

Service  
Service  
Service

70FR940/00S/13S

FR930PBK01

FR940PBK01



# Service Manual

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## SPECIFICATION

General	Nominal value	Typical value
Mains voltage	: 220V ~ (/00S), 120/220/240V ~ (/01S), : 110/220V ~ (/13S) 120V ~ (BK01)	: 220V ~ (/00S), 120/220/240V ~ (/01S), : 110/220V ~ (/13S) 120V ~ (BK01)
Mains frequency	: 50/60 Hz (/00S/01S), 60 Hz (/13S, BK01)	: 50/60 Hz (/00S/01S), 60 Hz (/13S, BK01)
Power consumption	: 380W (FR930), 460W (FR940)	: 380W (FR930), 460W (FR940)
Dimensions (WxHxD)	: 435 x 124 x 300 mm	: 435 x 124 x 300 mm
Weight	: 8.6 kg (FR930), 9.4 kg (FR940)	: 8.6 kg (FR930), 9.4 kg (FR940)
<b>Tuner: FM section (at 75Ω)</b>		
Tuning range	: 87.5 MHz to 108.0 MHz	: 87.5 MHz to 108.0 MHz
Aerial inputs	: 75Ω coaxial	: 75Ω coaxial
Sensitivity mono	: 2.5 μV (19.2 dBf) : 3% Distortion (75 kHz dev.)	: 1.3 μV (13.5 dBf) : 3% Distortion (75 kHz dev.)
Selectivity	: 50 dB at ±400 kHz bandwidth	: 60 dB at ±400 kHz bandwidth
Frequency response 30 Hz – 15 kHz	: +1.0, –4.0 dB	: +0.5, –2.0 dB
Suppression IF-AM	: 65 dB –45 dB	: 70 dB –55 dB
pilot tone	: 40 dB	: 50 dB
image frequency	: 40 dB	: 50 dB
Channel separation	: 30 dB 1 kHz	: 45 dB 1 kHz
Distortion T.H.D mono	: 0.5%	: 0.2%
stereo	: 1.0%	: 0.4%
Signal/noise ratio mono	: 71 dB	: 76 dB
stereo	: 63 dB	: 68 dB
Auto-stop threshold (Muting)	: 23.3 – 32.0 dBf (4 – 11 μV)	: 27.2 dBf (6.3 μV)
Output	: 650 –1300 mV/2.0 kΩ	: 940 mV/2.0 kΩ
<b>Tuner: AM section</b>		
Wave ranges	: 520 kHz to 1710 kHz	: 520 kHz to 1710 kHz
Sensitivity (Loop antenna)	: 1000 μV/m 10% Distortion	: 600 μV/m 10% Distortion
Selectivity (Loop antenna)	: 20 dB at ±10 kHz bandwidth	: 30 dB at ±10 kHz bandwidth
Suppression IF (Loop antenna)	: 50 dB	: 60 dB
image frequency (Loop antenna)	: 35 dB	: 40 dB
Output (Loop antenna)	: 130 – 260 mV	: 190 mV

## Note

– Test methods: IHF

**SPECIFICATION**

**Audio**

Output power (Front/Rear/Center)	: 60W (8Ω)/20W (4+4Ω)/20W (8Ω) (FR930) : 100W (8Ω)/20W (4+4Ω)/20W (8Ω) (FR940)	: 65W (8Ω)/22W (4+4Ω)/22W (8Ω) (FR930) : 105W (8Ω)/22W (4+4Ω)/22W (8Ω) (FR940)
Distortion		
T.H.D. (Front)	: ≤ 0.09% at 20 Hz – 20 kHz	: ≤ 0.05% at 20 Hz – 20 kHz
Intermodulation (Front)	: ≤ 0.09% at 60/7000 Hz 4:1	: ≤ 0.03% at 60/7000 Hz 4:1
Frequency characteristic		
Phono input } tone control	: from 20 Hz – 20 kHz ±2 dB (RIAA)	: from 20 Hz – 20 kHz ±0.5 dB (RIAA)
Linear inputs } neutral	: from 20 Hz – 20 kHz ±2 dB	: from 10 Hz – 30 kHz ±2 dB
Bass control	: at 100 Hz +10 dB to –10 dB ±2 dB	: at 100 Hz +10 dB to –10 dB
Treble control	: at 10 kHz +10 dB to –10 dB ±2 dB	: at 10 kHz +10 dB to –10 dB
Acoustic bass boost (80 Hz/150 Hz/ 250 Hz)	: 10 dB/10 dB/10 dB ±2 dB	: 10 dB/10 dB/10 dB
Signal/noise ratio weighted (A-curve)		
Phono input	: for 1W output ≥ 70 dB	: for 1W output ≥ 75 dB
Linear inputs	: for 1W output ≥ 78 dB	: for 1W output ≥ 82 dB
Channel separation	: at 1000 Hz ≥ 40 dB : at 100 Hz – 10 kHz ≥ 30 dB	: at 1000 Hz ≥ 45 dB : at 100 Hz – 10 kHz ≥ 35 dB
Input sensitivity/Input impedance		
Audio		
Phono	: 2.1 – 3.1 mV/47 kΩ	: 2.5 mV/47 kΩ
CD/LD/TV	: 120 – 190 mV/20 kΩ	: 150 mV/25 kΩ
Tape/VCR	: 120 – 190 mV/20 kΩ	: 150 mV/25 kΩ
Output level/Output impedance		
Tape (Audio)	: ≥ 250 mV/300 – 500Ω (Phono 5.0 mV 1 kHz input)	: 300 mV/400Ω (Phono 5.0 mV 1 kHz input)

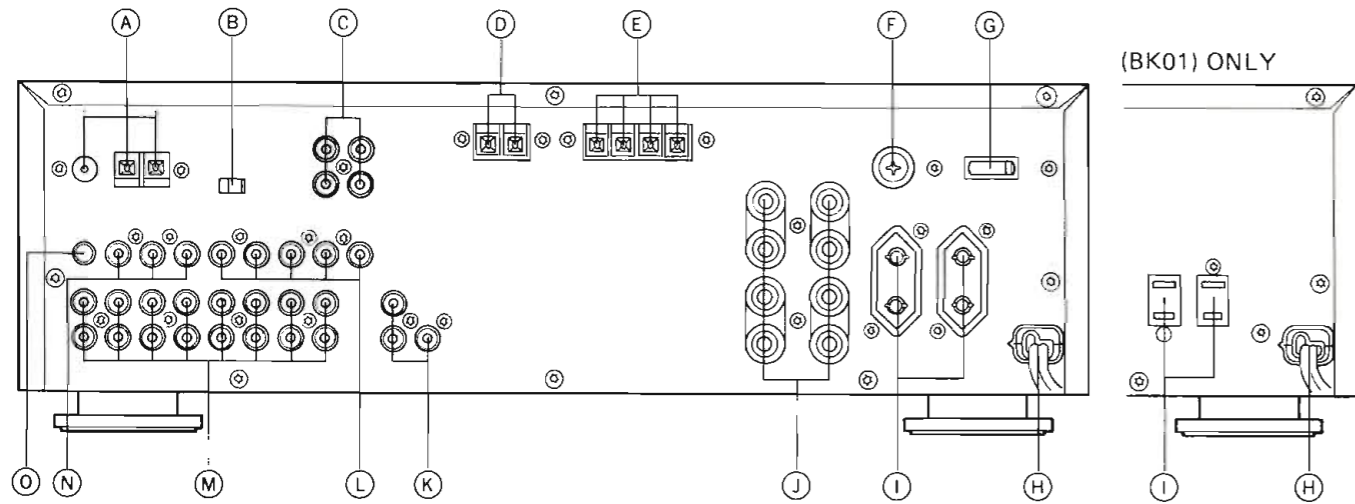
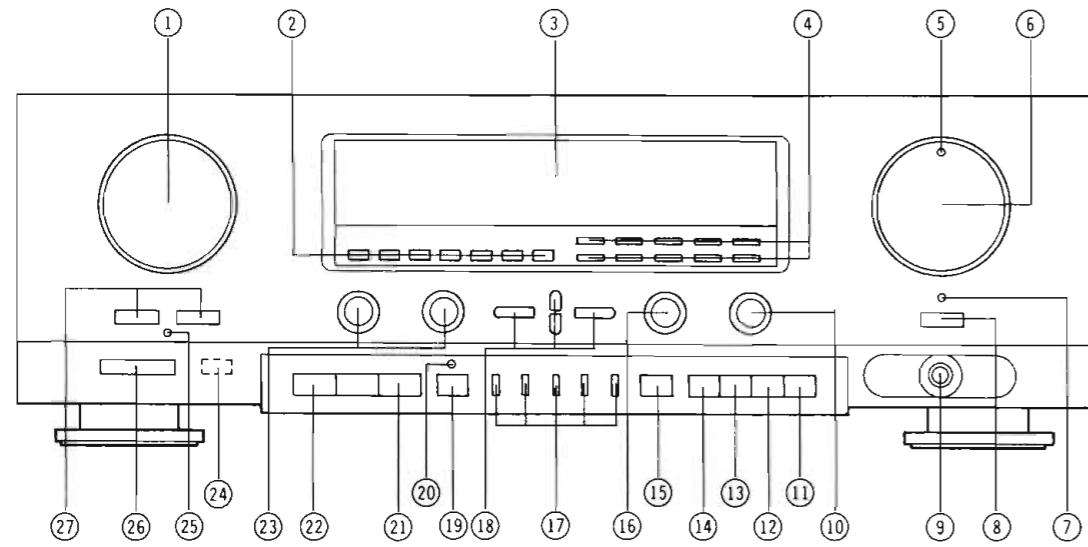
**Video**

Frequency characteristic	: from 10 Hz – 6 MHz –3 dB	: from 10 Hz – 10 MHz –3 dB
Signal/noise ratio weighted (A-curve)		
Video inputs	: 70 dB	: 75 dB
Crosstalk 3.58 MHz	: 35 dB	: 38 dB
Input sensitivity		
Video inputs	: 1.8 – 2.2 Vp-p	: 2.0 Vp-p
Output level/Output impedance		
Video outputs	: 0.9 – 1.1 Vp-p/60 – 85Ω	: 1.0 Vp-p/75Ω

**Note**

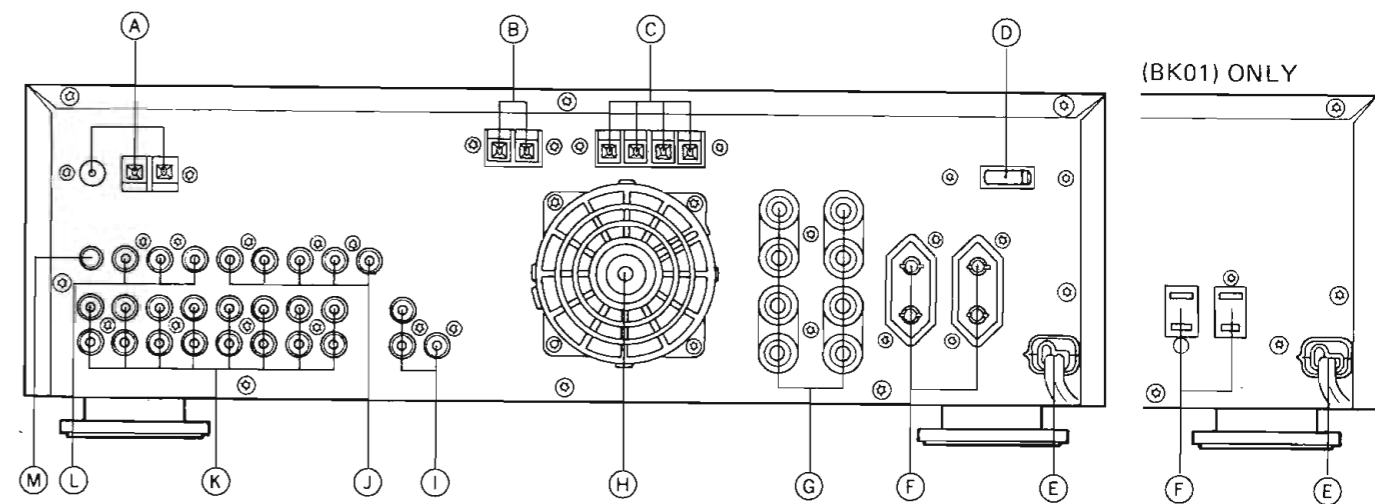
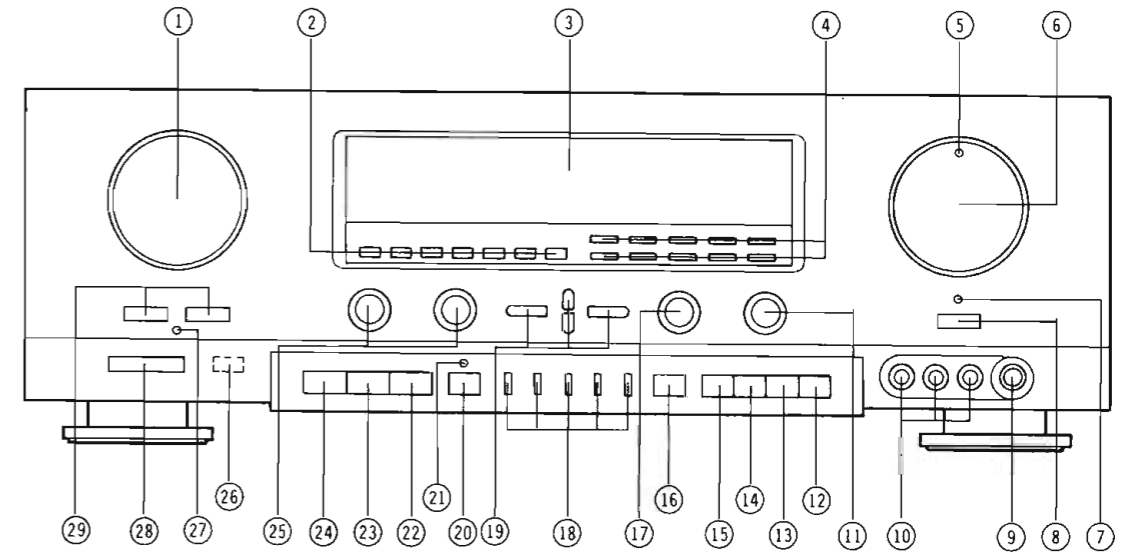
– Test methods: IHF

CONNECTIONS AND CONTROLS (FR930)



- |    |   |                        |    |  |                    |
|----|---|------------------------|----|--|--------------------|
| 1  | Source selector                         | S437                   | 22 | Video switch                               | S419               |
| 2  | Surround mode switches (/01S/BK01 only) | S401~S407              | 23 | Tone controls                              | R519, R520         |
| 3  | FTD display                             | V401                   | 24 | I.R. receiver                              | Q406               |
| 4  | Tuner preset switches                   | S408~S417              | 25 | Standby indicator                          | D404               |
| 5  | Volume indicator (/01S/BK01 only)       | D651                   | 26 | Power switch (/00S/01S) (BK01)             | S321<br>S320       |
| 6  | Volume control                          | R662                   | 27 | Speaker switch                             | S251               |
| 7  | Mute indicator                          | D405                   | A  | Antenna terminal                           | J101               |
| 8  | Mute switch                             | S418                   | B  | Scan step/De-emphasis switch (/01S only)   | S101               |
| 9  | Headphones socket                       | J586                   | C  | Processor input/output (/00S only)         | J104               |
| 10 | Balance control                         | R532                   | D  | Center speaker terminal (/01S/BK01 only)   | J309               |
| 11 | Memory switch                           | S436                   | E  | Surround speaker terminal (/01S/BK01 only) | J310               |
| 12 | FM mode switch                          | S435                   | F  | Fuse holder (/01S only)                    | J001               |
| 13 | Display switch                          | S434                   | G  | Voltage selector (/01S only)               | S322               |
| 14 | FM/AM switch                            | S433                   | H  | Mains cord                                 | W001               |
| 15 | Frequency direct switch                 | S432                   | I  | Mains outlet (/00S/01S) (BK01)             | J326, J327<br>J320 |
| 16 | Input balance control (/01S/BK01 only)  | R351                   | J  | Front speaker terminal                     | J300               |
| 17 | Source direct switch (/00S only)        | S701                   | K  | System control jacks                       | J553, J554         |
|    | Cursor mode switches (/01S/BK01) (/00S) | S423~S427<br>S424~S426 | L  | Video input/output                         | J570, J571         |
| 18 | Cursor switches                         | S428~S431              | M  | Analog audio input/output                  | J551, J552         |
| 19 | Auto selector switch                    | S422                   | N  | Digital input/output (/00S only)           | J592               |
| 20 | Auto selector indicator                 | D406                   | O  | Ground terminal                            | J053               |
| 21 | Sleep switch                            | S421                   |    |  |                    |

CONNECTIONS AND CONTROLS (FR940)



- |    |                                    |           |    |                                   |                                  |
|----|------------------------------------|-----------|----|-----------------------------------|----------------------------------|
| 1  | Source selector                    | S437      | 25 | Tone controls                     | R519, R520                       |
| 2  | Surround mode switches             | S401~S407 | 26 | I.R. receiver                     | Q406                             |
| 3  | FTD display                        | V401      | 27 | Standby indicator                 | D404                             |
| 4  | Tuner preset switches              | S408~S417 | 28 | Power switch (/00S) (/13S, BK01)  | S321<br>S320                     |
| 5  | Volume indicator (/13S, BK01 only) | D651      | 29 | Speaker switch                    | S251                             |
| 6  | Volume control                     | R662      | A  | Antenna terminal                  | J101                             |
| 7  | Mute indicator                     | D405      | B  | Center speaker terminal           | J309                             |
| 8  | Mute switch                        | S418      | C  | Surround speaker terminal         | J310                             |
| 9  | Headphones socket                  | J581      | D  | Voltage selector (/13S only)      | S322                             |
| 10 | Video-Aux input                    | J582~J584 | E  | Mains cord                        | W001                             |
| 11 | Balance control                    | R532      | F  | Mains outlet (/00S) (/13S) (BK01) | J326, J327<br>J021, J022<br>J320 |
| 12 | Memory switch                      | S436      | G  | Front speaker terminal            | J300                             |
| 13 | FM mode switch                     | S435      | H  | Fan motor                         | 910G                             |
| 14 | Display switch                     | S434      | I  | System control jacks              | J553, J554                       |
| 15 | FM/AM switch                       | S433      | J  | Video input/output                | J570, J571                       |
| 16 | Frequency direct switch            | S432      | K  | Analog audio input/output         | J551, J552                       |
| 17 | Input balance control              | R351      | L  | Digital audio input/output        | J592                             |
| 18 | Cursor mode switches               | S423~S427 | M  | Ground terminal                   | J053                             |
| 19 | Cursor switches                    | S428~S431 |    |                                   |                                  |
| 20 | Auto selector switch               | S422      |    |                                   |                                  |
| 21 | Auto selector indicator            | D406      |    |                                   |                                  |
| 22 | Sleep switch                       | S421      |    |                                   |                                  |
| 23 | Dubbing switch                     | S420      |    |                                   |                                  |
| 24 | Video switch                       | S419      |    |                                   |                                  |

**BG**

**Service Routine**

To enter the service routine, press the POWER switch to ON while press and hold the MUTE and MEMORY switches simultaneously. The display shows characters "SERVICE" for 2 seconds, then shows "TUNER-OK" or "TUNER-NG" for 2 seconds.

**TUNER-OK:** The data communication between the PLL IC (Q150) and microprocessor (Q401) is normal.

**TUNER-NG:** The data communication between the PLL IC (Q150) and microprocessor (Q401) is abnormal. Check the data line between them.

In case of "TUNER-NG", the characters blink at a cycle of 1 Hz. The blinking can be stopped with the FM/AM switch.

Other switches are invalid during blinking.

After the "TUNER-OK" or "TUNER-NG" display, normal operation starts. However, the source indicator on the display keeps on blinking at 1 Hz while the unit in the service routine.

– Tracking point memory mode

When the MUTE and MEMORY switches are pressed simultaneously while the unit is in the service routine, the tracking point frequencies as shown below are written in the memory.

● Tracking point frequencies

Pre Set Nbr.	1-3	4	5	6	7	8	9	10-20	21-30
/00S/01S /13S	87.5	90.0	98.0	106.0	603	999	1404	87.5	522
BK01					600	1000	1400	87.5	530
	FM (MHz)				AM (KHz)			FM (MHz)	AM (KHz)

In the service routine, the RAM can be cleared by pressing the POWER switch to OFF while pressing and holding the 0/+ and MEMORY switches simultaneously.

To quit the service routine, press the POWER switch to OFF.

**F**

**Routine d'entretien**

Pour utiliser la routine d'entretien, appuyer sur la touche POWER tout en appuyant et maintenant la pression simultanément sur les touches MUTE et MEMORY pour mettre l'appareil en service. L'afficheur indique le mot "SERVICE" pendant 2 secondes puis soit "TUNER-OK", soit "TUNER-NG" pendant 2 secondes.

**TUNER-OK:** La transmission d'informations entre le CI PLL (Q150) et le microprocesseur (Q401) est normale.

**TUNER-NG:** La transmission d'informations entre le CI PLL (Q150) et le microprocesseur (Q401) est anormale. Vérifier la ligne de transmission.

Dans le cas de "TUNER-NG", les caractères clignotent à la fréquence de 1 Hz. Il est possible d'arrêter le clignotement au moyen de la touche FM/AM. Les autres touches sont sans effet pendant le clignotement.

Après l'affichage de "TUNER-OK" ou de "TUNER-NG", le fonctionnement normal commence. Toutefois, le témoin de la source, placé sur l'afficheur, continue de clignoter à la fréquence de 1 Hz aussi longtemps que l'appareil est en routine d'entretien.

– Mémoire du point de poursuite

Lorsque l'on appuie simultanément sur les touches MUTE et MEMORY alors que l'appareil est en routine d'entretien, les fréquences du point de poursuite indiquées ci-dessous sont écrites en mémoire.

● Fréquences du point de poursuite

Numéro de présélection	1-3	4	5	6	7	8	9	10-20	21-30
/00S/01S/13S	87,5	90,0	98,0	106,0	603	999	1404	87,5	522
BK01					600	1000	1400	87,5	530
	FM (MHz)				AM (kHz)			FM (MHz)	AM (kHz)

Pendant la routine d'entretien, la mémoire vive peut être effacée en appuyant sur la touche POWER pour mettre l'appareil en service tout en appuyant et maintenant la pression simultanément sur les touches 0/+ et MEMORY. Pour abandonner la routine d'entretien, appuyer sur la touche POWER pour mettre l'appareil hors service.

(NL)

**Onderhoud en controle**

Druk de MUTE en MEMORY schakelaars in en druk tegelijkertijd de POWER schakelaar op ON om de onderhoudskontrolefunctie te activeren. "SERVICE" wordt 2 sekonden op het display getoond. Hierna verschijnt "TUNER-OK" of "TUNER-NG" gedurende 2 sekonden op het display.

TUNER-OK: Data-uitwisseling tussen de PLL IC (Q150) en mikroprocessor (Q401) is in orde.

TUNER-NG: Data-uitwisseling tussen de PLL IC (Q150) en mikroprocessor (Q401) is niet in orde. Controleer het pad van de data.

De karakters knipperen met een interval van 1 Hz indien "TUNER-NG" op het display wordt getoond. Het knipperen kan worden gestopt door op de FM/AM schakelaar te drukken. Overige schakelaars kunnen niet worden bediend terwijl de karakters knipperen.

Normale bediening start nadat "TUNER-OK" of "TUNER-NG" op het display werd getoond. De bronindikator blijft echter met een interval van 1 Hz op het display knipperen zolang de onderhoudskontrolefunctie is ingeschakeld.

— Geheugenfunctie voor sporingpunt

De hierna beschreven sporingpuntfrekwenties worden in het geheugen vastgelegd indien u tegelijkertijd op de MUTE en MEMORY schakelaars drukt terwijl de onderhoudskontrolefunctie is geactiveerd.

● Sporingpuntfrekwenties

Voorkeuze-nummer	1-3	4	5	6	7	8	9	10-20	21-30
/00S/01S/13S					603	999	1404	87,5	522
BK01	87,5	90,0	98,0	106,0	600	1000	1400	87,5	530
	FM (MHz)			AM (kHz)			FM (MHz)	AM (kHz)	

De RAM kan worden gewist door tijdens de onderhoudskontrolefunctie tegelijkertijd de 0/+ en MEMORY schakelaars in te drukken terwijl u de POWER schakelaar op OFF drukt.

