

Service
Service
Service



45 059 A11

Service Manual

FT290
FA260

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SPECIFICATION

General

	Nominal value	Typical value
Mains voltage	: 220 V - 240 V~	: 220 V - 240 V~
Mains outlet	: For power supply of CD or record player	: For power supply of CD or record player
Low voltage outlet (12 V DC)	: For power supply of cassette deck	: For power supply of cassette deck
Mains frequency	: 50 - 60 Hz	: 50 - 60 Hz
Power consumption	: .. W max	: .. W max
Dimensions (WxHxD)	: 360 x 180 x 300 mm	: 360 x 180 x 300 mm
Weight	: .. kg	: .. kg
Remote control	: RC290	: RC290

Tuner: FM section

Tuning range	: 87.5 MHz to 108 MHz	: 87.5 MHz to 108 MHz
Aerial inputs	: 75 Ω coaxial	: 75 Ω coaxial
Sensitivity	: ... μ V 26dB S/N at 98 MHz	: 1.3 μ V 26dB S/N at 98 MHz
at 75 Ω Δ f 75 kHz	: ... μ V 46dB S/N at 98 MHz	: 25 μ V 46dB S/N at 98 MHz
Selectivity	: ..dB at 300 kHz off resonance	: 60dB at 300 kHz off resonance
Suppression	: ..dB - ..dB	: 80dB - 50dB
IF-AM	: ..dB	: 50dB
pilot tone	: ..dB (at 106 MHz)	: 75dB
image frequency	: 40dB	: 40dB
Channel separation	: 0.25 %	: 0.3 %
Distortion T.H.D	: 0.7 %	: 0.5 %
Signal/noise	: ..dB	: 74dB
ratio	: ..dB IEC weighted	: 68dB

tuner: AM section

Wave ranges	MW	: 522 kHz to 1611 kHz	: 522 kHz to 1611 kHz (585-187 m)
	LW	: 153 kHz to 281 kHz	: 153 kHz to 281 kHz (1960-1067 m)
Sensitivity		: ... μ V 26 dB S/N (600 kHz)	: 200 μ V 26 dB S/N (600 kHz)
Selectivity		: ..dB at 9 kHz off resonance	: 27dB at 9 kHz off resonance
Suppression	IF	: ..dB	: 55dB
Output		: ..mV	: ..mV

Tuner: Digital section

Tuning steps	FM/MW/LW	: 50 kHz / 9 kHz / 1 kHz	: 50 kHz / 9 kHz / 1 kHz
Presets	FM/MW/LW	: 29 / 29/ 29 random sequential	: 29 / 29/ 29 random sequential

Amplifier

Output power	: .. W in .. Ω (FTC)	: 43 W in 8 Ω (1 kHz, D = 10%)
	: .. W in .. Ω (DIN)	: 40 W in 4 Ω (1 kHz, D $\leq$ 1%)
	: .. W in .. Ω	: 35 W in 8 Ω (1 kHz, D $\leq$ 1%)
	: .. W in .. Ω (IEC)	: 30 W acc. to IEC

Distortion	: $\leq$ 0.1% at 1 kHz	: $\leq$ 0.09% at 45W for 1 kHz, 8 Ω
T.H.D.	:	: 0.1% at 25 W
Intermodulation	:	:

Frequency response	: from .. Hz - .. kHz $\pm$...dB	: from 20 Hz - 30 kHz $\pm$ 2dB
Linear inputs	: from .. Hz - .. kHz $\pm$...dB	: from 20 Hz - 20 kHz $\pm$ 1.5dB
Equalized inputs	: at .. Hz $\pm$.. dB to -..dB	: at 80 kHz $\pm$ 10 dB to -10dB
Bass control	: at .. kHz $\pm$.. dB to -..dB	: at 10 kHz $\pm$ 10 dB to -10dB
Treble control	:	: 0-50dB
Balance control	:	:

Signal/noise ratio	:	: 95 dB
weighted	:	: at 1000 Hz $\geq$ 65dB

Channel separation	: at 1000 Hz $\geq$..dB	: at 1000 Hz $\geq$ 65dB
Input sensitivity	: ... mV at .. k Ω	: 150 mV at 25 k Ω
Phono MD	: 5 mV at 2.2 k Ω (FTC)	: 2.1 mV at 4 k Ω (FTC)
Tuner	: ... mV at .. k Ω (FTC)	: 150 mV at 25 k Ω (FTC)
Tape 1	: ... mV at .. k Ω (FTC)	: 150 mV at 25 k Ω (FTC)
Tape 2/VCR	: at 250 Hz-10 kHz $\geq$..dB	: at 250 Hz-10 kHz $\geq$ 40dB
CD/CDV	: 500 mV at 1 k Ω (FTC)	: 150 mV at 25 k Ω (FTC)
Aux 1/TV	: ... mV at .. k Ω (FTC)	: 150 mV at 25 k Ω (FTC)
Aux 2/CDV	:	: 150 mV at 25 k Ω
Microphone	:	: 0.5 mV

Outputs	:	:
Tape 1	: ... mV	: 150 mV
Tape 2/VCR	:	: 150 mV
Loudspeakers 2x2	: 8 Ω	: 8 Ω
Headphones	: 8-1000 Ω	: 8-1000 Ω
Processor in/out	:	: 150 mV

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

F

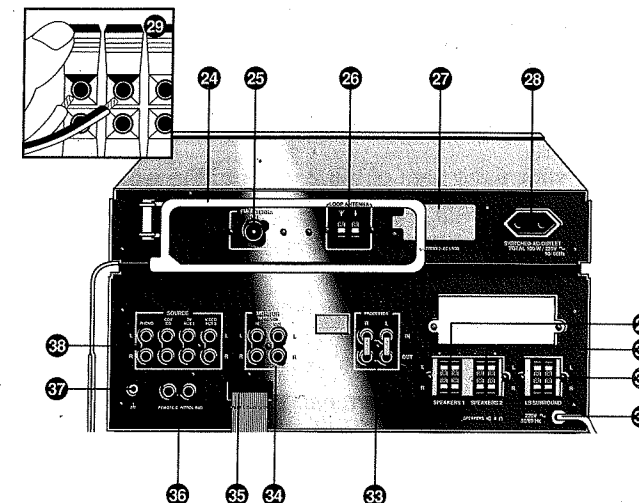
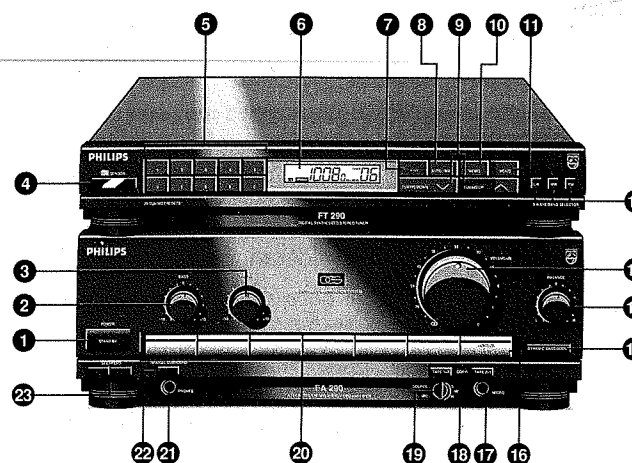
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambio identici a quelli specificati.

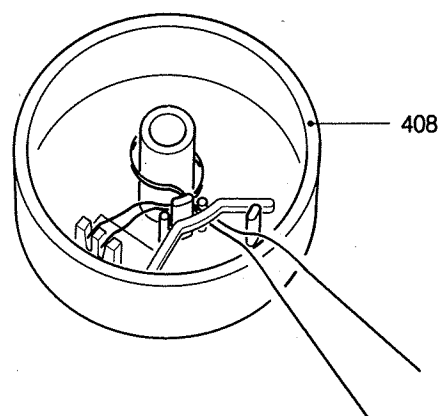


CONNECTIONS AND CONTROLS

- | | |
|------------------------------|-------------------------------|
| 1 Stand by button | 21 Phones socket |
| 2 Bass control | 22 Spatial surround button |
| 3 Treble control | 23 Speakers A/B |
| 4 Sensor | 24 Loop aerial |
| 5 Presets 0-9 | 25 FM antenna |
| 6 Display | 26 Loop antenna |
| 7 -/-- Button | 27 Battery |
| 8 Auto/Man button | 28 Switched AC outlet |
| 9 Tuning up/down buttons | 29 Speakers 1 |
| 10 Memo button | 30 Speakers 2 |
| 11 Mono button | 31 LS surround |
| 12 Waveband buttons | 32 Mains lead |
| 13 Volume control | 33 Processor in/out |
| 14 Balance control | 34 Monitor-tape 2/VCR sockets |
| 15 Dynamic bass boost button | 35 Tape 1/cass |
| 16 Monitor-tape 2/VCR | 36 Remote control |
| 17 Micro socket | 37 Ground terminal |
| 18 Copy buttons | 38 Source input sockets for: |
| 19 Source/mic. control | Phono |
| 20 Source selectors | CDV/CD |
| | Phono |
| | Tuner |
| | CD |
| | Aux 1/TV |
| | Aux 2/CDV |
| | Tape 1 |
| | Video/aux 2 |

D Servicehinweise:

1. Die Knöpfe 'bass', 'treble' und 'balance' lassen sich nicht unmittelbar von der Vorderfront an beseitigen. Die Knöpfe sind auf der Rückseite der Frontplatte befestigt (siehe Explosionsansicht).
Anmerkung: Beim Einbau der 'operating panel' ist zu beachten, dass sich die Knöpfe in der Nullstellung und die Potentiometer in der Mittelstellung befinden (Sieh Explosionsansicht).
2. Der Lautstärkerreglerknopf 408 ist mit einem Leuchtdiodenanzeiger ausgestattet. Bild 1 zeigt den Gang der 2 Drähte zu der Leuchtdiode.
3. Die Sicherungen SI 1 und SI2 befinden sich auf der 'trafo panel'. Sie sind zugänglich durch Abnahme des Deckels 518 von der Rückplatte 521.
4. Ausbauvorschrift i.b.a. Zugänglichkeit den Leiterplatten zum Mesen (siehe auch Explosionsansicht).
 - a. Die 'amplifier-supply panel' ist zugänglich durch Beseitigung der Unterplatte 507 (8 Schrauben). Dabei können die 4 Füßchen des Geräts an ihrer Stelle verbleiben.
 - b. Die 'plug source selector panel' ist zugänglich, indem zuerst Punkt a. durchgeführt wird und anschliessend die untere Rückplatte 521 (4 Schrauben losgekuppelt wird.
 - c. Die 'RF-IF panel', die 'operating panel', die 'volume control panel' und die 'trafo panel' (teilweise) sind zugänglich durch abnahme der Oberplatte 506 wenig anheben und rückwärts ziehen. Beim Einbau die Oberplatte flach auf das Gerät legen und dann vorwärts schieben.
5. Die Leiterplatten sind an mehreren Stellen mit einem Steckverbinder ausgeführt (wie etwa 2A, 4A usw.). Bild 2 zeigt den Einbau und den Ausbau der Verdrahtung.



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Fig. 1

I Consigli utili

1. Le manopole bass, treble e balance non sono direttamente estraibili dalla parte anteriore del mobiletto, poiché queste manopole sono state fissate alla parte posteriore di questa facciata (si v. a proposito la sezione esplosa).
Attenzione: però che l'installazione dell'operating panel va accompagnata da altre due condizioni: l'azzeramento di tutte le manopole è indispensabile che i potenziometri si trovino a metà strada (si v. a proposito la sezione esplosa).
2. Il controllo volume 408 è stato munito di un indicatore LED. Fig. 1 indica il collegamento di due cavi con il LED.
3. Le valvole di sicurezza SI1 e SI2 sono situate nel trafo panel e si trovano rimuovendo il coperchio 518 dal pannello posteriore 521.
4. Si prega di prendere in atto le seguenti regole quando di passa allo smontaggio dei seguenti pezzi: (queste regole sono in relazione alla portata degli stampati che esegue operazione di misura (si v. appunto la sezione esplosa)).
 - a. Svitando otto viti dal basso 507 si trova il "Amplifier-supply panel", tenendo a mente che i quattro piedini dell'apparecchio possono rimanere al loro posto.
 - b. Il "plug source selector panel" si trova eseguendo prima a, e svitando successivamente 4 viti dall' pannello posteriore 521.
 - c. Rimuovendo due viti posteriori dalla parte superiore 506 del mobiletto si trovano il "RF-IF panel", l' "operating panel", il "volume control panel", nonché il "Trafo panel" (parzialmente). Sollevare un po' la parte posteriore del mobiletto di sopra e tirarlo indietro. Durante l'installazione è indicato mettere la parte superiore diritta sull'apparecchio e, conseguentemente tirarla avanti.
5. Gli stampati sono state munite in diversi posti di un connettore, p.es. 2A, 4A etc.
Fig. 2 indica come attaccare e staccare i cavi.

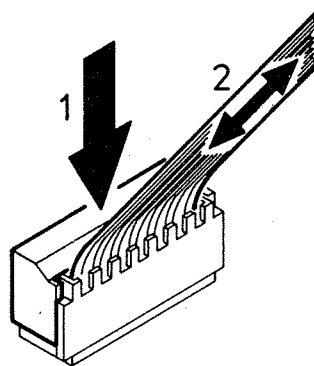


Fig. 2

GB SERVICE TEST PROGRAMME

The microprocessor contains a test programme which carries out the following chapters fully automatically when switched on.

1. Software version of the display
2. RAM test
3. Display test

Switching on the test programme

The test mode can be selected by depressing the FM and Phono buttons simultaneously. The set should be in the stand-by mode for this. The test programme will not be started if the microprocessor is defective or if a few basic conditions are not fulfilled.
In case of a supposed defect in the control section, it is therefore recommended that you first check the supply voltage, the function keys, the clock signal and the reset pulse.

Switching off the test programme

- a. The test programme cannot be left during the testing of chapters 1 and 2.
- b. The test programme can be left during the testing of chapter 3 in the following way:
Press the tuning up button for 1 second.

1. Software version of the display

After the test programme is switched on, the software version of the display (E.G. 1) appears in the preset field (digit 1 Fig. 4) after 2 seconds. After about 1 second the software version will have disappeared again and the RAM test will start automatically.

2. RAM test

The RAM test is now carried out fully automatically. If the test passes off positively, a "1" will be shown in the preset field (digit 1 Fig. 4) for 1 second. If the test does not pass off positively, a "0" will be displayed in the preset field for 1 second.
After this the display test starts automatically. (Also if the RAM test was not positive).

3. Display test

After the RAM test has been completed, the display test starts with a blank display. The display is automatically tested according to table 1. All segments mentioned in the table will be visible for 1 second. If table 1 has been completed, all segments of the display will remain on (see fig. 4) until the test is ended by means of the tuning up button (press it for 1 second).
Then the set returns to the stand-by mode.

Note: as already described, this test can be ended prematurely during the automatic testing by pressing the tuning up button (for 1 second). In that case the set will adopt the stand-by mode again.

NL SERVICE TESTPROGRAMMA

De microprocessor bevat een testprogramma, welke na het inschakelen de volgende hoofdstukken volledig automatisch afwerkt.

1. Software versie van de display
2. Ram-test
3. Display-test

Inschakelen testprogramma

Het apparaat kan in de testmode worden geplaatst door gelijktijdig de toetsen "FM" en "phono" in te drukken. Het apparaat moet hierbij in de stand-by mode staan. Het testprogramma wordt niet opgestart als de microprocessor defect is of als niet aan enkele basisvoorwaarden wordt voldaan.
Controleer dan ook eerst bij een vermeend defect in het bedieningsgedeelte de voedingsspanning, de functietoesten, het clock-sigitaal en de resetpuls.

Uitschakelen testprogramma

- a. Het testprogramma kan tijdens het testen van de hoofdstukken 1 en 2 niet verlaten worden.
- b. Het testprogramma kan tijdens het testen van hoofdstuk 3 wel verlaten worden en wel als volgt:
Druk de toets tuning up 1 seconde in.

1. Software versie van het display

Na het inschakelen van het testprogramma verschijnt in het preset veld (digit 1 Fig. 4) na 2 seconden de software versie van het display (bijv. 1). Na ongeveer 1 seconde is deze weer verdwenen en start automatisch de ram-test.

2. Ram-test

De Ram-test wordt nu dus ook volledig automatisch afgewerkt. Indien de test positief verlopen is, zal gedurende 1 seconde in het preset veld (digit 1 Fig. 4) een "1" gegeven worden. Indien niet positief verlopen, dan zal gedurende 1 seconde in het preset veld een "0" gegeven worden.
Hierna start automatisch de display test. (Ook al is de Ramtest niet positief verlopen).

3. Display-test

Na beëindiging van de Ram-test start de display-test met een blank display. Achtereenvolgens wordt het display volgens tabel 1 automatisch getest. Alle in de tabel genoemde segmenten zijn één seconde zichtbaar. Indien alles volgens de tabel 1 doorlopen is blijft het display met alle segmenten aan staan (zie Fig. 4), totdat de test d.m.v. de tuning up toets (1 seconde indrukken) beëindigt wordt.
Het apparaat komt dan weer in de stand-by mode.

Opmerking: zoals reeds beschreven kan deze test gedurende het automatisch testen d.m.v. de tuning up toets (1 seconde indrukken) eerder beëindigd worden. Het apparaat komt dan weer in de stand-by mode.

