

# TOSHIBA

## STEREO RADIO CASSETTE RECORDER

# RT-120S



### SPECIFICATIONS

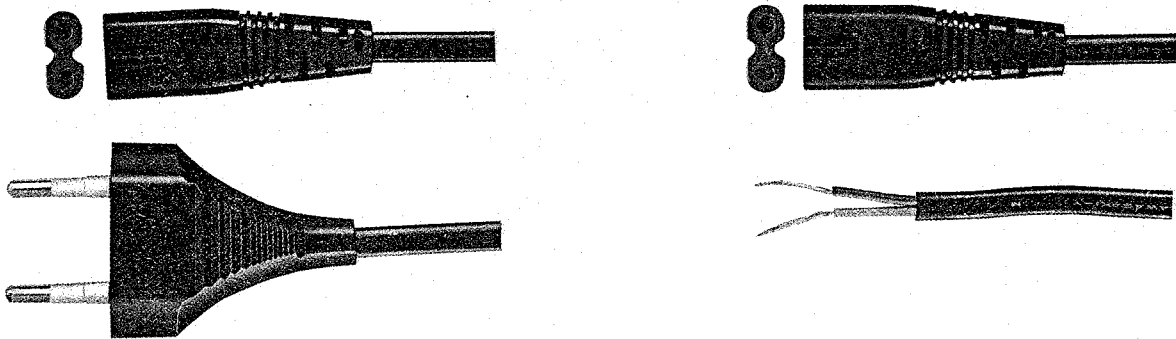
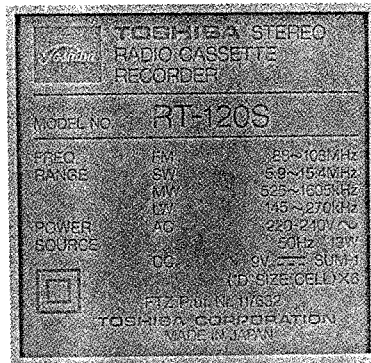
<b>Cassette tape used:</b>	C-30, C-60, C-90, C-120	<b>Speakers:</b>	120 mm (dia.) dynamic x 2 20 mm (dia.) Piezo-electric type x 2
<b>Tape speed:</b>	4.8 cm/sec.	<b>Jacks:</b>	[MIC] jack x 2, Impedance 200 – 2K ohm [AUX] jack x 2, Impedance 50K ohm [PHONES] jack x 1
<b>Track system:</b>	Four-track, two-channel stereophonic	<b>Power supply:</b>	AC 220V – 240V, 50 Hz DC 9V (SUM-1 "D" size x 6)
<b>Recording system:</b>	AC bias (50 kHz)	<b>Power consumption:</b>	13W
<b>Erasing system:</b>	Multipolar magnet erasing	<b>Dimensions</b>	(W x H x D): 440 x 240 x 118 mm
<b>Frequency response:</b>	60 Hz to 10 kHz	<b>Weight:</b>	2.9kg (without batteries)
<b>Receiving frequency:</b>	FM: 88 – 108 MHz SW: 5.9 – 15.4 MHz MW: 525 – 1605 kHz LW: 145 – 270 kHz		
<b>Intermediate frequency:</b>	FM: 10.7 MHz LW, MW, SW: 460 kHz		
<b>Antenna:</b>	FM, SW: telescopic antenna LW, MW: ferrite-core antenna		

Specifications are subject to change without notice.

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# 1. OPERATING CONTROLS

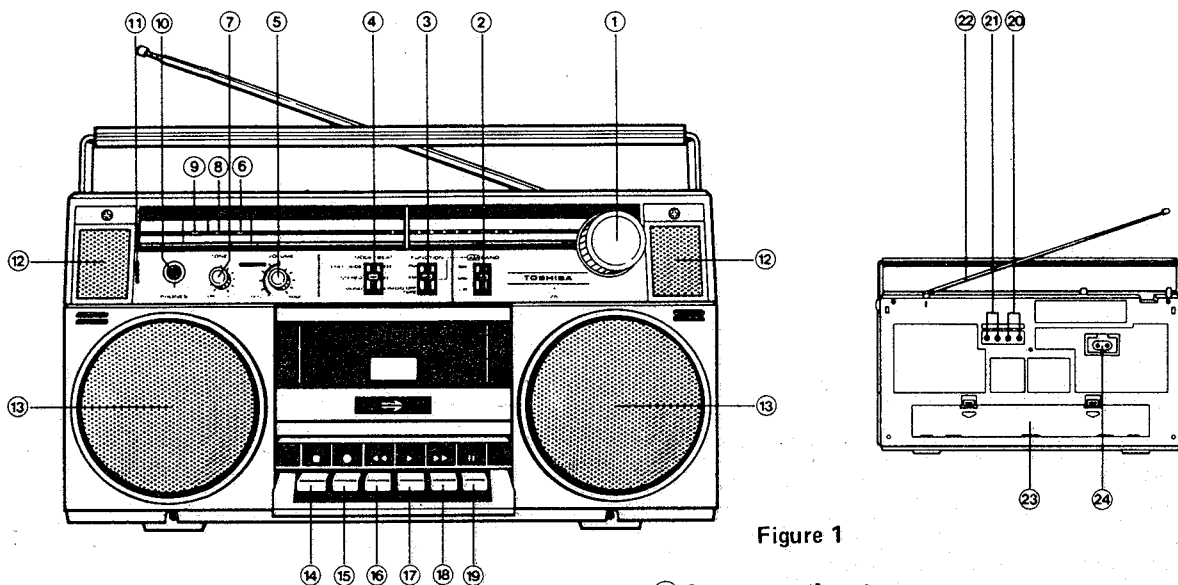


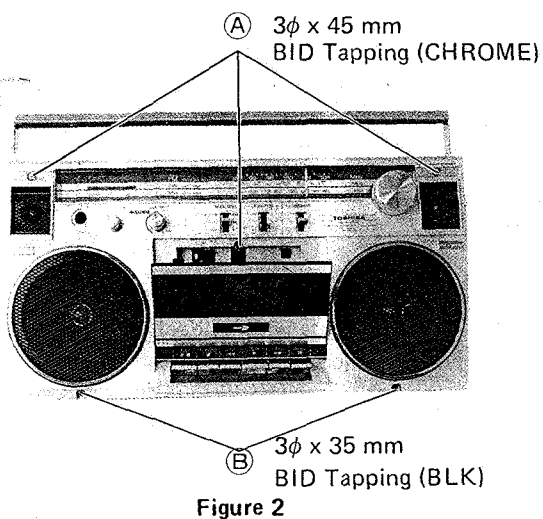
Figure 1

- ① **Tuning Knob**
- ② **[AM BAND] Selector**  
For selecting LW, MW and SW bands.
- ③ **[FUNCTION] Selector**  
Select the required programme source by switching to the corresponding position.  
FM: For listening to radio broadcast of FM  
AM: For listening to radio broadcast of AM  
RADIO OFF/TAPE: For tape playback, and recording via the built-in microphones and external microphones.  
**Note:** In the RADIO OFF/TAPE position the mains power will still be supplied. Therefore, when not in use unplug the cord from the socket.
- ④ **[MODE/BEAT] Selector**  
Switch to the STEREO position for stereo listening, or to the MONO position for monaural listening. In the STEREO WIDE position, an even greater stereo effect is obtained. If a beat noise is generated while recording radio broadcasts on LW or MW bands, this beat can be minimized or removed altogether by changing the beat switch position.
- ⑤ **[VOLUME] Control**  
Turn to adjust the volume level when listening on the speakers or headphones. In the low volume region marked LOUDNESS (thick line), the treble and bass tones are amplified to give a more natural sound at low listening levels.
- ⑥ **[TUNING] Indicator**  
This indicator lights when a broadcasting station is turned.
- ⑦ **[TONE] Control**  
Turn this knob clockwise to emphasize the high tone.
- ⑧ **[FM STEREO] Indicator**  
This indicator lights when an FM stereo broadcast is received (even when the MODE/BEAT selector is in the MONO position.)
- ⑨ **[BATTERY] Indicator**  
This indicator lights while the set is turned on as long as there is sufficient power in the batteries. (When AC mains power is used, the lamp stays on.)
- ⑩ **[PHONES] Jack**  
To listen via a pair of headphones, connect to this jack. (Inserting the headphones plug automatically switches off the speakers.)
- ⑪ **Built-in Microphones**
- ⑫ **Tweeters (Speakers for high-pitched sound)**
- ⑬ **Woofers (Speakers for low to mid-range sound)**
- ⑭ **[▲/■ EJECT/STOP] Key**  
To stop the tape, press this key once. To open the cassette compartment, press a second time.
- ⑮ **[● ONE TOUCH RECORD] Key**  
When this key is pressed, thereby starting recording.
- ⑯ **[◀◀ REW] Key**  
For rapid rewinding of the tape.
- ⑰ **[▶▶ PLAY] Key**  
Press this key to play recorded tapes.
- ⑱ **[▶▶ FF] Key**  
For rapid forward winding of the tape.
- ⑲ **[|| PAUSE] Key**  
Press to stop the tape temporarily during recording or playback. Press a second time to resume the recording or playback.
- ⑳ **[MIC] Jacks**  
Microphones with 3.5 mm plugs (outside diameter) may be connected to these jacks.
- ㉑ **[AUX] Jacks**  
To record via an external stereo amplifier, connect a cord with phonoplugs (optional) to these jacks.
- ㉒ **Telescopic Antenna**  
Adjust the direction and length of this antenna to obtain the optimum sound when listening to FM, and SW radio broadcasts.
- ㉓ **Batteries Compartment**
- ㉔ **[AC POWER] Socket**