Druk de POWER schakelaar op OFF om de onderhoudskontrolefunctie te annuleren.

(D)

**Wartungsroutine**

Zum Aktivieren der Wartungsroutine den POWER-Schalter auf ON drücken und dann die Schalter MUTE und MEMORY gleichzeitig gedrückt halten. Im Display erscheint der Schriftzug "SERVICE" für 2 Sekunden, danach "TUNER-OK" oder "TUNER-NG" für 2 Sekunden.

TUNER-OK: Die Datenkommunikation zwischen dem PLL IC (Q150) und dem Mikroprozessor (Q401) ist normal.

TUNER-NG: Die Datenkommunikation zwischen dem PLL IC (Q150) und dem Mikroprozessor (Q401) ist nicht normal. Die zwischenliegende Datenleitung überprüfen.

Im Fall von "TUNER-NG" blinken die Zeichen mit einer Frequenz von 1 Hz. Das Blinken kann mit dem FM/AM-Schalter gestoppt werden. Andere Schalter funktionieren während des Blinkens nicht.

Nach der Anzeige "TUNER-OK" der "TUNER-NG" beginnt der normale Betrieb. Die Quellen-Anzeige im Display blinkt jedoch weiterhin mit einer Frequenz von 1 Hz, solange das Gerät sich in der Wartungsroutine befindet.

— Spurlagenpunkt-Speichermodus

Wenn die Schalter MUTE und MEMORY gleichzeitig gedrückt werden, während das Gerät sich in der Wartungsroutine befindet, werden die nachstehend angeführten Spurlagenpunkt-Frequenzen in den Speicher geschrieben.

● Spurlagenpunkt-Frequenzen

Speicher-nummer	1-3	4	5	6	7	8	9	10-20	21-30
/00S/01S/13S					603	999	1404	87,5	522
BK01	87,5	90,0	98,0	106,0	600	1000	1400	87,5	530
	UKW (MHz)			MW (kHz)			UKW (MHz)	MW (kHz)	

In der Wartungsroutine kann der RAM-Speicher gelöscht werden, indem der POWER-Schalter auf OFF gedrückt wird, während die Schalter 0/+ und MEMORY gleichzeitig gedrückt gehalten werden.

Zum Verlassen der Wartungsroutine den POWER-Schalter auf OFF drücken.

(I)

**Routine di assistenza**

Per impostare il modo della routine di assistenza, premere il tasto POWER portandolo su ON mentre si tengono premuti contemporaneamente i tasti MUTE e MEMORY. Il display visualizza il messaggio "SERVICE" per 2 secondi, quindi mostra quello "TUNER-OK" o quello "TUNER-NG" per altri 2 secondi.

TUNER-OK: La comunicazione di dati fra il circuito integrato PLL IC (Q150) ed il microprocessore (Q401) è normale.

TUNER-NG: La comunicazione di dati fra il circuito integrato PLL IC (Q150) ed il microprocessore (Q401) non è normale. Controllare la linea di invio dati fra di essi.

Nel caso di "TUNER-NG", i caratteri lampeggiano in un ciclo di 1 kHz. Il lampeggiare può essere fatto terminare con l'interruttore FM/AM. Gli altri comandi non funzionano mentre il lampeggiare è in corso.

Dopo che il display "TUNER-OK" o quello "TUNER-NG" è comparso, il funzionamento normale ha inizio. Tuttavia, l'indicatore della sorgente di segnale attivata continua a lampeggiare ad 1 kHz sintanto che il modo della routine di servizio è impostato.

— Modo di memoria del punto di allineamento

Se i tasti MUTE e MEMORY vengono premuti contemporaneamente mentre l'unità si trova nel modo di routine di assistenza, le frequenze del punto di allineamento mostrate di seguito vengono scritte in memoria.

● Frequenze del punto di allineamento

Numero di preselezione	1-3	4	5	6	7	8	9	10-20	21-30
/00S/01S/13S					603	999	1404	87,5	522
BK01	87,5	90,0	98,0	106,0	600	1000	1400	87,5	530
	FM (MHz)			AM (kHz)			FM (MHz)	AM (kHz)	

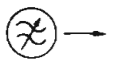

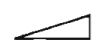



Nella routine di assistenza, il contenuto della RAM può venire cancellato premendo il tasto POWER su OFF mentre si tengono premuti contemporaneamente i tasti 0/+ e MEMORY.

Per abbandonare la routine di assistenza, premere il tasto POWER portandolo su OFF.

**ADJUSTMENTS**

**Audio Section**

**Idling Current**

SK... SWITCH	 SIGNAL	 TO	 VOLUME	 ADJUST	 OSCILLOSCOPE	 D.C. METER INDICATOR
Power switch OFF (S321: /00S/01S) (S320: /13S, BK01)				R263, R264 Preset in full C.C.W. position		
Power switch ON (S321: /00S/01S) (S320: /13S, BK01)			Min.	Lch R263		Lch TP1 (+), TP3 (-) (Both side of R271) DC 7.2 mV (20 mA)
				Rch R264		Rch TP2 (+), TP4 (-) (Both side of R272) DC 7.2 mV (20 mA)

C.C.W.: Counterclockwise

**(GB) Notes:**

- In 5 minutes after the power has been switched ON, adjust to read 7.2 mV DC.
- If the heat-sink temperature is higher than the ambient temperature, switch the power OFF, and leave the unit until the heat-sink temperature falls equal to or below the ambient temperature before proceeding to the idling current adjustment.

**(F) Remarques:**

- Dans 5 minutes après la mise en circuit, régler pour lire 7,2 mV CC.
- Si la température de la plaque de refroidissement est supérieure à la température ambiante, couper l'alimentation et laisser l'appareil jusqu'à ce que la température de la plaque de refroidissement soit égale ou inférieure à la température ambiante avant de passer à l'ajustement du courant déwatté.

**(NL) Opmerkingen:**

- Stel binnen 5 minuten nadat de spanning is aangeschakeld (ON) op 7,2 mV DC in.
- Als de temperatuur van de warmteput hoger is dan de omringende temperatuur, schakel dan de spanning uit totdat de temperatuur van de warmteput gelijk is aan of lager is dan de omringende temperatuur alvorens over te gaan tot aanpassen op de stationaire stroom.

**(D) Anmerkungen:**

- 5 Minuten nach dem Einschalten der Spannungsversorgung die Anzeige auf 7,2 mV Gleichstrom einstellen.
- Wenn die Temperatur des Kühlkörpers höher ist als die Umgebungstemperatur, die Spannungsversorgung ausschalten und warten, bis die Temperatur des Kühlkörpers gleich der oder niedriger als die Umgebungstemperatur wird, bevor die Ruhestrom-Einstellung durchgeführt wird.

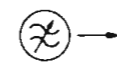




**(I) Note:**

- Regolare in modo da ottenere 7,2 mV di corrente continua dopo aver atteso 5 minuti dopo l'accensione.
- Se la temperatura degli organi di dispersione del calore è superiore a quella dell'ambiente, spegnete l'unità e lasciatela raffreddare sino a che la sua temperatura non diviene uguale o inferiore a quella ambiente, quindi procedete con la regolazione della corrente a riposo.

**Tuner Section**

- Inner adjustment of the FM front end pack (A101) of this unit is difficult. (IF, RF, OSC)
- Inductance of the AM OSC coil (L102) is preset. Therefore, please do not turn the core of this coil.
- Refer to "Tracking point memory mode" in the Service Routine.

**FM-Distortion**

SK... WAVE RANGE SWITCH	 SIGNAL	 TO	DISPLAY TUNE IN	DETUNE	 ADJUST	 OSCILLOSCOPE	 INDICATOR
FM (S433)	98 MHz Mod. 1 kHz $\Delta f$ 40 kHz (/00S/01S) $\Delta f$ 75 kHz (/13S, BK01) (Mono) Output 500 $\mu V$ (65 dBf)	J101	<input type="checkbox"/>		L105		J551 (Tape out) Distortion Min.
	98 MHz Mod. 1 kHz $\Delta f$ L+R 40 kHz Pilot 6 kHz (/00S/01S) $\Delta f$ L+R 67.5 kHz Pilot 6.75 kHz (/13S, BK01) Output 500 $\mu V$ (65 dBf)		<input type="checkbox"/>	A101-IFT (Front end IFT)			

**Stereo Separation**

FM (S433)	98 MHz Mod. 1 kHz $\Delta f$ L+R 40 kHz Pilot 6 kHz (/00S/01S) $\Delta f$ L+R 67.5 kHz Pilot 6.75 kHz (/13S, BK01) Output 500 $\mu V$ (65 dBf)	J101	<input type="checkbox"/>	R119	J551 (Tape out) Separation Max.
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**Muting Level**

FM (S433) FM mode switch (S435) (Mono indicator OFF)	98 MHz Mod. 1 kHz $\Delta f$ 75 kHz Output 6.3 $\mu V$ (27.2 dBf)	J101	<input type="checkbox"/>	R114	J551 (Tape out) 1
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**AM-IF**

AM (S433)	999 kHz (/00S/01S/13S) 1000 kHz (BK01) Mod. 400 Hz 30% Low Output (300 $\mu V/m$ )	Loop Ant.	<input type="checkbox"/>	L104	J551 (Tape out) Output Max.
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AM-RF

SK... WAVE RANGE SWITCH	SIGNAL	TO	DISPLAY	DETUNE	ADJUST	OSCILLOSCOPE	INDICATOR
AM (S433)	1404 kHz (/00S/01S/13S) 1400 kHz (BK01) 603 kHz (/00S/01S/13S) 600 kHz (BK01)	Loop Ant.			L101 C101		J551 (Tape out) Output Max.

AM Auto Stop

AM (S433)	999 kHz (/00S/01S/13S) 1000 kHz (BK01) Mod. 400 Hz 30% Output 1000 μV/m	Loop Ant.			R103		J551 (Tape out) <span style="border: 1px solid black; padding: 2px;">2</span>
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GB Notes:

- By turning R114, clear once the output waveform the J551, and then adjust it by turning R114 a little so that the waveform appears again.
- Adjust R103 so that the "TUNED" indicator of the FL display tubes lights up.

F Remarques:

- En tournant R114, effacer la forme d'onde de sortie de J551 dans un premier temps, puis ajuster celle-ci en tournant doucement R114 de sorte que la forme d'onde apparaisse à nouveau.
- Ajuster R103 pour que l'indicateur "TUNED" du tube d'affichage fluorescent s'allume.

NL Opmerkingen:

- Draai R114 rond om de uitgangsgolfvorm van de J551 eenmaal te doorlopen en stel daarna af door R114 een weinig te draaien zodat de golfvorm weer verschijnt.
- Stel R103 zodanig af dat de "TUNED" indicator van de FL-display oplicht.

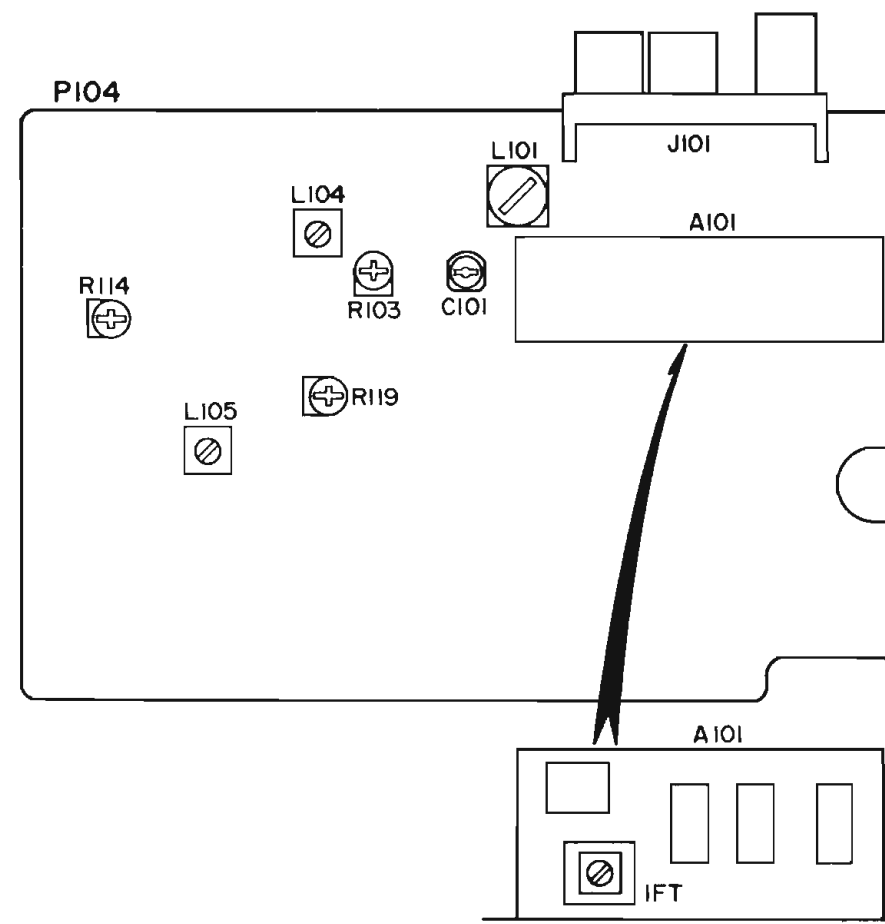
D Anmerkungen:

- Die Ausgangswellenform von J551 durch Drehen von R114 löschen und dann durch geringfügiges Drehen von R114 so einstellen, daß die Wellenform wieder erscheint.
- R103 so einstellen, daß die Anzeige "TUNED" auf dem Fluoreszenz-Display leuchtet.

I Note:

- Ruotando R114 cancellare la forma d'onda in uscita di J551 e quindi regolarla ruotando leggermente R114 in modo che la forma d'onda ricompaia.
- Regolare R103 in modo che l'indicatore "TUNED" del display FL si illumini.

Tuner Adjustment Positions



μ-Processor Data

Q401: TMP47C1670AN H054

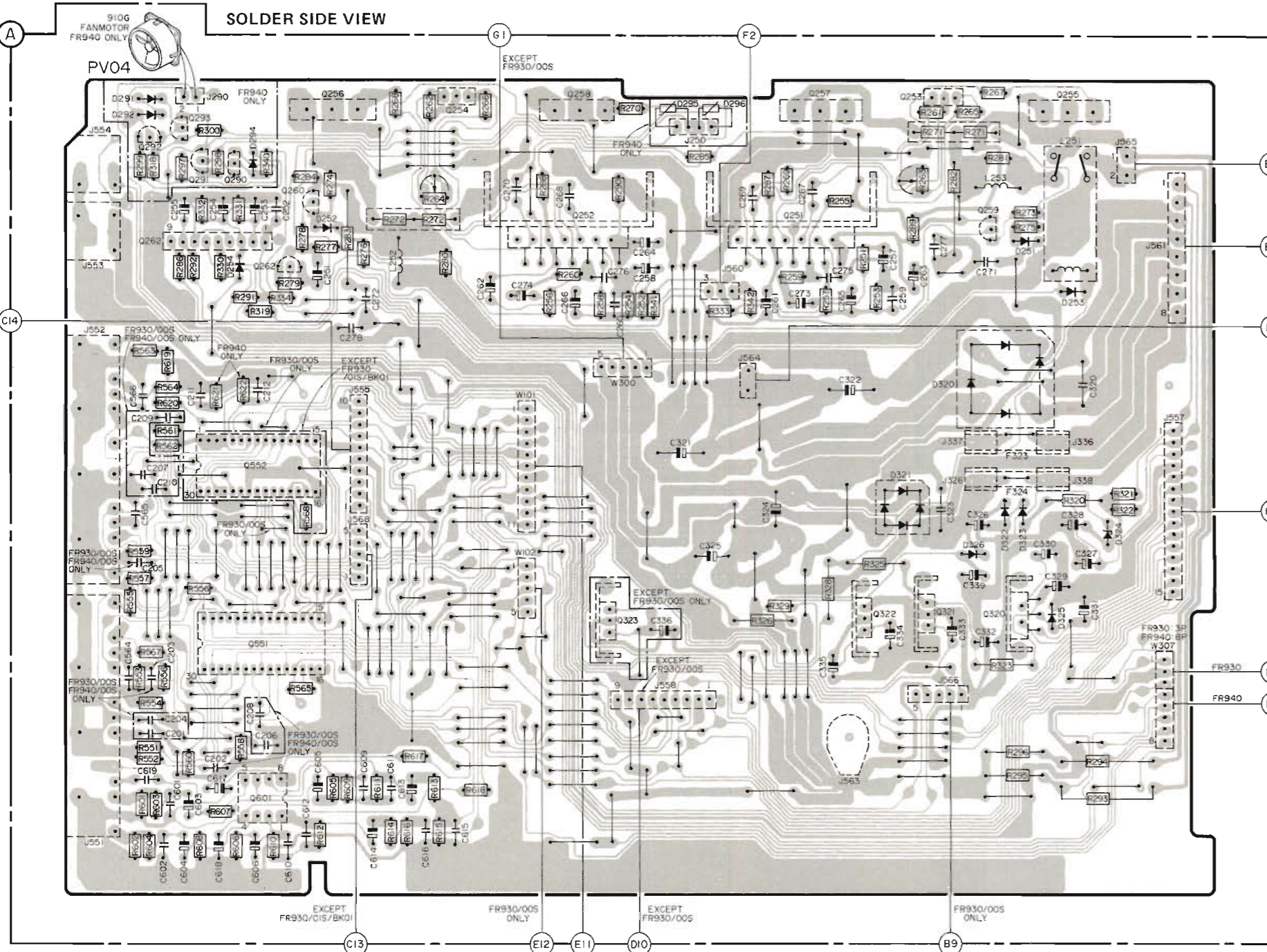
Pin Nbr.	Pin Name	I/O	Act.	Function	Pin Nbr.	Pin Name	I/O	Act.	Function
1	VKK	-	-	-35V	33	N.C.	-	-	Not Used
2	S0	O	H	FTD Segment Drive	34	AUTO SELECT IND	O	L	Auto Select Mode Indicator Out
3	S1	O	H		35	MUTE	O	L	Audio Mute Output
4	S2	O	H		36	STANDBY IND	O	L	Standby Indicator Output
5	S3	O	H		37	DATA IN	I	H	Serial Data Input
6	S4	O	H		38	W.T. OUT	O	L	Watchdog Reset Signal Output
7	S5	O	H		39	DIGITAL IND	I	L	Detecting Digital Signal Out/In
8	S6	O	H		40	3/4 CH	O	H	3CH/4CH Switching Signal Output
9	S7	O	H		41	RC-5 IN	I	L	RC-5 Bus Signal Input
10	S8	O	H		42	SD IN	I	L	Band Detecting Signal Input
11	S9	O	H		43	EASY LINK IN	I	L	Easy Link Bus Signal Input
12	S10	O	H	44	EASY LINK OUT	O	L	Easy Link Bus Signal Output	
13	S11	O	H	45	SPK RELAY	O	L	Speaker Relay Control	
14	K0	I	H	Key Input	46	MUTE	O	L	Front Channel Mute Signal Out
15	K1	I	H		47	V-AUX	O	L	FTD Segment Drive
16	K2	I	H		48	G11	O	H	FTD Grid Drive
17	K3	I	H	49	G10	O	H		
18	TEST	I	-	GND	50	G9	O	H	
19	OSC	I	-	Clock Input	51	G8	O	H	
20	OSC	O	-	Clock Output	52	G7	O	H	
21	RESET	I	L	Reset	53	G6	O	H	
22	HOLD	I	H	Elect. Failure Sensing Signal Input	54	G5	O	H	
23	CE4	O	H	Strobe Signal Output	55	G4	O	H	
24	PULSE UP	I	L	Function Selector Pulse Input	56	G3	O	H	
25	PULSE DOWN	I	L		57	G2	O	H	
26	CE3	O	H	Latch Signal Output	58	G1	O	H	
27	CE2	O	L	"REQ" Signal Output	59	G0	O	H	
28	CE1	O	H	Chip Enable Signal Output	60	S15	O	H	FTD Segment Drive
29	CLK OUT	O	H	Serial Data Control Clock Output	61	S14	O	H	
30	DATA OUT1	O	H	Data Output	62	S13	O	H	
31	DATA OUT2	O	H	Data Signal Output	63	S12	O	H	
32	VSS	-	-	GND	64	VDD	-	-	

	Carbon film 0.125 W or 0.2 W	70°C	5%		Ceramic plate Tuning ≤ 120 pF NP.0 2% Others -20/+80%	*a = 2.5 V b = 3.15 V or 4 V c = 6.3 V d = 10 V e = 16 V f = 25 V g = 40 V h = 63 V j = 100 V l = 125 V m = 150 V n = 160 V q = 200 V r = 250 V s = 300 V t = 350 V u = 400 V v = 500 V w = 630 V x = 1000 V A = 1.6 V B = 6 V C = 12 V D = 15 V E = 20 V F = 35 V G = 50 V H = 75 V I = 80 V
	Carbon film 0.25 W or 0.33 W	70°C	5%		Polyester flat foil 10%	
	Metal film 0.25 W or 0.33 W	70°C	5%		Metalized polyester flat film 10%	
	Carbon film 0.5 W	70°C	5%		Polyester flat foil small size (Mylar) 10%	
	Carbon film 0.67 W	70°C	5%		Polysterene film/foil 1%	
	Carbon film 1 W or 1.15 W	70°C	5%		Tubular ceramic	
					Miniature single	
					Subminiature tantalum ± 20%	
	Chip component					

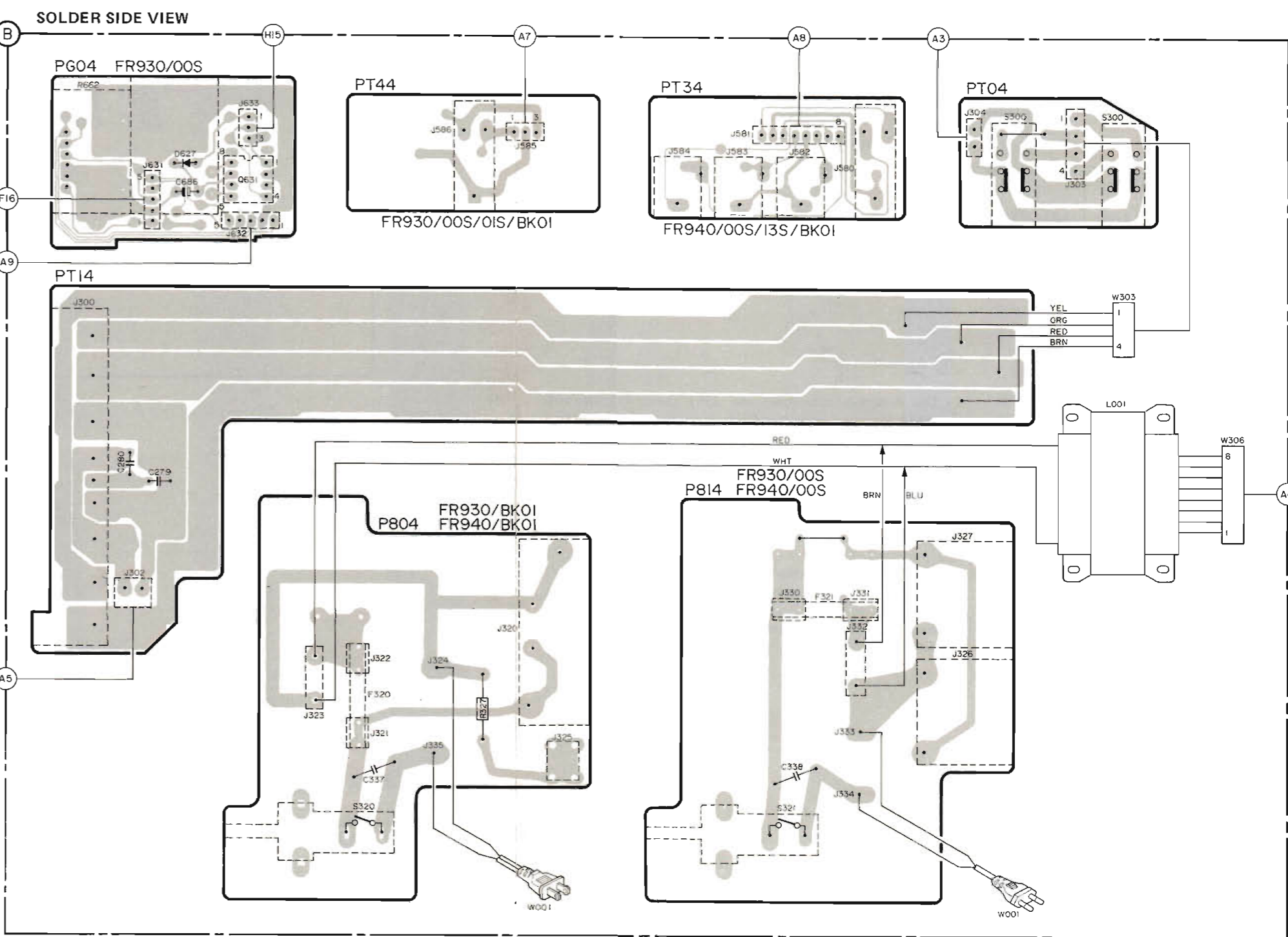


SCHEMATIC DIAGRAMS AND PARTS LOCATION

R	R318 R286 R292 R297~R300 R277~R279 R340 R284 R274	R266 R262 R266	R288 R260 R290 R270 R341	R285 R342 R287 R269 R297 R255 R251 R253 R263 R261 R265 R267 R273	R320~R323	
C	C564~C566 C251~C255	C278 C272	C262 C270 C268	C276 C264 C321	C269 C261 C273 C267 C275 C265 C257 C289 C263 C277 C271	C320
Q	Q201~Q212 Q601~Q606 Q564~Q570	Q609~Q619	Q274 Q266	Q260 Q258 Q336	Q325 Q324 Q335 Q322 Q334 Q323 Q333 Q332 Q326 Q339	Q327~Q331
D	D262 Q290~Q293 Q592 Q551 Q601 Q262 Q260 Q296		Q254	Q258 Q252 Q323	Q251 Q257	Q322 Q353 Q321 Q299 Q320 Q255
L	L291 L292	L254 L294	L252	L295 L296	L251 L253	L251

