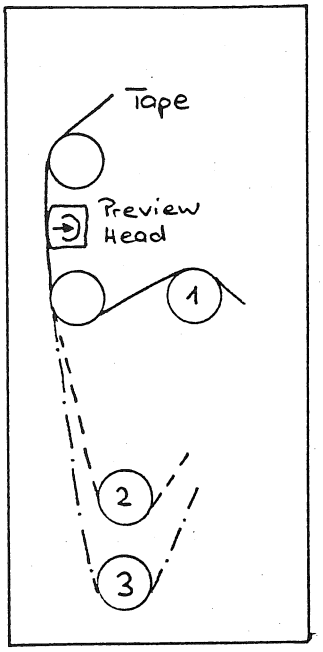
CONTENTS A810 APV ELECTRONICS

1. SYSTEM DESCRIPTION

The A810 APV System was designed to use the STUDER A810, tape recorder in postproduction or mixdown systems where a preview signal is needed to drive a bulb chain ("Chilbi") or where the modulation itself is used as indication for the operator.

Following preview times are possible:



Tape speed	7.5 ips	15 ips
Tape path via roller		
1	2.2 S	1.1 S
2	4 S	2 S
3	4.4 S	2.2 S

The modulation detected by the preview head is treated by a logic unit so that an open collector output is activated as soon as an audio signal appears on the preview head.

With the optional line amplifiers 1.914.501.00 the preview modulation can directly be fed to a mixing console or an amplifier via XLR outputs.

2. PART LIST OF THE APV KIT

1. 1 Preview tape loop unit

2. 1 Electronic unit containing power supply, reproduce amplifier, logic unit, controls and in- and output connectors

3. 1 Cable D9 female - D25 male to connect the electronic unit to the A810 tape recorder remote connector, length 1m

4. 1 Split cable for A810 remote connector to connect at the same time the electronic unit and a parallel remote control or a TLS 4000 synchronizer

5. 1 Power card for electronic unit

6. 1 D9 male connector for the preview logic outputs

7. 2 XLR female connectors

8. 1 Single wire to install in A810 tape recorder

3. MOUNTING INSTRUCTION

3.1 Installing single wire in A810 tape recorder

The equalisation switching of the preview reproduce amplifier is activated via the speed signal S.Speed 2 of the signal B-Fast from the master unit of the A810 recorder. This signal has to be brought on the parallel remote connector of the A810:

1. Remove the upper rear cover and the top cover of the A810

2. Remove the parallel remote controller (p.r.c.) 1.810.738.00 GR 23

3. Remove the plastic key in pin 24 of the parallel remote connector.

4. Turn the p.r.c. so that the pcb is on top and drill a hole of 2.3mm diameter into the p.c.b. at the place of pin 24 of the remote connector.
   Be careful not to break the p.c.b.!

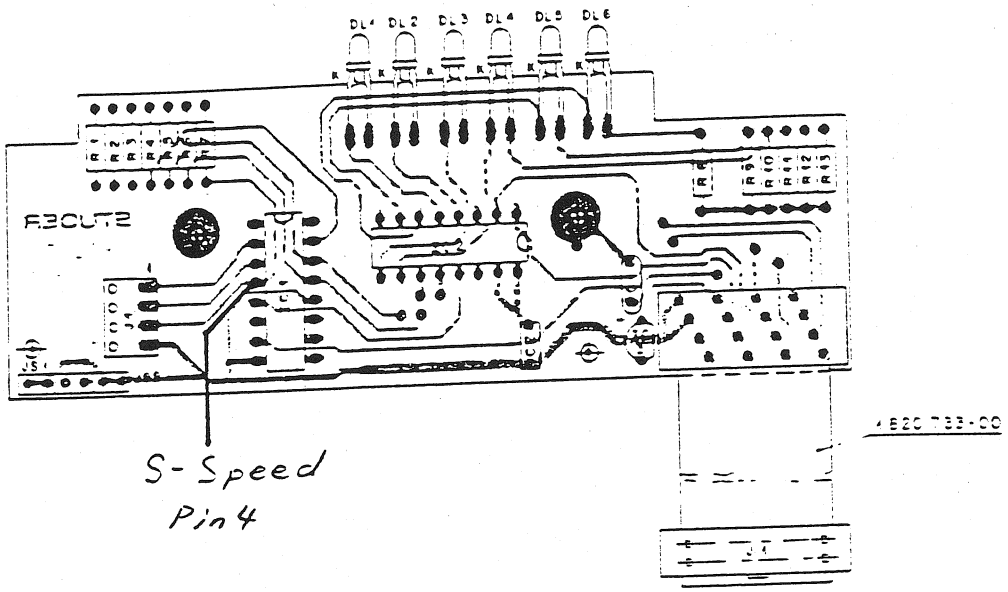
5. Insert the contact which is soldered to the single wire into the remote connector pin 24. Press until the contact pin snaps in.

6. Bring the other end of the single wire to the master unit via the cable duct.

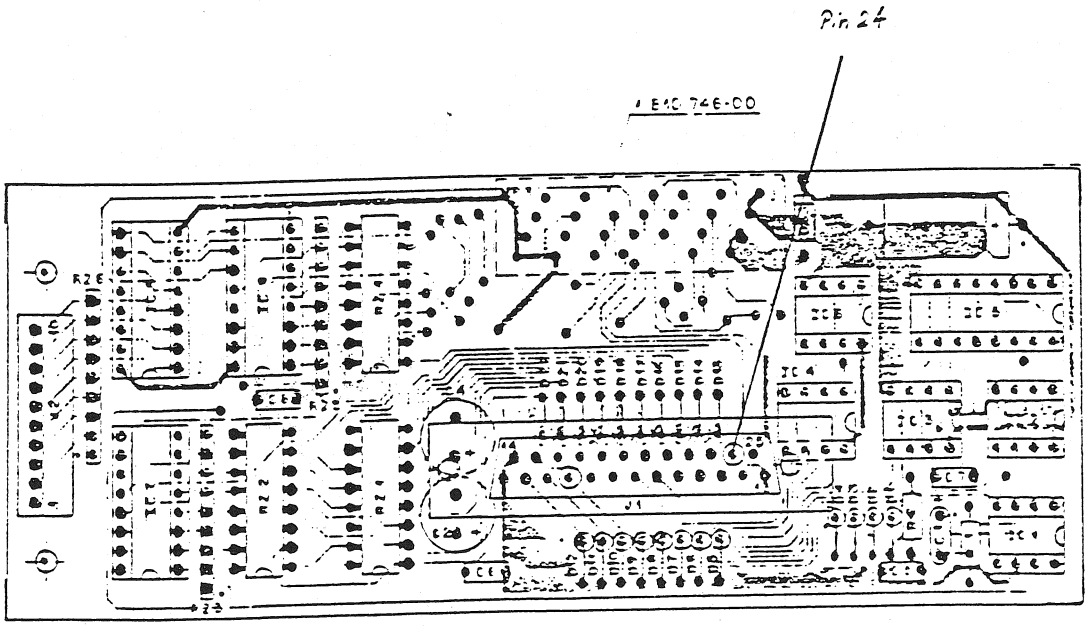
7. A810-2 speeds controlled by pulse keys: Solder the wire to pin 4 of IC 1 of the master control p.c.b. 1.810.733.00 on master unit (signal B-Fast).

