

- TRANSMISSION—4R44E—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—4R55E—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—4R70W—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—5R55E—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—AX4N—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—AX4S—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY
- TRANSMISSION—E40D—DIAGNOSTIC TROUBLE CODES (DTCS) P0705, P0708, P1704 AND/OR P1705 STORED IN MEMORY

Article No.
98-23-12

FORD: 1997 THUNDERBIRD
1998 CROWN VICTORIA, MUSTANG, TAURUS
1997 AEROSTAR
1997-1998 ECONOLINE, EXPLORER, F-150, F-250 LD, RANGER
1998 EXPEDITION

LINCOLN: 1997 MARK VIII
1998 CONTINENTAL, TOWN CAR, NAVIGATOR

MERCURY: 1997 COUGAR
1998 GRAND MARQUIS, SABLE
1997-1998 MOUNTAINEER

ISSUE

Diagnostic Trouble Codes (DTCs) P0705, P0708, P1704, and/or P1705 may be stored in memory. This may be caused by the Powertrain Control Module (PCM) reading an unexpected bit pattern for manual lever position. This may be caused by the PCM, the wiring harness, the connectors, and/or the Digital Transmission Range Sensor (DTRS).

ACTION

Diagnose the cause of the failure by following the detailed Service Procedure in this TSB article and Figure 1.

SERVICE PROCEDURE

1. Connect the New Generation Star (NGS) Tester to the vehicle and call Parameter Identification Displays (PIDs) TR, TR_D, and TR_V.

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2. Move the transmission range selector lever into each gear and stop.
3. Observe the PIDs while wiggling the harness, tapping on the sensor, and/or driving the vehicle.

Use PIDs TR, TR_D, and TR_V for codes:

- P0705 - The computer saw a bit pattern which is not in the chart (Figure 1)
- P0708 - The voltage for TR3A (displayed in TR_V) was higher than 1.8V
- P1704 - The computer saw an in-between position when the test was initiated
- P1705 - The computer did not see 0000 (P) or 0110 (N) when the test was initiated

4. Compare the PIDs to the chart in Figure 1.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 501000, 502000, 503000, 503300,
504000

DIGITAL TRANSMISSION RANGE (DTR) SENSOR DIAGNOSTIC CHART

SELECTOR POSITION	PID: TR	PID: TR_D				PID: TR_V (VOLTS)
		TR4	TR3A	TR2	TR1	TR3A (PCM PIN 64 TO SIGRTN)
PARK	P/N	0	0	0	0	0.0 Volts
In Between	REV	0	1	0	0	1.3-1.8 Volts
REVERSE	REV	1	1	0	0	1.3-1.8 Volts
In Between	REV	0	1	0	0	1.3-1.8 Volts
NEUTRAL	NTRL	0	1	1	0	1.3-1.8 Volts
In Between	O/D*	1	1	1	0	1.3-1.8 Volts
OVERDRIVE	O/D*	1	1	1	1	1.3-1.8 Volts
In Between	Man 2 @	1	0	1	1	0.0 Volts
MANUAL 2	Man 2 @	1	0	0	1	0.0 Volts
In Between	Man 2 @	1	0	1	1	0.0 Volts
MANUAL 1	Man 1	0	0	1	1	0.0 Volts

NOTE: * Will read "Drive" if O/D cancelled.
 Man 2 @ – Drive for applications without O/D cancel feature.

- NOTE:**
1. TR_V is the voltage at the PCM Pin 64 (TR3A circuit) to signal return.
 2. "In Between" reading could be caused by a shift cable or DTR sensor misalignment or a DTR circuit failure of TR1, TR2, TR3A, OR TR4.
 3. TR_D: 1 = open DTR switch 0 = closed DTR switch.
 4. Breakout box readings: Taken from PCM signal pins for TR1, TR2, TR3A, TR4 to signal return.

VOLTAGES FOR TR1, TR2, TR4:

- a. 0 = 0.0 volts (circuit shorted to ground).
- b. 1 = 9.0-14.0 volts (open circuit).

VOLTAGES FOR TR3A:

- c. 0 = 0.0 volts (circuit shorted to ground).
- d. 1 = 1.3-1.8 volts (open circuit).
- e. 1.8-5.0 volts = invalid reading
(open in wires or bad resistor in DTR sensor).

WIGGLE TEST INFORMATION FOR OPEN/SHORTS

1. TR4, TR3A, TR2, TR1 are all closed in Park (shorted to signal return), so Park is a good position to check for intermittent open circuits (with scan tool monitoring TR_D).
2. TR4, TR3A, TR2, TR1 are all open in Overdrive (O/D), so O/D is a good position to check for shorts to ground. To determine the shorted component while observing TR_D, unplug the TR and see if the short goes away. If the short is still present, unplug the transmission harness and see if the short is gone. If the short still persists, then the short is in the PCM or vehicle harness. Remove the suspect circuit(s) wire terminal from the PCM connector. If the short still persists, then the PCM has an internal failure, otherwise the failure is in the vehicle harness.

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Figure 1 - Article 98-23-12