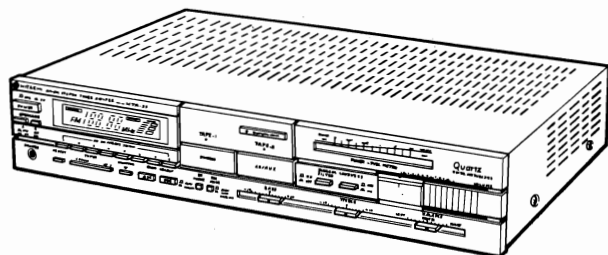
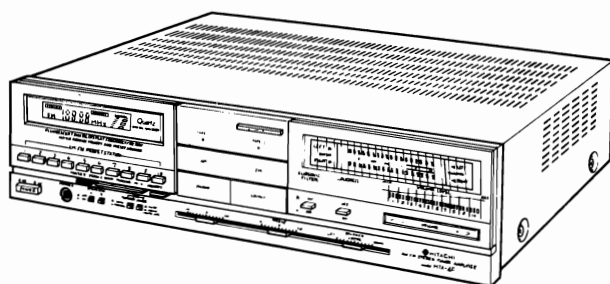




HITACHI

SERVICE MANUAL

TY
No. 378 EF
HTA-3F
HTA-4F

HTA-3F

HTA-4F

CONTENTS · SOMMAIRE

SPECIFICATIONS ·	
CARACTERISTIQUES TECHNIQUES	2,3
DISASSEMBLY AND REPLACEMENT ·	
DEMONTAGE ET REMONTAGE	4~7
GENERAL ALIGNMENT INSTRUCTION ·	
INSTRUCTIONS GENERALES	8
FM TUNER ALIGNMENT ·	
REGLAGE DE TUNER FM	9
AM TUNER ALIGNMENT ·	
REGLAGE DE TUNER AM	10
BLOCK DIAGRAM · SCHEMA	11
CIRCUIT DIAGRAM · PLAN DE CIRCUIT	12,14,16,18
PRINTED WIRING BOARD · PLAN DE BASE	13,15,17
TROUBLE SHOOTING ·	
ANALYSE DE PANNES	19 ~ 23
FRONT AND REAR PANEL ·	
PANNEAUX AVANT ET ARRIERE	24,25
REPLACEMENT PARTS LIST ·	
TABLEAU DE PIÈCE	26 ~ 33

CAUTION FOR U.S.A.

Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with Δ in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

PRÉCAUTIONS DE SÉCURITÉ

Les précautions suivantes doivent être observées chaque fois qu'une réparation doit être faite.

1. Etant donné que de nombreux composants de l'appareil possèdent des caractéristiques relatives à la sécurité, utiliser uniquement des pièces de rechange d'origine Hitachi pour effectuer un remplacement. Ceci se rapporte notamment aux pièces critiques du bloc d'alimentation qui ne doivent en aucun cas être remplacées par celles d'autres fabricants. Les pièces critiques sont accompagnés du symbole Δ dans le schéma de montage et sur le schéma de plaque de câblage.
2. Avant de retourner l'appareil réparé au client, le technicien doit procéder à un essai complet pour s'assurer qu'il ne présente aucun danger de chocs électriques.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

STEREO TUNER AMPLIFIER

July 1983
TOYOKAWA WORKS

SPECIFICATIONS**FM SECTION**

Frequency range	87.9 – 107.9 MHz (100 kHz spacing)
Usable sensitivity (IHF)	Mono : 13.2 dBf
50 dB quieting sensitivity	Mono : 20.2 dBf (5.6 μ V)
Signal-to-noise ratio (at 65 dBf)	Stereo : 38.2 dBf (44.7 μ V)
Total harmonic distortion (at 65 dBf)	Stereo : 70 dB (IHF)
1 kHz	
Frequency response	Mono : 0.15 %
Selectivity	Stereo : 0.25 %
Stereo separation	30 Hz – 12 kHz $\pm$ 2 dB
Antenna input	53 dB ($\pm$ 400 kHz IHF)
	40 dB (1 kHz)
	300 ohms balanced, 75 ohms unbalanced

AM SECTION

Frequency range	530 – 1,620 kHz (10 kHz spacing)
Sensitivity	15 μ V (IHF, ext. Antenna)
Selectivity	38 dB
Signal-to-noise ratio (at 50 mV)	45 dB
Antenna	Loop antenna and external terminal

AUDIO SECTION

RMS Power (Both channels driven)	30 Watts [HTA-3F] 40 Watts [HTA-4F] per channel, min RMS, at 8 ohms from 20 Hz to 20 kHz, with less than 0.05% [HTA-3F], 0.01% [HTA-4F] total harmonic distortion.
	30 W + 30 W (8 ohms, 1 kHz, T.H.D. 0.05 % IHF) [HTA-3F]
	45 W + 45 W (8 ohms, 1 kHz, T.H.D. 0.01 % IHF) [HTA-4F]
Power bandwidth	10 Hz – 30 kHz (1/2 RMS power, T.H.D. 0.05 % at 8 ohms) [HTA-3F]
	20 Hz – 30 kHz (1/2 RMS power, T.H.D. 0.01 % at 8 ohms) [HTA-4F]
Frequency characteristics	10 Hz – 40 kHz ($\pm$ 2 dB) [HTA-3F]
	10 Hz – 60 kHz ($\pm$ 2 dB) [HTA-4F]
Total harmonic distortion (at rated output)	Less than 0.05 % [HTA-3F]
	Less than 0.01 % [HTA-4F]
Intermodulation distortion (at 1/2 rated output)	Less than 0.05 % [HTA-3F]
	Less than 0.01 % [HTA-4F]
Input sensitivity/impedance (at 30 W output, 1 kHz)	
PHONO	2.5 mV/47 k-ohms [HTA-3F]
	2.5 mV/50 k-ohms [HTA-4F]
TAPE 1,2 : CD/VIDEO/AUX	150 mV/35 k-ohms [HTA-3F]
	150 mV/50 k-ohms [HTA-4F]
Max. input level (PHONO)	140 mV (T.H.D. 0.05 % at 1 kHz) [HTA-3F]
	150 mV (T.H.D. 0.02 % at 1 kHz) [HTA-4F]
Output level at TAPE OUT	150 mV (PHONO at rated input)
	150 mV (FM 400 Hz, 30 % mod. input 1 mV)
	150 mV (AM 400 Hz, 30 % mod. input 5 mV/m)
Signal-to-noise ratio (IHF, A network, rated power)	
PHONO	70 dB [HTA-3F]
	71 dB [HTA-4F]
TAPE 1,2 : CD/VIDEO/AUX	95 dB
Damping factor	30 (1 kHz, 8 ohms) [HTA-3F]
	50 (1 kHz, 8 ohms) [HTA-4F]
Equalizer	RIAA $\pm$ 0.5 dB
Bass control (100 Hz)	$\pm$ 9 dB [HTA-3F]
	$\pm$ 8 dB [HTA-4F]
Treble control (10 kHz)	$\pm$ 8 dB
Loudness control (100 Hz/10 kHz)	+6 dB/+5 dB/(100 Hz/10 kHz) [HTA-3F]
	+7 dB/+5 dB/(100 Hz/10 kHz) [HTA-4F]
Subsonic filter	–12 dB/oct. (20 Hz)
FM muting	Provided
Tape monitor	Provided (2 tape deck facilities)
Tape copy	Provided (1 $\rightarrow$ 2)
Speaker switch	A, B, A + B, OFF
AC outlet	1 (100 W unswitched)
Power requirements	AC 120 V 60 Hz
Power consumption	150 W (at 1/3 rated output) [HTA-3F]
	190 W (at 1/3 rated output) [HTA-4F]
Dimensions	435(W) $\times$ 83(H) $\times$ 292(D) mm [HTA-3F]
	435(W) $\times$ 110(H) $\times$ 347(D) mm [HTA-4F]
Weight	5.5 kg [HTA-3F]
	7.2 kg [HTA-4F]

CARACTERISTIQUES TECHNIQUES

SECTION FM

Gamme de fréquences
Sensibilité utile (IHF)
Seuil de sensibilité 50 dB
Rapport signal/bruit (à 65 dBf)
Distorsion harmonique totale (à 65 dBf)
 1 kHz

87,9 – 107,9 MHz (intervalle 100 kHz)
 Mono : 13,2 dBf
 Mono : 20,2 dBf (5,6 μ V)
 Mono : 76 dB (IHF)
 Stéréo : 38,2 dBf (44,7 μ V)
 Stéréo : 70 dB (IHF)

Mono : 0,15 %
 Stéréo : 0,25 %

Courbe de réponse

30 Hz – 12 kHz ± 2 dB

Sélectivité

53 dB (± 400 kHz IHF)

Séparation stéréo

40 dB (1 kHz)

Entrée d'antenne

300 ohms équilibrée, 75 ohms non équilibrée

SECTION AM

Gamme de fréquences
Sensibilité
Sélectivité
Rapport signal/bruit (à 50 mV)
Antenne

530 – 1,620 kHz (intervalle 10 kHz)
 15 μ V (IHF, antenne ext.)
 38 dB
 45 dB
 Antenne boucle et borne extérieure

SECTION AUDIO

Puissance efficace

30 Watts [HTA-3F] 40 Watts [HTA-4F] par canal, min. efficace, à 8 ohms de 20 Hz à 20 kHz, avec une distorsion harmonique total inférieure à 0,05 % [HTA-3F] 0,01 % [HTA-4F]

Largeur de bande

30 W + 30 W (8 ohms, 1 kHz, DHT 0,05 % IHF) [HTA-3F]
 45 W + 45 W (8 ohms, 1 kHz, DHT 0,01 % IHF) [HTA-4F]

Caractéristiques de fréquence

10 Hz – 30 kHz (Puissance efficace 1/2, DHT 0,05 % à 8 ohms) [HTA-3F]
 20 Hz – 30 kHz (Puissance efficace 1/2, DHT 0,01 % à 8 ohms) [HTA-4F]

Distorsion harmonique totale
 (à la sortie nominale)

10 Hz – 40 kHz (± 2 dB) [HTA-3F]
 10 Hz – 60 kHz (± 2 dB) [HTA-4F]

Distorsion d'intermodulation
 (à 1/2 de la sortie nominale)

Inférieure à 0,05 % [HTA-3F]
 Inférieure à 0,01 % [HTA-4F]

Impédance/sensibilité d'entrée
 (avec sortie 30 W, 1 kHz)
PHONO

Inférieure à 0,05 % [HTA-3F]
 Inférieure à 0,02 % [HTA-4F]

2,5 mV/47-ohms [HTA-3F]

2,5 mV/50 k-ohms [HTA-4F]

150 mV/35 k-ohms [HTA-3F]

150 mV/50 k-ohms [HTA-4F]

140 mV (DHT 0,05 % à 1 kHz) [HTA-3F]

150 mV (DHT 0,01 % à 1 kHz) [HTA-4F]

150 mV (PHONO à l'entrée nominale)

150 mV (FM 400 Hz, 30 % mod. entrée 1 mV)

150 mV (AM 400 Hz, 30 % mod. entrée 5 mV/m)

TAPE 1-2 : CD/VIDEO/AUX

Niveau d'entrée max.

Niveau de sortie à TAPE OUT

Rapport signal/bruit
 (IHF, réseau A, puissance nominale)
PHONO

70 dB [HTA-3F]

71 dB [HTA-4F]

95 dB

30 (1 kHz, 8 ohms) [HTA-3F]

50 (1 kHz, 8 ohms) [HTA-4F]

RIAA $\pm 0,5$ dB

± 9 dB [HTA-3F]

± 8 dB [HTA-4F]

± 8 dB

TAPE 1-2 : CD/VIDEO/AUX

Facteur d'amortissement

Egalisateur

Commande des graves (100 Hz)

Commande des aigus (10 kHz)

Commande de correction physiologique
 (100 Hz/10 kHz)

+6 dB/5 dB/(100 Hz/10 kHz) [HTA-3F]

+7 dB/5 dB/(100 Hz/10 kHz) [HTA-4F]

-12 dB/oct. (20 Hz)

Fournie

Fourni (pour une installation de 2 magnéto-phones)

Fournie (1 → 2)

A, B, A+B, OFF

1 (100 W non commutable)

CA 120 V 60 Hz

150 W (au 1/3 de la sortie nominale) [HTA-3F]

190 W (au 1/3 de la sortie nominale) [HTA-4F]

435(L) $\times$ 83(H) $\times$ 292(P) mm [HTA-3F]

435(L) $\times$ 110(H) $\times$ 347(P) mm [HTA-4F]

5,5 kg [HTA-3F]

7,2 kg [HTA-4F]

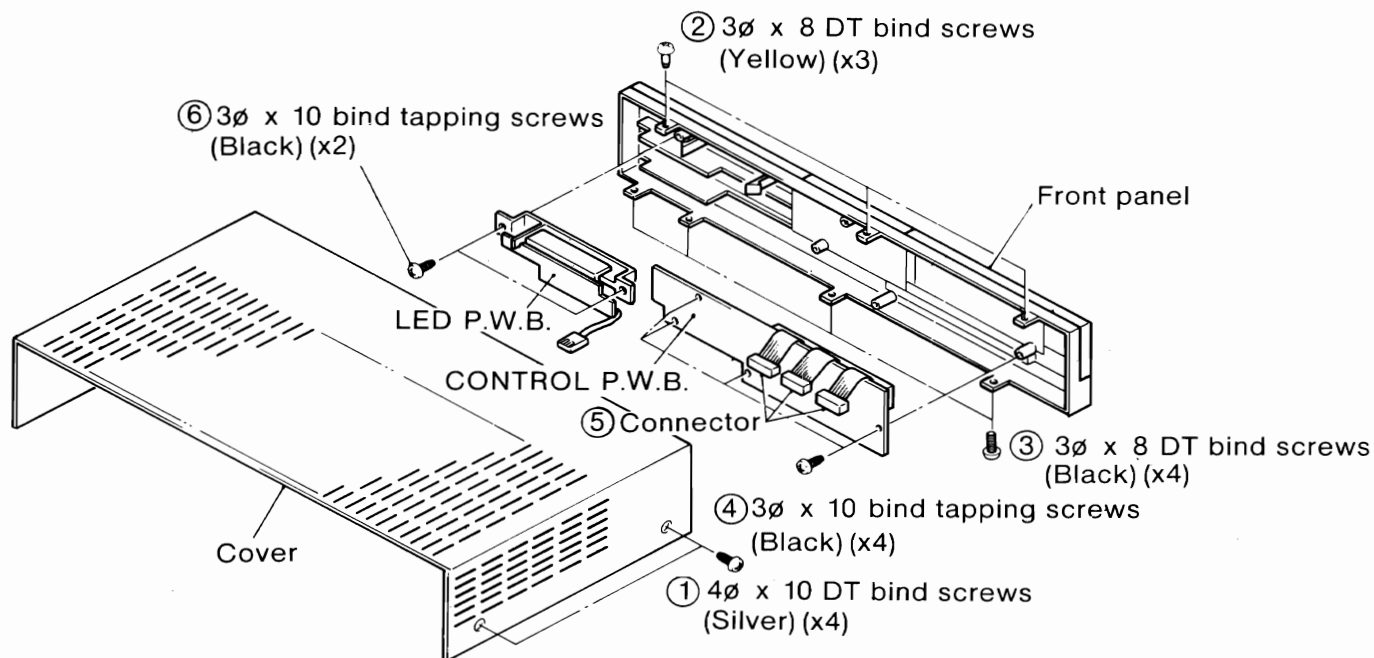
Dimensions

Poides

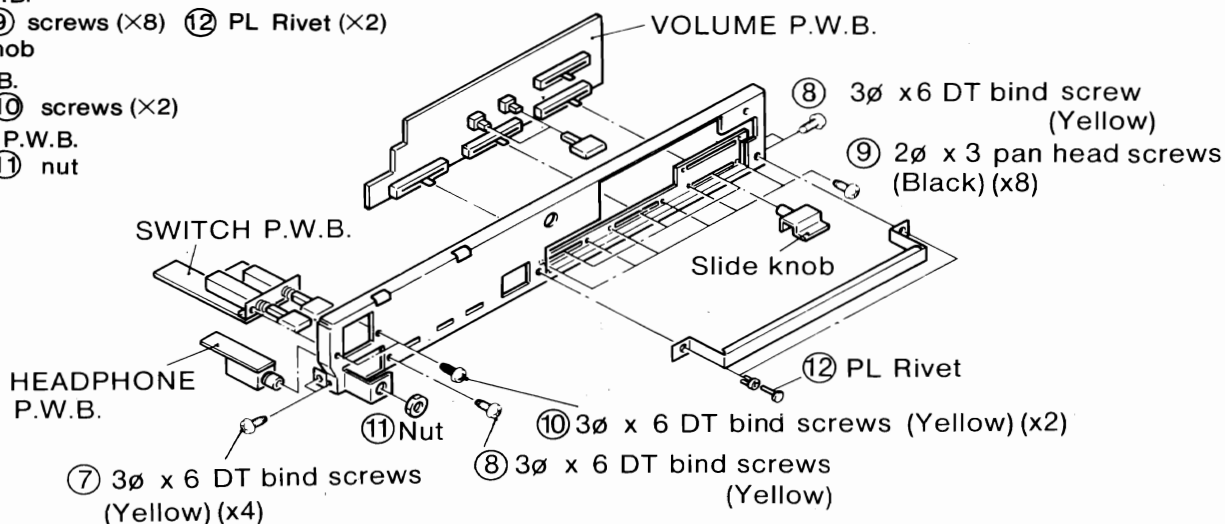
Les caractéristiques techniques et la présentation peuvent être modifiées sans préavis pour des raisons d'améliorations.

DISASSEMBLY AND REPLACEMENT · DEMONTAGE ET REMONTAGE
HTA-3F

1. Cover
 - Remove ① screws (×4)
2. Front panel
 - Remove ② screws (×3) and ③ screws (×4)
3. Control P.W.B.
 - Remove ④ screws (×4) and ⑤ connector (×3)
4. LED P.W.B.
 - Remove ⑥ screws (×2)



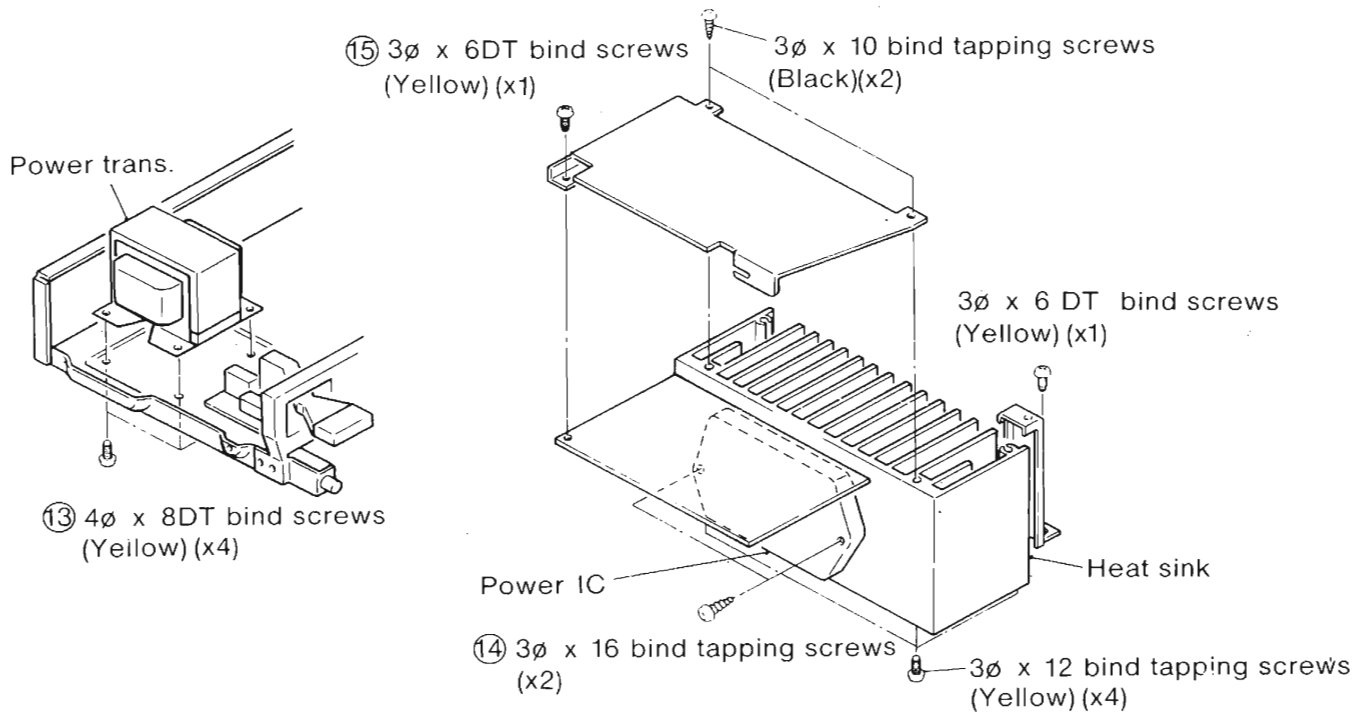
5. Mecha plate
 - Remove ⑦ screws (×4) and ⑧ 3ø × 6 DT bind screws
6. Volume P.W.B.
 - Remove ⑨ screws (×8) ⑫ PL Rivet (×2) and Slide knob
7. Switch P.W.B.
 - Remove ⑩ screws (×2)
8. Headphone P.W.B.
 - Remove ⑪ nut



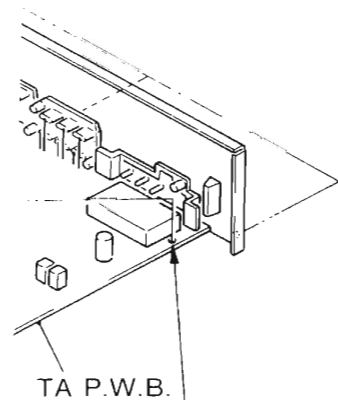
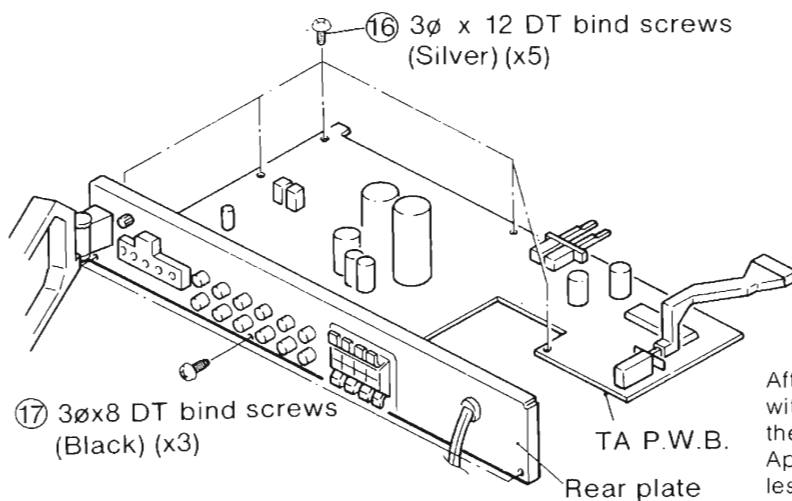
Note : After repair is finished, tighten the illustrated screws without fail. Otherwise, an oacillation might occur,thereby blowing the primary side fuse.

