

STUDER reVOX

B780/B739

SERVICEANLEITUNG
SERVICE INSTRUCTIONS
INSTRUCTIONS DE SERVICE



STUDER **reVox**

B780/B739

SERVICEANLEITUNG SERVICE INSTRUCTIONS INSTRUCTIONS DE SERVICE



Subject to change
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| INHALTSVERZEICHNIS | CONTENTS | REPertoire | Seite/Page |
|--------------------|--|--|------------|
| 1. | ALLGEMEINES | GENERALITES | |
| 1.1 | Indexliste der Bedienungselemente | Liste des organes de commande | 1/1 |
| 1.1.1 | Tunerteil | Section Tuner | 1/1 |
| 1.1.2 | Verstärkerteil/Vorverstärkerteil | Section Amplificateur/Préamplificateur | 1/2 |
| 1.2 | Anschlussfeld | Panneau de raccordement | 1/3 |
| 1.2.1 | Anschlussfeld B780 | Panneau de raccordement du B780 | 1/3 |
| 1.2.2 | Anschlussfeld B739 | Panneau de raccordement du B739 | 1/4 |
| 1.2.3 | Buchsenbelegungen | Câblage des prises | 1/5 |
| 2. | AUSBAU | DEMONTAGE | 2/1 |
| 2.1 | Entfernen des oberen Deckbleches | Dépose de la plaque supérieure | 2/1 |
| 2.2 | Entfernen des unteren Deckbleches | Dépose de la plaque du fond | 2/1 |
| 2.3 | Entfernen der seitlichen Abdeckungen | Dépose des plaques latérales | 2/2 |
| 2.4 | Kühlkörper inkl. Endstufenprints ausbauen (nur B780) | Dépose des radiateurs et des circuits de l'étage de puissance (B780 seulement) | 2/2 |
| 2.5 | Hintere Abdeckung ausbauen (B739) | Dépose de la plaque arrière (B739) | 2/3 |
| 2.6 | Anschlussfeld-Abdeckung ausbauen (B739) | Dépose de la façade du panneau de connexion (B739) | 2/3 |
| 2.7 | Bedienungseinheit ausbauen | Dépose de l'unité de commande | 2/3 |
| 2.8 | Frontplatte ausbauen | Dépose de la plaque frontale | 2/4 |
| 2.9 | Lampe für die Beleuchtung des Signalstärke-Instruments auswechseln | Remplacement de l'éclairage de l'indicateur d'intensité du signal | 2/4 |
| 2.10 | Signalstärke-Instrument auswechseln | Remplacement de l'indicateur d'intensité du signal | 2/4 |
| 2.11 | Netzschalter ersetzen | Remplacement de l'interrupteur secteur | 2/5 |
| 2.12 | Netzsicherung auswechseln | Remplacement du fusible secteur | 2/5 |
| 2.13 | Netzteilsicherungen auswechseln | Remplacement des fusibles d'alimentation | 2/5 |
| 3. | FUNKTIONSBESCHREIBUNG | DESCRIPTION DES FONCTIONS | 3/1 |
| 3.1 | Tunerteil | Section Tuner | 3/1 |
| 3.1.1 | Übertrager (Balun) | Translateur (Balun) | 3/1 |
| 3.1.2 | HF-Eingangsteil 1.166.100 | Etage d'entrée 1.166.100 | 3/1 |
| 3.1.3 | ZF-Verstärker 1.166.120 | Amplificateur FI 1.166.120 | 3/2 |
| 3.1.4 | FM-Modulator 1.166.130 | Démodulateur FM 1.166.130 | 3/3 |
| 3.1.5 | Stereo-Decoder 1.166.150 | Décodeur stéréo 1.166.150 | 3/3 |
| 3.1.6 | Frequenzsynthesizer und Lokaloszillator | Synthétiseur de fréquence et oscillateur local | 3/4 |
| 3.2 | Logik-Teil | Section logique | 3/7 |
| 3.2.1 | Mikroprozessorprint 1.780.260 | Circuit du microprocesseur 1.780.260 | 3/7 |
| 3.3 | Audio-Teil | Section audio | 3/10 |
| 3.3.1 | Meter Circuit and Deemphasis PCB 1.780.155 | Circuit de désaccentuation et de mesure 1.780.155 | 3/10 |
| 3.3.2 | Audio Connection Unit 1.780.145 | Unité de connexion audio 1.780.145 | 3/10 |
| 3.3.3 | Preamplifier 1.780.205 | Préamplificateur 1.780.205 | 3/11 |
| 3.3.4 | Tone Control PCB 1.780.210 | Correcteur de tonalité PCB 1.780.210 | 3/12 |
| 3.3.5 | Power Amplifier PCB 1.780.105 | Amplificateur de puissance PCB 1.780.105 | 3/12 |
| 3.3.6 | Dolby-Prozessor PCB 1.166.400 | Décodeur Dolby PCB 1.166.400 | 3/14 |
| 3.4 | Netzteil 1.780.110 | Alimentation 1.780.110 | 3/14 |

| | | | | |
|-------|---|---|--|------|
| 4. | ABGLEICHANLEITUNG | ADJUSTMENT INSTRUCTIONS | PROCEDURE DE REGLAGE | 4/1 |
| 4.1 | Benötigte Messgeräte | Required measuring instruments | Appareils de mesure nécessaires | 4/1 |
| 4.2 | Allgemeines | General | Généralités | 4/2 |
| 4.2.1 | Kontrolle der Speisespannungen | Checking the supply voltages | Contrôle des tensions d'alimentation | 4/3 |
| 4.3 | Funktions-Kurztest | Brief test for correct functioning | Contrôle rapide des fonctions | 4/3 |
| 4.3.1 | Tunerteil B780/B739 | Tuner section B780/B739 | Section Tuner B780/B739 | 4/3 |
| 4.3.2 | Verstärkerteil B780 | Amplifier section B780 | Section Amplificateur B780 | 4/4 |
| 4.4 | Vorbereitungen für die Abgleicharbeiten | Preparatory steps for adjustments | Préparation aux travaux de réglage | 4/4 |
| 4.4.1 | Abgleich der Quarzreferenz des Synthesizers | Calibrating the synthesizer quartz reference | Réglage de la référence à quartz du synthétiseur | 4/4 |
| 4.5 | Abgleich des Lokaloszillators und Synthesizers 1.780.151 | Calibrating the local oscillator and synthesizer 1.780.151 | Réglage de l'oscillateur local et du synthétiseur 1.780.151 | 4/5 |
| 4.6 | Abgleich der HF-Kreise | Tuning the RF circuits | Réglage des circuits HF | 4/7 |
| 4.7 | Abgleich des ZF-Filters, ZF-Verstärkers und des Anzeigediskriminators | Adjusting the IF filter, IF amplifier and the display discriminator | Réglage des filtres FI, de l'amplificateur FI et du discriminateur | 4/8 |
| 4.8 | Abgleich des Stereo-Decoders | Adjusting the stereo decoder | Réglage du décodeur stéréo | 4/11 |
| 4.9 | NF-Pegel des Tunersignals einstellen | Adjusting the AF level of the tuner signal | Réglage de la tension de sortie BF du tuner | 4/12 |
| 4.10 | Verstärkereinstellungen | Amplifier adjustments | Réglage de l'amplificateur | 4/13 |
| 5. | SCHEMA | SCHEMATICS | SCHEMAS | |
| 6. | ERSATZTEILE-LISTE | PARTS LIST | LISTE DES PIECES DETACHEES | |
| 7. | TECHNISCHE DATEN | TECHNICAL SPECIFICATIONS | CARACTERISTIQUES TECHNIQUES | |

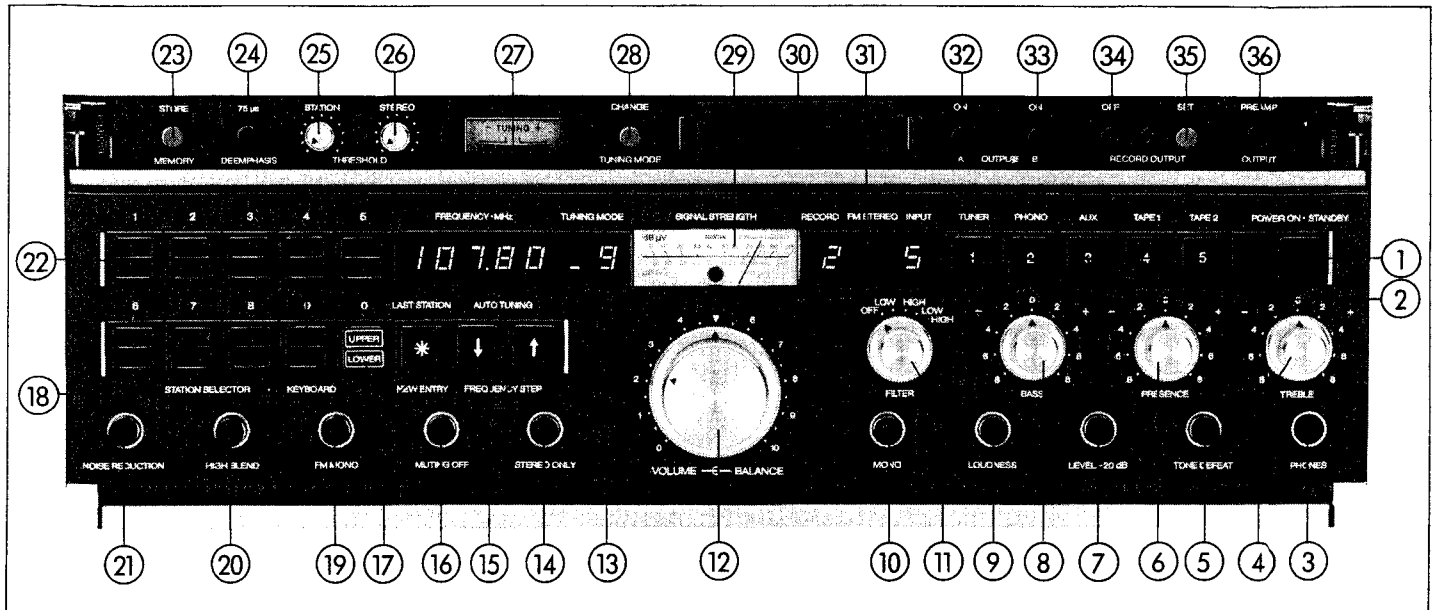


Fig. 1.1

1. ALLGEMEINES**1.1 INDEXLISTE DER BEDIENUNGSELEMENTE****1.1.1 Tunerteil**

- ① Netzschalter
- ⑬ Frequenz- und Abstimmmanzeige
- ⑭ Schalter "Nur Stereo-Empfang"
- ⑮ Automatische Abstimmung oder Eingabe von 25kHz-Schritten
- ⑯ Schalter für Stummschaltung
- ⑰ Schalter "letzte Station/neue Eingabe"
- ⑱ Umschalter "untere oder obere Speichergruppe" / Tipptaste für Null-Eingabe
- ⑲ Schalter für Mono-Empfang
- ⑳ Schalter für reduzierte Übersprechdämpfung
- ㉑ Schalter für Rauschunterdrückungssystem (Option)
- ㉒ Stationswahl-Tastenfeld/Zahleneingabetasten 1 – 9
- ㉓ Speichereingabetaste

1. GENERAL**1.1 INDEX TO THE OPERATING CONTROLS****1.1.1 Tuner section**

- ① POWER ON · STAND BY switch
- ⑬ Frequency and tuning mode display
- ⑭ STEREO ONLY switch
- ⑮ AUTO TUNING or input of 25kHz FREQUENCY STEPS
- ⑯ MUTING OFF switch
- ⑰ LAST STATION / NEW ENTRY switch
- ⑱ Selector button UPPER or LOWER memory group / 0-key of numeric keyboard
- ⑲ MONO reception switch
- ⑳ Crosstalk reduction switch (HIGH BLEND)
- ㉑ NOISE REDUCTION switch (option)
- ㉒ STATION SELECTOR · KEYBOARD (numeric keys 1 – 9)
- ㉓ STORE MEMORY button

1. GENERALITES**1.1 LISTE DES ORGANES DE COMMANDE****1.1.1 Section Tuner**

- ① Interrupteur de mise sous tension
- ⑬ Affichage de la fréquence et de l'accord
- ⑭ Commutateur de réception STEREO ONLY
- ⑮ Accord automatique ou composition de la fréquence avec un pas de 25kHz
- ⑯ Commutateur de muting
- ⑰ Touche "dernière station / nouvelle donnée"
- ⑱ Inverseur de groupes de mémoire / donnée de "0"
- ⑲ Commutateur de réception mono-phonique
- ⑳ Commutateur d'amortissement de la diaphonie
- ㉑ Commutateur du réducteur de bruit (en option)
- ㉒ Clavier de sélection des stations / donnée de "1" à "9"
- ㉓ Touche de mise en mémoire des stations

| | | | | | |
|----|--|----|---|----|---|
| 24 | Nachentzerrung 75µs | 24 | DEEMPHASIS 75µs | 24 | Désaccentuation de 75 microsecondes |
| 25 | Ansprechschwelle (schwache Sender werden stummgeschaltet) | 25 | THRESHOLD STATION (weak stations are muted) | 25 | Seuil d'écoute (les émetteurs faibles sont coupés) |
| 26 | Umschaltswelle Stereo (schwache Sender werden auf Mono geschaltet) | 26 | THRESHOLD STEREO (weak stations are switched to mono) | 26 | Seuil d'écoute stéréo (les émetteurs faibles sont commutés en mono) |
| 27 | Abstimminstrument TUNING | 27 | TUNING meter | 27 | Indicateur de centrage des stations |
| 28 | Umschalter für die Abstimm-Art | 28 | CHANGE TUNING MODE | 28 | Commutateur du mode d'accord |
| 29 | Anzeigeeinstrument für die Empfangsstärke | 29 | SIGNAL STRENGTH meter for FM reception | 29 | Indicateur d'intensité du signal reçu |
| 30 | Akku-Fach | 30 | Battery compartment | 30 | Compartiment des accumulateurs |
| 31 | Anzeige Stereo-Empfang (FM-STEREO) | 31 | FM STEREO reception indicator | 31 | Voyant de réception FM stéréo |

1.1.2 Verstärkerteil/Vorverstärkerteil

| | |
|-------|---|
| 1 | Netzschalter |
| 2 | Ein-/Ausgangswahltasten |
| 3 | Kopfhöreranschluss |
| 4 6 8 | Klangregelung |
| 5 | Überbrückung der Klangregelung |
| 7 | Pegelabschwächer -20dB |
| 9 | Gehörrichtige Lautstärkenregelung |
| 10 | Schalter für Mono-Wiedergabe |
| 11 | Filterwahlschalter |
| 12 | Lautstärke (innen) Balance (ausen) |
| 31 | Anzeige Feld Ausgang (RECORD), Eingang (INPUT) |
| 32 | Lautsprecher Ausgang A (B739: Vorverstärker Ausgang OUTPUT A) |
| 33 | Lautsprecher Ausgang B (B739: Vorverstärker Ausgang OUTPUT B) |
| 34 | Taste für Aufnahme-Ausgang ausschalten |
| 35 | Taste Aufnahme-Ausgang neu setzen (mit Tasten 2) |
| 36 | Vorverstärker Ausgang (Klinkenbuchse) |

1.1.2 Amplifier/preamplifier section

| | |
|-------|--|
| 1 | POWER ON - STAND BY switch |
| 2 | Input/output selector keyboard |
| 3 | Head PHONES socket |
| 4 6 8 | Tone control knobs |
| 5 | Tone control defeat |
| 7 | Level attenuator -20dB |
| 9 | LOUDNESS filter |
| 10 | Switch for MONO reproduction |
| 11 | FILTER selector switch |
| 12 | VOLUME (outer) BALANCE (inner) control knobs |
| 31 | Display field RECORD (output), INPUT |
| 32 | Speakers A (B739: preamp OUTPUT A) |
| 33 | Speakers B (B739: preamp OUTPUT B) |
| 34 | RECORD OUTPUT OFF (disables record output) |
| 35 | RECORD OUTPUT SET (reenables record output in conjunction with button 2) |
| 36 | Preamplifier output (jack socket) |

1.1.2 Section Amplificateur/Préamplificateur

| | |
|-------|---|
| 1 | Interrupteur de mise sous tension |
| 2 | Touches de sélection des entrées |
| 3 | Prise pour casque d'écoute |
| 4 6 8 | Contrôle de la tonalité |
| 5 | Déconnexion du contrôle de la tonalité |
| 7 | Atténuateur de volume: -20dB |
| 9 | Correction physiologique |
| 10 | Commutateur d'écoute monophonique |
| 11 | Sélecteur de filtres |
| 12 | Volume (intérieur), balance (extérieur) |
| 31 | Affichage des sorties (RECORD), des entrées (INPUT) |
| 32 | Sortie pour haut-parleurs A (B739: sortie A du préamp.) |
| 33 | Sortie pour haut-parleurs B (B739: sortie B du préamp.) |
| 34 | Touche d'annulation des sorties d'enregistrement |
| 35 | Touche de programmation des sorties d'enregistrement (avec touches 2) |
| 36 | Sortie du préamplificateur (prise jack) |

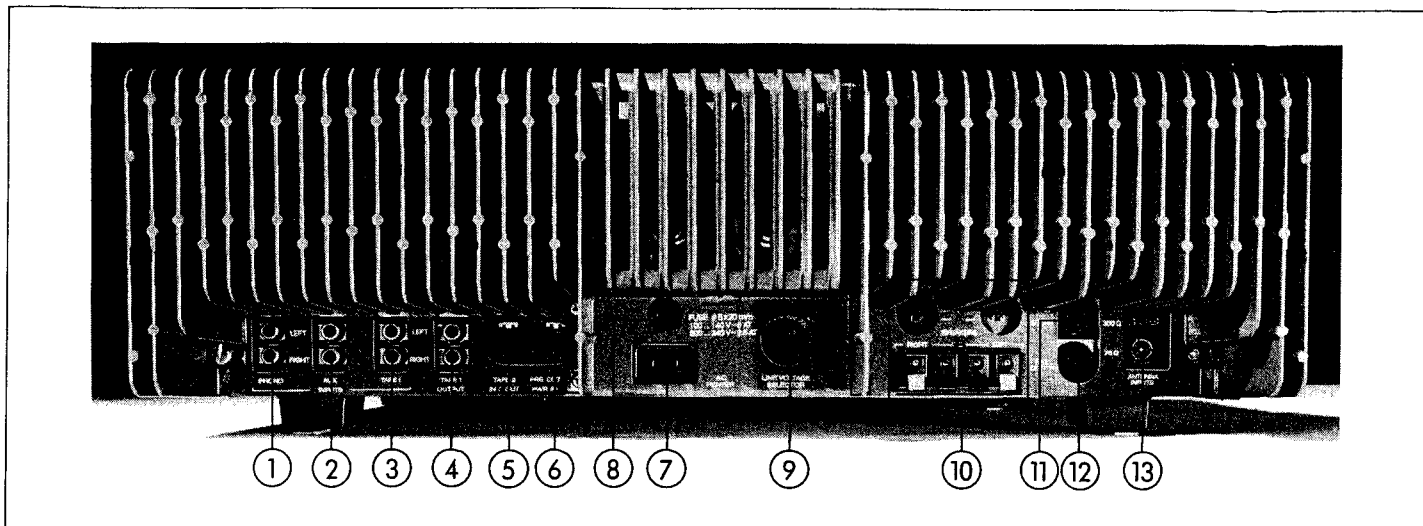


Fig. 1.2

1.2 ANSCHLUSSFELD**1.2.1 Anschlussfeld B780**

- ① Plattenspielereingang PHONO
- ② Hilfs-/Reserveeingang AUX
- ③ Tonbandgerät-Eingang TAPE1
- ④ Tonbandgerät-Ausgang TAPE1
- ⑤ Tonbandgerät-Ein-/Ausgang TAPE2 IN/OUT
- ⑥ DIN-Buchse PRE OUT/PWR IN (Einschlaufstelle für Filter, Equalizer, etc.)
- ⑦ Netzanschluss
- ⑧ Primär-Netzsicherung
- ⑨ Spannungswähler
- ⑩ Lautsprecherausgänge (Gruppe A: DIN-Buchsen/Gruppe B: Klemmen)
- ⑪ Ausgang für Oszilloskop/Input: PWR ON von B710 (Option)
- ⑫ Option, Buchse für Antennenrotorsteuerung
- ⑬ Antenneneingänge 60 ... 75 Ohm und 240 ... 300 Ohm

1.2 CONNECTOR PANEL**1.2.1 Connector panel B780**

- ① Turntable input, PHONO
- ② Auxiliary input, AUX
- ③ Tape recorder input, TAPE 1
- ④ Tape recorder output, TAPE 1
- ⑤ Tape recorder input/output TAPE 2 IN/OUT
- ⑥ DIN socket PRE OUT/PWR IN (Connecting point for filter, equalizer, etc.)
- ⑦ AC power terminal
- ⑧ Primary power fuse
- ⑨ Voltage selector
- ⑩ Speaker outputs (Group A: DIN sockets, group B: clamp sockets)
- ⑪ SCOPE output/input: PWR ON of B710 (option)
- ⑫ Optional socket for antenna rotor control
- ⑬ Antenna inputs 60 ... 75 ohms and 240 ... 300 ohms

1.2 PANNEAU DE RACCORDEMENT**1.2.1 Panneau de raccordement du B780**

- ① Entrée pour table de lecture PHONO
- ② Entrée de réserve AUX
- ③ Entrée pour magnétophone TAPE 1
- ④ Sortie pour magnétophone TAPE 1
- ⑤ Entrée/sortie pour magnétophone TAPE 2 IN/OUT
- ⑥ Prise DIN PRE OUT/PWR IN (mise en circuit de filtres, égaliseur, etc.)
- ⑦ Prise secteur
- ⑧ Fusible secteur (primaire du transformateur)
- ⑨ Sélecteur de tension
- ⑩ Prises pour haut-parleurs (groupe A: prises DIN / groupe B: bornes)
- ⑪ Sortie pour oscilloscope/ Entrée: PWR ON du B710 (option)
- ⑫ En option, prise pour commande de rotor d'antenne
- ⑬ Raccords d'antenne 60 ... 75 ohms et 240 ... 300 ohms

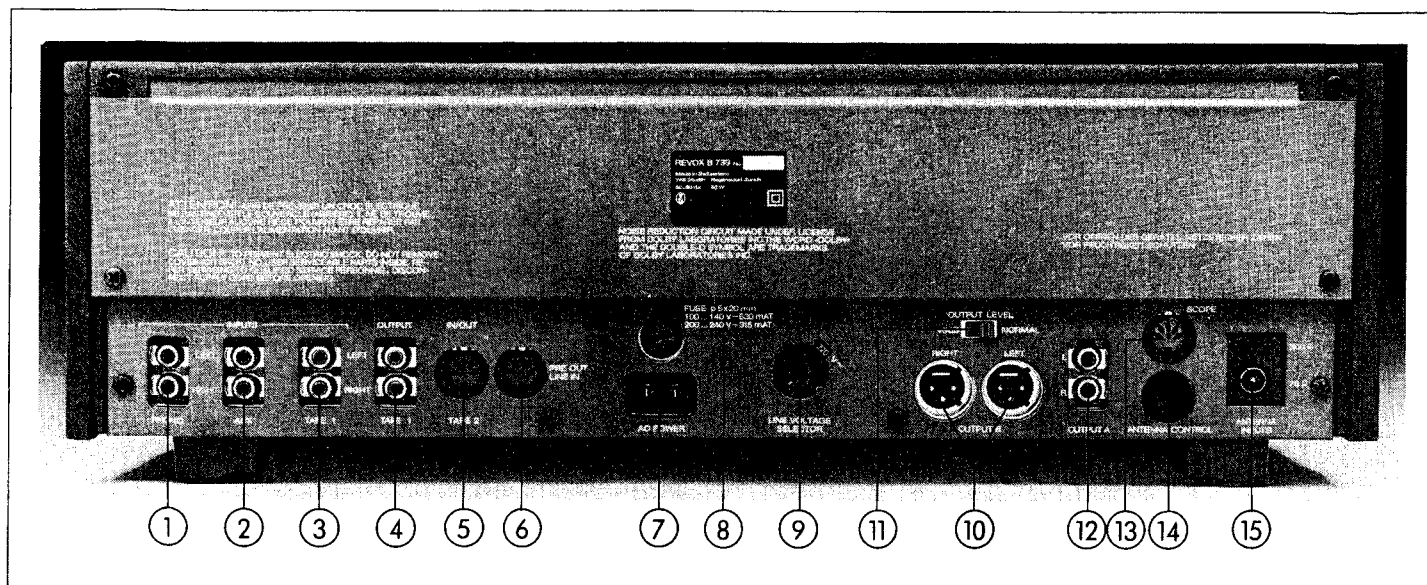


Fig. 1.3

1.2.2 Anschlussfeld B739

- ① — ⑨ wie bei B780
- ⑩ Ausgänge B (XLR-Stecker)
- ⑪ Umschalter für Ausgangsspannung (Normal = 2V, +6dB = 4V)
- ⑫ Ausgänge A (Cinch)
- ⑬ Ausgang für Oszilloskop
- ⑭ Option, Buchse für Antennenrotorsteuerung
- ⑮ Antenneneingänge 60 . . . 75 Ohm und 240 . . . 300 Ohm

1.2.2 Connector panel B739

- ① — ⑨ Same as B780
- ⑩ Outputs B (XLR connectors)
- ⑪ Change-over switch for output voltage (Normal = 2V, +6dB = 4V)
- ⑫ Outputs A (Cinch)
- ⑬ Output for oscilloscope
- ⑭ Optional socket for antenna rotor control
- ⑮ Antenna inputs 60 . . . 75 ohms and 240 . . . 300 ohms

1.2.2 Panneau de raccordement du B739

- ① — ⑨ Comme sur le B780
- ⑩ Sorties B (prises XLR)
- ⑪ Commutateur de tension de sortie (Normal = 2V, +6dB = 4V)
- ⑫ Sortie A (Cinch)
- ⑬ Sortie pour oscilloscope
- ⑭ En option, prise pour commande de rotor d'antenne
- ⑮ Raccords d'antenne 60 . . . 75ohms et 240 . . . 300 ohms

1.2.3 Buchsenbelegungen

JACK PREAMP OUT
 0,85 V/R_L min. 47 kOhm (über Regler VOLUME (12))

JACK PHONES
 11,8V/Last 200 ... 800 Ohm (über Regler VOLUME (12))

**1.2.3 Socket layouts**

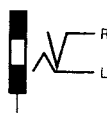
JACK PREAMP OUT
 0.85 V/R_L min 47 kohms (via VOLUME control (12))

JACK PHONES (via VOLUME control (12))
 11.8 V/load 200 ... 800 ohms

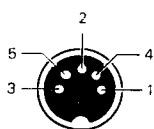
**1.2.3 Câblage des prises**

JACK PREAMP OUT
 0.85 V/R_L min 47 kohms (aux bornes du potentiomètre de volume (12))

JACK PHONES (aux bornes du potentiomètre de volume (12))
 11.8 V/charge 200 ... 800 ohms

**DIN TAPE 2 IN/OUT**

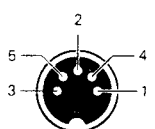
IN: 150 mV/50 kOhm
 OUT: 5,5 mV/R_L 10 kOhm



- 1 Ausgang links
- 2 Masse, Abschirmung
- 3 Eingang links
- 4 Ausgang rechts
- 5 Eingang rechts

DIN TAPE 2 IN/OUT

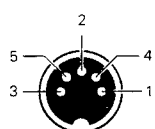
IN: 150 mV/50 kohms
 OUT: 5.5 mV/R_L 10 kohms



- 1 Output, left
- 2 Ground, screening
- 3 Input, left
- 4 Output right
- 5 Input, right

DIN TAPE 2 IN/OUT

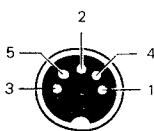
IN: 150 mV/50 kohms
 OUT: 5.5 mV/R_L 10 kohms



- 1 Sortie gauche
- 2 Masse, blindage
- 3 Entrée gauche
- 4 Sortie droite
- 5 Entrée droite

DIN PRE OUT/LINE IN

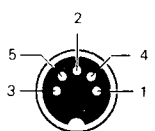
OUT: 0,85 V/R_L min. 10 kOhm (über Regler VOLUME (12))
 IN: 1 V/50 kOhm



- 1 PRE links
- 2 Masse, Abschirmung
- 3 LINE links
- 4 PRE rechts
- 5 LINE rechts

DIN PRE OUT/LINE IN

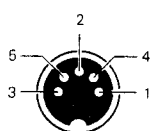
OUT: 0.85 V/R_L min 10 kohms (via VOLUME control (12))
 IN: 1 V/50 kohms



- 1 PRE, left
- 2 Ground, screening
- 3 LINE, left
- 4 PRE, right
- 5 LINE, right

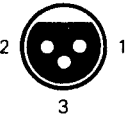
DIN PRE OUT/LINE IN

OUT: 0.85 V/R_L min 10 kohms (aux bornes du potentiomètre de volume (12))
 IN: 1 V/50 kohms



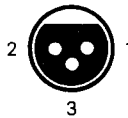
- 1 PRE gauche
- 2 Masse, blindage
- 3 LINE gauche
- 4 PRE droite
- 5 LINE droite

XLR OUTPUT A
2 V/220 Ohm umschaltbar auf 4V
(+6dB)



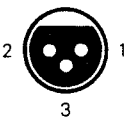
- 1 Gehäuse
- 2 Masse (0V)
- 3 Signal

XLR OUTPUT A
2 V/220 ohms, can be switched to 4V
(+ 6dB)



- 1 Boftier
- 2 Masse (0V)
- 3 Signal

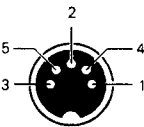
XLR OUTPUT A
2 V/220 ohms, commutable sur 4V
(+ 6dB)



- 1 Housing
- 2 Ground (0V)
- 3 Signal

DIN SCOPE

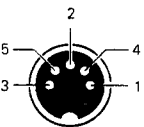
Oszilloskopausgang:
vertikal (Y): 50 mV an 75 Ohm HF \approx 1V
horizontal (X): 75 kHz Hub \approx 2,8 VSS
Buchse nach DIN 41524



- 1 X Achse
- 2 Masse
- 3 Y Achse
- 4
- 5 Ferneinschaltung Option

DIN SCOPE

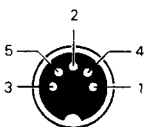
Oscilloscope output:
vertical (Y): 50 mV into 75 ohms RF \approx 1V
horizontal (X): 75kHz deviation \approx 2.8 VSS
Socket according to DIN 41524



- 1 Axe X
- 2 Masse
- 3 Axe Y
- 4 Commande d'enclenchement (option)
- 5

DIN SCOPE

Sortie pour oscilloscope:
Axe vertical (Y): 50mV à 75ohms HF \approx 1V
Axe horizontal (X): 75kHz d'excursion \approx 2,8 V_{cc}



- 1 X-axis
- 2 Ground
- 3 Y-axis
- 4
- 5 remote power on (option)

2. AUSBAU**Achtung:**

Vor Entfernen der Abdeckbleche ist unbedingt der Netzstecker auszuziehen! Wenn nichts vermerkt ist, gelten die Angaben für B780 und B739.

2. DISASSEMBLY**Caution:**

Ensure that the power cord is disconnected before you unfasten the cover plates! Unless specified to the contrary, the information applies to the B780 and the B739.

2. DEMONTAGE**Attention**

Il faut retirer la prise du secteur avant de déposer le couvercle de l'appareil. Quand aucune remarque n'est faite, les rubriques suivantes sont valables pour le B780 et le B739.

2.1 Entfernen des oberen Deckbleches

- An der Rückseite 2 Schrauben (A) (Fig. 2.1) lösen.
- Deckblech an der Biegekante zwischen Chassis und Kühlkörper herausziehen und nach hinten ausfahren (B739: Deckblech nach hinten ausfahren).

2.1 Removing the top cover plate

- Unfasten 2 screws (A) (Fig. 2.1) on the rear.
- Pull out cover plate at bending edge between chassis and heat sink and slide out towards rear (B739: slide cover plate out towards rear).

2.1 Dépose de la plaque supérieure

- Dévissez les 2 vis (A) (fig. 2.1) à l'arrière de l'appareil.
- Soulevez la plaque supérieure par son arête entre le châssis et les radiateurs, puis tirez-la vers l'arrière (B739: tirez la plaque supérieure vers l'arrière).

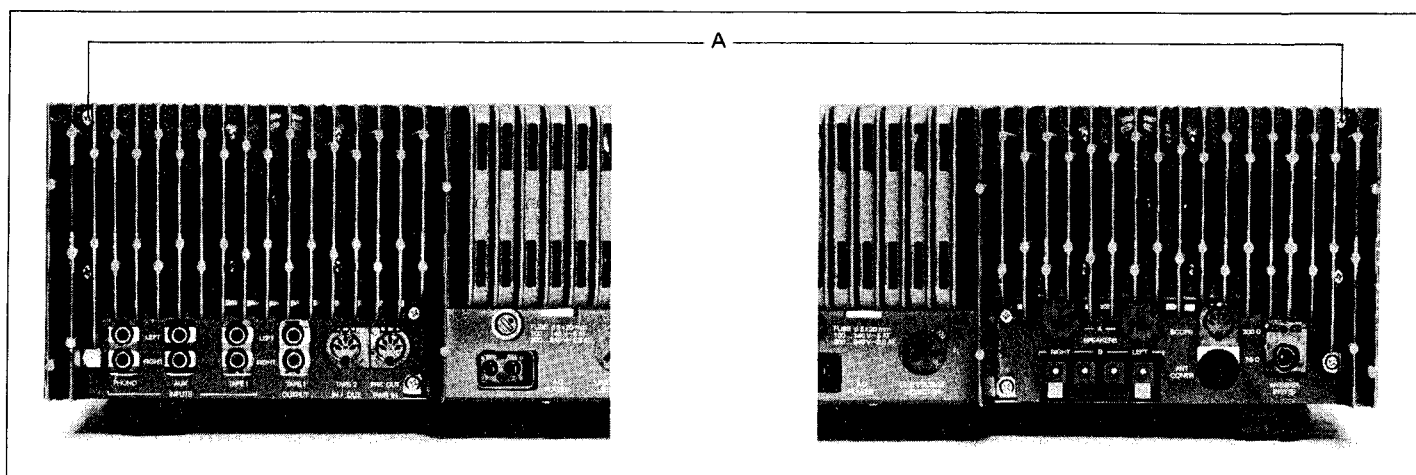


Fig. 2.1

2.2 Entfernen des unteren Deckbleches

- Fussleiste entfernen (2 Schrauben (B)).
- An der Unterseite des Gerätes 5 Schrauben (C) (Fig. 2.2) lösen.
- Unteres Deckblech abheben.

2.2 Removing the bottom cover plate

- Remove toe rail (2 screws (B)).
- Unfasten 5 screws (C) (Fig. 2.2) on the underside of the unit.
- Lift off bottom cover plate.

2.2 Dépose de la plaque du fond

- Démontez le bandeau inférieur (2 vis (B)).
- Dévissez les 5 vis (C) de la face inférieure.
- Oter la plaque du fond.

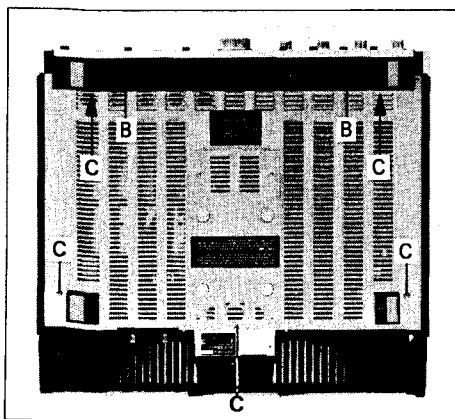


Fig. 2.2

2.3 Entfernen der seitlichen Abdeckungen

- Auf jeder Seite 2 Schrauben lösen und die seitlichen Abdeckungen entfernen.

2.3 Removing the side covers

- Unfasten 2 screws on each side and remove side covers.

2.3 Dépose des plaques latérales

- Dévissez 2 vis de chaque côté et retirez les plaques latérales.

2.4 Kühlkörper inkl. Endstufenprints ausbauen (nur B780)

- Oberes Deckblech entfernen (siehe 2.1).
- Am Kühlkörper 4 Schrauben Ⓢ lösen und Kühlkörper mit Endstufenprints nach unten kippen (Fig. 2.3).

2.4 Removing the heat sink incl. power stage PCB (B780 only)

- Remove the top cover plate (see 2.1).
- Unfasten 4 screws Ⓢ on heat sink and tilt heat sink down together with power stage circuit boards (Fig. 2.3).

2.4 Dépose des radiateurs et des circuits de l'étage de puissance (B780 seulement)

- Retirez les 4 vis Ⓢ des radiateurs puis faites basculer ceux-ci et les circuits de l'étage de puissance vers le bas (fig. 2.3).

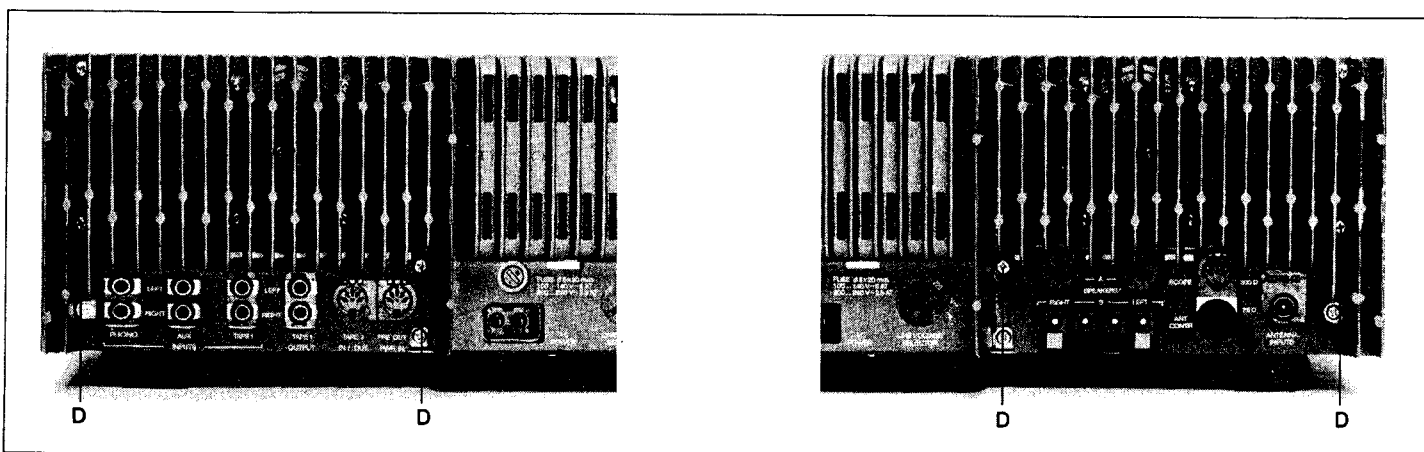


Fig. 2.3

- Auf jeder Seite je einen 4-poligen CIS-Stecker ausziehen.
- Auf beiden Endstufenprints je 5 Flachstecker ausziehen (Fig. 2.4).
- Die weißen Kabel, welche von der Thermosicherung auf den SPEAKER PROTECTION UNIT Print führen, ausziehen.
- Der Kühlkörper kann nun mit den Endstufenprints weggenommen werden.

- Unplug the 4-pin CIS connector on each side.
- Unplug 5 flat connectors on each of the power stage circuit boards (Fig. 2.4).
- Unplug the white cables which lead from the fuse to the SPEAKER PROTECTION UNIT circuit board.
- The heat sink can now be removed together with the power stage circuit boards.

- Enlevez, de chaque côté, une prise CIS à 4 poles.
- Retirez les 5 connecteurs plats de chaque étage de puissance (fig. 2.4).
- Enlevez les fils blancs qui relient la protection thermique au circuit SPEAKER PROTECTION UNIT.
- Le radiateur et les circuits de l'étage de puissance peuvent être maintenant déposés.

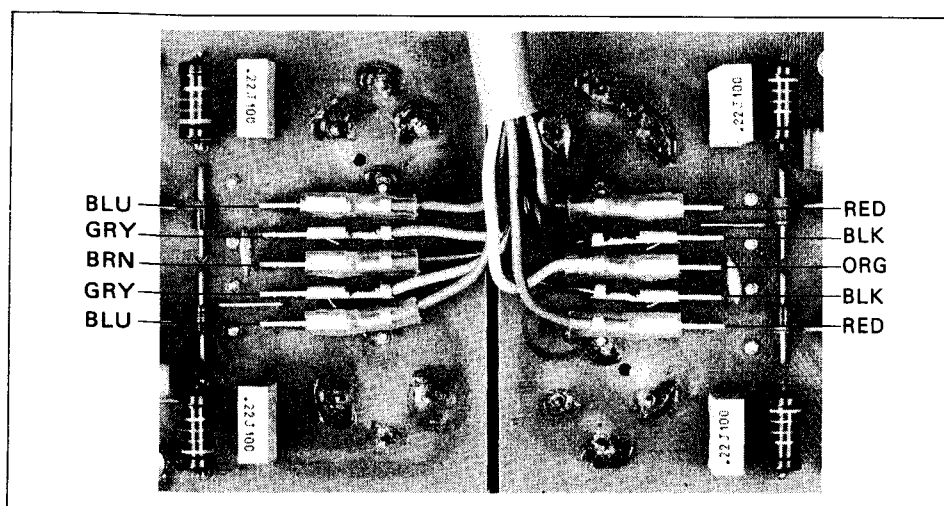


Fig. 2.4

2.5 Hintere Abdeckung ausbauen (B739)

- Zuerst muss das obere Deckblech entfernt werden (siehe 2.1).
- 2 Schrauben lösen und die hintere Abdeckung kann abgenommen werden.

2.6 Anschlussfeld-Abdeckung ausbauen (B739)

- 4 Schrauben lösen, die Abdeckung kann abgenommen werden.

2.7 Bedienungseinheit ausbauen

- Oberes und unteres Deckblech ausbauen (siehe Kapitel 2.1 und 2.2).
- Von oben (links und rechts aussen) 2 Befestigungsschrauben lösen.
- Die Bedienungseinheit kann nun nach unten gekippt werden.
- Auf der rechten Seite die 18-polige Stiftleiste und die 4 Flachstecker ausziehen (Fig. 2.5).
- Auf der linken Seite die beiden Befestigungsschrauben des Mikroprozessorprints (E) lösen (Fig. 2.6).
- Sämtliche Steckverbindungen, welche ins Gerät führen, ausziehen.
- Die Bedienungseinheit kann nun entfernt werden.

2.5 Removing the rear cover (B739)

- The top cover must be removed first (see 2.1).
- Unfasten 2 screws to remove the rear cover.

2.6 Removing the terminal board cover (B739)

- Unfasten 4 screws to remove the cover.

2.7 Removing the operating panel

- Remove top and bottom cover plates (see 2.1 and 2.2).
- Unfasten 2 screws from the top (on the extreme left and right).
- The operating unit can now be tilted down.
- Unplug the 18-pin multipoint connector and the 4 flat connectors (Fig. 2.5).
- Unfasten the two mounting screws of the microprocessor circuit board (E) on the left-hand side (Fig. 2.6).
- Unplug all connectors that lead to the interior of the unit.
- The operating unit can now be removed.

2.5 Dépose de la plaque arrière (B739)

- Démontez d'abord la plaque supérieure selon 2.1.
- Dévissez deux vis et la plaque arrière pourra être déposée.

2.6 Dépose de la façade du panneau de connexion

- Dévissez 4 vis et la façade sera démontée.

2.7 Dépose de l'unité de commande

- Démontez les plaques supérieures et inférieures selon 2.1 et 2.2.
- Dévissez les deux vis de fixation (aux extrémités droite et gauche) par le haut.
- L'unité de commande peut alors être inclinée vers le bas.
- Retirez, sur le côté droit, le connecteur 18 broches et les 4 connecteurs plats (fig. 2.5).
- Retirez, sur le côté gauche, les 2 vis de fixation du circuit du microprocesseur (fig. 2.6).
- Enlevez les quelques interconnexions restantes.
- L'unité de commande peut maintenant être déposée.

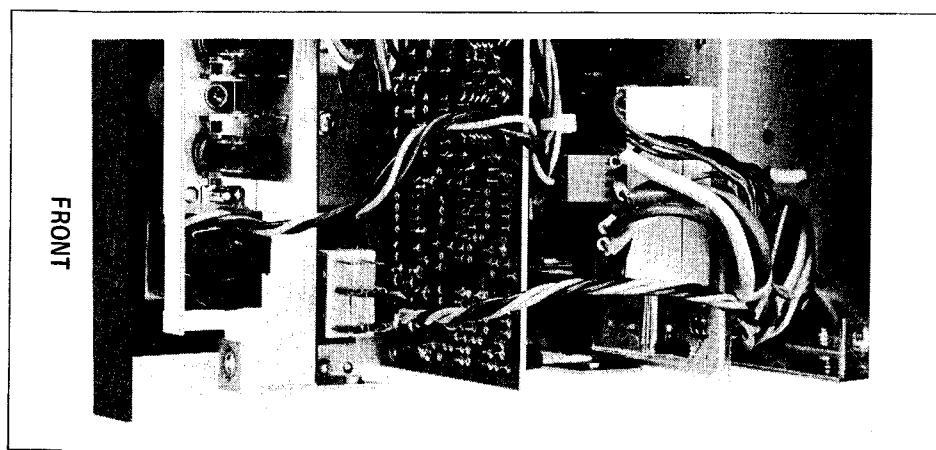


Fig. 2.5

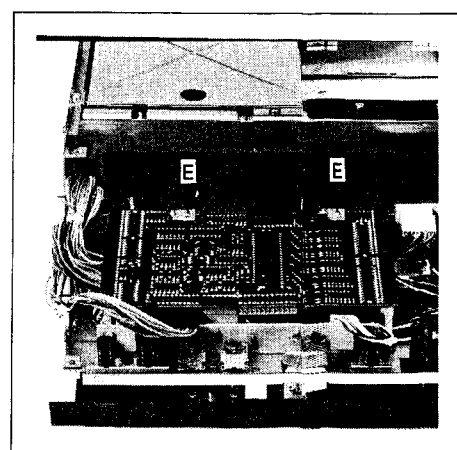


Fig. 2.6

2.8 Frontplatte ausbauen

- Seitliche Abdeckungen entfernen (siehe Kapitel 2.3).
- An den seitlichen Zierleisten je 2 Schrauben lösen und die Zierleisten mit Abdeckklappe entfernen.
- Sämtliche Potentiometerknöpfe abziehen (am Lautstärkenregler-Knopf VOLUME die Befestigungsschraube (Inbus 1,5 mm) lösen).
- Die Frontplatte kann nun abgehoben werden.

2.8 Removing the front panel

- Remove side covers (see 2.3).
- Unfasten 2 screws on each of the lateral trim strips and remove trim strips together with front flap.
- Pull off all potentiometer knobs (loosen the fixing screw on the VOLUME control knob, 1.5 mm Allen type key).
- The front panel can now be removed.

2.8 Dépose de la plaque frontale

- Démontez les plaques latérales selon 2.3.
- Dévissez 2 vis sur chaque moulure latérale et enlevez celles-ci avec le cache escamotable.
- Retirez les boutons des potentiomètres (utilisez une clé Inbus 1,5 mm pour démonter le bouton du réglage de volume).
- La plaque frontale peut maintenant être déposée.

2.9 Lampe für die Beleuchtung des Signalstärke-Instruments auswechseln

- Seitliche Abdeckungen entfernen (siehe Kapitel 2.3).
- An den seitlichen Zierleisten je 2 Schrauben lösen und die Zierleisten mit Abdeckklappe entfernen.
- Die Lampe für die Beleuchtung des Signalstärke-Instruments ist nun von oben zugänglich.

2.9 Replacing the illumination lamp of signal strength meter

- Remove side covers (see 2.3).
- Unfasten 2 screws on each of the lateral trim strips and remove trim strips together with front flap.
- The illumination lamp is now accessible from the top.

2.9 Remplacement de l'éclairage de l'indicateur d'intensité du signal

- Démontez les plaques latérales selon 2.3.
- Dévissez 2 vis sur chaque moulure latérale et enlevez celles-ci avec le bandeau escamotable.
- La lampe éclairant l'indicateur d'intensité du signal est maintenant accessible par le haut.

2.10 Signalstärke-Instrument auswechseln

- Bedienungseinheit ausbauen (siehe Kapitel 2.7).
- Frontplatte ausbauen (siehe Kapitel 2.8).
- Filtereinheit (inkl. Schalter) ausbauen: die beiden Befestigungsschrauben des Filterschalters lösen und die Einheit vorsichtig aus dem CIS-Stecksockel ziehen (Fig. 2.7).
- Bedienungseinheit auf die Frontseite legen und Mikroprozessorprint ausbauen (2 Schrauben lösen, Fig. 2.6).
- Die beiden Befestigungsklammern (F) (Fig. 2.8) des Display-Prints lösen, dadurch kann der Print sanft nach oben aus dem Chassis gezogen werden.

2.10 Replacing the signal strength meter

- Remove operating unit (see 2.7.).
- Remove front panel (see 2.8).
- Remove filter unit (including switch): unfasten the two mounting screws of the filter switch and carefully pull unit from the CIS plug socket (Fig. 2.7).
- Place operating unit on its front and remove micro-processor circuit board (unfasten 2 screws, Fig. 2.6).
- Unfasten both mounting clips (F) (Fig. 2.8) of the display circuit board. The circuit board can now be carefully pulled out of the chassis towards the top.

2.10 Remplacement de l'indicateur d'intensité du signal

- Déposez l'unité de commande selon 2.7.
- Déposez la plaque frontale selon 2.8.
- Démontez le circuit des filtres (avec son sélecteur): dévissez les 2 vis de fixation du sélecteur de filtres et retirez avec précaution le circuit de son connecteur (fig. 2.7).
- Démontez le circuit du microprocesseur de l'unité de commande (fig. 2.6).
- Démontez les pinces de fixation (F) du circuit d'affichage qui peut alors être extrait, avec précaution, par le haut.

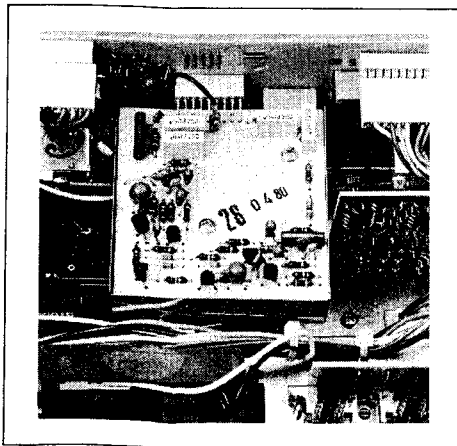


Fig. 2.7

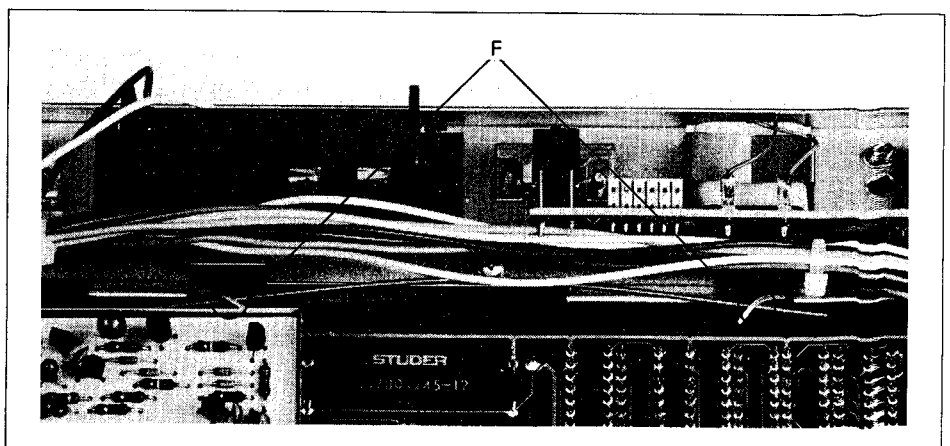


Fig. 2.8

2.11 Netzschalter ersetzen

- Bedienungseinheit ausbauen (siehe Kapitel 2.7).
- Frontplatte ausbauen (siehe Kapitel 2.8).
- Den Befestigungswinkel rechts neben dem Netzschalter ausbauen.
- Die Blindabdeckung zwischen dem Netzschalter und den Eingangswahltasten herausziehen, der Netzschalter kann nun ausgewechselt werden (Fig. 2.9).

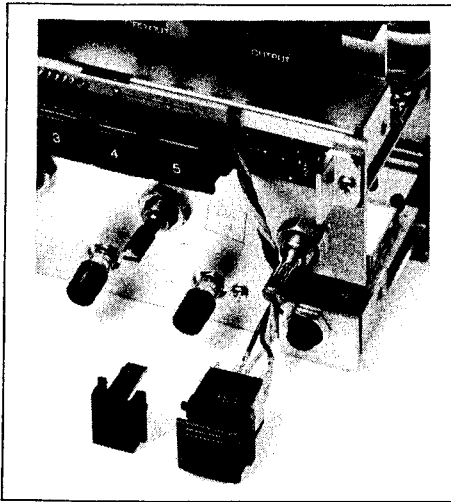


Fig. 2.9

2.11 Replacing the power switch

- Remove operating unit (see 2.7).
- Remove front panel (see 2.8).
- Remove mounting bracket next to power switch.
- Pull out blanking cover between power switch and input selector buttons. The power switch can now be replaced (Fig. 2.9).

2.11 Remplacement de l'interrupteur secteur

- Déposez l'unité de commande selon 2.7.
- Déposez la plaque frontale selon 2.8.
- Démontez l'équerre de renforcement située sur la droite de l'interrupteur secteur.
- Retirez l'isolation entre l'interrupteur secteur et le clavier de sélection.
- L'interrupteur secteur peut maintenant être remplacé.

2.12 Netzsicherung auswechseln

- Gerät vom Netz trennen.
- Sicherungsverschluss ⑧ (s. 1.2.1) durch Drehen öffnen (Bajonettverschluss).
- Defekte Sicherung auswechseln.

2.12 Replacing the power line fuse.

- Unplug power cord.
- Open fuse cap ⑧ (see 1.2.1) by twisting (bayonet catch).
- Replace blown fuse.

2.12 Remplacement du fusible secteur

- Débranchez l'appareil du secteur.
- Otez, en le faisant pivoter, le capuchon à baïonnette du fusible.
- Remplacez le fusible défectueux.

2.13 Netzteilsicherungen auswechseln

- Gerät vom Netz trennen.
- In der Mitte des unteren Deckblechs die beiden Schrauben der kleinen Abdeckung lösen und diese abheben (Fig. 2.10).
- Defekte Sicherung auswechseln.

2.13 Replacing the power supply fuse

- Unplug power cord.
- Unfasten the two screws of the small cover in the center of the bottom cover plate and remove small cover (Fig. 2.10).
- Replace blown fuse.

2.13 Remplacement des fusibles d'alimentation

- Débranchez l'appareil du secteur.
- Sur le fond de l'appareil, retirez le petit couvercle central en dévissant les 2 vis selon la fig. 2.10.
- Remplacez le fusible défectueux.

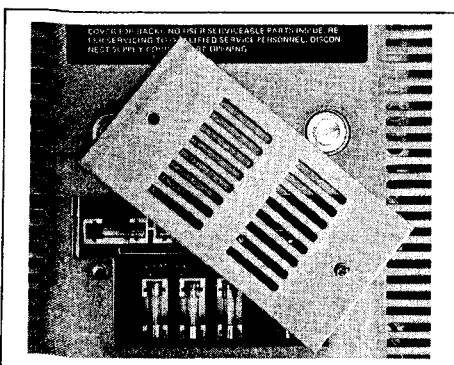


Fig. 2.10

3. FUNKTIONSBESCHREIBUNG**3.1 Tunerteil****3.1.1 Übertrager (Balun)** (auf Print SPEAKER PROTECTION UNIT 1.780.140)

Das Antennensignal gelangt von den 75 bzw. 300 Ohm-Anschlüssen über einen Symmetrierübertrager (Balun) und ein Bandpassfilter auf das HF-Eingangsteil.

3. DESCRIPTION OF FUNCTIONS**3.1 Tuner section****3.1.1 Balance-to-unbalance transformer (balun)** (Located on PCB SPEAKER PROTECTION UNIT 1.780.140)

The antenna signal is taken from the 75 or 300 ohms terminals via a balance-to-unbalance transformer (balun) and a band-pass filter to the RF input section.

3. DESCRIPTION DES FONCTIONS**3.1 Section Tuner****3.1.1 Translateur (Balun)** (sur le circuit SPEAKER PROTECTION UNIT 1.780.140)

Le signal arrivant sur les prises d'antenne de 75 ou 300 ohms est transmis à l'étage HF au travers d'un translateur symétrique et d'un filtre passe bande.

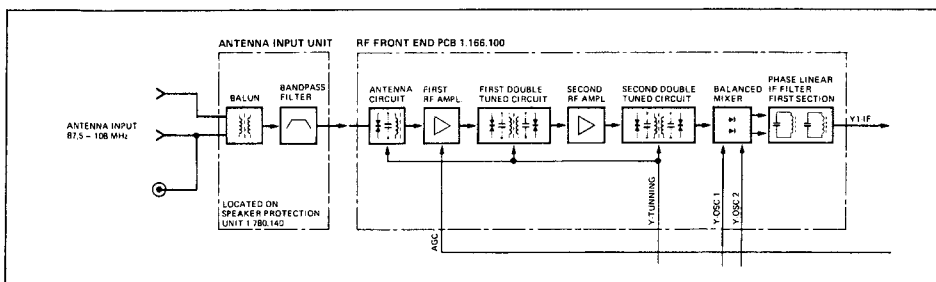
3.1.2 HF-Eingangsteil 1.166.100 (Fig. 3.1)**3.1.2 RF input section 1.166.100** (Fig. 3.1)**3.1.2 Etage d'entrée HF 1.166.100** (fig. 3.1)

Fig. 3.1

Über den Antennenkreis gelangt das Signal auf die erste HF-Verstärkerstufe. Bei grossen Eingangssignalen wird die Verstärkung durch AGC (Automatic Gain Control) geregelt. Danach folgt ein abgestimmtes Zweikreis-Bandpassfilter. Das Signal wird über die zweite HF-Verstärkerstufe und das zweite Bandpassfilter auf die symmetrische Gegentakt-Mischstufe geführt. Die Abstimmungsspannung (Y-TUNING) für die Kapazitätsdioden der Bandpassfilter wird vom Print Frequency Synthesizer 1.780.151 zugeführt. Das passive ZF-Filter ist durch 8 abstimmbare Kreise aufgebaut. Der erste Teil mit drei Kreisen befindet sich auf dem HF-Eingangsteil, die weiteren fünf Kreise sind auf dem ZF-Verstärkerteil.

Die Auslegung des ZF-Filters gewährt ideale Übertragungseigenschaften dank ausgezeichnete Durchlasskurve.

From the antenna circuit the signal is taken to the first RF amplifier stage. For large input signals, the gain is regulated by an AGC (Automatic Gain Control). This circuit is followed by a double-tuned circuit band-pass filter. The signal is taken via a second RF amplifier stage and a second band-pass filter to the balanced mixer. The tuning voltage (Y-TUNING) for the varactors of the band-pass filters is supplied by the frequency synthesizer board 1.780.151. The passive IF filter consists of 8 tunable circuits. The first section with three circuits is located in the RF input section, the remaining 5 circuits in the IF amplifier section.

The design of the IF filter assures ideal transformation characteristics on account of its excellent pass-band curve.

Par le circuit d'antenne, le signal arrive au premier étage HF. En présence de forts signaux, le gain est régulé par un circuit de CAG (contrôle automatique de gain). La liaison avec le deuxième étage est effectuée par un double filtre de bande accordé. Après le deuxième étage, un second filtre de bande conduit le signal à un mélangeur symétrique. La tension de commande (Y-TUNING) pour les diodes à capacité variable des filtres de bande est délivrée par le circuit du Frequency Synthesizer 1.780.151. Le filtre passif FI se compose de huit circuits accordés séparés: les trois premiers sont montés sur l'étage d'entrée HF et les cinq suivants sur l'amplificateur FI.

Cette disposition du filtre FI procure une qualité de transmission et de sélection optimale grâce à son exceptionnelle courbe de transfert.

3.1.3 ZF-Verstärker 1.166.120

(Fig. 3.2)

3.1.3 IF amplifier 1.166.120

(Fig. 3.2)

3.1.3 Amplificateur FI 1.166.120

(fig. 3.2)

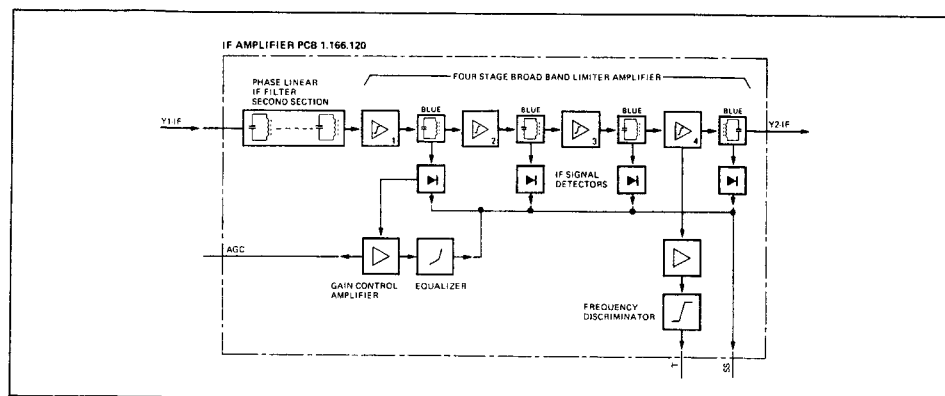


Fig. 3.2

Das zweite Teil des ZF-Filters mit fünf abstimmbaren Kreisen ist am Eingang des ZF-Verstärkers platziert. Von diesem Filter gelangt das Signal auf vier integrierte Differentialverstärker.

Nach der ersten ZF-Verstärkerstufe wird ein Teil des Signals abgenommen, gleichgerichtet und über einen Verstärker der HF-Vorstufe zugeführt (Verstärkungsregelung AGC). Von den drei weiteren ZF-Stufen werden die Signale ausgekoppelt, gleichgerichtet und über eine Summierstufe (Meter Circuit and Deemphasis 1.780.155) auf das Signalstärke-Anzeigeelement (SIGNAL STRENGTH) geführt. Die logarithmische Anzeige ermöglicht das Lesen der Signalstärke von wenigen Mikrovolt bis 100 Millivolt.

Für die Anzeige der Frequenzabweichung des empfangenen Senders gegenüber der digital angezeigten Abstimmfrequenz wird in der vierten ZF-Stufe das Signal ausgekoppelt und dem Frequenzdiskriminator zugeführt. Die Ausgangsspannung steuert das Abstimminstrument TUNING.

Die begrenzte ZF-Spannung (Signal Y2-IF) wird dem FM-Demodulator zugeführt.

The second section of the IF filter with its five tunable circuits is located at the input of the IF amplifier. From this filter the signal is taken to four integrated differential amplifiers.

After the first IF amplifier stage, a portion of the signal is tapped, rectified and input via an amplifier to the preselector (automatic gain control, AGC). In the remaining three IF stages the signals are coupled out, rectified and via a summing stage (meter circuit and deemphasis PCB 1.780.155) taken to the SIGNAL STRENGTH meter. Signal strengths of a few microvolt up to 100 millivolt can be read off the logarithmic scale.

For displaying the frequency deviation of the selected station from the digitally displayed tuning frequency, the signal is coupled out in the fourth IF stage and input to the frequency discriminator. The output voltage controls the TUNING meter.

The limited IF voltage (signal Y2-IF) is input to the FM demodulator.

La deuxième partie du filtre FI, composée de cinq circuits accordés, est placée à l'entrée de l'amplificateur FI qui comprend elle-même quatre amplificateurs différentiels intégrés.

On prélève, à la sortie du premier étage FI, une fraction du signal qui, une fois redressée et amplifiée, est appliquée à l'étage HF (contrôle de gain CAG). On prélève aussi un signal de chacun des trois étages FI suivants. Ces signaux sont redressés puis envoyés vers l'indicateur d'intensité du signal (SIGNAL STRENGTH) à travers un étage sommateur (Meter Circuit and Deemphasis 1.780.155). L'affichage logarithmique autorise la lecture de signaux d'une force s'étendant de quelques microvolts à 100mV.

Un quatrième étage FI délivre un signal qui, après démodulation dans un discriminateur de fréquence, commande l'affichage de la déviation de fréquence (TUNING).

La tension FI (Signal Y2-IF), limitée, parvient ensuite au démodulateur FM.

3.1.4 FM-Demodulator 1.166.130 (Fig. 3.3)

3.1.4 FM demodulator 1.166.130 (fig. 3.3)

3.1.4 Démodulateur 1.166.130 (fig. 3.3)

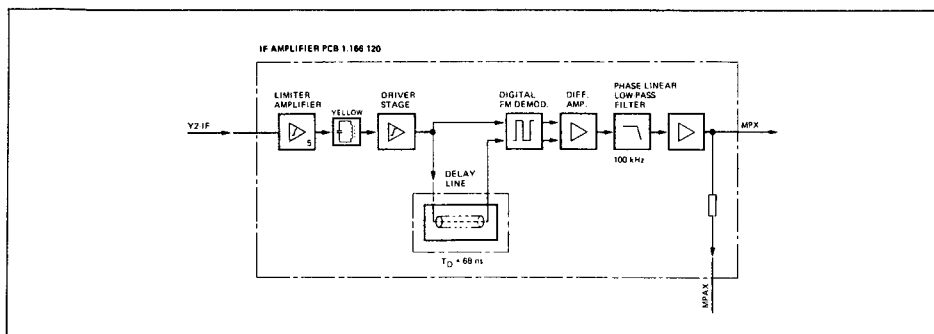


Fig. 3.3

Das ZF-Signal (Y2-IF) gelangt auf einen fünften Differentialverstärker und wird in der nachfolgenden Treiberstufe in ein Rechtecksignal umgewandelt. Die Ansteuerung des digitalen FM-Demodulators erfolgt einmal direkt und einmal über eine 68ns-Verzögerungsleitung. Eine Siebschaltung ermittelt aus der Impulsfolge der Demodulatorschaltung (Ex-OR) den Mittelwert als demoduliertes MPX-Signal. Nach der Differentialverstärkerstufe und dem 90kHz-Tiefpassfilter wird das Stereo-MPX-Signal über den Stumm-Schaltkreis (MUTING) auf dem Print Meter Circuit und Deemphasis 1.780.155 zum Stereodecoder geführt.

Parallel zum MPX-Ausgang wird noch das Horizontal-Signal (MPAX) für ein Oszilloskop an die Buchse SCOPE (11) geführt.

The IF signal (Y2-IF) is taken to a fifth differential amplifier and is converted to a square-wave signal in the subsequent driver stage. The digital FM demodulator is alternately controlled directly or via a 68 ns delay line. From the pulse sequence of the demodulator circuit (EX-OR), a filter network determines the mean as a demodulated MPX signal. After the differential amplifier and the 90kHz low-pass filter, the stereo MPX signal is taken via MUTING circuit, located on the meter circuit and de-emphasis board 1.780.155, to the stereo decoder.

In parallel to the MPX output, the horizontal signal (MPAX) is also taken to the SCOPE socket (11) where an oscilloscope can be connected.

Le signal FI (Y2-1F) issu du cinquième amplificateur différentiel est transformé en un signal carré par l'étage d'attaque suivant. Ce signal commande le démodulateur FM digital à commutation, une fois directement et une autre fois après un retard de 68 nanosecondes. Un circuit de filtrage démodule le signal MPX en transformant les impulsions issues du démodulateur (Ex-Or) en un signal de valeur moyenne. Après un amplificateur différentiel et un filtre passe-bas coupant à 90kHz, le signal MPX stéréo est envoyé au decodeur stéréo via le circuit de silence (MUTING) situé sur le circuit Meter Circuit and Deemphasis 1.780.155.

Le signal pour la voie horizontale de l'oscilloscope est prélevé de la sortie MPX vers la prise SCOPE (11).

