Troubleshooting Guide

Fuller Heavy-Duty Transmissions TRTS0011 EN-US

October 2007

RTLO-11118A-MT
RTLO-9118A-MT

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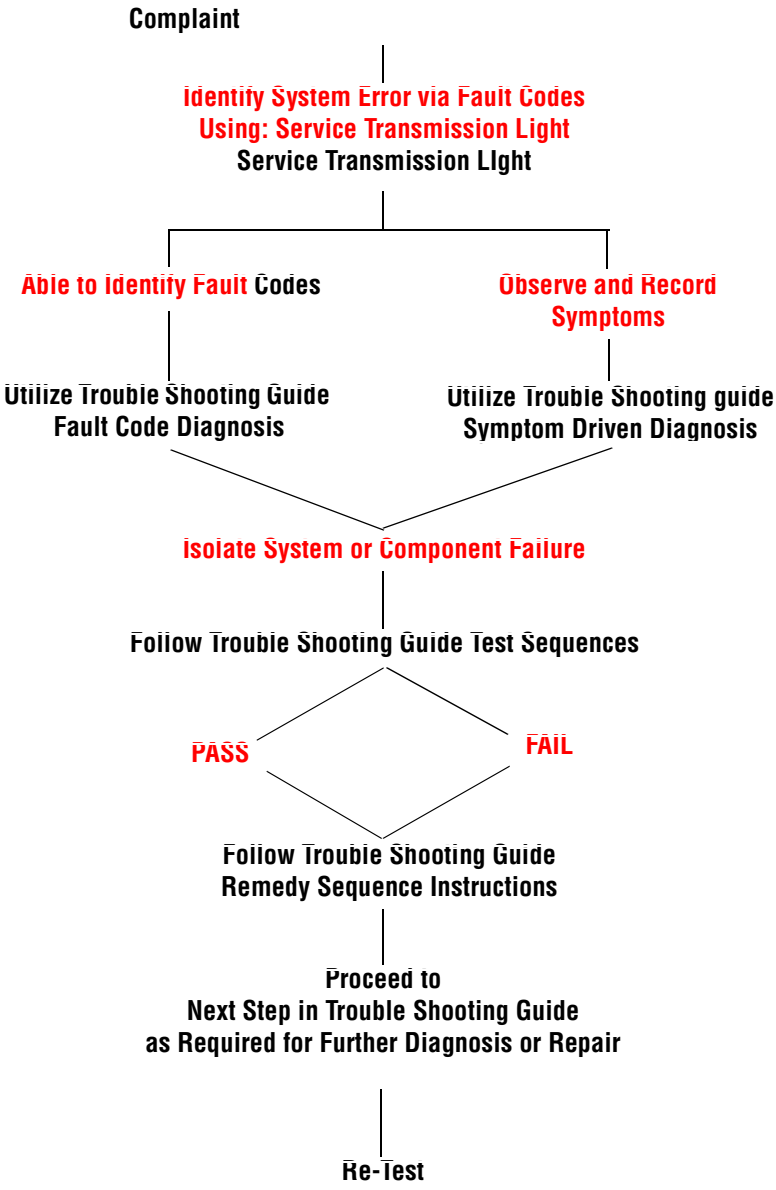
⚠ WARNING

- Before starting a vehicle always be seated in the driver's seat, move the shift lever to neutral, and set the parking brakes.
- If engine cranks in any other gear than neutral, service your vehicle neutral safety start circuit and start enable relay circuit immediately.
- Before working on a vehicle or leaving the cab with engine running, place the transmission in neutral, set the parking brakes, AND block the wheels.
- Do not release the parking brake or attempt to select a gear until the air pressure is at the correct level.
- For safety reasons, always engage the service brakes when moving the shift lever from neutral to one of the other gear positions.
- When parking the vehicle or leaving the cab, always place the shift lever in neutral and set the parking brakes.
- TOWING: To avoid damage to the transmission during towing, place the transmission in neutral and lift the drive wheels off the ground or disconnect the driveline.

Complaint Isolation, Verification & Remedy Procedure



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

How To Use this Troubleshooting Guide

The purpose of this manual is to assist in the diagnosis and verification of your electronically managed heavy-duty transmission system. It should be used in conjunction with Eaton Driver Instructions, Illustrated Parts List, Installation Guide, and Service Manual -- as well as OEM service related material.

This guide provides three functions:

1. **Service Transmission Light Diagnostics:** designed to lead the service technician to the source of a problem through flashing error codes.
2. **Performance Evaluation:** designed to lead the service technician to the source of a problem through a performance evaluation.
3. **Test and remedy Sequences:** detailed component testing designed to isolate and resolve system failures.

Service Transmission Light Diagnostics

The Service Transmission indicator light, which is also the torque converter open lamp, assists the mechanic in problem diagnosis via flashing signals equal to Fault Code numbers as listed in the Fault Codes Diagnosis section of this manual.

If a driver reports a degraded mode of operation, advise that the capabilities of the truck should be assessed and then taken to a service site. **The transmission temperature should be monitored during the trip to the service site.** Examples of potential problem conditions under which a vehicle with a Converter Enhanced Mechanical Transmission can be driven include:

- Transmission fails to lock torque converter, but vehicle can still proceed although speed and/or power is limited.
- Transmission is not able to select all ratios and limits the gears available.

1. **Using the Service Transmission Light for Diagnostics:** To activate the retrieval of fault codes via the Service Transmission light perform the following steps:

- Active Codes: Place the Shift Lever in Neutral. Set the parking brakes. Begin with the key in the off position. Turn the key off and back on two (2) times within 5 seconds (OFF/ON/OFF/ON). It is OK if the engine stops, or continues running, however do not re-energize the starter when retrieving Fault Codes as you may cause codes to clear.
- If there are no active fault codes, then retrieve the intermittent codes.
- Intermittent codes: Follow instructions for Active Codes, but turn key OFF and ON four (4) times.
- To clear fault codes: Follow instructions for Active Codes, but turn key OFF and ON six (6) times. Fault codes should be cleared each time the transmission is serviced.

1a. After activating the retrieval of codes, to read transmission errors via the Service Transmission light, observe the sequence of flashes exhibited by the light. The Service Transmission light will flash in coded sequences equal to Fault Codes identified in this manual. A long pause (5 seconds) follows each code before it is repeated, or the next codes sequence is given.
Examples:

- Flash / Pause / Flash = Fault Code 11 System Controller
- Flash - Flash / Pause / Flash - Flash - Flash = Fault Code 23 Engine Speed Sensor
- Flash / Pause / Flash - Long Pause - Flash - Flash / Pause / Flash - Flash - Flash = Fault Codes 11 & 23.

1b. To identify fault codes and applicable tests signalled by the Service Transmission light refer to the Fault code Diagnosis section of this manual.

Symptom Diagnosis

1. Refer to the Performance Evaluation test in this manual.
2. Locate and perform appropriate Test Sequence as indicated by the Performance Evaluation Test.

Before Beginning Diagnostic Procedures

It is possible to “clear” or “reset” the Converter Enhanced Mechanical Electronic Control Unit (ECU) for some transmission errors. If the transmission is not functioning properly try these steps before beginning diagnostic procedures:

1. Stop the vehicle.
2. Place the shift lever in neutral.
3. Set the parking brakes.
4. Turn off the engine/ignition and wait for one minute.
5. Restart the engine.
6. Resume operation.