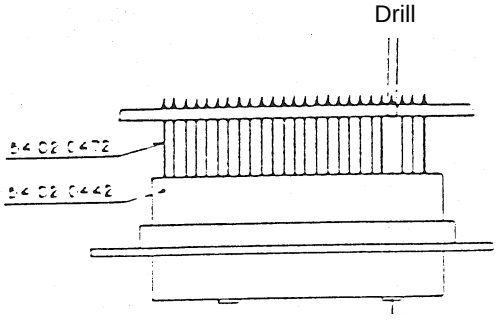
   A810- 3 or 4 speeds controlled by a rotary switch:
   -Solder the wire to pin A5 of the speed selector of the master unit (S-Speed 2).

8. Install p.r.c. and mount top and rear covers of A810 recorder.

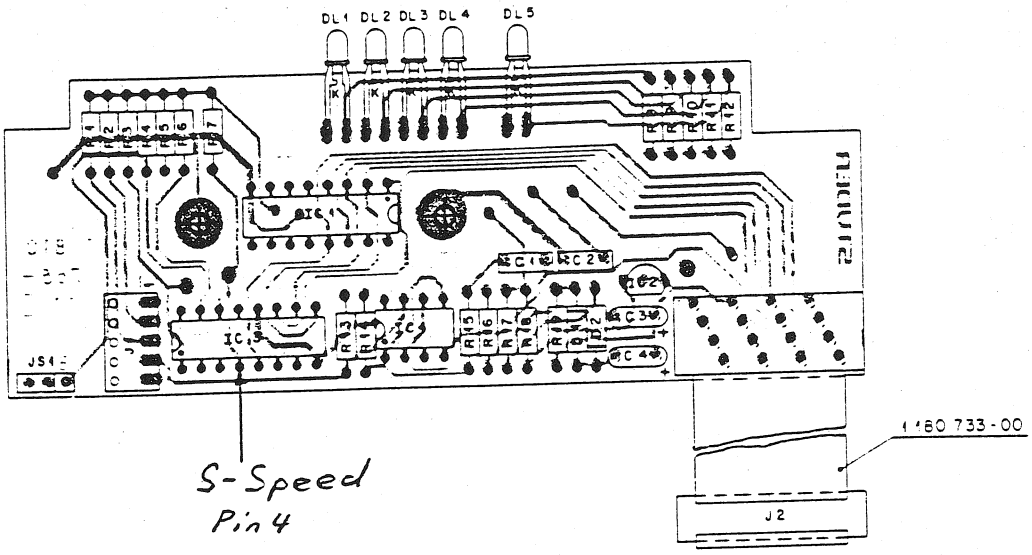


PARALLEL REMOTE CONTROLLER PCB 1.810.738–00 GR23





MASTER CONTROL PCB 4 SPEED 1.810.765—00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C...001	59.06.5104	0.1 uF	PETP	ERO.EVOX
	C...002	59.99.0205	68 nF	Ce	
	C...003	59.26.9109	1 uF	16v. Sol	Ph
	C...004	59.26.5229	2.2 uF	16v. Sol	Ph
	D...001	50.04.0125	1N4448		
	D...002	50.04.0125	1N4448		
	DL..001	50.04.2130	CQV 13-5	Q 62703-Q 575	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
	IC..001	50.15.0102	NE592N		Fc.NS
	IC..002	50.10.0107	LM78L05ACZ	uA78L05aWC	AMI.TI
	IC..003	50.06.0251	SN74LS251N	AM74LS251N	NS.TI
	IC..004	50.05.0283	LM393N	LM393P	
	J...001	54.01.0288	5 cont.	AMP Nr. 103.680-3	
	J...002	54.14.5021	16 cont.	See note 1	
	JS..001			See note 2	
	R...001	57.11.4103	10 kOhm		
	R...002	57.11.4103	10 kOhm		
	R...003	57.11.4103	10 kOhm		
	R...004	57.11.4103	10 kOhm		
	R...005	57.11.4103	10 kOhm		
	R...006	57.11.4103	10 kOhm		
	R...007	57.11.4103	10 kOhm		
	R...008	57.11.4151	150 Ohm		
	R...009	57.11.4151	150 Ohm		
	R...010	57.11.4151	150 Ohm		
	R...011	57.11.4151	150 Ohm		
	R...012	57.11.4151	150 Ohm		
	R...013	57.11.4104	100 kOhm		

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R...014	57.11.6335	3.3 MOhm		
	R...015	57.11.4101	100 Ohm		
	R...016	57.11.4564	560 kOhm		
	R...017	57.11.4104	100 kOhm		
	R...018	57.11.4102	1 kOhm		
	R...019	57.11.6335	3.3 MOhm		

Note 1 - Yamaichi Nr. FAS-16-17, Burndy Nr. FBS-16 BD-4P
Connection cable Studer Nr. 1.820.733.00
Note 2 - Contact pin: Studer 54.01.0020, Berg 75 160-102-36
Bridge: Studer 54.01.0021, Philips 2422 024 88003

Ce=Ceramic, PETP=Polyester, Sal=Solid aluminium

MANUFACTURER: AMI=American Microsystem Inc., Fc=Fairchild
NS=National Semiconductors Corp., Ph=Philips, Sie=Siemens,
Sig=Signetics, TI=Texas Instruments

DRIG 82/10/27

3.2 Installation and Mechanical alignment of the preview tape loop unit

1. Fasten the preview tape loop unit to the left hand side of the A810 console.

2. Heave the tape recorder into the console and fix it. Leave space in front of the machine for the preview electronics module.

3. Remove the idler roller and the plastic cover of the left tape tension sensor. Install the tape path alignment jig and refit the idler roller.

