

OPERATING MANUAL

FTL-2001 / 7002



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TOKYO, JAPAN

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CAUTION

There are no user-serviceable points inside this transceiver. All service jobs must be referred to an authorized Yaesu Service Representative. Owner maintenance is limited to fuse replacement (see page 12). Consult your Authorized Yaesu Dealer for installation of accessories.

FTL-2001 & FTL-7002

FM VHF and UHF LAND MOBILE TRANSCEIVERS

The 40-watt FTL-2001 and 25-watt FTL-7002 are synthesized two-way FM transceivers designed for serious business communications on the VHF and UHF land mobile bands, respectively. Up to eighty simplex or semi-duplex channels can be programmed in internal EEPROM.

Large, well-spaced buttons and controls on the sloped front panel allow easy operation under all conditions; and the front panel is reversible for overhead mounting, if desired. Maximum control flexibility is provided for the operator, including push-button selection of channels for priority monitoring and selective channel scanning.

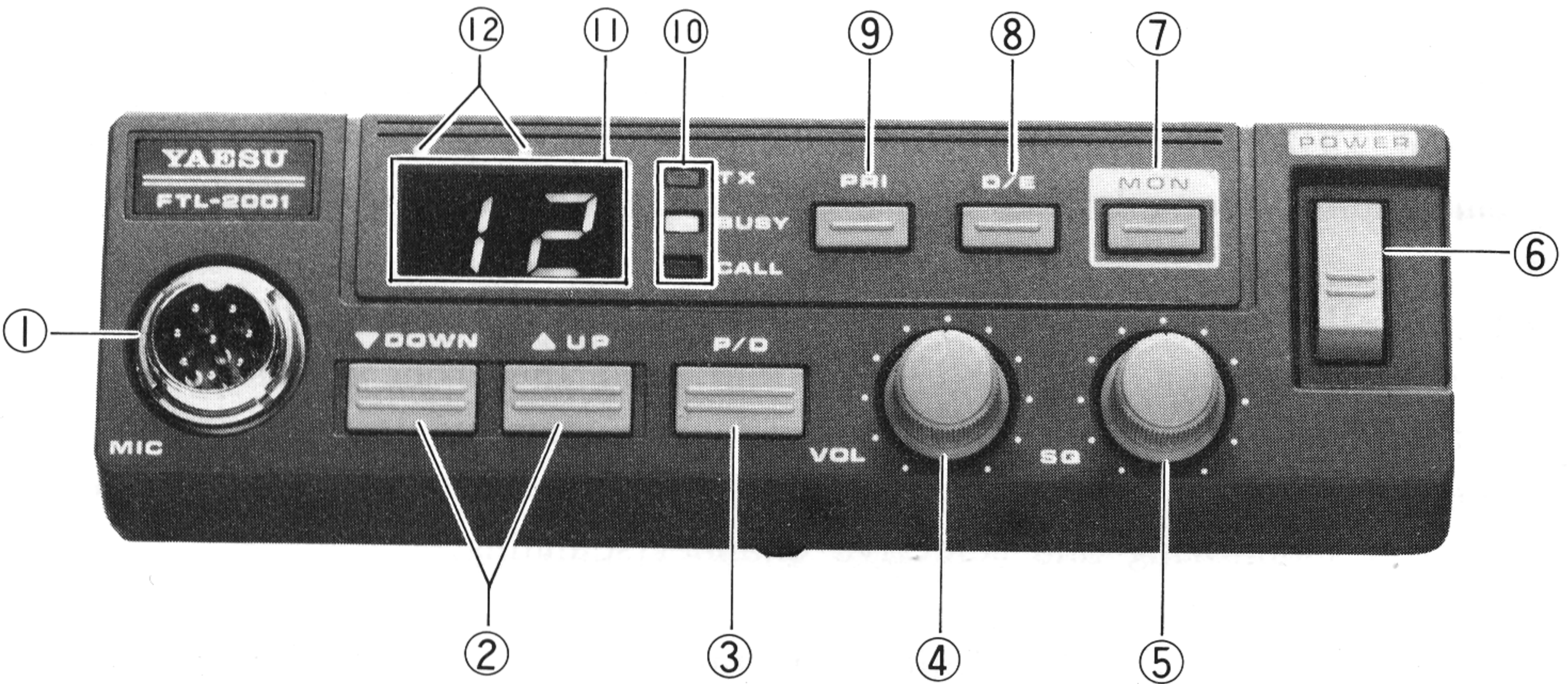
When the FTS-14 CTCSS Unit is installed, silent monitoring of busy channels is provided, with different subaudible tones for transmit and receive on each channel, if required.

