Midland 13-915 Owner's Manual

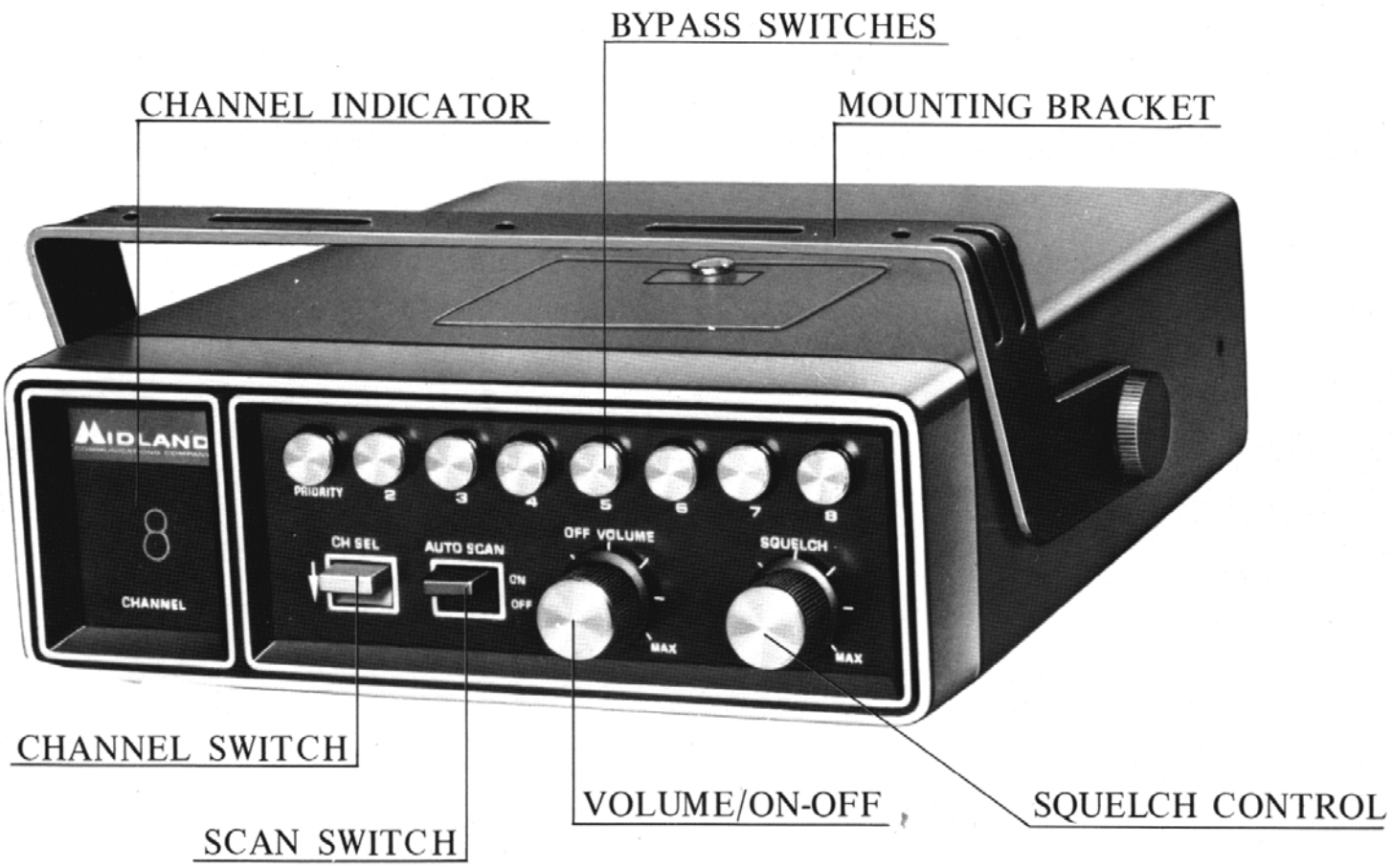
MIDLAND
ELECTRONICS COMPANY®

INTEGRATED CIRCUIT

MODEL 13-915

High VHF Band FM Scanning Monitor

OWNER'S GUIDE


BYPASS SWITCHES
CHANNEL INDICATOR
MOUNTING BRACKET
MIDLAND
PRIORITY
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8
CH SEL
AUTO SCAN
ON
OFF
OFF VOLUME
MAX
SQUELCH
MAX
8
CHANNEL
CHANNEL SWITCH
SCAN SWITCH
VOLUME/ON-OFF
SQUELCH CONTROL

Figure 1

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.

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. Incoming signals will automatically release the squelch enabling you to receive normally. Careful adjustment is necessary, as settings to far to the right will not allow weaker signals to release the squelch.

INDIVIDUAL CHANNEL SELECTORS 2–8

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

PRIORITY

Channel 1 is always the priority channel.