## 2. DISASSEMBLY INSTRUCTIONS

### FRONT CABINET REMOVAL

1. Pull out the Tone, Volume, Mode/Beat, Function, AM Band and Tuning Knobs.
2. Open the cassette cover by pressing the Eject/Stop button.
3. Unscrew three screws (A) and two screws (B) to separate the Front Cabinet from the Back Cabinet. Figure 2.
4. Reassemble in the reverse order.

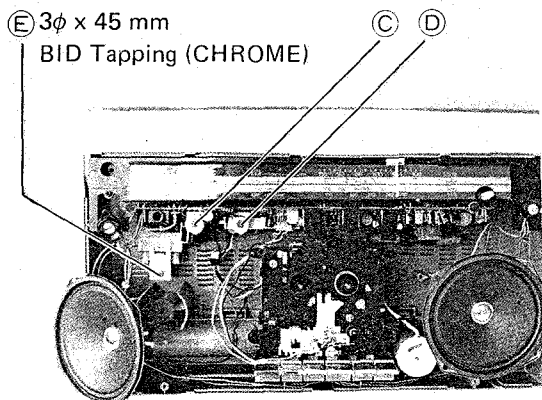


### CASSETTE MECHANISM ASS'Y REMOVAL

1. Follow the instruction for Front Cabinet Removal.
2. Disconnect the motor power supply (C) and head (D) connectors.
3. Take off the Cassette Mechanism Ass'y from the Back Cabinet.
4. Reassemble in the reverse order. Figure 3.

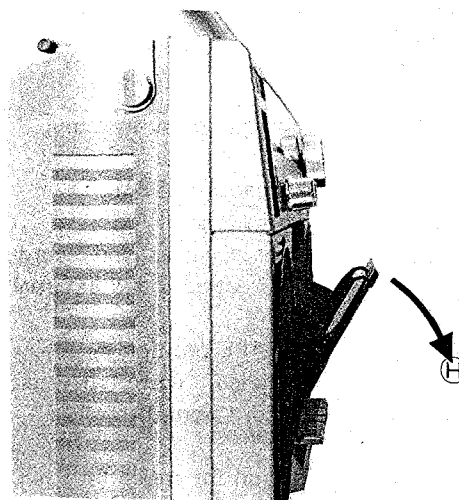
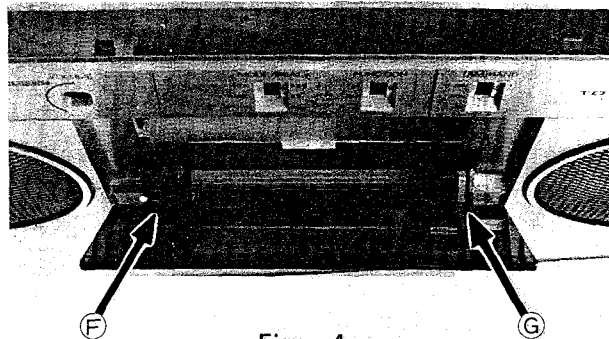
### MAIN P.C. BOARD REMOVAL

1. Remove the Dial Cover on the Dial Plate.
2. Unscrew one Screw (E) in the Power Transformer. Figure 3.
3. Take up the Main P.C. Board from the Back Cabinet.
4. Reassemble in the reverse order.



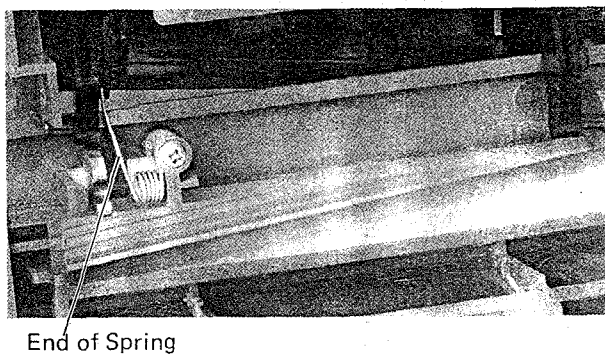
### CASSETTE COVER REMOVAL

Detach the cassette cover with the stopper of both side of cassette cover pushing simultaneously in the direction marked arrows (F) and (G) and pulling it downward in the direction marked arrow (H). Figures 4 and 5.



### CASSETTE COVER REASSEMBLY

1. Hook the end of cassette spring to the groove of cassette cover and push it into the front cabinet. Figure 6.



**DIAL DRUM REMOVAL**

1. Remove a screw ① securing the dial drum.
2. Insert the dial drum to the frame as illustrated without disconnecting the dial cord. Figures 7 and 8.

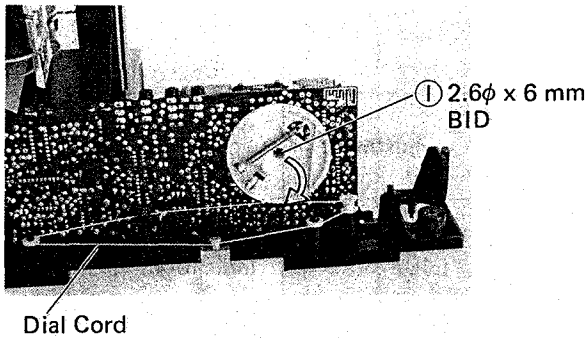


Figure 7

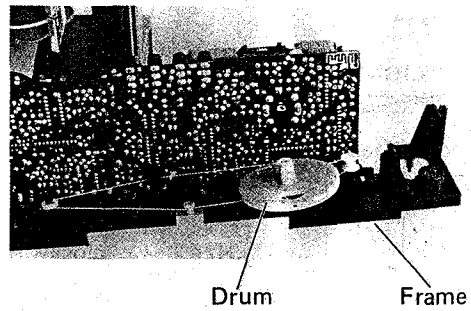


Figure 8

**3. DIAL CORD RESTRINGING**

1. Thread the dial cord into the spring after tying the cord.
2. Thread the dial cord with spring through the hole on the drum. (Do not hang on the hook.)
3. Turn the variable capacitor counterclockwise (F MIN. position).
4. Insert the drum into the variable capacitor and holding the drum by fingers, secure it with the screw. (After this, apply a lock point on the screw.)
5. Wind the dial cord in numerical order 1 to 7, and finally hang the spring on the hook.
6. Fit the pointer to "0" position on the dial scale.

