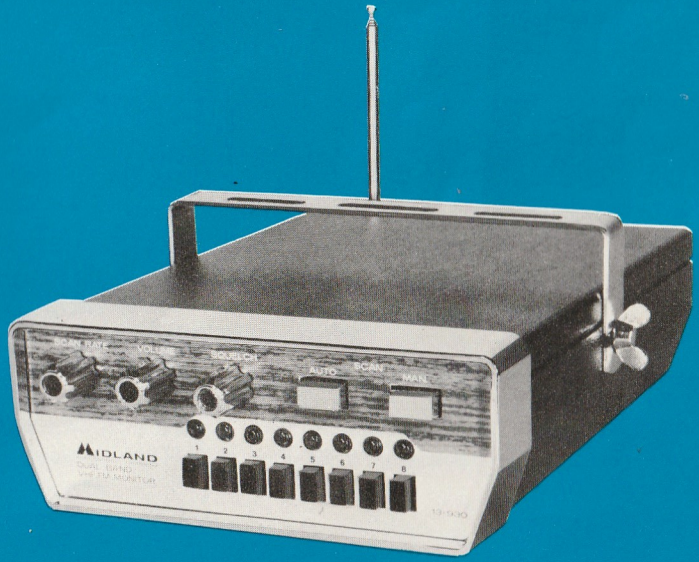
MIDLAND INTERNATIONAL®

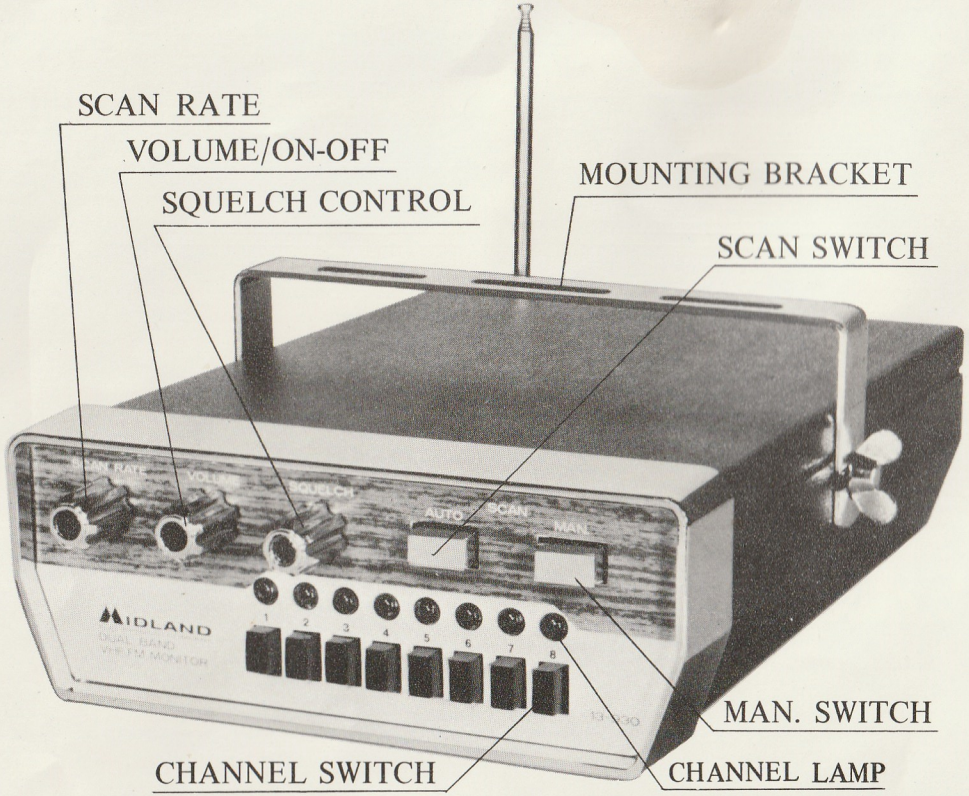
INTEGRATED CIRCUIT

# MODEL 13-930

## Hi-Lo VHF Dual Band FM Scanning Monitor

# OWNER'S GUIDE




SCAN RATE
VOLUME/ON-OFF
SQUELCH CONTROL
MOUNTING BRACKET
SCAN SWITCH
MAN. SWITCH
CHANNEL SWITCH
CHANNEL LAMP
MIDLAND

## OPERATING CONTROLS AND FUNCTIONS (Figures 1 and 2)

### VOLUME – ON/OFF

Controls the sound output from the speaker and the power on/off. Rotate to the right to turn the power on and increase the volume.

