MULTI QUARTZ-16

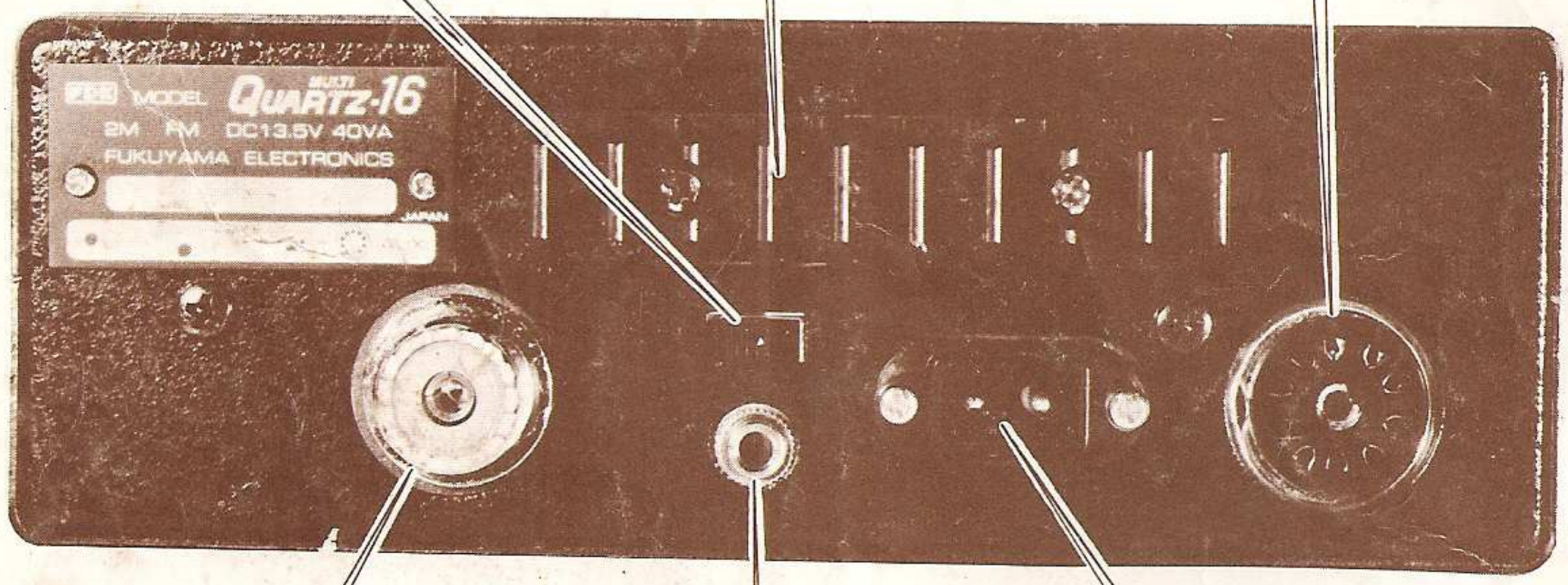
144MHz FM
10W/1W
23CHANNEL + 2
TRANSCEIVER

INSTRUCTION MANUAL

- **Radiator**
Radiates the heat sink by the transistors in the final stage.

- **Meter selector switch**
For selecting meter functions on the front panel. At the S position, the meter is used as S/RF meter. At the F position, it is used as center meter for measuring the frequency deviation of the opposite station.

- **Accessory socket**
When connect to external VFO unit, phone patch, P.L., etc.



- **ANTENNA terminal**
Connect it to a 144MHz (2m band) antenna with an UHF (PL-259) connector.

- **External speaker jack**
When using an external speaker, connect to this terminal using the external speaker

- **Power source connector**
The connector for supplying a DC voltage of 13.8V. Use the accessory cord (black/red).