F PROGRAMME TEST DE SERVICE

Le microprocesseur comporte un programme de test qui se déroule automatiquement après que l'appareil est mis en fonction. On aura donc:

1. Logiciel de l'afficheur
2. Test de la RAM
3. Test de l'affichage

Mise en route du programme de test

L'appareil sera mis au mode de test par pression simultanée des touches "FM" et "phono", à condition que l'appareil est en position de veille.

Le programme de test n'est pas démarré si le microprocesseur est défectueux ou si certaines conditions de base ne sont pas remplies.

A cet effet, vérifier, en cas de suspicion de défectuosité dans la section de commande, avant tout, la tension d'alimentation, les touches de fonction, le signal d'horloge et l'impulsion de remise à zéro.

Mise hors fonction du programme de test

- a. Il n'y a pas moyen de quitter le programme de test pendant les tests des chapitres 1 et 2.
- b. Il y a moyen de quitter le programme de test pendant le test du chapitre 3, il suffit d'appuyer sur la touche "tuning up" pendant 1 seconde.

1. Logiciel de l'afficheur

La version du logiciel de l'afficheur apparaît 2 secondes après la mise en service du programme de test dans le champ de préréglage ('digit' 1 Fig. 4). (par exemple 1). Après env. 1 sec. elle disparaît et le test de la RAM débute automatiquement.

2. Test de la RAM

Le test de la RAM est alors entièrement exécuté. Si le test se déroule positivement, un "1" apparaîtra pendant une seconde ('digit' 1 Fig. 4) dans le champ de remise à zéro. Si le test n'est pas positif, un "0" apparaîtra pendant 1 seconde sur le même champ. Ensuite, le test de l'afficheur commence immédiatement (même si le test de la RAM n'a pas été positif).

3. Test de l'afficheur

Après que s'est déroulé le test de la RAM, le test de l'afficheur débute par un afficheur vierge. Après quoi, l'afficheur est automatiquement testé dans l'ordre du tableau 1.

Tous les segments désignés dans le tableau deviennent visibles pendant une seconde. Lorsque tout est passé en revue dans la séquence du tableau 1, tous les segments de l'afficheur restent allumés (voir fig. 4) jusqu'à ce que qu'il soit mis fin au test en pressant la touche "tuning up" pendant 1 sec. L'appareil revient en position de veille.

Remarque: comme il avait déjà été dit plus haut, il peut être mis fin prématurément à ce test par pression (1 sec.) de la touche "tuning up". L'appareil revient alors au mode de veille.

D SERVICE PRÜFPROGRAMM

Der Mikroprozessor enthält ein Prüfprogramm, das nach Einschalten des folgenden Kapitel völlig automatisch erledigt.

1. Software-Ausführung des Display
2. RAM-Prüfung
3. Display-Prüfung

Einschalten des Prüfprogramms

Das Gerät kann in den Prüfbetrieb gebracht werden, dadurch dass gleichzeitig die Tasten 'FM' und 'phono' gedrückt werden.

Das Gerät muss dann im Bereitschaftsbetrieb sein. Das Prüfprogramm wird nicht angefahren, wenn der Mikroprozessor Schaden genommen hat, oder wenn nicht einige Grundbedingungen erfüllt werden. Bei einem vermeintlichen Mangel im Bedienungsteil sind denn auch zuerst die Versorgungsspannung, die Funktionstasten, das Taktsignal und der Rücksetzimpuls zu überprüfen.

Ausschalten des Prüfprogramms

- a. Das Prüfprogramm kann während dem Prüfen der Kapitel 1 und 2 nicht verlassen werden.
- b. Das Prüfprogramm kann während dem Prüfen von Kapitel 3 wohl verlassen werden, und zwar wie folgt: Die Taste 'tuning up' 1 Sekunde drücken.

1. Software-Ausführung des Display

Nach Einschalten des Prüfprogramms erscheint im 'preset'-Feld ('digit' 1 Bild 4) nach 2 Sekunden die Software-Ausführung des Display (z.B. 1). Nach etwa 1 Sekunde ist sie wieder verschwunden und läuft automatisch die RAM-Prüfung an.

2. RAM-Prüfung

Die RAM-Prüfung wird nun also auch vollautomatisch erledigt. Wenn die Prüfung positiv abgelaufen ist, wird für 1 Sekunde in dem 'preset'-Feld ('digit' 1 Bild 4) eine '1' gegeben werden. Falls nicht positiv abgelaufen, so wird für 1 Sekunde in dem 'preset'-Feld eine '0' gegeben werden. Darauf läuft automatisch die Displayprüfung an (auch wenn die RAM-Prüfung nicht positiv abgelaufen ist).

3. Display-Prüfung

Nach Abschluss der RAM-Prüfung läuft die Display-Prüfung mit einem blanken Display an. Nacheinander wird das Display gemäss Tabelle 1 automatisch geprüft. Alle in der Tabelle aufgeführten Segmente sind 1 Sekunde sichtbar. Wenn alles gemäss Tabelle 1 durchlaufen ist, ist das Display mit sämtlichen Segmenten (siehe Bild 4) nach wie vor eingeschaltet, bis die Prüfung mittels der Taste 'tuning up' (1 Sekunde drücken) beendet wird.

Das Gerät gelangt dann wieder in den Bereitschaftsbetrieb.

Anmerkung: Wie bereits beschrieben, kann diese Prüfung während dem automatischen Prüfen mittels der Taste 'tuning up' (1 Sekunde drücken) früher beendet werden. Das Gerät gelangt dann wieder in den Bereitschaftsbetrieb.

I PROGRAMMA PROVA DI SERVIZIO

Il microprocessore è stato munito di un programma de prova, che una volta programmato esegue automaticamente le seguenti fasi:

1. Visualizzazione del display in versione software
2. Prova Ram
3. Prova display

Azionare il programma

E' possibile mettere l'apparecchio in posizione "testmode", schiacciando contemporaneamente i pulsanti FM e Phono, dopo di che si lascia l'apparecchio in posizione stand-by. Il programma di prova non verrà eseguito qualora il microprocessore sia difettoso o qualora non vengano rispettate le condizioni di base. Se ciò si verifica, è indicato controllare se c'è un guasto nel reparto di comando e, più precisamente nel cavo di alimentazione, nei tasti, nel timer o nell'autoreverse.

Disazionare il programma di prova

Va notate che:

- a. questo programma non va interrotto durante le fasi (1) e (2).
- b. questo programma, al contrario di quanto descritto sopra, è suscettibile di cambiamenti schiacciando il pulsante tuning up per la durata di un secondo.

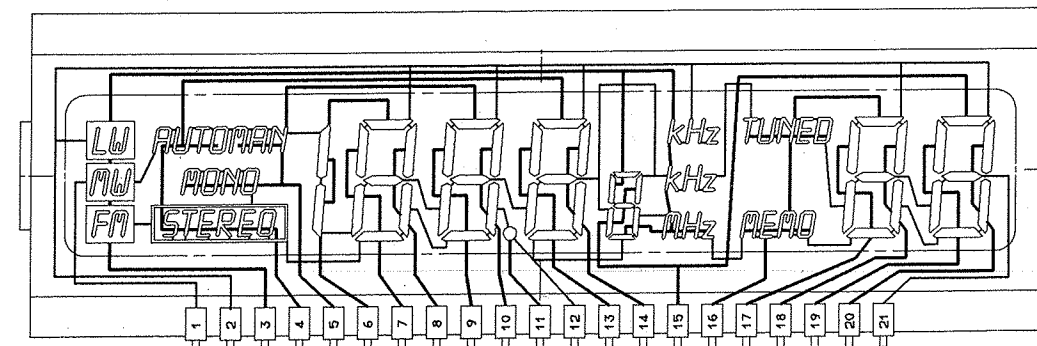
Table 1

- Decimal point (DP)
-  b and e of digit 3 (see Figs. 3, 4)
-  g of digit 3 (see Figs. 3, 4)
-  a, c, d and f of digit 3 (see Figs. 3, 4)

FM, MHz

MW, KHz
LW, KHz
STEREO
MONO
AUTO
MAN
MEMO
TUNED
000 00
1111 11
222 22
333 33
444 44
555 55
666 66
777 77
888 88
999 99

All segments except decimal point (DP) go on (see Fig. 4)



PIN 3 ... 11;
13 ... 20

1. La visualizzazione del display in versione software

Dopo che il programma di prova è stato azionato, a destra del display appare dopo per due secondi il display in versione software ('digit' 1' Fig. 4). Dopo un secondo la visualizzazione sparisce nuovamente ed ha automaticamente inizio la prova Ram.

2. La prova Ram

Anche questa prova viene eseguita automaticamente. Se la prova procede senza intralci, si vedrà apparire il numero 1 ('digit' 1' Fig. 4) a destra del display, se invece ci sono problemi tecnici, si vedrà apparire, sempre a destra del display (anche se la prova Ram ha avuto esiti negative).

3. La prova display

Si noti che, successivamente alla prova Ram, la prova display dà a vedere un display "bianco", dopo di che il display viene controllato automaticamente secondo il procedimento spiegato nella tabella n° 1.

Se ogni operazione è stata eseguita secondo la tabella n° 1, i dati del display resteranno visibili (si v. a proposito Fig. 4), finché la prova non verrà conclusa schiacciando per un secondo il tasto tuning up. L'apparecchio, automaticamente, si ritrova in posizione stand-by.

Si noti: però che questa prova durante la fase automatica può essere eseguita prima, schiacciando per un secondo il pulsante tuning up. L'apparecchio, automaticamente, riprende la posizione stand-by.

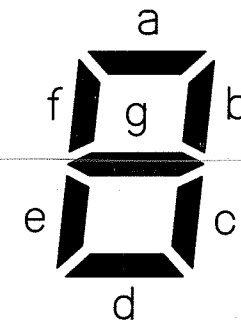


Fig. 3

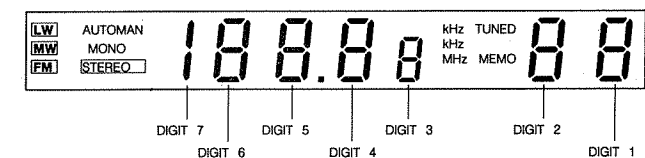


Fig. 4

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I PROGRAMMA PROVA DI SERVIZIO

Il microprocessore è stato munito di un programma de prova, che una volta programmato esegue automaticamente le seguenti fasi:

1. Visualizzazione del display in versione software
2. Prova Ram
3. Prova display

Azionare il programma

E' possibile mettere l'apparecchio in posizione "testmode", schiacciando contemporaneamente i pulsanti FM e Phono, dopo di che si lascia l'apparecchio in posizione stand-by. Il programma di prova non verrà eseguito qualora il microprocessore sia difettoso o qualora non vengano rispettate le condizioni di base. Se ciò si verifica, è indicato controllare se c'è un guasto nel reparto di comando e, più precisamente nel cavo di alimentazione, nei tasti, nel timer o nell'autoreverse.

Disazionare il programma di prova

Va notate che:

- a. questo programma non va interrotto durante le fasi (1) e (2).
- b. questo programma, al contrario di quanto descritto sopra, è suscettibile di cambiamenti schiacciando il pulsante tuning up per la durata di un secondo.

Table 1

- Decimal point (DP)



b and e of digit 3 (see Figs. 3, 4)



g of digit 3 (see Figs. 3, 4)



FM, MHz a, c, d and f of digit 3 (see Figs. 3, 4)

MW, KHz

LW, KHz

STEREO

MONO

AUTO

MAN

MEMO

TUNED

000 00

1111 11

222 22

333 33

444 44

555 55

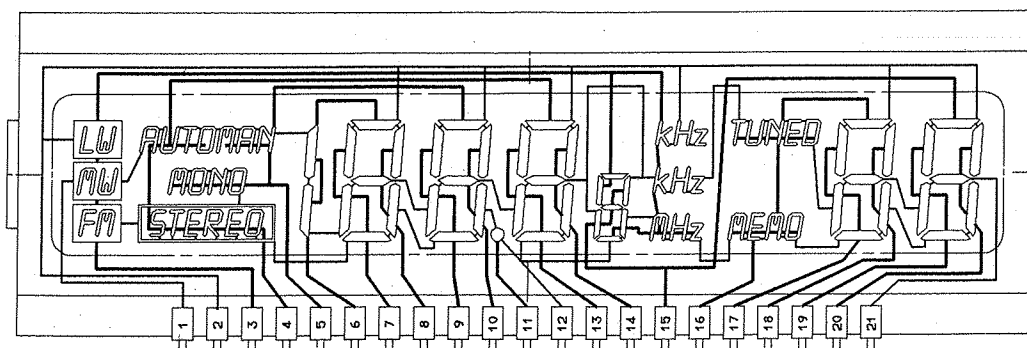
666 66

777 77

888 88

999 99

All segments except decimal point (DP) go on (see Fig. 4)



PIN 3 ... 11;
13 ... 20

1. La visualizzazione del display in versione software

Dopo che il programma di prova è stato azionato, a destra del display appare dopo per due secondi il display in versione software ('digit 1' Fig. 4). Dopo un secondo la visualizzazione sparisce nuovamente ed ha automaticamente inizio la prova Ram.

2. La prova Ram

Anche questa prova viene eseguita automaticamente. Se la prova procede senza intralci, si vedrà apparire il numero 1 ('digit 1' Fig. 4) a destra del display, se invece ci sono problemi tecnici, si vedrà apparire, sempre a destra del display (anche se la prova Ram ha avuto esiti negative).

3. La prova display

Si noti che, successivamente alla prova Ram, la prova display dà a vedere un display "bianco", dopo di che il display viene controllato automaticamente secondo il procedimento spiegato nella tabella n° 1.

Se ogni operazione è stata eseguita secondo la tabella n° 1, i dati del display resteranno visibili (si v. a proposito Fig. 4), finché la prova non verrà conclusa schiacciando per un secondo il tasto tuning up. L'apparecchio, automaticamente, si ritrova in posizione stand-by.

Si noti: però che questa prova durante la fase automatica può essere eseguita prima, schiacciando per un secondo il pulsante tuning up. L'apparecchio, automaticamente, riprende la posizione stand-by.

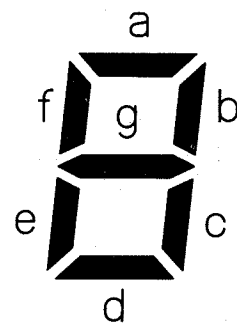


Fig. 3

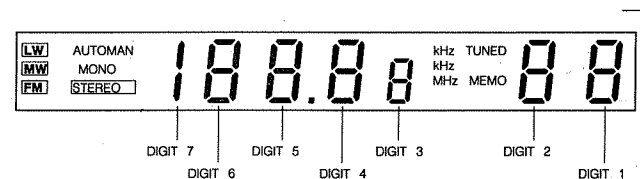
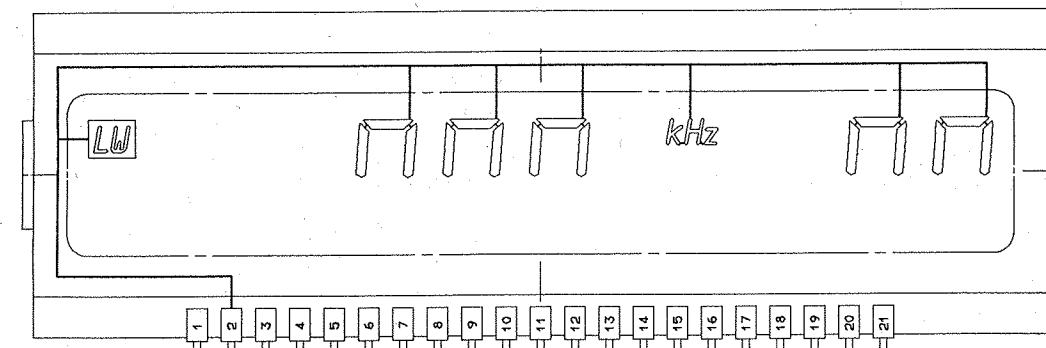
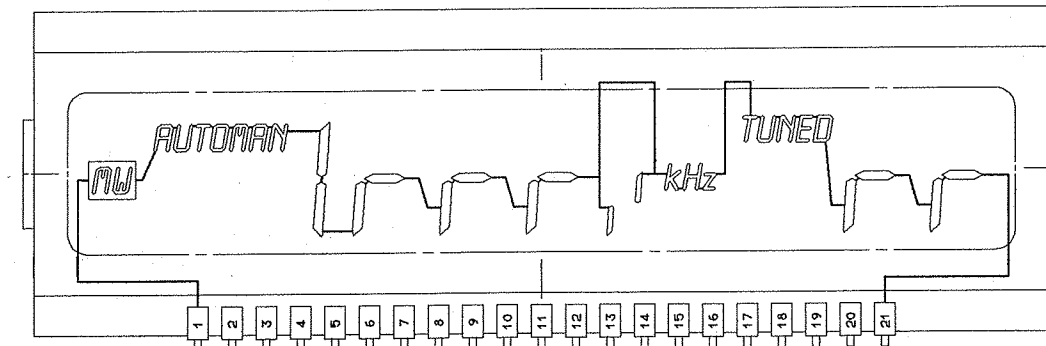


Fig. 4

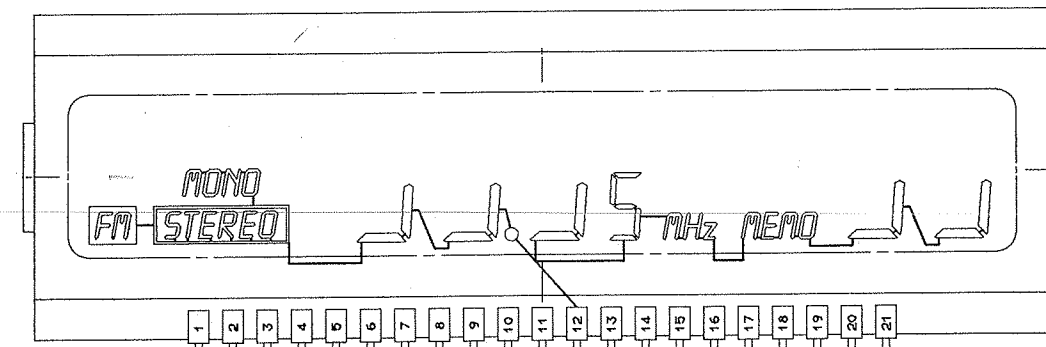
MDA.02268
T-08 932



COMMON 1



COMMON 2



COMMON 3

PIN-nr.	Common 1	Common 2	Common 3
1	Common 1 LW kHz	Common 2 MW kHz	Common 3 FM MHz a3 c3 d3 f3 Stereo Mono
2			
3			
4	a4 a5	Auto Man	
5			
6	a6	b7 c7	d6
7	f6	e6	
8	b6	g6	c6
9	f5	e5	d5
10	b5	g5	c5
11	f4 b4 a1	e4 g4 b3 e3	Decimal point Common 3 d4 c4 g3
12			
13			
14			
15	a2 f2 b2 f1 b1	Tuned e2 g2 e1 g1	Memo d2 c2 d1 c1
16			
17			
18			
19			
20			
21		Common 2	

SK... WAVE RANGE SWITCH	SIGNAL	TO	DISPLAY TUNE IN	REMARKS DETUNE	ADJUST	OSCILLOSCOPE OR A.C. METER	D.C. METER INDICATOR
-------------------------------	--------	----	--------------------	-------------------	--------	-------------------------------	-------------------------

FM-IF/T.H.D.

