MIDLAND INTERNATIONAL®

INTEGRATED CIRCUIT

MODEL 13-858

23-CHANNEL BASE/MOBILE TRANSCEIVER



OWNER'S GUIDE

FEDERAL COMMUNICATIONS COMMISSION'S REQUIREMENTS

Your new Midland 13-858 is a combination receiver-transmitter designed, built, and F.C.C. type accepted for licensed Class D operation on any of the 23 frequencies designated as citizens band channels 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. Part 95 regulations are available from the Superintendent of Documents, Government Printing Office, Washington D. C. 20402. You are also required to complete F.C.C. form 505 and submit it to the F.C.C. in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit prior to receipt of your license.

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.

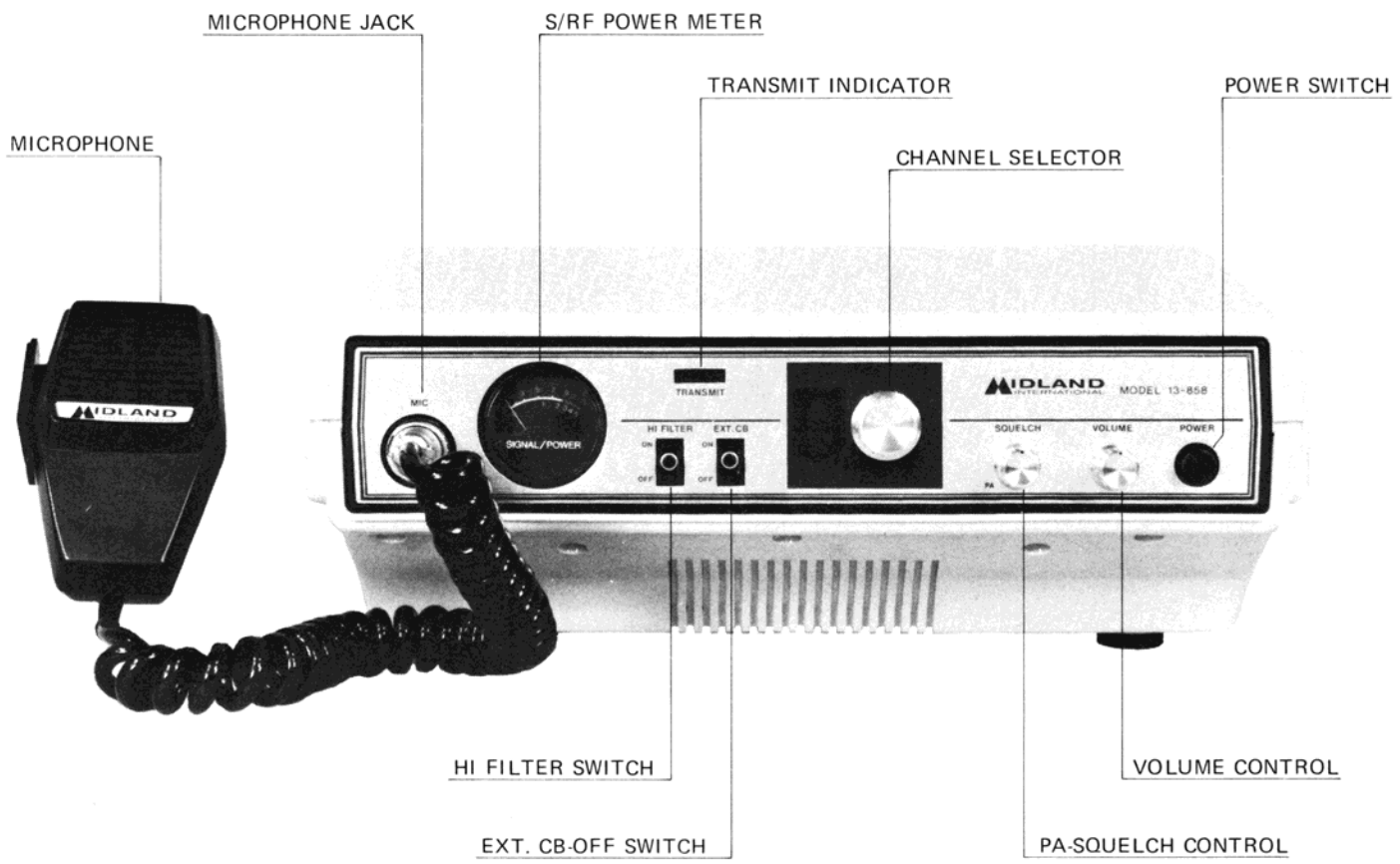
When service is performed by an authorized and licensed person, care must be taken in the replacement of parts to use only authorized parts, in order not to void the type acceptance of this model.