Note : Après avoir fini la réparation, ne pas manquer de serrer les vis illustrées. Sinon, une oscillation pourrait avoir lieu, ce qui ferait sauter le fusible côté primaire.

9. Power transformer
 - Remove ⑬ screws (x4)
10. Power IC
 - Remove ⑭ screws (x2) and ⑮ screws (x1)



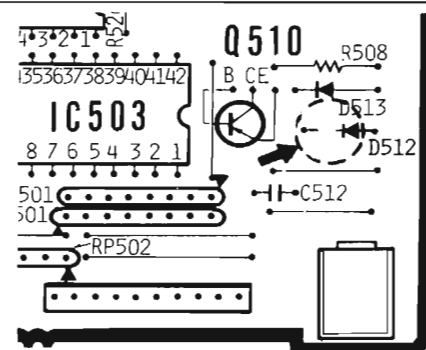
11. TA P.W.B.
 - Remove ⑯ screws (x5) and ⑰ screws (x3)



After repair is finished, tighten the illustrated screws without fail. Otherwise, an oscillation might occur, thereby blowing the primary side fuse.
Après avoir fini la réparation, ne pas manquer de serrer les vis illustrées. Sinon, une oscillation pourrait avoir lieu, ce qui ferait sauter le fusible côté primaire.

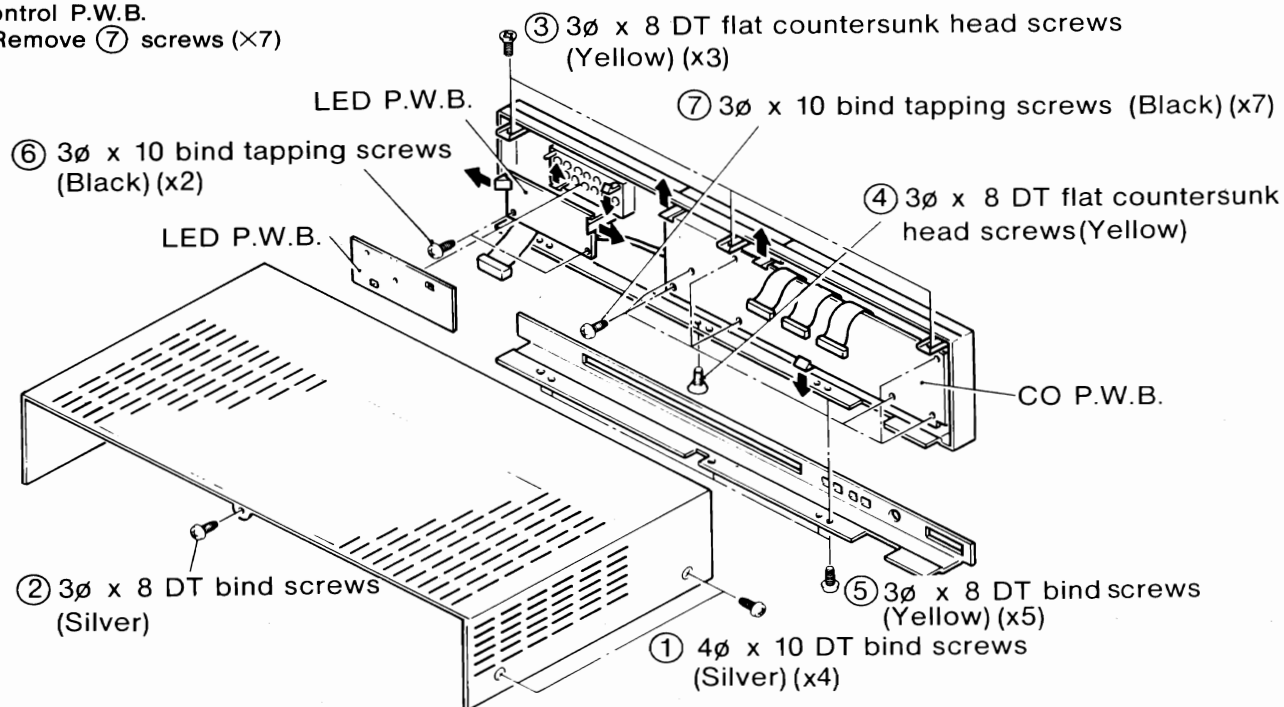
Notice for export models to the U.S.A. & Canada.
In order to switch the AM broadcast frequencies channel spacing from 10 kHz to 9 kHz, connect D512 as illustrated in the following figure.

Remarque concernant les modèles d'exportation pour les Etats-Unis et le Canada
Pour modifier l'espacement entre deux fréquences radio de la bande AM de 10 kHz à 9 kHz, relier D512 comme indiqué sur la figure.

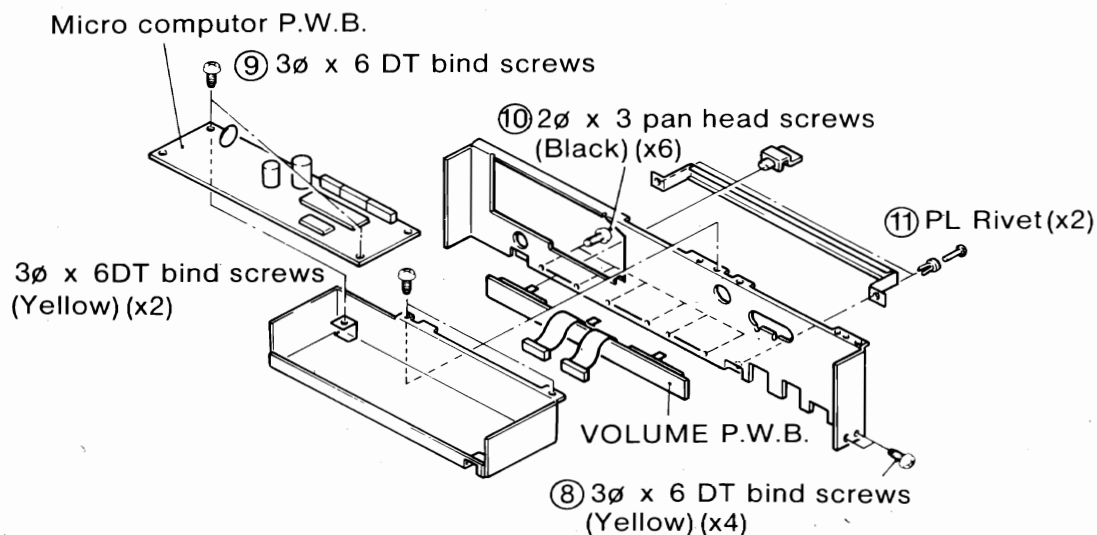


HTA-4F

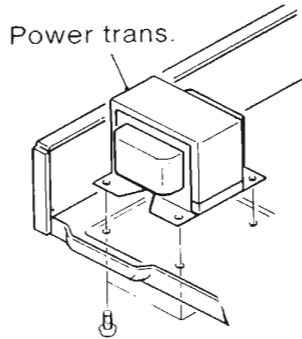
1. Cover
 - Remove ① screws (×4) and ② screws
2. Front panel
 - Remove ③ screws (×3), ④ screw and ⑤ screws (×5)
3. LED P.W.B.
 - Remove ⑥ screw (×2)
4. Control P.W.B.
 - Remove ⑦ screws (×7)



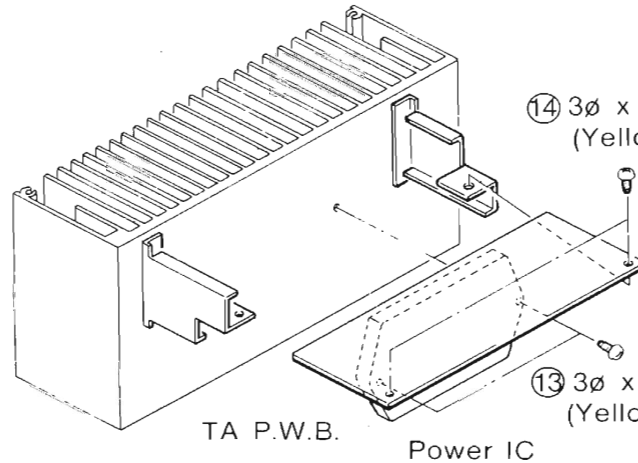
5. Mech plate
 - Remove ⑧ screws (×4)
6. MICRO COMPUTER P.W.B.
 - Remove ⑨ screws (×2)
7. VOLUME P.W.B.
 - Remove ⑩ screws (×6), ⑪ PL Rivet and Slide knob



8. Power transformer
 - Remove ⑫ screws (×4)
9. Power IC
 - Remove ⑬ screws (×2) and ⑭ screws (×2)
10. TA P.W.B.
 - Remove ⑮ screws (×5) and ⑯ screws (×4)



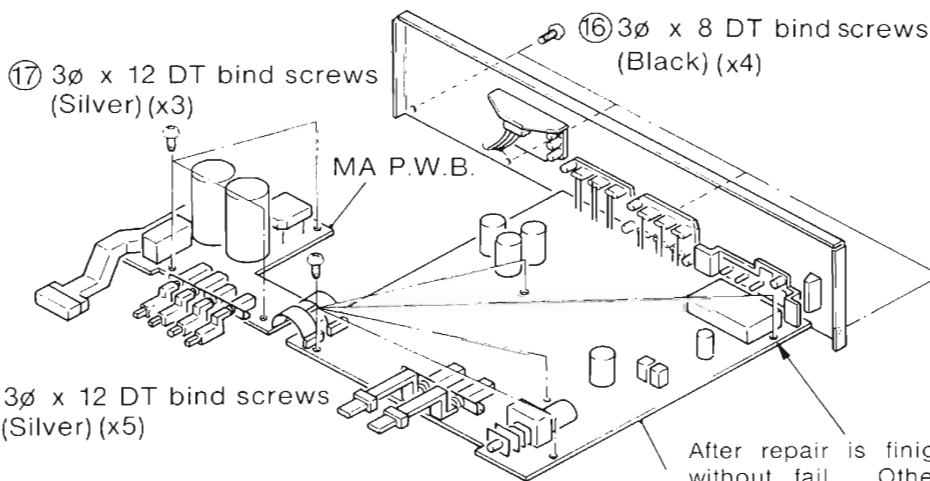
⑫ 4ø x 8DT bind screws (Yellow) (x4)



⑭ 3ø x 6 DT bind screws (Yellow) (x2)

⑬ 3ø x 16 bind tapping screws (Yellow) (x2)

11. MA P.W.B.
 - Remove ⑰ screws (×3)



⑰ 3ø x 12 DT bind screws (Silver) (x3)

⑯ 3ø x 8 DT bind screws (Black) (x4)

⑮ 3ø x 12 DT bind screws (Silver) (x5)

TA P.W.B.

After repair is finished, tighten the illustrated screws without fail. Otherwise, an oscillation might occur, thereby blowing the primary side fuse.

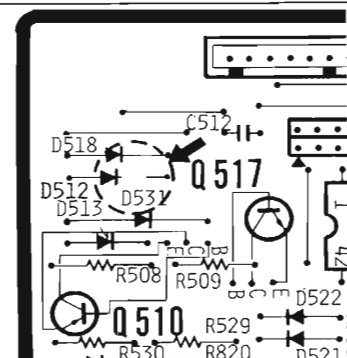
Après avoir fini la réparation, ne pas manquer de serrer les vis illustrées. Sinon, une oscillation pourrait avoir lieu, ce qui ferait sauter le fusible côté primaire.

Notice for export models to the U.S.A. & Canada.

In order to switch the AM broadcast frequencies channel spacing from 10 kHz to 9 kHz, connect D512 as illustrated in the following figure.

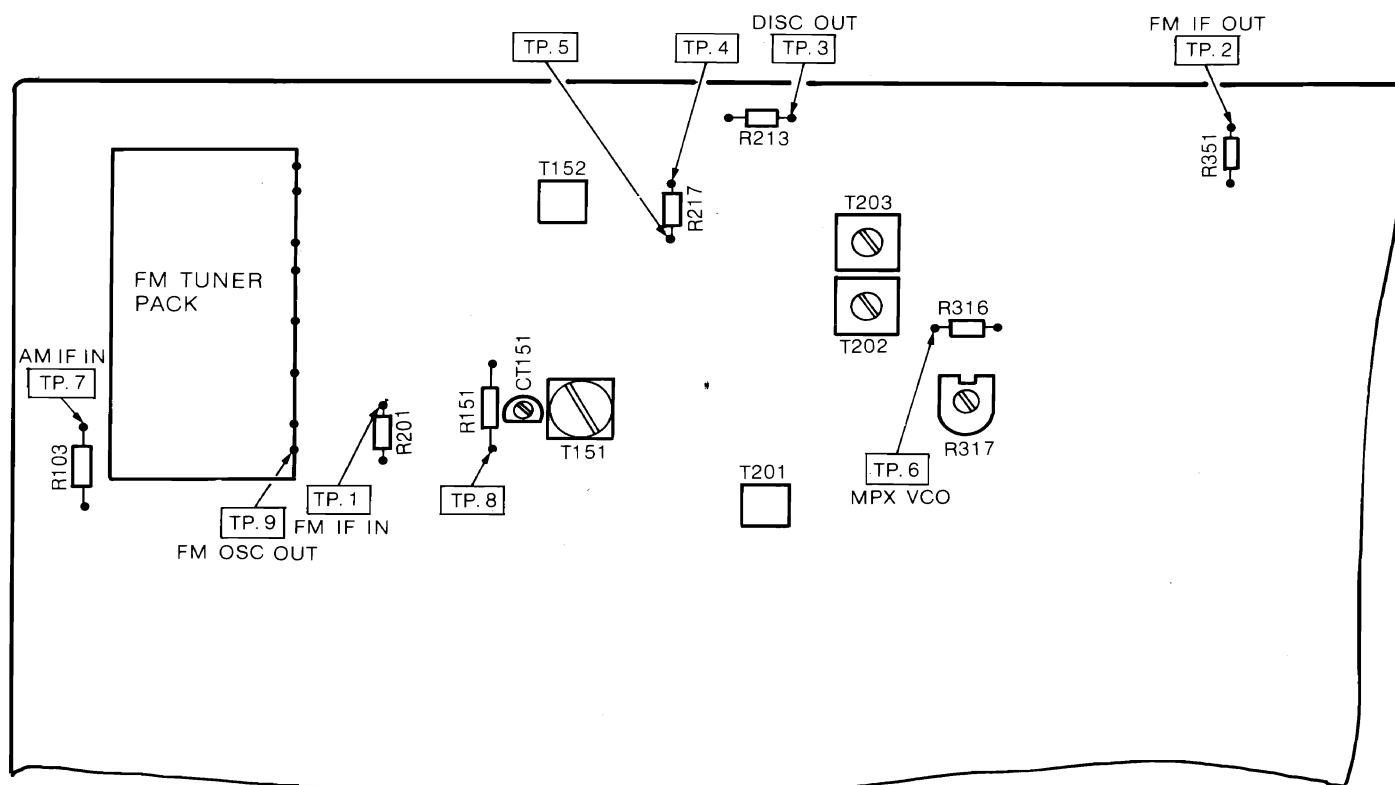
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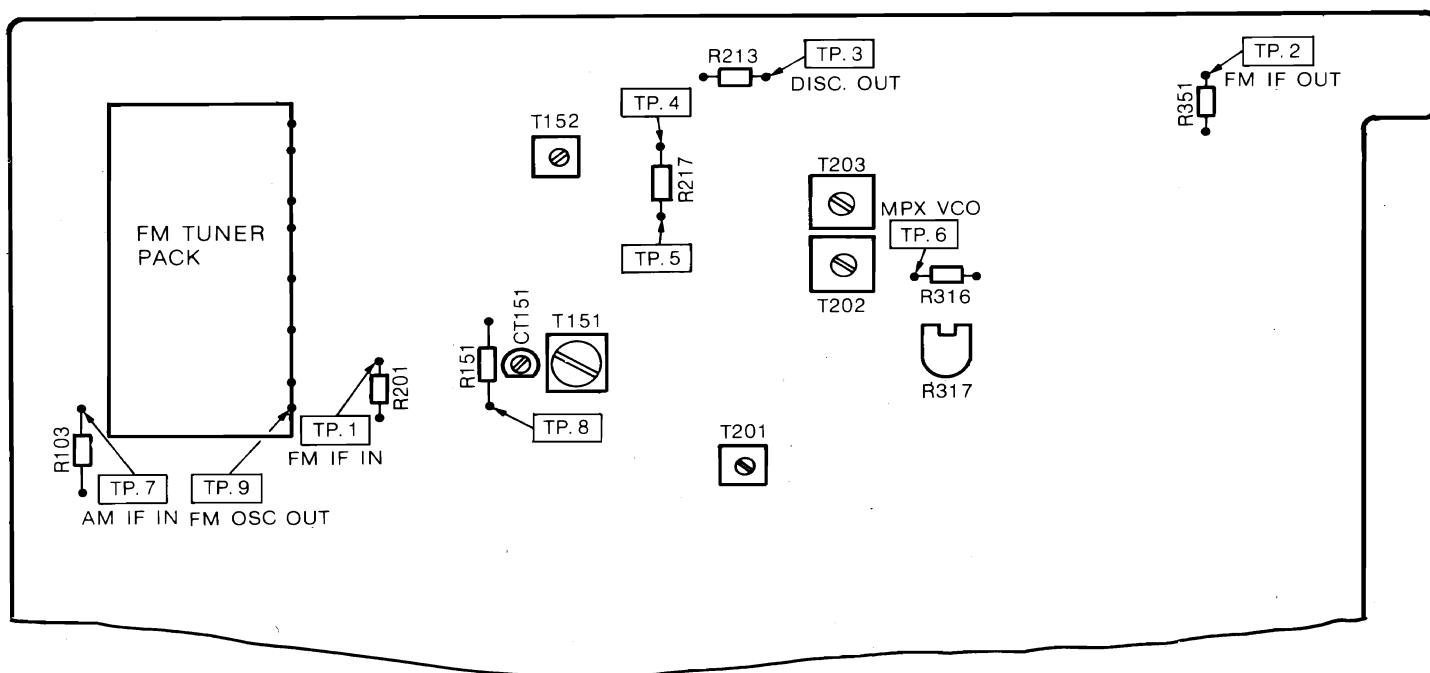


GENERAL ALIGNMENT INSTRUCTION · INSTRUCTIONS GENERALES

HTA-3F



HTA-4F



FM TUNER ALIGNMENT · REGLAGE DE TUNER FM

FUNCTION : FM
FONCTION : FM

VOLUME : MIN
VOLUME : min.

FM MODE : MONO

 Sweep Generator
Générateur de balayage

 Signal Generator
Générateur de signaux

 Oscilloscope

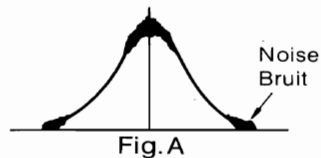
 + DC Null Meter
- Indicateur d'équilibrage à C.C.

 VTVM
Voltmètre électronique

 Frequency Counter
Fréquencemètre

Dist.
 Distortion Meter
Distorsionmètre

Sequence Ordre		Connection Connexion		Setting Montage		Adjust for Réglage pour	
		Input Entrée	Output Sortie	Tuning Indicateur d'accord	Signal	Adjust Réglage	Indication
1	IF Amp. Amplificateur de fréquence intermédiaire			—	10.7 MHz	T101 (Tuner pack) (Ensemble Tuner)	(Note 2)
2	"S" curve Courbe			—	10.7 MHz	T202, T203 T202 : "S" curve Courbe en forme de "S" T203 : Straight Line Ligne droite	 (Note 3)
3	Discriminator Discriminateur			98.1 MHz	98.1 MHz	T202	(Note 4)
4	Distortion Distorsion			98.1 MHz	98.1 MHz	T202, T203	Distortion min. (Note 5)
5	Covering Portée	—					(Note 6)
6	Tracking Alignement	—					(Note 6)
7	76 kHz (FM MODE : AUTO)	ANT. Terminal (300 ohms) Borne d'antenne (300 ohms) 60 dBμ Non modulated Sans modulation		98.1 MHz	98.1 MHz	R317	76 kHz ±100 Hz



Note 1 : Perform adjustment at least 3 minutes after the power has been switched on.

Note 2 : Using a sweep generator, apply low-input signals (with a small amount of noise superimposed as in Fig. A), and adjust the T101 so that the waveforms are brought to their maximum in center marker frequency (10.7 MHz).

Note 3 : Adjust the T202 coil and obtain an S-curve. Now adjust the T203 coil and improve the linearity of the S-curve.

Note 4 : Connect a DC null meter across R217 on the TA P.W.B., and adjust T202 core for a reading of 0 V ±60 mV.

Note 5 : When the distortion adjustment is performed, there will be a slight deviation in the discriminator adjustment performed under 3. Therefore, repeat adjustments 3 and 4 several times and adjust for a reading of 0V on the DC null meter with the distortion at its minimum.

Note 6 : FM Tuner pack is aligned before shipping, so it is not necessary to adjust covering and tracking.

Note 1 : Effectuer ce réglage au moins 3 minutes après la mise sous tension.

Note 2 : Utiliser un générateur de balayage et appliquer des signaux d'entrée à faible niveau (avec un faible chevauchement de bruit comme représenté sur la Fig. A), et ajuster T101 pour amener les formes d'ondes à leur maximum de la fréquence nominale de repérage (10,7 MHz).

Note 3 : Ajuster la bobine T202 pour obtenir une courbe en forme de "S". Ajuster ensuite la bobine T203 et améliorer la linéarité de la courbe en forme de "S".

Note 4 : Raccorder un indicateur de zéro à courant continu entre R217 de la plaquette à circuits imprimés du TA et ajuster le noyau T202 pour obtenir une lecture de $0\text{ V} \pm 60\text{ mV}$.

Note 5 : Quand le réglage de distorsion est réalisé, il existera un léger écart de réglage du discriminateur, opération qui est réalisée en en 3. Par conséquent, les réglages 3 et 4 doivent être faits à plusieurs reprises de façon à obtenir une indication de 0 V à l'indicateur de zéro à continu quand la distorsion est minimale.

Note 6 : L'étage tuner FM est réglé avant son envoi, il est donc inutile d'effectuer le réglage de portée et d'alignement.

