1. GENERAL

The TLD2600A Series Power Amplifier (refer to Table 1) consists of the power amplifier chassis and associated hardware, and contains three circuit boards: the power control board, the power amplifier board, and the exciter control voltage regulator board. The following sections detail the theory of operation and maintenance information for the power amplifier circuitry. Because the setting of the power levels is affected by the alignment of the exciter, the power set procedure is a part of the overall transmitter alignment procedure given in the Transmitter section of this manual.

<table>
<thead>
<tr>
<th>Table 1. Power Amplifier Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>TLD2601A</td>
</tr>
<tr>
<td>TLD2602A</td>
</tr>
<tr>
<td>TLD2603A</td>
</tr>
</tbody>
</table>

2. THEORY OF OPERATION

2.1 POWER AMPLIFIER BOARD
(Refer to Figure 1 and schematic diagram)

2.1.1 This series of power amplifiers requires a 400 mW rf input from the exciter board. This input is passed through a ferrite step-down transformer (to match the input impedance to the first stage) to the gain-controlled amplifier stage. The external power control circuit which drives the control stage transistor determines the gain of this stage. The power control circuit monitors the output of the final stages of the power amplifier and the load condition.

2.1.2 The output of the gain-controlled amplifier is passed through a fixed-tuned broadband matching network and applied to the pre-driver stage. A second ferrite transformer is utilized to match the single-ended output of the pre-driver stage to the input of the push-pull driver stage. The output of the driver stage is split by a pair of transformers to drive each of the push-pull final power amplifier stages. The output from each final stage is stepped up in impedance by ferrite transformers and paralleled to provide the 50 ohm output impedance to match the input impedance of the harmonic filter.

2.1.3 Pin 1 of the metering receptacle provides a means of checking the incoming signal from the exciter. Pin 2 permits observation of the drive output of the first stage and an indication of the operation of the pre-driver stage. Pins 3 and 4 reflect the output drive signal and operation of the two push-pull power amplifier stages. Reference position A on a Motorola Portable Test Set uses pin 7 of the metering socket as an A reference against which the outputs of pins 1, 2, 3, and 4 are checked. Switch the test set to reference position B which uses pin 6 as a reference and then switch to meter position 5. This provides a reading across a calibrated resistor through which the current is drawn by the final amplifier stages.

2.2 POWER CONTROL BOARD FUNCTIONAL THEORY OF OPERATION

2.2.1 Refer to the loop block diagram, Figure 2. The circuitry operates as a control loop which continually monitors the output from the final stages of the transmitter power amplifier and controls that output by regulating the gain of the first stage of the power amplifier.

2.2.2 Refer to the block diagram, Figure 3. The output of the integrated circuit differential amplifier, amplified by the dc amplifier, is the controlling input to the power amplifier board.

2.2.3 The output of the differential amplifier is determined by the potentials present on the non-inverting (+) and inverting (−) inputs. These potentials are developed by the power control board circuitry in the following manner.

2.2.4 When the impedances of the antenna circuitry (load) and the power amplifier are matched (a VSWR of 1:1), a bias voltage produced by the dc reference bias circuitry is placed on the inverting input (also called the "reference input") of the differential amplifier (see Figure 6).
Figure 1. Block Diagram

Figure 2. Loop Block Diagram

Figure 3. Power Control Board Block Diagram
2.2.5 When the transmitter is keyed, the forward (output) power from the final stages of the power amplifier is fed through the directional coupler to the antenna circuit. This flow of power is sampled by the forward power sampling circuitry and places a bias, proportional to the forward power, on the non-inverting input (pin 5) of the differential amplifier. The POWER SET potentiometer is then adjusted, changing the potential on the non-inverting input. As this voltage changes, relative to the reference input voltage, the output of the differential amplifier changes, in turn changing the loop control level and therefore the output of the power amplifier.

2.2.6 Once the power has been set to the proper level, any change in the output power will be instantly corrected by the circuitry. If the power increases, the increase causes the differential amplifier output voltage to increase, decreasing the output from the dc amplifier which decreases the gain of the power amplifier until the output returns to the preset level. A decrease in transmitter power amplifier output causes the reverse action.

2.2.7 Any power reflected back from the antenna circuit is detected by the reverse power sampling circuit. Reverse power causes a negative current to flow, which, in turn, decreases the potential on the reference input of the differential amplifier. Therefore, increasing levels of reflected power will cause the transmitter power output to be decreased to a safe level.