Channel and subaudible tone frequencies can be added or changed in minutes by your Yaesu dealer, using the FYG-4 EEPROM Programmer. The FYG-4 also allows cloning programmed data from one transceiver to another, meaning quick programming of your entire fleet.

Please take a few minutes to read this manual carefully. The information presented will allow you to derive maximum performance from the equipment. After reading it, keep this manual handy near the radio for quick reference, in case questions arise later.

CONTROLS & CONNECTORS

FRONT PANEL



(1) MIC Jack

Connect the microphone plug to this jack. Tighten the knurled ring on the plug to secure it in place.

(2) DOWN and UP Buttons

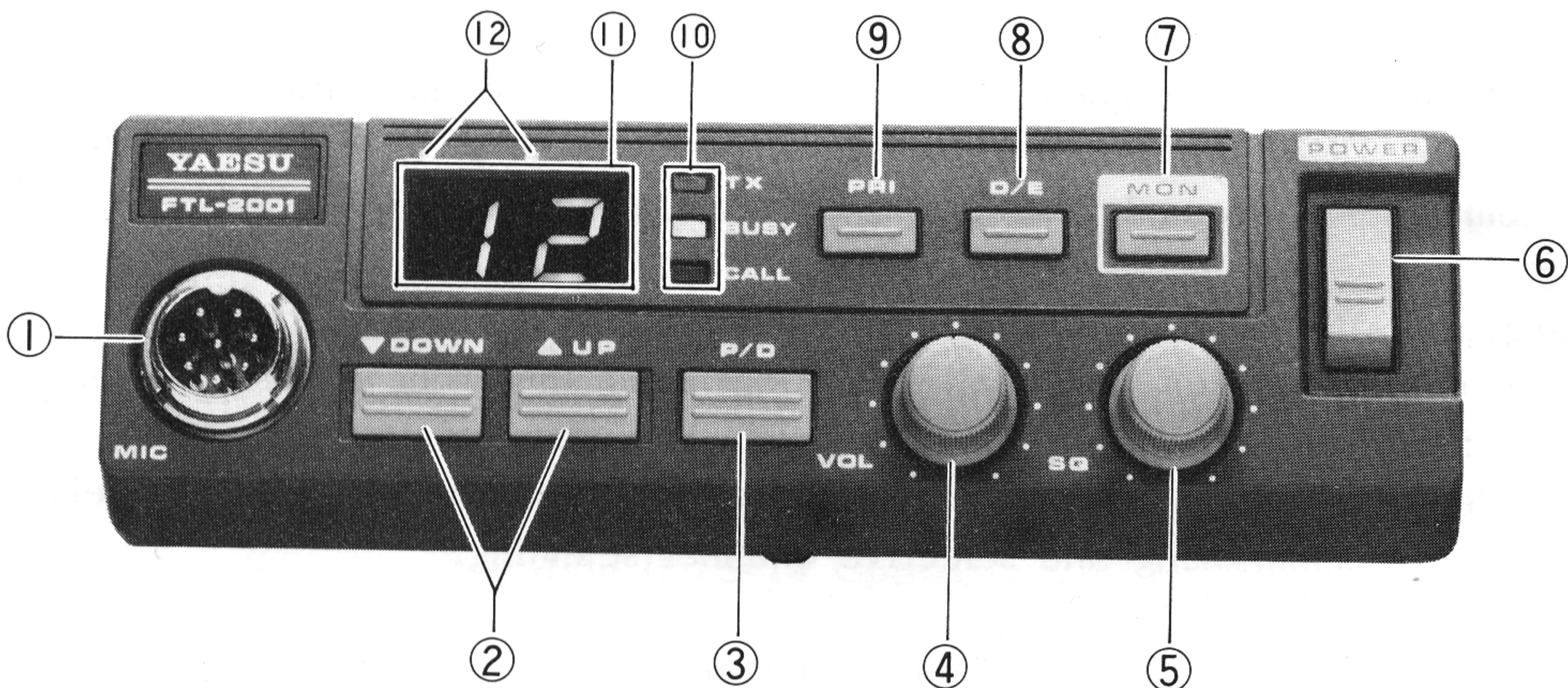
Press one of these buttons to step the selected channel up or down. Hold either button for one second to start automatic scanning.

(3) P/D (Priority/Dial) Button

Pressing this button changes operation alternately between the selected ("dial") channel and the priority channel. Holding this button for one second activates priority channel monitoring.

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(4) VOL (Volume) Control

Turn clockwise for louder receiver volume.

(5) SQ (Squelch) Control

Set just to the point where noise is silenced on a clear channel.

(6) POWER Switch

Turns the transceiver on and off.

(7) MON (Monitor) Button

If the optional tone squelch system is installed, press this button to defeat the squelch and hear all activity on the channel. If an optional selective calling system is installed, press this button after receiving a call to reset the system for another call.

