## Cobra 45XLR Service Manual

# SERVICE MANUAL

# 45XLR

# IN-DASH 40 CHANNEL CB 2 WAY MOBILE TRANSCEIVER WITH AM/FM/FM STEREO RADIO

## SPECIFICATIONS

### ■ GENERAL

| | | | |
|---|---|---|---|
| Power Supply Voltage: | DC 13.8V NOM.(11V ~ 16V), Negative ground | | |
| Maximum Current Drain: | Radio: 1.5A<br>CB Transceiver: 2.0A | | |
| Power Output: | 2 x 4 Watts (across 4 ohm load, @13.8V) | | |
| Speaker Impedance: | 4 ~ 8 ohms | | |
| Semiconductors: | Transistors; 23<br>FET's; 3<br>IC's; 8<br>Diodes including LED lamp & LED Numeric Display; 25 | | |
| Dimensions: | Width: | 7-3/32" | (180 mm) |
| | Height: | 2-1/16" | ( 52 mm) |
| | Depth: | 7-3/32" | (180 mm) |
| Weight: | Approx. | 3.3 lbs | (1.5 kg) |

### ■ AM RADIO SECTION

| | |
|---|---|
| Frequency Range: | 535 ~ 1605 kHz |
| Intermediate Frequency: | 455 kHz |
| Sensitivity: | Less than 20 μV |

### ■ FM RADIO SECTION

| | |
|---|---|
| Frequency Range: | 88 ~108 MHz |
| Intermediate Frequency: | 10.7 MHz |
| Maximum Sensitivity: | Less than 8 μV 18dB |
| Usable Sensitivity: | Less than 6.3μV for 30dB S+N/N |
| Stereo Separation: | More than 26 dB |

### ■ CB RECEIVER

| | |
|---|---|
| Channels: | 40 |
| Frequency Range: | 26.965 – 27.405 MHz |
| Intermediate Frequency: | 1st : 10.695 MHz<br>2nd: 455 kHz |
| Sensitivity: | Less than 0.5μV |
| Selectivity: | 5 kHz @ –6dB |
| Adjacent Channel Rejection: | More than 45 dB |
| Image Rejection: | More than 60 dB |
| Squelch Sensitivity: | Less than 1.4 μ V 0.5μV |

### ■ CB TRANSMITTER

| | |
|---|---|
| Channels: | 40 |
| Frequency Range: | 26.965 ~ 27.405 MHz |
| Frequency Tolerance: | ± 0.005% |
| RF Output Power: | 3.8 Watts |
| Modulation Capability: | 80 ~ 100% |
| Spurious Suppression: | More than 60 dB |
| Antenna Impedance: | 50 ohms, unbalanced |

★ Specifications subject to change without notice.

Cobra Communications Product Group
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## CONTENTS



## FEATURES

- In-dash 40 channel CB mobile transceiver with AM/FM-MPX stereo radio.
- Adjustable shaft spacing.
- DC 12V, Negative ground.
- For in-dash installation.

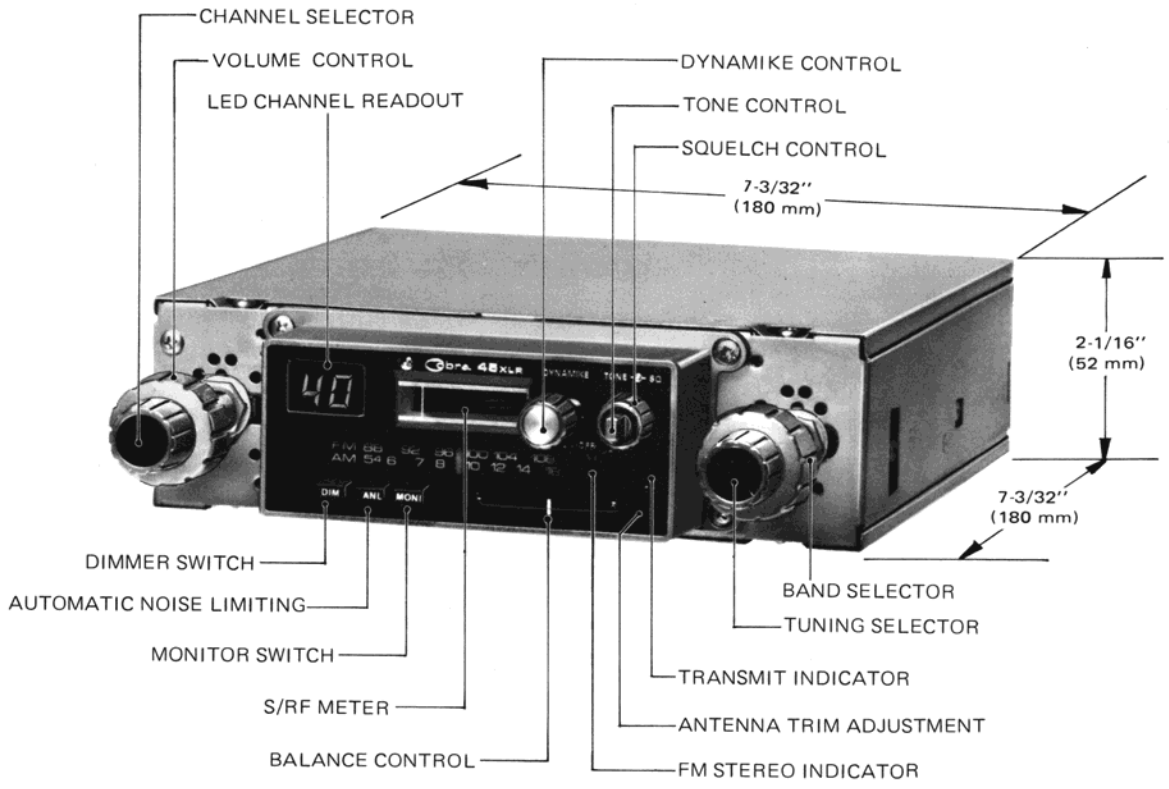
[RADIO SECTION]

- Sensitive superheterodyne system with IC's and ceramic filters.
- A.F.C. (Automatic Frequency Control) for FM reception.
- A.G.C. (Automatic Gain Control) for AM reception.
- DX/LOCAL Switch for FM reception.

[CB TRANSCEIVER SECTION]

- Double-conversion superheterodyne system receiver.
- P.L.L. (Phase Locked Loop) synthesized 40 channel selection.
- A.N.L. (Automatic Noise Limiter)
- Variable squelch control.
- Over-modulation protection circuit.
- S/RF Meter.
- CB monitoring reception.
- Coaxial type antenna connector.
- Press-to-talk switch with microphone.
- A.G.C. (Automatic Gain Control).

## DIMENSIONS AND LOCATION OF CONTROLS

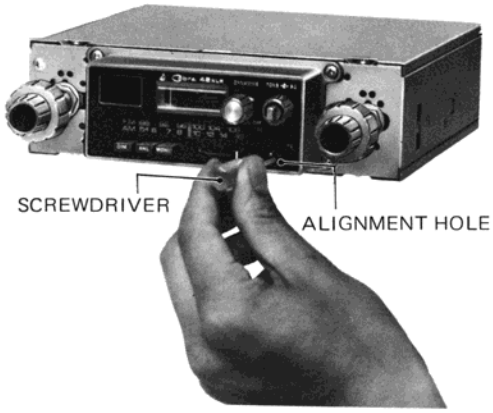


- Shaft Spacing: 5-5/8" (143 mm) ~ 6-5/16"(160 mm)

| Seating hole number | Shaft spacing dimension |
|---|---|
| 2 | 5-5/8" (143 mm) |
| 3 | 5-13/16" (148 mm) |
| 4 | 6" (152 mm) |
| 5 | 6-5/16" (160 mm) |

## ANTENNA TRIMMER ALIGNMENT

The antenna trimmer alignment can be made without removing any parts.
To adjust the antenna trimmer CV51, tune in a weak station near 1400 kHz.
Insert a small screwdriver through the escutcheon as shown below, and turn clockwise or counterclockwise for maximum output.

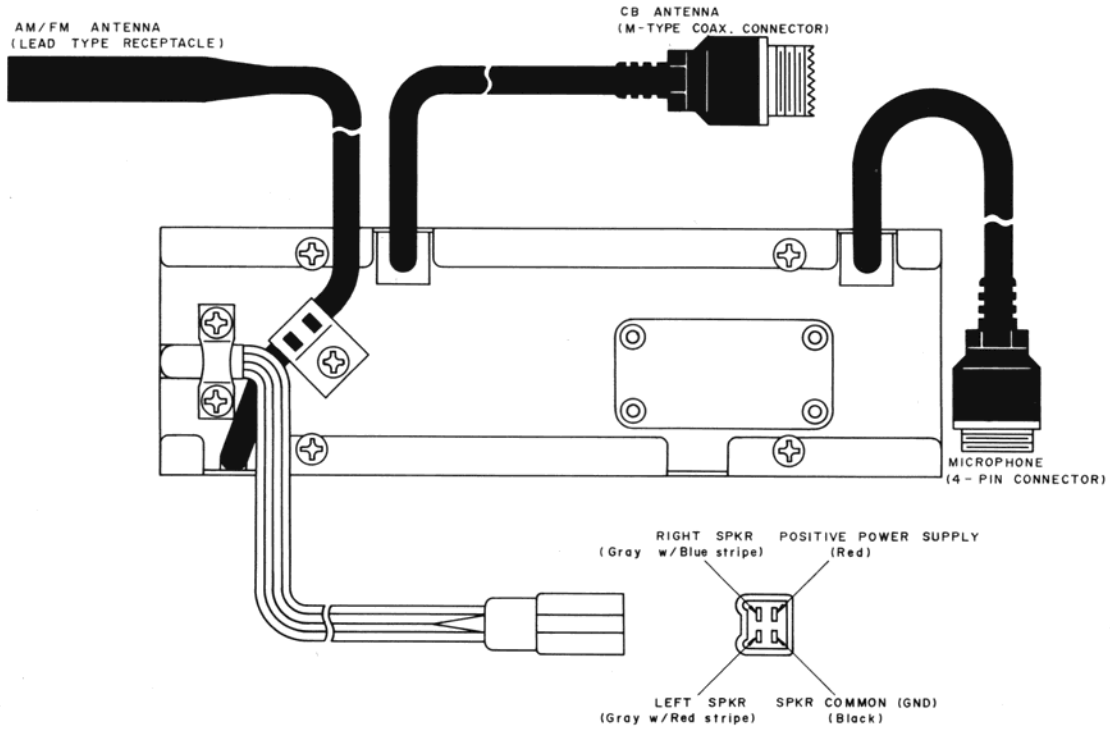



## SERVICING NOTICES

In U.S.A.
FCC Rules and Regulations, Part 95, require that only those persons possessing a valid First or Second Class Radio Telephone Operator's License are permitted to make repairs or adjustments in the transmitter section of a citizens band transceiver.

In CANADA
Please consult General Radio Service Handbook from Department of Communication or Information Canada.

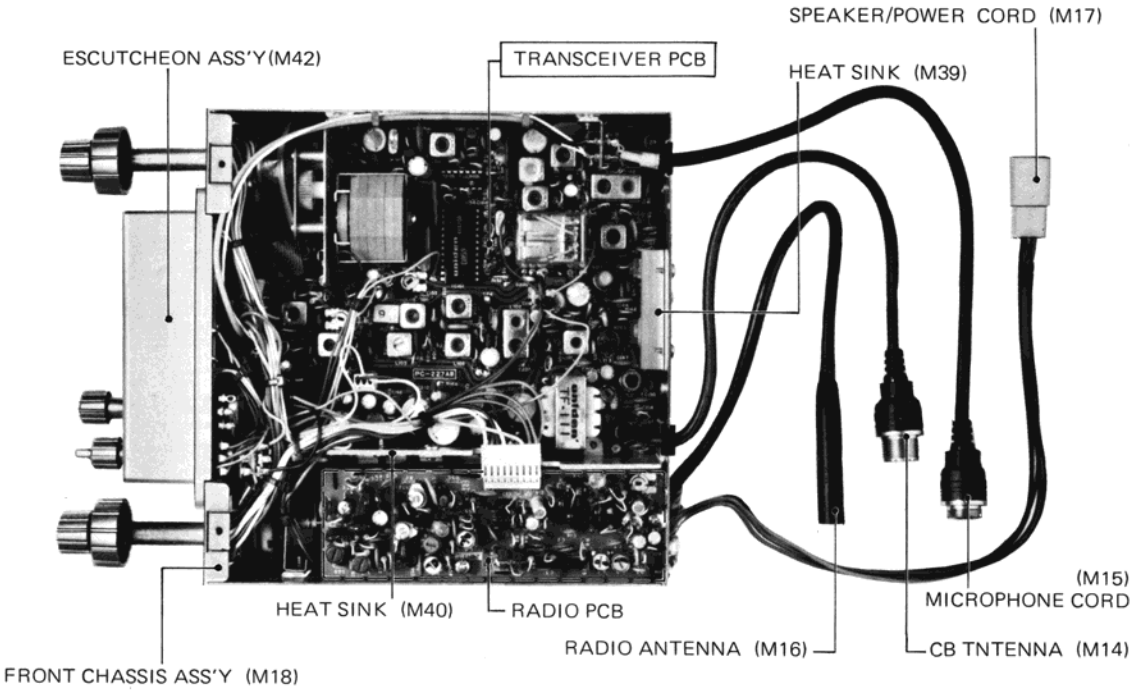
## CONNECTIONS DIAGRAM



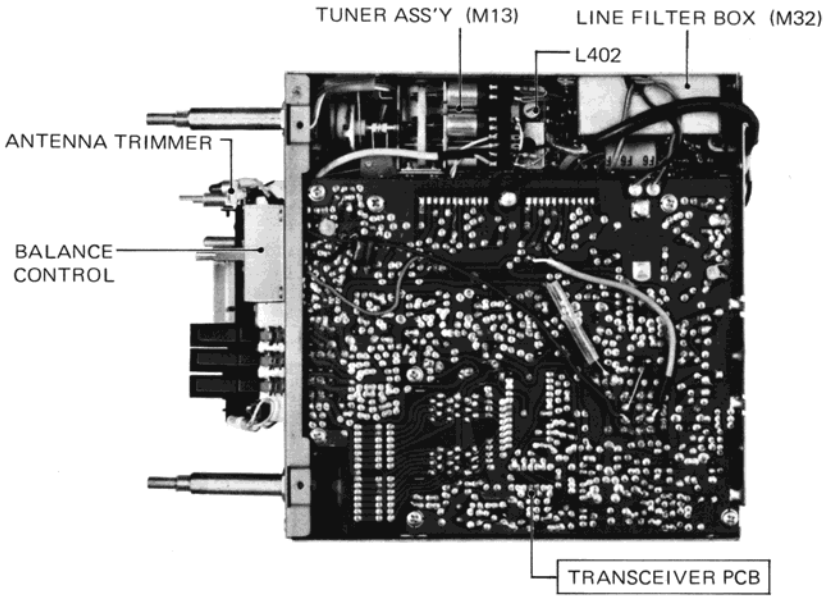
## PARTS LOCATION

- Numbers in (  ) are indicated REF. NO. in the REPLACEMENT PART LIST.
- Refer to EXPLODED VIEW in page **26, 27.**