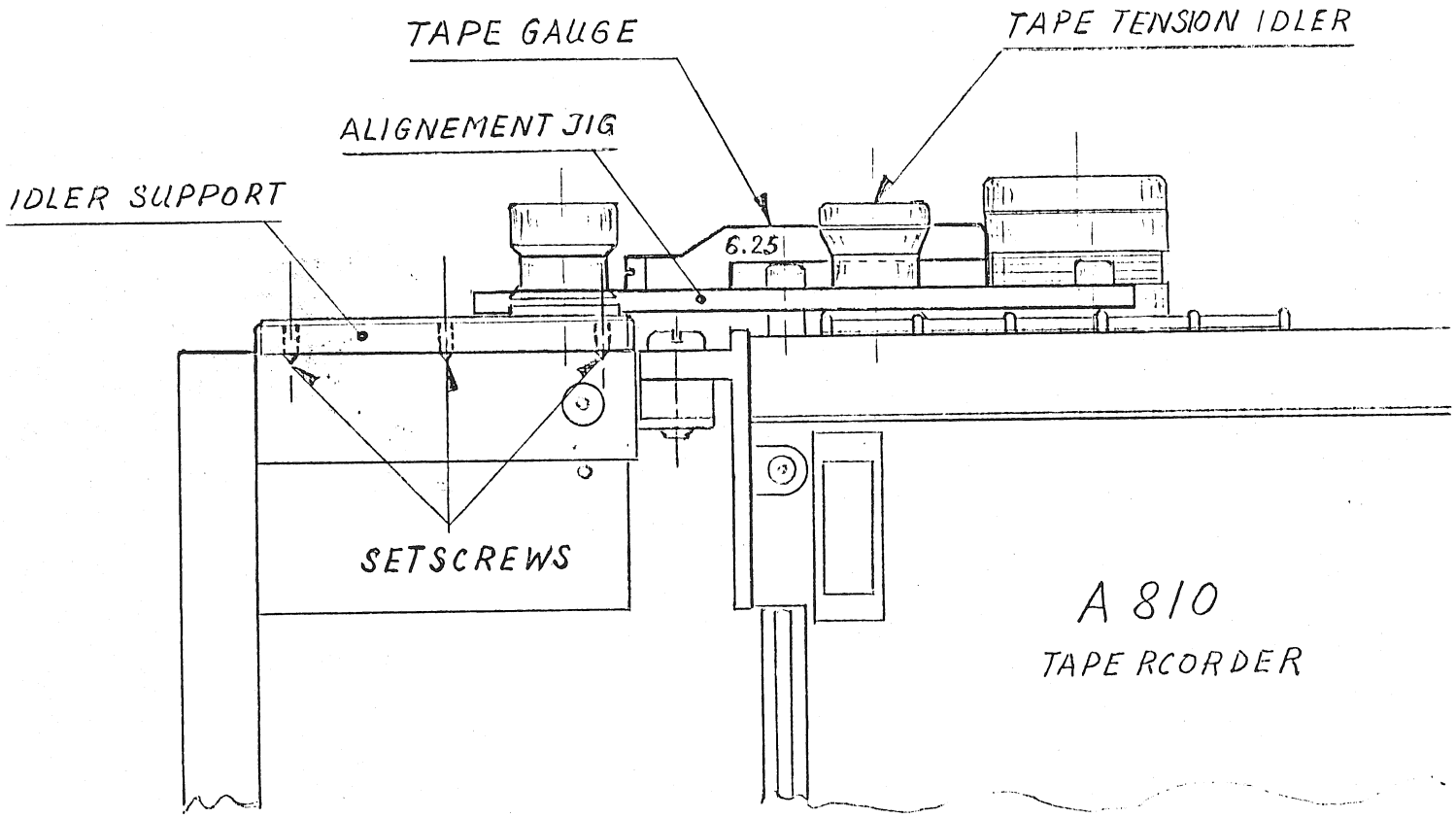
4. By means of the three set screws in the idler support of the tape loop unit, adjust for correct height of the tape path (1,5 mm allen wrench required).

5. Remove alignment jig and reinstall plastic cover of the tape tension sensor.

6. Install preview electronics module in front of the A810 recorder and connect the cable coming out of the module to the preview head connector on the preview tape loop unit.

7. Connect the preview electronics module to the A810 recorder (parallel remote connector) by the D9 female - D25 male cable. Use the split cable if there is already a remote control or a synchronizer connected to the A810 recorder.

STUDER	20.6.86	Thomsen	TAPE PATH ALIGNEMENT
	A 810 PREVIEW		
			PAGE OF



3.3 Test and line up procedure of preview attachments

1. Thread blank tape and check tape travel in fast wind and play modes. Test in all three loop configurations. Ensure that all idlers run quietly and that the left hand tape tension idler does not swing back and fore in play mode.

2. Check preview head for correct head wrap. If required adjust head, following the standard head wrap alignment procedure.

3. Demagnetize heads and tape path.

4. Thread standard alignment tape and plug audio output cable harness into socket J5 of power supply PCB 1.810.773.

5. Connect a high input impedance (= 100 Kohm) millivoltmeter to the audio XLR connector output.

6. Run the reference level section of the test tape and with the level control potentiometer of the reproduce amplifier 1.177.875 adjust the output level as follows:

   - For preview electronic units without audio line amplifiers: CCIR test tape = 80 mV NAB test tape = 40 mV

   - For preview electronic units with audio line amplifiers: CCIR test tape = 96 mV NAB test tape = 48 mV

7. Adjust output level of second channel.

8. Proceed with reproduce frequency response and azimuth adjustment, employing common alignment practice.

9. For preview electronic units fitted with audio line amplifiers, plug audio output cable harness into socket J3 of preview control electronics PCB 1.810.774.

10. Run level section of the test tape and adjust output to the required line level by means of the level potentiometers and jumpers of the line output amplifiers 1.914.501. (Point 8 may be carried out after point 10 for units with line amplifiers).

