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Midland 13-785 Owner's Manual

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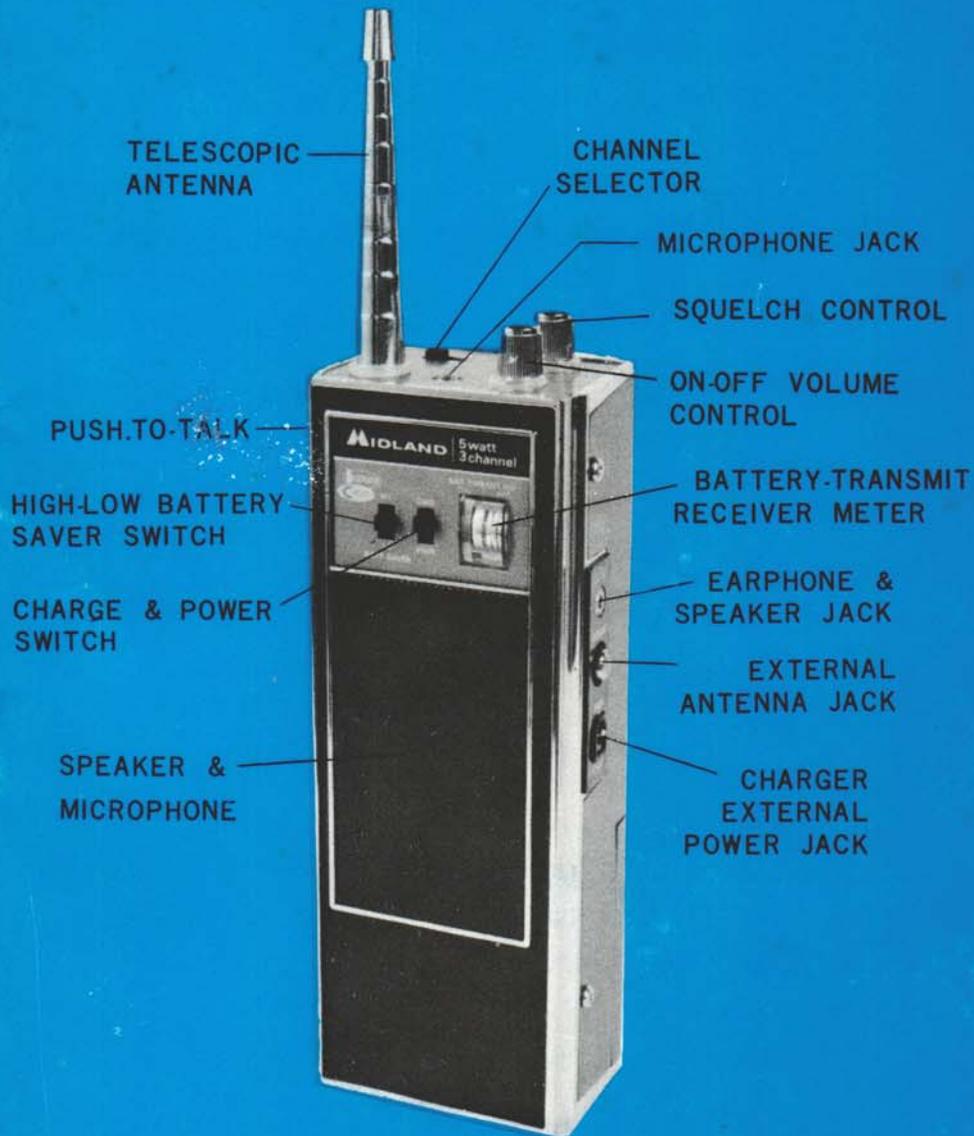
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# MIDLAND<sup>®</sup>

INTERNATIONAL CORPORATION

## Communications Division

### MODEL 13-785 COMPACT 5-WATT 3-CHANNEL TRANSCEIVER



**OWNER'S GUIDE**

## FEDERAL COMMUNICATIONS COMMISSION'S REQUIREMENTS

Your new Midland 13-785 is a combination receiver-transmitter designed and built for licensed Class D operation on any of the 23 frequencies designated as citizens band channels by the Federal Communications Commission. You are required to read and understand Part 95 of the F.C.C. rules and regulations prior to operation of this unit.

Part 95 regulations are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. You are also required to complete F.C.C. form 505 and submit to the F.C.C. in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit prior to receipt of your license.

NOTE: The technical information, diagrams, and charts provided in this manual are supplied for the use of a qualified holder of a first or second class radio-telephone license in servicing this transceiver. It is the users responsibility to see that this unit is operating at all times in accordance with the F.C.C. Citizens Radio Service Regulations.