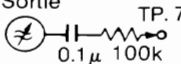
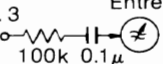
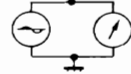
AM TUNER ALIGNMENT · REGLAGE DE TUNER AM

FUNCTION : AM

MODULATION : 400 Hz 30 %

FONCTION : AM

MODULATION : 400 Hz 30 %

Sequence Ordre		Connection Connexion		Setting Montage		Adjust for Réglage pour	
		Input Entrée	Output Sortie	Tuning Indicateur d'accord	Signal	Adjust Réglage	Indication
1	IF Amp. Amplificateur de fréquence intermédiaire	Out Sortie 	TP. 3 	—	450 kHz	T201	 Caution 1 Attention 1
2	Covering Guipage	Loop antenna Antenne en carton 	TP. 8 	530 kHz	—	T152	530 kHz : 2.0V DC Caution 2 Attention 2
3	Tracking Alignement		REC OUT 	600 kHz	600 kHz	T151	Output max. Caution 3 Attention 3
				1400 kHz	1400 kHz	CT151	

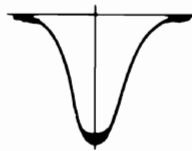


Fig. B

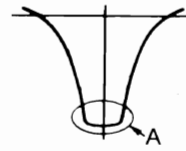


Fig. C

CAUTION

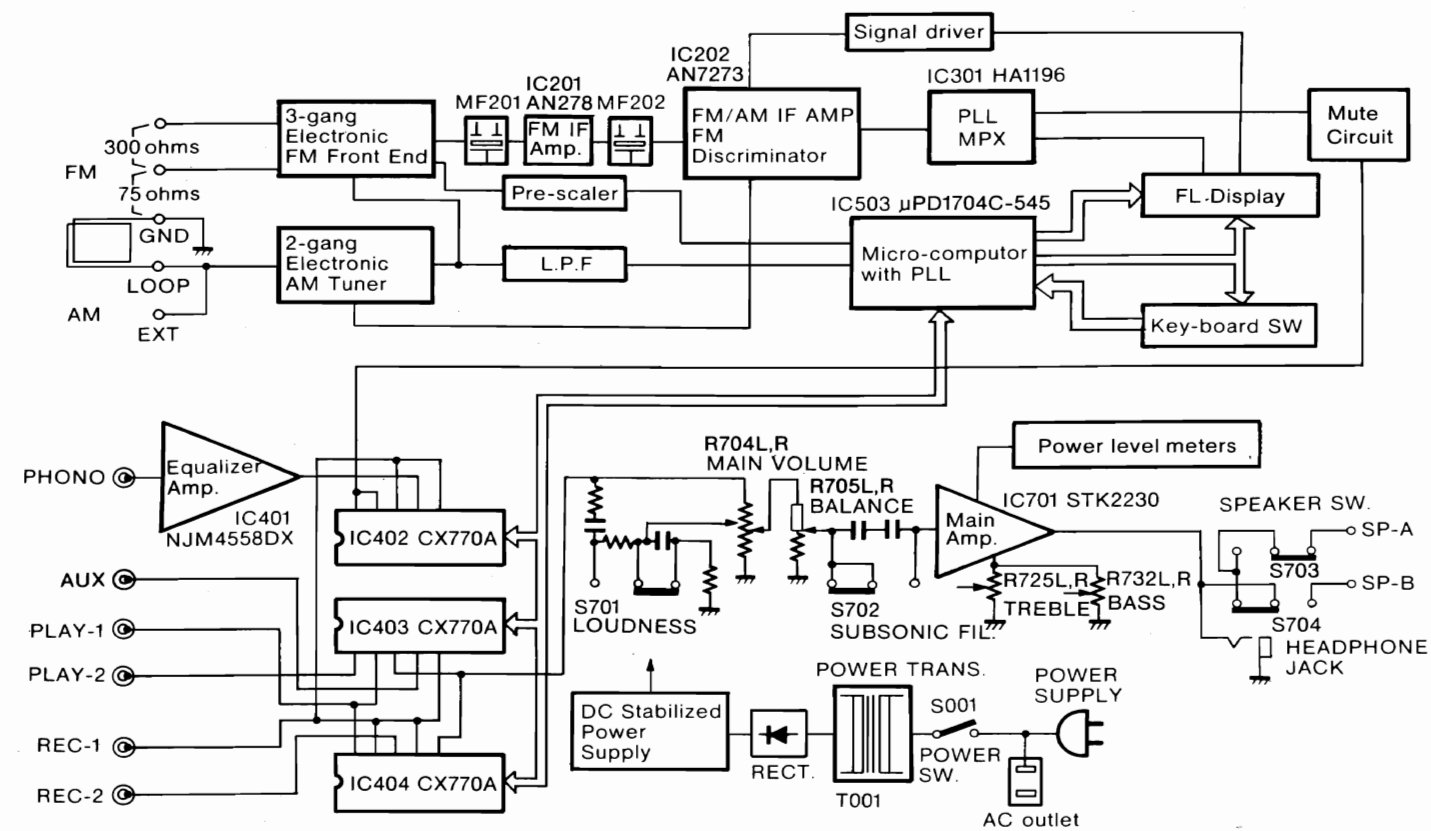
1. Adjust cores of T201 so that the waveform is as shown in Fig. B. After adjusting as above, increase the output level of the sweep generator and adjust T201 again so that the top of the waveform A (indicated in Fig. C) will be flat and wide.
2. Carry out this adjustment for final adjustment of the coil only when you have moved the core by mistake.
3. Set the input level to 74 dB/m in coarse adjustment. Reduce the input level to minimum (60 dB/m) as adjustment proceeds.

ATTENTION

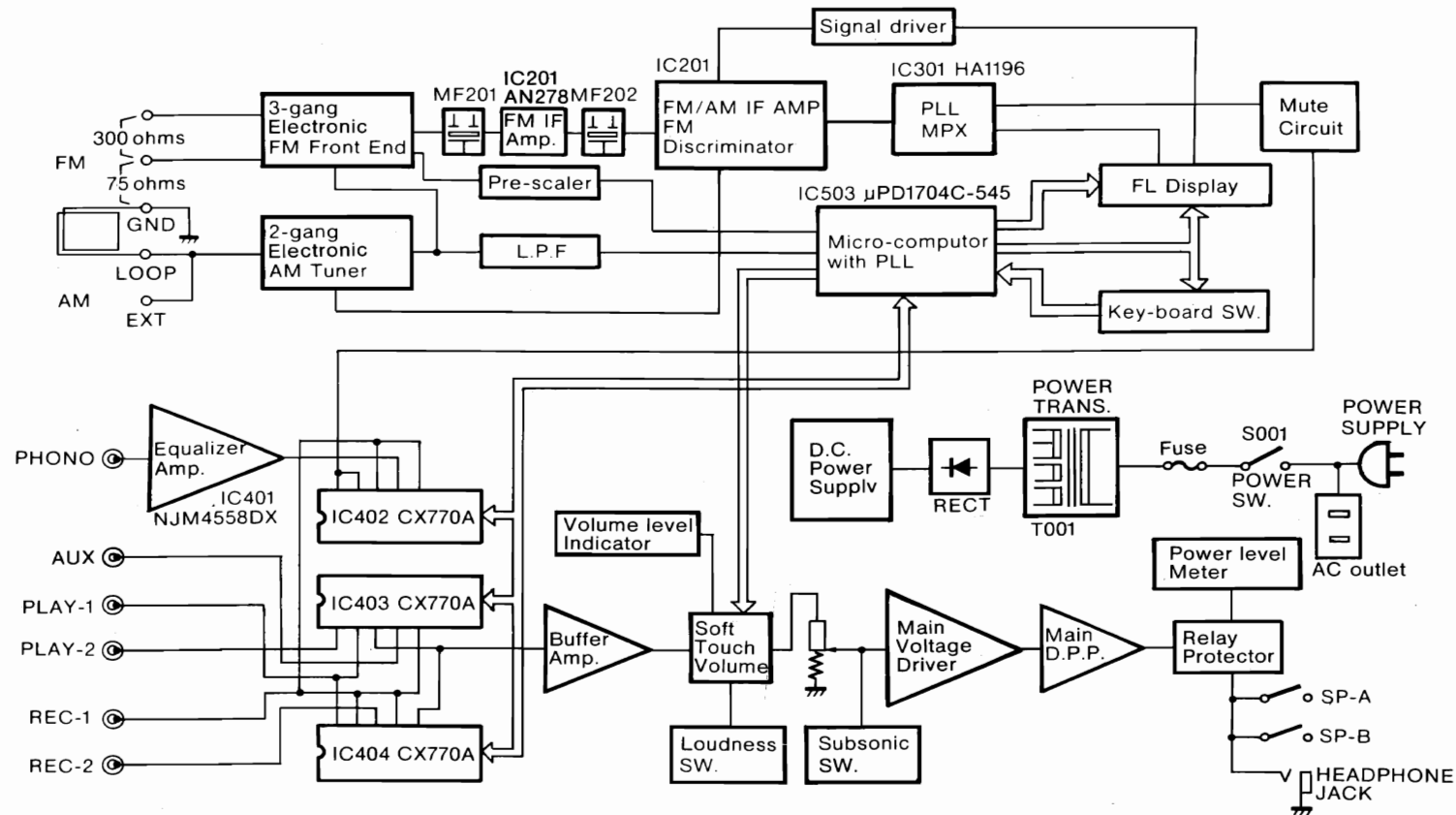
1. Régler les âmes noires de T201 de façon à obtenir une forme d'onde comme indiquée sur le Fig. B. Après avoir réglé comme indiqué ci-dessus, augmenter le niveau d'entrée du générateur de balayage et régler T201 à nouveau de façon que le sommet de la forme d'onde A (voir Fig. C) soit aplati et large.
2. N'effectuer le dernier réglage de la bobine par ce réglage que si vous avez bougé l'âme par erreur.
3. Faire un réglage approximatif du niveau d'entrée à 74 dB/m. Réduire le niveau d'entrée jusqu'à un minimum de 60 dB/m à mesure que l'on effectue le réglage.

BLOCK DIAGRAM · SCHEMA

HTA-3F

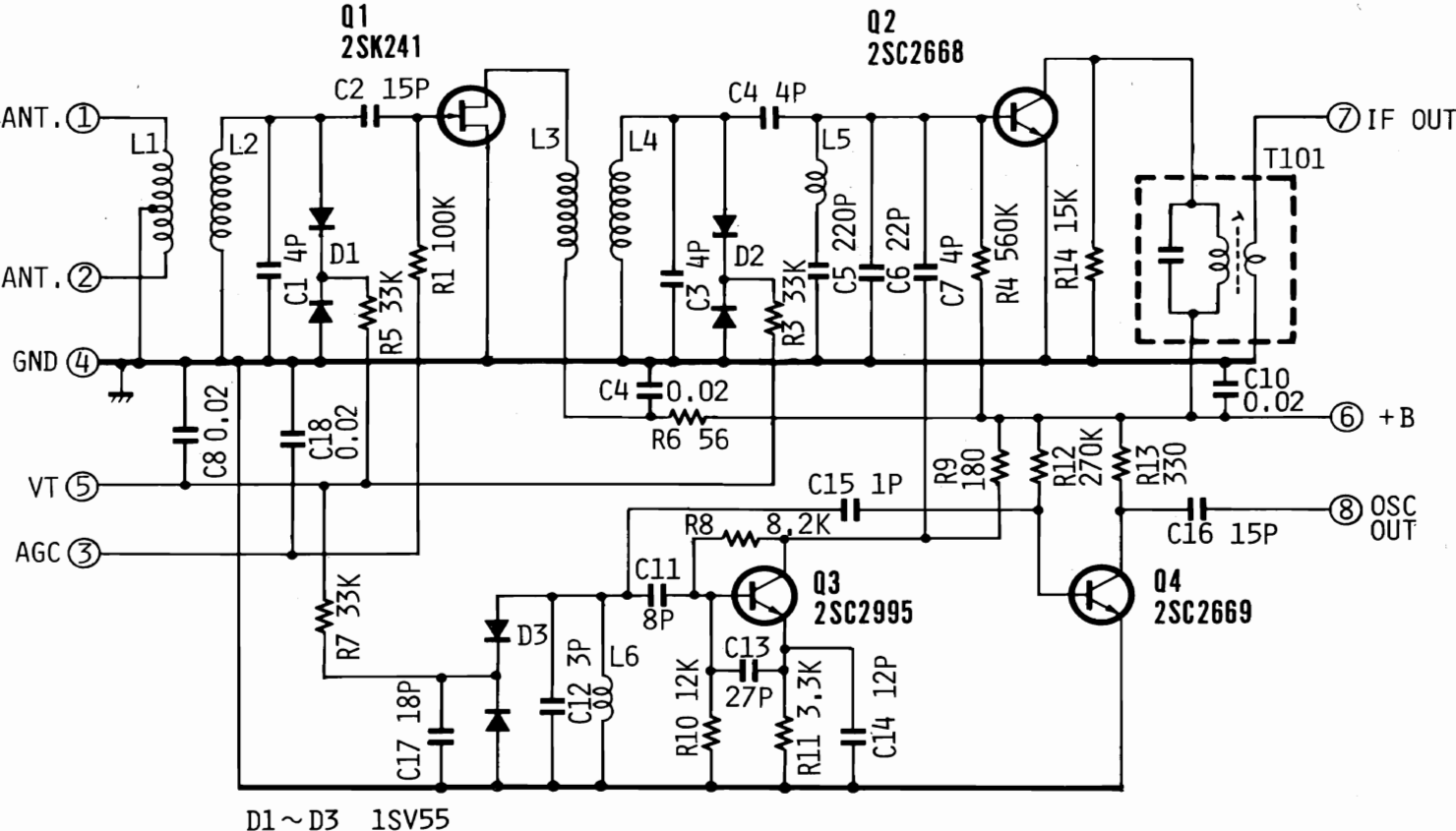


HTA-4F



CIRCUIT DIAGRAM · PLAN DE CIRCUIT

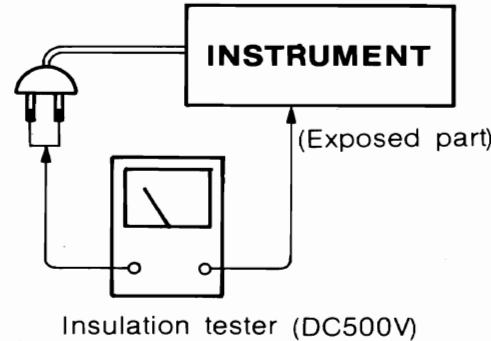
Tuner pack



Check that exposed parts are acceptably insulated from the supply circuit before returning the instrument repaired to the customer.

● Checking method

Power switch is set to ON.
Next, measure the resistance value between the both poles of attachment cup (Power supply plug) and the exposed parts (Parts such as Ground terminal, Knob, Cover, etc. where the customer is easy to touch.) and check that the resistance value is 500 kohms or more.

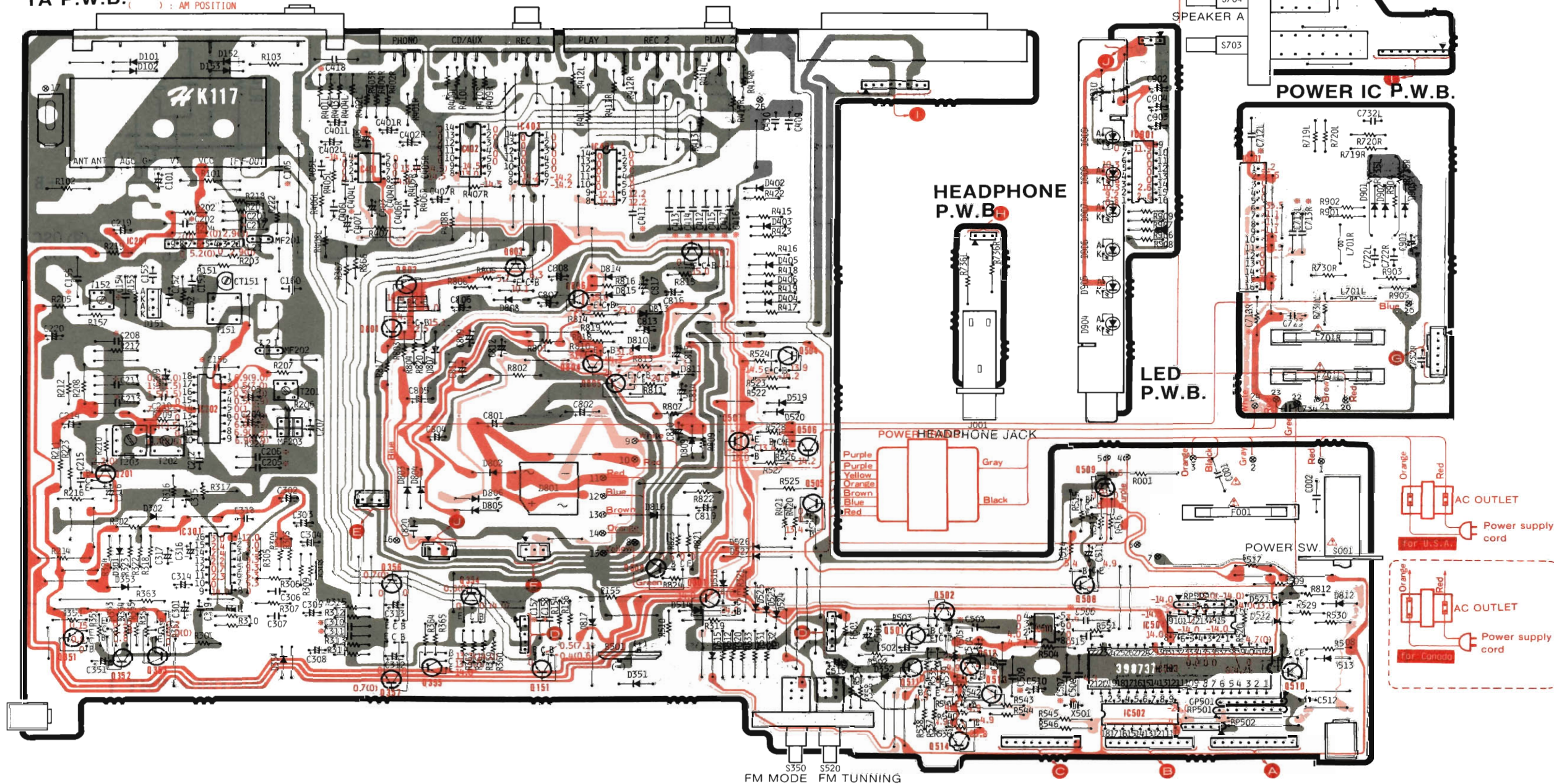


PRINTED WIRING BOARD · PLAN DE BASE HTA-3F

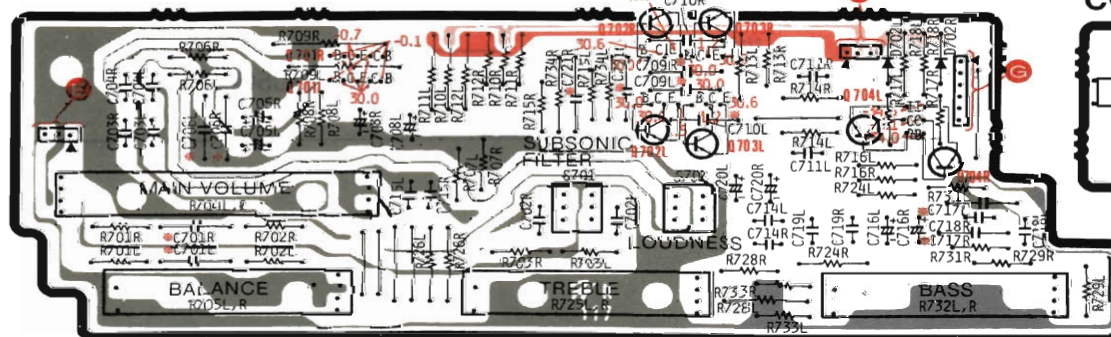
[: +B, : -B, : Earth, : Other]

* : Axial lead cylindrical ceramic capacitor
* : Condensateur céramique cylindrique à conducteur axial

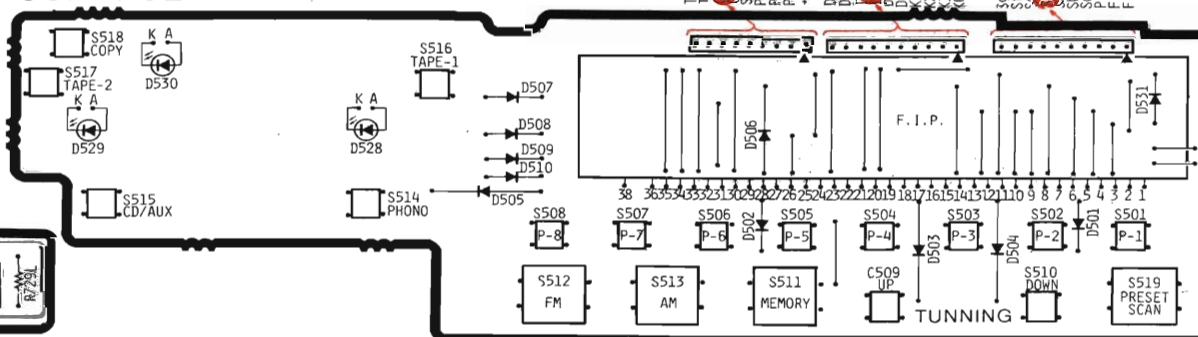
TA P.W.B. () : AM POSITION



VOLUME P.W.B.



CONTROL P.W.B.



SWITCH P.W.B.

SPEAKER B
S704

SPEAKER A
S703

POWER IC P.W.B.

HEADPHONE
P.W.B.