Note that regardless of which channel (from 2 through 8 inclusive) is in operation, the unit will still search Channel 1 approximately two times per second.

Should a signal be present on Channel 1 during searching, Channel 1 will lock-in, regardless of the fact that a signal is being received on another channel at that time; at the same time, the Carrier Delay feature will not allow further scanning until any carrier on Channel 1 is absent for more than 2 seconds.
The priority feature is operational during both "AUTO" and "MANUAL" Scan. The significance of the Priority feature is pointed out by the fact that in any given area there is usually one channel much more important than the others. By inserting the most important frequency crystal in the channel 1 position, the operator is assured of always hearing transmissions of that frequency, regardless of the activity on the other channels.

AUTO SCAN (Scanning Selector)

The SCAN control switches from automatic to manual scanning, in which case the "CHANNEL SELECTOR" switch must be used to switch channels.

MANUAL CHANNEL SELECTION

Channels may be selected manually by placing the scan control switch in the OFF position and then operating the channel select control until the desired channel is reached.

EXTERNAL SPEAKER

A rear panel jack is provided to allow the use of an external speaker. Connect a miniature plug to a suitable 8 ohms speaker. When the plug is inserted into the external speaker jack the built-in speaker is automatically disconnected and the external speaker will operate.

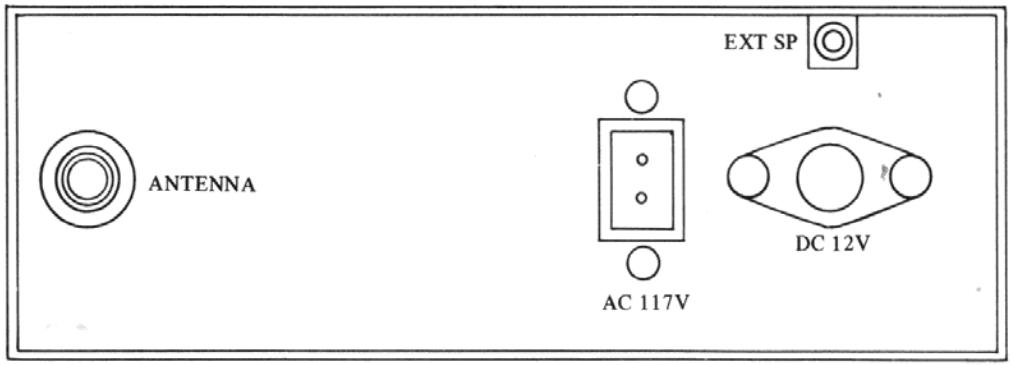


Figure 2

FREOUENCIES 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.

$$\text{CRYSTAL 3RD OVERTONE FREQUENCY} = \frac{\text{DESIRED CHANNEL FREQUENCY} - 10.7\ \text{MHz}}{\text{Divided by 3}}$$

Crystal Type	:	HC-25U Third overtone
Frequency Tolerance	:	±0.001% (+25°C)
	:	±0.005% (-55°C ~ +105°C)
Load Capacity	:	20 pF
Max. Series Resistance	:	40 ohms
Maximum Drive	:	2 milliwatts

CRYSTAL INSTALLATION

To install crystals, open the crystal access door on the top of the cabinet and carefully and gently plug in the crystals in whatever order you desire.

AC-DC OPERATION

The 13-915 may be installed in mobile service, (13.8 volts DC) or used for base station operation by selecting either of 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.
The red wire from the 13-915 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

1) Mobile antenna
   The mobile antenna represents an electrical quarter-wave length at the operation frequency, or physically represents about 19" at 150 MHz. Shorter equivalents are the "loaded" type of antenna, and are usually placed in the center of the roof for maximum effectiveness.
2) Base antenna
   To install this receiver in a base installation, simply connect the AC power cord to the rear panel connector and plug the cord into a 110–120 volt AC 60 Hz power source. For best operation, a permanent type antenna is recommended.
   Wire the antenna coax lead-in to a RCA type Phono Plug and insert this in the antenna jack on the rear panel. The base antenna should be as high as possible and can be of the ground-plane variety.