If you install or service your own transceiver do not attempt to make any transmitter tuning adjustment. Transmitter adjustments are prohibited by the F.C.C. unless you hold a first or second class radio-telephone license or are in the presence of a person holding such a license. A Citizens Band or Amateur license is not sufficient.

When service is performed by an authorized and licensed person, care must be taken in the

replacement of parts to use only authorized parts in order not to void the type acceptance of this model.

MIDLAND INTERNATIONAL CORPORATION, COMMUNICATION DIVISION, HEREBY CERTIFIES THAT THIS UNIT HAS BEEN DESIGNED AND MANUFACTURED IN ACCORDANCE WITH VOL.6, PART 95 OF THE CURRENT F.C.C. RULES AND REGULATIONS AS OF THE DATE OF MANUFACTURE.

### **OWNER'S GUIDE**

Your 13-785 is a versatile, professional quality transceiver, and we strongly suggest that you read this Owner's Guide carefully before operation so that you may receive full benefit from its many features.

### **OPERATING RANGE**

The operating range will vary from ½ to several miles depending upon terrain, obstacles, climatic conditions, and the other transceiver used.

Battery condition also affects range and fresh batteries will provide far better range than weak ones.

When the 13-785 is used with a base or mobile unit the range will generally be increased.

## **OPERATING CONTROLS, CONNECTORS AND THEIR FUNCTIONS**

### **CHANNEL SELECTOR**

Controls both transmitter and receiver frequencies simultaneously. This transceiver is capable of 3 channel operation. One set of Channel 7 crystals are installed in the CHANNEL "F1" position. Additional crystals may be installed (see crystal installation) in the open channels. To operate set the switch to the desired channel.

## **VOLUME-ON/OFF**

Turns the set on and controls the sound output from the speaker when receiving. The volume control does not affect transmitting output. To turn the unit on and increase volume rotate this control clockwise.

## **SQUELCH**

Quiets the receiver when signals are not being received. It functions only in the receive position and does not affect the receiver volume when signals are being received. To adjust: When no signals are present rotate the squelch control clockwise until the receiver is quieted. Incoming signals will automatically release the squelch, enabling you to receive normally. Careful adjustment is necessary as settings too far to the right will not allow weaker signals to release the squelch.

## **PUSH-TO-TALK BAR**

This controls both transmitter and receiver. To transmit press and hold the bar. To receive release it.

## **POWER/CHARGE SWITCH**

In "PWR" position, this feature allows the use of an external 12 volt DC power source such as a 12 VDC adaptor or your car battery. A coaxial jack labeled "charge" is located on the side of the unit for use with an AC adaptor or charger.

In "CHG" position, this feature allows charging of rechargeable batteries without removing the batteries from the unit. Use only nickel-cadmium batteries for recharging. Carbon-zinc, mercury, alkaline batteries may be used to operate the transceiver, but do not attempt to recharge these types because leakage or battery damage may occur. A regulated battery charger and not an AC power supply should be used for recharging purposes.

## **EXT ANT (EXTERNAL ANTENNA)**

External antennas, either mobile or base, may be plugged into this jack and will increase the unit's range. The built-in antenna is not extended when an external antenna is being used. When using an external antenna, be sure the antenna meets height limitations of current F. C. C. regulations.

## **POWER OUTPUT SWITCH**

To extend battery life, use the unit with the "power" switch in "Lo" position for short range communications. For long range use, place the switch in the "Hi" position.

## **EXTERNAL MICROPHONE JACK**

This will be used for connection of an optional external microphone (model 22-225), which allows you to transmit without holding and moving the transceiver to your mouth at every transmission. Connecting the external microphone will automatically cut off the built-in speaker/microphone.

## **BATTERY INSTALLATION**

This unit operates on 8 "AA" size 1.5 volt batteries, 1.2 volt "AA" rechargeable nicad batteries, or model 20-112 nicad pack (all optional) Standard types may be used, but alkaline or rechargeable batteries are desirable.

NOTE : Only nickel-cadmium batteries can be used for recharging purposes. Nickel-cadmium batteries with 500 MA capacity are recommended.

To Install : Open the battery compartment lid on the rear of the case and carefully remove the battery holder. It is not necessary to remove the wire connected to the battery holder and care should be taken not to break it. Insert the batteries observing the polarities marked on the holder. Make sure the batteries are properly seated,

replace the holder, and close the lid on the rear cover plate.