3.1.5 Stereo-Decoder 1.166.150 (Fig. 3.4)

3.1.5 Stereo decoder 1.166.150 (fig. 3.4)

3.1.5 Décodeur stéréo 1.166.150 (fig.3.4)

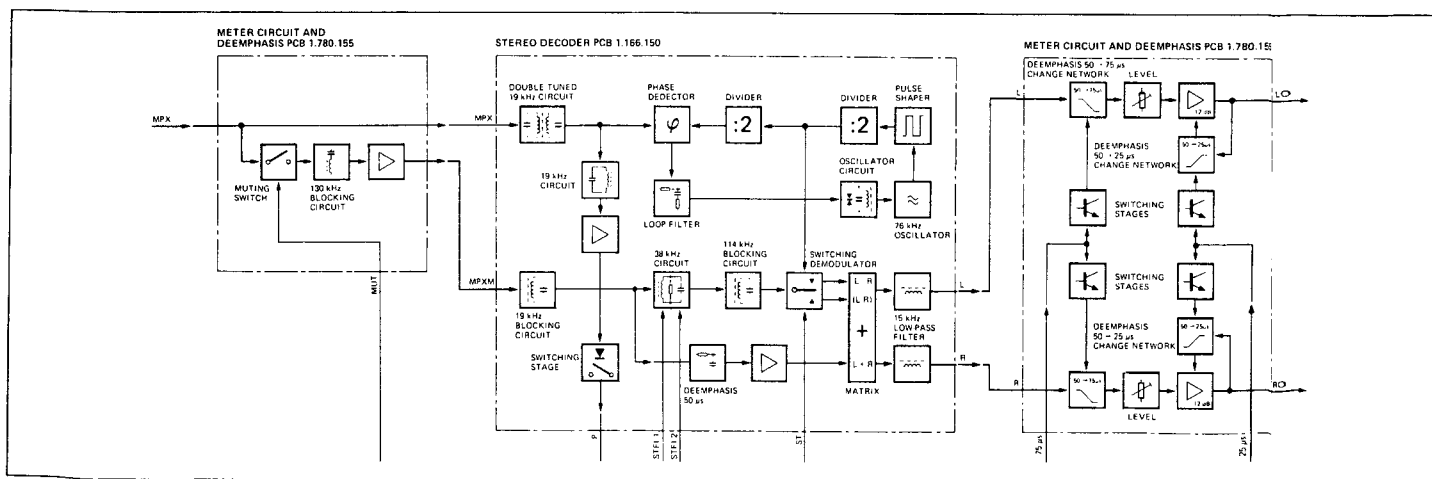


Fig. 3.4

Der Pilotton wird in einem breitbandigen, phasenstabilen 19kHz-Bandfilter aus dem Stereo-MPX-Signal ausgefiltert und der Phasenvergleichsstufe PLL (Phase Locked Loop) zugeführt. Vom 76kHz-Oszillator gelangt das Signal über eine Impulsformerstufe auf einen Frequenzteiler

In a wide-band, phase-stable 19kHz band filter, the pilot tone is filtered out of the stereo MPX signal after which it is taken to the phase comparator PLL (Phase Locked Loop). From the 76 kHz oscillator the signal is taken via a pulse former to the frequency divider (:2). The resulting

Le signal pilote est obtenu en filtrant le signal MPX stéréo avec un filtre large-bande, centré à 19kHz et stable en phase. On l'amène ensuite au comparateur de phase (PLL). Un étage de mise en forme amène le signal de l'oscillateur 76k Hz à un diviseur de fréquence ($\times 2$). La fréquence de

(:2). Die erhaltene Frequenz von 38kHz steuert den MPX-Schaltdemodulator. Über einen zweiten Frequenzteiler (:2) wird das Signal in die Phasenvergleichsstufe zurückgeführt. Stimmen die beiden Signale in Frequenz und Phase nicht überein, so steuert die Fehlerspannung der Phasenvergleichsstufe über das Loop-Filter und den Abstimmkreis den 76kHz-Oszillator nach.

Das von der Sturmschaltlogik überwachte MPX-Signal wird auf das 19kHz-Sperrfilter geführt und vom 19kHz-Pilotton befreit. Das Signal wird nun über das 50µs-Deemphasis-Netzwerk in den Hauptkanal und über den 38kHz-Kreis in den Hilfskanal aufgeteilt. Mit dem Schalter HIGH BLEND kann bei schwach empfangenen Stereosendern der Rauschabstand auf Kosten der Übersprechdämpfung verbessert werden, indem das Differenzsignal gegenüber dem Summensignal abgeschwächt wird. Das Summensignal wird immer über Q2 der Matrix (Q1 und Q3) zugeführt.

Das Differenzsignal wird im Schaltdemodulator (IC1) aus dem Hilfskanal gewonnen und ebenfalls der Matrix zugeführt. Damit keine Qualitätsverluste in Stereo gegenüber Mono auftreten, müssen gewisse Frequenzanteile über dem MPX-Signal entfernt werden. Diese Forderung wird erfüllt durch das 90kHz-Tiefpassfilter im FM-Demodulator, das 130kHz-Sperrfilter im Logikteil, die 114kHz-Sperrfilter und 38kHz-Filter im Stereodecoder. Die NF-Signale werden zur Unterdrückung der MPX-Restsigale über 15kHz-Tiefpassfilter geführt.

Nach dem 19kHz-Bandpassfilter am Eingang der Phasenvergleichsstufe (IC4) wird der Pilotton abgezweigt, scharf ausgefiltert, verstärkt (1/2 IC3), gleichgerichtet und einer Schaltstufe zugeführt (Q5). Das Signal P (Pilot) wird in der Stereo-Umschaltlogik (auf Micro Computer PCB 1.780.260) weiterverarbeitet.

38kHz frequency controls the MPX switching demodulator. The signal is returned to the phase comparator via a second frequency divider (:2). If the frequency and the phase of these two signals do not coincide, the error voltage of the phase comparator follows up the 76kHz oscillator via the loop filter and the tuning circuit.

The MPX signal monitored by the muting circuit is taken to the 19kHz band rejection filter where the 19kHz pilot tone is eliminated. Via the 50µs de-emphasis network, the signal is now split into the main channel and via the 38kHz circuit into the subsidiary channel. If the stereo reception is weak, the HIGH BLEND switch can be activated to improve the signal-to-noise ratio at the expense of the crosstalk attenuation. This is accomplished by attenuating the differential signal in relation to the aggregate signal. The aggregate signal is always input via Q2 into the matrix (Q1 and Q3).

The differential signal is developed by the switching demodulator (IC1) from the subsidiary channel and also input into the matrix. To ensure that there will be no quality loss in comparison to mono, certain frequency components above the MPX signals must be removed. This is accomplished by the 90kHz low-pass filter in the FM demodulator, the 130kHz band rejection filter in the logic section, the 114kHz band-rejection filter and the 38kHz filter in the stereo decoder. To suppress the residual MPX signals, the AF signals are conducted via 15kHz low-pass filters.

After the 19kHz band-pass filter at the input of the phase comparator (IC4), the pilot tone is branched off, filtered out sharply, amplified (1/2 IC3), rectified, and input to switching stage (Q5). The pilot signal (P) is further processed by the stereo threshold logic (in microcomputer PCB 1.780.260).

38kHz obtenue commande le démodulateur MPX à commutation. Un second diviseur de fréquence (:2) produit un signal à 19kHz qui est amené au comparateur de phase. Si les deux signaux d'entrée du PLL ne sont pas exactement en phase, le filtre de boucle envoie une tension d'erreur pour corriger l'oscillateur local 76kHz.

Après le circuit de silence (Muting), le signal MPX est libéré du pilote par un filtre réjeteur de 19kHz, d'où sont extraits, par le réseau de désaccentuation (50µs) le canal principal et par le filtre de 38kHz le canal auxiliaire. En cas de mauvaise réception d'émetteurs stéréo, on peut améliorer le rapport signal/bruit grâce au commutateur HIGH BLEND, mais au prix d'une moins bonne séparation des canaux: le signal de différence est affaibli par rapport au signal somme. Ce dernier est envoyé à la matrice de décodage (Q1 et Q3) par Q2.

Le signal de différence, issu du démodulateur à commutation (IC1), est également envoyé à la matrice de décodage. Pour ne pas perdre de sélectivité en stéréo par rapport à la réception monophonique, le signal MPX doit être libéré de certaines fréquences perturbatrices: 90kHz par un filtre passe-bas sur le démodulateur FM, 130kHz par un réjeteur sur le circuit logique, 114kHz et 38kHz par d'autres réjeteurs sur le décodeur stéréo. Un filtre passe-bas, coupant à 15kHz, amène le signal BF à la sortie en éliminant les résidus du signal MPX.

Après le filtre de bande 19kHz à l'entrée du comparateur de phase (IC4), le signal pilote passe par un filtre très sélectif puis est amplifié par IC3 (1/2), puis redressé et enfin commuté (Q5). Le signal P (pilote) est utilisé dans la commande de la logique de commutation (sur le circuit Microcomputer PCB 1.780.260).

3.1.6 Frequenzsynthesizer und Lokalschaltzillator (Fig. 3.5)

3.1.6 Frequency synthesizer and local oscillator (Fig. 3.5)

3.1.6 Synthétiseur de fréquence et oscillateur local (Fig. 3.5)

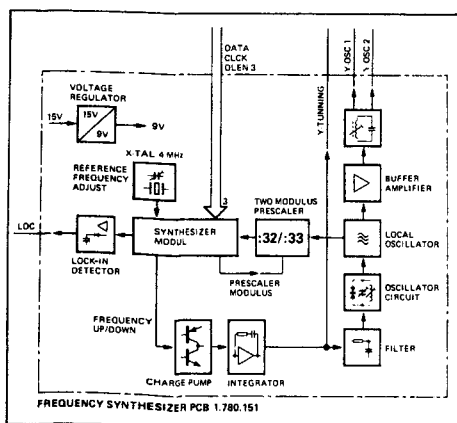


Fig. 3.5

Die Lokoszillatorspannung wird mit einer PLL-Schaltung (Phase Locked Loop) erzeugt. Das Signal wird über einen programmierbaren Frequenzteiler (IC3 :32/:33) auf den Frequenzsynthesizer IC2 geführt. Im Synthesizermodul (IC2) wird das von IC3 kommende Signal weiterverarbeitet und mit dem Referenzsignal (Quarzreferenz 4MHz) auf Frequenz und Phase verglichen. Das daraus resultierende Fehlersignal wird gefiltert, verstärkt (IC4) und zur Steuerung des Lokoszillators verwendet.

Der Teilermodus von IC3 wird vom Signal CMOD bestimmt. Dieses Signal wird im sog. SWALLOW COUNTER (Fig. 3.6) erzeugt. Einleitend ist dieses Signal logisch "H" und der Frequenzteiler teilt durch 33. Wenn der Swallow Counter auf Null hinuntergezählt hat, wird dieses Signal "L" und der Frequenzteiler teilt durch 32. Der Swallow Counter zählt danach nicht mehr weiter, bis auch der Program Counter auf Null ist. Sobald dieser auf Null ist, erzeugt er ein Signal, durch welches er sich selbst und den Swallow Counter mit der Information (15-Bit Frequenzcode) neu lädt (CMOD wieder "H").

The local-oscillator voltage is generated by a PLL circuit (Phase Locked Loop). The signal is taken via the programmable frequency divider (IC3 :32/:33) to the frequency synthesizer IC2. In the synthesizer module (IC2), the signal arriving from IC3 is further processed and compared with the reference signal (quartz reference 4MHz) in respect to frequency and phase coincidence. The resulting error signal is filtered, amplified in IC4, and used for controlling the local oscillator.

The division ratio of IC3 is determined by the signal CMOD. This signal is generated in the so-called SWALLOW COUNTER (Fig. 3.6). Initially, this signal is logical "H" and the frequency divider operates with the ratio 33. When the swallow counter is decremented to zero, this signal changes to "L" and the frequency divider operates with the ratio 32. The swallow counter stops counting until the program counter is also at zero. As soon as this is the case, the program counter generates a signal through which it re-initializes itself and the swallow counter with the information (15-bit frequency code) and CMOD again changes to "H".

La tension de l'oscillateur local est produite par un PLL (boucle à verrouillage de phase). Le signal est conduit au synthétiseur de fréquence IC2 par un diviseur de fréquence programmable (IC3 :32/:33). Le signal venant de IC3 est utilisé dans le module synthétiseur IC2 et comparé en fréquence et en phase à la référence à quartz (4MHz). Le signal d'erreur résultant est filtré, amplifié (IC4) et sert à la commande de l'oscillateur local.

Le mode de division de IC3 est déterminé par le signal CMOD produit par le circuit SWALLOW COUNTER (fig. 3.6). Initialement, ce signal est au niveau logique "H" et le diviseur de fréquence divise par 33. Quand le Swallow Counter a décompté jusqu'à zero, le signal devient "L" et le diviseur de fréquence divise par 32. Le Swallow Counter ne compte alors plus, jusqu'à ce que le Program Counter soit lui aussi à zéro. Dès que cela se produit, ce compteur délivre un ordre et les deux compteurs sont rechargés avec l'information de la fréquence, codée sur 15 bits, le signal CMOD retourne à l'état "H".

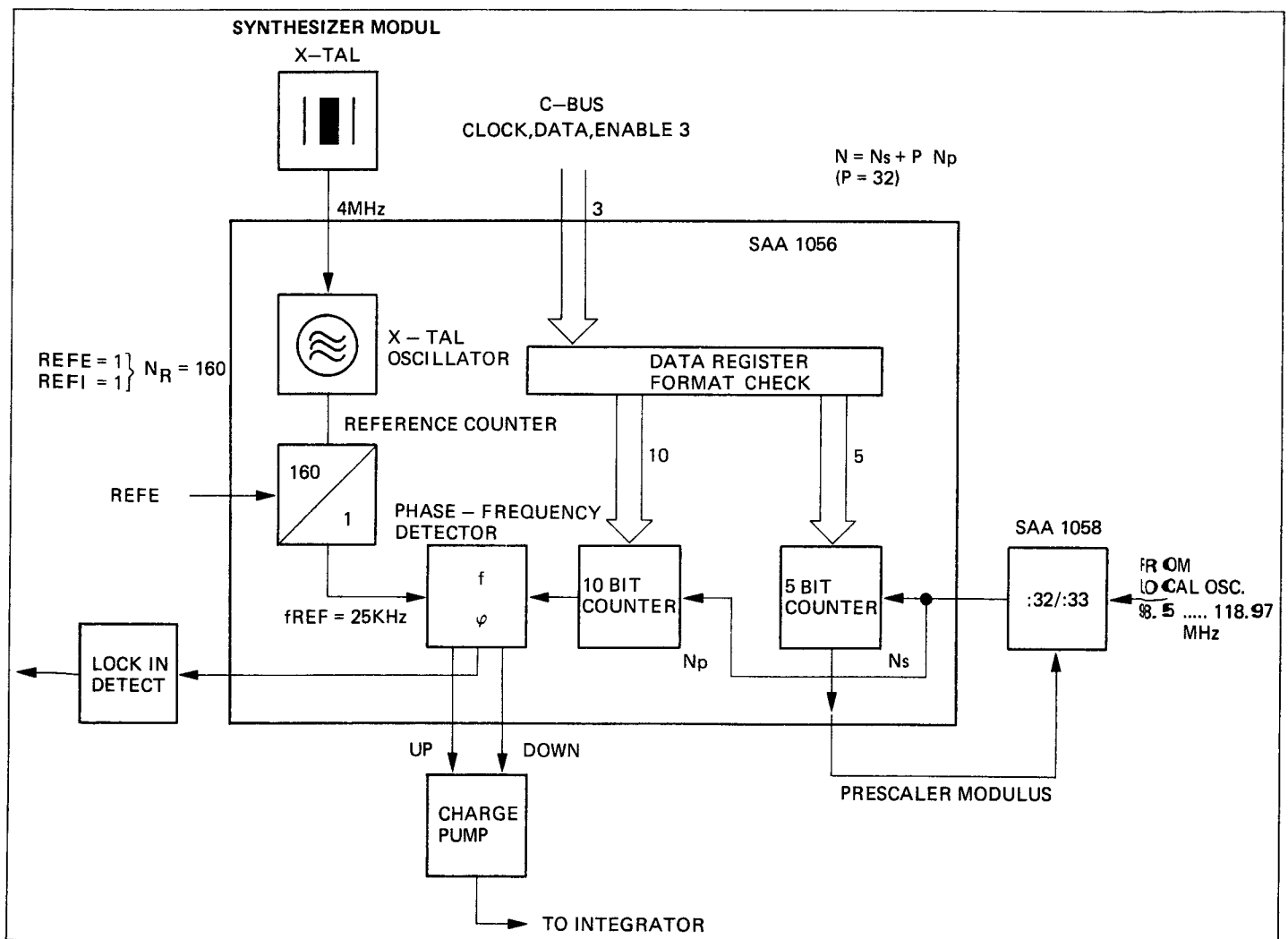


Fig. 3.6

Die von der seriellen Schnittstelle des Mikroprozessors kommenden Daten werden in ein 16-Bit Schieberegister eingelesen, wenn das Signal DLEN3 logisch "H" ist. In diesem Zustand wird bei jedem Clock-Impuls die Datenleitung abgefragt. Das Signal DATA beginnt mit einem "LEADING ZERO". Das erste Bit nach dem Leading Zero bestimmt das Teilverhältnis (:160) für die Referenzfrequenz. Die Quarzfrequenz von 4MHz wird auf die Referenzfrequenz von 25kHz hinuntergeteilt. Die weiteren 15 Bit bestimmen das Teilverhältnis für den Swallow und Program Counter. Der nach dem 16. Bit folgende Clock-Impuls lädt die Daten zusammen mit dem extern zugeführten Referenzfrequenz-Bit (REFE) in den internen 17-Bit Speicher.

The data arriving from the serial interface of the microprocessor is read into a 16-bit shift register when signal DLEN3 is logical "H". In this condition the data line is scanned for each clock pulse. The DATA signal starts with a LEADING ZERO. The first bit after the leading zero determines the divider ratio (:160) for the reference frequency. The 4MHz quartz frequency is divided down to 25kHz reference frequency. The remaining 15 bits define the division ratio for the swallow counter and the program counter. The clock pulse that follows the 16 bits loads the data together with the externally supplied reference frequency bit (REFE) into the internal 17-bit register.

Les données venant de l'interface série du microprocesseur sont lues dans un registre 16 bits à décalage quand le signal logique DLEN3 est "H". La ligne de données est alors scrutée à chaque impulsions d'horloge. Le signal DATA commence par un "LEADING ZERO". Le premier bit suivant détermine le rapport de division (:160) pour la fréquence de référence: on divise les 4MHz du quartz pour produire une fréquence de référence de 25kHz. Les 15 bits suivants déterminent les rapports de division des compteurs Swallow et Program. L'impulsion d'horloge suivant la séquence de 16 bits charge les données avec un bit de fréquence de référence (REFE), produit extérieurement, dans la mémoire interne 17 bits.

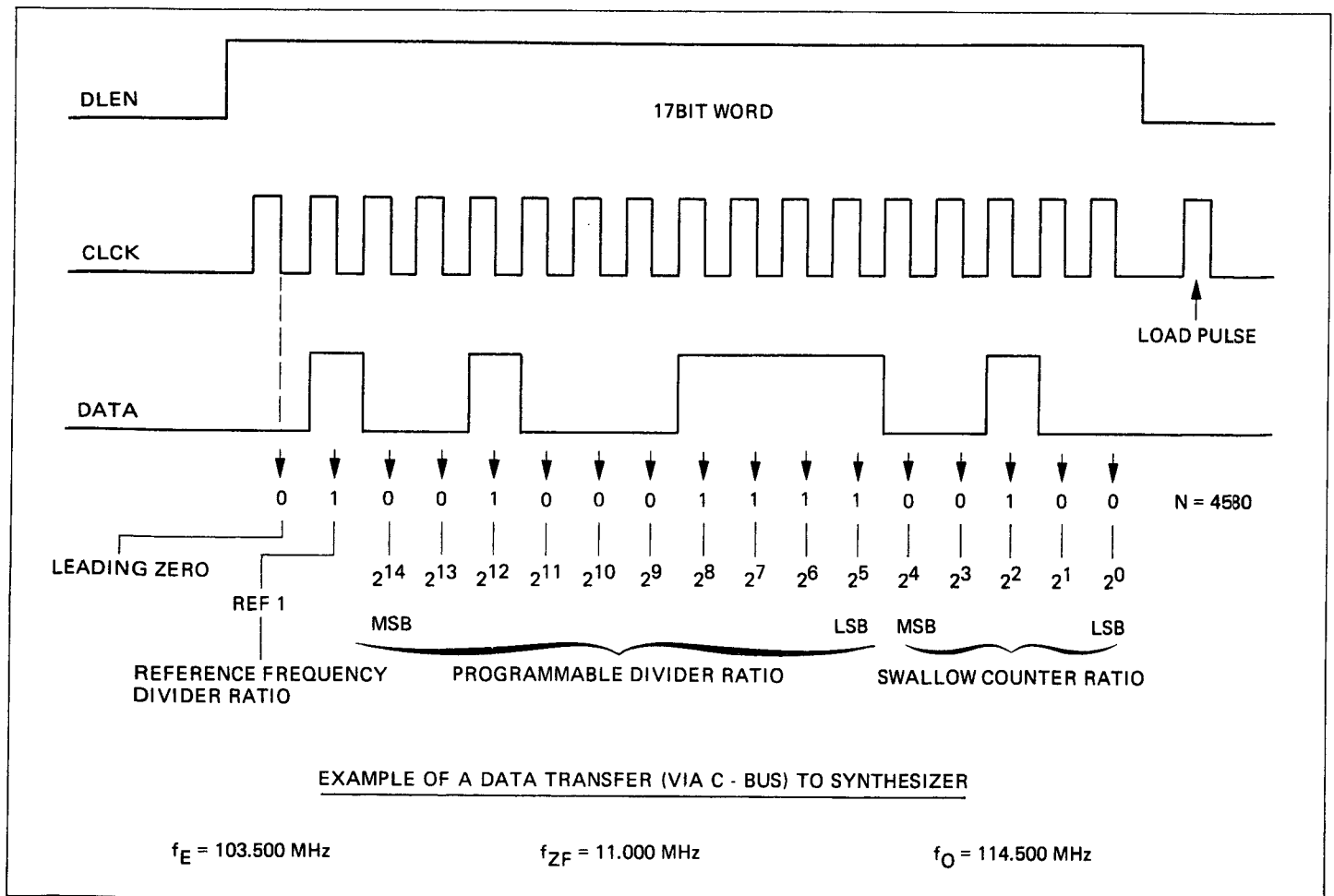


Fig. 3.7

3.2 Logik-Teil

3.2 Logic section

3.2 Section logique

3.2.1 Mikroprozessorprint MICROCOMPUTER PCB 1.780.260

3.2.1 MICROCOMPUTER PCB 1.780.260

3.2.1 Circuit du microprocesseur PCB 1.780.260

Die Signale von Station Selector Keyboard 1.780.225, Push Button Board FM-Mode 1.780.220, Input Selector Keyboard 1.780.230, Push Button Board/Output Selection 1.780.240 und von der Receiver-Elektronik (insgesamt 40 Signale) werden über die Data Selectoren (MUX) IC6 bis IC10 auf fünf Ausgänge geführt (siehe Fig. 3.9). IC6 bis IC10 sind C-MOS-IC's. Die Data Selectoren werden mit den Signalen A, B, C vom Mikroprozessor (IC1) gesteuert. Zu den Ausgangssignalen dieser Data Selectoren wird noch das Z-Signal von der Antennenrotorsteuerung hinzugefügt.

The signals from the station selector keyboard 1.780.225, push button board FM mode 1.780.220, input selector keyboard 1.780.230, push button / output selection board 1.780.240, and the receiver electronics (in total 40 signals) are taken via data selectors (MUX) IC6 through IC10 to five outputs (see Fig. 3.9). IC6 through IC10 are implemented in CMOS. The data selectors are controlled with the signals A, B, C of the microprocessor (IC1). The Z-signal of the antenna rotor control is also added to the output signals of these data selectors.

Les signaux issus du clavier de sélection des stations 1.780.225, du sélecteur FM-MODE 1.780.220, du sélecteur d'entrées 1.780.230, du sélecteur de sorties 1.780.240 et de l'électronique du récepteur (soit 40 signaux en tout) sont réduits en cinq canaux par les ICs 6 à 10 de sélection de données (MUX, voir fig. 3.9) qui sont des CMOS. Ils sont commandés par les signaux A, B et C du microprocesseur IC1. Aux cinq signaux de sortie ces sélecteurs s'ajoute le signal Z de la commande du rotor d'antenne.

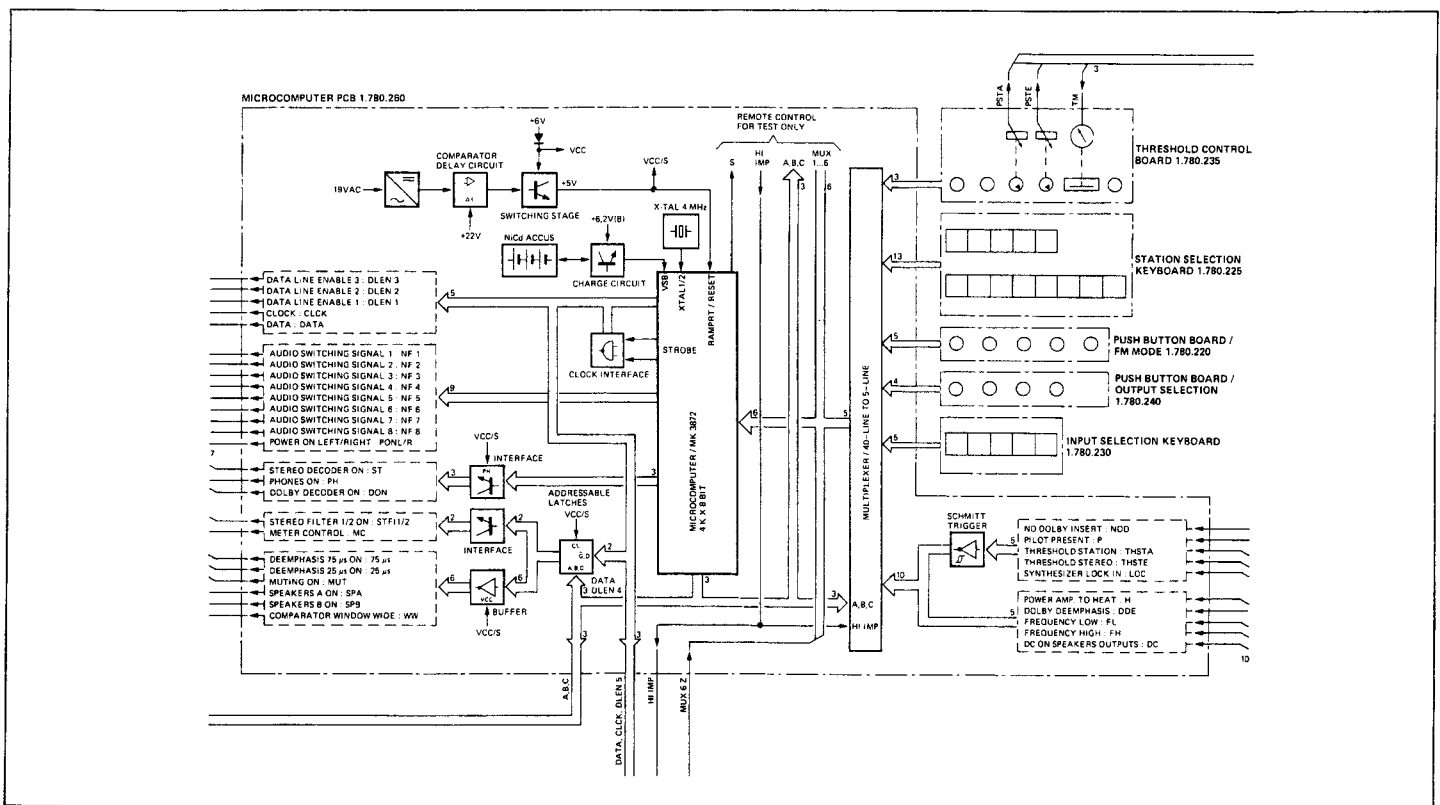


Fig. 3.9

Die Steuerbefehle für die NF-Umschaltung kommen von IC1 Pin 16-19 und 22-25. Über die logischen Zustände dieser Ausgänge gibt die Wahrheitstabelle in Fig. 3.10 Auskunft.

The control commands for the AF change-over arrive from IC1 pins 16-19 and 22-25. The logical conditions of these outputs are listed in the truth table Fig. 3.10.

Les commutations BF sont commandées par les signaux issus des broches 16 à 19 et 22 à 25 de l'IC1. La table de vérité correspondante est représentée fig. 3.10.

| SELECTOR | | NF | | | | | | | |
|----------|--------|----|---|---|---|---|---|---|---|
| INPUT | RECORD | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| TUNER | TUNER | | | | 0 | | | | |
| TUNER | PHONO | | | | 0 | 0 | | | |
| TUNER | AUX | | | | 0 | | 0 | | |
| TUNER | TAPE 1 | | | | 0 | | | | 0 |
| TUNER | TAPE 2 | | | | 0 | | | 0 | |
| TUNER | OFF | | | | 0 | | | 0 | 0 |
| | | | | | | | | | |
| PHONO | TUNER | | | | | | | | |
| PHONO | PHONO | | | | | 0 | | | |
| PHONO | AUX | | | | | | 0 | | |
| PHONO | TAPE 1 | | | | | | | | 0 |
| PHONO | TAPE 2 | | | | | | | 0 | |
| PHONO | OFF | | | | | | | 0 | 0 |
| | | | | | | | | | |
| AUX | TUNER | 0 | | | | | | | |
| AUX | PHONO | 0 | | | | 0 | | | |
| AUX | AUX | 0 | | | | | 0 | | |
| AUX | TAPE 1 | 0 | | | | | | | 0 |
| AUX | TAPE 2 | 0 | | | | | | 0 | |
| AUX | OFF | 0 | | | | | | 0 | 0 |
| | | | | | | | | | |
| TAPE 1 | TUNER | | 0 | | | | | | |
| TAPE 1 | PHONO | | 0 | | | 0 | | | |
| TAPE 1 | AUX | | 0 | | | | 0 | | |
| TAPE 1 | TAPE 1 | | 0 | | | | | | 0 |
| TAPE 1 | TAPE 2 | | 0 | | | | | 0 | |
| TAPE 1 | OFF | | 0 | | | | | 0 | 0 |
| | | | | | | | | | |
| TAPE 2 | TUNER | | | 0 | | | | | |
| TAPE 2 | PHONO | | | 0 | | 0 | | | |
| TAPE 2 | AUX | | | 0 | | | 0 | | |
| TAPE 2 | TAPE 1 | | | 0 | | | | | 0 |
| TAPE 2 | TAPE 2 | | | 0 | | | | 0 | |
| TAPE 2 | AUX | | | 0 | | | | 0 | 0 |

Fig. 3.10

Die Reset-Schaltung steuert den RESET/RAMPRT-Pin des Mikroprozessors (siehe Fig. 3.11).

The reset circuit controls the RESET/RAMPRT pin of the microprocessor (see Fig. 3.11).

Le circuit de Reset commande la broche RESET/RAMPRT du microprocesseur (voir fig. 3.11).

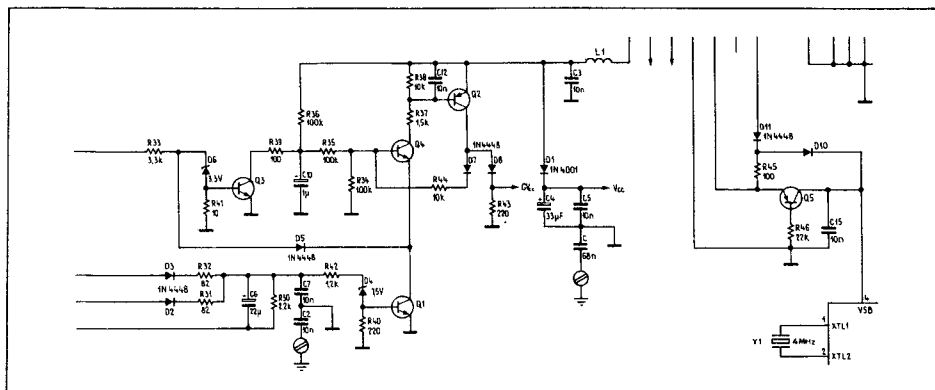


Fig. 3.11

Der interne Stand-By Speicher bleibt auch bei ausgeschaltetem Gerät an der Speisepannung. Wird das Gerät vom Netz getrennt, so wird dieser Speicher von den eingesetzten Akkumulatoren gespeist.

Über sämtliche Steckanschlüsse des Mikroprozessors gibt die Anschlussstabelle in Fig. 3.12 Auskunft.

The internal stand-by memory is connected with the supply voltage even when the receiver is switched off. When the unit is disconnected from the AC power, the memory is supplied by the built-in batteries.

All connecting points of the microprocessor board are listed in the table Fig. 3.12.

La mémoire interne Stand-By est alimentée même lorsque l'appareil n'est pas sous tension grâce aux accumulateurs placés dans celui-ci.

Le tableau des connexions du circuit du microprocesseur est représenté fig. 3.12.

SIGNALS OF THE MICROCOMPUTER PCB 1.780.260

INPUT

| SIGNAL | | CONDITION FOR LOGIC "LOW" | CONDITION FOR LOGIC "HIGH" |
|--------|---------|---------------------------------|--------------------------------|
| STME | J6 - 3 | U < 1V | U > 4V |
| T75µs | J7 - 16 | | |
| CHTM | J6 - 2 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| TSPA | J6 - 9 | | |
| TSPB | J6 - 10 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| RECOFF | J6 - 17 | | |
| RECSET | J6 - 16 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| KS 1 | J7 - 6 | | |
| KS 2 | J7 - 7 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| KS 3 | J7 - 8 | | |
| KS 4 | J7 - 9 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| KS 5 | J7 - 10 | | |
| KS 6 | J7 - 11 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| KS 7 | J7 - 12 | | |
| KS 8 | J7 - 13 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| KS 9 | J7 - 14 | | |
| KS 0 | J7 - 15 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| LSNE | J6 - 1 | | |
| DOWN | J7 - 18 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| UP | J7 - 17 | | |
| TU | J6 - 18 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| PHO | J6 - 12 | | |
| AUX | J6 - 13 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| TA 1 | J6 - 14 | | |
| TA 2 | J6 - 15 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| NR | J6 - 11 | | |
| HIBL | J6 - 8 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| MONO | J6 - 7 | | |
| MOFF | J6 - 6 | THE CORRESPONDING KEY DEPRESSED | THE CORRESPONDING KEY RELEASED |
| STLY | J6 - 5 | | |
| NOD | J4 - 17 | WITH "DUMMY PLUG" | WITH DOLBY PCB INSERTED |
| P | J4 - 18 | STATION WITH STEREO PILOT | STATION WITHOUT PILOT |
| THSTA | J5 - 14 | RF - SIGNAL HIGH (THRESHOLD) | RF - SIGNAL LOW (THRESHOLD) |
| THSTE | J5 - 13 | RF - SIGNAL HIGH (THRESHOLD) | RF - SIGNAL LOW (THRESHOLD) |
| LOC | J5 - 12 | SYNTHESIZER LOCKED | SYNTHESIZER UNLOCKED |
| H | J5 - 19 | OUTPUT STAGE < 90° C | OUTPUT STAGE > 90° C |
| DDE | J5 - 18 | ALWAYS HIGH | ALWAYS HIGH |
| FL | J5 - 17 | $f_e < (f_s - \Delta f) *$ | $f_e > (f_s - \Delta f) *$ |
| FH | J5 - 16 | $f_e < (f_s + \Delta f) *$ | $f_e > (f_s + \Delta f) *$ |
| DC | J5 - 15 | NO DC - VOLTAGE (SPEAKERS) | DC - VOLTAGE (SPEAKERS) |

* f_e = INPUT FREQUENCY

Δf = 75kHz (WW = HIGH)

f_s = STATION FREQUENCY

Fig.3.12a

OUTPUT

| SIGNAL | CONNECTOR | CONTROLS IF LOGIC LOW | | CONTROLS IF LOGIC HIGH | |
|--|--|--|-------|---|-------|
| DLEN 3 DLEN 2 DLEN 1 CLKK DATA | J5 – 2 J7 – 1 J7 – 2 J5 – 1 / J7 – 4 J5 – 3 / J7 – 3 | CONTROL OF SYNTHESIZER SEE FIG.3.7 | | | |
| NF 1 NF 2 NF 3 NF 4 NF 5 NF 6 NF 7 NF 8 | J4 – 9 J4 – 8 J4 – 7 J4 – 6 J5 – 7 J5 – 6 J5 – 5 J5 – 4 | AF – SWITCHING SEE FIG. 3.10 | | +0.1V | +4V |
| PONL / R | J4 – 4 / – 5 | POWER STAGE L / R: OFF | +0.4V | POWER STAGE L / R: ON | +4V |
| ST | J4 – 2 | DEMODULATOR FOR STEREO– SUB CHANNEL: OFF | –15V | DEMODULATOR FOR STE– REO SUB CHANNEL: ON | –4V |
| PH | J4 – 3 | PREAMP. RELAY: OFF PHONES / PREAMP. MUTED | –22V | PREAMP. RELAY: ON PHONES / PREAMP. ACTIV | –1.5V |
| DON | J4 – 1 | DOLBY – RELAY: OFF NR – SYSTEM OFF | –22V | DOLBY – RELAY: ON NR – SYSTEM ON | –0.2V |
| STFI 1/2 | J4 – 11 / – 12 | HIBL ON (Uc17) | –15V | SEPARATION MAX. (Uc17) | +12V |
| MC | J4 – 13 | SIGNAL AND TUNING METERS NORMAL | –2V | SIGNAL AND TUNING METERS OFF | +3V |
| 75 μ s | J5 – 9 | DEEMPHASIS 50 μ s | –2V | DEEMPHASIS 75 μ s | +3V |
| 25 μ s | J5 – 10 | DEEMPHASIS 50 μ s | –2V | DEEMPHASIS 25 μ s (75 μ s LOW) | +3V |
| MUT | J5 – 11 | AF – SIGNAL FROM TUNER SWITCHED ON | +0.2V | TUNER MUTED | +15V |
| SPA | J4 – 16 | SPEAKERS A: ON | +0.3V | SPEAKERS A: OFF | +22V |
| SPB | J4 – 15 | SPEAKERS B: ON | +0.3V | SPEAKERS B: OFF | +22V |
| WW | J4 – 14 | TUNING COMPARATOR ± 25 kHz | –1.4V | TUNING COMPARATOR ± 75 kHz | +22V |


 APPROXIMATE VALUE

Fig. 3.12b

3.3 Audio-Teil

3.3 Audio section

3.3 Section audio

3.3.1 Meter Circuit and Deemphasis
PCB 1.780.155

Die Audio-Signale L und R vom Stereo-Decoder werden auf den Entzerr-Verstärker geführt. Auf dem Entzerrverstärker sind die zusätzlichen De-emphasis-Glieder für 75 und 25 μ s und die Pegelregler für die NF-Ausgangsspannung. Das an R1/R39 abgenommene Signal wird in IC1/IC4 um 12dB verstärkt. Diese Signale (LO und RO) werden entweder über den Dolby Prozessor-Print oder über den Dummy-Print auf die Audio Connection Unit 1.780.145 geführt (Signale TULS/TURS).

3.3.1 Meter circuit and de-emphasis
PCB 1.780.155

The audio signals L and R from the stereo decoder are input to the de-emphasizing amplifier. The additional de-emphasis circuits for 75 μ s and 25 μ s, and the gain controls for the AF output voltage are located on this amplifier. The signal picked up at R1/R39 is amplified by 12dB in IC1/IC4. These signals (LO and RO) are taken to the audio connection unit 1.780.145 either via the dolby processor PCB or the dummy board (signals TULS/-TURS).

3.3.1 Circuit de désaccentuation et de mesure
PCB 1.780.155

Les signaux audio G et D, issus du décodeur stéréo, sont conduits à l'amplificateur de correction, lequel contient les réseaux supplémentaires de désaccentuation pour 25 et 75 μ s, ainsi que le réglage du niveau de sortie BF. Le signal prélevé en R1/R39 est amplifié de 12dB par IC1/IC4. Ces signaux (LO et RO) sont amenés à l'Audio Connection Unit 1.780.145 (signaux TULS/TURS), soit par le processeur Dolby, soit par un circuit "strap" le remplaçant.

3.3.2 Audio Connection Unit 1.780.145

Das Tuner-NF-Signal und die Eingänge PHONO, AUX, TAPE 1+2 sowie die Ausgänge TAPE 1+2 werden über Analog-Schalter (IC2 ... 5) gemäß den Steuerbefehlen NF1 ... NF 8 vom Mikroprozessorprint zusammengeschaltet. Die beiden daraus resultierenden Signale (ML und MR) werden auf den Vorverstärker 1.780.205 (B739: 1.780.835) geführt.

3.3.2 Audio connection unit 1.780.145

The tuner AF signal and the inputs PHONO, AUX, TAPE 1+2 as well as the outputs TAPE 1+2 are interconnected by the microprocessor PCB via analog switches (IC2 ... 5) as specified by the control commands NF1 ... NF8. The resulting two signals (ML and MR) are taken to the preamplifier 1.780.205 (B739: 1.780.835).

3.3.2 Unité de connexion audio 1.780.145

Le signal BF issu du tuner, les entrées PHONO, AUX, TAPE 1+2 ainsi que les sorties TAPE 1+2 sont commutées analogiquement par les ICs 2 à 5 selon les ordres NF1 ... NF8 donnés par le microprocesseur. Les deux signaux de sortie finaux parviennent au préamplificateur 1.780.205 (B739: 1.780.835).

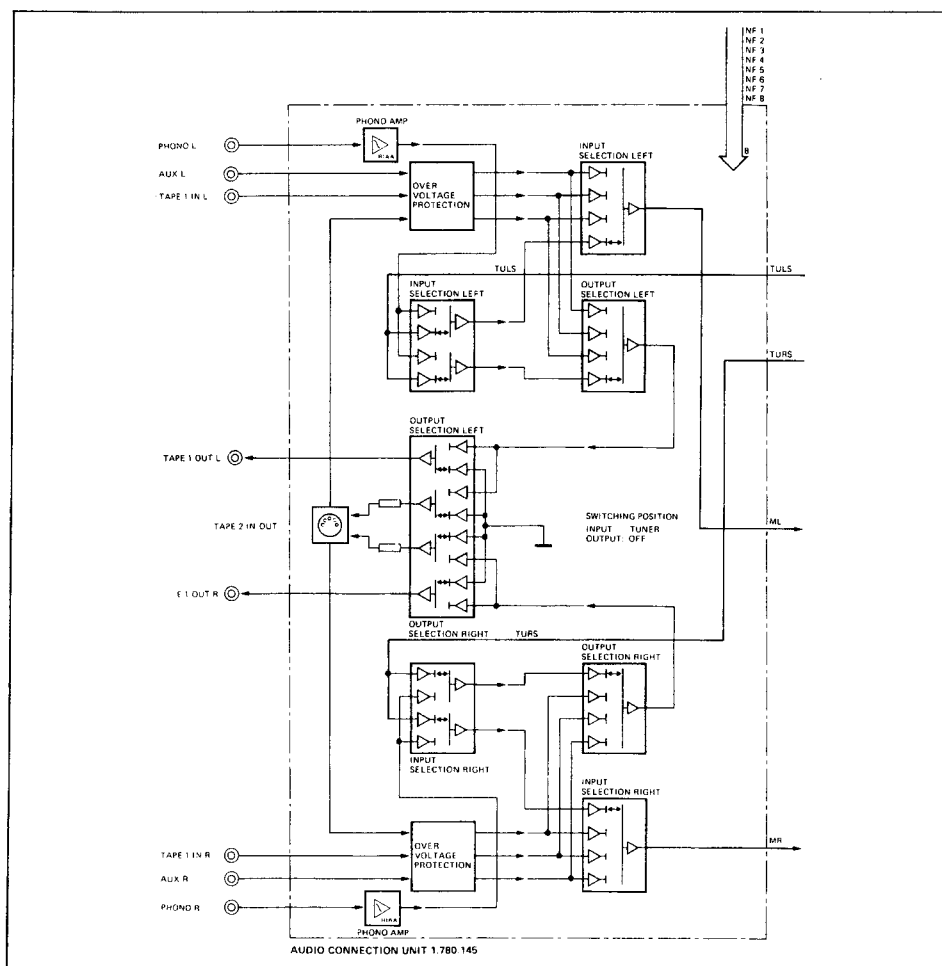


Fig. 3.13

3.3.3 Preamplifier 1.780.205 (B739: 1.780.835)

Die NF-Signale vom Audio Connection Unit werden zuerst über einen zuschaltbaren Abschwächer (LEVEL -20dB) geführt. Danach folgt ein zuschaltbares Loudness-Filter, welches lautstärkeabhängig die tiefsten sowie die hohen Frequenzen "gehörlich" anhebt. Danach gelangt das Signal an den Lautstärkereglер VOLUME, nach welchem der Umschalter MONO folgt. Vor dem Balanceregler wird das Signal um 14dB verstärkt. Danach gelangt es über den Filter-Print 1.780.215-81 und über den Print Tone Control PCB 1.780.210, welcher jedoch mit dem Schalter TONE DEFEAT überbrückbar ist.

Die Ausgangssignale PREL und PRER, sowie die Eingangssignale für den Kopfhörer-Ausgang PHL und PHR sind über die Einschaltkontakte von Relais K1 geführt.

Das verzögerte Durchschalten der NF-Kanäle bei Einschalten des Gerätes wird vom Signal PH gesteuert.

3.3.3 Preamplifier 1.780.205 (B739: 1.780.835)

The AF signals from the audio connection unit are first taken to an attenuator (LEVEL -20dB) that is brought into the circuit depending on the volume. This attenuator is followed by switch-controlled loudness filters which boost the lowest as well as the high frequencies to compensate the volume. The signal is subsequently taken to the VOLUME control, followed by the MONO change-over switch. The signal is amplified by 14dB before it is taken to the balance control. From there it is taken via filter PCB 1.780.215-81 to the tone control PCB 1.780.210 which can, however, be bypassed with the TONE DEFEAT switch.

The output signals PREL and PRER as well as the input signals for the headphones output PHL and PHR are taken to the making contacts of relays K1.

The delayed through connection of the AF channels when the unit is switched on is controlled by signal PH.

3.3.3 Préamplificateur 1.780.205 (B739: 1.780.835)

Les signaux BF issus de l'unité de connexion audio sont d'abord conduits à un atténuateur commutable (LEVEL -20dB). Un correcteur physiologique, lui aussi commutable, permet une correction physiologique du réglage de la puissance sonore. Le signal passe ensuite par le réglage du volume et l'inverseur mono/stéréo (MONO). Le signal est amplifié de 14dB avant le réglage de balance puis est transmis au circuit des filtres 1.780.215-81 et enfin au correcteur de tonalité PCB 1.780.210. Ce dernier peut être évité grâce au commutateur TONE DEFEAT.

Les signaux de sortie PREL et PRER, ainsi que ceux destinés (PHL et PHR) à la sortie casque, sont présents aux bornes du relais K1.

La commutation retardée des signaux BF, à la mise en service de l'appareil, est commandée par le signal PH.

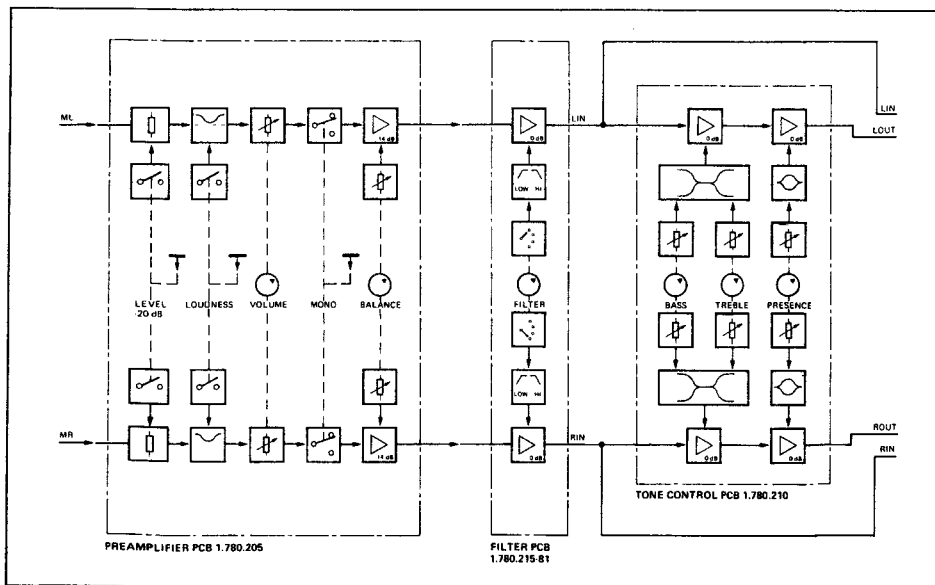


Fig. 3.14

3.3.4 Tone Control PCB 1.780.210

Zwischen dem Vorverstärker und der Endstufe ist die Tonregelung 1.780.210 eingesetzt. Sie besteht aus zwei aktiven Filterstufen. Die erste (TREBLE) beeinflusst die hohen Frequenzen. Der Regelbereich bei 8kHz beträgt $\pm 8\text{dB}$. Die gleiche Stufe wirkt auch auf die untersten Frequenzen. Der Regelbereich beträgt bei 120Hz $\pm 8\text{dB}$. Danach folgt die Filterstufe für den mittleren Frequenzbereich (PRESENCE). Der Regelbereich dieses Filters beträgt $\pm 8\text{dB}$ bei 3kHz.

3.3.4 Tone control PCB 1.780.210

The tone control 1.780.210 is inserted between the preamplifier and the power stage. It consists of two active filter stages. The first (TREBLE) influences the high frequencies. The range of regulation at 8kHz is $\pm 8\text{dB}$. The same stage also influences the lowest frequencies. The range of regulation at 120Hz is $\pm 8\text{dB}$. The second filter stage influences the medium frequencies (PRESENCE). The range of regulation for this filter is $\pm 8\text{dB}$ at 3kHz.

3.3.4 Correcteur de tonalité PCB 1.780.210

Le correcteur de tonalité 1.780.210 est situé entre le préamplificateur et l'étage de puissance. Il comprend deux filtres actifs: le premier traite les fréquences élevées et les basses, son domaine de réglage est de $\pm 8\text{dB}$ à 8kHz et de $\pm 8\text{dB}$ à 120Hz . Le deuxième filtre agit sur les moyennes fréquences (PRESENCE) et sa plage de réglage est de $\pm 8\text{dB}$ à 3kHz .

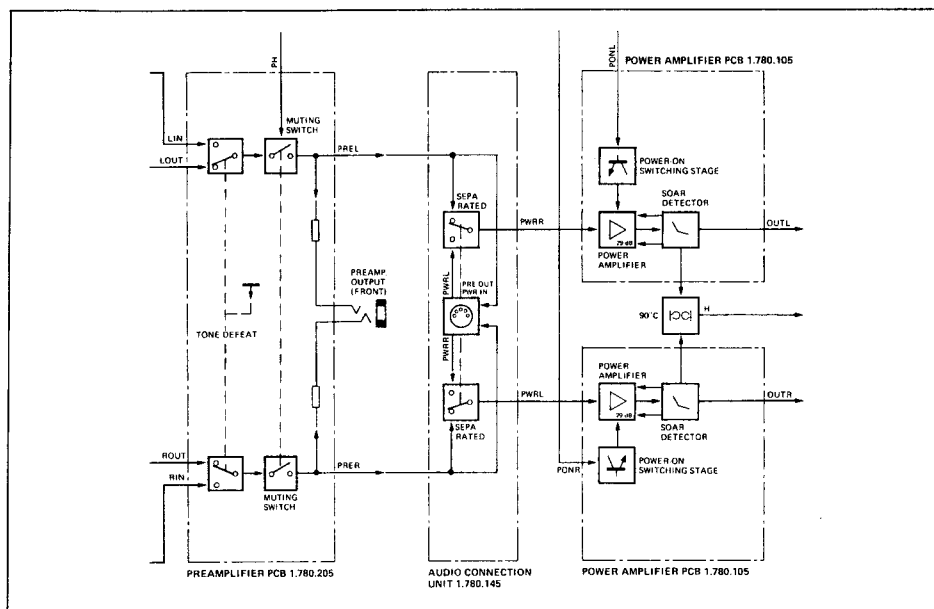


Fig. 3.15

3.3.5 Power Amplifier PCB 1.780.105

Die Signale gelangen über den Print Audio Connection Unit, wo sie zuerst auf die Buchse PRE OUT/PWR IN geführt sind, auf die Endstufe. Die Buchse PRE OUT/PWR IN dient zum Einschleifen von Effektgeräten wie z.B. ein Equalizer. Wird diese Buchse verwendet, so ist die Verbindung Vorverstärker-Endstufe von selbst unterbrochen. Ansonsten gelangen die Signale direkt auf die Endstufe. Diese besitzt eine fest eingestellte Verstärkung von 29dB. Eine aufwendige Schutzschaltung verhindert den Betrieb der Endtransistoren ausserhalb des erlaubten Bereiches der Verlustleistungshyperbel. Zusätzliche Schutzschaltungen überwachen die Endstufe:

3.3.5 Power amplifier PCB 1.780.105

The signals reach the power stage via the audio connection unit PCB where they are first taken to the socket PRE OUT/PWR IN. This socket is used for connecting effect devices such as an equalizer. When this socket is used, the connection between the preamplifier and the power stage is automatically opened and the signals no longer reach the power stage. The power stage is designed for a fixed gain of 29dB. A sophisticated guard circuit prevents the tail transistors from operating outside the admissible range of the power dissipation hyperbola. The power stage is monitored by additional guard circuits:

3.3.5 Amplificateur de puissance PCB 1.780.105

Les signaux arrivent de l'unité de connexion audio, où ils sont conduits à l'étage de puissance par la prise PRE OUT/PWR IN. Cette prise permet d'insérer des appareils à effets, comme par ex. un égaliseur, dans le circuit audio. Lorsque cette prise est utilisée, la liaison ampli-préampli est automatiquement interrompue. Le gain de l'amplificateur est fixé à 29dB. Un couteux circuit de protection empêche le fonctionnement des transistors de puissance en dehors de leur aire de sécurité. De plus, les circuits suivants contrôlent l'amplificateur:

Temperaturschutz

Bei übermässiger Erwärmung der Endtransistoren (ca. 90°C) lässt die Überwachungs-Logik das Trennrelais abfallen, welches zwischen Endstufe und Vorverstärker geschaltet ist. Bei ca. 80°C zieht das Relais wieder an. Die Signale PONL und PONR schalten die Speisung der Vorstufen zu resp. ab. Die Endstufentransistoren bleiben immer unter Spannung.

Thermal protection

If the tail transistors overheat (approx. 90°C), the monitor circuit causes a drop-out of the cut-off relay located between the power stage and the preamplifier. The relay picks up again after the temperature has dropped to approximately 80°C. The signals PONL and PONR switch the supply of the preliminary stages on or off. The tail transistors always remain under voltage.

Protection en température

Lors d'un échauffement excessif des transistors de puissance (env. 90° C), la logique de protection fait déclencher le relais situé entre le préamplificateur et l'amplificateur. Ce relais s'enclenche à nouveau vers 80° C. Les signaux PONL et PONR commutent l'alimentation des étages d'attaque alors que les transistors de puissance restent toujours alimentés.

Lautsprecherschutz

Tritt am Verstärkerausgang eine für die Lautsprecher gefährliche Gleichspannung auf, so fällt das Trennrelais ebenfalls ab. Die Lautsprechersysteme sind somit gegen Überlast geschützt.

Speaker protection

The cut-off relay drops out if a dangerous DC voltage is present at the speaker output. The speakers are thus protected against electrical overloads.

Protection des haut-parleurs

Si une composante continue, dangereuse pour les haut-parleurs, apparaît à la sortie de l'amplificateur, le relais de séparation déclenche. Les haut-parleurs sont ainsi protégés contre les surcharges.

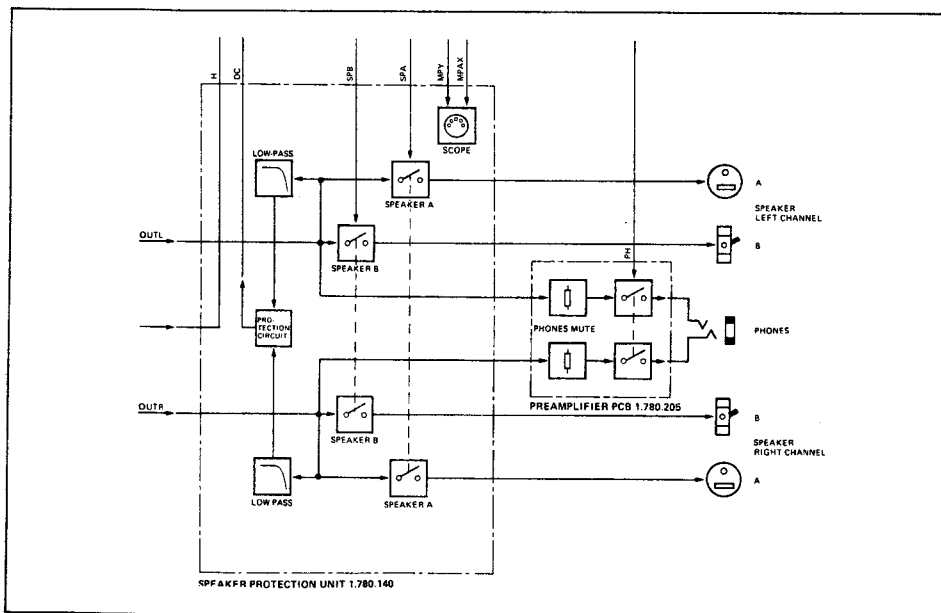


Fig. 3.16

4. ABGLEICHANLEITUNG**4. ADJUSTMENT INSTRUCTIONS****4. PROCEDURE DE REGLAGE****4.1 Benötigte Messgeräte****4.1 Required measuring instruments****4.1 Appareils de mesure nécessaires**

Eine detaillierte Liste der bei uns erhältlichen Messgeräte und Werkzeuge kann bei REVOX-ELA AG angefordert werden.

A detailed list of the available measuring instruments and tools can be obtained from REVOX-ELA AG.

Une liste complète des appareils de mesure et outils disponibles chez nous peut être demandée à REVOX-ELA AG.

Stereo-Mess-Sender:
87 ... 108MHz und 10,2 ... 11,2 MHz
Fremdspannungsabstand min. 75dB

Stereo standard-signal generator:
87 ... 108MHz and 10.2 ... 11.2MHz
Signal-to-noise ratio at least 75dB

Générateur HF stéréo:
87 ... 108MHz et 10,2 ... 11,2MHz
rapport signal/bruit min. 75dB

Stereo-Modulator:
Kanaltrennung min. 50dB
Fremdspannungsabstand min. 75dB

Stereo modulator:
Channel separation at least 50dB
Signal-to-noise ratio at least 75dB

Modulateur stéréo:
séparation des canaux min. 50dB
rapport signal/bruit min. 75dB

NF-Generator:
klirrarm (k kleiner als 0,05%)

AF generator:
Low-distortion (k < 0.05%)

Générateur BF:
à faible distorsion (THD 0,05%)

Digitalzähler:
für 38 kHz und 11MHz

Digital frequency counter:
For 38kHz and 11MHz

Fréquence-mètre digital:
pour 38kHz et 11MHz

Oszilloskop:
intern und extern triggerbar, Probe 10:1

Oscilloscope:
With internal and external triggering, probe 10:1

Oscilloscope:
avec trigger interne/externe et sonde 10:1

DC-Transistor- oder Röhrenvoltmeter (VTVM):
HF-Tastkopf
Eingangswiderstand 10 MOhm

DC transistor or vacuum-tube voltmeter (VTVM):
RF probe
Input impedance 10 ohms

Voltmètre électronique à transistors ou à tubes (VTVM):
avec sonde HF. Résistance d'entrée 10 Mohms

Universal-Messinstrument:
min. 20 000 Ohm/V

Multimeter:
min. 20 000 ohms/V

Multimètre:
Résistance interne 20kohms/V

Klirrfaktor-Messgerät (oder NF-Millivoltmeter mit geeigneten Filtern)

Distortion meter (or AF millivoltmeter with suitable filters)

Distorsionsmètre (ou millivoltmètre BF muni de filtres)

Zusätzliche Werkzeuge und Hilfsmittel:
1 Koax-Kabel (HF) BNC-DIN 45325
1 Satz Abstimmbesteck
1 Tiefpass-Filter 15kHz (Fig. 4.1)

Supplementary tools and aids:
1 Coax cable (RF) BNC-DIN 45325
1 Set alignment tool kit
1 Low-pass filter 15kHz (Fig. 4.1)

Outils supplémentaires et accessoires:
Un câble coaxial HF BNC-DIN 45325
Un jeu de tournevis de réglage
Un filtre passe-bas 15kHz (fig. 4.1)

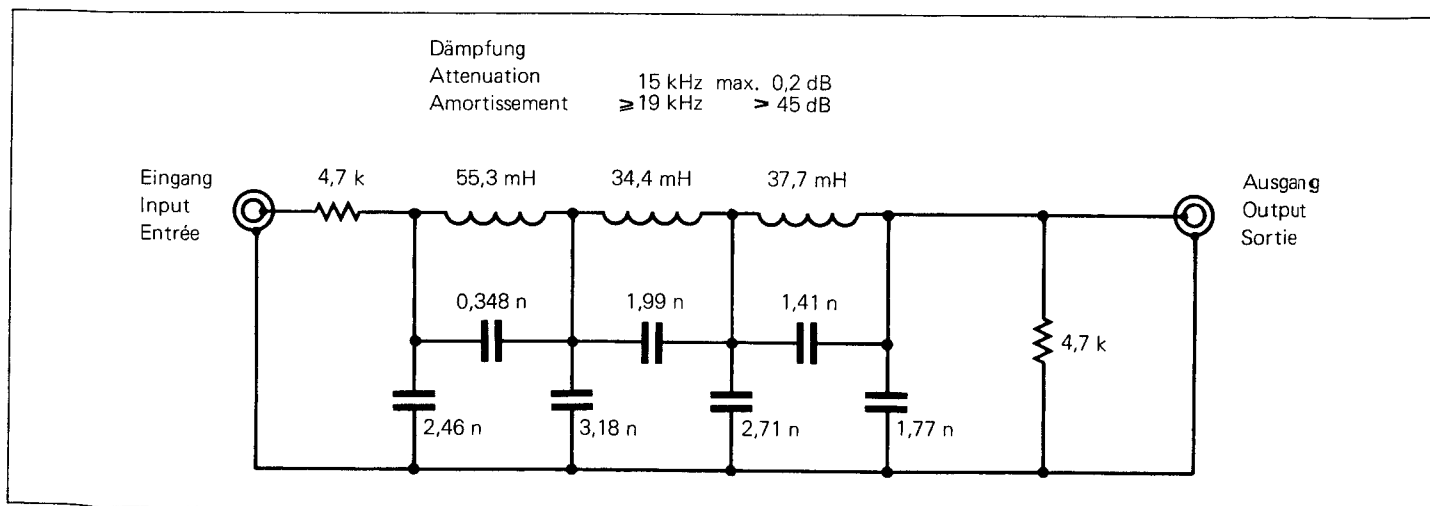


Fig. 4.1

4.2 Allgemeines

Die HF-Spannungen in dieser Anleitung sind in EMK (Leerlaufspannung) angegeben. Bei einem Innenwiderstand des Mess-Senders von 60 Ohm, resultiert am Eingangswiderstand des Tuners (60 Ohm-Eingang) ein Eingangssignal von der Hälfte der eingestellten EMK (siehe Fig. 4.2).

4.2 General

The RF voltages in these instructions refer to open-circuit voltage (emf). With a 60 ohms source resistance of the standard-signal generator, the input signal available at the input resistor of the tuner (60 ohms input) is 50% of the selected open-circuit voltage (see fig. 4.2).

4.2 Généralités

Les tension HF sont données en F.e.m. (force électromotrice). A cause de l'impédance interne de 60 ohms du générateur et de l'impédance d'entrée de 60 ohms du tuner, il résulte à l'entrée de celui-ci un signal dont la F.e.m est égale à la moitié de la valeur indiquée au générateur (voir fig. 4.2).

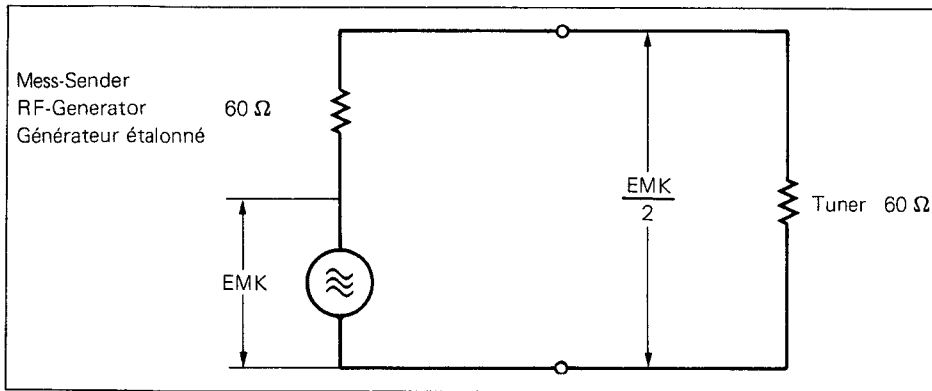


Fig. 4.2

Bei Mess-Sendern, deren Signalspannungen für den Nenn-Abschlusswiderstand geeicht sind, ist der halbe Wert der angegebenen EMK einzustellen. Die vorherrschende Messfrequenz von 97MHz gilt als Richtwert. Vor dem Abgleich ist zu prüfen, ob diese Frequenz frei von Sender-einfall oder Interferenzen ist.

Ist diese Frequenz nicht frei, so ist die Einstellung leicht zu verändern.

For standard-signal generators, the signal voltage of which is calibrated for the nominal terminating impedance, the specified open-circuit voltage is to be cut in half. The predominant measuring frequency of 97MHz serves as an approximate value. Check whether this frequency is free of transmitter signals or interference before any adjustments are made.

If this frequency is not clean, it should be slightly adjusted.

Lorsque l'on travaille avec des générateurs qui prennent en compte l'impédance de l'appareil sous test, il faut les régler à la moitié de la valeur nominale indiquée. La principale fréquence de mesure est 97MHz. Avant de commencer les réglages, assurez vous que cette fréquence soit bien exempte d'émission ou d'interférence.

Dans le cas contraire, décalez légèrement l'accord.

ALLE MESSUNGEN ERFOLGEN GEGEN MASSE!

ALL MEASUREMENTS ARE TAKEN AGAINST GROUND!

TOUTES LES MESURES SONT RÉFÉRÉES EN MASSE!

Bevor mit dem Abgleich begonnen wird, müssen die Speisespannungen unbedingt kontrolliert werden.

Mit den Abgleicharbeiten kann erst begonnen werden, wenn der Mess-Sender die stabile Messfrequenz erreicht hat (Thermodrift).

It is absolutely essential to check the supply voltages before any adjustments are made.

No adjustments should be made before the standard-signal generator has reached a stable measuring frequency (thermodrift).

Avant de commencer les réglages, il est indispensable de contrôler toutes les tensions d'alimentation et de s'assurer que le générateur HF ne présente plus de dérive thermique.

4.2.1 Kontrolle der Speisespannungen

Gerät einschalten, Netzspannung mit Regeltrafo genau auf Nennspannung einstellen. Stromaufnahme bei 220V: B780 ca. 180 mA, B739 ca. 120 mA. Spannungsmessungen an der Verteilerplatine (Fig. 4.3).

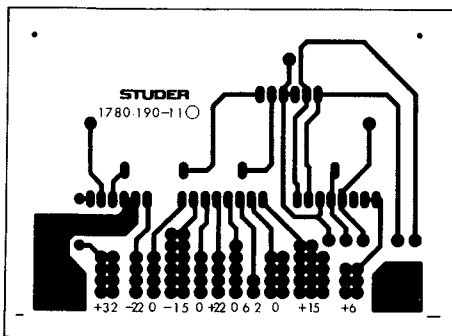


Fig. 4.3

| | |
|-----------|---------------------------------|
| +22V/-22V | ±0,8V unstabilisiert |
| +15V/-15V | ±0,5V stabilisiert |
| +6V | ±0,3V stabilisiert |
| +32V | ±0,5V stabilisiert, einstellbar |
| +5,6V | ±0,3V stabilisiert |

4.2.1 Checking the supply voltages

Switch unit on, adjust line voltage with the aid of regulating transformer exactly to the nominal voltage. Power consumption at 220V: B780 approx. 180mA, B739 approx. 120mA. Voltage measurements at distribution board (Fig. 4.3).

| | |
|-----------|------------------------------|
| +22V/-22V | ±0.8V unstabilized |
| +15V/-15V | ±0.5V stabilized |
| +6V | ±0.3V stabilized |
| +32V | ±0.5V stabilized, adjustable |
| +5.6V | ±0.3V stabilized |

4.2.1 Contrôle des tensions d'alimentation

Reliez l'appareil au secteur et enclenchez-le. Ajustez la tension secteur à sa valeur nominale. Consommation à 220V: B780 ca. 180 mA, B739 ca. 120 mA. Mesure des tensions sur la carte de distribution (fig. 4.3).

| | |
|-----------|---------------------------|
| +22V/-22V | ±0,8V non stabilisés |
| +15V/-15V | ±0,5V stabilisés |
| +6V | ±0,3V stabilisé |
| +32V | ±0,5V stabilisé, réglable |
| +5,6V | ±0,3V stabilisé |

4.3 Funktions-Kurztest

4.3.1 Tunerteil B780/B739

Gerät ans Netz anschliessen und einschalten. Am Antenneneingang 2µV EMK, 15kHz Hub, Frequenz 97MHz, Modulationsfrequenz 1kHz einspeisen und NF-Bezugsmesswert feststellen.

Modulation abschalten und den Fremdspannungsabstand ermitteln; ist dieser grösser als 30dB, am Antenneneingang 2mV EMK, 40kHz Hub, Modulationsfrequenz 1kHz einspeisen und bei Stereobetrieb den NF-Bezugsmesswert feststellen.

Modulation abschalten und Netzspannung auf 200V absenken.

Fremdspannungsabstand ermitteln, Sollwert min. 65dB.

4.3 Brief test for correct functioning

4.3.1 Tuner section B780/B739

Connect unit to AC power and switch it on. Feed in 2µV emf, 15kHz deviation, frequency 97MHz, modulation frequency 1kHz at the antenna input and check whether measured signal corresponds to reference value.

Switch modulation off and measure signal-to-noise ratio. If the ratio is greater than 30dB, feed in 2mV emf, 40kHz deviation, modulation frequency 1kHz and check in stereo mode whether the measured value corresponds to the reference value.

Switch modulation off and decrease voltage to 200V.

Measure signal-to-noise ratio, desired value at least 65dB.

4.3 Contrôle rapide des fonctions

4.3.1 Section Tuner B780/B739

Reliez l'appareil au secteur et enclenchez-le. Produire 2µV à la prise d'antenne, à 97MHz, 1kHz de modulation de fréquence et 15kHz d'excursion. Etablir la tension BF de référence.

Coupez la modulation et déterminez le rapport signal/bruit. Si celui-ci est supérieur à 30dB, produire 2mV de F.e.m à la prise d'antenne, avec 40kHz d'excursion et 1kHz de modulation de fréquence. Mesurez la valeur de référence de la tension BF en mode stéréo.

Coupez la modulation et réduisez la tension secteur à 200V.

Le rapport signal/bruit doit être alors d'au moins 65dB.

