		See Note 1
G..0002	1.010.034.50		T 114 sel		See Note 1
G..0003	1.010.034.50		T 114 sel		See Note 1
G..0004	50.03.0451		8039-10		MS
G..0005	50.03.0452		8034-10		PH
G..0006	1.010.034.50		T 114 sel		See Note 1
G..0007	1.010.034.50		T 114 sel		See Note 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L..0008	1.010.034.50		T 114 sel	See Note 1	See
R..0001	57.11.1077		2.7 kOhm	1%	
R..0002	57.11.1077		2.7 kOhm	1%	
R..0003	57.11.1077		2.7 kOhm	1%	
R..0004	57.11.1077		2.7 kOhm	1%	
R..0005	57.11.4103		10 kOhm	1%	
R..0006	57.11.4103		10 kOhm	1%	
R..0007	57.11.1072		1.2 kOhm	1%	
R..0008	57.11.1072		1.2 kOhm	1%	
R..0009	57.11.1061		460 Ohm	1%	
R..0010	57.11.4101		100 Ohm	1%	
R..0011	57.11.4122		1.2 kOhm	1%	
R..0012	57.11.4122		1.2 kOhm	1%	
R..0013	57.11.4273		27 kOhm	1%	
R..0014	57.11.4163		18 kOhm	1%	
R..0015	57.11.4273		27 kOhm	1%	
R..0016	57.11.4102		1 kOhm	1%	
R..0017	57.11.4102		1 kOhm	1%	
R..0018	57.11.4272		27 kOhm	1%	
R..0019	57.11.4181		180 Ohm	2%	
R..0020	57.11.1061		460 Ohm	1%	
R..0021	57.11.4104		100 kOhm	1%	
R..0022	57.11.4104		100 kOhm	1%	
R..0023	57.11.4104		100 kOhm	1%	
R..0024	57.11.4104		100 kOhm	1%	
R..0025	57.11.4273		27 kOhm	1%	
R..0026	57.11.1072		1.2 kOhm	1%	
R..0027	57.11.4470		4.7 Ohm	5%	
R..0028	57.11.4472		4.7 Ohm	5%	
R..0029	57.11.4105		100 kOhm	1%	
R..0030	57.11.4104		100 kOhm	1%	
R..0031	57.11.4102		1 kOhm	1%	
R..0032	57.11.4103		22 kOhm	1%	
R..0033	57.11.4104		100 kOhm	1%	
R..0034	57.11.4114		100 kOhm	1%	
R..0035	57.11.4105		1 MOhm	1%	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R..0036	57.11.4470		4.7 Ohm	5%	
R..0037	57.11.4470		4.7 Ohm	5%	
R..0038	57.11.4471		470 Ohm	5%	
R..0039	57.11.4102		1 kOhm	1%	
R..0040	57.11.4221		220 Ohm	5%	
R..0041	57.11.4102		1 kOhm	1%	
R..0042	57.02.1151		150 Ohm	5%	See Note 2
R..0043	57.02.1151		150 Ohm	5%	See Note 2
R..0044	57.11.4105		1 MOhm	1%	
R..0045	57.02.1151		150 Ohm	5%	See Note 2
R..0046	57.11.4152		1.5 kOhm	2%	
R..0047	57.11.4105		1 MOhm	1%	
R..0048	57.11.4272		2.7 kOhm	2%	
R..0049	57.11.4105		1 MOhm	1%	
R..0050	57.11.4562		5.6 kOhm	5%	
R..0051	57.11.4104		470 kOhm	2%	
R..0052	58.01.0202		2 kOhm	2%	See Note 3
R..0053	57.11.4104		1 kOhm	1%	
R..0054	57.11.4104		100 kOhm	1%	
R..0055	57.11.4104		100 kOhm	1%	
R..0056	57.11.4474		470 kOhm	5%	
R..0057	57.11.4122		1.2 kOhm	1%	
R..0058	57.11.4332		3.3 kOhm	5%	
R..0059	57.11.4122		1.2 kOhm	1%	
R..0060	57.11.4102		1 kOhm	1%	
R..0061	57.11.4122		1.2 kOhm	1%	
R..0062	57.11.4122		1.2 kOhm	1%	
R..0063	57.11.4101		100 Ohm	2%	
R..0064	57.11.4122		1.2 kOhm	1%	
R..0065	57.11.4101		100 Ohm	2%	
R..0066	57.11.3131		330 Ohm	1%	
R..0067	57.11.4101		470 Ohm	5%	
R..0068	57.11.3203		20 kOhm	5%	
R..0069	57.11.4471		470 Ohm	5%	
R..0070	57.11.4472		4.7 kOhm	5%	
R..0071	57.11.4104		100 kOhm	1%	
R..0072	57.11.4182		1.8 kOhm	2%	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R..0073	57.11.3153		15 kOhm	1%	
R..0074	57.11.4122		1.2 kOhm	1%	
R..0075	57.11.3622		4.5 kOhm	1%	
R..0076	57.11.4122		1.2 kOhm	1%	
R..0077	57.11.3681		680 Ohm	1%	
R..0078	57.11.3822		3.8 kOhm	1%	
R..0079	57.11.3622		4.2 kOhm	5%	
R..0080	57.11.4101		100 Ohm	2%	
R..0081	58.05.0202		2 kOhm	2%	See Note 4
R..0082	57.11.4101		100 Ohm	2%	
R..0083	57.11.4471		470 Ohm	2%	
R..0084	57.11.4122		1.2 kOhm	1%	
R..0085	57.11.4272		2.7 kOhm	2%	
R..0086	57.11.4122		1.2 kOhm	1%	
R..0087	57.11.4122		1.2 kOhm	1%	
R..0088	57.11.4152		1.5 kOhm	1%	
R..0089	57.11.4103		10 kOhm	2%	
R..0090	57.11.1014		100 kOhm	1%	
R..0091	57.11.4105		1 MOhm	1%	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
S..0001	1.022.340.00		Output Transformer		ST
T..0002	1.022.419.00		Input Transformer T1		ST
S..0001	1.010.034.50		T 114 sel		See Note 1
S..0002	1.010.034.50		T 114 sel		See Note 1
S..0003	1.010.034.50		T 114 sel		See Note 1
S..0004	50.03.0451		8039-10		MS
S..0005	50.03.0452		8034-10		PH
S..0006	1.010.034.50		T 114 sel		See Note 1
S..0007	1.010.034.50		T 114 sel		See Note 1

Note 1 - T 114 sel. For 1000 Hz (f₀ = 3 kHz)
 VCE < 0.7 V_{CE} I_B = 0 mA, VCE < 2.5 V_{CE} I_B = 4 mA

Note 2 - 150 Ohm PTC-resistor
 Philips Nr. 2322 808 11511
 PTC-resistor may be replaced by Fuse-resistor
 57.19.0180 Philips Nr. 2322 205 13189.

Note 3 - 2 kOhm Potentiometer 100 Ohm
 3394 F-1202
 Altm Bradley Nr. E 7 2 202
 Spectrol Nr. 83 M 202 F010

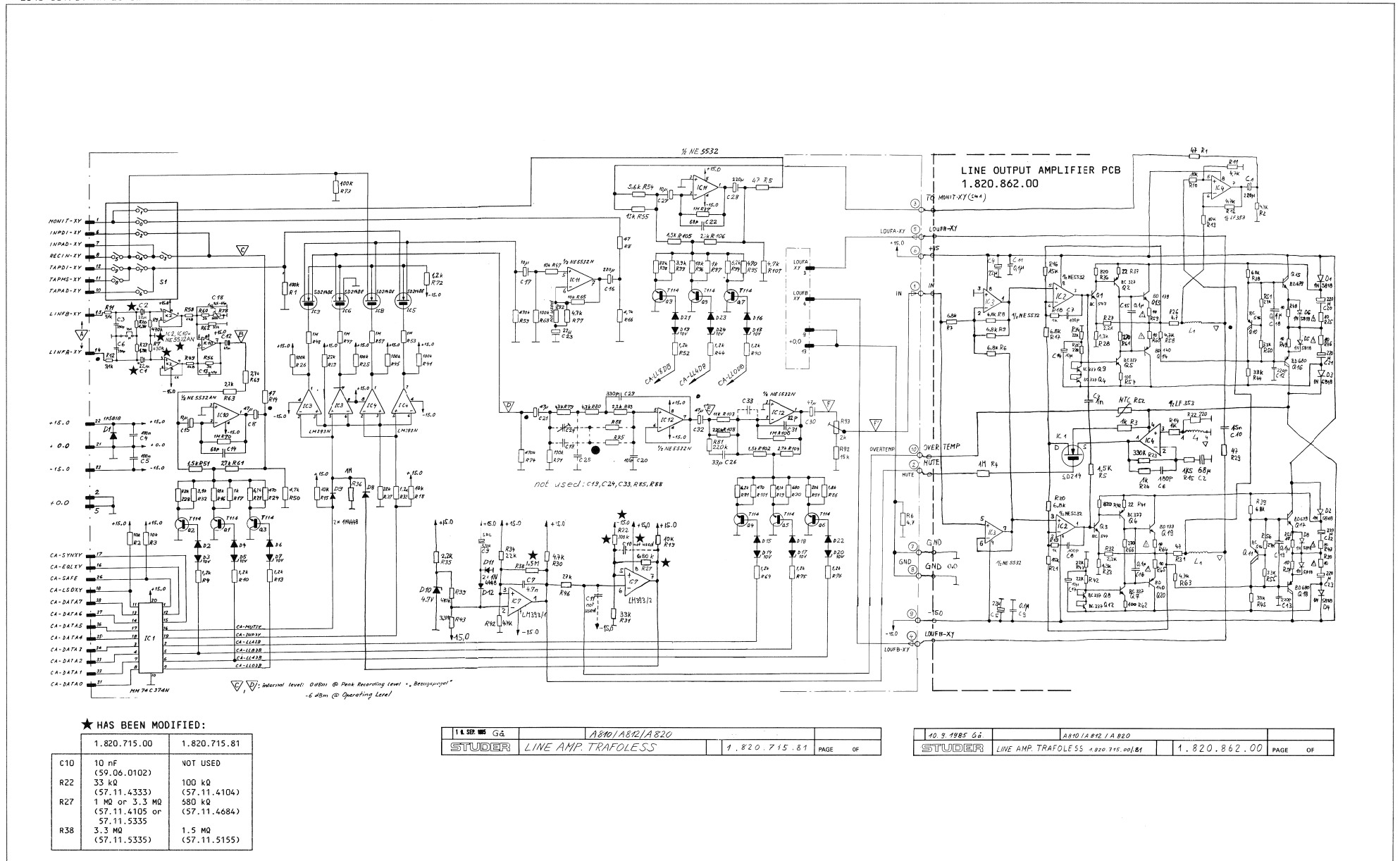
Note 4 - 2 kOhm Potentiometer 100 Ohm
 3394 F-1
 Spectrol Nr. 83 M 2 202 T 000
 Murata Nr. PUT 3105 T-1 - 202
 Vishay Intec 183 0 202

Ceramic: E=Electrolytic, S=Solid aluminum

MANUFACTURERS: Ex=Exar, ITT=InterTechnology, Mot=Motorola,
 NS=National Semiconductor, PH=Philips, Ren=Raytheon,
 See=Seecon, Sim=Siemens, Sig=Siemens, Six=Sixcomix,
 St=Studer, T=Telefunken, TI=Texas Instruments.

DRIG 05/01/18

LINE AMPLIFIER (TRANSFORMERLESS) PCB "ESE" 1.820.715.00/81 GRP 21/ELM 45,50
 - LINE OUTPUT AMPLIFIER PCB "ESE" 1.820.862.00



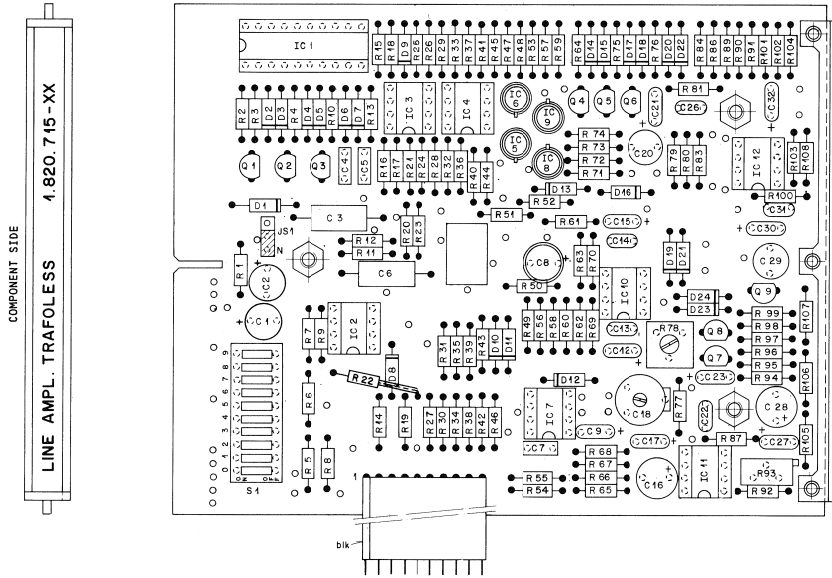
★ HAS BEEN MODIFIED:

	1.820.715.00	1.820.715.81
C10	10 nF (59.06.0102)	NOT USED
R22	33 kΩ (57.11.4333)	100 kΩ (57.11.4104)
R27	1 MΩ or 3.3 MΩ (57.11.4105 or 57.11.5335)	580 kΩ (57.11.4684)
R38	3.3 MΩ (57.11.5335)	1.5 MΩ (57.11.5155)

14 SEP 85 Gd	A810/A812/A820
STUDER	LINE AMP. TRAFOLESS
1.820.715.81	PAGE OF

10.9.1985 Gd	A810/A812/A820
STUDER	LINE AMP. TRAFOLESS 1.820.715.00/81
1.820.862.00	PAGE OF

LINE AMPLIFIER (TRANSFORMERLESS) PCB "ESE" 1.820.715.81 GRP 21/ELM 45,50



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Axxxx1		1.820.682-00		Line Output Amplifier	SE
Cxxxx1		59.22.0220	22 uF	35V EL	
Cxxxx2		59.22.0220	22 uF	35V EL	
Cxxxx3		59.12.1791	390 pF	1%, PS	
Cxxxx4		59.06.0104	100 nF	20%, PETP	
Cxxxx5		59.06.0104	100 nF	20%, PETP	
Cxxxx6		59.12.1791	390 pF	1%, PS	
Cxxxx7		59.06.0104	47 nF	20%, PETP	
Cxxxx8		59.22.1470	47 uF	20%, 10V, E1	
Cxxxx9		59.26.2539	3.2 uF	20%, 16 V, SAl	
Cxxxx10				not used	
Cxxxx11				not used	
Cxxxx12		59.26.0470	47 uF	20%, 2AL	PH
Cxxxx13		59.14.2470	47 uF	20%	
Cxxxx14		59.34.2680	68 pF	5%, N150, LAl	
Cxxxx15		59.26.2100	10 uF	20%, 16V, SAl	PH
Cxxxx16		59.22.2221	220 uF	-10%, 6V, E1	
Cxxxx17		59.26.2100	10 uF	20%, 16V, SAl	PH
Cxxxx18		59.08.0102	50 nF	20%	
Cxxxx19				not used	
Cxxxx20		59.05.1101	100 p	1%	
Cxxxx21		59.26.2070	47 uF	20%, 6.3V, SAl	PH
Cxxxx22		59.14.2680	68 pF	5%, N150, LAl	
Cxxxx23		59.26.1220	22 uF	20%, 10V, SAl	PH
Cxxxx24				not used	
Cxxxx25		59.34.2330	33 pF	5%	
Cxxxx26		59.26.2100	10 uF	20%, 16V, SAl	PH
Cxxxx27		59.22.2221	220 uF	-10%, 6V, E1	
Cxxxx28		59.05.1331	330 pF	1%	PH
Cxxxx29		59.06.0070	47 nF	20%, 6.3V, SAl	PH
Cxxxx30		59.14.2220	22 pF	5%	
Cxxxx31		59.34.2220	22 pF	5%	PH
Cxxxx32		59.06.0070	47 nF	20%, 6.3V, SAl	
Cxxxx33				not used	
Dxxxx1		50.04.0512	IN5818		Not

S T U D E R (00) 86/03/17 GAE LINE AMPLIFIER TRAFOLESS 1.820.715.81

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Dxxxx2		50.04.0125	IN4448		ITT/Phs/Ses
Dxxxx3		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx4		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx5		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx6		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx7		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx8		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx9		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx10		50.04.0123	1.77 Z		Not
Dxxxx11		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx12		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx13		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx14		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx15		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx16		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx17		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx18		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx19		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx20		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx21		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx22		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx23		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx24		50.04.0125	IN4448	5%	ITT/Phs/Ses
Dxxxx25		50.04.0114	10V Z	5%	ITT/Ses
Ixxxx1		50.07.0003	MHFC374N		NS
Ixxxx2		50.09.0106	NE532AN	XR5532AN, 5532AN	SignEx/Krr
Ixxxx3		50.04.0263	M939N		TI/MS
Ixxxx4		50.09.0263	M939N		TI/MS
Ixxxx5		50.11.0106	50 1% DE	BSO 214	Phs/Sik
Ixxxx6		50.11.0106	50 1% DE	BSO 214	Phs/Sik
Ixxxx7		50.05.0263	M939N		TI/MS
Ixxxx8		50.11.0106	50 1% DE	BSO 214	Phs/Sik
Ixxxx9		50.11.0106	50 1% DE	BSO 214	Phs/Sik
Ixxxx10		50.09.0106	NE532AN	XR5532AN, 5532AN	SignEx/Krr
Ixxxx11		50.09.0105	NE532AN	XR5532AN, 5532AN	SignEx/Krr
Ixxxx12		50.09.0106	NE532AN	XR5532AN, 5532AN	SignEx/Krr

S T U D E R (00) 86/03/17 GAE LINE AMPLIFIER TRAFOLESS 1.820.715.81

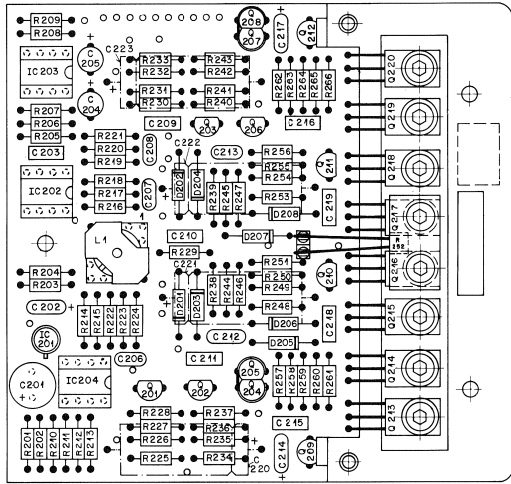
IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
J5xxxx1		54.01.0020	3 cont.	Philips Nr. 2423 025 89303 See note 1	
Qxxxx1		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx2		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx3		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx4		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx5		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx6		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx7		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx8		1.010.034.50	1 1/4 sel	See Note 2	Sie
Qxxxx9		1.010.034.50	1 1/4 sel	See Note 2	Sie
Rxxxx1		57.11.4104	100 kOhm	5%	
Rxxxx2		57.11.4103	10 kOhm	5%	
Rxxxx3		57.11.4102	1.2 kOhm	5%	
Rxxxx4		57.11.4079	4.7 Ohm	5%	
Rxxxx5		57.11.4079	4.7 Ohm	5%	
Rxxxx6		57.11.4079	4.7 Ohm	5%	
Rxxxx7		57.11.4079	4.7 Ohm	5%	
Rxxxx8		57.11.4079	4.7 Ohm	5%	
Rxxxx9		57.11.4079	4.7 Ohm	5%	
Rxxxx10		57.11.4122	1.2 kOhm	5%	
Rxxxx11		57.11.4122	1.2 kOhm	5%	
Rxxxx12		57.11.4122	1.2 kOhm	5%	
Rxxxx13		57.11.4122	1.2 kOhm	5%	
Rxxxx14		57.11.4079	4.7 Ohm	5%	
Rxxxx15		57.11.4103	10 kOhm	5%	
Rxxxx16		57.11.4183	18 kOhm	5%	
Rxxxx17		57.11.4103	10 kOhm	5%	
Rxxxx18		57.11.4103	10 kOhm	5%	
Rxxxx19		57.11.4103	10 kOhm	5%	
Rxxxx20		57.11.3132	1.3 kOhm	1%	
Rxxxx21		57.11.3022	62 kOhm	1%	
Rxxxx22		57.11.4104	100 kOhm	5%	
Rxxxx23		57.11.3132	1.3 kOhm	1%	
Rxxxx24		57.11.4171	410 Ohm	1%	
Rxxxx25		57.11.4104	100 kOhm	5%	

S T U D E R (00) 86/03/17 GAE LINE AMPLIFIER TRAFOLESS 1.820.715.81

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Sxxxx1		55.01.0170	5Ae-Nr.	1010-992	

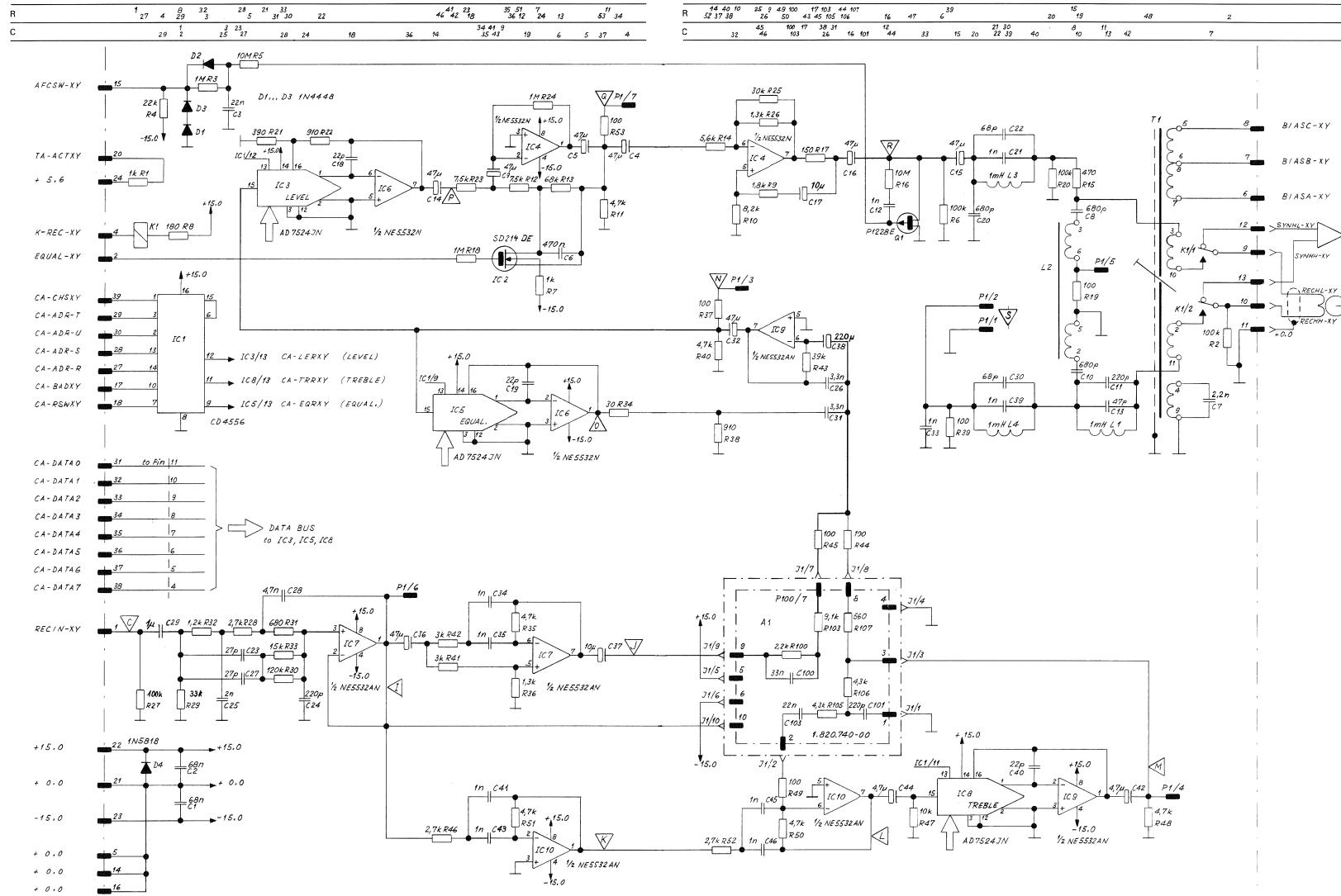
S T U D E R (00) 86/03/17 GAE LINE AMPLIFIER TRAFOLESS 1.820.715.81 PAGE 7

LINE OUTPUT AMPLIFIER PCB "ESE" 1.820.862.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++0201	59.25-5221	220 uF	-20%	10V ± EI	Ph	R++0215	57.11-4153		1.5 KOhm	5%	
C++0202	59.25-0102	48 uF	-20%	6.3V ± Sal		R++0216	57.11-3153		15 KOhm	1%	
C++0203	59.25-0102	1 nF	10%	63V ± PETP		R++0217	57.11-3682		6.8 KOhm	1%	
C++0204	59.25-0220	22 uF	-20%	35V ± EI		R++0218	57.11-4102		1 KOhm	5%	
C++0205	59.25-0220	22 uF	-20%	35V ± EI		R++0219	57.11-4102		1 KOhm	5%	
C++0206	59.25-0181	100 pF	5%	63V ± Cer		R++0220	57.11-3682		6.8 KOhm	1%	
C++0207	59.25-4101	100 pF	5%	63V ± Cer		R++0221	57.11-3153		15 KOhm	1%	
C++0208	59.25-0104	0.1 uF	10%	63V ± PETP		R++0222	57.11-4221		250 Ohm	5%	
C++0209	59.25-0104	0.1 uF	10%	63V ± PETP		R++0223	57.11-3153		15 KOhm	1%	
C++0210	59.25-0104	0.1 uF	10%	63V ± PETP		R++0224	57.11-1102		330 KOhm	5%	
C++0211	59.25-4221	220 pF	5%	63V ± Cer	Ph	R++0225	57.11-4010		10 Ohm	5%	See Note 2
C++0212	59.25-4221	220 pF	5%	63V ± Cer		R++0226	57.11-4010		10 Ohm	5%	
C++0213	59.25-4221	220 pF	5%	63V ± Cer		R++0227	57.11-3222		2.2 KOhm	1%	
C++0214	59.25-4109	0 uF	-20%	16V ± Sal	Ph	R++0228	57.11-3152		1.5 KOhm	1%	See Note 2
C++0215	59.25-0104	0.1 uF	10%	63V ± PETP		R++0229	57.11-4010		10 Ohm	5%	
C++0216	59.25-0104	0.1 uF	10%	63V ± PETP		R++0230	57.11-3152		1.5 KOhm	1%	
C++0217	59.25-4109	0 uF	-20%	16V ± Sal	Ph	R++0231	57.11-4010		10 Ohm	5%	
C++0218	59.25-0104	0.1 uF	10%	63V ± PETP		R++0232	57.11-3222		2.2 KOhm	1%	
C++0219	59.25-0104	0.1 uF	10%	63V ± PETP		R++0233	57.11-3152		1.5 KOhm	1%	
C++0220	59.25-5221	220 uF	-10%	40V ± EI		R++0234	57.11-4223		22 KOhm	5%	
C++0221	59.25-5221	220 uF	-10%	40V ± EI		R++0235	57.11-4223		22 KOhm	5%	
C++0222	59.25-5221	220 uF	-10%	40V ± EI		R++0236	57.11-4021		820 Ohm	5%	
C++0223	59.25-5221	220 uF	-10%	40V ± EI		R++0237	57.11-4220		22 Ohm	5%	
D++0201	50.04-0512	1N 5818	1N 5818		Mot	R++0238	57.11-4083		68 KOhm	5%	
D++0202	50.04-0512	1N 5818	1N 5818		Mot	R++0239	57.11-4083		68 KOhm	5%	
D++0203	50.04-0512	1N 5818	1N 5818		Mot	R++0240	57.11-4021		820 Ohm	5%	
D++0204	50.04-0512	1N 5818	1N 5818		Mot	R++0241	57.11-4220		22 Ohm	5%	
D++0205	50.04-0512	1N 5818	1N 5818		Mot	R++0242	57.11-4223		22 KOhm	5%	
D++0206	50.04-0512	1N 5818	1N 5818		Mot	R++0243	57.11-4223		22 KOhm	5%	
D++0207	50.04-0512	1N 5818	1N 5818		Mot	R++0244	57.11-3333		33 KOhm	5%	
D++0208	50.04-0512	1N 5818	1N 5818		Mot	R++0245	57.11-4333		33 KOhm	5%	See Note 2
IC+0201	50.11-0106	5014-DE	850214		Sig+Ph	R++0246	57.11-3010		10 Ohm	5%	See Note 2
IC+0202	50.09-0105	NE532 N	88 5532 N	5532 NB	Sig+Ex+Ro	R++0247	57.11-3010		10 Ohm	5%	
IC+0203	50.09-0109	NE532 N	88 5532 N	5532 NB	Sig+Ex+Ro	R++0248	57.11-4100		10 Ohm	5%	
IC+0204	50.09-0101	LF 353 N	TL 072 CP		NS+IT	R++0249	57.11-4100		10 Ohm	5%	
L++0201	1.022-273-00	3P150 uH			St	R++0250	57.11-3333		33 KOhm	5%	See Note 3
Q++0201	50.03-0436	BC 237 B	BC 547 B		Mot+Ph+Sil+eff	R++0251	57.11-4273		27 KOhm	5%	
Q++0202	50.03-0436	BC 237 B	BC 547 B		St+Ro	R++0252	57.11-4100		10 Ohm	5%	See Note 3
Q++0203	50.03-0436	BC 237 B	BC 547 B		Mot+Ph+Sil+eff	R++0253	57.11-4100		10 Ohm	5%	
Q++0204	50.03-0436	BC 237 B	BC 547 B		St	R++0254	57.11-4100		10 Ohm	5%	
Q++0205	50.03-0436	BC 237 B	BC 547 B		St	R++0255	57.11-4333		33 KOhm	5%	
Q++0206	50.03-0436	BC 237 B	BC 547 B		St	R++0256	57.11-4273		27 KOhm	5%	
Q++0207	50.03-0436	BC 337		See Note 1	St	R++0257	57.11-4333		33 KOhm	5%	
Q++0208	50.03-0436	BC 337		See Note 1	St	R++0258	57.11-4273		27 KOhm	5%	See Note 2
Q++0209	50.03-0436	BC 337		See Note 1	St	R++0259	57.11-4010		10 Ohm	5%	
Q++0210	50.03-0436	BC 337		See Note 1	St	R++0260	57.11-4010		10 Ohm	5%	See Note 2
Q++0211	50.03-0436	BC 337		See Note 1	St	R++0261	57.11-4271		270 Ohm	5%	
Q++0212	50.03-0436	BC 337		See Note 1	St	R++0262	57.11-1101		100 Ohm	5%	
Q++0213	50.03-0436	BC 337		See Note 1	St	R++0263	57.11-4472		4.7 KOhm	5%	See Note 2
Q++0214	50.03-0449	BC 516		See Note 1	St+IT	R++0264	57.11-4010		10 Ohm	5%	See Note 2
Q++0215	50.03-0449	BC 516		See Note 1	St+IT	R++0265	57.11-4010		10 Ohm	5%	
Q++0216	50.03-0449	BC 516		See Note 1	St+IT	R++0266	57.11-4271		270 Ohm	5%	
Q++0217	50.03-0451	BD 139			Ph						
Q++0218	50.03-0451	BD 140			Ph						
Q++0219	50.03-0504	BD 679			S65+Ph						
Q++0220	50.03-0504	BD 680			S65+Ph						
Q++0221	50.03-0504	BD 679			S65+Ph						
Q++0222	50.03-0504	BD 680			S65+Ph						
Q++0223	50.03-0504	BD 680			S65+Ph						
Q++0224	50.03-0451	BD 139			Ph						
Q++0225	50.03-0452	BD 140			Ph						
R++0201	57.11-4471	4.7 Ohm	5%								
R++0202	57.11-4472	4.7 KOhm	5%								
R++0203	57.11-4101	10 KOhm	5%								
R++0204	57.11-4105	68 KOhm	5%								
R++0205	57.11-4157	1.5 KOhm	5%								
R++0206	57.11-3682	6.8 KOhm	5%								
R++0207	57.11-3682	6.8 KOhm	5%								
R++0208	57.11-3682	6.8 KOhm	5%								
R++0209	57.11-3682	6.8 KOhm	5%								
R++0210	57.11-3103	10 KOhm	1%								
R++0211	57.11-3472	4.7 KOhm	1%								
R++0212	57.11-3472	4.7 KOhm	1%								
R++0213	57.11-3103	10 KOhm	1%								
R++0214	57.11-4102	1 KOhm	5%								
R++0215	57.11-4153	1.5 KOhm	5%								
R++0216	57.11-3153	15 KOhm	1%								
R++0217	57.11-3682	6.8 KOhm	1%								
R++0218	57.11-4102	1 KOhm	5%								
R++0219	57.11-4102	1 KOhm	5%								
R++0220	57.11-3682	6.8 KOhm	1%								
R++0221	57.11-3153	15 KOhm	1%								
R++0222	57.11-4221	250 Ohm	5%								
R++0223	57.11-3153	15 KOhm	1%								
R++0224	57.11-1102	330 KOhm	5%								
R++0225	57.11-4010	10 Ohm	5%								
R++0226	57.11-4010	10 Ohm	5%								
R++0227	57.11-3222	2.2 KOhm	1%								
R++0228	57.11-3152	1.5 KOhm	1%								
R++0229	57.11-4010	10 Ohm	5%								
R++0230	57.11-3152	1.5 KOhm	1%								
R++0231	57.11-4010	10 Ohm	5%								
R++0232	57.11-3222	2.2 KOhm	1%								
R++0233	57.11-3152	1.5 KOhm	1%								
R++0234	57.11-4223	22 KOhm	5%								
R++0235	57.11-4223	22 KOhm	5%								
R++0236	57.11-4021	820 Ohm	5%								
R++0237	57.11-4220	22 Ohm	5%								
R++0238	57.11-4083	68 KOhm	5%								
R++0239	57.11-4083	68 KOhm	5%								
R++0240	57.11-4021	820 Ohm	5%								
R++0241	57.11-4220	22 Ohm	5%								
R++0242	57.11-4223	22 KOhm	5%								
R++0243	57.11-4223	22 KOhm	5%								
R++0244	57.11-3333	33 KOhm	5%								
R++0245	57.11-4333	33 KOhm	5%								
R++0246	57.11-3010	10 Ohm	5%								
R++0247	57.11-3010	10 Ohm	5%								
R++0248	57.11-4100	10 Ohm	5%								
R++0249	57.11-4100	10 Ohm									

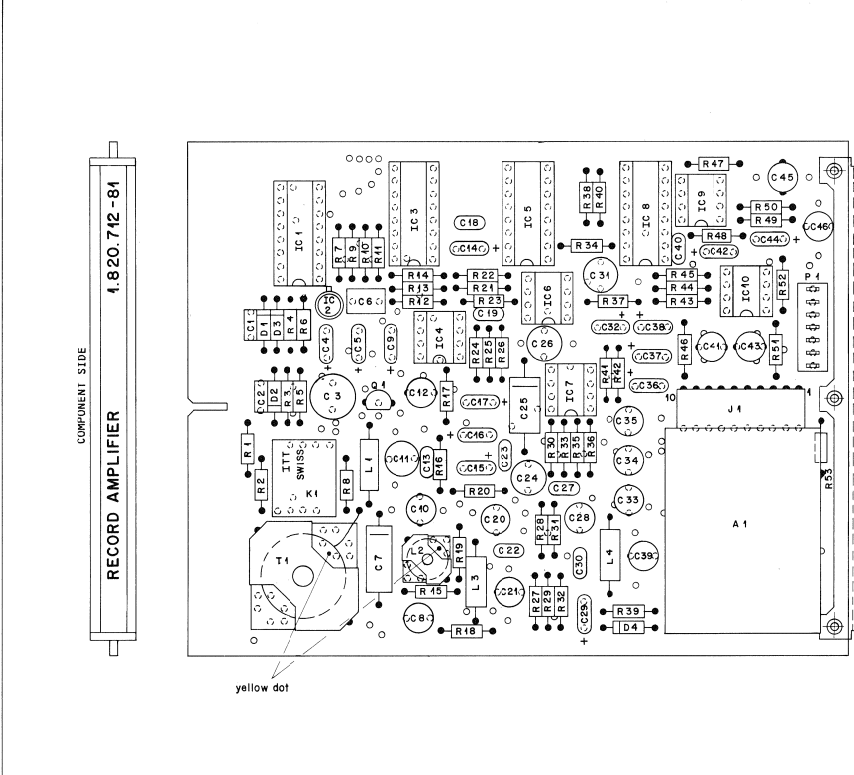
RECORD AMPLIFIER PCB "ESE" 1.820.712.81 GRP 21/ELM 43,48
- ADAPTATION PCB 1.820.740.00



12.10.83	Buchegger	A 820 / 840 Audio Section	
STUDER	Record Amplifier	SC 1.820.712-81	PAGE 1 OF 1

RECORD AMPLIFIER PCB "ESE" 1.820.712.81 GRP 21/ELM 43,48

ADAPTATION PCB 1.820.740.00

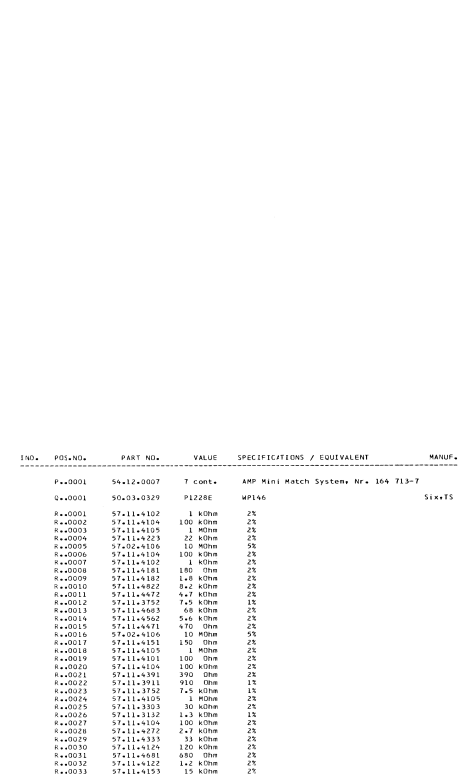


IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
A++001	1.820.740-00	Adaptation Board			SE
C++001	59-99-0205	68 PF	40V Cc		PH
C++002	59-99-0205	68 PF	40V Cc		PH
C++003	59-99-1223	22 MF	15V 40V PP		PH
C++004	59-26-0470	47 UF	50V SaI		PH
C++005	59-26-0470	47 UF	50V SaI		PH
C++006	59-09-5474	470 MF	5% PETP		PH
C++007	59-12-2222	2.2 MF	15V 500V PS		PH
C++008	59-05-1681	680 PF	15V 50V PP		PH
C++009	59-26-0470	47 UF	6.3V SaI		PH
C++010	59-05-1681	680 PF	15V PP		PH
C++011	59-05-1221	220 PF	15V PP		PH
C++012	59-05-1102	1 MF	15V PP		PH
C++013	59-18-9470	47 UF	50V SaI		PH
C++014	59-26-0470	47 UF	6.3V SaI		PH
C++015	59-26-0470	47 UF	6.3V SaI		PH
C++016	59-26-0470	47 UF	6.3V SaI		PH
C++017	59-26-1100	10 UF	50V SaI		PH
C++018	59-26-2220	22 PF	5% Cc		PH
C++019	59-18-2220	60 PF	15V PP		PH
C++020	59-05-1681	680 PF	15V PP		PH
C++021	59-05-1102	1 MF	15V PP		PH
C++022	59-26-1680	68 PF	5% Cc		PH
C++023	59-18-2220	20 MF	15V PP		PH
C++024	59-05-1221	220 PF	15V PP		PH
C++025	59-12-2222	2.2 MF	15V PP		PH
C++026	59-05-1332	3.3 MF	15V PP		PH
C++027	59-18-2220	20 MF	15V PP		PH
C++028	59-05-1472	4.7 MF	15V PP		PH
C++029	59-05-1505	150 PF	PETP		PH
C++030	59-26-1680	68 PF	5% Cc		PH
C++031	59-05-1332	3.3 MF	15V PP		PH
C++032	59-26-0470	47 UF	6.3V SaI		PH
C++033	59-05-1102	1 MF	15V PP		PH
C++034	59-05-1102	1 MF	15V PP		PH
C++035	59-05-1102	1 MF	15V PP		PH

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L++001	59-26-0470	47 UF	6.3V SaI		PH
L++002	59-26-2100	10 UF	100V SaI		PH
L++003	59-26-1221	220 UF	100V EI		PH
L++004	59-05-1102	1 MF	15V PP		PH
L++005	59-05-1102	1 MF	15V PP		PH
L++006	59-05-1102	1 MF	15V PP		PH
L++007	59-05-1102	1 MF	15V PP		PH
L++008	59-05-1102	1 MF	15V PP		PH
L++009	59-05-1102	1 MF	15V PP		PH
D++001	50-04-0125	1N4448		ITT+PhSes+IT	
D++002	50-04-0125	1N4448		ITT+PhSes+IT	
D++003	50-04-0125	1N4448		ITT+PhSes+IT	
D++004	50-04-0512	1N5818	1N5819	Met	
IC-001	50-07-0004	MC14566CP	CD4566CE, 4556B PC	MotorcAPIC	
IC-002	50-11-0108	52 23A DE	52021A	Sik+Ph	
IC-003	50-01-0002	AD7524N	MP7524N	ADI+MS	
IC-004	50-04-0105	NE5324N	X85324N, 5532B	Sig+Ex+44	
IC-005	50-01-0002	AD7524N	MP7524N	ADI+MS	
IC-006	50-04-0105	NE5324N	X85324N, 5532B	Sig+Ex+44	
IC-007	50-04-0106	NE5324N	X85324N, 5532AN	Sig+Ex+44	
IC-008	50-01-0002	AD7524N	MP7524N	ADI+MS	
IC-009	50-04-0106	NE5324N	X85324N, 5532AN	Sig+Ex+44	
IC-010	50-04-0106	NE5324N	X85324N, 5532AN	Sig+Ex+44	
J++001	54-01-0307	10 cont.	AMP Nr. 163-683-B		
K++001	50-04-0171	3M D1012		ITT	
L++001	62-01-0128	1 OHM	Gowanda 18-104 or Deivan 2307-105		
L++002	1322-21400	1 MH	Filter coil 150 kHz	SE	
L++003	62-01-0128	1 OHM	Gowanda 18-104 or Deivan 2307-105		
L++004	62-01-0128	1 OHM	Gowanda 18-104 or Deivan 2307-105		

STUDER (00) 83/10/12 PB RECORD AMPLIFIER 1.820.712.81 PAGE 1

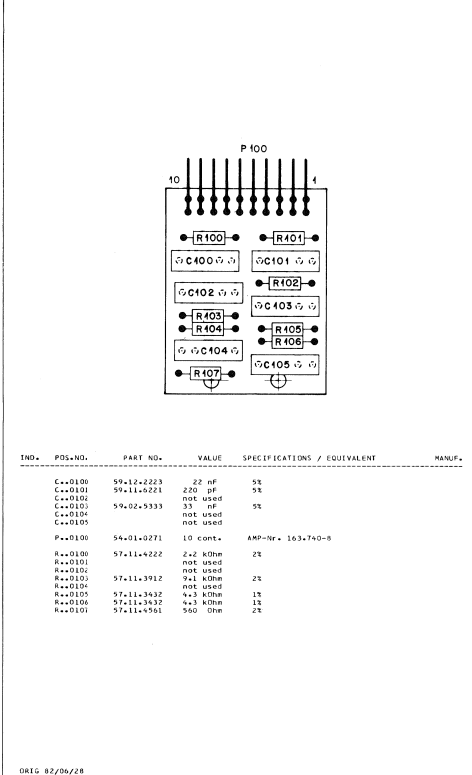
PUBLISHED: 08/86



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
P++001	54-12-0007	T cont.	AMP Mini Match System Nr. 164 713-7		
P++002	50-03-0329	P1228E	MP146		Six+TS
R++001	57-11-4102	1 KOHM			
R++002	57-11-4104	100 KOHM			
R++003	57-11-4105	1 KOHM			
R++004	57-11-4203	22 KOHM			
R++005	57-02-0100	10 KOHM			
R++006	57-11-4104	100 KOHM			
R++007	57-11-4102	1 KOHM			
R++008	57-11-4181	180 OHM			
R++009	57-11-4182	1.8 KOHM			
R++010	57-11-4422	8.2 KOHM			
R++011	57-11-4472	4.7 KOHM			
R++012	57-11-3757	7.5 KOHM			
R++013	57-11-4665	6.8 KOHM			
R++014	57-11-4462	5.6 KOHM			
R++015	57-11-4471	5.6 KOHM			
R++016	57-02-4109	10 KOHM			
R++017	57-11-4151	150 OHM			
R++018	57-11-4105	1 KOHM			
R++019	57-11-4101	100 OHM			
R++020	57-11-4104	100 KOHM			
R++021	57-11-4391	390 OHM			
R++022	57-11-3911	910 OHM			
R++023	57-11-3752	7.5 KOHM			
R++024	57-11-4105	1 KOHM			
R++025	57-11-3103	310 KOHM			
R++026	57-11-3132	1.3 KOHM			
R++027	57-11-3104	100 KOHM			
R++028	57-11-4732	2.7 KOHM			
R++029	57-11-3133	3.3 KOHM			
R++030	57-11-4124	120 KOHM			
R++031	57-11-4881	480 OHM			
R++032	57-11-3122	1.2 KOHM			
R++033	57-11-3155	15 KOHM			
R++034	57-11-3300	30 OHM			
R++035	57-11-4472	4.7 KOHM			
R++036	57-11-3132	1.3 KOHM			
R++037	57-11-4101	100 OHM			
R++038	57-11-4101	100 OHM			
R++039	57-11-4101	100 OHM			
R++040	57-11-4101	100 OHM			
R++041	57-11-3302	3 KOHM			
R++042	57-11-3302	3 KOHM			
R++043	57-11-4733	3.7 KOHM			
R++044	57-11-4101	100 OHM			
R++045	57-11-4103	100 OHM			
R++046	57-11-4103	100 OHM			
R++047	57-11-4103	100 OHM			
R++048	57-11-4103	100 OHM			
R++049	57-11-4101	100 OHM			
R++050	57-11-4101	100 OHM			
R++051	57-11-4472	4.7 KOHM			
R++052	57-11-4472	4.7 KOHM			
R++053	57-11-4101	100 OHM			
T++001	1-022-213-00		Rias Transformer, 150 kHz		SE

STUDER (00) 82/06/28 PB ADAPTATION BOARD 1.820.740.00 PAGE 1

PUBLISHED: 08/86



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++0100	59-12-2223	22 NF	5% Cc		
C++0101	59-11-6221	220 PF	not used		
C++0102	59-02-9333	33 PF	not used		
C++0103			not used		
C++0104			not used		
C++0105			not used		
P++0100	54-01-0271	10 cont.	AMP-Nr. 163-740-8		
R++0100	57-11-4202	2.2 KOHM	not used		
R++0101			not used		
R++0102			not used		
R++0103	57-11-3912	9.1 KOHM	not used		
R++0104			not used		
R++0105	57-11-3432	4.3 KOHM	not used		
R++0106	57-11-3432	4.3 KOHM	not used		
R++0107	57-11-4561	560 OHM	not used		

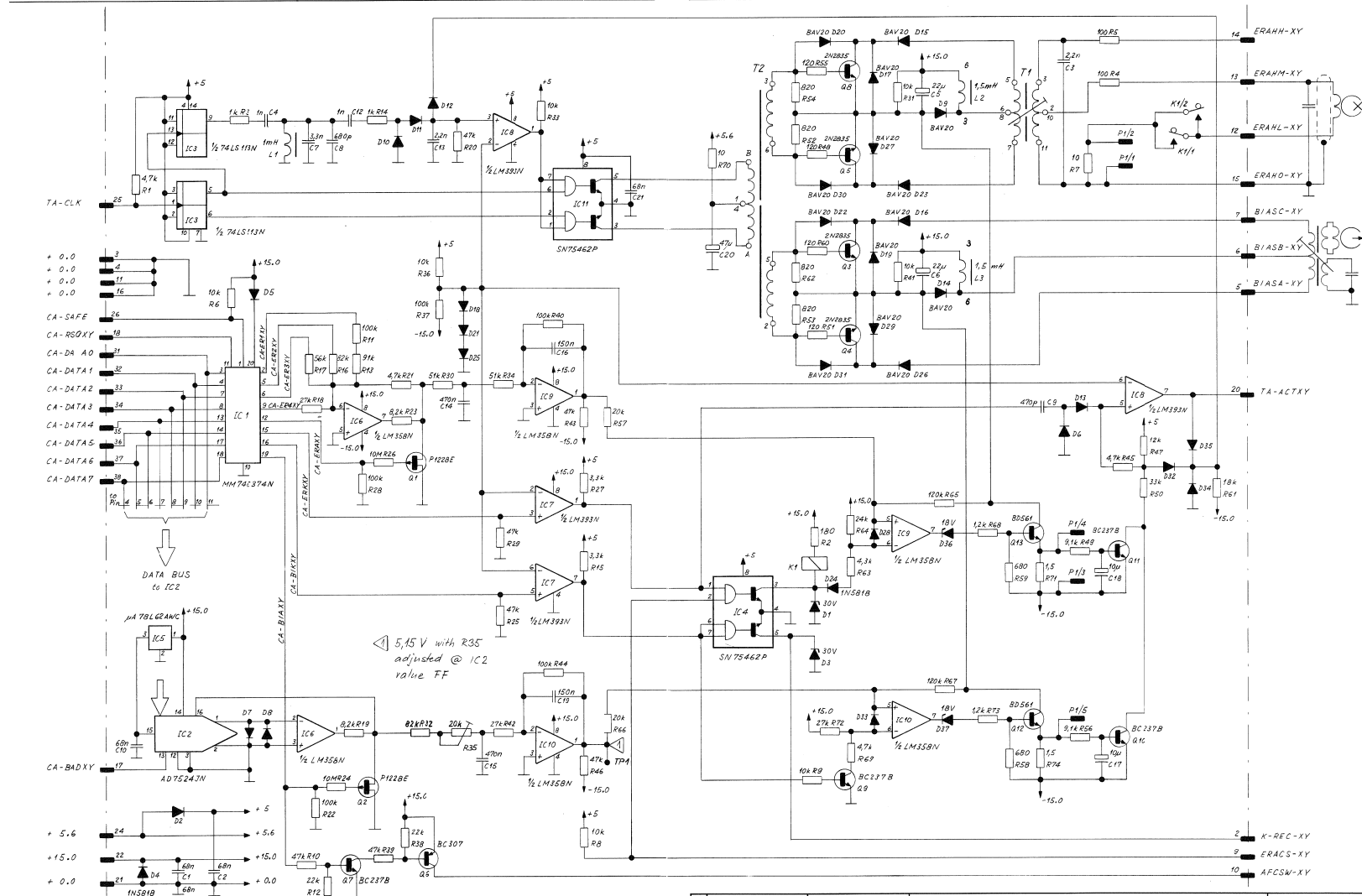
STUDER (00) 83/10/12 PB RECORD AMPLIFIER 1.820.712.81 PAGE 4

PUBLISHED: 08/86

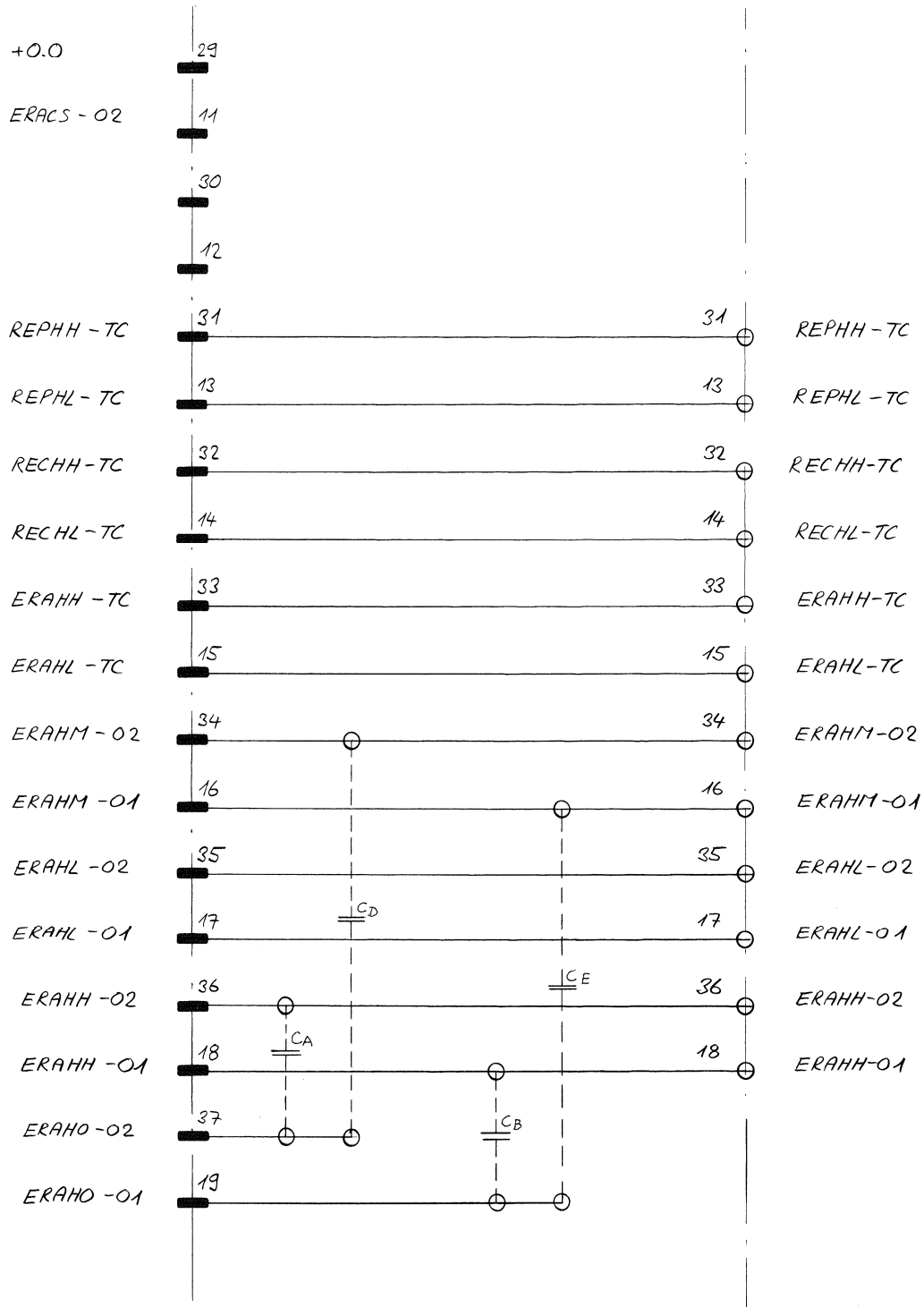
HF DRIVER PCB "ESE" 1.820.713.00 GRP 21/ELM 42,47

R	1	6	27 17 10	16	11 13	14	13	14	20	21	18	22	17	15	29	34	33	44	43	15	16	
C	10	11	2	4	7	8	12	13	14	15	16	19	21									

R	70	52	53	55	60	72	64	60	31	65	68	59	71	49	5	47	
C	20	54	62	7	48	51	63	41	67	73	58	74	56	7	4	50	61

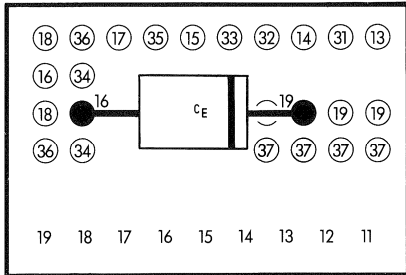


ERASE HEAD CONNECTION PCB 1.050.102.00 GRP 60/ELM 01



① 270285 We	○ ..	○ ..	○ ..	○ ..
	A 820 Audio Section			PAGE 1 OF 1
STUDER	Erase Head Connector		SC 1.050.102.00	

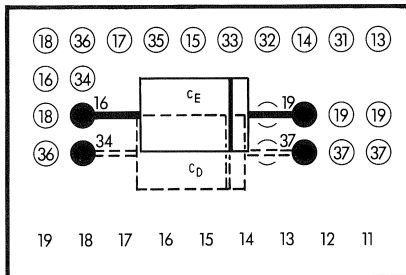
ERASE HEAD CONNECTION PCB 1.050.102.00 GRP 60/ELM 01



2 x ORIGINAL SIZE

- FOR A820 MONO VERSIONS AND STEREO VERSIONS WITHOUT VU-METERS
(A820-1, A820-1 VU, A820-0.75, A820-2 F)

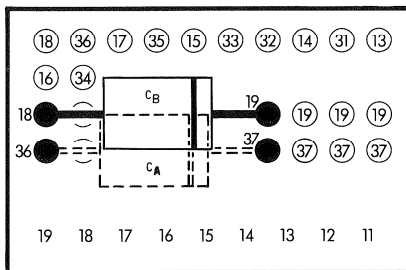
POS.NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
c _E	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 16/19	YES



2 x ORIGINAL SIZE

- FOR A820 STEREO VERSION WITH VU-METERS, 2-CHANNEL VERSIONS, AND
2-CHANNEL VERSIONS WITH TIME CODE
(A820-0.75 VU, A820-2, A820-2 VU, A820-2/2 VU, A820-2 TC,
A820-2 TC VU)

POS.NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
c _D	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 34/37	NO
c _E	59.04.9332	3.3 nF	5 %, 630 V, PP	Points 16/19	



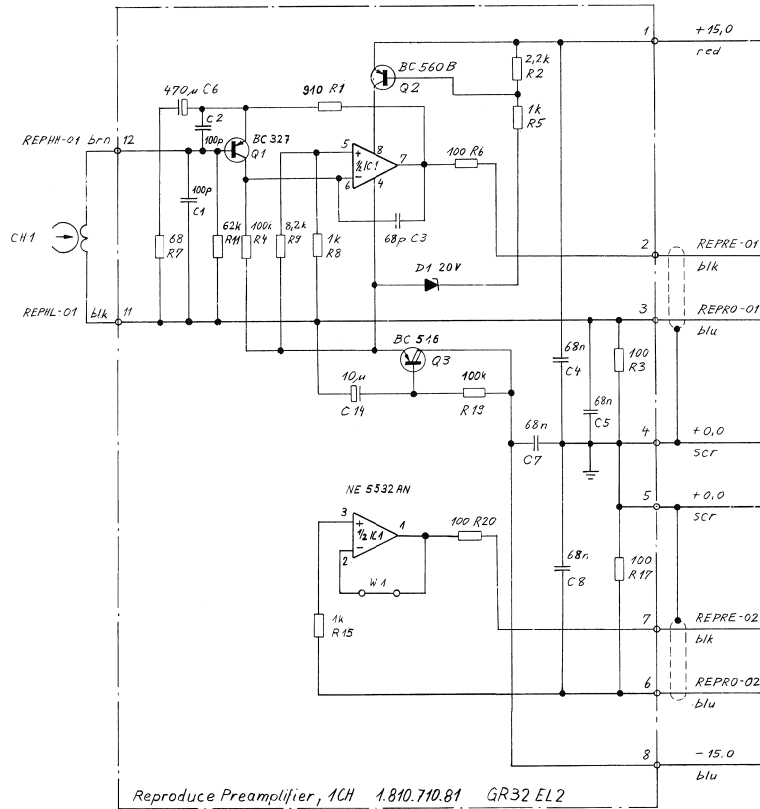
2 x ORIGINAL SIZE

- FOR A820 1/2" 2-CHANNEL VERSIONS
(A820-2/2-1/2" VU, A820-2/2-1/2" TC VU)

POS.NO.	PART NO.	VALUE	SPECIFICATIONS	CONNECTED TO	PIN NO. 11 GROUNDED
c _A	59.04.9271	270 pF	5 %, 630 V, PP	Points 36/37	NO
c _B	59.04.9271	270 pF	5 %, 630 V, PP	Points 18/19	

REPRODUCE PREAMPLIFIER PCB 1CH "ESE" 1.810.710.81 GRP 60/ELM 03

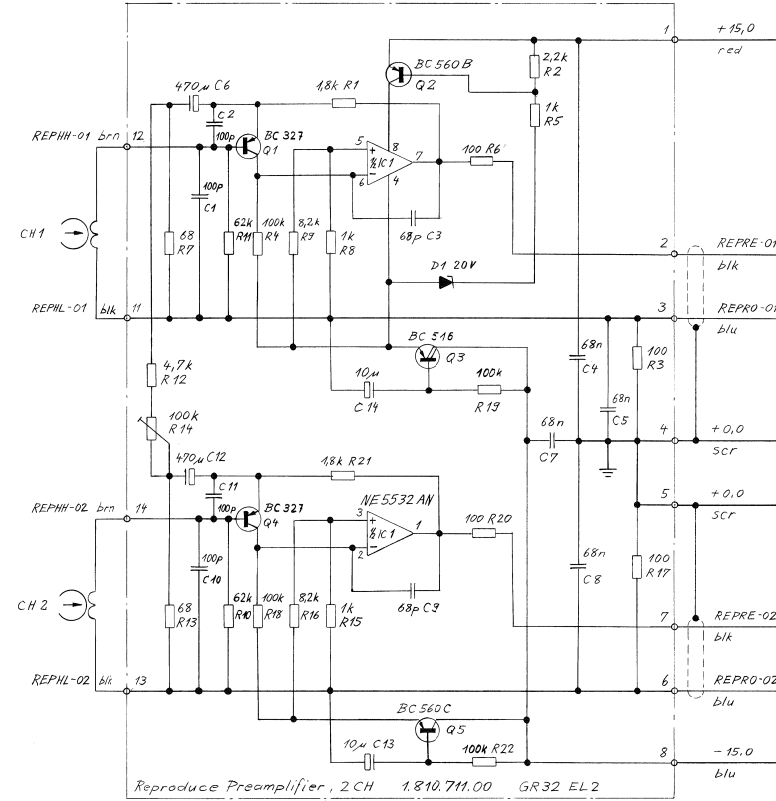
R	7	11	4	9	8,15,1	6,19,20	2,5	3,17
C	6,1,2		14		3		7,4,8,5	



09.03.83	B. Bernet		
STUDER	Reproduce Preamplifier 1CH	SC 1.810.710.81	PAGE 1 OF 1

REPRODUCE PREAMPLIFIER PCB 2CH "ESE" 1.810.711.81 GRP 60/ELM 03

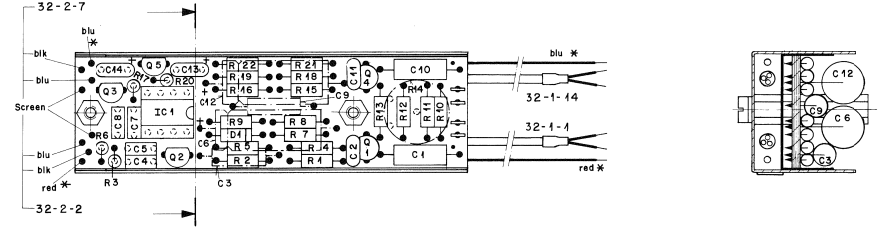
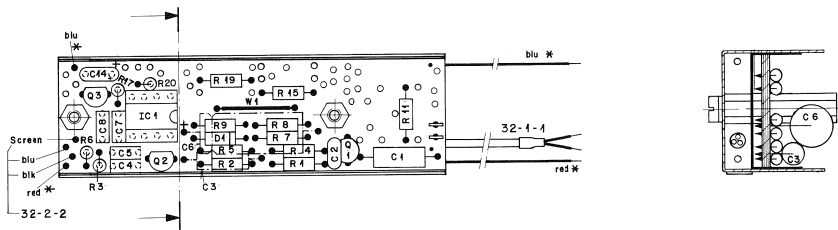
R	12,7	11	4	9	8,1	5	19	2	3
C	14,13	10	18	16	15,21	20	22	5	17
	6,12,2,11,1,10		14,13,3,3,1		7,4,8,5				



09.03.83	B. Bernet		
STUDER	Reproduce Preamplifier 2CH	SC 1.810.711-81	PAGE 1 OF 1

REPRODUCE PREAMPLIFIER PCB 1CH "ESE" 1.810.710.81 GRP 60/ELM 03

REPRODUCE PREAMPLIFIER PCB 2CH "ESE" 1.810.711.81 GRP 60/ELM 03



IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****1	59-08-7101	100 pF	2.5%	PP	FR0+NSF+Sie
C****2	59-99-0622	100 pF		Ce	FR0+NSF+Sie
C****3	59-04-9080	68 pF		PP	
C****4	59-99-0205	68 nF		Ce	
C****5	59-99-0205	68 nF		Ce	
C****6	59-25-1471	470 uF		6.3V+ E1	
C****7	59-99-0205	68 nF		Ce	
C****8	59-99-0205	68 nF		Ce	
C****9	59-26-2100	10 uF		16V+ Sal	Ph
D****1	50-04-1109	20 V Z	BZX83C 20, BZX55C 20, ZPD 20		ITT+Sus
IC****1	50-09-0106	NESS32AN	X85532AN, 5532ANB		Ex+Ra+Sig
Q****1	50-03-0625	BC327			Sie
Q****2	50-03-0615	BC307B	BC251B, BC557B, BC560B		ITT+Mot+Phi+TF+T
Q****3	50-03-0496	BC327			Sie+IT
R****1	57-11-3911	910 Ohm			
R****2	57-11-4222	2.2 kOhm			
R****3	57-11-4101	100 kOhm			
R****4	57-11-4104	100 kOhm			
R****5	57-11-4102	1 kOhm			
R****6	57-11-4101	100 Ohm			
R****7	57-11-4080	68 Ohm			
R****8	57-11-4102	1 kOhm			
R****9	57-11-4022	8.2 kOhm			
R****10	57-11-3923	92 kOhm			
R****11	57-11-4102	1 kOhm			
R****12	57-11-4101	100 Ohm			
R****13	57-11-4104	100 kOhm			
R****14	57-11-4101	100 Ohm			
R****15	57-11-4104	100 kOhm			
R****16	57-11-4101	100 Ohm			
R****17	57-11-4104	100 kOhm			
R****18	57-11-4104	100 kOhm			
R****19	57-11-4101	100 Ohm			
R****20	57-11-4101	100 Ohm			
R****01			Wire bridge		

S T U D E R (00) 83/03/02 081 REPRODUCE PREAMPLIFIER, 1 CH 1.810.710.81 PAGE 1

IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Following components are not used:					
C	0091, 0010, 0011, 0012, 0013,				
D	0094, 0095,				
R	0014, 0012, 0013, 0014, 0014, 0014, 0021, 0022,				
Cer=Ceramic; El=Electrolytic; PP=Polypropylen; Sal=Solid aluminium					
MANUFACTURER: ER0=Er. Rooderite n. Ex=Exar. ITT=Intermetall.					
NSI=AdCoTelefunken; M=Mut=Motorola. Phi=Philips.					
Ra=Raytheon. Sem=Semicon. Sie=Siemens. Sig=Signetics.					
TF=Telefunken. IT=Texas Instruments					

ORIG 83/03/02
S T U D E R (00) 83/03/02 081 REPRODUCE PREAMPLIFIER, 1 CH 1.810.710.81 PAGE 2

IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****001	59-08-7101	100 pF	2.5%	PP	
C****002	59-99-0622	100 pF		Ce	
C****003	59-04-9080	68 pF		PP	
C****004	59-99-0205	68 nF		Ce	
C****005	59-99-0205	68 nF		Ce	
C****006	59-25-1471	470 uF		6.3V+ E1	
C****007	59-99-0205	68 nF		Ce	
C****008	59-99-0205	68 nF		Ce	
C****009	59-04-9080	68 pF		PP	
C****010	59-08-7101	100 pF	2.5%	PP	
C****011	59-99-0622	100 pF		Ce	
C****012	59-25-1471	470 uF		6V+ E1	Ph
C****013	59-26-2100	10 uF		16V+ Sal	Ph
C****014	59-26-2100	10 uF		16V+ Sal	Ph
D****001	50-04-1109	20 V Z	BZX83C 20, BZX55C 20, ZPD 20		ITT+Sus
IC****001	50-09-0106	NESS32AN	X85532AN, 5532ANB		Ex+Ra+Sig
Q****001	50-03-0625	BC327			Sie
Q****002	50-03-0715	BC307B	BC251B, BC557B, BC560B		ITT+Mot+Phi+TF+T
Q****003	50-03-0496	BC327			Sie+IT
Q****004	50-03-0625	BC327			Sie
Q****005	50-03-0496	BC560C			Mot+Phi+Sie+TF
R****001	57-11-4192	1.8 kOhm			
R****002	57-11-4222	2.2 kOhm			
R****003	57-11-4101	100 Ohm			
R****004	57-11-4104	100 kOhm			
R****005	57-11-4102	1 kOhm			
R****006	57-11-4101	100 Ohm			
R****007	57-11-4080	68 Ohm			
R****008	57-11-4102	1 kOhm			
R****009	57-11-4022	8.2 kOhm			
R****010	57-11-3923	92 kOhm			
R****011	57-11-4102	1 kOhm			
R****012	57-11-4101	100 Ohm			
R****013	57-11-4104	100 kOhm			
R****014	57-11-4104	100 kOhm			
R****015	57-11-4102	1 kOhm			
R****016	57-11-4022	8.2 kOhm			
R****017	57-11-4101	100 Ohm			
R****018	57-11-4104	100 kOhm			
R****019	57-11-4104	100 kOhm			
R****020	57-11-4101	100 Ohm			
R****021	57-11-4102	1 kOhm			
R****022	57-11-4104	100 kOhm			

S T U D E R (00) 83/03/02 081 REPRODUCE PREAMPLIFIER, 2 CH 1.810.711.81 PAGE 1

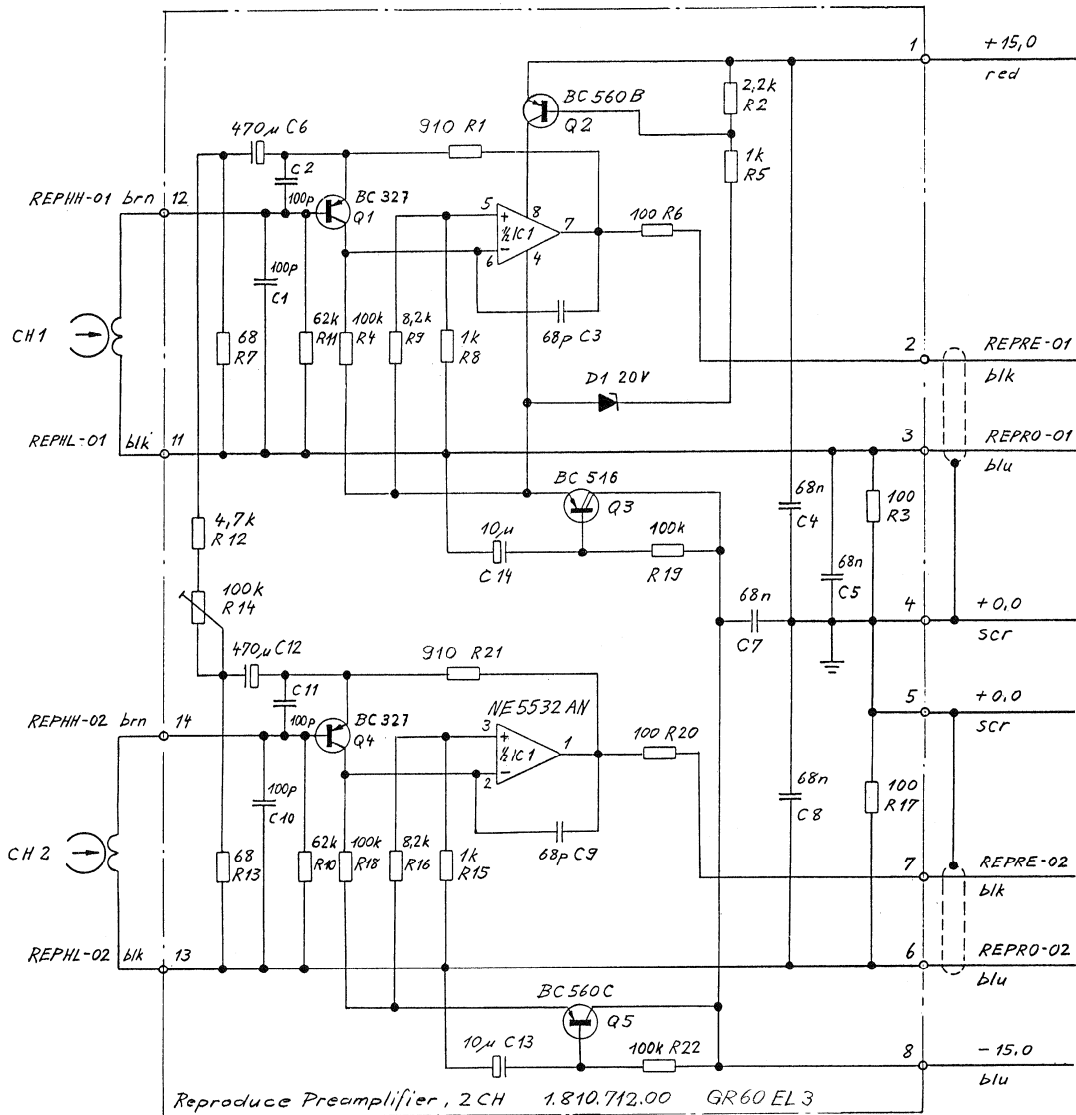
IND.	PDS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****013	57-11-4680	68 Ohm			
R****014	58-01-4104	100 kOhm			Sew note 1
R****015	57-11-4102	1 kOhm			
R****016	57-11-4022	8.2 kOhm			
R****017	57-11-4101	100 Ohm			
R****018	57-11-4104	100 kOhm			
R****019	57-11-4104	100 kOhm			
R****020	57-11-4101	100 Ohm			
R****021	57-11-4102	1 kOhm			
R****022	57-11-4104	100 kOhm			

Note 1 = 100 kOhm Potentiometer - 10% - 10k
Allen Bradley Inc. V6 15A A
Cer=Ceramic; El=Electrolytic; PP=Polypropylen; Sal=Solid aluminium
MANUFACTURER: Ex=Exar. ITT=Intermetall. Mut=Motorola. Phi=Philips.
Ra=Raytheon. Sem=Semicon. Sie=Siemens. Sig=Signetics.
TF=Telefunken. IT=Texas Instruments

ORIG 83/03/02
S T U D E R (00) 83/03/02 081 REPRODUCE PREAMPLIFIER, 2 CH 1.810.711.81 PAGE 2

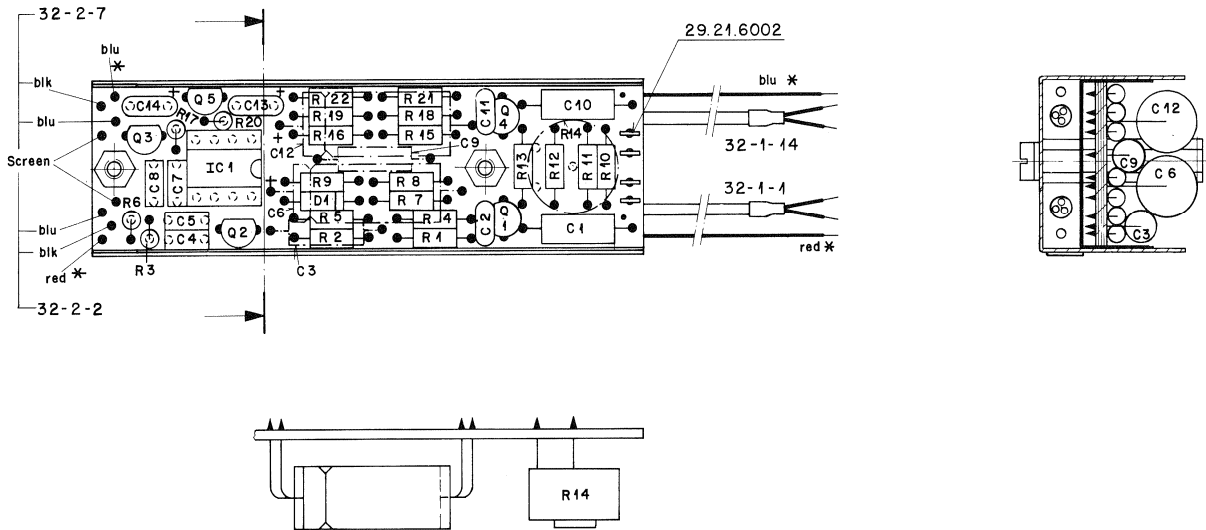
REPRODUCE PREAMPLIFIER PCB 2CH 1/2" "ESE" 1.810.712.00 GRP 60/ELM 03

R	12, 7, 14, 13,	11, 10,	4, 18,	9, 16,	8, 1, 15, 21,	6, 20,	19, 22,	2, 5,	3, 17,
C	6, 12, 2, 11, 1, 10				14, 13, 3, 9,			7, 4, 8, 5	



12.7.85	Gä	A 820 Audio Section	Part of GR 60
STUDER	Reproduce Preamplifier 2 CH/0,5"	SC	1.810.712-00 PAGE 1 OF 1

REPRODUCE PREAMPLIFIER PCB 2CH 1/2" "ESE" 1.810.712.00 GRP 60/ELM 03



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C..0001	59.09.7101	100 pF	2,5%	PP		R..0013	57.11.4680	68 Ohm			
C..0002	59.99.0622	100 pF		Ce		R..0014	59.01.4104	100 kOhm	See note 1		
C..0003	59.04.9680	68 pF		PP		R..0015	57.11.4102	1 kOhm			
C..0004	59.99.0205	68 nF		Ce		R..0016	57.11.4822	8.2 kOhm			
C..0005	59.99.0205	68 nF		Ce		R..0017	57.11.4101	100 Ohm			
C..0006	59.25.1471	470 uF		6.3V, EI		R..0018	57.11.4104	100 kOhm			
C..0007	59.99.0205	68 nF		Ce		R..0019	57.11.4104	100 kOhm			
C..0008	59.99.0205	68 nF		Ce		R..0020	57.11.4101	100 Ohm			
C..0009	59.04.9680	68 pF		PP		R..0021	57.11.3911	910 Ohm			
C..0010	59.08.7101	100 pF		PP		R..0022	57.11.4104	100 kOhm			
C..0011	59.99.0622	100 pF	2,5%	Ce							
C..0012	59.25.1471	470 uF		6V, EI							
C..0013	59.26.2100	10 uF		16V, Sal	Ph						
C..0014	59.26.2100	10 uF		16V, Sal	Ph						
D..0001	50.04.1109	20 V Z		BZX83C 20, BZX55C 20, ZPD 20	ITT,Ses						
IC.0001	50.09.0106	NE5532AN		XR5532AN, 5532ANB	Ex,Ra,Sig						
Q..0001	50.03.0625	BC327			Sie						
Q..0002	50.03.0515	BC307B		BC2515, BC557B, BC560B	ITT,Mot,Ph,Tf,TI						
Q..0003	50.03.0448	BC516			Sie,TI						
Q..0004	50.03.0625	BC327			Sie						
Q..0005	50.03.0496	BC560C			Mot,Ph,Sie,Tf						
R..0001	57.11.3911	910 Ohm									
R..0002	57.11.4222	2.2 kOhm									
R..0003	57.11.4101	100 Ohm									
R..0004	57.11.4104	100 kOhm									
R..0005	57.11.4102	1 kOhm									
R..0006	57.11.4101	100 Ohm									
R..0007	57.11.4680	68 Ohm									
R..0008	57.11.4102	1 kOhm									
R..0009	57.11.4822	8.2 kOhm									
R..0010	57.11.3623	62 kOhm	1%								
R..0011	57.11.3623	62 kOhm	1%								
R..0012	57.11.4472	4.7 kOhm									

Note 1 - 100 kOhm Potentiometer *log, 10%
Allen Bradley Nr. YR 104 A

Ce=Ceramic, EI=Electrolytic, PP=Polypropylen, Sal=Solid aluminium

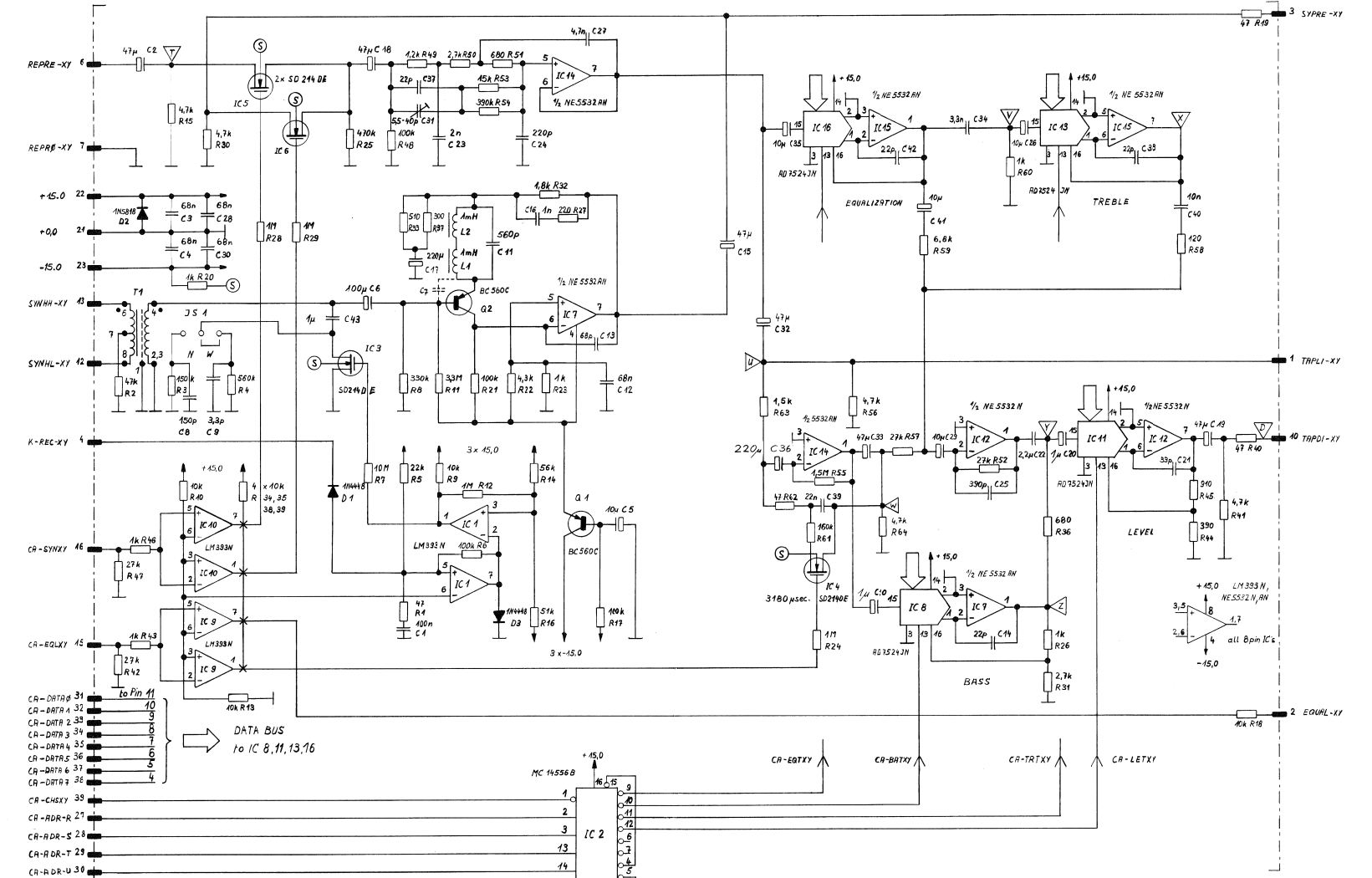
MANUFACTURER: Ex=Exar, ITT=Intermetall, Mot=Motorola, Ph=Philips,
Ra=Raytheon, Ses=Secosem, Sie=Siemens, Sig=Signetics,
Tf=Telefunken, TI=Texas Instruments

DRIG 85/01/30

REPRODUCE AMPLIFIER PCB "ESE" 1.820.710.82 GRP 21/ELM 44,49

R	2,42	66	4	40	20	30	4,31,35	23	22	25	7	48	8,13	3	80	12,21,52,51	4	22	23	17
C	2	1	8	33	33	33	33,35,36	33	33	43	18,6	4	31	33	7	41	24	16	37	12,8

R	63	62	61,88	56	64	57	59	52	60	26,31	58	45	41	48
C	15	21,26,35	39	33,10	42	41,29	34	26	22	20	38	24,40	19	49

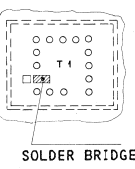
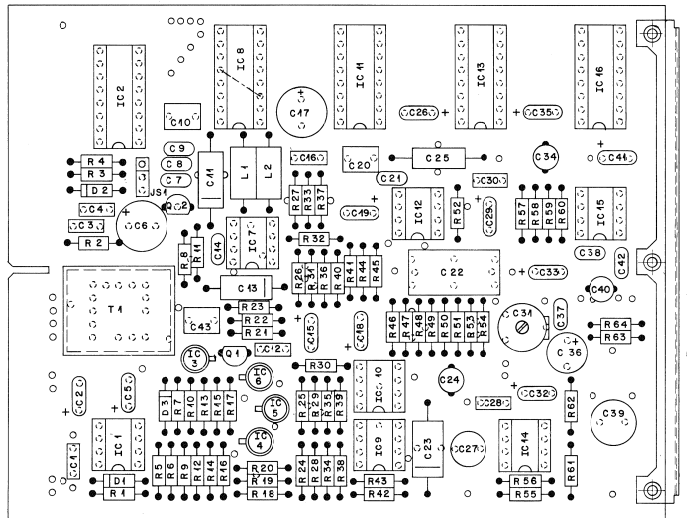


- CA-DATA 8 31
 - CA-DATA 1 32
 - CA-DATA 2 33
 - CA-DATA 3 34
 - CA-DATA 4 35
 - CA-DATA 5 36
 - CA-DATA 6 37
 - CA-DATA 7 38
 - CA-CHEX 39
 - CA-ADR-R 27
 - CA-ADR-S 28
 - CA-ADR-T 29
 - CA-ADR-U 30
 - CA-LSWXY 17
- DATA BUS
to IC 8, 11, 13, 16

12.10.83	Gämperte	A 820 / A 840	Audio Section
STUDER	Reproduce Amplifier	SC 1.820.710-82	PAGE 4 OF 4

REPRODUCE AMPLIFIER PCB "ESE" 1.820.710.82 GRP 21/ELM 44,49

COMPONENT SIDE
REPRODUCE AMPLIFIER
1.820.710-82



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L++0001	59.06.5104	0.1 uF	5%	63V PEFP	
L++0002	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0003	59.26.2205	88 pF	1%	6.3V x PP	
L++0004	59.49.2205	88 pF	-20%	6.3V x Cer	
L++0005	59.26.2100	10 uF	1%	15V x 50l	PH
L++0006	59.26.2101	100 uF	-20%	25V x 4 EL	
L++0007		not used			
L++0008	59.34.2151	150 pF	2%	N150 x Cer	
L++0009	59.34.2159	31 pF	1%	N150 x Cer	
L++0010	59.26.2105	1 uF	1%	6.3V x PEFP	
L++0011	59.12.7561	900 pF	1%	6.3V x PS	
L++0012	59.49.2205	88 pF	-20%	6.3V x Cer	
L++0013	59.06.9800	88 pF	1%	6.3V x PP	
L++0014	59.34.2220	22 pF	1%	N150 x Cer	
L++0015	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0016	59.06.2102	1 uF	1%	15V x 50l	PH
L++0017	59.22.2221	220 uF	-10%	6.3V x 50l	PH
L++0018	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0019	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0020	59.06.2105	1 uF	1%	6.3V x PEFP	
L++0021	59.34.2330	33 pF	1%	N150 x Cer	
L++0022	59.06.2125	2.2 uF	1%	6.3V x MFC	
L++0023	59.12.7202	2 nF	1%	6.3V x PS	
L++0024	59.06.2121	220 pF	1%	6.3V x PP	
L++0025	59.12.7391	390 pF	1%	6.3V x PS	
L++0026	59.26.2100	10 uF	-20%	10V x 50l	PH
L++0027	59.06.1472	4.7 nF	1%	6.3V x PP	PH
L++0028	59.26.2105	68 pF	-20%	6.3V x Cer	
L++0029	59.26.2100	10 uF	-20%	10V x 50l	PH
L++0030	59.26.2100	68 pF	-20%	6.3V x Cer	
L++0031	59.16.3108	40 pF		Trimmer capacitor, Philips Nr. 2222.808.32409	
L++0032	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0033	59.26.3470	47 uF	-20%	6.3V x 50l	PH
L++0034	59.06.1132	3.3 pF	1%	6.3V x PP	
L++0035	59.26.2100	10 uF	-20%	10V x 50l	PH
L++0036	59.22.2121	220 uF	-20%	10V x EL	
L++0037	59.34.2220	22 pF	1%	N150 x Cer	

S T U D E R (00) 83/10/12 BBT REPRODUCE AMPLIFIER 1.820.710.82 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0010	57.11.4403	10 kOhm	5%		
R++0040	57.11.4470	47 Ohm	5%		
R++0041	57.11.4472	4.7 kOhm	5%		
R++0042	57.11.4273	27 kOhm	5%		
R++0043	57.11.4102	1 kOhm	5%		
R++0044	57.11.4371	390 Ohm	5%		
R++0045	57.11.3911	910 Ohm	5%		
R++0046	57.11.4102	1 kOhm	5%		
R++0047	57.11.4273	27 kOhm	5%		
R++0048	57.11.4104	100 kOhm	5%		
R++0049	57.11.3122	1.2 kOhm	5%		
R++0050	57.11.3272	2.7 kOhm	5%		
R++0051	57.11.3601	680 Ohm	5%		
R++0052	57.11.4273	27 kOhm	5%		
R++0053	57.11.3153	15 kOhm	5%		
R++0054	57.11.4376	390 kOhm	5%		
R++0055	57.11.5155	1.5 MOhm	5%		
R++0056	57.11.4472	4.7 kOhm	5%		
R++0057	57.11.4273	27 kOhm	5%		
R++0058	57.11.4471	4.7 kOhm	5%		
R++0059	57.11.4602	6.8 kOhm	5%		
R++0060	57.11.4102	1 kOhm	5%		
R++0061	57.11.3166	160 kOhm	5%		
R++0062	57.11.4470	4.7 kOhm	5%		
R++0063	57.11.3152	1.5 kOhm	5%		
R++0064	57.11.4472	4.7 kOhm	5%		

S T U D E R (00) 83/10/12 BBT REPRODUCE AMPLIFIER 1.820.710.82 PAGE 4

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
L++0038	59.34.2220	22 pF	1%	N150 x Cer	
L++0039	59.06.2123	22 pF	1%	6.3V x PP	
L++0040	59.06.1103	10 nF	1%	6.3V x PP	PH
L++0041	59.26.2100	10 uF	-20%	10V x 50l	
L++0042	59.34.2220	22 pF	1%	N150 x Cer	
L++0043	59.06.2125	1 uF	1%	6.3V x PEFP	
S++0001	50.04.0125	IN 4448			
S++0002	50.04.0512	IN 5818	1+	30 V	
S++0003	50.04.0511	IN 5848			
IC++0001	50.05.0283	LM393N			NS:TI
IC++0002	50.07.0004	CD4558B	MC 14	556B, 4556B	RC:A:Mot+FC
IC++0003	50.11.3104	SD 214 DE	BD 214		Ph:Si
IC++0004	50.11.4106	SD 214 DE	BD 214		Ph:Si
IC++0005	50.11.4106	SD 214 DE	BD 214		Ph:Si
IC++0006	50.11.4106	SD 214 DE	BD 214		Ph:Si
IC++0007	50.09.5522	NES522AN	AR 5522AN	5532ANB	Si:G:FA:Ro
IC++0008	50.07.4002	AD7524JN	MP 7524	JN	ADI:MP
IC++0009	50.09.4105	LM393N			NS:TI
IC++0010	50.05.0283	LM393N			NS:TI
IC++0011	50.09.4105	NES522AN	MP 7524	JN	ADI:MP
IC++0012	50.09.4105	NES522AN	AR 5532	AN 5532 NB	Si:G:FA:Ro
IC++0013	50.07.4002	AD7524JN	MP 7524	JN	ADI:MP
IC++0014	50.09.4106	NES522AN	AR 5532AN	5532ANB	Si:G:FA:Ro
IC++0015	50.09.4106	NES522AN	AR 5524N	5532ANB	Si:G:FA:Ro
IC++0016	50.07.4002	AD7524JN	MP 7524	JN	ADI:MP
JS++0001			See note 1		
L++0001	62.01.0128	1 M	Gowand Nr. 17-104	Delevan Nr. 1641-105	
L++0002	62.01.0128	1 M	Gowand Nr. 17-104	Delevan Nr. 1641-105	
S++0001	50.03.0006	IC560			Si:G:FA:Ro
S++0002	50.03.0496	IC560			Si:G:FA:Ro
R++0001	57.11.4470	47 Ohm	5%		Si:G:FA:Ro

S T U D E R (00) 83/10/12 BBT REPRODUCE AMPLIFIER 1.820.710.82 PAGE 2

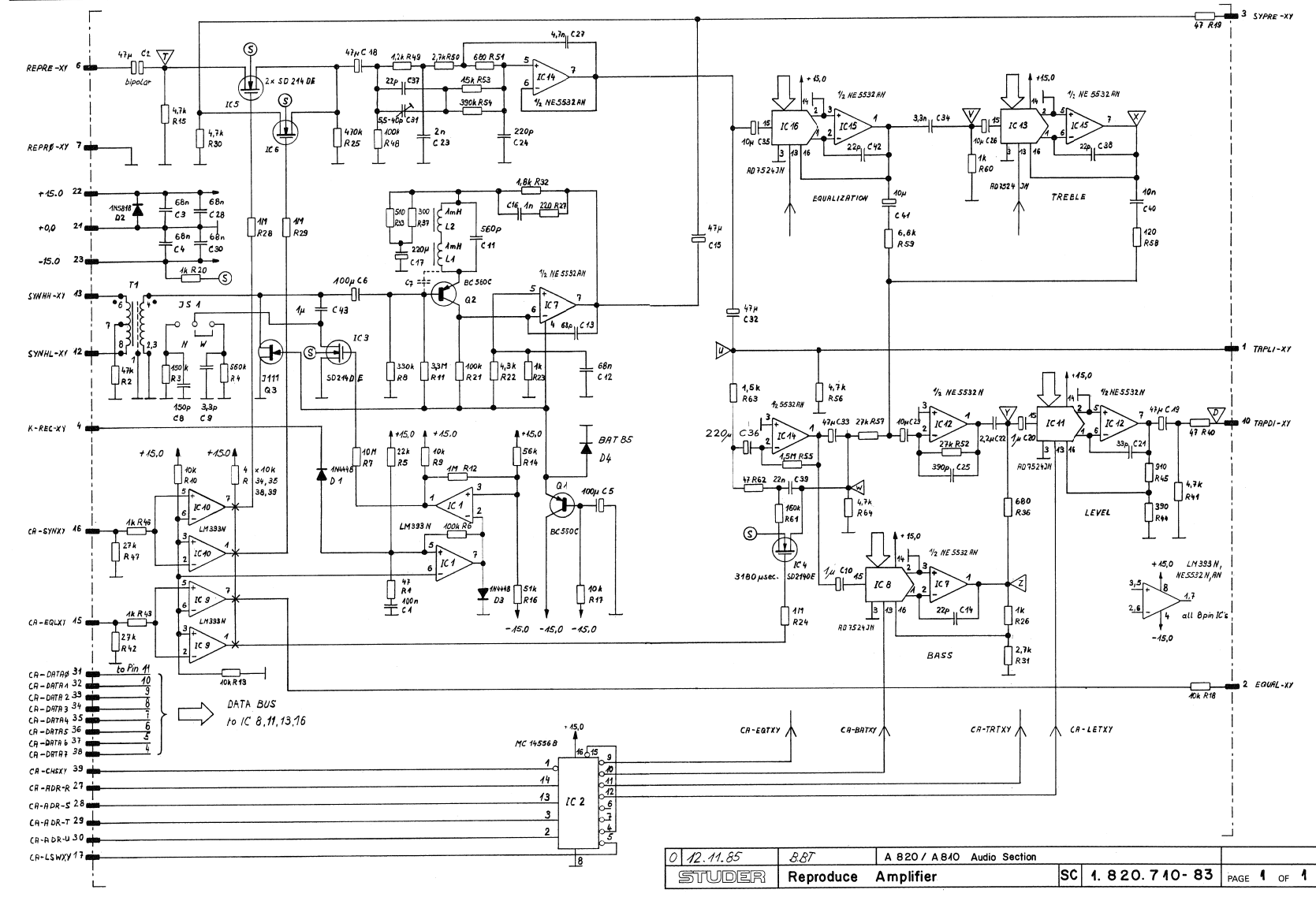
IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0002	57.11.4473	47 kOhm	5%		
R++0003	57.11.4154	150 kOhm	5%		
R++0004	57.11.4404	240 kOhm	5%		
R++0005	57.11.4223	22 kOhm	5%		
R++0006	57.11.4104	100 kOhm	5%		
R++0007	57.11.4106	10 kOhm	5%		
R++0008	57.11.4154	150 kOhm	5%		
R++0009	57.11.4103	10 kOhm	5%		
R++0010	57.11.4103	10 kOhm	5%		
R++0011	57.11.4355	3.3 kOhm	5%		
R++0012	57.11.4405	1 kOhm	5%		
R++0013	57.11.4103	10 kOhm	5%		
R++0014	57.11.4403	56 kOhm	5%		
R++0015	57.11.4472	4.7 kOhm	5%		
R++0016	57.11.3153	15 kOhm	5%		
R++0017	57.11.4104	100 kOhm	5%		
R++0018	57.11.4103	10 kOhm	5%		
R++0019	57.11.4470	47 Ohm	5%		
R++0020	57.11.4102	1 kOhm	5%		
R++0021	57.11.4104	100 kOhm	5%		
R++0022	57.11.4102	4.3 kOhm	5%		
R++0023	57.11.4102	1 kOhm	5%		
R++0024	57.11.4105	1 kOhm	5%		
R++0025	57.11.4474	470 kOhm	5%		
R++0026	57.11.4102	1 kOhm	5%		
R++0027	57.11.4221	220 Ohm	5%		
R++0028	57.11.4105	1 kOhm	5%		
R++0029	57.11.4105	1 kOhm	5%		
R++0030	57.11.4174	4.7 kOhm	5%		
R++0031	57.11.4272	2.7 kOhm	5%		
R++0032	57.11.4102	1.4 kOhm	5%		
R++0033	57.11.3911	910 Ohm	5%		
R++0034	57.11.4103	10 kOhm	5%		
R++0035	57.11.4103	10 kOhm	5%		
R++0036	57.11.4101	840 Ohm	5%		
R++0037	57.11.3301	300 Ohm	5%		
R++0038	57.11.4103	10 kOhm	5%		

S T U D E R (00) 83/10/12 BBT REPRODUCE AMPLIFIER 1.820.710.82 PAGE 3

REPRODUCE AMPLIFIER PCB "ESE" 1.820.710.83 GRP 21/ELM 44,49

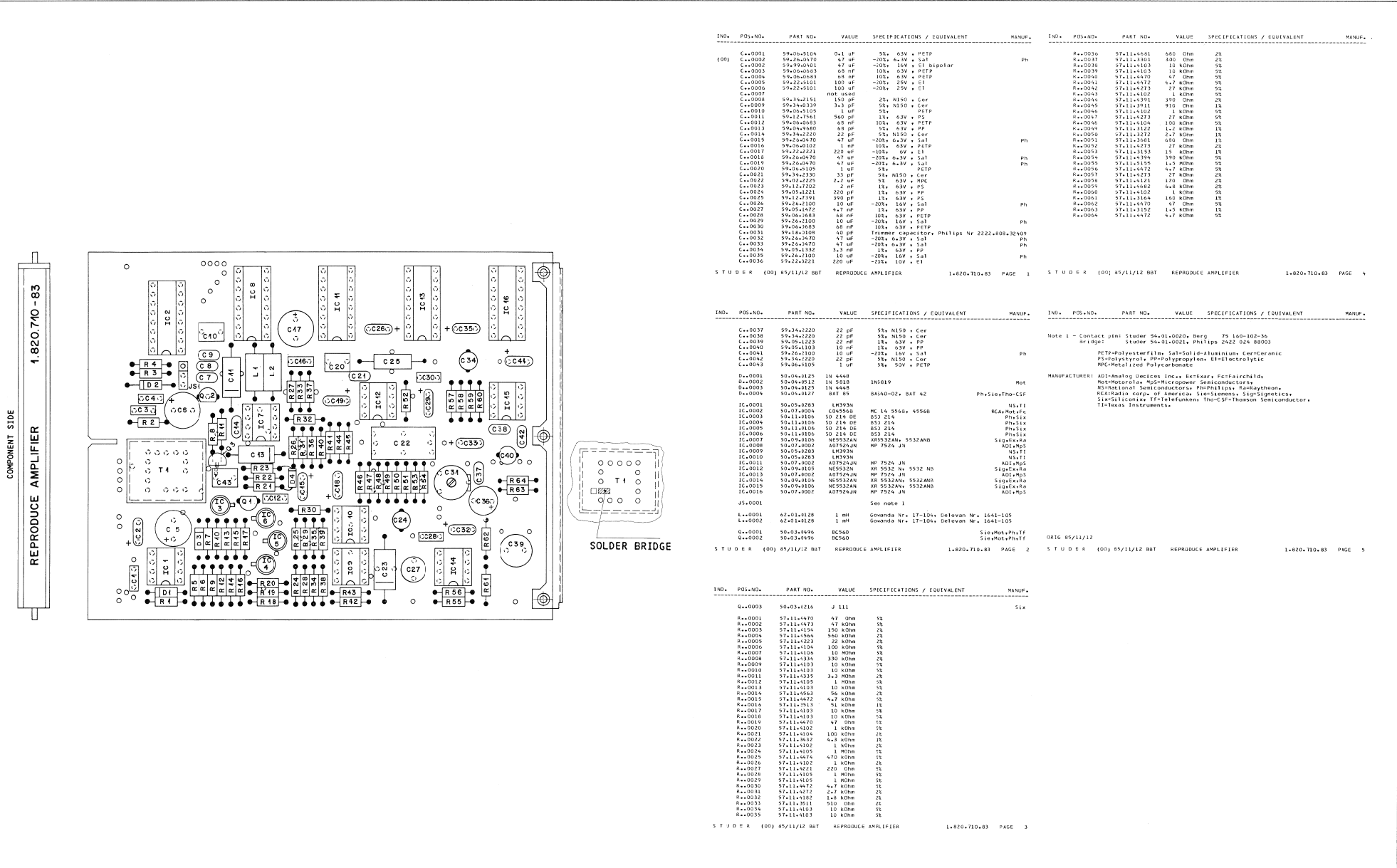
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C	2	3	4	8	28	30	9	43	48,6	49	51	52	53	54	55	56	57	58	59	60	61

R	63	62	61,85	58	64	57	59	52	60	38	28,31	38	45	41	49	40,18
C	15	23,26,35	39	33,10	42	41,29	34	22	22	28	22	20	38	24,10	19	

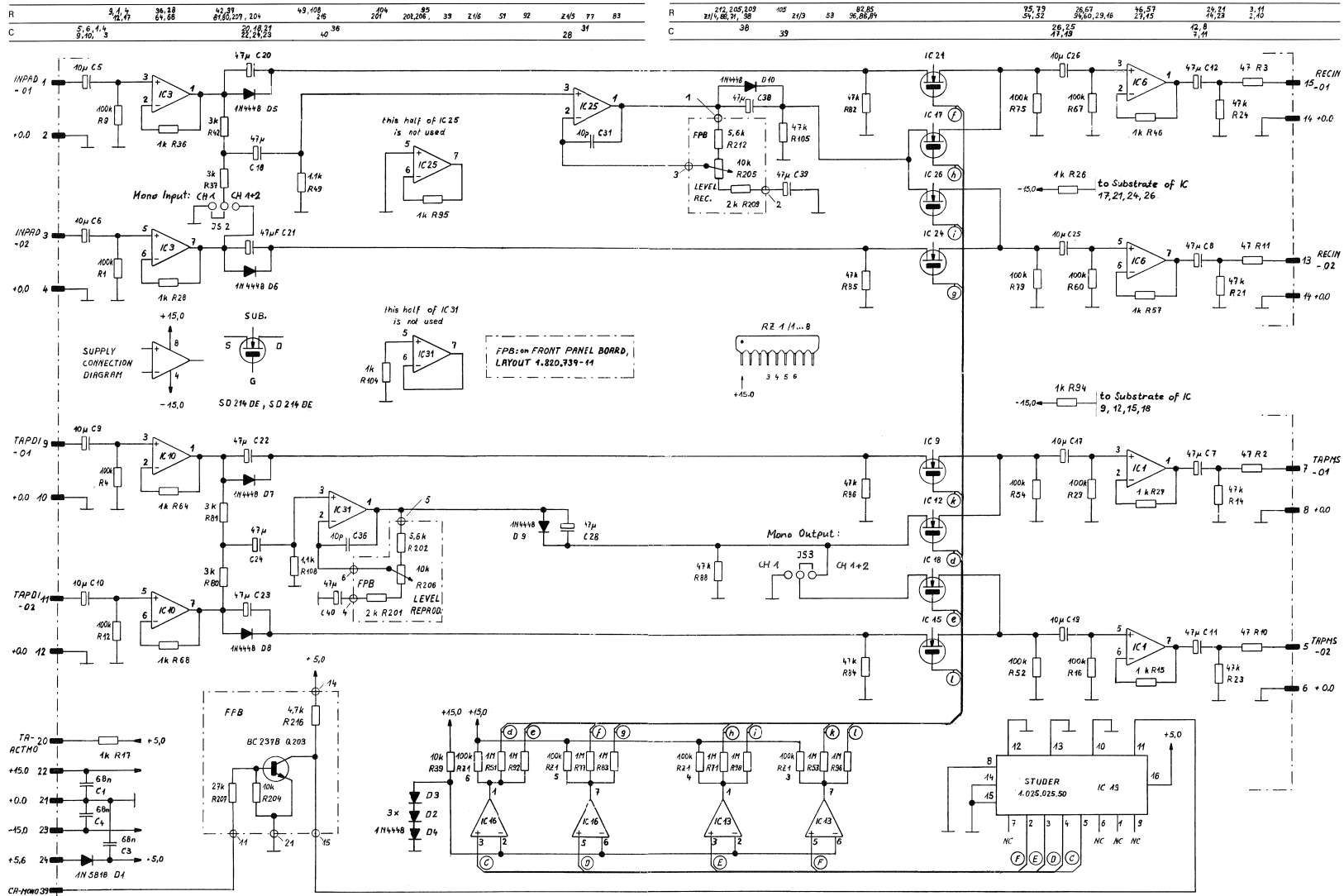


0 12.11.85	887	A 820 / A840 Audio Section	SC 1.820.710-83	PAGE 1 OF 1
STUDER	Reproduce Amplifier			

REPRODUCE AMPLIFIER PCB "ESE" 1.820.710.83 GRP 21/ELM 44,49

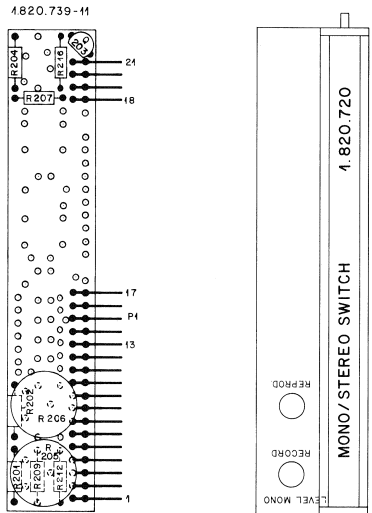
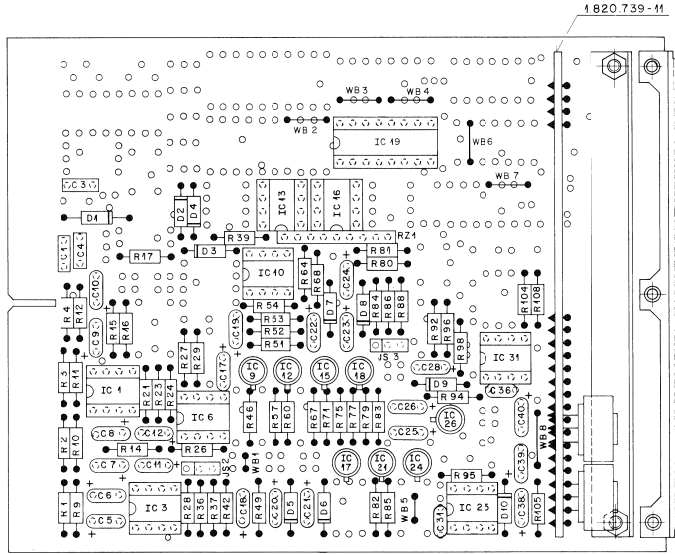


MONO/STEREO SWITCH PCB "ESE" 1.820.720.00 GRP 21/ELM 46
 - FRONT PANEL PCB 1.820.739.11



17.03.82	S. Berni	A820/B10 Audio Section	
STUDER	Mono Stereo Switch	SC 1.820.720-00	PAGE 1 OF 1

MONO/STEREO SWITCH PCB "ESE" 1.820.720.00 GRP 21/ELM 46
 - FRONT PANEL PCB 1.820.739.11



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++0001		59-09-0205	68 nF	-20%, 63V, Co	
C++0003		59-09-0205	68 nF	-20%, 63V, Co	
C++0004		59-09-0205	68 nF	-20%, 63V, Co	
C++0005		59-26-0100	10 uF	-20%, 16V, Sol	
C++0006		59-26-0100	10 uF	-20%, 16V, Sol	
C++0007		59-26-0470	47 uF	-20%, 63V, Sol	
C++0008		59-26-0470	47 uF	-20%, 63V, Sol	
C++0009		59-26-0100	10 uF	-20%, 16V, Sol	
C++0010		59-26-0100	10 uF	-20%, 16V, Sol	
C++0011		59-26-0470	47 uF	-20%, 63V, Sol	
C++0012		59-26-0470	47 uF	-20%, 63V, Sol	
C++0013		59-26-0470	47 uF	-20%, 63V, Sol	
C++0018		59-26-0470	47 uF	-20%, 63V, Sol	
C++0019		59-26-0100	10 uF	-20%, 16V, Sol	
C++0020		59-26-0470	47 uF	-20%, 63V, Sol	
C++0021		59-26-0470	47 uF	-20%, 63V, Sol	
C++0022		59-26-0470	47 uF	-20%, 63V, Sol	
C++0023		59-26-0470	47 uF	-20%, 63V, Sol	
C++0024		59-26-0100	10 uF	-20%, 16V, Sol	
C++0028		59-26-0100	10 uF	-20%, 16V, Sol	
C++0026		59-26-2100	10 uF	-20%, 160V, Sol	
C++0028		59-26-0100	10 uF	-20%, 16V, Sol	
C++0031		59-34-1100	10 pF	5%, Cc	
C++0036		59-26-0470	47 uF	-20%, 63V, Sol	
C++0038		59-26-0470	47 uF	-20%, 63V, Sol	
C++0039		59-26-0470	47 uF	-20%, 63V, Sol	
C++0040		59-26-0470	47 uF	-20%, 63V, Sol	
D++0001		50-04-0512	1N4618	INT819	Met
D++0002		50-04-0125	1N4448		ITT,PhySer
D++0003		50-04-0125	1N4448		ITT,PhySer
D++0004		50-04-0125	1N4448		ITT,PhySer
D++0005		50-04-0125	1N4448		ITT,PhySer
D++0006		50-04-0125	1N4448		ITT,PhySer
D++0007		50-04-0125	1N4448		ITT,PhySer
D++0008		50-04-0125	1N4448		ITT,PhySer
D++0009		50-04-0125	1N4448		ITT,PhySer

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D++0010		50-04-0125	1N4448		ITT,PhySer
IC+0001		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0006		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0009		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0010		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0013		50-05-0283	L4939N	L4939	Phy+Ex
IC+0016		50-05-0283	L4939N	L4939	Phy+Ex
IC+0017		50-11-0109	5D 214 DE	5D 214 DE	Phy+Sic
IC+0018		50-11-0109	5D 214 DE	5D 214 DE	Phy+Sic
IC+0021		50-11-0109	5D 214 DE	5D 214 DE	Phy+Sic
IC+0026		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0027		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra
IC+0031		50-09-0105	NE5532N	XPS532N	Sig+Ex+Ra

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0001		57-11-1404	100 kohm	5%	
R++0002		57-11-1404	100 kohm	5%	
R++0003		57-11-1404	100 kohm	5%	
R++0004		57-11-1404	100 kohm	5%	
R++0007		57-11-1404	100 kohm	5%	
R++0010		57-11-1404	100 kohm	5%	
R++0011		57-11-1404	100 kohm	5%	
R++0014		57-11-1404	100 kohm	5%	
R++0015		57-11-1404	100 kohm	5%	
R++0016		57-11-1404	100 kohm	5%	
R++0017		57-11-1404	100 kohm	5%	

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 3

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0021		57-11-1404	100 kohm	5%	
R++0023		57-11-1404	100 kohm	5%	
R++0024		57-11-1404	100 kohm	5%	
R++0026		57-11-1404	100 kohm	5%	
R++0027		57-11-1404	100 kohm	5%	
R++0028		57-11-1404	100 kohm	5%	
R++0029		57-11-1404	100 kohm	5%	
R++0036		57-11-1404	100 kohm	5%	
R++0037		57-11-1404	100 kohm	5%	
R++0038		57-11-1404	100 kohm	5%	
R++0042		57-11-1404	100 kohm	5%	
R++0046		57-11-1404	100 kohm	5%	
R++0049		57-11-1404	100 kohm	5%	
R++0051		57-11-1404	100 kohm	5%	
R++0052		57-11-1404	100 kohm	5%	
R++0053		57-11-1404	100 kohm	5%	
R++0054		57-11-1404	100 kohm	5%	
R++0057		57-11-1404	100 kohm	5%	
R++0060		57-11-1404	100 kohm	5%	
R++0068		57-11-1404	100 kohm	5%	
R++0071		57-11-1404	100 kohm	5%	
R++0075		57-11-1404	100 kohm	5%	
R++0077		57-11-1404	100 kohm	5%	
R++0078		57-11-1404	100 kohm	5%	
R++0080		57-11-1404	100 kohm	5%	
R++0081		57-11-1404	100 kohm	5%	
R++0082		57-11-1404	100 kohm	5%	
R++0083		57-11-1404	100 kohm	5%	
R++0084		57-11-1404	100 kohm	5%	
R++0085		57-11-1404	100 kohm	5%	
R++0086		57-11-1404	100 kohm	5%	
R++0087		57-11-1404	100 kohm	5%	
R++0088		57-11-1404	100 kohm	5%	
R++0089		57-11-1404	100 kohm	5%	
R++0090		57-11-1404	100 kohm	5%	
R++0091		57-11-1404	100 kohm	5%	

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 4

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R++0095		57-11-1404	100 kohm	5%	
R++0098		57-11-1404	100 kohm	5%	
R++0100		57-11-1404	100 kohm	5%	
R++0105		57-11-1404	100 kohm	5%	
R++0106		57-11-1404	100 kohm	5%	
R++0107		57-11-1404	100 kohm	5%	
R++0108		57-11-1404	100 kohm	5%	
R++0109		57-11-1404	100 kohm	5%	
R++0110		57-11-1404	100 kohm	5%	
R++0111		57-11-1404	100 kohm	5%	
R++0112		57-11-1404	100 kohm	5%	
R++0113		57-11-1404	100 kohm	5%	
R++0114		57-11-1404	100 kohm	5%	
R++0115		57-11-1404	100 kohm	5%	
R++0116		57-11-1404	100 kohm	5%	
R++0117		57-11-1404	100 kohm	5%	
R++0118		57-11-1404	100 kohm	5%	
R++0119		57-11-1404	100 kohm	5%	
R++0120		57-11-1404	100 kohm	5%	
R++0121		57-11-1404	100 kohm	5%	
R++0122		57-11-1404	100 kohm	5%	
R++0123		57-11-1404	100 kohm	5%	

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 5

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q 0001		0201, 0202, 0203, 0204, 0205, 0206			

(01) 83/03/22 Part No. of R2 I has been changed.
 Following components are not used:

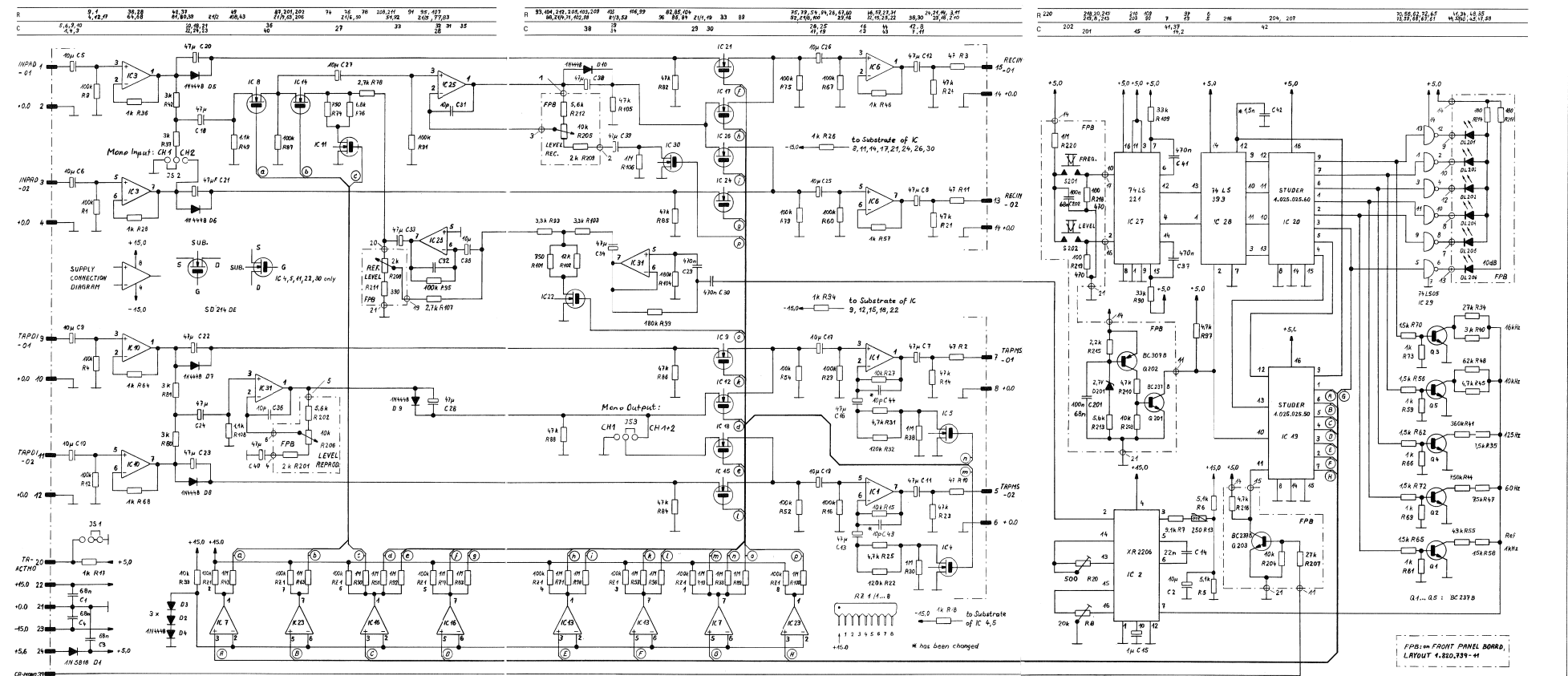
- C 0002, 0013, 0014, 0015, 0016, 0027, 0028, 0029, 0032, 0033, 0034
- 0035, 0041, 0041, 0201, 0202,
- U 0201,
- DL 0201, 0202, 0203, 0204, 0205, 0206,
- IC 0002, 0004, 0009, 0007, 0008, 0001, 0014, 0020, 0022, 0023, 0027, 0029, 0029, 0030,
- JS 0001,
- Q 0001, 0002, 0003, 0004, 0005, 0001, 0020,
- R 0001, 0004, 0007, 0008, 0013, 0014, 0019, 0020, 0022, 0023, 0030, 0031, 0032, 0033, 0034, 0035, 0038, 0040, 0041, 0043, 0044, 0045, 0047, 0048, 0050, 0055, 0056, 0058, 0059, 0061, 0062, 0063, 0065, 0066, 0067, 0070, 0072, 0073, 0074, 0076, 0076, 0087, 0089, 0090, 0094, 0094, 0097, 0099, 0100, 0101, 0102, 0103, 0104, 0107, 0109, 0203, 0208, 0210, 0211, 0213, 0214, 0215, 0217, 0218, 0219, 0220,
- S 0201, 0202,

Note 1 - Contact pins: Studer SK-01-0020; Berg 76 100-102-16
 HP 08001 Studer SK-01-0021; Philips 2422 024 80003
 Note 2 - 10 kohm Potentiometer Elm. 205
 Allen Bradley Nr. YR 103 M
 Note 3 - 8 x 100 kohm network 55
 Elasmohm Nr. C 08 x 100 KJ

S T U D E R (01) 83/03/22 B01 M=5 SWITCH 1-820-720.00 PAGE 5

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Imelcro Nr.		R 88 100K 5%			
Carboronic		Elfi/Electrolytic, Sol/Solid aluminium, PP/Polypropylen,			
REIT/Polystyrol/Fib					

MONO/STEREO SWITCH WITH TEST GENERATOR "ESE" 1.820.724.00 GRP 21/ELM 46 - FRONT PANEL PCB 1.820.739.11



2 16.01.84 B Benzl A820 / A810 Audio Section
STUDER Mono Stereo Switch with Test Generator SC 1.820.724.00 PAGE 1 OF 2

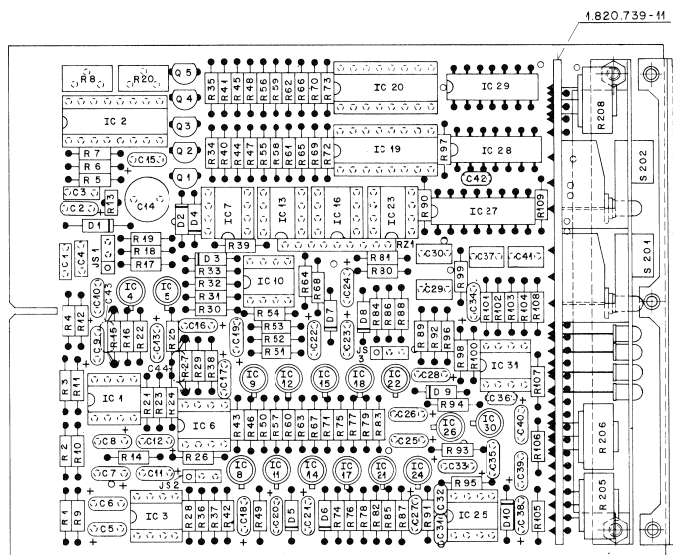
2 16.01.84 Benzl A820 / A810 Audio Section
STUDER Mono Stereo Switch w. Test Gen. SC 1.820.724.00 PAGE 2 OF 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C++0001	59-99-1205	68 HF	-23K 63V C0			C++0029	59-99-5674	0.47 UF	5% 63V PEP			IC-0017	50-11-0104	SD 214 DE	850 214		Ph+Six
C++0002	59-26-1100	10 UF	-23K 16V SAI			C++0030	59-99-5974	0.47 UF	5% 63V PEP			IC-0018	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0003	59-99-2025	68 HF	-23K 63V C0			C++0031	59-99-1100	10 UF	5% C0			IC-0019	1-025-025-60	PR0M A810 M/S Switch			Ph+Six
C++0004	59-99-2025	68 HF	-23K 63V C0			C++0032	59-26-0470	not used				IC-0020	1-025-025-60	PR0M A810 M/S Switch + Test Generator			Ph+Six
C++0005	59-26-1100	10 UF	-23K 16V SAI			C++0033	59-26-0470	47 UF	-20% 63V SAI			IC-0021	50-11-0108	SD 214 DE	850 214		Ph+Six
C++0006	59-26-1100	10 UF	-23K 16V SAI			C++0034	59-26-0470	47 UF	-20% 63V SAI			IC-0022	50-11-0108	SD 214 DE	850 214		Ph+Six
C++0007	59-26-0470	47 UF	-23K 16V SAI			C++0035	59-26-2100	10 UF	-20% 100V SAI			IC-0023	50-09-0208	LM937A			Ph+Six
C++0008	59-26-0470	47 UF	-23K 63V SAI			C++0036	59-39-1100	10 UF	5% C0			IC-0024	50-11-0104	SD 214 DE	850 214		Ph+Six
C++0009	59-26-1100	10 UF	-23K 16V SAI			C++0037	59-09-5974	0.47 UF	-20% 63V PEP			IC-0025	50-09-0108	NE532A			Ph+Six
C++0010	59-26-1100	10 UF	-23K 16V SAI			C++0038	59-26-0470	47 UF	-20% 63V SAI			IC-0026	50-09-2130	COV 13-5 Q 62703-Q 575			Ph+Six
C++0011	59-26-0470	47 UF	-23K 16V SAI			C++0039	59-26-0470	47 UF	-20% 63V SAI			IC-0027	50-09-2130	COV 13-5 Q 62703-Q 575			Ph+Six
C++0012	59-26-0470	47 UF	-23K 63V SAI			C++0040	59-26-0470	47 UF	-20% 63V SAI			IC-0028	50-09-0393	SN74LS27A			Ph+Six
C++0013	59-26-1100	10 UF	-23K 16V SAI			C++0041	59-26-0470	47 UF	-20% 63V SAI			IC-0029	50-09-0108	SN74LS27A			Ph+Six
C++0014	59-05-1233	22 HF	15K 63V PP			C++0042	59-32-4132	1.5 HF	20% 63V C0			IC-0030	50-11-0104	SD 214 DE	850 214		Ph+Six
C++0015	59-26-1100	10 UF	-23K 63V SAI			C++0043	59-09-0104	10 UF	5% C0			IC-0031	50-09-0108	NE532A			Ph+Six
C++0016	59-26-0470	47 UF	-23K 63V SAI			C++0044	59-99-0603	10 UF	5% C0			IC-0032	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0017	59-26-1100	10 UF	-23K 16V SAI			C++0045	59-09-0104	10 UF	5% C0			IC-0033	50-09-0108	NE532A			Ph+Six
C++0018	59-26-0470	47 UF	-23K 63V SAI			C++0046	59-09-0603	60 HF	10% 63V PEP			IC-0034	50-09-0108	NE532A			Ph+Six
C++0019	59-26-1100	10 UF	-23K 16V SAI			C++0047	59-09-0104	10 UF	5% C0			IC-0035	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0020	59-26-0470	47 UF	-23K 63V SAI			C++0048	59-06-0863	60 HF	10% 63V PEP			IC-0036	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0021	59-26-0470	47 UF	-23K 63V SAI			C++0049	59-09-0104	10 UF	5% C0			IC-0037	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0022	59-26-0470	47 UF	-23K 63V SAI			C++0050	59-09-0104	10 UF	5% C0			IC-0038	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0023	59-26-0470	47 UF	-23K 63V SAI			C++0051	59-09-0104	10 UF	5% C0			IC-0039	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0024	59-26-0470	47 UF	-23K 63V SAI			C++0052	59-09-0104	10 UF	5% C0			IC-0040	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0025	59-26-1100	10 UF	-23K 16V SAI			C++0053	59-09-0104	10 UF	5% C0			IC-0041	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0026	59-26-1100	10 UF	-23K 16V SAI			C++0054	59-09-0104	10 UF	5% C0			IC-0042	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0027	59-26-1100	10 UF	-23K 16V SAI			C++0055	59-09-0104	10 UF	5% C0			IC-0043	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0028	59-26-0470	47 UF	-23K 63V SAI			C++0056	59-09-0104	10 UF	5% C0			IC-0044	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0029	59-26-0470	47 UF	-23K 63V SAI			C++0057	59-09-0104	10 UF	5% C0			IC-0045	50-11-0106	SD 214 DE	850 214		Ph+Six
C++0030	59-26-0470	47 UF	-23K 63V SAI			C++0058	59-09-0104	10 UF	5% C0			IC-0046	50-11-0106	SD 214 DE	850 214		Ph+Six

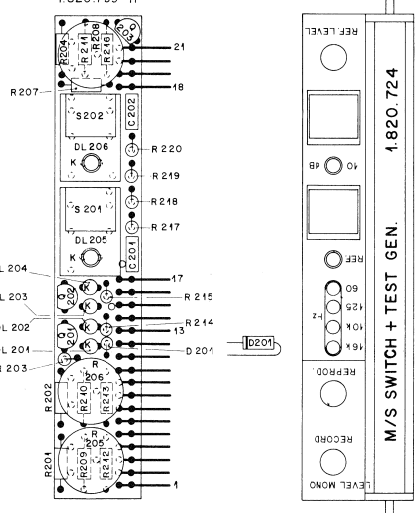
PUBLISHED: 08/86

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MONO/STEREO SWITCH WITH TEST GENERATOR "ESE" 1.820.724.00 GRP 21/ELM 46
 - FRONT PANEL PCB 1.820.739.11



1.820.739-M



1.820.724

(CONTINUED)

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0001	97.11.404	100 kOhm	5%		
R-0002	97.11.4070	47 Ohm	5%		
R-0003	97.11.4070	47 Ohm	5%		
R-0004	97.11.4070	100 kOhm	5%		
R-0005	97.11.3912	5.1 kOhm	1%		
R-0006	97.11.912	1.1 kOhm	1%		
R-0007	97.11.3912	9.1 kOhm	5%		
R-0008	98.01.9033	50 kOhm	1%		
R-0009	97.11.4026	100 kOhm	5%	See note 2	
R-0010	97.11.4070	47 Ohm	5%		
R-0011	97.11.4070	47 Ohm	5%		
R-0012	97.11.4026	100 kOhm	5%		
R-0013	97.11.4073	47 kOhm	5%	PTC resistor; Philips Nr. 2322 660 91001	
R-0014	97.11.4073	47 kOhm	5%		
R-0015	97.11.3103	10 kOhm	1%		
R-0016	97.11.4026	100 kOhm	5%		
R-0017	97.11.4026	1 kOhm	5%		
R-0018	97.11.4026	1 kOhm	5%		
R-0019	97.11.4026	1 kOhm	5%		
R-0020	98.01.9031	500 Ohm	1%	See note 3	
R-0021	97.11.4073	47 kOhm	5%		
R-0022	97.11.4026	120 kOhm	5%		
R-0023	97.11.4073	47 kOhm	5%		
R-0024	97.11.4073	47 kOhm	5%		
R-0025	97.11.3972	4.7 kOhm	1%		
R-0026	97.11.3103	10 kOhm	1%		
R-0027	97.11.3103	10 kOhm	1%		
R-0028	97.11.4026	1 kOhm	5%		
R-0029	97.11.4026	100 kOhm	5%		
R-0030	97.11.4026	1 kOhm	5%		
R-0031	97.11.3972	4.7 kOhm	1%		
R-0032	97.11.4026	120 kOhm	5%		
R-0033	97.11.4026	1 kOhm	5%		
R-0034	97.11.4073	47 kOhm	5%		
R-0035	97.11.3752	7.5 kOhm	1%		

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0036	97.11.4026	1 kOhm	5%		
R-0037	97.11.3302	3.3 kOhm	5%		
R-0038	97.11.4026	1 kOhm	5%		
R-0039	97.11.4026	10 kOhm	5%		
R-0040	97.11.3302	3.3 kOhm	5%		
R-0041	97.11.3306	360 kOhm	5%		
R-0042	97.11.3302	3.3 kOhm	5%		
R-0043	97.11.4026	1 kOhm	5%		
R-0044	97.11.3756	750 kOhm	5%		
R-0045	97.11.3972	4.7 kOhm	1%		
R-0046	97.11.4026	1 kOhm	5%		
R-0047	97.11.3752	7.5 kOhm	1%		
R-0048	97.11.3973	5.1 kOhm	5%		
R-0049	97.11.3112	1.1 kOhm	5%		
R-0050	97.11.4026	1 kOhm	5%		
R-0051	97.11.4026	1 kOhm	5%		
R-0052	97.11.4026	100 kOhm	5%		
R-0053	97.11.4026	1 kOhm	5%		
R-0054	97.11.4026	100 kOhm	5%		
R-0055	97.11.3433	43 kOhm	1%		
R-0056	97.11.4026	1 kOhm	5%		
R-0057	97.11.4026	1 kOhm	5%		
R-0058	97.11.4026	1 kOhm	5%		
R-0059	97.11.4026	1 kOhm	5%		
R-0060	97.11.4026	100 kOhm	5%		
R-0061	97.11.4026	1 kOhm	5%		
R-0062	97.11.4026	1.5 kOhm	5%		
R-0063	97.11.4026	1 kOhm	5%		
R-0064	97.11.4026	1 kOhm	5%		
R-0065	97.11.4026	1.5 kOhm	5%		
R-0066	97.11.4026	1 kOhm	5%		
R-0067	97.11.4026	100 kOhm	5%		
R-0068	97.11.4026	1 kOhm	5%		
R-0069	97.11.4026	1 kOhm	5%		
R-0070	97.11.4026	1.5 kOhm	5%		
R-0071	97.11.4026	1 kOhm	5%		
R-0072	97.11.4026	1.5 kOhm	5%		

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 5

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0073	97.11.4026	1 kOhm	5%		
R-0074	97.11.3751	750 Ohm	5%		
R-0075	97.11.4026	100 kOhm	5%		
R-0076	97.11.4026	6.8 kOhm	5%		
R-0077	97.11.4026	1 kOhm	5%		
R-0078	97.11.4072	2.7 kOhm	5%		
R-0079	97.11.4026	100 kOhm	5%		
R-0080	97.11.3302	3.3 kOhm	5%		
R-0081	97.11.3302	3.3 kOhm	5%		
R-0082	97.11.4073	47 kOhm	5%		
R-0083	97.11.4026	1 kOhm	5%		
R-0084	97.11.4073	47 kOhm	5%		
R-0085	97.11.4073	47 kOhm	5%		
R-0086	97.11.4073	47 kOhm	5%		
R-0087	97.11.4026	100 kOhm	5%		
R-0088	97.11.4073	47 kOhm	5%		
R-0089	97.11.4026	100 kOhm	5%		
R-0090	97.11.4026	33 kOhm	5%		
R-0091	97.11.4026	100 kOhm	5%		
R-0092	97.11.4026	1 kOhm	5%		
R-0093	97.11.3302	3.3 kOhm	5%		
R-0094	97.11.4026	1 kOhm	5%		
R-0095	97.11.4026	100 kOhm	5%		
R-0096	97.11.4026	1 kOhm	5%		
R-0097	97.11.4072	4.7 kOhm	5%		
R-0098	97.11.4026	1 kOhm	5%		
R-0099	97.11.4084	180 kOhm	5%		
R-0100	97.11.4026	1 kOhm	5%		
R-0101	97.11.3751	750 Ohm	5%		
R-0102	97.11.4026	1.2 kOhm	5%		
R-0103	97.11.3972	3.9 kOhm	5%		
R-0104	97.11.4026	180 kOhm	5%		
R-0105	97.11.4073	47 kOhm	5%		
R-0106	97.11.4026	1 kOhm	5%		
R-0107	97.11.4072	2.7 kOhm	5%		
R-0108	97.11.3112	1.1 kOhm	5%		
R-0109	97.11.4033	33 kOhm	5%		

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 6

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R-0001	97.11.3001	2 kOhm	5%	ITT+Roe/Ph/Siem	
R-0002	97.11.4026	5.6 kOhm	5%		
R-0003	97.11.4026	10 kOhm	5%		
R-0004	97.11.4103	10 kOhm	5%		
R-0005	98.01.9103	10 kOhm	5%	See note 4	
R-0006	98.01.9103	10 kOhm	5%	See note 4	
R-0007	97.11.4273	2 kOhm	5%		
R-0008	98.01.9202	2 kOhm	5%	See note 5	
R-0009	97.11.3022	2 kOhm	5%		
R-0010	97.11.4026	4.7 kOhm	5%		
R-0011	97.11.4911	390 Ohm	5%		
R-0012	97.11.4072	4.7 kOhm	5%		
R-0013	97.11.4902	5.6 kOhm	5%		
R-0014	97.11.4072	4.7 kOhm	5%		
R-0015	97.11.4222	2.2 kOhm	5%		
R-0016	97.11.4811	150 Ohm	5%		
R-0017	97.11.4181	180 Ohm	5%		
R-0018	97.11.4072	4.7 kOhm	5%		
R-0019	97.11.4471	470 Ohm	5%		
R-0020	97.11.4101	100 Ohm	5%		
R-0021	97.11.4471	470 Ohm	5%		
R-0022	97.11.4100	1 kOhm	5%		
R-0001	57.88.4103	100 kOhm	5%	See note 6	
R-0002	57.88.4104	100 kOhm	5%	See note 6	
S-0001	55.15.0901	Switch		See note 7	
S-0002	55.15.0901	Switch		See note 7	

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 7

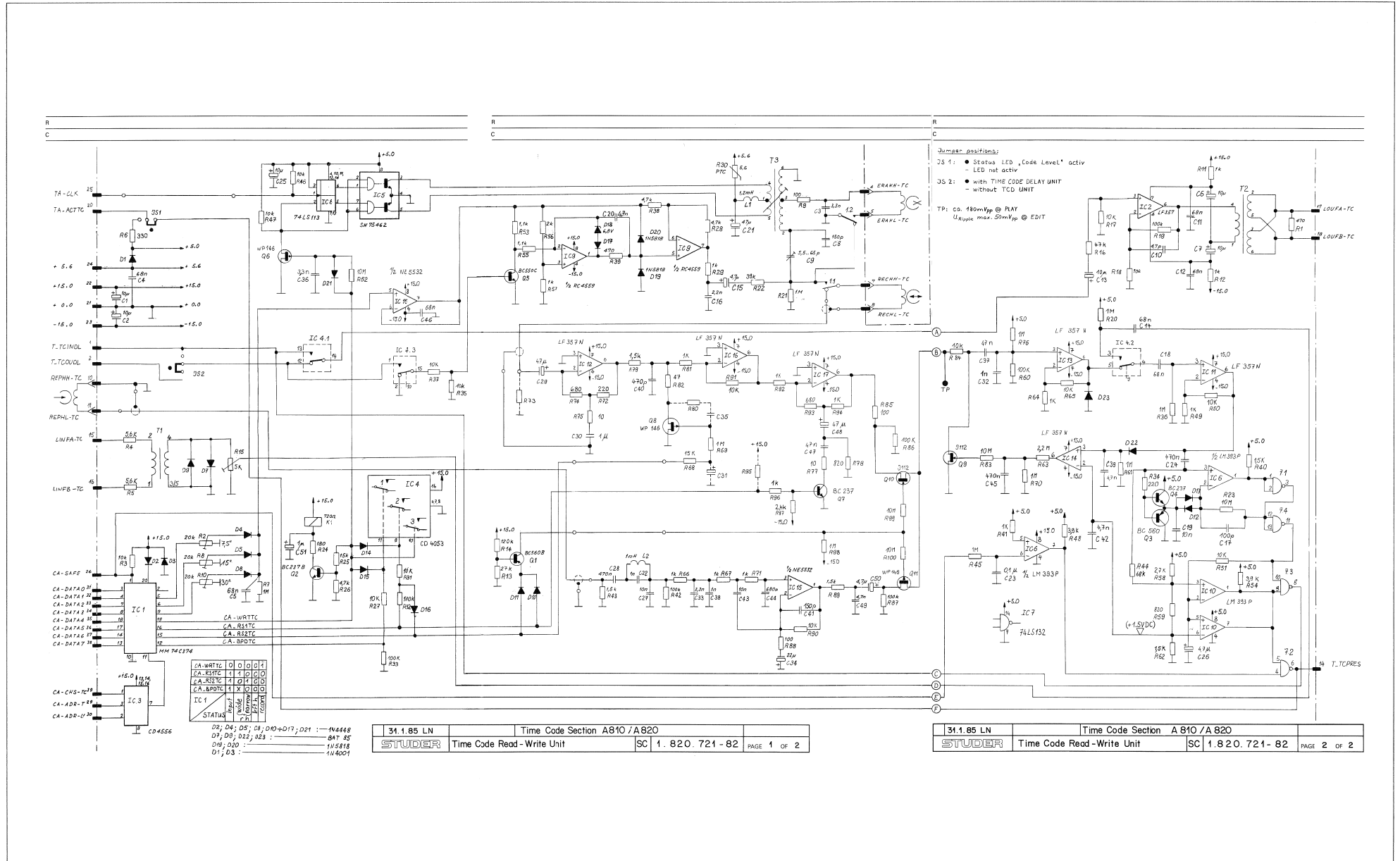
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	83-03-22	Improved stability of the oneshot against switches' bounce.		C 92 address C 201 C 202 + 21k R 219 changed. Part Nrs of R2 1 has been changed.	
(02)	84-03-16	Improved stability of the 100k stage against ringing.		C 93 and C94 added.	
Note 1		Contact point Studer 94.01.02001 Berg 75 160-102-36 Bridge: Studer 94.01.02021 Philips 2422 024 88003			
Note 2		50 kOhm Potentiometer lina... 10% Jouma Nr... 3306 H-1-93 Diaphora Nr. 361 50k / 525.646 10k			
Note 3		500 Ohm Potentiometer lina... 10% Jouma Nr... 3306 H-1-901 Spectrol Nr. 63 X 501 F010			
Note 4		10 kOhm Potentiometer lina... 20% Allan Bradley Nr. YR 103 V 8			
Note 5		2 kOhm Potentiometer lina... 20% Allan Bradley Nr. YR 202 M			
Note 6		0 - 100 kOhm Network, 5% Elmekohn Nr. C 09 + 100 kJ Ineltra Nr. R 88 100A 5%			
Note 7		Switch Serie DIGIFACT; Manufacturer Schadow/ITT Knob SHML; Manufacturer Schadow/ITT; Studer Nr. 55.15.0910			
		Cap-Ceramics: E3=Electrolytic, S3=S3olid aluminium, PP=Polypropylen, PET=Polyesterfilm			

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 8

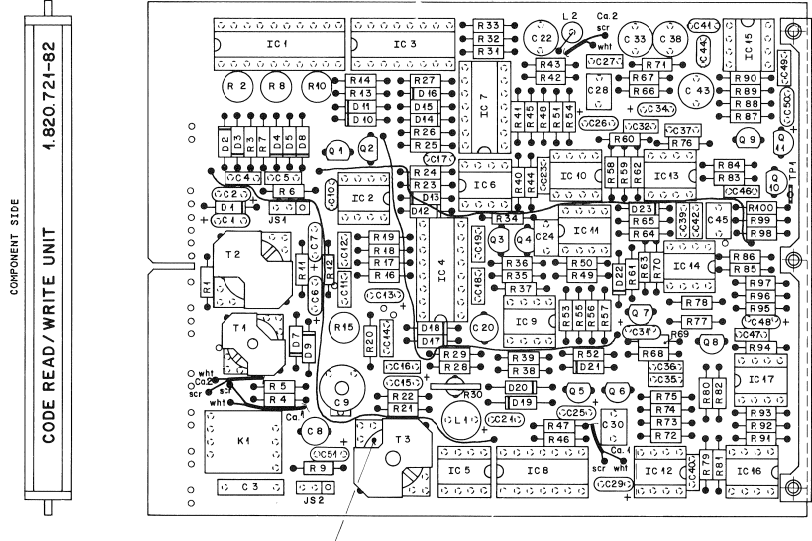
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
MANUFACTURERS: E=Elara, ITT=Intermetall, Ro=Motorola, NS=National Semiconductor, Ph=Philips, Ra=Raytheon, Se=Siemens, Sg=Siemens, Sig=Siemens, St=Studer, Sts=Siemens, Tr=Telefunken, Ti=Telefunken.					
ORIG	82/08/10	(01) 83/03/22 (02) 84/01/16			