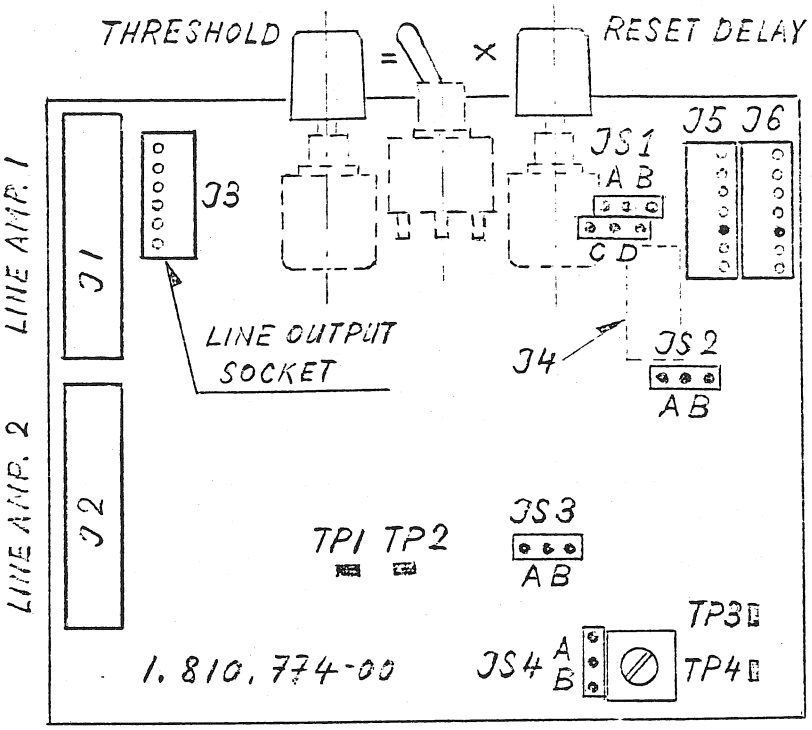
11. Insert jumpers JS 1 .... 4 and control output cable (J5/J6 on preview control electronic PCB 1.810.774.00) according to requirements of the count-down system (see description of jumper positions and output selection).

12. Start tape transport in PLAY mode and check CLOCK frequency on pin 4 of output socket or TP 3 on preview control electronic PCB. If required adjust potentiometer near TP 3.

13. Run tape in fast FORWARD and REWIND and check CLEAR output (pin 5) to become active.

14. Play back a tape with recorded sections at peak recording level, - 10 dB, - 20 dB and - 30 dB.
With the THRESHOLD control at fully counter clockwise position, the peak recorded section must trigger channel 1 and 2 outputs (pin 1 and 2) and equally must the -30 dB section with the threshold control at fully clockwise position.

15. Check satisfactory operation of the RESET DELAY control by monitoring the time delay between the end of information on the tape and the control outputs of channels 1 and 2.