4.3.2 Verstärkerteil B780

Leistungsaufnahme im Leerlauf messen. Ist diese in Ordnung, so wird die Sinusleistung an 4 Ohm mit einem KO bis zur Aussteuerungsgrenze (Klippen) geprüft. Bezugswert feststellen.

Rechteckdurchlass bei 40Hz und 10kHz bei 1/4-Sinusleistung (-6dB) prüfen (Fig. 4.4). Netzspannung auf 200V/100V absenken und Fremdspannungsabstand an TAPE und PHONO-Eingang überprüfen (nach Datenblatt).

4.3.2 Amplifier section B780

Measure the open-circuit power consumption and if in order, check the sine output into 4 Ohm, fully driven (up to the clipping point) with the aid of an oscilloscope. Check whether measured value corresponds to reference value.

Check square-wave pass at 20Hz and 10 kHz with 25% sine output (-6dB, (Fig. 4.4). Decrease AC voltage to 200V/100V and check signal-to-noise ratio at TAPE and PHONO input (according to technical data).

4.3.2 Section Amplificateur B780

Mesurez la consommation à vide. Si celle-ci est normale, on contrôlera la puissance de sortie en mode sinus sous 4 ohms avec un oscilloscope, et ce jusqu'à l'écrêtage qui déterminera la tension de référence.

Contrôlez la réponse aux signaux carrés à 40Hz et 10kHz, à 1/4 de la puissance nominale sinus (-6dB) selon la fig. 4.4. Abaissez la tension du secteur à 200V/100V et contrôlez le rapport signal/bruit des entrées TAPE et PHONO (selon la feuille de données).

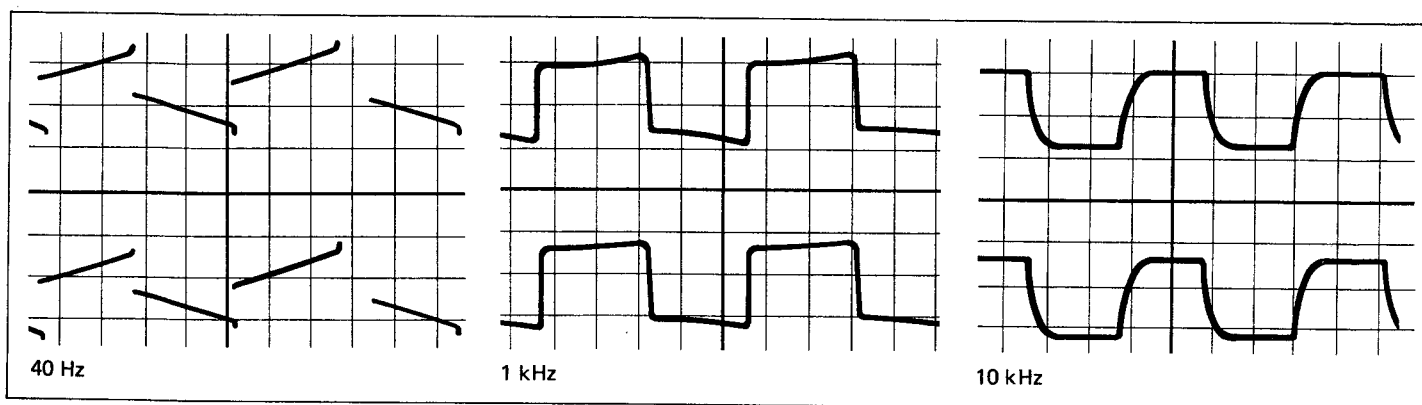


Fig. 4.4

4.4 Vorbereitungen für die Abgleicharbeiten

Zur Vereinfachung des Abgleichvorganges werden folgende Frequenzen eingestellt und gespeichert:

| | |
|-----------------|-----------|
| Stationstaste 1 | 87,50MHz |
| Stationstaste 2 | 90,00MHz |
| Stationstaste 3 | 97,00MHz |
| Stationstaste 4 | 106,00MHz |
| Stationstaste 5 | 107,95MHz |

Damit alle Abgleichpunkte zugänglich sind, müssen das obere und untere Deckblech entfernt werden (siehe Kapitel 2.1/2.2).

4.4 Preparatory steps for adjustments

The following frequencies are entered and stored in memory in order to simplify the adjustment procedures:

| | |
|---------------|-----------|
| Station key 1 | 87.50MHz |
| Station key 2 | 90.00MHz |
| Station key 3 | 97.00MHz |
| Station key 4 | 106.00MHz |
| Station key 5 | 107.95MHz |

To gain access to the various test points it will be necessary to remove the top and the bottom cover plates (refer to 2.1/2.2).

4.4 Préparation aux travaux de réglage

Pour simplifier le processus de réglage, mémorisez les fréquences suivantes:

| | |
|---------------------|-----------|
| Touche de station 1 | 87,50MHz |
| Touche de station 2 | 90,00MHz |
| Touche de station 3 | 97,00MHz |
| Touche de station 4 | 106,00MHz |
| Touche de station 5 | 106,95MHz |

Pour que tous les points de réglage soient accessibles, il faut enlever les plaques inférieure et supérieure (voir chap. 2.1 et 2.2).

4.4.1 Abgleich der Quarzreferenz des Synthesizers

Dieser Abgleich braucht nur nach dem Ersetzen eines Quarzes oder des Synthesizers durchgeführt zu werden.

- Digitalzähler an IC2 Pin 7 (Synthesizer PCB 1.780.151) anschließen. Falls IC2 mit dem Typ LN1031 versehen ist, muss für diese Messung ein 1kOhm Widerstand zwischen Pin 7 und 16 geschaltet werden.
- Mit Trimmer C23 eine Anzeige von 4MHz einstellen.

4.4.1 Calibrating the synthesizer quartz reference

This adjustment is only necessary after a crystal or the synthesizer has been replaced.

- Connect digital frequency counter at IC2, pin 7 (synthesizer PCB 1.780.151). If IC2 is equipped with LN1031, a 1kohm resistor must be connected between pin 7 and 16 before this measurement is made.
- Adjust trimmer C23 so that a reading of 4MHz is obtained.

4.4.1 Réglage de la référence à quartz du synthétiseur

Ce réglage n'est utile que lorsque l'on a remplacé un quartz ou un synthétiseur.

- Raccordez le fréquencemètre digital à la broche 7 de IC2 (Synthesizer PCB 1.780.151). Si IC2 est un LN 1031, il faut, pour cette mesure, connecter une résistance de 1kohms entre ses broches 7 et 16.
- Avec le trimmer C23, régler l'affichage sur 4MHz.

4.5 Abgleich des Lokaloszillators und Synthesizers 1.780.151

- Abschirmdeckel HF-Eingangsteil, Oszillator- und Synthesizerprint abziehen.
- VTVM an den Ausgang von IC4 (Pin 6) anschliessen.
- Gerät einschalten und Stationstaste 1 (87,50MHz) drücken. Mit dem Spulenkern von L3 eine Nachstimmspannung von $4,5V \pm 0V$ einstellen (Fig. 4.5).

4.5 Calibrating the local oscillator and synthesizer 1.780.151

- Remove screen covers of RF section, oscillator, and synthesizer board.
- Connect VTVM to the output of IC4 (pin 6).
- Switch unit on and press station 1 (87.50MHz). Adjust for a fine-tuning voltage of $4.5V \pm 0V$ with the aid of the trimmer slug of L3 (Fig. 4.5).

4.5 Réglage de l'oscillateur local et du synthétiseur 1.780.151

- Retirez les capots de blindage de l'étage d'entrée HF, de l'oscillateur local et du synthétiseur.
- Reliez le VTVM à la sortie de IC4 (broche 6).
- Enclenchez l'appareil et appuyez sur la touche de station 1 (87,50MHz). Réglez le noyau de L3 pour obtenir une tension d'accord de $4,5V \pm 0V$ (fig. 4.5).

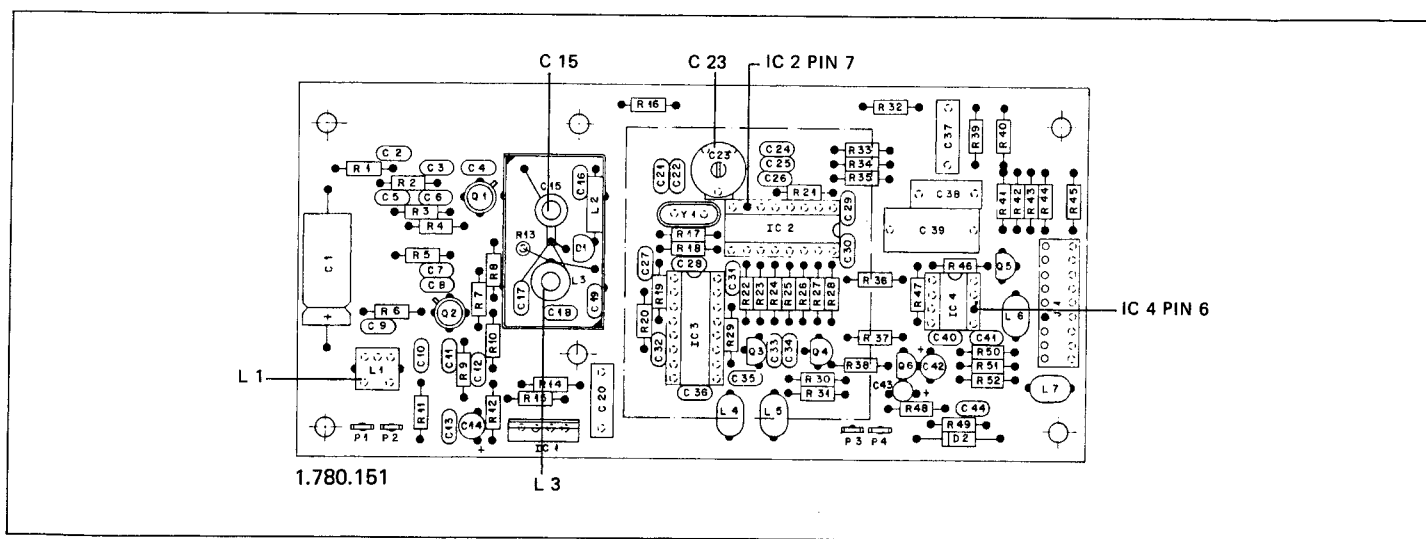


Fig. 4.5

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Stationstaste 5 (107,95MHz) drücken. Mit Trimmer C15 eine Nachstimmspannung von $24V \pm 0,2V$ einstellen. Diese Einstellvorgänge wiederholen, bis keine Korrektur mehr notwendig ist. VTVM von Messpunkt IC4 entfernen. VTVM mit HF-Tastkopf an Testpunkt TP4 auf dem HF-Eingangsteil 1.166.100 anschließen. Die HF-Spannungen müssen bei <ul style="list-style-type: none"> 87,50 (Stationstaste 1) 97,00 (Stationstaste 3) 107,95 (Stationstaste 5) im Bereich von 0,1 ... 0,25V liegen. Mit dem Übertrager L1 kann die Symmetrie nachgeregelt werden. | <ul style="list-style-type: none"> Press station 5 (107.95MHz). Adjust for a fine-tuning voltage of $24V \pm 0.2V$ with the aid of trimmer C15. Repeat these calibrating steps until no further corrections are necessary. Disconnect VTVM from test point IC4. Connect VTVM with RF probe to TP4 on RF input section 1.166.100. The RF voltages for <ul style="list-style-type: none"> station 1 87.50 station 3 97.00 station 5 107.95 must be within 0.1 ... 0.25V. The balance can be readjusted with the transformer L1. | <ul style="list-style-type: none"> Appuyez sur la touche de station 5 (107,95MHz) et réglez le trimmer C15 pour obtenir une tension d'accord de $24V \pm 0,2V$. Recommencez ce processus jusqu'à ce qu'aucune correction ne soit nécessaire, puis débranchez le VTVM du point de mesure sur IC4. Reliez le VTVM au point test TP4 de la tête HF sur l'étage d'entrée HF 1.166.100. Les tensions HF doivent être de l'ordre de 0,1 ... 0,25V pour: <ul style="list-style-type: none"> 87,50MHz (touche de station 1) 97,00MHz (touche de station 3) 107,95MHz (touche de station 5) La symétrie peut être ajustée par le translateur L1. |
|--|---|---|

Nach diesen Abgleicharbeiten müssen die Abschirmdeckel über dem Synthesizer und Lokaloszillator wieder aufgesteckt werden.

Reinstall the covers above the synthesizer and the local oscillator after these adjustments have been made.

Après ces réglages, il faut replacer les capots de blindage du synthétiseur et de l'oscillateur.

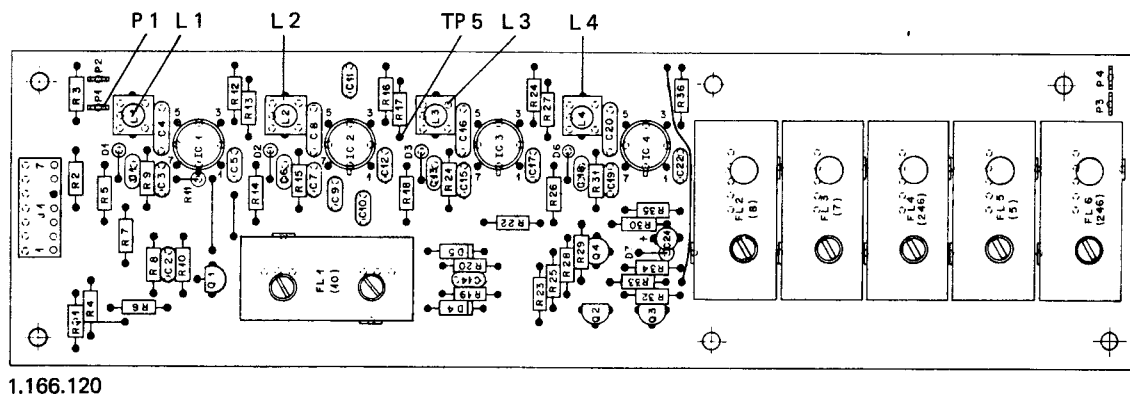


Fig. 4.6

4.6 Abgleich der HF-Kreise

- Mess-Sender mit Koax-Kabel an Antenneneingang anschliessen; Frequenz 90,00 MHz, 0,2mV EMK.
- VTVM mit HF-Tastkopf am Messpunkt TP5 (auf IF Amplifier PCB 1.166.120) anschliessen; Messbereich 1V DC.
- Stationstaste 2 drücken (Anzeige TUNING = 0). Alle 5 HF-Kreise auf dem HF-Eingangsteil mit den Spulenkernen L1 ... L4 und L6 auf Maximum-Anzeige am VTVM abgleichen. Während diesem Abgleichvorgang muss die Spannung am Antenneneingang immer unter dem Einsatzbereich der AGC (Automatic Gain Control) gehalten werden (ca. 400 ... 600mV).
- Stationstaste 4 (106,00MHz) drücken, den Mess-Sender auf 106,00MHz einstellen (TUNING = 0). Alle 5 HF-Kreise auf dem HF-Eingangsteil mit den Trimmern C3, C12, C17, C26 und C30 auf Maximum-Anzeige am VTVM abgleichen (Spannung am Antenneneingang unter Einsatzpunkt AGC halten).

4.6 Tuning the RF circuits

- Connect standard-signal generator with the aid of coax cable to the antenna input. Frequency 90.00MHz, 0.2mV, emf.
- Connect VTVM with RF probe at TP5 (on IF amplifier PCB 1.166.120); measuring range 1V DC.
- Press station 2 (TUNING display = 0). Adjust all 5 RF circuits on the RF input section for maximum reading on the VTVM with the aid of trimmer slugs L1 ... L4 and L6. The voltage at the antenna input must always be kept below the attack point of the AGC (Automatic Gain Control) when these adjustments are made (approx. 400 ... 600mV).
- Press station 4 (106.00MHz), set standard-signal generator to 106.00MHz (TUNING = 0). Adjust all 5 RF circuits on the RF input section for maximum reading on the VTVM with the aid of potentiometers C3, C12, C17, C26, and C30 (Keep voltage at antenna input below AGC attack point).

4.6 Réglage des circuits HF

- Raccordez le générateur HF à la prise d'antenne à l'aide du câble coaxial. Fréquence 90,00MHz et 0,2mV de F.e.m.
- Raccordez la sonde HF du VTVM au point de mesure TP5 (sur l'amplificateur FI PCB 1.166.120), échelle de mesure 1V DC.
- Appuyez sur la touche de station 2 (TUNING = 0). Réglez les cinq circuits HF au maximum de déviation du VTVM à l'aide des noyaux L1 ... L4 et L6. Pendant ce réglage, la tension d'entrée à l'antenne doit être inférieure au seuil d'action de la CAG (env. 400 à 600mV).
- Appuyez sur la touche de station 4 (106,00MHz). A l'aide des trimmers C3, C12, C17, C26 et C30, réglez les cinq circuits HF au maximum de déviation du VTVM (la tension à l'entrée d'antenne devant toujours être inférieure au seuil d'action de la CAG).

Diese Abgleichvorgänge sind zu wiederholen, bis keine Verbesserungen mehr erreichbar sind.

Repeat these adjustment procedures until no further improvement is achievable.

Ces réglages sont à reproduire jusqu'à ce qu'aucune amélioration ne puisse être obtenue.

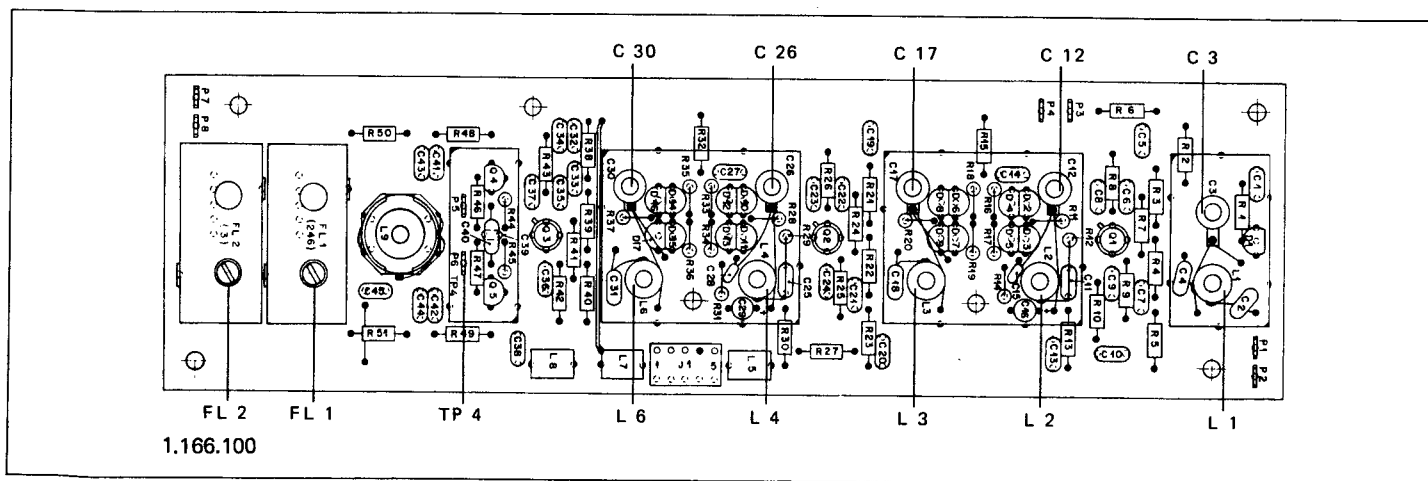


Fig. 4.7

4.7 Abgleich des ZF-Filters, ZF-Verstärkers und des Anzeigediskriminators

- Abschirmdeckel von ZF-Verstärker und Demodulator/Decoder abziehen.
- Mess-Sender (EMK 0,2mV) mit Koax-Kabel an Antenneneingang anschliessen.
- VTVM mit HF-Tastkopf an Messpunkt TP5 (ZF-Verstärker 1.166.120) anschliessen, Messbereich 1V DC.
- Mess-Sender auf 97,00MHz ± 1 kHz einstellen. Für die ganze Einstellung in diesem Kapitel muss diese Frequenz stabil gehalten werden. Zur Kontrolle, Digitalzähler an P1 anschliessen und ZF von 11MHz überwachen.
- Stationstaste 3 (97,00MHz) drücken. Die Kreise L3 und L4 auf dem ZF-Verstärker sowie das Achtkreisfilter (FL1, FL2 und L9 auf HF-Eingangsteil und FL2 ... 6 auf dem ZF-Verstärker) auf Maximum-Anzeige am VTVM abgleichen (TP5). Die Spannung am Antenneneingang während dieser Messung unter dem Einsatzpunkt der AGC halten.

Der Abgleichvorgang ist so lange zu wiederholen, bis keine Verbesserungen mehr erreichbar sind.

Taste CHANGE TUNING MODE (28) drücken. Sender-EMK verändern, bis das VTVM auf -4 dB ausschlägt (0dB = 775mV).

Mit den Tasten FREQUENCY STEP die Frequenz um ± 50 kHz verstimmen. Die Abweichung von der Symmetrie darf nicht grösser als 0,2dB sein.

Die Frequenz um ± 100 kHz verstimmen. Die Abweichung von der Symmetrie darf nicht grösser als 1dB sein.

Achtung

Beim Abgleich darauf achten, dass die Abgleichkerne auf das obere Maximum einjustiert werden (Fig. 4.8).

4.7 Adjusting the IF filter, IF amplifier and the display discriminator

- Remove screening cover of IF amplifier and demodulator/decoder.
- Connect standard-signal generator (emf 0.2mV) to antenna input with the aid of coax cable.
- Connect VTVM with RF probe to TP5 (IF amplifier 1.166.120), measuring range 1V DC.
- Set standard-signal generator to 97.00 MHz ± 1 kHz. This frequency must be kept stable throughout all the steps of this section. For checking purposes, connect digital frequency counter at P1 and monitor 11MHz IF.
- Press station 3 (97.00MHz). Adjust circuit L3 and L4 on the IF amplifier as well as the 8-circuit (FL1, FL2, and L9 on the RF input section, and FL2 ... 6 on the IF amplifier) for maximum reading on the VTVM (TP5). The voltage at the antenna input should be kept below the AGC attack point during this measurement.

Repeat these adjustment procedures until no further improvement is achievable.

Press CHANGE TUNING MODE (28). Vary the emf of the standard-signal generator until the VTVM indicates -4 dB (0dB = 775mV).

Detune the frequency by ± 50 kHz with the aid of the FREQUENCY STEP keys. The balance deviation should not exceed 0.2dB.

Detune the frequency by ± 100 kHz. The balance deviation should not exceed 1dB.

Caution

When making the adjustments ensure that the trimmer slugs are set to the upper maximum (Fig. 4.8).

4.7 Réglage des filtres FI, de l'amplificateur FI et du discriminateur

- Retirez les capots de blindage de l'amplificateur FI et du démodulateur/décodeur.
- Raccordez le générateur HF à la prise d'antenne avec le câble coaxial (F.e.m 0,2V).
- Raccordez la sonde HF du VTVM au point de mesure TP5 (amplificateur FI 1.166.120), gamme de mesure 1V DC.
- Réglez le générateur HF à 97,00MHz, ± 1 kHz. Cette fréquence doit être maintenue stable pour toutes les manipulations de ce chapitre. Contrôlez la fréquence FI de 11MHz en raccordant le fréquence-mètre digital à P1.
- Appuyez sur la touche de station 3 (97,00MHz). Réglez les circuits L3 et L4 de l'amplificateur FI ainsi que les huit filtres (FL1, FL2 et L9 sur l'étage d'entrée HF et FL2 ... 6 sur l'amplificateur FI) au maximum de déviation du VTVM. La tension d'entrée à l'antenne ne doit pas atteindre le seuil d'action de la CAG.

Ces réglages sont à reproduire jusqu'à ce qu'aucune amélioration ne puisse être obtenue.

Appuyez sur la touche CHANGE TUNING MODE (28). Modifiez la F.e.m du générateur HF jusqu'à ce que le VTVM affiche -4 dB (0dB = 775mV).

A l'aide des touches FREQUENCY STEP, faites varier l'accord de ± 50 kHz. Le VTVM ne doit pas indiquer une variation de plus de 0,2dB.

Faites varier l'accord de ± 100 kHz, l'écart au VTVM doit être inférieur à 1dB.

Attention

Pour ces réglages, les noyaux de réglage doivent être initialement en position haute maximale. (Fig. 4.8)

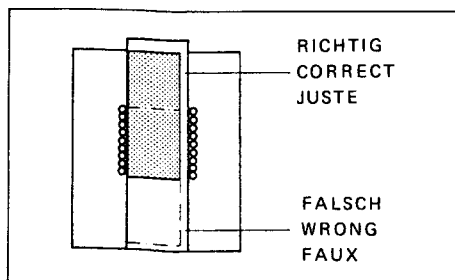


Fig. 4.8

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| <ul style="list-style-type: none"> — VTVM mit HF-Tastkopf an Messpunkt TP6 anschliessen. Kreis L2 auf Maximum-Anzeige (ca. 0,7mV) abgleichen. | <ul style="list-style-type: none"> — Connect VTVM with RF probe at TP6. Adjust circuit L2 for maximum reading (approx. 0.7mV). | <ul style="list-style-type: none"> — Branchez la sonde HF du VTVM au point de mesure TP6. Ajustez le circuit L2 au maximum de déviation du VTVM (env. 0,7V). |
| <ul style="list-style-type: none"> — VTVM mit HF-Tastkopf an Messpunkt TP7 anschliessen. Kreis L1 auf Maximum-Anzeige (ca. 0,7mV) abgleichen. | <ul style="list-style-type: none"> — Connect VTVM with RF probe at TP7. Adjust circuit L1 for maximum reading (approx. 0.7mV). | <ul style="list-style-type: none"> — Branchez la sonde HF du VTVM au point de mesure TP7. Ajustez le circuit L1 au maximum de déviation du VTVM (env. 0,7V). |
| <ul style="list-style-type: none"> — VTVM mit HF-Tastkopf an Messpunkt TP8 anschliessen. Kreis L3 (1.166.130) auf Maximum-Anzeige (ca. 0,35V) abgleichen. | <ul style="list-style-type: none"> — Connect VTVM with RF probe at TP8. Adjust circuit L3 (1.166.130) for maximum reading (approx. 0.35mV). | <ul style="list-style-type: none"> — Branchez la sonde HF du VTVM au point de mesure TP8. Ajustez le circuit L3 (1.166.130) au maximum de déviation du VTVM (env. 0,35V). |

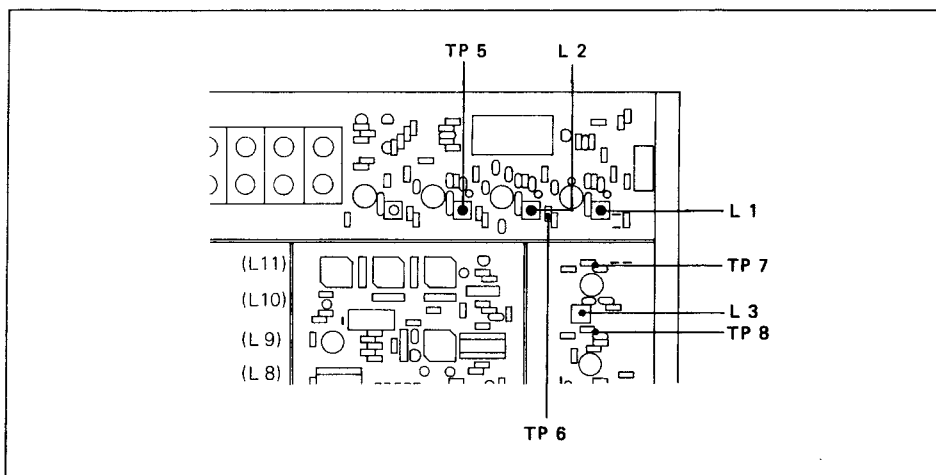


Fig. 4.9

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|---|--|---|
| <ul style="list-style-type: none"> — Diskriminator abgleichen: — Mess-Sender auf 106,00MHz einstellen. Den Receiver mit Taste CHANGE TUNING MODE auf "F"-Betrieb umschalten und auf die Frequenz des Mess-Senders einstellen. (Anstelle von 106,00MHz kann auch eine andere, von keinem Sender oder Störungen belegte Frequenz eingestellt werden.) — Mit einem Digitalzähler wird die genaue Messfrequenz geeicht. An P1 (IF AMPLIFIER 1.166.120) wird die ZF von 11MHz kontrolliert. — VTVM an IC6 Pin 3 (Meter Circuit and Deemphasis PCB 1.780.155) anschliessen. | <ul style="list-style-type: none"> — Adjusting the discriminator: — Set standard-signal generator to 106.00 MHz. With CHANGE TUNING MODE set receiver to "F" mode and enter the frequency of the standard-signal generator. (Not only 106.00MHz but any other frequency that is not used by a transmitter and that is free of parasitic noise can be used.) — Calibrate the measuring frequency with the aid of a digital frequency counter. Check the 11MHz IF at P1 (IF amplifier 1.166.120). — Connect VTVM at IC6 pin 3 (meter circuit and de-emphasis PCB 1.780.155). | <ul style="list-style-type: none"> — Réglez le discriminateur: — Réglez le générateur HF sur 106,00MHz. Mettez le récepteur en mode "F" en appuyant sur la touche CHANGE TUNING MODE. Ajustez sa fréquence à celle du générateur. (On peut prendre une autre fréquence à la place de 106,00MHz, pourvu qu'elle soit exempte d'émetteur ou de parasites.) — Déterminez précisément la fréquence de mesure avec le fréquencemètre digital. Contrôlez la FI de 11MHz sur P1 de l'amplificateur FI 1.166.120. — Raccordez le VTVM à la broche 3 de IC6 (circuit and de-emphasis PCB 1.780.155). |
|---|--|---|

- Mit dem Sekundärkern von FL1 Ⓑ (IF-Amplifier 1.166.120) am VTVM 0V ± 10 mV einstellen.
- Den Receiver B780 um 0,075MHz verstimmen (Bsp. 106,075MHz) und mit Trimpotentiometer R57 (Meter Circuit and Deemphasis PCB 1.780.155) die Steuerspannung auf +600mV einstellen.
- With secondary trimmer slug Ⓑ of FL1 (IF amplifier 1.166.120), adjust for 0V ± 10 mV reading at VTVM.
- Detune B780 receiver by 0.075MHz (example 106.075MHz) and adjust the control voltage to +600mV with the aid of trimmer potentiometer R57 (meter circuit and de-emphasis PCB 1.780.155).
- Réglez le noyau secondaire de FL1 pour qu'il y ait 0V ± 10 mV au VTVM.
- Décalez le récepteur B780 de 0,075MHz (par ex. 106,075MHz). Ajustez la tension de commande à +600mV avec le trimmer R57 (Meter Circuit and Deemphasis 1.780.155)

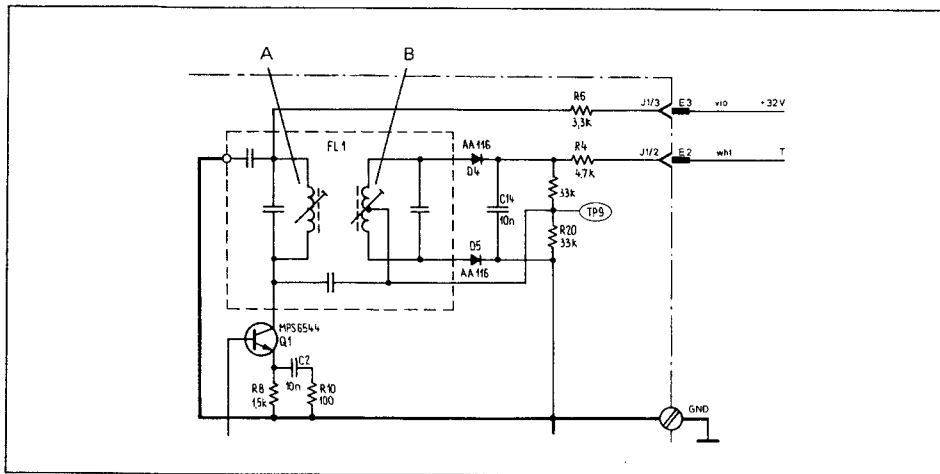


Fig. 4.10

- Den Receiver um $-0,075$ MHz verstimmen (Bsp. 105,925MHz). Das Voltmeter muss -600 mV ± 30 mV anzeigen. Sollte die Spannung eine zu grosse Abweichung aufweisen, so kann die Spannung durch Korrigieren der Symmetrie des Primärkreises von FL1 A (IF-Amplifier 1.166.120) verändert werden. Danach muss der Diskriminator neu abgeglichen werden.
- Detune the receiver by -0.075 MHz (example: 105.925MHz). The voltage meter should indicate -600 mV ± 30 mV. If the voltage deviation is too large, it can be adjusted by correcting the balance of the primary circuit of FL1 A (IF amplifier 1.166.120). In this case, however, the discriminator must be readjusted.
- Décalez le récepteur de $-0,075$ MHz (par ex. 105,925MHz). Le VTVM doit indiquer -600 mV ± 30 mV; si la tension s'écarte trop de cette valeur, on peut la modifier en corrigeant la symétrie du circuit primaire de FL1 A (amplificateur FI 1.166.120). Ensuite, il faudra encore régler le discriminateur à nouveau.
- Center Tuning Meter abgleichen: Das Center Tuning Meter sollte nach dem Diskriminator-Abgleich Mitte anzeigen. Ist dies nicht der Fall, so kann der Zeiger durch Verstellen des Trimpotentiometers R55 (Meter Circuit and Deemphasis PCB 1.780.155) geeicht werden.
- Calibrating the center tuning meter: After the discriminator has been adjusted, the center tuning meter needle should be in the middle. Should this not be the case, the needle can be calibrated by adjusting trimmer potentiometer R55 (meter circuit and de-emphasis PCB 1.780.155).
- Réglage de l'indicateur de centrage (Center Tuning): Après le réglage du discriminateur, cet indicateur devrait être en position centrale. Si ce n'est pas le cas, on agira sur le trimmer R55 (Meter Circuit and Deemphasis 1.780.155) pour amener l'aiguille en position centrale.
- Eichen des Signalstärke-Instruments: Wenn am HF-Eingang 20mV EMK ohne NF-Modulation eingespielt wird, kann die Meteranzeige auf 80dB/ μ V eingestellt werden.
- Calibrating the signal strength instrument: The meter reading can be calibrated for 80dB/ μ V by feeding in 20mV emf without AF modulation at the RF input.
- Calibrage de l'indicateur d'intensité du signal: Lorsqu'on produit 20mV e.f.e.m. à l'entrée HF, on peut calibrer l'indicateur sur 80dB/ μ V.

4.8 Abgleich des Stereo-Decoders

- Stationstaste 3 (97,00MHz) drücken. Mess-Sender auf 97,00MHz (TUNING = 0) EMK = 2mV, Modulation ausgeschaltet, ohne Pilotträger.
- Digitalzähler an Messpunkt TP10 auf Stereo Decoder PCB 1.166.150 anschliessen.
- Abgleich 76kHz-Oszillator:
Mit Spule L8 eine Zähleranzeige von 38 kHz \pm 50Hz einstellen.
- Abgleich 19kHz-Kreis:
Drucktaste FM MONO lösen. Am Stereo-Modulator Pilotträger 9% einstellen. Oszilloskop mit Probe 10:1 an Messpunkt TP11 auf dem Stereo-Decoderprint anschliessen (Messbereich 2V/cm). Mit Spule L9 auf maximale Anzeige am Oszilloskop abgleichen (ca. 10Vpp), die Stereoanzeige leuchtet auf. Der Digitalzähler muss 38kHz \pm 1Hz anzeigen.

4.8 Adjusting the stereo decoder

- Press station key 3 (97.00MHz). Set standard-signal generator to 97.00MHz (TUNING = 0) emf = 2mV, modulation off, no pilot carrier.
- Connect digital frequency counter at TP10 on stereo decoder PCB 1.166.150.
- Calibrating the 76kHz oscillator:
With trimmer slug L8 adjust for a frequency counter reading of 38kHz \pm 50Hz.
- Tuning the 19kHz circuit:
Release FM MONO push button. Adjust pilot tone carrier to 9% on stereo modulator. Connect oscilloscope with probe 10:1 at TP11 on stereo decoder PCB (measuring range 2V/cm). With trimmer slug L9 adjust for maximum reading on oscilloscope (approx. 10Vpp), the STEREO lamp turns on. The digital frequency counter should indicate 38kHz \pm 1kHz.

4.8 Réglage du décodeur stéréo

- Appuyez sur la touche de station 3 (97,00 MHz). Générateur HF sur 97,00 MHz (TUNING = 0), F.e.m. = 2mV. Modulation déclenchée, pas de porteuse pilote.
- Raccordez le fréquencemètre digital au point de mesure TP10 du décodeur stéréo 1.166.150.
- Réglage de l'oscillateur 76kHz:
Amenez l'affichage du fréquencemètre à 38kHz \pm 50Hz en faisant tourner le noyau de L8.
- Réglage du circuit 19kHz:
Relâchez la touche FM MONO. Réglez le modulateur stéréo sur 9% de porteuse pilote. Reliez la sonde 10:1 de l'oscilloscope au point de mesure TP11 du circuit du décodeur stéréo. (sensibilité Y = 2V/cm). Réglez la bobine L9 pour produire une trace maximale sur l'oscilloscope (env. 10V c.à.c.), le voyant stéréo s'allume. Le fréquencemètre doit afficher 38kHz \pm 1Hz.

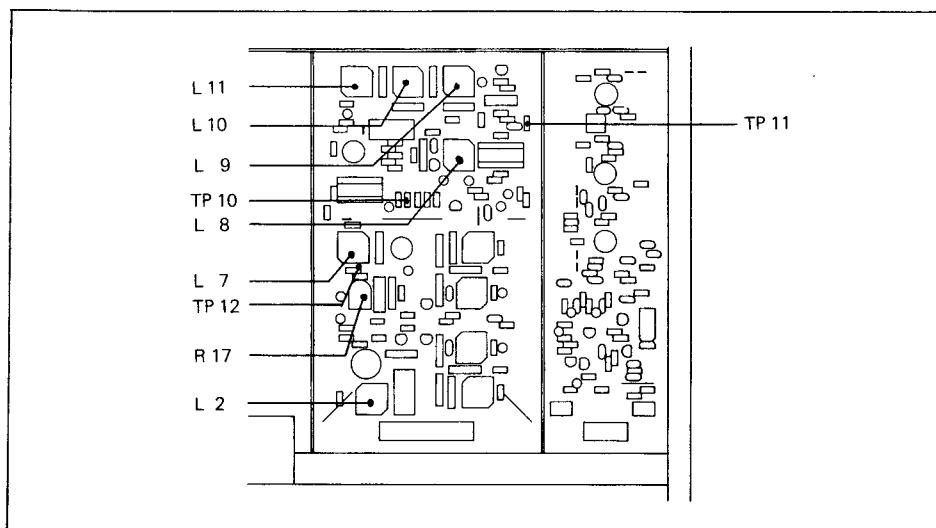


Fig. 4.11

- Abgleich 38kHz-Kreis:
Drucktaste HI BLEND lösen. Mess-Sender mit Modulation 1kHz, Hub 40kHz, ohne Pilotträger nur links moduliert. Oszilloskop mit Probe 10:1 an Messpunkt TP12 auf dem Stereo-Decoderprint anschliessen (10mV AC/cm; 0,1ms/cm; Trigger extern mit Modulationssignal 1kHz). Mit Spule L7 auf Stereo-Decoderprint auf scharfen Hüllkurvenschnittpunkt (am Oszilloskop) abgleichen.

- Tuning the 38kHz circuit:
Release HI BLEND push button. Standard-signal generator with 1kHz modulation, deviation 40kHz, no pilot carrier, only left-hand channel modulated. Connect oscilloscope with probe 10:1 to TP12 on stereo decoder circuit board (10mV AC/cm; 0.1 ms/cm, external triggering with 1kHz modulation signal). With trimmer slug L7 on the stereo decoder PCB, adjust for sharp envelope curve intersections (on oscilloscope).

- Réglage du circuit 38kHz:
Relâchez la touche HIGH BLEND. Générateur modulant à 1kHz, avec une excursion de 40kHz. Pas de porteuse pilote et seul le canal G est modulé. Raccordez la sonde 10:1 de l'oscilloscope au point de mesure TP12 du décodeur stéréo (10mV AC/cm; 0,1ms/cm et trigger ext. sur la modulation 1kHz). Réglez la bobine L7 pour obtenir le point d'intersection d'enveloppe le plus exact (à l'oscilloscope).

- Abgleich 19kHz-Bandfilter, Übersprechen:
Mess-Sender mit Modulation 1kHz, Hub 40kHz, mit Pilottonträger, nur Kanal rechts moduliert. 15kHz-Tiefpassfilter an Ausgang TAPE 1 anschliessen. NF-Voltmeter an Tiefpassfilter-Ausgang anschliessen.
- Adjusting the 19kHz band-pass filter, crosstalk:
Standard-signal generator with 1kHz modulation, deviation 40kHz, with pilot tone carrier, only right-hand channel modulated. Connect 15kHz low-pass filter at output TAPE 1. Connect AF voltmeter at low-pass filter output.
- Réglage du circuit 19kHz, diaphonie:
Générateur HF avec 1kHz de modulation, canal droit seulement, excursion de 40kHz avec porteuse pilote. Raccordez le filtre passe-bas coupant à 15kHz à la sortie TAPE 1 et le VTVM à la sortie de ce filtre.
- Trimpotentiometer R17 (Stereo Decoder 1.166.150) im Uhrzeigersinn in den Anschlag drehen.
- Rotate trimmer potentiometer R17 (stereo decoder 1.166.150) to clockwise limit position.
- Tournez le trimmer R17 à fond, dans le sens des aiguilles d'une montre.
- 19kHz-Bandfilter L10 und L11 auf Minimum-Anzeige am Voltmeter abgleichen. Beide Abgleichkerne ungefähr gleich tief eindrehen.
- Adjust 19kHz band-pass filters L10 and L11 to minimum voltmeter reading. Both trimmer slugs should be turned in by about the same amount.
- Réglez le filtre de bande L10 et L11 au minimum de déviation du VTVM.
- Mit Trimpotentiometer R17 auf minimales Übersprechen im linken Kanal abgleichen.
- Adjust for minimum crosstalk on the left-hand channel with the aid of trimmer potentiometer R17.
- Ajustez le trimmer R17 au minimum de diaphonie du canal G.
- Abgleich 19kHz-Sperre:
Mess-Sender mit Modulation 1kHz, Hub 75kHz mit Pilotträger L=R.
- Adjusting the 19kHz band rejection:
Standard-signal generator with 1kHz modulation, deviation 75kHz, with pilot tone carrier L=R.
- Réglage du filtre rejecteur 19kHz:
Générateur HF modulant à 1kHz, 75kHz d'excursion, porteuse pilote et G=D.
- Voltmeter an Ausgang TAPE 2 anschliessen und auf 0dB eichen.
- Connect voltmeter at output TAPE 2 and calibrate for 0dB.
- Raccordez le voltmètre à la sortie TAPE 2 et calibrez à 0dB.
- Modulation ausschalten und mit Spule L2 (Stereo Decoder 1.166.150) auf minimale MPX-Restspannung abgleichen.
- Switch modulation off and adjust for minimum MPX residual voltage with the aid of trimmer slug L2 (stereo decoder PCB 1.166.150).
- Déclenchez la modulation et ajustez la bobine L2 du décodeur stéréo 1.166.150 pour réduire au maximum les restes du signal MPX.

4.9 NF-Pegel des Tunersignals einstellen

4.9 Adjusting the AF level of the tuner signal

4.9 Réglage de la tension de sortie BF du tuner

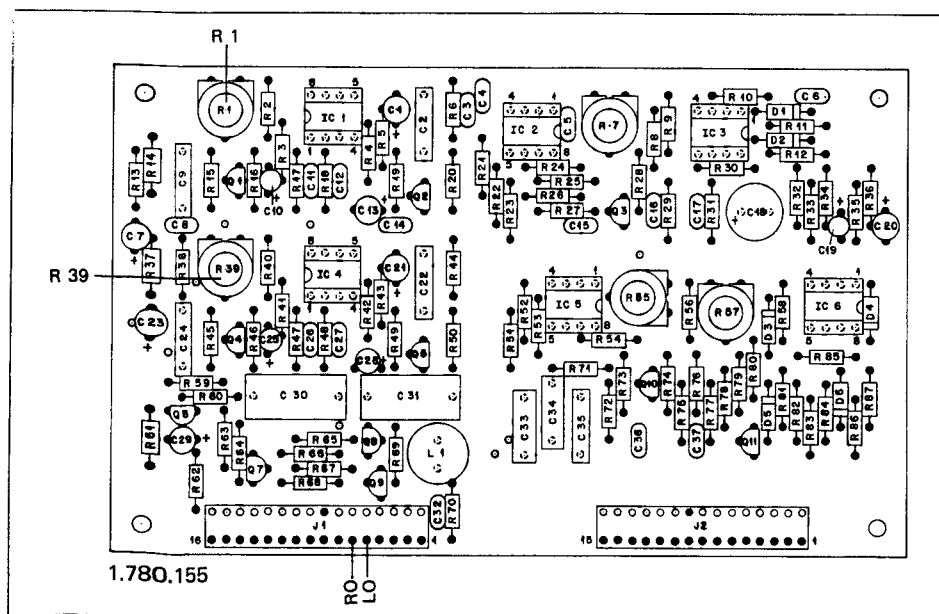


Fig. 4.12

- | | | |
|--|---|---|
| <ul style="list-style-type: none">— Mess-Sender auf eine EMK von 2mV, 75kHz Hub bei 400Hz ohne Pilotträger einstellen.— Mit den Trimpmpotentiometern R1 (linker Kanal) und R39 (rechter Kanal) auf Meter Circuit and Deemphasis PCB 1.780.155 den linken Kanal LO und den rechten Kanal RO auf je 1,16V einstellen. | <ul style="list-style-type: none">— Set standard-signal generator to an emf of 2mV, 75kHz deviation at 400Hz without pilot tone carrier.— Adjust left-hand channel LO and right-hand channel RO to 1.16mV each with the aid of trimmer potentiometers R1 (LH channel) and R39 (RH channel) on meter circuit and de-emphasis PCB 1.780.155. | <ul style="list-style-type: none">— Générateur HF produisant une F.e.m. de 2mV, avec 75kHz d'excursion sans porteuse pilote.— Ajustez les tensions de sortie des canaux droit RO et gauche LO avec les trimmers R39 et R1 du circuit 1.780.155 (Meter Circuit and Deemphasis). |
|--|---|---|

4.10 Verstärkereinstellungen

- **Ruhestromeinstellung für beide Endstufen:**
Die Ruhestromeinstellung erfolgt im kalten Zustand des Verstärkers. R12 (auf Power Amplifier PCB 1.780.105) wird so eingestellt, dass an den Emitterwiderständen R14 und R27 ein Spannungsabfall von 6mV entsteht.

4.10 Amplifier adjustments

- **Adjusting the closed-circuit current for both power stages**
The adjustment of the closed-circuit current is made when the amplifier is cold. R12 (on power amplifier PCB 1.780.105) is to be adjusted in such a manner that a voltage drop of 6mV occurs at the emitter resistors R14 and R27.

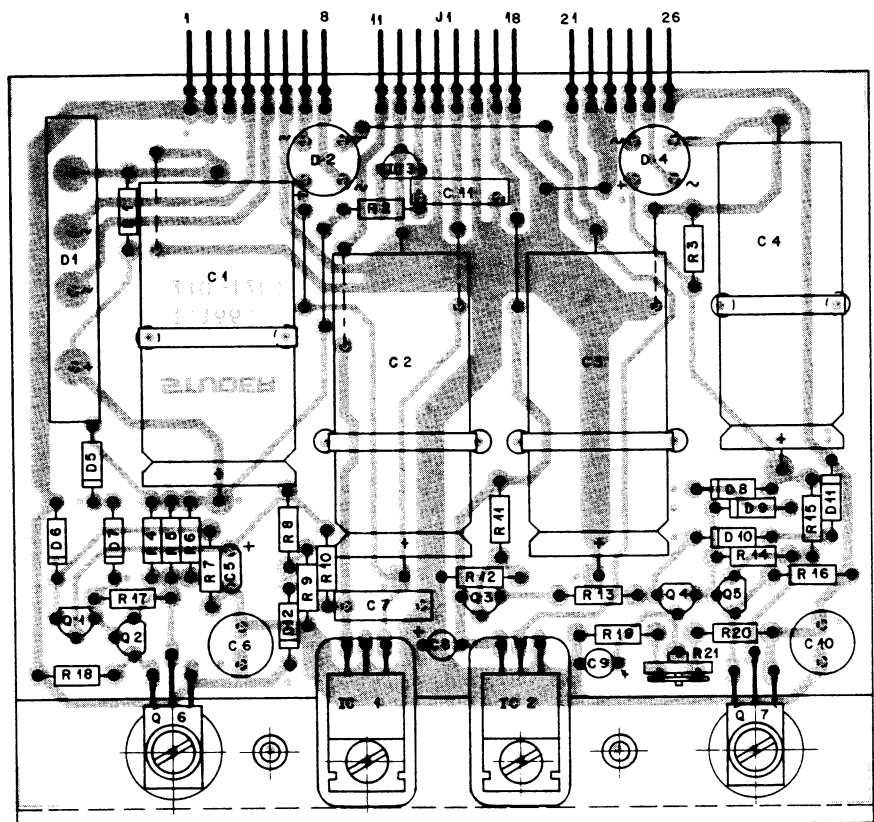
4.10 Réglage de l'amplificateur

- **Réglage du courant de repos:**
Ce réglage doit être effectué avec l'amplificateur "froid". On règle R12 (sur l'amplificateur de puissance 1.780.105) de façon à ce qu'il y ait une chute de tension de 6mV aux bornes des résistances d'émetteur R14 et R27.

CONTENTS

| DESCRIPTION | SCHEMATIC NO. | SECTION / PAGE |
|---|---------------|-------------------|
| FUNCTION DIAGRAM B780 | | 5/03 |
| POWER SUPPLY UNIT | 1.780.110 | 5/04 |
| — POWER SUPPLY PCB | 1.166.210-81 | 5/04 |
| — POWER DISTRIBUTION PCB | 1.780.190 | 5/04 |
| — MAINS TRANSFORMER | 1.780.120 | 5/05 |
| THRESHOLD CONTROL BOARD | 1.780.235 | 5/06 |
| STATION SELECTION KEYBOARD | 1.780.225 | 5/07 |
| PUSH BUTTON BOARD / FM MODE | 1.780.220 | 5/08 |
| PUSH BUTTON BOARD / OUTPUT SELECTION | 1.780.240 | 5/09 |
| INPUT SELECTION KEYBOARD | 1.780.230 | 5/09 |
| MICROCOMPUTER PCB | 1.780.260 | 5/10 |
| FREQUENCY SYNTHESIZER PCB | 1.780.151-81 | 5/12 |
| METER CIRCUIT AND DEEMPHASIS PCB | 1.780.155 | 5/14 |
| DISPLAY PCB | 1.780.245 | 5/16 |
| ANTENNA INPUT UNIT: (LOCATED ON SPEAKER PROTECTION UNIT) | 1.780.140-81 | |
| RF FRONT END PCB | 1.166.100 | 5/18 |
| IF AMPLIFIER PCB | 1.166.120 | 5/20 |
| FM DEMODULATOR PCB | 1.166.130 | 5/22 |
| STEREO DECODER PCB | 1.166.150 | 5/24 |
| AUDIO CONNECTION UNIT | 1.780.145 | 5/26 |
| PREAMPLIFIER PCB | 1.780.205 | 5/28 |
| — FILTER PCB | 1.780.215-81 | 5/29 |
| TONE CONTROL PCB | 1.780.210 | 5/32 |
| POWER AMPLIFIER PCB | 1.780.105 | 5/34 |
| SPEAKER PROTECTION UNIT | 1.780.140-81 | 5/36 |
| DOLBY PROCESSOR PCB | 1.166.400 | 5/38 |
| — DUMMY PLUG | 1.166.090 | 5/38 |
| ANTENNA CONTROL INTERFACE PCB | 1.780.400 | 5/40 |
| POWER-ON REMOTE CONTROL PCB | 1.780.430 | 5/42 |
| WIRE HARNESS / FRONT | 1.780.170 | 5/43 |
| WIRE HARNESS / REAR | 1.780.166 | 5/44 |
| FUNCTION DIAGRAM B739 | | 5/47 |
| POWER SUPPLY UNIT | 1.166.200 | 5/48 |
| — POWER SUPPLY PCB | 1.166.210-81 | 5/48 |
| — POWER DISTRIBUTION PCB | 1.166.206-81 | 5/48 |
| — MAINS TRANSFORMER | 1.166.201 | 5/49 |
| PREAMPLIFIER PCB | 1.780.835 | 5/50 |
| — FILTER PCB | 1.780.215-81 | 5/51 |
| LINE AMPLIFIER AND CONNECTION UNIT | 1.780.840 | 5/54 |
| WIRE HARNESS / REAR | 1.780.820 | 5/56 |
| VOCABULARY OF ABBREVIATIONS | | 5/58 |
| BLOCK DIAGRAM | | inside back cover |

POWER SUPPLY UNIT 1.780.110



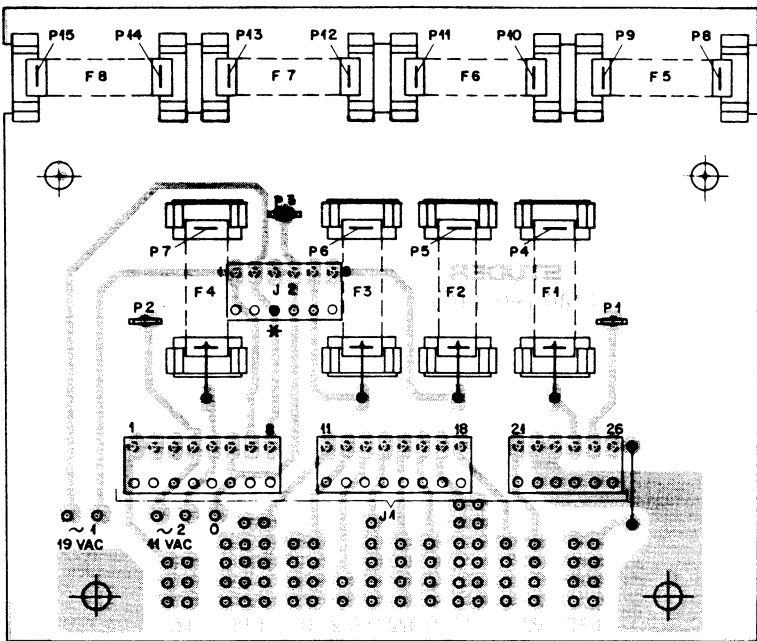
1.166.210 - 81

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|-------|
| | C 1 | 59.25.3472 | 4700µF | EL 16V | |
| | C 2 | 59.25.4222 | 2200µF | " 25V | |
| | C 3 | " | " | " | |
| | C 4 | 59.25.6471 | 470µF | " 63V | |
| | C 5 | 59.32.3103 | 0.04µF | CER 40V | |
| | C 6 | 59.22.5470 | 47µF | EL 25V | |
| | C 7 | 59.31.1104 | 0.1µF | PE 100V | |
| | C 8 | 59.30.6333 | 3.3µF | TA 35V | |
| | C 9 | 59.30.6100 | 10µF | " | |
| | C 10 | 59.22.6220 | 22µF | EL 40V | |
| | C 11 | 59.31.1104 | 0.1µF | PE 100V | |
| | D 1 | 70.01.0235 | BR.Rect. | 800 C 3700/2200 Si | SI |
| | D 2 | 70.01.0223 | " | 8 250 C 800 Si | GI |
| | D 3 | " | " | " | |
| | D 4 | 70.01.0223 | " | " | |
| | D 5 | 50.04.0125 | 1N4448 | Si Diode 100V, 100mA | GI |
| | D 6 | " | " | " | |
| | D 7 | " | " | " | |
| | D 8 | " | " | " | |
| | D 9 | " | " | " | |
| | D 10 | " | " | " | |
| | D 11 | 50.04.1108 | Z 5.6 | Zenerdiode 5.6V 0.4W 5% | |
| | D 12 | 50.04.0125 | 1N4448 | Si Diode 100V 100mA | |
| | IC 1 | 50.05.0253 | 78M15UC | +15 Voltage Regulator | F, TI |
| | IC 2 | 50.05.0252 | 79M15VC | -15 " " | " |
| | IC 3 | 50.10.0101 | 78L06ACS | +6.2 " " | TI |

| IND | DATE | NAME | |
|---------------------|---------|-----------|---------------------------------------|
| ① | | | EL = Electrolytic SI = Siemens |
| ② | | | CER = Ceramic GI = General Instr. |
| ③ | 3.6.80 | Rem. | PE = Polyester F = Fairchild |
| ④ | 3.1.80 | Hä. | TA = solid Tantalum TI = Texas Instr. |
| ⑤ | 6.10.77 | Bal. / la | |
| STUDER Power Supply | | | PL 1.166.210-81 PAGE 1 OF 2 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | Q 1 | 50.03.0436 | BC107B | NPN Si | |
| | Q 2 | 50.03.0312 | BC178B | NPN Si | |
| | Q 3 | 50.03.0436 | BC107B | NPN Si | |
| | Q 4 | 50.03.0431 | BC546 | NPN Si | |
| | Q 5 | 50.03.0432 | BC546 | PNP Si | |
| | Q 6 | 50.03.0433 | BD561 | NPN Si | |
| | Q 7 | 50.03.0445 | BD177 | NPN Si | |
| | R 1 | 57.41.4102 | 1kΩ | 5% | |
| | R 2 | " | " | " | |
| | R 3 | 57.41.4103 | 10kΩ | " | |
| | R 4 | 57.41.4129 | 1.2kΩ | " | |
| | R 5 | 57.41.4129 | 1.2kΩ | " | |
| | R 6 | 57.41.4129 | 1.2kΩ | " | |
| | R 7 | 57.41.4821 | 820Ω | " | |
| | R 8 | 57.41.4561 | 560Ω | " | |
| | R 9 | 57.39.8451 | 8450Ω | 1% MF | |
| | R 10 | 57.39.1432 | 14.3kΩ | 1% MF | |
| | R 11 | 57.41.4102 | 1kΩ | 5% | |
| | R 12 | 57.41.4103 | 10kΩ | " | |
| | R 13 | 57.41.4103 | 10kΩ | " | |
| | R 14 | 57.41.4102 | 1kΩ | " | |
| | R 15 | 57.41.4339 | 3.3kΩ | " | |
| | R 16 | 57.41.4561 | 560Ω | " | |
| | R 17 | 57.41.4102 | 1kΩ | " | |
| | R 18 | 57.41.4561 | 560Ω | " | |
| | R 19 | 57.41.4562 | 5.6kΩ | " | |
| | R 20 | 57.41.4102 | 1kΩ | " | |
| | R 21 | 58.02.4471 | 470Ω | CF Potentiometer | |

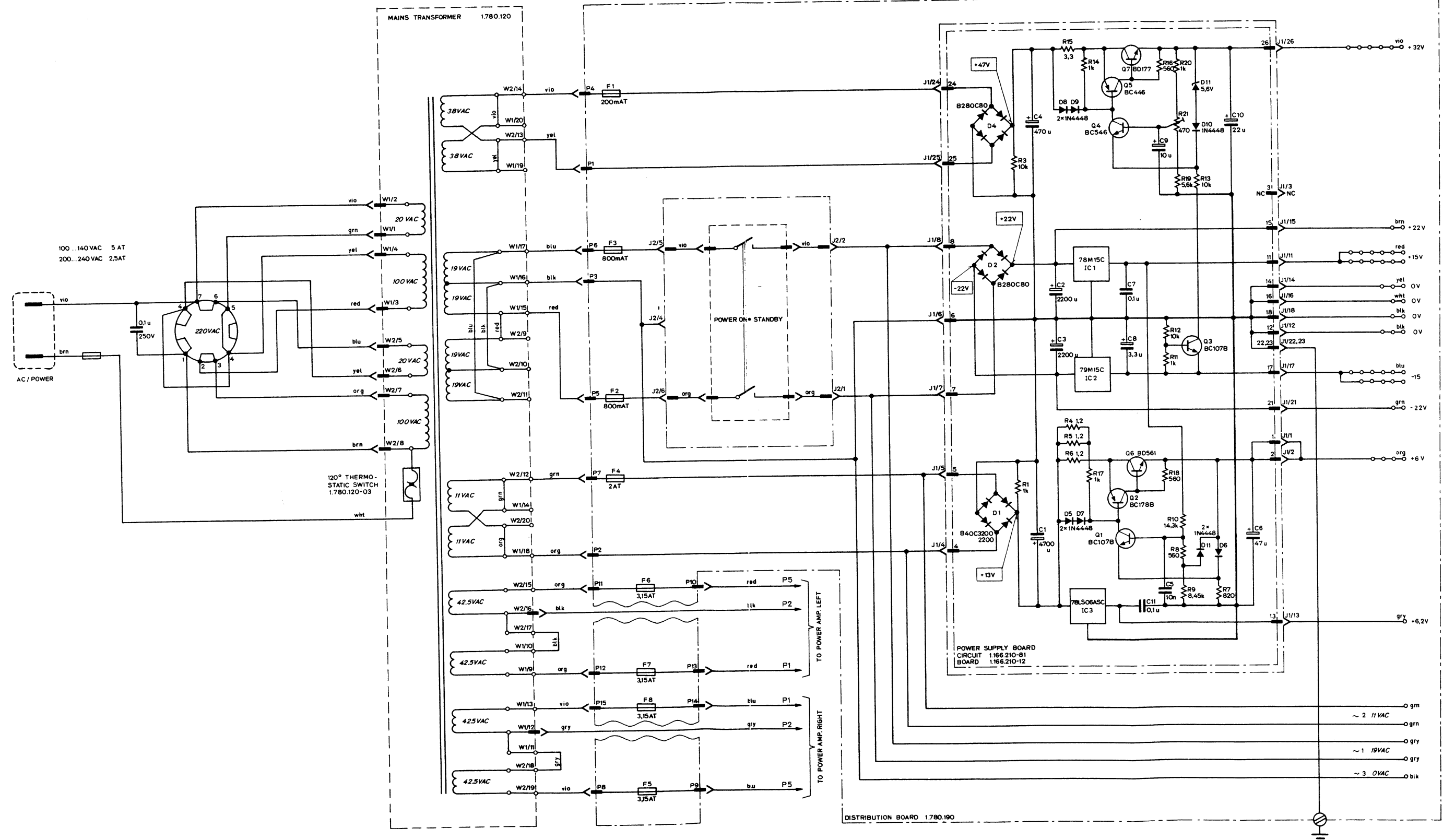
| IND | DATE | NAME | |
|---------------------|--------|------|-----------------------------|
| ① | | | CF = Carbon Film |
| ② | | | |
| ③ | | | |
| ④ | | | |
| ⑤ | 3.6.80 | Rem. | |
| STUDER Power Supply | | | PL 1.166.210-81 PAGE 2 OF 2 |



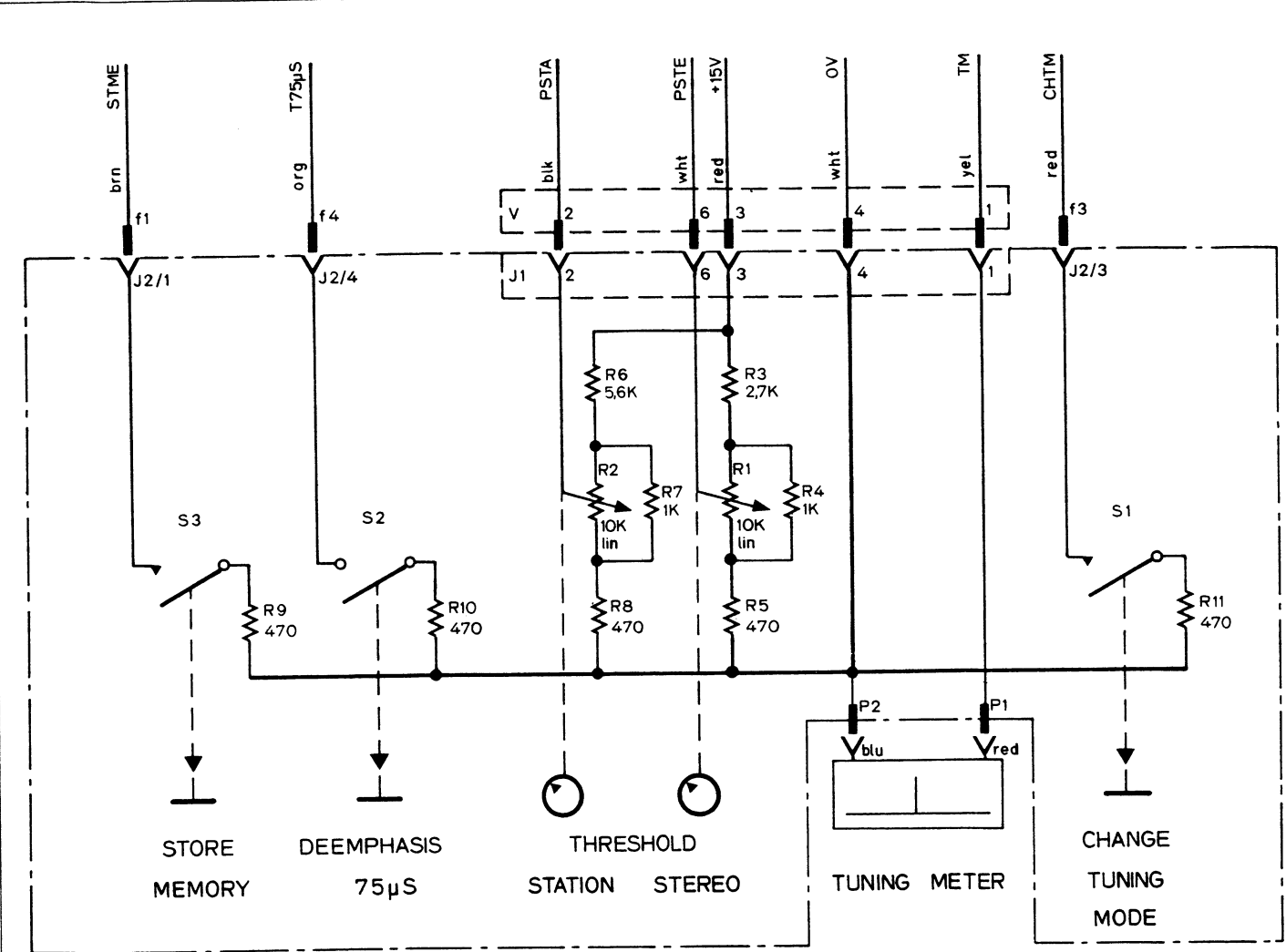
1.780.190

- F1: 200mA
- F2,3: 800mA
- F4: 2AT
- F5...8: 3,15AT
- J1: 2 x 54.01.0289 8 POLE
1 x 54.01.0216 6 POLE
- J2: 54.01.0216 6 POLE

