

Service
Service
Service



45 059 A11

Service Manual

FT290
FA260

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SPECIFICATION

2

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	mono : .. μV 26dB S/N at 98 MHz	mono : 1.3 μV 26dB S/N at 98 MHz
at 75Ω Δf 75 kHz	stereo : .. μV 46dB S/N at 98 MHz	stereo : 25 μV 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 pilot tone	: ..dB	: 50dB
image frequency	: ..dB (at 106 MHz)	: 75dB
Channel separation (1kHz mod)	: 40dB	: 40dB
Distortion T.H.D	mono : 0.25 %	mono : 0.3 %
	stereo : 0.7 %	stereo : 0.5 %
Signal/noise ratio	mono : ..dB	mono : 74dB
	stereo : ..dB IEC weighted	stereo : 68dB
Tuner: AM section		
Wave ranges	MW : 522 kHz to 1611 kHz	MW : 522 kHz to 1611 kHz (585-187 m)
	LW : 153 kHz to 281 kHz	LW : 153 kHz to 281 kHz (1960-1067 m)
Sensitivity	: .. μV 26 dB S/N (600 kHz)	: 200 μV 26 dB S/N (600 kHz)
Selectivity	: ..dB at 9 kHz off resonance	: 27dB at 9 kHz off resonance
Suppression	: ..dB	: 55dB
Output	: ..mV	: ..mV

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

Amplifier		
Output power	: .. W in .. Ω (FTC)	: 43 W in 8Ω (1 kHz, D = 10%)
	: .. W in .. Ω (DIN)	: 40 W in 4Ω (1 kHz, D ≤ 1%)
	: .. W in .. Ω	: 35 W in 8Ω (1 kHz, D ≤ 1%)
	: .. W in .. Ω (IEC)	: 30 W acc. to IEC
Distortion T.H.D.	: ≤0.1% at 1 kHz	: ≤0.09% at 45W for 1 kHz, 8Ω
Intermodulation	:	: 0.1% at 25 W
Frequency response	:	:
Linear inputs	: from .. Hz - .. kHz ± ..dB	: from 20 Hz - 30 kHz ± 2dB
Equalized inputs	: from .. Hz - .. kHz ± ..dB	: from 20 Hz - 20 kHz ± 1.5dB
Bass control	: at .. Hz + .. dB to -..dB	: at 80 kHz + 10 dB to -10dB
Treble control	: at .. kHz + .. dB to -..dB	: at 10 kHz + 10 dB to -10dB
Balance control	:	: 0-50dB
Signal/noise ratio weighted	:	: 95 dB
Channel separation	: at 1000 Hz ≥ ..dB	: at 1000 Hz ≥ 65dB
Input sensitivity	: .. mV at .. kΩ	: 150 mV at 25 kΩ
Phono MD	: 5 mV at 2.2 kΩ (FTC)	: 2.1 mV at 4 kΩ (FTC)
Tuner	: .. mV at .. kΩ (FTC)	: 150 mV at 25 kΩ (FTC)
Tape 1	: .. mV at .. kΩ (FTC)	: 150 mV at 25 kΩ (FTC)
Tape 2/VCR	at 250 Hz-10 kHz ≥ ..dB	at 250 Hz-10 kHz ≥ 40dB
CD/CDV	: 500 mV at 1 kΩ (FTC)	: 150 mV at 25 kΩ (FTC)
Aux 1/TV	: .. mV at .. kΩ (FTC)	: 150 mV at 25 kΩ (FTC)
Aux 2/CDV	:	: 150 mV at 25 kΩ
Microphone	:	: 0.5 mV
Outputs		
Tape 1	: .. mV	: 150 mV
Tape 2/VCR	:	: 150 mV
Loudspeakers 2x2	: 8Ω	: 8Ω
Headphones	: 8-1000Ω	: 8-1000Ω
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.

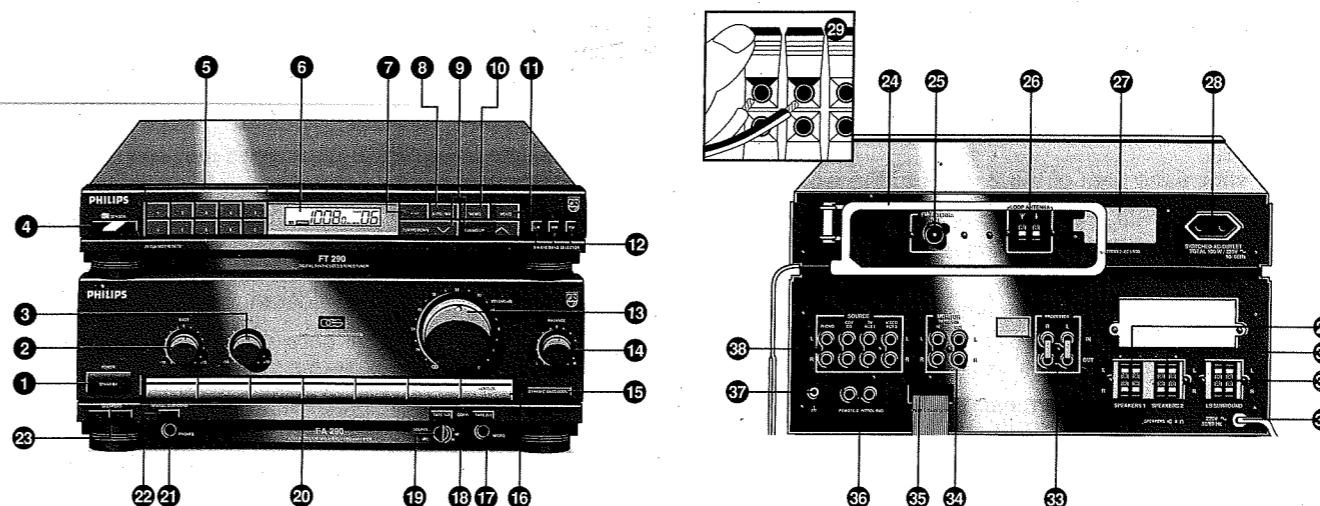
NL
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

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.

3

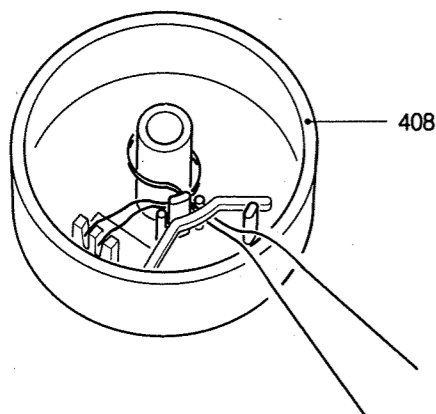


CONNECTIONS AND CONTROLS

- | | |
|------------------------------|-------------------------------|
| 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 (Siehe 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.



MDA.02240
932/T07

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.

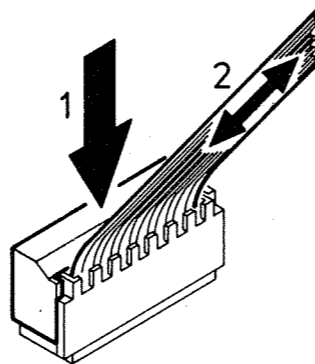


Fig. 2

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-signaal 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.

SK.
WAVE R.
SWITC
FM-IF/T.
FM
Ster
FM-RF
FM-RF
F
Repe
GB
1. E
A
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C
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V
v
th
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S
2. D
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e
c
c

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 pré-réglage ('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 die 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)

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.

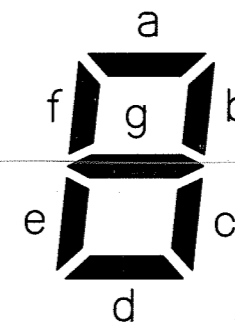


Fig. 3

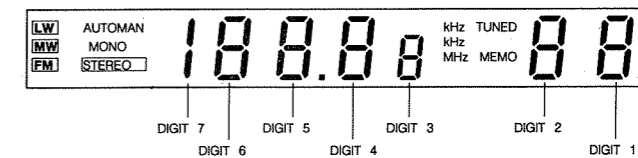
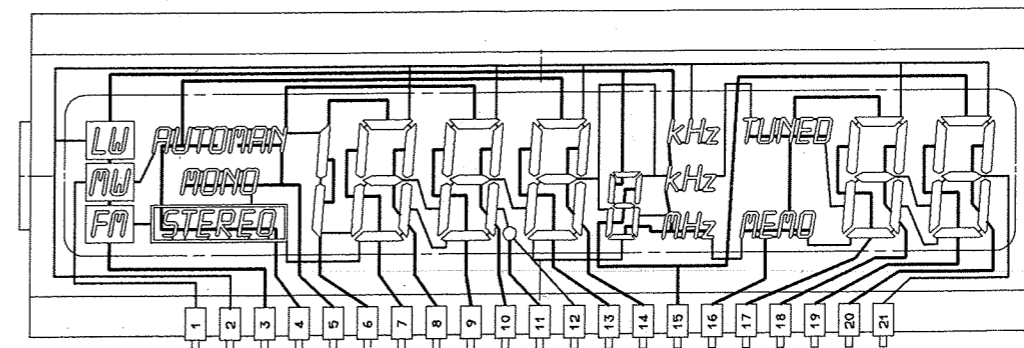


Fig. 4

MDA.02268
T-08 932



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

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)

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.

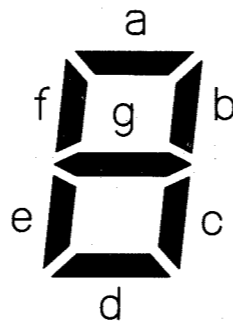


Fig. 3

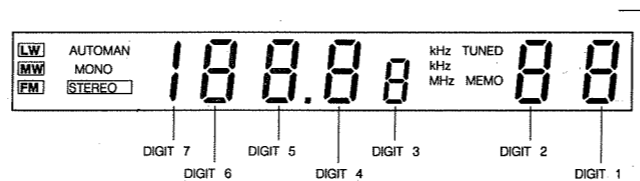
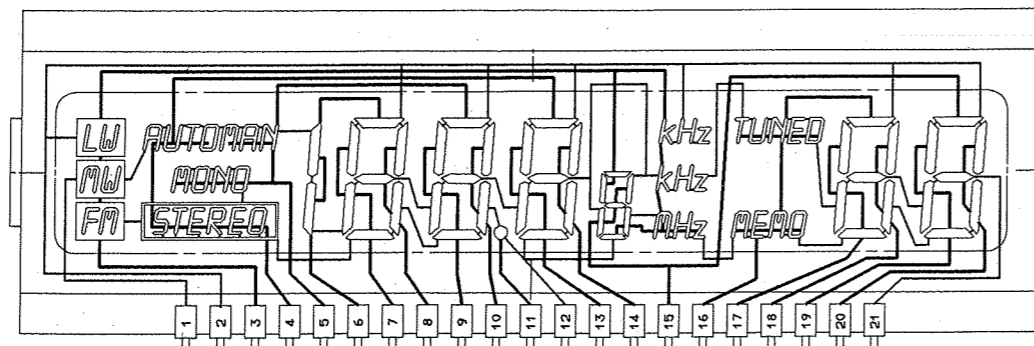
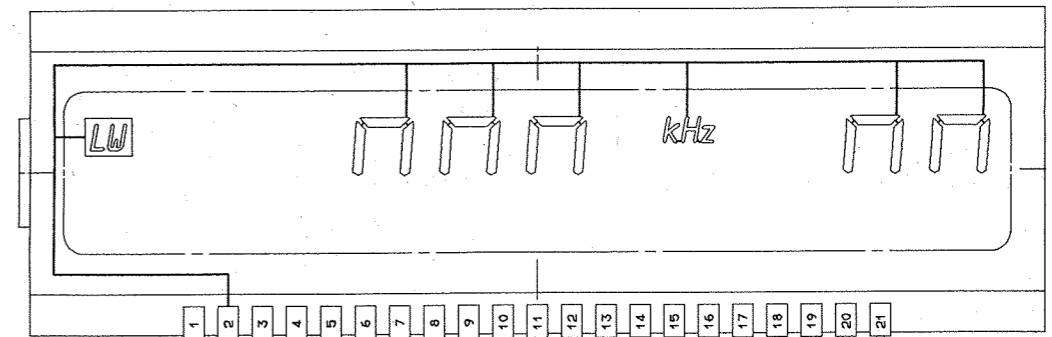


Fig. 4

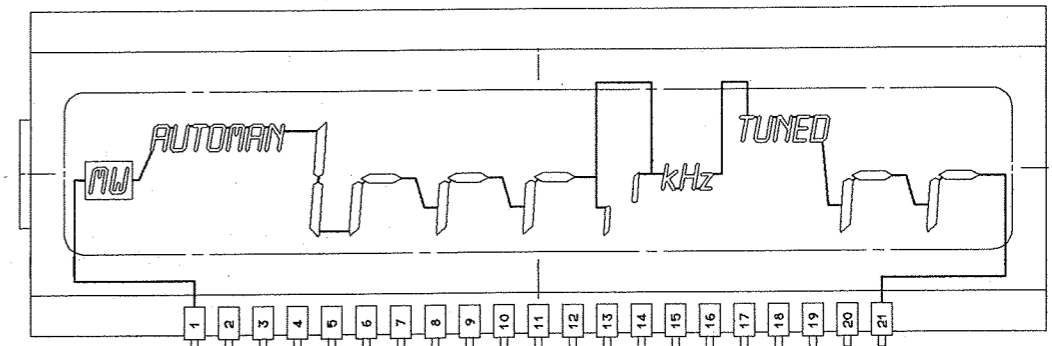
MDA 02268
T-08 932



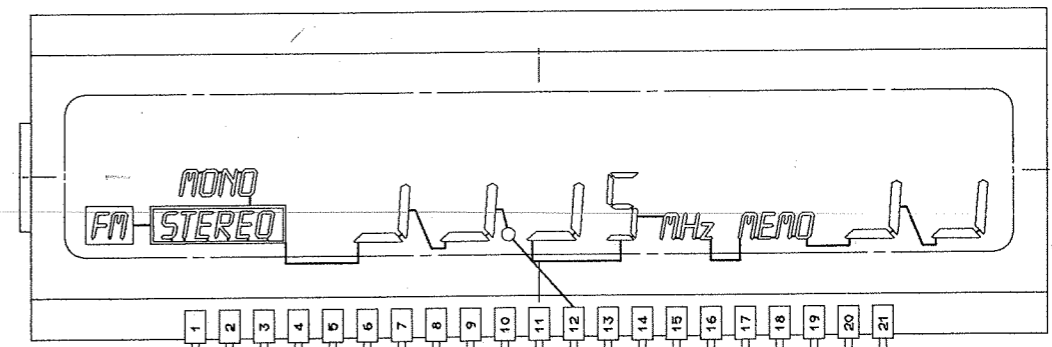
PIN 3 ... 11;
13 ... 20



COMMON 1



COMMON 2



COMMON 3

PIN-nr.	Common 1	Common 2	Common 3
1		Common 2	
2	Common 1		
3	LW kHz	MW kHz	FM MHz a3 c3
4	a4	Auto	d3 f3
5	a5	Man	Stereo
			Mono
6	a6	b7 c7	
7	f6	e6	d6
8	b6	g6	c6
9	f5	e5	d5
10	b5	g5	c5
11			Decimal point
12			Common 3
13	f4	e4	d4
14	b4	g4	c4
15	a1	b3 e3	g3
16	a2	Tuned	Memo
17	f2	e2	d2
18	b2	g2	c2
19	f1	e1	d1
20	b1	g1	c1
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			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. Δf =75 kHz	FM antenna	Display 106.00 MHz			max. ~ 	C305 C325 C327
	88 MHz 1 kHz mod. Δf =75 kHz		Display 88.00 MHz				

† Repeat -Herhalen - Répéter - Wiederholen - Ricominciare - Repetera - Gentage - Gjntagelse - 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	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 +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

NL 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.