2.3 POWER CONTROL BOARD DETAILED THEORY OF OPERATION

2.3.1 Bias Circuitry

Since the power control board has the capability to regulate the output of the transmitter power amplifier from a completely cut-off state to above the rated output power, a definite controlled output level is necessary whenever the transmitter is keyed. The desired controlled output level is determined by bias voltages present on the inverting and non-inverting inputs of the differential amplifier IC601 (see Figure 4). Under normal operating conditions (1:1 VSWR; 100% rated power out) the bias on the differential amplifier inputs are developed as described in the following paragraphs.

2.3.1.1 Voltage Regulator and Main Divider Line

Refer to Figure 5. The A+ supply to the board is regulated by a series regulator circuit providing a nominal voltage of 8.0 volts. The Zener diode holds the base of the series pass transistor at a fixed potential. The series pass transistor operates as a variable resistor to hold the input to the reference circuitry constant. The divider consisting of the two resistors and the diode provides the proper voltage tap points for the secondary voltage divider networks. All 220 pF capacitors in the board are used as rf bypasses.

2.3.1.2 Reference Bias Circuit

Refer to Figure 6. The reference bias is developed (with a 1:1 VSWR) by the voltage divider made up of two resistors and a diode between the regulated supply voltage and the switched A− source. Since A+ is applied to the board continuously and A− is only applied when the transmitter is keyed by the push-to-talk switch, the larger capacitor connected between the inverting input and keyed A− provides a time constant which allows the inverting input bias to build up slowly when power is first applied. This prevents full power output from occurring until the leveling circuitry can react and reach a quiescent level.

2.3.2 Directional Coupler

The directional coupler measures the voltage and the current traveling in both directions. The detection of forward (output) power causes a proportional voltage bias that is combined with the voltage-divider generated bias to set the potential on the non-inverting input of the differential amplifier. Any reverse power detected causes the VSWR circuitry to decrease the power output.

2.3.3 Protection Circuitry

2.3.3.1 Forward Power Bias and Detection Circuit

Refer to Figure 7. The forward power reference voltage divider comprised of two resistors and two potentiometers provides a stable potential that supplies a dc bias to the non-inverting input of the differential amplifier. With an approximately correct power output from the final stages of the power amplifier, a dc level proportional to that power is produced by the forward power detector circuit, which, in combination with the voltage developed by the voltage divider, produces a bias on the non-inverting input that can be adjusted by the POWER SET potentiometer. The POWER LIMIT control is pre-set to prevent over-dissipation if the POWER SET control should be set to maximum. (Refer to the CAUTION preceding maintenance information in this section.) The dc bias value will be determined by the power amplifier output and, with no reflected power (VSWR 1:1), balanced against the reference bias present on the inverting input of the differential amplifier. Once the bias has been set, and change in power output will change the bias on the non-inverting input causing the differential amplifier to compensate for the deviation. The forward power detector circuit (refer to Figure 8) detects rF power flowing through the directional coupler when the transmitter is keyed, and causes a small proportional current flow in the forward power sampling circuit. The diode converts the rF sample into a pulsating dc voltage and the dc filter removes the ripple. This is the dc voltage which is added to the dc bias already applied to the non-inverting input of the differential amplifier from the secondary divider circuitry.
Figure 4. IC601 Schematic Diagram

Figure 5. Voltage Regulator and Main Divider Line

Figure 6. Reference Power Bias Circuit
Figure 7. Forward Power Bias Circuit

Figure 8. Forward Power Detector Circuit

2.3.3.2 VSWR — Reverse Power Detection Circuit

Since the power control board is now operating correctly with the proper amount of forward power and the correct biases, the detection of reflected power causes a decrease in the power amplifier’s output in the following manner.

Refer to Figure 9. The components of the reverse power detector circuit function the same as those in the forward power detector. The voltage divider develops a bias voltage that isn’t quite enough to forward bias the diode that makes up one-half of a diode "OR" gate. When reflected power is detected, the resultant negative-going dc level lowers the dc bias level and the combination of the two forward bias the diode. The negative-going dc level on the inverting input increases the output voltage of the differential amplifier, decreasing the dc control output to protect the final stages of the power amplifier.

