

- **LAMP—4X4 LAMP FLASHING AND 4X4 INOPERATIVE—VEHICLES WITH A4WD TRANSMISSION AND 4.0L**
- **TRANSMISSION—A4WD—4X4 LAMP FLASHING AND 4X4 INOPERATIVE—VEHICLES WITH 4.0L**

**Article No.
99-14-2**

FORD: 1997-1999 EXPLORER

MERCURY: 1998-1999 MOUNTAINEER

ISSUE

The 4X4 indicator lamps may flash on some vehicles. This may be due to oxidation buildup and/or premature wear on the sense plate of the shift motor which can send incorrect signals to the 4X4 controller. Terminals on the transfer case connector may also develop a resistive film, leading to faulty signals to the 4X4 controller.

2. Connect a New Generation Star (NGS) Tester to the Data Link Connector (DLC) located under the dash panel and retrieve Diagnostic Trouble Codes (DTCs) from the Generic Electronic Module (GEM).
3. Using the customer's input and DTCs from the service diagnosis, follow the repair procedure outlined in the following Service Diagnostic Information Chart.

ACTION

Install a new shift motor and/or speed sensors with new terminal material. Refer to the following Service Procedure for details.

SERVICE PROCEDURE

1. Obtain customer's input on the 4X4 concern.

SERVICE DIAGNOSTIC INFORMATION				
Customer's Input				
4X4 Lamps Flashing (Yes/No)	Symptom(s)	DTCs Stored In GEM (And/Or)	Potential Cause	Recommended Repair Procedure
Yes	No physical 4X4 symptoms	None	Undetermined	Procedure I
Yes	Bind in turns after startup in 4Auto	P1836, P1837, P1874, P1875	Speed sensor circuit failure	Procedure II
Yes	No shift motor movement or general shift concerns	P1838, P1846, P1850, P1854, P1858, P1866, P1867 *NOTE: DTCs are designed to disappear if the fault has not reoccurred within a set number of ignition cycles (key on-off-on).	Shift motor circuit failure	Procedure III

Procedure I

4X4 lamps flashing with no DTCs stored in the GEM. Perform following repair procedure:

1. Select clear DTC command (even if there are no DTCs available) in the NGS Tester and cycle the vehicle ignition key (on-off-on) to reset the GEM's 4X4 monitoring software.

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2. Test drive to see if the condition returns. If the condition DOES NOT return, the intermittent fault is no longer present at this time and no repair should be performed. Release the vehicle to the customer.
3. If the condition DOES return and DTC(s) were stored in the GEM, use the DTC(s) to perform diagnostics (refer to Service Diagnostic Information table in this TSB).

Procedure II

For 4X4 lamps flashing with one or a combination of DTCs P1836, P1837, P1874, and P1875 stored in the GEM, perform following repair procedure:

1. Verify that DTCs P1836, P1837, P1874, and/or P1875 are present in the GEM. Then clear all stored DTCs and cycle the ignition key (on-off-on). Place the 4WD mode switch in 4X4 AUTO position. Monitor TRA_FSP and TRA_RSP Parameter Identification Displays (PIDs) using an NGS Tester at 80 km/h (50 mph) steady state driving. Verify that the two PIDs, TRA_FSP and TRA_RSP, are within 2-3 km/h (1-2 mph) of one another during steady state driving.
2. Refer to the following Steps 2a, 2b, and 2c for PID diagnostics:
 - a. (Upstream Check) If the two PIDs are NOT within 2-3 km/h (1-2 mph), check for continuity (open or short) in the speed sensor circuit on the vehicle side of Connector C201, 1999 Explorer/Mountaineer Workshop Manual, Section 308-07A, per Pinpoint Tests A33-A38. Visually inspect all terminal pins, crimps and connectors closely. If there are problems with the wiring, repair all wiring concerns as necessary and proceed to Step 4.
 - b. (Downstream Check) If the two PIDs are NOT within 2-3 km/h (1-2 mph) and the wiring/connector checks out OK, measure the resistance on the front and rear speed sensors (on the transfer case side of Connector C201). Refer to Figure 1 for the Connector C201 pin-out chart to measure the speed sensor resistance as follows:
 - For the front speed sensor, measure between C201-4 Circuit 236 (BK/LG) and C201-8 Circuit 359 (GY/R).
 - For the rear speed sensor, measure between C201-2 Circuit 772 (LB) and C201-6 Circuit 359 (GY/R).Replace all speed sensors with resistance less than 1,000,000 (1.0 Mega) Ohm. Service part numbers for the new speed sensors are: XL2Z-7F293-BA (front speed sensor) and XL2Z-7F293-AA (rear speed sensor). Proceed to Step 3.
 - c. If the two PIDs are within 2-3 km/h (1-2 mph), replace only the appropriate speed sensor per stored DTC in GEM. For vehicles with P1836 DTC, install a new Front Speed Sensor (XL2Z-7F293-BA). For vehicles with P1837 DTC, install a new Rear Speed Sensor (XL2Z-7F293-AA). Proceed to Step 3.
3. (ON Left Hand Drive Vehicles ONLY! NOT applicable to Right Hand Drive Vehicles) Install a new 4X4 jumper wiring harness that goes from underneath the driver seat to Connector C201 on the transfer case. The service part number for the new 4X4 Jumper Wiring Harness is XL2Z-7A786-AC. Proceed to Step 4.
4. Test drive to see if the condition returns. Pull DTCs from the GEM and confirm that no DTCs exist. Clear DTCs from GEM (even if there are no DTCs available) and cycle ignition.