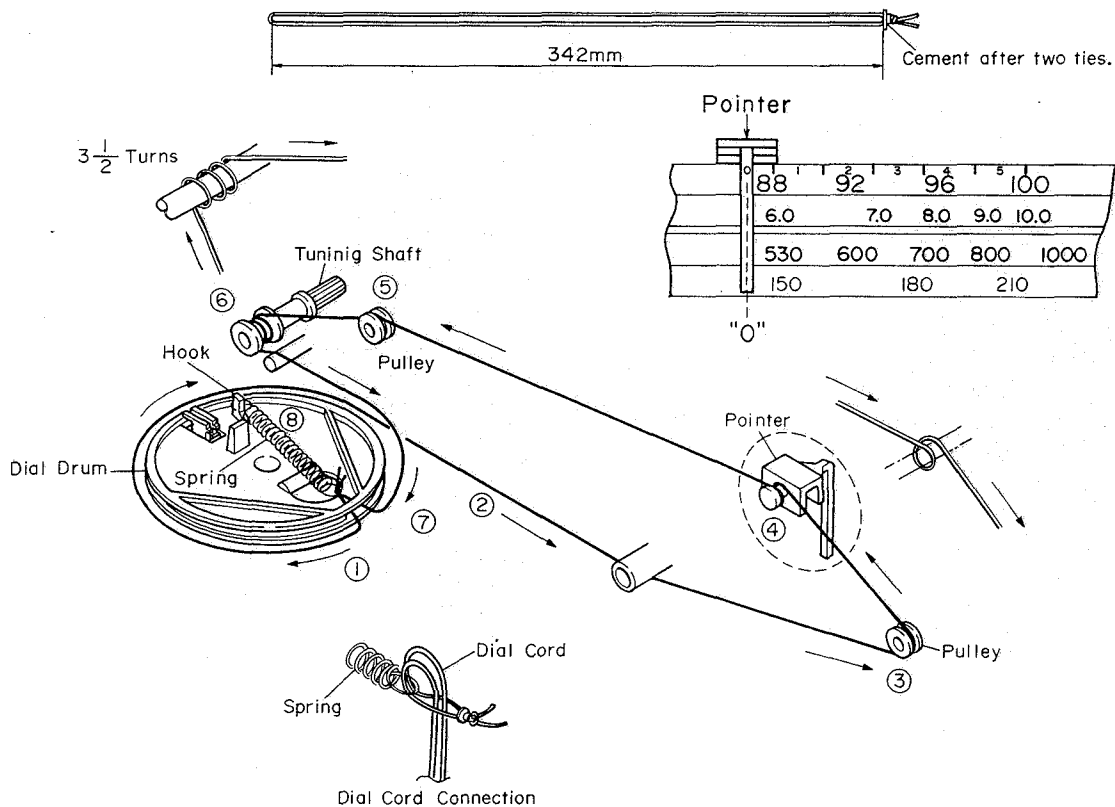


Figure 9

# 4. HANDLE REMOVAL

When replacing the handle, remove it by cutting the handle washer shown in figure below with cutter etc.

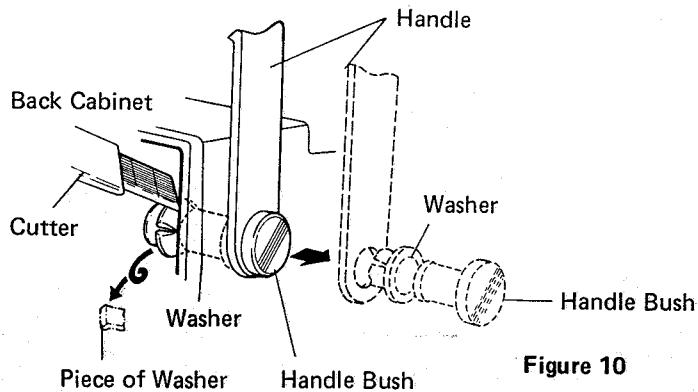


Figure 10

# 5. METHOD OF P.R.C REPAIRING

Cut defective printed-resistor-circuit off with knife. See Figure 11. Solder the replacement resistor (See replacement resistor parts list) on the opposite side of printed-circuit-board. See Figure 12.

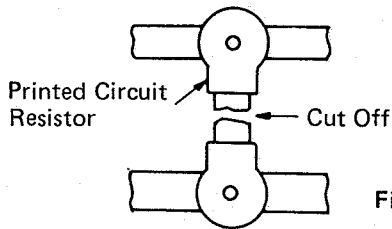


Figure 11

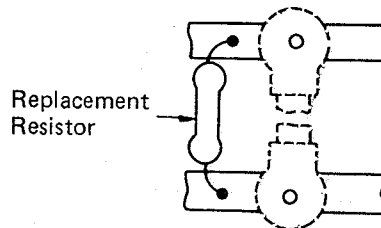


Figure 12

# 6. BLOCK DIAGRAM

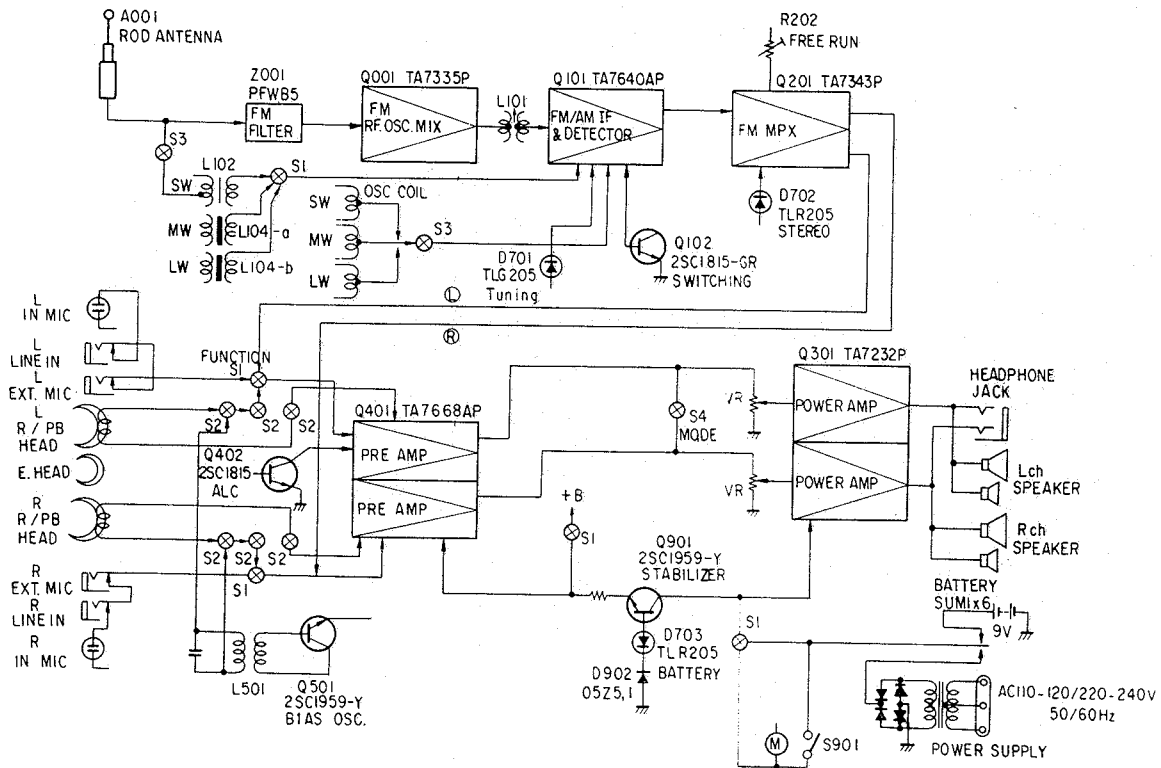


Figure 13

## 7. ALIGNMENT INSTRUCTIONS

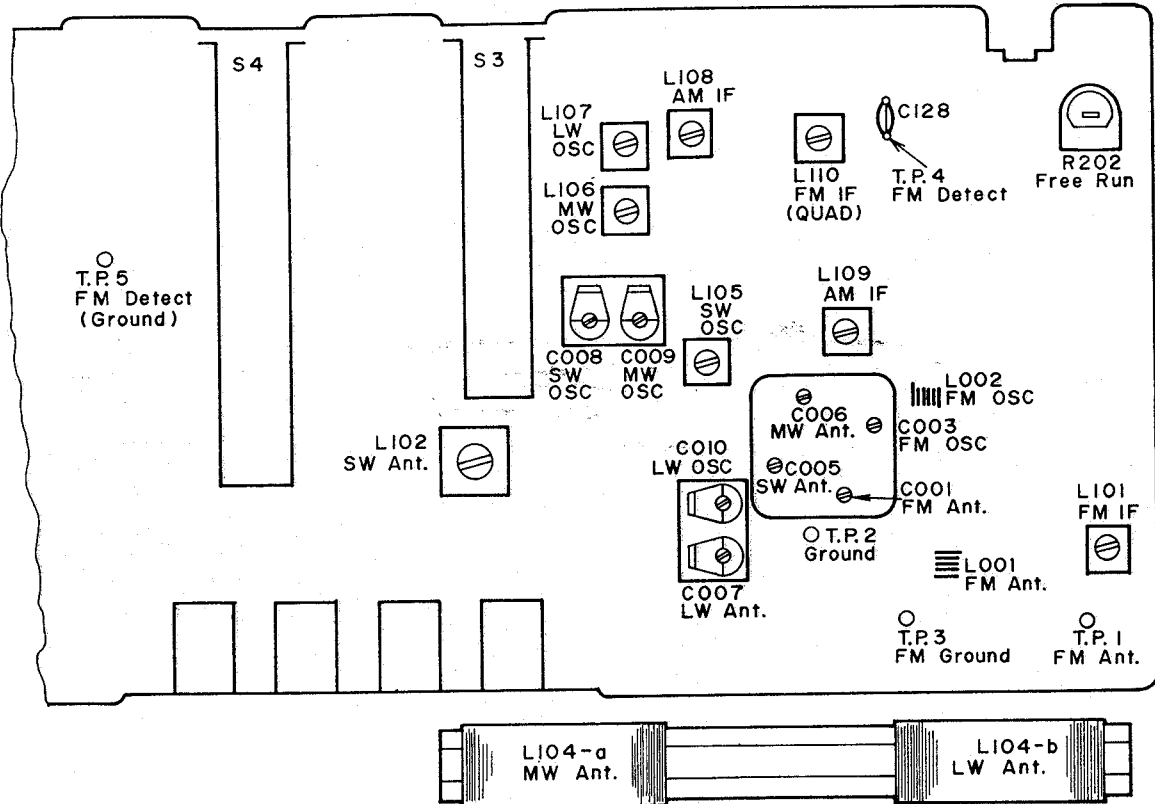


Figure 14

### TEST EQUIPMENT

1. Signal generator with a frequency range of at least from 140 kHz to 23 MHz AM.
2. Oscilloscope with a side range amplifier of approximately 100 kHz.
3. Test loop — a coil of any size wire, one turn or more. (LW & MW)
4. A 30 ohm dummy antenna. (SW)
5. VTVM

### AM ALIGNMENT

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minute warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the radio.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set signal generator frequency as listed in ALIGNMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the IF-LW, MW and SW ALIGNMENT CHART.