## TOP VIEW, WITH COVER REMOVED



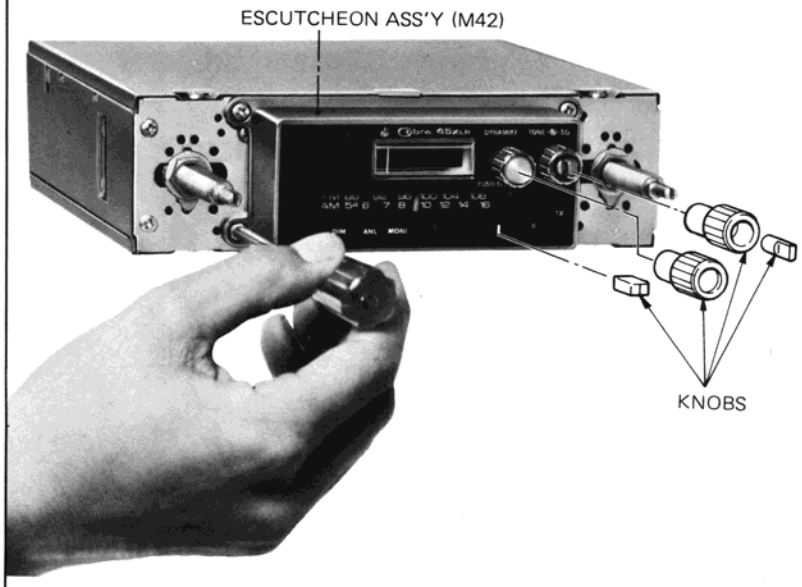

## BOTTOM VIEW, WITH COVER REMOVED



## DISASSEMBLY INSTRUCTION

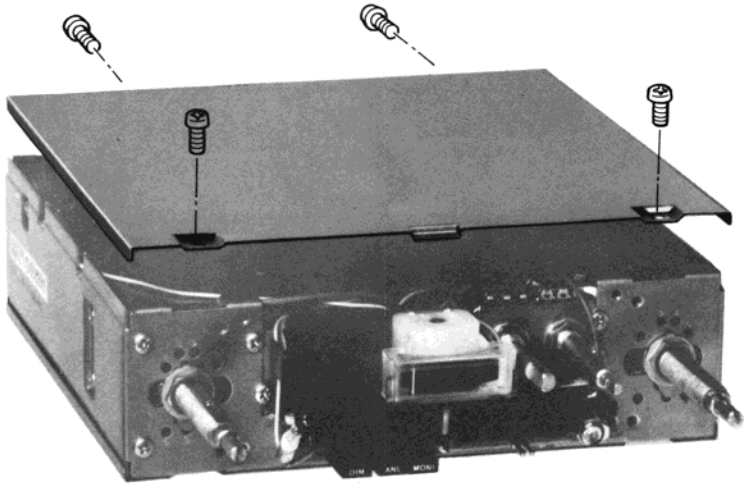
### ESCUTCHEON ASS'Y

■ The escutcheon ass'y can be taken off by removing four screws, after pulling out the knobs.



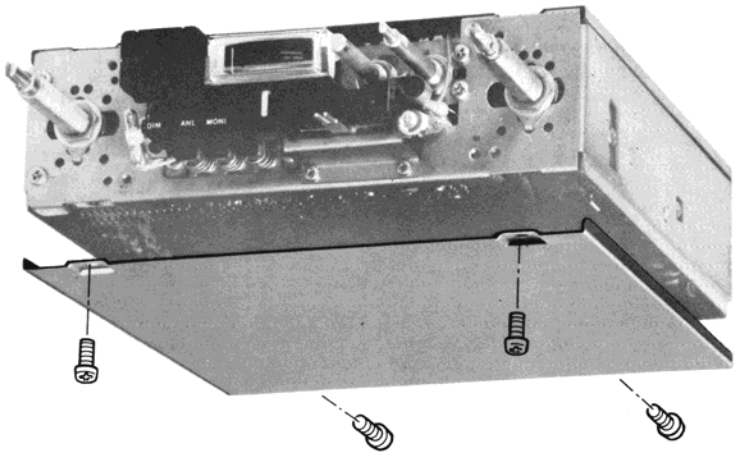

### TOP COVER

■ The top cover can be taken off by removing four screws.



## BOTTOM COVER

■ The bottom cover can be taken off by removing four screws.



## ALIGNMENT PROCEDURES (RADIO SECTION)

### ■ MEASURING INSTRUMENTS REQUIRED

- Signal Generator: AM 450~1700 kHz, 400 Hz, 30% modulation.
  FM 10.7 MHz, 86~110 MHz, 400 Hz, 22.5 kHz deviation.
- Sweep Generator: 10.7 MHz
- Frequency Counter: Must be able to measure 19 kHz.
- Dummy Antenna: Refer to Fig. 1 and Fig. 2
- Test Probe: Refer to Fig. 6
- Indicator: Output meter (AC voltmeter or VTVM)
  CRT Oscilloscope
- Specified Power Source Voltage: DC 13.8V

### AM (IF & RF) ALIGNMENT

- Set VOLUME Control at maximum, and TONE control in the maximum treble position.
- Set BAND Selector switch in AM.
- Set BALANCE Control in its midway position.
- Set ST-BY Switch in OFF position.
- Connect the signal generator to the radio antenna receptacle through the antenna pad. (Fig. 1)
- Keep the signal generator output low enough to prevent overloading the circuit.

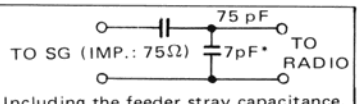


Fig. 1 Antenna Pad for AM

| STEP | GENERATOR FREQUENCY | DIAL SETTING | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|---|
| 1~4 | 455 kHz | Low frequency end stop. | Output meter across 4 ohm load. | L5 (yellow)<br>L6 (white)<br>L7 (green)<br>L8 (green) | Adjust for maximum. |
| 5 | 505 kHz | Low frequency end stop. | " | L3 (red) | " |
| 6 | 1650 kHz | High frequency end stop. | " | CV53 | " |
| 7 8 | 1400 kHz | Tune to signal. | " | CV52<br>CV51 | " |
| 9 | Repeat steps 5 and 6 until no further increase. | | | | |

NOTE: After the radio is installed in car, and antenna extented to desired height, tune in a weak station around 1400 kHz and adjust antenna trimmer (CV51) for maximum output.

### FM IF ALIGNMENT USING SWEEP GENERATOR

- Set BAND Selector switch in FM.
- Set VOLUME Control at minimum, and TONE Control in the maximum treble position.
- Connect the Sweep generator to the radio antenna receptacle through the antenna pad. (Fig. 2)

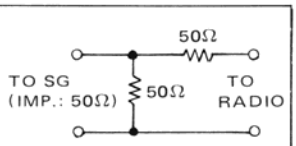


Fig. 2 Antenna Pad for FM

| STEP | GENERATOR FREQUENCY | DIAL SETTING | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|---|
| 10~12 | 10.7 MHz (Sweep) | Point of non-interference | Vert. amp. of oscilloscope between test point TP6 and ground. | *L402 (orange) on Front-od<br>L1 (blue)<br>L2 (pink) | Adjust for maximum amplitude and proper linearity. (Refer Note & Fig. 3) |
| 13 | Repeat steps 10 to 12 several times. | | | | |

*See 'BOTTOM VIEW" page 2

NOTE:
1. FM Sweep Generator should be definitely required for FM IF Alignment, because ceramic filters are used in IF circuit. 3 kinds of ceramic filters are used and they are different in their center frequencies as shown below:
2. If the ceramic filters except red colored are used, 10.7 MHz marker will not appear at the center of "S" curve (See Fig. 4 or 5). In these cases, disregard 10.7 MHz marker.
3. The color-code of ceramic filters used is different according to the production lots, but the same color-coded ceramic filters should be replaced as one pair on the individual units.

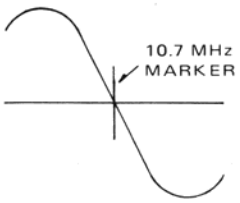



Fig. 3 RED

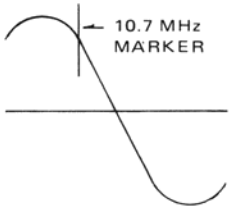



Fig. 4 ORANGE

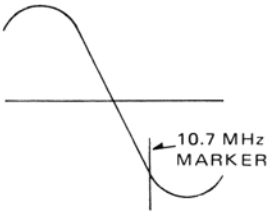



Fig. 5 BLUE

## FM RF ALIGNMENT

- Adjustable components for FM RF Alignment are located under tuner coils, therefore it is impossible to align FM RF section without disassemble FM front-end tuner printed circuit board from the tuner assembly.
  Replace whole tuner assembly instead of FM RF alignment.

## MULTIPLEX ALIGNMENT

- Set BAND Selector switch in FM.
- Connect Frequency Counter between the test point TP7 and the ground through the test probe. (Fig. 6)
- Adjust RV1 to obtain 19.20 kHz indication on the frequency counter.

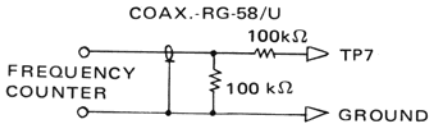
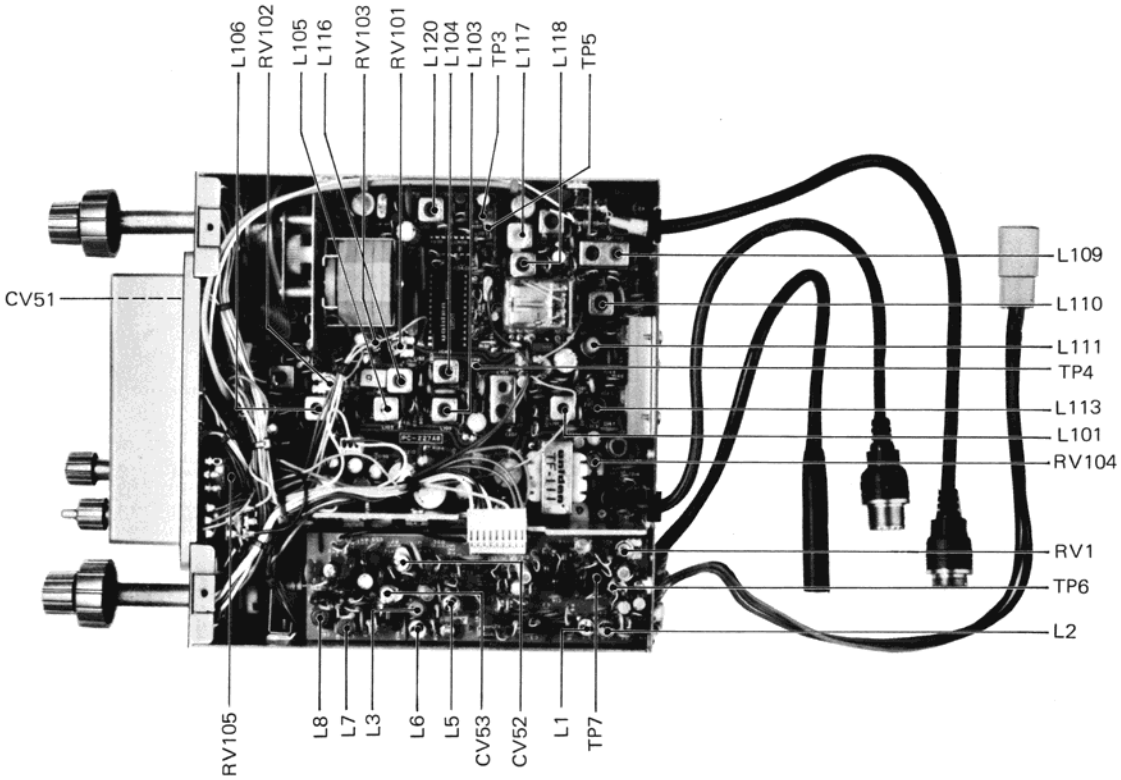