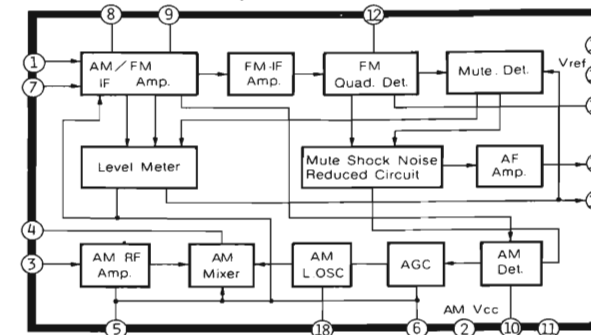
POWER HEADPHONE JACK

POWER SW. S001

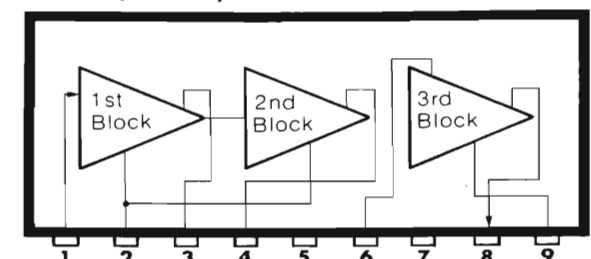
AC OUTLET
Power supply cord

AC OUTLET
Power supply cord

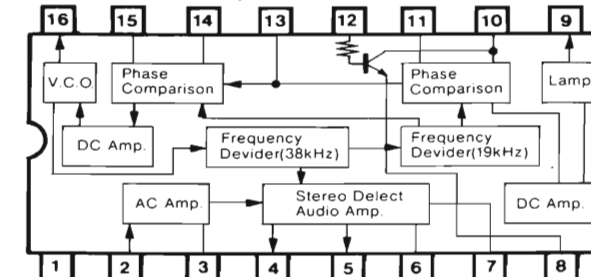
IC202 (AN7273)



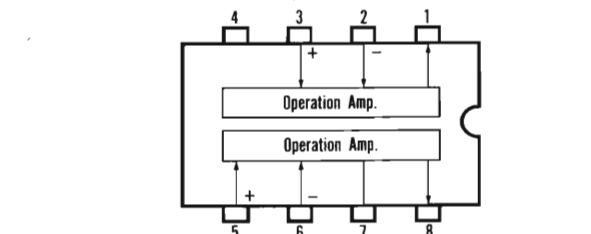
IC201 (AN278)



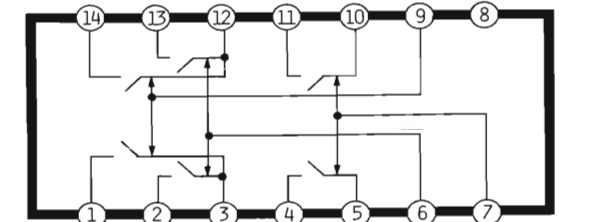
IC301 (HA1196)



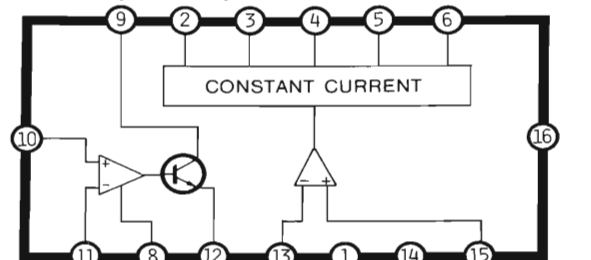
IC401 (NJM4558DX)



IC402 ~ 404 (CX770A)

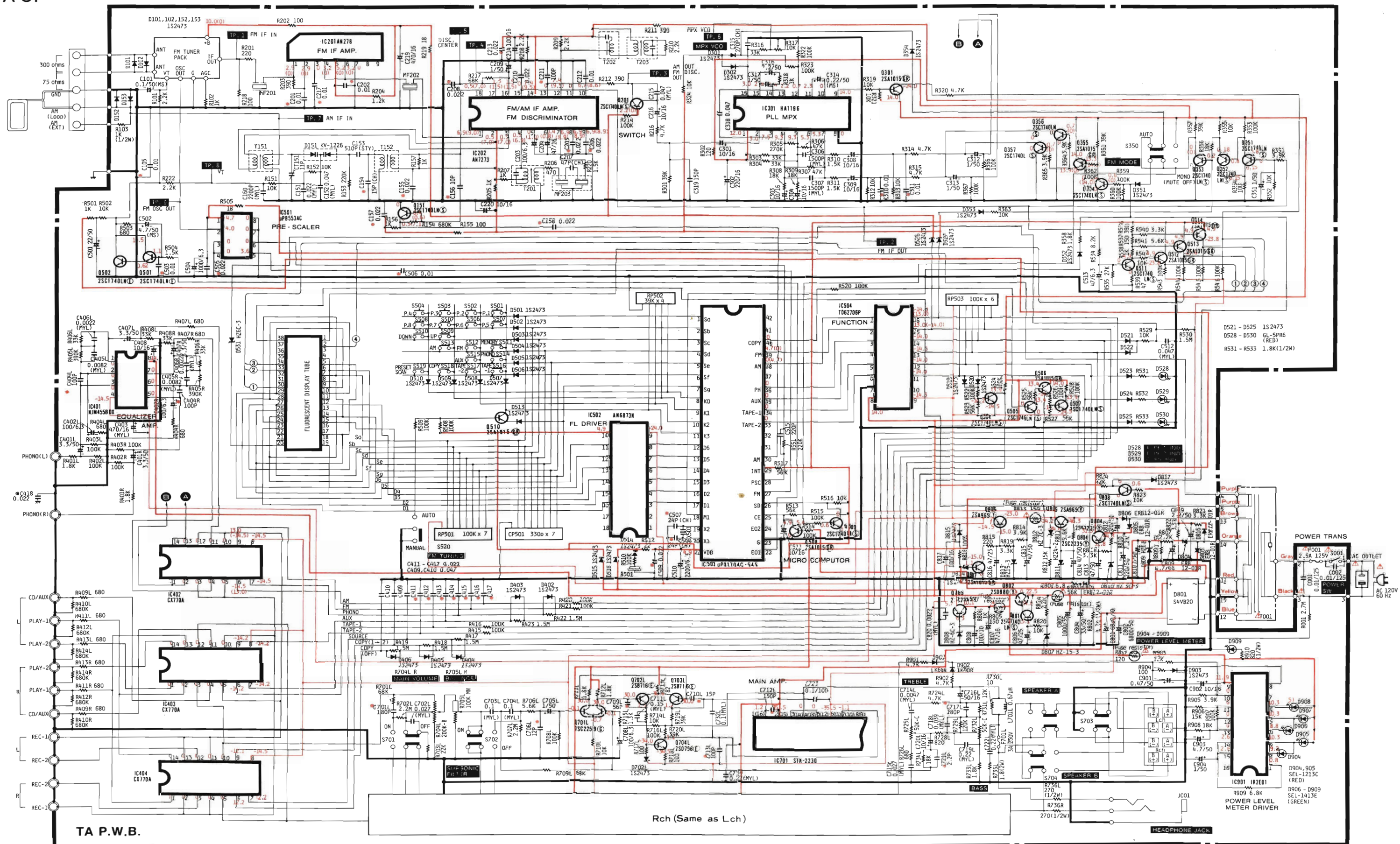


IC901 (IR2E01) HTA-3F only



CIRCUIT DIAGRAM · PLAN DE CIRCUIT
HTA-3F

* : Axial lead cylindrical ceramic capacitor
 * : Condensateur céramique cylindrique à conducteur axial



TA P.W.B.

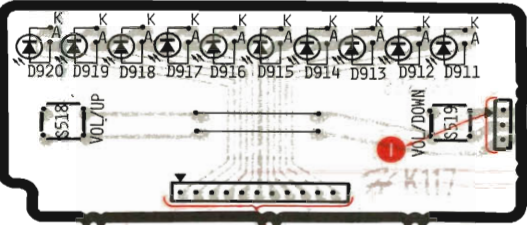
Rch (Same as Lch)

PRINTED WIRING BOARD · PLAN DE BASE
HTA-4F

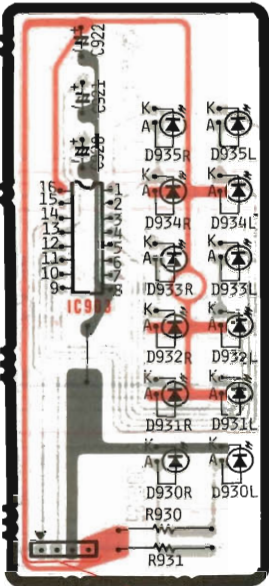
[:+B, :-B, :Earth, :Other]

* : Axial lead cylindrical ceramic capacitor
* : Condensateur céramique cylindrique à conducteur axial

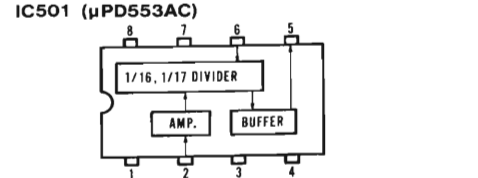
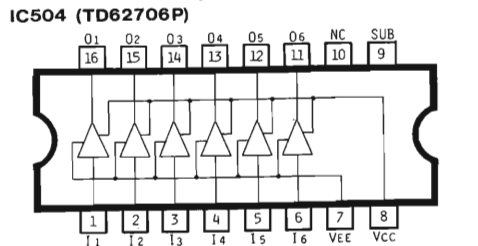
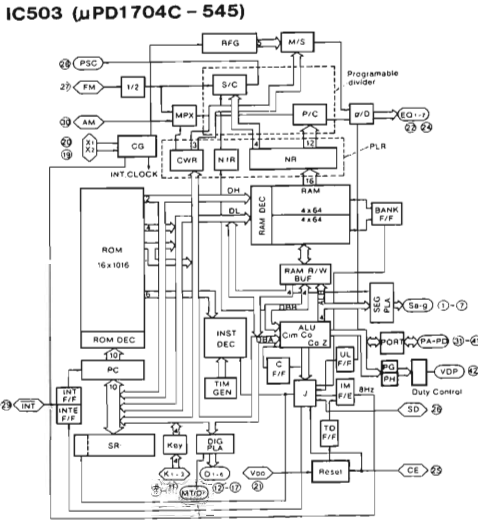
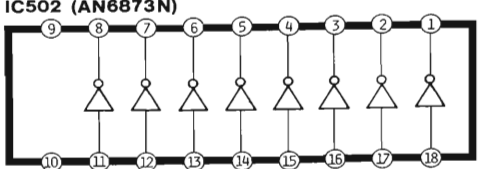
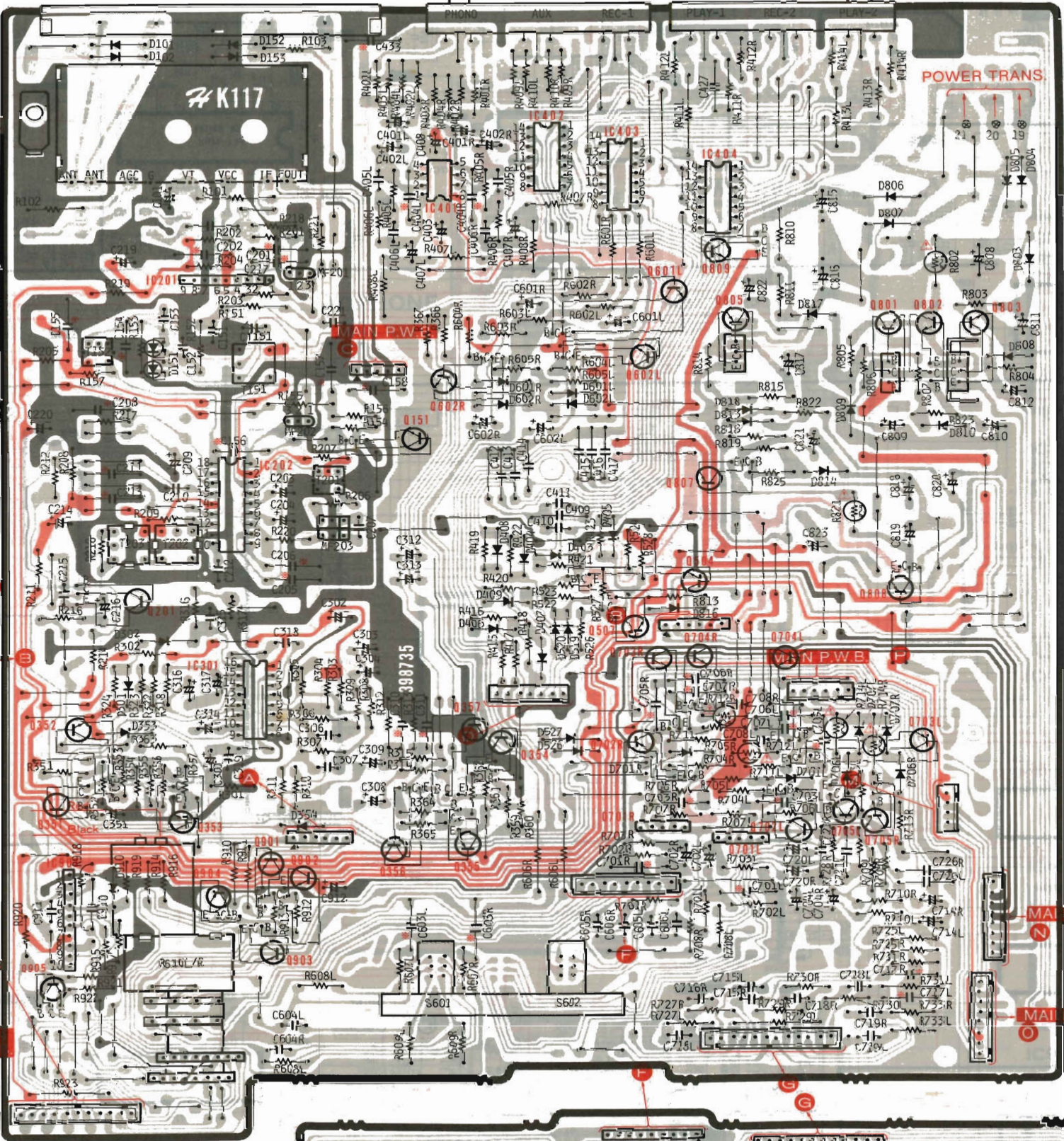
LED P.W.B.



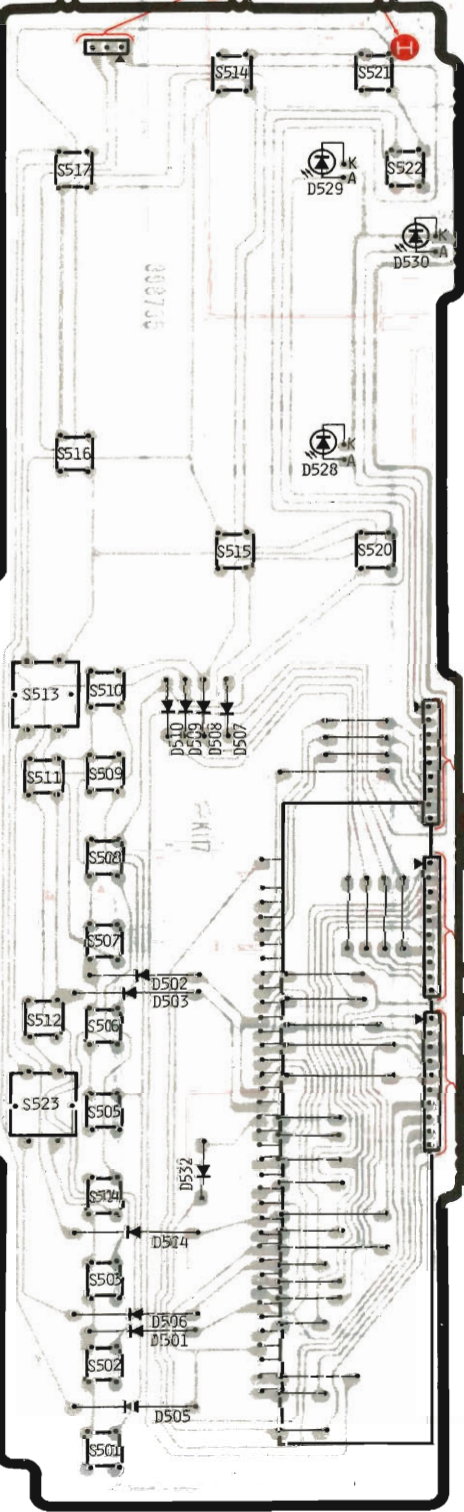
LED P.W.B.



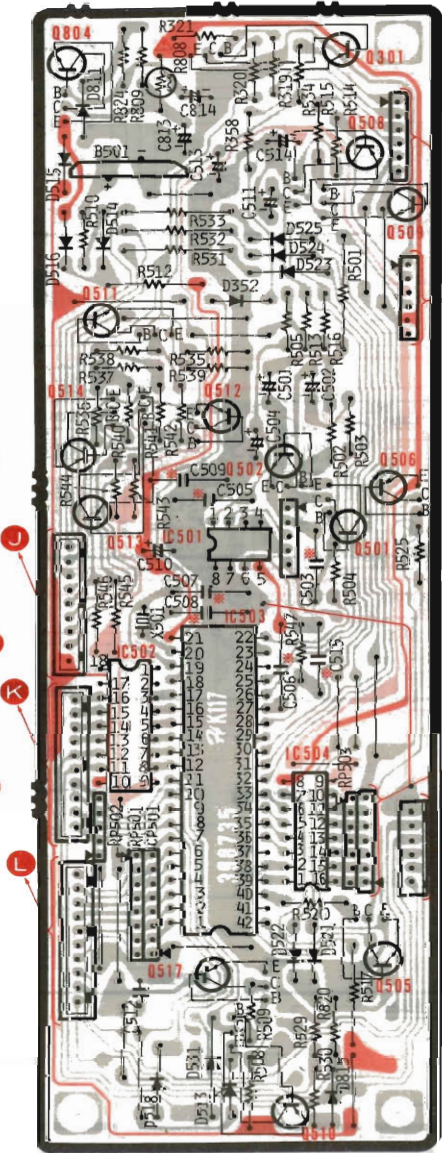
TA P.W.B.



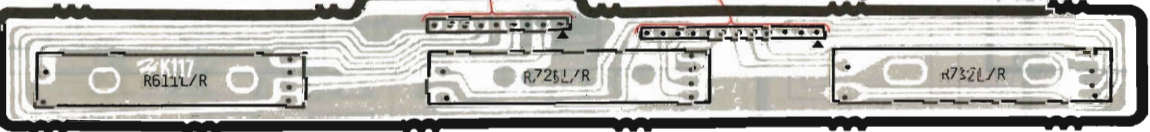
CONTROL P.W.B.



MICRO COMPUTER P.W.B.

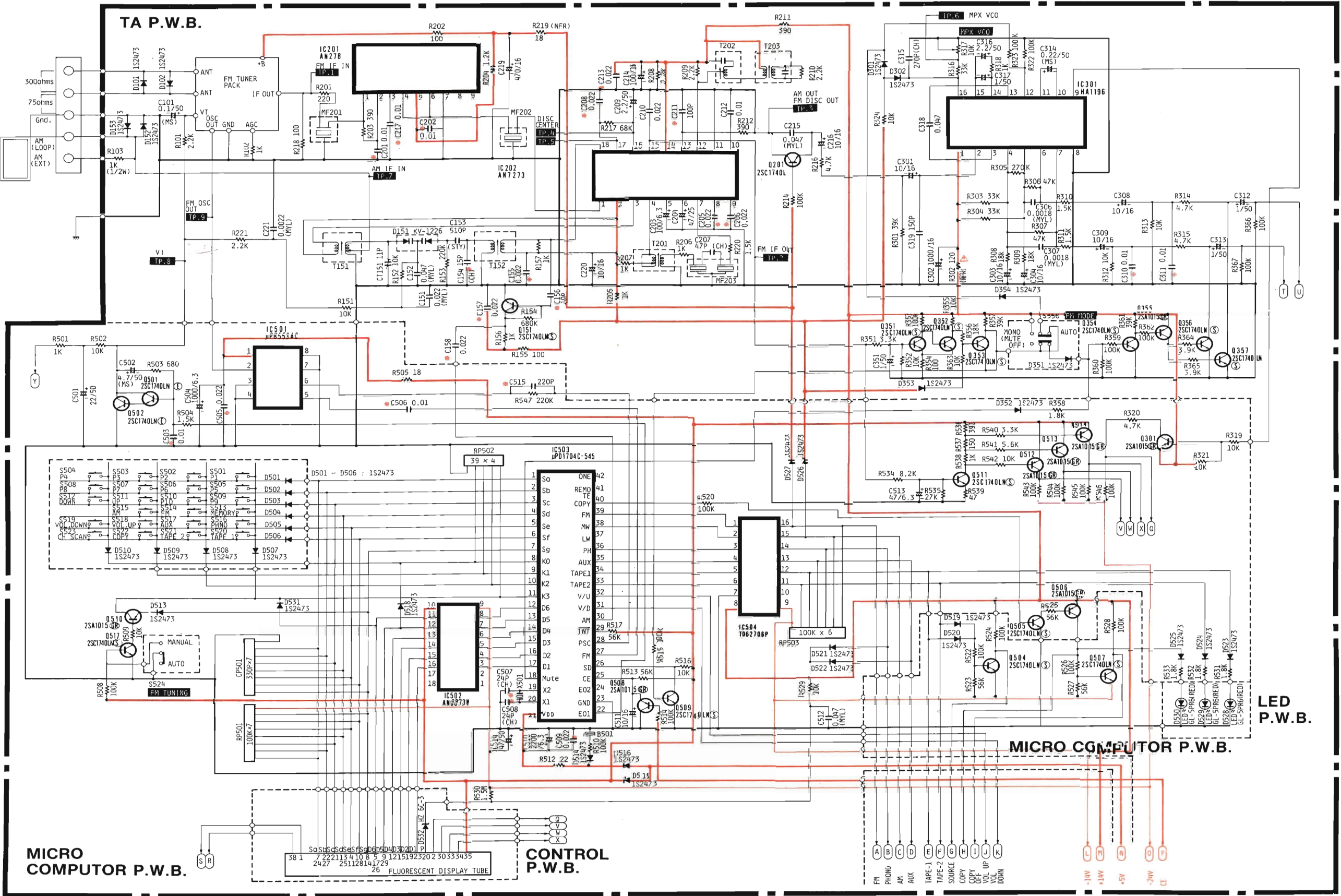


VOLUME P.W.B.