Procedure III

For 4X4 lamps flashing with one or a combination of DTCs P1838, P1846, P1850, P1854, P1858, P1866 and P1867 stored in the GEM, perform the following repair procedure:

1. Verify that DTCs P1838, P1846, P1850, P1854, P1858, P1866 and/or P1867 are present in the GEM. Then clear all stored DTCs and cycle the ignition key (on-off-on). Monitor contact plate A, B, C, and D PIDs using an NGS Tester while the transfer case is in 4X4 AUTO and 4X4 LOW mode. Verify that the contact plate PIDs correspond to appropriate 4WD positions (4X4 AUTO - "COCC", 4X4 LOW - "OCOC" where "C" is Closed and "O" is Open).
2. Refer to the following Steps 2a, 2b, 2c for PID diagnostics:
 - a. (Upstream Check) If the contact plate PIDs DO NOT correspond to the set 4WD position, check for continuity (open or short) in the contact plate circuit (on the vehicle side) of the 1999 Explorer/Mountaineer Workshop Manual, Section 308-07A, per Pinpoint Tests B40-B54. Visually inspect all terminal pins, crimps, and connectors closely. If there are problems with the wiring, repair all wiring concerns as necessary and proceed to Step 4.
 - b. (Downstream Check) If the contact plate PIDs DO NOT correspond to the set 4WD position and the wiring/connector checks out OK, measure the resistance on the transfer case shift motor contact plates while the 4WD is in 4X4 AUTO and 4X4 LOW position. Refer to Figure 1 for the Connector C201 pin-out chart to measure the transfer case shift motor contact plate resistance as follows:
 - To measure the contact plate "A" resistance, measure between C201-5 Circuit 771 (P/Y) and C201-10 Circuit 762 (Y/W).
 - For contact plate "B" resistance, measure between C201-1 Circuit 770 (W) and C201-10 Circuit 762 (Y/W).
 - For contact plate "C" resistance, measure between C201-9 Circuit 764 (BR/W) and C201-10 Circuit 762 (Y/W).
 - For contact plate "D" resistance, measure between C201-13 Circuit 763 (O/W) and C201-10 Circuit 762 (Y/W).
 Resistance less than 1.25 Ohms is considered "Closed". Resistance greater than 5100 Ohms is considered "Open". If the resistance on any one of the contact plates is between 1.25 and 5100 Ohms, replace the shift motor. Also, if the resistance check on the shift motor contact plate A, B, C, and D DO NOT correspond to "COCC" in 4X4 AUTO and "OCOC" in 4X4 LOW, replace the shift motor with a new Transfer Case Shift Motor (XL2Z-7G360-AA). Proceed to Step 3.
 - c. If the contact plate PIDs DO correspond to the set 4X4 position, replace the shift motor with a new shift motor. Proceed to Step 3.
3. (ON Left Hand Drive Vehicles ONLY! NOT applicable to Right Hand Drive Vehicles) Install a new 4X4 Jumper Wiring Harness (XL2Z-7A786-AC) that goes from underneath the driver seat to Connector C201 on the transfer case. Proceed to Step 4.
4. Test drive to see if the condition returns. Pull DTCs from the GEM module and confirm that no DTCs exist. Clear DTCs from GEM module (even if there are no DTCs available) and cycle ignition.

PART NUMBER	PART NAME
XL2Z-7A786-AC	Jumper Wiring Harness
XL2Z-7F293-BA	Front Speed Sensor
XL2Z-7F293-AA	Rear Speed Sensor
XL2Z-7G360-AA	Transfer Case Shift Motor

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under The Provisions Of Bumper To Bumper Warranty Coverage

OPERATION	DESCRIPTION	TIME
991402A	Perform Quick Tests And Review Service Diagnostic Information Chart	0.5 Hr.
991402BB	Extra Time To Replace Speed Sensor (Rear)	0.3 Hr.
991402BC	Extra Time To Replace Speed Sensors (Both)	0.5 Hr.
991402B	Extra Time To Replace Speed Sensor (Front)	0.5 Hr.
991402C	Extra Time To Install Jumper Harness	0.4 Hr.
991402D	Extra Time To Replace Shift Motor	0.5 Hr.
991402E	Extra Time To Road Test Vehicle After Repairs	0.3 Hr.
991402F	Use "A" Time For Circuit Repair And Diagnostics As Outlined In The Warranty And Policy Manual	

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DEALER CODING

BASIC PART NO.	CONDITION CODE
7A195	42

OASIS CODES: 203000, 204000, 204100, 205000,
206000, 506000, 508000, 597997,
608000, 610000, 703000