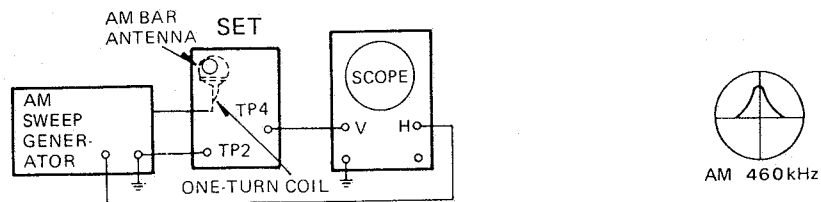


Figure 15



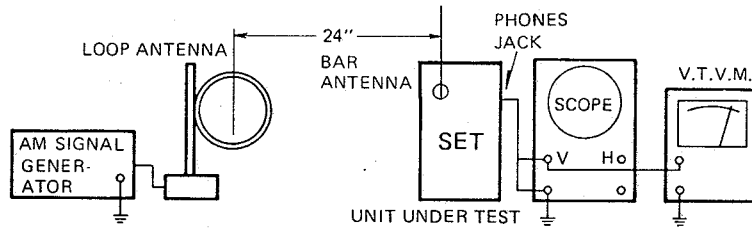


Figure 16

**MW ALIGNMENT CHART**

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks	
IF	1	460 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	L108, L109	Adjust for maximum indication.	
MW	2	510 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L106 (MW)	Adjust for maximum indication.	
	3	1650 kHz	Tuning Gang Fully clockwise (Highest Frequency)	OSC. Trim C009	Adjust for maximum indication.	
	4	Repeat steps 2 and 3 as required.				
	5	600 kHz	Tune to Signal.	Ant. Coil L104-a (MW)	Adjust for maximum indication.	
	6	1400 kHz	Tune to Signal.	Ant. Trim C006	Adjust for maximum indication.	
	7	Repeat steps 5 and 6 as required.				

**LW ALIGNMENT CHART**

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks	
LW	1	142 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L107	Adjust for maximum indication.	
	2	280 kHz	Tuning Gang Fully Clockwise (Highest Frequency)	OSC. Trim C010	Adjust for maximum indication.	
	3	Repeat steps 1 and 2 as required.				
	4	160 kHz	Tune to Signal.	Ant. Coil L104-b	Adjust for maximum indication.	
	5	280 kHz	Tune to Signal.	Ant. Trim C007	Adjust for maximum indication.	
	6	Repeat steps 4 and 5 as required.				

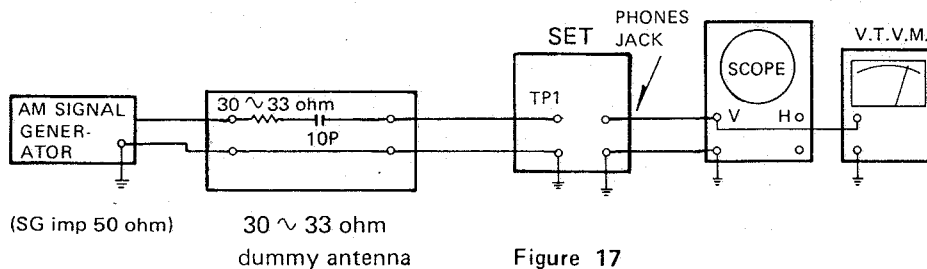


Figure 17



**SW ALIGNMENT CHART**

SW	1	5.75 MHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L105	Adjust for maximum indication.
	2	16 MHz	Tuning Gang Fully Clockwise (Highest Frequency)	OSC. Trim. C008	Adjust for maximum indication.
	3	Repeat steps 1 and 2 as required.			
	4	6.5 MHz	Tune to Signal.	Ant. Coil L102	Adjust for maximum indication.
	5	14 MHz	No Adjustment	Ant. Trim. C005	Adjust for maximum indication.
	6	Repeat steps 4 and 5 as required.			

**FM-IF ALIGNMENT**

1. Set the select switch to FM position.
2. Turn on both sweep generator and oscilloscope, and allow a fifteen-minute warm-up period.
3. Connect the RF SWEEP SIGNAL OUTPUT from the signal generator through the loop antenna to the receiver.
4. Connect the oscilloscope vertical input directly to the test point TURN OUT H and connect the shielded lead to the test point E or chassis ground.
5. Connect the SWEEP VOLTAGE OUTPUT of the sweep generator to the oscilloscope.
6. Proceed as outlined in the FM-IF ALIGNMENT CHART.

**FM-IF ALIGNMENT CHART**

Step	Signal coupling	Equip.	Tuning	Connection	Adjust. point	Pattern
1	Connect sweep generator output to a three-turn loop antenna of 10cm diameter.	Sweep generator of 10.7 MHz center freq. with 10.7 MHz marker.	Tuning Knob fully counter-clockwise (Lowest Frequency.)	Set scope for connecting output signal from TUN OUT to vertical axis of scope "V" and sweep generator output to horizontal axis "H".	L101 L110	Turn the IF Transformer L110 fully counterclockwise to obtain a single peak. Adjust coil L101 in order until the best single peak is obtained. Figure 19. Finally turn the coil L110 to obtain S curve. See Figure 20.

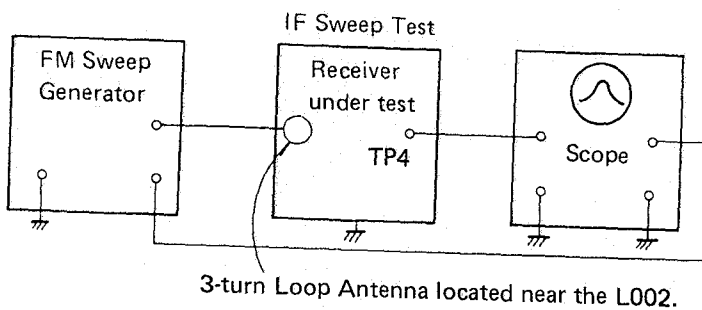


Figure 18

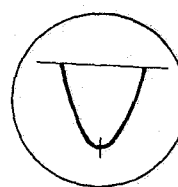


Figure 19

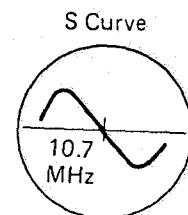


Figure 20

**FM-RF ALIGNMENT**

1. Turn on the signal generator and the VTVM, and allow a fifteen-minute warm-up period.
2. Connect the signal generator output through a 75 ohm dummy antenna across FM ANT.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set the volume control to mid-position.

5. Adjust the signal generator frequency as indicated in FM-RF ALIGNMENT CHART, and maintain a sufficient signal output level to provide a measurable indication.
6. Proceed as outlined in the FM-RM ALIGNMENT CHART.

**FM-RF ALIGNMENT CHART**

Step	Signal Generator	Radio Dial Setting	Adjustment	Remarks
1	87.5 MHz	Tuning Knob fully Counterclockwise (Lowest Frequency)	OSC. Coil L002	Adjust for maximum output indication
2	108 MHz	Tuning Knob fully Clockwise (Highest Frequency)	OSC. Trim. C003	Adjust for maximum output indication
3	Repeat steps 1 and 2 as required.			
4	90 MHz	Tune to signal	Ant. Coil L001	Adjust for maximum output indication
5	106 MHz		Ant. Trim. C001	
6	Repeat steps 4 and 5 as required.			

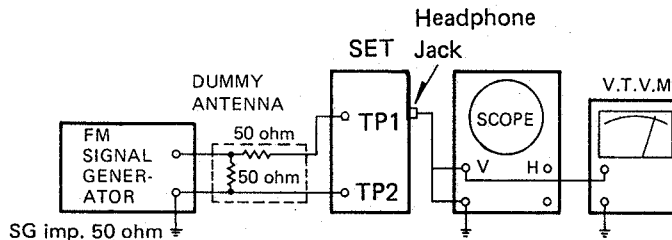


Figure 21

**FREE RUN FREQUENCY ALIGNMENT**

Adjust R202 under no signal condition so as to obtain 38 kHz  $\pm$ 75 Hz.