STUDER (02) 84/01/16 BBT M-S SWITCH + TESTGENERATOR 1.820.724.00 PAGE 9

TIME CODE READ/WRITE UNIT "ESE" 1.820.721.82 GRP 21/ELM 40

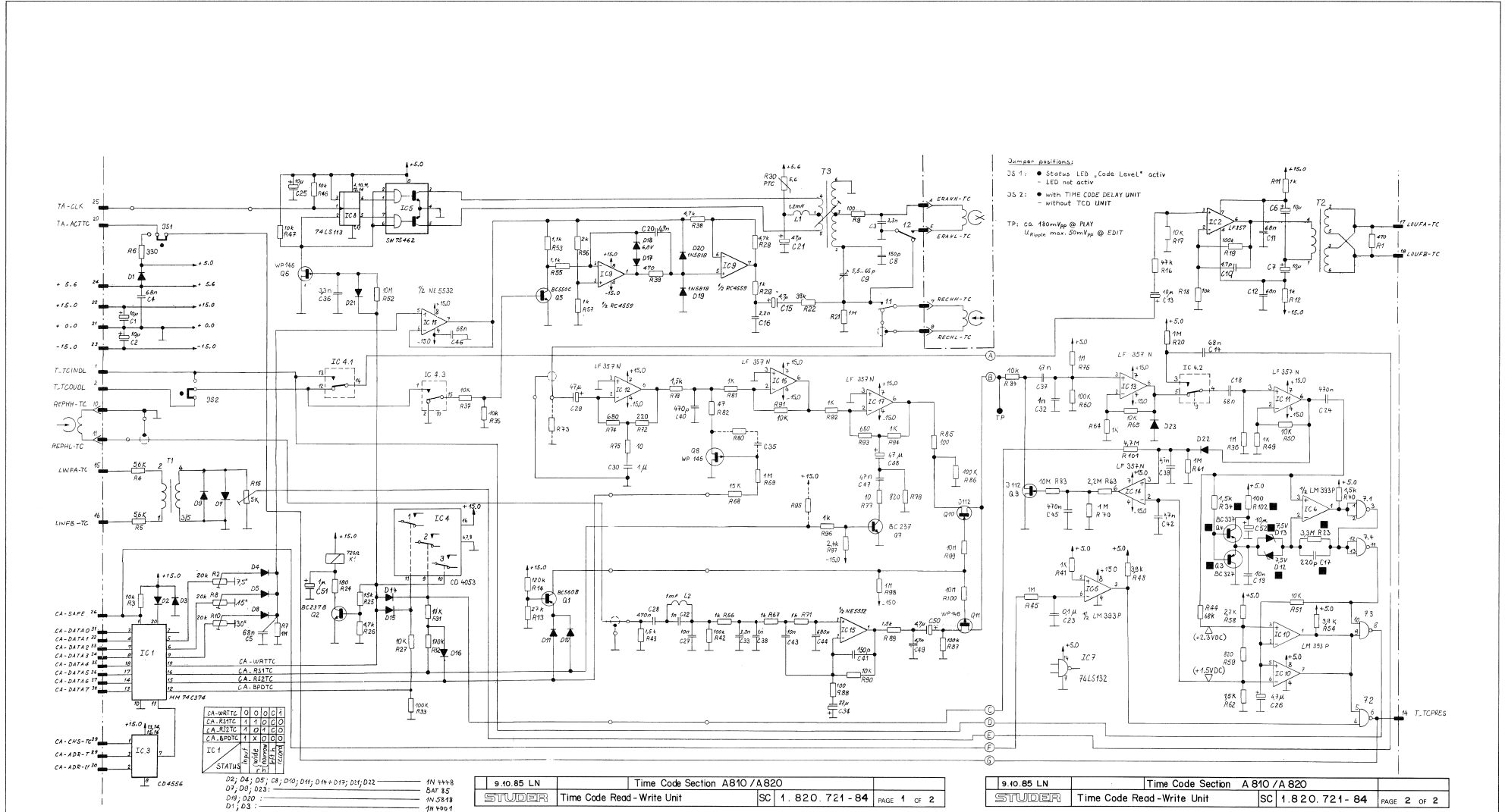


TIME CODE READ/WRITE UNIT "ESE" 1.820.721.82 GRP 21/ELM 40

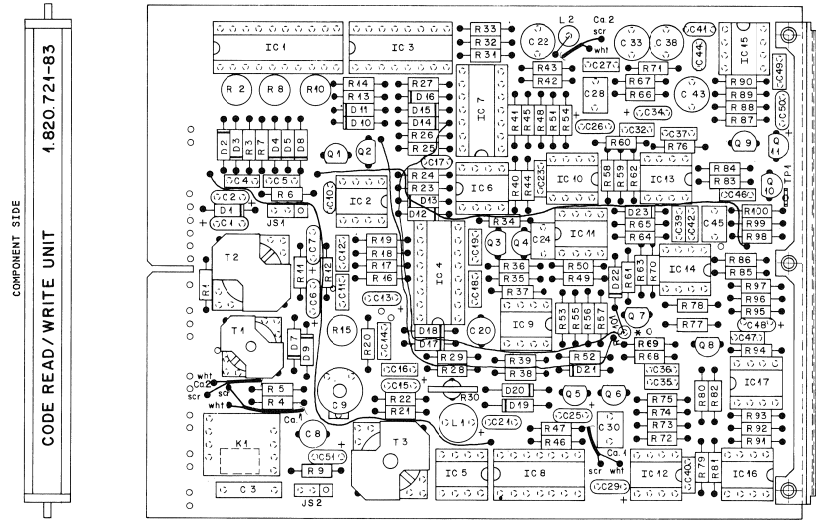


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	
....36	59-06-1102		1 mF			R.....35	57-11-4103		10 kOhm	2%		
....39	59-06-0972		4.7 mF	10%		R.....37	57-11-4103		10 kOhm	2%		
....40	59-06-2471		470 pF	10%		R.....38	57-11-4102		4.7 kOhm	2%		
....43	59-06-1103		150 pF	1%	Ce	R.....39	57-11-4102		1.5 kOhm	2%		
....42	59-06-3472		4.7 mF	10%		R.....40	57-11-4102		1 kOhm	2%		
....44	59-06-2861		880 pF	10%	Ce	R.....41	57-11-4102		1.5 kOhm	2%		
....45	59-06-0974		470 pF	10%		R.....42	57-11-4103		100 kOhm	2%		
....46	59-06-2205		68 nF	-20%		R.....43	57-11-4102		1.5 kOhm	2%		
....47	59-06-0976		470 pF	10%		R.....44	57-11-4103		10 kOhm	2%		
....48	59-26-0470		47 uF	20%, 6.3V, Sat	PH	R.....45	57-11-4105		1 kOhm	2%		
....49	59-06-0972		4.7 mF	10%		R.....46	57-11-4103		10 kOhm	2%		
....50	59-26-3479		4.7 uF	20%, 25V, Sat	PH	R.....47	57-11-4103		10 kOhm	2%		
....51	59-06-2909		4.7 uF	20%	10V, Sat	R.....48	57-11-4102		1.5 kOhm	2%		
D.....1	50-04-0122	1N4001		1N4002, 1N4003, 1N4004	Motor, Sol	R.....49	57-11-4102		1 kOhm	2%		
D.....2	50-04-0123	1N4001			Fc, ITT, PHS	R.....50	57-11-4103		10 kOhm	2%		
D.....3	50-04-0122	1N4001		1N4002, 1N4003, 1N4004	Motor, Sol	R.....51	57-11-4103		10 kOhm	2%		
D.....4	50-04-0125	1N4048			Fc, ITT, PHS	R.....52	57-11-4102		1.5 kOhm	2%		
D.....5	50-04-0125	1N4048			Fc, ITT, PHS	R.....53	57-11-4102		1.5 kOhm	2%		
D.....6	50-04-0122	1N4001			Fc, ITT, PHS	R.....54	57-11-4102		1.5 kOhm	2%		
D.....7	50-04-0127	BAT 85		B15 40-02	Ph, Sto	R.....55	57-11-4102		1.5 kOhm	2%		
D.....8	50-04-0125	1N4048			Fc, ITT, PHS	R.....56	57-11-4102		4 kOhm	1%		
D.....9	50-04-0127	BAT 85		B15 40-02	Ph, Sto	R.....57	57-11-4102		1 kOhm	1%		
D.....10	50-04-0125	1N4048			Fc, ITT, PHS	R.....58	57-11-4104		100 kOhm	1%		
D.....11	50-04-0125	1N4048			Fc, ITT, PHS	R.....59	57-11-3821		820 Ohm	1%		
D.....12	50-04-0125	1N4048			Fc, ITT, PHS	R.....60	57-11-3102		1 kOhm	2%		
D.....13	50-04-0125	1N4048			Fc, ITT, PHS	R.....61	57-11-4105		1 kOhm	2%		
D.....14	50-04-0125	1N4048			Fc, ITT, PHS	R.....62	57-11-3102		1.5 kOhm	2%		
D.....15	50-04-0125	1N4048			Fc, ITT, PHS	R.....63	57-11-5225		2.2 kOhm	5%		
D.....16	50-04-0125	1N4048			Fc, ITT, PHS	R.....64	57-11-4102		1 kOhm	2%		
D.....17	50-04-0125	1N4048			Fc, ITT, PHS	R.....65	57-11-3102		1 kOhm	2%		
D.....18	50-04-1102	6.8 V		80kOhm 6.8V ZPD 6.8	Not	R.....66	57-11-4103		10 kOhm	2%		
D.....19	50-04-0112	1N5818		1N5819	Not	R.....67	57-11-3102		1 kOhm	1%		
D.....20	50-04-0112	1N5818		1N5819	Not	R.....68	57-11-4103		15 kOhm	2%		
D.....21	50-04-0112	1N5818		1N5819	Not	R.....69	57-11-4105		1 kOhm	2%		
D.....22	50-04-0117	BAT 85		B15 40-02	Ph, Sto	R.....70	57-11-4105		1 kOhm	2%		
D.....23	50-04-0127	BAT 85		B15 40-02	Ph, Sto	R.....71	57-11-4102		1 kOhm	2%		
S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 2						S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 5						
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	
E.....1	50-07-0003	MHWAC374N			NSC	R.....72	57-11-4221		220 Ohm	2%		
E.....2	50-09-0110	LF3578N		50 uA 20V/us	NSC	R.....73	57-11-4102		not used			
E.....3	50-07-0005	MC14538C		PC95008E, 95058PC	Fc, Mot, HCA	R.....74	57-11-4101		680 Ohm	2%		
E.....4	50-07-0015	MC14538B		604038C	Not	R.....75	57-11-4105		1 kOhm	2%		
E.....5	50-05-0227	SNT5402P		SNT5402P, SNT5402J	TI	R.....76	57-11-4100		10 Ohm	2%		
E.....6	50-05-0283	LM932N		LM931	NCS, ITT	R.....77	57-11-4021		820 Ohm	5%		
E.....7	50-06-0122	SNT4131Z		NH445132N	TI, Sig, NSC	R.....78	57-11-4352		1.5 kOhm	2%		
E.....8	50-06-0113	SNT45113		DMT45113N	TI, Sig, NSC	R.....79	57-11-4102		not used			
E.....9	50-09-0107	LF3578N			TI, Sig, NSC	R.....80	57-11-4070		47 kOhm	2%		
E.....10	50-05-0283	LM932N		LM931	NCS, ITT	R.....81	57-11-5106		10 kOhm	5%		
E.....11	50-09-0110	LF3578N			NCS	R.....82	57-11-4103		1 kOhm	2%		
E.....12	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....83	57-11-4101		100 Ohm	2%		
E.....13	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....84	57-11-4104		100 kOhm	2%		
E.....14	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....85	57-11-4104		100 kOhm	2%		
E.....15	50-09-0110	LF3578N		50 uA 20V/us	TI	R.....86	57-11-4101		100 kOhm	2%		
E.....16	50-09-0110	LF3578N		50 uA 20V/us	TI, Sig, Ex, NSC	R.....87	57-11-4104		100 kOhm	2%		
E.....17	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....88	57-11-4101		100 kOhm	2%		
E.....18	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....89	57-11-4103		15 kOhm	2%		
E.....19	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....90	57-11-4103		15 kOhm	2%		
E.....20	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....91	57-11-4102		1 kOhm	2%		
E.....21	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....92	57-11-4102		1 kOhm	2%		
E.....22	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....93	57-11-4103		15 kOhm	2%		
E.....23	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....94	57-11-4102		1 kOhm	2%		
E.....24	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....95	57-11-4102		1 kOhm	2%		
E.....25	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....96	57-11-4102		1 kOhm	2%		
E.....26	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....97	57-11-4102		1 kOhm	2%		
E.....27	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....98	57-11-4102		1 kOhm	2%		
E.....28	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....99	57-11-4102		1 kOhm	2%		
E.....29	50-09-0110	LF3578N		50 uA 20V/us	NCS	R.....100	57-11-4102		1 kOhm	2%		
J.....1				See Note 1		R.....101	57-11-4102		1 kOhm	2%		
J.....2				See Note 1		R.....102	57-11-4081		680 Ohm	2%		
K.....1	56-04-0171	SM D1012			ITT	R.....103	57-11-4102		1 kOhm	2%		
L.....1	62-02-0122	1.2 mH		10% NR. CSL DB12-122 J		R.....104	57-11-4102		2.4 kOhm	5%		
L.....2	62-01-0128	1 mH		Goodman Nr. 17-100, Delavan Nr. 1641-105		R.....105	57-11-4105		1 kOhm	5%		
O.....1	50-03-0496			BC560 E 6328	SiP	R.....106	57-11-5106		10 kOhm	5%		
O.....2	50-03-0496			BC237B	BC578, BC550B	ITT, Mot, Ph, SiP	R.....107	57-11-5106		2.4 kOhm	5%	
O.....3	50-03-0496			BC560 E 6308	SiP	R.....108	57-11-5106		10 kOhm	5%		
O.....4	50-03-0496			BC237B	BC578, BC550B	ITT, Mot, Ph, SiP	R.....109	57-11-5106		10 kOhm	5%	
O.....5	50-03-0497			BC550 E 6308	SiP	R.....110	57-11-5106		10 kOhm	5%		
O.....6	50-03-0497			MP 146	Si	I.....1	1-022-218-00				Input Transformer 2:11	5%
O.....7	50-03-0497			MP 146	Si	I.....2	1-022-219-00				Time Code Output Transformer	5%
O.....8	50-03-0497			BC237B	BC578, BC550	SiP	I.....3	1-022-221-00			Time Code HF Transformer	5%
O.....9	50-03-0497			J112, TM00062	Sc, NS, Mot							
S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 3						S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 6						
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	
Q.....10	50-03-0350	J112P		J112, TM00062	Sc, NS, Mot							
Q.....11	50-03-0359	MP 146			Sc, NS, Mot							
Note 1: Contact pins Studer Nr. 54-01-0020 Berg Nr. 75 160-102-36 Philips Nr. 2422 025 8B003 54-01-0021 Studer Nr. 54-01-0022 COMMAR Nr. 2422 024 8B003 Philips Nr. 2422 024 8B003						Note 2: Potentiometers linear, Bourne Nr. 3129 H - 1 - 203 VERN Nr. 170 - 204 Lesaz Nr. 170 - 20k						
Note 3: Potentiometers linear, Bourne Nr. 3129 H - 1 - 502 VERN Nr. 170 - 5k Lesaz Nr. 170 - 5k						Co-Ceramic, Sol+Solid Aluminium						
MANUFACTURERS: Ex-Telex, Fc-Fairchild, Gs-General Instruments, IIT-Intertec, Inc, Mot-Motorola, NS-National Semiconductor, PH-Philips, Radco-Radio Shack, Rca-RCA, Rca-RCA of America, Sca-Sony, Sgm-Siemens, Sig-Sigmetrix, Si-Siemens, Ss-Standard Telephone, Ssc-Sony, Sst-Sony, Sst-Sony, Tl-Texas Instruments												
S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 4						S T U D E R (EP) 85/01/31 LN CODE READ/WRITE UNIT 1-820-721-82 PAGE 7						

TIME CODE READ/WRITE UNIT "ESE" 1.820.721.83/84 GRP 21/ELM 40



TIME CODE READ/WRITE UNIT "ESE" 1.820.721.83 GRP 21/ELM 40



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
0001	59	59-26-2100	10 uF	20% 16V Sal	PH
0002	59	59-26-2100	10 uF	20% 16V Sal	PH
0003	59	59-11-0332	3.3 nF	5%	PH
0004	59	59-26-0205	68 nF	-20% Co	PH
0005	59	59-26-0205	68 nF	-20% Co	PH
0006	59	59-26-2100	10 uF	20% 16V Sal	PH
0007	59	59-26-2100	10 uF	20% 16V Sal	PH
0008	59	59-26-1551	100 uF	2-5%	PH
0009	59	59-18-0102	65 pF	Terminer Capacitors Philips Nr 2322 800 01001	PH
0010	59	59-36-0678	4.7 uF	10%	PH
0011	59	59-26-0205	68 nF	-20% Co	PH
0012	59	59-26-0205	68 nF	-20% Co	PH
0013	59	59-26-2100	10 uF	20% 16V Sal	PH
0014	59	59-26-0688	10 uF	10%	PH
0015	59	59-26-5679	4.7 uF	20% 25V Sal	PH
0016	59	59-26-0202	2.2 nF	10%	PH
0017	59	59-36-0101	100 pF	5%	PH
0018	59	59-26-0688	68 nF	10%	PH
0019	59	59-26-0103	10 nF	10%	PH
0020	59	59-26-0672	4.7 nF	2-5%	PH
0021	59	59-26-0670	4.7 uF	20% 6.3V Sal	PH
0022	59	59-26-1107	1 uF	1%	PH
0023	59	59-26-0104	100 nF	10%	PH
0024	59	59-26-0676	4.7 nF	10%	PH
0025	59	59-26-2100	10 uF	20% 16V Sal	PH
0026	59	59-26-0676	4.7 nF	20% 25V Sal	PH
0027	59	59-26-0103	10 nF	10%	PH
0028	59	59-26-0676	4.7 nF	20% 25V Sal	PH
0029	59	59-26-0670	4.7 uF	20% 6.3V Sal	PH
0030	59	59-26-1105	1 nF	1%	PH
0031	59	59-26-1102	not used		PH
0032	59	59-26-1107	1 nF	1%	PH
0033	59	59-26-1132	3.3 nF	1%	PH
0034	59	59-26-1120	52 uF	20% 10V Sal	PH
0035	59	59-26-1132	not used		PH
0036	59	59-26-0332	3.3 nF	10%	PH
0037	59	59-26-0473	4.7 nF	10%	PH

STUDER (00) 85/0722 LN CODE READ/WRITE UNIT 1.820.721.83 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
0038	59	59-09-1107	1 nF	1%	PH
0039	59	59-09-1107	1 nF	1%	PH
0040	59	59-31-2471	470 pF	10%	PH
0041	59	59-36-1151	150 pF	5%	PH
0042	59	59-09-0472	4.7 nF	10%	PH
0043	59	59-09-1103	10 nF	1%	PH
0044	59	59-31-2481	680 pF	10%	PH
0045	59	59-09-0476	470 pF	10%	PH
0046	59	59-09-0205	68 nF	-20%	PH
0047	59	59-09-0471	47 nF	10%	PH
0048	59	59-23-0670	4.7 uF	20% 6.3V Sal	PH
0049	59	59-09-0472	4.7 nF	10%	PH
0050	59	59-23-0679	4.7 uF	20% 25V Sal	PH
0051	59	59-23-0109	1 uF	20% 60V Sal	PH
0052	59	59-09-0122	1N4001	1N4001, 1N4003, 1N4004	PH
0053	59	59-09-0125	1N4448		PH
0054	59	59-09-0122	1N4001	1N4002, 1N4003, 1N4004	PH
0055	59	59-09-0125	1N4448		PH
0056	59	59-09-0125	1N4448		PH
0057	59	59-09-0122	1N4001		PH
0058	59	59-09-0125	1N4448		PH
0059	59	59-09-0122	1N4001		PH
0060	59	59-09-0125	1N4448		PH
0061	59	59-09-0125	1N4448		PH
0062	59	59-09-0125	1N4448		PH
0063	59	59-09-0125	1N4448		PH
0064	59	59-09-0125	1N4448		PH
0065	59	59-09-0125	1N4448		PH
0066	59	59-09-0125	1N4448		PH
0067	59	59-09-0125	1N4448		PH
0068	59	59-09-0125	1N4448		PH
0069	59	59-09-0125	1N4448		PH
0070	59	59-09-0125	1N4448		PH
0071	59	59-09-0125	1N4448		PH
0072	59	59-09-0125	1N4448		PH

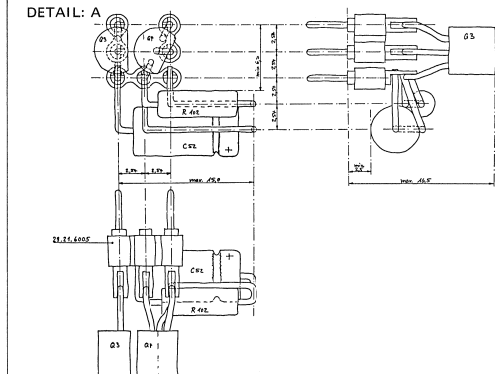
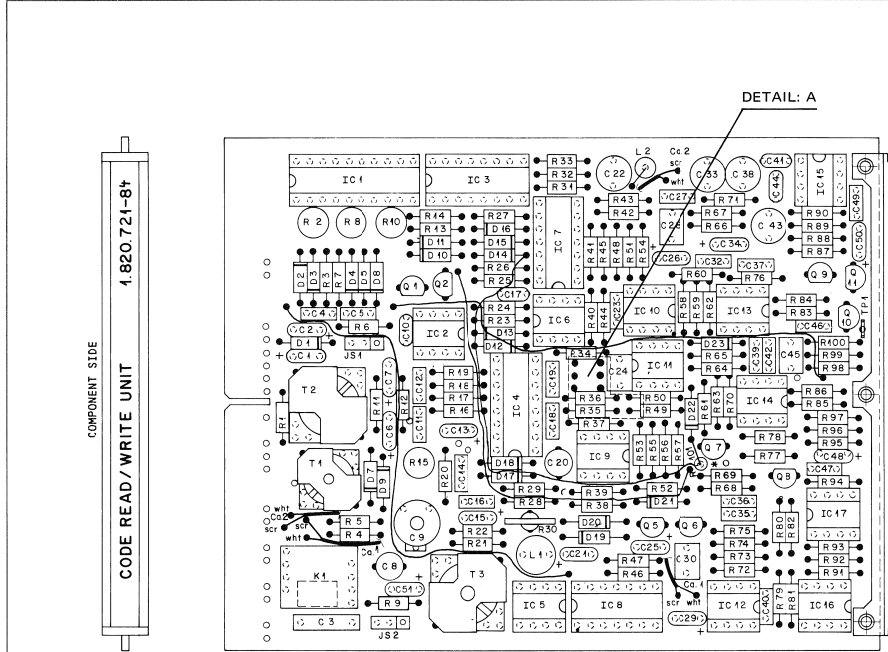
STUDER (00) 85/0722 LN CODE READ/WRITE UNIT 1.820.721.83 PAGE 2

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
0073	59	59-09-0127	8AT 85	8AS 40-02	PH-Sio
0074	59	59-07-0003	HM74C124N		NSC
0075	59	59-09-0110	LF3578N	Slew rate >30V/us	NSC
0076	59	59-07-0004	MC149586C	PNP 600mA, 4550µPC	FcHut-MCA
0077	59	59-07-0005	MC14053B	0A0530C4	Not-NSC
0078	59	59-07-0021	2AT9640P	1N747TP, SAT9642G	TI
0079	59	59-06-0281	LM93N	M93	NSC+TI
0080	59	59-06-0132	SN74ALS32	N74ALS32N	TI-Sil
0081	59	59-06-0133	SN74ALS13N	DM74ALS13N	TI-Sil
0082	59	59-06-0281	LM93N	M93	NSC+TI
0083	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0084	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0085	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0086	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0087	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0088	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0089	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0090	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0091	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0092	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0093	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0094	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0095	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0096	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0097	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0098	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0099	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0100	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0101	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0102	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0103	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0104	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0105	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0106	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0107	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0108	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0109	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0110	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0111	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0112	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0113	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0114	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0115	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0116	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0117	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0118	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0119	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0120	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0121	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0122	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC

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IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
0123	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0124	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0125	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0126	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0127	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0128	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0129	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0130	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0131	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0132	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0133	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0134	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0135	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0136	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0137	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0138	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0139	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0140	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0141	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0142	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0143	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0144	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0145	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0146	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0147	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0148	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0149	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0150	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0151	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0152	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0153	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0154	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0155	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0156	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0157	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0158	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0159	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0160	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0161	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0162	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0163	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0164	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0165	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0166	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0167	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0168	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0169	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0170	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
0171	59	59-06-0110	LF3578N	Slew rate >30V/us	NSC
01					

TIME CODE READ/WRITE UNIT "ESE" 1.820.721.84 GRP 21/ELM 20



IND.	PDS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....38	59.09.1107		1 MF	15		R.....34	57.11.4450	1.5 OHM	25		
C.....39	59.06.0472		4.7 MF	10R		R.....35	57.11.4103	10 OHM	25		
C.....40	59.12.4171		470 PF	10R		R.....36	57.11.4105	1 OHM	25		
C.....41	59.34.4151		150 PF	5% Co		R.....37	57.11.4103	10 OHM	25		
C.....42	59.06.0472		47 MF	10R		R.....38	57.11.4470	4.7 OHM	25		
C.....43	59.09.1103		10 MF	15		R.....39	57.11.4471	4.7 OHM	25		
C.....44	59.12.4181		600 PF	10R		R.....40	57.11.4152	1.5 OHM	25		
C.....45	59.06.0474		470 PF	10R	Co	R.....41	57.11.4102	1 OHM	25		
C.....46	59.09.2075		50 MF	-20%		R.....42	57.11.4105	10 OHM	25		
C.....47	59.06.0473		47 MF	10R	Co	R.....43	57.11.4152	1.5 OHM	25		
C.....48	59.06.0470		47 MF	20% 5+3V, 5a1	PhnRI	R.....44	57.11.4109	60 OHM	25		
C.....49	59.06.0472		4.7 MF	10R		R.....45	57.11.4103	10 OHM	25		
C.....50	59.26.4170		4.7 MF	20% 25V, 5a1	PhnRI	R.....46	57.11.4103	10 OHM	25		
C.....51	59.06.3109		1 MF	20% 40V, 5a1		R.....47	57.11.4103	10 OHM	25		
C.....52	59.26.3109		10 MF	20% 10V, 5a1		R.....48	57.11.4392	3.9 OHM	25		
D.....1	50.04.0122	1M4001		1N4001, 1N4002, 1N4003, 1N4004	Mot, ITC, Sot	R.....49	57.11.4102	1 OHM	25		
D.....2	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....50	57.11.4103	10 OHM	25		
D.....3	50.04.0122	1M4001		1N4002, 1N4003, 1N4004	Mot, ITC, Sot	R.....51	57.11.4102	1 OHM	25		
D.....4	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....52	57.11.4106	10 OHM	25		
D.....5	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....53	57.11.4102	1 OHM	25		
D.....6	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....54	57.11.4102	1 OHM	25		
D.....7	50.04.0127	8A5 40-02		8A5 40-02	Phn, Sot	R.....55	57.11.3202	2 OHM	15		
D.....8	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....56	57.11.4102	1 OHM	25		
D.....9	50.04.0127	8A5 40-02		8A5 40-02	Phn, Sot	R.....57	57.11.3202	2 OHM	15		
D.....10	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....58	57.11.4102	1 OHM	25		
D.....11	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....59	57.11.3202	2 OHM	15		
D.....12	50.04.0103	7.5 V Z		BZ83BC 7V5, BZ83SC 7V5, ZPD 1.5	Sem, ITC	R.....60	57.11.4104	100 OHM	25		
D.....13	50.04.0103	7.5 V Z		BZ83BC 7V5, BZ83SC 7V5, ZPD 1.5	Sem, ITC	R.....61	57.11.4104	100 OHM	25		
D.....14	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....62	57.11.3192	1.5 OHM	15		
D.....15	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....63	57.11.4102	1 OHM	25		
D.....16	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....64	57.11.4102	1 OHM	25		
D.....17	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....65	57.11.4102	1 OHM	25		
D.....18	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....66	57.11.4102	1 OHM	25		
D.....19	50.04.0112	1M8818		BZ83BC 6V8, BZ83SC 6V8, ZPD 4+4	Mot	R.....67	57.11.4103	1 OHM	15		
D.....20	50.04.0112	1M8818		BZ83BC 6V8, BZ83SC 6V8, ZPD 4+4	Mot	R.....68	57.11.4153	15 OHM	25		
D.....21	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....69	57.11.4105	1 OHM	25		

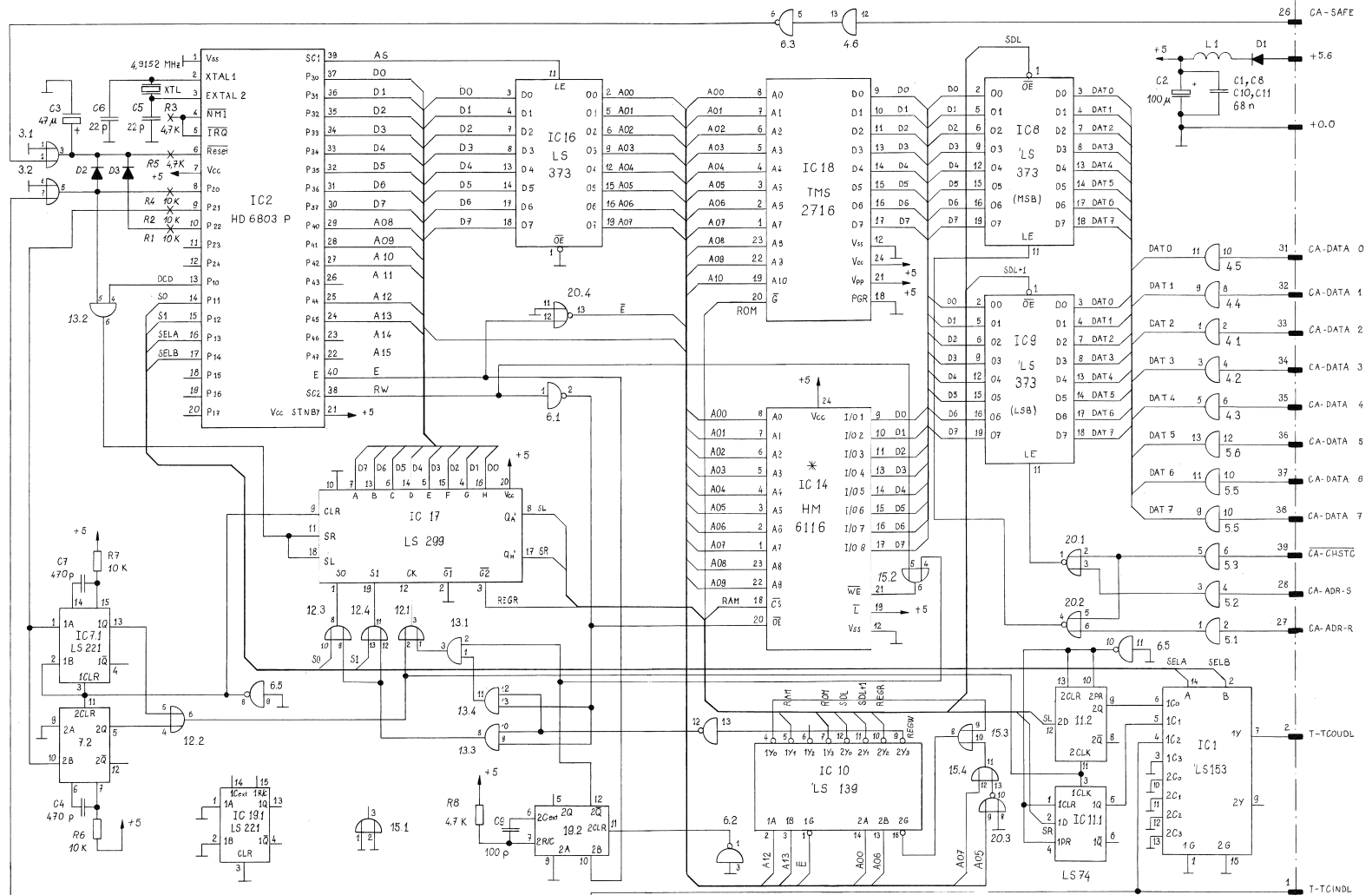
STUDEF (00) 85/10/09 LN CODE READ/WRITE UNIT 1.820.721.84 PAGE 2

IND.	PDS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PDS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D.....22	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....71	57.11.4102	1 OHM	25		
D.....23	50.04.0127	8A5 40-02		8A5 40-02	Phn, Sot	R.....72	57.11.4221	220 OHM	25		
D.....24	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....73	57.11.4102	1 OHM	25		
D.....25	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....74	57.11.4481	680 OHM	25		
D.....26	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....75	57.11.4100	10 OHM	25		
D.....27	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....76	57.11.4105	1 OHM	25		
D.....28	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....77	57.11.4100	10 OHM	25		
D.....29	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....78	57.11.4481	680 OHM	25		
D.....30	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....79	57.11.4102	1 OHM	25		
D.....31	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....80	57.11.4102	1 OHM	25		
D.....32	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....81	57.11.4102	1 OHM	25		
D.....33	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....82	57.11.4470	47 OHM	25		
D.....34	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....83	57.11.4100	10 OHM	25		
D.....35	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....84	57.11.4103	10 OHM	25		
D.....36	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....85	57.11.4101	100 OHM	25		
D.....37	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....86	57.11.4104	100 OHM	25		
D.....38	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....87	57.11.4102	1 OHM	25		
D.....39	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....88	57.11.4101	100 OHM	25		
D.....40	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....89	57.11.4102	1 OHM	25		
D.....41	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....90	57.11.4103	10 OHM	25		
D.....42	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....91	57.11.4103	10 OHM	25		
D.....43	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....92	57.11.4102	1 OHM	25		
D.....44	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....93	57.11.4101	100 OHM	25		
D.....45	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....94	57.11.4102	1 OHM	25		
D.....46	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....95	57.11.4102	1 OHM	25		
D.....47	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....96	57.11.4102	1 OHM	25		
D.....48	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....97	57.11.4102	1 OHM	25		
D.....49	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....98	57.11.4105	1 OHM	25		
D.....50	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....99	57.11.4106	10 OHM	25		
D.....51	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....100	57.11.4106	10 OHM	25		
D.....52	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....101	57.11.4106	10 OHM	25		
D.....53	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....102	57.11.4101	100 OHM	25		
D.....54	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....103	57.11.4106	10 OHM	25		
D.....55	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....104	57.11.4106	10 OHM	25		
D.....56	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....105	57.11.4106	10 OHM	25		
D.....57	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....106	57.11.4106	10 OHM	25		
D.....58	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....107	57.11.4106	10 OHM	25		
D.....59	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....108	57.11.4106	10 OHM	25		
D.....60	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....109	57.11.4106	10 OHM	25		
D.....61	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....110	57.11.4106	10 OHM	25		
D.....62	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....111	57.11.4106	10 OHM	25		
D.....63	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....112	57.11.4106	10 OHM	25		
D.....64	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....113	57.11.4106	10 OHM	25		
D.....65	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....114	57.11.4106	10 OHM	25		
D.....66	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....115	57.11.4106	10 OHM	25		
D.....67	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn, Sot	R.....116	57.11.4106	10 OHM	25		
D.....68	50.04.0125	1M4448		1N4002, 1N4003, 1N4004	Fc, ITC, Phn,						

TIME CODE DELAY UNIT "ESE" 1.820.722.81 GRP 21/ELM 41

R	R7	R2,R3	R6	
	R8	R1,R4,R5		
C	C3	C4	C6	C5

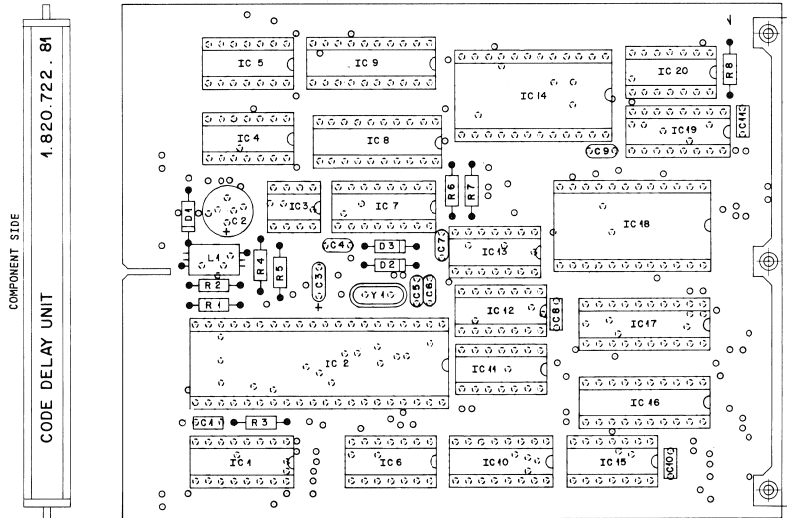
R				
C	C2	C1,C8	C10,C11	



* has been modified

① 7.12.82	Sandigliano	A 820/A810 Time code section	
STUDER	Code Delay Unit	SC 1.820.722.81	PAGE 1 OF 1

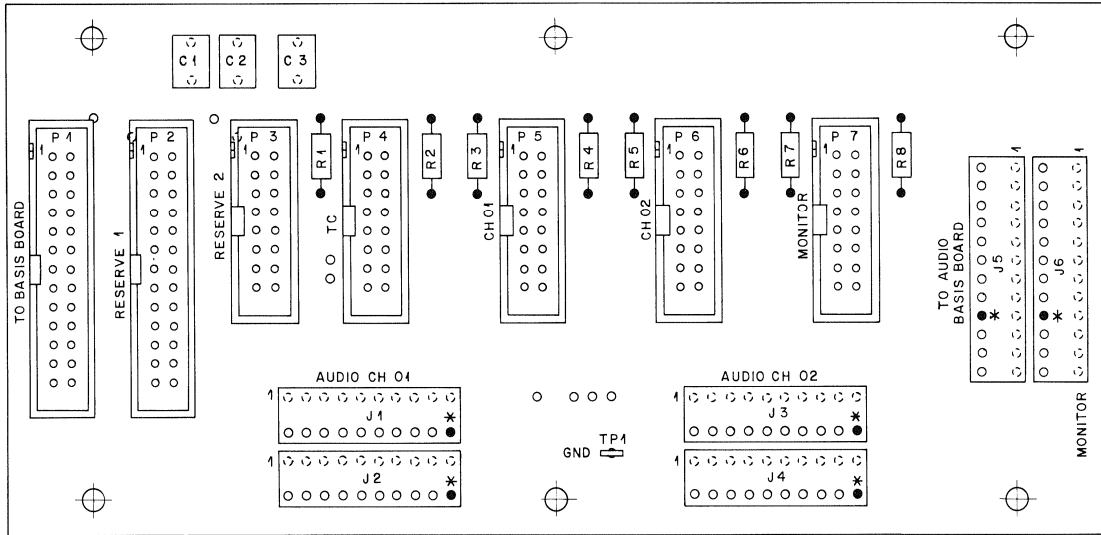
TIME CODE DELAY UNIT "ESE" 1.820.722.81 GRP 21/ELM 41



ENV.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	01	59-99-2205	68 nF		Ce
	02	59-22-1101	100 uF	25V, 6V, EI	PH
	03	59-22-2670	47 uF	25V, 6V, S&I	
	04	59-34-5471	470 pF		Ce
	05	59-34-2200	22 pF		Ce
	06	59-34-2220	22 pF		Ce
	07	59-34-5471	470 pF		Ce
	08	59-99-2205	68 nF		Ce
	09	59-34-1101	100 pF		Ce
	10	59-99-2205	68 nF		Ce
	11	59-99-2205	68 nF		Ce
	01	50-04-2512	IN5818	IN5819	Not
	02	50-04-2122	1N4001	1N4002, 1N4003, 1N4004	Fc, Cl, Mot, Sol
	03	50-04-2122	1N4001	1N4002, 1N4003, 1N4004	Fc, Cl, Mot, Sol
	01	50-04-0153	SN74LS153N	N74LS153N	Sign+TI
	02	50-14-0107	MC6803G-1	H88803P-1	Hi+Mot
	03	50-04-0103	SRT5463P	SRT5463JG, SRT5463JG, DS3613N	NS+TI
	04	50-07-2902	M74C902		NS
	05	50-01-0902	M74C902		NS
	06	50-06-0004	SN74LS 04N	N74LS 04N	Sign+TI
	07	50-06-0021	SN74LS221N		TI
	08	50-06-0373	SN74LS373N	N74LS373N	Max+Sign+TI
	09	50-06-0373	SN74LS373N	N74LS373N	Max+Sign+TI
	10	50-06-0139	AM74LS139N	SN74LS139N	AM+TI
	11	50-06-0076	SN74LS 74AN	N74LS 74AN	Sign+TI
	12	50-06-0032	SN74LS 32N	N74LS 32N	Sign+TI
	13	50-06-0008	SN74LS 00N	N74LS 00N	Sign+TI
(01)	14	50-14-0105	M6110R-2	-3, -4, M6110R-2, -3, -4	Not
(01)	15	50-14-0107	HM010, LP	-3, HM010, LP, A	Hi+Mot
	16	50-06-0032	SN74LS 32N	N74LS 32N	Sign+TI
	17	50-06-0373	SN74LS373N	N74LS373N	Max+Sign+TI
	18	50-06-0299	SN74LS299N	AM74LS299N	AM+TI
	19	L4195-075, 70		Software Delay time code R 257	SE
	20	50-06-0221	SN74LS221N	N74LS 02N	Sign+TI
	01	50-06-0002	SN74LS 02N	N74LS 02N	Sign+TI

ENV.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	01	62-01-0115		Interference coil, Philips Nr 4312 020 36700	
	01	57-11-4103	10 kOhm	5%	
	02	57-11-4103	10 kOhm	5%	
	03	57-11-4672	4.7 kOhm	5%	
	04	57-11-4103	10 kOhm	5%	
	05	57-11-4672	4.7 kOhm	5%	
	06	57-11-4103	10 kOhm	5%	
	07	57-11-4103	10 kOhm	5%	
	08	57-11-4672	4.7 kOhm	5%	
	01	69-01-0553		Quartz 4.915 MHz, +/-100 ppm	
(01) 62/12/07 IC 14, M6110R, no more manufactured; substituted by HM010, LP-3					
Cer+Frantic: (3)=Electrolytic, SM=Solid Aluminium					
MANUFACTURER: AM=American Microsystems Inc., FC=Fairchild, GI=General Instruments, Hi=Hi-tech, Mo=Motorola, Not=Motorola, NS=National Semiconductor, PH=Philips, Sign=Signetics, Sol=Solitron, St=Studer, TI=Texas Instruments, Or=Ortel					
DATE 02/06/21 (01) 02/12/07					

DISTRIBUTION PCB 1.820.794.00 GRP 70



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.06.0474	470 nF	20%, 6x3V	
C.....2		59.06.0474	470 nF	20%, 25V	
C.....3		59.06.0474	470 nF	20%, 25V	
R.....1		57.11.4100	10 Ohm	10%	
R.....2		57.11.4100	10 Ohm	10%	
R.....3		57.11.4100	10 Ohm	10%	
R.....4		57.11.4100	10 Ohm	10%	
R.....5		57.11.4100	10 Ohm	10%	
R.....6		57.11.4100	10 Ohm	10%	
R.....7		57.11.4100	10 Ohm	10%	
R.....8		57.11.4100	10 Ohm	10%	
J.....1		54.01.0290	10 cont.	C15, AMP Nr. 163.680-9	
J.....2		54.01.0290	10 cont.	C15, AMP Nr. 163.680-9	
J.....3		54.01.0290	10 cont.	C15, AMP Nr. 163.680-9	
J.....4		54.01.0290	10 cont.	C15, AMP Nr. 163.680-9	
J.....5		54.01.0215	12 cont.	C15, AMP Nr. 1-163.680-1	
J.....6		54.01.0215	12 cont.	C15, AMP Nr. 1-163.680-1	
P.....1		54.14.2003	26 cont.	See note 1	
P.....2		54.14.2003	26 cont.	See note 1	
P.....3		54.14.2002	16 cont.	See note 2	
P.....4		54.14.2002	16 cont.	See note 2	
P.....5		54.14.2002	16 cont.	See note 2	
P.....6		54.14.2002	16 cont.	See note 2	
P.....7		54.14.2002	16 cont.	See note 2	
TP.....1		29.21.6002		Testpoint	

Note 1 - Yamaichi Nr. FAP-26-08//4 Burndy Nr. 8PH 9 B 26 B00 GS

Note 2 - Yamaichi Nr. FAP-16-08//4 Burndy Nr. 8PH 9 B 16 B00 GS

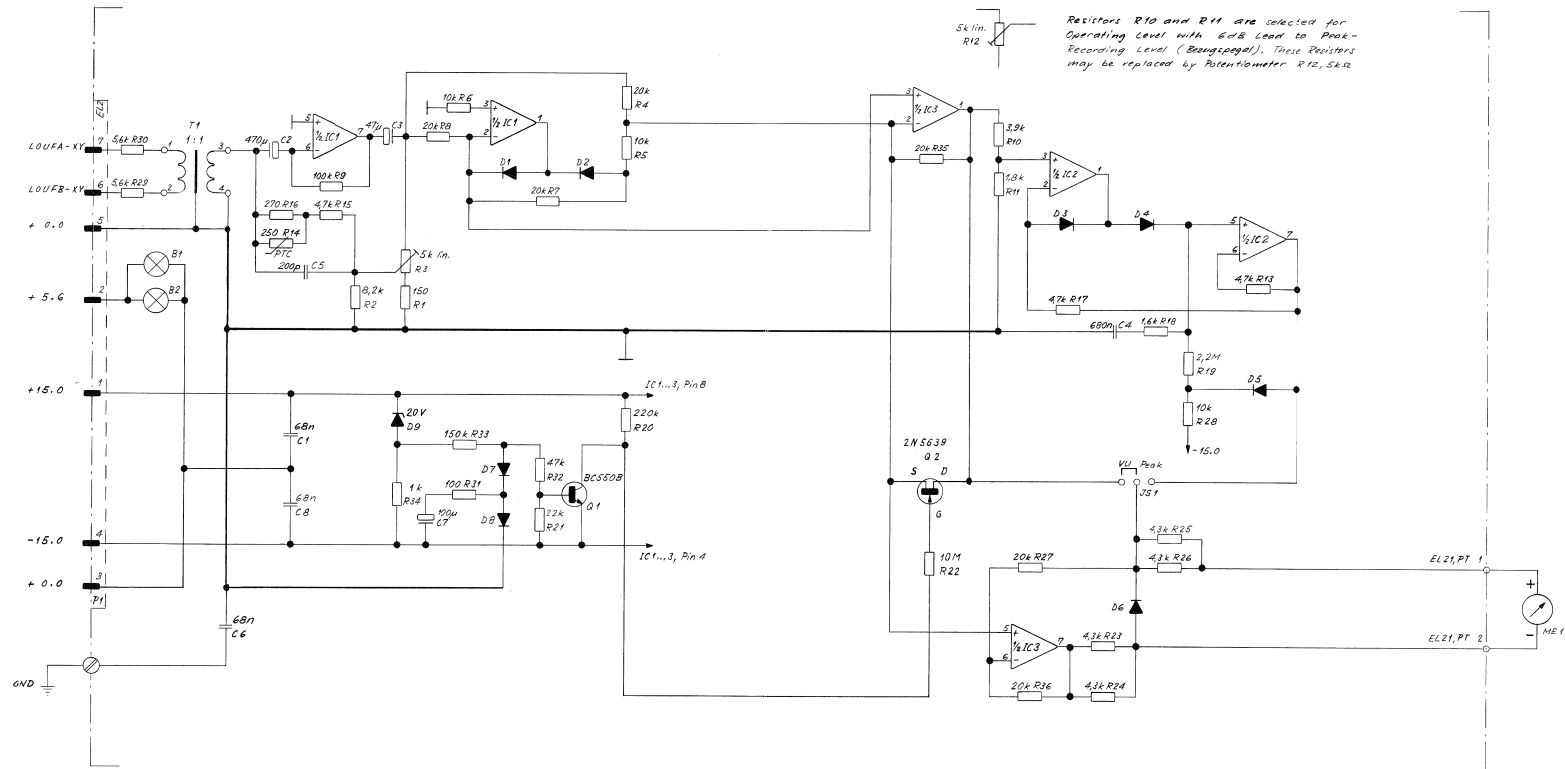
DRIG 84/11/14

S T U D E R (00) 84/11/14 WE DISTRIBUTION BOARD 1.820.794.00 PAGE 1

VU PANEL 1.810.320.81
 - VU-METER AMPLIFIER PCB "ESE" 1.820.730.81

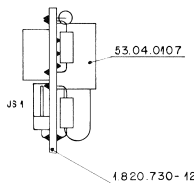
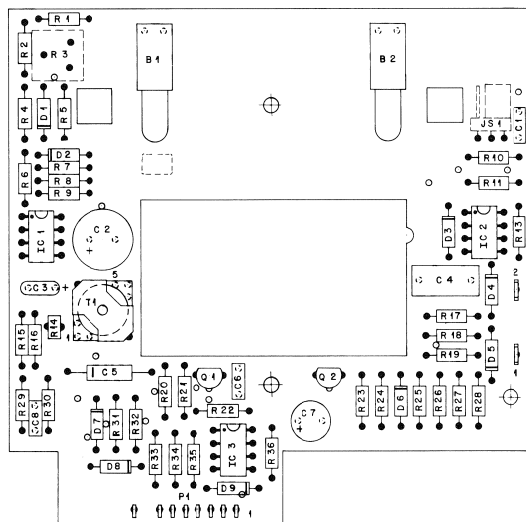
R _____
 C _____

R _____
 C _____



21.1.83	Buchegger	A820/A840	Audio Section	Part of GRP 70
STUDER	VU-Meter Amplifier	SC	1.820.730-81	PAGE 4 OF 4

VU PANEL 1.810.320.81
 - VU-METER AMPLIFIER PCB "ESE" 1.820.730.81



IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
D.....1		51-02-0144	Lamp	See note 1	
D.....2		51-02-0144	Lamp	See note 1	
L.....1		59-99-0205	68 nF		Co
L.....2		59-22-2471	470 uF		AVX E1
L.....3		59-02-0070	47 uF		AVX S41
L.....4		59-02-0584	680 nF		5% 63V MFC
L.....5		59-12-7201	200 uF		1% 63V PS
L.....6		59-99-0205	68 nF		Co
L.....7		59-22-2471	470 uF		25V E1
L.....8		59-99-0205	68 nF		Co
D.....1		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....2		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....3		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....4		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....5		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....6		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....7		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....8		50-04-0125	1N4449		ITT+Ph+Sos+TI
D.....9		50-04-1109	20 V Z	ZPD20, B2X83C20, B2X55C20	ITT+Sep
IC.....1		50-09-0101	LF553N	TLOT2ACP	NS+TI
IC.....2		50-09-0101	LF553N	TLOT2ACP	NS+TI
IC.....3		50-09-0101	LF553N	TLOT2ACP	NS+TI
J5.....1				See note 2	
ME.....1		1-810-320-22		VU-Meter	St
P.....1		54-01-0319	9 cont.	AMP Nr. 163-749-7	
Q.....1		50-03-0436	BC237B	BC547B	ITT+Ph+Sis
Q.....2		50-03-0331	ZN563V		Mot+Sis
R.....1		57-11-4451	150 Ohm		
R.....2		57-11-4422	82 kOhm		

S T U D E R (00) 83/02/22 BBT VU-METER AMPLIFIER 1.820.730-81 PAGE 1

IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....3		58-01-8502	5 kOhm	See note 3	
R.....4		57-11-3203	20 kOhm	1%	
R.....5		57-11-4403	10 kOhm		
R.....6		57-11-4403	10 kOhm		
R.....7		57-11-3203	20 kOhm		
R.....8		57-11-3203	20 kOhm		
R.....9		57-11-4509	100 kOhm		
R.....10		57-11-4392	1.4 kOhm		
R.....11		57-11-4382	1.4 kOhm		
R.....12			not used		
R.....13		57-11-4472	4.7 kOhm		
R.....14		57-99-0216	250 Ohm	PTC Resistors: Philips Nr. 2322 660 91001	
R.....15		57-11-4472	4.7 kOhm		
R.....16		57-11-4471	270 Ohm		
R.....17		57-11-4472	4.7 kOhm		
R.....18		57-11-3362	1.4 kOhm	1%	
R.....19		57-11-4224	220 kOhm		
R.....20		57-11-4224	220 kOhm		
R.....21		57-11-4203	22 kOhm		
R.....22		57-11-4406	10 kOhm		
R.....23		57-11-3432	4.3 kOhm	1%	
R.....24		57-11-3432	4.3 kOhm	1%	
R.....25		57-11-3432	4.3 kOhm	1%	
R.....26		57-11-3432	4.3 kOhm	1%	
R.....27		57-11-3303	20 kOhm	1%	
R.....28		57-11-4103	10 kOhm		
R.....29		57-11-4562	5.6 kOhm		
R.....30		57-11-4562	5.6 kOhm		
R.....31		57-11-4101	100 Ohm		
R.....32		57-11-4473	47 kOhm		
R.....33		57-11-4354	150 kOhm		
R.....34		57-11-4102	1 kOhm		
R.....35		57-11-3203	20 kOhm	1%	
R.....36		57-11-3203	20 kOhm	1%	
T.....01		1-0222-118-00		Inputtransformer 1:1:1	St

S T U D E R (00) 83/02/22 BBT VU-METER AMPLIFIER 1.820.730-81 PAGE 2

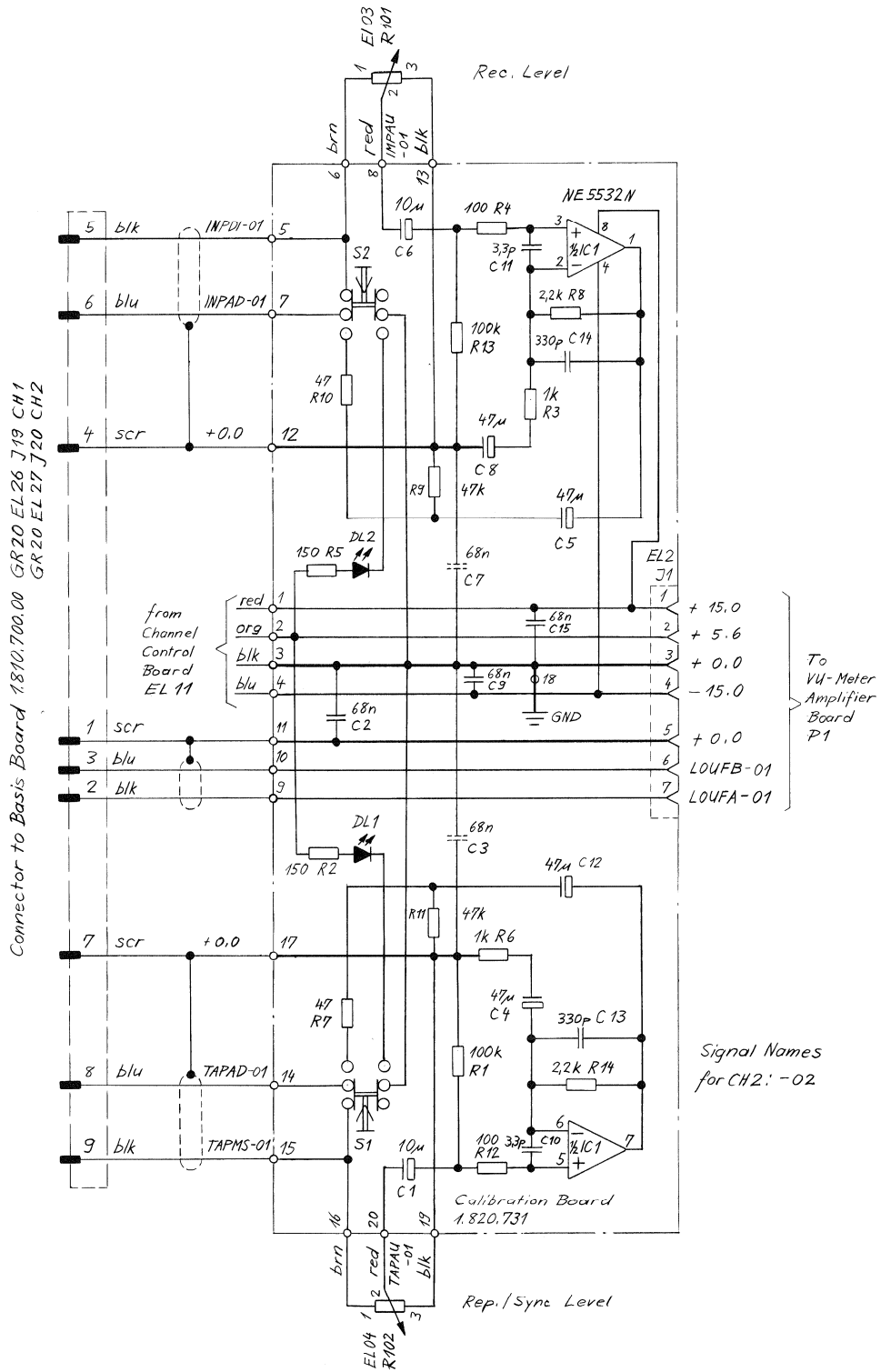
IND.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 = Lamp 6-V-0.03A Onform Nr. 2306 ITF Nr. 53373 Socket Studer Nr. 53-04-0107; Alampa Nr. 4050 021					
Note 2 = Contact pint Studer 54-11-0125; Berg 70168-301-36 Original Studer 54-11-0214; Philips 2422 024 88003					
Note 3 = 5 kOhm Potentiometer Allen Bradley Nr. E 28 502 Bourns Nr. 3160 P-L-502 Spectrol Nr. 63M 502 T010					

CapFormica: E1=Electrolytic; MFC=Polystyrol; P5=Polystyrol
 Gal=Solid aluminium.
 MANUFACTURER: ITT=Intermetel; Mot=Motorola; NS=National Semiconductors
 Ph=Philips; Sos=Siemens; Sic=Siemens; St=Studer;
 Ssi=Siemens; TI=Texas Instruments.

ORIG 83/02/22
 S T U D E R (00) 83/02/22 BBT VU-METER AMPLIFIER 1.820.730-81 PAGE 3

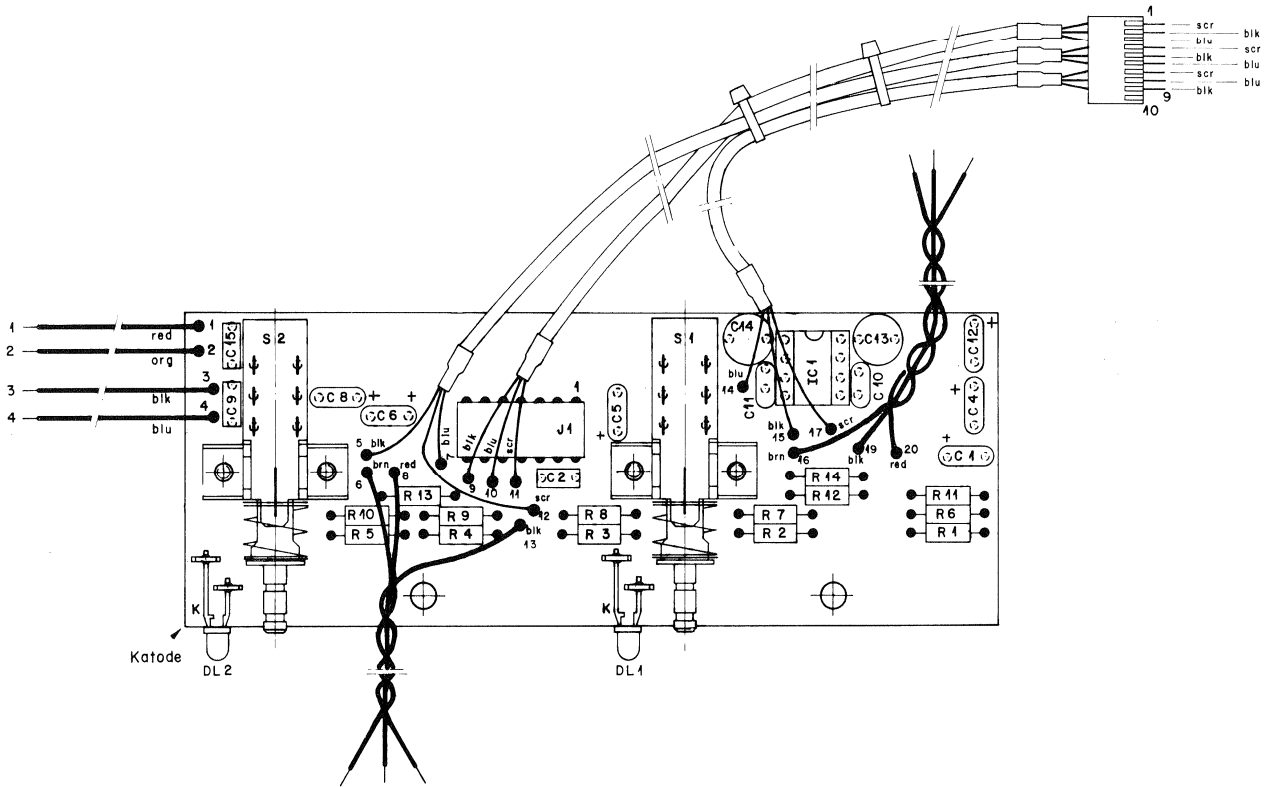
VU PANEL 1.810.320.81
 - CALIBRATION PCB 1.820.731.00

R	5, 10, 101, 9, 13, 4, 3, 8,
	2, 7, 102, 11, 1, 6, 12, 14,
C	2, 6, 7, 8, 11, 15, 14, 12,
	1, 1, 3, 9, 4, 10, 5, 13,



06.08.82	ed. Gimperti	A 820 / A 810 Audio Section	Part of GRP 70
STUDER	Calibration Board	SC 1.820.731.00	PAGE 1 OF 1

VU PANEL 1.810.320.81
 - CALIBRATION PCB 1.820.731.00

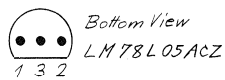
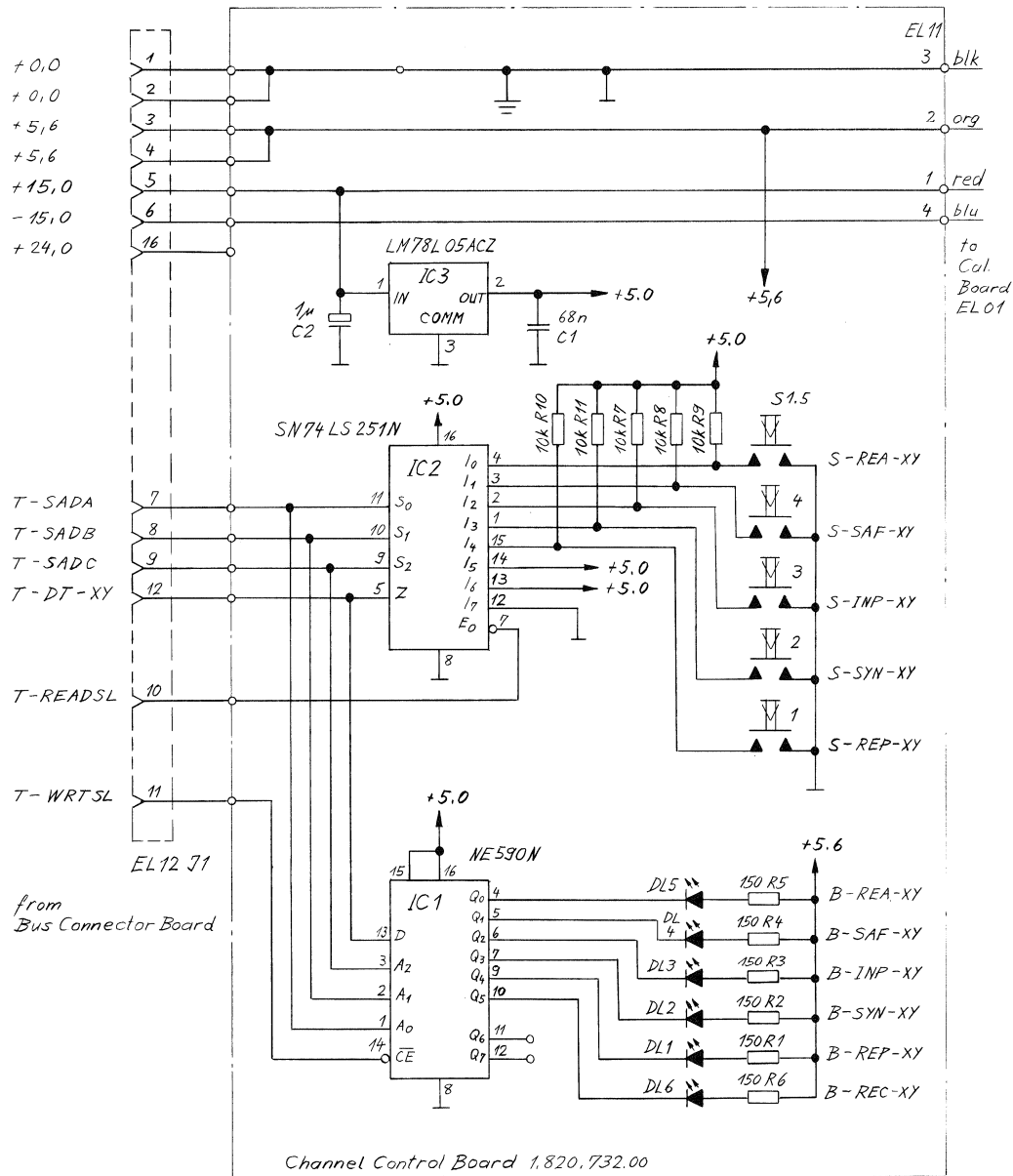


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.26.2100	10 uF	16V, Sa1	Ph	R...	101	58.10.9006	10 kOhm	log., Allen Bradley Nr. JA 1 N 072 S 103 AA	AA
C...	002	59.99.0205	68 nF	Ce		R...	102	58.10.9006	10 kOhm	log., Allen Bradley Nr. JA 1 N 072 S 103 AA	AA
C...	003		not used			S...	001	1.820.731.01		2pole change over switch	St
C...	004	59.26.0470	47 uF	6V, Sa1	Ph	S...	002	1.820.731.01		2pole change over switch	St
C...	005	59.26.0470	47 uF	6V, Sa1	Ph						
C...	006	59.26.2100	10 uF	16V, Sa1	Ph						
C...	007		not used								
C...	008	59.26.0470	47 uF	6V, Sa1	Ph						
C...	009	59.99.0205	68 nF	Ce							
C...	010	59.34.0339	3.3 pF	Ce							
C...	011	59.34.0339	3.3 pF	Ce							
C...	012	59.26.0470	47 uF	6V, Sa1	Ph						
C...	013	59.05.2331	330 pF	PP							
C...	014	59.05.2331	330 pF	PP							
C...	015	59.99.0205	68 nF	Ce							
DL...	001	50.04.2130	CQW 13-5	Q 62703-Q 575	Sie						
DL...	002	50.04.2130	CQW 13-5	Q 62703-Q 575	Sie						
IC...	001	50.09.0105	NE5532N	XR5532N, 5532NB	Sig,Ex+Ra						
J...	001	54.01.0244	7 cont.	AMP Nr. 163.683-5							
R...	001	57.11.4104	100 kOhm								
R...	002	57.11.4151	150 Ohm								
R...	003	57.11.4102	1 kOhm								
R...	004	57.11.4101	100 Ohm								
R...	005	57.11.4151	150 Ohm								
R...	006	57.11.4102	1 kOhm								
R...	007	57.11.4470	47 Ohm								
R...	008	57.11.4222	2.2 kOhm								
R...	009	57.11.4473	47 kOhm								
R...	010	57.11.4470	47 Ohm								
R...	011	57.11.4473	47 kOhm								
R...	012	57.11.4101	100 Ohm								
R...	013	57.11.4104	100 kOhm								
R...	014	57.11.4222	2.2 kOhm								

Ce=Ceramic, PP=Polypropylen, Sa1=Solid aluminium
 MANUFACTURER: Ex=Exar, Ph=Philips, Ra=Raytheon, Sie=Siemens, Sig=Signetics, St=Studer.
 ORIG 82/09/06

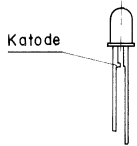
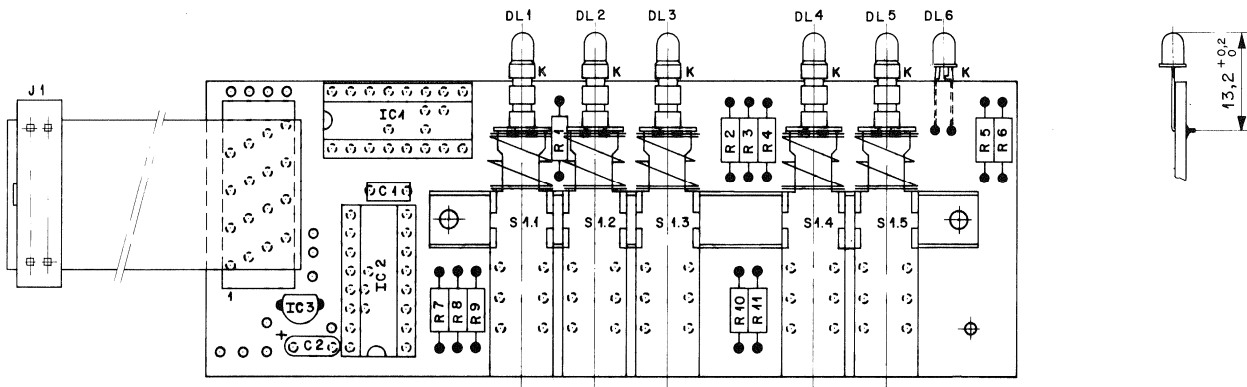
VU PANEL 1.810.320.81
 CHANNEL MODE SELECTOR UNIT 1.810.335.81
 - CHANNEL CONTROL PCB 1.820.732.00

R	10,11,7,8,9,	5,4,3,2,1,6
C	2	1



06.08.82	gämpflich LS	A 820 / A810	Audio Section	Part of GRP 70
STUDER	Channel Control Board	SC	1.820.732-00	PAGE 1 OF 1

VU PANEL 1.810.320.81
 CHANNEL MODE SELECTOR UNIT 1.810.335.81
 - CHANNEL CONTROL PCB 1.820.732.00



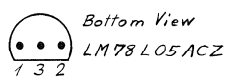
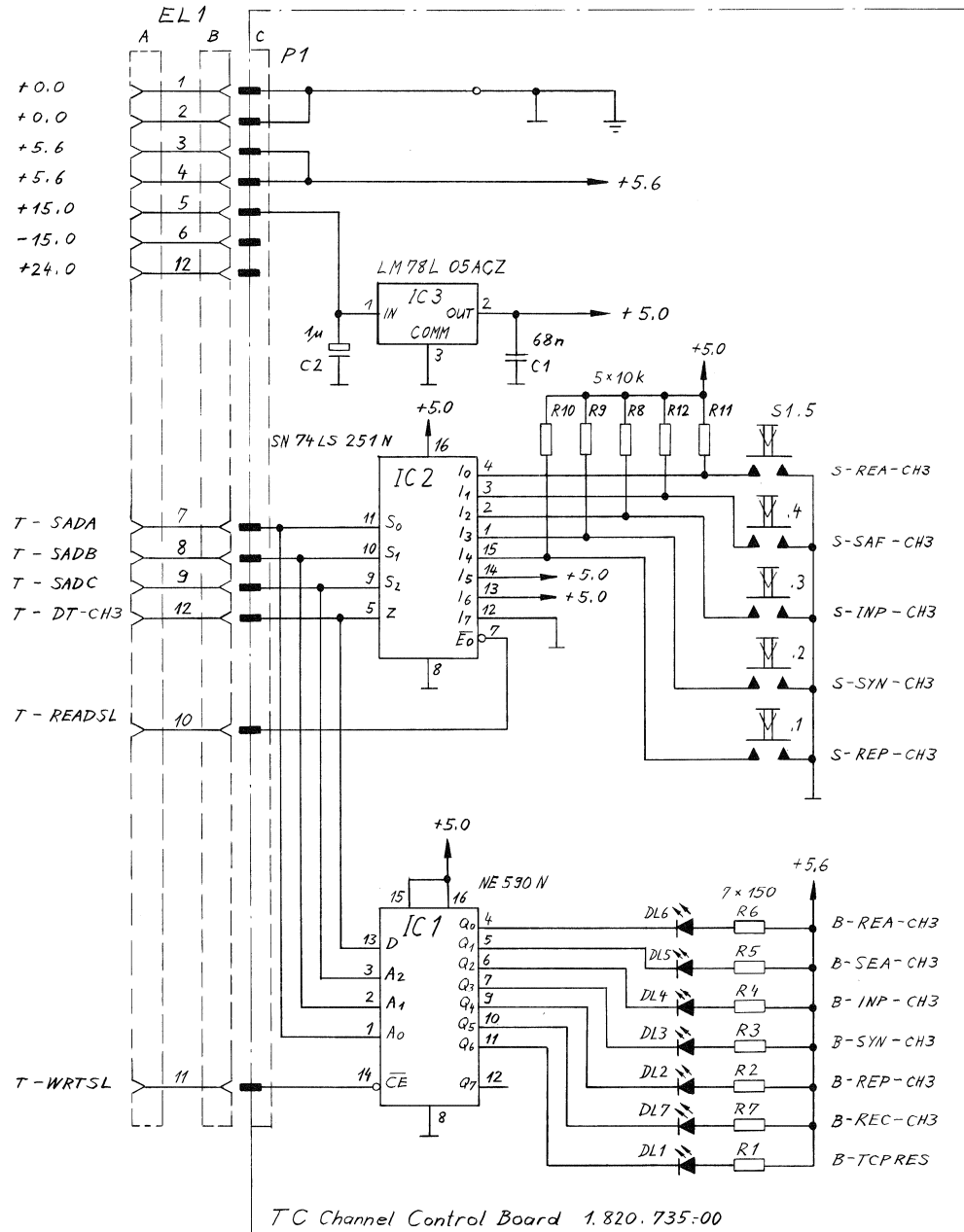
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.99.0205	68 nF	Ce		Note 1 - Yamachi Nr. FAS-16-17, Burndy Nr. FRS-16 B0-4P Connection cable Nr. 1.820.733.00					
C...	002	59.26.9109	1 uF	16V, Sal	Ph	Ce=Ceramic, Sal=Solid aluminium					
DL...	001	50.04.2130	COW 13-5	Q 62703-Q 575	Sie	MANUFACTURER: AMI=American Microsystem Inc, Fc=Fairchild, NS=National Semiconductors, Ph=Philips, Sie=Siemens, Sig=Signetics, St=Studer, TI=Texas Instruments.					
DL...	002	50.04.2130	COW 13-5	Q 62703-Q 575	Sie						
DL...	003	50.04.2130	COW 13-5	Q 62703-Q 575	Sie						
DL...	004	50.04.2130	COW 13-5	Q 62703-Q 575	Sie						
DL...	005	50.04.2131	COW 15-5	Q 62703-Q 585	Sie						
DL...	006	50.04.2129	COW 11-5	Q 62703-Q 571	Sie						
IC...	001	50.15.0102	NE590N		Sig						
IC...	002	50.06.0251	SN74LS251N	AM74LS251N	AMI+TI						
IC...	003	50.10.0107	LM78L05ACZ	uA78L05AWC	Fc+NS						
J...	001	54.14.5021	16 cont.	See note 1							
R...	001	57.11.4151	150 Ohm								
R...	002	57.11.4151	150 Ohm								
R...	003	57.11.4151	150 Ohm								
R...	004	57.11.4151	150 Ohm								
R...	005	57.11.4151	150 Ohm								
R...	006	57.11.4151	150 Ohm								
R...	007	57.11.4103	10 kOhm								
R...	008	57.11.4103	10 kOhm								
R...	009	57.11.4103	10 kOhm								
R...	010	57.11.4103	10 kOhm								
R...	011	57.11.4103	10 kOhm								
S...	001	1.820.732.01		5x2pole change over switch	St						

ORIG 82/08/06

TC CHANNEL MODE SELECTOR UNIT 1.810.337.00
 - TC CHANNEL CONTROL PCB 1.820.735.00

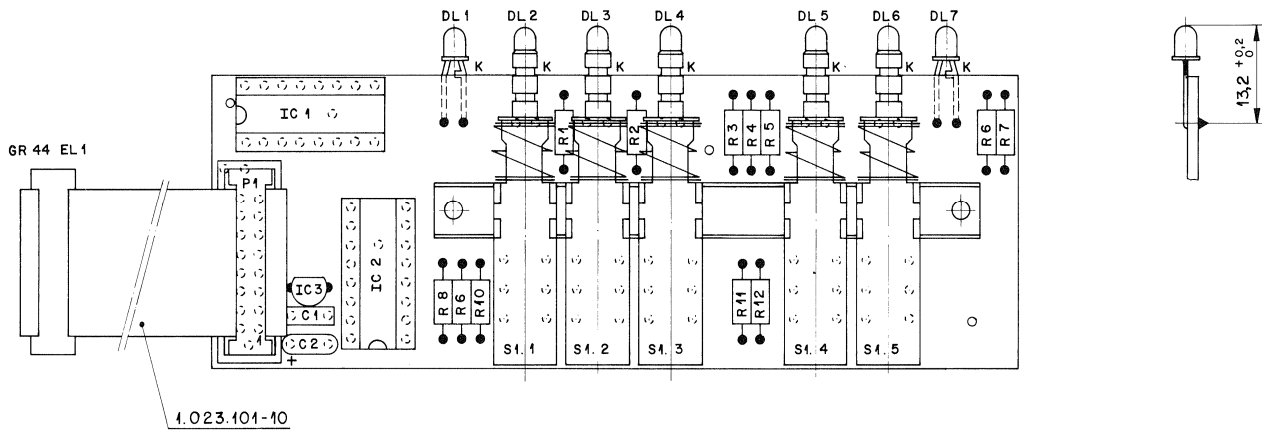
R	10, 9, 8, 12, 11, 6, 5, 4, 3, 2, 7, 1
C	2, 1

from Bus Connector Board



26.5.83	Gämperle L511	A820 / A810	Time Code Section	Part of GRP 70
STUDER	TC Channel Control Board	SC	1.820.735-00	PAGE 1 OF 1

TC CHANNEL MODE SELECTOR UNIT 1.810.337.00
 - TC CHANNEL CONTROL PCB 1.820.735.00

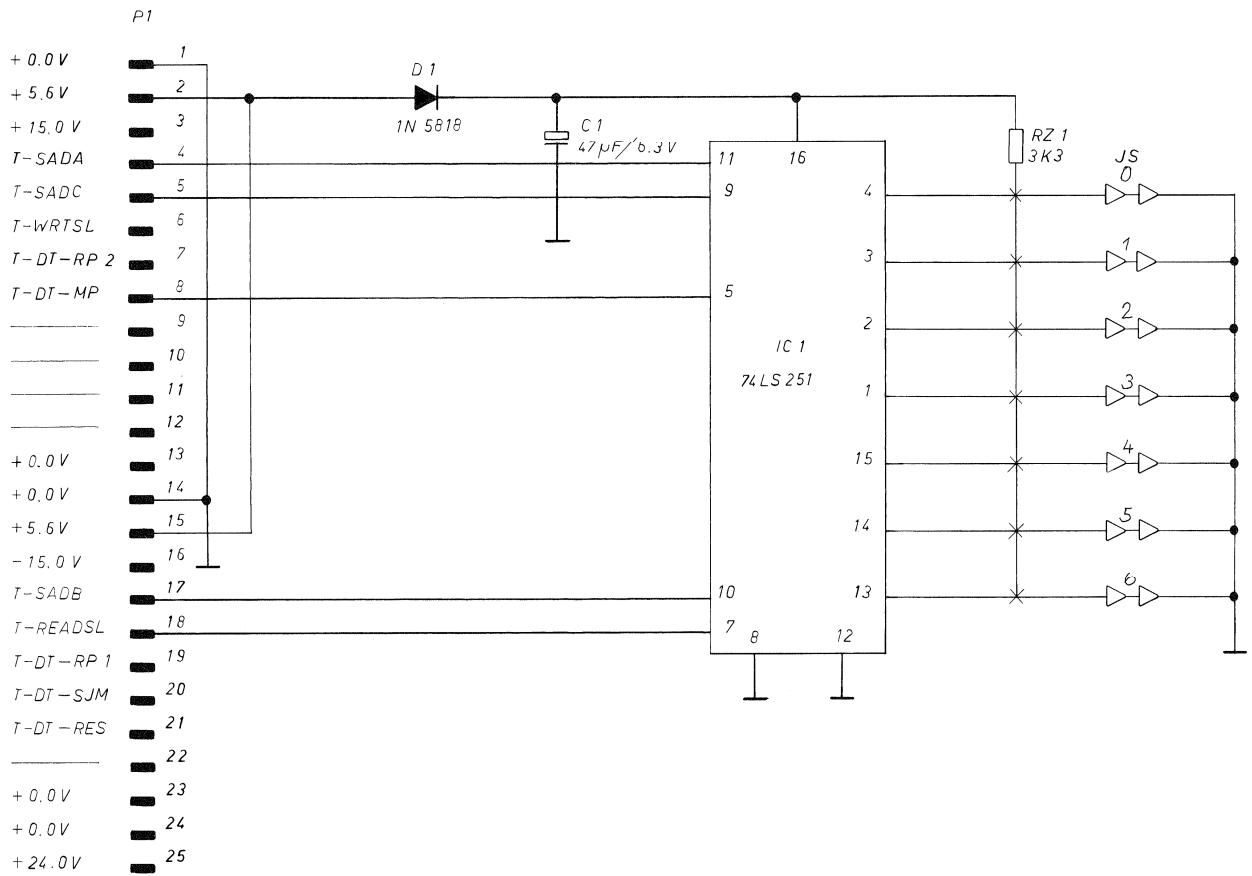


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.99.0205	68 nF	Ce	
C...	002	59.26.9109	1 uF	16V, Sal	Ph
DL...	001	50.04.2131	CQV 15-5	Q 62703-Q 585	Sie
DL...	002	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie
DL...	003	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie
DL...	004	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie
DL...	005	50.04.2130	CQV 13-5	Q 62703-Q 575	Sie
DL...	006	50.04.2131	CQV 15-5	Q 62703-Q 585	Sie
DL...	007	50.04.2129	CQV 11-5	Q 62703-Q 571	Sie
IC...	001	50.15.0102	NE590N		Sig
IC...	002	50.06.0251	SN74LS251N	AM74LS251N	AMI+TI
IC...	003	50.10.0107	LM78L05ACZ	UA78L05AMC	Fc+NS
P...	001	54.14.2002	16 cont.	See note 1	
R...	001	57.11.4151	150 Ohm		
R...	002	57.11.4151	150 Ohm		
R...	003	57.11.4151	150 Ohm		
R...	004	57.11.4151	150 Ohm		
R...	005	57.11.4151	150 Ohm		
R...	006	57.11.4151	150 Ohm		
R...	007	57.11.4151	150 Ohm		
R...	008	57.11.4103	10 kOhm		
R...	009	57.11.4103	10 kOhm		
R...	010	57.11.4103	10 kOhm		
R...	011	57.11.4103	10 kOhm		
R...	012	57.11.4103	10 kOhm		
S...	001	1.820.732.01		5*2pole change over switch	St

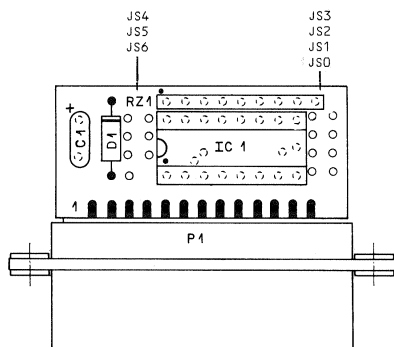
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - Yamaichi Nr. FAP-16-08/4 Burndy Nr. BPH 9 B 16 B00 TN Connection cable Studer Nr. 1.023.101.10					
Ce=Ceramic, Sal=Solid aluminium					
MANUFACTURER: AM=American Microsystems Inc, Fc=Fairchild, NS=National Semiconductors, Ph=Philips, Sie=Siemens, Sig=Signetics, St=Studer, TI=Texas Instruments.					

ORIG 83/07/06

HEAD ASSEMBLY IDENTIFIER PCB 1.820.795.00 GRP 60/ELM 02



① 3.584 We	○ . .	○ . .	○ . .	○ . .
A 820 Logic Section			PAGE 1 OF 1	
STUDER		Head Assembly Identifier PCB		SC 1.820.795.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC....1		50-06-0251		SN 74 LS 251 N	TI
D.....1		50-04-0512	1N 5818	1N 5818,	Mot
C.....1		59-26-0470	47 uF	20%, 6.3V, Sal	Ph
RZ....1		57-88-4332	8 03-3K	5%, SINGLE LINE	
P.....1		54-13-1003	D-TYPE	25 PDL-LOET	ITT+TRW

Sal=Solid aluminium

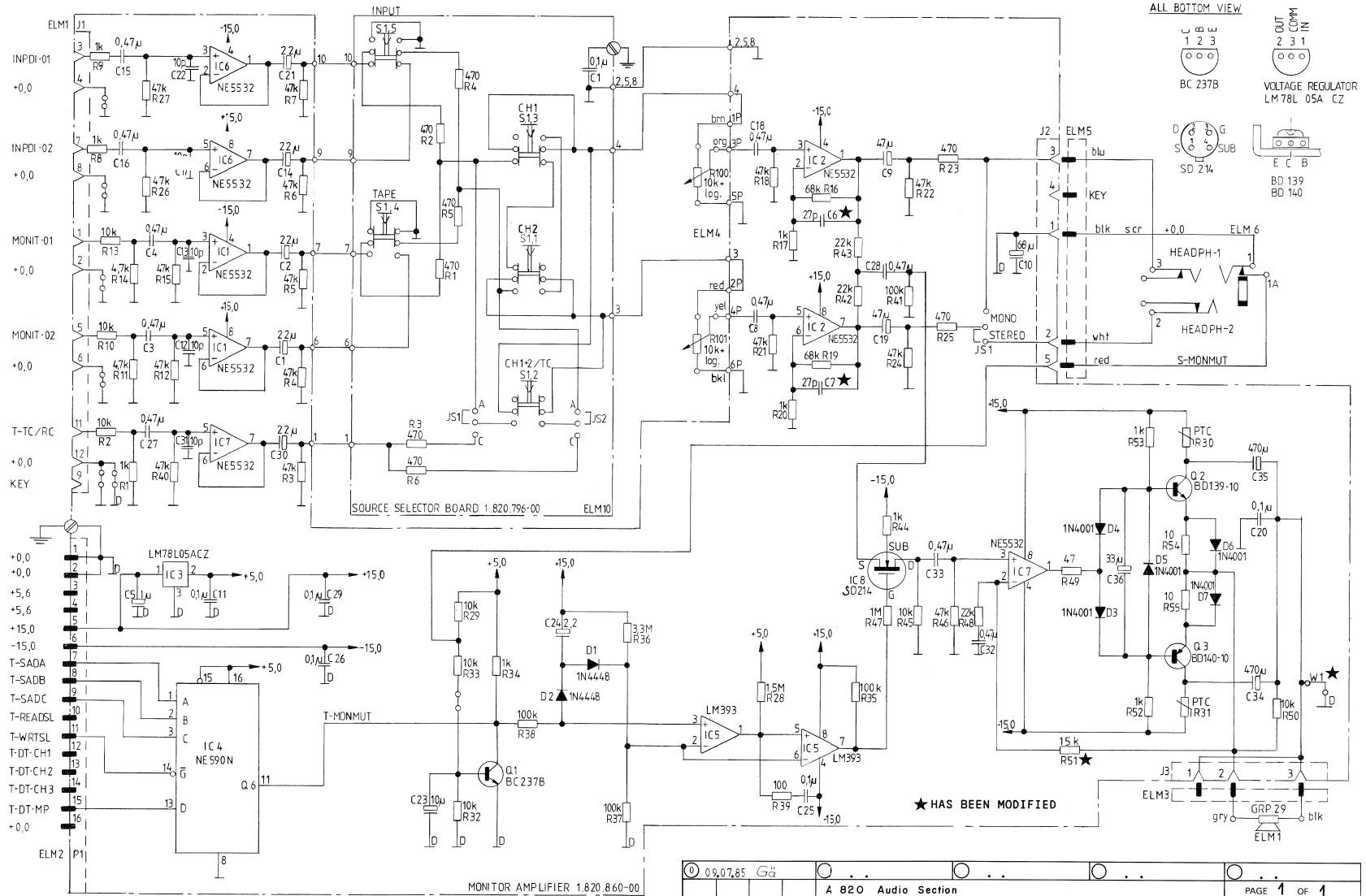
Manufacturer: ITI=Intermetall, Mot=Motorola, Ph=Phillips, St=Studer, TI=Texas Instrument, TRW=TRW

ORIG 84/05/03

S T U D E R (00) 84/05/03 WE HEAD ASSY IDENTIFIER BOARD 1.820.795.00 PAGE 1

FOR VERSION:	JUMPERS INTERRUPTED (x):						
	JS0	JS1	JS2	JS3	JS4	JS5	JS6
A820-1, A820-1 VU	x						
A820-0.75		x					
A820-0.75 VU	x	x					
A820-2 F	x	x	x				
A820-2, A820-2 VU			x				
A820-2/2 VU	x		x				
A820-2 TC, A820-2 TC VU		x	x				
A820-2/2-1/2" VU	x	x		x			
A820-2/2-1/2" TC VU	x	x		x			

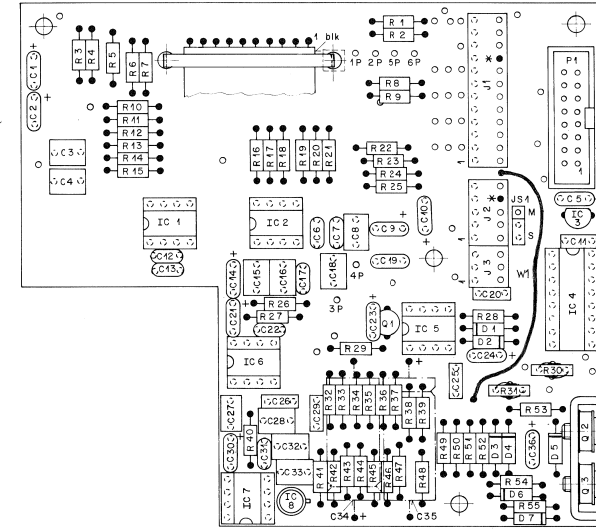
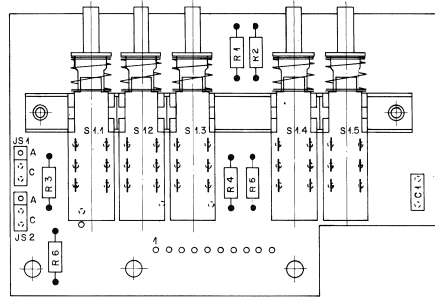
MONITOR CONTROL UNIT (TAPE TRANSP.) 1.820.235.00 GRP 28
 MONITOR CONTROL UNIT (EXT.) 1.820.580.00 GRP 71
 - MONITOR AMPLIFIER PCB "ESE" 1.820.860.00
 - SOURCE SELECTOR PCB 1.820.796.00



09,07,85	G _{ca}				
A 820 Audio Section					
STUDER Monitor Control Unit					
				PAGE 1 OF 1	
				SC 1.820.580-00 (GRP 71)	
				1.820.235-00 (GRP 28)	

MONITOR CONTROL UNIT (TAPE TRANSP.) 1.820.235.00 GRP 28
 MONITOR CONTROL UNIT (EXT.) 1.820.580.00 GRP 71
 - SOURCE SELECTOR PCB 1.820.796.00

MONITOR CONTROL UNIT (TAPE TRANSP.) 1.820.235.00 GRP 28
 MONITOR CONTROL UNIT (EXT.) 1.820.580.00 GRP 71
 - MONITOR AMPLIFIER PCB "ESE" 1.820.860.00



IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.06-0104	0.1 uF	PEFP	
J5...	001			See note 1	
J5...	002			See note 1	
R...	001	57.11-4471	470 Ohm		
R...	002	57.11-4471	470 Ohm		
R...	003	57.11-4471	470 Ohm		
R...	004	57.11-4471	470 Ohm		
R...	005	57.11-4471	470 Ohm		
R...	006	57.11-4471	470 Ohm		
S...	001	1.810.721+01		See note 2	

Note 1 - Contact pins: Studer Nr. 54.01.0020
 Philips Nr. 2322 205 80305
 Bridges: Studer Nr. 54.01.0021
 Philips Nr. 2322 204 80303
 AMP Nr. 141 767-1

Note 2 - Pushbutton switches:
 LK-Drucke release each other (S1-S12+S13)(S1+S11-S1)
 Manufacturer: Schrack (ITT), serie FOX

PEFP=Polystyester
 ORIG 84/12/11
 S T U D E R 1001 84/12/11 GSE SOURCE SELECTOR BOARD 1.820.796.00 PAGE 3

IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	001	59.26-1220	22 uF	20% Sat	PH
C...	002	59.26-1220	22 uF	20% Sat	PH
C...	003	59.26-3474	0.47 uF	10% PEFP	
C...	004	59.26-3474	0.47 uF	10% PEFP	PH
C...	005	59.34-1100	10 pF	20% Ca	PH
C...	006	59.34-1100	10 pF	20% Ca	PH
C...	007	59.34-1100	10 pF	20% Ca	PH
C...	008	59.26-3474	0.47 uF	10% PEFP	
C...	009	59.26-3474	0.47 uF	10% PEFP	PH
C...	010	59.26-1000	0.01 uF	20% Sat	
C...	011	59.26-0104	0.1 uF	10% PEFP	
C...	012	59.34-1100	10 pF	20% Ca	
C...	013	59.26-1100	10 pF	20% Ca	PH
C...	014	59.26-1220	22 uF	20% Sat	PH
C...	015	59.26-3474	0.47 uF	10% PEFP	
C...	016	59.26-1100	10 pF	20% Ca	
C...	017	59.26-3474	0.47 uF	10% PEFP	
C...	018	59.26-3474	0.47 uF	10% PEFP	PH
C...	019	59.26-1220	22 uF	20% Sat	
C...	020	59.26-0104	0.1 uF	10% PEFP	PH
C...	021	59.26-1220	22 uF	20% Sat	
C...	022	59.34-1100	10 pF	20% Ca	PH
C...	023	59.26-1000	0.01 uF	20% Sat	PH
C...	024	59.26-3229	2.2 uF	20% Sat	PH
C...	025	59.26-0104	0.1 uF	10% PEFP	
C...	026	59.26-0104	0.1 uF	10% PEFP	PH
C...	027	59.26-3474	0.47 uF	10% PEFP	
C...	028	59.26-3474	0.47 uF	10% PEFP	PH
C...	029	59.26-0104	0.1 uF	10% PEFP	
C...	030	59.26-1220	22 uF	20% Sat	
C...	031	59.26-1100	10 pF	20% Ca	PH
C...	032	59.26-3474	0.47 uF	10% PEFP	
C...	033	59.26-3474	0.47 uF	10% PEFP	PH
C...	034	59.25-471	470 uF	20% 100% L3	
C...	035	59.25-471	470 uF	20% 100% L3	PH
C...	036	99.70-3330	33 uF	20% Sat	PH

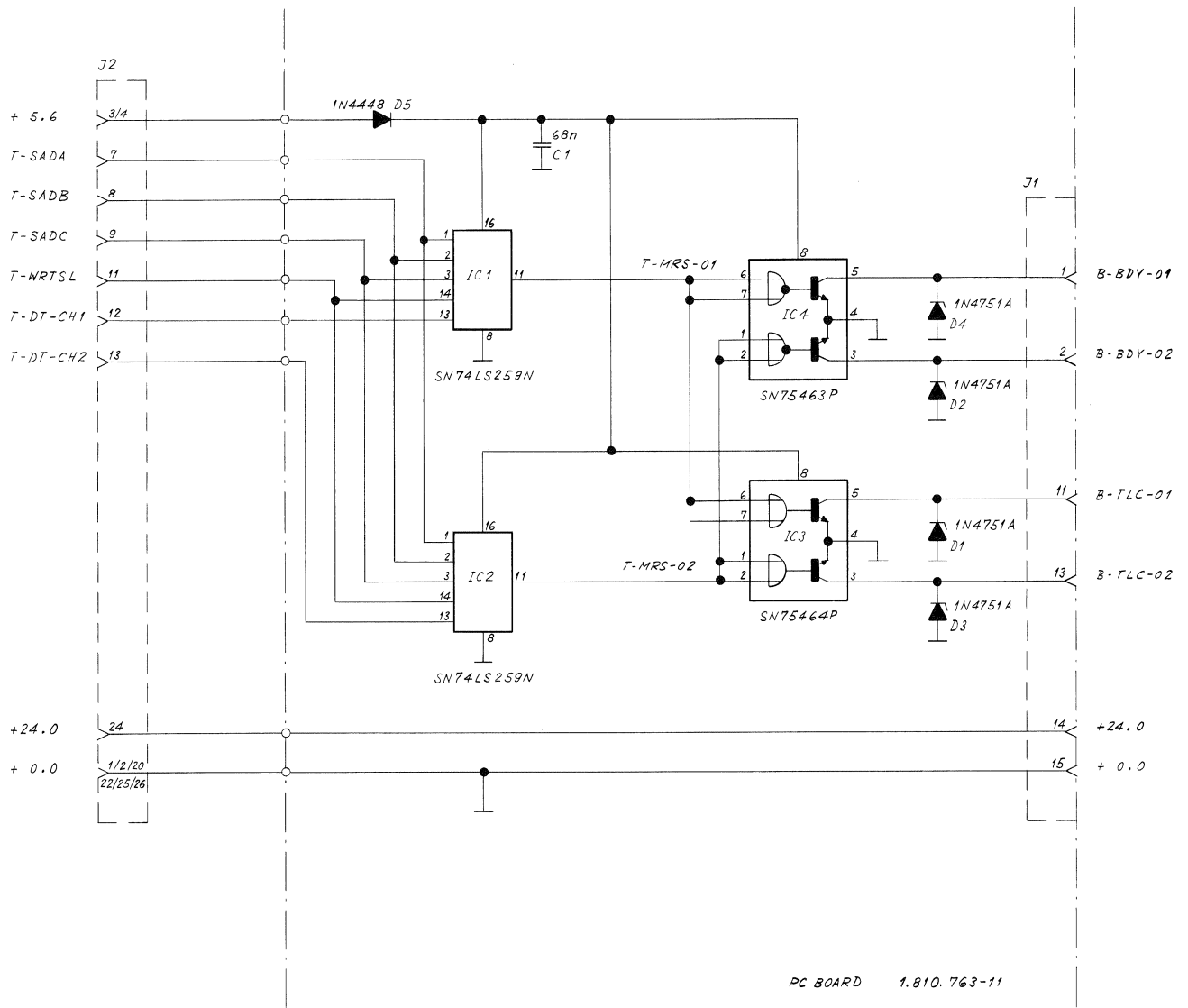
IND.	PDS-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R...	001	57.11-4103	10 kOhm	5%	
R...	002	57.11-4473	47 kOhm	5%	
R...	003	57.11-4103	10 kOhm	5%	
R...	004	57.11-4473	47 kOhm	5%	
R...	005	57.11-4473	47 kOhm	5%	
R...	006	57.11-4473	47 kOhm	5%	
R...	007	57.11-4102	1 kOhm	5%	
R...	008	57.11-4473	47 kOhm	5%	
R...	009	57.11-4473	47 kOhm	5%	
R...	010	57.11-4473	47 kOhm	5%	
R...	011	57.11-4473	47 kOhm	5%	
R...	012	57.11-4473	47 kOhm	5%	
R...	013	57.11-4473	47 kOhm	5%	
R...	014	57.11-4473	47 kOhm	5%	
R...	015	57.11-4473	47 kOhm	5%	
R...	016	57.11-4473	47 kOhm	5%	
R...	017	57.11-4473	47 kOhm	5%	
R...	018	57.11-4473	47 kOhm	5%	
R...	019	57.11-4473	47 kOhm	5%	
R...	020	57.11-4473	47 kOhm	5%	
R...	021	57.11-4473	47 kOhm	5%	
R...	022	57.11-4473	47 kOhm	5%	
R...	023	57.11-4473	47 kOhm	5%	
R...	024	57.11-4473	47 kOhm	5%	
R...	025	57.11-4473	47 kOhm	5%	
R...	026	57.11-4473	47 kOhm	5%	
R...	027	57.11-4473	47 kOhm	5%	
R...	028	57.11-4473	47 kOhm	5%	
R...	029	57.11-4473	47 kOhm	5%	
R...	030	57.11-4473	47 kOhm	5%	
R...	031	57.11-4473	47 kOhm	5%	
R...	032	57.11-4473	47 kOhm	5%	
R...	033	57.11-4473	47 kOhm	5%	
R...	034	57.11-4473	47 kOhm	5%	
R...	035	57.11-4473	47 kOhm	5%	
R...	036	57.11-4473	47 kOhm	5%	
R...	037	57.11-4473	47 kOhm	5%	
R...	038	57.11-4473	47 kOhm	5%	
R...	039	57.11-4473	47 kOhm	5%	
R...	040	57.11-4473	47 kOhm	5%	
R...	041	57.11-4473	47 kOhm	5%	
R...	042	57.11-4473	47 kOhm	5%	
R...	043	57.11-4473	47 kOhm	5%	
R...	044	57.11-4473	47 kOhm	5%	
R...	045	57.11-4473	47 kOhm	5%	
R...	046	57.11-4473	47 kOhm	5%	
R...	047	57.11-4473	47 kOhm	5%	
R...	048	57.11-4473	47 kOhm	5%	
R...	049	57.11-4473	47 kOhm	5%	
R...	050	57.11-4473	47 kOhm	5%	
R...	051	57.11-4473	47 kOhm	5%	
R...	052	57.11-4473	47 kOhm	5%	
R...	053	57.11-4473	47 kOhm	5%	
R...	054	57.11-4473	47 kOhm	5%	
R...	055	57.11-4473	47 kOhm	5%	
R...	056	57.11-4473	47 kOhm	5%	
R...	057	57.11-4473	47 kOhm	5%	
R...	058	57.11-4473	47 kOhm	5%	
R...	059	57.11-4473	47 kOhm	5%	
R...	060	57.11-4473	47 kOhm	5%	
R...	061	57.11-4473	47 kOhm	5%	
R...	062	57.11-4473	47 kOhm	5%	
R...	063	57.11-4473	47 kOhm	5%	
R...	064	57.11-4473	47 kOhm	5%	
R...	065	57.11-4473	47 kOhm	5%	
R...	066	57.11-4473	47 kOhm	5%	
R...	067	57.11-4473	47 kOhm	5%	
R...	068	57.11-4473	47 kOhm	5%	
R...	069	57.11-4473	47 kOhm	5%	
R...	070	57.11-4473	47 kOhm	5%	
R...	071	57.11-4473	47 kOhm	5%	
R...	072	57.11-4473	47 kOhm	5%	
R...	073	57.11-4473	47 kOhm	5%	
R...	074	57.11-4473	47 kOhm	5%	
R...	075	57.11-4473	47 kOhm	5%	
R...	076	57.11-4473	47 kOhm	5%	
R...	077	57.11-4473	47 kOhm	5%	
R...	078	57.11-4473	47 kOhm	5%	
R...	079	57.11-4473	47 kOhm	5%	
R...	080	57.11-4473	47 kOhm	5%	
R...	081	57.11-4473	47 kOhm	5%	
R...	082	57.11-4473	47 kOhm	5%	
R...	083	57.11-4473	47 kOhm	5%	
R...	084	57.11-4473	47 kOhm	5%	
R...	085	57.11-4473	47 kOhm	5%	
R...	086	57.11-4473	47 kOhm	5%	
R...	087	57.11-4473	47 kOhm	5%	
R...	088	57.11-4473	47 kOhm	5%	
R...	089	57.11-4473	47 kOhm	5%	
R...	090	57.11-4473	47 kOhm	5%	
R...	091	57.11-4473	47 kOhm	5%	
R...	092	57.11-4473	47 kOhm	5%	
R...	093	57.11-4473	47 kOhm	5%	
R...	094	57.11-4473	47 kOhm	5%	
R...	095	57.11-4473	47 kOhm	5%	
R...	096	57.11-4473	47 kOhm	5%	
R...	097	57.11-4473	47 kOhm	5%	
R...	098	57.11-4473	47 kOhm	5%	
R...	099	57.11-4473	47 kOhm	5%	
R...	100	57.11-4473	47 kOhm	5%	

[03] 999999 1.010.012444 Bridges
 [01] 8540507 Gain adaptation of Loudspeaker amplifier (RS1) and improved impedance-compensation of Headspan amplifier (C6, C7).
 Note 1 - Contact pins: Studer Nr. 54.01.0020
 Philips Nr. 2322 205 80303
 Bridges: Studer Nr. 54.01.0021
 Philips Nr. 2322 204 80303
 AMP Nr. 141 767-1
 Note 2 - Pushbutton switches: FOX-Drucke release each other (S1-S12+S13)(S1+S11-S1)
 Manufacturer: Schrack (ITT), serie FOX
 Note 3 - PTC-resistor 10 Ohm (150 mA) Philips Nr. 2322 061 15111.
 PTC-resistor may be replaced by Fusor 101008P
 St. Nr. 57.14.0100, Philips Nr. 2322 205 15109.

MANUFACTURE: PEEKAR, PCF,FAIRCHILD, GE-General Instruments,
 HAN-BRANDER, PHILIPS, RAYTHEON, SONY-SONOSON,
 SONY-SONOSON, SONY-SONOSON, SONY-SONOSON,
 IT-TelFunkon, IT-Texas Instruments, FO-Touche

ORIG 84/12/11 [01] 05/05/92
 S T U D E R [01] 05/05/92 SAK MODELER AMPLIFIER 1.820.860.00

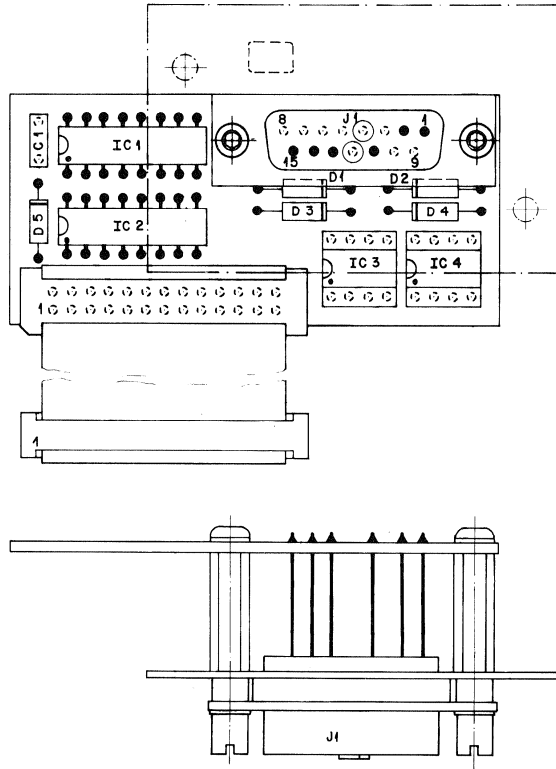
NOISE REDUCTION SYSTEM CONTROL PCB (OPTION) 1.810.763.81



PC BOARD 1.810.763-11

22.04.83	Buchegger	A 840 Logic Section	
STUDER	Noise Reduction System Control	SC 1.810.763-81	PAGE 1 OF 1

NOISE REDUCTION SYSTEM CONTROL PCB (OPTION) 1.810.763.81



IND.	PDS-Nr.	PART N°	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C..0001	59.99.0205	68 nF	-20%	Ce	
D..0001	50.04.1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph	
D..0002	50.04.1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph	
D..0003	50.04.1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph	
D..0004	50.04.1506	30 V Z	BZX61C30, BZV85C30, ZY30, 1N4751A	ITT, Mot, Ph	
D..0005	50.04.0125	1W449		ITT, Ph, Ses, TI	
IC.0001	90.06.0259	SN74LS259N		Fc, Mot, TI	
IC.0002	90.06.0259	SN74LS259N		Fc, Mot, TI	
IC.0003	50.05.0204	SN75464P		NSC, TI	
IC.0004	50.05.0203	SN75463P		NSC, TI	
J..0001	54.02.0183	15 cont.	See note 1		
J..0002	54.14.5022	26 cont.	See note 2		

Note 1 - Jack: TRW Nr. DA-15 S (Cannon)

Note 2 - Jack: Yamaichi Nr. FAS-26-17
 Burndy Nr. FRS-26 BD-7P
 Connection cable: Studer Nr. 1.810.749.00

Ce=Ceramic

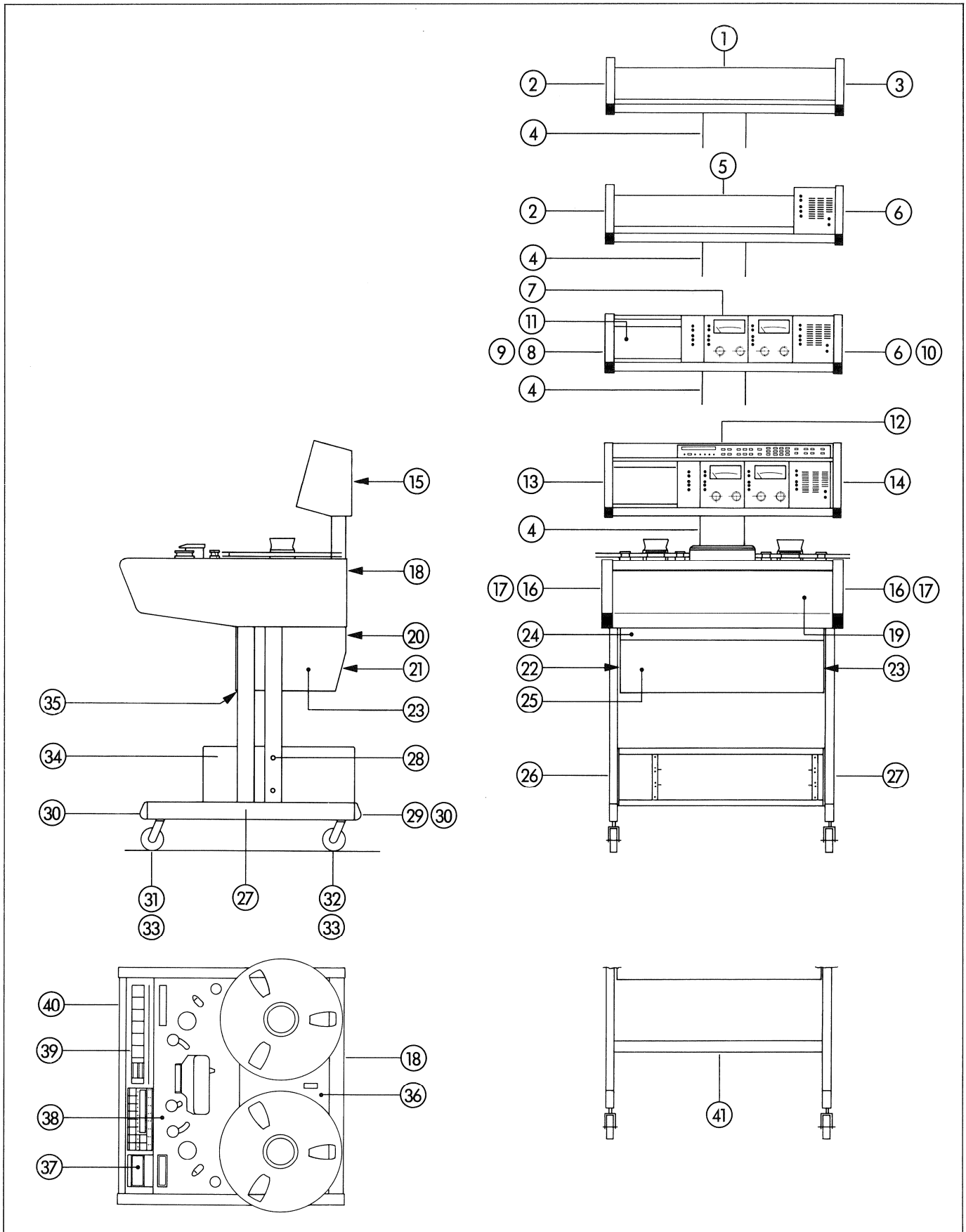
MANUFACTURER: Fc=Fairchild, IIT=Intermetall, Mot=Motorola,
 NSC=National Semiconductor Corp., Ph=Philips,
 Ses=Seccosem, TI=Texas Instruments

ORIG 83/04/22

8 ERSATZTEILE/SPARE PARTS

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8.3 TAPE TRANSPORT PUSH BUTTON ASSEMBLY	8/5
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8.1 COVERS, CONSOLE

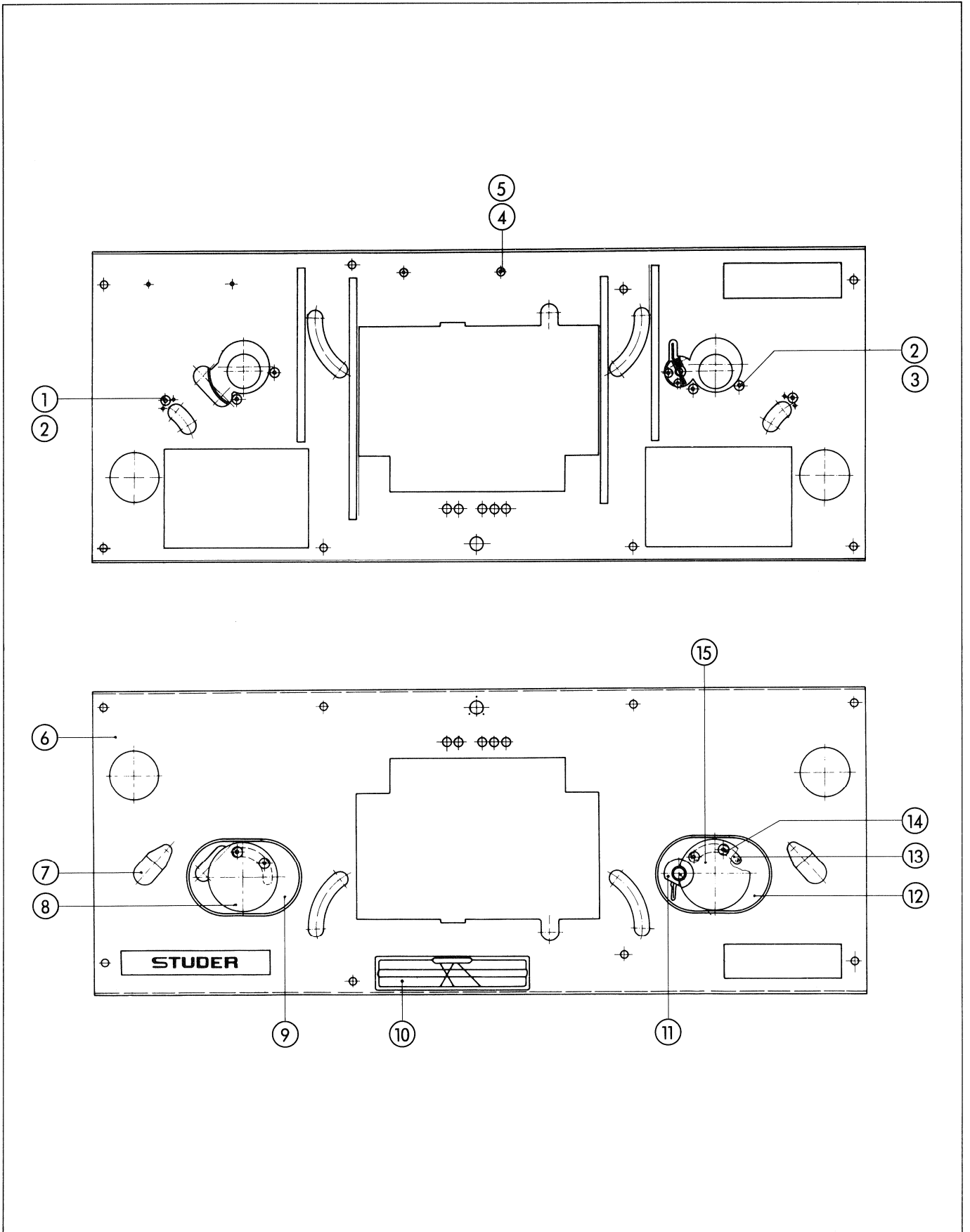


	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
01	1	1.820.572.00	Overbridge with shelf incl. pos. 02, 03, 04	
02	1	1.820.572.01	Wooden side panel, overbridge	Left
03	1	1.820.572.02	Wooden side panel, overbridge	right
04	1	1.820.551.00	Overbridge support compl.	
	2	21.53.0571	Allen screw	M6x14
	4	21.53.0559	Allen screw	M6x18
	6	24.16.2060	Serrated lock washer	
05	1	1.820.575.00	Overbridge with shelf and monitor speaker incl. pos. 02, 04, 06	
06	1	1.820.550.04	Wooden side panel, overbridge	right
	3	21.53.0455	Allen screw	M4x8
	3	24.16.1040	Fin washer	
07	1	1.820.550.00	Overbridge housing for VU-meters etc incl. pos. 04, 06, 08 or 04, 09, 10	
08	1	1.820.550.03	Wooden side panel, overbridge	Left
	3	21.53.0455	Allen screw	M4x8
	3	24.16.1040	Fin washer	
09	1	1.820.550.14	Black side panel, overbridge	Left
	3	21.53.0455	Allen screw	M4x8
	3	24.16.1040	Fin washer	
10	1	1.820.550.15	Black side panel, overbridge	right
	3	21.53.0455	Allen screw	M4x8
	3	24.16.1040	Fin washer	
11	1	1.820.550.10	Shelf (for TC version)	short
or	1	1.820.550.12	Shelf	Long
		1.010.025.21	Round head allen screw	M3x6
12	1	1.058.007.00	TLS 4000 LCU supplementary housing incl. pos. 13, 14, 15	
13	1	1.058.007.01	Wooden side panel, overbridge	Left
14	1	1.058.007.02	Wooden side panel, overbridge	right
15	1	1.058.019.00	Rear cover for TLS 4000 version	
16	1	1.058.005.00	Wooden side panel, set	Left/right
17	1	1.058.010.00	Black side panel, set	Left/right
18	1	1.820.550.08	Rear panel (overbridge version)	
or	1	1.820.090.12	Rear panel	
	5	1.010.007.21	Round head allen screw	M4x8
19	1	1.820.901.00	Tape transport cover	bottom
	10	1.010.007.21	Round head allen screw	M4x8
20	1	1.820.500.06	Mounting bracket for conn. panels	
	4	1.010.034.21	Countersunk allen head screw	
	2	1.010.007.21	Round head allen screw	M4x8
21	1	1.820.510.02	Power supply cover	
	8	1.010.007.21	Round head allen screw	M4x8
22	1	1.820.500.03	Side panel (amplifier bay)	Left

23	1	1.820.500.04	Side panel (amplifier bay)	right
24	1	1.820.902.00	Front bracket	
	4	1.010.034.21	Countersunk allen head screw	M4x8
	1	54.24.0102	Headphone socket	
	1	31.03.0110	Plastic cover, round	
	1	73.01.0116	Mechanical elapsed time counter	
	1	1.010.013.31	Plastic cover, rectangular	
	1	1.820.861.00	TIME COUNTER CONTROL PCB	
25	1	1.820.903.00	Hinged cover	
26	1	1.058.011.00	Console leg 780/840 mm	Left
or	1	1.058.015.00	Console leg 840/900 mm	Left
or	1	1.058.017.00	Console leg 900/960 mm	Left
	1	21.53.0621	Allen screw	M8x14
	1	23.01.1084	Washer	
	1	24.16.1080	Fin washer	
27	1	1.058.012.00	Console leg 780/840 mm	right
or	1	1.058.016.00	Console leg 840/900 mm	right
or	1	1.058.018.00	Console leg 900/960 mm	right
	1	21.53.0621	Allen screw	M8x14
	1	23.01.1084	Washer	
	1	24.16.1080	Fin washer	
28	4	31.03.0106	Plastic cover	
29	2	1.038.880.01	Plastic plug	flat
30	2	1.058.001.05	Plastic plug	dome-shaped
or	4	1.058.001.05	Plastic plug for TLS version, without pos.29	dome-shaped
31	2	33.04.0203	Castor, with brake	
32	2	33.04.0202	Castor, without brake	
33	4	33.04.0103	Floor slide, without pos. 31 and 32	
34	1	1.058.004.00	Pedestal rack	
	4	21.53.0572	Allen screw	M6x16
	4	24.16.1060	Fin washer	
		1.918.001.00	Filler panel, height 1 unit	
		1.918.002.00	Filler panel, height 2 units	
		1.918.003.00	Filler panel, height 3 units	
		21.99.0164	Pan head screw	M6x12
		21.99.0167	Pan head screw	M6x16
35	1	1.820.904.00	PCB carrier	
36	1	1.820.111.00	Upper tape transport cover, rear section, 14" reels	
	1	1.820.113.00	Upper tape transport cover, rear section, 12" reels	
	7	21.51.8455	Round head allen screw	M4x8
37	1	1.820.237.00	Hinged cover compl.	
38	1	1.820.110.00	Upper tape transport cover, front section, compl., for versions <u>with-</u> <u>out</u> built-in monitor speaker (refer to section 8.2)	
	1	1.820.112.00	Upper tape transport cover, front section, compl., for versions <u>with</u> built-in monitor speaker (refer to section 8.2)	
	7	21.51.8455	Round head allen screw	M4x8

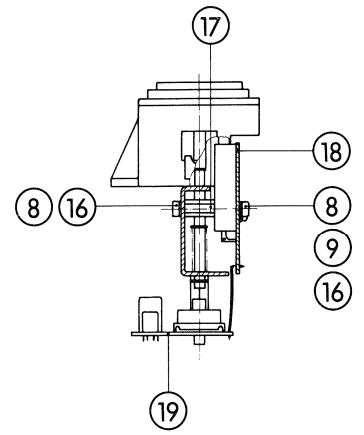
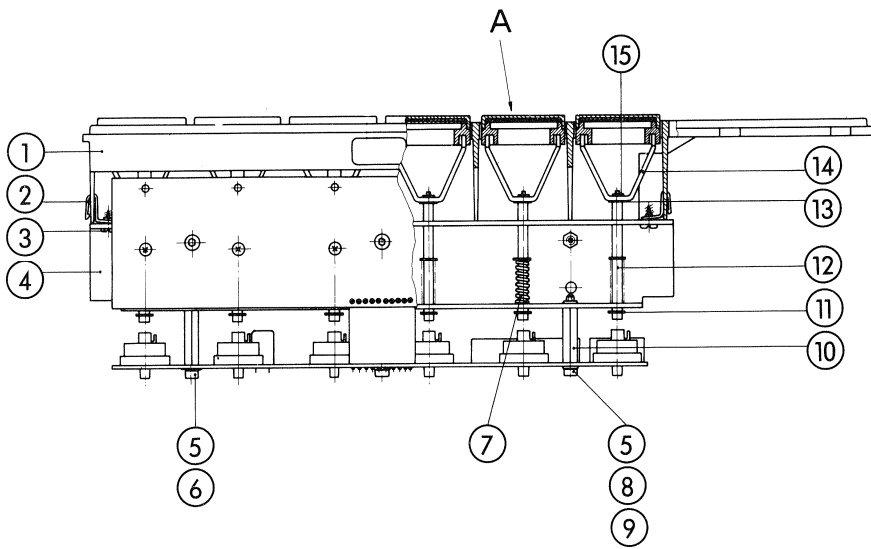
39	1	1.820.236.00	Push button rail	
	2	21.51.8455	Round head allen screw	M4x8
	1	1.820.238.00	Push button/display PCB compl., containing all components marked with	
	1	1.820.767.00	Push button/display PCB	
	1	1.820.232.01	Push button housing	
	1	1.810.300.05	Damping strip, for 2 push buttons	
	1	1.820.232.03	Damping strip, for 8 push buttons	
	10	1.011.210.01	Push button	
			Self-adhesive labels: Section 8.23	
	10	1.010.202.37	Pressure spring	
	1	1.820.232.02	Filter screen red	
	4	55.03.0360	Key cap	blue
	1	55.03.0362	Key cap	red
	10	55.03.0363	Key cap	dark grey
	4	55.03.0370	Insert	blue
	1	55.03.0373	Insert	red
	10	55.03.0374	Insert	white
	15	1.820.090.22	Screen	transparent
	1	1.820.090.25	Label set (Labels: see Section 8.23)	
	1	1.820.090.35	Label set (Labels: see Section 8.23)	
40	1	1.820.905.00	Leather hand rest	
	3	21.51.0455	Allen screw	M4x8
	3	24.16.1040	Fin washer	
41	1	1.058.003.00	Traverse	
	2	21.53.0572	Allen screw	M6x16
	2	24.16.1060	Fin washer	

8.2 UPPER TAPE TRANSPORT COVER, FRONT SECTION

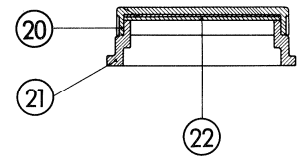
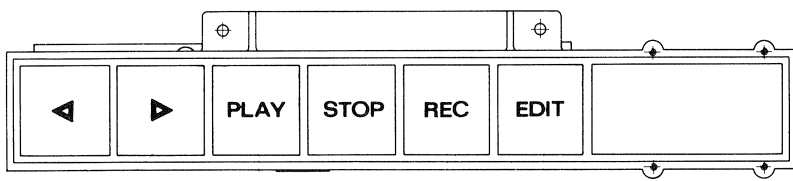


	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.110.00	Upper tape transport cover, front section, compl., for versions <u>with- out</u> built-in monitor speaker (* = not included)	
	1	1.820.112.00	Upper tape transport cover, front section, compl., for versions <u>with</u> built-in monitor speaker (* = not included)	
	7*7	21.51.8455	Round head allen screw	M4x8
01	2 2	21.53.0455	Allen screw	M4x8
02	6 6	24.16.1040	Fin washer	
03	4 4	21.53.0457	Allen screw	M4x12
04	2 2	21.53.0354	Allen screw	M3x6
05	2 2	24.16.1030	Fin washer	
06	1	1.820.906.00	Upper tape transport cover, front section, for versions <u>without</u> built-in monitor speaker	
	1	1.820.907.00	Upper tape transport cover, front section, for versions <u>with</u> built-in monitor speaker	
07	2 2	1.820.908.00	Cover for tape tension sensor	
08	1 1	1.820.110.05	Cover for prestabilizer roller	
09	1 1	1.820.110.03	Cover plate for tape end sensor	
10	1 1	1.820.110.18	Splicing block 1/4"	
	1	1.820.110.12	Splicing block 1/2"	
11	1 1	1.820.110.08	Protection cover for tape scissors	
12	1 1	1.820.110.04	Cover plate for tape scissors	
13	2 2	1.820.110.07	Cover support 1/4" or 1/2"	
	2	1.820.110.14	Extension 1/2"	
14	4 4	1.010.036.21	Spec. screw (1/4")	M4x14
	4	1.010.040.21	Spec. screw (1/2")	M4x20
15	1 1	1.820.110.06	Cover for move sensor roller 1/4"	
	1	1.820.110.15	Cover for move sensor roller 1/2"	
		1.820.110.13	Adapter for sliding splicing block over LCD	
	1 1	1.820.909.00	Slot cover compl.	left
	1 1	1.820.910.00	Slot cover compl.	right

8.3 TAPE TRANSPORT PUSH BUTTON ASSEMBLY

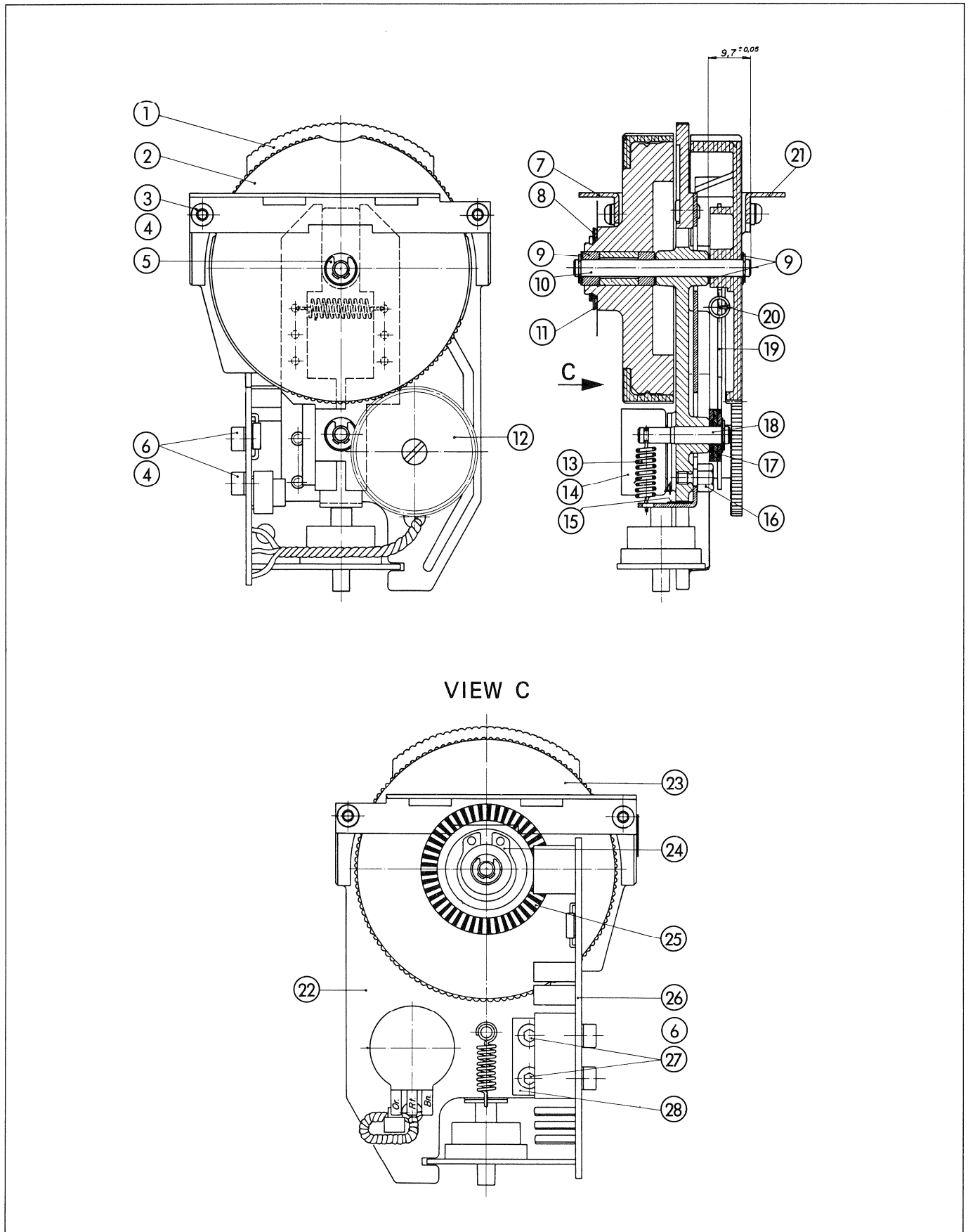


DETAIL A



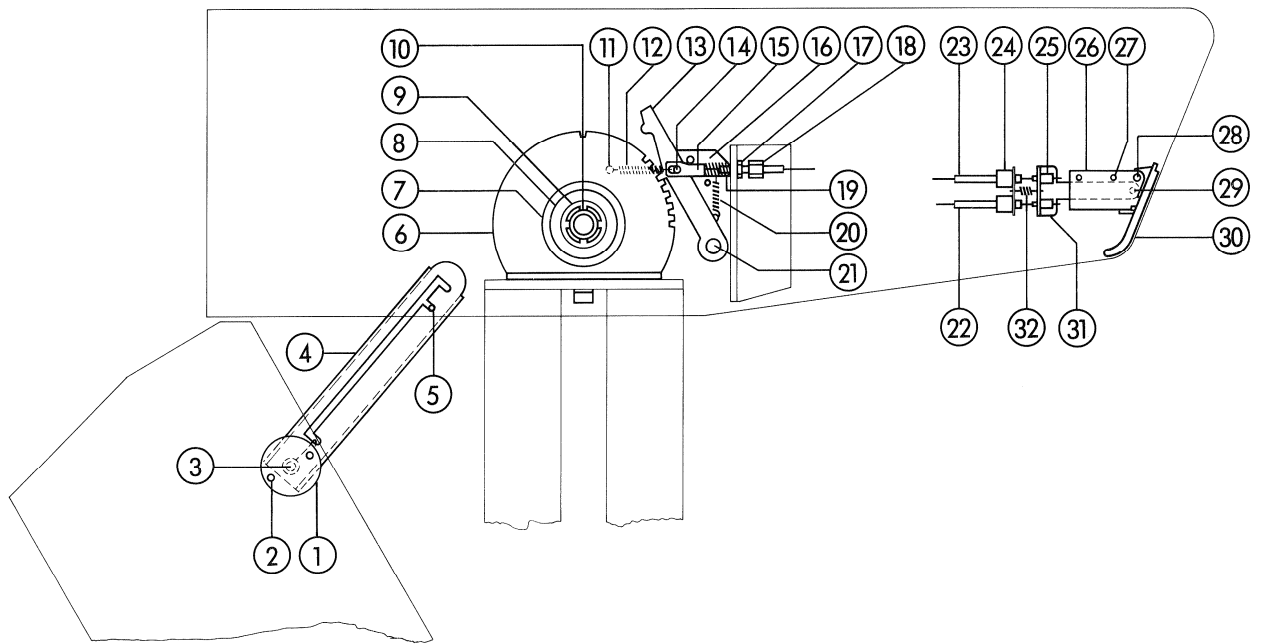
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.240.00	Push button unit (* = not included)	
	2*	21.53.0456	Allen screw	M4x10
	2*	24.16.1040	Fin washer	
01	1	1.820.240.03	Push button support	
02	2	22.16.2501	Clip-on nut	
03	2	20.21.7355	Cross-recessed button head self tapping screw	
04	1	1.820.240.01	Push button guide bracket	
05	4	21.53.0354	Allen screw	M3x6
06	1	24.16.2030	Serrated lock washer	
07	6	1.080.260.12	Pressure spring	
08	8	24.16.1030	Fin washer	
09	5	23.01.1032	Washer	
10	3	1.010.131.27	Hex stud bolt	
11	12	24.16.3032	Circlip	
12	6	1.820.240.02	Push button shaft	
13	6	1.010.032.23	Washer (PTFE)	
14	6	1.080.260.09	Push button holder	
15	6	24.16.3019	Circlip	
16	6	21.53.0355	Allen screw	M3x8
17	3	1.010.034.27	Hex stud bolt	
18	1	1.820.766.00	Tape deck indicator PCB	
19	1	1.820.769.00	Tape deck push button PCB	
20	6	1.080.260.03	Push button cover	
21	6	1.080.260.02	Push button body	
22	6	1.080.260.19	Diffusing screen	
	1	1.080.260.18	Transparent label	EDIT
	1	1.080.260.17	Transparent label	STOP
	1	1.080.260.16	Transparent label	REC
	1	1.080.260.15	Transparent label	PLAY
	2	1.080.260.14	Transparent label	> <

8.4 EDIT ASSEMBLY



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.250.00	Edit assembly	
	3*	21.53.0353	Allen screw	M3x5
	3*	23.01.1032	Washer	
	3*	24.16.1030	Fin washer	
	1*	1.010.135.27	Threaded stud	M3
01	1	1.820.253.00	Push button compl.	
02	1	1.820.250.10	Shuttle wheel	
03	4	21.51.8354	Round head allen screw	M3x6
04	6	24.16.1030	Fin washer	
05	2	24.16.3032	Circlip	
06	4	21.53.0354	Allen screw	M3x6
07	1	1.820.250.03	Mounting bracket	left
08	1	1.010.083.23	Washer	
09 or or		1.062.210.08 1.062.210.09 1.067.180.14	Spacer shim Spacer shim Spacer shim	
10	1	1.820.250.11	Shaft	
11	1	24.99.0132	Balance washer	
12	1	36.01.0301	Toothed wheel	
13	1	1.020.256.07	Tension spring	
14	1	58.99.0139	Potentiometer	
15		89.01.0164	Felt strip	
16	3	1.820.250.13	Guide bolt	
17	1	23.01.3043	Washer	
18	1	1.820.250.08	Bearing bolt	
19	2	1.820.250.07	Reset lever	
20	1	1.080.112.02	Tension spring	
21	1	1.820.250.04	Mounting bracket	right
22	1	1.820.250.01	Support	
23	1	1.820.911.00	Flywheel	
24	1	24.16.5120	Retaining ring for shaft	
25	1	1.820.250.06	Encoding disc	
26	1	1.820.765.00	Cue sensor PCB	
27	2	23.01.2032	Washer	
28	1	1.820.250.12	PCB mounting bracket	

8.5 CONSOLE TILTING MECHANISM

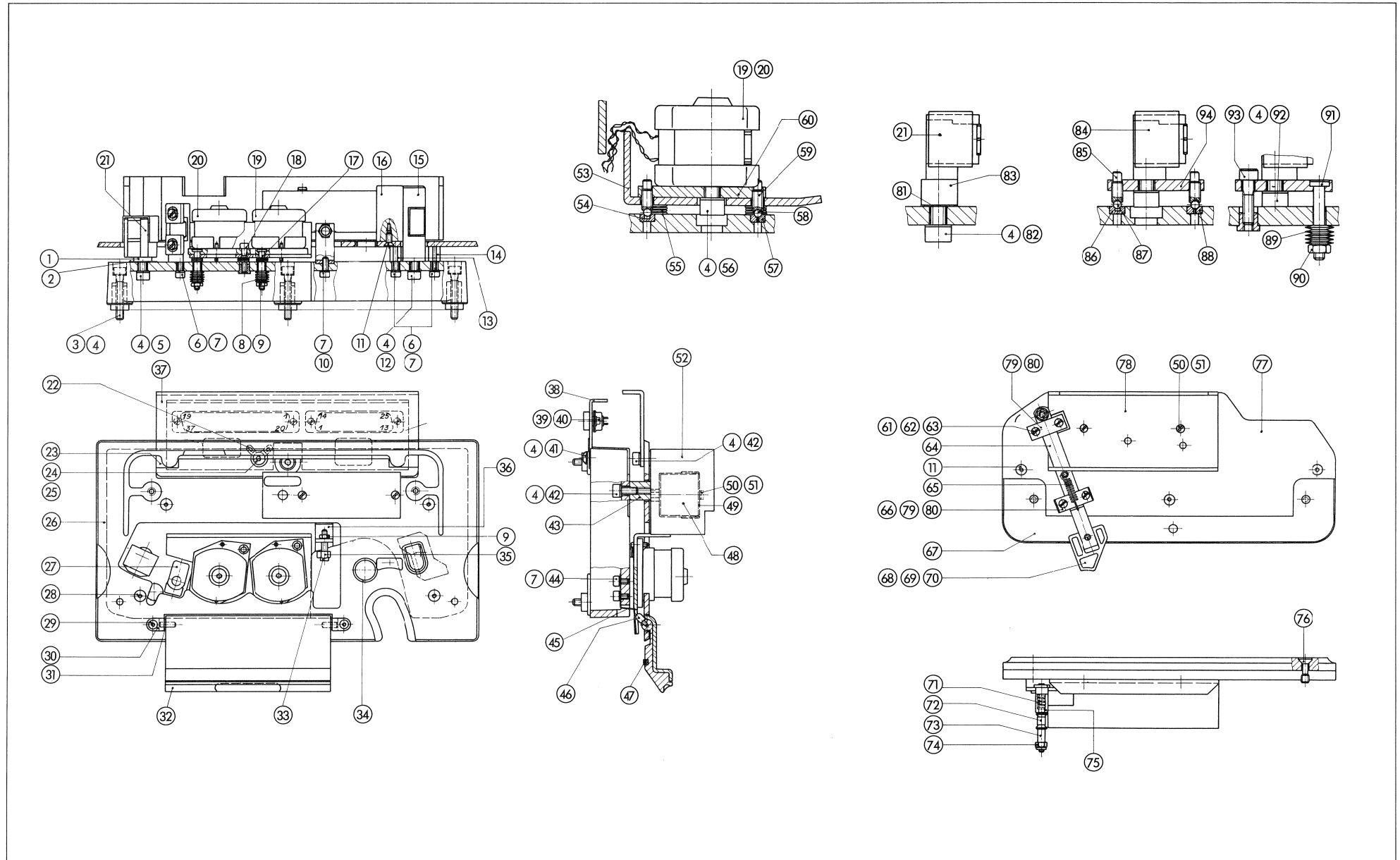


	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
01	1	1.820.500.17	Stop bar bearing	
02	2	1.010.034.21	Countersunk allen head screw	M4x8
03	1	1.820.500.25	Spring	
	1	24.16.3060	Circlip	
	1	23.01.2084	Washer	
04	1	1.820.500.16	Stop bar	
05	1	1.820.090.21	Guide bolt	
	2	24.16.3040	Circlip	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
06	1	1.820.266.00	Toothed disc (with bearing)	left
	1	1.820.267.00	Toothed disc (with bearing)	right
07	1	1.820.090.17	Buffer disc	
08	1	37.01.0140	Disc spring	
09	1	23.99.0119	Washer	
10	1	22.99.0133	Self locking nut	
11	1	1.820.090.18	Grooved pin	
	1	24.16.3032	Circlip	
12	1	1.010.113.37	Tension spring	
13	1	1.038.880.61	Detent lever	
14	1	1.820.090.15	Detent lever shaft	
	2	24.16.3032	Circlip	
15	1	1.820.263.10	Pull bracket	
16	1	1.820.264.00	Detent lever lock compl.	left
	1	1.820.265.00	Detent lever lock compl.	right
	2	24.16.3032	Circlip	
17	1	22.01.8050	Nut	M5
18	1	1.820.263.06	Adjusting screw	
19	1	1.010.089.37	Pressure spring	
20	1	1.077.603.01	Tension spring	
21	1	24.16.3100	Circlip	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
22	1	1.820.263.08	Bowden wire	Long
23	1	1.820.263.07	Bowden wire	short
24	2	1.820.263.12	Bowden wire bush	
25	2	1.820.263.09	Clamp	
26	1	1.820.263.01	Mounting bracket	
27	2	21.53.0454	Allen screw	M4x6
	2	24.16.1040	Fin washer	
28	1	1.820.263.04	Release lever	
	2	24.16.3040	Circlip	
29	1	1.820.263.05	Pull bracket shaft	
	1	24.16.3040	Circlip	
30	1	1.820.263.02	Release lever	
31	1	1.820.263.03	Pull bracket	
32	1	1.010.115.37	Tension spring	

8.6 HEAD BLOCK ASSEMBLY



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.101.00	Head block Mono 1/4"	
01	1	1.050.101.04	Spacer erase head	
02		1.020.500.01	Spacer shim	
03	3	21.53.0462	Allen screw	M4x25
04	16	24.16.1040	Fin washer	
05	1	21.53.0471	Allen screw	M4x14
06	7	21.53.0356	Allen screw	M3x10
07	10	24.16.1030	Fin washer	
08	20	37.01.0101	Disc spring	
09	3	22.01.8030	Hexagonal nut	M3
10	1	21.53.0355	Allen screw	M3x8
11	4	21.51.2355	Countersunk allen head screw	M3x8
12	1	21.53.0456	Allen screw	M4x10
13	2	1.010.112.27	Hex stud bolt	
14	4	1.010.216.27	Hex stud bolt	
15	1	1.050.190.00	Head dummy	
16	1	1.050.101.22	Tape guide profile	
17	2	1.020.740.03	Bolt	
18	2	1.020.710.05	Spec. screw	
19	1	1.317.716.00	Reproduce head	
20	1	1.317.710.00	Record head	
21	1	1.116.097.81	Erase head	
22	2	29.26.1024	Soldering lug	
23	1	1.050.101.21	Head block cover	rear
24	1	21.53.0454	Allen screw	M4x6
25	1	24.16.2040	Serrated lock washer	
26	1	1.050.101.09	Head block cover 1/4"	
27	1	1.050.197.00	Scrape flutter roller 1/4" compl.	
28	4	21.51.2354	Countersunk allen head screw	M3x6
29	2	21.51.8354	Round head allen screw	M3x6
30	2	1.050.101.13	Bearing cover	
31	2	1.010.105.23	Plastic washer (PTFE)	
32	1	1.820.912.00	Head screening flap 1/4" compl.	
33	1	1.050.101.19	Rubber stop	

34	1	1.050.101.28	Protective sleeve (plastic)	
35	1	1.050.101.24	Stop bolt	
36	1	1.050.101.18	Stop bolt mounting bracket	
37	1	1.050.101.20	Cover sheet	
38	1	1.050.101.01	Connector mounting bracket	
39	4	21.01.0204	Slotted cheese head screw	M2x6
40	4	24.16.1020	Fin washer	
41	4	21.51.8455	Round head allen screw	M4x8
42	4	21.53.0456	Allen screw	M4x10
43	2	1.010.132.27	Hex stud bolt	
44	2	21.53.0353	Allen screw	M3x5
45	1	1.050.101.27	Flat spring	
46	1	1.050.101.25	Engaging pin	
47	2	1.337.954.04	Damping rubber	
48	1	1.810.710.81	Reproduce preamplifier 1CH, 1/4"	
49	1	1.050.101.02	Preamplifier screening	
50	2	21.01.0278	Slotted cheese head screw	M2.5x5
51	4	24.16.1025	Fin washer	
52	1	1.050.101.10	Cover profile	rear
53	1	1.050.101.05	Head screening	bottom
54	2	1.020.840.10	Prism bearing	
55	3	1.010.099.37	Pressure spring	
56	2	21.53.0455	Allen screw	M4x8
57	2	1.020.840.09	Cone bearing	
58	4	41.01.0120	Bearing ball	
59	4	1.050.101.03	Allen set screw	
60	2	1.020.850.06	Swivel plate	
61	4	21.01.0281	Slotted cheese head screw	M2.5x10
62	2	23.01.1027	Washer	
63	4	24.16.1025	Fin washer	
64	1	1.050.193.00	Tape lifting slider	
65	1	1.010.025.37	Tension spring	
66	1	1.020.250.20	Bracket	
67	1	1.050.101.12	Head cover	rear section
68	1	1.050.101.14	Slider knob	
69	1	21.01.0352	Slotted cheese head screw	M3x4

70	1	23.01.1032	Washer	
71	1	1.020.250.23	Pressure spring	
72	1	1.020.250.29	Guide	
73	1	1.010.081.27	Spacer	
74	1	22.99.0112	Self locking nut	M3
75	1	1.050.101.17	Tape lifter bush	
76	2	1.010.036.21	Countersunk allen screw, spec.	M4x14
77	1	1.050.101.11	Head cover	front section
78	1	1.050.101.06	Head screening	upper
79	2	1.020.250.15	Slider guide	
80	2	1.020.250.14	Slider guide cover	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.102.00	Head block Stereo, full track erase head, 1/4"	Like 1.050.101.00 except:
19	1	1.317.736.00	Reproduce head	
20	1	1.317.730.00	Record head	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.103.00	Head block Stereo, overlapping erasure, 1/4"	Like 1.050.101.00 except:
19	1	1.317.736.00	Reproduce head	
20	1	1.317.730.00	Record head	
21	1	1.116.092.81	Erase head	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.104.00	Head block 2CH 1/4"	Like 1.050.101.00 except:
19	1	1.317.726.00	Reproduce head	
20	1	1.317.720.00	Record head	
21	1	1.116.092.81	Erase head	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.105.00	Head block 2CH/TC 1/4"	Like 1.050.101.00 except:
01			Not used	
02			Not used	
05			Not used	
12			Not used	
15			Not used	
19	1	1.317.726.00	Reproduce head	
20	1	1.317.720.00	Record head	
21	1	1.116.810.01	TC read/Audio erase head	
26	1	1.050.105.09	Head block cover TC	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	
81		1.062.210.08	Spacer shim	
82	1	21.53.0459	Allen screw	M4x18
83	1	1.050.105.04	Spacer	
84	1	1.116.810.02	TC read/write/erase head	
85	2	1.050.101.03	Allen set screw	
86	1	1.020.840.10	Prism bearing	
87	2	41.01.0120	Bearing ball	
88	1	1.020.840.09	Cone bearing	
89	10	37.01.0101	Disc spring	
90	1	22.01.8030	Hexagonal nut	M3
91	1	1.020.740.03	Bolt	
92	1	21.53.0455	Allen screw	M4x8
93	1	1.020.710.05	Spec. screw	
94	1	1.020.883.01	Swivel plate TC	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.106.00	Head block 2CH, 2CH erase head, 1/4"	Like 1.050.101.00 except:
19	1	1.317.726.00	Reproduce head	
20	1	1.317.720.00	Record head	
21	1	1.116.814.00	Erase head	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.107.00	Head block 2CH, full track erase head, 1/4" Like 1.050.101.00 except:	
19	1	1.317.726.00	Reproduce head	
20	1	1.317.720.00	Record head	
48	1	1.810.711.81	Reproduce preamplifier 2CH, 1/4"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.121.00	Head block 2CH 1/2" Like 1.050.101.00 except:	
01			Not used	
19	1	1.317.705.00	Reproduce head	
20	1	1.317.701.00	Record head	
21	1	1.216.042.04	Erase head	
26	1	1.050.121.04	Head block cover 1/2"	
27	1	1.050.191.00	Scrape flutter roller compl. 1/2"	
32	1	1.820.913.00	Head Screening flap 1/2" compl.	
48	1	1.810.712.00	Reproduce preamplifier 2CH, 1/2"	
52	1	1.050.121.05	Cover profile	rear
61			Not used	
62			Not used	
63			Not used	
64			Not used	
65			Not used	
66			Not used	
67	1	1.050.121.07	Head cover	rear section
68			Not used	
69			Not used	
70			Not used	
71			Not used	
72			Not used	
73			Not used	
74			Not used	
75			Not used	
77	1	1.050.121.06	Head cover	front section

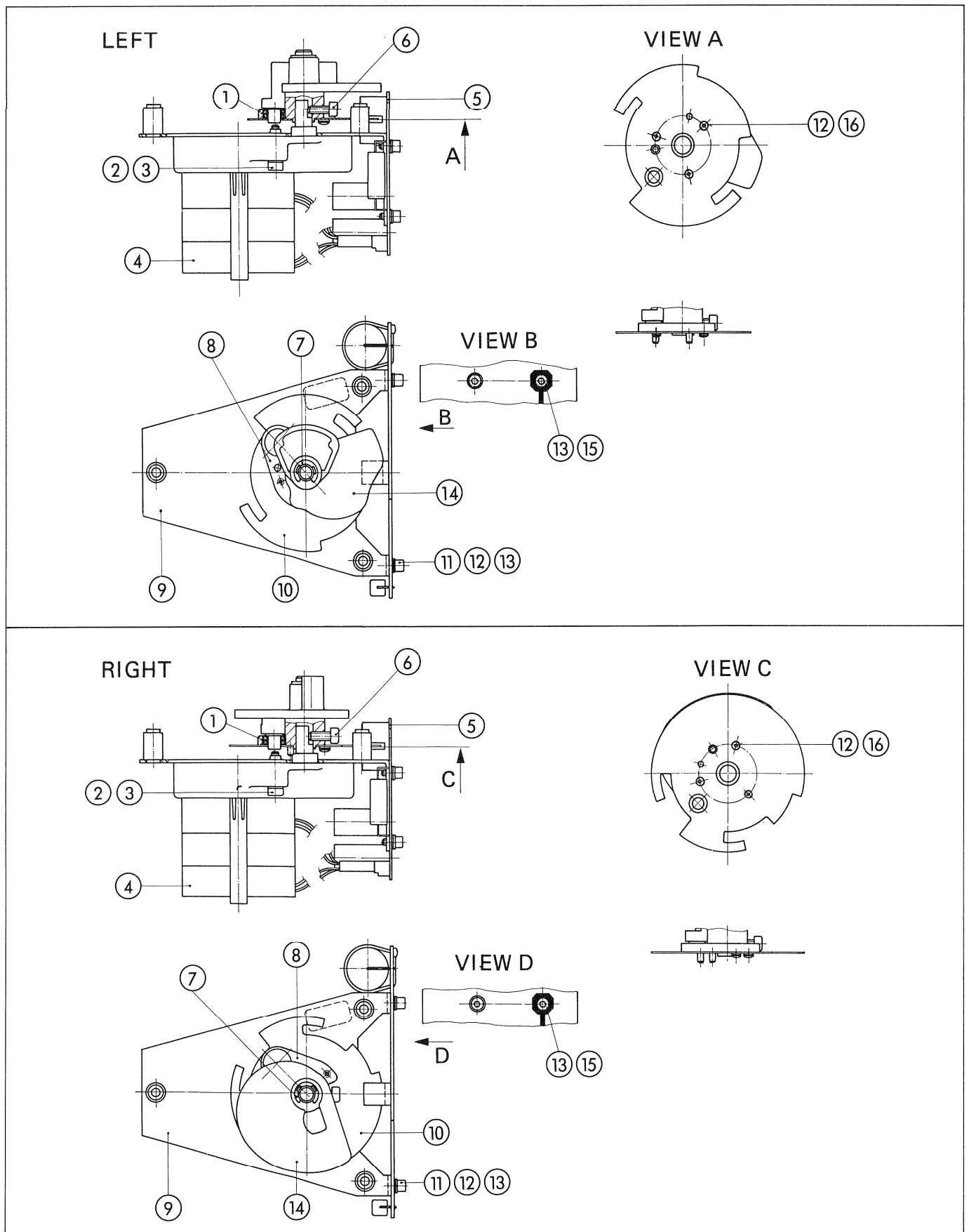
78	1	1.050.121.01	Head screening	top
79			Not used	
80			Not used	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.121.81	Head block 2CH 1/2" Like 1.050.121.00 except:	
19	1	1.318.705.00	Reproduce head	
20	1	1.318.701.00	Record head	
48	1	1.810.713.00	Reproduce preamplifier 2CH, 1/2"	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.050.122.00	Head block 2CH/TC 1/2" Like 1.050.101.00 except:	
01			Not used	
15			Not used	
19	1	1.318.705.00	Reproduce head	
20	1	1.318.700.00	Record head	
21	1	1.116.815.00	Erase head	
26	1	1.050.122.01	Head block cover 1/2"	
27	1	1.050.191.00	Scrape flutter roller compl. 1/2"	
32	1	1.820.913.00	Head Screening flap 1/2" compl.	
48	1	1.810.713.00	Reproduce preamplifier 2CH, 1/2"	
52	1	1.050.121.05	Cover profile	rear
61			Not used	
62			Not used	
63			Not used	
64			Not used	
65			Not used	
66			Not used	
67	1	1.050.121.07	Head cover	rear section
68			Not used	
69			Not used	
70			Not used	
71			Not used	
72			Not used	

