# ICF-6700L

*AEP Model*
*UK Model*


# FM/SW/MW/LW MULTI BAND RECEIVER

## SPECIFICATIONS

**Power Requirements:** 110, 120, 220 or 240V ac adjustable, 50/60Hz
9V dc, six batteries size D
(IEC designation R20)
12V car battery with optional
Sony Car Battery Cord DCC-130

**Power Consumption:** 7W ac

**Dimensions:** Approx. 453(w)x184(h)x227(d)mm
17⅞ (w) x 7¼ (h) x 9(d) inches
including projecting parts and controls

**Weight:** Approx. 5.5kg, 12 lb 2 oz including batteries

**Circuit system:** FM/MW/LW: Superheterodyne
SW: Dual conversion superheterodyne

**Frequency range:**
FM: 87.5–108 MHz
$SW_1$: 1.6–10 MHz (187.5–30 m)
$SW_2$: 11.5–20 MHz (26.1–15 m)
$SW_3$: 20–29.5 MHz (15–10.2 m)
MW: 530–1,605 kHz (566–187 m)
LW: 150–400 kHz (2000–750 m)

**Antennas:**
FM: Telescopic antenna, External antenna terminals (low impedance)
SW: Telescopic antenna, External antenna terminals (50–75 Ω)
MW/LW: Built-in ferrite rod antenna
External antenna terminals (low impedance)

**Speaker:** Approx. 10 cm (4 inches) dia.

**Power output:** 900 mW (at 10% harmonic distortion) at dc operation

**Input:** Timer input jack (minijack)

**Outputs:** Recording output jack (minijack)
output level 0.8 mV (–60dB)
output impedance 7 kΩ
Earphone jack (minijack)
for 8Ω earphone
Multiplex output jack (minijack)
Headphones jack (stereo binaural type jack)
for 8Ω impedance stereo or monaural headphones

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SONY®

SERVICE MANUAL

1232

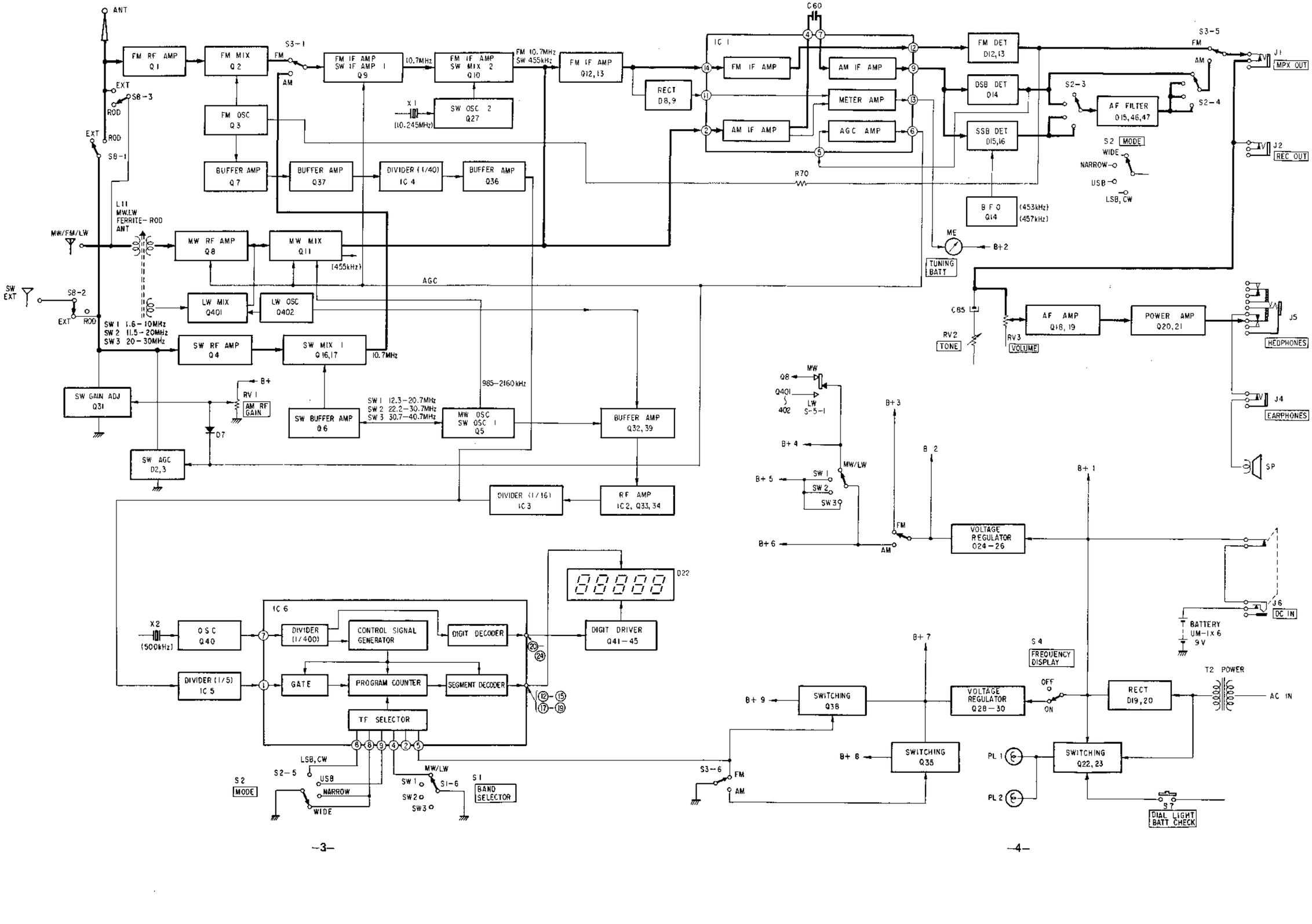
## 1/4 WATT CARBON RESISTORS Ⓐ

**Note:** Circled letter Ⓐ is applicable to European models only.

| Ω | *Part No.* | Ω | *Part No.* | Ω | *Part No.* | Ω | *Part No.* | Ω | *Part No.* | Ω | *Part No.* | Ω | *Part No.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | 1-246-401-00 | 10 | 1-246-425-00 | 100 | 1-246-449-00 | 1.0k | 1-246-473-00 | 10k | 1-246-497-00 | 100k | 1-246-521-00 | 1.0M | 1-246-545-00 |
| 1.1 | 1-246-402-00 | 11 | 1-246-426-00 | 110 | 1-246-450-00 | 1.1k | 1-246-474-00 | 11k | 1-246-498-00 | 110k | 1-246-522-00 | 1.1M | 1-210-814-00 |
| 1.2 | 1-246-403-00 | 12 | 1-246-427-00 | 120 | 1-246-451-00 | 1.2k | 1-246-475-00 | 12k | 1-246-499-00 | 120k | 1-246-523-00 | 1.2M | 1-210-815-00 |
| 1.3 | 1-246-404-00 | 13 | 1-246-428-00 | 130 | 1-246-452-00 | 1.3k | 1-246-576-00 | 13k | 1-246-500-00 | 130k | 1-246-524-00 | 1.3M | 1-210-816-00 |
| 1.5 | 1-246-405-00 | 15 | 1-246-429-00 | 150 | 1-246-453-00 | 1.5k | 1-246-577-00 | 15k | 1-246-501-00 | 150k | 1-246-525-00 | 1.5M | 1-210-817-00 |
| 1.6 | 1-246-406-00 | 16 | 1-246-430-00 | 160 | 1-246-454-00 | 1.6k | 1-246-578-00 | 16k | 1-246-502-00 | 160k | 1-246-526-00 | 1.6M | 1-210-818-00 |
| 1.8 | 1-246-407-00 | 18 | 1-246-431-00 | 180 | 1-246-455-00 | 1.8k | 1-246-579-00 | 18k | 1-246-503-00 | 180k | 1-246-527-00 | 1.8M | 1-210-819-00 |
| 2.0 | 1-246-408-00 | 20 | 1-246-432-00 | 200 | 1-246-456-00 | 2.0k | 1-246-580-00 | 20k | 1-246-504-00 | 200k | 1-246-528-00 | 2.0M | 1-210-820-00 |
| 2.2 | 1-246-409-00 | 22 | 1-246-433-00 | 220 | 1-246-457-00 | 2.2k | 1-246-581-00 | 22k | 1-246-505-00 | 220k | 1-246-529-00 | 2.2M | 1-210-821-00 |
| 2.4 | 1-246-410-00 | 24 | 1-246-434-00 | 240 | 1-246-458-00 | 2.4k | 1-246-582-00 | 24k | 1-246-506-00 | 240k | 1-246-530-00 | 2.4M | 1-244-754-00 |
| 2.7 | 1-246-411-00 | 27 | 1-246-435-00 | 270 | 1-246-459-00 | 2.7k | 1-246-583-00 | 27k | 1-246-507-00 | 270k | 1-246-531-00 | 2.7M | 1-244-755-00 |
| 3.0 | 1-246-412-00 | 30 | 1-246-436-00 | 300 | 1-246-460-00 | 3.0k | 1-246-584-00 | 30k | 1-246-508-00 | 300k | 1-246-532-00 | 3.0M | 1-244-756-00 |
| 3.3 | 1-246-413-00 | 33 | 1-246-437-00 | 330 | 1-246-461-00 | 3.3k | 1-246-585-00 | 33k | 1-246-509-00 | 330k | 1-246-533-00 | 3.3M | 1-244-757-00 |
| 3.6 | 1-246-414-00 | 36 | 1-246-438-00 | 360 | 1-246-462-00 | 3.6k | 1-246-586-00 | 36k | 1-246-510-00 | 360k | 1-246-534-00 | 3.6M | 1-244-758-00 |
| 3.9 | 1-246-415-00 | 39 | 1-246-439-00 | 390 | 1-246-463-00 | 3.9k | 1-246-587-00 | 39k | 1-246-511-00 | 390k | 1-246-535-00 | 3.9M | 1-244-759-00 |
| 4.3 | 1-246-416-00 | 43 | 1-246-440-00 | 430 | 1-246-464-00 | 4.3k | 1-246-588-00 | 43k | 1-246-512-00 | 430k | 1-246-536-00 | 4.3M | 1-244-760-00 |
| 4.7 | 1-246-417-00 | 47 | 1-246-441-00 | 470 | 1-246-465-00 | 4.7k | 1-246-589-00 | 47k | 1-246-513-00 | 470k | 1-246-537-00 | 4.7M | 1-244-761-00 |
| 5.1 | 1-246-418-00 | 51 | 1-246-442-00 | 510 | 1-246-466-00 | 5.1k | 1-246-590-00 | 51k | 1-246-514-00 | 510k | 1-246-538-00 | 5.1M | 1-244-762-00 |
| 5.6 | 1-246-419-00 | 56 | 1-246-443-00 | 560 | 1-246-467-00 | 5.6k | 1-246-491-00 | 56k | 1-246-515-00 | 560k | 1-246-539-00 | | |
| 6.2 | 1-246-420-00 | 62 | 1-246-444-00 | 620 | 1-246-468-00 | 6.2k | 1-246-492-00 | 62k | 1-246-516-00 | 620k | 1-246-540-00 | | |
| 6.8 | 1-246-421-00 | 68 | 1-246-445-00 | 680 | 1-246-469-00 | 6.8k | 1-246-493-00 | 68k | 1-246-517-00 | 680k | 1-246-541-00 | | |
| 7.5 | 1-246-422-00 | 75 | 1-246-446-00 | 750 | 1-246-470-00 | 7.5k | 1-246-494-00 | 75k | 1-246-518-00 | 750k | 1-246-542-00 | | |
| 8.2 | 1-246-423-00 | 82 | 1-246-447-00 | 820 | 1-246-471-00 | 8.2k | 1-246-495-00 | 82k | 1-246-519-00 | 820k | 1-246-543-00 | | |
| 9.1 | 1-246-424-00 | 91 | 1-246-448-00 | 910 | 1-246-472-00 | 9.1k | 1-246-496-00 | 91k | 1-246-520-00 | 910k | 1-246-544-00 | | |

# SECTION 1
# OUTLINE

## 1-1. BLOCK DIAGRAM



## 1-2. CIRCUIT DESCRIPTION

### 1. RECEPTION CIRCUIT

Fig. 1 is a block diagram of the equipment. Only the main parts are indicated to clearly illustrate the operation of the system. It consists of advanced circuits giving high efficiency. These include a double superheterodyne circuit with I-Fs at 10.7 MHz and 455kHz, a balanced type first frequency mixer, a preselector with high gain over a wide frequency range, a low frequency filter to enable easy listening to SSB, an FET RF amplifier that withstands noise and even an FET RF stage in the MW band.

Below is a brief explanation of how these circuits process the received signals.

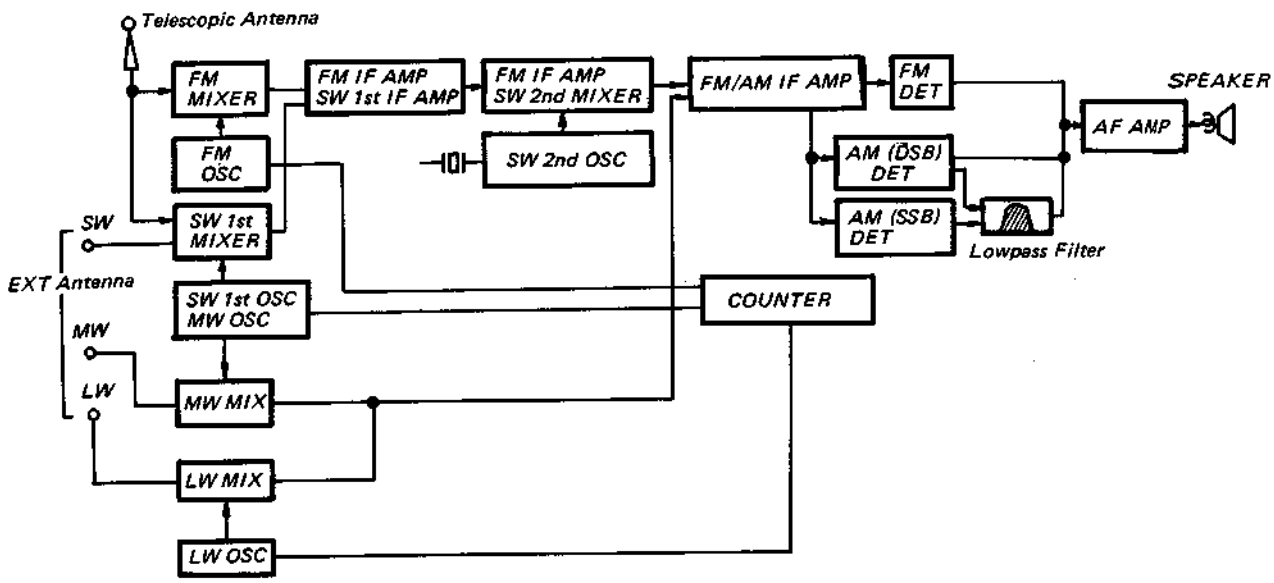



*Fig. 1*

1. SW bandpass filter

A bandpass filter is installed in the SW external antenna terminal input circuit. This filter prevents large-amplitude signals of unwanted frequencies from getting into the high-frequency amplifier. The filter is not installed at the rod antenna, however, because the impedance of the rod antenna is high enough to reject undesired large-amplitude signals. In addition, the filter would be less effective because of the high and frequency-dependent impedance of the rod antenna.

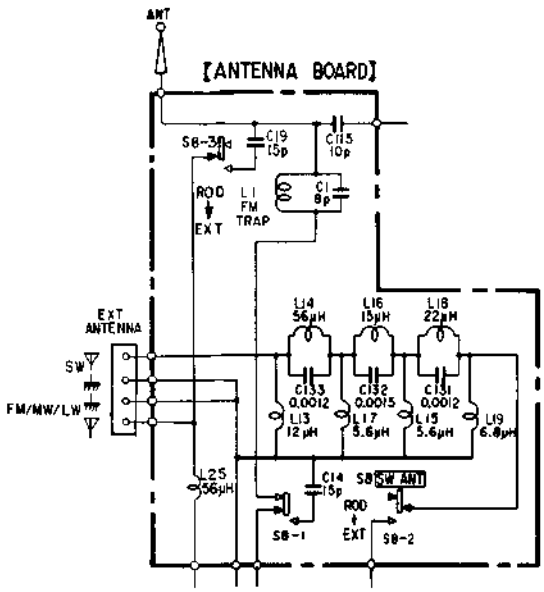



Fig. 2

2. Preselector

Preselectors are installed at both the input and output sides of RF amplifier Q4 and are synchronized. These are the same as the RF amplification circuits of regular type of receivers, but in order to maintain high efficiency over a wide range of frequencies and also to simplify the system, they are designed to be operated separately from the main dial. Moreover, L and C are set to be variable since a wide range of frequencies are to be covered.

3. High frequency gain adjustment See Fig. 3

RV1 controls the impedances of Q31, D2 and D3 which are also the input impedance of RF amplifier Q4. It also controls impedances D4, D6 of the antenna circuit in the MW band and D401, D402 of the antenna circuit in the LW band, and results in varying the RF gain in the MW/LW band as well. When RV1 is at the maximum gain position, AGC voltage is applied to D2, D3, D4 and D6.

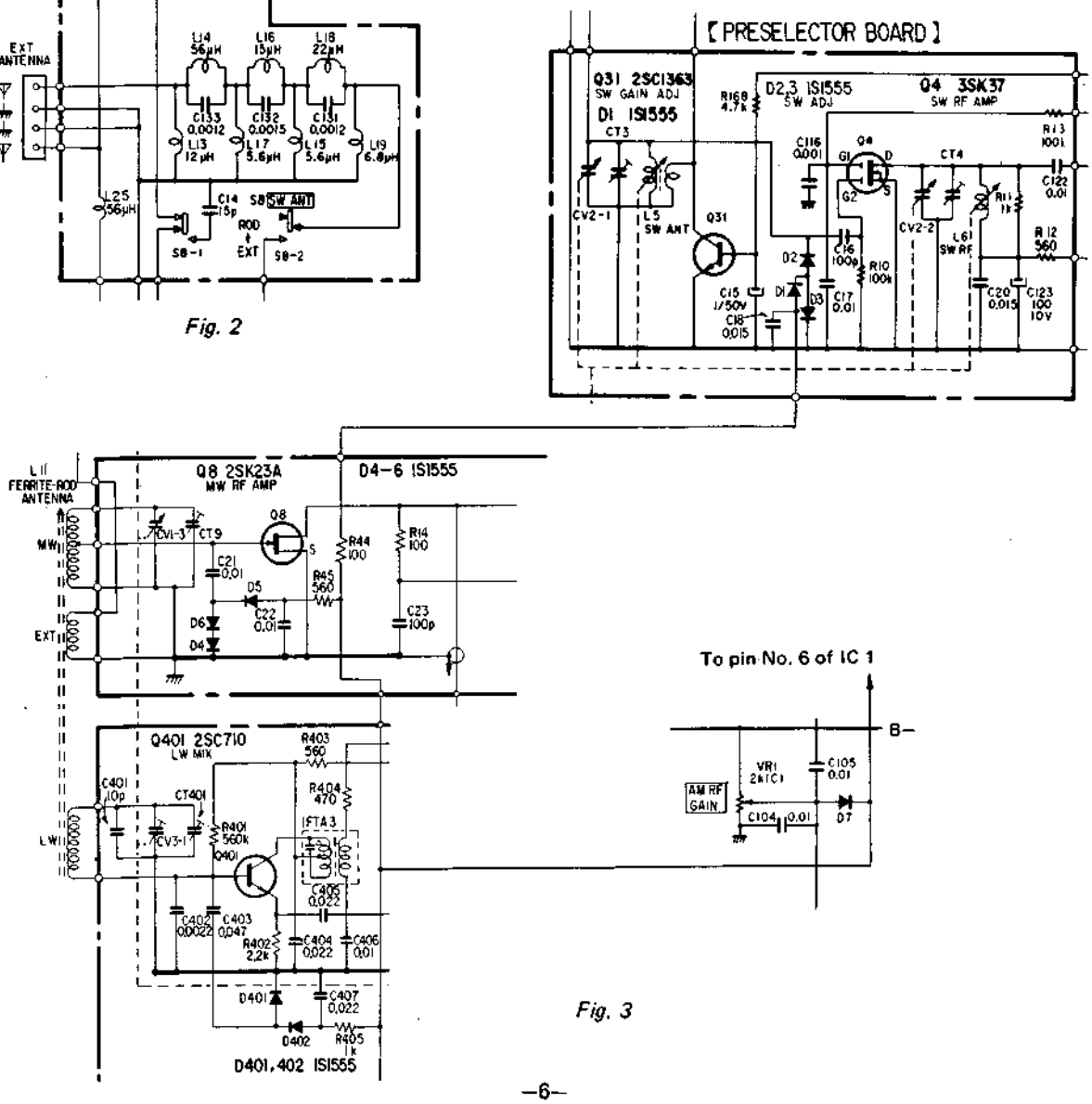



Fig. 3

4. SW primary frequency mixer (Q16, 17)

This balanced type frequency mixer consists of two 2SK23As. A characteristic of this type of frequency mixer is that signals entering from the balanced side are not, as a rule, transmitted to the output side. The received signal amplified by Q4 enters the balanced side. Applying the received signal to the balanced side makes it low in noise even when spurious waves of different frequencies are brought into the frequency mixer. This becomes quite effective for spurious waves which are the same as the first I-F 10.7 MHz. A variable resistor is installed in the source circuit so that the gains of Q16 and Q17 are simultaneously adjusted for the best balance. Local oscillation output is transmitted to the source. This frequency mixer transfers the received frequency to 10.7 MHz to enter the FM I-F amplifier. Setting the first I-F at 10.7 MHz means that the circuit can be used for FM and, since the frequency is high, an outstanding image rejection rate is obtained.

