

MIDLAND
ELECTRONICS COMPANY



**OWNER'S
GUIDE**

MODEL 13-904
Automatic Scanning
VHF-FM Pocketable
Monitor

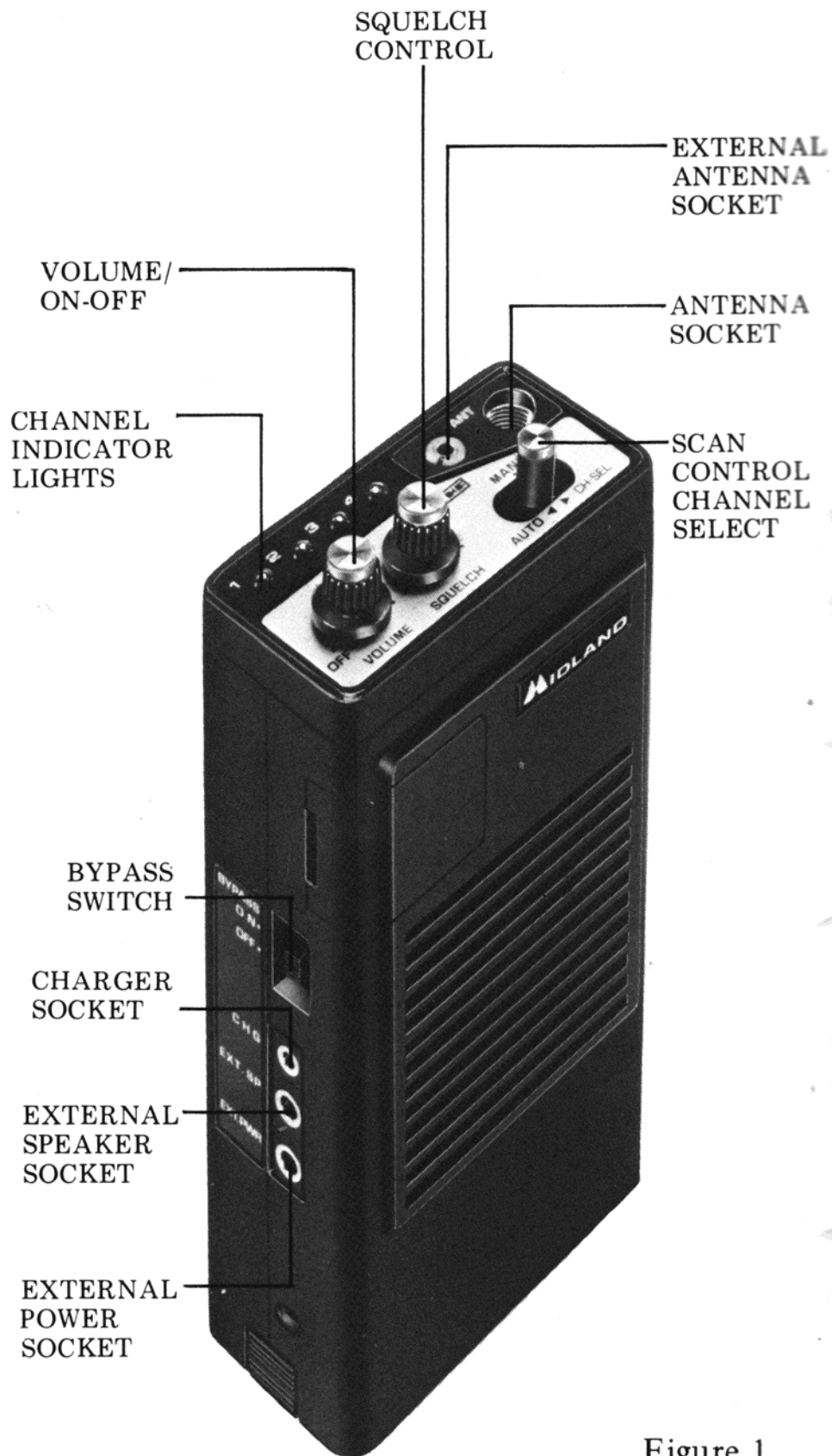


Figure 1

OPERATING CONTROLS AND FUNCTIONS (Figure 1)

VOLUME – ON/OFF

Turn the volume control clockwise and advance the volume control until you hear a rushing noise, and then adjust this control to a comfortable level.

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.

In the manual scanning mode, 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. In coming 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 CONTROL AND CHANNEL SELECT

The scan AUTO-MANUAL-CHANNEL Select switch has two functions. It switches from automatic to manual scanning and also serves as a channel selector switch in the manual scanning mode.