2.3.3.3 DC Level Output Amplification

The output of the differential amplifier is applied to the base of a voltage-inverting transistor amplifier whose output supplies the output control current. As the forward power increases above the normal value, the output of the differential amplifier increases proportionally. Since the dc level is increasing the base, the PNP transistor conducts less and the potentials across the output load resistor, and on the control output line, decrease.

3. MAINTENANCE

3.1 POWER AMPLIFIER BOARD

3.1.1 General

NOTE
Because of the complexity involved and time required to remove the PA board, compared to plug-in boards, it is not recommended that the PA board be removed. Proper troubleshooting techniques will usually locate defective components "on the spot."
This section of the manual provides the maintenance shop procedures for the PA board. It assumes that preliminary tests have already localized the trouble to the PA board. These procedures include measurements with a Motorola portable test set, a VOM, a complete set of performance tests, and extensive troubleshooting procedures.

**CAUTION**

The PA board must be installed in the transmitter for testing to provide the necessary power, ground, control, heat sinking and signal connections.

### 3.1.2 Recommended Test Equipment

The following test equipment is the minimum required for troubleshooting and adjusting the PA.

- Motorola S1056B through S1059B Portable Test Set and Model TEK-37 or TEK-37A Adapter Cable. The portable test set is required for checking each stage for proper operation.

- A Motorola Solid-State DC Multimeter or a 20,000 ohm-per-volt multimeter should be used, however a low impedance multimeter is acceptable for dc voltage measurements only.

- Motorola T1013A RF Load Resistor (dummy load) or equivalent.

### 3.1.3 Test Set Metering

The PA is equipped with a metering receptacle which allows five major test points to be measured. PA metering can be made at each of the five test points by merely rotating a selector switch on the optional station.
meter kit or on the test set. A failure in almost any portion of the PA will produce a low or zero meter reading for one or more of the test points. Improper alignment will also cause improper meter readings.

3.1.4 Using the Portable Test Set

3.1.4.1 To make the measurements, the portable test set must be connected to the station as follows.

Step 1. Set the function selector switch of the portable test set to the XMTR position.

Step 2. Set the meter reversing switch of the test set to the METER REV position, the selector switch to position 1, and REF switch to position A.

Step 3. Connect the 20-pin meter cable plug to the test set. When the test set is not in use, disconnect the 20-pin plug to conserve battery life. The plug acts as an on-off switch completing the battery circuit.

Step 4. Connect the red “control” plug of the adapter cable to the control receptacle on the remote control board. Connect the white “metering” plug of the adapter cable to the receptacle on the PA circuit board.

Step 5. The entire transmitter is necessary for testing PA boards including the power control board for proper control.

Step 6. The output of the station must be terminated in one of three types of loads:

(1) The antenna load.

(2) A dummy load such as Motorola's T1013A RF Load Resistor.

(3) An RF wattmeter.

NOTE
A dummy load is preferred to the antenna to eliminate the possibility of shutback by the power control board due to a defective antenna.

Step 7. Turn the station ON.

Step 8. Key the transmitter with the XMTR ON button on the test set. Observe the meter. Unkey the transmitter.

Step 9. Set the selector switch to positions 2, 3, & 4; then switch to reference position B and meter position 5 respectively, keying the transmitter and observing the meter reading for each. Refer to Table 2. On multi-frequency stations, repeat the readings for each frequency. An analysis of the meter readings for determining whether each circuit is good or bad follows.

3.1.4.2 Each time maintenance is performed on the PA the readings should be compared with the previous set of readings. Any degradation of performance will quickly be noted. Often, a lower reading may indicate an impending failure and corrective action may be taken before the circuit fails entirely.

3.1.5 Performance Tests

Step 1. No performance test of the power amplifier is required other than rf power output from the station as a whole. Before checking power output:

(1) The exciter board should be known to be operating normally.

(2) The power control board should be known to be functioning normally.

Step 2. Key the transmitter and observe power out, which should be 100 watts or value set from 50 to 100 watts depending upon licensing.