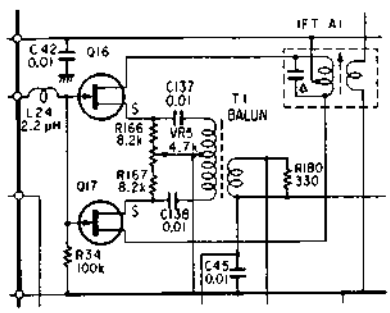



Fig. 4

5. SW second frequency mixer (Q10)

This frequency mixer also operates as an FM I-F amplifier. For SW, by changing the bias it can be used as a second frequency mixer. This also transfers 10.7 MHz to the second I-F of 455 kHz. A local oscillator signal of high stability from a crystal oscillator is put into the emitter. The frequency of the local oscillator is fixed at 10.245 MHz. The output of the second frequency mixer enters IC1 by way of CFT and CFU to be amplified.

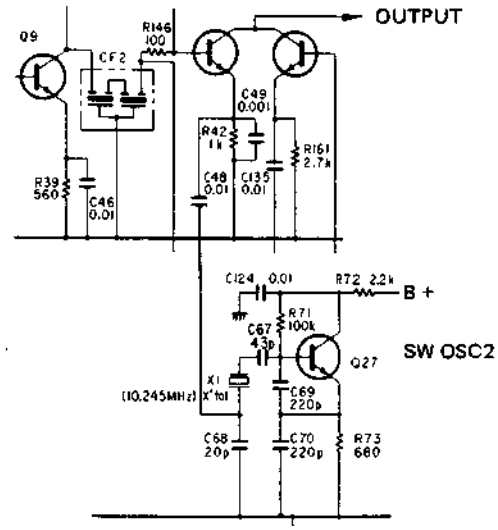



Fig. 5

6. SW second 1-F amplifier (IC1)

This IC contains not only an AM I-F amplifier but also an FM I-F amplifier, an AGC circuit, a meter circuit, etc.

7. Wave detector (D14–D16)

D14 and D15, D16 are wave detector diodes for DSB and SSB respectively. The detector for SSB is an ordinary balanced product detector. LSB and USB are selected by using S2-2 and C134 to shift the frequency by 2 kHz. This is performed by adjusting the core of L12 so that reproduced frequencies of LSB and USB become identical after receiving non-modulated waves accurately at the DSB position. The wave detector for DSB is a conventional type.

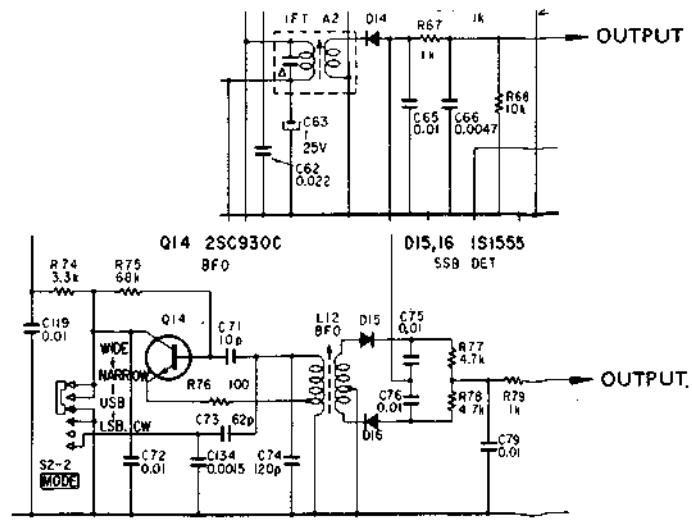



Fig. 6

8. Low-frequency filter (Q15, Q46, Q47)

It is more important for SSB receivers to reproduce sound easy to understand, rather than high fidelity sound, for this reason after the signal is detected it is passed through the bandpass filter to cut off unwanted frequencies and noise. The dedector output in SSB operation is usually lower than that of DSB, and thus the filter produces some gain. Even for DSB, this filter cuts off the high and low range of frequencies so that the sound is easy to understand. This filter has a peak at approximately 1 kHz and is approximately −20 dB at 150 Hz and 2 kHz. After this filter, the signal is amplified by the AF amplifier and is sent to the speakers.

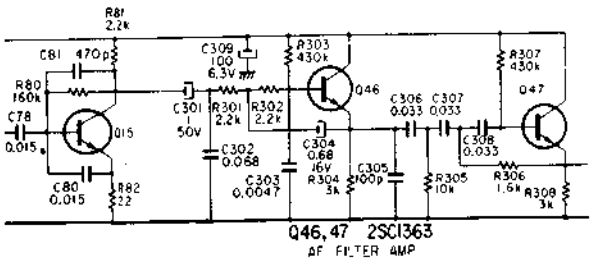



Fig. 7

## II. DISPLAY CIRCUIT OF RECEIVED FREQUENCY

The block diagram of the display circuit is shown in Fig. 8.

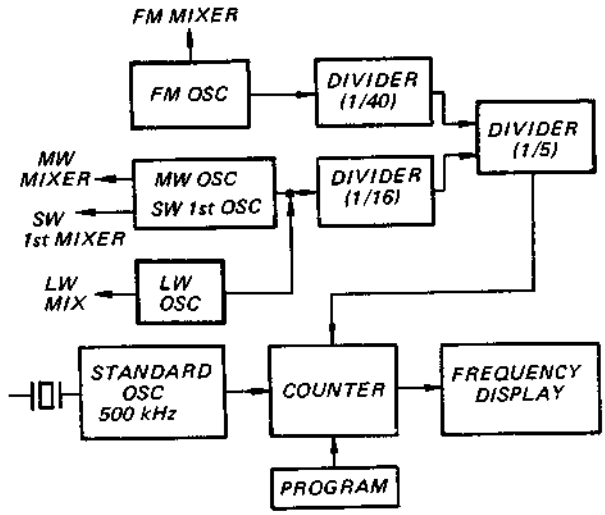



Fig. 8

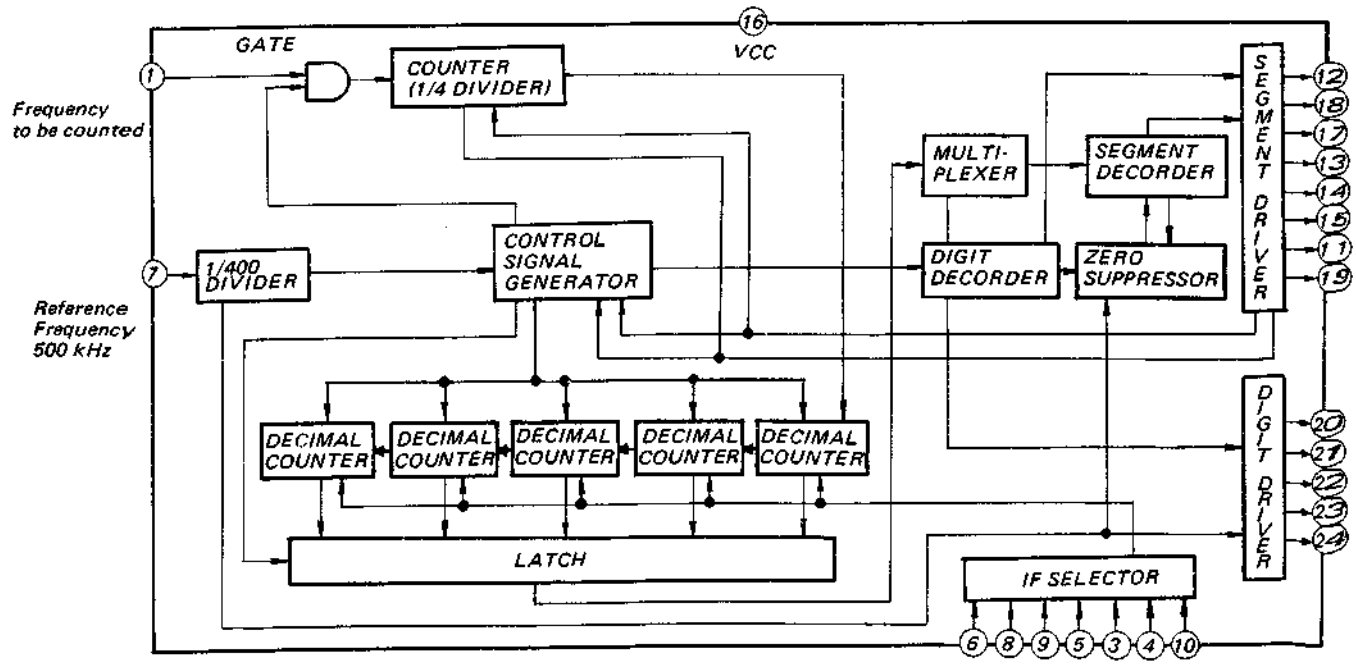



Fig. 9 BLOCK DIAGRAM OF IC6

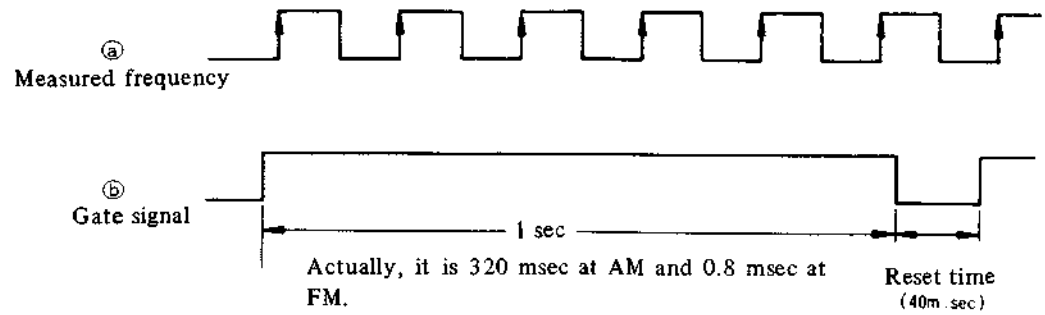



*Fig. 10*

**Basic Operation of IC6 Counter**

When a signal whose frequency is to be measured is applied to terminal 1, this signal enters the gate circuit. A reference frequency of 500 kHz is generated at terminal 7, and this signal is applied to the control-signal generator through the divider.

This signal is divided further in the control-signal generator so that a pulse lasts for a second as shown in Fig. 10. Actually, a display down to 1 kHz in MW/LW and 100 kHz in FM is sufficient. Thus, pulses in MW/LW and in FM are set to be 320 msec and 0.8 msec respectively. This signal from the control-signal generator is applied to the gate circuit (this signal is referred to as the gate signal). The gate circuit acts as an AND circuit, and an output signal appears when both ⓐ and ⓑ are at the same level. This output signal is divided and counted by the decimal counter.

As shown in Fig. 10, 6 pulses counted for a duration of 1 second make up the frequency 6 Hz.

Actually, high frequencies on the order of 10 MHz are received. Since the gate signal lasts for a second, the decimal counter must count pulses on the order of $10^5$. Therefore, an extremely high speed counter is essential. The gate signal and the frequency to be measured are divided at the same proportion and counted. This method is called "Prescaling".

**Decimal Counter**

The signal generated above is applied to the decimal counter and its frequency is counted. The decimal counter returns to 0 after counting from 0 to 9, and 1 is displayed at the next counter.

Explanation of the operation of the decimal counter will be given using an example of a decimal counter in the Master-Slave system (negative-going trigger).

In this method as shown in Fig. 11, the counter reads in the signal while the input signal is at a higher level, as indicated by the heavy line, and generates signals according to the truth table in Fig. 12 when the input signal changes from the higher to the lower level as indicated by the arrow.

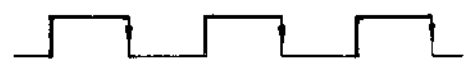


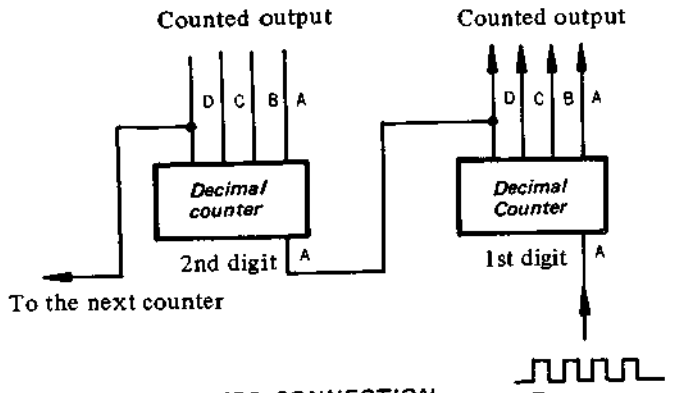
*Fig. 11*

**Truth Table**

| Count | D | C | B | A |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 1 | 1 |
| 4 | 0 | 1 | 0 | 0 |
| 5 | 0 | 1 | 0 | 1 |
| 6 | 0 | 1 | 1 | 0 |
| 7 | 0 | 1 | 1 | 1 |
| 8 | 1 | 0 | 0 | 0 |
| 9 | 1 | 0 | 0 | 1 |

Return from 9 to 0.

*Fig. 12*




*COUNTER CONNECTION*
*Fig. 13*

The frequency to be measured is applied to input A. Output D is connected input A of the next counter, and the next counter displays 1 when the count changes from 9 to 10.

Output D becomes 1 at 8 in the table, but the next counter does not display 1. The reason for this is that the signal to input A of the next counter is at a high level for both 8 and 9 and only goes low when the signal changes to a low level after 9.

The frequency is measured by using this technique.

The signals (outputs from A, B, C, D mentioned above) from the decimal counters are simultaneously sent to the latch circuit.

When the gate signal goes off, the decimal counter is reset to 0 for the next counter.

**Latch Circuit**

The result of the decimal count is put in the memory of the latch circuit when the gate signal is terminated. The purpose of the latch circuit is to keep certain information for a certain period of time.

In general, the latch circuit is made up of D type flip-flops.

Without the latch circuit, the display of the counter changes constantly as the counter counts pulses while the gate is open. The display becomes fixed and readable only when the gate is closed. The display returns to 0 when a reset signal is received and starts counting as the gate opens. This operation is repeated.

Therefore, with the latch circuit the display is fixed when the counting is over and continues to be so even when the reset signal is received. The display changes to show the results of the next count only when the next count is finished.

**Multiplexer**

The signal from the latch circuit is then sent to the multiplexer. This IC controls the LED display unit by a method called "dynamic drive", the generation of pulses to illuminate the digits of the LED in order from the 1st to the 5th digit.

Each digit of the LED is lit in sequence at a fast rate, but appears to the human eye to be lit continuously due to the "persistence of vision" effect.

This operation is performed through the multiplexer.

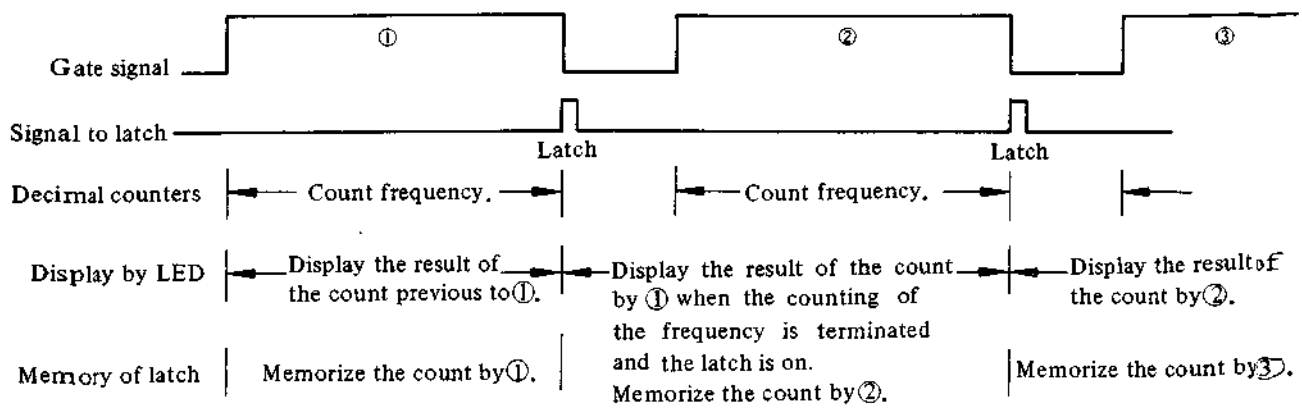
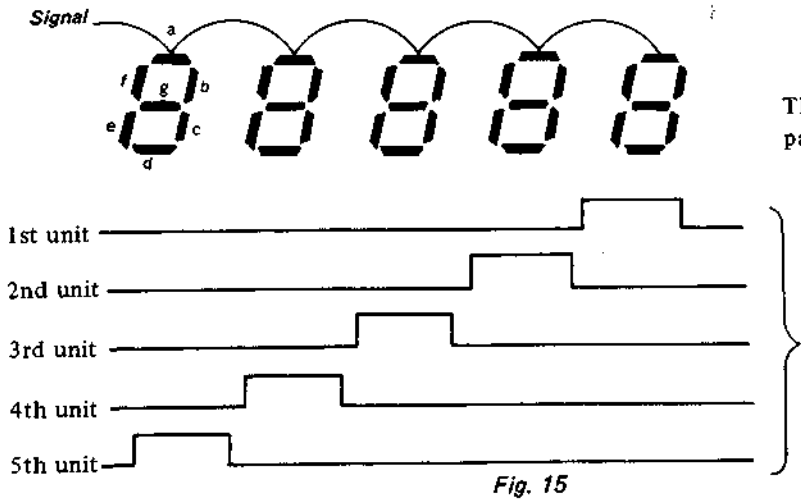



*Fig. 14*




The same segment in each unit is connected in parallel.

Apply a pulse so that each unit lights up in sequence.

*Fig. 15*

**Segment Decoder**

The purpose of the segment decoder is to change the output signals of the decimal counter to signals that illuminate the corresponding segment (a–g) of the LED.

The segment decoder operates as shown below. When the figure "2" is desplayed, for example, the signals shown in Fig. 7 are sent as output signals from the segment decoder.

Display of figure "2"

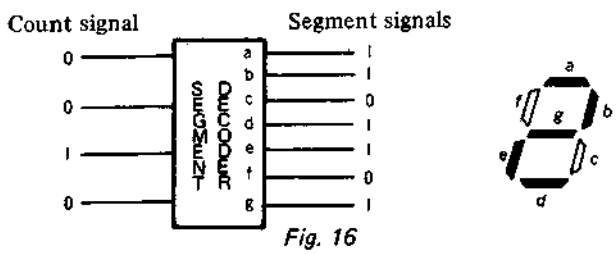



*Fig. 16*

**Conversion Table**

| Figure | Count signal | Segment signal | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | g |
| 0 | 0 0 0 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 1 | 0 0 0 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 0 0 1 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 3 | 0 0 1 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 4 | 0 1 0 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 5 | 0 1 0 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 6 | 0 1 1 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 7 | 0 1 1 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| 8 | 1 0 0 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 9 | 1 0 0 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |

**Segment Driver**

This amplifies signals generated by the segment decoder to the level required to operate the LED segments.

**Digit Decoder**

This generates signals for the multiplexer and the digit driver simultaneously.

**Digit Driver**

As previously mentioned in the explanation of the multiplexer, this IC provides the "dynamic drive" for the LED display.

This illuminates the 1st to the 5th digits in order. Q41–45 control the on-off operations of each digit of the LED. On-off signals are sent to Q41–45 by the digit driver.

**Zero Suppress**

Zero suppress is the circuit which terminates the display of zeroes preceding the significant figure.

Example: 00100 kHz
└─These 00 figures are not displayed.

**Dynamic chart of each signal**

An output dynamic chart for 12345 is given below as an example.

When both digit and segment outputs are at High level, the output is on.