OPERATING INSTRUCTIONS

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

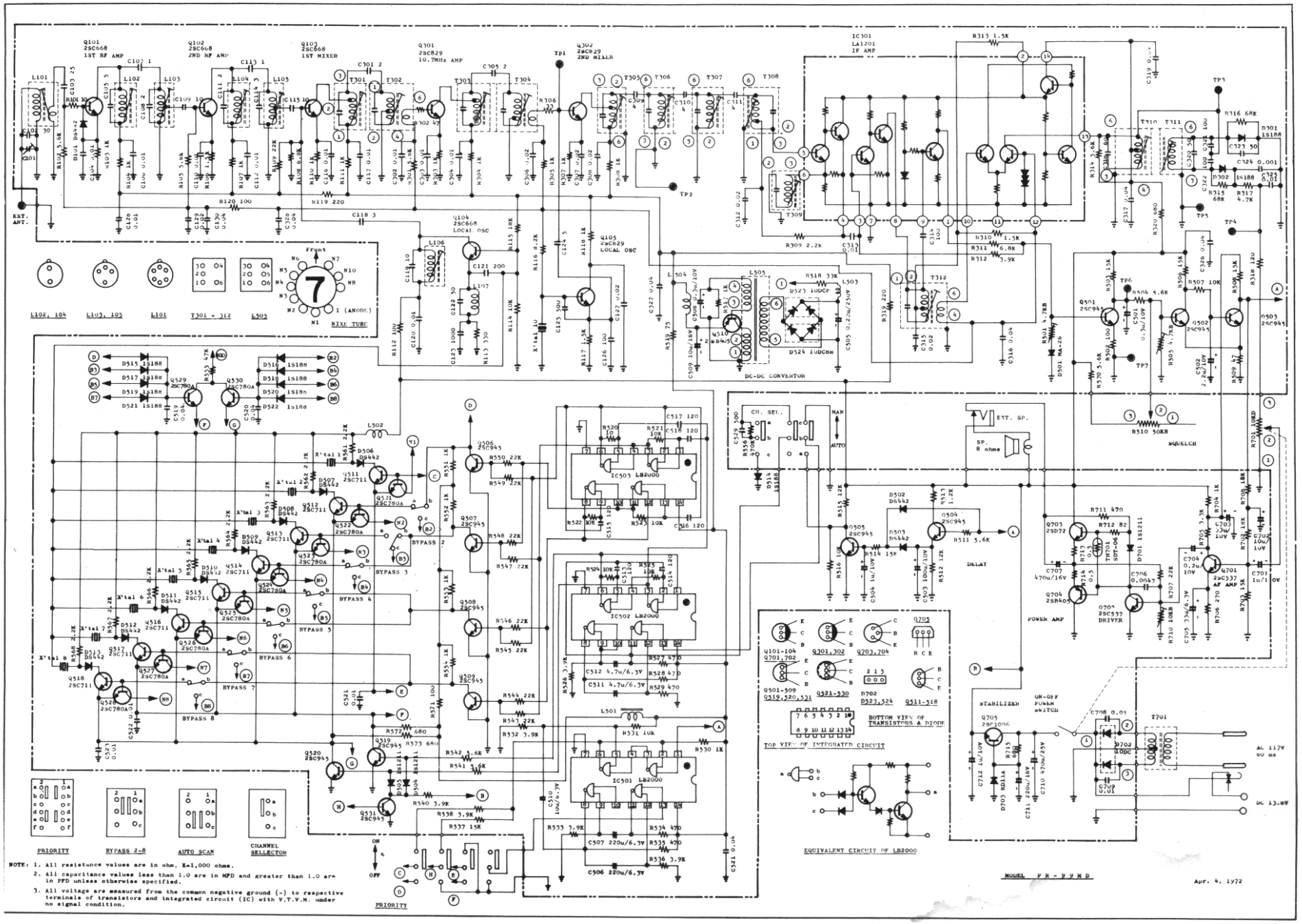
1. Connect an antenna and the proper power cable.
2. Insert desired crystals in proper position.
3. Select either automatic or manual scanning operation.
4. Select the channel you want to monitor.
5. Turn the unit on and adjust the volume and squelch controls.

   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. Any continuous broadcast channel may be disabled by releasing the front panel channel selector switch for that channel.

SPECIFICATIONS

Circuitry:	43 Transistors, 30 Diodes, 4 Integrated Circuits
Frequency:	150 – 170 MHz
Channels:	8 Channels
Sensitivity 20 dB Q.S.:	0.5 μV
Adjacent channel rejection:	More than 60 dB
Scan rate:	15 Channels per second
Power Supply:	117 volts AC, 13.8 volts DC
Audio output:	1.5 watt
Intermediate frequencies:	1st IF 10.7 MHz 2nd IF 455 MHz
Accessories:	a. 1 AC power cord unit b. 1 DC power cord unit c. 1 Mounting bracket unit d. 1 Antenna wire with plug (for temporary use) e. 1 Owner's guide

SCHEMATIC DIAGRAM



NOTE: 1. All resistance values are in ohm, K=1,000 ohms.
2. All capacitance values less than 1.0 are in MFD and greater than 1.0 are in PFD unless otherwise specified.
3. All voltage are measured from the common negative ground (-) to respective terminals of transistors and integrated circuit (IC) with V.T.V.M. under no signal condition.

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.

Midland Electronics Company

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