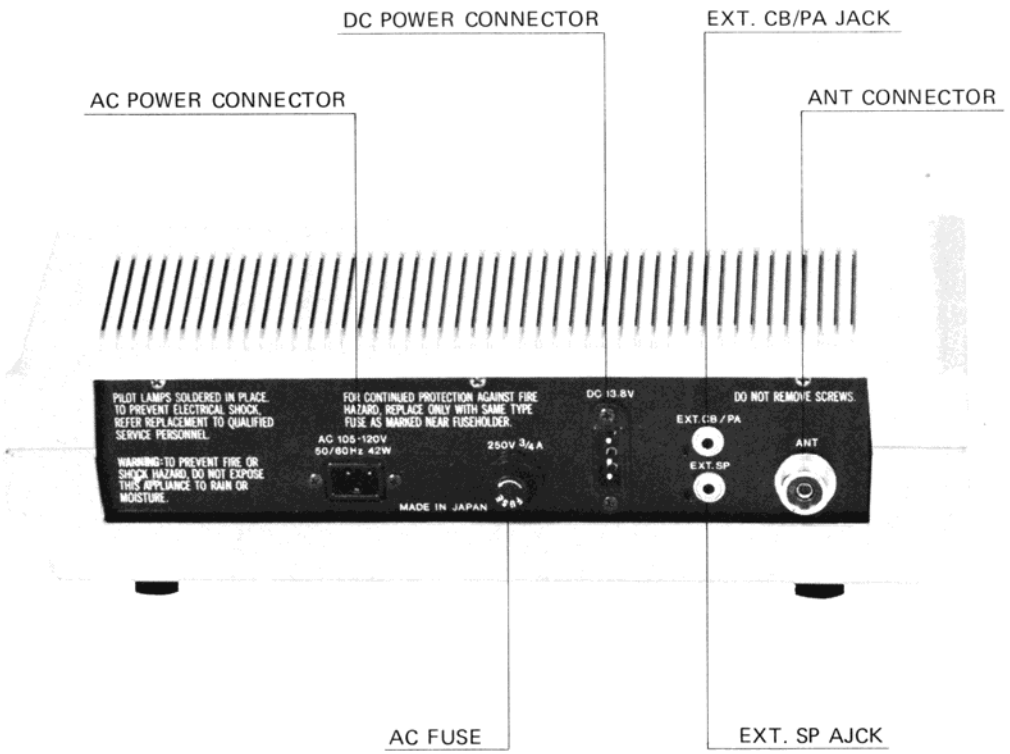
Midland International Corporation, Communications Division hereby certifies that this unit has been designed, manufactured and F.C.C. type accepted in accordance with Vol. 6, Part 95 of the current F.C.C. rules and regulations as of the date of manufacture.

OWNERS GUIDE

Your 13-858 is a versatile, professional quality transceiver and we strongly suggest that you read this Owners Guide carefully before operation so that you may receive full benefit from its many features.

OPERATING CONTROLS, CONNECTORS AND THEIR FUNCTIONS




DC POWER CONNECTOR
EXT. CB/PA JACK
AC POWER CONNECTOR
ANT CONNECTOR
PILOT LAMPS SOLDERED IN PLACE. TO PREVENT ELECTRICAL SHOCK, REFER REPLACEMENT TO QUALIFIED SERVICE PERSONNEL.
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE FUSE AS MARKED NEAR FUSEHOLDER.
AC 105-120V
50/60Hz 42W
250V 3/4A
MADE IN JAPAN
DC 13.8V
DO NOT REMOVE SCREWS.
EXT.CB/PA
EXT.SP
ANT
AC FUSE
EXT. SP AJCK

PA-SQUELCH CONTROL

Your Model 13-858 has been equipped with a PA (Public Address) amplifier system. Placing the SQUELCH Control in the PA (fully counter clockwise) position actuates the PA system. Press the Push-to-Talk switch on the Push-to-Talk microphone and speak at a normal tone of voice, then your voice will be heard from the PA speaker connected to the EXT-CB/PA jack on the rear panel.