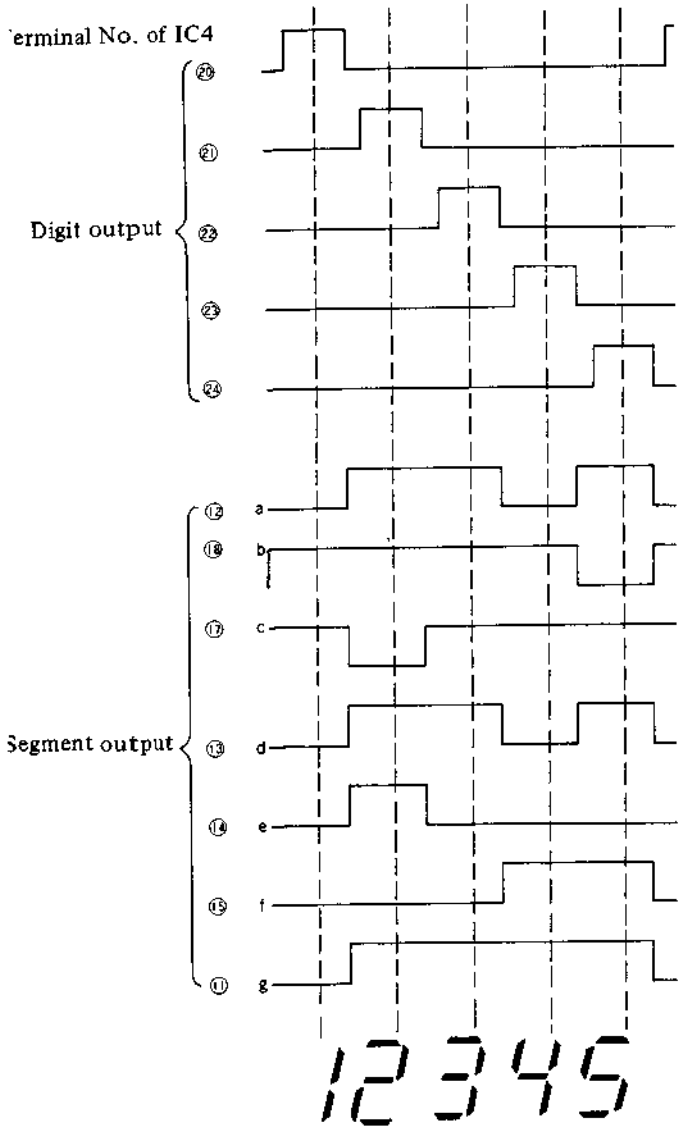



*Fig. 17*

**I-F Selector**

Since the frequency of the first local oscillator is 20.7 MHz, the counter would indicate 20.7 MHz if counted as it is, even if one wishes to display 10 MHz when receiving SW.

In order to get a display of 10 MHz a certain frequency must first be subtracted from the local-oscillator frequency. The I-F selector performs this subtraction. The counter has a display of five digits. If 0000 is set to be displayed when 10.700 is applied, 0000 1 kHz is displayed when 10.701 MHz is measured.

In order to get this performance, 10700 should be subtracted from the decimal counter before the next count.

These figures are calculated as follows.

100000 – 10700 = 89200

6 units

The figures 89200 should be set in the counter before counting a given frequency.

When 10.700 is counted, the display of the counters becomes 0, since 10700 + 89200 = 100000.

1 in the sixth digit is not displayed, since only 5 figures are displayed.

The I-F selector selects the figures to set in the counter before counting. The following figures are set by the I-F selector in this system.

| | | |
|---|---|---|
| FM | 89200 | |
| MW/LW | 99545 | |
| SW | 89200 | (WIDE, NARROW) |
| | 89198 | (USB) |
| | 89202 | (LSB) |

For SSB receivers, the received frequency is set at the carrier position. However, the oscillation frequency of transmitter is 2 kHz above or below the carrier frequency, and thus the I-F selector adds or subtracts 2 kHz before counting.

**Timing chart of each signal**

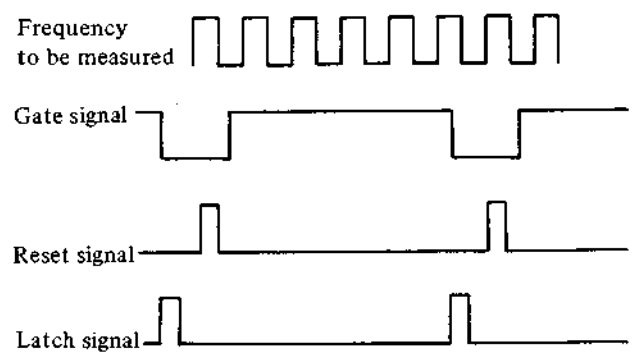


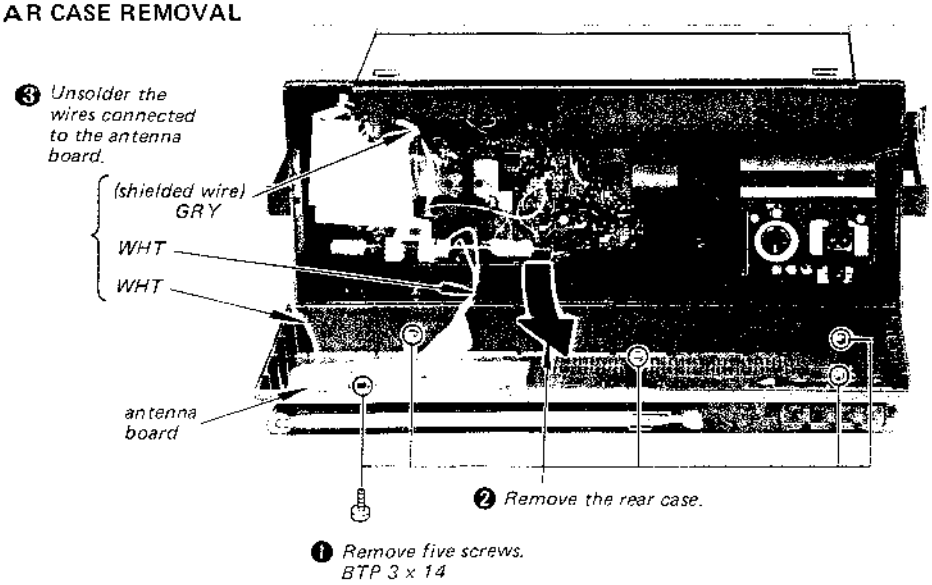

*Fig. 18*

# SECTION 2
# DISASSEMBLY

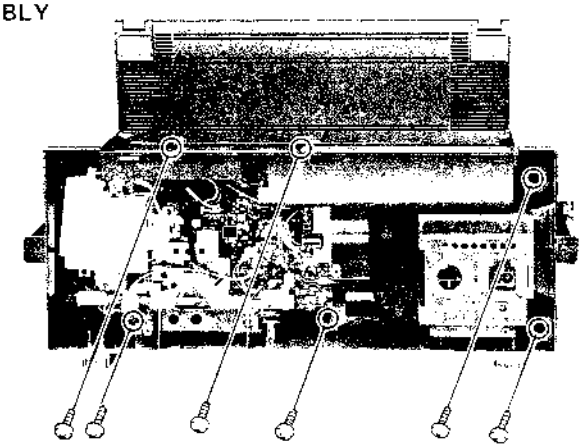
- Follow the disassembly procedure in the numerical order given.

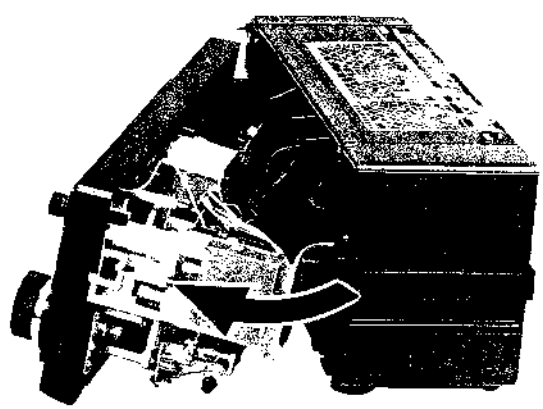
## 2-1. REMOVAL

### REAR CASE REMOVAL

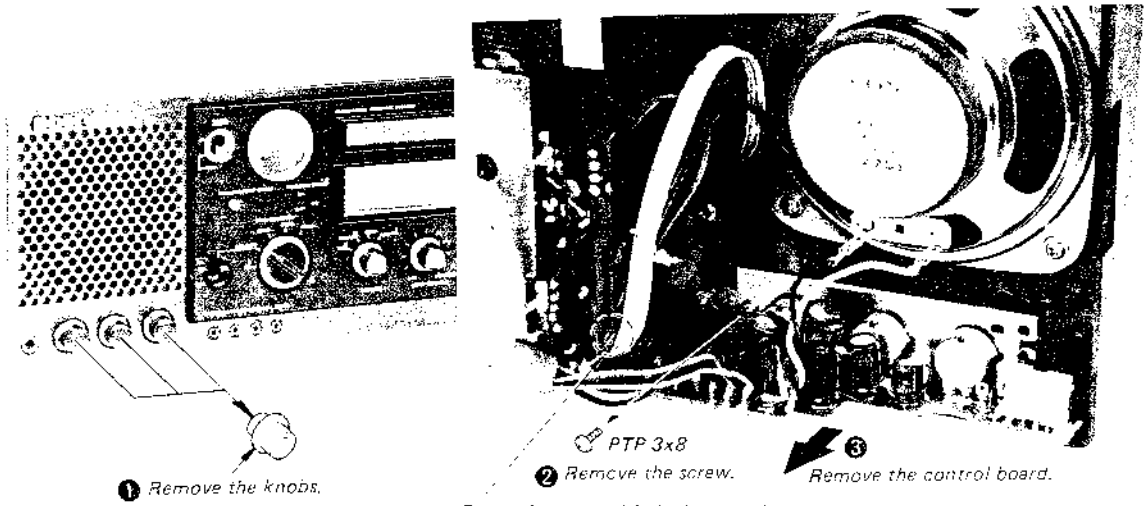



### CASE ASSEMBLY REMOVAL

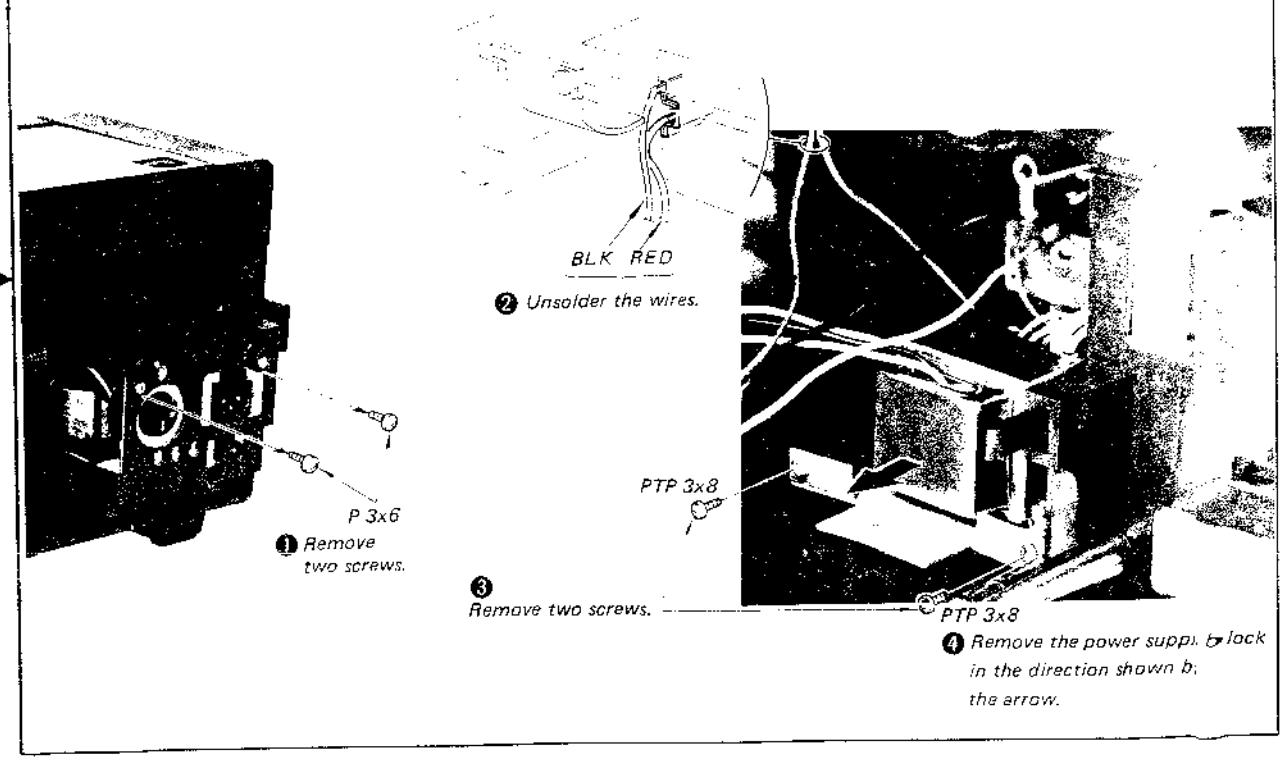


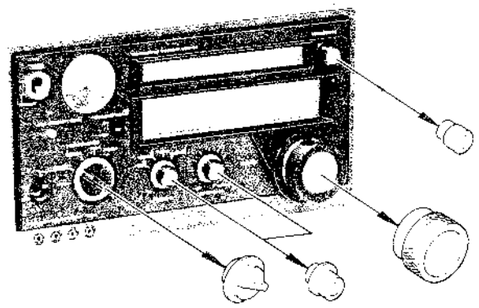
## CONTROL BOARD REMOVAL



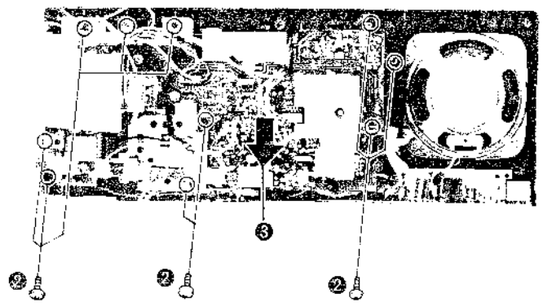

## POWER SUPPLY BLOCK REMOVAL



## FRONT PANEL REMOVAL



❶ Remove the knobs.

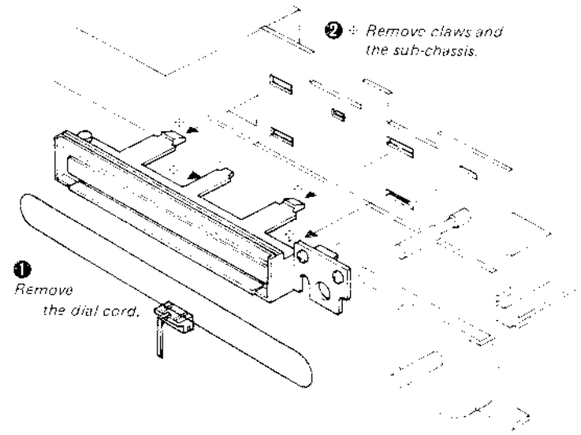


❷ Remove ten screws (BTB 3 x 10)
❸ Remove the chassis in the direction shown by the arrow.

## LAMP BOARD REMOVAL

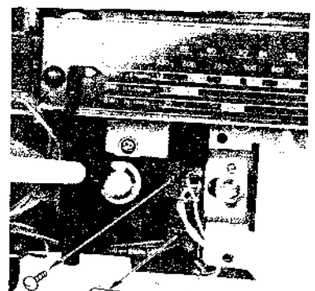
❶ Unlock claws.

## SUB-CHASSIS REMOVAL

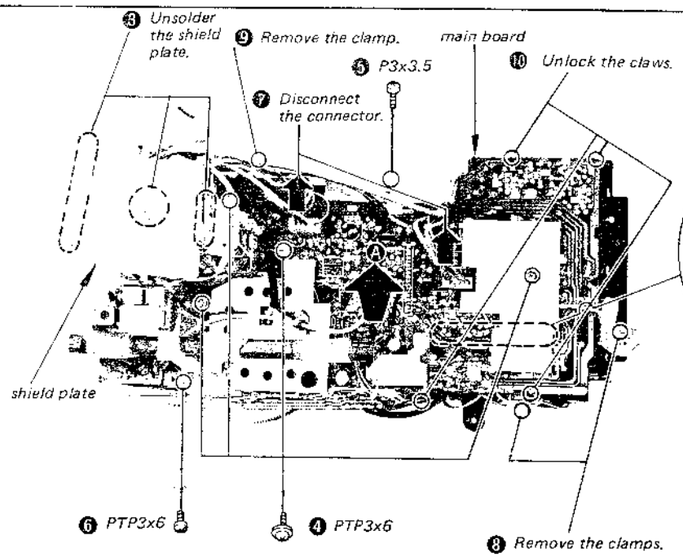


❷ Remove claws and the sub-chassis.
❶ Remove the dial cord.

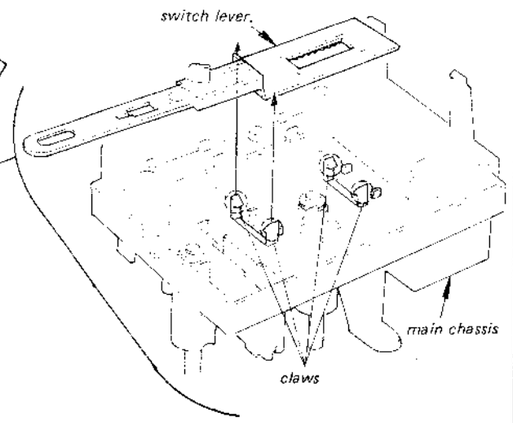
## MAIN BOARD REMOVAL



❶ Remove the screw.
P3x4
❷ Disconnect the connector.

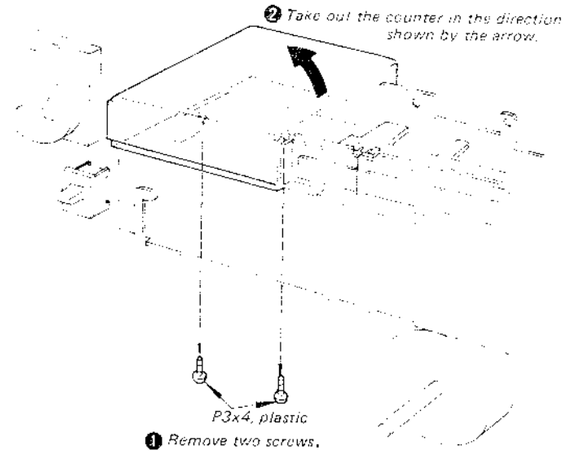


❸ Unsolder the shield plate.
❾ Remove the clamp.
main board
❺ P3x3.5
❿ Unlock the claws.
❼ Disconnect the connector.
shield plate
❻ PTP3x6
❹ PTP3x6
❽ Remove the clamps.



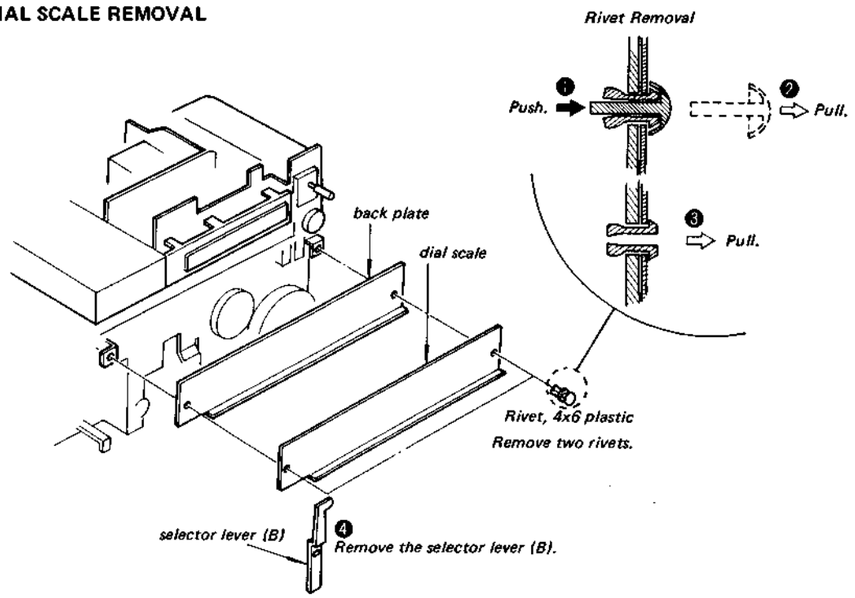
⓬ Unlock the claws to remove the switch lever while raising the main board.
switch lever
main chassis
claws

## COUNTER BLOCK REMOVAL

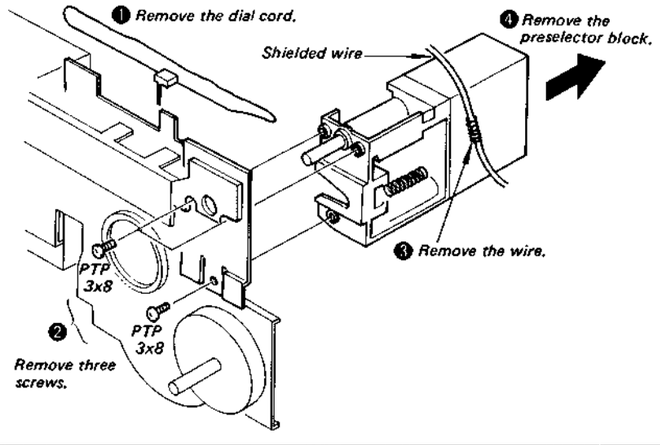


❷ Take out the counter in the direction shown by the arrow.
P3x4, plastic
❶ Remove two screws.