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)		Display 558 kHz			
	fo=f generator Δf 10 kHz (50 Hz)					

AM-RF (Oscillator)

MW	522 kHz 1 kHz mod. m=30%		Display 522 kHz			
LW	153 kHz 1 kHz mod. m=30%		Display 153 kHz			

AM-RF

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

↑ 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. Veillez 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 protégés 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). Unvorsichtige 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

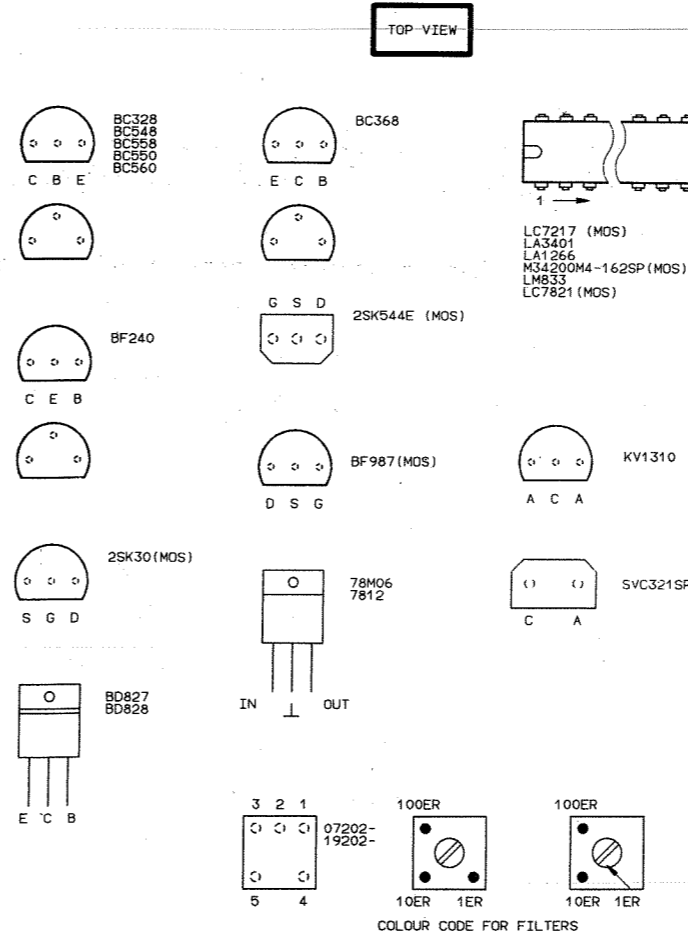
Die 'outputs' der Displaytreiber IC401 sind nicht vor externen Überspannungen geschützt! Beim Prüfen des Displays mit externen Spannungen müssen die Verbindungen mit IC401 unterbrochen werden.

3. FM-ZF-Offset

Die Keramikcondensatoren (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.



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

IF (MHz)	Jumper				Filter color
	B3	B2	B1	B0	
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

- CR16 0.2W (KSW0204 DIN) LOW FLAMMABILITY
- CR37 0.5W (KSW0411 DIN) METAL OXYDE
- SFR16T (MSW0204 DIN) SAFETY RESISTOR
- CR25 0.33W (KSW0207 DIN)
- CR52 0.67W (KSW0617 DIN)
- SFR25H 0.6W (MSW0207 DIN)
- CAPACITOR
- ELECTROLYTIC CERAMIC
- TANTALUM ELECTROLYTIC MULTILAYER
- FOIL POLYPROPYLEN (KS-KP)

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.

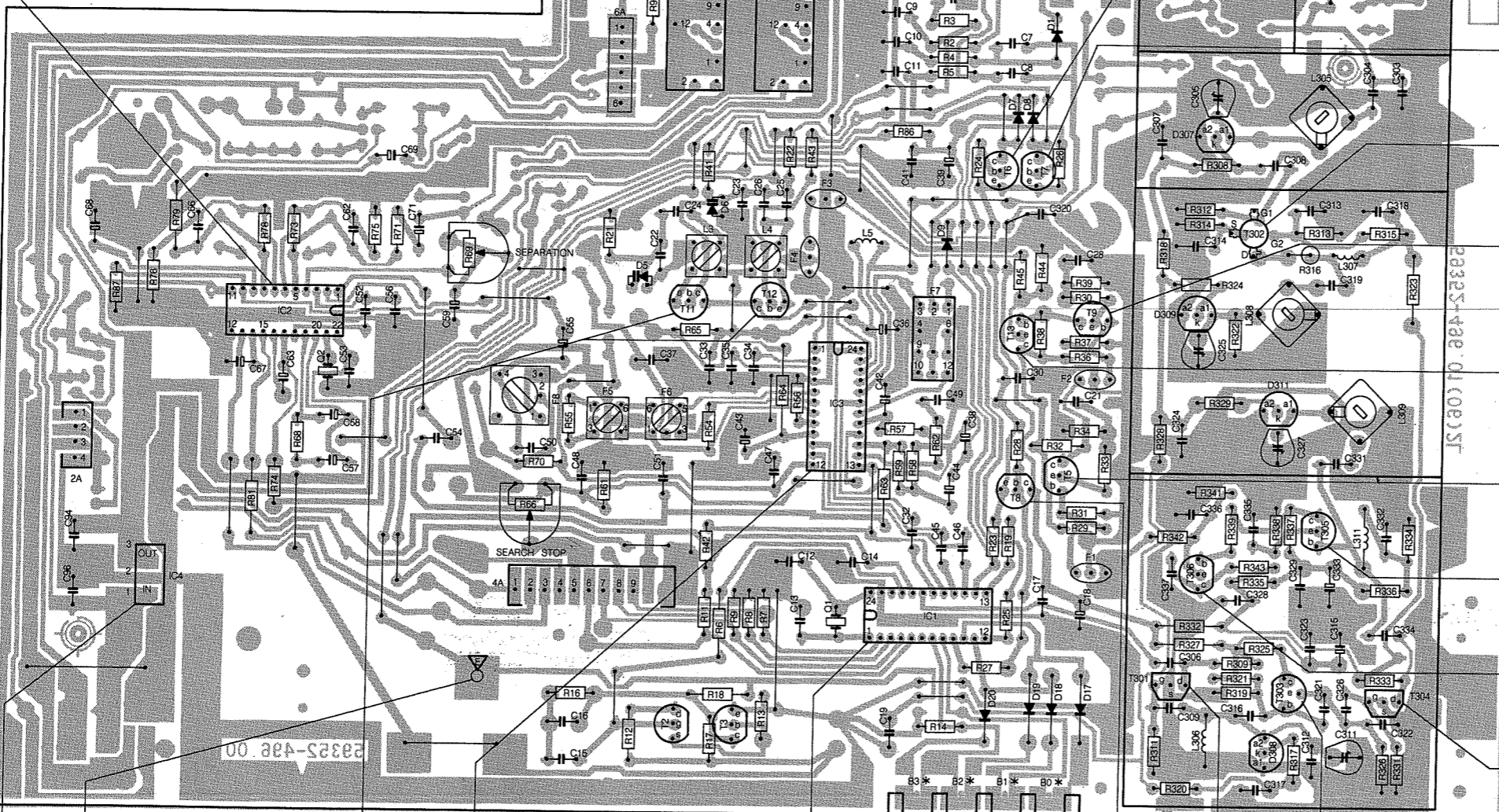
RF+IF PANEL

IC2

1 - 3.2V	12 - 1.0V
2 - 3.2V	13 - 5.0V M 0.5V S
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 S
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	22 - +12V
2.8V OFF ON	

T1

E - 1.0V
B - 0.7V
C -



IC4

V VARICAP

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

* ONLY FOR VERSION /17R

AM
FM
LW

T11

E -	1 - 1.0V 2.4V	9 - 3.7V 3.9V	17 - 0V
B - 4.3V	2 - 1.0V 2.4V	10 - 2.5V	18 - 1.1V 2.5V
C - 3.7V 3.4V	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 2.6V

T12

E -	1 - 1.0V 2.4V	9 - 3.7V 3.9V	17 - 0V
B - 4.3V	2 - 1.0V 2.4V	10 - 2.5V	18 - 1.1V 2.5V
C - 3.7V 3.4V	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 2.6V

IC1 * SEE TABLE PAGE

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 - 1.2V

T301

G -
S - 1.0V
D - 10.3V

T303

E - 5.0V
B - 5.6V
C - 1.3V

PCB.01704
T28/934

2A	E 1	D9	C 6	R78	C 2
4A	E 3	F 10	E 7	R79	C 2
6A	B 4	F 11	B 4	R80	E 5
B0	F 6	F 2	D 7	R81	E 2
B1	F 6	F 3	C 5	R82	C 6
B2	F 6	F 4	C 5	R83	D 1
B3	F 6	F 5	D 4	R84	E 5
BU3	A 6	F 6	D 4	R85	A 4
C1	B 6	F 7	D 6	R86	B 4
C10	B 6	F 8	D 4	R87	B 4
C103	A 4	F 9	B 5	T10	F 7
C11	B 6	IC1	E 6	T11	D 5
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	S
C16	F 4	L2	A 6	T301	F 7
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	D 7	L309	E 8	T5	E 7
C23	C 5	L311	E 8	T6	C 6
C24	C 4	L4	C 5	T7	C 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	R 1	R10	E 5		
C303	B 8	R11	E 5		
C304	B 8	R12	F 4		
C305	C 7	R13	F 5		
C306	C 7	R14	F 6		
C307	C 7	R16	F 4		
C308	F 7	R17	F 5		
C309	F 7	R18	F 5		
C311	F 8	R19	E 6		
C312	F 8	R2	B 6		
C313	F 8	R21	C 4		
C314	C 7	R22	C 5		
C315	F 7	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 6		
C320	R 29	R29	E 7		
C321	F 8	R3	B 6		
C322	F 8	R30	D 7		
C323	F 8	R308	C 7		
C324	D 7	R309	F 7		
C325	D 7	R31	E 7		
C326	F 8	R311	F 7		
C327	E 8	R312	C 7		
C328	E 8	R313	C 8		
C329	E 8	R314	C 7		
C33	D 4	R315	C 8		
C331	E 8	R316	D 8		
C332	E 8	R317	F 8		
C333	E 8	R318	C 7		
C334	F 8	R319	F 7		
C335	E 7	R32	E 6		
C336	E 7	R320	F 7		
C337	E 7	R321	F 7		
C34	D 5	R322	D 7		
C35	D 5	R323	D 8		
C36	D 6	R324	D 7		
C37	D 4	R325	F 8		
C38	D 6	R326	F 8		
C39	C 6	R327	F 7		
C41	C 6	R328	F 7		
C42	D 5	R329	D 7		
C43	D 5	R33	E 7		
C44	E 6	R331	F 8		
C45	E 6	R332	F 7		
C46	E 6	R333	F 8		
C47	E 6	R334	E 8		
C48	E 4	R335	E 8		
C49	D 6	R336	E 8		
C5	B 6	R337	E 8		
C50	E 4	R338	E 8		
C51	F 4	R339	E 7		
C52	D 3	R34	D 7		
C53	D 3	R341	E 7		
C54	E 3	R342	E 7		
C55	D 4	R343	E 8		
C56	D 3	R36	D 7		
C57	E 3	R37	D 7		
C58	D 3	R38	D 6		
C59	D 3	R39	F 7		
C6	B 6	R4	B 6		
C62	C 3	R41	C 4		
C63	C 2	R42	E 5		
C66	C 2	R43	C 5		
C67	D 1	R44	D 6		
C68	C 1	R45	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		
D20	B 6	R64	D 5		
D21	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	D 3		
D311	D 8	R70	E 4		
D4					

RF+IF PANEL 2

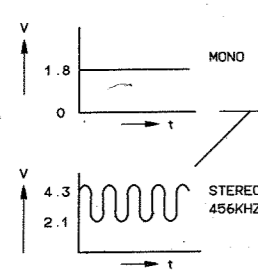
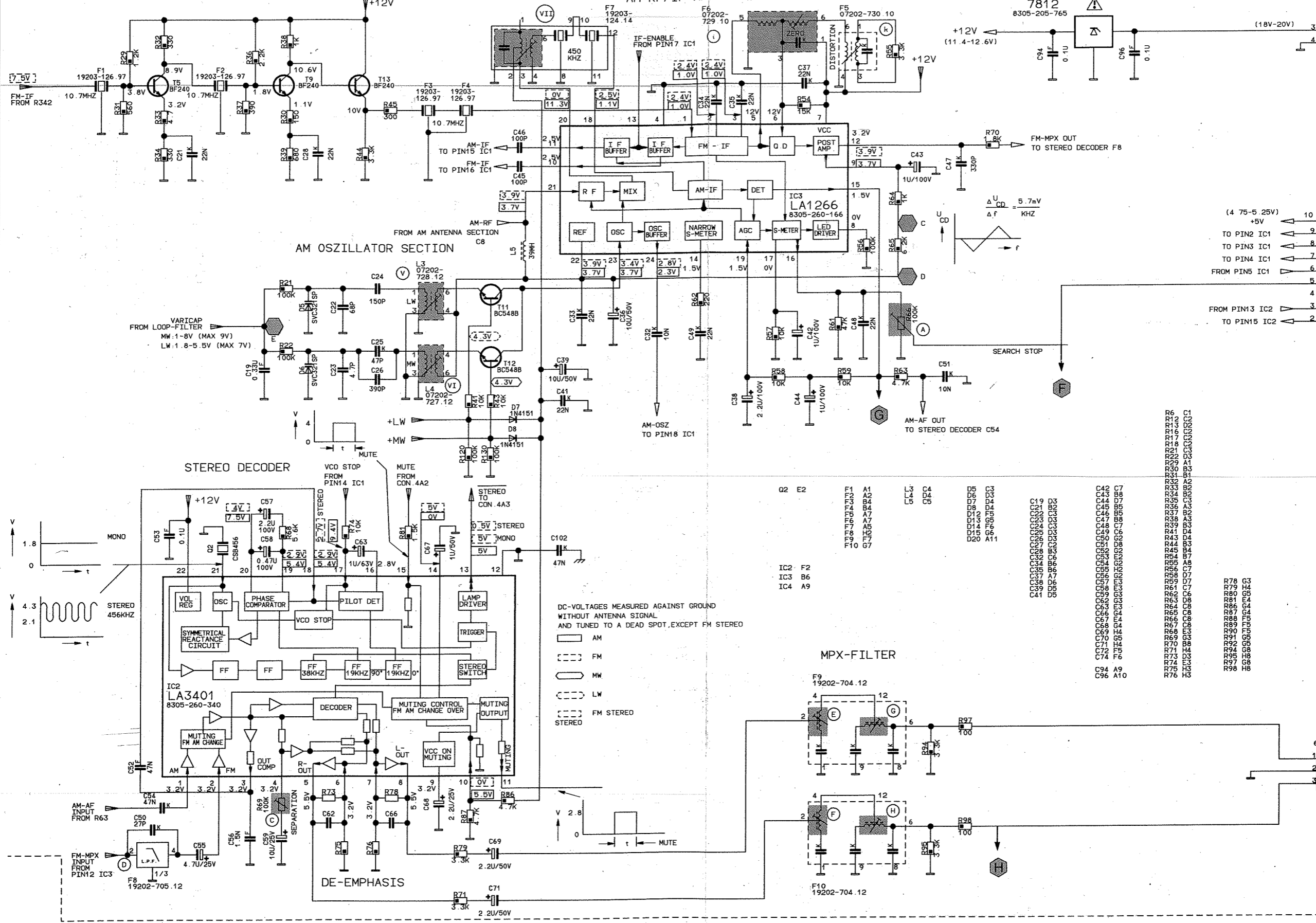
AM-RF/IF AND FM-IF