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NAME OF PARTS AND THEIR FUNCTION

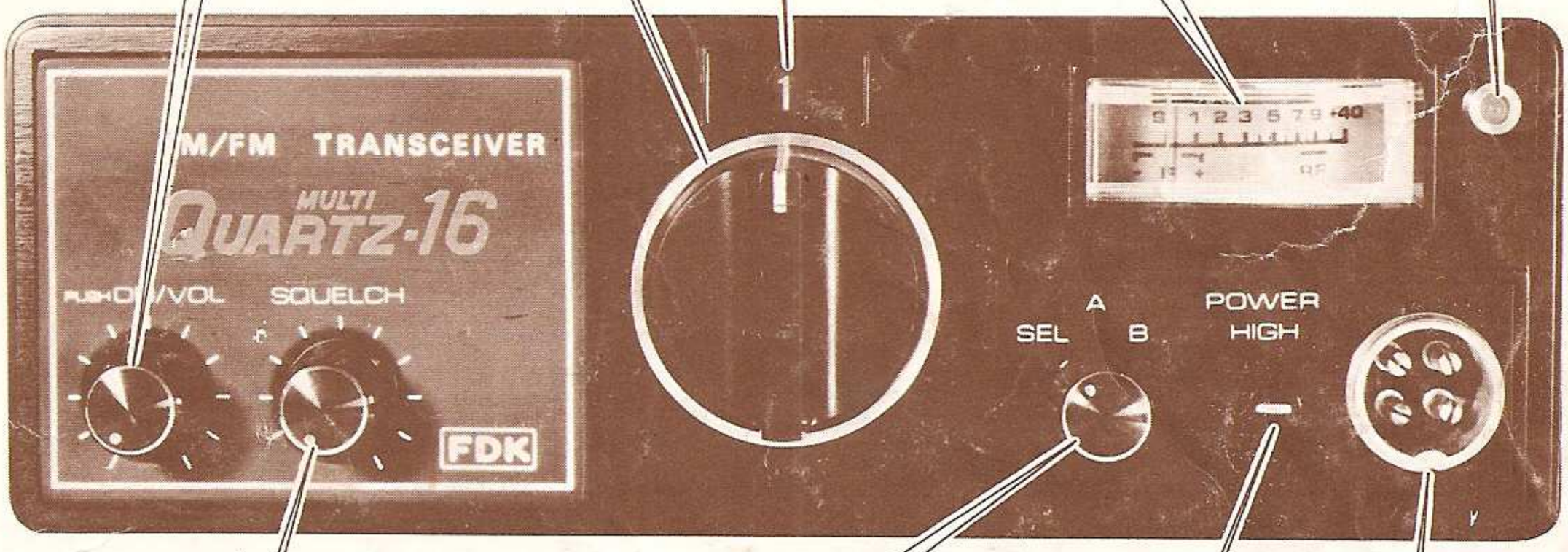
- **Channel indicator**
Indicates the frequency selected the fixed channel knob, using the transceiver on a fixed channel. Only that channel which has crystal is lit.

- **Transmission indicator lamp (on air lamp)**
Lights when the microphone PTT switch is pushed for transmission.

- **Channel selector knob**
Select any of 23 channels plus external VFO.

- **Meter**
Normally, the meter indicates the signal intensity of the opposite station during reception as S/RF meter; and functions as RF meter to indication transmitting output level during transmission.
When the F-S selector switch on the back panel is moved to the F position, the meter works as center meter to measure the frequency deviation of the opposite station.

- **ON/VOL knob**
When the knob is pushed, the power is switched on; and when it is pushed again, the power is OFF. Volume increases when the knob is turned clockwise.



- **Squelch knob**
Speaker noise gradually decreases when the knob is turned clockwise. Turn the knob to a point where speaker noise is no longer audible.

- **Priority knob**
Can receive on two channels, Channel A and Channel B. When the knob is set to the SEL position, the channel selector switch should work. When the knob is set to Channel A or Channel B, the channel selected will be in operating condition regardless of the channel selector switch.

- **MIC jack**
Plug the accessory microphone into this jack. When the P.T.T. switch is pushed, the transceiver is ready for transmission; and when it is released, the set is ready for reception. The microphone has an impedance of 600 ohms.

- **POWER HIGH-LOW selector**
Transmitting output will be 10W at the upper position; and 1W at the bottom position.

WHEN USING THE SET ON CAR

- **Place of installing**

The interior layout varies with the kinds of cars, so it is difficult to point out the best location for the set to be installed. Generally, however, it is recommended that the set be installed under the dashboard next to the driver's seat for ease of installation and operation and safety. (Fig. 1)

Keep the set from direct expose to sunlight and, especially in summer, high temperature inside the car.

