4R44E, 4R55E, 5R55E

Diagnostic Trouble Codes (DTC)

There are many ways to approach trouble codes. Some technicians prefer to diagnose the system completely, while others simply want a list of possibilities to throw parts at the problem. Both of these extremes have their benefits and drawbacks. The true technician knows which approach to choose for a successful diagnosis.

In this section we've tried to offer enough information to aid everyone's approach, including a brief definition of most codes associated with the 4R44E family, common causes, "quick fix" suggestions, and some computer strategies that happen due to certain codes. By strategies, we mean functions that the computer is programmed to change in the event of a trouble code.

Understanding these strategy changes can be useful for diagnosis, or at least offer an explanation when the transmission does something really strange. Very little is published about specific code strategies and even less is given to us by the manufacturer. The code strategies listed in this section are only some we know exist.

Among the first things you should check on a vehicle with electrical codes are the power and grounds supplied to the computer. Poor values in these two circuits can be the root cause of many electrical trouble codes. To keep from repeating this throughout the section, we'll assumed you've already checked these circuits and are known to be good. You must include these in your testing, whether we mention it or not.

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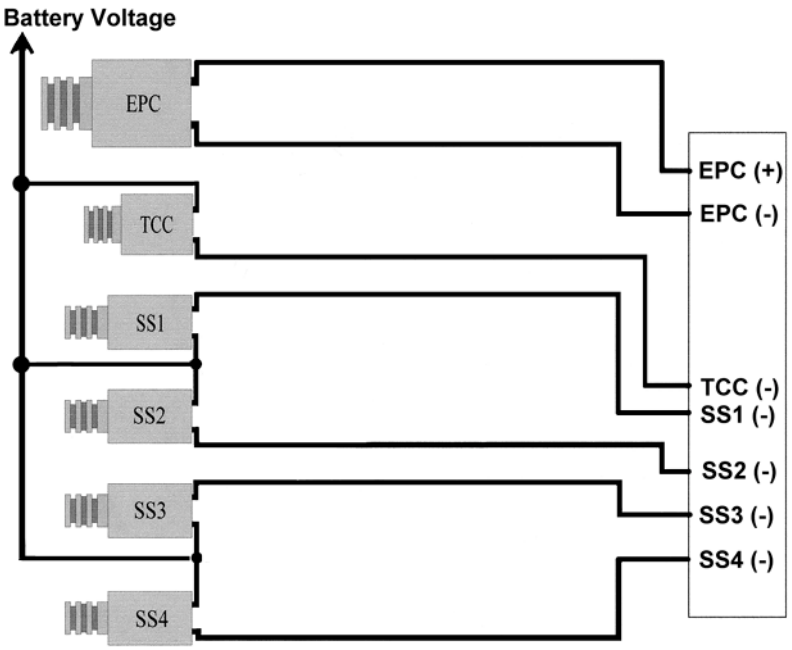
Solenoid Circuit Failure Codes

P0743, 652: TCC solenoid open or shorted circuit.
P0750, 621: SS1 open or shorted circuit.
P0755, 622: SS2 open or shorted circuit.
P0760, 641: SS3 open or shorted circuit.
P0765, P1754, 643: SS4 open or shorted circuit.
P1746, P1747, 624: EPC solenoid open or shorted circuit.

How the Codes Set:

The computer constantly monitors current flow through each solenoid. If the current goes out of normal range, the computer will set the corresponding code.



Possible Causes:

1) Bad wire or poor connections
2) Bad solenoid
3) Bad computer

Common Causes:

1) Bad connections or wiring
2) Bad solenoid

The Quick Fix:

1) Clean and tighten related connections.
2) Replace the wire that connects the related solenoid to the computer.
3) Replace the solenoid.

DIAGNOSTIC TIP Try these suggestions one at a time. The order is simply our suggestion based on simplicity, cost or frequent helpline calls. There is no reason to follow this order.

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Solenoid Circuit Failure Codes (continued)

Strategies

When the EPC solenoid sets a solenoid circuit code, the computer turns the EPC solenoid off, causing high line pressure and hard shifts.

When the TCC solenoid sets a solenoid circuit code, the computer turns the TCC solenoid off, disabling lockup.

When a shift solenoid circuit code sets, the computer shuts the failed solenoid off. The following charts show the changes in shift patterns due to these strategies.

