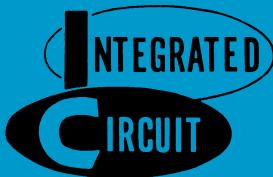


**MIDLAND**  
INTERNATIONAL®



**MODEL 77-857**

**40-CHANNEL MOBILE TRANSCEIVER**

**OWNER'S GUIDE**



## FEDERAL COMMUNICATIONS COMMISSIONS REQUIREMENTS

Your new Midland 77-857 is a combination receiver-transmitter designed and built for licensed Class D operation on any of the 40 frequencies designated for citizens band use 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. You are also required to complete F.C.C. form 505 and submit it to the FCC, GETTYSBURG, PA. 17326 in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit without complying with procedures explained on F.C.C. temporary license form 555-B.

You may use Form 555-B as a temporary permit while your regular Form 505 application is being processed by the F.C.C.

Both Forms are packed with the transceiver along with a copy of part 95 regulations for your use and convenience.

**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 radiotelephone 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 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 radiotelephone 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, Communications Division, hereby certifies that this unit has been designed, manufactured and F.C.C. type accepted in accordance with Part 95 and Part 15, Subpart C of the current F.C.C. rules and regulations as of the date of manufacture.

Your 77-857 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 CONTROLS CONNECTORS AND THEIR FUNCTIONS****VOLUME CONTROL/POWER SWITCH**

This turns the power on or off.

This controls the sound output from the speaker when receiving or from the public address (PA) speaker connected to the PA jack on the rear panel. The volume control does not affect transmitting output.

**PA/SQUELCH CONTROL**

This transceiver has been equipped with a simple PA (Public Address) amplifier system. When operating the transceiver as a PA, place the control in the PA (fully counter-clockwise) position and connect a suitable 8-16 ohm PA speaker to the EXT. CB/PA Jack on the rear panel. Press the Push-to-Talk bar on the microphone and talk into the microphone, then your voice will be heard from the PA speaker. For regular 2-way communications, turn the control clockwise. Further turning operates the squelch and quiets the receiver when signals are not being received and allows a quiet standby operation. It functions only in the receive mode and does not affect the receiver volume when signals are being received.

To adjust, when no signals are present, rotate the control clockwise until the receiver is silent. Incoming signals will automatically release the squelch. Careful adjustment is necessary as a setting too far to the right will not allow weaker signals to release the squelch.

#### **ANL-OFF SWITCH**

An Automatic Noise Limiter, (ANL) circuit is provided for reducing undesirable atmospheric noise. To operate the ANL circuit place the switch in the ANL position. To cut off the circuit, place it in the OFF position.

#### **EXT. CB-OFF SWITCH**

Model 77-857 has been designed to enable you to monitor CB calls through a P.A. speaker connected to the "EXT. CB/PA" jack on the rear panel.

For example: if you leave your car and you are expecting a call on your radio, simply put the EXT. CB-OFF switch in the "EXT. CB" position. This channels incoming calls through the P.A. speaker and cuts off the built-in speaker (or speaker connected to the "EXT. SPEAKER" jack). It is possible for you to transmit while the unit is in the "EXT. CB" mode although the unit's built-in speaker (or external speaker) will not be operational until the EXT. CB-OFF switch is moved to the OFF position.

The P.A. function of your unit is located on the squelch control. To use your unit as a P.A. amplifier simply turn the squelch control counter-clockwise to the P.A. position. When the unit is in the P.A. mode, it will not act as an external CB monitor.

#### **CHANNEL SELECTOR SWITCH**

This controls both transmitter and receiver frequencies simultaneously and may be set to any of the 40 channel positions indicated. All necessary crystals are supplied for full 40 channel operation.

## **DELTA TUNE CONTROL**

This is a 3-position switch which varies the receiving frequency for about  $\pm 1$  kHz. This enables you to receive stations transmitting slightly off frequency. Place the control in one of the three positions where the clearest reception is obtained. This control does not affect transmitting frequency.

## **S/RF POWER METER**

This gives the relative strength of incoming signals when receiving and RF power output when transmitting.

## **ANTENNA CONNECTOR**

Used for antenna connection, matches PL-259 standard type.