BYPASS

This feature prevents the scanner from being locked on a constantly busy frequency. Any crystal inserted in the channel 1 position can be bypassed in the scanning sequence, by engaging the bypass switch.

EXTERNAL POWER SOCKET

The 13-904 is provided with an External Power Socket so that the unit may be operated from any convenient 120V AC outlet with the use of an optional 6 volt DC/AC-adaptor such as model 18-106.

EARPHONE SOCKET (EXTERNAL SPEAKER SOCKET)

The earphone jack permits listening without disturbing others. Simply plug an earphone into the earphone socket on the unit. The speaker will be automatically disconnected and receiving will be heard only through the earphone.

CHARGER SOCKET

4 AA size nickel-cadmium batteries may be used in place of dry batteries. These can be recharged hundreds of times and provide long-lasting economical power. To charge Ni-Cd batteries, connect the charger plug of a charger such as model 18-112 to the charger jack located on the left side of the receiver.

It is a good idea to recharge Nickel-Cadmium batteries for a few hours when they are initially installed as they may have lost some of their charge in storage.

BATTERY OPERATION

Slide the battery compartment lock in

the direction shown by the arrow and remove the battery compartment lid. Install 4 penlight batteries in the battery lid as indicated. Insert batteries carefully observing polarity. Insert the battery compartment lid back in place. When the receiver is not to be used for an extended period of time or if the batteries are exhausted, remove the batteries to prevent damage to the receiver that could result from battery leakage.

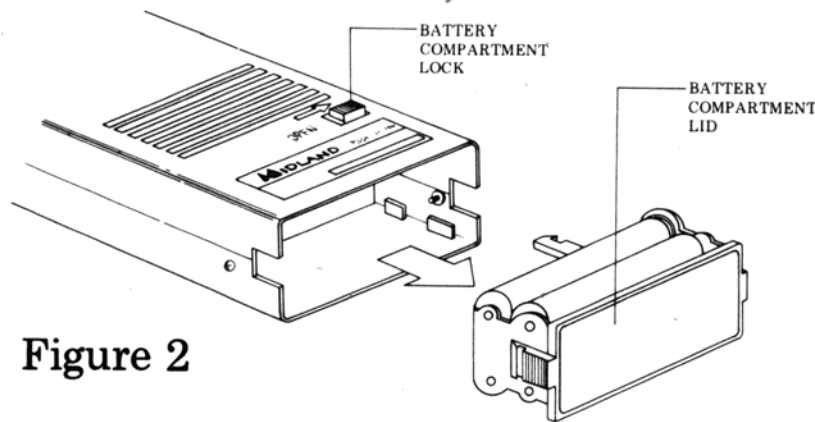


Figure 2

AC POWER OPERATION

This receiver can be operated on household current with an AC adaptor (optional) of 6 volt DC output, such as model 18-106. Connect the adaptor plug to EXT. POWER jack located on the left side of the receiver.

CRYSTAL INSTALLATION

Insert a small coin into the opening provided at the left side of the unit and twist the coin carefully to open the crystal compartment lid. Figure 3 shows the location of the crystal sockets. Insert the crystals into the sockets.

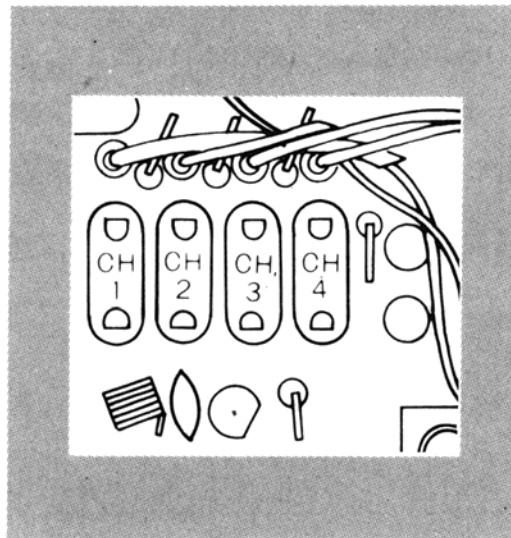


Figure 3

Crystal Socket Layout

FREQUENCIES AND CRYSTALS

Being a crystal controlled receiver, this unit requires a 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:

CRYSTAL FREQUENCY =

$$\frac{\text{DESIRED CHANNEL FREQUENCY} - 10.7 \text{ MHz}}{3}$$

Crystal Holder Type: HC-25U

Mode of Oscillation: Third Overtone

Frequency Tolerance: $\pm 0.001\%$ ($+25^{\circ}\text{C}$)

Load Capacity: Series Resonance
 -450Hz

Max. Series

Resistance: 35 ohms

Rated Drive Level: 2 milliwatts

Capacitance Shunt: 6 pF Max.