Fig. 6



## ALIGNMENT PROCEDURES
## (CB TRANSCEIVER SECTION)

### ■ MEASURING INSTRUMENTS REQUIRED

- Frequency Counter: Must be able to determine transmitter frequency of each channel within 0.005% accuracy.
- Signal Generator: AM 26.960~27.410 MHz, 1000 Hz, 30% modulation.
- Audio Generator: 1000 Hz, including attenuator.
- Dummy Load: Refer to Fig. 7 and Fig. 8
- Indicator: RF Wattmeter (5W, 50Ω, 27 MHz)
  DC Voltmeter
  AF Output Meter (AC Voltmeter or VTVM)
  Oscilloscope
  RF Voltmeter
- Specified Power Source Voltage: DC 13.8V

### OSCILLATOR ALIGNMENT

- Set BAND Selector switch in CB.
- Set CHANNEL Selector switch to Channel 19.

| STEP | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|
| 1 | RF Voltmeter between test point TP3 and ground. | L120 | Adjust to 90% position of the maximum indication by rotating slug core counter clockwise from the maximum position. |
| 2 | DC Voltmeter between test point TP5 and ground. | L117 | Adjust for 2.5V ± 0V indication. |
| 3 | RF Voltmeter between test point TP4 and ground. | L118 | Adjust for maximum. Indication should be $1V_{p\text{-}p} \pm 0.3V_{p\text{-}p}$. |

### TRANSMETTER ALIGNMENT

- Set BAND Selector switch in CB.
- Set CHANNEL Selector switch to Channel 19.
- Short terminals ③ and ④ on the MICROPHONE CONNECTOR (Refer to Fig. 8).
- Connect the dummy load (Fig. 7) to the CB ANTENNA Connector.

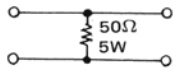



Fig. 7 Dummy Load for RF Output

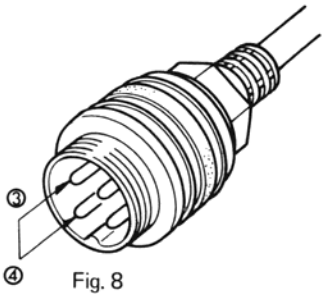



Fig. 8

| STEP | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|
| 4<br>5<br>6<br>7 | RF output meter across dummy load. | L109<br>L110<br>L111<br>L113 | Adjust for maximum. |
| 8 | Repeat steps 4 thru 7 until no further increase. | | |
| 9 | If the output power becomes in excess of FCC Regulation (4W), decrease the output power by rotating clockwise the slug of L113. | | |
| 10 | Frequency counter across dummy load thru proper attenuator. | L120 | Adjust for correct transmitting frequency. |
| 11 | Check the transmitting frequency deviations on all channels. | | |
| 12 | Built-in RF meter. | RV104 | Adjust for proper indication. (between 3.5 and 4) |

## MODULATION LIMITER ALIGNMENT

- Set BAND Selector switch in CB.
- Set CHANNEL Selector switch to Channel 19.
- Connect the dummy load (Fig. 7) to the CB ANTENNA Connector.
- Connect the audio signal generator to terminals ① and ② on the MICROPHONE connector thru the 600Ω pad. (Refer to Fig. 9 and Fig. 10)
- Short terminals ③ and ④ on the MICROPHONE connector. (Refer to Fig. 10)
- Connect the AF Voltmeter across the 600Ω pad.

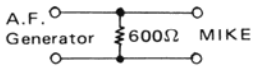
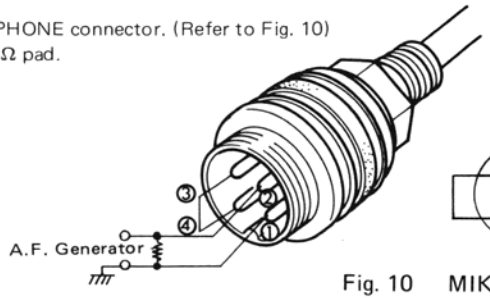



Fig. 9 600Ω Pad



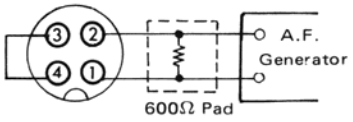
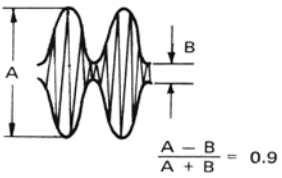




Fig. 10 MIKE CONNECTOR Connection

| STEP | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|
| 13 | Oscilloscope across dummy load thru proper attenuator. | RV105 | Adjust for around 90% modulation  |



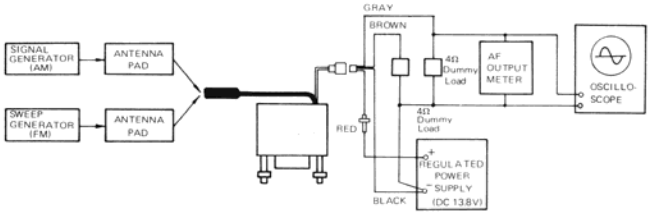
## RECEIVER ALIGNMENT

- Set BAND Selector switch in CB.
- Set CHANNEL Selector switch to Channel 19.
- Do not connect MICROPHONE or any wire to the MICROPHONE connector.
- Connect the signal generator to the CB ANTENNA Connector with 1000 Hz, 30% modulation.
- Set VOLUME Control for 0.5W audio output.
- Set SQUELCH Control in the fully counter-clockwise position.
- Set TONE Control in the maximum treble position.
- Set BALANCE Control in its midway position.
- Set ANL Switch in OFF position.
- Connect 4Ω dummy load between right speaker output lead and ground.

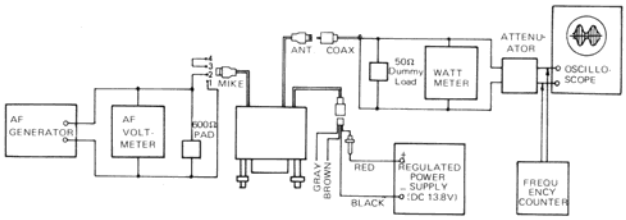
| STEP | GENERATOR FREQUENCY | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|
| 14<br>15<br>16<br>17<br>18<br>19 | CH 19 (27.185 MHz) | AF Output meter across dummy load. | L101<br>L103<br>L104<br>L105<br>L116<br>L106 | Ajust for maximum. |
| 20 | Set RF input level to 0.35 μV. Set VOLUME Control in the maximum position. | Ditto. | RV101 | Adjust for 0.5W audio output. |
| 21 | Set RF input level to 300 μV. Set VOLUME Control in the maximum position. Set SQUELCH Control in the fully clockwise position. | Ditto. | RV103 | Ditto. |
| 22 | Set RF input level to 100 μV. | Built-in S-meter. | RV102 | Adjust for S-9 indication. |