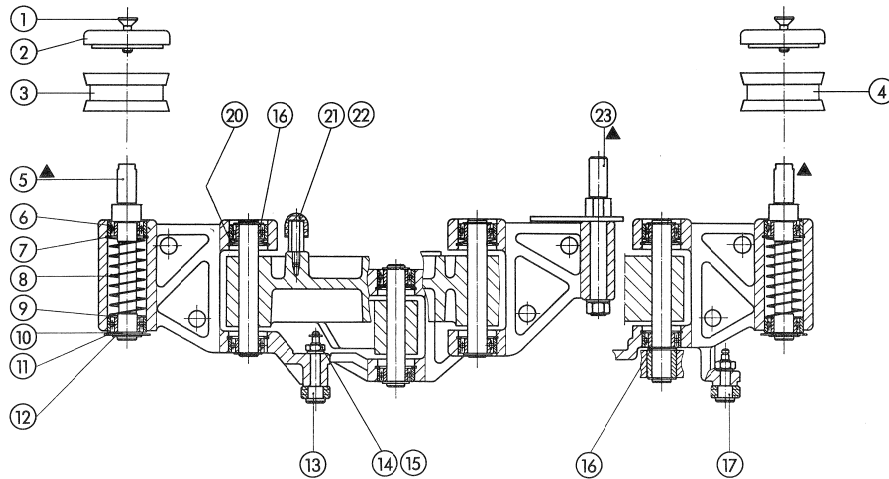
73			Not used
74			Not used
75			Not used
77	1	1.050.121.06	Head cover front section
78	1	1.050.121.01	Head screening top
79			Not used
80			Not used
84	1	1.116.816.00	TC read/write/erase head
85	2	1.050.101.03	Allen set screw
86	1	1.020.840.10	Prism bearing
87	2	41.01.0120	Bearing ball
88	1	1.020.840.09	Cone bearing
89	10	37.01.0101	Disc spring
90	1	22.01.8030	Hexagonal nut M3
91	1	1.020.740.03	Bolt
92	1	21.53.0455	Allen screw M4x8
93	1	1.020.710.05	Spec. screw
94	1	1.020.883.01	Swivel plate TC

8.7 TAPE GUIDE MOTOR ASSEMBLIES

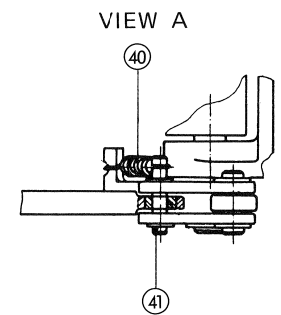
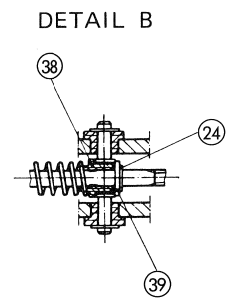
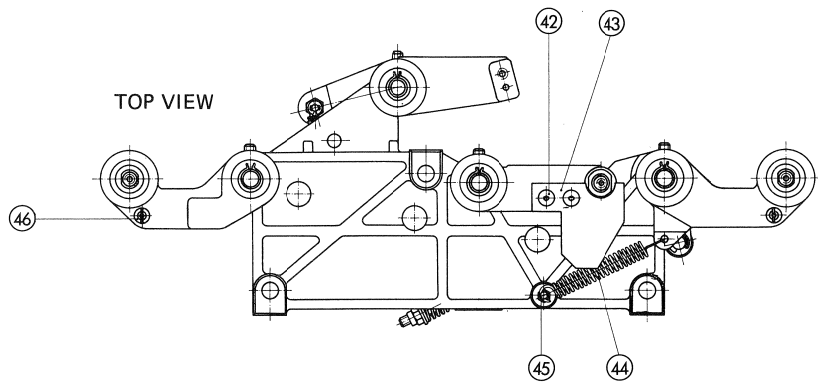
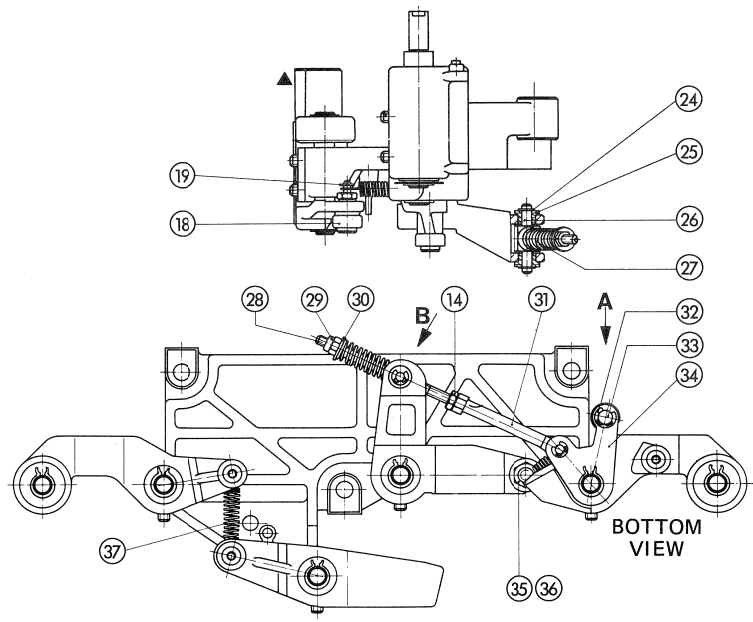


	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.140.00	Tape guide motor assembly (* = not included)	left
	1	1.820.141.00	Tape guide motor assembly (* = not included)	right
	3*3	21.53.0461	Allen screw	M4x22
	3*3	24.16.1040	Fin washer	
01	2 2	1.710.165.07	O-ring spec.	
02	2 2	21.53.0472	Allen screw	M4x16
03	2 2	24.16.1040	Fin washer	
04	1 1	1.820.142.00	Motor compl.	
05	1 1	1.820.773.82	Tape Lifter control PCB	
06	1 1	21.53.0456	Allen screw	M4x10
07	1 1	24.16.3060	Circlip	
08	1	1.820.914.00	Driver compl.	left
	1	1.820.915.00	Driver compl.	right
09	1 1	1.820.916.00	Motor support compl.	
10	1	1.820.140.06	Encoding disc	left
	1	1.820.141.06	Encoding disc	right
11	3 3	23.01.1032	Washer	
12	6 6	24.16.1030	Fin washer	
13	4 4	21.53.0354	Allen screw	M3x6
14	1	1.820.140.05	Cam disc	left
	1	1.820.141.05	Cam disc	right
15	1 1	24.16.2030	Serrated lock washer	
16	3 3	21.51.8354	Round head allen screw	M3x6

8.8 TAPE GUIDE ASSEMBLY



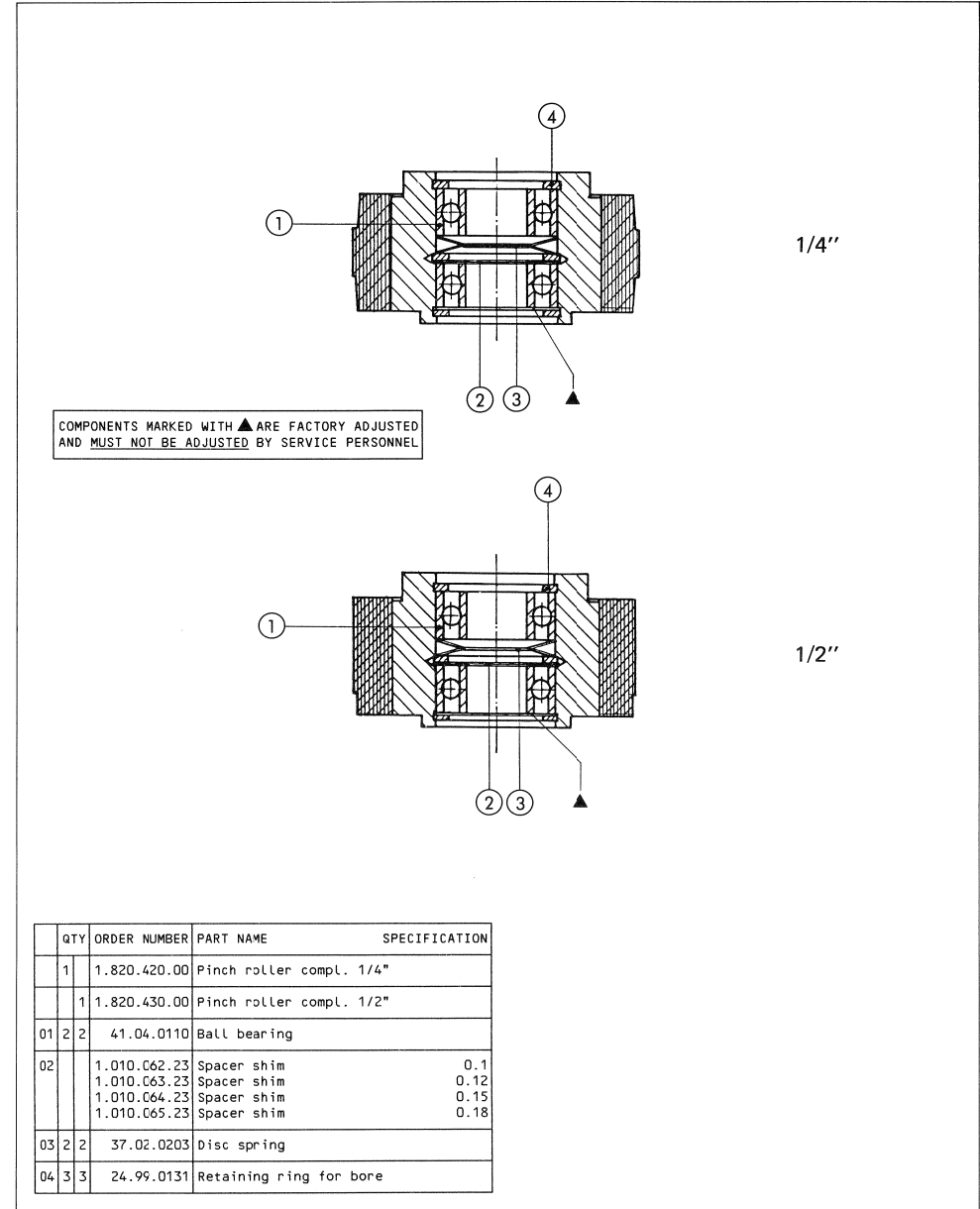
COMPONENTS MARKED WITH ▲ ARE FACTORY ADJUSTED AND MUST NOT BE ADJUSTED BY SERVICE PERSONNEL



QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.820.120.00	Tape guide assembly (* = not included)	
3*	21.53.0464	Allen screw	M4x30
3*	24.16.1040	Fin washer	
3*	1.820.090.08	Centring bush	
01 or 2*	1.010.036.21 1.010.040.21	Spec. screw (1/4") Spec. screw (1/2")	M4x14 M4x20
02 or 2*	1.820.400.05 1.820.410.05	Roller cap 1/4" Roller cap 1/2"	
03 or 1*	1.820.400.01 1.820.410.01	Guide roller left 1/4" Guide roller left 1/2"	
04 or 1*	1.820.400.02 1.820.410.02	Guide roller right 1/4" Guide roller right 1/2"	
05	2 1.820.120.28	Roller shaft 1/4", 1/2"	
06	12 41.04.0110	Ball bearing	
07	10 24.16.4160	Retaining ring for bore	
08	2 1.010.097.37	Pressure spring	
09	2 1.010.066.23	Spacer shim	
10	2 1.062.210.11	Spacer shim	
11	2 1.010.085.23	Washer	
12	2 24.16.3060	Circlip	
13	1 1.820.120.17	Bearing bolt	Left
14	4 22.01.8040	Hexagonal nut	M4
15	3 24.16.1040	Fin washer	
16	9 24.16.5080	Retaining ring for shaft	
17	2 1.820.120.18	Bearing bolt	right
18	4 1.820.120.19	Roller	
19	2 24.16.3023	Circlip	
20	8 37.02.0203	Disc spring	
21	3 1.010.133.27	Hex stud bolt	
22	3 1.077.100.20	Rubber cap	
23	1 1.820.120.27	Pinch roller shaft	
24	5 24.16.3032	Circlip	
25	2 1.820.120.23	Bearing bush	
26	1 1.820.120.24	Bearing bolt	
27	1 1.010.046.37	Pressure spring	
28	1 1.820.120.26	Stud	
29	1 22.99.0116	Self locking nut	M4

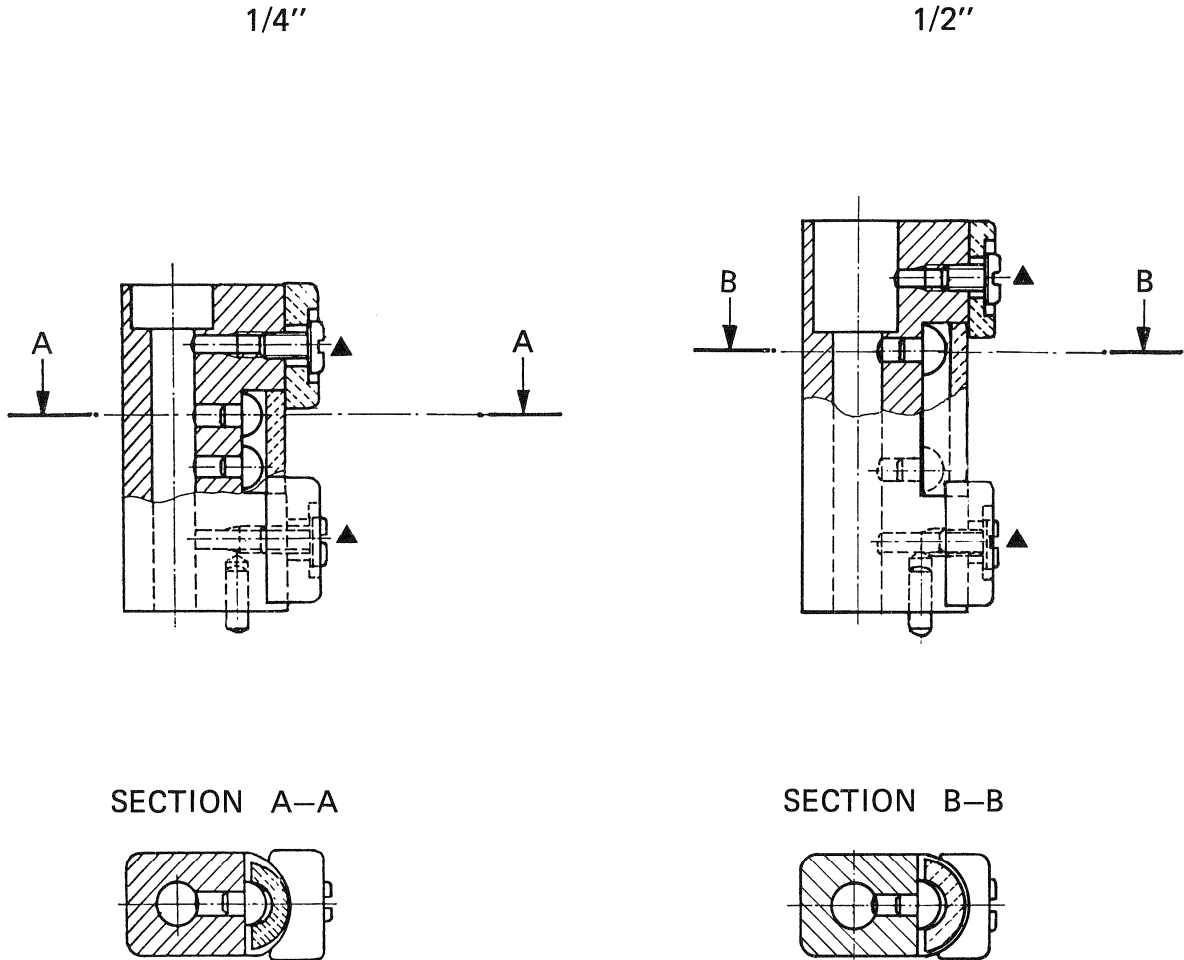
30	1	1.820.120.25	Washer	
31	1	1.820.120.20	Joint	
32	2	24.16.3050	Circlip	
33	1	1.820.120.21	Bolt	
34	1	1.820.917.00	Pinch force Lever compl.	
35	1	22.01.8060	Hexagonal nut	M6
36	1	24.16.1060	Fin washer	
37	1	1.010.116.37	Tension spring	
38	1	1.820.120.33	Bearing bush	
39	1	23.01.2043	Washer	
40	1	1.010.115.37	Tension spring	
41	1	1.820.120.22	Knuckle pin	
42	2	21.53.2354	Countersunk allen head screw	M3x6
43	1	1.820.120.31	Slot cover	
44	1	1.010.117.37	Tension spring	
45	1	1.830.125.07	Bolt	
46	2	1.820.120.32	Driver bolt	

8.9 PINCH ROLLER



QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.820.420.00	Pinch roller compl. 1/4"	
1	1.820.430.00	Pinch roller compl. 1/2"	
01	2 41.04.0110	Ball bearing	
02	1.010.062.23 1.010.063.23 1.010.064.23 1.010.065.23	Spacer shim Spacer shim Spacer shim Spacer shim	0.1 0.12 0.15 0.18
03	2 37.02.0203	Disc spring	
04	3 24.99.0131	Retaining ring for bore	

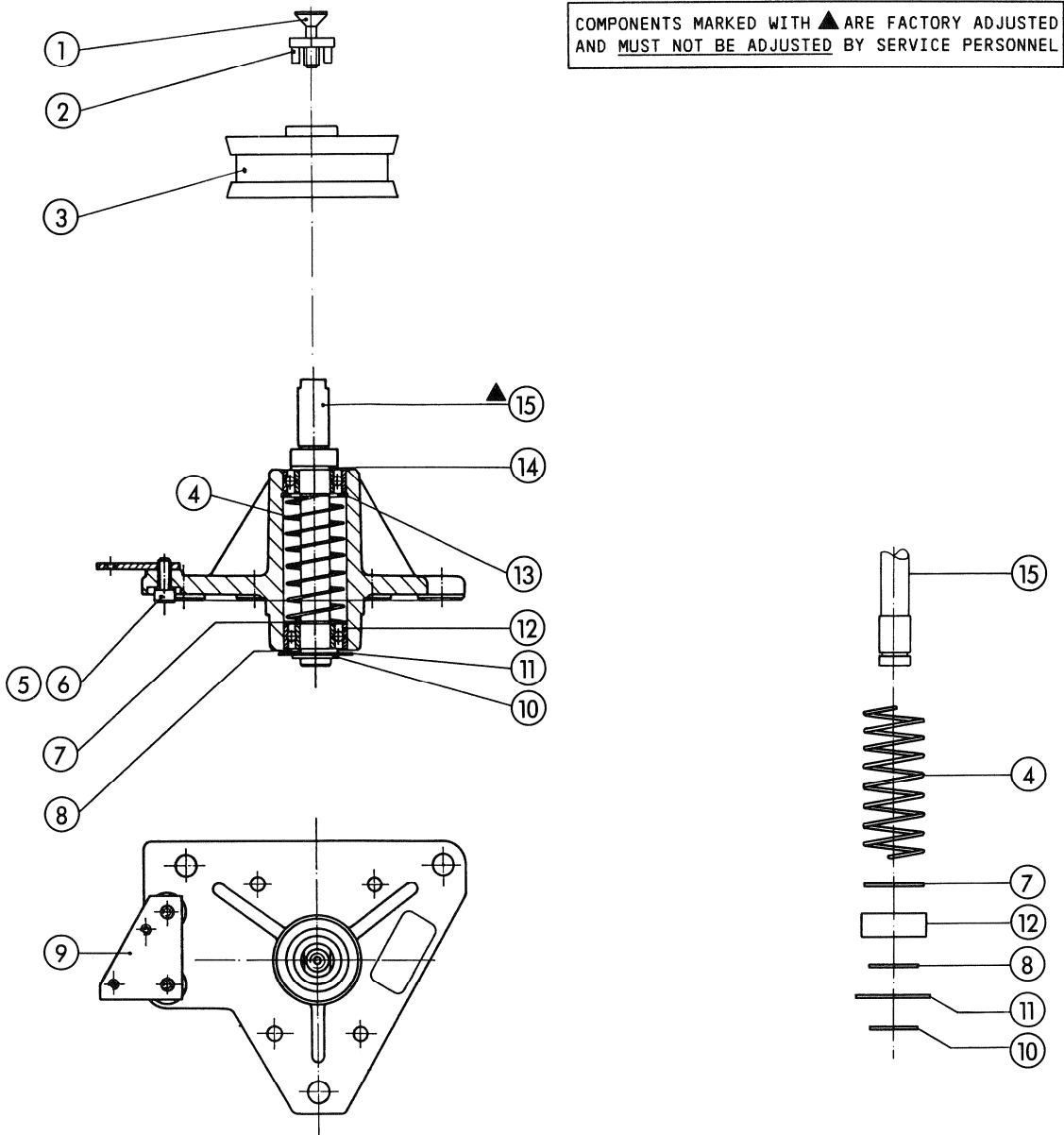
8.10 TAPE LIFTER BOLT



COMPONENTS MARKED WITH ▲ ARE FACTORY ADJUSTED AND MUST NOT BE ADJUSTED BY SERVICE PERSONNEL

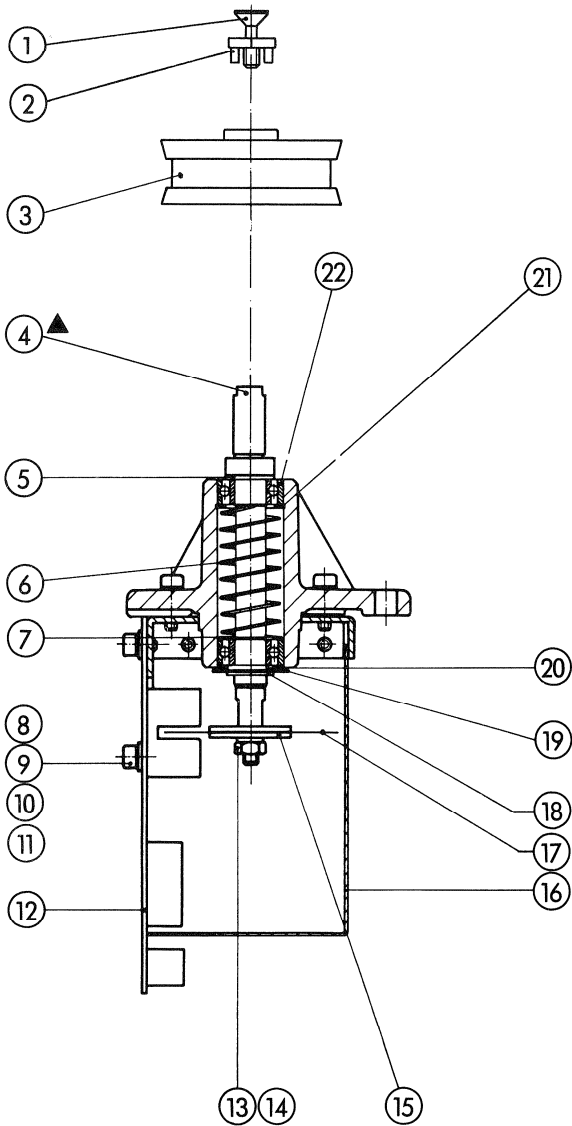
QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.820.121.00	Tape lift bolt compl. 1/4" (* = not included)	
1	1.820.122.00	Tape lift bolt compl. 1/2" (* = not included)	
1*1	21.53.0464	Allen screw	M4x30
1*1	24.16.1040	Fin washer	

8.11 PRESTABILIZER ROLLER

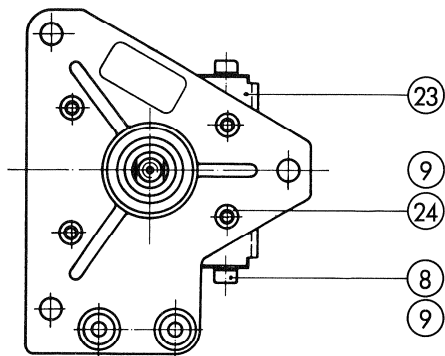
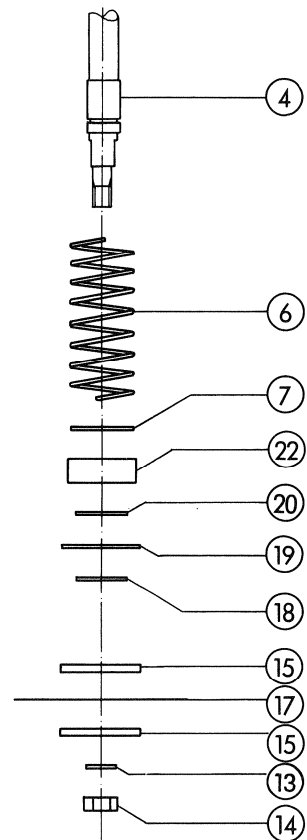


	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.170.00	Prestabilizer roller (* = not included)	
	3*	1.010.035.21	Spec. screw	M4
	3*	24.16.1050	Fin washer	
	1*	1.820.793.81	OPTO SENSOR PCB including:	
	1*	1.820.793.01	Opto sensor cover	
	1*	1.820.793.02	LED insert	
	1*	1.820.793.03	Mounting bracket for OPTO SENSOR PCB	
	2*	21.53.0354	Allen screw	M3x6
	2*	24.16.1030	Fin washer	
	1*	23.01.1032	Washer	
01	1*	1.010.036.21	Countersunk allen screw, spec.	M4x14
02	1*	1.820.400.06	Roller driver	
03	1*	1.820.400.03	Roller 1/4"	
or	1*	1.820.410.03	Roller 1/2"	
04	1	1.010.097.37	Pressure spring	
05	1	21.53.0335	Allen screw	
06	2	24.16.1030	Fin washer	
07	1	1.010.066.23	Spacer	
08	1	1.062.210.11	Spacer	
09	1	1.820.170.04	Screw plate	
10	1	24.16.3060	Circlip	
11	1	1.010.085.23	Spec. washer	
12	2	41.04.0110	Ball bearing	
13	1	24.16.4160	Retaining ring for bore	
14		1.010.058.23	Spacer shim	0.1
		1.010.059.23	Spacer shim	0.12
		1.010.060.23	Spacer shim	0.15
		1.010.061.23	Spacer shim	0.18
15	1	1.820.150.11	Shaft	

8.12 MOVE SENSOR ROLLER

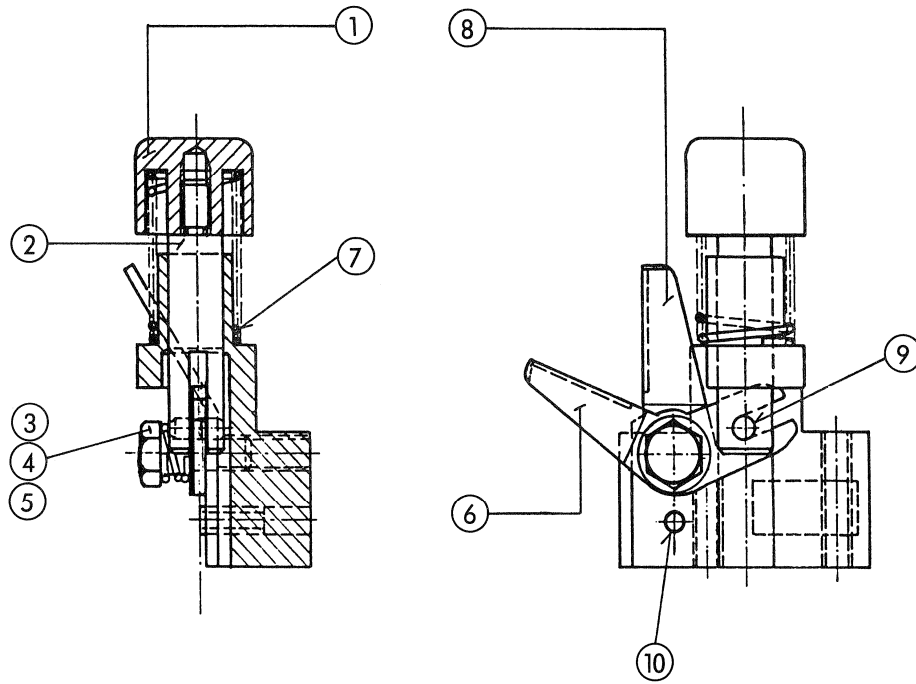


COMPONENTS MARKED WITH ▲ ARE FACTORY ADJUSTED AND MUST NOT BE ADJUSTED BY SERVICE PERSONNEL



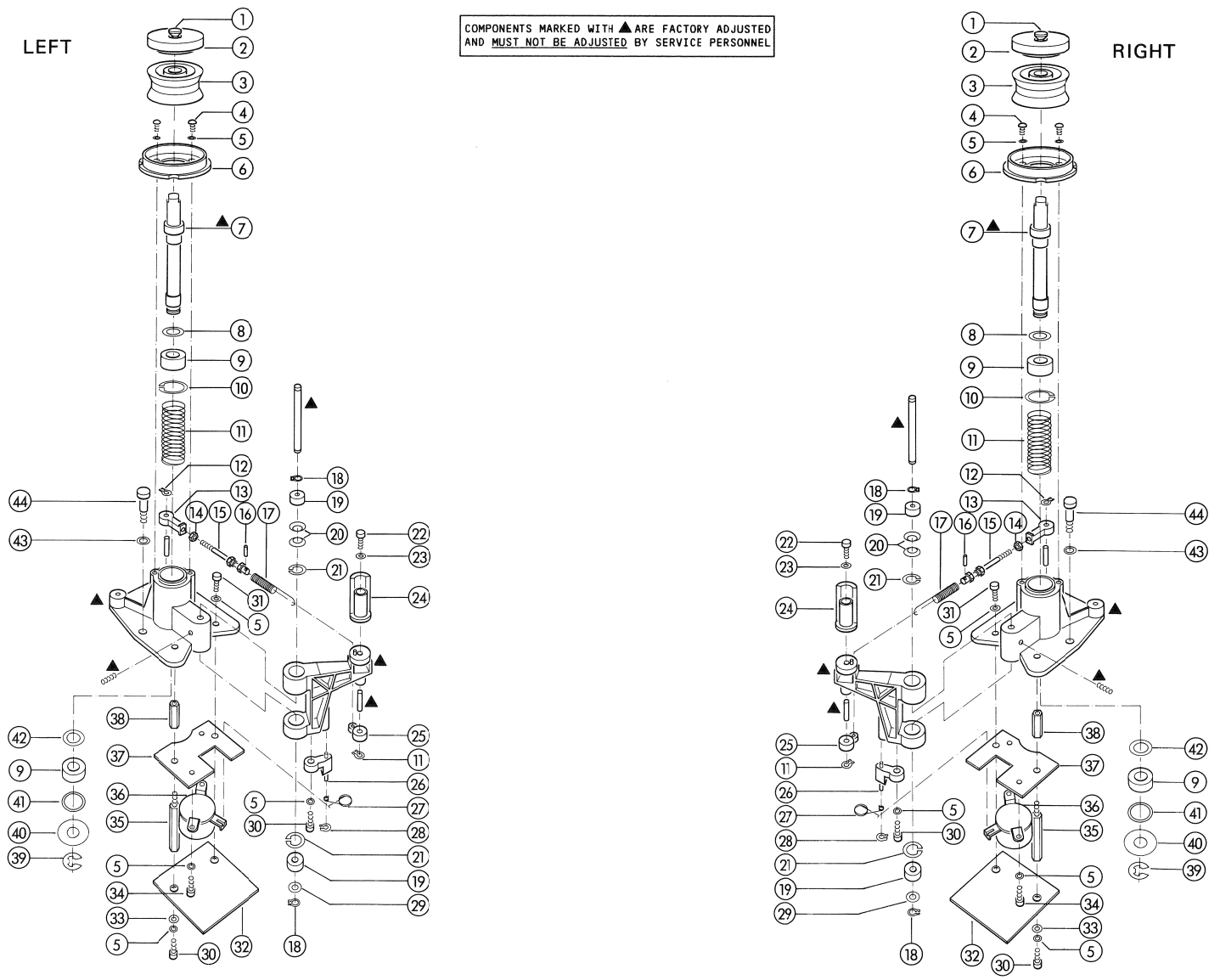
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.180.00	Move sensor roller 1/4", 1/2" (* = not included)	
	3*	1.010.035.21	Spec. screw	M4
	3*	24.16.1050	Fin washer	
01	1*	1.010.036.21	Countersunk allen screw, spec.	M4x14
02	1*	1.820.400.06	Roller driver	
03 or	1* 1*	1.820.400.04 1.820.410.04	Roller 1/4" Roller 1/2"	
04	1	1.820.180.02	Shaft	
05		1.010.058.23 1.010.059.23 1.010.060.23 1.010.061.23	Spacer shim Spacer shim Spacer shim Spacer shim	0.1 0.12 0.15 0.18
06	1	1.010.097.37	Pressure spring	
07	1	1.010.066.23	Spacer	
08	8	21.53.0353	Allen screw	M3x5
09	11	24.16.1030	Fin washer	
10	3	23.01.1032	Washer	
11	1	24.16.2030	Serrated lock washer	
12	1	1.820.770.00	MOVE SENSOR PCB	
13	1	24.16.1040	Fin washer	
14	1	22.01.8040	Hexagonal nut	
15	2	1.010.084.23	Washer	
16	1	1.820.180.05	Cover	
17	1	1.820.180.04	Encoding disc	
18	1	24.16.3060	Circlip	
19	1	1.010.085.23	Flat washer	
20	1	1.062.210.11	Spacer	
21	1	24.16.4160	Retaining ring for bore	
22	2	41.04.0110	Ball bearing	
23	1	1.820.180.03	Mounting bracket	
24	4	21.53.0356	Allen screw	M3x10

8.13 TAPE SCISSORS



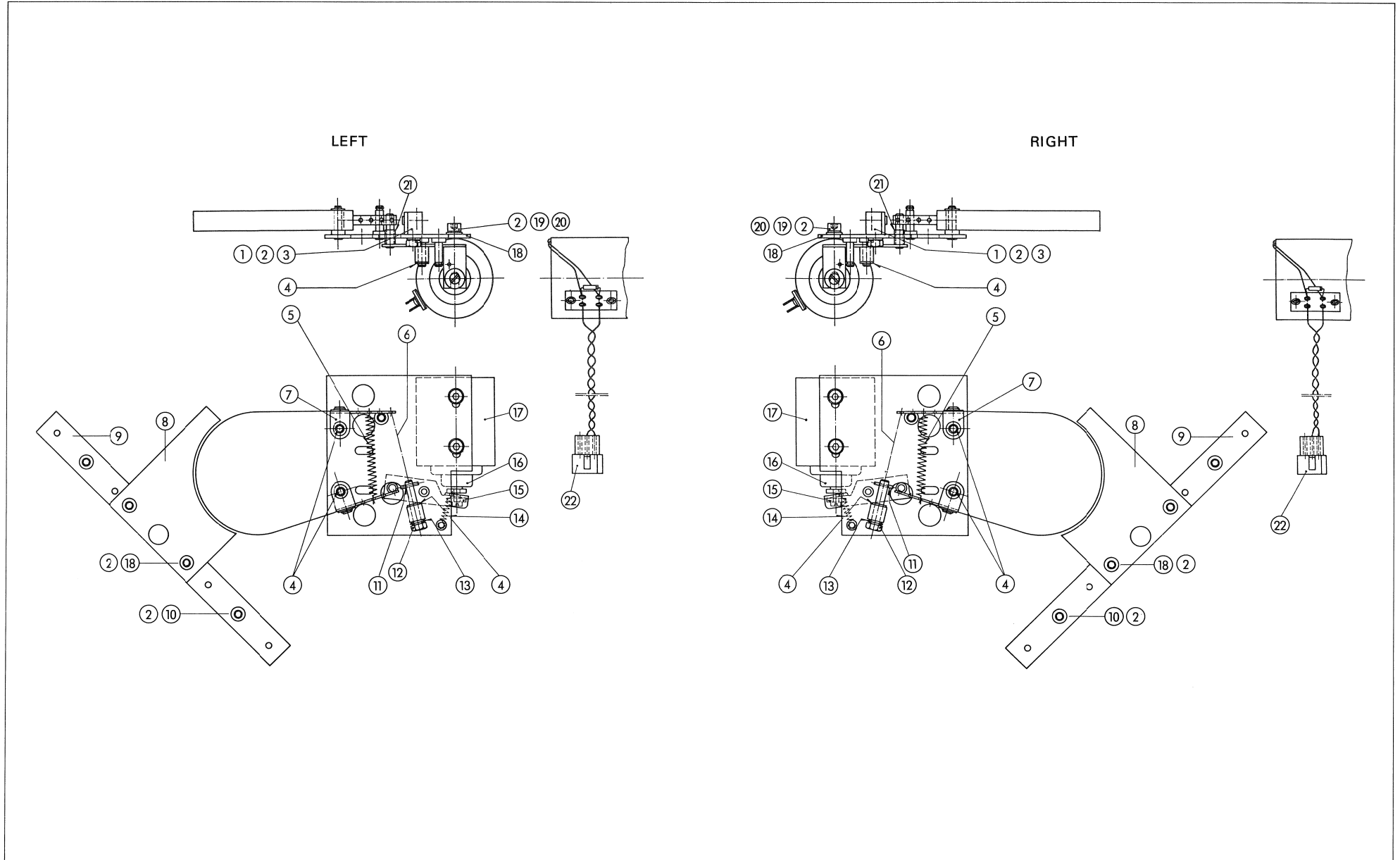
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.215.00	Tape scissors 1/4" (* = not included)	
	2*	21.53.0361	Allen screw	M3x22
	2*	24.16.1030	Fin washer	
01	1	1.820.215.03	Push button	
02	1	1.820.215.02	Shaft	
03	1	1.020.715.05	Spec. screw	
04	1	1.020.715.08	Pressure spring	
05	1	1.020.715.10	Spacer	
06	1	1.020.715.02	Moving blade	
07	1	1.020.715.09	Pressure spring	
08	1	1.020.715.01	Fixed blade	
09	1	25.06.8154	Straight pin	
10	1	25.16.1206	Spiral pin	

8.14 TAPE TENSION SENSORS LEFT/RIGHT



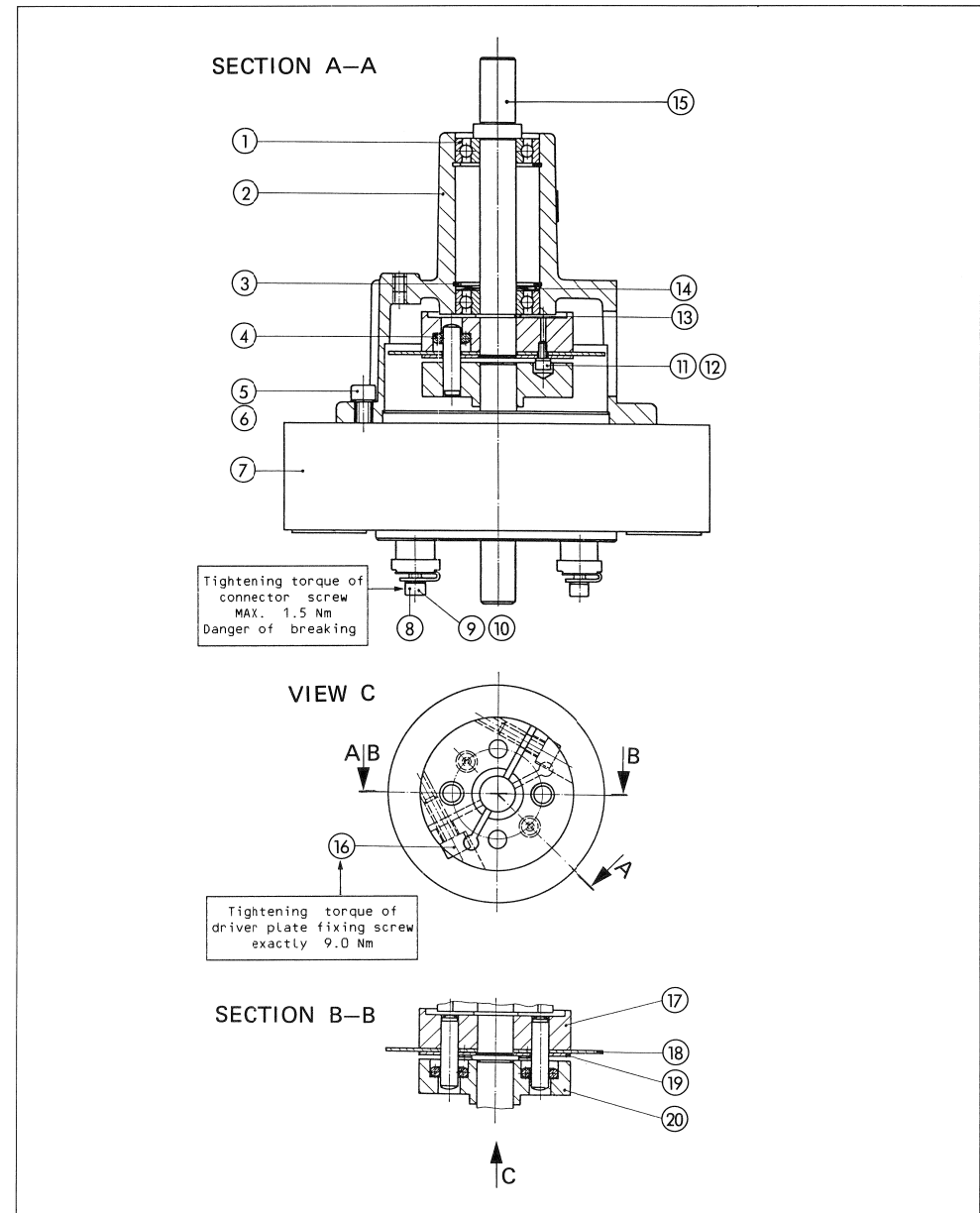
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.150.00	Tape tension sensor (* = not included)	left
	1	1.820.151.00	Tape tension sensor (* = not included)	right
01	1*1	1.010.036.21	Spec. screw (1/4")	M4x14
	1*1	1.010.040.21	Spec. screw (1/2")	M4x20
02	1*1	1.820.400.05	Roller cap 1/4"	
or	1*1	1.820.410.05	Roller cap 1/2"	
03	1*1	1.820.400.02	Guide roller 1/4"	
or	1*1	1.820.410.02	Guide roller 1/2"	
04	2 2	21.51.8354	Round head allen screw	M3x6
05	9 9	24.16.1030	Fin washer	
06	1 1	1.820.150.12	CoLLar	
07	1 1	1.820.150.11	Shaft	
08		1.010.058.23	Spacer shim	0.1
		1.010.059.23	Spacer shim	0.12
		1.010.060.23	Spacer shim	0.15
		1.010.061.23	Spacer shim	0.18
09	2 2	41.04.0110	Ball bearing	
10	1 1	24.16.4160	Retaining ring for bore	
11	1 1	1.010.097.37	Pressure spring	
12	2 2	24.99.0129	Retaining ring for shaft	
13	1 1	1.820.150.06	Joint	
14	1 1	22.01.8030	Hexagonal nut	M3
15	1 1	1.820.154.00	Adjusting joint	
16	1 1	25.06.6054	Center grooved pin	
17	1 1	1.010.114.37	Tension spring	
18	2 2	24.16.5040	Retaining ring for shaft	
19	2 2	41.99.0104	Ball bearing	
20	2 2	37.02.0201	Disc spring	
21	2 2	24.16.4100	Retaining ring for bore	
22	1*1	21.53.0355	Allen screw	M3x8
23	1*1	24.16.1030	Fin washer	
24	1*1	1.820.160.00	Tape tension feeling element compl.	
25	1 1	1.820.918.00	Eye compl.	
26	1 1	1.820.150.16	Driver	
27	1	1.820.151.17	Driver spring	right
	1	1.820.150.17	Driver spring	left
28	1 1	24.99.0122	Retaining ring for shaft	
29	1 1	1.062.210.09	Spacer shim	
30	3 3	21.53.0355	Allen screw	M3x8
31	2 2	21.53.0356	Allen screw	M3x10
32	1 1	1.820.772.00	TAPE TENSION SENSOR PCB	
33	2 2	23.01.1032	Washer	
34	2 2	21.53.0355	Allen screw	M3x5
35	2 2	1.010.127.27	Hex stud bold	
36	1 1	1.820.153.00	Hall effect potentiometer (7 kΩ)	
37	1 1	1.820.150.10	Stop sheet	
38	2 2	1.010.068.27	Hex stud bolt	
39	1 1	24.16.3060	Circlip	
40	1 1	1.010.085.23	Washer	
41	1 1	1.062.210.11	Spacer shim	
42	1 1	1.010.066.23	Spacer shim	
43	3*3	24.16.1050	Fin washer	
44	3*3	1.010.035.21	Spec. Screw	M4

8.15 TAPE BRAKE ASSEMBLIES



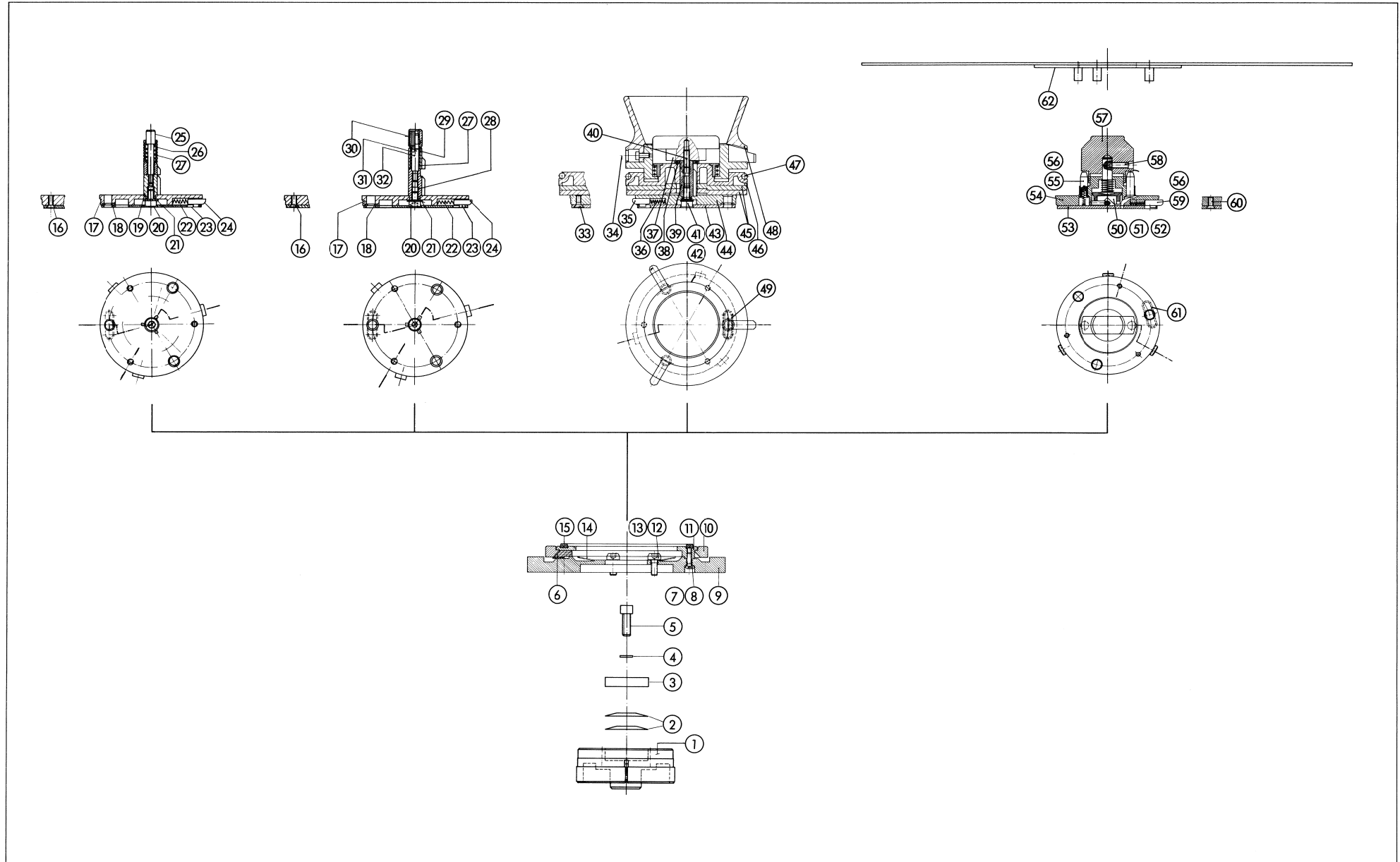
QTY	ORDER NUMBER	PART NAME	SPECIFICATION
		Brake rollers: see 8.17	
1	1.080.230.00	Brake assembly compl. (* = not included)	Left
1	1.080.240.00	Brake assembly compl. (* = not included)	right
2*2	21.53.0457	Allen screw	M4x12
2*2	23.01.1043	Washer	
2*2	24.16.1040	Fin washer	
01	1	1.080.230.01	Support bolt
02	7	24.16.1040	Fin washer
03	1	22.01.8040	Hexagonal nut M4
04	4	24.16.3032	Circlip
05	1	1.080.230.05	Tension spring
06	1	1.080.230.06	Tension spring
07	1	1.080.238.00	Brake band compl.
08	1	1.820.090.02	Brake band guide
09	1	1.820.090.01	Strip
10	2	21.53.0471	Allen screw M4x14
11	1	25.16.2106	Spring pin
12	1	1.080.230.02	Adjusting bolt
13	2	37.01.0102	Disc spring
14	1	1.080.112.02	Tension spring
15	1	1.080.236.00	Brake Lever
16	1	1.014.753.00	Armature compl.
17	1	1.014.750.00	Solenoid
18	1	1.080.233.00	Brake chassis Left
1	1.080.243.00	Brake chassis right	
19	2	23.01.1043	Washer
20	4	21.53.0454	Allen screw M4x6
21	1	1.080.120.15	Rubber damping hose
22	1	54.02.0400	Connector

8.16 SPOOLING MOTORS



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.190.00	Spooling motor compl. 1/4", 1/2" (* = not included)	
	3*	21.53.0321	Allen screw	M5x14
	3*	24.16.1050	Fin washer	
01	2	41.99.0113	Ball bearing	
02	1	1.820.190.01	Bearing case	
03	2	24.16.4280	Retaining ring for bore	
04	4	31.05.0002	O-ring	
05	4	21.53.0507	Allen screw	M5x12
06	4	24.16.1050	Fin washer	
07	1	1.820.191.00	Spooling motor	
08	2	1.820.191.01	Carbon brush compl.	
09	2	21.53.0455	Allen screw	M4x8
10	2	24.16.1040	Fin washer	
11	2	21.53.0354	Allen screw	M3x6
12	2	24.16.1030	Fin washer	
13	1	24.16.5120	Retaining ring for shaft	
14	2	37.02.0209	Disc spring	
15	1	1.820.190.03	Shaft	
16	2	21.54.0522	Allen screw	M5x16
17	1	1.820.919.00	Upper driver plate compl.	
18	1	1.820.190.06	Encoding disc	
19	1	1.820.190.07	Spec. washer for encoding disc	
20	1	1.820.920.00	Lower driver plate compl.	

8.17 REEL ADAPTERS



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
01	1	1.820.200.00	Brake roller compl.	
02	2	24.16.6120	Star washer	
03	1	1.820.090.03	Pressure disc	
04	1	24.16.1050	Fin washer	
05	1	21.53.0521	Allen screw	M5x14

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.341.00	Adapter support	
06	3	1.013.325.04	Release catch	
07	3	21.51.8356	Round head allen screw	M3x10
08	3	24.16.1030	Fin washer	
09	1	1.013.341.01	Base plate	
10	1	1.013.325.01	Release ring	
11	1	1.013.325.02	Guide ring	
12	3	1.010.039.21	Centring screw	M4x10
13	3	24.16.1040	Fin washer	
14	1	37.02.0216	Disc spring	
15	1	1.013.325.03	Rubber ring	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.326.00	Three-pronged "CINE" adapter	
16	3	21.51.2355	Countersunk allen head screw	M3x8
17	1	1.013.342.02	Adapter plate	
18	1	1.013.326.04	Contact spring	
19	1	1.013.342.03	3-pronged bolt	
20	1	21.53.0454	Allen screw	M4x6
21	1	24.16.2040	Serrated lock washer	
22	3	1.011.010.05	Pressure spring	
23	1	1.013.342.01	Bottom cover	
24	3	1.013.326.03	Spring catch	
25	1	1.013.326.06	Spec. screw	
26	1	1.062.390.01	Guide bush	
27	1	1.736.794.03	Pressure spring	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.347.00	Three-pronged "CINE" adapter Like 1.013.326.00 except:	
19			Not used	
25			Not used	
26			Not used	
28	1	1.013.347.01	Driver bolt	
29	1	1.013.347.02	Guide bush	
30	1	1.013.347.03	Knurled nut	
31	1	1.010.108.23	Washer	
32	1	1.013.347.04	Spec. screw	

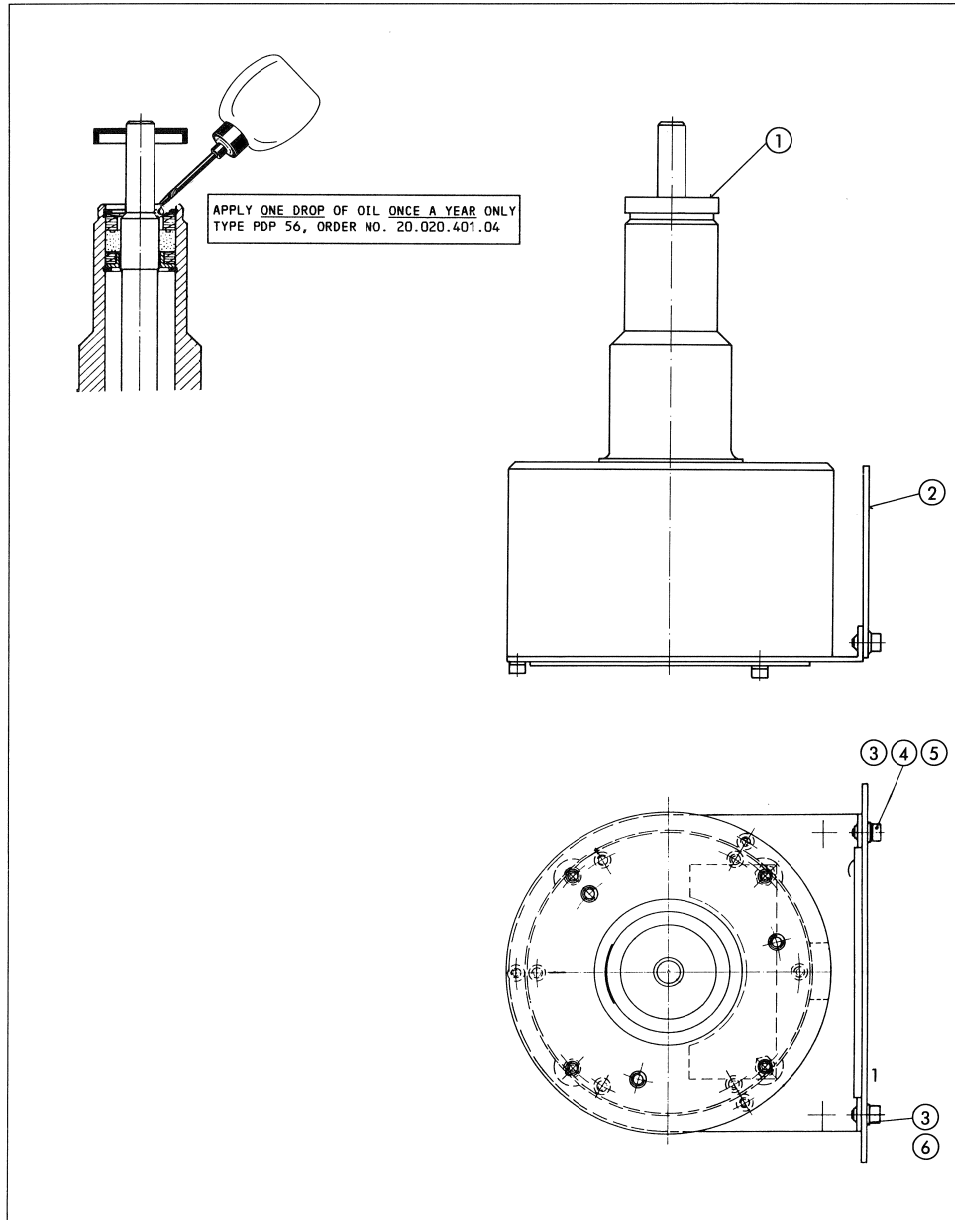
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.345.00	Precision NAB adapter	1/2"
33	3	21.51.2355	Countersunk allen head screw	M3x8
34	3	21.44.7355	Cross-recessed pan head scrape point screw	M3x8
35	3	1.013.326.03	Spring catch	
36	3	1.011.010.05	Pressure spring	
37	1	1.013.344.01	Push button	
38	4	37.02.0203	Disc spring	
39	1	1.013.345.01	Driver NAB	1/2"
40	1	21.99.0136	Set screw	M4x12
41	1	21.53.0454	Allen screw	M4x6
42	1	24.16.2040	Serrated lock washer	
43	1	1.013.342.01	Bottom cover	
44	1	1.013.342.02	Adapter plate	
45	2	1.013.336.02	Spacer	
46	1	1.013.344.03	NAB adapter (incl. pos. 42)	
47	1	31.99.0123	O-ring	
48	1	1.013.344.04	Handle	
49	1	1.013.326.04	Contact spring	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.344.00	Precision NAB adapter Like 1.013.345.00 except:	1/4"
39	1	1.013.344.02	Driver NAB	1/4"
45			not used	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.013.343.00	Open reel "DIN" adapter	1/4"
50	1	25.06.8263	Straight pin	
51	1	1.013.003.03	Pressure spring	
52	1	1.013.343.02	Cam shaft	
53	1	1.013.342.01	Bottom cover	
54	1	1.013.343.01	Adapter plate	
55	2	1.013.343.03	Driver bolt	
56	5	1.011.010.05	Pressure spring	
57	1	1.013.343.06	Knob	
58	1	21.99.0136	Allen set screw	M4x12
59	3	1.013.326.03	Spring catch	
60	3	21.51.2355	Countersunk allen head screw	M3x8
61	1	1.013.326.04	Contact spring	

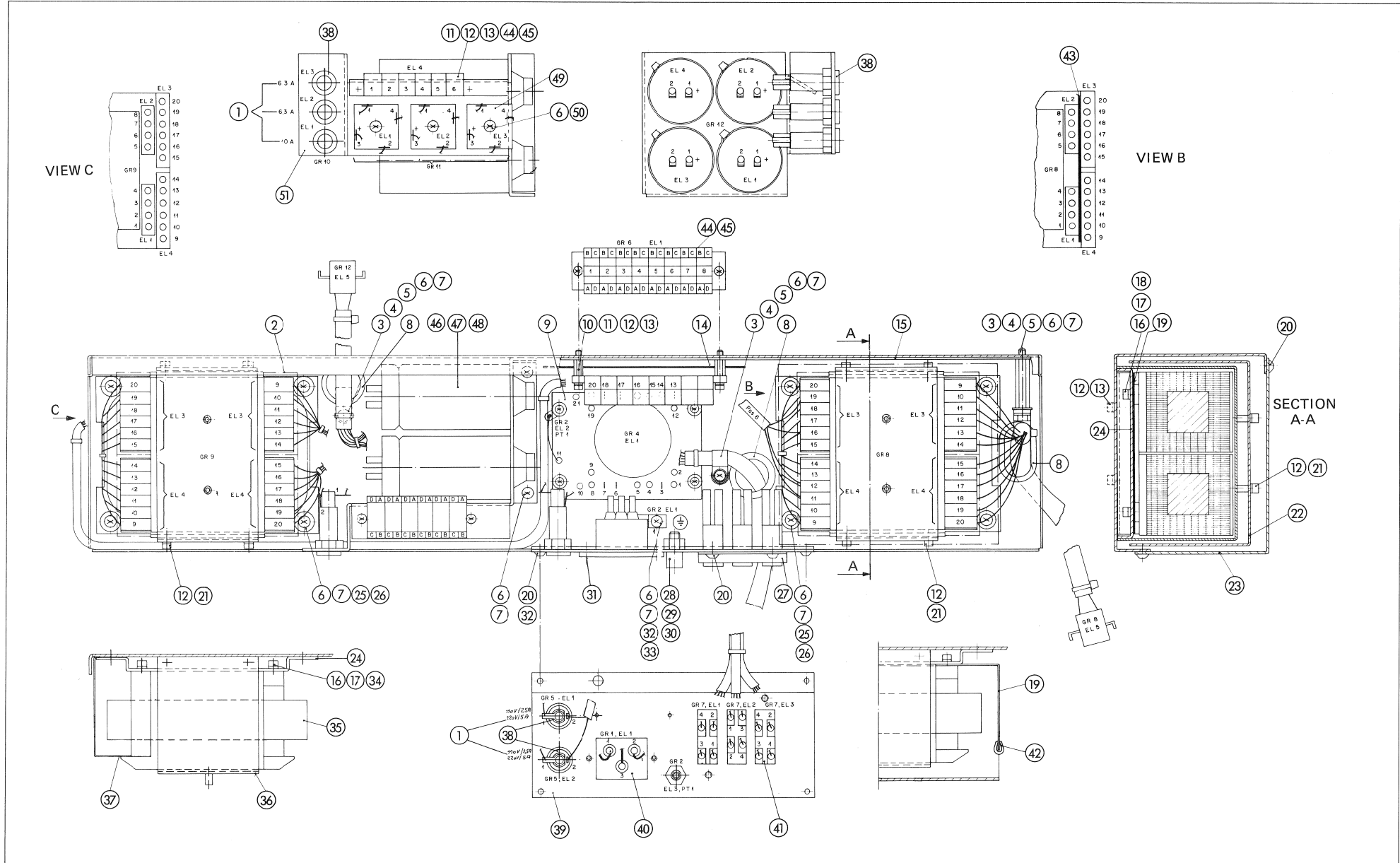
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
62	1	1.013.328.00	Pancake platter compl.	

8.18 CAPSTAN MOTOR



QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1.021.601.81	Capstan motor 1/4", 1/2" (* = not included)	
3*	1.010.035.21	Spec. screw	M4
3*	24.16.1050	Fin washer	
01	1.021.601.07	Bearing cap	
02	1.021.695.81	Tacho sensor PCB	
03	21.53.0353	Allen screw	M3x5
04	24.16.1030	Fin washer	
05	23.01.1032	Washer	
06	24.16.2030	Serrated lock washer	

8.19 POWER SUPPLY ASSEMBLY



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.510.00	Power supply (* = not included)	
	6*	1.010.034.21	Countersunk allen head screw	M4x8
	1*	21.53.0455	Allen screw	M4x8
	2*	24.16.1040	Fin washer	
	2*	24.16.2040	Serrated lock washer	
	3*	54.02.0343	Flat connector	
	4*	21.53.0454	Allen screw	M4x6
	2*	1.820.500.33	Mounting bracket	
	1*	1.820.500.32	Mounting bracket	left
	1*	1.820.500.34	Cable channel	
	1*	1.820.738.00	PARALLEL REMOTE INTERFACE PCB	
	1*	1.820.500.26	Guide rail	right
	1*	1.820.500.27	Guide rail	left
	2*	1.088.300.07	Slide rail	
01	2	51.01.0121	Fuse T 2.5 A SLOW (220V)	
	2	51.01.0124	Fuse T 5 A SLOW (110V)	
	2	51.01.0125	Fuse T 6.3 A SLOW	
	1	51.01.0126	Fuse T 10 A SLOW	
02	8	1.010.044.63	Protection against contact	
03	3	1.010.124.27	Hex stud bolt	
04	3	23.01.3043	Washer	
05	3	35.03.0120	Support	
06	21	24.16.1040	Fin washer	
07	15	21.53.0455	Allen screw	
08	3	31.01.0105	PVC grommet	
09	1	1.180.337.00	LINE FILTER PCB	
10	2	1.010.106.27	Hex stud bolt	
11	4	23.01.1032	Washer	
12	18	24.16.1030	Fin washer	
13	8	21.53.0355	Allen screw	M3x8
14	1	1.820.510.07	Insulation	
15	1	1.820.510.16	Screening sheet	
16	8	22.99.0117	Square nut	M5
17	8	24.16.1050	Fin washer	
18	4	21.53.0506	Allen screw	M5x10

19	1	1.820.510.17	Transformer screening	bottom
20	14	1.010.007.21	Round head allen screw	M4x8
21	10	21.53.0353	Allen screw	M3x5
22	1	1.820.510.18	Transformer screening	upper
23	1	1.820.510.02	Cover	
24	2	1.820.510.03	Transformer support	
25	8	1.780.110.01	Rubber grommet	
26	8	1.820.510.13	Spacer	
27	1	1.820.510.11	Voltage selector cover	
28	1	1.010.001.53	Ground terminal	
29	1	24.16.2060	Serrated lock washer	
30	1	1.010.030.22	Hexagonal nut	M6
31	2	21.53.2354	Countersunk allen head screw	M3x6
32	3	24.16.2040	Serrated lock washer	
33	2	54.02.0343	Flat connector	
34	4	21.53.0505	Allen screw	M3x8
35	2	1.820.520.00	Mains transformer	
36	2	1.820.510.04	Transformer cover	
37	1	1.820.510.14	Lateral insulation	
38	5	53.03.0106	Protection against contact	
39	1	1.820.510.09	Mains connector panel	
40	1	54.42.0001	Mains connector	
41	3	55.12.0001	Switch	
42	2	1.067.660.03	Border protection	
43	1	1.820.510.07	Insulation	
44	14	53.05.0114	Terminal block	
45	2	53.05.0145	Terminal support	
46	4	59.26.7103	Capacitor 10'000 µF/63 V	
47	4	59.20.0107	Insulating washer	
48	4	59.20.0109	Insulating nut	
49	3	70.01.0231	Bridge rectifier 100 V/35 A	
50	3	21.53.0471	Allen screw	M4x14
51	1	1.820.510.05	Support	

8.20 CONNECTOR PANELS

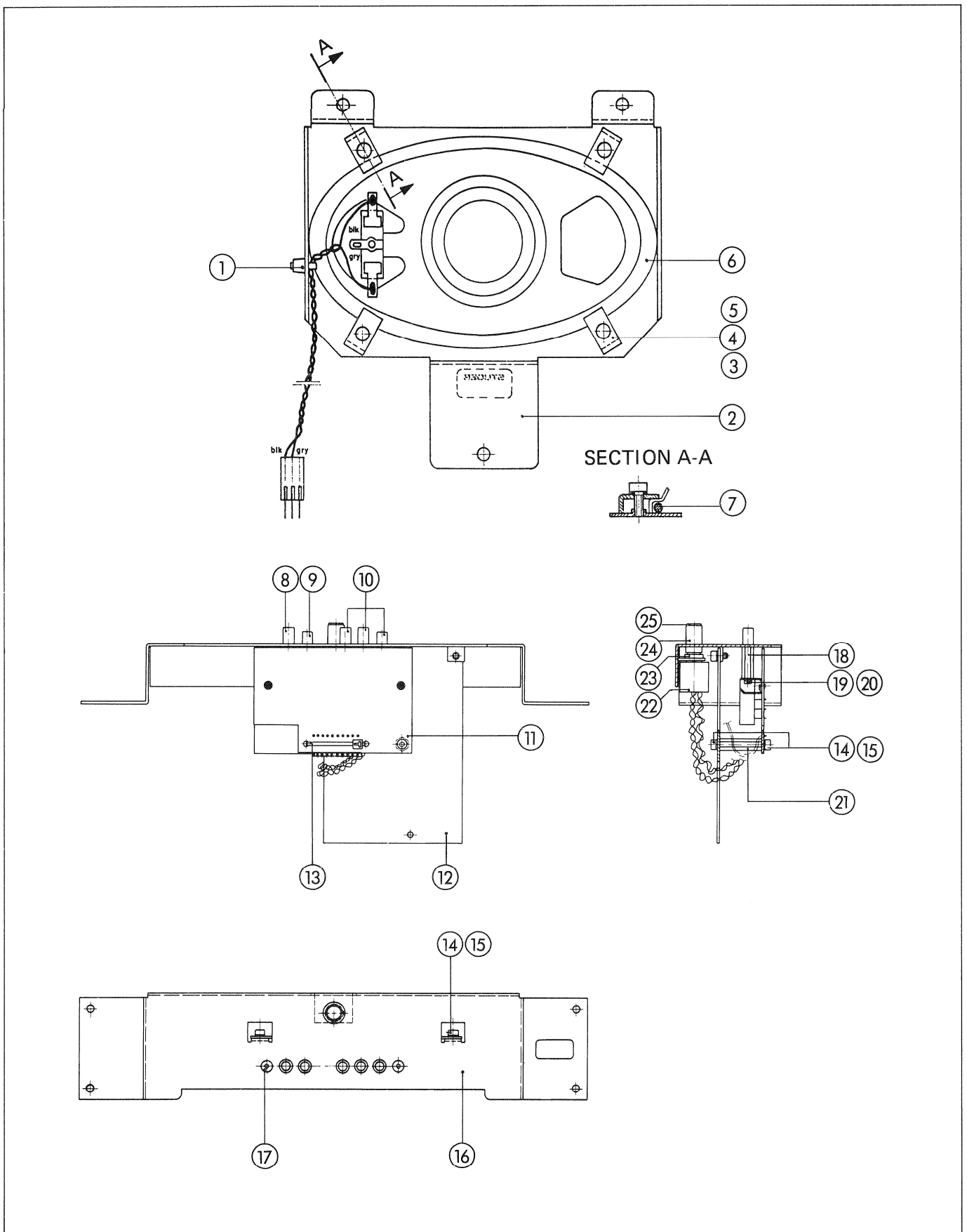
(without illustrations; self-adhesive labels see 8.23)

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.502.00	Connector panel "LINE" XLR, compl.	
	1	54.21.2001	(parts marked with ■ included)	
	1	54.21.2002	XLR socket, 3-pole, female	
	1	1.820.749.00	XLR socket, 3-pole, male	
	1	1.820.749.00	INTERFERENCE FILTER PCB (including	
	2	20.99.0103	XLR sockets)	
	2	20.99.0103	Thread-forming cross-recessed pan	
	4	21.27.3354	head screw	D2.2x5
	2	1.010.007.21	Cross-recessed countersunk oval	
	2	1.010.007.21	head screw	M3x5
	2	1.010.007.21	Round head allen screw	M4x8
or	1	1.820.501.00	Connector panel "LINE" LEMO, compl.	
	2	1.010.007.21	Round head allen screw	M4x8
or	1	1.820.500.23	Dummy panel, 55 mm	
	2	1.010.007.21	Round head allen screw	M4x8

	1	20.820.344.00	Noise reduction system interface	
	4	1.010.007.21	(optional modification kit; refer	
	4	1.010.007.21	to instruction sheet 10.27.0300)	
	4	1.010.007.21	Round head allen screw	M4x8
or	1	1.820.500.22	Dummy panel, 95 mm	
	4	1.010.007.21	Round head allen screw	M4x8

	1	1.820.560.00	Connector panel "REMOTE CONTROLS"	
	6	1.010.007.21	(parts marked with ■ included)	
	6	1.010.007.21	Round head allen screw	M4x8
	1	20.820.345.00	Serial interface for autolocator	
	2	1.010.025.21	and remote timer/control (optional	
	2	1.010.025.21	modification kit, refer to in-	
	2	1.010.025.21	struction sheet 10.27.0310)	
	2	1.010.025.21	Round head allen screw	M3x6
or	1	1.820.560.04	Cover plate "AUTOLOCATOR/REM.TIMER"	
	2	1.010.025.21	Round head allen screw	M3x6
	1	1.820.560.03	Cover plate "SYNCHRONIZER"	
	2	1.010.025.21	Round head allen screw	M3x6
	1	20.820.342.00	Serial interface RS232 (optional	
	4	1.010.025.21	modification kit, refer to in-	
	4	1.010.025.21	struction sheet 10.27.0280)	
	4	1.010.025.21	Round head allen screw	M3x6
or	1	20.820.343.00	Serial interface SMPTE/EBU (RS422)/	
	4	1.010.025.21	(optional modification kit, refer	
	4	1.010.025.21	to instruction sheet 10.27.0290)	
	4	1.010.025.21	Round head allen screw	M3x6
or	1	1.820.560.04	Cover plate "SMPTE/EBU BUS - RS232"	
	4	1.010.025.21	Round head allen screw	M3x6
			Mains connector, ground terminal:	
			refer to 8.19	

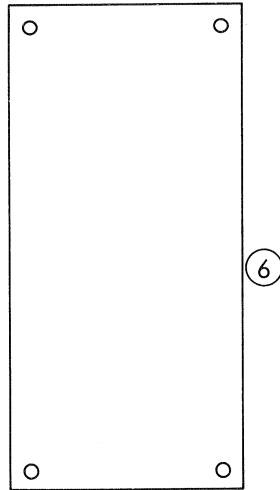
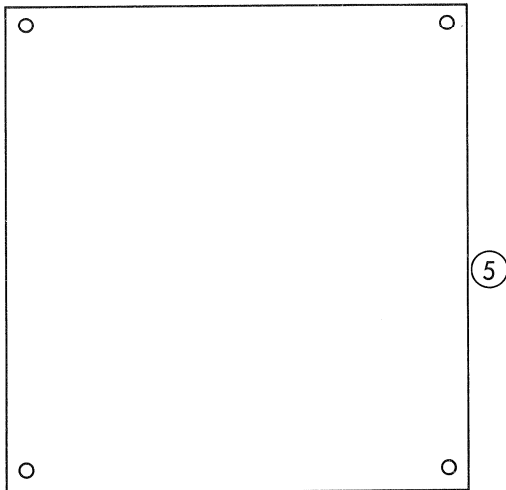
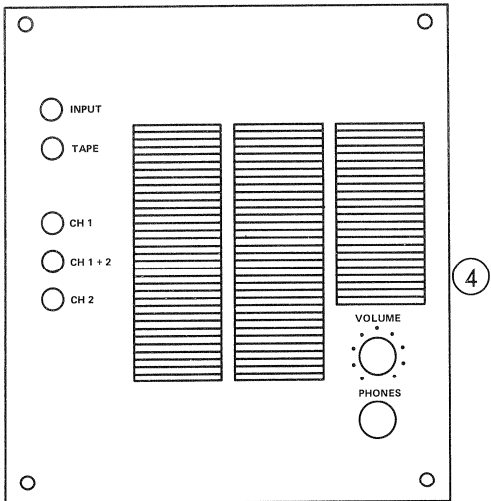
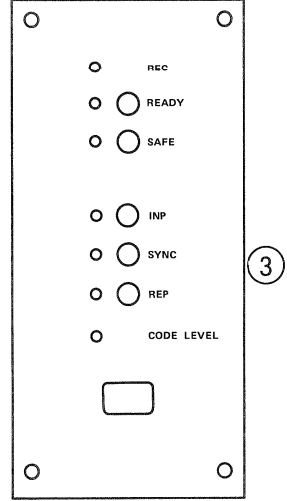
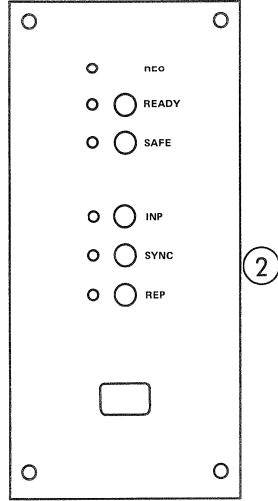
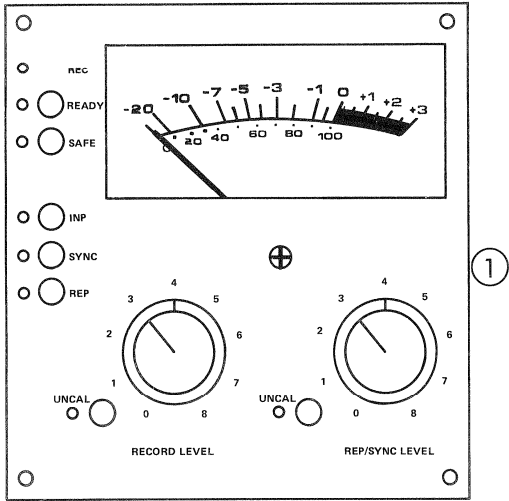
8.21 INTERNAL MONITOR SPEAKER UNIT



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.234.00	Monitor loudspeaker unit (* = not included)	
	3*	21.53.0455	Allen screw	M4x8
	3*	24.16.1040	Fin washer	
01	1	32.03.0109	Cable tie	
02	1	1.820.234.01	Support	
03	4	1.038.822.15	Clip	
04	4	21.53.0355	Allen screw	M3x8
05	4	24.16.1030	Fin washer	
06	1	71.01.0108	Loudspeaker 76x130 mm, 15 Ω , 3 W	
07	1	31.05.0064	O-ring	

	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.820.235.00	Monitor operating unit (* = not included)	
	2*	21.53.0455	Allen screw	M4x8
	2*	24.16.1040	Fin washer	
	2*	1.010.136.27	Threaded stud	
08	1	1.810.320.03	Push button long	blue
09	1	1.810.320.05	Push button long	white
10	3	1.810.320.02	Push button long	dark grey
11	1	1.820.796.00	SOURCE SELECTOR PCB	
12	1	1.820.860.00	MONITOR AMPLIFIER PCB	
13	1	35.03.0109	Cable tie	
14	4	21.53.0354	Allen screw	M3x6
15	4	24.16.1030	Fin washer	
16	1	1.820.235.01	Mounting bracket	
17	2	21.51.2354	Countersunk allen head screw	M3x6
18	2	1.820.235.02	Threaded stud	
19	2	21.01.0202	Slotted cheese head screw	M2x4
20	2	24.16.1020	Fin washer	
21	1	1.010.050.27	Threaded stud	
22	1	1.912.001.34	Potentiometer	2x10 k Ω , +log.
23	1	1.010.032.22	Slotted nut	M7x0.75
24	1	42.01.0203	Knob	dark grey, \varnothing 10 mm
25	1	42.01.0251	Cap	dark grey, to knob \varnothing 10 mm

8.22 PANELS

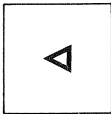







	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
01	1	1.810.320.81	VU panel	
	4	1.010.025.21	Round head allen screw	M3x6
	1	1.810.321.81	Front cover VU panel	
	2	42.01.0150	Knob	alu
	2	42.01.0151	Knob cover	
	2	1.810.320.09	Indicator ring	
	2	1.810.320.08	Retaining ring	
	2	37.02.0210	Disc spring	
	1	1.810.320.02	Push button, long	dark grey
	1	1.810.320.03	Push button, long	blue
	1	1.810.320.04	Push button, long	yellow
	1	1.810.320.05	Push button, long	white
	1	1.810.320.06	Push button, long	green
	1	1.810.320.07	Push button, long	red
	1	1.810.320.22	VU-meter	
	1	1.820.730.81	VU-METER AMPLIFIER PCB	
	2	51.02.0144	Bulb 6 V / 30 mA to VU-meter	
	1	1.820.731.00	CALIBRATION PCB	
	2	1.820.731.01	Push button switch, Locking	
	1	1.820.732.00	CHANNEL CONTROL PCB	
1	1.820.732.01	Push button switch, 5-fold, non-locking		
02	1	1.810.335.81	Channel mode selector unit	
	1	1.820.732.00	CHANNEL CONTROL PCB	
	4	1.010.025.21	Round head allen screw	M3x6
	1	1.810.336.81	Front cover channel mode selector	
	1	1.810.320.02	Push button, long	dark grey
	1	1.810.320.03	Push button, long	blue
	1	1.810.320.04	Push button, long	yellow
	1	1.810.320.05	Push button, long	white
	1	1.810.320.06	Push button, long	green
	1	1.810.335.01	Self adhesive labels (see 8.23)	
03	1	1.810.337.00	TC channel mode selector unit	
	1	1.820.735.00	TC CHANNEL CONTROL PCB	
	4	1.010.025.21	Round head allen screw	M3x6
	1	1.810.338.00	Front cover TC channel mode selector unit	
	1	1.810.320.02	Push button, long	dark grey
	1	1.810.320.03	Push button, long	blue
	1	1.810.320.04	Push button, long	yellow
	1	1.810.320.05	Push button, long	white
	1	1.810.320.06	Push button, long	green
	1	1.810.335.01	Self adhesive labels (see 8.23)	
04	1	1.820.580.00	Monitor unit, external	
	1	1.820.796.00	SOURCE SELECTOR PCB	
	1	1.820.860.00	MONITOR AMPLIFIER PCB	
	4	1.010.025.21	Round head allen screw	M3x6
	1	1.820.580.05	Front cover external monitor unit	
	1	1.912.001.34	Potentiometer	
	1	42.01.0203	Knob	grey
	1	42.01.0251	Cover	dark grey
	1	54.24.0102	Headphones socket	
	3	1.810.320.02	Push button, long	dark grey
	1	1.810.320.03	Push button, long	blue
1	1.810.320.05	Push button, long	white	
05	1	1.810.002.03	Dummy plate, 2 modules	
	4	1.010.025.21	Round head allen screw	M3x6
06	1	1.810.002.04	Dummy plate, 1 module	
	4	1.010.025.21	Round head allen screw	M3x6

8.23 LABELS

Transparent labels for:





- A820 tape recorders

	1.080.260.14		1.080.260.15
	1.080.260.16 (RED)		1.080.260.17
	1.080.260.18		

	1.011.210.23		1.011.210.24
	1.011.210.25		1.011.210.26
	1.011.210.27		1.011.210.28
	1.011.210.29		1.011.210.30
	1.011.210.31		1.011.210.32
	1.011.210.33		1.011.210.34

Self-adhesive labels for:













- Tape deck remote control cabinet 1.328.250.00
- Remote control cabinet (serial) 1.328.210.00
- Remote control module (serial) 190x203 1.328.220.00




	1.011.210.02		1.011.210.03
	1.011.210.04		1.011.210.05 (RED)

	1.011.210.35		1.011.210.38 (BLACK)
	1.011.210.41		1.011.210.42
	1.011.210.43		1.011.210.44
	1.011.210.45		1.011.210.46

Self-adhesive labels for:

- A820 tape recorders
- Tape deck remote control cabinet 1.328.250.00
- Rem. timer/lap mode display (serial) 1.328.270.00
- Remote control cabinet (serial) 1.328.210.00
- Remote control module (serial) 190x203 1.328.220.00

	1.011.210.07		1.011.210.08
	1.011.210.09		1.011.210.10
	1.011.210.11		1.011.210.13
	1.011.210.14		1.011.210.15
	1.011.210.17		1.011.210.18
	1.011.210.19		1.011.210.20

	1.011.210.48 (RED)		1.011.210.49 (RED)
	1.011.210.50		

Self-adhesive Labels for:

- A820 tape recorders
- Rem. timer/lap mode display (serial) 1.328.270.00
- Remote control cabinet (serial) 1.328.210.00
- Remote control module (serial) 190x203 1.328.220.00

<input type="radio"/> 15 IPS	<input type="radio"/> SAFE	<input type="radio"/> STEREO	<input type="radio"/> CCIR	<input type="radio"/> TAPE A
<input type="radio"/> 7.5 IPS	<input type="radio"/> 3.75 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> MONO	<input type="radio"/> NAB
<input type="radio"/> TAPE B	<input type="radio"/> FADER			

1.820.011.02

<input type="radio"/> 15 IPS	<input type="radio"/> 30 IPS	<input type="radio"/> STEREO	<input type="radio"/> CCIR	<input type="radio"/> TAPE A
<input type="radio"/> 7.5 IPS	<input type="radio"/> 3.75 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> MONO	<input type="radio"/> NAB
<input type="radio"/> TAPE B	<input type="radio"/> REHEARSE	<input type="radio"/> FADER		

1.820.022.02

<input type="radio"/> 15 IPS	<input type="radio"/> 30 IPS	<input type="radio"/> CCIR	<input type="radio"/> TAPE A
<input type="radio"/> 7.5 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> NAB	<input type="radio"/> TAPE B
<input type="radio"/> REHEARSE	<input type="radio"/> FADER		

1.820.041.01

<input type="radio"/> 15 IPS	<input type="radio"/> 30 IPS	<input type="radio"/> SAFE	<input type="radio"/> STEREO	<input type="radio"/> CCIR	<input type="radio"/> TAPE A	<input type="radio"/> REMOTE
<input type="radio"/> 7.5 IPS	<input type="radio"/> 3.75 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> MONO	<input type="radio"/> NAB	<input type="radio"/> TAPE B	<input type="radio"/> FADER

1.328.210.07

<input type="radio"/> 15 IPS	<input type="radio"/> 30 IPS	<input type="radio"/> SAFE	<input type="radio"/> STEREO	<input type="radio"/> CCIR	<input type="radio"/> TAPE A	<input type="radio"/> SPOT ERASE	<input type="radio"/> REMOTE
<input type="radio"/> 7.5 IPS	<input type="radio"/> 3.75 IPS	<input type="radio"/> VARISPEED	<input type="radio"/> MONO	<input type="radio"/> NAB	<input type="radio"/> TAPE B	<input type="radio"/> REHEARSE	<input type="radio"/> FADER

1.820.012.01

Set of transparent Labels for:

- A820 tape recorders

1.820.090.36 :

↓ NEXT	← CURSOR	→ CURSOR	
↑ LAST	STORE	REMOTE	
30 IPS	15 IPS	7.5 IPS	
3.75 IPS	FRAME/S SELECT	R'HEARSE	
STEREO MONO	TAPE A TAPE B	CCIR NAB	
VARI SPEED	SET VARISP	SET TIMER	↑ UP
MASTER SAFE	FADER START	SET ADDRESS	↓ DOWN

1.820.090.37 :

↓ NEXT	← CURSOR	→ CURSOR	↑ LAST	STORE			
30 IPS	15 IPS	7.5 IPS	3.75 IPS	REMOTE	SKIMMING	LAP	UNLOAD
R'HEARSE	RESET	LIFTER	FADER REC	FADER PLAY	SHUTTLE A/B	LIBRARY WIND	VS DISPL FORMAT
SPEED SELECT	7.5 15 IPS	3.75 7.5 IPS	15 30 IPS	VU PPM	DOLBY HX	TAPE GUARD	REVERSE PLAY
STEREO MONO	TAPE A TAPE B	CCIR NAB	↓ DOWN	↑ UP	SET VARISP	SET ADDRESS	SET TIMER
VARI SPEED	SPOT ERASE	FRAME/S SELECT	OFFSET SELECT	MASTER SAFE	HOLD REV.PLAY	TRANSFER REV.PLAY	AUTO INPUT
BACK SPACE	DISPLAY FORMAT	REV PLAY	FADER START	SHUTTLE A/B	AUTO STOP	LIBRARY WIND	AUTO MUTE

Self-adhesive Labels for:

- A820 tape recorders

AUDIO CH1 INPUT	OUTPUT
AUDIO CH1 OUTPUT	INPUT
AUDIO CH2 INPUT	OUTPUT
AUDIO CH2 OUTPUT	INPUT
TIME CODE CH INPUT	OUTPUT
TIME CODE CH OUTPUT	INPUT

1.810.090.47

CH1	CH2
CH1	CH2
AUDIO	CODE

1.810.335.01

NOISE REDUCTION SYSTEM

1.810.763.02

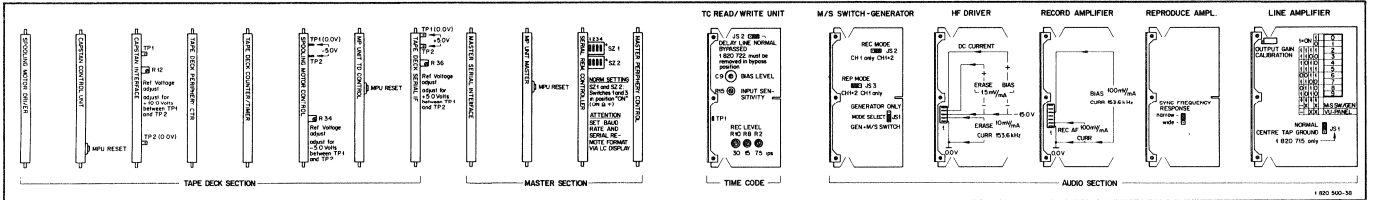
AUTOLOCATOR
REMOTE TIMER

SYNCHRONIZER

PARALLEL REMOTE

SMPTE/EBU
BUS
RS 232

1.820.560.07



1.820.500.38

SM-DRIV	CAP-CTR	CAP-IF	TD-PER	TD-C T	SM-CTR	TD-MPU	TD-S IF	M-S IF	M-MPU	REC-IF	M-PR	TC-R W	TC-DELAY	HF-DRIV	REC-AMPL	REP-AMPL	LINE-AMPL	M-S SW	HF-DRIV	REC-AMPL	REP-AMPL	LINE-AMPL	
820.759	820.764	820.727	820.762	820.761	820.760	820.785	820.763	820.753	820.786	820.751	820.728	820.721	820.722	820.713	820.812	820.810	820.715	820.724	820.813	820.812	820.810	820.714	820.715

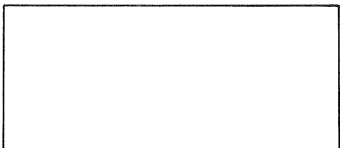
1.820.500.30

BEFORE REMOVING OR INSERTING CARDS, MACHINE MUST BE SWITCHED OFF MINIMUM 5 SEC.

1.820.500.31



1.010.023.43



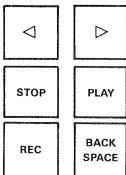
1.820.230.08



43.01.0104

Transparent labels for:

■ Tape deck remote control module 1.328.255.00








1.328.255.03






1.328.256.02

8.24 FLAT CABLES, WIRE HARNESSSES

(without illustrations)

 : Recorders without overbridge  : Recorders with overbridge						
FROM		POLES	FLAT CABLE		TO	
GRP	ELM		LENGTH	ORDER NO.	GRP	ELM
20	01	16	1.32 m	1.023.101.13	33	02
20	02	16	1.32 m	1.023.101.13	30	02
20	03	16	1.70 m	1.023.101.17	39	01
20	05	16	1.32 m	1.023.101.13	31	03
20	06	10	1.56 m	1.023.100.16	44	01
20	07	16	1.70 m	1.023.101.17	46	01
20	08	16	1.70 m	1.023.101.17	47	01
20	09	10	1.56 m	1.023.100.16	36	01
20	10	10	1.56 m	1.023.100.16	37	01
20	11	10	1.56 m	1.023.100.16	45	01
20	12	10	1.56 m	1.023.100.16	42	01
20	13	10	1.56 m	1.023.100.16	43	01
20	14	16	1.32 m	1.023.101.13	59	01
20	15	40	1.80 m	1.023.104.18	50	01
20	16	40	1.00 m	1.023.104.10	27	02
20	17	26	1.36 m	1.023.152.14	60	02
20	18	26	1.00 m	1.023.102.10 	70	01
20	19	16	1.00 m	1.023.101.10 	28	02
27	04	26	0.22 m	1.023.152.03	25	03
48	01	26	0.45 m	1.023.102.04	50	02
70	07	16	0.30 m	1.023.101.03 	71	02

 : Recorders with shelf and monitor loudspeaker  : Recorders without panel overbridge  : Recorders with panel overbridge		
ORDER NUMBER	PART NAME	SPECIFICATION
1.180.165.00	Cable set for connecting one spooling motor with one SPOOLING MOTOR DRIVE AMPLIFIER (GRP33/ELM03 <-> GRP36/ELM02 left, GRP30/ELM03 <-> GRP37/ELM02 right)	
1.820.591.00	Wire harness from SWITCHING STABILIZER PCB to BASIS PCB AUDIO (GRP32/ELM02 <-> GRP21/ELM02)	
1.820.592.00	Wire harness from SPOOLING MOTOR SUPPLY to both SPOOLING MOTOR DRIVE AMPLIFIERS GRP30/ELM01 <-> GRP31/ELM01 <-> GRP33/ELM01	
1.820.894.00	Wire harness from DISTRIBUTION PCB (in panel overbridge) to MONITOR AMPLIFIER PCB (in ext. monitor unit) (GRP70/ELM13 <-> GRP71/ELM01)	
1.820.895.00	Wire harness from MONITOR AMPLIFIER PCB (in int. monitor unit) to phones socket (incl. socket) (GRP28/ELM05 <-> GRP28/ELM06)	
1.820.896.00	Wire harness from BASIS PCB AUDIO to MONITOR AMPLIFIER PCB (in int. monitor unit) or to MONITOR AMPLIFIER PCB (in ext. monitor unit) (GRP21/ELM13 <-> GRP28/ELM01 or GRP71/ELM01)	
1.820.897.00	Wire harness from BASIS PCB AUDIO to DISTRIBUTION PCB (in panel overbridge) (GRP21/ELM11,12,13 <-> GRP70/ELM09,11,12)	
1.820.898.00	Wire harness from BASIS PCB AUDIO to INTERFERENCE FILTER PCBs (GRP21 <-> GRP22,23,24)	
1.820.899.00	Wire harness from BASIS PCB AUDIO to headblock (GRP21 <-> GRP60/ELM01)	

9 SPARE PARTS/DIAGRAMS ACCESSORIES

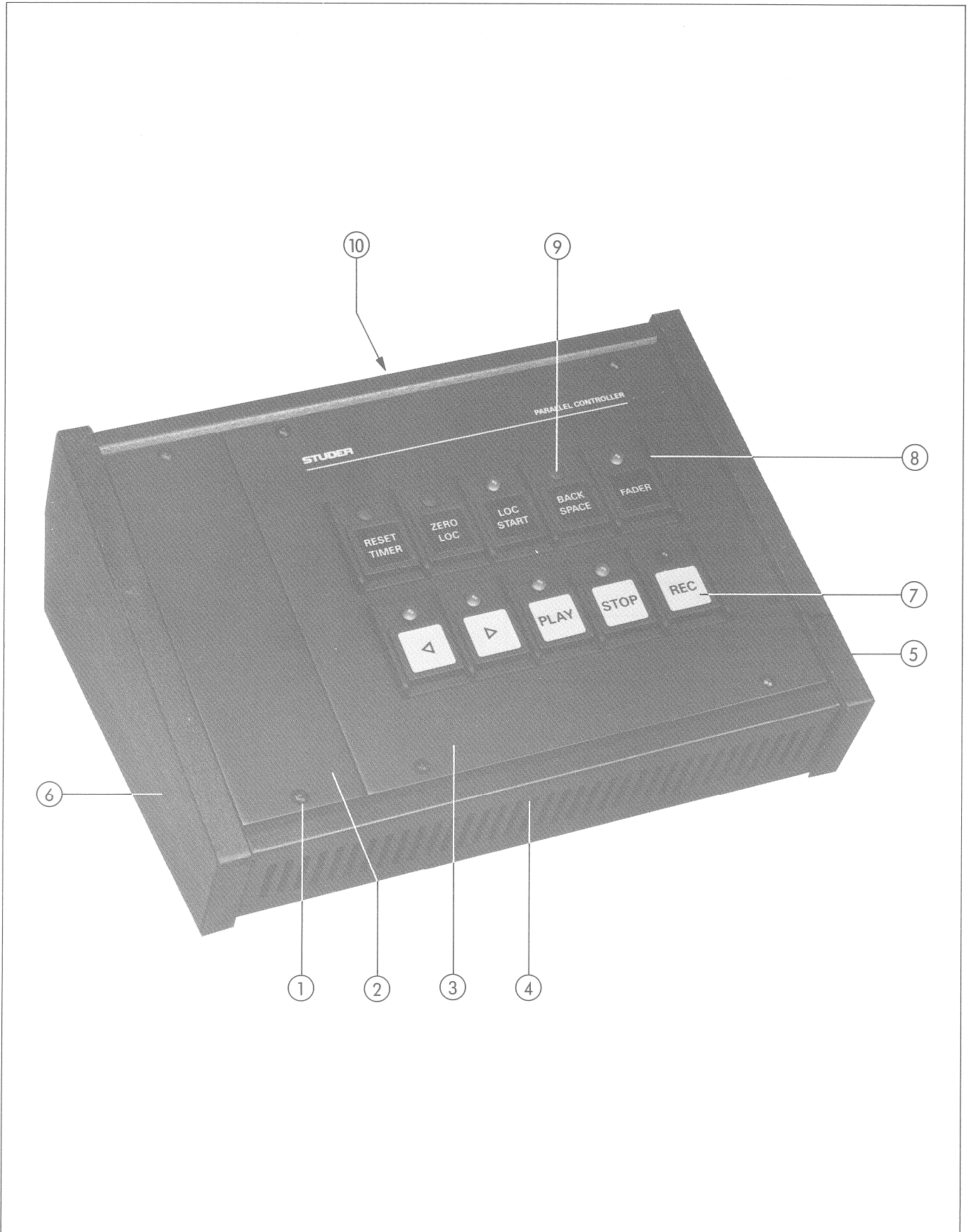
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- TAPE DECK REMOTE CONTROL PCB	1.328.251.00	9/3
- LED PCB (2 x)	1.810.735.12	9/3
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- TIMER DISPLAY PCB	1.328.271.00	9/17
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REMOTE CONTROL MODULE (SERIAL)	1.328.220.00	9/19
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- REMOTE CONTROL DISPLAY PCB	1.328.212.00	9/23
- SHUTTLE PCB	1.328.214.00	9/25
VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY)	1.328.253.00	9/27
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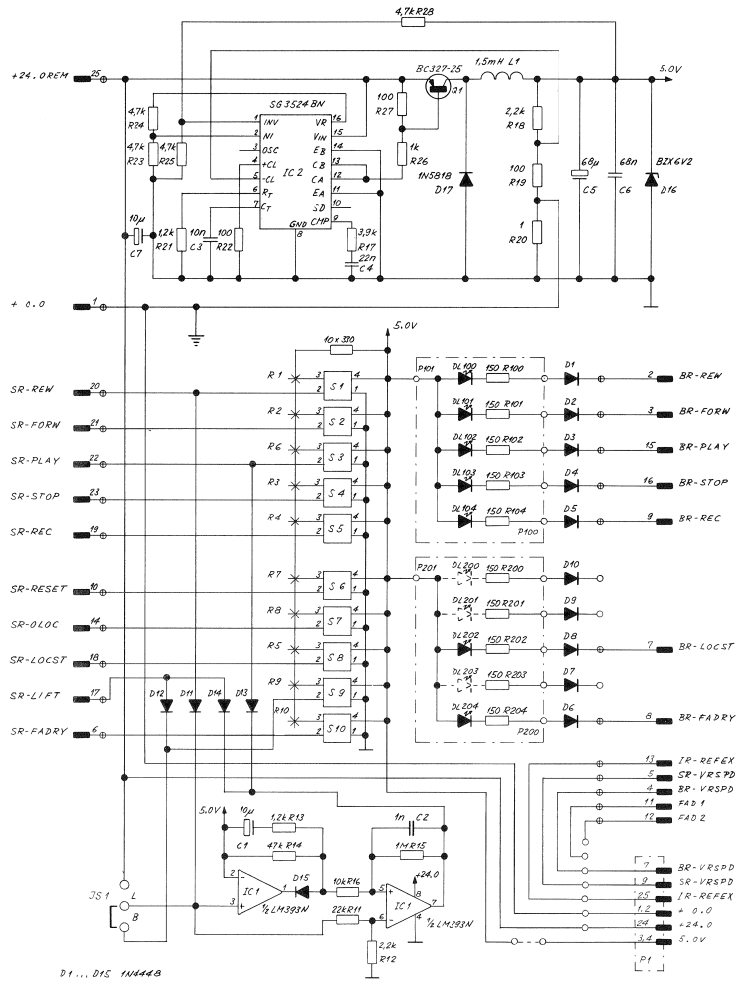
73.01.0125	- LCD MODULE (PART OF 1.820.233)	6/37
1.021.695.81	TACHO SENSOR ELECTRONICS PCB "ESE"	5/127
1.021.697.00	HALL SENSOR PCB	5/129
1.050.102.00	ERASE HEAD CONNECTION PCB	7/17
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1.328.212.00	- REMOTE CONTROL DISPLAY PCB <ACCESSORY> (PART OF 1.328.210/220)	9/23
1.328.213.00	- STABILIZER PCB <ACCESSORY> (PART OF 1.328.210/.220/.270)	9/13
1.328.214.00	- SHUTTLE PCB <ACCESSORY> (PART OF 1.328.210/.220)	9/25
1.328.251.00	- TAPE DECK REMOTE CONTROL PCB <ACCESSORY> (PART OF 1.328.250)	9/3
1.328.256.00	- PUSHBUTTON PCB <ACCESSORY> (PART OF 1.328.255)	9/7
1.328.257.00	- CONNECTOR PCB <ACCESSORY> (PART OF 1.328.255)	9/9
1.328.271.00	- TIMER DISPLAY PCB <ACCESSORY> (PART OF 1.328.270)	9/17
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1.810.710.81	REPRODUCE PREAMPLIFIER PCB 1CH "ESE"	7/19
1.810.711.81	REPRODUCE PREAMPLIFIER PCB 2CH "ESE"	7/19
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1.810.751.82	RS232/DATA SAVE INTERFACE PCB	6/13
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1.820.759.81/.82	SPOOLING MOTOR DRIVER PCB "ESE"	5/109
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1.820.770.00	MOVE SENSOR PCB "ESE"	5/97
1.820.771.81	MOTOR TACHO PCB "ESE"	5/99
1.820.772.00	TAPE TENSION SENSOR PCB	5/105
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1.820.777.00	SPOOLING MOTOR SUPPLY PCB "ESE"	5/71
1.820.785.21	MP UNIT TAPE DECK CONTROL "ESE"	5/77
1.820.786.21	MP UNIT MASTER "ESE"	6/3
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1.820.860.00	- MONITOR AMPLIFIER PCB "ESE" (PART OF 1.820.235/.580)	7/51
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TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250



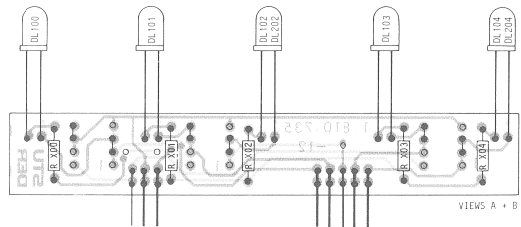
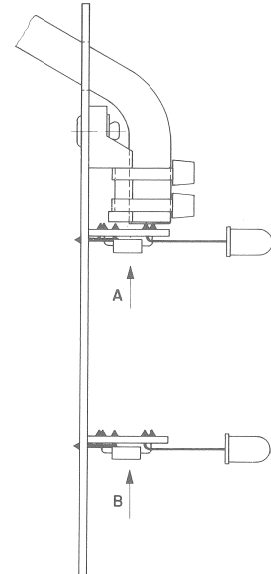
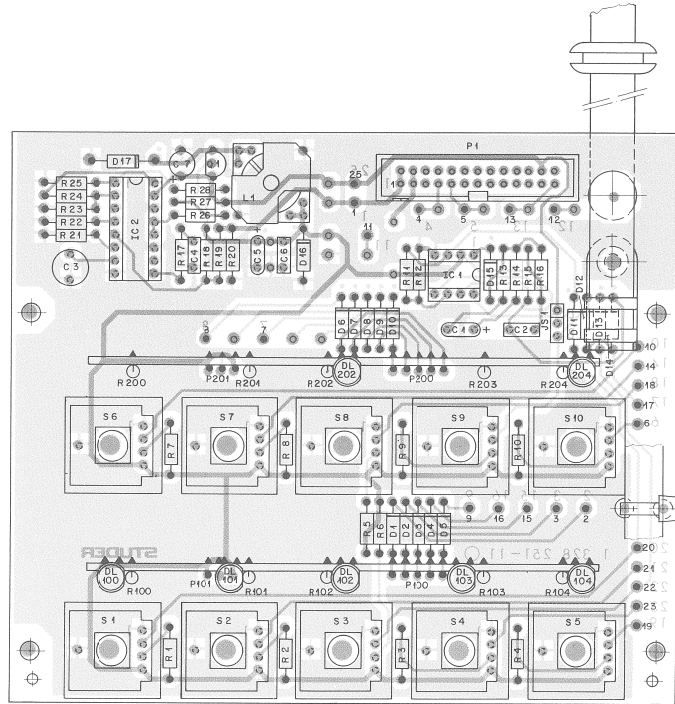
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.250.00	Tape deck remote control cabinet (parallel) (self-adhesive labels: Section 8.23)	
	1	1.328.251.00	TAPE DECK REMOTE CONTROL PCB	
	4	1.328.250.08	Hex stud bolt	
	4	1.010.025.21	Round head allen screw	M3x6
	4	24.16.1030	Fin washer	
	4	23.01.1032	Washer	
01	6	1.010.025.21	Round head allen screw	M3x6
02	1	1.328.250.05	Dummy plate	
03	1	1.328.250.03	Front cover	
04	1	1.820.921.00	Housing compl. (with pos.5, 6, 10 and feet)	
	4	31.02.0211	Foot	
05	1	1.328.250.02	Side panel	right
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
06	1	1.328.250.01	Side panel	left
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
07	10	1.011.210.01	Push button	
	10	1.010.202.37	Pressure spring	
08	2	1.810.300.03	Push button housing	
	2	1.810.300.06	Damping strip	
09	3	1.810.300.21	Plastic cover	
10	1	35.03.0120	Cable mounting support	
	1	21.51.8454	Round head allen screw	M4x6
	1	24.16.1040	Fin washer	

TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250.00
 - TAPE DECK REMOTE CONTROL PCB 1.328.251.00
 - LED PCB (2 x) 1.810.735.12



1.3.85					PAGE 1 OF 1
STUDER	TAPE DECK REMOTE CONTROL	SC	1.328.251-00		

TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250.00
- TAPE DECK REMOTE CONTROL PCB 1.328.251.00
- LED PCB (2 x) 1.810.735.12



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC	1	50.05.0208	LM959W		NS;Thom ITT
IC	2	50.05.0279	SG3524BN		SG
J5	1			See note 1	
L	1	1.022.197-00	1,5 mH		St
P	100	56.14.2003	26 cont.	See note 2	
P	101	56.01.0209	5 cont.	AMP Nr. 163.740-3	
P	102	56.01.0227	5 cont.	AMP Nr. 163.740-1	
P	200	56.01.0209	5 cont.	AMP Nr. 163.740-3	
P	201	56.01.0227	5 cont.	AMP Nr. 163.740-1	
Q	1	50.03.0351	BC327-25		ITT+PhSic
R	11	57.11.4331	330 Ohm		
R	12	57.11.4331	330 Ohm		
R	13	57.11.4331	330 Ohm		
R	14	57.11.4331	330 Ohm		
R	15	57.11.4331	330 Ohm		
R	16	57.11.4331	330 Ohm		
R	17	57.11.4331	330 Ohm		
R	18	57.11.4331	330 Ohm		
R	19	57.11.4331	330 Ohm		
R	20	57.11.4331	330 Ohm		
R	21	57.11.4331	330 Ohm		
R	22	57.11.4331	330 Ohm		
R	23	57.11.4222	2,2 kOhm		
R	24	57.11.4222	2,2 kOhm		
R	25	57.11.4222	2,2 kOhm		
R	26	57.11.4222	2,2 kOhm		
R	27	57.11.4222	2,2 kOhm		
R	28	57.11.4222	2,2 kOhm		
R	29	57.11.4222	2,2 kOhm		
R	30	57.11.4222	2,2 kOhm		
R	31	57.11.4109	1 Ohm		
R	32	57.11.4102	1,2 kOhm		
R	33	57.11.4101	100 Ohm		

STUDER (00) 85/03/01 PB TAPE DECK REMOTE CONTROL 1.328.251.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R	34	57.11.4472	4,7 kOhm		
R	35	57.11.4472	4,7 kOhm		
R	36	57.11.4472	4,7 kOhm		
R	37	57.11.4101	100 Ohm		
R	38	57.11.4472	4,7 kOhm		
R	100	57.11.4151	150 Ohm		
R	101	57.11.4151	150 Ohm		
R	102	57.11.4151	150 Ohm		
R	103	57.11.4151	150 Ohm		
R	104	57.11.4151	150 Ohm		
R	200	57.11.4151	150 Ohm		
R	201	57.11.4151	150 Ohm		
R	202	57.11.4151	150 Ohm		
R	203	57.11.4151	150 Ohm		
R	204	57.11.4151	150 Ohm		

STUDER (00) 85/03/01 PB TAPE DECK REMOTE CONTROL 1.328.251.00 PAGE 3

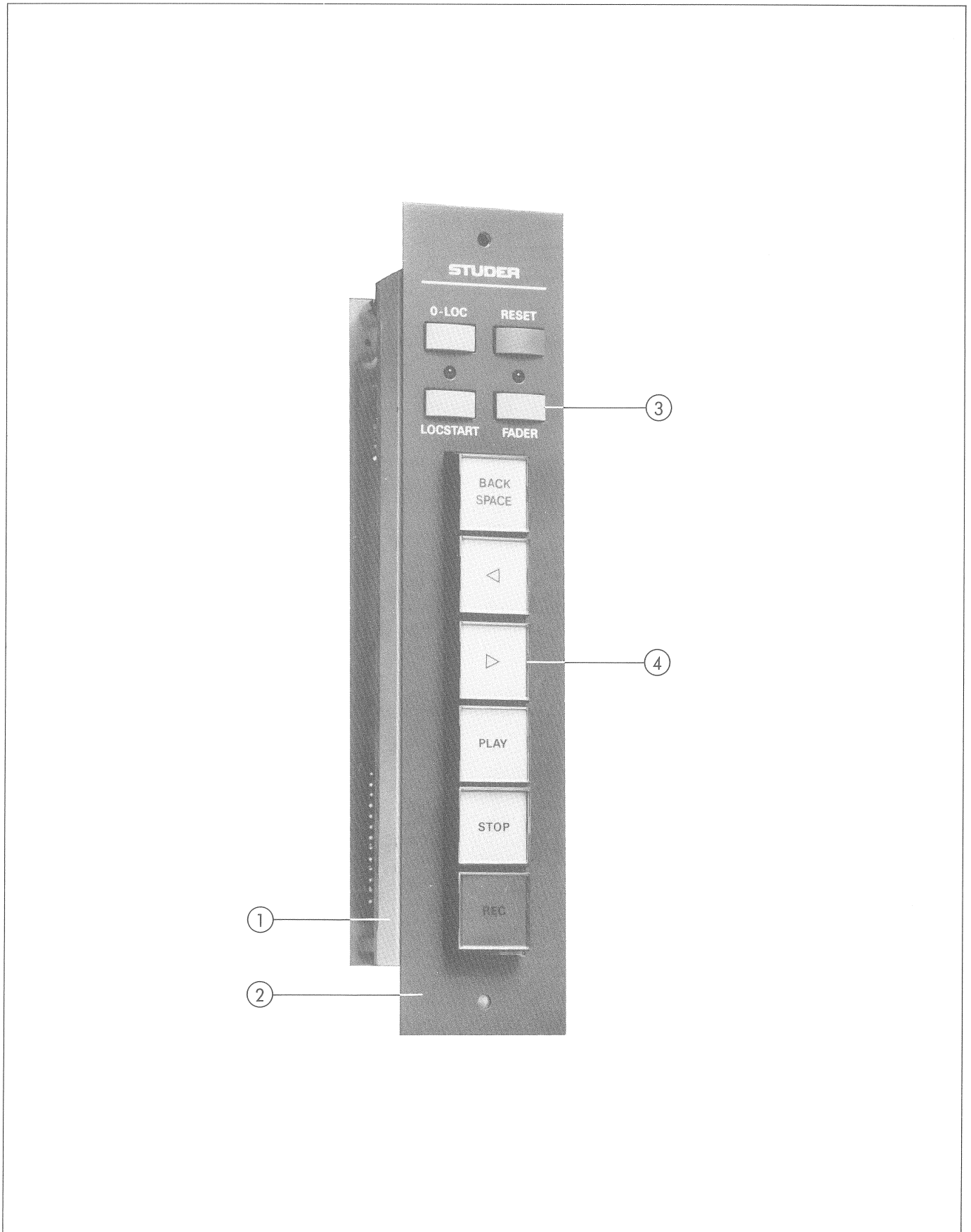
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C	1	59.26.2100	10 uF	20%, 16V, Sal	Ph
C	2	59.06.5102	1 uF	5%, PET	
C	3	59.05.1103	10 nF	1%, P	
C	4	59.06.0223	22 nF	10%, PET	
C	5	59.26.0580	88 uF	20%, 6-3V, Sal	Ph
C	6	59.06.0813	88 nF	20%, PET	
C	7	59.22.6100	10 uF	-10%, 40V, El	
D	1	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	2	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	3	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	4	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	5	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	6	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	7	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	8	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	9	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	10	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	11	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	12	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	13	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	14	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	15	50.04.0125	1N4448		Fc;ITT-Ph;Ses;TF
D	16	50.04.1118	6x2 V Z	BZ13C 6-2; BZX55C 6-2; ZFD 6x2	ITT;Doe
D	17	50.04.0912	1N5818	IN5819	Not
DL	100	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP
DL	101	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP
DL	102	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP
DL	103	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP
DL	104	50.04.2111	M5753	CM-28AR, HEMP-3301	CM;G;HP
DL	200		not used		
DL	201	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP
DL	202		not used		
DL	203		not used		
DL	204	50.04.2112	M5353	CM-58AR, HEMP-3401	CM;G;HP

STUDER (00) 85/03/01 PB TAPE DECK REMOTE CONTROL 1.328.251.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1	-	Contact pins	Studier 56.01.0020; Berg 75 100-102-36		
			56.01.0021	Philips 2x22 025 8003	
Note 2	-	Connector	Yamaichi EAP-26-08/74; Burydy BPH 9 B 26 900 G5		
Note 3	-	Switch	Studier 55.03.0261; Rafi 3-13001.110		
		Extender	Studier 55.03.0262; Rafi 5-55101.690		
<p>Component: El/Electrolytic, Sal/Solid aluminum, PET/Polyesterfilm, PP/Polypropylion.</p> <p>MANUFACTURER: MCChicago Miniatur, Fc/Fairchild; ITTGeneral Instruments, HP/Hamamata Packard, ITT/Interdatta, Matsushita, Siliconium Semiconductor, Ph/Philips, Ses/Sescom, SG/Silicon General, St/Stromco, Th/Thomson, ITT/ITT, ITT/ITT, ITT/ITT.</p>					

STUDER (00) 85/03/01 PB TAPE DECK REMOTE CONTROL 1.328.251.00 PAGE 4

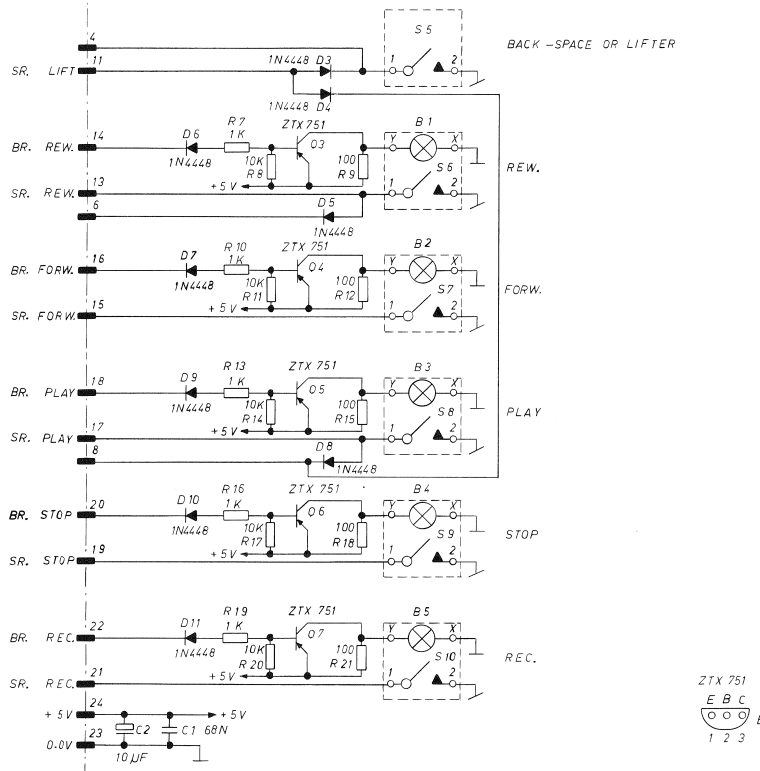
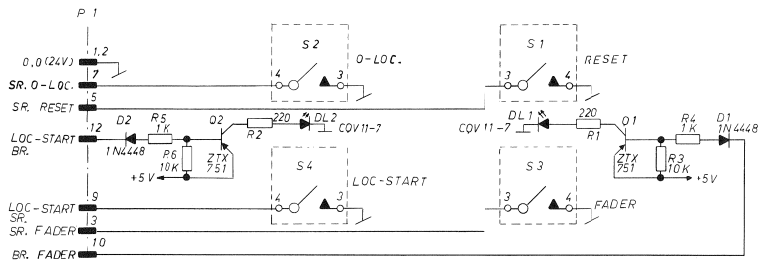
TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.255.00	Tape deck remote control module (parallel) (labels: Section 8.23)	
	1	1.328.256.00	PUSH BUTTON PCB	
	1	1.328.257.00	CONNECTOR PCB	
	4	1.010.110.27	Hex stud bolt	
	4	21.53.0354	Allen screw	M3x6
	4	24.16.1030	Fin washer	
	4	23.01.1032	Washer	
01	1	1.328.255.01	Support	
02	1	1.328.255.02	Front plate	
03	1	55.15.0122	Push button knob	red
	3	55.15.0128	Push button knob	grey
04	1	55.15.0201	Push button cover	concave
	5	55.15.0202	Push button cover	flat
	1	55.15.0212	Diffusing screen	red
	5	55.15.0221	Diffusing screen	white
	6	55.15.0228	Push button frame	

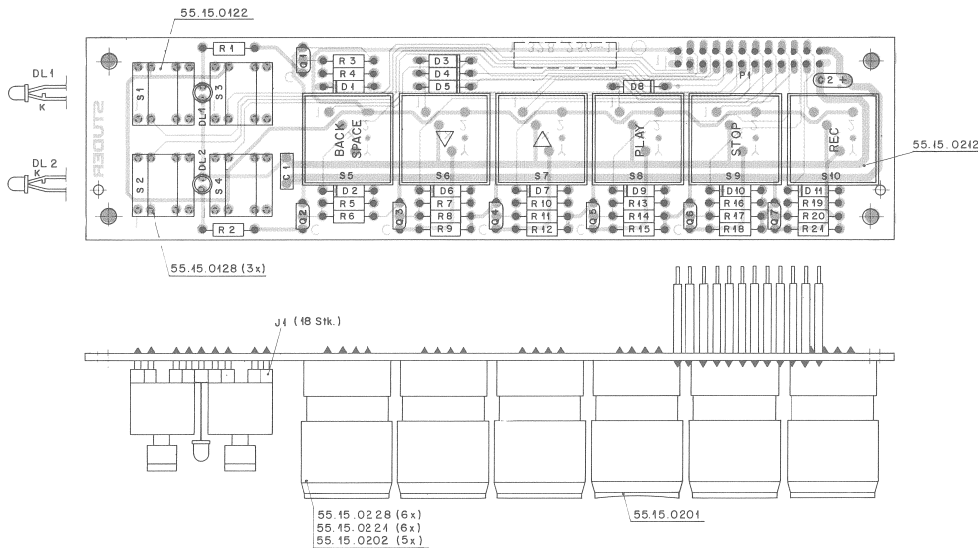
TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
 - PUSHBUTTON PCB 1.328.256.00

TO J 1.328.257-00



① 12,32,86 C.METZ	MODUL PARALLEL A727, A812, A820	PAGE 1 OF 1
STUDER	PUSHBUTTON BOARD	SC 1.328.256-00

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
 - PUSHBUTTON PCB 1.328.256.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****1		51-02-0155		5 V; 0.060 A	
R****2		51-02-0155		5 V; 0.060 A	
R****3		51-02-0155		5 V; 0.060 A	
R****4		51-02-0155		5 V; 0.060 A	
R****5		51-02-0155		5 V; 0.060 A	
C****1		59-06-0683	0.060 u	10%, 63V + PETP	
C****2		59-26-2100	10 u	20%, 16V + SAL	
D****1		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****2		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****3		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****4		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****5		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****6		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****7		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****8		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****9		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****10		50-04-0125	1 N 4448	75 V; 0.1 A S1	
D****11		50-04-0125	1 N 4448	75 V; 0.1 A S1	
DL****1		50-04-2129	RED DIFF.	CGW 11-7	Siw.
DL****2		50-04-2129	RED DIFF.	CGW 11-7	Siw.
P****1		1-010-019-54	2 x 24 PIN	L = 20 MM	
Q****1		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****2		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****3		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****4		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****5		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****6		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
Q****7		50-03-0352	ZTX 751 S	60 V; 2 A PNP S1	Fes
R****1		57-11-0221	220	2%, 0207 + ME	
R****2		57-11-0221	220	2%, 0207 + ME	
R****3		57-11-0103	10 k	2%, 0207 + ME	

S T U D E R (00) 86/02/13 CM PUSHBUTTON BOARD 1.328.256-00 PAGE 1

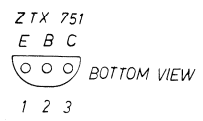
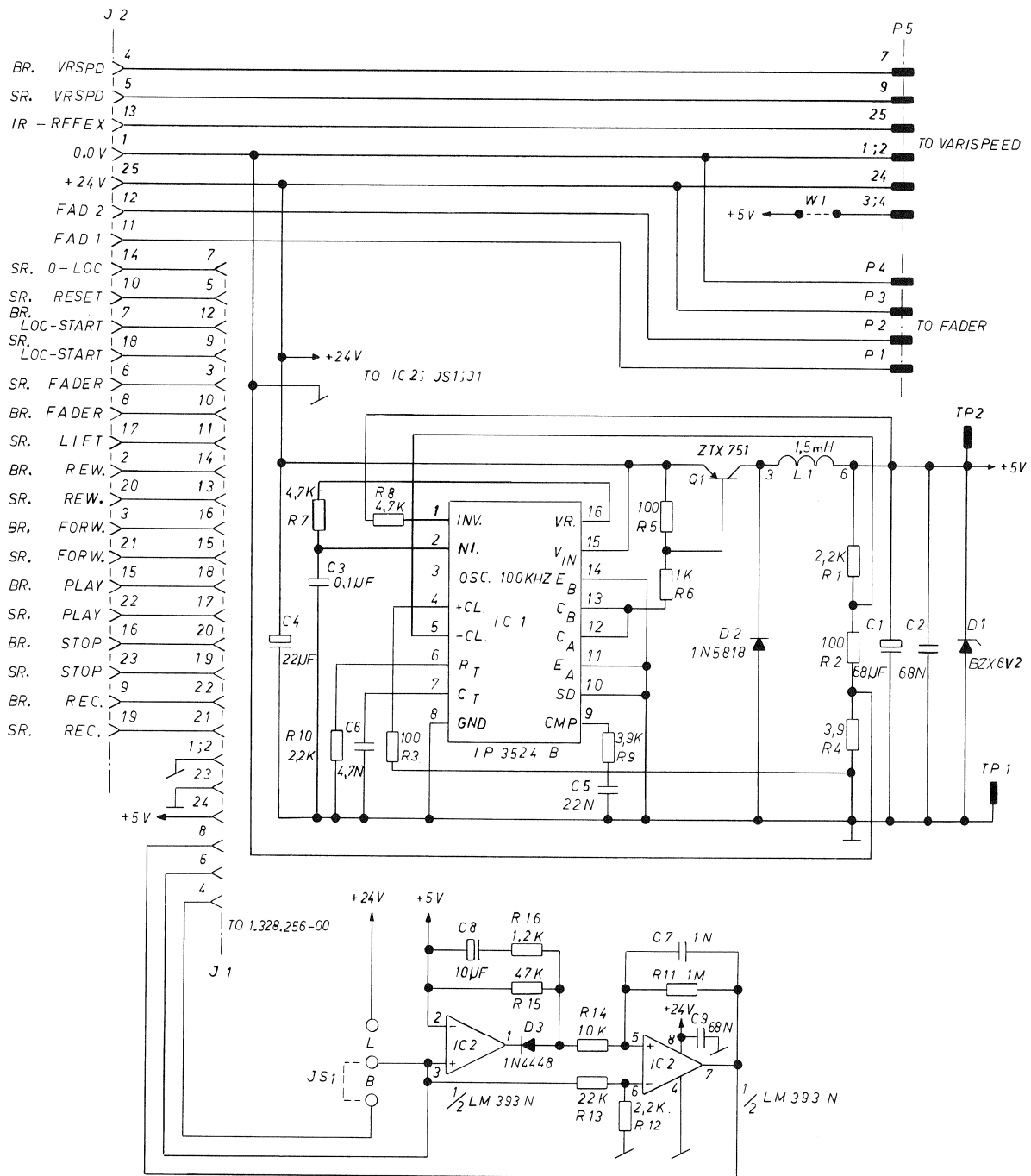
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****9		57-11-0102	1.0 k	2%, 0207 + ME	
R****10		57-11-0102	1.0 k	2%, 0207 + ME	
R****11		57-11-0103	10 k	2%, 0207 + ME	
R****12		57-11-0102	1.0 k	2%, 0207 + ME	
R****13		57-11-0103	10 k	2%, 0207 + ME	
R****14		57-11-0101	100 k	2%, 0207 + ME	
R****15		57-11-0102	1.0 k	2%, 0207 + ME	
R****16		57-11-0102	1.0 k	2%, 0207 + ME	
R****17		57-11-0103	10 k	2%, 0207 + ME	
R****18		57-11-0101	100 k	2%, 0207 + ME	
R****19		57-11-0102	1.0 k	2%, 0207 + ME	
R****20		57-11-0103	10 k	2%, 0207 + ME	
R****21		57-11-0101	100 k	2%, 0207 + ME	
S****1		55-15-0112	MK 11	MOMENTARY PUSHBUTTON SWITCH	MEK.
S****2		55-15-0112	MK 11	MOMENTARY PUSHBUTTON SWITCH	MEK.
S****3		55-15-0112	MK 11	MOMENTARY PUSHBUTTON SWITCH	MEK.
S****4		55-15-0231	MK 11	MOMENTARY PUSHBUTTON SWITCH	EAD
S****5		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD
S****6		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD
S****7		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD
S****8		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD
S****9		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD
S****10		55-15-0231		MOMENTARY PUSHBUTTON SWITCH	EAD

S T U D E R (00) 86/02/13 CM PUSHBUTTON BOARD 1.328.256-00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
CER=Ceramic; EL=Electrolytic; HP=Metallized Papers; MPC=Metallized Poly- carbonates; MPEI=Metallized Polyesters; PC=Polycarbonates; PE=Polyester PP=Polypropylene; PS=Polystyrol; SAL=Solid Aluminum; TA=Tantal CO=Carbonic Metal; MP=Metal Film					
MANUFACTURERS : EAD = Elektro Apparaten Giten Fes = Faermark MEK = Mekonisk Elektrisk Compagni af 1975 Siw = Siemens					

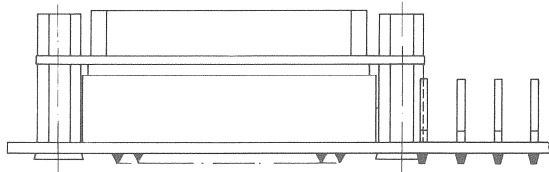
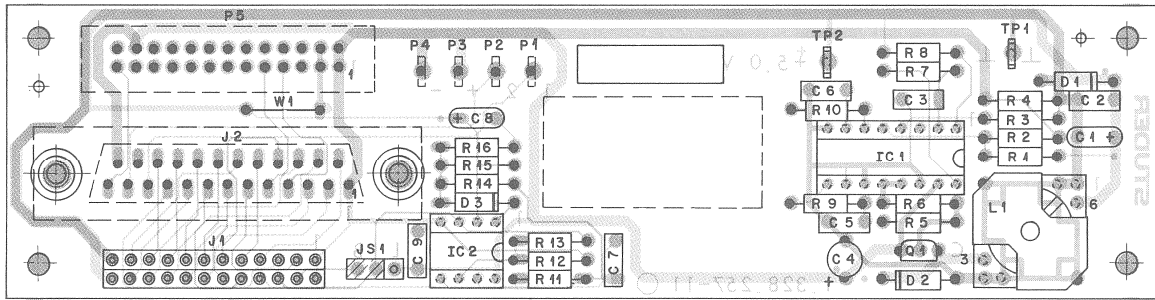
ORIG 86/02/13
 S T U D E R (00) 86/02/13 CM PUSHBUTTON BOARD 1.328.256-00 PAGE 3

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
 - CONNECTOR PCB 1.328.257.00



13,02,86 C. METZ	MODUL PARALLEL A727, A812, A820	PAGE 1 OF 1
STUDER	CONNECTORS BOARD	SC 1,328.257-00

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.00
 - CONNECTOR PCB 1.328.257.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59.26.0680	68 u	20%, 6.3V, SAL	
C.....2		59.06.0683	+060 u	10%, 63V, PETP	
C.....3		59.06.0106	+1 u	10%, 63V, PETP	
C.....4		59.22.6220	22 u	20%, 35V, EL	
C.....5		59.06.0223	+022 u	10%, 63V, PETP	
C.....6		59.06.0472	4700 p	10%, 63V, PETP	
C.....7		59.06.0102	1000 p	10%, 63V, PETP	
C.....8		59.26.2100	10 u	20%, 16V, SAL	
C.....9		59.06.0683	+060 u	10%, 63V, PETP	
D.....1		50.04.1118	BZX 6V2	5%, 6±2 V, 0±40 Hz, Z	
D.....2		50.04.0512	1 N 5818	SCHOTTKY	Hot.
D.....3		50.04.0125	1 N 4448	75 V, 100 mA; SI	
IC.....1		50.05.0279	IP 3524 B	REGULATING PULSE WIDTH MODULATOR	IPS.
IC.....2		50.05.0283	LH 393 N	DUAL LOW POWER COMPARATOR	TI.
J.....1		53.03.0212	2 ± 12 PIN		
J.....2		54.13.0023		D-TYPE, 25 PIN PRINT FEMALE CONNECTOR	
JS.....1		54.01.0021	2 ± 0.63	JUMPER	
L.....1		1.022.197.00	1,5 mH	CHOKE	St.
P.....1		54.02.0320	2.8 ± 0.8	SOLDERING PIN	
P.....2		54.02.0320	2.8 ± 0.8	SOLDERING PIN	
P.....3		54.02.0320	2.8 ± 0.8	SOLDERING PIN	
P.....4		54.02.0320	2.8 ± 0.8	SOLDERING PIN	
P.....5		54.14.2003		26 PIN PRINT MALE CONNECTOR	
Q.....1		50.03.0352	ZTX 751 S	60 V, 2 A, PNP SI	Fe.
R.....1		57.11.4222	2.2 k	2%, 0207, MF	
R.....2		57.11.4101	100	2%, 0207, MF	
R.....3		57.11.4101	100	2%, 0207, MF	
R.....4		57.11.4399	3.9	2%, 0207, MF	
R.....5		57.11.4101	100	2%, 0207, MF	

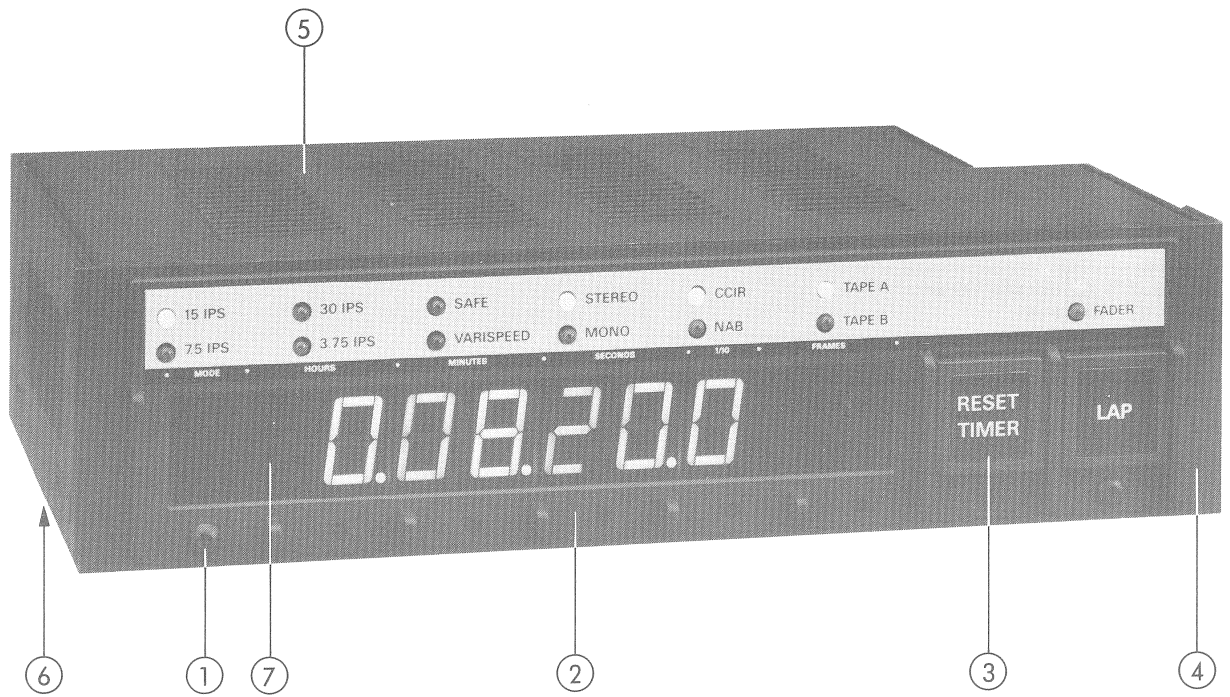
IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....6		57.11.4102	1.0 k	2%, 0207, MF	
R.....7		57.11.4472	4.7 k	2%, 0207, MF	
R.....8		57.11.4472	4.7 k	2%, 0207, MF	
R.....9		57.11.4392	3.9 k	2%, 0207, MF	
R.....10		57.11.4222	2.2 k	2%, 0207, MF	
R.....11		57.11.4105	1 M	2%, 0207, MF	
R.....12		57.11.4222	2.2 k	2%, 0207, MF	
R.....13		57.11.4223	22 k	2%, 0207, MF	
R.....14		57.11.4103	10 k	2%, 0207, MF	
R.....15		57.11.4473	4.7 k	2%, 0207, MF	
R.....16		57.11.4122	1.2 k	2%, 0207, MF	
TP.....1		54.02.0320	2.8 ± 0.8	SOLDERING PIN	
TP.....2		54.02.0320	2.8 ± 0.8	SOLDERING PIN	

CER=Ceramic, EL=Electrolytic, MP=Metallized Paper, MPC=Metallized Poly-carbonate, MPELP=Metallized Polyester, PC=Polycarbonate, PETP=Polyester
 PP=Polypropylene, PS=Polystyrol, SAL=Solid Aluminium, TA=Tantal
 Cermet=Ceramic Metal, MF=Metal Film.

MANUFACTURERS :
 Fe = Ferranti
 IPS = Integrated Power Semiconductors Limited
 Mot = Motorola
 St = Studer
 TI = Texas Instruments

ORIG 86/02/14

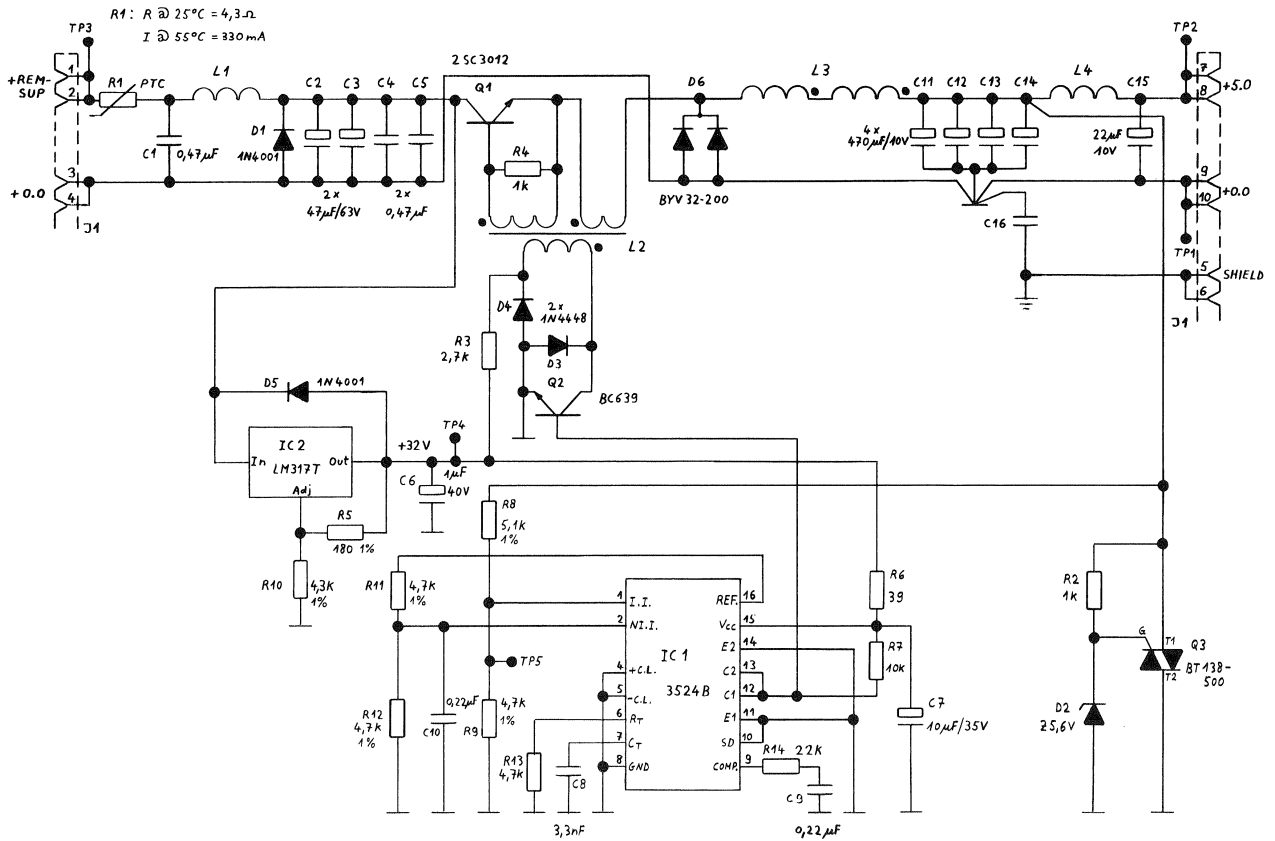
REMOTE TIMER/LAP MODE DISPLAY (SERIAL) 1.328.270



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.270.00	Remote timer/Lap mode display (self-adhesive labels: Section 8.23)	
	1	1.328.213.00	STABILIZER PCB	
	3	21.53.0354	Allen screw	M3x6
	3	23.01.1032	Washer	
	3	24.16.1030	Fin washer	
	1	1.328.271.00	TIMER DISPLAY PCB	
	1	1.328.270.14	Insulation	
	2	21.53.0354	Allen screw	M3x6
	2	23.01.1032	Washer	
	2	24.16.1030	Fin washer	
	1	1.328.272.00	TIMER DRIVER PCB	
	4	21.53.0354	Allen screw	M3x6
	3	23.01.1032	Washer	
	3	24.16.1030	Fin washer	
	1	24.16.2030	Serrated lock washer	
01	2	1.010.025.21	Round head allen screw	M3x6
02	1	1.328.270.02	Push button housing	
	1	1.810.300.06	Damping strip	
03	2	1.011.210.01	Push button	
	2	1.010.202.37	Pressure spring	
04	1	1.328.270.01	Front cover	
	4	1.010.034.21	Countersunk allen head screw	
05	1	1.328.274.00	Housing	upper
	6	1.010.045.21	Countersunk allen head screw	
06	1	1.328.273.00	Bottom cover	
	4	31.02.0211	Foot	
07	1	1.820.232.02	Filter screen red	

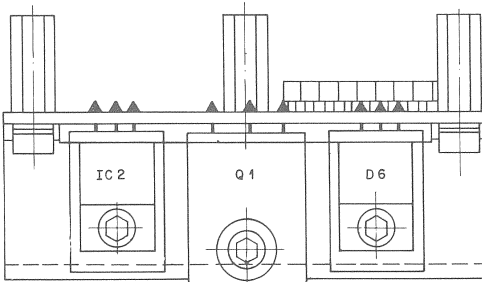
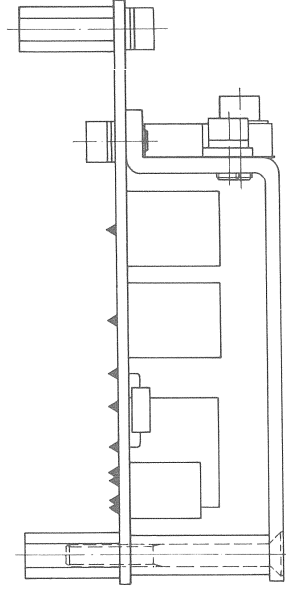
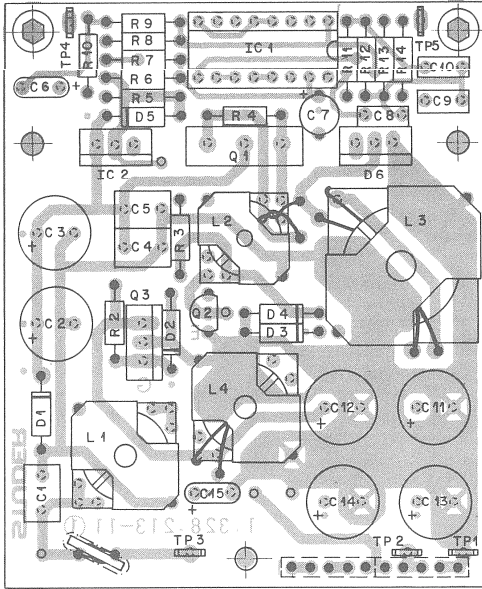
REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - STABILIZER PCB 1.328.213.00

L1 : 1.022.252.00
 L2 : 1.022.224.00
 L3 : 1.022.217.00
 L4 : 1.022.202.00



05.02.85 CHE	. . .	. . .	. . .	. . .
	A820/A812			PAGE 1 OF 1
STUDER	STABILIZER BOARD	SC	1.328.213.00	

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - STABILIZER PCB 1.328.213.00



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R...	01	57.92-1331	PTC	see note 2	Ph
R...	02	57.11-4102	1 kOhm	2%	
R...	03	57.11-4272	2.7 kOhm	2%	
R...	04	57.11-4102	1 kOhm	2%	
R...	05	57.11-3181	180 Ohm	1%	
R...	06	57.11-4390	39 Ohm	2%	
R...	07	57.11-4103	10 kOhm	2%	
R...	08	57.11-3512	5.1 kOhm	1%	
R...	09	57.11-3472	4.7 kOhm	1%	
R...	10	57.11-3432	4.3 kOhm	1%	
R...	11	57.11-3472	4.7 kOhm	1%	
R...	12	57.11-3472	4.7 kOhm	1%	
R...	13	57.11-4472	4.7 kOhm	2%	
R...	14	57.11-4223	22 kOhm	2%	
P...	01	54.02-0320	Test Point		
P...	02	54.02-0320	Test Point		
P...	03	54.02-0320	Test Point		
P...	04	54.02-0320	Test Point		
P...	05	54.02-0320	Test Point		

STUDER (P) 85/02/05 SU STABILIZER BOARD 1.328.213-00 PAGE 2

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	01	59.06-0474	0.47 uF	10%, PETP	
C...	02	59.22-8470	47 uF	20%, 63V, EL	
C...	03	59.22-8470	47 uF	20%, 63V, EL	
C...	04	59.06-0474	0.47 uF	10%, PETP	
C...	05	59.06-0474	0.47 uF	10%, PETP	
C...	06	59.26-9109	1 uF	20%, 40V, SAL	
C...	07	59.22-6109	10 uF	-20%, 35V, EL	
C...	08	59.06-0332	3300 pF	10%, PETP	
C...	09	59.06-0224	0.22 uF	10%, PETP	
C...	10	59.06-0224	0.22 uF	10%, PETP	
C...	11	59.22-3471	470 uF	-20%, 10V, EL	
C...	12	59.22-3471	470 uF	-20%, 10V, EL	
C...	13	59.22-3471	470 uF	-20%, 10V, EL	
C...	14	59.22-3471	470 uF	-20%, 10V, EL	
C...	15	59.26-1220	22 uF	20%, 10V, SAL	
D...	01	50.04-0122	1N 4001		Hot
D...	02	50.04-1108	5.6 V	BZX83 C 5V6, BZX55 C 5V6, ZPD 5.6	Ses, ITI
D...	03	50.04-0125	1N 4448		Fc, ITI, Ph, Ses
D...	04	50.04-0125	1N 4448		Fc, ITI, Ph, Ses
D...	05	50.04-0122	1N 4001		Hot
D...	06	50.04-0517	BVY32-200		Hot, Ph
IC...	01	50.05-0279	SG 3524BN		SG
IC...	02	50.10-0104	LM 317T	LH 317 SP	Tho, Mot, NS, TI
J...	01			see note 1	
L...	01	1-022-252-00	0.32 mH	Filter Coil	St
L...	02	1-022-224-00		Power Supply Transformer	St
L...	03	1-022-217-00	46 uH	HF-Coil, 5A	St
L...	04	1-022-202-00	16.9 mH	Filter Coil	St
Q...	01	50.03-0517	2 SC 301Z		NEC
Q...	02	50.03-0391	BC 639		Hot, Ph
Q...	03	50.99-0106	T 2800	400V, BA, Triac	Ph

STUDER (P) 85/02/05 SU STABILIZER BOARD 1.328.213-00 PAGE 1

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
EL=Electrolytic, SAL=Solid Aluminium, PETP=Polyester					

MANUFACTURERS: Fc=Fairchild, ITI=Intermetall, Mot=Motorola, NLC=Nippon Electric Corp., NS=National Semiconductors, Ph=Philips, Ses=Secossem, SG=Silicon General, St=Studer, Tho=Thomson, TI=Texas Instruments

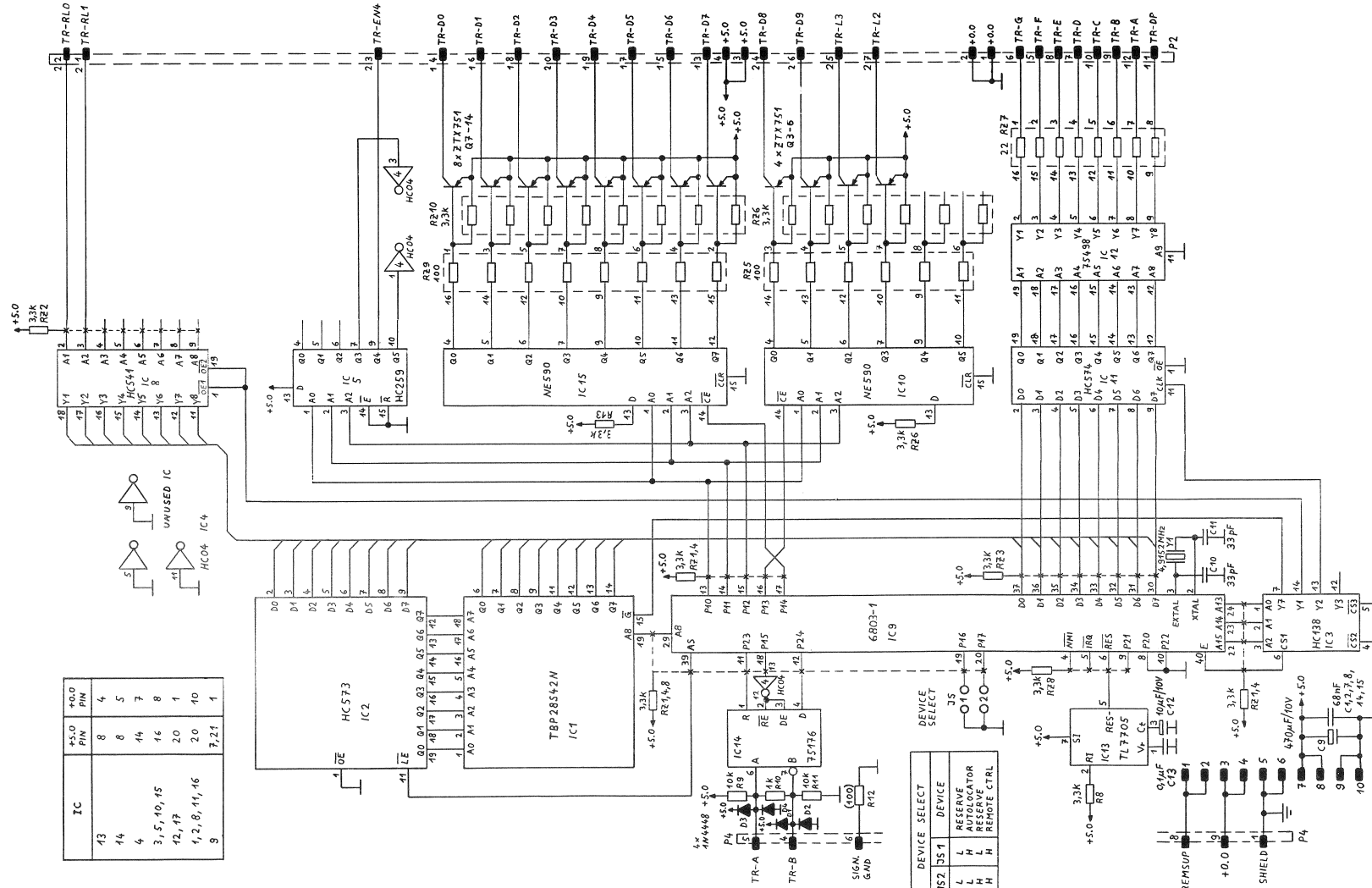
note 1 - Connector: 2 pieces Studer Nr.53030202

note 2 - PTC Thermistor: R @ 25 degree Celsius = 4.7 Ohm
 I @ 55 degree Celsius = 330 mA
 Philips Nr.2322 663 13311

ORIG 85/02/05

STUDER (P) 85/02/05 SU STABILIZER BOARD 1.328.213-00 PAGE 3

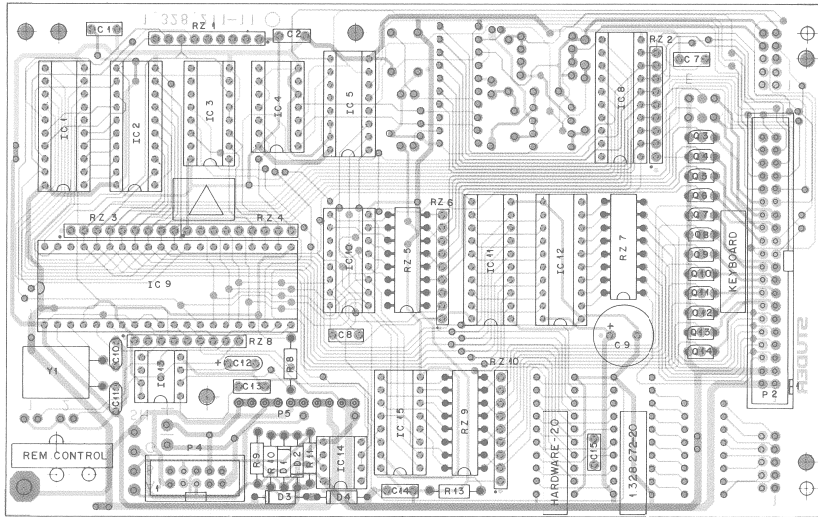
REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 - TIMER DRIVER PCB 1.328.272.20



IC	+5.0 PIN	+0.0 PIN
43	8	4
44	8	5
4	14	7
3, 5, 10, 15	16	8
12, 17	20	1
1, 2, 8, 11, 16	20	10
9	7, 21	1

20	29.03.85	CHE						
STUDER			A820/A812			PAGE 1 OF 1		
TIMER DRIVER BOARD			'ESE' SC			1.328.272.00		

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
- TIMER DRIVER PCB 1.328.272.20



IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59-06-0683	68 nF	10%, 63V, PETP	
C.....2		59-06-0683	68 nF	10%, 63V, PETP	
C.....7		59-06-0683	68 nF	10%, 63V, PETP	
C.....8		59-06-0683	68 nF	10%, 63V, PETP	
C.....9		59-22-3471	470 uF	-20%, 10V, EI	
C....10		59-34-2300	33 pF	5%, NISO, Car	
C....11		59-34-2300	33 pF	5%, NISO, Car	
C....12		59-26-1100	10 uF	20%, 10V, Sol	
C....13		59-06-0104	100 nF	10%, 63V, PETP	
C....14		59-06-0683	68 nF	10%, 63V, PETP	
C....15		59-06-0683	68 nF	10%, 63V, PETP	
D.....1		50-04-0125	IN 4448		Fc-ITT-PH-Sos+Tf
D.....2		50-04-0125	IN 4448		Fc-ITT-PH-Sos+Tf
D.....3		50-04-0125	IN 4448		Fc-ITT-PH-Sos+Tf
D.....4		50-04-0125	IN 4448		Fc-ITT-PH-Sos+Tf
IC.....1		1-128-999-20		Software 13/85	SL
IC.....2		50-17-1573	74 HC 573	-- 74 HC 573 +	Mot.N5+PhuRCA-S55-TI+TD
IC.....3		50-17-1138	74 HC 138	-- 74 HC 138 +	Mot.N5+PhuRCA-S55-TI+TD
IC.....4		50-17-1806	74 HC 04	-- 74 HC 04 +	Mot.N5+PhuRCA-S55-TI+TD
IC.....5		50-17-1259	74 HC 259	-- 74 HC 259 +	Mot.N5+PhuRCA-S55-TI+TD
IC.....6		50-17-1541	74 HC 541	-- 74 HC 541 +	Mot.N5+PhuRCA-S55-TI+TD
IC.....7		50-15-0107	HE 6803P-1		HE-Mot
IC....10		50-15-0302	NE 590 N		5i9
IC....11		50-17-1574	74 HC 574	-- 74 HC 574 +	Mot.N5+PhuRCA-S55-TI+TD
IC....12		50-15-0113	SN 75498 N		TI
IC....13		50-15-0122	TL 7758AP		TI
IC....14		50-15-0115	SN 75176AP		NS-TI
IC....15		50-15-0302	NE 590 N		5i9
F.....2				see note 3	
F.....3				see note 2	
F.....4				see note 4	
Q.....3		50-03-0352	ZTX 751 S		Fo
Q.....4		50-03-0352	ZTX 751 S		Fo

S T U D E R (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 1

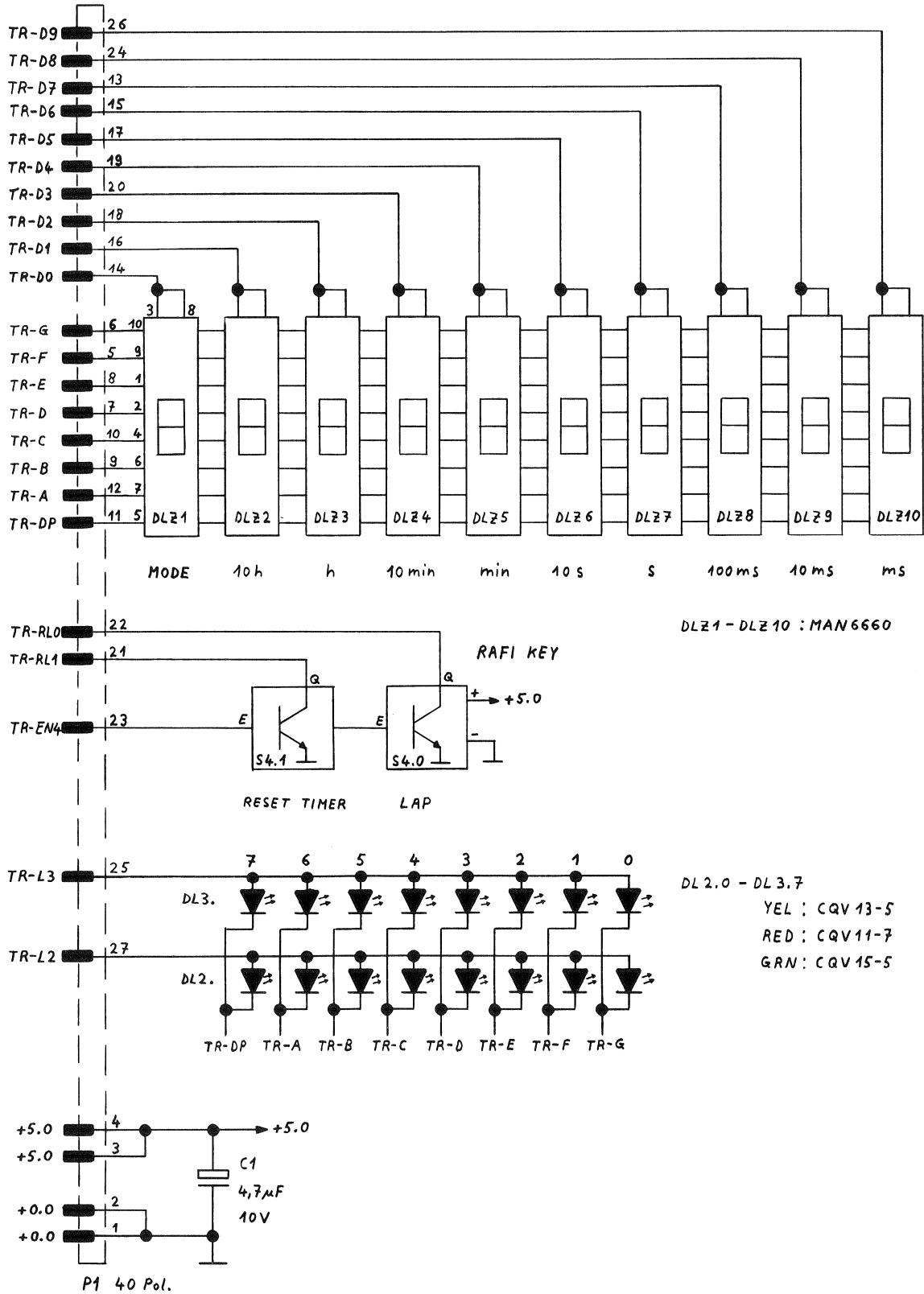
IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Q.....5		50-03-0352	ZTX 751 S		Fo
Q.....6		50-03-0352	ZTX 751 S		Fo
Q.....7		50-03-0352	ZTX 751 S		Fo
Q.....8		50-03-0352	ZTX 751 S		Fo
Q.....9		50-03-0352	ZTX 751 S		Fo
Q....10		50-03-0352	ZTX 751 S		Fo
Q....11		50-03-0352	ZTX 751 S		Fo
Q....12		50-03-0352	ZTX 751 S		Fo
Q....13		50-03-0352	ZTX 751 S		Fo
Q....14		50-03-0352	ZTX 751 S		Fo
R.....8		57-11-4332	3-3 kOhm	2%	
R.....9		57-11-4103	10 kOhm	2%	
R....10		57-11-4102	10 kOhm	2%	
R....11		57-11-4103	10 kOhm	2%	
R....12				not used	
R....13		57-11-4332	3-3 kOhm	2%	
RZ....1		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....2		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....3		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....4		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....5		57-88-3101		Networks R 0 100 Ohm 5% 01E 10	
RZ....6		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....7		57-88-3100		Networks R 0 100 Ohm 5% 01E 10	
RZ....8		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
RZ....9		57-88-3101		Networks R 0 100 Ohm 5% 01E 10	
RZ....10		57-88-4332		Networks R 0 3-3 kOhm 2% single line	
Y.....1		89-01-0560	4-9152 pF	±100 ppm Nymph Nr. TD 18/HMP 049	

S T U D E R (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 2

IND.	POS.ND.	PART ND.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 2 - Connector: 10 Contacts Studer Nr. 54-14-2001 Yamachi Nr. PAP-10-09/4 Burdys Nr. 8PH T B 10 800 G5					
Note 3 - Connector: 40 Contacts Studer Nr. 54-14-2004 Yamachi Nr. PAP-40-09/4 Burdys Nr. 8PH V B 40 800 G5					
Note 4 - Connector: 10 Pieces Studer Nr. 1-010-018-54					
Cer-Ceramic: Cl=Electrolytic, PETP=Polyester film, Sol=Solid aluminum.					
MANUFACTURERS: Fc=Fairchild, Fe=Ferranti, Hi=Hitachi, Is=Intersil, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation, Ss=Sansone, S5=SGS/Atos, Sig=Signetics, Sk=Studer, Tf=Telefunken, TI=Texas Instruments, To= Toshiba.					