<table>
<thead>
<tr>
<th>Selector Switch Position</th>
<th>Reference Switch Position Portable Test Set Only</th>
<th>Minimum Meter Readings</th>
<th>Circuit Metered</th>
<th>If Low, Defective Circuit Is: (See Troubleshooting Charts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>10 μA</td>
<td>Exciter Output (input to Controlled Amplifier Q501)</td>
<td>Exciter output, input circuitry of controlled amplifier stage Q501.</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>5 μA</td>
<td>Input of Pre-driver Stage (Q502)</td>
<td>Output of controlled amplifier stage input circuitry of predriver stage.</td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>10 μA</td>
<td>Input of Final Amplifier Stage Q505, Q506</td>
<td>Input of Q505, Q506 stages, output of driver stage QSO2, Q503, output of pre-driver stage Q502.</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>10 μA</td>
<td>Input of Final Amplifier Stage Q507, Q508</td>
<td>Input of QSO7, Q508 stage output of driver stage Q502, Q503. Output of pre-driver stage Q502.</td>
</tr>
<tr>
<td>5 (or 2)</td>
<td>B</td>
<td>29 μA Max. 105 W</td>
<td>Total Current in Final Amplifier Stages Q505, Q506, Q507, Q508</td>
<td>Output of final amplifier stages Q505-Q508, power control board antenna switch, antenna.</td>
</tr>
<tr>
<td>6 (or 3)</td>
<td>B</td>
<td>12 V (0-30 V scale)</td>
<td>Final Amplifier Stage</td>
<td>Final amplifier stage A + or A− input.</td>
</tr>
</tbody>
</table>
3.2 POWER CONTROL BOARD

CAUTION
The power control board is incorporated in the transmitter to provide protection for the rf power transistors under environmental conditions such as voltage, load variation, and device variations. In order for the circuitry to operate properly and provide protection it is necessary to set the power output control (POWER SET) in accordance with the station alignment procedure.

3.2.1 General

3.2.1.1 Two basic maintenance approaches may be used for localizing and replacing trouble in these radio sets.

- Replace the defective circuit board with a spare and return the defective board to a maintenance shop for repair.

- Isolate and repair the trouble on the spot. This approach must be used if spares are not available.

3.2.1.2 Regardless of the maintenance approach used, a few simple tests on the overall radio set will localize the trouble to the power control board if it is defective. These procedures are given elsewhere in the manual. This section of the manual provides the maintenance shop level procedures for the power control circuitry. It assumes that preliminary tests have already localized the trouble to the power control board. These bench test type procedures include measurements with a Motorola portable test set, a simple set of performance tests, and complete troubleshooting procedures including step-by-step circuit check-out.

3.2.2 Recommended Test Equipment

The following test equipment is the minimum required for troubleshooting and adjusting the board. All such equipment is battery operated. When ac operated equipment is used, the ground lead must not be electrically connected to ac line ground.

- Optional station metering or Motorola S1056B through S1059B Portable Test Set and Model TEK-37 or TEK-37A Adapter Cable. (The meter or portable test set is necessary to monitor forward and reverse power detectors.)

- Motorola Solid-State DC Multimeter or equivalent. A 20,000 ohm-per-volt multimeter may be used but a low impedance volt-ohm meter may not be used. This meter is used for measuring dc voltages and resistance.

- Motorola T1013A RF Load Resistor (Dummy Load) or equivalent.

3.2.3 Metering

The power control board is equipped with a metering receptacle which allows three major test points (forward power, reflected power and control current) to be measured. Refer to the troubleshooting charts or the schematic diagram for the correct meter indications.

3.2.4 Using Portable Test Set

Step 1. Set the function selector switch of the portable test set to the XMTR position.

Step 2. Set the meter reversing switch of the test set to the METER REV position.

Step 3. Set the REF switch to position A or B.

Step 4. Connect the 20-pin meter cable plug to the test set. When the test set is not in use, disconnect the 20-pin plug to conserve battery life. The plug acts as an on-off switch completing the battery circuit.

Step 5. Connect the red “control” plug of the adapter cable to the control receptacle on the remote control circuit board. Connect the white “metering” plug of the adapter cable to the receptacle on the power control board.

Step 6. The output of the power control board must be terminated in one of three types of loads.

1. The antenna load.

2. A dummy load such as Motorola’s T1013A RF Load Resistor.

3. An RF wattmeter.

NOTE
A dummy load is preferred to the antenna to eliminate the possibility of shutback due to a defective antenna.

Step 7. Turn the station ON.