Test Sequence and Remedy Sequence

1. Locate the correct Test Sequence.
2. Always perform pre-test procedures found at the top of each Test Sequence page before beginning test procedure.
3. Follow test steps in sequence.
4. Go to Remedy Sequence when required.
5. Perform appropriate removal, replacement or adjustment procedures.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

If no fault codes exist perform the Performance Evaluation Test. Locate and perform appropriate test sequence as indicated by the evaluation.

Symptom Driven Diagnosis

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Measure voltage across vehicle battery terminals [voltage = 12.6 volts].
Is voltage correct?

YES **NO**

Refer to Figure A below. Disconnect vehicle interface harness connector J1 from ECU.

Repair low voltage problem. Contact OEM for service information.

Refer to Figure B below. Measure resistance between pins A3, B3, C3, and battery negative terminal [resistance = 0.0-0.4 ohms].
Is resistance correct?

YES **NO**

Refer to Figure B on page 9.
Measure voltage between harness connector pins A3 and G2 [voltage = battery voltage].
Is voltage correct?

A problem exists with transmission electrical grounds. Contact OEM for service information.

YES **NO**

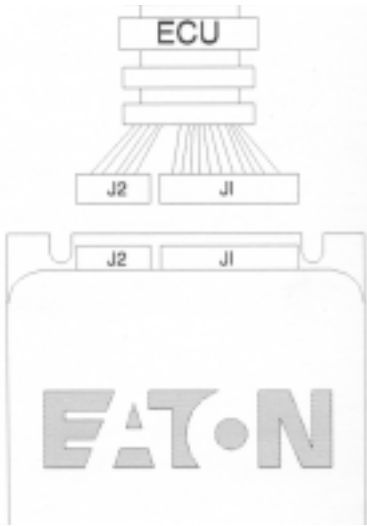
Refer to Figure B below. Measure voltage between harness connector pins A3 and G1 [voltage = 0 volts.]
Is voltage correct?

A problem exists in vehicle interface harness or batter supply circuit breaker. Contact service information.

YES **NO**

CONTINUE

A problem exists in vehicle interface harness or ignition voltage supply circuit breaker. Contact OEM for service information.



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Turn the ignition key "ON".

Refer to Figure B on page 12. Measure the voltage between the harness connector pins A3 and G1 [voltage = battery voltage]. *Is voltage correct?*

YES **NO**

Turn ignition key "OFF".

A problem exists in vehicle interface harness or ignition voltage supply circuit breaker. Contact OEM for service information.

Refer to Figure B below. Place jumper wire across vehicle interface harness connector pins F1 and A3.

Refer to Figure B below. Measure voltage between harness connector pins B3 and E1 [voltage = battery voltage]. *Is voltage correct?*

YES **NO**

Refer to Figure A on page 8. Disconnect vehicle interface harness J2 connector from ECU.

A problem exists in transmission power relay or vehicle interface harness. contact OEM for service information.

Refer to Figure C on page 12. Measure voltage between J1 connector pin B3 and J2 connector pin A3 [voltage = battery voltage]. *Is voltage correct?*

YES **NO**

Test complete

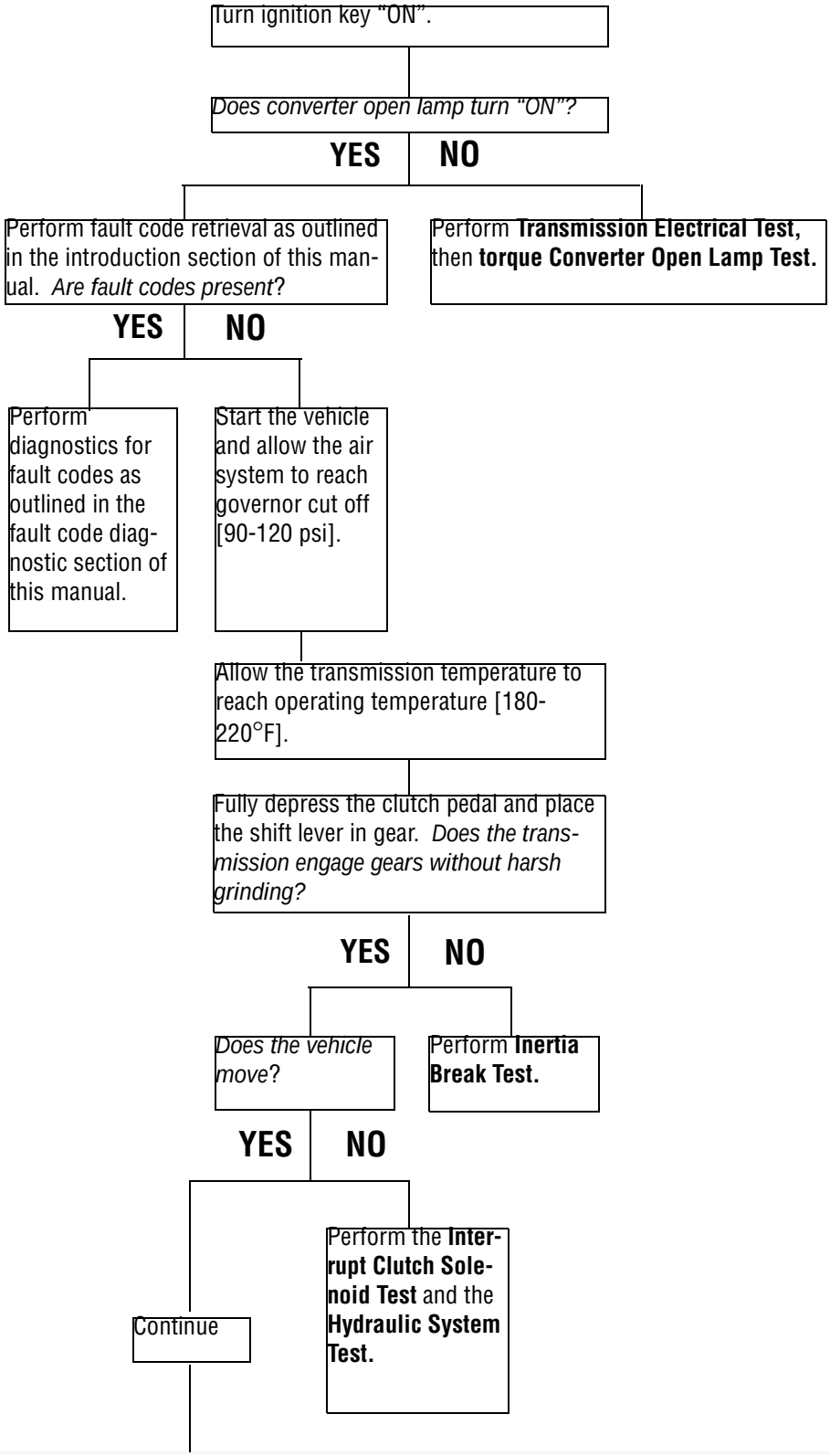
Repair/replace vehicle interface harness according to OEM service information.