## ALIGNMENT CONNECTIONS

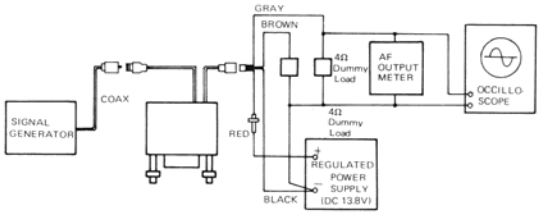
### FOR RADIO SECTION




### FOR CB TRANSMITTER SECTION

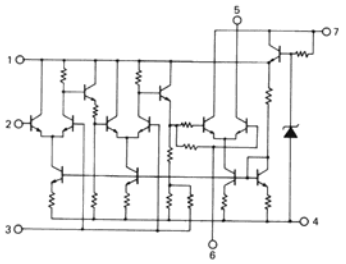


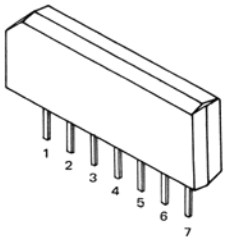

### FOR CB RECEIVER SECTION



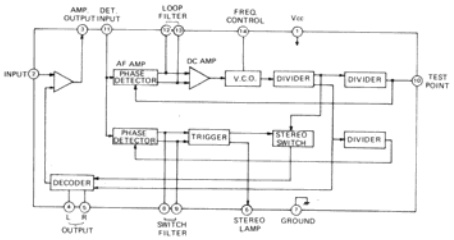

## IC EQUIVALENT CIRCUITS

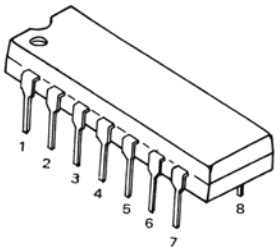
### IC1 μPC577H



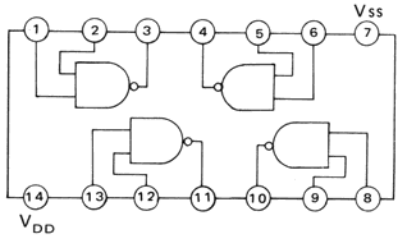

### IC2 KB4409



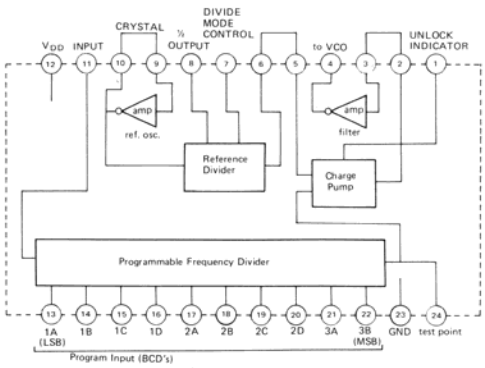



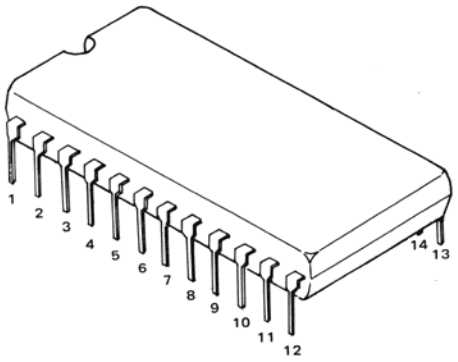

IC2
IC102

### IC102 MB84011

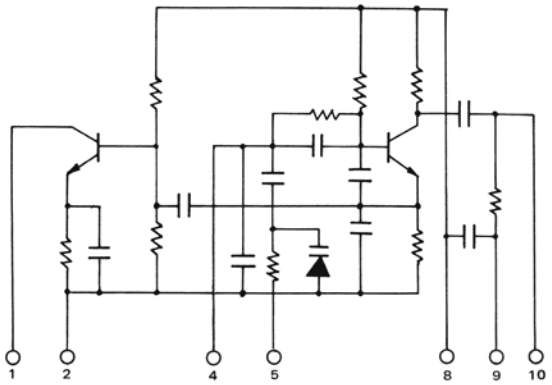


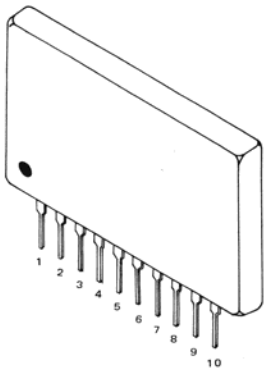
## IC101 $\mu$PD858C



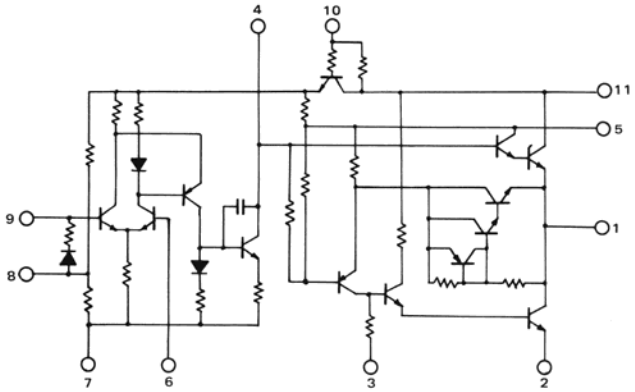



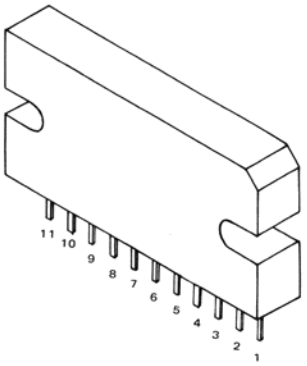

## IC103 UHIC-004



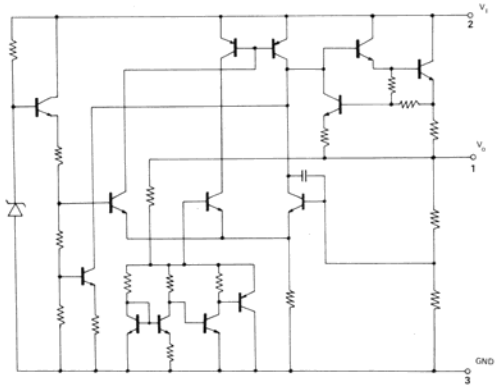



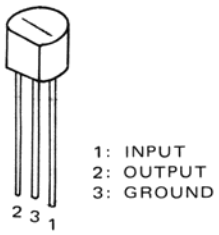

## IC104, IC105 AN315



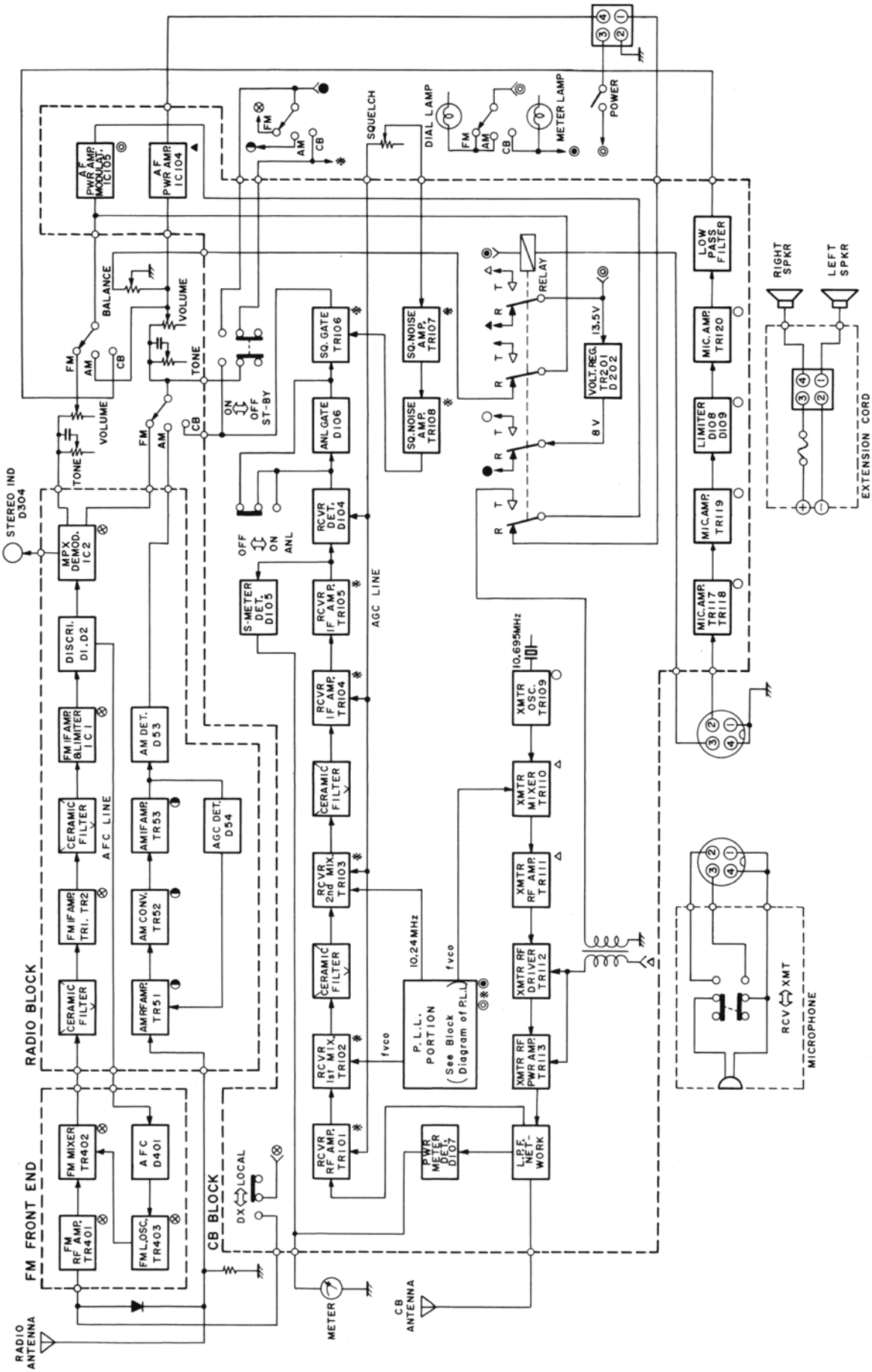

## IC201 78L05



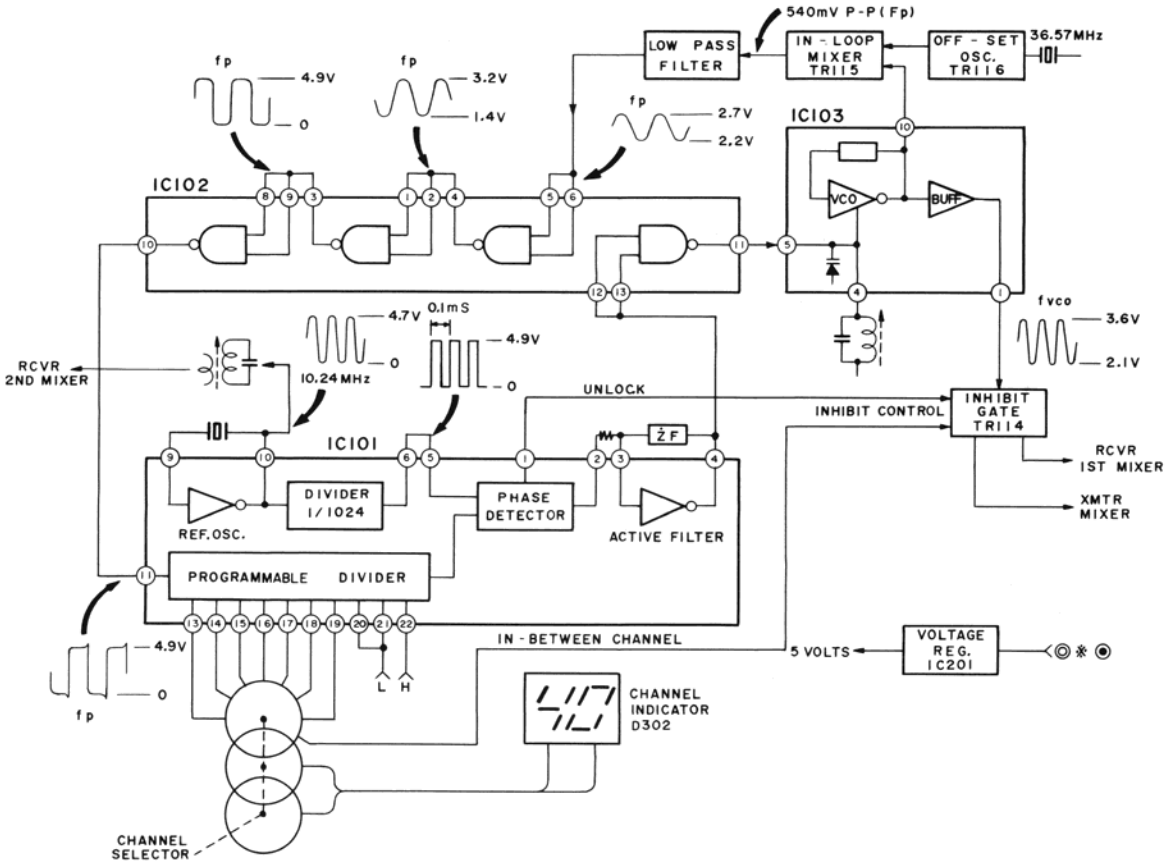




1: INPUT
2: OUTPUT
3: GROUND

# FUNCTIONAL BLOCK DIAGRAM



## BLOCK DIAGRAM OF P.L.L.




## CIRCUIT DESCRIPTION

### CIRCUIT FOR DETERMINING FREQUENCY OF CB TRANSCEIVER

1. **Receiving Frequency** (Refer to FUNCTIONAL BLOCK DIAGRAM)

   Received signal is amplified by RF Amplifier TR101 (2SC1047) and is applied to the gate of Receiver 1st Mixer TR102 (2SK55).

   1st local oscillator frequency, **Fvco**, which is produced by the P.L.L. Local Oscillator circuit is applied to the source of TR102.

   The difference of these frequencies makes the 1st intermediate frequency of 10.695 MHz as follows;

   $Fvco - Fr = 10.695$ (MHz)

   **Fr**: Frequency of received signal.

   The difference between the 1st i.f. of 10.695 MHz and the 2nd local frequency of 10.24 MHz produced by IC101 ($\mu$PD858C) makes the 2nd intermediate frequency of 455 kHz.

2. **Transmitting Frequency** (Refer to FUNCTIONAL BLOCK DIAGRAM)

   Transmitting frequency, **Ft** is the output of the Transmitter Mixer TR110 (3SK45).

   One of the input signals of TR110 is the 1st local frequency, **Fvco**, which is produced by the P.L.L. Local Oscillator circuit, and the other is the transmitter local frequency of 10.695 MHz produced by TR109 (2SC829).

   The difference of these frequencies makes the transmitting frequency as follows;

   $Ft = Fvco - 10.695$ (MHz)

3. **Transmitter Local Frequency** (Refer to FUNCTIONAL BLOCK DIAGRAM)

Transmitter local frequency of 10.695 MHz is produced by the Transmitter Oscillator TR109 (2SC829) and the output frequency is determined by the quartz crystal X1.

4. **P.L.L. Local Oscillator** (Refer to BLOCK DIAGRAM of P.L.L.)

**Fvco**, the output frequency of the VCO (or Voltage Controlled Oscillator) IC103 (UHIC-004), is fed into one of the input terminals of the In-loop Mixer TR115 (3SK45).
**Fos**, the output frequency of the Off-set Oscillator, TR116 (2SC829), of which frequency is 36.570 MHz, is fed into the another input terminal of TR115.
These frequencies are mixed by TR115 and the difference between **Fvco** and **Fos** makes the input frequency to the Programmable Frequency Divider.
The input frequency to the Programmable Divider, **Fp**, is calculated as follows;

$$Fp = Fvco - Fos\ (36.570\ MHz)$$

**Fp** is then fed into the Programmable Divider in the P.L.L. IC, IC101 ($\mu$PD858C) through the interface gates in IC102 (MB84011) and is divided by N by the Programmable Divider.

The frequency of 10.240 MHz produced by the Reference Frequency Oscillator in IC101 is divided by 1024 by the Reference Frequency Divider in IC101 and resultant frequency, **Fref** is:

$$Fref = 10.240\ MHz \div 1024 = 10\ kHz$$

The output frequency of the Programmable Divider is compared with **Fref** in the Phase Detector in IC101, in other words, these frequencies are phase detected by the Phase Detector, and **Fp** divided by N becomes equal to **Fref** (10 kHz) when the phase locked loop is under locked condition.
Therefore, **Fvco** is determined by the following formula, relating **Fos** and the divide ratio N.

$$Fvco = Fos\ (36.570\ MHz) + 10 \times N\ (kHz)$$

**Fvco** is changeable at the increment of 10 kHz by varing the program divide ratio, N.
For example, the divide ratio, N is programmed to 109 at the channel No. 1, therefore **Fvco** is calculated as follows:

$$Fvco = 36570 + 10 \times 109 = 36570 + 1090$$
$$= 37660\ (kHz)$$

In the same manner, **Fvco** for channel No. 1 through No. 40 is determined as shown in Table 1.

5. **Channel Selection Program** (Refer Table 1)

The divide ratio of the Programmable Frequency Divider in IC101 is determined by supplied voltages to the program input terminals, Pin No. 13 through Pin No. 22 of the IC101.
The program input voltages for Pin No. 13 through Pin No. 19 are supplied from channel selector switch S1, and the inputs for Pin No. 20 and No. 22 are fixed to "LOW" level and the input for Pin No. 21 is fixed to "HIGH" level.

The function of the program input terminals is as follows;

| Pin No.: | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|
| Function: | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 3A | 3B |
| Significance Number: | 1 | 2 | 4 | 8 | 10 | 20 | 40 | 80 | 100 | 200 |

*each program input effects when the input voltage is in "HIGH" level.

The divide ratio, N of the Programmable Divider is given by the sum of the significance numbers which are effective by supplying "HIGH" level input. For example, when channel selector switch is set to channel No. 1, the input levels of 1A, 1D and 3A are in "HIGH" level, and the input levels of other terminals are in "LOW" level, therefore, divide ratio, N is determined as follows;

$$N = 1 + 8 + 100 = 109$$

In the same manner, divide ratio, N for channel No. 1 through No. 40 is determined as shown in Table 1.