POWER SUPPLY UNIT 1.780.110

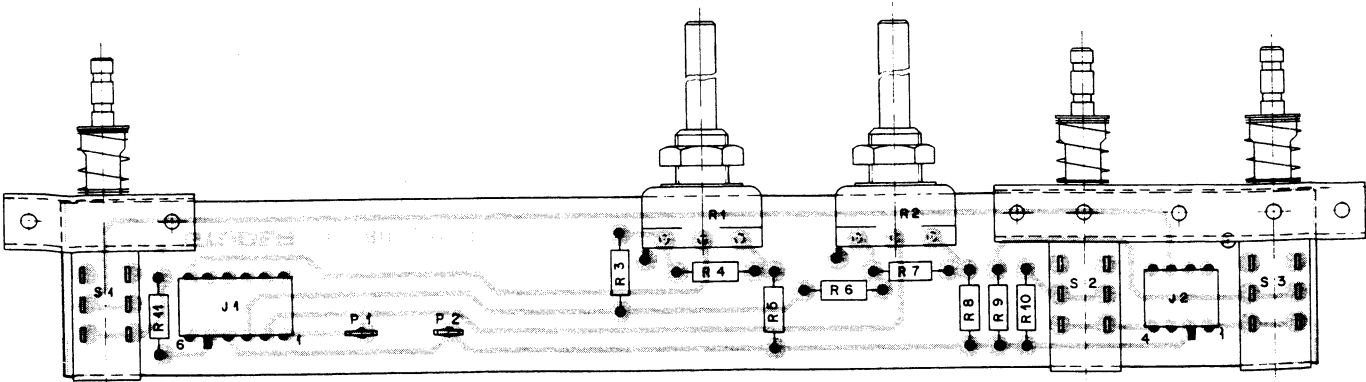


THRESHOLD CONTROL BOARD 1.780.235

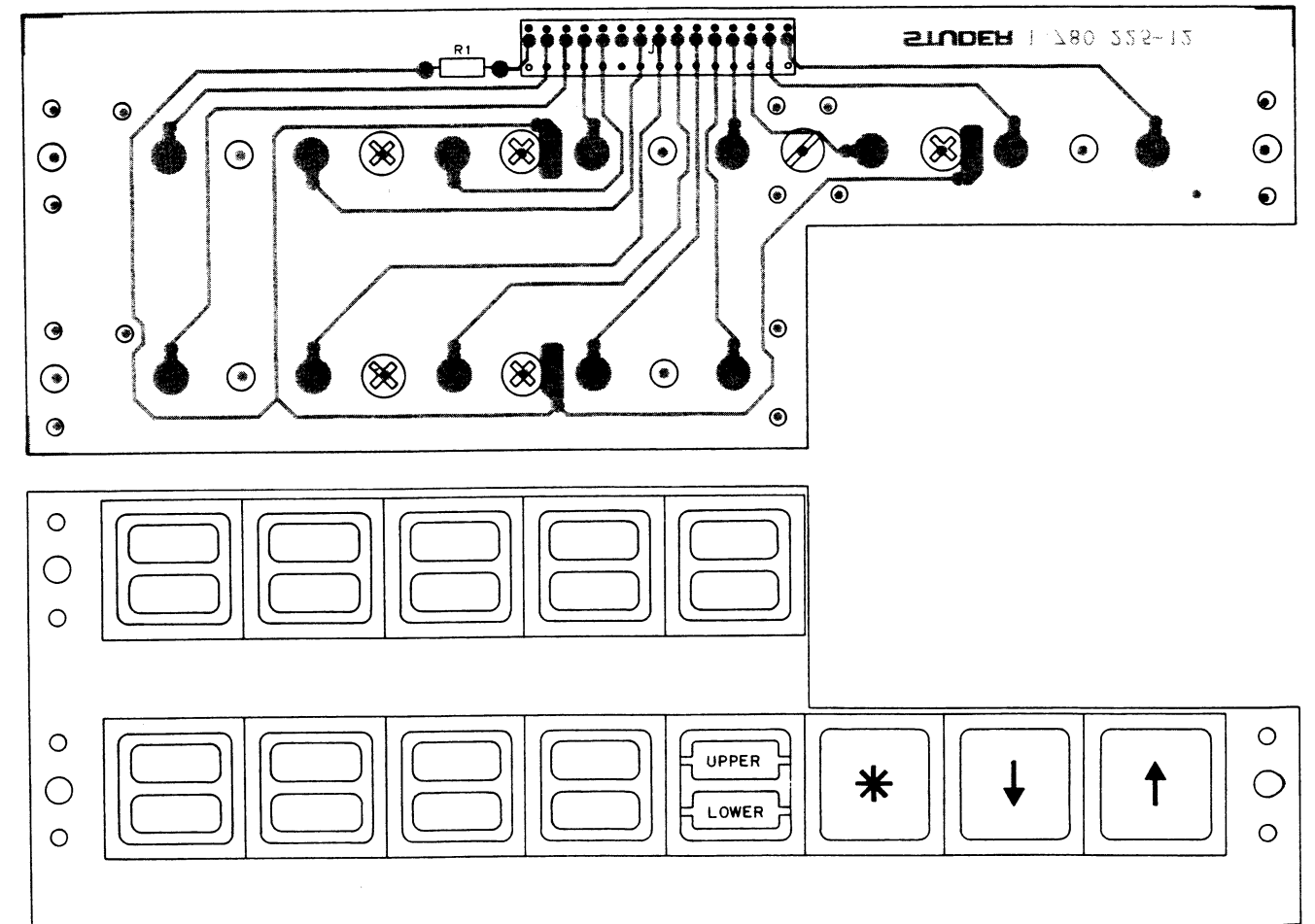
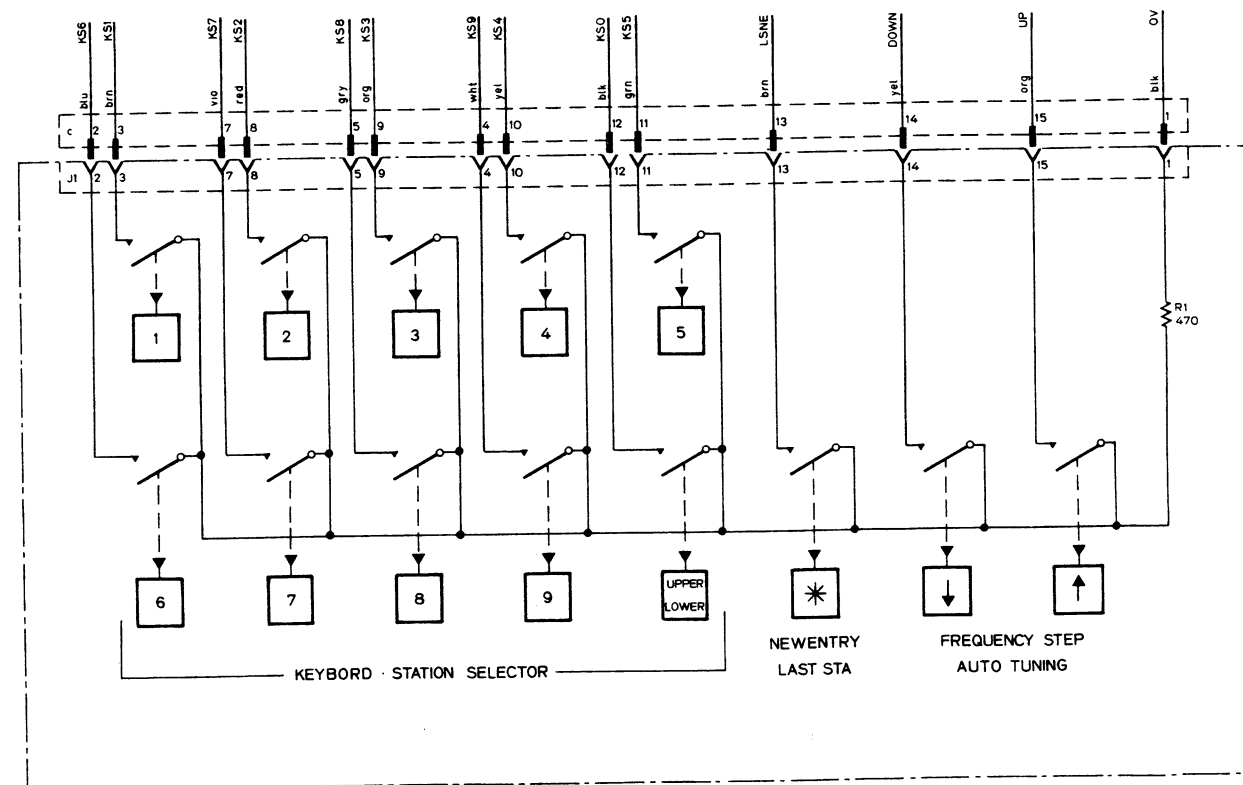


| INDX | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|---------|-------------------------|--------------------------|---------------------------|-----|
| | J1 | 54.01.0214 | 6 POLE | C/S | |
| | J2 | 54.01.0304 | 4 POLE | C/S | |
| | P1 | 54.02.0320 | 2,8x9,8 | | |
| | P2 | 54.02.0320 | 2,8x9,8 | | |
| | R1 | 1.780.235.03 | 10k Ω | PCF LIN. 20% | ST |
| | R2 | 1.780.235.03 | 10k Ω | PCF LIN. 20% | ST |
| | R3 | 57.11.4242 | 2,4k Ω | 5% | |
| | R4 | 57.11.4102 | 1k Ω | 5% | |
| | R5 | 57.11.4471 | 470 Ω | 5% | |
| | R6 | 57.11.4132 | 5,6k Ω | 5% | |
| | R7 | 57.11.4102 | 1k Ω | 5% | |
| | R8 | 57.11.4471 | 470 Ω | 5% | |
| | R9 | 57.11.4471 | 470 Ω | 5% | |
| | R10 | 57.11.4471 | 470 Ω | 5% | |
| | R11 | 57.11.4471 | 470 Ω | 5% | |
| | S1 | 1.780.235-02 | PUSH BUTTON SWITCH | | ST |
| | S2/S3 | 1.780.235-01 | PUSH BUTTON SWITCH | | ST |
| INDX | DATE | NAME | | | |
| ④ | | | ST = STUDER | | |
| ③ | | | PCF = POT'N. CARBON FILM | | |
| ② | | | | | |
| ① | | | | | |
| ○ | 17.5.79 | 1/2 | | | |
| STUDER | | THRESHOLD CONTROL BOARD | 1.780.235 | PAGE 1 OF 1 | |

CHANGE TUNING MODE STEREO STATION 75µS STORE
THRESHOLD THRESHOLD DEEMPHASIS MEMORY



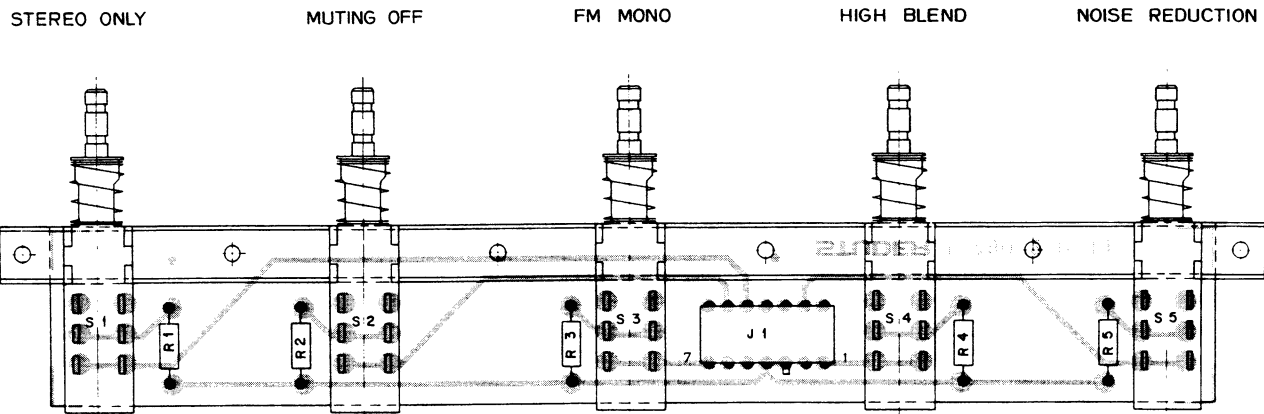
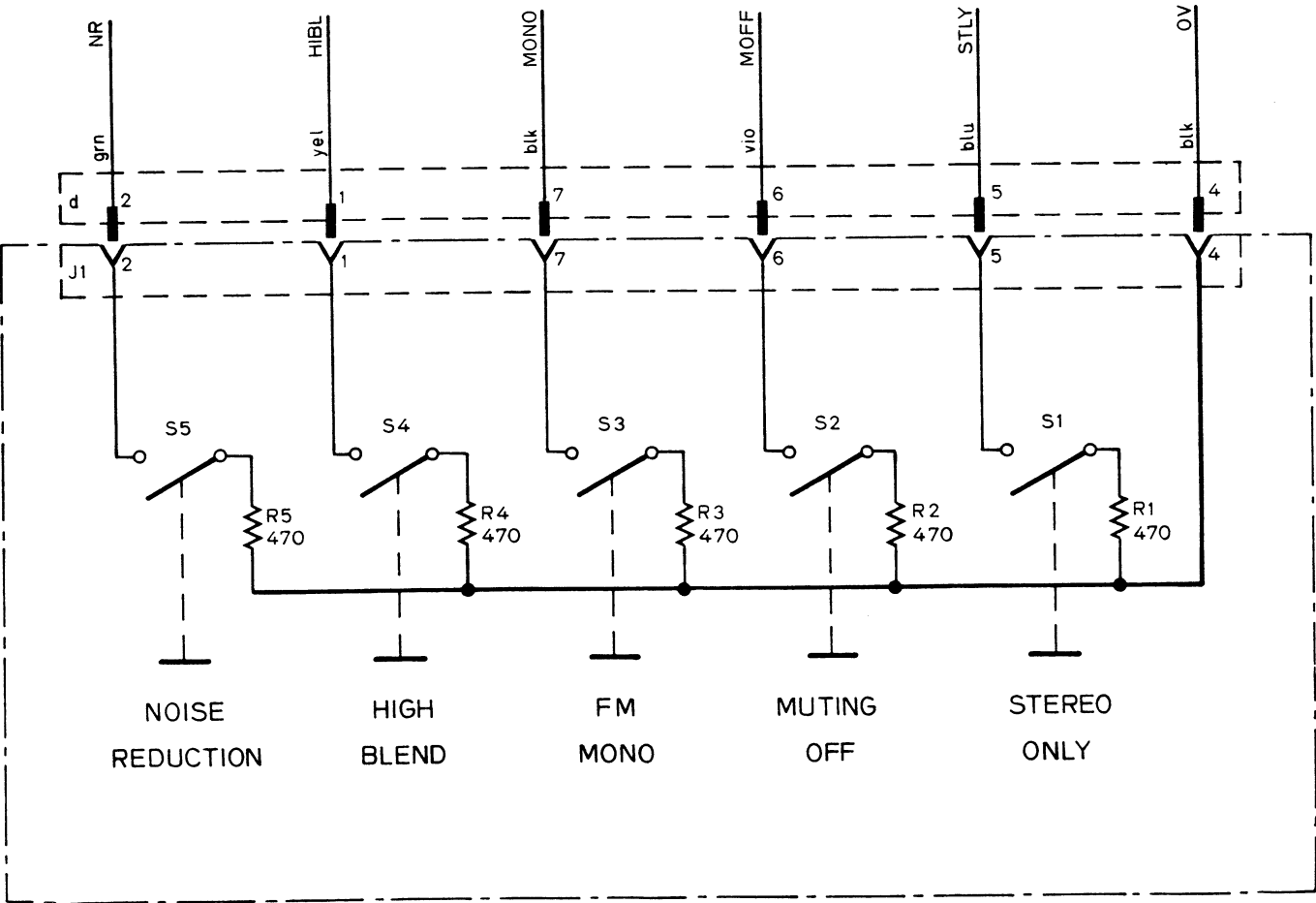
STATION SELECTION KEYBOARD 1.780.225



1.780.225

J1: 54.01.0219 15 POLE
 R1: 57.11.4471 470 5%

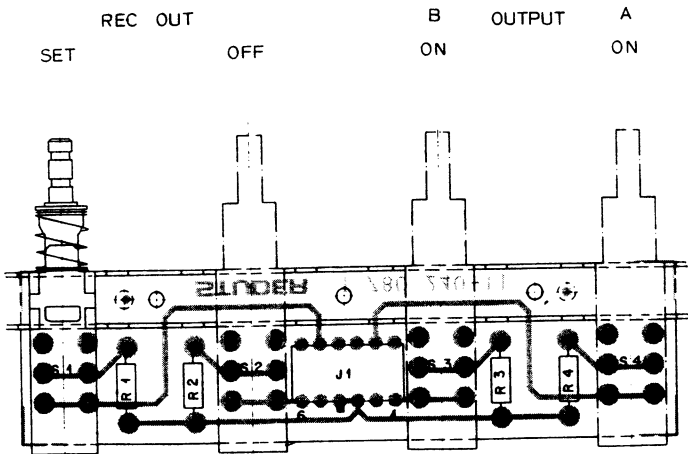
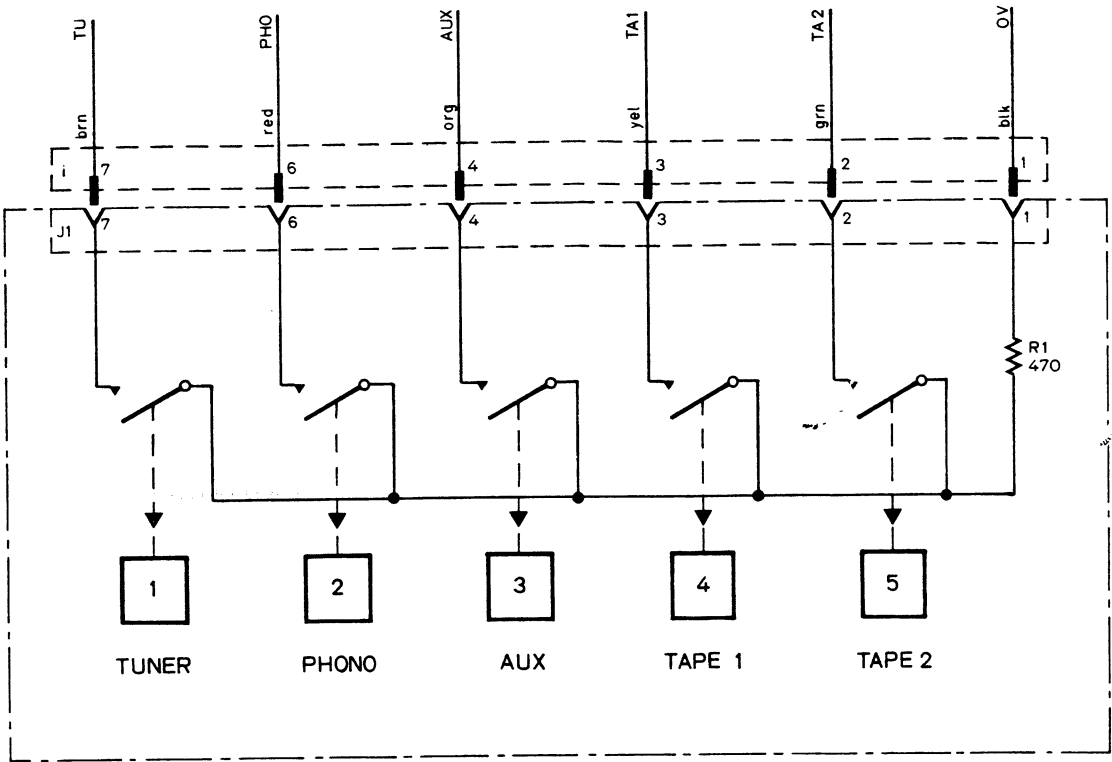
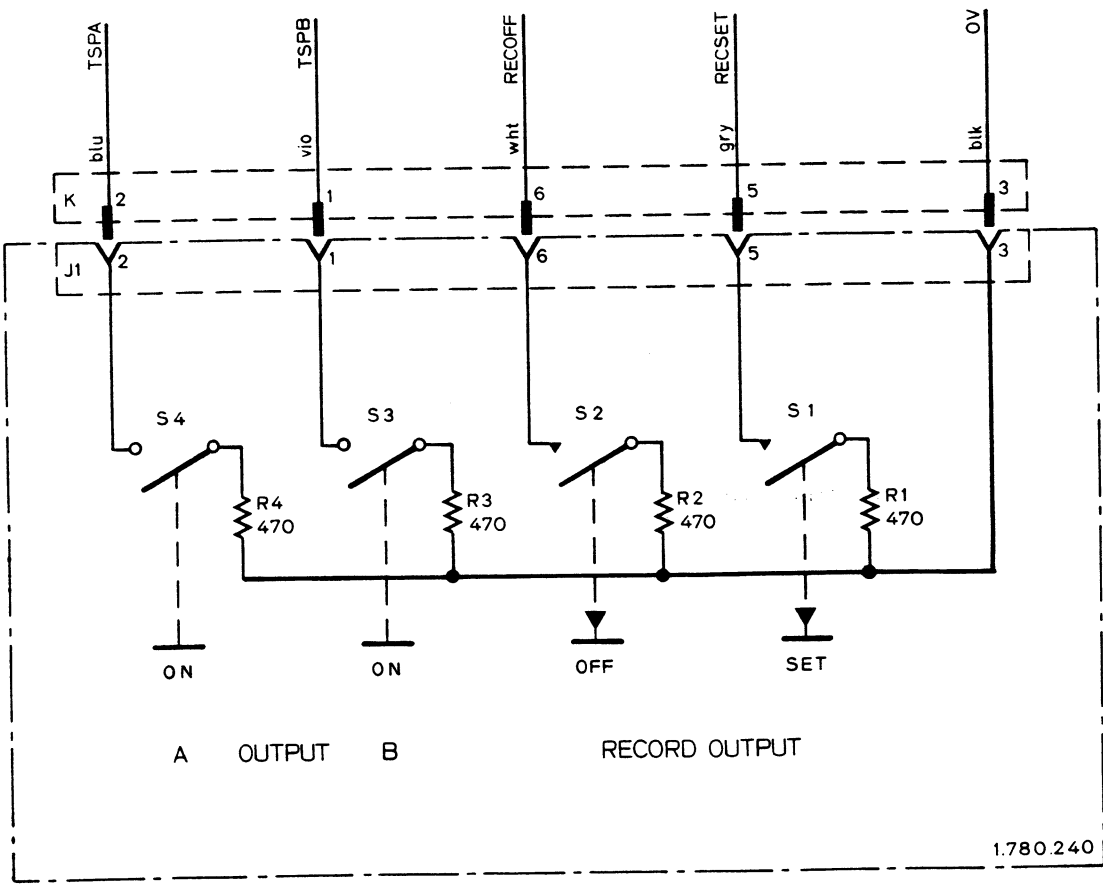
PUSH BUTTON BOARD / FM MODE 1.780.220



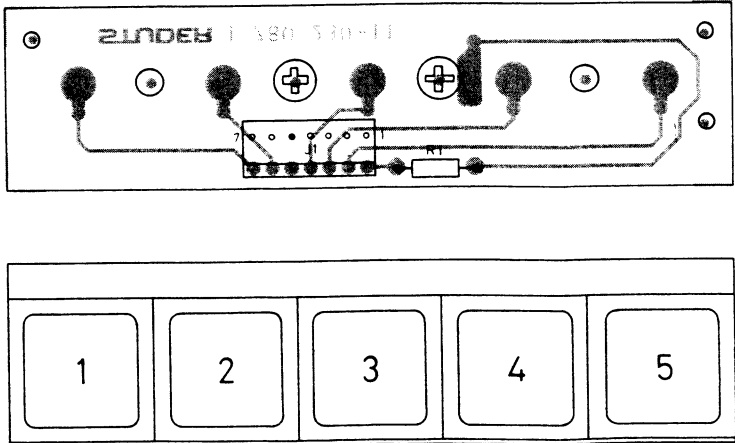
- 1.780.220
- J1: 54.01.0244 7 POLE
 - R1...5: 57.11.4471 470 5%
 - S1...5: 1.780.220-01 PUSHBUTTON

PUSH BUTTON BOARD / OUTPUT SELECTION 1.780.240

INPUT SELECTION KEYBOARD 1.780.230



| INDX | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------|--------------|-----------------------------------|---------------------------|-------------|
| | 1 | 54.01.0214 | 6 POLE | CIS | |
| | 2 | 57.11.4471 | 470Ω | 5% | |
| | 3 | 57.11.4471 | 470Ω | 5% | |
| | 4 | 57.11.4471 | 470Ω | 5% | |
| | 5 | 57.11.4471 | 470Ω | 5% | |
| | 6 | 57.11.4471 | 470Ω | 5% | |
| | 7 | 57.11.4471 | 470Ω | 5% | |
| | 8 | 1.780.240.01 | PUSH BUTTON SWITCH | | ST |
| INDX | DATE | NAME | ST: STUDER | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| STUDER | | | PUSH BUTTON B. / OUTPUT SELECTION | 1.780.240 | PAGE 1 OF 1 |



1.780.230

J1: 54.01.0218 7 POLE
R1: 57.11.4471 470 5%

MICROCOMPUTER PCB 1.780.260

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|--------------|----------|---------------------------|-----|
| C1 | 59.99.0205 | 68 nF | -20+80% 100V CER | |
| C2-3 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C4 | 59.30.3330 | 33 µF | -20+50% 10V TA | |
| C5 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C6 | 59.30.7220 | 22 µF | -20+50% 25V TA | |
| C8-9 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C10 | 59.30.6109 | 1 µF | -20+50% 35V TA | |
| C11-15 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C17-18 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C20 | 59.32.3103 | 10 nF | -20+100% 40V CER | |
| C21 | 59.99.0205 | 68 nF | -20+80% 100V CER | |
| D1 | 50.04.0122 | 1N4001 | | SJ |
| D2-3 | 50.04.0125 | 1N4448 | | SJ |
| D4 | 50.04.1103 | ±7.5V | ±5% 0.4W | |
| D5 | 50.04.0125 | 1N4448 | | SJ |
| D6 | 50.04.1103 | ±3.3V | ±5% 0.4W | |
| D7-11 | 50.04.0125 | 1N4448 | | SJ |
| JC1 | 1.780.260.01 | | STUDER JC | |
| JC2 | 50.06.0000 | 74LS00 | | |
| JC3 | 50.05.0123 | 7406 | TTL | |
| JC4 | 50.06.0259 | 74LS259 | | |
| JC5 | 50.07.0014 | MC14584 | CMOS 40014 BPC | |
| JC6-10 | 50.07.0512 | MC14512 | " 4512 BPC | |
| Q1 | 54.01.0307 | 10 poles | CIS | |
| Q2 | 54.01.0289 | 8 poles | " | |
| Q3 | 54.01.0309 | 13 poles | " | |
| Q4 | 54.01.0296 | 18 poles | " | |
| Q5 | 54.01.0297 | 19 poles | " | |
| Q6-7 | 54.01.0296 | 18 poles | " | |

| INDI | DATE | NAME |
|--------|---------------|--------------------------|
| ④ | | |
| ③ | | |
| ② | 10.3.80 | Rom. |
| ① | 19.12.79 | He |
| ○ | 29.8.79 | A. Dünner L2 |
| STUDER | MICROCOMPUTER | 1.780.260.00 PAGE 1 OF 4 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|---------|-----------------------------------|-----|
| L1 | 62.01.0115 | 0.45 kΩ | ±20% Wide-band-inductor 80-220MHz | |
| L2-L3 | 62.01.0126 | 15 µH | ±10% | |
| Q1 | 50.03.0436 | BC237B | npn BC 547 B | |
| Q2 | 50.03.0332 | BC560B | pnp P _{tot} = 500 mW | |
| Q3-4 | 50.03.0436 | BC237B | npn BC 547 B | |
| Q5 | 50.03.0314 | BC252B | pnp BC 308 B | |
| Q6 | 50.03.0350 | MPF4392 | N-Mos 7112 F/-12 | |
| Q7 | 50.03.0312 | BC252B | pnp BC 308 B | |
| Q8 | 50.03.0436 | BC237B | npn BC 547 B | |
| Q9-10 | 50.03.0314 | BC252B | pnp BC 308 B | |
| Q11-Q13 | 50.03.0436 | BC237B | npn BC 547 B | |
| Q12 | 50.03.0314 | BC252B | pnp BC 308 B | |
| R1 | 57.11.4122 | 1.2 kΩ | ±5% 0.25W CSCH | |
| R2 | 57.11.4432 | 4.7 kΩ | " " " | |
| R3 | 57.11.4222 | 2.2 kΩ | " " " | |
| R4-5 | 57.11.4332 | 3.3 kΩ | " " " | |
| R6-7 | 57.11.4102 | 1 kΩ | " " " | |
| R8 | 57.11.4122 | 1.2 kΩ | " " " | |
| R9 | 57.11.4122 | 1.2 kΩ | " " " | |
| R10-12 | 57.11.4332 | 3.3 kΩ | " " " | |
| R13-15 | 57.11.4122 | 1.2 kΩ | " " " | |
| R16 | 57.11.4432 | 4.7 kΩ | " " " | |
| R17 | 57.11.4332 | 3.3 kΩ | " " " | |
| R18-21 | 57.11.4103 | 10 kΩ | " " " | |
| R22-25 | 57.11.4332 | 3.3 kΩ | " " " | |
| R26 | 57.11.4222 | 2.2 kΩ | " " " | |
| R27-30 | 57.11.4332 | 3.3 kΩ | " " " | |
| R31-33 | 57.11.4104 | 100 kΩ | " " " | |
| R34 | 57.11.4152 | 1.5 kΩ | " " " | |

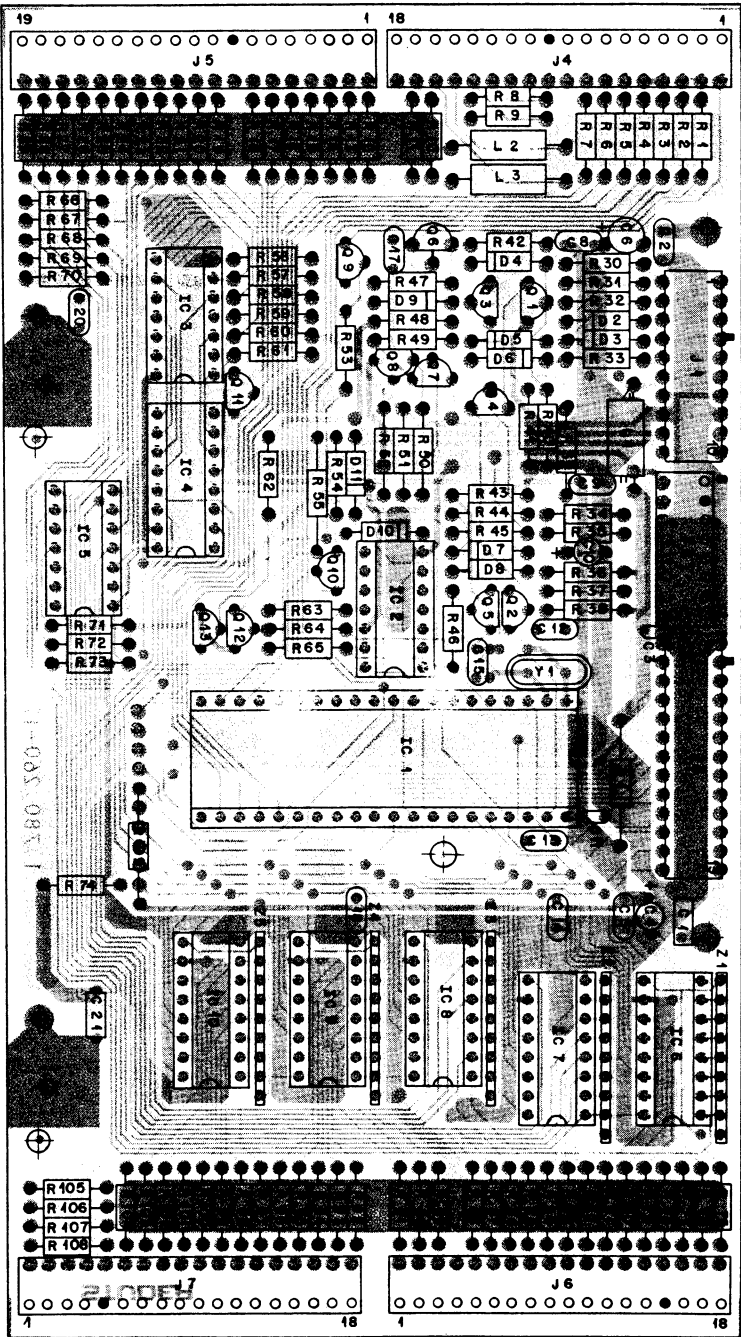
| INDI | DATE | NAME |
|--------|---------------|--------------------------|
| ④ | | |
| ③ | | |
| ② | 10.3.80 | Rom. |
| ① | 19.12.79 | He |
| ○ | 29.8.79 | A. Dünner L2 |
| STUDER | MICROCOMPUTER | 1.780.260.00 PAGE 2 OF 4 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|--------|---------------------------|-----|
| R35 | 57.11.4103 | 10 kΩ | ±5% 0.25W CSCH | |
| R36 | 57.11.4101 | 100 Ω | " " " | |
| R40 | 57.11.4221 | 220 Ω | " " " | |
| R41 | 57.11.4103 | 10 kΩ | " " " | |
| R42 | 57.11.4122 | 1.2 kΩ | " " " | |
| R43 | 57.11.4221 | 220 Ω | " " " | |
| R44 | 57.11.4103 | 10 kΩ | " " " | |
| R45 | 57.11.4101 | 100 Ω | " " " | |
| R46 | 57.11.4223 | 22 kΩ | " " " | |
| R47 | 57.11.4432 | 4.7 kΩ | " " " | |
| R48 | 57.11.4104 | 100 kΩ | " " " | |
| R49 | 57.11.4103 | 10 kΩ | " " " | |
| R50 | 57.11.4104 | 100 kΩ | " " " | |
| R51 | 57.11.4103 | 10 kΩ | " " " | |
| R52 | 57.11.4222 | 2.2 kΩ | " " " | |
| R53 | 57.11.4332 | 3.3 kΩ | " " " | |
| R54 | 57.11.4432 | 4.7 kΩ | " " " | |
| R55 | 57.11.4102 | 1 kΩ | " " " | |
| R56 | 57.11.4332 | 3.3 kΩ | " " " | |
| R57-60 | 57.11.4152 | 1.5 kΩ | " " " | |
| R61 | 57.11.4222 | 2.2 kΩ | " " " | |
| R62 | 57.11.4124 | 180 kΩ | " " " | |
| R63-64 | 57.11.4223 | 22 kΩ | " " " | |
| R65 | 57.11.4233 | 27 kΩ | " " " | |
| R66-70 | 57.11.4104 | 100 kΩ | " " " | |
| R71-72 | 57.11.4233 | 27 kΩ | " " " | |
| R73 | 57.11.4104 | 100 kΩ | " " " | |
| R74 | 57.11.4333 | 33 kΩ | " " " | |
| R75-108 | 57.11.4332 | 3.3 kΩ | " " " | |
| R109 | 57.11.4223 | 22 kΩ | " " " | |

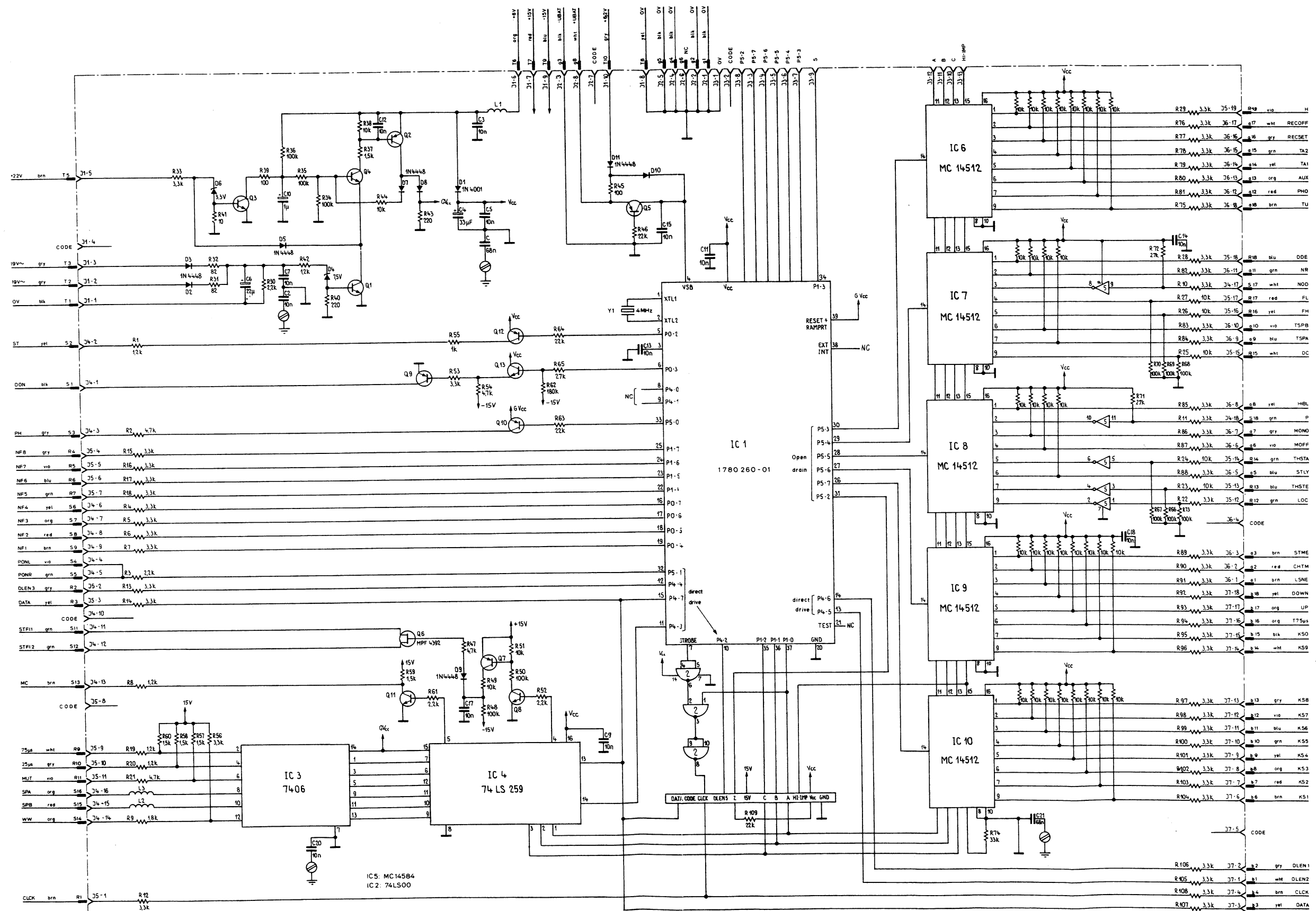
| INDI | DATE | NAME |
|--------|---------------|--------------------------|
| ④ | | |
| ③ | | |
| ② | 10.3.80 | Rom. |
| ① | 19.12.79 | He |
| ○ | 29.8.79 | A. Dünner L2 |
| STUDER | MICROCOMPUTER | 1.780.260.00 PAGE 3 OF 4 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|--------------|-------|---------------------------|-----|
| Y1 | 89.01.0550 | 4 MHz | C ₀ = 30 pF | |
| Z1-5 | 1.010.014.57 | 10 kΩ | 8x10 kΩ resistor network | |

| INDI | DATE | NAME |
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| ④ | | |
| ③ | | |
| ② | 10.3.80 | Rom. |
| ① | 19.12.79 | He |
| ○ | 29.8.79 | A. Dünner L2 |
| STUDER | MICROCOMPUTER | 1.780.260.00 PAGE 4 OF 4 |



MICROCOMPUTER PCB 1.780.260



FREQUENCY SYNTHESIZER PCB 1.780.151-81

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|---------|---------------------------|-----|
| | C1 | 59.25.3281 | 220µF | -10% 16V EL | |
| | C2 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C3 | 59.34.2390 | 39pF | 5% 40V N150 CER | |
| | C4 | 59.34.0399 | 39pF | 0.5pF 40V N100 CER | |
| | C5 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C6 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C7 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C8 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C9 | 59.34.1829 | 82pF | 5% 40V N100 CER | |
| | C10 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C11 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C12 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C13 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C14 | 59.30.6109 | 1µF | 20% 35V TA | |
| | C15 | 59.18.0015 | 1...6pF | TRI CER | ST |
| | C16 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C17 | 59.34.0229 | 2.2pF | 0.5pF 40V N100 CER | |
| | C18 | 59.34.1180 | 18pF | 5% 40V N150 CER | |
| | C19 | 59.34.2181 | 180pF | 5% 40V N100 CER | |
| | C20 | 59.31.6104 | 0.1µF | 10% 100V HPE | |
| | C21 | 59.34.4680 | 68pF | 5% 40V N100 CER | |
| | C22 | 59.34.2220 | 22pF | 5% 40V N100 CER | |
| | C23 | 59.18.0108 | 5...4pF | TRI FOL | PH |
| | C24 | 59.34.4151 | 15pF | 5% 40V N100 CER | |
| | C25 | 59.34.4151 | 15pF | 5% 40V N100 CER | |
| | C26 | 59.34.4151 | 15pF | 5% 40V N100 CER | |
| | C27 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C28 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C29 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C30 | 59.32.3103 | 10nF | 20% 40V CER | |

| INDI | DATE | NAME | CER: CERAMIC | PH: PHILIPS |
|--------|-------------|--------------|---------------------|-------------|
| ① | 22.9.81 | PH | HPE: MET. POLYESTER | ST: STETTER |
| ② | 22.7.81 | PH | TRI: TRIMMER | |
| ③ | 20.5.80 | PH | EL: ELECTROLYTIC | |
| ④ | 24.11.79 | PH | TA: TANTALUM | |
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| STUDER | SYNTHESIZER | 1.780.151-81 | PAGE 1 OF 5 | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|--------|---------------------------|-----|
| | C31 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C32 | 59.32.4102 | 1nF | 20% 40V CER | |
| | C33 | 59.34.4151 | 15pF | 5% 40V N100 CER | |
| | C34 | 59.32.2220 | 22pF | 10% 40V CER | |
| | C35 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C36 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C37 | 59.31.6224 | 0.22µF | 10% 100V HPE | |
| | C38 | 59.31.6105 | 1µF | 10% 100V HPE | |
| | C39 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C40 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C41 | 59.32.3103 | 10nF | 20% 40V CER | |
| | C42 | 59.30.6479 | 0.47µF | 20% 35V TA | |
| | C43 | 59.30.3479 | 4.7µF | 20% 35V TA | |
| | C44 | 59.32.3103 | 10nF | 20% 40V CER | |

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| | D1 | 50.04.0126 | BR204R | TUNING DIODE | S |
| | D2 | 50.04.0122 | 1N4001 | 50V 1A | |
| | IC1 | 50.05.0266 | HA7460K | VOLT. REG. | F |
| | IC2 | 50.13.0101 | SHA1053 | SYNTH. MODUL | CHOS |
| | IC3 | 50.13.0104 | SHA1059 | TWO MODULUS PRECALCULATED ECL | P |
| | IC4 | 50.09.0103 | LF353B | FET OP AMP | NS |
| | J1 | 54.01.0217 | 9P30E | CIS | |
| | L1 | 1.166.112 | DIC. TRANSFO | | ST |
| | L2 | 42.01.0126 | 15µH | 10% | |
| | L3 | 1.166.110.01 | DIC. COIL | | ST |

| INDI | DATE | NAME | CER: CERAMIC | S: SIEMENS |
|--------|-------------|--------------|---------------------|-------------------|
| ① | 22.9.81 | PH | HPE: MET. POLYESTER | F: FRANKLO |
| ② | 22.7.81 | PH | TA: TANTALUM | P: PHILIPS |
| ③ | 20.5.80 | PH | | ST: STUOER |
| ④ | 24.11.79 | PH | | NS: NATIONAL SEM. |
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| STUDER | SYNTHESIZER | 1.780.151-81 | PAGE 2 OF 5 | |

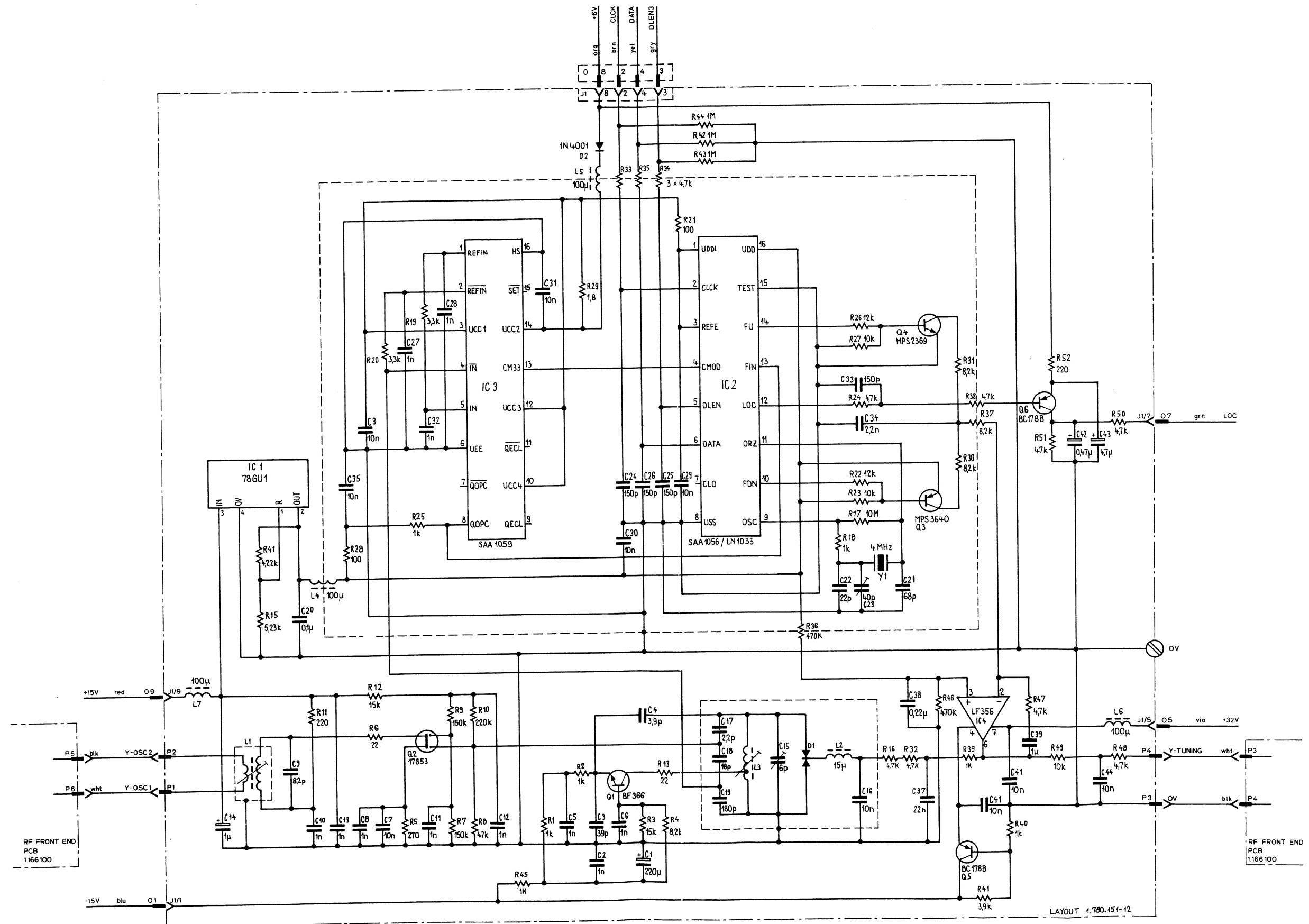
| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|---------------|---------|---------------------------|-----|
| | L4 | 62.02.4101 | 100µH | 10% | |
| | L5 | 62.02.4101 | 100µH | 10% | |
| | L6 | 62.02.4101 | 100µH | 10% | |
| | L7 | 62.02.4101 | 100µH | 10% | |
| | PA... | PH 54.02.0320 | 2FX08 | | |
| | Q1 | 50.03.0516 | BF356 | NPN SI | P |
| | Q2 | 50.03.0311 | 17P53 | DUAL GATE MOS FET | RCA |
| | Q3 | 50.03.0449 | MAR3640 | PNP SI | M |
| | Q4 | 50.03.0508 | MAR3689 | NPN SI | M |
| | Q5 | 50.03.0318 | BC174B | PNP SI | |
| | Q6 | 50.03.0318 | BC174B | PNP SI | |
| | R1 | 57.11.4102 | 1kΩ | 5% | |
| | R2 | 57.11.4102 | 1kΩ | 5% | |
| | R3 | 57.11.4153 | 15kΩ | 5% | |
| | R4 | 57.11.4222 | 8.2kΩ | 5% | |
| | R5 | 57.11.4241 | 270Ω | 5% | |
| | R6 | 57.11.4220 | 22Ω | 5% | |
| | R7 | 57.11.4154 | 150kΩ | 5% | |
| | R8 | 57.11.4473 | 47kΩ | 5% | |
| | R9 | 57.11.4154 | 150kΩ | 5% | |
| | R10 | 57.11.4224 | 220kΩ | 5% | |
| | R11 | 57.11.4221 | 220 | 5% | |
| | R12 | 57.11.4153 | 15kΩ | 5% | |
| | R13 | 57.09.5320 | 22Ω | 10% | |
| | R14 | 57.39.4221 | 4.2kΩ | 1% | |
| | R15 | 57.39.5231 | 5.23kΩ | 1% | |
| | R16 | 57.11.4472 | 47kΩ | 5% | |

| INDI | DATE | NAME | P: PHILIPS | RCA: RADIO CORP AM |
|--------|-------------|--------------|-------------|--------------------|
| ① | 22.9.81 | PH | | M: MOTOROLA |
| ② | 22.7.81 | PH | | |
| ③ | 20.5.80 | PH | | |
| ④ | 24.11.79 | PH | | |
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| STUDER | SYNTHESIZER | 1.780.151-81 | PAGE 3 OF 5 | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------|---------------------------|-----|
| | R17 | 57.02.4106 | 10HΩ | 5% | |
| | R18 | 57.11.4102 | 1kΩ | 5% | |
| | R19 | 57.11.4332 | 3.3kΩ | 5% | |
| | R20 | 57.11.4332 | 3.3kΩ | 5% | |
| | R21 | 57.11.4101 | 100Ω | 5% | |
| | R22 | 57.11.4123 | 12kΩ | 5% | |
| | R23 | 57.11.4103 | 10kΩ | 5% | |
| | R24 | 57.11.4472 | 47kΩ | 5% | |
| | R25 | 57.11.4102 | 1kΩ | 5% | |
| | R26 | 57.11.4123 | 12kΩ | 5% | |
| | R27 | 57.11.4103 | 10kΩ | 5% | |
| | R28 | 57.11.4101 | 100Ω | 5% | |
| | R29 | 57.11.4189 | 1.8Ω | 5% | |
| | R30 | 57.11.4222 | 8.2kΩ | 5% | |
| | R31 | 57.11.4222 | 8.2kΩ | 5% | |
| | R32 | 57.11.4472 | 47kΩ | 5% | |
| | R33 | 57.11.4472 | 47kΩ | 5% | |
| | R34 | 57.11.4472 | 47kΩ | 5% | |
| | R35 | 57.11.4472 | 47kΩ | 5% | |
| | R36 | 57.11.4474 | 470kΩ | 5% | |
| | R37 | 57.11.4472 | 47kΩ | 5% | |
| | R38 | 57.11.4472 | 47kΩ | 5% | |
| | R39 | 57.11.4102 | 1kΩ | 5% | |
| | R40 | 57.11.4102 | 1kΩ | 5% | |
| | R41 | 57.11.4392 | 3.9kΩ | 5% | |
| | R42 | 57.11.4105 | 11kΩ | 5% | |
| | R43 | 57.11.4105 | 11kΩ | 5% | |
| | R44 | 57.11.4105 | 11kΩ | 5% | |
| | R45 | 57.11.4102 | 1kΩ | 5% | |
| | R46 | 57.11.4474 | 470kΩ | 5% | |

| INDI | DATE | NAME | | |
|------|----------|------|--|--|
| ① | 22.9.81 | PH | | |
| ② | 22.7.81 | PH | | |
| ③ | 20.5.80 | PH | | |
| ④ | 24.11.79 | PH | | |
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FREQUENCY SYNTHESIZER PCB 1.780.151-81



METER CIRCUIT AND DEEMPHASIS PCB 1.780.155

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | C1 | 59.30.4479 | 47µF | -20% 16V TA | |
| | C2 | 59.11.4472 | 4700pF | 25% 160V PC | |
| | C3, C4 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C5 | 59.34.1100 | 10pF | 5% 40V CER | |
| | C6 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C7 | 59.30.6478 | 0.47µF | -20% 35V TA | |
| | C8 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C9 | 59.11.6152 | 1500pF | 5% 160V PC | |
| | C10 | 59.30.6109 | 1µF | -20% 35V TA | |
| | C11 | 59.34.1689 | 68pF | 5% 40V CER | |
| | C12 | 59.34.4680 | 68pF | 5% 40V CER | |
| | C13 | 59.30.6109 | 1µF | -20% 35V TA | |
| | C14 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C15 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C16 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C17 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C18 | 59.22.4101 | 100µF | -10% 16V EL | |
| | C19 | 59.30.4339 | 3.3µF | -20% 16V TA | |
| | C20 | 59.30.4339 | 3.3µF | -20% 16V TA | |
| | C21 | 59.30.4479 | 47µF | -20% 16V TA | |
| | C22 | 59.11.4472 | 4700pF | 25% 160V PC | |
| | C23 | 59.30.6478 | 0.47µF | -20% 35V TA | |
| | C24 | 59.11.6152 | 1500pF | 5% 160V PC | |
| | C25 | 59.30.6109 | 1µF | -20% 35V TA | |
| | C26 | 59.34.1689 | 68pF | 5% 40V CER | |
| | C27 | 59.34.4680 | 68pF | 5% 40V CER | |
| | C28 | 59.30.6109 | 1µF | -20% 35V TA | |
| | C29 | 59.30.6109 | 1µF | -20% 35V TA | |
| | C30 | 59.31.6105 | 1µF | 10% 160V MPE | |
| | C31 | 59.31.6105 | 1µF | 10% 160V MPE | |

| IND | DATE | NAME | |
|--------|------------------------------|-----------|----------------------|
| ① | | | TA = TANTALUM |
| ② | | | PC = POLYCARBONATE |
| ③ | | | CER = CERAMIC |
| ④ | | | EL = ELECTROLYTIC |
| ⑤ | 10.3.80 | imp | MPE = MET. POLYESTER |
| ⑥ | 15.4.79 | imp | |
| STUDER | METER CIRCUIT AND DEEMPHASIS | 1.780.155 | PAGE 1 OF 5 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|---------------------------|-------|
| | C32 | 59.34.4680 | 68pF | 5% 40V CER | |
| | C33 | 59.12.2223 | 22nF | 5% 100V MPE | |
| | C34 | 59.12.2563 | 56nF | 5% 100V MPE | |
| | C35 | 59.11.6332 | 3.3nF | 5% 400V PC | |
| | C36 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | C37 | 59.32.3103 | 10nF | ±20% 40V CER | |
| | DA... | 50.04.0125 | 1N4448P | REV Q1A | ANY |
| | IC1 | 50.05.0254 | LM301AP | OP. AMP. | NS/TI |
| | IC2 | 50.05.0257 | LM301AP | OP. AMP. | NS/TI |
| | IC3 | 50.05.0245 | RC4558P | DUAL OP. AMP. | TI |
| | IC4 | 50.05.0257 | LM301AP | OP. AMP. | NS/TI |
| | IC5 | 50.09.0103 | LF353P | PET OP. AMP. | NS |
| | IC6 | 50.05.0245 | RC4558P | DUAL OP. AMP. | TI |
| | J1 | 54.01.0294 | 16 POLE | C/S | |
| | J2 | 54.01.0219 | 15 POLE | C/S | |
| | L1 | 62.02.3223 | 22mH | 5% | |
| | Q1... | 50.03.0438 | BC108B | NPN SI | |
| | Q2 | 50.03.0439 | BC109C | NPN SI | |
| | Q3... | 50.03.0318 | BC178B | PNP SI | |
| | Q4... | 50.03.0438 | BC108B | NPN CI | |
| | R1 | 59.02.5473 | 47kΩ | PCF 20% | |
| | R2 | 59.11.4153 | 15kΩ | 5% | |
| | R3 | 59.11.4102 | 1kΩ | 5% | |
| | R4 | 59.39.2212 | 22,1kΩ | 1% HF | |

| IND | DATE | NAME | |
|--------|------------------------------|-----------|-------------------------|
| ① | | | CER: CERAMIC |
| ② | | | MPE: MET. POLYESTER |
| ③ | | | PC: POLYCARBONATE |
| ④ | | | SI: SILICON |
| ⑤ | 10.3.80 | imp | CF: CARBON FILM |
| ⑥ | 15.4.79 | imp | PCF: POT'N. CARBON FILM |
| STUDER | METER CIRCUIT AND DEEMPHASIS | 1.780.155 | PAGE 2 OF 5 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | R5 | 59.39.5361 | 536kΩ | 1% HF | |
| | R6 | 59.11.4153 | 15kΩ | 5% | |
| | R7 | 59.02.5473 | 47kΩ | 20% PCF | |
| | R8 | 59.11.4472 | 47kΩ | 5% | |
| | R9 | 59.11.4472 | 47kΩ | 5% | |
| | R10 | 59.11.4335 | 3,31kΩ | 5% | |
| | R11 | 59.11.4102 | 1kΩ | 5% | |
| | R12 | 59.11.4102 | 1kΩ | 5% | |
| | R13 | 59.39.1692 | 16,9kΩ | 1% HF | |
| | R14 | 59.39.3322 | 33,2kΩ | 1% HF | |
| | R15 | 59.11.4823 | 82kΩ | 5% | |
| | R16 | 59.11.4105 | 11kΩ | 5% | |
| | R17 | 59.11.4103 | 10kΩ | 5% | |
| | R18 | 59.39.6941 | 6,94kΩ | 1% HF | |
| | R19 | 59.11.4105 | 11kΩ | 5% | |
| | R20 | 59.11.4102 | 1kΩ | 5% | |
| | R21 | 59.11.4471 | 470kΩ | 5% | |
| | R22 | 59.11.4103 | 10kΩ | 5% | |
| | R23 | 59.11.4152 | 1,5kΩ | 5% | |
| | R24 | 59.11.4393 | 39kΩ | 5% | |
| | R25 | 59.11.4472 | 47kΩ | 5% | |
| | R26 | 59.11.4153 | 15kΩ | 5% | |
| | R27 | 59.11.4102 | 1kΩ | 5% | |
| | R28 | 59.11.4472 | 47kΩ | 5% | |
| | R29 | 59.11.4223 | 22kΩ | 5% | |
| | R30 | 59.11.4335 | 3,31kΩ | 5% | |
| | R31 | 59.11.4223 | 22kΩ | 5% | |
| | R32 | 59.11.4221 | 220Ω | 5% | |
| | R33 | 59.11.4123 | 12kΩ | 5% | |
| | R34 | 59.11.4123 | 12kΩ | 5% | |

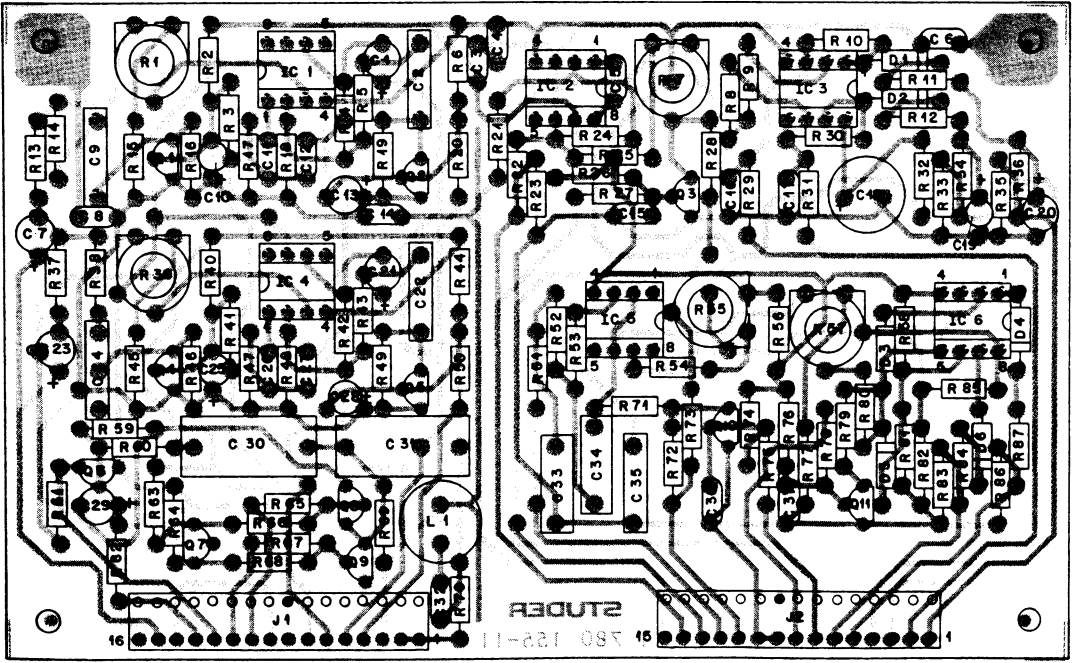
| IND | DATE | NAME | |
|--------|------------------------------|-----------|-------------------------|
| ① | | | HF: METAL FILM |
| ② | | | PCF: POT'N. CARBON FILM |
| ③ | | | |
| ④ | | | |
| ⑤ | 10.3.80 | imp | |
| ⑥ | 15.4.79 | imp | |
| STUDER | METER CIRCUIT AND DEEMPHASIS | 1.780.155 | PAGE 3 OF 5 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | R35 | 59.11.4123 | 12kΩ | 5% | |
| | R36 | 59.11.4123 | 12kΩ | 5% | |
| | R37 | 59.39.1692 | 16,9kΩ | 1% HF | |
| | R38 | 59.39.3322 | 33,2kΩ | 1% HF | |
| | R39 | 59.02.5473 | 47kΩ | 20% PCF | |
| | R40 | 59.11.4153 | 15kΩ | 5% | |
| | R41 | 59.11.4102 | 1kΩ | 5% | |
| | R42 | 59.39.2212 | 22,1kΩ | 1% HF | |
| | R43 | 59.39.5361 | 536kΩ | 1% HF | |
| | R44 | 59.11.4153 | 15kΩ | 5% | |
| | R45 | 59.11.4823 | 82kΩ | 5% | |
| | R46 | 59.11.4105 | 11kΩ | 5% | |
| | R47 | 59.11.4103 | 10kΩ | 5% | |
| | R48 | 59.39.6941 | 6,94kΩ | 1% HF | |
| | R49 | 59.11.4105 | 11kΩ | 5% | |
| | R50 | 59.11.4102 | 1kΩ | 5% | |
| | R51 | 59.11.4105 | 11kΩ | 5% | |
| | R52 | 59.11.4105 | 11kΩ | 5% | |
| | R53 | 59.11.4105 | 11kΩ | 5% | |
| | R54 | 59.11.4333 | 33kΩ | 5% | |
| | R55 | 59.02.5473 | 47kΩ | 20% PCF | |
| | R56 | 59.11.4333 | 33kΩ | 5% | |
| | R57 | 59.02.5470 | 470kΩ | 20% PCF | |
| | R58 | 59.39.1622 | 16,2kΩ | 1% HF | |
| | R59 | 59.11.4334 | 330kΩ | 5% | |
| | R60 | 59.11.4220 | 220Ω | 5% | |
| | R61 | 59.11.4472 | 47kΩ | 5% | |
| | R62 | 59.11.4472 | 47kΩ | 5% | |
| | R63 | 59.11.4222 | 2,2kΩ | 5% | |
| | R64 | 59.11.4222 | 2,2kΩ | 5% | |

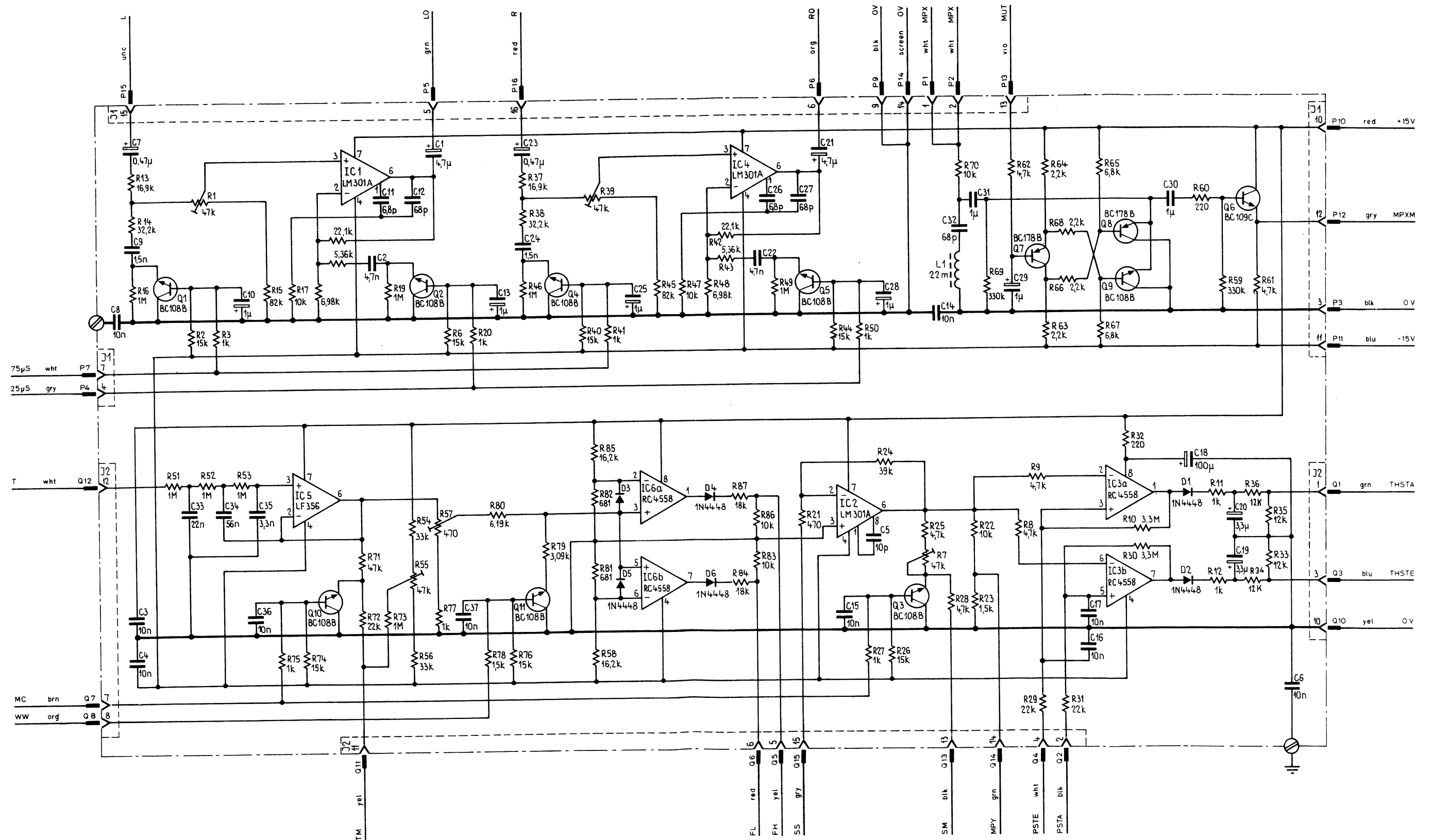
| IND | DATE | NAME | |
|--------|------------------------------|-----------|-------------------------|
| ① | | | HF: METAL FILM |
| ② | | | PCF: POT'N. CARBON FILM |
| ③ | | | |
| ④ | | | |
| ⑤ | 10.3.80 | imp | |
| ⑥ | 15.4.79 | imp | |
| STUDER | METER CIRCUIT AND DEEMPHASIS | 1.780.155 | PAGE 4 OF 5 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | R65 | 59.11.4682 | 6,8kΩ | 5% | |
| | R66 | 59.11.4222 | 2,2kΩ | 5% | |
| | R67 | 59.11.4682 | 6,8kΩ | 5% | |
| | R68 | 59.11.4222 | 2,2kΩ | 5% | |
| | R69 | 59.11.4334 | 330kΩ | 5% | |
| | R70 | 59.11.4102 | 1kΩ | 5% | |
| | R71 | 59.11.4473 | 47kΩ | 5% | |
| | R72 | 59.11.4223 | 22kΩ | 5% | |
| | R73 | 59.11.4105 | 11kΩ | 5% | |
| | R74 | 59.11.4153 | 15kΩ | 5% | |
| | R75 | 59.11.4102 | 1kΩ | 5% | |
| | R76 | 59.11.4152 | 1,5kΩ | 5% | |
| | R77 | 59.11.4102 | 1kΩ | 5% | |
| | R78 | 59.11.4152 | 1,5kΩ | 5% | |
| | R79 | 59.39.3091 | 3,09kΩ | 1% HF | |
| | R80 | 59.39.6191 | 6,19kΩ | 1% HF | |
| | R81 | 59.39.6810 | 68kΩ | 1% HF | |
| | R82 | 59.39.6810 | 68kΩ | 1% HF | |
| | R83 | 59.11.4103 | 10kΩ | 5% | |
| | R84 | 59.11.4123 | 12kΩ | 5% | |
| | R85 | 59.39.1622 | 16,2kΩ | 1% HF | |
| | R86 | 59.11.4103 | 10kΩ | 5% | |
| | R87 | 59.11.4123 | 12kΩ | 5% | |

| IND | DATE | NAME | |
|--------|------------------------------|-----------|-------------------------|
| ① | | | HF: METAL FILM |
| ② | | | PCF: POT'N. CARBON FILM |
| ③ | | | |
| ④ | | | |
| ⑤ | 10.3.80 | imp | |
| ⑥ | 15.4.79 | imp | |
| STUDER | METER CIRCUIT AND DEEMPHASIS | 1.780.155 | PAGE 5 OF 5 |



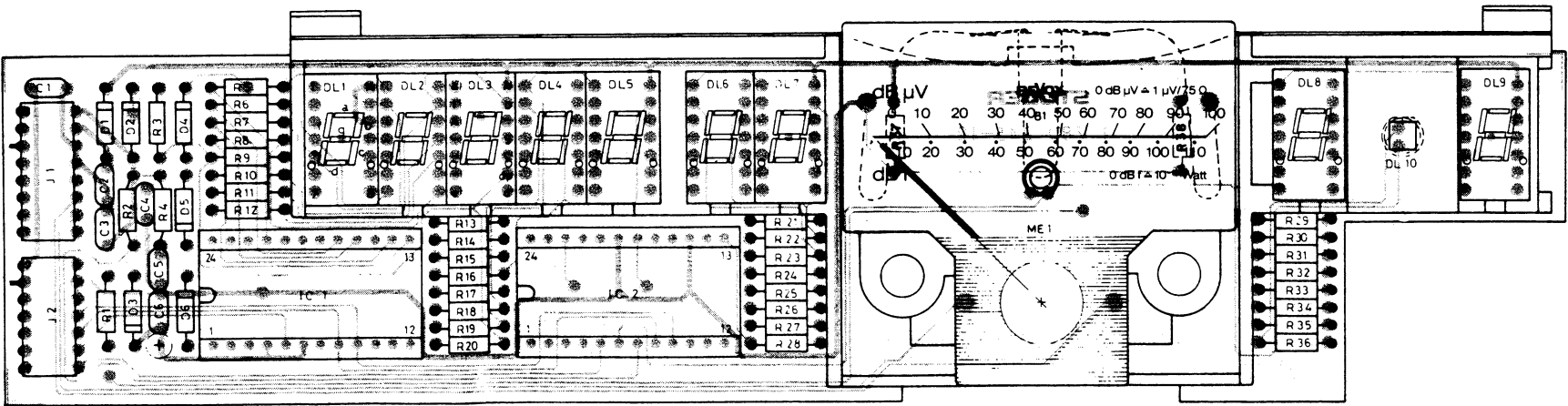
METER CIRCUIT AND DEEMPHASIS PCB 1.780.155