Step 8. Set the selector switch of the test set to position 1 and key the transmitter with the XMTR ON button on the test set. Observe the wattmeter, or the efer reading if a dummy load is used or if the antenna is used. Unkey the transmitter. Under normal conditions at rated power out, meter 1 should read between 15 uA and 45 uA typically. Refer to Table 3.

3.2.5 Performance Test, Power Set Control

This control allows the power output of the radio set to be varied from zero (0) power out with the control fully counterclockwise to greater than the rated output.
Table 3. Power Control Board Metering

<table>
<thead>
<tr>
<th>Selector Switch Position</th>
<th>Reference Switch Position (See Note)</th>
<th>Normal Meter Readings</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>15-45 uA</td>
<td>Indicates forward power output.</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>10 uA max.</td>
<td>A meter reading higher than the normal range indicates reflected power caused by a defective antenna, antenna switch, or cables.</td>
</tr>
<tr>
<td>5</td>
<td>B (Meter Reverse On)</td>
<td>50 uA max.</td>
<td>Indicates the relative level of drive sent to the PA on the blue control lead. A reading of greater than 35 uA indicates the power control board is set for a higher power than the radio is capable of supplying.</td>
</tr>
</tbody>
</table>

METERING NOTE
Alignment may be performed using a Motorola S1056B thru S1059B Portable Test Set. The OSC. & METER REV. SWITCH column refers to portable test set usage.

CAUTION
For proper operation of the protection circuitry, it is imperative that the POWER SET control never be left in a position that exceeds rated power output.

Refer to the power amplifier tune-up procedure.

Step 1. Key the transmitter.

Step 2. Adjust the POWER SET control until the rated power output is reached.

Step 3. Unkey the transmitter.

4. TROUBLESHOOTING PROCEDURES

4.1 GENERAL

If a problem has been localized to either the power amplifier or power control board decks, several checks can be made prior to extensive troubleshooting.

4.2 VISUAL

Visually check for obvious physical defects such as broken leads, broken plating, broken or disconnected components or overheated parts. Before any attempt is made to change parts, the circuit should be checked to insure that the problem causing the original failure has been identified and corrected, otherwise damage to the new part may occur.

4.3 VOLTAGE CHECKS

Check for A+ and A− at the feedthrough connections and for proper voltages at the collectors of each transistor. Certain defects such as broken plating, broken leads etc. may not be obvious to a visual inspection.

4.4 TROUBLESHOOTING

4.4.1 If test set readings are abnormal or tests indicate subnormal performance, a logical troubleshooting procedure is required to isolate the defective component efficiently. The accompanying troubleshooting chart summarizes these results in a logical sequence. A few voltage and resistance checks in the suspected circuit should readily isolate the defective component. Note that all power for the circuits in the PA and power control board is from A− referenced to A+ (not to chassis ground, this feature allows operation from positive or negative ground power sources when an optional positive ground converter is used).

CAUTION
Due to the voltage requirements of PNP transistors, all "rf ground" plating is A+ and is "hot" with respect to chassis ground in negative ground applications. Because of this, caution should be used to prevent connection of "ground" plating on the PA board to chassis ground, either directly or by the use of test equipment ground leads. If ac operated test equipment is used, the ground lead must not be electrically connected to ac line ground.

4.4.2 The schematic diagrams of the PA board and power control board contain the voltage readings required for troubleshooting. The readings are typical for normal operating conditions at rated power output for the radio. Refer to the troubleshooting charts and the schematics when a defect is suspected.

5. REPAIR PROCEDURES

5.1 RESISTANCE MEASUREMENT OF TRANSISTORS IN PUSH-PULL PAIRS

Due to the fact that transistors in push-pull pairs are dc connected at both base and emitter, BOTH devices should be measured when a defect in the pair is suspected.

5.2 TRANSISTOR REMOVAL PROCEDURE

Step 1. Unscrew both mounting screws from the base of the transistors. The nuts (for the mounting screws) on the reverse side of the shelf are captivated and will not fall out.
Step 2. Remove excess solder from around transistor tabs with a vacuum bulb type desoldering device.

Step 3. Gently lift each lead, one at a time while applying heat.

Step 4. When all four leads are loose from the board carefully lift out the transistor.

5.3 TRANSISTOR INSTALLATION PROCEDURE

Step 1. Pre-tin underside of each transistor lead.