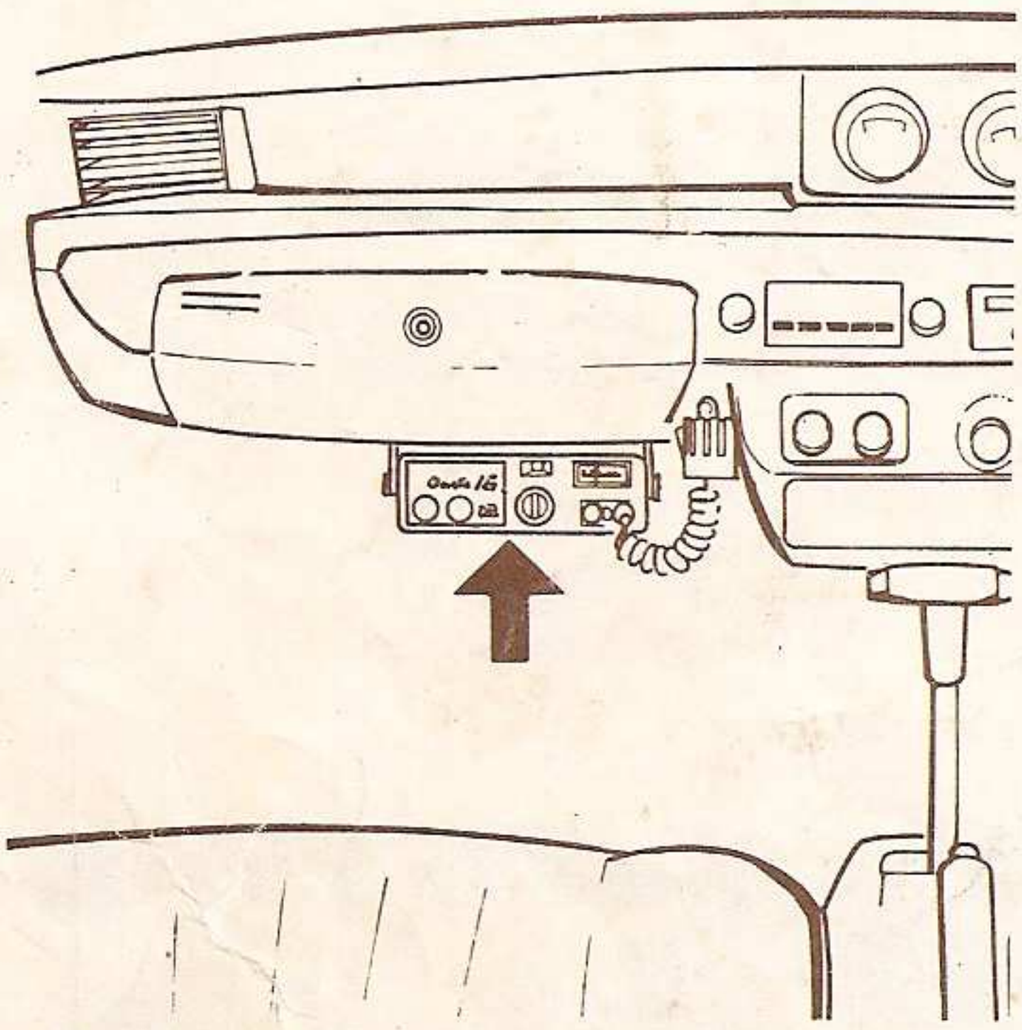


Fig. 1 An example showing mounting position

- **Installing method**

The installing method differs with the kinds of cars. When installing the set in a truck or large-sized vehicle, careful to the battery voltage and body grounding. Quartz 16 is a negative ground set so, when installing it on a positive ground vehicle, the set must be insulated from the vehicle body. When installing set on a positive ground vehicle, consult your store or dealers.

One of easy ways to take power is to connect the set to the cigar lighter receptacle. But, to eliminate the effect of noise, it is suggested that the set directly wired to the battery terminals.

Install the car mounting angles with bolts, nuts and washers as shown in Fig. 2. When slide the set along the rails all the way in, adjust it to the most convenient angle, and then fasten the hanger knob.

