• **POWERTRAIN CONTROL/EMISSIONS DIAGNOSIS MANUAL—1993—SECTIONS 3A AND 6A—INTAKE MANIFOLD RUNNER CONTROL (IMRC) SOLENOID PIN NUMBER REVISED** • **POWERTRAIN CONTROL/EMISSIONS DIAGNOSIS MANUAL—1994—SECTIONS 3A AND 6A—INTAKE MANIFOLD RUNNER CONTROL (IMRC) SOLENOID PIN NUMBER REVISED**	**Article No. 94-10B-56**

FORD: 1993-94 TAURUS SHO

ISSUE: Intake Manifold Runner Control (IMRC) solenoid pin number, applicable to 3.2L Taurus SHO, is incorrect or missing from various pages in 1993 and 1994 Powertrain Control/Emissions Diagnosis Manuals. The following pages are affected:

- 1993: Page 3A-43, and Pages 6A-380 through 6A-382
- 1994: Pages 3A-43 and 3A-44, and 6A-408 through 6A-410

ACTION: Refer to the pages following this TSB article for the revised information.

OTHER APPLICABLE ARTICLES: NONE
WARRANTY STATUS: INFORMATION ONLY
OASIS CODES: 690000

Electrical Schematic

3.2L SHO SFI

Taurus

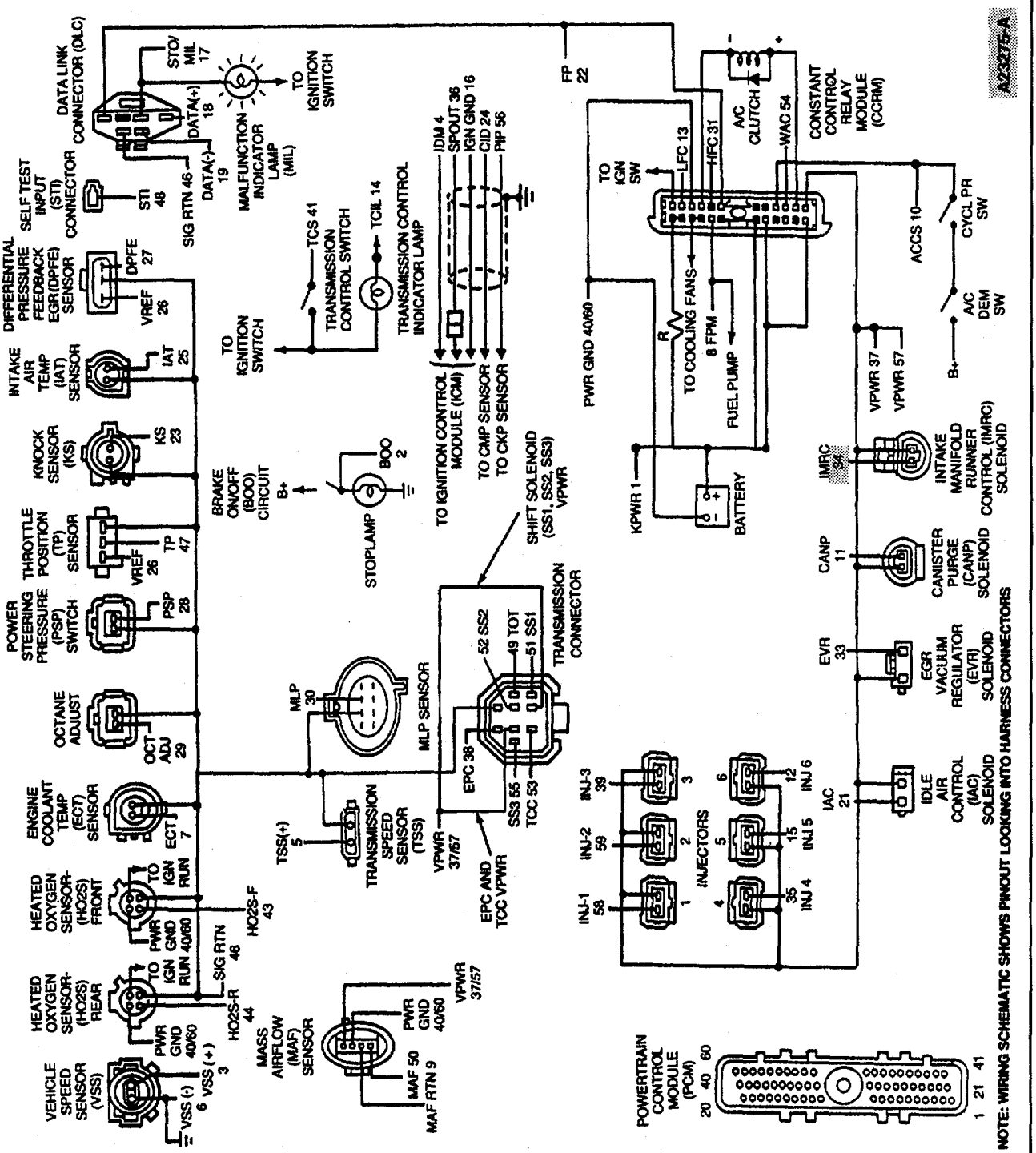


Figure 15.

Powertrain Control Module (PCM) Connector Pin Usage

3.2L SHO SFI

Taurus

Pin	Circuit	Wire Color	Application	Abbreviation
1	37	Y	Keep Alive Power	KAPWR
2	810	R/LG	Brake On/Off	BOO
3	150	DG/W	Vehicle Speed Sensor (+)	VSS (+)
4	395	GY/O	Ignition Diagnostic Monitor	IDM
5	679	GY/BK	Transmission Speed Sensor	TSS
6	563	O/Y	Vehicle Speed Sensor (-)	VSS (-)
7	354	LG/R	Engine Coolant Temperature Sensor	ECT