## **BATTERY-SIGNAL METER**

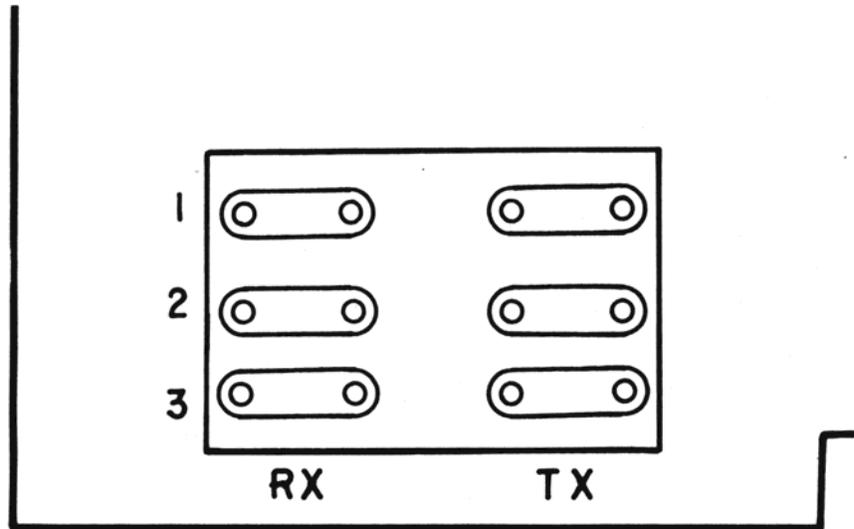
A combination meter on front panel provides a constant visual monitor of incoming "Signal Strength" when receiving and "Relative Output Power" when transmitting also it indicates the battery condition. When the pointer is in the black color range, batteries are working good, and when the pointer is in the red color range, when operating this unit, batteries are to be replaced with fresh ones.

## **CRYSTAL INSTALLATION**

In order to insure proper operation, only crystals designed for this unit circuit should be used. Midland 18-000 series crystals are recommended, however, crystals from other manufacturers may be used provided they are the proper type.

This unit has been adjusted for maximum performance in the middle of the citizens band channels and will operate properly across the entire band without further adjustment. If you desire, this unit may be readjusted for maximum performance at either the high or low end of the band. This will, however, result in reduced performance at the opposite end. All adjustments of this type MUST be made by a qualified and LICENSED technician.

To install crystals, remove the entire back cover by carefully loosening the screw on the side of the unit.



**CRYSTAL SOCKET DIAGRAM**

Plug the crystals you desire into the sockets being careful to place transmit crystals into the transmit sockets and receive crystals into the receive sockets. Replace the back cover.

## **OPERATING INSTRUCTIONS**

1. Extend the antenna to its full length or connect an external antenna.  
NOTE : TRANSMITTING WITHOUT ANY ANTENNA MAY CAUSE DAMAGE TO THE OUTPUT TRANSISTORS AND VOID YOUR WARRANTY.
2. Turn the power switch to the "ON" position.
3. Set the channel selector to the desired channel (F1 position if you have not installed other crystals).
4. Adjust the volume and squelch controls.
5. To transmit, press and hold the push-to-talk bar and talk into the microphone. Use a normal voice and hold the unit about 2 to 3 inches from your mouth. To receive, release the push-to-talk bar.

For best transmission and reception when using the built-in antenna, it should be held in a vertical position and be fully extended.