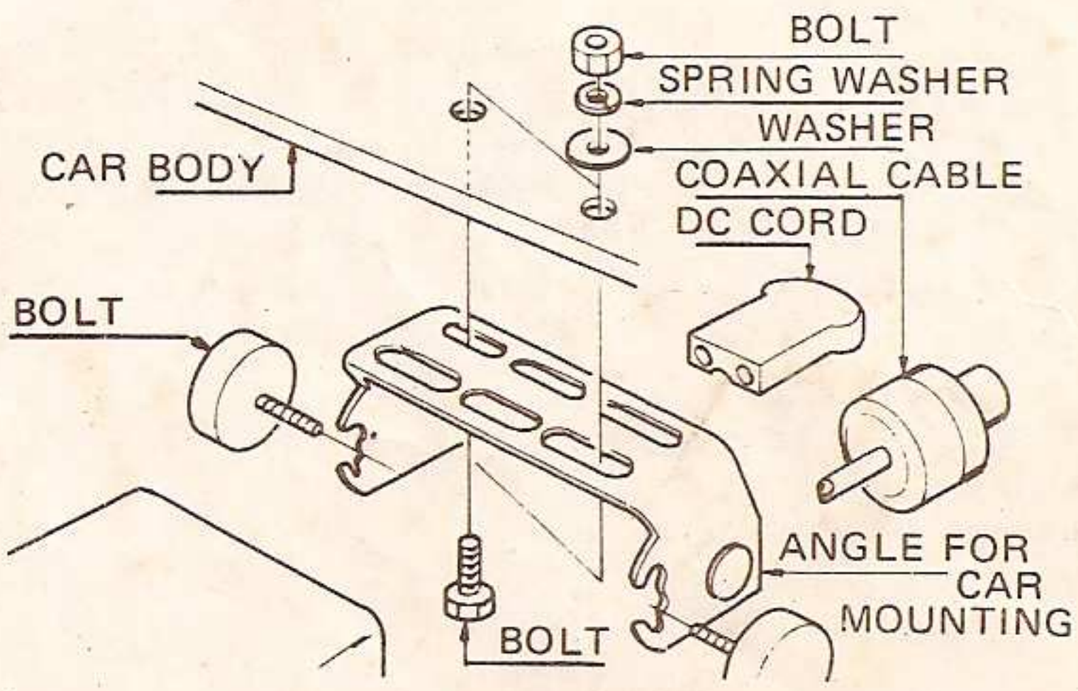


Fig. 2 Mounting method

- **Installing a mobile antenna**

Generally, a mobile antenna is installed at the edge or the center of the roof. A roof edge antenna of 1/4λ or 5/8λ, or a roof top antenna of 1/4λ GP is popularly used, and can be installed with relative ease. Since the output impedance of the set is 50 ohms, the coaxial cable connecting to the antenna terminal on the set must have an impedance of 50 ohms. It is recommended that the cable fed to be as shortest possible.

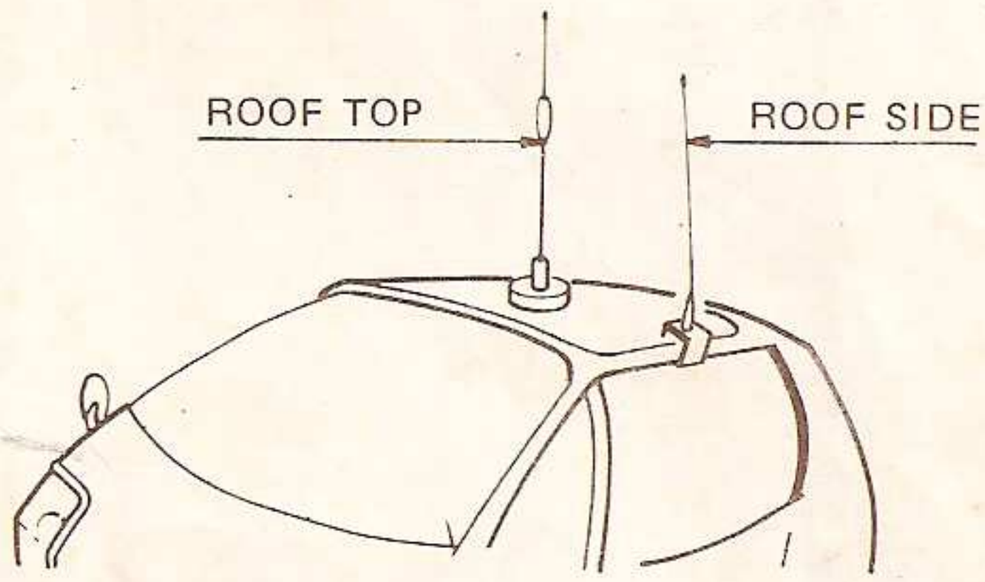


Fig. 3 An example of antenna mounting

WHEN USING THE SET AS FIXED STATION

- **Place of installing**

When using the set as a fixed station, select a place where the set can be kept from exposure to high temperature, high humidity and dust. An airy, dry place is ideal. Keep the bottom and back of the set away from desks and walls. Be sure to avoid direct exposure to sunlight.