8	787	PK/BK	Fuel Pump Monitor	FPM
9	968	T/LB	Mass Air Flow Sensor Return	MAF RTN
10	883	PK/LB	A/C Clutch Signal	ACCS
11	101	GY/Y	Canister Purge Solenoid	CANP
12	560	LG/O	Injector 6	INJ 6
13	197	T/O	Low Fan Control	LFC
14	665	O/Y	Transmission Control Indicator Lamp	TCIL
15	559	T/BK	Injector 5	INJ 5
16	259	O/R	Ignition Ground	IGN GND
17	201	T/R	Self-Test Output/Malfunction Indicator Lamp	STO/MIL
18	696	O/BK	Data (+)	DATA (+)
19	695	BK/O	Data (-)	DATA (-)
20	57	BK	Case Ground	CSE GND
21	68	O/BK	Idle Air Control Solenoid	IAC
22	97	T/LG	Fuel Pump	FP
23	310	Y/R	Knock Sensor	KS
24	795	DG	Cylinder Indentification	CID
25	743	GY	Intake Air Temperature Sensor	IAT
26	351	BR/W	Reference Voltage	VREF
27	352	BR/LG	Differential Pressure Feedback EGR Sensor	DPFE
28	330	Y/LG	Power Steering Pressure Switch	PSP
29	929	PK	Octane Adjust	OCT ADJ
30	199	LB/Y	Manual Lever Position Sensor	MLP
31	639	LG/P	High Fan Control	HFC
33	360	BR/PK	EGR Vacuum Regulator Solenoid	EVR
34	965	LG/P	Intake Manifold Runner Control	IMRC
35	558	BR/LB	Injector 4	INJ 4
36	324	Y/LG	Spark Output	SPOUT
37	361	R	Vehicle Power	VPWR
38	925	W/Y	Electronic Pressure Control	EPC
39	557	BR/Y	Injector 3	INJ 3

(Continued)

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

Note

You should enter this Pinpoint Test only when you have been directed here from Diagnostic Routines, Section 2A.