FM Stereo	98 MHz Δf 75 kHz 1 mV	FM antenna	Display 98.00 MHz				max.
	fo=f generator Δf 75 kHz 1 mV						 0 V $\pm$ 30 mV
							min. distortion 3

FM-RF (Oscillator)

FM	108 MHz 1 kHz mod. Δf 75 kHz	FM antenna	Display 108.00 MHz		C311	max. ~ 	8.5 V ...
	87,5 MHz 1 kHz mod. Δf 75 kHz		Display 87.50 MHz		L306		2.5 V ...

FM-RF

FM	106 MHz 1 kHz mod. Δf 75 kHz	FM antenna	Display 106.00 MHz		C305 C325 C327	max. ~ 	
	88 MHz 1 kHz mod. Δf 75 kHz		Display 88.00 MHz		L305 L308 L309		

† Repeat -Herhalen - Répéter - Wiederholen - Ricominciare - Repetera - Gentage - Gjentagelse - Toista

SERVICING HINTS

1. ESD



All ICs and many other semi-conductors are sensitive to electrostatic discharges (ESD). Careless treatment during repairs may drastically reduce life. When repairing, make sure that you are connected, via a wristlet, the same potential as the chassis of the set. Keep components and tools at this potential as well. See Service information A86-1000 for this.

2. Display DP401

The outputs of the display drivers are not protected against external overvoltages! When testing the display with external voltages, you should interrupt the connection with IC401.

3. FM IF offset

The ceramic resonators (F1+F4) have different intermediate frequencies as a result of tolerances. Dependent on the IF jumper has to be applied or a bridge has to be opened. B0+B3 (see table). The resonators have been provided with a colour code.

4. Ceramic resonators F1 + F4

When replacing one of the ceramic resonators, take care that the colour codes of all three resonators are the same.

SK... WAVE RANGE SWITCH	SIGNAL	TO	DISPLAY TUNE IN	REMARKS DETUNE	ADJUST	OSCILLOSCOPE OR A.C. mV METER	D.C. METER INDICATOR
-------------------------------	--------	----	--------------------	-------------------	--------	-------------------------------------	-------------------------

FM SEARCH STOP

FM Stereo	106 MHz 15 μ V	FM antenna	106.00 MHz		R66		0.7 V $\pm$ 0.05 V
--------------	-----------------------	---------------	------------	--	-----	--	--------------------

FM - STEREO DECODER CROSSTALK

FM Stereo	106 MHz 45 % L mod. 1 kHz 9 % pilot 1 mV	FM antenna	106.00 MHz		R69	min ~ (1 kHz)	
--------------	--	---------------	------------	--	-----	---------------	--

FM - PILOT - FILTERS

FM Stereo	106 MHz 1 mV 9 % pilot	FM antenna	106.00 MHz		F9 F10	min ~ 19 kHz	
					F9 F10	min ~ 38 kHz	

SERVICEWENKEN

1. ESD



Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op hetzelfde potentiaal. Zie hiervoor service information A86-1000.

2. Display DP401

De outputs van de display drivers in IC401 zijn niet beveiligd tegen externe overspanningen! Bij het testen van de display met externe spanningen dienen de verbindingen met IC401 onderbroken te worden.

3. FM middenfrequent offset

De keramische resonatoren (F1+F4) hebben verschillende middenfrequenties, als gevolg van toleranties. Afhankelijk van de middenfrequentie dient een jumper worden aangebracht of een brug worden geopend. B0+B3 (zie tabel). De resonatoren zijn voorzien van een kleurcode.

4. Keramische resonatoren F1 + F4

Bij het vervangen van een van de keramische resonatoren dient men erop te letten dat de kleurcode van alle drie resonatoren dezelfde is.

ELECTRICAL ADJUSTMENTS AND CHECKS

General

- For the HF adjustments, the injected signals should be kept as small as possible.
- Connect the frame aerial in case AM is used.
- The AM IF amplifier is adjusted with a wobulator signal of approx 600 kHz having a sweep of 250 kHz at a rhythm of 50 Hz.

Measuring equipment used

- Power-supply equipment
- Oscilloscope
- DC millivoltmeter
- AC millivoltmeter
- Frequency counter
- Distortion meter

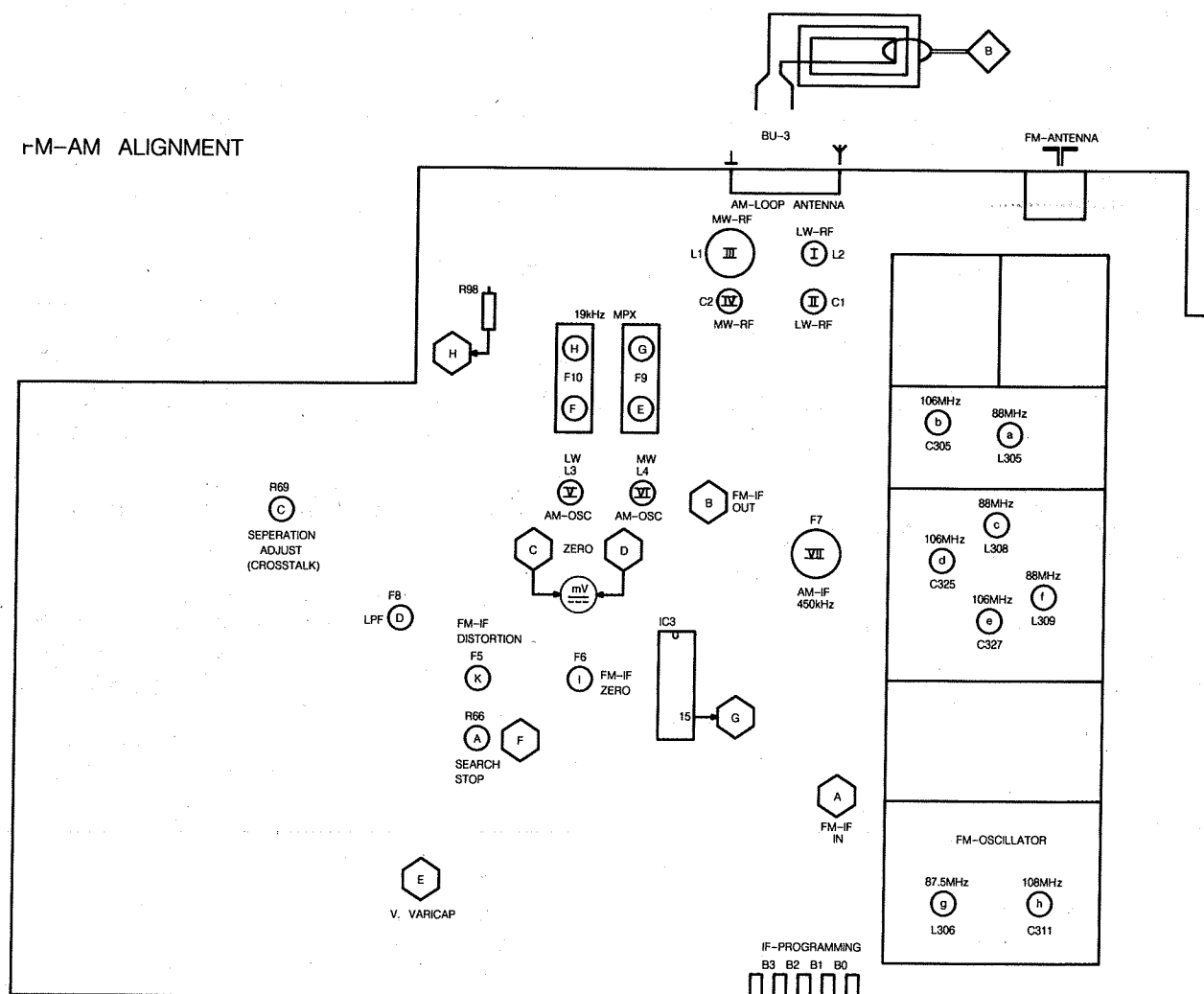
ELUCIDATIONS

- 1** Place the top of the response curve in the centre of the screen by displacing the wobulating frequency.
- 2** Adjust for maximum height and symmetry.
- 3** Adjust for minimum THD distortion on the distortion meter.

 Measuring point

○ Trimming element

rM-AM ALIGNMENT



SK... WAVE RANGE SWITCH	 SIGNAL	 TO	DISPLAY TUNE IN	REMARKS DETUNE	 ADJUST	 OSCILLOSCOPE OR A.C. METER	 D.C. METER INDICATOR
-------------------------------	---	---	--------------------	-------------------	---	--	--

FM-IF/T.H.D.

FM Stereo	98 MHz Δf 75 kHz 1 mV	FM antenna	Display 98.00 MHz				 max.
	fo=f generator Δf =75 kHz 1 mV				 F6		  0 V $\pm$ 30 mV
					 F5		 min. distortion 3

FM-RF (Oscillator)

FM	108 MHz 1 kHz mod. Δf=75 kHz	FM antenna	Display 108.00 MHz		 C311	max. ~ 	 8.5 V ...
	87,5 MHz 1 kHz mod. Δf=75 kHz		Display 87.50 MHz				 L306

FM-RF

FM	106 MHz 1 kHz mod. $\Delta f=75$ kHz	FM antenna	Display 106.00 MHz		(b) C305 (d) C325 (e) C327	max. ~ 	
	88 MHz 1 kHz mod. $\Delta f=75$ kHz		Display 88.00 MHz		(a) L305 (c) L308 (f) L309		

↕ Repeat -Herhalen - Répéter - Wiederholen - Ricominciare - Repetera - Gentage - Gientagelse - Toista

GB **SERVICING HINTS**

1. ESD



All ICs and many other semi-conductors are sensitive to electrostatic discharges (ESD). Careless treatment during repairs may drastically reduce life.

When repairing, make sure that you are connected, via a wristlet, the same potential as the chassis of the set.

Keep components and tools at this potential as well. See Service information A86-1000 for this.

2. Display DP401

The outputs of the display drivers are not protected against external overvoltages! When testing the display with external voltages, you should interrupt the connection with IC401.

3. FM IF offset

The ceramic resonators (F1+F4) have different intermediate frequencies as a result of tolerances. Dependent on the IF jumper has to be applied or a bridge has to be opened. B0+B3 (see table). The resonators have been provided with a colour code.

4. Ceramic resonators F1 ÷ F4

When replacing one of the ceramic resonators, take care that the colour codes of all three resonators are the same.

SK... WAVE RANGE SWITCH	 SIGN
---	---

FM SEARCH STOP

FM Stereo	106 M 15 μ
--------------	---------------

FM - STEREO DECODER

FM Stereo	106 MHz 45 % mod. 1 9 % p 1 mV
--------------	--

FM - PILOT - FILTERS

FM Stereo	106 MHz 1 mV 9 % pilot
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NL SERVICEWENKE

1. ESD

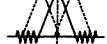
[illegible]

2. Display DP401

De outputs van de display zijn beveiligd tegen externe aansluitingen van de display met externe verbindingen met IC40.

SK... WAVE RANGE SWITCH	 SIGNAL	 TO	DISPLAY TUNE IN	REMARKS DETUNE	 ADJUST	 OSCILLOSCOPE OR A.C. METER	 D.C. METER INDICATOR
-------------------------------	---	---	--------------------	-------------------	---	--	--

AM-IF

MW	558 kHz Δf 10 kHz (50 Hz)	B	Display 558 kHz			Center 
	$f_o = f_{\text{generator}}$ Δf 10 kHz (50 Hz)				VII F7	Symmetrical 

AM-RF (Oscillator)

MW	522 kHz 1 kHz mod. m=30%		Display 522 kHz	 L4	 max ~	 1,0 V ...
LW	153 kHz 1 kHz mod. m=30%		Display 153 kHz			 L3

AM-RF

MW	1449 kHz 1 kHz mod m=30%		Display 1449 kHz		 C2	 max ~	
	558 kHz 1 kHz mod m=30%		Display 558 kHz		 L1		
LW	261 kHz 1 kHz mod. m=30%		Display 261 kHz		 C1		
	162 kHz 1 kHz mod m=30%		Display 162 kHz		 L2		

↕ Repeat -Herhalen - Répéter - Wiederholen - Ricominciare - Repetera - Gentage - Gjentagelse - Toista

(F) CONSEILS PRATIQUES

1. ESD

Tous les circuits intégrés et de nombreux semi-conducteurs sont sensibles aux décharges électrostatiques.

Le manque de soin apporté aux réparations est susceptible de réduire considérablement la durée de vie. Veuillez pendant les réparations à être connecté par l'intermédiaire d'un bracelet à résistance au même potentiel que la masse de l'appareil.

Maintenez également les composants et les accessoires à ce même potentiel. Voir à ce sujet l'information du service après-vente A86-1000.

2. Afficheur DP401

Les sorties des circuits de commande d'affichage ne sont pas protégées contre les surtensions extérieures! Si l'on teste l'afficheur avec des tensions extérieures, on devra couper les connexions avec IC401.

3. Offset FM-IF

Les résonateurs céramique (F1 à F4) possèdent des fréquences intermédiaires différentes du fait de tolérances.
Indépendamment de la fréquence intermédiaire, un câble de pontage doit être monté entre B0 - B3 (voir tableau).
Les résonateurs ont un code de couleur.

4. Résonateurs céramiques F1 + F4

Lors du remplacement de l'un des résonateurs
céramiques, on ne devra pas oublier que les trois
résonateurs ont la même couleur code.

D SERVICE HINWEISE

1. ESD

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten. Siehe dafür die Service Information A86-1000.

2. Display DP401

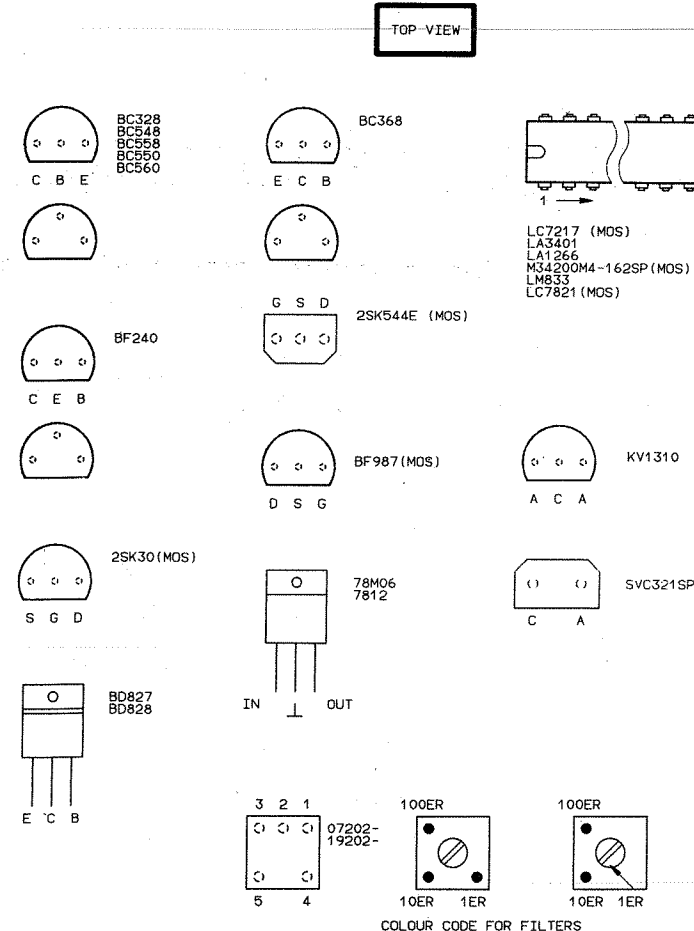
Die 'outputs' der Displaytreiber IC401 sind nicht vor externen Überspannungen geschützt! Beim Prüfen des Displays mit externen Spannungen müssen die Verbindungen mit IC401 unterbrochen werden.

