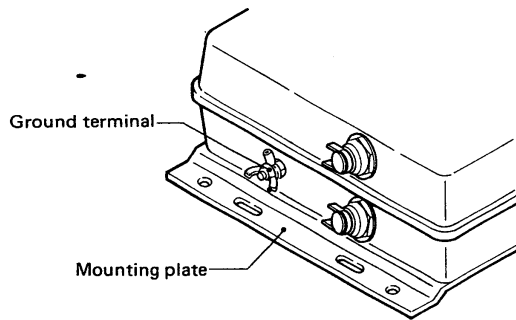


Thank you for purchasing the **AH-3 HF AUTOMATIC ANTENNA TUNER**. The AH-3 matches your transceiver to an antenna more than 3 m/10 ft long (3.5 MHz and above) or more than 12 m/40 ft long (1.8 MHz and above).

Please read this manual thoroughly before **AH-3** installation and operation.

## DANGER!



**NEVER USE THIS TUNER WHEN IT IS UNGROUNDED. ALWAYS GROUND THE TUNER THROUGH THE GROUND TERMINAL BEFORE OPERATING. DO NOT use the mounting plates for grounding.**

**NEVER TRANSMIT OR TUNE WITHOUT AN ANTENNA.** Failure to use an antenna will damage the tuner.

**HIGH VOLTAGE! NEVER TOUCH THE ANTENNA WHILE TRANSMITTING OR TUNING.** Place the antenna in a position where you are sure it will not be touched.

## FEATURES

### ● WIDE TUNING RANGE

The AH-3 provides reliable matching for frequencies from 3.5 MHz to 30 MHz when using at least a 3 m (10 ft) antenna such as the AH-2b ANTENNA ELEMENT (with a 50 cm lead-in wire).

When operating above 1.8 MHz, use at least a 12 m (40 ft) antenna.

### ● AUTOMATIC DIGITAL CONTROL TUNING

The built-in 8-bit microcomputer chooses the lowest SWR condition from more than 260,000 different LC (coil/capacitor) combinations.

### ● EIGHT-FREQUENCY MEMORY FOR FAST TUNING

The LC combinations of 8 previously used frequencies are automatically memorized in the AH-3. Once a frequency is memorized, the AH-3 tunes on that frequency in less than 1 sec. Note that the AH-3 does not memorize a frequency which is normally tuned within 2.5 sec. Memories are retained only when the power is ON.

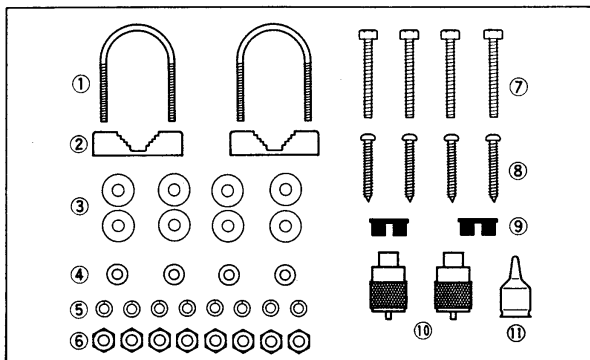
### ● WEATHERPROOF DESIGN

The AH-3's tightly sealed plastic case allows convenient mounting virtually anywhere. The AH-3 can be mounted outdoors under your antenna.

### ● 0.3 W RADIATED POWER

Radiated power during tuning is less than 0.3 W, minimizing interference to other stations.