Have a stabilizing power supply ready for supplying power to the set used as a fixed station. Any power supply with a capacity of more than 3A, DC 13.8V is available.

- **Antenna for fixed station**

To assure the full performance of the set, install a grand plane or a Yagi beam antenna at a height of about 10 to 15 meters, and connect it to the antenna connector to the set .

- **How to use a headphone**

When using the set late at night, the use of a headphone with an impedance of 8 to 16 ohms and connect it to the EXT SP terminal on the back.

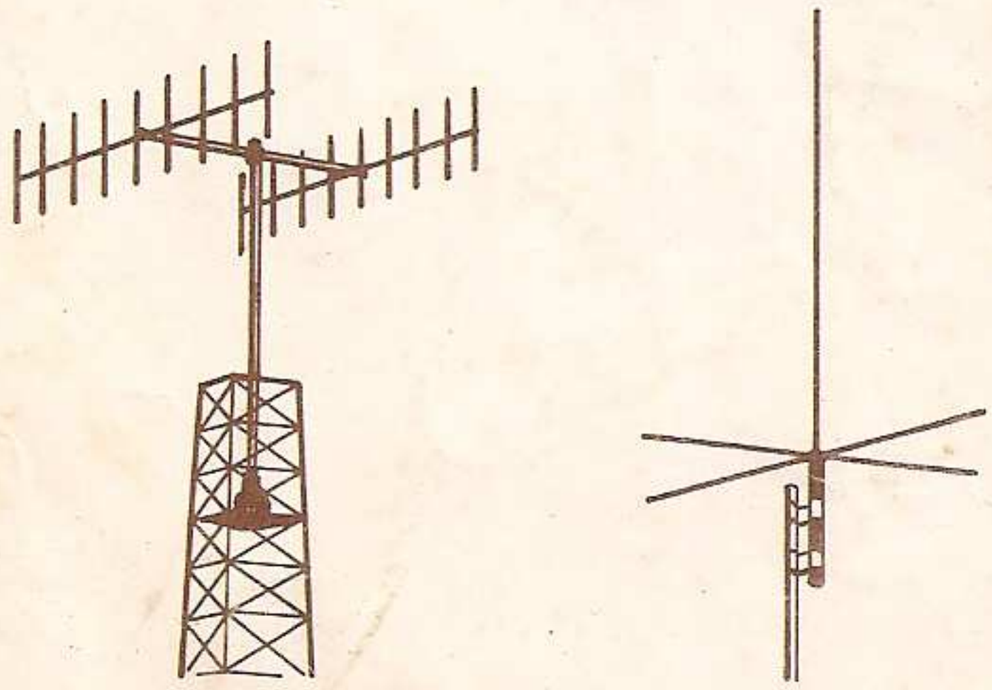


Fig. 4 Fixed antenna

OPERATING INSTRUCTIONS

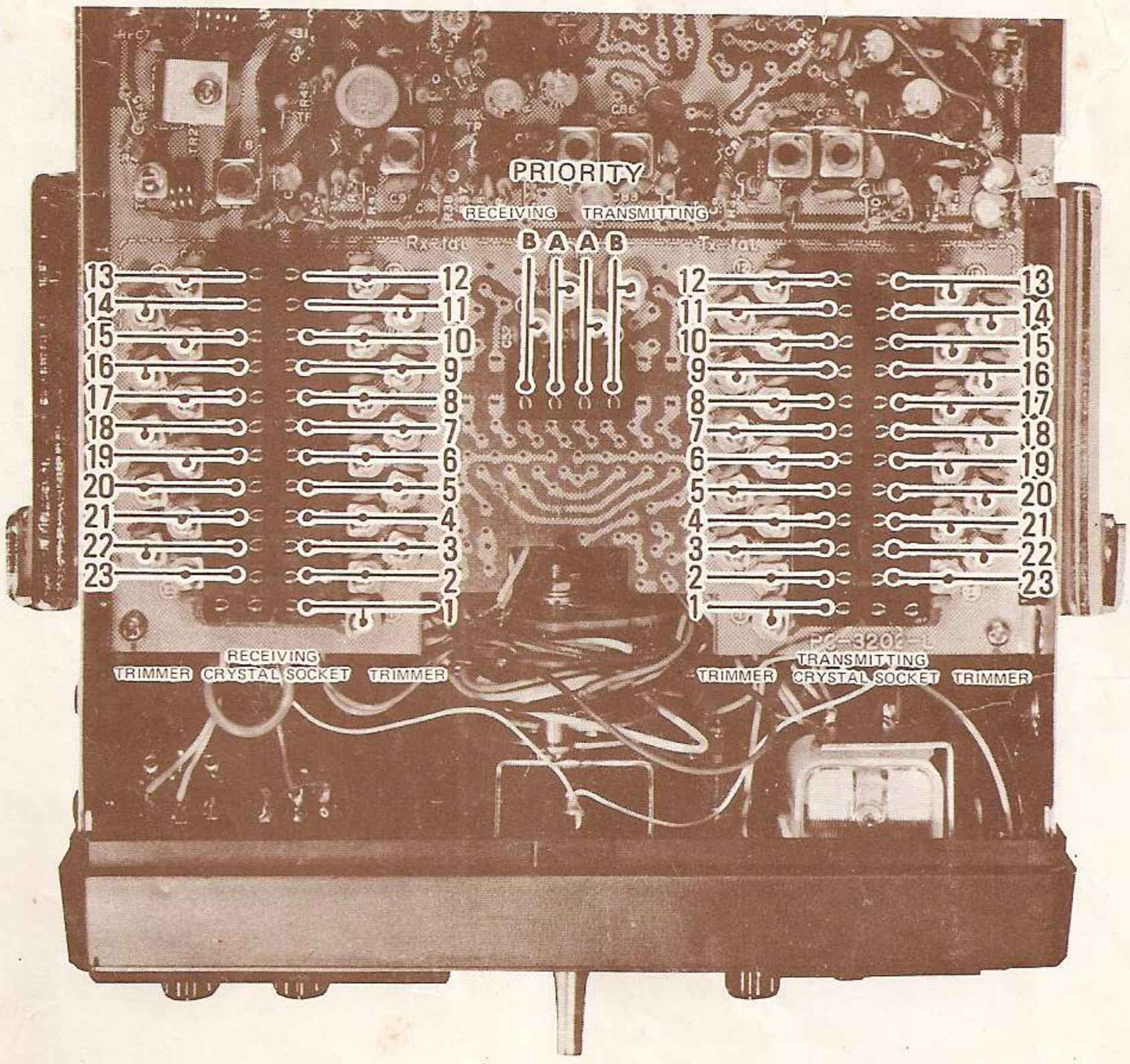
Connect the antenna, power cord and microphone securely.

- **Reception**

(1) Push the power switch ON.
The meter pilot lamp will light.
(2) Turn the channel selector knob to an idle channel that has no crystal (where the indicator lamp will not light) at first.
(3) Turn the squelch knob fully counterclockwise.
(4) Turn the ON/VOL knob little by little clockwise, and FM noise comes out of the speaker. Set the knob at an appropriate sound level.