(8) D/E (Disable/Enable) Button

This button is used to select and deselect channels for scanning, as described in the Operation section.

(9) PRI (Priority) Button

This button is used to select the channel for priority monitoring, as described in the Operation section.

(10) TX, BUSY and CALL Lamps

The TX lamp glows red while transmitting. The BUSY lamp glows green when the channel is busy (the squelch is open). The CALL lamp glows red if a selective calling option is installed and a call is received.

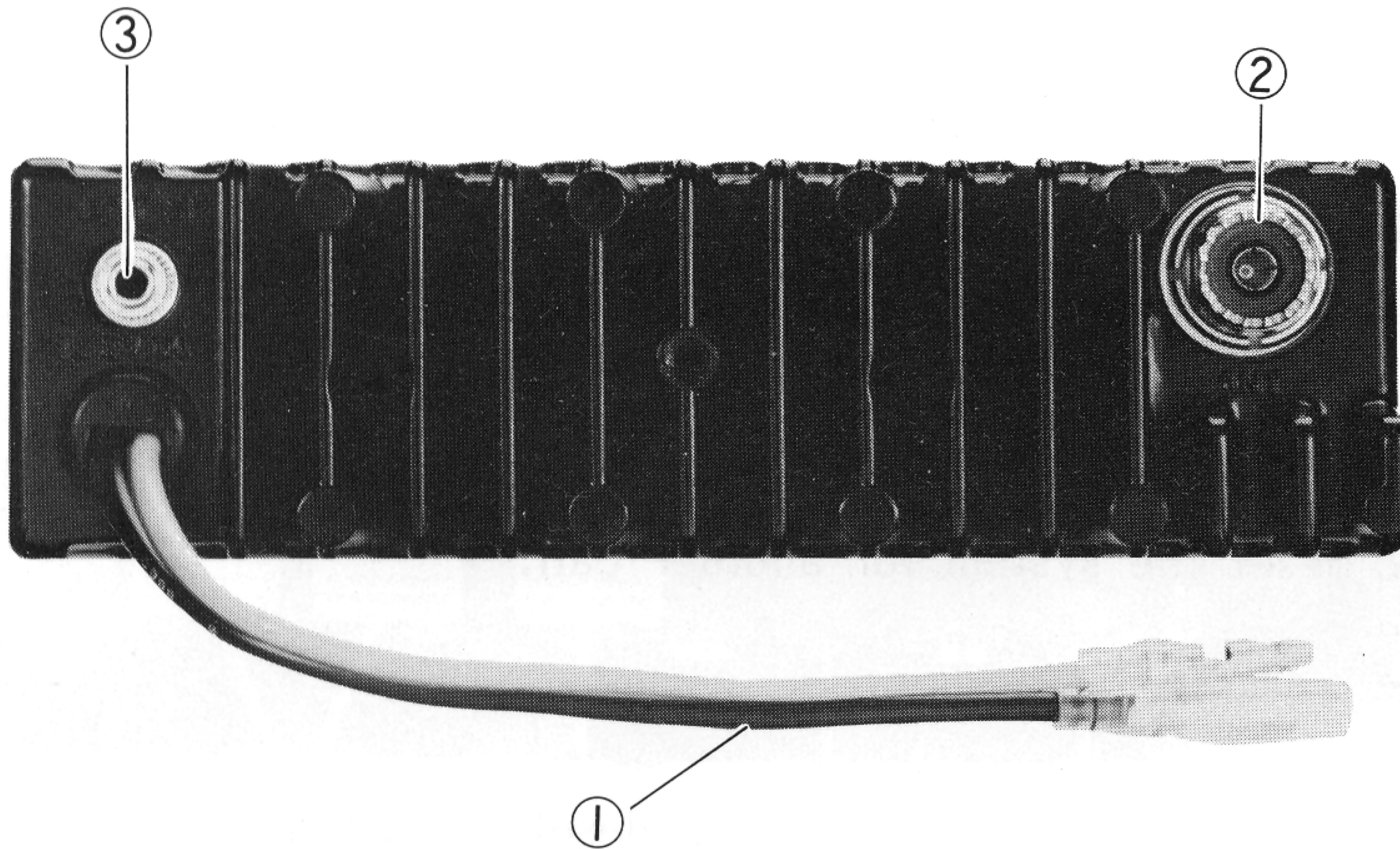
(11) Channel Display

Shows the selected channel number.

(12) P and E Indicator Dots on Display

These indicators light if the displayed channel is currently selected for priority monitoring or scanning, respectively.

REAR (Heatsink)



(1) 13.8VDC Cable

This pigtail is for connection of the power cable. The red lead must be connected to the positive supply, and black to negative (ground). Use only the supplied fused cable, extended if necessary, for power connection.