## UNPACKING



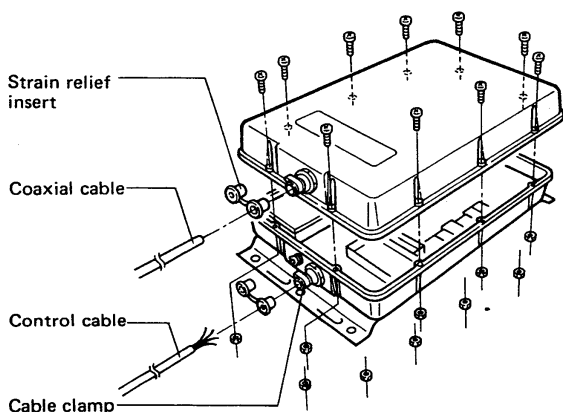
① U-bolts . . . . .	2
② U-bolt plates . . . . .	2
③ Flat washers (M6 large) . . . . .	8
④ Flat washers (M6 small) . . . . .	4
⑤ Spring washers (M6) . . . . .	8
⑥ Nuts (M6) . . . . .	8
⑦ Hex head bolts (M6 x 50) . . . . .	4
⑧ Self-tapping screws (A0 6 x 30) . . . . .	4
⑨ Strain relief inserts . . . . .	2
⑩ PL-259 connectors . . . . .	2
⑪ Weatherproof cap . . . . .	1
⑫ Control cable (5 m, connector assemblies) . . . . .	1
⑬ Coaxial cable (5 m) . . . . .	1

# INSTALLATION

**NOTE:** After inserting the coaxial cable into the AH-3 top cover, solder the PL-259 connector to the coaxial cable.

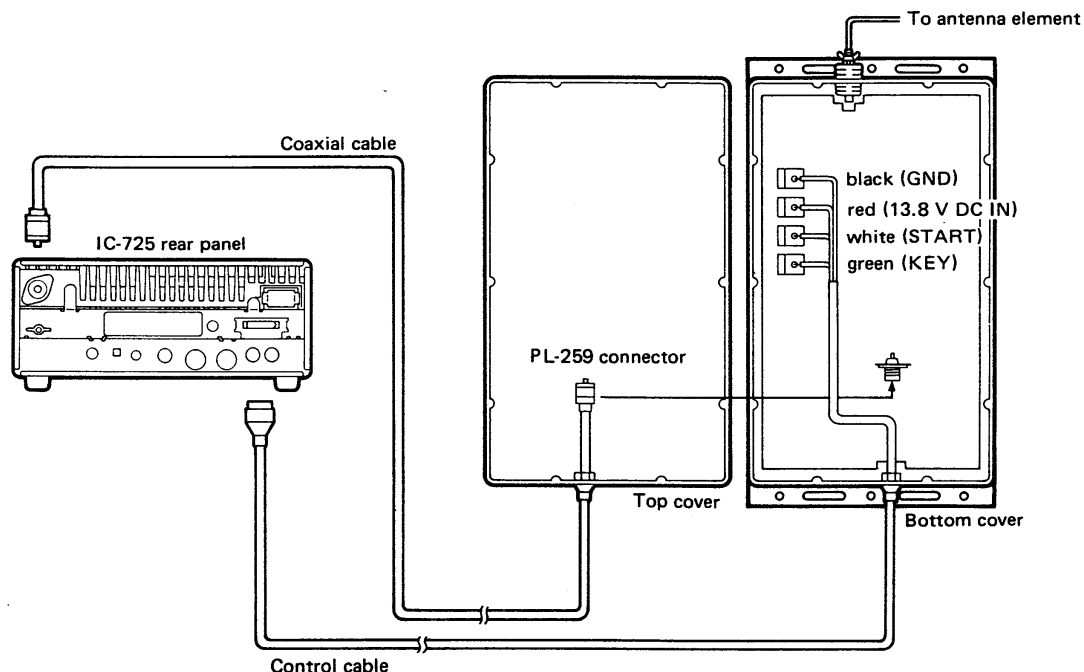
- (1) Remove the top cover (Fig. 1).
- (2) Install the control cable and coaxial cable. (Fig. 1)
- (3) Connect and solder the PL-259 connector to the coaxial cable. (Fig. 3)
- (4) Connect the control cable to the AH-3. (Fig. 2)
- (5) Replace the top cover.
- (6) Mount the AH-3 in the desired location: on an antenna pole, in your vehicle's trunk, etc. (Fig. 4)
- (7) Connect an antenna to the AH-3. (Fig. 5)
- (8) Connect the control cable and the coaxial cable to the transceiver.