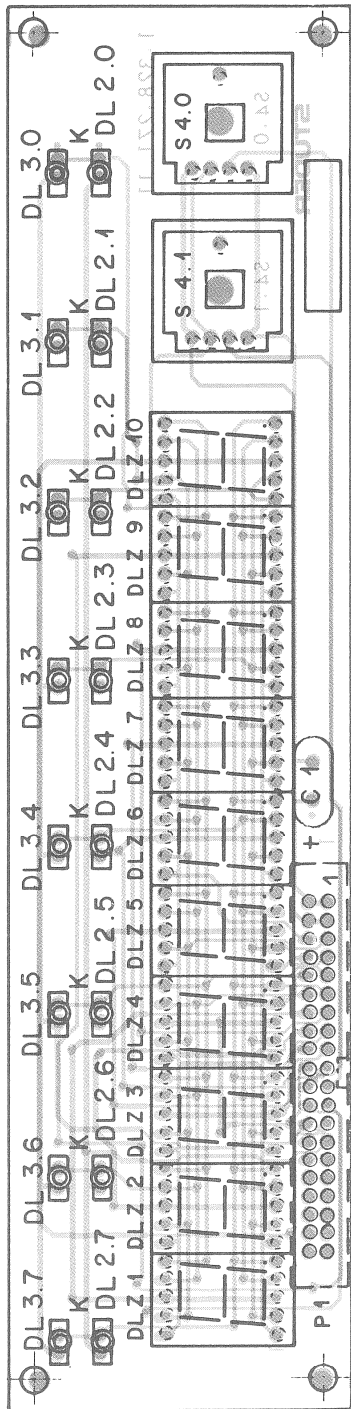
ORIG 85/04/23
S T U D E R (20) 85/04/23 SU TIMER DRIVER BOARD 1.328.272.00 PAGE 3

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 - TIMER DISPLAY PCB 1.328.271.00



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STUDER	TIMER DISPLAY BOARD	SC 1.328.271.00	PAGE 1 OF 1

REMOTE TIMER/LAP MODE DISPLAY 1.328.270.00
 - TIMER DISPLAY PCB 1.328.271.00



IND.	POS. NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1		59-26-1479	4.7uF	-20%, 10V, Sal	Ph,Ri
DL...2.0		50.04.2130	LY 3160-GK	Yellow	Sie
DL...2.1			not used		
DL...2.2		50.04.2130	LY 3160-GK	Yellow	Sie
DL...2.3		50.04.2130	LY 3160-GK	Yellow	Sie
DL...2.4		50.04.2131	LG 3160-GK	Green	Sie
DL...2.5		50.04.2129	LS 3160-HL	Red	Sie
DL...2.6		50.04.2130	LY 3160-GK	Yellow	Sie
DL...2.7		50.04.2131	LG 3160-GK	Green	Sie
DL...3.0		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.1			not used		
DL...3.2		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.3		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.4		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.5		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.6		50.04.2130	LY 3160-GK	Yellow	Sie
DL...3.7		50.04.2130	LY 3160-GK	Yellow	Sie
DLZ...1		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...2		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...3		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...4		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...5		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...6		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...7		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...8		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...9		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...10		73.01-0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
S...4.0		55.03.0261	TTL-switch	1 = 0C, Rafi Nr. 3.13001.110	
S...4.1		55.03.0261	TTL-switch	1 = 0C, Rafi Nr. 3.13001.110	
P.....1		54.14*2004	40 cont.	see note 1	

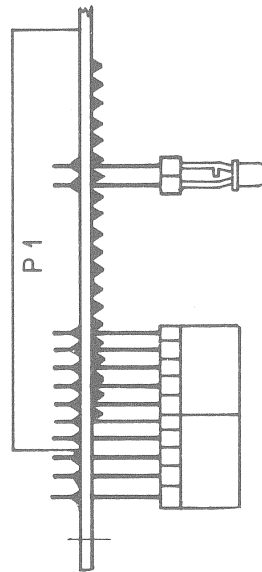
Note 1 - Connector: Yamaichi Nr. FAP-40-08-4055
 Burndy Nr. BPH 9 B 40 B00 GS

Sal=Solid Aluminium

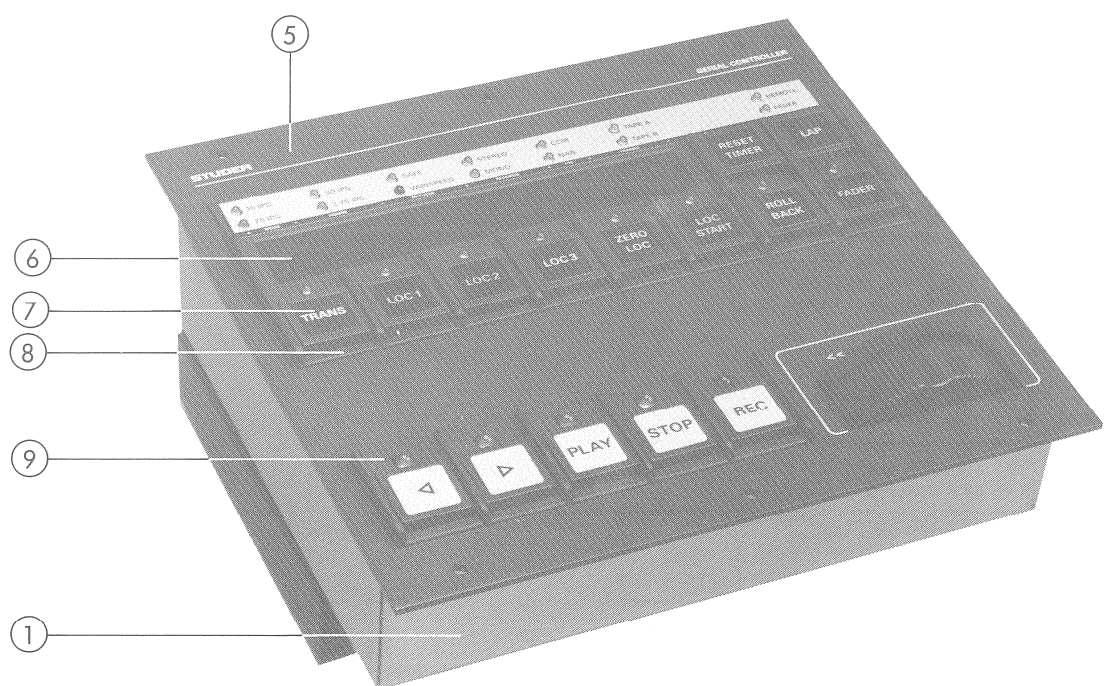
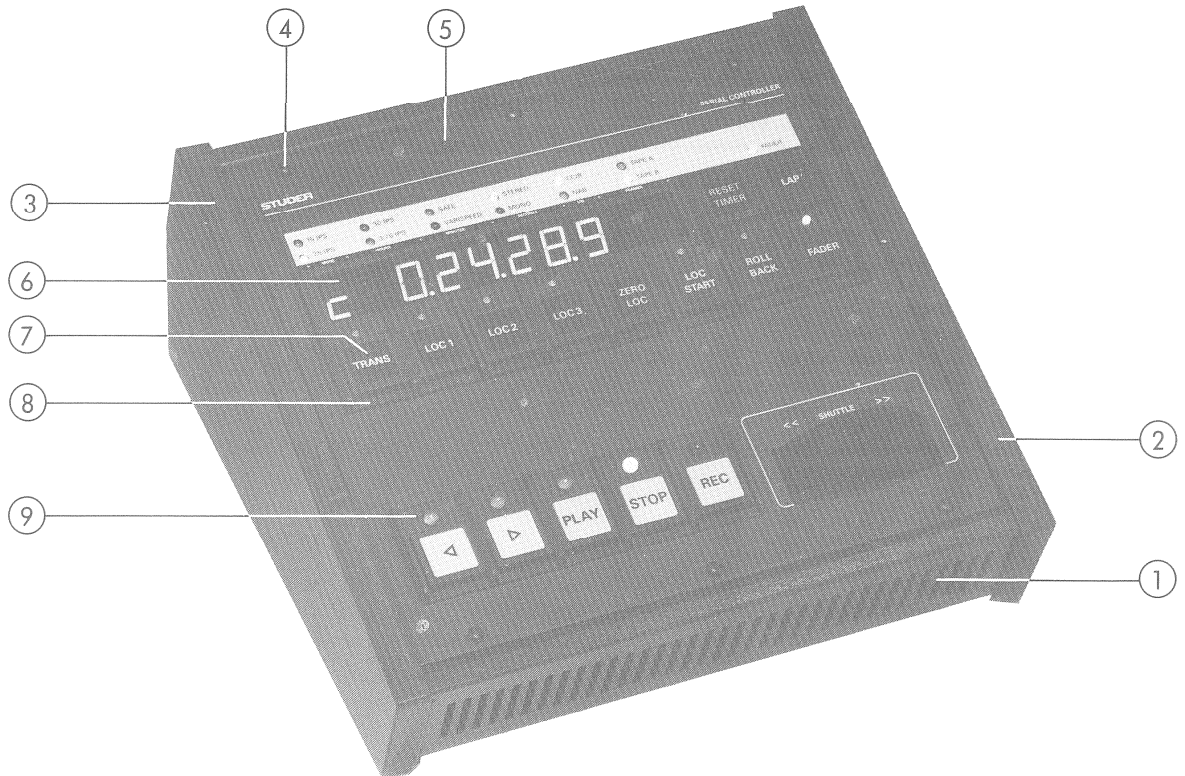
MANUFACTURERS: GI=General Instruments, Ph=Philips, Ri=Rifa, Sie=Siemens.

ORIG 85/04/23

S T U D E R (OP) 85/04/23 SU TIMER DISPLAY BOARD 1.328.271.00



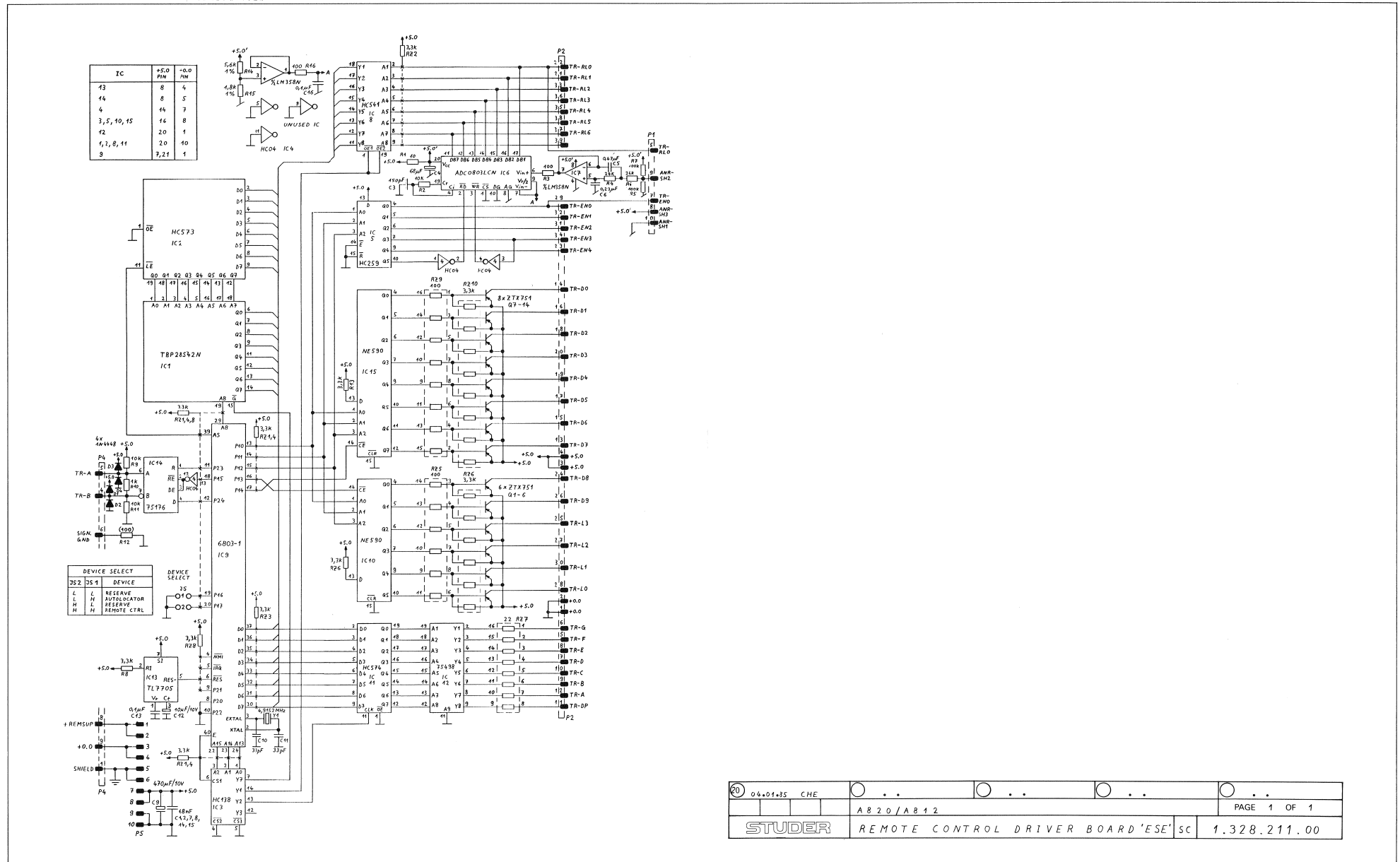
REMOTE CONTROL CABINET (SERIAL) 1.328.210
REMOTE CONTROL MODULE (SERIAL) 1.328.220



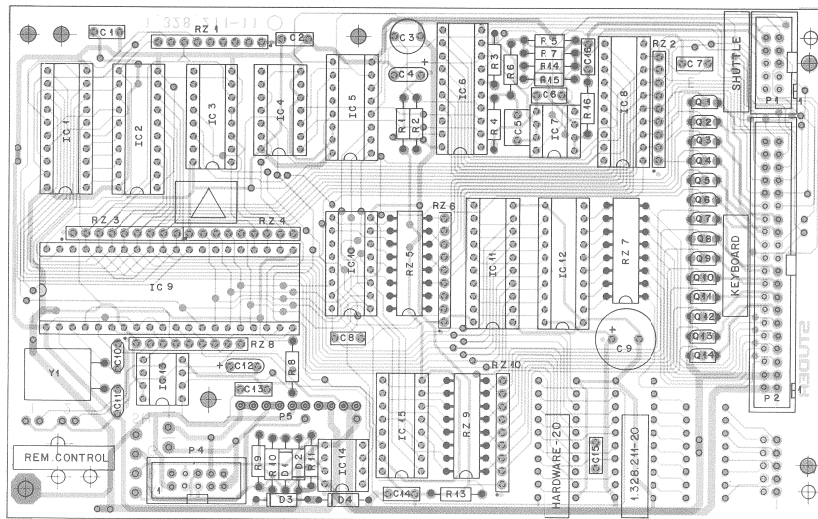
	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.210.00	Remote control cabinet (serial) (self-adhesive labels: section 8.23)	
	1	1.328.220.00	Remote control module (serial) (self-adhesive labels: section 8.23)	
	1	1.328.213.00	STABILIZER PCB	
	3	21.53.0354	Allen screw	M4x6
	3	24.16.1030	Fin washer	
	3	23.01.1032	Washer	
	1	1.328.211.20	REMOTE CONTROL DRIVER PCB	
	4	1.010.054.27	Hex stud bolt	
	4	1.010.021.27	Hex stud bolt	
	4	21.53.0354	Allen screw	M3x6
	4	1.010.025.21	Round head allen screw	M3x6
	6	24.16.1030	Fin washer	
	3	23.01.1032	Washer	
	2	24.16.2030	Serrated lock washer	
01	1	1.820.922.00	Housing compl. (with pos.2, 3, and feet)	
	4	31.02.0211	Foot	
	1	1.328.220.02	Bottom cover	
	6	21.53.0354	Allen screw	
	6	24.16.1030	Fin washer	
	6	1.010.118.27	Hex stud bolt	
	6	24.16.1030	Fin washer	
	6	23.01.1032	Washer	
	1	1.010.052.17	Border protection	
	1	1.328.220.01	Chassis	
	6	1.010.118.27	Hex stud bolt	
	6	24.16.1030	Fin washer	
	6	23.01.1032	Washer	
	1	1.080.715.04	Border protection	
	1	1.328.220.04	Insulation	
02	1	1.328.210.02	Side panel	right
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
03	1	1.328.210.01	Side panel	left
	4	21.53.0454	Allen screw	M4x6
	4	24.16.1040	Fin washer	
04	6	1.010.025.21	Round head allen screw	M3x6
05	1	1.328.217.00	Front cover compl. containing all parts marked with "■"	
	1	1.328.221.00	Front cover compl. containing all parts marked with "■"	
	1	1.328.210.03	Front cover	
	1	1.328.220.11	Front cover	
	1	1.328.212.00	REMOTE CONTROL DRIVER PCB	
	6	1.328.210.06	Hex stud bolt	
	6	21.53.0353	Allen screw	M3x5
	6	23.01.1032	Washer	
	6	24.16.1030	Fin washer	
06	1	1.820.232.02	Filter screen red	
07	15	1.011.210.01	Push button	
	15	1.010.202.37	Pressure spring	
08	1	1.820.232.01	Push button housing	
	1	1.810.300.05	Damping strip, for 2 push buttons	
	1	1.820.232.03	Damping strip, for 8 push buttons	
09	1	1.810.300.03	Push button housing	
	1	1.810.300.06	Damping strip, for 5 push buttons	

10	1	1.328.215.00	Shuttle assembly compl.	
	1	1.328.214.00	SHUTTLE PCB	
	2	1.328.210.09	Spec. nut	
	2	22.01.8030	Nut	M3
	1	1.328.215.03	Shuttle wheel	
	1	1.328.216.00	Push button compl.	
	1	36.01.0302	Toothed wheel	
	2	1.010.101.37	Tension spring	
	1	58.99.0139	Potentiometer	5 kΩ, 2 W

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - REMOTE CONTROL DRIVER PCB 1.328.211.20



REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - REMOTE CONTROL DRIVER PCB 1.328.211.20



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59-06-0683	68 nF	10%	63V PEP	
C.....2	59-06-0683	68 nF	10%	63V PEP	
C.....3	59-05-2151	150 pF	2.5%	630V PP	
C.....4	59-06-0680	68 nF	20%	6.3V 381	
C.....5	59-06-0474	470 nF	10%	63V PEP	
C.....6	59-06-0224	220 nF	10%	63V PEP	
C.....7	59-06-0683	68 nF	10%	63V PEP	
C.....8	59-06-0683	68 nF	10%	63V PEP	
C.....9	59-22-3471	470 uF	-70%	10V E1	
C.....10	59-34-2220	22 pF	5%	N150, Car	
C.....11	59-34-2220	22 pF	5%	N150, Car	
C.....12	59-26-1100	10 uF	10%	10V, 541	
C.....13	59-06-0104	100 nF	10%	63V PEP	
C.....14	59-06-0683	68 nF	10%	63V PEP	
C.....15	59-06-0683	68 nF	10%	63V PEP	
C.....16	59-06-0104	100 nF	10%	63V PEP	
R.....1	50-04-0125	1N 4448			Fc:ITT-PHu Ses+TF
R.....2	50-04-0125	1N 4448			Fc:ITT-PHu Ses+TF
R.....3	50-04-0125	1N 4448			Fc:ITT-PHu Ses+TF
R.....4	50-04-0125	1N 4448			Fc:ITT-PHu Ses+TF
IC.....1	1-328-999-20			software 13/85	St
IC.....2	50-17-1133	74 HC 573		** 74 HC 573 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....3	50-17-1138	74 HC 138		** 74 HC 138 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....4	50-17-1008	74 HC 584		** 74 HC 584 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....5	50-17-1239	74 HC 259		** 74 HC 259 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....6	50-00-0009	ALGEBROELEN			TSMS
IC.....7	50-05-0286	LM 358 N		LM 358 P	Mot.HS+T1
IC.....8	50-17-1941	74 HC 541		** 74 HC 541 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....9	50-16-0107	MC 6803P-1		HD 6803P-1	Hi+Mot
IC.....10	50-15-0102	HE 590 N			Si9
IC.....11	50-17-1574	74 HC 574		** 74 HC 574 *	Mot.HS+PhuRCA-SGS+T1+To
IC.....12	50-15-0113	SN 7548 N			TI
IC.....13	50-11-0122	TL7705ACP			TI
IC.....14	50-15-0115	SN 7548P		85 3695 N	HS+T1
IC.....15	50-15-0102	HE 590 N			Si9

STUDER (FP) 85/02/01 BD REMOTE CONTROL DRIVER BOARD 1.328.211-00 PAGE 1

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....16				not used	
IC.....17				not used	
R.....1				see note 2	
R.....2				see note 3	
R.....3				not used	
R.....4				see note 2	
R.....5				see note 4	
Q.....1	50-03-0352	27K 751 S			Fa
Q.....2	50-03-0352	27K 751 S			Fa
Q.....3	50-03-0352	27K 751 S			Fa
Q.....4	50-03-0352	27K 751 S			Fa
Q.....5	50-03-0352	27K 751 S			Fa
Q.....6	50-03-0352	27K 751 S			Fa
Q.....7	50-03-0352	27K 751 S			Fa
Q.....8	50-03-0352	27K 751 S			Fa
Q.....9	50-03-0352	27K 751 S			Fa
Q.....10	50-03-0352	27K 751 S			Fa
Q.....11	50-03-0352	27K 751 S			Fa
Q.....12	50-03-0352	27K 751 S			Fa
Q.....13	50-03-0352	27K 751 S			Fa
Q.....14	50-03-0352	27K 751 S			Fa
R.....1	57-11-4100	10 Ohm	2%		
R.....2	57-11-4103	10 Ohm	2%		
R.....3	57-11-4101	100 Ohm	2%		
R.....4	57-11-3263	24 Ohm	1%		
R.....5	57-11-4104	100 Ohm	2%		
R.....6	57-11-3263	24 Ohm	1%		
R.....7	57-11-4104	100 Ohm	2%		
R.....8	57-11-4332	3.3 Ohm	2%		
R.....9	57-11-4103	10 Ohm	2%		
R.....10	57-11-4102	10 Ohm	2%		
R.....11	57-11-4103	10 Ohm	2%		
R.....12				not used	
R.....13	57-11-4332	3.3 Ohm	2%		

STUDER (FP) 85/02/01 BD REMOTE CONTROL DRIVER BOARD 1.328.211-00 PAGE 2

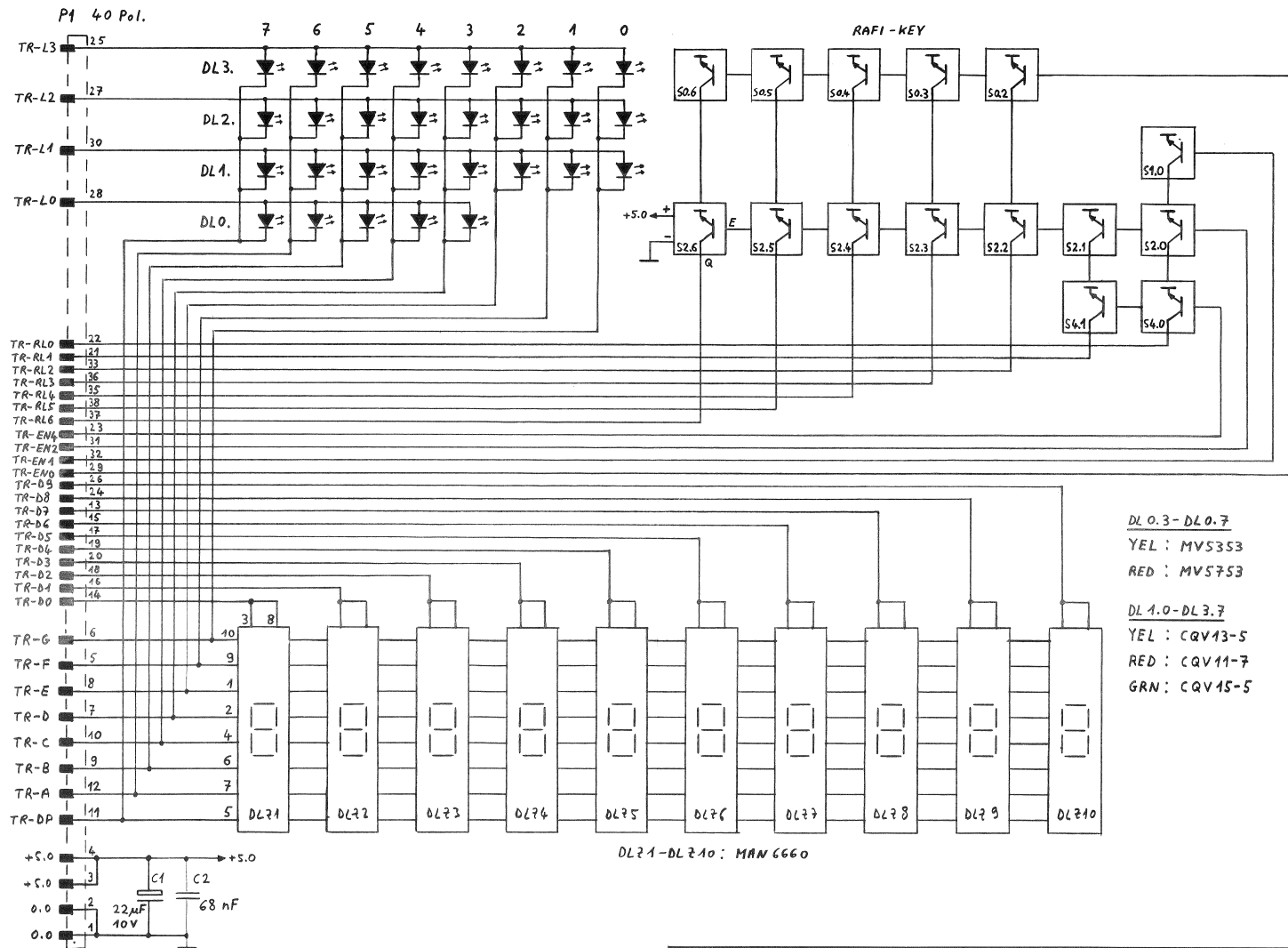
IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R.....14	57-11-3562	5.6 Ohm	1%		
R.....15	57-11-3182	1.8 Ohm	1%		
R.....16	57-11-4101	100 Ohm	2%		
RZ.....1	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....2	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....3	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....4	57-88-3101			Network, R = 100 Ohm, 2%, DIL 16	
RZ.....5	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....6	57-88-3220			Network, R = 22 Ohm, 2%, DIL 16	
RZ.....7	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....8	57-88-3101			Network, R = 100 Ohm, 2%, DIL 16	
RZ.....9	57-88-3101			Network, R = 100 Ohm, 2%, DIL 16	
RZ.....10	57-88-4332			Network, R = 3.3 kOhm, 5%, single line	
RZ.....11				not used	
Y.....1	89-01-0553	4.9152 Mhz	z = ±100 ppm, Nymph Nr. TD 18/MP 049		

STUDER (FP) 85/02/01 BD REMOTE CONTROL DRIVER BOARD 1.328.211-00 PAGE 3

IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
IC.....16				not used	
IC.....17				not used	
R.....1				see note 2	
R.....2				see note 3	
R.....3				not used	
R.....4				see note 2	
R.....5				see note 4	
Note 2				Connector: 10 Contacts Studer Nr. 54-14-2001 Yamaha Nr. #AP-10-08/4 Burney Nr. DPH 7 B 10 BDD GS	
Note 3				Connector: 40 Contacts Studer Nr. 54-14-2004 Yamaha Nr. #AP-40-08/4 Burney Nr. DPH 9 B 40 BDD GS	
Note 4				Connector: 10 Pines Studer Nr. 1-010-018-54	
Chemicals:				Electrolytic, PEP/Polyester Film, PP-Polypropylen Salt-Solid Aluminium.	
MANUFACTURERS:				Inf-Ferrite, Rad-Ferrite, Hi-Conduct, Is-Intersil ITT-Intermetall, Mot-Motorola, NEC-National, Semiconductors Mu-Philips, RCA-RCA Corporation, Sec-Teconex, SGS-SGS/Ates Siag-Sylvania, St-Studer, Tri-Triumph TI-Texas Instruments, To-Toshiba.	
ORIG	85/02/01				

STUDER (FP) 85/02/01 BD REMOTE CONTROL DRIVER BOARD 1.328.211-00 PAGE 4

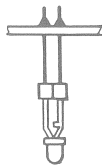
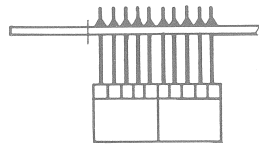
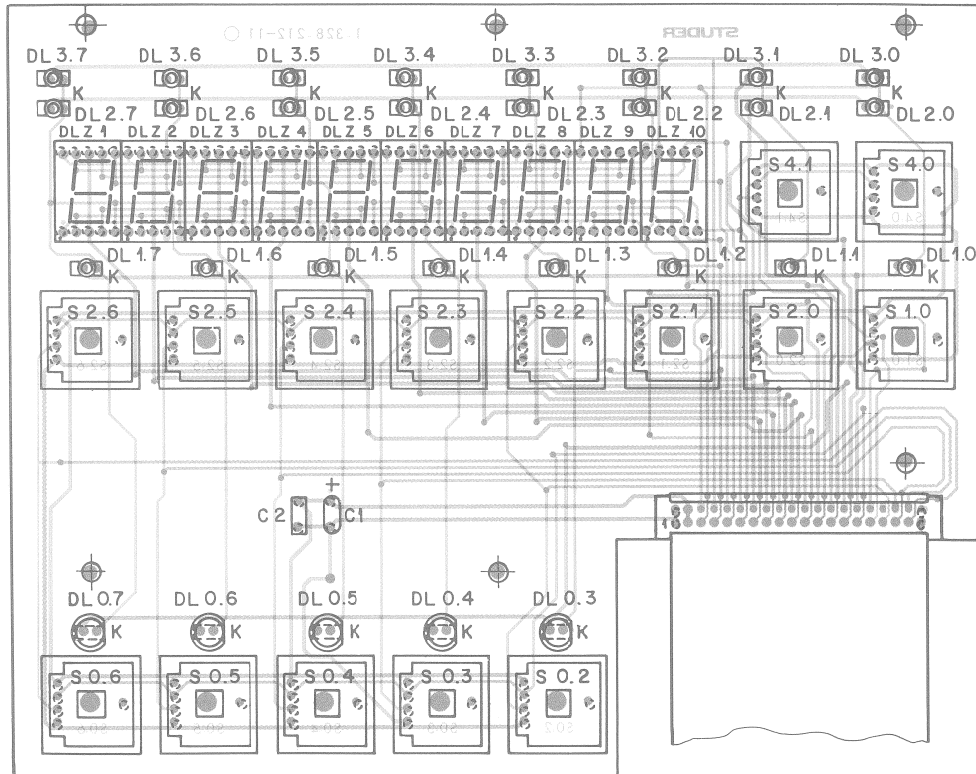
REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - REMOTE CONTROL DISPLAY PCB 1.328.212.00



DL21-DL210: MAN 6660

28.11.84 CHE	A820/A812		
STUDER	REMOTE CONTROL DISPLAY BOARD	SC 1.328.212.00	PAGE 1 OF 1

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - REMOTE CONTROL DISPLAY PCB 1.328.212.00



END.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	01	50-06-1220	22 uF	-20% 10V S4L	
C...	02	50-03-0083	08 MF	10% PEI	
DL...	03	50-04-2111	MF 5753	LED, Red, HLM 3001	Sie
DL...	04	50-04-2112	MF 5353	LED, Yellow, HLM 3001	Sie
DL...	05	50-04-2112	MF 5353	LED, Yellow, HLM 3001	Sie
DL...	06	50-04-2112	MF 5353	LED, Yellow, HLM 3001	Sie
DL...	07	50-04-2112	MF 5353	LED, Yellow, HLM 3001	Sie
DL...	08	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	09	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	10	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	11	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	12	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	13	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	14	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	15	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	16	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	17	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	18	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	19	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	20	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	21	50-04-2130	not used		Sie
DL...	22	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	23	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	24	50-04-2131	COV 15-5	LED, Green, COV 15-6	Sie
DL...	25	50-04-2129	COV 11-7	LED, Red	Sie
DL...	26	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	27	50-04-2131	COV 15-5	LED, Green, COV 15-6	Sie
DL...	28	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	29	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	30	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	31	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	32	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	33	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	34	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	35	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	36	50-04-2130	COV 13-7	LED, Yellow	Sie
DL...	37	50-04-2130	COV 13-7	LED, Yellow	Sie
DLZ...	01	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	02	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	03	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	04	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI

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END.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
DLZ...	05	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	06	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	07	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	08	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	09	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI
DLZ...	10	73-01-0124	MAN 6600	7-segments, Red, Brightness "G"	GI

STUDER (01) 06/01/23 PD REMOTE CONTROL DISPLAY BOARD 1.328-212.00 PAGE 2

END.	POS.ND.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
S...	02	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	03	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	04	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	05	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	06	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	07	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	08	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	09	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	10	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	11	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	12	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	13	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	14	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	15	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	16	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	17	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	18	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	19	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	20	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	21	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	22	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	23	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	24	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	25	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	26	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	27	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	28	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	29	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	30	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	31	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	32	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	33	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	34	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	35	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	36	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	37	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	38	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	39	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	
S...	40	55-03-0261	TTL-switch	1 8 OC Rafi Nr. 3-13001-110	

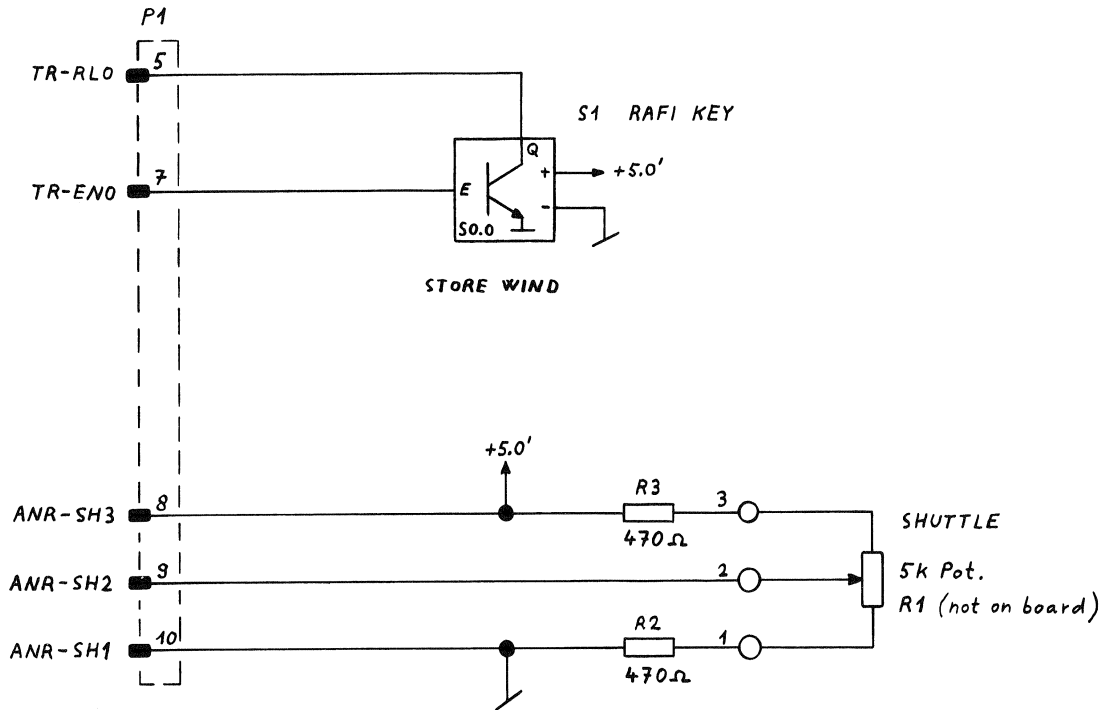
SAL=Solid Aluminum; PEI=Polyester

MANUFACTURERS: GI=General Instruments; Sie=Siemens

DRG 05/11/26 (01) 06/01/23

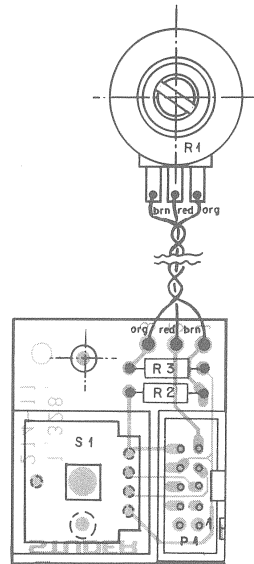
STUDER (01) 06/01/23 PD REMOTE CONTROL DISPLAY BOARD 1.328-212.00 PAGE 2

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - SHUTTLE PCB 1.328.214.00



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STUDER	SHUTTLE BOARD	SC	1.328.214.00	PAGE 1 OF 1

REMOTE CONTROL CABINET (SERIAL) 1.328.210.00
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.00
 - (STABILIZER PCB 1.328.220: SEE PAGE 9/13)
 - SHUTTLE PCB 1.328.214.00



IND.	POS.-NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R....01		54.14.2001		see note 1	
R....02		57.11.4471	470 Ohm	2%	
R....03		57.11.4471	470 Ohm	2%	
S....01		55.03.0261	TTL-Switch	1 ÷ 0C, Rafi Nr.3.13001.110	

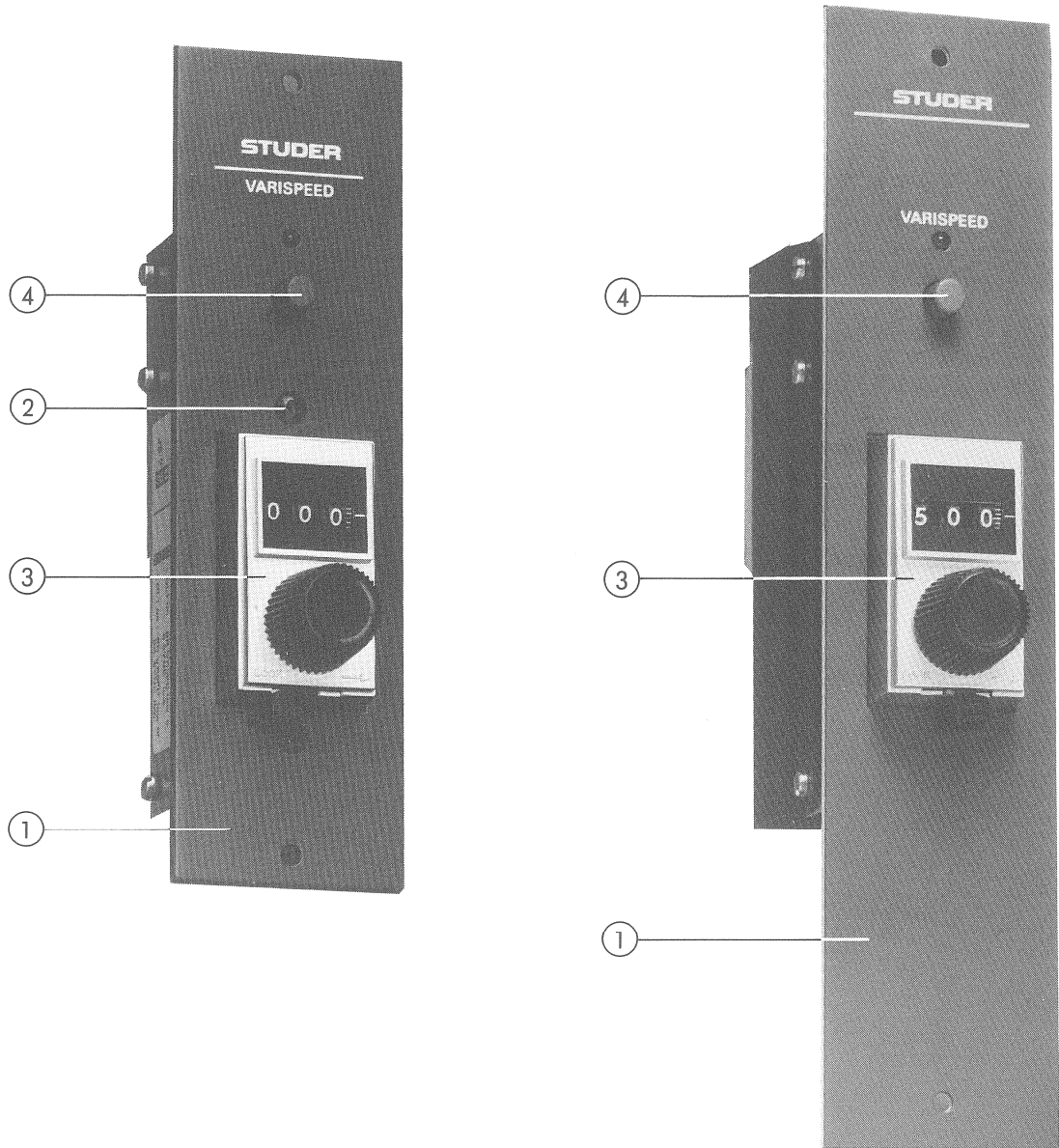
Note 1 - Connector 10 contacts: Yamaichi Nr. FAP-10-DR24
 Burydy Nr. BPH 9 B 10 B00 GS

ORIG 85/03/22

S T U D E R (PP) 85/03/22 SU SHUTTLE BOARD

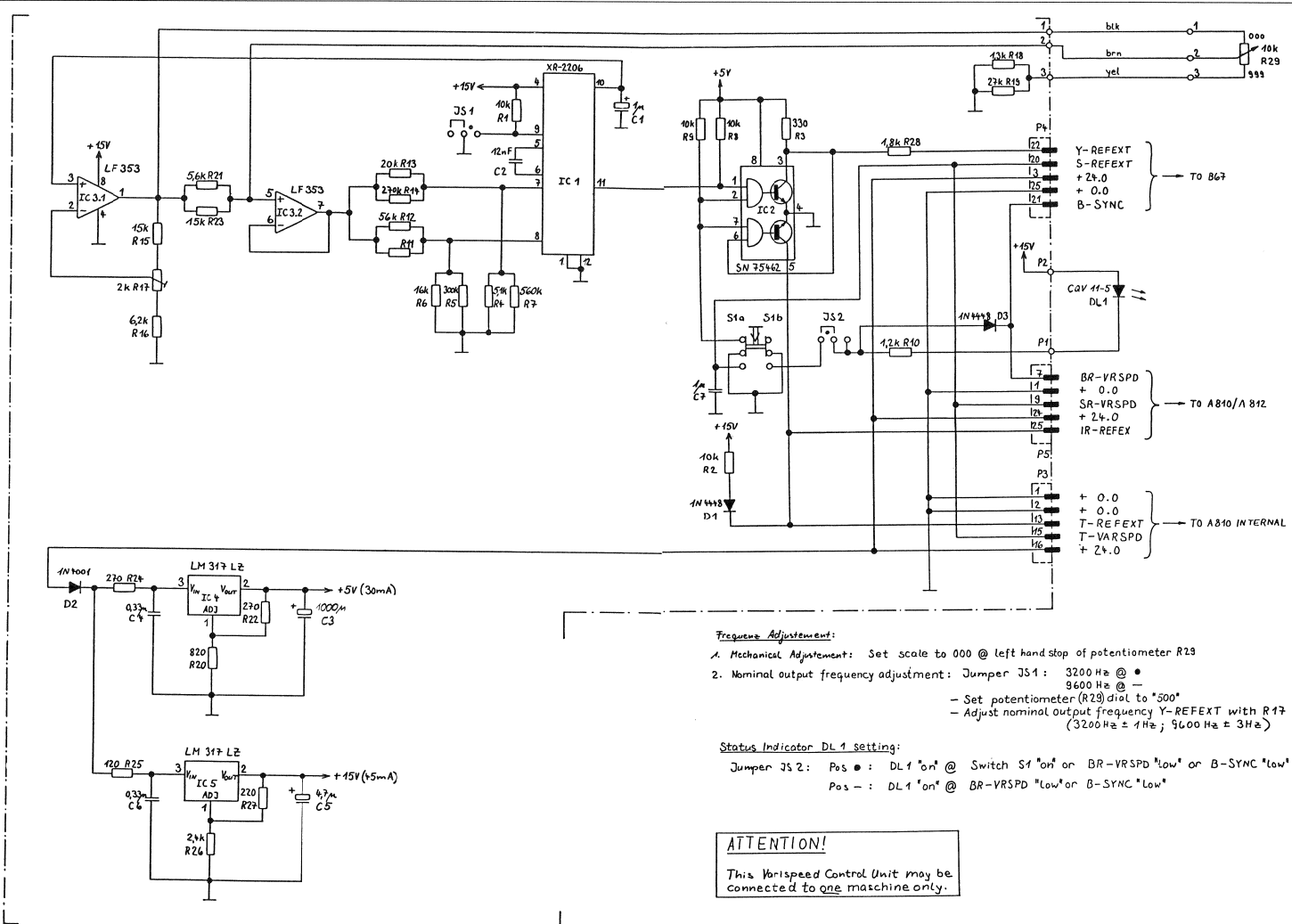
1.328.214.00 PAGE 1

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
VARISPEED CONTROL MODULE 1.328.290.00
- VARISPEED CONTROL PCB 1.810.762.82



	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.328.253.00	Varispeed conversion kit (for parallel remote control only)	
	1	1.328.290.00	Varispeed control module	
	1	1.810.762.82	VARISPEED CONTROL PCB	
	3	21.01.0279	Slotted cheese head screw	M2.5x6
	3	24.16.1025	Fin washer	
	1	1.328.290.04	Insulation	
01	1	1.328.250.10	Front cover	
	1	1.810.330.02	Spacer	
	1	1.328.290.01	Support	
	1	1.328.290.02	Front plate	
02	2	1.010.025.21	Round head allen screw	M3x6
03	1	58.99.0116	Fine drive with reading scale	
04	1	1.810.320.07	Push button, long	red

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
 VARISPEED CONTROL MODULE 1.328.290.00
 - VARISPEED CONTROL PCB 1.810.762.82



Up-date to the operating and service manual A820-2CH

Operation

- 1 Menu tree for the latest software version 02/93.
- 2 Description of new functions.

UP-DATE Master Section

Serial Remote Interface	1.820.729.25
Parallel Remote Interface	1.820.738.85
SMPTE/EBU Bus Interface	1.820.751.21
Master Serial Interface	1.820.753.82
Tape Deck Display Driver	1.820.768.84
Tape Deck Display Driver	1.820.768.85
MP-Unit Master	1.820.786.33
Display Connection Board	1.820.233.83

UP-DATE Tape Deck Section

Tacho Sensor Electronics PCB	1.021.695.85
Tacho Sensor Electronics PCB	1.021.695.86
Spooling Motor Driver	1.820.759.83
Spooling Motor Driver	1.820.759.84
Spooling Motor Driver	1.820.759.85
Spooling Motor Control	1.820.760.81
Spooling Motor Control	1.820.760.82
Tape Deck Periphery Control	1.820.762.81
Tape Deck Serial Interface	1.820.763.83
Capstan Control Unit	1.820.764.28
Move Sensor	1.820.770.82
Motor Tacho	1.820.771.84
Tape Tension Sensor PCB	1.820.772.81
Tape Lifter Control	1.820.773.83
Capstan Motor Drive Amplifier	1.820.774.27
Spooling Motor Drive Amplifier	1.820.775.82
Spooling Motor Supply	1.820.777.84
MP Unit Tape Deck Control MCH	1.820.785.25
Opto Sensor	1.820.793.82
Basis Board Tape Deck	1.820.701.82
Tape Deck Counter/Timer	1.820.823.00
Stabilizer	1.820.832.00/1.820.832.81
Stabilizer $\pm 26V/1A$	1.820.833.00
Fuse Supply Failure Detector	1.820.866.00

UP-DATE Audio Section

Audio Block Diagram	
Level Diagrams, Line Amplifier	
Line Amplifier with Trafo	1.820.814.81
Line Amplifier Trafoless	1.820.715.82
Line Amplifier Trafoless	1.820.715.83
Line Output Amplifier PCB	1.820.862.00
Reproduce Preamp 1CH	1.810.714.81
Reproduce Preamp 2CH	1.810.717.81
Level Diagrams, Reproduce Amplifier	
Reproduce Amplifier	1.820.710.84
Reproduce Amplifier	1.820.710.85
Level Diagrams, Record Amplifier	
Record Amplifier HX-PRO	1.820.811.81
Adaption Board	1.820.741.00 for 1.318... Heads
HF Driver	1.820.813.81
Noise Reduction System Control	1.810.763.82
Time Code Read-Write Unit	1.820.721.87
Code Delay Unit	1.820.722.21
Distribution Board	1.820.794.81
Head Assembly Identifier Board	1.820.795.00

UP-DATE Accessories Section

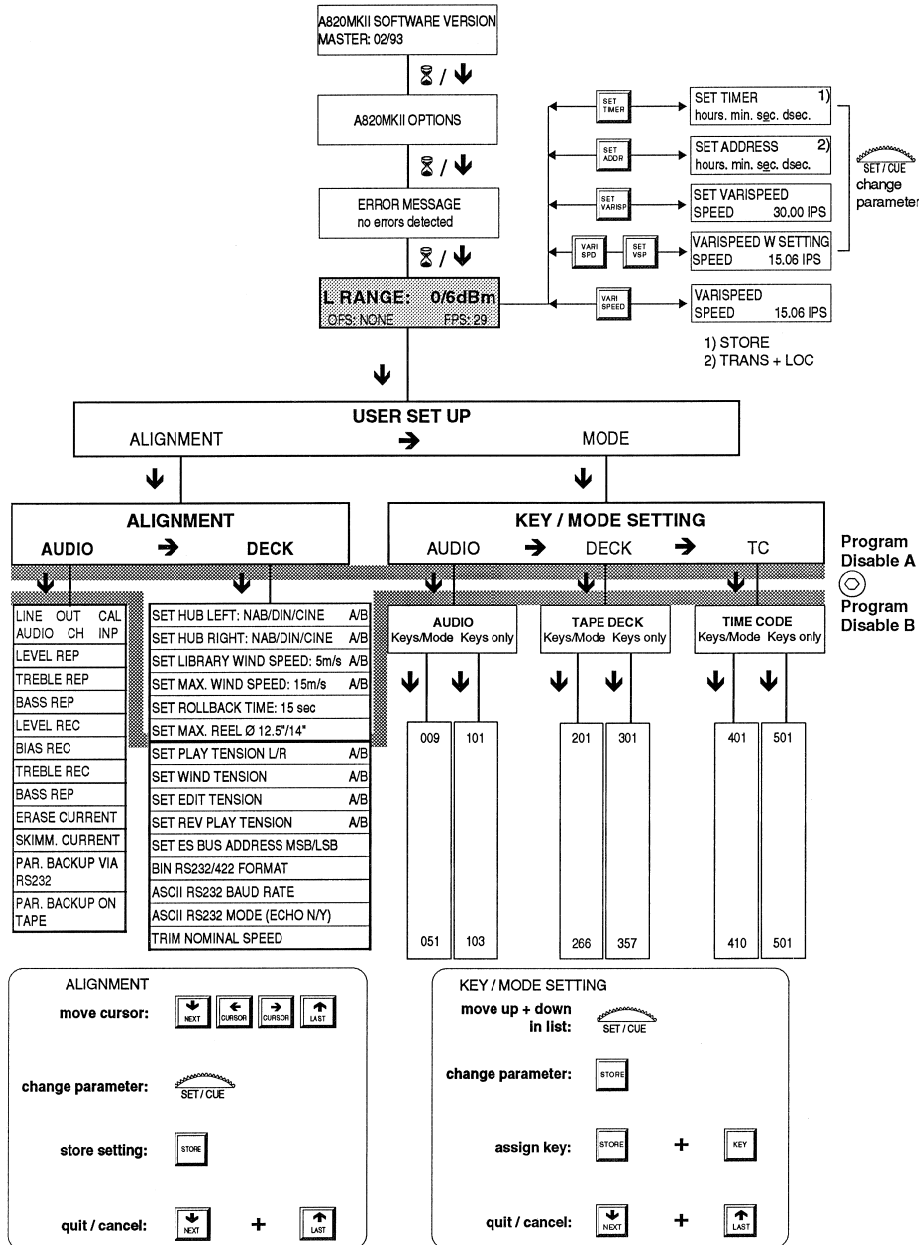
Tape Deck Remote Control Cabinet (Parallel)	1.328.250.81
- Tape Deck Control PCB	1.328.251.81
Tape Deck Remote Control Module (Parallel)	1.328.255.81
- Connectors Board	1.328.257.81
Remote Timer/Lap Mode Display	1.328.270.81
- Stabilizer PCB	1.328.213.81
- Timer Driver PCB	1.328.272.24
Remote Control Cabinet (Serial)	1.328.210.81
Remote Control Module (Serial)	1.328.220.81
- Stabilizer PCB (see under 1.328.270.81)	1.328.213.81
- Remote Control Driver Board	1.328.211.25
- Remote Control Display PCB	1.328.212.81
Varispeed Conversion Kit (for Parallel Remote Control Only)	1.328.253.00
Varispeed Control Module	1.328.290.00
- Varispeed Control PCB	1.810.762.83

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Menu tree for A820-2CH software version 02/93



Audio Keys/Mode

009	LEVEL RANGE	0/6 dBm	Y/N
010	LEVEL RANGE	4/10 dBm	Y/N
011	LEVEL RANGE	8/14 dBm	Y/N
012	LEVEL RANGE	10/16 dBm	Y/N
021	MASTER SAFE		Y/N
022	TAPE A		Y/N
023	TAPE B		Y/N
024	TAPE A/B		
031	MONO/STEREO		
032	CCIR/NAB		
033	CIRR/NAB PAR SAME/INDIV		
034	REP/SYNC PAR SAME/INDIV		
041	AUTO MUTE	ON/OFF	
042	AUTO INPUT A	Y/N	
043	AUTO INPUT B	Y/N	
044	IN/OUT DELAY	Y/N	
045	DOLBY HX PRO	ON/OFF	
046	AUTO LOW PASS	Y/N	
051	CH CONTROL PAR/INDIV		

Tape Deck Keys/Mode

201	TAPE GUARD A	NO/RED	
202	TAPE GUARD B	NO/STOP	
211	3.75 IPS		Y/N
212	7.5 IPS		Y/N
213	15 IPS		Y/N
214	30 IPS		Y/N
215	3.75/7.5 IPS		
216	7.5/15 IPS		
217	15/30 IPS		
218	3.75/7.5/15 IPS		
219	7.5/15/30 IPS		
220	3.75/7.5/15/30 IPS		
230	FADER MASTER ENABLE		Y/N
231	FADER A		Y/N
232	FADER B		Y/N
233	FADER C		Y/N
234	FADER D		Y/N
241	VARISPEED %		Y/N
242	VARISPEED HT		Y/N
243	VARISPEED IPS		Y/N
244	VARISPEED % / IPS / HT -.		
245	VS IND. ENHANCED -.		Y/N
246	SAVE KEY SETTING		Y/N
247	PROGRAM DISABLE		A/B
250	SHUTTLE IN PLAY		Y/N
251	SHUTTLE MODE		A/B
252	CAPSTAN MODE		A/B
253	WIND MODE		A/B
254	EDIT MODE		A/B
255	REC INDIC MODE		A/B
259	SINGLE LOOP MODE		A/B
265	AUTO LOAD ENABLE		Y/N
266	QUICK START		Y/N

Tape Deck Keys only

301	REWIND	
302	FORWARD	
303	LIBRARY WIND	
304	PLAY	
305	REVERSE PLAY	
306	STOP	
307	RECORD A	
308	RECORD B	
309	EDIT	
310	CUT	
311	TRANSFER	
312	HOLD	
313	LOCATE 1	
314	LOCATE 2	
315	LOCATE 3	
316	LOCATE 4	
317	LOCATE 5	
318	LOCATE ZERO	
319	LOC START PLAY	
320	LOC START STOP	
321	LOC START REC	
322	ROLLBACK PLAY	
323	ROLLBACK STOP	
324	ROLLBACK RECORD	
325	BACKSPACE STOP	
326	BACKSPACE PLAY	
327	TAPE DUMP A	
328	TAPE DUMP B	
329	TAPE DUMP C	
330	TAPE DUMP D	
332	LIFTER	
334	LAP/WATCH DISPLAY	
335	RESET TIMER	
336	SET TIMER	
337	SET ADDRESS	
338	SET VARISPEED	
339	VARISPEED	ON/OFF
345	REMOTE A REM CTL ONLY	
346	REMOTE B REM+LOCAL	
347	SHUTTLE BAR	
348	UNLOAD	
351	NO FUNCTION	
355	SINGLE LOOP	
356	AUTO LOOP	
357	INSTANT LOOP	

Audio Keys only

101	REHEARSE	
102	SPOT ERASE	
103	SKIMMING	

Time Code Keys/Mode

401	24 FRAMES/SEC	Y/N
402	25 FRAMES/SEC	Y/N
403	29.97 FRAMES/SEC	Y/N
404	30 FRAMES/SEC	Y/N
406	25/29.97 FRAMES/SEC	
407	29.97/30 FRAMES/SEC	
408	24/25/29/30 FRAMES/SEC	
409	OFFSET 1.2"	Y/N
410	TC MODE	NORM/SPEC

Time Code Keys only

501	FUTURE USE	
-----	------------	--

2 Beschreibung neuer Funktionen

ab Software 02/93

2.1 Menü "Alignment – Audio"

ERASE CURRENT	A
CH1 85 CH2 85	

Anwahl der **Löschstrom** Einstellung für Bandsorte A, Kanal 1 bzw. 2.

2.2 Menü "Alignment – Deck"

SET ES BUS ADDRESS
MSB 82 LSB 80

Setzen der SMPTE/EBU-Busadresse.
Zur Adressierung der A812MKII in einem Verbundsystem mit der SMPTE/EBU Bus Option 1.820.751.XX.

BIN RS232/422 FORMAT
SET: 8, ev par, 1 sb

Setzen des BINÄR CODE FORMATS für die Option SMPTE/EBU Schnittstelle 1.820.751.XX.

8 = 8 bit code

ev par = even parity (gerade)

odd par = odd parity (ungerade)

1 sb = 1 stop – bit

ASCII RS 232 MODE
ECHO NO ECHO

Setzen der ECHO oder NO-ECHO Funktion der Option RS 232 1.810.751.XX mit ASCII Protokoll.

2.3 Menü "Audio – Keys / Mode"

F045 0/1 no key
DOLBY HX PRO ON/OFF

ON: Dolby HX PRO ist eingeschaltet.

OFF: Dolby HX PRO ist ausgeschaltet.

F046 1/0 no key
AUTO LOW PASS Y/N

Y: Die automatische Höhenabsenkung beim Umspulen ist aktiert. Die Parameter der Tonhöhenwiedergabe werden zum Schutz der Monitorlautsprecher auf Null (00) gesetzt.

N: Die automatische Höhenabsenkung beim Umspulen ist nicht aktiv.

2.4 Menü "Tape Deck – Keys / Mode"

F247 1/0	no key
PROGRAM DISABLE	A/B

- A: Die geschlossene Programmiersperre (Freigabeschraube [28] auf S. D/6) erlaubt kein Zugriff in das Menü.
- B: Die geschlossene Programmiersperre (Freigabeschraube [28] auf S. D/6) erlaubt folgende Menüzugriffe:
- SET HUB DIAMETER LEFT
 - SET HUB DIAMETER RIGHT
 - SET LIBRARY WIND SPEED
 - SET MAX. WIND SPEED
 - SET ROLLBACK TIME
 - SET MAX. REEL DIAMETER

Es ist nicht möglich, eine Tastenfunktion zu programmieren, solange die Programmiersperre geschlossen ist. Ein allfälliger Versuch wird auf dem Service-Display mit der Meldung "program mode not enabled" angezeigt. Zum öffnen der Programmiersperre muss die Freigabeschraube gedreht werden.

F250 1/0	no key
SHUTTLE IN PLAY	Y/N

- Y: Das SHUTTLE-Rad ist auch im Play Betrieb aktivierbar.
- N: Das SHUTTLE-Rad ist im Play Betrieb nicht aktivierbar

F252 0/1	no key
CAPSTAN MODE	A/B

- A: Capstan dreht im Stop-Modus nicht. PLAY oder RECORD Befehl aktiviert den Capstan erst, nachdem die Andruckrolle das Band gegen die Capstanachse gedrückt hat (Bandschonung).
- B: Capstan dreht immer bei eingelegtem Band (schnelleres Startverhalten).

F253 0/1	no key
WIND MODE	A/B

- A: Der Bandabhebebolzen hebt das Band während dem Umspulen von den Audioköpfen ab.
- B: Das Band berührt den Bandabhebebolzen während dem Umspulen nicht (Bandschonend). Andruckaggregat ganz ausgefahren.

F254 1/0	no key
EDIT MODE	A/B/C

Mit der Funktion F254 EDIT A/B/C kann die Logik der Bandzugsensorblockierung gewählt werden.

- EDIT A:** Keiner der beiden Bandzugsensoren blockiert.
- EDIT B:** Linker Bandzugsensor blockiert, ideal für Editieren mit dem rechten Bandteller.
- EDIT C:** Rechter Bandzugsensor blockiert, ideal für Editieren mit dem linken Bandteller.

F255 1/0	no key
REC INDIC MODE	A/B

- A: Aufnahmerückmeldung der Laufwerkstaste [10] ist nur aktiv, wenn mindestens 1 Kanal auf Aufnahme geschaltet ist.
- B: Aufnahmerückmeldung auf der Laufwerkstaste [10] ist unabhängig vom Aufnahmezustand des Audioteils.
- Anwendung: "Follow external Record" mit TLS 4000.

F259 1/0	no key
SINGLE LOOP MODE	A/B

- Für LOOP-Betrieb ohne numerische Eingabe einer Endadresse.
- A: Die SINGLE LOOP Taste **auf dem Autolocator** funktioniert als Instant Loop.
- B: Die SINGLE LOOP Taste **auf dem Autolocator** funktioniert als Single Loop.

Erklärung Single Loop

Eine einzelne auf dem Autolocator angewählte Schleife wird gefahren.

Erklärung Instant Loop

Drücken der Taste INSTANT LOOP bestimmt eine Endlosschleife zwischen dem angezeigten Zählerstand und der in LOC 1 abgespeicherten Bandposition. Dabei gilt der kleinere Wert als Startadresse.

F265	0/1	no key
AUTO LOAD ENABLE		Y/N

AUTO LOAD dient zum automatischen Programmieren der Punch-In und Punch-Out Adressen auf dem Autolocator im AUTOREC Modus. Die Adressen werden durch Drücken von REC bzw. PLAY eingegeben.

Y: Die Taste mit der TRANS Funktion **auf dem Autolocator** bekommt die AUTO LOAD Funktion.

B: Die ursprüngliche Funktion TRANSFER (Rückmelde LED blinkt) ist wieder auf der TRANS/REV PLAY-Taste des Autolocators programmiert.

F266	0/1	no key
QUICK START		Y/N

Neu ist bei 1/4"-Ausführungen die Funktion Nr. 266, "Quick Start Yes/No", mit Default auf "No" implementiert. Voraussetzung für Quick Start ist, dass 12,5"-Spulen eingelegt und nicht 30ips Nominalgeschwindigkeit eingestellt sind, so dass sich der Algorithmus zur Trägheitsmessung vereinfacht. Der aktivierte Quick Start Modus wird irreversibel ausgeworfen, wenn der Spulendurchmesser im Menü "Tape Deck Alignment" auf 14" umprogrammiert wird oder wenn man auf die Nominalgeschwindigkeit von 30ips per Taste umschaltet. Der Operator muss bewusst per Tastendruck Quick Start reaktivieren, nachdem die Voraussetzungen wiederhergestellt sind. Ausserdem kann in der Quick Start Betriebsart weder irgendein Varispeed Modus (inkl. Setting) ein- oder ausgeschaltet noch der Capstan Modus von B nach A umgeschaltet werden.

Der Quick Start Modus bleibt **als Vorwahl** auch dann gespeichert, wenn auf eine unzulässige Nominalgeschwindigkeit oder einen unzulässigen Kerndurchmesser umgeschaltet wird. Ein- und Ausschalten des Quick Start Modus sind nur bei zulässigen Randbedingungen erlaubt, um sofortige Quittierung zu gewährleisten.

Varispeed ist bei Quick Start unter allen Bedingungen ausgeschlossen.

2.5 Menü "Tape Deck - Keys only"

F305		no key
REVERSE PLAY		

Wiedergabe in Rückwärtsrichtung. Funktioniert auch mit der Taste HOLD und PLAY gleichzeitig gedrückt.

F325		no key
BACKSPACE STOP		

Mit dieser Vorlauffunktion kann das Band mit Kopfkontakt und vierfacher PLAY-Geschwindigkeit zurückgespult werden. Funktioniert nur solange die Taste gedrückt wird.

F326		no key
BACKSPACE PLAY		

Mit dieser Vorlauffunktion kann das Band mit Kopfkontakt und vierfacher PLAY-Geschwindigkeit zurückgespult werden. Nach dem Loslassen der BACKSPACE PLAY Taste geht die Maschine in den PLAY Zustand.

F327 Loc.k10
TAPE DUMP A

F328 no key
TAPE DUMP B

F329 no key
TAPE DUMP C

F330 no key
TAPE DUMP D

Mit den Funktionen F327–F330 können folgende Modi angewählt werden:

Papierkorb Betriebsarten (F327–F330):	A F327	B F328	C F329	D F330
Direkte Anwahltaste TAPE DUMP (Abbrechen mit STOP oder TAPE DUMP)	■	■		
Vorbereitungstaste TAPE DUMP Aktivieren durch PLAY (unterbrechen mit STOP)			■	■
Bandzähler aktiv	■		■	
Bandzähler abgeschaltet		■		■

F348 no key
UNLOAD

Schaltet die Wickelmotorsteuerung aus. Das Band wird entlastet. Funktion nur in STOP.

2.6 Menü "Time Code – Keys / Mode"

F410 1/0 no key
TC MODE NORM/SPEC

Hinweis:

Aktivieren der Zeitcodeaufnahme bzw. Wiedergabe bei 3 3/4 ips.
 NORM: Keine Zeitcode-Aufnahme bzw. Wiedergabe bei 3 3/4 ips möglich.
 SPEC: Freigabe der Zeitcode-Aufnahme bzw. Wiedergabe bei 3 3/4 ips.
 Bei dieser Bandgeschwindigkeit ist mit erhöhter drop-out Rate zu rechnen. Der Zeitcode-Aufnahmepegel R2 ist für 3 3/4 und 7 1/2 ips zu verwenden. Es wird empfohlen, den Pegel für die gebräuchlichere Anwendung zu optimieren.

2.7 Allgemeine Geräte-Funktionen

Faderstart

Der Anschluss eines Fader-READY-Schalters soll als Impulstaste gemäss folgenden Varianten erfolgen:

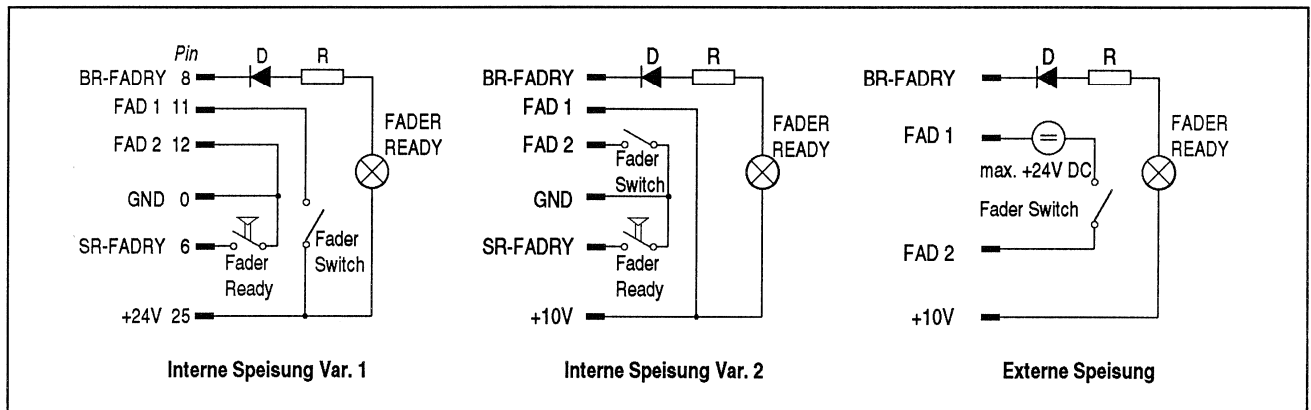


Fig. 1.13 FADER START-Funktion mit interner oder externer Speisung am Anschluss PAR. REM. CTRL.

Locator-Adressen

Da die Adressen von Loc Start, AREC Punch In und Punch Out auf die Bandpositionen bezogen sind, werden bei versehentlichem Betätigen der Zähler-Rückstelltaete RESET TIMER **keine** unerwünschten Verschiebungen auftreten!

Autolocator

Autolocator-Tasten sind keine "Soft-Tasten" und nicht frei programmierbar. (Nur bedingt über lokales LCD mit veränderter Funktionalität: siehe Funktionen im Menü!)

Dokumentation

Ausführliche Beschreibungen der seriellen Schnittstelle sind in Englisch unter folgenden Bestellnummern erhältlich.

Protokoll der RS232-Schnittstelle
 Studer ATR ES-Bus-Protokoll

Best. Nr. 10.85.1330
 Best. Nr. 10.85.1350

2 Description of new functions

Software 02/93 and up

2.1 Menu "Alignment - Audio"

ERASE CURRENT	A
CH1 85 CH2 85	

Selects the **erase current** alignment for tape type A, channel 1 or 2.

2.2 Menu "Alignment - Deck"

SET ES BUS ADDRESS
MSB 82 LSB 80

Sets the SMPTE/EBU bus address.
For addressing the A812 MKII operating in an interlinked system in conjunction with the SMPTE/EBU option 1.820.751.XX.

BIN RS232/422 FORMAT
SET: 8, ev par, 1 sb

Sets the BINARY CODE FORMAT for the optional SMPTE/EBU interface 1.820 751.XX.
8 = 8-bit code
ev par = even parity
odd par = odd parity
1 sb = 1 stop bit

ASCII RS 232 MODE
ECHO NO ECHO

Sets the ECHO or NO ECHO function of the RS232 option 1.810.751.XX with ASCII protocol.

2.3 Menu "Audio - Keys / Mode"

F045 0/1 no key
DOLBY HX PRO ON/OFF

ON: Dolby HX PRO switched on.
OFF: Dolby HX PRO switched off.

F046 1/0 no key
AUTO LOW PASS Y/N

Y: Automatic treble attenuation during fast wind is active. The parameters for high frequency reproduction are set to zero (00) for protection of the monitor speakers.
N: Automatic treble attenuation during fast wind is not activated.

2.4 Menu "Tape Deck - Keys / Mode"

F247 1/0 no key
PROGRAM DISABLE A/B

- A: The closed programming lock (enable screw [28] on page E/6) prevents access to the menu.
- B: The closed programming lock (enable screw [28] on page E/6) allows the following menu accesses:
 - SET HUB DIAMETER LEFT
 - SET HUB DIAMETER RIGHT
 - SET LIBRARY WIND SPEED
 - SET MAX. WIND SPEED
 - SET ROLLBACK TIME
 - SET MAX. REEL DIAMETER

It is not possible to program a key function as long as the programming lock is closed. Any attempt will be rejected with the message "program mode not enabled" on the service display. For opening the programming lock, the enable screw [28] on page E/6 must be turned.

F250 1/0 no key
SHUTTLE IN PLAY Y/N

- Y: The SHUTTLE wheel can also be activated in play mode.
- N: The SHUTTLE wheel cannot be activated in play mode.

F252 0/1 no key
CAPSTAN MODE A/B

- A: The capstan does not turn in stop mode. PLAY or RECORD activates the capstan only when the pinch roller presses the tape against the capstan shaft (more gentle tape handling).
- B: The capstan always turns when the tape is inserted (faster acceleration behavior).

F253 1/0 no key
WIND MODE A/B

- A: The tape lift pin lifts the tape off the soundhead in spooling mode.
- B: The tape does not contact the tape lift pin in spooling mode (gentle tape handling). The pinch roller assembly is fully disengaged.

F254 1/0/0 no key
EDIT MODE A/B/C

With function F254 EDIT A/B/C the logic of the tape tension sensor arrest can be selected.

- EDIT A:** Both tape tension sensors free.
- EDIT B:** Left-hand tension sensor arrested (blocked). Ideal for cueing and editing by manipulating the right hand reel.
- EDIT C:** Right-hand tension sensor arrested (blocked). Ideal for cueing and editing by manipulating the left hand reel.

F255 1/0 no key
REC INDIC MODE A/B

- A: Record indication on the tape deck key [10] is only active if at least 1 channel is switched to record.
- B: Record indication on the tape deck key [10] is independent of the audio section status.
Application: "Follow external record" with TLS 4000.

F259 1/0	no key
SINGLE LOOP MODE	A/B

For LOOP mode without numeric input of an end address.

A: The SINGLE LOOP key **on the autolocator** functions as an instant loop.

B: The SINGLE LOOP key **on the autolocator** functions as a single loop.

Explanation of single loop

One individual loop as selected on the autolocator is performed.

Explanation of instant loop

When the INSTANT LOOP key is pressed, a loop between the displayed counter address and the tape address stored in LOC 1 is performed endlessly. The lower of the two values is taken as the starting address.

F265 0/1	no key
AUTO LOAD ENABLE	Y/N

AUTO LOAD is used for automatic programming the punch-in and punch-out addresses on the autolocator in AUTOREC mode. The addresses are entered by pressing REC or PLAY respectively.

Y: The key with the TRANS/REV PLAY function **on the autolocator** determines the AUTO LOAD function.

B: The original function TRANSFER (LED flashes) is again assigned to the TRANS/REV PLAY key function **on the autolocator**.

F266 0/1	no key
QUICK START	Y/N

A new feature of the 1/4" version is the function No. 266 "Quick Start Yes/No". The default setting is "No". A precondition for quick start is that 12.5" reels are mounted and that the 30 ips speed is deselected in order to simplify the algorithm for inertia measurement. The activated Quick Start mode is irrevocably rejected if the reel diameter in the "Tape deck alignment" menu has been reprogrammed to 14", or if the 30 ips nominal speed is selected. The operator must activate the Quick Start function explicitly by pressing this key after these preconditions have been established. In Quick Start mode neither a Varispeed mode (incl. setting) can be activated or deactivated, nor can the capstan mode be changed from mode B to A.

The Quick Start mode remains preselected even if an inadmissible nominal speed has been activated or if an inadmissible reel diameter has been selected. The Quick Start mode can only be deactivated if all required operating conditions exist. This will be acknowledged immediately.

Varispeed is precluded under all conditions if Quick Start is active.

2.5 Menu "Tape Deck - Keys only"

F305	no key
REVERSE PLAY	

Playback in reverse direction. The function can also be activated by simultaneously pressing the HOLD and PLAY keys.

F325	no key
BACKSPACE STOP	

With this spooling function the tape can be rewound at four times the PLAY speed with tape-head contact. This function remains only active for as long as this key is pressed.

F326	no key
BACKSPACE PLAY	

With this spooling function the tape can be rewound at four times the PLAY speed with tape-head contact. When the BACKSPACE key is released, the machine switches to PLAY mode.

F327 Loc.k10
TAPE DUMP A

F328 no key
TAPE DUMP B

F329 no key
TAPE DUMP C

F330 no key
TAPE DUMP D

With the functions F327-F330 the following modes can be selected

Dump edit modes (F327-F330):	A F327	B F328	C F329	D F330
Direct selection key TAPE DUMP (cancel with STOP or TAPE DUMP)	■	■		
Preselection key TAPE DUMP activate with PLAY (cancel with STOP)			■	■
Tape timer active	■		■	
Tape timer switched off		■		■

F348 no key
UNLOAD

Key for retracing the tape guide assembly. Spooling motor control switched off. Effective in STOP only.

2.6 Menu "Time Code - Keys / Mode"

F410 1/0 no key
TC MODE NORM/SPEC

Activates the time code recording or reproduction at 3 3/4 ips.
NORM: No time code recording or reproduction at 3 3/4 ips.
SPEC: Enables time code recording or reproduction at 3 3/4 ips.

Note: At this tape speed one has to expect a higher drop-out rate. The time code record level R2 has to be used for 3 3/4 and 7 1/2 ips. It is recommended to optimize the level for the more frequently used speed.

2.7 General equipment functions

Faderstart

A Fader READY switch must be connected as a momentary action push button according to one of the following versions:

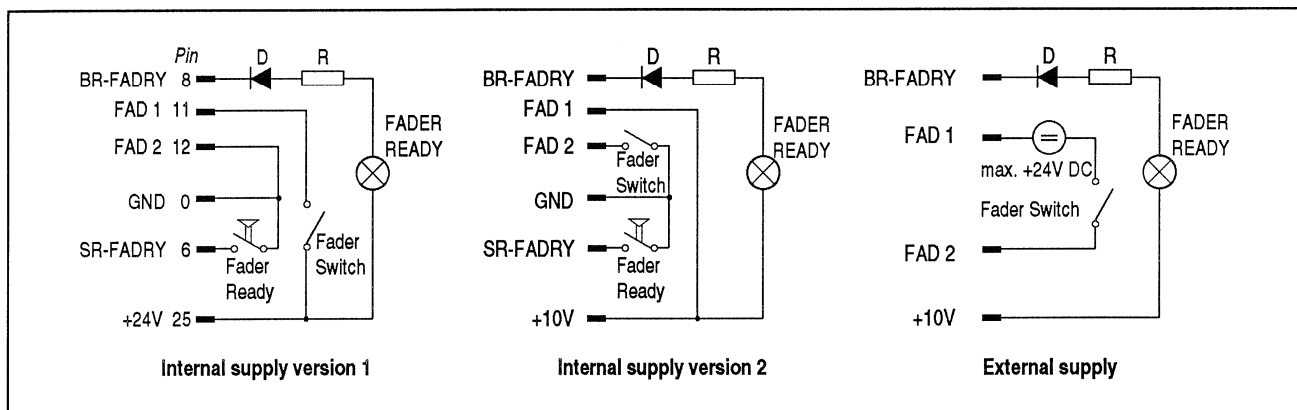


Fig. 1.13 FADER START function with internal or external supply at the PAR. REM. CTRL. terminal.

Locator addresses

Since the Loc Start, AREC punch in and punch out addresses relate to the actual tape positions, no unwanted offsets occur if the RESET TIMER key is inadvertently pressed!

Autolocator

Autolocator keys do not function as soft keys and are not freely programmable. (Only subject to certain restrictions via a local LCD with changed functionality; see menu functions!)

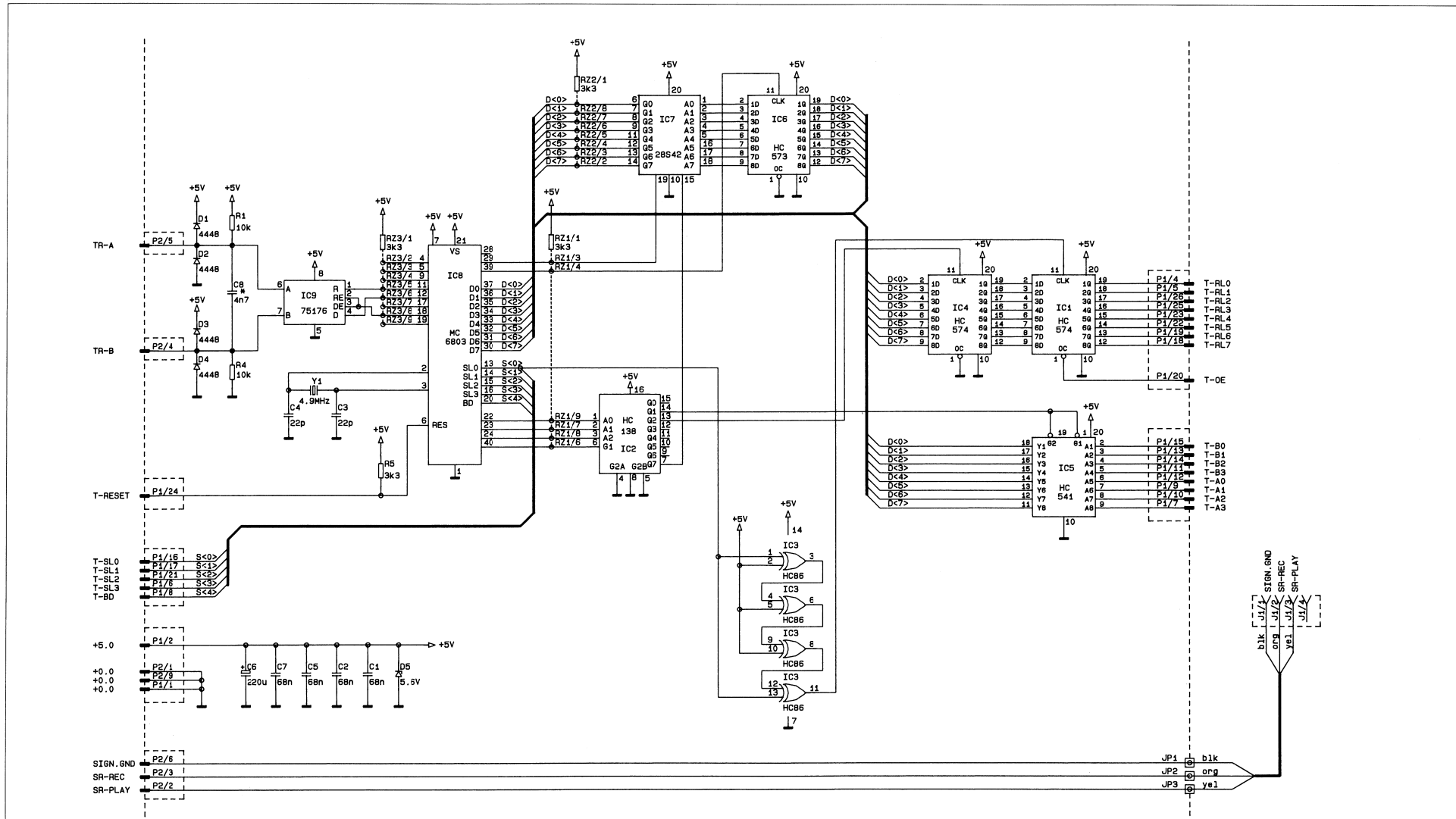
Documentation

A detailed English description of the interface can be ordered under the following publication numbers:

Protocol of the RS232 interface
 Studer ATR ES bus protocol

Order No. 10.85.1330
 Order No. 10.85.1350

SERIAL REMOTE INTERFACE 1.820.729.25

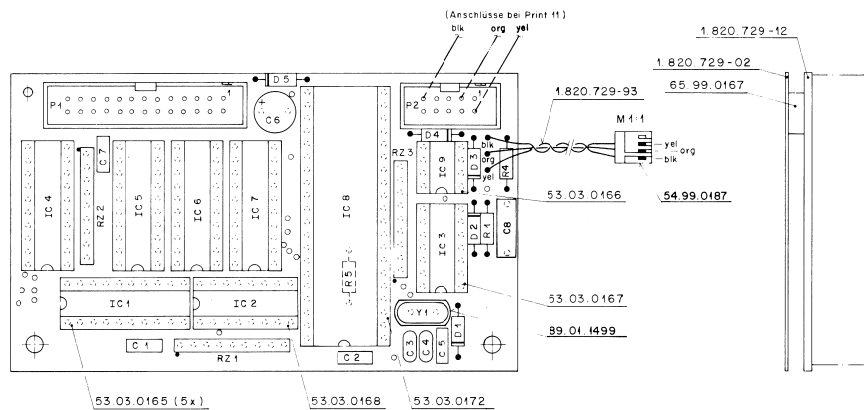


* = has been modified

04	06.04.89	SU	05	25.09.89	VF			
A820							PAGE 1 OF 1	
STUDER			Serial Remote Interface				SC 1.820.729-25	

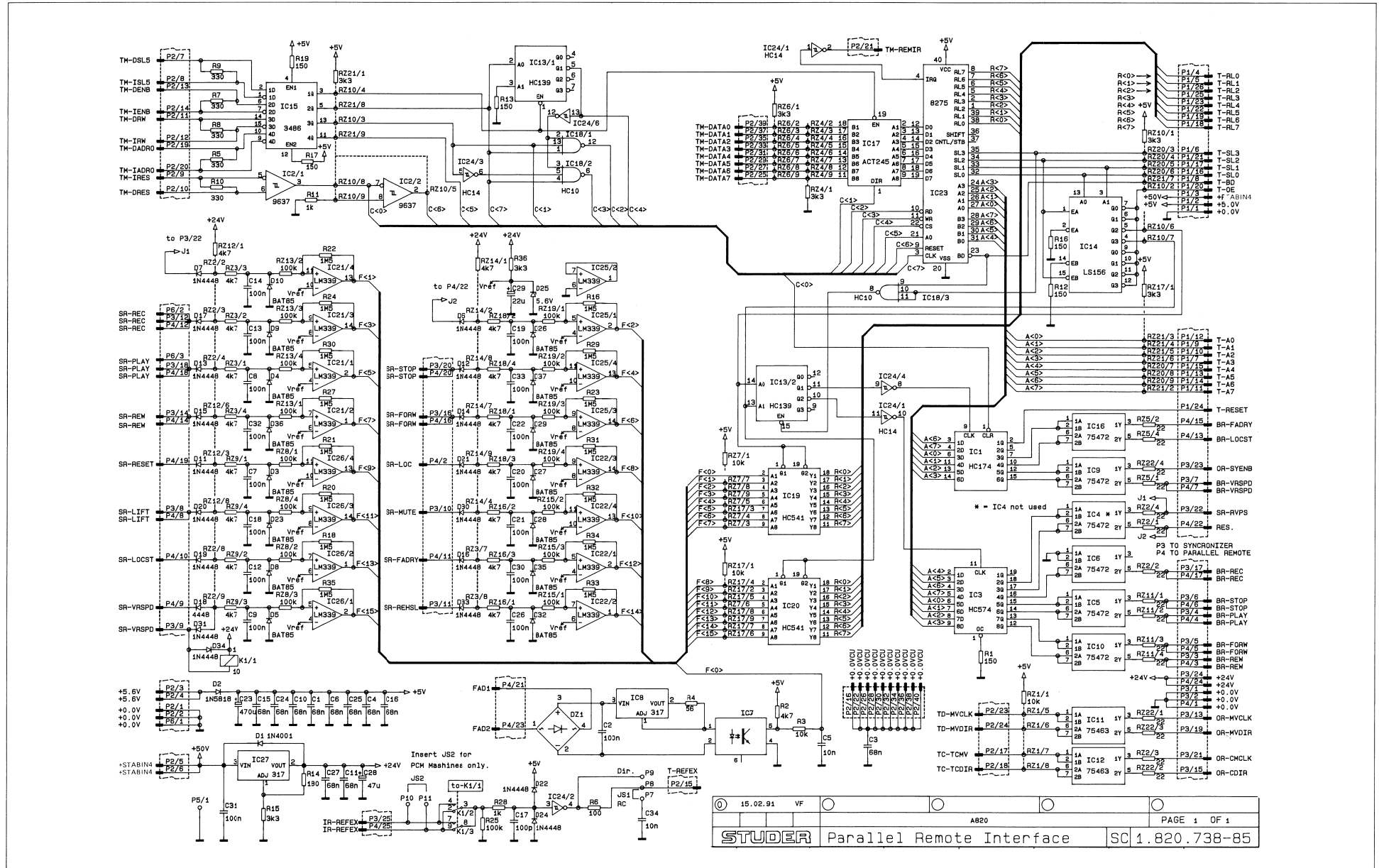


SERIAL REMOTE INTERFACE 1.820.729.25



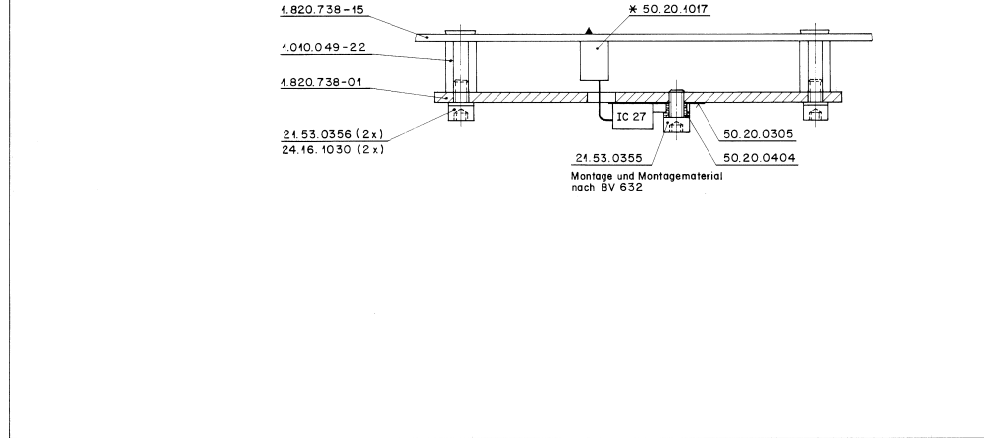
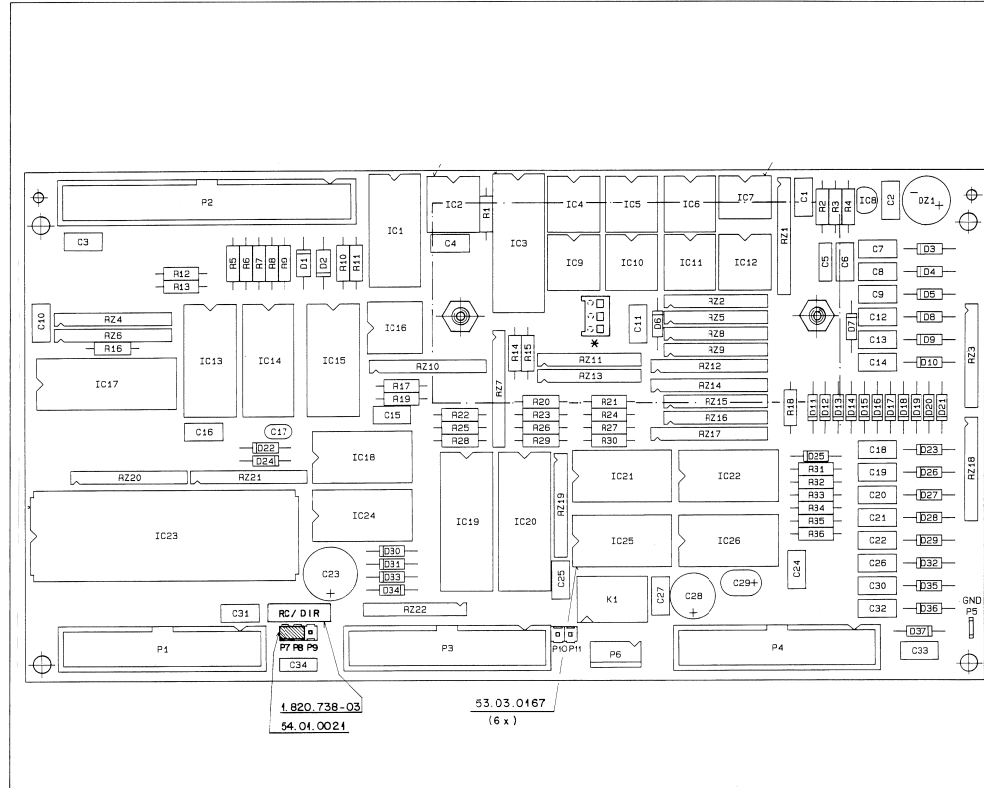
Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
20	C.....1	59.40.0683	68nF	10%, PETP
20	C.....2	59.40.0683	68nF	10%, PETP
20	C.....3	59.45.2220	22pF	5%, CER
21	C.....3	59.34.2330	33pF	5%, CER
20	C.....4	59.45.2220	22pF	5%, CER
21	C.....4	59.34.2330	33pF	5%, CER
20	C.....5	59.40.0683	68nF	10%, PETP
20	C.....6	59.22.3221	220uF	20%, 10V EL
20	C.....7	59.40.0683	68nF	10%, PETP
25	C.....8	59.03.2472	4.7nF	10%, PETP
20	D.....1	50.04.0125	1M448	Fc,ITT,Ses,Ph
20	D.....2	50.04.0125	1M448	Fc,ITT,Ses,Ph
20	D.....3	50.04.0125	1M448	Fc,ITT,Ses,Ph
20	D.....4	50.04.0125	1M448	Fc,ITT,Ses,Ph
20	D.....5	50.04.1108	5.6V Z	ITT,Ses
20	IC.....1	50.17.1574	74HC 574	... 74 HC 574 Ph,Mot,NS,RCA,To,TI
20	IC.....2	50.17.1138	74HC 138	... 74 HC 138 Mot,NS,Ph,RCA,SGS,TI
20	IC.....3	50.17.1086	74HC 86	... 74 HC 86 Mot,NS,Ph,RCA,SGS,TI
20	IC.....4	50.17.1574	74HC 574	... 74 HC 574 Ph,Mot,NS,RCA,To,TI
20	IC.....5	50.17.1541	74HC 541	... 74 HC 541 Ph,Mot,NS,RCA,To,TI
20	IC.....6	50.17.1573	74HC 573	... 74 HC 573 Ph,Mot,RCA,To,TI,SGS
20	IC.....7	50.14.0120	TBP28542N	TI
20	IC.....7	1.820.999.20		Software 13/85
21	IC.....7	1.820.999.21		Software 50/86
22	IC.....7	1.820.999.22		Software 29/87
23	IC.....7	1.820.999.23		Software 41/87
20	IC.....8	50.16.0107	MC6803 P-1	HD 6803P-1 Mot,HI
20	IC.....9	50.15.0115	SM75176 AP	DS 3695 N TI,NS
20	P.....1	54.14.2003	connector	26 contacts, flat cable
20	P.....2	54.14.2001	connector	10 contacts, flat cable
20	R.....1	57.11.3103	10 kOhm	2%
20	R.....2	57.11.3102	1 kOhm	2%
25	R.....2	00.00.0000	not used	replaced by C8
20	R.....4	57.11.3103	10 kOhm	2%
20	R.....5	57.11.3332	3.3 kOhm	2%
20	RZ.....1	57.88.4332	8*3.3kOhm	Network, 8 * 3.3 kOhm, 5%, single line
20	RZ.....2	57.88.4332	8*3.3kOhm	Network, 8 * 3.3 kOhm, 5%, single line
20	RZ.....3	57.88.4332	8*3.3kOhm	Network, 8 * 3.3 kOhm, 5%, single line
20	Y.....1	89.01.0553		4.9152 MHz, TD 18
21	Y.....1	89.01.0560		4.9152 MHz, +- 100 ppm
(21)	86.12.08			Improved quartz accuracy, extension of autocalcator key board.
(22)	87.07.13			Software 29/87 (wrong stroke).
(23)	87.10.08			Software 41/87.
(24)	89.04.06			Additional connections to Parallel Remote, SR-PLAY, SR-REC for improved progress time.
(25)	89.09.25			Improved noise suppression on differential line.
El=Electrolytic, PETP=Polyester, CER=Ceramic, SAL=Solid Aluminium				
MANUFACTURERS: Fe=Ferranti, Hi=Hitachi, Is=Intersil, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation, SGS=SGS/Ates, St=Studer, TI=Texas Instruments, To=Toshiba				
1.820.729.00	SERIAL REMOTE INTERFACE	SU85/03/2100		
1.820.729.00	SERIAL REMOTE INTERFACE	SU85/03/2120		
1.820.729.00	SERIAL REMOTE INTERFACE	B086/12/0821		
1.820.729.00	SERIAL REMOTE INTERFACE	B087/07/1322		
1.820.729.00	SERIAL REMOTE INTERFACE	B087/10/0823		
1.820.729.00	SERIAL REMOTE INTERFACE	VF89/04/0624		
1.820.729.00	SERIAL REMOTE INTERFACE	VF89/09/2525		

PARALLEL REMOTE INTERFACE 1.820.738.85



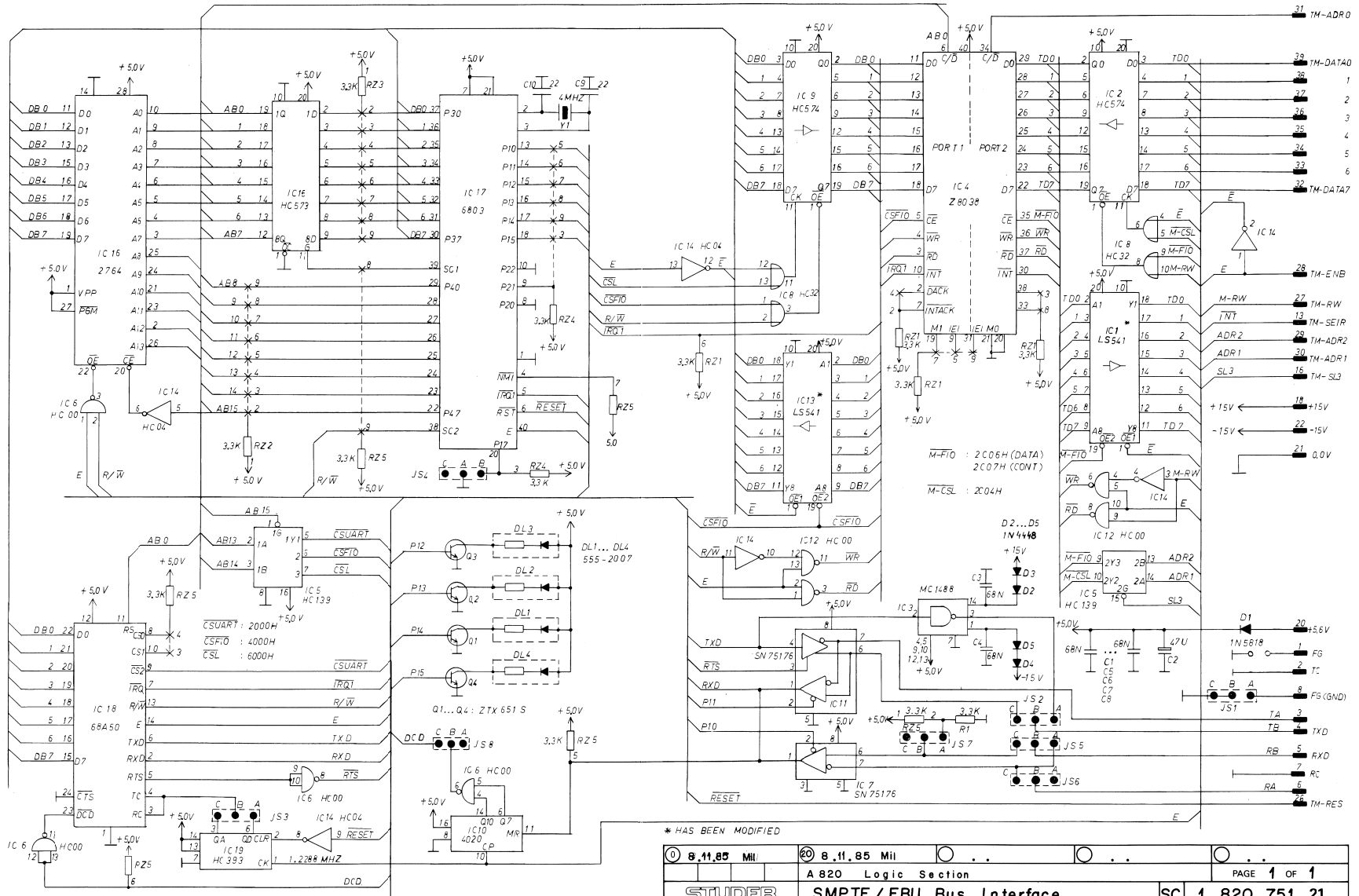


PARALLEL REMOTE INTERFACE 1.820.738.85



Ad	..POS.	..REF.No.	DESCRIPTION	MANUFACTURER	Ad	..POS.	..REF.No.	DESCRIPTION	MANUFACTURER	
C...	1	59.40.0683	68 nF	-10%, PETP	IC...	25	50.11.0104	LM 339 AN	339 A,UA 339	
C...	2	59.40.0104	0.1 uF	-10%, PETP	IC...	26	50.11.0104	LM 339 AN	339 A,UA 339	
C...	3	59.40.0683	68 nF	-10%, PETP	IC...	27	50.10.0104	LM 317 T	LM 317 SP	
C...	4	59.40.0683	68 nF	-10%, PETP						
C...	5	59.40.0103	10 nF	-10%, PETP	K....	1	56.04.0197	24 V 2*U	125V/ 2 A, Ag/AU	
C...	6	59.40.0683	68 nF	-10%, PETP	P....	1	54.14.2003	Connector	26 contacts, flat cable	
C...	7	59.40.0104	0.1 uF	-10%, PETP	P....	2	54.14.2004	Connector	40 contacts, flat cable	
C...	8	59.40.0104	0.1 uF	-10%, PETP	P....	3	54.14.2003	Connector	26 contacts, flat cable	
C...	9	59.40.0104	0.1 uF	-10%, PETP	P....	4	54.14.2003	Connector	26 contacts, flat cable	
C...	10	59.40.0683	68 nF	-10%, PETP	P....	5	54.02.0320	Connector	1 contact, 2.8*0.8, Flat	
C...	11	59.40.0683	68 nF	-10%, PETP	P....	6	54.99.0213	Connector	4 contacts, straight, AMP	
C...	12	59.40.0104	0.1 uF	-10%, PETP	P....	7	54.01.0020	Connector	1 contact, .63* .63, H=5.8/3.4	
C...	13	59.40.0104	0.1 uF	-10%, PETP	P....	8	54.01.0020	Connector	1 contact, .63* .63, H=5.8/3.4	
C...	14	59.40.0104	0.1 uF	-10%, PETP	P....	9	54.01.0020	Connector	1 contact, .63* .63, H=5.8/3.4	
C...	15	59.40.0683	68 nF	-10%, PETP	P....	10	54.01.0020	Connector	1 contact, .63* .63, H=5.8/3.4	
C...	16	59.40.0683	68 nF	-10%, PETP						
C...	17	59.45.4101	100 pF	5%, CER	P....	11	54.01.0020	Connector	1 contact, .63* .63, H=5.8/3.4	
C...	18	59.40.0104	0.1 uF	-10%, PETP	R....	1	57.11.3151	150 Ohm	2%	
C...	19	59.40.0104	0.1 uF	-10%, PETP	R....	2	57.11.3472	4.7 kOhm	2%	
C...	20	59.40.0104	0.1 uF	-10%, PETP	R....	3	57.11.3103	10 kOhm	2%	
C...	21	59.40.0104	0.1 uF	-10%, PETP	R....	4	57.11.3560	56 Ohm	2%	
C...	22	59.40.0104	0.1 uF	-10%, PETP	R....	5	57.11.3331	330 Ohm	2%	
C...	23	59.22.3471	470 uF	-20%, 10V, EL	R....	6	57.11.3101	100 Ohm	2%	
C...	24	59.40.0103	10 nF	-10%, PETP	R....	7	57.11.3331	330 Ohm	2%	
C...	25	59.40.0683	68 nF	-10%, PETP	R....	8	57.11.3331	330 Ohm	2%	
C...	26	59.40.0104	0.1 uF	-10%, PETP	R....	9	57.11.3331	330 Ohm	2%	
C...	27	59.40.0683	68 nF	-10%, PETP	R....	10	57.11.3331	330 Ohm	2%	
C...	28	59.41.6470	47 uF	-20%, 40V, EL	R....	11	57.11.3102	1 kOhm	2%	
C...	29	59.42.1220	22 uF	-20%, 10V, SAL	R....	12	57.11.3151	150 Ohm	2%	
C...	30	59.40.0104	0.1 uF	-10%, PETP	R....	13	57.11.3151	150 Ohm	2%	
C...	31	59.40.0104	0.1 uF	-10%, PETP	R....	14	57.11.3181	180 Ohm	1%	
C...	32	59.40.0104	0.1 uF	-10%, PETP	R....	15	57.11.3331	330 Ohm	2%	
C...	33	59.40.0104	0.1 uF	-10%, PETP	R....	16	57.11.3151	150 Ohm	2%	
C...	34	59.40.0103	10 nF	-10%, PETP	R....	17	57.11.3151	150 Ohm	2%	
D...	1	50.04.0122	IN 4001	IN4004						
D...	2	50.04.0512	IN 5818	IN 5819	Mot					
D...	3	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	21	57.11.5155	1.5 Mohm	5%
D...	4	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	22	57.11.5155	1.5 Mohm	5%
D...	5	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	23	57.11.5155	1.5 Mohm	5%
D...	6	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	24	57.11.5155	1.5 Mohm	5%
D...	7	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	25	57.11.3104	100 kOhm	2%
D...	8	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	26	57.11.5155	1.5 Mohm	5%
D...	9	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	27	57.11.5155	1.5 Mohm	5%
D...	10	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	R....	28	57.11.3102	1 kOhm	2%
D...	11	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	29	57.11.5155	1.5 Mohm	5%
D...	12	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	30	57.11.5155	1.5 Mohm	5%
D...	13	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	31	57.11.5155	1.5 Mohm	5%
D...	14	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	32	57.11.5155	1.5 Mohm	5%
D...	15	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	33	57.11.5155	1.5 Mohm	5%
D...	16	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	34	57.11.5155	1.5 Mohm	5%
D...	17	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	35	57.11.5155	1.5 Mohm	5%
D...	18	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		R....	36	57.11.3332	3.3 kOhm	2%
D...	19	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	1	57.88.4103	Network, 8 * 10 kOhm, 2%, single line	
D...	20	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	2	57.88.2220	Network, 4 * 22 Ohm, 2%, single line	
D...	21	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	3	57.88.2472	Network, 4 * 4.7 kOhm, 2%, single line	
D...	22	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	4	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
D...	23	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	5	57.88.2220	Network, 4 * 22 Ohm, 2%, single line	
D...	24	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	6	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
D...	25	50.04.1108	6.6 V Z	E2X63 C 5V6, BZX55 C 5V6, ZPD 5.6	ITT,Ses	RZ...	7	57.88.4103	Network, 8 * 10 kOhm, 2%, single line	
D...	26	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	8	57.88.2104	Network, 4 * 100 kOhm, 2%, single line	
D...	27	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	9	57.88.2472	Network, 4 * 4.7 kOhm, 2%, single line	
D...	28	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	10	57.88.2472	Network, 4 * 4.7 kOhm, 2%, single line	
D...	29	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	11	57.88.2104	Network, 4 * 100 kOhm, 2%, single line	
D...	30	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	12	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
D...	31	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	13	57.88.2220	Network, 4 * 22 Ohm, 2%, single line	
D...	32	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	14	57.88.4472	Network, 8 * 4.7 kOhm, 2%, single line	
D...	33	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	15	57.88.2104	Network, 4 * 100 kOhm, 2%, single line	
D...	34	50.04.0125	IN 4448	Fc,ITT,Ph,Ses		RZ...	16	57.88.2472	Network, 4 * 4.7 kOhm, 2%, single line	
D...	35	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	17	57.88.4103	Network, 8 * 10 kOhm, 2%, single line	
D...	36	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	18	57.88.2472	Network, 4 * 4.7 kOhm, 2%, single line	
D...	37	50.04.0127	BAT 85	EAS 40-02	Ph,Sie	RZ...	19	57.88.2104	Network, 4 * 100 kOhm, 2%, single line	
DZ...	1	70.01.0223	B 250 C 800 S1		GI,Mot	RZ...	20	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
IC...	1	50.11.1174	74 HC 174	.. 74 HC 174 ..	Mot,NS,Ph,RCA,SGS,TI,To	RZ...	21	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
IC...	2	50.15.0114	uA9637ATC	uA9637ACP	Fc,TI	RZ...	22	57.88.2220	Network, 4 * 22 Ohm, 2%, single line	
IC...	3	50.17.1574	74 HC 574	.. 74 HC 574 ..	Mot,NS,Ph,RCA,SGS,TI,To					
IC...	4	0 not used			TI					
IC...	5	50.05.0227	SN 75462P		TI					
IC...	6	50.05.0227	SN 75462P		TI					
IC...	7	50.59.0126	4N 26		TI					
IC...	8	50.10.0108	LM 317 LZ		NS,Mot					
IC...	9	50.05.0227	SN 75462P		TI					
IC...	10	50.05.0227	SN 75462P		TI					
IC...	11	50.05.0203	SN 75463P		TI					
IC...	12	50.05.0203	SN 75463P		TI					
IC...	13	50.11.1139	74 HC 139	.. 74 HC 139 ..	Mot,NS,Ph,RCA,SGS,TI,To					
IC...	14	50.06.0156	74 LS 156	SN 74 LS 156 N	Fc,NS,TI					
IC...	15	50.15.0104	MC 3486 P	DS 3486 N	Mot,NS					
IC...	16	50.05.0227	SN 75462P		TI					
IC...	17	50.17.7245	74ACT 245	.. 74ACT 245 ..	Ph,Sie,TF					
IC...	18	50.17.1010	74 HC 10	.. 74 HC 10 ..	Mot,NS,Ph,RCA,SGS,TI,To					
IC...	19	50.17.1541	74 HC 541	.. 74 HC 541 ..	Mot,NS,Ph,RCA,SGS,TI,To					
IC...	20	50.17.1541	74 HC 541	.. 74 HC 541 ..	Mot,NS,Ph,RCA,SGS,TI,To					
IC...	21	50.11.0104	LM 339 AN	339 A,UA 339	Fc,Mot,NS,To					
IC...	22	50.11.0104	LM 339 AN	339 A,UA 339	Fc,Mot,NS,To					
IC...	23	50.16.0111	IP 8279-5	MEL 8279 P-5	It,Mi					
IC...	24	50.17.1014	74 HC 14	.. 74 HC 14 ..	Mot,NS,Ph,RCA,TI,To					

SMPTE / EBU BUS INTERFACE 1.820.751.21

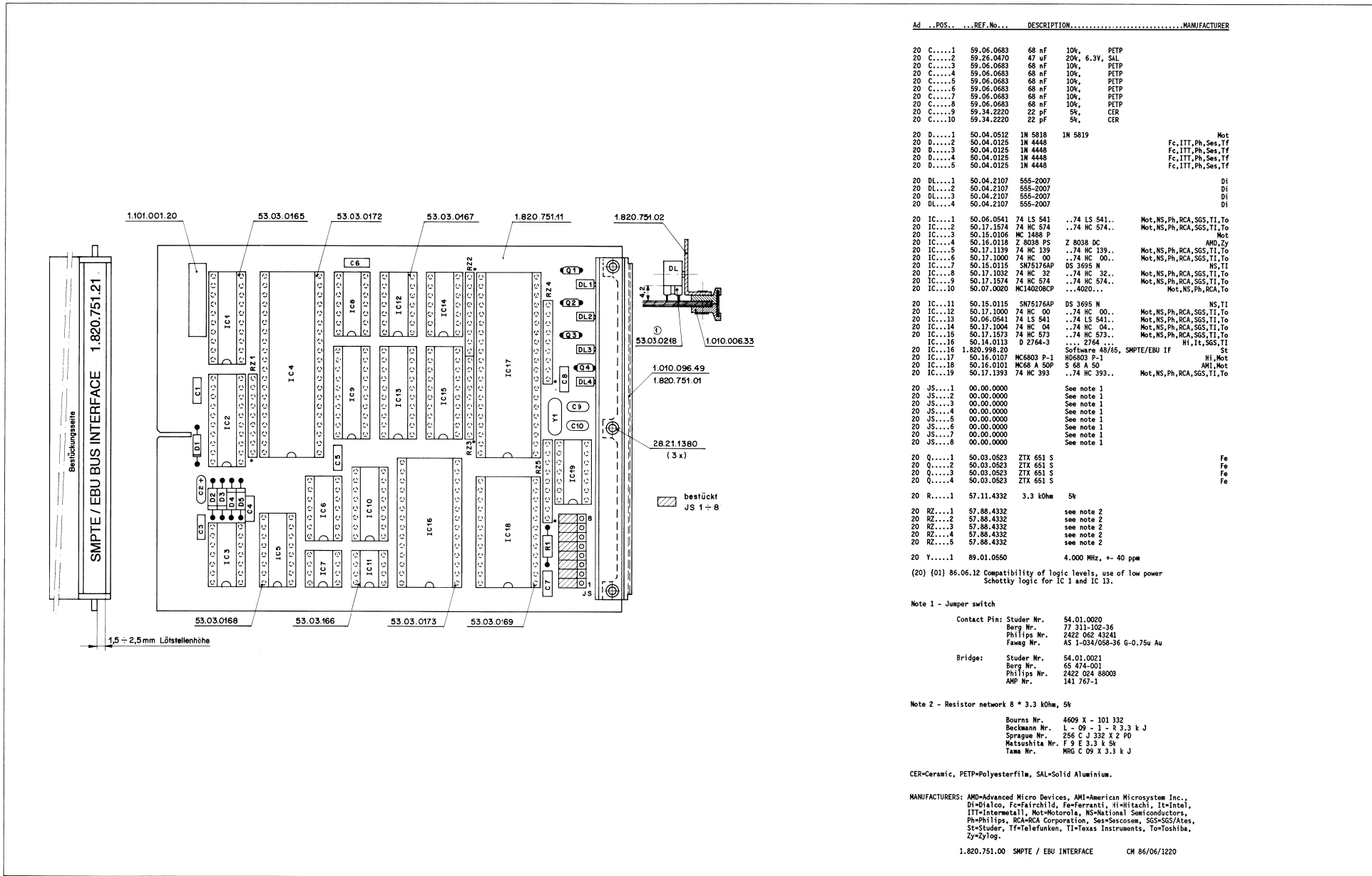


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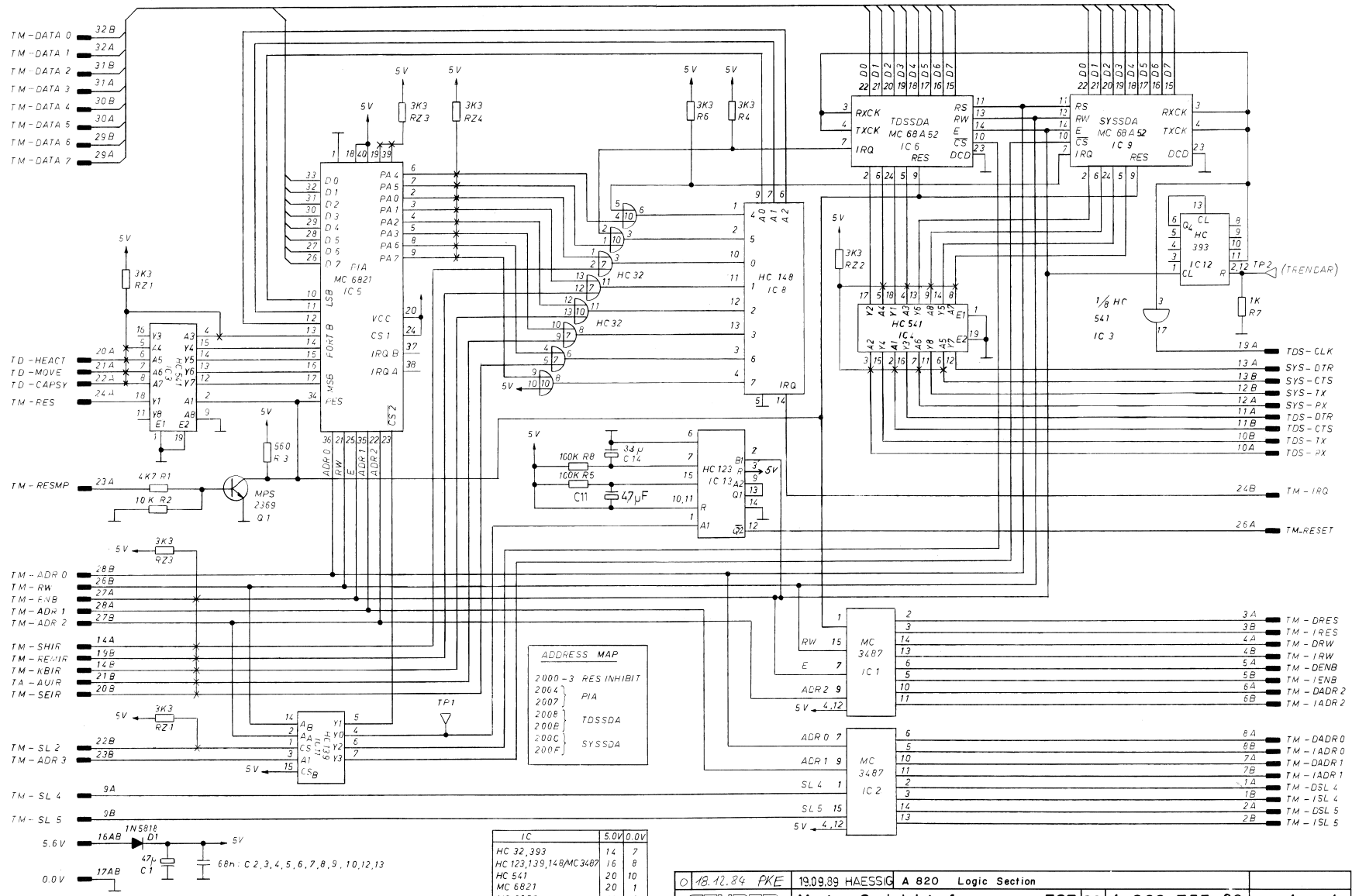
① 8.11.85 Mil	② 8.11.85 Mil	③ . . .	④ . . .
A 820 Logic Section			PAGE 1 OF 1
STUDER SMPTE / EBU Bus Interface		SC 1.820.751.21	



SMPT E / EBU BUS INTERFACE 1.820.751.21

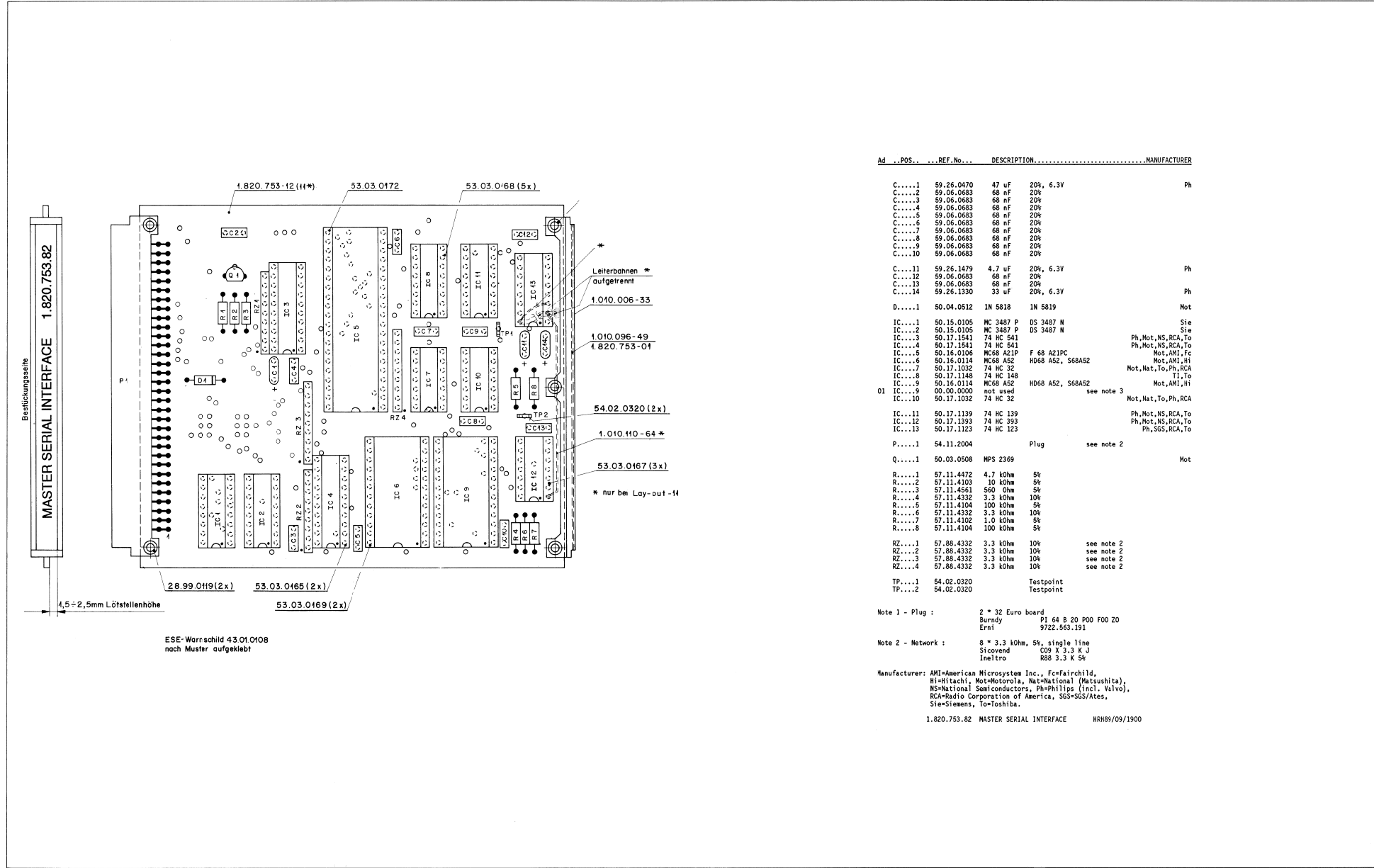


MASTER SERIAL INTERFACE 1.820.753.82





MASTER SERIAL INTERFACE 1.820.753.82



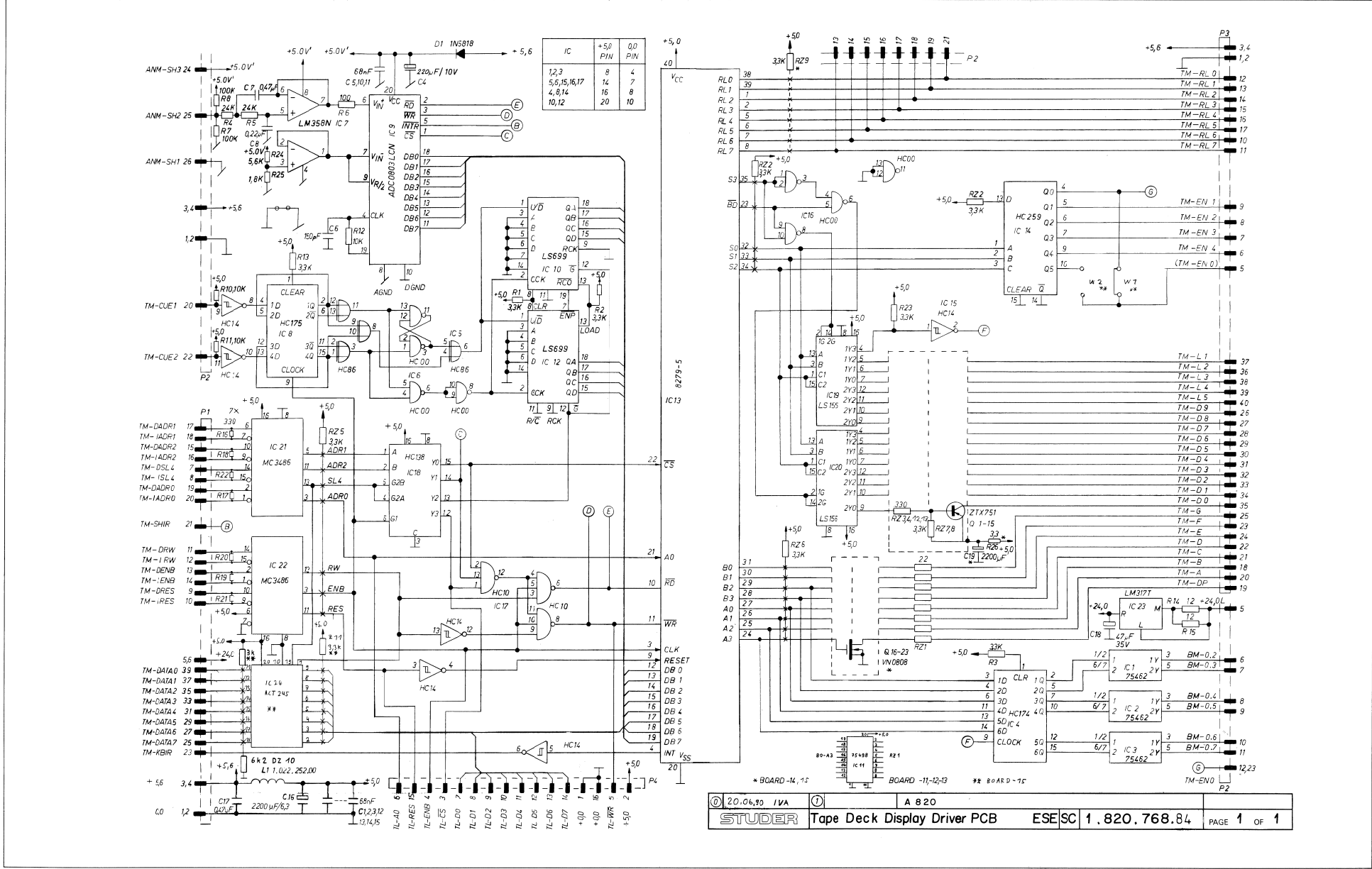
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C....1	59.26.0470	47 uF	20%, 6.3V	Ph
C....2	59.06.0683	68 nF	20%	
C....3	59.06.0683	68 nF	20%	
C....4	59.06.0683	68 nF	20%	
C....5	59.06.0683	68 nF	20%	
C....6	59.06.0683	68 nF	20%	
C....7	59.06.0683	68 nF	20%	
C....8	59.06.0683	68 nF	20%	
C....9	59.06.0683	68 nF	20%	
C....10	59.06.0683	68 nF	20%	
C....11	59.26.1479	4.7 uF	20%, 6.3V	Ph
C....12	59.06.0683	68 nF	20%	
C....13	59.06.0683	68 nF	20%	
C....14	59.26.1330	33 uF	20%, 6.3V	Ph
D....1	50.04.0512	1N 5818	1N 5819	Mot
IC....1	50.15.0105	MC 3487 P	DS 3487 N	Sie
IC....2	50.15.0105	MC 3487 P	DS 3487 N	Sie
IC....3	50.17.1541	74 HC 541		Ph,Mot,NS,RCA,To
IC....4	50.17.1541	74 HC 541		Ph,Mot,NS,RCA,To
IC....5	50.16.0106	MC68 A21P	F 68 A21PC	Mot,AMI,Hi
IC....6	50.16.0114	MC68 A52	HD68 A52, S68A52	Mot,AMI,Hi
IC....7	50.17.1032	74 HC 32		Mot,AMI,Hi
IC....8	50.17.1148	74 HC 148		Hi,To
IC....9	50.16.0114	MC68 A52	HD68 A52, S68A52	Mot,AMI,Hi
01 IC....9	00.00.0000	not used		see note 3
IC....10	50.17.1032	74 HC 32		Mot,Nat,To,Ph,RCA
IC....11	50.17.1139	74 HC 139		Ph,Mot,NS,RCA,To
IC....12	50.17.1393	74 HC 393		Ph,Mot,NS,RCA,To
IC....13	50.17.1123	74 HC 123		Ph,SGS,RCA,To
P....1	54.11.2004	Plug		see note 2
Q....1	50.03.0508	MPS 2369		Mot
R....1	57.11.4472	4.7 kOhm	5%	
R....2	57.11.4103	10 kOhm	5%	
R....3	57.11.4561	560 Ohm	5%	
R....4	57.11.4332	3.3 kOhm	10%	
R....5	57.11.4104	100 kOhm	5%	
R....6	57.11.4332	3.3 kOhm	10%	
R....7	57.11.4102	1.0 kOhm	5%	
R....8	57.11.4104	100 kOhm	5%	
RZ....1	57.88.4332	3.3 kOhm	10%	see note 2
RZ....2	57.88.4332	3.3 kOhm	10%	see note 2
RZ....3	57.88.4332	3.3 kOhm	10%	see note 2
RZ....4	57.88.4332	3.3 kOhm	10%	see note 2
TP....1	54.02.0320	Testpoint		
TP....2	54.02.0320	Testpoint		

Note 1 - Plug : 2 * 32 Euro board
 Burndy P1 64 B 20 P00 F00 Z0
 Erni 9722.563.191

Note 2 - Network : 8 * 3.3 kOhm, 5%, single line
 Sicovent C09 X 3.3 K J
 Ineltro R88 3.3 K 5%

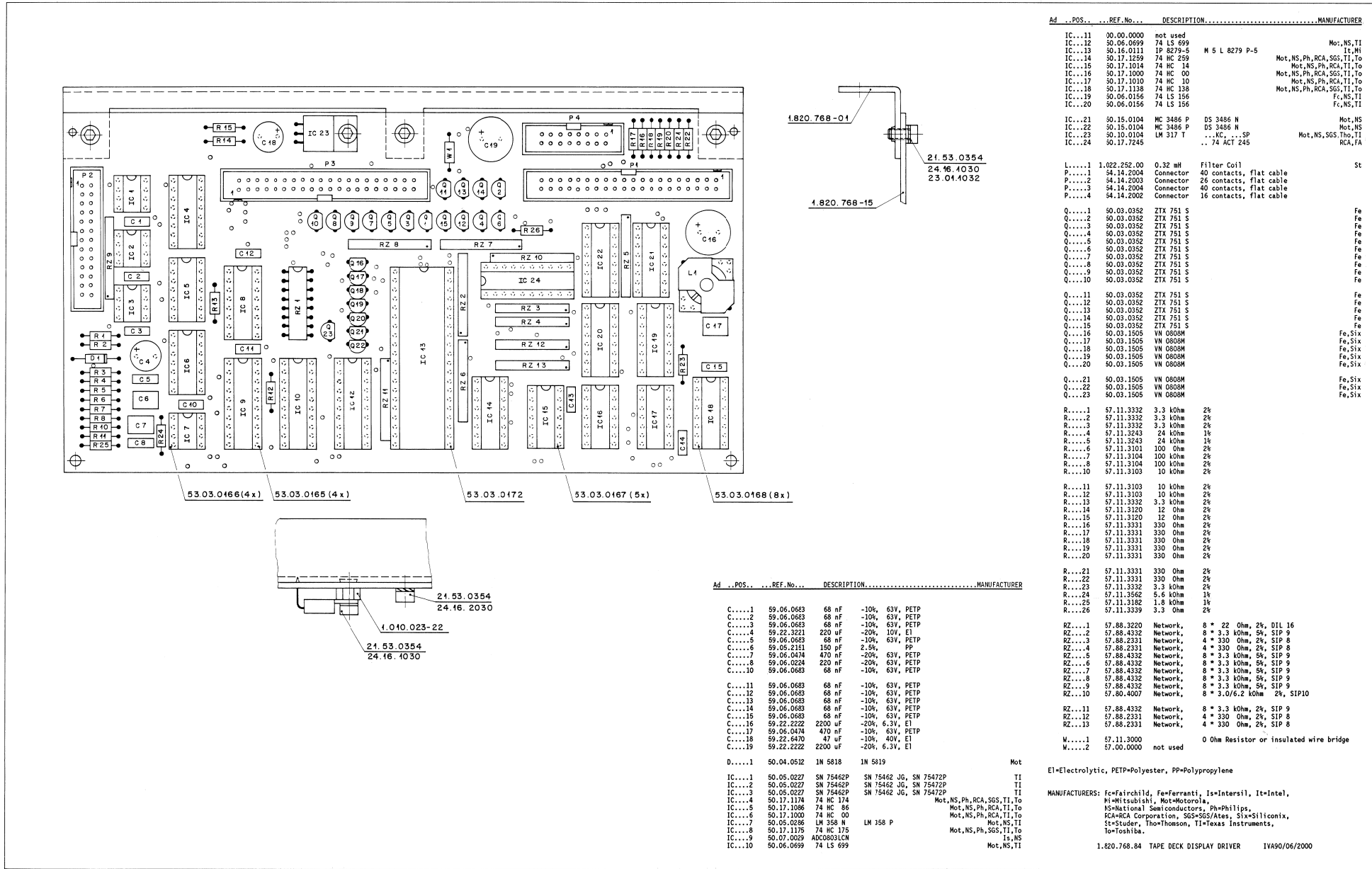
Manufacturer: AMI=American Microsystem Inc., Fc=Fairchild,
 Hi=Hitachi, Mot=Motorola, Nat=National (Matsushita),
 NS=National Semiconductors, Ph=Philips (incl. Valvo),
 RCA=Radio Corporation of America, SGS=SGS/Ates,
 Sie=Siemens, To=Toshiba.