IC4 7812

to ampl.-supply panel

to operat.-panel 1

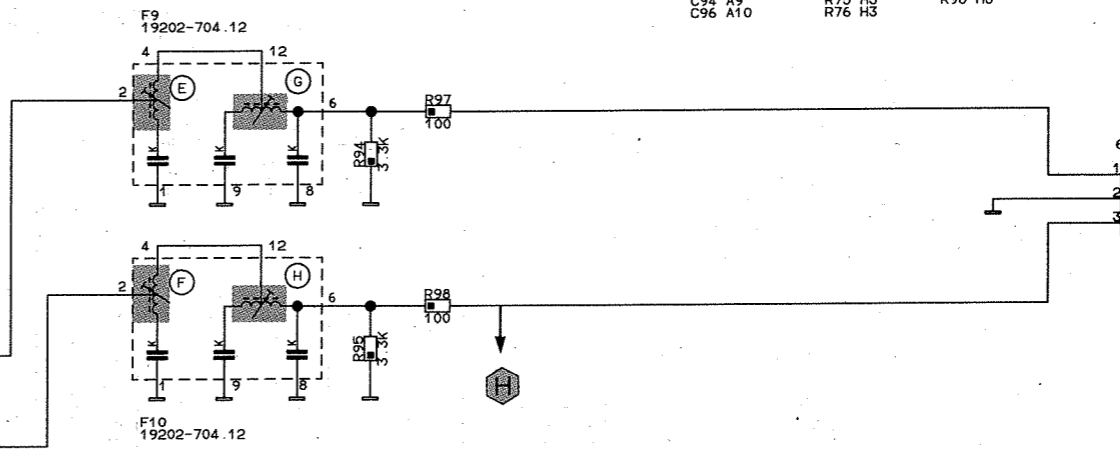
to plug-selector spatial surround panel



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

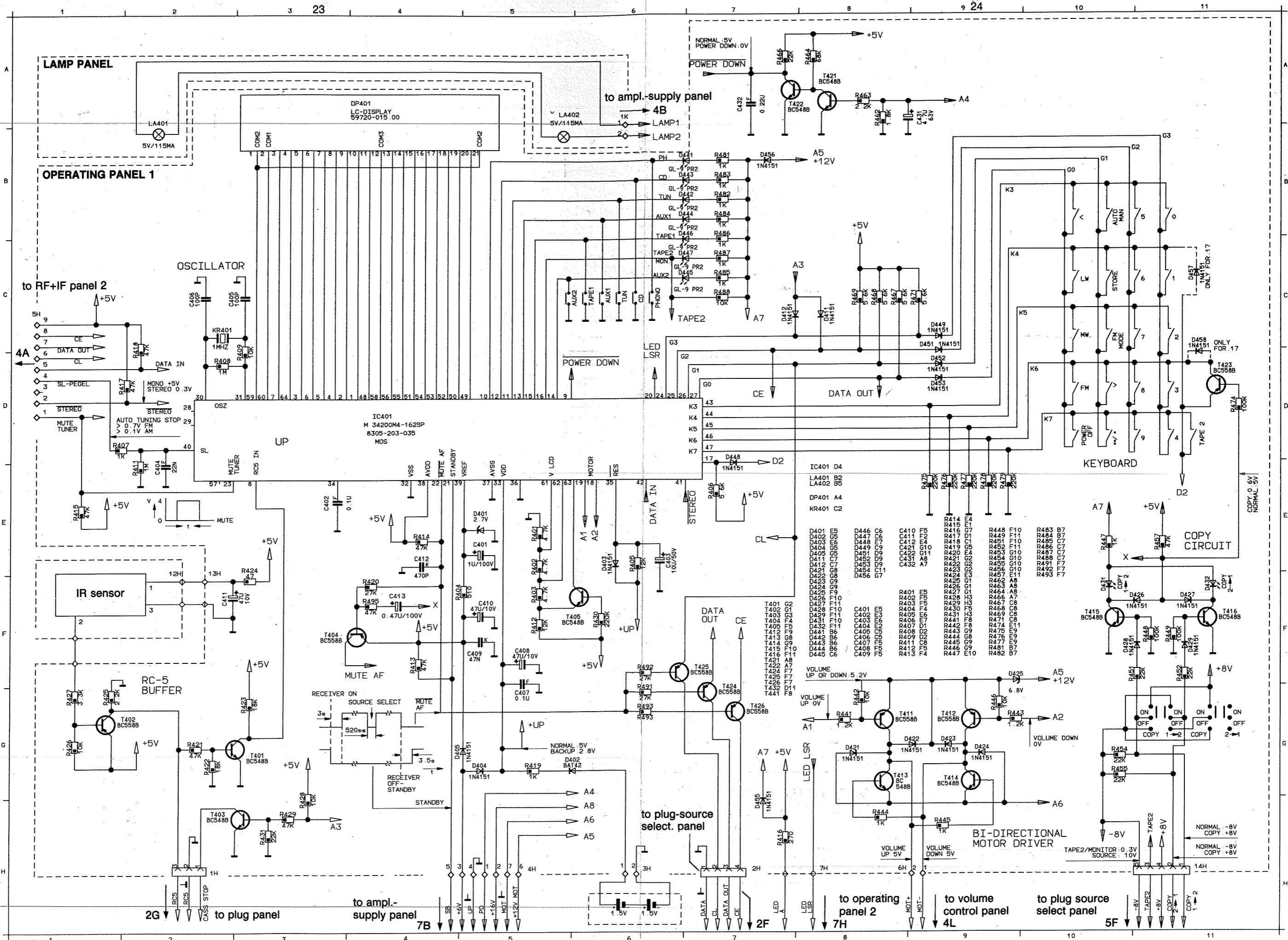
- AM
- FM
- MW
- LW
- FM STEREO
- STEREO

MPX-FILTER



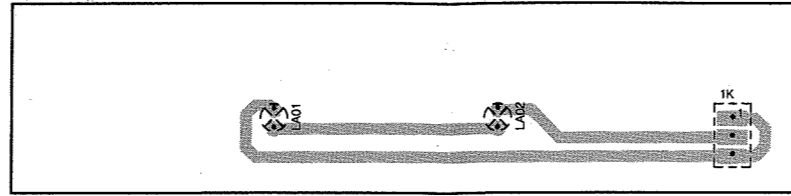
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F4	A5	L6	C7	D8	C6	C45	C10
F5	A6	L7	C8	D9	C7	C46	C11
F6	A7	L8	C9	D10	C8	C47	C12
F7	A8	L9	C10	D11	C9	C48	C13
F8	A9	L10	C11	D12	C10	C49	C14
F9	A10	L11	C12	D13	C11	C50	C15
F10	A11	L12	C13	D14	C12	C51	C16
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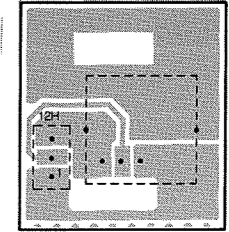


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/ B9	08 C4	1K A5	AUT B9	C227 E3	C237 E4	C403 D8	C412 E11	D402 E8	D423 C11	D441 F3	D451 F7	LA01 A7	R224 E1	R234 E2	R244 F4	R255 E2	R408 F8	R418 E8	R427 C2	R445 C12	R455 G10	R469 F7	R482 G4	R493 F7	T225 E4	T414 C12	T427 E11
00 C5	09 C4	2H F8	AUX1 G7	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	AUX2 G8	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	T4 G3
02 B3	11H D12	4H C10	C221 E1	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
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04 B4	13H C2	6H D11	C223 E2	C233 F4	C244 E2	C408 D8	CD G8	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	C224 F2	C234 E4	C245 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	
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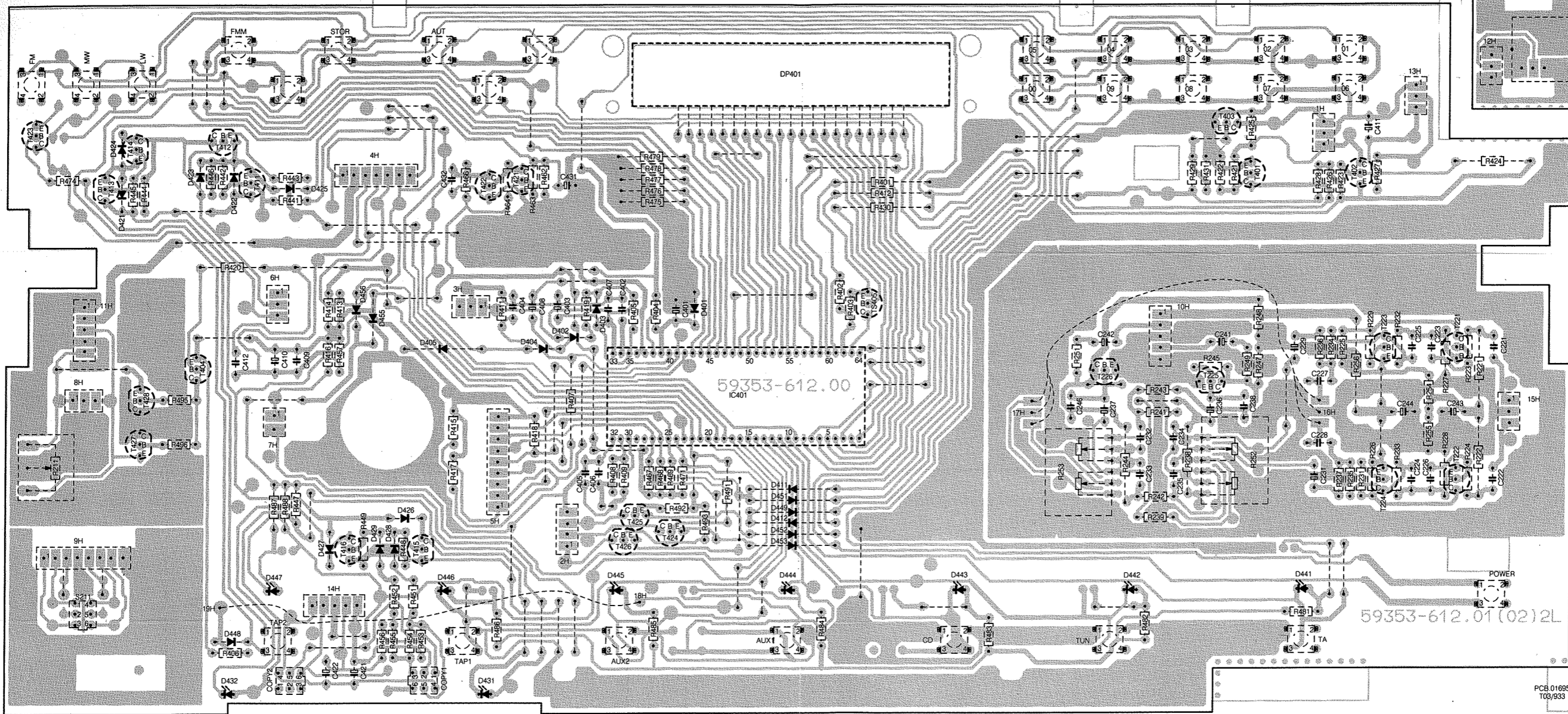
LAMP-PANEL