Remember

To prevent the replacement of good components, be aware that the following non-EEC areas may be at fault:

- Vacuum tank leaks
- Vacuum hose leaks

This Pinpoint Test is intended to diagnose only the following:

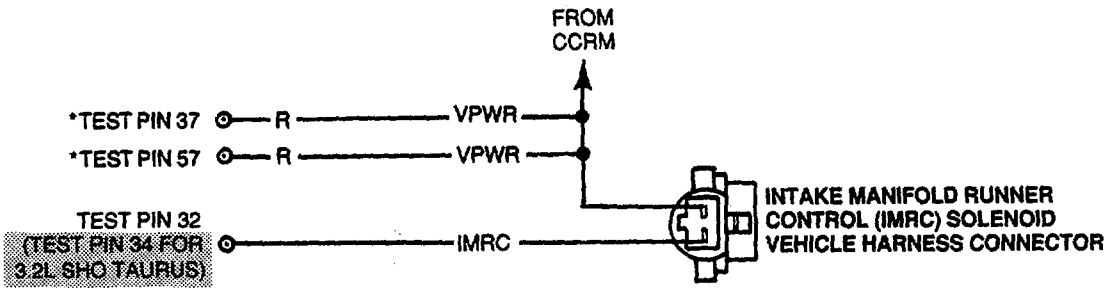
- Harness circuits: VPWR and IMRC
- Intake Manifold Runner Control (IMRC) solenoid (9H465)
- Powertrain Control Module (PCM) (12A650)

Description

The Intake Manifold Runner Control (IMRC) solenoid is an output used to control an on-off vacuum switching valve that allows additional air intake to each cylinder.

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

Pinpoint Test Schematic



*TEST PINS LOCATED ON BREAKOUT BOX.
ALL HARNESS CONNECTORS VIEWED INTO MATING SURFACE.

A23566-A

Test Pin 32—IMRC

DELETION

Applications	Wire Colors
3.0L SHO Taurus	LG/P
4.6L 4-V Mark VIII	LG/BK

Test Pin 34—IMRC

Application	Wire Colors
3.2L SHO Taurus	LG/P

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

TEST STEP		RESULT ▶	ACTION TO TAKE
KT1	DIAGNOSTIC TROUBLE CODE (DTC) 81/551: CHECK IMRC SOLENOID RESISTANCE		
	DTC 81/551 indicates that the IMRC solenoid output voltage did not change when activated during Key On Engine Off Self-Test. Possible causes: — IMRC circuit open — IMRC circuit short — IMRC solenoid — IMRC valve(s) assembly — Powertrain Control Module (PCM) output driver open/grounded • Key off. • Disconnect IMRC solenoid. • Measure resistance between IMRC circuit and VPWR circuit at the IMRC solenoid. • **Is solenoid resistance between 50 and 100 ohms?**	Yes ▶ No ▶	GO to KT2. REPLACE IMRC solenoid. RERUN Quick Test.
KT2	CHECK VPWR CIRCUIT VOLTAGE		
	• Key on, engine off. • IMRC solenoid disconnected. • Measure voltage between VPWR circuit of IMRC solenoid vehicle harness connector and battery negative post. • **Is voltage greater than 10.5 volts?**	Yes ▶ No ▶	GO to KT3. SERVICE open circuit. RECONNECT IMRC solenoid. RERUN Quick Test.
KT3	CHECK IMRC CIRCUIT CONTINUITY		
	• Key off. • IMRC solenoid disconnected. • Disconnect Powertrain Control Module (PCM). Inspect for damaged pins, corrosion, loose wires etc. Service as necessary. • Install breakout box, leave PCM disconnected. • Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) at the breakout box and IMRC circuit at the IMRC solenoid vehicle harness connector. • **Is resistance less than 5.0 ohms?**	Yes ▶ No ▶	GO to KT4. SERVICE open circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test.
KT4	CHECK IMRC CIRCUIT FOR SHORT TO GROUND		
	• Key off. • IMRC solenoid disconnected. • Breakout box installed, PCM disconnected. • Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) and Test Pins 40, 46 and 60 at the breakout box. • **Is each resistance greater than 100,000 ohms?**	Yes ▶ No ▶	GO to KT5. SERVICE short circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test.