(5) Turn the squelch knob slowly clockwise until noise no longer comes in.
(6) Turn the channel selector knob to a channel with crystal.

- **Transmission**

(1) First push the PTT (push-to-talk) switch on the microphone so a relay operates to make the set ready for operation. The transmission indicator lamp lights, and the meter reads about 8.
(2) If the set fails to be in the condition mentioned in (1) above, the antenna system may be faulty. Double check the coaxial cable for a shortcircuit or wire breakage. When corrected power switch turn again.



Crystal socket and trimmer

SPECIFICATIONS

- **General**

Frequency Range:	144 MHz to 148 MHz (Each 2 MHz)
Number of Channels:	23 Fixed + 2 Priority and VFO
Selection Method:	Fixed and VFO Channel Rotary Switch Selection
Power Source:	DC 13.8V Operation Voltage 11—15V Minus Grounding
Current Consumption:	at Transmit (Hi) Approx. 2.5A at Transmit (Low) Approx. 1.3A at Receive (MAX) Approx. 0.6A at Receive (No Signal) Approx. 0.3A
Semiconductor:	Tr 30, FET 2, IC 1, Di 30, SCR 1
Measurement:	Width 163 mm (6.42″) Height 56 mm (2.20″) Depth 220 mm (8.66″)
Weight:	About 2.3 Kg.