Performance Evaluation Test

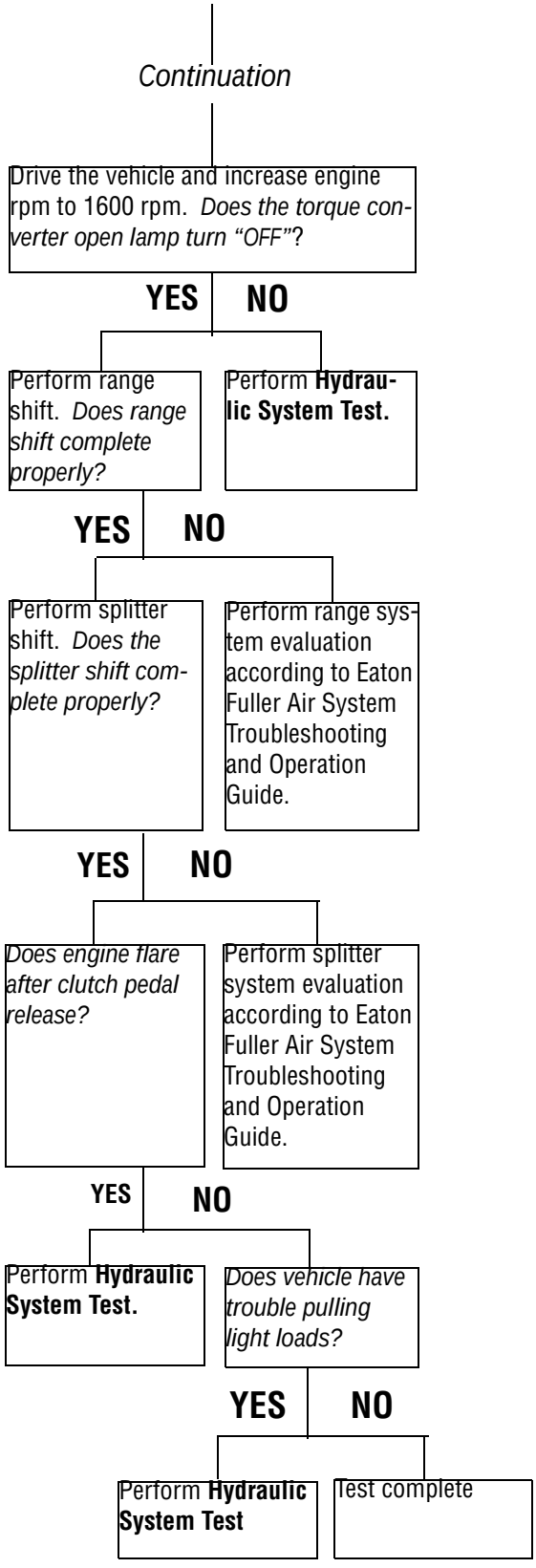
For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key "OFF".



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.



Power Relay Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key "OFF".

Refer to Figure A below. Disconnect vehicle interface harness J1 connector from the transmission ECU.

Refer to Figure B below. Measure resistance between J1 connector pins F1 and G2 [resistance = 40-90 ohms]. Measure voltage between G2 and vehicle ground, F1 and vehicle electrical ground [should = battery voltage].

YES | **NO**

Replace transmission ECU.

Locate power relay assembly and disconnect vehicle interface harness from relay assembly.

Refer to Figure C below. Measure resistance between pins 85 and 86 of each power relay [resistance = 40-90 ohms]. *Is resistance correct*?

YES | **NO**

Replace vehicle interface harness according to OEM service information.

Replace power relay assembly according to OEM service information.

Test complete

Figure A: Vehicle Interface Harness

Figure B: Connector J1

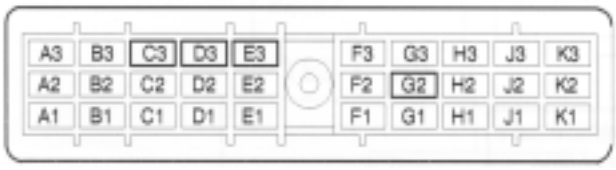


Figure C: Relay Connector

System Voltage Test

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Measure voltage across vehicle battery terminals [voltage = 12.6 volts].
Is voltage correct?

YES **NO**

- **NO** → Repair low voltage problem. Contact OEM for service information.
- **YES** → Refer to Figure A below. Disconnect vehicle interface harness connector J1 from ECU.

Refer to Figure B below. Measure resistance between pins A3, B3, C3, and battery negative terminal [resistance = 0.0-0.4 ohms].
Is resistance correct?

YES **NO**

- **NO** → A problem exists with transmission electrical grounds. Contact OEM for service information.
- **YES** → Refer to Figure B below. Measure voltage between harness connector pins A3 and G2 [voltage = battery voltage].
Is voltage correct?

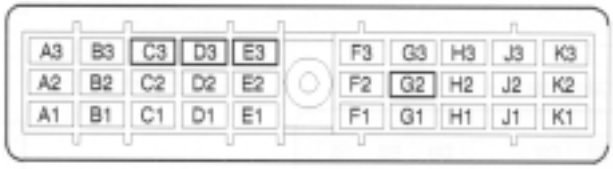
YES **NO**

- **NO** → A problem exists in vehicle interface harness or battery supply circuit breaker. Contact OEM for service information.
- **YES** → Refer to Figure B below. Measure voltage between harness connector pins A3 and G1 [voltage = 0 volts]. *Is voltage correct?*

YES **NO**

- **NO** → A problem exists in vehicle interface harness or ignition voltage supply circuit breaker. Contact OEM for service information.
- **YES** → *Continue*

Figure B: Connector J1



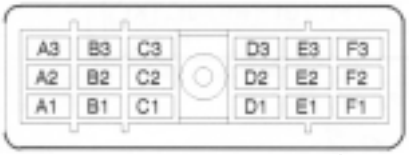
For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

System Voltage Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Figure B: Connector J1

Figure C: Connector J2



Continuation

Turn the ignition key "ON".

Refer to Figure B below. Measure the voltage between the harness connector pins A3 and G1 [voltage = battery voltage. *Is voltage correct*?

YES **NO**

Turn ignition key "OFF".

A problem exists in vehicle interface harness or ignition voltage supply circuit breaker. Contact OEM for service information.

Refer to Figure B below. Place jumper wire across vehicle interface harness connector pins F1 and A3.

Refer to Figure B below. Measure voltage between harness connector pins B3 and E1 [voltage = batter voltage]. *Is voltage correct*?

YES **NO**

Refer to Figure A at left. Disconnect vehicle interface harness J2 connector from ECU.

A problem exists in transmission power relay or vehicle interface harness. Contact OEM for service information.

Refer to Figure C at left. Measure voltage between J1 connector pin B3 and J2 connector pin A3 [voltage = battery voltage]. Is voltage correct?

YES **NO**

Test Complete

Repair/replace vehicle interface harness according to OEM service information

Inertia Brake Solenoid Coil Test

Before beginning test procedure:
1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect inertia brake solenoid from the transmission electrical harness.

Measure resistance between inertia brake solenoid connector pins [resistance = 11-18 ohms]. Measure resistance between inertia brake solenoid and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES **NO**

Connect inertia brake solenoid to transmission harness.

Replace inertia brake solenoid.

Disconnect transmission harness from vehicle interface harness.

Refer to Figure B below. Measure resistance between transmission harness pins G and H [resistance = 11-18 ohms]. Measure resistance between transmission harness pin H and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES **NO**

Connect transmission harness to vehicle interface harness.

Replace transmission harness.