3. FM-ZF-Offset

Die Keramik Kondensatoren (F1 + F4) weisen infolge der Toleranzen unterschiedliche Zwischenfrequenzen auf.
Durch die Zwischenfrequenz bedingt muss ein Brückendraht ("jumper") angebracht oder eine Brücke B0+B3 geöffnet werden (siehe Tabelle).
Die Resonatoren sind mit einem Farbcode versehen.

4. Keramikresonatoren F1 ÷ F4

Beim Auswechseln eines der Keramikresonatoren ist zu beachten, dass der Farbcode aller drei Resonatoren der gleiche ist.



 ABSOLUTELY NECESSARY FOR THE SAFETY OF THE SET. THESE COMPONENTS MEET THE SAFETY REQUIREMENTS ACCORDING TO VDE OR IEC. RESP. AND MUST BE REPLACED BY PARTS OF SAME SPECIFICATION ONLY.

I CONSIGLI PER LA RIPARAZIONE

1. ESD

Tutti gli IC e molti altri semiconduttori sono sensibili alle scariche elettrostatiche (ESD).
 la non attenzione durante la riparazione può ridurre drasticamente la vita di questi componenti.
 Durante la riparazione bisogna aver cura di essere collegati allo stesso potenziale dello chassis dell'apparecchio. Teneri i componenti e gli attrezzi a questo potenziale.
 Vedere l'informazione di servizio A-86-1000.

2. Display DP401

Le uscite del pilota display non sono protette contro sovraccarichi esterni. Quando si eseguono controlli sul display con tensioni esterne, interrompere i collegamenti con IC401

3. Offset FM-FI

I resonatori ceramici (da F1 a F4) hanno frequenze intermedie diverse dal fatto delle tolleranze diverse. Indipendentemente dalla frequenza intermedia, un filo di ponticello deve essere montato o un ponticello, aperto fra B0+B3 (vedi tabella).

4. Risonatori ceramici F1 + F4

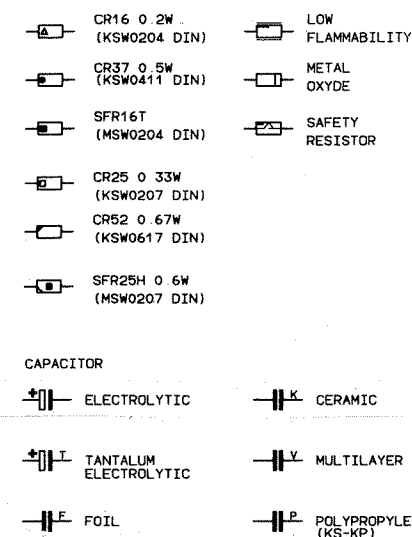
Quando si sostituisce uno dei risonatori ceramici, assicurarsi che il codice colore di tutti e tre i risonatori sia.

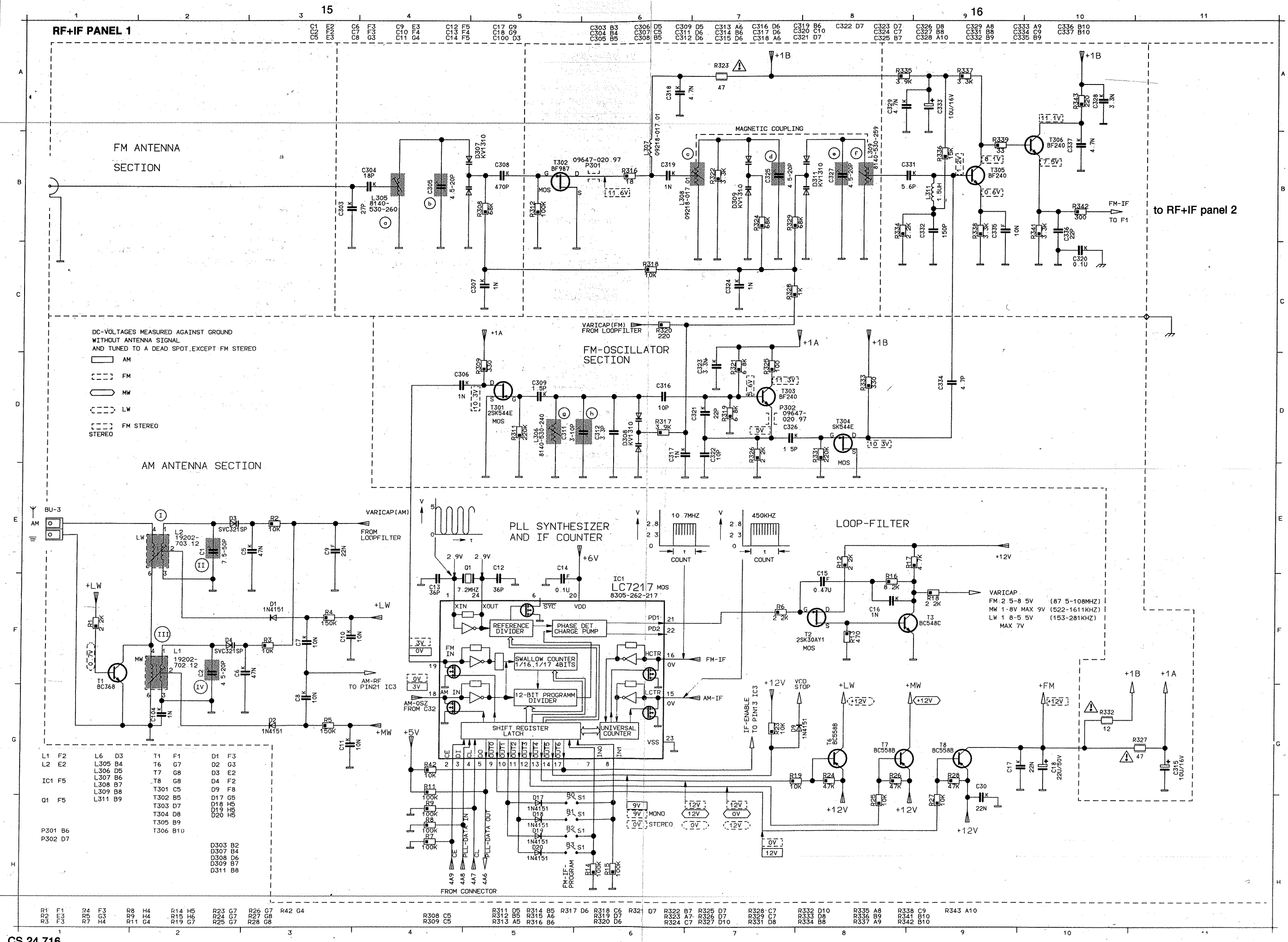
FM-IF program

Jumper					
IF (MHz)	B3	B2	B1	B0	Filter color
10.6500	0	1	0	0	Black
10.6750	0	1	1	0	Blue
10.7000	1	0	0	0	Red
10.7225	1	0	1	0	Orange
10.7500	1	1	0	0	White

0 = jumper open

1 = jumper closed

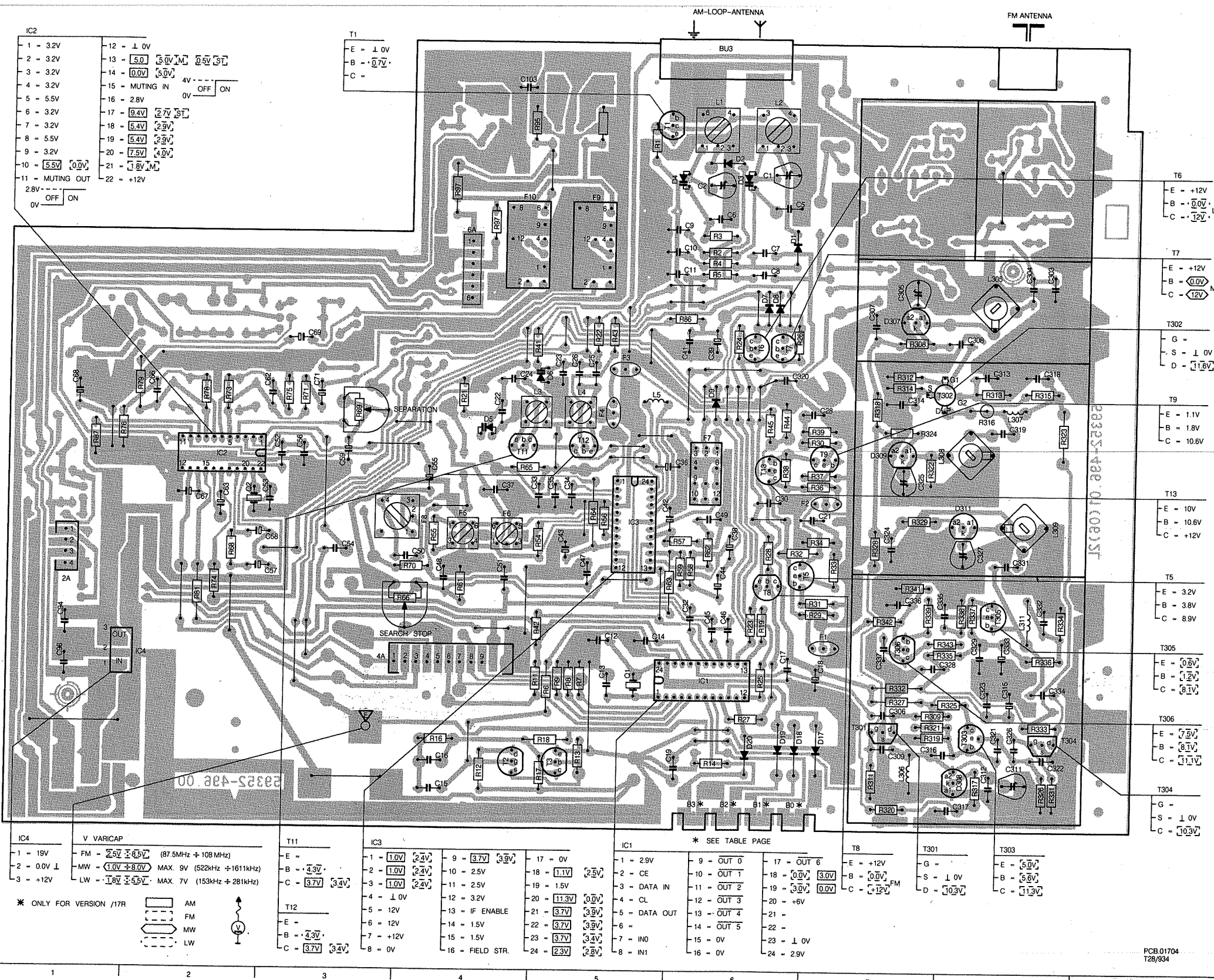




RF+IF PANEL

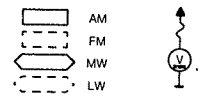
IC2	1 - 3.2V	12 - 1.0V
	2 - 3.2V	13 - 5.0V M 0.5V ST
	3 - 3.2V	14 - 0.0V 5.0V
	4 - 3.2V	15 - MUTING IN 4V OFF ON
	5 - 5.5V	16 - 2.8V
	6 - 3.2V	17 - 9.4V 2.7V ST
	7 - 3.2V	18 - 5.4V 2.9V
	8 - 5.5V	19 - 5.4V 2.9V
	9 - 3.2V	20 - 7.5V 4.0V
	10 - 5.5V 0.0V	21 - 1.8V M
	11 - MUTING OUT 2.8V OFF ON	22 - +12V

T1	E - 1.0V
	B - 0.7V
	C -



IC4	1 - 19V	V VARICAP
	2 - 0.0V	FM - 2.5V ± 0.5V (87.5MHz ± 108MHz)
	3 - +12V	MW - 1.0V ± 0.0V MAX. 9V (522kHz ± 1611kHz)
		LW - 1.8V ± 0.5V MAX. 7V (153kHz ± 281kHz)

* ONLY FOR VERSION /17R



T11	E -
	B - 4.3V
	C - 3.7V 3.4V

IC3	1 - 1.0V 2.4V	9 - 3.7V 3.9V	17 - 0V
	2 - 1.0V 2.4V	10 - 2.5V	18 - 1.1V 2.5V
	3 - 1.0V 2.4V	11 - 2.5V	19 - 1.5V
	4 - 1.0V	12 - 3.2V	20 - 11.3V 0.0V
	5 - 12V	13 - IF ENABLE	21 - 3.7V 3.9V
	6 - 12V	14 - 1.5V	22 - 3.7V 3.9V
	7 - +12V	15 - 1.5V	23 - 3.7V 3.4V
	8 - 0V	16 - FIELD STR.	24 - 2.3V 2.5V

IC1	1 - 2.9V	9 - OUT 0	17 - OUT 6
	2 - CE	10 - OUT 1	18 - 0.0V 3.0V
	3 - DATA IN	11 - OUT 2	19 - 3.0V 0.0V
	4 - CL	12 - OUT 3	20 - +6V
	5 - DATA OUT	13 - OUT 4	21 -
	6 -	14 - OUT 5	22 -
	7 - IN0	15 - 0V	23 - 1.0V
	8 - IN1	16 - 0V	24 - 2.9V

T8	E - +12V
	B - 0.0V FM
	C - +12V

T301	G -
	S - 1.0V
	D - 10.3V

T303	E - 5.0V
	B - 5.6V
	C - 11.3V

PCB.01704
T28/934

2A	E 1	D9	C 6	R78	C 2
4A	E 3	F1	E 7	R79	C 2
6A	B 4	F10	E 7	R80	C 2
8A	F 6	F2	D 7	R81	E 5
B1	F 6	F3	C 5	R82	E 6
B2	F 6	F4	C 5	R83	O 1
B3	F 6	F5	D 4	R84	E 5
BU3	A 6	F6	D 4	R85	A 4
C1	B 6	F7	D 6	R86	B 4
C10	B 6	F8	D 4	R87	B 4
C103	A 4	F9	B 5	T1	A 5
C11	B 6	IC1	E 6	T11	D 4
C12	E 5	IC2	D 2	T12	D 5
C13	E 5	IC3	D 5	T13	D 6
C14	E 5	IC4	E 2	T2	F 4
C15	F 4	L1	A 6	T3	F 7
C16	F 4	L2	A 6	T301	C 8
C17	E 6	L3	C 5	T302	C 8
C18	E 7	L305	C 8	T303	F 8
C19	F 6	L306	F 7	T304	F 8
C2	B 6	L307	D 8	T305	E 8
C21	D 7	L308	D 7	T306	E 7
C22	C 4	L309	D 8	T5	E 7
C23	C 5	L311	E 8	T6	C 6
C24	C 4	L4	C 5	T7	E 6
C25	C 5	L5	C 5	T8	E 6
C26	C 5	Q1	E 5	T9	D 7
C28	D 7	Q2	D 2		
C30	D 6	R1	E 5		
C303	B 8	R11	E 5		
C304	B 8	R12	F 4		
C305	C 7	R13	F 5		
C306	F 7	R14	F 6		
C307	C 7	R16	F 4		
C308	C 8	R17	F 5		
C309	F 7	R18	F 5		
C311	F 8	R19	E 6		
C312	F 8	R2	B 6		
C313	C 8	R21	C 4		
C314	C 7	R22	C 5		
C315	F 8	R23	E 6		
C316	F 7	R24	C 6		
C317	F 8	R25	E 6		
C318	C 8	R26	C 6		
C319	D 8	R27	F 6		
C32	E 6	R28	E 7		
C320	R29	R3	B 6		
C321	F 8	R30	D 7		
C322	F 8	R308	C 7		
C323	F 8	R309	F 7		
C324	D 7	R31	E 7		
C325	D 7	R311	F 7		
C326	F 8	R312	C 7		
C327	E 8	R313	C 8		
C328	E 8	R314	C 8		
C329	E 8	R315	C 8		
C33	D 4	R316	D 8		
C331	E 8	R317	F 8		
C332	E 8	R318	C 7		
C333	F 8	R319	F 7		
C334	F 8	R32	E 6		
C335	E 7	R320	F 7		
C336	E 7	R321	F 7		
C337	E 7	R322	D 7		
C34	D 5	R323	D 8		
C35	D 5	R324	D 7		
C36	D 6	R325	F 8		
C37	D 4	R326	F 8		
C38	D 6	R327	F 7		
C39	C 6	R328	D 7		
C41	C 6	R329	D 7		
C42	D 5	R33	E 7		
C43	D 5	R331	F 8		
C44	E 6	R332	F 7		
C45	E 6	R333	F 8		
C46	E 6	R334	E 8		
C47	E 6	R335	E 8		
C48	E 4	R336	E 8		
C49	D 6	R337	E 8		
C5	B 6	R338	E 8		
C50	E 4	R339	E 7		
C51	E 4	R34	D 7		
C52	D 3	R341	E 7		
C53	D 3	R342	E 7		
C54	E 3	R343	E 8		
C55	D 4	R36	D 7		
C56	D 3	R37	D 7		
C57	E 3	R38	D 6		
C58	D 3	R39	D 7		
C59	D 3	R4	B 6		
C6	B 6	R41	C 4		
C62	C 3	R42	E 5		
C63	D 2	R43	C 5		
C66	D 2	R44	D 6		
C67	D 2	R45	D 6		
C68	C 1	R46	D 6		
C69	C 3	R5	C 6		
C7	B 6	R54	D 5		
C71	C 3	R55	D 4		
C8	B 6	R56	D 5		
C9	B 6	R57	D 6		
C94	E 1	R58	E 6		
C96	E 1	R59	E 6		
D1	B 6	R6	F 5		
D17	F 7	R61	E 4		
D18	F 6	R62	E 4		
D19	F 6	R63	E 5		
D2	B 6	R64	D 5		
D20	F 6	R65	D 4		
D3	B 6	R66	E 4		
D307	C 7	R68	E 2		
D308	F 8	R69	D 3		
D309	D 7	R7	E 5		
D311	D 8	R70	E 4		
D4	B 5	R71	C 3		
D5	D 4	R73	C 2		
D6	C 5	R74	E 2		
D7	C 5	R75	C 3		
D8	C 6	R76	D 1		