**DIAL SCALE REMOVAL**



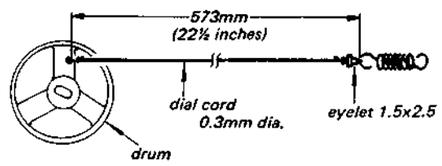

**PRESELECTOR BLOCK REMOVAL**

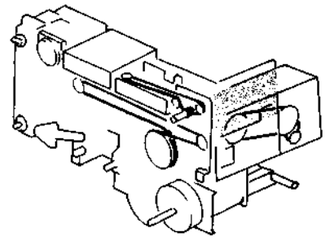




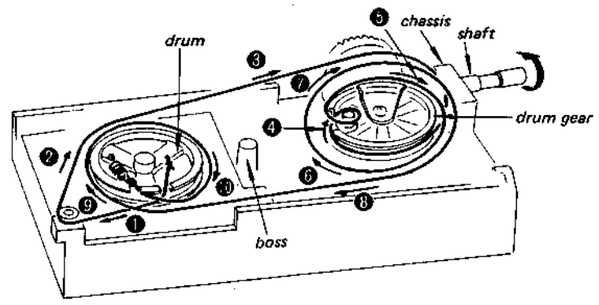

## 2-2. CORD STRINGING OF PRESELECTOR DRUM

1. Cord Preparation



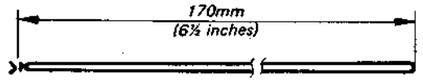



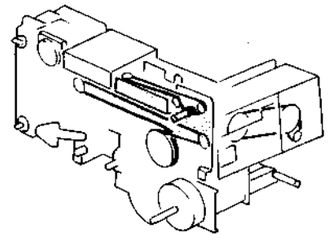
2. Dial Cord Stringing
Proceed in the numerical order given, after turning the shaft and the drum fully clockwise.



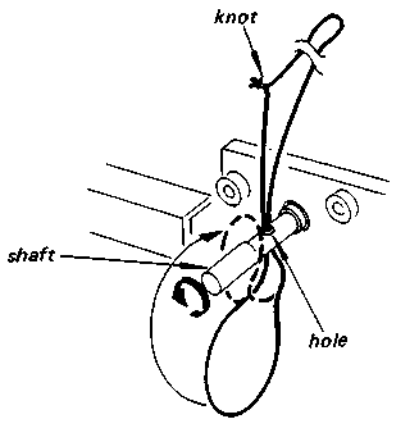

## 2-3. DIAL CORD STRINGING OF PRESELECTOR

1. Dial Cord Preparation

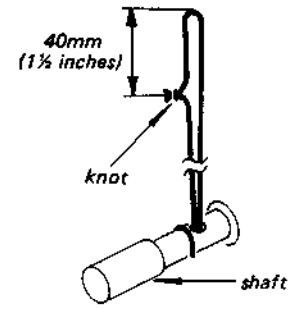


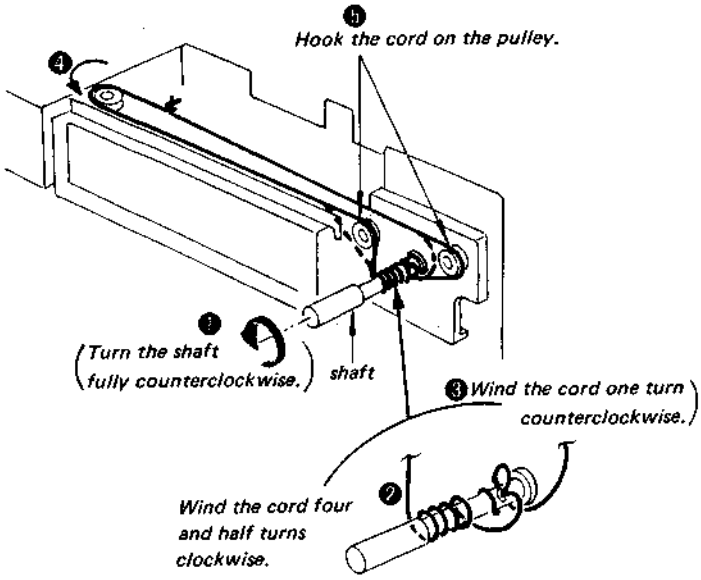
2. Turn the shaft fully counterclockwise and thread the dial cord in the hole of the shaft as shown below.



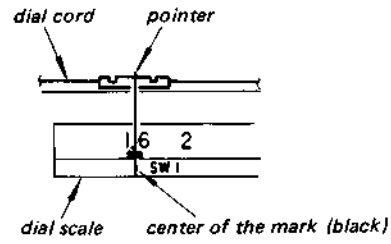

3. Set the knot of the dial cord as shown below.



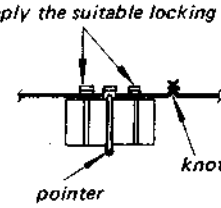

4. Proceed in the numerical order given.




5. Install the pointer at the position as shown below, after turning the shaft fully clockwise.

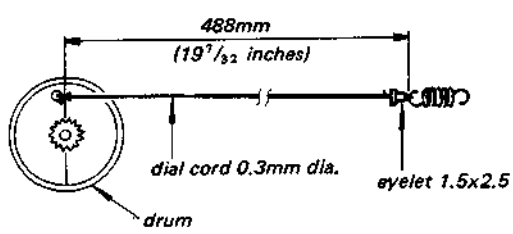


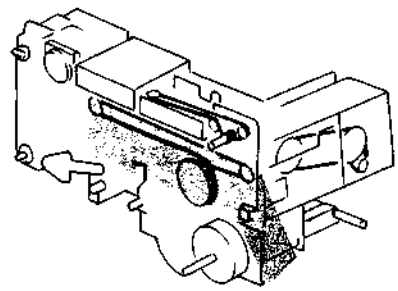

Apply the suitable locking compound.



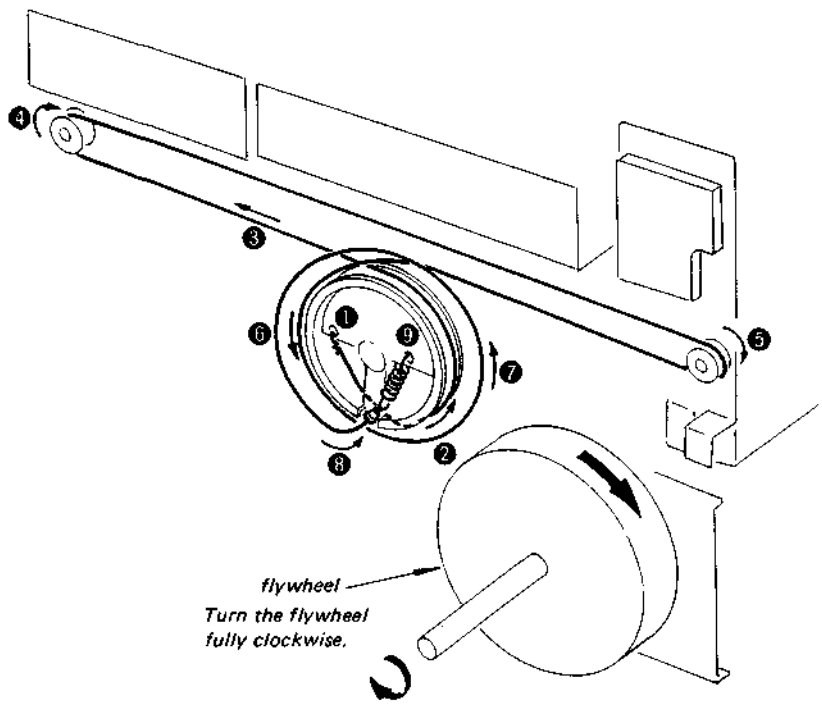

## 2-4. MAIN DIAL CORD STRINGING

1. Dial Cord Preparation

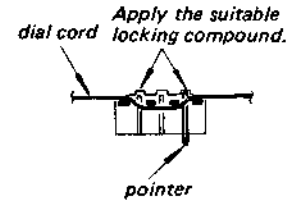


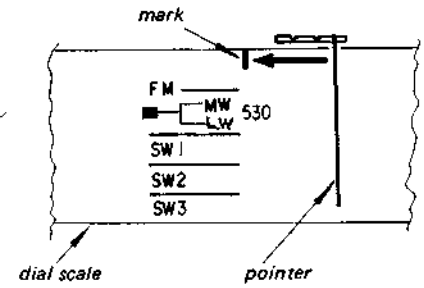



2. Proceed in the numerical order given.



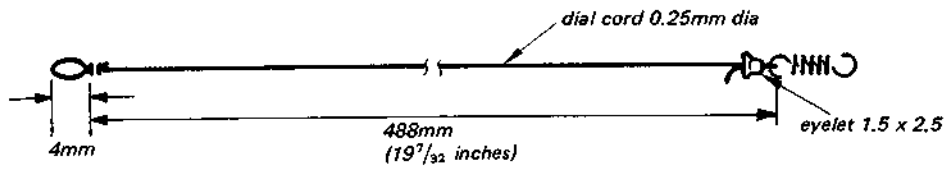

3. Pointer Installation



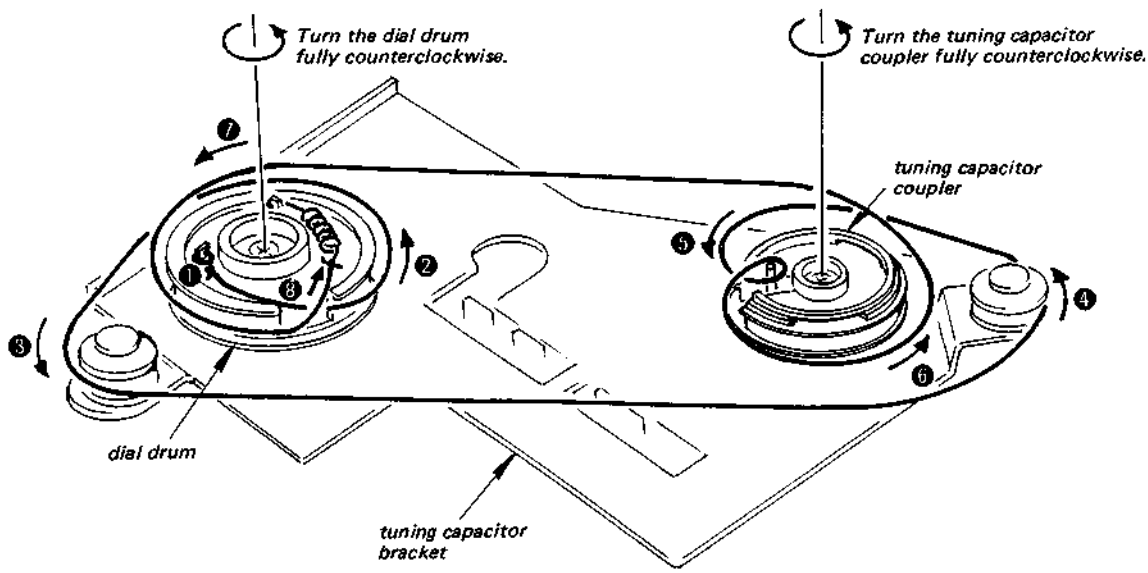




## 2-5. LW DIAL CORD STRINGING

1. Dial Cord Preparation



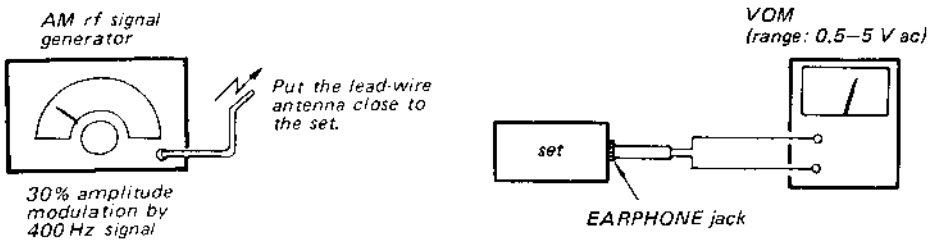

2. Proceed in the numerical order given.



# SECTION 3
# ADJUSTMENTS

## MW/LW SECTION

Setting:
BAND SELECTOR Switch; MW/LW



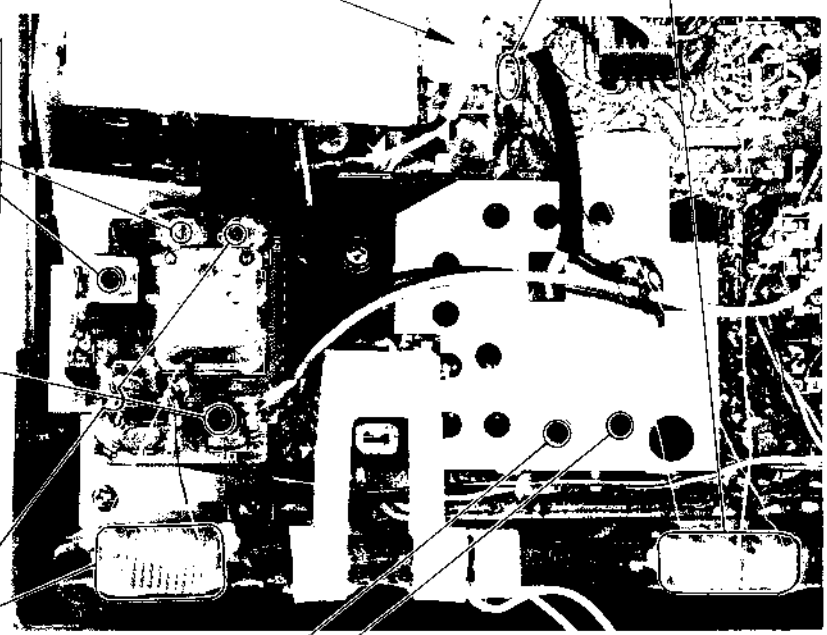

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

| MW TRACKING ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| CT 9 | 1,400 kHz |
| L11 | 620 kHz |

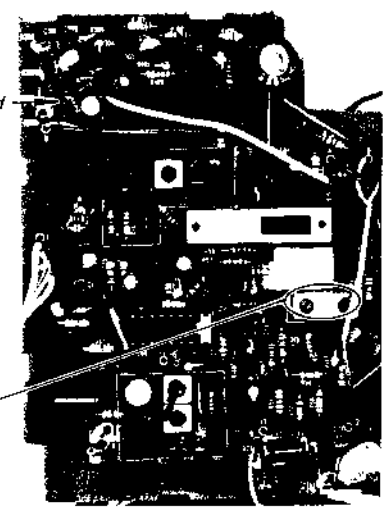
| LW FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 420 kHz | CT 402 |
| 145 kHz | L 401 |

| LW IF ALIGNMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 455 kHz | IFTA-3 |

| LW TRACKING ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 360 kHz | CT 401 |
| 180 kHz | L 11 |



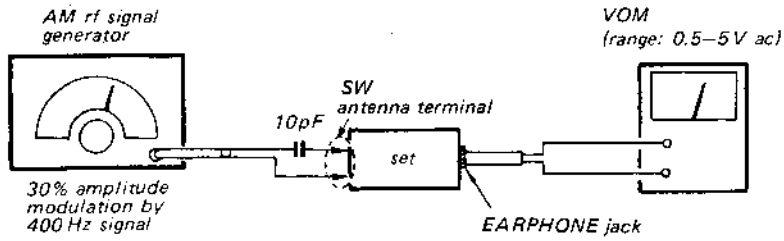

| MW FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM | |
| 520 kHz | L 7 |
| 1,680 kHz | CT 5 |

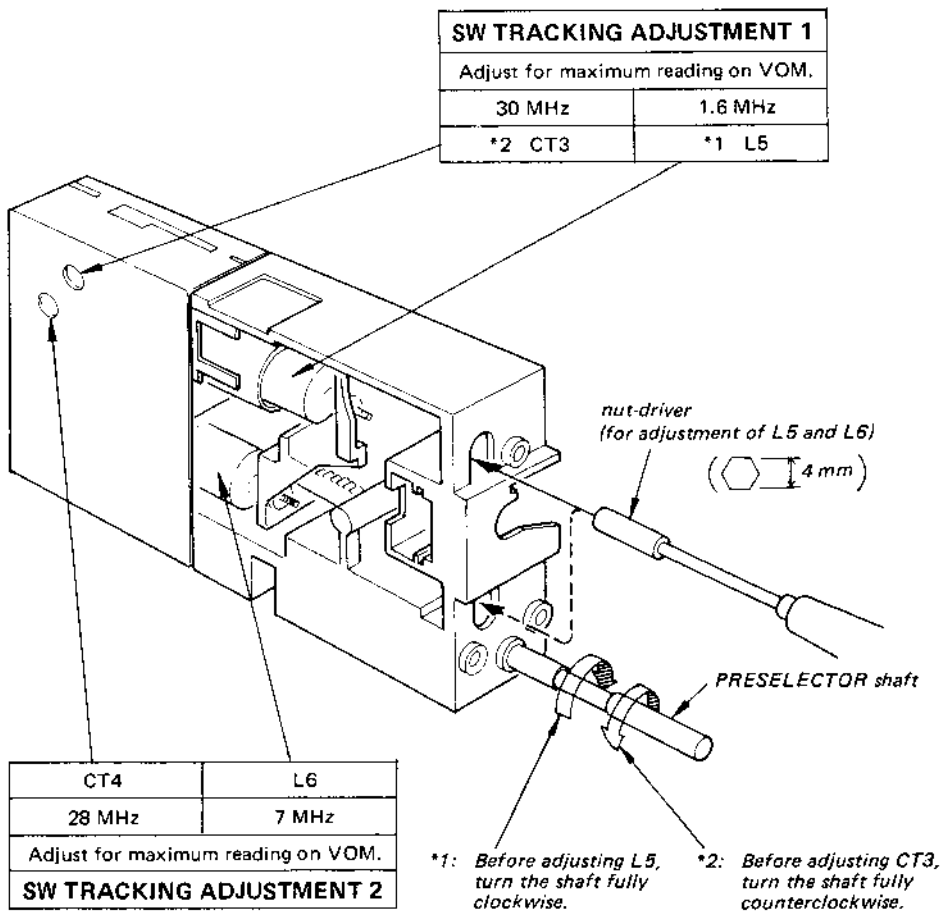



| MW IF ALIGNMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 455 kHz | CFT |

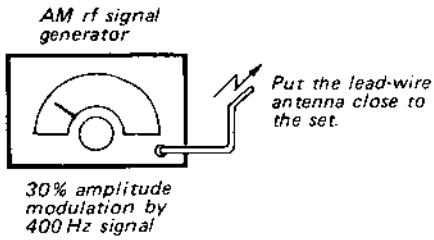
## SW SECTION

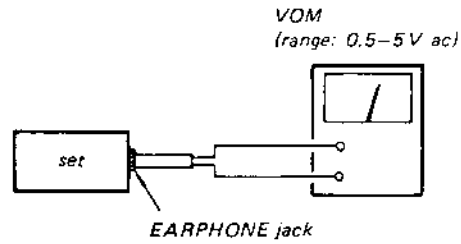
Setting:
BAND SELECTOR Switch: SW
SW ANTENNA Switch: EXT



Setting:
BAND SELECTOR Switch: SW
SW ANTENNA Switch: ROD



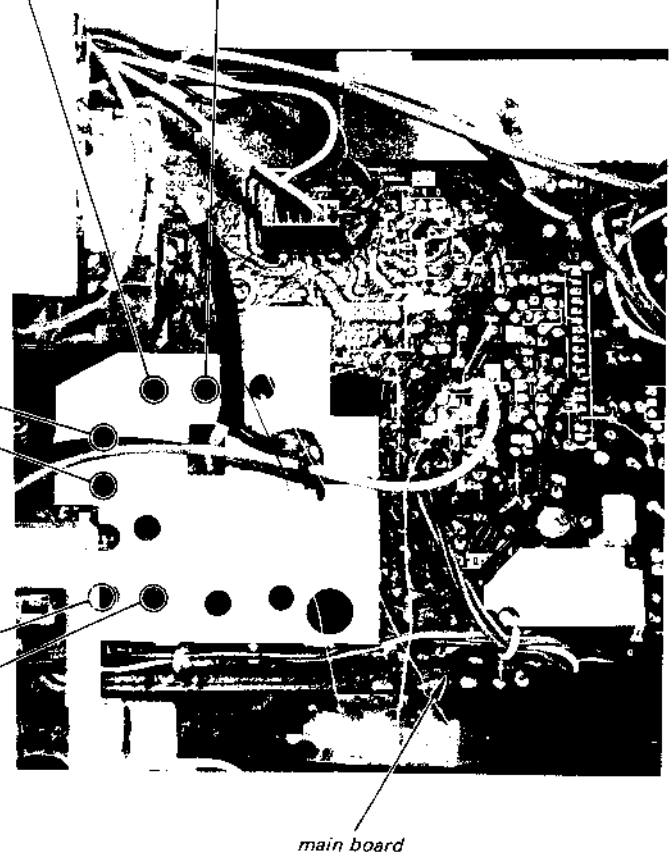




- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

| SW3 FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 19.8 MHz | 29.7 MHz |
| L10 | CT8 |