IR-SENSOR PANEL



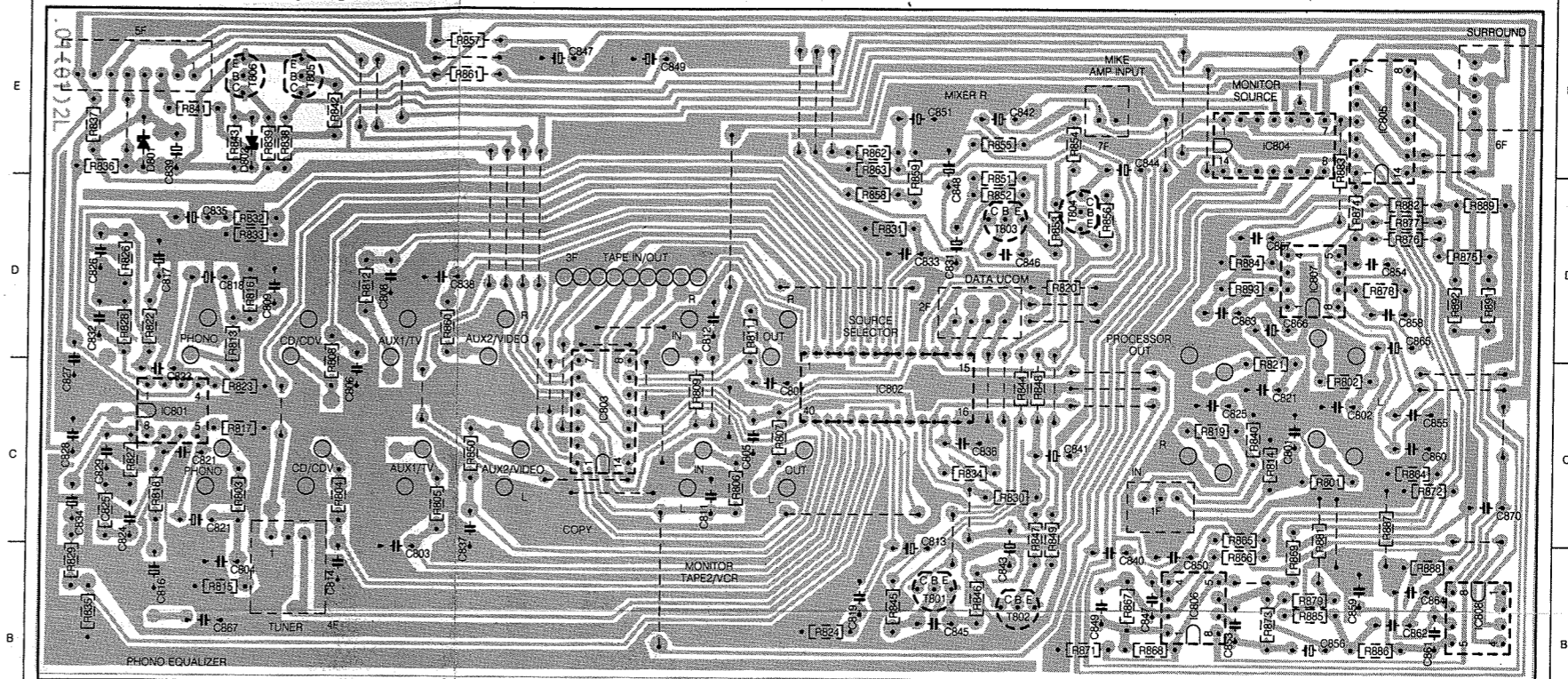
OPERATING PANEL



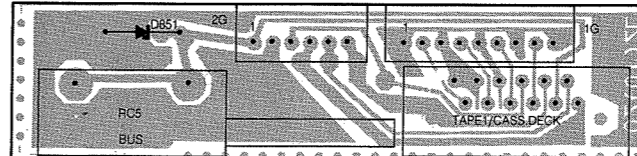
PCB 01695
T03/933

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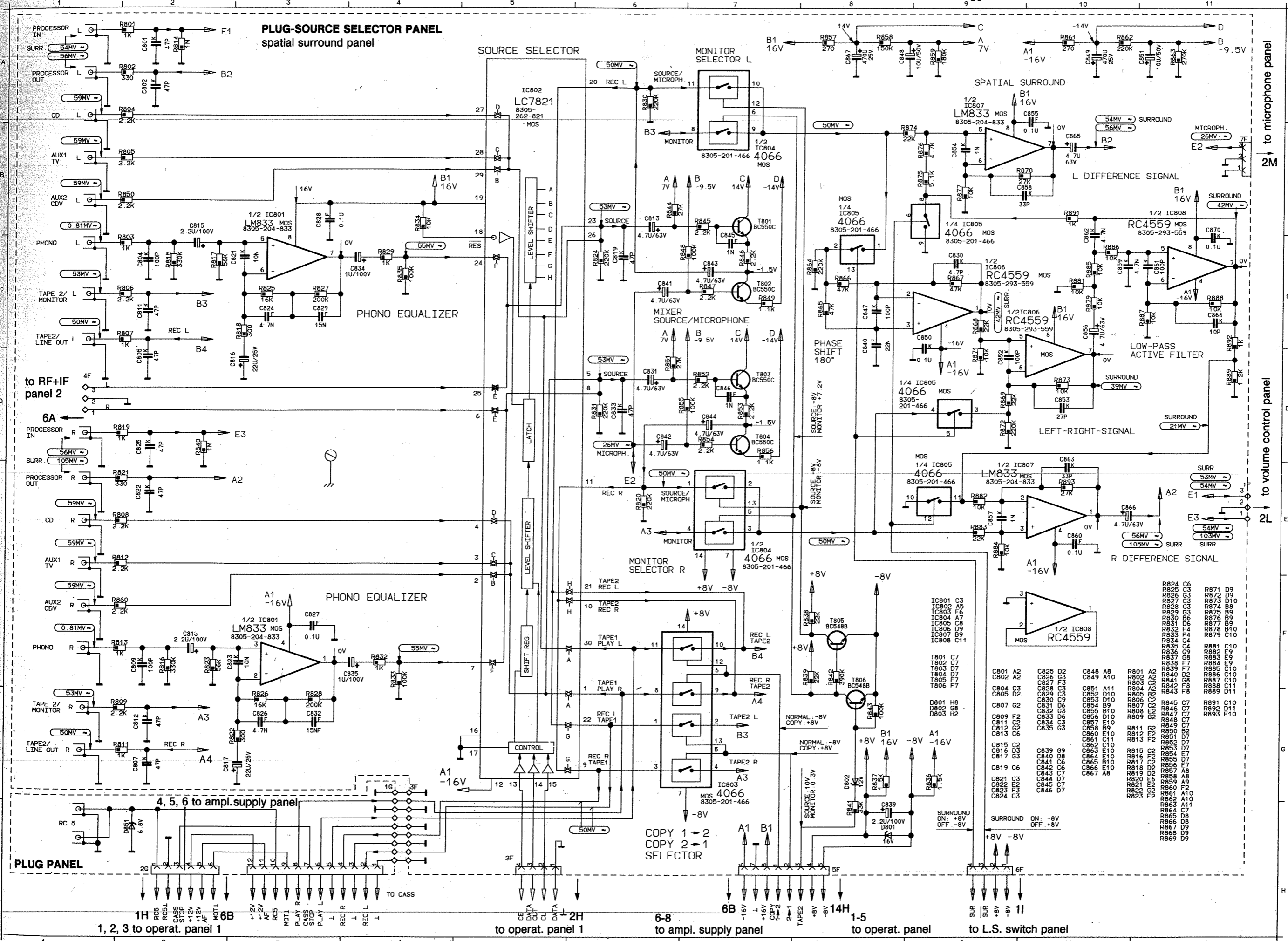
PLUG-SOURCE SELECTOR-SPATIAL SURROUND PANEL



PLUG PANEL



PCB.01663
T03-934



PLUG-SOURCE SELECTOR PANEL
spatial surround panel

SOURCE SELECTOR

MONITOR SELECTOR L

SPATIAL SURROUND

PHONO EQUALIZER

MIXER SOURCE/MICROPHONE

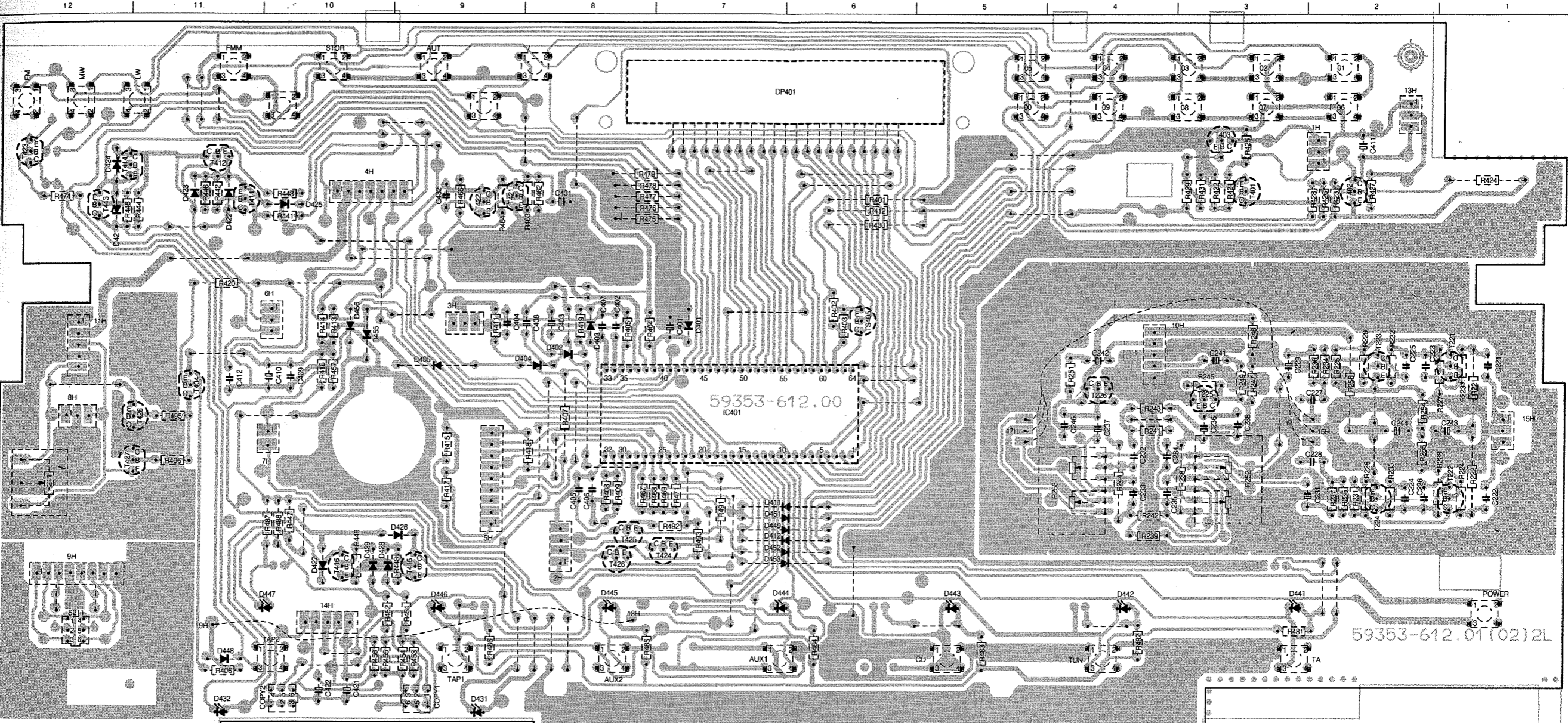
PHONO EQUALIZER

MONITOR SELECTOR R

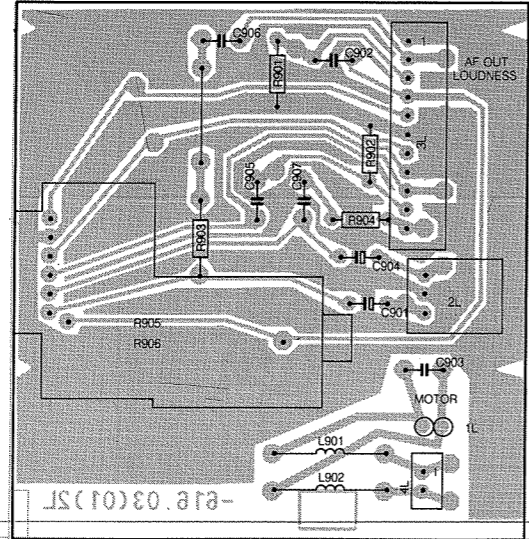
**COPY 1 -> 2
COPY 2 -> 1
SELECTOR**

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R825	C3
R826	C2
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R828	D10
R829	C3
R830	B6
R831	D6
R832	F4
R833	F4
R834	C4
R835	C4
R836	G9
R837	D8
R838	F7
R839	F7
R840	D2
R841	D8
R842	F8
R843	F8
R844	C11
R845	C7
R846	C7
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R848	C7
R849	C7
R850	D7
R851	D7
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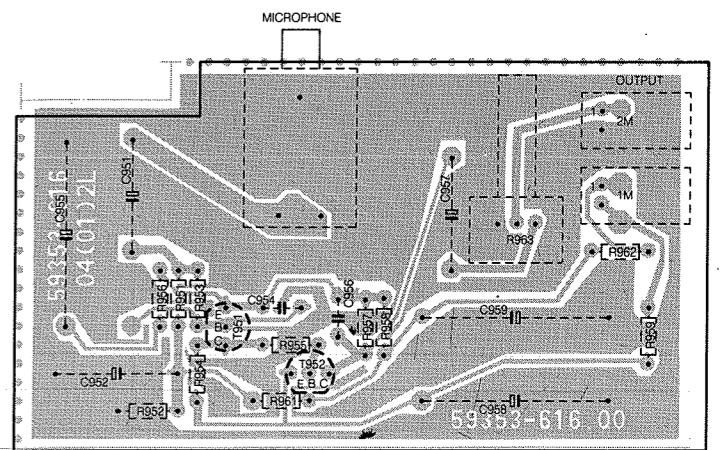
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OPERATING PANEL (TONE CONTROL)

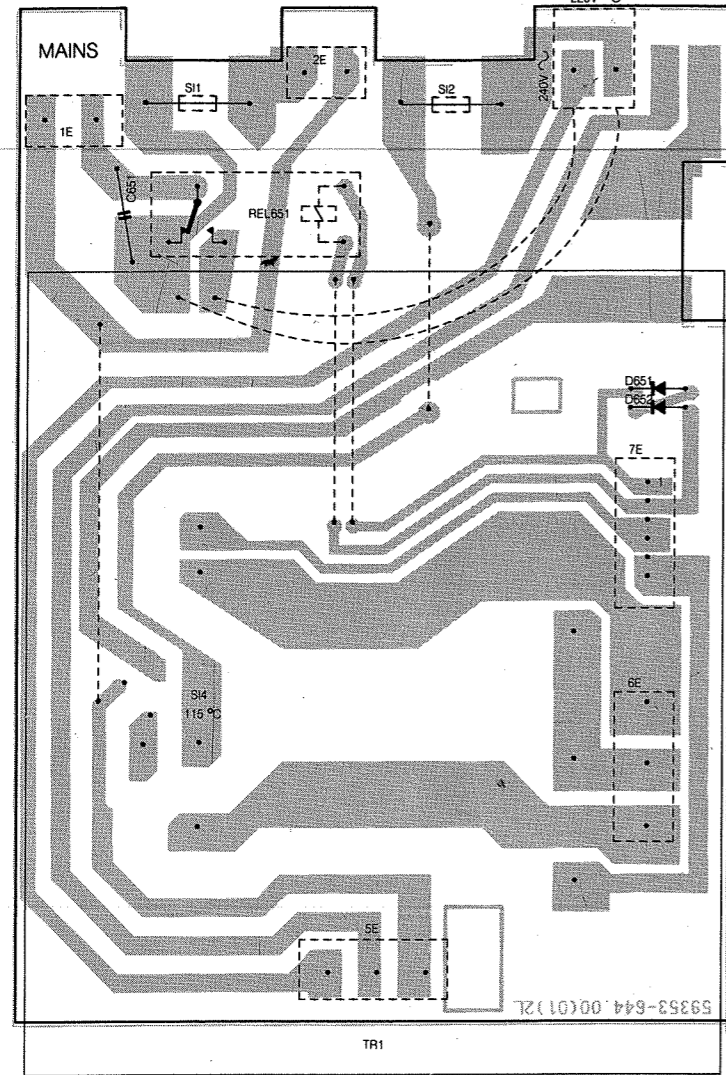


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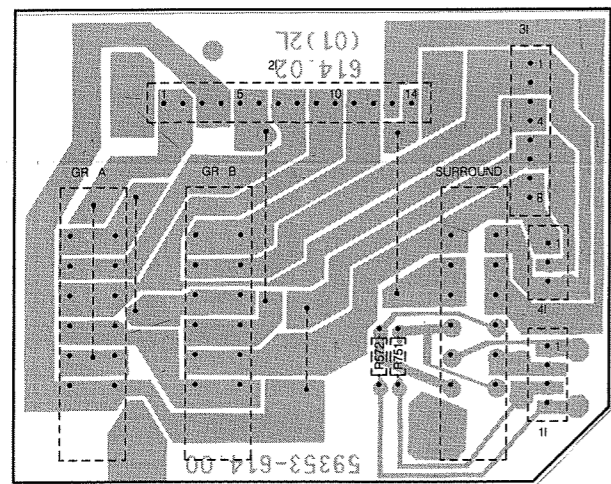