For regular 2-way communications, this control must be placed in the normal position (other than PA position).

Turning the squelch control clockwise 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 squelch control clockwise until the receiver is quieted. 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.

VOLUME CONTROL

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.

POWER SWITCH

This turns the power on or off.

CHANNEL SELECTOR SWITCH

This controls both transmitter and receiver frequencies simultaneously and may be set to any of the 23 channel positions indicated. All necessary crystals are supplied for full 23 channel operation.

HI-FILTER SWITCH

Cuts high frequency noise at times present when monitoring an incoming call.

EXT. CB-OFF SWITCH

This switch, when placed in EXT. CB position, enables you to monitor CB calls through the PA speaker connected to the EXT. CB/PA jack on the rear panel. However, with the switch placed in EXT. CB position, the built-in speaker (or external speaker) will be automatically cut off and no sound will be obtained from these speakers.

This feature is particularly useful should you have your 13-858 station set in a bedroom or den but wish to hear an incoming call from another location (i.e. basement, patio, etc.) When an incoming call is heard through the speaker connected to the EXT. CB/PA jack, it is necessary to flip the EXT. CB/OFF switch to "OFF" position in order to transmit.

IMPORTANT: For regular 2-way communications, this switch must be placed in the OFF position. This will allow normal audio reception through the built-in speaker (or external speaker) connected to the "EXT. SPKR" jack on the rear of the cabinet.

TRANSMIT INDICATOR

Illuminates when transmitting.

S/RF POWER METER

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

AC POWER SUPPLY CONNECTOR

Used for connection of AC power cord. When the AC power cord is connected to the connector the DC power supply circuit is automatically cut off. Therefore always remove the AC cord when operating the transceiver with DC power connected.

ANTENNA CONNECTION

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 or the transceiver also depends on the height of the antenna so whenever possible, select the highest location within F.C.C. limits.

A vertical whip antenna is best suited for mobile operation. A non-directional 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 connecter (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 3.5 results in reduced radiated power and may cause instability and damage to the final output stage of the transceiver.

MIC JACK

This accepts the plugs from the Push-to-Talk Microphone supplied with the unit.

ANT CONNECTOR

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

EXT. CB/PA JACK

This will be used for connection of PA or monitor speaker (8 ohms), see "PA-SQUELCH CONTROL" and "EXT. CB-OFF SWITCH" in this manual. This jack accepts a standard (3.5 mmϕ) 2 circuit phone plug.

EXT. SP JACK

Used for an external speaker (8 ohms) connection.
This jack accepts a standard (3.5 mmϕ) 2 circuit phone plug. When the plug is inserted into the jack, the built-in speaker is automatically disconnected.

DC POWER CONNECTOR

Used for connection of DC power cord supplied with the unit. (DC operation for negative ground system only).

POWER CONNECTION

AC OPERATION

Use the AC power cord supplied with the unit. Insert the one end of the cord to the AC power connector on the rear panel and the other end to the AC outlet supplying 105-120V 50/60 Hz AC.

DC OPERATION

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

CAUTION: The 13-858 is designed to be used in a 12 volts DC negative system only. If you are unsure of your vehicle's polarity, ask your dealer or local service station.

The red wire of the DC power cord 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 should be connected to a metal part of the vehicle body or frame or (—) battery terminal.

OPERATION INSTRUCTIONS

1. Insert the plug from the microphone into the MIC Jack (front panel).
2. Make sure your antenna is securely connected to the antenna connector.
3. Make sure the EXT. CB-OFF Switch is placed in the OFF position and the PA-SQUELCH control in the SQUELCH (about 3 o'clock) position.
4. Turn the power on and adjust the VOLUME control for proper sound level.
5. Place the channel selector in a desired channel.
6. If necessary, place the hi filter switch in the ON position.
7. 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 connector and coaxial cable.