J5 = Open Collector pull up outputs

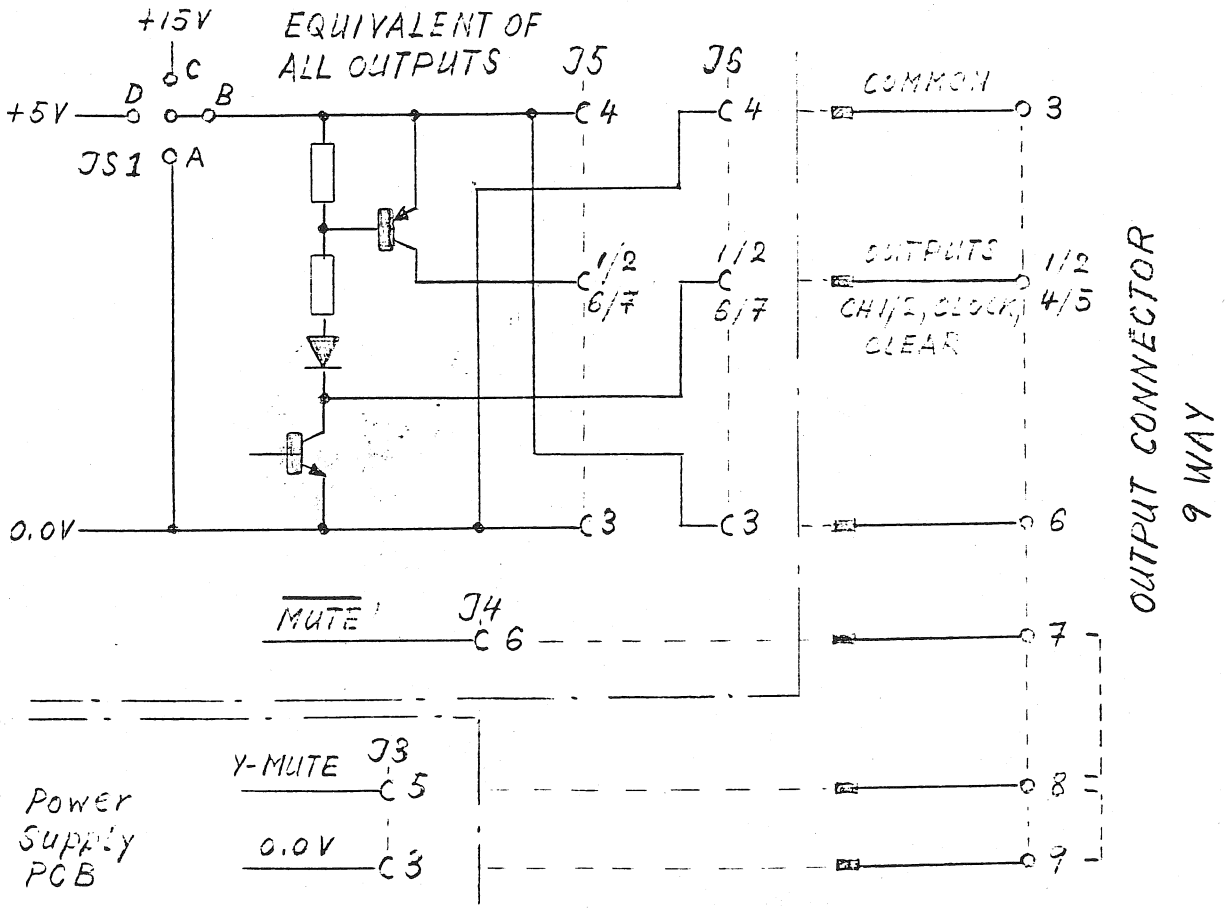
J6 = Open collector pull down outputs

JS1 = Common high potential selector
see diagram below

JS2 = Mute Selector
A=Mute in fast wind only
B=Mute in fast wind and stop

JS3 = Logic Level selector for REW/FORW & STOP signal inputs
A= + 15V B= + 5V

JS4 = Clock generator frequency selector
A = 50 Hz B = 25 Hz

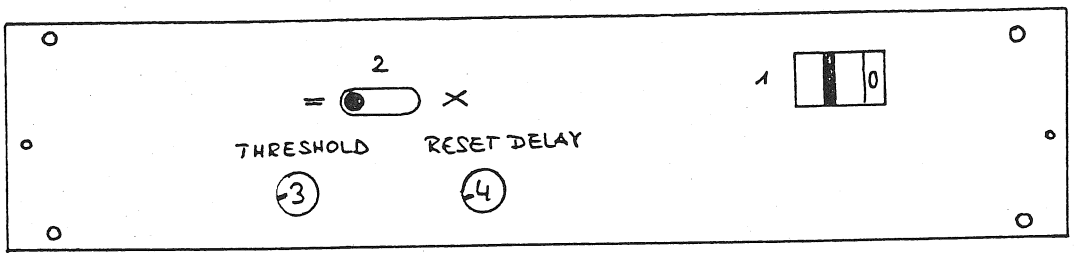


4, 6, 8C		JUMPER & OUTPUT SELECTION		
STUDER	PREVIEW ELECTRONICS		1.810.774-00	PAGE OF

3.4 Retrofitting of line amplifiers into preview module

1. Open preview electronic module.
2. Unplug 7pole CIS cable of preview control electronics PCB which is plugged into connector of line amplifier 2 and plug the cable into connector J5 of power supply PCB 1.810.773.00.
3. Plug the 2 line amplifiers into preview control electronics pcb and fix them on the bolts at the bottom of the preview electronic module.
4. Follow the alignment procedure in section 3.3 point 10.
5. Reinstall cover of preview electronic module.

4. OPERATION



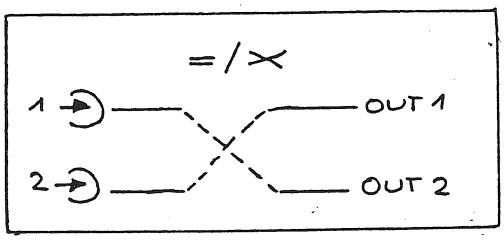
Controls

1. Power Switch

Switches on the power for the preview electronics module. This switch can always remain in ON position because the preview electronics is remotely switched off when the A810 recorder is switched off.

2. Channel Reverse Switch

The channel reverse switch allows to switch the modulation detected by the preview head on track 1 to opencollector output 2 and modulation on track 2 to output 1.



3. Threshold Level

Potmeter threshold allows to set the trigger level for the preview modulation:

a) Potmeter in fully counter clockwise position:
Minimum sensitivity, modulation level must be peak recording level or max. -5dB below peak recording level to trigger the output.

b) Potmeter in fully clockwise position:
Maximum sensitivity, modulation levels of -30dB below peak recording level are triggered by the detection circuits.

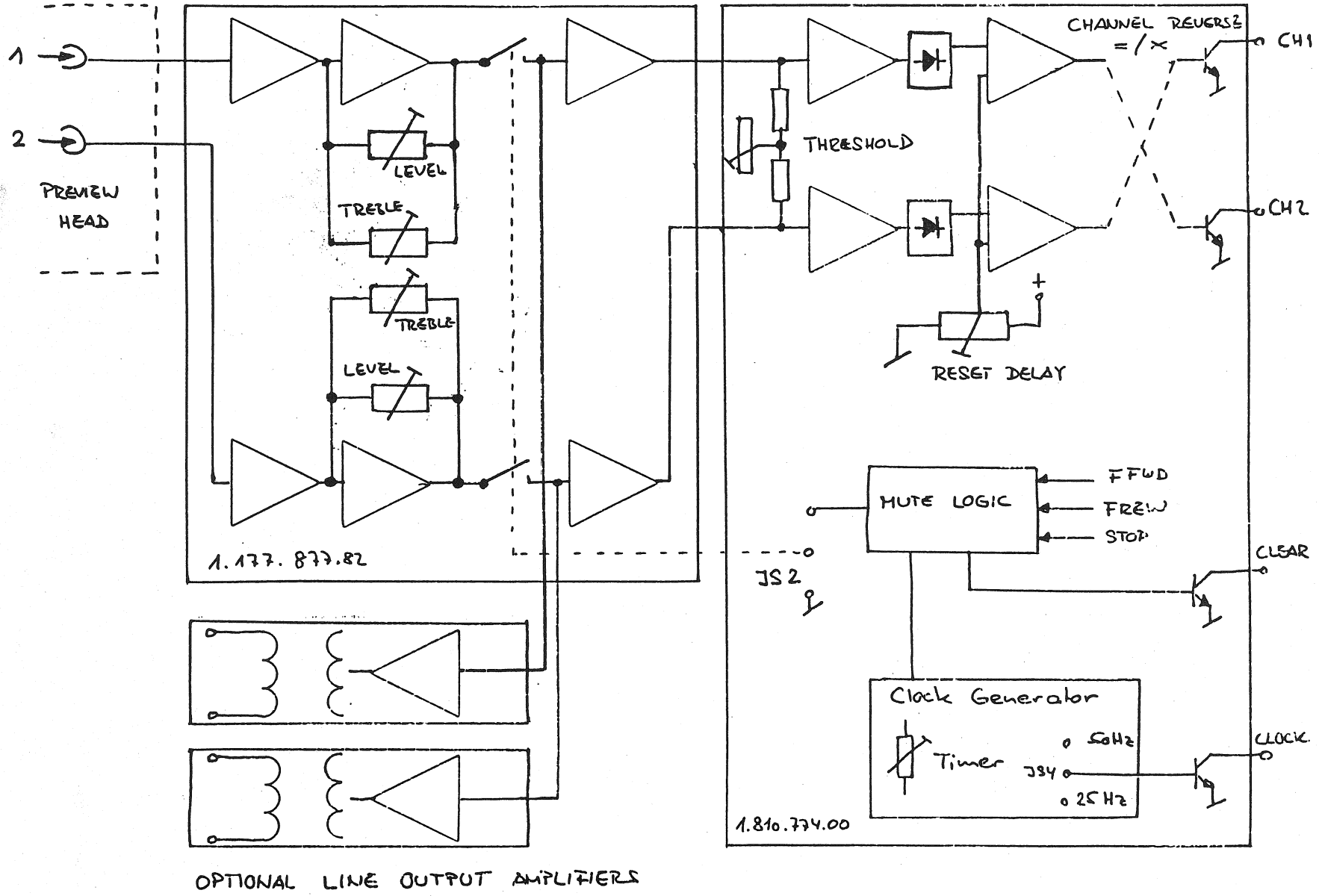
4. Reset Delay

The potmeter "reset delay" allows to adjust the "reaction time" of the opencollector output when the modulation disappears on the preview head:

a) Potmeter in fully counter clockwise position, a few milliseconds after the modulation has disappeared, the opencollector output changes the level.

b) Potmeter in fully clockwise position, maxium delay, about 2 seconds after the modulation has disappeared, the opencollector output changes the level.

With the adjustment of the reset delay potmeter a more continous indication of a bulb chain ("Chilbi") can be achieved so that the bulbs won't go off with every short drop of modulation.