**CAUTION:**

When realigning the FM Receiving Frequency, the highest end of the frequency range should not be move than 108 MHz and the lowest end of the frequency range should not be less than 87.5 MHz, in order to comply with FTZ regulations in West Germany.

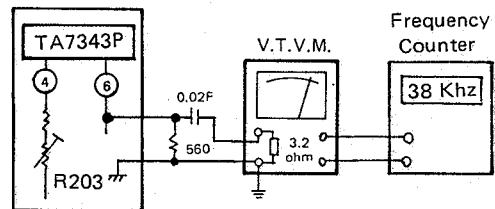
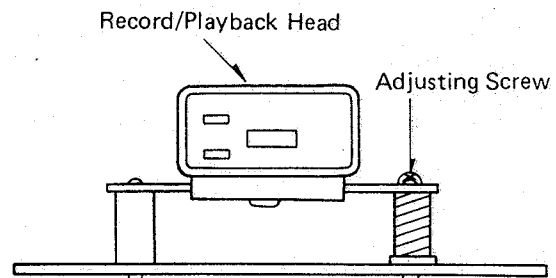


Figure 22

**RECORD/PLAYBACK HEAD ADJUSTMENT**

A 6.3 kHz test tape must be used for this adjustment. Connect a VTVM or an oscilloscope to the headphones jack or speaker terminal and adjust the azimuth by using a phillips screwdriver to maintain the maximum output voltage.



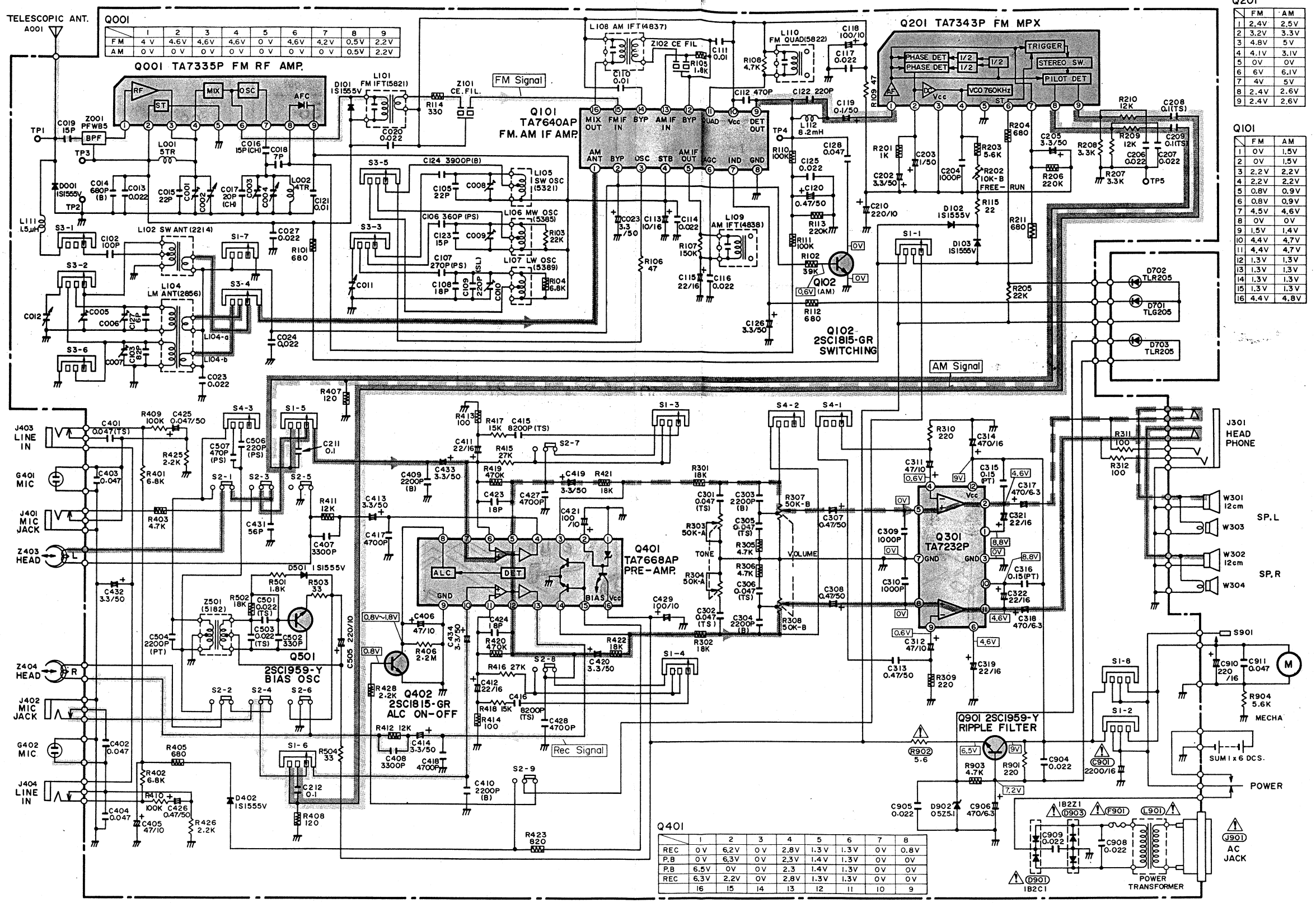
Record/Playback Head Adjustment  
Figure 23

**TAKE-UP/SUPPLY REEL TENSION**

1. Insert cassette torque meter (HARTAK X-87 Torquette).
2. Press PLAY button and read torque meter. Torque should be 35 to 65 gcm.
3. Release PLAY button and press REWIND button. Torque should be 60 to 160 gcm. If necessary, clean take-up reel or drive belt with alcohol, or replace belt.



# 9. SCHEMATIC DIAGRAM

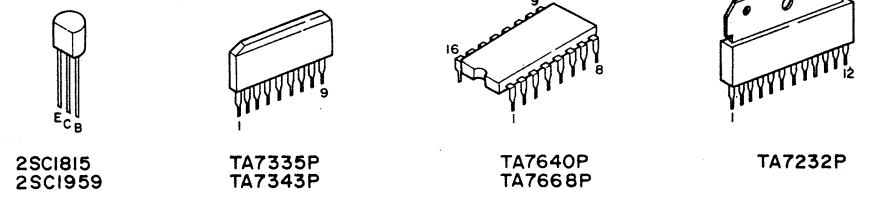


BAND (AM)	FUNC	MODE, BEAT	REC PB
S3-1~6	S1-1~8	S4-1~3	S2-1~9
LW SW	FM TAPE	WIDE MONO	REC PB

Q501	
REC	P.B
E 0.4V	5.6V
C 6.0V	6.5V
B 0.7V	5.9V

NOTE  
 1) All resistance values are indicated in ohms and 1/4W unless otherwise noted. K=1000  
 2) All capacitance values are indicated in microfarads. P = 1/102  
 Electrolytic capacitor indicates Working Voltage (V)  
 Capacitance (μF)



Q201

	FM	AM
1	2.4V	2.5V
2	3.2V	3.3V
3	4.8V	5V
4	4.1V	3.1V
5	0V	0V
6	6V	6.1V
7	4V	5V
8	2.4V	2.6V
9	2.4V	2.6V

Q101

	FM	AM
1	0V	1.5V
2	0V	1.5V
3	2.2V	2.2V
4	2.2V	2.2V
5	0.8V	0.9V
6	0.8V	0.9V
7	4.5V	4.6V
8	0V	0V
9	1.5V	1.4V
10	4.4V	4.7V
11	4.4V	4.7V
12	1.3V	1.3V
13	1.3V	1.3V
14	1.3V	1.3V
15	1.3V	1.3V
16	4.4V	4.8V

Q401

	1	2	3	4	5	6	7	8
REC	0V	6.2V	0V	2.8V	1.3V	1.3V	0V	0.8V
P.B	0V	6.3V	0V	2.3V	1.4V	1.3V	0V	0V
P.B	6.5V	0V	0V	2.3V	1.4V	1.3V	0V	0V
REC	6.3V	2.2V	0V	2.8V	1.3V	1.3V	0V	0V
	16	15	14	13	12	11	10	9