**Fig. 1 COVER REMOVAL AND CABLE INSTALLATION**

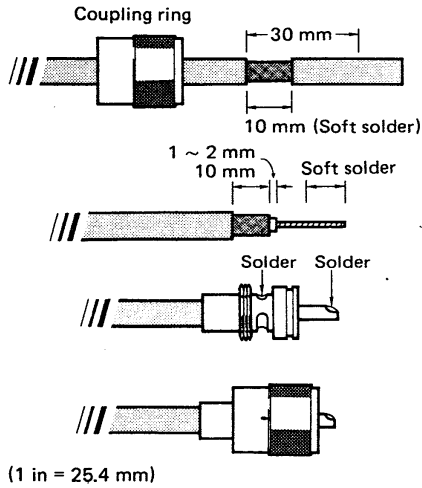


- 1) Remove 10 screws from the top cover and remove the cover.
- 2) Loosen the screws on both cable clamps. If desired, install a strain relief insert (supplied) corresponding to the diameter of the cable.
- 3) Install the coaxial cable through the top cover cable clamp.
- 4) Install the control cable through the bottom cover cable clamp.
- 5) After connecting the coaxial and control cables, tighten the cable clamp screws.

**Fig. 2 CABLE CONNECTIONS**



**Fig. 3 PL-259 CONNECTOR SOLDERING**

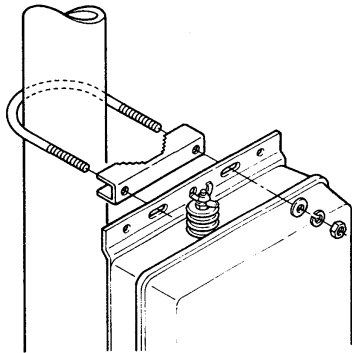


- 1) Slide the coupling ring over the coaxial cable. Strip the cable jacket and pull it to reveal 10 mm (0.4 in) of braid.
  - Soft solder the exposed braid and then pull out the jacket.
- 2) Strip the cable as shown at left. Tin the center conductor the entire length of the exposed braid.
- 3) Slide the connector body over the cable and solder as shown at left.
- 4) Screw the coupling ring onto the connector body.

**Fig. 4 MOUNTING THE AH-3**

• **MOUNTING ON AN ANTENNA POLE**

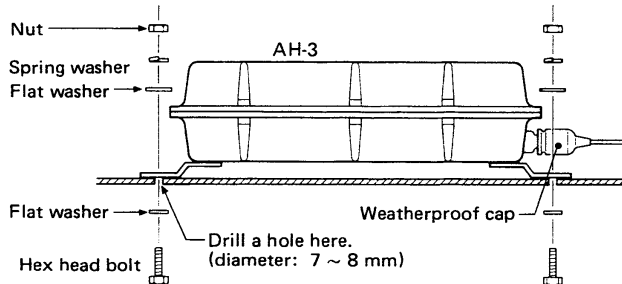
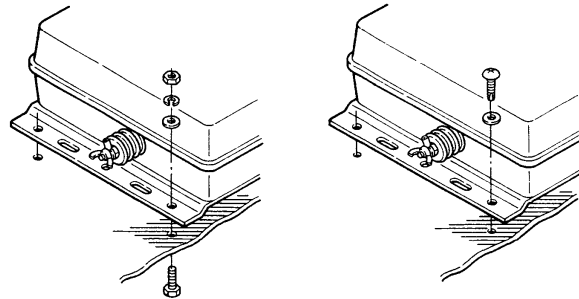
Use the supplied U-bolts