### SQUELCH

Mutes the receiver to provide a quiet stand-by operation when signals are not being received and does not affect the volume when signals are received.

The squelch should be adjusted in the following manner. With the unit on and set to any channel equipped with a crystal but with no signal present, carefully rotate the squelch control to the right until the receiver is quiet. 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.

### SCAN RATE

Changes the speed of scanning rate. It continuously varies approximately from 8 to 24 channels a second.

### INDIVIDUAL CHANNEL SELECTORS 1 – 8

These pushbuttons allow individual channel selection for programming either the automatic or manual scanning operation. Push the buttons in to select the desired channels.

### AUTOMATIC-MANUAL SCANNING

These two push buttons control the automatic and manual scanning operation. For automatic scanning, Adjust the squelch for quiet operation as above and push in the button marked SCAN and then, squelch until scanning starts. The unit must be squelched off for proper scanning action. For manual scanning, push the button marked MAN. This defeats the automatic scanning and you may manually scan by pushing the MAN button each time you want to advance to another channel.

## EXTERNAL SPEAKER

A rear panel jack is provided to allow the use of an external speaker. When the plug is inserted into the external speaker jack the built-in speaker is automatically disconnected and the external speaker will operate.

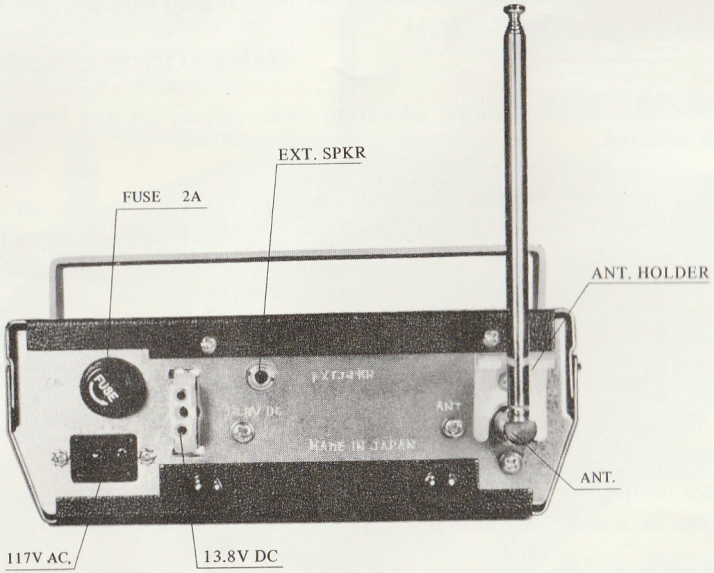



FIGURE 2

## FREQUENCIES AND CRYSTALS

Being a crystal controlled receiver, this unit requires 1 crystal for each frequency you want to monitor.

Generally speaking, frequencies for the various radio services such as police, fire, business, etc. vary from area to area and it is suggested that you contact your local authorities for frequency information for your area. You should also verify that the area in which you will use this monitor does not have laws or regulations prohibiting its use.

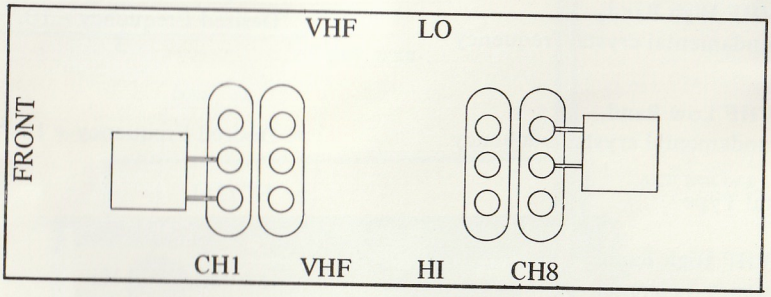
Once you have determined the frequencies you want to monitor, crystals may be ordered from your Midland dealer or by writing directly to a crystal manufacturer.