1
2
PREVIEW HEAD
LEVEL
TREBLE
TREBLE
LEVEL
1.177.877.82
THRESHOLD
CHANNEL REVERSE
=/x
CH1
CH2
RESET DELAY
+
MUTE LOGIC
FFWD
FREW
STOP
CLEAR
JS2
Clock Generator
Timer
50Hz
JS4
25Hz
CLOCK
1.810.774.00
OPTIONAL LINE OUTPUT AMPLIFIERS

6. INPUT & OUTPUT CONNECTION

OUTPUT CONNECTOR D-TYPE 9 WAY FEMALE

PULL UP MODE, connected to J5 of Preview Electronics PCB

Pin No.	
1	= Channel 1 OC-H
2	= Channel 2 OC-H
3	= Common +V/ext.supply
4	= Clock OC-H
5	= Clear OC-H
6	= Extern 0V
7	= Mute'
8	= Y-Mute
9	= 0,0V

OC-H = Open Collector Output active high

PULL DOWN MODE, connected to J6 of Preview Electronics PCB

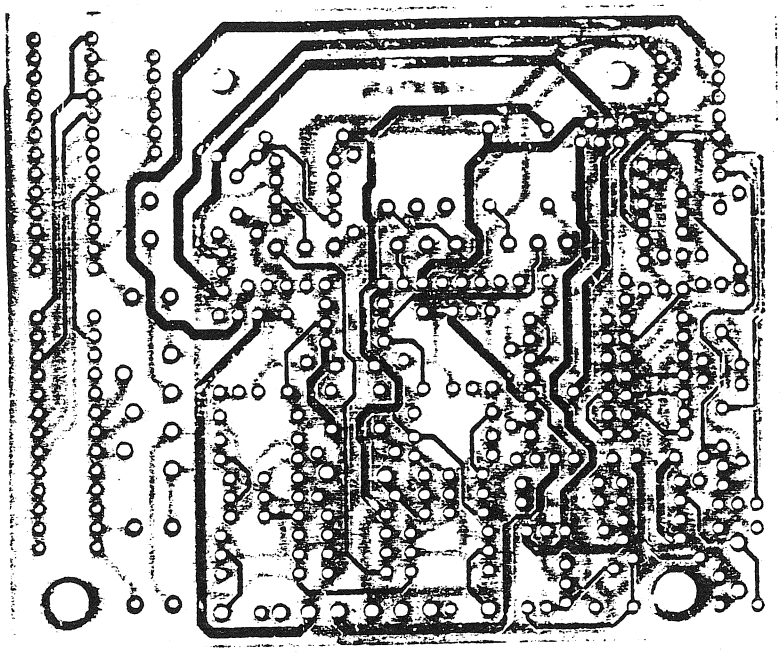
Pin No.	
1	= Channel 1 OC-L
2	= Channel 2 OC-L
3	= Common 0,0V
4	= Clock OC-L
5	= Clear OC-L
6	= (+V intern)
7	= Mute'
8	= Y-Mute
9	= 0,0V

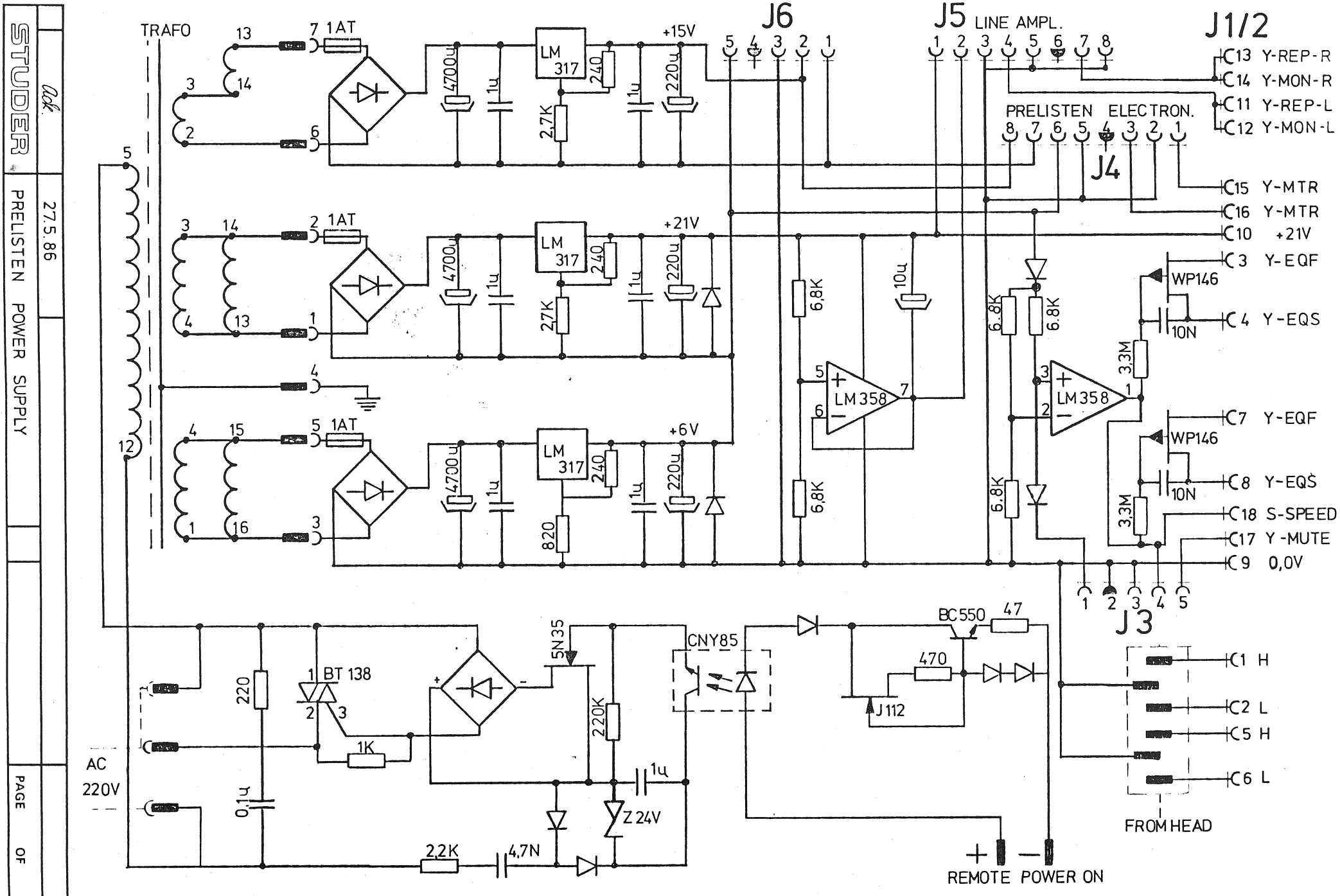
OC-L = Open Collector Output active Low

TAPE TRANSPORT CONNECTOR D-TYPE 9 WAY MALE

9 Way D-Type Connector			25 Way Remote Control Connector A810	
Pin No.			Pin No.	
1	BR-FORW		3	
2	BR-REW		2	
3	0,0V		1	
4	NC	----------	NC	
5	BR-STOP	cable length	16	
6	EQ-CONTR.	1000mm	24	wired to speedselector
7	0,0V		NC	
8	0,0V		14	
9	+24V		25	