Figure 25

**CAUTION:** The mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

### 10-1. EXPLODED VIEW MECHANISM (UPPER)

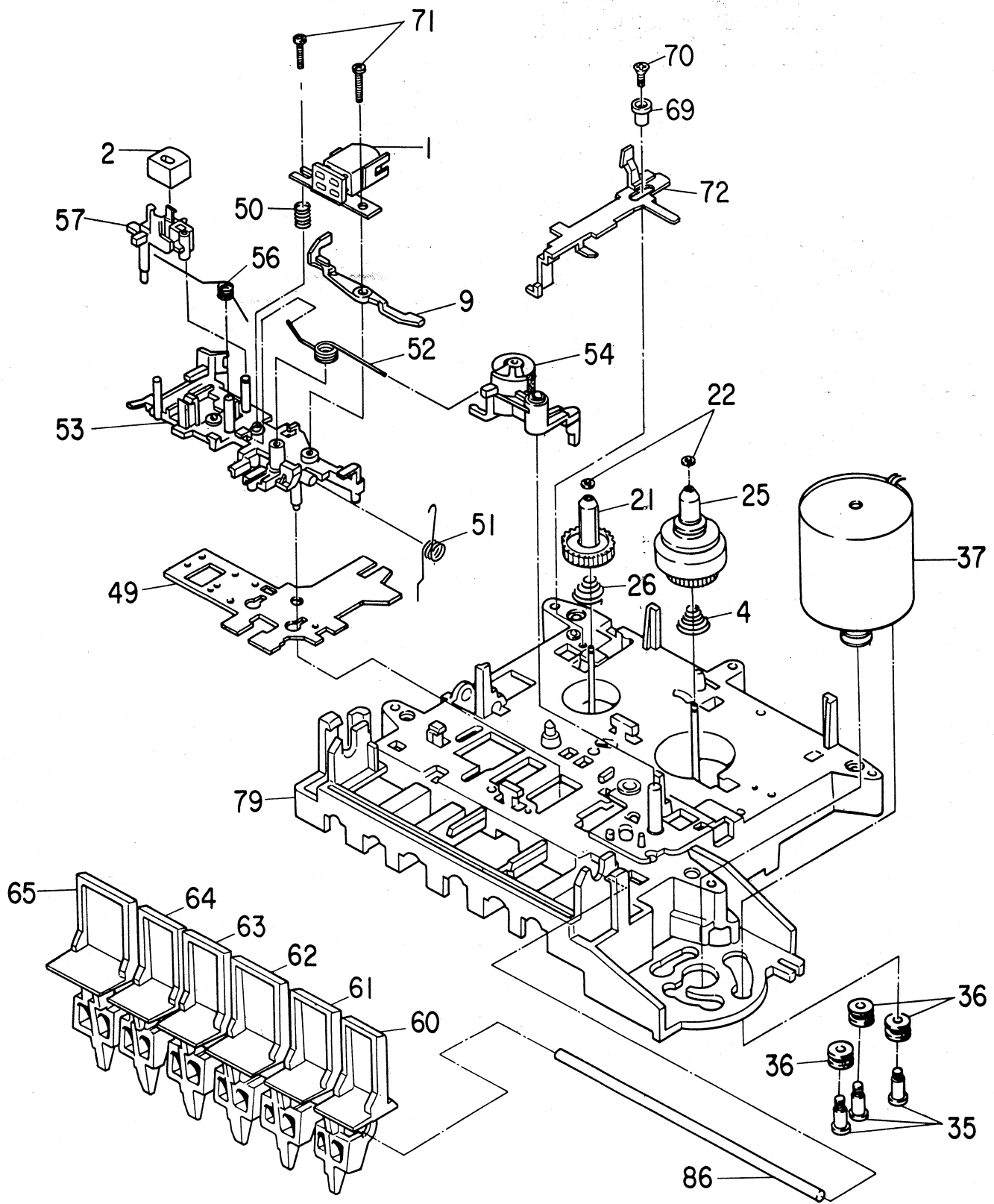


Figure 26

NOTE: Parts excluded in the parts list are not available as replacement parts.

### 10-2. EXPLODED VIEW MECHANISM (LOWER)

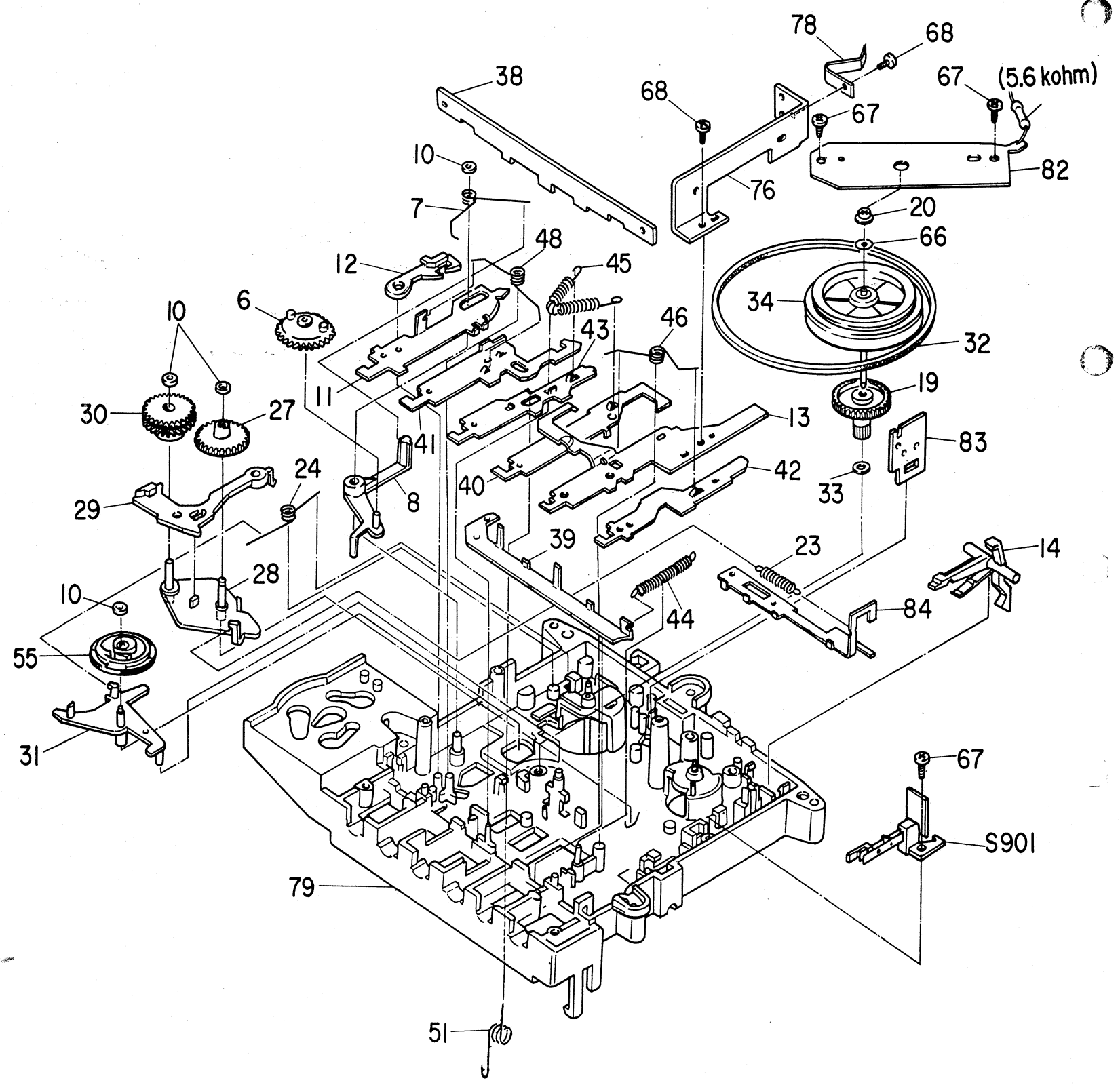


Figure 27

NOTE: Parts excluded in the parts list are not available as replacement parts.