Continue

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Figure A: Inertia Brake Solenoid Connector

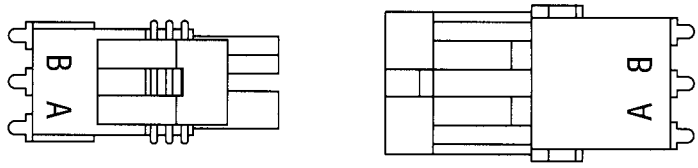
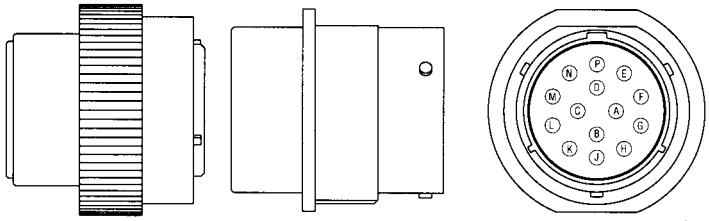


Figure B: Transmission Harness Connector



Inertia Brake Solenoid Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Refer to Figure C below. Disconnect vehicle interface harness J1 connector from transmission ECU.

YES **NO**

Refer to Figure D below. Measure resistance between vehicle interface harness connector pins E1 and H1 [resistance = 11-18 ohms]. Measure resistance between pin H1 and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES **NO**

Replace transmission ECU.

Replace vehicle interface harness according to OEM service information.

Test complete

Figure C: Vehicle Interface Harness

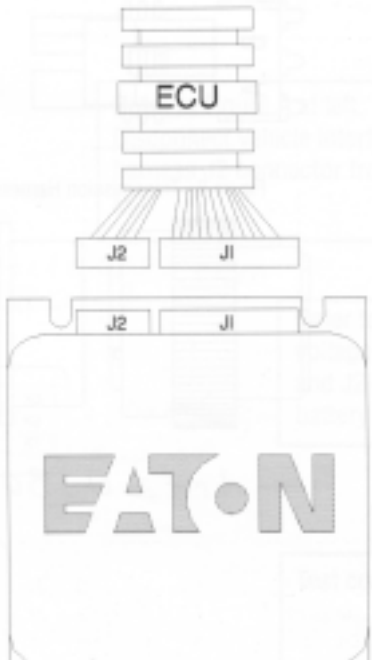
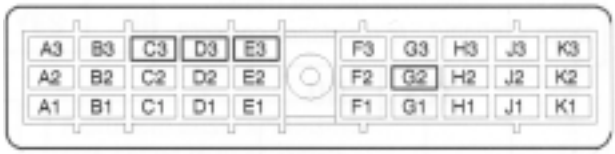


Figure D: Connector J1



Inertia Brake Test

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Refer to Figure A below. Install 0-100 psi air gauge in inertia brake air line. Gauge should be installed in “T” fashion.

Start vehicle and allow air pressure to reach governor cut off [90-125 psi].

With the vehicle at idle fully depress clutch pedal and monitor air pressure gauge. *Does the inertia brake air pressure cycle on and off?*

YES | **NO**

Replace inertia brake according to service manual.

Refer to Figure B below. Disconnect vehicle interface harness connector J1 from transmission ECU.

Refer to Figure C below. Place jumper wire between pins G2 and E1.

Refer to Figure C below. Place jumper wire between pins H1 and A3. Monitor pressure gauge. Does the inertia brake air pressure read 85-95 psi?

YES | **NO**

Go to Inertia Brake Switch Test

Remove air gauge from inertia brake air line.

Go to Inertia Brake Air Supply Test

Figure A

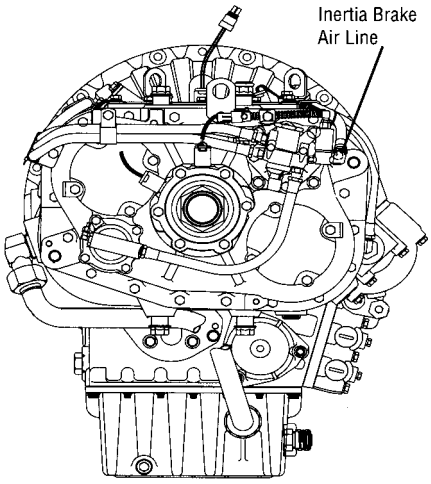


Figure B: Vehicle Interface Harness

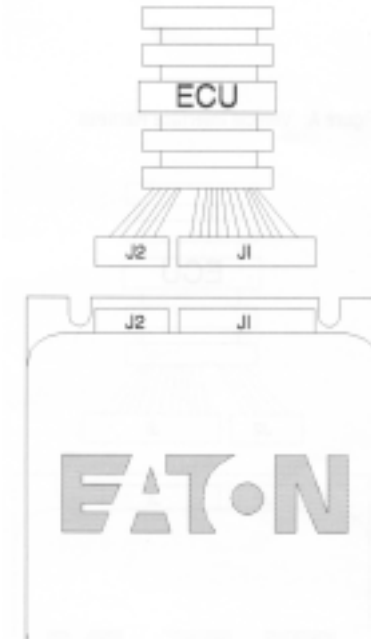
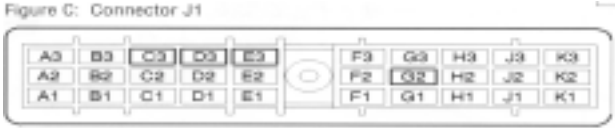


Figure C: Connector J1



Inertia Brake Switch Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect vehicle interface harness connector J2 from the transmission ECU.

Refer to Figure B below. Measure the resistance between pin F3 and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES **NO**

Fully depress the clutch pedal.

Repair inertia brake switch according to OEM service information.

Refer to Figure A below. Measure the resistance between pin F3 and vehicle electrical ground [resistance = 0-5 ohms]. *Is resistance correct?*

YES **NO**

Replce transmission ECU according to transmission service manual.

Repair inertia brake switch circuit according to OEM service information.

Figure A: Vehicle Interface Harness

Figure B: Connector J2

Inertia Brake Air Supply Test

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Install 0-100 psi air gauge in inertia brake solenoid air regulator port.

Start the vehicle and allow air system to reach governor cut-off [90-120 psi]. Monitor air pressure gauge. *Does air pressure equal 73-83 psi*?

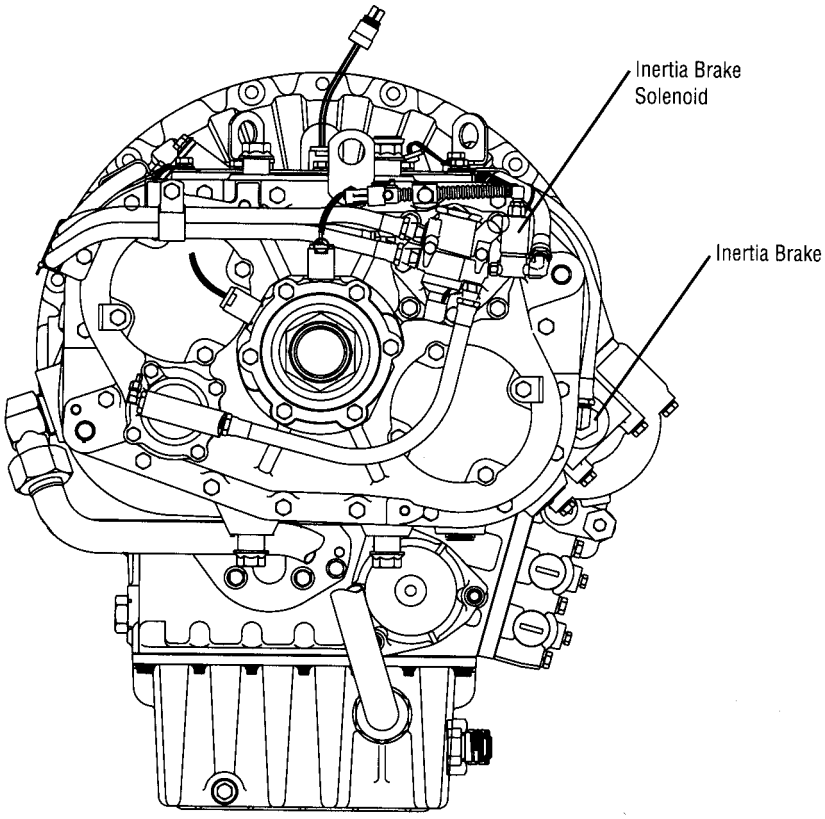
YES | **NO**

Replace inertia brake solenoid according to transmission service manual.