(2) ANT (Antenna)

The 50-ohm coaxial feedline to the antenna must be connected here using a type-M (PL-259) plug.

(3) EXT SP (External Speaker)

The optional FSP-2 or SP-55 external loudspeakers may be connected to this 2-contact mini-phone jack.

HOW TO USE THE TRANSCEIVER

IMPORTANT! - Before turning on the radio the first time, confirm that the power connections have been made correctly to the power source, and that a proper antenna is connected to the antenna jack. If the transceiver is not installed, see the Installation section.

Press the POWER switch to turn on the radio. The display will show a channel number. If a continuous beep is heard, the transceiver has not yet been programmed with channel frequencies: switch off the power and contact your Yaesu dealer to have the channels programmed.

Setting the Squelch

If this is the first time to use the transceiver, set the SQ control fully counterclockwise, and then adjust the VOL control for comfortable receiver volume on background noise or a signal (if nothing is heard, press and hold the MON button or remove the microphone from its hanger to hear the receiver while adjusting the volume control).

Press the DOWN or UP key momentarily (a beep should sound) to find a channel where only noise is heard. Then rotate the SQ control clockwise just to the point where the noise is silenced (and the green BUSY indicator turns off).

Transmitting

To transmit, wait until the BUSY indicator is off (the channel is not in use), and press the PTT (Push-To-Talk) switch on the side of the microphone (the red TX lamp will light). While holding the PTT switch, speak across the face of the microphone in a clear, normal voice, and then release the PTT switch to receive.

Note: if your transceiver has been programmed for busy channel lock-out, the transmitter will not be activated when the PTT switch is pressed unless the BUSY lamp is off. This prevents interference to other stations.

If the selected channel has been programmed for automatic time-out, you must limit the length of your transmissions. If you accidentally exceed the time-out period, a short beep will sound, the red TX indicator will turn off and transmission will cease. Release the PTT switch, listen for a moment, and then press it again to resume transmitting.

Priority Channel Monitoring

Priority channel monitoring allows you to listen or scan channels while the receiver periodically checks for signals on a preselected ("priority") channel. If a priority signal is heard, operation automatically shifts to the priority channel.

To select a priority channel, use the DOWN/UP buttons to display the desired channel number, and then press the PRI button. A dot (the "P" indicator) now appears at the upper left of the display whenever this channel is selected. While receiving on any channel, you can always check which channel has been selected for priority monitoring by pressing the P/D button momentarily (less than one second).

After a priority channel has been selected you can activate priority monitoring any time (while receiving on another channel): make sure the microphone is placed in its hanger, and then press and hold the P/D button for one second. Every three seconds, the receiver will briefly shift to the priority channel to check for activity there. If a signal is found on the priority channel, or if you remove the microphone from its hanger, the receiver will jump to the priority channel and the "P" indicator blink.

To cancel priority monitoring, press P/D momentarily.

Scanning

The SQ control must be set as described on page 5, and the microphone must be placed in its hanger (attached to the vehicle, or power supply in a base station).

First select the desired channels for scanning: press the DOWN and UP buttons to select a channel, and then press the D/E button to turn on the scan indicator dot ('E', for enabled) if you want to scan this channel (you will hear one beep), or to turn it off (three beeps) if you don't want to scan it. Repeat this selection process for each channel*. Include the priority channel if you want quick sampling during combined scanning/priority monitoring.

Press and hold either the DOWN or UP button for one second to activate the scanner (a beep sounds once when you first press the button, and again when scanning starts). Scanning will pause on a channel if a signal appears, and then resume automatically a few seconds after the channel clears. Also, if the microphone is removed from its hanger during scanning, scanning will pause until it is replaced, or if the MON button is pressed, scanning will pause until it is released.

While the scanner is active (paused or otherwise), the E dot blinks.

Scanning with Priority Monitoring

If scanning is activated while priority channel monitoring is active, the priority channel will be checked every other step of the scanner. If a signal appears on a non-priority channel the scanner will pause, but priority checking will continue at one of two selectable rates, determined by your selection of channels to be scanned (see footnote).

To turn the scanner off (again, whether it is paused or not) press either DOWN, UP (to stop at the non-priority channel) or the P/D button (to stop on the priority channel) momentarily.

If while scanning with priority monitoring you receive a call on a non-priority channel, lift the microphone from its hanger before the

* Including the priority channel among those to be scanned causes the priority channel to be checked every one second, instead of every three seconds, when priority monitoring is activated and the scanner pauses on a non-priority channel.

carrier of the caller drops, and then press P/D to halt priority monitoring so that you can answer the call. If you cannot get to the microphone before he stops calling, at least glance at the displayed channel number. Then lift the microphone, press P/D, and reselect that channel with the UP/DOWN buttons.

