

# Service Manual

Radio

11-BAND  
COMMUNICATION

RF-4900LBS

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SM-RF4900LBS  
SERVICE MANUAL

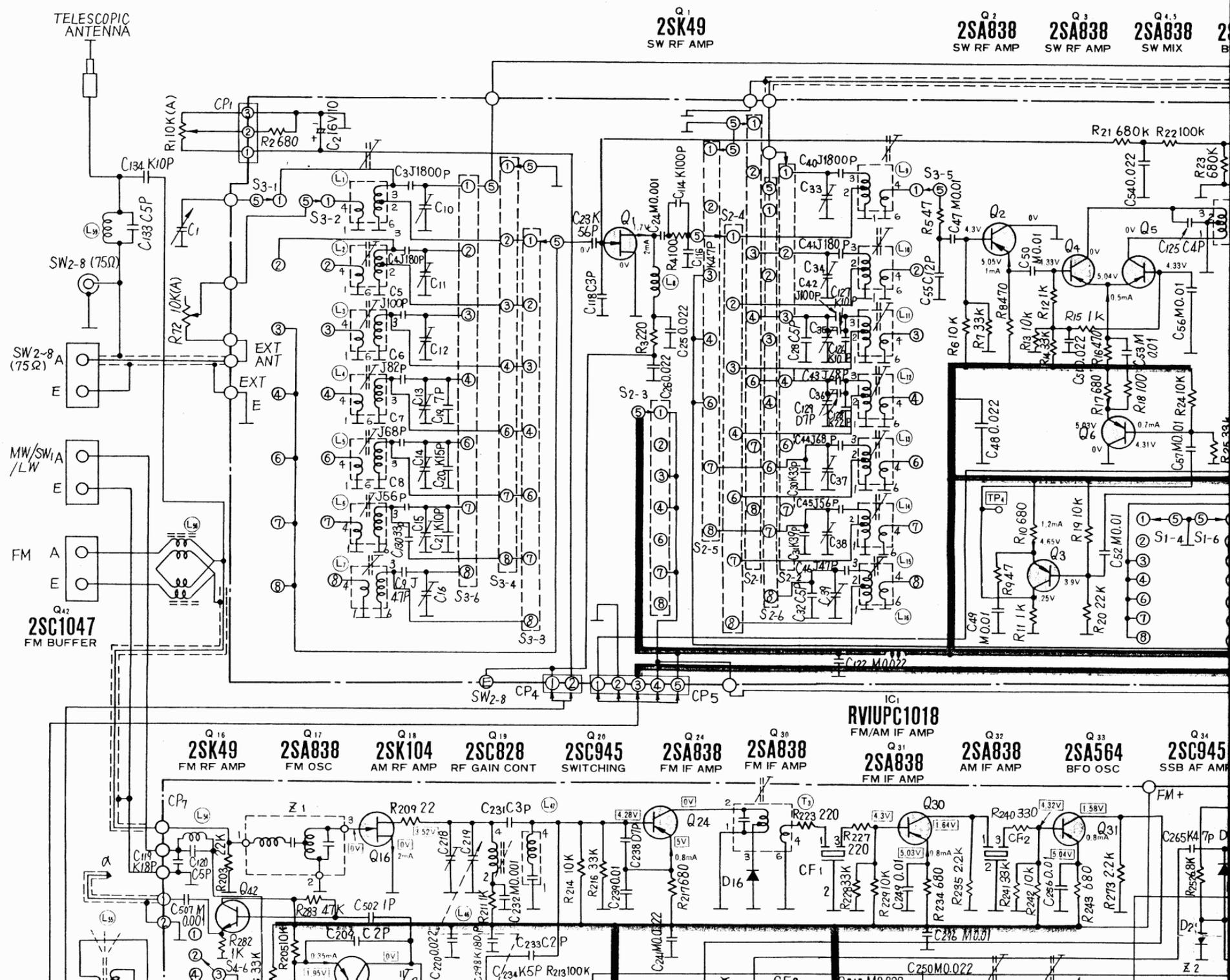
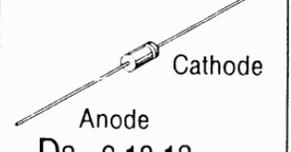
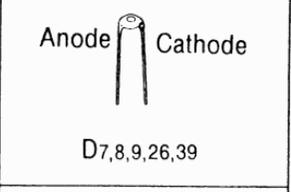
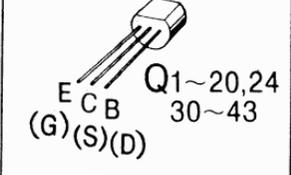
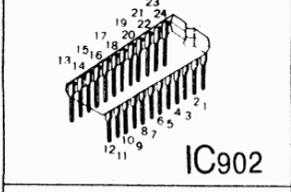
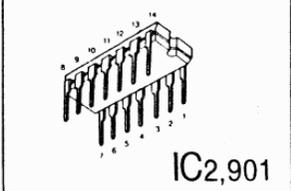
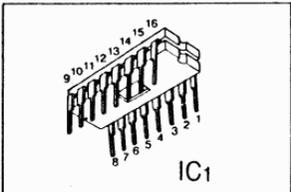
## ■ SPECIFICATIONS

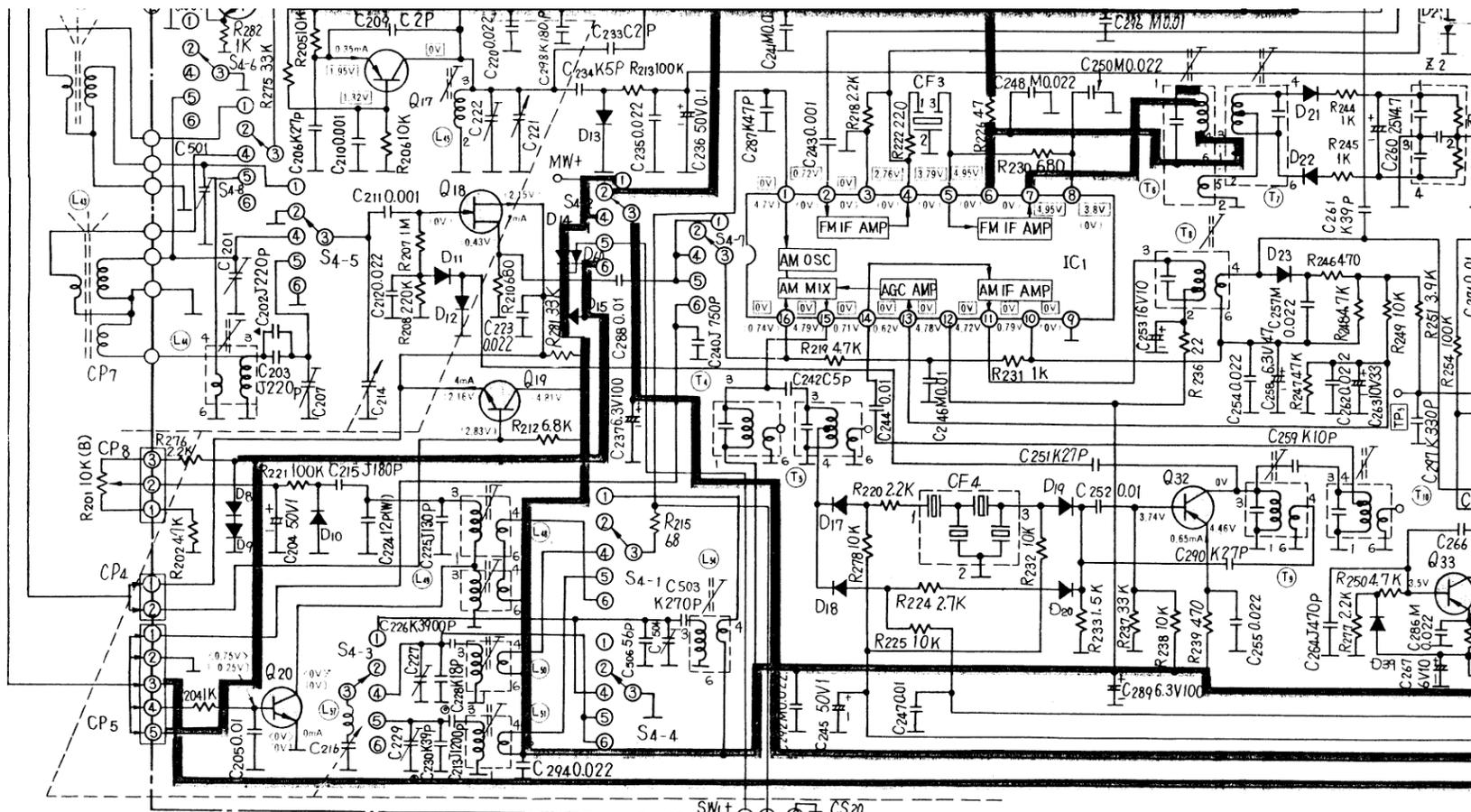
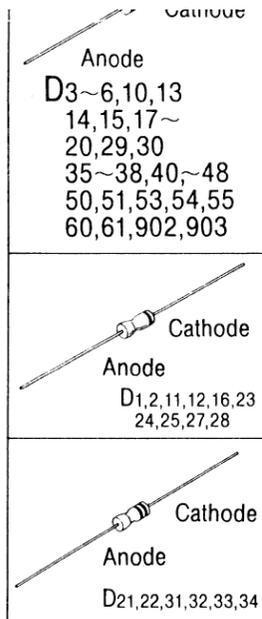
Frequency Range:	FM 87.5~108 MHz	Power Output:	DC Max. 3W (60% Mod. 400 Hz)
	LW 145~410 kHz (2060~732m)	Power Source:	AC 110~125/220~240V 50/60 Hz
	MW 520~1610 kHz (577~186m)		or 12V (Eight "D" Size Flash-
	SW <sub>1</sub> 1.6~3 MHz (188~100m)		light Batteries)
	SW <sub>2</sub> 3~7 MHz (100~42.9m)		(National UM-1 or equivalent)
	SW <sub>3</sub> 7~11 MHz (42.9~27.3m)	Power Consumption:	10W (AC Only)
	SW <sub>4</sub> 11~15 MHz (27.3~20m)	Speaker:	10 cm (4") PM Dynamic Speaker
	SW <sub>5</sub> 15~19 MHz (20~15.8m)	Dimensions:	18 $\frac{1}{2}$ (Wide) x 7 $\frac{1}{2}$ (High) x 13 $\frac{1}{2}$ (Deep)
	SW <sub>6</sub> 19~23 MHz (15.8~13m)		(482 x 200 x 354 mm)
	SW <sub>7</sub> 22~26 MHz (13.6~11.5m)	Weight:	8 kg (17 lb 10 oz) without batteries
	SW <sub>8</sub> 26~30 MHz (11.5~10.0m)	Impedance:	Speaker .....4 $\Omega$
Intermediate Frequency:	FM 10.7 MHz		AUX Jack
	LW/MW/SW <sub>1</sub> 455 kHz		Din Type .....500k $\Omega$ (50mV)
	SW <sub>2~8</sub> 1st IF 2 MHz		Miniature Type ...300k $\Omega$ (20mV)
	2nd IF 455 kHz		REC OUT Jack
Sensitivity:	FM 6 $\mu$ V (S/N 26 dB)		Din Type .....80k $\Omega$ (100mV)
	LW 100 $\mu$ V/m (S/N 10 dB)		Miniature Type ...4k $\Omega$ (400mV)
	MW 60 $\mu$ V/m (S/N 10 dB)		Earphone Jack .....4~8 $\Omega$
	SW <sub>1</sub> 1 $\mu$ V (S/N 10 dB)		FM EXT ANT .....300 $\Omega$
	SW <sub>2</sub> 1.3 $\mu$ V (S/N 10 dB)		SW <sub>1</sub> /LW/MW .....75 $\Omega$
	SW <sub>3</sub> 0.8 $\mu$ V (S/N 10 dB)		SW <sub>2~8</sub> .....75 $\Omega$
	SW <sub>4</sub> 1.2 $\mu$ V (S/N 10 dB)		
	SW <sub>5</sub> 1.2 $\mu$ V (S/N 10 dB)		
	SW <sub>6</sub> 1.2 $\mu$ V (S/N 10 dB)		
	SW <sub>7</sub> 2.0 $\mu$ V (S/N 10 dB)		
	SW <sub>8</sub> 1.4 $\mu$ V (S/N 10 dB)		