SPECIFICATIONS

Circuitry:	1 IC, 22 Transistors, 15 Diodes, 3 Zener Diode
Frequency Control:	Crystal Synthesizing System
Channels:	23 channels all installed
Mode of Operation:	AM
Receiver System:	Dual Conversion Superheterodyne
Sensitivity:	Nominal 0.7 μV (S/N 10 dB)
Selectivity:	More than 45 dB down at ± 10 KHz
Intermediate Frequency:	1st : 11.275 MHz 2nd: 455 KHz
Frequency Tolerance:	± 0.005 %
Spurious Rejection:	More than 50 dB
RF Output Power:	Maximum 4.0 W (F.C.C. Maximum)
Squelch Range:	0.5 μV — 500 μV
Audio Output Power:	More than 3 W (EXT. SP at 8 ohms)
Controls:	OFF/Volume (PA), PA-Squelch, Channel Selector, EXT. CB-OFF switch, Hi FILTER-switch.
Jacks and Connectors:	Antenna, EXT. CB/PA, EXT. SP, DC Power connector, AC Power connector
Speaker:	3" dynamic, 8 ohms

Microphone:	Dynamic CB mike
Power Source:	AC 105 — 120 V 50/60 H, DC 13.8 V
Size:	11-3/6(W) x 8-9/16(D) x 4-3/4(H) inches
Weight:	5.7 l.b.s. (2.6 kg)

TRANSCEIVER SERVICING

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 users responsibility to see that this unit is operating at all times in accordance with the F.C.C. citizens radio service regulations.

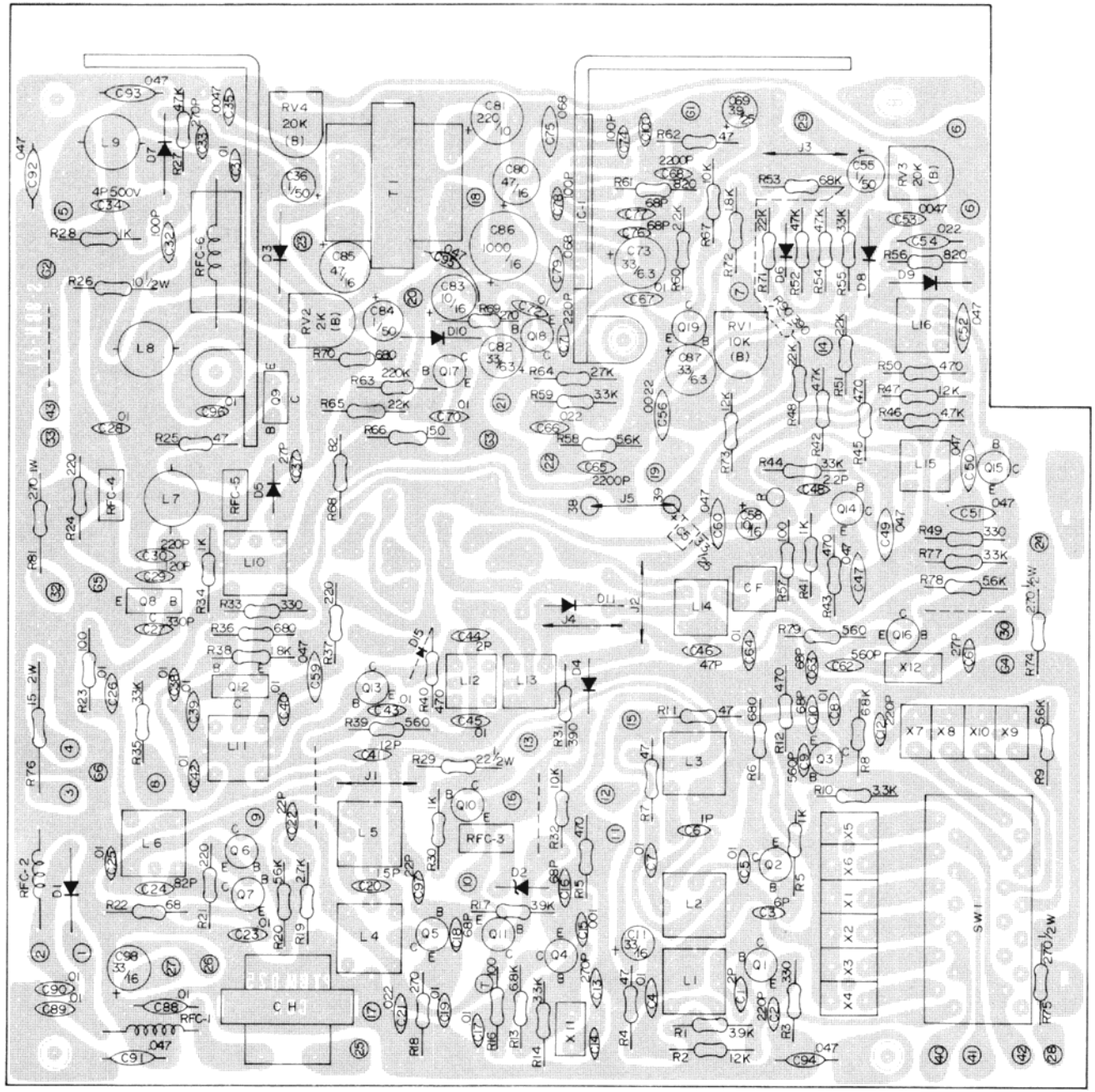
If you install your own transceiver, do not attempt to make any transmitter tuning adjustments. All transmitter adjustments and servicing are prohibited by the F.C.C. unless you hold a first or second class radiotelephone license or are in the presence of a person holding such a license. A Citizens Band or Amateur license is not sufficient.