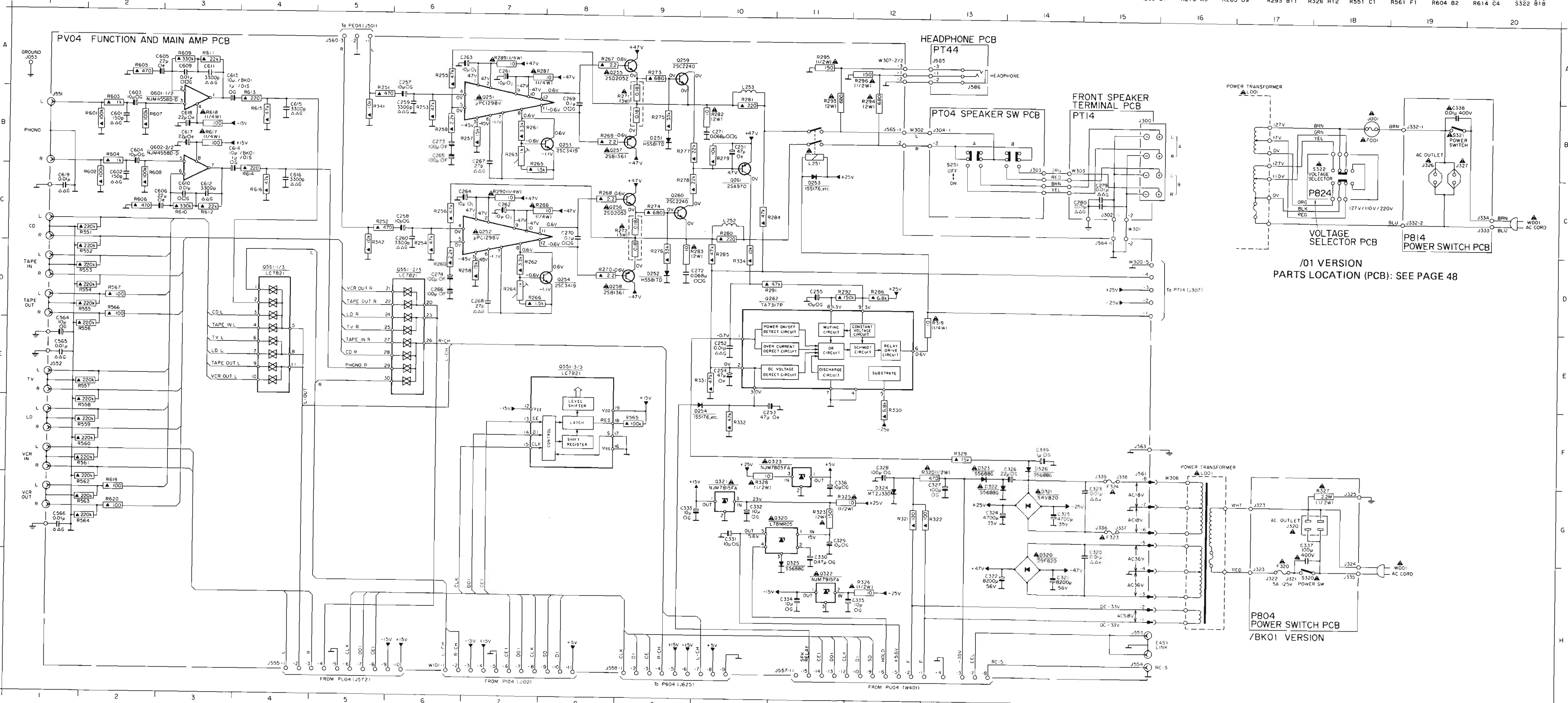


R-C-Q-D	R662 C280 C279 D627 C686	Q631	C337	R327	C338						R-C-Q-D
S-F-L			S320 F320		S321	S300	L001				S-F-L



FR930/01S,BK01

C251 B10	C263 A6	C273 B6	C326 F14	C336 G11	C604 B2	C616 C4	D322 G14	J302 C15	J327 B19	J551 B1	J561 A13	Q253 B8	Q320 G11	R254 C6	R264 D7	R274 C9	R284 C10	R294 B12	R327 G18	R552 D1	R562 G1	R605 A2	R615 B4
C252 F10	C264 C6	C274 D6	C327 G13	C337 G18	C605 A2	C617 B3	D323 F14	J303 B14	J332 B19	J552 E1	J562 A12	Q254 D8	Q321 G10	R255 A6	R265 D7	R275 C9	R285 B19	R295 A11	R328 F13	R553 D1	R563 G1	R606 C2	R616 C4
C253 D11	C265 B6	C275 C15	C328 F12	C338 B19	C606 C2	C618 B3	D324 G12	J304 B14	J333 C19	J553 H15	J563 A13	Q255 A9	Q322 G11	R256 C6	R266 D7	R276 D9	R286 D12	R296 A12	R329 F10	R554 D1	R564 G1	R607 B2	R617 B3
C257 B6	C267 B7	C276 G15	C329 G11	C339 F14	C609 A3	C619 C3	D325 F14	J321 H17	J334 C20	J554 H15	J564 A15	Q256 C9	Q323 F11	R257 B7	R267 AB	R277 D9	R287 A7	R297 D13	R330 F12	R555 D1	R565 F9	R608 C2	R618 B3
C258 C6	C268 D7	C277 B10	C321 H14	C331 G10	C605 E1	C611 A3	D252 D9	J322 H17	J334 C20	J555 H4	J565 H4	Q257 B9	Q551 D4	R258 B7	R268 C8	R278 C9	R288 C7	R298 F13	R331 E10	R556 D1	R566 D2	R609 A3	R619 C2
C259 B6	C269 B8	C278 C8	C322 H14	C332 G10	C612 C3	C612 C3	D253 D11	F320 H17	J323 G17	J560 A5	L251 B1	Q258 E9	Q551 D6	R259 B6	R269 B8	R279 B10	R289 A7	R299 A7	R332 F10	R557 E1	R567 D3	R610 C3	R620 G2
C260 C6	C270 C8	C279 D9	C323 G15	C333 G15	C613 B3	C613 B3	D254 F10	J001 B18	J324 H18	J337 G15	J561 F15	Q259 A9	R251 E9	R260 D6	R270 D8	R280 C10	R290 C7	R322 G13	R334 D10	R558 F1	R568 F1	R601 B6	R611 A3
C261 A7	C271 B10	C272 D9	C324 G14	C334 H11	C602 C2	C614 B3	D320 H14	J053 A1	J325 H18	J338 F15	J562 F15	Q260 C9	R251 E9	R260 D6	R271 A9	R281 B10	R291 D10	R323 G11	R341 B5	R559 F1	R569 F1	R602 C2	R612 C3
C262 C7	C272 D9	C272 D9	C325 D9	C335 H12	C603 B2	C615 B4	D321 G14	J300 B15	J326 B19	J339 F15	J563 B12	Q261 B10	R252 C5	R262 D7	R272 C8	R282 C10	R292 D11	R324 G11	R342 C5	R560 F1	R603 B2	R613 B4	R614 C4

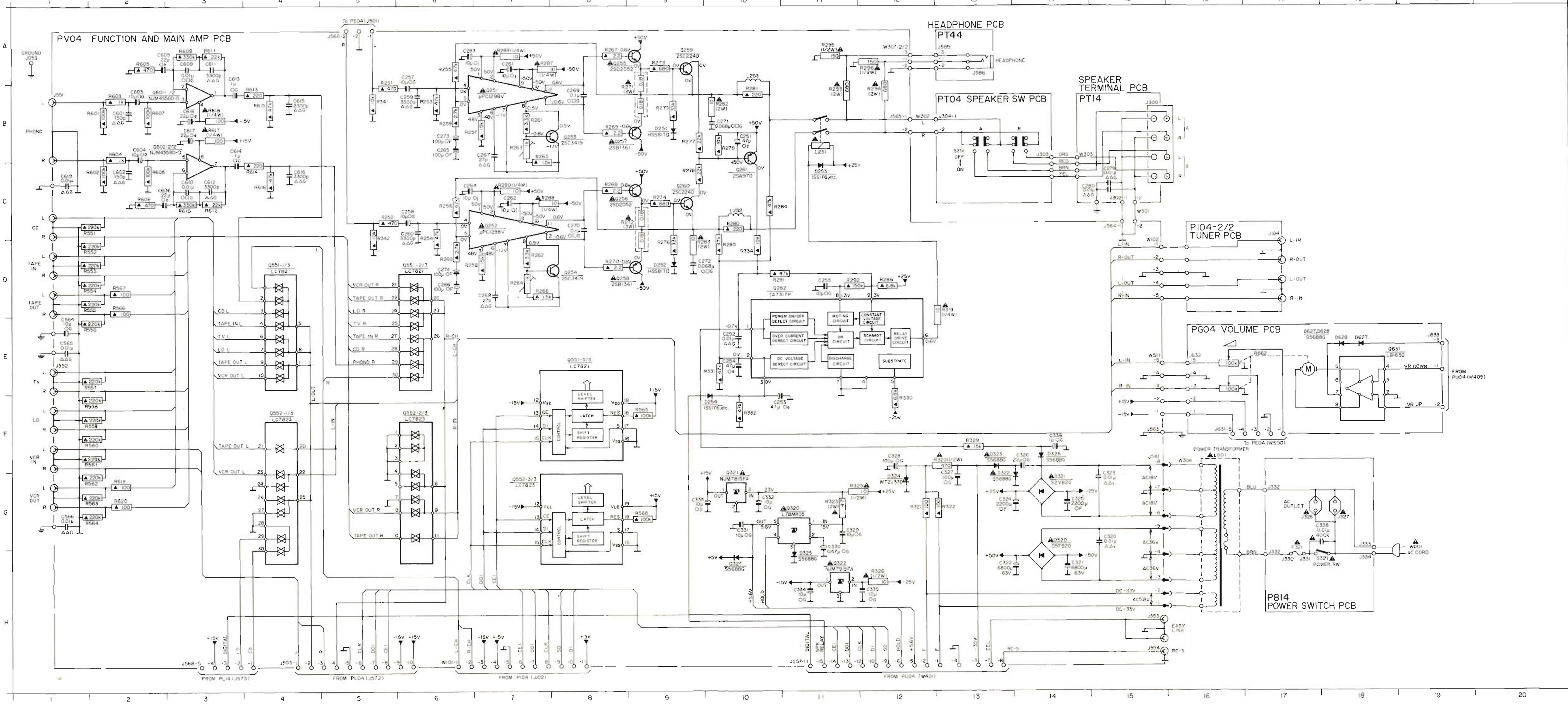


/01 VERSION  
PARTS LOCATION (PCB): SEE PAGE 48

P804  
POWER SWITCH PCB  
/BK01 VERSION

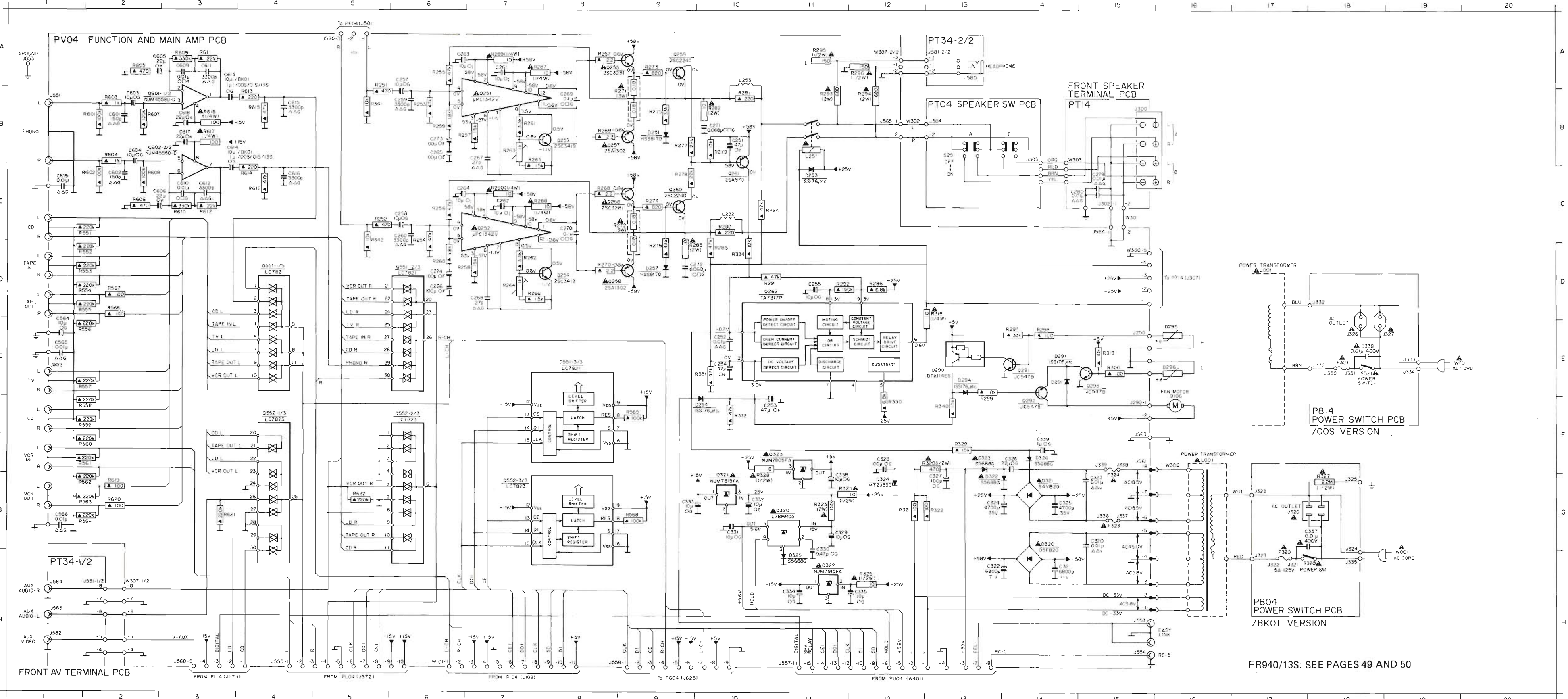
FR930/00S

C251 B10	C262 C7	C273 D6	C325 G14	C339 F14	C609 A3	D619 C1	D326 F14	J304 B13	J552 E1	J568 H3	L253 A10	Q260 C9	Q552 F6	R258 D7	R268 C8	R278 C9	R288 C7	R320 F13	R334 D10	R558 F1	R568 G9	R610 C3	R620 G2
C252 B10	C263 A6	C274 D6	C326 F12	C340 F14	C610 A3	D252 D9	D327 H10	J326 B19	J553 H15	J568 A13	Q252 B7	Q261 B10	Q552 G8	R259 B6	R269 B8	R279 B10	R289 A7	R321 G12	R341 B5	R559 F1	R601 B2	R611 A3	R620 G2
C253 F10	C264 C6	C275 B6	C327 F11	C341 F14	C611 A3	D253 C11	D328 H10	J327 B19	J554 H15	J568 A13	Q253 B8	Q262 D10	Q552 H8	R260 D6	R270 D8	R280 C10	R290 C7	R322 G13	R342 C5	R560 F1	R602 C2	R612 C3	R620 G2
C254 F10	C265 B6	C276 D6	C328 F12	C342 F14	C612 C3	D254 F10	D329 H10	J328 B19	J555 H15	J568 A13	Q254 B8	Q263 D10	Q552 I8	R261 B7	R271 A9	R281 B10	R291 D10	R323 G11	R343 C5	R561 C1	R603 B2	R613 B4	R620 G2
C255 D11	C266 B6	C277 C15	C329 G11	C343 F14	C613 B3	D255 C11	D330 H10	J329 B19	J556 H15	J568 A13	Q255 B9	Q264 D10	Q552 J8	R262 D7	R272 C9	R282 B10	R292 D11	R324 G11	R344 C5	R562 G1	R604 B2	R614 C4	R620 G2
C256 B6	C267 B7	C278 C15	C330 H11	C344 F14	C614 B4	D256 C11	D331 H10	J330 B19	J557 H11	J568 A13	Q256 B9	Q265 D10	Q552 K8	R263 B7	R273 A9	R283 D9	R293 B11	R325 G11	R345 C5	R563 D1	R605 A2	R615 B4	R620 G2
C257 B6	C268 D7	C279 C15	C331 G10	C345 F14	C615 B4	D257 C11	D332 H10	J331 B19	J558 H11	J568 A13	Q257 B9	Q266 D10	Q552 L8	R264 D7	R274 C9	R284 C10	R294 B12	R326 G11	R346 C5	R564 G1	R606 C2	R616 C4	R620 G2
C258 C6	C269 B8	C280 C15	C332 G10	C346 F14	C616 B4	D258 C11	D333 H10	J332 B19	J559 H11	J568 A13	Q258 B9	Q267 D10	Q552 M8	R265 B7	R275 A9	R285 D10	R295 A11	R327 G11	R347 C5	R565 F9	R607 B2	R617 B3	R620 G2
C259 B8	C270 C8	C281 H14	C333 G10	C347 F14	C617 B4	D259 C11	D334 H10	J333 B19	J560 A5	J568 A13	Q259 B9	Q268 D10	Q552 N8	R266 D7	R276 D9	R286 D12	R296 A12	R328 G11	R348 C5	R566 E1	R608 C2	R618 B3	R620 G2
C260 C6	C271 B10	C282 H14	C334 H11	C348 F14	C618 B3	D260 C11	D335 H11	J334 C20	J561 F15	J568 A13	Q260 B9	Q269 D10	Q552 O8	R267 A8	R277 B9	R287 A7	R297 A12	R329 G11	R349 C5	R567 D2	R609 A3	R619 G2	R620 G2
C261 A7			C335 H12	C349 F14	C619 B3	D261 C11		J335 B19	J562 B12	J568 A13	Q261 B9	Q270 D10	Q552 P8					R330 F10	R350 E1	R567 D2		R619 G2	R620 G2



FR940/00S/13S,BK01

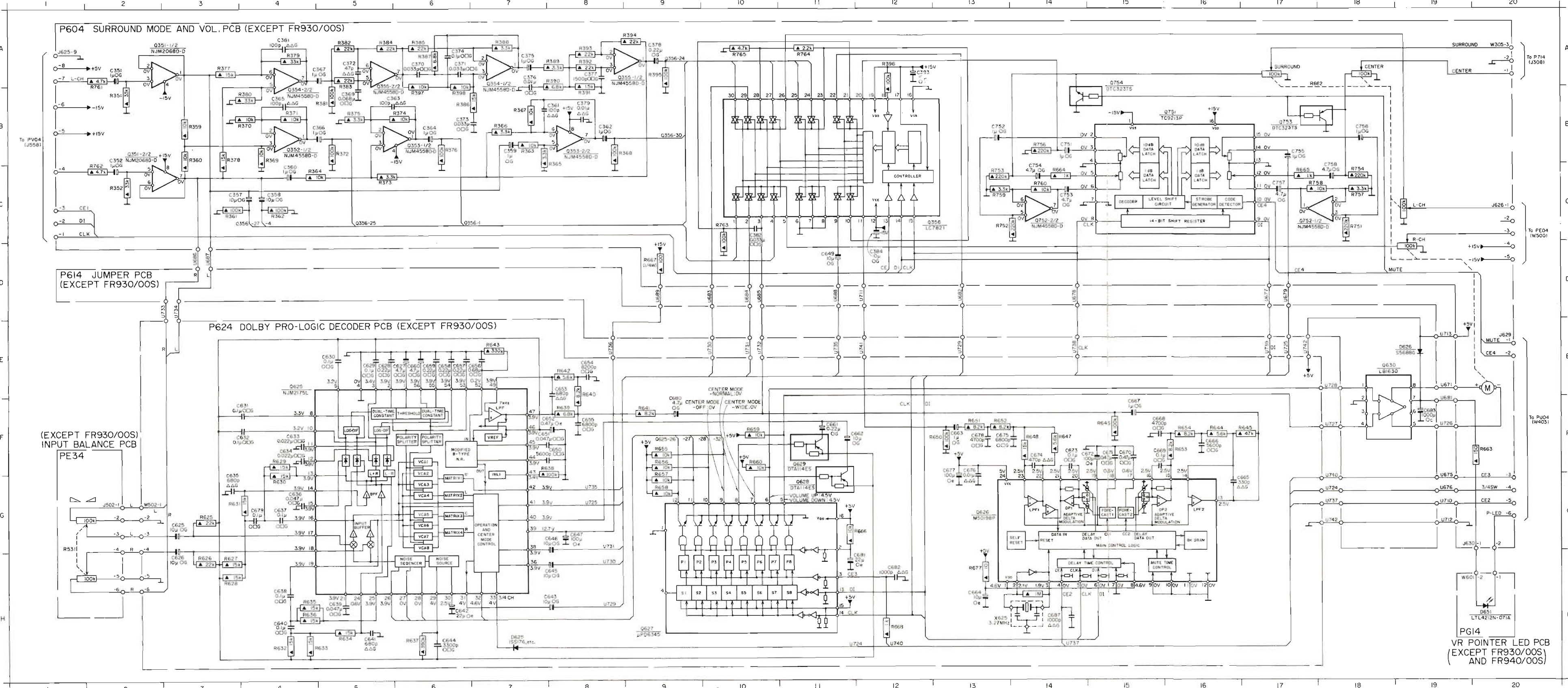
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C252 F10	C263 A6	C273 B6	C326 F14	C336 B19	C602 C2	C614 B3	D291 E14	D326 F14	J320 B15	J325 G18	J332 E18	J551 B1	J564 C15	L001 D16	Q257 B9	Q320 G11	Q601 B3	R259 D7	R269 B6	R279 B10	R289 A7	R299 E14	R327 H18	R551 C1	R561 F1	R603 B2	R613 B4	R622 B13
C253 F10	C264 C6	C274 D6	C327 C13	C337 G11	C603 B2	C615 B4	D294 E14	F001 B18	J302 C15	J326 G18	J333 C20	J552 E1	J565 B12	L251 B11	Q258 F9	Q321 G10	Q602 C3	R260 D6	R270 D8	R280 C10	R290 C7	R300 E15	R328 F10	R552 D1	R562 G1	R604 B2	R614 C4	R622 B18
C254 F10	C265 B6	C275 C15	C328 F12	C338 B19	C604 B2	C616 C4	D295 E14	F320 H17	J303 B14	J327 G18	J334 C20	J553 E19	J566 H3	L252 C10	Q259 A9	Q322 H11	Q603 C4	R261 B7	R271 A9	R281 B10	R291 D10	R301 E15	R329 F13	R553 D1	R563 G1	R605 A2	R615 B4	R622 B19
C255 D11	C266 D6	C276 C15	C329 H11	C339 B19	C605 A2	C617 B3	D321 E18	F321 B18	J304 B13	J328 G18	J335 C19	J554 H15	J567 H3	L253 A10	Q260 C9	Q323 F11	Q604 C5	R262 D7	R272 C9	R282 B10	R292 D11	R302 F13	R330 F12	R554 D1	R564 G1	R606 C2	R616 C4	R622 B18
C256 B7	C267 B7	C277 C15	C330 H11	C330 B19	C606 C2	C618 B3	D320 H14	F322 G15	J320 G18	J327 F18	J334 E19	J555 H4	J581 H2	Q251 B7	Q261 B10	Q551 D4	Q605 A2	R263 B7	R273 A9	R283 D9	R293 B11	R320 F13	R331 F10	R555 D1	R565 F9	R607 B2	R617 B3	R622 B18
C257 B7	C268 D7	C278 C15	C331 G10	C339 B19	C609 A3	C619 C1	D321 C14	F324 G15	J321 H17	J330 F18	J335 H18	J557 H11	J582 H1	Q252 C7	Q262 D10	Q551 D6	Q606 A3	R264 D7	R274 C9	R284 C10	R294 B12	R321 G12	R332 F10	R556 E1	R566 D2	R608 C2	R618 B3	R622 B18
C258 B7	C269 B8	C279 C15	C332 G10	C339 B19	C610 C3	C620 C2	D322 G14	F325 G15	J322 H17	J331 F18	J336 C15	J558 H9	J583 H1	Q253 B8	Q290 F13	Q551 E8	Q607 A3	R265 A8	R275 B9	R285 D10	R295 A11	R322 G13	R334 D10	R557 E1	R567 D2	R609 A3	R619 B2	R622 B18
C259 B8	C270 C8	C280 C15	C333 G10	C339 B19	C611 A3	C621 C2	D323 F13	J053 A1	J323 C17	J332 G18	J337 C15	J560 A5	J584 H1	Q254 D8	Q291 E14	Q552 F6	Q608 A3	R266 D7	R276 D9	R286 D12	R296 A12	R323 G11	R340 F13	R558 F1	R568 G9	R610 C3	R620 C2	R622 B18
C260 C8	C271 B10	C324 G14	C334 H11	C366 G1	C612 C3	C622 C2	D324 G12	J250 E15	J323 H17	J332 D18	J338 F15	J561 F15	L001 A17	Q255 A9	Q292 E14	Q552 F6	Q609 A3	R267 A8	R277 B9	R287 A7	R297 E14	R325 G11	R341 B5	R559 F1	R569 F1	R601 B2	R611 A3	R621 G3



