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ICOM-706 MODIFICATIONS

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SUMMARY

MODIFICATION 1: Enables extended transmit from 1.6 to 54 MHz inclusive.
MODIFICATION 2: Enables extended receive from .05 to about 165 MHz inclusive.

CAUTION

Improperly performed modifications can severely damage your radio.
Use extreme caution. Proceed at your own risk.

Transmitting on frequencies other than those assigned to the amateur radio service may be illegal.

TOOLS RECOMMENDED

1) Small philips-head screwdriver
2) Magnifying glass
3) Small wattage (15 watt) soldering iron with a small tip
4) Long-nosed pliers
5) Paper clip
6) Tweezers

MODIFICATION 1

Result of modification: The IC-706 transmits only on the ham bands. This modification allows for transmit on any frequency from 1.6 to 54 MHz. The radio will also continue to transmit on 2 meters (144 to 148 MHz in the United States) at 10 watts output. This modification will NOT allow for transmit on the AM or FM broadcast bands. The radio will appear to transmit on most frequencies above 54 MHz, but the power output will be a milliwatt or less. The highest power output will be 100 watts from 1.6 to 54 MHz (SSB, FM, CW; 40 watts AM) and 10 watts on 2 meters. (SSB, FM, CW; 4 watts AM) Note: This modification requires that you reset the CPU. All memory information will be erased.

1) Disconnect the power cable. Open the TOP cover of the radio. You will need to remove only 5 screws: three on the top of the radio and one screw on each side. Pull up the speaker carefully and set it aside. Look at the radio from the front; the speaker area should be in front.

2) Locate the rectangular, silver 9 MHz SSB filter. This is clearly marked on the top of it. Now look to the right. Note the "D 108" marking. Below this marking, there are three tiny black diodes. There are two diodes, followed by two blank sockets, followed by another diode.

3) The second diode from the left (the middle diode) is diode D-59. This diode needs to be removed. There are many ways to remove this diode. The easiest way is to crush it with long-nosed pliers. Another way is to use a low-wattage soldering iron and tweezers and carefully heat the diode, then pull with the tweezers. Be extremely careful not to apply too much heat.

4) Re-assemble the radio. Press and hold the UP and DOWN buttons on the right side of the front panel, and while holding them down, turn on the power. This resets the CPU.

MODIFICATION 2

Result of modification: The bandpass filters on the IC-706 are improperly wired. As a result, the radio does not receive any stations above 129 MHz, except in the 2-meter band. This modification allows for reception up to about 165 MHz.

(Note: If your radio receives the FM broadcast band (88-108 MHz), the aircraft band (108-136 MHz), 2 meters, and stations above 148 MHz, it is possible that the modification has already been performed by Icom; you may have a later model.)

1) Open the TOP cover of the radio. You will need to remove only 5 screws: three on the back of the radio and one screw on each side. Pull up the speaker carefully and set it aside. Look at the radio from the front; the speaker area should be in front.

2) Locate the rectangular, silver 9 MHz SSB filter. This is clearly marked on the top of it. Now move your eyes toward the back of the radio until you notice a long white connector with several colored wires on it.

3) The 4th wire from the left, a yellow wire, needs to be removed from the connector. You can cut this wire carefully if you wish. Or, another alternaive is to remove it from the connector. Stick a paper clip or perhaps a pin into the side of the connector under the yellow wire. Pull the wire with tweezers and remove it. There are two yellow wires; be sure to remove the 4th wire from the left, not the other one.

4) Open the BOTTOM of the radio, removing similar screws as you did when you removed the TOP.

5) Look at the PC board just behind the MENU button. You will notice a jack marked "J8" with a grey cable coming out of it.

6) To the left of jack J8, you will see five tiny transistors. Look at the middle transistor. Follow the light green circuit board trace from the middle transistor to a tiny hole just to the left of J9.

7) The yellow wire from the top of the radio needs to be connected to this transistor. The easiest way is to solder a small insulated wire to the yellow wire you just removed, run this new wire underneath the radio to the hole you found in #6 above, put the wire into the hole, and solder the wire into the hole with a low-wattage soldering iron. Use caution not to damage the grey cable or to apply too much heat. This could damage the PCB and seriously affect the radio.

If you perform only steps 1 through 3, you will be able to hear stations above 148 MHz, but you will not be able to hear FM broadcast stations on the 88-108 MHz band.

RECEPTION SUGGESTIONS

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1) You need to use wide FM to receive FM broadcast signals on the 88-108 MHz band, or TV sound signals between 59 and 87 MHz. To receive wide FM, press the MODE button until "FM" or "FM-T" appears on the display, then press and hold the MODE button for two seconds. "WFM" should now appear on the display, and you should be able to hear the FM broadcast stations. Reception quality is quite good if you use a decent external speaker.

2) Aircraft (118-136 MHz) uses AM. You will need to set the radio to AM to receive aircraft.

3) The sensitivity of the radio diminishes rapidly after about 165 MHz.

NOAA weather stations (162.40 to 162.55) are clearly audible, however.

4) If you find the FM broadcast signals overload the aircraft portion of the bands, disable the preampifier by pressing PREAMP (the green light should go out.)