When service is performed by a 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 unit.

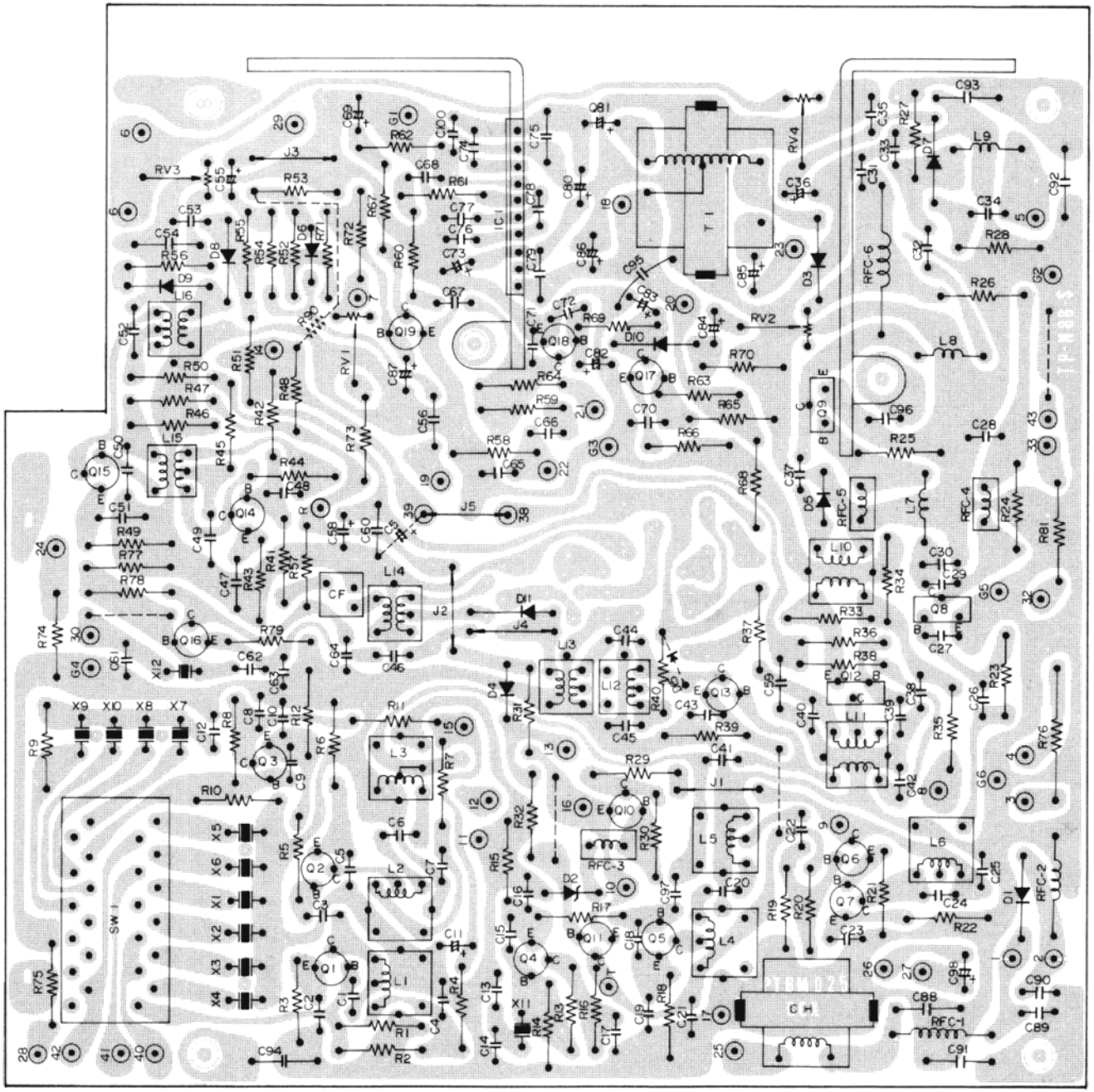
NOTE: When ordering parts, it is essential to specify the correct model number and serial number of the unit.