HTA-4F

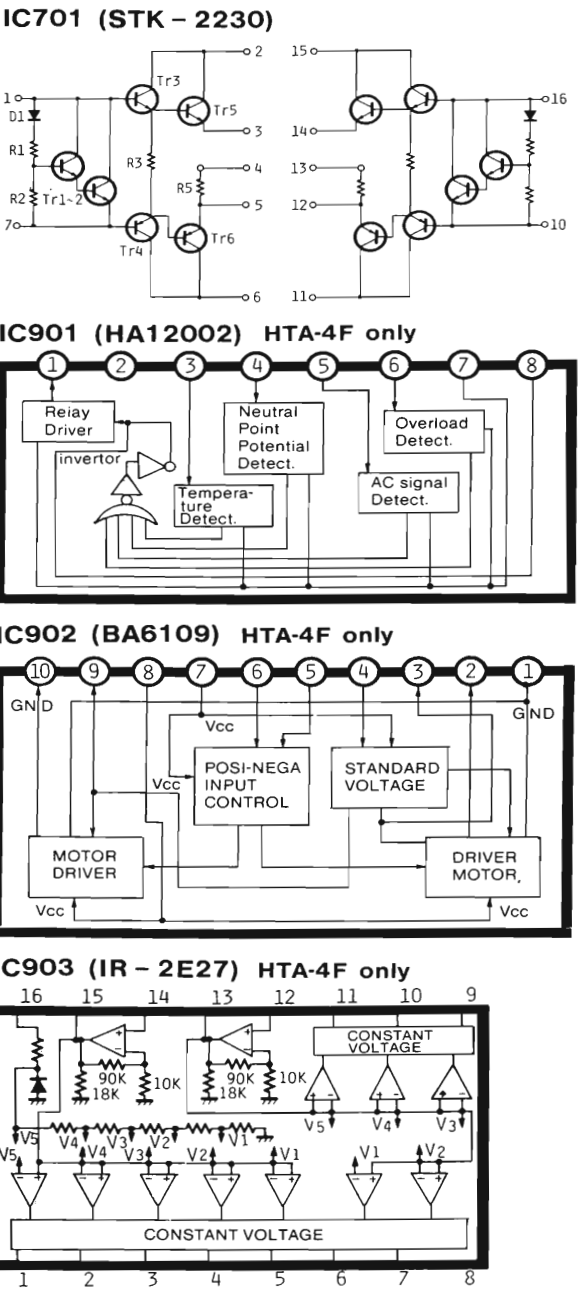
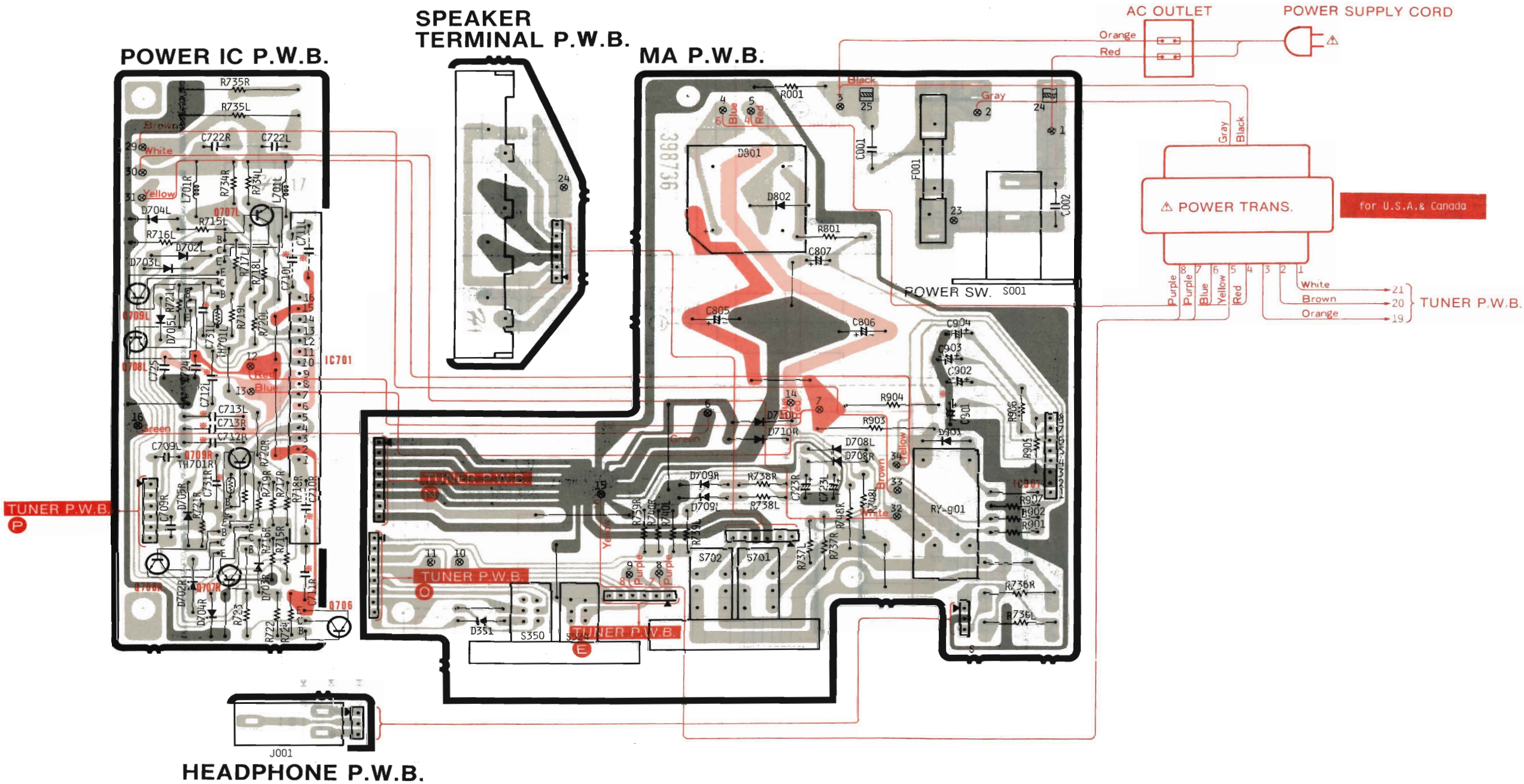
※ : Condensateur céramique cylindrique à conducteur axial



PRINTED WIRING BOARD · PLAN DE BASE
HTA-4F

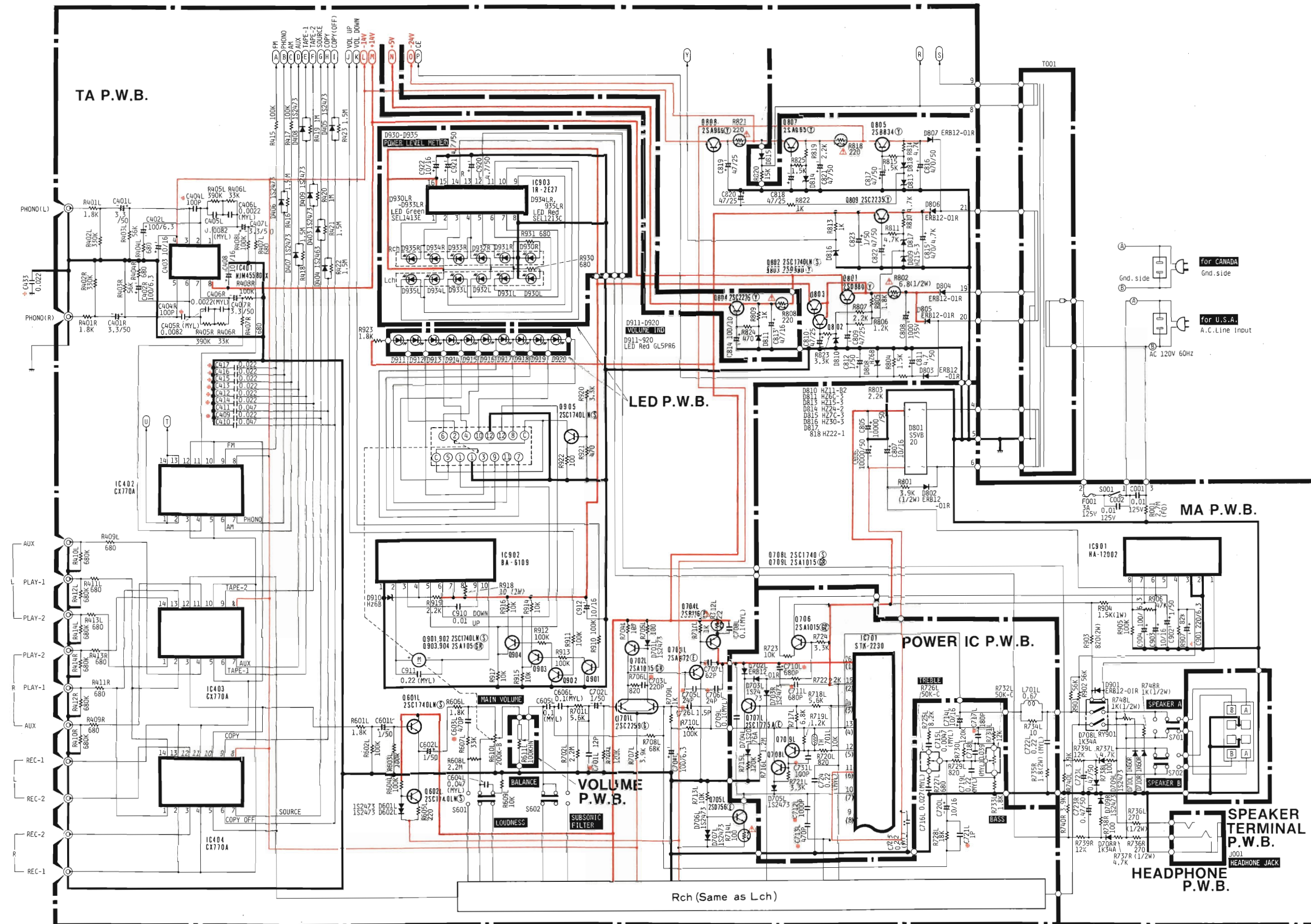
[ : +B,  : -B,  : Earth,  : Other]

* : Axial lead cylindrical ceramic capacitor
* : Condensateur céramique cylindrique à conducteur axial

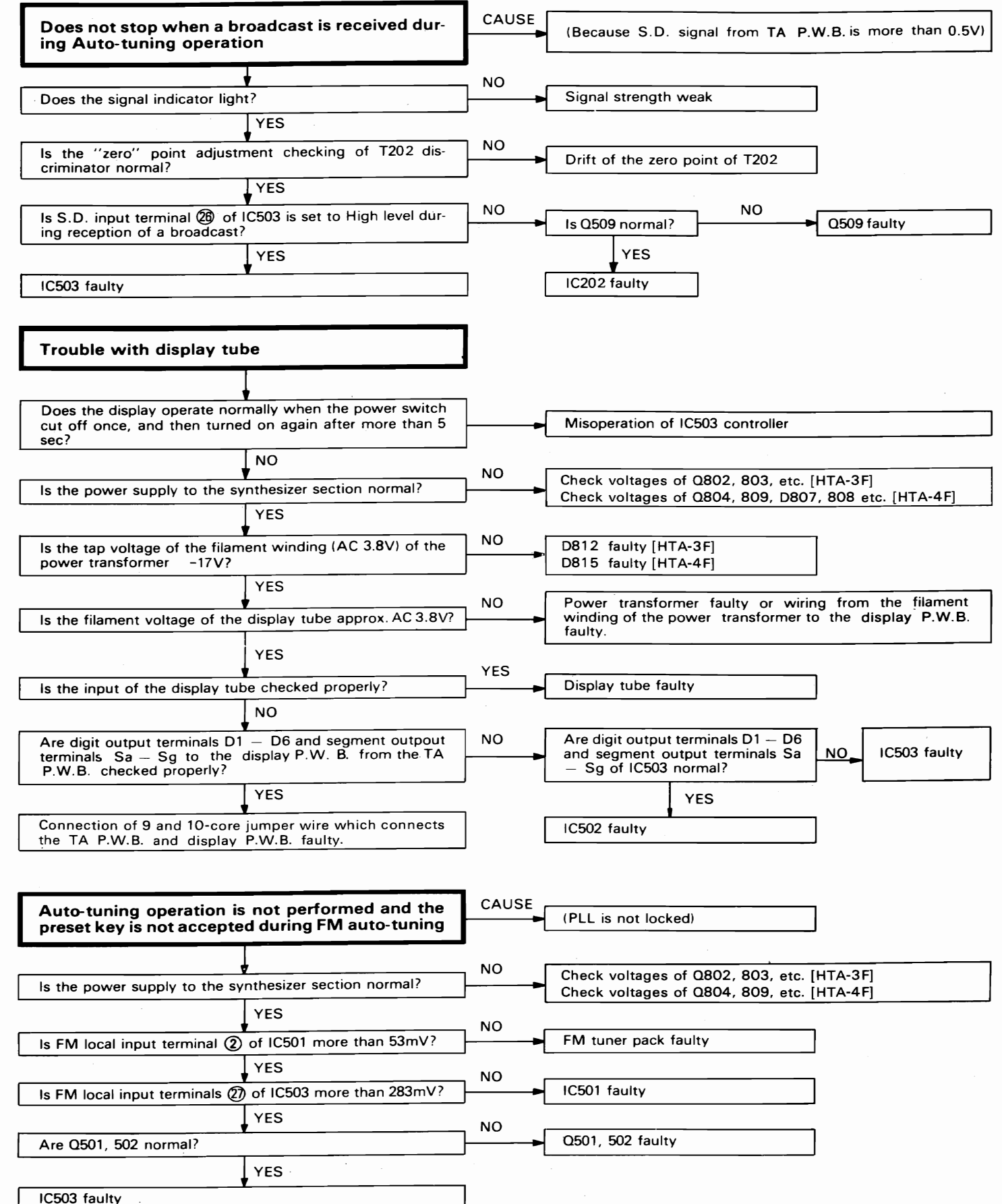
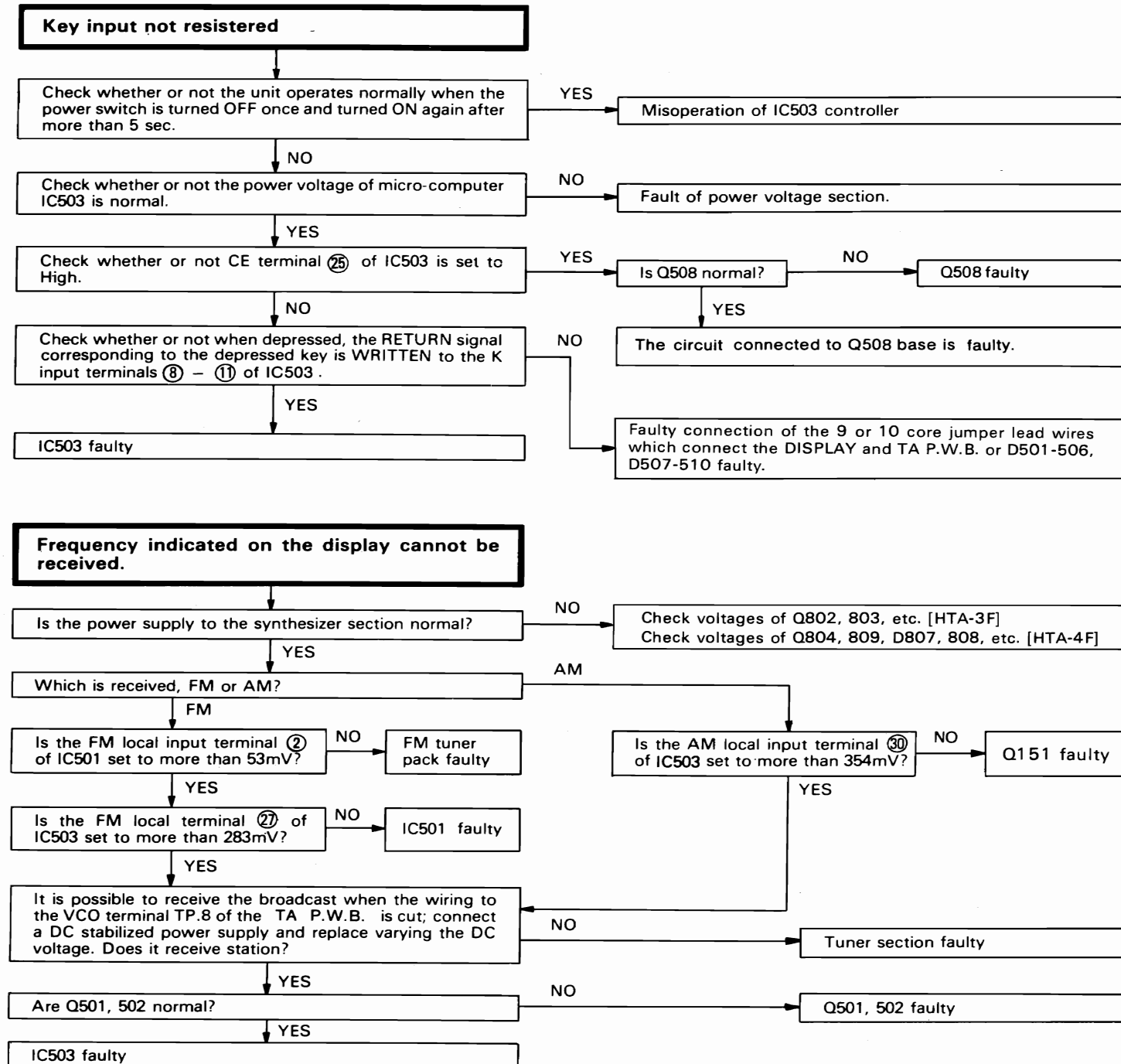


CIRCUIT DIAGRAM · PLAN DE CIRCUIT

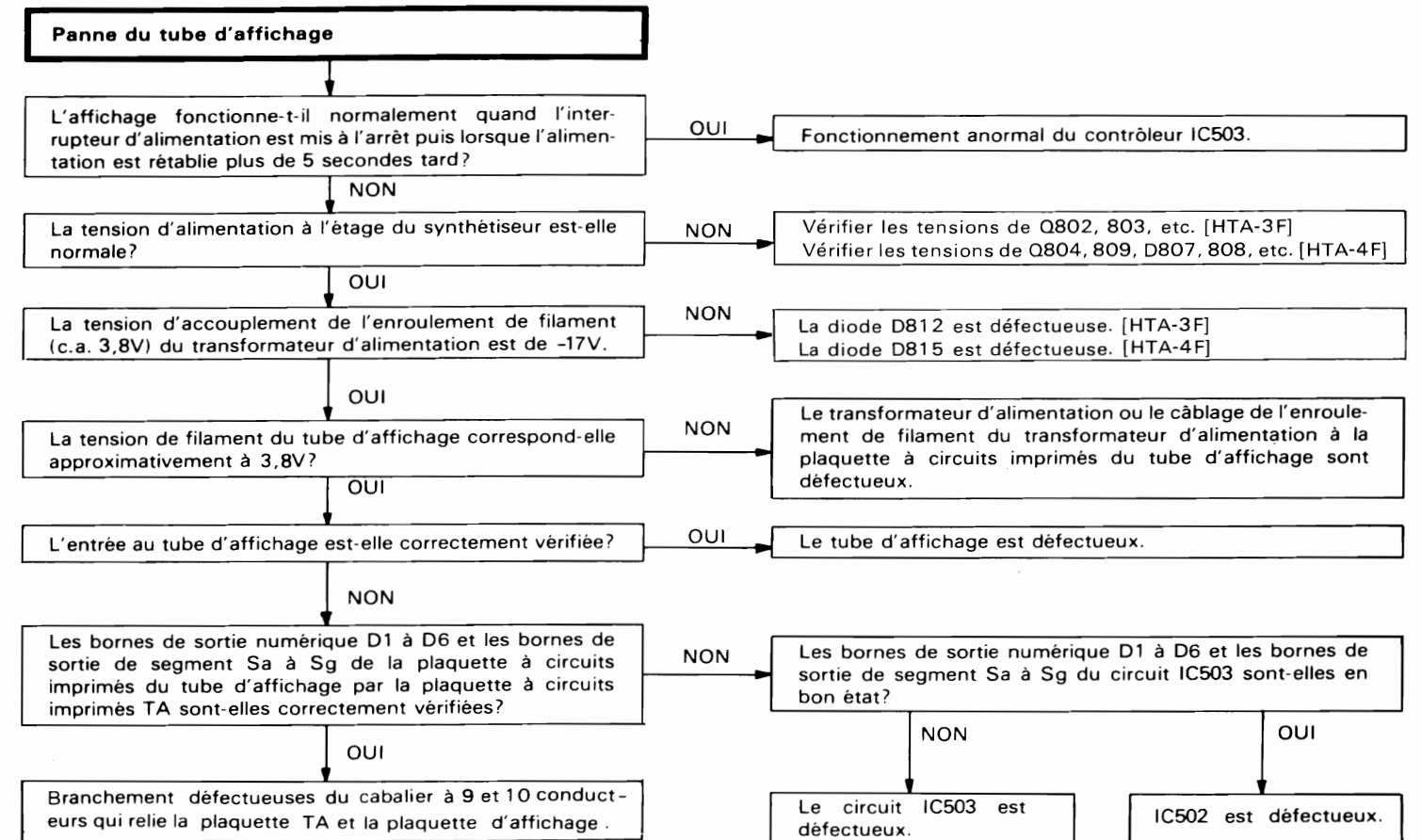
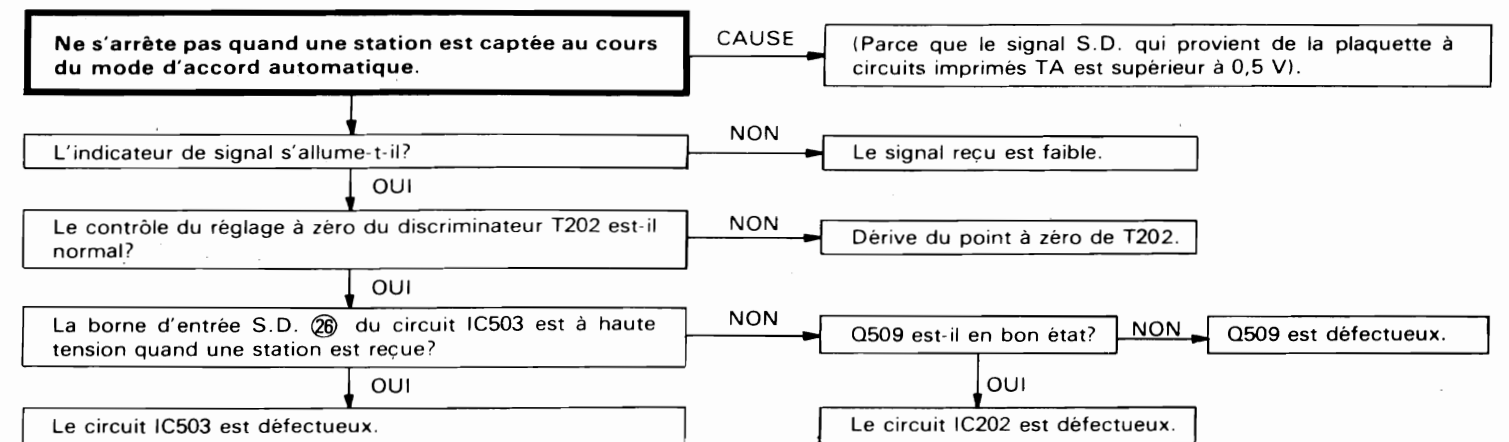
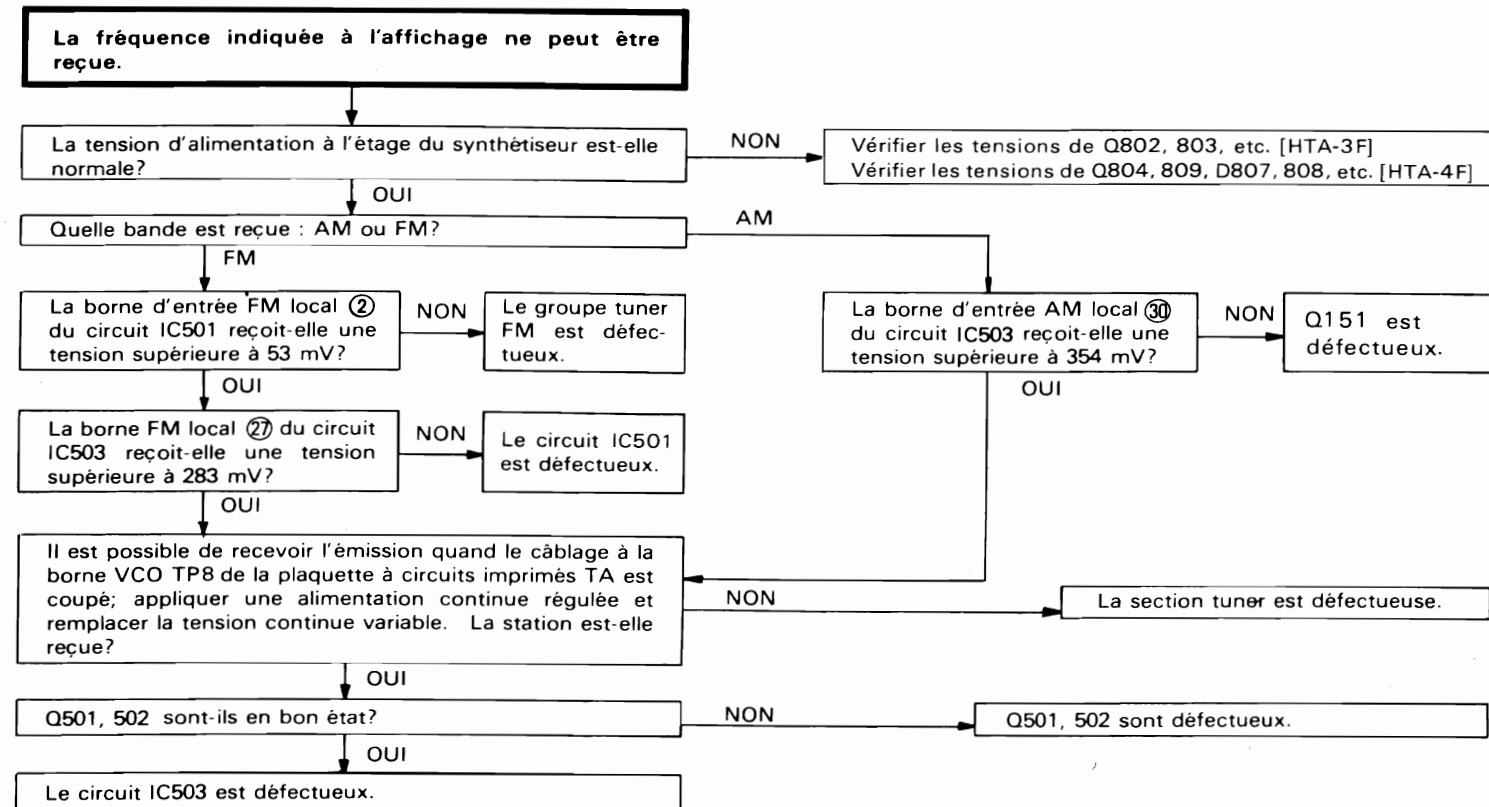
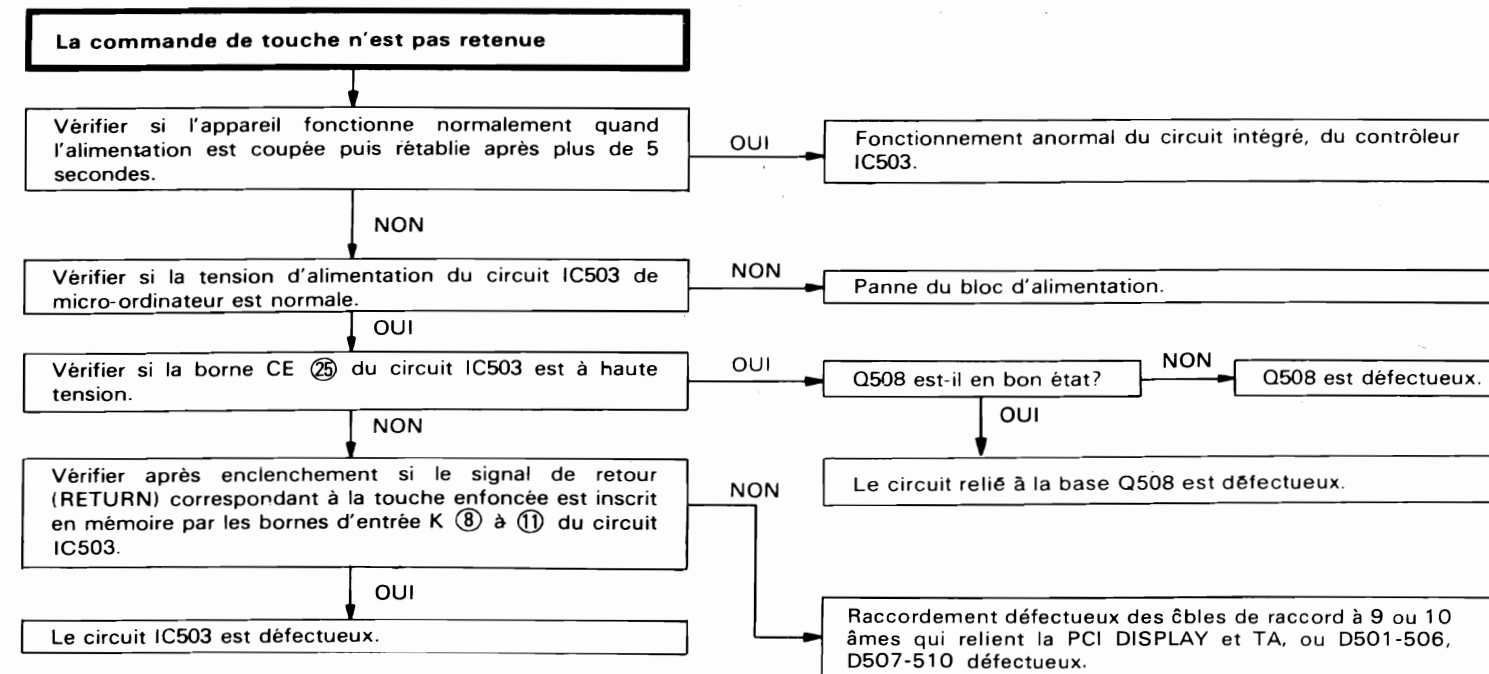
- * : Axial lead cylindrical ceramic capacitor
* : Condensateur céramique cylindrique à conducteur axial

