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Midland 13-770 Owner's Manual

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MIDLAND
COMMUNICATIONS COMPANY

INTEGRATED
CIRCUIT



MODEL 13-770

5 WATT 6 CHANNEL TRANSCEIVER

SOLID STATE PLUS 1 INTEGRATED CIRCUIT

INTRODUCTION

Your new Midland Model 13-770 is a combination receiver-transmitter designed and engineered for licensed class "D" operation on any of the 23 channels designated as Citizens Band frequencies by the Federal Communications Commission. You are required to read and understand Volume 6 Part 95 of the F.C.C. regulations prior to operation of this unit.

Copies of Volume 6 Part 95, regulations for Citizens Band Radio Service, are available for \$2.00 by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. You are also required to complete F.C.C. Form 505 and submit it to the Federal Communications Commission in order to receive your license to operate this unit. F.C.C. regulations will be violated if you operate this transceiver on the air prior to receipt of your license.

Midland Communications Company hereby certifies that as of the date of manufacture, this unit has been designed and manufactured in accordance with Volume, 6, Part 95 of the F.C.C. Regulations for Class D Citizens Band Operation.

Midland's new Integrated Circuit is a revolutionary concept in solid state efficiency and dependability.

IC works as 7-stage I.F. amplifier yet the entire circuit is no larger than a single ordinary transistor. The most advanced electronics concept since solid state circuitry itself.


OPERATING INSTRUCTIONS

1. Open back cover and insert 8 penlite batteries, carefully observing polarities. Check to see that batteries are firmly seated.
2. Extend the telescopic antenna to its full length for maximum distance.
3. Turn the "ON-OFF & VOLUME" switch to "ON" position. Your transceiver is now ready to operate. Adjust volume to desired level.
4. The variable squelch control reduces background noises and keeps interference at a minimum between calls. Caution should be taken in setting squelch control so as not to reduce receive signal.
5. This transceiver is equipped for six-channel operation. One set of Channel 7 crystals are installed in the unit.

Additional crystals may be installed for the other open channels. Make sure the switch is set to desired channel.


6. Press the "PUSH-TO-TALK" switch for transmitting.
7. Release the "PUSH-TO-TALK" switch for receiving.
8. When transmitting, speak clearly in normal voice, holding the transceiver about 3 inches from your mouth.
9. When receiving, adjust the volume control and squelch control for best reception and desired listening level. For private listening, or when receiving in noisy locations, use the earphone.
10. For best transmission and reception, antenna should be held in vertical position.
11. Public address system
To use your new 13-770 as a public address system, connect any standard 8 ohm PA speaker to the PA jack located at the right side of the unit.
Slide the switch to PA position, Turn set on and press push-to-talk switch to broadcast over PA speaker.

OPERATION RANGE

Your  13-770 is a fine piece of high frequency equipment.

The operating range can be several miles, depending upon terrain, obstacles, climatic conditions and the type of equipment used with this unit.

By using this model with a base station or mobile unit, this range can be greatly increased.

Your  13-770 is completely transistorized and crystal-controlled portable transmitter and receiver.

It is designed to operate in the 27MC citizens band and built to comply with F. C. C. Rules and Regulations.

POWER SAVER SWITCH

To extend battery life, use unit with battery saver switch in "LOW" position for short range communications.

For long range use, move switch to "HIGH" position.

GUIDE TO ADJUSTMENT

(Intended for use by qualified technician)

TRANSMITTING SECTION

- 1) Use only those crystals recommended for the circuitry of this unit. Otherwise, the specified channel frequency may not be attained.

A check of the oscillation frequencies by frequency meter should be made.

Midland series 18-000 crystals are recommended for the 13-770 and may be ordered through your dealer.

- 2) When the frequencies are close to each other, such as Channel 1 and 2, no adjustment for frequency is necessary. If adjustment is necessary, follow the instructions below:
 - a. Extend the rod antenna to its full length.
Never transmit without antenna fully extended as one or more transistors will be ruined and will not be covered by warranty.
 - b. Make sure that battery voltage is 12 volts.
 - c. Use a simple field strength meter.
 - d. Install the crystals in their proper socket for transmit and receive.
 - e. Press the talk-listen switch to transmit, adjust the antenna load coil and tank coil for maximum indication on strength meter or RF output meter.
 - f. Input power can be controlled by adjusting the oscillator coil of the transmitter.
 - g. Too much input power in relation to modulation capability can result in a low modulation percentage, so decrease drive to obtain 85% modulation.

RECEIVING SECTION

- 1) Adjust the Intermediate Frequency circuit to 455 KC from signal generator, peak the 3 IF transformers for maximum.
- 2) Adjust the receiver antenna and oscillator coil for maximum reception or indication by instruments, using another transceiver or transmitter as signal source.
- 3) The above adjustment should be repeated several times to ascertain peak reception.

NOTE: It is best to choose channel numbers close to one another, as adjustments are not adequate from Channel 2 to 22 separation.