PARTS LAYOUT

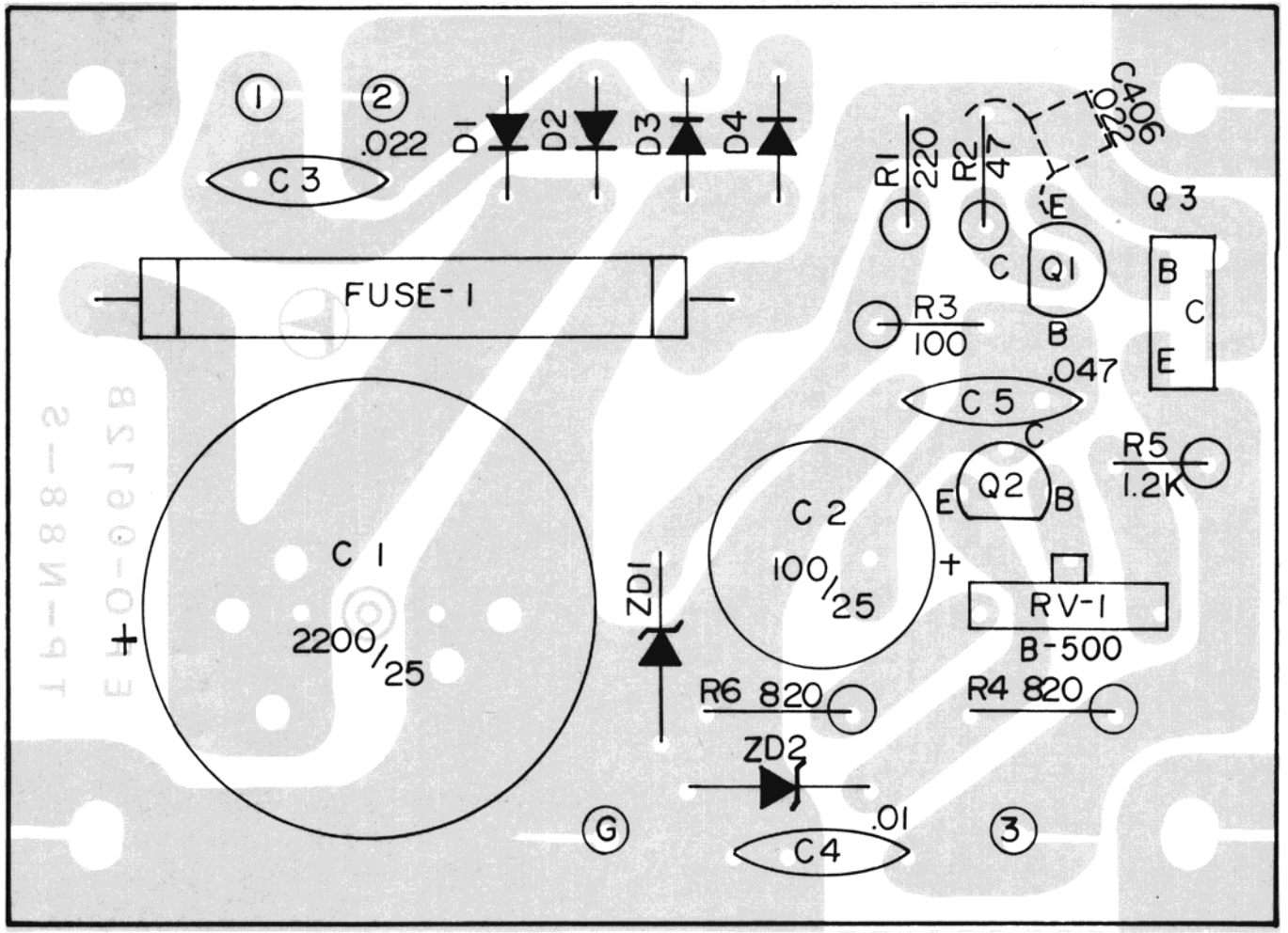
FRONT VIEW



BACK VIEW



FRONT VIEW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2
.022
C 3
D1
D2
D3
D4
FUSE-1
C 1
2200/25
+
ZD1
C 2
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R6 820