## **EXT. SPEAKER JACK**

Used for an external speaker (8 ohms) connection.

This jack accepts a standard (3.5 mm $\phi$ ) 2 circuit phone plug. When the plug is inserted into the jack, the built-in speaker is automatically disconnected.

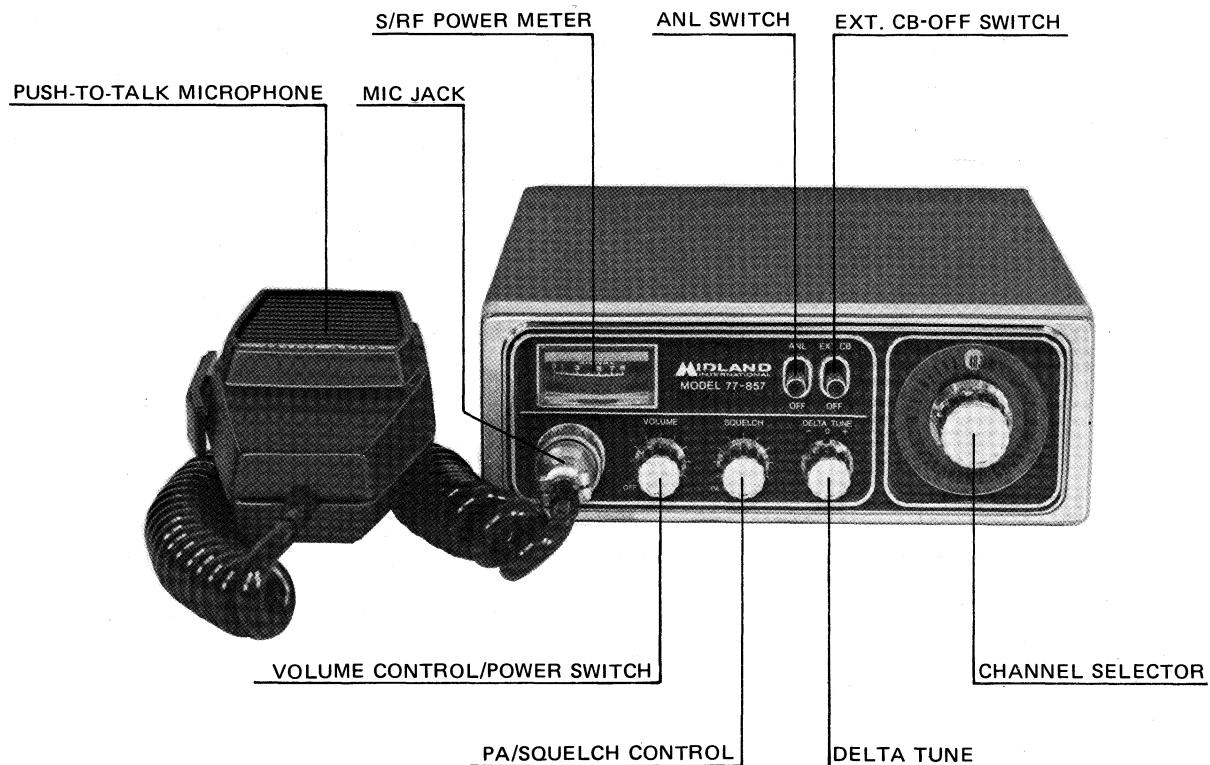
## **EXT. CB/PA JACK**

This will be used for connection of PA speaker, see "PA/SQUELCH" control and "EXT. CB-OFF" switch in this manual.

## **DC POWER CONNECTOR**

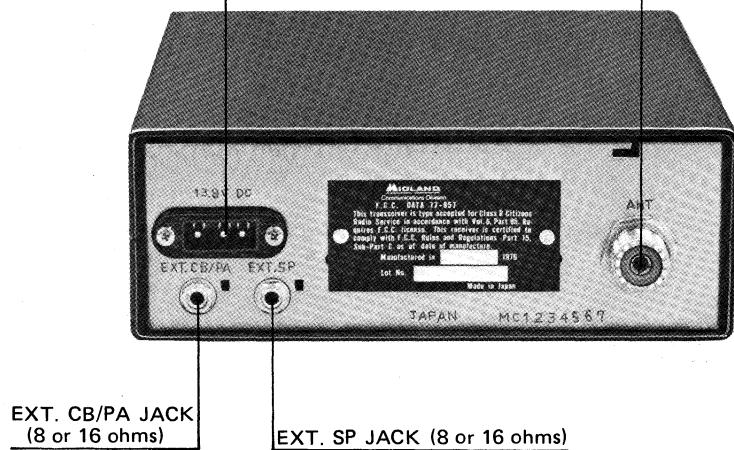
Used for connection of DC power cord supplied with the unit.