Tone Squelch Operation (FTS-14 Option)

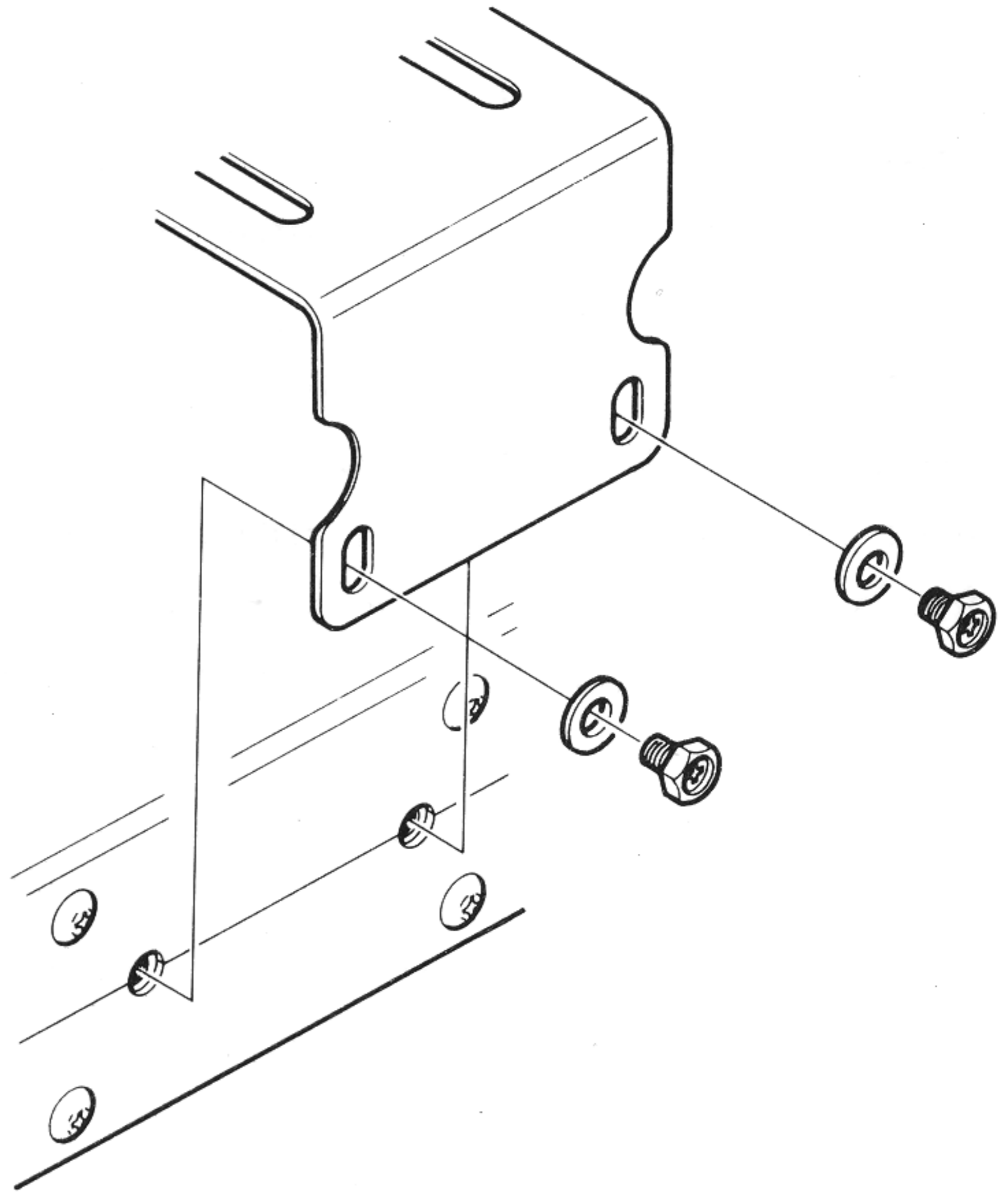
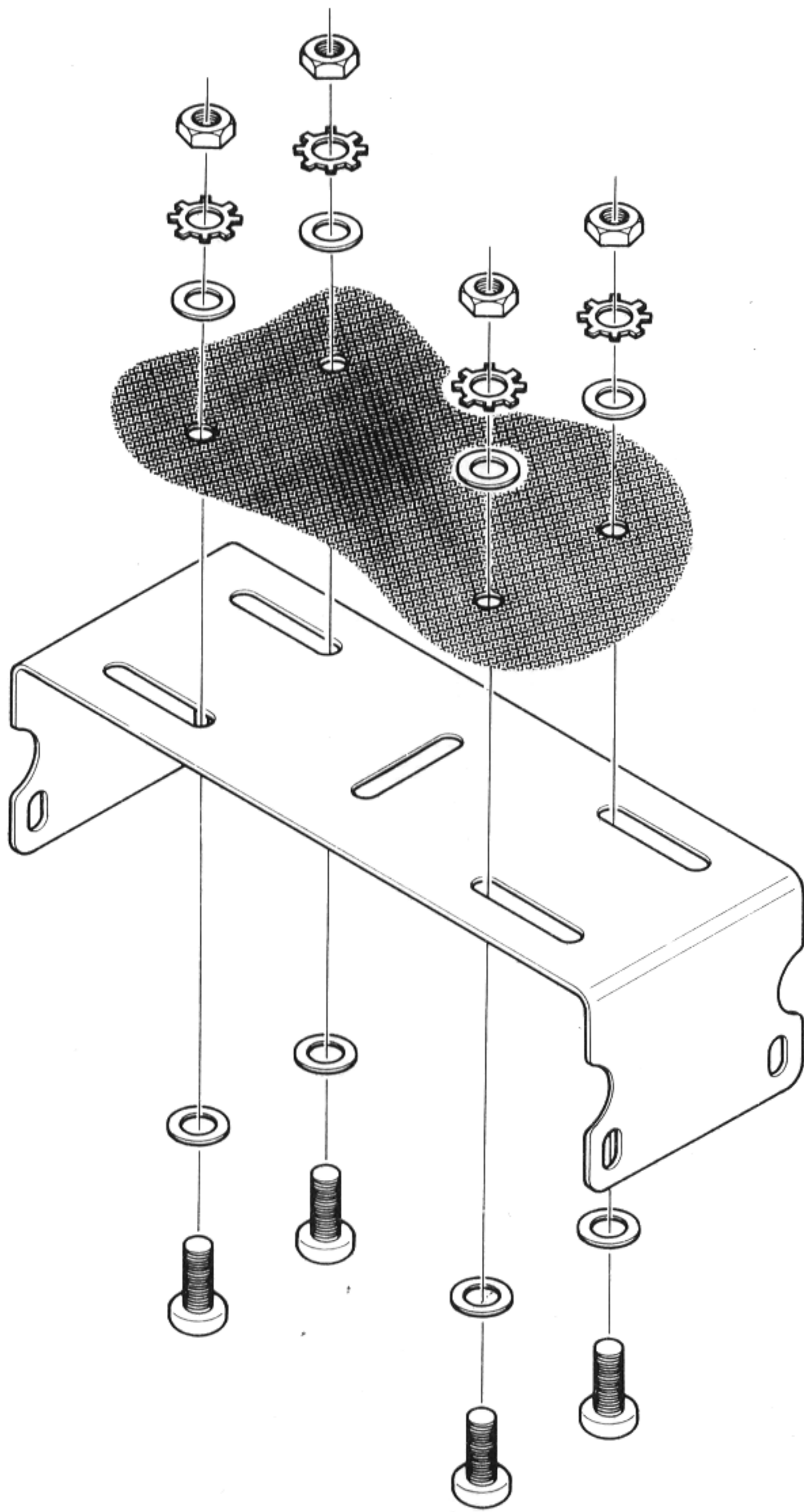
The optional tone squelch unit allows silent monitoring of busy channels. See your Yaesu Dealer for purchasing and installation.