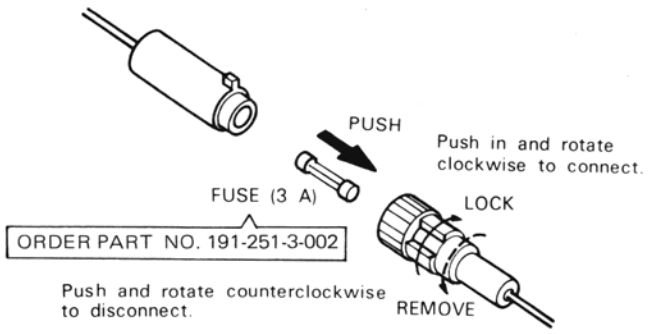
## TABLE 1. FREQUENCY & PROGRAM CHART

| Channel Number | RCV or XMT Frequency | Fvco | Fp | Divide Ratio | Program Input Level | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 3A | 3B |
| 1 | 26.965 | 37.660 | 1.090 | 109 | H | L | L | H | L | L | L | L | H | L |
| 2 | 26.975 | 37.670 | 1.100 | 110 | L | L | L | L | H | L | L | L | H | L |
| 3 | 26.985 | 37.680 | 1.110 | 111 | H | L | L | L | H | L | L | L | H | L |
| 4 | 27.005 | 37.700 | 1.130 | 113 | H | H | L | L | H | L | L | L | H | L |
| 5 | 27.015 | 37.710 | 1.140 | 114 | L | L | H | L | H | L | L | L | H | L |
| 6 | 27.025 | 37.720 | 1.150 | 115 | H | L | H | L | H | L | L | L | H | L |
| 7 | 27.035 | 37.730 | 1.160 | 116 | L | H | H | L | H | L | L | L | H | L |
| 8 | 27.055 | 37.750 | 1.180 | 118 | L | L | L | H | H | L | L | L | H | L |
| 9 | 27.065 | 37.760 | 1.190 | 119 | H | L | L | H | H | L | L | L | H | L |
| 10 | 27.075 | 37.770 | 1.200 | 120 | L | L | L | L | L | H | L | L | H | L |
| 11 | 27.085 | 37.780 | 1.210 | 121 | H | L | L | L | L | H | L | L | H | L |
| 12 | 27.105 | 37.800 | 1.230 | 123 | H | H | L | L | L | H | L | L | H | L |
| 13 | 27.115 | 37.810 | 1.240 | 124 | L | L | H | L | L | H | L | L | H | L |
| 14 | 27.125 | 37.820 | 1.250 | 125 | H | L | H | L | L | H | L | L | H | L |
| 15 | 27.135 | 37.830 | 1.260 | 126 | L | H | H | L | L | H | L | L | H | L |
| 16 | 27.155 | 37.850 | 1.280 | 128 | L | L | L | H | L | H | L | L | H | L |
| 17 | 27.165 | 37.860 | 1.290 | 129 | H | L | L | H | L | H | L | L | H | L |
| 18 | 27.175 | 37.870 | 1.300 | 130 | L | L | L | L | H | H | L | L | H | L |
| 19 | 27.185 | 37.880 | 1.310 | 131 | H | L | L | L | H | H | L | L | H | L |
| 20 | 27.205 | 37.900 | 1.330 | 133 | H | H | L | L | H | H | L | L | H | L |
| 21 | 27.215 | 37.910 | 1.340 | 134 | L | L | H | L | H | H | L | L | H | L |
| 22 | 27.225 | 37.920 | 1.350 | 135 | H | L | H | L | H | H | L | L | H | L |
| 23 | 27.255 | 37.950 | 1.380 | 138 | L | L | L | H | H | H | L | L | H | L |
| 24 | 27.235 | 37.930 | 1.360 | 136 | L | H | H | L | H | H | L | L | H | L |
| 25 | 27.245 | 37.940 | 1.370 | 137 | H | H | H | L | H | H | L | L | H | L |
| 26 | 27.265 | 37.960 | 1.390 | 139 | H | L | L | H | H | H | L | L | H | L |
| 27 | 27.275 | 37.970 | 1.400 | 140 | L | L | L | L | L | L | H | L | H | L |
| 28 | 27.285 | 37.980 | 1.410 | 141 | H | L | L | L | L | L | H | L | H | L |
| 29 | 27.295 | 37.990 | 1.420 | 142 | L | H | L | L | L | L | H | L | H | L |
| 30 | 27.305 | 38.000 | 1.430 | 143 | H | H | L | L | L | L | H | L | H | L |
| 31 | 27.310 | 38.010 | 1.440 | 144 | L | L | H | L | L | L | H | L | H | L |
| 32 | 27.320 | 38.020 | 1.450 | 145 | H | L | H | L | L | L | H | L | H | L |
| 33 | 27.330 | 38.030 | 1.460 | 146 | L | H | H | L | L | L | H | L | H | L |
| 34 | 27.340 | 38.040 | 1.470 | 147 | H | H | H | L | L | L | H | L | H | L |
| 35 | 27.350 | 38.050 | 1.480 | 148 | L | L | L | H | L | L | H | L | H | L |
| 36 | 27.360 | 38.060 | 1.490 | 149 | H | L | L | H | L | L | H | L | H | L |
| 37 | 27.370 | 38.070 | 1.500 | 150 | L | L | L | L | H | L | H | L | H | L |
| 38 | 27.380 | 38.080 | 1.510 | 151 | H | L | L | L | H | L | H | L | H | L |
| 39 | 27.390 | 38.090 | 1.520 | 152 | L | H | L | L | H | L | H | L | H | L |
| 40 | 27.405 | 38.100 | 1.530 | 153 | H | H | L | L | H | L | H | L | H | L |

1: Frequencies are in MHz.
2: 1A is the least significant bit, and 3B is the most significant bit.
3: H means in "HIGH" level, and L means in "LOW" level.

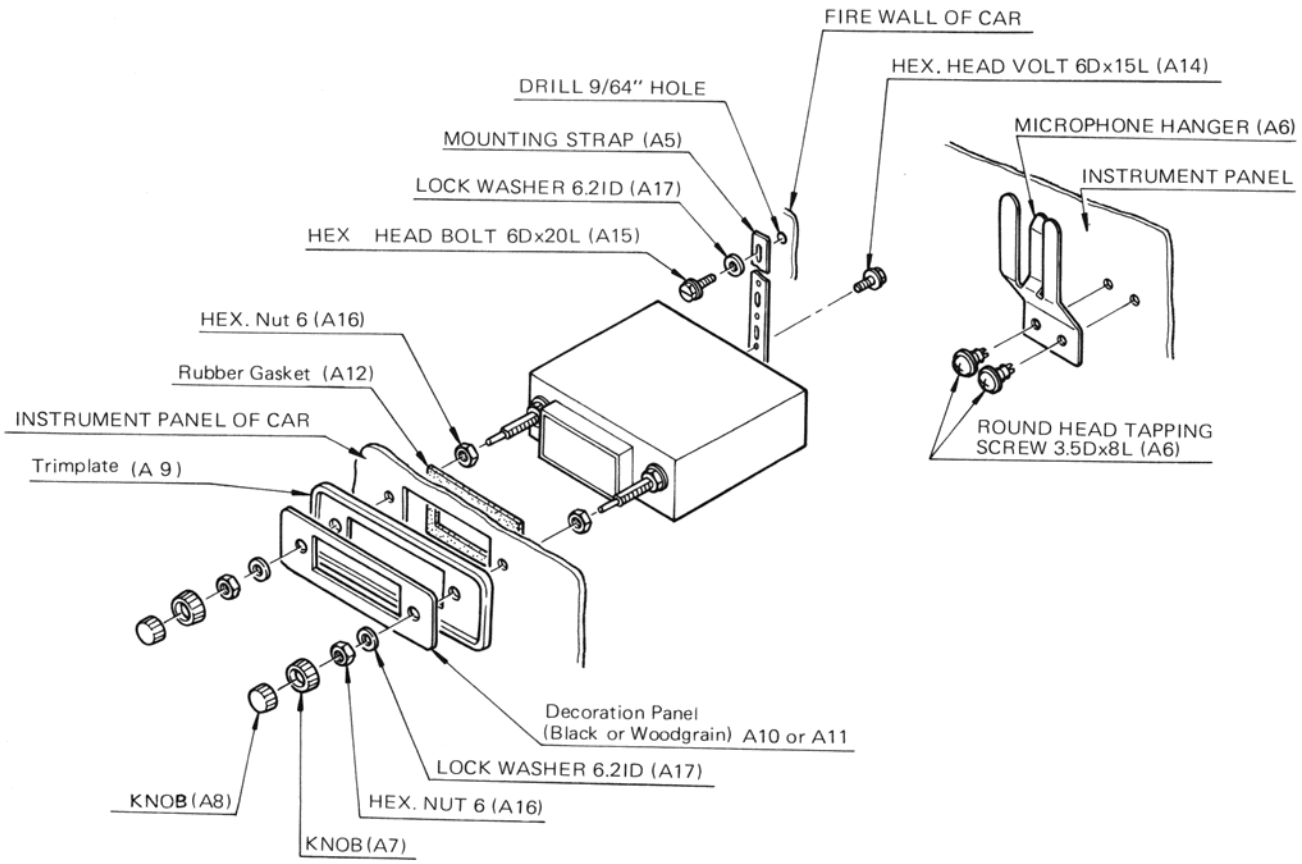
## NORMAL CARE AND MAINTENANCE

- Be sure to use a 3 A fuse for replacement. Use of a larger fuse may not protect the unit from excessive current drain.




- The vehicle can be the cause of much noise interference. Since the receiver section of this set is very sensitive, it will pick up even the smallest noise signals and amplify them. Any noise that you hear in this set is almost totally from external sources. The receiver itself is exceptionally quiet. Steady high noise levels cannot be totally eliminated by the international Automatic Noise Limiter circuit. Noise problems cannot be solved internally (in the transceiver); they must be solved at the source of the noise.
  Several noise suppressor kits are available from local dealers which include all necessary parts and instructions.
- To clean Ithe outside of the set (escutcheon and chassis) wipe off dust with a soft cloth.
  Never use benzine, thinner or any other type of solvent.

## INSTALLATION INSTRUCTIONS

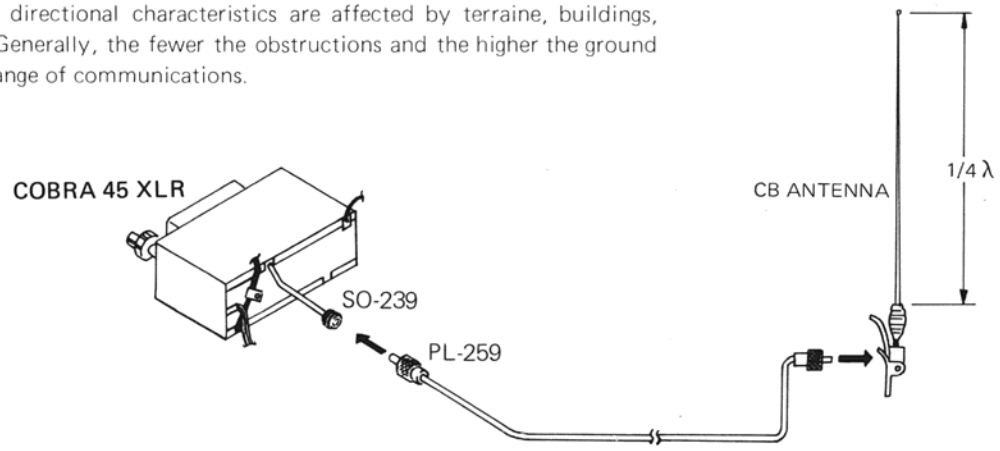


## CB ANTENNA SYSTEM

It is very important that you use the correct type of transmission line. It should be of the coaxial type and should have an impedance equal to the antenna impedance.

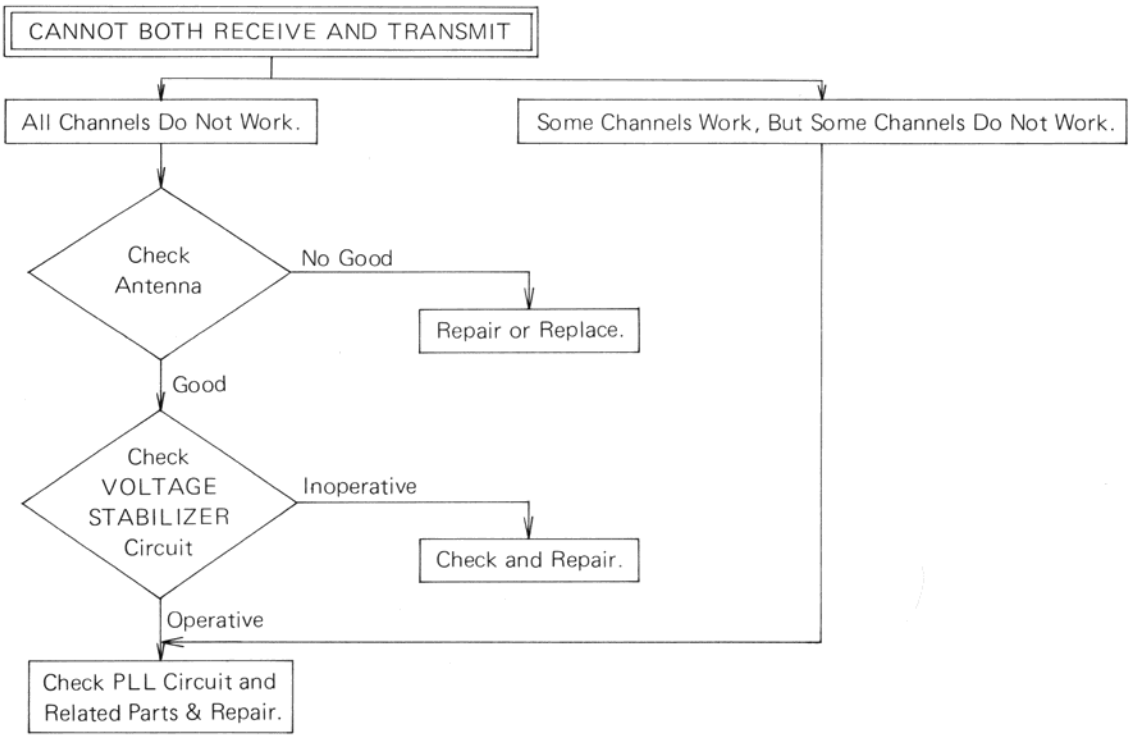
Since the 45 XLR is designed to operate most efficiently into a 50 Ω load, it is best to use a 50 Ω coaxial cable. There are many different types of antennas designed for CB mobile use. Selection of one should be made on the basis of the type of installation, or car mount desired and the antenna specifications. A vertical whip normally has a 360° radiation pattern; and it can be mounted on the rear bumper, rear fender, or trunk lid.