Replace air filter regulator according to transmission service manual.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Figure A



Transmission Converter Open Lamp Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key "OFF".

Refer to Figure A below. Disconnect vehicle interface harness connector J1 from the transmission ECU.

Refer to Figure B below. Place jumper wire between pins G2 and E1. Place jumper wire between pins C2 and A3. *Does Converter open lamp turn "ON"?*

YES **NO**

Replace transmission ECU according to OEM service information.

Replace converter open lamp and inspect the vehicle interface harness.

Does condition still exist?

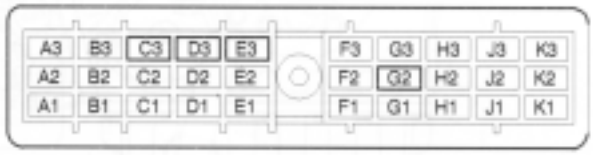
YES **NO**

Perform **Transmission Electrical Test.**

Test Complete

Figure A: Vehicle Interface Harness

Figure B: Connector J1



Engine Speed Sensor Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect engine speed sensor from transmission electrical harness.

Measure resistance between engine speed sensor connector pins [resistance = 3k-4k ohms]. Measure resistance between engine speed sensor pin A and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES | **NO**

- **YES:** Connect engine speed sensor to transmission harness.
- **NO:** Replace engine speed sensor.

Refer to Figure B below. Disconnect transmission harness from the vehicle interface harness.

Measure resistance between transmission harness pins N and P [resistance = 3k-4k ohms]. Measure resistance between transmission harness pin P and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES | **NO**

- **YES:** Connect transmission harness to vehicle interface harness.
- **NO:** Replace transmission harness.

Continue

Figure A: Engine Speed Sensor Connector

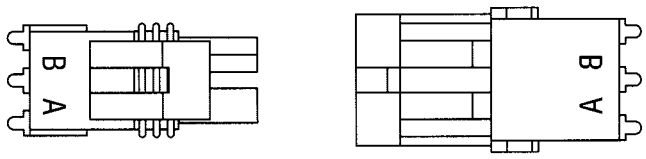
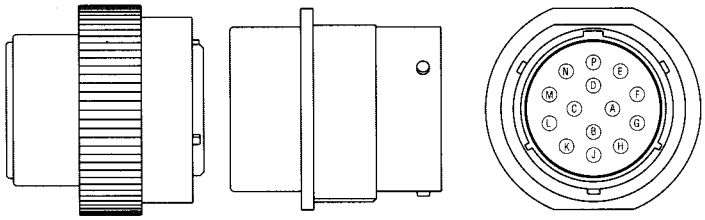


Figure B: Transmission Harness Connector



Engine Speed Sensor Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Refer to Figure C below. Disconnect vehicle interface harness J1 connector from transmission ECU.

Refer to Figure D below. Measure resistance between vehicle interface harness connector pins J3 and K3 [resistance = 3k-4k ohms]. Measure resistance between pin K3 and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

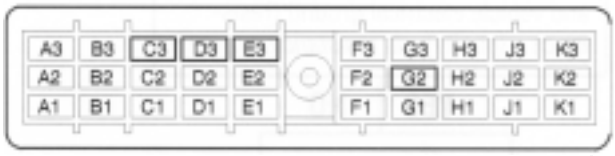
YES **NO**

Replace transmission ECU.

Test complete

Replace vehicle interface harness according to OEM service information.

Figure D: Connector J1



Bypass/ Lockup Solenoid Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect torque converter harness from transmission electrical harness.

Measure resistance between torque converter harness pins A and B [resistance = 2.5-4 ohms]. Measure resistance between torque converter harness pin A and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES | **NO**

Connect torque converter harness to transmission harness.

Replace torque converter harness.

Refer to Figure B below. Disconnect transmission harness from the vehicle interface harness.

Measure resistance between transmission harness pins A and B [resistance = 2.5-4 ohms]. Measure resistance between transmission harness pin B and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES | **NO**

Connect transmission harness to vehicle interface harness.

Replace transmission harness.

Continue

Figure A: Torque Converter Harness Connector

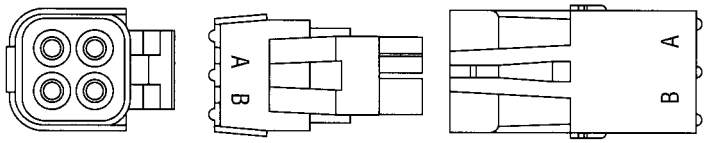
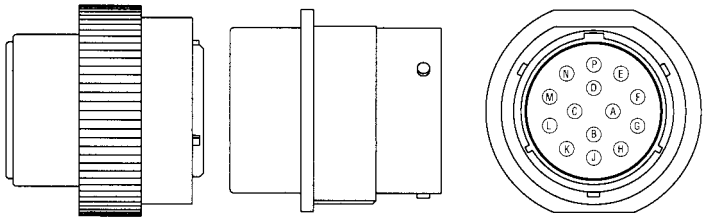


Figure B: Transmission Harness Connector



Bypass/ Lockup Solenoid Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key "OFF".

Continuation

Refer to Figure C below. Disconnect vehicle interface harness J1 connector from transmission ECU.

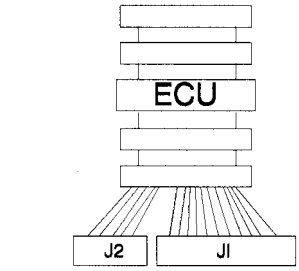
Refer to Figure D below. Measure resistance between vehicle interface harness connector pins E1 and K2 [resistance = 2.5-4 ohms]. Measure resistance between vehicle electrical ground pins E1 and C1 [resistance = 2.5-4 ohms]. Measure resistance between pin C1 and vehicle electrical ground [resistance infinity]. *Is resistance correct?*

YES **NO**

Replace transmission ECU.

Test complete

Replace vehicle interface harness according to OEM service information.



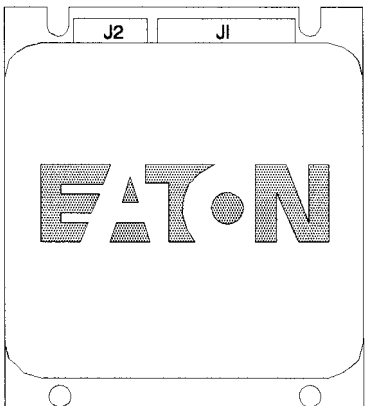
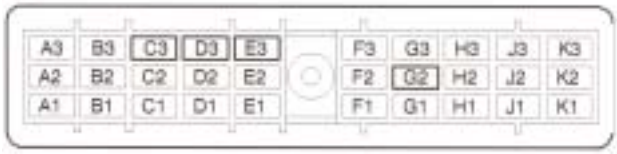


Figure D: Connector J1



Interrupt Clutch Solenoid Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Disconnect torque converter harness from transmission harness.