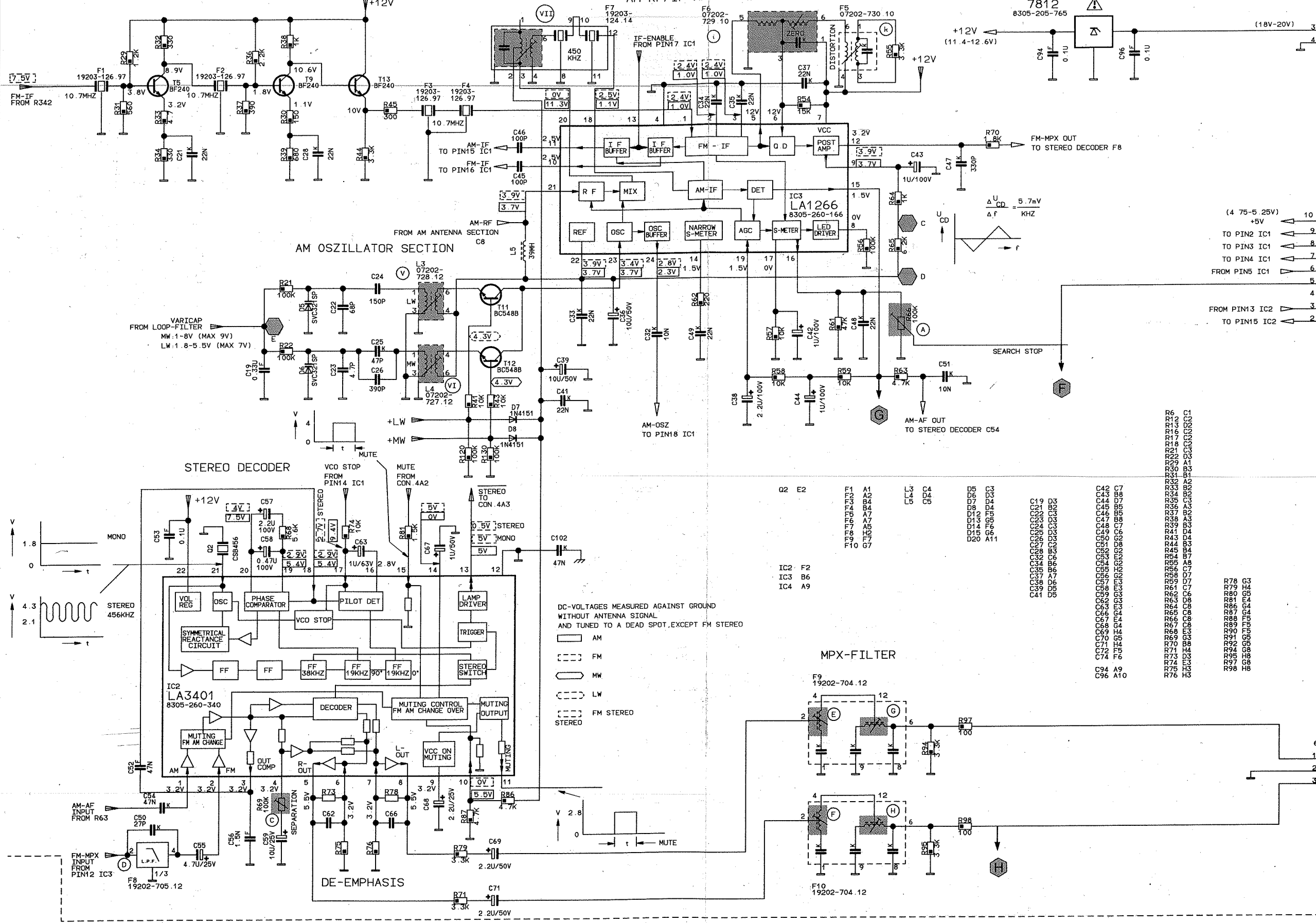
RF+IF PANEL 2

AM-RF/IF AND FM-IF

to ampl.-
supply panel

to operat.-
panel 1

to plug-source
selector
spatial
surround
panel



AM OSCILLATOR SECTION

STEREO DECODER

MPX-FILTER

DC-VOLTAGES MEASURED AGAINST GROUND
WITHOUT ANTENNA SIGNAL
AND TUNED TO A DEAD SPOT, EXCEPT FM STEREO

- AM
- FM
- MW
- LW
- FM STEREO
- STEREO

DE-EMPHASIS FOR:	R73	R75	C62
.00 (EURO)	270K	330K	180P

R6	C1
R7	C2
R8	C3
R9	C4
R10	C5
R11	C6
R12	C7
R13	C8
R14	C9
R15	C10
R16	C11
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R97	C92
R98	C93

R76	H3
R77	H4
R78	H5
R79	H6
R80	H7
R81	H8
R82	H9
R83	H10
R84	H11
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R94	H21
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R96	H23
R97	H24
R98	H25

R6	C1
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R76	H3
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R98	C93

R76	H3
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R96	H23
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R98	H25

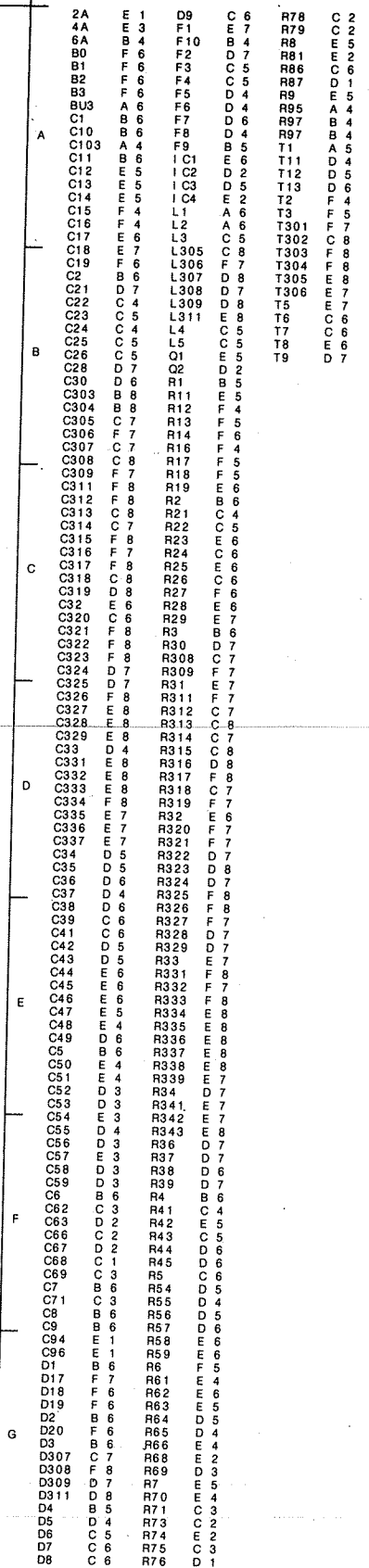
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R98	C93

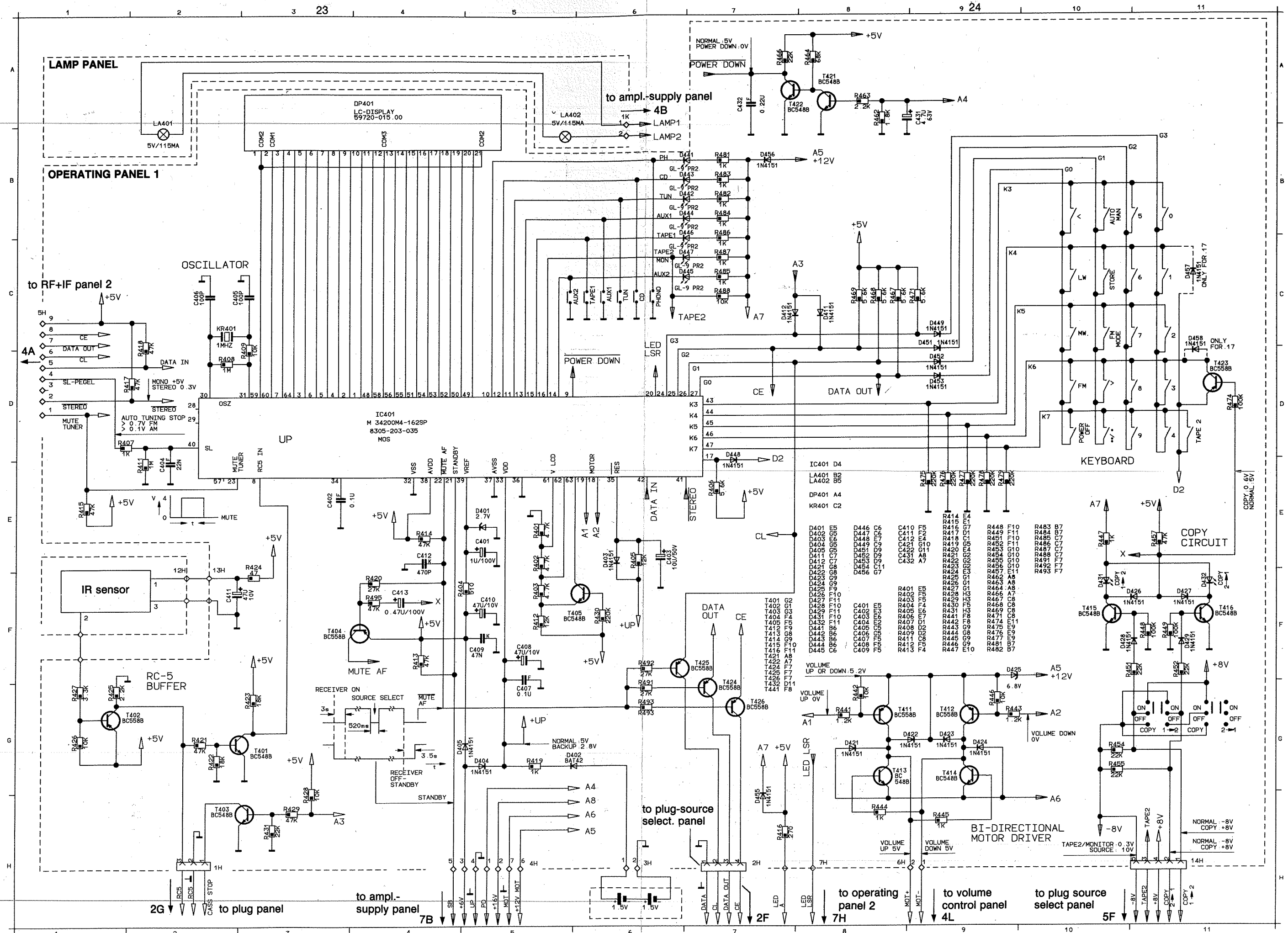
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R97	H24
R98	H25

R6	C1
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R98	C93

R76	H3
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R98	H25

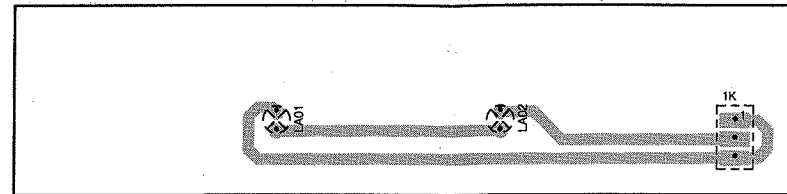
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R13	C3
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R17	C2
R18	C2
R21	C3
R22	D3
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R30	B3
R31	B1
R32	A2
R33	B2
R34	B2
R35	C3
R36	A3
R37	B2
R38	A3
R39	B3
R41	D4
R43	D4
R44	B3
R45	B4
R54	B7
R55	A8





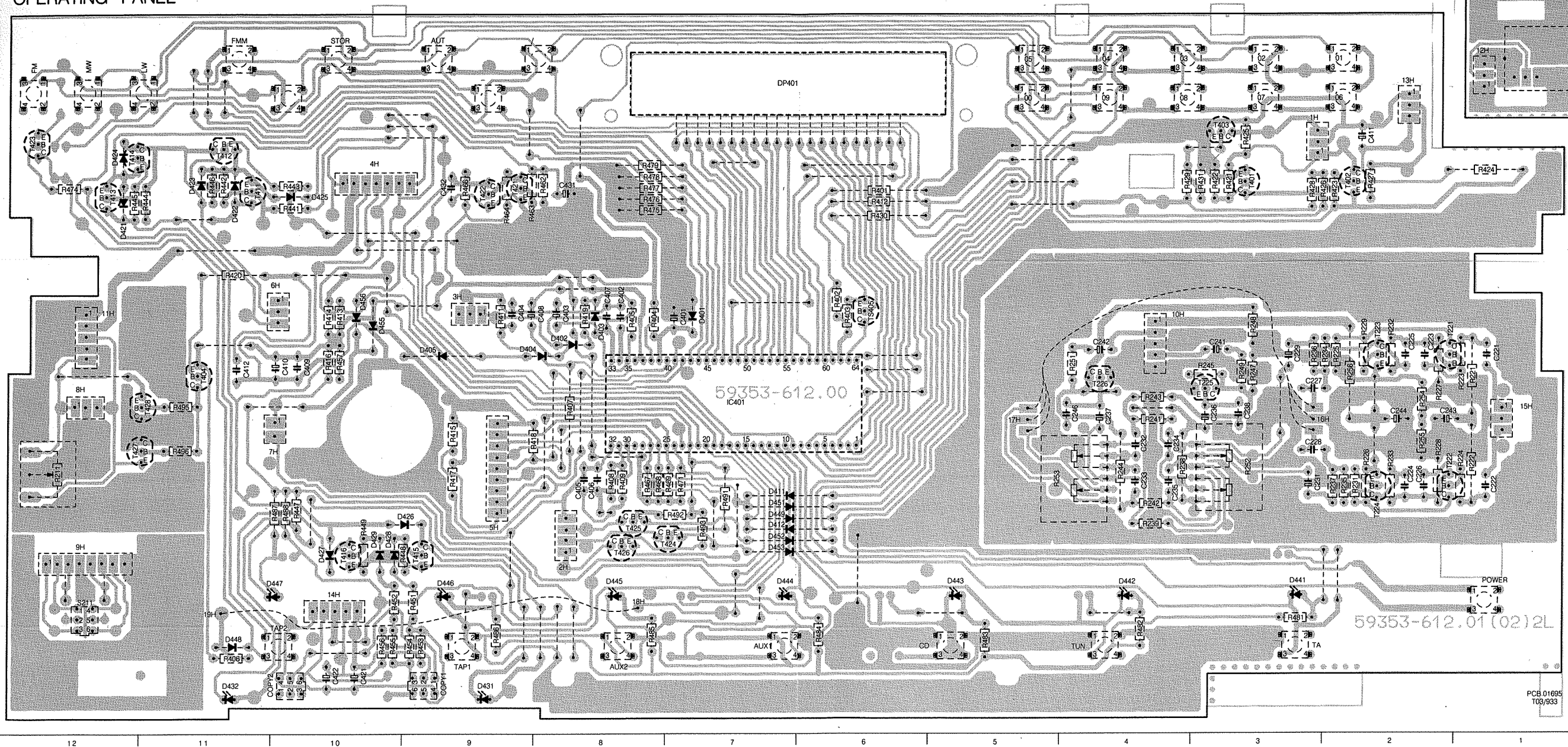
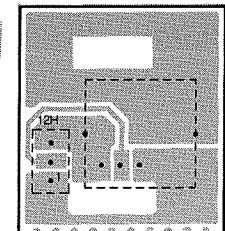
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08 C4	1K A5	AUT B9	C227 E3	C237 E4	C403 D8	C412 E11	D402 E8	D423 C11	D441 F3	D451 F7	LA01 A7	R224 E1	R234 E2	R244 F4	R255 E2	R408 F8	R418 E8	R427 C2	R445 C12	R455 G10	R469 F7	R482 G4	R493 F7	T225 E4	T414 C12	T427 E11
09 C4	2H F8	AUX1 G7	C228 E3	C238 E3	C404 D9	C421 G10	D403 D8	D424 C12	D442 F4	D452 F7	LA02 A6	R225 E2	R235 F2	R245 E4	R256 E2	R409 F8	R419 D8	R428 C3	R446 C11	R456 G10	R471 F7	R483 G5	R495 E11	T226 E4	T415 F9	T428 E11
01 B3	10H D4	3H D9	C229 E3	C241 E3	C405 F8	C422 G10	D404 E9	D425 C10	D443 F5	D453 F7	LW B11	R226 E2	R236 E3	R247 E3	R401 C6	R411 D9	R420 D11	R429 C4	R447 F10	R457 E10	R474 C12	R484 G6	R496 E11	T401 C3	T416 F10	TA G3
02 B3	11H D12	4H C10	C231 F3	C242 E4	C406 F8	C431 C8	D405 D6	D426 F10	D444 F7	D455 D10	MW B12	R227 E2	R237 F2	R248 D3	R402 D6	R412 C6	R421 C3	R430 D6	R448 F9	R462 C8	R475 D8	R485 G8	S211 G12	T402 C2	T421 C9	TAP1 G9
03 B4	12H B1	5H F9	C232 E4	C243 E2	C407 D8	C432 C9	D405 E9	D427 F10	D445 F8	D456 D10	POWER F1	R228 E2	R238 F4	R249 E3	R403 D6	R413 D10	R422 C3	R431 C3	R449 F10	R463 D8	R476 C8	R486 G9	STOR B10	T403 C3	T422 C9	TAP2 G11
04 B4	13H C2	6H D11	C233 F4	C244 E2	C408 D8	CD G6	D411 F7	D428 F10	D446 F9	DP401 C7	R211 F12	R229 D2	R239 F4	R251 E4	R404 D8	R414 D10	R423 C2	R441 C11	R451 G9	R464 D9	R477 C8	R487 F10	T221 D1	T404 E11	T423 C12	TUN G4
05 B5	14H G10	7H E11	C234 E4	C246 E4	C409 E10	COPY1 G9	D412 F7	D429 F10	D447 F11	FM B12	R221 E1	R231 F2	R241 E4	R252 F3	R405 D8	R415 E9	R424 C1	R442 C11	R452 G10	R466 C9	R478 C8	R488 F10	T222 E2	T411 C11	T424 F8	
06 C3	15H E1	8H E12	C235 F4	C401 D7	C410 E10	COPY2 G10	D421 D12	D431 G9	D448 G11	FMM B11	R222 E1	R232 D2	R242 F4	R253 F4	R406 G11	R416 E10	R425 C3	R443 C11	R453 G9	R467 F8	R479 C8	R491 F7	T223 D2	T412 C11	T425 F8	