## OPERATION OF CONTROLS



DC POWER CONNECTOR

ANTENNA CONNECTOR



EXT. CB/PA JACK  
(8 or 16 ohms)

EXT. SP JACK (8 or 16 ohms)

## 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 transceiver 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

The transceiver may be installed and used in any 12 volt DC negative or positive ground system vehicle. Most newer U.S. and foreign-made cars and small trucks use a negative ground system while some older cars and some newer large trucks may use a positive ground.

A negative ground system is generally identified by the (—) battery terminal being connected to the vehicle motor block, but if you cannot determine the polarity system of your vehicle, it is suggested that you contact your vehicle dealer for definite information.

### NEGATIVE GROUND SYSTEM

Connect the red DC power cord from the transceiver to the positive or (+) battery terminal or other convenient point and connect the black power cord to the negative or (—) battery terminal.

### POSITIVE GROUND SYSTEM

In the case of a positive ground system connect the black DC power cord from the transceiver to the negative or (—) battery terminal or other convenient point and connect the red power lead to the chassis or vehicle frame or (+) battery terminal.

With regard to the connection of the power cords, it may be possible or desirable to connect the (red lead for negative ground system) or (black lead for positive ground system) to the ignition switch accessory terminal, so that the transceiver is automatically turned off when the ignition switch (key)

is turned off.

Alternately, the power cord may be connected to an available terminal on the fuse block or even to a point in the wiring harness. Care must be taken, however, to guard against a short circuit condition so when in doubt, please contact your vehicle dealer for specific information for your vehicle.

### MOBILE ANTENNA CONNECTION

A vertical whip antenna is best suited for mobile operation. A nondirectional antenna should be used for best results in any case. The base-loaded whip antenna will normally provide effective communication or for greater range and more reliable operation a full quarter-wave whip may be used. Either of these antennas use the metal car body as a ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL-259 coax plug. Following the antenna manufacturer's instructions carefully will insure proper operation.

Whatever the type of antenna selected, it is important that it be properly adjusted and matched and the connecting transmission line be in good condition so as to avoid a high VSWR (voltage standing wave ratio). A VSWR over 2.5 results in reduced radiated power and may cause instability and damage to the final output stage of the transceiver.

### BASE STATION OPERATION

When the 77-857 is used as a base station, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type antenna will provide good coverage, and since it is essentially non-directional, it is ideal in base station to mobile operation. From base station to base station or point-to-point operation a directional beam will give greater distance even under adverse conditions. The range of the transceiver also depends on the height of the antenna so whenever possible, select the highest location within F.C.C. limits.

## OPERATING INSTRUCTIONS

1. Insert the MIC plug in the MIC connector.
2. Make sure your Antenna is securely connected to the antenna connector.
3. Turn the Power on and Adjust the VOLUME control for proper sound level.
4. Temporarily turn and place the PA/SQUELCH control in slight clockwise position.
5. Place the DELTA TUNE switch at center position.
6. Place the EXT. CB-OFF switch in the OFF position.
7. Place the Channel Selector switch to a desired channel.
8. To transmit press the Push-to-Talk button on the microphone and to receive release the button.

**IMPORTANT:** Do not short circuit the antenna or do not try to transmit without an antenna connected to the Antenna connector on the rear panel. This may cause damage to the output power transistors. Transmit only after carefully checking the installation of antenna connector and coaxial cable.