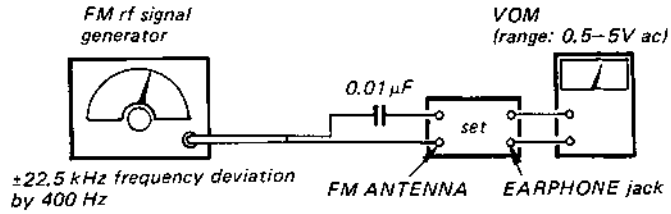
| SW2 FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM | |
| 11.3 MHz | L9 |
| 20.3 MHz | CT7 |

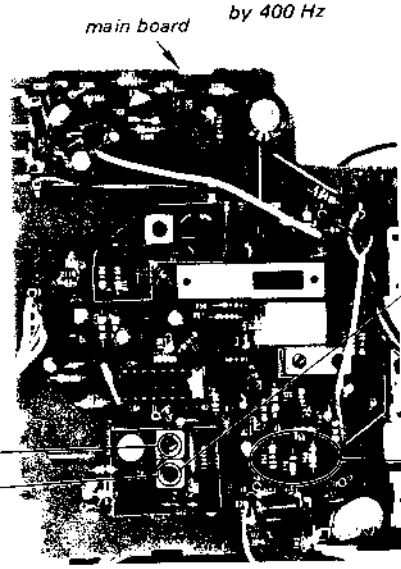
| SW1 FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 10.3 MHz | CT6 |
| 1.55 MHz | L8 |



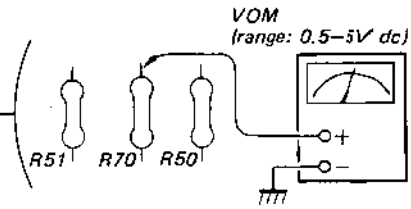
## FM SECTION

Setting:
BAND SELECTOR Switch: FM

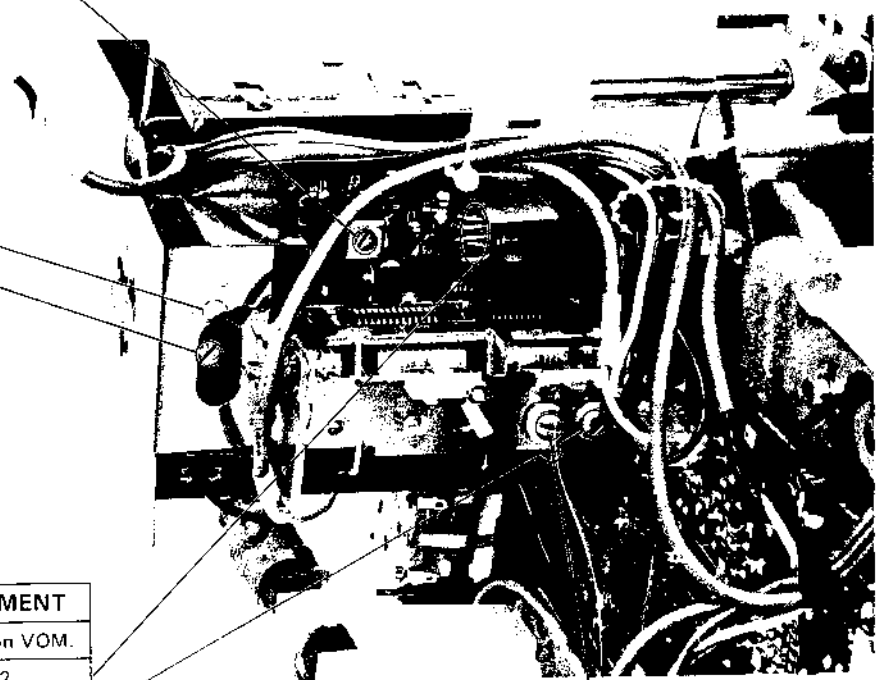



| FM IF ALIGNMENT 2 |
|---|
| Turn off the modulation.<br>Connect VOM as shown below. |
| IFT F3 |
| Adjust for 0V DC reading on VOM. |




| FM IF ALIGNMENT 1 | |
|---|---|
| 10.7 MHz | IFT F2 |
| | IFT F3 |
| | IFT F1 |
| Adjust for maximum reading on VOM. | |



| FM FREQUENCY COVERAGE ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 87.1(87.5) MHz | L3 |
| 108.5 (108) MHz | CT2 |

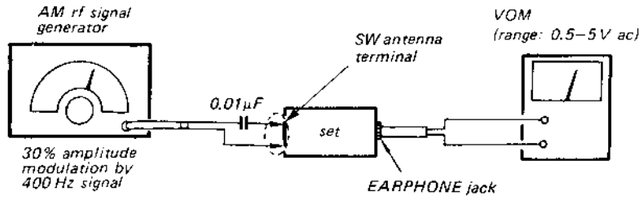
( ): AEP model

| FM TRACKING ADJUSTMENT | |
|---|---|
| Adjust for maximum reading on VOM. | |
| 87.1(87.5) MHz | L2 |
| 108.5(108) MHz | CT1 |

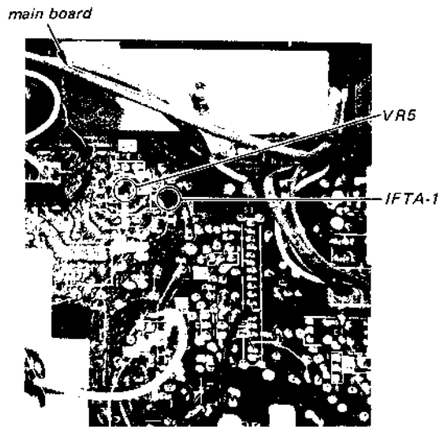
CT9 (Refer to the MW TRACKING ADJUSTMENT on page 21.)

## SW 1ST MIXER BALANCE ADJUSTMENT

Setting:
BAND SELECTOR Switch: SW
SW ANTENNA Switch: EXT



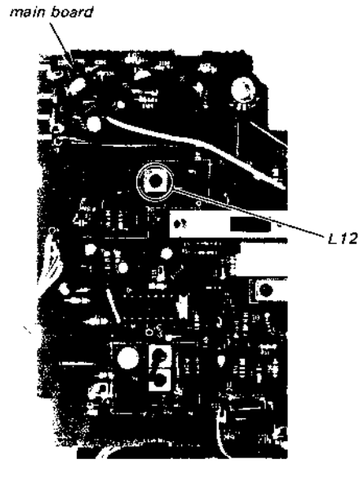

1. Set AM rf signal generator to 10.7 MHz.
2. Tune the set for maximum reading on VOM.
3. Adjust IFT A-1 for maximum reading on VOM.
4. Adjust VR5 for minimum reading on VOM.




## BFO ADJUSTMENT

Setting: the same as the above.

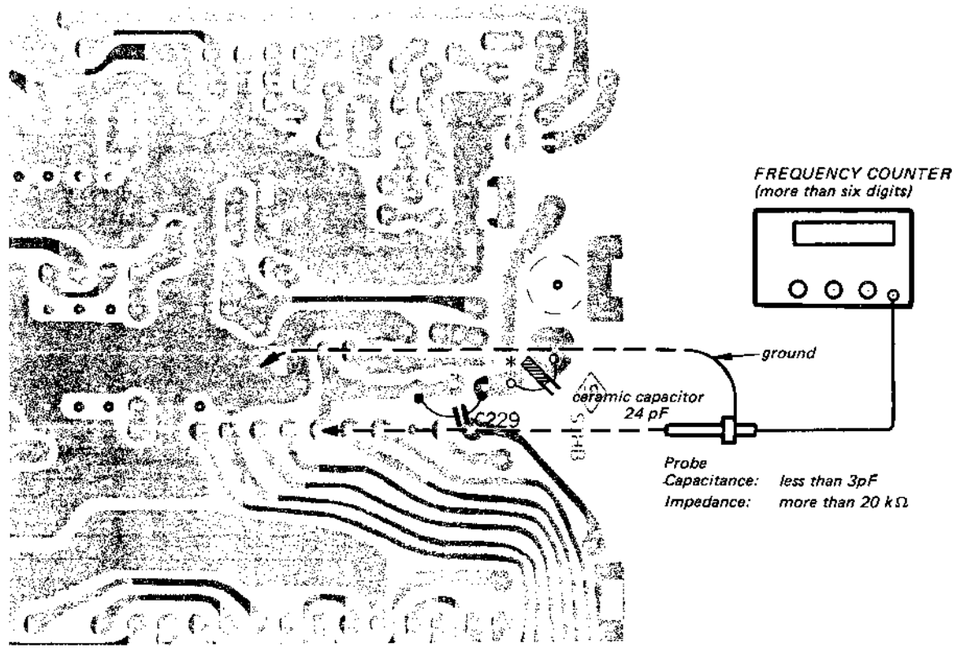
1. Tune the set at mode of NARROW or WIDE and turn off the modulation.
2. Adjust L12 so that the sound level becomes equal at USB mode and LSB mode.






## 500 kHz OSCILLATOR ADJUSTMENT

[COUNTER BOARD]



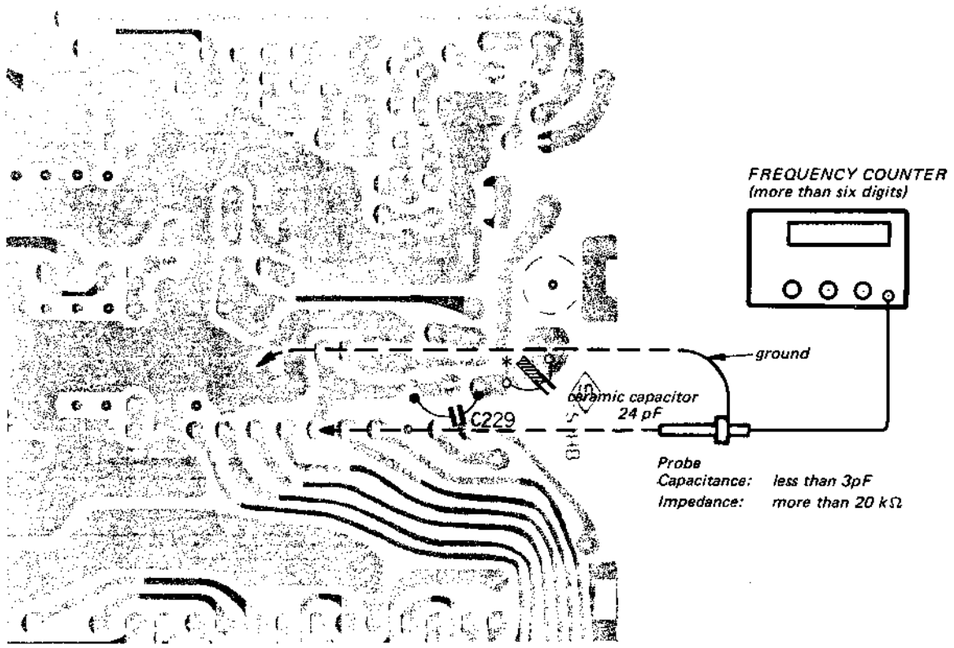

Setting:
FREQUENCY DISPLAY Switch: ON

Connect the frequency counter to pin 7 of IC6 as shown above.
The value of C229 is determined by the counter reading listed below.

| Counter reading | Adjustment |
|---|---|
| 499981–499992Hz | Cut the pattern marked*.<br>Add the ceramic capacitor 24 pF.<br>C229 is unnecessary. |
| 499993–500006Hz | C229 is unnecessary. |
| 500007–500018Hz | Select the value of C229 to 10pF. |
| 500019–500031Hz | Select the value of C229 to 33pF. |
| 500032–500044Hz | Select the value of C229 to 68pF. |

## 500 kHz OSCILLATOR ADJUSTMENT

[COUNTER BOARD]




Setting:
FREQUENCY DISPLAY Switch: ON

Connect the frequency counter to pin 7 of IC6 as shown above.
The value of C229 is determined by the counter reading listed below.

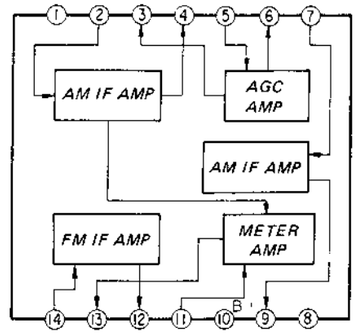
| Counter reading | Adjustment |
|---|---|
| 499981–499992Hz | Cut the pattern marked*. Add the ceramic capacitor 24 pF. C229 is unnecessary. |
| 499993–500006Hz | C229 is unnecessary. |
| 500007–500018Hz | Select the value of C229 to 10pF. |
| 500019–500031Hz | Select the value of C229 to 33pF. |
| 500032–500044Hz | Select the value of C229 to 68pF. |



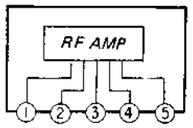


## IC BLOCK DIAGRAM

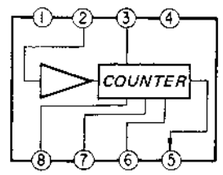
IC1 CX162



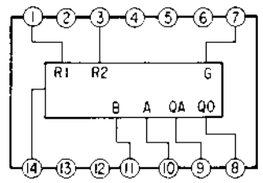

IC2 TA7060P



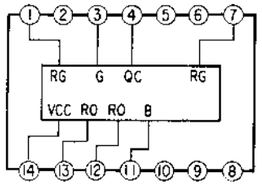

IC4 μPB551C



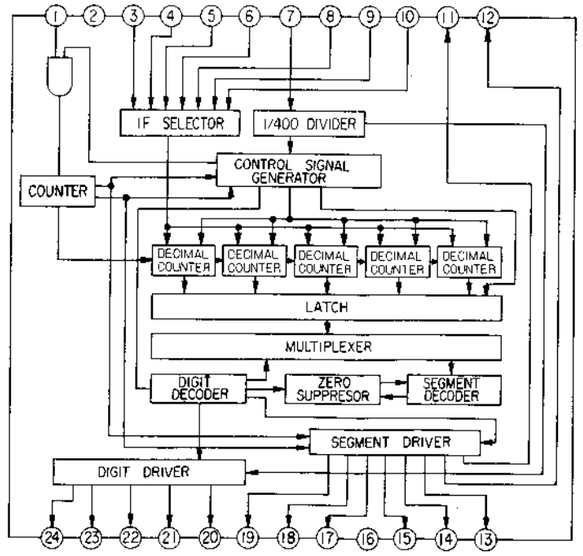

IC3 SN74LS293N




IC5 SN74LS290N




IC6 M54825P



# SECTION 4
# DIAGRAMS

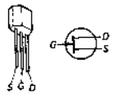
## 4-1. MOUNTING DIAGRAM

*– Conductor Side –*

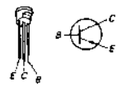
Replacement Semiconductors
For replacement, use semiconductors except in ( ).

IC Block Diagram is listed on page 27.

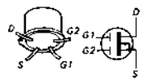
**Q1, 32: 2SK42-2 (2SK42)**
**Q7: 2SK42-2 (2SK42-1)**



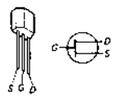

**Q2, 5, 6, 9**
**Q10, 12, 13, 27 : 2SC930 (2SC930C)**
**Q3: 2SC668 (2SC668D)**



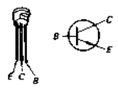

**Q4: 3SK37**



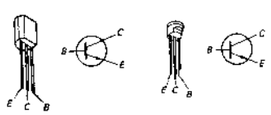

**Q8: 2SK23A-824 (2SK23A)**



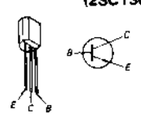

**Q11: 2SC930 (2SC930E)**



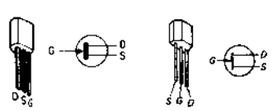

**Q14: 2SC1364 (2SC930C)**



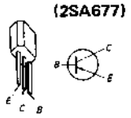

**Q15, 19, 22, 25, 26**
**Q29–31, 40–47 : 2SC1364 (2SC1363)**



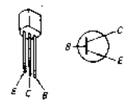

**Q16, 17: 2SK107 (2SK23A)**



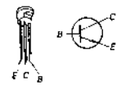

**Q18, 23, 35, 38: 2SA1027R (2SA677)**



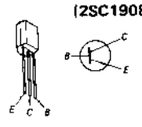

**Q20: 2SC1474**



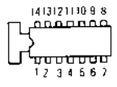

**Q36, 39: 2SC930 (2SC930D)**



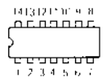

**Q33, 34, 37: 2SC710 (2SC1908)**



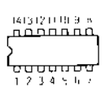

**IC1: CX162**



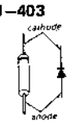

**IC3: SN74LS293N**



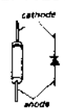

**IC5: SN74LS290N**



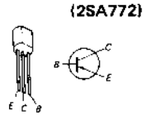

**D1–8**
**D10, 11**
**D15–18 : 1S1555**
**D401–403**



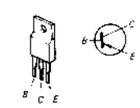

**D12, 13: 1T261**



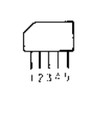

**Q21, 24: 2SA772-23 (2SA772)**



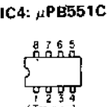

**Q28: 2SA861**



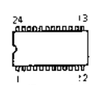

**IC2: TA7060P**



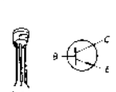

**IC4: μPB551C**



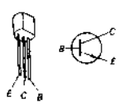

**IC6: M54825P**



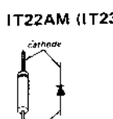

**D9: 2SC930 (2SC930C)**



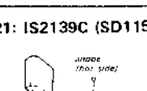

**Q401: 2SC930**
**Q402: 2SC1364**



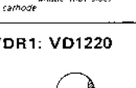

**D14, 23: IT22AM (IT23)**



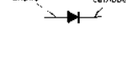

**D21: IS2139C (SD115)**



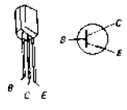

**VDR1: VD1220**




**D22: SL1512**




**(2SC710)**
**(2SC710)**

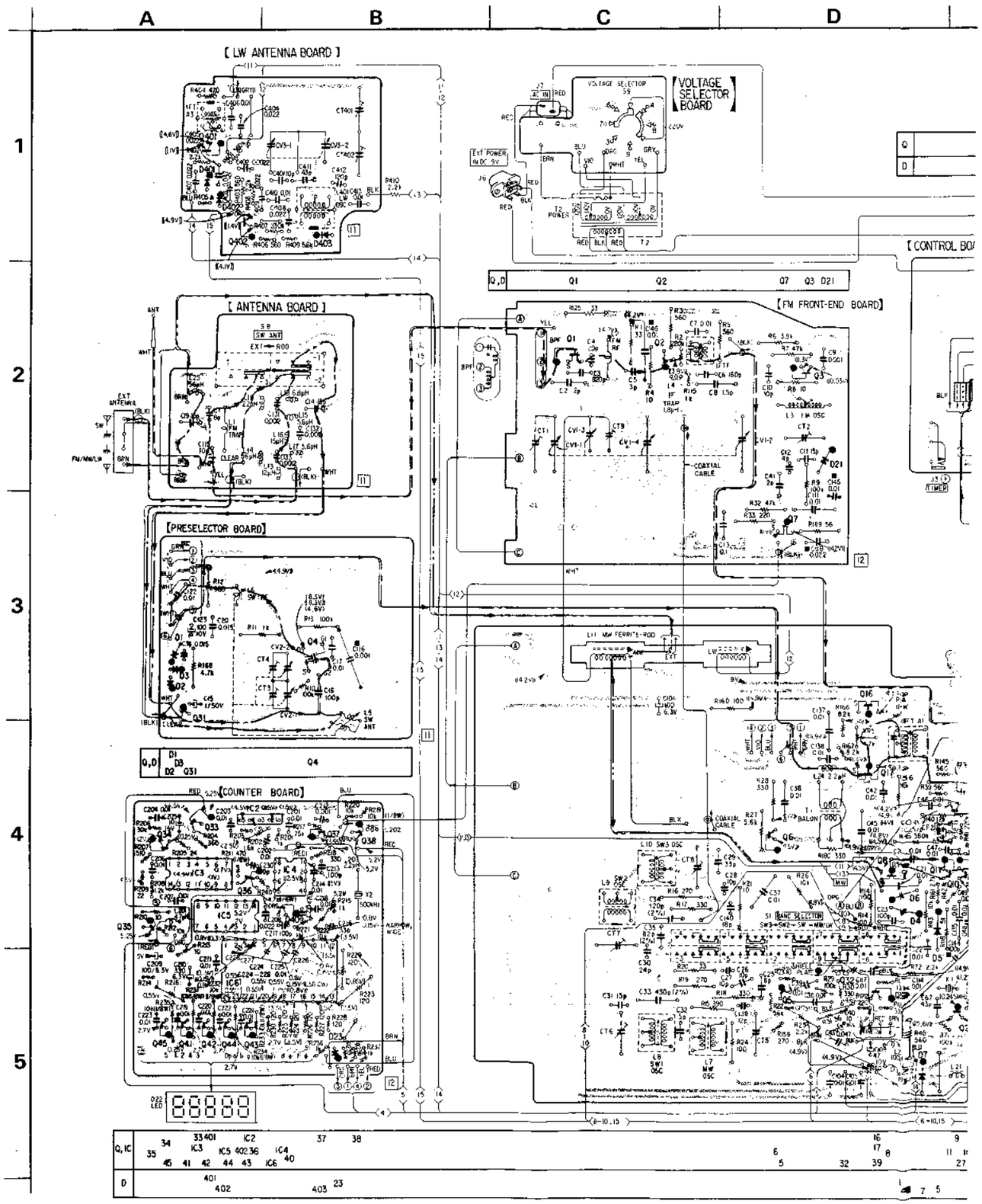



**Note:**

- : indicates side identified with part number.
- : B + pattern
- Signal Path
  - : FM
  - : SW
  - : MW