LAMP-PANEL



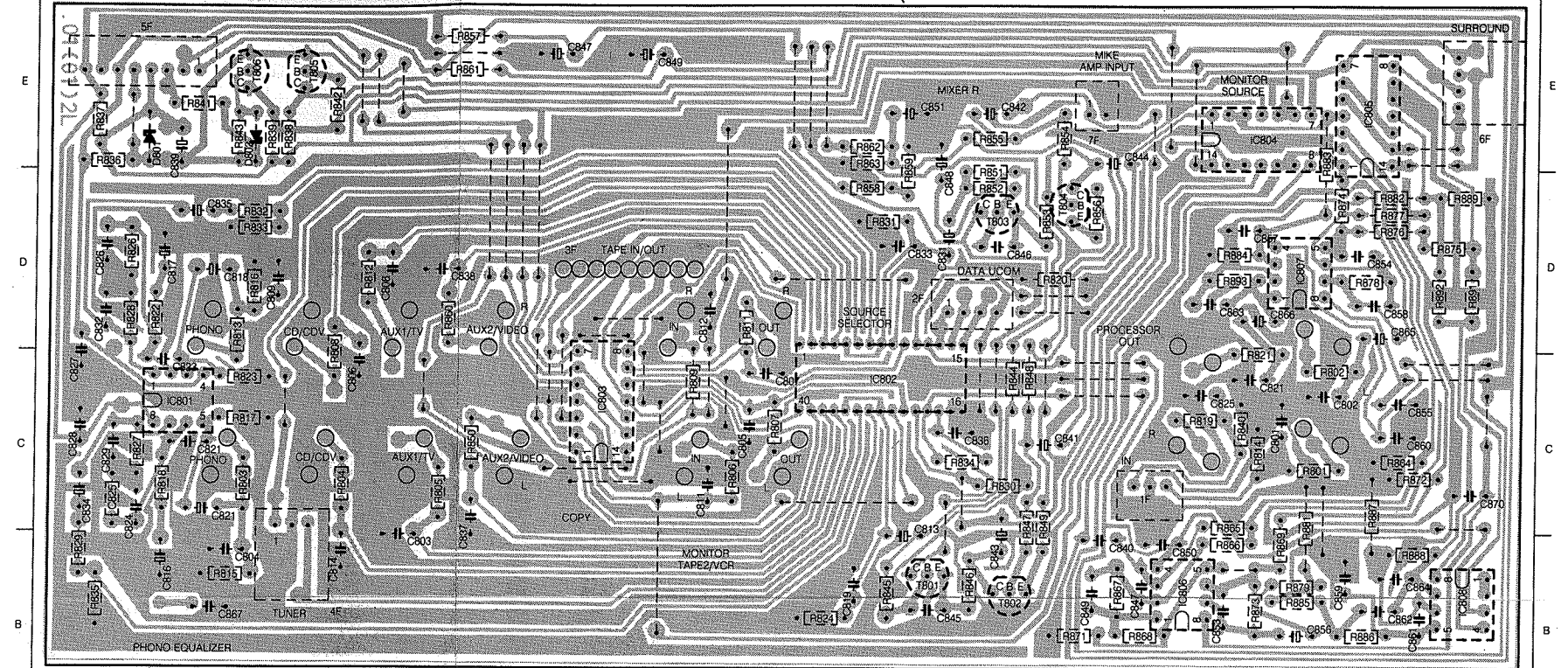
OPERATING PANEL

IR-SENSOR PANEL

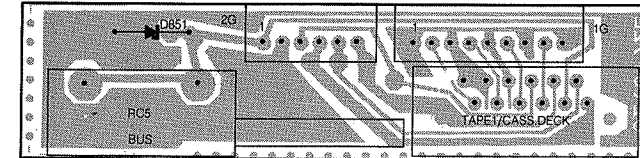
PCB 01695
103/933

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1G	A5	C803	B2	C814	B2	C825	C1	C835	D1	C845	B5	C854	D7	C864	B7	IC802	C4	R803	C1	R814	C6	R824	B4	R835	B1	R845	B5	R855	E5	R865	B6	R876	D7	R887	B7	T806	E1
2G	A4	C805	C4	C817	D1	C826	D1	C837	B2	C847	E3	C856	B7	C866	D6	IC803	C3	R805	C2	R816	D1	R827	C1	R837	E1	R847	B5	R857	E2	R867	B6	R877	D7	R888	B7	TAPE1	A5
3F	D3	C806	C2	C818	D1	C827	C1	C838	D2	C847	B6	C857	D6	C867	B1	IC804	E6	R806	C4	R817	C1	R828	D1	R838	E2	R848	C5	R858	D4	R868	B6	R879	B6	R891	D7		
4F	B2	C807	C4	C819	B4	C828	C1	C839	D1	C848	D5	C858	D7	C870	C7	IC805	E7	R807	C4	R818	C1	R829	B1	R839	E2	R849	B5	R859	D5	R869	B6	R881	B7	R892	D7		
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7F	E6	C811	B4	C821	C6	C832	C1	C842	E5	C850	B6	C861	B7	D851	A3	IC808	B7	R811	C4	R821	C6	R832	D1	R842	E2	R852	D5	R862	E4	R873	B6	R884	D6	T803	D5		
C801	C6	C812	C4	C823	C1	C833	D5	C843	B5	C851	E5	C862	B7	IC801	C1	R801	C7	R812	D2	R822	D1	R833	D1	R843	E1	R853	D5	R863	D4	R874	D7	R885	B6	T804	D5		

PLUG-SOURCE SELECTOR-SPATIAL SURROUND PANEL



PLUG PANEL

PCB.01663
T03-934

PLUG-SOURCE SELECTOR PANEL spatial surround panel

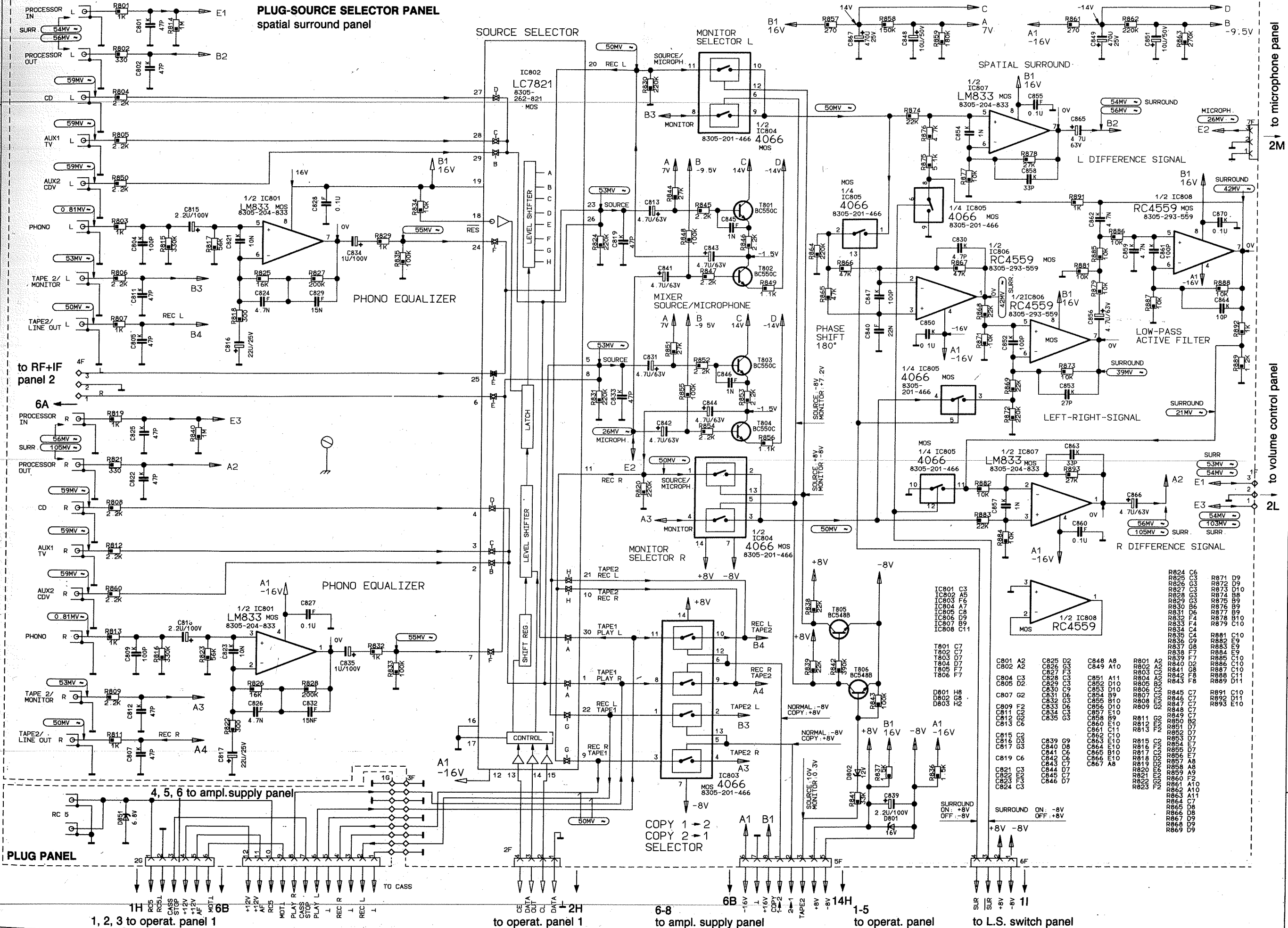
SOURCE SELECTOR

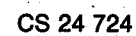
MONITOR SELECTOR L

SPATIAL SURROUND

to microphone panel
2M

to volume control panel
2L





12		11		10		9		8		7		6		5		4		3		2	
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OPERATING PANEL (TONE CONTROL)

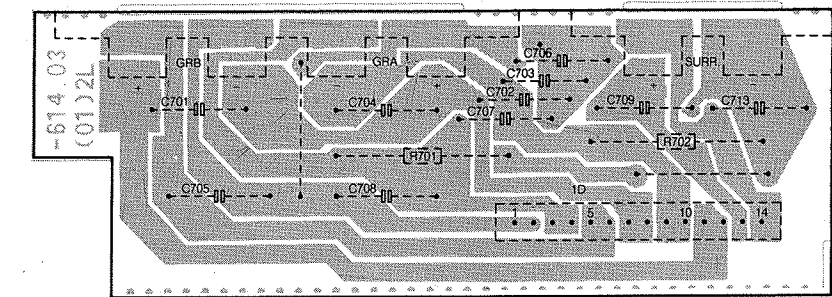


VOLUME CONTROL PANEL

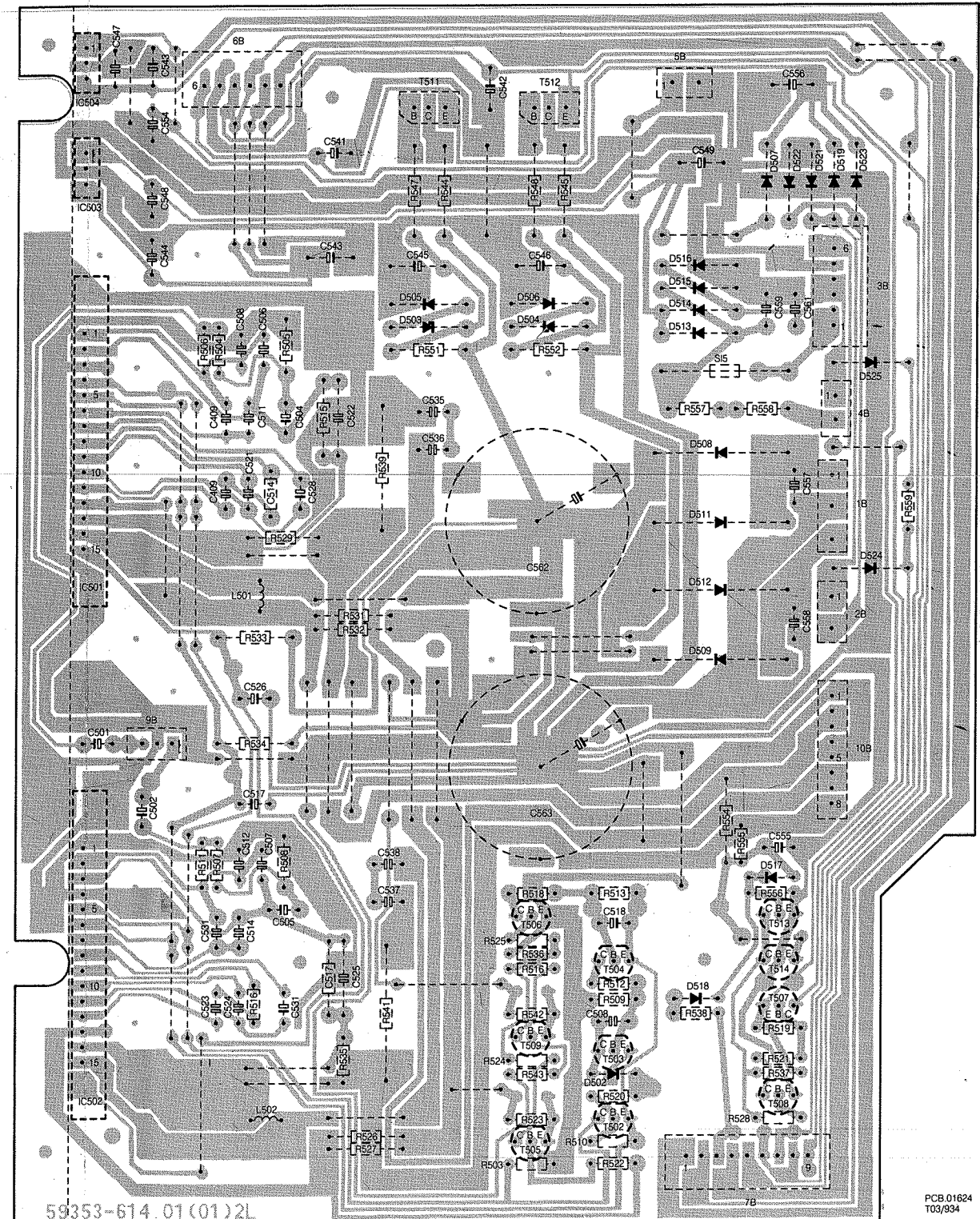
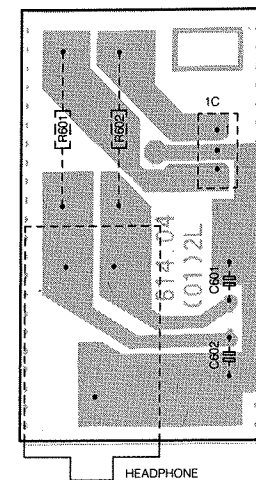