J1/J2 =LINE AMPLIFIER
J3 =AUDIO OUT
J4 =REMOTE SIGNALS
J5 =NEGATIV LOGIC
J6 =POSITIV LOGIC

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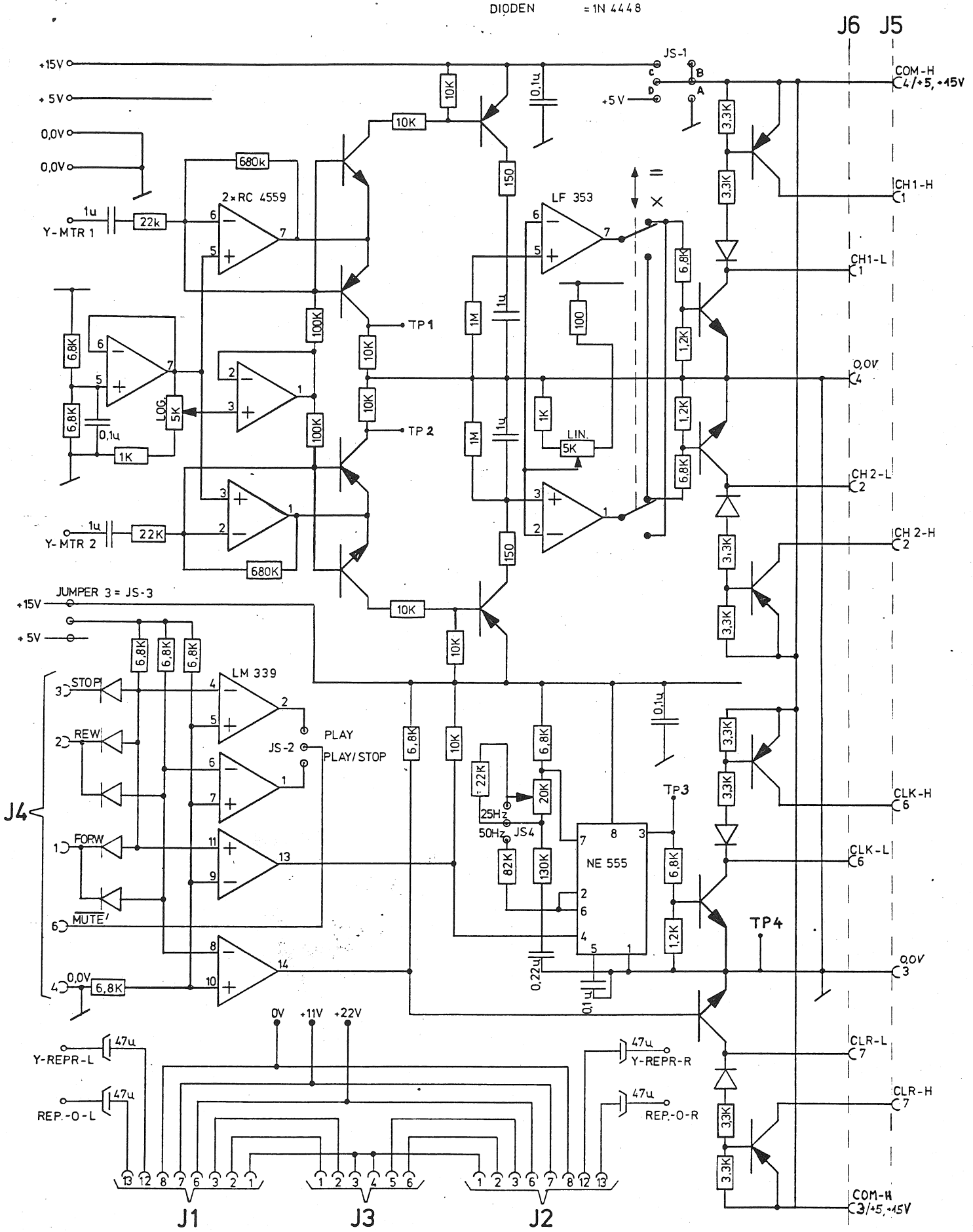
ak
27.5.86
PRELISTEN POWER SUPPLY
PAGE OF
TRAFO
1AT
LM 317
+15V
+21V
+6V
4700u
1u
220u
240
2,7K
27K
820
J6
J5
LINE AMPL.
J1/2
PRELISTEN ELECTRON.
J4
J3
C13 Y-REP-R
C14 Y-MON-R
C11 Y-REP-L
C12 Y-MON-L
C15 Y-MTR
C16 Y-MTR
C10 +21V
C3 Y-EQF
C4 Y-EQS
C7 Y-EQF
C8 Y-EQS
C18 S-SPEED
C17 Y-MUTE
C9 0,0V
C1 H
C2 L
C5 H
C6 L
FROM HEAD
LM358
6,8K
10u
WP146
10N
3,3M
AC 220V
BT 138
220
1K
0,1u
5N35
220K
Z 24V
2,2K
4,7N
CNY85
BC550
47
470
J112
REMOTE POWER ON