FR940/13S: SEE PAGES 49 AND 50

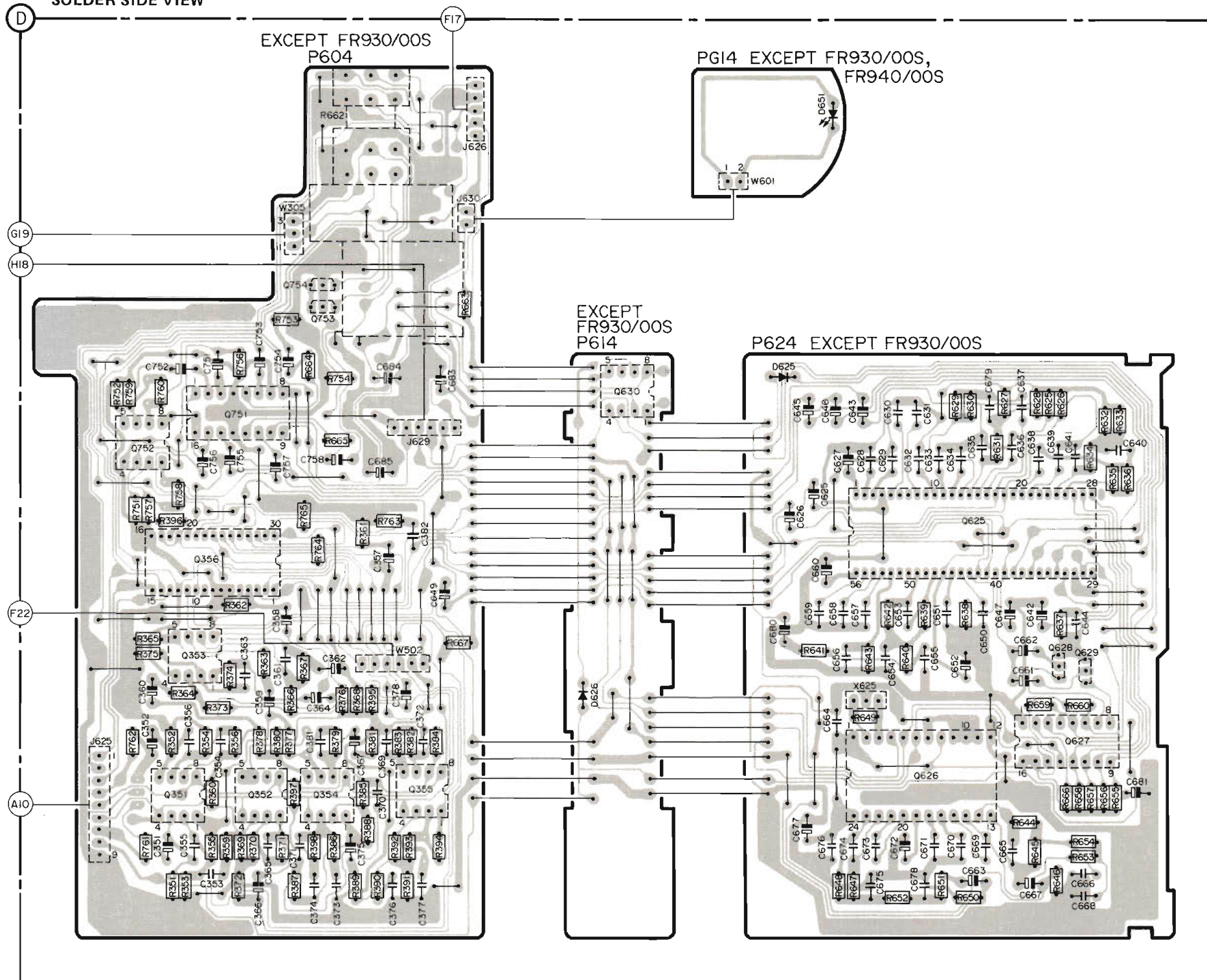
FR930/FR940

C351 A2	C365 B4	C377 A8	C628 E5	C638 H4	C649 D11	C659 E6	C669 F15	C680 F9	C757 C17	J629 E20	Q355 A9	Q627 H9	R352 C2	R368 B8	R378 B3	R388 A7	R398 A6	R633 H4	R643 E7	R654 F16	R665 C7	R757 C18	U675 G19	U685 D3	U725 E17	U732 E10	U740 G18
C352 C2	C366 B6	C379 A9	C629 E5	C639 H5	C650 F8	C660 E6	C670 F15	C681 H11	C758 C18	J630 G19	Q356 A9	Q628 G11	R353 B3	R369 B3	R379 A4	R389 A8	R399 A6	R634 H5	R644 F16	R655 F9	R666 G11	R758 C7	U676 C19	U686 D11	U726 F19	U733 D3	U740 H12
C353 C4	C367 B5	C379 B8	C630 E5	C640 H4	C651 F7	C661 F11	C671 F15	C682 H12	D625 H7	J625 H7	Q351 A2	Q356 A9	Q629 F11	R360 B3	R370 B4	R380 B4	R390 A8	R635 H4	R645 F16	R656 F9	R667 D9	R759 C13	U677 D17	U687 D11	U727 F19	U734 D3	U741 E12
C358 C4	C369 B5	C381 A4	C631 F4	C641 H5	C652 F8	C662 F11	C672 F14	C683 F19	D626 E19	J626 E19	Q351 B2	Q356 B2	Q630 E18	R361 C3	R371 B4	R381 B5	R391 A8	R636 H4	R646 F15	R657 G9	R668 H12	R760 C14	U678 D14	U688 D9	U727 F18	U735 G8	U742 E17
C359 B7	C370 A6	C382 C10	C632 F4	C642 H6	C653 F8	C663 F13	C674 F14	C684 F19	D627 H7	J627 H7	Q352 A2	Q357 A2	Q631 C4	R362 C4	R372 B5	R382 A5	R392 A8	R637 H6	R647 F14	R658 G9	R677 H13	R761 A2	U679 D17	U689 D9	U728 E18	U736 E11	U743 E17
C360 C4	C371 A6	C383 F4	C633 F4	C643 H6	C654 F8	C664 H14	C675 F13	C752 B13	J308 A20	Q355 B6	Q356 C6	Q356 C6	Q752 C14	R363 B7	R373 B5	R383 A5	R393 A8	R638 H3	R648 F14	R659 F10	R751 C18	R762 C2	U681 F19	U711 D12	U729 E13	U736 E8	X625 H13
C361 B7	C373 B6	C384 C12	C634 F4	C644 H6	C655 F8	C665 G16	C676 G13	C753 B17	J502 C2	Q353 A8	Q356 C13	Q752 C17	R364 C4	R373 C5	R384 A5	R394 A9	R639 F8	R649 E8	R660 F10	R752 C14	R763 C10	U682 D13	U712 G19	U729 H8	U737 G18		
C362 B8	C374 A6	C625 G3	C635 G3	C644 H6	C656 F7	C666 F19	C677 G13	C754 C14	J503 A1	Q354 A4	Q354 A7	Q753 B17	R365 B6	R374 B6	R385 A6	R395 A9	R640 E8	R651 F13	R662 A17	R753 C13	R764 A11	U683 D10	U713 E19	U730 E10	U737 H14		
C363 B8	C375 A7	C626 G3	C636 G4	C645 H6	C657 E6	C667 F19	C678 G13	C755 B17	J625 A1	Q355 A1	Q355 A5	Q754 B15	R366 B7	R375 B6	R386 B6	R396 A12	R641 F9	R652 F13	R663 F20	R754 C19	R765 A10	U684 D10	U714 G18	U731 E10	U738 E18		
C364 B6	C376 A7	C627 E6	C637 G4	C647 G8	C658 E6	C668 F15	C679 G4	C756 B18	J626 C20	Q355 A5	Q626 G13	R351 B2	R367 B7	R377 A3	R387 A6	R397 A6	R642 E8	R653 F16	R664 C14	R755 B14	U671 E19	U685 D10	U724 H11	U731 G8	U739 E17		



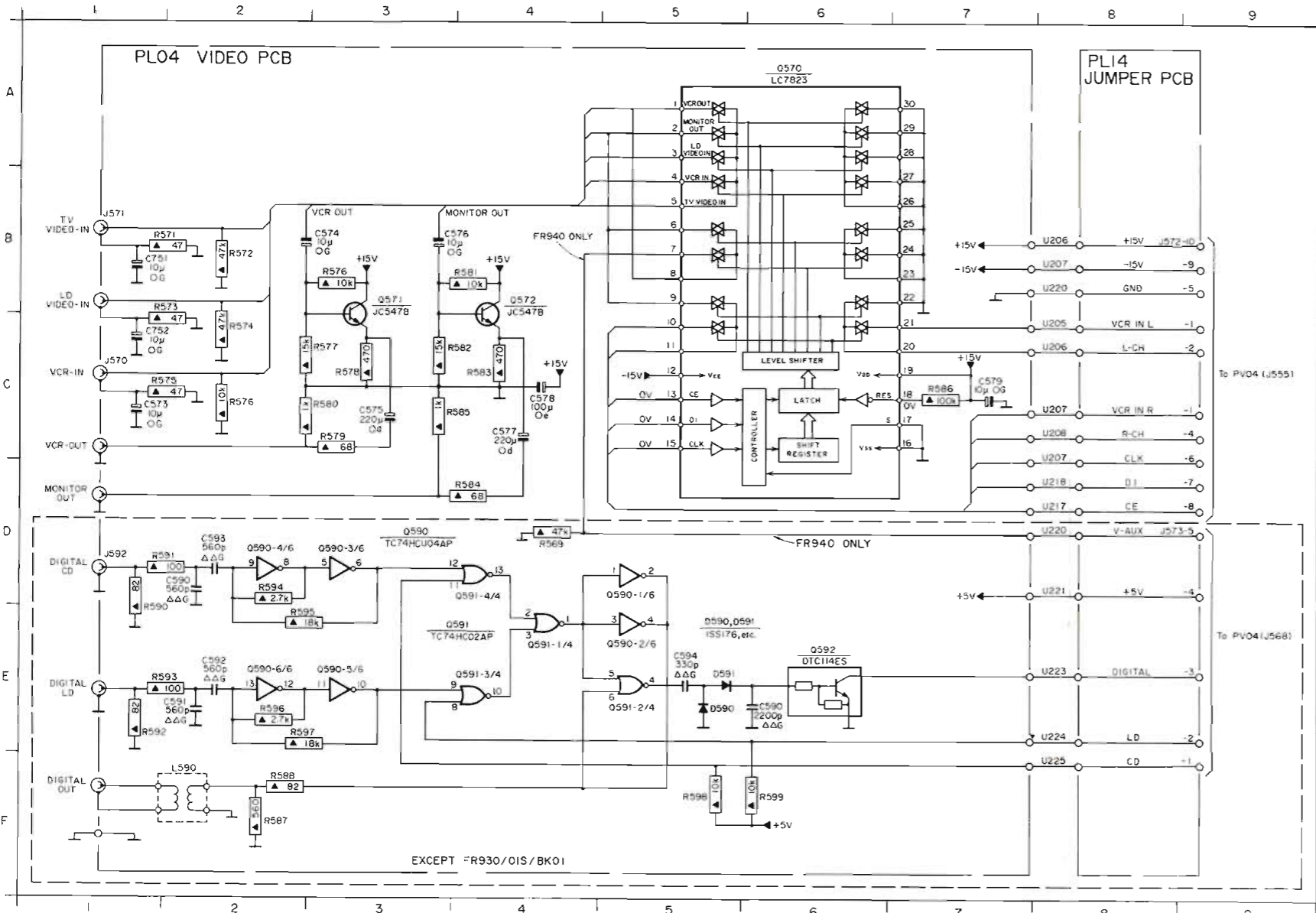
R	R752 R751 R396 R756~R762 R753 R662R664 R665 R754 R763~R765 R667 R663 R351~R356 R359~R365 R369~R380 R366~R368 R397 R398 R381~R395	R638~R643 R647~R649 R650~R652 R644~R646 R666	R
C	C751~C758 C358 C359 C361~C367 C357 C382 C649 C351~C356 C381 C369~C378	C645 C646 C643 C625~C635 C679 C636~C642 C644 C680 C664 C650~C660 C670~C678 C647 C661~C663 C665~C669 C681	C
Q-D	Q752 Q351 Q353 Q356 Q751 Q352 Q754 Q753 Q354 Q355	D626 Q630 D625 D651 Q626 Q625 Q627~Q629	Q-D
X		X625	X

SOLDER SIDE VIEW



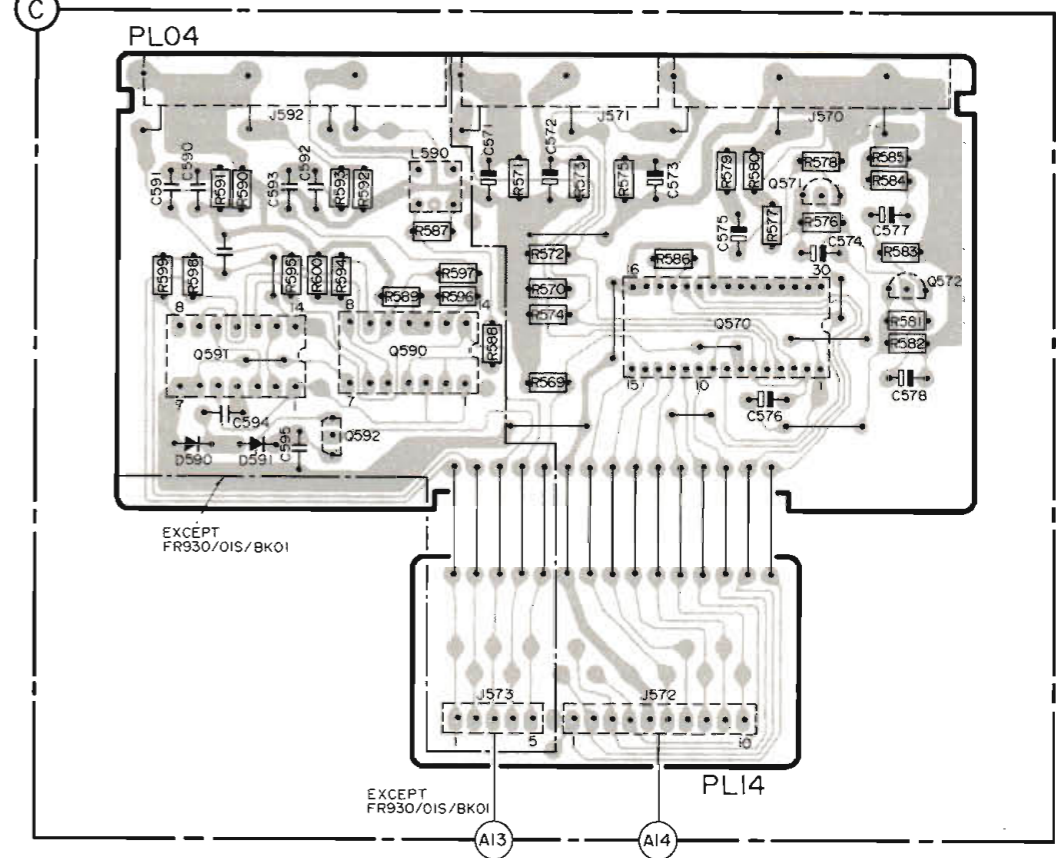
FR930/FR940

C573	C1	C591	E2	J592	D1	Q590	E5	R575	C1	R585	C3	R596	E2
C574	B3	C592	E2	L590	F2	Q591	D4	R576	B3	R586	C7	R597	E2
C575	C3	C593	D2	Q570	A6	Q591	E4	R576	C2	R587	F2	R598	F2
C576	B3	C594	E5	Q571	B3	Q591	E4	R577	C2	R588	F2	R599	F6
C577	C4	C751	B1	Q572	B4	Q592	E6	R578	C3	R589	D1		
C578	C4	C752	C1	Q590	D2	R569	D4	R579	C3	R591	D1		
C579	C7	J570	C1	Q590	D3	R571	81	R580	C2	R592	E1		
C590	D2	J571	B1	Q590D5		R571	82	R582	C3	R593	E1		
C590	E5	J572	D9	Q590	E2	R573	81	R583	C4	R594	D2		
C590	E6	J573	D9	Q590	E3	R574	C2	R584	D4	R595	E2		



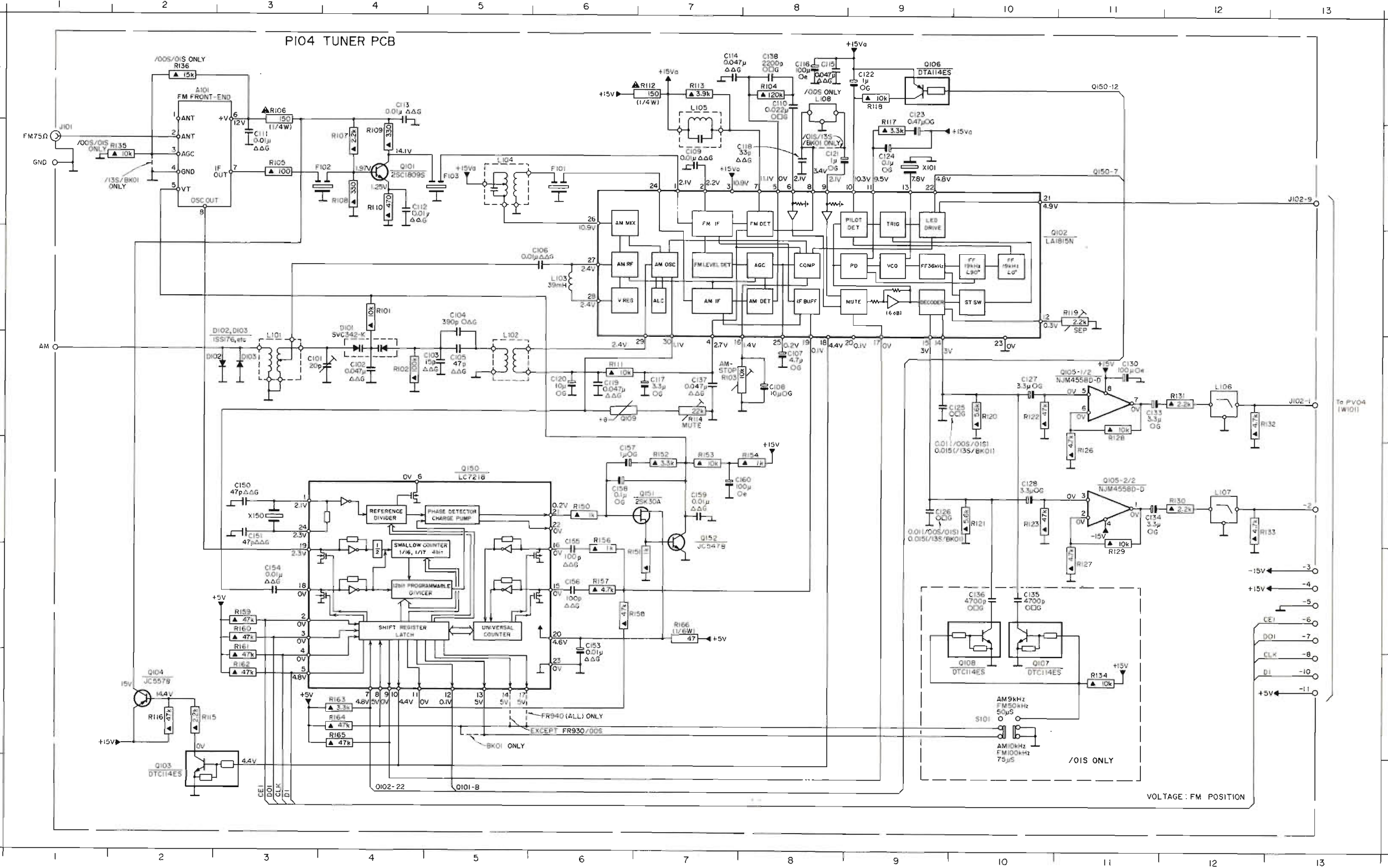
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C	C591	C590	C592~C595		C571	C572		C573	C575	C576	C574	C577	C578	C
Q-D-L	D590	Q591	D591	Q592	Q590	L590		Q570	Q571		Q572		Q-D-L	