MICROPHONE PANEL

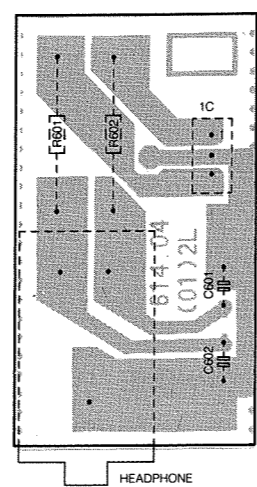
TRAF0 PANEL



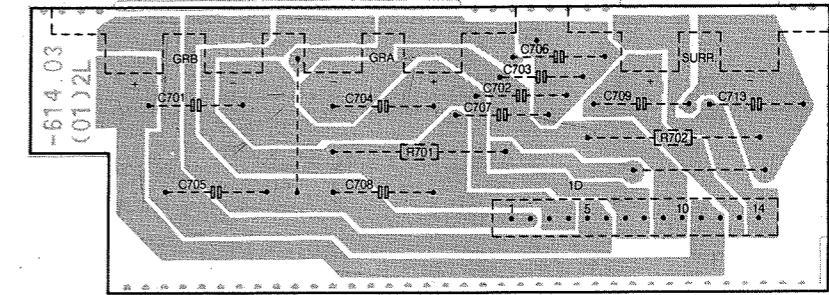
SPEAKERS/SPATIAL SURROUND SWITCH PANEL



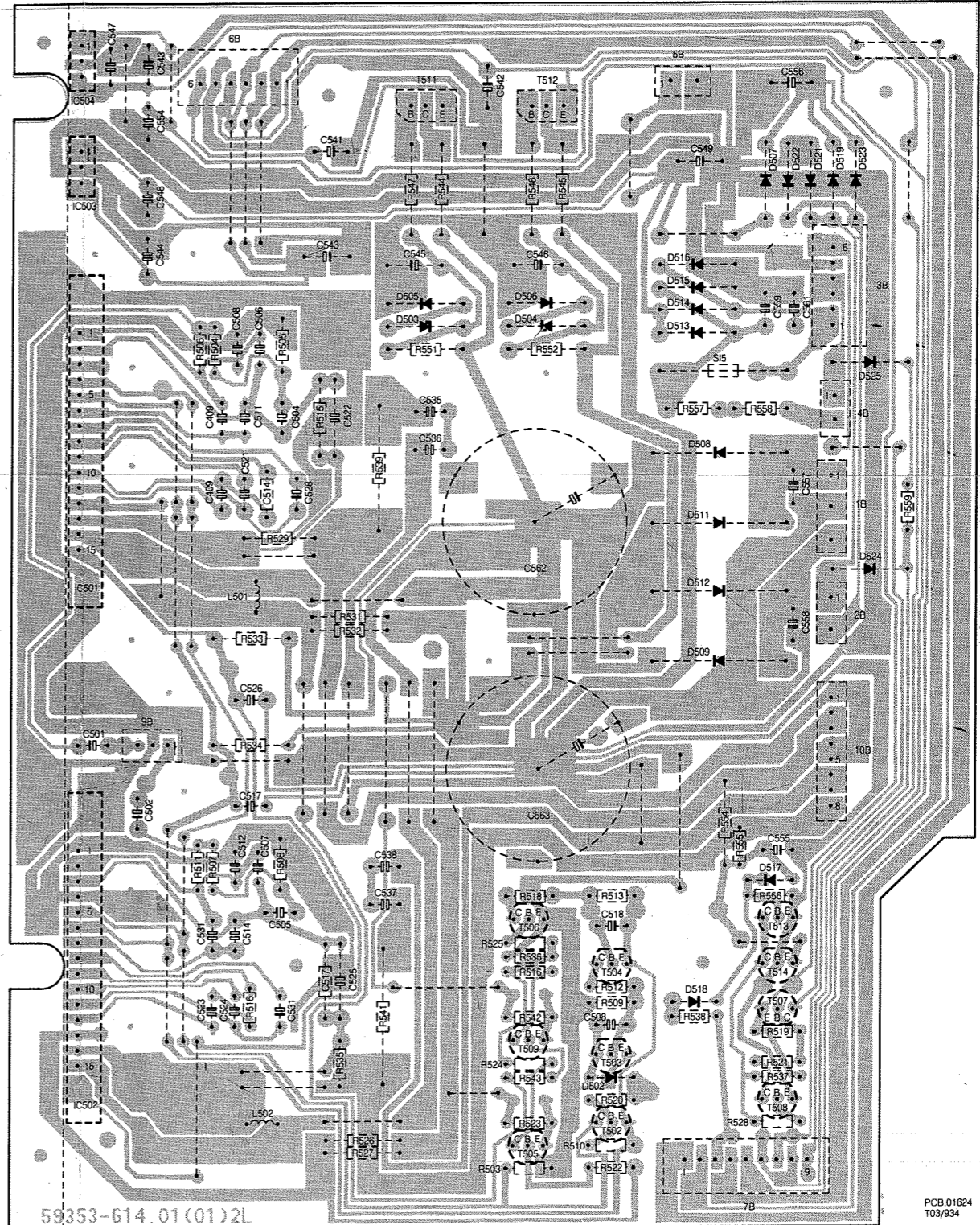
HEADPHONE PANEL



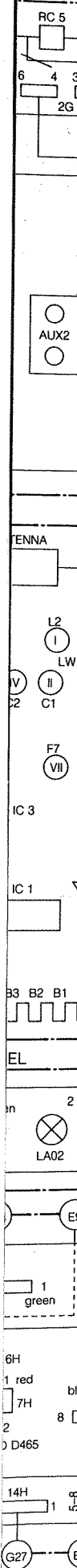
LOUDSPEAKER CLAMP PANEL



AMPLIFIER-SUPPLY PANEL

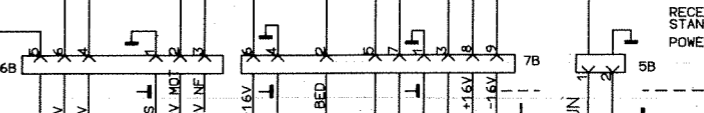
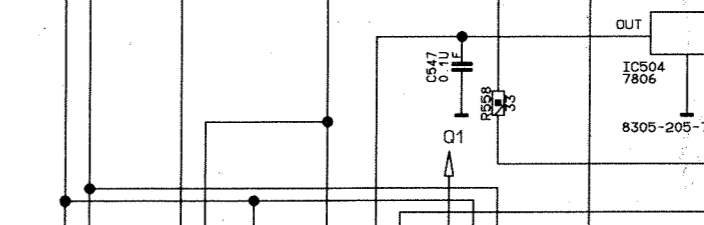
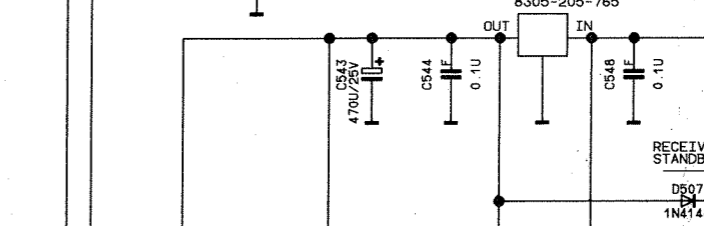
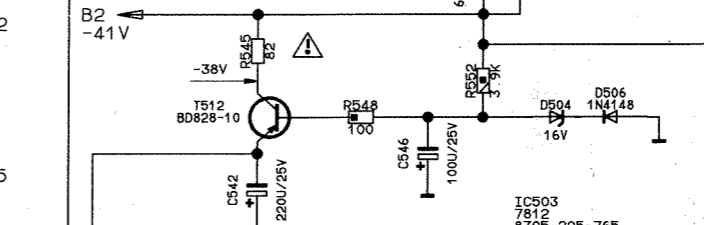
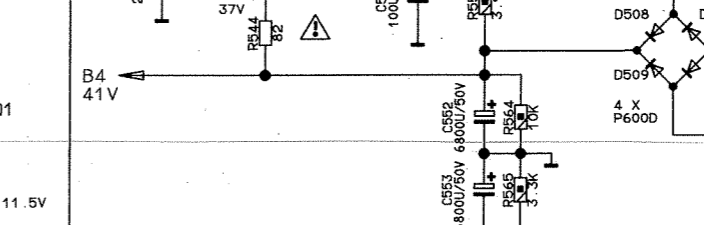
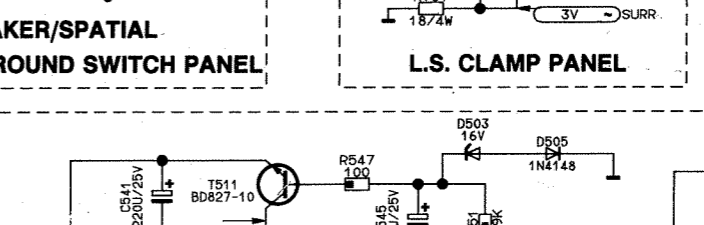
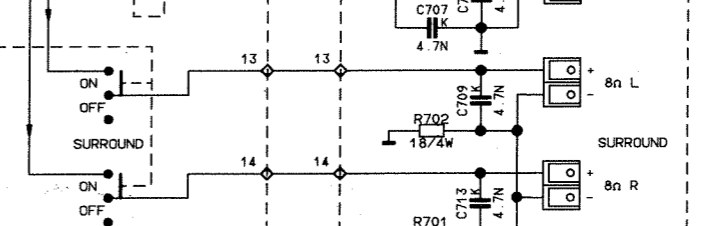
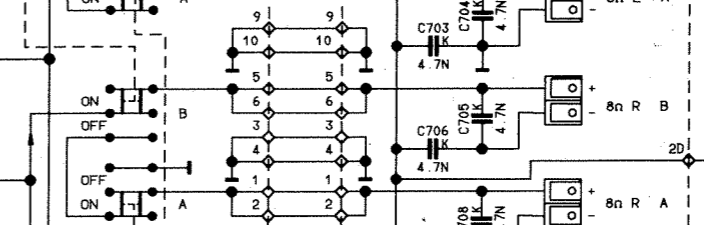
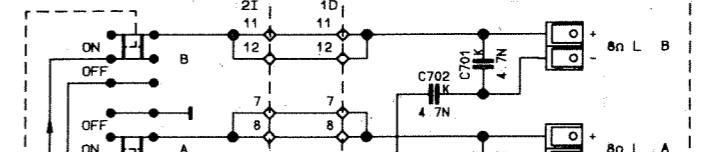
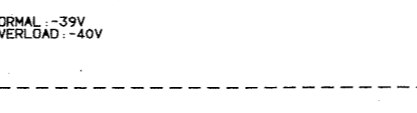
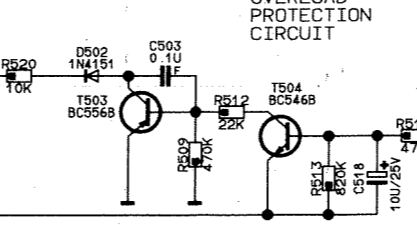
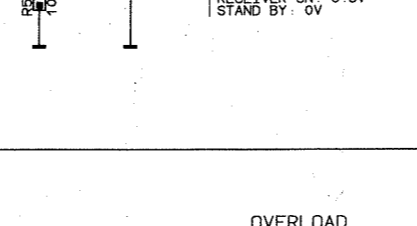
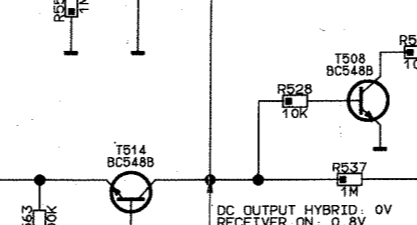
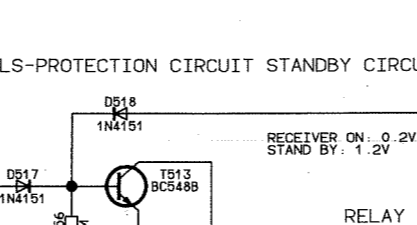
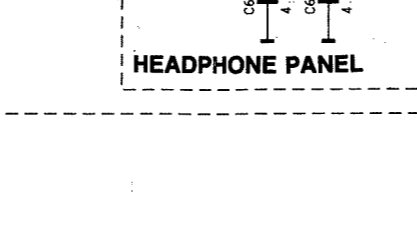
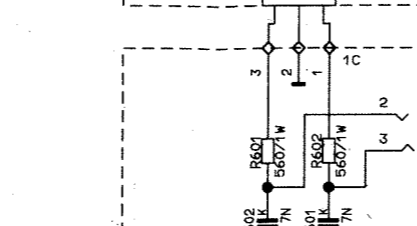
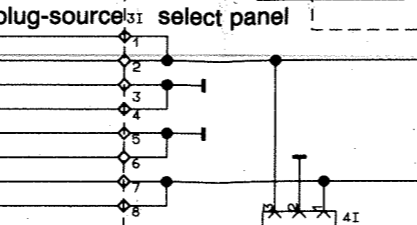
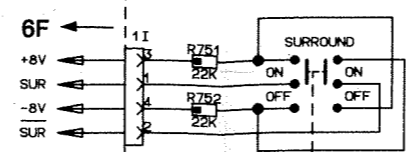
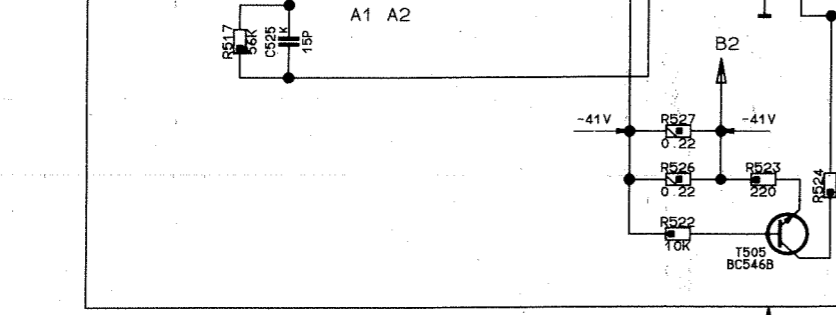
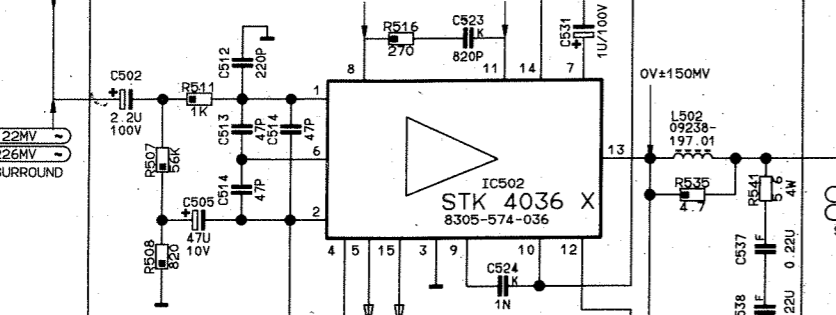
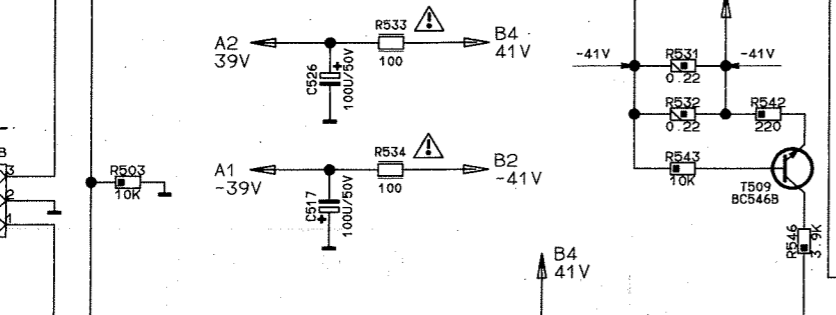
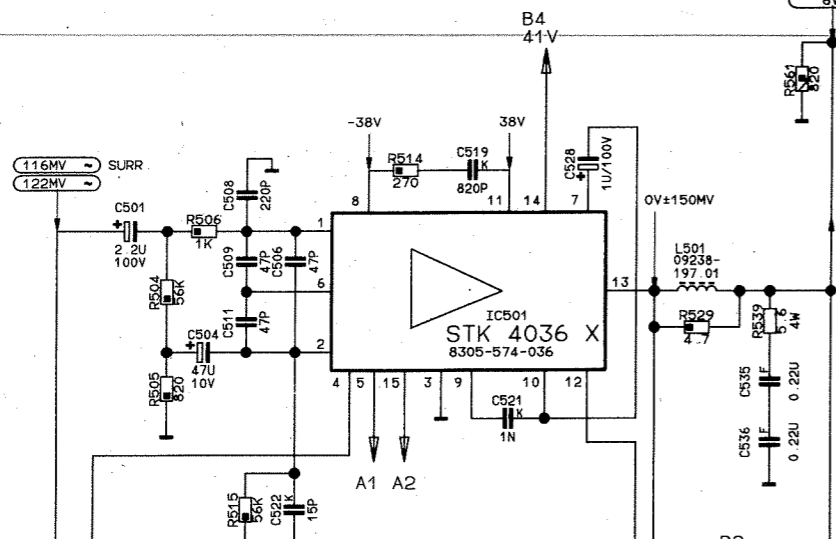