## 11. EXPLODED VIEW (MECHANISM) PARTS LIST

Symbol No.	Part No.	Description
1	22217379	Head, Record/Playback
2	22218240	Head, Erase
4	25777047	Spring, Back Tension
6	25756247	Gear, ASO
7	25773367	Spring, ASO Lever
8	25782440	Lever, ASO
9	25782427	Lever, Detector
10	25783239	Bushing
11	25741852	Operation Plate, Pause
12	25782430	Lever, Pause Lock
13	25741828	Operation Plate, Record
14	25782444	Lever, Record Lock
20	25725340	Holder, Flywheel
21	25754386	Hub Plate, Supply
22	25764549	Washer
23	25776400	Spring, Rewind Lever
24	25773543	Spring
25	25712392	Hub Plate, Take-up
26	25777055	Spring, Back Tension
27	25756179	Gear, High-speed
28	25782441	Lever, Rewind
29	25782442	Lever, Fast Forward
30	25791353	Gear Ass'y, High-speed
31	25783238	Mount, Take-up Idler
32	25755497	Belt, Drive
33	25764398	Washer, 2.5 $\phi$ x 6 $\phi$ x 0.5t
34	25717486	Flywheel Ass'y
35	25758089	Screw, Special
36	25761327	Cushion, Motor
37	25791532	Motor Ass'y
38	25732357	Stop Plate
40	25741827	Operation Plate, Rewind
41	25741826	Operation Plate, FF
42	25741865	Operation Plate, Stop
43	25741844	Operation Plate, Play
44	25776331	Spring, Lock Slider
45	25776329	Spring, Operation
46	25773369	Spring, Operation
48	25773561	Spring, Operation
49	25741825	Slider, Head
50	25777056	Spring, Azimuth
51	25773577	Spring, Head Slider
52	25773366	Spring, Pressure Roller
53	25783237	Head Mount
54	25717480	Pressure Roller Ass'y
55	25713547	Idler Ass'y, Take-up

Symbol No.	Part No.	Description
56	25773544	Spring, Head Lever
57	25782428	Lever, Erase Head
60	25837723	Knob, Pause
61	25837724	Knob, Fast Forward
62	25837725	Knob, Play
63	25837726	Knob, Rewind
64	25837727	Knob, Record
65	25837728	Knob, Stop
66	25766043	Washer, Flywheel
67	22707301	Screw, 2.6 $\phi$ x 8mm BID Tapping
68	22707350	Screw, 2.6 $\phi$ x 5mm, BID
69	25726659	Spacer
70	22707849	Screw, 2.6 $\phi$ x 10mm, FLT
71	22707322	Screw, 2 $\phi$ x 10mm, BID

## 12. EXPLODED VIEW CABINET

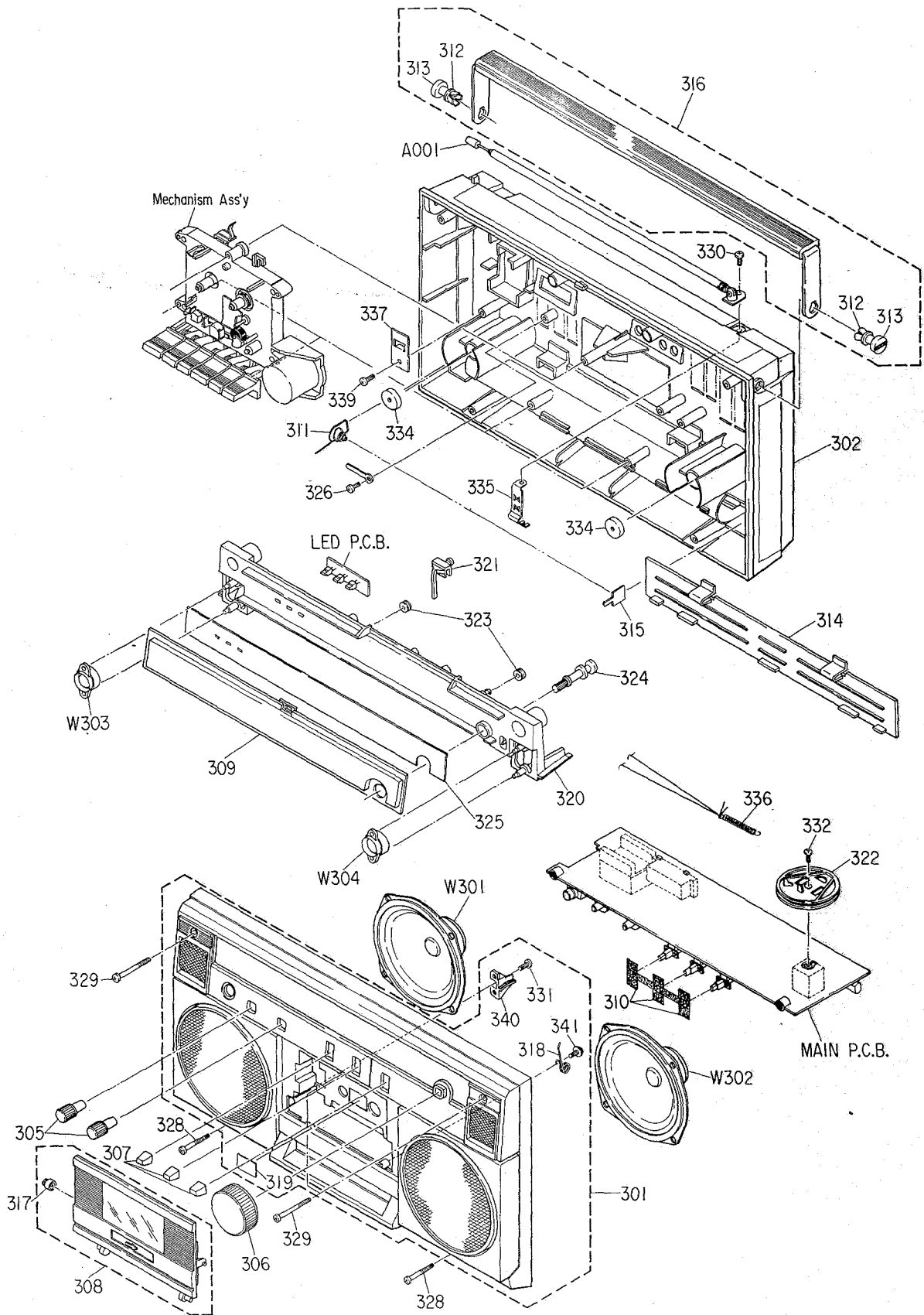


Figure 28 NOTE: Parts excluded in the parts list are not available as replacement parts.





# 14. PARTS LIST

**CAUTION:**

The  $\Delta$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
<b>TRANSISTORS, ICS AND DIODES</b>		
Q001	B0325270	IC, TA7335P
Q101	B0356385	IC, TA7640AP
Q102	A6317460	Transistor, 2SC1815NEW-GR
Q201	B0325350	IC, TA7343P
Q301	B0319960	IC, TA7232P
Q401	B0356690	IC, TA7668AP
Q402	A6317460	Transistor, 2SC1815NEW-GR
Q501	A6319300	Transistor, 2SC1959NEW-Y
Q901	A6319300	Transistor, 2SC1959NEW-Y
D001	A7246703	Diode, 1S1555V
D101, 102	A7246703	Diode, 1S1555V
D103	A7246703	Diode, 1S1555V
D402	A7246703	Diode, 1S1555V
D501	A7246703	Diode, 1S1555V
D701	A8606630	Diode (LED), TLG205
D702, 703	A8603110	Diode (LED), TLR205
$\Delta$ D901	A7682012	Diode, 1B2C1
D902	A7110023	Diode (Zener), 05Z5.1
$\Delta$ D903	A7682052	Diode, 1B2Z1
<b>COILS AND TRANSFORMERS</b>		
L001	22294463	Coil, FM Antenna
L002	22294462	Coil, Oscillator, FM
L101	22265821	IF Transformer, FM
L102	22282214	Coil, Antenna, SW
L104	22242929	Coil, Antenna, MW/LW
L105	22285321	Coil, Oscillator, SW
L106	22245385	Coil, Oscillator, MW
L107	22245389	Coil, Oscillator, LW
L108	22264837	IF Transformer, AM
L109	22264838	IF Transformer, AM
L110	22265822	IF Transformer, FM
L111	22291103	Coil, Choke, 1.5 $\mu$ H
L112	22232219	Coil, Choke, 8.2mH
L501	22235182	Coil, Oscillator, Tape
$\Delta$ L901	22223963	Transformer, Power

Symbol No.	Part No.	Description
<b>ELECTRICAL PARTS</b>		
S1-1 ~ 8	22195944	Switch, Lever, Function
S2-1 ~ 9	22195878	Switch, Slide, Record/Play-back
S3-1 ~ 6	22195955	Switch, Lever, Band Select
S4-1 ~ 3	22195943	Switch, Lever, Mode
S901	22195839	Switch, Leaf, Power
A001	22124491	Rod Antenna
W301, 302	22152360	Speaker, 12cm
W303, 304	22152408	Speaker, 2cm
Z001	22153121	Filter, RF, FM
Z101	22153058	Filter, Ceramic
Z102	22153083	Filter, Ceramic
G401, 402	22154233	Microphone Unit
$\Delta$ F901	22144387	Fuse, 0.8A/250V
J301	22163880	Jack, Headphone, 6 $\phi$
J401, 402	22163865	Jack, Mic/Line-in, 3.5 $\phi$
J403, 404		
$\Delta$ J901	22167901	AC Socket, 2P
EP01	22165047	Holder, Fuse
<b>CAPACITORS</b>		
D = $\pm 5\text{pF}$ , J = $\pm 5\%$ , K = $\pm 10\%$ , M = $\pm 20\%$ , Z = $-20 + 80\%$		
ABBREVIATIONS: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PP = Polypropylene, BL = Barrier Layer		
C001, 002	22308219	Variable
C003, 004		
C005, 006		
C011, 012		
C007, 010	22309184	Trimmer
C008, 009	22309183	Trimmer
C013	22342223	CD, 0.022mfd, 50V, Z
C014	22349681	CD, 680pF, 50V, K
C015	22362220	CD, 22pF, 50V, K
C016	22360132	CD, 15pF, 50V, J (CH)
C017	22360673	CD, 20pF, 50V, J (CH)
C018	22361709	CD, 7pF, 50V, D
C019	22362150	CD, 15pF, 50V, K
C020	22342223	CD, 0.022mfd, 50V, Z