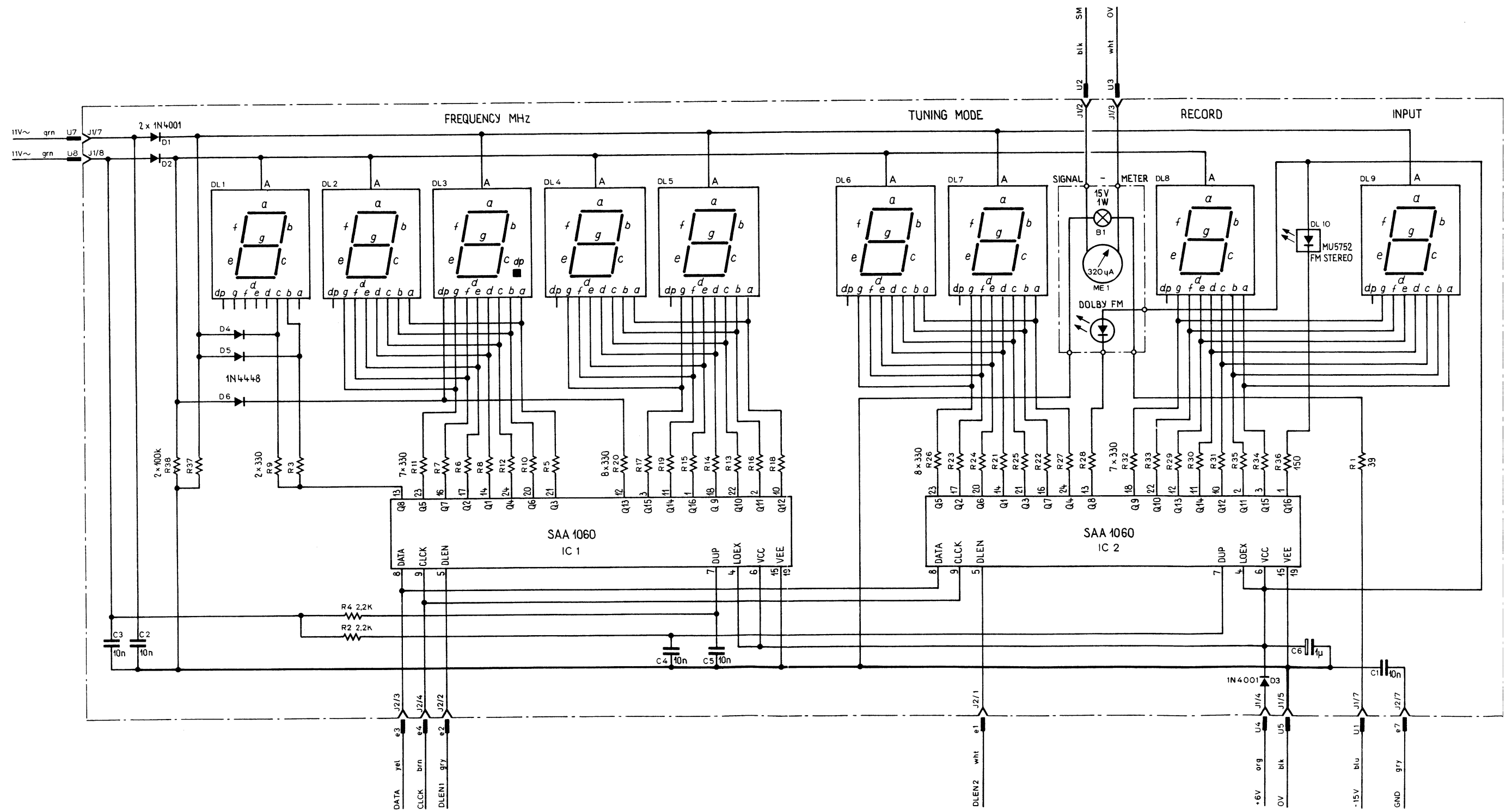
DISPLAY PCB 1.780.245

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|-----------|----------------|-----------|---------------------------|-----|
| | C1... | C5 59.32.3103 | 10nF | +40% 40V CER | |
| | C6 | 59.30.6103 | 1µF | 20% 3.5V T.A | |
| | D1... | DR 50.04.0122 | 1N4001 | 50V 1A | ANY |
| | D4... | D6 50.04.0125 | 1N4448 | 75V 0.1A | ANY |
| | DL1...DL9 | 73.01.0122 | 5042-7R31 | 7-SEGMENT LED DISPLAY | HP |
| | DL10 | 50.04.2115 | HV 5752 | LED RED | M |
| | JC1...JC2 | 50.13.0103 | 5041060 | LED INTERFACE CIRCUIT | P |
| | R1 | 57.11.4390 | 39Ω | 5% 0.25W CF | |
| | R2,R4 | 57.11.4222 | 22kΩ | " | |
| | R3,R5... | R35 57.11.4331 | 330Ω | " | |
| | R36 | 57.11.4151 | 150Ω | " | |
| | R37,R38 | 57.11.4104 | 100kΩ | " | |
| | J1 | 54.01.0306 | 8-POLE | CLS | |
| | J2 | 54.01.0244 | 7-POLE | CLS | |
| | HE1 | 1.740.245.04 | | SIGNAL METER | ST |
| | B1 | | 15V-1W | 2321 | O |

| IND | DATE | NAME | |
|----------------|----------|------|------------------------------------|
| ① | | | CER = CERAMIC HP = HEWLETT PACKARD |
| ② | | | CF = CARBON FILM M = MOUNTED |
| ③ | 15.10.79 | 160m | TA = Tantalum P = PHILIPS |
| ④ | 18.6.79 | 160 | ST = STUDER |
| ⑤ | 15.5.79 | 160 | O = ORIGIN |
| STUDER DISPLAY | | | 1.780.245 PAGE 1 OF 1 |



DISPLAY PCB 1.780.245



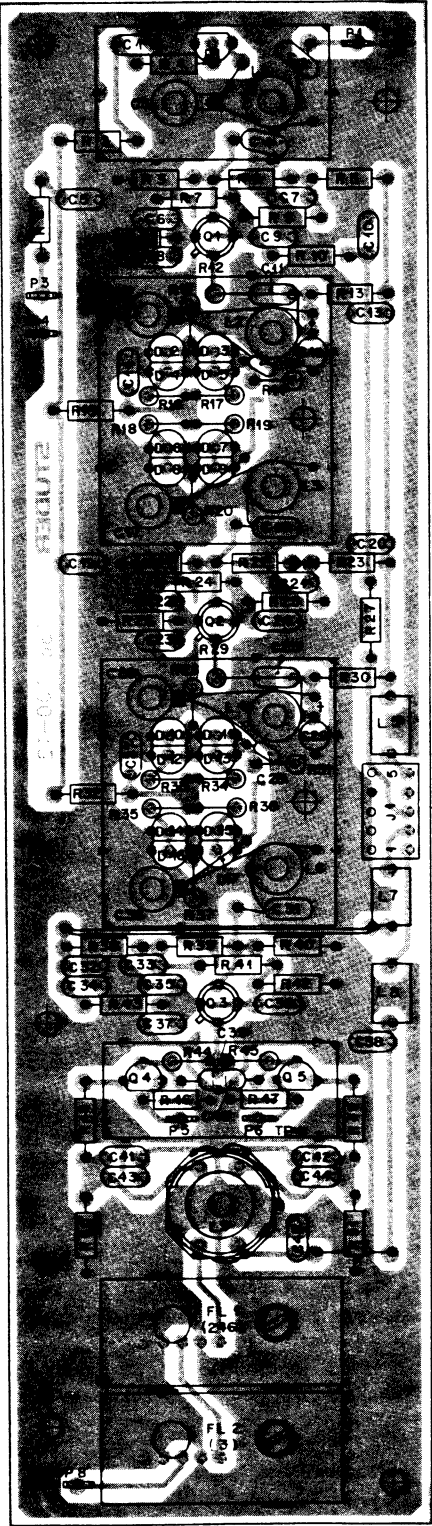
RF FRONT END PCB 1.166.100

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------------|----------------|--------------------------------------|---------------------------|-----|
| | C 1 | 59.32.3103 | 0.01µF | 20% CER | |
| | C 2 | 59.32.4471 | 470pF | " " | |
| | C 3 | 59.18.0106 | 13pF | variable " | |
| | C 4 | 59.32.4471 | 470pF | 20% " | |
| | C 5 | 59.32.3103 | 0.01µF | " " | |
| | C 6 | 59.99.0182 | 1000pF | " " | |
| | C 7 | 59.99.0182 | 1000pF | " " | |
| | C 8 | 59.32.3103 | 0.01µF | " " | |
| | C 9 | 59.99.0182 | 1000pF | " " | |
| | C 10 | 59.32.3103 | 0.01µF | " " | |
| | C 11 | 59.99.0182 | 1000pF | " " | |
| | C 12 | 59.18.0106 | 13pF | variable " | |
| | C 13 | 59.32.3103 | 0.01µF | 20% " | |
| | C 14 | 59.32.3103 | 0.01µF | " " | |
| | C 15 | 59.32.4471 | 470pF | " " | |
| | C 16 | 59.30.4339 | 3.3µF | " TA 16V | |
| | C 17 | 59.18.0106 | 13pF | variable CER | |
| | C 18 | 59.32.4471 | 470pF | 20% CER | |
| | C 19 | 59.99.0182 | 1000pF | " " | |
| | C 20 | " " " | " | " " | |
| | C 21 | " " " | " | " " | |
| | C 22 | " " " | " | " " | |
| | C 23 | 59.32.3103 | 0.01µF | " " | |
| | C 24 | 59.99.0182 | 1000pF | " " | |
| | C 25 | " " " | " | " " | |
| | C 26 | 59.18.0106 | 13pF | variable " | |
| | C 27 | 59.32.3103 | 0.01µF | 20% " | |
| | C 28 | 59.32.4471 | 470pF | " " | |
| | C 29 | 59.30.4339 | 3.3µF | " TA 16V | |
| | C 30 | 59.18.0106 | 13pF | variable CER | |
| IND | DATE | NAME | CER = CERAMIC TA = Solid Tantalum | | |
| ④ | | | | | |
| ③ | | | | | |
| ② | 21.6.78 | Rom. | | | |
| ① | 16.6.78 | Rom. | | | |
| ① | 6.10.77 | Bal. <i>fl</i> | | | |
| STUDER | RF Front End | PL 1.166.100 | PAGE 1 OF 4 | | |

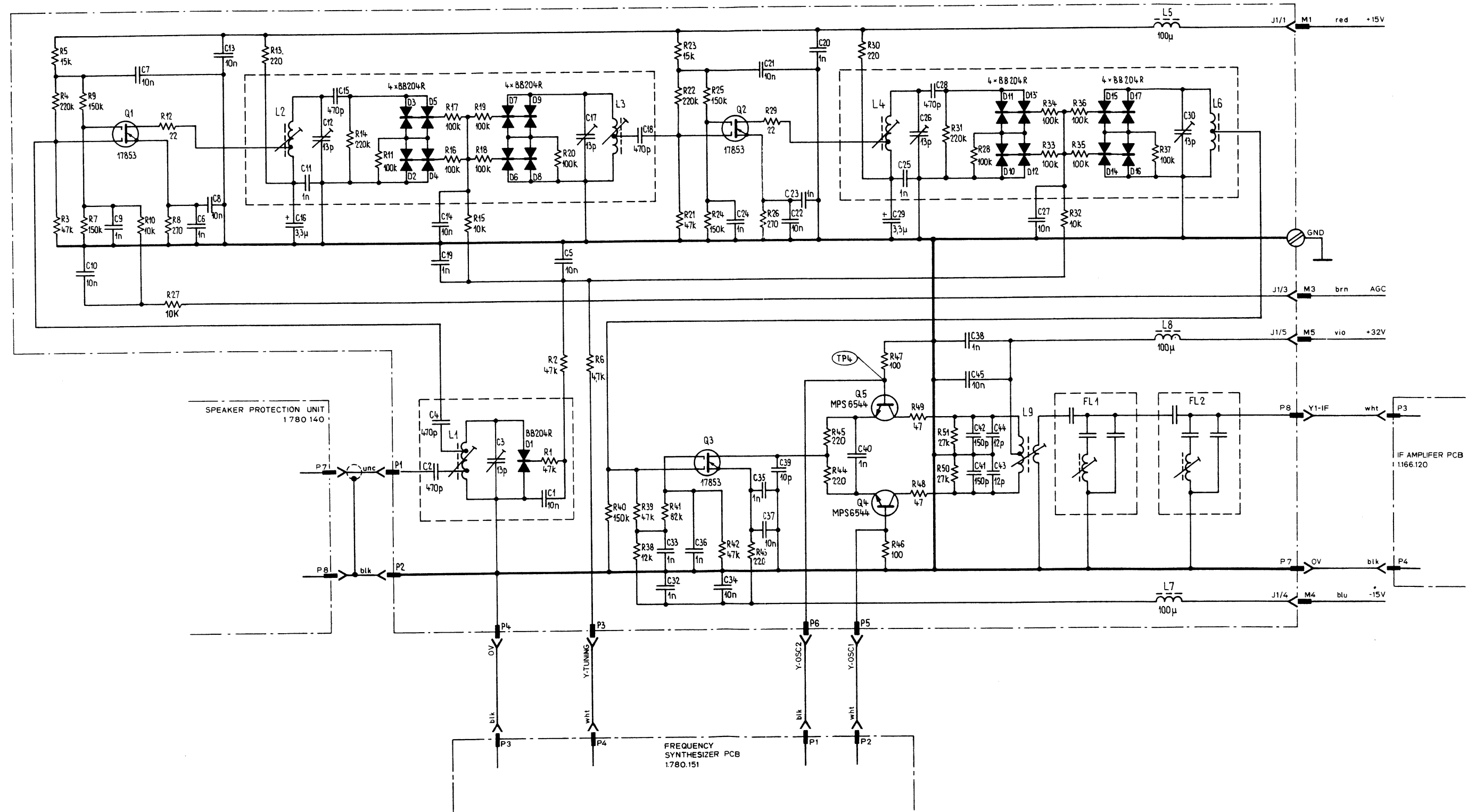
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------------|----------------|--|---------------------------|---------|
| | C 31 | 59.32.4471 | 470pF | 20% CER | |
| | C 32 | 59.99.0182 | 1000pF | " " | |
| | C 33 | 59.99.0182 | " | " " | |
| | C 34 | 59.32.3103 | 0.01µF | " " | |
| | C 35 | 59.99.0182 | 1000pF | " " | |
| | C 36 | " " " | " | " " | |
| | C 37 | 59.32.3103 | 0.01µF | " " | |
| | C 38 | 59.99.0182 | 1000pF | " " | |
| | C 39 | 59.34.1100 | 10pF | 5% " | |
| | C 40 | 59.99.0182 | 1000pF | 20% " | |
| | C 41 | 59.34.2151 | 150pF | 2% " N 150 | |
| | C 42 | 59.34.2151 | " | " " " | |
| | C 43 | 59.34.1120 | 12pF | 5% " NPD | |
| | C 44 | 59.34.1120 | " | " " " | |
| | C 45 | 59.32.3103 | 0.01µF | 20% " | |
| | D 1 | 50.04.0126 | BB 204 red | | only SI |
| | J 1 | 54.01.0288 | 5pol | | |
| | 2 FL 1 | 1.166.512 | Type 2.46 | IF Filter | ST |
| | 2 FL 2 | 1.166.513 | Type 3 | " " | " |
| | L 1 | 1.166.100.01 | | ANTENNA COIL | ST |
| | L 2 | 1.166.100.02 | | RF COIL 1 | " |
| | L 3 | 1.166.100.03 | | RF COIL 2 | " |
| | L 4 | 1.166.100.02 | | RF COIL 1 | " |
| | L 5 | 62.02.4101 | 100µH | | |
| | L 6 | 1.166.100.03 | | RF COIL 2 | ST |
| | L 7 | 62.02.4101 | 100µH | | |
| IND | DATE | NAME | CER = CERAMIC SI = SIEMENS ST = STUDER | | |
| ④ | | | | | |
| ③ | | | | | |
| ② | 21.6.78 | Rom. | | | |
| ① | 16.6.78 | Rom. | | | |
| ① | 6.10.77 | Bal. <i>fl</i> | | | |
| STUDER | RF Front End | PL 1.166.100 | PAGE 2 OF 4 | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------------|----------------|-----------------------------|---------------------------|-----|
| | L 8 | 62.02.4101 | 100µH | | |
| | L 9 | 1.022.152 | | IF COIL | ST |
| | P 1 | 54.02.0320 | 2.8x0.8mm | male connector | |
| | Q 1 | 50.03.0311 | 17853 | Dual Gate Mos Fet | ST |
| | Q 2 | " " " | " | " " " | |
| | Q 3 | " " " | " | " " " | |
| | Q 4 | 50.03.0327 | MP5654* | NPN | M |
| | Q 5 | " " " | " | " | " |
| | R 1 | 57.41.4473 | 47kΩ | 5% | |
| | R 2 | " " " | " | " | |
| | R 3 | " " " | " | " | |
| | R 4 | 57.41.4224 | 220kΩ | " | |
| | R 5 | 57.41.4153 | 15kΩ | " | |
| | R 6 | 57.41.4472 | 47kΩ | " | |
| | R 7 | 57.41.4154 | 150kΩ | " | |
| | R 8 | 57.41.4271 | 270Ω | " | |
| | R 9 | 57.41.4154 | 150Ω | " | |
| | R 10 | 57.41.4103 | 10kΩ | " | |
| | R 11 | 57.11.4104 | 100kΩ | 10% | |
| | R 12 | 57.02.5220 | 22Ω | " | |
| | R 13 | 57.41.4221 | 220Ω | 5% | |
| | R 14 | 57.11.4224 | 220kΩ | 10% | |
| | R 15 | 57.41.4103 | 10kΩ | 5% | |
| | R 16/17 | 57.11.4104 | 100kΩ | 10% | |
| | R 18/19 | " " " | " | " | |
| | R 20 | " " " | " | " | |
| | R 21 | 57.41.4473 | 47kΩ | 5% | |
| IND | DATE | NAME | ST = STUDER M = MOTOROLA | | |
| ④ | | | | | |
| ③ | | | | | |
| ② | 21.6.78 | Rom. | | | |
| ① | 16.6.78 | Rom. | | | |
| ① | 6.10.77 | Bal. <i>fl</i> | | | |
| STUDER | RF Front End | PL 1.166.100 | PAGE 3 OF 4 | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------------|----------------|-------------|---------------------------|-----|
| | R 22 | 57.41.4224 | 220kΩ | 5% | |
| | R 23 | 57.41.4153 | 15kΩ | " | |
| | R 24 | 57.41.4154 | 150kΩ | " | |
| | R 25 | 57.41.4154 | 150kΩ | " | |
| | R 26 | 57.41.4271 | 270Ω | " | |
| | R 27 | 57.41.4103 | 10kΩ | " | |
| | R 28 | 57.11.4104 | 100kΩ | 10% | |
| | R 29 | 57.02.5220 | 22Ω | 10% | |
| | R 30 | 57.41.4221 | 220Ω | 5% | |
| | R 31 | 57.11.4224 | 220kΩ | 10% | |
| | R 32 | 57.41.4103 | 10kΩ | 5% | |
| | R 33/34 | 57.11.4104 | 100kΩ | 10% | |
| | R 35/36 | " " " | " | " | |
| | R 37 | " " " | " | " | |
| | R 38 | 57.41.4123 | 12kΩ | 5% | |
| | R 39 | 57.41.4473 | 47kΩ | " | |
| | R 40 | 57.41.4154 | 150kΩ | " | |
| | R 41 | 57.41.4823 | 82kΩ | " | |
| | R 42 | 57.41.4473 | 47kΩ | " | |
| | R 43 | 57.41.4221 | 220Ω | " | |
| | R 44 | " " " | " | " | |
| | R 45 | " " " | " | " | |
| | R 46 | 57.41.4101 | 100Ω | " | |
| | R 47 | " " " | " | " | |
| | R 48 | 57.41.4470 | 47Ω | " | |
| | R 49 | " " " | " | " | |
| | R 50 | 57.41.4273 | 27kΩ | " | |
| | R 51 | " " " | " | " | |
| IND | DATE | NAME | | | |
| ④ | | | | | |
| ③ | | | | | |
| ② | 21.6.78 | Rom. | | | |
| ① | 16.6.78 | Rom. | | | |
| ① | 6.10.77 | Bal. <i>fl</i> | | | |
| STUDER | RF Front End | PL 1.166.100 | PAGE 4 OF 4 | | |



RF FRONT END PCB 1.166.100



IF AMPLIFIER PCB 1.166.120

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|---------|---------------------------|-----|
| | C 1 | 59.34.2470 | 47 pF | 20% CER | |
| | C 2 | 59.32.3103 | 0.01 uF | " " | |
| | C 3 | " " | " " | " " | |
| | C 4 | 59.34.2181 | 180 pF | 5% CER N 150 | |
| | C 5 | 59.32.3103 | 0.01 uF | 20% CER | |
| | C 6 | 59.34.2470 | 47 pF | " " | |
| | C 7 | 59.32.3103 | 0.01 uF | " " | |
| | C 8 | 59.34.2181 | 180 pF | 5% CER N 150 | |
| | C 9 | 59.32.3103 | 0.01 uF | 20% CER | |
| | C 10 | 59.32.2332 | 3300 pF | 10% " | |
| | C 11 | 59.32.3103 | 0.01 uF | 20% " | |
| | C 12 | " " | " " | " " | |
| | C 13 | 59.34.2470 | 47 pF | " " | |
| | C 14 | 59.32.3103 | 0.01 uF | " " | |
| | C 15 | " " | " " | " " | |
| | C 16 | 59.34.2181 | 180 pF | 5% CER N 150 | |
| | C 17 | 59.32.3103 | 0.01 uF | 20% CER | |
| | C 18 | 59.34.2470 | 47 pF | " " | |
| | C 19 | 59.32.3103 | 0.01 uF | " " | |
| | C 20 | 59.34.2181 | 180 pF | 5% CER N 150 | |
| | C 21 | 59.30.4339 | 3.3 uF | TA 16 V | |
| | C 22 | 59.32.3103 | 0.01 uF | 20% CER | |
| | D 1 | 50.04.0953 | AA116 | Ge-Diode | ANY |
| | D 7 | 50.04.0125 | AM4448 | Si-Diode | ANY |
| | FL 1 | 1.166.510-81 | Type 10 | IF-Filter | ST |
| | FL 2 | 1.166.518 | " 8 | " " | " |
| | FL 3 | 1.166.517 | " 7 | " " | " |
| | FL 4 | 1.166.512 | " 2,4,6 | " " | " |

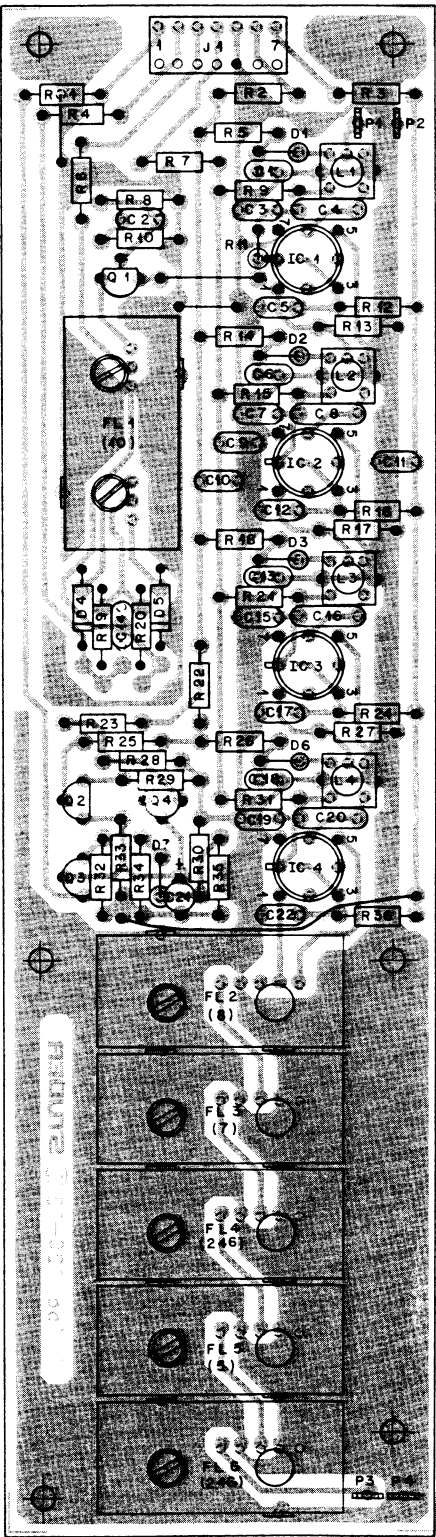
| IND | DATE | NAME | |
|-----------------|---------|------|-----------------------------|
| ④ | 24.5.82 | Rm. | |
| ③ | 19.7.79 | Rom. | |
| ② | 21.6.78 | Rom. | |
| ① | 5.10.77 | Sal. | |
| STUDER IF-Strip | | | PL 1.166.120.00 PAGE 1 OF 3 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|------------|---------------------------|-----|
| | FL 5 | 1.166.515 | Type 5 | IF-Filter | ST |
| | FL 6 | 1.166.512 | Type 2,4,6 | " " | " |
| | IC 1 | 50.05.0101 | CA 3053 | Diff. Amp | RCA |
| | J 1 | 50.01.0218 | 7 pol | | ST |
| | P 1 | 59.02.0320 | 28x0,8 | male | ST |
| | Q 1 | 50.03.0327 | MPS 6544 | | M |
| | Q 2 | 50.03.0318 | BC178 B | | ANY |
| | Q 3 | 50.03.0438 | BC108 B | | " |
| | Q 4 | " " | " " | | " |
| | R 1 | 57.41.4273 | 27 kΩ | 5% | |
| | R 2 | 57.41.4471 | 470 Ω | " | |
| | R 3 | 57.41.4221 | 220 Ω | " | |
| | R 4 | 57.41.4472 | 4700 Ω | " | |
| | R 5 | 57.41.4473 | 47 kΩ | " | |
| | R 6 | 57.41.4332 | 3300 Ω | " | |
| | R 7 | 57.41.4221 | 220 Ω | " | |
| | R 8 | 57.41.4152 | 1500 Ω | " | |
| | R 9 | " " | " " | " | |
| | R 10 | 57.41.4101 | 100 Ω | " | |
| | R 11 | " " | " " | " | |
| | R 12 | 57.41.4102 | 1 kΩ | " | |
| | R 13 | 57.41.4271 | 270 Ω | " | |
| | R 14 | 57.41.4473 | 47 kΩ | " | |
| | R 15 | 57.41.4152 | 1500 Ω | " | |
| | R 16 | 57.41.4102 | 1 kΩ | " | |

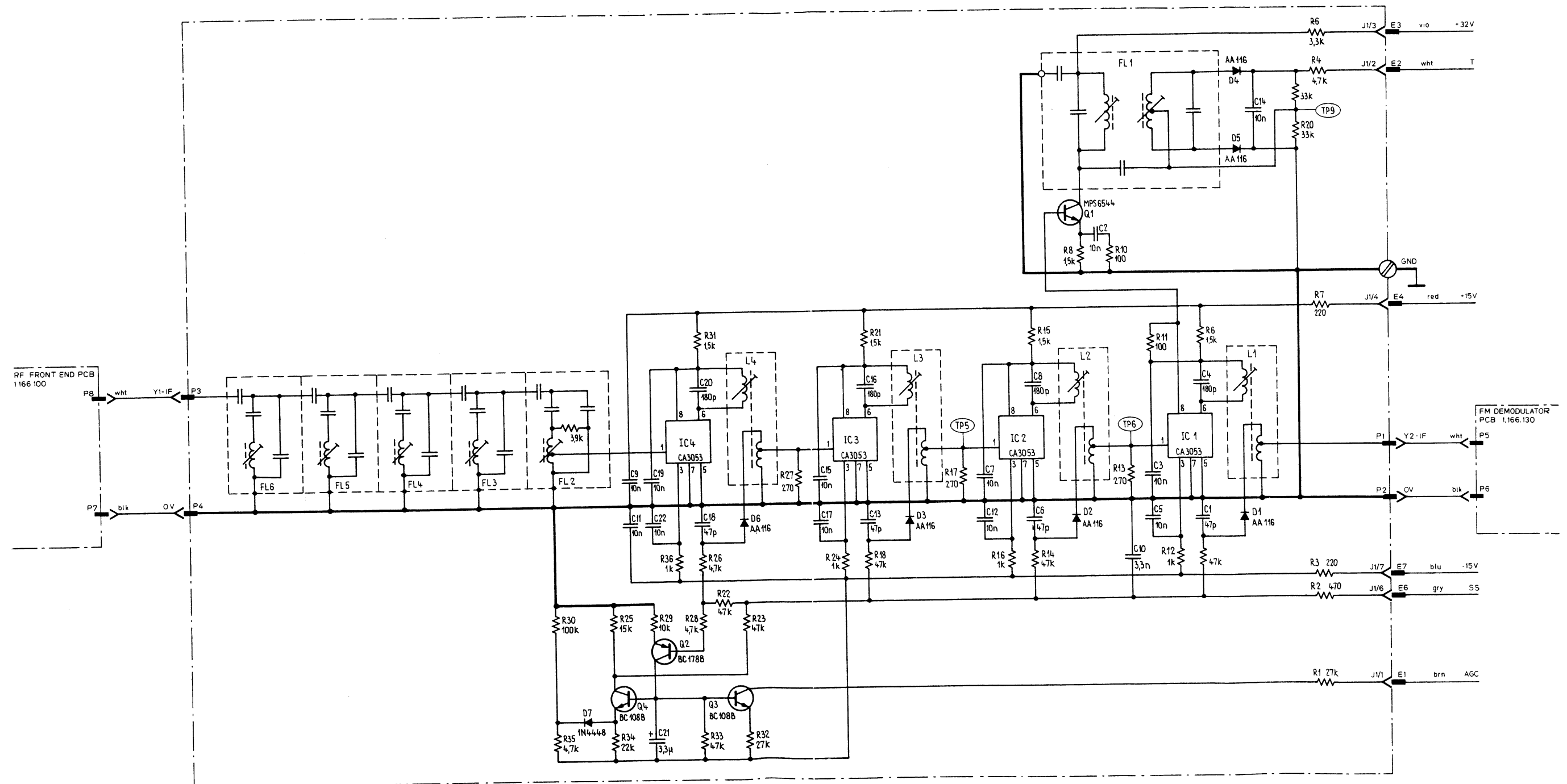
| IND | DATE | NAME | |
|-----------------|---------|------|-----------------------------|
| ④ | 24.5.82 | Rm. | |
| ③ | 19.7.79 | Rom. | |
| ② | 21.6.78 | Rom. | |
| ① | 5.10.77 | Sal. | |
| STUDER IF-Strip | | | PL 1.166.120.00 PAGE 2 OF 3 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| | R 17 | 57.41.4271 | 270 Ω | 5% | |
| | R 18 | 57.41.4473 | 47 kΩ | " | |
| | R 19 | 57.41.4333 | 33 kΩ | " | |
| | R 20 | " " | " " | " | |
| | R 21 | 57.41.4152 | 1500 Ω | " | |
| | R 22 | 57.41.4473 | 47 kΩ | " | |
| | R 23 | " " | " " | " | |
| | R 24 | 57.41.4102 | 1 kΩ | " | |
| | R 25 | 57.41.4153 | 15 kΩ | " | |
| | R 26 | 57.41.4472 | 47 kΩ | " | |
| | R 27 | 57.41.4271 | 270 Ω | " | |
| | R 28 | 57.41.4472 | 4700 Ω | " | |
| | R 29 | 57.41.4103 | 10 kΩ | " | |
| | R 30 | 57.41.4104 | 100 kΩ | " | |
| | R 31 | 57.41.4152 | 1.5 kΩ | " | |
| | R 32 | 57.41.4273 | 27 kΩ | " | |
| | R 33 | 57.41.4473 | 47 kΩ | " | |
| | R 34 | 57.41.4223 | 22 kΩ | " | |
| | R 35 | 57.41.4472 | 47 kΩ | " | |
| | R 36 | 57.41.4102 | 1 kΩ | " | |

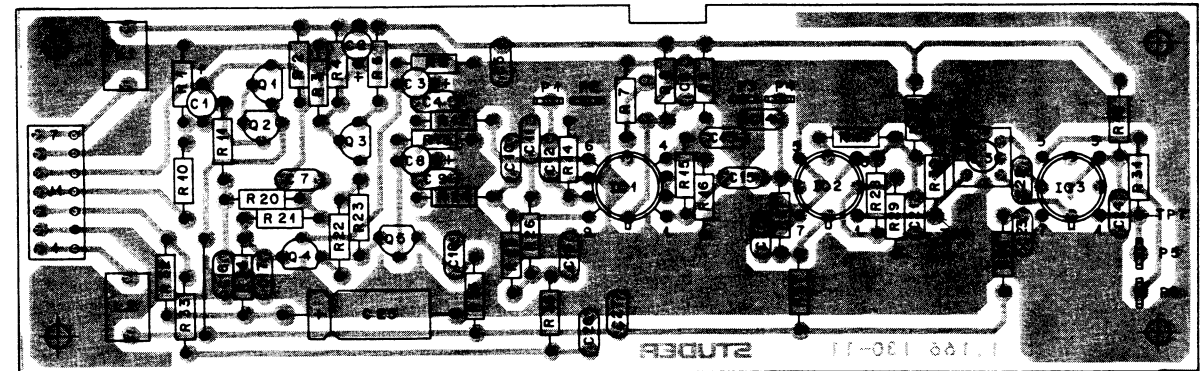
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| L 1-4 | 1.726.740.01 | | IF-Transformer | ST |
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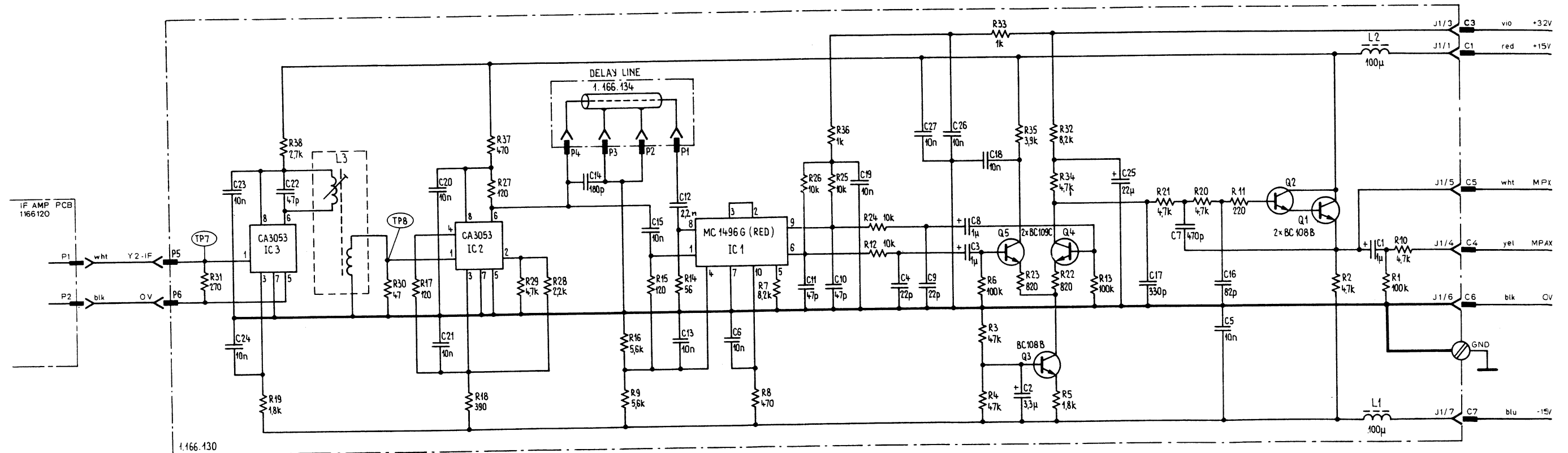
IF AMPLIFIER PCB 1.166.120



| POS NO | PART NO | VALUE | SPECIFICATIONS | EQUIVALENT | MFR |
|---|----------------|----------------|-----------------------------|-------------------------------|--------------|
| C 1 | 59.30.6107 | 1 μF | 35V TR | | |
| C 2 | 59.30.6139 | .33 μF | 10V TR | | |
| C 3 | 59.30.6108 | 1 μF | 35V | | |
| C 4 | 59.34.2220 | 22 μF | 5% CER | | |
| C 5 | 59.32.3103 | 10000 pF | CER | | |
| C 6 | 59.32.3103 | 10'000 pF | CER | | |
| C 7 | 59.34.5431 | 480 pF | 5% CER | | |
| C 8 | 59.30.6109 | 1 μF | 35V TR | | |
| C 9 | 59.34.2220 | 22 μF | 5% CER | | |
| C 10 | 59.34.2410 | 47 μF | 5% CER | | |
| C 11 | 59.34.2410 | 47 μF | 5% CER | | |
| C 12 | 59.32.3102 | 2200 pF | CER | | |
| C 13 | 59.32.3103 | 10'000 pF | CER | | |
| C 14 | 59.34.2410 | 480 pF | 5% CER | | |
| C 15 | 59.32.3103 | 10000 pF | CER | | |
| C 16 | 59.34.4820 | 82 pF | 5% CER | | |
| C 17 | 59.34.4834 | 330 pF | 5% CER | | |
| C 18 | 59.32.3103 | 10000 pF | CER | | |
| C 19 | 59.32.3103 | 10'010 pF | CER | | |
| C 20 | 59.32.3103 | 10'010 pF | CER | | |
| C 21 | 59.32.3103 | 10'010 pF | CER | | |
| C 22 | 59.34.2410 | 47 μF | 5% NISO CER | | |
| C 23 | 59.32.3103 | 10000 pF | CER | | |
| C 24 | 59.32.3103 | 10'000 pF | CER | | |
| C 25 | 59.25.5220 | 22 μF | 40V EL | | |
| C 26 | 59.32.3103 | 10000 pF | CER | | |
| C 27 | 59.32.3103 | 10'000 pF | CER | | |
| IC 1 | 50.84.0108 | MC 1495 G | MODULATOR (MODULE SELECTED) | H RCA. | |
| IC 2 | 50.05.0101 | CA30A3 | DIFF AMP | RCA. | |
| IC 3 | 50.05.0101 | CA30A3 | DIFF AMP | RCA. | |
| J 1 | 51.01.0312 | F Pin | | | |
| L 1 | 62.02.4101 | 100 uH | | | |
| L 2 | 62.02.4101 | 100 uH | | | |
| L 3 | 1.166.130-01 | | IF-TRANSFORMER | | |
| Q 1 | 5D.03.0412 | BC 108 P | VPN | METAL OR PLASTIC EQUIV. | ANY |
| Q 2 | TD.02.0532 | BC 108 B | VPN | | |
| Q 3 | TD.02.0532 | BC 108 B | VPN | | |
| Q 4 | SD.03.0412 | BC 108 C | VPN | | |
| Q 5 | TD.02.0429 | BC 108 C | VPN | | |
| R 1 | 53.44.4104 | 100 K Ω | 5% 0.25W | | |
| R 2 | 53.41.4472 | 47 K Ω | 5% 0.25W | | |
| TAP: TANTALUM CAP: CERAMIC EL: ELECTROLYTIC IF: METAL FILM | | | K: METER RCA | | |
| | | | ① | | |
| | | | ② | | |
| | | | ③ | | |
| | | | ④ | | |
| | | | ⑤ | 27.5 R0 | 15% |
| | | | ⑥ | 75 HZ | 100 ohms |
| | | | IND | DATE | NAME |
| STUDER | FM DEMODULATOR | | | 1.166.130 | PAGE of 2 |

[illegible]

FM DEMODULATOR PCB 1.166.130



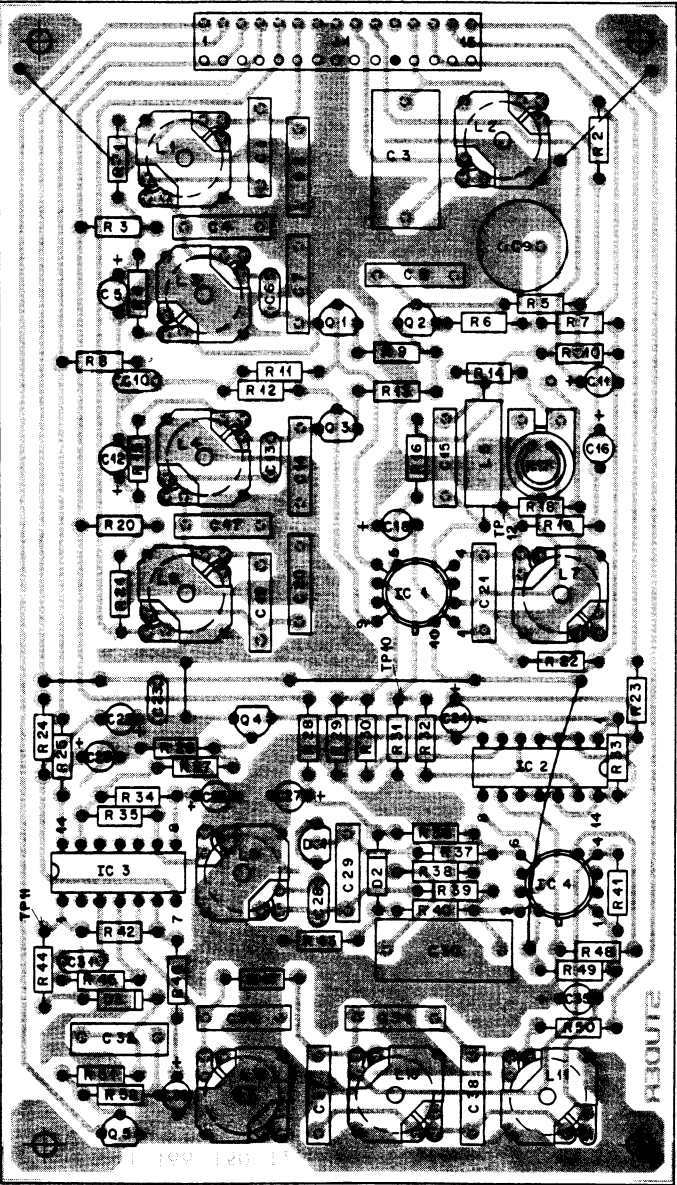
STEREO DECODER PCB 1.166.150

| POS NO | PART NO | VALUE | SPECIFICATIONS | EQUIVALENT | MFR |
|--------|----------------|--------------|----------------|------------|-------------|
| L 04 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 04 | 59 11 6102 | 27000 pF | 5% | PC | |
| L 03 | 59 11 6102 | 47000 pF | 5% | PC | |
| L 04 | 59 11 6102 | 47000 pF | 5% | PC | |
| L 05 | 59 30 6100 | 10 pF | 35V | TD | |
| L 06 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 07 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 08 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 09 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 10 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 11 | 59 30 6100 | 10 pF | 35V | TD | |
| L 12 | 59 30 6100 | 10 pF | 35V | TD | |
| L 13 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 14 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 15 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 16 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 17 | 59 30 6100 | 10 pF | 35V | TD | |
| L 18 | 59 30 6100 | 10 pF | 35V | TD | |
| L 19 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 20 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 21 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 22 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 23 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 24 | 59 30 6100 | 10 pF | 35V | TD | |
| L 25 | 59 30 6100 | 10 pF | 35V | TD | |
| L 26 | 59 30 6100 | 10 pF | 35V | TD | |
| L 27 | 59 30 6100 | 10 pF | 35V | TD | |
| L 28 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 29 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 30 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 31 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 32 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 33 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 34 | 59 30 6100 | 10 pF | 35V | TD | |
| L 35 | 59 30 6100 | 10 pF | 35V | TD | |
| L 36 | 59 30 6100 | 10 pF | 35V | TD | |
| L 37 | 59 30 6100 | 10 pF | 35V | TD | |
| L 38 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 39 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 40 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 41 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 42 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 43 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 44 | 59 30 6100 | 10 pF | 35V | TD | |
| L 45 | 59 30 6100 | 10 pF | 35V | TD | |
| L 46 | 59 30 6100 | 10 pF | 35V | TD | |
| L 47 | 59 30 6100 | 10 pF | 35V | TD | |
| L 48 | 59 34 5391 | 330 pF | 5% | CEB | |
| L 49 | 59 11 6102 | 10000 pF | 5% | PC | |
| L 50 | 59 11 6102 | 10000 pF | 5% | PC | |
| D 01 | 50 04 0126 | 0.01 uF | 50V | TD | |
| D 02 | 50 04 0126 | 0.01 uF | 50V | TD | |
| D 03 | 50 04 0126 | 0.01 uF | 50V | TD | |
| IC 01 | 50 05 0122 | 10000 pF | 5% | PC | |
| IC 02 | 50 05 0122 | 10000 pF | 5% | PC | |
| STUDER | STEREO DECODER | 1.166.150.00 | | | PAGE 1 of 3 |

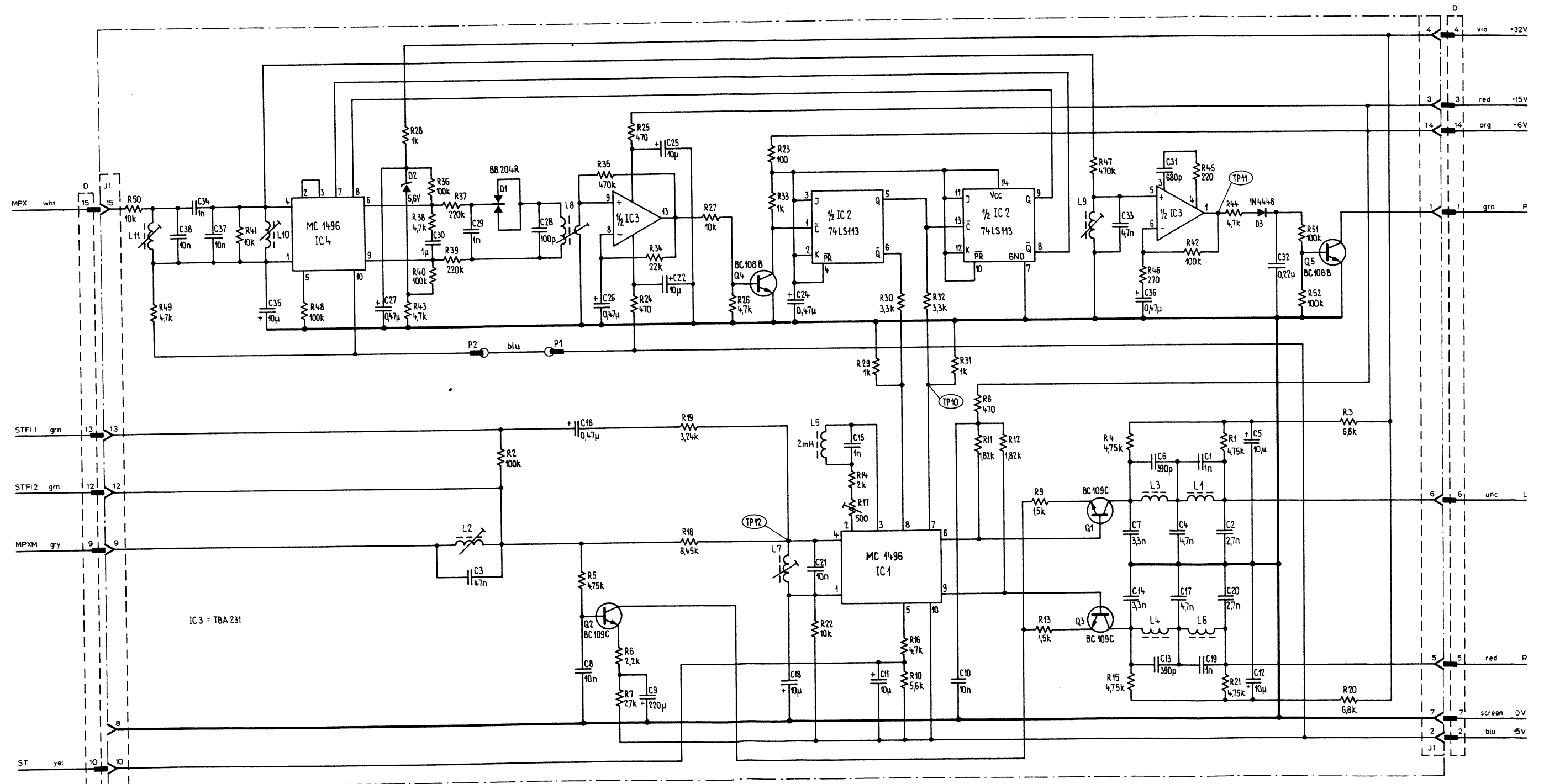
| POS NO | PART NO | VALUE | SPECIFICATIONS | EQUIVALENT | MFR |
|--------|----------------|--------------|----------------|------------|-------------|
| R 21 | 57 39 4251 | 475 K | 1% | HF | |
| R 22 | 57 39 4251 | 475 K | 1% | HF | |
| R 23 | 57 39 4251 | 475 K | 1% | HF | |
| R 24 | 57 39 4251 | 475 K | 1% | HF | |
| R 25 | 57 39 4251 | 475 K | 1% | HF | |
| R 26 | 57 39 4251 | 475 K | 1% | HF | |
| R 27 | 57 39 4251 | 475 K | 1% | HF | |
| R 28 | 57 39 4251 | 475 K | 1% | HF | |
| R 29 | 57 39 4251 | 475 K | 1% | HF | |
| R 30 | 57 39 4251 | 475 K | 1% | HF | |
| R 31 | 57 39 4251 | 475 K | 1% | HF | |
| R 32 | 57 39 4251 | 475 K | 1% | HF | |
| R 33 | 57 39 4251 | 475 K | 1% | HF | |
| R 34 | 57 39 4251 | 475 K | 1% | HF | |
| R 35 | 57 39 4251 | 475 K | 1% | HF | |
| R 36 | 57 39 4251 | 475 K | 1% | HF | |
| R 37 | 57 39 4251 | 475 K | 1% | HF | |
| R 38 | 57 39 4251 | 475 K | 1% | HF | |
| R 39 | 57 39 4251 | 475 K | 1% | HF | |
| R 40 | 57 39 4251 | 475 K | 1% | HF | |
| R 41 | 57 39 4251 | 475 K | 1% | HF | |
| R 42 | 57 39 4251 | 475 K | 1% | HF | |
| R 43 | 57 39 4251 | 475 K | 1% | HF | |
| R 44 | 57 39 4251 | 475 K | 1% | HF | |
| R 45 | 57 39 4251 | 475 K | 1% | HF | |
| R 46 | 57 39 4251 | 475 K | 1% | HF | |
| R 47 | 57 39 4251 | 475 K | 1% | HF | |
| R 48 | 57 39 4251 | 475 K | 1% | HF | |
| R 49 | 57 39 4251 | 475 K | 1% | HF | |
| R 50 | 57 39 4251 | 475 K | 1% | HF | |
| STUDER | STEREO DECODER | 1.166.150.00 | | | PAGE 2 of 3 |

| POS NO | PART NO | VALUE | SPECIFICATIONS | EQUIVALENT | MFR |
|--------|----------------|--------------|----------------|------------|-------------|
| IC 03 | 50 05 0122 | 10000 pF | 5% | PC | |
| IC 04 | 50 05 0122 | 10000 pF | 5% | PC | |
| T 01 | 50 01 0119 | 15.0 uF | | | |
| L 01 | 1.0 uF | 15.0 uF | | | |
| L 02 | 1.0 uF | 15.0 uF | | | |
| L 03 | 1.0 uF | 15.0 uF | | | |
| L 04 | 1.0 uF | 15.0 uF | | | |
| L 05 | 1.0 uF | 15.0 uF | | | |
| L 06 | 1.0 uF | 15.0 uF | | | |
| L 07 | 1.0 uF | 15.0 uF | | | |
| L 08 | 1.0 uF | 15.0 uF | | | |
| L 09 | 1.0 uF | 15.0 uF | | | |
| L 10 | 1.0 uF | 15.0 uF | | | |
| L 11 | 1.0 uF | 15.0 uF | | | |
| STUDER | STEREO DECODER | 1.166.150.00 | | | PAGE 3 of 3 |

| POS NO | PART NO | VALUE | SPECIFICATIONS | EQUIVALENT | MFR |
|--------|----------------|--------------|----------------|------------|-------------|
| R 01 | 57 39 4251 | 475 K | 1% | HF | |
| R 02 | 57 39 4251 | 475 K | 1% | HF | |
| R 03 | 57 39 4251 | 475 K | 1% | HF | |
| R 04 | 57 39 4251 | 475 K | 1% | HF | |
| R 05 | 57 39 4251 | 475 K | 1% | HF | |
| R 06 | 57 39 4251 | 475 K | 1% | HF | |
| R 07 | 57 39 4251 | 475 K | 1% | HF | |
| R 08 | 57 39 4251 | 475 K | 1% | HF | |
| R 09 | 57 39 4251 | 475 K | 1% | HF | |
| R 10 | 57 39 4251 | 475 K | 1% | HF | |
| R 11 | 57 39 4251 | 475 K | 1% | HF | |
| R 12 | 57 39 4251 | 475 K | 1% | HF | |
| R 13 | 57 39 4251 | 475 K | 1% | HF | |
| R 14 | 57 39 4251 | 475 K | 1% | HF | |
| R 15 | 57 39 4251 | 475 K | 1% | HF | |
| R 16 | 57 39 4251 | 475 K | 1% | HF | |
| R 17 | 57 39 4251 | 475 K | 1% | HF | |
| R 18 | 57 39 4251 | 475 K | 1% | HF | |
| R 19 | 57 39 4251 | 475 K | 1% | HF | |
| R 20 | 57 39 4251 | 475 K | 1% | HF | |
| STUDER | STEREO DECODER | 1.166.150.00 | | | PAGE 3 of 3 |



STEREO DECODER PCB 1.166 150



AUDIO CONNECTION UNIT 1.780.145

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------|------------|---------|---------------------------|-----|
| C1 | 4 | 59 34.4221 | 220 pF | 20% 400V CER | |
| C5 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C6 | 5 | 59 34.4221 | 220 pF | 20% 400V CER | |
| C7 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C8,9 | 5 | 59 34.4221 | 220 pF | 20% 400V CER | |
| C10 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C11 | 5 | 59 34.4221 | 220 pF | 20% 400V CER | |
| C12 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C13 | 5 | 59 34.1105 | 1 nF | 20% 100V MPETP | |
| C14 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C15 | 5 | 59 31.1105 | 1 nF | 20% 100V MPETP | |
| C16,17 | 5 | 59 34.4221 | 220 pF | 20% 400V CER | |
| C18,19 | 5 | 59 31.1105 | 1 nF | 20% 100V MPETP | |
| C22,23 | 5 | 59 32.4101 | 100 pF | 20% 400V CER | |
| C24 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C25 | 5 | 59 30.6339 | 3.3 nF | 20% 35V TA | |
| C26,29 | 5 | 59 32.4102 | 1 nF | 20% 50V CER | |
| C30,31 | 5 | 59 30.7100 | 10 nF | 20% 25V TA | |
| C32 | 5 | 59 30.6339 | 3.3 nF | 20% 35V TA | |
| C33 | 5 | 59 32.2221 | 220 nF | -10% 63V EL | |
| C34 | 5 | 59 34.4101 | 100 pF | 5% 50V CER | |
| C35,36 | 5 | 59 30.7100 | 10 nF | 20% 25V TA | |
| C37 | 5 | 59 22.4101 | 100 nF | -10% 16V EL | |
| C38 | 5 | 59 22.4102 | 1000 nF | -10% 16V EL | |
| C39 | 5 | 59 12.4183 | 18 nF | 5% 100V MPETP | |
| C40 | 5 | 59 11.3682 | 6.8 nF | " | |
| C41 | 5 | 59 22.2221 | 220 nF | -10% 63V EL | |
| C42 | 5 | 59 34.4101 | 100 pF | 5% 50V CER | |
| C43,44 | 5 | 59 12.2224 | 0.22 nF | 5% 100V MPETP | |
| C45,46 | 5 | 59 31.1105 | 1 nF | 20% 100V MPETP | |

| INDI | DATE | NAME |
|---|----------|------------------------------|
| ① | | CER : Ceramic |
| ② | | MPETP : Metallized Polyester |
| ③ | 16.1.80 | TA : Tantalum |
| ④ | 14.12.79 | EL : Electrolytic |
| ⑤ | 31.5.79 | Ha |
| STUDER AUDIO CONNECTION UNIT 1.780.145.00 PAGE 1 OF 4 | | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------|------------|---------|---------------------------|-----|
| C41,42 | 5 | 59 30.7100 | 10 nF | 20% 25V CER | |
| C43 | 5 | 59 12.4183 | 18 nF | 5% 100V MPETP | |
| C50 | 5 | 59 11.3682 | 6.8 nF | " | |
| C51,52 | 5 | 59 32.3103 | 10 nF | 80% 40V CER | |
| C53,54 | 5 | 59 12.2224 | 0.22 nF | 5% 100V MPETP | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------|--------|---------|------------|--------------------------------|------------|
| D1,12 | 50 | 04.0125 | 1N4448 | 100mA, 75V | |
| IC1 | 50 | 05.0244 | TDA 1034NB | low noise opamp / NE 5534AN | Philips |
| IC2 | 50 | 11.0101 | TDA 1028 | low noise opamp, analog switch | " |
| IC3 | 50 | 11.0102 | TDA 1029 | " | " |
| IC4 | 50 | 11.0101 | TDA 1028 | " | " |
| IC5 | 50 | 11.0102 | TDA 1029 | " | " |
| IC6 | 50 | 05.0244 | TDA 1034NB | low noise opamp / NE 5534AN | " |
| IC7 | 50 | 05.0245 | RC 4558P | dual opamp / RC 4558 DN | " |
| IC8 | 50 | 05.0266 | UA78MGC | voltage regulator 0.5A | Fairchild |
| J1 | 54 | 01.0212 | 9 pole | CIS | AMP |
| J2 | 54 | 01.0247 | 18 pole | " | " |
| J3,4 | 54 | 02.0321 | 5 pole | Stereo DIN Mah 55H | Hirschmann |
| Q1,2 | 50 | 03.0436 | BC237B | 45V 300mA NPN / BC107 B | |
| R1 | 57 | 11.4102 | 1 kΩ | 5% 0.25W CF | |
| R2 | 57 | 11.4105 | 1 MΩ | " | |
| R3 | 57 | 11.4102 | 1 kΩ | " | |
| R4 | 57 | 11.4105 | 1 MΩ | " | |
| R5,6 | 57 | 11.4224 | 220 kΩ | " | |
| R7,8 | 57 | 11.4102 | 1 kΩ | " | |

| INDI | DATE | NAME |
|---|----------|-----------------|
| ① | | CF : Carbonfilm |
| ② | | |
| ③ | 16.1.80 | Ha |
| ④ | 14.12.79 | Ra |
| ⑤ | 31.5.79 | Ha |
| STUDER AUDIO CONNECTION UNIT 1.780.145.00 PAGE 2 OF 4 | | |

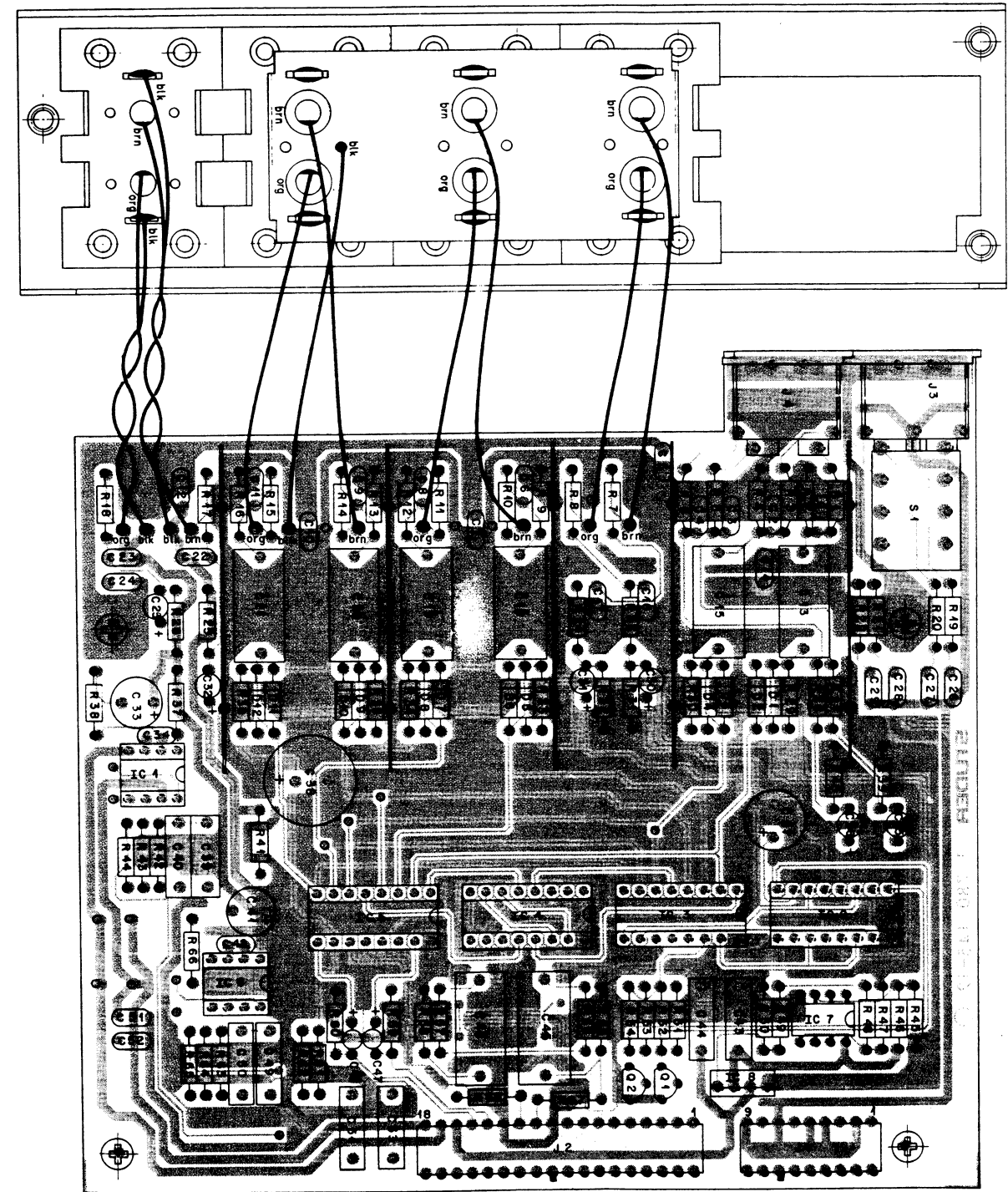
| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------|---------|---------|---------------------------|-----|
| R9 | 57 | 11.4105 | 1 MΩ | 5% 0.25W CF | |
| R10,11 | 57 | 11.4102 | 1 kΩ | " | |
| R12,13 | 57 | 11.4105 | 1 MΩ | " | |
| R14,15 | 57 | 11.4102 | 1 kΩ | " | |
| R16 | 57 | 11.4105 | 1 MΩ | " | |
| R17,18 | 57 | 11.4102 | 1 kΩ | " | |
| R19,22 | 57 | 11.4221 | 220 Ω | " | |
| R23,24 | 57 | 11.4102 | 1 kΩ | " | |
| R25,26 | 57 | 11.4104 | 100 kΩ | " | |
| R27,28 | 57 | 11.4102 | 1 kΩ | " | |
| R29,30 | 57 | 11.4563 | 56 kΩ | " | |
| R31,32 | 57 | 11.4223 | 22 kΩ | " | |
| R33,36 | 57 | 11.4563 | 56 kΩ | " | |
| R37 | 57 | 11.4104 | 100 kΩ | " | |
| R38 | 57 | 11.4331 | 330 Ω | " | |
| R39,40 | 57 | 11.4223 | 22 kΩ | " | |
| R41 | 57 | 11.4104 | 100 kΩ | " | |
| R42 | 57 | 11.4123 | 12 kΩ | " | |
| R43 | 57 | 11.4101 | 100 Ω | " | |
| R44 | 57 | 11.4154 | 150 kΩ | " | |
| R45 | 57 | 11.4222 | 2.2 kΩ | " | |
| R46,47 | 57 | 11.4183 | 18 kΩ | " | |
| R48 | 57 | 11.4222 | 2.2 kΩ | " | |
| R49 | 57 | 39.1822 | 18.2 kΩ | 1% 0.25W MF | |
| R50 | 57 | 39.5361 | 53.6 kΩ | " | |
| R51,54 | 57 | 11.4473 | 47 kΩ | 5% 0.25W CF | |
| R55 | 57 | 11.4272 | 2.7 kΩ | " | |
| R56,57 | 57 | 11.4473 | 47 kΩ | " | |
| R58 | 57 | 11.4272 | 2.7 kΩ | " | |
| R59,62 | 57 | 11.4473 | 47 kΩ | " | |

| INDI | DATE | NAME |
|---|----------|----------------|
| ① | | MF : Metalfilm |
| ② | | |
| ③ | 16.1.80 | Ha |
| ④ | 14.12.79 | Ra |
| ⑤ | 31.5.79 | Ha |
| STUDER AUDIO CONNECTION UNIT 1.780.145.00 PAGE 3 OF 4 | | |

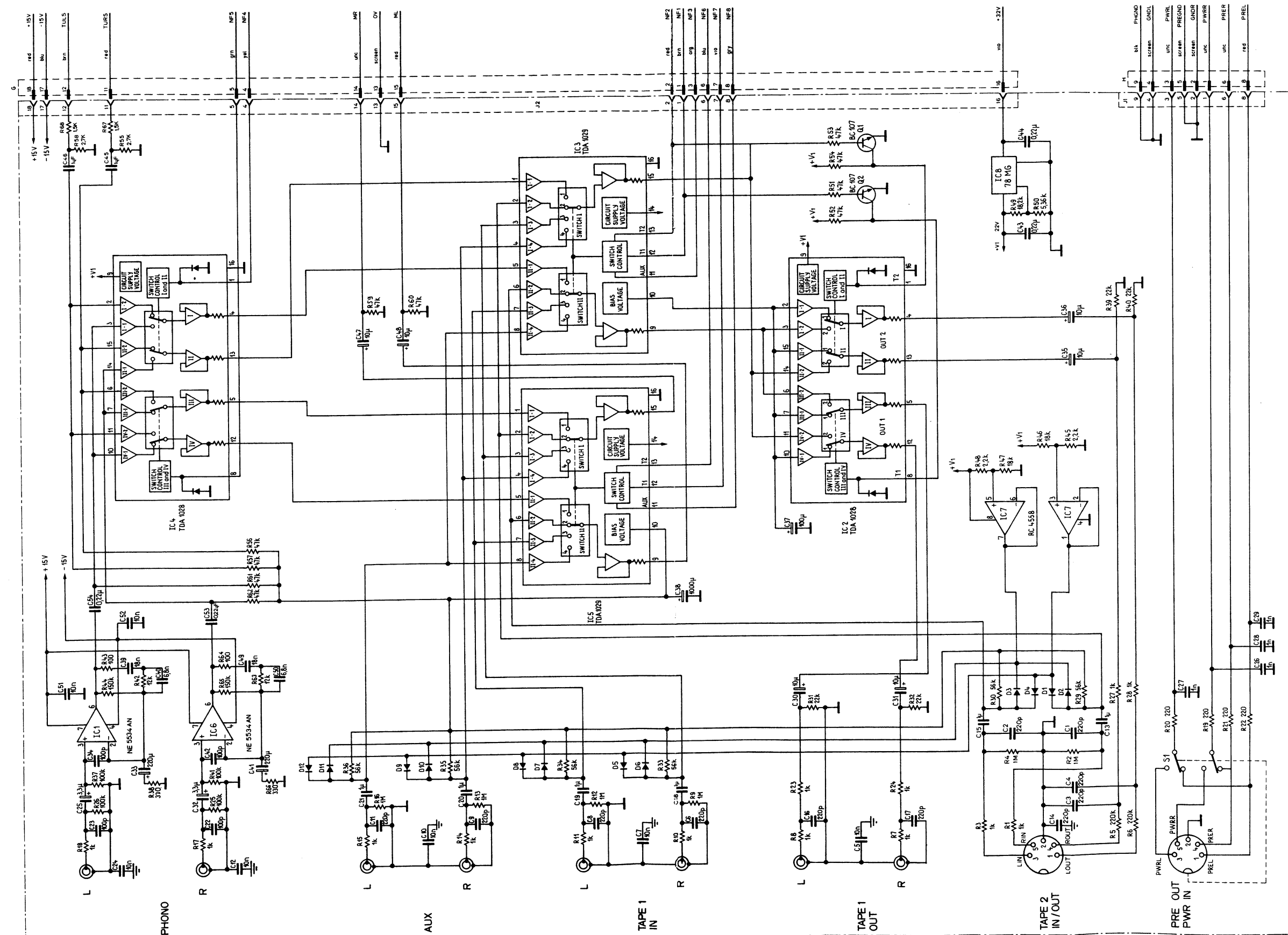
| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|--------|---------|--------|---------------------------|-----|
| R63 | 57 | 11.4223 | 22 kΩ | 5% 0.25W CF | |
| R64 | 57 | 11.4101 | 100 Ω | " | |
| R65 | 57 | 11.4154 | 150 kΩ | " | |
| R66 | 57 | 11.4331 | 330 Ω | " | |
| R67,68 | 57 | 11.4152 | 1.5 kΩ | " | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|---------|-------|---------------------------|-----|
| S1 | 55 | 01.0306 | | Mobsa 24-UU Hirschmann | |