4R44E / 4R55E Shift Strategies

SS1 Always Off

Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	3rd	2nd	*1st
2nd	2nd	2nd	—
3rd	3rd	—	—
4th	4th	—	—

* With SS1 always off, the L/R band isn't applied in manual low.

SS3 Always Off

Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	2nd	1st
2nd	2nd	2nd	—
3rd	3rd	—	—
4th	3rd	—	—

SS2 Always Off

Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	2nd	1st
2nd	1st	2nd	—
3rd	3rd	—	—
4th	4th	—	—

SS4 Always Off

Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	2nd	1st
2nd	2nd	2nd	—
3rd	3rd	—	—
4th	4th	—	—

SS4 always off causes no engine braking.

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Solenoid Circuit Failure Codes (continued)

5R55E Shift Strategies

SS1 Always Off			
Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	4th	3rd	3rd
2nd	5th	*	—
3rd	3rd	—	—
4th	4th	—	—
5th	5th	—	—

* Overdriven 2nd gear; 1.10:1 ratio.

SS3 Always Off			
Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	3rd	1st
2nd	1st	3rd	—
3rd	3rd	—	—
4th	4th	—	—
5th	4th	—	—

SS2 Always Off			
Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	3rd	1st
2nd	2nd	*	—
3rd	1st	—	—
4th	4th	—	—
5th	5th	—	—

* Overdriven 2nd gear; 1.10:1 ratio.

SS4 Always Off			
Gear Commanded	Actual Gear Range		
	OD	Manual 2	Manual L
1st	1st	3rd	1st
2nd	2nd	*	—
3rd	3rd	—	—
4th	4th	—	—
5th	5th	—	—

* Overdriven 2nd gear; 1.10:1 ratio.

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Solenoid Circuit Failure Codes (continued)

Diagnostic Suggestions

Here's some useful data you can use to test each solenoid circuit for problems. Perform these tests at the computer connector with the computer disconnected.

1) Use the specifications chart for computer pin ID and resistance values. Check resistance between the positive and negative terminals for each solenoid. They should fall between the specs listed.
2) Check resistance between the negative terminal and chassis ground. The readings for all solenoids should read infinity (no continuity). This is testing the circuit for shorts to ground.

Solenoid	All Except 95 Explorer	95 Explorer	Resistance (Ohms)
All Solenoids (+)	Pins 71, 97	Pin 37, 57	
EPC (–)	Pin 81	Pin 38	3.1 – 5.7
TCC (–)	Pin 54	Pin 53	8.9 – 16.0
CCS (–)	Pin 28	Pin 28	22.0 – 48.0
SS1 (–)	Pin 27	Pin 51	22.0 – 48.0
SS2 (–)	Pin 1	Pin 52	22.0 – 48.0
SS3 (–)	Pin 53	Pin 55	22.0 – 48.0

CAUTION Always perform these tests with the computer disconnected.

Because the computer monitors the amperage through each of the solenoid circuits, it's able to identify an open or shorted circuit quickly and accurately. The computer is also programmed to shut the solenoid circuit off to save the computer from possible damage.

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Solenoid Circuit Failure Codes (continued)

Diagnostic Suggestions (continued)

Amperage testing is much more accurate than resistance testing. Always use amperage testing to verify resistance testing.

3) To perform an amperage test, use a jumper to connect B+ to the positive solenoid feed terminal at the computer connector. Ground the solenoid negative wire to chassis ground through an ammeter. Use the following equation to calculate the expected amperage, or simply use the chart.

Volts ÷ Resistance = Amperage

Calculated Amperage

System Voltage	Solenoid Resistance					
	EPC Solenoid		TCC Solenoid		Shift Solenoids	
	3.1 Ohms	5.7 Ohms	8.9 Ohms	16 Ohms	22 Ohms	48 Ohms
12.5 Volts	4.03	2.19	1.40	0.78	0.57	0.26
13.0 Volts	4.19	2.28	1.46	0.81	0.59	0.27
13.5 Volts	4.35	2.37	1.52	0.84	0.61	0.28
14.0 Volts	4.52	2.46	1.57	0.88	0.64	0.29
14.5 Volts	4.68	2.54	1.63	0.91	0.66	0.30
15.0 Volts	4.84	2.63	1.69	0.94	0.68	0.31