Refer to Figure A below. Measure resistance between torque converter harness pins C and D [resistance = 2.5-4 ohms]. *Is resistance correct*?

YES **NO**

Refer to Figure A below. Measure resistance between torque converter harness pin C and vehicle electrical ground [resistance = infinity]. *Is resistance correct*?

Replace torque converter harness.

YES **NO**

Turn ignition key “ON”.

Replace torque converter harness.

Refer to Figure A at right. Measure voltage between transmission harness pins C and D [voltage = battery voltage]. *Is voltage correct*?

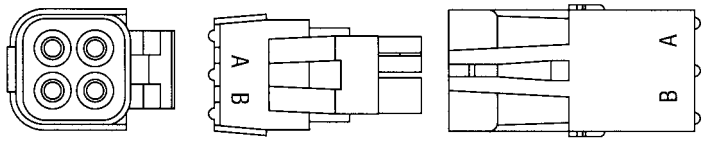
YES **NO**

Depress clutch pedal.

Continue

Continue

Figure A: Torque Converter Harness Connector



Interrupt Clutch Solenoid Coil Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Refer to Figure A below. Measure voltage between transmission harness pins C and D [voltage = 0 volts]. *Is voltage correct*?

YES **NO**

Test Complete

Release clutch pedal.

Continuation

Connect torque converter harness to transmission harness. Disconnect transmission harness from vehicle interface harness.

Refer to Figure B below. Measure voltage between vehicle interface harness pins C and D [voltage = battery voltage]. Is voltage correct?

YES **NO**

Depress clutch pedal.

Refer to Figure B at left. Measure voltage between vehicle interface harness pins C and D [voltage = 0 volts]. Is voltage correct?

YES **NO**

Replace transmission harness

A problem exists in the vehicle interface harness, clutch switch or power connect relay. Contact OEM for service information.

Figure A: Torque Converter Harness Connector

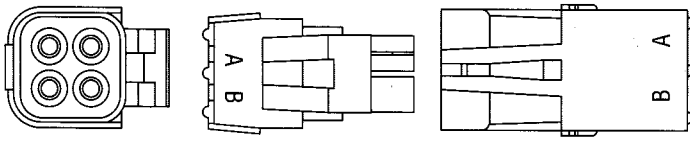
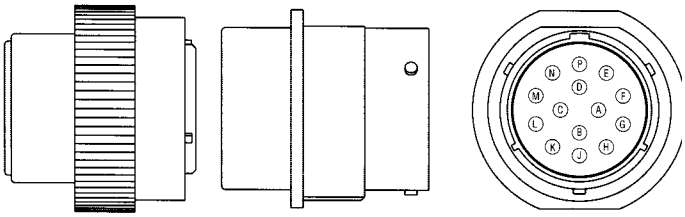


Figure B: Transmission Harness Connector



Hydraulic System Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Set Parking brake and place shift lever in neutral position.

Refer to Figure A below. Connect 0-300 psi gauges to main interrupt and bypass/ lockup torque converter ports.

Refer to Figure A below. Connect 0-100 psi gauge to torque converter lube port.

Start vehicle and allow transmission temperature to reach 180-220°F.

Depress clutch pedal.

Monitor pressure gauges.
Main pressure: 225-255 psi
Interrupt pressure: 0 psi
Bypass/lockup pressure: 0 psi
Lube pressure: 20-35 psi
Are the pressures correct?

YES **NO**

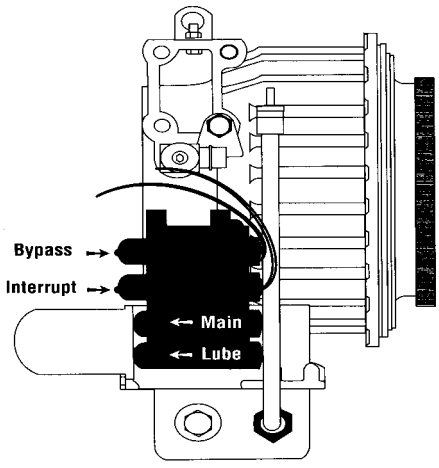
Release clutch pedal.

Monitor pressure gauges.
Main pressure: 225-255 psi
Interrupt pressure: ±5 psi of main
Bypass/lockup pressure: 0 psi
Lube pressure: 15-20 psi
Are the pressures correct?

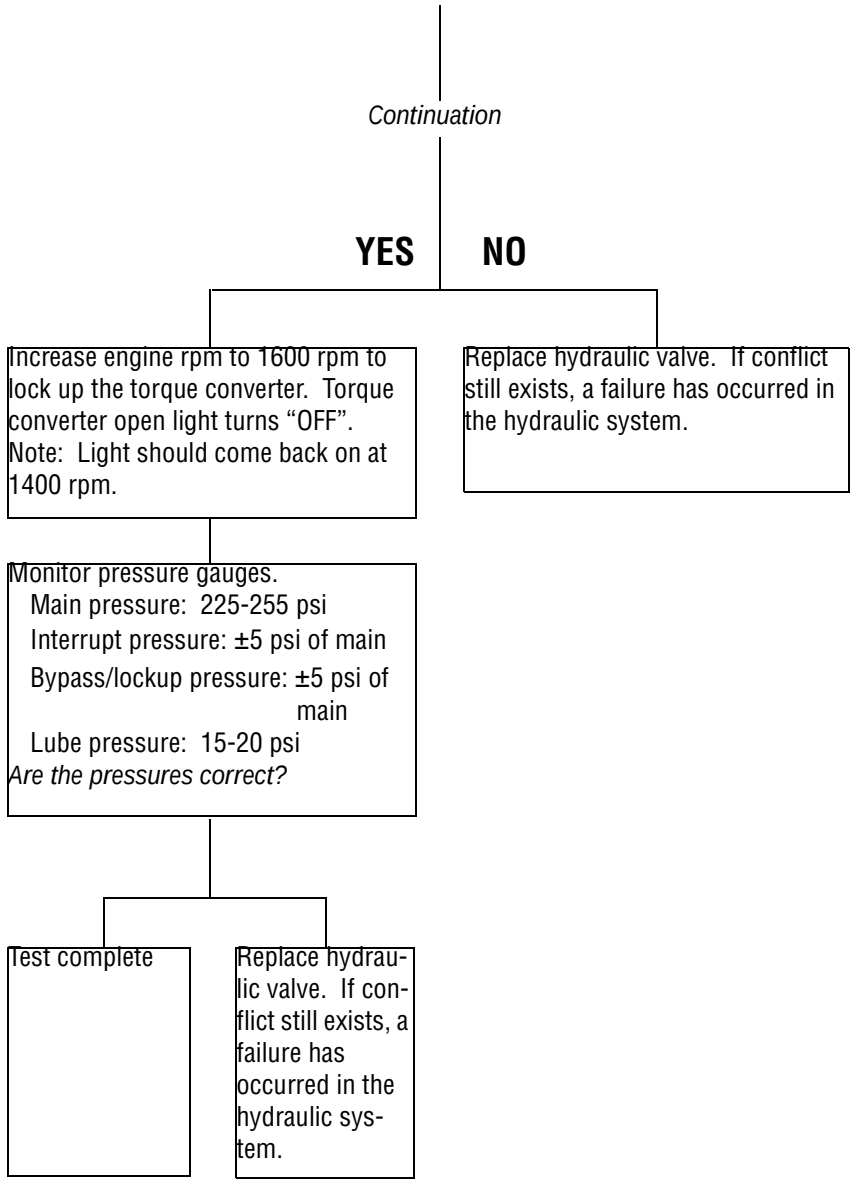
Continue

Inspect/clean oil strainer in oil pan. Replace hydraulic valve. If conflict still exists, a failure has occurred in the hydraulic system.