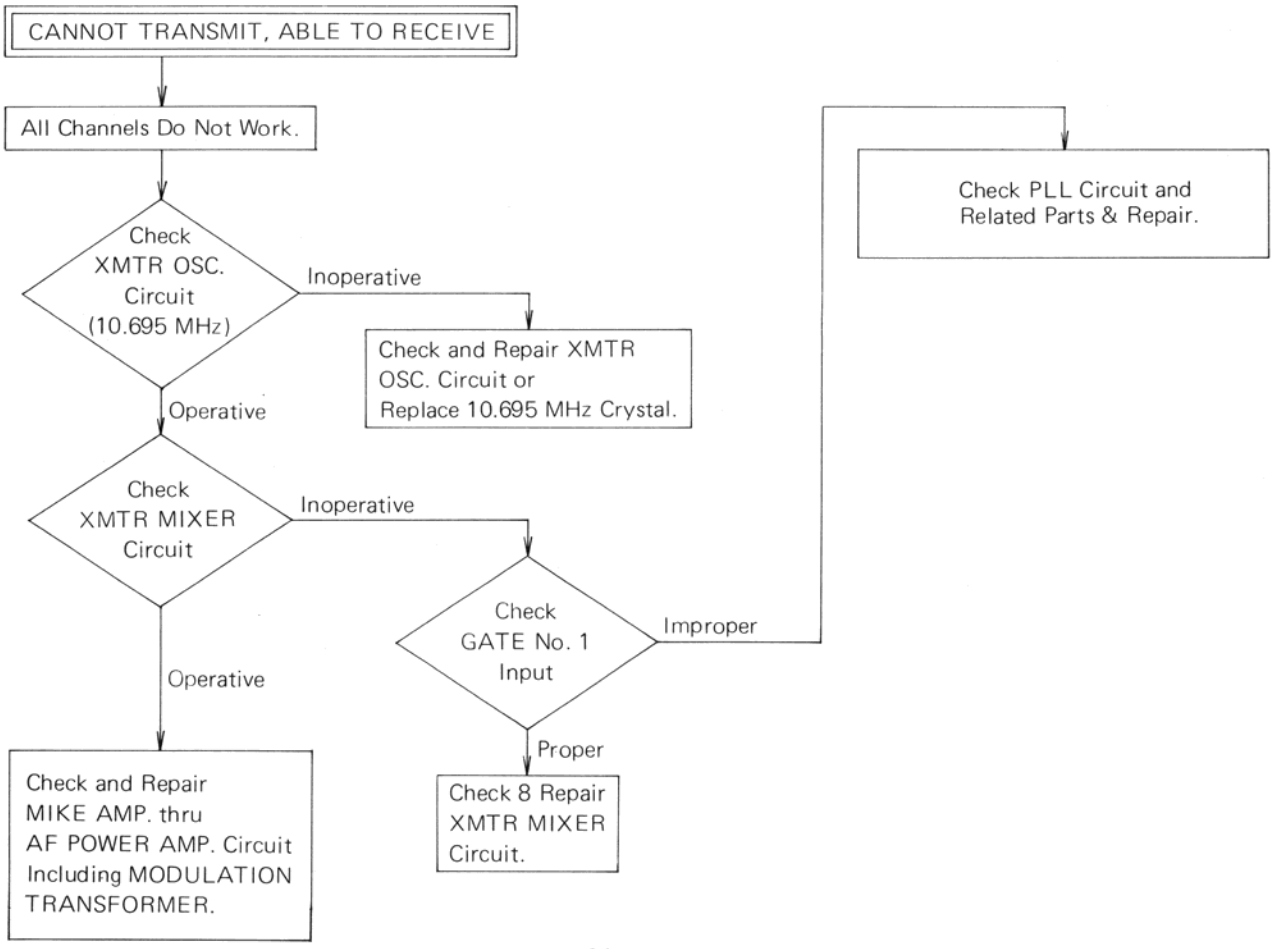
Generally, it is better to mount the antenna on the left side of the car than on the right side, to minimize contact with trees and other low-clearance obstructions. Generally, the better the antenna, the better the communications over greater distances. A full 1/4 wavelength antenna is usually more efficient than the shorter versions equipped with a loading coil to electrically make up for the shorter length. However, the antennas can provide adequate service, and be less proneto damage from contact with external obstructions. Some short antennas can be more centrally located on the car. The car body acts as a ground plane and tends to shift the radiation pattern to favor a diagonal line, running from the right front of the car to the left rear, for an antenna mounted on the right front or left rear portion of the car. For an antenna mounted on the left front or right rear portion of the car, the pattern will follow the diagonal line from the left front to the right rear of the car. For a more circular pattern, the antenna would have to be centrally mounted on the car. Effective antenna height, clearance and directional characteristics are affected by terraine, buildings, tunnels, bridges, etc. Generally, the fewer the obstructions and the higher the ground level, the greater the range of communications.

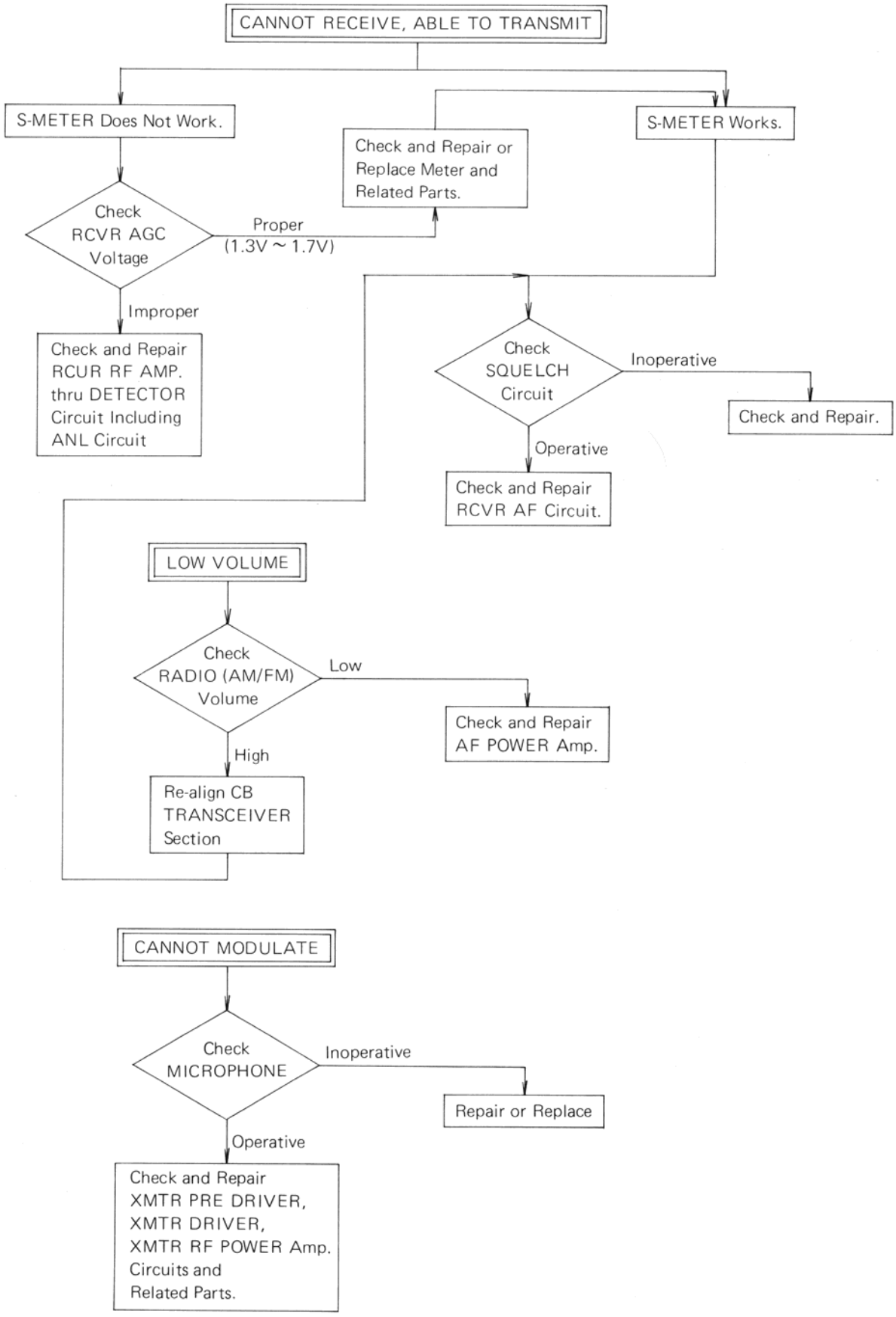


## TROUBLE SHOOTING GUIDE

### FOR CB TRANSCEIVER SECTION




CANNOT RECEIVE, ABLE TO TRANSMIT
S-METER Does Not Work.
S-METER Works.
Check and Repair or Replace Meter and Related Parts.
Check RCVR AGC Voltage
Proper (1.3V ~ 1.7V)
Improper
Check and Repair RCUR RF AMP. thru DETECTOR Circuit Including ANL Circuit
Check SQUELCH Circuit
Inoperative
Check and Repair.
Operative
Check and Repair RCVR AF Circuit.
LOW VOLUME
Check RADIO (AM/FM) Volume
Low
Check and Repair AF POWER Amp.
High
Re-align CB TRANSCEIVER Section
CANNOT MODULATE
Check MICROPHONE
Inoperative
Repair or Replace
Operative
Check and Repair XMTR PRE DRIVER, XMTR DRIVER, XMTR RF POWER Amp. Circuits and Related Parts.

Replacement Parts List
For COBRA 45XLR

| CIRCUIT SYMBOL | DESCRIPTION | | | PART NO. |
|---|---|---|---|---|
| **INTEGRATED CIRCUIT'S** | | | | |
| IC-101 | μPD858C | | | 307-095-9-004 |
| IC-102 | MB84011μ | | | 307-113-9-001 |
| IC-103 | UHIC-004 | | | 307-113-9-002 |
| IC-201 | NJM78L05A | | | 307-113-9-002 |
| IC-105,104 | AN-315 Audio Power | | | 307-120-9-001 |
| IC-1 | μPC-577-H | | | 307-115-9-001 |
| IC-2 | KB-4409 Stereo Multipler Decoder | | | 307-120-9-002 |
| **FET'S** | | | | |
| TR-102 | 2SK55-D | | | 182-045-9-001 |
| TR-110,115 | 3SK45-B | | | 182-038-9-001 |
| **TRANSISTORS** | | | | |
| TR-101 | 2SC1047-C | NPN, Silicon Signal | | 150-014-9-001 |
| TR-51,52,53,103,105 | 2SC829-B | NPN, Silicon Signal | | 150-006-9-001 |
| TR-1,2,104,109,116 | 2SC829-C | NPN, Silicon Signal | | 176-075-9-003 |
| TR-106,107,108 | 2SC828-Q | NPN, Silicon Signal | | 176-075-9-004 |
| TR-114,118,119,120 | 2SC828-R | NPN, Silicon Signal | | 176-075-9-005 |
| TR-111 | 2SC2076-CB | NPN, Silicon Signal | | 176-060-9-004 |
| TR-112 | 2SC-1846-Q | NPN, Silicon Siganl | | 176-075-9-006 |
| TR-113 | 2SC1975 | NPN, Silicon Signal | | 176-075-9-007 |
| TR-201,202 | 2SC1846-P | NPN, Silicon Signal | | 176-075-9-008 |
| TR-117 | 2SA564-Q | PNP, Silicon Signal | | 177-027-9-001 |
| **DIODES** | | | | |
| D-104,105,107,53,54 | Forming D, | 1N60 | AM Diode | 150-014-9-001 |
| D-1, 2 | Forming D, | 1N60 | P Diode | 150-006-9-001 |
| D-51,52,101,102,103, 203,204,206 | Diode, | 1S2076 | Silicon | 150-067-9-001 |
| D-106,108,109 | Forming D, | 1S2473K | | 151-069-9-001 |
| D-205,301 | Diode, | SRIK-1 | | 151-040-9-003 |
| D-202 | Zener Diode, | CZ-092 | | 152-051-9-001 |
| D-302 | LED | TLR-321 | Channel Display | 158-014-9-001 |
| D-303 | LED | LR0702R | Transmit LED | 151-064-9-003 |
| D-304 | LED | LN25D | Stereo LED | 158-016-9-001 |