Specifications are subject to change without notice for further improvement.

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka, Japan

# Schematic Diagram





C	119	120	1	114	2	3~21	118	23	24~26	116	27~46	47~49	50	51	52	53	54	55~57				
R	501	201~207	208~216	218~230	248	231~240	288	503-506	287	241~245	292	246	247	248	249~253	289	254~259	290	260~264	265~270		
	1	2	205	221	275	206~208	209	210	211	212	213~216	217	218~221	278	222~226	227~233	234~239	240~242	243~250	277	273	251~257

**Notes:**

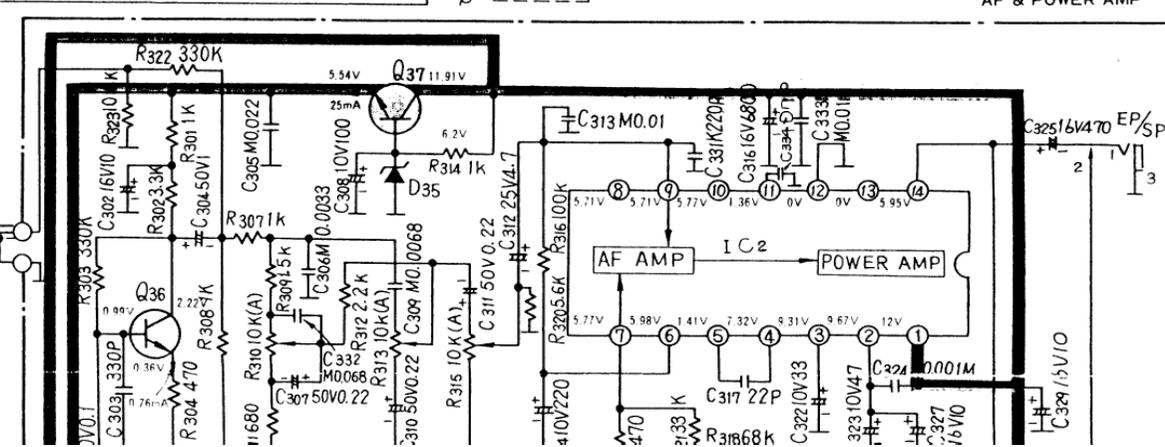
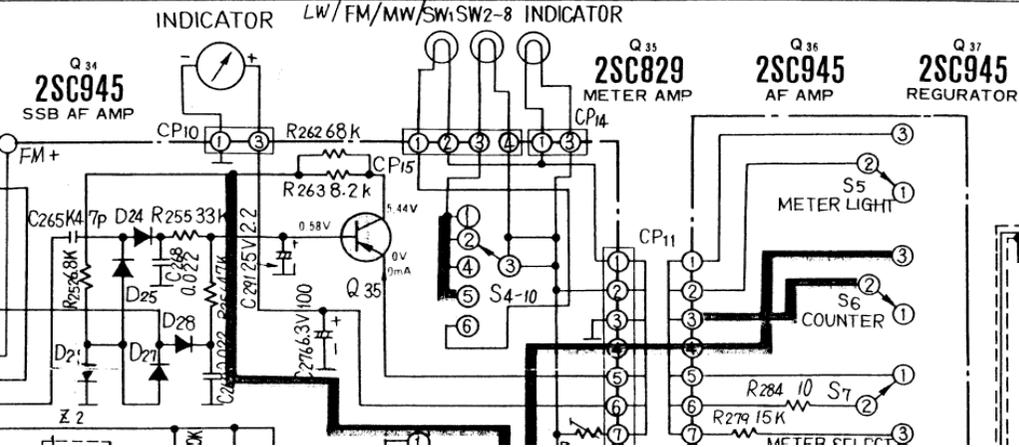
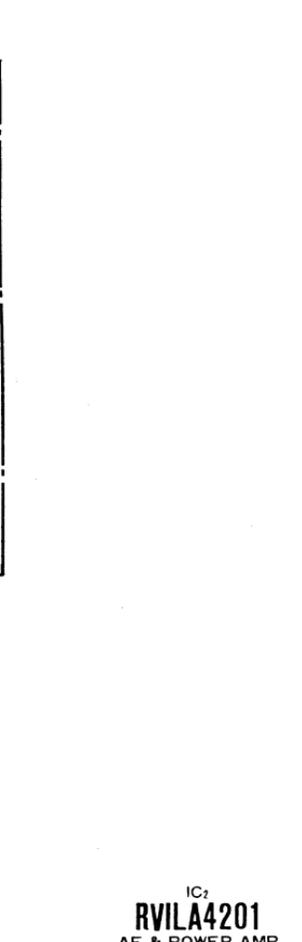
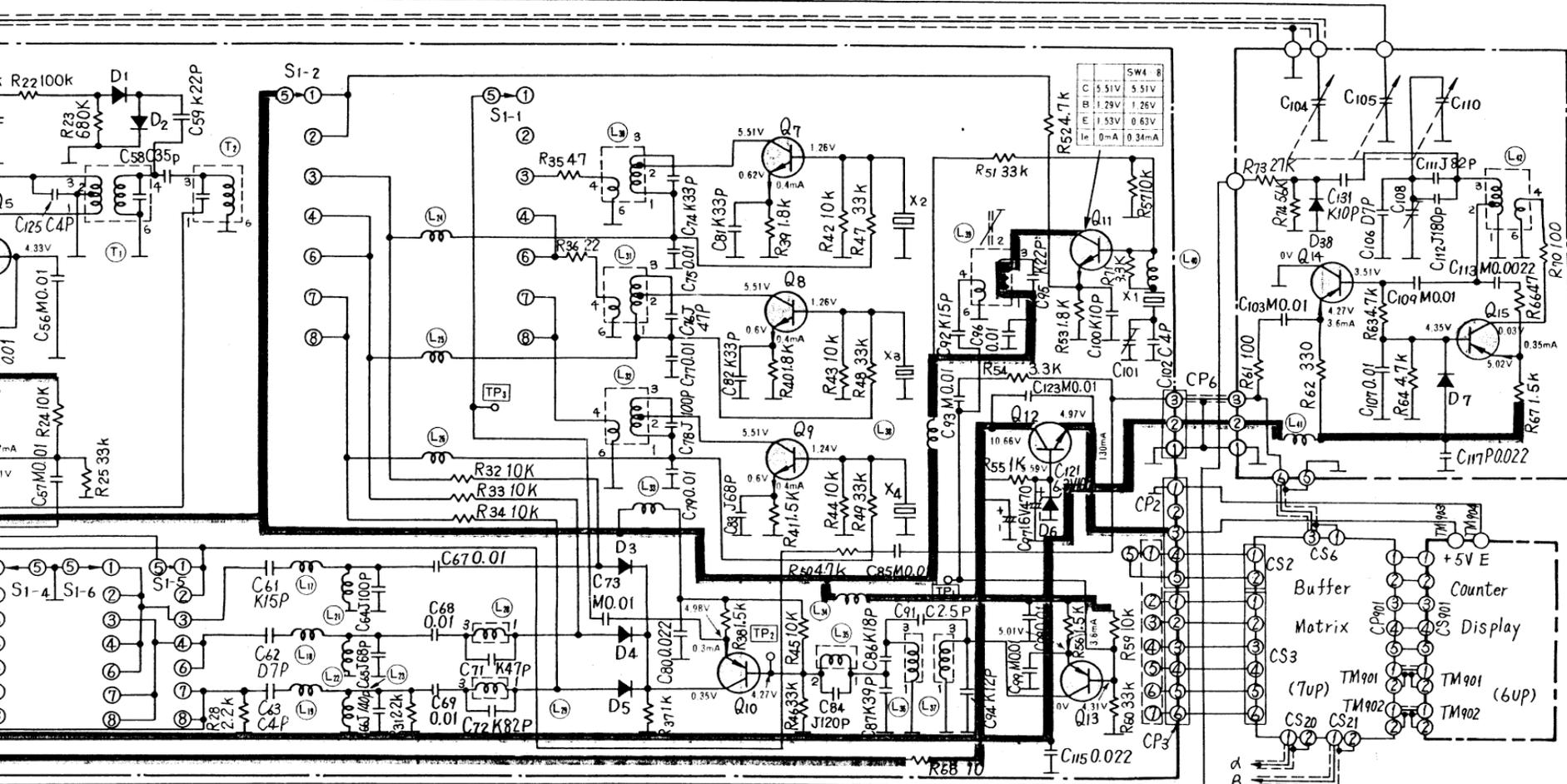
- S<sub>1-1</sub>~S<sub>3-8</sub>: Band switch (SW<sub>2</sub>~<sub>8</sub>) in "SW<sub>2</sub>" position.
- S<sub>4-1</sub>~S<sub>4-10</sub>: Band switch (SW<sub>2</sub>~<sub>8</sub>, SW<sub>1</sub>, MW, FM) in "FM" position.
- S<sub>5</sub>: Light switch in "OFF" position.
- S<sub>6</sub>: Digital display switch in "OFF" position.
- S<sub>7</sub>: Indicator switch in "SIGNAL" position.
- S<sub>8-1</sub>, S<sub>8-2</sub>: FM AFC/Band Width switch in "WIDTH" "AFC" position.
- S<sub>9</sub>: AM ANL switch in "OFF" position.
- S<sub>10-1</sub>, S<sub>10-2</sub>: AM mode switch in "AM" position.
- S<sub>11</sub>: Power switch in "OFF" position.