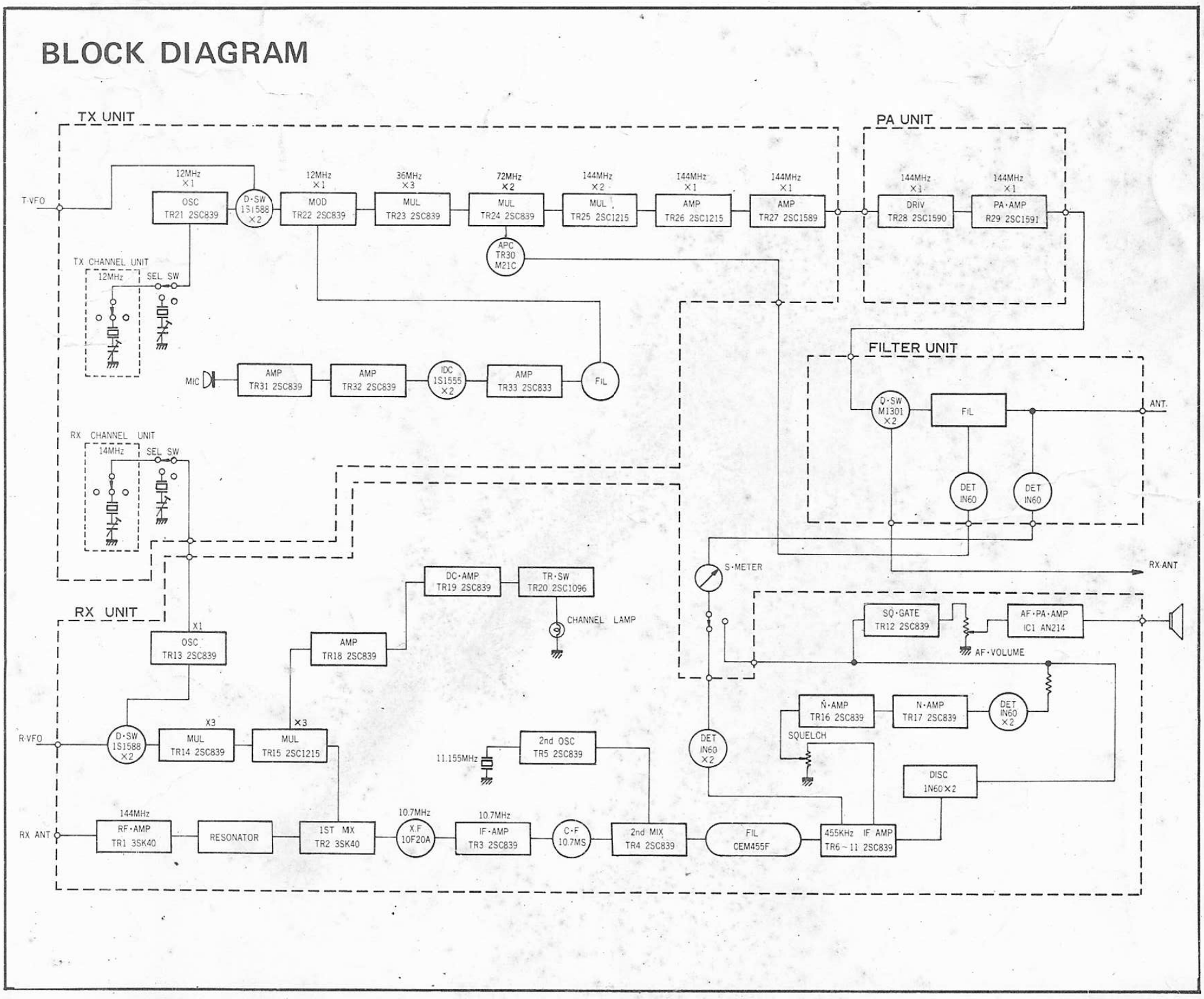
- **Transmitter**

Mode:	F3	
Power Output:	High	10W
	Low	about 1W
Modulation:	Vector Synthetic Phase Modulation	
Maximum Frequency Deviation:	±5 kHz	
Multiplied Times:	12	
Fundamental Oscillation Frequency:	12 MHz	
Unwanted Radiation Spurious:	less than —60 dB	
Antenna Impedance:	50—52 Ohms	
Microphone:	Dynamic 500—600 Ohms	