| CIRCUIT SYMBOL | DESCRIPTION | | PART NO. |
|---|---|---|---|
| **COILS** | | | |
| L-101 | LA-029 | | 066-023-9-001 |
| L-105 | LA-163 | | 060-022-9-001 |
| L-103 | LA-180 | | 060-024-9-001 |
| L-104 | LA-181 | | 060-024-9-002 |
| L-116 | LA-182 | | 060-024-9-003 |
| L-106 | LA-183 | | 060-024-9-004 |
| L-107 | LA-184 | | 060-024-9-005 |
| L-109 | LA-185 | | 060-024-9-006 |
| L-120 | LA-186 | | 060-024-9-007 |
| L-117 | LA-187 | | 060-024-9-008 |
| L-118 | LA-188 | | 060-024-9-009 |
| L-110 | LA-189 | | 060-024-9-010 |
| L-108 | LA-193 | | 060-024-9-011 |
| L-102 | LA-194 | | 060-024-9-012 |
| L-1 | LB-084 | | 046-019-9-001 |
| L-2 | LB-085 | | 046-019-9-002 |
| L-8,7 | LB-086 | | 046-019-9-003 |
| L-6 | LB-087 | | 046-019-9-004 |
| L-3 | LB-088 | | 046-019-9-005 |
| L-5 | LB-089 | | 046-019-9-006 |
| L-111 | LB-017 | | 044-047-9-001 |
| L-113 | LB-020 | | 044-047-9-002 |
| L-114 | LC-110 | | 041-078-9-001 |
| L-115 | LE-064 | | 041-093-9-001 |
| L-112 | LD-012 | | 044-028-9-003 |
| L-10 | LD-081 | | 041-093-9-002 |
| L-11 | LD-075 | | 041-093-9-003 |
| **INDUCTORS** | | | |
| L-4 | LZ-002 | 4.7μH | 041-093-9-004 |
| L-121 | LZ-002 | 1μH | 041-056-9-002 |
| L-119 | LZ-002 | 100μH | 041-087-9-002 |
| L-124 | LZ-015 | 47mH | 041-093-9-005 |
| L-123 | LZ-015 | 68mH | 041-086-9-004 |
| L- | NOISE SUP. COIL | | 042-026-9-001 |
| **TRANSFORMERS** | | | |
| CH-301 | Choke Trans. | TF-017 | 042-014-9-001 |
| T-1 | Output Trans. | TF-111 | 061-035-9-001 |

| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| **VARIABLE RESISTORS** | | |
| VR-101,105 | Semi Fixed Resistor RV189 100K B | 008-316-9-001 |
| VR-103,104 | Semi Fixed Resistor, RV189 50K B | 008-316-9-002 |
| VR-102 | Semi Fixed Resistor, RV188 20K B | 008-316-9-003 |
| VR-1 | Semi Fixed Resistor, RV189 5K B | 008-316-9-004 |
| VR-3 | Variable Resistor, RV198 | 008-316-9-005 |
| VR-5,S-3 | Variable Resistor, RV199 | 008-316-9-006 |
| VR-4 | Variable Resistor, RV200 | 008-316-9-007 |
| VR-2 | Variable Resistor, RV201 | 008-316-9-008 |
| **RESISTORS** | | |
| R-51 | Carbon Resistor, 10KΩ ⅛W J | 002-108-5-103 |
| R-71 | Carbon Resistor, 470KΩ ⅛W J | 002-108-5-471 |
| R-145 | Carbon Resistor, 1Ω ¼W J | 002-104-5-010 |
| R-144 | Carbon Resistor, 2,2Ω ¼W J | 002-104-5-229 |
| R-164 | Carbon Resistor, 10Ω ¼W J | 002-104-5-100 |
| R-114,182,185 | Carbon Resistor, 68Ω ¼W J | 002-104-5-680 |
| R-142,146,8 | Carbon Resistor, 47Ω ¼W J | 002-104-5-470 |
| R-143,120,204,6,139 165,191 | Carbon Resistor, 100Ω ¼W J | 002-104-5-101 |
| R-1,53,58,104,107,110,116 | Carbon Resistor, 220Ω ¼W J | 002-104-5-221 |
| R-3,101,136,171 | Carbon Resistor, 330Ω ¼W J | 002-104-5-331 |
| R-5,57,59,62,63,187,171 | Carbon Resistor, 470Ω ¼W J | 002-104-5-471 |
| R-119,160,173,180 | Carbon Resistor, 680Ω ¼W J | 002-104-5-681 |
| R-106,109,188 | Carbon Resistor, 820Ω ¼W J | 002-104-5-821 |
| R-4,9,10,16,19,21,22,23 24,54,103,105,115, 150,162,167 | Carbon Resistor, 1KΩ ¼W J | 002-104-5-102 |
| R-166 | Carbon Resistor, 1,5KΩ ¼W J | 002-104-5-152 |
| R-111,161,172,66,181,184 | Carbon Resistor, 2.2KΩ ¼W J | 002-104-5-222 |
| R-57,140 | Carbon Resistor, 2.7KΩ ¼W J | 002-104-5-272 |
| R-108,113,117,155,147,194 | Carbon Resistor, 3.3KΩ ¼W J | 002-104-5-332 |
| R-70 | Carbon Ressitor, 56Ω ¼W J | 002-104-5-560 |
| R-69 | Carbon Resistor, 560Ω ⅛W J | 002-108-5-561 |
| R-17,18 | Carbon Resistor, 3.9KΩ ¼W J | 002-104-5-392 |
| R-65 | Carbon Resistor, 4,7KΩ ¼W J | 002-104-5-472 |
| R-64,69,102,151,174,181 184 | Carbon Resistor, 5.6KΩ ¼W J | 002-104-5-562 |
| R-168 | Carbon Resistor, 6.8KΩ ¼W J | 002-104-5-682 |
| R-13 | Cabron Resistor, 8.2KΩ ¼W J | 002-104-5-822 |
| R-11,12,66,118,130,135 152,153,159,175,177, 202,203,134,193 | Carbon Resistor, 10KΩ ¼W J | 002-104-5-103 |
| R-138 | Carbon Resistor 12KΩ ¼W J | 002-104-5-123 |
| R-121,124,141,20,68,76 | Carbon Resistor, 15KΩ ¼W J | 002-104-5-153 |
| R-154,179,193,205 | Carbon Resistor, 22KΩ ¼W J | 002-104-5-223 |
| R-55 | Carbon Resistor, 18KΩ ¼W J | 002-104-5-183 |
| R-189 | Carbon Resistor, 33KΩ ¼W J | 002-104-5-333 |
| R-183,186 | Carbon Resistor, 39KΩ ¼W J | 002-104-5-393 |

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| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| **RESISTORS (Continued)** | | |
| R-2 | Carbon Resistor, 47KΩ ¼W J | 002-104-5-473 |
| R-122,123,125,127,129, 133,52 | Carbon Resistor, 56KΩ ¼W J | 002-104-5-563 |
| R-178 | Carbon Resistor, 68KΩ ¼W J | 002-104-5-683 |
| R-169 | Carbon Resistor, 82KΩ ¼W J | 002-104-5-823 |
| R-149,176,156,157,158, 190,75 | Carbon Resistor, 100KΩ ¼W J | 002-104-5-104 |
| R-170 | Carbon Resistor, 120KΩ ¼W J | 002-104-5-124 |
| R-137 | Carbon Resistor, 180KΩ ¼W J | 002-104-5-184 |
| R-128,132,15,61 | Carbon Resistor, 220KΩ ¼W J | 002-104-5-224 |
| R-67,163 | Carbon Resistor, 270KΩ ¼W J | 002-104-5-274 |
| R-14,126 | Carbon Resistor, 470KΩ ¼W J | 002-104-5-474 |
| R-201 | Carbon Resistor, 150Ω ½W J | 002-104-5-151 |
| R-148 | Carbon Resistor, 1KΩ ½W J | 002-104-5-102 |
| R-204 | Metalized Resistor, 100Ω 1W J | 013-025-9-001 |
| **CAPACITORS** | | |
| CV-51,52,53 | Trimmer Capacitor CV-021 70P | 028-047-9-001 |
| C-306,307,308,311 312,313 | Feed Through Capacitor, CZ-029,006 1000P | 033-030-9-001 |
| C-11,13 | Tantalum Capacitor, 0.22μF 35V M | 027-026-9-001 |
| C-12 | Tantalum Capacitor, 0.47μF 35V M | 027-026-9-002 |
| C-141 | Tantalum Capacitor, 4.7μF 35V M | 027-026-9-003 |
| C-178 | Tantalum Capacitor, 4.7μF 16V M | 027-026-9-004 |
| C-154,155 | Tantalum Capacitor, 4.7μF 10V M | 027-026-9-005 |
| C-158 | Solid Aluminum Capacitor, 0.22μF 16V M | 022-158-9-001 |
| C-61 | Polystyrol Capacitor, 130pF 125V J | 030-040-9-001 |
| C-16 | Polystyrol Capacitor, 470pF 125V J | 030-040-9-002 |
| C-179 | Electrolytic Capacitor, 0.47μF 50V | 022-157-9-001 |
| C-8,124,128,174,172 | Electrolytic Caoacutir, 1μF 50V | 022-157-9-002 |
| C-169 | Electrolytic Capacitor, 2.2μF 25V | 022-158-9-002 |
| C-5,9,19,20,109,116 | Electrolytic Capacitor, 4.7μF 25V | 022-157-9-003 |
| C-129.130,195,205,206 | Electrolytic Capacitor, 10μF 16V | 022-157-9-004 |
| C-192,202 | Eelctrolytic Capacitor, 33μF 16V | 022-157-9-006 |
| C-168,301,303 | Electrolytic Capacitor, 100μF 16V | 022-157-9-009 |
| C-212,213 | Electrolytic Capacitor, 330μF 16V | 022-158-9-003 |
| C-194,204 | Electrolytic Capacitor, 470μF 16V | 022-157-9-011 |
| C-304 | Electrolytic Capacitor, 1000μF 16V | 022-158-9-004 |

| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| | **CAPACITORS (Continued)** | |
| C-189,199 | Electrolytic Capacitor, 33μF 10V | 022-158-9-005 |
| C-221 | Electrolytic Capacitor, 47μF 10V | ( ) |
| C-25 | Electrolytic Capacitor, 470μF 10V | 022-160-9-001 |
| C-166,171,217 | Electrolytic Capacitor, 100μF 10V | 022-157-9-008 |
| C-52 | Electrolytic Capacitor, 22μF 6.3V | 022-158-9-006 |
| C-188,189 | Electrolytic Capacitor, 100μF 6.3V | 022-158-9-007 |
| C-165 | Electrolytic Capacitor, 470μF 6.3V | 022-158-9-008 |
| C-58,190,191,200,201 | Mylar Capacitor, 0.001μF 50V K | 025-122-9-001 |
| C-10,21,22,57,197,187,125 | Mylar Capacitor, 0.0033μF 50V K | 025-122-9-002 |
| C-23,24. | Mylar Capacitor, 0.0068μF 50V K | 025-122-9-003 |
| C-56,59,184,179,222 | Mylar Capacitor, 0.01μF 50V K | 025-121-9-002 |
| C-17,18,70,112,157,167, 180,186,196,126 | Mylar Capacitor, 0.022μF 50V K | 025-121-9-003 |
| C-173 | Mylar Capacitor, 0.033μF 50V K | 025-121-9-004 |
| C-183,185 | Mylar Capacitor, 0.039μF 50V K | 025-121-9-005 |
| C-15,51,53,66,119 | Mylar Capacitor, 0.047μF 50V K | 025-121-9-006 |
| C-72,181,71 | Mylar Capacitor, 0.068μF 50V K | 025-122-9-004 |
| C-182,193,203,309,310 | Mylar Capacitor, 0.1μF 50V K | 025-121-9-001 |
| C-214 | Ceramic Capacitor, 1pF 50V K SL | 020-181-9-001 |
| C-111 | Ceramic Capacitor, 2pF 50V K SL | 020-181-9-002 |
| C-153 | Ceramic Capacitor, 5pF 50V K SL | 020-181-9-003 |
| C-134 | Ceramic Capacitor, 10pF 50V K SL | 020-181-9-004 |
| C-101 | Ceramic Capacitor, 27pF 50V K SL | 020-181-9-005 |
| C-145 | Ceramic Capacitor, 33pF 50V K SL | 020-180-9-012 |
| C-55,149, | Ceramic Capacitor, 47pF 50V K SL | 020-180-9-013 |
| C-143 | Ceramic Capacitor, 68pF 50V K SL | 020-180-9-015 |
| C-6,7 | Ceramic Capacitor, 100pF 50V K SL | 020-180-9-016 |
| C-67 | Ceramic Capacitor, 120pF 50V K SL | 020-181-9-006 |
| C-140 | Ceramic Capacitor, 200pF 50V K SL | 020-180-9-017 |
| C-142,151,148 | Ceramic Capacitor, 250pF 50V K SL | 020-181-9-007 |
| C-150,209 | Ceramic Capacitor, 330pF 50V K SL | 020-181-9-008 |
| C-207 | Ceramic Capacitor, 1pF 50V C CH | 020-180-9-001 |
| C-65 | Ceramic Capacitor, 3pF 50V C CH | 020-180-9-003 |
| C-152 | Ceramic Capacitor, 10pF 50V J CH | 020-181-9-009 |
| C-68 | Ceramic Capacitor, 0.022μF 25V Z YG | 020-186-9-002 |
| C-161,162 | Ceramic Capacitor, 22pF 50V J CH | 020-181-9-010 |
| C-54,133 | Ceramic Capacitor, 100pF 50V K CH | 020-181-9-011 |
| C-211 | Ceramic Capacitor, 150pF 50V K CH | 020-181-9-012 |
| C-218 | Ceramic Capacitor, 7pF 50V J RH | 020-181-9-013 |
| C-219 | Ceramic Capacitor, 47pF 50V K RH | 020-181-9-014 |
| C-210 | Ceramic Capacitor, 330pF 50V K RH | 020-181-9-015 |
| C-14 | Ceramic Capacitor, 680pF 50V K YP | 020-181-9-016 |
| C-1,2,3,4,25,73 | Ceramic Capacitor, 0.022μF 25V Z YG | 020-181-9-017 |
| C-220 | Ceramic Capacitor, 0.0022μF 25V Z YG | ( ) |
| C-60,62,64,69,74 | Ceramic Capacitor, 0.047μF 25V Z YG | 020-181-9-018 |
| C-160 | Ceramic Capacitor, 0.001μF 25V Z YG | 020-180-9-020 |
| C-102,103,104,105,106, 107,114,115,117,118, | Ceramic Capacitor, 0.01μF 25V Z YG | 020-180-9-023 |