TAPE DECK DISPLAY DRIVER 1.820.768.84

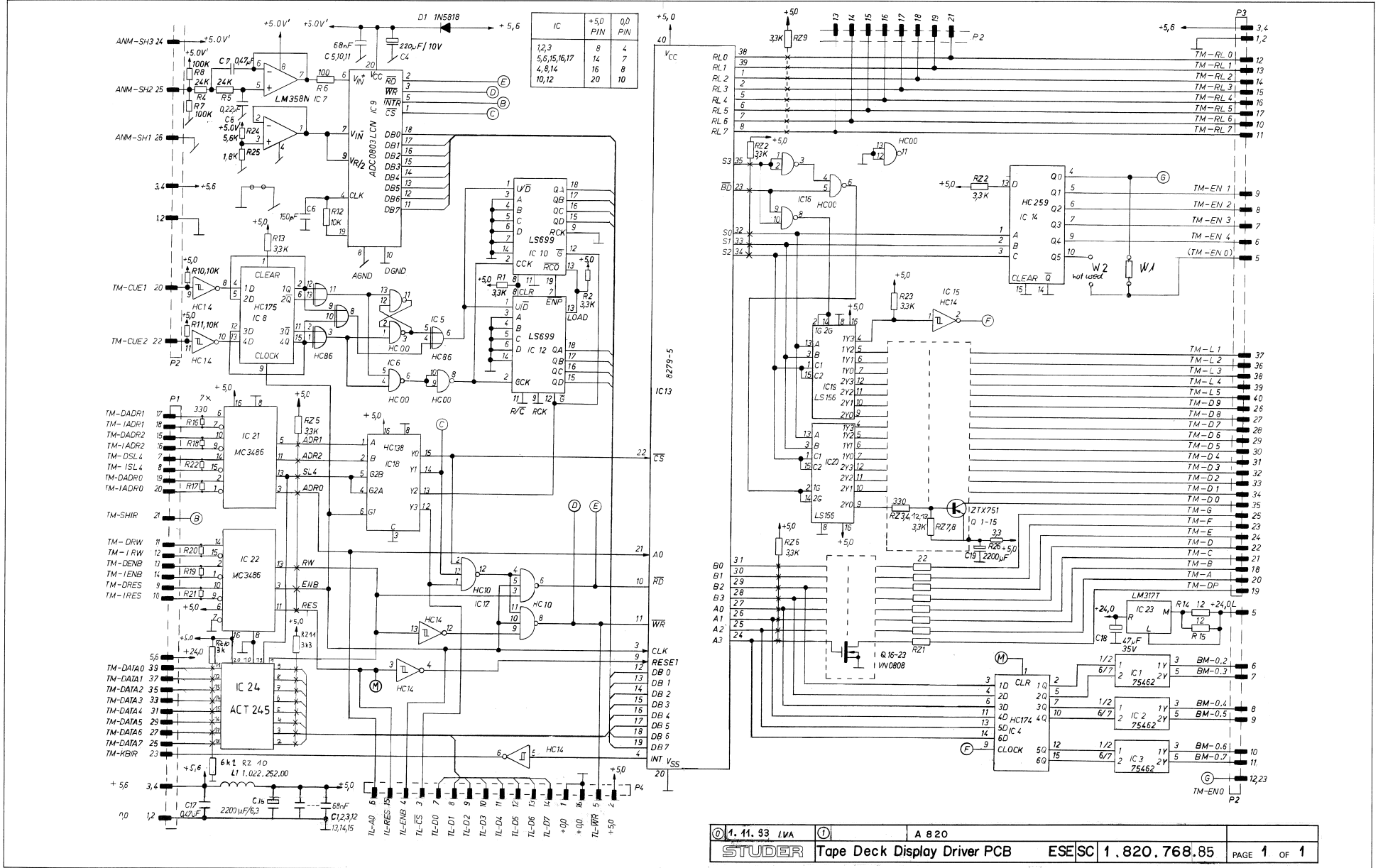




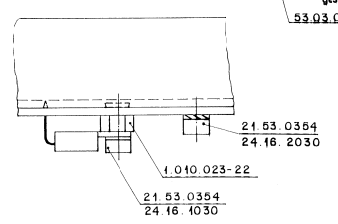
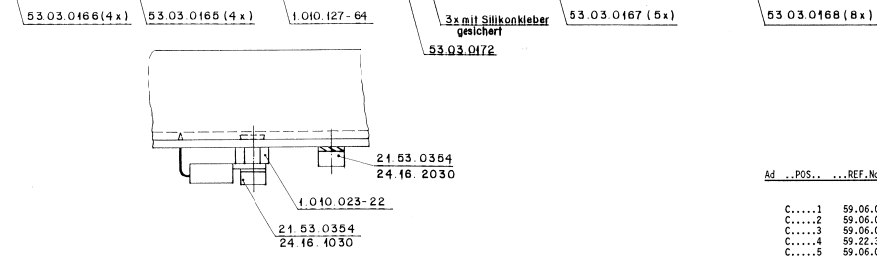
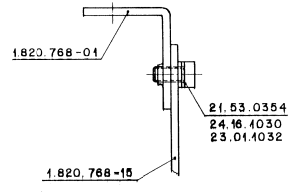
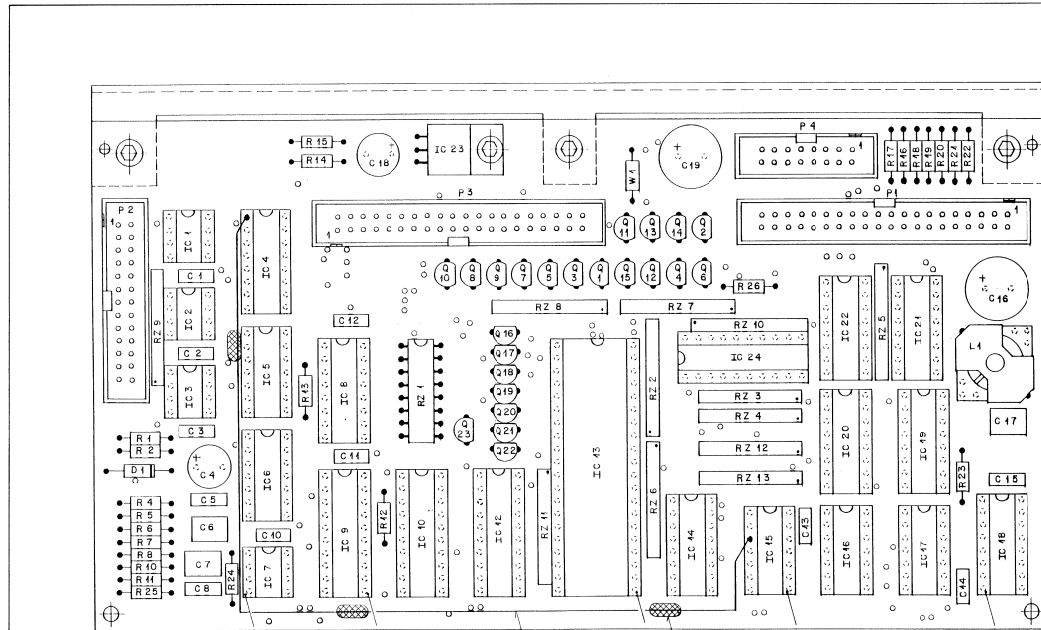
TAPE DECK DISPLAY DRIVER 1.820.768.84



TAPE DECK DISPLAY DRIVER 1.820.768.85



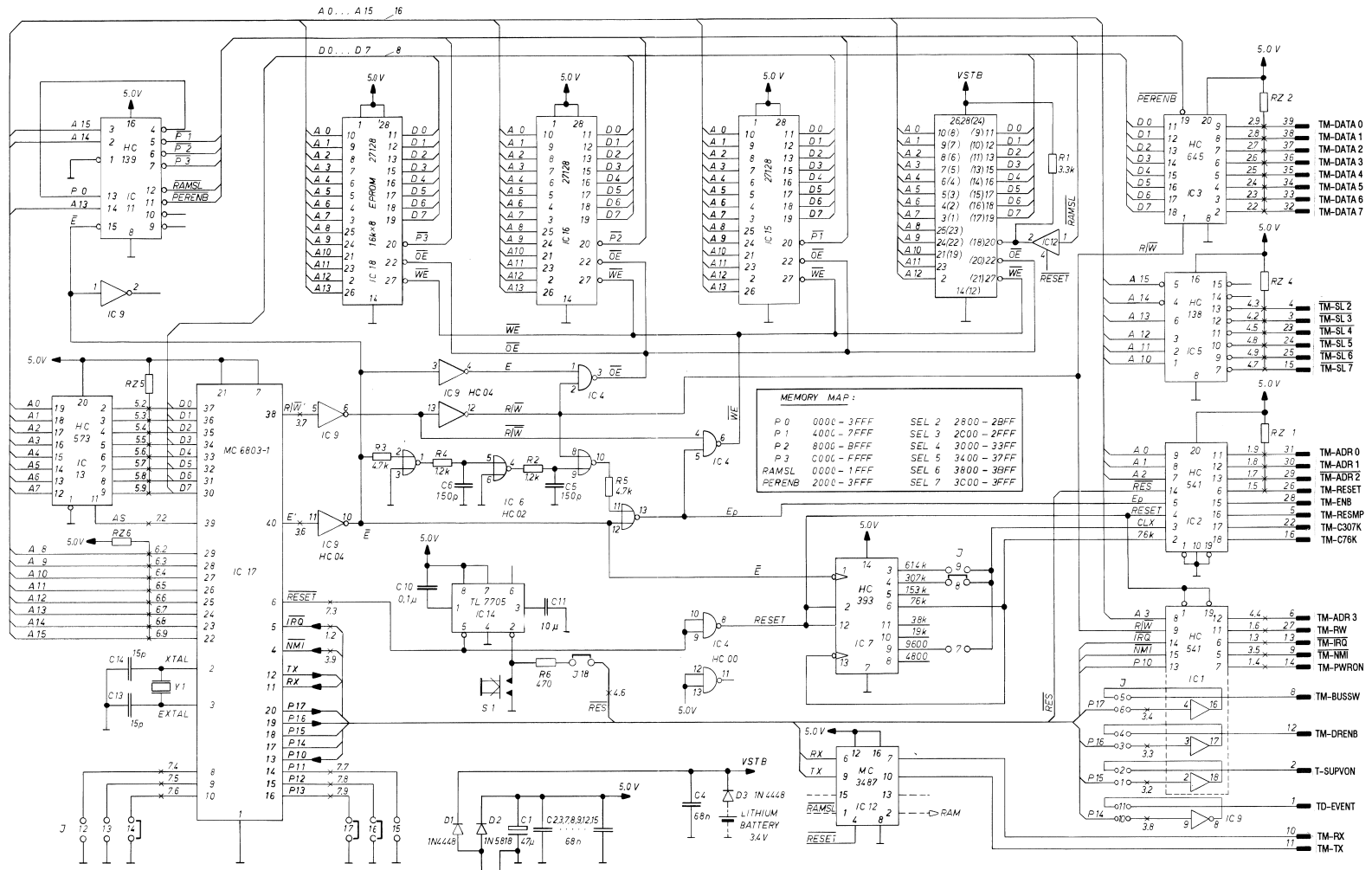
TAPE DECK DISPLAY DRIVER 1.820.768-85



Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
IC...11	00.00.0000	not used		
IC...12	50.06.0099	74 LS 699		Mot,NS,TI
IC...13	50.16.0111	1P 8279-5		It,Mi
IC...14	50.17.1259	74 HC 259		Mot,NS,Ph,RCA,SGS,TI,To
IC...15	50.17.1014	74 HC 14		Mot,NS,Ph,RCA,SGS,TI,To
IC...16	50.17.1000	74 HC 00		Mot,NS,Ph,RCA,SGS,TI,To
IC...17	50.17.1010	74 HC 10		Mot,NS,Ph,RCA,SGS,TI,To
IC...18	50.17.1138	74 HC 138		Mot,NS,Ph,RCA,SGS,TI,To
IC...19	50.06.0156	74 LS 156		Fc,NS,TI
IC...20	50.06.0156	74 LS 156		Fc,NS,TI
IC...21	50.15.0104	MC 3486 P	DS 3486 N	Mot,NS
IC...22	50.15.0104	MC 3486 P	DS 3486 N	Mot,NS
IC...23	50.10.0104	LM 317 T	...KC...SP	Mot,NS,SGS,Tho,TI
IC...24	50.17.7245		.. 74 ACT 245	RCA,FA
L...1	1.022.252.00	0.32 mH	Filter Coil	St
P...1	54.14.2004	Connector	40 contacts, flat cable	
P...2	54.14.2003	Connector	26 contacts, flat cable	
P...3	54.14.2004	Connector	40 contacts, flat cable	
P...4	54.14.2002	Connector	16 contacts, flat cable	
Q...1	50.03.0352	ZTX 751 S		Fe
Q...2	50.03.0352	ZTX 751 S		Fe
Q...3	50.03.0352	ZTX 751 S		Fe
Q...4	50.03.0352	ZTX 751 S		Fe
Q...5	50.03.0352	ZTX 751 S		Fe
Q...6	50.03.0352	ZTX 751 S		Fe
Q...7	50.03.0352	ZTX 751 S		Fe
Q...8	50.03.0352	ZTX 751 S		Fe
Q...9	50.03.0352	ZTX 751 S		Fe
Q...10	50.03.0352	ZTX 751 S		Fe
Q...11	50.03.0352	ZTX 751 S		Fe
Q...12	50.03.0352	ZTX 751 S		Fe
Q...13	50.03.0352	ZTX 751 S		Fe
Q...14	50.03.0352	ZTX 751 S		Fe
Q...15	50.03.0352	ZTX 751 S		Fe
Q...16	50.03.1505	VN 0808M		Fe,Six
Q...17	50.03.1505	VN 0808M		Fe,Six
Q...18	50.03.1505	VN 0808M		Fe,Six
Q...19	50.03.1505	VN 0808M		Fe,Six
Q...20	50.03.1505	VN 0808M		Fe,Six
Q...21	50.03.1505	VN 0808M		Fe,Six
Q...22	50.03.1505	VN 0808M		Fe,Six
Q...23	50.03.1505	VN 0808M		Fe,Six
R...1	57.11.3332	3.3 kOhm	2%	
R...2	57.11.3332	3.3 kOhm	2%	
R...3	00.00.0000	not used		
R...4	57.11.3243	24 kOhm	1%	
R...5	57.11.3243	24 kOhm	1%	
R...6	57.11.3103	100 kOhm	2%	
R...7	57.11.3104	100 kOhm	2%	
R...8	57.11.3104	100 kOhm	2%	
R...10	57.11.3103	10 kOhm	2%	
R...11	57.11.3103	10 kOhm	2%	
R...12	57.11.3103	10 kOhm	2%	
R...13	57.11.3332	3.3 kOhm	2%	
R...14	57.11.3120	12 Ohm	2%	
R...15	57.11.3120	12 Ohm	2%	
R...16	57.11.3331	330 Ohm	2%	
R...17	57.11.3331	330 Ohm	2%	
R...18	57.11.3331	330 Ohm	2%	
R...19	57.11.3331	330 Ohm	2%	
R...20	57.11.3331	330 Ohm	2%	
R...21	57.11.3331	330 Ohm	2%	
R...22	57.11.3331	330 Ohm	2%	
R...23	57.11.3332	3.3 kOhm	2%	
R...24	57.11.3562	5.6 kOhm	1%	
R...25	57.11.3182	1.8 kOhm	1%	
R...26	57.11.3339	3.3 kOhm	2%	
RZ...1	57.88.3220	Network	8 * 22 Ohm, 2%, DIL 16	
RZ...2	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...3	57.88.2331	Network	4 * 330 Ohm, 2%, SIP 8	
RZ...4	57.88.2331	Network	4 * 330 Ohm, 2%, SIP 8	
RZ...5	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...6	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...7	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...8	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...9	57.88.4332	Network	8 * 3.3 kOhm, 5%, SIP 9	
RZ...10	57.80.4007	Network	8 * 3.0/5.2 kOhm, 2%, SIP10	
RZ...11	57.88.4332	Network	8 * 3.3 kOhm, 2%, SIP 9	
RZ...12	57.88.2331	Network	4 * 330 Ohm, 2%, SIP 8	
RZ...13	57.88.2331	Network	4 * 330 Ohm, 2%, SIP 8	
W...1	57.11.3000		0 Ohm Resistor or insulated wire bridge	
W...2	00.00.0000	not used		
D...1	50.04.0512	1N 5818	1N 5819	Not
IC...1	50.05.0227	SN 75462P	SN 75462 JG, SN 75472P	TI
IC...2	50.05.0227	SN 75462P	SN 75462 JG, SN 75472P	TI
IC...3	50.05.0227	SN 75462P	SN 75462 JG, SN 75472P	TI
IC...4	50.17.1174	74 HC 174		Mot,NS,Ph,RCA,SGS,TI,To
IC...5	50.17.1085	74 HC 86		Mot,NS,Ph,RCA,SGS,TI,To
IC...6	50.17.1000	74 HC 00		Mot,NS,Ph,RCA,SGS,TI,To
IC...7	50.05.0285	LW 358 N		Not,NS,TI
IC...8	50.17.1175	74 HC 175		Mot,NS,Ph,RCA,SGS,TI,To
IC...9	50.07.0029	ADCC0031CN		Is,NS
IC...10	50.06.0099	74 LS 699		Not,NS,TI

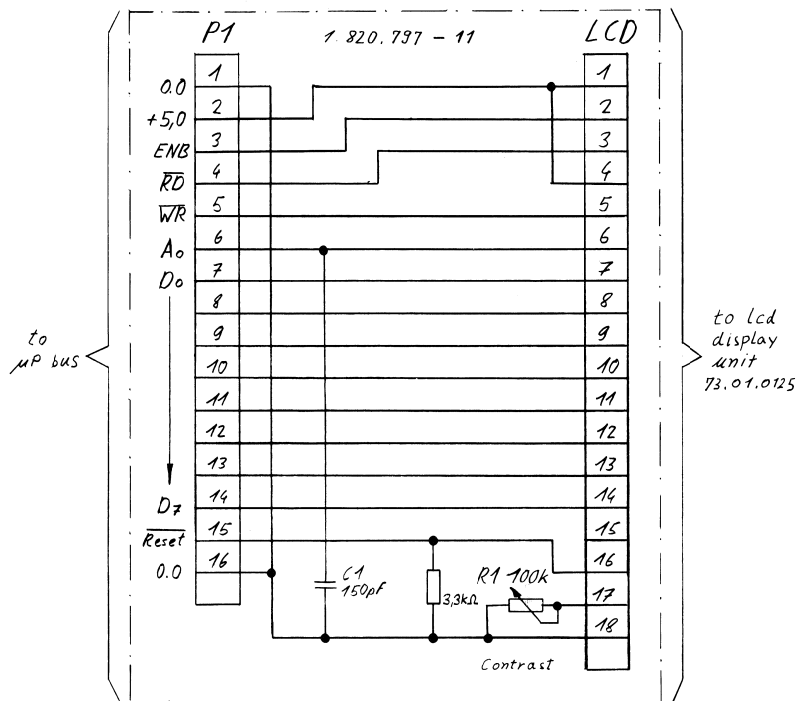
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MP-UNIT MASTER 1.820.786.33



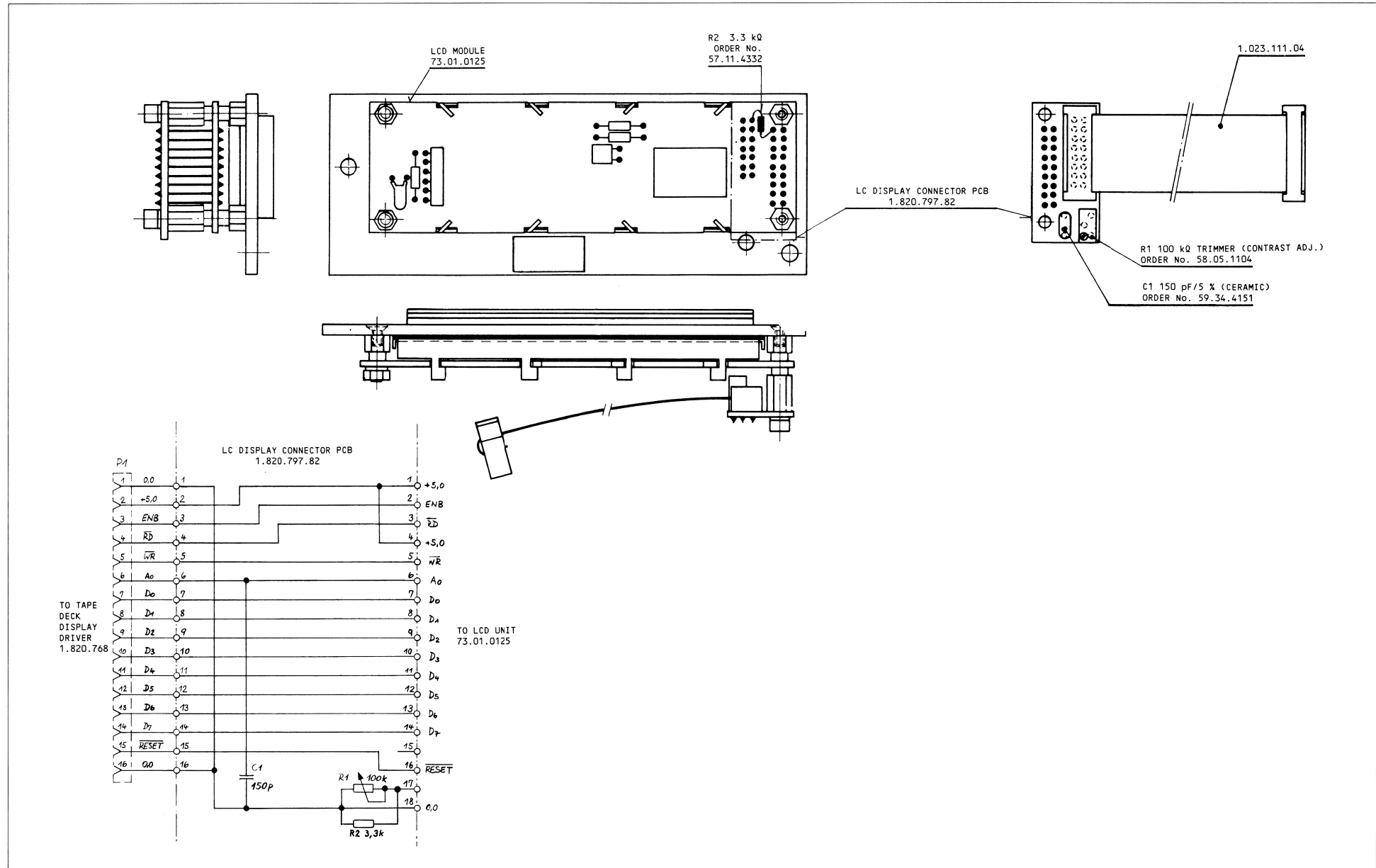
RAM-VERSION :
 28 PIN: IC 8 8kx8 HM 6264
 24 PIN: IC 10/12kx8 HM 6116

DISPLAY CONNECTION BOARD 1.820.233.83



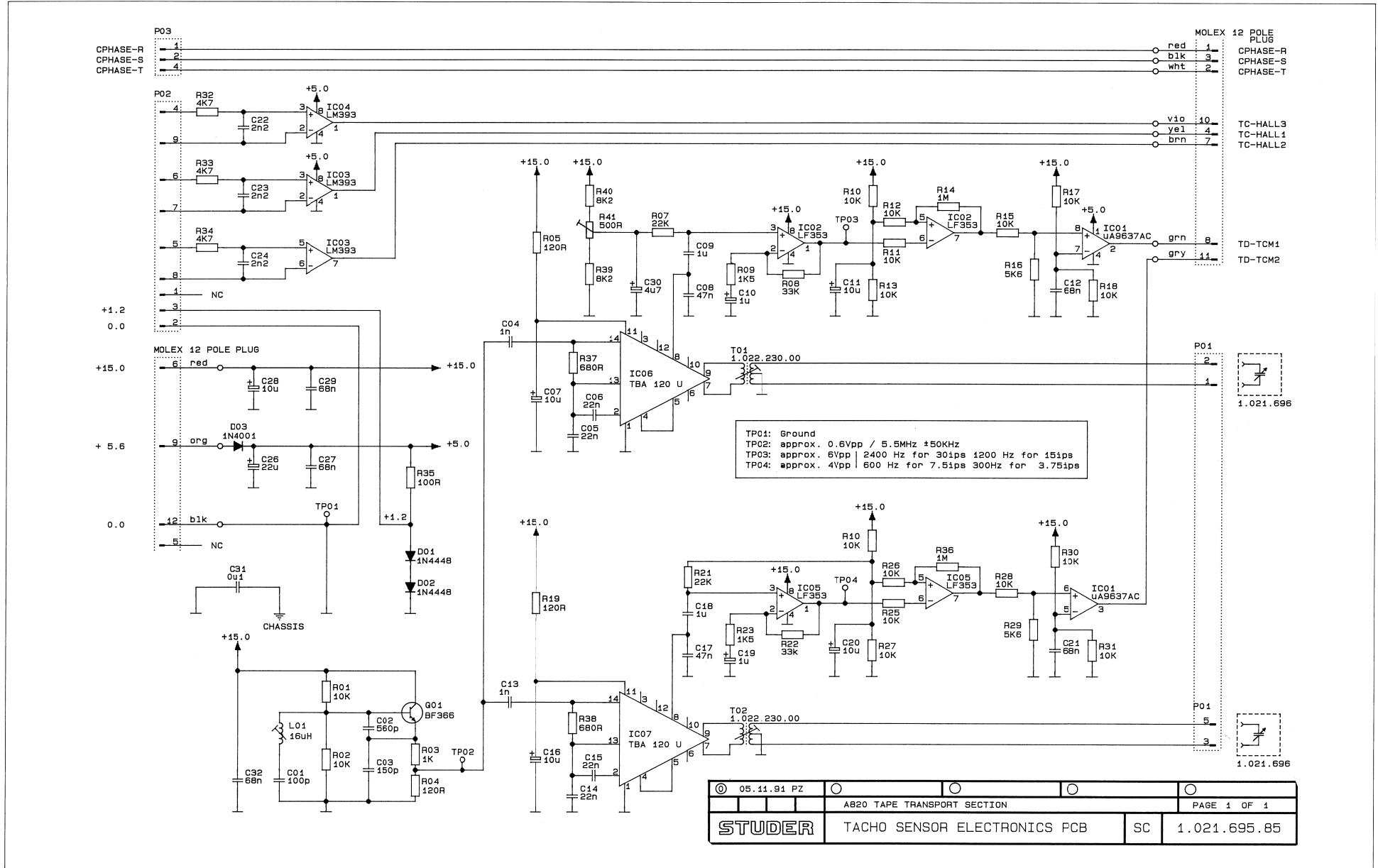
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STUDER	Display Connection Board	1.820.233.83	PAGE 1 OF 1

DISPLAY CONNECTION BOARD 1.820.233.83



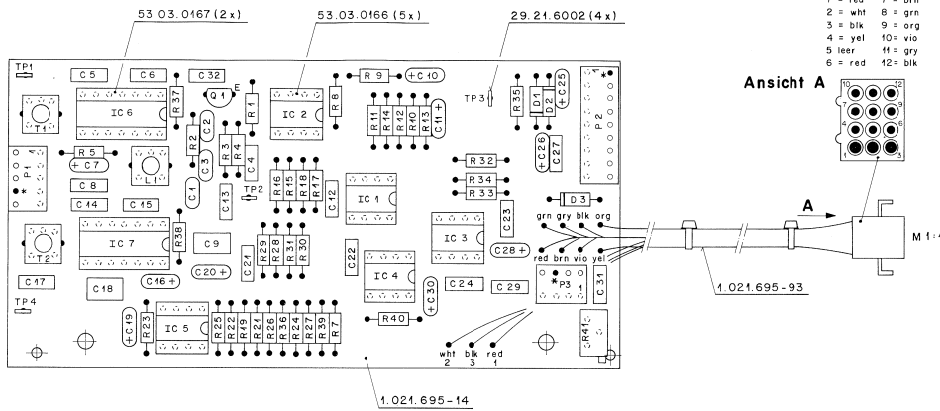


TACHO SENSOR ELECTRONICS PCB 1.021.695.85





TACHO SENSOR ELECTRONICS PCB 1.021.695.85



* Codierung: Schaltdraht 64.01.0108 ø 0,8 x 8 mm (muss 1mm vorstehen)

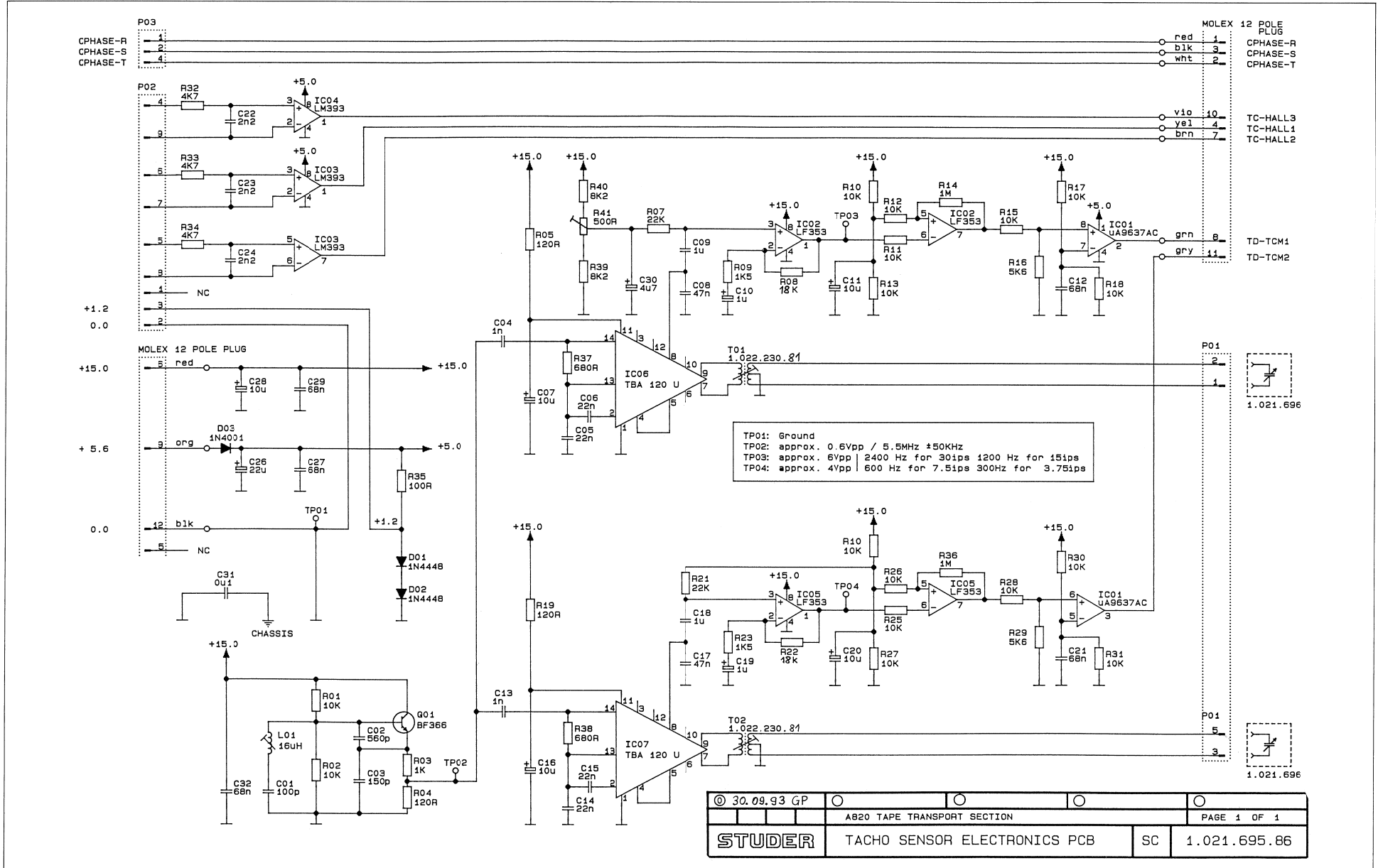
STUDER REGENSDORF ZÜRICH	Bearbeitung: TACHO SENSOR EL. BOARD ESE	Nummer: 1.021.695-85
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Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.34.4101	100 pF	5%, N750, CE	
C.....2	59.34.5561	500 pF	5%, 63V, CE	
C.....3	59.34.4151	150 pF	5%, N750, CE	
C.....4	59.06.0102	1 nF	10%, 63V, PETF	
C.....5	59.06.0223	22 nF	10%, 63V, PETF	
C.....6	59.06.0223	22 nF	10%, 63V, PETF	
C.....7	59.26.2100	10 uF	20%, 16V, EL	
C.....8	59.06.0473	47 nF	10%, 63V, PETF	
C.....9	59.06.0105	1 uF	10%, 63V, PETF	
C.....10	59.26.9109	1 uF	20%, 40V, EL	
C.....11	59.26.2100	10 uF	20%, 16V, EL	
C.....12	59.06.0683	68 nF	10%, 63V, PETF	
C.....13	59.06.0102	1 nF	10%, 63V, PETF	
C.....14	59.06.0223	22 nF	10%, 63V, PETF	
C.....15	59.06.0223	22 nF	10%, 63V, PETF	
C.....16	59.26.2100	10 uF	20%, 16V, EL	
C.....17	59.06.0473	47 nF	10%, 63V, PETF	
C.....18	59.06.0105	1 uF	10%, 63V, PETF	
C.....19	59.26.9109	1 uF	20%, 40V, EL	
C.....20	59.26.2100	10 uF	20%, 16V, EL	
C.....21	59.06.0683	68 nF	10%, 63V, PETF	
C.....22	59.06.0222	2.2 nF	10%, 63V, PETF	
C.....23	59.06.0222	2.2 nF	10%, 63V, PETF	
C.....24	59.06.0222	2.2 nF	10%, 63V, PETF	
C.....25	59.26.1220	22 uF	20%, 10V, EL	
C.....26	59.26.1220	22 uF	20%, 10V, EL	
C.....27	59.06.0683	68 nF	10%, 63V, PETF	
C.....28	59.26.2100	10 uF	20%, 16V, EL	
C.....29	59.06.0683	68 nF	10%, 63V, PETF	
C.....30	59.26.1479	4.7 uF	10%, 10V, EL	
C.....31	59.06.0104	100 nF	10%, 63V, PETF	
C.....32	59.06.0683	68 nF	10%, 63V, PETF	
J.....1	50.04.0125	1N 4448		Fc,ITT,Ph,Sie,Tf
J.....2	50.04.0125	1N 4448		Fc,ITT,Ph,Sie,Tf
J.....3	50.04.0122	1N 4001		Mot
			(to 4004)	
IC.....1	50.15.0114	UA9637ACP		9637 ATC
IC.....2	50.09.0101	LM 393 N		TL 072 CP
IC.....3	50.05.0283	LM 393 N		LM 393 P
IC.....4	50.05.0283	LM 393 N		LM 393 P
IC.....5	50.09.0101	LM 393 N		TL 072 CP
IC.....6	50.11.0151	TBA 120U		Ph,Sie
IC.....7	50.11.0151	TBA 120U		Ph,Sie
L.....1	1.022.222.00	16 mH		HF-C01L
P.....1	54.01.0286			see Note 2
P.....2	54.01.0217			see Note 3
P.....3	54.01.0287			see Note 4
P.....3	54.01.0241			see Note 4
Q.....1	50.03.0514	BF 366		Mot
R.....1	57.11.3103	10 kOhm	5%	
R.....2	57.11.3103	10 kOhm	5%	
R.....3	57.11.3102	1 kOhm	5%	
R.....4	57.11.3121	120 Ohm	5%	
R.....5	57.11.3121	120 Ohm	5%	
R.....6	00.00.0000			not used
R.....7	57.11.3223	22 kOhm	5%	
R.....8	57.11.3333	33 kOhm	5%	
R.....9	57.11.3152	1.5 kOhm	5%	
R.....10	57.11.3103	10 kOhm	5%	
R.....11	57.11.3103	10 kOhm	5%	
R.....12	57.11.3103	10 kOhm	5%	
R.....13	57.11.3103	10 kOhm	5%	
R.....14	57.11.3105	1 Mohm	5%	
R.....15	57.11.3103	10 kOhm	5%	
R.....16	57.11.3562	5.6 kOhm	5%	
R.....17	57.11.3103	10 kOhm	5%	
R.....18	57.11.3103	10 kOhm	5%	
R.....19	57.11.3121	120 Ohm	5%	
R.....20	00.00.0000			not used
R.....21	57.11.3223	22 kOhm	5%	
R.....22	57.11.3333	33 kOhm	5%	
R.....23	57.11.3152	1.5 kOhm	5%	
R.....24	57.11.3103	10 kOhm	5%	
R.....25	57.11.3103	10 kOhm	5%	
R.....26	57.11.3103	10 kOhm	5%	
R.....27	57.11.3103	10 kOhm	5%	
R.....28	57.11.3103	10 kOhm	5%	
R.....29	57.11.3562	5.6 kOhm	5%	
R.....30	57.11.3103	10 kOhm	5%	
R.....31	57.11.3103	10 kOhm	5%	
R.....32	57.11.3472	4.7 kOhm	5%	
R.....33	57.11.3472	4.7 kOhm	5%	
R.....34	57.11.3472	4.7 kOhm	5%	
R.....35	57.11.3101	100 Ohm	5%	
R.....36	57.11.3105	1 Mohm	5%	
R.....37	57.11.3681	680 Ohm	5%	
R.....38	57.11.3681	680 Ohm	5%	
R.....39	57.11.3822	8.2 kOhm	5%	
R.....40	57.11.3822	8.2 kOhm	5%	
R.....41	58.05.0501	500 Ohm	10%	see Note 1
T.....1	1.022.230.00			Diskriminator X-former
T.....2	1.022.230.00			Diskriminator X-former
TP....1	29.21.6002			Testpoint

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
TP....2	29.21.6002			Testpoint
TP....3	29.21.6002			Testpoint
TP....4	29.21.6002			Testpoint
Note 1:	Pot: Bourns, Nr.: 3296 Z-1-501			
	Sselectrol, Nr.: 64 Z 501 T 000			
	Murata, Nr.: Pot 3105 Z-1-501			
Note 2:	Plug: 5-Pin AMP, Nr.: --163.680-3			
Note 3:	Plug: 9-Pin AMP, Nr.: --163.680-7			
Note 4:	Plug: 3-Pin AMP, Nr.: --163.680-1			
CE=Ceramic, EL=Electrolytic, PETF=Polyester Film				
MANUFACTURER: Fc=Fairchild, GI=General Instruments, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Sie=Siemens, St=Studer, TI=Texas Instruments				
1.021.695.85 TACHO SENS. EL. BOARD				ZAN91/11/0500
END				

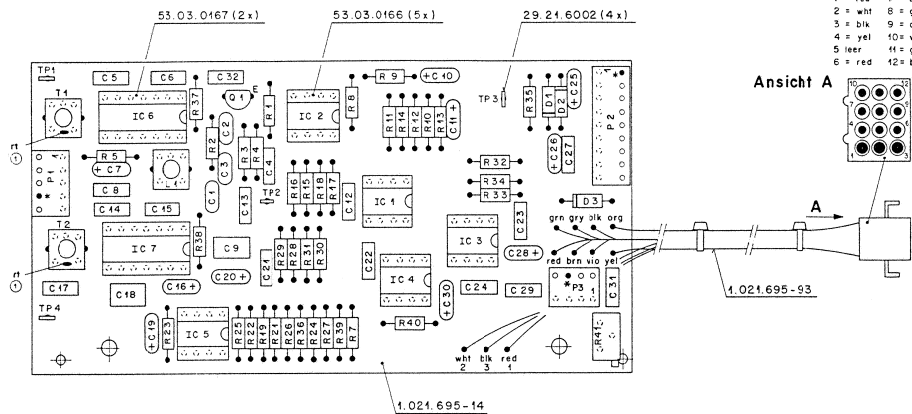


TACHO SENSOR ELECTRONICS PCB 1.021.695.86





TACHO SENSOR ELECTRONICS PCB 1.021.695.86



Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.34.4101	100p		CER 63V, 5%, N750
0	C 2	59.34.5561	500p		CER 63V, 5%, N1500
0	C 3	59.34.4151	150p		CER 63V, 5%, N750
0	C 4	59.06.0102	1n0		PETP, 63V, 10%, RM5
0	C 5	59.06.0223	22n		PETP, 63V, 10%, RM5
0	C 6	59.06.0223	22n		PETP, 63V, 10%, RM5
0	C 7	59.26.2100	10u		SAL, 20%, 16V
0	C 8	59.06.0473	47n		PETP, 63V, 10%, RM5
0	C 9	59.06.0105	1u0		PETP, 50V, 10%, RM5
0	C 10	59.26.9109	1u		SAL, 20%, 40V
0	C 11	59.26.2100	10u		SAL, 20%, 16V
0	C 12	59.06.0683	68n		PETP, 63V, 10%, RM5
0	C 13	59.06.0102	1n0		PETP, 63V, 10%, RM5
0	C 14	59.06.0223	22n		PETP, 63V, 10%, RM5
0	C 15	59.06.0223	22n		PETP, 63V, 10%, RM5
0	C 16	59.26.2100	10u		SAL, 20%, 16V
0	C 17	59.06.0473	47n		PETP, 63V, 10%, RM5
0	C 18	59.06.0105	1u0		PETP, 50V, 10%, RM5
0	C 19	59.26.9109	1u		SAL, 20%, 40V
0	C 20	59.26.2100	10u		SAL, 20%, 16V
0	C 21	59.06.0683	68n		PETP, 63V, 10%, RM5
0	C 22	59.06.0222	2n2		PETP, 63V, 10%, RM5
0	C 23	59.06.0222	2n2		PETP, 63V, 10%, RM5
0	C 24	59.06.0222	2n2		PETP, 63V, 10%, RM5
0	C 25	59.26.1220	22u		SAL, 20%, 10V
0	C 26	59.26.1220	22u		SAL, 20%, 10V
0	C 27	59.06.0683	68n		PETP, 63V, 10%, RM5
0	C 28	59.26.2100	10u		SAL, 20%, 16V
0	C 29	59.06.0683	68n		PETP, 63V, 10%, RM5
0	C 30	59.26.1479	4u7		SAL, 20%, 10V
0	C 31	59.06.0104	100n		PETP, 63V, 10%, RM5
0	C 32	59.06.0683	68n		PETP, 63V, 10%, RM5
0	D 1	50.04.0125	1N4448		75V, 150mA, 4ns, DO-35
0	D 2	50.04.0125	1N4448		75V, 150mA, 4ns, DO-35
0	D 3	50.04.0122	1N4001		1A, DO 41
0	IC 1	50.15.0114	9637		Dual diff Line Receiver
0	IC 2	50.09.0101	TL072		IC TL 072 CN
0	IC 3	50.05.0283	LM393		Dual Comparator
0	IC 4	50.05.0283	LM393		Dual Comparator
0	IC 5	50.09.0101	TL072		IC TL 072 CN
0	IC 6	50.11.0151	TBA120U		IC TBA 120 UV5
0	IC 7	50.11.0151	TBA120U		IC TBA 120 UV5
0	L 1	1.022.222.00	L16mH		HF-DROSSSEL 16 MH
0	P 1	54.01.0288	5-P		J LEISTE 5 POL CIS AUFST.
0	P 2	54.01.0217	9-P		J LEISTE 9 POL CIS AUFST.
0	P 3	54.01.0241	4-P		J LEISTE 4 POL CIS AUFST.
0	Q 1	50.03.0514	BF566		BF 366 NPN
0	R 1	57.11.3103	10k		MF, 1%, 0207
0	R 2	57.11.3103	10k		MF, 1%, 0207
0	R 3	57.11.3102	1k0		MF, 1%, 0207
0	R 4	57.11.3121	120R		MF, 1%, 0207
0	R 5	57.11.3121	120R		MF, 1%, 0207
0	R 6	not used	not used		not used
0	R 7	57.11.3223	22k		MF, 1%, 0207
0	R 8	57.11.3183	18k		MF, 1%, 0207
0	R 9	57.11.3152	1k5		MF, 1%, 0207
0	R 10	57.11.3103	10k		MF, 1%, 0207
0	R 11	57.11.3103	10k		MF, 1%, 0207
0	R 12	57.11.3103	10k		MF, 1%, 0207
0	R 13	57.11.3103	10k		MF, 1%, 0207
0	R 14	57.11.3105	1M0		MF, 1%, 0207
0	R 15	57.11.3103	10k		MF, 1%, 0207
0	R 16	57.11.3562	5k6		MF, 1%, 0207
0	R 17	57.11.3103	10k		MF, 1%, 0207
0	R 18	57.11.3103	10k		MF, 1%, 0207
0	R 19	57.11.3121	120R		MF, 1%, 0207
0	R 20	not used	not used		not used
0	R 21	57.11.3223	22k		MF, 1%, 0207
0	R 22	57.11.3183	18k		MF, 1%, 0207
0	R 23	57.11.3152	1k5		MF, 1%, 0207
0	R 24	57.11.3103	10k		MF, 1%, 0207
0	R 25	57.11.3103	10k		MF, 1%, 0207
0	R 26	57.11.3103	10k		MF, 1%, 0207
0	R 27	57.11.3103	10k		MF, 1%, 0207
0	R 28	57.11.3103	10k		MF, 1%, 0207
0	R 29	57.11.3562	5k6		MF, 1%, 0207
0	R 30	57.11.3103	10k		MF, 1%, 0207

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	R 31	57.11.3103	10k		MF, 1%, 0207
0	R 32	57.11.3472	4k7		MF, 1%, 0207
0	R 33	57.11.3472	4k7		MF, 1%, 0207
0	R 34	57.11.3472	4k7		MF, 1%, 0207
0	R 35	57.11.3101	100R		MF, 1%, 0207
0	R 36	57.11.3105	1M0		MF, 1%, 0207
0	R 37	57.11.3681	680R		MF, 1%, 0207
0	R 38	57.11.3581	680R		MF, 1%, 0207
0	R 39	57.11.3822	8k2		MF, 1%, 0207
0	R 40	57.11.3822	8k2		MF, 1%, 0207
0	R 41	58.05.0501	500R		10%, 0.5W, Cermet
1	T 1	1.022.230.82	Trafo		DISKRIMINATORTRAFO
1	T 2	1.022.230.82	Trafo		DISKRIMINATORTRAFO
0	TP 1	29.21.6002	1-P		LOETOESE
0	TP 2	29.21.6002	1-P		LOETOESE
0	TP 3	29.21.6002	1-P		LOETOESE
0	TP 4	29.21.6002	1-P		LOETOESE

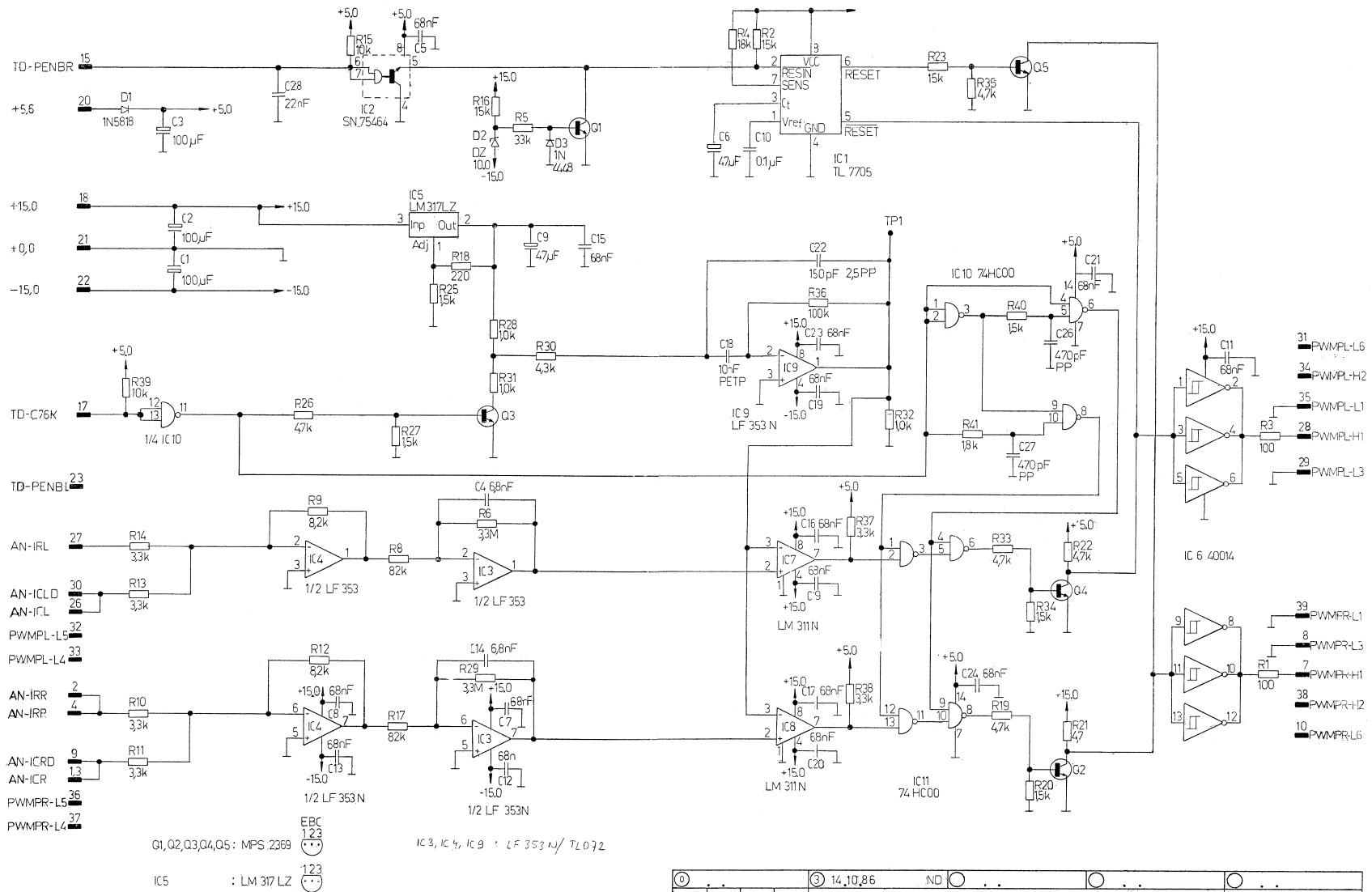
End of List

Comments:

- * Note 1: Pot: Bourns, Nr.: 3296 Z-1-501
- * Spectrol, Nr.: 64 Z 501 T 000
- * Murata, Nr.: Pot 3105 Z-1-501
- * Note 2: Plug: 5-Pin AMP, Nr.: -163.680-3
- * Note 3: Plug: 9-Pin AMP, Nr.: -163.680-7
- * Note 4: Plug: 3-Pin AMP, Nr.: -163.680-1
- * CE=Ceramic, EL=Electrolytic, PETP=Polyester Film
- * MANUFACTURER: Fc=Fairchild, GI=General Instruments, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Sie=Siemens, St=Studer, TI=Texas Instruments
- (01) T1+T2 -81 changed to -82

STUDER REGENSDORF ZÜRICH	TACHO SENSOR EL. BOARD ESE	1.021.695-86
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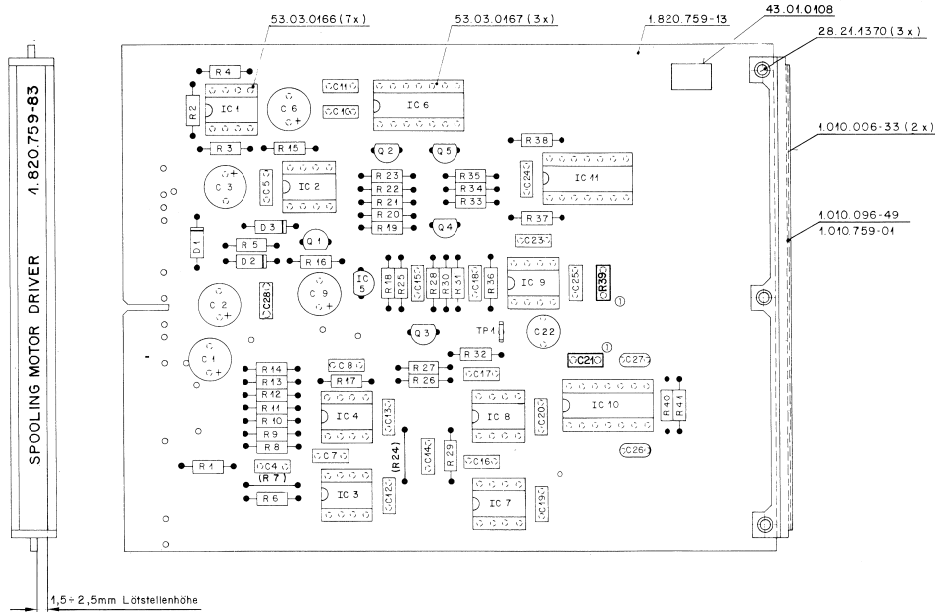
SPOOLING MOTOR DRIVER 1.820.759.83



①	③ 14,10,86	ND	④	⑤	⑥	⑦	⑧	⑨	⑩	
STUDER						A820 Tape Transport Section			PAGE 1 OF 1	
Spooling Motor Driver						SC			1.820.759.83	



SPOOLING MOTOR DRIVER 1.820.759.83



1,5 ± 2,5mm Lötstellenhöhe

43.1.87	RU	
2.370.86	AHo	

STUDER REGENSDORF ZÜRICH	SPOOLING MOTOR DRIVER ESE	1.820.759-83
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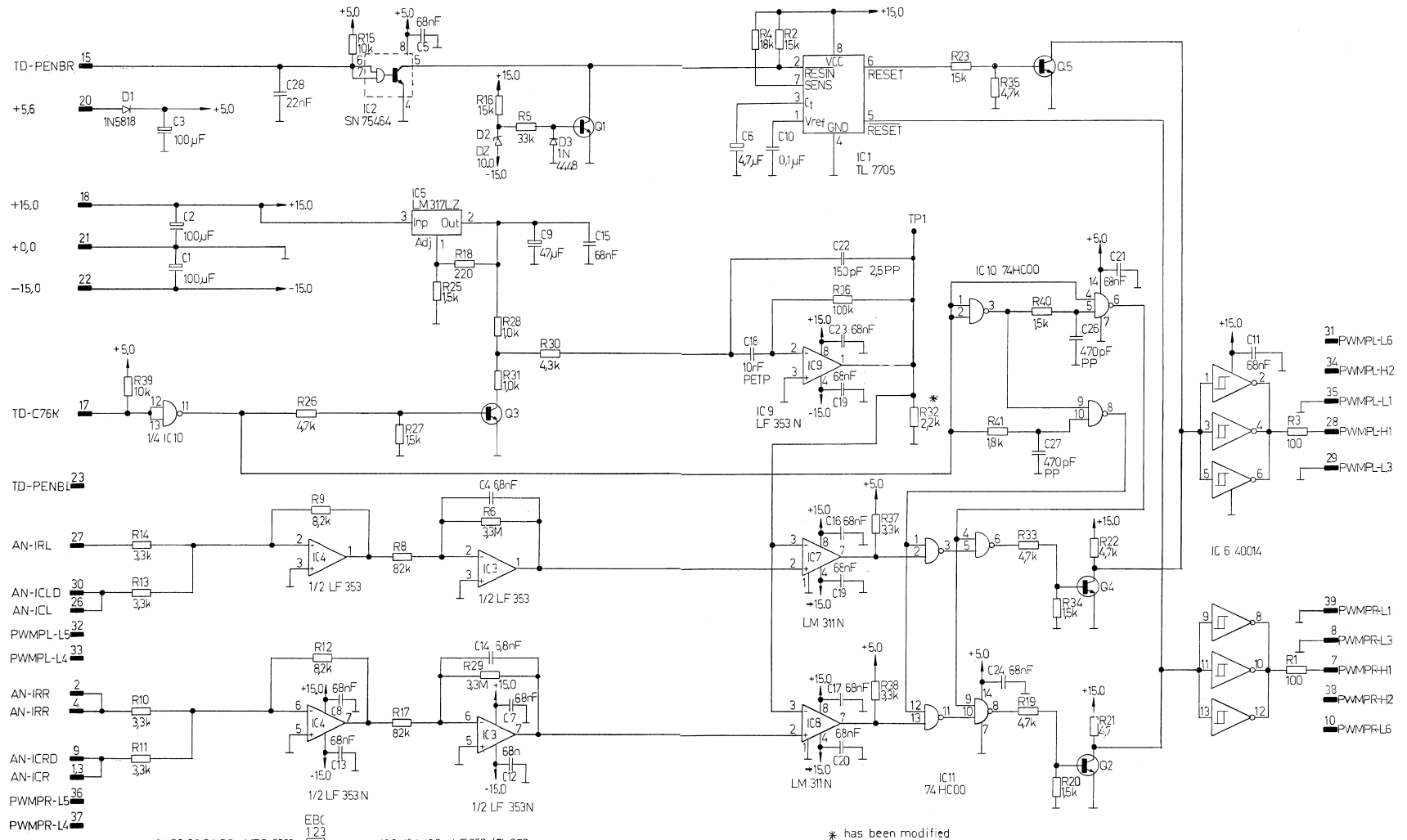
Ad . . POS . . . REF. No . . . DESCRIPTION MANUFACTURER

C.....1	59.22.5101	100 uF	25V, EI	
C.....2	59.22.5101	100 uF	25V, EI	
C.....3	59.22.5101	100 uF	25V, EI	
C.....4	59.06.0682	6.8 nF	10%	
C.....5	59.06.0683	68 nF		
C.....6	59.22.5470	47 uF	25V, EI	
C.....7	59.06.0683	68 nF		
C.....8	59.06.0683	68 nF		
C.....9	59.22.5470	47 uF	25V, EI	
C.....10	59.06.0104	100 nF		
C.....11	59.06.0683	68 nF		
C.....12	59.06.0683	68 nF		
C.....13	59.06.0683	68 nF		
C.....14	59.06.0682	6.8 nF	10%	
C.....15	59.06.0683	68 nF		
C.....16	59.06.0683	68 nF		
C.....17	59.06.0683	68 nF		
C.....18	59.06.0103	10 nF		
C.....19	59.06.0683	68 nF		
C.....20	59.06.0683	68 nF		
C.....21	59.06.0683	68 nF		
C.....22	59.05.2151	150 pF	5%	
C.....23	59.06.0683	68 nF		
C.....24	59.06.0683	68 nF		
C.....25	59.06.0683	68 nF		
C.....26	59.34.5471	470 pF	5%	
C.....27	59.34.5471	470 pF	5%	
C.....28	59.06.0223	22 nF		
D.....1	50.04.0512	1N 5818	1N 5818	TI
D.....2	50.04.1114	10 V		ITT, Ses
D.....3	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
IC.....1	50.11.0122	TL 7705		TI
IC.....2	50.05.0204	SN 75464P	DS 75464 N	NS, TI
IC.....3	50.09.0101	TL 072 CP	LF 353 N	NS, TI
IC.....4	50.09.0101	TL 072 CP	LF 353 N	NS, TI
IC.....5	50.10.0108	LM 311 LZ		Hot, NS
IC.....6	50.07.0014	40014 BPC	MC14584 BPC	Hot, NS, Ph, To
IC.....7	50.11.0114	LM 311 N	LM 311 P	Hot, NS
IC.....8	50.11.0114	LM 311 N	LM 311 P	Hot, NS
IC.....9	50.09.0101	TL 072 CP	LF 353 N	NS, TI
IC.....10	50.17.1000	74 HC 00		Hot, NS, Ph, RCA, SGS, TI, To
IC.....11	50.17.1000	74 HC 00		Hot, NS, Ph, RCA, SGS, TI, To
Q.....1	50.03.0508	MPS 2369		Hot
Q.....2	50.03.0508	MPS 2369		Hot
Q.....3	50.03.0508	MPS 2369		Hot
Q.....4	50.03.0508	MPS 2369		Hot
Q.....5	50.03.0508	MPS 2369		Hot
R.....1	57.11.4101	100 Ohm		
R.....2	57.11.4153	15 kOhm		
R.....3	57.11.4101	100 Ohm		
R.....4	57.11.4153	15 kOhm	5%	
R.....5	57.11.4333	33 kOhm	5%	
R.....6	57.11.5335	3.3 MOhm		
R.....7		not used		(replaced by wire bridge)
R.....8	57.11.4823	82 Ohm	5%	
R.....9	57.11.4822	8.2 kOhm	5%	
R.....10	57.11.4332	3.3 kOhm	5%	
R.....11	57.11.4332	3.3 kOhm	5%	
R.....12	57.11.4822	8.2 kOhm	5%	
R.....13	57.11.4332	3.3 kOhm	5%	
R.....14	57.11.4332	3.3 kOhm	5%	
R.....15	57.11.4103	10 kOhm		
R.....16	57.11.4153	15 kOhm	5%	
R.....17	57.11.4823	82 kOhm	5%	
R.....18	57.11.4221	220 Ohm	2%	
R.....19	57.11.4472	4.7 kOhm	5%	
R.....20	57.11.4152	1.5 kOhm	5%	
R.....21	57.11.4472	4.7 kOhm	5%	
R.....22	57.11.4472	4.7 kOhm	5%	
R.....23	57.11.4153	15 kOhm	5%	
R.....24		not used		(replaced by wire bridge)
R.....25	57.11.4152	1.5 kOhm	2%	
R.....26	57.11.4472	4.7 kOhm	5%	
R.....27	57.11.4152	1.5 kOhm	5%	
R.....28	57.11.4102	1 kOhm	2%	
R.....29	57.11.5335	3.3 MOhm		
R.....30	57.11.3432	4.3 kOhm	1%	
R.....31	57.11.4102	1 kOhm	2%	
R.....32	57.11.4102	1 kOhm	2%	
R.....33	57.11.4472	4.7 kOhm	5%	
R.....34	57.11.4152	1.5 kOhm	5%	
R.....35	57.11.4472	4.7 kOhm	5%	
R.....36	57.11.4104	100 kOhm		
R.....37	57.11.4332	3.3 kOhm	5%	
R.....38	57.11.4332	3.3 kOhm	5%	
R.....39	57.11.4103	10 kOhm		
R.....40	57.11.4152	1.5 kOhm	2%	
R.....41	57.11.4182	1.8 kOhm	2%	

Manufacturer: Fc=Fairchild, ITT=Intermettal, Hot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation of America, Ses=Sesocosem, SGS=SGS/Ates, Tf=Telefunken, TI=Texas Instruments, To=Toshiba.



SPOOLING MOTOR DRIVER 1.820.759.84



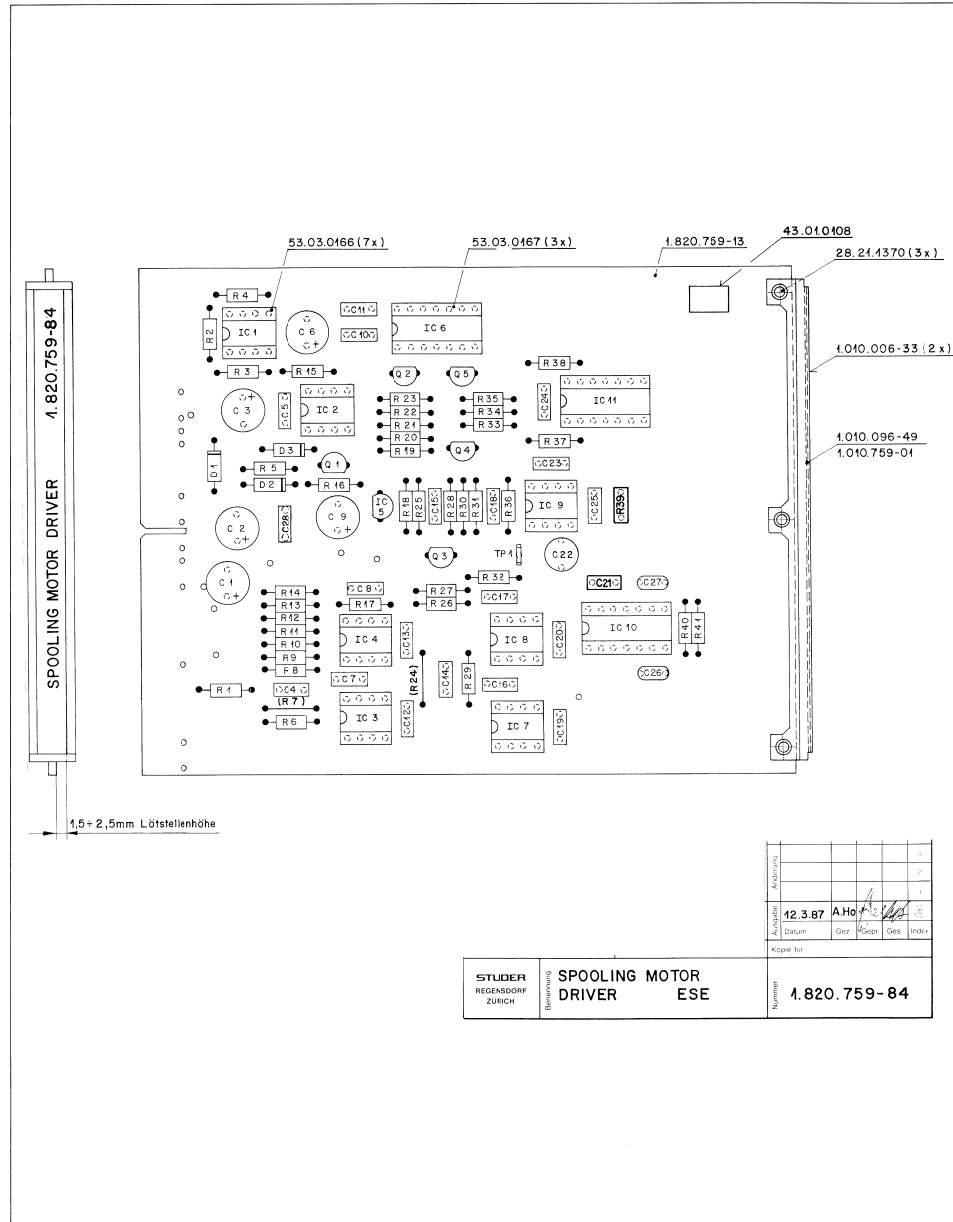
G1, Q2, Q3, Q4, Q5: MPS 2369
 IC 3, IC 4, IC 9: LF 353 / TL 072
 IC 5: LM 317 LZ

* has been modified

5	3	87	ND	1	ND	...	...
A820 Tape Transport Section							PAGE 1 OF 1
STUDER Spooling Motor Driver							SC 1.820.759.84



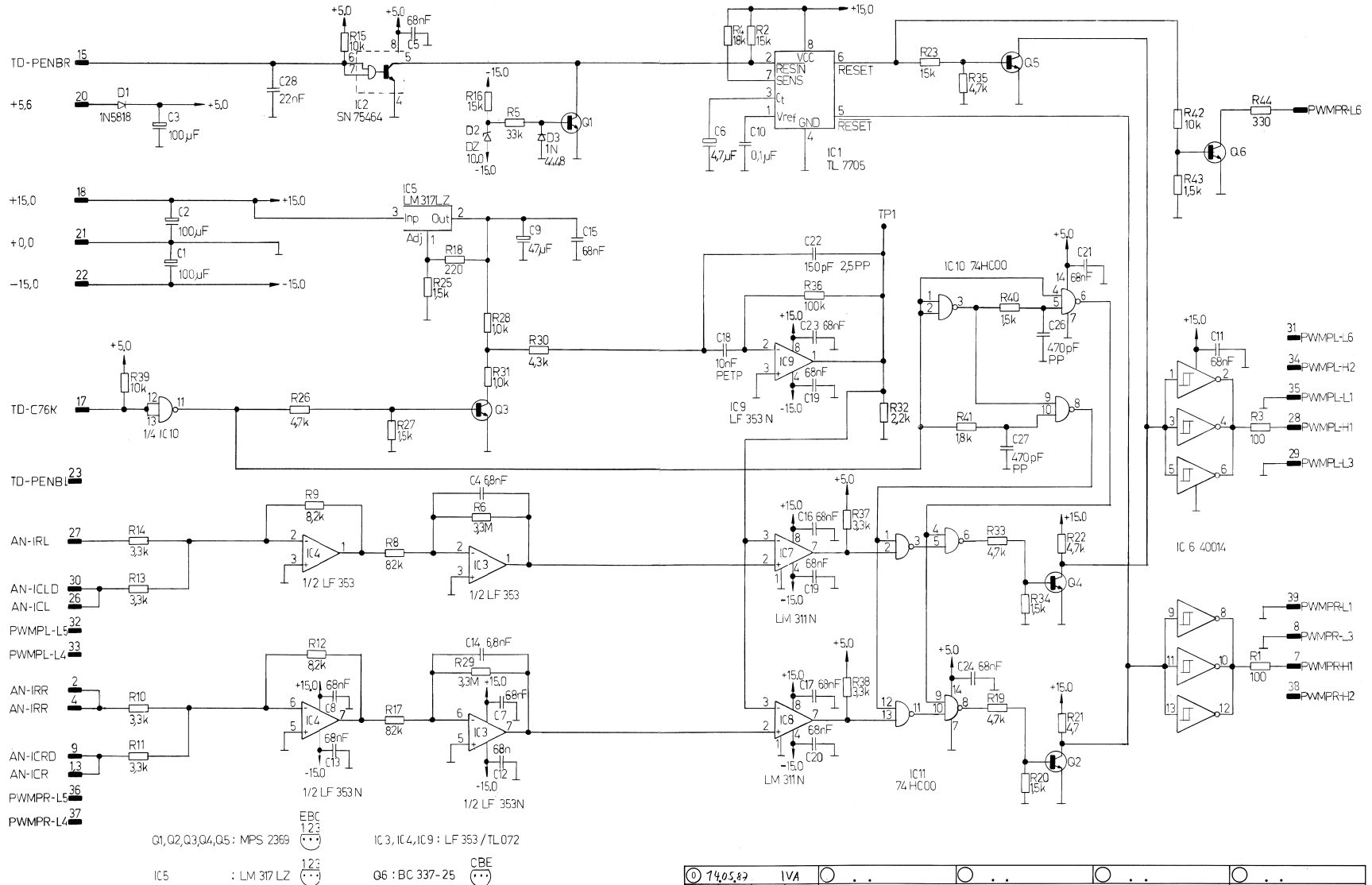
SPOOLING MOTOR DRIVER 1.820.759.84



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1		59.22.5101	100 uF	25V, E1					
C....2		59.22.5101	100 uF	25V, E1					
C....3		59.22.5101	100 uF	E1					
C....4		59.06.0682	6.8 nF	10%					
C....5		59.06.0683	68 nF						
C....6		59.26.5479	4.7 uF	25V, E1					
C....7		59.06.0683	68 nF						
C....8		59.06.0683	68 nF						
C....9		59.22.5470	47 uF	25V, E1					
C....10		59.06.0104	100 nF						
C....11		59.06.0683	68 nF						
C....12		59.06.0683	68 nF						
C....13		59.06.0683	68 nF						
C....14		59.06.0682	6.8 nF	10%					
C....15		59.06.0683	68 nF						
C....16		59.06.0683	68 nF						
C....17		59.06.0683	68 nF						
C....18		59.06.0102	10 nF						
C....19		59.06.0683	68 nF						
C....20		59.06.0683	68 nF						
C....21		59.06.0683	68 nF						
C....22		59.05.2151	150 pF	5%					
C....23		59.06.0683	68 nF						
C....24		59.06.0683	68 nF						
C....25		59.06.0683	68 nF						
C....26		59.34.5471	470 pF	5%					
C....27		59.34.5471	470 pF	5%					
C....28		59.06.0223	22 nF						
D....1		50.04.0512	1N 5818	IN 5818					Mot
D....2		50.04.1114	10 V Z	BZX 56-C10					ITT, Mot, Ph, Tf, Tho
D....3		50.04.0125	1N 4448						Fc, ITT, Ph, SES, Tf
IC....1		50.11.0122	TL 7705						TI
IC....2		50.05.0204	SN 75464P	DS 75464 N					NS, TI
IC....3		50.09.0101	TL 072 CP	LF 353 N					NS, TI
IC....4		50.09.0101	TL 072 CP	LF 353 N					NS, TI
IC....5		50.10.0106	LM 317 L						Mot, NS
IC....6		50.07.0014	40014 BPC	MC14584 BPC					Mot, NS, Ph, To
IC....7		50.11.0114	LM 311 N	LM 311 P					Mot, NS
IC....8		50.11.0114	LM 311 N	LM 311 P					Mot, NS
IC....9		50.09.0101	TL 072 CP	LF 353 N					NS, TI
IC....10		50.17.1000	74 HC 00						Mot, NS, Ph, RCA, SGS, TI, To
IC....11		50.17.1000	74 HC 00						Mot, NS, Ph, RCA, SGS, TI, To
Q....1		50.03.0508	MPS 2369						Mot
Q....2		50.03.0508	MPS 2369						Mot
Q....3		50.03.0508	MPS 2369						Mot
Q....4		50.03.0508	MPS 2369						Mot
Q....5		50.03.0508	MPS 2369						Mot
R....1		57.11.4101	100 Ohm						
R....2		57.11.4155	15 Ohm						
R....3		57.11.4101	100 Ohm						
R....4		57.11.4183	18 Kohm	5%					
R....5		57.11.4332	3.3 Kohm	5%					
R....6		57.11.5335	3.3 Mohm						
R....7			not used						(replaced by wire bridge)
R....8		57.11.4821	82 Kohm	5%					
R....9		57.11.4822	8.2 Kohm	5%					
R....10		57.11.4332	3.3 Kohm	5%					
R....11		57.11.4332	3.3 Kohm	5%					
R....12		57.11.4822	8.2 Kohm	5%					
R....13		57.11.4332	3.3 Kohm	5%					
R....14		57.11.4332	3.3 Kohm	5%					
R....15		57.11.4103	10 Kohm						
R....16		57.11.4155	15 Kohm	5%					
R....17		57.11.4821	82 Kohm	5%					
R....18		57.11.4221	220 Ohm	2%					
R....19		57.11.4472	4.7 Kohm	5%					
R....20		57.11.4155	1.5 Kohm	5%					
R....21		57.11.4472	4.7 Kohm	5%					
R....22		57.11.4472	4.7 Kohm	5%					
R....23		57.11.4155	15 Kohm	5%					
R....24			not used						(replaced by wire bridge)
R....25		57.11.4155	1.5 Kohm	2%					
R....26		57.11.4472	4.7 Kohm	5%					
R....27		57.11.4155	1.5 Kohm	5%					
R....28		57.11.4104	1 Kohm	2%					
R....29		57.11.5335	3.3 Mohm						
R....30		57.11.3432	4.3 Kohm	1%					
R....31		57.11.4102	1 Kohm	2%					
R....32		57.11.4102	1 Kohm	5%					
R....33		57.11.4222	2.2 Kohm	5%					
R....34		57.11.4472	4.7 Kohm	5%					
R....35		57.11.4152	1.5 Kohm	5%					
R....36		57.11.4472	4.7 Kohm	5%					
R....37		57.11.4104	100 Kohm						
R....38		57.11.4332	3.3 Kohm	5%					
R....39		57.11.4332	3.3 Kohm	5%					
R....40		57.11.4103	10 Kohm						
R....41		57.11.4152	1.5 Kohm	2%					
R....42		57.11.4182	1.8 Kohm	2%					
(01) 87.03.24			Reduced loading of IC 9.						

Manu-facturers: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Phillips,

SPOOLING MOTOR DRIVER 1.820.759.85

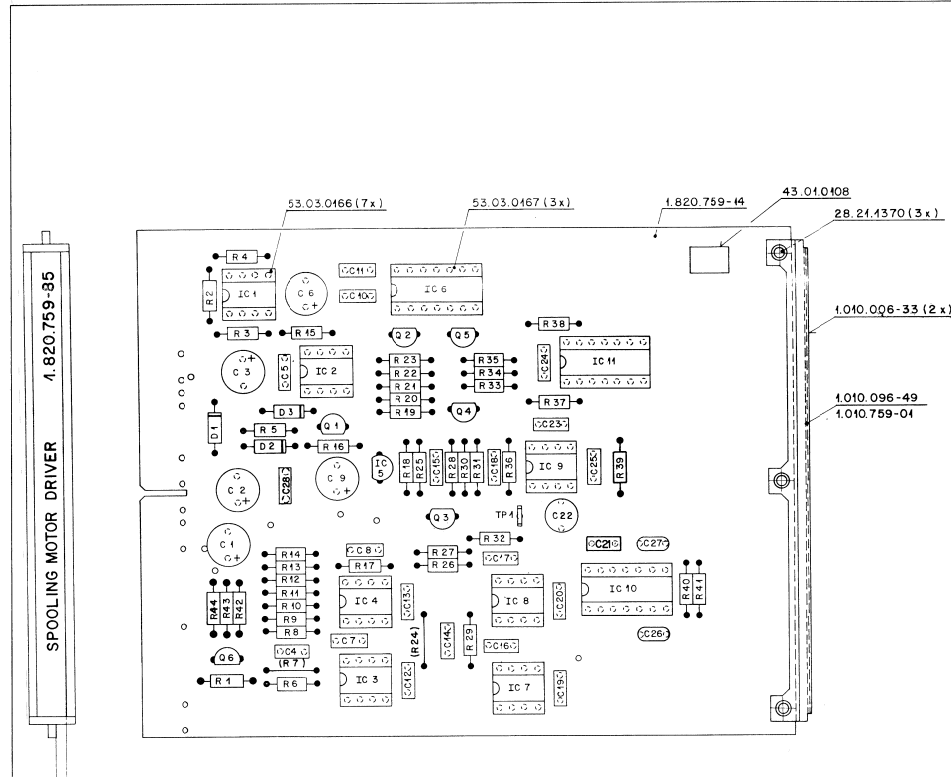


Q1, Q2, Q3, Q4, Q5 : MPS 2369
 IC 3, IC 4, IC 9 : LF 353 / TL 072
 IC 5 : LM 317 LZ
 O6 : BC 337-25

① 14.05.82	I VA	○ . . . ○ . . . ○ . . .	○ . . .
STUDER AB20 Tape Transport Section			PAGE 1 OF 1
Spooling Motor Driver			SC 1.820.759.85



SPOOLING MOTOR DRIVER 1.820.759.85



Ad .POS. .REF.No. .DESCRIPTION. .MANUFACTURER

C....1	59.22.5101	100 uF	25V, EI
C....2	59.22.5101	100 uF	25V, EI
C....3	59.22.5101	100 uF	
C....4	59.06.0682	6.8 nF	10K
C....5	59.06.0683	68 nF	
C....6	59.26.5479	4.7 uF	25V, EI
C....7	59.06.0683	68 nF	
C....8	59.06.0683	68 nF	
C....9	59.22.5470	47 uF	25V, EI
C....10	59.06.0104	100 nF	
C....11	59.06.0683	68 nF	
C....12	59.06.0683	68 nF	
C....13	59.06.0683	68 nF	
C....14	59.06.0682	6.8 nF	10K
C....15	59.06.0683	68 nF	
C....16	59.06.0683	68 nF	
C....17	59.06.0683	68 nF	
C....18	59.06.0103	10 nF	
C....19	59.06.0683	68 nF	
C....20	59.06.0683	68 nF	
C....21	59.06.0683	68 nF	
C....22	59.05.2151	150 pF	5K
C....23	59.06.0683	68 nF	
C....24	59.06.0683	68 nF	
C....25	59.06.0683	68 nF	
C....26	59.34.5471	470 pF	5K
C....27	59.34.5471	470 pF	5K
	59.06.0228	22 nF	
D....1	50.04.0512	1N 5818	1N 5818
D....2	50.04.1114	10 Z	
D....3	50.04.0125	1N 4448	
IC....1	50.11.0122	TL 7705	TI
IC....2	50.05.0204	SN 75464P	DS 75464 N
IC....3	50.09.0101	TL 072 CP	LF 353 N
IC....4	50.09.0101	TL 072 CP	LF 353 N
IC....5	50.10.0108	LM 317 LZ	
IC....6	50.07.0014	40014 BPC	MC14584 BPC
IC....7	50.11.0114	LM 311 N	LM 311 P
IC....8	50.11.0114	LM 311 N	LM 311 P
IC....9	50.09.0101	TL 072 CP	LF 353 N
IC....10	50.17.1000	74 HC 00	
IC....11	50.17.1000	74 HC 00	
Q....1	50.03.0508	MPS 2369	
Q....2	50.03.0508	MPS 2369	
Q....3	50.03.0508	MPS 2369	
Q....4	50.03.0508	MPS 2369	
Q....5	50.03.0508	MPS 2369	
Q....6	50.03.0340	BC 337-25	
R....1	57.11.4101	100 Ohm	
R....2	57.11.4153	15 Kohm	
R....3	57.11.4101	100 Ohm	
R....4	57.11.4183	18 Kohm	5K
R....5	57.11.4333	33 Kohm	5K
R....6	57.11.5335	3.3 MOhm	
R....7	00.00.0000	not used	(REPLACED BY WIRE BRIDGE)
R....8	57.11.4823	8.2 Kohm	5K
R....9	57.11.4822	8.2 Kohm	5K
R....10	57.11.4332	3.3 Kohm	5K
R....11	57.11.4332	3.3 Kohm	5K
R....12	57.11.4822	8.2 Kohm	5K
R....13	57.11.4332	3.3 Kohm	5K
R....14	57.11.4332	3.3 Kohm	5K
R....15	57.11.4103	10 Kohm	
R....16	57.11.4153	15 Kohm	5K
R....17	57.11.4823	8.2 Kohm	5K
R....18	57.11.4221	220 Ohm	2K
R....19	57.11.4472	4.7 Kohm	5K
R....20	57.11.4152	1.5 Kohm	5K
R....21	57.11.4472	4.7 Kohm	5K
R....22	57.11.4472	4.7 Kohm	5K
R....23	57.11.4153	15 Kohm	5K
R....24	00.00.0000	not used	(REPLACED BY WIRE BRIDGE)
R....25	57.11.4152	1.5 Kohm	2K
R....26	57.11.4472	4.7 Kohm	5K
R....27	57.11.4152	1.5 Kohm	5K
R....28	57.11.4102	1 Kohm	2K
R....29	57.11.5335	3.3 MOhm	
R....30	57.11.3432	4.3 Kohm	1K
R....31	57.11.4102	1 Kohm	2K
R....32	57.11.4222	2.2 Kohm	5K
R....33	57.11.4472	4.7 Kohm	5K
R....34	57.11.4152	1.5 Kohm	5K
R....35	57.11.4472	4.7 Kohm	5K
R....36	57.11.4104	100 Kohm	
R....37	57.11.4332	3.3 Kohm	5K
R....38	57.11.4332	3.3 Kohm	5K
R....39	57.11.4103	10 Kohm	
R....40	57.11.4152	1.5 Kohm	2K
R....41	57.11.4182	1.8 Kohm	2K
R....42	57.11.4103	10 Kohm	5K
R....43	57.11.4152	1.5 Kohm	5K
R....44	57.11.4331	330 Ohm	5K

Ad .POS. .REF.No. .DESCRIPTION. .MANUFACTURER

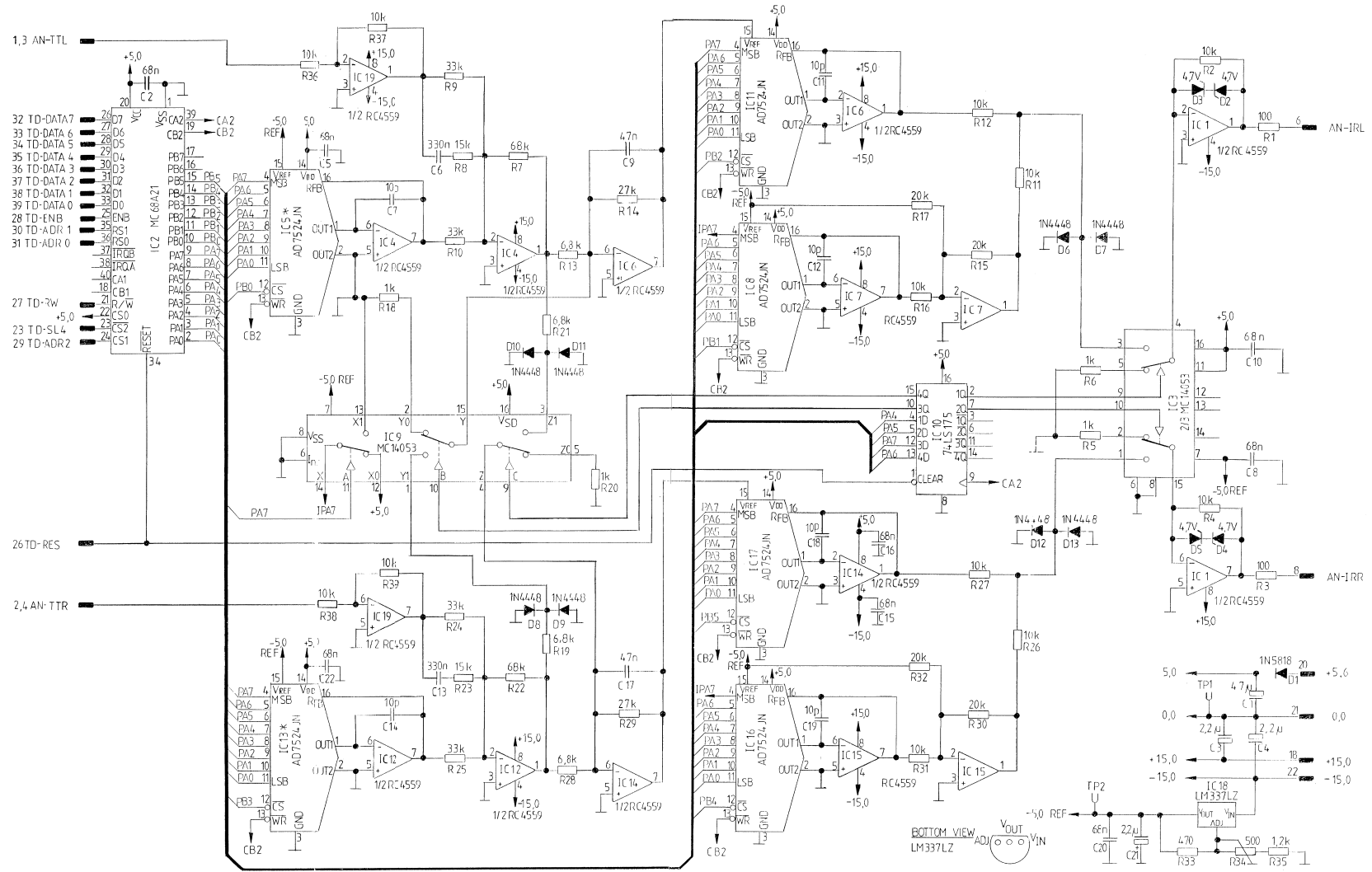
Manufacturer: F=Fairchild, ITT=Intermetal, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation of America, Ses=Secossem, SGS=SGS/Ates, TI=Telefunken, Ti=Texas Instruments, To=Toshiba.

1.820.759.85	SPOOLING MOTOR DRIVER	BD 87/05/1400
END		

Abgefragt	Abgegeben								
14.5.87	RAC	AK							
System	SBZ	Gued	Stech	Improv					

STUDER REGENSDORF ZURICH	Bezeichnung SPOOLING MOTOR DRIVER ESE	Nummer 1.820.759-85
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SPOOLING MOTOR CONTROL 1.820.760.81

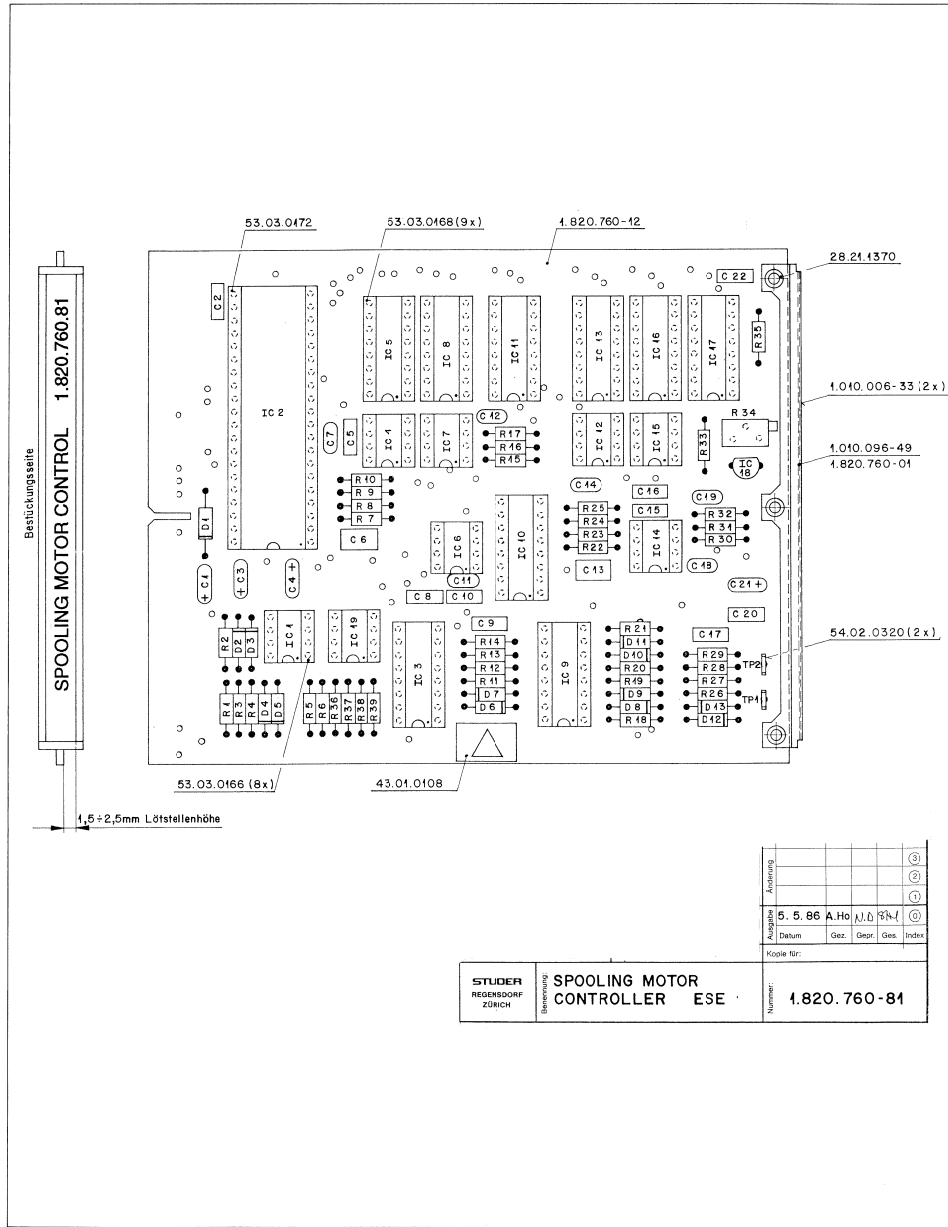


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① 27,04,R6	ND	○ . .	○ . .	○ . .
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STUDER Spooling Motor Control			SC 1.820.760.81	



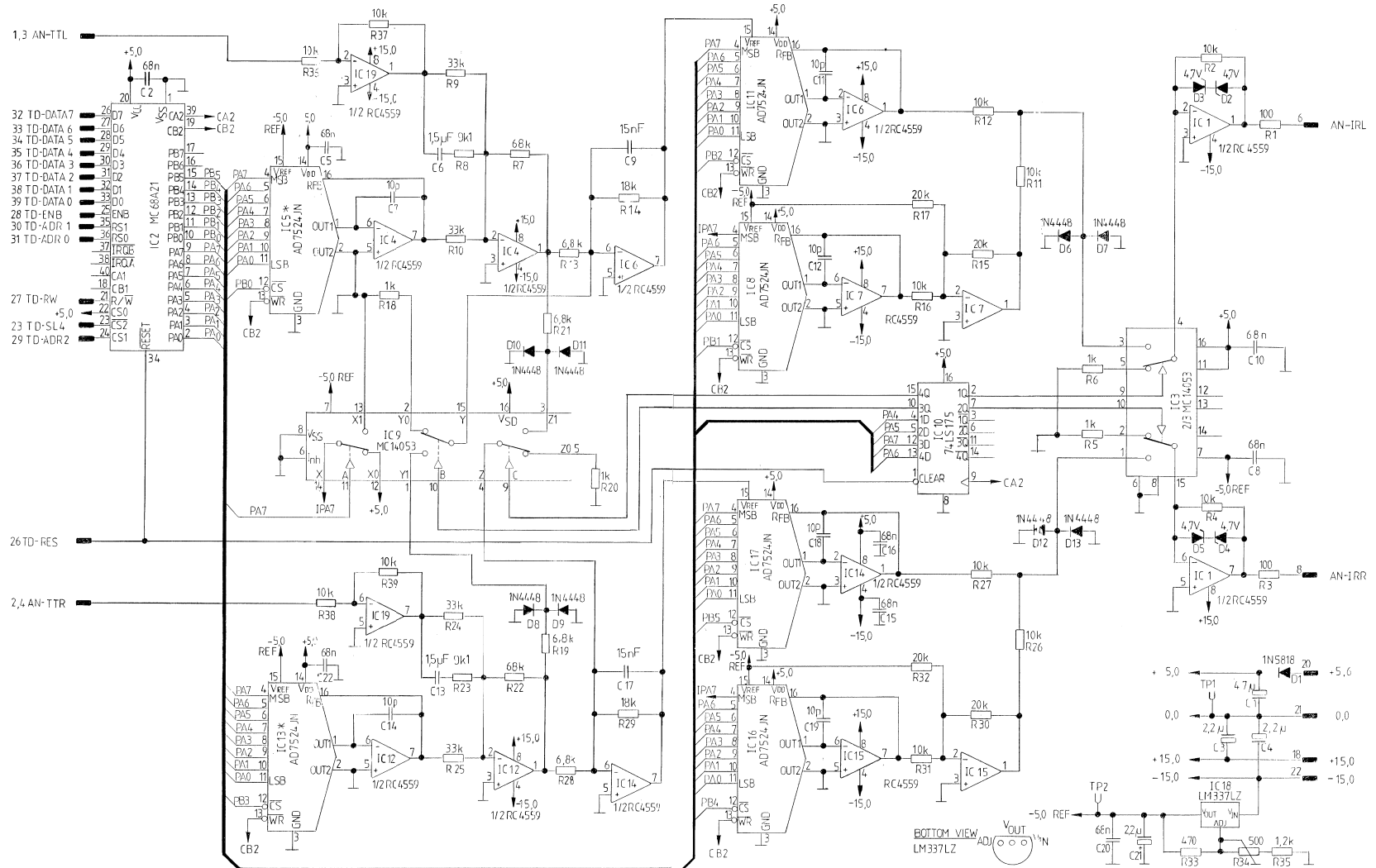
SPOOLING MOTOR CONTROL 1.820.760.81



Ad	..POS.	..REF.No.	DESCRIPTION	MANUFACTURER	Ad	..POS.	..REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.26.0470	47	uF	6.3V, Sal					
C.....2	59.06.0683	68	nF						Bourns nr. 3296 Z - 1 - 501
C.....3	59.26.5229	2.2	uF	25V, Sal					Contelec nr. 383 X2 501
C.....4	59.26.5229	2.2	uF	25V, Sal					Spectrol nr. 64 Z 501 T 000
C.....5	59.06.0683	68	nF						Murata nr. POT 3105 Z - 1 - 501
C.....6	59.06.0334	330	nF	10%					Ce=Ceramic, Sal=Solid aluminum
C.....7	59.34.1100	10	pF						
C.....8	59.06.0683	68	nF						MANUFACTURER: ADI=Analog Devices Inc., AMI=American Microsystem Inc.,
C.....9	59.06.0473	47	nF	10%					Fc=Fairchild, Mot=Motorola, MPS=Micropower Semicond.,
C.....10	59.06.0683	68	nF						NEC=Nippon Electric Corp., NS=National Semiconductors,
C.....11	59.34.1100	10	pF						Ph=Philips, Ra=Raytheon, RCA=RCA Corp. of America,
C.....12	59.34.1100	10	pF						Sig=Signetics, TI=Texas Instruments
C.....13	59.06.0334	330	nF	10%					1.820.760.81 SPOOLING MOTOR CONTROLLER ND 86/05/0500
C.....14	59.34.1100	10	pF						
C.....15	59.06.0683	68	nF						
C.....16	59.06.0683	68	nF						
C.....17	59.06.0473	47	nF	10%					
C.....18	59.34.1100	10	pF						
C.....19	59.34.1100	10	pF						
C.....20	59.06.0683	68	nF						
C.....21	59.26.5229	2.2	uF	25V, Sal					
C.....22	59.06.0683	68	nF						
D.....1	50.04.0512	1N 5818	IN 5818	IN 5818					Mot
D.....2	50.04.1123	4.7 V, Z	82X81C 4V7, 82X55C 4V7, ZPD 4.7	ITT, Ses					
D.....3	50.04.1123	4.7 V, Z	82X81C 4V7, 82X55C 4V7, ZPD 4.7	ITT, Ses					
D.....4	50.04.1123	4.7 V, Z	82X81C 4V7, 82X55C 4V7, ZPD 4.7	ITT, Ses					
D.....5	50.04.1123	4.7 V, Z	82X81C 4V7, 82X55C 4V7, ZPD 4.7	ITT, Ses					
D.....6	50.04.0125	1N 4448	IN 4448						
D.....7	50.04.0125	1N 4448	IN 4448						
D.....8	50.04.0125	1N 4448	IN 4448						
D.....9	50.04.0125	1N 4448	IN 4448						
D.....10	50.04.0125	1N 4448	IN 4448						
D.....11	50.04.0125	1N 4448	IN 4448						
D.....12	50.04.0125	1N 4448	IN 4448						
D.....13	50.04.0125	1N 4448	IN 4448						
IC.....1	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....2	50.15.0107	MC1405	568 A 21P, F68 A 21P	AMI, Fc, Mot					
IC.....3	50.07.0015	MC14053BCP	... 4053 ...	Mot, NS, Ph, RCA, To					
IC.....4	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....5	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....6	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....7	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....8	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....9	50.07.0015	MC14053BCP	... 4053 ...	Mot, NS, Ph, RCA, To					
IC.....10	50.06.0175	74 LS 175	.. 74 LS 175	NSC, Sig, TI					
IC.....11	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....12	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....13	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....14	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....15	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
IC.....16	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....17	50.07.0002	AD 7524 JN	MP 7524 JN	ADI, MPS					
IC.....18	50.10.0109	LM 337 LZ		NS					
IC.....19	50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us	NEC, Ra					
TP.....1	54.02.0320		Test point						
TP.....2	54.02.0320		Test point						
R.....1	57.11.4101	100	Ohm						
R.....2	57.11.4103	10	kOhm	5%					
R.....3	57.11.4101	100	Ohm	5%					
R.....4	57.11.4103	10	kOhm	5%					
R.....5	57.11.4102	1	kOhm	5%					
R.....6	57.11.4102	1	kOhm	5%					
R.....7	57.11.4683	68	kOhm	5%					
R.....8	57.11.4153	15	kOhm	5%					
R.....9	57.11.4333	33	kOhm	5%					
R.....10	57.11.4333	33	kOhm	5%					
R.....11	57.11.4103	10	kOhm	5%					
R.....12	57.11.4103	10	kOhm	5%					
R.....13	57.11.4682	6.8	kOhm	5%					
R.....14	57.11.4273	27	kOhm	5%					
R.....15	57.11.3203	20	kOhm	5%					
R.....16	57.11.4103	10	kOhm	5%					
R.....17	57.11.3203	20	kOhm	5%					
R.....18	57.11.4102	1	kOhm	5%					
R.....19	57.11.4682	6.8	kOhm	5%					
R.....20	57.11.4102	1	kOhm	5%					
R.....21	57.11.4682	6.8	kOhm	5%					
R.....22	57.11.4682	68	kOhm	5%					
R.....23	57.11.4152	15	kOhm	5%					
R.....24	57.11.4333	33	kOhm	5%					
R.....25	57.11.4333	33	kOhm	5%					
R.....26	57.11.4103	10	kOhm	5%					
R.....27	57.11.4103	10	kOhm	5%					
R.....28	57.11.4682	6.8	kOhm	5%					
R.....29	57.11.4273	27	kOhm	5%					
R.....30	57.11.3203	20	kOhm	5%					
R.....31	57.11.4103	10	kOhm	5%					
R.....32	57.11.3203	20	kOhm	5%					
R.....33	57.11.4471	470	Ohm	5%					
R.....34	58.05.0501	500	Ohm	see note 1					
R.....35	57.11.4122	1.2	kOhm	5%					
R.....36	57.11.4103	10	kOhm	5%					
R.....37	57.11.4103	10	kOhm	5%					
R.....38	57.11.4103	10	kOhm	5%					
R.....39	57.11.4103	10	kOhm	5%					

Note 1 - Potentiometer 500 Ohm

SPOOLING MOTOR CONTROL 1.820.760.82

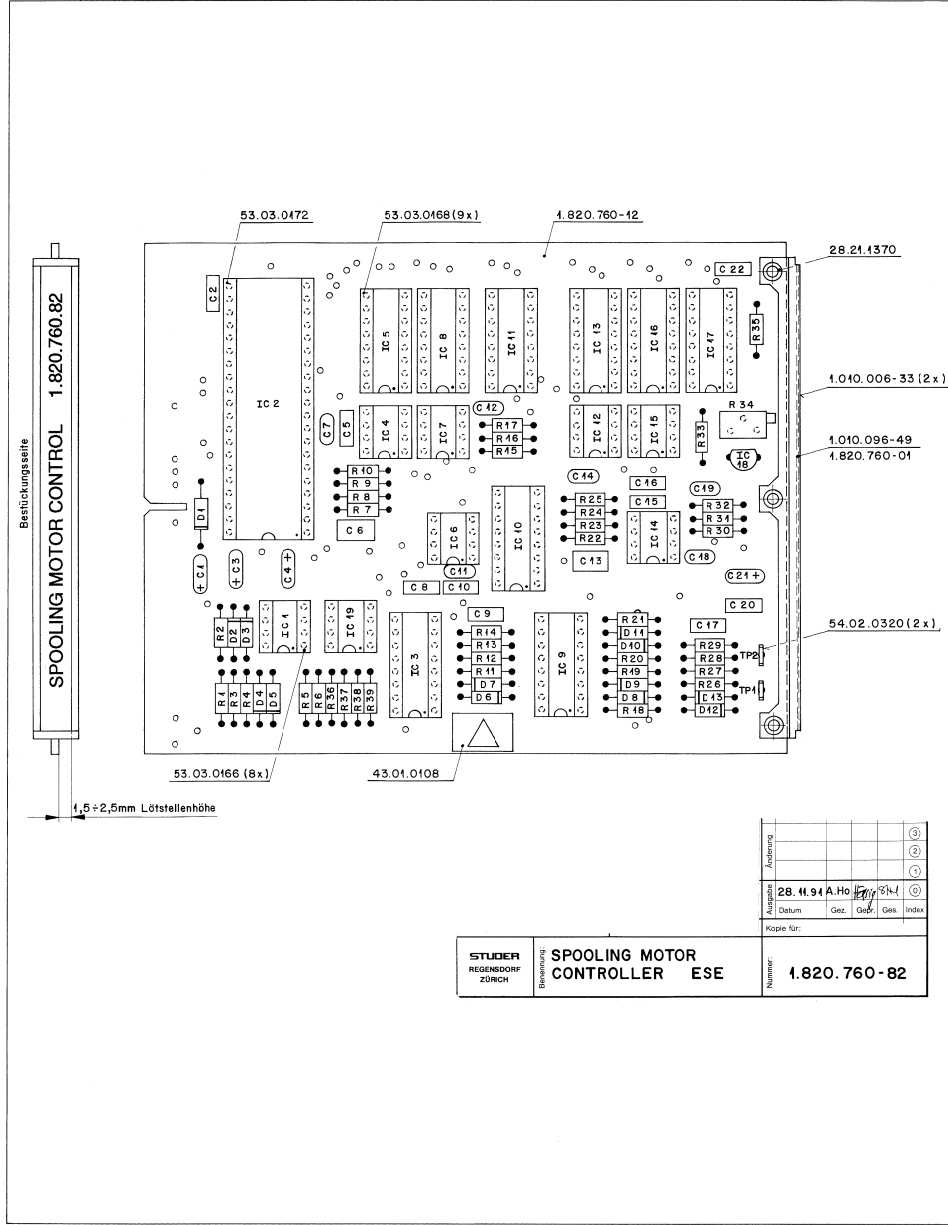


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28.11.91	HR1			
A 820		PAGE 1 OF 1		
STUDER		Spooling Motor Control		SC 1.820.760.82

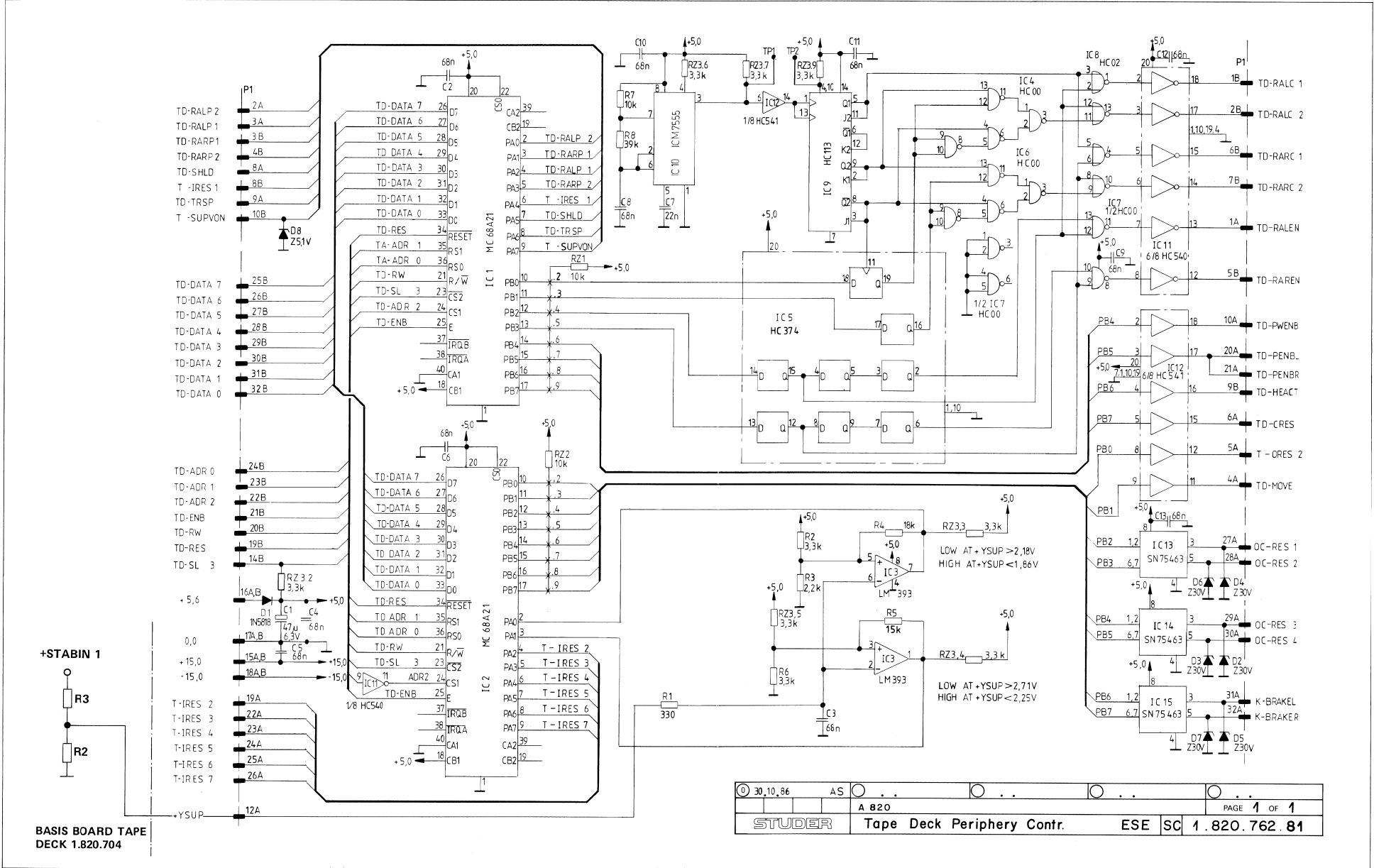


SPOOLING MOTOR CONTROL 1.820.760.82



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1		59.26.0470	47 uF	5.3V, Sal					
C....2		59.06.0683	68 nF						
C....3		59.26.5229	2.2 uF	25V, Sal					
C....4		59.26.5229	2.2 uF	25V, Sal					
C....5		59.06.0683	68 nF						
C....6		59.06.5156	1.5 uF	5%					
C....7		59.34.1100	10 pF	Ce					
C....8		59.06.0683	68 nF						
C....9		59.06.5153	15 nF	5%					
C....10		59.06.0683	68 nF						
C....11		59.34.1100	10 pF	Ce					
C....12		59.34.1100	10 pF	Ce					
C....13		59.06.5156	1.5 uF	5%					
C....14		59.34.1100	10 pF	Ce					
C....15		59.06.0683	68 nF						
C....16		59.06.0683	68 nF						
C....17		59.06.5153	15 nF	5%					
C....18		59.34.1100	10 pF	Ce					
C....19		59.34.1100	10 pF	Ce					
C....20		59.06.0683	68 nF						
C....21		59.26.5229	2.2 uF	25V, Sal					
C....22		59.06.0683	68 nF						
M....1		50.04.0512	1M 5818	1M 5819					
M....2		50.04.1123	4.7 V, Z	BZX83C 4V7, BZX55C 4V7, ZPD 4.7					
M....3		50.04.1123	4.7 V, Z	BZX83C 4V7, BZX55C 4V7, ZPD 4.7					
M....4		50.04.1123	4.7 V, Z	BZX83C 4V7, BZX55C 4V7, ZPD 4.7					
M....5		50.04.1123	4.7 V, Z	BZX83C 4V7, BZX55C 4V7, ZPD 4.7					
M....6		50.04.0125	1M 4448						
M....7		50.04.0125	1M 4448						
M....8		50.04.0125	1M 4448						
M....9		50.04.0125	1M 4448						
M....10		50.04.0125	1M 4448						
M....11		50.04.0125	1M 4448						
M....12		50.04.0125	1M 4448						
M....13		50.04.0125	1M 4448						
IC....1		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....2		50.16.0106	MC68 A ZIP	S68 A ZIP, FS6 A ZIP					AMI, Fc, Mot
IC....3		50.07.0015	MC140538PC	... 4053 ...					Mot, NS, Ph, RCA, To
IC....4		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....5		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....6		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....7		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....8		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....9		50.07.0015	MC140538PC	... 4053 ...					Mot, NS, Ph, RCA, To
IC....10		50.06.0175	74 LS 175	.. 74 LS 175 .					NSC, Sig, TI
IC....11		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....12		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....13		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....14		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....15		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
IC....16		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....17		50.07.0002	AD 7524 JN	MP 7524 JN					ADI, MPS
IC....18		50.10.0109	LM 337 LZ						NS
IC....19		50.09.0107	RC 4559 NB	uPC 4559, slew rate min. 1.5 V/us					NEC, Ra
F....1		57.11.3101	100 Ohm	1%					
F....2		57.11.3103	10 kOhm	1%					
F....3		57.11.3101	100 Ohm	1%					
F....4		57.11.3103	10 kOhm	1%					
F....5		57.11.3102	1 kOhm	1%					
F....6		57.11.3102	1 kOhm	1%					
F....7		57.11.3683	68 kOhm	1%					
F....8		57.11.3912	9.1 kOhm	1%					
F....9		57.11.3333	33 kOhm	1%					
F....10		57.11.3333	33 kOhm	1%					
F....11		57.11.3103	10 kOhm	1%					
F....12		57.11.3103	10 kOhm	1%					
F....13		57.11.3682	6.8 kOhm	1%					
F....14		57.11.3103	10 kOhm	1%					
F....15		57.11.3203	20 kOhm	1%					
F....16		57.11.3103	10 kOhm	1%					
F....17		57.11.3203	20 kOhm	1%					
F....18		57.11.3102	1 kOhm	1%					
F....19		57.11.3682	6.8 kOhm	1%					
F....20		57.11.3102	1 kOhm	1%					
F....21		57.11.3682	6.8 kOhm	1%					
F....22		57.11.3683	68 kOhm	1%					
F....23		57.11.3912	9.1 kOhm	1%					
F....24		57.11.3333	33 kOhm	1%					
F....25		57.11.3333	33 kOhm	1%					
F....26		57.11.3103	10 kOhm	1%					
F....27		57.11.3103	10 kOhm	1%					
F....28		57.11.3682	6.8 kOhm	1%					
F....29		57.11.3103	10 kOhm	1%					
F....30		57.11.3203	20 kOhm	1%					
F....31		57.11.3103	10 kOhm	1%					
F....32		57.11.3203	20 kOhm	1%					
F....33		57.11.3471	470 Ohm	1%					
F....34		56.05.0501	500 Ohm	see note 1					
F....35		57.11.3122	1.2 kOhm	1%					
F....36		57.11.3103	10 kOhm	1%					
F....37		57.11.3103	10 kOhm	1%					
F....38		57.11.3103	10 kOhm	1%					
F....39		57.11.3103	10 kOhm	1%					
TP....1		54.02.0320		Test point					
TP....2		54.02.0320		Test point					

TAPE DECK PERIPHERY CONTROL 1.820.762.81

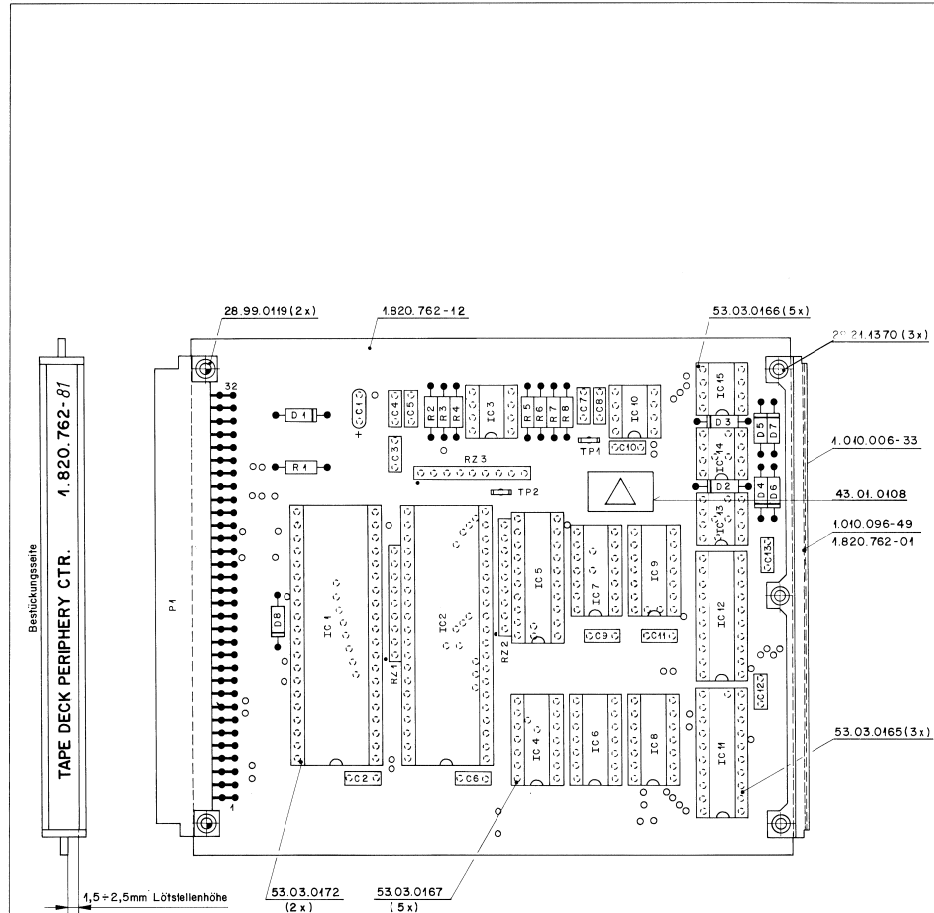


BASIS BOARD TAPE DECK 1.820.704

30.10.86	AS								
STUDER		A 820				Tape Deck Periphery Contr.		ESE SC 1.820.762.81	
								PAGE 1 OF 1	



TAPE DECK PERIPHERY CONTROL 1.820.762.81



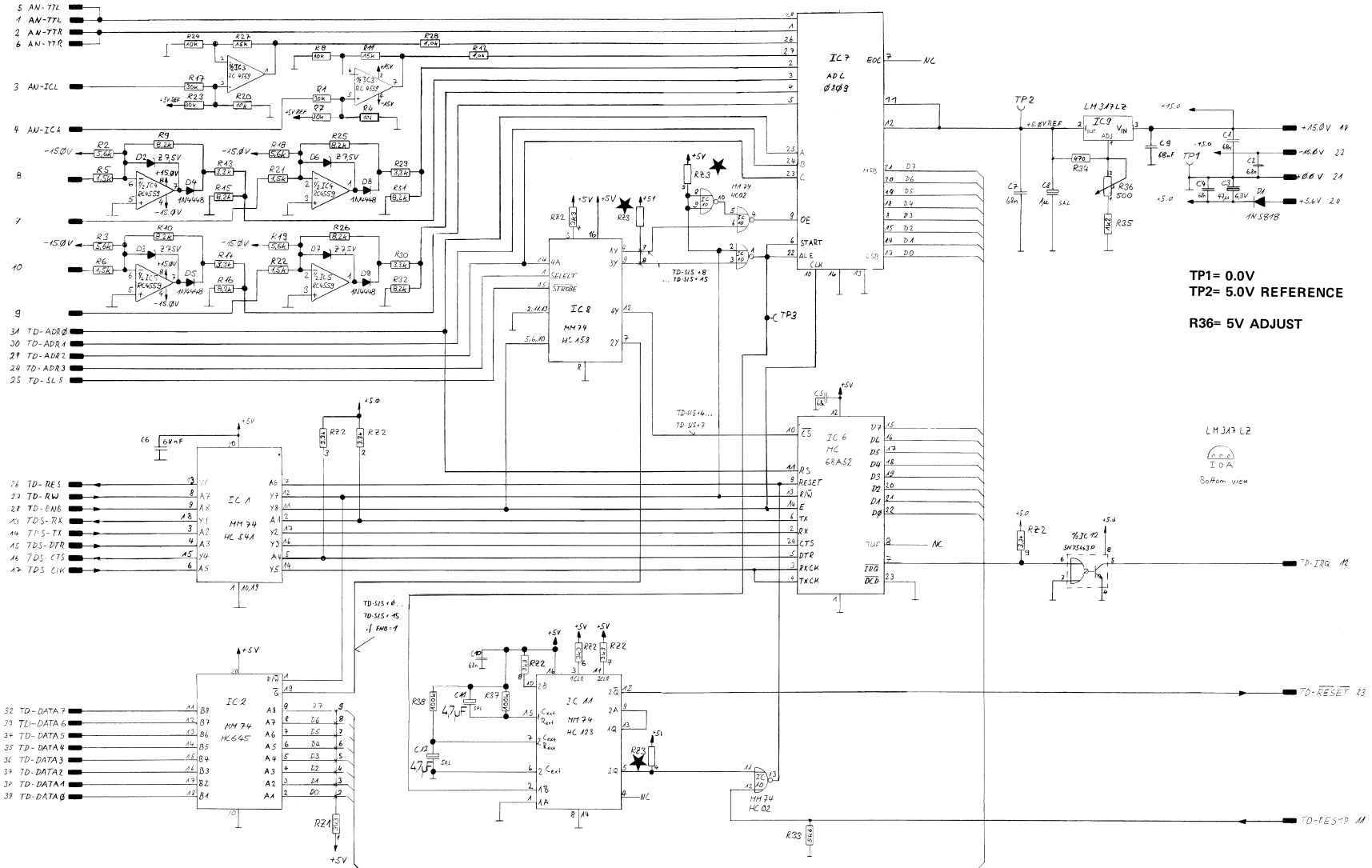
Ad . . POS. REF. No. DESCRIPTION MANUFACTURER

C.....1	59.26.0470	47 uF	20%	6.3V	
C.....2	59.06.0683	68 nF	20%		
C.....3	59.06.0683	68 nF	20%		
C.....4	59.06.0683	68 nF	20%		
C.....5	59.06.0683	68 nF	20%		
C.....6	59.06.0683	68 nF	20%		
C.....7	59.06.0223	22 nF	10%		
C.....8	59.06.5683	68 nF	5%		
C.....9	59.06.0683	68 nF	20%		
C.....10	59.06.0683	68 nF	20%		
C.....11	59.06.0683	68 nF	20%		
C.....12	59.06.0683	68 nF	20%		
C.....13	59.06.0683	68 nF	20%		
D.....1	50.04.0512	1N 5818	1N 5819		Mot
D.....2	50.04.1125	30 V Z	ZPD 30		ITT
D.....3	50.04.1125	30 V Z	ZPD 30		ITT
D.....4	50.04.1125	30 V Z	ZPD 30		ITT
D.....5	50.04.1125	30 V Z	ZPD 30		ITT
D.....6	50.04.1125	30 V Z	ZPD 30		ITT
D.....7	50.04.1125	30 V Z	ZPD 30		ITT
D.....8	50.04.1112	5.1 V Z	BZX83C 5V1, BZX55C 5V1, ZPD 5.1		ITT, Ses
IC....1	50.16.0106	MC68 A 21P	S68 A 21P		AMI, Fc, Mot
IC....2	50.16.0106	MC68 A 21P	S68 A 21P		AMI, Fc, Mot
IC....3	50.05.0283	LM 393 N	LM 393 P		NS, TI
IC....4	50.17.1000	74 HC 00	.. 74 HC 00		Mot, NS, TI
IC....5	50.17.1374	74 HC 374	.. 74 HC 374		Mot, NS, TI
IC....6	50.17.1000	74 HC 00	.. 74 HC 00		Mot, NS, TI
IC....7	50.17.1000	74 HC 00	.. 74 HC 00		Mot, NS, TI
IC....8	50.17.1002	74 HC 02	.. 74 HC 02		Mot, NS, TI
IC....9	50.17.1113	74 HC 113	.. 74 HC 113		Mot, NS, TI
IC....10	50.07.0036	1CM7551PA			Is, Ma
IC....11	50.17.1540	74 HC 540	.. 74 HC 540		Mot, NS, TI
IC....12	50.17.1541	74 HC 541	.. 74 HC 541		Mot, NS, TI
IC....13	50.05.0203	SN 75463 P	DS 3613 N		NS, TI
IC....14	50.05.0203	SN 75463 P	DS 3613 N		NS, TI
IC....15	50.05.0203	SN 75463 P	DS 3613 N		NS, TI
P.....1	54.11.2004		2 * 32 contacts, see note 1		
R.....1	57.11.4331	330 Ohm	10%		
R.....2	57.11.4332	3.3 kOhm	5%		
R.....3	57.11.4222	2.2 kOhm	5%		
R.....4	57.11.4153	18 kOhm	5%		
R.....5	57.11.4153	15 kOhm	5%		
R.....6	57.11.4332	3.3 kOhm	5%		
R.....7	57.11.4103	10 kOhm	5%		
R.....8	57.11.4393	39 kOhm	5%		
RZ....1	57.88.4103	10 kOhm	10%		See note 2
RZ....2	57.88.4103	10 kOhm	10%		See note 2
RZ....3	57.88.4332	3.3 kOhm	10%		See note 3
TP....1	54.02.0320		test pin		
TP....2	54.02.0320		test pin		
Note 1 - Connector:	2 * 32 Euro Print				
	Burndy	P1 64 B 20 P00 F00 Z0			
	Ernt	9722.563.191			
Note 2 - Network:	8 * 10 kOhm, 5%, single line				
	Bourne	4609 X 101 - 103			
	Sprague	256 CJ 103 X 2 PD			
	Beckmann	L - 09 - 1 - R 3.3 k J			
	Matsushita	F 9 E 10 k 5%			
	Tana	MRG C 09 X 10 k J			
Note 3 - Network:	8 * 3.3 kOhm, 5%, single line				
	Bourne	4609 X 101 - 332			
	Sprague	256 CJ 332 X 2 PD			
	Beckmann	L - 09 - 1 - R 3.3 k J			
	Matsushita	F 9 E 3.3 k 5%			
	Tana	MRG C 09 X 3.3 k J			

Manufacturer: AMI=American Microsystem Inc., Fc=Fairchild, Hi=Hitachi, ITT=Intermetall, Is=Intersil, Ma=Maxim, Mot=Motorola, NS=National Semi-conductors, Ph=Philips, Ra=Raytheon, RCA=RCA Corporation of America, Sig=Signetics, TI=Texas Instruments, To=Toshiba.

1.820.762.81 TAPE DECK PERIPHERY CONTR. BD 85/10/3000

TAPE DECK SERIAL INTERFACE 1.820.763.83

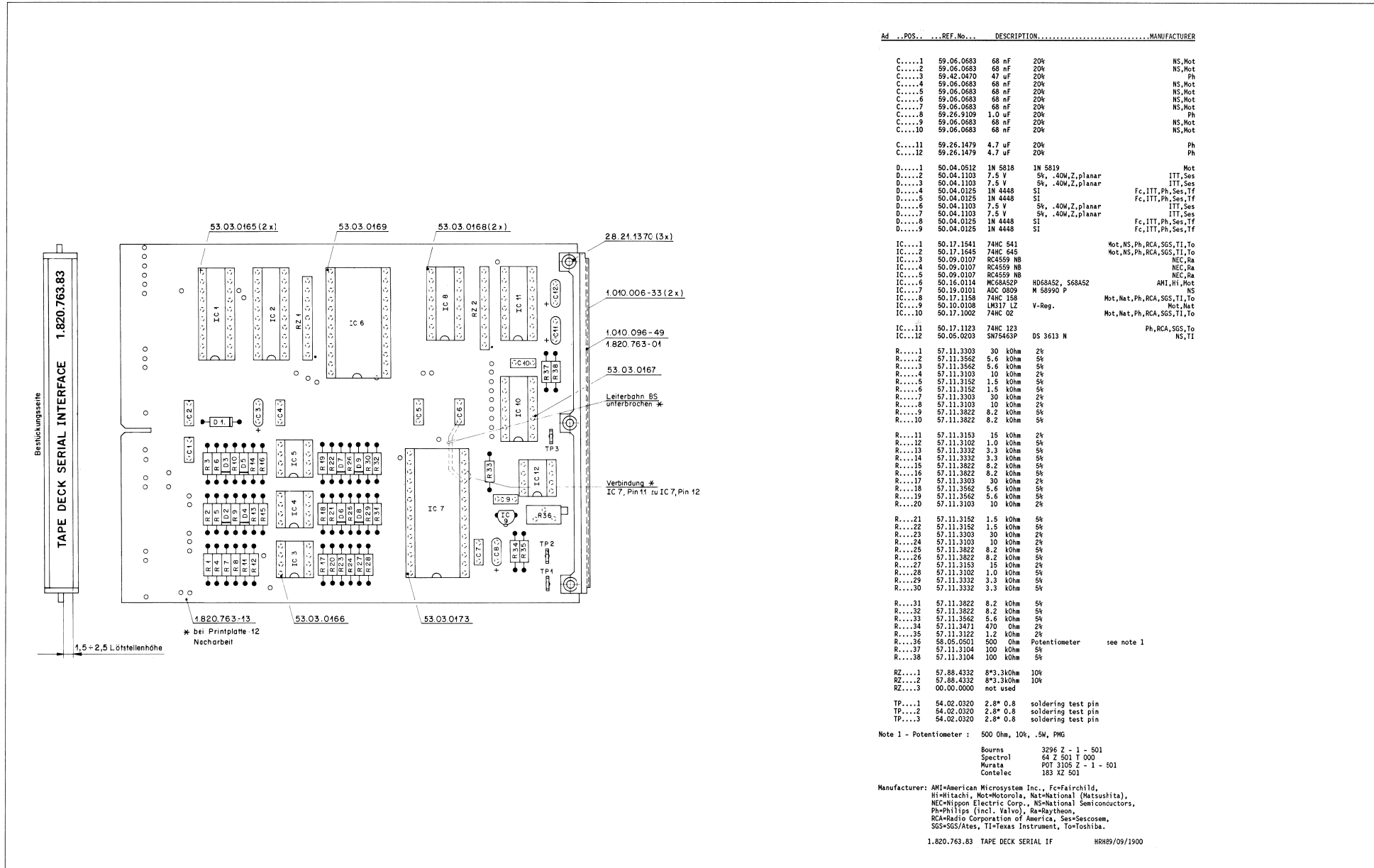


TP1= 0.0V
 TP2= 5.0V REFERENCE
 R36= 5V ADJUST

★ R23 NOT USED



TAPE DECK SERIAL INTERFACE 1.820.763.83



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.06.0683	68 nF	20k	NS, Mot
C....2	59.06.0683	68 nF	20k	NS, Mot
C....3	59.42.0470	47 uF	20k	Ph
C....4	59.06.0683	68 nF	20k	NS, Mot
C....5	59.06.0683	68 nF	20k	NS, Mot
C....6	59.06.0683	68 nF	20k	NS, Mot
C....7	59.06.0683	68 nF	20k	NS, Mot
C....8	59.26.9109	1.0 uF	20k	Ph
C....9	59.06.0683	68 nF	20k	NS, Mot
C....10	59.06.0683	68 nF	20k	NS, Mot
C....11	59.26.1479	4.7 uF	20k	Ph
C....12	59.26.1479	4.7 uF	20k	Ph
D....1	50.04.0512	1N 5818	1N 5819	Mot
D....2	50.04.1103	7.5 V	5k, .40W, Z, planar	ITT, Ses
D....3	50.04.1103	7.5 V	5k, .40W, Z, planar	ITT, Ses
D....4	50.04.0125	1N 4448	SI	Fc, ITT, Ph, Ses, Tf
D....5	50.04.0125	1N 4448	SI	Fc, ITT, Ph, Ses, Tf
D....6	50.04.1103	7.5 V	5k, .40W, Z, planar	ITT, Ses
D....7	50.04.1103	7.5 V	5k, .40W, Z, planar	ITT, Ses
D....8	50.04.0125	1N 4448	SI	Fc, ITT, Ph, Ses, Tf
D....9	50.04.0125	1N 4448	SI	Fc, ITT, Ph, Ses, Tf
IC....1	50.17.1541	74HC 841		Mot, NS, Ph, RCA, SGS, TI, To
IC....2	50.17.1645	74HC 645		Mot, NS, Ph, RCA, SGS, TI, To
IC....3	50.09.0107	RC4559 NB		NEC, Ra
IC....4	50.09.0107	RC4559 NB		NEC, Ra
IC....5	50.09.0107	RC4559 NB		NEC, Ra
IC....6	50.16.0114	MC68A52P	HD68A52, S68A52	AMI, Hi, Mot
IC....7	50.19.0101	ADC 0809	M 58990 P	Mot, Nat, Ph, RCA, SGS, TI, To
IC....8	50.17.1158	74HC 158		Mot, Nat, Ph, RCA, SGS, TI, To
IC....9	50.10.0108	LM317 LZ	V-Reg.	Mot, Nat
IC....10	50.17.1002	74HC 02		Mot, Nat, Ph, RCA, SGS, TI, To
IC....11	50.17.1123	74HC 123		Ph, RCA, SGS, To
IC....12	50.05.0203	SN75463P	DS 3613 N	NS, TI
R....1	57.11.3303	30 kOhm	5%	
R....2	57.11.3562	5.6 kOhm	5%	
R....3	57.11.3562	5.6 kOhm	5%	
R....4	57.11.3103	10 kOhm	2%	
R....5	57.11.3152	1.5 kOhm	5%	
R....6	57.11.3152	1.5 kOhm	5%	
R....7	57.11.3303	30 kOhm	2%	
R....8	57.11.3103	10 kOhm	2%	
R....9	57.11.3822	8.2 kOhm	5%	
R....10	57.11.3822	8.2 kOhm	5%	
R....11	57.11.3153	15 kOhm	2%	
R....12	57.11.3102	10 kOhm	5%	
R....13	57.11.3332	3.3 kOhm	5%	
R....14	57.11.3332	3.3 kOhm	5%	
R....15	57.11.3822	8.2 kOhm	5%	
R....16	57.11.3822	8.2 kOhm	5%	
R....17	57.11.3303	30 kOhm	2%	
R....18	57.11.3562	5.6 kOhm	5%	
R....19	57.11.3562	5.6 kOhm	5%	
R....20	57.11.3103	10 kOhm	2%	
R....21	57.11.3152	1.5 kOhm	5%	
R....22	57.11.3152	1.5 kOhm	5%	
R....23	57.11.3303	30 kOhm	2%	
R....24	57.11.3103	10 kOhm	2%	
R....25	57.11.3822	8.2 kOhm	5%	
R....26	57.11.3822	8.2 kOhm	5%	
R....27	57.11.3153	15 kOhm	2%	
R....28	57.11.3102	10 kOhm	5%	
R....29	57.11.3332	3.3 kOhm	5%	
R....30	57.11.3332	3.3 kOhm	5%	
R....31	57.11.3822	8.2 kOhm	5%	
R....32	57.11.3822	8.2 kOhm	5%	
R....33	57.11.3562	5.6 kOhm	5%	
R....34	57.11.3471	470 Ohm	2%	
R....35	57.11.3122	1.2 kOhm	2%	
R....36	58.05.0501	500 Ohm	Potentiometer	see note 1
R....37	57.11.3104	100 kOhm	5%	
R....38	57.11.3104	100 kOhm	5%	
RZ....1	57.88.4332	8*3.3kOhm	10%	
RZ....2	57.88.4332	8*3.3kOhm	10%	
RZ....3	00.00.0000	not used		
TP....1	54.02.0320	2.8* 0.8	soldering test pin	
TP....2	54.02.0320	2.8* 0.8	soldering test pin	
TP....3	54.02.0320	2.8* 0.8	soldering test pin	

Note 1 - Potentiometer : 500 Ohm, 10%, .5W, PMG
 Bourne 3296 Z - 1 - 501
 Spectrol 64 Z 501 T 000
 Murata POT 3105 Z - 1 - 501
 Contelec 183 XZ 501

Manufacturer: AMI=American Microsystem Inc., Fc=Fairchild,
 Hi=Hitachi, Mot=Motorola, Nat=National (Matsushita),
 NEC=Nippon Electric Corp., NS=National Semiconductors,
 Ph=Philips (incl. Valvo), Ra=Raytheon,
 RCA=Radio Corporation of America, Ses=Secosom,
 SGS=SGS/Ates, TI=Texas Instrument, To=Toshiba.



CAPSTAN CONTROL UNIT 1.820.764.28

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
20	C....1	59.26.0470	47 uF	20%, 6.3V Ph
20	C....2	59.06.0683	68 nF	20%
20	C....3	59.06.0683	68 nF	20%
20	C....4	59.32.2472	4.7 nF	10%
20	C....5	59.06.0683	68 nF	20%
20	C....6	59.32.2332	3.3 nF	10%
20	C....7	59.06.0683	68 nF	20%
20	C....8	59.06.0683	68 nF	20%
20	C....9	59.06.0683	68 nF	20%
20	C....10	59.45.4560	56 pF	10%
20	C....11	59.05.1101	100 pF	1%
20	C....12	59.06.0683	68 nF	20%
20	C....13	59.06.0683	68 nF	20%
20	C....14	59.06.0683	68 nF	20%
20	C....15	59.06.0683	68 nF	20%
20	C....16	59.06.0683	68 nF	20%
20	C....17	59.06.0683	68 nF	20%
20	C....18	59.06.0683	68 nF	20%
20	C....19	59.45.1155	15 pF	5%
22	C....19	59.45.2330	33 pF	5%
20	C....20	59.45.1155	15 pF	5%
22	C....20	59.45.2330	33 pF	5%
20	C....21	59.32.4102	1 nF	20%
20	C....22	59.06.0104	100 pF	10%
20	C....23	59.06.0474	470 nF	20%
20	C....24	59.06.0683	68 nF	20%
20	I....1	50.04.0512	1M 5818	1M 5819 Mot
20	I....2	50.04.0125	1M 4448	ITT, Ph, Ses, TI
20	I....3	50.04.0125	1M 4448	ITT, Ph, Ses, TI
20	I....4	50.04.0125	1M 4448	ITT, Ph, Ses, TI
20	I....1	50.17.1540	74 HC 540	Ph, Mot, NS, RCA, To, TI
20	I....2	50.17.1741	74 HC 541	Ph, Mot, NS, RCA, To, TI
20	I....3	50.17.1245	74 HC 245	Mot, Ph, RCA, To, TI
20	I....4	50.17.1008	74 HC 08	Ph, Mot, NS, RCA, To, TI
20	I....5	50.17.1074	74 HC 74	Ph, Mot, NS, RCA, To, TI
20	I....6	50.17.1004	74 HC 04	Ph, Mot, NS, RCA, To, TI
20	I....7	50.17.1002	74 HC 02	Ph, Mot, NS, RCA, To, TI
20	I....8	50.06.0123	74 LS 123	Mot, TI
20	I....9	50.17.1000	74 HC 00	Ph, Mot, NS, RCA, To, TI
20	I....10	50.17.1153	74 HC 153	Mot, Ph, RCA, To, TI
20	I....11	50.17.0004	74 HCT 04	Ph, NS, RCA
20	I....12	50.17.1139	74 HC 139	Ph, Mot, NS, RCA, SGS, To, TI
20	I....13	50.07.0502	4520 Bk	Ph, Fc
20	I....14	50.17.1573	74 HC 573	HEF 4520
20	I....15	50.14.0107	MSM5128-15	MSM5128-15
20	I....16	50.16.0101	MS68036-1	MS68036-1
20	I....17	00.00.0000		see note 1
20	I....17	1.820.994.20	Software 13/85, Capstan Control	St
21	I....17	1.820.994.21	Software 35/85, Capstan Control	St
22	I....17	1.820.994.22	Software 36/85, Capstan Control	St
24	I....17	1.820.994.23	Software 17/87, Capstan Control	St
25	I....17	1.820.994.24	Software 22/88, Capstan Control	St
26	I....17	1.820.994.25	Software 35/88, Capstan Control	St
27	I....17	1.820.994.26	Software 37/89, Capstan Control	St
28	I....17	1.820.994.27	Software 10/92, Capstan Control	St
20	I....18	50.11.0122	TL1705ACP	TI
20	JS....1	00.00.0000		see note 2
20	JS....2	00.00.0000		see note 2
20	JS....3	00.00.0000		see note 2
20	TP....1	00.00.0000		see note 2
20	TP....2	00.00.0000		see note 2
20	TP....3	54.02.0320	Testpoint	
20	R....1	57.11.4221	220 Ohm	2%
20	R....2	57.11.4103	10 kOhm	10%
20	R....3	57.11.3133	10 kOhm	2%
20	R....4	57.11.4332	3.3 kOhm	10%
20	R....5	57.11.3512	5.1 kOhm	2%
20	R....6	57.11.4332	3.3 kOhm	10%
20	R....7	57.11.4332	3.3 kOhm	10%
20	R....8	57.11.4471	470 Ohm	10%
20	FZ....1	57.88.4103	Network 8 * 10 kOhm (old part 1.010.014.57)	
20	FZ....2	57.88.4103	Network 8 * 10 kOhm (old part 1.010.014.57)	
20	FZ....3	57.88.4103	Network 8 * 10 kOhm (old part 1.010.014.57)	
20	FZ....4	57.88.4332	Network 8 * 3.3 kOhm	
20	FZ....5	57.88.4332	Network 8 * 3.3 kOhm	
20	FZ....6	57.88.4103	Network 8 * 10 kOhm (old part 1.010.014.57)	
20	FZ....7	57.88.4332	Network 8 * 3.3 kOhm	
20	S....1	55.03.0122	Switch impuls, see note 3	
20	Y....1	89.01.0553	4.9152 MHz, TD18	
22	Y....1	89.01.0560	4.9152 MHz, +- 20 ppm.	

(21) 12.08.85 software 35/85 (EPROM 16k * 8)

(22) 12.11.85 Improved quartz accuracy.

(23) 18.09.86 Software 36/86

(24) 24.04.87 Software 17/87

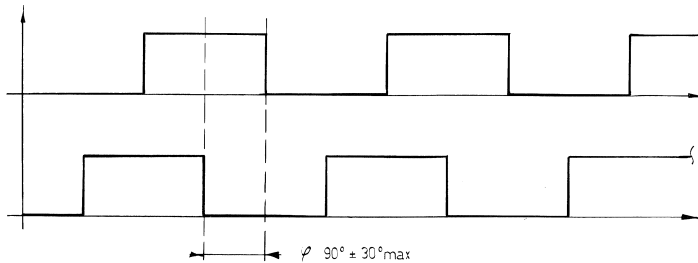
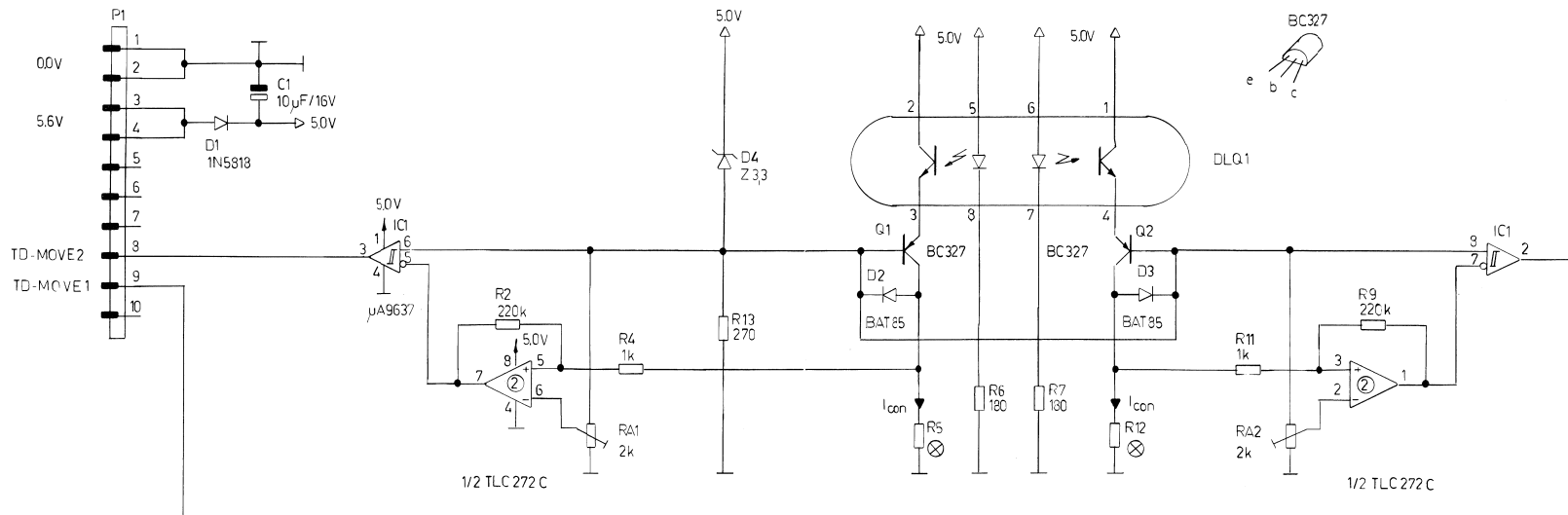
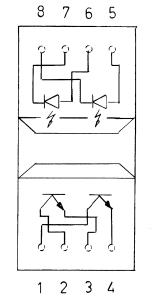
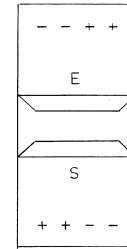
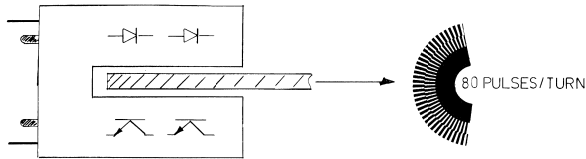
(25) 10.06.88 Software 22/88

(26) 31.08.88 Software 35/88

(27) 15.03.89 Software 37/89

(28) 28.02.92 Software 10/92

MOVE SENSOR 1.820.770.82



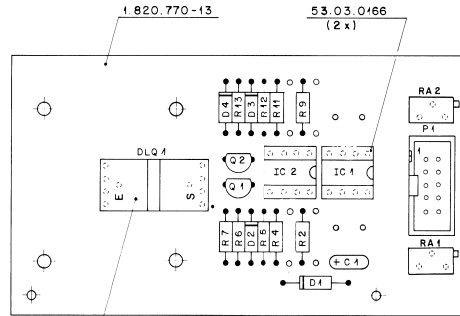
⊗ R5/R12 factory adjusted according to following table
coupling measured without tacho disk
 I_{con} measurement R2/R4 replaced by digital milliamperemeter

I_{con}	250µA	360µA	520µA	720µA	1,07mA	1,55mA	2,2mA	3,1mA	4,6mA	6,5mA	10mA
R2/R4	7k5	5k1	3k6	2k4	1k6	1k2	820	560	390	270	

15,11,89 ZOLLER	A 8 2 0	PAGE 1 OF 1
STUDER	MOVE SENSOR	SC 1.820.770.82



MOVE SENSOR 1.820.770.82



DLQ1 soll auflegend
auf Bestückungsseite
montiert.

Ad . POS. . . . REF.No. . . . DESCRIPTION MANUFACTURER

C....1	59.26.2100	10 uF	20%, 16V, Sal		
C....2	00.00.0000	not used			
C....3	00.00.0000	not used			
D....1	50.04.0512	IN 5818	IN 5913		Mot
D....2	50.04.0127	BAT 42	BAT 85, BAS 40-02,		Ph, Sie, Tho
D....3	50.04.0127	BAT 42	BAT 85, BAS 40-02,		Ph, Sie, Tho
D....4	50.04.1107	3,3V Z	82X 55-C3V3		ITT, Mot, Ph, Tf, Tho
DLQ...1	50.99.0166	OPB 826			Op
IC...1	50.15.0114	uA9637ACP	9637 AFC		Fc, TI
IC...2	50.05.0286	LW 358 W	LW 358 P		NS, Mot, SGS, TI
01 IC...2	50.09.0122	TLC 272 C	TS 272 CN		SGS, TI
P....1	54.14.2001	10 cont.	see note 1		
Q....1	50.03.0351	BC 327-25			ITT, Ph, Sie
Q....2	50.03.0351	BC 327-25			ITT, Ph, Sie
R....1	00.00.0000	not used			
R....2	57.11.3224	220 kOhm	1%		
R....3	00.00.0000	not used			
R....4	57.11.3102	1 kOhm	1%		
R....5	00.00.0000	factory	adjusted		
R....6	57.11.3181	180 Ohm	1%		
R....7	57.11.3181	180 Ohm	1%		
R....8	00.00.0000	not used			
R....9	57.11.3224	220 kOhm	1%		
R....10	00.00.0000	not used			
R....11	57.11.3102	1 kOhm	1%		
R....12	00.00.0000	factory	adjusted		
R....13	57.11.3271	270 Ohm	1%		
RA....1	58.05.0202	2 kOhm	10% multi turn		
RA....2	58.05.0202	2 kOhm	10% multi turn		

(01) 11.01.90 Printout error

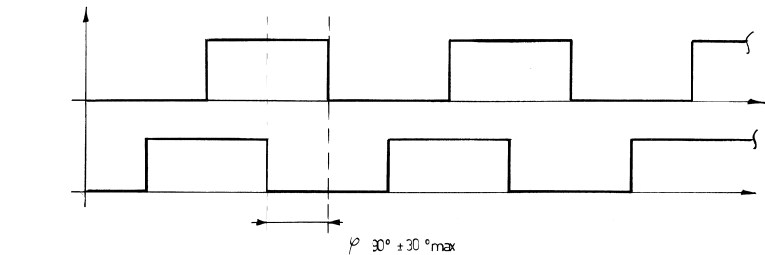
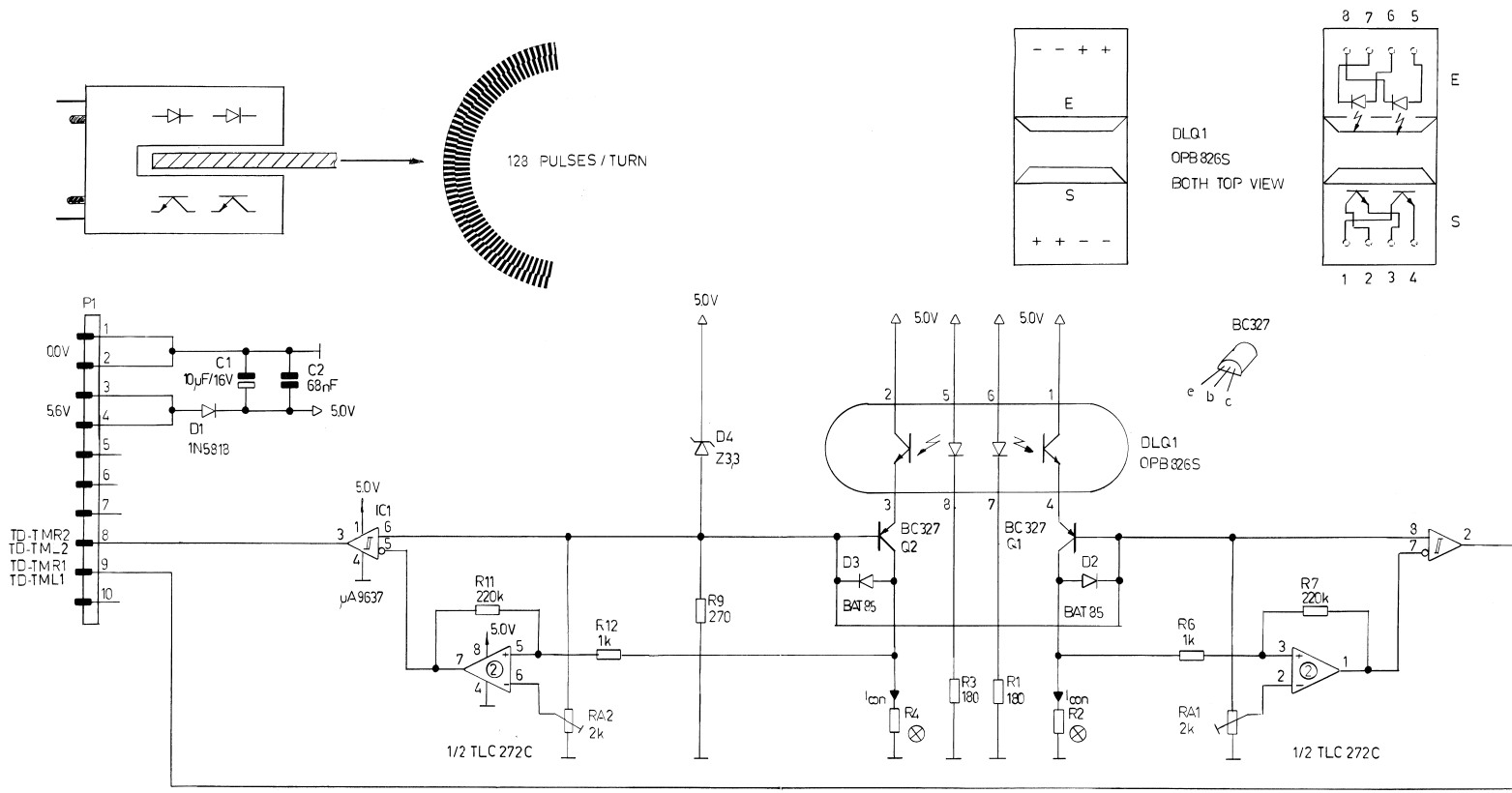
Note 1 - Connector 10 contacts:
Yamaichi nr. FAP-10-08-40SS
Burdny nr. BPH 9 810 800 GS
3M nr. 7610-6002 VZ

E1=Electrolytic, Sal=Solid aluminium

MANUFACTURER: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NS=National
Semiconductor, Op=Optron, Ph=Philips, SGS=SGS/Ates,
Sie=Siemens, Tf=Telefunken, Tho=Thomson, TI=Texas Instrument.

1.820.770.82 MOVE SENSOR PZ 89/11/1500
1.820.770.82 MOVE SENSOR PZ 90/01/1101

MOTOR TACHO 1.820.771.84

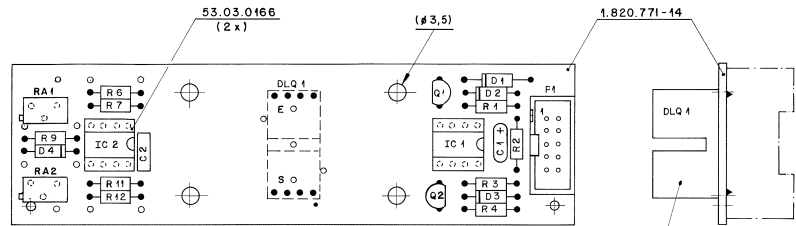


⊗ R2/R4 factory adjusted according to following table
 coupling measured without tacho disk
 I_{con} measurement: R2/R4 replaced by digital milliamperemeter

I _{con}	250 μA	360 μA	520 μA	720 μA	107 mA	155 mA	2,2 mA	3,1 mA	4,6 mA	6,5 mA	10 mA
R2/R4	7k5	5k1	3k6	2k4	1k6	1k2	820	560	390	270	



MOTOR TACHO 1.820.771.84



DLQ1 satt aufliegend auf Lötseite montiert. Nach der Montage, beschichtet mit Epoxid - Lack nach BV 682. Hierbei 4 Bohrungen $\phi 3,5$ abgedeckt mit Klebband (müssen frei bleiben von Lack).

43.01.0108 und Schild 1.820.771-01 aufgeklebt nach Fabrikationsmuster.

Abgegeben	Freigegeben								
Datum	Gez.	Gepr.	Ges.	Index					
10.3.92									

STUDER REGENSDORF ZÜRICH	Bezeichnung: MOTOR TACHO BOARD ESE	Nummer: 1.820.771-84
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Ad . . POS. . . REF. No. . . DESCRIPTION MANUFACTURER

C....1	59.26.2100	10 uF	20%, 16V, Sa1	
C....2	59.06.0683	68 nF	10%, 63V, PETP	
C....3	00.00.0000	not used		
C....4	00.00.0000	not used		
D....1	50.04.0512	1N 5818	1N 5818	
D....2	50.04.0127	BAT 42	BAT 85, BAS 40-02,	Ph, Sie, Tho
D....3	50.04.0127	BAT 42	BAT 85, BAS 40-02,	Ph, Sie, Tho
D....4	50.04.1107	3,3V Z	BZX 55-C3V3	ITT, Mot, Ph, Tf, Tho
DLQ...1	50.99.0166	OPB 826		Op
IC....1	50.15.0114	uA9637ACP	9637 ATC	Fc, TI
IC....2	50.05.0286	LM 358 M	LM 358 P	NS, Mot, SGS, TI
IC....2	50.09.0122	TLC 272 C	TS 272 CN	SGS, TI
P....1	54.14.2001	10 cont.	see note 1	
Q....1	50.03.0351	BC 327-25		ITT, Ph, Sie
Q....2	50.03.0351	BC 327-25		ITT, Ph, Sie
R....1	57.11.3181	180 Ohm	1%	
R....2	00.00.0000	factory	adjusted	
R....3	57.11.3181	180 Ohm	1%	
R....4	00.00.0000	factory	adjusted	
R....5	00.00.0000	not used	1%	
R....6	57.11.3102	1 kOhm	1%	
R....7	57.11.3224	220 kOhm	1%	
R....8	00.00.0000	not used		
R....9	57.11.3271	270 Ohm	1%	
R....10	00.00.0000	not used		
R....11	57.11.3224	220 kOhm	1%	
R....12	57.11.3102	1 kOhm	1%	
R....13	00.00.0000	not used		
RA....1	58.05.0202	2 kOhm	10%, multi turn	
RA....2	58.05.0202	2 kOhm	10%, multi turn	

(01) 11.01.90 Printout error

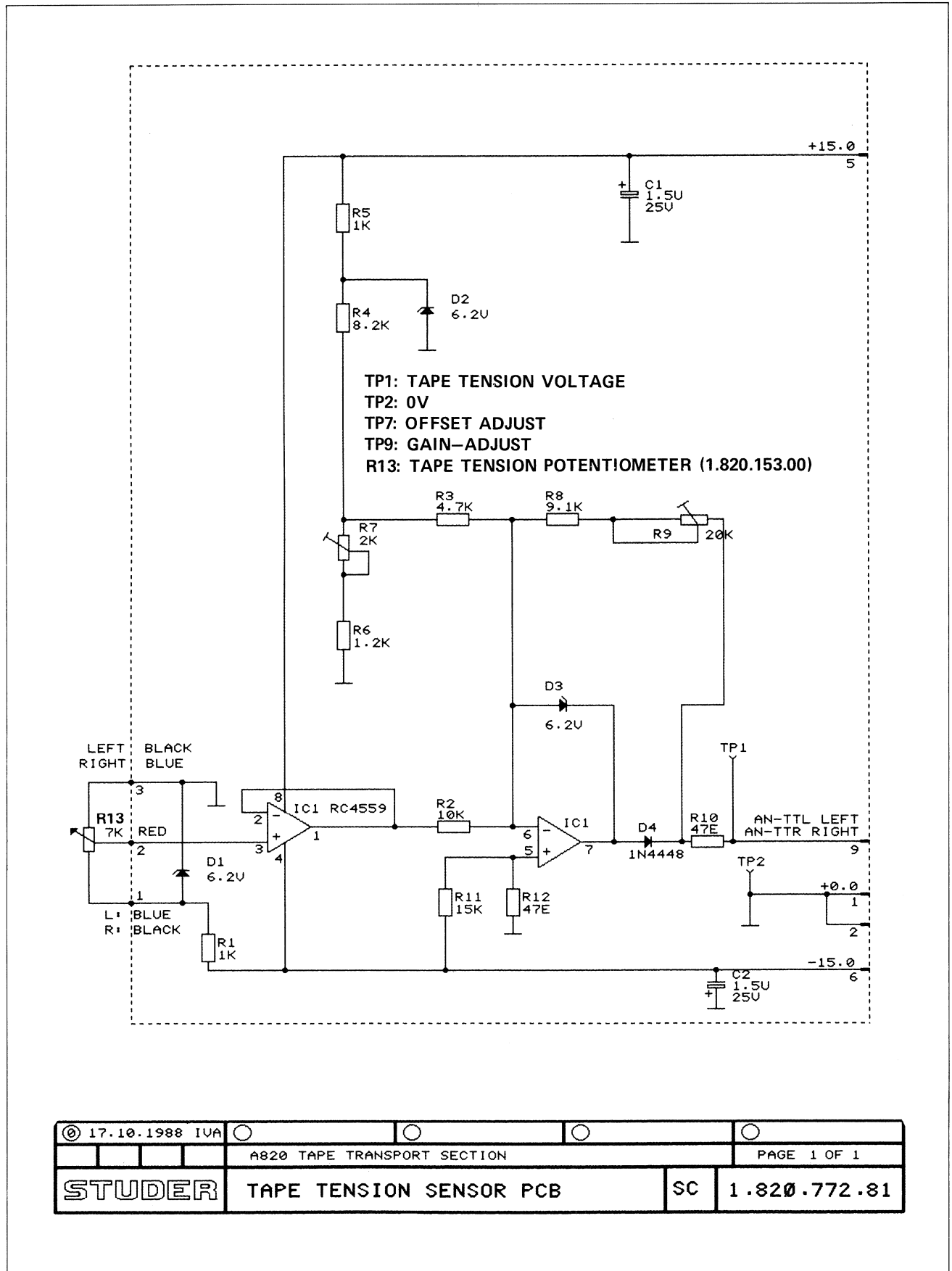
Note 1 - Connector 10 contacts:
Yamaichi nr. FAP-10-08-40SS
Burndy nr. BPH 9 810 800 GS
3M nr. 7610-6002 YZ

EI=Electrolytic, Sa=Solid aluminium

MANUFACTURER: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NS=National Semiconductor, Op=Optron, Ph=Philips, SGS=SGS/Ates, Sie=Siemens, Tf=Telefunken, Tho=Thomson, TI=Texas Instrument.