- S<sub>12</sub>: AC-BATTERY selector in "BATTERY" position.
- S<sub>13</sub>: Voltage selector.
- DC voltage measurements are taken with circuit tester 10kΩ/V from negative side of batteries.  
□.....FM position, ( ).....MW, SW position.  
< >.....SW<sub>2</sub> position, [ ].....SW<sub>3</sub> position.  
Q<sub>7</sub>...SW<sub>4</sub>, Q<sub>8</sub>...SW<sub>5</sub>, 6, Q<sub>9</sub>...SW<sub>7</sub>, 8 Q<sub>33</sub>, 34...CW/SSB,  
Q<sub>14</sub>, 15, 37...SW<sub>2</sub>~<sub>8</sub>
- Battery current: No signal ..... 45mA  
Maximum output ..... 600mA

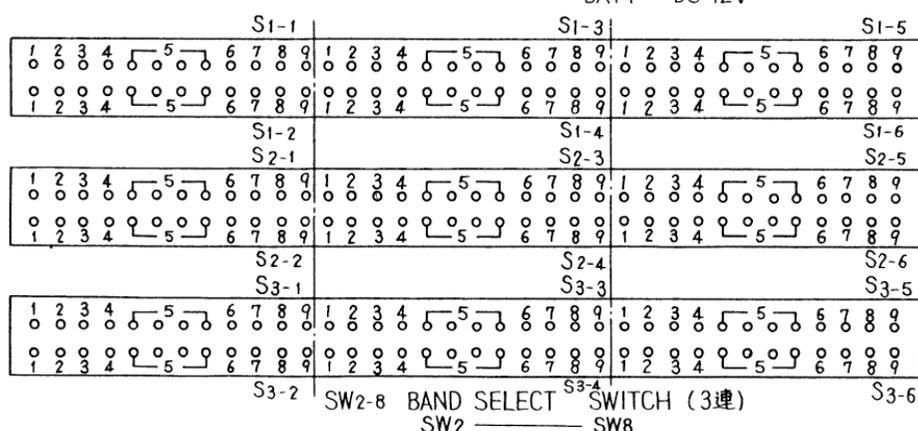
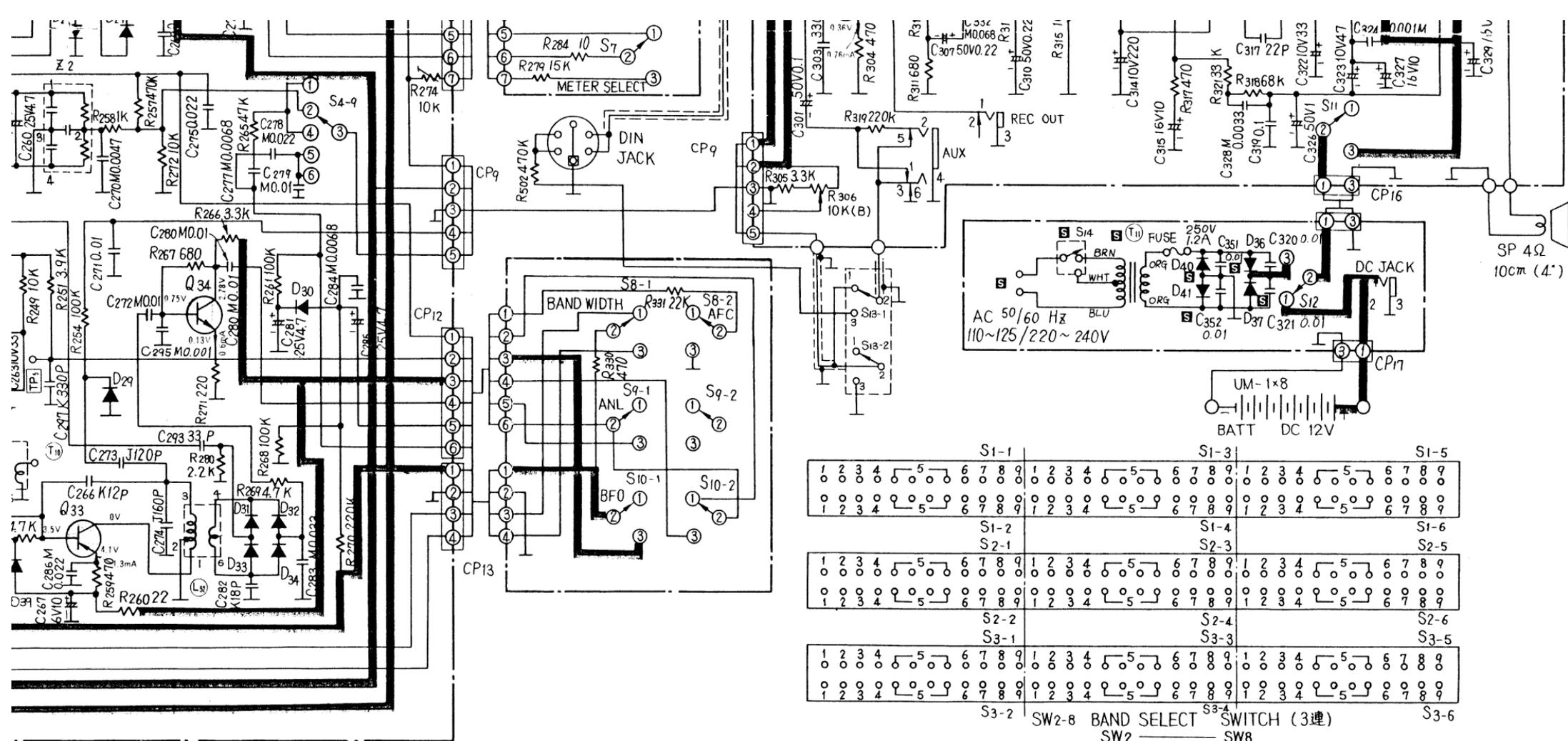
14. Indicates that only parts supplied by the manufacturer be used for replacement.