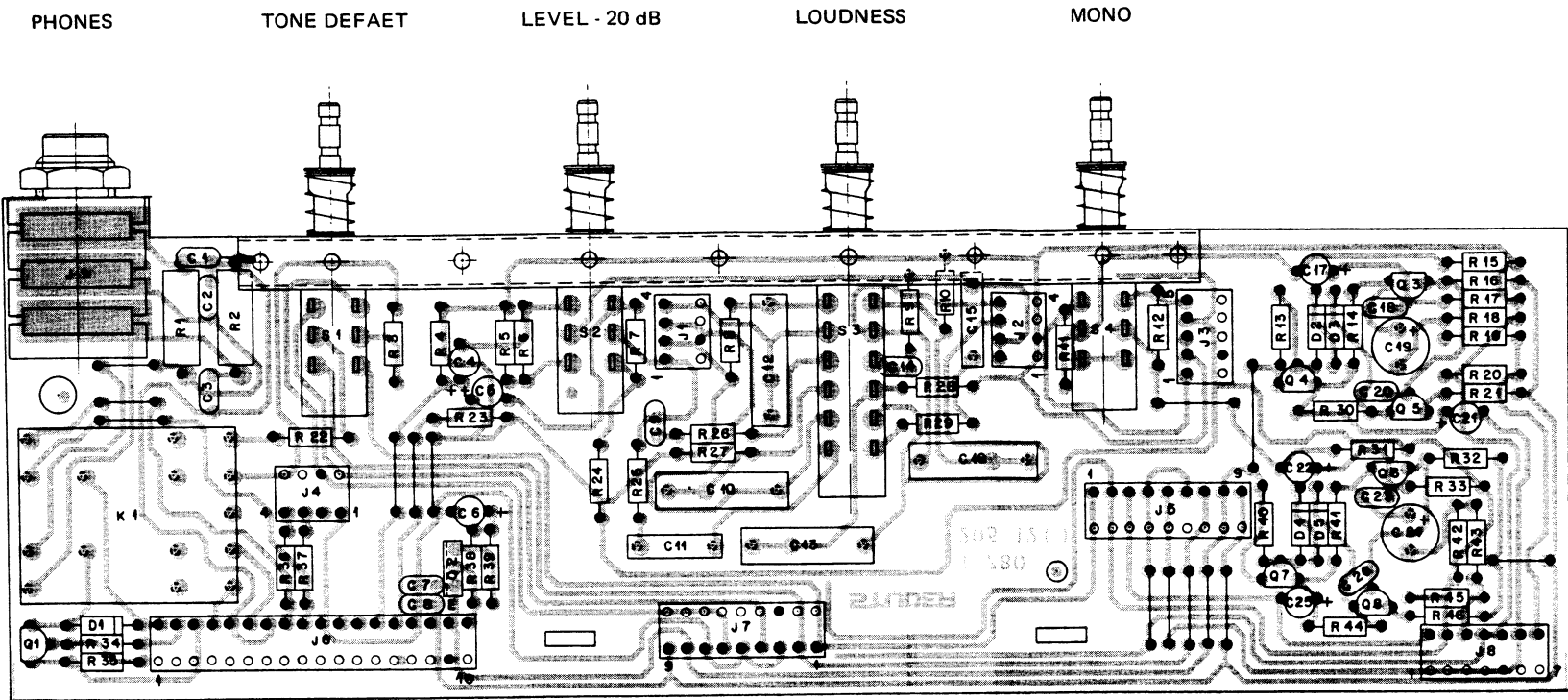
| INDI | DATE | NAME |
|---|---------|------|
| ① | | |
| ② | 28.1.80 | Ha |
| ③ | | |
| ④ | 31.5.79 | Ha |
| STUDER AUDIO CONNECTION UNIT 1.780.145.00 PAGE 4 OF 4 | | |



AUDIO CONNECTION UNIT 1.780.145



PREAMPLIFIER PCB 1.780.205



| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|-----------|------------|---------|---------------------------|-----|
| | C 1 | 59.32.3103 | 10 nF | 80% 50V CER | |
| | C 2,3 | 59.32.4102 | 1 nF | 20% 50V CER | |
| | C 4...C 6 | 59.30.4220 | 22 nF | 20% 16V TA | |
| | C 7,8 | 59.32.3103 | 10 nF | 80% 50V CER | |
| | C 9 | 59.32.2681 | 680 pF | 10% 50V CER | |
| | C 10 | 59.31.6474 | 0.47 nF | 10% 100V MPETP | |
| | C 11 | 59.11.6222 | 2.2 nF | " | |
| | C 12,13 | 59.31.6474 | 0.47 nF | " | |
| | C 14 | 59.32.2681 | 680 pF | 10% 50V CER | |
| | C 15 | 59.11.6222 | 2.2 nF | 10% 100V MPETP | |
| | C 16 | 59.31.6474 | 0.47 nF | " | |
| | C 17 | 59.30.6109 | 1 nF | 20% 35V TA | |
| | C 18 | 59.32.2681 | 680 pF | 10% 50V CER | |
| | C 19 | 59.22.5470 | 47 nF | -10% 25V EL | |
| | C 20 | 59.34.2220 | 22 pF | 5% 50V CER | |
| | C 21 | 59.30.4220 | 22 nF | 20% 16V TA | |
| | C 22 | 59.30.6109 | 1 nF | 20% 35V TA | |
| | C 23 | 59.32.2681 | 680 pF | 10% 50V CER | |
| | C 24 | 59.22.5470 | 47 nF | -10% 25V EL | |
| | C 25 | 59.30.4220 | 22 nF | 20% 16V TA | |
| | C 26 | 59.34.2220 | 22 pF | 5% 50V CER | |
| | D 1...5 | 50.04.0425 | 1N4448 | 100 mA 75V | |
| | J 1,2 | 54.01.0241 | 4 pole | CIS | AMP |
| | J 3 | 54.01.0288 | 5 pole | " | " |
| | J 4 | 54.01.0241 | 4 pole | " | " |
| | J 5 | 54.01.0217 | 9 pole | " | " |
| | J 6 | 54.01.0236 | 18 pole | " | " |
| | J 7 | 54.01.0217 | 9 pole | " | " |

| INDI | DATE | NAME | |
|--------|---------|------|---------------------------------------|
| ④ | | | CER : Ceramic |
| ③ | | | TA : Tantalum |
| ② | | | MPETP : Metallized Polyester |
| ① | 5.3.80 | Rm | EL Electrolytic |
| ① | 13.6.79 | He | |
| STUDER | | | PREAMPLIFIER 1.780.205.00 PAGE 1 OF 3 |

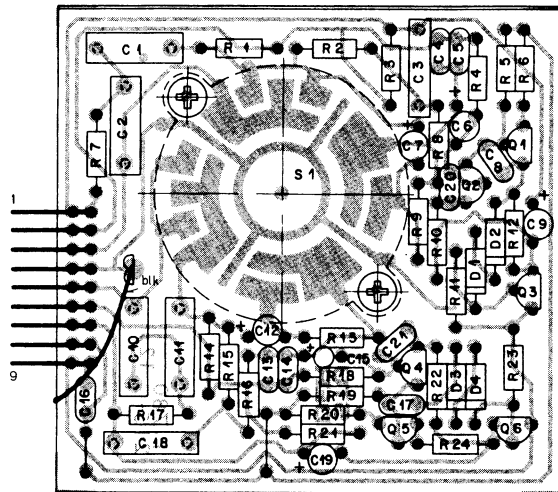
| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|---------|------------|-----------|---------------------------|---------|
| | J 8 | 54.01.0218 | 7 pole | CIS | AMP |
| | J 9 | 54.02.0104 | | 3 pole Jack 6.3 mm | |
| | K 1 | 56.04.0141 | 24V, 12kΩ | AE 1354 6500 T | Wattman |
| | Q 1 | 50.03.0436 | BC237 B | NPN / BC 107 | |
| | Q 2 | 50.03.0438 | 2SC496-0 | NPN / BD 139 | |
| | Q 3 | 50.03.0436 | BC540 C | low noise PNP / BC 177 B | |
| | Q 4,5 | 50.03.0437 | BC550 C | " NPN / BC 107 B | |
| | Q 6 | 50.03.0436 | BC560 C | " PNP / BC 177 B | |
| | Q 7,8 | 50.03.0437 | BC550 C | " NPN / BC 107 B | |
| | R 1,2 | 57.43.4471 | 470 Ω | 5% 0.5W CF | |
| | R 3 | 57.11.4101 | 100 Ω | 5% 0.25W CF | |
| | R 4 | 57.11.4563 | 56 kΩ | " | |
| | R 5 | 57.39.2611 | 2,61 kΩ | 1% 0.25W MF | |
| | R 6,7 | 57.33.2052 | 20,5 kΩ | " | |
| | R 8 | 57.11.4152 | 1,5 kΩ | 5% 0.25W CF | |
| | R 9 | 57.11.4563 | 56 kΩ | " | |
| | R 10 | 57.11.4152 | 1,5 kΩ | " | |
| | R 11,12 | 57.11.4102 | 1 kΩ | " | |
| | R 13 | 57.11.4563 | 56 kΩ | " | |
| | R 14 | 57.11.4822 | 8,2 kΩ | " | |
| | R 15 | 57.11.4224 | 220 kΩ | " | |
| | R 16 | 57.11.4153 | 1,5 kΩ | " | |
| | R 17 | 57.11.4224 | 220 kΩ | " | |
| | R 18 | 57.11.4152 | 1,5 kΩ | " | |
| | R 19 | 57.11.4272 | 2,7 kΩ | " | |
| | R 20 | 57.11.4222 | 2,2 kΩ | " | |
| | R 21 | 57.11.4470 | 47 Ω | " | |

| INDI | DATE | NAME | |
|--------|---------|------|---------------------------------------|
| ④ | | | CF : Carbonfilm |
| ③ | | | MF : Metallfilm |
| ② | | | |
| ① | 5.3.80 | Rm | |
| ① | 13.6.79 | He | |
| STUDER | | | PREAMPLIFIER 1.780.205.00 PAGE 2 OF 3 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|-----------|--------------|---------|---------------------------|-----|
| | R 22 | 57.11.4101 | 100 Ω | 5% 0.25W CF | |
| | R 23 | 57.11.4563 | 56 kΩ | " | |
| | R 24 | 57.39.2611 | 2,61 kΩ | 1% 0.25W MF | |
| | R 25 | 57.11.4562 | 5,6 kΩ | 5% 0.25W CF | |
| | R 26 | 57.11.4563 | 56 kΩ | " | |
| | R 27,28 | 57.11.4332 | 33 kΩ | " | |
| | R 29 | 57.11.4562 | 5,6 kΩ | " | |
| | R 30 | 57.11.4101 | 100 Ω | " | |
| | R 31 | 57.11.4224 | 220 kΩ | " | |
| | R 32 | 57.11.4153 | 1,5 kΩ | " | |
| | R 33 | 57.11.4224 | 220 kΩ | " | |
| | R 34 | 57.11.4153 | 1,5 kΩ | " | |
| | R 35 | 57.11.4822 | 8,2 kΩ | " | |
| | R 36...38 | 57.11.4222 | 2,2 kΩ | " | |
| | R 39 | 57.11.4331 | 330 Ω | " | |
| | R 40 | 57.11.4563 | 56 kΩ | " | |
| | R 41 | 57.11.4822 | 8,2 kΩ | " | |
| | R 42 | 57.11.4152 | 1,5 kΩ | " | |
| | R 43 | 57.11.4272 | 2,7 kΩ | " | |
| | R 44 | 57.11.4101 | 100 Ω | " | |
| | R 45 | 57.11.4222 | 2,2 kΩ | " | |
| | R 46 | 57.11.4470 | 47 Ω | " | |
| | 51...4 | 1.780.205.01 | | | |

| INDI | DATE | NAME | |
|--------|---------|------|---------------------------------------|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | 5.3.80 | Rm | |
| ① | 13.6.79 | He | |
| STUDER | | | PREAMPLIFIER 1.780.205.00 PAGE 3 OF 3 |

FILTER PCB 1.780.215.-81



FILTER PCB 1.780.215 - 81

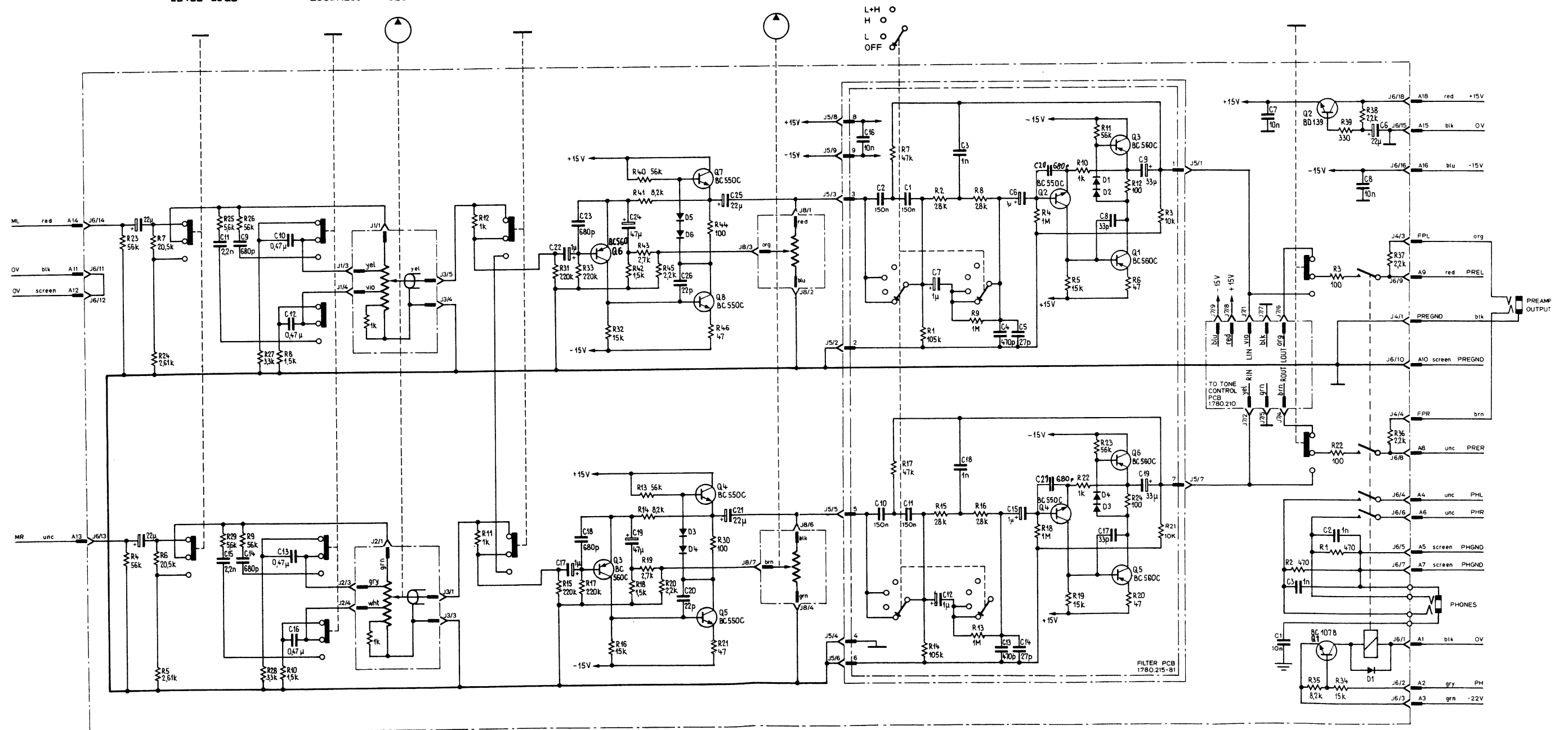
| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|----------|------------|----------------|---------------------------|-----|
| 2 | C1, C2 | 59.12.2154 | 0,15 μ F | 5% , 100 V, MPETP | |
| | C3 | 59.11.6102 | 10 nF | 5% , 400 V, PC | |
| | C4 | 59.34.5471 | 470 pF | 5% , 50 V, CER | |
| | C5 | 59.34.2270 | 27 pF | 5% , 50 V, CER | |
| | C6, C7 | 59.30.6109 | 1 μ F | 20% , 35 V, TA | |
| | C8 | 59.34.2330 | 33 pF | 5% , 50 V, CER | |
| | C9 | 59.30.3330 | 33 μ F | 20% , 10 V, TA | |
| 2 | C10, C11 | 59.12.2154 | 0,15 μ F | 5% , 100 V, MPETP | |
| | C12 | 59.30.6109 | 1 μ F | 20% , 35 V, TA | |
| | C13 | 59.34.5471 | 470 pF | 5% , 50 V, CER | |
| | C14 | 59.34.2270 | 27 pF | 5% , 50 V, CER | |
| | C15 | 59.30.6109 | 1 μ F | 20% , 35 V, TA | |
| | C16 | 59.32.3103 | 10 nF | 80% , 40 V, CER | |
| | C17 | 59.34.2330 | 33 pF | 5% , 50 V, CER | |
| | C18 | 59.11.6102 | 10 nF | 5% , 400 V, PC | |
| | C19 | 59.30.3330 | 33 μ F | 20% , 10 V, TA | |
| 1 | C20, 21 | 59.32.2681 | 680 pF | 10% , 50 V, CER | |
| | 01..04 | 50.04.0125 | 1N4448 | 100 mA, 75 V, | |
| 1 | Q1 | 50.03.0496 | BC560C | low noise 45V PNP | |
| 1 | Q2 | 50.03.0497 | BC550C | low noise 45V NPN | |
| 1 | Q3 | 50.03.0496 | BC560C | | |
| 1 | Q4 | 50.03.0497 | BC550C | | |
| 1 | Q5, Q6 | 50.03.049 | BC560C | | |
| | R1 | 57.33.1053 | 105 k Ω | 1% 0,25 W MF | |
| | R2 | 57.33.2802 | 28 k Ω | " | |
| | R3 | 57.11.4103 | 10 k Ω | 5% 0,25 W CF | |
| | R4 | 57.11.4105 | 1 M Ω | " | |
| | R5 | 57.11.4153 | 15 k Ω | " | |

| INDI | DATE | NAME | |
|---------------|---------|------|--------------------------|
| ④ | | | |
| ③ | | | |
| ② | 26.8.80 | He | 81 |
| ① | 10.7.80 | Rem | |
| ○ | 23.5.79 | He | |
| STUDER FILTER | | | 1.780.215.81 PAGE 1 OF 2 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|----------|--------------|----------------|---------------------------|-----|
| | R6 | 57.11.4470 | 47 Ω | 5% 0,25 W CF | |
| | R7 | 57.11.4473 | 47 k Ω | " | |
| | R8 | 57.33.2802 | 28 k Ω | 1% 0,25 W MF | |
| | R9 | 57.11.4105 | 1 M Ω | 5% 0,25 W CF | |
| | R10 | 57.11.4102 | 1 k Ω | " | |
| | R11 | 57.11.4563 | 56 k Ω | " | |
| | R12 | 57.11.4701 | 100 Ω | " | |
| | R13 | 57.11.4705 | 1 M Ω | " | |
| | R14 | 57.33.1053 | 105 k Ω | 1% 0,25 W MF | |
| | R15, R16 | 57.33.2802 | 28 k Ω | " | |
| | R17 | 57.11.4473 | 47 k Ω | 5% 0,25 W CF | |
| | R18 | 57.11.4105 | 1 M Ω | " | |
| | R19 | 57.11.4153 | 15 k Ω | " | |
| | R20 | 57.11.4470 | 47 Ω | " | |
| | R21 | 57.11.4703 | 10 k Ω | " | |
| | R22 | 57.11.4102 | 1 k Ω | " | |
| | R23 | 57.11.4563 | 56 k Ω | " | |
| | R24 | 57.11.4701 | 100 Ω | " | |
| | S1 | 1.011.307.00 | | | |

| INDI | DATE | NAME | |
|---------------|---------|------|--------------------------|
| ④ | | | |
| ③ | | | |
| ② | 26.8.80 | He | 81 |
| ① | 10.7.80 | Rem | |
| ○ | 23.5.79 | He | |
| STUDER FILTER | | | 1.780.215.81 PAGE 2 OF 2 |

TONE DEFEAT



TONE CONTROL PCB 1.780.210

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|---------|---------------------------|-----|
| C1, C2 | 59.32.3103 | 10 nF | 80% 40V CER | |
| C3, C4 | 59.12.2154 | 0,15 µF | 5% 100V MPETP | |
| C5 | 59.12.4472 | 47 nF | " | |
| C6 | 59.12.2123 | 12 nF | " | |
| C7, C8 | 59.12.2154 | 0,15 µF | " | |
| C9 | 59.12.4472 | 47 nF | " | |
| C10 | 59.12.4103 | 10 nF | " | |
| C11 | 59.12.2123 | 12 nF | " | |
| C12 | 59.12.4103 | 10 nF | " | |
| C13 | 59.30.6478 | 0,47 µF | 20% 16V TA | |
| C14 | 59.30.4220 | 22 µF | " | |
| C15 | 59.30.6478 | 0,47 µF | " | |
| C16 | 59.30.4220 | 22 µF | " | |
| C17 | 59.30.6478 | 0,47 µF | " | |
| C18 | 59.30.4220 | 22 µF | " | |
| C19 | 59.30.6478 | 0,47 µF | " | |
| C20 | 59.30.4220 | 22 µF | " | |
| C21, C24 | 59.34.2470 | 47 µF | 5% 50V CER | |
| C25 | 59.32.3103 | 10 nF | 80% 40V CER | |

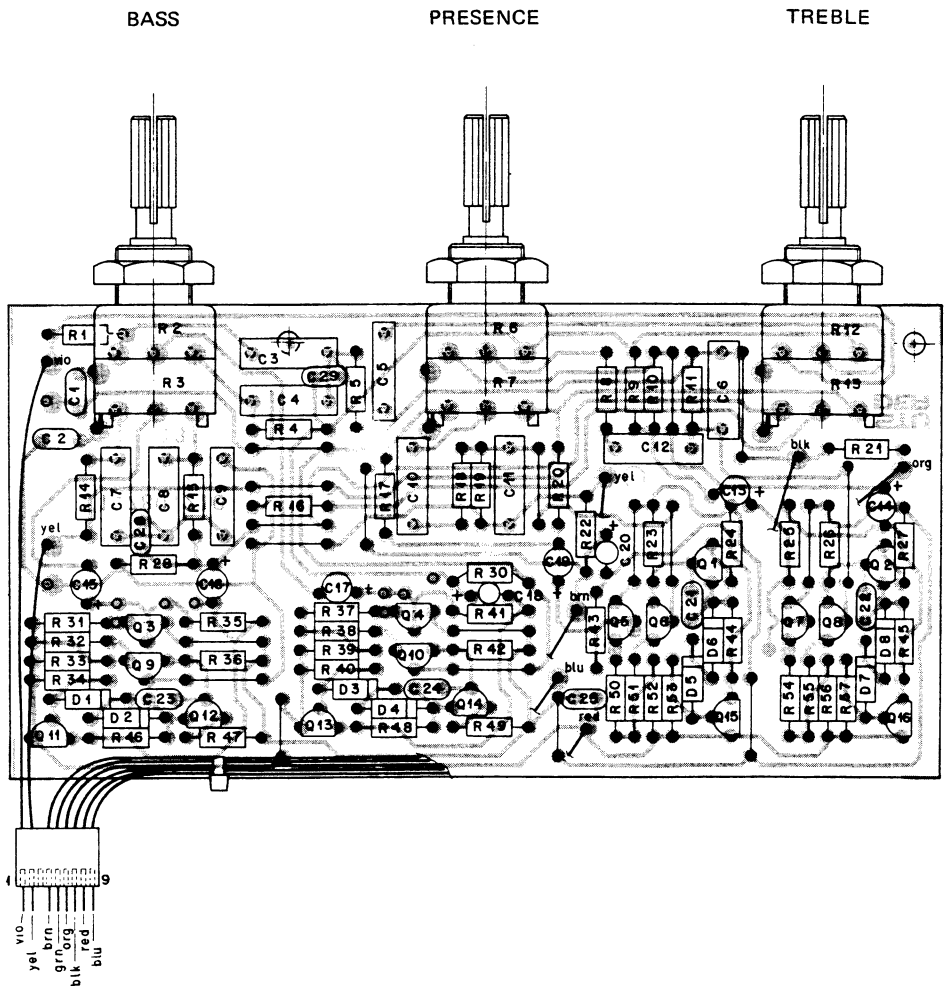
| INDI | DATE | NAME | |
|---------------------|----------|------|------------------------------|
| ④ | | | MPETP - Metallized Polyester |
| ③ | | | CER - Ceramic |
| ② | 17.3.80 | Rm | TA - Tantalum |
| ① | 22.10.79 | Ho | CF - Carbonfilm |
| ○ | 29.5.79 | Ha | |
| STUDER TONE CONTROL | | | 1.780.210.00 PAGE 1 OF 3 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|--------------|-----------|---------------------------|-----|
| R6, R7 | 1.780.210.03 | 2x 10 kΩ | Potentiometer Lin | |
| R8 | 57.39.5231 | 5,23 kΩ | 1% 0,25W MF | |
| R9, R10 | 57.11.4682 | 6,8 kΩ | 5% 0,25W CF | |
| R11 | 57.39.4531 | 4,53 kΩ | 1% 0,25W MF | |
| R12, R13 | 1.780.210.01 | 2x 4,7 kΩ | Potentiometer Lin | |
| R14, R15 | 57.11.4822 | 8,2 kΩ | 5% 0,25W CF | |
| R16 | 57.11.4152 | 1,5 kΩ | " | |
| R17 | 57.11.4682 | 6,8 kΩ | " | |
| R18 | 57.39.5231 | 5,23 kΩ | 1% 0,25W MF | |
| R19 | 57.39.4531 | 4,53 kΩ | " | |
| R20 | 57.11.4682 | 6,8 kΩ | 5% 0,25W CF | |
| R21, R22 | 57.11.4103 | 10 kΩ | " | |
| R23 | 57.11.4182 | 1,8 kΩ | " | |
| R24 | 57.11.4470 | 47 Ω | " | |
| R25 | 57.11.4105 | 1 MΩ | " | |
| R26 | 57.11.4182 | 1,8 kΩ | " | |
| R27 | 57.11.4470 | 47 Ω | " | |
| R28, R30 | 57.11.4103 | 10 kΩ | " | |
| R31, R32 | 57.11.4470 | 47 Ω | " | |
| R33 | 57.11.4183 | 18 kΩ | " | |
| R34 | 57.11.4563 | 56 kΩ | " | |
| R35 | 57.11.4105 | 1 MΩ | " | |
| R36 | 57.11.4182 | 1,8 kΩ | " | |
| R37, R38 | 57.11.4470 | 47 Ω | " | |
| R39 | 57.11.4183 | 18 kΩ | " | |
| R40 | 57.11.4563 | 56 kΩ | " | |
| R41 | 57.11.4105 | 1 MΩ | " | |
| R42 | 57.11.4182 | 1,8 kΩ | " | |
| R43 | 57.11.4105 | 1 MΩ | " | |
| R44, R46 | 57.11.4101 | 100 Ω | " | |

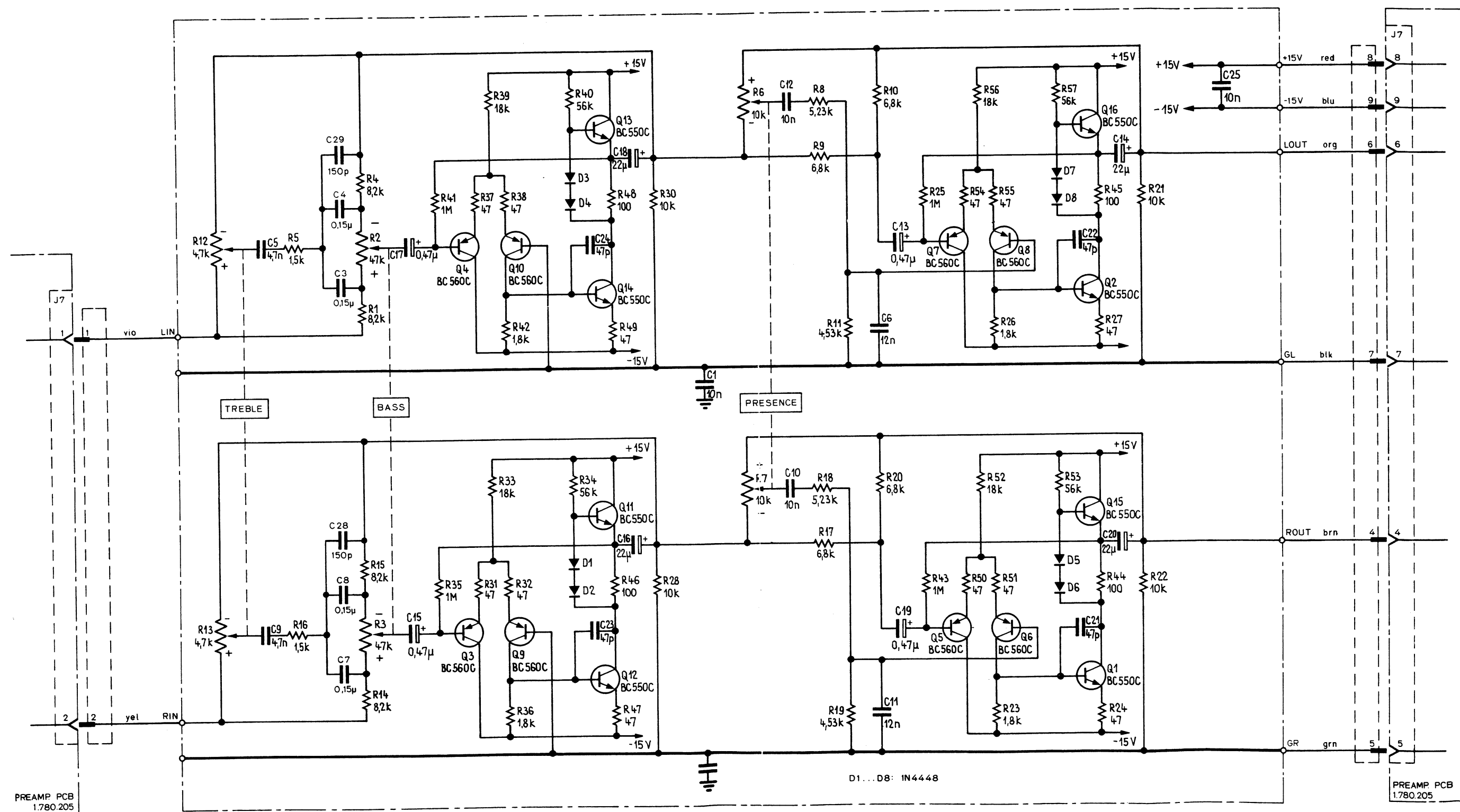
| INDI | DATE | NAME | |
|---------------------|----------|------|--------------------------|
| ④ | | | MF - Metallfilm |
| ③ | | | |
| ② | 17.3.80 | Rm | |
| ① | 22.10.79 | Ho | |
| ○ | 29.5.79 | Ha | |
| STUDER TONE CONTROL | | | 1.780.210.00 PAGE 2 OF 3 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-----|
| R47 | 57.11.4470 | 47 Ω | 5% 0,25W CF | |
| R48 | 57.11.4101 | 100 Ω | " | |
| R49, R51 | 57.11.4470 | 47 Ω | " | |
| R52 | 57.11.4183 | 18 kΩ | " | |
| R53 | 57.11.4563 | 56 kΩ | " | |
| R54, R55 | 57.11.4470 | 47 Ω | " | |
| R56 | 57.11.4183 | 18 kΩ | " | |
| R57 | 57.11.4563 | 56 kΩ | " | |

| INDI | DATE | NAME | |
|---------------------|----------|------|--------------------------|
| ④ | | | |
| ③ | | | |
| ② | 17.3.80 | Rm | |
| ① | 22.10.79 | Ho | |
| ○ | 29.5.79 | Ha | |
| STUDER TONE CONTROL | | | 1.780.210.00 PAGE 3 OF 3 |



TONE CONTROL PCB 1.780.210



D1...D8: 1N4448

PREAMP PCB
1.780.205PREAMP PCB
1.780.205

| IND | DATE | NAME | |
|-----|------|------|----------------------------|
| ⑤ | 5.10 | 40 | EL Electrolytic |
| ⑥ | 5.10 | 200 | MPETP Metallized Polyester |
| ⑦ | 5.10 | 100 | MP Metallized Paper |
| ⑧ | | | CER Ceramic |
| ⑨ | 5.10 | 40 | TA Tantalum |

STUDER POWER AMP FIER 1.280.105.00 PAGE 1 OF 4

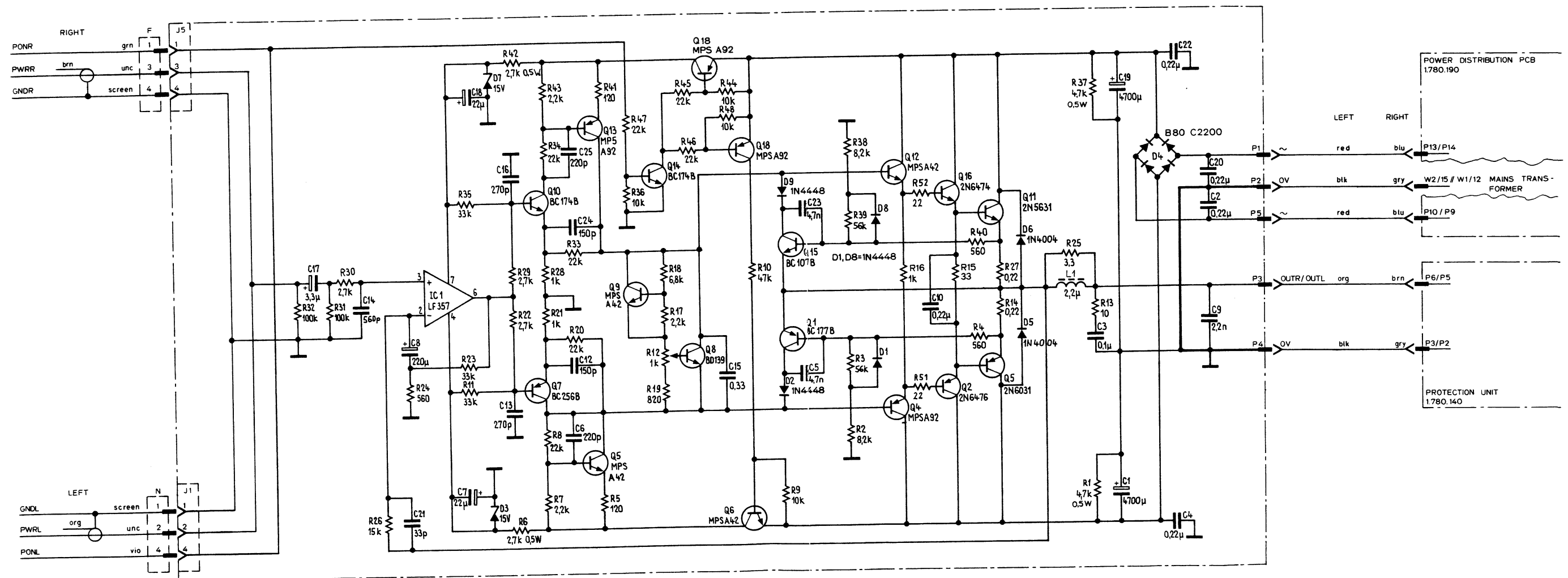
| IND. | DATE | NAME | |
|---------------|--------|------------------|------------------|
| ⑤ | 2-5-20 | H ₀ | M : Metrola |
| ⑥ | 2-5-20 | Row | CF : Carbon-film |
| ⑦ | 2-2-87 | SW | |
| ⑧ | | | |
| ○ | 5-6-75 | H ₀ | |
| STUDER | | POWER AIR-FILIER | 1.780.105.00 |
| | | | PAGE 2 OF 4 |

| IND | DATE | NAME | |
|-----|--------|------|---------------|
| ⑤ | 5 5 20 | no | WR Wire Wound |
| ⑥ | 5 2 30 | none | |
| ⑦ | 5 5 21 | SL | |
| ⑧ | | | |
| ① | 5 6 22 | the | |
| | | | |

STUDER POWER AMPLIFIER 11.22.195.01 PAGE 3 OF 4

| IND | DATE | NAME | |
|-------------|-----------------|-------|------------------------|
| ⑤ | 6-5-80 | H | |
| ⑥ | 2-7-80 | Power | |
| ⑦ | 2-7-80 | SA | |
| ⑧ | | | |
| ○ | 5-7-80 | HA | |
| STUD | POWER AMPLIFIER | | 0.500.405.00 PAGE 2 OF |

POWER AMPLIFIER PCB 1.780.105



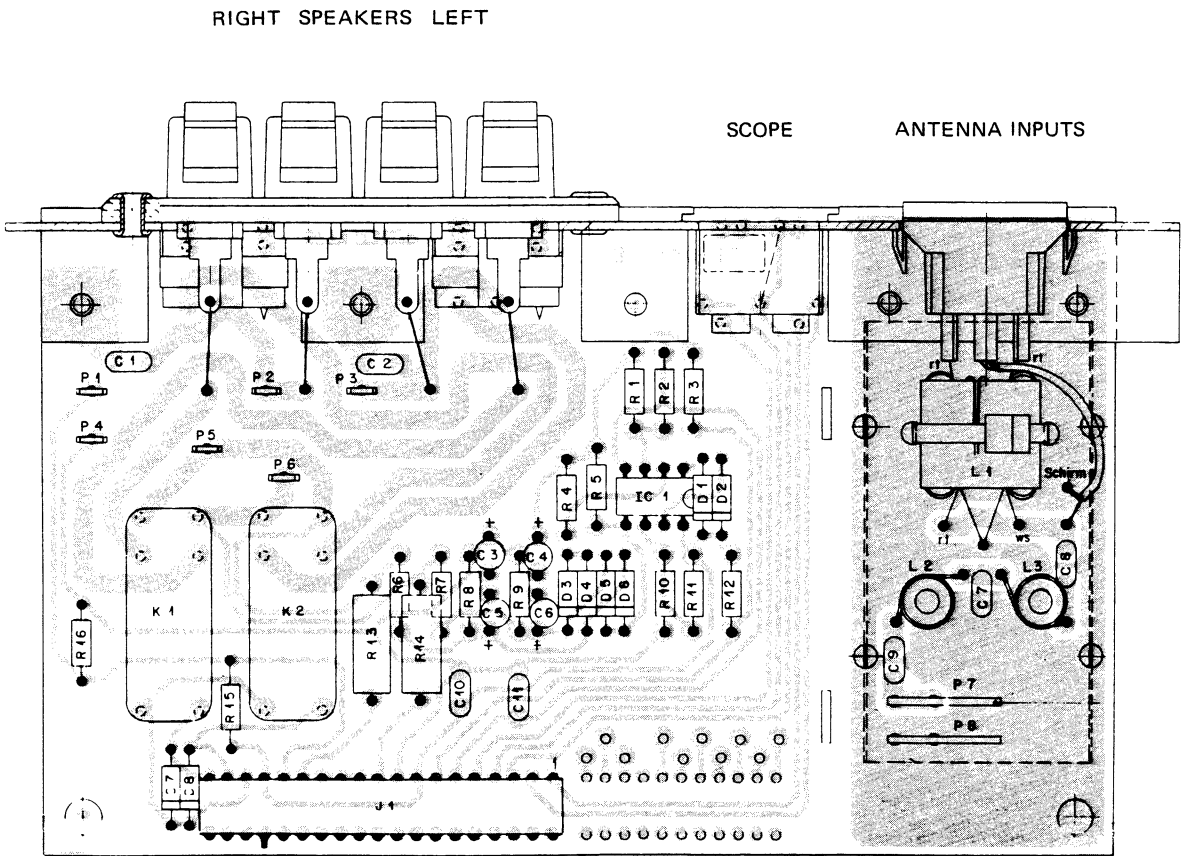
SPEAKER PROTECTION UNIT 1.780.140-81

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|----------------|--------------|--------------|---------------------------|---------|
| | C1, C2 | 58.32.3103 | 10 µF | 80% 40V CER | |
| | C3, 6 | 58.30.7100 | 10 µF | 20% 25V TA | |
| | C7 | 58.34.2270 | 27 pF | 5% N450 50V CER | |
| | C8, 9 | 58.99.0189 | 13 pF | ±0.25pF N450 50V CER | |
| | C10, 11 | 58.32.3103 | 10 nF | 80% 40V CER | |
| | D1, 8 | 50.04.0125 | 1N4448 | 100mA, 75V | |
| | IC 1 | 50.05.0245 | RC4558 P | Dual opamp. / RC4558 DN | |
| | J 1 | 54.01.0312 | 79 pole | | AMP |
| | K1, 2 | 56.01.0120 | 220V/4A | 24V Relais A2 731-14-2 | Zettler |
| | P4, 6 | 54.02.0320 | 2,8 x 0,8 mm | | AMP |
| | P7, 8 | 54.02.0328 | 2,8 x 0,8 mm | | AMP |
| | L 1 | 1.166.197.00 | | Balun | |
| | L1, 166.195.01 | | | Coil | |
| | L2, 3 | 61.02.0113 | | Core of Coil | |
| | | 61.02.0114 | | Coil form | |
| | R1 | 57.11.4393 | 39 kΩ | 5% 0,25W CF | |
| | R2 | 57.11.4154 | 150 kΩ | " | |
| | R3 | 57.11.4103 | 10 kΩ | " | |
| | R4, 5 | 57.11.4154 | 150 kΩ | " | |
| | R6, 7 | 57.11.4333 | 33 kΩ | " | |
| | R7, 8 | 57.11.4154 | 150 kΩ | " | |
| | R10 | 57.11.4393 | 39 kΩ | " | |
| | R11 | 57.11.4154 | 150 kΩ | " | |

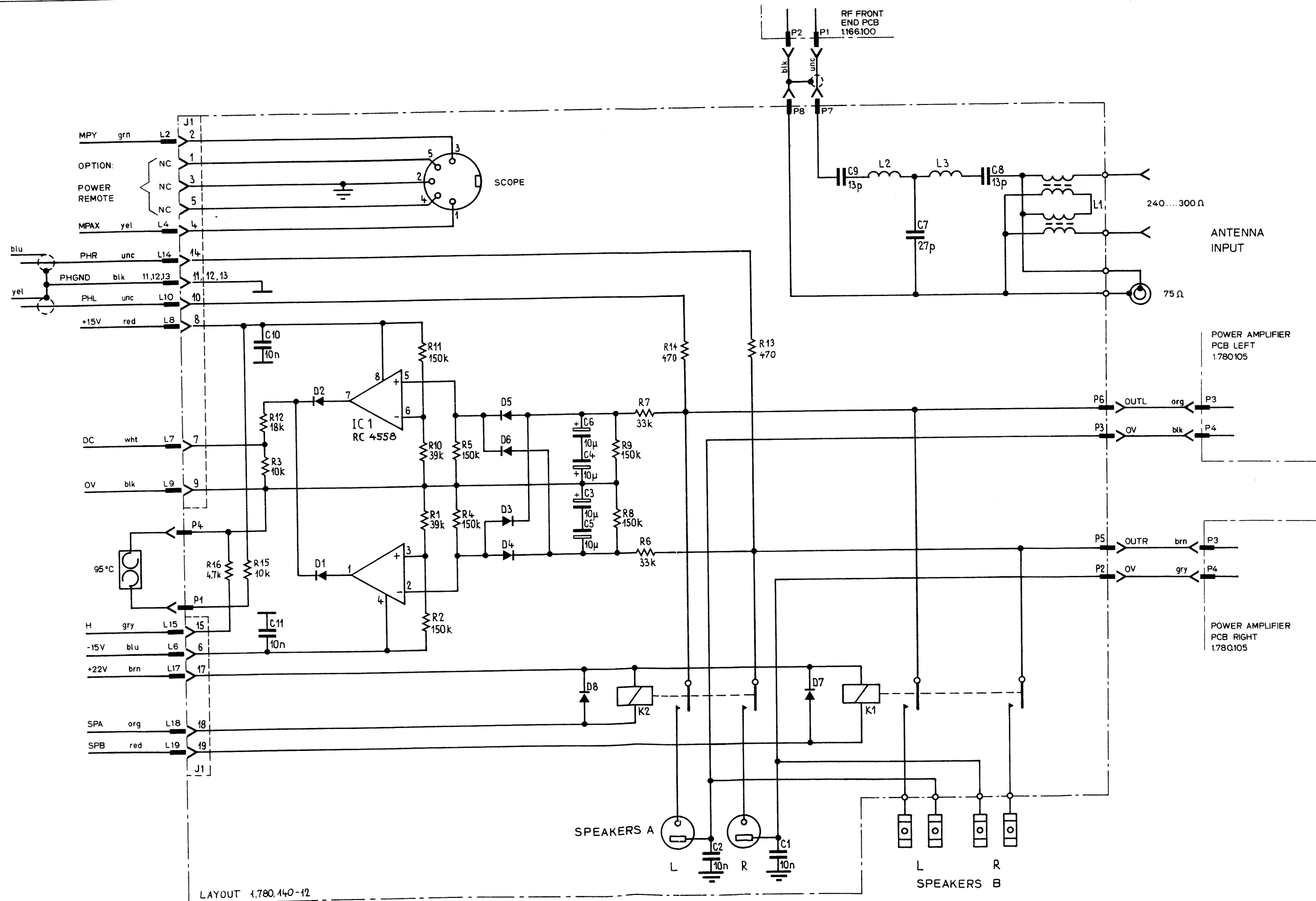
| IND | DATE | NAME |
|--|---------|------------------|
| ④ | | CER : Ceramic |
| ③ | | TA : Tantalum |
| ② | | CF : Carbon-film |
| ① | 01.1.82 | Tom. 81 |
| ○ | 30.5.79 | Ha |
| STUDER CONNECTION UNIT LEFT 1.780.140.81 PAGE 1 OF 2 | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|---------|------------|-------|---------------------------|-----|
| | R12 | 57.11.4183 | 18 kΩ | 5% 0,25W CF | |
| | R13, 14 | 57.43.4471 | 470 Ω | 5% 0,5W CF | |
| | R15 | 57.11.4103 | 10 kΩ | 5% 0,25 CF | |
| | R16 | 57.11.4472 | 47 kΩ | 5% 0,25 CF | |

| IND | DATE | NAME |
|--|---------|---------|
| ④ | | |
| ③ | | |
| ② | | |
| ① | 01.1.81 | Tom. 81 |
| ○ | 30.5.79 | Ha |
| STUDER CONNECTION UNIT LEFT 1.780.140.81 PAGE 2 OF 2 | | |



SPEAKER PROTECTION UNIT 1.780.140-81



LAYOUT 1.780.140-12

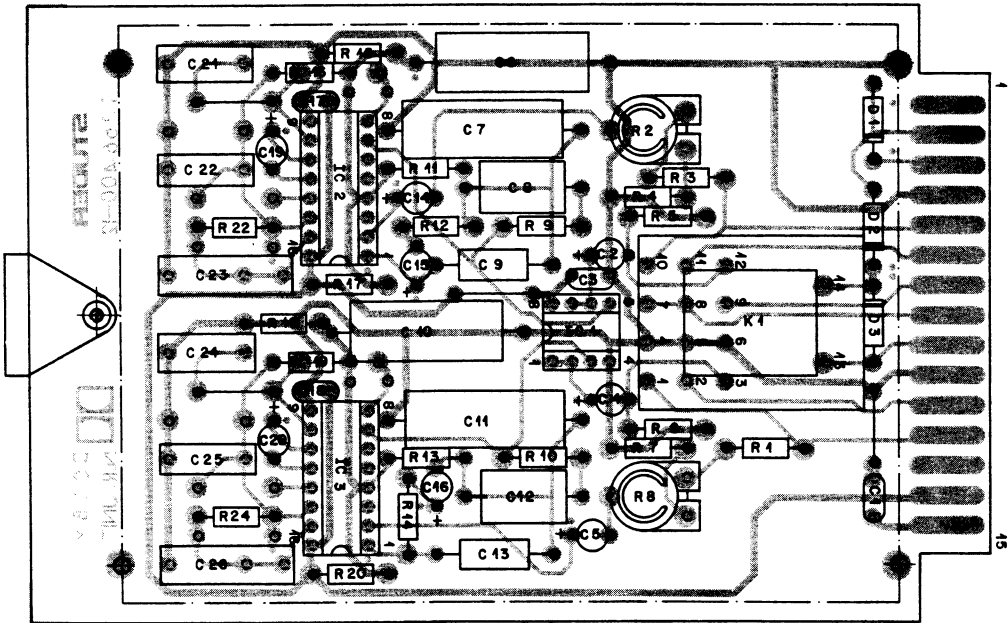
DOLBY PROCESSOR PCB 1.166.400 / DUMMY PLUG 1.166.090

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------------|---------------------------|-----|
| | C 1 | 59.32.3103 | 0.01 μ F | 20% CER | |
| | C 2 | 59.30.4100 | 10 μ F | TA 16V | |
| | C 3 | 59.32.3103 | 0.01 μ F | 20% CER | |
| | C 4 | 59.30.4100 | 10 μ F | TA 16V | |
| | C 5 | " | " | " | |
| | C 6 | 59.25.3221 | 220 μ F | EL 16V | |
| | C 7 | 59.12.7273 | 0.027 μ F | 1% PS | |
| | C 8 | 59.12.7562 | 5600 pF | " | |
| | C 9 | 59.12.7472 | 4700 pF | " | |
| | C 10 | 59.25.3221 | 220 μ F | EL 16V | |
| | C 11 | 59.12.7273 | 0.027 μ F | 1% PS | |
| | C 12 | 59.12.7562 | 5600 pF | " | |
| | C 13 | 59.12.7472 | 4700 pF | " | |
| | C 14 | 59.30.4100 | 10 μ F | EL 16V | |
| | C 15 | " | " | " | |
| | C 16 | " | " | " | |
| | C 17 | 59.32.3103 | 0.01 μ F | 20% CER | |
| | C 18 | " | " | " | |
| | C 19 | 59.30.4100 | 10 μ F | EL 16V | |
| | C 20 | " | " | " | |
| | C 21 | 59.12.4473 | 0.047 μ F | 5% MPE | |
| | C 22 | 59.31.6104 | 0.1 μ F | 10% " | |
| | C 23 | 59.31.6334 | 0.33 μ F | " | |
| | C 24 | 59.12.4473 | 0.047 μ F | 5% " | |
| | C 25 | 59.31.6104 | 0.1 μ F | 10% " | |
| | C 26 | 59.31.6334 | 0.33 μ F | " | |
| | D 1 | 50.04.0125 | 1N4448 | Si-Diode 100mA 50V | Any |
| | D 2 | " | " | " | " |
| | D 3 | " | " | " | " |

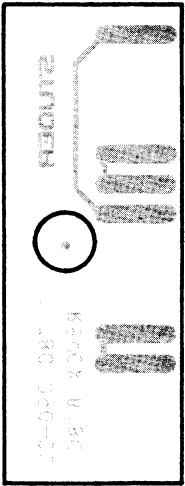
| IND | DATE | NAME |
|--|----------|----------------------------|
| ① | | CER = CERAMIC |
| ② | | TA = Solid Tantalum |
| ③ | | EL = Electrolytic |
| ④ | | PS = Polystyrene or org. |
| ⑤ | | MPE = Metallized Polyester |
| ⑥ | 17.10.77 | Bal. <i>[Signature]</i> |
| STUDER Dolby-Processor PL 1.166.400.00 PAGE 1 OF 2 | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-----------------|---------------------------|-------|
| | IC 1 | 50.05.0245 | RC4558 | Dual Op Amp | R, TI |
| | IC 2 | 50.05.0258 | NE645B | Dolby Processor | ST |
| | IC 3 | " | " | " | |
| | K 1 | 56.04.0121 | PZ # | Relay 24V, 0.03A | ITT |
| | R 1 | 57.41.4392 | 3.9 k Ω | 5% | |
| | R 2 | 58.02.5102 | 1 k Ω | Pot'meter \pm 20% | |
| | R 3 | 57.41.4392 | 3.9 k Ω | 5% | |
| | R 4 | 57.41.4102 | 1 k Ω | " | |
| | R 5 | 57.41.4473 | 47 k Ω | " | |
| | R 6 | " | " | " | |
| | R 7 | 57.41.4102 | 1 k Ω | " | |
| | R 8 | 58.02.5102 | 1 k Ω | Pot'meter \pm 20% | |
| | R 9 | 57.41.4181 | 180 Ω | " | |
| | R 10 | " | " | " | |
| | R 11 | 57.39.3321 | 3.32 k Ω | 1% | |
| | R 12 | 57.41.4473 | 47 k Ω | 5% | |
| | R 13 | 57.39.3321 | 3.32 k Ω | 1% | |
| | R 14 | 57.41.4473 | 47 k Ω | 5% | |
| | R 15 | 57.41.4102 | 1 k Ω | 5% | |
| | R 16 | 57.39.2003 | 200 k Ω | 1% | |
| | R 17 | 57.41.4102 | 1 k Ω | 5% | |
| | R 18 | " | " | " | |
| | R 19 | 57.39.2003 | 200 k Ω | 1% | |
| | R 20 | 57.41.4102 | 1 k Ω | 5% | |
| | R 21 | " | " | " | |
| | R 22 | 57.41.4274 | 270 k Ω | " | |
| | R 23 | " | " | " | |
| | R 24 | 57.41.4274 | 270 k Ω | " | |

| IND | DATE | NAME |
|--|----------|-------------------------|
| ④ | | R = Raytheon |
| ⑤ | | TI = Texas Instr. |
| ⑥ | | ST = STUDER |
| ⑦ | 23.1.80 | Ho. |
| ⑧ | 27.4.78 | Rom. <i>[Signature]</i> |
| ⑨ | 17.10.77 | Bal. <i>[Signature]</i> |
| STUDER Dolby-Processor PL 1.166.400.00 PAGE 2 OF 2 | | |

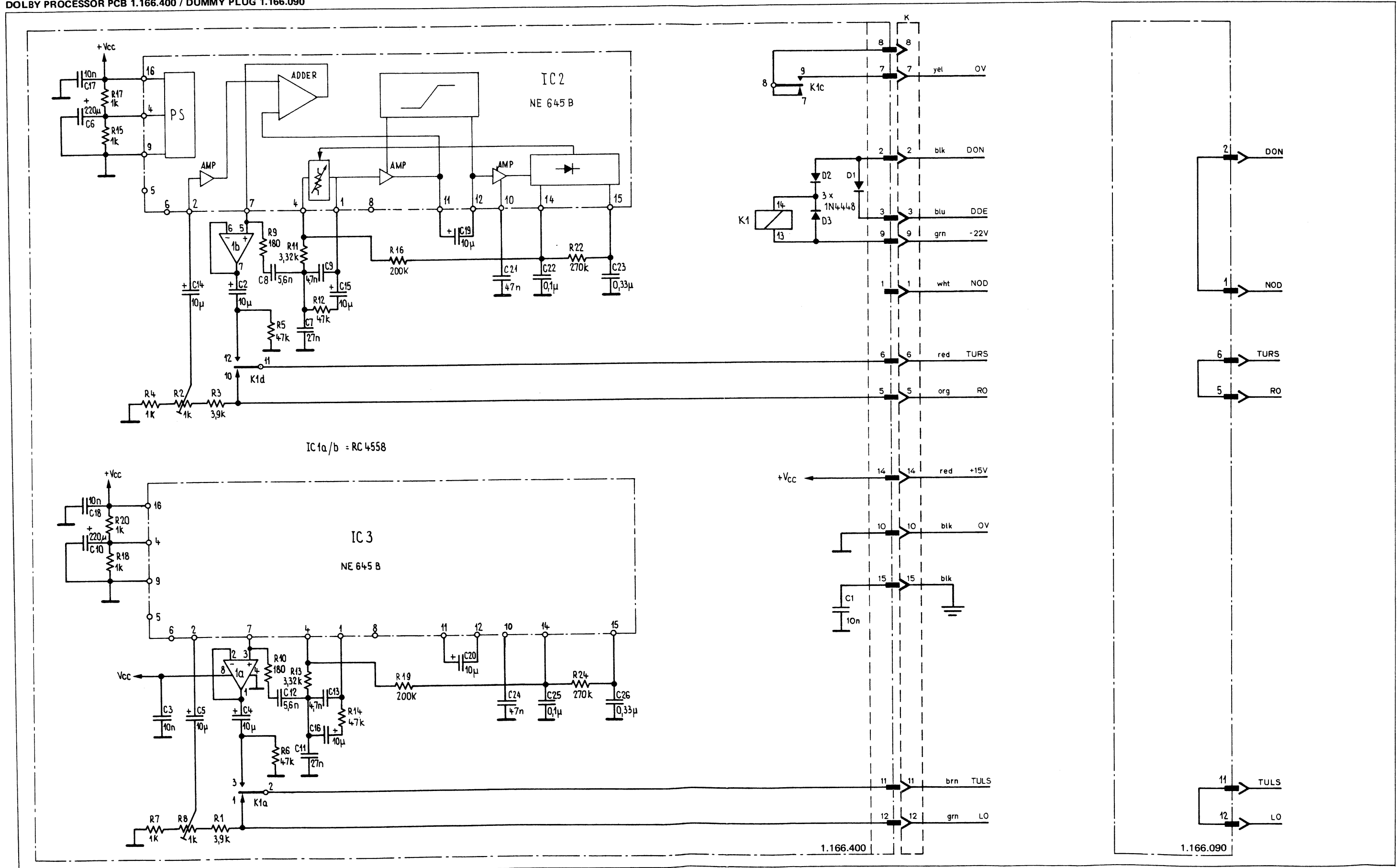


1.166.400



1.166.090

DOLBY PROCESSOR PCB 1.166.400 / DUMMY PLUG 1.166.090



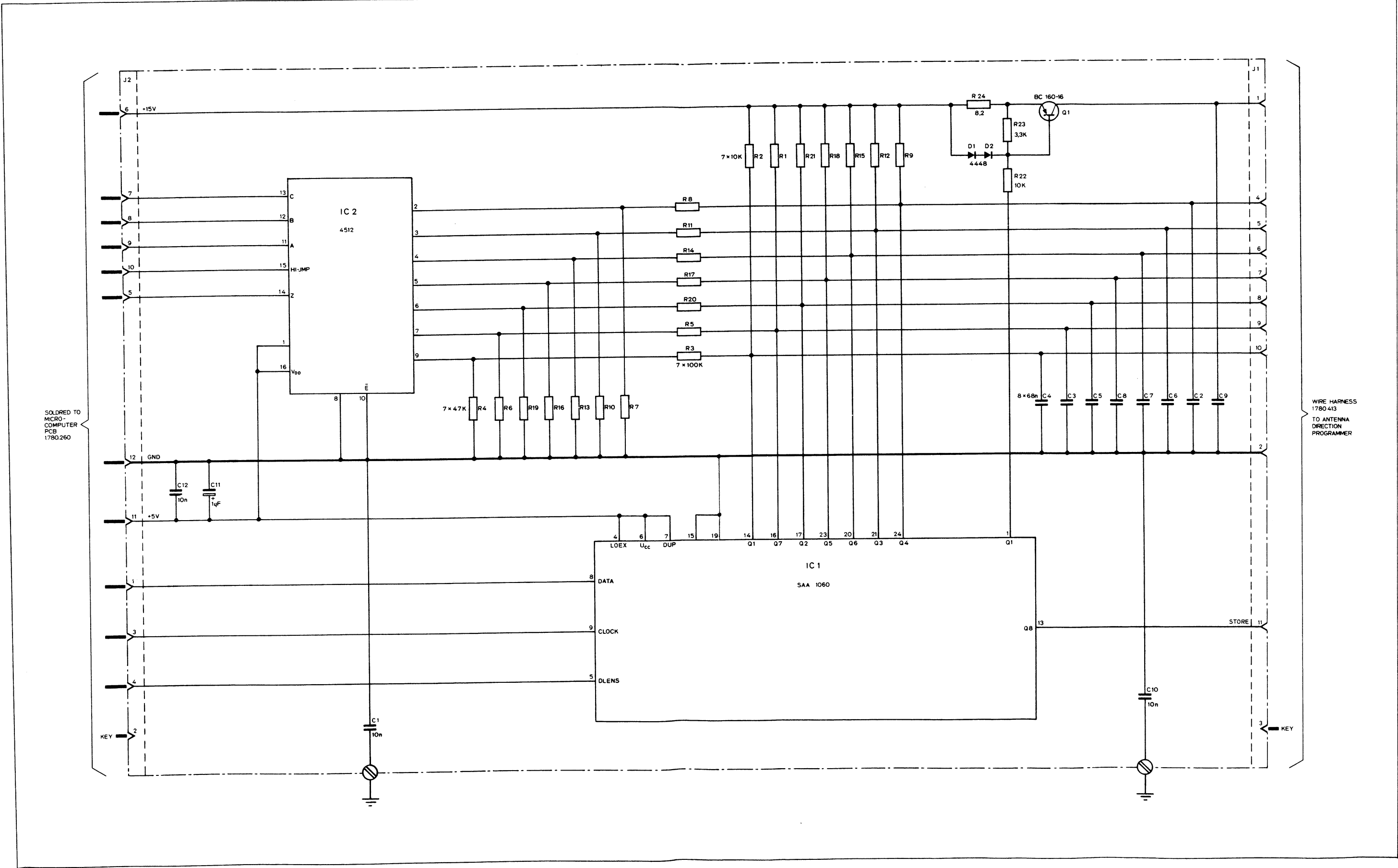
| INDEX | DATE | NAME | |
|-------|--------|--------------|--|
| ③ | | | |
| ③ | | | |
| ② | | | |
| ① | 4.7.80 | Perm | |
| ○ | 4.9.79 | A. Dünner LG | |

| | | | |
|--------|-----------------|--------------|-------------|
| STUDER | ANTENNA CONTROL | 1.780.400.00 | PAGE 1 OF 2 |
|--------|-----------------|--------------|-------------|

| INDI | DATE | NAME | |
|------|--------|-------------|--|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | 4.7.80 | Rev. | |
| ○ | 4.9.79 | A Dinner L2 | |

STUDER **ANTENNA - CONTROL** 1.780.400,00 PAGE 2 OF 2

ANTENNA CONTROL INTERFACE PCB 1.780.400



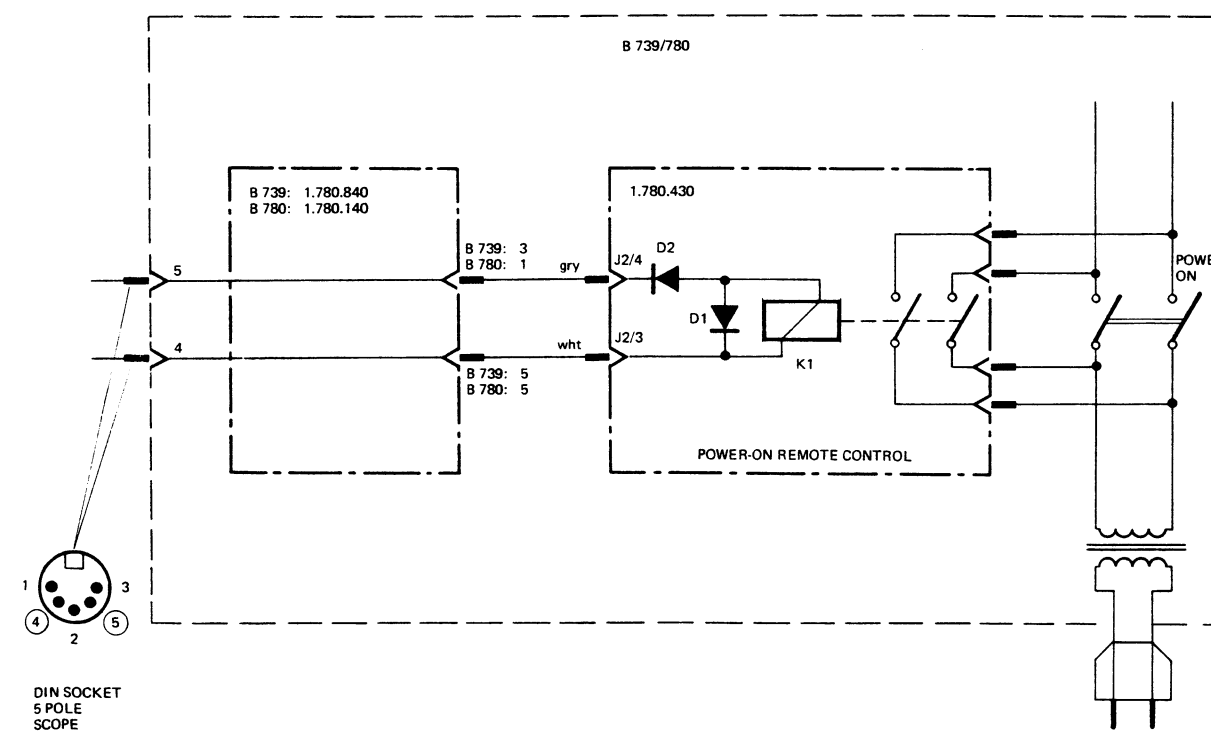
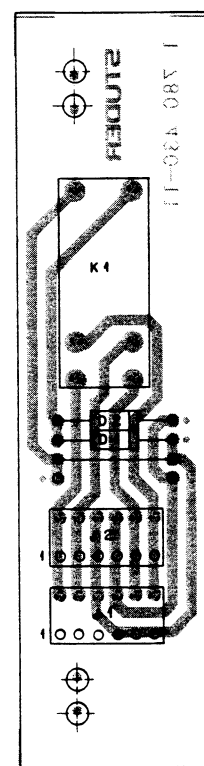
| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------------|---------------------------|---------|
| D1, D2 | 50.04.0125 | 1N4448 | 50V. 50 mA | |
| J1, J2 | 54.01.0216 | CIS-6 poles | | |
| K1 | 56.01.0117 | 275 A | 180 Ω. 8-15 V. / A2 732 | Zettler |

STUDER
1.780.430-11

DIN SOCKET
5 POLE
SCOPE

| IND | DATE | NAME | |
|-----|---------|----------|--|
| ④ | | | |
| ⑤ | | | |
| ⑥ | | | |
| ⑦ | | | |
| ⑧ | 14.7.80 | A Dinner | |

| | | | | |
|---------------|----------|----------------|-----------|-------------|
| STUDER | POWER-ON | REMOTE CONTROL | 1.740.430 | PAGE 1 OF 1 |
|---------------|----------|----------------|-----------|-------------|



WIRE HARNESS / FRONT 1.780.170

| a PLUGGED TO MICROCOMPUTER PCB 1.780.260 J6 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | LSNE | brn | c13 |
| 2 | CHTM | red | f3 |
| 3 | STME | bru | f1 |
| 4 | — | — | — |
| 5 | STLY | blu | d5 |
| 6 | MOFF | vio | d6 |
| 7 | MONO | gry | d7 |
| 8 | HIBL | yel | d1 |
| 9 | TSPA | blu | k2 |
| 10 | TSPB | vio | k1 |
| 11 | NR | gru | d2 |
| 12 | PHO | red | j6 |
| 13 | AUX | org | j4 |
| 14 | TA1 | yel | j3 |
| 15 | TA2 | grn | j2 |
| 16 | RECSET | gry | k5 |
| 17 | RECOFF | wht | k6 |
| 18 | TU | bru | j7 |

| b PLUGGED TO MICROCOMPUTER PCB 1.780.260 J7 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | DLEN2 | wht | e1 |
| 2 | DLEN1 | gry | e2 |
| 3 | DATA | yel | e3 |
| 4 | CLCK | brn | e4 |
| 5 | — | — | — |
| 6 | KS1 | brn | c3 |
| 7 | KS2 | red | c8 |
| 8 | KS3 | org | c9 |
| 9 | KS4 | yel | c10 |
| 10 | KS5 | grn | c11 |
| 11 | KS6 | blu | c2 |
| 12 | KS7 | vio | c7 |
| 13 | KS8 | gry | c5 |
| 14 | KS9 | wht | c4 |
| 15 | KS0 | blk | c12 |
| 16 | T75µs | org | i4 |
| 17 | UP | org | c15 |
| 18 | DOWN | yel | c14 |

| c PLUGGED TO STATION SELECTION KEY BOARD 1.780.225 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | g4 |
| 2 | KS6 | blu | b11 |
| 3 | KS1 | brn | b6 |
| 4 | KS9 | wht | b14 |
| 5 | KS8 | gry | b13 |
| 6 | — | — | — |
| 7 | KS7 | vio | b12 |
| 8 | KS2 | red | b7 |
| 9 | KS3 | org | b8 |
| 10 | KS4 | yel | b9 |
| 11 | KS5 | grn | b10 |
| 12 | KS0 | blk | b15 |
| 13 | LSNE | brn | a1 |
| 14 | DOWN | yel | b18 |
| 15 | UP | org | b17 |

| d PLUGGED TO PUSHBUTTON BOARD/ FM MODE 1.780.220 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | HIBL | yel | a8 |
| 2 | NR | grn | a11 |
| 3 | — | — | — |
| 4 | OV | blk | g5 |
| 5 | STLY | blu | a5 |
| 6 | MOFF | vio | a6 |
| 7 | MONO | gry | a7 |

| e PLUGGED TO DISPLAY PCB 1.780.245 J2 | | | |
|---------------------------------------|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | DLEN2 | wht | b1 |
| 2 | DLEN1 | gry | b2 |
| 3 | DATA | yel | b3 |
| 4 | CLCK | brn | b4 |
| 5 | — | — | — |
| 6 | — | — | — |
| 7 | GND | blk | — |