ZD2
.01
C4
G
3
R1
220
R2
47
C406
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E
C
Q1
B
Q 3
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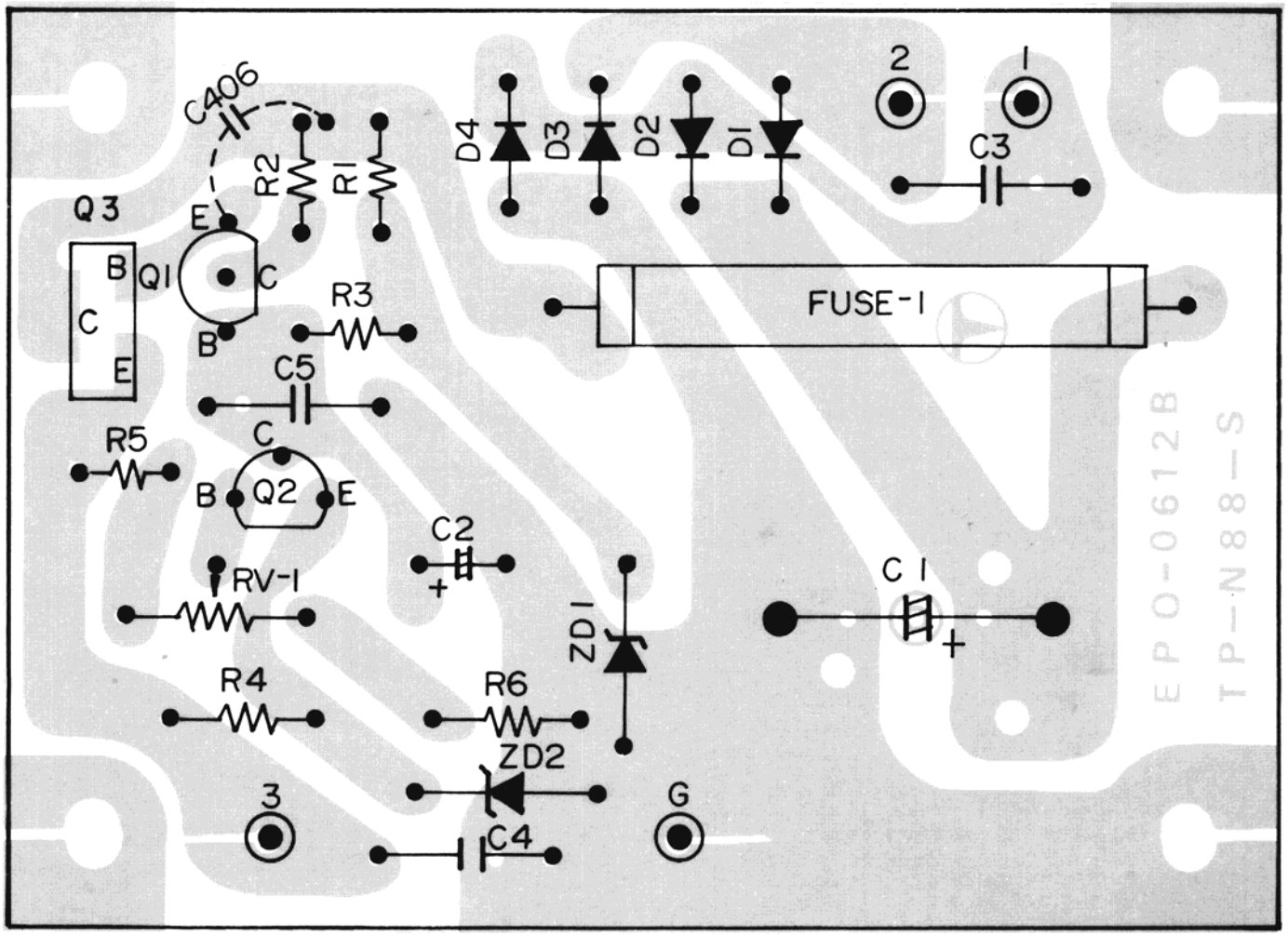
R5
1.2K
RV-1
B-500
R4 820