# Diagram - Model RF-4900LBS

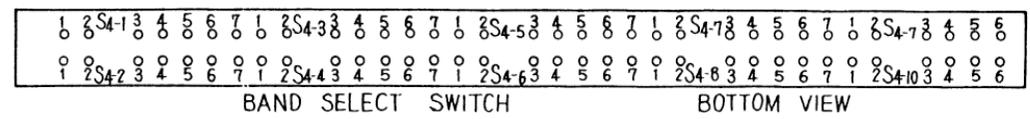
- Q<sub>4,5</sub>  
**2SA838**  
W MIX
- Q<sub>6</sub>  
**2SA838**  
BUFFER
- Q<sub>7</sub>  
**2SC1675**  
OSC
- Q<sub>8</sub>  
**2SC1675**  
OSC
- Q<sub>9</sub>  
**2SC1675**  
OSC
- Q<sub>10</sub>  
**2SA838**  
2nd PRE MIX
- Q<sub>11</sub>  
**2SC1675**  
OSC
- Q<sub>12</sub>  
**2SC1383**  
REGULATOR
- Q<sub>13</sub>  
**2SA838**  
1st PRE MIX
- Q<sub>14</sub>  
**2SA838**  
BUFFER
- Q<sub>15</sub>  
**2SA838**  
VFO OSC



IC<sub>2</sub>  
**RVILA4201**  
AF & POWER AMP



55 ~ 57	58	59	60	61 ~ 63	64 ~ 69	70 ~ 72	73	74 ~ 80	81 ~ 83	84 ~ 87	91 ~ 94	95 ~ 100	101	102	103 ~ 107	108 ~ 113													
265 ~ 274	293	275 ~ 283	291	284	285						301 ~ 303	304 ~ 307	319	308 ~ 310	311 ~ 314	351 352 315 328 316 317 318 ~ 322 326 323 ~ 324 327 329													
22 ~ 24	25	26 ~ 28		29 ~ 31	32 ~ 34	35	36	37	38	39 ~ 46	47 ~ 50	51 ~ 55	56 ~ 60		61	62	63	64	66	67	70								
277	273	251 ~ 260	272	280	271	262 ~ 269	270	274	330	500	279				322	323	331	320	321	301 ~ 306	307 ~ 311	332	312 ~ 314	315	320	316	317	321	318

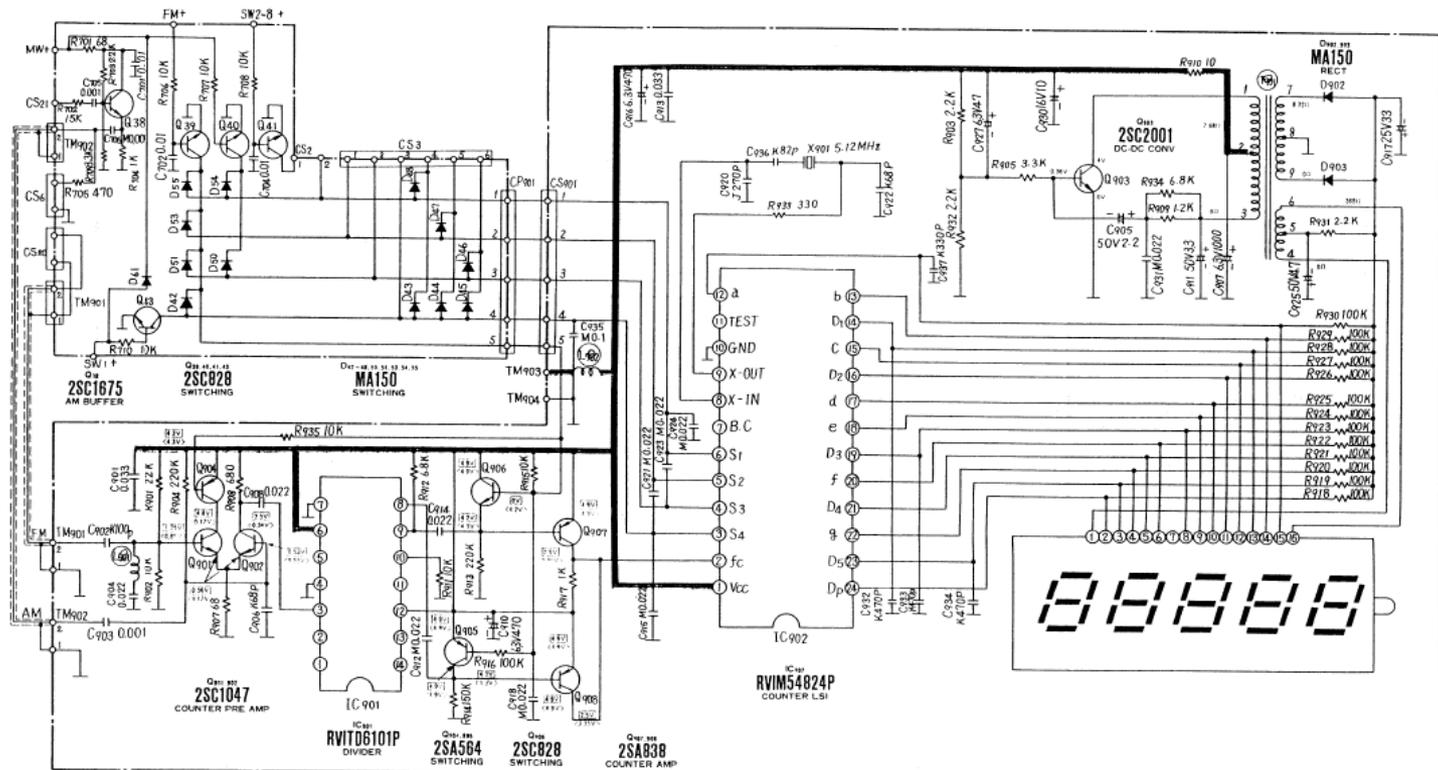


only parts specified by the manu-  
r replacement in critical circuits.

D <sub>1,2</sub>	OA90	SW AGC
D <sub>3~5</sub>	MA150	SWITCHING
D <sub>6</sub>	RVDEQA0106RF	ZENER
D <sub>7</sub>	RVDYD1261L	AOC
D <sub>8,9</sub>	RVDVD1262L	AOC
D <sub>10</sub>	RVSD113	COUNT ADJUST
D <sub>11,12</sub>	OA90	AM AGC
D <sub>13</sub>	RVSD113	FM AFC

D <sub>14,15</sub>	MA150	SWITCHING
D <sub>16</sub>	OA90	FM AGC
D <sub>17~20</sub>	MA150	SWITCHING
D <sub>21,22</sub>	2-OA90	FM DET
D <sub>23~25</sub>	OA90	AM METER RECT
D <sub>26</sub>	RVDVD1160L	AOC
D <sub>27,28</sub>	OA90	FM METER RECT
D <sub>29</sub>	RVSD113	BFO DET

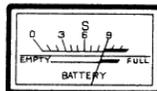
D <sub>30</sub>	MA150	ANL
D <sub>31~34</sub>	2-OA90	BFO DET
D <sub>35</sub>	RVDMZ206	Zener
D <sub>36,37</sub>	RVD10E1LF	RECT
D <sub>38</sub>	RVSD113	SWITCHING
D <sub>39</sub>	RVDVD1261M	AOC
D <sub>40,41</sub>	RVD10E1LF	RECT



**TUNE/BATT METER ADJUSTMENT**

- 1. RADIO RECEIVER SETTING**
- Set band switch to MW.
  - Set volume control MIN.
  - Set indicator switch to BATT.
  - Set AM mode switch to AM.
  - Set power source voltage to 7.2 volts DC.

- 2. REMARKS**
- Adjust R<sub>274</sub> so that the pointer of meter stays as shown in figure right.



**ALIGNMENT INSTRUCTIONS**

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

- Notes:**
1. Set power switch to ON.
  2. Set volume control to MAX.
  3. Set bass and treble control to center.
  4. Set band switch to MW, LW, SW<sub>1</sub>~SW<sub>6</sub> or FM.
  5. Set SW cal control to center.
  6. Set AM RF gain control to DX.
  7. Set FM AFC/Band width switch to WIDE or OFF (FM).
  8. Set light switch to OFF.
  9. Set AM ANL switch to OFF.
  10. Set BFO pitch control to center.
  11. Set digital display switch to OFF.
  12. Set AM mode switch to AM or SSB/CW.
  13. Set indicator switch to signal.
  14. Set ANT trim control to center.
  15. Set radio-phonoswitch to RADIO.
  16. Output of signal generator should be no higher than necessary to obtain an output reading.