MICROPHONE PANEL

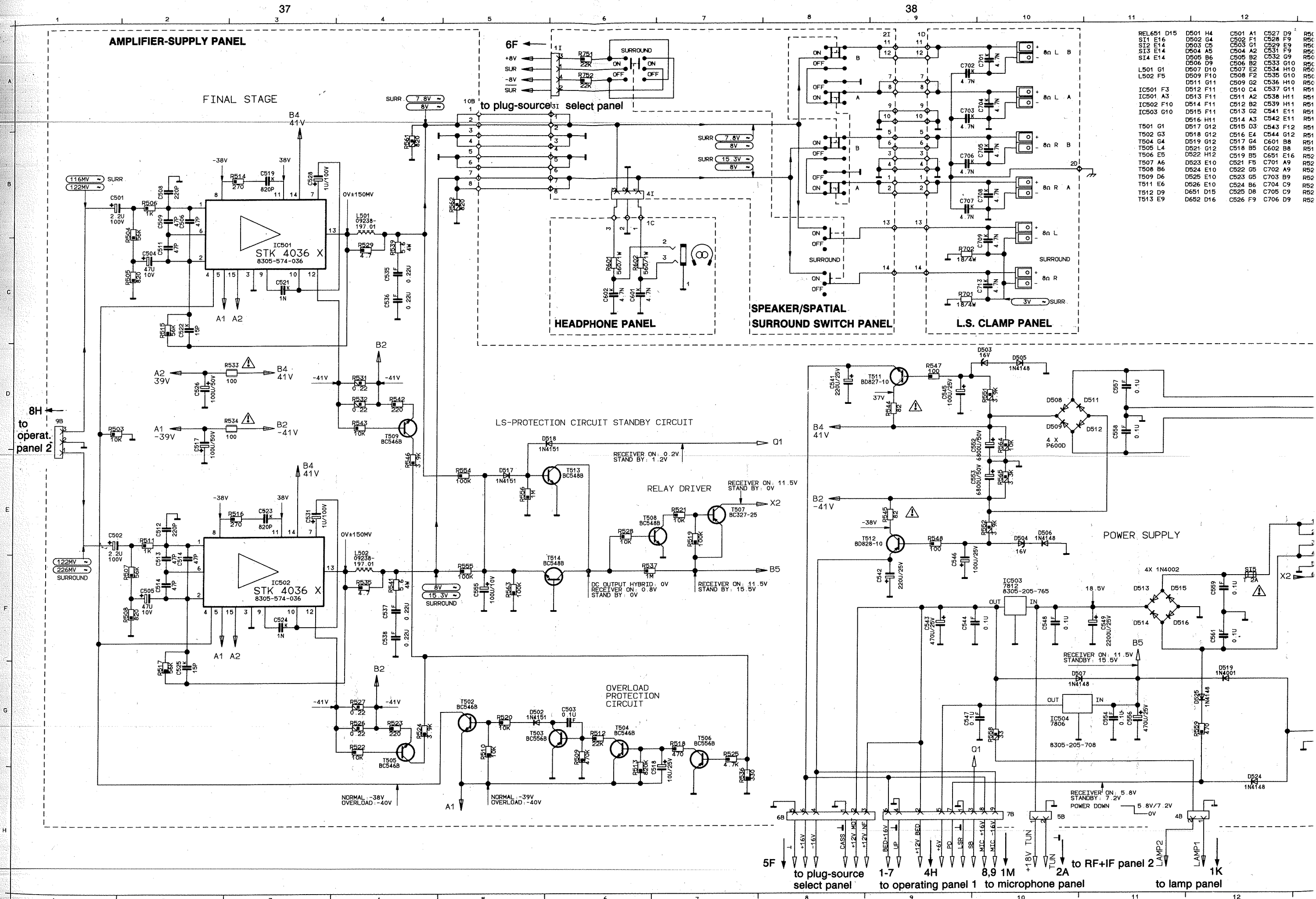
LOUDSPEAKER CLAMP PANEL

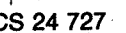


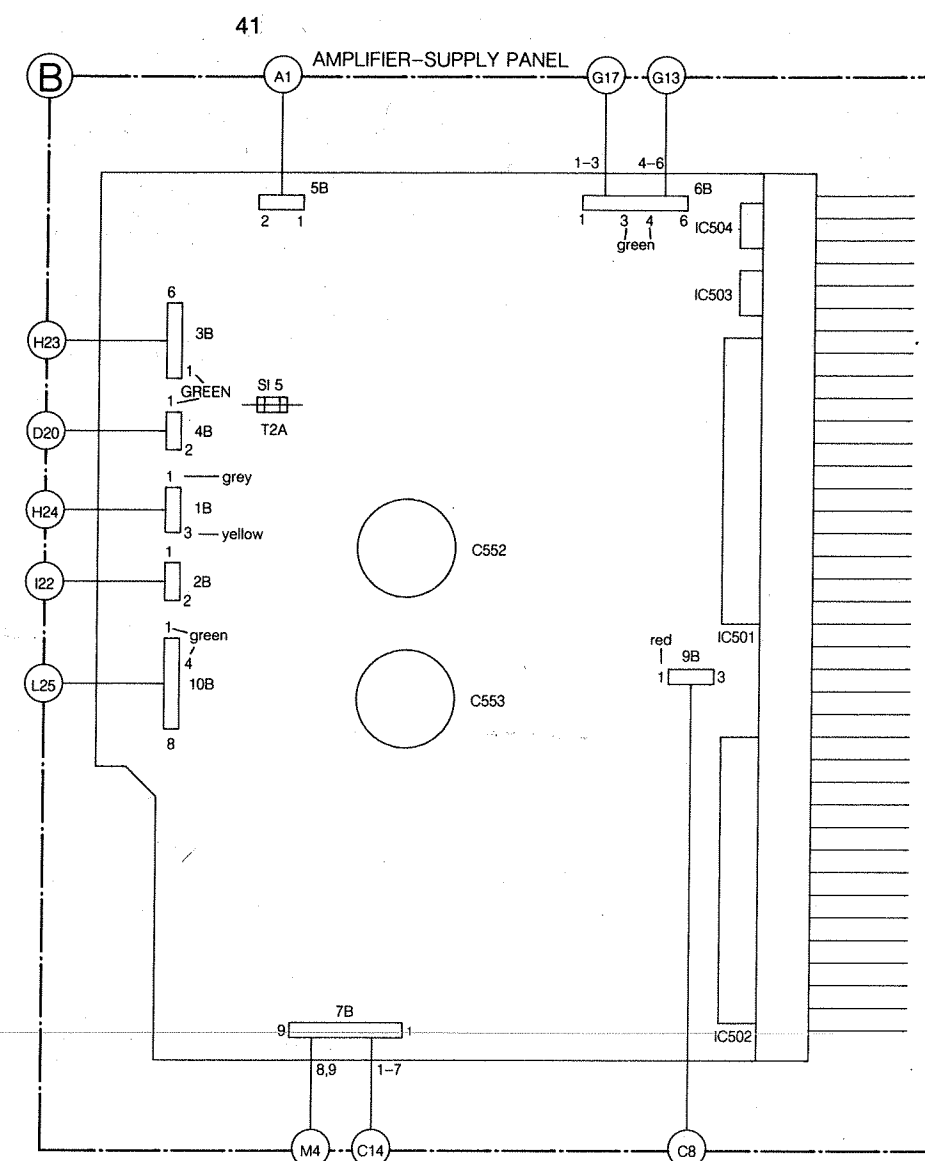
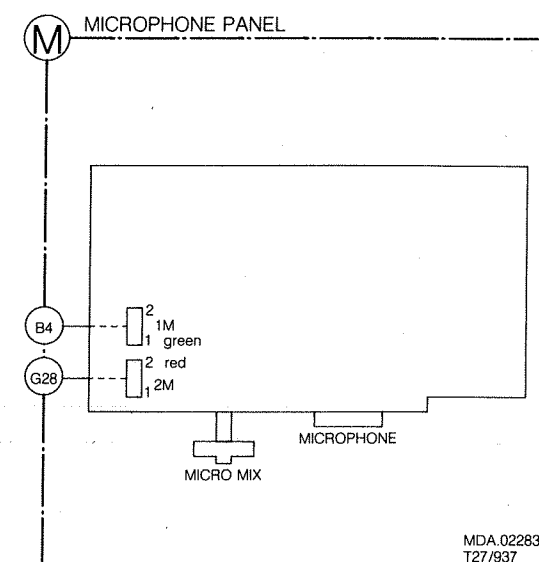
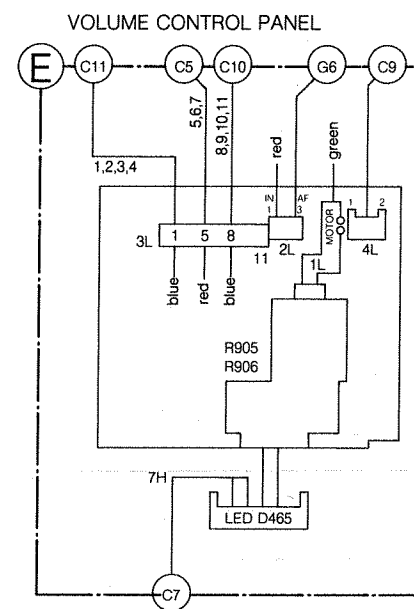
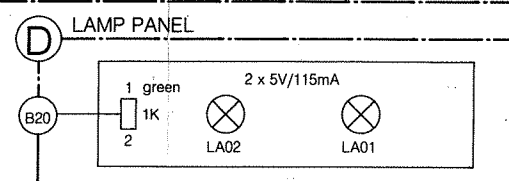
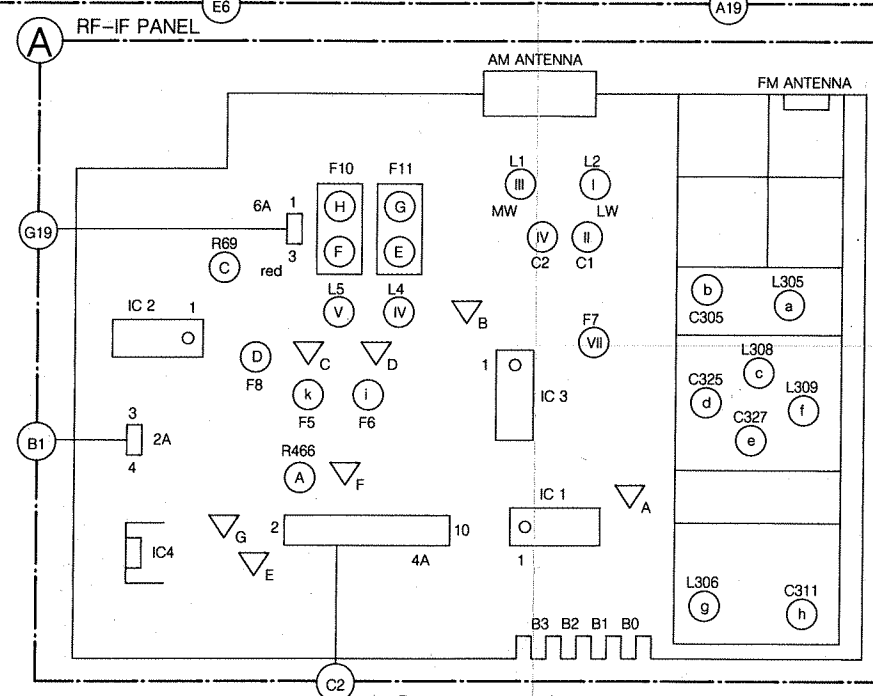
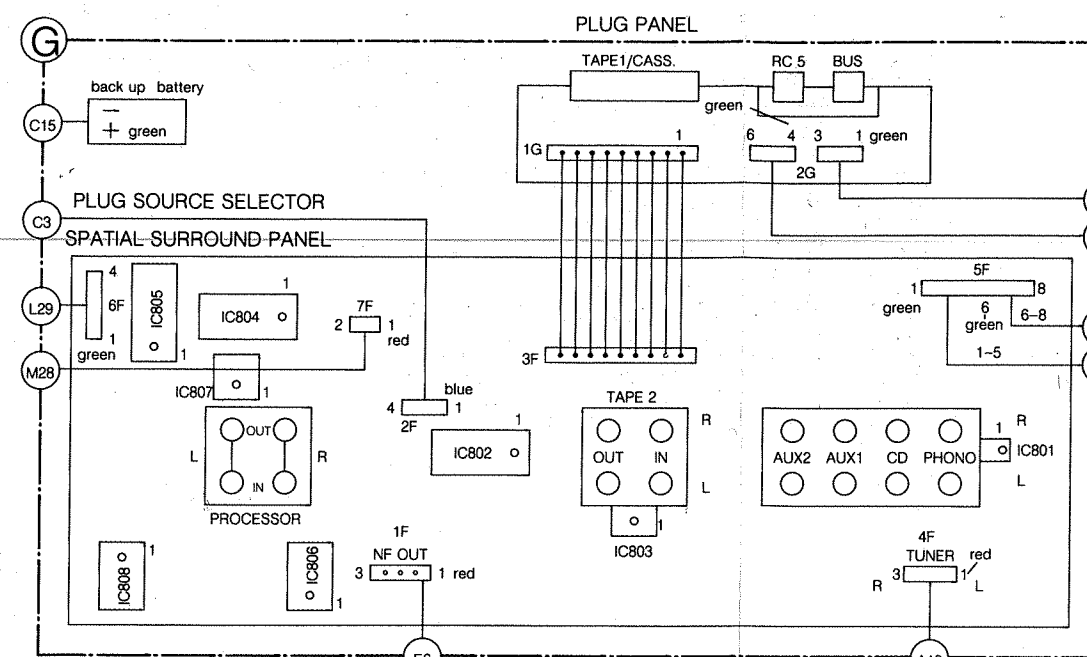
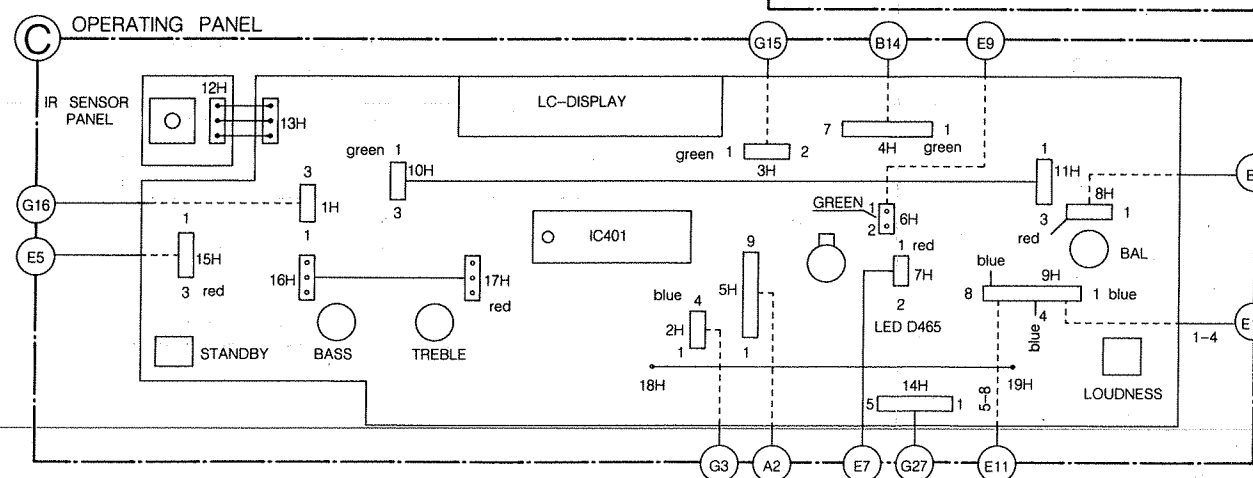
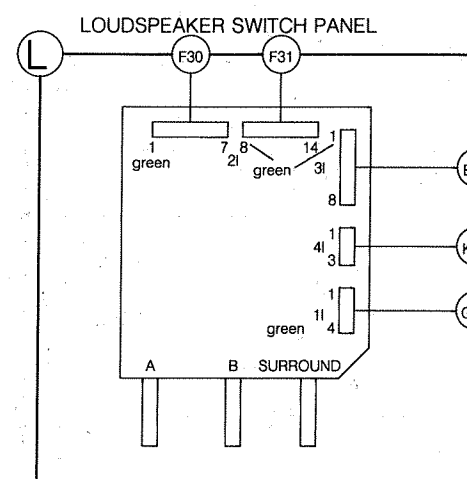
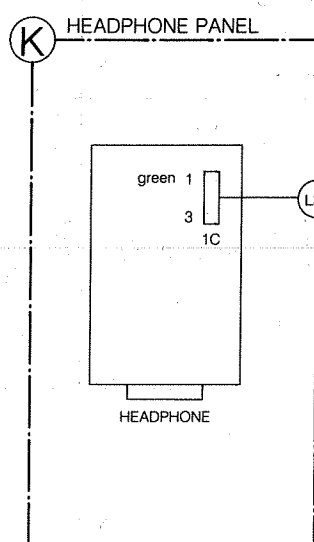
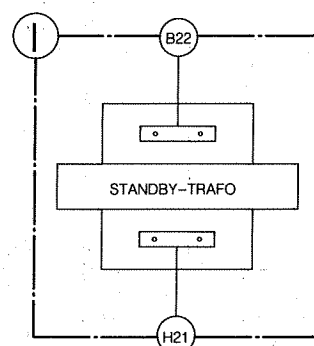
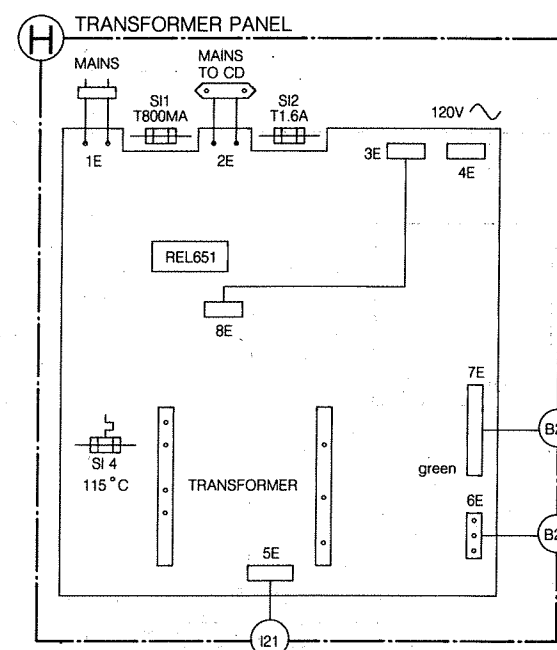
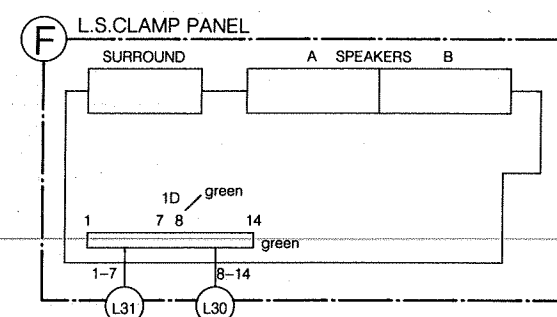
SPEAKERS/SPATIAL SURROUND
SWITCH PANEL