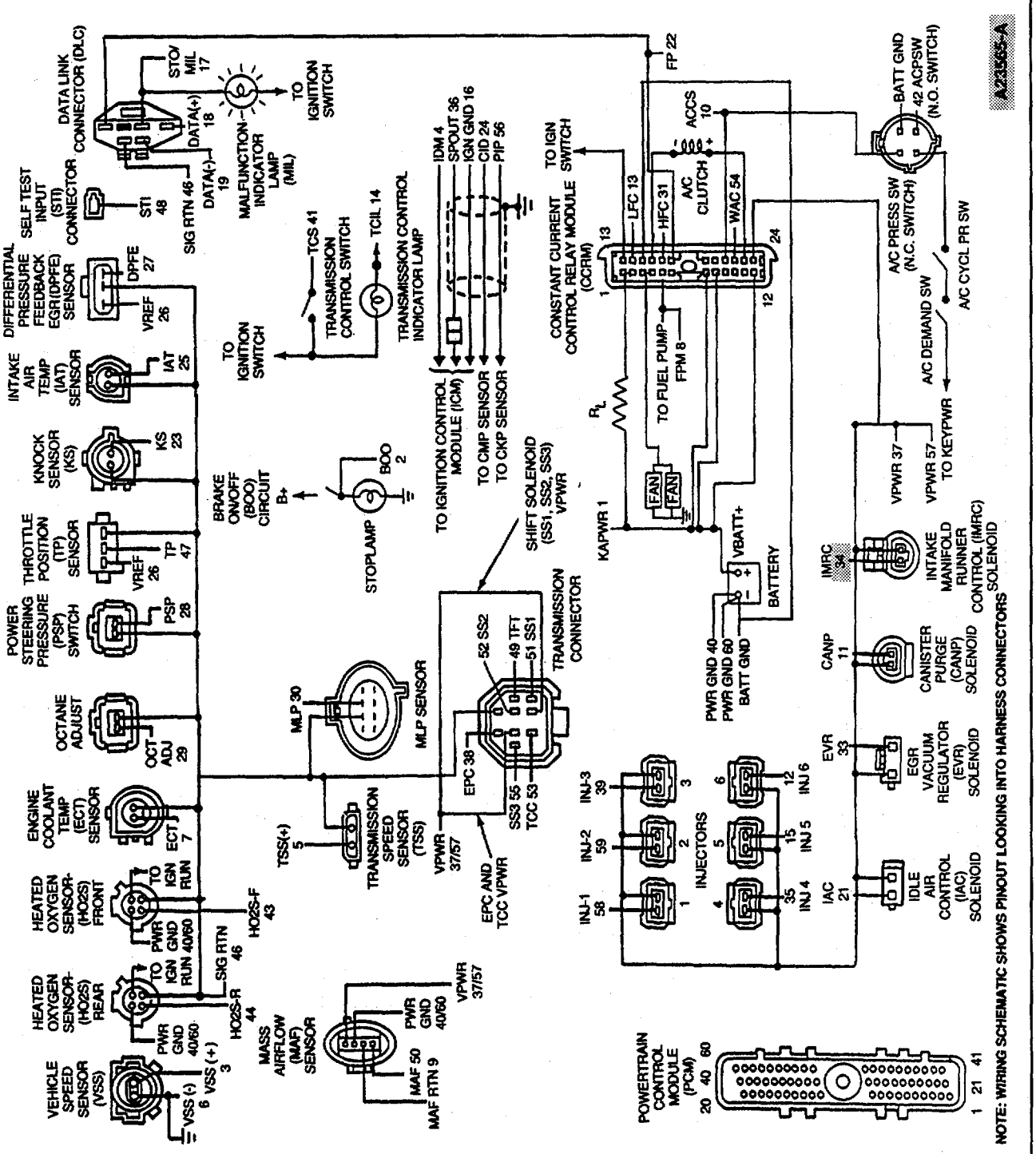
Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