# ICF-6700L ICF-6700L

A B C D E F G

1 2 3 4 5

[ LW ANTENNA BOARD ]

[ ANTENNA BOARD ]

[PRESELECTOR BOARD]

[VOLTAGE SELECTOR BOARD]

[FM FRONT-END BOARD]

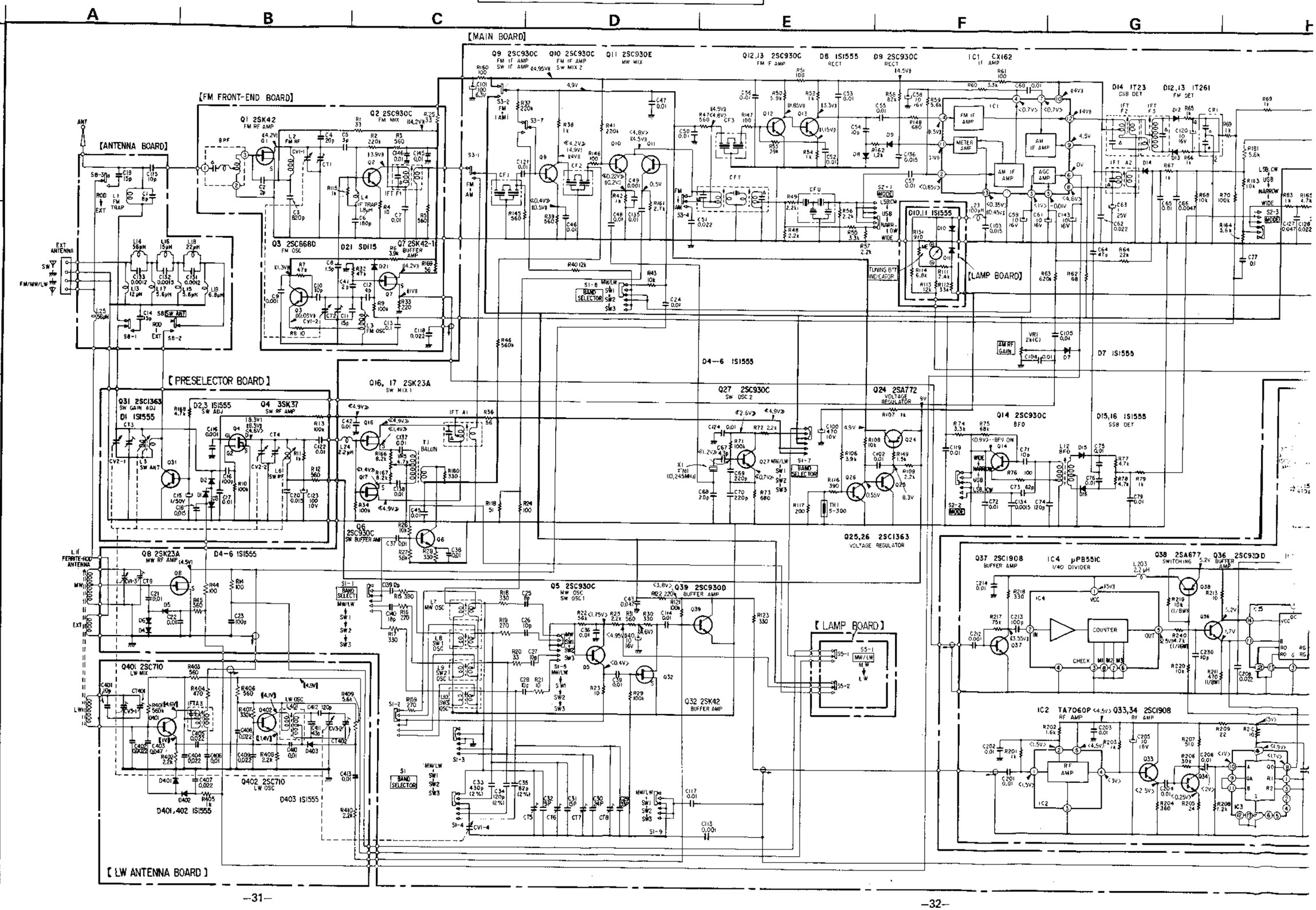
[CONTROL BOARD]

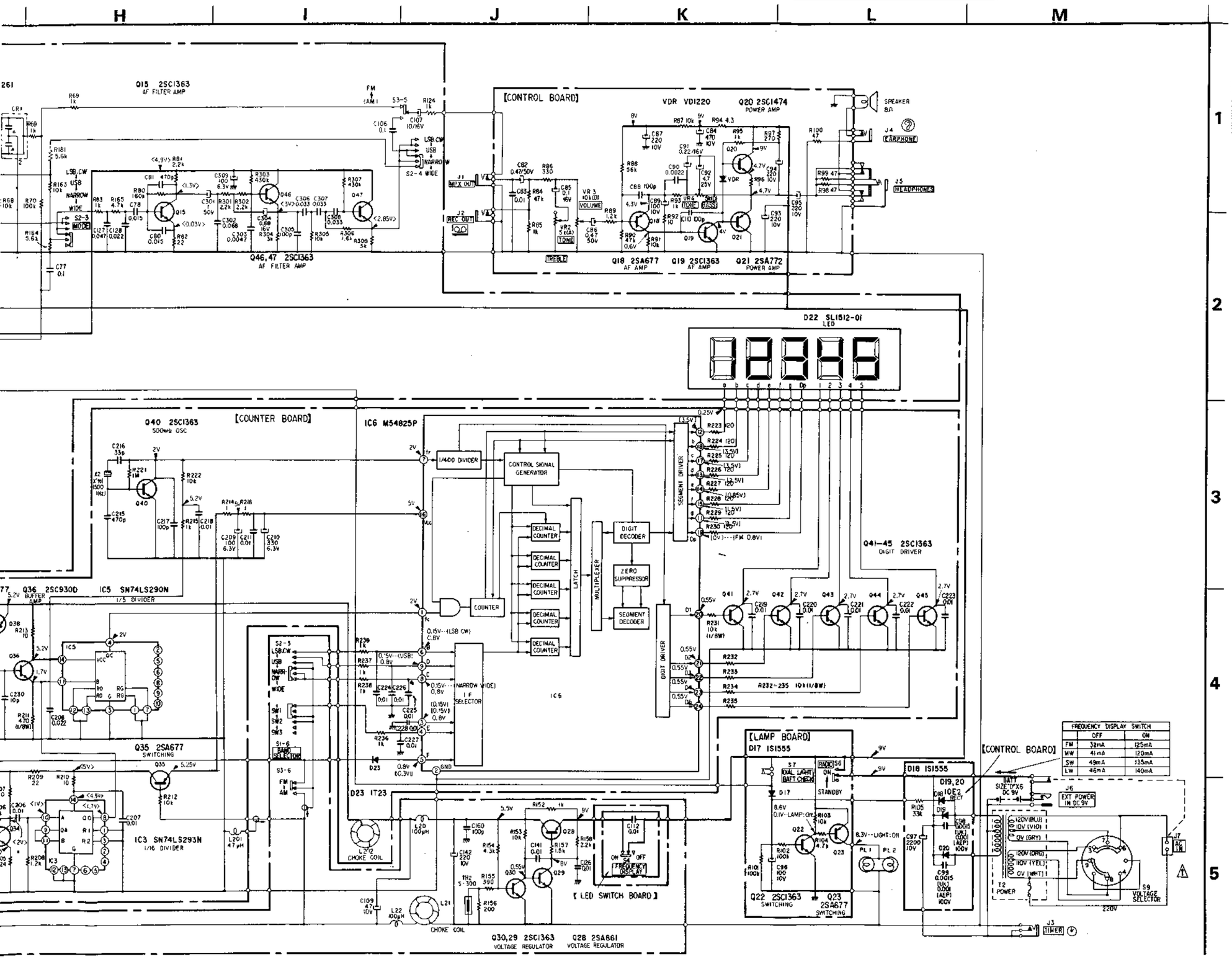
[COUNTER BOARD]

[MAIN BOARD]

[LAMP BOARD]

[LED SWITCH BOARD]


[MAIN BOARD]
[FM FRONT-END BOARD]
[ANTENNA BOARD]
[PRESELECTOR BOARD]
[LAMP BOARD]
[LW ANTENNA BOARD]
Q9 2SC930C FM IF AMP SW IF AMP
Q10 2SC930C FM IF AMP SW MIX 2
Q11 2SC930E MW MIX
Q12,13 2SC930C FM IF AMP
D8 1SI555 RECT
D9 2SC930C RECT
IC1 CX162 IF AMP
D14 1T23 SSB DET
D12,13 1T261 FM DET
Q1 2SK42 FM RF AMP
Q2 2SC930C FM MIX
Q3 2SC668D FM OSC
D21 SD115
Q7 2SK42-II BUFFER AMP
D10,11 1SI555
D4—6 1SI555
D7 1SI555
Q31 2SC1363 SW GAIN ADJ
D1 1SI555
D2,3 1SI555 SW ADJ
Q4 3SK37 SW RF AMP
Q16, 17 2SK23A SW MIX 1
Q27 2SC930C SW OSC 2
Q24 2SA772 VOLTAGE REGULATOR
Q14 2SC930C BFO
D15,16 1SI555 SSB DET
Q25,26 2SC1363 VOLTAGE REGULATOR
Q6 2SC930C SW BUFFER AMP
Q8 2SK23A MW RF AMP
D4—6 1SI555
Q5 2SC930C MW OSC SW OSC 1
Q39 2SC930D BUFFER AMP
Q32 2SK42 BUFFER AMP
Q37 2SC1908 BUFFER AMP
IC4 μPB551C 1/40 DIVIDER
Q38 2SA677 SWITCHING
Q36 2SC930D BUFFER AMP
IC2 TA7060P RF AMP
Q33,34 2SC1908 RF AMP
Q401 2SC710 LW MIX
Q402 2SC710 LW OSC
D403 1SI555
D401,402 1SI555
BAND SELECTOR
COUNTER
RF AMP




**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

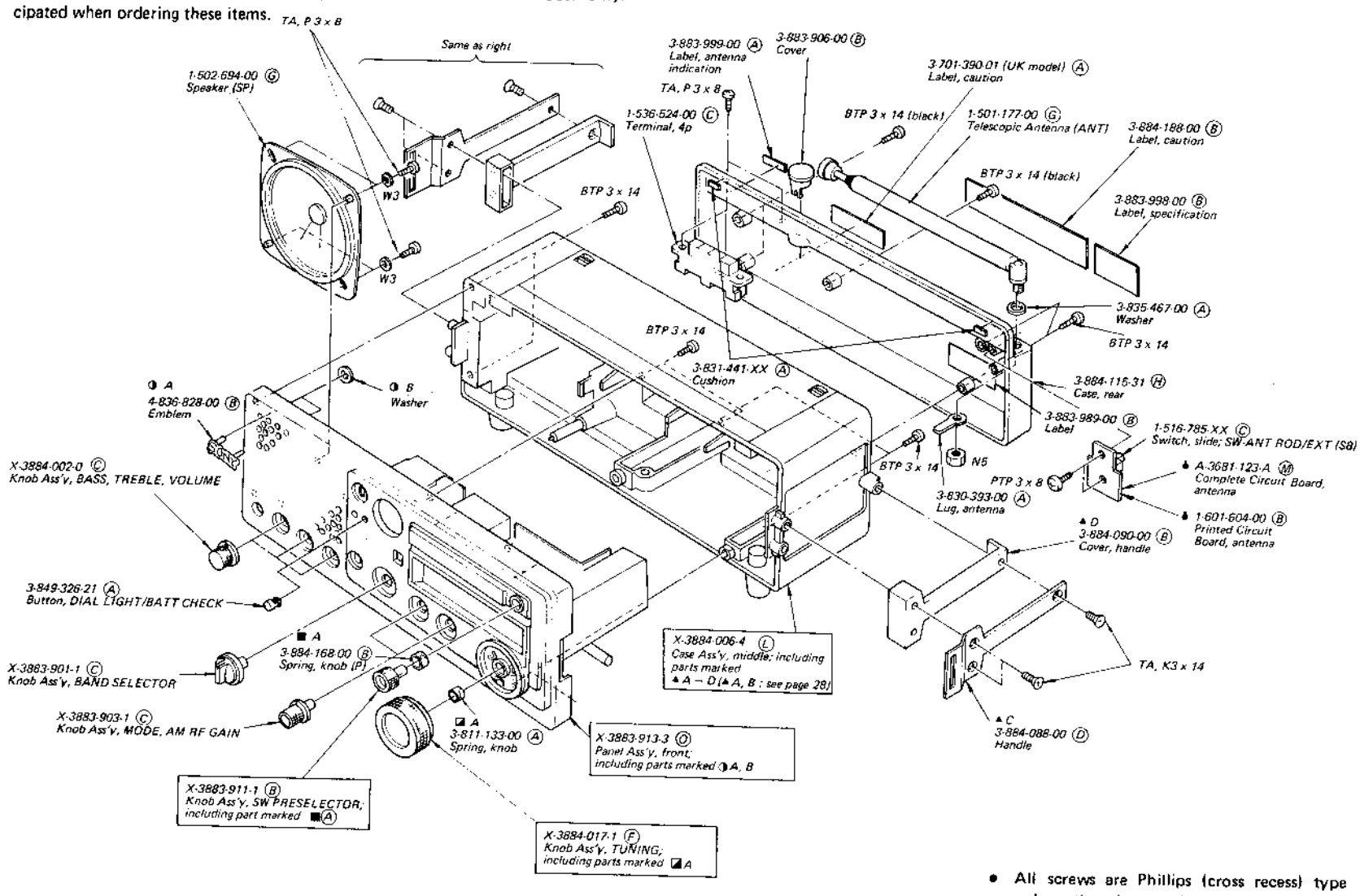
**Note:**

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω; MΩ : 1000kΩ
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ▬ : B + bus.
- Voltage variations may be noted due to normal production tolerances.
- Transistor base-emitter voltages are measured on the 2.5V range.
- Readings are taken under no-signal (detuned) conditions with a VOM (20 kΩ/V).
  - ≪ ≫ : SW
  - < > : AM
  - ( ) : MW
  - [[ ]] : LW
  - ⟪ ⟫ : FM
  - [ ] : When receiving 12.345 kHz signal.
- Switch

| Ref. No. | Switch | Position |
|---|---|---|
| S1 | BAND SELECTOR | LW/MW |
| S2 | MODE | WIDE |
| S3 | FM-AM | FM |
| S4 | FREQUENCY DISPLAY | ON |
| S5 | LW/MW | MW |
| S6 | RADIO | OFF |
| S7 | DIAL LIGHT/ BATT CHECK | OFF |
| S8 | SW ANT | ROD |
| S9 | VOLTAGE SELECTOR | 120V |

- Transistor is used for D9.
- Δ: internal component.
- 2% indicates component tolerances.

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.

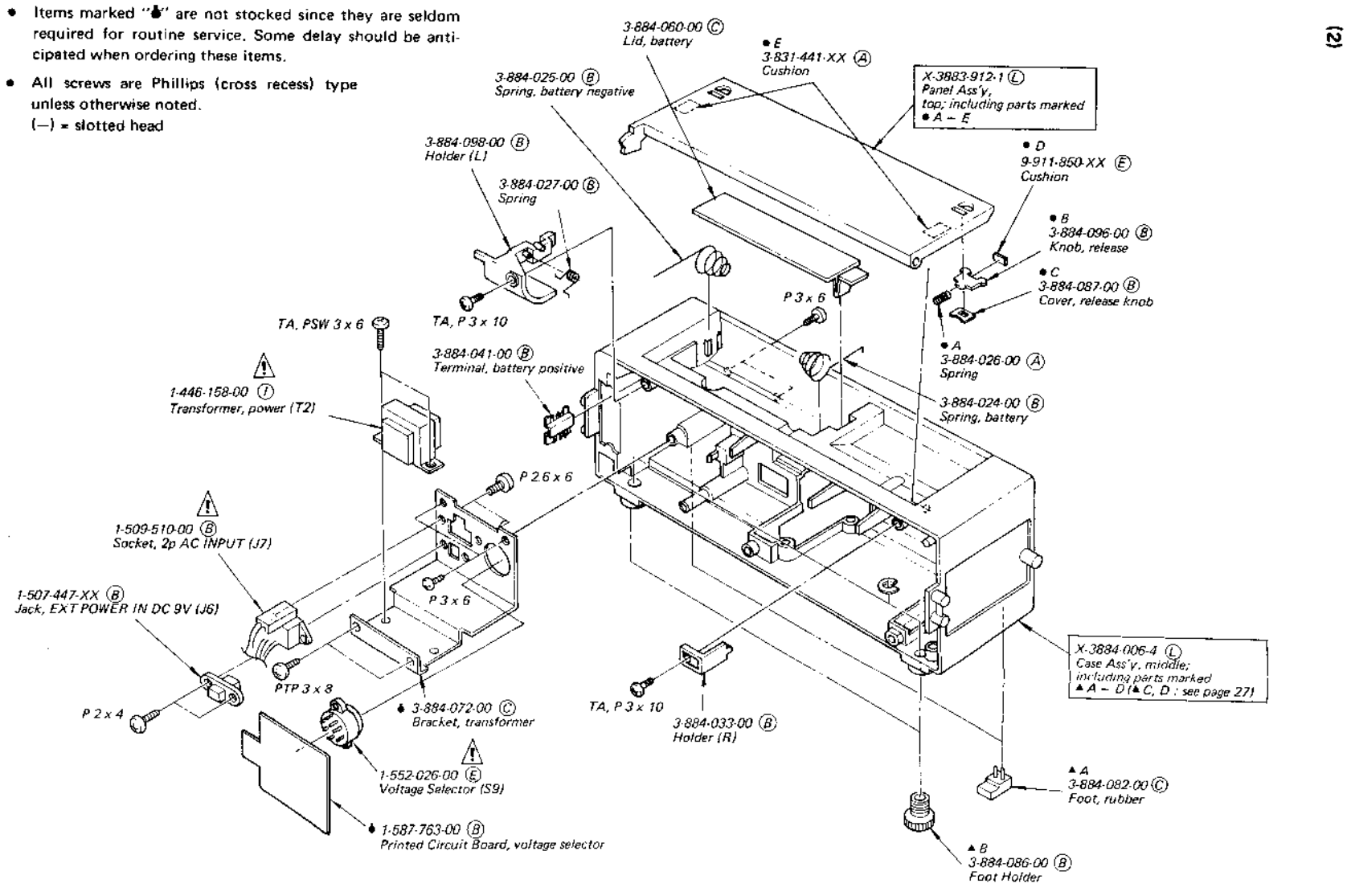



- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head





- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head




**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

- Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.