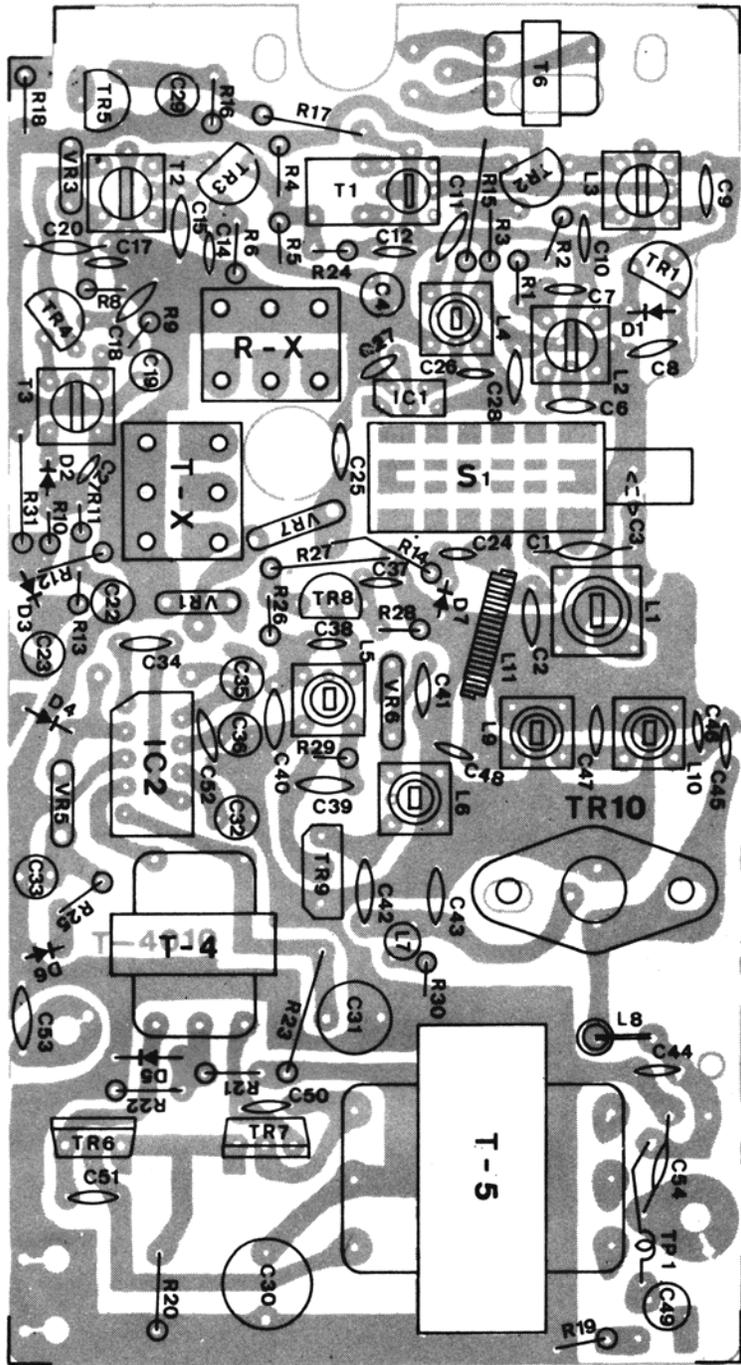
NOTE: THIS UNIT IS DESIGNED TO OPERATE PROPERLY WITH ANY STANDARD 12 VDC SYSTEM. VOLTAGES OTHER THAN 12V MAY CAUSE DAMAGE TO THE UNIT OR RESULT IN POOR OPERATION.

## SPECIFICATIONS

- Semiconductor Complement .....  
9 Transistors, 6 Diodes, 2 Integrated circuits,  
1 Varistor, and 1 Transistor used in squelch circuit.
  
- Transmit and Receive Frequency .....  
3 Channel available, Channel 7 (27.035 MHz) plug-in  
crystals factory installed in number F1 position.
  
- Receiving System .....  
Superheterodyne
  
- Intermediate Frequency .....  
455 KHz
  
- Transmitter .....  
3 Channel, crystal controlled system.
  
- Modulation System .....  
AM maintained between 90 and 100%.
  
- RF Input Power .....  
5 Watts
  
- Frequency Tolerance .....  
 $\pm 0.005\%$
  
- Receiver Sensitivity .....  
 $1 \mu\text{V}$  at 10 dB (S + N)/N

- Antenna .....  
 Telescopic 13 section, 56" extended. External antenna jack provided to match any standard 50 Ohm CB antenna.
  
- Power Source .....  
 12-Volts DC (8 penlight batteries self-contained or external 12 Volt DC source)
  
- Speaker Microphone .....  
 Extra sensitive 2 3/4" dynamic 8 Ohm.
  
- Controls & Switches .....  
 3 channel selector switch ON-OFF volume control, full variable squelch, Hi-Lo battery saver switch, push-to-talk switch, power/charge switch.
  
- Accessory Jacks .....  
 External antenna, external microphone, AC adaptor/ battery charger (coaxial), earphone/ speaker jack .
  
- Dimensions .....  
 8" (H) × 3" (W) × 2" (D).

# TOP VIEW OF CIRCUIT BOARD



MODEL 13-785



## WARRANTY POLICY

Midland International Corporation warrants each new Midland product to be free from defects in material and workmanship under the normal use and service for a period of 90 days after delivery to the ultimate user and will replace or repair the product at our option, at no charge should it become defective and which our examination shall disclose to be defective and under warranty.

This warranty shall not apply to any Midland product which has been subject to misuse, neglect, accident, incorrect wiring not of our own installation, or to use in violation of instructions furnished by us, nor extended to units which have been repaired or altered outside of our factory.

This warranty does not cover carrying case, earphones, batteries, antenna, broken or cracked cabinets, or any other accessory used in connection with this product.

This warranty is in lieu of all other warnings expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

Sales receipt must accompany product to validate the date of purchase.



### Communications Division

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