## SPECIFICATIONS

Circuitry:	3 ICs, 21 Transistors, 13 Diodes, 2 Zener Diodes, 1 Vari-cap
Frequency Control:	PLL (Phase Lock Loop) Synthesizing System
Channels:	40 channels all installed
Mode of operation:	AM

Receiver System:	Dual Conversion Superheterodyne
Sensitivity:	Nominal 0.7 $\mu$ V (S/N 10 dB)
Selectivity:	More than 45 dB down at $\pm$ 10 KHz
Intermediate Frequency:	1st: 10.695 MHz 2nd: 455 KHz
Frequency Tolerance:	$\pm$ 0.005%
Spurious Rejection:	More than 60 dB
RF Output Power:	Maximum 4.0W
Squelch Range:	0.5 $\mu$ V—500 $\mu$ V
Delta Tune:	About $\pm$ 1 KHz (Receiving only)
Audio Output Power:	More than 3W (EXT. SP at 8 ohms)
Controls:	Volume, Squelch, Delta Tune, Channel Selector, ANL-OFF Switch, EXT. CB-OFF Switch
Jacks and Connectors:	Microphone, EXT. SP, Antenna, EXT. CB/PA Speaker, DC Power
Speaker:	3" dynamic, 8 ohms
Microphone:	Dynamic CB mike
Power Source:	DC 13.8V
Size:	6-3/8 (W) $\times$ 7-7/8 (D) $\times$ 2-1/4 (H) inches
Weight:	3.8 lbs.

## TRANSCEIVER SERVICING

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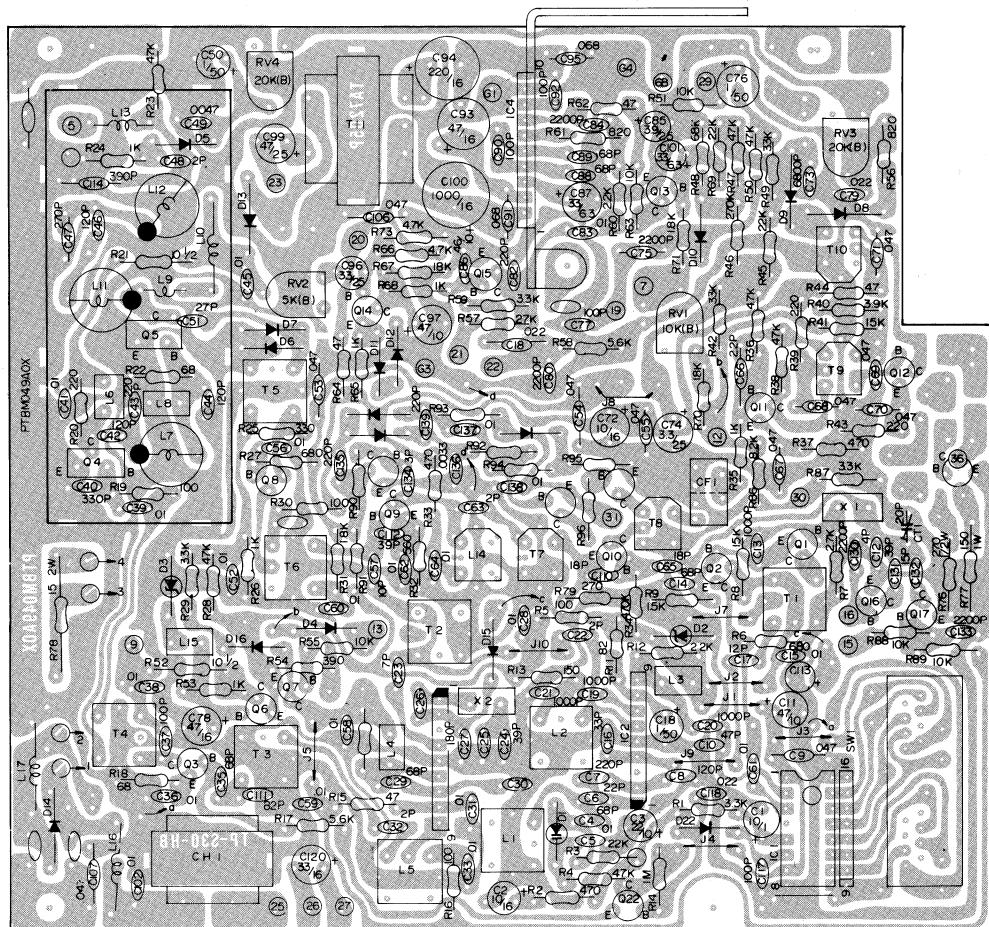
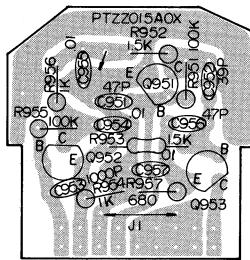
**NOTE:** When ordering parts, it is essential to specify the correct model number and serial number of the unit.