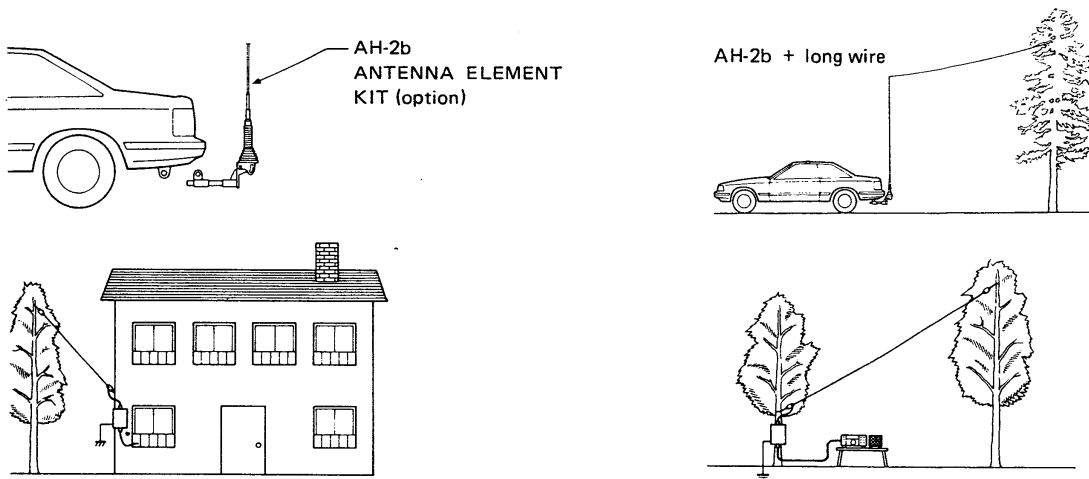
• **MOUNTING ON A FLAT LOCATION**

Using nuts and bolts

Using self-tapping screws



**Fig. 5 MOUNTING EXAMPLES**

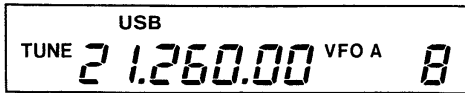


## OPERATION

To ensure the correct impedance match, tune the antenna with the AH-3 each time the operating frequency is changed.



"TUNE" blinks while tuning.



"TUNE" steadily appears when tuning is completed.



"THRU" appears when tuning is unsuccessful.

- (1) Set the desired amateur band and frequency of the transceiver.
- (2) Push the [TUNER] switch on the transceiver.
  - The transceiver automatically changes the mode to CW and transmits at low power.
  - "TUNE" blinks while tuning.
  - Do not change the frequency or mode while tuning.
- (3) After tuning is completed "TUNE" steadily appears on the function display.
  - Normally, tuning requires less than 20 secs; average tuning time is 2 ~ 3 secs.
- (4) When tuning is unsuccessful, "THRU" appears on the function display.
  - At this time, check the antenna connection and antenna length.
  - The AH-3 cannot tune when the antenna is a half-wave or a multiple of a half-wave in length to the operating frequency.
- (5) To bypass (turn OFF) the antenna tuner, push the [FUNCTION] switch and then push the [TUNER] switch.
  - "THRU" appears on the function display.

### ■ CALCULATION OF ANTENNA LENGTH AVOIDED

$$\text{Length of half-wave } (1/2 \lambda) = \frac{300}{\text{Operating frequency (MHz)}} \times \frac{1}{2}$$

[EXAMPLE] Avoid antenna length with an operating frequency of 29.00 MHz

$$\text{Multiple of } 1/2 \lambda = \frac{300}{29} \times \frac{1}{2} \times (1, 2, 3, \dots) = 5.2, 10.3, 15.5 \text{ m}$$

## SPECIFICATIONS

- Frequency range : 3.5 ~ 30 MHz (with the AH-2b)  
1.8 ~ 30 MHz (with an antenna longer than 12 m/40 ft)
- Maximum input power : 120 W
- Input impedance : 50  $\Omega$
- Tuning power required : 5 ~ 15 W
- Rated voltage : 13.8 V DC  $\pm$  15%
- Usable temperature range :  $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$  ( $+14^{\circ}\text{F} \sim +140^{\circ}\text{F}$ )
- VSWR : Less than 1.5 : 1  
(except antennas a half-wave or a multiple of a half-wave in length)
- Weight : 2.4 kg (5.3 lb)
- Dimensions : 230(W) x 85(H) x 38(D) mm    9.1(W) x 3.3(H) x 1.5(D) in  
(Projections not included.)

All stated specifications are subject to change without notice or obligation.

Icom Inc.

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**Count on us!**

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