TEST STEP		RESULT ▶	ACTION TO TAKE
KT5	CHECK IMRC CIRCUIT FOR SHORT TO POWER		
	• Key off. • IMRC solenoid disconnected. • Breakout box installed, PCM disconnected. • Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) and Test Pins 37 and 57 at the breakout box. • **Is each resistance greater than 100,000 ohms?**	Yes ▶ No ▶	REPLACE PCM. REMOVE breakout box. RECONNECT all components. RERUN Quick Test. SERVICE short circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test. If symptom is still present, REPLACE PCM.
KT6	CHECK BOTH IMRC VALVES		
	• Key off. • Disconnect vacuum lines from both IMRC valves. • Install vacuum pump at each IMRC valve. • Apply 10 in-Hg (34 kPa) vacuum to each of the IMRC valves. • **Did both IMRC valves hold vacuum?**	Yes ▶ No ▶	GO to KT7. REPLACE IMRC valve assembly as necessary. REMOVE vacuum pumps. RECONNECT vacuum lines to both IMRC valves. RERUN Quick Test.
KT7	CHECK OPERATION OF BOTH IMRC VALVES AND LINKAGES		
	• Key off. • Apply 10 in-Hg (34 kPa) vacuum to both IMRC valves. • **Did both valves and valve mechanical linkages move in response to the applied vacuum?**	Yes ▶ No ▶	GO to KT8. SERVICE as necessary. INSPECT for contamination, if none then REPLACE appropriate IMRC valve assembly. RERUN Quick Test.
KT8	CHECK VACUUM HOSES TO BOTH IMRC VALVES		
	• Key off. • Check the vacuum hose from the front and rear IMRC valves to the IMRC solenoid. Inspect for holes, kinks, disconnections and blockages. • **Are vacuum hoses OK?**	Yes ▶ No ▶	GO to KT9. SERVICE vacuum hose(s) as necessary. RERUN Quick Test.

Electrical Schematic

3.2L SHO SFI

Taurus SHO



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3.2L SHO SFI

Taurus SHO

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10	883	PK/LB	A/C Clutch Signal	ACCS
11	101	GY/Y	Canister Purge Solenoid	CANP
12	560	LG/O	Injector 6	INJ 6
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15	559	T/BK	Injector 5	INJ 5
16	259	O/R	Ignition Ground	IGN GND
17	201	T/R	Self-Test Output/Malfunction Indicator Lamp	STO/MIL
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19	695	BK/O	Data (-)	DATA (-)
20	57	BK	Case Ground	CSE GND
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24	795	DG	Cylinder Indentification	CID
25	743	GY	Intake Air Temperature Sensor	IAT
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30	199	LB/Y	Manual Lever Position Sensor	MLP
31	639	LG/P	High Fan Control	HFC
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34	965	LG/P	Intake Manifold Runner Control	IMRC
35	558	BR/LB	Injector 4	INJ 4
36	324	Y/LG	Spark Output	SPOUT
37	361	R	Vehicle Power	VPWR
38	925	W/Y	Electronic Pressure Control	EPC
39	557	BR/Y	Injector 3	INJ 3

(Continued)

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

Note

You should enter this Pinpoint Test only when you have been directed here from Diagnostic Routines, Section 2A.

Remember

To prevent the replacement of good components, be aware that the following non-EEC areas may be at fault:

- Vacuum tank leaks
- Vacuum hose leaks

This Pinpoint Test is intended to diagnose only the following:

- Harness circuits: VPWR and IMRC
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- Powertrain Control Module (PCM) (12A650)

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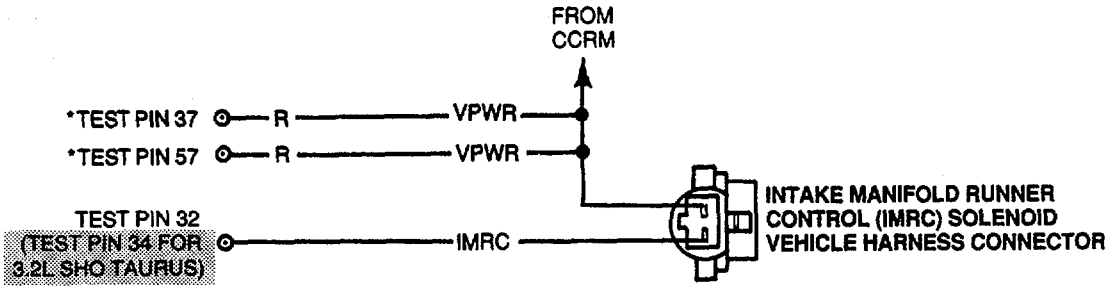
Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

Pinpoint Test Schematic



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ALL HARNESS CONNECTORS VIEWED INTO MATING SURFACE.