SOLDER SIDE VIEW



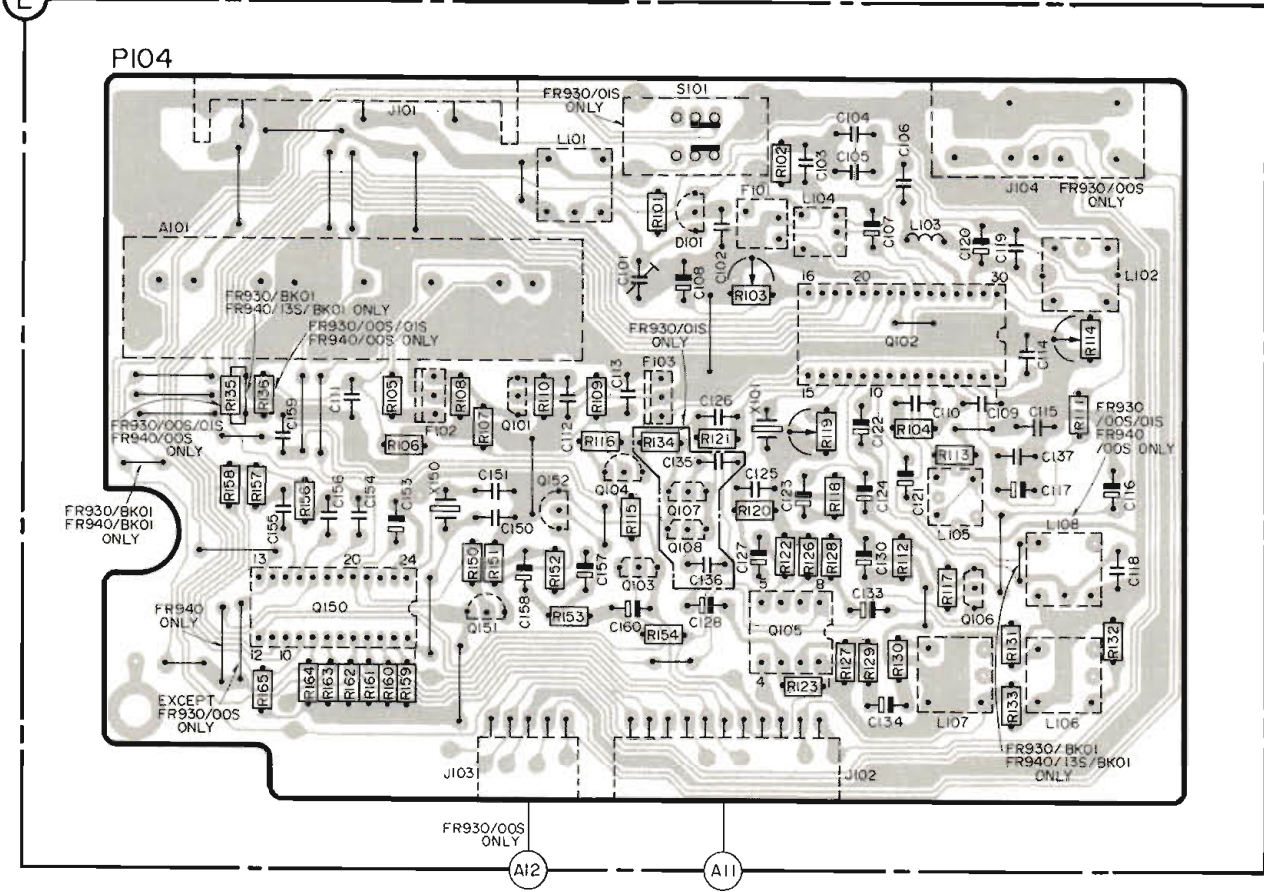
A101	A2	C110	A8	C120	D6	C133	D11	C154	F3	F101	B6	L105	B7	Q105	E11	R101	C4	R111	D6	R121	E10	R133	E12	R157	F6	X101	B9
C101	D4	C111	B8	C121	B8	C134	E11	C155	F6	F102	B3	L106	A9	Q106	A9	R102	D4	R112	A7	R122	D10	R134	G11	R158	F6	X150	E3
C102	D4	C112	B4	C122	A9	C135	F10	C156	F6	F103	B5	L107	E12	Q107	F10	R103	D7	R113	A7	R123	E10	R135	B2	R159	F3		
C103	D6	C113	A4	C123	B9	C136	F10	C157	E6	J101	B1	Q101	B4	Q108	D6	R104	A8	R114	D7	R124	E11	R136	A2	R160	F3		
C104	C5	C114	A7	C124	B9	C137	D7	C158	E6	J102	B13	Q101	H5	Q109	D6	R105	B3	R115	G2	R125	F11	R137	E6	R161	G3		
C105	D5	C115	A8	C125	D9	C138	A8	C159	E7	J102	B13	Q102	C11	Q150	A11	R106	A3	R116	G2	R126	D11	R138	F7	R162	G3		
C106	C6	C116	AB	C126	E9	C139	E3	C160	E7	L101	D3	Q102	H4	Q150	B11	R107	B4	R117	B9	R127	E11	R139	E7	R163	G4		
C107	D8	C117	D7	C127	E10	C140	E3	C161	E7	L102	D5	Q103	H4	Q150	E5	R108	B4	R118	A9	R128	D11	R140	E7	R164	G4		
C108	D8	C118	B8	C128	E10	C141	F6	C162	E7	L103	C6	Q104	G2	Q151	E7	R109	B4	R119	C11	R129	E11	R141	E7	R165	G4		
C109	B7	C119	D6	C130	D11	C153	G6	C163	D3	L104	B5	Q105	D11	Q152	E7	R110	B4	R120	D10	R130	D12	R142	E7	R166	F7		

FR930/FR940



R	R135 R136	R105~R108	R110	R109	R101	R134	R103	R102	R119	R118	R104	R113	R111	R114	R		
C	R156~R158	R159~R165	R150~R153	R116	R115	R154	R120~R122	R126~R130	R112	R117	R131	R133	R132				
	C159	C111	C151	C112	C113	C101	C108	C102	C103~C107	C130	C120	C119	C137				
Q			R153~C156	C150	C158	C157	C160	C135	C136	C125~C128	C121~C124	C133	C134	C110	C109	C114~C118	C
D-S			Q150	Q151	Q101	Q152	Q104	Q103	Q107	Q108	Q105	Q102	Q106				D-S
F-L-X									S101	D101							D-S
			F102	X150	L101	F103	F101	X101	L104	L103	L105	L107	L108	L106	L102		F-L-X

SOLDER SIDE VIEW



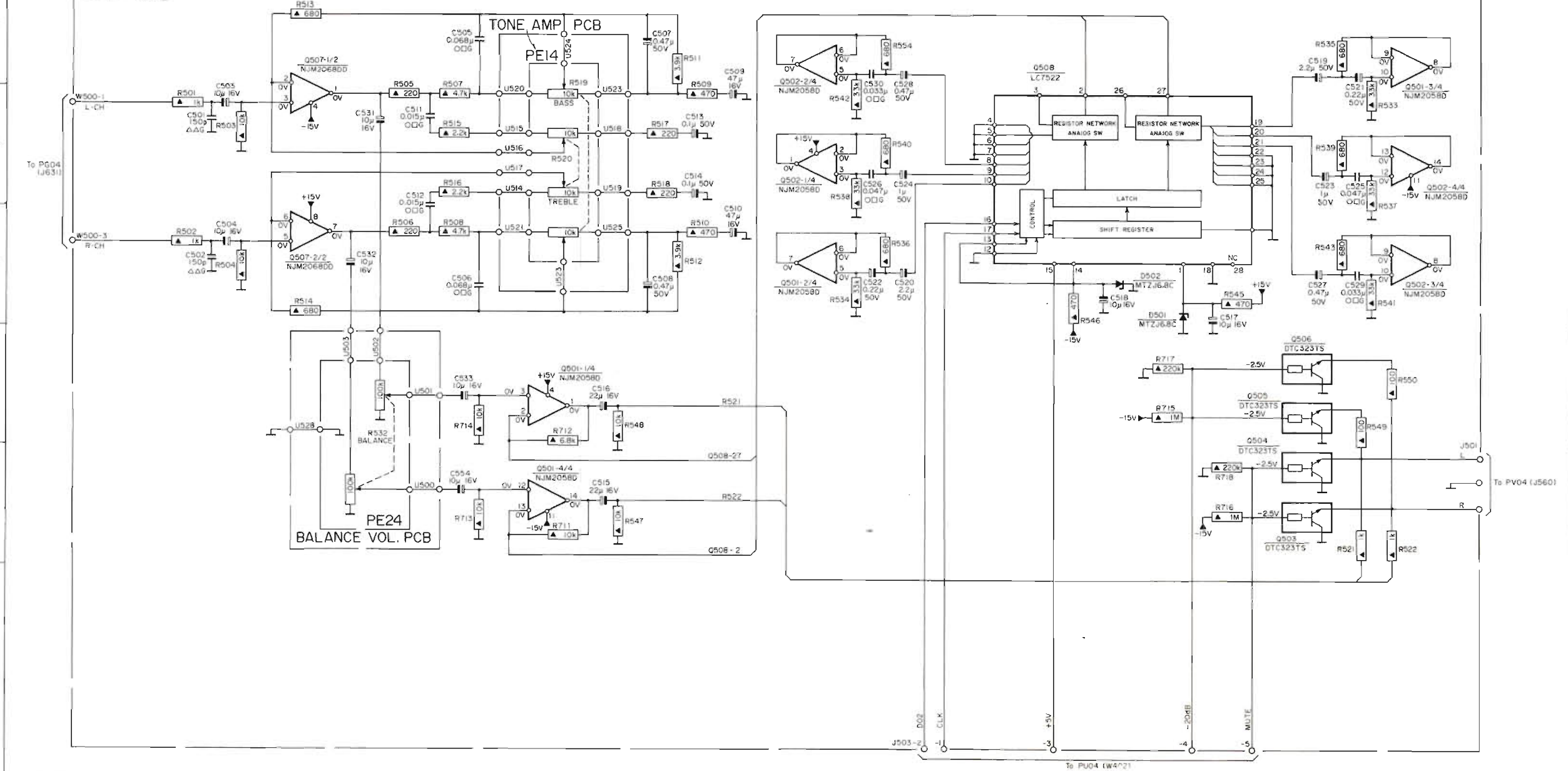


FR930/01S,BK01  
FR940/00S/13S,BK01

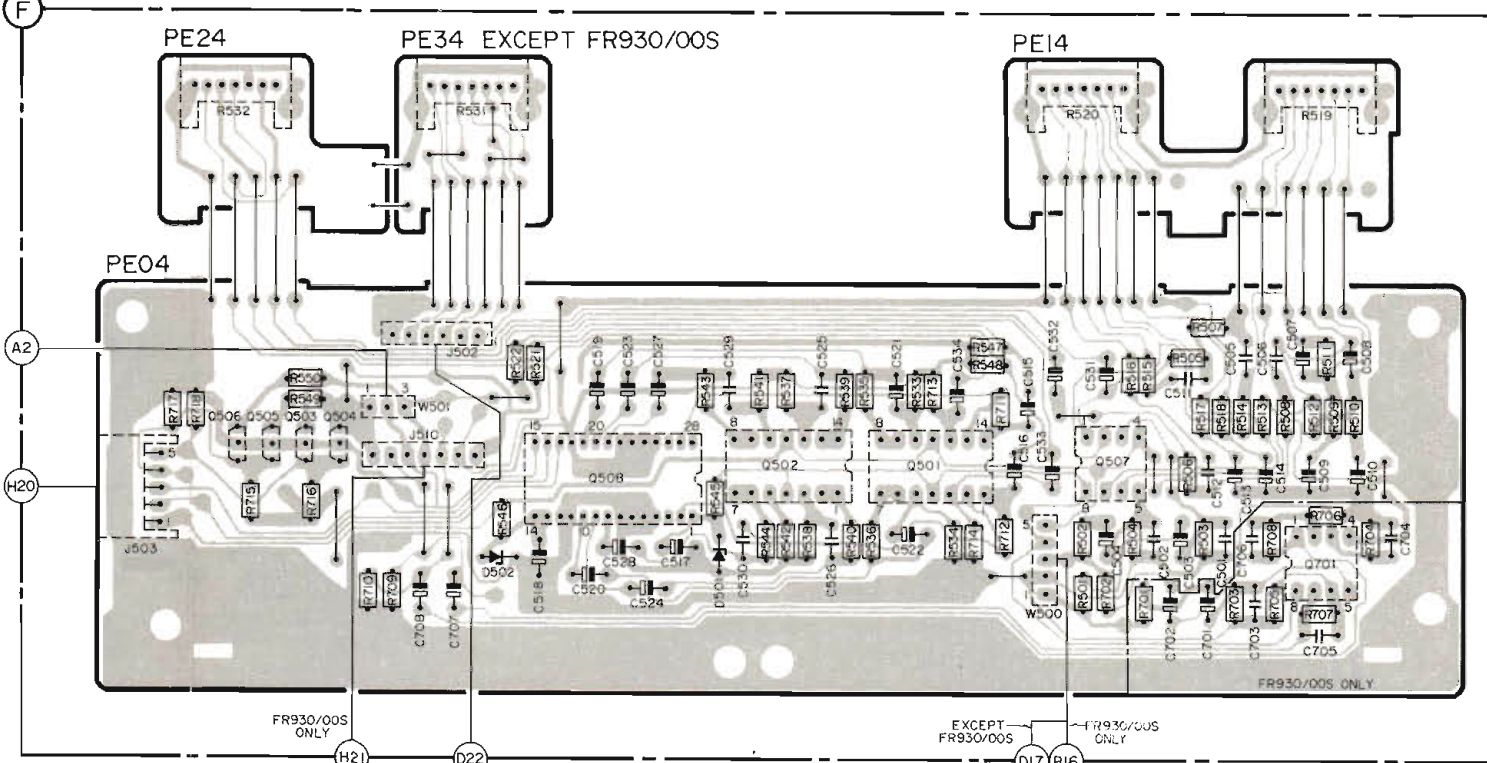
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C502	C2	C512	B4	C522	C8	C532	C3	Q501	E5	Q507	C3	R510	C6	R520	B5	R539	B12	R550	D12		
C503	B2	C513	B6	C523	B12	C533	D4	Q502	A7	R501	B2	R511	A6	R521	F12	R540	B8	R554	A8		
C504	C2	C514	B6	C524	B8	C534	E4	Q502	B7	R502	C2	R512	C6	R522	E12	R541	C12	R711	E5		
C505	A4	C515	E6	C525	B12	D501	C10	Q502	B12	R503	B2	R513	A3	R532	D4	R542	B8	R712	D5		
C506	C4	C516	D6	C526	B8	D502	C10	Q502	C12	R504	C2	R514	C3	R533	A12	R543	C12	R713	E4		
C507	A6	C517	C11	C527	C12	J501	E13	Q503	E11	R505	B4	R515	B4	R534	C8	R545	C11	R714	D4		
C508	C6	C518	C10	C528	A8	J503	G8	Q504	E11	R506	C4	R516	B4	R535	A12	R546	C9	R715	D10		
C509	A7	C519	A12	C529	C12	Q501	A12	Q505	D11	R507	B4	R517	B6	R536	C8	R547	E6	R716	E11		
C510	C7	C520	C8	C530	A8	Q501	C7	Q506	D11	R508	C4	R518	B6	R537	B12	R548	D6	R717	D10		

R	R717	R718	R532	R550	R531	R522	R521	R543	R541	R537	R539	R535	R533	R713	R547	R711	R520	R516	R515	R517~R519	R505~R514	R
C	R715		R716	R710	R709	R546		R545	R544	R542	R538	R540	R536	R534	R714	R548	R712	R501~R504	R701~R703	R704~R708		C
D-Q	Q506				Q505	Q503	Q504	D502	Q508	Q501	Q502	Q501		C516	C515	C531	C531~C533	C501~C514	C701~C706		D-Q	

PE04 TONE AMP PCB

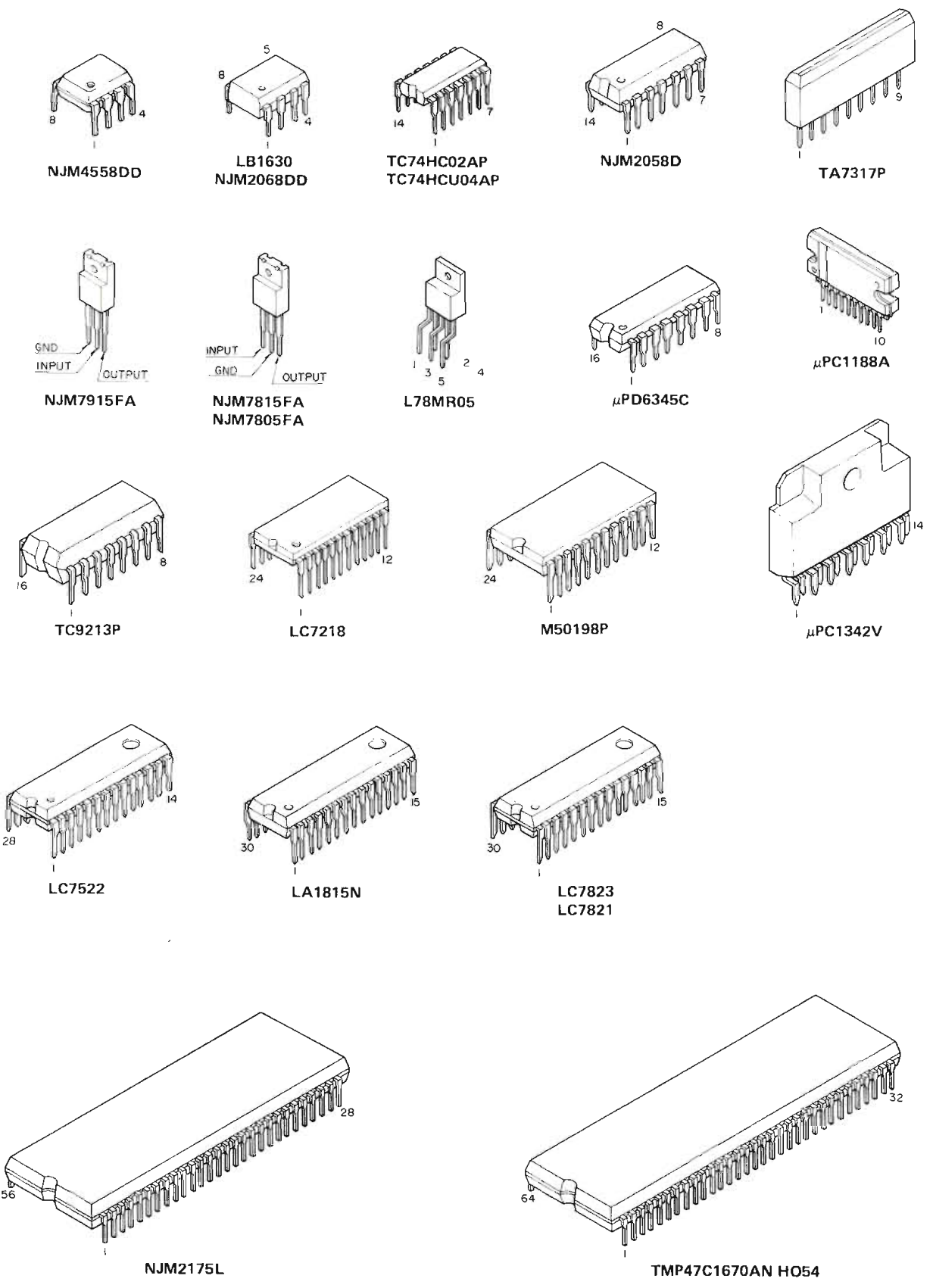


SOLDER SIDE VIEW

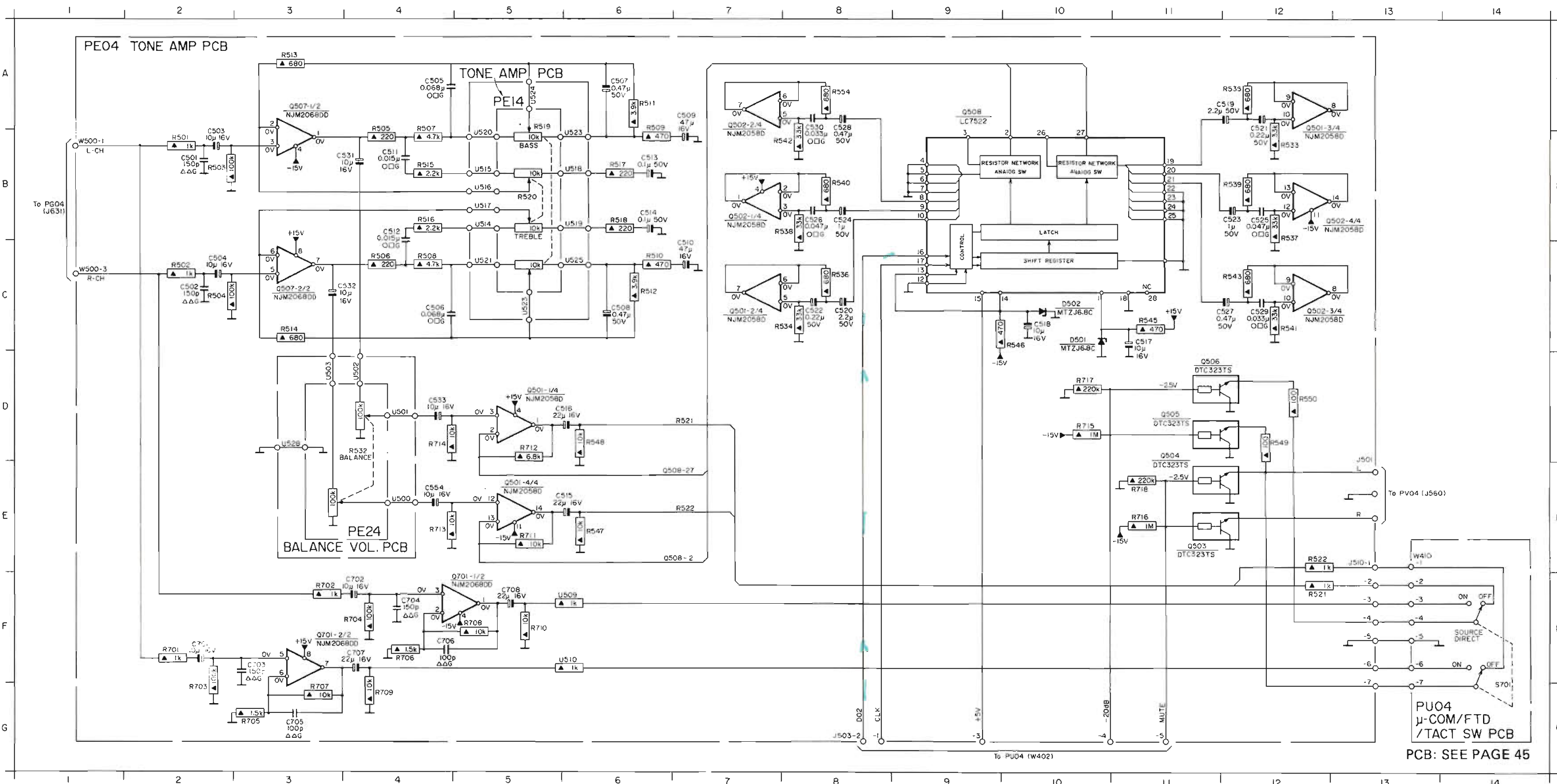


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C502	C2	C512	B4	C522	C8	C532	C3	C708	F5	Q502	A7	Q508	A9	R508	C4	R518	B6	R537	B12	R548	D6	R707	G3	R717	D10
C503	B2	C513	B6	C523	B12	C533	D4	D501	C10	Q502	B7	Q701	F3	R509	A6	R519	B5	R538	B8	R549	D12	R708	F5	R718	E11
C504	C2	C514	B6	C524	B8	C534	E4	D502	C10	Q502	B12	Q701	F4	R510	C6	R520	B5	R539	B12	R550	D12	R709	G4	S701	G14
C505	A4	C515	E6	C525	B12	C701	F2	J501	E13	Q502	C12	R501	B2	R511	A6	R521	F12	R540	B8	R554	A8	R710	F5	U509	F5
C506	C4	C516	D6	C526	B8	C702	F4	J503	B8	Q503	E11	R502	C6	R512	C6	R522	F12	R541	C12	R701	F2	R711	E5	U510	F5
C507	A6	C517	C11	C527	C12	C703	F3	J510	E13	Q504	E11	R503	B2	R513	A3	R523	D4	R542	B8	R702	F3	R712	D5		
C508	C6	C518	C10	C528	A8	C704	F4	Q501	A12	Q505	D11	R504	C2	R514	C3	R524	A12	R543	C12	R703	G2	R713	E4		
C509	A7	C519	A12	C529	C12	C705	G3	Q501	C7	Q506	D11	R505	B4	R515	B4	R525	C8	R544	C11	R704	F4	R714	D4		
C510	C7	C520	C8	C530	A8	C706	F4	Q501	D5	Q507	A3	R506	C4	R516	B4	R526	A12	R545	C9	R705	G3	R715	D10		