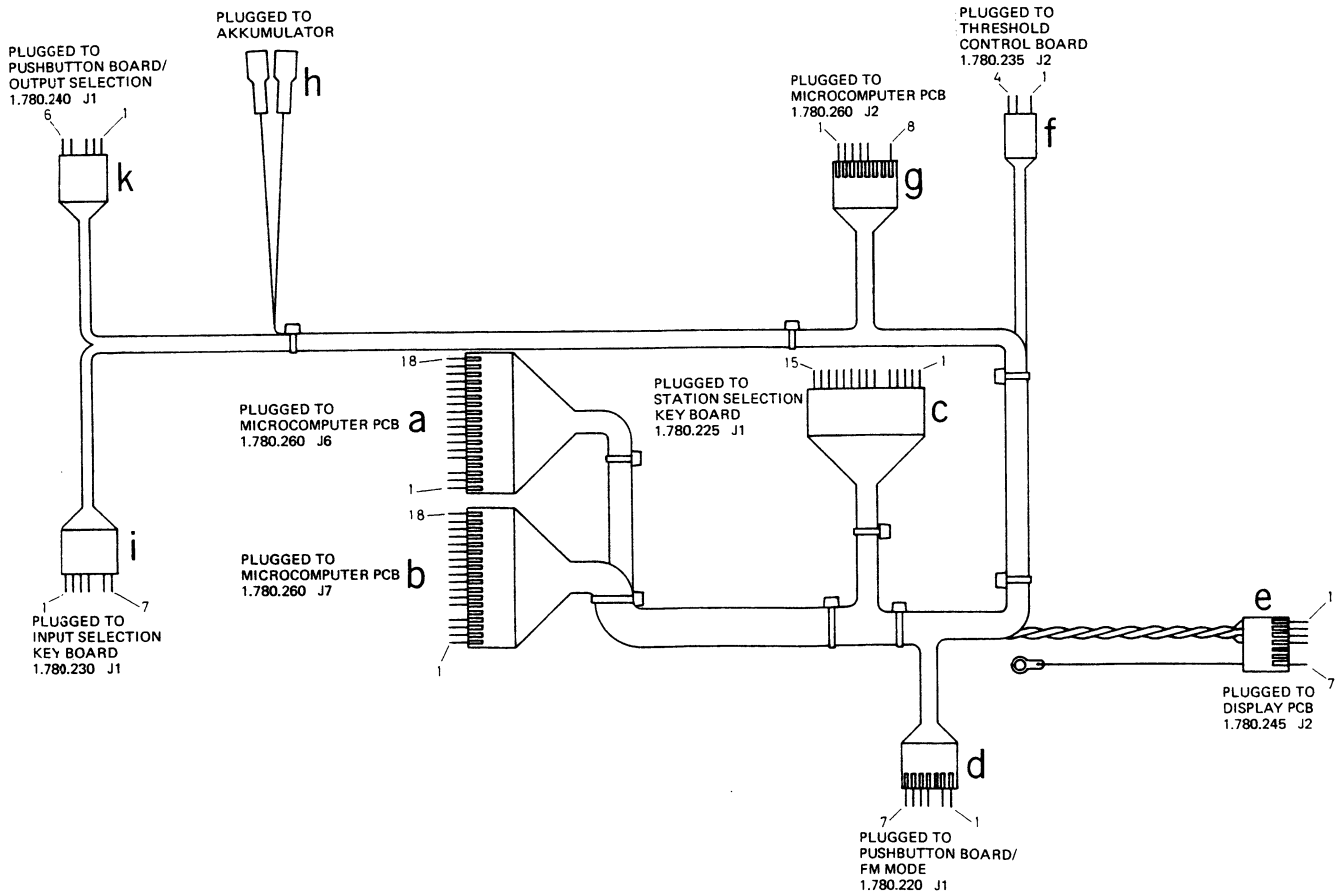
| f PLUGGED TO THRESHOLD CONTROL BOARD 1.780.235 J2 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | STME | brn | a3 |
| 2 | — | — | — |
| 3 | CHTM | red | a2 |
| 4 | T75µs | org | b16 |

| g PLUGGED TO MICROCOMPUTER PCB 1.780.260 J2 | | | |
|---|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | k3 |
| 2 | OV | blk | j1 |
| 3 | —UBAT | blk | h1 |
| 4 | OV | blk | c1 |
| 5 | OV | blk | d4 |
| 6 | — | — | — |
| 7 | — | — | — |
| 8 | +UBAT | wht | h2 |

| h PLUGGED TO AKKUMULATOR | | | |
|--------------------------|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | —UBAT | blk | g3 |
| 2 | +UBAT | wht | g8 |

| i PLUGGED TO INPUT SELECTION KEY BOARD 1.780.230 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | g2 |
| 2 | TA2 | grn | a15 |
| 3 | TA1 | yel | a14 |
| 4 | AUX | org | a13 |
| 5 | — | — | — |
| 6 | PHO | red | a12 |
| 7 | TU | brn | a18 |

| k PLUGGED TO PUSHBUTTON BOARD/ OUTPUT SELECTION 1.780.240 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | TSPB | vio | a10 |
| 2 | TSPA | blu | a9 |
| 3 | OV | blk | g1 |
| 4 | — | — | — |
| 5 | RECSET | gry | a16 |
| 6 | RECOFF | wht | a17 |



WIRE HARNESS / REAR 1.780.166

| A PLUGGED TO PREAMPLIFIER PCB 1.780.205 J6 | | | |
|--|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | W3 |
| 2 | PH | gry | S3 |
| 3 | -22V | grn | W10 |
| 4 | PHL | unc | L10 |
| 5 | PHGND | screen | L11 |
| 6 | PHR | unc | L14 |
| 7 | PHGND | screen | L13 |
| 8 | PRER | unc | H6 |
| 9 | PREL | red | H8 |
| 10 | PREGND | screen | H5 |
| 11 | OV | blk | W9 |
| 12 | OV | screen | G13 |
| 13 | MR | unc | G14 |
| 14 | ML | red | G15 |
| 15 | OV | blk | W9 |
| 16 | -15V | blu | W8 |
| 17 | — | — | — |
| 18 | +15V | red | W2 |

| B PLUGGED TO POWER ON/STANDBY SWITCH | | | |
|--------------------------------------|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | — | vio | I2 |
| 2 | — | vio | I5 |
| 3 | — | org | I6 |
| 4 | — | org | I1 |

| C PLUGGED TO FM DEMODULATOR PCB 1.166.130 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | +15V | red | W2 |
| 2 | — | — | — |
| 3 | +32V | vio | W11 |
| 4 | MPAX | yel | L4 |
| 5 | MPX | wht | P2 |
| 6 | OV | blk | P3 |
| 7 | -15V | blu | W8 |

| D PLUGGED TO STEREO DECODER PCB 1.166.150 J1 | | | |
|--|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | P | grn | S18 |
| 2 | -15V | blu | W8 |
| 3 | +15V | red | W2 |
| 4 | +32V | vio | W11 |
| 5 | R | red | P16 |
| 6 | L | unc | P15 |
| 7 | OV | screen | P14 |
| 8 | — | — | — |
| 9 | MPXM | gry | P12 |
| 10 | ST | yel | S2 |
| 11 | — | — | — |
| 12 | STFI 2 | grn | S12 |
| 13 | STFI 1 | grn | S11 |
| 14 | +6V | org | W1 |
| 15 | MPX | wht | P1 |

| E PLUGGED TO IF AMPLIFIER PCB 1.166.120 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | AGC | brn | M3 |
| 2 | T | wht | Q12 |
| 3 | +32V | vio | W11 |
| 4 | +15V | red | W2 |
| 5 | — | — | — |
| 6 | SS | gry | Q15 |
| 7 | -15V | blu | W8 |

| F PLUGGED TO POWER AMPLIFIER PCB RIGHT 1.780.105 J5 | | | |
|---|--------|--------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | PONR | grn | S5 |
| 2 | — | — | — |
| 3 | PWRR | unc | H1 |
| 4 | GNDR | screen | H2 |

| G PLUGGED TO AUDIO CONNECTION UNIT 1.780.145 J2 | | | |
|---|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | NF1 | brn | S9 |
| 2 | NF2 | red | S8 |
| 3 | NF3 | org | S7 |
| 4 | NF4 | yel | S6 |
| 5 | NF5 | grn | R7 |
| 6 | NF6 | blu | R6 |
| 7 | NF7 | vio | R5 |
| 8 | NF8 | gry | R4 |
| 9 | OV | blk | K10 |
| 10 | — | — | — |
| 11 | TURS | red | K6 |
| 12 | TULS | brn | K11 |
| 13 | OV | screen | A12 |
| 14 | MR | unc | A13 |
| 15 | ML | red | A14 |
| 16 | +32V | vio | W11 |
| 17 | -15V | blu | W8 |
| 18 | +15V | red | W2 |

| H PLUGGED TO AUDIO CONNECTION UNIT 1.780.145 J1 | | | |
|---|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | PWRR | unc | F3 |
| 2 | GNDR | screen | F4 |
| 3 | PWRL | unc | N2 |
| 4 | GNDL | screen | N1 |
| 5 | PREGND | screen | A10 |
| 6 | PRER | unc | A8 |
| 7 | — | — | — |
| 8 | PREL | red | A9 |
| 9 | PHGND | blk | L12 |

| I PLUGGED TO POWER DISTRIBUTION PCB 1.780.190 J2 | | | |
|--|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | — | org | B4 |
| 2 | — | vio | B1 |
| 3 | — | — | — |
| 4 | — | — | — |
| 5 | — | vio | B2 |
| 6 | — | org | B3 |

| K SOLDRED TO CHASSIS CONNECTOR (DOLBY PROC PCB 1.166.400) | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | NOD | wht | S17 |
| 2 | DON | blk | S1 |
| 3 | DDE | blu | R18 |
| 4 | — | — | — |
| 5 | RO | org | P6 |
| 6 | TURS | red | G11 |
| 7 | OV | yel | W5 |
| 8 | — | — | — |
| 9 | -22V | grn | W10 |
| 10 | OV | blk | G9 |
| 10 | OV | blk | P9 |
| 11 | TULS | brn | G12 |
| 12 | LO | grn | P5 |
| 13 | — | — | — |
| 14 | +15V | red | W2 |

| L PLUGGED TO SPEAKER PROTECTION UNIT 1.780.140 J1 | | | |
|---|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | — | — | — |
| 2 | MPY | grn | Q14 |
| 3 | — | — | — |
| 4 | MPAX | yel | C4 |
| 5 | — | — | — |
| 6 | -15V | blu | W8 |
| 7 | DC | wht | R15 |
| 8 | +15V | red | W2 |
| 9 | OV | blk | W3 |
| 10 | PHL | unc | A4 |
| 11 | PHGND | screen | A5 |
| 12 | PHGND | blk | H9 |
| 13 | PHGND | blk | A7 |
| 14 | PHR | unc | A6 |
| 15 | H | gry | R19 |
| 16 | — | — | — |
| 17 | +22V | brn | W6 |
| 18 | SPA | org | S16 |
| 19 | SPB | red | S15 |

| M PLUGGED TO RF FRONT END PCB 1.166.100 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | +15V | red | W2 |
| 2 | — | — | — |
| 3 | AGC | brn | E1 |
| 4 | -15V | blu | W8 |
| 5 | +32V | vio | W11 |

| N PLUGGED TO POWER AMPLIFIER PCB LEFT 1.780.105 J1 | | | |
|--|--------|--------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | GNDL | screen | H4 |
| 2 | PWRL | unc | H3 |
| 3 | — | — | — |
| 4 | PONL | vio | S4 |

| O PLUGGED TO FREQUENCY SYNTHESIZER PCB 1.780.151 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | -15V | blu | W8 |
| 2 | CLK | brn | R1 |
| 3 | DLEN 3 | gry | R2 |
| 4 | DATA | yel | R3 |
| 5 | +32V | vio | W11 |
| 6 | — | — | — |
| 7 | LOC | grn | R12 |
| 8 | +6V | org | W1 |
| 9 | +15V | red | W2 |

| P PLUGGED TO METER CIRCUIT AND DEEMPHASIS PCB 1.780.155 J1 | | | |
|--|------------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | MPX | wht | D15 |
| 2 | MPX | wht | C5 |
| 3 | OV | blk | C6 |
| 4 | 25 μ s | gry | R10 |
| 5 | LO | grn | K12 |
| 6 | RO | org | K5 |
| 7 | 75 μ s | wht | R9 |
| 8 | — | — | — |
| 9 | OV | blk | K10 |
| 10 | +15V | red | W2 |
| 11 | -15V | blu | W8 |
| 12 | MPXM | gry | D9 |
| 13 | MUT | vio | R11 |
| 14 | OV | screen | D7 |
| 15 | L | unc | D6 |
| 16 | R | red | D5 |

| Q PLUGGED TO METER CIRCUIT AND DEEMPHASIS PCB 1.780.155 J2 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | THSTA | grn | R14 |
| 2 | PSTA | blk | V2 |
| 3 | THSTE | blu | R13 |
| 4 | PSTE | wht | V6 |
| 5 | FH | yel | R16 |
| 6 | FL | red | R17 |
| 7 | MC | brn | S13 |
| 8 | WW | org | S14 |
| 9 | — | — | — |
| 10 | OV | yel | W5 |
| 11 | TM | yel | V1 |
| 12 | T | wht | E2 |
| 13 | SM | blk | U2 |
| 14 | MPY | grn | L2 |
| 15 | SS | gry | E6 |

| R PLUGGED TO MICROCOMPUTER PCB 1.780.260 J5 | | | |
|---|------------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | CLK | brn | O2 |
| 2 | DLEN 3 | gry | O3 |
| 3 | DATA | yel | O4 |
| 4 | NF 8 | gry | G8 |
| 5 | NF 7 | vio | G7 |
| 6 | NF 6 | blu | G6 |
| 7 | NF 5 | grn | G5 |
| 8 | — | — | — |
| 9 | 75 μ s | wht | P7 |
| 10 | 25 μ s | gry | P4 |
| 11 | MUT | vio | P13 |
| 12 | LOC | grn | O7 |
| 13 | THSTE | blu | O3 |
| 14 | THSTA | grn | Q1 |
| 15 | DC | wht | L7 |
| 16 | FH | yel | Q5 |
| 17 | FL | red | Q6 |
| 18 | DDE | blu | K3 |
| 19 | H | gry | L15 |

| S PLUGGED TO MICROCOMPUTER PCB 1.780.260 J4 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | DON | blk | K2 |
| 2 | ST | yel | D10 |
| 3 | PH | gry | A2 |
| 4 | PONL | vio | N4 |
| 5 | PONR | grn | F1 |
| 6 | NF 4 | yel | G4 |
| 7 | NF 3 | org | G3 |
| 8 | NF 2 | red | G2 |
| 9 | NF 1 | brn | G1 |
| 10 | — | — | — |
| 11 | STFI 1 | grn | D13 |
| 12 | STFI 2 | grn | D12 |
| 13 | MC | brn | Q7 |
| 14 | WW | org | Q8 |
| 15 | SPB | red | L19 |
| 16 | SPA | org | L18 |
| 17 | NOD | wht | K1 |
| 18 | P | grn | D1 |

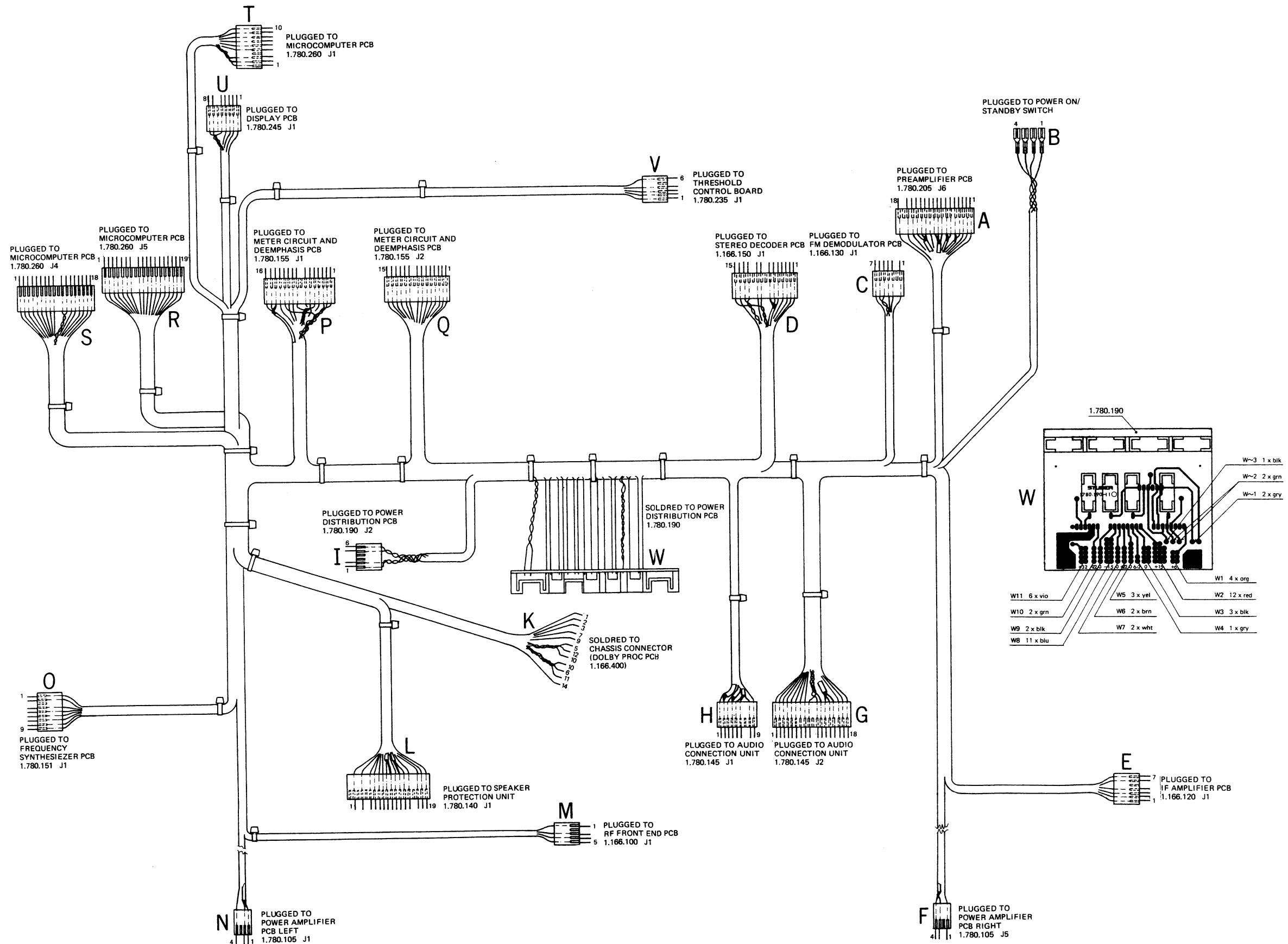
| T PLUGGED TO MICROCOMPUTER PCB 1.780.260 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | W~3 |
| 2 | 19V~ | gry | W~1 |
| 3 | 19V~ | gry | W~1 |
| 4 | — | — | — |
| 5 | +22V | brn | W6 |
| 6 | +6V | org | W1 |
| 7 | +15V | red | W2 |
| 8 | OV | yel | W5 |
| 9 | -15V | blu | W8 |
| 10 | +6,2V | gry | W4 |

| U PLUGGED TO DISPLAY PCB 1.780.245 J1 | | | |
|---------------------------------------|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | -15V | blu | W8 |
| 2 | SM | blk | Q13 |
| 3 | OV | wht | W7 |
| 4 | +6V | org | W1 |
| 5 | OV | blk | W3 |
| 6 | — | — | — |
| 7 | 11V~ | grn | W~2 |
| 8 | 11V~ | grn | W~2 |

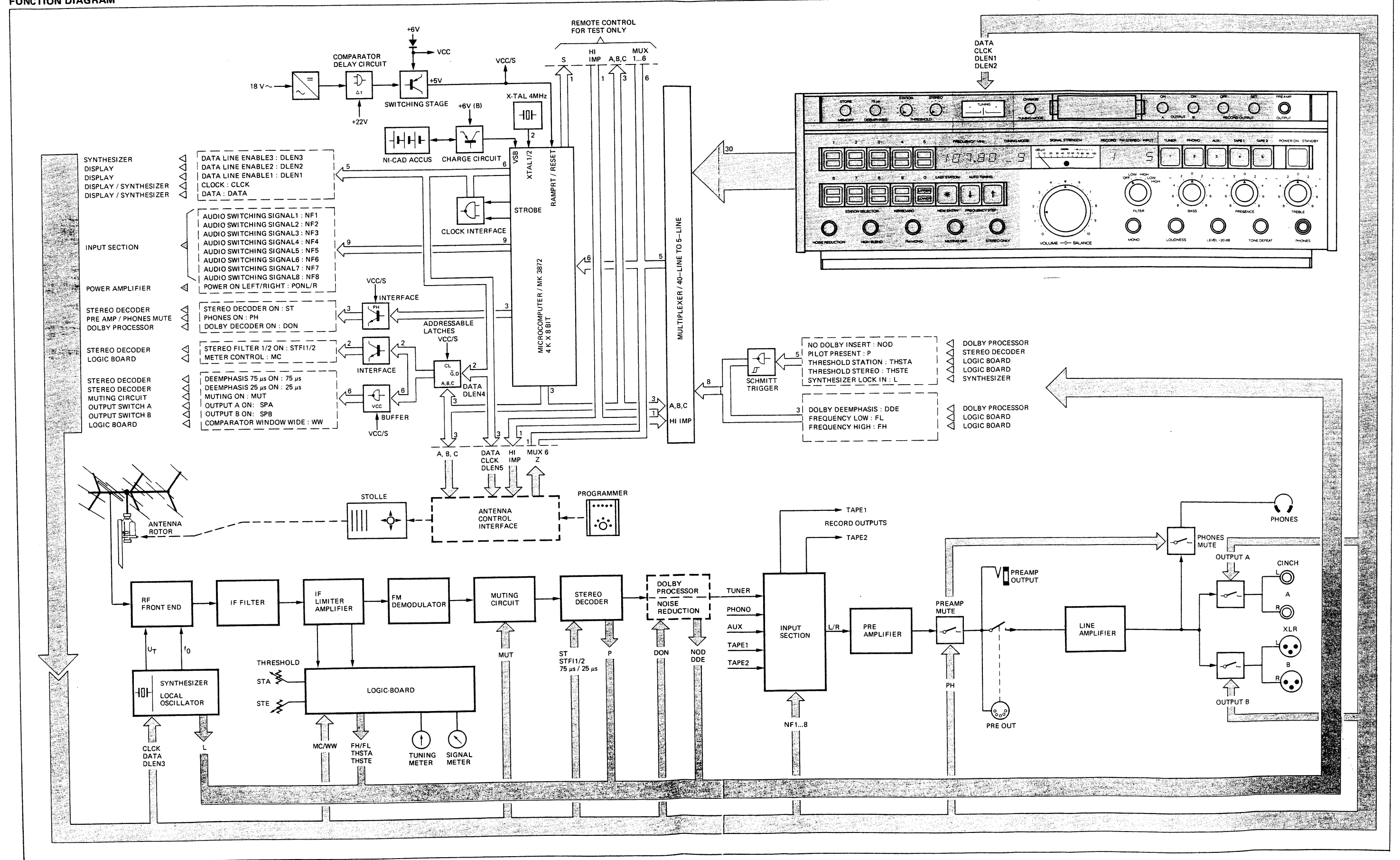
| V PLUGGED TO THRESHOLD CONTROL BOARD 1.780.235 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | TM | yel | Q11 |
| 2 | PSTA | blk | Q2 |
| 3 | +15V | red | W2 |
| 4 | OV | wht | W7 |
| 5 | — | — | — |
| 6 | PSTE | wht | Q4 |

| W SOLDRED TO POWER DISTRIBUTION PCB 1.780.190 | | | |
|---|--------|-------|--|
| PIN | SIGNAL | COLOR | TO |
| ~1 | 19V~ | gry | T2, T3 |
| ~2 | 11V~ | grn | U7, U8 |
| ~3 | OV | blk | T1 |
| 1 | +6V | org | D14, O8, T6, U4 |
| 2 | +15V | red | A18, C1, D3, E4, G18, K14, L8, M1, O9, P10, T7, V3 |
| 3 | OV | blk | A1, L9, U5 |
| 4 | +6,2V | gry | T10 |
| 5 | OV | yel | K7, Q10, T8 |
| 6 | +22V | brn | L17, T5 |
| 7 | OV | wht | U3, V4 |
| 8 | -15V | blu | A16, C7, D2, E7, G17, L6, M4, O1, P11, T9, U1 |
| 9 | OV | blk | A11, A15 |
| 10 | -22V | grn | A3, K9 |
| 11 | +32V | vio | C3, D4, E3, G16, M5, O5 |

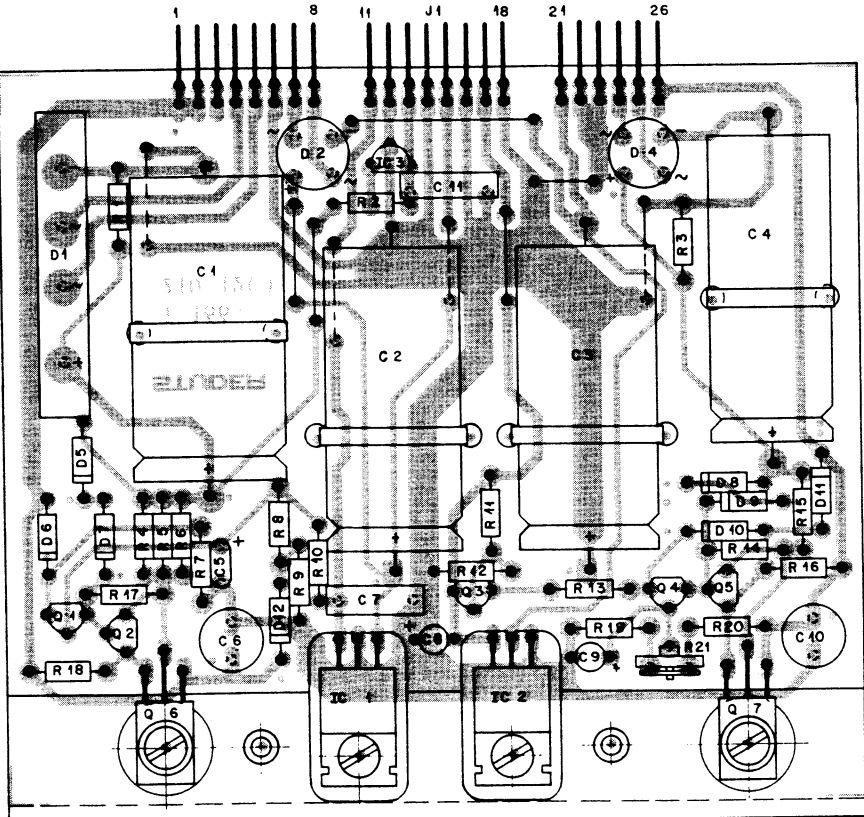
WIRE HARNESS / REAR 1.780.166



FUNCTION DIAGRAM



POWER SUPPLY UNIT 1.166.200



1.166.210 - 81

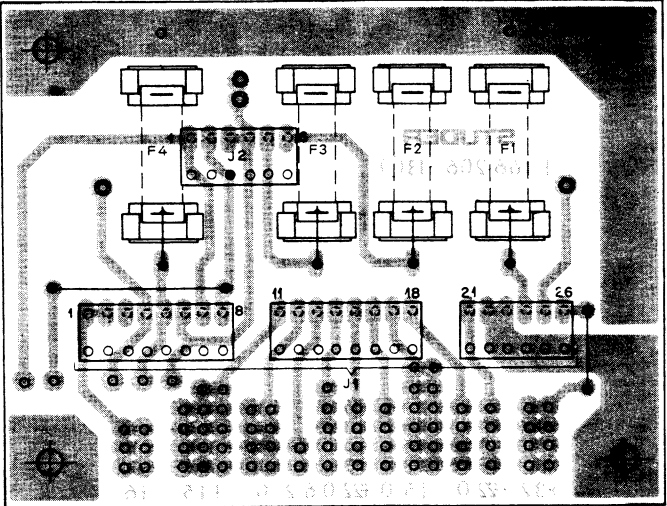
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|-------|
| | C 1 | 59.25.3472 | 4700 µF | EL 16 V | |
| | C 2 | 59.25.4222 | 2200 µF | " 25 V | |
| | C 3 | " | " | " " | |
| | C 4 | 59.25.6471 | 470 µF | " 63 V | |
| 4.1 | C 5 | 59.32.3103 | 0.01 µF | CER 40 V | |
| | C 6 | 59.22.5470 | 47 µF | EL 25 V | |
| | C 7 | 59.31.1104 | 0.1 µF | PE 100 V | |
| 6 | C 8 | 59.30.6333 | 3.3 µF | TA 35 V | |
| | C 9 | 59.30.6100 | 10 µF | " " | |
| | C 10 | 59.22.6220 | 22 µF | EL 40 V | |
| | C 11 | 59.31.1104 | 0.1 µF | PE 100 V | |
| 5 | D 1 | 70.01.0235 | BR Rect. | B80 C 3700/2200 Si | SI |
| | D 2 | 70.01.0223 | " | B 250 C 800 Si | GI |
| 1 | D 3 | " | " | " | |
| | D 4 | 70.01.0223 | " | " | |
| | D 5 | 50.04.0125 | 1N4448 | Si Diode 100 V, 100 mA | GI |
| | D 6 | " | " | " | |
| | D 7 | " | " | " | |
| | D 8 | " | " | " | |
| | D 9 | " | " | " | |
| | D 10 | " | " | " | |
| | D 11 | 50.04.1108 | Z 5.6 | Zenerdiode 5.6V 0.4W 5% | |
| | D 12 | 50.04.0125 | 1N4448 | Si Diode 100V 100mA | |
| | IC 1 | 50.05.0253 | 78M15UC | +15 Voltage Regulator | F, TI |
| | IC 2 | 50.05.0252 | 79M15AVC | -15 " " | " " |
| 3 | IC 3 | 50.10.0101 | 78L06ACS | +6.2 " " | TI |

| IND | DATE | NAME |
|-----------------|---------|-------------------|
| ① | | EL = Electrolytic |
| ② | | CER = Ceramic |
| ③ | 3.6.80 | Rem. |
| ④ | 3.1.80 | Hä. |
| ⑤ | 6.10.77 | Bal. / la |
| STUDER | | Power Supply |
| PL 1.166.210-81 | | PAGE 1 OF 2 |

SI = Siemens
GI = General Instr.
F = Fairchild
TI = Texas Instr.

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|---------------------------|-----|
| | Q 1 | 50.03.0436 | BC107B | NPN Si | |
| | Q 2 | 50.03.0312 | BC178B | NPN Si | |
| | Q 3 | 50.03.0436 | BC107B | NPN Si | |
| | Q 4 | 50.03.0431 | BC154 | NPN Si | |
| | Q 5 | 50.03.0492 | BC146 | PNP Si | |
| | Q 6 | 50.03.0493 | BD561 | NPN Si | |
| | Q 7 | 50.03.0445 | BD177 | NPN Si | |
| | R 1 | 57.41.4102 | 1 kΩ | 5% | |
| 2.3 | R 2 | " | " | " | |
| | R 3 | 57.41.4103 | 10 kΩ | " | |
| | R 4 | 57.41.4129 | 1.2 kΩ | " | |
| | R 5 | 57.41.4129 | 1.2 kΩ | " | |
| | R 6 | 57.41.4129 | 1.2 kΩ | " | |
| | R 7 | 57.41.4221 | 820 Ω | " | |
| | R 8 | 57.41.4561 | 560 Ω | " | |
| | R 9 | 57.39.8451 | 8450 Ω | 1% MF | |
| | R 10 | 57.39.1432 | 14.3 kΩ | 1% MF | |
| | R 11 | 57.41.4102 | 1 kΩ | 5% | |
| | R 12 | 57.41.4103 | 10 kΩ | " | |
| | R 13 | 57.41.4103 | 10 kΩ | " | |
| | R 14 | 57.41.4102 | 1 kΩ | " | |
| | R 15 | 57.41.4333 | 3.3 kΩ | " | |
| | R 16 | 57.41.4561 | 560 Ω | " | |
| | R 17 | 57.41.4102 | 1 kΩ | " | |
| | R 18 | 57.41.4561 | 560 Ω | " | |
| | R 19 | 57.41.4562 | 5.6 kΩ | " | |
| | R 20 | 57.41.4102 | 1 kΩ | " | |
| | R 21 | 58.02.4471 | 470 Ω | CF Potentiometer | |

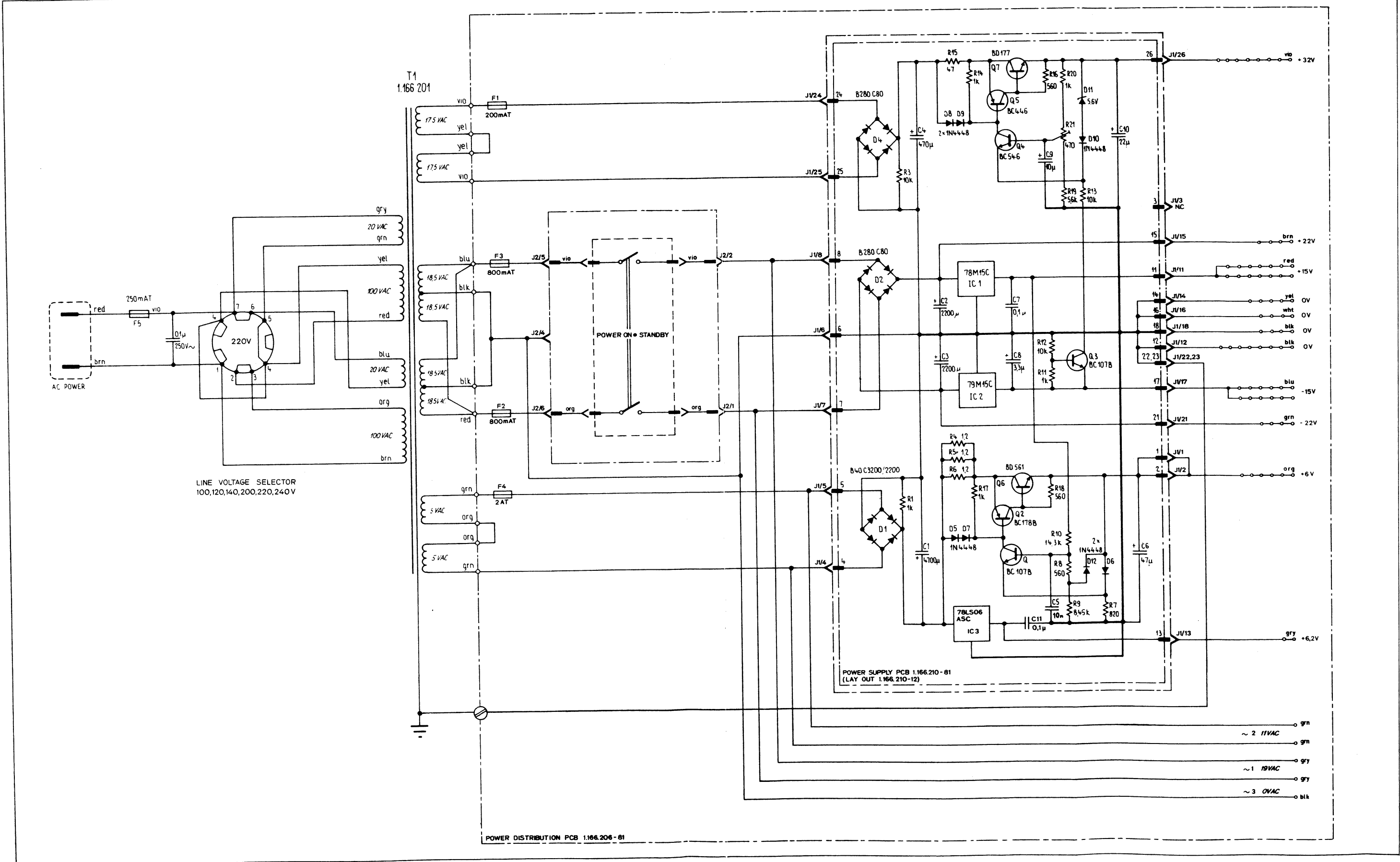
| IND | DATE | NAME |
|-----------------|---------|------------------|
| ④ | | CF = Carbon Film |
| ③ | | |
| ② | | |
| ① | | |
| ⑥ | 3.60.80 | Rem. / la |
| STUDER | | Power Supply |
| PL 1.166.210-81 | | PAGE 2 OF 2 |



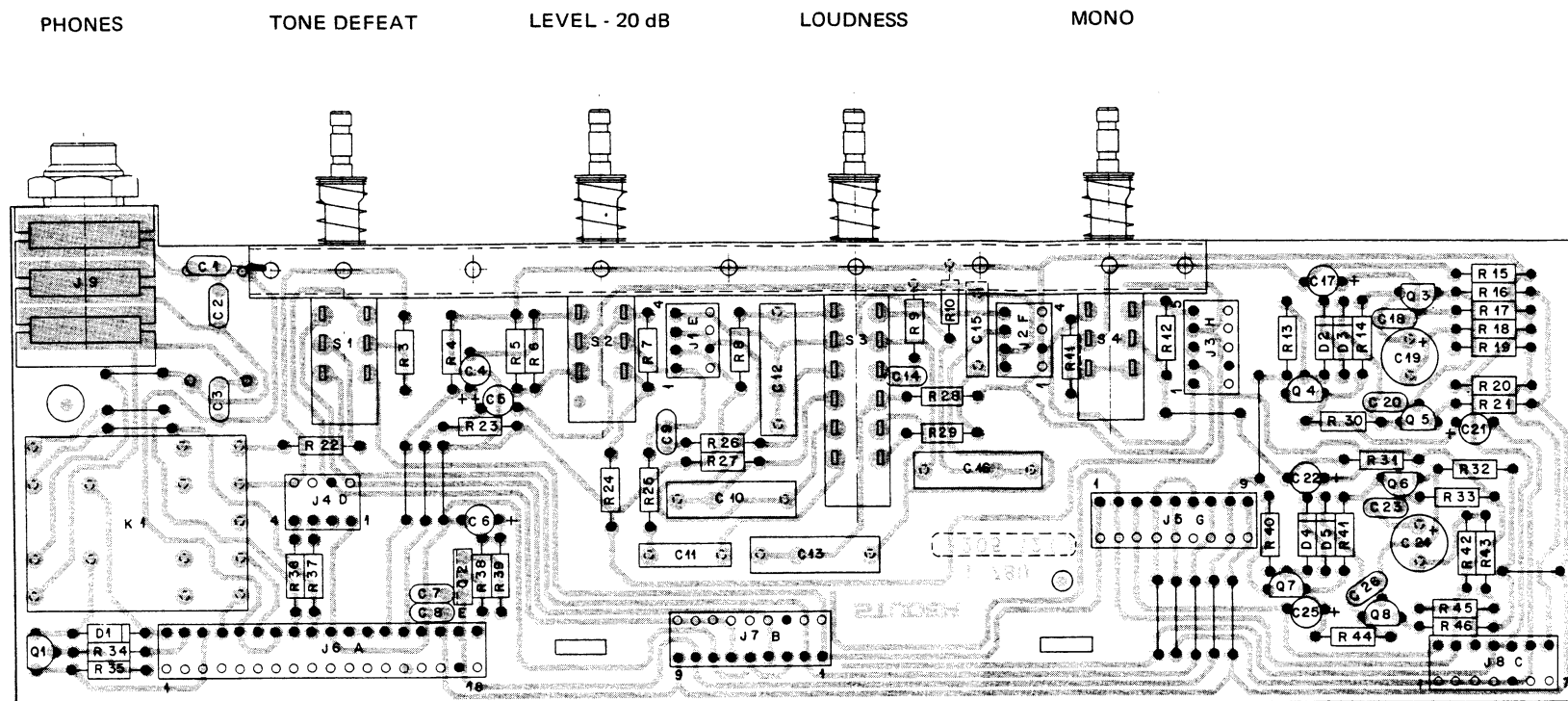
1.166.206-81

- F1: 200mA
- F2,3: 800mA
- F4: 2AT
- J1: 2 x 54.01.0289 8 POLE
1 x 54.01.0216 6 POLE
- J2: 54.01.0216 6 POLE

POWER SUPPLY UNIT 1.166.200



PREAMPLIFIER PCB 1.780.835



| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|-----------|------------|---------|---------------------------|-----|
| | C 1 | 59 32 3103 | 10 nF | 80% 50V CER | |
| | C 23 | 59 32 4102 | 1 nF | 20% 50V CER | |
| | C 4...C 6 | 59 30 4220 | 22 µF | 20% 16V TA | |
| | C 7, 8 | 59 32 3103 | 10 nF | 80% 50V CER | |
| | C 9 | 59 32 2687 | 680 pF | 10% 50V CER | |
| I | C 10 | 59 31 6474 | 0.47 µF | 10% 100V HPETP | |
| | C 11 | 59 11 6222 | 2.2 nF | " | |
| I | C 12, 13 | 59 31 6474 | 0.47 µF | " | |
| | C 14 | 59 32 2687 | 680 pF | 10% 50V CER | |
| | C 15 | 59 11 6222 | 2.2 nF | 10% 100V HPETP | |
| I | C 16 | 59 31 6474 | 0.47 µF | " | |
| | C 17 | 59 30 6109 | 1 µF | 20% 35V TA | |
| | C 18 | 59 32 2687 | 680 pF | 10% 50V CER | |
| | C 19 | 59 22 5470 | 47 µF | -10% 25V EL | |
| | C 20 | 59 34 2220 | 22 pF | 5% 50V CER | |
| | C 21 | 59 30 4220 | 22 µF | 20% 16V TA | |
| | C 22 | 59 30 6109 | 1 µF | 20% 35V TA | |
| | C 23 | 59 32 2687 | 680 pF | 10% 50V CER | |
| | C 24 | 59 22 5470 | 47 µF | -10% 25V EL | |
| | C 25 | 59 30 4220 | 22 µF | 20% 16V TA | |
| | C 26 | 59 34 2220 | 22 pF | 5% 50V CER | |
| | D 1, 5 | 50 04 0125 | 1N4448 | 100 mA 75V | |
| | J 1, 2 | 54 01 0241 | 4 pole | CIS | AMP |
| | J 3 | 54 01 0288 | 5 pole | " | " |
| | J 4 | 54 01 0241 | 4 pole | " | " |
| | J 5 | 54 01 0217 | 3 pole | " | " |
| | J 6 | 54 01 0236 | 18 pole | " | " |
| | J 7 | 54 01 0217 | 3 pole | " | " |

| INDI | DATE | NAME |
|---|---------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | 5.3.80 | He |
| ⑤ | 13.6.79 | He |
| STUDER PREAMPLIFIER 1.780.835 PAGE 1 OF 3 | | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|----------|------------|----------|---------------------------|----------|
| | J 8 | 54 01 0218 | 7 pole | CIS | AMP |
| | J 9 | 54 02 0104 | | 3 pole Jack 6.3 mm | |
| | K 1 | 56 04 0141 | 24V 12kΩ | AE 1354 6500 T | National |
| | Q 1 | 50 03 0436 | BC237 B | NPN / BC 107 | |
| | Q 2 | 50 03 0478 | 2SC496-0 | NPN / BD 133 | |
| | Q 3 | 50 03 0436 | BC560 C | low noise PNP / BC 173 B | |
| | Q 4, 5 | 50 03 0497 | BC550 C | " NPN / BC 107 B | |
| | Q 6 | 50 03 0436 | BC560 C | " PNP / BC 173 B | |
| | Q 7, 8 | 50 03 0437 | BC550 C | " NPN / BC 107 B | |
| | R 1, 2 | missing | | | |
| | R 3 | 57 11 4101 | 100 Ω | 5% 0.25W CF | |
| | R 4 | 57 11 4563 | 56 kΩ | " | |
| | R 5 | 57 39 2611 | 2,61 kΩ | 1% 0.25W MF | |
| | R 6, 7 | 57 33 2052 | 20,5 kΩ | " | |
| | R 8 | 57 11 4152 | 1,5 kΩ | 5% 0.25W CF | |
| | R 9 | 57 11 4563 | 56 kΩ | " | |
| | R 10 | 57 11 4152 | 1,5 kΩ | " | |
| | R 11, 12 | 57 11 4702 | 1 kΩ | " | |
| | R 13 | 57 11 4563 | 56 kΩ | " | |
| | R 14 | 57 11 4822 | 8,2 kΩ | " | |
| | R 15 | 57 11 4224 | 220 kΩ | " | |
| | R 16 | 57 11 4753 | 15 kΩ | " | |
| | R 17 | 57 11 4224 | 220 kΩ | " | |
| | R 18 | 57 11 4752 | 15 kΩ | " | |
| | R 19 | 57 11 4272 | 2,7 kΩ | " | |
| | R 20 | 57 11 4222 | 2,2 kΩ | " | |
| | R 21 | 57 11 4470 | 47 Ω | " | |

| INDI | DATE | NAME |
|---|---------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | 5.3.80 | He |
| ⑤ | 13.6.79 | He |
| STUDER PREAMPLIFIER 1.780.835 PAGE 2 OF 3 | | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|-----------|---------------|---------|---------------------------|-----|
| | R 22 | 57 11 4101 | 100 Ω | 5% 0.25W CF | |
| | R 23 | 57 11 4563 | 56 kΩ | " | |
| | R 24 | 57 39 2611 | 2,61 kΩ | 1% 0.25W MF | |
| | R 25 | 57 11 4562 | 5,6 kΩ | 5% 0.25W CF | |
| | R 26 | 57 11 4563 | 56 kΩ | " | |
| | R 27, 28 | 57 11 4332 | 33 kΩ | " | |
| | R 29 | 57 11 4562 | 5,6 kΩ | " | |
| | R 30 | 57 11 4701 | 100 Ω | " | |
| | R 31 | 57 11 4224 | 220 kΩ | " | |
| | R 32 | 57 11 4153 | 15 kΩ | " | |
| | R 33 | 57 11 4224 | 220 kΩ | " | |
| | R 34 | 57 11 4753 | 15 kΩ | " | |
| | R 35 | 57 11 4822 | 8,2 kΩ | " | |
| | R 36...38 | 57 11 4222 | 2,2 kΩ | " | |
| | R 39 | 57 11 4331 | 330 Ω | " | |
| | R 40 | 57 11 4563 | 56 kΩ | " | |
| | R 41 | 57 11 4822 | 8,2 kΩ | " | |
| | R 42 | 57 11 4752 | 15 kΩ | " | |
| | R 43 | 57 11 4272 | 2,7 kΩ | " | |
| | R 44 | 57 11 4101 | 100 Ω | " | |
| | R 45 | 57 11 4222 | 2,2 kΩ | " | |
| | R 46 | 57 11 4470 | 47 Ω | " | |
| | S 1...4 | 1.7.80.205.01 | | | |

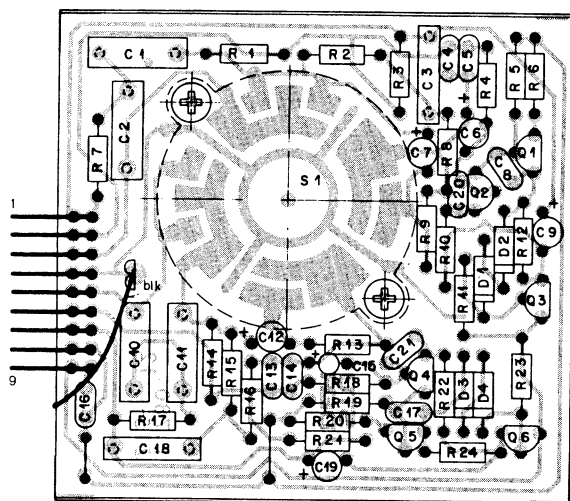
| INDI | DATE | NAME |
|---|---------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | 5.3.80 | He |
| ⑤ | 13.6.79 | He |
| STUDER PREAMPLIFIER 1.780.835 PAGE 3 OF 3 | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|----------|------------|----------------|---------------------------|-----|
| 2 | C1, C2 | 59.12.2154 | 0,15 μ F | 5%, 100 V, MPETP | |
| | C3 | 59.11.6102 | 10 nF | 5%, 400 V, PC | |
| | C4 | 59.34.5471 | 470 pF | 5%, 50 V, CER | |
| | C5 | 59.34.2270 | 27 pF | 5%, 50 V, CER | |
| | C6, C7 | 59.30.6109 | 1 μ F | 20%, 35 V, TA | |
| | C8 | 59.34.2330 | 33 pF | 5%, 50 V, CER | |
| | C9 | 59.30.3330 | 33 μ F | 20%, 10 V, TA | |
| 2 | C10, C11 | 59.12.2154 | 0,15 μ F | 5%, 100 V, MPETP | |
| | C12 | 59.30.6109 | 1 μ F | 20%, 35 V, TA | |
| | C13 | 59.34.5471 | 470 pF | 5%, 50 V, CER | |
| | C14 | 59.34.2270 | 27 pF | 5%, 50 V, CER | |
| | C15 | 59.30.6109 | 1 μ F | 20%, 35 V, TA | |
| | C16 | 59.32.3103 | 10 nF | 80%, 40 V, CER | |
| | C17 | 59.34.2330 | 33 pF | 5%, 50 V, CER | |
| | C18 | 59.11.6102 | 10 nF | 5%, 400 V, PC | |
| | C19 | 59.30.3330 | 33 μ F | 20%, 10 V, TA | |
| 1 | C20, 21 | 59.32.2681 | 680 pF | 10%, 50 V, CER | |
| | D1... D4 | 50.04.0125 | 1N4448 | 100 mA, 75 V, | |
| | | | | | |
| 1 | Q1 | 50.03.0496 | BC 560C | low noise 45V PNP | |
| 1 | Q2 | 50.03.0497 | BC 550C | low noise 45V NPN | |
| 1 | Q3 | 50.03.0496 | BC 560C | | |
| 1 | Q4 | 50.03.0497 | BC 550C | | |
| 1 | Q5, Q6 | 50.03.049 | BC 560C | | |
| | | | | | |
| | R1 | 57.39.1053 | 105 k Ω | 1%, 0,25 W MF | |
| | R2 | 57.39.2802 | 28 k Ω | " | |
| | R3 | 57.11.4103 | 10 k Ω | 5%, 0,25 W CF | |
| | R4 | 57.11.4105 | 1 M Ω | " | |
| | R5 | 57.11.4153 | 15 k Ω | " | |

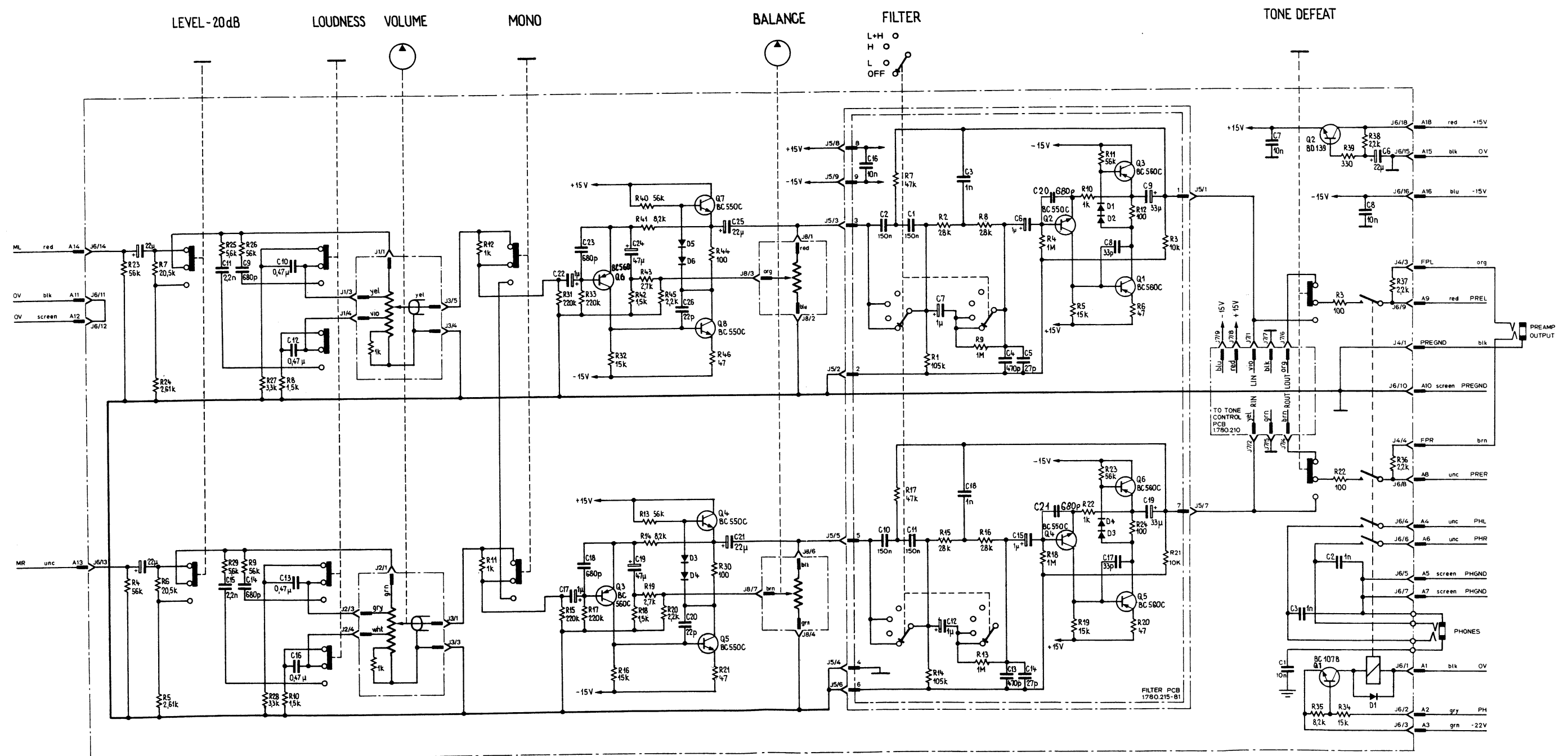
[illegible]

26.08.80

FILTER PCB 1.780.215-81



PREAMPLIFIER PCB 1.780.835



LINE AMPLIFIER AND CONNECTION UNIT 1.780.840

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|--------------|---------------------------|-----|
| C1 | 59.22.2221 | 220 μ F | -20,+50% EL 6,3V | |
| C2,3 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C4,5 | 59.34.4331 | 330 pF | 5% CER 50V | |
| C6,7 | 59.30.6339 | 3,3 μ F | 20% TA 35V | |
| C8 | 59.34.4151 | 150 pF | 5% CER 50V | |
| C9 | 59.34.4560 | 56 pF | " | |
| C10 | 59.34.4151 | 150 pF | " | |
| C11 | 59.31.1224 | 0,22 μ F | 20% MPETP 100V | |
| C12,13 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C14,16 | 59.34.4560 | 56 pF | 5% CER 50V | |
| C17 | 59.34.4151 | 150 pF | " | |
| C18,19 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C20 | 59.22.2221 | 220 μ F | -20,+50% EL 6,3V | |
| C21 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C22,23 | 59.34.4560 | 56 pF | 5% CER 50V | |
| C24,25 | 59.34.4151 | 150 pF | " | |
| C26,28 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C30 | 59.31.1224 | 0,22 μ F | 20% M | |
| C31,32 | 59.22.2221 | 220 μ F | -20,+50% EL 6,3V | |
| C33,34 | 59.32.3103 | 10 nF | -10,+10% CER 50V | |
| C35,36 | 59.11.5102 | 1 nF | 5% MPETP 100V | |
| C37 | 59.33.0183 | 13 pF | 5% CER 50V | |
| C38 | 59.34.2270 | 27 pF | " | |
| C39 | 59.33.0183 | 13 pF | " | |
| C40 | 59.34.4151 | 150 pF | " | |
| D1,2 | 50.04.0125 | 1N4448 | 100 mA 75 V | |

| INDI | DATE | NAME | |
|--|--------|-------|------------------------|
| ① | | EL | : Electrolytic |
| ② | | MPETP | : Metallized Polyester |
| ③ | | CER | : Ceramic |
| ④ | | TA | : Tantalum |
| ⑤ | 7.3.80 | Ha | |
| STUDER LINE AMPLIFIER AND CONNECTION UNIT 1.780.840.00 PAGE 1 OF 4 | | | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|--------------|-------------|---------------------------|----------|
| IC1,2 | 50.03.0103 | LF356N | BIFET | Motorola |
| J1(A) | 54.01.0213 | 12 pole | CIS | AMP |
| J2(B) | 54.01.0308 | 11 pole | CIS | AMP |
| K1,K2 | 56.04.0142 | 24 V | Relais OMRON, NATIONAL | AMP |
| P1,P2 | 54.02.0328 | 2P x 4,5 mm | | |
| L1 | 1.166.137.00 | | Balun | |
| L2,3 | 1.166.135.01 | | Coil | |
| | 61.02.0113 | | Core of Coil | |
| | 61.02.0114 | | Coilform | |
| R1 | 57.11.4333 | 33 K | 5% CF 0,25W | |
| R2 | 57.11.4101 | 100 | " | |
| R3 | 57.11.4182 | 1,8 K | " | |
| R4 | 57.11.4222 | 2,2 K | " | |
| R5 | 57.11.4104 | 100 K | " | |
| R6 | 57.11.4104 | 100 K | " | |
| R7 | 57.11.4104 | 100 K | " | |
| R8 | 57.11.4104 | 100 K | " | |
| R9 | 57.11.4222 | 2,2 K | " | |
| R10 | 57.11.4392 | 3,9 K | " | |
| R11 | 57.11.4222 | 2,2 K | " | |
| R12 | 57.11.4560 | 56 | " | |
| R13 | 57.11.4100 | 10 | " | |
| R14 | 57.11.4101 | 100 | " | |
| R15 | 57.11.4101 | 100 | " | |
| R16 | 57.11.4101 | 100 | " | |
| R17 | 57.11.4101 | 100 | " | |
| R18 | 57.11.4333 | 33 K | " | |

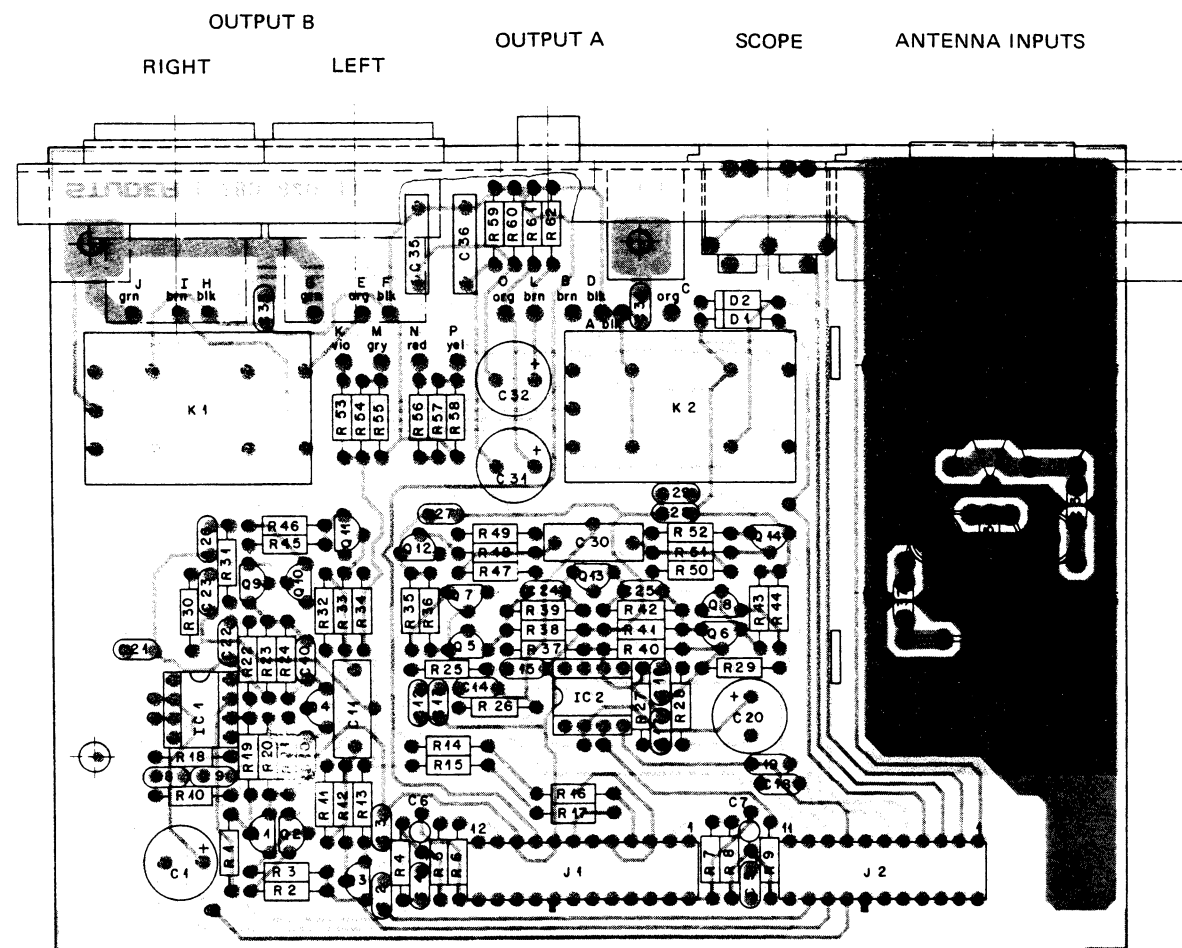
| INDI | DATE | NAME | |
|--|--------|------|---------------|
| ① | | CF | : Carbon Film |
| ② | | | |
| ③ | | | |
| ④ | | | |
| ⑤ | 7.3.80 | Ha | |
| STUDER LINE AMPLIFIER AND CONNECTION UNIT 1.780.840.00 PAGE 2 OF 4 | | | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-----|
| R19 | 57.11.4222 | 2,2 K | 5% CF 0,25W | |
| R20 | 57.11.4561 | 560 | " | |
| R21 | 57.11.4333 | 33 K | " | |
| R22 | 57.11.4222 | 2,2 K | " | |
| R23 | 57.11.4561 | 560 | " | |
| R24 | 57.11.4333 | 33 K | " | |
| R25 | 57.11.4333 | 33 K | " | |
| R26 | 57.11.4753 | 15 K | " | |
| R27 | 57.11.4333 | 33 K | " | |
| R28 | 57.11.4332 | 3,9 K | " | |
| R29 | 57.11.4333 | 33 K | " | |
| R30 | 57.11.4753 | 15 K | " | |
| R31 | 57.11.4333 | 33 K | " | |
| R32 | 57.33.2001 | 2,0 K | 1% HF 0,25W | |
| R33 | 57.11.4560 | 56 | 5% CF 0,25W | |
| R34 | 57.11.4700 | 10 | " | |
| R35 | 57.11.4701 | 100 | " | |
| R36 | 57.11.4182 | 1,8 K | " | |
| R37 | 57.11.4222 | 2,2 K | " | |
| R38 | 57.11.4561 | 560 | " | |
| R39 | 57.11.4333 | 33 K | " | |
| R40 | 57.11.4222 | 2,2 K | " | |
| R41 | 57.11.4561 | 560 | " | |
| R42 | 57.11.4333 | 33 K | " | |
| R43 | 57.11.4182 | 1,8 K | " | |
| R44 | 57.11.4101 | 100 | " | |
| R45 | 57.11.4182 | 1,8 K | " | |
| R46 | 57.11.4701 | 100 | " | |
| R47 | 57.33.2001 | 2,0 K | 1% HF 0,25W | |
| R48 | 57.11.4560 | 56 | 5% CF 0,25W | |

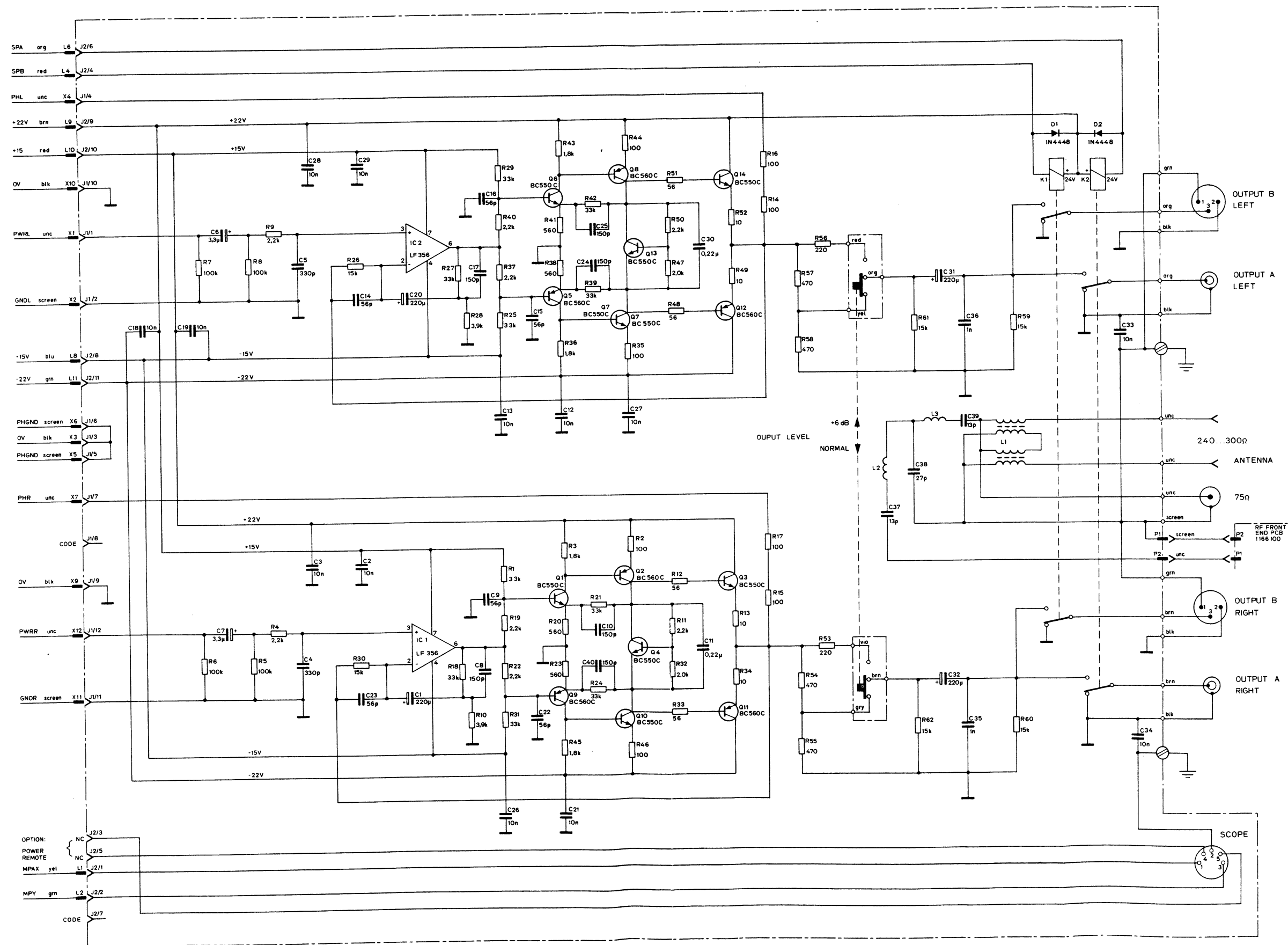
| INDI | DATE | NAME | |
|--|--------|------|--------------|
| ① | | MF | : Metallfilm |
| ② | | | |
| ③ | | | |
| ④ | | | |
| ⑤ | 7.3.80 | Ha | |
| STUDER LINE AMPLIFIER AND CONNECTION UNIT 1.780.840.00 PAGE 3 OF 4 | | | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|--------|---------------------------|------------|
| R49 | 57.11.4700 | 10 | 5% CF 0,25W | |
| R50 | 57.11.4222 | 2,2 K | " | |
| R51 | 57.11.4560 | 56 | " | |
| R52 | 57.11.4700 | 10 | " | |
| R53 | 57.11.4221 | 220 | " | |
| R54 | 57.11.4471 | 470 | " | |
| R55 | 57.11.4471 | 470 | " | |
| R56 | 57.11.4221 | 220 | " | |
| R57 | 57.11.4471 | 470 | " | |
| R58 | 57.11.4471 | 470 | " | |
| R59 | 57.11.4753 | 15 K | " | |
| R60 | 57.11.4753 | 15 K | " | |
| R61 | 57.11.4753 | 15 K | " | |
| R62 | 57.11.4753 | 15 K | " | |
| Q1 | 50.03.0497 | BC550C | BC550C: High gain npn | Motorola |
| Q2 | 50.03.0496 | BC560C | V _{ceo} : 45V | Telefunken |
| Q3 | 50.03.0497 | BC550C | I _c : 100 mA | |
| Q4 | 50.03.0497 | BC550C | P _d : 225 mW | |
| Q5 | 50.03.0496 | BC560C | | |
| Q6 | 50.03.0497 | BC550C | BC550C: High gain pnp | " |
| Q7 | 50.03.0497 | BC550C | | |
| Q8 | 50.03.0496 | BC560C | | |
| Q9 | 50.03.0496 | BC560C | | |
| Q10 | 50.03.0497 | BC550C | | |
| Q11 | 50.03.0496 | BC560C | | |
| Q12 | 50.03.0496 | BC560C | | |
| Q13 | 50.03.0497 | BC550C | | |
| Q14 | 50.03.0497 | BC550C | | |

| INDI | DATE | NAME | |
|--|--------|------|--|
| ① | | | |
| ② | | | |
| ③ | | | |
| ④ | | | |
| ⑤ | 7.3.80 | Ha | |
| STUDER LINE AMPLIFIER AND CONNECTION UNIT 1.780.840.00 PAGE 4 OF 4 | | | |