Symbol No.	Part No.	Description
C023	22342223	CD, 0.022mfd, 50V, Z
C024	22342223	CD, 0.022mfd, 50V, Z
C027	22342223	CD, 0.022mfd, 50V, Z
C028	22488339	EL, 3.3mfd, 50V
C102	22362101	CD, 100pF, 50V, K
C103	22362820	CD, 82pF, 50V, K
C105	22362220	CD, 22pF, 50V, K
C106	22321016	PP, 360pF, 50V, J
C107	22321048	PP, 270pF, 50V, J
C108	22362180	CD, 18pF, 50V, K
C109	22321164	PP, 220pF, 50V, J
C110	22342103	CD, 0.01mfd, 50V, Z
C111	22342103	CD, 0.01mfd, 50V, Z
C112	22349471	CD, 470pF, 50V, K
C113	22485100	EL, 10mfd, 16V
C114	22342223	CD, 0.022mfd, 50V, Z
C115	22485220	EL, 22mfd, 16V
C116	22342223	CD, 0.022mfd, 50V, Z
C117	22360329	CD, 0.022mfd, 50V, M
C118	22483101	EL, 100mfd, 10V
C119	22488108	EL, 0.1mfd, 50V
C120	22488478	EL, 0.47mfd, 50V
C121	22342103	CD, 0.01mfd, 50V, Z
C122	22349221	CD, 220pF, 50V, K
C123	22362150	CD, 15pF, 50V, J
C124	22349392	CD, 3900pF, 50V, K
C125	22342223	CD, 0.022mfd, 50V, Z
C126	22488339	EL, 3.3mfd, 50V
C127	22361609	CD, 6pF, 50V, D
C128	22342473	CD, 0.047mfd, 50V, Z
C202	22488339	EL, 3.3mfd, 50V
C203	22488109	EL, 1mfd, 50V
C204	22321032	PP, 1000pF, 50V, K
C205	22488339	EL, 3.3mfd, 50V
C206, 207	22342223	CD, 0.022mfd, 50V, Z
C208, 209	22360333	BL, 0.1mfd, 25V, M
C210	22483221	EL, 220mfd, 10V
C211, 212	22360333	BL, 0.1mfd, 25V, M
C301, 302	22360331	BL, 0.047mfd, 25V, M
C303, 304	22349222	CD, 2200pF, 50V, K
C305, 306	22360331	BL, 0.047mfd, 25V, M
C307, 308	22488478	EL, 0.47mfd, 50V
C309, 310	22349102	CD, 1000pF, 50V, K
C311, 312	22483470	EL, 47mfd, 10V
C313	22488478	EL, 0.47mfd, 50V
C314	22483471	EL, 470mfd, 10V
C315, 316	22372154	MY, 0.15mfd, 50V, K
C317, 318	22482471	EL, 470mfd, 6.3V

Symbol No.	Part No.	Description
C319	22485220	EL, 22mfd, 16V
C321, 322	22485220	EL, 22mfd, 16V
C401, 402	22360331	BL, 0.047mfd, 25V, M
C403	22342473	CD, 0.047mfd, 50V, Z
C404	22360484	CD, 0.047mfd, 50V, Z
C405	22483470	EL, 47mfd, 10V
C406	22483470	EL, 47mfd, 10V
C407, 408	22349332	CD, 3300pF, 50V, K
C409, 410	22349222	CD, 2200pF, 50V, K
C411	22485220	EL, 22mfd, 16V
C412	22485220	EL, 22mfd, 16V
C413, 414	22488339	EL, 3.3mfd, 50V
C415, 416	22360543	BL, 8200pF, 25V, K
C417, 418	22349472	CD, 4700pF, 50V, K
C419, 420	22488339	EL, 3.3mfd, 50V
C421	22483101	EL, 100mfd, 10V
C423, 424	22362180	CD, 18pF, 50V, K
C425, 426	22488478	EL, 0.47mfd, 50V
C427, 428	22349472	CD, 4700pF, 50V, K
C429	22483101	EL, 100mfd, 10V
C431	22362560	CD, 56pF, 50V, K
C432	22488339	EL, 3.3mfd, 50V
C433	22488339	EL, 3.3mfd, 50V
C434	22488339	EL, 3.3mfd, 50V
C501	22360329	BL, 0.022mfd, 25V, M
C502	22362331	CD, 330pF, 50V, K
C503	22360329	BL, 0.022mfd, 25V, M
C504	22372222	MY, 2200pF, 50V, K
C505	22483221	EL, 220mfd, 10V
C506	22321164	PP, 220pF, 50V, J
C507	22321053	PP, 470pF, 50V, J
C901	22485222	EL, 2200mfd, 16V
C904, 905	22342223	CD, 0.022mfd, 50V, Z
C906	22482471	EL, 470mfd, 6.3V
C908, 909	22342223	CD, 0.022mfd, 50V, Z
C910	22485221	EL, 220mfd, 16V
C911	22360484	CD, 0.047mfd, 50V, Z

Symbol No.	Part No.	Description
<b>RESISTORS</b>		
<p>1. Resistors are carbon film 1/4W, <math>\pm 5\%</math> unless otherwise noted.</p> <p>2. PRC is short for the printed resistor circuit. If replacement of the resistor in PRC is required. Please use the substitutional fixed carbon film resistor of 1/4W, <math>\pm 5\%</math> according to the following list. K = 1000, M = 1000000</p>		
R101	22545681	680 ohm (PRC)
R102	22545393	39K ohm (PRC)
R103	22545223	22K ohm
R104	22545682	6.8K ohm (PRC)
R105	22545182	1.8K ohm
R106	22545470	47 ohm
R107	22545154	150K ohm
R108	22545472	4.7K ohm
R109	22545470	47 ohm
R110	22545104	100K ohm (PRC)
R111	22545104	100K ohm (PRC)
R112	22545681	680 ohm (PRC)
R113	22545224	220K ohm (PRC)
R114	22545331	330 ohm (PRC)
R115	22545220	22 ohm
R201	22545102	1K ohm (PRC)
R202	22658599	Semi-Fixed Variable, 10K ohm
R203	22545562	5.6K ohm (PRC)
R204	22545562	5.6K ohm (PRC)
R205	22545223	22K ohm (PRC)
R206	22545224	220K ohm (PRC)
R207, 208	22545332	3.3K ohm
R209, 210	22545123	12K ohm
R211	22545681	680 ohm (PRC)
R301, 302	22545183	18K ohm (PRC)
R303, 304	22651564	Variable, 50K ohm, Tone
R305, 306	22545472	4.7K ohm (PRC)
R307, 308	22651622	Variable, 50K ohm, Volume
R309	22545221	220 ohm (PRC)
R310	22545221	220 ohm
R311, 312	22545101	100 ohm

Symbol No.	Part No.	Description
R401, 402	22545682	6.8K ohm
R403, 404	22545472	4.7K ohm (PRC)
R405	22545681	680 ohm (PRC)
R406	22555225	2.2M ohm
R407, 408	22545121	120 ohm (PRC)
R409, 410	22545104	100K ohm
R411, 412	22545123	12K ohm (PRC)
R413, 414	22545101	100 ohm (PRC)
R415, 416	22545273	27K ohm
R417, 418	22545153	15K ohm
R419, 420	22545474	470K ohm (PRC)
R421, 422	22545183	18K ohm (PRC)
R423	22545821	820 ohm (PRC)
R425, 426	22545222	2.2K ohm
R428	22545222	2.2K ohm (PRC)
R501	22545182	1.8K ohm
R502	22545183	18K ohm (PRC)
R503	22545330	33 ohm
R504	22545330	33 ohm
R901	22545221	220 ohm
△ R902	22540561	5.6 ohm
R903	22545472	4.7K ohm (PRC)
R904	22555562	5.6K ohm
<b>ACCESSORIES</b>		
△ AC01	22176616	Cord, Power (TE)
△ AC01	22176626	Cord, Power (TU)
AC02	22903361	Owner's Manual (TE)
AC02	22903362	Owner's Manual (TU)
AC03	22906331	Pop Label

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