## FREQUENCY – CHANNEL NUMBER CHARTS

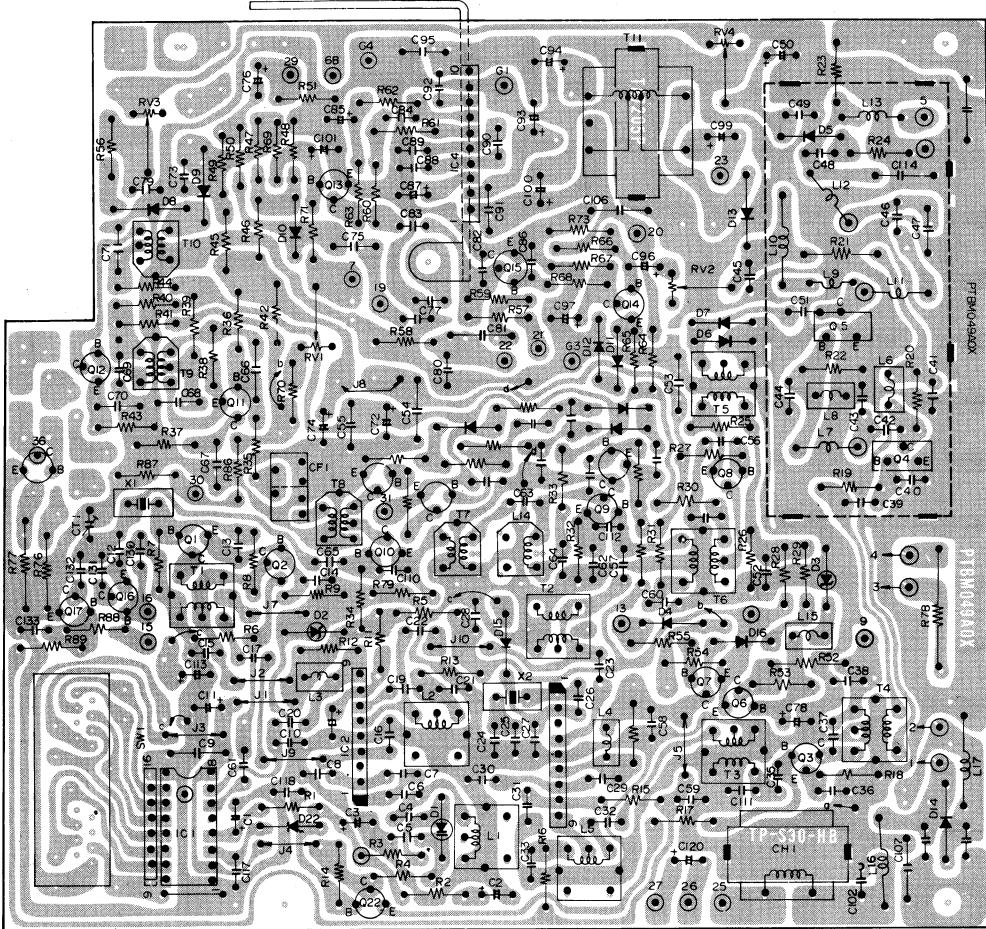
Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel
26.965 MHz	1	27.085 MHz	11	27.215 MHz	21	27.315 MHz	31
26.975 MHz	2	27.105 MHz	12	27.225 MHz	22	27.325 MHz	32
26.985 MHz	3	27.115 MHz	13	27.255 MHz	23	27.335 MHz	33
27.005 MHz	4	27.125 MHz	14	27.235 MHz	24	27.345 MHz	34
27.015 MHz	5	27.135 MHz	15	27.245 MHz	25	27.355 MHz	35
27.025 MHz	6	27.155 MHz	16	27.265 MHz	26	27.365 MHz	36
27.035 MHz	7	27.165 MHz	17	27.275 MHz	27	27.375 MHz	37
27.055 MHz	8	27.175 MHz	18	27.285 MHz	28	27.385 MHz	38
27.065 MHz	9	27.185 MHz	19	27.295 MHz	29	27.395 MHz	39
27.075 MHz	10	27.205 MHz	20	27.305 MHz	30	27.405 MHz	40