10B	F1	R525	G3
1B	E7	R526	H4
1C	G7	R527	H4
1D	A2	R528	H2
1E	A11	R529	E5
11	H9	R531	E4
2B	E1	R532	E4
R533	A10	R533	E5
21	G10	R534	F5
3B	D1	R535	H4
31	G9	R536	G3
4B	D1	R537	H2
41	H9	R538	G2
5B	B2	R539	D4
5E	E10	R541	G4
6B	B5	R542	G3
6E	D9	R543	H3
7B	H2	R544	C3
7E	O9	R545	C3
9B	F5	R547	C4
C409	E5	R548	C3
C409	D5	R551	D4
C501	F6	R552	D3
C502	F5	R554	F2
C504	D4	R555	F2
C505	G5	R556	G2
C506	D4	R557	D2
C507	F4	R558	D2
C508	D5	R559	E1
C508	G3	R572	H10
C511	D4	R601	G8
C512	F5	R602	G8
C514	E4	R701	A2
C514	G5	R702	A1
C517	G4	R751	H10
C517	F3	REL65	B11
C518	G5	SI 1	A11
C521	D5	SI 2	A10
C522	D4	SI 4	D11
C523	G5	SI 5	D2
C524	G5	SURRO	G10
C525	G4	T502	H3
C526	F5	T503	H3
C528	F5	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	C4		
C546	C3		
C547	B5		
C548	C5		
C549	C2		
C549	C2		
C554	C5		
C555	F2		
C556	B2		
C557	E1		
C558	E1		
C559	D2		
C561	D3		
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	C1		
D523	C1		
D524	E1		
D525	D1		
D551	B9		
D552	B9		
GR A	G11		
GR B	G11		
I C501	E6		
I C502	H6		
I C503	C6		
I C504	C6		
L501	E5		
L502	H5		
R503	H3		
R504	D5		
R505	D4		
R506	D5		
R507	G5		
R508	G4		
R509	G3		
R510	H3		
R511	G5		
R512	G3		
R513	G3		
R515	D4		
R516	G5		
R516	G3		
R518	G3		
R519	G2		
R520	H3		
R521	H2		
R522	H3		
R523	H3		
R524	H3		



AMPLIFIER-SUPPLY PANEL

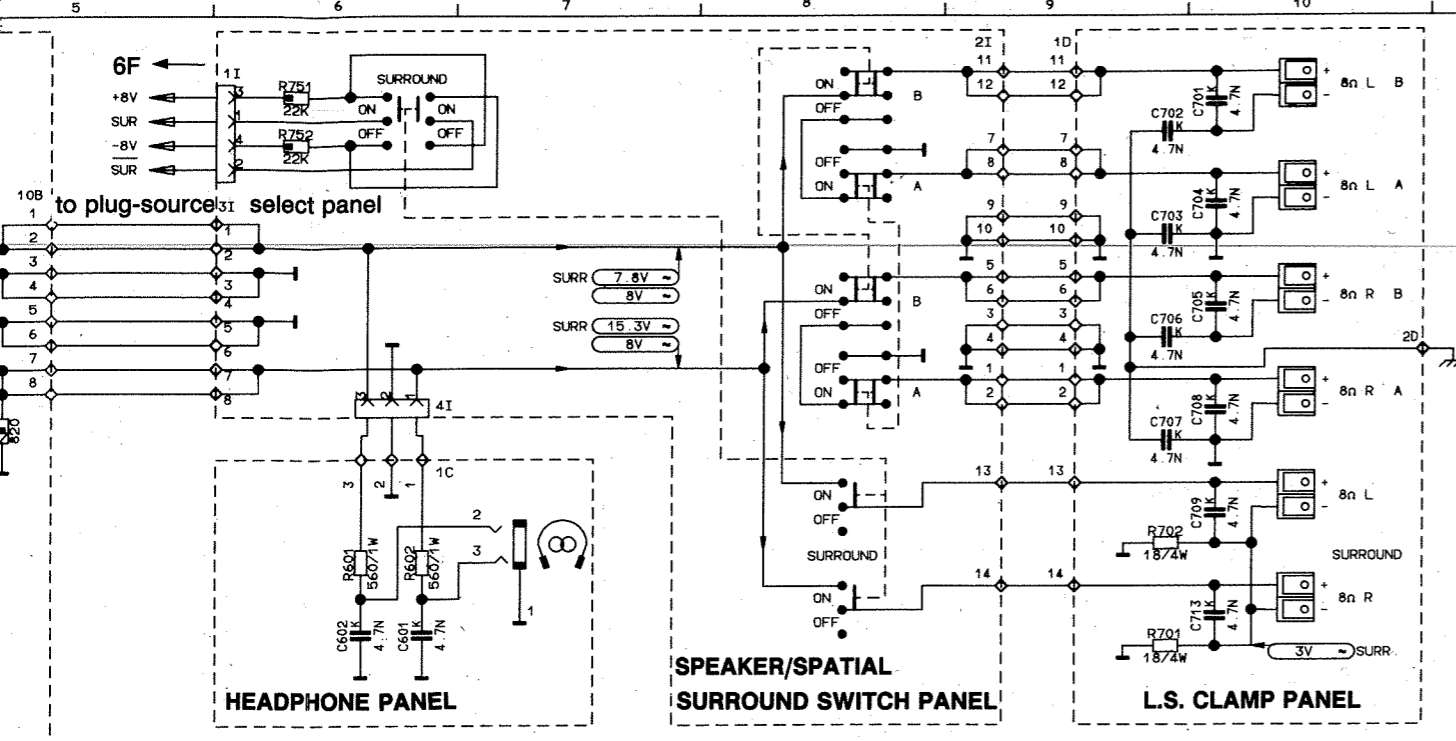
FINAL STAGE



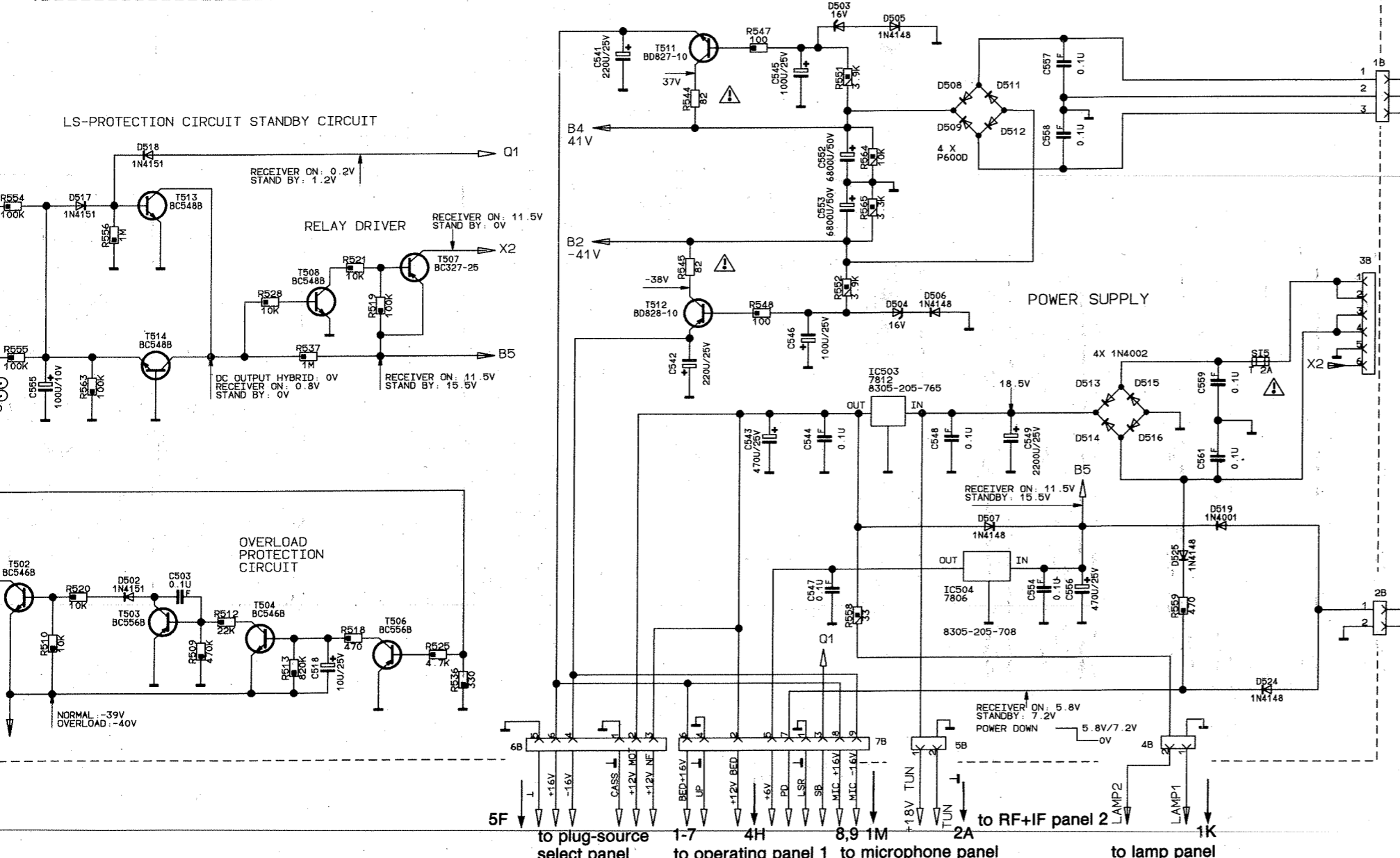
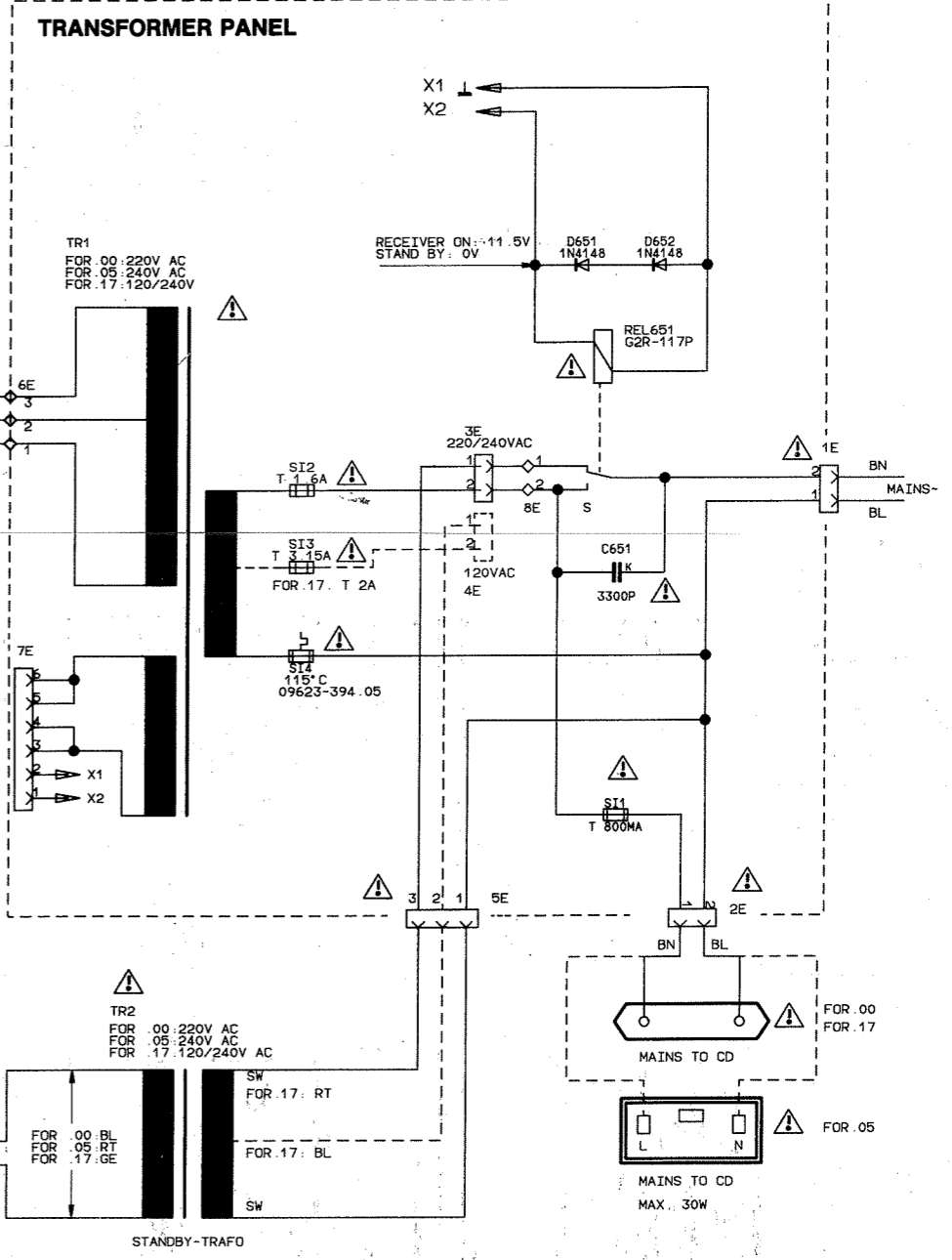
REL651 D15	D501 H4	C501 A1	C527 D9	R501
S11 E16	D502 G4	C502 F1	C528 F9	R502
S12 E14	D503 C5	C503 G1	C529 E9	R503
S13 E14	D504 A5	C504 A2	C531 F9	R504
S14 E14	D505 B6	C505 B2	C532 G9	R505
L501 G1	D506 D9	C506 B2	C533 G10	R506
L502 F5	D507 D10	C507 F2	C534 H10	R507
	D509 F10	C508 F2	C535 G10	R508
	D511 G11	C509 G2	C536 H10	R509
	D512 F11	C510 C4	C537 G11	R510
IC501 F3	D513 F11	C511 A2	C538 H11	R511
IC501 A3	D514 F11	C512 B2	C539 H11	R512
IC502 F10	D515 F11	C513 G2	C541 E11	R513
IC503 G10	D516 H11	C514 A3	C542 E11	R514
T501 G1	D517 G12	C515 D3	C543 F12	R515
T502 G3	D518 G12	C516 G4	C544 G12	R516
T504 G4	D519 G12	C517 G4	C601 B8	R517
T505 L4	D521 G12	C518 B5	C602 B8	R518
T506 E5	D522 H12	C519 B5	C651 E16	R519
T507 A6	D523 E10	C521 F5	C701 A9	R520
T508 B6	D524 E10	C522 E5	C702 A9	R521
T509 D6	D525 E10	C523 G5	C703 B9	R522
T511 E6	D526 E10	C524 B6	C704 C9	R523
T512 D9	D651 D15	C525 D8	C705 C9	R524
T513 E9	D652 D16	C526 F9	C706 D9	R525