A23566-A

Test Pin 32—IMRC

DELETION

Applications	Wire Colors
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4.6L 4-V Mark VIII	LG/BK

Test Pin 34—IMRC

Application	Wire Colors
3.2L SHO Taurus	LG/P

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

TEST STEP		RESULT ▶	ACTION TO TAKE
KT1	DIAGNOSTIC TROUBLE CODE (DTC) 81/551: CHECK IMRC SOLENOID RESISTANCE		
	DTC 81/551 indicates the IMRC solenoid output voltage did not change when activated during Key On Engine Off (KOEO) Self-Test. Possible causes: — IMRC circuit open. — IMRC circuit short. — IMRC solenoid. — IMRC valve(s) assembly. — Powertrain Control Module (PCM) output driver open/grounded. ● Key off. ● Disconnect IMRC solenoid. ● Measure resistance between IMRC circuit and VPWR circuit at the IMRC solenoid. ● **Is solenoid resistance between 50 and 100 ohms?**	Yes ▶ No ▶	GO to KT2. REPLACE IMRC solenoid. RERUN Quick Test.
KT2	CHECK VPWR CIRCUIT VOLTAGE		
	● Key on, engine off. ● IMRC solenoid disconnected. ● Measure voltage between VPWR circuit of IMRC solenoid vehicle harness connector and battery negative post. ● **Is voltage greater than 10.5 volts?**	Yes ▶ No ▶	GO to KT3. SERVICE open circuit. RECONNECT IMRC solenoid. RERUN Quick Test.
KT3	CHECK IMRC CIRCUIT CONTINUITY		
	● Key off. ● IMRC solenoid disconnected. ● Disconnect Powertrain Control Module (PCM). Inspect for damaged pins, corrosion, loose wires etc. Service as necessary. ● Install breakout box, leave PCM disconnected. ● Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) at the breakout box and IMRC circuit at the IMRC solenoid vehicle harness connector. ● **Is resistance less than 5.0 ohms?**	Yes ▶ No ▶	GO to KT4. SERVICE open circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test.
KT4	CHECK IMRC CIRCUIT FOR SHORT TO GROUND		
	● Key off. ● IMRC solenoid disconnected. ● Breakout box installed, PCM disconnected. ● Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) and Test Pins 40, 46 and 60 at the breakout box. ● **Is each resistance greater than 100,000 ohms?**	Yes ▶ No ▶	GO to KT5. SERVICE short circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test.

Intake Manifold Runner Control (IMRC) System	Pinpoint Test	KT

TEST STEP		RESULT ▶	ACTION TO TAKE
KT5	CHECK IMRC CIRCUIT FOR SHORT TO POWER		
	• Key off. • IMRC solenoid disconnected. • Breakout box installed, PCM disconnected. • Measure resistance between Test Pin 32 (Test Pin 34 for 3.2L SHO) and Test Pins 37 and 57 at the breakout box. • **Is each resistance greater than 100,000 ohms?**	Yes ▶ No ▶	REPLACE PCM. REMOVE breakout box. RECONNECT all components. RERUN Quick Test. SERVICE short circuit. REMOVE breakout box. RECONNECT all components. RERUN Quick Test. If symptom is still present, REPLACE PCM.
KT6	CHECK BOTH IMRC VALVES		
	• Key off. • Disconnect vacuum lines from both IMRC valves. • Install vacuum pump at each IMRC valve. • Apply 10 in-Hg (34 kPa) vacuum to each of the IMRC valves. • **Did both IMRC valves hold vacuum?**	Yes ▶ No ▶	GO to KT7. REPLACE IMRC valve assembly as necessary. REMOVE vacuum pumps. RECONNECT vacuum lines to both IMRC valves. RERUN Quick Test.
KT7	CHECK OPERATION OF BOTH IMRC VALVES AND LINKAGES		
	• Key off. • Apply 10 in-Hg (34 kPa) vacuum to both IMRC valves. • **Did both valves and valve mechanical linkages move in response to the applied vacuum?**	Yes ▶ No ▶	GO to KT8. SERVICE as necessary. INSPECT for contamination, if none, then REPLACE appropriate IMRC valve assembly. RERUN Quick Test.
KT8	CHECK VACUUM HOSES TO BOTH IMRC VALVES		
	• Key off. • Check the vacuum hose from the front and rear IMRC valves to the IMRC solenoid. Inspect for holes, kinks, disconnections and blockages. • **Are vacuum hoses OK?**	Yes ▶ No ▶	GO to KT9. SERVICE vacuum hose(s) as necessary. RERUN Quick Test.