## PARTS LAYOUT

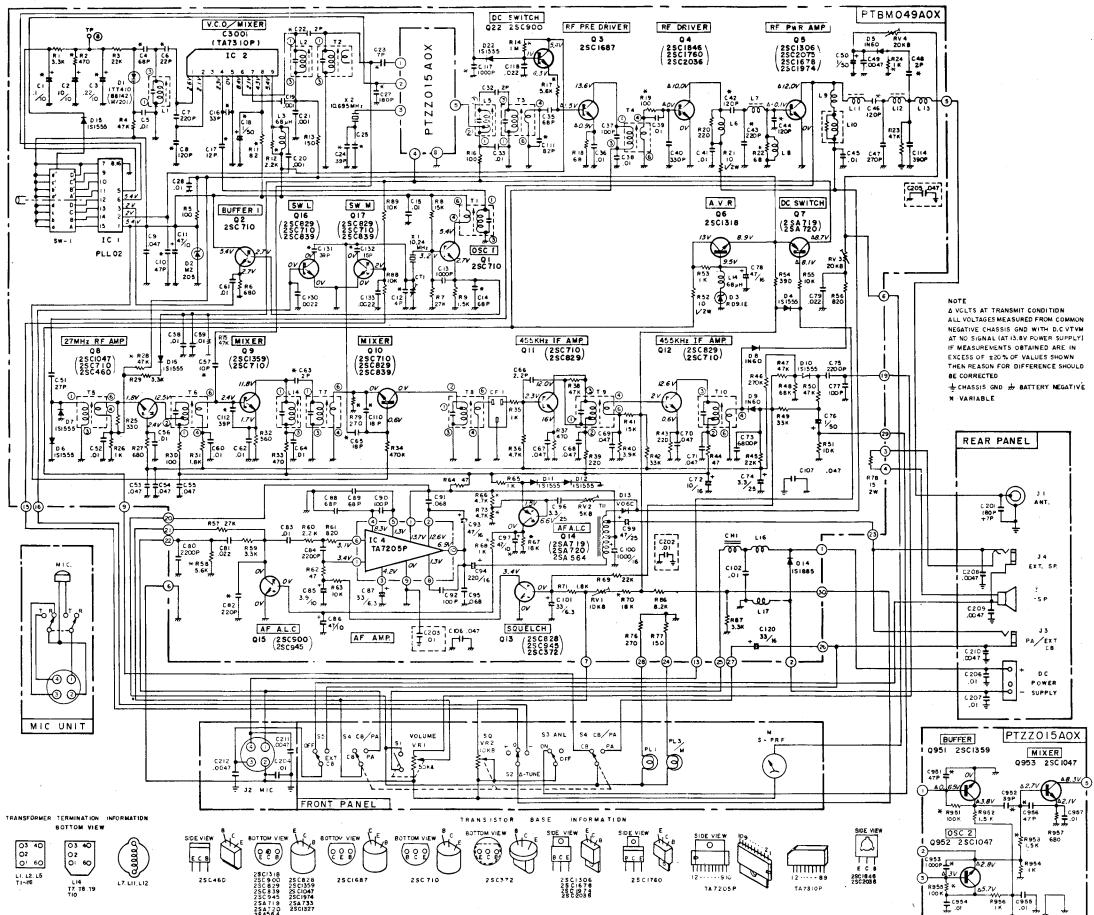
## FRONT VIEW



## BACK VIEW



## SCHEMATIC DIAGRAM



## LIMITED WARRANTY

Midland International Corporation, Communications Division 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, antenna, broken or cracked cabinets, or any other accessory used in connection with this products.

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.



### Communications Division

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