The following information may be required by the crystal manufacturer in order to properly prepare the crystals.

| | |
|---|---|
| For VHF High Band,<br>the fundamental crystal frequency | $= \frac{\text{Desired Frequency} - 10.7\ \text{MHz}}{3}$ |
| For VHF Low Band,<br>the fundamental crystal frequency | = Desired Frequency + 10.7 MHz |
| Crystal Type | : HC/25U |
| For VHF High Band,<br>Frequency Tolerance | : +1,000, –800 Hz<br>(–10°C ~ +60°C) |
| For VHF Low Band,<br>Frequency Tolerance | : +2,000, –1,500 Hz<br>(–10°C ~ +60°C) |
| Resonance | : Series, –450 Hz<br>Third Overtone |
| Maximum Impedance | : 35 ohms |
| Drive Level | : 2.0 mW |
| Shunt Capacitance | : Less than 6 pF |

## CRYSTAL INSTALLATION

To install crystals, open the crystal access door on the bottom of the cabinet and carefully and gently plug in the crystals in whatever order you desire as illustrated below. High and Low bands crystals should be installed in the rows of crystal sockets designated as "H" and "L", respectively.




## AC - DC OPERATION

The 13-930 may be installed in mobile service, (13.8 volt DC) or used for base station operation by selecting either ot the two power cords supplied.

## MOBILE INSTALLATION

Safety and operating convenience are the primary factors to consider when mounting any piece of equipment in an automobile. Be sure that the controls may be easily reached by the operator. Also be sure that connecting cables do not interfere with the operation of the brake, accelerator, etc.

## POWER CONNECTION

When used in mobile operation, the vehicle's battery supplies the power.

CAUTION: The 13-930 is designed to be used in a 12 volt DC negative ground system only. If you are unsure of your vehicle's polarity, ask your dealer or local service station.

The red wire from the 13-930 is positive and may be connected directly to the positive or + battery terminal or to a fuse block or ignition switch or other convenient point.

The black wire is negative or ground and should be connected to be metal part of the vehicle body or frame or – battery terminal.

To insure proper operation, care should also be taken in attaching the unit and mounting bracket to the vehicle in such a way as to obtain good ground connection at this point.

## ANTENNAS

As is the case with all high quality communications receivers, the better the antenna, the better the performance of the receiver. The antenna supplied with the 13-930 should provide satisfactory performance in strong signal areas. If you desire even better reception, or are in a weak signal area, a suitable outdoor antenna should be used. In many cases, your regular car radio antenna will provide satisfactory performance or a mobile antenna specifically designed for VHF may be used.

If you desire to use multi-antenna for this equipment, short the loading coil T-101 for better reception. Solder the two lines coming out from the coil T-101.