**MW, SW, LW ALIGNMENT**

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
<b>AM-IF ALIGNMENT</b> <span style="float: right;">Note: Set band width switch to "Narrow".</span>						
(1) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference.	Output meter across voice coil.	T <sub>4</sub> (AM 1st IFT) T <sub>5</sub> (AM 2nd IFT) T <sub>6</sub> (AM 3rd IFT) T <sub>7</sub> (AM 4th IFT) T <sub>8</sub> (AM 5th IFT)	Adjust for maximum output.
<b>BFO ALIGNMENT</b> <span style="float: right;">Note: Set band width switch to "Narrow".</span>						
MW	"	600 kHz	Tune to signal.	Audio output from speaker.	L <sub>52</sub> (BFO OSC Coil)	1. Cut off modulation after tune signal. 2. Set AM mode switch to CW/SSB. 3. Adjust for zero beat.
<b>SW-1st IF and 2nd OSC ALIGNMENT</b>						
(3) SW2	Connect EXT ANT (SW <sub>2</sub> ~) terminal.	2 MHz	Point of non-interference.	Output meter across voice coil.	L <sub>48</sub> (SW 2nd OSC Coil) T <sub>1</sub> (SW 1st IFT) T <sub>2</sub> (SW 1st IFT)	Adjust for maximum output.
SW3	"	"	"	"	L <sub>49</sub> (SW 2nd OSC Coil)	"
<b>MW-RF ALIGNMENT</b>						
(4) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz	550 kHz 2.4 mm (3/32")	Output meter across voice coil	L <sub>50</sub> (MW OSC Coil) L <sub>43</sub> (MW ANT Coil)	Adjust for maximum output.
(5) MW	"	1500 kHz	1500 kHz 57 mm (2 1/4")	"	C <sub>227</sub> (MW OSC Trimmer) C <sub>201</sub> (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
<b>LW-RF ALIGNMENT</b>						
(6) LW	"	145 kHz	145 kHz 2.4 mm (3/32")	"	L <sub>54</sub> (LW OSC Coil) L <sub>27</sub> (LW ANT Coil)	Adjust for maximum output.
(7) LW	"	400 kHz	Tune to signal	"	C <sub>501</sub> (LW ANT Trimmer)	"
(8) LW	"	415 kHz	Variable capacitor fully open.	"	C <sub>504</sub> (LW OSC Coil)	Adjust for maximum output. Repeat steps (6)~(7).

**SW4~8 X' tal ALIGNMENT** Note: Pull out socket [CP<sub>6</sub>].

BAND	CONNECTIONS	ADJUSTMENT	REMARKS
SW4	Connect RF voltmeter: ⊕ side to [TP <sub>1</sub> ] ⊖ side to [E]	C <sub>101</sub> (Trimmer) L <sub>39</sub> (39 MHz Coil)	1. Turn C <sub>101</sub> to its center position. 2. Adjust L <sub>39</sub> (Turn to upper) until 25 mV ± 1 mV is read on RF voltmeter.
SW4	Connect frequency counter: ⊕ side to [TP <sub>1</sub> ] ⊖ side to [E]	C <sub>101</sub> (Trimmer)	Adjust C <sub>101</sub> until 39, 100 MHz ± 100 Hz is read on RF voltmeter.
SW4	Connect RF voltmeter: ⊕ side to [TP <sub>3</sub> ] ⊖ side to [E]	L <sub>30</sub> (31 MHz Coil)	Adjust L <sub>30</sub> (Turn to upper) until 30 mV ± 1 mV is read on RF voltmeter.
SW5	"	L <sub>31</sub> (27 MHz Coil)	Adjust L <sub>31</sub> (Turn to upper) until 30 mV ± 1 mV is read on RF voltmeter.
SW7	"	L <sub>32</sub> (20 MHz Coil)	Adjust L <sub>32</sub> (Turn to upper) until 20 mV ± 1 mV is read on RF voltmeter.

**44~48 MHz BPF ALIGNMENT** Note: Pull out socket [CP<sub>2</sub>].

BAND	SWEEP GENERATOR		SWEEP SCOPE	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY			
SW4	Connect to test point [TP <sub>1</sub> ] through ceramic capacitor (0.01μF) negative side to point [E]	44.48 MHz	Connect to test point [TP <sub>2</sub> ] negative side to point [E]	L <sub>35</sub> (BPF Coil) L <sub>36</sub> (BPF Coil) L <sub>37</sub> (BPF Coil)	1. Turn L <sub>35</sub> to lower before adjustment. 2. Adjust L <sub>36</sub> and L <sub>37</sub> for maximum amplitude.

**TRAP ALIGNMENT** Note: Pull out socket [CP<sub>6</sub>].

BAND	CONNECTIONS	ADJUSTMENT	REMARKS
SW4	Connect RF voltmeter: ⊕ side to [TP <sub>2</sub> ] ⊖ side to [E]	L <sub>35</sub> 39 MHz (Trap Coil)	Adjust L <sub>35</sub> for minimum RF voltmeter reading.
SW5	Connect RF voltmeter: ⊕ side to [TP <sub>4</sub> ] ⊖ side to [E]	L <sub>28</sub> 27 MHz (Trap Coil)	Adjust L <sub>28</sub> for minimum RF voltmeter reading.
SW7	"	L <sub>29</sub> 20 MHz (Trap Coil)	Adjust L <sub>29</sub> for minimum RF voltmeter reading.