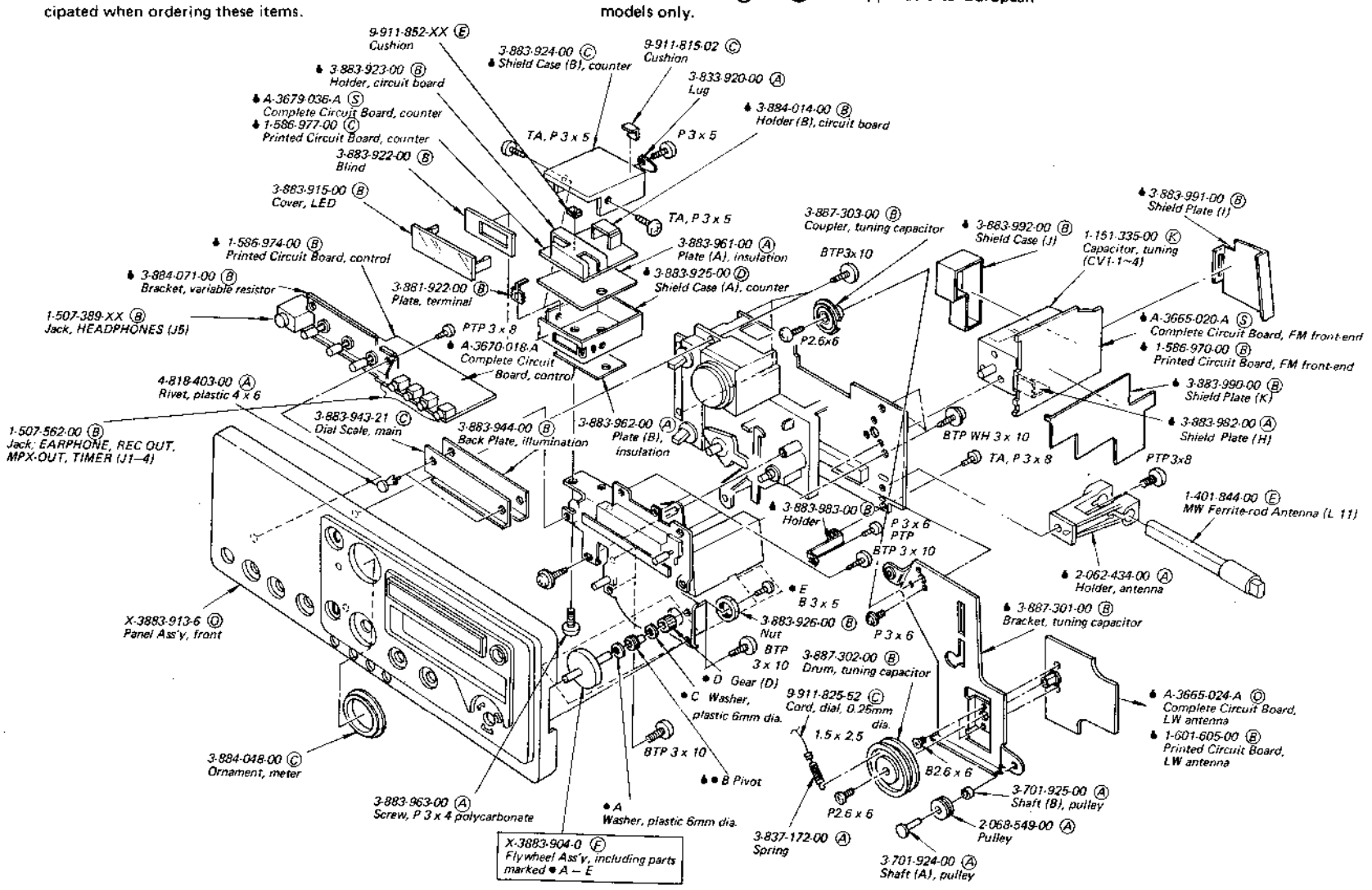




- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anti-
- Circled letters ( Ⓐ to Ⓩ ) are applicable to European

(3)

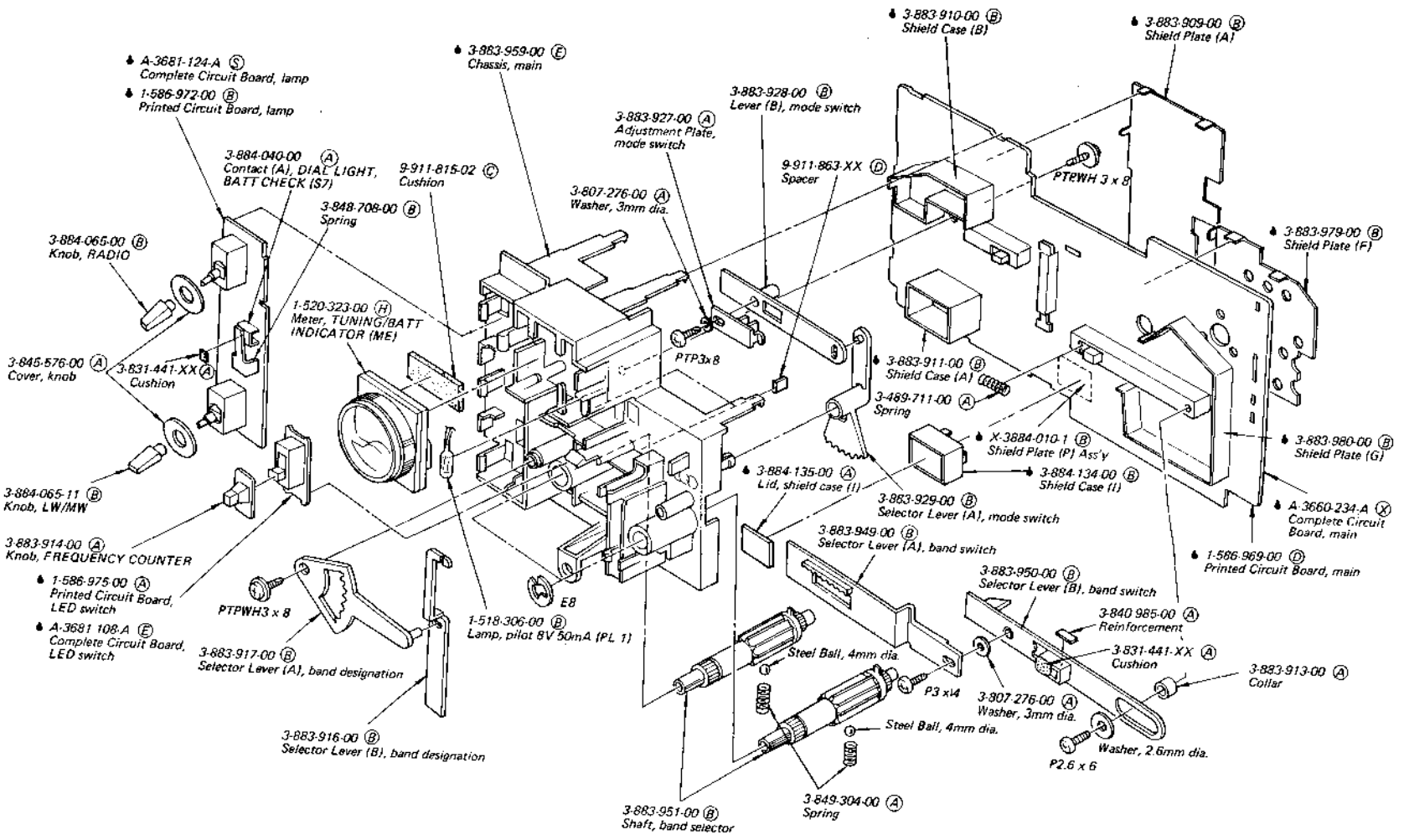
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.




- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

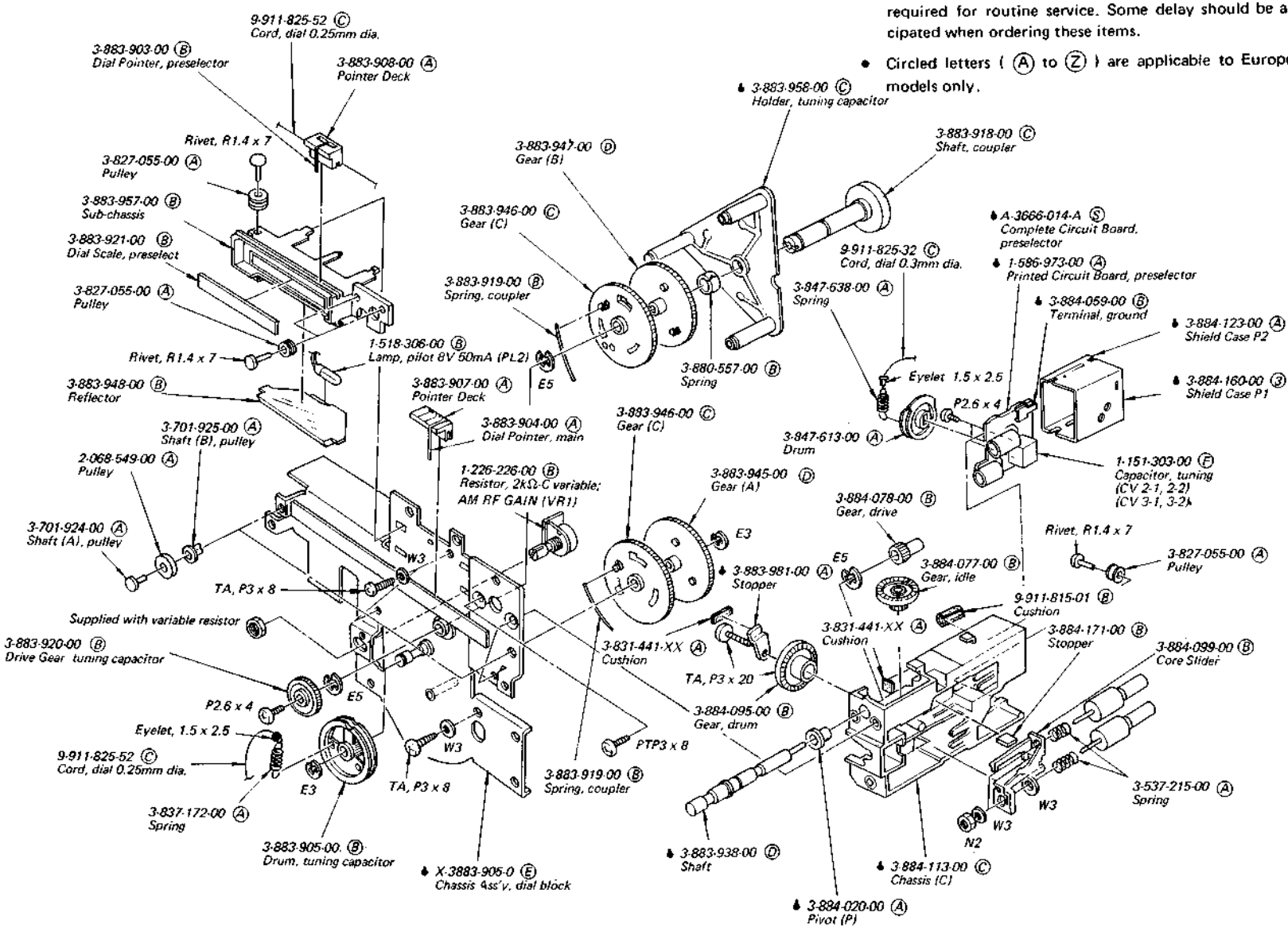
(4)

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.




- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.




- All screws are Phillips (cross recess) type unless otherwise noted.
(–) = slotted head

# SECTION 6
# ELECTRICAL PARTS LIST

Note:
Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.

| Ref. No. | Part No. | Description |
|---|---|---|
| | | **SEMICONDUCTORS** |
| | | **Transistors** |
| ⇒ Q1 | 8-727-312-00 | Ⓒ 2SK42-2 |
| ⇒ Q2 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q3 | 8-729-806-84 | Ⓑ 2SC668 |
| Q4 | 8-722-762-00 | Ⓕ 3SK37 |
| ⇒ Q5, 6 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q7 | 8-727-312-00 | Ⓒ 2SK42-2 |
| Q8 | 8-722-382-04 | Ⓔ 2SK23A-824 |
| ⇒ Q9-13 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q14, 15 | 8-729-663-47 | Ⓒ 2SC1364 |
| ⇒ Q16, 17 | 8-769-010-35 | Ⓑ 2SK107 |
| ⇒ Q18 | 8-729-612-77 | Ⓑ 2SA1027R |
| ⇒ Q19 | 8-729-663-47 | Ⓒ 2SC1364 |
| Q20 | 8-760-335-10 | Ⓑ 2SC1474 |
| ⇒ Q21 | 8-760-523-10 | Ⓒ 2SA772-23 |
| ⇒ Q22 | 8-729-663-47 | Ⓒ 2SC1364 |
| ⇒ Q23 | 8-729-612-77 | Ⓑ 2SA1027R |
| ⇒ Q24 | 8-760-523-10 | Ⓒ 2SA772-23 |
| ⇒ Q25, 26 | 8-729-663-47 | Ⓒ 2SC1364 |
| ⇒ Q27 | 8-729-803-04 | Ⓑ 2SC930 |
| Q28 | 8-763-213-00 | Ⓒ 2SA861 |
| ⇒ Q29-31 | 8-729-663-47 | Ⓒ 2SC1364 |
| ⇒ Q32 | 8-727-312-00 | Ⓒ 2SK42-2 |
| ⇒ Q33, 34 | 8-729-671-15 | Ⓑ 2SC710-15 |
| ⇒ Q35 | 8-729-612-77 | Ⓑ 2SA1027R |
| ⇒ Q36 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q37 | 8-729-671-15 | Ⓑ 2SC710-15 |
| ⇒ Q38 | 8-729-612-77 | Ⓑ 2SA1027R |
| ⇒ Q39 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q40-47 | 8-729-663-47 | Ⓒ 2SC1364 |
| ⇒ Q401 | 8-729-803-04 | Ⓑ 2SC930 |
| ⇒ Q402 | 8-729-663-47 | Ⓒ 2SC1364 |
| | | **ICs** |
| IC1 | 8-751-620-00 | Ⓗ CX162 |
| IC2 | 8-759-270-60 | Ⓓ TA7060P |
| IC3 | 8-759-902-93 | Ⓕ SN74LS293N |
| IC4 | 8-759-155-10 | Ⓚ μPB551C |
| IC5 | 8-759-902-90 | Ⓕ SN74LS290N |
| IC6 | 8-759-648-25 | Ⓝ M54825P |
| | | **Diodes** |
| D1-8 | 8-719-815-55 | Ⓑ 1S1555 |
| ⇒ D9 | 8-729-803-04 | Ⓑ 2SC930 |
| D10, 11 | 8-719-815-55 | Ⓑ 1S1555 |
| D12, 13 | 8-719-026-11 | Ⓐ 1T261 |
| ⇒ D14 | 8-719-422-21 | Ⓑ 1T22AM |
| D15-18 | 8-719-815-55 | Ⓑ 1S1555 |
| D19, 20 | ⚠ 8-719-200-02 | Ⓑ 10E2 |
| ⇒ D21 | 8-719-713-93 | Ⓑ 1S2139C |
| D22 | 8-719-905-11 | Ⓛ SL1512-01 |
| ⇒ D23 | 8-719-422-21 | Ⓑ 1T22AM |
| D401-403 | 8-719-815-55 | Ⓑ 1S1555 |
| VDR1 | 8-719-122-00 | Ⓑ VC1220 |
| | | **Thermistor** |
| Th1, 2 | 1-800-071-XX | Ⓐ S-300 |
| | | **COILS** |
| ♦ L1 | 1-401-456-00 | Ⓑ FM Antenna |
| ♦ L2 | 1-420-856-00 | Ⓐ FM RF |
| ♦ L3 | 1-420-922-00 | Ⓑ FM Osc |
| L4 | 1-407-181-XX | Ⓐ Microinductor, 1.8μH |
| L5 | 1-401-715-00 | Ⓕ SW Antenna |
| L6 | 1-401-716-00 | Ⓕ SW RF |
| L7 | 1-405-787-00 | Ⓑ MW Osc |
| L8 | 1-405-788-00 | Ⓑ SW1 Osc |
| L9 | 1-405-789-00 | Ⓑ SW2 Osc |
| L10 | 1-405-790-00 | Ⓑ SW3 Osc |
| L11 | 1-401-844-00 | Ⓔ MW Ferrite-rod Antenna |
| L12 | 1-405-807-00 | Ⓑ BFO |
| L13 | 1-407-158-XX | Ⓐ Microinductor, 12μH |
| L14, 25 | 1-407-166-XX | Ⓐ Microinductor, 5.6μH |
| L15, 17 | 1-407-187-XX | Ⓐ Microinductor, 5.6μH |
| L16 | 1-407-159-XX | Ⓐ Microinductor, 15μH |

• ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

Note: Circled letters ( Ⓐ to Ⓩ ) are applicable to European models only.

| Ref. No. | Part No. | Description |
|---|---|---|
| L18 | 1-407-161-XX | Ⓑ Microinductor, 22μH |
| L19 | 1-407-188-XX | Ⓐ Microinductor, 6.8μH |
| L20, 22, 23 | 1-407-169-XX | Ⓐ Microinductor, 100μH |
| L21 | 1-407-856-00 | Ⓒ Choke |
| L24 | 1-407-182-XX | Ⓐ Microinductor, 2.2μH |
| L201 | 1-407-165-XX | Ⓑ Microinductor, 47μH |
| L202 | 1-407-856-00 | Ⓒ Choke |
| L203 | 1-407-182-XX | Ⓐ Microinductor, 2.2μH |
| L401 | 1-405-896-00 | Ⓑ LW Osc |

**TRANSFORMERS**

| | | |
|---|---|---|
| CFT | 1-403-144-00 | Ⓒ IFT, triple tuning |
| T1 | 1-417-064-00 | Ⓑ Balun |
| T2 | ⚠1-446-158-00 | Ⓘ Power |
| IFT A-1 | 1-404-021-00 | Ⓑ AM IFT |
| IFT A-2 | 1-404-100-00 | Ⓑ AM IFT |
| IFT A-3 | 1-404-236-00 | Ⓑ AM IFT |
| IFT F-1 | 1-403-872-00 | Ⓑ FM IFT |
| IFT F-2 | 1-403-959-00 | Ⓑ FM Discriminator |
| IFT F-3 | 1-403-953-00 | Ⓑ FM Discriminator |

**CAPACITORS**

All capacitors are in μF. Common capacitors are omitted. Refer to the list on pages 43 and 44 for their part numbers.

| | | | | | |
|---|---|---|---|---|---|
| C97 | ⚠1-123-074-00 | Ⓐ 2200 | 10V | elect | |
| C98, 99 | ⚠1-108-367-00 | Ⓐ 0.0015 | 100V | mylar | (UK model) |
| | ⚠1-108-377-00 | Ⓐ 0.01 | 100V | mylar | (AEP model) |
| CT2 | 1-141-138-XX | Ⓐ Trimmer | | | |
| CT5 | 1-141-140-XX | Ⓑ Trimmer | | | |
| CT6-8 | 1-141-180-00 | Ⓑ Trimmer | | | |
| CT401, 402 | 1-141-171-00 | Ⓑ Trimmer | | | |
| CV1 | 1-151-335-00 | Ⓚ Tuning | | | |
| CV2, 3 | 1-151-303-00 | Ⓕ Tuning | | | |

**RESISTORS**

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 2 for their part numbers.

| Ref. No. | Part No. | Description |
|---|---|---|
| R96 | 1-247-071-00 | Ⓐ 1 ¼W carbon (nonflammable) |
| VR1 | 1-226-226-00 | Ⓑ 2k-C; variable; AM RF GAIN |
| VR2 | 1-226-162-00 | Ⓒ 5k-A; variable; TONE TREBLE |
| VR3 | 1-226-161-00 | Ⓒ 10k-D; variable; VOLUME |
| VR4 | 1-226-163-00 | Ⓒ 5k-D; variable; TONE BASS |
| VR5 | 1-224-251-XX | Ⓑ 4.7k-B; adjustable; SW 1ST MIXER BALANCE |

**SWITCHES**

| | | |
|---|---|---|
| S1 | 1-514-316-00 | Ⓓ Slide; BAND SELECT |
| S2 | 1-513-281-00 | Ⓒ Slide; MODE |
| S3 | 1-514-861-XX | Ⓒ Slide; AM/FM |
| S4 | 1-552-327-00 | Ⓔ Slide; FREQUENCY DISPLAY |
| S5 | 1-552-128-00 | Ⓒ Lever slide; LW/MW |
| S6 | 1-552-127-00 | Ⓑ Lever slide, RADIO |
| S7 | 3-848-708-00 | Ⓑ Spring |
| | 3-884-040-00 | Ⓐ Contact(A) DIGITAL LIGHT, BATT CHECK |
| S8 | 1-516-785-XX | Ⓒ Slide, SW ANT |
| S9 | ⚠1-552-026-00 | Ⓔ Voltage Selector |

**JACKS**

| | | |
|---|---|---|
| J1-4 | 1-507-562-00 | Ⓑ EARPHONES, REC-OUT, MPX-OUT, TIMER |
| J5 | 1-507-389-XX | Ⓑ HEADPHONES |
| J6 | 1-507-447-XX | Ⓑ EXT POWER IN DC9V |
| J7 | ⚠1-509-510-00 | Ⓑ Socket, AC INPUT |

**MISCELLANEOUS**

| | | |
|---|---|---|
| ANT | 1-501-177-00 | Ⓖ Telescopic Antenna |
| BPF1 | 1-231-392-00 | Ⓑ Bandpass Filter |
| CF1-3 | 1-527-184-XX | Ⓑ Ceramic Filter, 10.7MHz |
| CFU | 1-527-319-00 | Ⓔ Ceramic Filter |
| CR1 | 1-231-202-00 | Ⓐ Encapsulated Component |
| ME | 1-520-323-00 | Ⓗ Meter, TUNING/BATT INDICATOR |
| PL1, 2 | 1-518-306-00 | Ⓑ Lamp, pilot 8V 50mA |
| SP | 1-502-694-00 | Ⓖ Speaker |

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

| Ref. No. | Part No. | Description |
|---|---|---|
| X1 | 1-527-339-00 | (E) Crystal, 10.245MHz |
| X2 | 1-527-269-51 | (K) Crystal, 500kHz |
| | 1-536-524-00 | (C) Terminal, 4p; SW, MW |

**Complete Circuit Boards**

| | | |
|---|---|---|
| ♣ | A-3660-234-A | (X) Main |
| ♣ | A-3665-020-A | (S) FM front-end |
| ♣ | A-3665-024-A | (O) LW antenna |
| ♣ | A-3666-014-A | (S) Preselector |
| ♣ | A-3670-018-A | Control |
| ♣ | A-3679-036-A | (S) Counter |
| ♣ | A-3681-108-A | (E) LED switch |
| ♣ | A-3681-123-A | (M) Antenna |
| ♣ | A-3681-124-A | (S) Lamp |