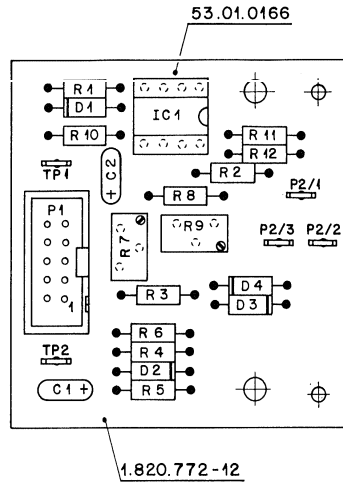
1.820.771.83	MOTOR TACHO	PZ 89/11/1500
1.820.771.83	MOTOR TACHO	PZ 90/01/1101

TAPE TENSION SENSOR PCB 1.820.772.81



© 17.10.1988 IVA				
A820 TAPE TRANSPORT SECTION			PAGE 1 OF 1	
STUDER	TAPE TENSION SENSOR PCB		SC	1.820.772.81

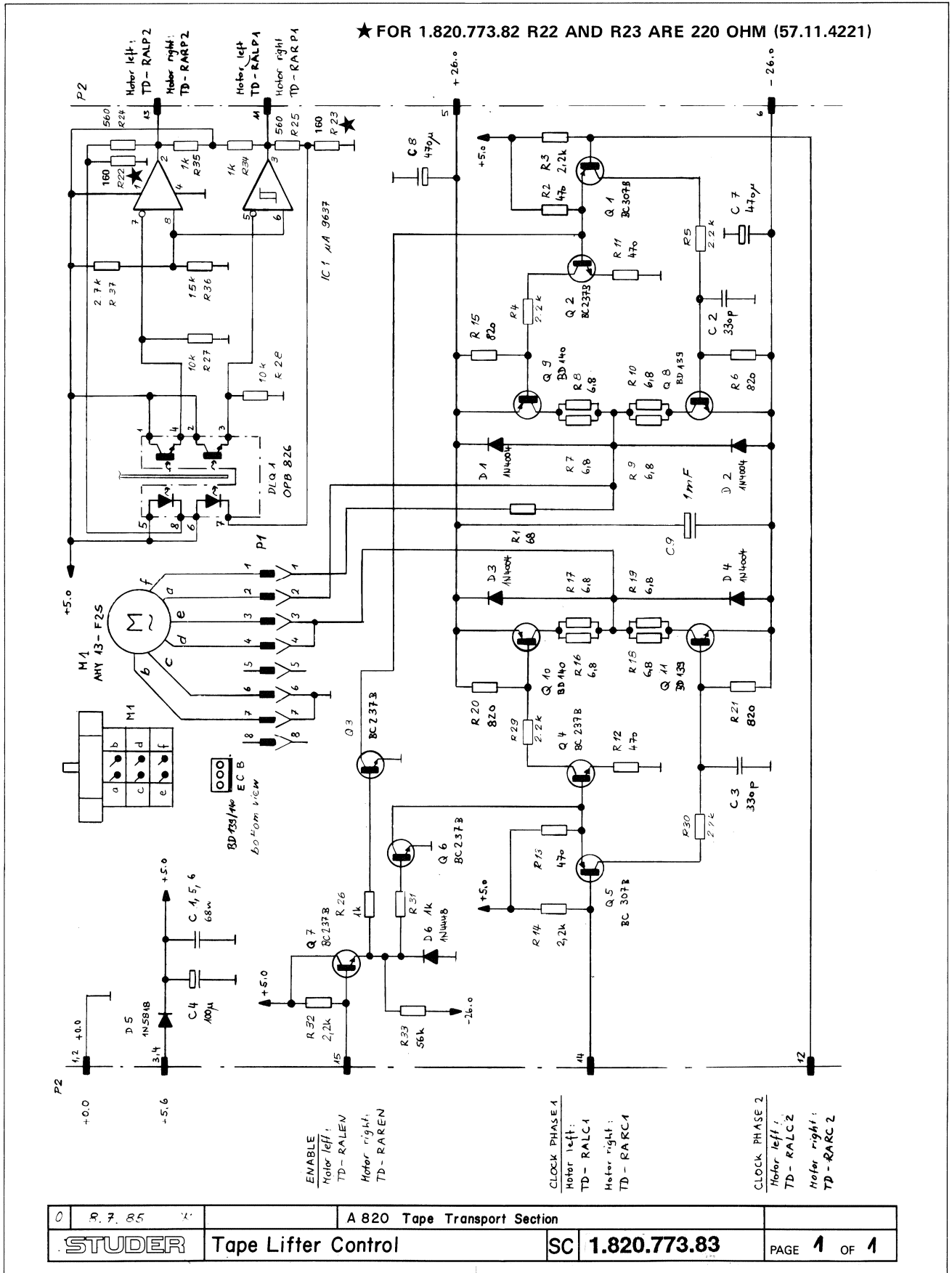
TAPE TENSION SENSOR PCB 1.820.772.81



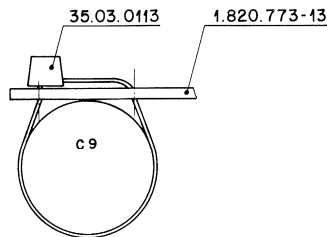
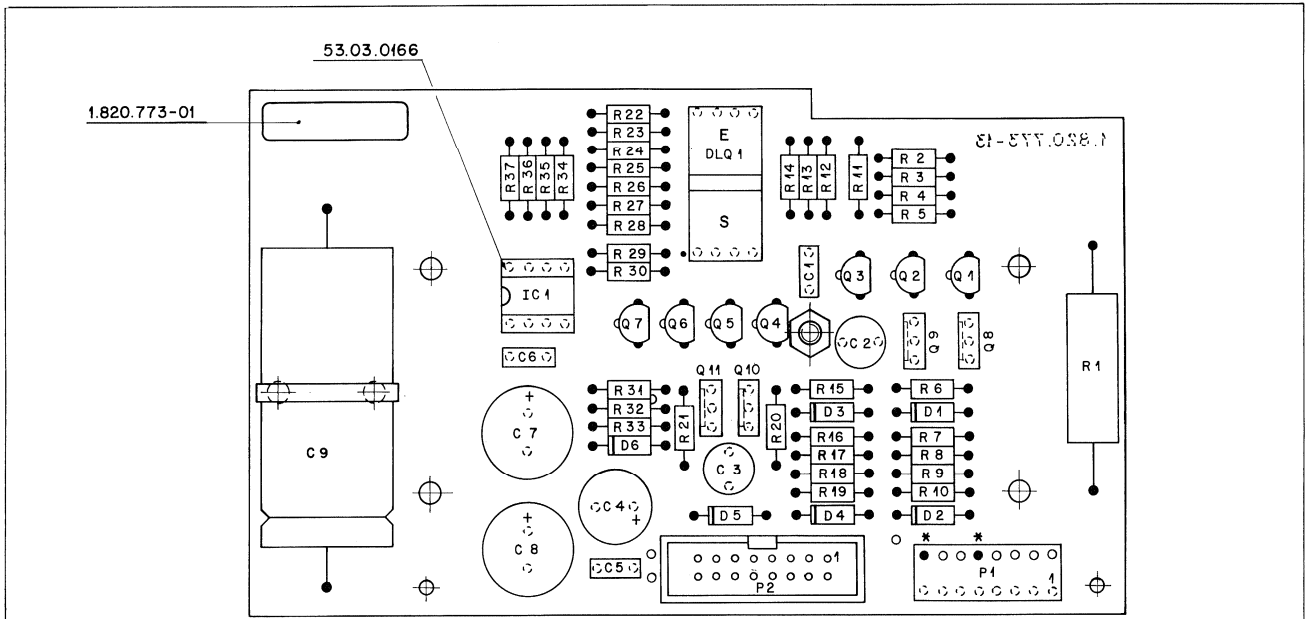
Schild 1.820.772-01
aufgeklebt nach Fabrikationsmuster.

Ad	..POS..	...REF.No...	DESCRIPTION.....	MANUFACTURER
C.....1	59.26.5159	1.5 uF	25V, Sal	Ph
C.....2	59.26.5159	1.5 uF	25V, Sal	Ph
D.....1	50.04.1118	6.2 V Z	BZX 55 C6V2	ITT,Mot,Ph,Tf,SGS,Tho
D.....2	50.04.1102	6.8 V Z	BZX 55 C6V8	ITT,Mot,Ph,Tf,SGS,Tho
D.....3	50.04.1118	6.2 V Z	BZX 55 C6V2	ITT,Mot,Ph,Tf,SGS,Tho
D.....4	50.04.0125	1 N 4448		Fc,ITT,Ph,SES,Tf
IC....1	50.09.0107	RC 4559 NB	uPC 4559	NEC,Ra
P.....1	54.14.2001	10 cont.	see note 1	
P.....2	54.02.0320			
P.....2	54.02.0320			
P.....2	54.02.0320			
R.....1	57.11.4102	1 kOhm		
R.....2	57.11.4103	10 kOhm		
R.....3	57.11.4472	4.7 kOhm		
R.....4	57.11.4822	8.2 kOhm		
R.....5	57.11.4102	1 kOhm		
R.....6	57.11.4122	1.2 kOhm		
R.....7	58.05.1202	2 kOhm	see note 2	
R.....8	57.11.3912	9.1 kOhm		
R.....9	58.05.1203	20 kOhm	see note 3	
R.....10	57.11.4470	47 Ohm		
R.....11	57.11.3153	15 kOhm		
R.....12	57.11.3470	47 Ohm		
TP....1	54.02.0320	Testpoint		
TP....2	54.02.0320	Testpoint		
Note 1 - Connector				
	Burndy		BPH 7 B 10 B00 GS	
	Yamaichi		FAP-10-08//4	
Note 2 - 2 kOhm Potentiometer, linear				
	Allan Bradley		E 2B 202	
	Bourns		386 F-1-202	
	Spectrol		63 M 202 T010	
Note 3 - 20 kOhm Potentiometer, linear				
	Allan Bradley		E 2B 203	
	Bourns		386 F-1-203	
	Spectrol		63 M 203 T010	
Sal = Solid Aluminium.				
MANUFACTURER: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NEC= Nippon Electric Corp., Ph=Philips, Ra=Raytheon, SGS=SGS/Ates, Ses=Secosem, Tho=Thomson, Tf=Telefunken.				
1.820.772.81 TAPE TENSION SENSOR			BD 88/11/2900	

TAPE LIFTER CONTROL 1.820.773.83



TAPE LIFTER CONTROL 1.820.773.83

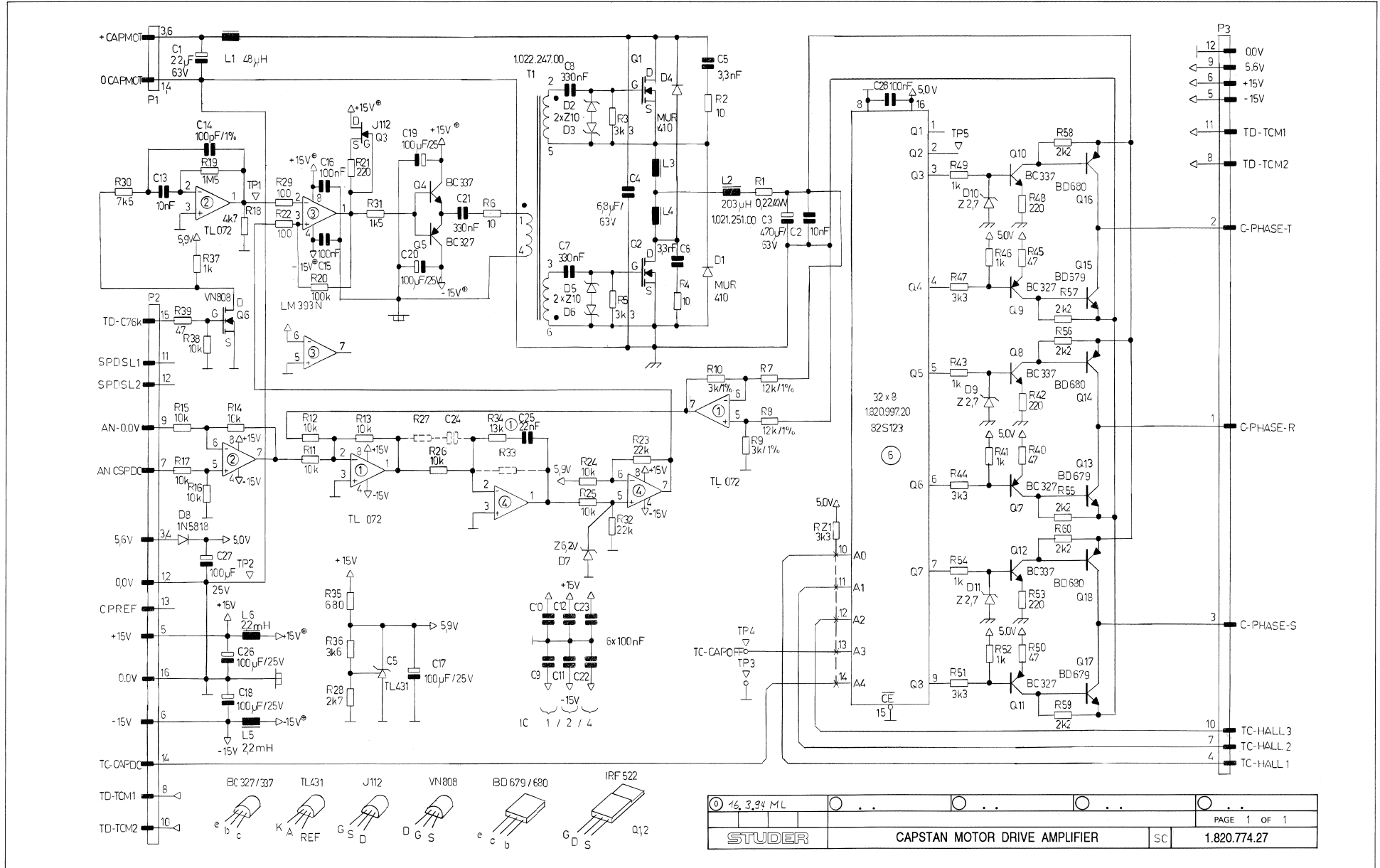


* Codierung : Schaltdraht 64.04.0108 Ø 0,8 x 8 mm (muss 1 mm vorstehen).

Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
C....1	59.06.0683	68 nF	10%, 63V, PETP	
C....2	59.05.2331	330 pF	2.5%, 63V, PP	
C....3	59.05.2331	330 pF	2.5%, 63V, PP	
C....4	59.22.4101	100 uF	10%, 16V, E1	
C....5	59.06.0683	68 nF	10%, 63V, PETP	
C....6	59.06.0683	68 nF	10%, 63V, PETP	
C....7	59.22.6471	470 uF	10%, 40V, E1	
C....8	59.22.6471	470 uF	10%, 40V, E1	
C....9	59.25.6102	1000 uF	63V, E1	
D....1	50.04.0122	1N 4001	...	1N 4004
D....2	50.04.0122	1N 4001	...	1N 4004
D....3	50.04.0122	1N 4001	...	1N 4004
D....4	50.04.0122	1N 4001	...	1N 4004
D....5	50.04.0512	1N 5818	...	1N 5819
D....6	50.04.0125	1N 4448		
DLQ...1	50.99.0166	OPB 8265		Op
IC....1	50.15.0114	uA 9637A		TI,Fc
P....1	54.01.0289		see note 1	
P....2	54.14.2002		see note 2	
Q....1	50.03.0515	BC 307 B	BC 251 B, BC 557 B	ITT,Mot,Ph
Q....2	50.03.0436	BC 237 B	BC 547 B, BC 550 B	ITT,Mot,Ph,Sie
Q....3	50.03.0436	BC 237 B	BC 547 B, BC 550 B	ITT,Mot,Ph,Sie
Q....4	50.03.0436	BC 237 B	BC 547 B, BC 550 B	ITT,Mot,Ph,Sie
Q....5	50.03.0515	BC 307 B	BC 251 B, BC 557 B	ITT,Mot,Ph
Q....6	50.03.0436	BC 237 B	BC 547 B, BC 550 B	ITT,Mot,Ph,Sie
Q....7	50.03.0436	BC 237 B	BC 547 B, BC 550 B	ITT,Mot,Ph,Sie
Q....8	50.03.0451	BD 139-10		Mot,Ph,SGS,Tf,To
Q....9	50.03.0452	BD 140-10		Mot,Ph,SGS,Tf,To
Q....10	50.03.0452	BD 140-10		Mot,Ph,SGS,Tf,To
Q....11	50.03.0451	BD 139-10		Mot,Ph,SGS,Tf,To
R....1	57.56.5680	68 Ohm	10%, 4 W	
R....2	57.11.4471	470 Ohm	2%	
R....3	57.11.4222	2.2 kOhm	2%	
R....4	57.11.4222	2.2 kOhm	2%	
R....5	57.11.4222	2.2 kOhm	2%	
R....6	57.11.4821	820 Ohm	2%	
R....7	57.11.4689	6.8 Ohm	5%	
R....8	57.11.4689	6.8 Ohm	5%	
R....9	57.11.4689	6.8 Ohm	5%	
R....10	57.11.4689	6.8 Ohm	5%	

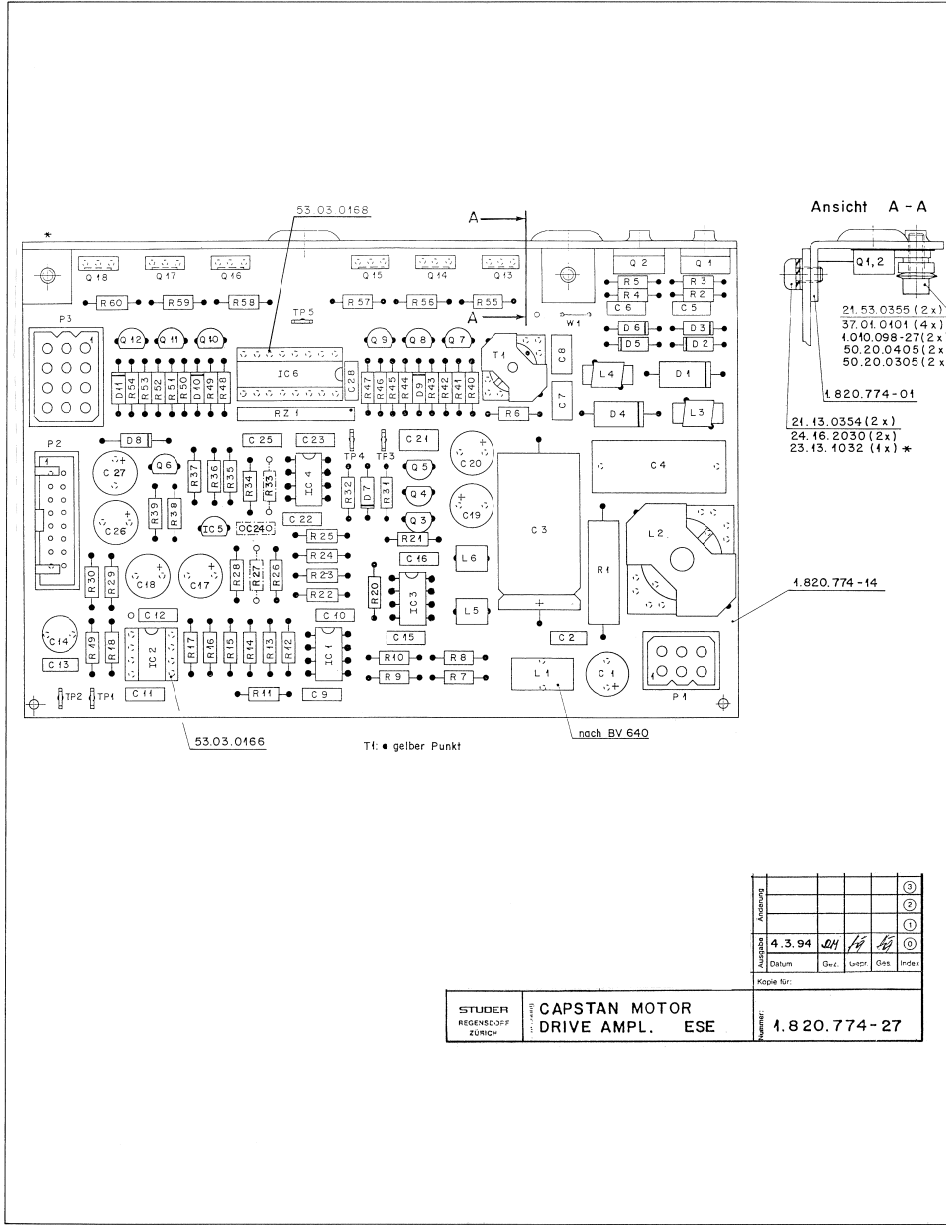
Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
R....11	57.11.4471	470 Ohm	2%	
R....12	57.11.4471	470 Ohm	2%	
R....13	57.11.4471	470 Ohm	2%	
R....14	57.11.4222	2.2 kOhm	2%	
R....15	57.11.4821	820 Ohm	2%	
R....16	57.11.4689	6.8 Ohm	5%	
R....17	57.11.4689	6.8 Ohm	5%	
R....18	57.11.4689	6.8 Ohm	5%	
R....19	57.11.4689	6.8 Ohm	5%	
R....20	57.11.4821	820 Ohm	2%	
R....21	57.11.4821	820 Ohm	2%	
R....22	57.11.4161	160 Ohm	2%	
R....23	57.11.4161	160 Ohm	2%	
R....24	57.11.4561	560 Ohm	2%	
R....25	57.11.4561	560 Ohm	2%	
R....26	57.11.4102	1 kOhm	2%	
R....27	57.11.4103	10 kOhm	2%	
R....28	57.11.4103	10 kOhm	2%	
R....29	57.11.4222	2.2 kOhm	2%	
R....30	57.11.4222	2.2 kOhm	2%	
R....31	57.11.4102	1 kOhm	2%	
R....32	57.11.4222	2.2 kOhm	2%	
R....33	57.11.4563	56 kOhm	2%	
R....34	57.11.4102	1 kOhm	2%	
R....35	57.11.4102	1 kOhm	2%	
R....36	57.11.4152	1.5 kOhm	2%	
R....37	57.11.4272	2.7 kOhm	2%	
Note 1	Connector: AMP Nr. --163.680-6			
Note 2	Connector: Yamaichi Nr. FAP-16-08//4 Burndy Nr. BPH 9 B 16 800 GS			
El=Electrolytic, PP=Polypropylene				
Manufacturer: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, Op=Optron, Ph=Philips, Ses=Sescosem, SGS=SGS/Ates, Sie=Siemens, Tf=Telefunken, TI=Texas Instruments, To=Toshiba.				
1.820.773.83 TAPE LIFTER CONTROL VF 91/03/2800				

CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.27





CAPSTAN MOTOR DRIVE AMPLIFIER 1.820.774.27

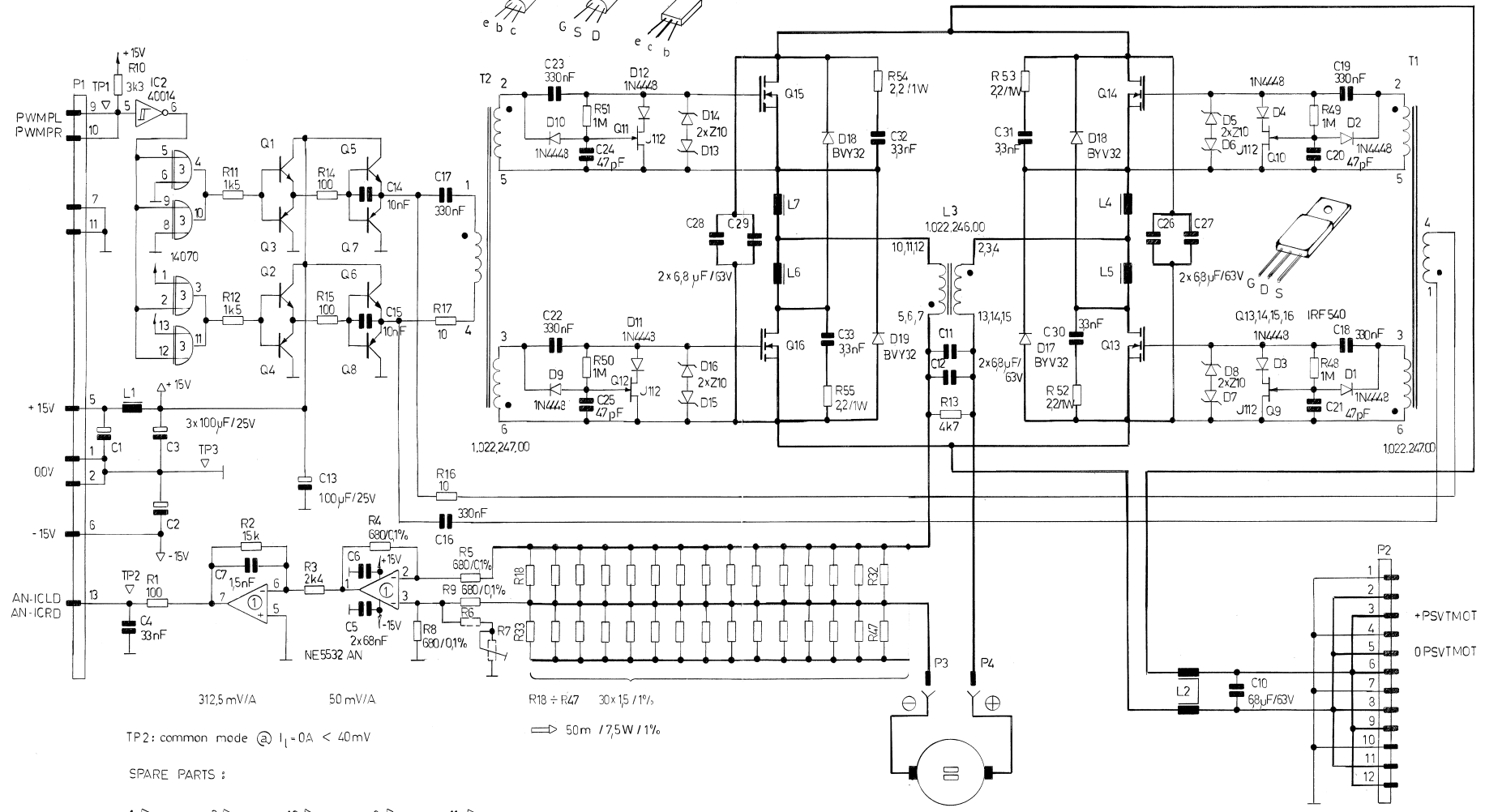


Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.22.8220	22 uF	-20%, 63V, EL		R....23	57.11.3223	22 kOhm	10%	
C....2	59.06.0103	10 nF	10%, 63V, PETP		R....24	57.11.3103	10 kOhm	10%	
C....3	59.25.6471	470 uF	-20%, 63V, EL		R....25	57.11.3103	10 kOhm	10%	
C....4	59.02.0685	6.8 uF	5%, 63V, MPC		R....26	57.11.3103	10 kOhm	10%	
C....5	59.06.0332	3.3 nF	10%, 63V, PETP		R....27	00.00.0000	not used		
C....6	59.06.0332	3.3 nF	10%, 63V, PETP		R....28	57.11.3272	2.7 kOhm	1%	
C....7	59.06.0334	330 nF	10%, 63V, PETP		R....29	57.11.3101	100 Ohm	10%	
C....8	59.06.0334	330 nF	10%, 63V, PETP		R....30	57.11.3752	7.5 kOhm	1%	
C....9	59.06.0104	100 nF	10%, 63V, PETP		R....31	57.11.3152	1.5 kOhm	10%	
C....10	59.06.0104	100 nF	10%, 63V, PETP		R....32	57.11.3223	22 kOhm	10%	
C....11	59.06.0104	100 nF	10%, 63V, PETP		R....33	00.00.0000	not used		
C....12	59.06.0104	100 nF	10%, 63V, PETP		R....34	57.11.3133	13 kOhm	1%	
C....13	59.06.0103	10 nF	10%, 63V, PETP		R....35	57.11.3661	680 Ohm	10%	
C....14	59.05.1101	100 uF	1%, 63V, PP		R....36	57.11.3352	3.6 kOhm	1%	
C....15	59.06.0104	100 nF	10%, 63V, PETP		R....37	57.11.3102	1 kOhm	10%	
C....16	59.06.0104	100 nF	10%, 63V, PETP		R....38	57.11.3103	10 kOhm	10%	
C....17	59.22.5101	100 uF	-20%, 25V, EL		R....39	57.11.3470	47 Ohm	10%	
C....18	59.22.5101	100 uF	-20%, 25V, EL		R....40	57.11.3470	47 Ohm	10%	
C....19	59.22.5101	100 uF	-20%, 25V, EL		R....41	57.11.3102	1 kOhm	10%	
C....20	59.22.5101	100 uF	-20%, 25V, EL		R....42	57.11.3221	220 Ohm	10%	
C....21	59.06.0334	330 nF	10%, 63V, PETP		R....43	57.11.3102	1 kOhm	10%	
C....22	59.06.0104	100 nF	10%, 63V, PETP		R....44	57.11.3332	3.3 kOhm	10%	
C....23	59.06.0104	100 nF	10%, 63V, PETP		R....45	57.11.3470	47 Ohm	10%	
C....24	00.00.0000	not used			R....46	57.11.3102	1 kOhm	10%	
C....25	59.06.0223	22 uF	10%, 63V, PETP		R....47	57.11.3332	3.3 kOhm	10%	
C....26	59.22.5101	100 uF	-20%, 25V, EL		R....48	57.11.3221	220 Ohm	10%	
C....27	59.22.5101	100 uF	-20%, 25V, EL		R....49	57.11.3102	1 kOhm	10%	
C....28	59.06.0104	100 nF	10%, 63V, PETP		R....50	57.11.3470	47 Ohm	10%	
D....1	50.04.0521	MUR 410		Mot,GI	R....51	57.11.3332	3.3 kOhm	10%	
D....2	50.04.1216	Z 10 V	5k, 1.3W	ITT,Mot,Ph,Tf,SGS	R....52	57.11.3102	1 kOhm	10%	
D....3	50.04.1216	Z 10 V	5k, 1.3W	ITT,Mot,Ph,Tf,SGS	R....53	57.11.3221	220 Ohm	10%	
D....4	50.04.0521	MUR 410		Mot,GI	R....54	57.11.3102	1 kOhm	10%	
D....5	50.04.1216	Z 10 V	5k, 1.3W	ITT,Mot,Ph,Tf,SGS	R....55	57.11.3222	2.2 kOhm	10%	
D....6	50.04.1216	Z 10 V	5k, 1.3W	ITT,Mot,Ph,Tf,SGS	R....56	57.11.3222	2.2 kOhm	10%	
D....7	50.04.1118	Z 6.2 V	5k, .40W	ITT,Mot,Ph,Tf,SGS	R....57	57.11.3222	2.2 kOhm	10%	
D....8	50.04.0519	1N 5818		Mot	R....58	57.11.3222	2.2 kOhm	10%	
D....9	50.04.1106	Z 2.7 V	5k, .40W	ITT,Mot,Ph,Tf,SGS	R....59	57.11.3222	2.2 kOhm	10%	
D....10	50.04.1106	Z 2.7 V	5k, .40W	ITT,Mot,Ph,Tf,SGS	R....60	57.11.3222	2.2 kOhm	10%	
D....11	50.04.1106	Z 2.7 V	5k, .40W	ITT,Mot,Ph,Tf,SGS	RZ....1	57.88.4332	Network, 8 * 3.3 kOhm, 2%, SIP 9		
IC....1	50.09.0101	TL 072 CP		Mot,11,NS	T....1	1.022.247.00	Drive Transformer		St
IC....2	50.09.0101	TL 072 CP		Mot,11,NS					
IC....3	50.05.0283	LM 393 ..	TDB 0193 DP	NS,Sig,Ti,Tho	TP....1	54.02.0320	Connector 1 contact, 2.8*0.8, flat		
IC....4	50.09.0101	TL 072 CP		Mot,11,NS	TP....2	54.02.0320	Connector 1 contact, 2.8*0.8, flat		
IC....5	50.10.0196	TL 431CUP		Mot,11	TP....3	54.02.0320	Connector 1 contact, 2.8*0.8, flat		
IC....6	1.820.997.20		Commutation Logic device	St	TP....4	54.02.0320	Connector 1 contact, 2.8*0.8, flat		
L....1	62.03.0010	48 uH	2 A, filter		TP....5	54.02.0320	Connector 1 contact, 2.8*0.8, flat		
L....2	1.022.251.00	203 uH	Filtercoil	St	W....1	1.310.321.64	Wire bridge		
L....3	62.99.0113	1.0 uH							
L....4	62.99.0113	1.0 uH							
L....5	62.02.3222	2.2 mH	10%, Fad, RM 5						
L....6	62.02.3222	2.2 mH	10%, Fad, RM 5						
P....1	54.02.0418	Connector	6 contacts, MOLEX, see note 2						
P....2	54.14.2102	Connector	16 contacts, latch, flat cable						
P....3	54.02.0408	Connector	12 contacts, MOLEX, see note 1						
Q....1	50.03.1502	IRF 522	MTP 8H10	IR,Mot					
Q....2	50.03.1502	IRF 522	MTP 8H10	IR,Mot					
Q....3	50.03.0350	J-112		Mot					
Q....4	50.03.0340	BC 337-25		ITT,Ph,Sie					
Q....5	50.03.0351	BC 327-25		ITT,Ph,Sie					
Q....6	50.03.1505	VN 0508 M	ZVN 0108 A	Fe,Six					
Q....7	50.03.0351	BC 327-25		ITT,Ph,Sie					
Q....8	50.03.0340	BC 337-25		ITT,Ph,Sie					
Q....9	50.03.0351	BC 327-25		ITT,Ph,Sie					
Q....10	50.03.0340	BC 337-25		ITT,Ph,Sie					
Q....11	50.03.0351	BC 327-25		ITT,Ph,Sie					
Q....12	50.03.0340	BC 337-25		ITT,Ph,Sie					
Q....13	50.03.0749	BD 679	see note 3	Ph					
Q....14	50.03.0749	BD 680	see note 3	Ph					
Q....15	50.03.0749	BD 679	see note 3	Ph					
Q....16	50.03.0799	BD 680	see note 3	Ph					
Q....17	50.03.0749	BD 679	see note 3	Ph					
Q....18	50.03.0799	BD 680	see note 3	Ph					
R....1	57.56.5228	0.22 Ohm	10%, 4 W, WW						
R....2	57.11.3100	10 Ohm	10%						
R....3	57.11.3332	3.3 kOhm	10%						
R....4	57.11.3100	10 Ohm	10%						
R....5	57.11.3332	3.3 kOhm	10%						
R....6	57.11.3100	10 Ohm	10%						
R....7	57.11.3123	12 kOhm	1%						
R....8	57.11.3123	12 kOhm	1%						
R....9	57.11.3302	3 kOhm	1%						
R....10	57.11.3302	3 kOhm	1%						
R....11	57.11.3103	10 kOhm	10%						
R....12	57.11.3103	10 kOhm	10%						
R....13	57.11.3103	10 kOhm	10%						
R....14	57.11.3103	10 kOhm	10%						
R....15	57.11.3103	10 kOhm	10%						
R....16	57.11.3103	10 kOhm	10%						
R....17	57.11.3103	10 kOhm	10%						
R....18	57.11.3472	4.7 kOhm	10%						
R....19	57.11.5155	1.5 MOhm	10%						
R....20	57.11.3104	100 kOhm	10%						
R....21	57.11.3221	220 Ohm	10%						
R....22	57.11.3101	10 Ohm	10%						

SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.82



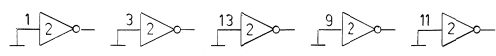
Q1,2 BC 337
Q3,4 BC 327
Q5,6 BD 139
Q7,8 BD 140



312,5 mV/A 50 mV/A

TP2: common mode @ $I_L = 0A < 40mV$

SPARE PARTS :



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STUDER			SPOOLING MOTOR DRIVE AMPLIFIER	SC 1.820.775.82
				PAGE 1 OF 1



SPOOLING MOTOR DRIVE AMPLIFIER 1.820.775.82

21.53.0353
24.16.2030 mit Silikon-Kleber gesichert nach BV 640

53.03.0456

53.03.0467 (2x)

Alle Lötstellen 1,5-2,5 mm hoch.
L4 - L7 nicht direkt auf Print gelötet (gesickt)

L 820.775-02 (4x)

T1, T2 : • gelber Punkt

4.820.775-14

4.820.539-00

4.820.775-01

4.8M.771-04

50.20.0404 (7x)

1.010.006-50 (7x)

37.01.0101 (14x)

21.53.0357 (7x)

D17, 18, 19
Q 13, 14, 15, 16

1.820.790-02

Montiert nach BV 632

Abzählung	Abbildung	(1)	(2)	(3)	(4)	(5)	(6)
1.2.90	1.820.775-82						

STUDER	SPPOOLING MOTOR	ESE
REGISCHEN	DRIVE AMPL.	
ZÜRICH		
1.820.775-82		

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.22.5101	100 uF	20%, 25V, EL	
C.....2	59.22.5101	100 uF	20%, 25V, EI	
C.....3	59.22.5101	100 uF	20%, 25V, EI	
C.....4	59.06.0333	33 nF	10%, 63V, PETP	
C.....5	59.06.0683	68 nF	10%, 63V, PETP	
C.....6	59.06.0683	68 nF	10%, 63V, PETP	
C.....7	59.06.0132	1,5 nF	10%, 63V, PETP	
C.....8	59.06.0683	68 nF	10%, 63V, PETP	
C.....9	59.06.0683	68 nF	10%, 63V, PETP	
C.....10	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....11	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....12	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....13	59.22.5101	100 uF	20%, 25V, EI	
C.....14	59.06.0103	10 nF	10%, 63V, PETP	
C.....15	59.06.0103	10 nF	10%, 63V, PETP	
C.....16	59.06.0132	330 nF	10%, 63V, PETP	
C.....17	59.06.0334	330 nF	10%, 63V, PETP	
C.....18	59.06.0334	330 nF	10%, 63V, PETP	
C.....19	59.06.0334	330 nF	10%, 63V, PETP	
C.....20	59.34.2470	47 pF	5%, N150, CER	
C.....21	59.34.2470	47 pF	5%, N150, CER	
C.....22	59.06.0334	330 nF	10%, 63V, PETP	
C.....23	59.06.0334	330 nF	10%, 63V, PETP	
C.....24	59.34.2470	47 pF	5%, N150, CER	
C.....25	59.34.2470	47 pF	5%, N150, CER	
C.....26	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....27	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....28	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....29	59.99.0268	6,8 uF	10%, 63V, PETP	
C.....30	59.47.2332	3,3 nF	2,5%, 160V, PP	
C.....31	59.47.2332	3,3 nF	2,5%, 160V, PP	
C.....32	59.47.2332	3,3 nF	2,5%, 160V, PP	
C.....33	59.47.2332	3,3 nF	2,5%, 160V, PP	
D.....1	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....2	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....3	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....4	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....5	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....6	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....7	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....8	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....9	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....10	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....11	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....12	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf	
D.....13	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....14	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....15	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....16	50.04.1216	2 10V 1,3W	ITT,Mot,Ph,Tf,Tho	
D.....17	50.04.0517	BV 32	Mot,Ph	
D.....18	50.04.0517	BV 32	Mot,Ph	
D.....19	50.04.0517	BV 32	Mot,Ph	
D.....20	50.04.0517	BV 32	Mot,Ph	
D.....21	50.09.0106	NE 5532AN XR 5512AN	EX,SIG	
D.....22	50.07.0014	MC40106BCP ..14584..	Mot,NS,Ph,RCA,To	
D.....23	50.07.0070	MC14070BCP HEF4070BP, CD4070BE	Mot,Ph,RCA	
D.....24	62.02.3101	100 uH	Filter coil	TDK
D.....25	62.99.0112	>1 mH	Filter coil	Tokin
D.....26	1.022.246.00		Choke coil	St
D.....27	62.99.0113	1 uH	Filter coil	Vo
D.....28	62.99.0113	1 uH	Filter coil	Vo
D.....29	62.99.0113	1 uH	Filter coil	Vo
D.....30	62.99.0113	1 uH	Filter coil	Vo
F.....1	54.14.2002	16 cont.	see note 1	
F.....2	54.02.0408	12 cont.	see note 2	
F.....3	54.02.0335			
F.....4	54.02.0335			
G.....1	50.03.0340	BC 337-25	ITT,NS,Ph,Sie	
G.....2	50.03.0340	BC 337-25	ITT,NS,Ph,Sie	
G.....3	50.03.0351	BC 327-25	ITT,Ph,Sie	

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
Q.....4	50.03.0351	BC 327-25		ITT,Ph,Sie
Q.....5	50.03.0451	80 139		Mot,Ph,SGS,Tf,To
Q.....6	50.03.0451	80 139		Mot,Ph,SGS,Tf,To
Q.....7	50.03.0452	80 140		Mot,Ph,SGS,Tf,To
Q.....8	50.03.0452	80 140		Mot,Ph,SGS,Tf,To
Q.....9	50.03.0350	J 112		Mot
Q.....10	50.03.0350	J 112		Mot
Q.....11	50.03.0350	J 112		Mot
Q.....12	50.03.0350	J 112		Mot
Q.....13	50.03.1609	IRF 540	see note 3	IR
Q.....14	50.03.1609	IRF 540	see note 3	IR
Q.....15	50.03.1609	IRF 540	see note 3	IR
Q.....16	50.03.1609	IRF 540	see note 3	IR
R.....1	57.11.3101	100 Ohm	1%	
R.....2	57.11.3153	15 kOhm	1%	
R.....3	57.11.3242	2,4 kOhm	1%	
R.....4	57.99.0199	680 Ohm	0,1%	
R.....5	57.99.0199	680 Ohm	0,1%	
R.....6	00.00.0000	not used		
R.....7	00.00.0000	not used		
R.....8	57.99.0199	680 Ohm	0,1%	
R.....9	57.99.0199	680 Ohm	0,1%	
R.....10	57.11.3322	3,3 kOhm	1%	
R.....11	57.11.3152	1,5 kOhm	1%	
R.....12	57.11.3152	1,5 kOhm	1%	
R.....13	57.11.3472	4,7 kOhm	1%	
R.....14	57.11.3101	100 Ohm	1%	
R.....15	57.11.3101	100 Ohm	1%	
R.....16	57.11.3100	10 Ohm	1%	
R.....17	57.11.3100	10 Ohm	1%	
R.....18	57.11.3159	1,5 Ohm	1%	
R.....19	57.11.3159	1,5 Ohm	1%	
R.....20	57.11.3159	1,5 Ohm	1%	
R.....21	57.11.3159	1,5 Ohm	1%	
R.....22	57.11.3159	1,5 Ohm	1%	
R.....23	57.11.3159	1,5 Ohm	1%	
R.....24	57.11.3159	1,5 Ohm	1%	
R.....25	57.11.3159	1,5 Ohm	1%	
R.....26	57.11.3159	1,5 Ohm	1%	
R.....27	57.11.3159	1,5 Ohm	1%	
R.....28	57.11.3159	1,5 Ohm	1%	
R.....29	57.11.3159	1,5 Ohm	1%	
R.....30	57.11.3159	1,5 Ohm	1%	
R.....31	57.11.3159	1,5 Ohm	1%	
R.....32	57.11.3159	1,5 Ohm	1%	
R.....33	57.11.3159	1,5 Ohm	1%	
R.....34	57.11.3159	1,5 Ohm	1%	
R.....35	57.11.3159	1,5 Ohm	1%	
R.....36	57.11.3159	1,5 Ohm	1%	
R.....37	57.11.3159	1,5 Ohm	1%	
R.....38	57.11.3159	1,5 Ohm	1%	
R.....39	57.11.3159	1,5 Ohm	1%	
R.....40	57.11.3159	1,5 Ohm	1%	
R.....41	57.11.3159	1,5 Ohm	1%	
R.....42	57.11.3159	1,5 Ohm	1%	
R.....43	57.11.3159	1,5 Ohm	1%	
R.....44	57.11.3159	1,5 Ohm	1%	
R.....45	57.11.3159	1,5 Ohm	1%	
R.....46	57.11.3159	1,5 Ohm	1%	
R.....47	57.11.3159	1,5 Ohm	1%	
R.....48	57.11.3105	1,0 MOhm	1%	
R.....49	57.11.3105	1,0 MOhm	1%	
R.....50	57.11.3105	1,0 MOhm	1%	
R.....51	57.11.3105	1,0 MOhm	1%	
R.....52	57.13.4229	2,2 Ohm	2%	
R.....53	57.13.4229	2,2 Ohm	2%	
R.....54	57.13.4229	2,2 Ohm	2%	
R.....55	57.13.4229	2,2 Ohm	2%	
T.....1	1.022.247.00		Impulse transformer	St
T.....2	1.022.247.00		Impulse transformer	St
TP.....1	54.02.0320		Test point	
TP.....2	54.02.0320		Test point	
TP.....3	54.02.0320		Test point	

Note 1 - Plug : 16 Pol
Yamaichi FAP-16-08/4
Burdy BPH 9 B 16 800 GS

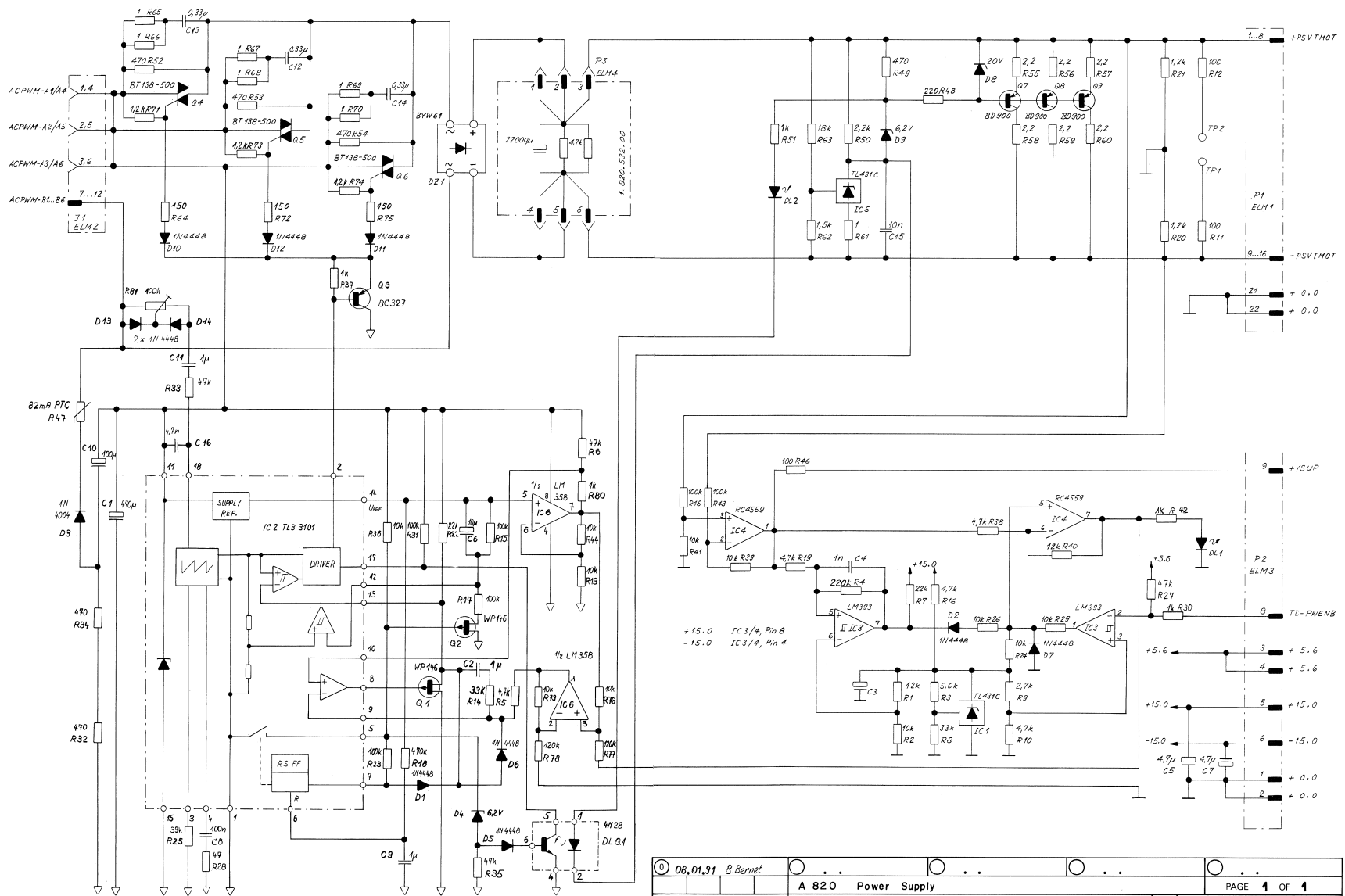
Note 2 - Molex plug : Studer 54.02.0408
with 12 pins Studer 54.02.0406

Note 3 - All power transistors must be from the same type and manufacturer.

Manufacturers: Ex=Exar, Fc=Fairchild, IR=International Rectifier, ITT=Intermetal, Mot=Motorola, NS=National Semiconductor, Ph=Philips (incl.Valvo), RCA=Radio Corporation of America, Ses=Secosum, SDS=SGS/Ates, Sig=Signetics, Sie=Siemens, St=Studer, T=Telefunken, Tho=Thomson, To=Tohiba, Vo=Vogt & Co.

1.820.775.82 SPOOLING MOTOR DRIVE AMPLIFIER PRZ 90/02/0100

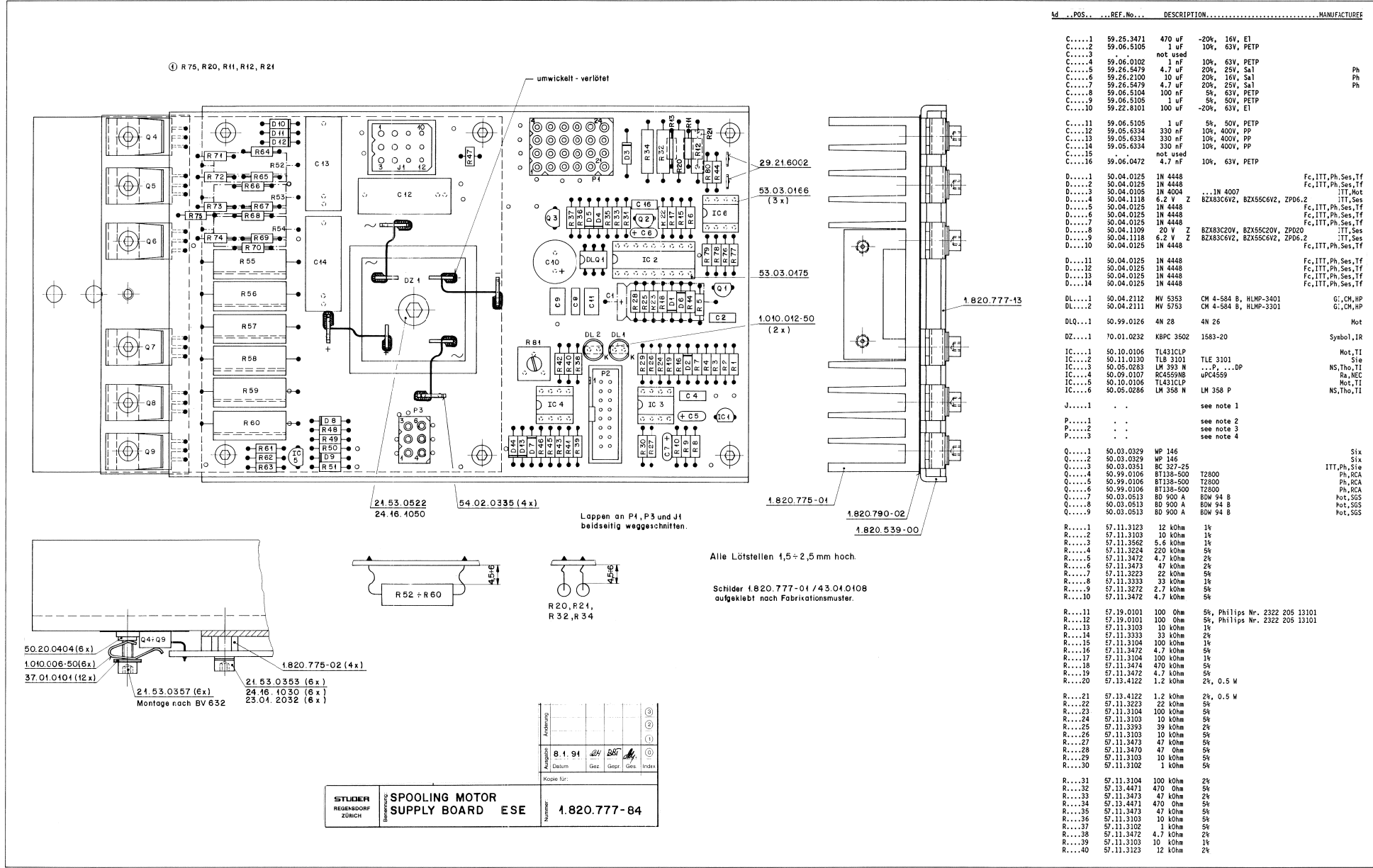
SPOOLING MOTOR SUPPLY 1.820.777.84



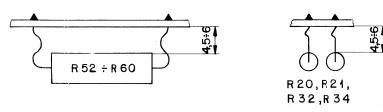
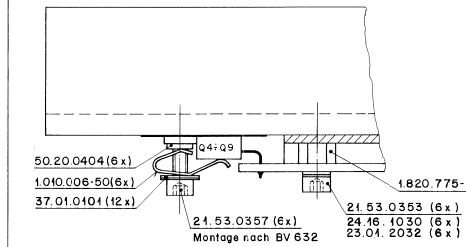
08.01.91 B. Bernert	A 820 Power Supply	PAGE 1 OF 1
STUDER Spooling Motor Supply		SC 1.820.777.84



SPOOLING MOTOR SUPPLY 1.820.777.84



ld	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.25.3471	470 uF	-20%, 16V, EI	
C....2	59.06.5105	1 uF	10%, 63V, PETF	
C....3		not used		
C....4	59.06.0102	1 nF	10%, 63V, PETF	Ph
C....5	59.26.5479	4.7 uF	20%, 25V, SaI	Ph
C....6	59.26.2100	10 uF	20%, 16V, SaI	Ph
C....7	59.26.5479	4.7 uF	20%, 25V, SaI	Ph
C....8	59.06.5104	100 nF	5%, 63V, PETF	
C....9	59.06.5105	1 uF	5%, 50V, PETF	
C....10	59.22.8101	100 uF	-20%, 63V, EI	
C....11	59.06.5105	1 uF	5%, 50V, PETF	
C....12	59.05.6334	330 nF	10%, 400V, PP	
C....13	59.05.6334	330 nF	10%, 400V, PP	
C....14	59.05.6334	330 nF	10%, 400V, PP	
C....15		not used		
C....16	59.06.0472	4.7 nF	10%, 63V, PETF	
D....1	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....2	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....3	50.04.0105	1N 4004	...1N 4007	ITT,Mot
D....4	50.04.1118	6.2 V Z	BZX83C6V2, BZX55C6V2, ZPD6.2	ITT,Ses
D....5	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....6	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....7	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....8	50.04.1109	20 V Z	BZX83C20V, BZX55C20V, ZPD20	ITT,Ses
D....9	50.04.1118	6.2 V Z	BZX83C6V2, BZX55C6V2, ZPD6.2	ITT,Ses
D....10	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....11	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....12	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....13	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D....14	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
DL....1	50.04.2112	MV 5353	CM 4-584 B, HLMP-3401	Gf,CM,HP
DL....2	50.04.2111	MV 5753	CM 4-584 B, HLMP-3301	Gf,CM,HP
DLQ...1	50.99.0126	4N 28	4N 26	Mot
DZ...1	70.01.0232	KBPC 3502	1583-20	Sybol,IR
IC...1	50.10.0106	TL431CLP		Mot,TI
IC...2	50.11.0130	TLB 3101	TLE 3101	Sie
IC...3	50.05.0263	LM 358 W	...P...DP	NS,Tho,IT
IC...4	50.09.0107	RC4559NB	uPC4559	Ph,RCC
IC...5	50.10.0106	TL431CLP		Mot,TI
IC...6	50.05.0286	LM 358 W	LM 358 P	NS,Tho,IT
J....1			see note 1	
P...1			see note 2	
P...2			see note 3	
P...3			see note 4	
Q....1	50.03.0329	WP 146		Six
Q....2	50.03.0329	WP 146		Six
Q....3	50.03.0351	86 327-25		ITT,Ph,Sie
Q....4	50.99.0106	BT138-500	T2800	Ph,RCA
Q....5	50.99.0106	BT138-500	T2800	Ph,RCA
Q....6	50.99.0106	BT138-500	T2800	Ph,RCA
Q....7	50.03.0513	80 900 A	80W 94 B	Mot,SGS
Q....8	50.03.0513	80 900 A	80W 94 B	Mot,SGS
Q....9	50.03.0513	80 900 A	80W 94 B	Mot,SGS
R....1	57.11.3123	12 kOhm	1%	
R....2	57.11.3103	10 kOhm	1%	
R....3	57.11.3562	5.6 kOhm	1%	
R....4	57.11.3224	220 kOhm	5%	
R....5	57.11.3472	4.7 kOhm	2%	
R....6	57.11.3473	47 kOhm	2%	
R....7	57.11.3223	22 kOhm	5%	
R....8	57.11.3233	33 kOhm	1%	
R....9	57.11.3272	2.7 kOhm	5%	
R....10	57.11.3472	4.7 kOhm	5%	
R....11	57.19.0101	100 Ohm	5%, Philips Nr. 2322 205 13101	
R....12	57.19.0101	100 Ohm	5%, Philips Nr. 2322 205 13101	
R....13	57.11.3103	10 kOhm	1%	
R....14	57.11.3103	10 kOhm	1%	
R....15	57.11.3104	100 kOhm	1%	
R....16	57.11.3472	4.7 kOhm	5%	
R....17	57.11.3104	100 kOhm	1%	
R....18	57.11.3474	470 kOhm	5%	
R....19	57.11.3472	4.7 kOhm	5%	
R....20	57.13.4122	1.2 kOhm	2%, 0.5 W	
R....21	57.13.4122	1.2 kOhm	2%, 0.5 W	
R....22	57.11.3123	12 kOhm	5%	
R....23	57.11.3104	100 kOhm	5%	
R....24	57.11.3103	10 kOhm	5%	
R....25	57.11.3103	10 kOhm	5%	
R....26	57.11.3103	10 kOhm	5%	
R....27	57.11.3473	47 kOhm	5%	
R....28	57.11.3470	47 Ohm	5%	
R....29	57.11.3103	10 kOhm	5%	
R....30	57.11.3102	1 kOhm	5%	
R....31	57.11.3104	100 kOhm	2%	
R....32	57.13.4471	470 Ohm	5%	
R....33	57.11.3473	47 kOhm	2%	
R....34	57.13.4471	470 Ohm	5%	
R....35	57.11.3473	47 kOhm	5%	
R....36	57.11.3103	10 kOhm	5%	
R....37	57.11.3102	1 kOhm	5%	
R....38	57.11.3472	4.7 kOhm	2%	
R....39	57.11.3103	10 kOhm	1%	
R....40	57.11.3123	12 kOhm	2%	



Alle Lötstellen 1,5 - 2,5 mm hoch.
Schilder 1.820.777-01 / 43.04.0108 aufgeklebt nach Fabrikationsmuster.

STUDER REGENSDORF ZÜRICH	Schematische Zeichnung	SPPOOLING MOTOR SUPPLY BOARD ESE		Kopie für:
		Nummer 1.820.777-84		
Revidiert Datum	8.1.94	Gez. Gepf.	BST	Ges. Index



SPOOLING MOTOR SUPPLY 1.820.777.84

Ad .POS. . . . REF.No. . . . DESCRIPTION MANUFACTURER

R....41	57.11.3103	10 kOhm	1%	
R....42	57.11.3102	1 kOhm	5%	
R....43	57.11.3104	100 kOhm	1%	
R....44	57.11.3103	10 kOhm	1%	
R....45	57.11.3104	100 kOhm	1%	
R....46	57.11.3101	100 Ohm	5%	
R....47	57.92.1820	82 mA		PTC-Resistor, Philips nr. 2322 660 18291
R....48	57.11.3221	220 Ohm	5%	
R....49	57.11.3471	470 Ohm	5%	
R....50	57.11.3222	2.2 kOhm	5%	
R....51	57.11.3102	1 kOhm	5%	
R....52	57.56.4471	470 Ohm	5%,	4 W
R....53	57.56.4471	470 Ohm	5%,	4 W
R....54	57.56.4471	470 Ohm	5%,	4 W
R....55	57.56.5229	2.2 Ohm	10%,	4 W
R....56	57.56.5229	2.2 Ohm	10%,	4 W
R....57	57.56.5229	2.2 Ohm	10%,	4 W
R....58	57.56.5229	2.2 Ohm	10%,	4 W
R....59	57.56.5229	2.2 Ohm	10%,	4 W
R....60	57.56.5229	2.2 Ohm	10%,	4 W
R....61	57.11.3109	1 Ohm	5%	
R....62	57.11.3152	1.5 kOhm	1%	
R....63	57.11.3183	18 kOhm	1%	
R....64	57.11.3151	150 Ohm	5%	
R....65	57.11.3109	1 Ohm	5%	
R....66	57.11.3109	1 Ohm	5%	
R....67	57.11.3109	1 Ohm	5%	
R....68	57.11.3109	1 Ohm	5%	
R....69	57.11.3109	1 Ohm	5%	
R....70	57.11.3109	1 Ohm	5%	
R....71	57.11.3122	1.2 kOhm	5%	
R....72	57.11.3151	150 Ohm	5%	
R....73	57.11.3122	1.2 kOhm	5%	
R....74	57.11.3122	1.2 kOhm	5%	
R....75	57.11.3151	150 Ohm	5%	
R....76	57.11.3103	10 kOhm	1%	
R....77	57.11.3124	120 kOhm	1%	
R....78	57.11.3124	120 kOhm	1%	
R....79	57.11.3103	10 kOhm	1%	
R....80	57.11.3102	1 kOhm	1%	
R....81	58.01.8104	100 kOhm	10%	

Note 1 - Case for 12 contacts: Studer Nr. 54.02.0408
Molex Nr. 03-06-2121
Contact pin (6 pieces): Studer Nr. 54.02.0406
Molex Nr. 02-06-8103
Socket (6 pieces): Studer Nr. 54.02.0407
Molex Nr. 02-06-7103

Note 2 - Case for 24 contacts: Studer Nr. 54.02.0416
Molex Nr. 03-06-1241
Contact pin (24 pieces): Studer Nr. 54.02.0406
Molex Nr. 02-06-8103

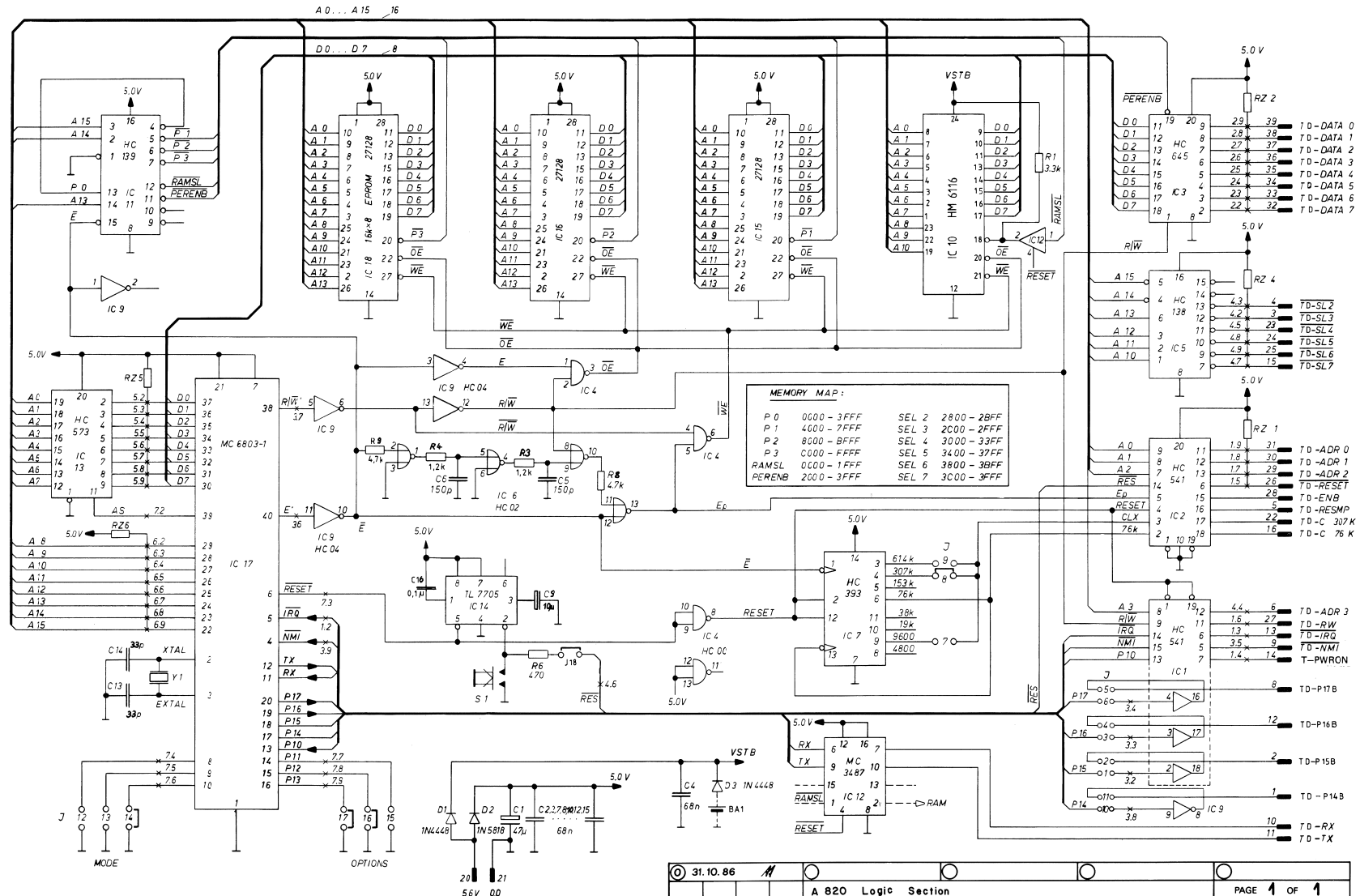
Note 3 - Connector 16 contacts: Studer Nr. 54.14.2002
Yamaichi Nr. FAP-16-08//4
Burndy Nr. BPH 9 B 16 B0 GS

Note 4 - Case for 6 contacts: Studer Nr. 54.02.0417
Molex Nr. 03-06-1061
Sockets (6 pieces): Studer Nr. 54.02.0407
Molex Nr. 02-06-7103

El=Electrolytic, Sal=Solid aluminium,
PETP=Polyesterfilm, PP=Polypropylen.

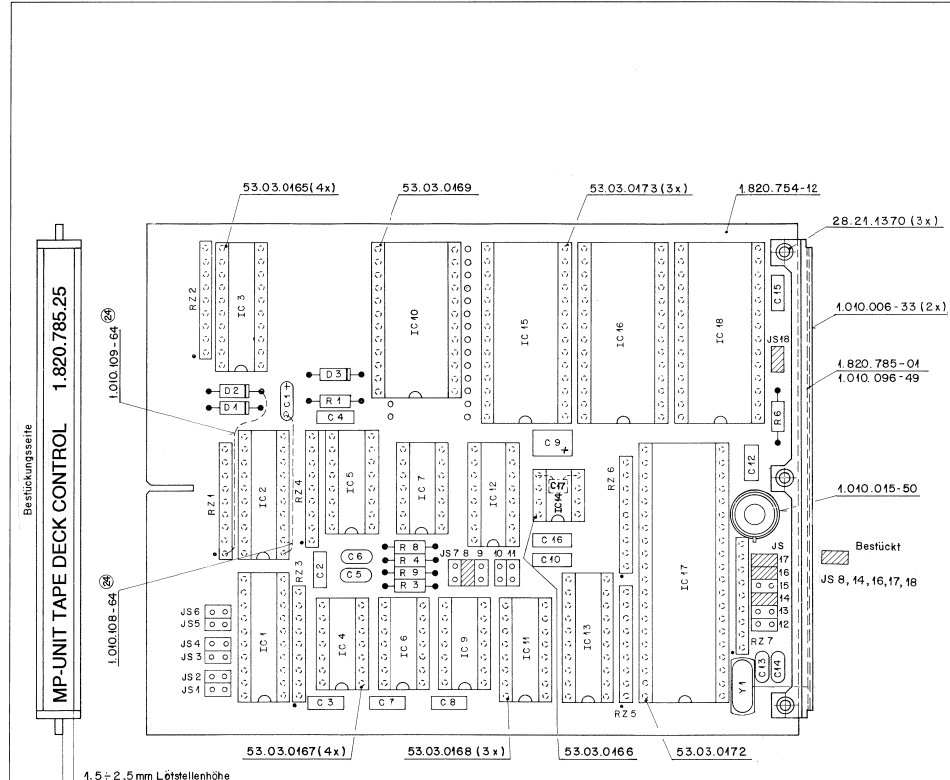
MANUFACTURER: CM=Chicago Miniatur, Fc=Fairchild,
GI=General Instruments, HP=Hewlett Packard,
IR=International Rectifier, ITT=Intermetall,
Mot=Motorola, NEC=Nippon Electric Corporation,
NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
RCA=Radio Corporation of America, Ses=Sescosem,
SGS=SGS/Ates, Sie=Siemens, Six=Siliconix, Tf=Telefunken,
Tho=Thomson, TI=Texas Instruments,
1.820.777.84 SPOOLING MOTOR SUPPLY VF 91/01/0800

MP UNIT TAPE DECK CONTROL MCH 1.820.785.25



EDITION: OKTOBER 1993

MP UNIT TAPE DECK CONTROL MCH 1.820.785.25



Schilde: 43.01.0108
und 4.101.001.XX
aufgelegt nach
Fabrikationsmuster

C17 auf
4.101.108-64
Lötseite
4.101.109-64

14.1.93	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88
18.10.88	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88
18.10.88	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88
18.10.88	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88
18.10.88	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88
18.10.88	18.10.88	18.10.88	18.10.88	18.10.88	18.10.88

STUDER REGENSDORF ZÜRICH	Benennung MP-UNIT TD CONTROL	ESE	Nummer: 1.820.785.25
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Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C	1	59.26.0470	47 uF	20%, 6.3V Sa1 Ph
C	2	59.06.0683	68 nF	10%, 63V PEP
C	3	59.06.0683	68 nF	10%, 63V PEP
C	4	59.06.0683	68 nF	10%, 63V PEP
C	5	59.34.7151	150 pF	2%, Ce
C	6	59.34.7151	150 pF	2%, Ce
C	7	59.06.0683	68 nF	10%, 63V PEP
C	8	59.06.0683	68 nF	10%, 63V PEP
C	9	59.06.0474	470 nF	10%, 63V PEP
C	10	59.26.2100	10 uF	20%, 16V Sa1
C	11	59.06.0683	68 nF	10%, 63V PEP
C	12	59.06.0104	100 nF	10%, 63V PEP
C	13	59.06.0104	100 nF	10%, 63V PEP
C	14	59.34.2330	33 pF	5%, Ce
C	15	59.34.2330	33 pF	5%, Ce
C	16	59.06.0683	68 nF	10%, 63V PEP
C	17	59.06.0683	68 nF	10%, 63V PEP
C	18	59.06.0104	100 nF	10%, 63V PEP
C	19	59.06.0222	2.2 nF	10%, 63V PEP
J	1	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
J	2	50.04.0512	1N 5818	Not
J	3	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
I	1	50.17.1541	74 HC 541	Mot,NS,Ph,RCA,SGS,TI,To
I	2	50.17.1541	74 HC 541	Mot,NS,Ph,RCA,SGS,TI,To
I	3	50.17.1646	74 HC 645	Mot,NS,Ph,RCA,SGS,TI,To
I	4	50.17.1000	74 HC 00	Mot,NS,Ph,RCA,SGS,TI,To
I	4	50.17.1132	74 HC 132	Mot,NS,Ph,RCA,SGS,TI,To
I	5	50.17.1138	74 HC 138	Mot,NS,Ph,RCA,SGS,TI,To
I	6	50.17.1002	74 HC 02	Mot,NS,Ph,RCA,SGS,TI,To
I	7	50.17.1393	74 HC 393	Mot,NS,Ph,RCA,SGS,TI,To
I	8	00.00.0000	not used	
I	9	50.17.0004	74 HC 04	Mot,NS,Ph,RCA,SGS,TI,To
I	10	50.14.0107	HM6161P-4	MSH 5128-15 Hi,OKI
I	11	50.17.1139	74 HC 139	Mot,NS,Ph,RCA,SGS,TI,To
I	12	50.15.0105	MC 3487 P	DS 3487 N Mot,NS
I	13	50.17.1573	74 HC 573	Mot,NS,Ph,RCA,SGS,TI,To
I	14	50.11.0122	TL7058CP	TI
I	14	50.11.0157	TL7058CP	TI
I	15	00.00.0000	not used	
I	16	50.14.0125	27128	HM 4821286-30 Hi,It
I	16	1.820.995.20	Software 38/86, see note 1	
I	16	1.820.995.21	Software 38/88, see note 1	
I	16	1.820.995.22	Software 02/93, see note 1	
I	17	50.16.0107	MC6803P-1	Not,Hi
I	18	80.14.0122	27128	HM 4821286-30 Hi,It
I	18	1.820.995.20	Software 38/86, see note 1	
I	18	1.820.995.21	Software 38/88, see note 1	
I	18	1.820.995.22	Software 02/93, see note 1	
J	1			see note 2
J	2			see note 2
J	3			see note 2
J	4			see note 2
J	5			see note 2
J	6			see note 2
J	7			see note 2
J	8			see note 2
J	9			see note 2
J	10			see note 2
J	11			see note 2
J	12			see note 2
J	13			see note 2
J	14			see note 2
J	15			see note 2
J	16			see note 2
J	17			see note 2
J	18			see note 2
R	1	57.11.3332	3.3 kOhm	5%
R	2	57.11.3333	3.3 kOhm	5%
R	2	00.00.0000	not used	
R	3	57.11.3182	1.8 kOhm	5%
R	3	57.11.3122	1.2 kOhm	5%
R	4	57.11.3182	1.8 kOhm	5%
R	4	57.11.3122	1.2 kOhm	5%
R	5	57.11.3332	3.3 kOhm	5%
R	5	00.00.0000	not used	
R	6	57.11.3471	4.7 kOhm	5%
R	7	57.11.3332	3.3 kOhm	5%
R	7	00.00.0000	not used	
R	8	57.11.3472	4.7 kOhm	5%
R	9	57.11.3472	4.7 kOhm	5%
R	1	57.88.4332		see note 3
R	2	57.88.4332		see note 3
R	3	57.88.4332		see note 3
R	4	57.88.4332		see note 3
R	5	57.88.4332		see note 3
R	6	57.88.4332		see note 3
R	7	57.88.4332		see note 3
S	1	55.03.0122	Chicago Switch	34-550-001
Y	1	89.01.0553	4.9152	MIIZ, TD 16
Y	1	89.01.0560	4.9152	MIIZ, +-100 ppm

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
			(24) 91/10/08 Same software as 38/88 suffix (22), improved reset performance.	
			(25) 93/01/12 Software 02/93.	
			Note 1 - IC 16/18 : Software in set available only.	
			Note 2 - Contact pin:	
			Stud Nr. 54.01.0020	
			Berg Nr. 75 160-102-36	
			Philips Nr. 2422 025 99303	
			Bridge: Studer Nr. 54.01.0021	
			Berg Nr. 65 474-001	
			Philips Nr. 2422 024 88003	
			Note 3 - Network:	
			8 * 3.3 kOhm, 5%	
			Silcock Nr. C09 x 3.3 k J	
			Ineltra Nr. 888 3.3 k 5%	
			Ce=Ceramic, Sa1=Solid Aluminium, PEP=Polyesterfilm.	
			MANUFACTURER: Fc=Fairchild, Hi=Hitachi, ITT=Intermetall, Mot=Motorola,	
			NS=National Semiconductors, OK=OKI, Ph=Philips,	
			Ses=Secosese, Tf=Telefunken, TI=Texas Instruments.	
			1.820.785.00 MP-UNIT TD CONTROL CK 85/06/1000	
			1.820.785.01 MP-UNIT TD CONTROL CK 85/06/1020	
			1.820.785.02 MP-UNIT TD CONTROL PB 85/10/1821	
			1.820.785.03 MP-UNIT TD CONTROL BD 88/10/1322	
			1.820.785.04 MP-UNIT TD CONTROL BB79/10/0823	
			1.820.785.05 MP-UNIT TD CONTROL BB79/10/0824	
			1.820.785.06 MP-UNIT TD CONTROL GP 93/01/1225	
			(20) 85/06/10 PCB lay-out -11.	
			(21) 85/10/18 Improved noise suppression of reset circuit and improved timing of E-pulse (PCB lay-out -12).	
			(22) 88/10/13 Software 38/88.	
			(23) 91/10/08 Allready occupied to 1.820.785.23 0.5" MR, suffix (23) no longer needed, (number has changed to 1.820.885.20 & up).	

OPTO SENSOR 1.820.793.82

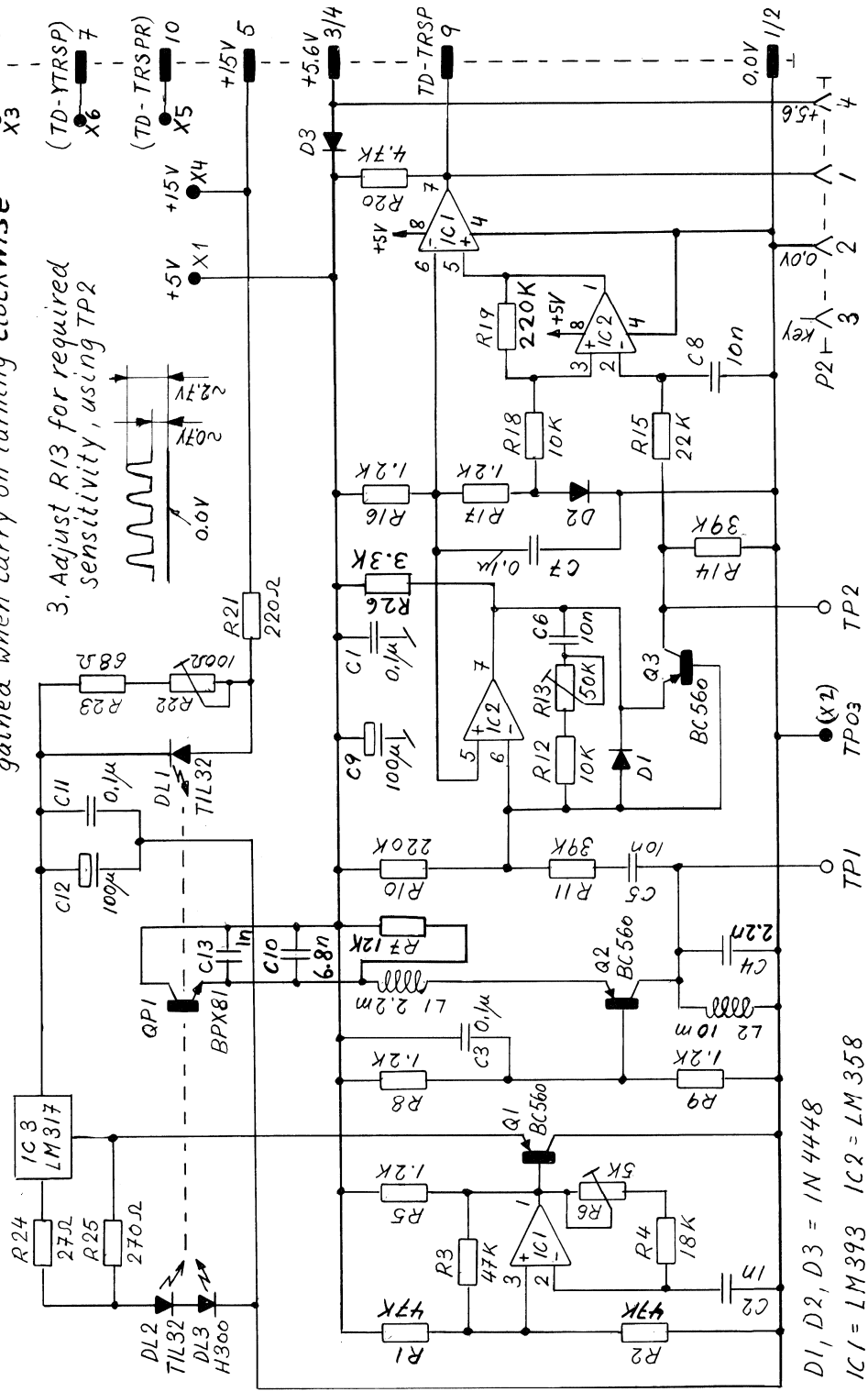
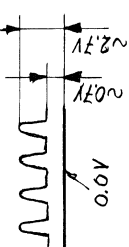


LINE UP PROCEDURE

1. With a leader tape of low transparency across the optosensor adjust R6 for max. signal on testpoint TP1

2. With a leader tape of low transparency plus one or two layers of splicing tape across the optosensor turn R22 up to the point where only a marginal increase of the signal on TP1 is gained when carry on turning clockwise

3. Adjust R13 for required sensitivity, using TP2

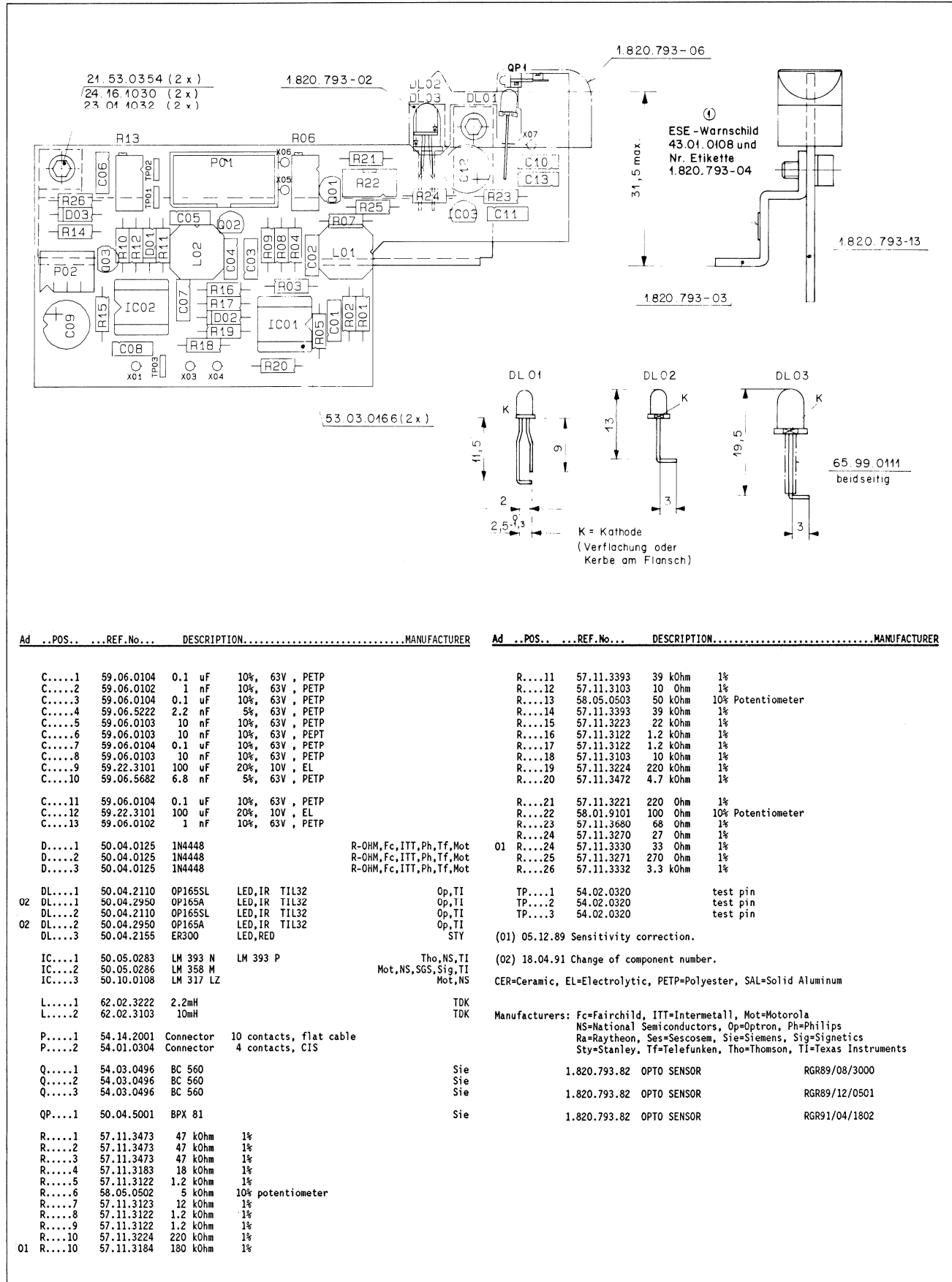


D1, D2, D3 = 1N4448
IC1 = LM393 IC2 = LM358

① 8.8.89 <i>Real Thomson</i>	..	..	..
STUDER	OPTOSENSOR A820	PAGE	OF
		1.820.793-82	



OPTO SENSOR 1.820.793.82

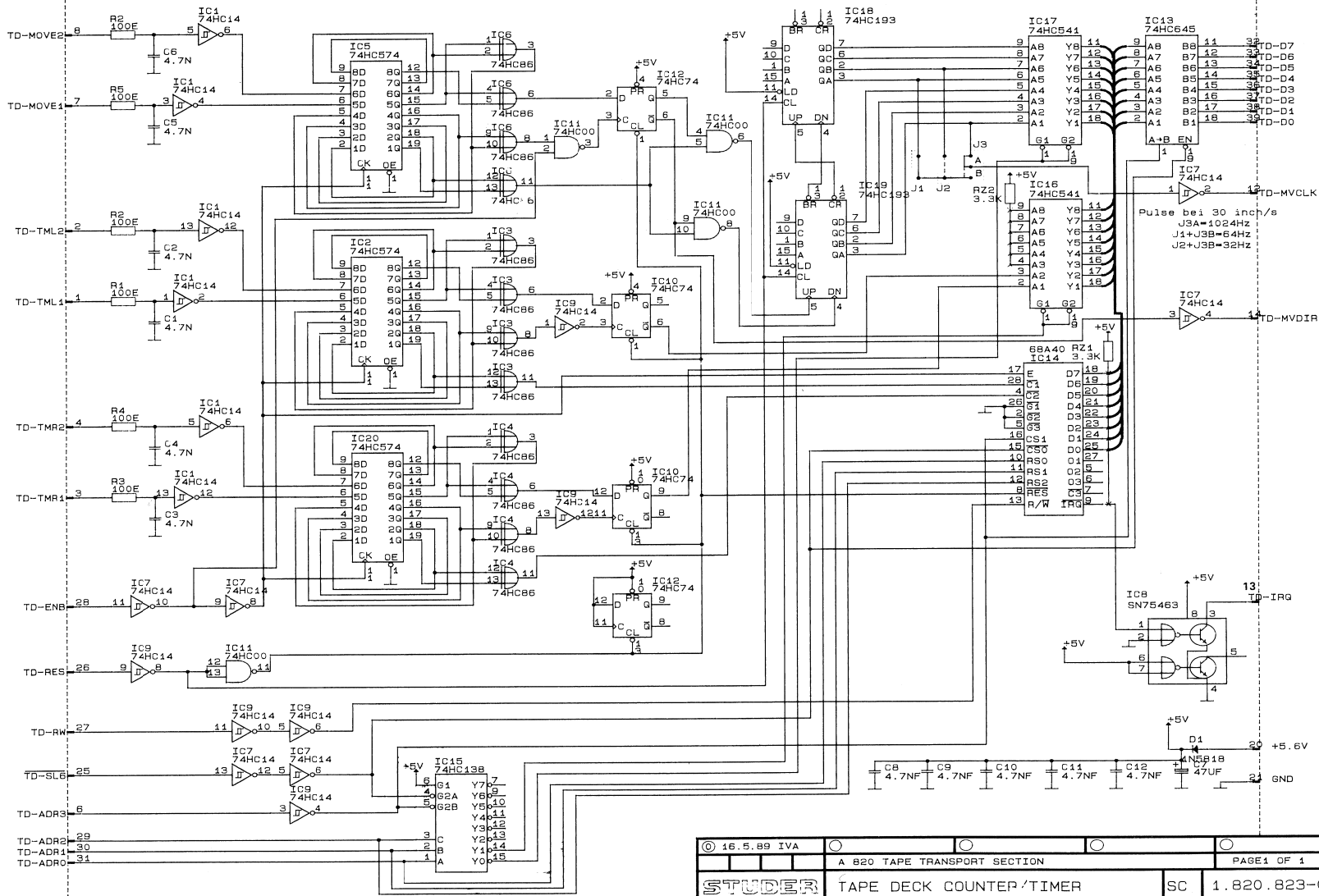


BASIS BOARD TAPE DECK 1.820.701.82

Ad	.POS.	..REF.No.	DESCRIPTION	MANUFACTURER	Ad	.POS.	..REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.06.0683	68 nF	20%, PETP						
C.....2	59.25.1102	1000 uF	-10%, 6.3V, E1						
C.....3	59.25.3471	470 uF	-10%, 16V, E1						
C.....4	59.25.3471	470 uF	-10%, 16V, E1						
C.....5	59.25.1102	1000 uF	-10%, 6.3V, E1						
C.....6	59.25.3471	470 uF	-10%, 16V, E1						
C.....7	59.25.3471	470 uF	-10%, 16V, E1						
D.....1	50.04.0122	1N 4001	...1N 4004	ITT,Mot					
D.....2	50.04.0122	1N 4001	...1N 4004	ITT,Mot					
D.....3	50.04.0122	1N 4001	...1N 4004	ITT,Mot					
D.....4	50.04.1503	7.5 V Z	BZX 85 C 7W5	Ses					
D.....5	50.04.0122	1N 4001	...1N 4004	ITT,Mot					
D.....6	50.04.0123	1N 4448	see note 10	Fc,ITT,Ph,Ses,Tr					
J.....1	00.00.0000		18 + 20 contacts, see note 1						
J.....2	00.00.0000		18 + 20 contacts, see note 1						
J.....3	00.00.0000		2 * 32 contacts, see note 2						
J.....4	00.00.0000		2 * 32 contacts, see note 2						
J.....5	00.00.0000		18 + 20 contacts, see note 1						
J.....6	00.00.0000		18 + 20 contacts, see note 1						
J.....7	00.00.0000		18 + 20 contacts, see note 1						
J.....8	00.00.0000		18 + 20 contacts, see note 1						
J.....9	00.00.0000		2 * 32 contacts, see note 2						
J.....10	00.00.0000		18 + 20 contacts, see note 1						
J.....11	00.00.0000		18 + 20 contacts, see note 1						
J.....12	00.00.0000		2 * 32 contacts, see note 2						
J.....13	00.00.0000		24 contacts, see note 3						
P.....1	00.00.0000		16 contacts, see note 4						
P.....2	00.00.0000		16 contacts, see note 4						
P.....3	00.00.0000		16 contacts, see note 4						
P.....4	00.00.0000		16 contacts, see note 4						
P.....5	00.00.0000		16 contacts, see note 4						
P.....6	00.00.0000		10 contacts, see note 5						
P.....7	00.00.0000		16 contacts, see note 4						
P.....8	00.00.0000		16 contacts, see note 4						
P.....9	00.00.0000		10 contacts, see note 5						
P.....10	00.00.0000		10 contacts, see note 5						
P.....11	00.00.0000		10 contacts, see note 5						
P.....12	00.00.0000		10 contacts, see note 5						
P.....13	00.00.0000		10 contacts, see note 5						
P.....14	00.00.0000		16 contacts, see note 4						
P.....15	00.00.0000		40 contacts, see note 6						
P.....16	00.00.0000		40 contacts, see note 6						
P.....17	00.00.0000		26 contacts, see note 7						
P.....18	00.00.0000		26 contacts, see note 7						
P.....19	00.00.0000		16 contacts, see note 4						
P.....20	00.00.0000		10 contacts, see note 5						
P.....21	00.00.0000		10 contacts, see note 5						
P.....22	00.00.0000		26 contacts, see note 7						
P.....23	00.00.0000		26 contacts, see note 7						
P.....24	00.00.0000		6 contacts, see note 8						
P.....25	00.00.0000		3 contacts, see note 9						
P.....26	00.00.0000		3 contacts, see note 9						
R.....1	57.11.4332		3.3 kOhm						
Note 1 - 2 connectors:									
18 contacts,	Studer Nr.	54.10.2015							
	Burndy Nr.	GCSB 18 50 19 V1 K9							
20 contacts,	Studer Nr.	54.10.2026							
	Burndy Nr.	GCSB 20 50 V1 K9							
Note 2 - connector, 2 * 32 contacts:									
	Studer Nr.	54.11.2005							
	Burndy Nr.	PI 64 B 20 R00 A00 Z0							
	Philips Nr.	2422 025 89297							
	Emi Nr.	9722.543.616							
Note 3 - connector:									
case, 24 circuits,	Studer Nr.	54.02.0415							
	Molex Nr.	03-06-2242							
19 contacts,	Studer Nr.	54.02.0413							
	Molex Nr.	02-06-1101							
5 contacts,	Studer Nr.	54.02.0412							
	Molex Nr.	02-06-1131							
Note 4 - connector, 16 contacts:									
	Studer Nr.	54.14.2002							
	Yamaichi Nr.	FAP-16-08/A							
	Burndy Nr.	BPH 9 B 16 B00 GS							
Note 5 - connector, 10 contacts:									
	Studer Nr.	54.14.2001							
	Yamaichi Nr.	FAP-10-08/A							
	Burndy Nr.	BPH 7 B 10 B00 GS							
Note 6 - connector, 40 contacts:									
	Studer Nr.	54.14.2004							
	Yamaichi Nr.	FAP-40-08/A							
	Burndy Nr.	BPH 9 B 40 B00 GS							
Note 7 - connector, 26 contacts:									
	Studer Nr.	54.14.2003							
	Yamaichi Nr.	FAP-26-08/A							
	Burndy Nr.	BPH 9 B 26 B00 GS							
Note 8 - connector:									
case, 5 circuits,	Studer Nr.	54.02.0417							
	Molex Nr.	03-06-1061							
2 contacts,	Studer Nr.	54.02.0411							
	Molex Nr.	02-06-1101							



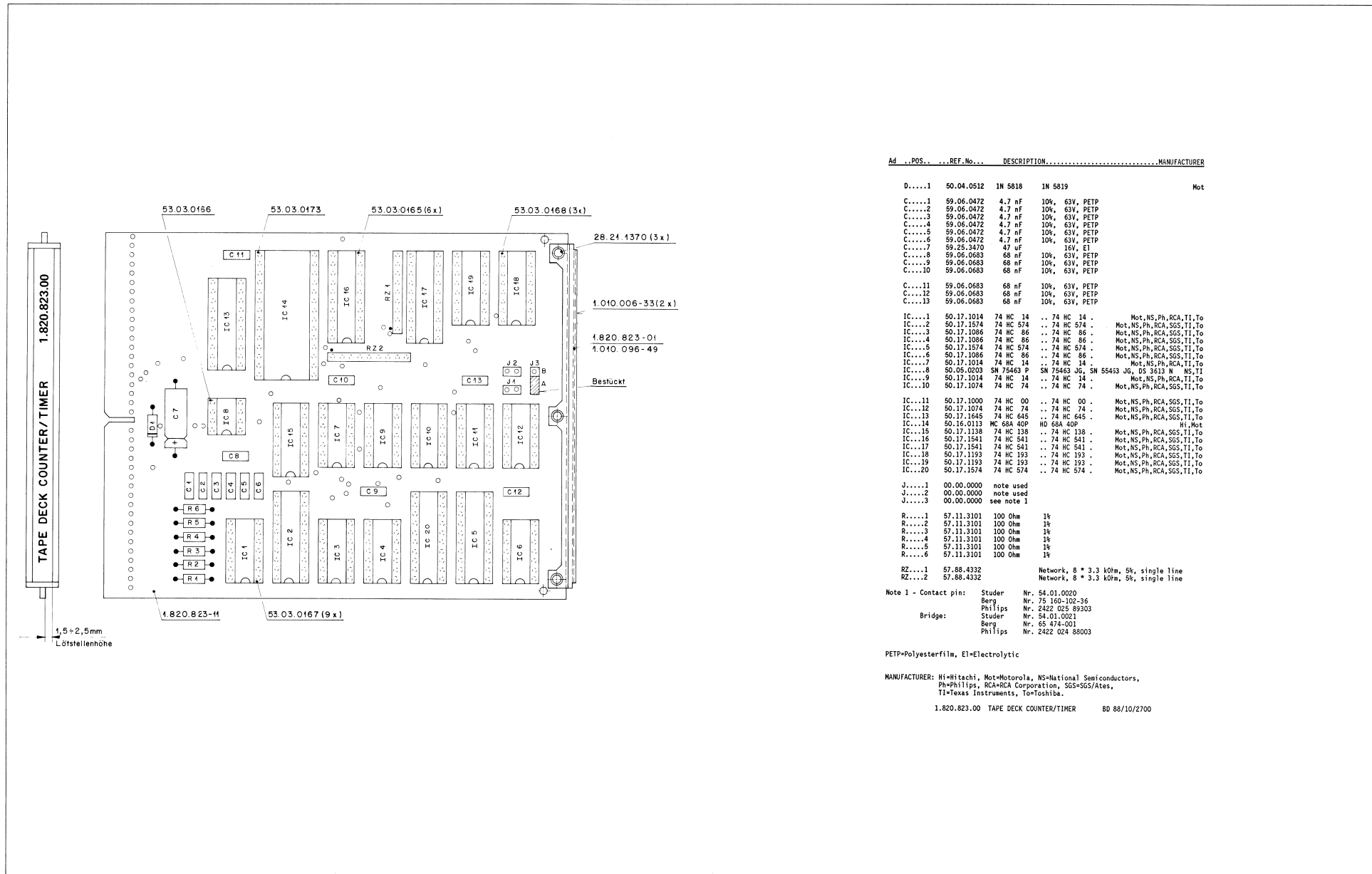
TAPE DECK COUNTER / TIMER 1.820.823.00



© 16.5.89 IVA	A 820 TAPE TRANSPORT SECTION	PAGE 1 OF 1
STUDER	TAPE DECK COUNTER/TIMER	SC 1.820.823-00



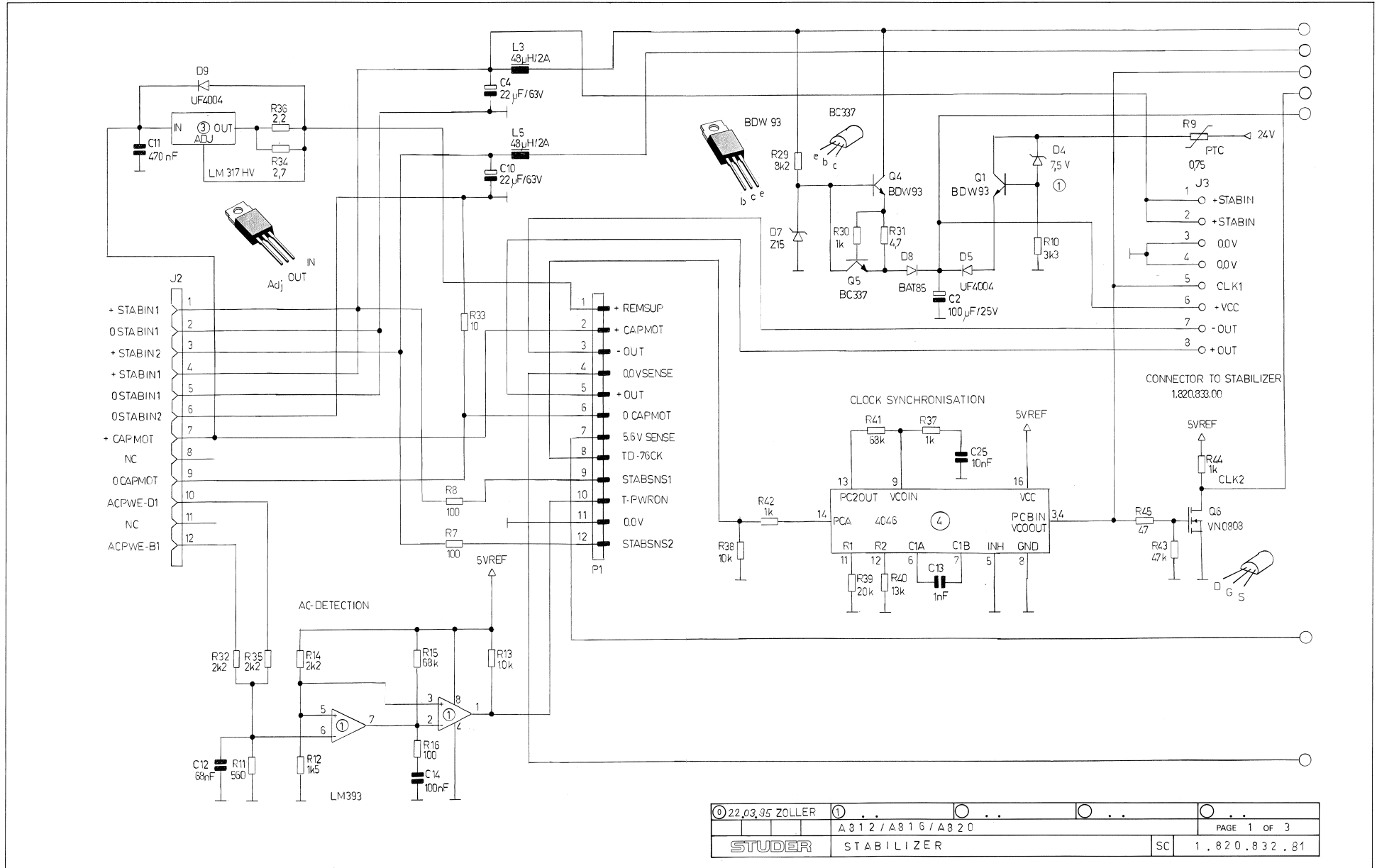
TAPE DECK COUNTER / TIMER 1.820.823.00



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
D....1	50.04.0512	1N 5818	1N 5819	Mot
C....1	59.06.0472	4,7 nF	10%, 63V, PETP	
C....2	59.06.0472	4,7 nF	10%, 63V, PETP	
C....3	59.06.0472	4,7 nF	10%, 63V, PETP	
C....4	59.06.0472	4,7 nF	10%, 63V, PETP	
C....5	59.06.0472	4,7 nF	10%, 63V, PETP	
C....6	59.06.0472	4,7 nF	10%, 63V, PETP	
C....7	59.25.3470	47 nF	16V, EI	
C....8	59.06.0683	68 nF	10%, 63V, PETP	
C....9	59.06.0683	68 nF	10%, 63V, PETP	
C....10	59.06.0683	68 nF	10%, 63V, PETP	
C....11	59.06.0683	68 nF	10%, 63V, PETP	
C....12	59.06.0683	68 nF	10%, 63V, PETP	
C....13	59.06.0683	68 nF	10%, 63V, PETP	
IC....1	50.17.1014	74 HC 14	.. 74 HC 14 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....2	50.17.1574	74 HC 574	.. 74 HC 574 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....3	50.17.1086	74 HC 86	.. 74 HC 86 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....4	50.17.1086	74 HC 86	.. 74 HC 86 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....5	50.17.1574	74 HC 574	.. 74 HC 574 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....6	50.17.1086	74 HC 86	.. 74 HC 86 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....7	50.17.1014	74 HC 14	.. 74 HC 14 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....8	50.05.0203	SN 75463 P	SN 75463 JG, DS 3513 N	NS,TI
IC....9	50.17.1014	74 HC 14	.. 74 HC 14 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....10	50.17.1074	74 HC 74	.. 74 HC 74 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....11	50.17.1000	74 HC 00	.. 74 HC 00 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....12	50.17.1074	74 HC 74	.. 74 HC 74 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....13	50.17.1645	74 HC 645	.. 74 HC 645 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....14	50.16.0113	MC 68A 40P	HD 68A 40P	Hi,Mot
IC....15	50.17.1138	74 HC 138	.. 74 HC 138 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....16	50.17.1541	74 HC 541	.. 74 HC 541 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....17	50.17.1541	74 HC 541	.. 74 HC 541 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....18	50.17.1193	74 HC 193	.. 74 HC 193 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....19	50.17.1193	74 HC 193	.. 74 HC 193 .	Mot,NS,Ph,RCA,SGS,TI,To
IC....20	50.17.1574	74 HC 574	.. 74 HC 574 .	Mot,NS,Ph,RCA,SGS,TI,To
J....1	00.00.0000	note used		
J....2	00.00.0000	note used		
J....3	00.00.0000	see note 1		
R....1	57.11.3101	100 Ohm	1%	
R....2	57.11.3101	100 Ohm	1%	
R....3	57.11.3101	100 Ohm	1%	
R....4	57.11.3101	100 Ohm	1%	
R....5	57.11.3101	100 Ohm	1%	
R....6	57.11.3101	100 Ohm	1%	
RZ....1	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line		
RZ....2	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line		
Note 1 - Contact pin: Studer Nr. 54.01.0020 Berg Nr. 75 160-102-36 Philips Nr. 2422 025 89303 Bridge: Studer Nr. 54.01.0021 Berg Nr. 65 474-001 Philips Nr. 2422 024 98003				

PETP=Polyesterfilm, EI=Electrolytic
 MANUFACTURER: Hi=Hitachi, Mot=Motorola, NS=National Semiconductors,
 Ph=Philips, RCA=RCA Corporation, SGS=SGS/Ates,
 TI=Texas Instruments, To=Toshiba.
 1.820.823.00 TAPE DECK COUNTER/TIMER 80 88/10/2700

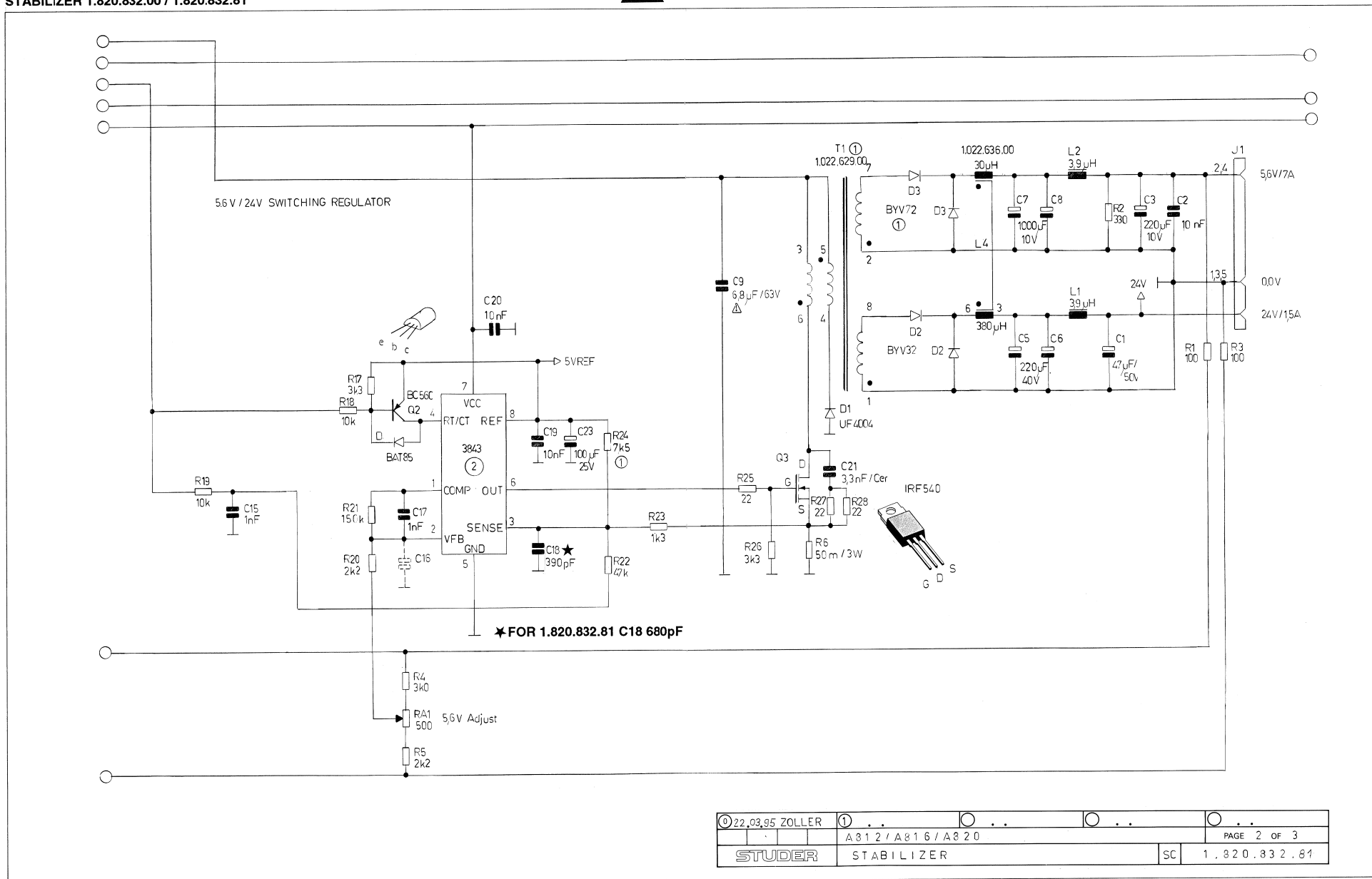
STABILIZER 1.820.832.00 / 1.820.832.81



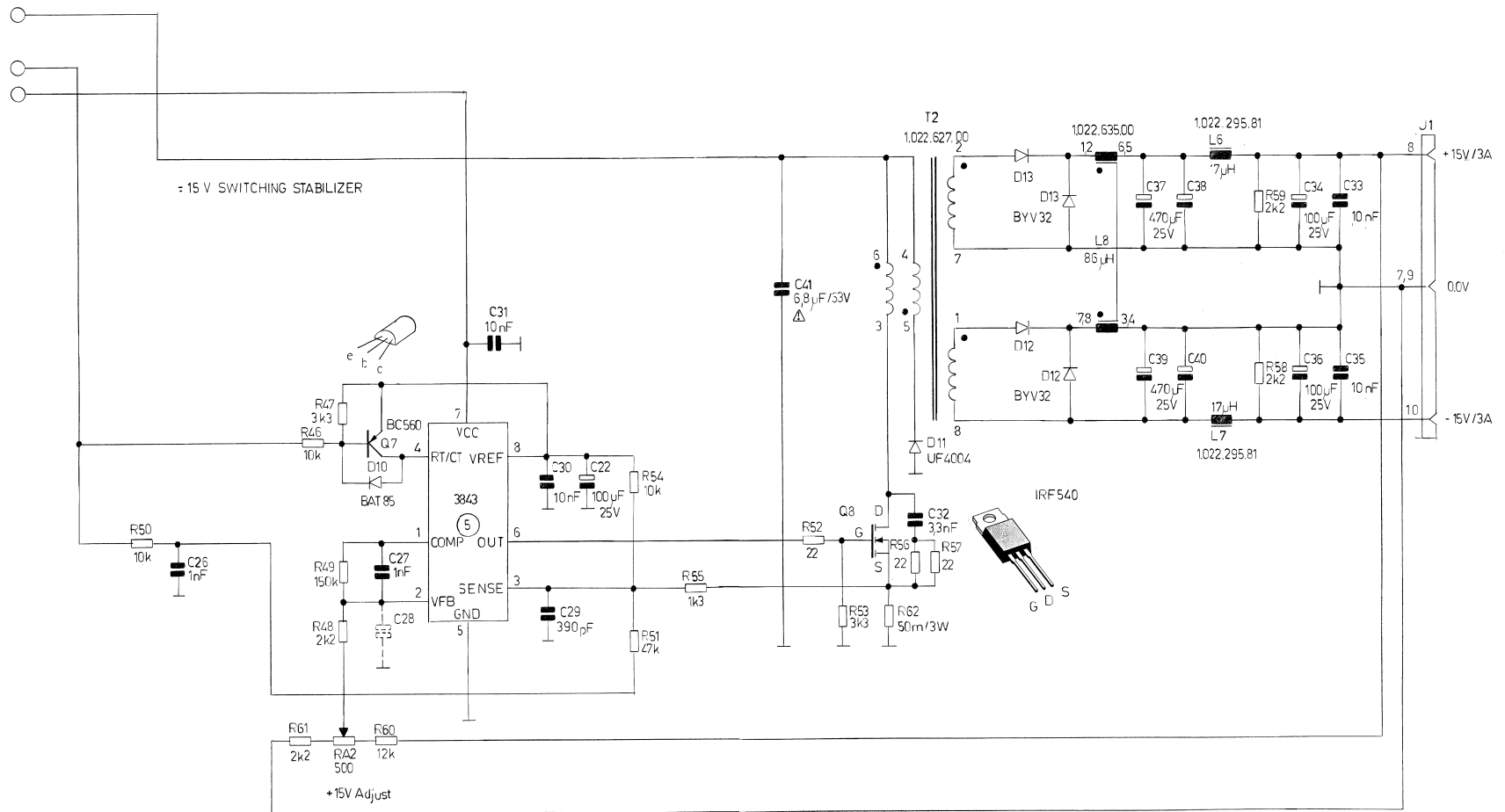
© 22.03.95 ZOLLER	① . . .	○ . . .	○ . . .	○ . . .
A 8 1 2 / A 8 1 6 / A 8 2 0			PAGE 1 OF 3	
STUDER STABILIZER			SC	1.820.832.81



STABILIZER 1.820.832.00 / 1.820.832.81

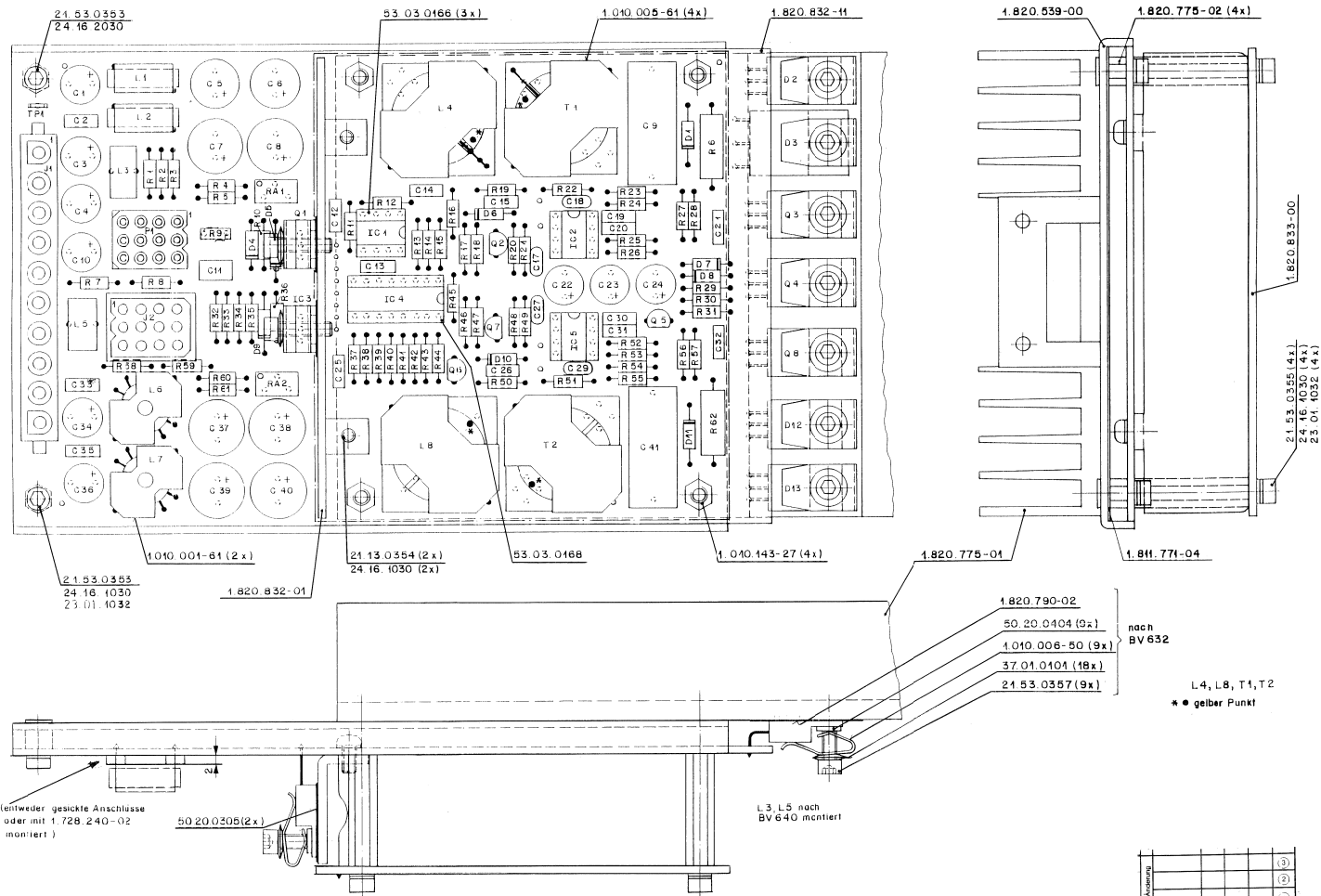


STABILIZER 1.820.832.00 / 1.820.832.81



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	A812 / A816 / A820		PAGE 3 OF 3
STUDER	STABILIZER	SC	1.820.832.81

STABILIZER 1.820.832.00 / 1.820.832.81



(entweder geackte Anschlüsse
oder mit 1.728.240-02
montiert)

50.20.0506(2x)

L3, L5 nach
BV640 montiert

nach
BV632

L4, L8, T1, T2
* • gelber Punkt

Arbeits-					(3)
Datum	22.3.95	PZ			(2)
Kopie für:					(1)
					(0)

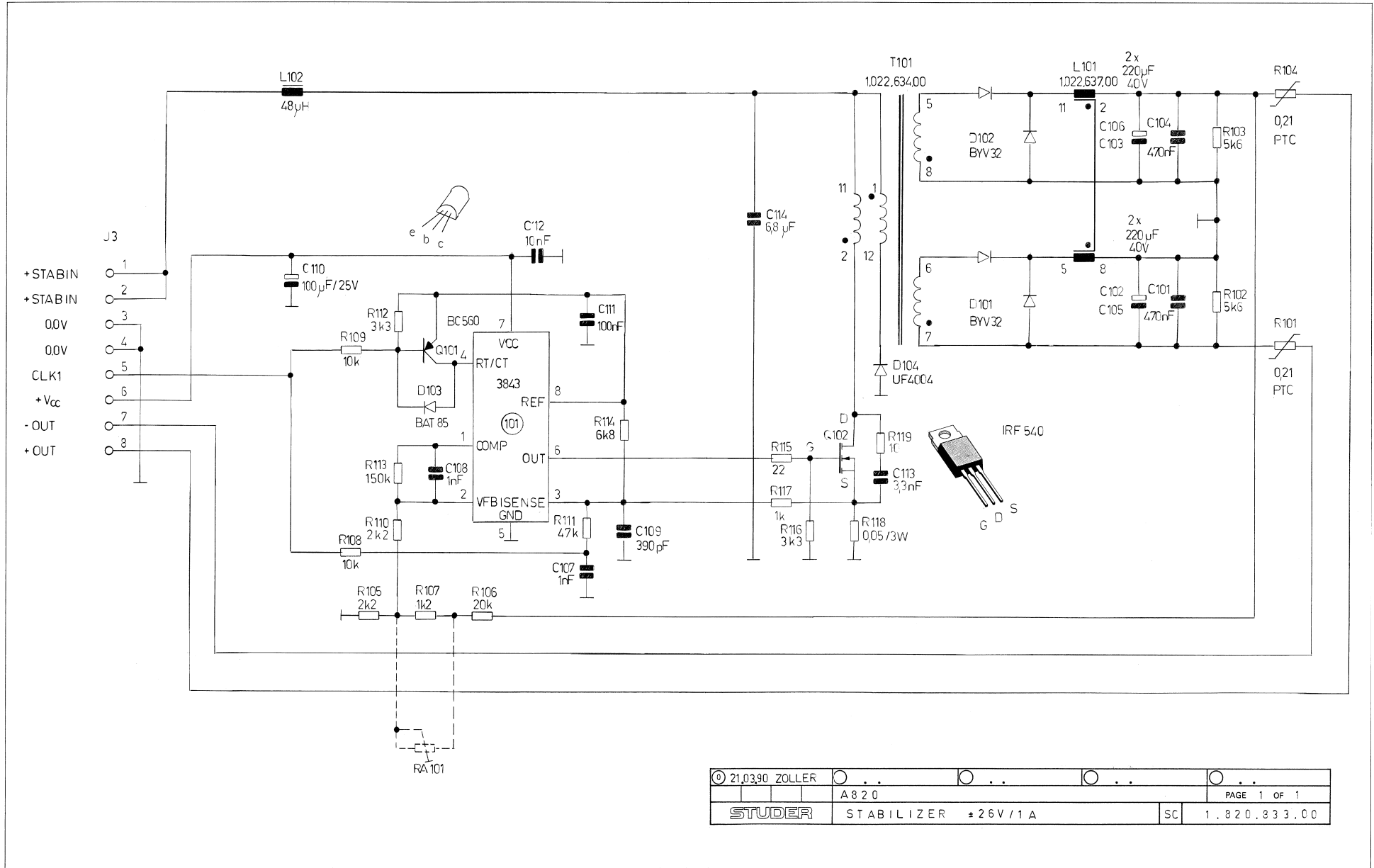
STUDER REGENSDORF ZÜRICH	Bearbeitung	STABILIZER	ESE	Nummer	1.820.832-81
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STABILIZER 1.820.832.81

Ad	..POS..	..REF.No..	DESCRIPTION.....	MANUFACTURER	Ad	..POS..	..REF.No..	DESCRIPTION.....	MANUFACTURER
A.....1	1.820.833.00		Stabilizer +/-26V		R....14	57.11.3222	2.2 kOhm	1%	
C.....1	59.22.6470	47 uF	-20%, 40V, EL		R....15	57.11.3683	68 kOhm	1%	
C.....2	59.06.0103	10 nF	10%, 63V, PETP		R....16	57.11.3101	100 Ohm	1%	
C.....3	59.22.3221	220 uF	-20%, 10V, EL		R....17	57.11.3332	3.3 kOhm	5%	
C.....4	59.22.8220	22 uF	-20%, 63V, EL		R....18	57.11.3103	10 kOhm	5%	
C.....5	59.22.6221	220 uF	-20%, 40V, EL		R....19	57.11.3103	10 kOhm	1%	
C.....6	59.22.6221	220 uF	-20%, 40V, EL		R....20	57.11.3222	2.2 kOhm	5%	
C.....7	59.22.3102	1000 uF	-20%, 10V, EL		R....21	57.11.3154	150 kOhm	5%	
C.....8	59.22.3102	1000 uF	-20%, 10V, EL		R....22	57.11.3473	47 kOhm	1%	
C.....9	59.02.0685	6.8 uF	10%, 63V, MPC, /!\		R....23	57.11.3132	1.3 kOhm	1%	
C.....10	59.22.8220	22 uF	-20%, 63V, EL		R....24	57.11.3752	7.5 kOhm	1%	
C.....11	59.06.0474	470 nF	10%, 63V, PETP		R....25	57.11.3220	22 Ohm	5%	
C.....12	59.06.0683	68 nF	10%, 63V, PETP		R....26	57.11.3332	3.3 kOhm	5%	
C.....13	59.06.5102	1 nF	5%, 63V, PETP		R....27	57.11.3220	22 Ohm	5%	
C.....14	59.06.5104	100 nF	5%, 63V, PETP		R....28	57.11.3220	22 Ohm	5%	
C.....15	59.06.5102	1 nF	5%, 63V, PETP		R....29	57.11.3822	8.2 kOhm	5%	
C.....16	00.00.0000		not used		R....30	57.11.3102	1 kOhm	5%	
C.....17	59.32.4102	1 nF	20%, 63V, CER		R....31	57.11.3479	4.7 Ohm	5%	
C.....18	59.32.1681	680 pF	10%, 400V, CER		R....32	57.11.3222	2.2 kOhm	1%	
C.....19	59.06.0103	10 nF	10%, 63V, PETP		R....33	57.11.3100	10 Ohm	5%	
C.....20	59.06.0103	10 nF	10%, 63V, PETP		R....34	57.11.3279	2.7 Ohm	5%	
C.....21	59.06.0332	3.3 nF	10%, 63V, PETP		R....35	57.11.3222	2.2 kOhm	1%	
C.....22	59.22.5101	100 uF	-20%, 25V, EL		R....36	57.11.3229	2.2 Ohm	5%	
C.....23	59.22.5101	100 uF	-20%, 25V, EL		R....37	57.11.3102	1 kOhm	1%	
C.....24	59.22.5101	100 uF	-20%, 25V, EL		R....38	57.11.3103	10 kOhm	5%	
C.....25	59.06.0103	10 nF	10%, 63V, PETP		R....39	57.11.3203	20 kOhm	1%	
C.....26	59.06.5102	1 nF	5%, 63V, PETP		R....40	57.11.3133	13 kOhm	1%	
C.....27	59.32.4102	1 nF	20%, 63V, CER		R....41	57.11.3683	68 kOhm	5%	
C.....28	00.00.0000		not used		R....42	57.11.3102	1 kOhm	5%	
C.....29	59.34.5391	390 pF	5%, 63V, CER		R....43	57.11.3473	47 kOhm	5%	
C.....30	59.06.0103	10 nF	10%, 63V, PETP		R....44	57.11.3102	1 kOhm	5%	
C.....31	59.06.0103	10 nF	10%, 63V, PETP		R....45	57.11.3470	47 Ohm	5%	
C.....32	59.06.0332	3.3 nF	10%, 63V, PETP		R....46	57.11.3103	10 kOhm	5%	
C.....33	59.06.0103	10 nF	10%, 63V, PETP		R....47	57.11.3332	3.3 kOhm	5%	
C.....34	59.22.5101	100 uF	-20%, 25V, EL		R....48	57.11.3222	2.2 kOhm	5%	
C.....35	59.06.0103	10 nF	10%, 63V, PETP		R....49	57.11.3154	150 kOhm	5%	
C.....36	59.22.5101	100 uF	-20%, 25V, EL		R....50	57.11.3103	10 kOhm	1%	
C.....37	59.22.5471	470 uF	-20%, 25V, EL		R....51	57.11.3473	47 kOhm	1%	
C.....38	59.22.5471	470 uF	-20%, 25V, EL		R....52	57.11.3220	22 Ohm	5%	
C.....39	59.22.5471	470 uF	-20%, 25V, EL		R....53	57.11.3332	3.3 kOhm	5%	
C.....40	59.22.5471	470 uF	-20%, 25V, EL		R....54	57.11.3103	10 kOhm	1%	
C.....41	59.02.0685	6.8 uF	10%, 63V, MPC, /!\		R....55	57.11.3132	1.3 kOhm	1%	
D.....1	50.04.0138	UF 4004	BYT 01-400, UES 1106	GI,Tho,Un	R....56	57.11.3220	22 Ohm	5%	
D.....2	50.04.0517	BYV 32		Mot,Ph	R....57	57.11.3220	22 Ohm	5%	
D.....3	50.04.0522	BYV 72	BYW 99 P - 100	Mot,Ph	R....58	57.11.3222	2.2 kOhm	5%	
D.....4	50.04.1103	Z 7.5 V		ITT,Mot,Ph,Tf,SGS,Tho	R....59	57.11.3222	2.2 kOhm	5%	
D.....5	50.04.0138	UF 4004	BYT 01-400, UES 1106	GI,Tho,Un	R....60	57.56.2050	50 mOhm	3%, 3W	
D.....6	50.04.0127	BAT 85	BAT 42	Ph,SGS,Tho	R....61	57.11.3222	2.2 kOhm	5%	
D.....7	50.04.1119	Z 15 V		ITT,Mot,Ph,Tf,SGS,Tho	R....62	57.11.3222	2.2 kOhm	5%	
D.....8	50.04.0127	BAT 85	BAT 42	Ph,SGS,Tho	RA....1	58.05.1501	500 Ohm	10%, multi turn	
D.....9	50.04.0138	UF 4004	BYT 01-400, UES 1106	GI,Tho,Un	RA....2	58.05.1501	500 Ohm	10%, multi turn	
D.....10	50.04.0127	BAT 85	BAT 42	Ph,SGS,Tho	T.....1	1.022.629.00		Switching Transformer	St
D.....11	50.04.0138	UF 4004	BYT 01-400, UES 1106	GI,Tho,Un	T.....2	1.022.627.00		Switching Transformer	St
D.....12	50.04.0517	BYV 32		Mot,Ph	TP....1	54.02.0320		Test Point	
D.....13	50.04.0517	BYV 32		Mot,Ph					
IC....1	50.05.0283	LM 393 N	LM 393 P, LM 393 DP	Sig,TI,NS,Tho	/!\ = Increasing of safety relative to risk of fire.				
IC....2	50.10.0113	IP3843 N	UC 3843 N	IPS,Un	Note 1 - Connector: 10 contacts, AMP Nr. 826 852-3				
IC....3	50.10.0116	LM317HVT		Seagate,SG	Note 2 - Connector: case, Studer Nr. 54.02.0409, Molex Nr. 03-06-1121, Studer Nr. 54.02.0407, Molex Nr. 02-06-7103				
IC....4	50.07.0046	CD0404BE	HCF 4046 BE	SGS,RCA	Note 3 - Connector: case, Studer Nr. 54.02.0408, Molex Nr. 03-06-2121, Studer Nr. 54.02.0406, Molex Nr. 02-06-8103				
IC....5	50.10.0113	IP3843 N	UC 3843 N	IPS,Un	Ce=Ceramic, El=Electrolytic, MPETP=Metallized Polyesterfilm, PETP=Polyesterfilm, MPC=Metallized Polycarbonate film.				
J.....1	54.25.0010		see note 1		MANUFACTURER: Fe=Ferranti, GI=General Instruments, IPS=Integrated Power Semiconductor, ITI=Intermetall, IR=International Rectifier, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation, Ses=Secossem, SGS=SGS/Atos, SG=Silicon General, Sie=Siemens, Sig=Signetics, Six=Siliconix, St=Studer, Tf=Telefunken, Tho=Thomson, Ti=Texas Instruments, Un=Unitrode, Vo=Vogt & Co.				
J.....2	54.02.0409		see note 2		1.820.832.81 STABILIZER GP 95/03/2200				
L.....1	62.99.0111	3.9 uH		Vo	END				
L.....2	62.99.0111	3.9 uH		Vo	+				
L.....3	62.03.0010	48 uH		Tokin					
L.....4	1.022.636.00	30 uH		St					
L.....5	62.03.0010	48 uH		Tokin					
L.....6	1.022.295.81	17 uH		St					
L.....7	1.022.295.81	17 uH		St					
L.....8	1.022.635.00	86 uH		St					
P.....1	54.02.0408		see note 3						
Q.....1	50.03.0512	BDW 93 B	BD 899 A	Mot,SGS,Tho					
Q.....2	50.03.0496	BC 560		Sie					
Q.....3	50.03.1609	IRF 540		IR					
Q.....4	50.03.0512	BDW 93 B	BD 899 A	Mot,SGS,Tho					
Q.....5	50.03.0340	BC 337-25		ITT,NS,Ph,Sie					
Q.....6	50.03.1505	VN 0808 M	ZVN 0108 A	Fe,Six					
Q.....7	50.03.0496	BC 560		Sie					
Q.....8	50.03.1609	IRF 540		IR					
R....1	57.11.3101	100 Ohm	5%						
R....2	57.11.3331	330 Ohm	5%						
R....3	57.11.3101	100 Ohm	5%						
R....4	57.11.3302	3.0 kOhm	5%						
R....5	57.11.3222	2.2 kOhm	5%						
R....6	57.56.2050	50 mOhm	3%, 3W						
R....7	57.19.0101	100 Ohm	5%, Fuse						
R....8	57.19.0101	100 Ohm	5%, Fuse						
R....9	57.92.7013	0.75 Ohm	PTC						
R....10	57.11.3332	3.3 kOhm	5%						
R....11	57.11.3561	560 Ohm	1%						
R....12	57.11.3152	1.5 kOhm	1%						
R....13	57.11.3103	10 kOhm	5%						

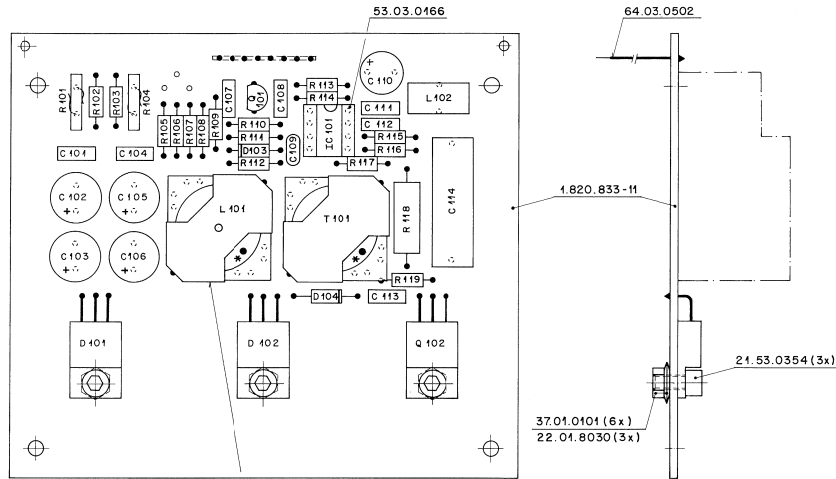
STABILIZER + / -26V / 1A 1.820.833.00



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A 8 2 0	PAGE 1 OF 1		
STUDER	STABILIZER ±26V / 1A	SC	1.820.833.00



STABILIZER +/- -26V / 1A 1.820.833.00



1.010.002-61 (2x)
 Nr. Etikette / ESE-Warnschild
 aufgeklebt nach Fabrikationsmuster.

* ● gelber Punkt

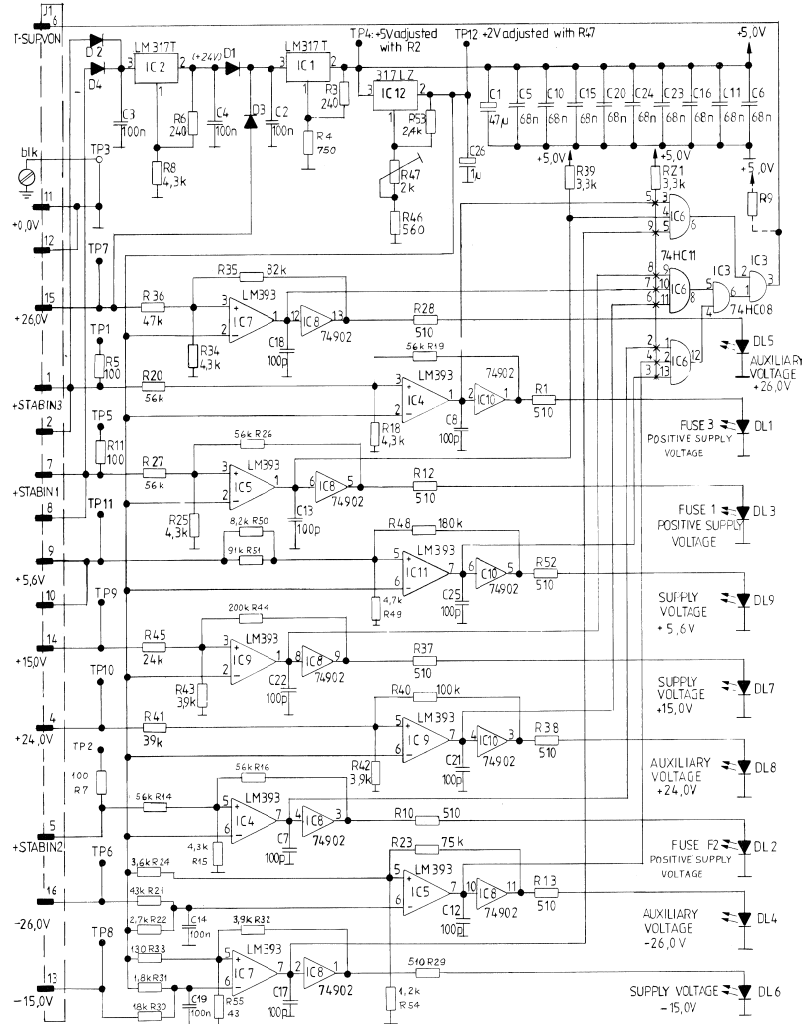
21.3.90	RP				
Datum	Gez.	Gepr.	Ges.	Index	

STUDER REGENSDORF ZÜRICH	Baumzeichnung	STABILIZER +/- -26V ESE	Nummer	1.820.833-00
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Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C...	101	59.06.0103	10 nF	10%, 63V, PETP
C...	102	59.22.6221	220 uF	-20%, 40V, EL
C...	103	59.22.6221	220 uF	-20%, 40V, EL
C...	104	59.06.0103	10 nF	10%, 63V, PETP
C...	105	59.22.6221	220 uF	-20%, 40V, EL
C...	106	59.22.6221	220 uF	-20%, 40V, EL
C...	107	59.06.0102	1 nF	10%, 63V, PETP
C...	108	59.06.0102	1 nF	10%, 63V, PETP
C...	109	59.32.2681	680 pF	5%, 63V, CER
C...	110	59.22.5101	100 uF	-20%, 25V, EL
C...	111	59.06.0104	100 nF	10%, 63V, PETP
C...	112	59.06.0103	10 nF	10%, 63V, PETP
C...	113	59.06.0332	3.3 nF	10%, 63V, PETP
C...	114	59.31.5685	6.8 uF	10%, 63V, PETP
01 C...	114	59.02.0685	6.8 uF	10%, 63V, MPC
D...	101	50.04.0517	BYV 32	Mot, Ph
D...	102	50.04.0517	BYV 32	Mot, Ph
D...	103	50.04.0127	BAT 55	Ph, SSS, Tho
D...	104	50.04.0138	UF 4004	GI, Tho, Un
IC...	101	50.10.0113	IP3843 N	UC 3843 N
L...	101	1.022.637.00	403 uH	St
L...	102	62.03.0010	68 uH	Tokin
Q...	101	50.03.0496	BC 560	Sie
Q...	102	50.03.1609	IRF 540	IR
R...	101	57.92.7015	0.21 Ohm	PTC
R...	102	57.11.3262	5.6 Kohm	5%
R...	103	57.11.3262	5.6 Kohm	5%
R...	104	57.92.7015	0.21 Ohm	PTC
R...	105	57.11.3222	2.2 Kohm	1%
R...	106	57.11.3203	20 Kohm	1%
R...	107	57.11.3122	1.2 Kohm	1%
R...	108	57.11.3103	10 Kohm	5%
R...	109	57.11.3103	10 Kohm	5%
R...	110	57.11.3222	2.2 Kohm	5%
R...	111	57.11.3473	47 Kohm	5%
R...	112	57.11.3332	3.3 Kohm	5%
R...	113	57.11.3154	150 Kohm	5%
R...	114	57.11.3482	6.8 Kohm	1%
R...	115	57.11.3220	22 Ohm	5%
R...	116	57.11.3332	3.3 Kohm	5%
R...	117	57.11.3132	1.3 Kohm	1%
R...	118	57.56.2050	50 mOhm	3%, 3W
R...	119	57.11.3100	10 Ohm	5%
RA...	101	00.00.0000	not used	
T...	101	1.022.634.00	Switching Transformer	St
(01) 03.10.91	Improved high frequency behaviour.			
Ce=Ceramic, El=Electrolytic, MPETP=Metallized Polyesterfilm, PETP=Polyesterfilm, MPC=Metallized Polycarbonate film.				
MANUFACTURER: GI=General Instruments, IPS=Integrated Power Semiconductor, IR=International Rectifier, Mot=Motorola, Ph=Philips, SSS=SSS/Ätes, Sie=Siemens, St=Studer, Tho=Thomson, Un=Unintode.				
1.820.833.00	STABILIZER +/- -26 V	PZ 90/03/2100		
1.820.833.00	STABILIZER +/- -26 V	PZ 91/10/0301		



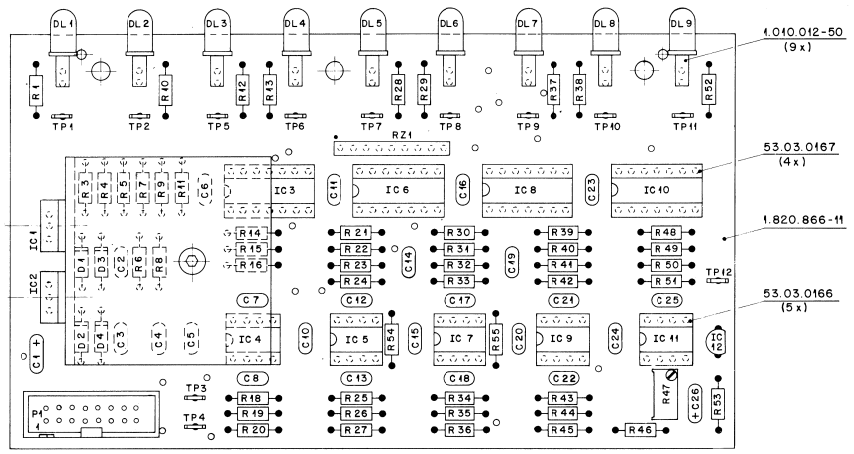
FUSE SUPPLY FAILURE DETECTOR 1.820.866.00



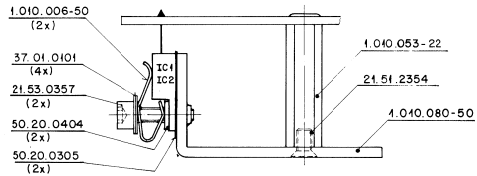
7, 10, 86 Buchse	A 820	PAGE 1 OF 1
STUDER	Fuse /Supply Failure Detector	SC 1.820.866.00



FUSE SUPPLY FAILURE DETECTOR 1.820.866.00



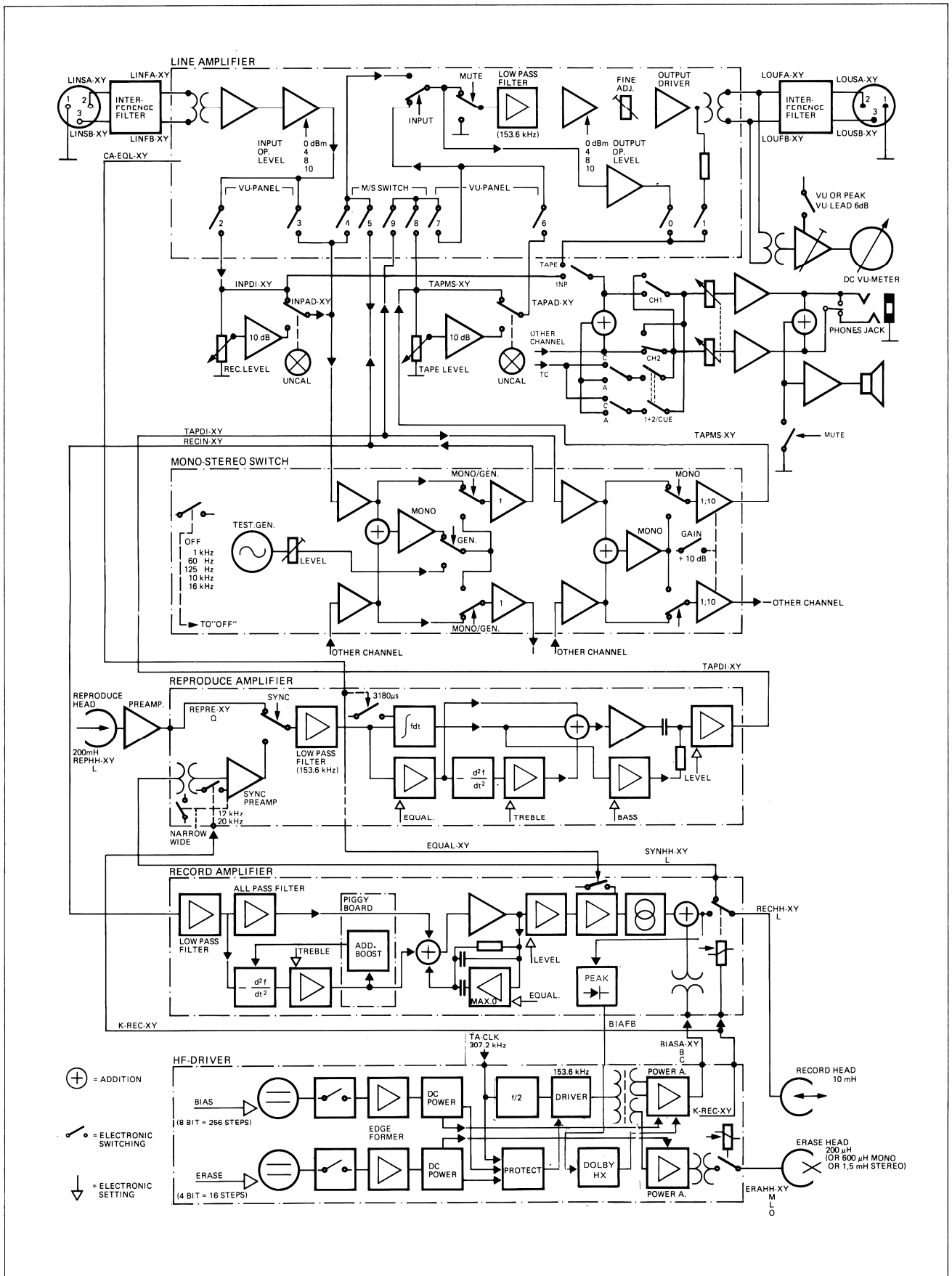
① Etiketten 1.820.866-01 und 43.01.0108 nach Muster aufkleben!