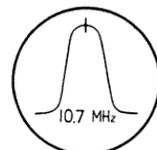


Fig. 32

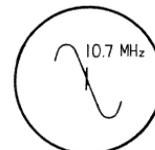


Fig. 33

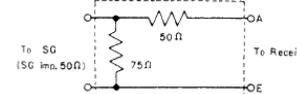
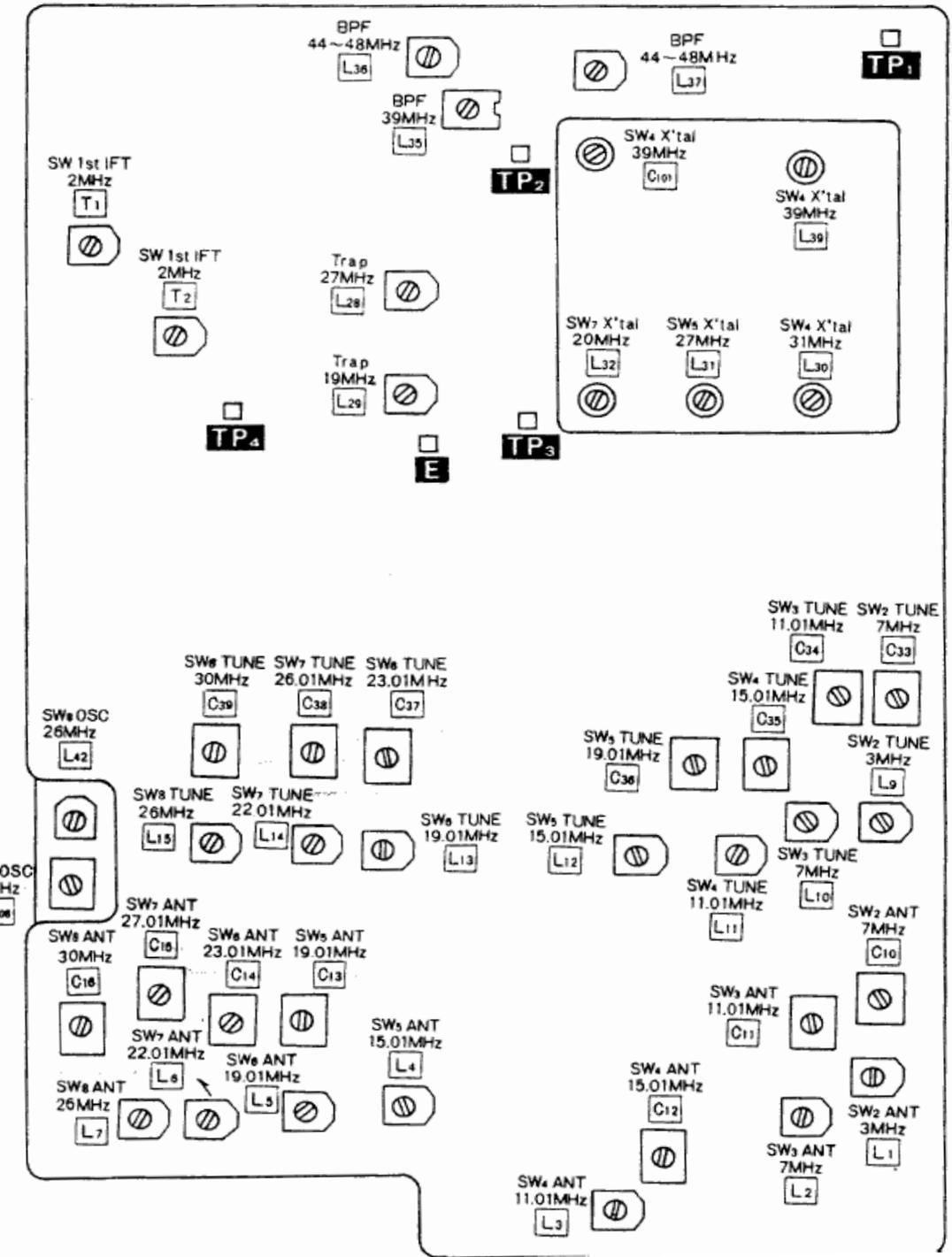
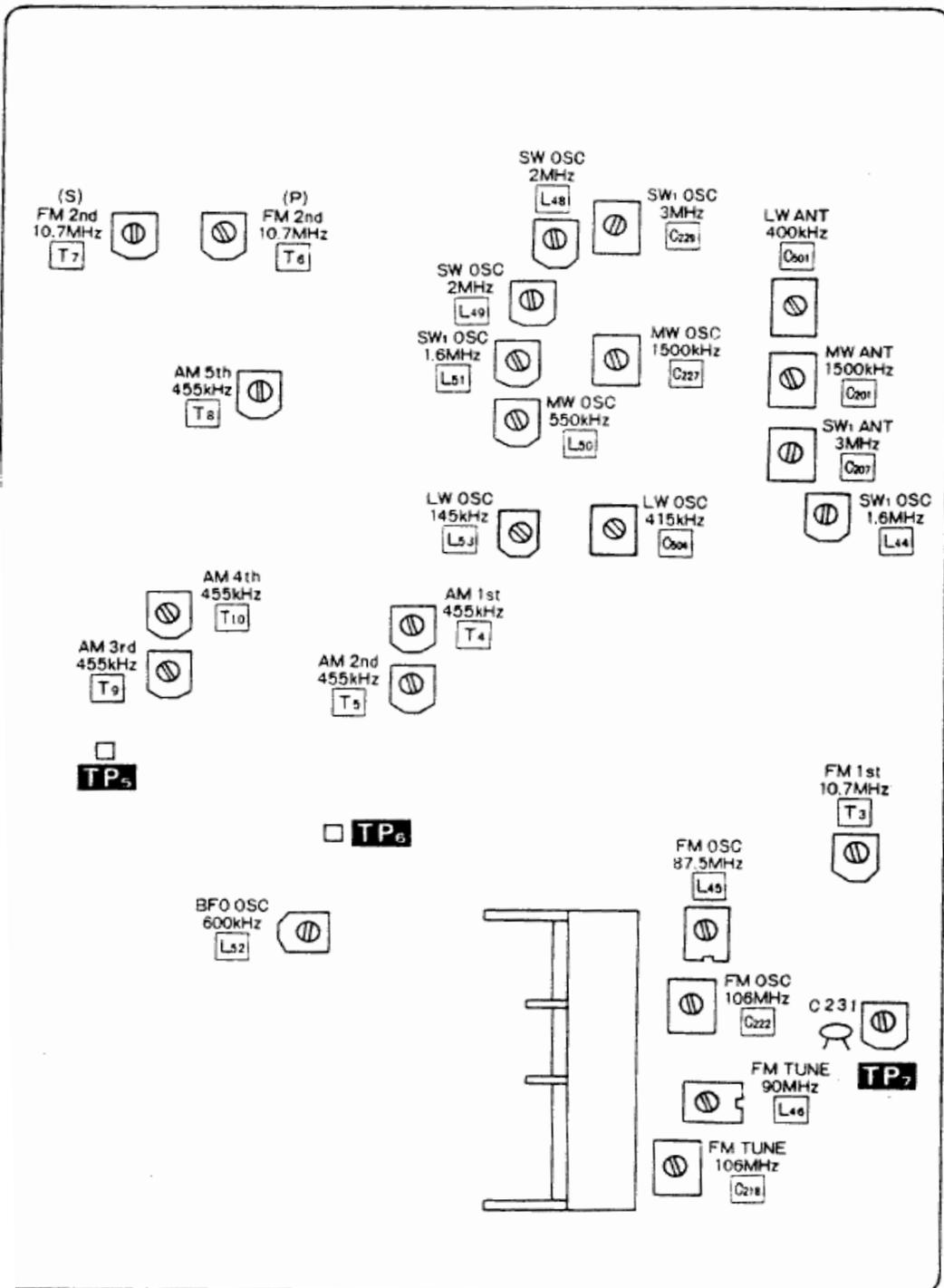


Fig. 34 FM Dummy Antenna

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
<b>SW1-RF ALIGNMENT</b>						
(1)	SW1	Connect to EXT ANT (LW/MW/SW1) terminal.	1.6 MHz 2.9mm( $\frac{1}{4}$ "	Output meter across voice coil.	L <sub>51</sub> (SW1 OSC Coil) L <sub>44</sub> (SW1 ANT Coil)	Adjust for maximum output.
(2)	SW1	"	3 MHz 58.1mm( $2\frac{3}{8}$ "	"	C <sub>229</sub> (SW1 OSC Trimmer) C <sub>207</sub> (SW1 ANT Trimmer)	Adjust for maximum output. Repeat steps (1) and (2).
<b>SW2-RF ALIGNMENT</b>						
(3)	SW2	Connect to EXT ANT (SW2~SW6) terminal.	3 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>9</sub> (SW2 TUNE Coil) L <sub>1</sub> (SW2 ANT Coil)	Adjust for maximum output.
(4)	SW2	"	7 MHz 62.7mm( $2\frac{5}{8}$ "	"	C <sub>33</sub> (SW2 TUNE Trimmer) C <sub>10</sub> (SW2 ANT Trimmer)	Adjust for maximum output. Repeat steps (3) and (4).
<b>SW3-RF ALIGNMENT</b>						
(5)	SW3	"	7 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>10</sub> (SW3 TUNE Coil) L <sub>2</sub> (SW3 ANT Coil)	Adjust for maximum output.
(6)	SW3	"	11.01 MHz 64.6mm( $2\frac{5}{8}$ "	"	C <sub>34</sub> (SW2 TUNE Trimmer) C <sub>11</sub> (SW2 ANT Trimmer)	Adjust for maximum output. Repeat steps (5) and (6).
<b>SW4-RF ALIGNMENT</b>						
(7)	SW4	"	11.01 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>11</sub> (SW4 TUNE Coil) L <sub>3</sub> (SW4 ANT Coil)	Adjust for maximum output.
(8)	SW4	"	15.01 MHz 62.7mm( $2\frac{5}{8}$ "	"	C <sub>35</sub> (SW4 TUNE Trimmer) C <sub>12</sub> (SW4 ANT Trimmer)	Adjust for maximum output. Repeat steps (7) and (8).
<b>SW5-RF ALIGNMENT</b>						
(9)	SW5	"	15.01 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>12</sub> (SW5 TUNE Coil) L <sub>4</sub> (SW5 ANT Coil)	Adjust for maximum output.
(10)	SW5	"	19.01 MHz 62.7mm( $2\frac{5}{8}$ "	"	C <sub>36</sub> (SW6 TUNE Trimmer) C <sub>13</sub> (SW5 ANT Trimmer)	Adjust for maximum output. Repeat steps (9) and (10).
<b>SW6-RF ALIGNMENT</b>						
(11)	SW6	"	19.01 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>13</sub> (SW6 TUNE Coil) L <sub>5</sub> (SW6 ANT Coil)	Adjust for maximum output.
(12)	SW6	"	23.01 MHz 64.6mm( $2\frac{5}{8}$ "	"	C <sub>37</sub> (SW6 TUNE Trimmer) C <sub>14</sub> (SW6 ANT Trimmer)	Adjust for maximum output. Repeat steps (11) and (12).
<b>SW7-RF ALIGNMENT</b>						
(13)	SW7	"	22.01 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>14</sub> (SW7 TUNE Coil) L <sub>6</sub> (SW7 ANT Coil)	Adjust for maximum output.
(14)	SW7	"	26.01 MHz 62.7mm( $2\frac{5}{8}$ "	"	C <sub>38</sub> (SW7 TUNE Trimmer) C <sub>15</sub> (SW7 ANT Trimmer)	Adjust for maximum output. Repeat steps (13) and (14).
<b>SW8-RF ALIGNMENT</b>						
(15)	SW8	"	26 MHz 3mm( $\frac{1}{8}$ "	"	L <sub>42</sub> (SW8 OSC Coil) L <sub>15</sub> (SW8 TUNE Coil) L <sub>7</sub> (SW8 ANT Coil)	Adjust for maximum output.
(16)	SW8	"	30 MHz 64.6mm( $2\frac{5}{8}$ "	"	C <sub>108</sub> (SW8 OSC Trimmer) C <sub>39</sub> (SW8 TUNE Trimmer) C <sub>18</sub> (SW8 ANT Trimmer)	Adjust for maximum output. Repeat steps (15) and (16).