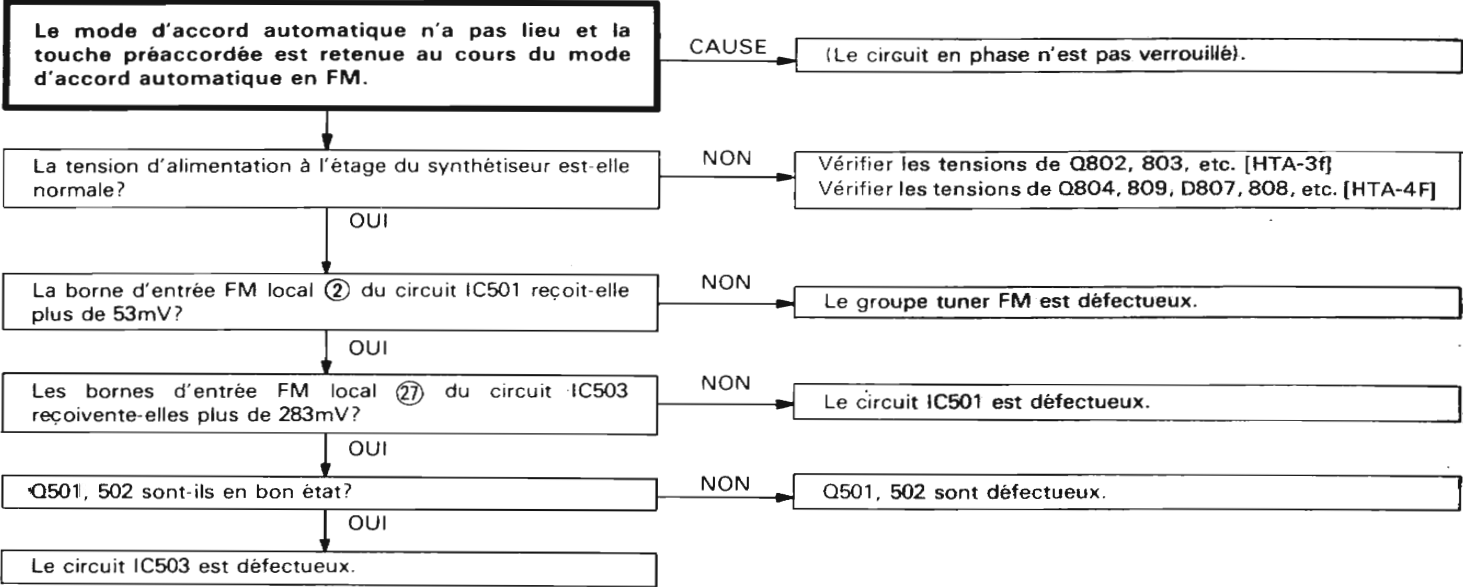


TROUBLE SHOOTING

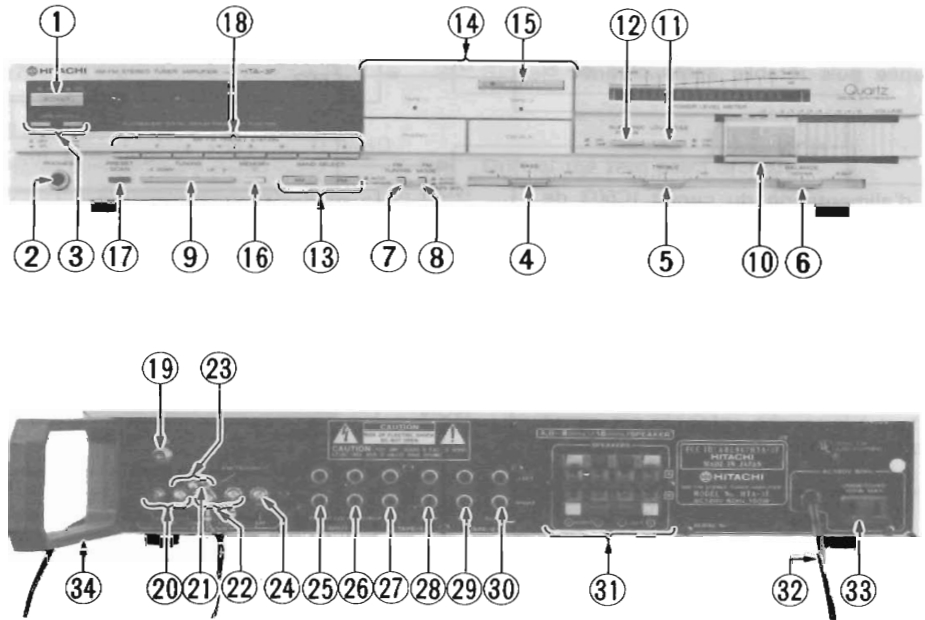


ANALYSE DE PANNES



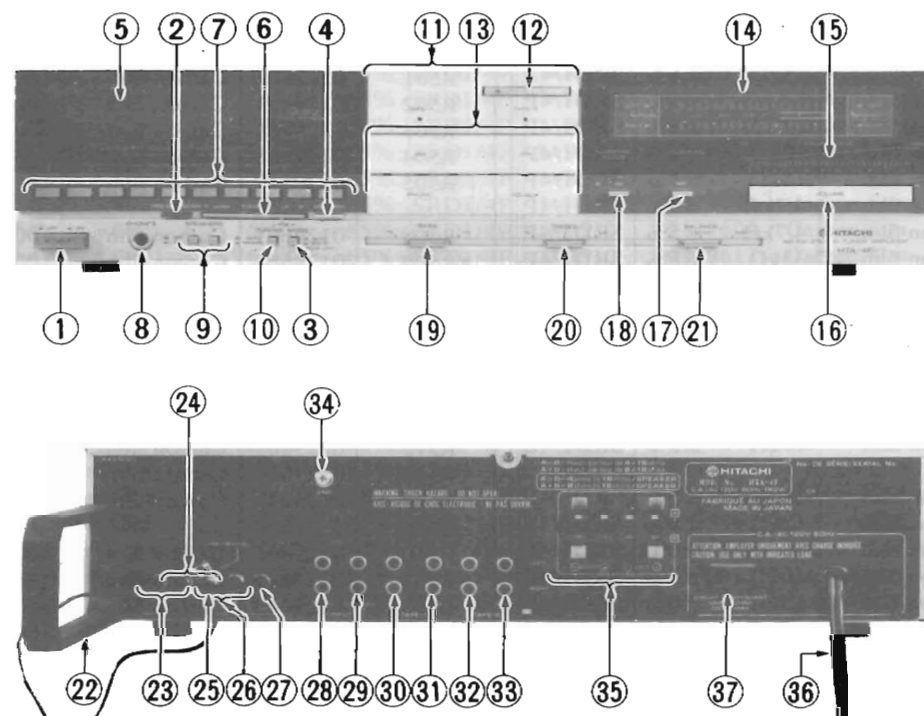


FRONT AND REAR PANEL · PANNEAUX AVANT ET ARRIERE
HTA-3F



- ① POWER switch (POWER)
② HEADPHONES jack (PHONES)
③ SPEAKERS switches (SPEAKERS)
④ BASS control (BASS)
⑤ TREBLE control (TREBLE)
⑥ BALANCE control (BALANCE)
⑦ FM TUNING switch (FM TUNING)
⑧ FM MODE switch (FM MODE)
⑨ TUNING key (UP/DOWN) (TUNING)
⑩ VOLUME control (VOLUME)
⑪ LOUDNESS switch (LOUDNESS)
⑫ SUBSONIC FILTER switch (SUBSONIC FILTER)
⑬ BAND SELECTOR switch (BAND SELECT)
⑭ FUNCTION keys
⑮ TAPE COPY key (Copy 1 ▷ 2) (TAPE COPY)
⑯ MEMORY write key (MEMORY)
⑰ PRESET SCAN key (PRESET SCAN)
⑱ PRESET keys (AM-FM PRESET STATION)
⑲ GROUND terminal (GND)
⑳ FM ANTENNA terminals (300 ohms) (FM ANTENNA)
㉑ GROUND terminal (GND)
㉒ AM LOOP Antenna terminals (AM LOOP ANTENNA)
㉓ FM ANTENNA terminal (75 ohms)
㉔ AM ANTENNA terminal (AM ANTENNA)
㉕ PHONO INPUT jacks (PHONO INPUT)
㉖ CD/VIDEO/AUX INPUT jacks (CD/VIDEO AUX INPUT)
㉗ TAPE-1 REC jacks (TAPE-1 REC)
㉘ TAPE-1 PLAY jacks (TAPE-1 PLAY)
㉙ TAPE-2 REC jacks (TAPE-2 REC)
㉚ TAPE-2 PLAY jacks (TAPE-2 PLAY)
㉛ SPEAKER terminals (SPEAKERS)
㉜ Power supply cord
㉝ AC outlet
㉞ AM LOOP ANTENNA
- ① Interrupteur d'alimentation (POWER)
② Prise du casque d'écoute (PHONES)
③ Interrupteurs d'enceintes (SPEAKERS)
④ Commande des graves (BASS)
⑤ Commande des aigus (TREBLE)
⑥ Commande de balance (BALANCE)
⑦ Bouton d'accord FM (FM TUNING)
⑧ Commutateur de mode FM (FM MODE)
⑨ Touche d'accord (UP/DOWN) (TUNING)
⑩ Commande de volume (VOLUME)
⑪ Commande de correction physiologique (LOUDNESS)
⑫ Interrupteur du filtre infra-acoustique (SUBSONIC FILTER)
⑬ Selecteur de bande (BAND SELECT)
⑭ Touches de fonction
⑮ Touche de copie de bande (copie 1 ▷ 2) (TAPE COPY)
⑯ Touche d'enregistrement de mémoire (MEMORY)
⑰ Touche de pré-réglage de balayage (PRESET SCAN)
⑱ Touches de pré-réglage (AM-FM PRESET STATIONS)
⑲ Borne de mise à la terre (GND)
⑳ Bornes d'antenne FM (300 ohms) (FM ANTENNA)
㉑ Borne de mise à la terre (GND)
㉒ Bornes d'antenne boucle AM (AM LOOP ANTENNA)
㉓ Bornes d'antenne FM (75 ohms)
㉔ Borne d'antenne AM (Antenne AM)
㉕ Prises d'entrée phono (PHONO INPUT)
㉖ Prises d'entrée CD/VIDEO/AUX (CD/VIDEO/AUX INPUT)
㉗ Prises d'enregistrement de bande 1 (TAPE-1 REC)
㉘ Prises de lecture de bande 1 (TAPE-1 PLAY)
㉙ Prises d'enregistrement de bande 2 (TAPE-2 REC)
㉚ Prises de lecture de bande 2 (TAPE-2 PLAY)
㉛ Bornes d'enceintes (SPEAKERS)
㉜ Cordon d'alimentation
㉝ Prise secteur
㉞ Antenne boucle AM

HTA-4F



- ① POWER switch (POWER)
- ② PRESET SCAN key (PRESET SCAN)
- ③ FM MODE switch (FM MODE)
- ④ MEMORY WRITE key (MEMORY)
- ⑤ CHANNEL/FREQUENCY display
- ⑥ TUNING key (UP/DOWN) (TUNING)
- ⑦ PRESET keys (AM-FM PRESET STATION)
- ⑧ HEADPHONES jack (PHONES)
- ⑨ SPEAKER switches (SPEAKERS)
- ⑩ FM TUNING switch (FM TUNING)
- ⑪ TAPE MONITOR key (TAPE-1, TAPE-2)
- ⑫ TAPE COPY key (Copy 1 ▷ 2) (TAPE COPY)
- ⑬ FUNCTION keys
- ⑭ LED POWER LEVEL meter
- ⑮ VOLUME LEVEL indicator (VOLUME LEVEL)
- ⑯ VOLUME control (VOLUME)
- ⑰ LOUDNESS switch (LOUDNESS)
- ⑱ SUBSONIC FILTER switch (SUBSONIC FILTER)
- ⑲ BASS control (BASS)
- ⑳ TREBLE control (TREBLE)
- ㉑ BALANCE control (BALANCE)
- ㉒ AM LOOP antenna
- ㉓ FM ANTENNA terminals (300 ohms) (FM ANTENNA)
- ㉔ FM ANTENNA terminals (75 ohms) (FM ANTENNA)
- ㉕ GROUND terminal (GND)
- ㉖ AM LOOP Antenna terminals (AM LOOP ANTENNA)
- ㉗ AM ANTENNA terminal (AM ANTENNA)
- ㉘ PHONO INPUT jacks (PHONO INPUT)
- ㉙ CD/VIDEO/AUX input jacks (CD/VIDEO AUX INPUT)
- ㉚ TAPE-1 REC jacks (TAPE-1 REC)
- ㉛ TAPE-1 PLAY jacks (TAPE-1 PLAY)
- ㉜ TAPE-2 REC jacks (TAPE-2 REC)
- ㉝ TAPE-2 PLAY jacks (TAPE-2 PLAY)
- ㉞ GROUND terminal (GND)
- ㉟ SPEAKER terminals (SPEAKERS)
- ㊱ POWER SUPPLY cord
- ㊲ AC outlet

- ① Interrupteur d'alimentation (POWER)
- ② Touche de balayage préréglé (PRESET SCAN)
- ③ Commutateur de mode FM (FM MODE)
- ④ Touche d'enregistrement de mémoire (MEMORY)
- ⑤ Affichage de fréquence/canal
- ⑥ Touche d'accord (UP/DOWN) (TUNING)
- ⑦ Touches de préréglage (AM-FM PRESET STATION)
- ⑧ Prise du casque d'écoute (PHONES)
- ⑨ Interrupteurs d'enceintes (SPEAKERS)
- ⑩ Touche d'accord FM (FM TUNING)
- ⑪ Touche de contrôle de bande (TAPE-1, TAPE-2)
- ⑫ Touche de copie de bande (copie 1 ▷ 2) (TAPE COPY)
- ⑬ Touches de fonction
- ⑭ Indicateur de niveau de puissance à DEL
- ⑮ Indicateur de niveau de volume (VOLUME LEVEL)
- ⑯ Commande de volume (VOLUME)
- ⑰ Interrupteur de correction physiologique (LOUDNESS)
- ⑱ Interrupteur du filtre infra-acoustique (SUBSONIC FILTER)
- ⑲ Commande des graves (BASS)
- ⑳ Commande des aigus (TREBLE)
- ㉑ Commande de balance (BALANCE)
- ㉒ Antenne boucle AM
- ㉓ Bornes d'antenne FM (300 ohms) (FM ANTENNA)
- ㉔ Borne d'antenne FM (75 ohms) (FM ANTENNA)
- ㉕ Borne de mise à la terre (GND)
- ㉖ Bornes d'antenne boucle AM (AM LOOP ANTENNA)
- ㉗ Borne d'antenne AM (Antenne AM)
- ㉘ Prises d'entrée phono (PHONO INPUT)
- ㉙ Prises d'entrée CD/VIDEO/AUX (CD/VIDEO/AUX INPUT)
- ㉚ Prises d'enregistrement de bande 1 (TAPE-1 REC)
- ㉛ Prises de lecture de bande 1 (TAPE-1 PLAY)
- ㉜ Prises d'enregistrement de bande 2 (TAPE-2 REC)
- ㉝ Prises de lecture de bande 2 (TAPE-2 PLAY)
- ㉞ Borne de mise à la terre (GND)
- ㉟ Bornes d'enceintes (SPEAKERS)
- ㊱ Cordon d'alimentation
- ㊲ Prise secteur