SPECIFICATIONS

Semiconductor

Complement: 13 Transistors , 1 Intergrated Circuit (consisting of 3 Transistors and 3 Resistors)

Plus 2 Transistors in Squelch Circuit, 1 Diode in ANL Circuit, and plus 6 Diodes, 1 thermistor.

Transmit and

Receiver Frequency: 6 Channel available, Channel 7 (27.035MC) plug-in crystals factory installed in number position.

Receiving System : Superheterodyne with RF amplifier. Sensitivity better than 1.2uV.

Intermediate Frequency: 455 KC

Transmitter : Dual purpose, 6-channel, crystal controlled oscillator system voice transmission.

Modulation System : AM maintained between 90 and 100 %

RF Input Power : 5 Watts

Frequency Tolerance : ± 0.005 %

Receiver Sensitivity : $1 \mu v$ at 10 db S/N.

Squelch Sensitivity : 1~100 Nominal. (Variable)

Antenna : Telescopic 13 section, 61" extended. External antenna jack provided to match any standard 50 Ohms CB antenna.

Power Source : 12-Volts DC (8 penlight batteries self-contained or external 12 Volt DC source).

Speaker Microphone : Extra sensitive $2 \frac{3}{4}$ " dynamic 8 Ohm

Controls : 6-channel selector switch, full variable squelch with PA position, On-Off volume control, external power-charge, switch.


Accessory Jacks : External power-charger jack, ear-
phone jack, external mike jack,
external PA jack, antenna jack.

Cabinet : All metal with diecast chrome
grille.

Dimensions : 9 $\frac{3}{4}$ " (H) \times 3" (W) \times 2 $\frac{3}{16}$ " (D)

Accessories Included : Leather case, instruction booklet.

WARRANTY POLICY

 **MIDLAND** Communications Company warrants each new Midland product to be free from defects in material and workmanship under 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 cases, earphones, batteries, antennas, broken or cracked cabinets, or any other accessory used in connection with the product.

This warranty is in lieu of all other warranties 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 date of purchase.

MIDLAND COMMUNICATIONS COMPANY
1909 Vernon Street
North Kansas City, Missouri 64116

SERVICING YOUR TRANSCEIVER

The technical information, diagrams and charts provided in this manual are supplied for the use of qualified holder of a first or second-class radio-telephone license in servicing this transceiver. It is the user's 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 your own transceiver, do not attempt to make any transmitter tuning adjustments. Adjustments are prohibited by the F. C. C. unless you hold a first or second-class radio-telephone license, or in the presence of a person holding such license. A Citizens Band or Amateur license is not sufficient.

MIDLAND INTERNATIONAL CORPORATION CERTIFIES THAT THIS EQUIPMENT HAS BEEN DESIGNED, MANUFACTURED AND FURNISHED IN ACCORDANCE WITH THE SPECIFICATIONS CONTAINED IN SUB-PARAGRAPHS (1), (2), (3), (4) and (5) OF PART 1971 (C) OF THE F. C. C. RULES AND REGULATIONS AS AMENDED EFFECTIVE FEBRUARY 1962.

OPTIONAL ACCESSORIES

10-141

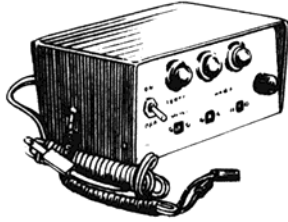
12 Volt Battery Cable (10-141)



10-141

For use with 12-volt automobile negative ground.

AC Power Supply (18-143C)



18-143C

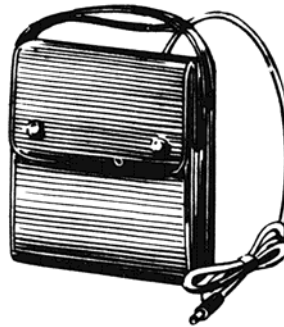
To operate 13-770 on 110-volts AC and to charge rechargeable batteries.

For base station operation.

External Battery Pack (18-137)

Cowhide case (5½" high × 6" wide × 2" deep) with shoulder strap and 35" lead with plug.

Accommodates 8 flashlight "D" cells. (Eveready 950, NEDA 813 or **MIDLAND** 20-813)

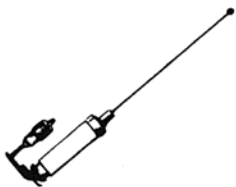


18-137

External Antenna (18-210)

Loaded coil base station antenna with all mounting hardware and 20 feet of coaxial cable. For mobile or base station use.

Requires 25-411 adaptor to plug directly into antenna jack.



18-210

External Microphone (18-138)

Specially designed for use with 13-760 as base station. Gives sharp, clear voice response.

Attractive gray case and cable equipped with plug to fit 13-770.



18-138

TR₁ 2SC394 ©

TR₂ 2SC380 ©

TR₃ 2SC380 ©

IC₁ CA-3028 ©