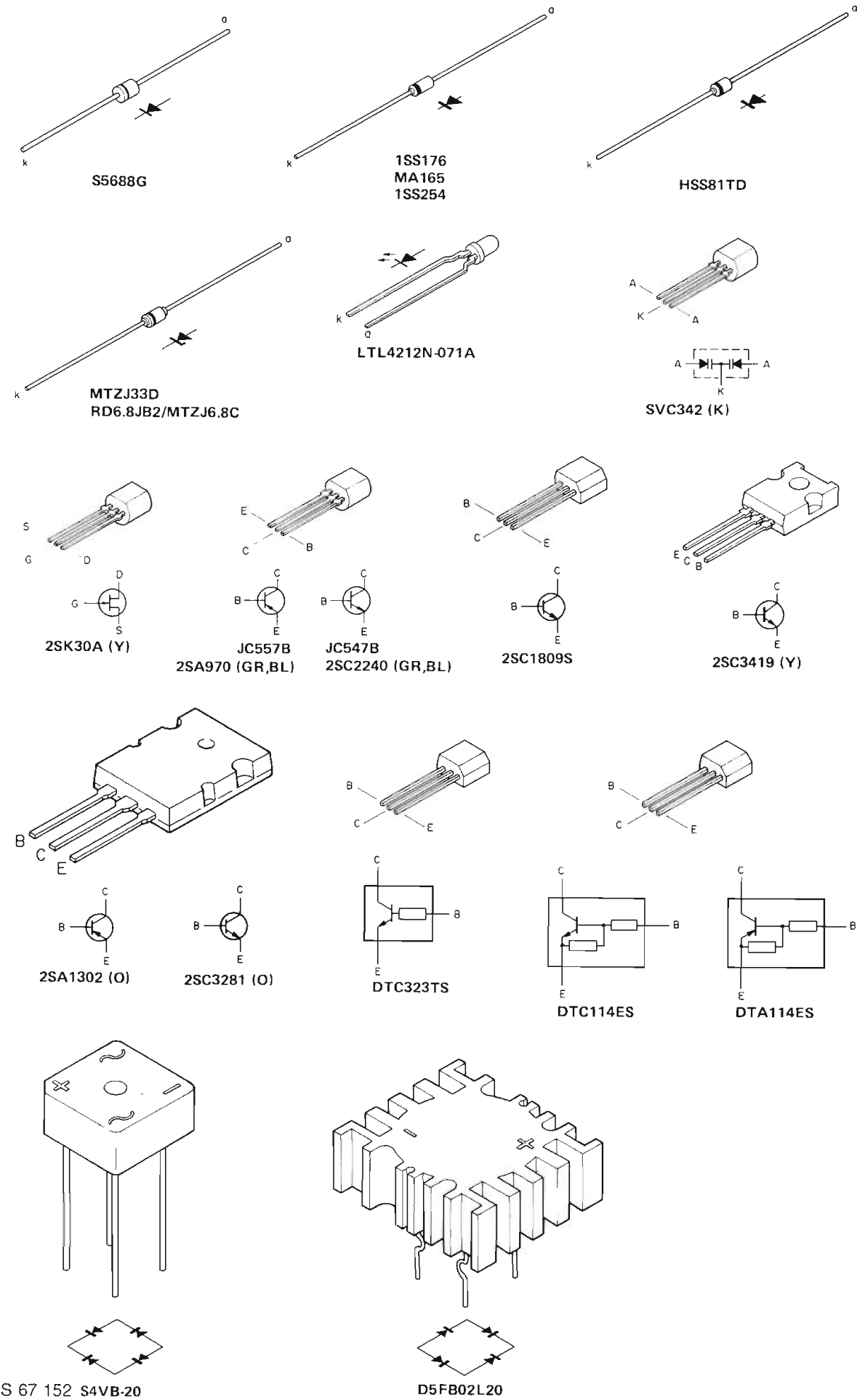
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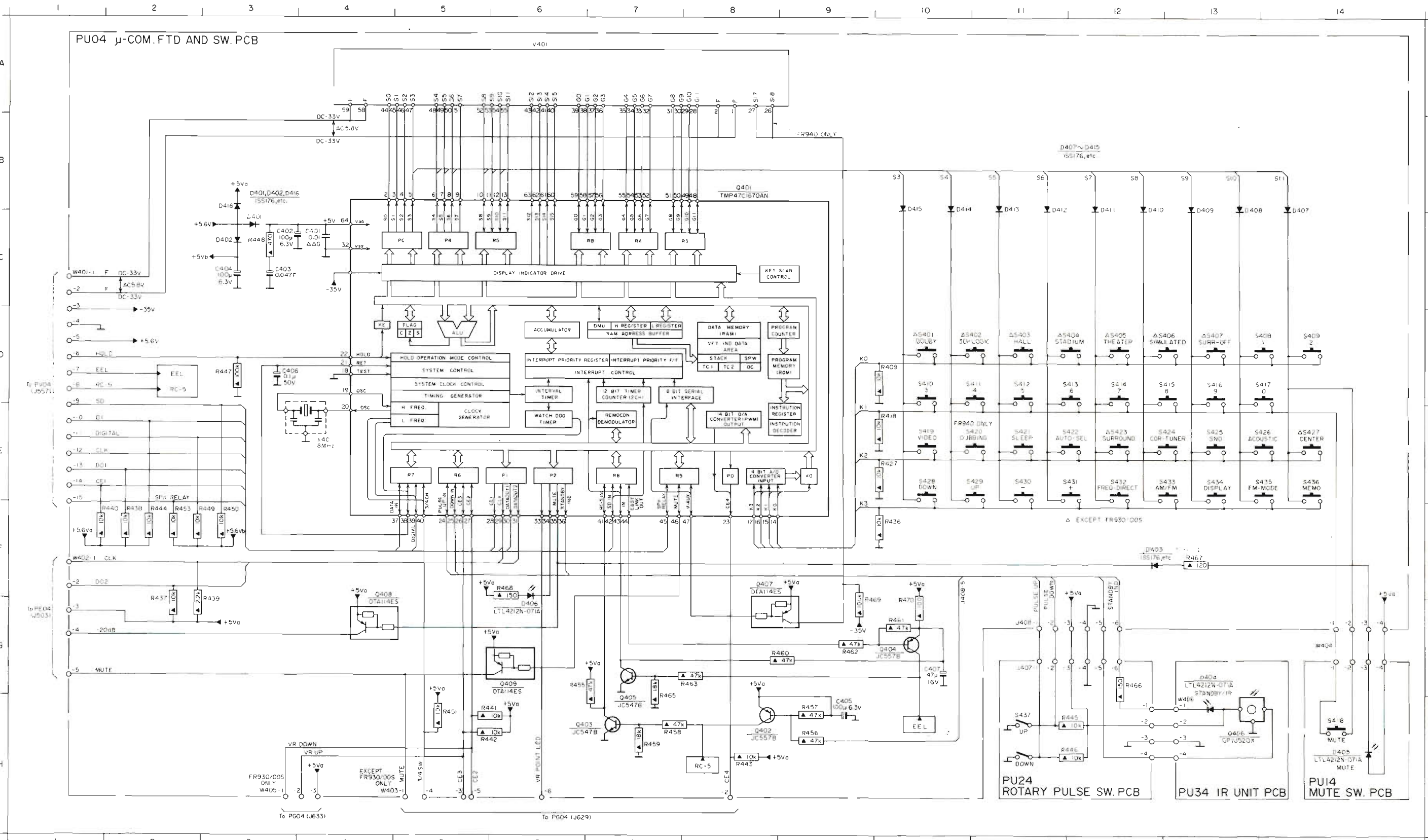
FR930/00S



SEMI-CONDUCTOR LAYOUT



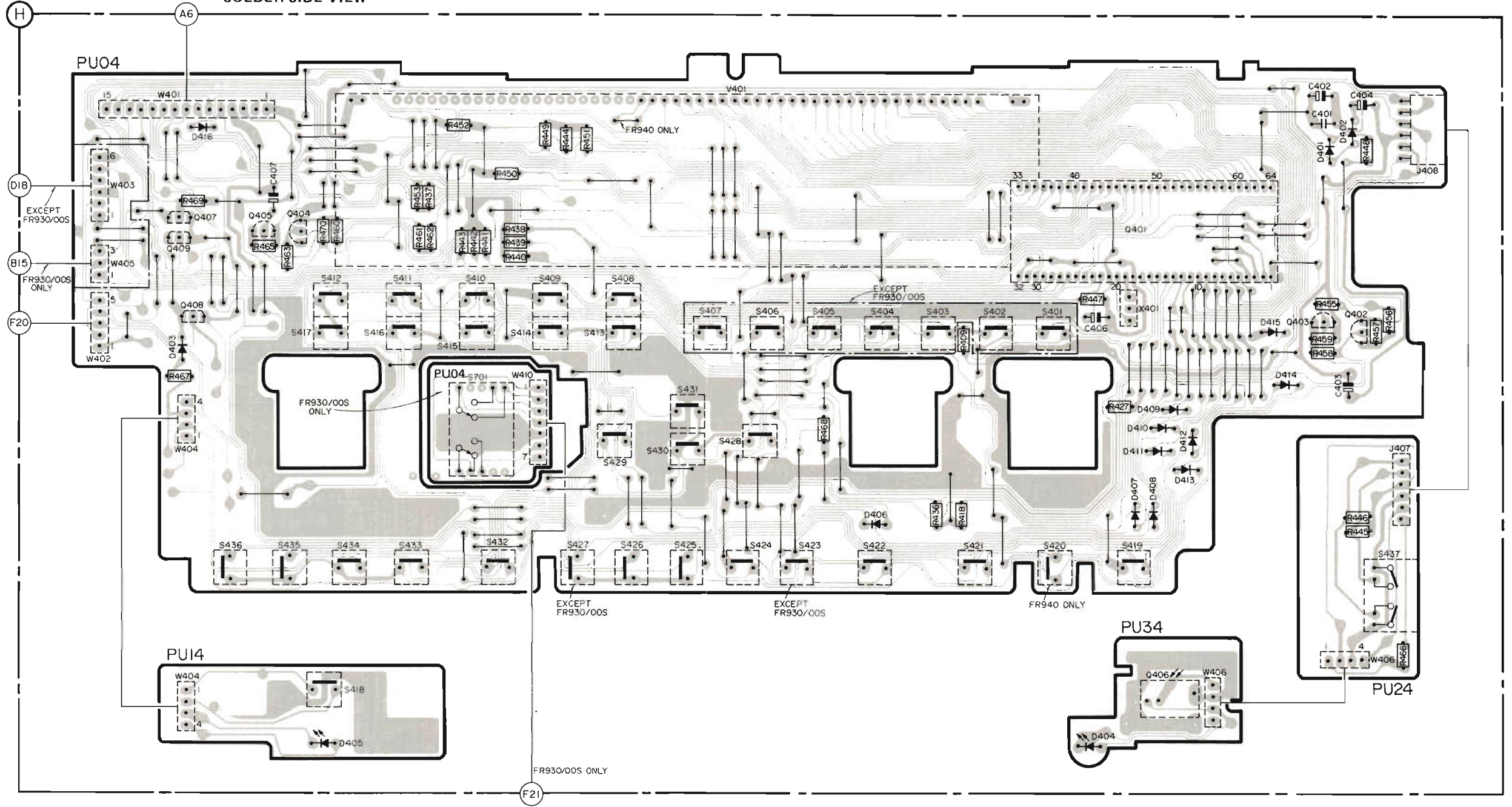
FR930/FR940



C401 C4	D404 G13	D414 B10	D401 B8	R418 E10	R444 F2	R456 H9	R467 F13	S407 D13	S417 D14	S427 F14	S437 H11
C402 C3	D405 H14	D415 B10	D403 H7	R427 E10	R445 H12	R457 H9	R468 F6	S408 D14	S418 D14	S428 F10	S438 H10
C403 C3	D406 G6	D416 B3	D404 G10	R436 F10	R446 H12	R456 H7	R469 G9	S409 D14	S419 E10	S429 F11	S439 H11
C404 C3	D407 B14	J407 G11	D405 H7	R437 G2	R447 D3	R459 H7	R470 G10	S410 D10	S420 E11	S430 F11	S440 E4
C405 H5	J408 F10	D406 H13	R438 F2	R448 C3	R460 G9	S401 D10	S411 D11	S421 E11	S431 F11	S441 E4	
C406 D3	D409 B13	J408 G11	D407 G8	R439 G2	R449 F2	R461 G10	S402 D11	S412 D11	S422 E12	S432 F12	
C407 G10	D410 B12	J503 G1	D408 G4	R440 F1	R450 F3	R462 G9	S403 D11	S413 D12	S423 E12	S433 F13	
D401 C3	D411 B11	J557 D1	D408 H8	R441 H5	R451 H5	R463 G8	S404 D12	S414 D14	S424 E13	S434 F14	
D402 C3	D412 B11	J629 H6	D409 G6	R442 H5	R453 F2	R465 H7	S405 D12	S415 D14	S425 E13	S435 F14	
D403 H12	D413 B11	J633 H4	R409 D10	R443 H8	R455 H7	R466 G12	S406 D13	S416 D13	S426 E14	S436 F14	

R	R467 R469	R465 R463 R470 R460	R453 R437 R461 R462 R452 R438~R444 R449~R451	R468	R436 R418 R409	R447 R427	R455~R459 R445 R446 R448 R466	R
C	C407							C
Q - D	D403 Q407~Q409 D416 Q405 Q404	D405	D406			D404 Q401 Q406 D407~D413	D415 D414 Q403 D401 D402 Q402	Q - D
S - X	S432~S436		S413~S417	S408~S412	S423~S431	S401~S407	S419~S422 X401	S437 S - X

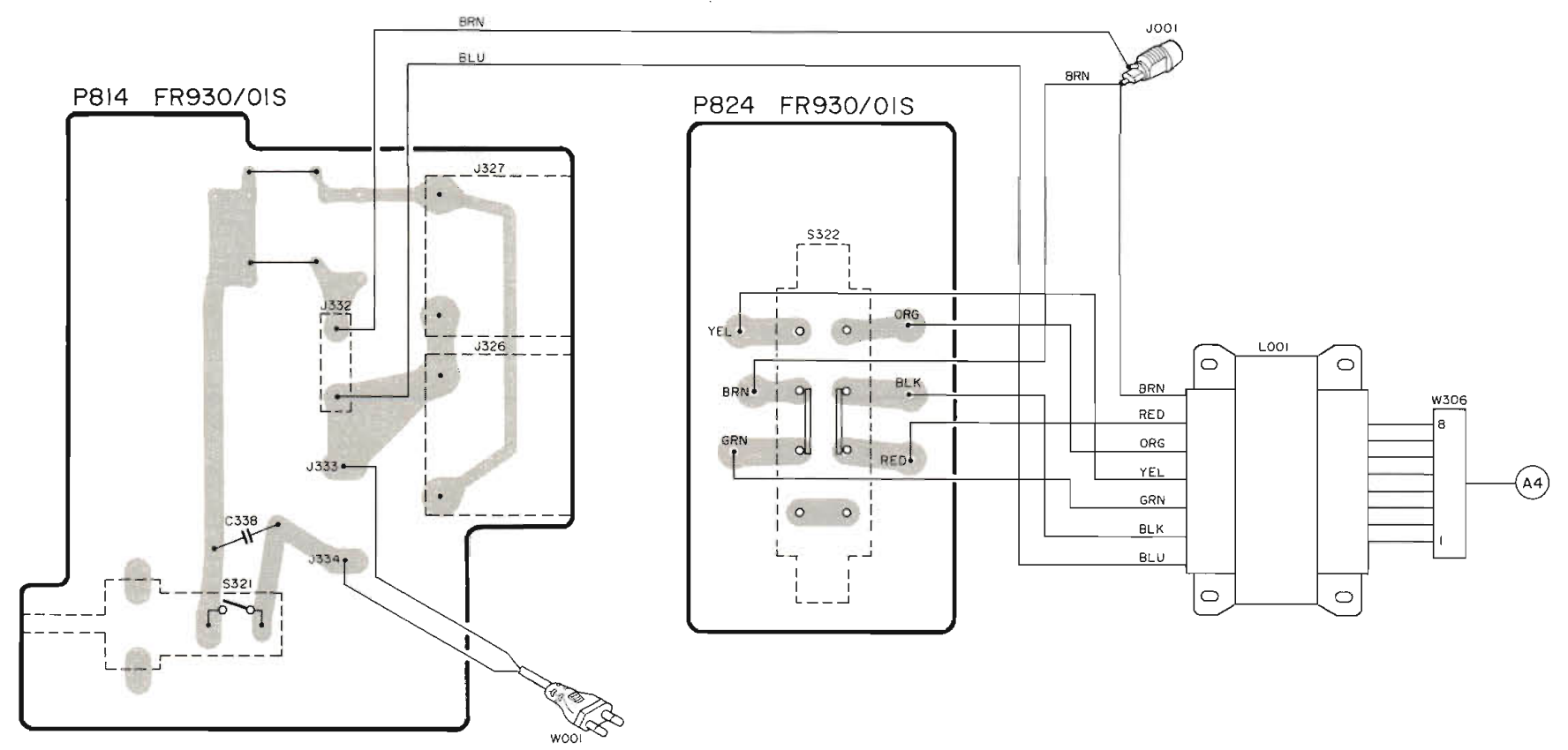
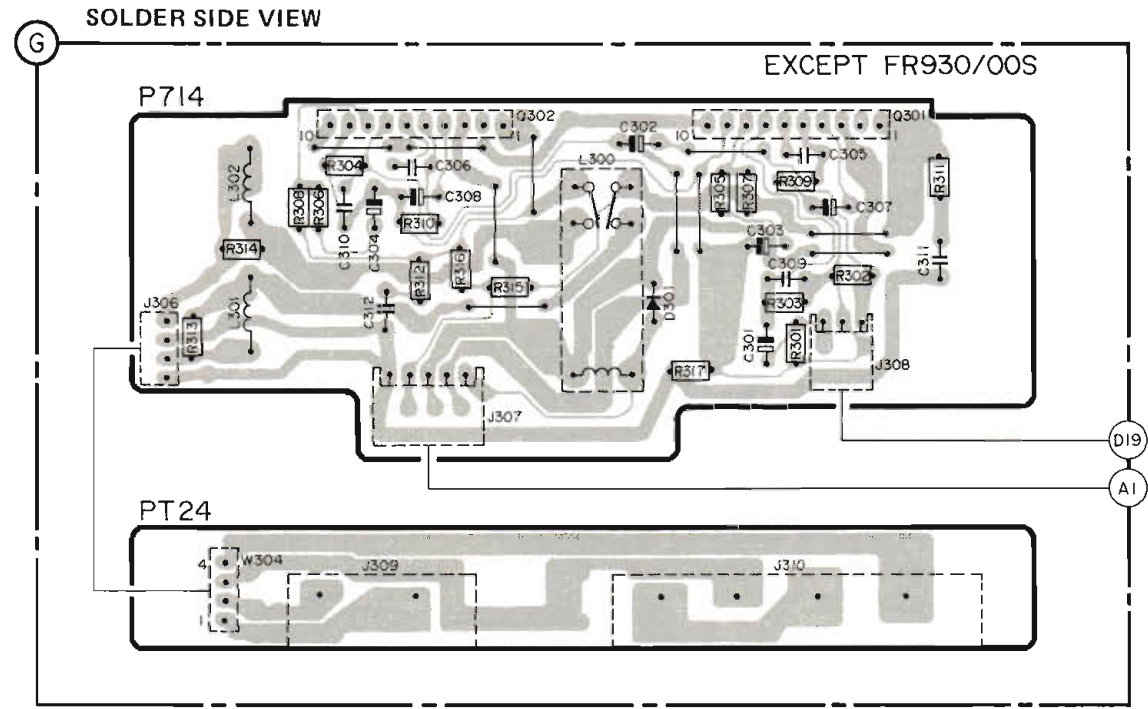
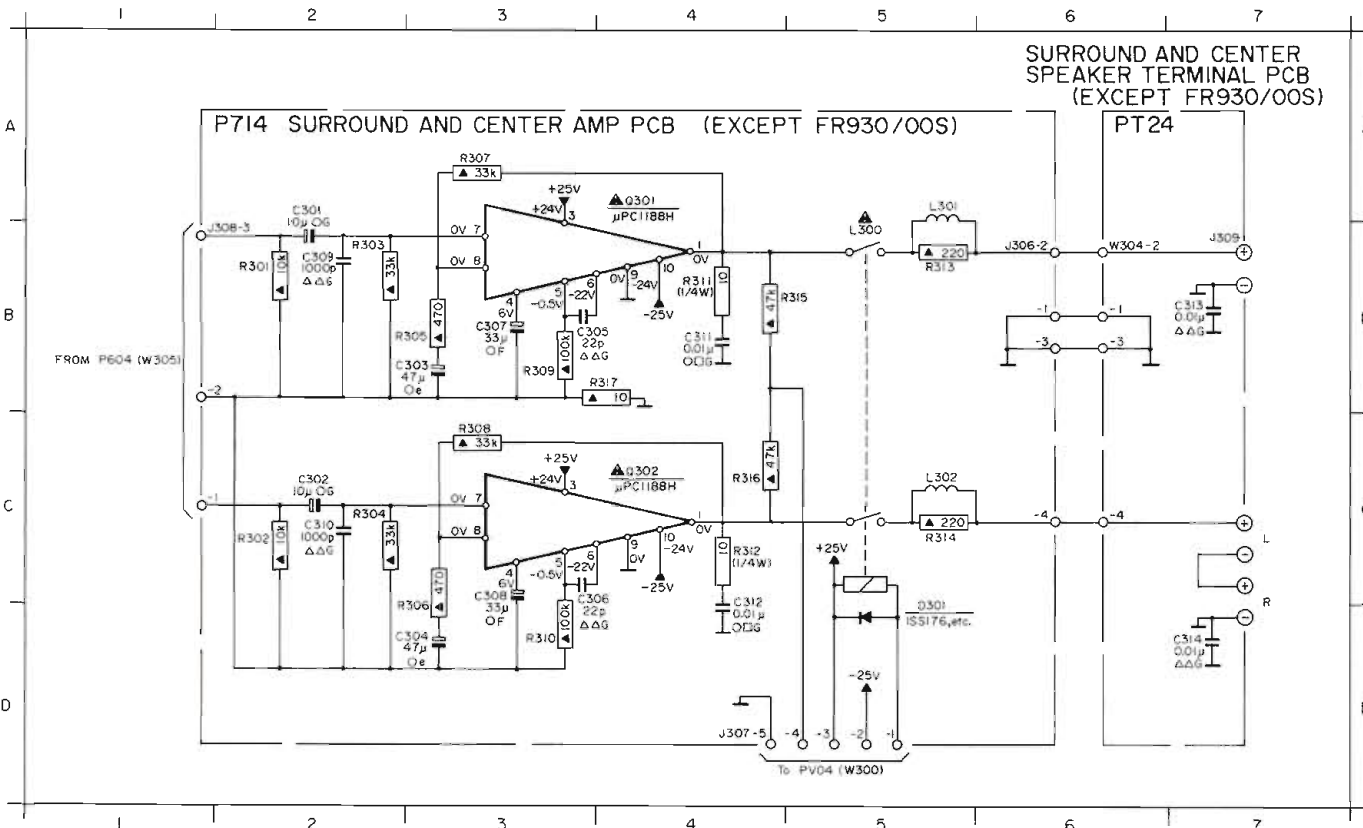
SOLDER SIDE VIEW