## OPERATING INSTRUCTIONS

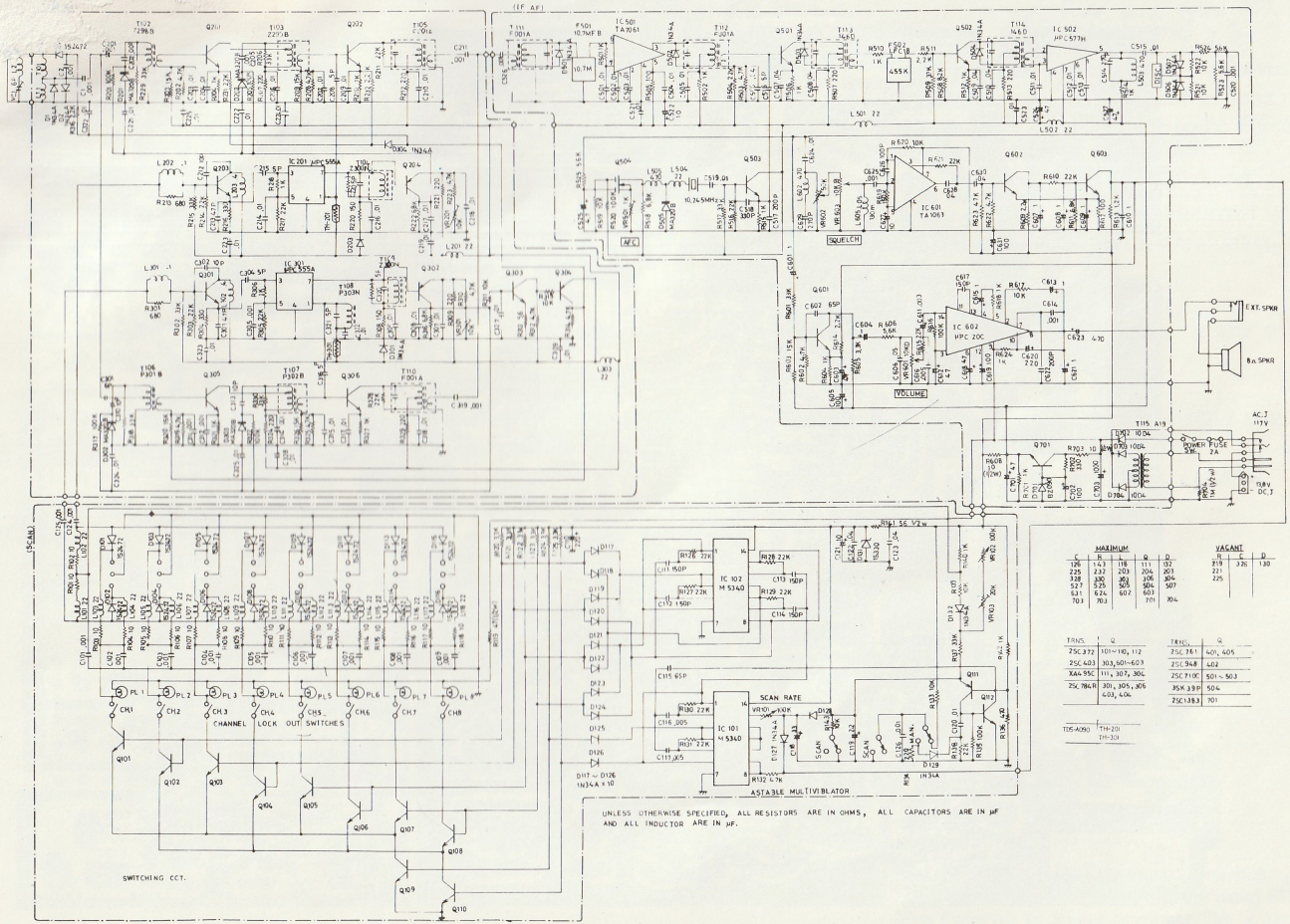
The explanations of operating controls and functions should be read and understood before actual operation of this receiver.

1. Connect an antenna and the proper power cable.
2. Select either automatic or manual scanning operation.
3. Select the channels you want to monitor.
4. Turn the unit on and adjust the volume, squelch and scan rate controls.
   NOTE: In the case of a continuous broadcast, the scanning circuit will lock on this channel and not scan.
   Any continuous broadcast channel may be disabled by releasing the front panel channel selector button for that channel.

## SPECIFICATIONS

| | |
|---|---|
| Circuitry | 28 Transistors, 49 Diodes, 8 Integrated Circuits<br>1 Field Effect Transistor |
| Frequency Range<br>(Usable Sensitivity) | 30 ~ 50 MHz for Low Band<br>144 ~ 173 MHz for High Band |
| Sensitivity 20 dB Q.S. | 1$\mu$V (Usable Sensitivity 2$\mu$V) |
| Adjacent Channel Rejection | 60 dB |
| Scan Rate | 8 ~ 24 Channels per Second |
| Audio Output | 1W |
| Intermediate Frequency | 1st 10.7 MHz, 2nd 455 KHz |
| Power Supply | 117 Volts AC, 12 Volts DC |
| Accessories | 1 AC Power Cord Unit<br>1 DC Power Cord Unit<br>1 Spare Lamp<br>1 Spare Fuse<br>1 Mounting Bracket with Screws<br>1 Owner's Guide<br>1 Telescopic Antenna with Plug |

# SCHEMATIC DIAGRAM






Drawing No. E0287-2136F

## PARTS LAYOUT

2 Co. Police (Base Sta) 155.730
1 City Police 154.845
3 Co. Police Car. 154.89
4 Fire Dept 154.310
State Police Post. — 165.37

## WARRANTY POLICY

Midland International Corporation 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 this 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 the date of purchase.

42.26
42.42

Mobile Phone 152.57

30-50 MHz
Station to Station
Car to Station

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