BACK VIEW


C406
R2
R1
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D3
D2
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2
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C3
Q3
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C
E
Q1
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R3
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C5
R5
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+
RV-1
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R4
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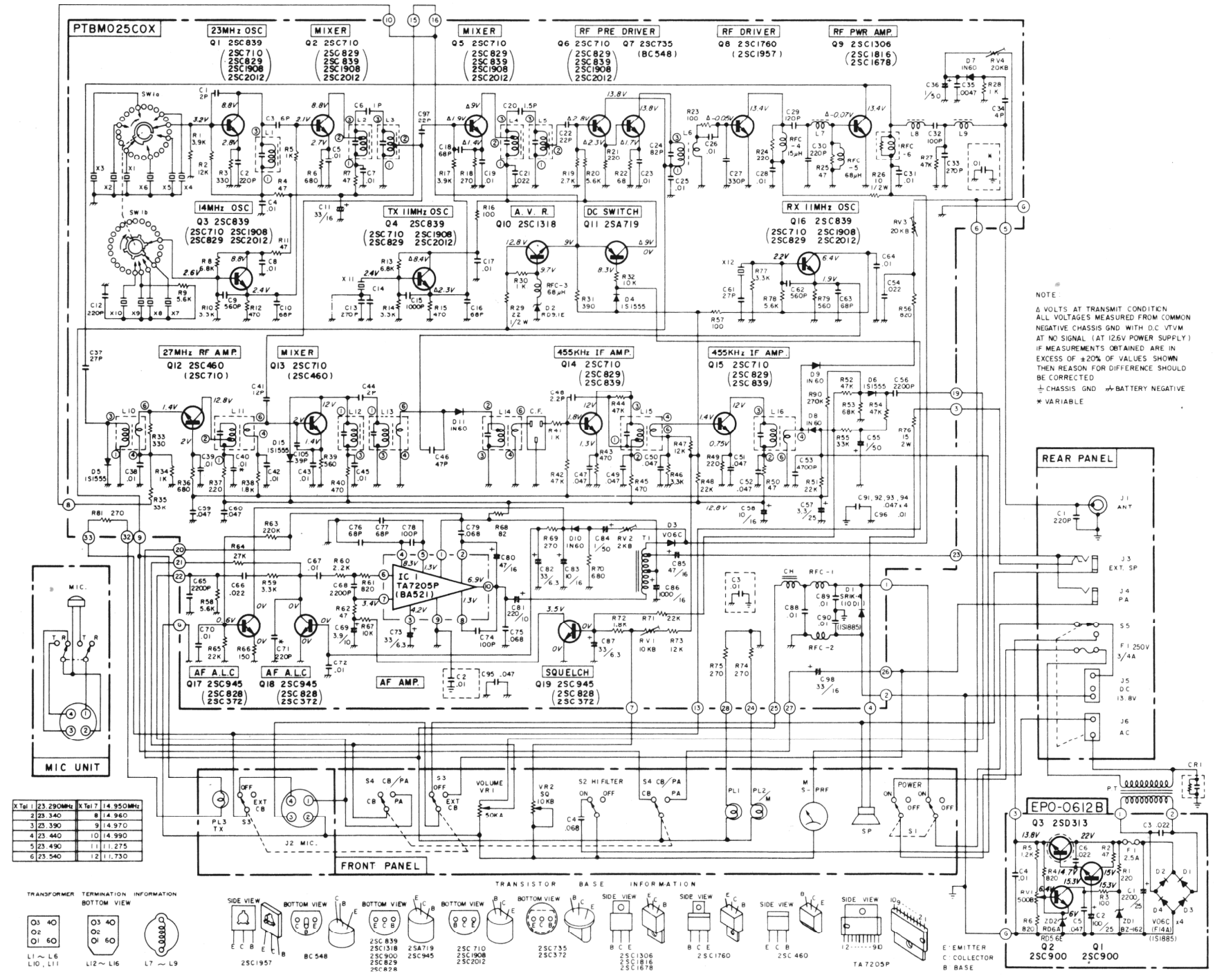
TP-N88-S

SCHEMATIC DIAGRAM OF 13-858



X'tal 1	23.290MHz	X'tal 7	14.950MHz
2	23.340	8	14.960
3	23.390	9	14.970
4	23.440	10	14.990
5	23.490	11	11.275
6	23.540	12	11.730

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 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®
INTERNATIONAL CORPORATION

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