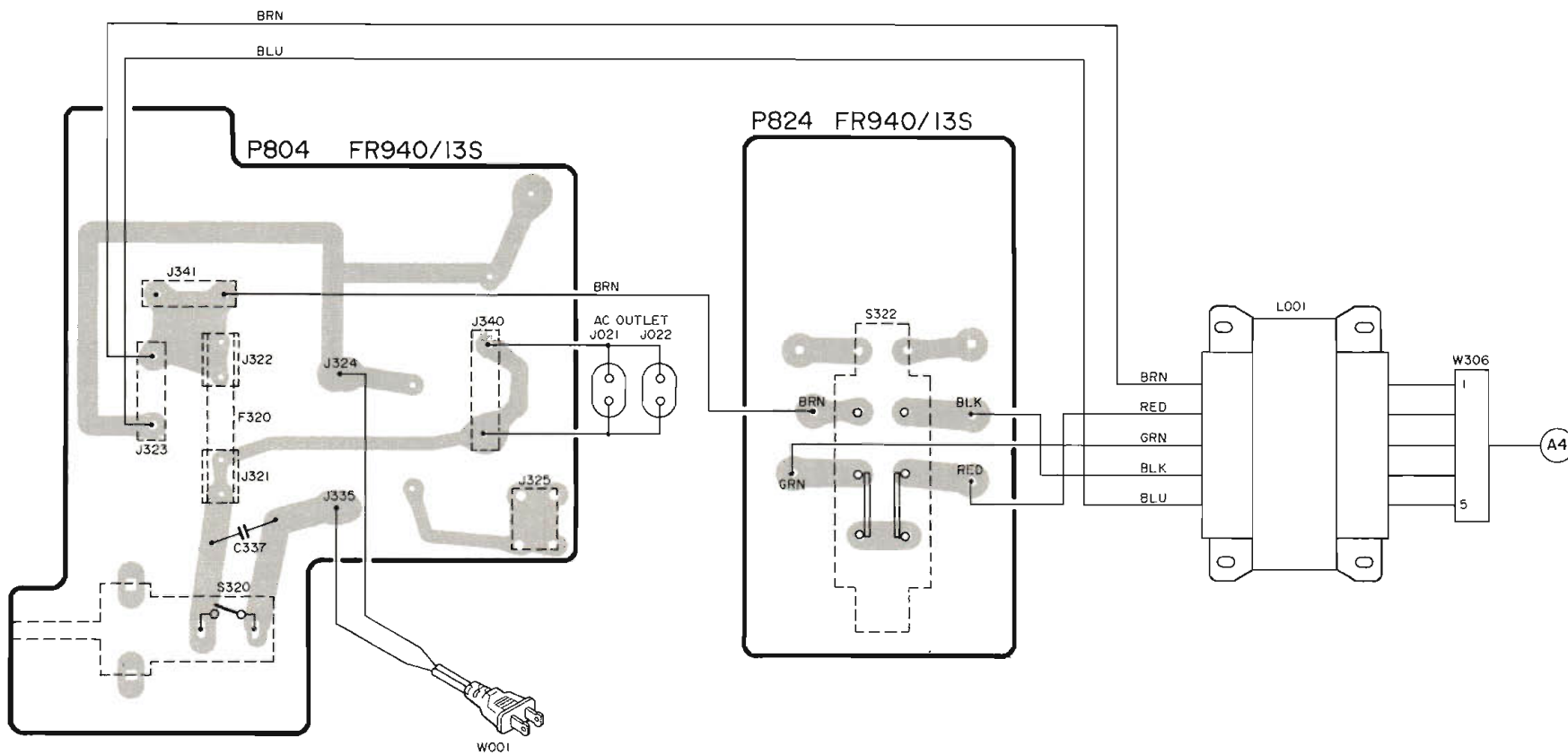
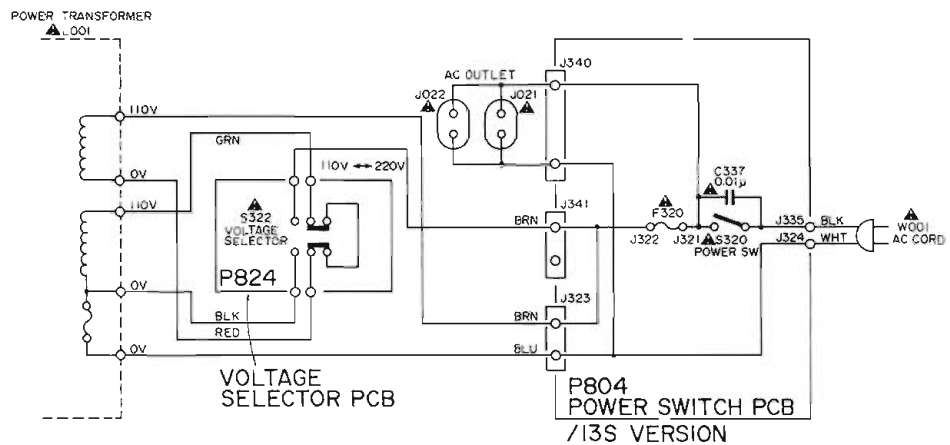
FR930/01S,BK01  
FR940/00S/13S,BK01

C301 B2	C311 B4	L301 A5	R307 A3	R317 B4
C302 B3	C312 D4	L302 C5	R308 C3	
C303 B3	C313 B7	Q301 A4	R309 B3	
C304 D3	C314 D7	Q302 C4	R310 D3	
C305 B3	D301 D5	R301 B2	R311 B4	
C306 C3	J306 B6	R302 C2	R312 C4	
C307 B3	J307 D4	R303 B2	R313 B5	
C308 C3	J308 B1	R304 C2	R314 C5	
C309 B2	J309 B7	R305 B2	R315 B4	
C310 C2	L300 B5	R306 C3	R316 C4	

R	R313 R314 R308 R306 R304 R310 R312 R316 R315	R317 R305 R307 R309 R301~R303 R311	R
C	C310 C312 C304 C306 C308	C302 C301 C303 C309 C305 C307 C311	C
Q - D		Q302 D301	Q - D
L	L302 L301	L300	L



FR940/13S



ELECTRICAL PARTS LIST (FR930)



	<p>Q101 4822 130 62294 2SC1809S (P)  Q103 4822 130 60588 DTC114ES  Q104 4822 130 62386 JC557B  Q106 4822 130 61227 DTA114ES  Q107, Q108 4822 130 60588 DTC114ES [/01S]</p> <p>Q151 4822 130 42121 2SK30A (Y)  Q152 4822 130 62295 JC547B  Q253, Q254 4822 130 60117 2SC3419 (Y)  ▲ Q255, Q256 4822 130 63096 2SD2052 (S)  ▲ Q257, Q258 4822 130 63095 2SB1361 (S)</p> <p>Q259, Q260 4822 130 43233 2SC2240 (GR, BL)  Q261 4822 130 42951 2SA970 (GR, BL)  Q402, Q404 4822 130 62386 JC557B  Q403, Q405 4822 130 62295 JC547B  Q407-Q409 4822 130 61227 DTA114ES</p> <p>Q503-Q506 4822 130 61723 DTC323TS  Q571, Q572 4822 130 62295 JC547B  Q592 4822 130 60588 DTC114ES [/00S]  Q628, Q629 4822 130 61227 DTA114ES [/01S, BK01]  Q753, Q754 4822 130 61723 DTC323TS [/01S, BK01]</p>		<p>Q102 4822 209 31001 LA1851N  Q105 4822 209 83631 NJM4558DD  Q150 4822 209 73435 LC7218  ▲ Q251, Q252 4822 209 70382 μPC1298V  Q262 4822 209 83312 TA7317P</p> <p>▲ Q301, Q302 4822 209 73727 μPC1188H [/01S, BK01]  ▲ Q320 4822 209 70385 L78MR05  ▲ Q321 4822 209 61848 NJM7815FA  ▲ Q322 4822 209 83828 NJM7915FA  ▲ Q323 4822 209 31631 NJM7805FA [/01S, BK01]</p> <p>Q351 4822 209 73064 NJM2068DD [/01S, BK01]  Q352-Q355 4822 209 83631 NJM4558DD [/01S, BK01]  Q356 4822 209 72748 LC7821 [/01S, BK01]  Q401 4822 209 31556 TMP47C1670AN H054  Q501, Q502 4822 209 70044 NJM2058D</p> <p>Q507 4822 209 73064 NJM2068DD  Q508 4822 209 71783 LC7522  Q551 4822 209 72748 LC7821  Q552 4822 209 73731 LC7823 [/00S]  Q570 4822 209 73731 LC7823</p> <p>Q590 4822 209 72323 TC74HCU04AP [/00S]  Q591 4822 209 61688 TC74HC02AP [/00S]  Q601 4822 209 83631 NJM4558DD  Q625 4822 209 31572 NJM2175L [/01S, BK01]  Q626 4822 209 31573 M50198P [/01S, BK01]</p> <p>Q627 4822 209 31574 μPD6345C [/01S, BK01]  Q630 4822 209 73287 LB1630 [/01S, BK01]  Q631 4822 209 73287 LB1630 [/00S]  Q701 4822 209 73064 NJM2068DD [/00S]  Q751 4822 209 31575 TC9213P [/01S, BK01]</p> <p>Q752 4822 209 83631 NJM4558DD [/01S, BK01]</p>
	<p>D101 4822 125 50416 SVC342K  D102, D103 4822 130 33305 1SS176 (MA165, 1SS254)  D251, D252 4822 130 80837 HSS81TD  D253, D254 4822 130 33305 1SS176 (MA165, 1SS254)  D301 4822 130 33305 1SS176 (MA165, 1SS254) [/01S, BK01]</p> <p>▲ D320 4822 130 30984 S5VB20  ▲ D321 4822 130 31007 S4VB20 [/01S, BK01]  ▲ D321 4822 130 80907 S2VB20 [/00S]  ▲ D322, D323 4822 130 80839 S5688G  D324 4822 130 81729 MTZJ33D</p> <p>D325, D326 4822 130 80839 S5688G  D327 4822 130 80839 S5688G [/00S]  D401-D403 4822 130 33305 1SS176 (MA165, 1SS254)  D404-D406 4822 130 82978 LTL4212N-071A  D407-D416 4822 130 33305 1SS176 (MA165, 1SS254)</p> <p>D501, D502 4822 130 80318 RD6.8JB2, MTZJ6.8C  D590, D591 4822 130 33305 1SS176 (MA165, 1SS254) [/00S]  D625 4822 130 33305 1SS176 (MA165, 1SS254) [/01S, BK01]  D626 4822 130 80839 S5688G  D627 4822 130 80839 S5688G [/00S]  D651 4822 130 82978 LTL4212N-071A [/01S, BK01]</p> <p>Q109 4822 126 90002 Posistor ZPA21BB251B1UA</p>		<p>L101 4822 157 63084 Ant coil AM  L102 4822 157 52716 OSC coil AM  L103 4822 157 53589 Choke coil 39mH  L104 4822 148 81095 I.F.T. coil AM  L105 4822 148 81269 I.F.T. coil FM</p> <p>L106, L107 4822 157 70021 MPX coil FM  L108 4822 156 10794 MPX coil [/00S, /01S]  ▲ L251 4822 280 70354 Relay, speaker  L252, L253 4822 157 70022 Air coil, speaker  ▲ L300 4822 280 70354 Relay, speaker [/01S, BK01]</p> <p>L301, L302 4822 157 70022 Air coil speaker [/01S, BK01]  L590 4822 148 81268 Pulse transformer [/00S]</p>

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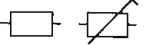


	<p>R103 4822 100 11351 Potm. trimmer 10K  ▲ R106, R112 4822 050 21501 Res. 150E 1/4W  R114 4822 100 11352 Potm. trimmer 22K  R119 4822 100 20681 Potm. trimmer 2.2K  R263, R264 4822 100 11386 Potm. trimmer 1K</p> <p>▲ R271, R272 4822 116 82049 Res. 0.18Ex2 3W  R280, R281 4822 050 22201 Res. 220E 1/4W  ▲ R282, R283 4822 053 11109 Res. 10E 2W  ▲ R287-R290 4822 115 90166 Res. fusible 10E 1/4W  ▲ R293, R294 4822 053 11681 Res. 680E 2W</p> <p>▲ R295, R296 4822 050 21501 Res. 150E 1/2W  R311, R312 4822 052 10109 Res. 10E 1/4W [/01S, BK01]  R313, R314 4822 050 22201 Res. 220E 1/4W [/01S, BK01]</p> <p>▲ R319 4822 115 90166 Res. fusible 10E 1/4W  ▲ R320 4822 050 24701 Res. 470E 1/2W</p> <p>▲ R323 4822 053 11151 Res. 150E 2W [/01S, BK01]  ▲ R323 4822 053 11479 Res. 47E 2W [/00S]  ▲ R325, R326 4822 116 60313 Res. fusible 10E 1/2W  ▲ R327 4822 113 80322 Res. 2.2M 1/2W [/01S, BK01]  ▲ R328 4822 116 60313 Res. fusible 10E 1/2W [/01S, BK01]</p> <p>R519 4822 101 30797 Potm. bass 10K (C)  R520 4822 101 30797 Potm. treble 10K (C)  R531 4822 101 30798 Potm. input bal. 100K (W) [/01S, BK01]  R532 4822 101 30798 Potm. balance 100K (W)  ▲ R617, R618 4822 050 21021 Res. 100E 1/4W</p> <p>R662 4822 101 30799 Potm. master vol 100K [/01S, BK01]  R662 4822 101 30801 Potm. master vol 100K (B)x2 [/00S]  R667 4822 050 21021 Res. 100E 1/4W [/01S, BK01]</p>		<p>C101 4822 125 60185 Cap. trimming 20pF  C320, C323 4822 122 30043 Cap. ceramic 0.01μF 500V  C321, C322 4822 124 23346 Cap. elect 8200μF 56V [/01S, BK01]  C321, C322 4822 124 80369 Cap. elect 6800μF 63V [/00S]  C324, C325 4822 124 80244 Cap. elect 4700μF 35V [/01S, BK01]</p> <p>▲ C337 4822 122 33276 Cap. ceramic 0.01μF 400V [BK01]  ▲ C338 4822 122 33276 Cap. ceramic 0.01μF 400V [/00S, /01S]  C402 4822 124 21737 Cap. elect 100μF 6.3V  C403 4822 124 23128 Cap. big elect 0.047F 5.5V  C404, C405 4822 124 21737 Cap. elect 100μF 6.3V</p> <p>C406 4822 124 41604 Cap. elect 0.1μF 50V  C407 4822 124 41246 Cap. elect 47μF 16V  C503, C504 4822 124 21894 Cap. elect 10μF 16V  C507, C508 4822 124 21898 Cap. elect 0.47μF 50V  C509, C510 4822 124 41246 Cap. elect 47μF 16V</p> <p>C513, C514 4822 124 41604 Cap. elect 0.1μF 50V  C515, C516 4822 124 21739 Cap. elect 22μF 16V  C517, C518 4822 124 21894 Cap. elect 10μF 16V  C519, C520 4822 124 41243 Cap. elect 2.2μF 50V  C521, C522 4822 124 21895 Cap. elect 0.22μF 50V</p> <p>C523, C524 4822 124 21736 Cap. elect 1μF 50V  C527, C528 4822 124 21898 Cap. elect 0.47μF 50V  C531-C534 4822 124 21894 Cap. elect 10μF 16V  C701, C702 4822 124 21894 Cap. elect 10μF 16V [/00S]  C707, C708 4822 124 21739 Cap. elect 22μF 16V [/00S]</p>
	<p>S101 4822 277 20968 Sean/ De-emphasis [/01S]  S300 4822 276 13289 Speaker  ▲ S320 4822 276 13285 Power [BK01]  ▲ S321 4822 276 13285 Power [/00S, /01S]  ▲ S322 4822 272 10322 Voltage selector [/01S]</p> <p>S401-S417 4822 276 13288 Functions [01S, BK01]  S408-S417 4822 276 13288 Functions [/00S]  S418, S419 4822 276 13213 Functions  S421, S422 4822 276 13213 Functions</p> <p>S423-S431 4822 276 13288 Functions [01S, BK01]  S424-S426 4822 276 13288 Functions [/00S]  S428-S431 4822 276 13288 Functions [/00S]  S432-S436 4822 276 13213 Functions  S437 4822 273 10249 Pulse switch</p> <p>S701 4822 273 10251 Source direct [/00S]</p>		

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ELECTRICAL PARTS LIST (FR940)

MISCELLANEOUS			
A101	4822 210 10397	V.H.F. tuner [BK01]	Q101 4822 130 62294 2SC1809S (P)
A101	4822 210 10372	V.H.F. tuner [/00S, /01S]	Q103 4822 130 60588 DTC114ES
F101	4822 242 81262	Ceramic filter SFP450F	Q104 4822 130 62386 JC557B
F102	4822 242 70911	Ceramic filter 10.7MHz [BK01]	Q106 4822 130 61227 DTA114ES
F102	4822 242 71135	Ceramic filter 10.7MHz [/00S, /01S]	Q151 4822 130 42121 2SK30A (Y)
F103	4822 242 71135	Ceramic filter 10.7MHz	Q152 4822 130 62295 JC547B
▲ F320	4822 253 30224	Fuse 4.0A 125V [BK01]	Q253, Q254 4822 130 60117 2SC3419 (Y)
▲ F321	4822 253 30416	Fuse T2.5A 250V [/00S]	▲ Q255, Q256 4822 130 63121 2SC3281 (O)
▲ F322	4822 253 30416	Fuse T2.5A 250V [/00S]	▲ Q257, Q258 4822 130 63119 2SA1302 (O)
▲ F323	4822 253 30409	Fuse T4.0A 250V [/01S]	Q259, Q260 4822 130 43233 2SC2240 (GR, BL)
▲ F323	4822 253 30224	Fuse 4.0A 125V [BK01]	Q261 4822 130 42951 2SA970 (GR, BL)
▲ F324	4822 253 30409	Fuse T4.0A 250V [/01S]	Q290 4822 130 61227 DTA114ES
▲ F324	4822 253 30224	Fuse 4.0A 125V [BK01]	Q291-Q293 4822 130 62295 JC547B
J101	4822 264 30255	Terminal, antenna [/00S]	Q402, Q404 4822 130 62386 JC557B
J101	4822 290 81537	Terminal, antenna [/01S, BK01]	Q403, Q405 4822 130 62295 JC547B
J104	4822 157 63605	Terminal, processor IN/OUT [/00S]	Q407-Q409 4822 130 61227 DTA114ES
J105	4822 264 10111	Short plug [/00S]	Q503-Q506 4822 130 61723 DTC323TS
J300	4822 266 30323	Terminal, speaker	Q571, Q572 4822 130 62295 JC547B
J309	4822 290 81525	Terminal, speaker 2P [/01S, BK01]	Q592 4822 130 60588 DTC114ES
J310	4822 290 81526	Terminal, speaker 4P [/01S, BK01]	Q628, Q629 4822 130 61227 DTA114ES
▲ J320	4822 267 31286	Jack, AC outlet [BK01]	Q753, Q754 4822 130 61723 DTC323TS
▲ J326, J327	4822 267 31194	Jack, AC outlet [/00S, /01S]	
J551, J552	4822 290 81524	Terminal, RCA pin 8P	
J553	4822 265 20542	Terminal, RCA pin 2P	D101 4822 125 50416 SVC342K
J554	4822 290 81519	Terminal, RCA pin 1P	D102, D103 4822 130 33305 1SS176 (MA165, 1SS254)
J570	4822 265 41264	Terminal, RCA pin 3P	D251, D252 4822 130 80837 HSS81TD
J571	4822 265 41263	Terminal, RCA pin 2P	D253, D254 4822 130 33305 1SS176 (MA165, 1SS254)
J585	4822 265 20555	Jack, headphone	D291 4822 130 33305 1SS176 (MA165, 1SS254)
J592	4822 265 41265	Terminal, RCA pin 3P [/00S]	D294, D301 4822 130 33305 1SS176 (MA165, 1SS254)
Q406	4822 130 83197	IR receiver GP1U58XP	D295 4822 130 42848 PTH9MO4BB222TS2F333
V401	4822 130 91145	Display unit	D296 4822 130 43564 PTH9MO4BE222TS2F333
X101	4822 242 81248	Ceramic resonator CSB456F15	▲ D320 4822 130 33132 D5FBO2L20
X150	4822 242 72333	Crystal 7.2MHz	▲ D321 4822 130 31007 S4VB-20
X401	4822 242 73696	Ceramic resonator 8.00MHz	▲ D322, D323 4822 130 80839 S5688G
X625	4822 242 81271	Ceramic resonator 3.27MHz [/01S, BK01]	D324 4822 130 81729 MTZJ33D
			D325, D326 4822 130 80839 S5688G
			D401-D403 4822 130 33305 1SS176 (MA165, 1SS254)
			D404-D406 4822 130 82978 LTL4212N-71A
			D407-D416 4822 130 33305 1SS176 (MA165, 1SS254)
			D501, D502 4822 130 80318 RD6.8JB2, MTZJ6.8C
			D590, D591 4822 130 33305 1SS176 (MA165, 1SS254)
			D625 4822 130 33305 1SS176 (MA165, 1SS254)
			D626 4822 130 80839 S5688G
			D651 4822 130 82978 LTL4212N-071A [/13S, BK01]
			Q109 4822 126 90002 Posistor ZPA21BB251B1UA

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Q102	4822 209 31001	LA1851N	R103 4822 100 11351 Potm. trimmer 10K
Q105	4822 209 83631	NJM4558DD	▲ R106, R112 4822 050 21501 Res. 150E 1/4W
Q150	4822 209 73435	LC7218	R114 4822 100 11352 Potm. trimmer 22K
▲ Q251, Q252	4822 209 31613	μPC1342V	R119 4822 100 20681 Potm. trimmer 2.2K
Q262	4822 209 83312	TA7317P	R263, R264 4822 100 11386 Potm. trimmer 1K
▲ Q301, Q302	4822 209 73727	μPC1188H	▲ R271, R272 4822 116 82049 Res. 0.18Ex2 3W
▲ Q320	4822 209 70385	L78MR05	R280, R281 4822 050 22201 Res. 220E 1/4W
▲ Q321	4822 209 61848	NJM7815FA	▲ R282, R283 4822 053 11109 Res. 10E 2W
▲ Q322	4822 209 83828	NJM7915FA	▲ R287-R290 4822 115 90166 Res. fusible 10E 1/4W
▲ Q323	4822 209 31631	NJM7805FA	▲ R293, R294 4822 053 11681 Res. 680E 2W
Q351	4822 209 73064	NJM2068DD	▲ R295, R296 4822 050 21501 Res. 150E 1/2W
Q352-Q355	4822 209 83631	NJM4558DD	R311, R312 4822 052 10109 Res. 10E 1/4W
Q356	4822 209 72748	LC7821	R313, R314 4822 050 22201 Res. 220E 1/4W
Q401	4822 209 31556	TMP47C1670AN H054	▲ R319 4822 115 90166 Res. fusible 10E 1/2W
Q501, Q502	4822 209 70044	NJM2058D	▲ R320 4822 050 24701 Res. 470E 1/2W
Q507	4822 209 73064	NJM2068DD	▲ R323 4822 053 11151 Res. 150E 2W
Q508	4822 209 71783	LC7522	▲ R325, R326 4822 116 60313 Res. fusible 10E 1/2W
Q551	4822 209 72748	LC7821	▲ R327 4822 113 80322 Res. 2.2M 1/2W [BK01]
Q552, Q570	4822 209 73731	LC7823	▲ R328 4822 116 60313 Res. fusible 10E 1/2W
Q590	4822 209 72323	TC74HCU04AP	R519 4822 101 30797 Potm. bass 10K (C)
Q591	4822 209 61688	TC74HC02AP	R520 4822 101 30797 Potm. treble 10K (C)
Q601	4822 209 83631	NJM4558DD	R531 4822 101 30798 Potm. input bal. 100K (W)
Q625	4822 209 31572	NJM2175L	R532 4822 101 30798 Potm. balance 100K (W)
Q626	4822 209 31573	M50198P	▲ R617, R618 4822 050 21021 Res. 100E 1/4W
Q627	4822 209 31574	μPD6345C	R662 4822 101 30799 Potm. master vol 100K
Q630	4822 209 73287	LB1630	R667 4822 050 21021 Res. 100E 1/4W
Q751	4822 209 31575	TC9213P	
Q752	4822 209 83631	NJM4558DD	
C101	4822 125 60185	Cap. trimming 20pF	L101 4822 157 63084 Ant coil AM
C320, C323	4822 122 30043	Cap. ceramic 0.01μF 500V	L102 4822 157 52716 OSC coil AM
C321, C322	4822 124 80254	Cap. elect 6800μF 71V	L103 4822 157 53589 Choke coil 39mH
C324, C325	4822 124 80244	Cap. elect 4700μF 35V	L104 4822 148 81095 I.F.T. coil AM
▲ C337	4822 122 33276	Cap. ceramic 0.01μF 400V [/13S, BK01]	L105 4822 148 81269 I.F.T. coil FM
▲ C338	4822 122 33276	Cap. ceramic 0.01μF 400V [/00S]	L106, L107 4822 157 70021 MPX coil FM
C402	4822 124 21737	Cap. elect 100μF 6.3V	L108 4822 156 10794 MPX coil FM [/00S]
C403	4822 124 23128	Cap. big elect 0.047F 5.5V	▲ L251 4822 280 70354 Relay, speaker
C404, C405	4822 124 21737	Cap. elect 100μF 6.3V	L252, L253 4822 157 70022 Air coil, speaker
C406	4822 124 41604	Cap. elect 0.1μF 50V	▲ L300 4822 280 70354 Relay, speaker
C407	4822 124 41246	Cap. elect 47μF 16V	L301, L302 4822 157 70022 Air coil, speaker
C503, C504	4822 124 21894	Cap. elect 10μF 16V	L590 4822 148 81268 Pulse transformer
C507, C508	4822 124 21898	Cap. elect 0.47μF 50V	
C509, C510	4822 124 41246	Cap. elect 47μF 16V	S300 4822 276 13289 Speaker
C513, C514	4822 124 41604	Cap. elect 0.1μF 50V	▲ S320 4822 276 13285 Power [/13S, BK01]
C515, C516	4822 124 21739	Cap. elect 22μF 16V	▲ S321 4822 276 13285 Power [/00S]
C517, C518	4822 124 21894	Cap. elect 10μF 16V	▲ S322 4822 272 10325 Voltage selector [/13S]
C519, C520	4822 124 41243	Cap. elect 2.2μF 50V	S401-S417 4822 276 13288 Functions
C521, C522	4822 124 21895	Cap. elect 0.22μF 50V	S418-S422 4822 276 13213 Functions
C523, C524	4822 124 21736	Cap. elect 1μF 50V	S423-S431 4822 276 13288 Functions
C527, C528	4822 124 21898	Cap. elect 0.47μF 50V	S432-S436 4822 276 13213 Functions
C531-C534	4822 124 21894	Cap. elect 10μF 16V	S437 4822 273 10249 Pulse switch