Figure A: Locating Pressure Ports



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.



Input Shaft Speed Sensor Test

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect input shaft speed sensor from the transmission electrical harness.

Measure resistance between input shaft speed sensor connector pins [resistance = 3k-4k ohms]. Measure resistance between input shaft speed sensor pin A and vehicle electrical ground [resistance = infinity].
Is resistance correct?

YES | **NO**

Connect input shaft speed sensor to transmission harness.

Replace the input shaft speed sensor.

Refer to Figure B below. Disconnect transmission harness from vehicle interface harness.

Measure resistance between transmission harness pins J and K [resistance = 3k-4k ohms]. Measure resistance between transmission harness pin K and vehicle electrical ground [resistance = infinity].
Is resistance correct?

YES | **NO**

Connect transmission harness to transmission electrical harness.

Replace the transmission harness.

Continue

Figure A: Speed Sensor Connector

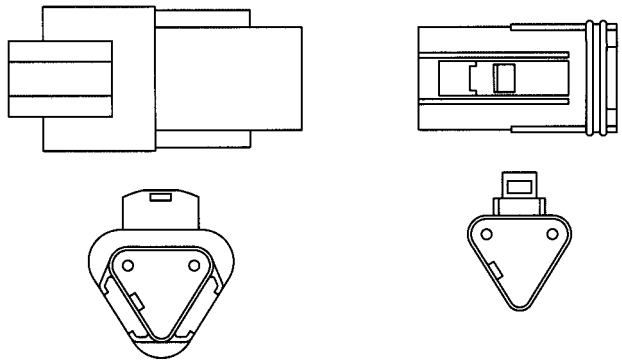
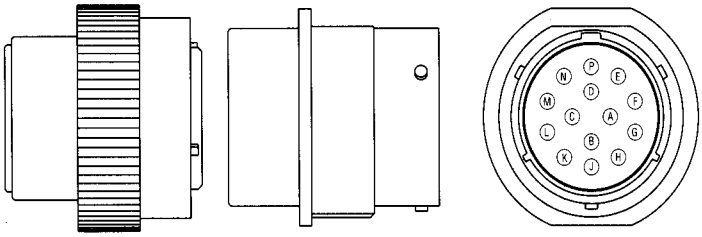


Figure B: Transmission Harness Connector



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Refer to Figure C below. Disconnect vehicle interface harness J1 connector from transmission ECU.

Refer to Figure D below. Measure resistance between vehicle interface harness connector pin G3 and H3 [resistance = 3k-4k ohms]. Measure resistance between pin H3 and vehicle electrical ground [resistance = infinity].
Is resistance correct?

YES **NO**

Replace transmission ECU.

Replace vehicle interface harness according to OEM service information.

Test Complete

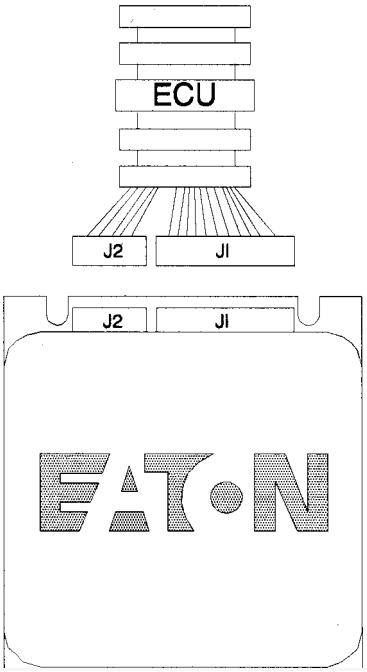
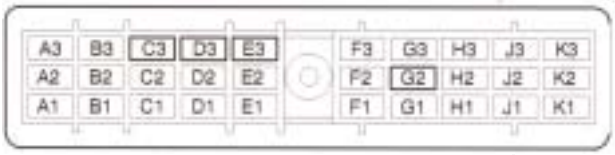


Figure D: Connector J1



Output Shaft Speed Sensor Test

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Before beginning test procedure:

1. Set parking brakes.
2. Perform Transmission Electrical Test.
3. Turn ignition key “OFF”.

Refer to Figure A below. Disconnect output shaft speed sensor from the transmission electrical harness.

Measure resistance between output shaft speed sensor connector pins [resistance = 3k-4k ohms]. Measure resistance between output shaft speed sensor pin A and vehicle electrical ground [resistance = infinity].
Is resistance correct?

YES **NO**

Connect output shaft speed sensor to transmission harness.

Replace the output shaft speed sensor.

Refer to Figure B below. Disconnect transmission harness from vehicle interface harness.

Measure resistance between transmission harness pins E and F [resistance = 3k-4k ohms]. Measure resistance between transmission harness pin F and vehicle electrical ground [resistance = infinity].
Is resistance correct?

YES **NO**

Connect transmission harness to transmission electrical harness.

Replace the transmission harness.

Continue

Figure A: Speed Sensor Connector

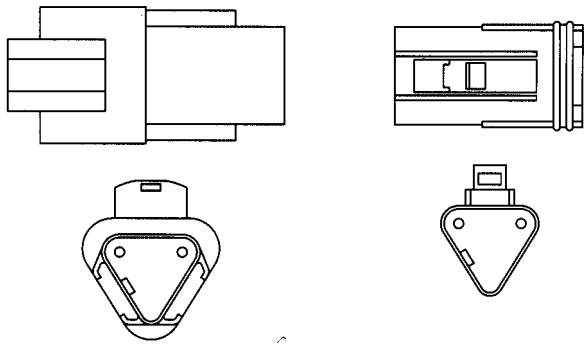
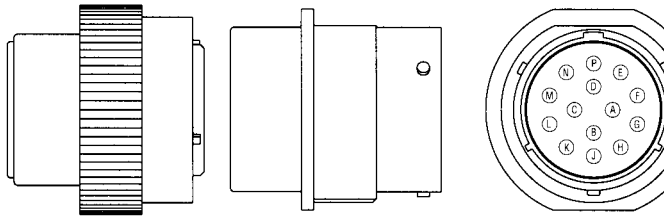


Figure B: Transmission Harness Connector



For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Continuation

Refer to Figure C below. Disconnect vehicle interface harness J1 connector from transmission ECU.

Refer to Figure D below. Measure resistance between vehicle interface harness connector pins A1 and B1 [resistance = 3k-4k ohms]. Measure resistance between pin B1 and vehicle electrical ground [resistance = infinity]. *Is resistance correct?*

YES **NO**

Replace transmission ECU.

Replace vehicle interface harness according to OEM service information.