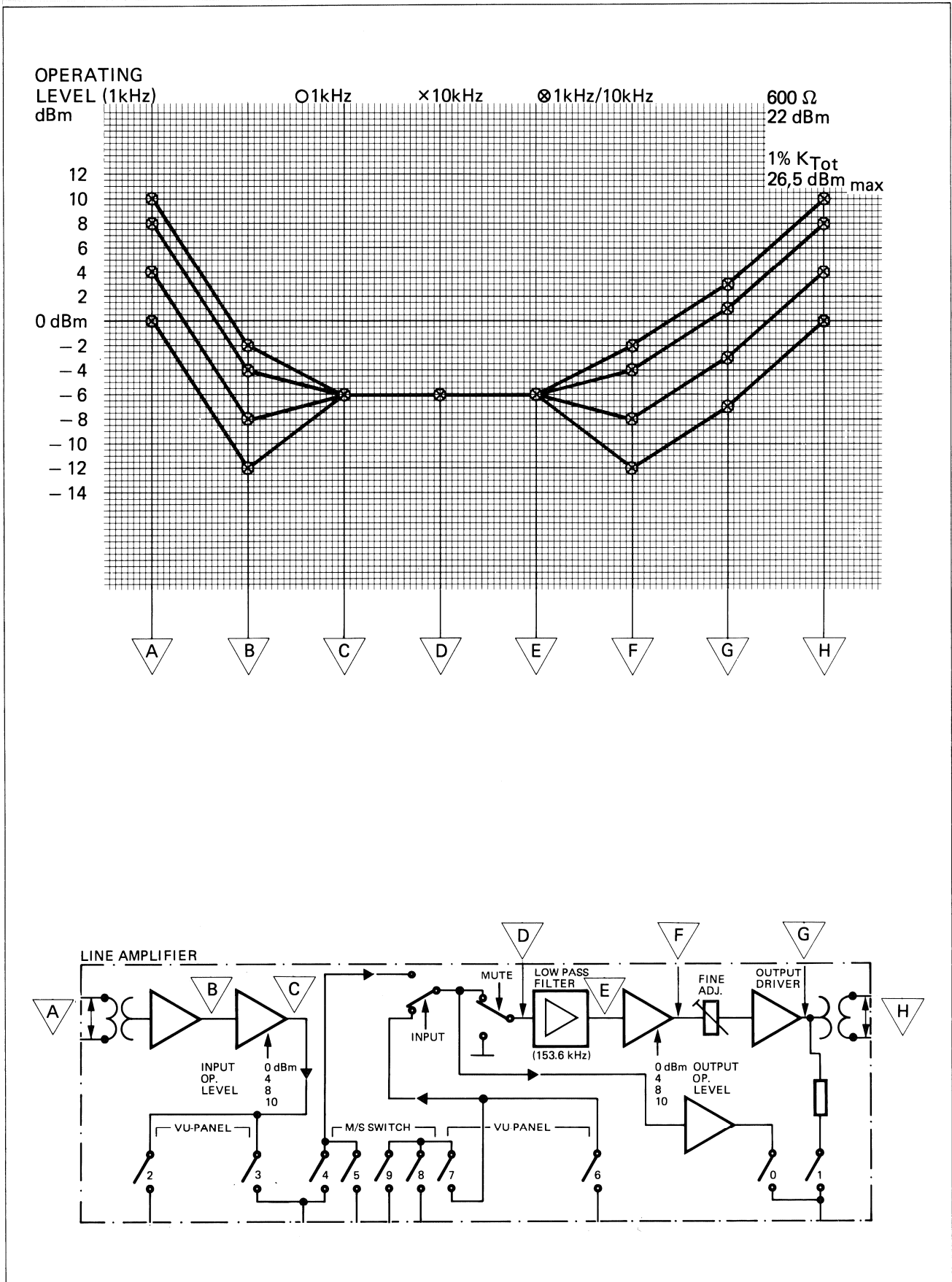
Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.26.0470	47 uF	20%, 6.3 V, Sal	Ph,Ri
C....2	59.06.0104	100 nF	10%, PETP	
C....3	59.06.0104	100 nF	10%, PETP	
C....4	59.06.0104	100 nF	10%, PETP	
C....5	59.06.0683	68 nF	20%, PETP	
C....6	59.06.0683	68 nF	20%, PETP	
C....7	59.34.4101	100 pF	10%, Cer	
C....8	59.34.4101	100 pF	10%, Cer	
C....9		not used		
C....10	59.06.0683	68 nF	20%, PETP	
C....11	59.06.0683	68 nF	20%, PETP	
C....12	59.34.4101	100 pF	10%, Cer	
C....13	59.34.4101	100 pF	10%, Cer	
C....14	59.06.0104	100 nF	10%, PETP	
C....15	59.06.0683	68 nF	20%, PETP	
C....16	59.06.0683	68 nF	20%, PETP	
C....17	59.34.4101	100 pF	10%, Cer	
C....18	59.34.4101	100 pF	10%, Cer	
C....19	59.06.0104	100 nF	10%, PETP	
C....20	59.06.0683	68 nF	20%, PETP	
C....21	59.34.4101	100 pF	10%, Cer	
C....22	59.34.4101	100 pF	10%, Cer	
C....23	59.06.0683	68 nF	20%, PETP	
C....24	59.06.0683	68 nF	20%, PETP	
C....25	59.34.4101	100 pF	10%, Cer	
C....26	59.26.9109	1 uF	20%, 6.3 V, Sal	Ph,Ri
D....1	50.04.0122	1N 4001	...	IN 4004 GI,Not
D....2	50.04.0122	1N 4001	...	IN 4004 GI,Not
D....3	50.04.0122	1N 4001	...	IN 4004 GI,Not
D....4	50.04.0122	1N 4001	...	IN 4004 GI,Not
DL...1	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...2	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...3	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...4	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...5	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...6	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...7	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...8	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
DL...9	50.04.2113	MV 5453	CM 4-384 B, HLMF-3507	Ms,CM,HP
IC...1	50.10.0104	LM 317 T	...	MC, ... SP NS,Not,SGS,Tho,TI
IC...2	50.10.0104	LM 317 T	...	MC, ... SP NS,Not,SGS,Tho,TI
IC...3	50.17.1008	74 HC 06	...	Ph,Not,NS,RCA,To,II
IC...4	50.05.0283	LM 393 N	...	TI,NS
IC...5	50.05.0283	LM 393 N	...	TI,NS
IC...6	50.17.1011	74 HC 11	...	Ph,Not,NS,RCA,To,II
IC...7	50.05.0283	LM 393 N	...	TI,NS
IC...8	50.07.0902	74 C902 N	...	TI,NS
IC...9	50.05.0283	LM 393 N	...	TI,NS
IC...10	50.07.0902	74 C902 N	...	TI,NS
IC...11	50.05.0283	LM 393 N	...	TI,NS
IC...12	50.10.0108	LM 317 LZ	...	NS,Not
P....1	54.14.2002		see note 1	
R....1	57.11.3511	510 Ohm	2%	
R....2	00.00.0000	not used		
R....3	57.11.3241	240 Ohm	2%	
R....4	57.11.3751	750 Ohm	2%	
R....5	57.19.0101	100 Ohm	10%	
R....6	57.11.3241	240 Ohm	2%	
R....7	57.19.0101	100 Ohm	10%	
R....8	57.11.3432	4.3 kOhm	2%	
R....9	00.00.0000	not used		
R....10	57.11.3511	510 Ohm	2%	
R....11	57.19.0101	100 Ohm	10%	
R....12	57.11.3511	510 Ohm	2%	
R....13	57.11.3511	510 Ohm	2%	
R....14	57.11.3623	62 kOhm	2%	
R....15	57.11.3563	56 kOhm	2%	
R....16	57.11.3432	4.3 kOhm	2%	
R....17	57.11.3913	91 kOhm	2%	
R....18	57.11.3563	56 kOhm	2%	
R....19	00.00.0000	not used		
R....20	57.11.3432	4.3 kOhm	2%	
R....21	57.11.3913	91 kOhm	2%	
R....22	57.11.3212	2.7 kOhm	2%	
R....23	57.11.3753	750 Ohm	2%	
R....24	57.11.3362	3.6 kOhm	2%	
R....25	57.11.3432	4.3 kOhm	2%	
R....26	57.11.3913	91 kOhm	2%	
R....27	57.11.3563	56 kOhm	2%	
R....28	57.11.3511	510 Ohm	2%	
R....29	57.11.3511	510 Ohm	2%	
R....30	57.11.3182	1.8 kOhm	1%	
R....31	57.11.3182	1.8 kOhm	1%	
R....32	57.11.3392	3.9 kOhm	1%	
R....33	57.11.3392	3.9 kOhm	1%	
R....34	57.11.3131	130 Ohm	1%	
R....35	57.11.3432	4.3 kOhm	2%	
R....36	57.11.4823	82 kOhm	2%	
R....37	57.11.4473	47 kOhm	2%	
R....38	57.11.3511	510 Ohm	2%	
R....39	57.11.3332	3.3 kOhm	1%	
R....40	57.11.4332	3.3 kOhm	1%	
R....41	57.11.4332	3.3 kOhm	1%	
R....42	57.11.3392	3.9 kOhm	1%	
R....43	57.11.3392	3.9 kOhm	1%	
R....44	57.11.3184	180 kOhm	1%	
R....45	57.11.3204	200 kOhm	1%	
R....46	57.11.3243	24 kOhm	1%	
R....47	57.11.4561	560 Ohm	2%	
R....48	56.05.1202	2 kOhm	see note 2	
R....49	57.11.3184	180 kOhm	1%	
R....50	57.11.3432	4.3 kOhm	1%	
R....51	57.11.3472	4.7 kOhm	1%	
R....52	57.11.3333	33 kOhm	1%	
R....53	57.11.3822	8.2 kOhm	1%	
R....54	57.11.3912	9.1 kOhm	1%	
R....55	57.11.3913	9.1 kOhm	1%	
R....56	57.11.3511	510 Ohm	2%	
R....57	57.11.3242	2.4 kOhm	2%	
R....58	57.11.3122	1.2 kOhm	1%	
R....59	57.11.3430	43 Ohm	1%	
RZ...1	57.88.4332		see note 3	
TP...1	54.02.0320		Testpoint	
TP...2	54.02.0320		Testpoint	
TP...3	54.02.0320		Testpoint	
TP...4	54.02.0320		Testpoint	
TP...5	54.02.0320		Testpoint	
TP...6	54.02.0320		Testpoint	
TP...7	54.02.0320		Testpoint	
TP...8	54.02.0320		Testpoint	
TP...9	54.02.0320		Testpoint	
TP...10	54.02.0320		Testpoint	
TP...11	54.02.0320		Testpoint	
TP...12	54.02.0320		Testpoint	
(01) 15.12.86			Improved accuracy of voltage measurement.	

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
R....38	57.11.3511	510 Ohm	2%	
R....39	57.11.3332	3.3 kOhm	1%	
R....40	57.11.4332	3.3 kOhm	1%	
R....41	57.11.4333	3.3 kOhm	1%	
R....42	57.11.3392	3.9 kOhm	2%	
R....43	57.11.3392	3.9 kOhm	1%	
R....44	57.11.3184	180 kOhm	1%	
R....45	57.11.3204	200 kOhm	1%	
R....46	57.11.3243	24 kOhm	1%	
R....47	56.05.1202	2 kOhm	see note 2	
R....48	57.11.3184	180 kOhm	1%	
R....49	57.11.3432	4.3 kOhm	1%	
R....50	57.11.3472	4.7 kOhm	1%	
R....51	57.11.3333	33 kOhm	1%	
R....52	57.11.3822	8.2 kOhm	1%	
R....53	57.11.3912	9.1 kOhm	1%	
R....54	57.11.3913	9.1 kOhm	1%	
R....55	57.11.3511	510 Ohm	2%	
R....56	57.11.3242	2.4 kOhm	2%	
R....57	57.11.3122	1.2 kOhm	1%	
R....58	57.11.3430	43 Ohm	1%	
RZ...1	57.88.4332		see note 3	
TP...1	54.02.0320		Testpoint	
TP...2	54.02.0320		Testpoint	
TP...3	54.02.0320		Testpoint	
TP...4	54.02.0320		Testpoint	
TP...5	54.02.0320		Testpoint	
TP...6	54.02.0320		Testpoint	
TP...7	54.02.0320		Testpoint	
TP...8	54.02.0320		Testpoint	
TP...9	54.02.0320		Testpoint	
TP...10	54.02.0320		Testpoint	
TP...11	54.02.0320		Testpoint	
TP...12	54.02.0320		Testpoint	
(01) 15.12.86			Improved accuracy of voltage measurement.	
Note 1 - Plug, 16 contacts:		Yamaichi nr. FAP-16-08/4 Burdy nr. BPH 9 B 16 800 GS		
Note 2 - 2 kOhm Potentiometer:		Bourns nr. 3296 Y-1-202 Spectrol nr. 64 Y 202 T 000 Contelec nr. 183 W2 202 Mureta nr. POT 3105 Y - 1 - 202		
Note 3 - 8 * 3.3 kOhm Network:		Sicovend nr. C09 X 3.3 K J Ineltro nr. R88 3.3 K 5k		
		Cer=Ceramic, PETP=Polyesterfilm, Sal=Solid aluminium.		
MANUFACTURER:		CM=Chicago Miniatur, GI=General Instruments, IP=Hewlett Packard, ITI=Intermetall, Mot=Motorola, Ms=Mosanto, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation of America, Ri=Rifa, SGS=SGS / Ates, Sie=Siemens, Tho=Thomsen CSF, TI=Texas Instruments, To=Toshiba.		
1.820.866.00 FUSE/SUPPLY FAILURE DETECTOR		PB 86/07/1700		
1.820.866.00 FUSE/SUPPLY FAILURE DETECTOR		BD 86/12/1501		
END				

AUDIO BLOCK DIAGRAM

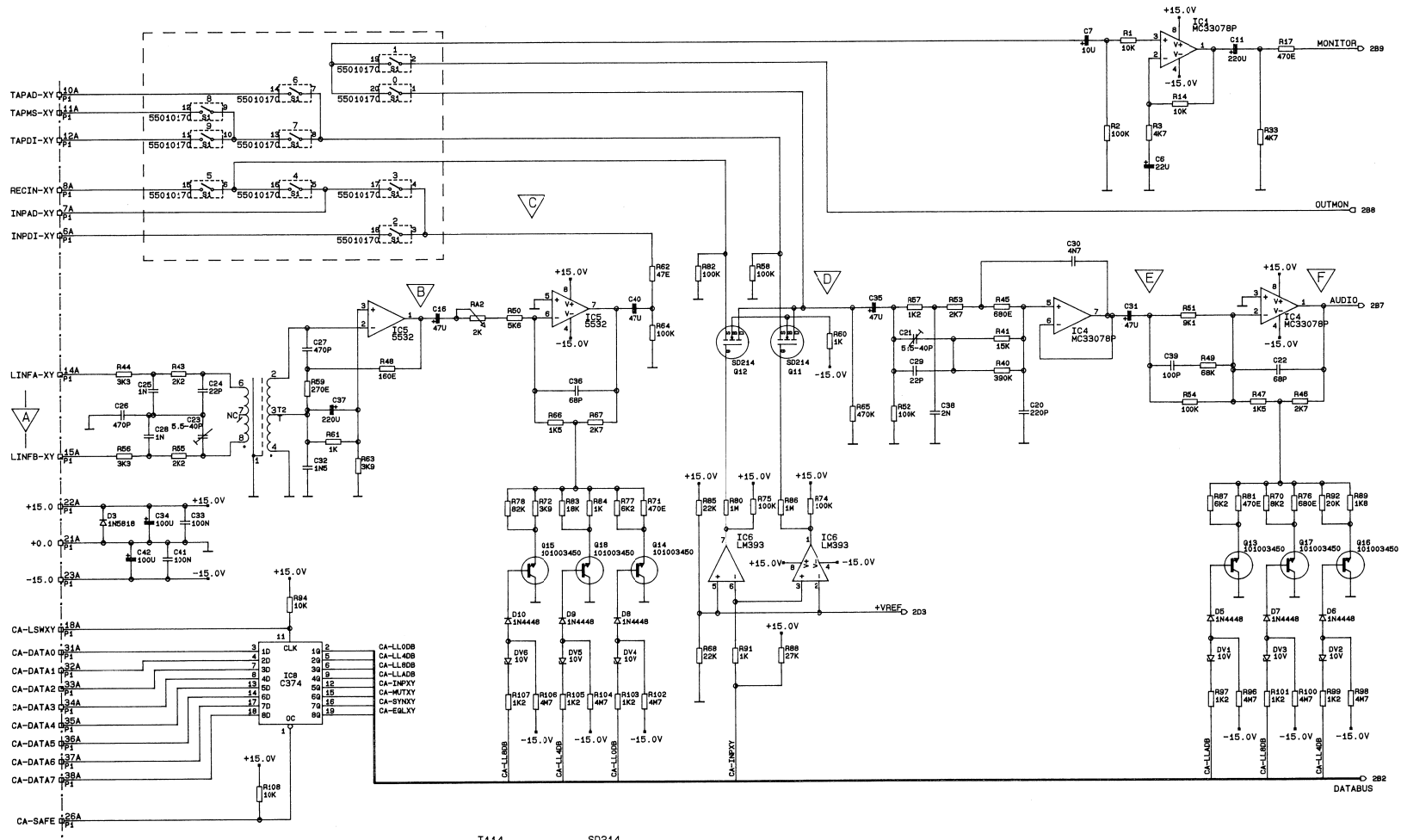


LEVEL DIAGRAMS, LINE AMPLIFIER





LINE AMPLIFIER WITH TRAF0 1.820.814.81



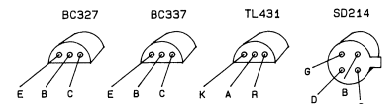
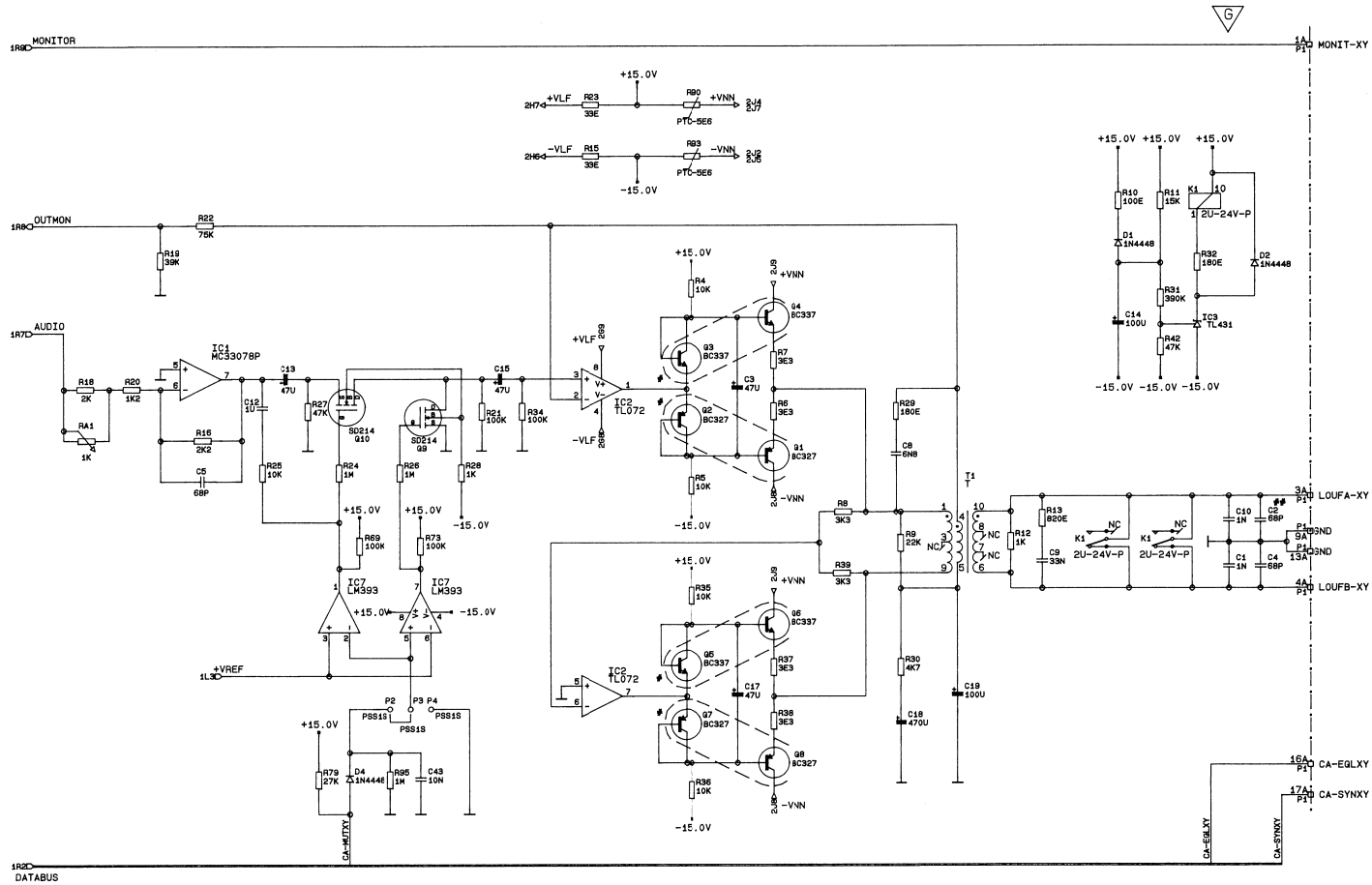
T14

SD214



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STUDER			AB10/AB16/AB20 AUDIOSECTION	
LINE AMPLIFIER WITH TRAF0			PAGE 1 OF 2	
SC 1.820.814-81				

LINE AMPLIFIER WITH TRAF0 1.820.814.81

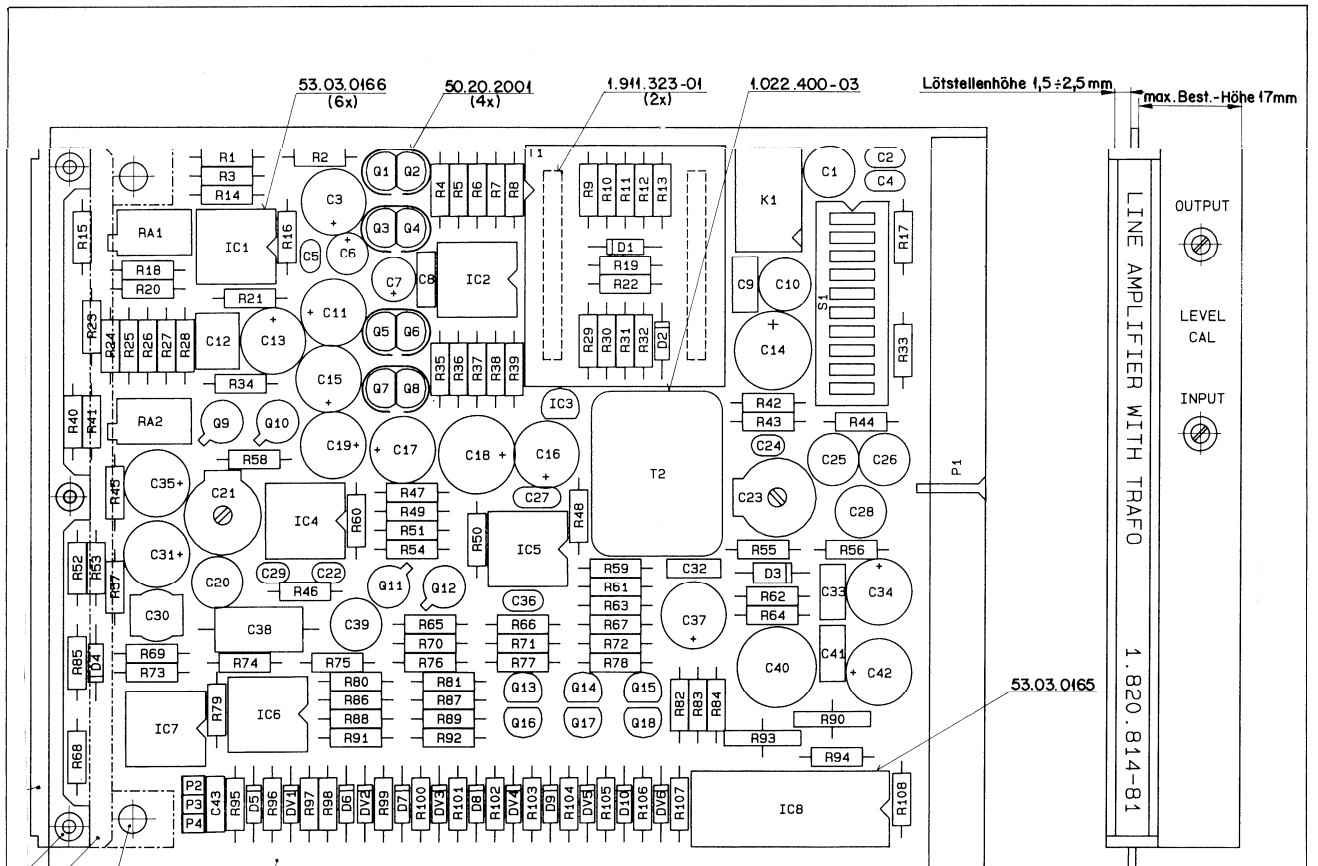


* VBE MATCHED AND THERM. COUPLED
 ** C2 NOT USED

13.09.91 BBT	A810/A816/A820 AUDIOSECTION	PAGE 2 OF 2
STUDER	LINE AMPLIFIER WITH TRAF0	SC 1.820.814-81



LINE AMPLIFIER WITH TRAF0 1.820.814.81



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1		59.05.1102	1 nF	1%, 630V, PP	D.....1		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....2		00.00.0000	not used		D.....2		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....3		59.22.4470	47 uF	-20%, 16V, EL	D.....3		50.04.0512	1N 5818	1N 5819 Mot
C.....4		59.34.2680	68 pF	5%, CER	D.....4		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....5		59.34.4680	68 pF	5%, CER	D.....5		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....6		59.22.5220	22 uF	-20%, 25V, EL	D.....6		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....7		59.22.6100	10 uF	-20%, 35V, EL	D.....7		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....8		59.06.0692	6.8 nF	10%, 63V, PETP	D.....8		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....9		59.06.0333	33 nF	10%, 63V, PETP	D.....9		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
C.....10		59.05.1102	1 nF	1%, 630V, PP	D.....10		50.04.0125	1N 4448	Fc,ITT,Ph,Tf
01 C.....11		59.22.3221	220 uF	-20%, 10V, EL	DV.....1		50.04.1114	10 V	5%, 0.4 W, Z
C.....12		00.00.0000	not used		DV.....2		50.04.1114	10 V	5%, 0.4 W, Z
C.....13		59.22.4470	47 uF	-20%, 16V, EL	DV.....3		50.04.1114	10 V	5%, 0.4 W, Z
C.....14		59.22.6101	100 uF	-20%, 40V, EL	DV.....4		50.04.1114	10 V	5%, 0.4 W, Z
C.....15		59.22.4470	47 uF	-20%, 16V, EL	DV.....5		50.04.1114	10 V	5%, 0.4 W, Z
C.....16		59.22.4470	47 uF	-20%, 16V, EL	DV.....6		50.04.1114	10 V	5%, 0.4 W, Z
C.....17		59.22.4470	47 uF	-20%, 16V, EL	IC.....1		50.09.0117	MC 33078P	Mot
C.....18		59.22.2471	470 uF	-20%, 6.3V, EL	IC.....2		50.09.0101	TL 072 CP	Mot,Ti,NS,SGS
C.....19		59.22.4101	100 uF	-20%, 16V, EL	IC.....3		50.10.0106	TL 431CLP	Mot,Ti
C.....20		59.05.1221	220 pF	1%, 630V, PP	IC.....4		50.09.0117	MC 33078P	Mot
C.....21		59.18.0108	5.5--40 pF	100V, TRI	IC.....5		50.09.0106	NE 5532AN	XR 5532 AN
C.....22		59.34.4680	68 pF	5%, CER	IC.....6		50.05.0283	LM 393 ..	TDB 0193 DP
C.....23		59.18.0108	5.5--40 pF	100V, TRI	IC.....7		50.05.0283	LM 393 ..	TDB 0193 DP
C.....24		59.34.2220	22 pF	5%, CER	IC.....8		50.07.0003	MM74C374N	NS
C.....25		59.05.1102	1 nF	1%, 630V, PP	J.....1		54.01.0021	Jumper	
C.....26		59.05.2471	470 pF	2.5%, 630V, PP	K.....1		56.04.0197	24 V 2*U	125V/ 2 A, AG/AU
C.....27		59.34.5471	470 pF	5%, CER	P.....2		54.01.0020	Connector	contact pin .63*.63, H=5.8/3.4
C.....28		59.05.1102	1 nF	1%, 630V, PP	P.....3		54.01.0020	Connector	contact pin .63*.63, H=5.8/3.4
C.....29		59.34.2220	22 pF	5%, CER	P.....4		54.01.0020	Connector	contact pin .63*.63, H=5.8/3.4
C.....30		59.05.1472	4.7 nF	1%, 63V, PP	Q.....1		50.03.0625	BC 327	E 6310, see note 2
C.....31		59.22.4470	47 uF	-20%, 16V, EL	Q.....2		50.03.0625	BC 327	E 6310, see note 2
C.....32		59.06.0152	1.5 nF	10%, 63V, PETP	Q.....3		50.03.0516	BC 337	E 6310, see note 2
C.....33		59.06.0104	100 nF	10%, 63V, PETP	Q.....4		50.03.0516	BC 337	E 6310, see note 2
C.....34		59.22.5101	100 uF	-20%, 25V, EL	Q.....5		50.03.0516	BC 337	E 6310, see note 2
C.....35		59.22.4470	47 uF	-20%, 16V, EL	Q.....6		50.03.0516	BC 337	E 6310, see note 2
C.....36		59.34.2680	68 pF	5%, CER	Q.....7		50.03.0516	BC 337	E 6310, see note 2
C.....37		59.22.3221	220 uF	-20%, 10V, EL	Q.....8		50.03.0625	BC 327	E 6310, see note 2
C.....38		59.12.7202	2 nF	1%, 63V, PS	Q.....9		50.03.0625	BC 327	E 6310, see note 2
C.....39		59.05.1101	100 pF	1%, 630V, PP	Q.....10		50.11.0106	SD 214-DE	Ph,Six
C.....40		59.99.0401	47 uF	-10%, 16V, ELBIP					Ph,Six
C.....41		59.06.0104	100 nF	10%, 63V, PETP					
C.....42		59.22.5101	100 uF	-20%, 25V, EL					
C.....43		59.06.5103	10 nF	5%, 63V, PETP					



LINE AMPLIFIER WITH TRAF0 1.820.814.81

Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER	Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
Q....11	50.11.0106	SD 214-DE		Ph,Six	R....81	57.11.3471	470 Ohm	1% 0207	MF
Q....12	50.11.0106	SD 214-DE		Ph,Six	R....82	57.11.3104	100 kOhm	10%, 0207	MF
Q....13	1.010.034.50	Q, NPN	see note 1		R....83	57.11.3183	18 kOhm	5%, 0207	MF
Q....14	1.010.034.50	Q, NPN	see note 1		R....84	57.11.3102	1 kOhm	1%, 0207	MF
Q....15	1.010.034.50	Q, NPN	see note 1		R....85	57.11.3223	22 kOhm	10%, 0207	MF
Q....16	1.010.034.50	Q, NPN	see note 1		R....86	57.11.3105	1 MOhm	10%, 0207	MF
Q....17	1.010.034.50	Q, NPN	see note 1		R....87	57.11.3622	6.2 kOhm	5%, 0207	MF
Q....18	1.010.034.50	Q, NPN	see note 1		R....88	57.11.3273	27 kOhm	10%, 0207	MF
					R....89	57.11.3182	1.8 kOhm	1%, 0207	MF
					R....90	57.99.0209	5.6 Ohm		PTC
R....1	57.11.3103	10 kOhm	5%, 0207	MF	R....91	57.11.3102	1 kOhm	10%, 0207	MF
R....2	57.11.3104	100 kOhm	1%, 0207	MF	R....92	57.11.3203	20 kOhm	5%, 0207	MF
R....3	57.11.3472	4.7 kOhm	1%, 0207	MF	R....93	57.99.0209	5.6 Ohm		PTC
R....4	57.11.3103	10 kOhm	5%, 0207	MF	R....94	57.11.3103	10 kOhm	10%, 0207	MF
R....5	57.11.3103	10 kOhm	5%, 0207	MF	R....95	57.11.3105	1 MOhm	10%, 0207	MF
R....6	57.11.3339	3.3 Ohm	1%, 0207	MF	R....96	57.11.5475	4.7 MOhm	10%, 0207	MF
R....7	57.11.3339	3.3 Ohm	1%, 0207	MF	R....97	57.11.3122	1.2 kOhm	10%, 0207	MF
R....8	57.11.3332	3.3 kOhm	1%, 0207	MF	R....98	57.11.5475	4.7 MOhm	10%, 0207	MF
R....9	57.11.3223	22 kOhm	1%, 0207	MF	R....99	57.11.3122	1.2 kOhm	10%, 0207	MF
R....10	57.11.3101	100 Ohm	5%, 0207	MF	R...100	57.11.5475	4.7 MOhm	10%, 0207	MF
R....11	57.11.3153	15 kOhm	5%, 0207	MF	R...101	57.11.3122	1.2 kOhm	10%, 0207	MF
R....12	57.11.3102	1 kOhm	5%, 0207	MF	R...102	57.11.5475	4.7 MOhm	10%, 0207	MF
R....13	57.11.3821	820 Ohm	5%, 0207	MF	R...103	57.11.3122	1.2 kOhm	10%, 0207	MF
R....14	57.11.3103	10 kOhm	1%, 0207	MF	R...104	57.11.5475	4.7 MOhm	10%, 0207	MF
R....15	57.11.3330	33 Ohm	5%, 0207	MF	R...105	57.11.3122	1.2 kOhm	10%, 0207	MF
R....16	57.11.3222	2.2 kOhm	5%, 0207	MF	R...106	57.11.5475	4.7 MOhm	10%, 0207	MF
R....17	57.11.3471	470 Ohm	5%, 0207	MF	R...107	57.11.3122	1.2 kOhm	10%, 0207	MF
R....18	57.11.3202	2 kOhm	1%, 0207	MF	R...108	57.11.3103	10 kOhm	10%, 0207	MF
R....19	57.11.3393	39 kOhm	1%, 0207	MF	RA....1	58.05.0102	1 kOhm	10%, .5 W	PMG
R....20	57.11.3122	1.2 kOhm	5%, 0207	MF	RA....2	58.05.0202	2 kOhm	10%, .5 W	PMG
R....21	57.11.3104	100 kOhm	5%, 0207	MF	S....1	55.01.0170	DIL-Switch	10*A, Print	
R....22	57.11.3753	75 kOhm	1%, 0207	MF	T....1	1.022.362.00		LINE OUTPUT TRAF0 1:1,46	
R....23	57.11.3330	33 Ohm	5%, 0207	MF	T....2	1.022.454.00		INPUT TRAF0 1:0,175	
R....24	57.11.3105	1 MOhm	10%, 0207	MF					
01 R....25	00.00.0000	not used							
R....26	57.11.3105	1 MOhm	10%, 0207	MF					
R....27	57.11.3473	47 kOhm	5%, 0207	MF					
R....28	57.11.3102	1 kOhm	10%, 0207	MF					
R....29	57.11.3181	180 Ohm	5%, 0207	MF					
R....30	57.11.3472	4.7 kOhm	5%, 0207	MF					
R....31	57.11.3394	390 kOhm	10%, 0207	MF					
R....32	57.11.3181	180 Ohm	10%, 0207	MF					
R....33	57.11.3472	4.7 kOhm	5%, 0207	MF					
R....34	57.11.3104	100 kOhm	5%, 0207	MF					
R....35	57.11.3103	10 kOhm	5%, 0207	MF					
R....36	57.11.3103	10 kOhm	5%, 0207	MF					
R....37	57.11.3339	3.3 Ohm	1%, 0207	MF					
R....38	57.11.3339	3.3 Ohm	1%, 0207	MF					
R....39	57.11.3332	3.3 kOhm	1%, 0207	MF					
R....40	57.11.3394	390 kOhm	1%, 0207	MF					
R....41	57.11.3153	15 kOhm	1%, 0207	MF					
R....42	57.11.3473	47 kOhm	10%, 0207	MF					
R....43	57.11.3222	2.2 kOhm	1%, 0207	MF					
R....44	57.11.3332	3.3 kOhm	1%, 0207	MF					
R....45	57.11.3681	680 Ohm	1%, 0207	MF					
R....46	57.11.3272	2.7 kOhm	1%, 0207	MF					
R....47	57.11.3152	1.5 kOhm	1%, 0207	MF					
R....48	57.11.3161	160 Ohm	5%, 0207	MF					
R....49	57.11.3683	68 kOhm	1%, 0207	MF					
R....50	57.11.3562	5.6 kOhm	5%, 0207	MF					
R....51	57.11.3912	9.1 kOhm	1%, 0207	MF					
R....52	57.11.3104	100 kOhm	1%, 0207	MF					
R....53	57.11.3272	2.7 kOhm	1%, 0207	MF					
R....54	57.11.3104	100 kOhm	5%, 0207	MF					
R....55	57.11.3222	2.2 kOhm	1%, 0207	MF					
R....56	57.11.3332	3.3 kOhm	1%, 0207	MF					
R....57	57.11.3122	1.2 kOhm	1%, 0207	MF					
R....58	57.11.3104	100 kOhm	10%, 0207	MF					
R....59	57.11.3271	270 Ohm	5%, 0207	MF					
R....60	57.11.3102	1 kOhm	10%, 0207	MF					
R....61	57.11.3102	1 kOhm	5%, 0207	MF					
R....62	57.11.3470	47 Ohm	10%, 0207	MF					
R....63	57.11.3392	3.9 kOhm	5%, 0207	MF					
R....64	57.11.3104	100 kOhm	10%, 0207	MF					
R....65	57.11.3474	470 kOhm	10%, 0207	MF					
R....66	57.11.3152	1.5 kOhm	1%, 0207	MF					
R....67	57.11.3272	2.7 kOhm	1%, 0207	MF					
R....68	57.11.3223	22 kOhm	10%, 0207	MF					
R....69	57.11.3104	100 kOhm	10%, 0207	MF					
R....70	57.11.3822	8.2 kOhm	5%, 0207	MF					
R....71	57.11.3471	470 Ohm	1% 0207	MF					
R....72	57.11.3392	3.9 kOhm	1%, 0207	MF					
R....73	57.11.3104	100 kOhm	10%, 0207	MF					
R....74	57.11.3104	100 kOhm	10%, 0207	MF					
R....75	57.11.3104	100 kOhm	10%, 0207	MF					
R....76	57.11.3681	680 Ohm	1%, 0207	MF					
R....77	57.11.3622	6.2 kOhm	5%, 0207	MF					
R....78	57.11.3823	82 kOhm	5%, 0207	MF					
R....79	57.11.3273	27 kOhm	10%, 0207	MF					
R....80	57.11.3105	1 MOhm	10%, 0207	MF					

(01) 90/02/03 Removed R*C network for faster mute switching.

Note 1 - BC 337 E selected for inverse mode (IBC = 3 mA)
UCE < 0.7 mV, IE 0 mA. UCE < 25 mV, IE 4 mA.

Note 2 - Q1-Q2, Q3-Q4, Q5-Q6, Q7-Q8 matched and thermally coupled with 50.20.2001.

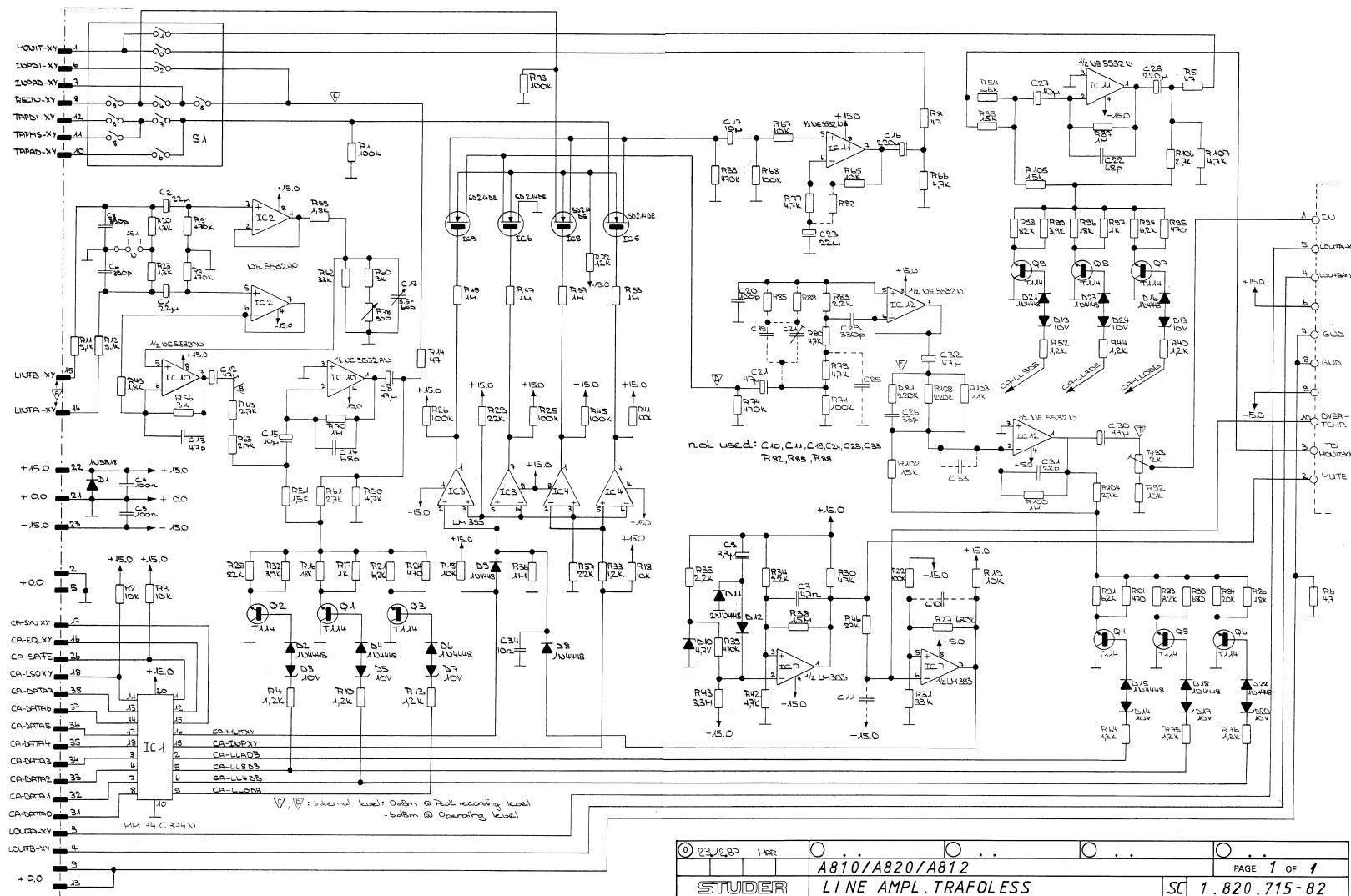
Cer=Ceramic, ElBip=Electrolytic Bipolar,
El=Electrolytic, Sal=Solid aluminum.

MANUFACTURER: Ex=Exar, Fas=Faselec, Fc=Fairchild, GI=General Instruments,
ITT=Intermetall, Mot=Motorola, NS=National Semicond.,
Ph=Philips, Ra=Raytheon, RCA=Radio Corp. of America,
Ses=Sescosem, Sie=Siemens, Sig=Signetics, SGS=SGS/Ates,
St=Studer, Six=Siliconix, TS=Teledyne Semiconductors,
Tf=Telefunken, TI=Texas Instruments.

1.820.814.81 LINE AMPLIFIER WITH TRAF0 BBT91/10/0200
1.820.814.81 LINE AMPLIFIER WITH TRAF0 BBT92/02/0301



LINE AMPLIFIER TRAFOLESS 1.820.715.82

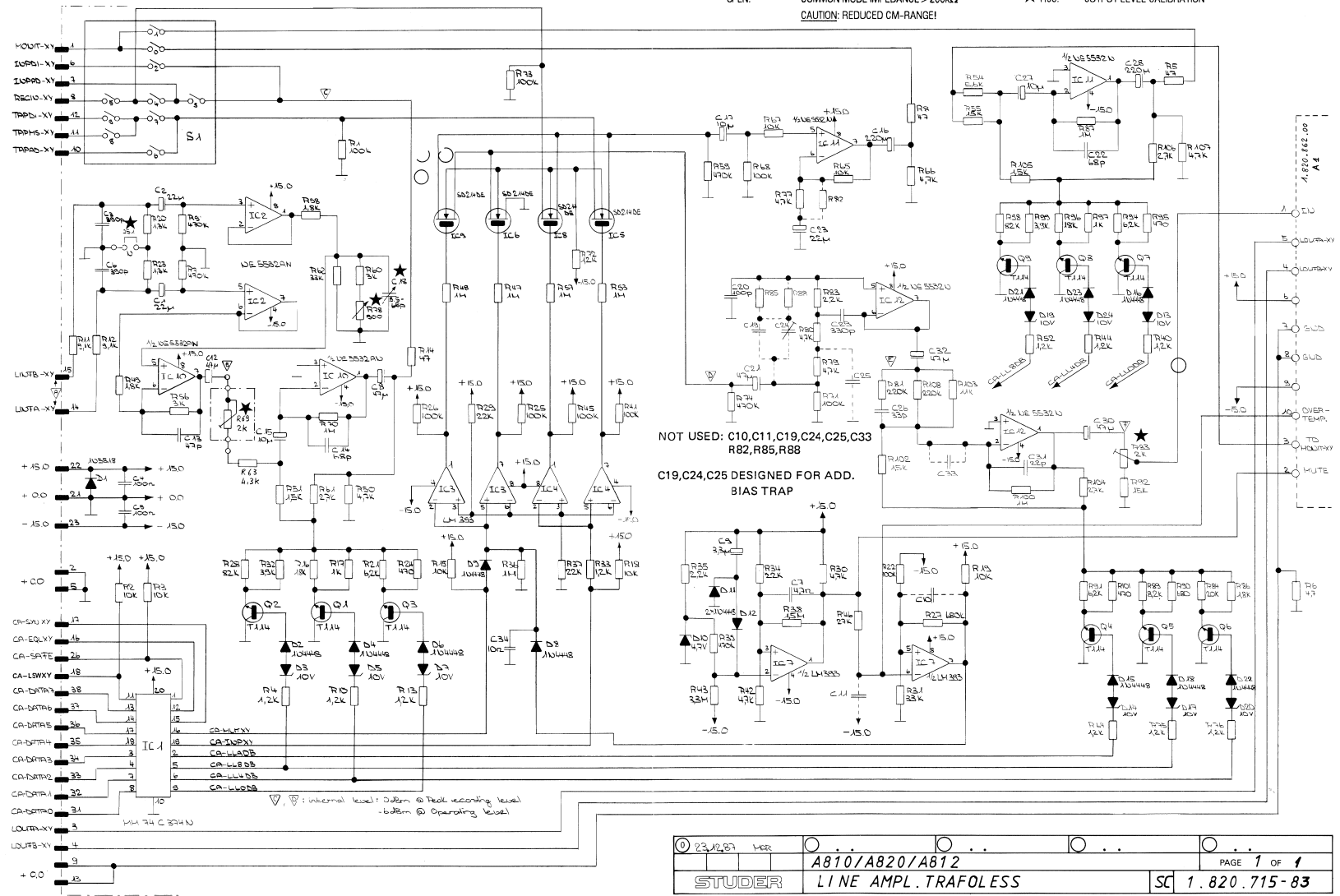


23.12.87	WER	A810/A820/A812	PAGE 1 OF 1
STUDER	LINE AMPL. TRAFOLESS	SC	1.820.715-82



LINE AMPLIFIER TRAFOLESS 1.820.715.83

- ★ JS1: POS.N: NORMAL POSITION
OPEN: COMMON MODE IMPEDANCE ≥ 5kΩ
COMMON MODE IMPEDANCE = 200kΩ
CAUTION: REDUCED CM-RANGE!
- ★ R78: FOR BEST INPUT CMRR AT (1kHz)
★ C18: FOR BEST INPUT CMRR AT (15kHz)
★ R93: OUTPUT LEVEL CALIBRATION



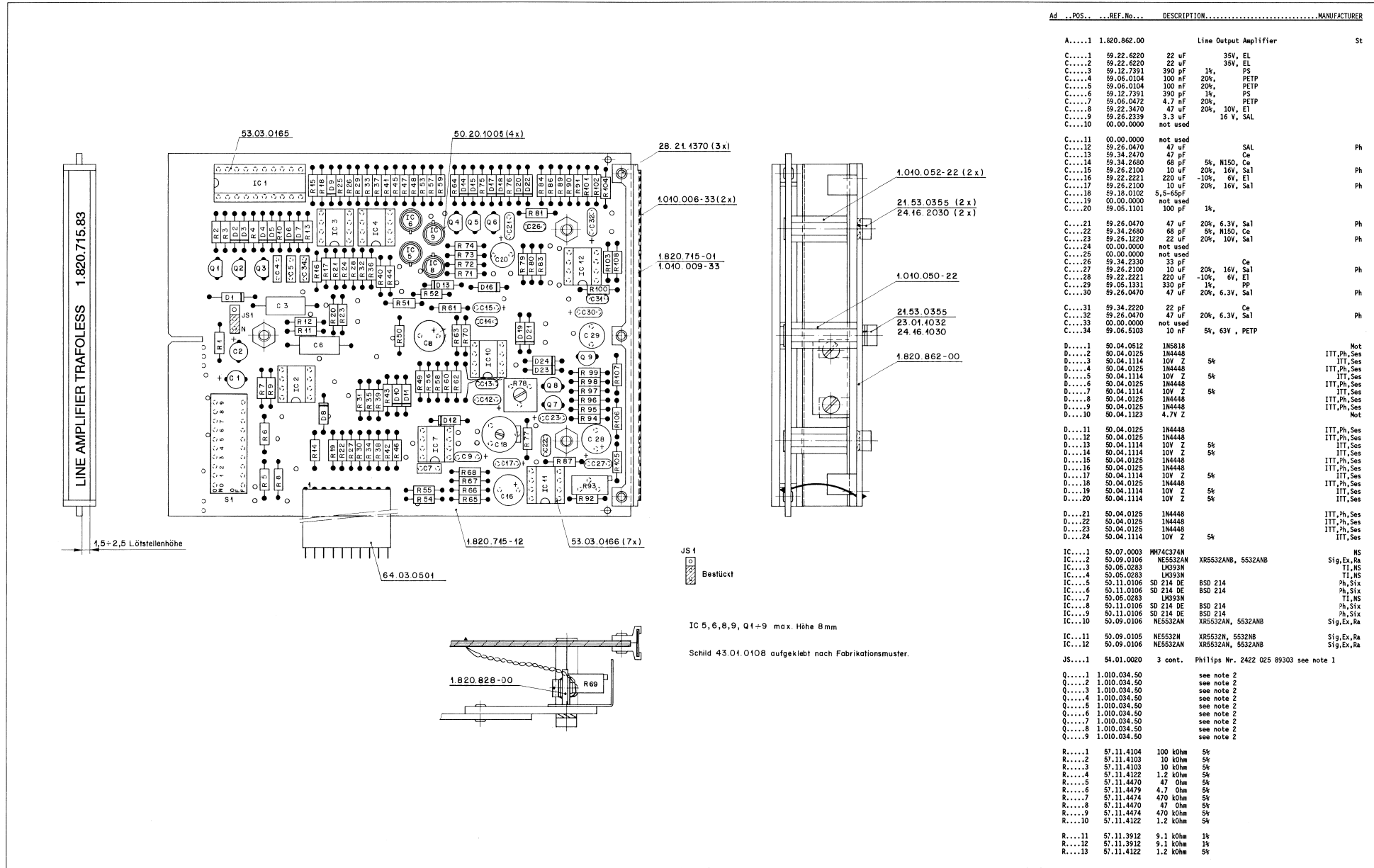
NOT USED: C10, C11, C19, C24, C25, C33
R82, R85, R88
C19, C24, C25 DESIGNED FOR ADD.
BIAS TRAP

★ R69 INPUT LEVEL CALIBRATION
FOR INTERNAL LEVEL

TO LINE-OUTPUT AMPLIFIER 1.820.862

23.12.87	148								
STUDER					A810/A820/A812			PAGE 1 OF 1	
					LINE AMPL. TRAFOLESS			SC 1.820.715-83	

LINE AMPLIFIER TRAFOLESS 1.820.715.83



Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
A....1	1.820.862.00		Line Output Amplifier	St
C....1	59.22.6220	22 uF	35V, EL	
C....2	59.22.6220	22 uF	35V, EL	
C....3	59.12.7391	390 pF	1%, PS	
C....4	59.06.0104	100 nF	20%, PETP	
C....5	59.06.0104	100 nF	20%, PETP	
C....6	59.12.7391	390 pF	1%, PS	
C....7	59.06.0472	4.7 nF	20%, PETP	
C....8	59.22.3470	47 uF	20%, 10V, EI	
C....9	59.26.2339	3.3 uF	16 V, SAL	
C....10	00.00.0000	not used		
C....11	00.00.0000	not used		
C....12	59.26.0470	47 uF	SAL	Ph
C....13	59.34.2470	47 pF	Ce	
C....14	59.34.2680	68 pF	5%, N150, Ce	
C....15	59.26.2100	10 uF	20%, 16V, Sa1	Ph
C....16	59.22.2221	220 uF	-10%, 6V, EI	
C....17	59.26.2100	10 uF	20%, 16V, Sa1	Ph
C....18	59.18.0102	5,5-65pF		
C....19	00.00.0000	not used		
C....20	59.05.1101	100 pF	1%,	
C....21	59.26.0470	47 uF	20%, 6.3V, Sa1	Ph
C....22	59.34.2680	68 pF	5%, N150, Ce	
C....23	59.26.1220	22 uF	20%, 10V, Sa1	Ph
C....24	00.00.0000	not used		
C....25	00.00.0000	not used		
C....26	59.34.2330	33 pF	Ce	
C....27	59.26.2100	10 uF	20%, 16V, Sa1	Ph
C....28	59.22.2221	220 uF	-10%, 6V, EI	
C....29	59.05.1321	330 pF	PP	
C....30	59.26.0470	47 uF	20%, 6.3V, Sa1	Ph
C....31	59.34.2220	22 pF	Ce	
C....32	59.26.0470	47 uF	20%, 6.3V, Sa1	Ph
C....33	00.00.0000	not used		
C....34	59.06.5103	10 nF	5%, 63V , PETP	
D....1	50.04.0512	1N5818		Not
D....2	50.04.0125-2	1N4448		ITT,Ph,Ses
D....3	50.04.1114	10V Z	5%	ITT,Ses
D....4	50.04.0125	1N4448		ITT,Ph,Ses
D....5	50.04.1114	10V Z	5%	ITT,Ses
D....6	50.04.0125	1N4448		ITT,Ph,Ses
D....7	50.04.1114	10V Z	5%	ITT,Ses
D....8	50.04.0125	1N4448		ITT,Ph,Ses
D....9	50.04.0125	1N4448		ITT,Ph,Ses
D....10	50.04.1123	4.7V Z		Not
D....11	50.04.0125	1N4448		ITT,Ph,Ses
D....12	50.04.0125	1N4448		ITT,Ph,Ses
D....13	50.04.1114	10V Z	5%	ITT,Ses
D....14	50.04.1114	10V Z	5%	ITT,Ses
D....15	50.04.0125	1N4448		ITT,Ph,Ses
D....16	50.04.0125	1N4448		ITT,Ph,Ses
D....17	50.04.1114	10V Z	5%	ITT,Ses
D....18	50.04.0125	1N4448		ITT,Ph,Ses
D....19	50.04.1114	10V Z	5%	ITT,Ses
D....20	50.04.1114	10V Z	5%	ITT,Ses
D....21	50.04.0125	1N4448		ITT,Ph,Ses
D....22	50.04.0125	1N4448		ITT,Ph,Ses
D....23	50.04.0125	1N4448		ITT,Ph,Ses
D....24	50.04.1114	10V Z	5%	ITT,Ses
IC....1	50.07.0003	MM74C374N		NS
IC....2	50.09.0106	NE5532AN		Sig,Ex,Ra
IC....3	50.05.0283	LM393N	XR5532AN, 5532ANB	TI,NS
IC....4	50.05.0283	LM393N		TI,NS
IC....5	50.11.0106	SD 214 DE	BSD 214	Ph,Six
IC....6	50.11.0106	SD 214 DE	BSD 214	Ph,Six
IC....7	50.05.0283	LM393N		TI,NS
IC....8	50.11.0106	SD 214 DE	BSD 214	Ph,Six
IC....9	50.11.0106	SD 214 DE	BSD 214	Ph,Six
IC....10	50.09.0106	NE5532AN	XR5532AN, 5532ANB	Sig,Ex,Ra
IC....11	50.09.0105	NE5532N	XR5532N, 5532NB	Sig,Ex,Ra
IC....12	50.09.0106	NE5532AN	XR5532AN, 5532ANB	Sig,Ex,Ra
JS....1	54.01.0020	3 cont.	Philips Nr. 2422 025 89303 see note 1	
Q....1	1.010.034.50		see note 2	
Q....2	1.010.034.50		see note 2	
Q....3	1.010.034.50		see note 2	
Q....4	1.010.034.50		see note 2	
Q....5	1.010.034.50		see note 2	
Q....6	1.010.034.50		see note 2	
Q....7	1.010.034.50		see note 2	
Q....8	1.010.034.50		see note 2	
Q....9	1.010.034.50		see note 2	
R....1	57.11.4104	100 kOhm	5%	
R....2	57.11.4103	10 kOhm	5%	
R....3	57.11.4103	10 kOhm	5%	
R....4	57.11.4122	1.2 kOhm	5%	
R....5	57.11.4470	47 Ohm	5%	
R....6	57.11.4479	4.7 Ohm	5%	
R....7	57.11.4474	470 kOhm	5%	
R....8	57.11.4470	47 Ohm	5%	
R....9	57.11.4474	470 kOhm	5%	
R....10	57.11.4122	1.2 kOhm	5%	
R....11	57.11.3912	9.1 kOhm	1%	
R....12	57.11.3912	9.1 kOhm	1%	
R....13	57.11.4122	1.2 kOhm	5%	



LINE AMPLIFIER TRAFOLESS 1.820.715.83

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
R....14		57.11.4470	47 Ohm	5%					
R....15		57.11.4103	10 kOhm	5%					
R....16		57.11.4183	18 kOhm	5%					
R....17		57.11.3102	1 kOhm	1%					
R....18		57.11.4103	10 kOhm	5%					
R....19		57.11.4103	10 kOhm	5%					
R....20		57.11.3132	1.3 kOhm	1%					
R....21		57.11.3622	6.2 kOhm	1%					
R....22		57.11.4104	100 kOhm	5%					
R....23		57.11.3132	1.3 kOhm	1%					
R....24		57.11.3471	470 Ohm	1%					
R....25		57.11.4104	100 kOhm	5%					
R....26		57.11.4104	100 kOhm	5%					
R....27		57.11.4684	680 kOhm	5%					
R....28		57.11.4823	82 kOhm	5%					
R....29		57.11.4223	22 kOhm	5%					
R....30		57.11.4472	4.7 kOhm	5%					
R....31		57.11.4333	33 kOhm	5%					
R....32		57.11.3392	3.9 kOhm	1%					
R....33		57.11.4122	1.2 kOhm	5%					
R....34		57.11.4223	22 kOhm	5%					
R....35		57.11.4222	2.2 kOhm	5%					
R....36		57.11.4105	1 MOhm	5%					
R....37		57.11.4223	22 kOhm	5%					
R....38		57.11.5155	1.5 MOhm	5%					
R....39		57.11.4474	470 kOhm	5%					
R....40		57.11.4122	1.2 kOhm	5%					
R....41		57.11.4104	100 kOhm	5%					
R....42		57.11.4472	4.7 kOhm	5%					
R....43		57.11.5335	3.3 kOhm	5%					
R....44		57.11.4122	1.2 kOhm	5%					
R....45		57.11.4104	100 kOhm	5%					
R....46		57.11.4273	27 kOhm	5%					
R....47		57.11.4105	1 MOhm	5%					
R....48		57.11.4105	1 MOhm	5%					
R....49		57.11.3182	1.8 kOhm	1%					
R....50		57.11.4472	4.7 kOhm	5%					
R....51		57.11.3152	1.5 kOhm	1%					
R....52		57.11.4122	1.2 kOhm	5%					
R....53		57.11.4105	1 MOhm	5%					
R....54		57.11.3562	5.6 kOhm	5%					
R....55		57.11.4153	15 kOhm	2%					
R....56		57.11.3302	3 kOhm	1%					
R....57		57.11.4105	1 MOhm	5%					
R....58		57.11.3182	1.8 kOhm	1%					
R....59		57.11.4474	470 kOhm	5%					
R....60		57.11.3302	3 kOhm	1%					
R....61		57.11.3272	2.7 kOhm	1%					
R....62		57.11.4333	33 kOhm	2%					
R....63		57.11.3432	4.3 kOhm	2%					
R....64		57.11.4122	1.2 kOhm	5%					
R....65		57.11.4103	10 kOhm	2%					
R....66		57.11.4472	4.7 kOhm	5%					
R....67		57.11.4103	10 kOhm	5%					
R....68		57.11.4104	100 kOhm	5%					
R....69		58.05.1202	2 kOhm	see note 5					
R....70		57.11.4105	1 MOhm	5%					
R....71		57.11.4104	100 kOhm	5%					
R....72		57.11.4122	1.2 kOhm	5%					
R....73		57.11.4104	100 kOhm	5%					
R....74		57.11.4474	470 kOhm	5%					
R....75		57.11.4122	1.2 kOhm	5%					
R....76		57.11.4122	1.2 kOhm	5%					
R....77		57.11.4472	4.7 kOhm	2%					
R....78		58.01.8501	500 Ohm	see note 3					
R....79		57.11.4472	4.7 kOhm	2%					
R....80		57.11.4472	4.7 kOhm	2%					
R....81		57.11.4224	220 kOhm	2%					
R....82		00.00.0000	not used						
R....83		57.11.4222	2.2 kOhm	2%					
R....84		57.11.3203	20 kOhm	5%					
R....85		00.00.0000	not used						
R....86		57.11.3182	1.8 kOhm	1%					
R....87		57.11.4105	1 MOhm	5%					
R....88		00.00.0000	not used						
R....89		57.11.4822	8.2 kOhm	5%					
R....90		57.11.3681	680 Ohm	1%					
R....91		57.11.3622	6.2 kOhm	5%					
R....92		57.11.4153	15 kOhm	5%					
R....93		58.05.0202	2 kOhm	see note 4					
R....94		57.11.3622	6.2 kOhm	5%					
R....95		57.11.3471	470 Ohm	1%					
R....96		57.11.4183	18 kOhm	5%					
R....97		57.11.3102	1 kOhm	1%					
R....98		57.11.4823	82 kOhm	5%					
R....99		57.11.3392	3.9 kOhm	1%					
R...100		57.11.4105	1 MOhm	5%					
R...101		57.11.3471	470 Ohm	1%					
R...102		57.11.3152	1.5 kOhm	1%					
R...103		57.11.3113	11 kOhm	1%					
R...104		57.11.3272	2.7 kOhm	1%					
R...105		57.11.3152	1.5 kOhm	1%					
R...106		57.11.3272	2.7 kOhm	1%					
R...107		57.11.4472	4.7 kOhm	5%					
R...108		57.11.4224	220 kOhm	5%					
S....1		55.01.0170	SAE-Nr. 1010-692						

Note 1 - Bridge Studer Nr. 54.01.0021
Philips Nr. 2422 024 88003

Note 2 - DC 237 B sel. for invers mode (iDC = 3 mA)
VCE < 0.7 mV, iE 0 mA. VCE < 25 mV, iE 4 mA

Note 3 - 500 Ohm Potentiometer lin., 10%
Allen Bradley nr. E 2B 501
Bourns nr. 3386 F-1- 501
Spectrol nr. 63 M 501 T010

Note 4 - 2 kOhm Potentiometer lin., 10%
Bourns nr. 3296 Z - 1 - 202
Spectrol nr. 64 Z 202 T 000
Murata nr. POT 3105 Z - 1 - 202
Contelec nr. 183 XZ 202

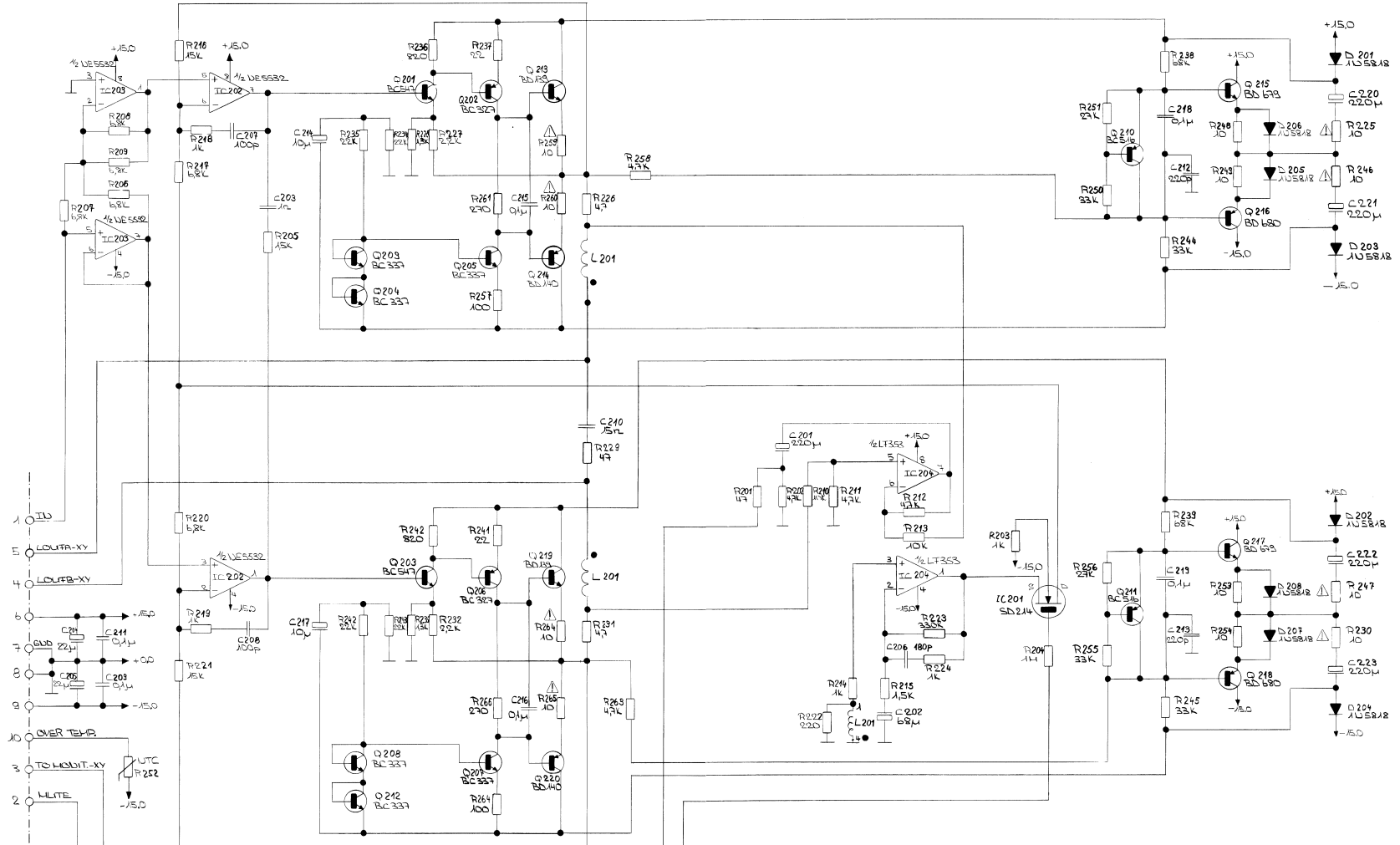
Note 5 - 2 kOhm Potentiometer lin., 10%
Bourns nr. 3296 Y - 1 - 202
Spectrol nr. 64 Y 202 T 000
Murata nr. POT 3105 Y - 1 - 202
Contelec nr. 183 NZ 202

Ce=Ceramic, El=Electrolytic, PETP=Polyester, PP=Polypropylen
Sal=Solid aluminium.

MANUFACTURER: Ex=Exar, ITT=Intermetall, Mot=Motorola,
NS=National Semiconductor, Ph=Philips, Ra=Raytheon,
Ses=Sescosem, Sie=Siemens, Sig=Signetics, Six=Siliconix,
St=Studer, Tf=Telefunken, TI=Texas Instruments.

1.820.715.83 LINE AMPLIFIER TRAFOLESS BD 88/08/3100

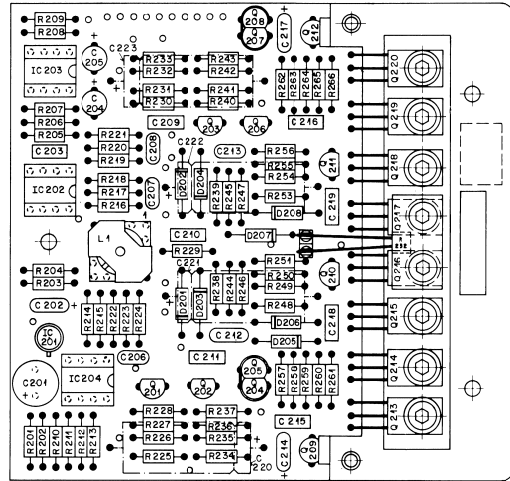
LINE OUTPUT AMPLIFIER PCB 1.820.862.00



- 1 0
- 5 LOUFA-XY
- 4 LOUFB-XY
- 6
- 7 GND
- 8
- 9 -15.0
- 10 OVER TEMP
- 3 TO LOUHT-XY
- 2 MUTE

18.12.87	WPR						
A810/A812/A820							PAGE 1 OF 1
STUDER POWER SECTION TO 1.820.715-...							SC 1.820.862-00

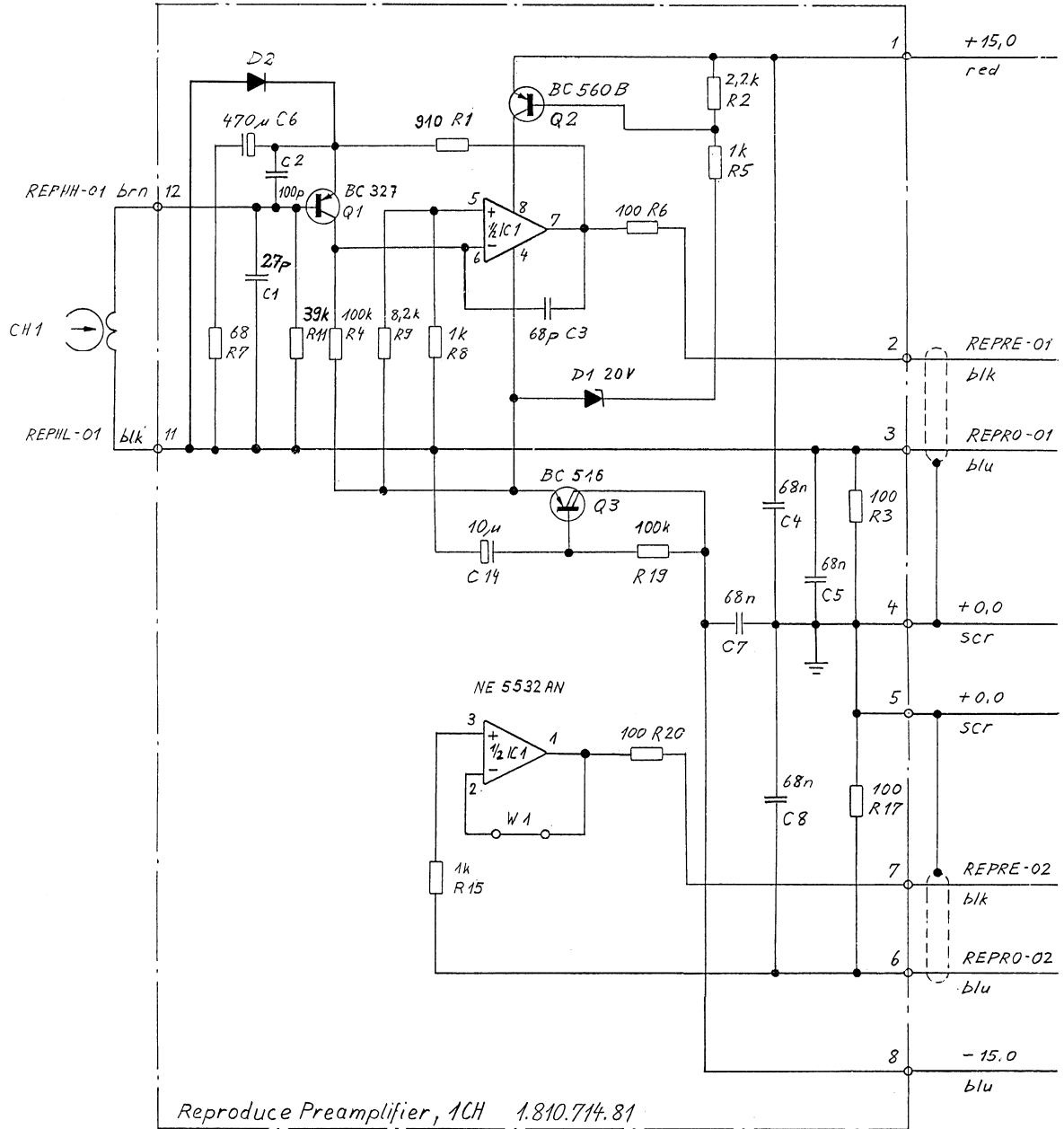
LINE OUTPUT AMPLIFIER PCB 1.820.862.00



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C...	201	59.22.3221	220 uF	-20%, 10V, EI					
C...	202	59.25.6280	58 uF	-20%, 6.3V, Sal	Ph	R...	241	57.11.4220	22 Ohm 5%
C...	203	59.06.0102	1 nF	10%, 63V, PETP		R...	242	57.11.4223	22 kOhm 5%
C...	204	59.22.6220	22 uF	-20%, 35V, EI		R...	243	57.11.4223	22 kOhm 5%
C...	205	59.22.6220	22 uF	-20%, 35V, EI		R...	244	57.11.4333	33 kOhm 5%
C...	206	59.34.2181	180 pF	5%, 63V, Cer		R...	245	57.11.4333	33 kOhm 5%
C...	207	59.34.4101	100 pF	5%, 63V, Cer		R...	246	57.19.0100	10 Ohm 5%
C...	208	59.34.4101	100 pF	5%, 63V, Cer		R...	247	57.19.0100	10 Ohm 5%
C...	209	59.06.0104	0.1 uF	10%, 63V, PETP		R...	248	57.11.4100	10 Ohm 5%
C...	210	59.06.0153	15 nF	10%, 63V, PETP		R...	249	57.11.4100	10 Ohm 5%
C...	211	59.06.0104	0.1 uF	10%, 63V, PETP		R...	250	57.11.4333	33 kOhm 5%
C...	212	59.34.4221	220 pF	5%, 63V, Cer		R...	251	57.11.4273	27 kOhm 5%
C...	213	59.34.4221	220 pF	5%, 63V, Cer		R...	252	57.09.0208	11.2 kOhm
C...	214	59.26.2100	10 u	-20%, 16V, Sal	Ph	R...	253	57.11.4100	10 Ohm 5%
C...	215	59.06.0104	0.1 uF	10%, 63V, PETP		R...	254	57.11.4100	10 Ohm 5%
C...	216	59.06.0104	0.1 uF	10%, 63V, PETP		R...	255	57.11.4333	33 kOhm 5%
C...	217	59.26.2100	10 uF	-20%, 16V, Sal	Ph	R...	256	57.11.4273	27 kOhm 5%
C...	218	59.06.0104	0.1 uF	10%, 63V, PETP		R...	257	57.11.4101	100 Ohm 5%
C...	219	59.06.0104	0.1 uF	10%, 63V, PETP		R...	258	57.11.4472	4.7 kOhm 5%
C...	220	59.25.5221	220 uF	-10%, 40V, EI		R...	259	57.19.0100	10 Ohm 5%
C...	221	59.25.5221	220 uF	-10%, 40V, EI		R...	260	57.19.0100	10 Ohm 5%
C...	222	59.25.5221	220 uF	-10%, 40V, EI		R...	261	57.11.4271	270 Ohm 5%
C...	223	59.25.5221	220 uF	-10%, 40V, EI		R...	262	57.11.4101	100 Ohm 5%
D...	201	50.04.0512	1N 5818	1N 5819	Not	R...	263	57.11.4472	4.7 kOhm 5%
D...	202	50.04.0512	1N 5818	1N 5819	Not	R...	264	57.19.0100	10 Ohm 5%
D...	203	50.04.0512	1N 5818	1N 5819	Not	R...	265	57.19.0100	10 Ohm 5%
D...	204	50.04.0512	1N 5818	1N 5819	Not	R...	266	57.11.4271	270 Ohm 5%
D...	205	50.04.0512	1N 5818	1N 5819	Not				
D...	206	50.04.0512	1N 5818	1N 5819	Not				
D...	207	50.04.0512	1N 5818	1N 5819	Not				
D...	208	50.04.0512	1N 5818	1N 5819	Not				
IC...	201	50.11.0106	S0214-DE	85D014	Sig,Ph				
IC...	202	50.09.0105	NE5532 N	XR 5532 N, 5532 NB	Sig,Ex,Ra				
IC...	203	50.09.0105	NE5532 N	XR 5532 N, 5532 NB	Sig,Ex,Ra				
IC...	204	50.09.0101	LF 353 N	TL 012 CP	NS, TI				
L...	201	1.022.273.00	3*150 mH		St				
C...	201	50.03.0436	BC 237 B	BC 547 B	Not,Ph,Sie,Tf				
C...	202	50.03.0351	BC 327-25	BC 547 B	Sie,Not				
C...	203	50.03.0351	BC 327 B	BC 547 B	Not,Ph,Sie,Tf				
C...	204	50.03.0516	BC 337		Sie				
C...	205	50.03.0516	BC 337		Sie				
C...	206	50.03.0351	BC 327-25		Sie,Not				
C...	207	50.03.0516	BC 337		Sie				
C...	208	50.03.0516	BC 337		Sie				
C...	209	50.03.0516	BC 337		Sie				
C...	210	50.03.0448	BC 516		Sie, TI				
C...	211	50.03.0448	BC 516		Sie, TI				
C...	212	50.03.0516	BC 337		Sie				
C...	213	50.03.0445	BD 139		Ph				
C...	214	50.03.0452	BD 140		Ph				
C...	215	50.03.0504	BD 679		SGS, Ph				
C...	216	50.03.0505	BD 680		SGS, Ph				
C...	217	50.03.0504	BD 679		SGS, Ph				
C...	218	50.03.0505	BD 680		SGS, Ph				
C...	219	50.03.0445	BD 139		Ph				
C...	220	50.03.0452	BD 140		Ph				
R...	201	57.11.4470	47 Ohm 5%						
R...	202	57.11.4472	4.7 kOhm 5%						
R...	203	57.11.4102	1 kOhm 5%						
R...	204	57.11.4105	1.5 kOhm 5%						
R...	205	57.11.4152	1.5 kOhm 5%						
R...	206	57.11.3682	6.8 kOhm 1%						
R...	207	57.11.3682	6.8 kOhm 1%						
R...	208	57.11.3682	6.8 kOhm 1%						
R...	209	57.11.3682	6.8 kOhm 1%						
R...	210	57.11.3103	10 kOhm 1%						
R...	211	57.11.3472	4.7 kOhm 1%						
R...	212	57.11.3472	4.7 kOhm 1%						
R...	213	57.11.3103	10 kOhm 1%						
R...	214	57.11.4102	1 kOhm 5%						
R...	215	57.11.4152	1.5 kOhm 5%						
R...	216	57.11.3153	15 kOhm 1%						
R...	217	57.11.3682	6.8 kOhm 1%						
R...	218	57.11.4102	1 kOhm 5%						
R...	219	57.11.4102	1 kOhm 5%						
R...	220	57.11.3682	6.8 kOhm 1%						
R...	221	57.11.3153	15 kOhm 1%						
R...	222	57.11.4221	220 Ohm 5%						
R...	223	57.11.4334	330 kOhm 5%						
R...	224	57.11.4102	1 kOhm 5%						
R...	225	57.19.0100	10 Ohm 5%						
R...	226	57.11.4474	4.7 Ohm 5%						
R...	227	57.11.3222	2.2 kOhm 1%						
R...	228	57.11.3132	1.3 kOhm 1%						
R...	229	57.11.4470	47 Ohm 5%						
R...	230	57.19.0100	10 Ohm 5%						
R...	231	57.11.4479	4.7 Ohm 5%						
R...	232	57.11.3222	2.2 kOhm 1%						
R...	233	57.11.3132	1.3 kOhm 1%						
R...	234	57.11.4223	22 kOhm 5%						
R...	235	57.11.4223	22 kOhm 5%						
R...	236	57.11.4821	820 Ohm 5%						
R...	237	57.11.4220	22 Ohm 5%						
R...	238	57.11.4683	68 kOhm 5%						
R...	239	57.11.4683	68 kOhm 5%						
R...	240	57.11.4821	820 Ohm 5%						



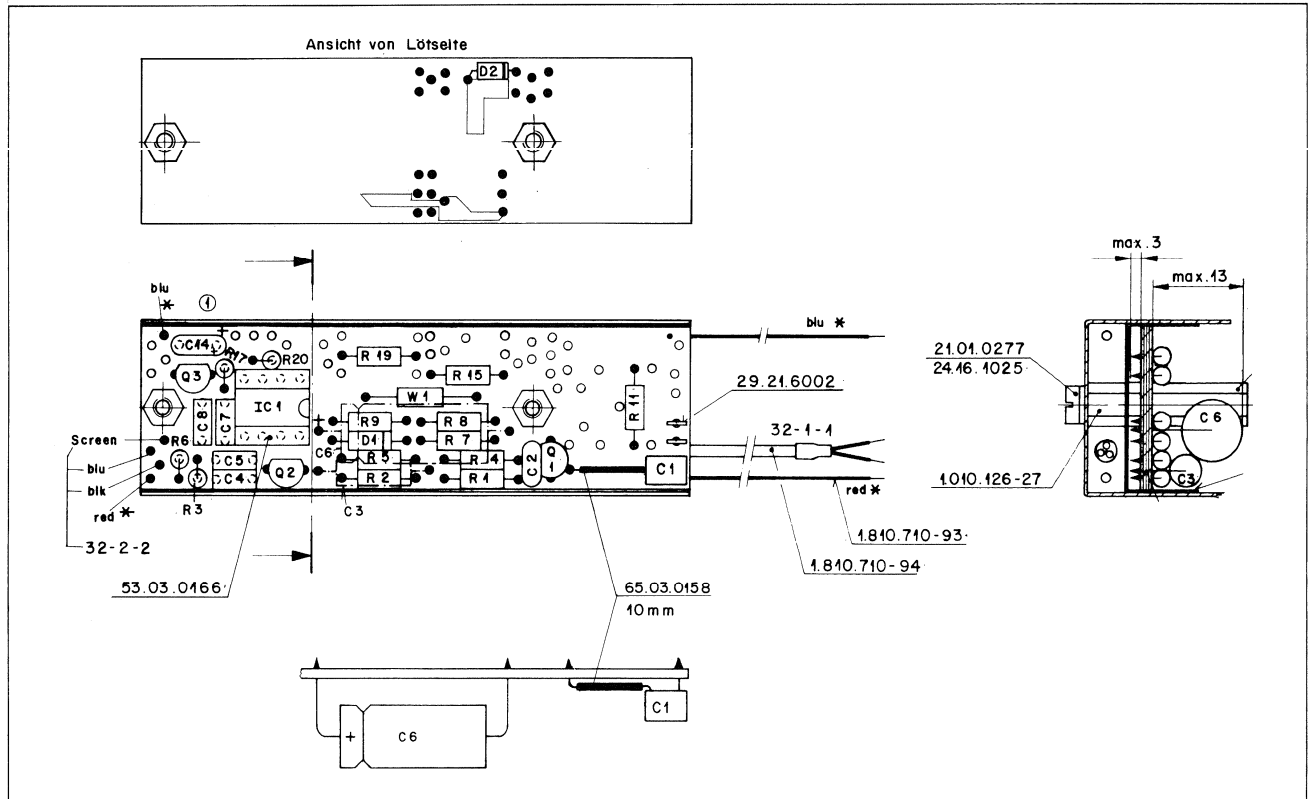
REPRODUCE PREAMPLIFIER 1CH 1.810.714.81



6.2.90	Gämperle	Audio Section		
STUDER	Reproduce Preamplifier 1CH	SC	1.810.714-81	PAGE 1 OF 1



REPRODUCE PREAMPLIFIER 1CH 1.810.714.81



Ad ..POS.. ..REF.No... DESCRIPTION.....MANUFACTURER

C.....1	59.99.0612	27 pF	5%	Ce	
C.....2	59.99.0622	100 pF		Ce	
C.....3	59.04.9680	68 pF		PP	ERO,NSF,Sie
C.....4	59.99.0205	68 nF		Ce	
C.....5	59.99.0205	68 nF		Ce	
C.....6	59.99.1704	470 uF	105 Grad C., 6.3V, EI		
C.....7	59.99.0205	68 nF		Ce	
C.....8	59.99.0205	68 nF		Ce	
C....14	59.26.2100	10 uF	16V, Sal		Ph
D.....1	50.04.1109	20 V Z	BZX83C 20, BZX55C 20, ZPD 20		ITT,Ses
D.....2	50.04.0125	1N 4448			Fe,ITT,Ph,Ses,Tf
IC....1	50.09.0106	NE5532AN	XR5532AN, 5532ANB		Ex,Ra,Sig
Q.....1	50.03.0625	BC327			Sie
Q.....2	50.03.0515	BC307B	BC251B, BC557B, BC560B		ITT,Mot,Ph,Tf,TI
Q.....3	50.03.0448	BC516			Sie,TI
R.....1	57.11.3911	910 Ohm			
R.....2	57.11.3222	2.2 kOhm			
R.....3	57.11.3101	100 Ohm			
R.....4	57.11.3104	100 kOhm			
R.....5	57.11.3102	1 kOhm			
R.....6	57.11.3101	100 Ohm			
R.....7	57.11.3680	68 Ohm			
R.....8	57.11.3102	1 kOhm			
R.....9	57.11.3822	8.2 kOhm			
R....11	57.11.3393	39 kOhm			
R....15	57.11.3102	1 kOhm			
R....17	57.11.3101	100 Ohm			
R....19	57.11.3104	100 kOhm			
R....20	57.11.3101	100 Ohm			
W.....1	57.11.3000	0 Ohm	Resistor or insulated wire bridge		

Following components are not used:

C 0009, 0010, 0011, 0012, 0013.

Q 0004, 0005.

R 0010, 0012, 0013, 0014, 0016, 0018, 0021, 0022.

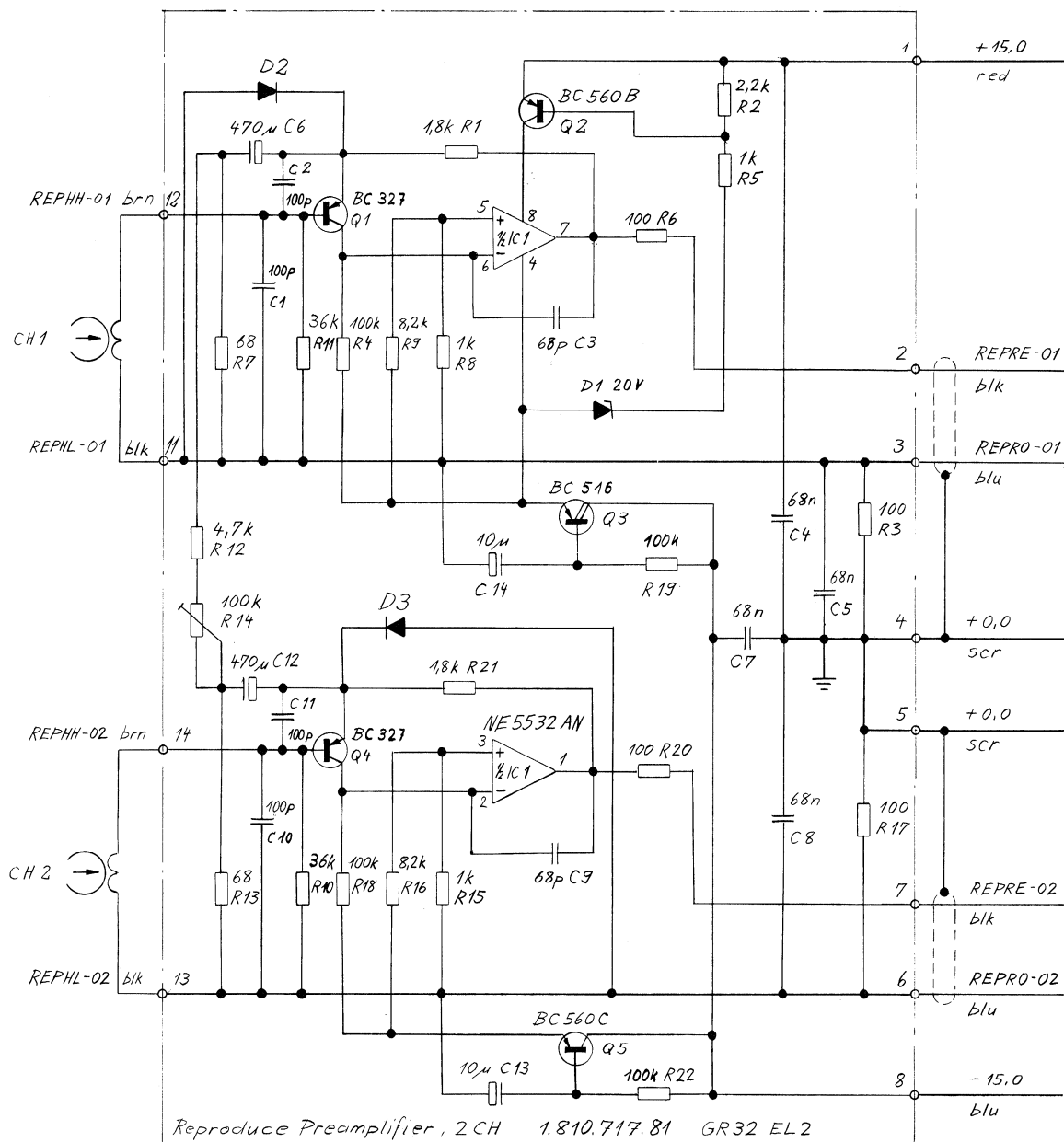
Ce=Ceramic, EI=Electrolytic, PP=Polypropylen, Sal=Solid aluminum

MANUFACTURER: ERO=E. Roederstein, Ex=Exar, ITT=Intermetall, NSF=AEG-Telefunken-NSF, Mot=Motorola, Ph=Philips, Ra=Raytheon, Ses=Sescosem, Sie=Siemens, Sig=Signetics, Tf=Telefunken, TI=Texas Instruments

1.810.714.81 REPRODUCE PREAMPLIFIER, 1 CH GAE90/02/0600



REPRODUCE PREAMPLIFIER 2CH 1.810.717.81

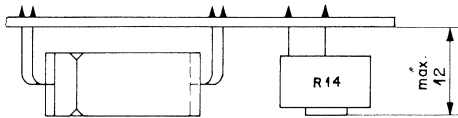
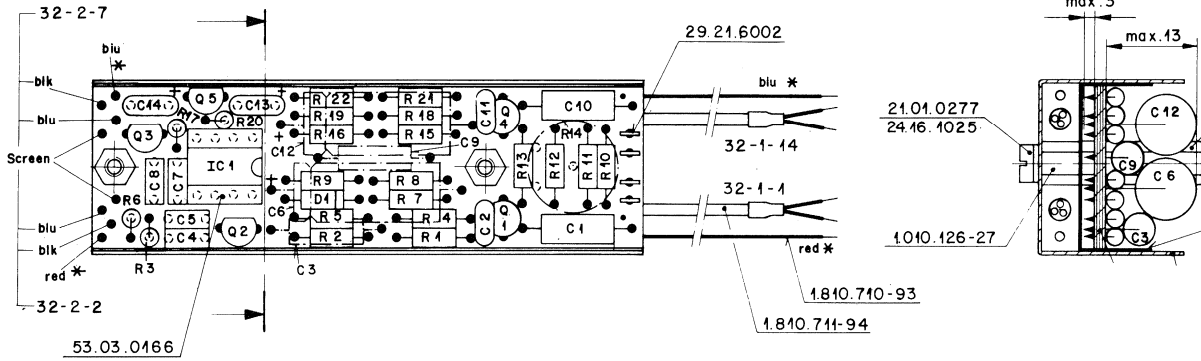
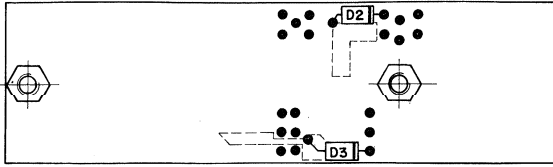


8.2.90	Grämperle	A 810 Audio Section	Part of GR 32
STUDER	Reproduce Preamplifier 2 CH	SC 1.810.717-81	PAGE 1 OF 1



REPRODUCE PREAMPLIFIER 2CH 1.810.717.81

Ansicht von Lötseite



Ad . . . POS. . . . REF.No. . . . DESCRIPTION MANUFACTURER

C.....1	59.04.9560	56 pF	5%	PP	
C.....2	59.99.0622	100 pF		Ce	
C.....3	59.04.968	68 pF		PP	
C.....4	59.99.0205	68 nF		Ce	
C.....5	59.99.0205	68 nF		Ce	
C.....6	59.99.1704	470 uF		105 Grad C., 6.3V, EI	
C.....7	59.99.0205	68 nF		Ce	
C.....8	59.99.0205	68 nF		Ce	
C.....9	59.04.968	68 pF		PP	
C.....10	59.04.9560	56 pF	5%	PP	
C.....11	59.99.0622	100 pF		Ce	
C.....12	59.25.1471	470 uF		6V, EI	
C.....13	59.26.2100	10 uF		16V, Sal	Ph
C.....14	59.26.2100	10 uF		16V, Sal	Ph
D.....1	50.04.1109	20 V Z		BZX83C 20, BZX55C 20, ZPD 20	ITT,Ses
D.....2	50.04.0125	1N4448			Fc,ITT,Ph,Ses,Tf
D.....3	50.04.0125	1N4448			Fc,ITT,Ph,Ses,Tf
IC....1	50.09.0106	NE5532AN		XR5532AN, 5532ANB	Ex,Re,Sig
Q.....1	50.03.0625	BC327			Sie
Q.....2	50.03.0515	BC307B		BC251B, BC557B, BC560B	ITT,Mot,Ph,Tf,TI
Q.....3	50.03.0448	BC516			Sie,TI
Q.....4	50.03.0625	BC327			Sie
Q.....5	50.03.0496	BC560C			Mot,Ph,Sie,Tf
R.....1	57.11.3182	1.8 kOhm			
R.....2	57.11.3222	2.2 kOhm			
R.....3	57.11.3101	100 Ohm			
R.....4	57.11.3104	100 kOhm			
R.....5	57.11.3102	1 kOhm			
R.....6	57.11.3101	100 Ohm			
R.....7	57.11.3680	68 Ohm			
R.....8	57.11.3102	1 kOhm			
R.....9	57.11.3822	8.2 kOhm			
R.....10	57.11.3363	36 kOhm	1%		
R.....11	57.11.3363	36 kOhm	1%		
R.....12	57.11.3472	4.7 kOhm			
R.....13	57.11.3680	68 Ohm			
R.....14	58.01.4104	100 kOhm		see note 1	
R.....15	57.11.3102	1 kOhm			
R.....16	57.11.3822	8.2 kOhm			
R.....17	57.11.3101	100 Ohm			
R.....18	57.11.3104	100 kOhm			
R.....19	57.11.3104	100 kOhm			
R.....20	57.11.3101	100 Ohm			
R.....21	57.11.3182	1.8 kOhm			
R.....22	57.11.3104	100 kOhm			

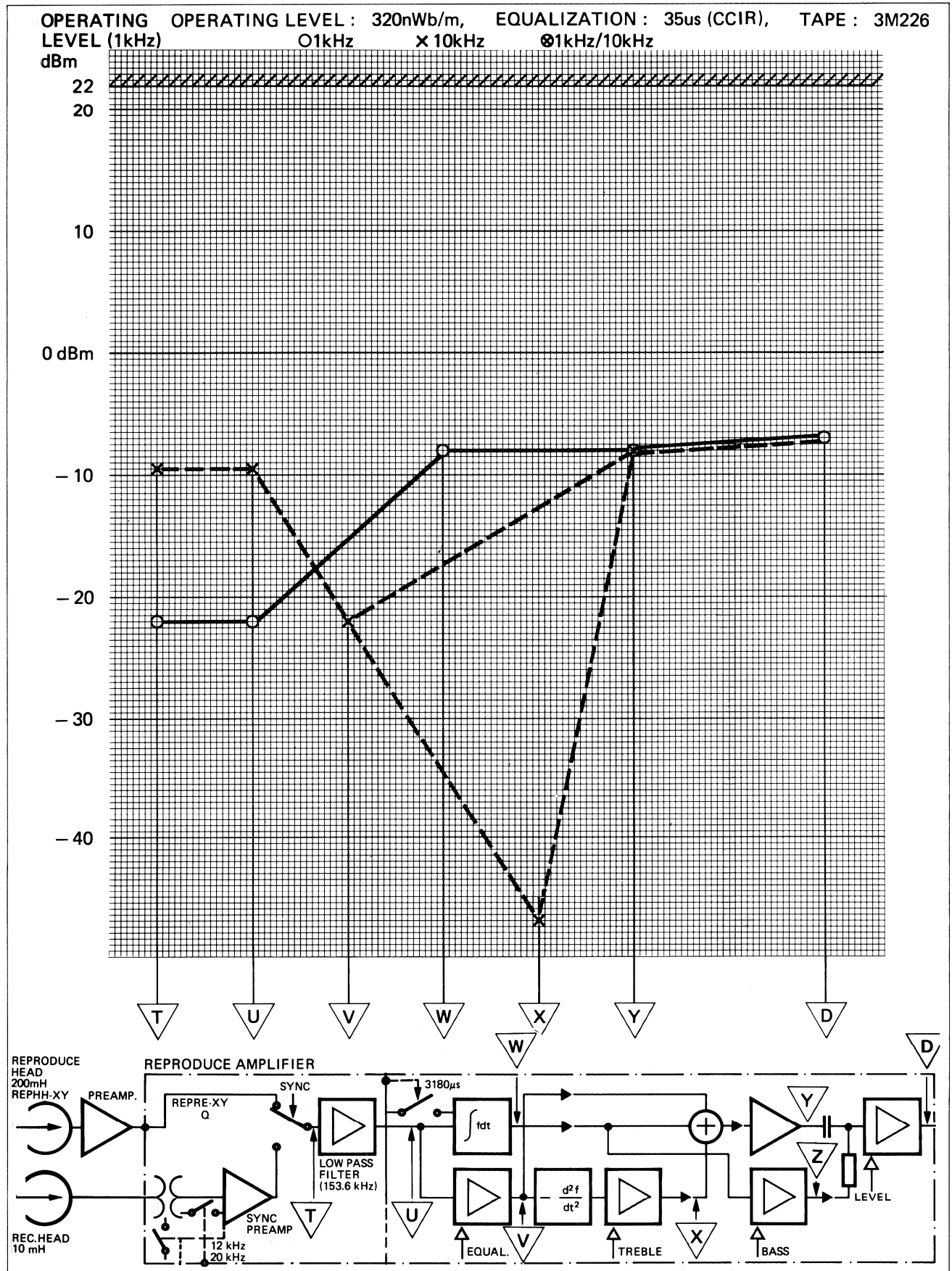
Note 1 - 100 kOhm Potentiometer +log. 10%
Allen Bradley Nr. YR 104 A

Ce=Ceramic, EI=Electrolytic, PP=Polypropylen, Sal=Solid aluminium

MANUFACTURER: Ex=Exar, ITT=Intermetall, Mot=Motorola, Ph=Philips,
Ra=Raytheon, Ses=Sescom, Sie=Siemens, Sig=Signetics,
Tf=Telefunken, TI=Texas Instruments

1.810.717.81 REPRODUCE PREAMPLIFIER, 2 CH GAE90/02/0800

LEVEL DIAGRAM, REPRODUCE AMPLIFIER

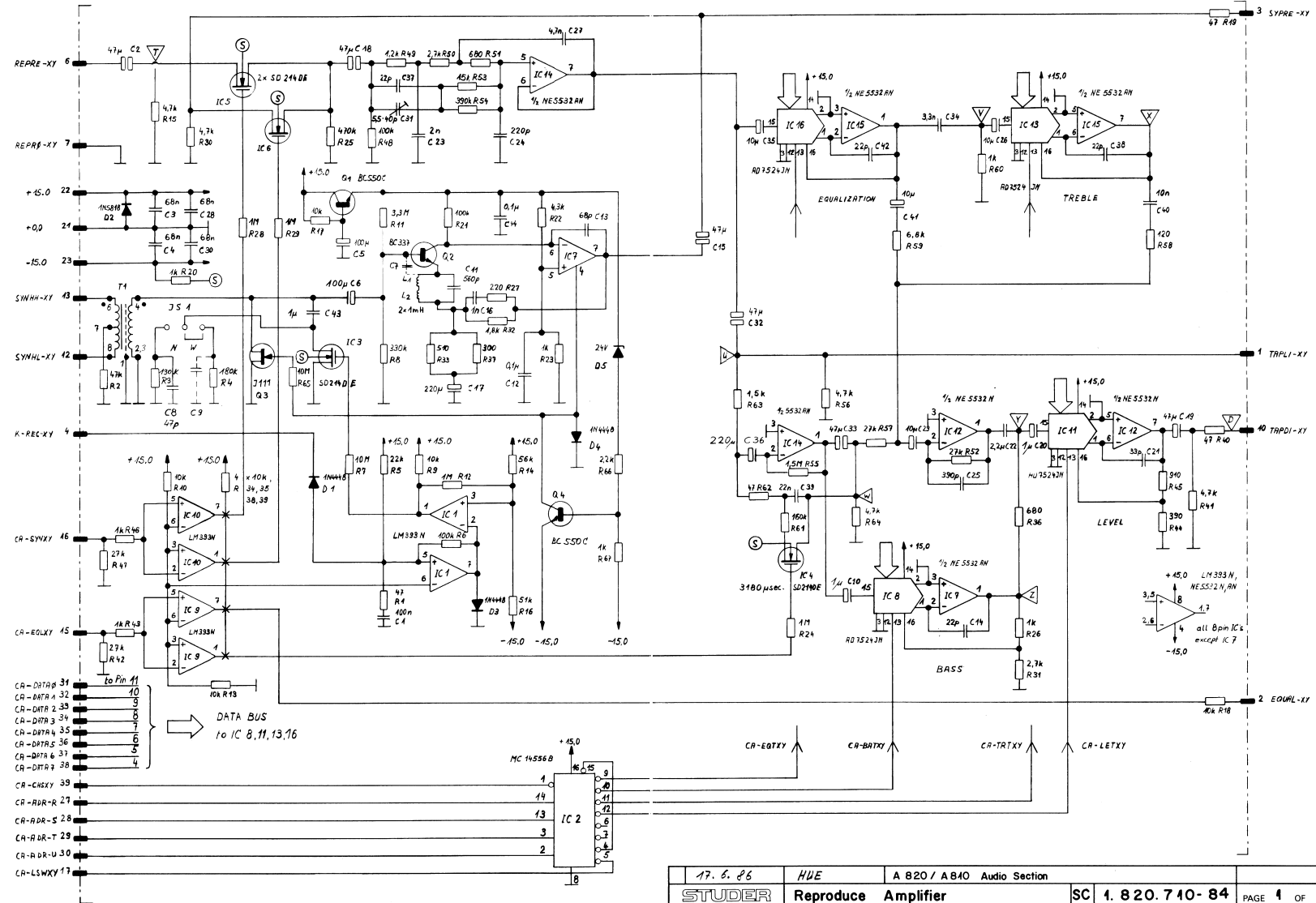


REPRODUCE AMPLIFIER 1.820.710.84



R	2	43	46	45	40	30	30	35	35	38	29	45	12	25	7	48	11	59	33	40	12	24	21	21	22	64
C	7	3	8	28	30	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

R	63	62	61	55	56	64	57	59	52	60	36	31	30	45	41	49	
C	15	21	26	35	39	33	40	42	41	29	34	25	22	20	38	24	40

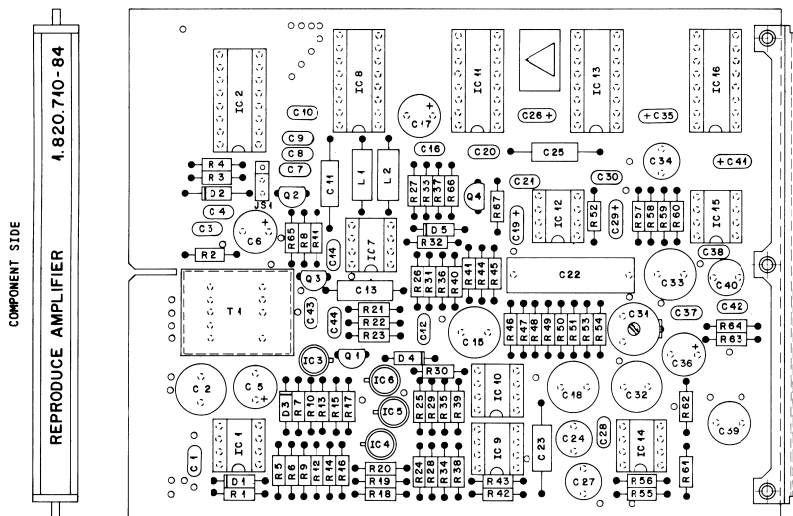


- CA-DATA# 31 to Pin 11
 - CA-DATA 1 32 10
 - CA-DATA 2 33 9
 - CA-DATA 3 34 8
 - CA-DATA 4 35 7
 - CA-DATA 5 36 6
 - CA-DATA 6 37 5
 - CA-DATA 7 38 4
 - CA-CHEXY 39
 - CA-ADR-R 27
 - CA-ADR-S 28
 - CA-ADR-T 29
 - CA-ADR-U 30
 - CA-LSWXY 17
- DATA BUS
to IC 8, 11, 13, 16

17. 6. 86	HUE	A 820 / A 840 Audio Section	SC 1.820.710-84	PAGE 4 OF 4
STUDER	Reproduce Amplifier			



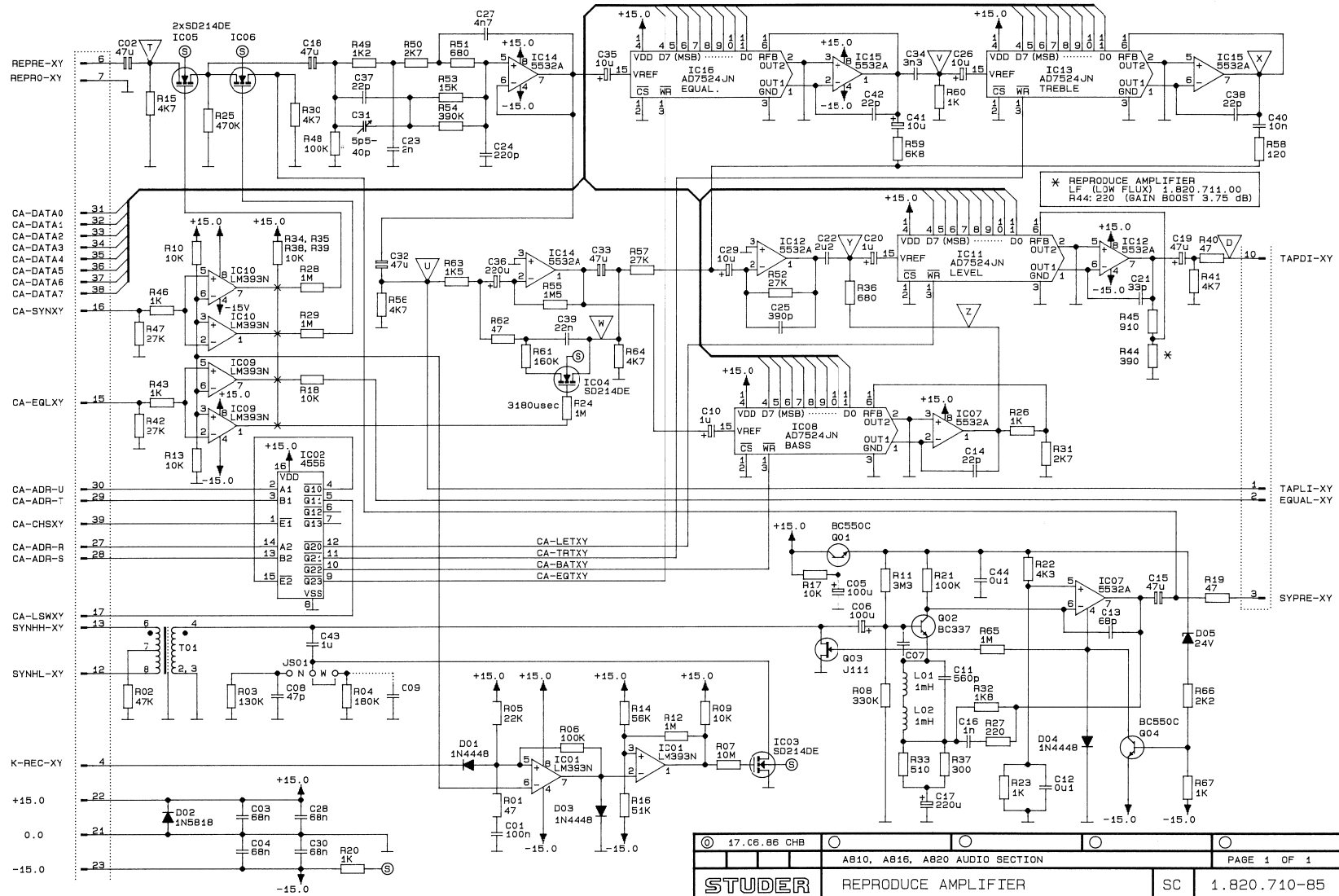
REPRODUCE AMPLIFIER 1.820.710.84



COMPONENT SIDE
REPRODUCE AMPLIFIER
1.820.710-84

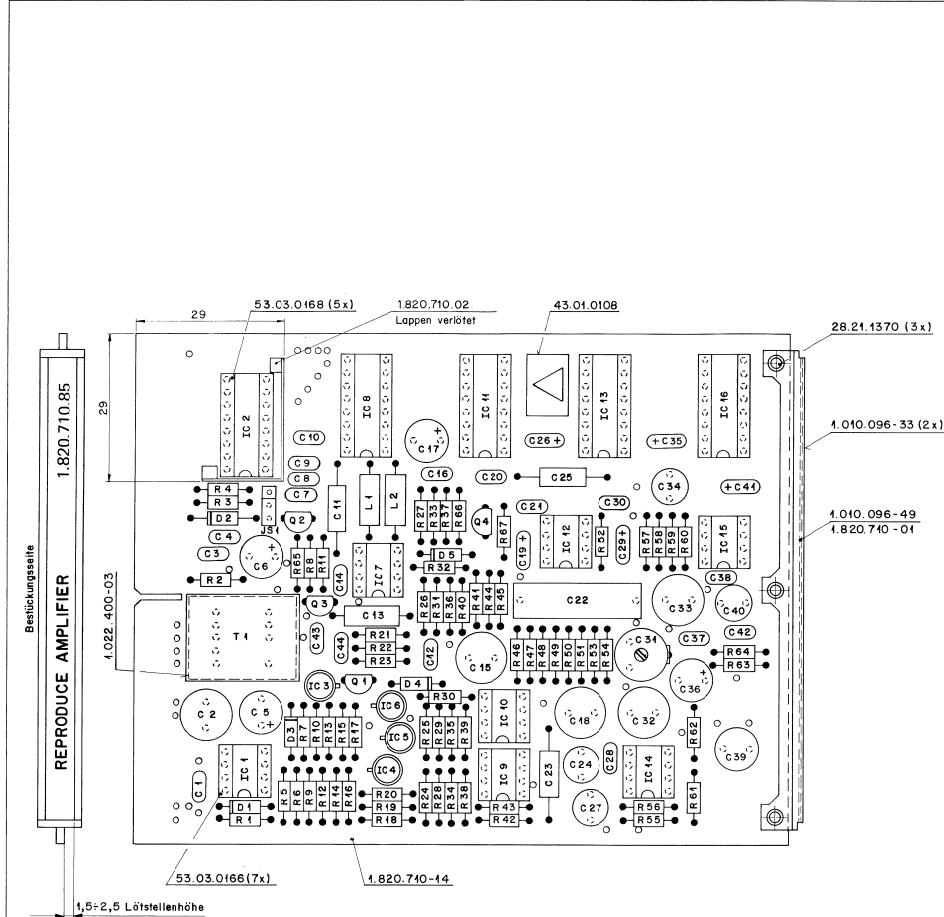
Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.06.5104	0.1 uF	5%, 63V, PETP		R....23	57.11.4102	1 kOhm	2%	
C....2	59.06.5104	47 uF	-20%, 16V, EI bipolar		R....24	57.11.4105	1 MOhm	5%	
C....3	59.06.0683	68 nF	10%, 63V, PETP		R....25	57.11.4474	470 kOhm	5%	
C....4	59.06.0683	68 nF	10%, 63V, PETP		R....26	57.11.4102	1 kOhm	2%	
C....5	59.22.5101	100 uF	-20%, 25V, EI		R....27	57.11.4221	220 Ohm	5%	
C....6	59.22.5101	100 uF	-20%, 25V, EI		R....28	57.11.4105	1 MOhm	5%	
C....7	00.00.0000	not used			R....29	57.11.4105	1 MOhm	5%	
C....8	59.34.2470	47 pF	2%, N150, Cer		R....30	57.11.4472	4.7 kOhm	5%	
C....9	00.00.0000	not used			R....31	57.11.4272	2.7 kOhm	2%	
C....10	59.06.5105	1 uF	5%, PETP		R....32	57.11.4182	1.8 kOhm	2%	
C....11	59.12.7561	560 pF	1%, 63V, PS		R....33	57.11.3511	510 Ohm	2%	
C....12	59.06.5104	0.1 uF	5%, 63V, PETP		R....34	57.11.4103	10 kOhm	5%	
C....13	59.04.9585	68 pF	5%, 63V, PP		R....35	57.11.4103	10 kOhm	5%	
C....14	59.34.2220	22 pF	5%, N150, Cer		R....36	57.11.4681	680 Ohm	2%	
C....15	59.06.0102	1 nF	10%, 63V, PETP		R....37	57.11.3501	300 Ohm	2%	
C....16	59.06.0102	1 nF	10%, 63V, PETP		R....38	57.11.4103	10 kOhm	5%	
C....17	59.22.2221	220 uF	-10%, 6V, EI		R....39	57.11.4103	10 kOhm	5%	
C....18	59.06.0102	1 nF	10%, 63V, PETP		R....40	57.11.4470	47 Ohm	5%	
C....19	59.26.0470	47 uF	-20%, 5.3V, Sal	Ph	R....41	57.11.4472	4.7 kOhm	5%	
C....20	59.06.5105	1 uF	5%, 50V, PETP	Ph	R....42	57.11.4273	27 kOhm	5%	
C....21	59.34.2330	33 pF	5%, N150, Cer		R....43	57.11.4102	1 kOhm	5%	
C....22	59.02.2225	2.2 uF	5%, 63V, MPC		R....44	57.11.4391	390 Ohm	2%	See note 2
C....23	59.12.7202	2 nF	1%, 63V, PS		R....45	57.11.3911	910 Ohm	1%	
C....24	59.05.1221	220 pF	1%, 63V, PP		R....46	57.11.4102	1 kOhm	5%	
C....25	59.12.7381	1 nF	1%, 63V, PS	Ph	R....47	57.11.4273	27 kOhm	5%	
C....26	59.26.2100	10 uF	-20%, 16V, Sal	Ph	R....48	57.11.4104	100 kOhm	5%	
C....27	59.05.1472	4.7 nF	1%, 63V, PP	Ph	R....49	57.11.3122	1.2 kOhm	1%	
C....28	59.06.0683	68 nF	10%, 63V, PETP		R....50	57.11.3272	2.7 kOhm	1%	
C....29	59.26.2100	10 uF	-20%, 16V, Sal		R....51	57.11.3681	680 Ohm	1%	
C....30	59.06.0683	68 nF	10%, 63V, PETP		R....52	57.11.4273	27 kOhm	2%	
C....31	59.18.0108	40 pF	Trimmer capacitor, Philips Nr 2222.808.32409		R....53	57.11.3153	15 kOhm	1%	
C....32	59.06.5104	0.1 uF	-20%, 16V, EI bipolar		R....54	57.11.4394	390 kOhm	5%	
C....33	59.06.5104	0.1 uF	-20%, 16V, EI bipolar		R....55	57.11.5155	1.5 MOhm	5%	
C....34	59.05.1332	3.3 nF	1%, 63V, PP	Ph	R....56	57.11.4472	4.7 kOhm	5%	
C....35	59.26.2100	10 uF	-20%, 16V, Sal	Ph	R....57	57.11.4273	27 kOhm	2%	
C....36	59.22.3321	220 pF	-20%, 10V, EI		R....58	57.11.4121	120 Ohm	2%	
C....37	59.34.2220	22 pF	5%, N150, Cer		R....59	57.11.4682	6.8 kOhm	2%	
C....38	59.34.2220	22 pF	5%, N150, Cer		R....60	57.11.4102	1 kOhm	5%	
C....39	59.05.1223	22 nF	1%, 63V, PP		R....61	57.11.3164	160 kOhm	1%	
C....40	59.05.1103	10 nF	1%, 63V, PP	Ph	R....62	57.11.4470	47 Ohm	5%	
C....41	59.26.2100	10 uF	-20%, 16V, Sal		R....63	57.11.3152	1.5 kOhm	1%	
C....42	59.34.2220	22 pF	5%, N150, Cer		R....64	57.11.4472	4.7 kOhm	5%	
C....43	59.06.5105	1 uF	5%, 50V, PETP		R....65	57.11.5106	10 MOhm	5%	
C....44	59.06.0104	0.1 uF	10%, 50V, PETP		R....66	57.11.4222	2.2 kOhm	5%	
C....45	59.06.0104	0.1 uF	10%, 50V, PETP		R....67	57.11.4102	1.0 kOhm	5%	
D....1	50.04.0125	1N 4448		Not	Note 1 - Contact pins: Studer 54.01.0020, Berg 75 160-102-36 Bridge: Studer 54.01.0021, Philips 2422 024 88003				
D....2	50.04.0512	1N 5818	1N5819	Not	Note 2 - Reproduce Amplifier LF (Low Flux) 1.820.711.00. R 44 : 220 Ohm 57.11.4221, (3.75 dB higher gain of Amplifier).				
D....3	50.04.0125	1N 4448			MANUFACTURER: ADI=Analog Devices Inc., Ex=Exar, Fc=Fairchild, Mot=Motorola, MpS=Micropower Semiconductors, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, RA=Radio corp. of America, Sie=Siemens, Sig=Signetics, Six=Siliconix, Tf=Telefunken, Tho=CSF=Thomson Semiconductors, TI=Texas Instruments.				
D....4	50.04.0125	1N 4448			REPRODUCE AMPLIFIER LF 1.820.711.00 see note 2.				
D....5	50.04.1321	24 V	5% 0.4W		1.820.710.84 REPRODUCE AMPLIFIER BD 86/06/1700				
IC....1	50.05.0283	LM933N			END				
IC....2	50.07.0004	CD4556B	MC 14 556B, 4556B	RCA, Mot, Fc					
IC....3	50.11.0106	SD 214 DE	SD 214	Ph, Six					
IC....4	50.11.0106	SD 214 DE	SD 214	Ph, Six					
IC....5	50.11.0106	SD 214 DE	SD 214	Ph, Six					
IC....6	50.11.0106	SD 214 DE	SD 214	Ph, Six					
IC....7	50.09.0106	NE5532AN	XR5532AN, 5532ANB	Sig, Ex, Ra					
IC....8	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS					
IC....9	50.05.0283	LM933N		NS, TI					
IC....10	50.05.0283	LM933N		NS, TI					
IC....11	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS					
IC....12	50.09.0105	NE5532N	XR 5532 N, 5532 NB	Sig, Ex, Ra					
IC....13	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS					
IC....14	50.09.0106	NE5532AN	XR 5532AN, 5532ANB	Sig, Ex, Ra					
IC....15	50.09.0106	NE5532AN	XR 5532AN, 5532ANB	Sig, Ex, Ra					
IC....16	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS					
JS....1	00.00.0000	See note 1							
L....1	62.01.0128	1 mH	Gowanda Nr. 17-104, Delevan Nr. 1641-105						
L....2	62.01.0128	1 mH	Gowanda Nr. 17-104, Delevan Nr. 1641-105						
Q....1	50.03.0407	BC550C		Sie, Ph					
Q....2	50.03.0516	BC337		Sie					
Q....3	50.03.0216	J 111		Six					
Q....4	50.03.0407	BC550C		Sie, Ph					
R....1	57.11.4470	47 Ohm	5%						
R....2	57.11.4473	47 kOhm	5%						
R....3	57.11.3134	130 kOhm	2%						
R....4	57.11.4184	180 kOhm	2%						
R....5	57.11.4223	22 kOhm	2%						
R....6	57.11.4104	100 kOhm	5%						
R....7	57.11.4106	10 MOhm	5%						
R....8	57.11.4334	330 kOhm	2%						
R....9	57.11.4103	10 kOhm	5%						
R....10	57.11.4103	10 kOhm	5%						
R....11	57.11.4335	3.3 MOhm	2%						
R....12	57.11.4105	1 MOhm	5%						
R....13	57.11.4103	10 kOhm	5%						
R....14	57.11.4563	56 kOhm	2%						
R....15	57.11.4472	4.7 kOhm	5%						
R....16	57.11.3513	51 kOhm	1%						
R....17	57.11.4103	10 kOhm	5%						
R....18	57.11.4103	10 kOhm	5%						
R....19	57.11.4470	47 Ohm	5%						
R....20	57.11.4102	1 kOhm	5%						
R....21	57.11.4104	100 kOhm	2%						
R....22	57.11.3432	4.3 kOhm	1%						

REPRODUCE AMPLIFIER 1.820.710.85



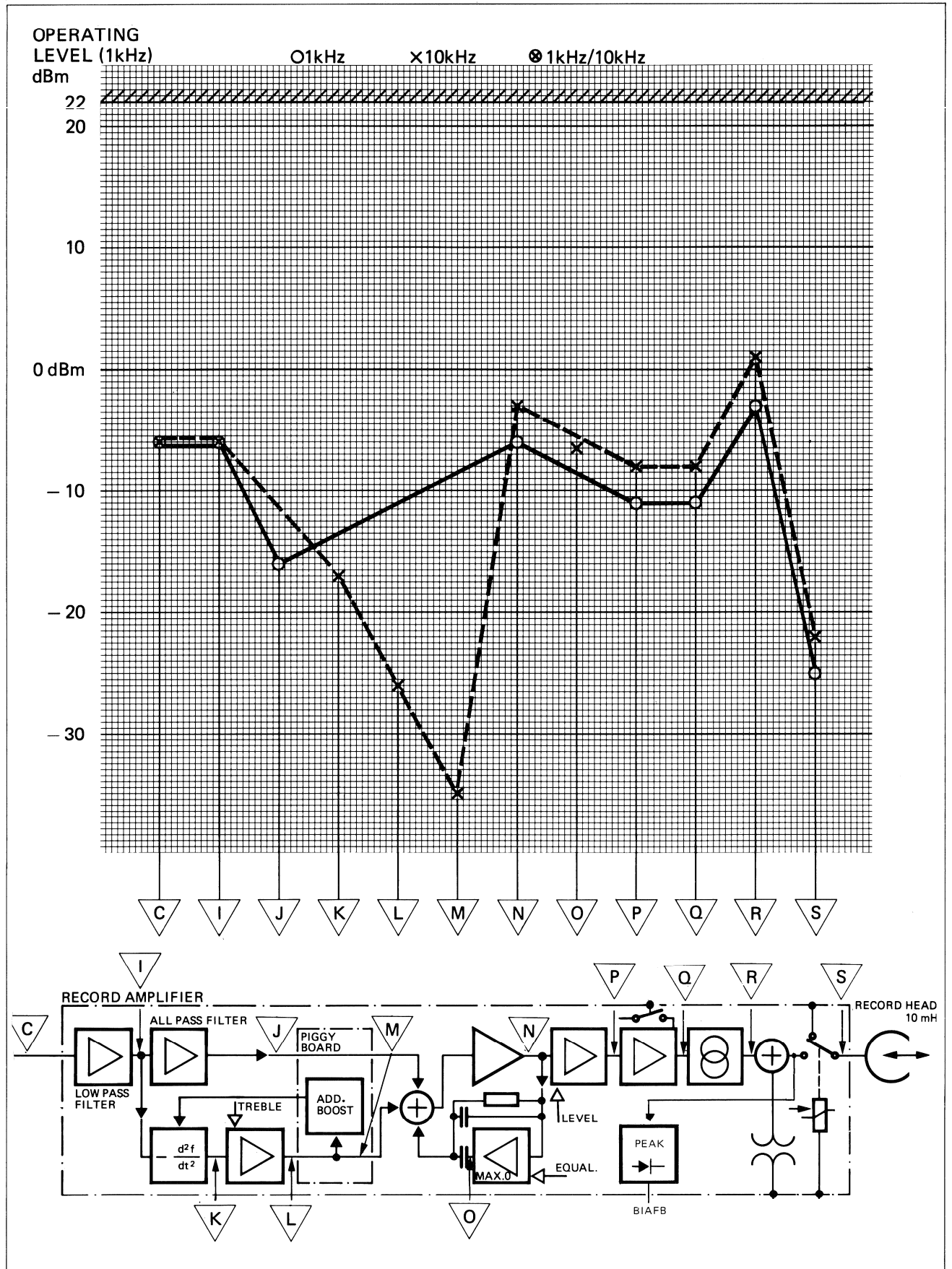


REPRODUCE AMPLIFIER 1.820.710.85

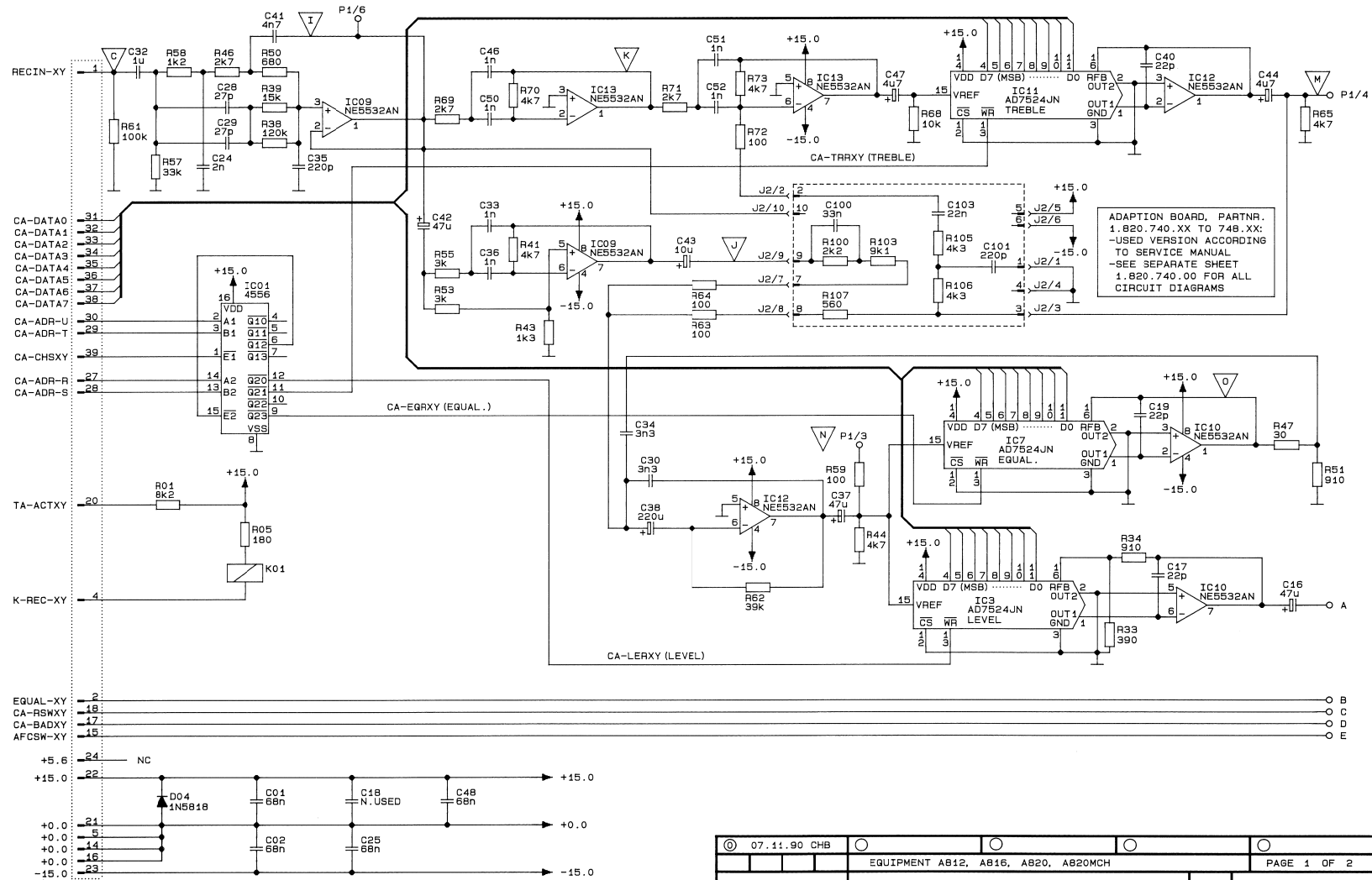


ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER	ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
C	1	59.06.5104	0.1 uF	5%, 63V, PETP	R	23	57.11.3102	1 kOhm	2%
C	2	59.99.0401	47 uF	-20%, 16V, El bipolar	R	24	57.11.3105	1 MOhm	5%
C	3	59.06.0683	68 nF	10%, 63V, PETP	R	25	57.11.3474	470 kOhm	5%
C	4	59.06.0683	68 nF	10%, 63V, PETP	R	26	57.11.3102	1 kOhm	2%
C	5	59.22.5101	100 uF	-20%, 25V, El	R	27	57.11.3221	220 Ohm	5%
C	6	59.22.5101	100 uF	-20%, 25V, El	R	28	57.11.3105	1 MOhm	5%
C	7	00.00.0000	not used		R	29	57.11.3105	1 MOhm	5%
C	8	59.34.2470	47 pF	2%, N150, Cer	R	30	57.11.3472	4.7 kOhm	5%
C	9	00.00.0000	not used		R	31	57.11.3272	2.7 kOhm	2%
C	10	59.06.5105	1 uF	5%, PETP	R	32	57.11.3182	1.8 kOhm	2%
C	11	59.12.7561	560 pF	1%, 63V, PS	R	33	57.11.3511	510 Ohm	2%
C	12	59.06.5104	0.1 uF	5%, 63V, PETP	R	34	57.11.3103	10 kOhm	5%
C	13	59.04.9680	68 pF	5%, 63V, PP	R	35	57.11.3103	10 kOhm	5%
C	14	59.34.2220	22 pF	5%, N150, Cer	R	36	57.11.3681	680 Ohm	2%
C	15	59.99.0401	47 uF	-20%, 16V, El bipolar	R	37	57.11.3301	300 Ohm	2%
C	16	59.06.0102	1 nF	10%, 63V, PETP	R	38	57.11.3103	10 kOhm	5%
C	17	59.22.2221	220 uF	-10%, 6V, El	R	39	57.11.3103	10 kOhm	5%
C	18	59.99.0401	47 uF	-20%, 16V, El bipolar	R	40	57.11.3470	47 Ohm	5%
C	19	59.26.0470	47 uF	-20%, 6.3V, Sal	R	41	57.11.3472	4.7 kOhm	5%
C	20	59.06.5105	1 uF	5%, 50V, PETP	R	42	57.11.3273	27 kOhm	5%
C	21	59.34.2330	33 pF	5%, N150, Cer	R	43	57.11.3102	1 kOhm	5%
C	22	59.02.2225	2.2 uF	5%, 63V, MPC	R	44	57.11.3391	390 Ohm	2%
C	23	59.12.7202	2 nF	1%, 63V, PS	R	45	57.11.3911	910 Ohm	1%
C	24	59.05.1221	220 pF	1%, 63V, PP	R	46	57.11.3102	1 kOhm	5%
C	25	59.12.7391	390 pF	1%, 63V, PS	R	47	57.11.3273	27 kOhm	5%
C	26	59.26.2100	10 uF	-20%, 16V, Sal	R	48	57.11.3104	100 kOhm	5%
C	27	59.05.1474	4.7 nF	1%, 63V, PP	R	49	57.11.3122	1.2 kOhm	1%
C	28	59.06.0683	68 nF	10%, 63V, PETP	R	50	57.11.3272	2.7 kOhm	1%
C	29	59.26.2100	10 uF	-20%, 16V, Sal	R	51	57.11.3681	680 Ohm	1%
C	30	59.06.0681	68 nF	10%, 63V, PETP	R	52	57.11.3273	27 kOhm	2%
C	31	59.18.0108	40 pF	Trimmer capacitor, Philips Nr 2222.808.32409	R	53	57.11.3155	15 kOhm	1%
C	32	59.99.0401	47 uF	-20%, 16V, El bipolar	R	54	57.11.3394	390 kOhm	5%
C	33	59.99.0401	47 uF	-20%, 16V, El bipolar	R	55	57.11.5155	1.5 MOhm	5%
C	34	59.05.1332	3.3 nF	1%, 63V, PP	R	56	57.11.3472	4.7 kOhm	5%
C	35	59.26.2100	10 uF	-20%, 16V, Sal	R	57	57.11.3273	27 kOhm	2%
C	36	59.22.3221	220 uF	-20%, 10V, El	R	58	57.11.3121	120 Ohm	2%
C	37	59.34.222C	22 pF	5%, N150, Cer	R	59	57.11.3682	6.8 kOhm	2%
C	38	59.34.222C	22 pF	5%, N150, Cer	R	60	57.11.3102	1 kOhm	5%
C	39	59.05.1223	22 nF	1%, 63V, PP	R	61	57.11.3164	160 kOhm	1%
C	40	59.05.1103	10 nF	1%, 63V, PP	R	62	57.11.3470	47 Ohm	5%
C	41	59.26.2100	10 uF	-20%, 16V, Sal	R	63	57.11.3152	1.5 kOhm	1%
C	42	59.34.222C	22 pF	5%, N150, Cer	R	64	57.11.3472	4.7 kOhm	5%
C	43	59.06.5105	1 uF	5%, 50V, PETP	R	65	57.11.5106	10 MOhm	5%
C	44	59.06.0104	0.1 uF	10%, 50V, PETP	R	66	57.11.3222	2.2 kOhm	5%
R	1	50.04.0125	1N 4448		R	67	57.11.3102	1.0 kOhm	5%
R	2	50.04.0512	1N 5818	1N5819	Note 1 - Contact pin: Studer 54.01.0020, Berg 75 160-102-36 Bridge: Studer 54.01.0021, Philips 2422 024 88003				
R	3	50.04.0125	1N 4448		FETP=Polyesterfilm, Sal=Solid-Aluminium, Cer=Ceramic PS=Polystyrol, PP=Polypropylen, El=Electrolytic MPC=Metallized Polycarbonate				
R	4	50.04.0125	1N 4448		MANUFACTURER: ADI=Analog Deices Inc., Ex=Exar, Fc=Fairchild, Mot=Motorola, MpS=Micropower Semiconductor, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, RCA=Radio corp. of America, Sie=Siemens, Sig=Signetics, Six=Siliconix, Tf=Telefunken, Tho=CSF=Thomson Semiconductor, Ti=Texas Instruments.				
R	5	50.04.1121	24 V V	5% 0.4W	1.820.710.85 REPRODUCE AMPLIFIER BD 88/10/2600				
IC	1	50.05.0283	LM933N		NS, TI				
IC	2	50.07.0204	CD4568B	MC 14 556B, 4556B	RCA, Mot, Fc				
IC	3	50.11.0106	SD 214 DE	BSD 214	Ph, Six				
IC	4	50.11.0106	SD 214 DE	BSD 214	Ph, Six				
IC	5	50.11.0106	SD 214 DE	BSD 214	Ph, Six				
IC	6	50.11.0106	SD 214 DE	BSD 214	Ph, Six				
IC	7	50.09.0106	NE5532AN	KRS532AN, 5532ANB	Sig, Ex, Ra				
IC	8	50.09.0002	AD7524JN	MP 7524 JN	ADI, MpS				
IC	9	50.05.0283	LM933N		NS, TI				
IC	10	50.05.0283	LM933N		NS, TI				
IC	11	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS				
IC	12	50.09.0105	NE5532N	XR 5532 N, 5532 NB	Sig, Ex, Ra				
IC	13	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS				
IC	14	50.09.0106	NE5532AN	XR 5532AN, 5532ANB	Sig, Ex, Ra				
IC	15	50.09.0106	NE5532AN	XR 5532AN, 5532ANB	Sig, Ex, Ra				
IC	16	50.07.0002	AD7524JN	MP 7524 JN	ADI, MpS				
J	1	00.00.0000	See note 1						
L	1	62.01.0128	1 mH	Gowands Nr. 17-104, Delevan Nr. 1641-105					
L	2	62.01.0128	1 mH	Gowands Nr. 17-104, Delevan Nr. 1641-105					
C	1	50.03.0407	BC550C		Sie, Ph				
C	2	50.03.0516	BC337		Six				
C	3	50.03.0216	J 111		Stx				
C	4	50.03.0407	BC550C		Sie, Ph				
R	1	57.11.3470	47 Ohm	5%					
R	2	57.11.3473	47 kOhm	5%					
R	3	57.11.3134	130 kOhm	2%					
R	4	57.11.3184	180 kOhm	2%					
R	5	57.11.3223	22 kOhm	2%					
R	6	57.11.3104	100 kOhm	5%					
R	7	57.11.3106	10 MOhm	5%					
R	8	57.11.3234	330 kOhm	2%					
R	9	57.11.3103	10 kOhm	5%					
R	10	57.11.3103	10 kOhm	5%					
R	11	57.11.3335	3.3 MOhm	2%					
R	12	57.11.3105	1 MOhm	5%					
R	13	57.11.3103	10 kOhm	5%					
R	14	57.11.3593	56 kOhm	2%					
R	15	57.11.3472	4.7 kOhm	5%					
R	16	57.11.3513	51 kOhm	1%					
R	17	57.11.3103	10 kOhm	5%					
R	18	57.11.3103	10 kOhm	5%					
R	19	57.11.3470	47 Ohm	5%					
R	20	57.11.3102	1 kOhm	5%					
R	21	57.11.3104	100 kOhm	2%					
R	22	57.11.3432	4.3 kOhm	1%					

LEVEL DIAGRAMS, RECORD AMPLIFIER

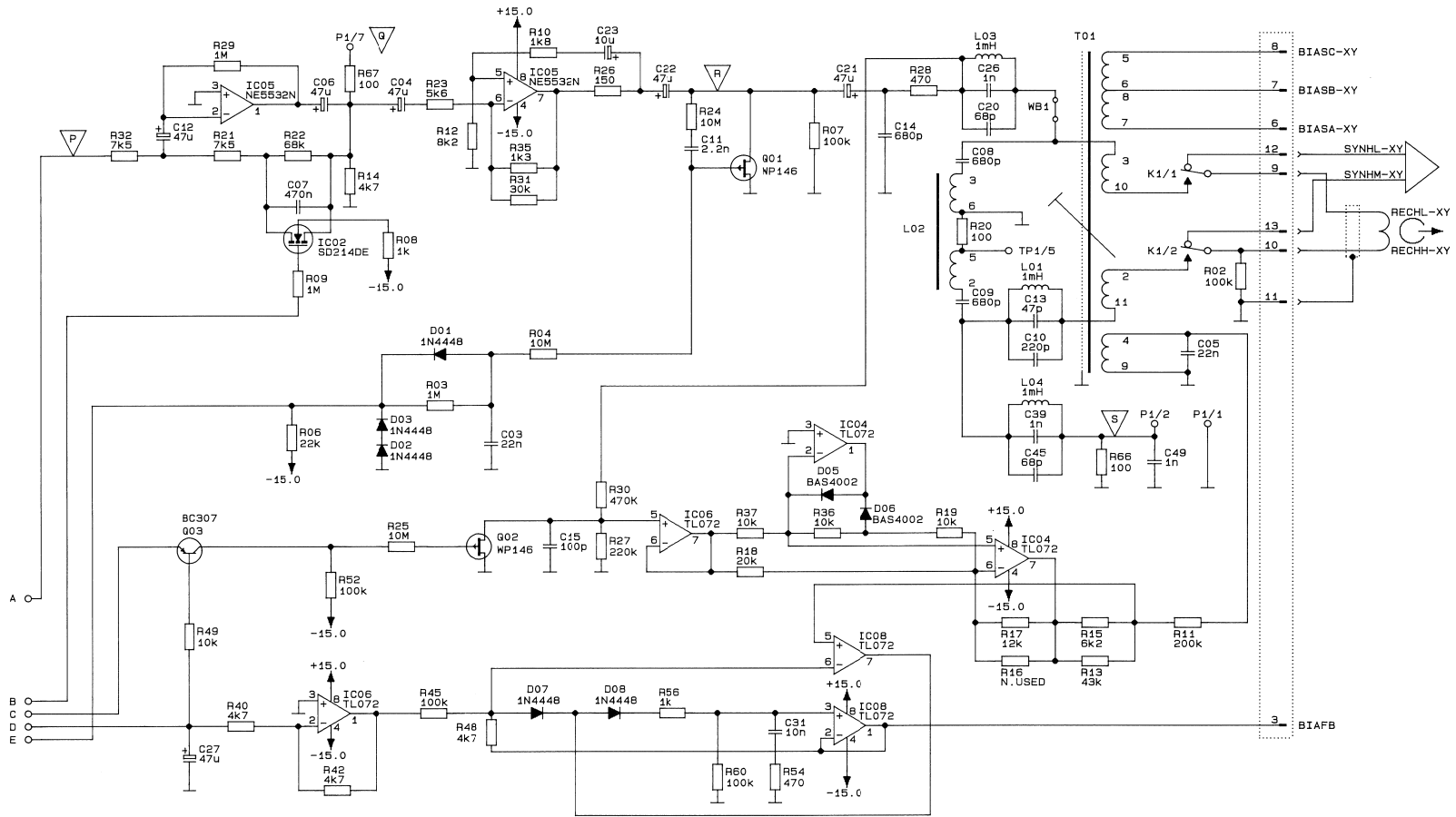


RECORD AMPLIFIER HX-PRO 1.820.811.81



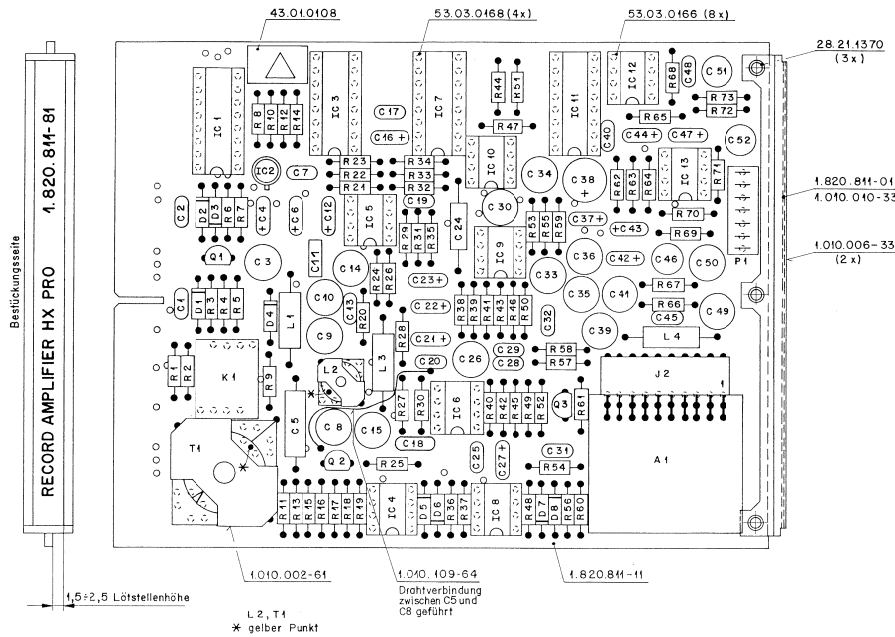
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EQUIPMENT A812, A816, A820, A820MCH			PAGE 1 OF 2
STUDER		RECORD AMPLIFIER HX-PRO	SC 1.820.811-81

RECORD AMPLIFIER HX-PRO 1.820.811.81



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EQUIPMENT AB12, AB16, AB20, AB20MCH			PAGE 2 OF 2	
STUDER		RECORD AMPLIFIER HX-PRO	SC	1.820.811-81

RECORD AMPLIFIER HX-PRO 1.820.811.81



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
A	...	00.00.0000	see note 1 Adaptation Board	S
C	...	59.06.0683	68 nF 20%	PETP
C	...	59.06.0683	68 nF 20%	PETP
C	...	59.05.1223	22 nF 1%	PP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.12.9222	2.2 nF 1%, 500 V, PS	Ph
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.06.5474	470 nF 5%	PETP
C	...	59.05.1681	680 pF 1%	PP
C	...	59.05.1681	680 pF 1%	PP
C	...	59.05.1221	220 pF 1%	PP
C	...	59.06.0222	2.2 nF 10%	PETP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.34.2470	47 pF 5%	Cer
C	...	59.05.1681	680 pF 1%	PP
C	...	59.05.1101	100 pF 1%	PP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.34.2220	22 pF 5%	Cer
C	...	00.00.0000	not used	
C	...	59.34.2220	22 pF 5%	Cer
C	...	59.34.4680	68 pF 5%	Cer
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.26.2100	10 nF 20%, 16 V, Sal	Ph
C	...	59.12.7202	2 nF 1%	PS
C	...	59.06.0683	68 nF 20%	PETP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.34.2270	27 pF 5%	Cer
C	...	59.34.2270	27 pF 5%	Cer
C	...	59.05.1332	3.3 nF 1%	PP
C	...	59.06.5103	10 nF 5%	PETP
C	...	59.06.5105	1 nF 5%	PETP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.05.1332	3.3 nF 1%	PP
C	...	59.05.1221	220 pF 1%	PP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.22.3221	220 nF 2%	PP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.34.2220	22 pF 5%	Cer
C	...	59.05.1472	4.7 nF 1%	PP
C	...	59.26.0470	47 nF 20%, 6.3 V, Sal	Ph
C	...	59.26.2100	10 nF 20%, 16 V, Sal	Ph
C	...	59.26.5479	4.7 nF 20%	Sal
C	...	59.34.4680	68 pF 5%	Cer
C	...	59.05.1102	1 nF 1%	PP
C	...	59.26.5479	4.7 nF 20%	Sal
C	...	59.06.0683	68 nF 20%	PETP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.05.1102	1 nF 1%	PP
C	...	59.05.1102	1 nF 1%	PP
D	...	50.04.0125	1N4448	ITT, Ph, Ses, TI
D	...	50.04.0125	1N4448	ITT, Ph, Ses, TI
D	...	50.04.0125	1N4448	ITT, Ph, Ses, TI
D	...	50.04.0512	1N5819	Mot
D	...	50.04.0127	BAT 42	Ph, Sig, Tho-CSF
D	...	50.04.0127	BAT 42	Ph, Sig, Tho-CSF
D	...	50.04.0125	1N4448	ITT, Ph, Ses, TI
D	...	50.04.0125	1N4448	ITT, Ph, Ses, TI
IC	...	50.07.0004	MC145568PC	Not, RCA, Fc
IC	...	50.11.0106	50 214 DE	Six, Ph
IC	...	50.07.0002	AD7524JN	ADI, Mps
IC	...	50.09.0101	TL072CP	NS, TI, Tho
IC	...	50.09.0105	NE5532N	Sig, Ex, Ra
IC	...	50.09.0101	TL072CP	NS, TI, Tho
IC	...	50.07.0002	AD7524JN	ADI, Mps
IC	...	50.09.0101	TL072CP	NS, TI, Tho
IC	...	50.09.0106	NE5532AN	Sig, Ex, Ra
IC	...	50.09.0105	NE5532N	Sig, Ex, Ra
IC	...	50.07.0002	AD7524JN	ADI, Mps
IC	...	50.09.0106	NE5532AN	Sig, Ex, Ra
IC	...	50.09.0106	NE5532AN	Sig, Ex, Ra
J	...	54.01.0307	10 cort.	AMP Nr. 163.683-8
K	...	56.04.0171	SM D103	ITT
L	...	62.01.0128	1 mH	Gowanda 16-104 or Delevan 2307-105
L	...	1.022.214.00	1 mH	Filter coil, 150 kHz
L	...	62.01.0128	1 mH	Gowanda 16-104 or Delevan 2307-105
L	...	62.01.0128	1 mH	Gowanda 16-104 or Delevan 2307-105

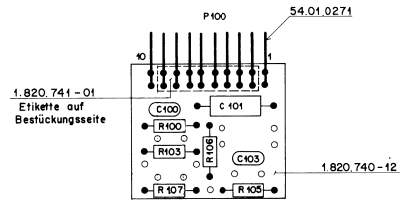
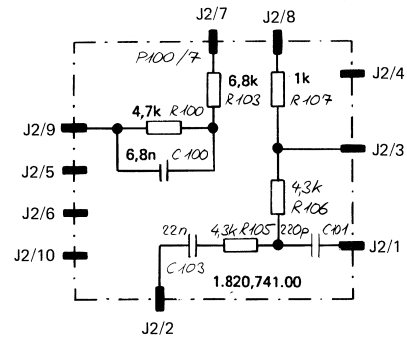
Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
P	...	54.12.0007	7 cont.	AMP Mini Match System, Nr. 164 713-7
Q	...	50.03.0329	P1228E	WPI46 Six, TS
Q	...	50.03.0329	P1228E	WPI46 Six, TS
Q	...	50.03.0515	BC 307	BC 557 B ITT, Mot, Ph
R	...	57.11.4822	8.2 kOhm	5%
R	...	57.11.4104	100 kOhm	5%
R	...	57.11.4105	1 MOhm	5%
R	...	57.11.5106	10 MOhm	10%
R	...	57.11.4181	150 Ohm	5%
R	...	57.11.4223	22 kOhm	5%
R	...	57.11.4104	100 kOhm	5%
R	...	57.11.4102	1 kOhm	5%
R	...	57.11.4105	1 MOhm	10%
R	...	57.11.4182	1.8 kOhm	2%
R	...	57.11.3204	200 kOhm	1%
R	...	57.11.4822	8.2 kOhm	2%
R	...	57.11.3433	43 kOhm	2%
R	...	57.11.4472	4.7 kOhm	5%
R	...	57.11.3622	6.2 kOhm	1%
R	...	00.00.0000	not used	
R	...	57.11.3123	150 kOhm	1%
R	...	57.11.3203	20 kOhm	1%
R	...	57.11.4103	10 kOhm	2%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.3752	7.5 kOhm	1%
R	...	57.11.3652	6.5 kOhm	1%
R	...	57.11.3562	5.6 kOhm	1%
R	...	57.11.5106	10 MOhm	10%
R	...	57.11.5105	10 MOhm	10%
R	...	57.11.4151	150 Ohm	2%
R	...	57.11.3224	220 kOhm	1%
R	...	57.11.4471	470 Ohm	5%
R	...	57.11.4105	1 MOhm	5%
R	...	57.11.4474	470 kOhm	2%
R	...	57.11.3303	30 kOhm	5%
R	...	57.11.3752	7.5 kOhm	1%
R	...	57.11.3911	390 Ohm	5%
R	...	57.11.3911	910 Ohm	1%
R	...	57.11.2132	1.3 kOhm	1%
R	...	57.11.4103	10 kOhm	2%
R	...	57.11.4103	10 kOhm	2%
R	...	57.11.4124	120 kOhm	5%
R	...	57.11.4153	15 kOhm	2%
R	...	57.11.3472	4.7 kOhm	1%
R	...	57.11.3472	4.7 kOhm	1%
R	...	57.11.3472	4.7 kOhm	1%
R	...	57.11.3132	1.3 kOhm	1%
R	...	57.11.4472	4.7 kOhm	5%
R	...	57.11.4104	100 kOhm	2%
R	...	57.11.3272	2.7 kOhm	2%
R	...	57.11.3300	30 Ohm	1%
R	...	57.11.3472	4.7 kOhm	1%
R	...	57.11.4103	10 kOhm	5%
R	...	57.11.4681	680 Ohm	2%
R	...	57.11.3911	910 Ohm	1%
R	...	57.11.4104	100 kOhm	5%
R	...	57.11.3302	3 kOhm	1%
R	...	57.11.4471	470 Ohm	5%
R	...	57.11.3302	3 kOhm	1%
R	...	57.11.4102	1 kOhm	5%
R	...	57.11.4333	33 kOhm	5%
R	...	57.11.4122	1.2 kOhm	2%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.4104	100 kOhm	5%
R	...	57.11.4104	100 kOhm	5%
R	...	57.11.4393	39 kOhm	2%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.4472	4.7 kOhm	5%
R	...	57.11.4101	100 Ohm	2%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.4103	10 kOhm	5%
R	...	57.11.3272	2.7 kOhm	1%
R	...	57.11.3472	4.7 kOhm	1%
R	...	57.11.3272	2.7 kOhm	1%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.4101	100 Ohm	5%
R	...	57.11.3472	4.7 kOhm	1%
T	...	1.022.213.00	Bias Transformer, 150 kHz	St

Note 1: Actual use of Adaptation Board (Studer nr. 1.820.740.00 up to 1.820.748.00) according to Service Manual.