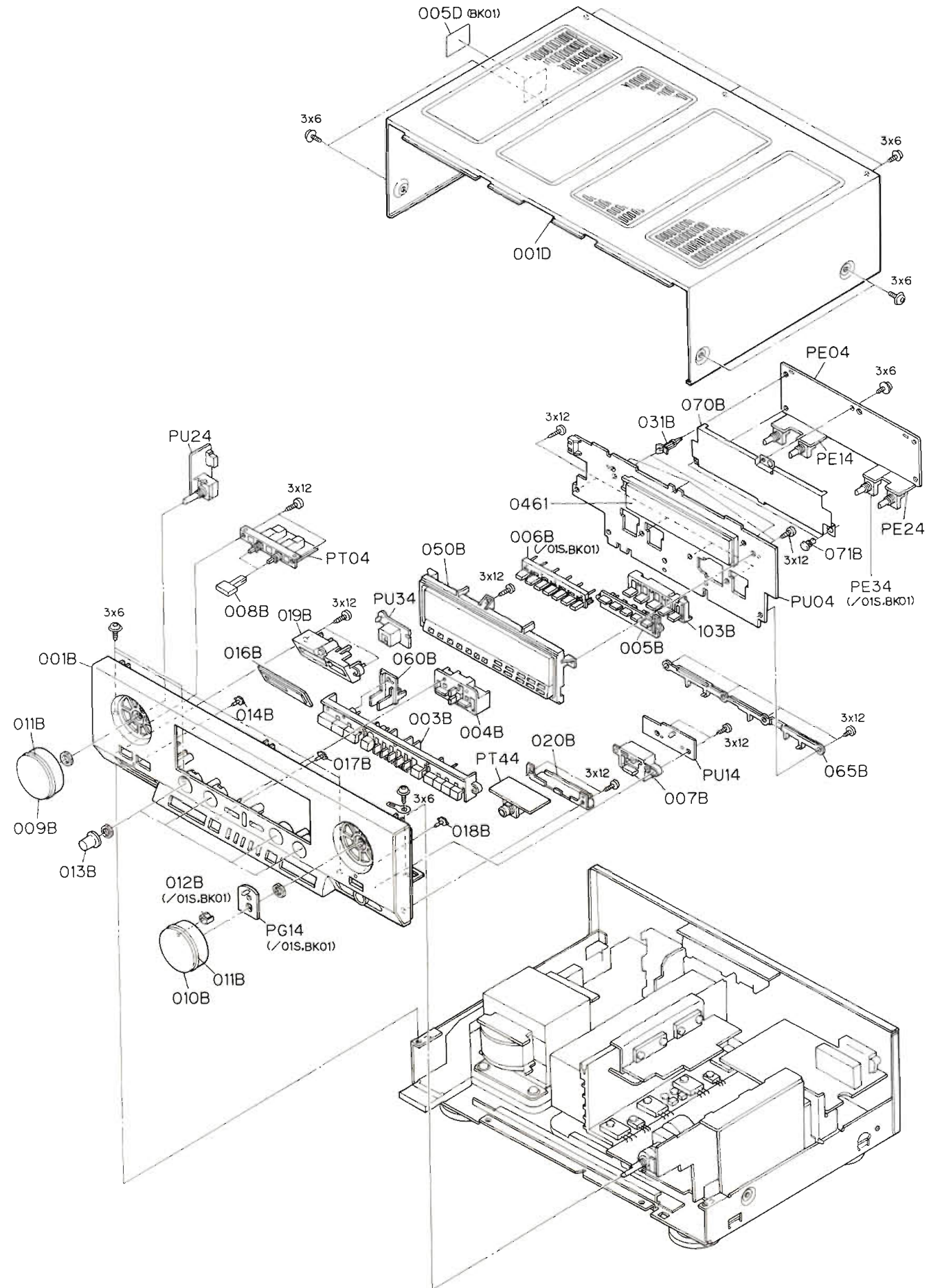


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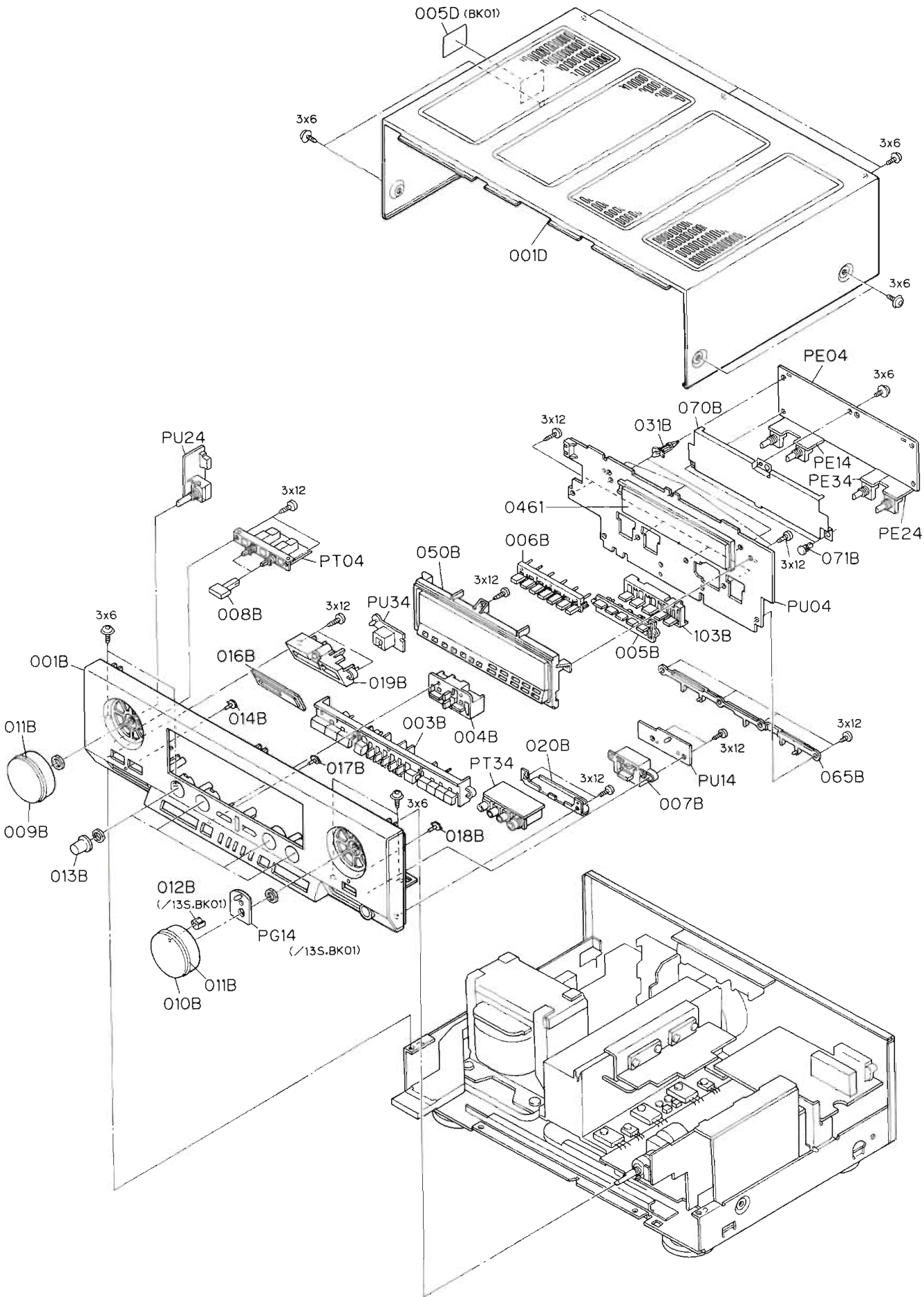
A101	4822 210 10372	V.H.F. tuner [/00S]
A101	4822 210 10397	V.H.F. tuner [/13S,BK01]
F101	4822 242 81262	Ceramic filter SFP450F
F102	4822 242 71135	Ceramic filter 10.7MHz [00S]
F102	4822 242 70911	Ceramic filter 10.7MHz [/13S, BK01]
F103	4822 242 71135	Ceramic filter 10.7MHz
▲ F320	4822 253 30411	Fuse 5.0A 125V [BK01]
▲ F320	4822 253 30397	Fuse T5.0A 250V [/13S]
▲ F321	4822 253 30416	Fuse T2.5A 250V [00S]
▲ F322	4822 253 30416	Fuse T2.5A 250V [00S]
▲ F323	4822 253 30409	Fuse T4.0A 250V [00S, /13S]
▲ F323	4822 253 30224	Fuse 4.0A 125V [BK01]
▲ F324	4822 253 30409	Fuse T4.0A 250V [00S, /13S]
▲ F324	4822 253 30224	Fuse 4.0A 125V [BK01]
J101	4822 264 30255	Terminal, antenna [/00S]
J101	4822 290 81537	Terminal, antenna [/13S, BK01]
J300	4822 266 30323	Terminal, speaker 8P
J309	4822 290 81525	Terminal, speaker 2P
J310	4822 290 81526	Terminal, speaker 4P
▲ J320	4822 267 31286	Jack, AC outlet [BK01]
▲ J326, J327	4822 267 31194	Jack, AC outlet [/00S]
J551, J552	4822 290 81524	Terminal, RCA pin 8P
J553	4822 265 20542	Terminal, RCA pin 2P
J554	4822 290 81519	Terminal, RCA pin 1P
J570	4822 265 41264	Terminal, RCA pin 3P
J571	4822 265 41263	Terminal, RCA pin 2P
J580	4822 265 20555	Jack, headphone
J582	4822 290 81521	Terminal, RCA pin 1P
J583	4822 290 81522	Terminal, RCA pin 1P
J584	4822 290 81523	Terminal, RCA pin 1P
J592	4822 265 41265	Terminal, RCA pin 3P
Q406	4822 130 83197	IR receiver GP1U58XP
V401	4822 130 91145	Display unit
X101	4822 242 81248	Ceramic resonator CSB456F15
X150	4822 242 72333	Crystal 7.2MHz
X401	4822 242 73696	Ceramic resonator 8.00MHz
X625	4822 242 81271	Ceramic resonator 3.27MHz

001B	4822 426 51565	Front panel [/01S, BK01]
	4822 426 51566	Front panel [/00S]
003B	4822 410 62061	Button, nose[/01S, BK01]
	4822 410 62067	Button, nose [/00S]
004B	4822 410 62062	Button, cursor
005B	4822 410 62063	Button, 10key upper
006B	4822 410 62064	Button, surround [/01S, BK01]
007B	4822 410 62065	Button, muting
008B	4822 410 62066	Button, speaker
009B	4822 413 31708	Knob, selector [/01S, BK01]
	4822 413 41727	Knob, selector [/00S]
010B	4822 413 41733	Knob, volume [/01S, BK01]
	4822 413 41732	Knob, volume [/00S]
011B	4822 532 21449	Rubber ring
012B	4822 381 11349	Lens, pointer [/01S, BK01]
013B	4822 413 41704	Knob, tone/ balance
014B	4822 381 11311	Lens, standby
015B	4822 462 71808	Cap, power knob
016B	4822 381 11347	Lens, IR sensor
017B	4822 381 11311	Lens, auto selector
018B	4822 381 11311	Lens, muting
050B	4822 454 12845	Escutcheon assembly, window [/01S, BK01]
	4822 454 12879	Escutcheon assembly, window [/00S]
103B	4822 410 62069	Button, 10key lower
004G	4822 462 41887	Buffer, leg
005G	4822 462 41888	Leg
022G	4822 404 21245	Link, power
912G	4822 532 60948	Bushing, AC cord
0461	4822 256 91966	Holder, FTD
▲ F001	4822 253 30408	Fuse T2.0A 250V [/01S]
▲ J001	4822 256 30233	Fuse holder [/01S]
J053	4822 290 40297	Terminal, GND
▲ L001	4822 146 21683	Power transformer [/00S]
	4822 146 21696	Power transformer [/01S]
	4822 146 21682	Power transformer [BK01]
001T	4822 736 21472	User manual [/01S]
	4822 736 21471	User manual [BK01]
	4822 736 21474	User manual [/00S]
Z001	4822 218 10468	Remote control unit, RC6640 [/00S]
	4822 218 10469	Remote control unit, RC6640 [/01S, BK01]
Z003	4822 157 70019	AM loop antenna
Z005	4822 303 50055	FM ext. antenna [/00S]
	4822 303 30314	FM ext. antenna [/01S, BK01]
Z006	4822 264 30265	Ant. adaptor [/01S, BK01]
Z007	4822 253 30409	Fuse, 4A 250V [/01S]

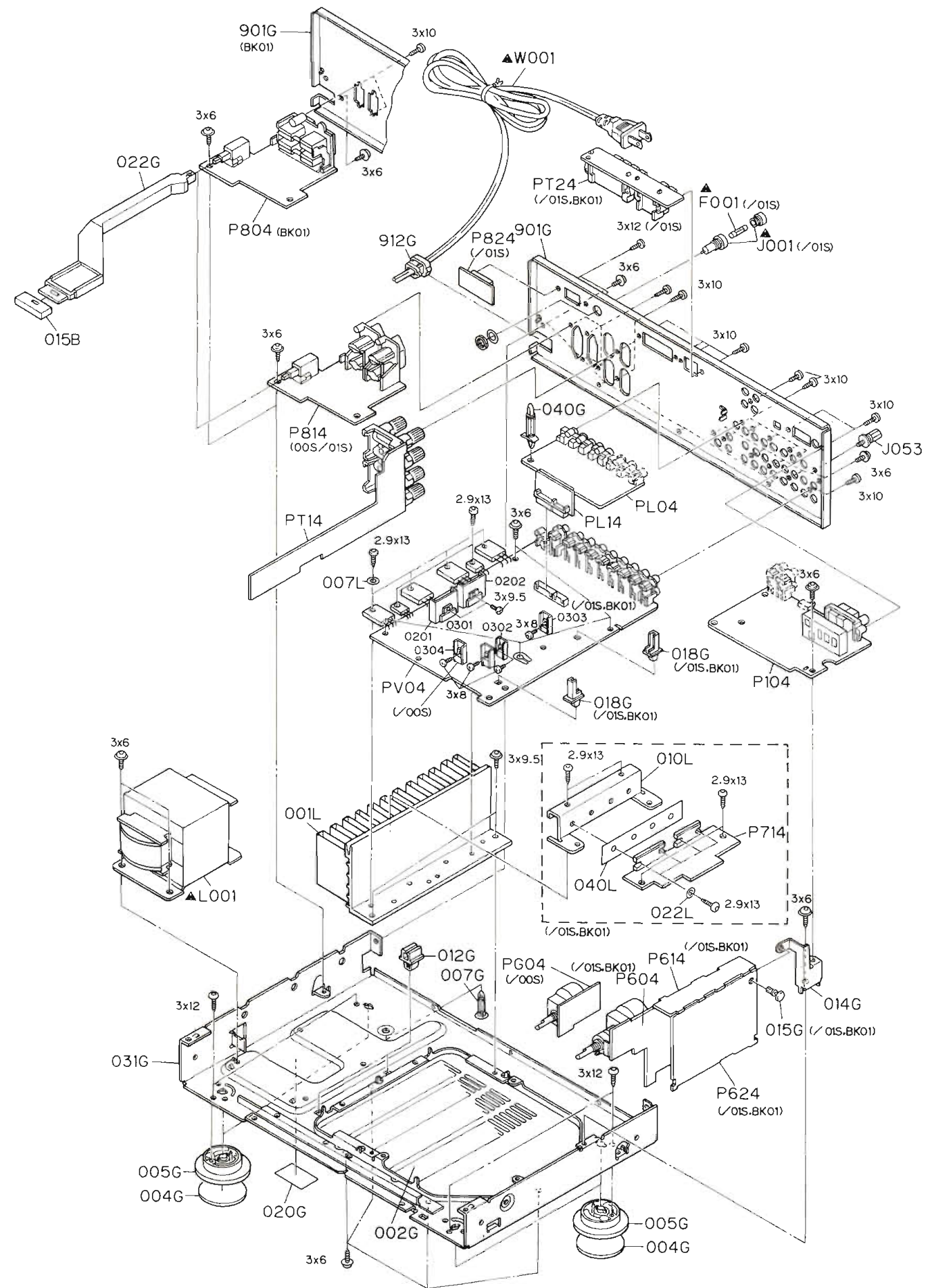
Accessories



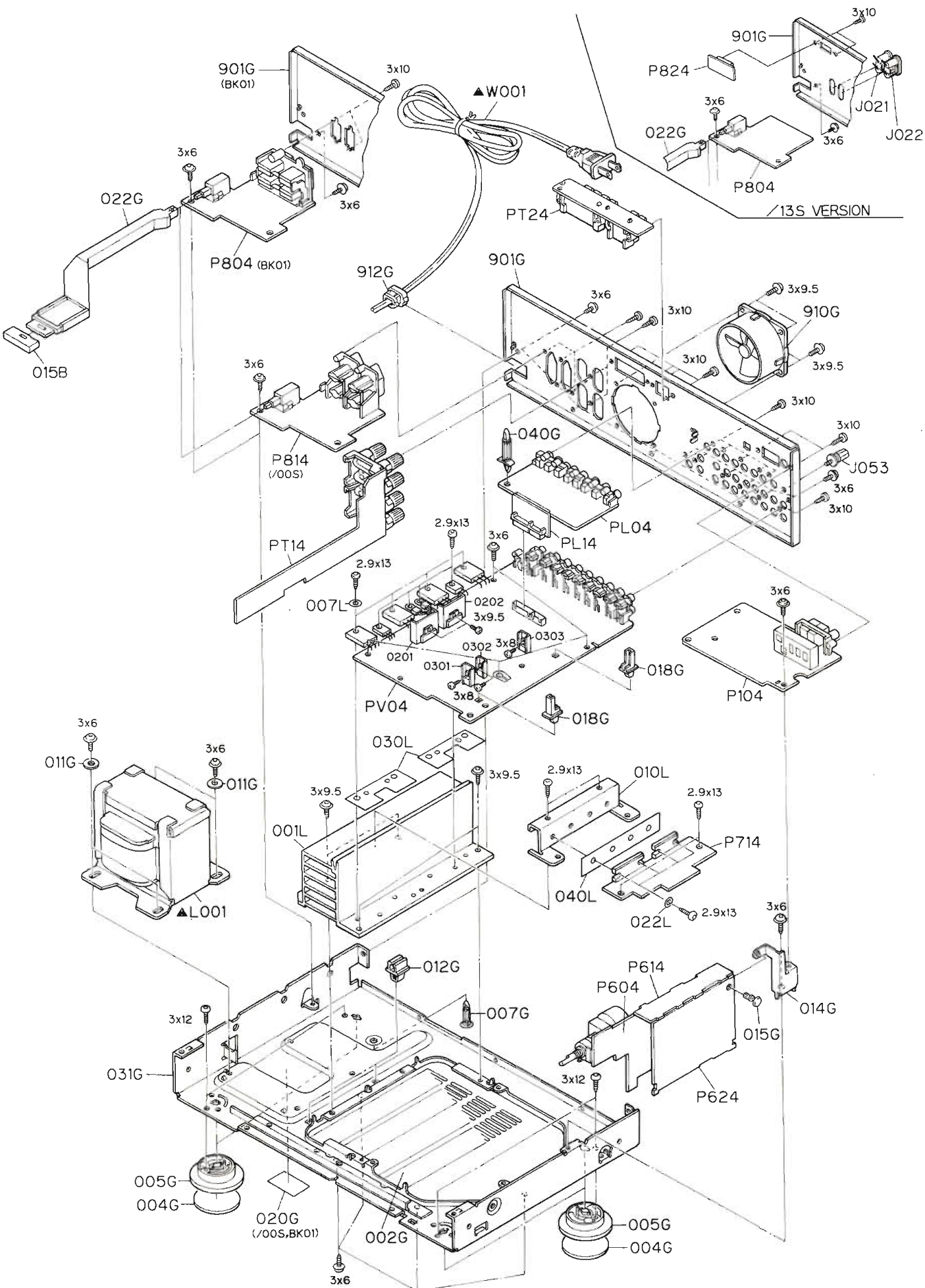
EXPLODED VIEW AND PARTS LIST (FR940)



(FR930)



(FE940)



(FR940)

001B	4822 426 51564	Front panel [/00S, BK01]
	4822 426 51599	Front panel [/13S]
003B	4822 410 62061	Button, nose
004B	4822 410 62068	Button, cursor
005B	4822 410 62063	Button, 10key upper
006B	4822 410 62064	Button, surround mode
007B	4822 410 62065	Button, muting
008B	4822 410 62066	Button, speaker
009B	4822 413 41727	Knob, selector [/00S]
	4822 413 31708	Knob, selector [/13S, BK01]
010B	4822 413 41732	Knob, volume [/00S]
	4822 413 41733	Knob, volume [/13S, BK01]
011B	4822 532 21449	Rubber, ring
012B	4822 381 11349	Lens, pointer [/13S, BK01]
013B	4822 413 41704	Knob, tone/balance
014B	4822 381 11311	Lens, standby
015B	4822 462 71808	Cap, power knob
016B	4822 381 11347	Lens, IR sensor
017B	4822 381 11311	Lens, auto selector
018B	4822 381 11311	Lens, muting
050B	4822 454 12845	Escutcheon assembly, window [/00S, BK01]
	4822 454 12877	Escutcheon assembly, window [/13S]
103B	4822 410 62069	Button, 10key lower
004G	4822 462 41887	Buffer, leg
005G	4822 462 41888	Leg
022G	4822 404 21245	Link, power switch
910G	4822 361 10653	Fan
912G	4822 532 60948	Bushing, AC cord
0461	4822 256 91966	Holder, FTD
▲ J021	4822 267 31573	AC outlet [/13S]
▲ J022	4822 267 31573	AC outlet [/13S]
J053	4822 290 40297	Terminal, GND
▲ L001	4822 146 21687	Power transformer [/00S]
	4822 146 21695	Power transformer [/13S]
	4822 146 21685	Power transformer [BK01]
<b>Accessories</b>		
001T	4822 736 21473	User manual [/00S]
	4822 736 21577	User manual [/13S]
	4822 736 21477	User manual [BK01]
Z001	4822 218 10469	Remote control unit, RC6624 [/00S, BK01]
	4822 218 10487	Remote control unit, RC6624 [/13S]
Z003	4822 157 70019	AM loop antenna
Z005	4822 303 50055	FM ext. antenna [/00S]
	4822 303 30314	FM ext. antenna [/13S, BK01]
Z006	4822 264 30265	Ant. adaptor [/13S, BK01]

# Service Information

**FAULT:** When in cursor mode ACOUSTIC with setting LEVEL 10dB  
FREQ 150Hz  
the receiver is switched to standby and then reactivated the volume is reduced by more than 20dB.

To achieve the original sound level one has to switch the source select to another input and back.

**CAUSE:** When the power is switched off and on after the acoustic bass was set at 150Hz / +10dB, switches (pins 7 - 9 & 22 - 24) in the selector IC Q552 (LC7823) are turned on. Unfortunately pins 7 and 24 which are "NOT USE" are connected to ground, short-circuiting the output of the selector.

**SOLUTION:** Rework the PV04 pc board by cutting the copper tracks between pin 7 & ground and pin 24 and ground (See figure 1).

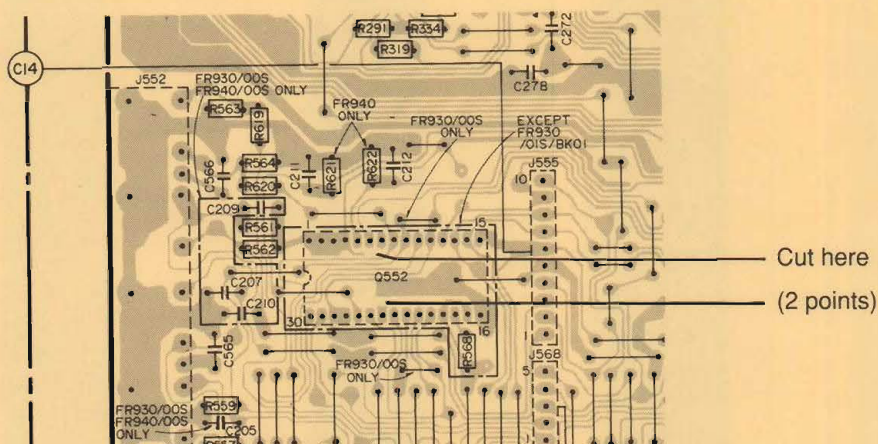


Figure 1