G3
H4
H4
E4
E4
F5
H4
G3
G2
D4
G4
G3
H3
C3
C3
C4
D4
D4
F2
D2
D2
E1
H10
G8
A2
H10
B11
A11
A10
D11
D2
G3
H3
H3
H3
H3
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B3
G2
E10

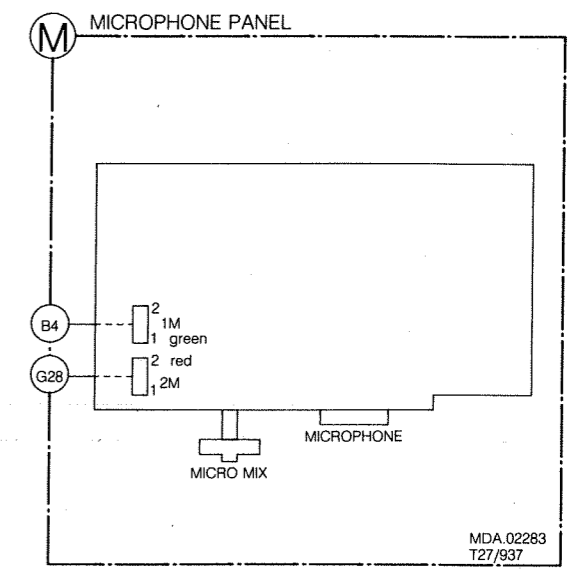
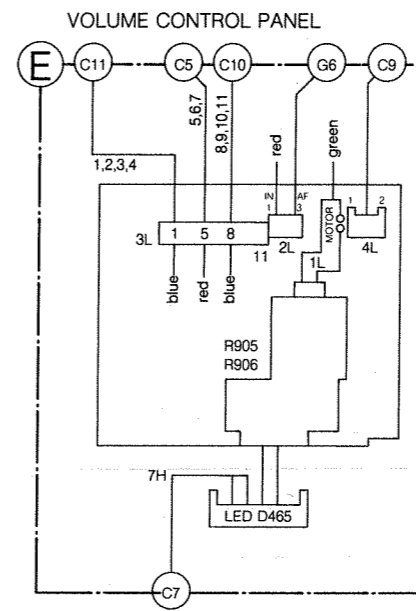
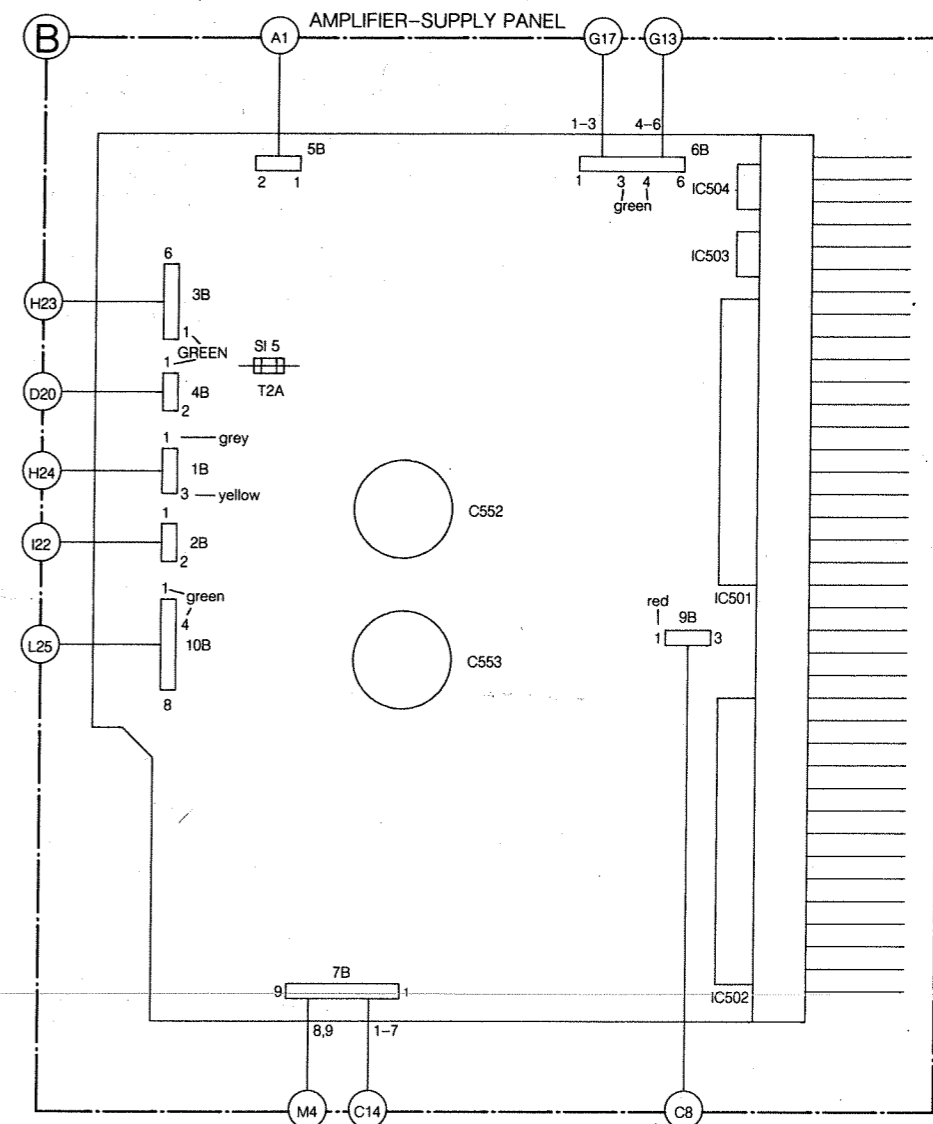
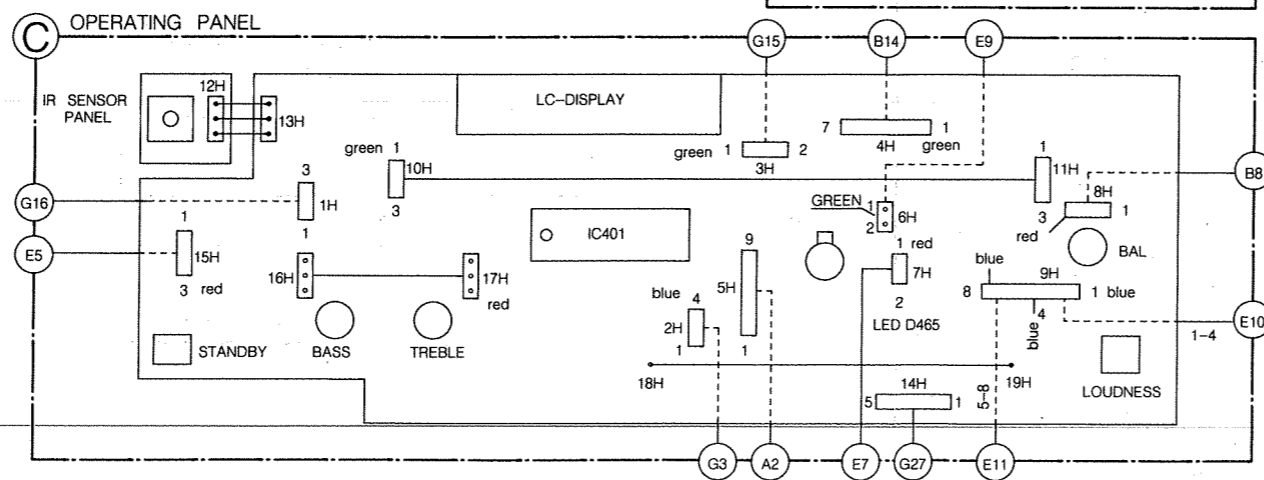
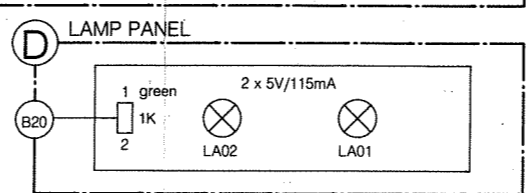
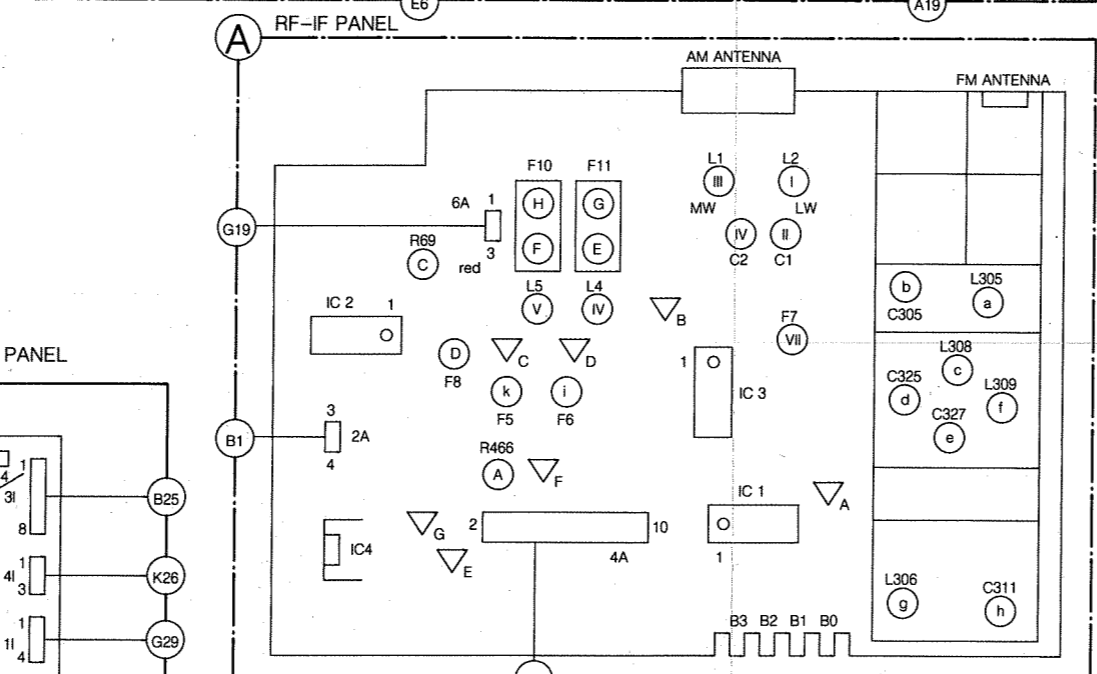
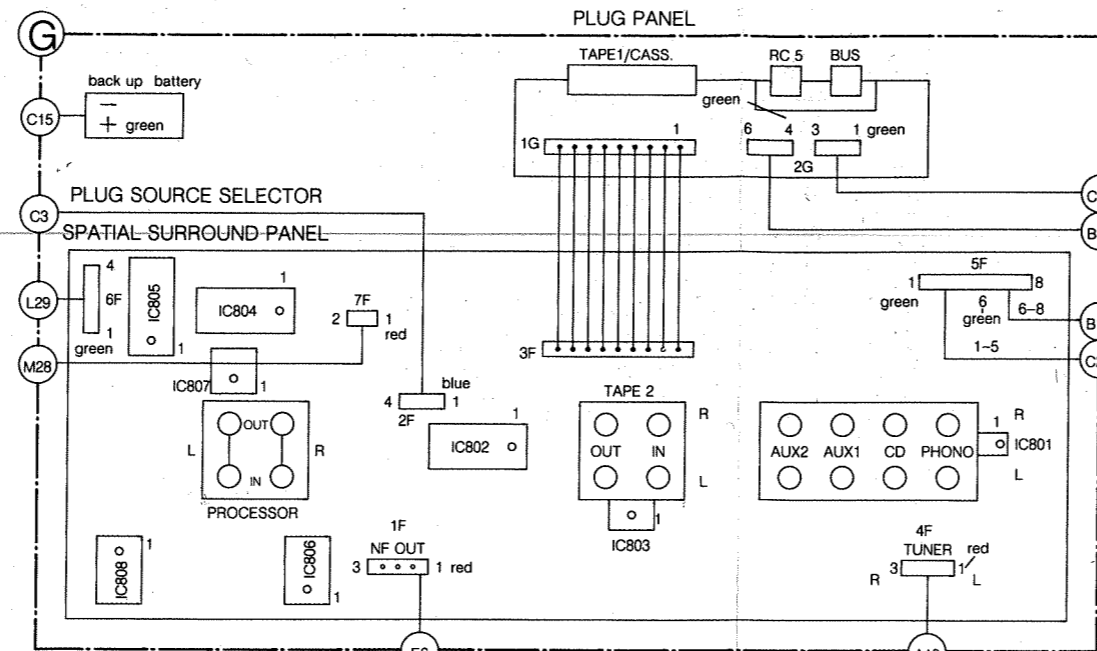
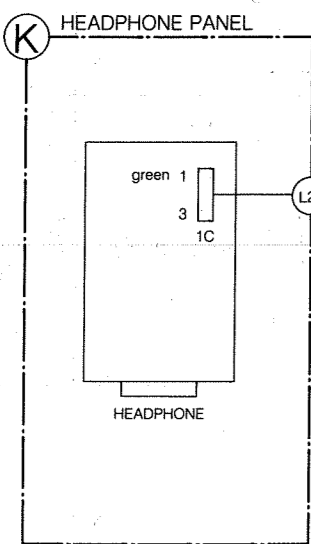
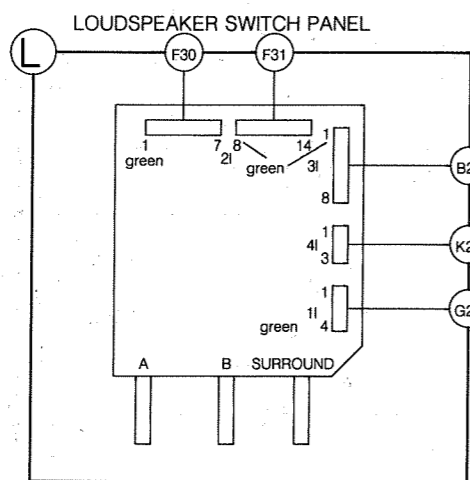
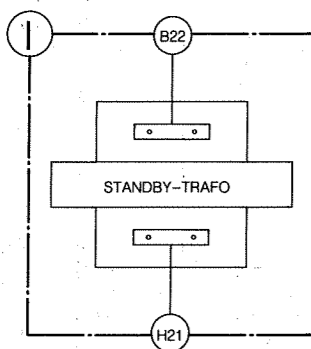
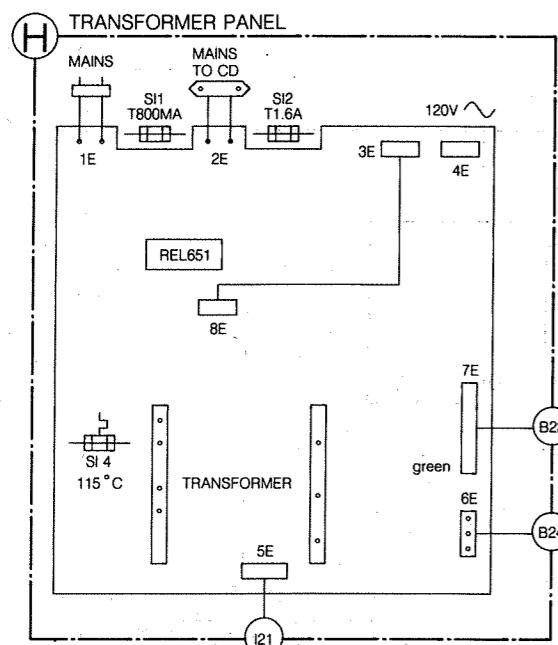
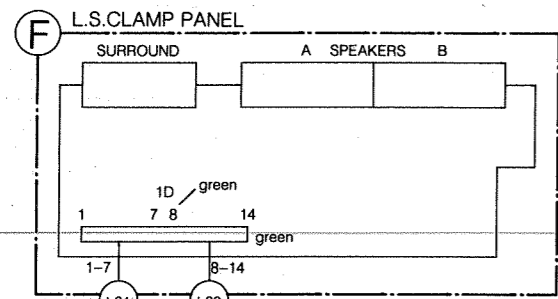
5F to plug-source select panel
1-7 to operating panel 1
4H to microphone panel
8,9 1M to RF+IF panel 2
+1.8V TUN to lamp panel
2A to lamp panel
1K to lamp panel