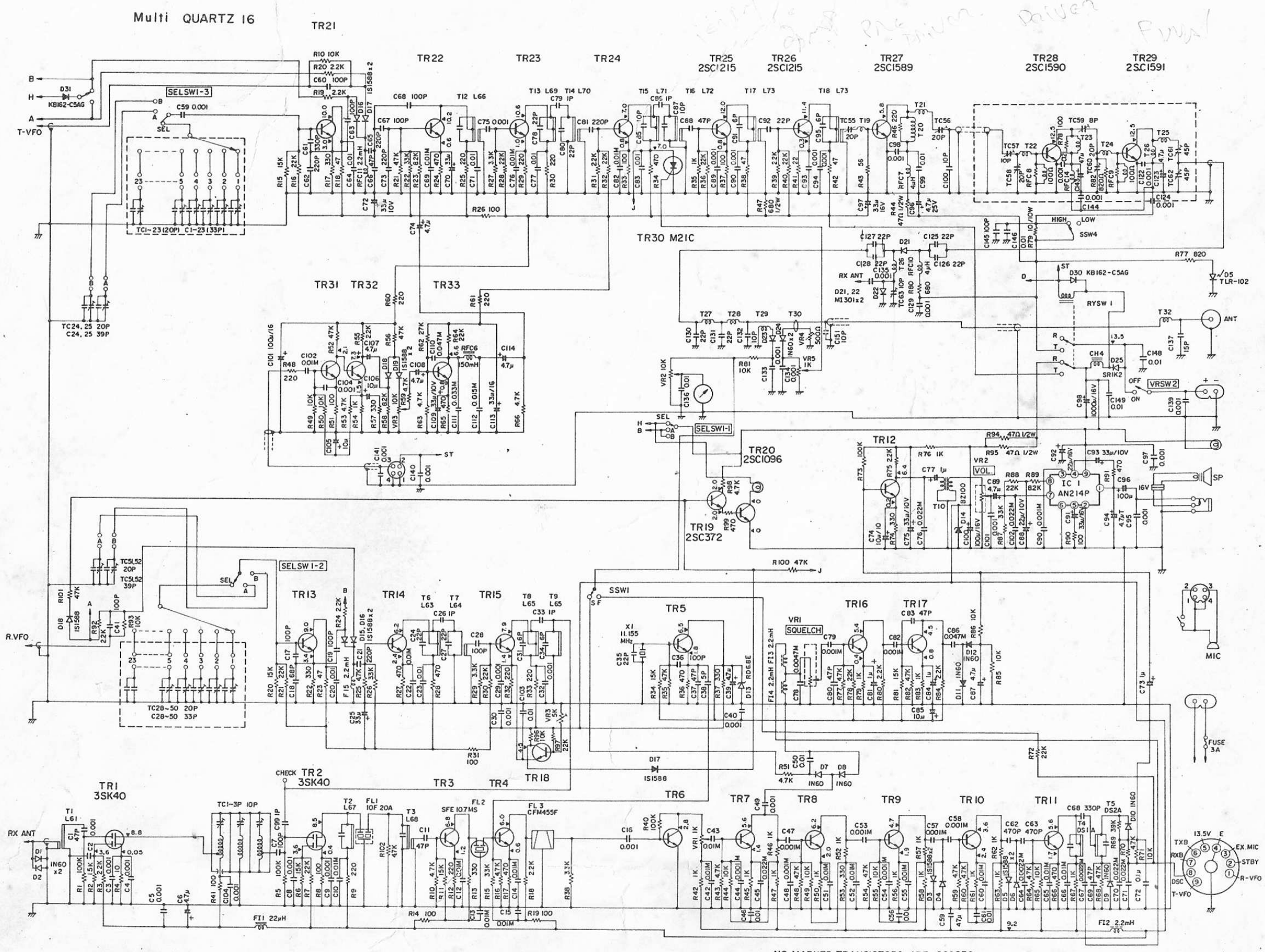
- **Receiver**

Mode:	F3
Receiving Method:	Double Super Heterodyne
Intermediate Frequency:	1st IF 10.7 MHz 2nd IF 455 KHz
Sensitivity:	Less than 0.7μV (20 dB NQ)
Squelch Sensitivity:	Less than 0.5μV
Selectivity:	6 KHz Min. (—6 dB) 12 KHz Max. (—80 dB)
Image Radio:	Less than —60 dB
Receiving Spurious:	Less than —60 dB
Audio Output:	Max. 2.5 Watt at 8 Ohms

BLOCK DIAGRAM



SCHEMATIC DIAGRAM



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FDK FUKUYAMA
electronics
Tokyo, Japan