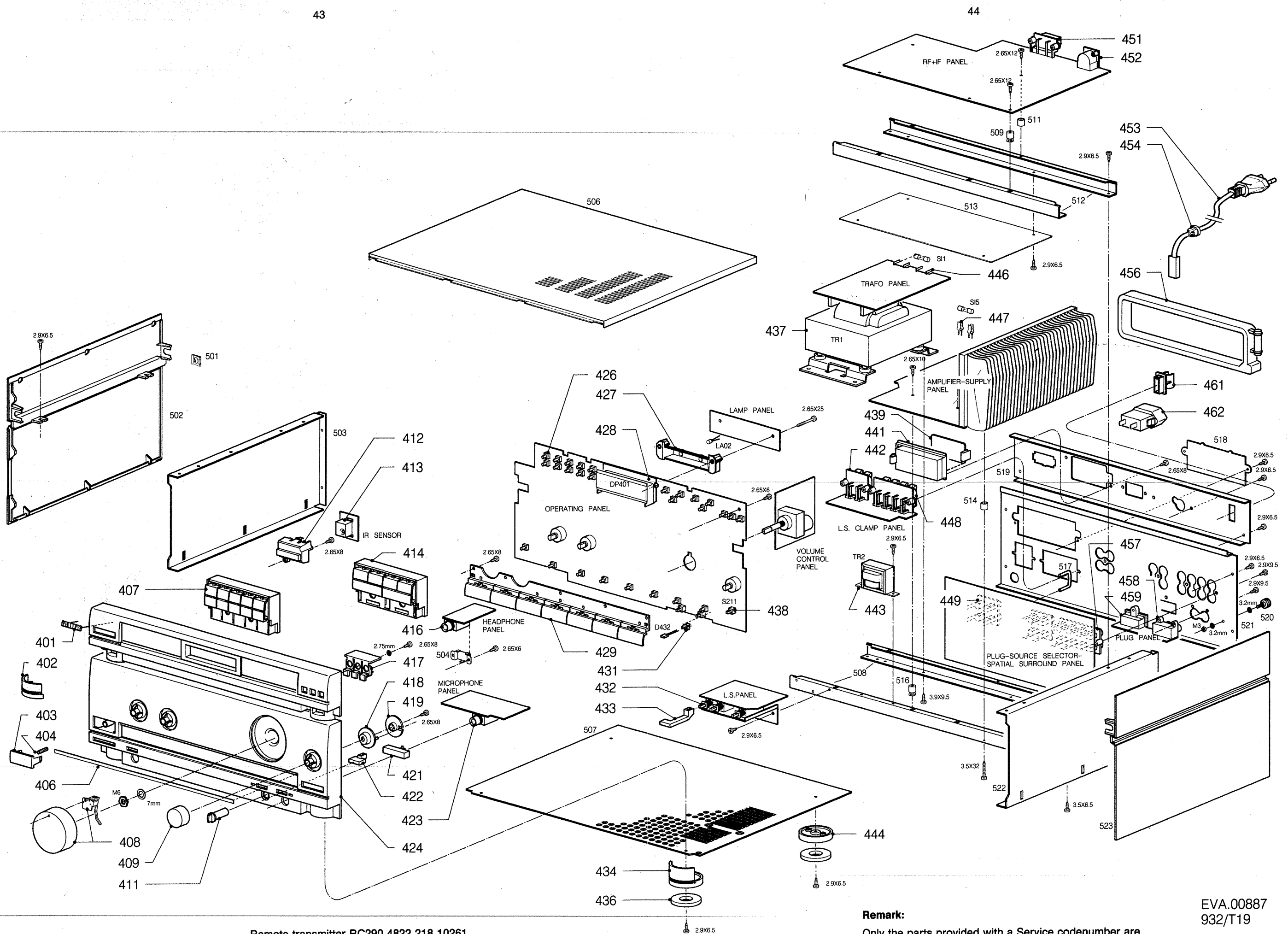


1B	E1	R525	G3
1B	E1	R526	H4
1C	G7	R527	H4
1D	A2	R528	H2
1E	A11	R529	E5
1E	G9	R531	E4
2B	E1	R532	E4
2E	A10	R533	E5
2I	G10	R534	F5
3B	D1	R535	H4
3B	D1	R536	G3
4B	D1	R537	H2
4I	H9	R538	G2
5B	B2	R539	D4
5E	E10	R541	G4
6B	B5	R542	G3
6B	D9	R543	H3
7B	H2	R544	C3
7E	C9	R545	C3
9B	F5	R547	C4
C409	E5	R548	C3
C501	D5	R551	D4
C501	F6	R552	D3
C502	F5	R554	F2
C504	D4	R555	F2
C505	G5	R556	G2
C506	D4	R557	D2
C507	F5	R558	D2
C508	D5	R559	E1
C508	G3	R572	H10
C511	D4	R601	G8
C512	F5	R602	G8
C514	E4	R701	A2
C517	F6	R702	A1
C517	G4	R751	H10
C517	F5	REL65	B11
C518	G3	SI 1	A11
C521	D5	SI 2	A10
C521	D4	SI 4	D11
C523	G5	SI 5	D2
C524	G5	SURRO	G10
C525	G4	T502	H3
C526	F5	T503	H3
C528	E4	T504	G3
C531	G4	T505	H3
C531	G5	T506	G3
C535	D4	T507	G2
C536	D4	T508	H2
C537	G4	T509	H3
C538	G4	T511	B4
C541	C4	T512	B3
C542	B3	T513	G2
C543	B5	T514	G2
C543	C4	TR1	E10
C544	C5		
C545	C5		
C546	C3		
C547	B5		
C548	C5		
C549	C2		
C549	C2		
C550	F2		
C552	B2		
C557	E1		
C558	E1		
C559	D2		
C561	B1		
C562	E3		
C563	F3		
C601	H7		
C602	H7		
C651	B11		
C701	A4		
C702	A2		
C703	A2		
C704	A3		
C705	A3		
C706	A2		
C707	A2		
C708	A3		
C709	A2		
C713	A1		
D502	H3		
D503	D4		
D504	D3		
D505	D4		
D506	D3		
D507	C2		
D508	D2		
D509	E2		
D511	E2		
D512	E2		
D513	D2		
D514	D2		
D515	C2		
D516	C2		
D517	G2		
D518	G2		
D519	C1		
D521	C1		
D522	A1		
D523	C1		
D524	E1		
D525	D1		
D651	B9		
D652	B9		
GR	A	G11	
GR	B	G11	
I C501	E6		
I C502	H6		
I C503	C8		
I C504	C8		
L501	E5		
L502	H5		
R503	H3		
R504	D5		
R505	A4		
R506	D5		
R507	G5		
R508	G4		
R509	G3		
R510	H3		
R511	G5		
R512	G3		
R513	G3		
R515	D4		
R516	D5		
R516	H3		
R518	G3		
R519	G2		
R520	H3		
R521	H2		
R522	H3		
R523	H3		
R524	H3		









Remote transmitter RC290 4822 218 10261

Remark:

Only the parts provided with a Service codenumber are available as Service spare parts.

EVA.00887
932/T19

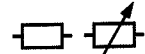
List of mechanical parts

401	4822 459 10806
402	4822 460 10966
403	4822 276 12621
404	4822 492 52115
406	4822 466 92426
407	4822 410 60312
408	4822 413 41535
409	4822 413 41529
411	4822 413 41536
412	4822 218 10295
413	4822 218 10292
414	4822 410 60313
416	4822 267 31099
417	4822 410 60247
418	4822 466 92417
419	4822 466 92418
421	4822 410 60237
422	4822 410 60249
423	4822 267 31099
424	4822 426 51366
426	4822 276 12473
427	4822 380 20359
428	4822 256 91492
429	4822 410 60314
431	4822 255 40957
432	4822 276 12622
433 (A)	4822 410 60318
433 (B)	4822 410 60319
433 (sur)	4822 410 60248
434	4822 466 92374
436	4822 462 41409
437	4822 146 30807
437 /05R	4822 146 30806
438	4822 276 12615
439	4822 426 60558
441	4822 256 60299
442	4822 267 40881
443	4822 148 80919
443 /05R	4822 148 80924
444	4822 462 41408
446	4822 256 91489
447	4822 256 40065
448	4822 290 60835
449	4822 267 20383
451	4822 290 40315
452	4822 267 10219
453	4822 321 10634
453 /05R	4822 321 10638
454	4822 325 50164
456	4822 157 53633
457	4822 267 20385
458	4822 267 20384
459	4822 267 50953
461	4822 256 91336
462	4822 267 10231
462 /05R	4822 267 10232

List of electrical parts



C1	4822 125 50332	Cap. trimmer 7.5-50 pF LW-RF
C2	4822 125 50329	Cap. trimmer 4.5-20 pF MW-RF
C12	4822 122 33562	Cap. ceramic 36 pF 2% N150
C13	4822 122 33562	Cap. ceramic 36 pF 2% N150
C22	4822 122 33568	Cap. ceramic 68 pF 2% N750
C23	4822 122 33567	Cap. ceramic 4.7 pF 0.25 pF 2% N750
C24	4822 122 33565	Cap. ceramic 150 pF 2% N470
C26	4822 122 33572	Cap. ceramic 390 pF N1500
C45	4822 122 33571	Cap. ceramic 100 pF 5% N750
C46	4822 122 33571	Cap. ceramic 100 pF 5% N750
C62	4822 122 33569	Cap. ceramic 180 pF 2% N750
C66	4822 122 33569	Cap. ceramic 180 pF 2% N750
C225	4822 122 33571	Cap. ceramic 100 pF 5% N750
C226	4822 122 33571	Cap. ceramic 100 pF 5% N750
C305	4822 125 50329	Cap. trimmer 4.5-20 pF FM-RF
C311	4822 125 50386	Cap. trimmer 3-10 pF FM-osc
C312	4822 122 33563	Cap. ceramic 3.3 pF 0.5 pF N150
C316	4822 122 33559	Cap. ceramic 10 pF 2% N150
C322	4822 122 33559	Cap. ceramic 10 pF 2% N150
C325	4822 125 50329	Cap. trimmer 4.5-20 pF FM-RF
C327	4822 125 50329	Cap. trimmer 4.5-20 pF FM-RF
C332	4822 122 33564	Cap. ceramic 150 pF 2% N150
C334	4822 122 33557	Cap. ceramic 4.7 pF 0.25 pF N150
C336	4822 122 33561	Cap. ceramic 22 pF 5% N150
C405	4822 122 33571	Cap. ceramic 100 pF 5% N750
C406	4822 122 33571	Cap. ceramic 100 pF 5% N750
C506	4822 126 10302	Cap. ceramic 47 pF 5% N150
C507	4822 126 10302	Cap. ceramic 47 pF 5% N150
C508	4822 126 10216	Cap. ceramic 220 pF 5% N750
C509	4822 126 10302	Cap. ceramic 47 pF 5% N150
C511	4822 126 10302	Cap. ceramic 47 pF 5% N150
C512	4822 126 10216	Cap. ceramic 220 pF 5% N750
C513	4822 126 10302	Cap. ceramic 47 pF 5% N150
C514	4822 126 10302	Cap. ceramic 47 pF 5% N150



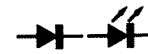
R66	4822 100 20694	Potm. trimmer 100K
R69	4822 100 20694	Potm. trimmer 100K
R73	4822 111 91658	Res. carbon 270K 2%
R78	4822 111 91658	Res. carbon 270K 2%
R211	4822 101 30636	Potm. 100K balance
R252	4822 102 20099	Potm. 2x50K bass
R253	4822 102 20101	Potm. 2x10K treble
R323	4822 116 53666	Saf. res. 47 Ω 5%
R327	4822 116 53666	Saf. res. 47 Ω 5%
R332	4822 116 81908	Saf. res. 12 Ω 5%
R424	4822 116 53666	Saf. res. 47 Ω 5%
R533	4822 116 81993	Saf. res. 100 Ω 5%
R534	4822 116 81993	Saf. res. 100 Ω 5%
R539	4822 116 81977	Res. met. 5.6 Ω 4W 5%
R541	4822 116 81977	Res. met. 5.6 Ω 4W 5%
R544	4822 116 81976	Saf. res. 82 Ω 5%
R545	4822 116 81976	Saf. res. 82 Ω 5%
R601	4822 116 81907	Saf. res. 560 Ω 2W 5%
R602	4822 116 81907	Saf. res. 560 Ω 2W 5%
R701	4822 116 81978	Saf. res. 18 Ω 4W 5%
R702	4822 116 81978	Saf. res. 18 Ω 4W 5%
R905	4822 102 20102	Potm. 2x50K volume
R906		
R963	4822 100 20697	Potm. 50K micro



4822 130 41246	BC327-25
5322 130 44647	BC368
4822 130 44461	BC546B
4822 130 40937	BC548B
4822 130 44196	BC548C
4822 130 41096	BC550C
4822 130 41691	BC556B
4822 130 44197	BC558B
4822 130 61755	BC560C
4822 130 61803	BD827-10
4822 130 41761	BD828-10
4822 130 40902	BF240
4822 130 41817	BF982-I
4822 130 42121	2SK30
4822 130 61298	2SK544E



4822 209 71785	LA1266
4822 209 73434	LA3401
4822 209 73435	LC7217
4822 209 72748	LC7821
4822 209 73452	LM833
4822 209 61336	M 34200M4-160SP
4822 209 70361	MC78M06CT
4822 209 70072	STK4036 X
5322 130 42221	7812
4822 209 70414	RC4559NB



4822 130 33773	BAT42/BAT43
4822 130 31322	GL-9 PR2
4822 130 81003	KV1310
4822 130 81595	Zen. diode 2.7V 0.5W
4822 130 33783	Zen. diode 6.8V 0.5W
4822 130 81596	Zen. diode 6.8V 1.3W
4822 130 81615	Zen. diode 12V 0.5W
4822 130 33785	Zen. diode 16V 0.5W
4822 130 31438	1N4001
5322 130 30684	1N4002
4822 130 30621	1N4148
5322 130 34052	1N4151
4822 130 81614	MR752
4822 130 81002	SVC321



F1+F4	4822 242 72291	Cer. filter 10.7 MHz FM-IF
F5	4822 156 11093	Coil FM-IF
F6	4822 156 11092	Coil FM-IF
F7	4822 242 72289	Cer filter AM-IF 450 KHz
F8	4822 214 51727	LP filter
F9	4822 156 11104	Filter pilot 19 KHz
F10	4822 156 11104	Filter pilot 19 KHz
L1	4822 156 11094	Coil MW-RF
L2	4822 156 11095	Coil LW-RF
L3	4822 156 11091	Coil LW-osc.
L4	4822 156 11089	Coil MW-osc.
L5	4822 157 53632	Coil, choke 39 MH
L305	4822 156 11099	Coil FM-RF
L306	4822 156 11096	Coil FM-osc.
L307	4822 157 60206	Coil, choke



L308	4822 156 11098	Coil FM-RF
L309	4822 156 11097	Coil FM-RF
L311	4822 157 53631	Coil 1.5 UH
L501	4822 157 60207	Coil
L502	4822 157 60207	Coil
L901	4822 157 60208	Coil 47UH
L902	4822 157 60208	Coil 47UH
TR1	4822 146 30809	Transf. Mains 220 V
TR1 /05R	4822 146 30801	Transf. Mains 240 V
TR2	4822 148 80919	Stand-by trafo
TR2 /05R	4822 148 80924	Stand-by trafo

Miscellaneous

DP401	4822 130 90692	LCD display
KR401	4822 242 72611	Crystal CSB1000D
LA401	4822 134 40957	Lamp 5V 115 mA
LA402	4822 134 40957	Lamp 5V 115 mA
P301	4822 526 10406	Bar, ferrite
P302	4822 526 10406	Bar, ferrite
REL651	4822 280 50076	Relais G2R-117P
Q1	4822 242 72294	Crystal 7.2 MHz
Q2	4822 242 72295	Crystal 456 KHz
SI1	4822 253 30019	Fuse 800 mA/T
SI2	4822 253 30024	Fuse 1.6A/T
SI4	4822 252 20237	Thermo fuse 115°C
SI5	4822 253 30025	Fuse 2A/T