The mounting knob on the back of the microphone and its hanger form an integral part of the tone squelch system. For proper operation, the microphone hanger must be affixed to the metal body of the vehicle. To use the tone squelch system:

- (1) Place the microphone into its hanger.
- (2) The radio remains silent until a call is received from a station using an identical tone squelch system. When the matching tone signal is received, the caller will be heard in the speaker.
- (3) When you transmit, a subaudible tone (too low to hear) will be sent automatically along with your voice. This will open the squelch of the other party's radio, in the same way that your receiver responded.

Note that when a signal is received which does not include a matching tone, your BUSY lamp still lights, indicating that the channel is occupied, even though you cannot hear the signal. Always wait until the BUSY lamp is off before transmitting, to avoid interfering with the other stations on frequency.

When you remove the microphone from its hanger or press the MON button, the receiver tone squelch is defeated, so you will hear all stations on the channel (including those not using tone squelch).



MMB-33 Installation

Base Station Installation

The FP-700 AC Power Supply may be used to operate the FTL-2001 and FTL-7002 from a variety of AC mains voltages. Connect the fused DC Cable supplied with the transceiver to the colored terminals on the rear of the FP-700.

NOTE: In all installations, means must be provided to ground the metal mounting loop on the microphone in order for the squelch and scanning/monitoring systems to function. In base installations, a grounding hook must be provided in which to rest the microphone when not transmitting.