LINE AMPLIFIER AND CONNECTION UNIT 1.780.840



WIRE HARNESS / REAR 1.780.820

| A PLUGGED TO PREAMPLIFIER PCB 1.780.835 J6 | | | |
|---|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | W3 |
| 2 | PH | gry | S3 |
| 3 | -22V | grn | W10 |
| 4 | PHL | unc | X4 |
| 5 | PHGND | screen | X5 |
| 6 | PHR | unc | X7 |
| 7 | PHGND | screen | X6 |
| 8 | PRER | unc | H6 |
| 9 | PREL | red | H8 |
| 10 | PREGND | screen | H5 |
| 11 | OV | blk | W9 |
| 12 | OV | screen | G13 |
| 13 | MR | unc | G14 |
| 14 | ML | red | G15 |
| 15 | OV | blk | W9 |
| 16 | -15V | blu | W8 |
| 17 | - | - | - |
| 18 | +15V | red | W2 |

| B PLUGGED TO POWER ON/ STANDBY SWITCH | | | |
|---|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | - | vio | I2 |
| 2 | - | vio | I5 |
| 3 | - | org | I6 |
| 4 | - | org | I1 |

| C PLUGGED TO FM DEMODULATOR PCB 1.166.130 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | +15V | red | W2 |
| 2 | - | - | - |
| 3 | +32V | vio | W11 |
| 4 | MPAX | yel | L1 |
| 5 | MPX | wht | P2 |
| 6 | OV | blk | P3 |
| 7 | -15V | blu | W8 |

| D PLUGGED TO STEREO DECODER PCB 1.166.150 J1 | | | |
|---|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | P | grn | S18 |
| 2 | -15V | blu | W8 |
| 3 | +15V | red | W2 |
| 4 | +32V | vio | W11 |
| 5 | R | red | P16 |
| 6 | L | unc | P15 |
| 7 | OV | screen | P14 |
| 8 | - | - | - |
| 9 | MPXM | gry | P12 |
| 10 | ST | yel | S2 |
| 11 | - | - | - |
| 12 | STFI 2 | grn | S12 |
| 13 | STFI 1 | grn | S11 |
| 14 | +6V | org | W1 |
| 15 | MPX | wht | P1 |

| E PLUGGED TO IF AMPLIFIER PCB 1.166.120 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | AGC | brn | M3 |
| 2 | T | wht | Q12 |
| 3 | +32V | vio | W11 |
| 4 | +15V | red | W2 |
| 5 | - | - | - |
| 6 | SS | gry | Q15 |
| 7 | -15V | blu | W8 |

| G PLUGGED TO AUDIO CONNECTION UNIT 1.780.145 J2 | | | |
|--|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | NF1 | brn | S9 |
| 2 | NF2 | red | S8 |
| 3 | NF3 | org | S7 |
| 4 | NF4 | yel | S6 |
| 5 | NF5 | grn | R7 |
| 6 | NF6 | blu | R6 |
| 7 | NF7 | vio | R5 |
| 8 | NF8 | gry | R4 |
| 9 | OV | blk | K10 |
| 10 | - | - | - |
| 11 | TURS | red | K6 |
| 12 | TULS | brn | K11 |
| 13 | OV | screen | A12 |
| 14 | MR | unc | A13 |
| 15 | ML | red | A14 |
| 16 | +32V | vio | W11 |
| 17 | -15V | blu | W8 |
| 18 | +15V | red | W2 |

| H PLUGGED TO AUDIO CONNECTION UNIT 1.780.145 J1 | | | |
|--|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | PWRR | unc | X12 |
| 2 | GNDR | screen | X11 |
| 3 | PWRL | unc | X1 |
| 4 | GNDL | screen | X2 |
| 5 | PREGND | screen | A10 |
| 6 | PRER | unc | A8 |
| 7 | - | - | - |
| 8 | PREL | red | A9 |
| 9 | - | - | - |

| I PLUGGED TO POWER DISTRIBUTION PCB 1.166.206 - 81 J2 | | | |
|--|--------|-------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | - | org | B4 |
| 2 | - | vio | B1 |
| 3 | - | - | - |
| 4 | - | - | - |
| 5 | - | vio | B2 |
| 6 | - | org | B3 |

| K SOLDERED TO CHASSIS CONNECTOR (DOLBY PROC PCB 1.166.400) | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | NOD | wht | S17 |
| 2 | DON | blk | S1 |
| 3 | DDE | blu | R18 |
| 4 | - | - | - |
| 5 | RO | org | P6 |
| 6 | TURS | red | G11 |
| 7 | OV | yel | W5 |
| 8 | - | - | - |
| 9 | -22V | grn | W10 |
| 10 | OV | blk | G9 |
| 10 | OV | blk | P9 |
| 11 | TULS | brn | G12 |
| 12 | LO | grn | P5 |
| 13 | - | - | - |
| 14 | +15V | red | W2 |

| L PLUGGED TO LINE AMPLIFIER AND CONNECTION UNIT 1.780.840 J2 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | MPAX | yel | C4 |
| 2 | MPY | grn | Q14 |
| 3 | - | - | - |
| 4 | SPB | red | S15 |
| 5 | - | - | - |
| 6 | SPB | org | S16 |
| 7 | - | - | - |
| 8 | -15V | blu | W8 |
| 9 | +22V | brn | W6 |
| 10 | +15V | red | W2 |
| 11 | -22V | grn | W10 |

| M PLUGGED TO RF FRONT END PCB 1.166.100 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | +15V | red | W2 |
| 2 | - | - | - |
| 3 | AGC | brn | E1 |
| 4 | -15V | blu | W8 |
| 5 | +32V | vio | W11 |

| O PLUGGED TO FREQUENCY SYNTHESIZER PCB 1.780.151 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | -15V | blu | W8 |
| 2 | CLK | brn | R1 |
| 3 | DLEN 3 | gry | R2 |
| 4 | DATA | yel | R3 |
| 5 | +32V | vio | W11 |
| 6 | - | - | - |
| 7 | LOC | grn | P12 |
| 8 | +6V | org | W1 |
| 9 | +15V | red | W2 |

| P PLUGGED TO METER CIRCUIT AND DEEMPHASIS PCB 1.780.155 J1 | | | |
|--|--------|--------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | MPX | wht | D15 |
| 2 | MPX | wht | C5 |
| 3 | OV | blk | C6 |
| 4 | 25µs | gry | R10 |
| 5 | LO | grn | K12 |
| 6 | RO | org | K5 |
| 7 | 75µs | wht | R9 |
| 8 | - | - | - |
| 9 | OV | blk | K10 |
| 10 | +15V | red | W2 |
| 11 | -15V | blu | W8 |
| 12 | MPXM | gry | D9 |
| 13 | MUT | vio | R11 |
| 14 | OV | screen | D7 |
| 15 | L | unc | D6 |
| 16 | R | red | D5 |

| Q PLUGGED TO METER CIRCUIT AND DEEMPHASIS PCB 1.780.155 J2 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | THSTA | grn | R14 |
| 2 | PSTA | blk | V2 |
| 3 | THSTE | blu | R13 |
| 4 | PSTE | wht | V6 |
| 5 | FH | yel | R16 |
| 6 | FL | red | R17 |
| 7 | MC | brn | S13 |
| 8 | WW | org | S14 |
| 9 | - | - | - |
| 10 | OV | yel | W5 |
| 11 | TM | yel | V1 |
| 12 | T | wht | E2 |
| 13 | SM | blk | U2 |
| 14 | MPY | grn | L2 |
| 15 | SS | gry | E6 |

| R PLUGGED TO MICROCOMPUTER PCB 1.780.260 J5 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | CLK | brn | O2 |
| 2 | DLEN 3 | gry | O3 |
| 3 | DATA | yel | O4 |
| 4 | NF 8 | gry | G8 |
| 5 | NF 7 | vio | G7 |
| 6 | NF 6 | blu | G6 |
| 7 | NF 5 | grn | G5 |
| 8 | - | - | - |
| 9 | 75µs | wht | P7 |
| 10 | 25µs | gry | P4 |
| 11 | MUT | vio | P13 |
| 12 | LOC | grn | O7 |
| 13 | THSTE | blu | Q3 |
| 14 | THSTA | grn | Q1 |
| 15 | - | - | - |
| 16 | FH | yel | O5 |
| 17 | FL | red | Q6 |
| 18 | DDE | blu | K3 |
| 19 | OV | wht | W7 |

| S PLUGGED TO MICROCOMPUTER PCB 1.780.260 J4 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | DON | blk | K2 |
| 2 | ST | yel | D10 |
| 3 | PH | gry | A2 |
| 4 | - | - | - |
| 5 | - | - | - |
| 6 | NF 4 | yel | G4 |
| 7 | NF 3 | org | G3 |
| 8 | NF 2 | red | G2 |
| 9 | NF 1 | brn | G1 |
| 10 | - | - | - |
| 11 | STFI 1 | grn | D13 |
| 12 | STFI 2 | grn | D12 |
| 13 | MC | brn | Q7 |
| 14 | WW | org | Q8 |
| 15 | SPB | red | L4 |
| 16 | SPA | org | L6 |
| 17 | NOD | wht | K1 |
| 18 | P | grn | D1 |

| T PLUGGED TO MICROCOMPUTER PCB 1.780.260 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | OV | blk | W~3 |
| 2 | 19V~ | gry | W~1 |
| 3 | 19V~ | gry | W~1 |
| 4 | - | - | - |
| 5 | +22V | brn | W6 |
| 6 | +6V | org | W1 |
| 7 | +15V | red | W2 |
| 8 | OV | yel | W5 |
| 9 | -15V | blu | W8 |
| 10 | +6,2V | gry | W4 |

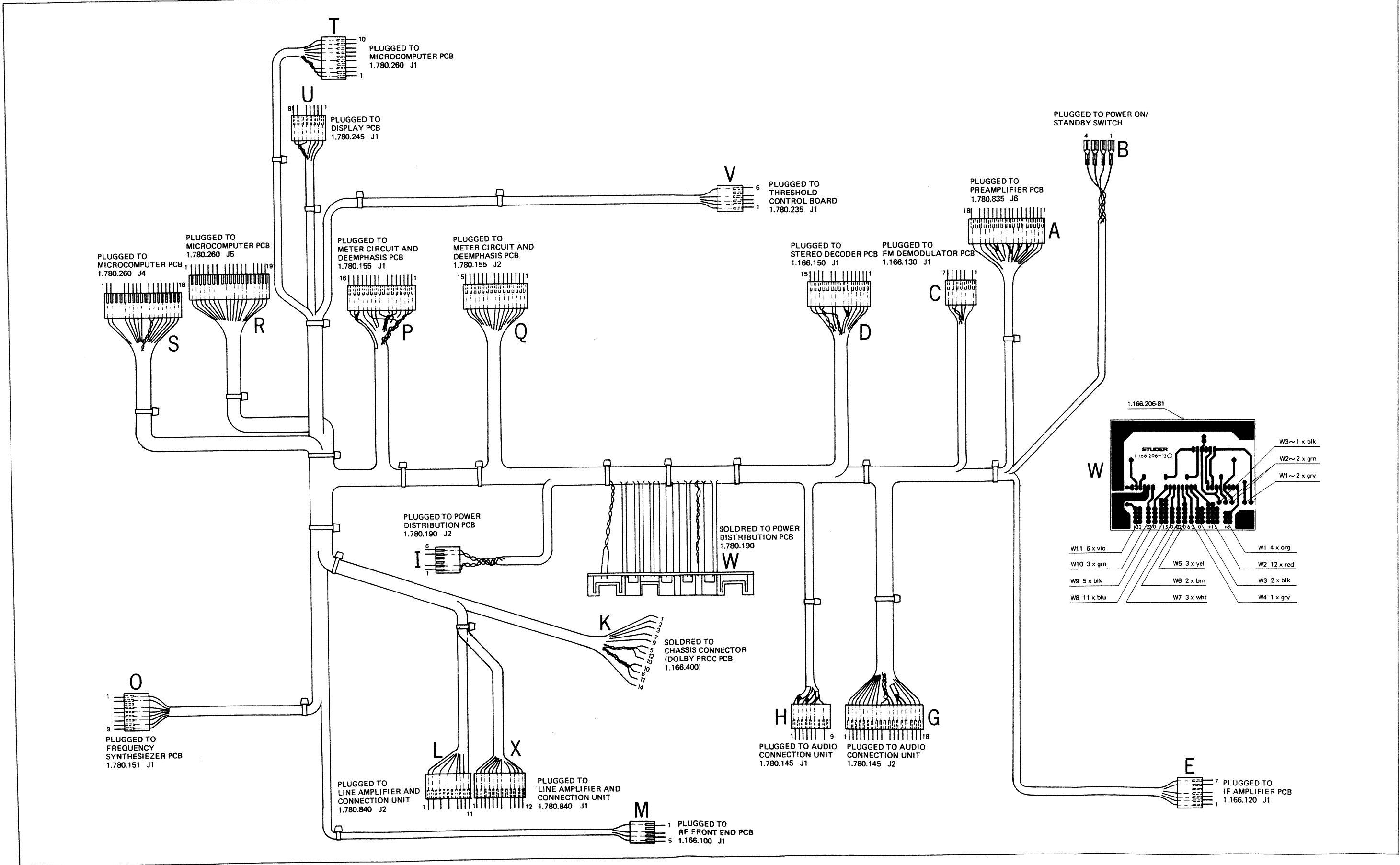
| U PLUGGED TO DISPLAY PCB 1.780.245 J1 | | | |
|--|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | -15V | blu | W8 |
| 2 | SM | blk | Q13 |
| 3 | OV | wht | W7 |
| 4 | +6V | org | W1 |
| 5 | OV | blk | W3 |
| 6 | - | - | - |
| 7 | 11V~ | grn | W~2 |
| 8 | 11V~ | grn | W~2 |

| V PLUGGED TO THRESHOLD CONTROL BOARD 1.780.235 J1 | | | |
|---|--------|-------|-----|
| PIN | SIGNAL | COLOR | TO |
| 1 | TM | yel | Q11 |
| 2 | PSTA | blk | Q2 |
| 3 | +15V | red | W2 |
| 4 | OV | wht | W7 |
| 5 | - | - | - |
| 6 | PSTE | wht | Q4 |

| W SOLDERED TO POWER DISTRIBUTION PCB 1.166.206 - 81 | | | |
|---|--------|-------|---|
| PIN | SIGNAL | COLOR | TO |
| ~1 | 19V~ | gry | T2, T3 |
| ~2 | 11V~ | grn | U7, U8 |
| ~3 | OV | blk | T1 |
| 1 | +6V | org | D14, O8, T6, U4 |
| 2 | +15V | red | A18, C1, D3, E4, G18, K14, L10, M1, O9, P10, T7, V3 |
| 3 | OV | blk | A1, U5 |
| 4 | +6,2V | gry | T10 |
| 5 | OV | yel | K7, Q10, T8 |
| 6 | +22V | brn | L9, T5 |
| 7 | OV | wht | U3, V4, R19 |
| 8 | -15V | blu | A16, C7, D2, E7, G17, L8, M4, O1, P11, T9, U1 |
| 9 | OV | blk | A11, A15, X3, X9, X10 |
| 10 | -22V | grn | A3, K9, L11 |
| 11 | +32V | vio | C3, D4, E3, G16, M5, O5 |

| X PLUGGED TO LINE AMPLIFIER AND CONNECTION UNIT 1.780.840 J1 | | | |
|--|--------|--------|----|
| PIN | SIGNAL | COLOR | TO |
| 1 | PWRL | unc | H3 |
| 2 | GNDL | screen | H4 |
| 3 | OV | blk | W9 |
| 4 | PHL | unc | A4 |
| 5 | PHGND | screen | A5 |
| 6 | PHGND | screen | A7 |
| 7 | PHR | unc | A6 |
| 8 | - | - | - |
| 9 | OV | blk | W9 |
| 10 | OV | blk | W9 |
| 11 | GNDR | screen | H2 |
| 12 | PWRR | unc | H1 |

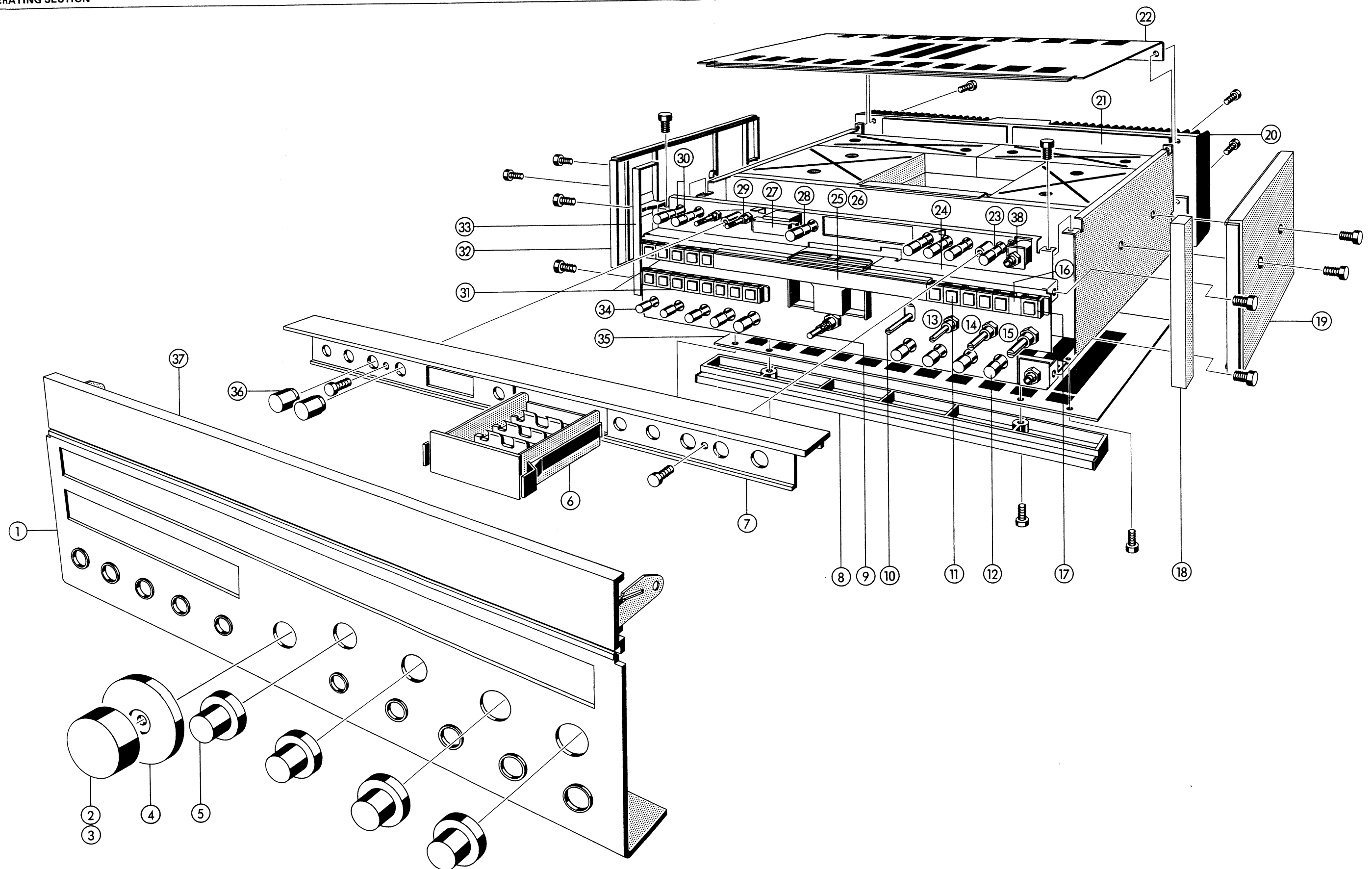
WIRE HARNESS / REAR 1.780.820



VOCABULARY OF ABBREVIATIONS

| | | | |
|------------|---|----------|--|
| A | 3 - BIT MULTIPLEXER | PHO | PUSH BUTTON PHONO |
| AGC | AUTOMATIC GAIN CONTROL (GAIN CONTROL VOLTAGE) | PHR | PHONE RIGHT (OUTPUT SPEAKER PROTECTION UNIT) |
| AUX | PUSH BUTTON AUXILIARY | PONL | POWER ON LEFT |
| B | 3 - BIT MULTIPLEXER | PONR | POWER ON RIGHT |
| C | 3 - BIT MULTIPLEXER | PREL | PREAMPLIFIER OUTPUT LEFT |
| CHTM | PUSH BUTTON CHANGE TUNING MODE | PRER | PREAMPLIFIER OUTPUT RIGHT |
| CLCK | CLOCK SA 1060/ SA 1056 | PSTA | POTENTIOMETER THRESHOLD STATION |
| DATA | DATA SIGNAL | PSTE | POTENTIOMETER THRESHOLD STEREO |
| DC | DC AT POWER AMPLIFIER OUTPUT | PWRL | POWER LEFT (AUDIO SIGNAL INPUT POWER AMPLIFIER) |
| DDE | DOLBY DEEMPHASIS | PWRR | POWER RIGHT (AUDIO SIGNAL INPUT POWER AMPLIFIER) |
| DLEN 1...3 | DATA LINE ENABLE 1...3 | R | RIGHT OUTPUT (AUDIO SIGNAL STEREO DECODER) |
| DON | DOLBY DECODER ON | RECOFF | PUSH BUTTON RECORD OUTPUT / OFF |
| DOWN | PUSH BUTTON AUTO TUNING / FREQUENCY STEP DOWN | RECSET | PUSH BUTTON RECORD OUTPUT / SET |
| FH | SIGNAL FREQUENCY HIGH | RIN | RIGHT INPUT (AUDIO SIGNAL TONE CONTROL) |
| FL | SIGNAL FREQUENCY LOW | RO | RIGHT OUTPUT (AUDIO SIGNAL METER AND DEEMPHASIS PCB) |
| FPL | FRONT PANEL LEFT (PREAMPLIFIER OUTPUT) | ROUT | RIGHT OUTPUT (AUDIO SIGNAL TONE CONTROL) |
| FPR | FRONT PANEL RIGHT (PREAMPLIFIER OUTPUT) | SM | SIGNAL METER (SIGNAL VOLTAGE) |
| GL | GROUND LEFT (TONE CONTROL) | SPA | CONTROL SIGNAL OF SPEAKER-RELAY A |
| GNDL | GROUND LEFT (POWER AMPLIFIER) | SPB | CONTROL SIGNAL OF SPEAKER-RELAY B |
| GNDR | GROUND RIGHT (POWER AMPLIFIER) | SS | SIGNAL STRENGTH (SIGNAL VOLTAGE) |
| GR | GROUND RIGHT (TONE CONTROL) | ST | STEREO DECODER ON |
| H | OVERHEAT | STFI 1 | STEREO FILTER 1 ON |
| HIBL | PUSH BUTTON HIGH BLEND | STFI 2 | STEREO FILTER 2 ON |
| HI-IMP. | HIGH IMPEDANCE | STLY | PUSH BUTTON STEREO ONLY |
| KS 0...9 | KEYBOARD 0...9 | STME | PUSH BUTTON STORE MEMORY |
| L | LEFT OUTPUT (AUDIO SIGNAL STEREO DECODER) | T | DISCRIMINATOR VOLTAGE |
| LIN | LEFT INPUT (AUDIO SIGNAL TONE CONTROL) | TA 1 | PUSH BUTTON TAPE 1 |
| LO | LEFT OUTPUT (AUDIO SIGNAL METER AND DEEMPHASIS PCB) | TA 2 | PUSH BUTTON TAPE 2 |
| LOC | SYNTHESIZER LOCK IN | THSTA | THRESHOLD STATION |
| LOUT | LEFT OUTPUT (AUDIO SIGNAL TONE CONTROL) | THSTE | THRESHOLD STEREO |
| LSNE | PUSH BUTTON LAST STATION / NEW ENTRY | TM | TUNING METER |
| MC | METER CONTROL | TSPA | PUSH BUTTON SPEAKER A ON |
| ML | MONITOR LEFT (AUDIO SIGNAL OUTPUT AUDIO CONNECTION UNIT) | TSPB | PUSH BUTTON SPEAKER B ON |
| MOFF | PUSH BUTTON MUTING OFF | TU | PUSH BUTTON TUNER |
| MONO | PUSH BUTTON FM MONO | TULS | TUNER LEFT SINGLE (AUDIO SIGNAL OUTPUT DOLBY PROCESSOR PCB) |
| MPAX | MULTIPATH X-OUTPUT | TURS | TUNER RIGHT SINGLE (AUDIO SIGNAL OUTPUT DOLBY PROCESSOR PCB) |
| MPXM | MULTIPLEX MUTING | T 75 µS | PUSH BUTTON DEEMPHASIS 75 µS |
| MPX | MULTIPLEX SIGNAL | UP | PUSH BUTTON AUTO TUNING / FREQUENCY STEP UP |
| MPY | MULTIPATH Y-OUTPUT | WW | COMPERATOR WINDOW WIDE |
| MR | MONITOR RIGHT (AUDIO SIGNAL OUTPUT AUDIO CONNECTION UNIT) | Y-OSC 1 | LOCAL OSCILLATOR VOLTAGE 1 |
| MUT | CONTROL SIGNAL MUTING | Y-OSC 2 | LOCAL OSCILLATOR VOLTAGE 2 |
| NF 1...8 | AF-SWITCH CONTROL SIGNAL 1...8 | Y-TUNING | TUNING VOLTAGE |
| NOD | NO DOLBY | Y 1 - IF | INTERMEDIATE FREQUENCY 1 |
| NR | PUSH BUTTON NOISE REDUCTION | Y 2 - IF | INTERMEDIATE FREQUENCY 2 |
| OUTL | OUTPUT LEFT (POWER AMPLIFIER) | Z | ROTOR CONTROL (OUTPUT SIGNAL) |
| OUTR | OUTPUT RIGHT (POWER AMPLIFIER) | 25 µS | DEEMPHASIS 25 µS ON |
| P | PILOT RESENT | 75 µS | DEEMPHASIS 75 µS ON |
| PH | PHONES ON | - UBAT | - BATTERY VOLTAGE |
| PHGND | PHONE GROUND | + UBAT | + BATTERY VOLTAGE |
| PHL | PHONE LEFT (OUTPUT SPEAKER PROTECTION UNIT) | | |

OPERATING SECTION



OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|------------------------------------|
| 01 | 1 | 76075 | 1.780.290.00 | Bedienungsplatte |
| | | | | Operating panel |
| | | | | Plaque de commande |
| 02 | 1 | 76004 | 1.780.010.05 | Drehknopf mit Befestigungsschraube |
| | | | | Knob with fixing screw |
| | | | | Bouton avec vis de fixation |
| dazu | 1 | 73437 | 21.59.5352 | Gewindestift M3x4 |
| to above | | | | Threaded pin M3x4 |
| avec | | | | Cheville filetée M3x4 |
| 03 | 1 | 76001 | 1.780.010.01 | Drehknopf mit Steckbefestigung |
| | | | | Knob with fixing clamp |
| | | | | Bouton avec vis de fixation |
| 04 | 1 | 76002 | 1.780.010.02 | Drehscheibe (Balanceregler) |
| | | | | Rotating disk (balance control) |
| | | | | Disque de balance |
| 05 | 4 | 74513 | 1.177.100.10 | Drehknopf |
| | | | | Knob |
| | | | | Bouton |
| 06 | 1 | 76066 | 1.780.250.00 | Batteriefach |
| | | | | Battery compartment |
| | | | | Casier à piles |
| 07 | 1 | 76073 | 1.780.281.00 | Abschlussleiste kompl. |
| | | | | Cover strip |
| | | | | Cornière |
| dazu | 2 | 74049 | 1.010.003.21 | Schraube M4x6 |
| to above | | | | Screw M4x6 |
| avec | | | | Vis M4x6 |
| 08 | 1 | 74112 | 1.068.711.00 | Fussleiste vorn |
| | | | | Toe rail |
| | | | | Pieds frontal |
| dazu | 2 | 70067 | 21.26.0457 | Schraube M4x12 |
| to above | | | | Screw M4x12 |
| avec | | | | Vis M4x12 |

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|--|
| 09 | 1 | 76037 | 1.780.195.00 | Doppel - Potentiometer |
| | | | | Twin potentiometer |
| | | | | Potentiomètre double |
| 10 | 1 | 74274 | 1.011.307.00 | Drehschalter 4 - Kontakt |
| | | | | Rotary switch 4 pins |
| | | | | Sélecteur rotatif 4 contacts |
| 11 | 1 | 76053 | 1.780.230.00 | Tastenprint (rechts,Eingangswahl) |
| | | | | Push button p.c. board (right,input selection) |
| | | | | Plaquette des touches (droite,sélecteur d'entée) |
| | | | | bestehend aus / comprising / y compris |
| | 1 | 74265 | 1.011.201.30 | Tastensatz "1" bis "5" |
| | | | | Set of buttons "1" to "5" |
| | | | | Jeu des touches "1" à "5" |
| | 1 | 74225 | 1.011.205.06 | Drucktastengehäuse (5 Tasten) |
| | | | | Push button housing (5 buttons) |
| | | | | Boîtier des touches (5 touches) |
| | | 74227 | 1.011.205.05 | Isolierstreifen |
| | | | | Insulating strip |
| | | | | Bande isolante |
| | 5 | 74226 | 1.011.205.02 | Schnappfederstreifen (5 Tasten) |
| | | | | Snap spring strip (5 buttons) |
| | | | | Bande de ressort à déclic |
| | 5 | 74232 | 1.011.220.01 | Zylinderstift |
| | | | | Cylinder pin |
| | | | | Cheville |
| | 5 | 74233 | 1.011.220.02 | Zwischenlage Gummi |
| | | | | Intermediate layer (rubber) |
| | | | | Entretoise |
| 12 | 1 | 76040 | 1.780.205.01 | Vierer Tastenschalter S1 - 4 |
| | | | | Push button unit S1 - 4 |
| | | | | Clavier à 4 touches S1 - 4 |
| dazu | 4 | 72105 | 1.166.090.09 | Taste |
| to above | | | | Button |
| avec | | | | Touche |

OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|--|
| 13 | 1 | 76044 | 1.780.210.02 | Bass Regler R2 |
| | | | | Potentiometer "Bass" R2 |
| | | | | Potentiomètre "Bass" R2 |
| 14 | 1 | 76045 | 1.780.210.03 | Presence Regler R6 |
| | | | | Potentiometer "Presence" R6 |
| | | | | Potentiomètre "Presence" R6 |
| 15 | 1 | 76043 | 1.780.210.01 | Treble Regler R12 |
| | | | | Potentiometer "Treble" R12 |
| | | | | Potentiomètre "Treble" R12 |
| 16 | 1 | 76018 | 1.780.090.25 | Ausgleichsstück |
| | | | | Dummy plate |
| | | | | Cale |
| 17 | 1 | 74273 | 1.011.231.00 | Netzschalter |
| | | | | Power switch |
| | | | | Interrupteur secteur |
| | | | | bestehend aus / comprising / y compris |
| | 1 | 74272 | 1.011.230.10 | Drucktaste |
| | | | | Push button |
| | | | | Touche |
| 18 | 1 | 74510 | 1.177.100.06 | Seitenteil rechts |
| | | | | Side part right |
| | | | | Côté droit |
| dazu | 2 | 73416 | 21.26.0454 | Schraube M4x6 |
| to above | | | | Screw M4x6 |
| avec | | | | Vis M4x6 |
| 19 | 1 | 72103 | 1.166.010.09 | Seitenabdeckung |
| | | | | Side panel |
| | | | | Partie latérale |
| dazu | 2 | 73701 | 1.010.001.21 | Schraube M4x10 |
| to above | | | | Screw M4x10 |
| avec | | | | Vis M4x10 |
| 20 | 1 | | 1.780.100.03 | Kühlkörper |
| | | | | Heat sink |
| | | | | Radiateur |

OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|--|
| dazu | 6 | 70067 | 21.26.0457 | Schraube M4x12 |
| to above | | | | Screw M4x12 |
| avec | | | | Vis M4x12 |
| 21 | 2 | 76022 | 1.780.105.00 | Endstufen-Print kompl. |
| | | | | Power amplifier p.c. board compl. |
| | | | | Etage de puissance |
| 22 | 1 | 76072 | 1.780.275.00 | Deckblech |
| | | | | Cover plate |
| | | | | Plaque de recouvrement |
| dazu | 2 | 70067 | 21.26.0457 | Schraube M4x12 |
| to above | | | | Screw M4x12 |
| avec | | | | Vis M4x12 |
| 23 | 1 | 76059 | 1.789.240.01 | Vierer Tastenschalter S1 - 4 |
| | | | | Push button unit S1 - 4 |
| | | | | Clavier à 4 touches S1 - 4 |
| dazu | 3 | 76008 | 1.780.090.04 | Knopf (hinter Abdeckklappe, grau) |
| to above | | | | Knob (behind front flap, grey) |
| avec | | | | Bouton derrière le cache (gris) |
| | 1 | 76017 | 1.780.090.23 | Knopf (hinter Abdeckklappe, rot) |
| | | | | Knob (behind front flap, red) |
| | | | | Bouton derrière le cache (rouge) |
| 24 | 1 | | 1.780.200.00 | Bedienungschassis (ohne Elemente) |
| | | | | Control chassis (without controls) |
| | | | | Châssis de commande (sans éléments) |
| dazu | 4 | 73417 | 21.26.0455 | Schraube M4x8 |
| to above | | | | Screw M4x8 |
| avec | | | | Vis M4x8 |
| 25 | 1 | 76005 | 1.780.090.01 | Fenster |
| | | | | Window |
| | | | | Fenêtre |
| | | | | bestehend aus / comprising / y compris |
| | 1 | 76006 | 1.780.090.02 | Rotfilter lang |
| | | | | Red abstracting filter, long |
| | | | | Filtre rouge, grand |

OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|--|
| | 1 | 76007 | 1.780.090.03 | Rotfilter,kurz |
| | | | | Red abstracting filter,short |
| | | | | Filtre rouge,petit |
| | 1 | 76065 | 1.780.245.00 | Anzeigeeinheit |
| | | | | Display unit |
| | | | | Unité d'affichage |
| 26 | 1 | 76065 | 1.780.245.05 | Signal Instrument |
| | | | | Instrument SIGNAL STRENGTH |
| | | | | Instrument SIGNAL STRENGTH |
| 27 | 1 | 76009 | 1.780.090.05 | Abstimm-Instrument |
| | | | | Tuning meter |
| | | | | Instrument "TUNING" |
| 28 | 1 | 76056 | 1.780.235.02 | Schalter TUNING MODE |
| | | | | Push button TUNING MODE |
| | | | | Touche TUNING MODE |
| 29 | 2 | 76057 | 1.780.235.03 | Regler - STEREO / STATION |
| | | | | Potentiometer STEREO / STATION |
| | | | | Potentiomètre STEREO / STATION |
| 30 | 1 | 76055 | 1.780.235.01 | DOPPEL-Schalter DEEMPHASIS / MEMORY |
| | | | | Push button unit 2 DEEMPHASIS / MEMORY |
| | | | | Clavier à 2 touches DEEMPHASIS / MEMORY |
| dazu | 1 | 76008 | 1.780.090.04 | Knopf (hinter Abdeckklappe,grau) |
| to above | | | | Knob (behind front flap,grey) |
| avec | | | | Bouton derrière le cache (gris) |
| | 2 | 76017 | 1.780.090.23 | Knopf (hinter Abdeckklappe,rot) |
| | | | | Knob (behind front flap,red) |
| | | | | Bouton derrière le cache (rouge) |
| 31 | 1 | 76052 | 1.780.225.00 | Tastenprint kompl. (Senderwahl) |
| | | | | Push button p.c.board kompl.(station selection) |
| | | | | Plaquette des touches kompl.(sélecteur de station) |
| | | | | bestehend aus / comprising / y compris |
| | 9 | 74264 | 1.011.201.29 | Drucktasten (Senderwahl) |
| | | | | Push buttons (station selection) |
| | | | | Touches (sélecteur de station) |

OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|-------|-----|--------------|----------------|---------------------------------------|
| | 1 | 74263 | 1.011.201.27 | UPPER/LOWER - Taste |
| | | | | UPPER/LOWER button |
| | | | | Touche UPPER/LOWER |
| | 1 | 74267 | 1.011.201.32 | LAST STATION / NEW ENTRY - Taste |
| | | | | LAST STATION / NEW ENTRY - button |
| | | | | Touche LAST STATION / NEW ENTRY |
| | 2 | 74266 | 1.011.201.31 | AUTO TUNING - Taste |
| | | | | AUTO TUNING button |
| | | | | Touche AUTO TUNING |
| | 2 | 74225 | 1.011.205.06 | Drucktastengehäuse (5 Tasten) |
| | | | | Push button housing (5 buttons) |
| | | | | Boîtier des touches (5 touches) |
| | 1 | 74253 | 1.011.203.04 | Drucktastengehäuse (3 Tasten) |
| | | | | Push button housing (3 buttons) |
| | | | | Boîtier des touches (3 touches) |
| | 2 | 74226 | 1.011.205.02 | Schnappfederstreifen (5 Tasten) |
| | | | | Snap spring strip (5 buttons) |
| | | | | Bande de ressort à déclic (5 touches) |
| | 2 | 74227 | 1.011.205.05 | Isolierstreifen |
| | | | | Insulating strip |
| | | | | Bande isolante |
| | 1 | 74254 | 1.011.203.02 | Schnappfederstreifen (3 Tasten) |
| | | | | Snap spring strip (3 buttons) |
| | | | | Bande de ressort à déclic (3 touches) |
| | 1 | 74255 | 1.011.203.03 | Isolierstreifen |
| | | | | Insulating strip |
| | | | | Bande isolante |
| | 13 | 74232 | 1.011.220.01 | Zylinderstift |
| | | | | Cylinder pin |
| | | | | Cheville |
| | 13 | 74233 | 1.011.220.02 | Zwischenlage Gummi |
| | | | | Intermediate layer (rubber) |
| | | | | Entretoise |
| | | | | |

OPERATING SECTION

| INDEX | QTY | ORDER NUMBER | ARTICLE NUMBER | PART NAME |
|----------|-----|--------------|----------------|--|
| 32 | 1 | 72103 | 1.166.010.09 | Seitenabdeckung |
| | | | | Side panel |
| | | | | Paroi |
| dazu | 2 | 73701 | 1.010.001.21 | Schraube M4x10 |
| to above | | | | Screw M4x10 |
| avec | | | | Vis M4x10 |
| 33 | 1 | 74509 | 1.177.100.05 | Seitenteil, links |
| | | | | Side part, left |
| | | | | Côté gauche |
| 34 | 1 | 76051 | 1.780.220.01 | Fünfer Tastenschalter FM-Empfänger |
| | | | | Push button unit 5 "FM-MODE" |
| | | | | Clavier à 5 touches "FM-MODE" |
| | | | | bestehend aus / comprising / y compris |
| | 5 | 72105 | 1.166.090.09 | Taste (Knopf) |
| | | | | Button (knob) |
| | | | | Touche (bouton) |
| 35 | 1 | 76074 | 1.780.285.00 | Boden kompl. |
| | | | | Bottom compl. |
| | | | | Fond compl. |
| 36 | 2 | 72101 | 1.166.010.07 | Drehknopf |
| | | | | Knob |
| | | | | Bouton |
| 37 | 1 | 76071 | 1.780.270.00 | Abdeckplatte kompl. |
| | | | | Front flap compl. |
| | | | | Clapet compl. |
| 38 | 1 | | 1.780.265.00 | Jackbuchse kompl. |
| | | | | Jack receptacle compl. |
| | | | | Prise Jack compl. |
| | | | | |
| | | | | |
| | | | | B739: gleich wie B780 jedoch: |
| | | | | B739: like B780 except |
| | | | | B739: comme B780 excepté |
| | | | | |

[illegible]

7. TECHNISCHE DATEN

7.1 Tunerteil B780/B739

Empfangsbereich:

87,50 ... 107,975MHz, durchstimbar über
quarzgenauen Frequenzsynthesizer

- a) direkte Frequenzeingabe über Keyboard
im 25kHz-Kanalraster
- b) Aufwärts- und Abwärts-Schritte im 25
kHz-Kanalraster
- c) automatischer Suchlauf (Aufwärts und
Abwärts) im 50kHz-Kanalraster

Sendervorwahl:

18 Stationen im 25kHz-Kanalraster, quartzgenau
programmierbar

Genauigkeit der Quarzreferenz:

$\pm 0,0025\%$

Anzeigen:

für Frequenz: 5stellig
für TUNING MODE: 2stellig

Messinstrumente:

für Signalstärke:

log. 0 ... 100dB μ V (0dB μ V $\hat{=}$ 1 μ V/75
Ohm)

log. 10 ... 110dBf (0dBf $\hat{=}$ 10-15 Watt)

für Abstimmung:

lin. 20kHz/mm

Grenzempfindlichkeit:

0,7 μ V, am 75-Ohm-Eingang für einen Signal-/
Rauschabstand von 26dB bezogen auf 40kHz
Hub, gemessen am Ausgang TAPE OUT 1

Empfindlichkeit:

Mono: 2 μ V; Stereo: 20 μ V am 75 Ohm-Eingang
für einen Signal-/Rauschabstand von 46dB be-
zogen auf 40kHz Hub, gemessen am Ausgang
TAPE OUT 1

Spiegelfrequenzdämpfung:

106dB; $\Delta f = 2 \times f_{ZF}$ (22MHz)

Zwischenfrequenzdämpfung:

110dB; f_{ZF} (11MHz)

Nebenwellendämpfung:

106dB; $\Delta f = f_{ZF}/2$ (5,5MHz)

Übernahmeverhältnis:

0,8dB, gemessen mit 40kHz Hub, 30dB Signal-/
Rauschabstand und 1mV/75 Ohm

Trennschärfe:

80dB, Nutzsignal 100 μ V an 75 Ohm, Störsignal
1mV an 75 Ohm moduliert mit 40kHz Hub
 $\Delta f = 300$ kHz

7. TECHNICAL DATA

7.1 Tuner section B780/B739

Tuning range:

87.50 ... 107.975MHz, accurately tunable with
quartz-controlled frequency synthesizer

- a) Direct frequency selection via keyboard
with 25kHz channel spacing
- b) Incremental/decremental tuning in 25
kHz steps
- c) Automatic scanning (up and down) with
50kHz channel spacing

Station preselection:

18 stations, 25kHz channel spacing, accurately
programmable with quartz-controlled frequency
synthesizer

Accuracy of quartz reference:

$\pm 0.0025\%$

Displays:

For frequency: 5 positions
For TUNING MODE: 2 positions

Tuning meters:

For signal strength:

log. 0 ... 100 dB μ V (0dB μ V $\hat{=}$ 1 μ V/75
ohms)

log. 10 ... 110 dBf (0dBf $\hat{=}$ 10-15 Watt)

For tuning:

lin. 20kHz/mm

Absolute sensitivity:

0,7 μ V at 75 ohms input for a signal-to-noise
ratio of 26dB relative to 40kHz deviation, meas-
ured at output TAPE OUT 1

Sensitivity:

Mono: 2 μ V; stereo: 20 μ V at 75 ohms input for
a signal-to-noise ratio of 46dB relative to 40kHz
deviation, measured at output TAPE OUT 1

Image rejection:

106dB; $\Delta f = 2 \times f_{IF}$ (22MHz)

IF rejection:

110dB; f_{IF} (11MHz)

Spurious response rejection:

106dB; $\Delta f = f_{IF}/2$ (5.5MHz)

Capture ratio:

0,8dB, measured with 40kHz deviation, 30dB
signal-to-noise ratio and 1mV/75 ohms

Selectivity:

80dB, useful signal 100 μ V into 75 ohms, noise
signal 1mV into 75 ohms, modulated with 40kHz
deviation $\Delta f = 300$ kHz

7. CARACTERISTIQUES TECHNIQUES

7.1 Section Tuner

Gamme de fréquence:

87,50 ... 107,975MHz, accord par synthétiseur
de fréquence à quartz

- a) donnée directe de la fréquence au
clavier, par pas de 25kHz
- b) défilement des fréquences, dans un sens
ou dans l'autre, par pas de 25kHz
- c) recherche automatique (dans un sens ou
dans l'autre) par pas de 50Hz

Préselection:

18 stations programmables par pas de 25kHz
définis par quartz

Précision de la base de temps à quartz:

$\pm 0,0025\%$

Affichages:

pour la fréquence: 5 digits
pour le mode d'accord: 2 digits

Instruments de mesure:

Intensité du signal:

log. 0 ... 100dB μ V (0dB μ V $\hat{=}$ 1 μ V/75
ohms)

log. 10 ... 110dBf (0dBf $\hat{=}$ 10-15 watts)

Centrage d'accord:

lin. 20kHz/mm

Sensibilité limite:

0,7 μ V, mesurée à l'entrée 75 ohms pour un rap-
port signal/bruit de 26dB avec une excursion
de 40kHz et à la sortie TAPE OUT 1

Sensibilité:

Mono: 2 μ V, Stéréo 20 μ V, mesurée à l'entrée
75 ohms pour un rapport signal/bruit de 46dB
avec une excursion de 40kHz et à la sortie TAPE
OUT 1

Réjection image:

106dB, $\Delta f = 2 \times f_{ZF}$ (22MHz)

Réjection de la fréquence intermédiaire:

110dB, f_{ZF} (11MHz)

Affaiblissement d'intermodulation:

106dB, $\Delta f = f_{ZF}/2$ (5,5MHz)

Rapport de caputre:

0,8dB, mesuré avec une excursion de 40kHz, un
rapport signal/bruit de 30dB pour 1mV/75
ohms

Sélectivité:

80dB, signal utile 100 μ V/75 ohms, signal per-
turbateur 1mV/75 ohms modulé avec 40kHz
d'excursion ($\Delta f = 300$ kHz)

AM-Unterdrückung:

70dB, bezogen auf 75kHz Hub, 30% AM-Modulation, Frequenz 400Hz und 1mV/75 Ohm Antennenspannung

Frequenzgang:

30 Hz ... 15kHz \pm 1dB, gemessen mit 40kHz Hub und 1mV/75 Ohm Antennenspannung

Deemphasis:

umschaltbar 50-75 μ s, mit eingebautem Rauschunterdrückungssystem (Option) 25-50-75 μ s

NF-Verzerrungen:

> 0,075%, gemessen mit 40kHz Hub 1kHz, Mono und Stereo L = R, 1mV/75 Ohm

Fremdspannungsabstand:

75dB, 30 Hz ... 15kHz linear, gemessen bei 1mV/75 Ohm bezogen auf 75kHz Hub

Stereo-Übersprechdämpfung:

42dB, gemessen bei 1kHz, 40kHz Hub und 1mV/75 Ohm. Mit eingeschalteter Taste HIGH BLEND: Geräuschabstandsverbesserung 10dB bei 50 μ V/75 Ohm (DIN 45405): 7dB

Pilotton- und Hilfsträgerdämpfung:

70dB, (inkl. Oberwellen) 15kHz ... 300 kHz linear, bezogen auf 75kHz Hub gemessen mit 1mV/75 Ohm

Umschaltsschwelle STATION:

2 ... 20 μ V an 75 Ohm, einstellbar mit Regler THRESHOLD STATION

Umschaltsschwelle STEREO:

5 ... 500 μ V an 75 Ohm, einstellbar mit Regler THRESHOLD STEREO

Antenneneingänge:

60 ... 75 Ohm, koaxial, nach DIN 45325
240 ... 300 Ohm, symmetrisch, nach DIN 45316

Oszilloskopausgang: (Analyse von Mehrwegeempfangsstörungen mit einem Oszilloskop)

vertikal (Y): 50mV an 75 Ohm HF \approx 1V
horizontal (X): 75kHz Hub \approx 2,8V_{SS}
Buchse nach DIN 41524

NF-Ausgangswerte Tuner:

75kHz Hub/400Hz ergibt 0,7V am Ausgang TAPE 1
15kHz Hub/400Hz ergibt 70Watt/8 Ohm am Ausgang SPEAKERS A oder B (nur B780)

Optionen:

Antennenrotorsteuerung REVOX: nachrüstbar, Best.Nr. 34260
Dolby* Decode Unit: Einbau ohne Abgleicharbeiten.

AM-rejection:

70dB relative to 75kHz deviation, 30% AM modulation, frequency 400Hz and 1mV/75 ohms antenna voltage

Frequency response:

30Hz ... 15kHz \pm 1dB, measured with 40kHz deviation and 1mV/75 ohms antenna voltage

De-emphasis:

Can be changed over between 50-75 μ s. Built in (optional) noise reduction system 25-50-75 μ s

AF distortion:

< 0.075%, measured with 40kHz deviation, mono and stereo L = R, 1mV/75 ohms

Signal-to-noise ratio, unweighted:

75dB, 30Hz ... 15kHz linear, measured with 1mV/75 ohms relative to 75kHz deviation

Stereo crosstalk attenuation:

42dB, measured at 1kHz, 40kHz deviation and 1mV/75 ohms. With HIGH BLEND switched on: 10dB SN ratio improvement with 50 μ V/75 ohms (DIN 45405): 7dB

Pilot tone and subcarrier attenuation:

70dB (including harmonics) 15kHz ... 300kHz linear, relative to 75kHz deviation measured with 1mV/75 ohms

Station threshold:

2 ... 20 μ V into 75 ohms, adjustable with THRESHOLD STATION

Stereo threshold:

5 ... 500 μ V into 75 ohms, adjustable with THRESHOLD STEREO

Antenna inputs:

60 ... 75 ohms, coaxial, conforming to DIN 45325
240 ... 300 ohms, balanced, conforming to DIN 45316

Oscilloscope output: (For analyzing multipath radio interference with an oscilloscope)

Vertical (Y): 50mV into 75 ohms RF \approx 1V
Horizontal (X): 75kHz deviation \approx 2.8V_{SS}
Socket conforming to DIN 41524

AF output value tuner:

75kHz deviation/400Hz produces 0.7V at output TAPE 1
15kHz deviation/400Hz produces 70W/8 ohms at output SPEAKERS A or B (only B780)

Options:

Antenna rotor control REVOX; retrofittable. Part No. 34260
Dolby* Decode Unit: installation does not require adjustments.

Réjection de la modulation d'amplitude:

70dB, correspondant à 75kHz d'excursion, 30% de modulation d'amplitude à 400Hz et 1mV/75 ohms à l'antenne

Bande passante:

30Hz ... 15kHz, se rapportant à un signal d'antenne de 1mV/75 ohms modulé avec une excursion de 40kHz

Désaccentuation:

commutable 50-75 μ s, avec le réducteur de bruit (option) 25-50-75 μ s

Distortion BF:

0,075% à 1mV/75 ohms, 1kHz avec 40kHz d'excursion, mono et stéréo G = D

Recul du bruit de fond:

75dB, de 30Hz à 15kHz linéaire, à 1mV/75 ohms avec 75kHz d'excursion

Amortissement de la diaphonie stéréo:

42dB, mesurée à 1kHz, avec 1mV/75 ohms à l'antenne et 40kHz d'excursion. Avec la touche HIGH BLEND enfoncée, amélioration du rapport signal/bruit de 10dB, à 50 μ V/75 ohms (DIN 45405)

Réjection du signal pilote et de la sous-porteuse:

70dB (avec toutes les harmoniques) de 15Hz à 300kHz linéaire, avec une excursion de 75kHz et 1mV/75 ohms

Seuil de commutation STATION:

2 ... 20 μ V à 75 ohms, réglable avec le potentiomètre THRESHOLD STATION

Seuil de commutation STEREO:

5 ... 500 μ V à 75 ohms, réglable avec le potentiomètre THRESHOLD STEREO

Entrées d'antenne:

60 ... 75 ohms, coaxiale d'après DIN 45325
240 ... 300 ohms, symétrique d'après DIN 45316

Sortie oscilloscope: (Analyse des perturbations dues aux ondes réfléchies avec un oscilloscope)

vertical (Y): 50mV/75 ohms HF \approx 1V
horizontal (X): 75kHz d'excursion \approx 2,8 V_{CC}

Valeurs de sortie BF du tuner:

une excursion de 75kHz, à 400Hz produit 0,7V à la sortie TAPE 1
une excursion de 15kHz, à 400Hz produit 70 watts/8 ohms à la sortie SPEAKERS A ou B (B780 seulement)

Options:

Commande de rotor d'antenne REVOX, numéro de commande 34260
Dolby* Decode Unit: montage sans réglage

7.2 Verstärkerteil B780**Musikleistung:**

140Watt pro Kanal (4 Ohm), beide Kanäle gleichzeitig ausgesteuert

Ausgangsleistung: (nach DIN 45500)

110Watt pro Kanal (4 Ohm) beide Kanäle gleichzeitig ausgesteuert

80Watt pro Kanal (8 Ohm) beide Kanäle gleichzeitig ausgesteuert

Harmonische Verzerrungen: (1kHz)

kleiner als 0,03% bei 70Watt (8 Ohm)

Frequenzgang:

+0/-0,7dB, 20Hz ... 20kHz

Dämpfungsfaktor:

grösser als 100 bei 1kHz (8 Ohm)

Eingänge:

(Empfindlichkeit für 70Watt (8 Ohm/Impedanz)

AUX, TAPE 1+2 150mV/50kOhm

PHONO 3mV/47kOhm, 220 pF

PWR IN 1V/50kOhm

Übersteuerungssicherheit:

PHONO, AUX, TAPE 1+2: besser als 30 dB

Ausgänge:

DIN-Anschluss TAPE 2 OUT:

5,5mV/R_L 10kOhm

SPEAKERS A, B: 23,7V (8 Ohm)

TAPE 1 (Cinch): 135mV/R_L min. 47kOhm

PRE OUT (DIN-Anschluss):

0,85V/R_L min. 10kOhm

PRE AMP OUT (Jack): 0,85V/R_L min. 47kOhm

Fremdspannungsabstand:

(Effektivwert, unbewertet, 20Hz ... 20kHz, bezogen auf 70Watt 8 Ohm)

AUX, TAPE 1, 2: grösser als 90dB

PHONO: grösser als 73dB, bezogen auf 5mV (1kHz) Eingänge mit 1kOhm abgeschlossen

Übersprechdämpfung Stereo: (bei 1kHz)

alle Eingänge grösser als 70dB

Phono-Entzerrung: (nach IEC 98, MOD 4 1976)

± 0,5dB, 20Hz ... 20kHz

Klangregler:

BASS ±8dB bei 120Hz

TREBLE ±8dB bei 8kHz

PRESENCE ±8dB bei 3kHz

Filter:

LOW 18Hz, -3dB (12dB/Oktave)

HIGH 8kHz, -3dB (12dB/Oktave)

Loudness:

(Volume 40dB unter max. Aussteuerung)

100Hz +5dB; 10kHz +6dB

7.2 Amplifier section B780**Music power:**

140W per channel (4 ohms), both channels simultaneously driven

Output power: (according to DIN 45500)

110W per channel (4 ohms) both channels simultaneously driven

80W per channel (8 ohms) both channels simultaneously driven

Harmonic distortion: (1kHz)

less than 0.03% at 70W (8 ohms)

Frequency response:

+0/-0.7dB, 20Hz ... 20kHz

Damping coefficient:

Greater than 100 at 1 kHz (8 ohms)

Inputs:

(sensitivity for 70W (8 ohms)/impedance)

AUX, TAPE 1+2 150mV/50 kohms

PHONO 3mV/47kohms, 220pF

PWR IN 1V/50kohms

Input overload margin:

PHONO, AUX, TAPE 1+2: greater than 30dB

Outputs:

DIN terminal TAPE 2 OUT:

5,5mV/R_L 10kohms

SPEAKERS A+B: 23.7V (8 ohms)

TAPE 1 (Cinch): 135mV/R_L min. 47kohms

PRE OUT (DIN terminal): 0.85 V/R_L min.

10kohms via volume control

PRE AMP OUT (Jack):

0.85V/R_L min. 47 kohms

Signal-to-noise ratio: (RMS value, unweighted,

20Hz ... 20kHz, relative to 70W, 8 ohms)

AUX, TAPE 1+2: greater than 90dB

PHONO: greater than 73dB, relative to 5mV (1kHz) inputs terminated with 1kohm

Crosstalk attenuation, stereo: (at 1kHz)

All inputs greater than 70dB

Phono equalization: (conforming to IEC98, MOD 4 1976)

±0.5dB, 20Hz ... 20kHz

Tone controls:

BASS ±8dB at 120Hz

TREBLE ±8dB at 8kHz

PRESENCE ±8dB at 3kHz

Filters:

LOW 18Hz, -3dB (12dB/octave)

HIGH 8kHz, -3dB (12dB/octave)

Loudness:

(Volume 40dB below maximum level)

100Hz +5dB; 10kHz +6dB

7.2 Section Amplificateur B780**Puissance musicale:**

140 watts par canal (4 ohms), les deux canaux en service simultanément

Puissance de sortie: (d'après DIN 45500)

110 watts par canal (4 ohms), les deux canaux en service simultanément

80 watts par canal (8 ohms), les deux canaux en service simultanément

Distorsion harmonique: (1kHz)

inférieure à 0,03% à 70 watts sous 8 ohms

Réponse en fréquence:

+0/-0,7dB, de 20Hz à 20kHz

Facteur d'amortissement:

supérieur à 100 à 1kHz, sous 8 ohms

Entrées:

(sensibilité pour 70 watts/8 ohms)

AUX, TAPE 1+2 150mV/50kohms

PHONO 3mV/47kohms, 220pF

PWR IN 1V/50kohms

Sécurité de saturation:

PHONO, AUX, TAPE 1+2: meilleure que 30dB

Sorties:

Prises DIN TAPE 2/OUT:

5,5mV/R_L = 10kohms

SPEAKERS A, B: 23,7V (8 ohms)

TAPE 1 (Cinch): 135mV/R_L min. 47kohms

PRE OUT (DIN): 0,85 V/R_L min. 10kohms

PRE AMP OUT (Jack):

0,85 V/R_L min. 47kohms

Recul du bruit de fond:

(Valeur effective, non pondérée, se rapportant à 70 watts sous 8 ohms, de 20Hz à 20kHz)

AUX, TAPE 1,2: supérieur à 90dB

PHONO: supérieur à 73dB, par rapport à 5mV (1kHz), les entrées étant chargées avec 1kohm

Amortissement de la diaphonie stéréo: (1kHz)

supérieur à 70dB sur toutes les entrées

Correction phono: (d'après IEC 98, MOD 4 1976)

±0,5dB, de 20Hz à 20kHz

Correcteur de tonalité:

BASS ±8dB à 120Hz

TREBLE ±8dB à 8kHz

PRESENCE ±8dB à 3kHz

Filtres:

LOW 18Hz, -3dB (12dB/octave)

HIGH 8kHz, -3dB (12dB/octave)

Loudness:

(Volume à -40dB et modulation maximale)

100Hz +5dB, 10kHz +6dB

Stromversorgung:

100, 120, 140; 200, 220, 240V AC $\pm 10\%$ umschaltbar mit Spannungswähler (siehe Netzsicherung)
Netzfrequenz: 50 ... 60 Hz
Leistungsaufnahme: 550W max.

Netzsicherung:

100 ... 140V : T 5A
200 ... 240V : T 2,5A

Memory-Stromversorgung bei Netzausfall:

durch drei NiCd-Akkumulatoren IEC KR 15/51, einsetzbar in Fach unter der Frontklappe

Bestückung:

122 Transistoren, 99 Dioden, 19 Abstimm-Doppeldioden, 46IC, 1 Mikrokomputer 4K x 8Bit, 5 Brückengleichrichter, 9 Sieben-Segment-Anzeigen

Gewicht: (Masse)

ca. 17kg

Abmessungen: (BxHxT)

452 x 151 x 420mm

Power requirements:

100, 120, 140; 200, 220, 240 VAC $\pm 10\%$, selectable on voltage selector (see power fuse)
Power line frequency: 50 ... 60Hz
Power consumption: max. 50W

Power fuse:

100 ... 150V: T 5A
200 ... 240V: T 2.5A

Emergency power for memory:

Three NiCd batteries IEC KR 15/51, mounted in a compartment below the hinged front flap

Electronic components:

122 transistors, 99 diodes, 19 tuning twin-diodes, 46ICs, 1 microcomputer 4K x 8Bit, 5 bridge-connected rectifiers, 9 7-segment displays LEDs

Weight:

Approx. 17 kg

Dimensions: (WxHxD)

452 x 151 x 420mm

Alimentation:

100, 120, 140; 200, 220, 240V AC $\pm 10\%$, commutable par sélecteur de tension (attention au fusible secteur!)
fréquence secteur: 50 ... 60Hz
consommation: 550 watts au maximum

Fusible secteur:

100 ... 140V : 5 AT
200 ... 240V : 2,5 AT

Alimentation auxiliaire des mémoires:

par trois accumulateurs IEC KR 15/51, au NiCd, placés dans le tiroir situé sous le volet frontal

Composants:

122 transistors, 99 diodes, 19 diodes varicap doubles, 46 CI, 1 microprocesseur 4K x 8Bit, 5 ponts redresseurs et 9 afficheurs 7 segments

Poids: (Masse)

environ 17 kg

Dimensions: (LxHxP)

452 x 151 x 420mm

7.3 Vorverstärkerteil B739**Eingänge:** Empfindlichkeit für 2V

AUX, TAPE 1+2 150mV/50kOhm
PHONO 3mV/47kOhm, 220pF
LINE IN 1V/50kOhm

Übersteuerungssicherheit:

PHONO, AUX, TAPE 1+2: besser als 30dB

Ausgänge:

OUTPUT A, B:

2V/4V/ R_L min. 1kOhm (schaltbar)
TAPE 1 (Cinch): 135mV/ R_L min. 47kOhm
DIN-Anschluss TAPE 2 OUT:

5,5mV/ R_L 10kOhm

PRE OUT (DIN-Anschluss):

0,85V/ R_L min. 10kOhm über Volumenregler

PRE AMP OUT (Jack):

0,85V/ R_L min. 47kOhm über Volumenregler

PHONES: 4V/ R_i 220 Ohm

Harmonische Verzerrungen: (1kHz)

kleiner als 0,02% bei 2V

Frequenzgang:

+0/-0,7dB, 20Hz ... 20kHz

Fremdspannungsabstand:

(Effektivwert, unbewertet, 20Hz ... 20kHz, bezogen auf 2V)

AUX, TAPE 1+2: grösser als 90dB

PHONO: grösser als 73dB, bezogen auf 5mV (1kHz) Eingänge mit 1kOhm abgeschlossen

7.3 Preamplifier section B739**Inputs:** Sensitivity for 2V

AUX, TAPE 1+2 150mV/50 kohms
PHONO 3mV/47kohms, 220pF
LINE IN 1V/50kohms

Input overload margin:

PHONO, AUX, TAPE 1+2: greater than 30dB

Outputs:

OUTPUT A, B:

2V/4V/ R_L min. 1kohm (switchable)
TAPE 1 (Cinch): 135mV/ R_L min. 47kohms
DIN terminal TAPE 2 OUT:

5,5mV/ R_L 10kohms

PRE OUT (DIN terminal):

0.85 V/ R_L min. 10 kohms

PRE AMP OUT (Jack):

0.85V/ R_L min. 47 kohms

PHONES: 4V/ R_i 220 ohms

Distortion harmonique: (1kHz)

inférieure à 0,02% à 2V

Réponse en fréquence:

+0/-0,7dB, de 20Hz à 20kHz

Recul du bruit de fond:

(Valeur effective, non pondérée, 20Hz ... 20kHz, rapportée à 2V)

AUX, TAPE 1,2: supérieur à 90dB

PHONO: supérieur à 73dB, rapporté à 5mV (1kHz), entrées chargées 1kohm

7.3 Section Préamplificateur B739**Entrées:** Sensibilité pour 2V en sortie

AUX, TAPE 1+2 150mV/50kohms
PHONO 3mV/47kohms, 220pF
LINE IN 1V/50kohms

Sécurité de saturation:

PHONO, AUX, TAPE 1+2: meilleure que 30dB

Sorties:

OUTPUT A, B:

2V/4V/ R_L min. 1kohm, commutable
TAPE 1 (Cinch): 135mV/ R_L min. 47kohms
Prises DIN TAPE 2/OUT:

5,5mV/ R_L 10kohms

PRE OUT (DIN): 0,85 V/ R_L min. 10kohms

aux bornes du potentiomètre de volume

PRE AMP OUT (Jack):

0,85 V/ R_L min. 47kohms, aux bornes du potentiomètre de volume

PHONES: 4V/ R_i 220 ohms

Harmonic distortion: (1kHz)

Less than 0.02% at 2V

Frequency response:

+0/-0,7dB, 20Hz ... 20kHz

Signal-to-noise ratio: (RMS value, unweighted, 20Hz ... 20kHz, relative to 2V)

AUX, TAPE 1+2: greater than 90dB

PHONO: greater than 73dB, relative to 5mV (1kHz), inputs terminated with 1kohm

Übersprechdämpfung Stereo: (bei 1kHz)
alle Eingänge grösser als 70dB

Phono-Entzerrung: (nach IEC 98, MOD 4 1976)
±0,5dB, 20Hz ... 20kHz

Klangregler:

BASS ±8dB bei 120Hz
TREBLE ±8dB bei 8kHz
PRESENCE ±8dB bei 3kHz

Filter:

LOW 18Hz, -3dB (12dB/Oktave)
HIGH 8kHz, -3dB (12dB/Oktave)

Loudness:

(Volume 40dB unter max. Aussteuerung)
100Hz + 5dB; 10kHz +6dB

Stromversorgung:

100, 120, 140; 200, 220, 240V AC ± 10% umschaltbar mit Spannungswähler (siehe Netzsicherung)
Netzfrequenz 50 ... 60 Hz
Leistungsaufnahme max. 50W

Netzsicherung:

100 ... 140V : T 630mA
200 ... 240V : T 315mA

Memory-Stromversorgung bei Netzausfall:

durch drei NiCd-Akkumulatoren IEC KR 15/51, einsetzbar in Fach unter der Frontklappe

Bestückung:

100 Transistoren, 77 Dioden, 19 Abstimm-Doppeldioden, 45 IC, 1 Mikrocomputer 4K x 8Bit, 3 Brückengleichrichter, 9 Sieben-Segment-Anzeigen

Gewicht: (Masse)

ca. 13kg

Crosstalk attenuation, stereo: (at 1kHz)
All inputs greater than 70dB

Phono equalization: (according to IEC98, MOD 4 1976)
±0.5dB, 20Hz ... 20kHz

Tone controls:

BASS ±8dB at 120Hz
TREBLE ±8dB at 8kHz
PRESENCE ±8dB at 3kHz

Filters:

LOW 18Hz, -3dB (12dB/octave)
HIGH 8kHz, -3dB (12dB/octave)

Loudness:

(Volume 40dB below maximum level)
100Hz +5dB; 10kHz +6dB

Power requirements:

100, 120, 140; 200, 220, 240 VAC ±10%, selectable at voltage selector (see power fuse)
Power line frequency: 50 ... 60Hz
Power consumption: max. 50W

Power fuse:

100 ... 140V: T 630mA
200 ... 240V: T 315mA

Emergency power for memory:

Three NiCd batteries IEC KR 15/51, mounted in compartment below hinged front flap

Electronic components:

100 Transistors 77 diodes, 19 tuning twin-diodes, 45 ICs, 1 microcomputer 4K x 8Bit, 3 bridge-connected rectifiers, 9 7-segment display LEDs

Weight:

Approx. 13 kg

Amortissement de la diaphonie stéréo: (1kHz)
supérieur à 70dB sur toutes les entrées

Correction phono: (selon IEC 98, MOD 4 1976)
±0,5dB, de 20Hz à 20kHz

Correcteur de tonalité:

BASS ±8dB à 120Hz
TREBLE ±8dB à 8kHz
PRESENCE ±8dB à 3kHz

Filtres:

LOW 18Hz, -3dB (12dB/octave)
HIGH 8kHz, -3dB (12dB/octave)

Loudness:

(Volume à -40dB et modulation maximale)
100Hz +5dB, 10kHz +6dB

Alimentation:

100, 120, 140; 200, 220, 240V AC ±10%, commutable par sélecteur de tension (attention au fusible secteur!)
fréquence secteur: 50 ... 60Hz
consommation maximale 50 watts

Fusible secteur:

100 ... 140V: 630 mA
200 ... 240V: 315 mA

Alimentation auxiliaire des mémoires en cas de panne de courant:

par 3 accumulateurs NiCd IEC KR 15/51 placés dans le tiroir sous le volet frontal

Composants:

100 transistors, 77 diodes, 19 diodes varicap doubles, 45 CI, 1 microprocesseur 4K x 8Bit, 3 ponts redresseurs et 9 afficheurs à 7 segments

Poids: (Masse)

environ 17 kg

7.4 Abmessungen: (BxHxT)
452 x 151 x 350mm

7.4 Dimensions: (WxHxD)
452 x 151 x 350mm

7.4 Dimensions: (LxHxP)
452 x 151 x 350mm

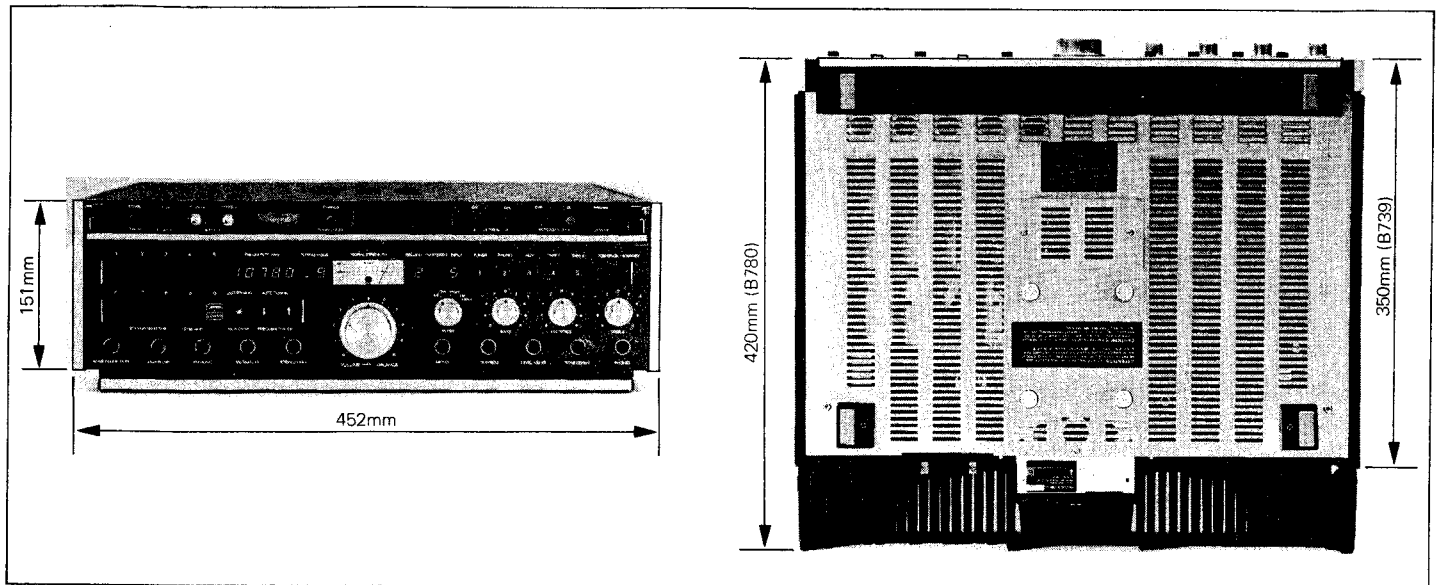


Fig. 7.1

BLOCK DIAGRAM B780