OPERATING INSTRUCTIONS

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

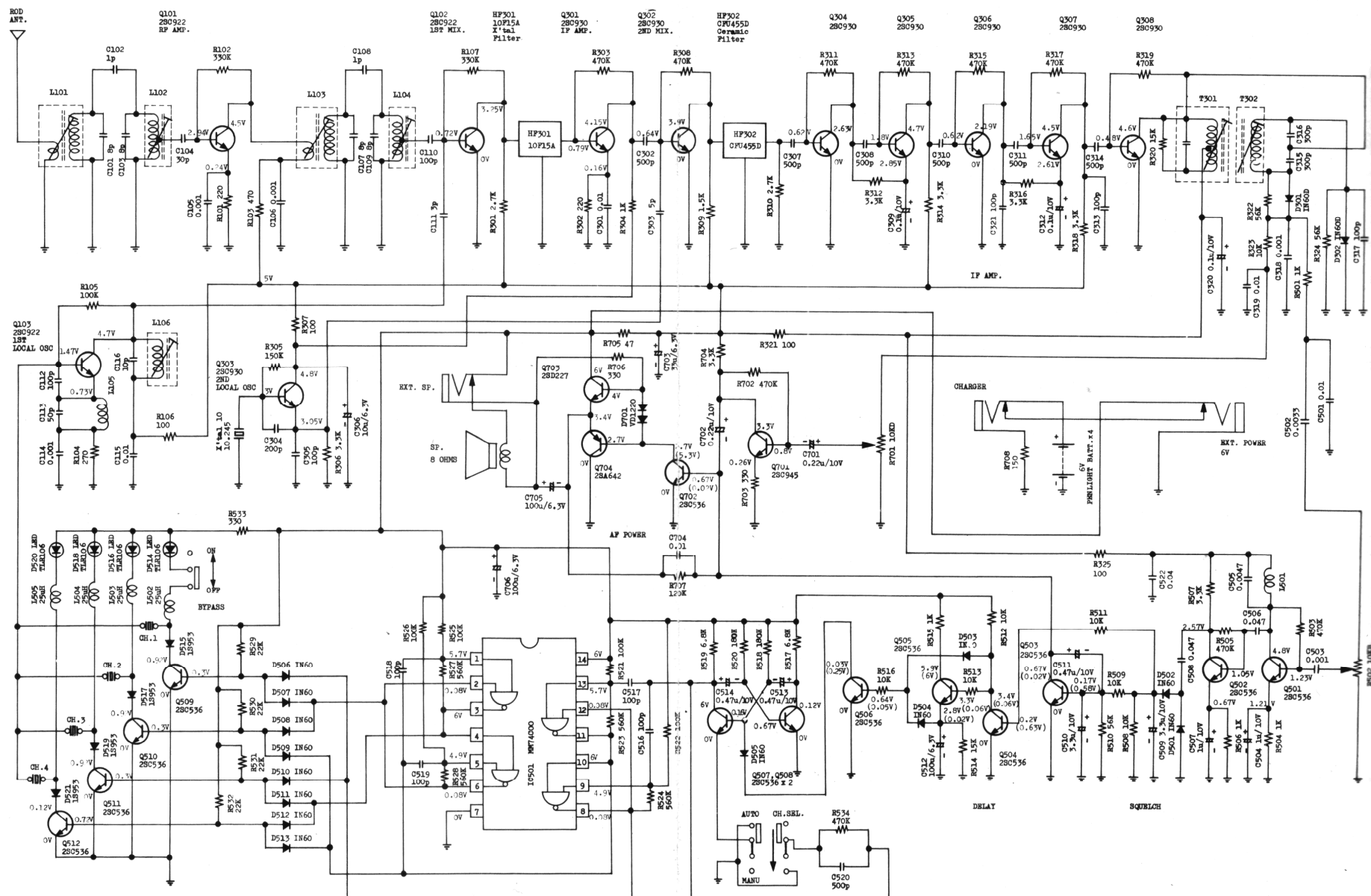
1. Insert desired crystals in the proper positions.
2. Insert the telescopic antenna into antenna socket located at the top of the cabinet. This antenna socket is also designed to accept a standard 5/16—32 stud size rubber coil loaded antenna as an optional feature.
3. Select either automatic or manual scanning operation.
4. Select the channel you want to monitor.
5. Turn the unit on and adjust the volume and squelch controls.