Power Connections

For mobile installations, the power cable should be connected directly

to the automobile battery. This allows the radio to operate without turning on the ignition, and may also reduce noise in the receiver. Connection to the cigarette lighter or other existing circuits may result in overloading, or degradation of transceiver performance.

Always use the supplied DC power cable, which includes fuses to protect you, your vehicle and the equipment. If it is necessary to lengthen the power cable, use #12 AWG stranded, insulated copper wire. Use the shortest length possible, connected to the end of the DC cable that does not have connectors installed.

CAUTION

Permanent damage will result if the power supply polarity is reversed. Our warranty does not cover damage caused by reversed power supply connections.

Refer to the diagrams on the page 13 for connection details of the power cable.

- (1) Before connecting the supplied DC cable to the transceiver, connect the RED lead of the DC cable to the POSITIVE (+) battery (or power supply) terminal, and the BLACK lead to the NEGATIVE (-) terminal.
- (2) Connect the DC power cable to the cable pigtail at the back of the transceiver - RED to RED and BLACK to BLACK.
- (3) Connect the coaxial plug on the antenna cable (not supplied) to the coaxial antenna jack on the transceiver. Antenna impedance must be 50 ohms at the operating frequency.
- (4) Connect the microphone plug to the jack on the transceiver.
- (5) If the optional Yaesu SP-55, FSP-2 or similar external speaker is to be installed, insert the plug from the speaker into the EXT SP jack on the rear (disabling the internal speaker).

MAINTENANCE AND SERVICE

Keep the outside of the transceiver clean by wiping with a soft cloth as necessary. Avoid rain or immersion in water, and protect the radio from dust as much as possible. Do not open the case. If the radio fails to operate, check the cable connections, and inspect the fuses in the DC cable. See Fuse Replacement, below.

Regular Maintenance Plan

Your Yaesu dealer will advise you of the preventative maintenance plan that best suits your needs. We recommend that the transceiver be returned to your Yaesu dealer at least once every two years, for testing of receiving sensitivity and transmitter power output.

If the need for servicing does arise, phone your Yaesu dealer for a service appointment. Your dealer will be pleased to answer any service-related questions, and his qualified service technicians will make sure that your radio is back in service as quickly as possible.

Fuse Replacement

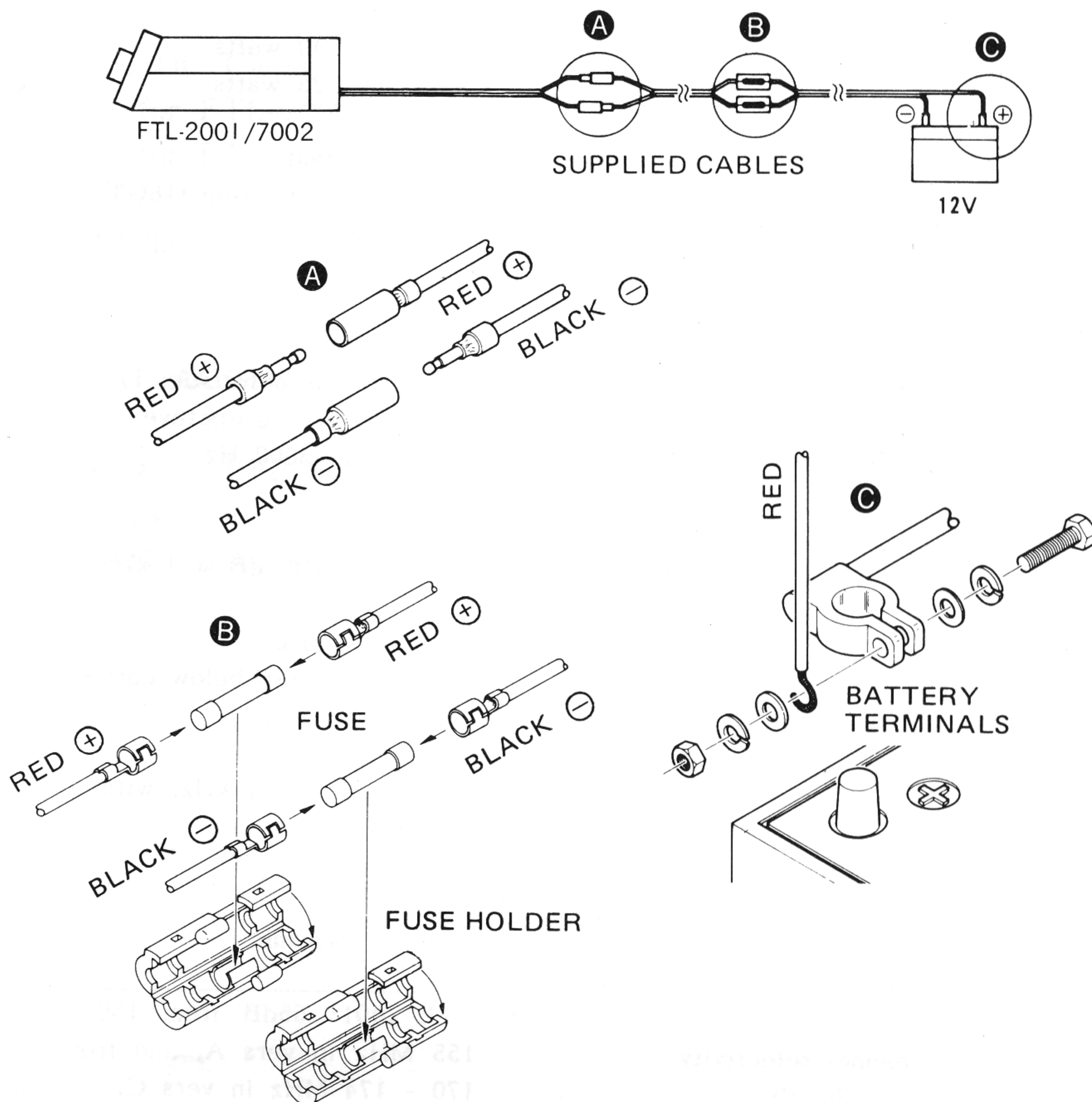
If a fuse is blown, before replacing it, see if you can determine if it was caused by something outside of the radio (perhaps a short circuit due to a worn cable or pigtail near the radio). Contact your Yaesu dealer at once if you do not find the cause of the problem. Replace fuses only with the same type installed.