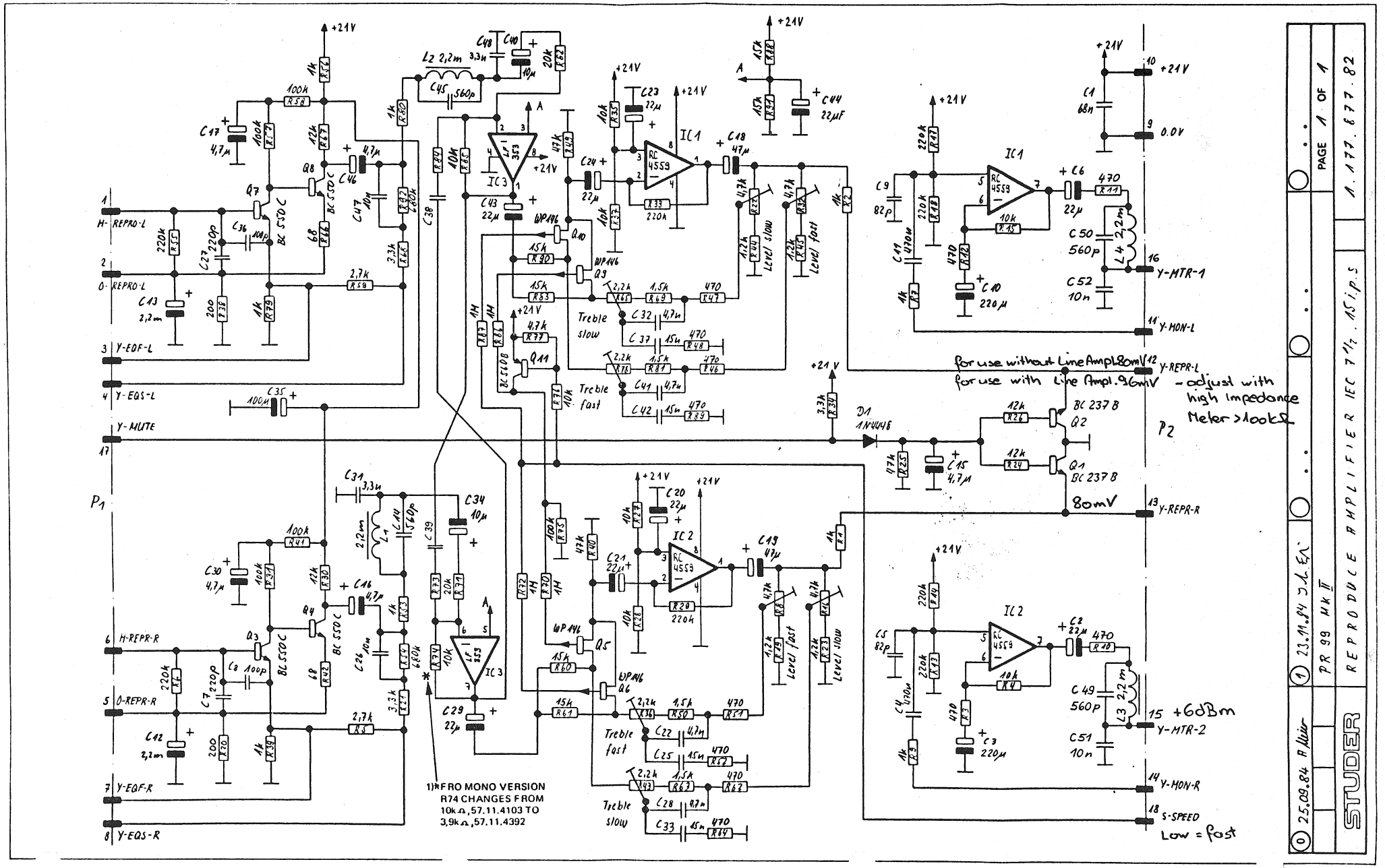
TRANSISTOREN = BC550 + BC560
DIODEN = 1N 4448



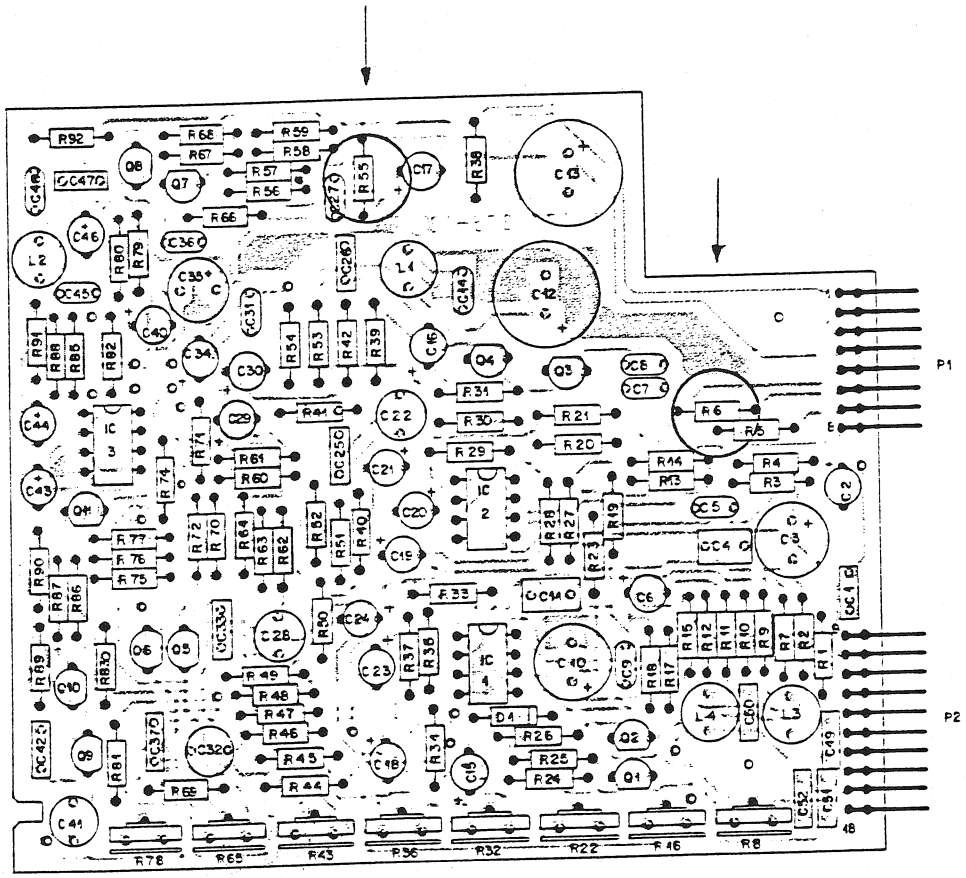
Gez.:	Ck	Bezeichnung:	PRELISTEN ELECTRONIC
Dat.:	26.5.86	Gerät:	Nummer:

STUDER

REPRODUCE AMPLIFIER PCB (IEC 7 1/2–15 ips) 1.177.877–82



REPRODUCE AMPLIFIER PCB (NAB 3 3/4–7 1/2 ips) 1.177.875.82 / (NAB 7 1/2–15 ips) 1.177.876.82 / (IEC 7 1/2–15 ips) 1.177.877.82



bei Glasmetallköpfen
R55 + R6 auf 27kΩ verkleinern

STUDER

6.6.83	Fritz
13.10.83	Fritz
14.11.83	Fritz
2	

LINE AMPLIFIER (NR 1)

1.914.501.00

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