REPLACEMENT PARTS LIST · TABLEAU DE PIÈCE

* marked parts used for only HTA-3F, o marked parts used for only HTA-4F

SYMBOL No.	PART No.	DESCRIPTION					SYMBOL No.	PART No.	DESCRIPTION					
CAPACITORS														
C001,002	0243899	Ceramic, discal	0.01μF	$\pm 100\%$ 0%	125V		C401LR	0252813	Electrolytic	3.3μF		50V		
C101	0252871	Electrolytic	0.1μF		50V		C402LR	0252231	Electrolytic	100μF		6.3V		
*C105	0240106	Cylindrical ceramic	0.01μF	±30%	25V		*C403	0252535	Electrolytic	470μF		16V		
							oC403	0252521	Electrolytic	10μF		16V		
C151	0275013	Mylar, film	0.022μF	±10%	50V		C404LR	0230036	Cylindrical ceramic	100pF	±5%	50V		
C152	0275015	Mylar, film	0.047μF	±10%	50V		*C405LR	0274036	Mylar, film	0.0082μF	±10%	50V		
C153	0228478	Styrol	510pF	±1%	50V		oC405LR	0274236	Mylar, film	0.0082μF	±5%	50V		
C154	0230066	Cylindrical ceramic	15pF	±5%	50V		C406LR	0274013	Mylar, film	0.0022μF	±10%	50V		
C155	0240108	Cylindrical ceramic	0.022μF	±30%	16V		C407LR	0252813	Electrolytic	3.3μF		50V		
C156	0230012	Cylindrical ceramic	10pF	±5%	50V		C408	0252521	Electrolytic	10μF		16V		
C157	0240108	Cylindrical ceramic	0.022μF	±30%	16V		*C409	0275015	Mylar, film	0.047μF	±10%	50V		
C158	0240108	Cylindrical ceramic	0.022μF	±30%	16V		oC409	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
							C410	0275015	Mylar, film	0.047μF	±10%	50V		
*C160	0274213	Mylar, film	0.0022μF	±5%	50V		*C411	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
							oC411	0275015	Mylar, film	0.047μF	±10%	50V		
C201	0240106	Cylindrical ceramic	0.01μF	±30%	25V		C412	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
C202	0240106	Cylindrical ceramic	0.01μF	±30%	25V		}	}	}	}	}	}		
C203	0252231	Electrolytic	100μF		6.3V		C417	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
*C204	0252525	Electrolytic	47μF		16V		*C418	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
oC204	0252625	Electrolytic	47μF		25V		oC433	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
C205	0240108	Cylindrical ceramic	0.022μF	±30%	16V		C501	0252822	Electrolytic	22μF		50V		
C206	0240108	Cylindrical ceramic	0.022μF	±30%	16V		C502	0252880	Electrolytic	4.7μF		50V		
C207	0246456	Ceramic, discal	47pF	±5%	50V		C503	0240106	Cylindrical ceramic	0.01μF	±30%	25V		
C208	0240108	Cylindrical ceramic	0.022μF	±30%	16V		C504	0252241	Electrolytic	1000μF		6.3V		
C209	0252812	Electrolytic	1μF		50V		C505	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
C210	0245018	Ceramic, discal	0.022μF	$\pm 80\%$ $\pm 20\%$	25V		C506	0240106	Cylindrical ceramic	0.01μF	±30%	25V		
C211	0230036	Cylindrical ceramic	100pF	±5%	50V		C507	0230071	Cylindrical ceramic	24pF	±5%	50V		
C212	0244171	Ceramic, discal	0.01μF	$\pm 80\%$ $\pm 20\%$	50V		C508	0230071	Cylindrical ceramic	24pF	±5%	50V		
C213	0240108	Cylindrical ceramic	0.022μF	±30%	16V		C509	0240108	Cylindrical ceramic	0.022μF	±30%	16V		
C214	0252531	Electrolytic	100μF		16V		C510	0252242	Electrolytic	2200μF		6.3V		
C215	0275015	Mylar, film	0.047μF	±10%	50V		C511	0252521	Electrolytic	10μF		16V		
C216	0252521	Electrolytic	10μF		16V		C512	0275015	Mylar, film	0.047μF	±10%	50V		
C217	0240106	Cylindrical ceramic	0.01μF	±30%	25V		C513	0252225	Electrolytic	47μF		6.3V		
							oC514	0252825	Electrolytic	47μF		50V		
C219	0252535	Electrolytic	470μF		16V		oC515	0240004	Cylindrical ceramic	220pF	±10%	50V		
C220	0252521	Electrolytic	10μF		16V		*C515	0248692	Ceramic, discal	220pF	±5%	50V		
oC221	0274013	Mylar, film	0.0022μF	±10%	50V		oC601LR	0252811	Electrolytic	1μF		50V		
C301	0252521	Electrolytic	10μF		16V		oC602LR	0252811	Electrolytic	1μF		50V		
*C302	0252532	Electrolytic	220μF		16V		oC603LR	0240008	Cylindrical ceramic	470pF	±10%	50V		
oC302	0252541	Electrolytic	1000μF		16V		oC604LR	0275015	Mylar, film	0.047μF	±10%	50V		
C303	0252521	Electrolytic	10μF		16V		oC605LR	0276011	Mylar, film	0.1μF	±10%	50V		
C304	0252521	Electrolytic	10μF		16V		oC606LR	0276011	Mylar, film	0.1μF	±10%	50V		
							*C701LR	0240003	Cylindrical ceramic	180pF	±10%	50V		
*C306	0274012	Mylar, film	0.0015μF	±10%	50V		oC701LR	0230014	Cylindrical ceramic	12pF	±5%	50V		
oC306	0274032	Mylar, film	0.0018μF	±10%	50V		*C702LR	0275033	Mylar, film	0.027μF	±10%	50V		
*C307	0274012	Mylar, film	0.0015μF	±10%	50V		oC702LR	0252811	Electrolytic	1μF		50V		
oC307	0274032	Mylar, film	0.0018μF	±10%	50V		*C703LR	0276011	Mylar, film	0.1μF	±10%	50V		
C308	0252521	Electrolytic	10μF		16V		oC703LR	0240004	Cylindrical ceramic	220pF	±10%	50V		
C309	0252521	Electrolytic	10μF		16V		*C704LR	0276011	Mylar, film	0.1μF	±10%	50V		
C310	0240106	Cylindrical ceramic	0.01μF	±30%	25V		oC704LR	0252231	Electrolytic	100μF		6.3V		
C311	0240106	Cylindrical ceramic	0.01μF	±30%	25V		*C705LR	0252811	Electrolytic	1μF	±20%	50V		
C312	0252811	Electrolytic	1μF		50V		oC705LR	0230021	Cylindrical ceramic	24pF	±5%	50V		
C313	0252811	Electrolytic	1μF		50V		*C706LR	0230014	Cylindrical ceramic	12pF	±5%	50V		
C314	0252873	Electrolytic	0.22μF		50V		oC706LR	0230021	Cylindrical ceramic	24pF	±5%	50V		
C315	0246470	Ceramic, discal	270pF	±5%	50V		oC707LR	0230031	Cylindrical ceramic	62pF	±5%	50V		
C316	0252812	Electrolytic	2.2μF		50V		*C708LR	0252231	Electrolytic	10μF		6.3V		
C317	0252811	Electrolytic	1μF		50V		oC708LR	0276011	Mylar, film	0.1μF	±10%	50V		
C318	0244185	Ceramic, discal	0.047μF	$\pm 80\%$ $\pm 20\%$	50V		*C709LR	0230030	Cylindrical ceramic	56pF	±5%	50V		
C319	0248688	Ceramic, discal	150pF	±5%	50V		oC709LR	0276011	Mylar, film	0.1μF	±10%	50V		
							*C710LR	0230016	Cylindrical ceramic	15pF	±5%	50V		
C351	0252811	Electrolytic	1μF		50V		oC710LR	0240010	Cylindrical ceramic	680pF	±10%	50V		

* marked parts used for only HTA-3F, ◦marked parts used for only HTA-4F

SYMBOL No.	PART No.	DESCRIPTION					SYMBOL No.	PART No.	DESCRIPTION				
*C711LR	0276012	Mylar, film	0.15μF	±10%	50V		*C901	0252805	Electrolytic	0.47μF		50V	
◦C711LR	0240010	Cylindrical ceramic	680pF	±10%	50V		◦C901	0252232	Electrolytic	220μF		6.3V	
*C712LR	0240002	Cylindrical ceramic	150pF	±10%	50V		*C902	0252521	Electrolytic	10μF		16V	
◦C712LR	0240020	Cylindrical ceramic	0.001μF	±20%	50V		◦C902	0252811	Electrolytic	1μF		50V	
*C713LR	0230036	Cylindrical ceramic	100pF	±5%	50V		*C903	0252815	Electrolytic	4.7μF		50V	
◦C713LR	0240008	Cylindrical ceramic	470pF	±10%	50V		◦C903	0252521	Electrolytic	10μF		16V	
*C714LR	0274015	Mylar, film	0.0047μF	±10%	50V		*C904	0252811	Electrolytic	1μF		50V	
◦C714LR	0252521	Electrolytic	10μF		16V		◦C904	0252231	Electrolytic	100μF		6.3V	
*C715LR	0275033	Mylar, film	0.027μF	±10%	50V								
◦C715LR	0274015	Mylar, film	0.0047μF	±10%	50V		◦C910	0240106	Cylindrical ceramic	0.01μF	±30%	25V	
*C716LR	0252521	Electrolytic	10μF		16V		◦C911	0276013	Mylar, film	0.22μF	±10%	50V	
◦C716LR	0275033	Mylar, film	0.027μF	±10%	50V		◦C912	0252521	Electrolytic	10μF		16V	
C717LR	0240003	Cylindrical ceramic	180pF	±10%	50V								
C718LR	0275034	Mylar, film	0.039μF	±10%	50V		◦C920	0252815	Electrolytic	4.7μF		50V	
C719LR	0276013	Mylar, film	0.22μF	±10%	50V		◦C921	0252815	Electrolytic	4.7μF		50V	
C720LR	0252521	Electrolytic	10μF		16V		◦C922	0252521	Electrolytic	10μF		16V	
*C721LR	0230004	Cylindrical ceramic	2.2pF	±10%	50V		RESISTORS						
◦C721LR	0230000	Cylindrical ceramic	1pF	±20%	50V		R001	0139005	Composition	2.7MΩ	±10%	RC1/2GF	
C722LR	0276013	Mylar, film	0.22μF	±10%	50V								
*C723	0276511	Mylar, film	0.1μF	±10%	100V		R101	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
◦C723LR	0252805	Electrolytic	0.47μF		50V		R102	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
◦C724	0276013	Mylar, film	0.22μF	±10%	50V		R103	0134373	Composition	1kΩ	±10%	RC1/2GF	
◦C725	0276013	Mylar, film	0.22μF	±10%	50V								
◦C726LR	0230002	Cylindrical ceramic	1.5pF	±20%	50V		R151	0129631	Carbon film	10kΩ	±5%	SRD1/4P	
							R152	0129631	Carbon film	10kΩ	±5%	SRD1/4P	
◦C731LR	0230036	Cylindrical ceramic	100pF	±5%	50V		R153	0129669	Carbon film	220kΩ	±5%	SRD1/4P	
*C732LR	0276011	Mylar, film	0.1μF	±10%	50V		R154	0129681	Carbon film	680kΩ	±5%	SRD1/4P	
*C734	0276013	Mylar, film	0.22μF	±10%	50V		R155	0129561	Carbon film	100Ω	±5%	SRD1/4P	
							R156	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
							R157	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
*C801	0259931	Electrolytic	6800μF		50V		R201	0129569	Carbon film	220Ω	±5%	SRD1/4P	
*C802	0259931	Electrolytic	6800μF		50V		R202	0129561	Carbon film	100Ω	±5%	SRD1/4P	
*C804	0252823	Electrolytic	33μF		50V		R203	0129575	Carbon film	390Ω	±5%	SRD1/4P	
*C805	0252741	Electrolytic	1000μF		35V		R204	0129603	Carbon film	1.2kΩ	±5%	SRD1/4P	
◦C805	0259927	Electrolytic	10000μF		50V		R205	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
*C806	0252625	Electrolytic	47μF		25V		*R206	0129577	Carbon film	470Ω	±5%	SRD1/4P	
◦C806	0259927	Electrolytic	10000μF		50V		◦R206	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
*C807	0252525	Electrolytic	47μF		16V		R207	0129601	Carbon film	1kΩ	±5%	SRD1/4P	
◦C807	0252521	Electrolytic	10μF		16V		R208	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
*C808	0252331	Electrolytic	100μF		10V		R209	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
◦C808	0252741	Electrolytic	1000μF		35V		R210	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
*C809	0252815	Electrolytic	4.7μF		50V		*R211	0114145	Carbon film	390Ω	±5%	SRD1/4P	
◦C809	0252625	Electrolytic	47μF		25V		◦R211	0129575	Carbon film	390Ω	±5%	SRD1/4P	
*C810	0252811	Electrolytic	1μF		50V		R212	0129575	Carbon film	390Ω	±5%	SRD1/4P	
◦C810	0252625	Electrolytic	47μF		25V		R213	0129639	Carbon film	22kΩ	±5%	SRD1/4P	
*C811	0252832	Electrolytic	220μF		50V		R214	0129661	Carbon film	100kΩ	±5%	SRD1/4P	
◦C811	0252815	Electrolytic	4.7μF		50V		R216	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P	
*C812	0252832	Electrolytic	220μF		50V		R217	0129651	Carbon film	68kΩ	±5%	SRD1/4P	
◦C812	0252811	Electrolytic	1μF		50V		R218	0129561	Carbon film	100Ω	±5%	SRD1/4P	
*C813	0252825	Electrolytic	47μF		50V		R219	0129561	Carbon film	18Ω	±5%	SRD1/4P	
◦C813	0252525	Electrolytic	47μF		16V		R220	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P	
*C814	0252825	Electrolytic	47μF		50V		◦R221	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
◦C814	0252331	Electrolytic	100μF		10V		*R222	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	
*C815	0252825	Electrolytic	47μF		50V								
◦C815	0252835	Electrolytic	470μF		50V		R301	0129645	Carbon film	39kΩ	±5%	SRD1/4P	
*C816	0252625	Electrolytic	47μF		25V		R302	0123622	Carbon film	120Ω	±5%	SRD1/4P	
◦C816	0252835	Electrolytic	470μF		50V		R303	0129643	Carbon film	33kΩ	±5%	SRD1/4P	
*C817	0252531	Electrolytic	100μF		16V		R304	0129643	Carbon film	33kΩ	±5%	SRD1/4P	
◦C817	0252825	Electrolytic	47μF		50V		R305	0129671	Carbon film	270kΩ	±5%	SRD1/4P	
*C818	0252625	Electrolytic	47μF		25V		R306	0129647	Carbon film	47kΩ	±5%	SRD1/4P	
◦C819	0252812	Electrolytic	2.2μF		50V		R307	0129647	Carbon film	47kΩ	±5%	SRD1/4P	
*C820	0274013	Mylar, film	0.0022μF	±10%	50V		R308	0129637	Carbon film	18kΩ	±5%	SRD1/4P	
◦C820	0252625	Electrolytic	47μF		25V								
◦C821	0252825	Electrolytic	47μF		50V								
◦C822	0252825	Electrolytic	47μF		50V								
◦C823	0252811	Electrolytic	1μF		50V								

* marked parts used for only HTA-3F, ◦marked parts used for only HTA-4F

SYMBOL No. PART No. DESCRIPTION						SYMBOL No. PART No. DESCRIPTION					
R309	0129637	Carbon film	18kΩ	±5%	SRD1/4P	R501	0129601	Carbon film	1kΩ	±5%	SRD1/4P
R310	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P	R502	0129631	Carbon film	10kΩ	±5%	SRD1/4P
R311	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P	R503	0129581	Carbon film	680Ω	±5%	SRD1/4P
R312	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R504	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P
R313	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R505	0129537	Carbon film	18Ω	±5%	SRD1/4P
R314	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P						
R315	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P	R508	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R316	0129643	Carbon film	33kΩ	±5%	SRD1/4P	*R509	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R318	0129601	Carbon film	1kΩ	±5%	SRD1/4P	◦R509	0129631	Carbon film	10kΩ	±5%	SRD1/4P
R319	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R510	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R320	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P						
R321	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R512	0129539	Carbon film	22Ω	±5%	SRD1/4P
R322	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R513	0129649	Carbon film	56kΩ	±5%	SRD1/4P
R323	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R514	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R324	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R515	0129661	Carbon film	100kΩ	±5%	SRD1/4P
					R516	0129631	Carbon film	10kΩ	±5%	SRD1/4P	
					R517	0129649	Carbon film	56kΩ	±5%	SRD1/4P	
R351	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P						
R352	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R520	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R353	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R522	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R354	0129561	Carbon film	100Ω	±5%	SRD1/4P	R523	0129649	Carbon film	56kΩ	±5%	SRD1/4P
R355	0129631	Carbon film	10kΩ	±5%	SRD1/4P	R524	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R356	0129637	Carbon film	18kΩ	±5%	SRD1/4P	R525	0129649	Carbon film	56kΩ	±5%	SRD1/4P
R357	0129645	Carbon film	39kΩ	±5%	SRD1/4P	R526	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R358	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	R527	0129649	Carbon film	56kΩ	±5%	SRD1/4P
R359	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R528	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R360	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R529	0129631	Carbon film	10kΩ	±5%	SRD1/4P
R361	0129645	Carbon film	39kΩ	±5%	SRD1/4P	R530	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P
R362	0129661	Carbon film	100kΩ	±5%	SRD1/4P	*R531	0134376	Composition	1.8kΩ	±10%	RC1/2GF
R363	0129631	Carbon film	10kΩ	±5%	SRD1/4P	◦R531	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P
R364	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P	*R532	0134376	Composition	1.8kΩ	±10%	RC1/2GF
R365	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P	◦R532	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P
R366	0129661	Carbon film	100kΩ	±5%	SRD1/4P	*R533	0134376	Composition	1.8kΩ	±10%	RC1/2GF
R367	0129661	Carbon film	100kΩ	±5%	SRD1/4P	◦R533	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P
					R534	0129623	Carbon film	8.2kΩ	±5%	SRD1/4P	
R401LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	R535	0129641	Carbon film	27kΩ	±5%	SRD1/4P
*R402LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R536	0129575	Carbon film	390Ω	±5%	SRD1/4P
◦R402LR	0129673	Carbon film	330kΩ	±5%	SRD1/4P	R537	0129565	Carbon film	150Ω	±5%	SRD1/4P
*R403LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R538	0129601	Carbon film	1kΩ	±5%	SRD1/4P
◦R403LR	0129649	Carbon film	56kΩ	±5%	SRD1/4P	R539	0129547	Carbon film	47Ω	±5%	SRD1/4P
R404LR	0129581	Carbon film	680Ω	±5%	SRD1/4P	R540	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P
R405LR	0129675	Carbon film	390kΩ	±5%	SRD1/4P	R541	0129619	Carbon film	5.6kΩ	±5%	SRD1/4P
R406LR	0129643	Carbon film	33kΩ	±5%	SRD1/4P	R542	0129631	Carbon film	10kΩ	±5%	SRD1/4P
R407LR	0129581	Carbon film	680Ω	±5%	SRD1/4P	R543	0129661	Carbon film	100kΩ	±5%	SRD1/4P
*R408LR	0129643	Carbon film	33kΩ	±5%	SRD1/4P	}	}	}	}	}	}
◦R408LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R546	0129661	Carbon film	100kΩ	±5%	SRD1/4P
R409LR	0129581	Carbon film	680Ω	±5%	SRD1/4P	◦R547	0129669	Carbon film	220kΩ	±5%	SRD1/4P
R410LR	0129681	Carbon film	680kΩ	±5%	SRD1/4P						
R411LR	0129581	Carbon film	680Ω	±5%	SRD1/4P						
R412LR	0129681	Carbon film	680kΩ	±5%	SRD1/4P	*R551	0129669	Carbon film	220kΩ	±5%	SRD1/4P
R413LR	0129581	Carbon film	680Ω	±5%	SRD1/4P						
R414LR	0129681	Carbon film	680kΩ	±5%	SRD1/4P	◦R601LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P
*R415	0129701	Carbon film	1MΩ	±5%	SRD1/4P	◦R602LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P
◦R415	0129661	Carbon film	100kΩ	±5%	SRD1/4P	◦ }	}	}	}	}	}
*R416	0129701	Carbon film	1MΩ	±5%	SRD1/4P	◦R604LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P
◦R416	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R605LR	0129569	Carbon film	220Ω	±5%	SRD1/4P
*R417	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R606LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P
◦R417	0129661	Carbon film	100kΩ	±5%	SRD1/4P	◦R607LR	0129643	Carbon film	33kΩ	±5%	SRD1/4P
R418	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R608LR	0129709	Carbon film	2.2MΩ	±5%	SRD1/4P
*R419	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R609LR	0129631	Carbon film	10kΩ	±5%	SRD1/4P
◦R419	0129701	Carbon film	1MΩ	±5%	SRD1/4P						
*R420	0129661	Carbon film	100kΩ	±5%	SRD1/4P	*R701LR	0129651	Carbon film	68kΩ	±5%	SRD1/4P
◦R420	0129701	Carbon film	1MΩ	±5%	SRD1/4P	◦R701LR	0129619	Carbon film	5.6kΩ	±5%	SRD1/4P
*R421	0129661	Carbon film	100kΩ	±5%	SRD1/4P	R702LR	0129709	Carbon film	2.2MΩ	±5%	SRD1/4P
◦R421	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	*R703LR	0129639	Carbon film	22kΩ	±5%	SRD1/4P
R422	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R703LR	0129663	Carbon film	120kΩ	±5%	SRD1/4P
R423	0129705	Carbon film	1.5MΩ	±5%	SRD1/4P	◦R704LR	0129561	Carbon film	100Ω	±5%	SRD1/4P