Test complete

Figure C: Vehicle Interface Harness

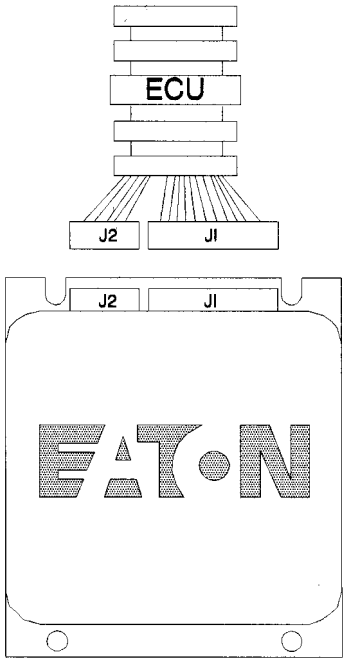
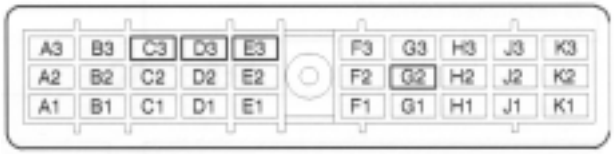
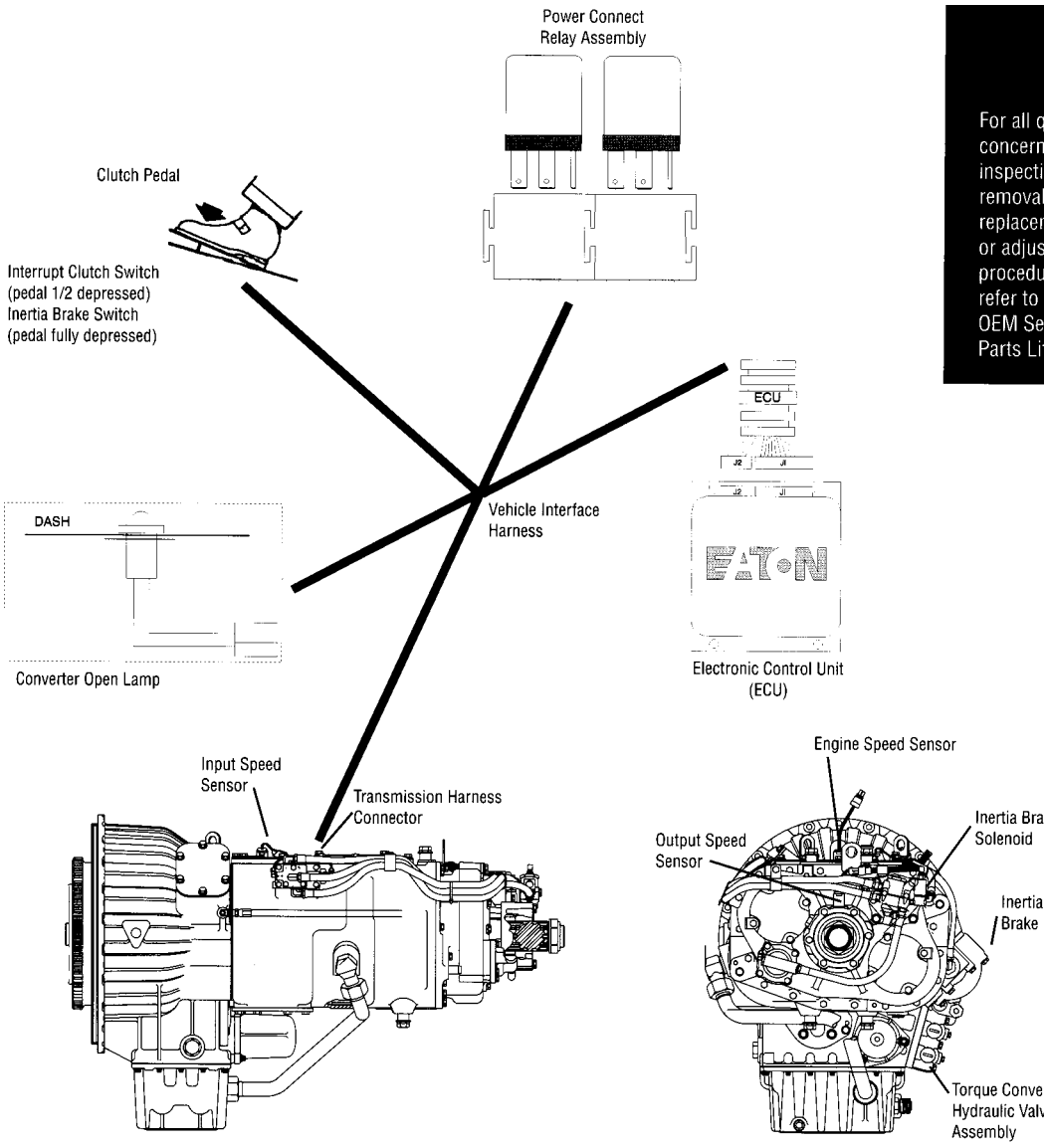


Figure D: Connector J1



System Overview

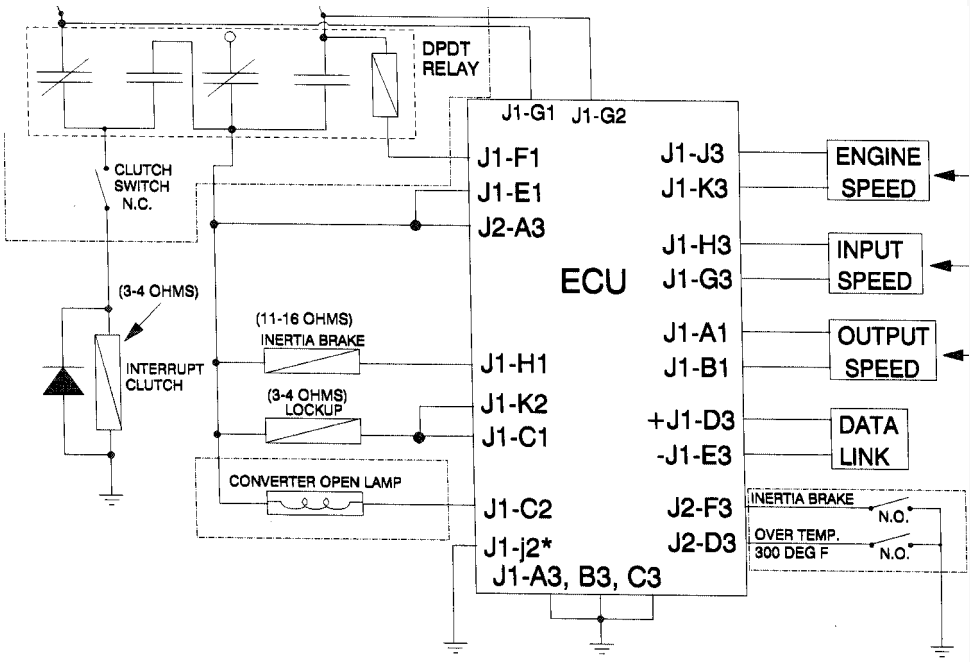
For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.



Appendix I

For all questions concerning inspection, removal, replacement, or adjustment procedures, refer to Eaton or OEM Service and Parts Literature.

Electrical Schematic



*Ground pin J2 only for 11118. Leave open for a 9118.

Everything in dashed boxes supplied by OEM.

Note: Features and specifications listed in this document are subject to change without notice and represent the maximum capabilities of the software and products with all options installed. Although every attempt has been made to ensure the accuracy of information contained within, Eaton makes no representation about the completeness, correctness or accuracy and assumes no responsibility for any errors or omissions. Features and functionality may vary depending on selected options.

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