**FM ALIGNMENT**

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING [DISTANCE]	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS	
CONNECTIONS	FREQUENCY					
<b>FM-IF ALIGNMENT</b>						
(1)	High side crip to capacitor [C <sub>231</sub> ] body point <b>TP<sub>7</sub></b> . Negative side to point <b>E</b> .	10.7 MHz (400 kHz SWP.)	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point <b>TP<sub>5</sub></b> . Negative side to point <b>E</b> .	T <sub>3</sub> (FM 1st IFT) T <sub>6</sub> (FM 2nd IFT) (Primary)	Adjust for maximum amplitude. (Refer to fig. 32).
(2)	"	"	"	"	T <sub>7</sub> (FM 2nd IFT) (Secondary)	Adjust for maximum amplitude. (Refer to fig. 33).
<b>FM-RF ALIGNMENT</b>						
(3)	Connect to EXT ANT (FM) terminal through FM dummy antenna. (Refer to fig. 34).	87.5 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L <sub>45</sub> (FM OSC Coil)	(*) Adjust for maximum output.
(4)	"	90 MHz	Tune to signal.	"	L <sub>46</sub> (FM TUNE Coil)	(*) Adjust for maximum output.
(5)	"	106 MHz	106 MHz 53.1mm (2 $\frac{1}{32}$ "')	"	C <sub>222</sub> (FM OSC Trimmer) C <sub>218</sub> (FM TUNE Trimmer)	(*) Adjust for maximum output. Repeat steps (3)~(5).
(*) Three output responses will be present; proper tuning is the center frequency.						



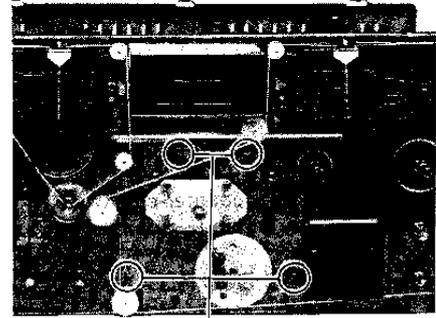
# DIAL CORD INSTALLATION GUIDE

## ■ TO REMOVE DIAL MECHANISM

1. Remove the front panel. (Refer to the front panel removal instruction.)
2. Remove the PC board (VFO circuit). (Refer to PC board removal instruction.)
3. Remove the dial cord.
4. Remove the four (4) screws (nos. 1~4) for the dial mechanism, as shown in fig. 26.
5. Remove the dial mechanism.
6. To reassemble, reverse the above procedure and read the following notes.

Note:

1. Refer to dial cord installation (SW<sub>2</sub>~<sub>8</sub>).



Screw No.1~4 (XYN3+C6S)

Fig. 26

## ■ DIAL CORD INSTALLATION GUIDE

### ● SW<sub>1</sub> /MW/LW/FM

1. Remove the front panel. (Refer to the front panel removal instruction.)
2. Remove the dial scale.
3. Turn the dial drum fully counter-clockwise.
4. Cord length is 90 cm (35<sup>7</sup>/<sub>16</sub>"').
5. Arrows (1~10) indicate correct order and direction of cord installation, as shown in fig. 27.
6. Cement cord ends.
7. Turn tuning shaft fully counter-clockwise.
8. Attach pointer to cord.
9. Set pointer to "0" point of dial scale.

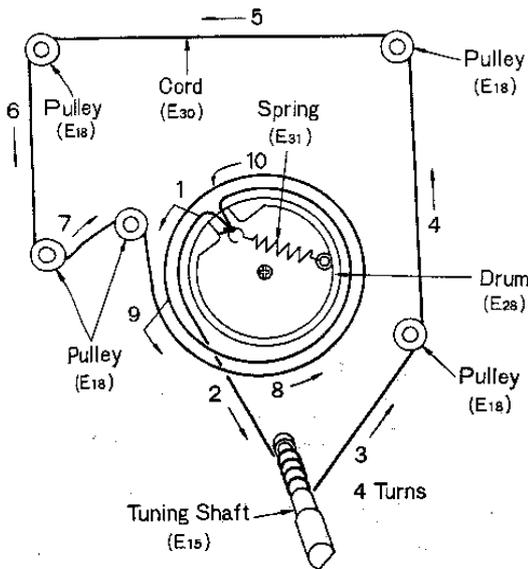


Fig. 27

### ● SW<sub>2</sub> ~SW<sub>8</sub>

1. Remove the front panel. (Refer to the front panel removal instruction.)
2. Turn tuning shaft fully clockwise.
3. Cord length is 115 cm (47<sup>1</sup>/<sub>2</sub>"').
4. Arrows (1~9) indicate correct order and direction of cord installation, as shown in fig. 28.
5. Turn tuning shaft fully counter-clockwise.
6. Attach pointer to cord.
7. Set pointer to start point of dial scale.

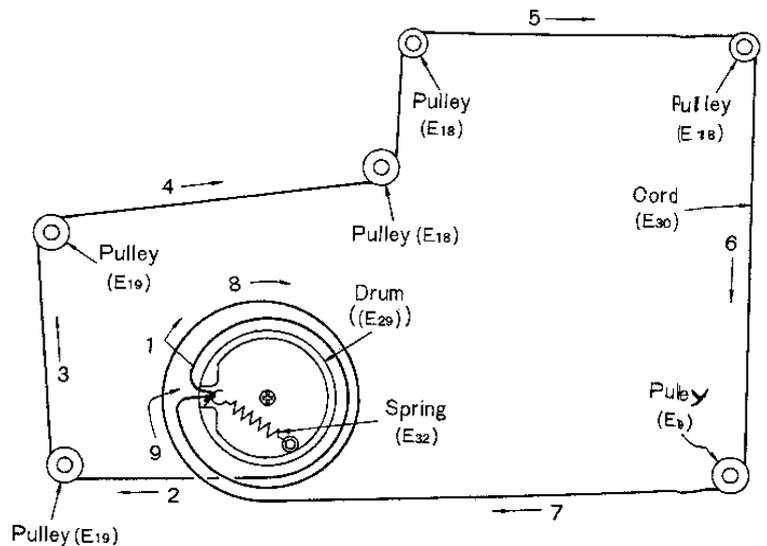


Fig. 28

**VOLTAGE**

IC1		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	MW 4.7V	S 0V	C 0V	C 1.25V	C 0V	C 0V	C 0V	SW4	SW5,6
2	0V	G 0V	B 4.3V	B 3.9V	B 4.33V	B 4.33V	B 4.31V	C 5.51V	C 5.51V
3	0V	D 1.7V	E 5.05	E 4.65V	E 5.04V	E 5.04V	E 5.03V	B 1.26V	B 1.26V
4	0V	ID 2mA	Ie 1mA	Ie 1.2mA	Ie 0.5mA	Ie 0.5mA	Ie 0.7mA	E 0.62V	E 0.6V
5	0V							Ie 0.4mA	Ie 0.4mA
6	0V								
7	0V								
8	0V								
9	0V								
10	0.79V								
11	4.72V								
12	4.78V								
13	0.62V								
14	0.71V								
15	4.79V								
16	0.74V								

IC2		Q9	Q10	Q11	Q12	Q13	Q14	Q15
1	12V	SW7,8	C 0.35V	SW4-8	C 10.66V	C 0V	SW2-8	SW2-8
2	9.67V	C 5.51V	B 4.27V	C 5.51V 5.51V	B 5.59V	B 4.31V	C 0V	C 0.03V
3	9.31V	B 1.24V	E 4.98V	B 1.20V 1.20V	E 4.97V	E 5.01V	B 3.51V	B 4.35V
4	7.32V	E 0.6V	Ie 0.3mA	E 1.53V 0.63V	Ie 130mA	Ie 3.6mA	E 4.27V	E 5.02V
5	1.41V	Ie 0.4mA		Ie 0mA 0.34mA			Ie 3.6mA	Ie 0.35mA
6	5.98V							
7	5.77V							
8	5.71V							
9	5.71V							
10	5.77V							
11	1.36V							
12	0V							
13	0V							
14	5.95V							
15	---							
16	---							

Q16	Q17	Q18	Q19	Q20	Q24	Q30
FM	FM	AM	AM	SW2,4,5,7 SW3,6,8	FM	FM
S 0V	C 0V	S 0.43V	C 4.81V	C 0V 0V	C 0V	C 1.64V
G 0V	B 1.32V	Q 0V	B 2.83V	B 0.75V -0.25V	B 4.28V	B 4.3V
D 3.52V	E 1.95V	D 2.15V	E 2.16V	E 0V 0V	E 5V	E 5.03V
ID 2mA	Ie 0.35mA	ID 2mA	Ie 4mA	Ie 0mA 0mA	Ie 0.8mA	Ie 0.8mA

Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38
FM	C 0V	CW/SSB	CW/SSB	C 5.44V	C 2.22V	SW2-8	LW, MW SW1
C 1.58V	B 3.74V	C 0V	C 2.78V	B 0.58V	B 0.99V	C 11.91V	C 5.3V 4.65V
B 4.32V	E 4.46V	B 3.5V	B 0.75V	E 0V	E 0.36V	B 6.2V	B 3.15V 2.77V
E 5.04V	Ie 0.65mA	E 4.1V	E 0.13V	Ie 0mA	Ie 0.76mA	E 5.54V	E 2.45V 2.06V
Ie 0.8mA		Ie 1.3mA	Ie 0.6mA			Ie 25mA	Ie 2.4mA 2mA

Q39	Q40	Q41	Q43
FM	LW, MW, SW1	SW2-8	SW1
C 0.03V 4.77V	C 0.01V 0.55V 1.4V	C 0.01V 0.56V	C 0.01V 0.58V 1.6V
B 0.71V 0V	B 0.7V 0V 0V	B 0.7V 0V	B 0.70V 0V 0V
E 0V 0V	E 0V 0V 0V	E 0V 0V	E 0V 0V 0V
Ie 0.4mA 0mA	Ie 0.4mA 0mA 0mA	Ie 1.5mA 0mA	Ie 0.4mA 0mA 0mA

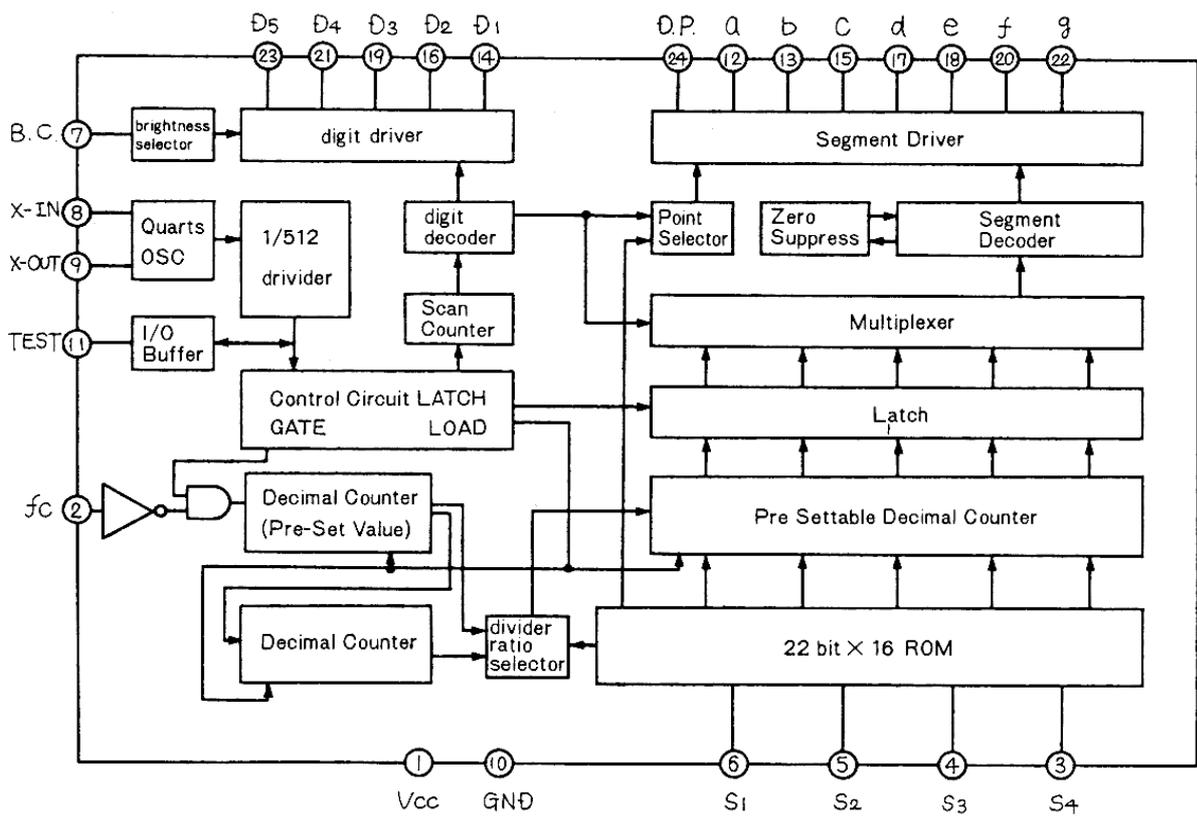
  

Q901	Q902	Q903	Q904	Q905
FM	FM	C	FM	FM
C 4.8V 0.17V	C 3.5V 0.34V	C 4V	C 4.8V 0.17V	C 4.9V 4.9V
B 1.25V 0.85V	B 0.63V 0.53V	B 0.06V	B 4.2V 4.3V	B 4.3V 4.3V
E 0.56V 0.17V	E 0.56V 3.17V	E 0V	E 4.9V 4.9V	E 4.9V 4.9V

Q906	Q907	Q908
FM	FM	FM
C 4.9V 4.9V	C 2.5V 3.35V	C 2.5V 3.35V
B 0V 4.2V	B 4.2V 4.3V	B 4.9V 4.9V
E 4.2V 4.3V	E 4.9V 4.9V	E 4.9V 4.9V

**IC902(RVIM54824P) BLOCK DIAGRAM**



■ BLOCK DIAGRAM

# Block Diagram

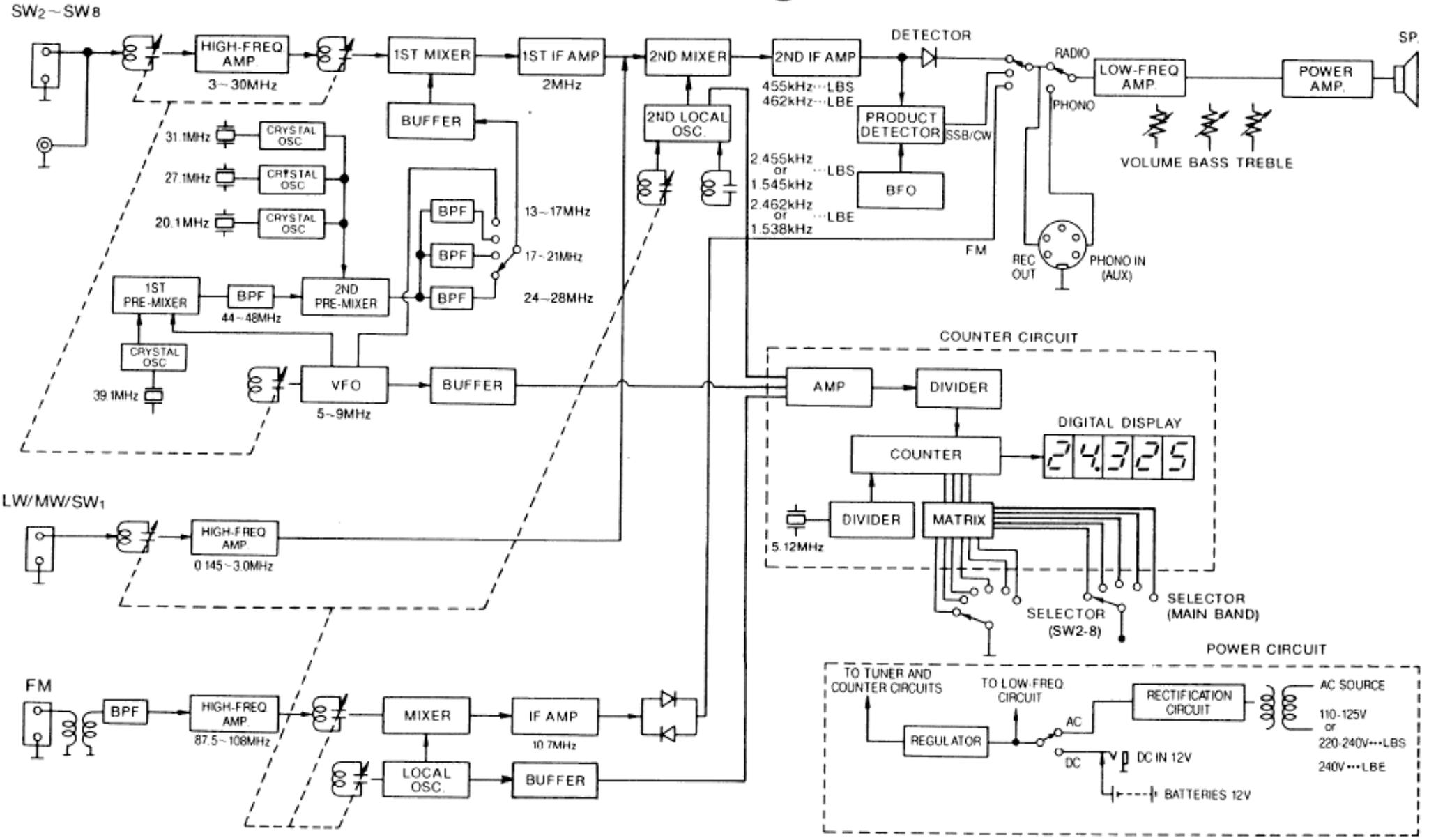


Fig. 37