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| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| | **CAPACITORS (Continued)** | |
| C-121,122,123,131,136, 146,147,156,159,164, 175,215,216,302,208, 135,223 | Ceramic Capacitor, 0.01μF 25V Z YG | 020-180-9-023 |
| C-137,163 | Ceramic Capacitor, 0.022μF 25V Z YG | 020-181-9-019 |
| C-110,113,120,139,144,305 | Ceramic Capacitor, 0.039μF 25V Z YG | 020-181-9-020 |
| C-108 | Ceramic Capacitor, 0.047μF 25V Z YG | 020-181-9-021 |
| C-132 | Ceramic Capacitor, 0.001μF 25V K YB | 020-181-9-022 |
| C-138,176,214 | Ceramic Capacitor, 0.0033μF 25V K YB | 020-181-9-023 |
| | **ARRAYS** | |
| RR-101 | Composite Parts, HA-012 | 527-081-9-001 |
| RR-102,103 | Composite Parts, HA-009 | 527-079-9-001 |
| CC-101,102 | Composite Parts, HA-003 | 527-077-9-002 |
| | **CRYSTALS** | |
| X-2 | Crystal, QX-077 | 133-014-9-001 |
| X-1 | Crystal, QX-078 | 133-014-9-002 |
| X-3 | Crystal, QX-079 | 133-014-9-003 |
| | **CERAMIC FILTER** | |
| CF-2,1 | FL-051, 10.7MHz IF (FM) | 140-019-9-001 |
| CF-101 | FL-047 10.7MHz IF (CB) | 140-018-9-001 |
| CF-102 | FL-049, 455HMz IF (CB) | 140-018-9-002 |
| | **SWITCHES** | |
| S-1 | Rotary Switch, SR-172 | 083-225-9-001 |
| S-2 | Rotary Switch, SR-173 | 083-225-9-002 |
| S-4,5,6 | Rotary Switch, SW-092 | 083-225-9-003 |
| | **MISCELLANEOUS** | |
| M-1 | Meter, MT-086 | 320-085-9-001 |
| RL-1 | Relay, RL-025 | 441-018-9-001 |
| P/J-101,103 | Jack (5045-03A), JK-033 | 773-081-9-001 |
| P-104 | Jack (3022-15A), JK-039 | 773-081-9-002 |
| P/J-1 | Jack (5046-09A), JK-081 | 773-081-9-003 |
| P/J-102 | Jack (5048-04A), JK-032 | 773-081-9-004 |
| M-11 | Insulation Board, for 2SC1975 YD-033 | 345-050-9-002 |
| TP-1,2,3,4,5,6,7,8 | Check Terminal, TP-020 | 757-028-9-001 |

| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| | MISCELLANEOUS(Continued) | |
| PL-2 | Pilot Lamp, PL-005 (yellow) | 400-045-9-001 |
| M-13 | Tuner, YY-054 | 523-196-9-001 |
| CN-1 (M14) | Coaxial Cable, WZ-024 | 426-023-9-001 |
| CN-2 (M14) | Coaxial Cable, WZ-026 | 426-023-9-002 |
| CN-3 (M15) | Microphone Cord, WZ-025 | 426-023-9-003 |
| CN-4 (M16) | DC Cord, WZ-027 | 426-023-9-004 |
| M-17 | DC Cord, WZ-028 | 426-023-9-005 |
| A-3 | Microphone,Dynamic MK-046 | 562-006-9-001 |
| A-1 | NS Condenser, CZ-031 Metal Can 0.47μF 160V | 021-062-9-001 |
| M-18 | Front Chassis (Comp) | 258-018-9-001 |
| M-18 | Front Chassis, t=1.0 | 258-019-9-001 |
| M-19 | Rear Chassis, t=1.0 | 258-020-9-001 |
| M-20,21 | Cover t=0.6 | 253-058-9-001 |
| M-22 | Subchassis (Comp) t=0.6 | 258-021-9-001 |
| M-22 | Subchassis t=1.2 | 258-021-9-001 |
| | Holder for Meter, t=0.8 | 251-212-9-001 |
| | LED Bracket, t=1.0 | 251-213-9-001 |
| | Clip for Metal, t=1.0 | 261-073-9-001 |
| M-24 | Tuner Bracket, t=1.0 | 251-214-9-001 |
| M-25 | Pulley Bracket (Comp) | 251-215-9-001 |
| M-25 | Pulley Bracket, t=1.0 | 251-216-9-001 |
| M-26 | Gear Bracket, t=1.0 | 251-217-9-001 |
| A-5 | Perforated Support Bracket, t=1.0 | 251-218-9-001 |
| M-27 | Holder for Cord, t=0.5 | 251-219-9-001 |
| M-28 | Clip for Cord, t=0.8 | 261-073-9-002 |
| M-29 | Back Panel, spcc t=0.8 | 262-018-9-001 |
| M-30 | SW Holder Panel (Comp) | 261-073-9-003 |
| M-30 | SW Holder panel, t=1.0 | 261-073-9-004 |
| M-31 | Bracket for Through Capacity, t=1.0 | 251-220-9-001 |
| M-32 | Filter Box t=0.8 | 763-089-9-001 |
| M-33 | Slide VR Throuch Capcity | 763-089-9-002 |
| M-34 | Bracket for through Capacity. t=0.5 | 251-221-9-001 |
| M-35 | Holder for Oldham's Coupling PBP ¼H t=0.6 | 251-222-9-001 |
| M-36 | Lamp Hokder,PBP ½H t=0.3 | 752-013-9-001 |
| M-37 | Pointer, BSP3H t=0.5 | 261-073-9-005 |
| M-38 | Holder for IC, SUS-403 t=0.6 | 261-073-9-006 |
| M-39 | Heat Sink, t=2.0 | 747-053-9-001 |
| M-40 | Heat Sinnk, t=2.0 | 747-053-9-002 |
| M-41 | Lamp Holder, PBP ½H t=0.3 | 752-013-9-002 |
| A-6 | Microphone Hanger, spcc t=1.0 ni-3 | 741-074-9-001 |
| M-42 | Front Panel | 255-153-9-001 |
| A-8 | Knob, ABS Cr-1 VR | 751-150-9-001 |
| A-9 | Trim Plate | 260-121-9-001 |
| M-45 | LED Holder | 752-013-9-003 |
| A-7 | Knob, ABS Cr-1 CH Tuning | 751-150-9-002 |
| M-43 | Knob, ABS Cr-1 Dyna Mike | 751-150-9-003 |
| M-43 | Knob, ABS Cr-1 SO | 751-150-9-004 |
| M-44 | Knob, Balance | 751-150-9-005 |

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| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| | MISCELLANEOUS (Continued) | |
| M-45 | Knob, Cr-1 Tone | 751-150-9-006 |
| | Knob, Dim | 751-150-9-007 |
| M-47 | Knob, ANL | 751-150-9-008 |
| M-48 | Knob, MONI | 751-150-9-009 |
| M-49 | Gear | 743-004-9-001 |
| M-46 | Puliiey | 743-004-9-002 |
| M-52 | Oldham's Coupling Tunner, CH, Tuning | 743-004-9-003 |
| M-53 | Oldham's Coupling Switch Fixing Metal | 743-004-9-004 |
| M-54 | Oldham's Coupling | 743-004-9-005 |
| M-50 | Gear | 743-004-9-006 |
| M-51 | Gear | 743-004-9-007 |
| M-55 | Dial Indicator | 261-073-9-007 |
| M-56 | Holder for code | 251-223-9-001 |
| A-2 | Display Board, t=1.0 | 763-089-9-003 |
| A-4 | Display Board, t=1.0 | 763-089-9-004 |
| M-57 | FCC Name Palte, t=1.0 | 600-034-9-001 |
| | FCC Name Plate, t=0.3 | 600-034-9-002 |
| | FCC Name Plate, t=0.3 | 600-034-9-003 |
| | Microphone Plate, t=0.3 | 600 034-9-004 |
| | Seal | 600-034-9-005 |
| | Seal | 600-034-9-006 |
| | Production No.Seal | –NA– |
| | Serial Label | –NA– |
| | Tag | 484-048-9-001 |
| | Tag | 484-048-9-002 |
| | Tag | 484-048-9-003 |
| | Tag | 484-048-9-004 |
| | Shaft, BSBM Front Chassis | 261-073-9-008 |
| | Shaft, BSBM Pulley Bracket | 261-073-9-009 |
| | Shaft, BSBM Switch Fixing Metal | 261-073-9-010 |
| | Shaft, BSBM Switch Fixing Metal | 261-073-9-011 |
| | Shaft, BSBM Switch Fixing Metal | 261-073-9-012 |
| M-82 | Stud, BSBM | 261-073-9-013 |
| | Philip Screw, Ni-3 SWRM-3 | 634-087-9-001 |
| M-63 | LED Cover | 753-008-9-001 |
| M-80 | Slit Cover | 253-059-0-001 |
| M-62 | Fiber | 763-089-9-005 |
| M-64 | Dial Spring | 767-050-9-001 |
| M-81 | Slit Cover | 253-060-9-001 |
| M-83 | LED Cap | 753-008-9-002 |
| M-58 | Cushion | 763-089-9-006 |
| M-65 | Dial String | 763-089-9-007 |
| M-68 | Bind Screw, M2 x 4 | 634-069-9-002 |
| M-69 | Bind Screw, M2.6 x 5 | 634-067-9-003 |
| M-70 | Screw, M2.6 x 4 | 634-087-9-002 |
| M-72 | Bind Screw, M3 x 5 | 634-067-9-002 |
| M-73 | Bind Screw, M3 x 8 | 634-067-9-001 |
| M-71 | Bind Screw, M3 x 4 | 634-087-9-003 |

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| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|
| | **MISCELLANEOUS (Continued)** | |
| | Screw | 634-087-9-004 |
| M-74 | Plastic Screw, M3 x 5 (tuner fixing) | 634-087-9-005 |
| M-76 | Tapping Screw, 3 x 6 | 710-035-9-001 |
| | Tapping, 3.5 x 8 | 710-021-9-001 |
| A-15 | Hexagon Bolt, M6 x 20 | 634-087-9-006 |
| A-14 | HexagonBolt, M6 x 15 | 634-087-9-007 |
| | Lugged Washer | 731-041-9-001 |
| | Lugged Washer | 731-049-9-001 |
| | Knob Spring | 763-084-9-003 |
| | Knob Spring | 763-085-9-005 |
| | Knob Spring | 763-084-9-004 |
| M-78 | Rivet | 733-022-9-001 |
| A-25 | Display Box | 500-318-9-001 |
| A-26,27 | Master Carton | 500-319-9-001 |
| A-18 | Instraction Manual | 480-203-9-001 |
| A-10 | Service Station Card | 492-092-0-000 |
| A-22 | Warranty Card | 491-191-9-001 |
| A-19 | FCC Rules Part 95 | 492-047-9-001 |
| A-20 | FCC Form 555-B | 492-046-9-001 |
| A-21 | FCC Form 505 | 492-041-9-001 |
| A-11 | Wiring Drawing | |
| A-12 | Composite: | 499-112-9-001 |
| | Schematic | 488-193-9-001 |
| | Pars List; | 488-193-9-002 |
| A-16 | Hexagon Nut, M6 | 653-037-9-001 |
| A-17 | Spring Washer | 731-049-9-002 |
| | **PRINTED CIRCUIT BOARDS** | |
| PC-227 | Printed Circuit Board (Main), PC-227AA | 302-250-9-001 |
| PC-228 | Printed Circuit Board (Radio), PC-228AA | 302-251-9-001 |
| PC-214 | Printed Circuit Board LED DISP (A) PC-214AA | 302-252-9-001 |
| PC-215 | Printed Circuit Board LED DISP (B) PC-215AA | 302-253-9-001 |
| PC-180 | Printed Circuit Board Power Supply, PC-180AA | 302-254-9-001 |

| CIRCUIT SYMBOL | DESCRIPTION | PART NO. |
|---|---|---|

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