* marked parts used for only HTA-3F, ◦ marked parts used for only HTA-4F

SYMBOL No.	PART No.	DESCRIPTION					SYMBOL No.	PART No.	DESCRIPTION				
◦R705LR	0129561	Carbon film	100Ω	±5%	SRD1/4P	*R806	0129601	Carbon film	1kΩ	±5%	SRD1/4P		
*R706LR	0129619	Carbon film	5.6kΩ	±5%	SRD1/4P	◦R806	0129603	Carbon film	1.2kΩ	±5%	SRD1/4P		
◦R706LR	0129583	Carbon film	820Ω	±5%	SRD1/4P	R807	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P		
*R707LR	0129709	Carbon film	2.2MΩ	±5%	SRD1/4P	△◦R808	0110625	Metal (fuse resistor)	220Ω	±5%	RN1/4B		
◦R707LR	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P	*R809	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P		
*R708LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	◦R809	0129601	Carbon film	1kΩ	±5%	SRD1/4P		
◦R708LR	0129651	Carbon film	68kΩ	±5%	SRD1/4P	*R810	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P		
*R709LR	0129651	Carbon film	68kΩ	±5%	SRD1/4P	◦R810	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P		
◦R709LR	0129601	Carbon film	1kΩ	±5%	SRD1/4P	*R811	0129619	Carbon film	5.6kΩ	±5%	SRD1/4P		
*R710LR	0129631	Carbon film	10kΩ	±5%	SRD1/4P	◦R811	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P		
◦R710LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	*R812	0129635	Carbon film	15kΩ	±5%	SRD1/4P		
*R711LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	△*R813	0110623	Metal (fuse resistor)	150Ω	±5%	RN1/4B		
◦R711LR	0129601	Carbon film	1kΩ	±5%	SRD1/4P	◦R813	0123633	Carbon film	1kΩ	±5%	SRD1/4P		
*R712LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	*R814	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P		
△◦R712LR	0110605	Metal (fuse resistor)	22Ω	±5%	RN1/4B	◦R814	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P		
*R713LR	0129553	Carbon film	82Ω	±5%	SRD1/4P	*R815	0129569	Carbon film	220Ω	±5%	SRD1/4P		
◦R713LR	0129631	Carbon film	10kΩ	±5%	SRD1/4P	◦R815	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P		
*R714LR	0129631	Carbon film	10kΩ	±5%	SRD1/4P	*R816	0129661	Carbon film	100kΩ	±5%	SRD1/4P		
△◦R714LR	0110621	Metal (fuse resistor)	100Ω	±5%	RN1/4B	△*R817	0110622	Metal (fuse resistor)	120Ω	±5%	RN1/4B		
*R715LR	0129604	Carbon film	1.3kΩ	±5%	SRD1/4P	*R818	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R715LR	0129663	Carbon film	120kΩ	±5%	SRD1/4P	△◦R818	0110625	Metal (fuse resistor)	220Ω	±5%	RN1/4B		
*R716LR	0129661	Carbon film	100kΩ	±5%	SRD1/4P	*R819	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R716LR	0129703	Carbon film	1.2MΩ	±5%	SRD1/4P	◦R819	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P		
*R717LR	0129561	Carbon film	100Ω	±5%	SRD1/4P	*R820	0129631	Carbon film	10kΩ	±5%	SRD1/4P		
◦R717LR	0129621	Carbon film	6.8kΩ	±5%	SRD1/4P	◦R820	0129635	Carbon film	15kΩ	±5%	SRD1/4P		
*R718LR	0129561	Carbon film	100Ω	±5%	SRD1/4P	*R821	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R718LR	0129619	Carbon film	5.6kΩ	±5%	SRD1/4P	△◦R821	0110625	Metal (fuse resistor)	220Ω	±5%	RN1/4B		
*R719LR	0129645	Carbon film	39kΩ	±5%	SRD1/4P	*R822	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R719LR	0129603	Carbon film	1.2kΩ	±5%	SRD1/4P	◦R822	0129601	Carbon film	1kΩ	±5%	SRD1/4P		
*R720LR	0129645	Carbon film	39kΩ	±5%	SRD1/4P	*R823	0129631	Carbon film	10kΩ	±5%	SRD1/4P		
◦R720LR	0129583	Carbon film	820Ω	±5%	SRD1/4P	◦R823	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R721LR	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P	*R824	0129639	Carbon film	22kΩ	±5%	SRD1/4P		
◦R722	0129639	Carbon film	22kΩ	±5%	SRD1/4P	◦R824	0129577	Carbon film	470Ω	±5%	SRD1/4P		
◦R723	0129631	Carbon film	10kΩ	±5%	SRD1/4P	◦R825	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P		
*R724LR	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P								
◦R724	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P	*R901	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P		
◦R725LR	0129623	Carbon film	8.2kΩ	±5%	SRD1/4P	◦R901	0129649	Carbon film	56kΩ	±5%	SRD1/4P		
*R726LR	0129581	Carbon film	680Ω	±5%	SRD1/4P	*R902	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P		
◦R727LR	0129581	Carbon film	680Ω	±5%	SRD1/4P	◦R902	0129649	Carbon film	56kΩ	±5%	SRD1/4P		
*R728LR	0129583	Carbon film	820Ω	±5%	SRD1/4P	*R903	0129633	Carbon film	12kΩ	±5%	SRD1/4P		
◦R728LR	0129637	Carbon film	18kΩ	±5%	SRD1/4P	◦R903	0119532	Metal oxide	820Ω	±10%	RS2B		
*R729LR	0129663	Carbon film	120kΩ	±5%	SRD1/4P	*R904	0129561	Carbon film	100Ω	±5%	SRD1/4P		
◦R729LR	0129583	Carbon film	820Ω	±5%	SRD1/4P	◦R904	0119443	Metal oxide	1.5kΩ	±10%	RS1B		
*R730LR	0129531	Carbon film	10Ω	±5%	SRD1/4P	*R905	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P		
◦R730LR	0129663	Carbon film	120kΩ	±5%	SRD1/4P	◦R905	0129661	Carbon film	100kΩ	±5%	SRD1/4P		
R731LR	0129633	Carbon film	12kΩ	±5%	SRD1/4P	*R906	0129635	Carbon film	15kΩ	±5%	SRD1/4P		
R733LR	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	◦R906	0129647	Carbon film	47kΩ	±5%	SRD1/4P		
*R734LR	0129637	Carbon film	18kΩ	±5%	SRD1/4P	*R907	0129661	Carbon film	100kΩ	±5%	SRD1/4P		
◦R734LR	0129531	Carbon film	10Ω	±5%	SRD1/4P	◦R907	0129653	Carbon film	82kΩ	±5%	SRD1/4P		
R735LR	0119134	Metal	1.8Ω	±5%	RN2B	*R908	0129637	Carbon film	18kΩ	±5%	SRD1/4P		
R736LR	0134366	Composition	270Ω	±10%	RC1/2GF	*R909	0129621	Carbon film	6.8kΩ	±5%	SRD1/4P		
◦R737LR	0129617	Carbon film	4.7kΩ	±5%	SRD1/4P	*R910	0134372	Composition	820Ω	±10%	RC1/2GF		
◦R738LR	0129561	Carbon film	100Ω	±5%	SRD1/4P	◦R910	0129661	Carbon film	100kΩ	±5%	SRD1/4P		
◦R739LR	0129633	Carbon film	12kΩ	±5%	SRD1/4P	}	}	}	}	}	}		
◦R740LR	0129615	Carbon film	3.9kΩ	±5%	SRD1/4P	◦R913	0129661	Carbon film	100kΩ	±5%	SRD1/4P		
◦R748LR	0134373	Composition	1kΩ	±10%	RC1/2GF	◦R914	0129631	Carbon film	10kΩ	±5%	SRD1/4P		
*R801	0129649	Carbon film	56kΩ	±5%	SRD1/4P	}	}	}	}	}	}		
◦R801	0134380	Composition	3.9kΩ	±10%	RC1/2GF	◦R917	0129631	Carbon film	10kΩ	±5%	SRD1/4P		
*R802	0134381	Composition	4.7kΩ	±10%	RC1/2GF	◦R918	0119041	Metal	10Ω	±10%	RN1B		
△◦R802	0113827	Metal (fuse resistor)	6.8Ω	±5%	RN1/2B	◦R919	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P		
△*R803	0118447	Metal (fuse resistor)	6.8Ω	±5%	RN1/2B	◦R920	0129613	Carbon film	3.3kΩ	±5%	SRD1/4P		
◦R803	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	◦R921	0129577	Carbon film	470Ω	±5%	SRD1/4P		
*R804	0129609	Carbon film	2.2kΩ	±5%	SRD1/4P	◦R922	0129561	Carbon film	100Ω	±5%	SRD1/4P		
◦R804	0129605	Carbon film	1.5kΩ	±5%	SRD1/4P	◦R923	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P		
△*R805	0110623	Metal (fuse resistor)	150Ω	±5%	RN1/4B	◦R930	0129581	Carbon film	680Ω	±5%	SRD1/4P		
◦R805	0129607	Carbon film	1.8kΩ	±5%	SRD1/4P	◦R931	0129581	Carbon film	680Ω	±5%	SRD1/4P		

* marked parts used for only HTA-3F, ◦ marked parts used for only HTA-4F

SYMBOL No.	PART No.	DESCRIPTION	SYMBOL No.	PART No.	DESCRIPTION
IC & TRANSISTOR					
IC201	2368431	AN278	*Q801	2328652	2SC1740LN (S)
IC202	2387321	AN7273	◦Q801	2317822	2SD880 (Y)
			*Q802	2317822	2SD880 (Y)
IC301	2367271	HA1196	◦Q802	2328652	2SC1740LN (S)
			*Q803	2317782	2SC2235 (Y)
IC401	2368041	NJM4558DX	◦Q803	2317822	2SD880 (Y)
IC402	2368831	CX770A	Q804	2317782	2SC2235 (Y)
}	}	}	*Q805	2317792	2SA965 (Y)
IC404	2368831	CX770A	◦Q805	2317832	2SB834 (Y)
IC501	2368741	μPB553AC	*Q806	2317792	2SA965 (Y)
IC502	2387421	AN6873N	*Q807	2329183	2SA1015 (GR)
IC503	2369723	μPD1704C - 545	◦Q807	2317792	2SA965 (Y)
IC504	2387511	TD62706P	*Q808	2328652	2SC1740LN (S)
			◦Q808	2317792	2SA965 (Y)
			◦Q809	2317782	2SC2235 (Y)
IC701	2369771	STK2230			
*IC901	2368631	IR - 2E01	◦Q901	2328652	2SC1740LN (S)
◦IC901	2367372	HA - 12002R	◦Q902	2328652	2SC1740LN (S)
◦IC902	2469931	BA6109	◦Q903	2329183	2SA1015 (GR)
◦IC903	2387391	IR2E27	◦Q904	2329183	2SA1015 (GR)
			◦Q905	2328652	2SC1740LN (S)
Q151	2328652	2SC1740LN (S)	DIODES		
Q201	2328652	2SC1740LN (S)	D101	2337601	1S2473
			D102	2337601	1S2473
Q301	2329183	2SA1015 (GR)	D151	2338541	KV - 1226
Q351	2328652	2SC1740LN (S)	D152	2337601	1S2473
}	}	}	D153	2337601	1S2473
Q354	2328652	2SC1740LN (S)	D301	2337601	1S2473
Q355	2329183	2SA1015 (GR)	D302	2337601	1S2473
Q356	2328652	2SC1740LN (S)	D351	2337601	1S2473
Q357	2328652	2SC1740LN (S)	D352	2337601	1S2473
			D353	2337601	1S2473
Q501	2328653	2SC1740LN (E)	D354	2337601	1S2473
Q502	2328653	2SC1740LN (E)			
Q504	2328652	2SC1740LN (S)	*D402	2337601	1S2473
Q505	2328652	2SC1740LN (S)	D403	2337601	1S2473
Q506	2329183	2SA1015 (GR)	}	}	}
Q507	2328652	2SC1740LN (S)	D408	2337601	1S2473
Q508	2329183	2SA1015 (GR)	◦D409	2337601	1S2473
Q509	2328652	2SC1740LN (S)			
Q510	2329183	2SA1015 (GR)	D501	2337601	1S2473
Q511	2328652	2SC1740LN (S)	}	}	}
Q512	2329183	2SA1015 (GR)	D510	2337601	1S2473
}	}	}			
Q514	2329183	2SA1015 (GR)	D513	2337601	1S2473
◦Q517	2328652	2SC1740LN (S)	}	}	}
			D516	2337601	1S2473
◦Q601LR	2328652	2SC1740LN (S)	◦D518	2337601	1S2473
◦Q602LR	2328652	2SC1740LN (S)	D519	2337601	1S2473
			}	}	}
Q701LR	2367656	2SC2259 (G)	D527	2337601	1S2473
*Q702LR	2328862	2SB716 (E)	D528	2337751	GL - 5PR6 (Red)
◦Q702LR	2329183	2SA1015 (GR)	}	}	}
*Q703LR	2328862	2SB716 (E)	D530	2337751	GL - 5PR6 (Red)
◦Q703LR	2327893	2SA872 (E)	*D531	2337519	HZ6C - 3
*Q704LR	2328872	2SD756 (E)	◦D531	2337601	1S2473
◦Q704LR	2328862	2SB716 (E)	◦D532	2337519	HZ6C - 3
◦Q705LR	2328872	2SD756 (E)			
◦Q706	2329183	2SA1015 (GR)	◦D601LR	2337601	1S2473
◦Q707LR	2327923	2SC1775A (E)	◦D602LR	2337601	1S2473
◦Q708LR	2328652	2SC1740LN (S)			
◦Q709LR	2329183	2SA1015 (GR)	◦D701LR	2337601	1S2473

* marked parts used for only HTA-3F, ◦ marked parts used for only HTA-4F

SYMBOL No.	PART No.	DESCRIPTION	SYMBOL No.	PART No.	DESCRIPTION
*D702LR	2337601	1S2473	T151	2136503	MW RF Coil
◦D702LR	2337762	ERB12 - 01R	T152	2136493	MW OSC Coil
◦D703LR	2337601	1S2473			
◦D704LR	2337151	1S2076A	T201	2154493	AM IF trans.
◦D705LR	2337601	1S2473	T202	2155174	FM discr. coil
◦D706LR	2337601	1S2473	T203	2155175	FM discr. coil
◦D707LR	2337601	1S2473			
◦D708LR	2337921	1K34A	MISCELLANEOUS (HTA-3F)		
◦D709LR	2337601	1S2473	MF201,	2134992	FM ceramic filter MA8
◦D710LR	2337931	1K60R	202,		
*D801	2337461	S4VB20	MF203	2155152	AM ceramic filter 450F3
◦D801	2337341	S5VB20			
D802	2337762	ERB12 - 01R	CT151	0283126	Trimmer capacitor 11P
}	}	}	RP501	0189014	100 kΩ
D806	2337762	ERB12 - 01R	RP502	0189031	39 kΩ
*D807	2337189	HZ - 15 - 3	RP503	0189001	100 kΩ
◦D807	2337762	ERB12 - 01R	CP501	0241892	Capacitor array (300P × 7)
*D808	2337519	HZ6C - 3	△ S001	2639869	Power switch
◦D808	2337122	HZ6B	S350	2639931	2 keys push switch
*D809	2337122	HZ6B	S501	2639682	Tact switch
◦D809	2337189	HZ15 - 3	}	}	}
*D810	2337186	HZ - 30 - 3	S510	2639682	Tact switch
◦D810	2337555	HZ11 - B2	S511	2638241	Tact switch
*D811	2337188	HZ - 24 - 2	}	}	}
◦D811	2337519	HZ6C - 3	S513	2638241	Tact switch
*D812	2337549	HZ - 7C - 3	S514	2639682	Tact switch
D813	2337189	HZ - 15 - 3	}	}	}
*D814	2337601	1S2473	S518	2639682	Tact switch
◦D814	2337188	HZ24 - 2	S519	2638241	Tact switch
*D815	2337601	1S2473	S520	2539931	2 keys push switch
◦D815	2337549	HZ7C - 3	S701	2639092	1 key push switch
*D816	2337762	ERB12 - 01R	S702	2639092	1 key push switch
◦D816	2337186	HZ30 - 3	S703	2639941	2 keys push switch
*D817	2337601	1S2473	S704	2639941	2 keys push switch
◦D817	2338371	HZ22 - 1			
◦D818	2338371	HZ22 - 1	△ B501	2810161	Lithium Battery
			J001	2677751	Headphone jack
*D901	2337931	1K60R	△ F001	2727564	Fuse (2.5A 125V)
◦D901	2337762	ERB12 - 01R			
*D902	2337931	1K60R	△ F701LR	2727223	Fuse 3A 250V
*D903	2337601	1S2473		2688281	8P Push terminal
◦D910	2337122	HZ6B		2688203	5P screw terminal
◦D911	2337751	GL - 5PR6 (Red)		2425381	FM tuner pack
}	}	}		2677612	6P US pin jack
◦D920	2337751	GL - 5PR6 (Red)		2788613	Flourescent display tube
VARIABLE RESISTOR			X501	2789281	Crystal oscillator 4.5 MHz
R317	0150958	10kΩ - (B)		2397031	LED ass'y (D904 ~ D909)
◦R610LR	0158604	100kΩ - (B)	for REAR PLATE ASSEMBLY		
◦R611LR	0166724	100kΩ - (M)		4453751	Rear plate (for U.S.A.)
*R704LR	0166727	200kΩ - (B) MAIN VOL.		4453752	Rear plate (for Canada)
*R705LR	0166724	100kΩ - (MW) BALANCE		4575661	Earth screw
*R725LR	0166725	50kΩ - (C) TREBLE		4408861	Washer
◦R726LR	0166725	50kΩ - (C)	△	0043793	Bushing (3P - 4) (for U.S.A.)
*R732LR	0166725	50kΩ - (C) BASS	△	3913006	Bushing (4N - 4) (for Canada)
◦R732LR	0166725	50kΩ - (C)			
COIL & TRANSFORMERS			△	2702331	Power supply cord (for U.S.A.)
L701LR	2227361	Audio trap coil - 0.67μH	△	2700122	Power supply cord (for Canada)
*T001	2248361	Power trans.	△	2657721	AC outlet (for U.S.A.)
◦T001	2248381	Power trans.	△	2658372	AC outlet (for Canada)

SYMBOL No.	PART No.	DESCRIPTION
for FINAL ASSEMBLY		
	4450411	Cover
	4567463	4φ × 10 DT bind screw
for DIAL MECHANISM ASSEMBLY		
	4024551	Front panel ass'y
	3297861	Tape copy button ass'y
	3297671	Power button ass'y
	3297631	Push button (SPEAKER)
	3297591	PRESET button
	3297581	Push button (SM) Preset scan
	3297582	Push button (SM) Memory
	3297611	UP. Down button
	3297571	Push button (AM)
	3297572	Push button (FM)
	3297621	Push button (Tuning Mode)
	3297761	Function button (L) ass'y (TAPE)
	3297741	Function button (S) ass'y (PHONO)
	3297742	Function button (S) ass'y (CD/AUX)
	3902692	Power display sheet
	3297601	Push button (SUBSONIC FIL LOUDNESS)
	3296681	Volume knob
	3297851	Slide Inner Knob
	3296511	Slide VR Knob
	4451151	Slide VR plate
	3927411	Leg
	2757573	Loop antenna
	4567413	3φ × 10 DT bind screw
	4567422	4φ × 8 DT bind screw
	4573552	3φ × 16 bind tapping screw
	8691412	3φ × 12 bind tapping screw
	4784106	3φ × 10 bind tapping screw
	4567454	3φ × 12 DT bind screw
	4567411	3φ × 6 DT bind screw
	4580933	2φ × 3 pan head screw
	4567432	3φ × 8 DT bind screw
	4784106	3φ × 10 bind tapping screw
	4568812	3φ × 8 DT flat head screw
	4574605	3φ × 8 bind double thread screw
	4567432	3φ × 8 DT bind screw
	4567412	3φ × 8 DT bind screw
for ACCESSORIES		
	2757522	FM antenna
MISCELLANEOUS (HTA-4F)		
CT151	0283126	Trimmer capacitors 11P
RP501	0189014	100 kΩ
RP502	0189031	39 kΩ
RP503	0189001	100 kΩ
CP501	0241892	Capacitor array (300P × 7)
MF201	2134992	FM Ceramic filter MA8
MF202	2134992	FM Ceramic filter MA8
MF203	2155152	AM Ceramic filter 450F3
X501	2789281	Crystal oscillator 4.5MHz
△ B501	2810161	Lithium battery CR2032

SYMBOL No.	PART No.	DESCRIPTION
△ S001	2639869	Power switch
S350	2639931	2 keys push switch
S501	2639682	Tact switch
}	}	}
S512	2639682	Tact switch
S513	2638241	Tact switch
S514	2639682	Tact switch
}	}	}
S522	2639682	Tact switch
S523	2638241	Tact switch
S524	2639931	2 keys push switch
S601	2639932	2 keys push switch
S602	2639932	2 keys push switch
S701	2639942	2 keys push switch
S702	2639942	2 keys push switch
△ F001	2727565	Fuse - 3A 125V
RY901	2647221	Miniature power relay
J001	2677751	Headphone jack
TH701LR	2347114	Thermostat
	2677612	6P US pin jack
	2688201	5P screw terminal
	2688281	8P push terminal
	2425381	FM tuner pack
	2788613	Flourescent display tube
	2397041	Led bar
for REAR PLATE ASSEMBLY		
	4451511	Rear plate (for U.S.A.)
	4451512	Rear plate (for Canada)
	4575661	Earth screw
	4408861	Washer
△ 0043793		Bushing (3P - 4) (for U.S.A.)
△ 3913006		Bushing (4N - 4) (for Canada)
△ 2702331		Power supply cord (for U.S.A.)
△ 2700122		Power supply cord (for Canada)
△ 2657721		AC outlet (for U.S.A.)
△ 2658372		AC outlet (for Canada)
2757573		AM Loop antenna
for FINAL ASSEMBLY		
	4451522	Cover
	4567463	4φ × 10 DT bind screw
	4567452	3φ × 8 DT bind screw
for DIAL MECHANISM ASSEMBLY		
T001	2248381	Power trans. AC 120V
	4023551	Front panel ass'y
	3959352	Display sheet
	3959351	Display sheet
	3959331	Blind A
	3959341	Blind B
	3947541	Nylon rivet B

SYMBOL No.	PART No.	DESCRIPTION	SYMBOL No.	PART No.	DESCRIPTION
	3298191	Knob (14) PRESET SCAN		4567413	3φ × 10 DT bind screw
	3298201	Knob (UD)		4784106	3φ × 10 bind tapping screw
	3298192	Knob (14) MEMORY		4567422	4φ × 8 DT bind screw
	3298131	Knob (T) ass'y TAPE - 1,2		4573554	4φ × 16 bind tapping screw
	3298071	Knob (B) ass'y AM FM		4567454	3φ × 12 DT bind screw
	3298101	Knob (F) ass'y CD/AUX		4567411	3φ × 6 DT bind screw
	3298102	Knob (F) ass'y PHONO		4573552	3φ × 16 bind tapping screw
	3296511	Slide volume knob (BASS, TREBLE, BALANCE)		4784106	3φ × 10 bind tapping screw
	3298181	Knob (Volume) ass'y		4567432	3φ × 8 DT bind screw
	3298211	Preset knob ass'y		4567411	3φ × 6 DT bind screw
	3249851	Escutcheon		4567413	3φ × 10 DT bind screw
	4568812	3φ × 8 DT flat head screw			for ACCESSORIES
	4567411	3φ × 6 DT bind screw			
	4567413	3φ × 10 DT bind screw			
	4784106	3φ × 10 bind tapping screw		2757522	FM Antenna
	4784106	3φ × 10 bind tapping screw			
	4580933	2φ × 3 pan head screw			
	3960431	Plastic rivet			
	4784103	3φ × 8 bind tapping screw			
	3298031	Push button (S)			
	3298561	Push (A) ass'y			
	3298051	Power button ass'y			
	3927411	Leg			



HITACHI SALES CORPORATION OF AMERICA
Eastern Regional Office

1200 Wall Street West, Lyndhurst, New Jersey
07071, U.S.A.
Tel. 201-935-8980

Mid-Western Regional Office

1400 Morse Ave., Elk Grove Village, Ill. 60007, U.S.A.
Tel. 312-593-1550

Southern Regional Office

510 Plaza Drive College Park, Georgia 30349, U.S.A.
Tel. 404-763-0360

Western Regional Office

401 West Artesia Boulevard, Compton, California
90220, U.S.A.
Tel. 213-537-8383

HITACHI SALES CORPORATION OF HAWAII, INC.

3219 Koapaka Street Honolulu, Hawaii 96819, U.S.A.
Tel. 808-836-3621

HITACHI (HSC) CANADA INC.

3300 Trans Canada Highway, Pointe Claire, Quebec
H9R 1B1, Canada
Tel. 514-697-9150

HITACHI Ltd. TOKYO JAPAN

Head Office: THE HITACHI ATAGO BLDG.
No. 15-12, 2-chome Nishi-Shinbashi
Minato-ku, Tokyo 105, Japan
Tel. Tokyo (03) 502-2111