NOTE: In the case of a continuous broadcast such as the 162.55 MHz weather service, the scanning circuit will lock on this channel and not scan. It is suggested that the crystal for any continuously broadcasting station be placed in position one so the front panel bypass switch can be used.

SPECIFICATIONS

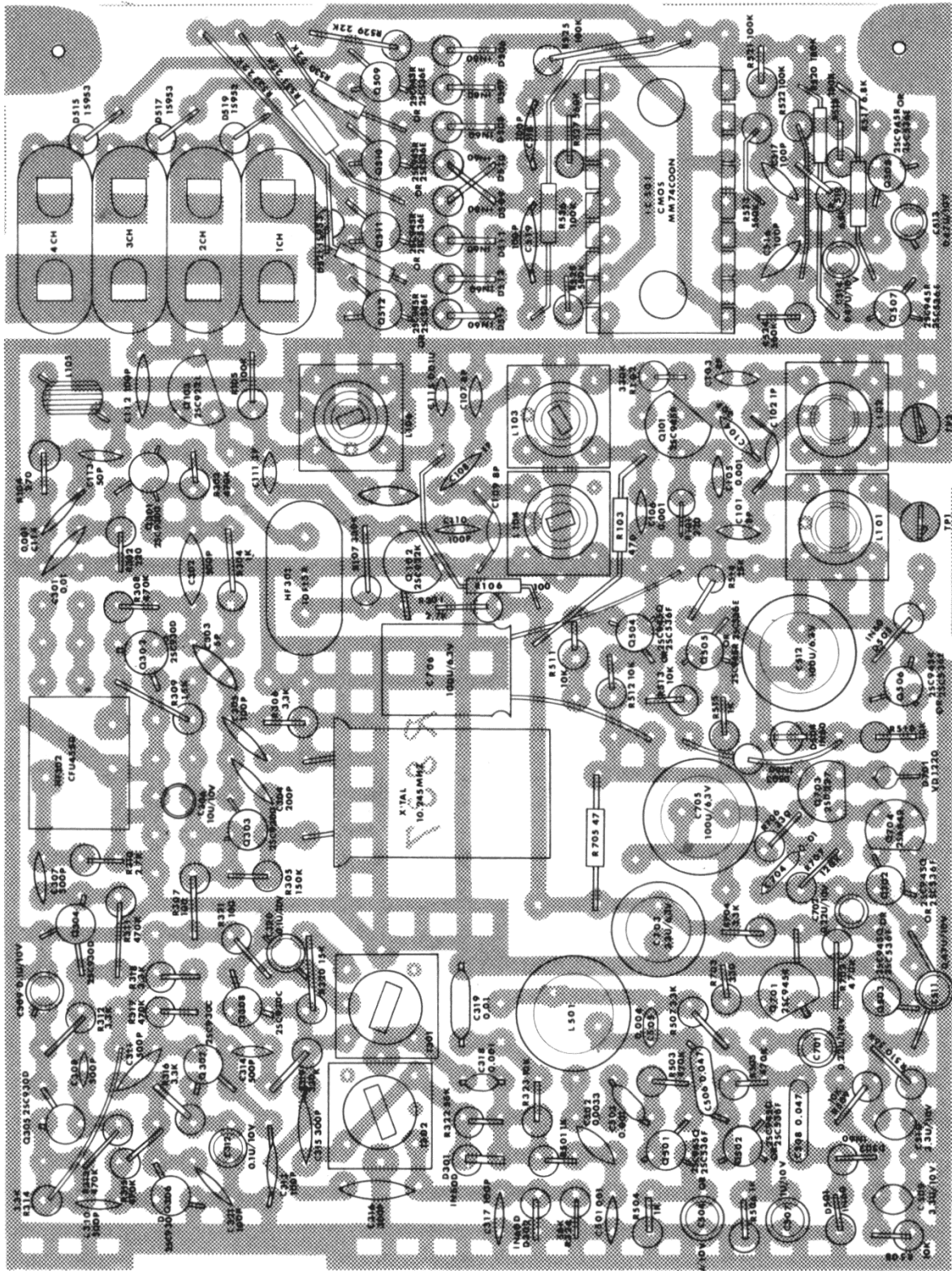
Circuitry: 27 Transistors, 20 Diodes
1 Integrated Circuit
Frequency: 150—170MHz
Channels: 4 Channels
Sensitivity
20db Q.S.: 0.5 μ V
Adjacent channel rejection: More than 60db
Scan rate: 10 channels per second
Power supply: 6 volts DC
Audio output: 0.3 watts
Intermediate frequencies: 1st IF 10.7MHz
2nd IF 455KHz
Accessories: a. 1 telescopic antenna
b. 1 antenna wire
c. 1 owner's guide