CAUTION

When replacing fuses, make certain to use the correct type (fast-blow) and rating for your transceiver (FTL-2001: 15A, FTL-7002: 10A). The warranty policy does not cover damage that may result from use of an improper fuse.

SERVICE INFORMATION

If the transceiver fails to operate when switched on, check the fuses in the power cable. If either is found to have blown, attempt to locate and correct the cause of the problem before replacing the fuse(s). The FTL-2001 and FTL-7002 have no user-serviceable parts inside.



SPECIFICATIONS

GENERAL

Frequency range:

see Model Chart

Channels:

12, expandable to 80

Frequency stability:

better than 5 ppm

Emission type:

16G3E

Antenna connection:

M-type (SO-239) socket

Supply voltage:

12.2 to 15V DC, negative ground

Current consumption (Approx.):

0.5A Standby, 1.5A Receive,
8A Transmit

Case size (WHD):

FTL-2001: 160 x 52 x 202mm

FTL-7002: 160 x 52 x 150mm

Weight (Approx.)

FTL-2001: 1.7 kg

FTL-7002: 1.5 kg

RECEIVER

Circuit type:

Double conversion superhet-
erodyne

Sensitivity (for 12 dB SINAD):

FTL-2001: better than 0.25 uV

FTL-7002: better than 0.3 uV

Adjacent channel selectivity:

better than 70 dB

IF frequencies:

FTL-2001: 21.4 MHz & 455 kHz

FTL-7002: 54.5 MHz & 455 kHz

Image rejection:

better than 70 dB*

Intermodulation distortion:

better than 70 dB

Audio output (for 5% THD):

more than 3 watts @ 4 ohms

TRANSMITTER

Power output:

FTL-2001: 40 watts

FTL-7002: 25 watts

Modulation method:

Reactance modulation (16G3E)

Maximum deviation:

5 kHz

Pre-emphasis characteristic:

+1, -3 dB of 6 dB/octave

from 300 to 3000 Hz

FM Noise:

better than -40 dB @ 1 kHz

Spurious emissions:

better than 65dB below carrier

Audio distortion:

less than 5% @ 1 kHz, with
3 kHz deviation

Microphone:

600-ohm dynamic

* FTL-2001: 65dB from 150 -
155 MHz in vers A, and from
170 - 174 MHz in vers C.

MODEL CHART

Model	Version	Frequency Range (MHz)
FTL-2001	A	134 - 155
	C	150 - 174
FTL-7002	D	450 - 470
	E	470 - 490
	F	490 - 512

SUPPLIED ACCESSORIES

One Microphone:

MH-5F8 (Noise Cancelling), or
MH-15B8 (DTMF Keypad)

Fused DC Cable:

for FTL-2001 - T9015615 w/two 15A fuses
for FTL-7002 - T9015610 w/two 10A fuses

MMB-33 Mobile Mounting Bracket

OPTIONAL ACCESSORIES

FYG-4 EEPROM Programmer
FTS-14 CTCSS (subaudible tone) Unit
FP-700 AC (Base Station) Power Supply

Free Manual

Not to be resold

**Technology
Systems**

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