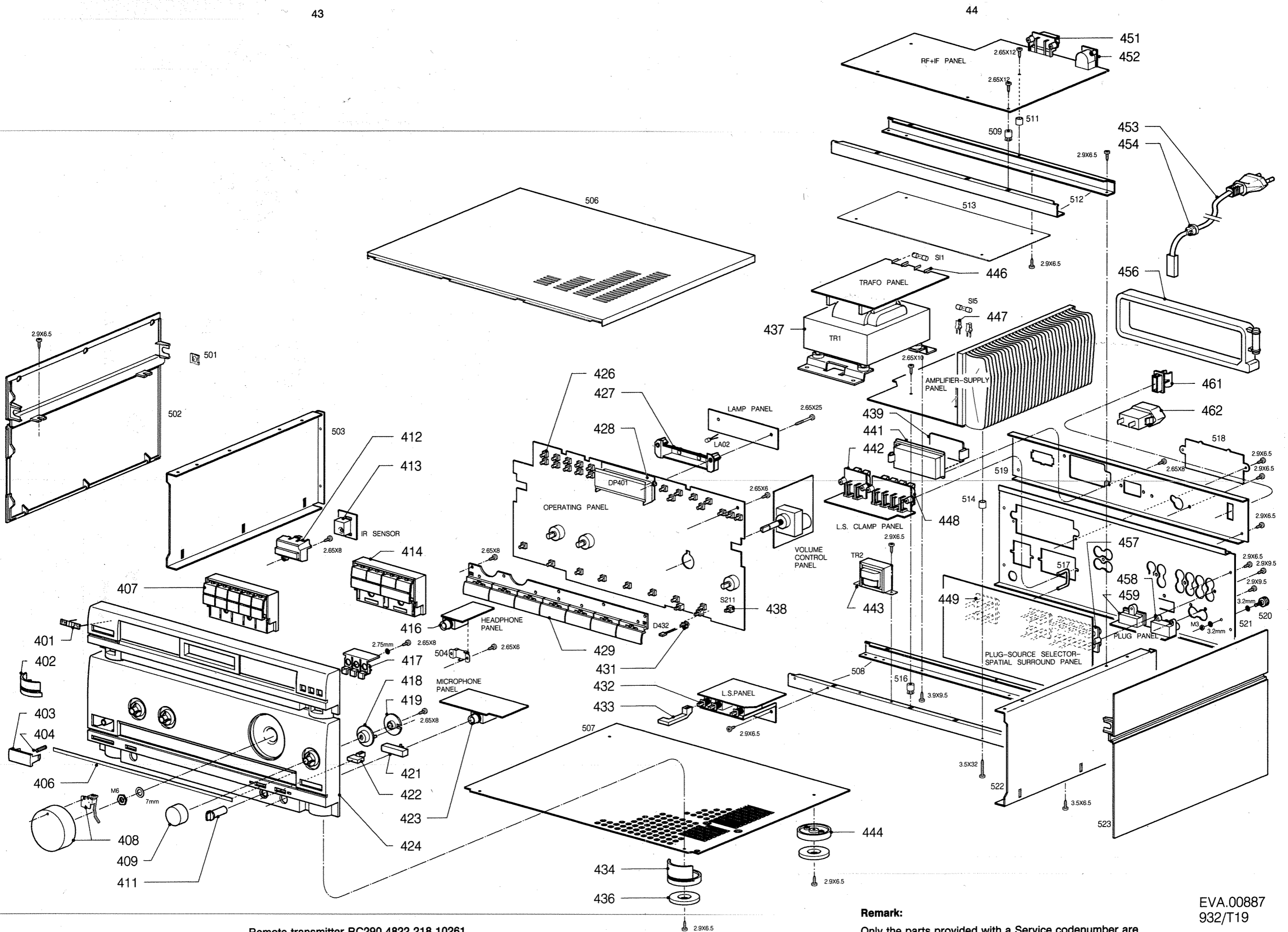


REL651 D15	D501 H4	C501 A1	C527 D9	R501 F1	R528 H3	R556 D9
SI1 E16	D502 G4	C502 F1	C528 F9	R502 B1	R529 C4	R557 F9
SI3 E14	D503 C5	C503 G1	C529 E9	R503 A1	R531 H4	R558 D10
SI4 E14	D504 A5	C504 A2	C531 F9	R504 C2	R532 G4	R559 E10
	D505 B6	C505 B2	C532 C9	R505 F1	R533 E4	R561 G10
	D506 D9	C506 B2	C533 G10	R506 F1	R534 B4	R562 H11
L501 G1	D507 D10	C507 E2	C534 H10	R507 G2	R535 C4	R563 H12
L502 F5	D509 F10	C508 F2	C535 G10	R508 C2	R536 C4	R601 B8
	D511 G11	C509 G2	C536 H10	R509 G2	R537 C4	R602 B8
IC501 F3	D512 F11	C510 C4	C537 G11	R511 A3	R538 E5	R701 A9
IC501 A3	D513 F11	C511 A2	C538 H11	R512 E3	R539 F5	R702 A9
IC502 F10	D514 F11	C512 B2	C539 H11	R513 G3	R541 F5	
IC503 G10	D515 F11	C513 G2	C541 E11	R514 H3	R542 G5	
	D516 H11	C514 A3	C542 E11	R515 G3	R543 F5	
T501 G1	D517 G12	C515 D3	C543 F12	R516 G3	R544 B5	
T502 G3	D518 G12	C516 E4	C544 G12	R517 G3	R545 B5	
T504 G4	D519 G12	C517 G4	C601 B8	R518 H3	R546 B5	
T505 L4	D521 G12	C518 B5	C602 B8	R519 C3	R547 C6	
T506 E5	D522 H12	C519 B5	C651 E16	R521 C3	R548 B6	
T507 A6	D523 E10	C521 F5	C701 A9	R522 E3	R549 D6	
T508 B6	D524 E10	C522 G5	C702 A9	R523 E3	R551 E6	
T509 D6	D525 E10	C523 G5	C703 B9	R524 A4	R552 E6	
T511 E6	D526 E10	C524 B6	C704 C9	R525 B4	R553 E7	
T512 D9	D651 D15	C525 D8	C705 C9	R526 F4	R554 D9	
T513 E9	D652 D16	C526 F9	C706 D9	R527 F4	R555 E9	



AF VOLTAGES 2 X 8W INTO 8n = 8V~ AT OUTPUT.
1KHZ VOLUME FULLY UP. LOUDNESS OFF. TREBLE AND
BASS IN CENTRE SETTING. LOUDSPEAKER SWITCHES ON





Remote transmitter RC290 4822 218 10261

Remark:



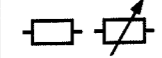
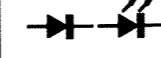


Only the parts provided with a Service codenumber are available as Service spare parts.


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	4822 130 41246 BC327-25
C2	4822 125 50329	Cap. trimmer 4.5-20 pF MW-RF	5322 130 44647 BC368
C12	4822 122 33562	Cap. ceramic 36 pF 2% N150	4822 130 44461 BC546B
C13	4822 122 33562	Cap. ceramic 36 pF 2% N150	4822 130 40937 BC548B
C22	4822 122 33568	Cap. ceramic 68 pF 2% N750	4822 130 44196 BC548C
C23	4822 122 33567	Cap. ceramic 4.7 pF 0.25 pF 2% N750	4822 130 41096 BC550C
C24	4822 122 33565	Cap. ceramic 150 pF 2% N470	4822 130 41691 BC556B
C26	4822 122 33572	Cap. ceramic 390 pF N1500	4822 130 44197 BC558B
C45	4822 122 33571	Cap. ceramic 100 pF 5% N750	4822 130 61755 BC560C
C46	4822 122 33571	Cap. ceramic 100 pF 5% N750	4822 130 61803 BD827-10
C62	4822 122 33569	Cap. ceramic 180 pF 2% N750	4822 130 41761 BD828-10
C66	4822 122 33569	Cap. ceramic 180 pF 2% N750	4822 130 40902 BF240
C225	4822 122 33571	Cap. ceramic 100 pF 5% N750	4822 130 41817 BF982-I
C226	4822 122 33571	Cap. ceramic 100 pF 5% N750	4822 130 42121 2SK30
C305	4822 125 50329	Cap. trimmer 4.5-20 pF FM-RF	4822 130 61298 2SK544E
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	4822 209 71785 LA1266
R69	4822 100 20694	Potm. trimmer 100K	4822 209 73434 LA3401
R73	4822 111 91658	Res. carbon 270K 2%	4822 209 73435 LC7217
R78	4822 111 91658	Res. carbon 270K 2%	4822 209 72748 LC7821
R211	4822 101 30636	Potm. 100K balance	4822 209 73452 LM833
R252	4822 102 20099	Potm. 2x50K bass	4822 209 61336 M 34200M4-160SP
R253	4822 102 20101	Potm. 2x10K treble	4822 209 70361 MC78M06CT
R323	4822 116 53666	Saf. res. 47 Ω 5%	4822 209 70072 STK4036 X
R327	4822 116 53666	Saf. res. 47 Ω 5%	5322 130 42221 7812
R332	4822 116 81908	Saf. res. 12 Ω 5%	4822 209 70414 RC4559NB
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	
			
F1+F4	4822 242 72291	Cer. filter 10.7 MHz FM-IF	4822 130 33773 BAT42/BAT43
F5	4822 156 11093	Coil FM-IF	4822 130 31322 GL-9 PR2
F6	4822 156 11092	Coil FM-IF	4822 130 81003 KV1310
F7	4822 242 72289	Cer filter AM-IF 450 KHz	4822 130 81595 Zen. diode 2.7V 0.5W
F8	4822 214 51727	LP filter	4822 130 33783 Zen. diode 6.8V 0.5W
F9	4822 156 11104	Filter pilot 19 KHz	4822 130 81596 Zen. diode 6.8V 1.3W
F10	4822 156 11104	Filter pilot 19 KHz	4822 130 81615 Zen. diode 12V 0.5W
L1	4822 156 11094	Coil MW-RF	4822 130 33785 Zen. diode 16V 0.5W
L2	4822 156 11095	Coil LW-RF	4822 130 31438 1N4001
L3	4822 156 11091	Coil LW-osc.	5322 130 30684 1N4002
L4	4822 156 11089	Coil MW-osc.	4822 130 30621 1N4148
L5	4822 157 53632	Coil, choke 39 MH	5322 130 34052 1N4151
L305	4822 156 11099	Coil FM-RF	4822 130 81614 MR752
L306	4822 156 11096	Coil FM-osc.	4822 130 81002 SVC321
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