Step 2. Apply a light coat of Wakefield Thermal Compound to the underside of the transistor mounting base and to the heat sink.

Step 3. Install the transistor making sure that all collector leads face the proper direction. Refer to the circuit board detail.

Step 4. Screw down the two mounting screws securely.

Step 5. Solder each transistor lead one at a time to the circuit board. The use of a generous amount of solder will insure a good contact of the entire tab to the board. Use care that solder does not bridge to other plating or that solder does not flow into the cutout in the circuit board.

5.4 PROCEDURES FOR RESISTANCE MEASUREMENTS OF TRANSISTORS

Step 1. Set ohmmeter to RX1, RX10 or RX100 scale (preferably RX10 if available).

Step 2. Measure the resistance from lead to lead as described in (a) thru (c). Should any indication be observed in measurements (a) or (c), the transistor is defective and should be replaced.

(a) With the positive probe on the base, no indication (very high impedance) should be observed when the negative probe is touched to the collector or emitter. (Reverse drop measurement.)

(b) With the negative probe on the base, a relatively low impedance should be observed when touching the positive probe to the collector and emitter. (Forward drop measurement.)

(c) No indication should be observed from collector to emitter regardless of the polarity of the ohmmeter probes.
## Parts List

<table>
<thead>
<tr>
<th>ROHS REF.</th>
<th>MANUFACT.</th>
<th>PART. NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>C011</td>
<td>MOTOROLA</td>
<td>24641133</td>
<td>motor</td>
</tr>
<tr>
<td>C012</td>
<td>MOTOROLA</td>
<td>48641133</td>
<td>motor</td>
</tr>
<tr>
<td>C014</td>
<td>MOTOROLA</td>
<td>48641134</td>
<td>motor</td>
</tr>
<tr>
<td>C015</td>
<td>MOTOROLA</td>
<td>50041135</td>
<td>motor</td>
</tr>
<tr>
<td>C016</td>
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<td>50041136</td>
<td>motor</td>
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## Main Component List

<table>
<thead>
<tr>
<th>ROHS REF.</th>
<th>MANUFACT.</th>
<th>PART. NO.</th>
<th>DESCRIPTION</th>
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<td>24641133</td>
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<tr>
<td>C012</td>
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<tr>
<td>C016</td>
<td>MOTOROLA</td>
<td>50041136</td>
<td>motor</td>
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## Universal Voltage Transformer

<table>
<thead>
<tr>
<th>ROHS REF.</th>
<th>MANUFACT.</th>
<th>PART. NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>C011</td>
<td>MOTOROLA</td>
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</tr>
<tr>
<td>C016</td>
<td>MOTOROLA</td>
<td>50041136</td>
<td>motor</td>
</tr>
</tbody>
</table>

## Additional Notes

- For optimum performance, diodes, transistors, and integrated circuits must be voltage-rated by Motorola part numbers.
ANTENNA SWITCH REPLACEMENT

1. Remove the card cage per manual instructions in the maintenance section.

2. Note the positions of the tie wraps and cable clamps, and pay attention to cable routing.

3. Remove the appropriate cable clamps, and clip the necessary tie wraps.

4. Remove the antenna switch:
   4.1 Unfasten the receiver antenna connector from the card cage chassis (2 screws).
   4.2 Disconnect the rf connector from the PA output
   4.3 Unfasten the 2 pin molex connector.

4.4 Remove the antenna switches spanner nut from the junction box.

5. Installation is the reverse of the above. Remember to fasten the cables with new tie wraps.

parts list

<table>
<thead>
<tr>
<th>TRN5122A Antenna Switch</th>
<th>PL-8027-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>REFERENCE SYMBOL</td>
<td>MOTOROLA PART NO.</td>
</tr>
<tr>
<td>1</td>
<td>2-60006A01</td>
</tr>
<tr>
<td>2</td>
<td>4-114532</td>
</tr>
<tr>
<td>3</td>
<td>43-62955N01</td>
</tr>
<tr>
<td>4</td>
<td>28-83975N01</td>
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<td>5</td>
<td>28-84579F01</td>
</tr>
<tr>
<td>6</td>
<td>28-63099K01</td>
</tr>
<tr>
<td>7</td>
<td>J801 consists of 15-6486-1K02 Housing, 29-84706E06 TERMINALS</td>
</tr>
</tbody>
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