SCHEMATIC DIAGRAM

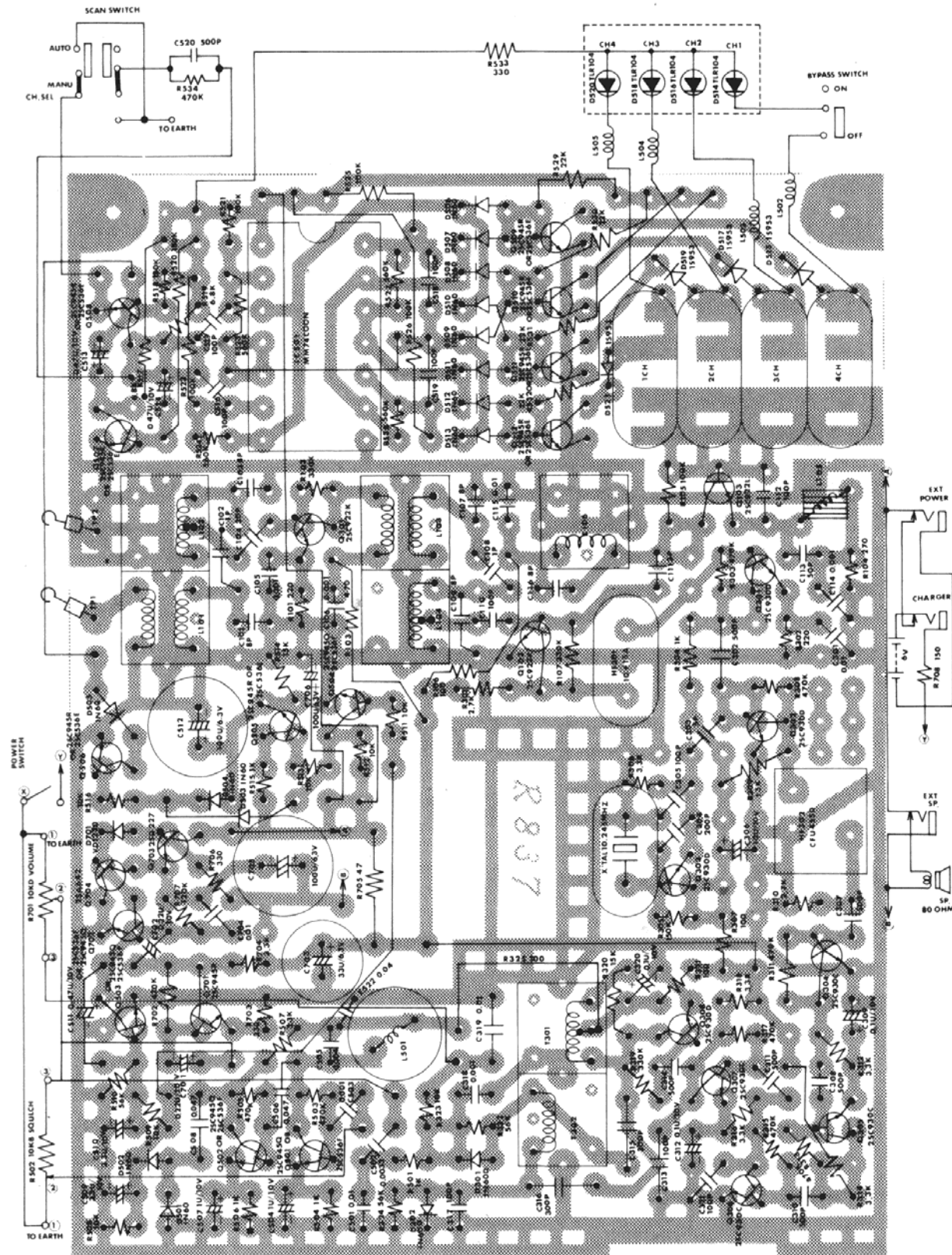


- NOTES:
1. All resistance values are in "ohm", K=1,000.
 2. All capacitance values less than 1.0 are in "mfd" and greater than are in "pfd".
 3. Voltage values indicated are measured at no signal. However, terminal voltages of Q503, 504, 505, 506 and Q2 are measured at squelch open position and parenthesized voltages are at squelch threshold position.

TOP VIEW



BOTTOM VIEW



WARRANTY POLICY

Midland Electronics 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 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.

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