Cer=Ceramic, PETP=Polyester, PP=Polypropylen, PS=Polystyrol, Sal=Solid aluminium

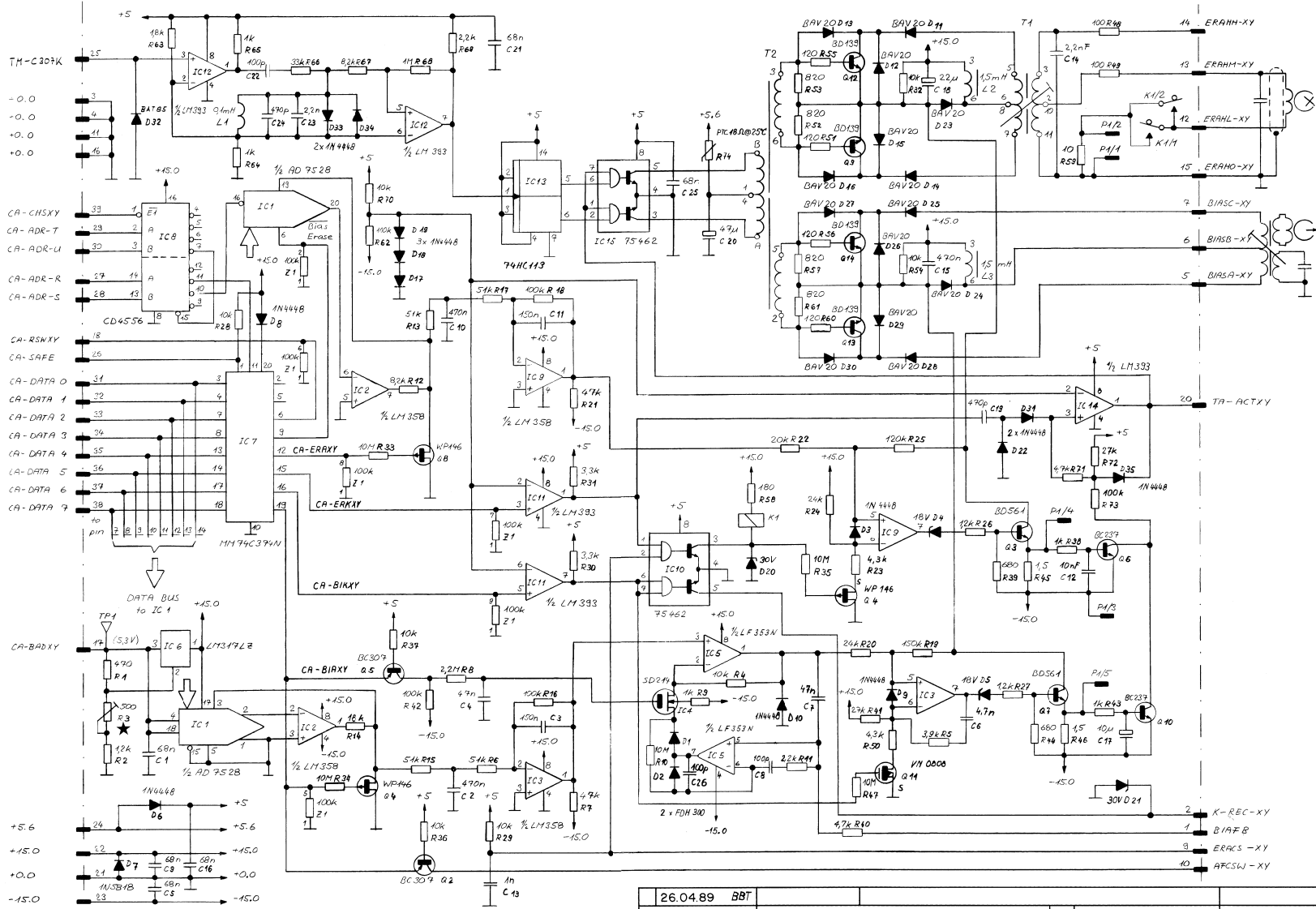
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ADAPTION BOARD 1.820.741.00 FOR 1.318... HEADS



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C...	100	59.06.5682	6.8 nF	5%
C...	101	59.04.8221	220 pF	5%
C...	102	.	not used	
C...	103	59.06.5223	22 nF	5%
C...	104	.	not used	
C...	105	.	not used	
P...	100	54.01.0271	10 cont.	AMP-Nr. 163.740-8
R...	100	57.11.4472	4.7 kOhm	2%
R...	101	.	not used	
R...	102	.	not used	
R...	103	57.11.4682	6.8 kOhm	2%
R...	104	.	not used	
R...	105	57.11.3432	4.3 kOhm	1%
R...	106	57.11.3432	4.3 kOhm	1%
R...	107	57.11.4102	1.0 kOhm	2%
1.820.741.00 ADAPTION BOARD				
BD 87/04/1300				

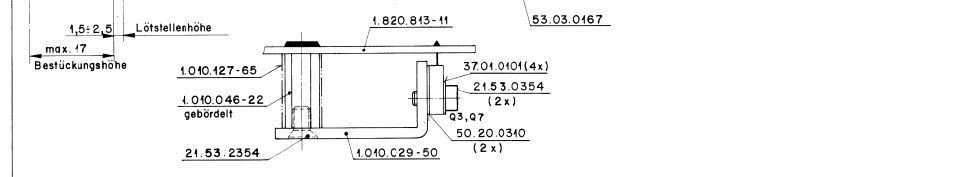
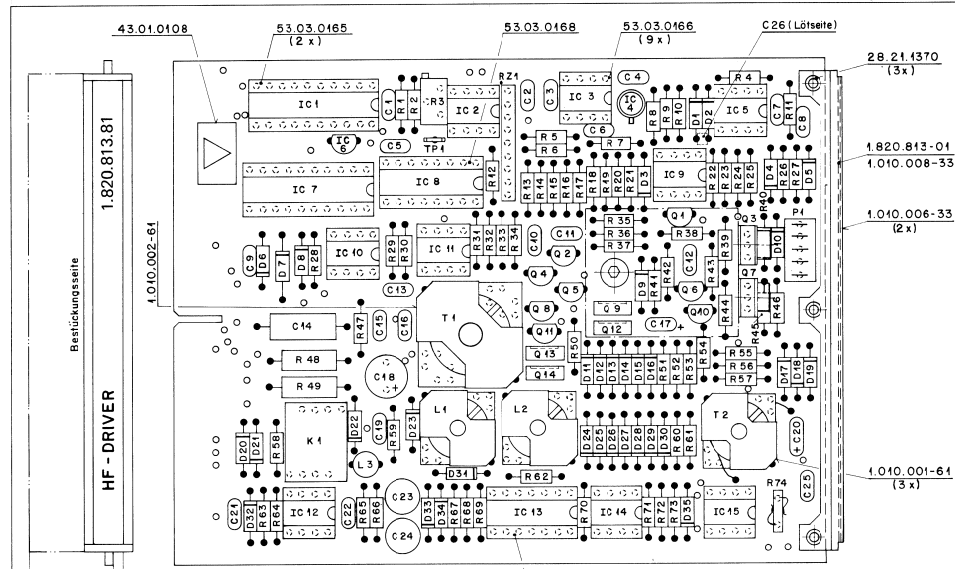
HF DRIVER 1.820.813.81



★R3 ADJUST FOR 5,3V ± 50mV AT TP1

26.04.89	BBT		
STUDER	HF-DRIVER	SC 1.820.813-81	PAGE 1 OF 1

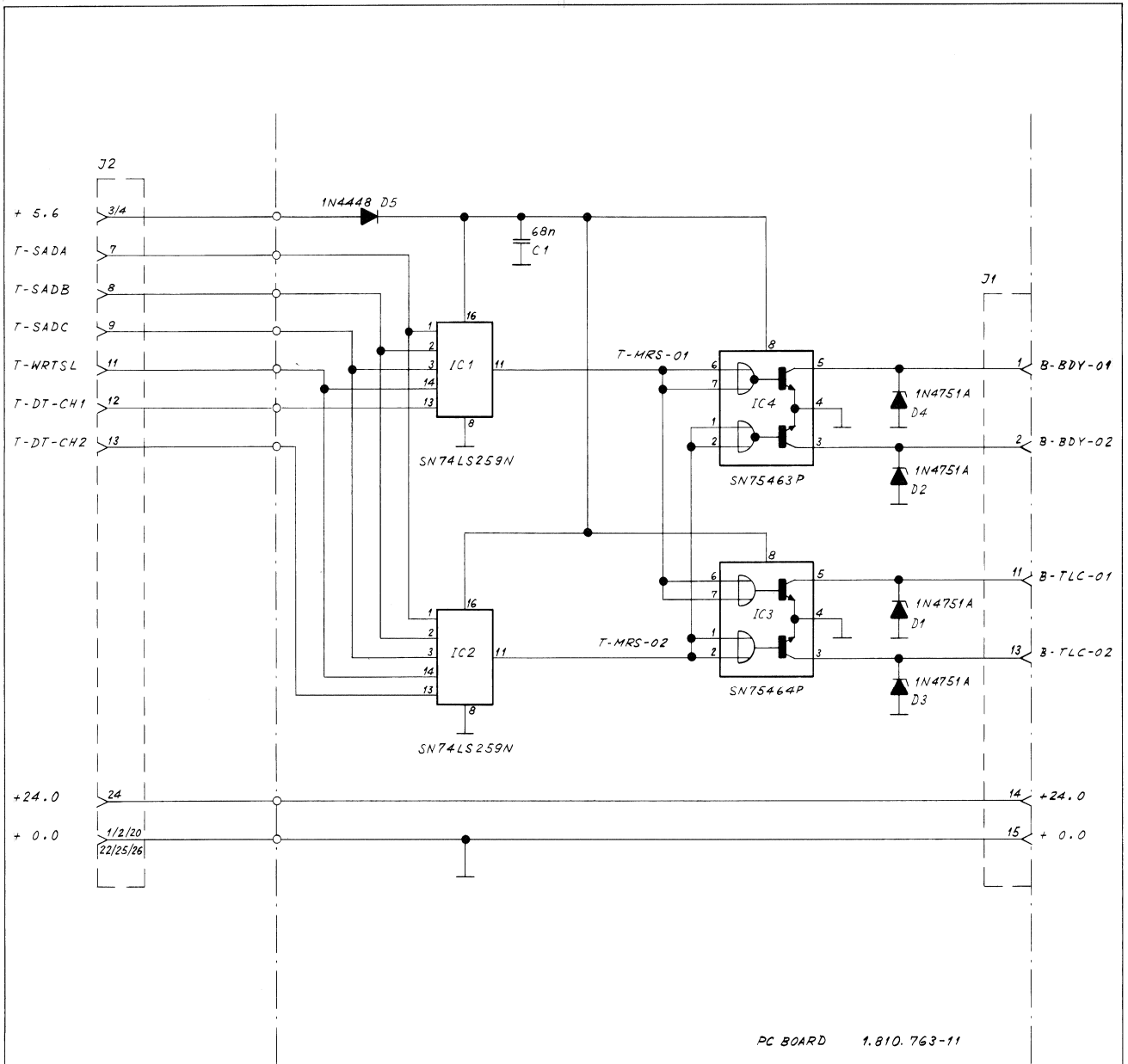
HF DRIVER 1.820.813.81



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.06.0683	68 nF	20%	PETP
C....2	59.06.0474	470 nF	5%	PETP
C....3	59.06.3154	150 nF	5%	PETP
C....4	59.06.5473	47 nF	5%	PETP
C....5	59.06.0683	68 nF	20%	PETP
C....6	59.32.2472	4.7 nF	10%	Cer
C....7	59.06.5473	47 nF	5%	PETP
C....8	59.34.4101	100 pF	10%	Cer
C....9	59.06.0683	68 nF	20%	PETP
C....10	59.06.5474	470 nF	5%	PETP
C....11	59.06.3154	150 nF	5%	PETP
C....12	59.06.0103	10 nF	10%	PETP
C....13	59.32.4102	1 nF	20%	Cer
C....14	59.12.3222	2.2 nF	1%	PP
C....15	59.06.5474	470 nF	5%	PETP
C....16	59.06.0683	68 nF	20%	PETP
C....17	59.25.2100	10 uF	20%	16V, Sal
C....18	59.22.8220	22 uF	20%, 40V, EI	Ph, RI
C....19	59.34.3471	470 pF	5%	Cer
C....20	59.26.0470	47 uF	20%, 6.3V, Sal	Ph, RI
C....21	59.06.0683	68 nF	20%	PETP
C....22	59.34.4101	100 pF	5%	Cer
C....23	59.05.2222	2.2 nF	2.5%	PP
C....24	59.05.1471	470 pF	2.5%	PP
C....25	59.06.0683	68 nF	20%	PETP
C....26	59.60.3101	100 nF	5%	Cer
D....1	50.04.0134	1N3595DND	FN300	Fc
D....2	50.04.0134	1N3595DND	FN300	Fc
D....3	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf
D....4	50.04.1122	18 V Z	BZX55C 18	ITT, Mot, Ph, Tf, Tho
D....5	50.04.1122	18 V Z	BZX55C 18	ITT, Mot, Ph, Tf, Tho
D....6	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf
D....7	50.04.0512	1N6818	1N6819	Mo
D....8	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf
D....9	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf
D....10	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
J....11	50.04.0133	BAV20		ITT, Ph	R....31	57.11.4332	3.3 kOhm	5%	
J....12	50.04.0133	BAV20		ITT, Ph	R....32	57.11.4103	10 kOhm	10%	
J....13	50.04.0133	BAV20		ITT, Ph	R....33	57.11.5106	10 MOhm	10%	
J....14	50.04.0133	BAV20		ITT, Ph	R....34	57.11.5106	10 MOhm	10%	
J....15	50.04.0133	BAV20		ITT, Ph	R....35	57.11.5106	10 MOhm	10%	
J....16	50.04.0133	BAV20		ITT, Ph	R....36	57.11.4103	10 kOhm	10%	
J....17	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....37	57.11.4103	10 kOhm	10%	
J....18	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....38	57.11.4102	1 kOhm	2%	
J....19	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....39	57.11.4651	500 Ohm	5%	
J....20	50.04.0125	1N4448		ITT, Mot, Ph, Tf, Tho	R....40	57.11.4472	4.7 kOhm	2%	
D....21	50.04.1125	30 V Z	BZX55 C 30	ITT, Mot, Ph, Tf, Tho	R....41	57.11.4273	27 kOhm	2%	
D....22	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....42	57.11.4104	100 kOhm	10%	
D....23	50.04.0133	BAV20		ITT, Ph	R....43	57.11.4102	1 kOhm	2%	
D....24	50.04.0133	BAV20		ITT, Ph	R....44	57.11.4651	500 Ohm	2%	
D....25	50.04.0133	BAV20		ITT, Ph	R....45	57.11.4159	1.5 Ohm	2%	
D....26	50.04.0133	BAV20		ITT, Ph	R....46	57.11.4159	1.5 Ohm	2%	
D....27	50.04.0133	BAV20		ITT, Ph	R....47	57.11.5106	10 MOhm	10%	
D....28	50.04.0133	BAV20		ITT, Ph	R....48	57.13.4101	100 Ohm	5%, 0.5M	
D....29	50.04.0133	BAV20		ITT, Ph	R....49	57.13.4101	100 Ohm	5%, 0.5M	
D....30	50.04.0133	BAV20		ITT, Ph	R....50	57.11.3432	4.3 kOhm	2%	
D....31	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....51	57.11.4121	120 Ohm	5%	
D....32	50.04.0127	BAT 42	BAT 85, BAS 40-02	Ph, Ste, Tho	R....52	57.11.4821	820 Ohm	5%	
D....33	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....53	57.11.4821	820 Ohm	5%	
D....34	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....54	57.11.4103	10 kOhm	10%	
D....35	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....55	57.11.4121	120 Ohm	5%	
D....36	50.04.0125	1N4448		Fc, ITT, Ph, Ses, Tf	R....56	57.11.4121	120 Ohm	5%	
IC....1	50.07.0026	A07528JN	MP 7528 JN	ADI, MPS	R....57	57.11.4821	820 Ohm	5%	
IC....2	50.05.0286	LM358N	LM358P	Mo, NS, SGS, TI	R....58	57.11.4181	180 Ohm	5%	
IC....3	50.05.0286	LM358N	LM358P	Mo, NS, SGS, TI	R....59	57.11.4100	10 Ohm	2%	
IC....4	50.11.0106	SD 214-DE	85D 214	Ph, Six	R....60	57.11.4121	120 Ohm	5%	
IC....5	50.09.0101	TL 072 CP	TO8 C353 DP	Tho, TI	R....61	57.11.4821	820 Ohm	5%	
IC....6	50.10.0108	LM 317 LZ		Mo, NS	R....62	57.11.4104	100 kOhm	5%	
IC....7	50.07.0003	MN74C374N	...4556... MCI4556BCP	NS	R....63	57.11.4182	1.8 kOhm	2%	
IC....8	50.07.0004	CD4556BE	...4556... MCI4556BCP	Mo, Ph, RCA, To	R....64	57.11.4102	1 kOhm	2%	
IC....9	50.05.0286	LM358N	LM358P	Mo, NS, SGS, TI	R....65	57.11.4102	1 kOhm	5%	
IC....10	50.05.0287	SN75462P	SN75462JG, SN75472P	TI	R....66	57.11.4333	33 kOhm	5%	
IC....11	50.05.0288	LM 393 N	LM 393 DP, LM 393 P	NS, Tho, TI	R....67	57.11.4822	8.2 kOhm	5%	
IC....12	50.05.0288	LM 393 N	LM 393 DP, LM 393 P	NS, Tho, TI	R....68	57.11.4105	1 MOhm	10%	
IC....13	50.17.1113	74 HC 113	... 74 HC 113 ...	Mo, NS, Ph, RCA, SGS, TI, To	R....69	57.11.4222	2.2 kOhm	5%	
IC....14	50.05.0288	LM 393 N	LM 393 DP, LM 393 P	NS, Tho, TI	R....70	57.11.4103	10 kOhm	5%	
IC....15	50.05.0287	SN75462P	SN75462JG, SN75472N	TI	R....71	57.11.4472	4.7 kOhm	5%	
K....1	56.04.0171	SM 01012		ITT	R....72	57.11.4273	27 kOhm	5%	
L....1	1.022.197.00	1.5 nH		St	R....73	57.11.4104	100 kOhm	5%	
L....2	1.022.197.00	1.5 nH		St	R....74	57.92.1151	18 Ohm	5%	
L....3	62.02.3101	100 uH		TKK rr. EL 0606 SKI - 101 K	RZ....1	57.88.4104		See Note 2	
P....1	54.12.0005	5 cont.	AMP Mini Match System, Nr. 164 713-5AMP		T....1	1.022.212.00	Erse Transformer, 150kHz	St	
P....2	50.03.0329	WP146	U pirch-off < 4.0 V	Six	T....2	1.022.213.00	Driver Transformer, 150kHz	St	
P....3	50.03.0515	BC 251 B	BC 307 B, BC 557 B	ITT, Mot, Ph	TP....1	54.02.0320	Test-Pin Lupot-Nr. E184 / 8LE		
P....4	50.03.0329	WP146	U pirch-off < 4.0 V	Mo, Ph, Nem					
P....5	50.03.0515	BC 251 B	BC 307 B, BC 557 B	ITT, Mot, Ph					
P....6	50.03.0495	BC 237 B	BC 550 B, BC 547 B	ITT, Mot, Ph, Sie					
P....7	50.03.0495	80 437	80 437	Mo, Ph					
P....8	50.03.0329	WP146	U pirch-off < 4.0 V	Six					
P....9	50.03.0451	80 139-10	...-K, ...-J, ...-K	Mo, Ph, SGS, Tf, To					
P....10	50.03.0451	80 139-10	...-K, ...-J, ...-K	ITT, Mot, Ph, Sie					
Q....11	50.03.1505	VN 0608 M	VN 0608 HTR, ZVN 0108 A	Fc, Six					
Q....12	50.03.0451	80 139-10	...-J, ...-J, ...-K	Mo, Ph, SGS, Tf, To					
Q....13	50.03.0451	80 139-10	...-J, ...-J, ...-K	Mo, Ph, SGS, Tf, To					
Q....14	50.03.0451	80 139-10	...-J, ...-J, ...-K	Mo, Ph, SGS, Tf, To					
R....1	57.11.4471	470 Ohm	2%						
R....2	57.11.4122	1.2 kOhm	2%						
R....3	58.05.0501	500 Ohm		See Note 1					
R....4	57.11.4103	10 kOhm	2%						
R....5	57.11.4392	3.9 kOhm	5%						
R....6	57.11.3513	51 kOhm	5%						
R....7	57.11.4073	87 kOhm	5%						
R....8	57.11.3274	270 kOhm	5%						
R....9	57.11.5225	2.2 MOhm	10%						
R....10	57.11.4102	1 kOhm	10%						
R....11	57.11.4222	2.2 kOhm	5%						
R....12	57.11.4822	8.2 kOhm	5%						
R....13	57.11.3513	51 kOhm	5%						
R....14	57.11.4622	8.2 kOhm	5%						
R....15	57.11.4182	18 kOhm	5%						
R....16	57.11.3513	51 kOhm	2%						
R....17	57.11.4104	100 kOhm	2%						
R....18	57.11.3513	51 kOhm	2%						
R....19	57.11.4104	100 kOhm	2%						
R....20	57.11.3243	24 kOhm	2%						
R....21	57.11.4473	47 kOhm	5%						
R....22	57.11.3203	20 kOhm	2%						
R....23	57.11.3432	4.3 kOhm	2%						
R....24	57.11.3243	24 kOhm	2%						
R....25	57.11.4124	120 kOhm	2%						
R....26	57.11.4122	1.2 kOhm	5%						
R....27	57.11.4122	1.2 kOhm	5%						
R....28	57.11.4103	10 kOhm	5%						
R....29	57.11.4103	10 kOhm	5%						
R....30	57.11.4332	3.3 kOhm	5%						
1.820.813.81	HF - DRIVER			B8T86/05/2200					
1.820.813.81	HF - DRIVER			B8T87/04/0701					
1.820.813.81	HF - DRIVER			B8T91/05/0602					

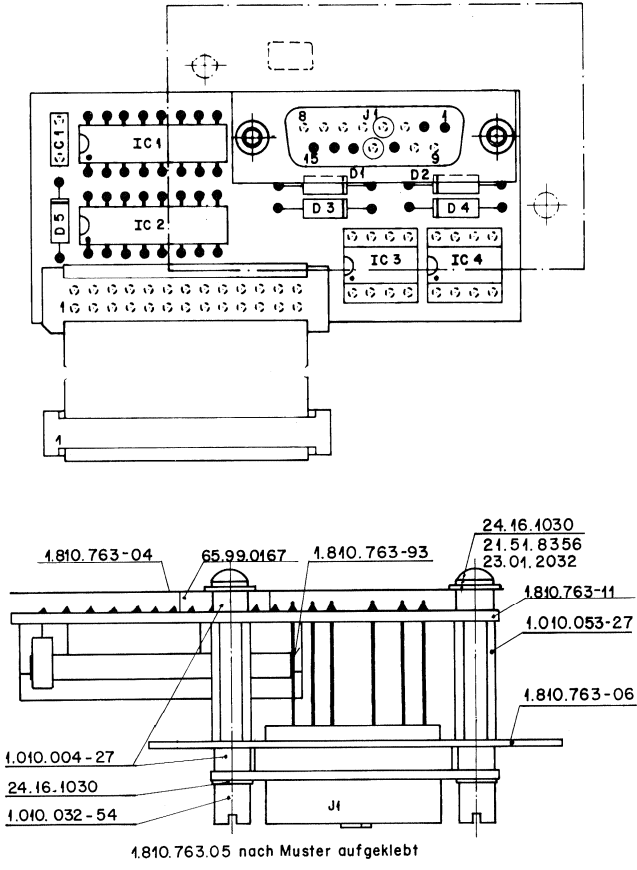
NOISE REDUCTION SYSTEM CONTROL 1.810.763.82



PC BOARD 1.810.763-11

22.04.83	Buchegger	A 810 Logic Section		
STUDER	Noise Reduction System Control	SC	1.810.763.82	PAGE 1 OF 1

NOISE REDUCTION SYSTEM CONTROL 1.810.763.82



Ad	..POS..	...REF.No...	DESCRIPTION.....	MANUFACTURER
C.....1	59.99.0205	68 nF	-20%, Ce	
D.....1	50.04.1506	30 V Z	BZX 85-C30	ITT,Mot,Ph,Tf,Tho
D.....2	50.04.1506	30 V Z	BZX 85-C30	ITT,Mot,Ph,Tf,Tho
D.....3	50.04.1506	30 V Z	BZX 85-C30	ITT,Mot,Ph,Tf,Tho
D.....4	50.04.1506	30 V Z	BZX 85-C30	ITT,Mot,Ph,Tf,Tho
D.....5	50.04.0125	1N4448		Fc,ITT,Ph,Ses,Tf
IC....1	50.06.0259	SN74LS259N	74 LS 259 PC	Fc,Mot,TI
IC....2	50.06.0259	SN74LS259N	74 LS 259 PC	Fc,Mot,TI
IC....3	50.05.0204	SN75464P	DS 75464	NS,TI
IC....4	50.05.0203	SN75463P	SN 75463 JG,SN 55463 JG,DS 75463	NS,TI
J.....1	54.02.0183	15 cont.	See note 1	
J.....2	54.14.5022	26 cont.	See note 2	
Note 1 - Jack:		TRW Nr.	DA-15 S (Cannon)	
Note 2 - Jack:		Yamaichi Nr.	FAS-26-17	
		Burndy Nr.	FRS-26 BD-7P	
		Connection cable:	Studer Nr. 1.810.749.00	

Ce=Ceramic

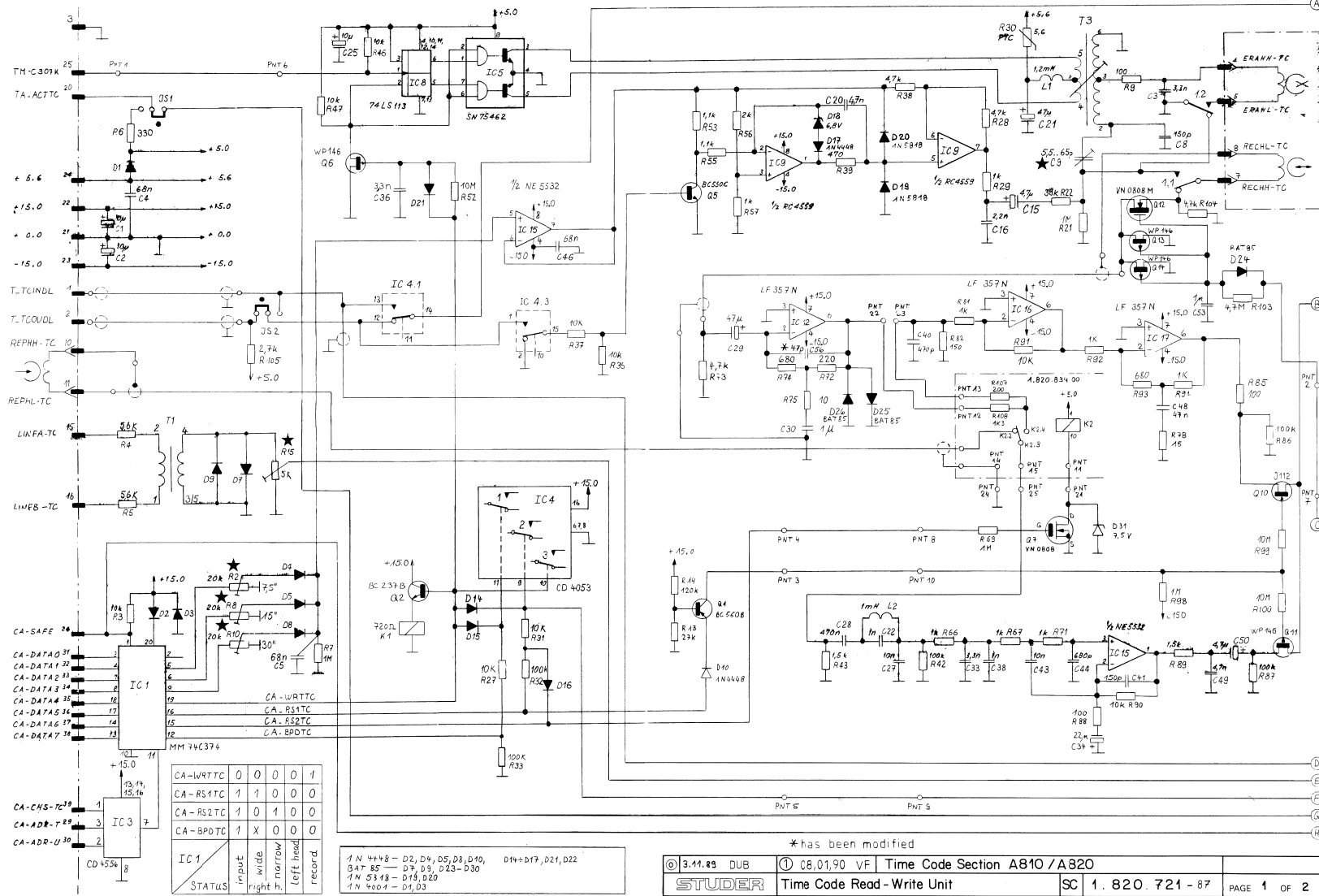
MANUFACTURER: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NS=National Semiconductor, Ph=Philips, Ses=Sesosem, Tf=Telefunken, Tho=Thomson, TI=Texas Instruments.

1.810.763.82 NRS CONTROL BOARD BD 88/05/0400

- ★ R15: LINE INPUT CALIBRATION RECORD
- ★ R2: RECORD LEVEL SETTING FOR 7.5" (3 3/4"IPS)
- ★ R8: RECORD LEVEL SETTING FOR 15"
- ★ R10: RECORD LEVEL SETTING FOR 30"
- ★ C9: BIAS CURRENT ALIGNMENT

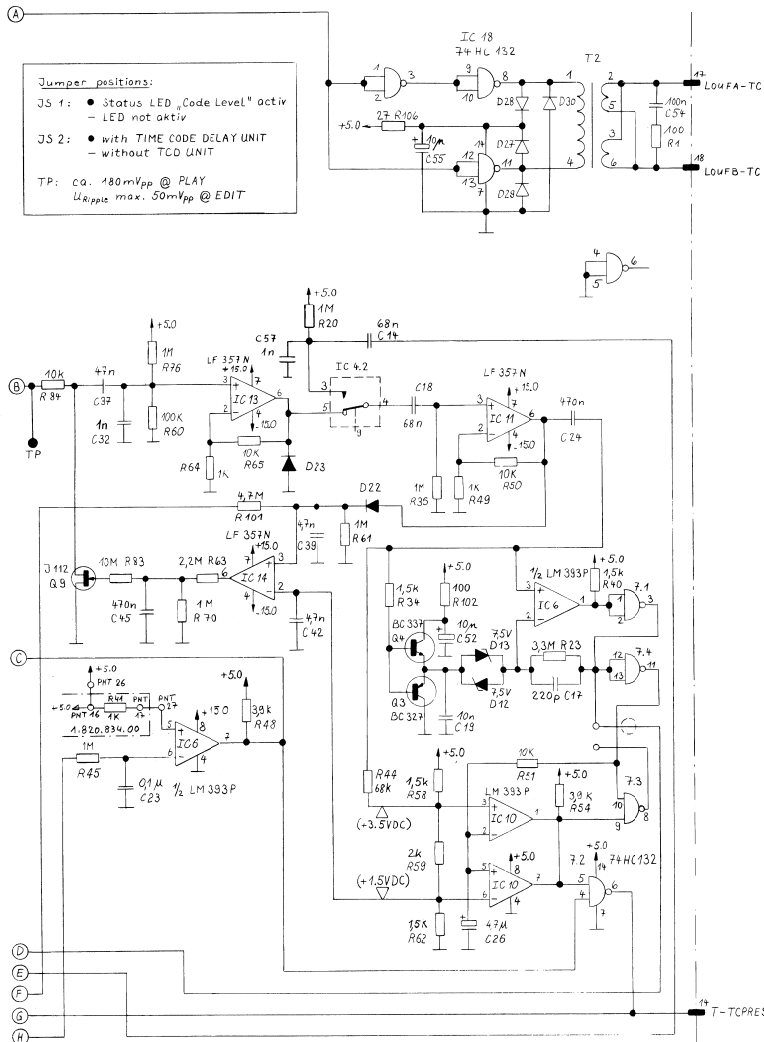


TIME CODE READ-WRITE UNIT 1.820.721.87





TIME CODE READ-WRITE UNIT 1.820.721.87



© 3.11.83 DUB	① 08.01.90 VF	Time Code Section A 810 / A 820	
STUDER	Time Code Read-Write Unit	SC 1.820.721-87	PAGE 2 OF 2

TIME CODE READ-WRITE UNIT 1.820.721.87



Nr.	Punkt	Punkt	Norm. Nr.	Verarbeitung	Abschneidelänge	Absolierung
W1	1	6	1 010 415 - 64			
W2	2	7	1 010 415 - 64			
W3	3	10	1 010 418 - 64			
W4	4	8	1 010 415 - 64			
W5	5	9	1 010 416 - 64			
W6			64 03 0186	95 mm	Bild 1	
W7			64 03 0186	30 mm	Bild 1	
W8			64 03 0186	40 mm	Bild 1	
W9			64 03 0186	115 mm	Bild 2	
W10			64 03 0186	130 mm	Bild 2	
W11	11	21	1 010 410 - 64			
W12	12	22	1 010 413 - 64			
W13	13	23	1 010 114 - 64			
W14	14	24	1 010 019 - 54 (Shift)			
W15	15	25	1 010 019 - 54 (Shift)			
W16	16	26	1 010 019 - 54 (Shift)			
W17	17	27	1 010 019 - 54 (Shift)			
W18	18	28	1 010 197 - 64			
W19	19	29	64 04 0104			
W20	20	30	64 04 0104			

Schirm bindig mit Mantel

Bild 1

Bild 2

Toleranzen ± 0,1

Ad.	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1	59.26.2100	10 uF	20%, 16V, Sal	Ph,Ri
C....2	59.26.2100	10 uF	20%, 16V, Sal	Ph,Ri
C....3	59.05.1332	3,3 nF	2,5%	
C....4	59.06.0683	68 nF	10%	
C....5	59.06.0683	68 nF	10%	
C....6	00.00.0000	not used		
C....7	00.00.0000	not used		
C....8	59.05.2151	150 pF	2,5%	
C....9	59.18.0102	65 pF	Trimmer Capacitor, Philips Nr 2222 808 01001	
C....10	00.00.0000	not used		
C....11	00.00.0000	not used		
C....12	00.00.0000	not used		
C....13	00.00.0000	not used		
C....14	59.06.0683	68 nF	10%	
C....15	59.26.5479	4,7 uF	20%, 25V, Sal	Ph,Ri
C....16	59.06.0222	2,2 nF	10%	
C....17	59.34.4221	220 pF	5%, Cer	
C....18	59.06.0683	68 nF	10%	
C....19	59.06.0103	10 nF	10%	
C....20	59.05.2472	4,7 nF	2,5%	
C....21	59.26.0470	47 uF	20%, 6,3V, Sal	Ph,Ri
C....22	59.05.1102	1 nF	1%	
C....23	59.06.0104	100 nF	10%	
C....24	59.06.0474	470 nF	10%	
C....25	59.26.2100	10 uF	20%, 16V, Sal	Ph,Ri
C....26	59.26.5479	4,7 uF	20%, 25V, Sal	Ph,Ri
C....27	59.06.0103	10 nF	10%	
C....28	59.06.0474	470 nF	10%	
C....29	59.26.0470	47 uF	20%, 6,3V, Sal	Ph,Ri
C....30	59.06.5105	1 uF	5%	
C....31	00.00.0000	not used		
C....32	59.06.0102	1 nF	1%	
C....33	59.05.1332	3,3 nF	1%	
C....34	59.26.1220	22 uF	20%, 10V, Sal	Ph,Ri
C....35	00.00.0000	not used		
C....36	59.06.0332	3,3 nF	10%	
C....37	59.06.0473	47 nF	10%	
C....38	59.05.1103	1 nF	1%	
C....39	59.06.0472	4,7 nF	10%	
C....40	59.32.2471	470 pF	10%	
C....41	59.34.4151	150 pF	5%, Cer	
C....42	59.06.0472	4,7 nF	10%	
C....43	59.05.1103	1 nF	1%	
C....44	59.32.2681	680 pF	10%	
C....45	59.06.0474	470 nF	10%	
C....46	59.06.0683	68 nF	10%	
C....47	59.06.0473	47 nF	10%	
C....48	59.06.0472	4,7 nF	10%	
C....49	59.06.0472	4,7 nF	10%	
C....50	59.26.5479	4,7 uF	20%, 25V, Sal	Ph,Ri
C....51	00.00.0000	not used		
C....52	59.26.1100	10 uF	20%, 10V, Sal	Ph,Ri
C....53	59.06.0104	1 uF	5%	
C....54	59.06.0104	100 nF	10%	
C....55	59.26.1100	10 uF	20%, 10V, Sal	Ph,Ri
C....56	59.34.1100	10 uF	5%	
C....57	59.34.2470	47 pF	5%	
C....58	59.60.0102	1 nF	5%	
C....59	50.04.0122	IN4001	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....60	50.04.0125	IN4448	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....61	50.04.0122	IN4001	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....62	50.04.0125	IN4448	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....63	50.04.0125	IN4448	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....64	50.04.0125	IN4448	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....65	50.04.0125	IN4448	IN4002, IN4003, IN4004	Fc,ITT,Ph,Ses
C....66	00.00.0000	not used		
C....67	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....68	50.04.0125	IN4448	BAS 40-02	Fc,ITT,Ph,Ses
C....69	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....70	50.04.0125	IN4448	BAS 40-02	Fc,ITT,Ph,Ses
C....71	50.04.1103	7,5 V Z	BZ83C 7V5, BZ85C 7V5, ZFD 7,5	Ses,ITT
C....72	50.04.1103	7,5 V Z	BZ83C 7V5, BZ85C 7V5, ZFD 7,5	Ses,ITT
C....73	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....74	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....75	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....76	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....77	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....78	50.04.1102	6,8 V Z	BZ83C 6V8, BZ85C 6V8, ZFD 6,8	Ses,ITT
C....79	50.04.0127	IN5818	IN5818	Ph,Sie
C....80	50.04.0512	IN5818	IN5818	Ph,Sie
C....81	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....82	50.04.0125	IN4448	Fc,ITT,Ph,Ses	
C....83	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....84	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....85	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....86	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....87	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....88	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....89	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....90	50.04.0127	BAT 85	BAS 40-02	Ph,Sie
C....91	50.04.1103	7,5 V Z	BZ83C 7V5, BZ85C 7V5, ZFD 7,5	Ses,ITT
IC....1	50.07.0003	MH74C374N		NCA
IC....2	00.00.0000	not used		
IC....3	50.07.0004	MC14558BCP	CD4558E, 4558BPC	Fc,Not,NSC
IC....4	50.07.0015	MC14053B	CD4053BCN	Not,NSC
IC....5	50.05.0227	SN75462P	SN75462JG	TI
IC....6	50.05.0283	LM93N	LM93	NSC, TI
IC....7	50.17.1132	MC74HC132	PC74HC132, MC74HC132	Not,Ph,NSC
IC....8	50.06.0113	SN74LS113N	74LS113N, DM74LS113N	TI, Sig, NSC
IC....9	50.09.0107	RC4559NB		NSC
IC....10	50.05.0283	LM93N	LM93	NSC, TI



TIME CODE READ-WRITE UNIT 1.820.721.87

Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER	Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
IC...	11	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	69	00.00.0000	not used
IC...	12	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	69	57.11.3105	1 MOhm 2%
IC...	13	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	70	57.11.3105	1 MOhm 2%
IC...	14	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	71	57.11.3102	1 kOhm 2%
IC...	15	50.09.0106	NE5532AN	XRS532AN, 5532ANB	Sig,Ex,Ra	R....	72	57.11.3221	220 Ohm 2%
IC...	15	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	73	57.11.3472	4.7 MOhm 5%
IC...	17	50.09.0110	LF357 A	Slew rate >40V/us	NS	R....	74	57.11.6601	680 Ohm 2%
IC...	18	50.17.1132	MC74HC132	PC74HC132 M74HC132	Mot,Ph,NS	R....	75	57.11.3100	10 Ohm 2%
J5....	1	00.00.0000				R....	76	57.11.3105	1 MOhm 2%
J5....	2	00.00.0000				R....	78	57.11.3150	15 Ohm 2%
J5....	2	00.00.0000		See Note 1		R....	80	00.00.0000	not used
K.....	1	56.04.0171	SM D1012		ITT	R....	81	57.11.3102	1 kOhm 2%
K.....	2	56.04.0195	TQ2			R....	82	57.11.3151	150 Ohm 2%
L.....	1	62.02.2122	1.2 mH	TDK Nr. CSL 0812-122 J		R....	83	57.11.3106	10 MOhm 5%
L.....	2	62.01.0128	1 mH	Gowanda Nr. 17-104, Delevan Nr. 1641-105		R....	84	57.11.3103	10 MOhm 2%
Q.....	1	50.03.0496	BC560E		St	R....	86	57.11.3104	100 kOhm 2%
Q.....	2	50.03.0436	BC237B	BC547B, BC550B	ITT,Mot,Ph,St	R....	88	57.11.3101	100 Ohm 2%
Q.....	3	50.03.0351	BC327-25		ITT,Ph,St	R....	89	57.11.3152	1.5 MOhm 2%
Q.....	4	50.03.0340	BC327-25		ITT,NS,Ph,St	R....	90	57.11.3103	10 kOhm 2%
Q.....	5	50.03.0351	BC560E		St	R....	91	57.11.3103	10 kOhm 2%
Q.....	6	50.03.0329	WF 146		St	R....	92	57.11.3102	1 kOhm 2%
Q.....	7	50.03.1505	VN 0808M	ZVN 0108A	Fe,St	R....	93	57.11.6601	680 Ohm 2%
Q.....	9	50.03.0350	J112F	J112, TM00062	Sc,NS,Mot	R....	94	57.11.3102	1 kOhm 2%
Q.....	10	50.03.0350	J112F	J112, TM00062	Sc,NS,Mot	R....	95	00.00.0000	not used
Q.....	11	50.03.0329	WF 146		St	R....	98	57.11.3105	1 MOhm 2%
Q.....	12	50.03.1505	VN 0808M	ZVN 0108A	Fe,St	R....	99	57.11.3106	10 MOhm 5%
Q.....	13	50.03.0329	WF 146		St	R....	100	57.11.3106	10 MOhm 5%
Q.....	14	50.03.0329	WF 146		St	R....	101	57.11.3475	4.7 MOhm 5%
R.....	1	57.11.3101	100 Ohm	5%		R....	102	57.11.3101	100 Ohm 5%
R.....	2	58.11.6203	20 kOhm	See Note 2		R....	103	57.11.3475	4.7 MOhm 5%
R.....	3	57.11.3103	10 kOhm	2%		R....	104	57.11.3472	4.7 MOhm 5%
R.....	4	57.11.3562	5.6 kOhm	2%		R....	105	57.11.3272	2.7 kOhm 5%
R.....	5	57.11.3562	5.6 kOhm	2%		R....	106	57.11.3270	27 Ohm 5%
R.....	6	57.11.3331	330 Ohm	2%		R....	107	57.11.3201	200 Ohm 2%
R.....	7	57.11.3105	1 MOhm	2%		R....	108	57.11.3132	1.3 kOhm 2%
R.....	8	58.11.6203	20 kOhm	See Note 2		T....	1	1.022.218.00	Input Transformer 1:1
R.....	9	57.11.3101	100 Ohm	2%		T....	2	1.022.215.00	Time Code Output Transformer
R.....	10	58.11.6203	20 kOhm	See Note 2		T....	3	1.022.221.00	Time Code HF Transformer
R.....	11	00.00.0000	not used						
R.....	12	00.00.0000	not used						
R.....	13	57.11.3273	27 kOhm	5%					
R.....	14	57.11.3124	120 kOhm	5%					
R.....	15	58.11.6502	5 kOhm	See Note 3					
R.....	16	00.00.0000	not used						
R.....	17	00.00.0000	not used						
R.....	18	00.00.0000	not used						
R.....	19	00.00.0000	not used						
R.....	20	57.11.3105	1 MOhm	2%					
R.....	21	57.11.3105	1 MOhm	2%					
R.....	22	57.11.3393	39 kOhm	2%					
R.....	23	57.11.5335	3.3 MOhm	5%					
R.....	24	00.00.0000	not used						
R.....	25	00.00.0000	not used						
R.....	26	00.00.0000	not used						
R.....	27	57.11.3102	10 kOhm	2%					
R.....	28	57.11.3472	4.7 kOhm	1%					
R.....	29	57.11.3102	1 kOhm	1%					
R.....	30	57.99.0209	5.6 Ohm	PTC Resistor, Philips Nr. 2322 662 91005					
R.....	31	57.11.3103	10 kOhm	2%					
R.....	32	57.11.3104	100 kOhm	5%					
R.....	33	57.11.3104	100 kOhm	2%					
R.....	34	57.11.3152	1.5 kOhm	2%					
R.....	35	57.11.3103	10 kOhm	2%					
R.....	36	57.11.3105	1 MOhm	2%					
R.....	37	57.11.3103	10 kOhm	2%					
R.....	38	57.11.3472	4.7 kOhm	1%					
R.....	39	57.11.3471	470 Ohm	2%					
R.....	40	57.11.3152	1.5 kOhm	2%					
R.....	41	57.11.3102	1 kOhm	2%					
R.....	42	57.11.3104	100 kOhm	2%					
R.....	43	57.11.3152	1.5 kOhm	2%					
R.....	44	57.11.3683	68 kOhm	2%					
R.....	45	57.11.3105	1 MOhm	2%					
R.....	46	57.11.3103	10 kOhm	2%					
R.....	47	57.11.3103	10 kOhm	2%					
R.....	48	57.11.3392	3.9 kOhm	2%					
R.....	49	57.11.3102	1 kOhm	2%					
R.....	50	57.11.3103	10 kOhm	2%					
R.....	51	57.11.3103	10 kOhm	2%					
R.....	52	57.11.5106	10 MOhm	5%					
R.....	53	57.11.3112	1.1 kOhm	1%					
R.....	54	57.11.3392	3.9 kOhm	2%					
R.....	55	57.11.3112	1.1 kOhm	1%					
R.....	56	57.11.3202	2 kOhm	1%					
R.....	57	57.11.3102	1 kOhm	1%					
R.....	58	57.11.3152	1.5 kOhm	1%					
R.....	59	57.11.3202	2 kOhm	1%					
R.....	60	57.11.3104	100 kOhm	2%					
R.....	61	57.11.3105	1 MOhm	2%					
R.....	62	57.11.3152	1.5 kOhm	1%					
R.....	63	57.11.5225	2.2 MOhm	5%					
R.....	64	57.11.3102	1 kOhm	2%					
R.....	65	57.11.3103	10 kOhm	2%					
R.....	66	57.11.3102	1 kOhm	1%					
R.....	67	57.11.3102	1 kOhm	1%					

(01) 08.01.90 Optimized reading at high ambient temperature.

Note 1: Contact pin: Studer Nr. 54.01.0020
 Berg Nr. 75 160-102-36
 Philips Nr. 2422 025 89303
 Bridge: Studer Nr. 54.01.0021
 Conmatel Nr. 313.1365.000 408
 Philips Nr. 2422 024 88003

Note 2: Potentiometer, linear, Bourns Nr. 3329 H - 1 - 203
 VRN Nr. 170 - 20k
 Lesa Nr. 170 - 20k

Note 3: Potentiometer, linear, Bourns Nr. 3329 H - 1 - 502
 VRN Nr. 170 - 5k
 Lesa Nr. 170 - 5k

Cer=Ceramic, Sal=Solid Aluminum

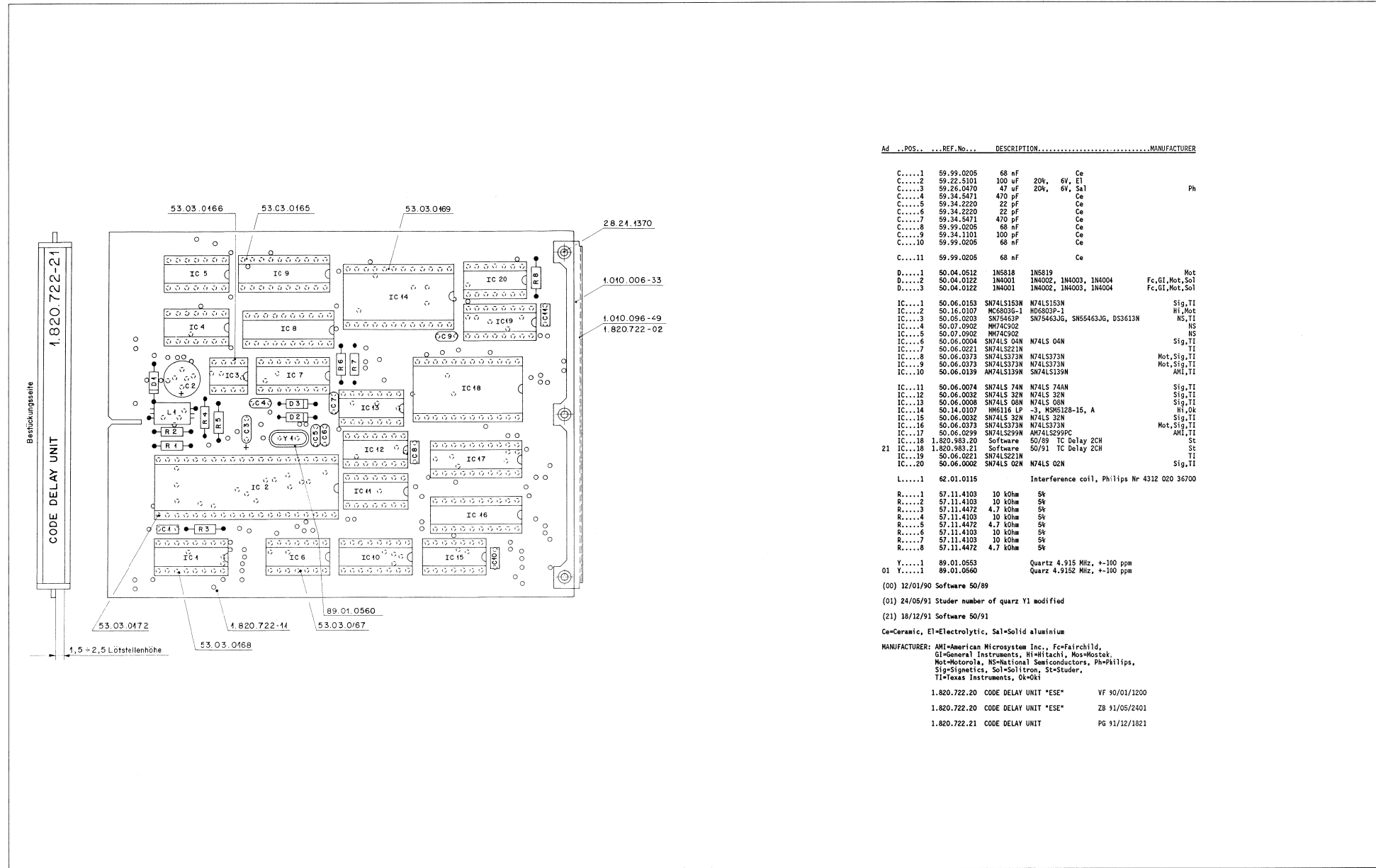
MANUFACTURER: Ex=Exar, Fc=Fairchild, Fe=Ferranti, GI=General Instruments, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, RCA=Radio Corp. of America, Ses=Seiscosm, Sien=Siemens, Sig=Signetics, St=Studer, Six=Siliconix, TS=Teledyne Semiconductors, T=Telefunken, TI=Texas Instruments

1.820.721.87 CODE READ/WRITE UNIT DUB89/11/0300

1.820.721.87 CODE READ/WRITE UNIT DUB90/01/0801

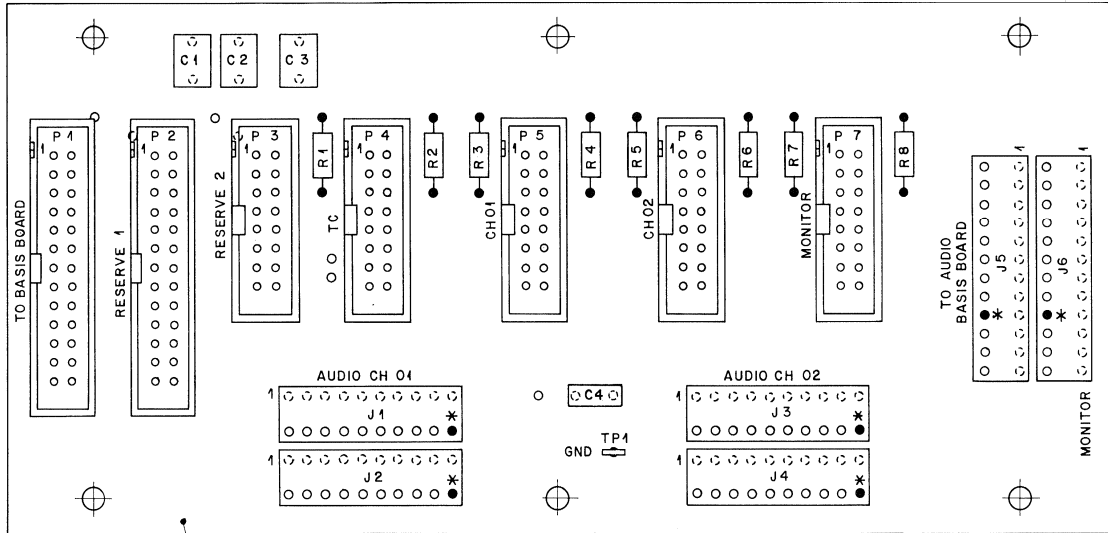


CODE DELAY UNIT 1.820.722.21



Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
C....1	59.99.0205	68 nF		Ce
C....2	59.22.5101	100 uF 20%	6V, EI	
C....3	59.26.0470	47 uF 20%	6V, Sal	Ph
C....4	59.34.5471	470 pF		Ce
C....5	59.34.2220	22 pF		Ce
C....6	59.34.2220	22 pF		Ce
C....7	59.34.5471	470 pF		Ce
C....8	59.99.0205	68 nF		Ce
C....9	59.34.1101	100 pF		Ce
C....10	59.99.0205	68 nF		Ce
C....11	59.99.0205	68 nF		Ce
D....1	50.04.0512	1N5818	1N5819	Mot
D....2	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Fc, GI, Mot, Sol
D....3	50.04.0122	1N4001	1N4002, 1N4003, 1N4004	Fc, GI, Mot, Sol
IC...1	50.06.0153	SN74LS153N	N74LS153N	Sig, TI
IC...2	50.16.0107	MC68036-1	HD68036P-1	Hi, Mot
IC...3	50.05.0203	SN75463P	SN75463JG, SN55463JG, DS3613N	NS, TI
IC...4	50.07.0902	MH74C902		NS
IC...5	50.07.0902	MH74C902		NS
IC...6	50.06.0204	SN74LS 04N	N74LS 04N	Sig, TI
IC...7	50.06.0221	SN74LS221N		TI
IC...8	50.06.0373	SN74LS373N	N74LS373N	Mot, Sig, TI
IC...9	50.06.0373	SN74LS373N	N74LS373N	Mot, Sig, TI
IC...10	50.06.0139	AM74LS139N	N74LS139N	AMI, TI
IC...11	50.06.0074	SN74LS 74N	N74LS 74AN	Sig, TI
IC...12	50.06.0032	SN74LS 32N	N74LS 32N	Sig, TI
IC...13	50.06.0008	SN74LS 08N	N74LS 08N	Sig, TI
IC...14	50.14.0107	HM6116 LP	-3, NSM5128-15, A	Hi, Ok
IC...15	50.06.0032	SN74LS 32N	N74LS 32N	Sig, TI
IC...16	50.06.0373	SN74LS373N	N74LS373N	Mot, Sig, TI
IC...17	50.06.0209	SN74LS295N	AM74LS295PC	AMI, TI
IC...18	1.820.983.20	Software	50/89 TC Delay 2CH	St
IC...18	1.820.983.21	Software	50/91 TC Delay 2CH	St
IC...19	50.06.0221	SN74LS221N		TI
IC...20	50.06.0002	SN74LS 02N	N74LS 02N	Sig, TI
L....1	62.01.0115		Interference coil, Philips Nr 4312 020 36700	
R....1	57.11.4103	10 kOhm	5%	
R....2	57.11.4103	10 kOhm	5%	
R....3	57.11.4472	4.7 kOhm	5%	
R....4	57.11.4103	10 kOhm	5%	
R....5	57.11.4472	4.7 kOhm	5%	
R....6	57.11.4103	10 kOhm	5%	
R....7	57.11.4103	10 kOhm	5%	
R....8	57.11.4472	4.7 kOhm	5%	
Y....1	89.01.0553		Quartz 4.915 Mhz, +/-100 ppm	
01 Y....1	89.01.0560		Quartz 4.9152 Mhz, +/-100 ppm	
(00)	12/01/90	Software	50/89	
(01)	24/05/91	Studer number of quartz Y1 modified		
(21)	18/12/91	Software	50/91	
Ce=Ceramic, El=Electrolytic, Sal=Solid aluminium				
MANUFACTURER: AMI=American Microsystem Inc., Fc=Fairchild, GI=General Instruments, Hi=Hitachi, Mos=Mostek, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Sig=Signetics, Sol=Solitron, St=Studer, TI=Texas Instruments, Ok=Oki				
1.820.722.20	CODE DELAY UNIT *ESE*	VF	30/01/2000	
1.820.722.20	CODE DELAY UNIT *ESE*	ZB	91/05/2401	
1.820.722.21	CODE DELAY UNIT	PG	91/12/1821	

DISTRIBUTION BOARD 1.820.794.81



1.820.794-11

Ad ..POS.. ..REF.No... DESCRIPTION.....MANUFACTURER

C.....1	59.06.0474	470 nF	10%, 50V, PETP	
C.....2	59.06.0474	470 nF	10%, 50V, PETP	
C.....3	59.06.0474	470 nF	10%, 50V, PETP	
C.....4	59.06.0104	100 nF	10%, 50V, PETP	
J.....1	54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....2	54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....3	54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....4	54.01.0290	10 cont.	CIS, AMP Nr. 163.680-9	
J.....5	54.01.0215	12 cont.	CIS, AMP Nr. 1-163.680-1	
J.....6	54.01.0215	12 cont.	CIS, AMP Nr. 1-163.680-1	
P.....1	54.14.2003	26 cont.	see note 1	
P.....2	54.14.2003	26 cont.	see note 1	
P.....3	54.14.2002	16 cont.	see note 2	
P.....4	54.14.2002	16 cont.	see note 2	
P.....5	54.14.2002	16 cont.	see note 2	
P.....6	54.14.2002	16 cont.	see note 2	
P.....7	54.14.2002	16 cont.	see note 2	
R.....1	57.11.3100	10 Ohm	10%, 0.25W	
R.....2	57.11.3100	10 Ohm	10%, 0.25W	
R.....3	57.11.3100	10 Ohm	10%, 0.25W	
R.....4	57.11.3100	10 Ohm	10%, 0.25W	
R.....5	57.11.3100	10 Ohm	10%, 0.25W	
R.....6	57.11.3100	10 Ohm	10%, 0.25W	
R.....7	57.11.3100	10 Ohm	10%, 0.25W	
R.....8	57.11.3100	10 Ohm	10%, 0.25W	
TP....1	29.21.6002		Testpoint	

PETP = Polyester

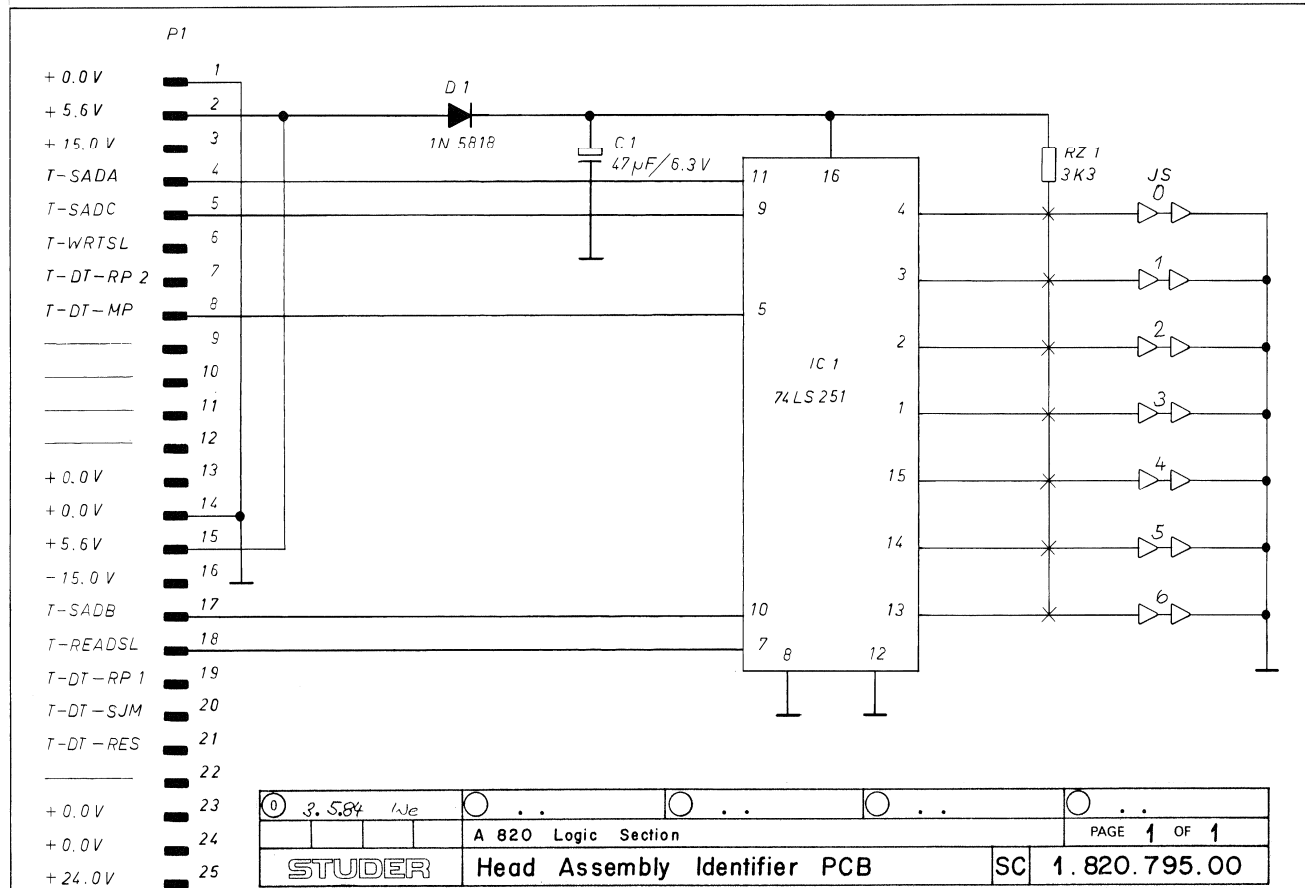
Note 1 - Yamaichi Nr. FAP-26-08//4, Burndy Nr. BPH 9 B 26 800 GS

Note 2 - Yamaichi Nr. FAP-16-08//4, Burndy Nr. BPH 9 B 16 800 GS

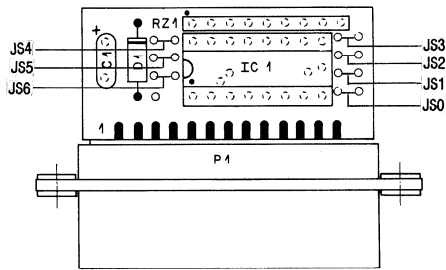
1.820.794.81 DISTRIBUTION BOARD

GP 91/10/1100

HEAD ASSEMBLY IDENTIFIER BOARD 1.820.795.00



①	3, 5, 8, 4	1/2	..	..	..	..
A 820 Logic Section					PAGE 1 OF 1	
STUDER			Head Assembly Identifier PCB		SC	1.820.795.00

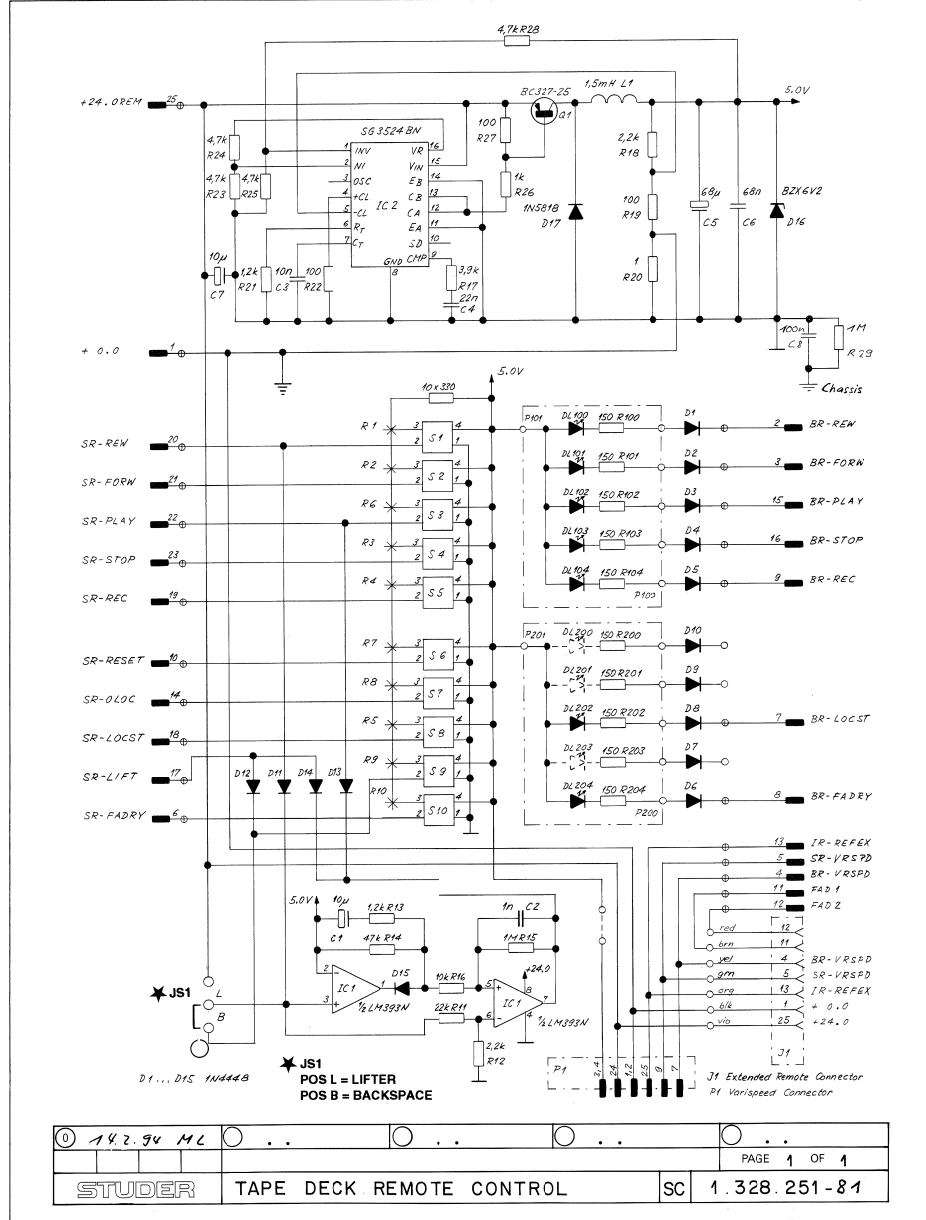


FOR VERSION:	JUMPERS INTERRUPTED (X):					
	JS0	JS1	JS2	JS3	JS4	JS5 JS6
A820-1, A820-1 VU	X					
A820-0.75		X				
A820-0.75 VU	X	X				
A820-2 F	X	X	X			
A820-2, A820-2 VU		X	X			
A820-2/2 VU			X			
A820-2 TC, A820-2 TC VU	X		X			
A820-2/2-1/2" VU	X	X		X		
A820-2/2-1/2" TC VU			X	X		

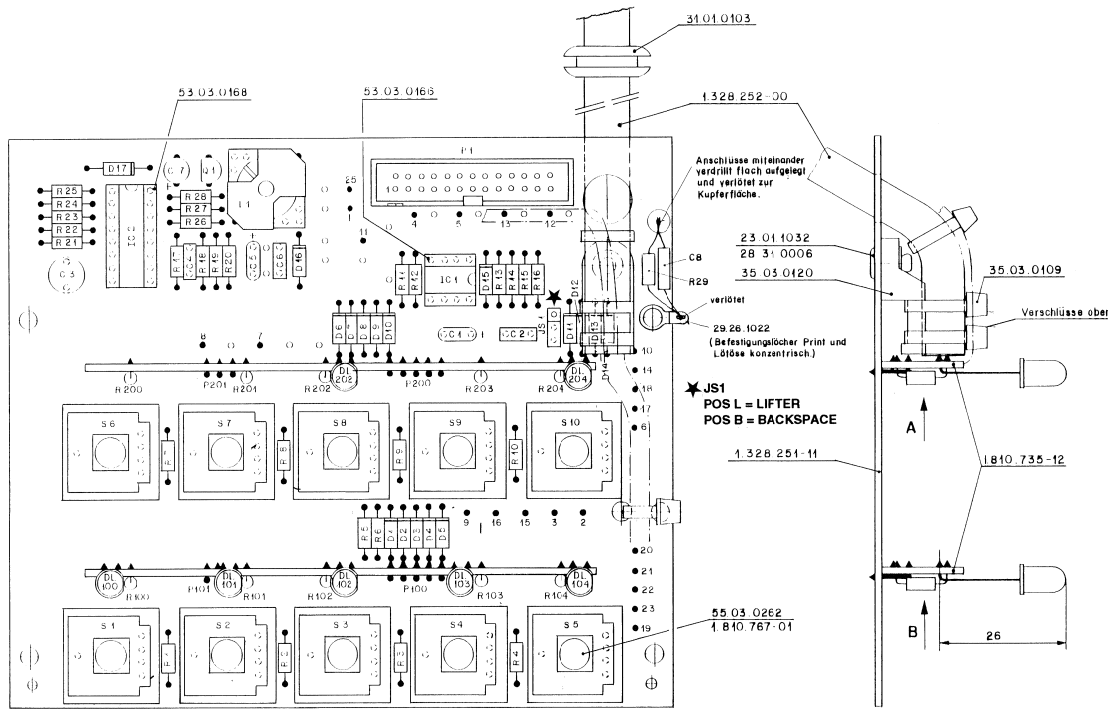
Ad	..POS..	..REF.No...	DESCRIPTION.....	MANUFACTURER
IC....1	50.06.0251		SN 74 LS 251 N	TI
D.....1	50.04.0512	1N 5818	1N 5819,	Mot
C.....1	59.26.0470	47 uF	20%, 6.3V , Sa1	Ph
RZ....1	57.88.4332	8 *3.3K	5%, SINGLE LINE	
P.....1	54.13.1003	D-TYPE	25 POL. LOET	ITT,TRW

Sa1=Solid aluminium
 Manufacturer: ITT=Intermetall, Mot=Motorola, Ph=Philips, St=Studer, TI=Texas Instrument, TRW=TRW
 1.820.795.00 HEAD ASSY IDENTIFIER BOARD WE 84/05/0300

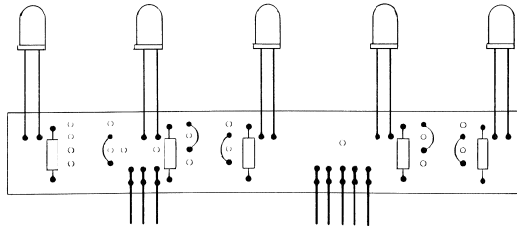
TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250.81
 - Tape Deck Remote Control PCB 1.328.251.81



TAPE DECK REMOTE CONTROL CABINET (PARALLEL) 1.328.250.81
 - Tape Deck Remote Control PCB 1.328.251.81



★ JS1
 POS L = LIFTER
 POS B = BACKSPACE



Ansicht A + B
 A nur 2 DL und 2 Drahtbrücken bestückt.

26.1.94	10	10	10	10
10	10	10	10	10

STUDER
 REGEREDROFF
 ZÜRICH

TAPE DECK REMOTE CONTROL BOARD ESE

1.328.251-81

Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
DL..201			not used	
DL..202	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
DL..203		not used		
DL..204	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
IC....1	50.05.0283	LM933N		NS,Tho,TT
IC....2	50.05.0279	SG3524BN		SG
JS....1			See note 1	
L.....1	1.022.197.00		1.5 mH	St
P.....1	54.14.2003	26 cont.	See note 2	
P...100	54.01.0269	5 cont.	AMP Nr. 163.740-3	
P...101	54.01.0227	3 Cont.	AMP Nr. 163.740-1	
P...200	54.01.0269	5 cont.	AMP Nr. 163.740-3	
P...201	54.01.0227	3 cont.	AMP Nr. 163.740-1	
Q.....1	50.03.0351	BC327-25		ITT,Ph,Sie
R....1	57.11.3331	330 Ohm		
R....2	57.11.3331	330 Ohm		
R....3	57.11.3331	330 Ohm		
R....4	57.11.3331	330 Ohm		
R....5	57.11.3331	330 Ohm		
R....6	57.11.3331	330 Ohm		
R....7	57.11.3331	330 Ohm		
R....8	57.11.3331	330 Ohm		
R....9	57.11.3331	330 Ohm		
R...10	57.11.3331	330 Ohm		
R...11	57.11.3223	22 kOhm		
R...12	57.11.3222	2.2 kOhm		
R...13	57.11.3122	1.2 kOhm		
R...14	57.11.3473	47 kOhm		
R...15	57.11.3105	1 MOhm		
R...16	57.11.3103	10 kOhm		
R...17	57.11.3392	3.9 kOhm		
R...18	57.11.3222	2.2 kOhm		
R...19	57.11.3103	100 Ohm		
R...20	57.11.3109	1 Ohm		
R...21	57.11.3122	1.2 kOhm		
R...22	57.11.3101	100 Ohm		
R...23	57.11.3472	4.7 kOhm		
R...24	57.11.3472	4.7 kOhm		
R...25	57.11.3472	4.7 kOhm		
R...26	57.11.3102	1 kOhm		
R...27	57.11.3101	100 Ohm		
R...28	57.11.3472	4.7 kOhm		
R...29	57.11.3105	1 MOhm		
R...100	57.11.3151	150 Ohm		
R...101	57.11.3151	150 Ohm		
R...102	57.11.3151	150 Ohm		
R...103	57.11.3151	150 Ohm		
R...104	57.11.3151	150 Ohm		
R...200	57.11.3151	150 Ohm		
R...201	57.11.3151	150 Ohm		
R...202	57.11.3151	150 Ohm		
R...203	57.11.3151	150 Ohm		
R...204	57.11.3151	150 Ohm		

Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
----	-----	--------	-------------	--------------

C....1	59.26.2100	10 uF	20%, 16V, Sa1	Ph
C....2	59.06.5102	1 nF	5%, PETP	
C....3	59.05.1103	10 nF	1%, Pp	
C....4	59.06.0223	22 nF	10%, PETP	
C....5	59.26.0680	68 uF	20%, 6.3V, Sa1	Ph
C....6	59.06.0680	68 nF	20%, PETP	
C....7	59.22.6100	10 uF	-10%, 40V, EI	
C....8	59.03.2104	100 nF	35V/us	

D....1	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....2	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....3	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....4	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....5	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....6	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....7	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....8	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D....9	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...10	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	

D...11	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...12	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...13	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...14	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...15	50.04.0125	IN4448	Fc,ITT,Ph,Ses,Tf	
D...16	50.04.1118	6.2 V Z	BZX83C 6.2, BZX55C 6.2, ZPD 6.2	ITT,Ses
D...17	50.04.0512	IN5818	IN5819	Mot

DL..100	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
DL..101	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
DL..102	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
DL..103	50.04.2112	MH5353	CM4-584B, HLMP-3401	CM,GI,HP
DL..104	50.04.2111	MH5353	CM4-284B, HLMP-3301	CM,GI,HP
DL..200		not used		

S....1 See note 3
 S....2 See note 3
 S....3 See note 3
 S....4 See note 3
 S....5 See note 3
 S....6 See note 3
 S....7 See note 3
 S....8 See note 3
 S....9 See note 3
 S...10 See note 3

Note 1 - Contact pins: Studer 54.01.0020, Berg 75 160-102-36
 Bridge: Studer 54.01.0021, Philips 2422 024 88003

Note 2 - Connector: Yamachi FAP-26-08/4, Burndy BPH 9 B 26 800

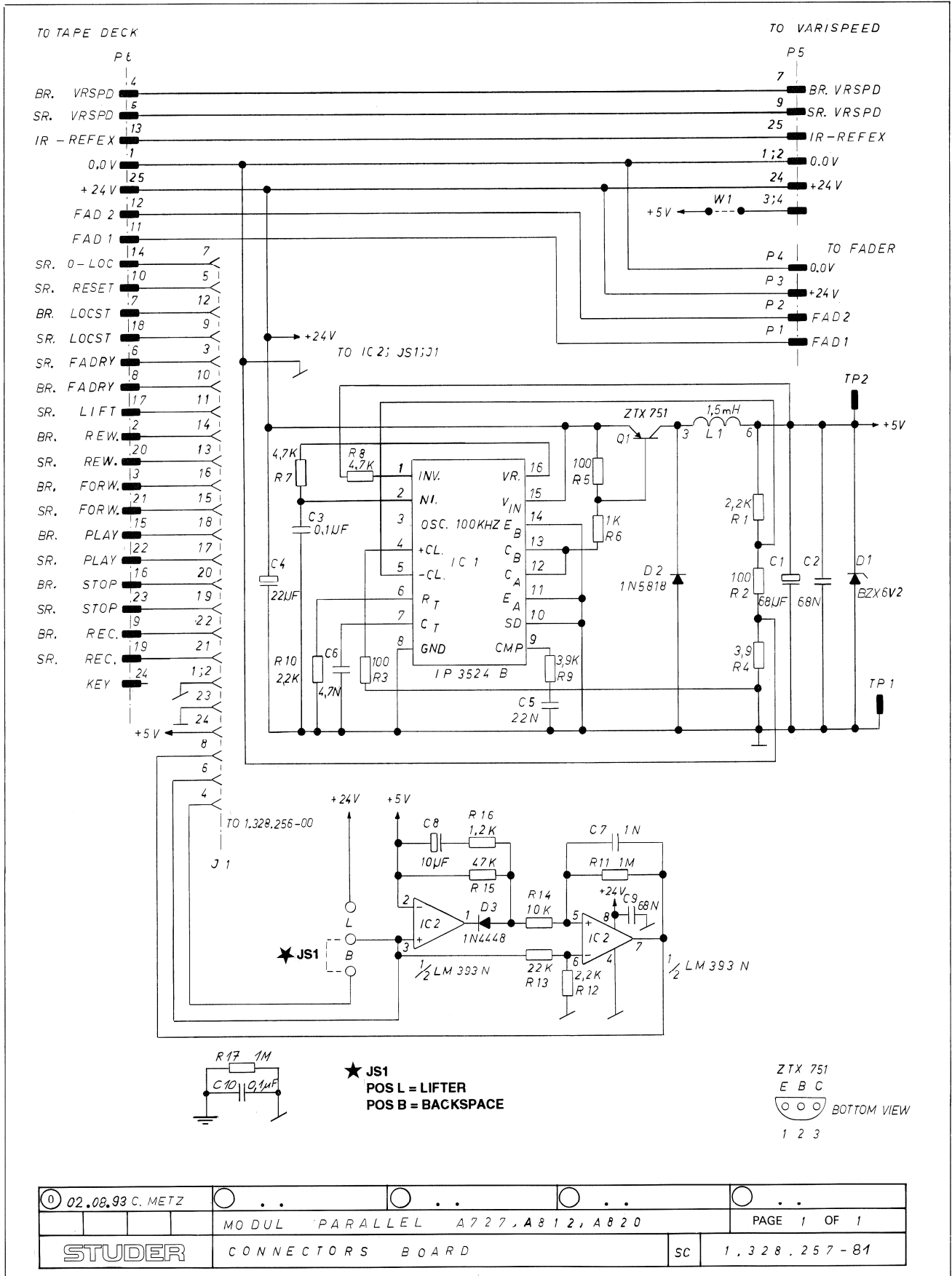
Note 3 - Switch: Studer 55.03.0261, Rafi 3.13001.110
 Extender: Studer 55.03.0262, Rafi 5.55101.490

Ce=Ceramic, El=Electrolytic, Sa=Solid aluminium,
 PETP=Polyesterfilm, Pp=Polypropylen.

MANUFACTURER: Ch=Chicago Miniatur, Fc=Fairchild,
 Gi=General Instruments, Hp=Hewlett Packard,
 Itt=Interelectra, Mot=Motorola,
 N=National Semiconductors, Ph=Philips, Ses=Sesocsem,
 Sg=Silicon General, St=Siemens, St=Studer, Tho=Thomson,
 Tt=Texas Instruments, Tf=Telefunken.

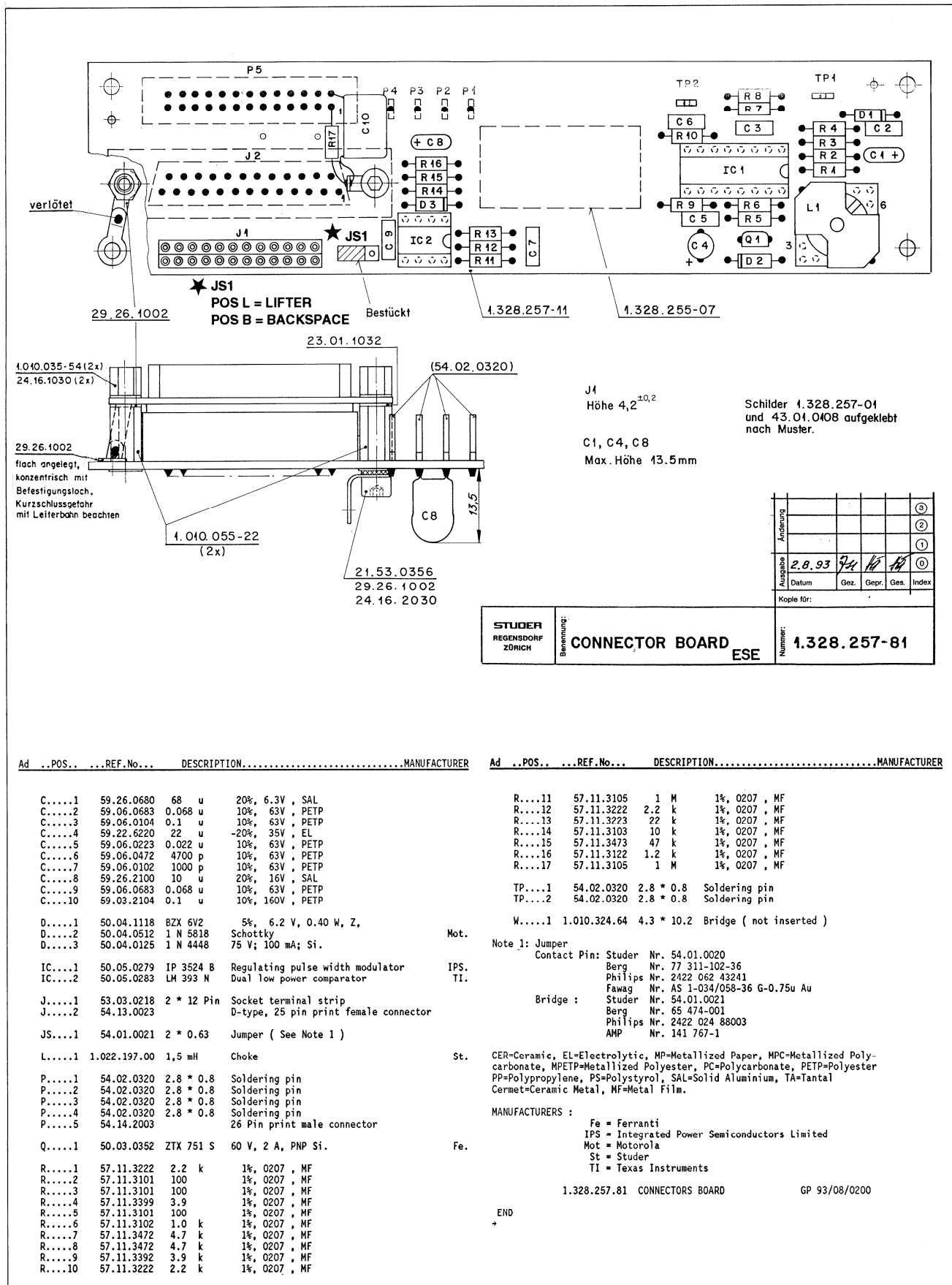
1.328.251.81 TAPE DECK REMOTE CONTROL ML 94/01/2600

TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.81
 - Connector PCB 1.328.257.81



02.08.93 C. METZ	MODUL PARALLEL A727, A812, A820	PAGE 1 OF 1
STUDER	CONNECTORS BOARD	SC 1.328.257-81

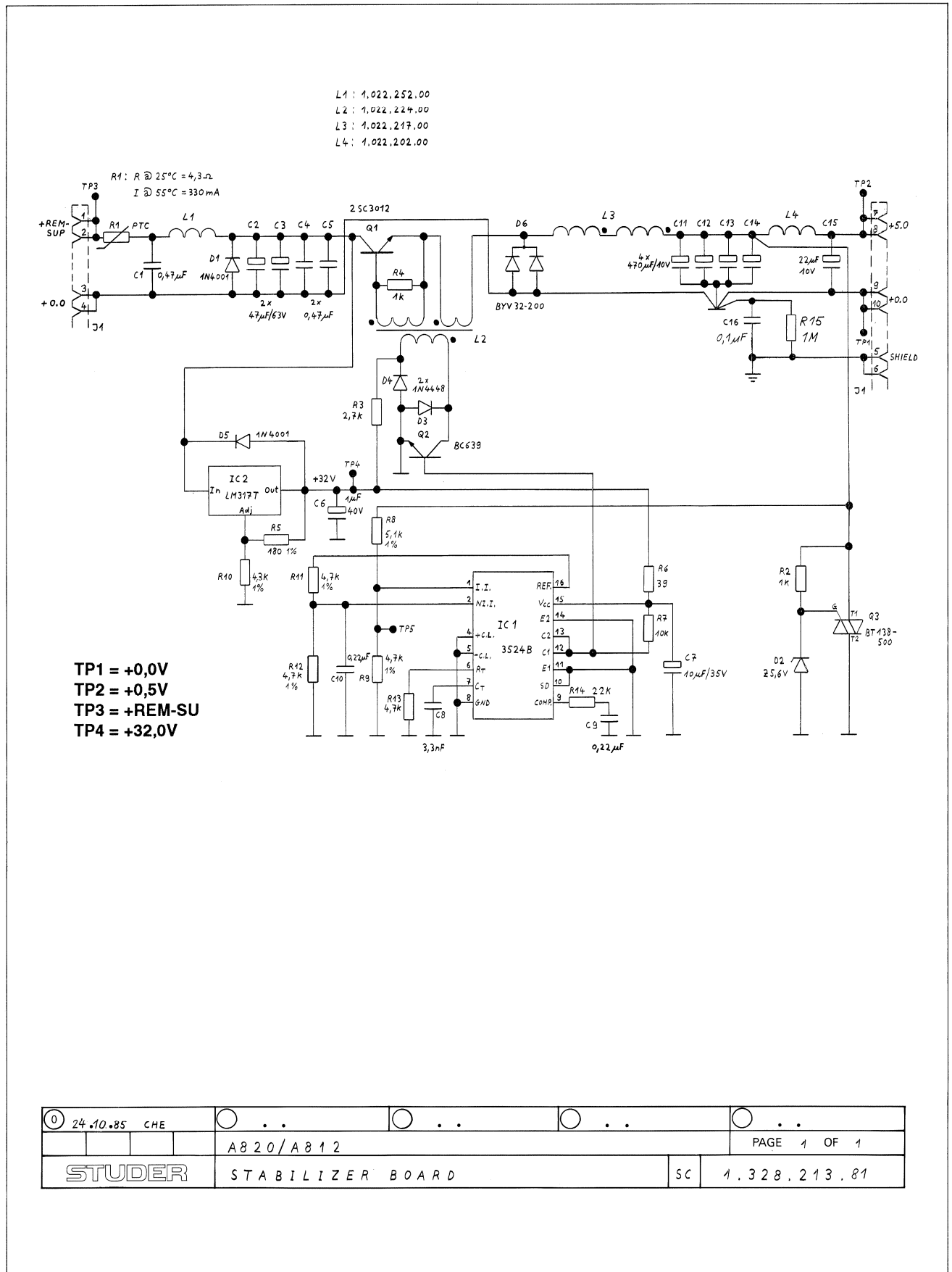
TAPE DECK REMOTE CONTROL MODULE (PARALLEL) 1.328.255.81
 - Connector PCB 1.328.257.81



Ad	..POS..	..REF.No...	DESCRIPTION	MANUFACTURER
C.....1	59.26.0680	68 u	20%, 6.3V, SAL	
C.....2	59.06.0683	0.068 u	10%, 63V, PETP	
C.....3	59.06.0104	0.1 u	10%, 63V, PETP	
C.....4	59.22.6220	22 u	-20%, 35V, EL	
C.....5	59.06.0223	0.022 u	10%, 63V, PETP	
C.....6	59.06.0472	4700 p	10%, 63V, PETP	
C.....7	59.06.0102	1000 p	10%, 63V, PETP	
C.....8	59.26.2100	10 u	20%, 16V, SAL	
C.....9	59.06.0683	0.068 u	10%, 63V, PETP	
C.....10	59.03.2104	0.1 u	10%, 160V, PETP	
D.....1	50.04.1118	BZX 6V2	5%, 6.2 V, 0.40 W, Z,	
D.....2	50.04.0512	1 N 5818	Schottky	Mot.
D.....3	50.04.0125	1 N 4448	75 V; 100 mA; Si.	
IC.....1	50.05.0279	IP 3524 B	Regulating pulse width modulator	IPS.
IC.....2	50.05.0283	LH 393 N	Dual low power comparator	TI.
J.....1	53.03.0218	2 * 12 Pin	Socket terminal strip	
J.....2	54.13.0023		D-type, 25 pin print female connector	
JS.....1	54.01.0021	2 * 0.63	Jumper (See Note 1)	
L.....1	1.022.197.00	1,5 mH	Choke	St.
P.....1	54.02.0320	2.8 * 0.8	Soldering pin	
P.....2	54.02.0320	2.8 * 0.8	Soldering pin	
P.....3	54.02.0320	2.8 * 0.8	Soldering pin	
P.....4	54.02.0320	2.8 * 0.8	Soldering pin	
P.....5	54.14.2003		26 Pin print male connector	
Q.....1	50.03.0352	ZTX 751 S	60 V, 2 A, PNP Si.	Fe.
R.....1	57.11.3222	2.2 k	1%, 0207, MF	
R.....2	57.11.3101	100	1%, 0207, MF	
R.....3	57.11.3101	100	1%, 0207, MF	
R.....4	57.11.3399	3.9	1%, 0207, MF	
R.....5	57.11.3101	100	1%, 0207, MF	
R.....6	57.11.3102	1.0 k	1%, 0207, MF	
R.....7	57.11.3472	4.7 k	1%, 0207, MF	
R.....8	57.11.3472	4.7 k	1%, 0207, MF	
R.....9	57.11.3392	3.9 k	1%, 0207, MF	
R.....10	57.11.3222	2.2 k	1%, 0207, MF	

Ad	..POS..	..REF.No...	DESCRIPTION	MANUFACTURER
R.....11	57.11.3105	1 M	1%, 0207, MF	
R.....12	57.11.3222	2.2 k	1%, 0207, MF	
R.....13	57.11.3223	22 k	1%, 0207, MF	
R.....14	57.11.3103	10 k	1%, 0207, MF	
R.....15	57.11.3473	47 k	1%, 0207, MF	
R.....16	57.11.3122	1.2 k	1%, 0207, MF	
R.....17	57.11.3105	1 M	1%, 0207, MF	
TP....1	54.02.0320	2.8 * 0.8	Soldering pin	
TP....2	54.02.0320	2.8 * 0.8	Soldering pin	
W.....1	1.010.324.64	4.3 * 10.2	Bridge (not inserted)	
Note 1: Jumper				
Contact Pin: Studer Nr. 54.01.0020				
Berg Nr. 77 311-102-36				
Philips Nr. 2422 062 43241				
Fawag Nr. AS 1-034/058-36 G-0.75u Au				
Studer Nr. 54.01.0021				
Berg Nr. 65 474-001				
Philips Nr. 2422 024 88003				
AMP Nr. 141 767-1				
MANUFACTURERS :				
Fe = Ferranti				
IPS = Integrated Power Semiconductors Limited				
Mot = Motorola				
St = Studer				
TI = Texas Instruments				
1.328.257.81 CONNECTORS BOARD GP 93/08/0200				
END				

REMOTE TIMER / LAP MODE DISPLAY 1.328.270.81
 REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - Stabilizer PCB 1.328.213.81



① 24.10.85 CHE	○ . .	○ . .	○ . .	○ . .
	A820/A812			PAGE 1 OF 1
STUDER	STABILIZER BOARD		SC	1.328.213.81

REMOTE TIMER / LAP MODE DISPLAY 1.328.270.81
REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - Stabilizer PCB 1.328.213.81

TP1 = +0,0V
TP2 = +0,5V
TP3 = +REM-SU
TP4 = +32,0V

53.03.0168

53.03.0218 (10x)

Montage nach BV 632

24.10.91	Gez.	Gepr.	Gez.	Index
Kopie für:				
STUDER REGENSDORF ZÜRICH				Benennung: STABILIZER BOARD ESE
Nummer: 1.328.213-81				

Ad	..POS..	..REF.No..	DESCRIPTION	MANUFACTURER
C....1	59.06.0474	0.47 uF	10%, PETP	
C....2	59.22.8470	47 uF	20%, 63V, EL	
C....3	59.22.8470	47 uF	20%, 63V, EL	
C....4	59.06.0474	0.47 uF	10%, PETP	
C....5	59.06.0474	0.47 uF	10%, PETP	
C....6	59.26.9109	1 uF	20%, 40V, SAL	
C....7	59.22.6100	10 uF	-20%, 35V, EL	
C....8	59.06.0332	3300 pF	10%, PETP	
C....9	59.06.0224	0.22 uF	10%, PETP	
C....10	59.06.0224	0.22 uF	10%, PETP	
C....11	59.22.3471	470 uF	-20%, 10V, EL	
C....12	59.22.3471	470 uF	-20%, 10V, EL	
C....13	59.22.3471	470 uF	-20%, 10V, EL	
C....14	59.22.3471	470 uF	-20%, 10V, EL	
C....15	59.26.1220	22 uF	20%, 10V, SAL	
C....16	59.06.0104	0.1 uF	10%, 50V, PETP	
D....1	50.04.0122	1N 4001		Mot
D....2	50.04.1108	5.6 V	BZX83 C 5V6, BZX55 C 5V6, ZPD 5.6	Ses,ITT
D....3	50.04.0125	1N 4448		Fc,ITT,Ph,Ses
D....4	50.04.0125	1N 4448		Fc,ITT,Ph,Ses
D....5	50.04.0122	1N 4001		Mot
D....6	50.04.0517	BYV32-200		Mot,Ph
IC....1	50.05.0279	SG 3524BN		SG
IC....2	50.10.0104	LM 317T	LM 317 SP	Tho,Mot,NS,TI
J....1	00.00.0000		see note 1	
L....1	1.022.252.00	0.32 mH	Filter Coil	St
L....2	1.022.224.00		Power Supply Transformer	St
L....3	1.022.217.00	46 uH	HF-Coil, 5A	St
L....4	1.022.202.00	16.9 mH	Filter Coil	St
Q....1	50.03.0517	2 SC 3012	NPN	NEC
Q....2	50.03.0551	BC 639	NPN	Mot,Ph
Q....3	50.99.0106	T 2800	400V, 8A, Triac	Ph
R....1	57.92.1331	PTC	see note 2	Ph
R....2	57.11.3102	1 kOhm	1%	
R....3	57.11.3272	2.7 kOhm	1%	
R....4	57.11.3102	1 kOhm	1%	
R....5	57.11.3181	180 Ohm	1%	
R....6	57.11.3390	39 Ohm	1%	
R....7	57.11.3103	10 kOhm	1%	
R....8	57.11.3512	5.1 kOhm	1%	
R....9	57.11.3472	4.7 kOhm	1%	
R....10	57.11.3432	4.3 kOhm	1%	
R....11	57.11.3472	4.7 kOhm	1%	
R....12	57.11.3472	4.7 kOhm	1%	
R....13	57.11.3472	4.7 kOhm	1%	
R....14	57.11.3223	22 kOhm	1%	
R....15	57.11.3105	1 MOhm	1%	
TP....1	54.02.0320		Test Point	
TP....2	54.02.0320		Test Point	
TP....3	54.02.0320		Test Point	
TP....4	54.02.0320		Test Point	
TP....5	54.02.0320		Test Point	

EL=Electrolytic, SAL=Solid Aluminium, PETP=Polyester

MANUFACTURERS: Fc=Fairchild, ITT=Intermetall, Mot=Motorola, NEC=Nippon Electric Corp., NS=National Semiconductors, Ph=Philips, Ses=Sesocosem, SG=Silicon General, St=Studer, Tho=Thomson, TI=Texas Instruments

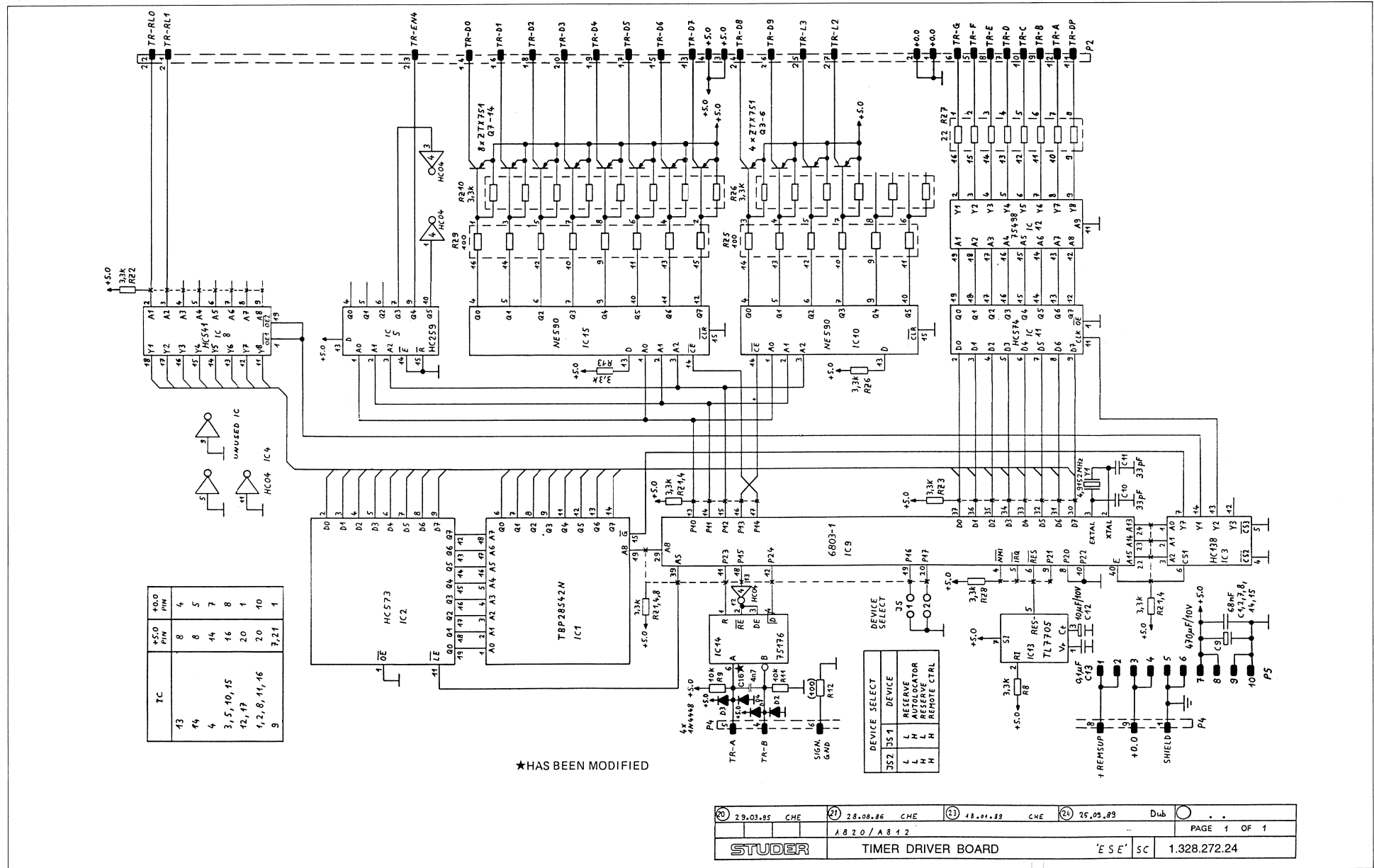
note 1 - Connector: 10 pieces Studer Nr. 53.03.0218

note 2 - PTC Thermistor: R @ 25 degree Celsius = 4.7 Ohm
 I @ 55 degree Celsius = 330 mA
 Philips Nr.2322 663 13311

1.328.213.81 STABILIZER BOARD 8091/10/2400

REMOTE TIMER / LAP MODE DISPLAY 1.328.270.81

- Timer Driver PCB 1.328.272.24



IC	+5.0 PIN	+5.0 PIN
43	8	4
44	8	5
4	44	7
3, 5, 10, 15	16	8
42, 47	20	1
1, 2, 8, 11, 16	20	10
9	7, 21	1

★ HAS BEEN MODIFIED

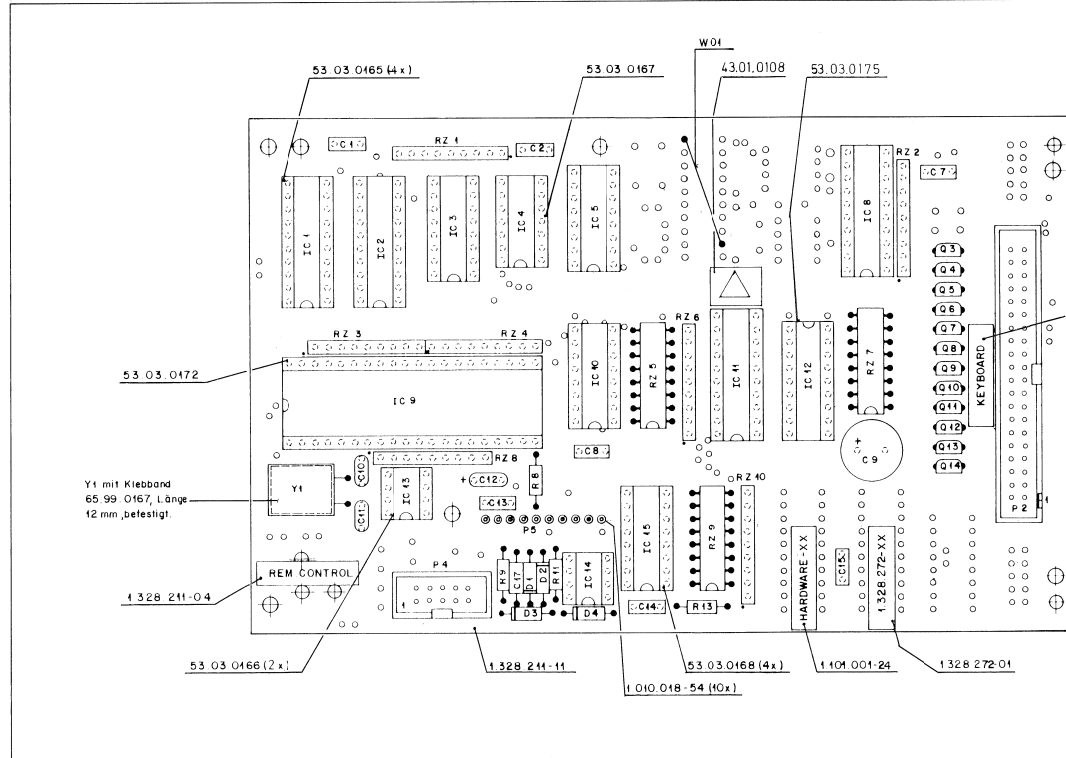
DEVICE SELECT	DEVICE
J52	J51
L	H
L	H
L	H
L	H

20	2.9.03.85	CHE	21	2.8.08.86	CHE	22	4.8.01.89	CHE	23	25.05.89	Dub	
A 8 2 0 / A 8 1 2												
STUDER												
TIMER DRIVER BOARD												
PAGE 1 OF 1												
'E S E' SC 1.328.272.24												



REMOTE TIMER / LAP MODE DISPLAY 1.328.270.81

- Timer Driver PCB 1.328.272.24



STUDER
REGENSDORF
ZÜRICH

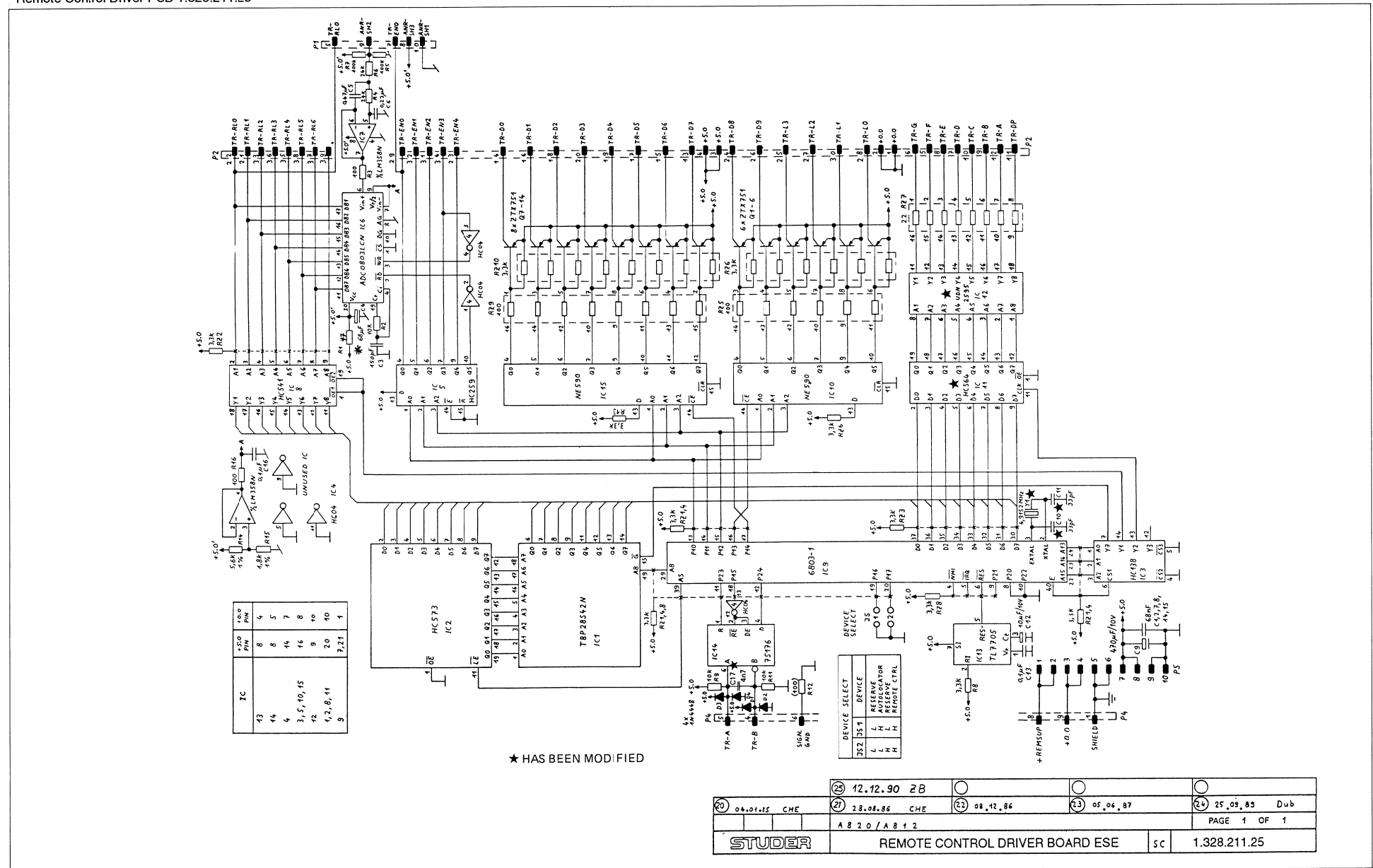
Benennung
**TIMER
DRIVER BOARD ESE**

Nummer
1.328.272-24

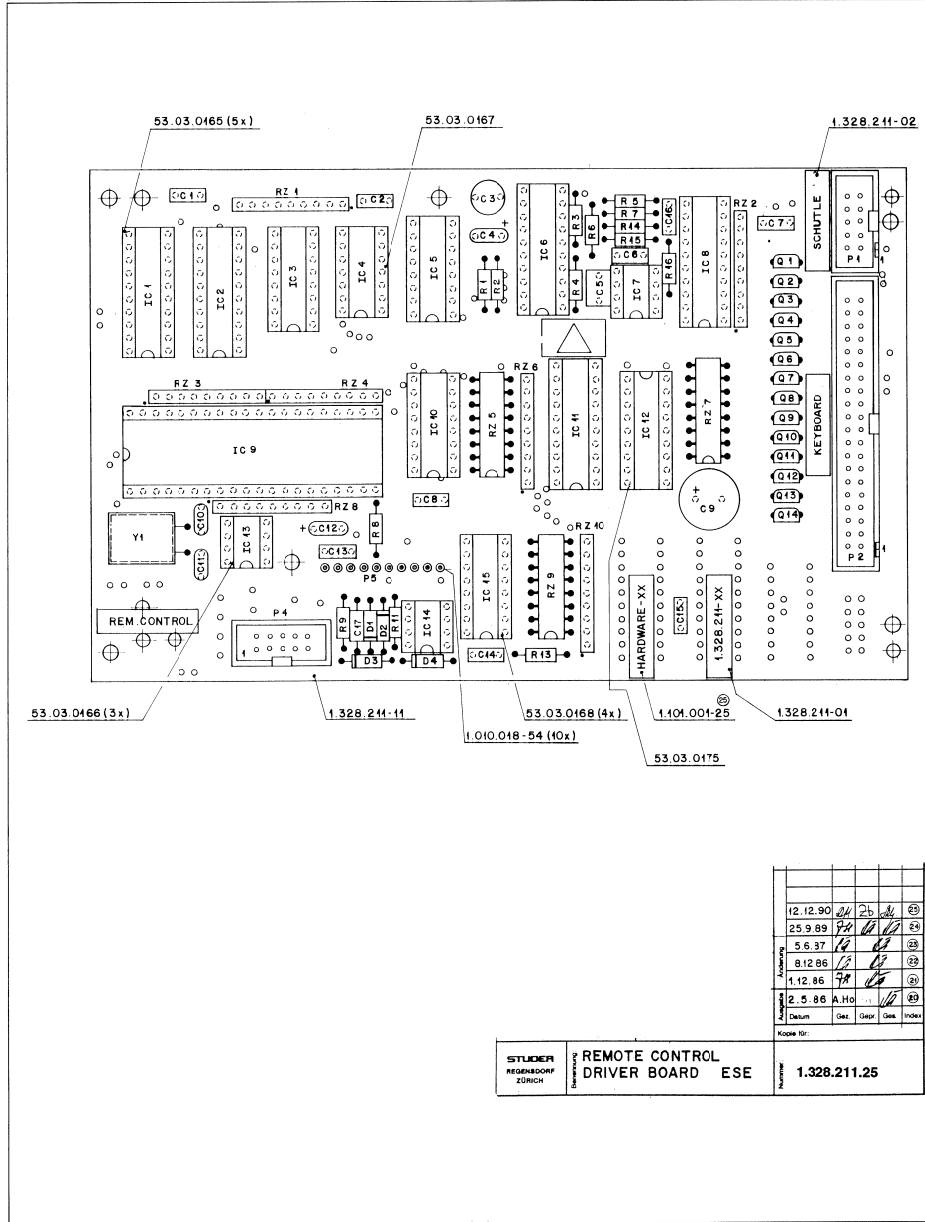
Abmessen					
Abbohren					
Abfräsen					
Abkanten					
Abkühlen					
Abkleben					
Abmessen					
Abbohren					
Abfräsen					
Abkanten					
Abkühlen					
Abkleben					

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
Q.....3	50.03.0352	ZTX 751 S		Fe
Q.....4	50.03.0352	ZTX 751 S		Fe
Q.....5	50.03.0352	ZTX 751 S		Fe
Q.....6	50.03.0352	ZTX 751 S		Fe
Q.....7	50.03.0352	ZTX 751 S		Fe
Q.....8	50.03.0352	ZTX 751 S		Fe
Q.....9	50.03.0352	ZTX 751 S		Fe
Q.....10	50.03.0352	ZTX 751 S		Fe
Q.....11	50.03.0352	ZTX 751 S		Fe
Q.....12	50.03.0352	ZTX 751 S		Fe
Q.....13	50.03.0352	ZTX 751 S		Fe
Q.....14	50.03.0352	ZTX 751 S		Fe
R.....8	57.11.4332	3.3 kOhm 2%		
R.....9	57.11.4103	10 kOhm 2%		
R.....10	57.11.4102	1 kOhm 2%		
24 R.....10	00.00.0000	not used	replaced by C16	
R.....11	57.11.4103	10 kOhm 2%		
R.....12	00.00.0000	not used		
R.....13	57.11.4332	3.3 kOhm 2%		
RZ....1	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....2	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....3	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....4	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....5	57.88.3101	Network, 8 * 100 Ohm, 5%, DIL 16		
RZ....6	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....7	57.88.3220	Network, 8 * 22 Ohm, 5%, DIL 16		
RZ....8	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
RZ....9	57.88.3101	Network, 8 * 100 Ohm, 5%, DIL 16		
RZ....10	57.88.4332	Network, 8 * 3.3 kOhm, 2%, single line		
23 W.....1	1.010.108.64	Wrap wire, D = 0.255, L = 80 MM.		St.
Y.....1	89.01.0560	4.9152 Mhz +/-100 ppm, Nymph Nr. TD 18/WMP 049		
Index (01) : Wrsp Wire #1.010.108.64 introduced at 18.01.89.				
(20) 23.04.85 : PCB lay-out -11				
(21) 01.12.86 : IC 12 (SN 75498 N) delivered for spare purpose only. New devices IC 11 and IC 12.				
(22) 08.12.86 : Extended Autolocator Key Board.				
(23) 05.06.87 : Software 29/87				
(23-1) 15.01.89 : Wire bridge W01				
(24) 25.03.89 : Improved noise suppression on differential line.				
Note 2 - Connector: 10 Contacts Studer Nr. 54.14.2001 Yanachi Nr. FAP-10-08/4 Burndy Nr. BPH 7 B 10 800 GS				
Note 3 - Connector: 40 Contacts Studer Nr. 54.14.2004 Yanachi Nr. FAP-40-08/4 Burndy Nr. BPH 9 B 40 800 GS				
Note 4 - Connector: 10 Picas Studer Nr. 1.010.018.54				
Cer=Ceramic, El=Electrolytic, PETP=Polyester film, Sal=Solid aluminium.				
MANUFACTURERS: Ic=Fairchild, Fe=Ferranti, H=Hitachi, Is=Intersil, IT=Intelmetall, Mo=Motorola, NS=National Semiconductors Ph=Phillips, RCA=RCA Corporation, Ses=Secoson, SCS=SGS/Ates, Sig=Signetics, Sp=Sprague, St=Studer, Tf=Telefunken, Ti=Texas Instruments, To=Toshiba.				
Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.06.0683	68 nF	10%, 63V, PETP	
C.....2	59.06.0683	68 nF	10%, 63V, PETP	1.328.272.00
C.....7	59.06.0683	68 nF	10%, 63V, PETP	1.328.272.00
C.....8	59.06.0683	68 nF	10%, 63V, PETP	SU 85/04/2320
C.....9	59.22.3471	470 uF	-20%, 10V, El	BD 86/12/0121
C.....10	59.34.2330	33 pF	5%, N150, Cer	BD 86/12/0822
C.....11	59.34.2330	33 pF	5%, N150, Cer	1.328.272.00
C.....12	59.26.1100	10 uF	20%, 10V, Sa1	1.328.272.00
C.....13	59.06.0104	100 nF	10%, 63V, PETP	CM 89/01/1823
C.....14	59.06.0683	68 nF	10%, 63V, PETP	1.328.272.00
C.....15	59.06.0683	68 nF	10%, 63V, PETP	1.328.272.00
24 C.....16	59.03.2472	4.7 nF	10%, 63V, PETP	DUB89/09/2524
D.....1	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D.....2	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D.....3	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
D.....4	50.04.0125	1N 4448		Fc,ITT,Ph,Ses,Tf
23 IC.....1	1.328.999.22		Software 29/87 REM-CTR. DRIVER	St
IC.....2	50.17.1573	74 HC 573	.. 74 HC 573	Mot,NS,Ph,RCA,SGS,TI,To
IC.....3	50.17.1138	74 HC 138	.. 74 HC 138	Mot,NS,Ph,RCA,SGS,TI,To
IC.....4	50.17.1034	74 HC 04	.. 74 HC 04	Mot,NS,Ph,RCA,TI,To
IC.....5	50.17.1259	74 HC 259	.. 74 HC 259	Mot,NS,Ph,RCA,SGS,TI,To
IC.....8	50.17.1541	74 HC 541	.. 74 HC 541	Mot,NS,Ph,RCA,SGS,TI,To
IC.....9	50.15.0107	MC 6803P-1		Hi,Not
IC.....10	50.15.0102	NE 590 N		Sig
21 IC.....11	50.17.1564	74 HC 564	.. 74 HC 564	Mot,NS,Ph,RCA,TI
21 IC.....12	50.15.0118	UDN-2595A		Sp
IC.....13	50.11.0122	TL7705ACP		NS
IC.....14	50.15.0115	SN 75176AP		TI
IC.....15	50.15.0102	NE 590 N		Sig
P.....2			see note 3	
P.....4			see note 2	
P.....5			see note 4	

REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - (Stabilizer PCB 1.328.213.81: See under 1.328.270.81)
 - Remote Control Driver PCB 1.328.211.25



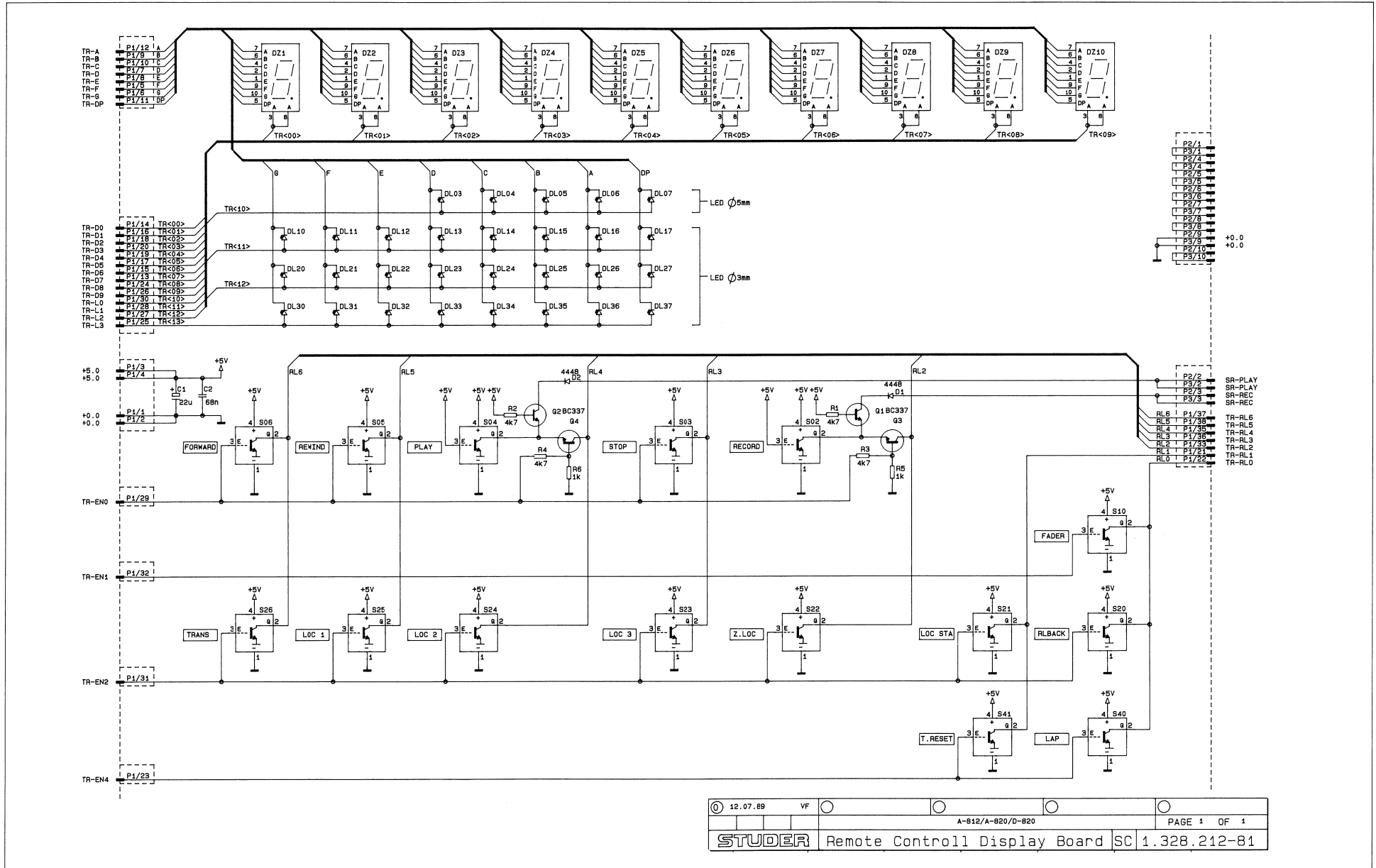
REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - (Stabilizer PCB 1.328.213.81: See under 1.328.270.81)
 - Remote Control Driver PCB 1.328.211.25



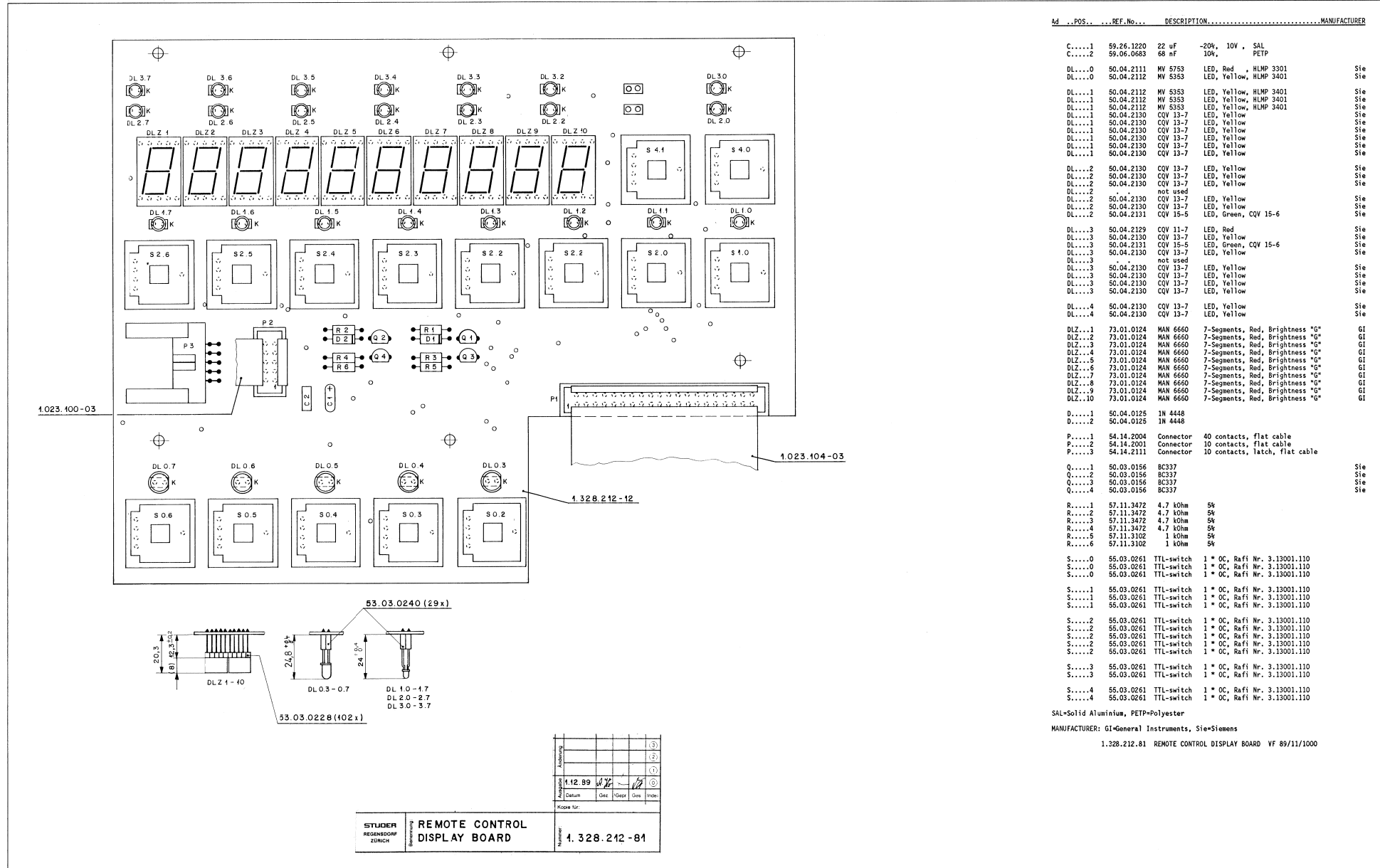
Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
20	C....1	59.06.0683	68 nF	10%, 63V, PETP
20	C....2	59.06.0683	68 nF	10%, 63V, PETP
20	C....3	59.05.2151	150 pF	2.5%, 450V, PP
20	C....4	59.26.0680	68 uF	20%, 4.5V, Sal
20	C....5	59.06.0474	470 nF	10%, 63V, PETP
20	C....6	59.06.0224	220 nF	10%, 63V, PETP
20	C....7	59.06.0683	68 nF	10%, 63V, PETP
20	C....8	59.06.0683	68 nF	10%, 63V, PETP
20	C....9	59.22.2471	470 uF	^{20%}, 10V, El
20	C....10	59.34.2220	22 pF	5%, 1150, Cer
21	C....10	59.34.2330	33 pF	5%, 1150, Cer
20	C....11	59.34.2220	22 pF	5%, 1150, Cer
21	C....11	59.34.2330	33 pF	5%, 1150, Cer
20	C....12	59.26.1100	10 uF	20%, 10V, Sal
20	C....13	59.06.0104	100 nF	10%, 63V, PETP
20	C....14	59.06.0683	68 nF	10%, 63V, PETP
20	C....15	59.06.0683	68 nF	10%, 63V, PETP
20	C....16	59.06.0104	100 nF	10%, 63V, PETP
24	C....17	59.03.2472	4.7 nF	10%, 63V, PETP
20	C....1	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
20	C....2	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
20	C....3	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
20	C....4	50.04.0125	1N 4448	Fc,ITT,Ph,Ses,Tf
20	IC....1	50.14.0120	TP28542N	TI
22	F....1	1.328.999.20	Software 13/85	St
22	IC....1	1.328.999.21	Software 50/86	St
22	IC....1	1.328.999.22	Software 29/87	St
20	IC....2	50.17.1573	74 HC 573	Mot,NS,Ph,RCA,SGS,TI,To
20	IC....3	50.17.1138	74 HC 138	.. 74 HC 138
20	IC....4	50.17.1004	74 HC 04	.. 74 HC 04
20	IC....5	50.17.1138	74 HC 239	Mot,NS,Ph,RCA,SGS,TI,To
20	IC....6	50.07.0029	ADC0803CN	Is,NS
20	IC....7	50.05.0286	LM 358 N	LM 358 N
20	IC....8	50.03.0583	74 HC 541	Mot,NS,Ph,RCA,SGS,TI,To
20	IC....9	50.16.0107	MC 6803P-1	HD 6803P-1
20	IC....10	50.15.0102	NE 590 N	NE 590 N
20	IC....11	50.17.1574	74 HC 574	.. 74 HC 574
21	IC....11	50.17.1564	74 HC 564	.. 74 HC 564
20	IC....12	50.15.0113	SN 75498 N	Mot,NS,Ph,RCA,TI
21	IC....12	50.15.0118	UDN-2595A	Sp
20	IC....13	50.11.0122	TL77054CP	TI
20	IC....14	50.15.0115	SN 751768P	NS, TI
20	IC....15	50.15.0102	NE 590 N	Sig
20	IC....16	..	not used	
20	IC....17	..	not used	
20	F....1	..	see note 2	
20	F....2	..	see note 3	
20	F....3	..	not used	
20	F....4	..	see note 2	
20	F....5	..	see note 4	
20	C....1	50.03.0382	ZTX 751 S	Fe
20	C....2	50.03.0382	ZTX 751 S	Fe
20	C....3	50.03.0382	ZTX 751 S	Fe
20	C....4	50.03.0382	ZTX 751 S	Fe
20	C....5	50.03.0382	ZTX 751 S	Fe
20	C....6	50.03.0382	ZTX 751 S	Fe
20	C....7	50.03.0382	ZTX 751 S	Fe
20	C....8	50.03.0382	ZTX 751 S	Fe
20	C....9	50.03.0382	ZTX 751 S	Fe
20	C....10	50.03.0382	ZTX 751 S	Fe
20	C....11	50.03.0382	ZTX 751 S	Fe
20	C....12	50.03.0382	ZTX 751 S	Fe
20	C....13	50.03.0382	ZTX 751 S	Fe
20	C....14	50.03.0382	ZTX 751 S	Fe
20	F....1	57.11.3100	10 Ohm	2%
25	F....1	57.11.3410	47 Ohm	2%
20	F....2	57.11.3103	10 kOhm	2%
20	F....3	57.11.3101	100 Ohm	2%
20	F....4	57.11.3243	24 kOhm	1%
20	F....5	57.11.3104	100 kOhm	2%
20	F....6	57.11.3243	24 kOhm	1%
20	F....7	57.11.3104	100 kOhm	2%
20	F....8	57.11.3332	3.3 kOhm	2%
20	F....9	57.11.3103	10 kOhm	2%
20	F....10	57.11.3102	1 kOhm	2%
24	F....10	00.00.0000	not used	replaced by C17
20	F....11	57.11.3103	10 kOhm	2%
20	F....12	..	not used	
20	F....13	57.11.3332	3.3 kOhm	2%
20	F....14	57.11.3562	5.6 kOhm	1%
20	F....15	57.11.3182	1.8 kOhm	1%
20	F....16	57.11.3101	100 Ohm	2%
20	FZ....1	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....2	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....3	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....4	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....5	57.88.3101	Network, 8 * 100 Ohm, 2%, DIL 16	
20	FZ....6	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....7	57.88.3220	Network, 8 * 22 Ohm, 2%, DIL 16	
20	FZ....8	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....9	57.88.3101	Network, 8 * 100 Ohm, 2%, DIL 16	
20	FZ....10	57.88.4332	Network, 8 * 3.3 kOhm, 5%, single line	
20	FZ....11	..	not used	
20	Y....1	89.01.0553	4.9152 MHz +100 ppm, Nymph Nr. TD 18/NMP 049	

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
21	Y....1	89.01.0560	HC-49/V 4.9152 MHz, +/-20 ppm	Quarz AG,ITT,Saronix
(20) 01.02.85 PCB lay-out -11.				
(21) 01.12.86 IC12-SN75498N delivered for spare purpose only, new devices IC11 and IC12, Y1, C10, C11 improved accuracy of quartz frequency.				
(22) 08.12.86 Extended Autolocator key Board.				
(23) 05.06.87 Software 29/87.				
(24) 25.09.89 Improved noise suppression on differential line.				
(25) 12.12.90 Ripple on AD-converter supply reduced.				
Note 2 - Connector, 10 Contacts				
			Studer Nr. 54.14.2001	
			Yamaichi Nr. FAP-10-08/4	
			Burndy Nr. BPH 7 B 10 800 GS	
Note 3 - Connector, 40 Contacts				
			Studer Nr. 54.14.2004	
			Yamaichi Nr. FAP-40-08/4	
			Burndy Nr. BPH 9 B 40 800 GS	
Note 4 - Connector: 10 Pieces				
			Studer Nr. 1.010.018.54	
Cer=Ceramic, El=Electrolytic, PETP=Polyester Film, PP=Polypropylen, Sal=Solid Aluminium.				
MANUFACTURERS: Fc=Fairchild, Fe=Ferranti, Hi=Hitachi, Is=Intersil, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, RCA=RCA Corporation, Ses=Secoscom, SGS=SGS/Ates, Sig=Signetics, Sp=Sprague, St=Studer, Tf=Telefunken, TI=Texas Instruments, To= Toshiba.				
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	BD 85/02/0100
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	BD 85/02/0120
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	BD 86/12/0121
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	BD 86/12/0822
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	BD 87/06/0523
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	VF 89/09/2524
			1.328.211.00 REMOTE CONTROL DRIVER BOARD	ZB 90/12/1225
END				

REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - Stabilizer PCB 1.328.213.81: See under 1.328.270.81)
 - Remote Control Display PCB 1.328.212.81



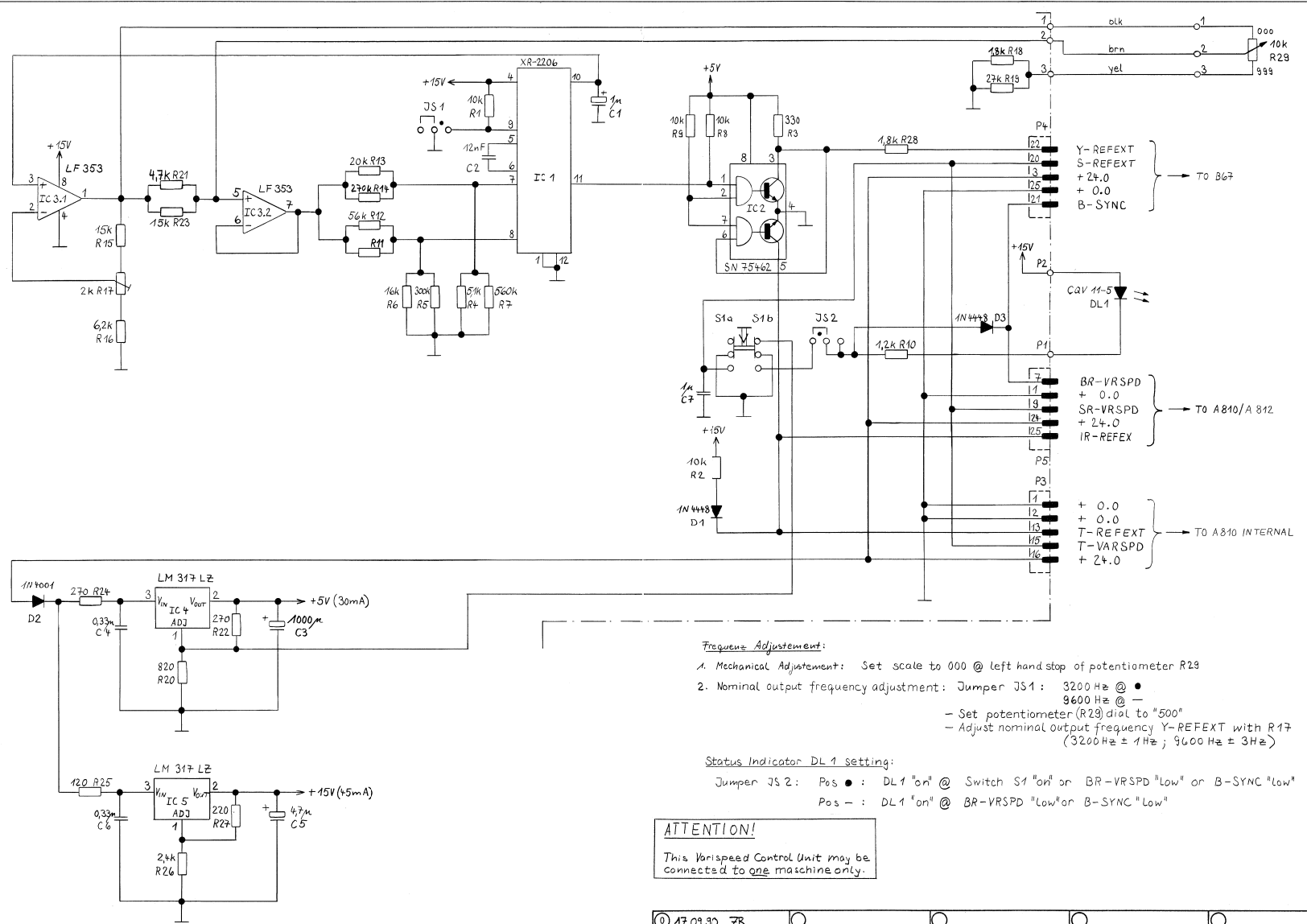
REMOTE CONTROL CABINET (SERIAL) 1.328.210.81
 REMOTE CONTROL MODULE (SERIAL) 1.328.220.81
 - Stabilizer PCB 1.328.213.81: See under 1.328.270.81)
 - Remote Control Display PCB 1.328.212.81



Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.26.1220	22 uF	-20%, 10V, SAL	
C.....2	59.06.0683	68 nF	104, PETP	
DL.....0	50.04.2111	MV 5753	LED, Red, HUMP 3301	Sie
DL.....0	50.04.2112	MV 5353	LED, Yellow, HUMP 3401	Sie
DL.....1	50.04.2112	MV 5353	LED, Yellow, HUMP 3401	Sie
DL.....1	50.04.2112	MV 5353	LED, Yellow, HUMP 3401	Sie
DL.....1	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....1	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....1	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....1	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....2	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....2	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....2	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....2	50.04.2130	not used		Sie
DL.....2	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....2	50.04.2131	COV 15-5	LED, Green, COV 15-6	Sie
DL.....3	50.04.2129	COV 11-7	LED, Red	Sie
DL.....3	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....3	50.04.2131	COV 15-5	LED, Green, COV 15-6	Sie
DL.....3	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....3	50.04.2130	not used		Sie
DL.....3	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....3	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....3	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....4	50.04.2130	COV 13-7	LED, Yellow	Sie
DL.....4	50.04.2130	COV 13-7	LED, Yellow	Sie
DLZ...1	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...2	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...3	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...4	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...5	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...6	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...7	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...8	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...9	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
DLZ...10	73.01.0124	MAN 6660	7-Segments, Red, Brightness "G"	GI
D.....1	50.04.0125	1N 4448		
D.....2	50.04.0125	1N 4448		
P.....1	54.14.2004	Connector	40 contacts, flat cable	
P.....2	54.14.2001	Connector	10 contacts, flat cable	
P.....3	54.14.2111	Connector	10 contacts, latch, flat cable	
Q.....1	50.03.0156	BC337		Sie
Q.....2	50.03.0156	BC337		Sie
Q.....3	50.03.0156	BC337		Sie
Q.....4	50.03.0156	BC337		Sie
R.....1	57.11.3472	4.7 kOhm	5k	
R.....2	57.11.3472	4.7 kOhm	5k	
R.....3	57.11.3472	4.7 kOhm	5k	
R.....4	57.11.3472	4.7 kOhm	5k	
R.....5	57.11.3102	1 kOhm	5k	
R.....6	57.11.3102	1 kOhm	5k	
S.....0	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....0	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....0	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....1	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....1	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....1	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....2	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....2	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....2	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....2	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....3	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....3	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....4	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	
S.....4	55.03.0261	TTL-switch	1 * OC, Rafi Nr. 3.13001.110	

SAL=Solid Aluminium, PETP=Polyester
 MANUFACTURER: GI=General Instruments, Sie=Siemens
 1.328.212.81 REMOTE CONTROL DISPLAY BOARD VF 89/11/1000

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
 VARISPEED CONTROL MODULE 1.328.290.00
 - Varispeed Control PCB 1.810.762.83



Frequency Adjustment:

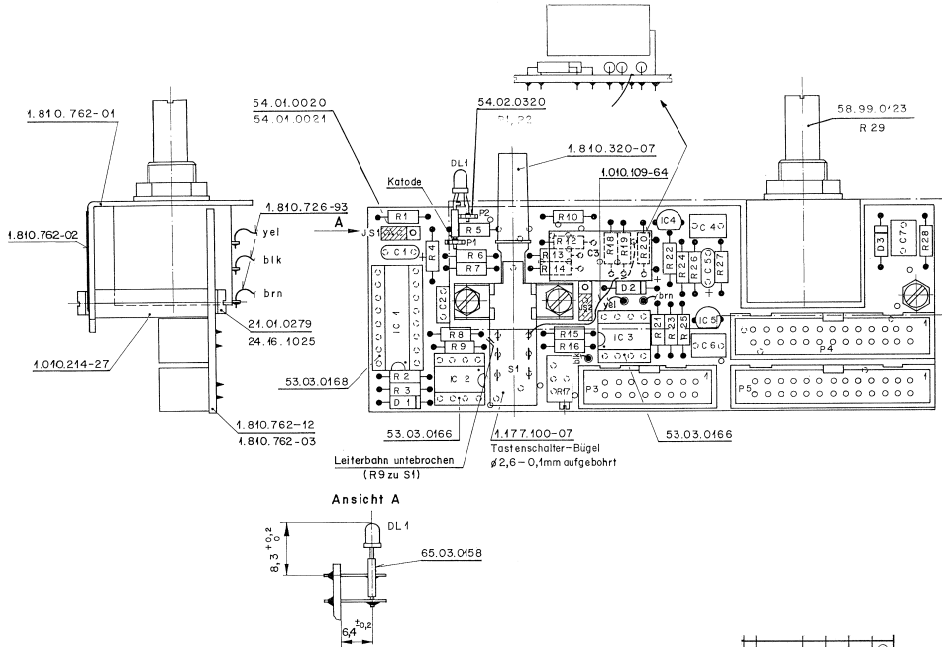
- Mechanical Adjustment: Set scale to 000 @ left hand stop of potentiometer R2
- Nominal output frequency adjustment: Jumper JS1:
 - 3200 Hz @ ●
 - 9600 Hz @ —
 - Set potentiometer (R2) dial to "500"
 - Adjust nominal output frequency Y-REFEXT with R17
 (3200 Hz ± 1 Hz; 9600 Hz ± 3 Hz)

Status Indicator DL1 setting:

Jumper JS2: Pos ● : DL1 "on" @ Switch S1 "on" or BR-VRSPD "low" or B-SYNC "low"
 Pos — : DL1 "on" @ BR-VRSPD "low" or B-SYNC "low"

ATTENTION!
 This Varispeed Control Unit may be connected to one machine only.

VARISPEED CONVERSION KIT (FOR PAR. REMOTE CONTROL ONLY) 1.328.253.00
VARISPEED CONTROL MODULE 1.328.290.00
 - Varispeed Control PCB 1.810.762.83



Id .POS. . . . REF.No. . . . DESCRIPTION MANUFACTURER

C.....1	59.26.9109	1 uF	20%, 40V, Sal	Ph
C.....2	59.99.0220	12 nF	5%, 50V, Cer	see note 1
C.....3	59.99.1700	1000 uF	6,3V L < 21mm Ø < 10mm	
C.....4	59.06.0334	0.33uF	10%, 63V, Petp	
C.....5	59.26.5479	4.7 uF	20%, 25V, Sal	Ph
C.....6	59.06.0334	0.33uF	10%, 63V, Petp	
C.....7	59.06.5105	1uF	10%, 50V, Petp	
D.....1	50.04.0125	1N 4448		Ph, Ses, ITT, Fc, Tf
D.....2	50.04.0122	1N 4001		Not, GI, Sol
D.....3	50.04.0125	1N 4448		Ph, Ses, ITT, Fc, Tf
DL.....1	50.04.2129	CQV11-7		Sie
IC.....1	50.11.0108	VX2206CP	SG 2206	Ex
IC.....2	50.05.0227	SN7542CP		TI
IC.....3	50.09.0101	LF 353N	TL 072CP	TI, NS, Mot
IC.....4	50.10.0108	LM317LZ		Nat, Mot
IC.....5	50.10.0108	LM317LZ		Nat, Mot
JS.....1	54.01.0020	Pin (3*)	54.01.0021 Bridge (1*)	see note 2
JS.....2	54.01.0020	Pin (3*)	54.01.0021 Bridge (1*)	see note 2
P.....1	54.02.0320		2,8*0,8	
P.....2	54.02.0320		2,8*0,8	
P.....3	54.14.2102		16-contacts	see note 3
P.....4	54.14.2003		26-contacts	see note 4
P.....5	54.14.2003		26-contacts	see note 4
R.....1	57.11.3103	10 kOhm	5%	
R.....2	57.11.3103	10 kOhm	5%	
R.....3	57.11.3331	330 Ohm	5%	
R.....4	57.11.3512	5.1 kOhm	1%	
R.....5	57.11.3304	300 kOhm	5%	
R.....6	57.11.3163	16 kOhm	1%	
R.....7	57.11.3564	560 kOhm	5%	
R.....8	57.11.3103	10 kOhm	5%	
R.....9	57.11.3103	10 kOhm	5%	
R.....10	57.11.3122	1.2 kOhm	5%	
R.....11		not used		
R.....12	57.11.3563	56 kOhm	1%	
R.....13	57.11.3203	20 kOhm	1%	
R.....14	57.11.3274	270 kOhm	5%	
R.....15	57.11.3153	15 kOhm	5%	
R.....16	57.11.3622	6.2 kOhm	5%	
R.....17	58.05.0202	2 kOhm		25 turns
R.....18	57.11.3182	1.8 kOhm	1%	
R.....19	57.11.3273	27 kOhm	5%	
R.....20	57.11.3921	820 Ohm	1%	
R.....21	57.11.3472	4.7 kOhm	1%	
R.....22	57.11.3271	270 Ohm	1%	
R.....23	57.11.3153	15 kOhm	1%	
R.....24	57.11.3271	270 Ohm	5%	
R.....25	57.11.3121	120 Ohm	5%	
R.....26	57.11.3242	2.4 kOhm	1%	
R.....27	57.11.3221	220 Ohm	1%	
R.....28	57.11.3182	1.8 kOhm	5%	
R.....29	58.99.0123	10 kOhm		10 turns
S.....1	1.177.100.07	Switch		St
Note 1: 12nF, 50V: Centralab Nr. CN 40 C 123 J Siemens Nr. B 37 903 - J - 5123 - J Kemet Nr. C 062 S 123 J 5 G S CA				
Note 2: Contact pin: Berg Nr. 75160-102-36 Philips Nr. 2422 025 89303 Bridge: Berg Nr. 65474-001 AMP Nr. 14157-1 Philips Nr. 2422 024 88003				
Note 3: 16-contacts: Siemens Nr. V23635-02700-A162 Thomas+Betts 501-1627 ES				
Note 4: 26-contacts: Yamachi Nr. FAP-26-08/14 Burdry Nr. BPH 9 B 26 800 GS				
Manufacturer: Ex=Exar, Fc=Fairchild, GI=General Instruments, ITT=Intemetal, Mot=Motorola, Nat=National (Matsushita) NS=National Semiconductors, Ph=Philips, Ses=Secossem, Sie=Siemens, Sol=Solitron, St=Studer, TI=Telefunken, TI=Texas Instrument				
1.810.762.83 VARISPEED CONTROL BOARD Z890/10/0500				

STUDER REGENSDORF ZÜRICH	Brennzeichnung: VARISPEED CONTROL BOARD	1.810.762-83
		Kaube Nr.: