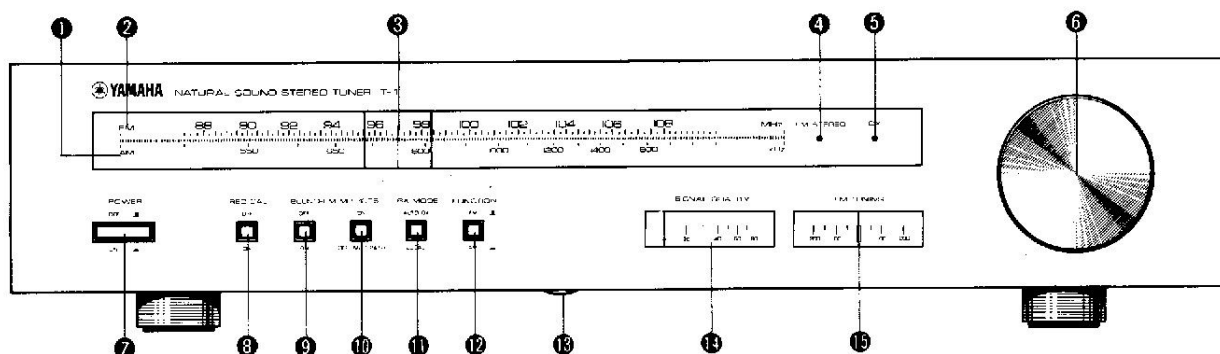


T-1

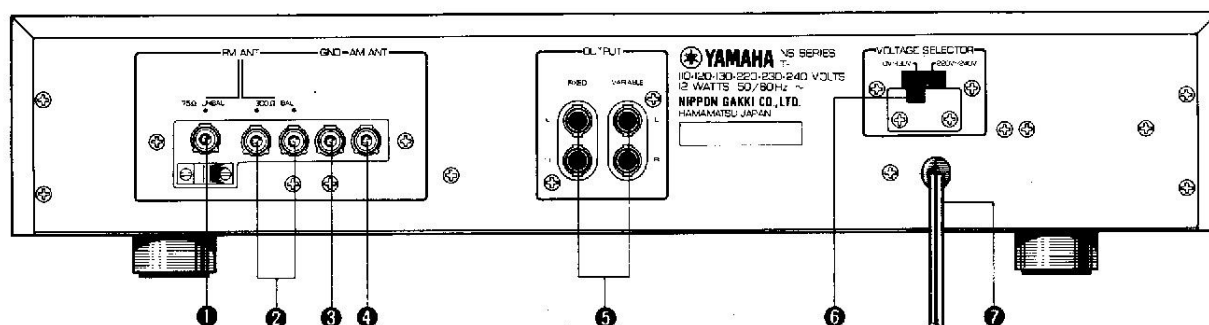
SERVICE MANUAL

■ FRONT PANEL



- | | |
|-----------------------|-------------------------|
| ① AM DIAL SCALE | ⑨ FM BLEND SWITCH |
| ② FM DIAL SCALE | ⑩ FM MUT /OTS SWITCH |
| ③ DIAL POINTER | ⑪ RX MODE SWITCH |
| ④ FM STEREO INDICATOR | ⑫ FUNCTION SWITCH |
| ⑤ DX INDICATOR | ⑬ OUT PUT LEVEL CONTROL |
| ⑥ TUNING KNOB | ⑭ SIGNAL QUALITY METER |
| ⑦ POWER SWITCH | ⑮ FM TUNING METER |
| ⑧ REC CAL SWITCH | |

■ REAR PANEL (GENERAL MODELS)



- | | |
|-----------------------------------|--------------------|
| ① FM ANTENNA TERMINAL (75Ω UNBAL) | ⑤ OUT PUT JACKS |
| ② FM ANTENNA TERMINAL (300Ω BAL) | ⑥ VOLTAGE SELECTOR |
| ③ GROUND TERMINAL | ⑦ AC CORD |
| ④ AM ANTENNA TERMINAL | |

004357

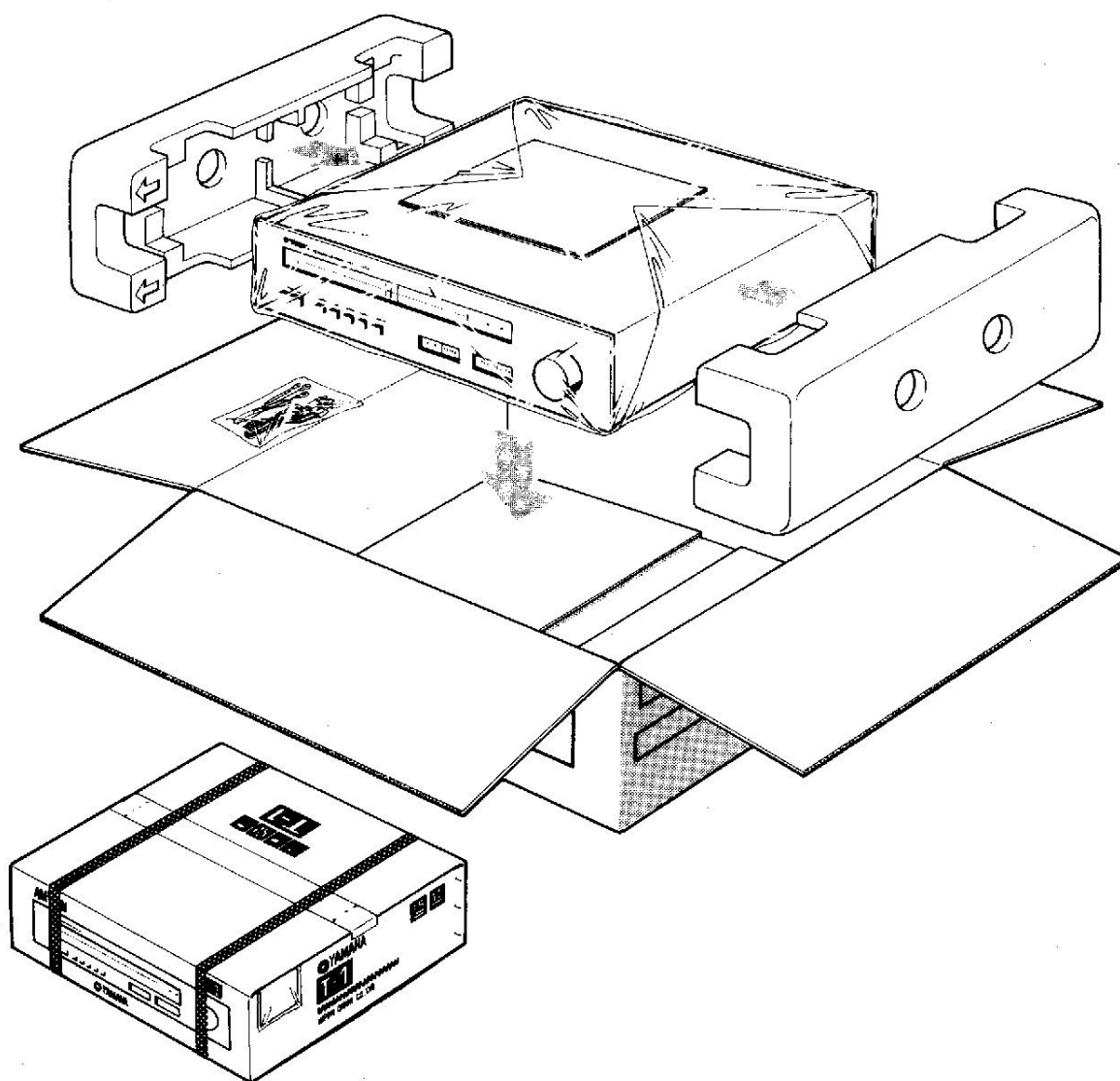


Printed in Japan 5.78, T.T 2K

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■PACKAGE

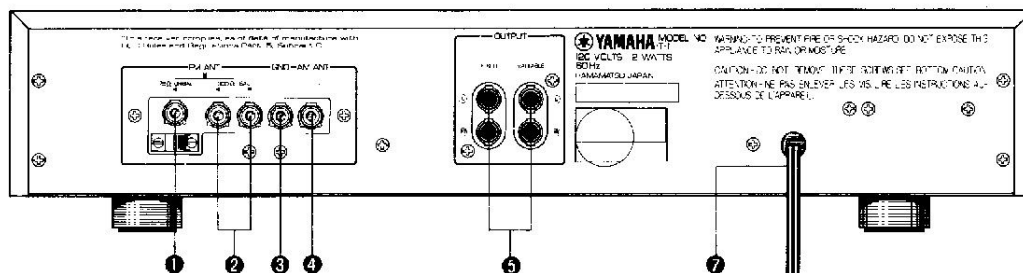


SPECIFICATIONS (SPECIFICATIONS SUBJECT CHANGE WITHOUT NOTICE.)

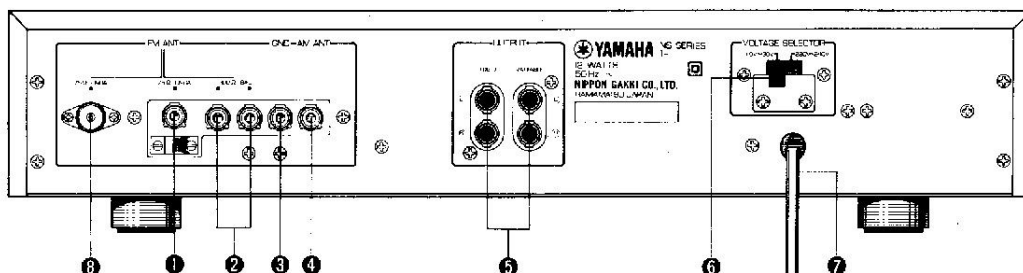
■ FM SECTION					
Tuning Rang	87.5 ~ 108 MHZ				
Usable Sensitivity	IHF MONO	1.7 μ V (300 Ω) 9.8dBf			
	STEREO	0.85 μ V (75 Ω) 9.8dBf			
	DIN MONO (40KHZ. Dev : S/N 26dB)	1.1 μ V			
	STEREO (40KHZ. Dev : S/N 46dB)	35 μ V			
50dB S/N Sensitivity	MONO	3 μ V (14.8dBf)			
	STEREO	35 μ V (36dBf)			
Signal to Noise Ratio	MONO (IHF)	86dB	{DIN, 40KHZ Der}	80dB	
	STEREO (IHF)	84dB	{DIN, 40KHZ Der}	78dB	
Image Frequency Rejection	(98MHZ)	90dB			
IF Rejection	(98MHZ)	100dB			
Spurious Response Rejection	(98MHZ)	100dB			
AM Rejection	(IHF)	65dB			
Capture Ratio	(IHF)	1.0dB			
Effective Selectivity	DX MODE (IHF)	92dB			
	LOCAL MODE (IHF)	55dB			
	DIN ($\pm$ 300KHZ, 40KHZ Dev)	65dB			
Total Harmonic Distortion	MONO	100HZ	LOCAL MODE: 0.05%	DX MODE:	0.1%
		1KHZ	0.05%		0.1%
		6KHZ	0.08%		0.3%
		10KHZ	0.05%		0.1%
	STEREO	100HZ	0.05%		0.5%
		1KHZ	0.05%		0.5%
		6KHZ	0.08%		0.8%
		10KHZ	0.13%		1.5%
Inter modulation Distortion	MONO	LOCAL MODE : 0.05%		DX MODE:	0.5%
	STEREO	0.08%			1.0%
Stereo Separation	1KHZ	LOCAL MODE : 55dB		DX MODE:	30dB
	50 ~ 10KHZ	46dB			25dB
Frequency Response	50 ~ 10KHZ	$\pm$ 0.3dB			
	30 ~ 15KHZ	$\pm$ 0.5dB			
	10 ~ 18KHZ	$\pm$ 0.5 dB			
Sub-Carrier Suppression	70dB				
Muting Level	AUTO DX MODE : 5 μ V (19.2 dBf)				
AUTO DX MODE	50 μ V (39.2dBf) at Stereo -50dB				
■ AM SECTION					
Tuning Range	525 ~ 1605KHZ				
Usable Sensitivity	(IHF)	15 μ V			
Selectivity	+30dB (1000KHZ $\pm$ 10KHZ)				
Signal to Noise Ratio	50dB (80dBm)				
Image Frequency Rejection	(1000KHZ)	70dB			
IF Rejection	(1000KHZ)	70dB			
Spurious Response Rejection	(1000KHZ)	70dB			
Total Harmonic Distortion	0.4%				
■ AUDIO SECTION					
Out put Level / Impedance	FM (100% MOD)	VR min ~ max	0.1 ~ 1V/220 Ω	VR center	0.5V/2.5K Ω
	AM (30% MOD)	VR min ~ max	25 ~ 250mV/220 Ω	VR center	125mV/2.5K Ω
	REC CAL (333HZ)	VR min ~ max	50 ~ 500mV /220 Ω	VR center	250mV / 2.5K Ω
■ GENERAL					
REC CAL SW, FM BLEND SW, FM MUTING & OPTIMUM TUNING SYSTEM, AUTO DX/NORMAL SW, FUNCTION SW, SIGNAL STRENGTH/QUALITY METER, FM TUNING METER, FM STEREO/AM.FM DX IND, FM TUNING IND (Full $\rightarrow$ Half Bright)					
Semiconductors	IC	5			
	Transistors	60			
	FET	1			
	Diodes	17			
	Zener Diodes	2			
	LEDs	2			
	Ceramic filters	3			
Power Consumption	General model	: AC110 ~ 130V, 220 ~ 240V , 50/60HZ , 12W			
	US & Canadian models	: AC120, 60HZ, 12W			
	European models	: AC110 ~ 130V, 220 ~ 240V , 50HZ , 12W			
	Austratian & British models	: AC240V, 50HZ, 13W			
Dimensions (W x H x D) mm	435 x 97 x 376				
Weight	5.7Kg (12 lb 9 oz)				

REAR PANEL

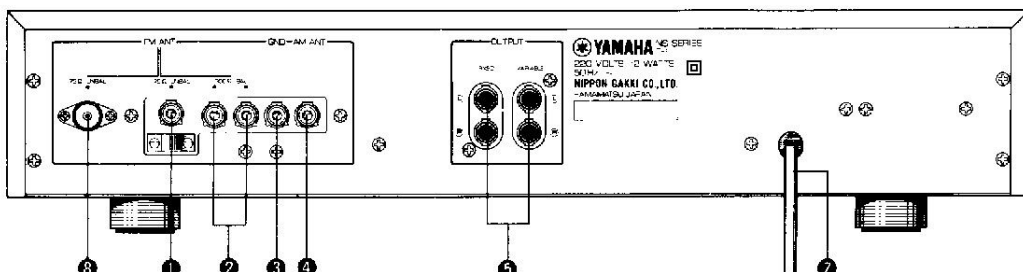
▼ US & CANADIAN MODELS



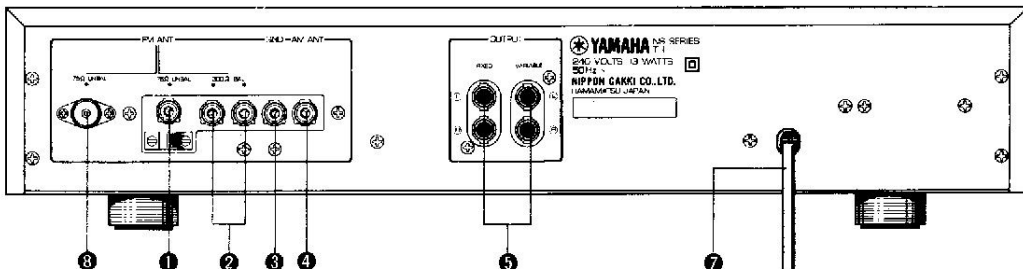
▼ EUROPEAN MODEL



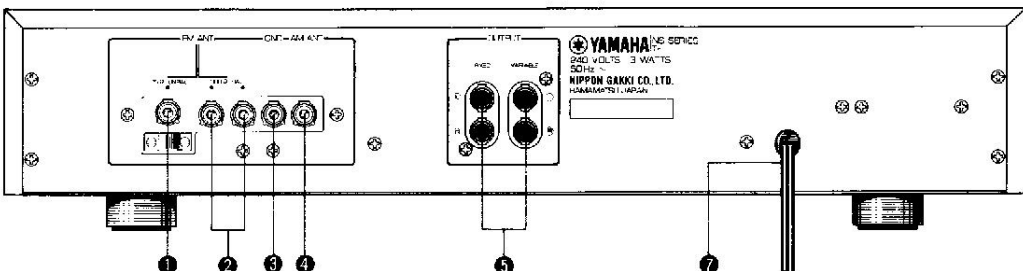
▼ NORTH EUROPEAN MODEL



▼ BRITISH MODEL



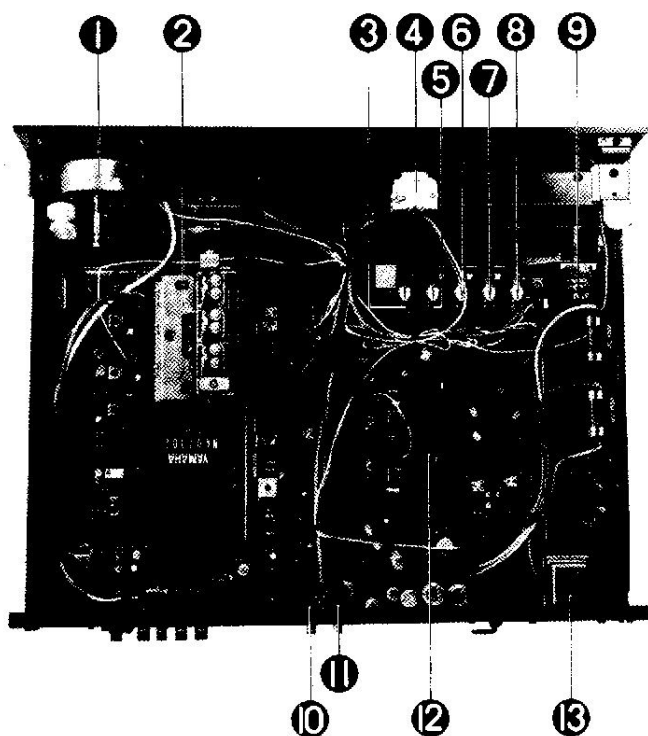
▼ AUSTRIAN MODEL



- ① FM ANTENNA (75Ω UNBAL)
- ② FM ANTENNA (300Ω BAL)
- ③ GROUND TERMINAL
- ④ AM ANTENNA TERMINAL
- ⑤ OUTPUT JACKS
- ⑥ VOLTAGE SELECTOR
- ⑦ AC CORD
- ⑧ FM ANTENNA (75Ω UNBAL)

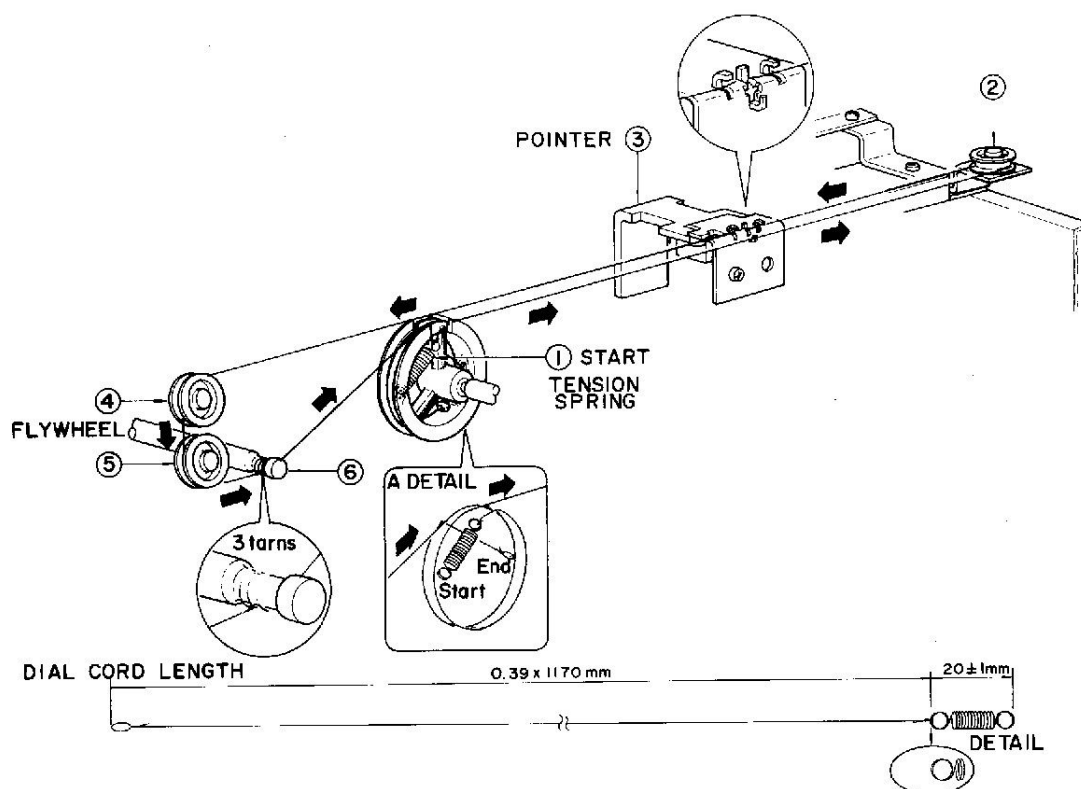
INTERNAL VIEW

▼ TOP VIEW



- ① FLY WHEEL
- ② FRONT END
- ③ FUNCTION SWITCH
- ④ DIAL POINTER
- ⑤ RX MODE SWITCH
- ⑥ MUT /OTS SWITCH
- ⑦ BLEND SWITCH
- ⑧ REC CAL SWITCH
- ⑨ POWER SWITCH
- ⑩ OUTPUT JACKS (FIXED)
- ⑪ OUTPUT JACKS (VARIABLE)
- ⑫ TUNER CIRCUIT BOARD
- ⑬ POWER TRANSFORMER

DIAL MECHANISM



DISASSEMBLY PROCEDURES

1. Top cover removal

Turn the model over so that the bottom cover is facing up, remove screws (1) to (4) in Photo 1, slide the top cover to the rear panel side and remove.

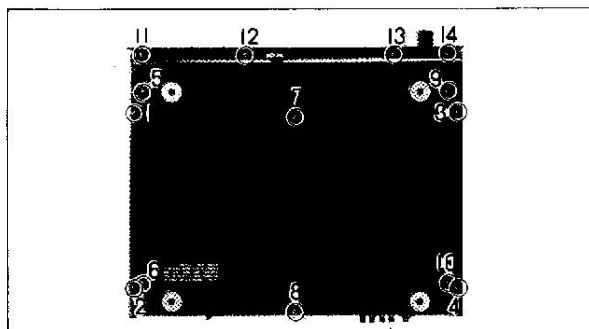


Photo 1

2. Bottom cover removal

Remove screws (5) to (10) in Photo 1 and then detach the bottom cover.

3. Front panel removal

- Remove the top and bottom covers first. (Proceed according to steps 1 and 2.)
- As in Fig. 1, use a 2mm diameter hexagonal wrench to loosen the screws (1) and (2) of the tuning knob from between the front panel and the sub-chassis. Then draw the knob out and remove.
- Remove screws (11) to (14) in Photo 1 and also screws (1) to (3) in Photo 2, and then draw the front panel out toward you gently.

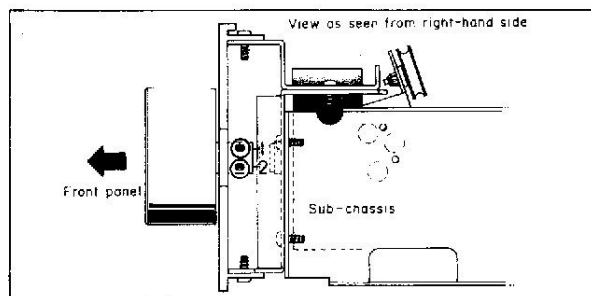


Fig. 1

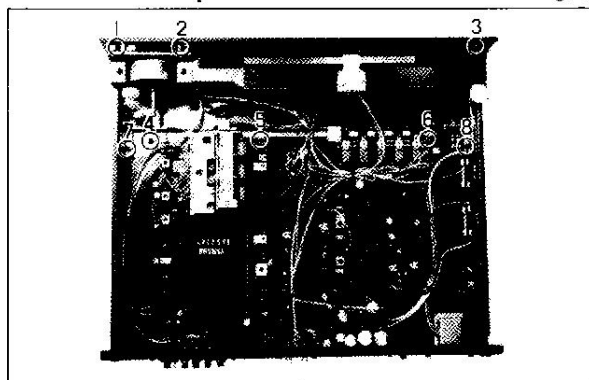


Photo 2

4. Tuner printed circuit board removal

- Remove the front panel. (Proceed according to step 3.)
- Remove screws (1) to (5) in Photo 3 and also plastic rivet (6).
- Detach the lead wires which are connected to the tuner printed circuit board.
- Loosen the two screws which serve to hold the variable capacitor pulley in position, and take out the pulley from the variable capacitor shaft. If the pulley and dial thread are connected together by solder, the thread will not get tangled up and it will be easier to mount.

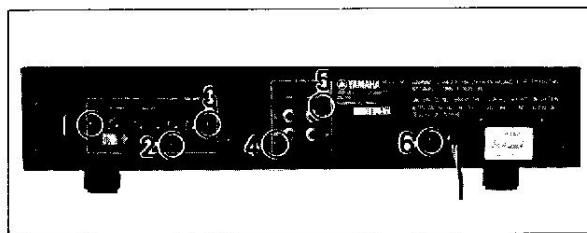


Photo 3

- Remove plastic rivets (4) to (6) in Photo 2, and remove the tuner printed circuit board.

* If the screws (7) and (8) in Photo 2 are removed, the center frame and the power switch can be removed at the same time as the tuner printed circuit board.

5. Meter removal

- Remove the front panel. (Proceed according to step 3.)
- Remove the lead wires which are attached to the meters, and the meters can be removed when the rear section of the meters is pushed toward the front panel.

6. Dial illumination lamp removal

- Remove the front panel. (Proceed according to step 3.)
- Remove screws (1) and (2) in Photo 4, and then remove the dial illumination lamp.

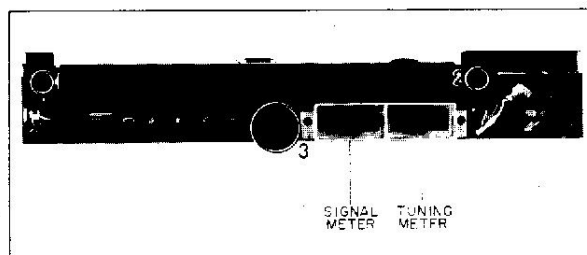


Photo 4

7. Output level adjustment volume control (VR207, 10KB x 2) removal

- Remove the front panel. (Proceed according to step 3.)
- Draw knob (3) in Photo 4 out, remove the VR207 nuts and then remove the volume controls.

CIRCUIT DESCRIPTIONS

▼ Muting circuit

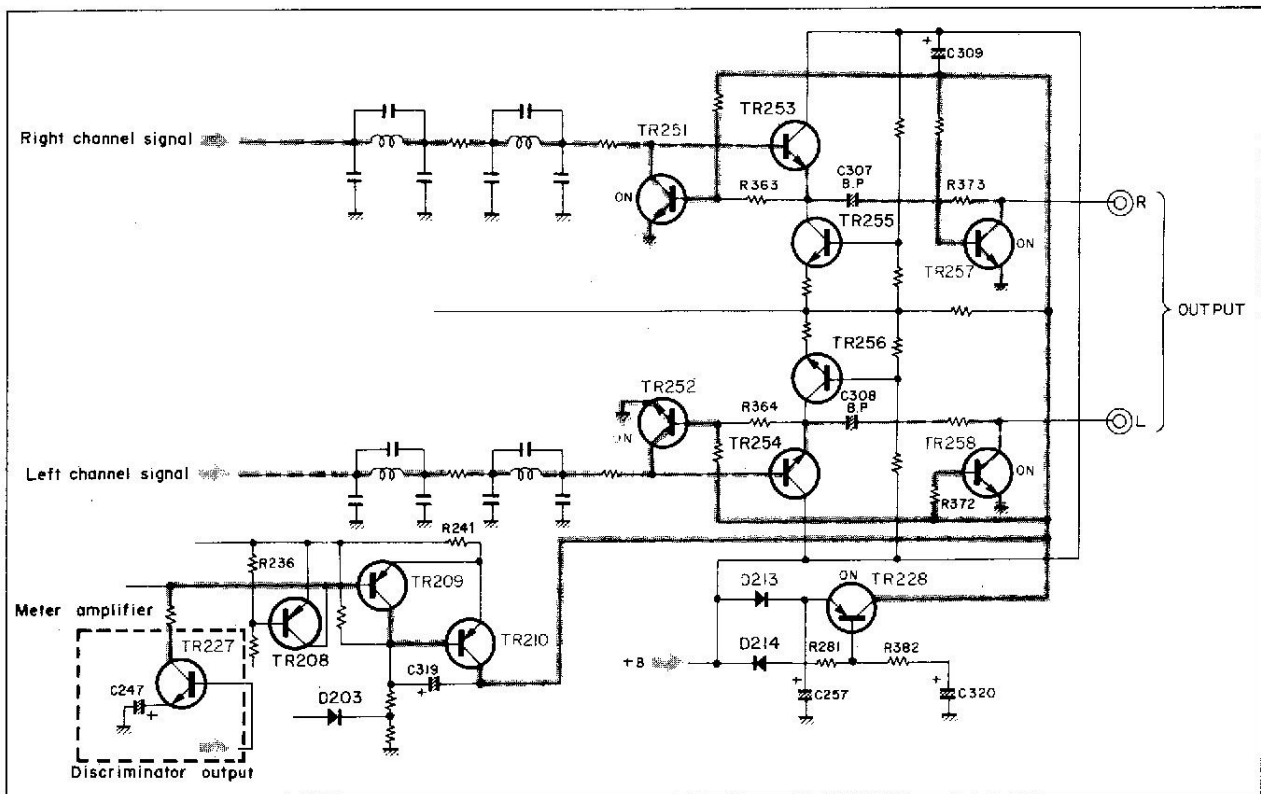


Fig. 1

1. When the POWER switch is set to ON

The +B voltage enters from D213 to the emitter of TR228 and its base, it passes through R382 (22k) and charges C320 (10uF/16V) (about 3 seconds). TR228 is actuated, and TR251 and TR257 (right channel) as well as TR252 and TR258 (left channel) of the muting circuit connected to the collector side are also actuated, and undesirable noise produced when the power is switched on is cut out.

2. When the POWER switch is set to OFF

C257 (220uF/16V) discharges the charge accumulated when the POWER switch is set to ON, TR228 is actuated and the muting circuit is made to function. (Fig. 1)

3. Muting operation with detuning

During detuning the noise components from the discriminator are applied to the base of TR227 and so TR227 is almost cut off by the actuation of the AGC, and the collector side of TR227 virtually maintains the power line voltage. This means that the voltage at the base side of TR209 increases, TR209 goes off, TR210 goes on, the +B voltage appears at the collector side of TR210, TR251 and 257 (right channel) as well as TR252 and 258 (left channel), becomes on, and the signals are cut off. (Fig. 1)

4. When tuning in perfectly from an approximate accurate tuning point

When the tuning knob is rotated for tuning, the signal meter pointer starts to deflect in accordance with the DC output from the discriminator, and the TR227 collector's potential decreases.

The base potential of TR209 starts to decrease but a positive (+) and negative (-) voltage is applied to the differential amplifier composed of TR206 and TR207, the current increases, and TR208 goes on. This means that the base voltage of TR209 does not drop and so the muting circuit continues to function. Next, when the station has been tuned in accurately, the total current of the differential amplifier decreases without being applied to the TR206 base, and the TR208 base voltage increases. This sets TR208 off and the TR209 base voltage drops, setting TR209 on. This action sets TR210 off, all the muting circuit's transistors go off and the reception signals are allowed to pass through. (Fig. 2)

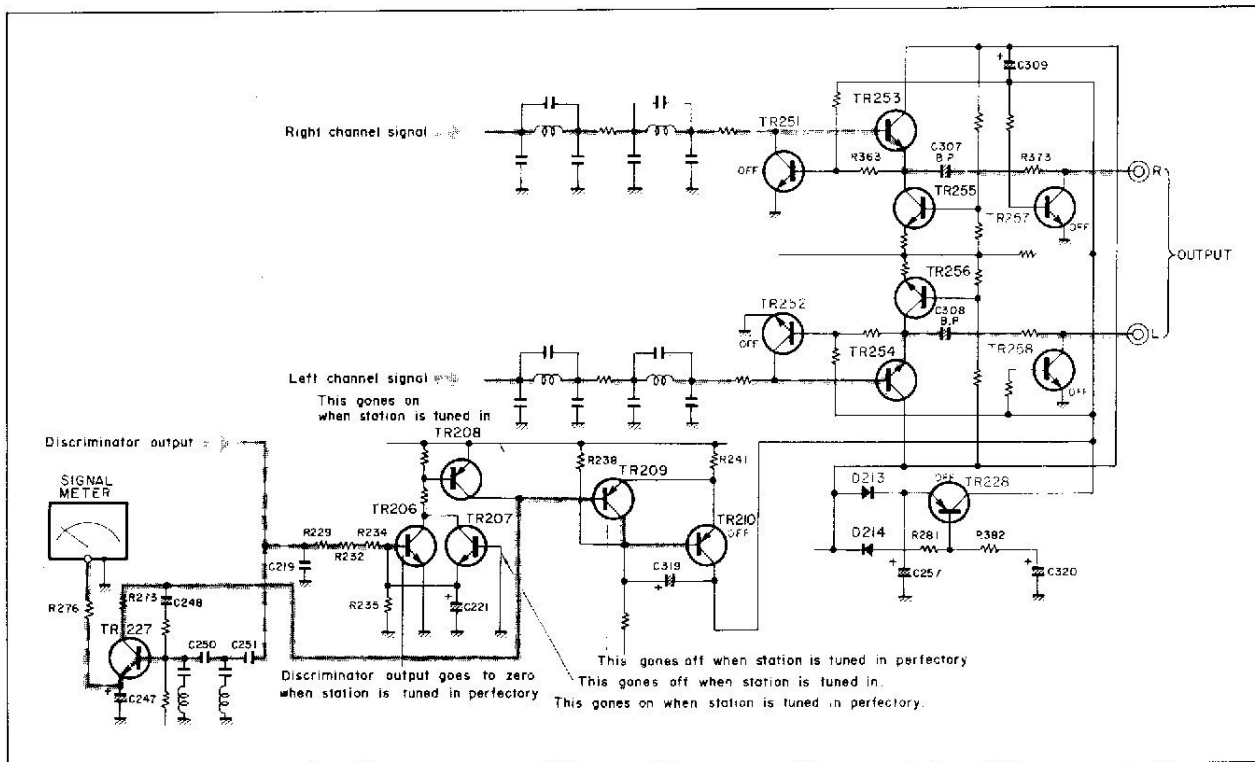


Fig. 2

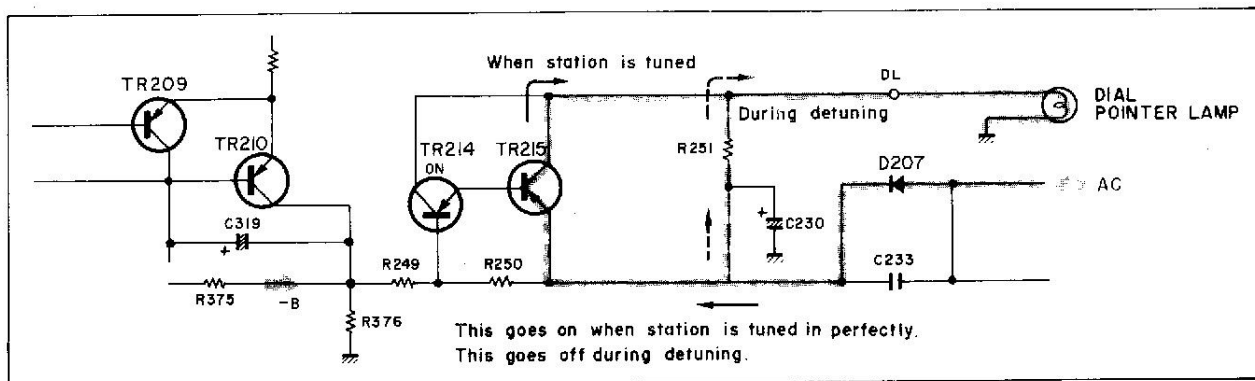


Fig. 3

5. Dial pointer lamp drive

When TR215 goes off (detuning), the pointer lamp lights up with the bypass resistance of R251. When a station is tuned in, the base voltage of TR214 drops according to the negative (-) voltage which is supplied from R375 at the collector side (left side of R249) of TR201, TR214 goes on, TR215 goes on as well, and the pointer lamp becomes even brighter. (Fig. 3)

6. Auto DX circuit

The basic principle of operation for this circuit is virtually the same as that of CT-G1.

7. Tracking pilot signal pure canceling circuit

The 19kHz pilot signal is required to produce the

38kHz subcarrier. However, it is undesirable as an audio signal. The T-1 tuner is equipped with a tracking type pilot signal pure canceling circuit which is designed to cancel out the pilot signal with the input of the switching circuit using sine waves with the same amplitude but opposite phase. This circuit makes use of the 19kHz square waves generated by the PLL circuit, a 19kHz signal with a phase and level which track the input pilot signal is generated, and the signals which have been converted into sine waves by the waveform converter circuit are canceled out before the switching circuit (these signals have the same level as the pilot signal but the opposite phase). Fig. 4 shows a block diagram of this circuit as well as the waveforms produced at each of the sections.

Fig. 5 gives the pilot signal leakage in the T-1's tracking type pilot signal pure canceling circuit as well as that in a circuit where the level is not tracked, as seen through a spectrum analyzer. 'a' shows no pilot signal cancellation at all, 'b' shows the T-1 with a 9% pilot, 'c' shows the T-1 with a 10% pilot, and 'd' shows the waveform with the 10% pilot signal of a circuit which does not track the level.

following low-pass filter,

Tracking type pure pilot signal canceling circuit

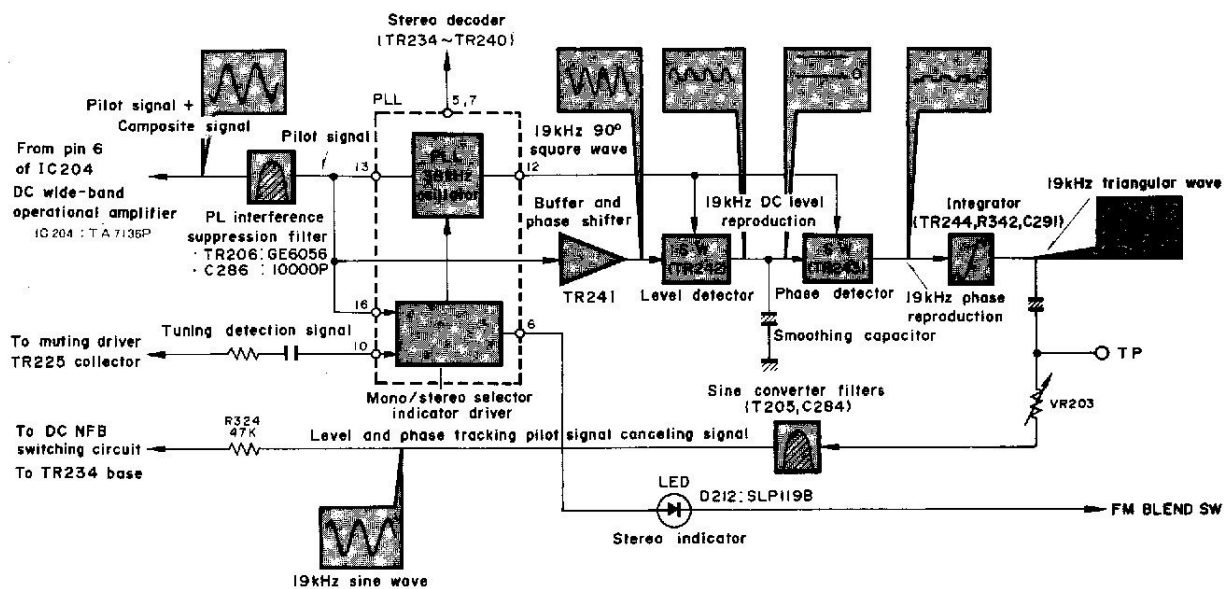


Fig. 4

Spectrum analysis of tuner output terminals

a.No pilot signal cancellation

b. With 9% pilot (T-1)

c. With 10% pilot (T-1)

d. With a pilot signal
canceling circuit which
does not track the level
With 10% pilot

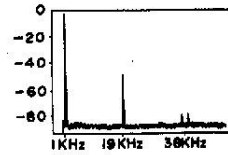
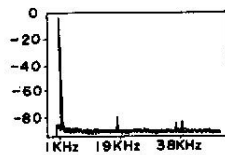
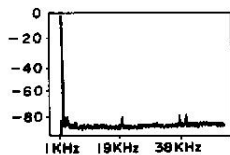
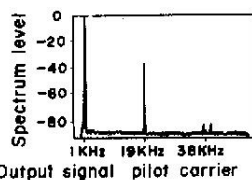
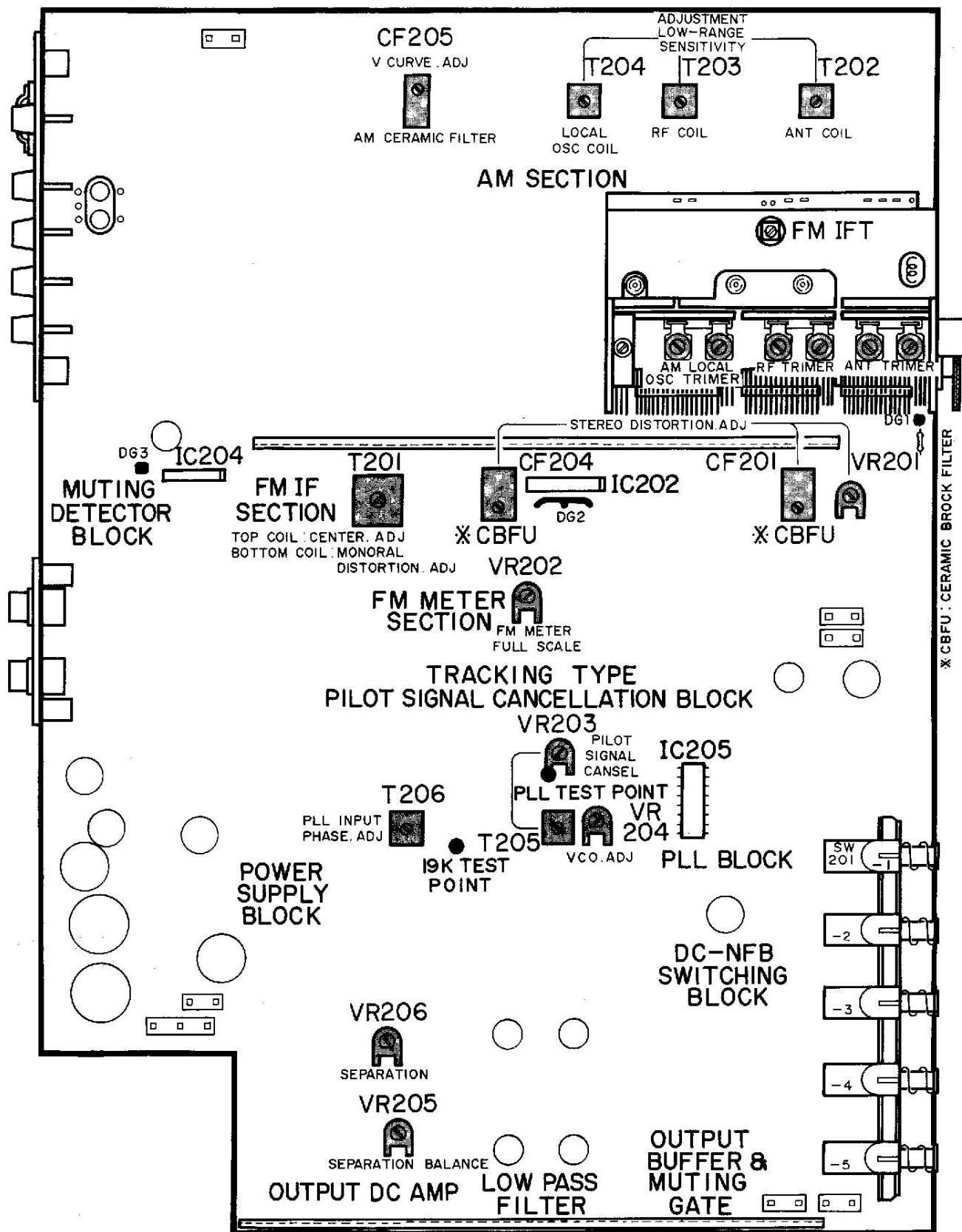


Fig. 5

■ TEST POINTS

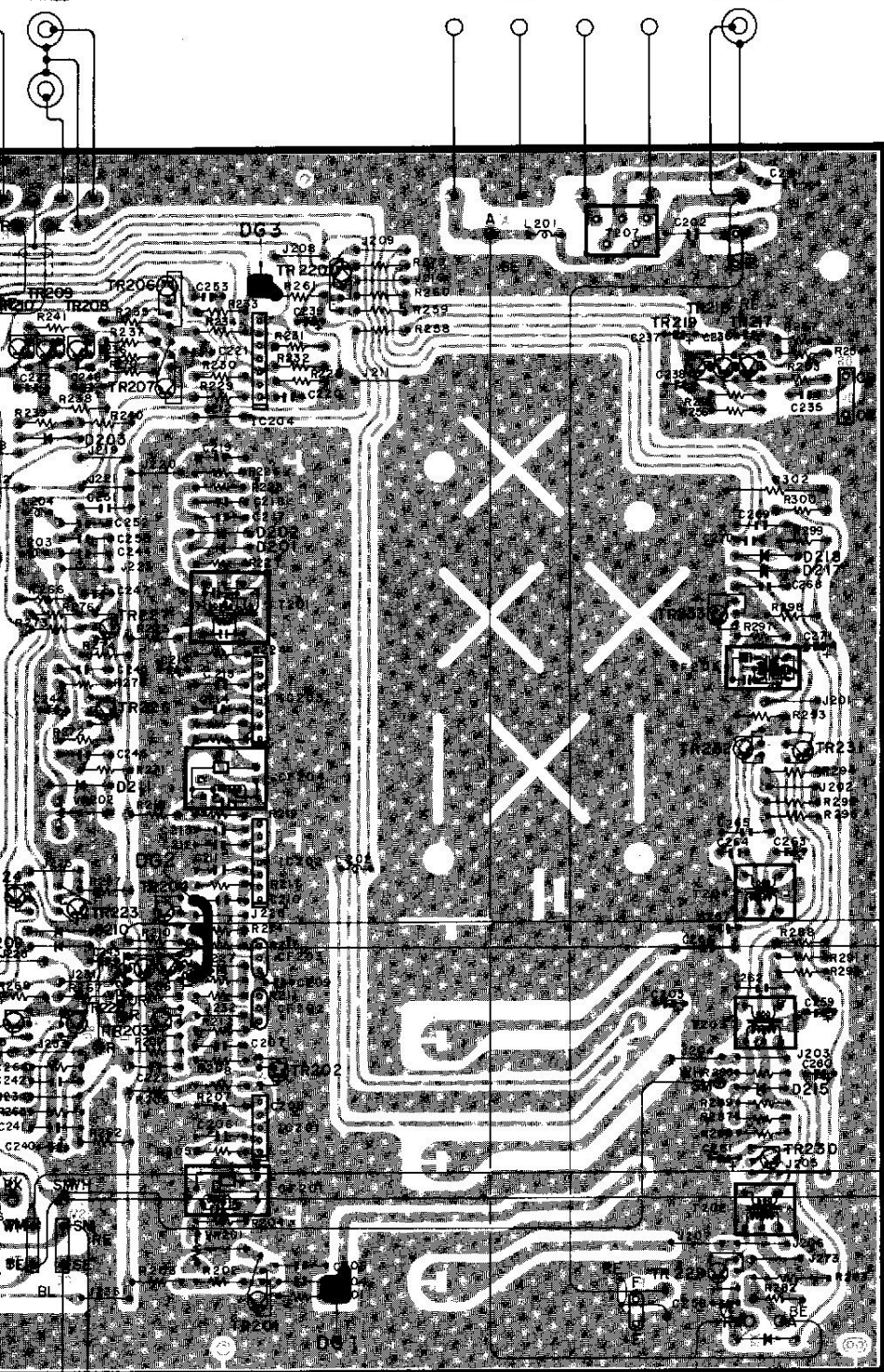


— 0
VARIABLE



OUTPUT — FIXED

AM GND 300 Ω BAL 75 Ω BAL UN

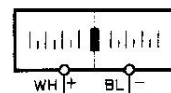


PARTS	BRITISH AUSTRALIAN EUROPEAN	GENERAL US & CANADIAN
C293 C294	0.0011	0.0016
C297 C298	0.0051	0.0068
C299 C300	0.0013	0.0018
C303 C304	0.0022	0.0027
R252	1/2P 10	

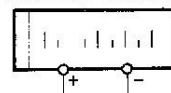
TUNER (3)



TUNING METER

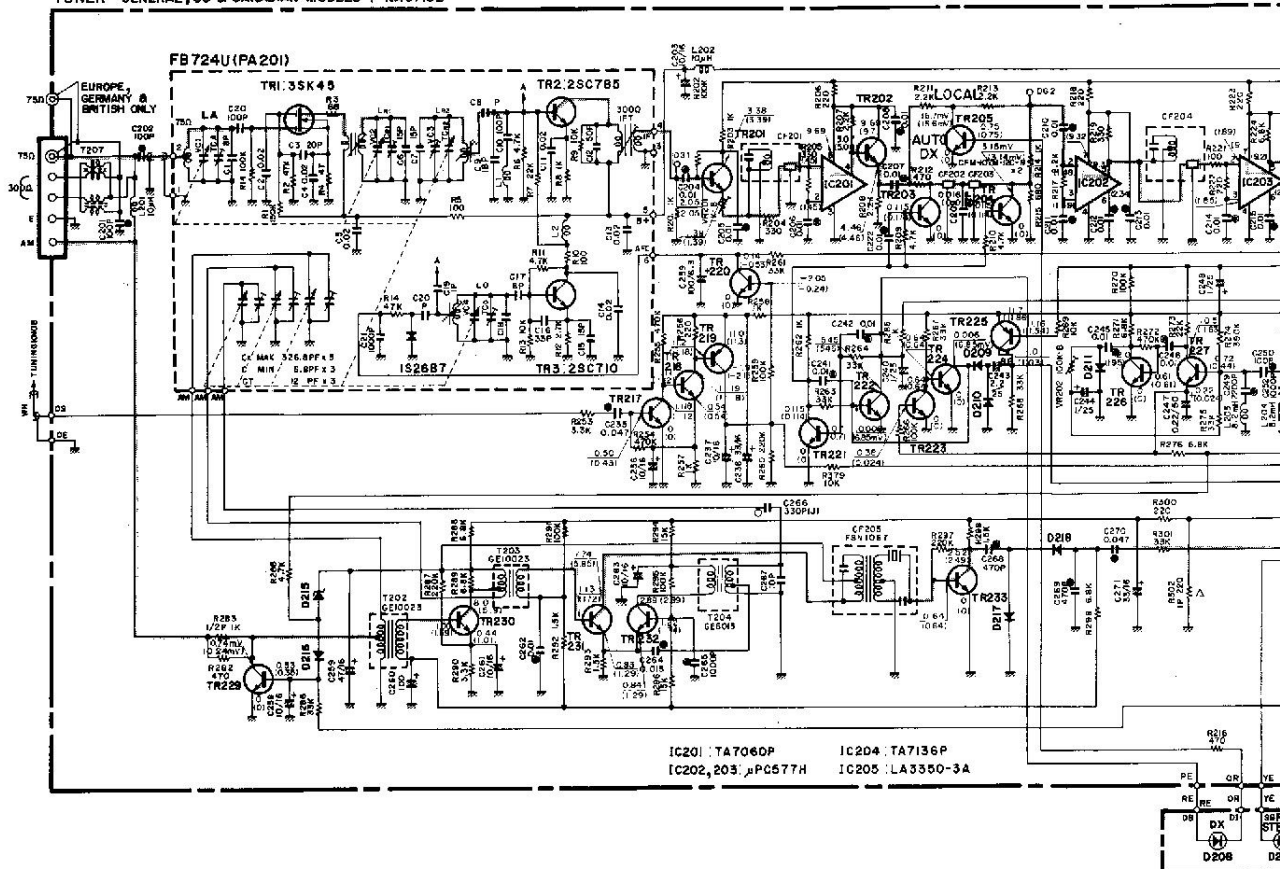


SIGNAL METER



SCHEMATIC DIAGRAM

EUROPEAN & BRITISH MODELS : NA07104
 AUSTRALIAN MODEL : NA07103
 TUNER GENERAL, US & CANADIAN MODELS : NA07102



WIRE COLOR ABBREVIATIONS

BL ▶ Black VI ▶ Violet YE ▶ Yellow SB ▶ Light Blue
 BR ▶ Brown GY ▶ Gray GR ▶ Green PK ▶ Pink
 RE ▶ Red WH ▶ White BE ▶ Blue
 OR ▶ Orange GG ▶ Light Green

RESISTOR

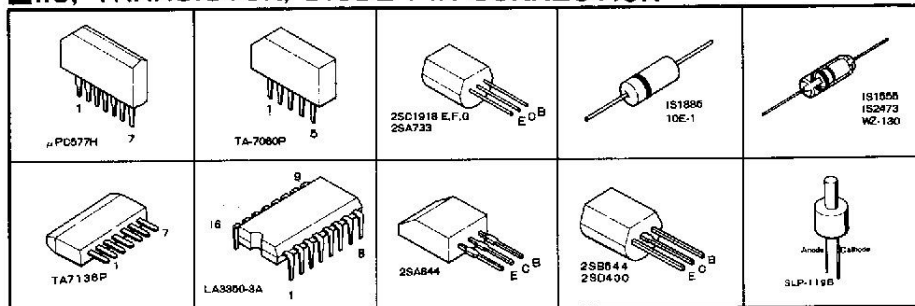
▲	Metalized Film Resistor
△	Metalized Oxidation Resistor
■	Fine Proof Resistor
□	Wire Film Resistor
□	Carbon Molded Resistor
NO MARK	Carbon Film Resistor

CAPACITOR

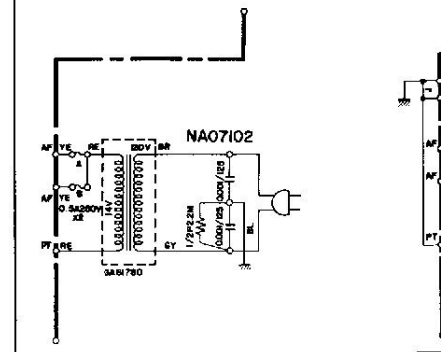
⊗	Ceramic Film Capacitor (Cylinder type)
⊙	SBL Film Capacitor
⊗	Mylar Film Capacitor
⊙	Polypropylene Film Capacitor
NO MARK	Ceramic Capacitor
⊗	Tantalum Electrolytic Capacitor
NO MARK	Aluminum Electrolytic Capacitor

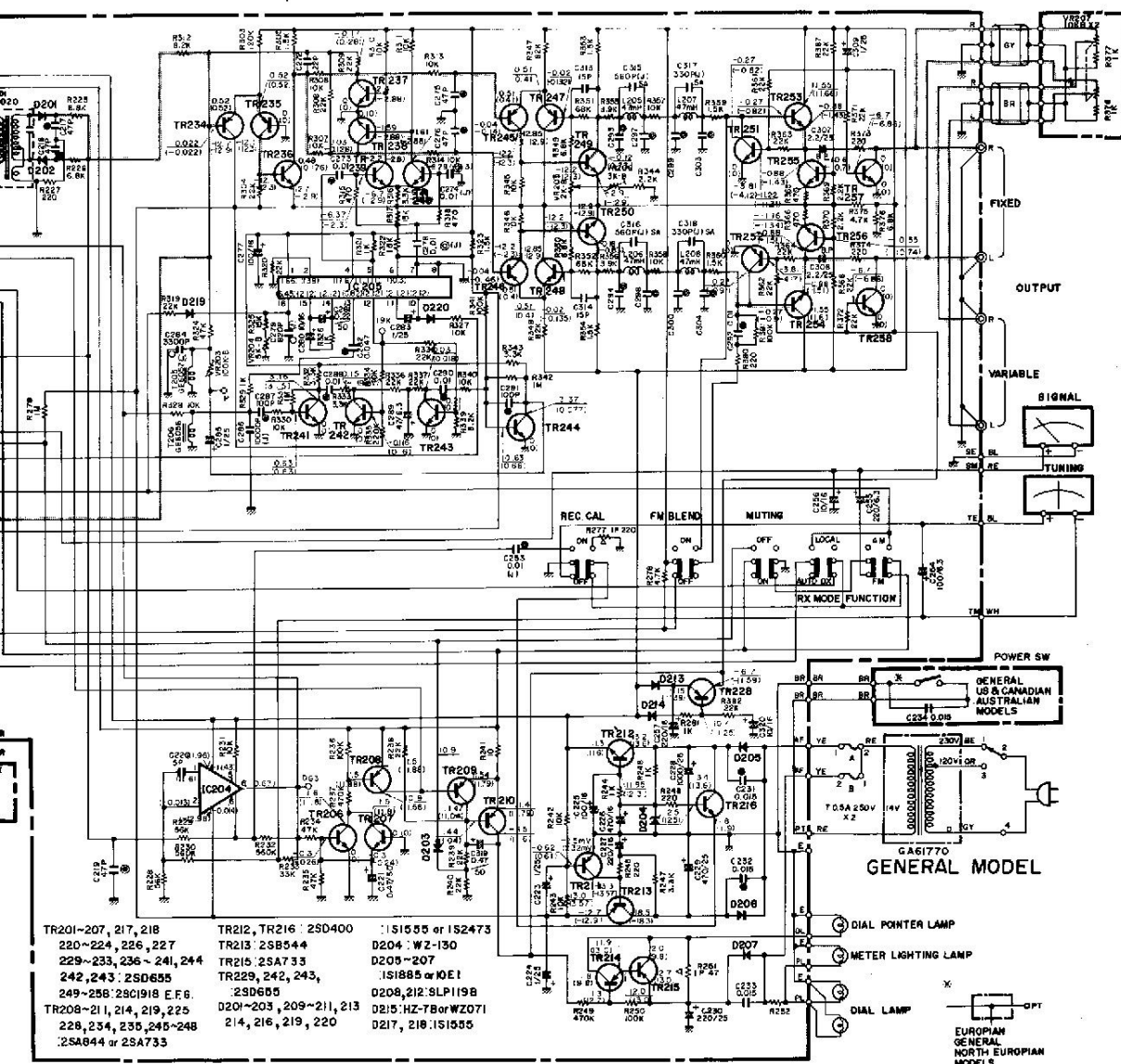
* All Voltages measured with a 1 kΩ/DC electronic volt meter.

I.C., TRANSISTOR, DIODE PIN CONNECTION



US & CANADIAN MODELS AU



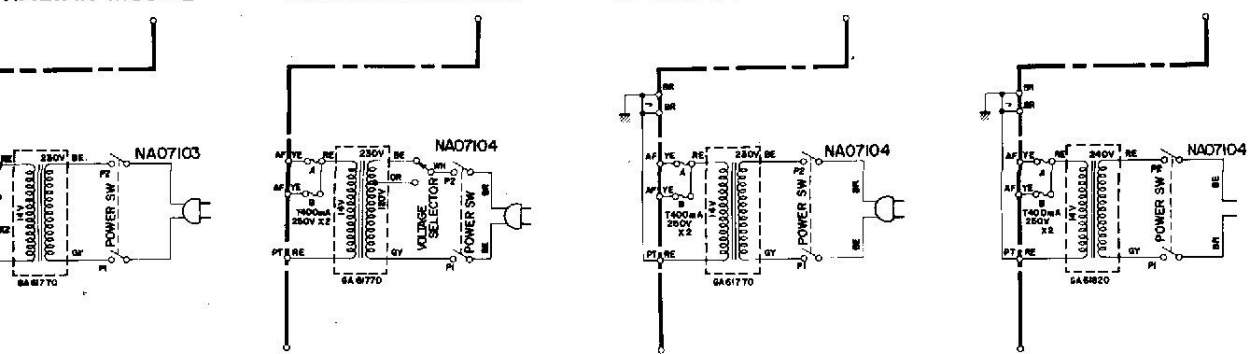


ARALIAN MODEL

EUROPEAN MODEL

NORTH EUROPEAN MODEL

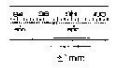
BRITISH MODEL



ADJUSTMENT

1. FM tuner section

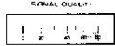
1. Set the switches to the following positions: FUNCTION → FM, REC CAL → OFF, RECMODE → LOCAL, FM MUTING/OTS → ON
2. Use a low-pass filter for the steps following 6.
FM BLEND → OFF

Step	Adjustment item	Terminal to be connected	Instrument required	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	Discriminator balance	Connect 300Ω balanced antenna to FM antenna terminals.		T201 (GE-10020): Secondary (top) core of discriminator coil	Move core until tuning meter pointer deflects to 0 with noise at detuned point near 98MHz		Check that meter pointer mechanically points to 0 when power switch is set OFF. (See Fig. 1)
2.	Tuning point setting	FM antenna terminals	Antenna input: 60dBμ, 98MHz	Tuning knob	Adjust knob until tuning meter pointer points to center		Fig. 1 
3.	Monaural distortion adjustment	FM antenna terminals, L OUTPUT terminal only	Same as Step 2. Monaural 1kHz, 100% modulation, oscilloscope, valve voltmeter, distortion meter	T201 (GE-10020) primary (bottom) core	Reduce distortion to minimum.	Less than -60dB (-66dB)	
4.	VCO adjustment	FM antenna terminals, 19kHz TP terminal	Same as Step 2. Unmodulated frequency counter	VCO ADJ VR204 (3kΩ)	Set to 19kHz.	19kHz ±20Hz (±5Hz)	
5.	PLL input phase adjustment	FM antenna terminals, P terminal (PLL T.P)	Same as Step 4. Pilot 9%, MOD, Oscilloscope	T206	Observe waveforms on oscilloscope and set so that 19 kHz triangular waveforms are brought to their maximum.		
6.	Stereo distortion adjustment	FM antenna terminals, L OUTPUT terminal only	Same as Step 2. Stereo L, 1kHz 100% modulation, dual-trace oscilloscope, dual-channel valve voltmeter, distortion meter	VR201, CF-201, CR204 Front end IF core	Reduce distortion to minimum	Less than -60dB (-66dB)	
7.	Pilot canceling adjustment Carrier leakage adjustment	FM antenna terminals, L, R OUTPUT	Same as step 5. Pilot 9%, MOD, oscilloscope, valve voltmeter	PCL VR203 (100kΩ), T205, T206	Observe waveforms on oscilloscope and adjust so that level is reduced to minimum.	Carrier leakage for both channels: less than 60dB	
8.	Separation adjustment	Same as step 6	Stereo L, R 1kHz, 100% modulation	SEP VR206 (3kΩ), SEP, BAL VR205 (2kΩ)	Attain balance between left and right channels with VR205, and then bring to maximum with VR206.	Less than 50dB (55dB)	
9.	Signal meter full scale adjustment	Same as step 5.	Non-modulated 60dBμ	FM METER ADJ VR202 (100kΩ)	Adjust so that pointer is within rated range	70-80 (75)	
10.	Pointer alignment	FM antenna terminals	98MHz, antenna input 60dBμ	Tuning knob pointer	Rotate the knob, and tune in station so that tuning meter pointer is at center. Now align pointer with 98 on dial scale.	Within ±1mm	Within ±1mm  Fig. 2

Step	Adjustment item	Terminal to be connected	Instrument required	Adjustment location	Adjustment method	Rating or standard	Remarks
11.	High-range tracking check	FM antenna terminals	108MHz	Tuning knob	Rotate the knob, and set to center of tuning meter. Read out deviation between pointer and scale.	Within $\pm 2\text{mm}$ from center of numerals	Within $\pm 2\text{mm}$  Fig. 3
12.	Tracking adjustment I	FM antenna terminals	FM signal generator	Pointer	Re-set pointer so that it comes within specifications on right across whole frequency range.	$\pm 2\text{mm}$ less than	Adjust only when pointer deviates with Step 10 setting.
13.	Tracking adjustment II	FM antenna terminals	FM signal generator	Pointer PACK	Adjust deviation mainly with pack for low frequency range and with pointer for high frequency range.	Same as step 10	Adjust only when pointer deviates with Step 11 adjustment.
14.	Muting operation check	FM antenna terminals	Oscilloscope, valve voltmeter, antenna input: 60dB μ , 84MHz	FM MUT/OTS switch tuning knob	Check that detuning point noise is canceled when FM MUT/OTS switch is set to ON, and that normal waveforms are obtained.		
15.	Stereo reception check, PLL input phase adjustment	FM antenna terminals, P (T.P terminal)	Stereo L, R 1kHz, 100% modulation oscilloscope, valve voltmeter	T206, LEVEL VR (keep at MAX)	Observe waveforms on oscilloscope and adjust T206 so that 19kHz triangular waves at terminal P are brought to their maximum.		Check that stereo indicator comes on.
16.	Blend operation check	FM antenna terminals	Stereo L, R 1kHz, 100% modulation 60 dB μ oscilloscope, valve voltmeter	FM BLEND switch	Check that separation drops when FM BLEND switch is set to ON.		
17.	OTS operation check	FM antenna terminals	Stereo L, R 1kHz, 100% modulation 60dB μ , oscilloscope, valve voltmeter	Tuning knob	Let go of tuning knob when detuning at + and - sides and when waveforms have disappeared, and check that tuning meter pointer returns to center, and that waveforms reappear.		
18.	Pointer lamp tuning indication check	FM antenna terminals	Stereo L, R 1kHz, 100% modulation 60dB μ	Tuning knob	Check that pointer lamp comes on when 60dB μ signal is received and that it goes off during detuning.		
19.	AUTO DX operation check	FM antenna terminals	Stereo L, R 1kHz, 100% modulation 60dB μ	RX MODE switch tuning knob	1) When RX MODE switch is set to AUTO DX: Check that DX indicator comes on during detuning and that it goes off when 60dB μ signal is received 2) When RX MODE switch is set to LOCAL: Check that DX indicator goes off during signal reception and detuning.		

2. AM tuner section

1. Set the FUNCTION switch to AM.
2. Proceed with the AM section adjustments after having finished the FM section adjustments.

Step	Adjustment item	Terminal to be connected	Instrument required	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	Local oscillator coil adjustment	OUTPUT Lor R	AM signal generator 600kHz, 60dB μ	Tuning knob T204 (GE-6013)	Align pointer with 600kHz using tuning knob, rotate coil core and adjust for a maximum signal quality meter deflection.		
2.	Low-frequency range sensitivity adjustment	Same as step 1.	Same as step 1.	T202 (GE-10023) T203 (GE-10023)	Adjust for a maximum signal meter pointer deflection at same tuning point as under step 1.		 Fig. 4
3.	Local oscillator trimmer adjustment	Same as step 1	AM signal generator 1350kHz, 60dB μ	Tuning knob front end local oscillator trimmer	Align pointer with 1350kHz using tuning knob, rotate trimmer and set for a maximum signal meter pointer deflection.		
4.	High-frequency range sensitivity adjustment	Same as step 1	Same as step 3	Front end AM ANT trimmer, inter-AM stage trimmer	Adjust for a maximum signal quality meter pointer deflection at step 3 tuning point		
5.	Sensitivity difference adjustment	Same as step 1	AM signal generator 600kHz, 1350kHz	Repeat steps 1 to 4.		Scale deviation: less than ± 1.5 mm for 600kHz, 1350kHz	
6.	Medium frequency range check	Same as step 1	AM signal generator 950kHz	Tuning knob	Set for maximum signal quality meter pointer deflection	Scale deviation: less than ± 2 mm	

3. REC CAL output voltage check

Step	Adjustment item	Terminal to be connected	Instrument required	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	REC CAL output check	OUTPUT L or R	Frequency counter Valve voltmeter Oscilloscope		Check that output is within specified range with 333 $\pm$ 66Hz oscillation frequency.	-4 ± 2.5 dBm with volume control at maximum	

4. Variable output check

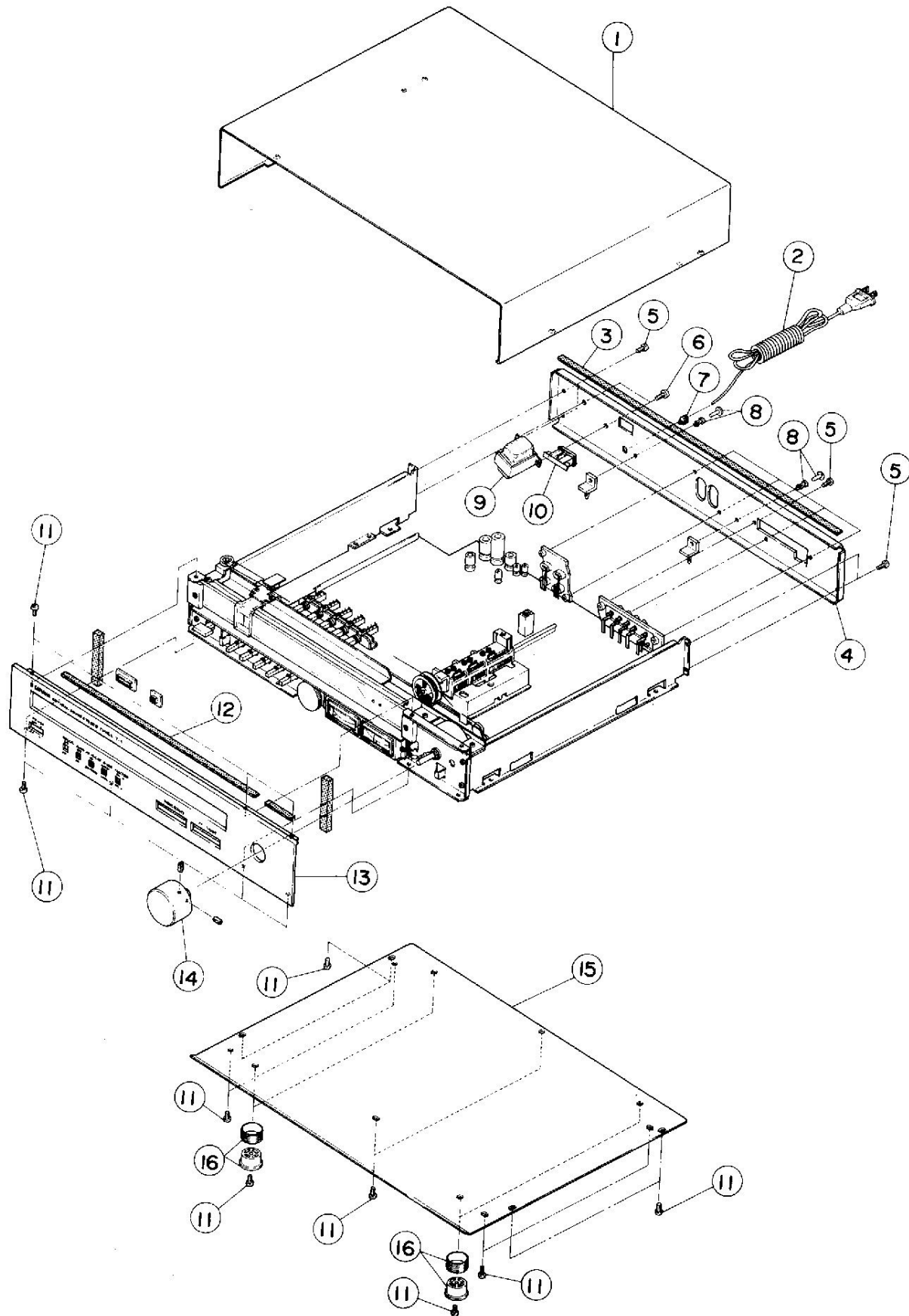
1. Set the switches to the following positions
FUNCTION $\rightarrow$ FM, RX MODE $\rightarrow$ LOCAL, REC CAL $\rightarrow$ OFF, FM MUT/OTS $\rightarrow$ OFF

Step	Adjustment	Terminal to be connected	Instrument required	Adjustment location	Rating or standard
1.	Variable output check	FM antenna terminals	Antenna input 60dB μ	OUTPUT LEVEL VR (VR207)	Rotate VR 2-7 counterclockwise and check that output drops -6 dB at center and -20 dB when set to lowest position.

PARTS LIST

T-1

■ Exploded view

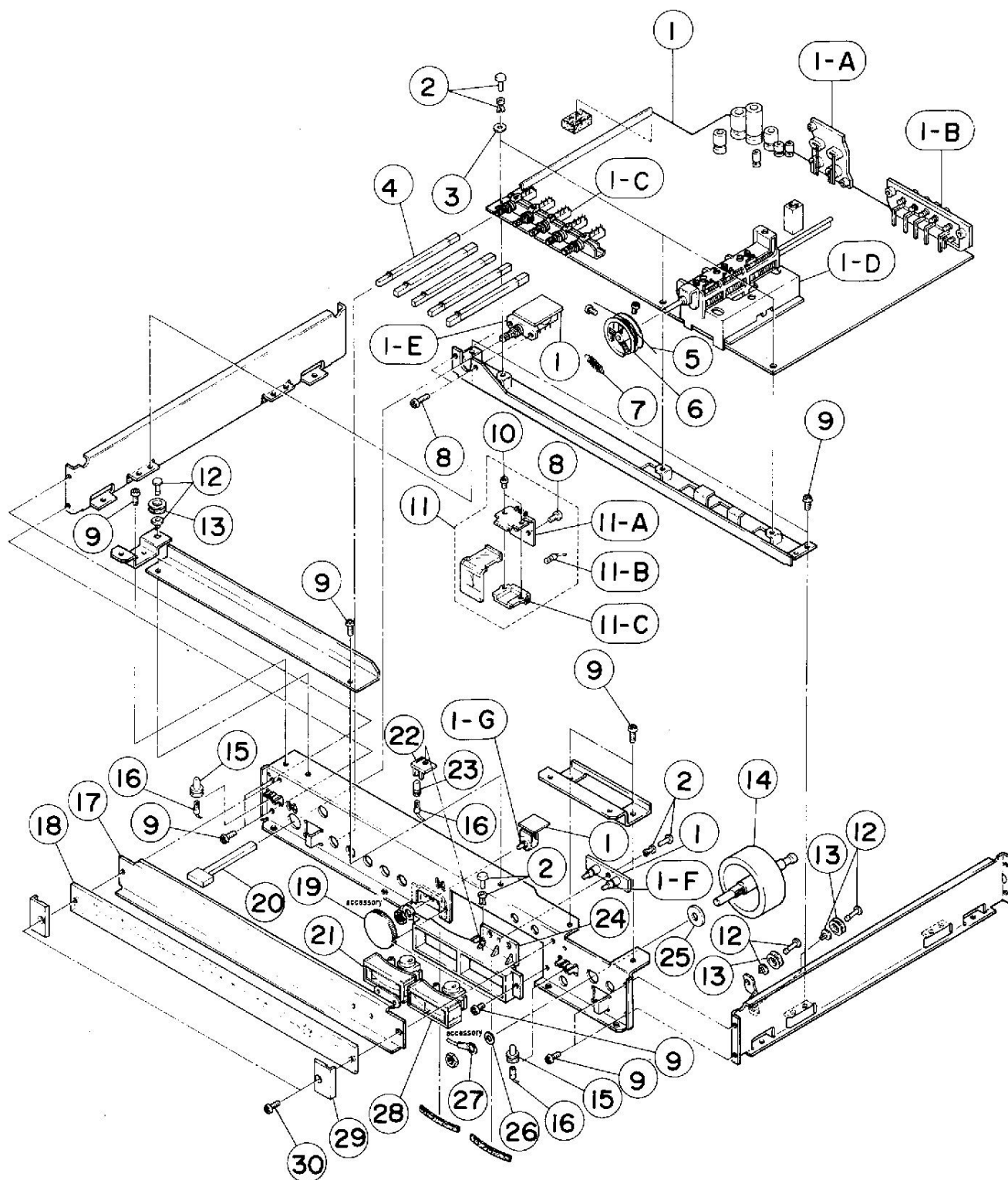


■Parts List

[illegible]

* New parts

■ Exploded view



■ Parts List

* New parts

Ref. No.	Part No.	Description	Markets	Remarks
1	32:00:00:NA:07:10:20	Tuner Circuit Board	R, U, C	
	32:00:00:NA:07:10:30	- do. -	A	
	32:00:00:NA:07:10:40	- do. -	E, G, B	
TR201~ TR207	42:00:00:IC:19:18:00	Transistor	2SC1918 E.F.G	
TR208~ TR211	42:00:00:IA:08:44:00	- do. -	2SA844	
TR212	42:00:00>ID:04:00:00	- do. -	2SD400	
TR213	42:00:00:IB:05:44:00	- do. -	2SA544	
TR214	42:00:00:IA:08:44:00	- do. -	2SA844	
TR215	42:00:00:IA:07:33:00	- do. -	2SA733	
TR216	42:00:00>ID:04:00:00	- do. -	2SD400	
TR217 TR218	42:00:00:IC:19:18:00	- do. -	2SC1918 E.F.G	
TR219	42:00:00:IA:08:44:00	- do. -	2SA844	
TR220~ TR224	42:00:00:IC:19:18:00	- do. -	2SC1918 E.F.G	
TR225	42:00:00:IA:08:44:00	- do. -	2SA844	
TR226~ TR227	42:00:00:IC:19:18:00	- do. -	2SC1918 E.F.G	
TR228	42:00:00:IA:08:44:00	- do. -	2SA844	
TR229	42:00:00>ID:06:55:00	- do. -	2SD655	
TR230~ TR233	42:00:00:IC:19:18:00	- do. -	2SC1918 E.F.G.	
TR234 TR235	42:00:00:IA:08:44:00	- do. -	2SA844	
TR236~ TR241	42:00:00:IC:19:18:00	- do. -	2SC1918 E.F.G	
TR242 TR243	42:00:00>ID:06:55:00	- do. -	2SD655	
TR245~ TR248	42:00:00:IA:07:33:00	- do. -	2SA733	
D201 ~ D203	42:00:00:IF:00:00:40	Diode	1S1555	
D204	42:00:00:IF:00:03:50	- do. -	WZ130	
D205 ~ D207	42:00:00:IH:00:02:40	- do. -	1S1885	
	42:00:00:IH:00:05:90	- do. -	10EI	
D208	42:00:00:IF:00:04:90	LED	SPL-119B	
D209 ~ D211	42:00:00:IF:00:00:40	Diode	1S1555	
D212	42:00:00:IF:00:04:90	LED	SPL-119B	
D213 D214	42:00:00:IF:00:00:40	Diode	1S1555	
D215	42:00:00:IF:00:05:80	- do. -	WZ071	
	42:00:00:IF:00:06:40	- do. -	MZ7B	
D216 ~ D219	42:00:00:IF:00:00:40	- do. -	1S1555	
D220	42:00:00:IF:00:06:70	- do. -	1S2473	
IC201	42:00:00:IG:00:04:00	IC	TA7060P	
IC202 IC203	42:00:00:IG:00:03:90	- do. -	μ pc 577H	
IC204	42:00:00:IG:00:12:20	- do. -	TA7136P	
IC205	42:00:00:IG:00:24:10	- do. -	LA3350-3A	
R201	42:00:00:HK:35:61:00	Carbon Resistor	1K Ω	
R202	42:00:00:HK:35:81:00	- do. -	100K Ω	
R203	42:00:00:HK:35:61:00	- do. -	1K Ω	
R204 R205	42:00:00:HK:35:53:00	- do. -	330 Ω	
R206	42:00:00:HK:33:52:20	- do. -	220 Ω	
R207 R208	42:00:00:HK:35:61:50	- do. -	1.5K Ω	
R209 R210	42:00:00:HK:35:64:70	- do. -	4.7K Ω	
R211	42:00:00:HK:35:62:20	- do. -	2.2K Ω	
R212	42:00:00:HK:35:54:70	- do. -	470 Ω	
R213	42:00:00:HK:35:62:20	- do. -	2.2K Ω	
R214	42:00:00:HK:35:61:00	- do. -	1K Ω	
R215	42:00:00:HK:35:56:80	- do. -	680 Ω	
R216	42:00:00:HK:35:54:70	- do. -	470 Ω	
R217	42:00:00:HK:35:62:20	- do. -	2.2K Ω	
R218	42:10:00:HK:35:52:20	- do. -	220 Ω	

* New parts

Ref. No.	Part No.	Description	Markets	Remarks
R219	42 00 00 HK 35 53 30	Carbon Resistor 330 Ω		
R211	42 00 00 HK 35 51 00	— do. — 100 Ω		
R222 R223	42 00 00 HK 35 52 00	— do. — 220 Ω		
R224 ~ R226	42 00 00 HK 35 56 80	— do. — 6.8K Ω		
R227	42 00 00 HK 35 52 00	— do. — 220 Ω		
R228 R229	42 00 00 HK 35 75 60	— do. — 56K Ω		
R230	42 00 00 HK 35 85 60	— do. — 560K Ω		
R231	42 00 00 HK 35 71 00	— do. — 10K Ω		
R232	42 00 00 HK 35 85 60	— do. — 560K Ω		
R233	42 00 00 HK 35 73 30	— do. — 33K Ω		
R234 R235	42 00 00 HK 35 74 70	— do. — 47K Ω		
R236	42 00 00 HK 53 81 00	— do. — 100K Ω		
R237	42 00 00 HK 35 84 70	— do. — 470K Ω		
R238 ~ R240	42 00 00 HK 35 72 20	— do. — 22K Ω		
R241	42 00 00 HK 35 41 00	— do. — 10 Ω		
R242 R243	42 00 00 HK 35 71 00	— do. — 10K Ω		
R244	42 00 00 HK 35 61 00	— do. — 1K Ω		
R245	42 00 00 HK 35 52 20	— do. — 220 Ω		
R246	42 00 00 HK 35 61 00	— do. — 1K Ω		
R247	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R248	42 00 00 HK 35 52 20	— do. — 220 Ω		
R249	42 00 00 HK 35 84 70	— do. — 470K Ω		
R250	42 00 00 HK 35 81 00	— do. — 100K Ω		
* R251	42 00 00 HL 61 44 70	Metal Oxide Resistor 47 Ω		
R252	42 00 00 HG 10 35 60	Carbon Resistor R $\frac{1}{2}$ 5.6 Ω	J	
	42 00 00 HG 10 41 00	— do. — 10 Ω	U, C, R, E, B	
R253	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R254 R255	42 00 00 HK 35 84 70	— do. — 470K Ω		
R256	42 00 00 HK 35 52 20	— do. — 220 Ω		
R257 R258	42 00 00 HK 35 61 00	— do. — 1K Ω		
R259	42 00 00 HK 35 81 00	— do. — 100K Ω		
R260	42 00 00 HK 35 82 20	— do. — 220K Ω		
R261	42 00 00 HK 35 73 30	— do. — 33K Ω		
R262	42 00 00 HK 35 61 00	— do. — 1K Ω		
R263 R264	42 00 00 HK 35 73 30	— do. — 33K Ω		
R265	42 00 00 HK 35 61 00	— do. — 1K Ω		
R266	42 00 00 HK 35 81 00	— do. — 100K Ω		
R267 R268	42 00 00 HK 35 73 30	— do. — 33K Ω		
R269	42 00 00 HK 35 71 00	— do. — 10K Ω		
R270	42 00 00 HK 35 81 00	— do. — 100K Ω		
R271	42 00 00 HK 35 66 80	— do. — 6.8K Ω		
R272	42 00 00 HK 35 84 70	— do. — 470K Ω		
R273	42 00 00 HK 35 72 20	— do. — 22K Ω		
R274	42 00 00 HK 35 83 90	— do. — 390K Ω		
R275	42 00 00 HK 35 73 30	— do. — 33K Ω		
R276	42 00 00 HL 35 66 80	— do. — 6.8K Ω		
R277	42 00 00 HK 35 44 70	Metal Oxide Resistor 47 Ω		
R278	42 00 00 HK 35 64 70	Carbon Resistor 4.7K Ω		
R279	42 00 00 HK 35 91 00	— do. — 1M Ω		
R280	42 00 00 HK 35 61 50	— do. — 1.5K Ω		
R281	42 00 00 HK 35 61 00	— do. — 1K Ω		
R282	42 00 00 HK 35 54 70	— do. — 470 Ω		
R283	42 00 00 HK 35 61 00	— do. — R50. $\frac{1}{2}$ P 1K Ω		

* New parts

Ref. No.	Part No.	Description	Markets	Remarks
R285	42 00 00 HK 35 64 70	Carbon Resistor 4.7K Ω		
R286	42 00 00 HK 35 73 30	— do. — 33K Ω		
R287	42 00 00 HK 35 82 20	— do. — 220K Ω		
R288 R289	42 00 00 HK 35 66 80	— do. — 6.8K Ω		
R290	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R291	42 00 00 HK 35 81 00	— do. — 100K Ω		
R292 R293	42 00 00 HK 35 61 50	— do. — 1.5K Ω		
R294	42 00 00 HK 35 71 50	— do. — 15K Ω		
R295	42 00 00 HK 35 81 00	— do. — 100K Ω		
R296	42 00 00 HK 35 71 50	— do. — 15K Ω		
R297	42 00 00 HK 35 82 20	— do. — 220K Ω		
R298	42 00 00 HK 35 61 50	— do. — 1.5K Ω		
R299	42 00 00 HK 35 66 80	— do. — 6.8K Ω		
R300	42 00 00 HK 35 52 20	— do. — 220 Ω		
R301	42 00 00 HK 35 73 30	— do. — 33K Ω		
* R302	42 00 00 HL 61 52 20	Metal Oxide Resistor 220 Ω		
R303	42 00 00 HK 35 81 20	Carbon Resistor 120K Ω		
R304	42 00 00 HK 35 72 20	— do. — 22K Ω		
R305	42 00 00 HK 35 61 50	— do. — 1.5K Ω		
R306 R307	42 00 00 HK 35 71 00	— do. — 10K Ω		
R308 R309	42 00 00 HK 35 72 20	— do. — 22K Ω		
R310 R311	42 00 00 HK 35 71 00	— do. — 10K Ω		
R312	42 00 00 HK 35 66 80	— do. — 6.8K Ω		
R313 R314	42 00 00 HK 35 71 00	— do. — 10K Ω		
R315	42 00 00 HK 35 54 70	— do. — 470 Ω		
R316	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R317	42 00 00 HK 35 71 50	— do. — 15K Ω		
R318	42 00 00 HK 35 54 70	— do. — 470 Ω		
R319 R320	42 00 00 HK 35 72 20	— do. — 22K Ω		
R321	42 00 00 HK 35 61 00	— do. — 1K Ω		
R322	42 00 00 HK 35 71 50	— do. — 15K Ω		
R323	42 00 00 HK 35 61 50	— do. — 1.5K Ω		
R324	42 00 00 HK 35 74 70	— do. — 47K Ω		
R325	42 00 00 HK 35 71 50	— do. — 15K Ω		
R326	42 00 00 HK 36 61 00	— do. — 1K Ω		
R327 R328	42 00 00 HK 35 71 00	— do. — 10K Ω		
R329	42 00 00 HK 35 61 00	— do. — 1K Ω		
R330	42 00 00 HK 35 71 00	— do. — 10K Ω		
R331	42 00 00 HK 35 91 00	— do. — 1M Ω		
R332 R333	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R334	42 00 00 HK 35 71 00	— do. — 10K Ω		
R335	42 00 00 HK 35 82 20	— do. — 220K Ω		
R336	42 00 00 HK 35 72 20	— do. — 22K Ω		
R337 R338	42 00 00 HK 35 72 20	— do. — 22K Ω		
R339	42 00 00 HK 35 66 80	— do. — 6.8K Ω		
R340	42 00 00 HK 35 71 00	— do. — 10K Ω		
R341	42 00 00 HK 35 81 00	— do. — 100K Ω		
R342	42 00 00 HK 35 91 00	— do. — 1M Ω		
R343	42 00 00 HK 35 63 30	— do. — 3.3K Ω		
R344	42 00 00 KH 35 62 20	— do. — 2.2K Ω		
R345 R346	42 00 00 HK 35 71 00	— do. — 10K Ω		
R347 R348	42 00 00 HK 35 78 20	— do. — 82K Ω		
R349 R350	42 00 00 HK 35 66 80	— do. — 6.8K Ω		

*New parts