**Printed Circuit Boards**

| | | |
|---|---|---|
| ♣ | 1-586-969-00 | (D) Main |
| ♣ | 1-586-970-00 | (B) FM front-end |
| ♣ | 1-586-972-00 | (B) Lamp |
| ♣ | 1-586-973-00 | (A) Preselector |
| ♣ | 1-586-974-00 | (B) Control |
| ♣ | 1-586-975-00 | (A) LED switch |
| ♣ | 1-586-977-00 | (C) Counter |
| ♣ | 1-587-763-00 | (B) Voltage selector |
| ♣ | 1-601-604-00 | (B) Antenna |
| ♣ | 1-601-605-00 | (B) LW antenna |

• Items marked "♣" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**ACCESSORIES AND PACKING MATERIALS**

| Part No. | Description |
|---|---|
| ⚠1-534-218-13 | (Z) Cord, power; DK-50 (UK model) |
| ⚠1-534-840-XX | (E) Cord, power; DK-38 (AEP model) |
| 3-551-895-00 | (C) Bag. set protection |
| 3-701-616-00 | (A) Bag, plastic |
| 3-701-627-00 | (A) Bag, plastic; manual |
| 3-884-119-00 | (C) Cushion (L) |
| 3-884-120-00 | (C) Cushion (R) |
| 3-884-176-00 | (A) Rivet |
| 3-887-305-00 | (E) Carton |
| 3-993-171-11 | (B) Leaflet |
| 3-995-831-41 | (D) Manual, instruction |

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

## ELECTROLYTIC CAPACITORS

Note: Circled letter (Ⓐ to Ⓩ) are applicable to European models only.

| CAP. (μF) | RATING → : Use the high voltage rated one. | | | | | |
|---|---|---|---|---|---|---|
| | 6.3 VOLT. | 10 VOLT. | 16 VOLT. | 25 VOLT. | 35 VOLT. | 50 VOLT. |
| | PART No. | PART No. | PART No. | PART No. | PART No. | PART No. |
| 0.47 | | | | | → | 1-121-726-00 Ⓐ |
| 1.0 | | | | | → | 1-121-391-00 Ⓐ |
| 2.2 | | | | | → | 1-121-450-00 Ⓐ |
| 3.3 | → | → | → | 1-121-392-00 Ⓐ | → | 1-121-393-00 Ⓐ |
| 4.7 | → | → | → | 1-121-395-00 Ⓐ | → | 1-121-396-00 Ⓐ |
| 10 | → | → | 1-121-651-00 Ⓐ | 1-121-398-00 Ⓐ | → | 1-121-738-00 Ⓐ |
| 22 | → | → | 1-121-479-00 Ⓐ | 1-121-480-00 Ⓐ | 1-121-662-00 Ⓐ | 1-121-152-00 Ⓐ |
| 33 | → | → | 1-121-403-00 Ⓐ | 1-121-404-00 Ⓐ | 1-121-652-00 Ⓑ | 1-121-405-00 Ⓐ |
| 47 | → | 1-121-352-00 Ⓐ | 1-121-409-00 Ⓐ | 1-121-410-00 Ⓐ | 1-121-653-00 Ⓑ | 1-121-411-00 Ⓐ |
| 100 | → | 1-121-414-00 Ⓐ | 1-121-415-00 Ⓐ | 1-121-416-00 Ⓐ | 1-121-357-00 Ⓑ | 1-121-417-00 Ⓑ |
| 220 | 1-121-419-00 Ⓑ | 1-121-420-00 Ⓑ | 1-121-421-00 Ⓐ | 1-121-422-00 Ⓑ | 1-121-261-00 Ⓒ | 1-121-423-00 Ⓑ |
| 330 | 1-121-751-00 Ⓑ | 1-121-805-00 Ⓑ | 1-121-521-00 Ⓒ | 1-121-654-00 Ⓑ | 1-121-655-00 Ⓓ | 1-121-656-00 Ⓒ |
| 470 | 1-121-424-00 Ⓑ | 1-121-425-00 Ⓒ | 1-121-426-00 Ⓒ | 1-121-733-00 Ⓑ | 1-121-361-00 Ⓔ | 1-121-810-00 Ⓓ |
| 1000 | – | 1-121-736-00 Ⓒ | 1-121-245-00 Ⓓ | 1-121-657-00 Ⓓ | 1-121-388-00 Ⓔ | 1-123-061-00 Ⓕ |
| 2200 | 1-121-658-00 Ⓑ | 1-121-659-00 Ⓒ | 1-121-660-00 Ⓓ | 1-123-067-00 Ⓕ | 1-121-984-00 Ⓕ | – |
| 3300 | 1-121-661-00 Ⓓ | 1-123-075-00 Ⓔ | 1-123-071-00 Ⓕ | – | – | – |

| CAP. (μF) | 100 VOLT. | 160 VOLT. | 250 VOLT. | 350 VOLT. |
|---|---|---|---|---|
| | PART No. | PART No. | PART No. | PART No. |
| 0.47 | – | – | – | – |
| 1.0 | 1-123-249-00 Ⓐ | 1-123-252-00 Ⓐ | 1-123-003-00 Ⓑ | 1-121-168-00 Ⓑ |
| 2.2 | 1-123-250-00 Ⓐ | 1-123-026-00 Ⓑ | – | 1-123-028-00 Ⓑ |
| 3.3 | 1-121-995-00 Ⓐ | – | 1-123-004-00 Ⓑ | 1-123-006-00 Ⓒ |
| 4.7 | 1-123-255-00 Ⓐ | 1-121-246-00 Ⓑ | 1-121-759-00 Ⓑ | 1-123-007-00 Ⓓ |
| 10 | 1-121-126-00 Ⓑ | 1-121-999-00 Ⓑ | 1-123-254-00 Ⓒ | 1-123-008-00 Ⓓ |
| 22 | 1-121-996-00 Ⓒ | 1-123-253-00 Ⓒ | 1-123-005-00 Ⓓ | 1-123-022-00 Ⓓ |
| 33 | 1-121-997-00 Ⓒ | 1-121-757-00 Ⓒ | – | – |
| 47 | 1-123-251-00 Ⓒ | 1-121-919-00 Ⓒ | – | – |
| 100 | 1-123-084-00 Ⓔ | – | – | – |

## CERAMIC CAPACITORS Ⓐ

| CAP. (pF) | RATING 50 VOLT. PART No. | CAP. (pF) | 50 VOLT. PART No. | CAP. (pF) | 50 VOLT. PART No. | CAP. (μF) | 50 VOLT. PART No. |
|---|---|---|---|---|---|---|---|
| 0.5 | 1-101-837-00 | 22 | 1-102-959-00 | 150 | 1-101-361-00 | 0.001 | 1-102-074-00 |
| 0.75 | 1-101-586-00 | 24 | 1-102-960-00 | 160 | 1-101-367-00 | 0.0012 | 1-102-118-00 |
| 1.0 | 1-102-934-00 | 27 | 1-102-961-00 | 180 | 1-102-976-00 | 0.0015 | 1-102-119-00 |
| 1.5 | 1-101-576-00 | 30 | 1-102-962-00 | 200 | 1-102-977-00 | 0.0018 | 1-102-120-00 |
| 2.0 | 1-102-935-00 | 33 | 1-102-963-00 | 220 | 1-102-978-00 | 0.0022 | 1-102-121-00 |
| 3 | 1-102-936-00 | 36 | 1-102-964-00 | 240 | 1-102-979-00 | 0.0027 | 1-102-122-00 |
| 4 | 1-102-937-00 | 39 | 1-102-965-00 | 270 | 1-102-980-00 | 0.0033 | 1-102-123-00 |
| 5 | 1-102-942-00 | 43 | 1-102-966-00 | 300 | 1-102-981-00 | 0.0039 | 1-102-124-00 |
| 6 | 1-102-943-00 | 47 | 1-101-880-00 | 330 | 1-102-820-00 | 0.0047 | 1-102-125-00 |
| 7 | 1-102-944-00 | 51 | 1-101-882-00 | 360 | 1-102-821-00 | 0.0056 | 1-102-126-00 |
| 8 | 1-102-945-00 | 56 | 1-101-884-00 | 390 | 1-102-822-00 | 0.0068 | 1-102-127-00 |
| 9 | 1-102-946-00 | 62 | 1-101-886-00 | 430 | 1-102-823-00 | 0.0082 | 1-102-128-00 |
| 10 | 1-102-947-00 | 68 | 1-101-888-00 | 470 | 1-102-824-00 | 0.01 | 1-102-129-00 |
| 11 | 1-102-948-00 | 75 | 1-101-890-00 | 510 | 1-101-059-00 | 0.022 | 1-101-005-00 |
| 12 | 1-102-949-00 | 82 | 1-102-971-00 | 560 | 1-102-115-00 | 0.047 | 1-101-006-00 |
| 13 | 1-102-950-00 | 91 | 1-102-972-00 | 680 | 1-102-116-00 | | |
| 15 | 1-102-951-00 | 100 | 1-102-973-00 | 820 | 1-102-117-00 | | |
| 16 | 1-102-952-00 | 110 | 1-102-815-00 | | | | |
| 18 | 1-102-953-00 | 120 | 1-102-816-00 | | | | |
| 20 | 1-102-958-00 | 130 | 1-101-081-00 | | | | |

0.001μF = 1,000pF

## CERAMIC (SEMICONDUCTOR) CAPACITORS Ⓐ

| CAP. (μF) | RATING → : Use the high voltage rated one. 25 VOLT. PART No. | 50 VOLT. PART No. | CAP. (μF) | 25 VOLT. PART No. | 50 VOLT. PART No. |
|---|---|---|---|---|---|
| 0.001 | → | 1-161-039-00 | 0.018 | 1-161-016-00 | 1-161-054-00 |
| 0.0012 | → | 1-161-040-00 | 0.022 | 1-161-017-00 | 1-161-055-00 |
| 0.0015 | | 1-161-041-00 | 0.027 | 1-161-018-00 | 1-161-056-00 |
| 0.0018 | | 1-161-042-00 | 0.033 | 1-161-019-00 | 1-161-057-00 |
| 0.0022 | | 1-161-043-00 | 0.039 | 1-161-010-00 | 1-161-058-00 |
| 0.0027 | → | 1-161-044-00 | 0.047 | 1-161-021-00 | 1-161-059-00 |
| 0.0033 | → | 1-161-045-00 | 0.056 | → | 1-161-060-00 |
| 0.0039 | → | 1-161-046-00 | 0.068 | → | 1-161-061-00 |
| 0.0047 | → | 1-161-047-00 | 0.082 | 1-161-024-00 | 1-161-062-00 |
| 0.0056 | → | 1-161-048-00 | 0.1 | 1-161-025-00 | 1-161-063-00 |
| 0.0068 | → | 1-161-049-00 | | | |
| 0.0082 | 1-161-012-00 | 1-161-050-00 | | | |
| 0.01 | 1-161-013-00 | 1-161-051-00 | | | |
| 0.012 | → | 1-161-052-00 | | | |
| 0.015 | 1-161-015-00 | 1-161-053-00 | | | |

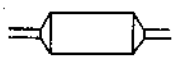
## MYLAR CAPACITORS Ⓐ

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

| CAP. (μF) | RATING 50 VOLT. PART No. | 100 VOLT. PART No. | 200 VOLT. PART No. | CAP. (μF) | 50 VOLT. PART No. | 100 VOLT. PART No. | 200 VOLT. PART No. | CAP. (μF) | 50 VOLT. PART No. | 100 VOLT. PART No. | 200 VOLT. PART No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.001 | 1-108-227-00 | 1-108-365-00 | 1-108-409-00 | 0.01 | 1-108-239-00 | 1-108-377-00 | 1-108-421-00 | 0.1 | 1-108-251-00 | 1-108-389-00 | 1-108-433-00 |
| 0.0012 | 1-108-351-00 | 1-108-366-00 | 1-108-410-00 | 0.012 | 1-108-357-00 | 1-108-378-00 | 1-108-422-00 | 0.12 | 1-108-363-00 | 1-108-390-00 | 1-108-434-00 |
| 0.0015 | 1-108-228-00 | 1-108-367-00 | 1-108-411-00 | 0.015 | 1-108-240-00 | 1-108-379-00 | 1-108-423-00 | 0.15 | 1-108-252-00 | 1-108-391-00 | 1-108-435-00 |
| 0.0018 | 1-108-352-00 | 1-108-368-00 | 1-108-412-00 | 0.018 | 1-108-358-00 | 1-108-380-00 | 1-108-424-00 | 0.18 | 1-108-364-00 | 1-108-392-00 | 1-108-436-00 |
| 0.0022 | 1-108-230-00 | 1-108-369-00 | 1-108-413-00 | 0.022 | 1-108-242-00 | 1-108-381-00 | 1-108-425-00 | 0.22 | 1-108-254-00 | 1-108-393-00 | 1-108-437-00 |
| 0.0027 | 1-108-353-00 | 1-108-370-00 | 1-108-414-00 | 0.027 | 1-108-359-00 | 1-108-382-00 | 1-108-426-00 | 0.27 | 1-108-854-00 | – | – |
| 0.0033 | 1-108-232-00 | 1-108-371-00 | 1-108-415-00 | 0.033 | 1-108-244-00 | 1-108-383-00 | 1-108-427-00 | 0.33 | 1-108-855-00 | – | – |
| 0.0039 | 1-108-354-00 | 1-108-372-00 | 1-108-416-00 | 0.039 | 1-108-360-00 | 1-108-384-00 | 1-108-428-00 | 0.39 | 1-108-856-00 | – | – |
| 0.0047 | 1-108-234-00 | 1-108-373-00 | 1-108-417-00 | 0.047 | 1-108-246-00 | 1-108-385-00 | 1-108-429-00 | 0.47 | 1-108-857-00 | – | – |
| 0.0056 | 1-108-355-00 | 1-108-374-00 | 1-108-418-00 | 0.056 | 1-108-361-00 | 1-108-386-00 | 1-108-430-00 | | | | |
| 0.0068 | 1-108-237-00 | 1-108-375-00 | 1-108-419-00 | 0.068 | 1-108-249-00 | 1-108-387-00 | 1-108-431-00 | | | | |
| 0.0082 | 1-108-356-00 | 1-108-376-00 | 1-108-420-00 | 0.082 | 1-108-362-00 | 1-108-388-00 | 1-108-432-00 | | | | |

## TANTALUM CAPACITORS

| CAP. (μF) | RATING → : Use the high voltage rated one. 3.15 VOLT. PART No. | 6.3 VOLT. PART No. | 10 VOLT. PART No. | 16 VOLT. PART No. | 20 VOLT. PART No. | 25 VOLT. PART No. | 35 VOLT. PART No. |
|---|---|---|---|---|---|---|---|
| 0.01 | | | | | → | → | 1-131-396-00 Ⓑ |
| 0.015 | | | | | | → | 1-131-397-00 Ⓑ |
| 0.022 | | | | | | → | 1-131-398-00 Ⓑ |
| 0.033 | | | | | | → | 1-131-399-00 Ⓑ |
| 0.047 | | | | | | → | 1-131-400-00 Ⓑ |
| 0.068 | | | | | → | → | 1-131-401-00 Ⓑ |
| 0.1 | | | | | → | → | 1-131-402-00 Ⓑ |
| 0.15 | | | | | → | → | 1-131-403-00 Ⓑ |
| 0.22 | | | | | → | → | 1-131-404-00 Ⓑ |
| 0.33 | | | | | → | 1-131-409-00 Ⓑ | 1-131-405-00 Ⓑ |
| 0.47 | – | – | – | – | 1-131-412-00 Ⓑ | → | 1-131-406-00 Ⓑ |
| 0.68 | – | – | – | 1-131-415-00 Ⓑ | → | 1-131-410-00 Ⓑ | 1-131-407-00 Ⓑ |
| 1.0 | – | – | 1-131-418-00 Ⓑ | – | 1-131-413-00 Ⓑ | → | 1-131-408-00 Ⓑ |
| 1.5 | – | 1-131-421-00 Ⓑ | – | 1-131-416-00 Ⓑ | → | 1-131-411-00 Ⓑ | 1-131-348-00 Ⓑ |
| 2.2 | 1-131-424-00 Ⓑ | – | 1-131-419-00 Ⓑ | – | 1-131-414-00 Ⓑ | 1-131-355-00 Ⓑ | 1-131-349-00 Ⓑ |
| 3.3 | – | 1-131-422-00 Ⓑ | – | 1-131-417-00 Ⓑ | 1-131-362-00 Ⓑ | 1-131-356-00 Ⓑ | 1-131-350-00 Ⓑ |
| 4.7 | 1-131-425-00 Ⓑ | – | 1-131-420-00 Ⓑ | 1-131-369-00 Ⓑ | 1-131-363-00 Ⓑ | 1-131-357-00 Ⓑ | 1-131-351-00 Ⓒ |
| 6.8 | – | 1-131-423-00 Ⓑ | 1-131-376-00 Ⓑ | 1-131-370-00 Ⓑ | 1-131-364-00 Ⓑ | 1-131-358-00 Ⓒ | 1-131-352-00 Ⓒ |
| 10 | 1-131-426-00 Ⓑ | 1-131-383-00 Ⓑ | 1-131-377-00 Ⓑ | 1-131-371-00 Ⓑ | 1-131-365-00 Ⓒ | 1-131-359-00 Ⓒ | 1-131-353-00 Ⓓ |
| 15 | 1-131-390-00 Ⓑ | 1-131-384-00 Ⓑ | 1-131-378-00 Ⓑ | 1-131-372-00 Ⓑ | 1-131-366-00 Ⓒ | 1-131-360-00 Ⓓ | – |
| 22 | 1-131-391-00 Ⓑ | 1-131-385-00 Ⓑ | 1-131-379-00 Ⓒ | 1-131-373-00 Ⓒ | 1-131-367-00 Ⓓ | | |
| 33 | 1-131-392-00 Ⓑ | 1-131-386-00 Ⓒ | 1-131-380-00 Ⓒ | 1-131-374-00 Ⓓ | | | |
| 47 | 1-131-393-00 Ⓒ | 1-131-387-00 Ⓒ | 1-131-381-00 Ⓓ | – | | | |
| 68 | 1-131-394-00 Ⓑ | 1-131-388-00 Ⓒ | – | – | | | |
| 100 | 1-131-395-00 Ⓓ | – | – | – | | | |



## TANTALUM CAPACITORS

| CAP. (μF) | RATING 3 VOLT. PART No. | 6.3 VOLT. PART No. | 10 VOLT. PART No. | 16 VOLT. PART No. | 20 VOLT. PART No. | 35 VOLT. PART No. |
|---|---|---|---|---|---|---|
| 0.033 | | | | | | 1-131-273-00 Ⓔ |
| 0.047 | | | | | | 1-131-274-00 Ⓔ |
| 0.068 | | | | | | 1-131-275-00 Ⓔ |
| 0.1 | | | | | | 1-131-276-00 Ⓓ |
| 0.15 | | | | | | 1-131-277-00 Ⓓ |
| 0.22 | | | – | – | 1-131-262-00 Ⓓ | 1-131-278-00 Ⓓ |
| 0.33 | | | – | – | 1-131-263-00 Ⓓ | 1-131-279-00 Ⓓ |
| 0.47 | | | 1-131-169-00 Ⓓ | – | 1-131-264-00 Ⓓ | 1-131-280-00 Ⓓ |
| 0.68 | | | – | 1-131-258-00 Ⓓ | 1-131-265-00 Ⓓ | 1-131-281-00 Ⓓ |
| 1.0 | | | 1-131-254-00 Ⓓ | – | 1-131-266-00 Ⓓ | 1-131-282-00 Ⓓ |
| 1.5 | | 1-131-250-00 Ⓓ | – | – | 1-131-267-00 Ⓓ | 1-131-283-00 Ⓔ |
| 2.2 | | – | – | 1-131-259-00 Ⓓ | 1-131-268-00 Ⓓ | 1-131-284-00 Ⓔ |
| 3.3 | | – | 1-131-255-00 Ⓓ | – | 1-131-269-00 Ⓓ | – |
| 4.7 | | 1-131-251-00 Ⓔ | 1-131-171-00 Ⓓ | – | 1-131-270-00 Ⓓ | – |
| 6.8 | | – | – | 1-131-260-00 Ⓓ | 1-131-271-00 Ⓔ | – |
| 10 | – | – | 1-131-256-00 Ⓓ | – | 1-131-272-00 Ⓔ | – |
| 15 | – | 1-131-252-00 Ⓓ | – | 1-131-261-00 Ⓔ | | |
| 22 | – | – | 1-131-257-00 Ⓔ | – | | |
| 33 | 1-131-176-00 Ⓓ | 1-131-253-00 Ⓔ | 1-131-173-00 Ⓒ | – | | |
| 47 | 1-131-288-00 Ⓕ | 1-131-174-00 Ⓓ | – | – | | |
| 100 | 1-131-177-00 Ⓓ | | | | | |

**Sony Corporation**