

SECTION 15

Ignition Systems, Timing Procedures and Diagnostics

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Initial Timing Procedure

PRELIMINARY NOTE

The procedure described below for setting initial timing is to be used under normal circumstances. If problems are encountered setting initial timing using this procedure, the spark timing procedure that follows should be used to diagnose the problem.

Procedure	A	B
① Place transmission in Park or Neutral, A/C and heater in OFF position.	X	X
② Remove vacuum hoses from the distributor vacuum advance connection at the distributor and plug the hoses.	X	
③ Connect an inductive timing light, Rotunda No. 059-00006 or equivalent.	X	X
④ Connect a tachometer, Rotunda No. 099-00003 or equivalent.	X	
⑤ Disconnect the single wire in-line spout connector near the distributor.		X
⑥ If the vehicle is equipped with a barometric pressure switch (-12A243-) disconnect it from the ignition module and place a jumper wire across the pins at the ignition module connector (yellow and black wires).	X	
⑦ Start the engine and allow it to warm up to operating temperature.	X	X
⑧ With engine at timing rpm if specified, check/adjust initial timing to specification.	X	X
⑨ Reconnect single wire in-line spout connector and check timing advance to verify distributor is advancing beyond the initial setting. If it is not, refer to Section 19 Quick Test 04.		X
⑩ Remove test instruments.	X	X
⑪ Unplug and reconnect vacuum hoses.	X	
⑫ Remove jumper from ignition connector and reconnect if applicable.	X	

Procedure	Passenger Car	Light Truck	Medium/Heavy Truck
A	1.9L-2V 2.3L HSC-1V 3.8L-2V 5.8L-VV FBC	2.0L-2V 5.8L-4V 7.5L-4V	4.9L-1V 5.8L-4V 6.1L-2V/4V 7.0L-4V
B	1.9L EFI 2.3L OHC-1V FBC 2.3L OHC EFI 2.3L HSC CFI 2.5L HSC CFI 3.0L EFI 3.8L CFI 5.0L SEFI 5.0L HO SEFI	2.3L OHC EFI 2.8L-2V FBC 2.9L EFI 3.0L EFI 4.9L-1V FBC 5.0L EFI	

Diagnostic Procedures

PRELIMINARY NOTES

The engine analyzer is used to diagnose problems in the secondary side of the ignition system. This is covered in Part 1, which is common for all ignition systems used in 1986.

For problems in the primary side of the ignition system, there is a separate Part 2 for each of the three basic types of ignition systems and a Part 3 for TFI IV.

The beginning point for Ignition System Diagnosis is the Symptom Index. This will direct you to the proper part for your engine symptom.

If after completing a Part 1, Part 2 or Part 3 diagnosis and a problem has not been solved, the problem is either an intermittent one or is not in the ignition system. If you suspect it to be intermittent, refer to intermittent diagnosis. Otherwise return to the Diagnostic Routines, (Section 2), for additional assistance.

SYMPTOM INDEX

ENGINE SYMPTOM	START AT
● CRANKS NORMALLY BUT WON'T START	PART 2
● STARTS NORMALLY BUT WON'T RUN (STALLS)	PART 2
● CRANKS NORMALLY BUT SLOW TO START	PART 1
● ROUGH IDLE	PART 1
● ENGINE MISS	PART 1
● POOR FUEL ECONOMY	PART 1
● ROUGH IDLE OR ENGINE MISS AT COLD TEMPERATURE-OK WARM-EEC IV EQUIPPED VEHICLES ONLY	PART 1 IF NOT RESOLVED, PART 3

PART 1

Preliminary Checkout & Equipment

CHECKOUT

- Visually inspect the engine compartment to ensure all vacuum hoses and spark plug wires are properly routed and securely connected.
- Examine all wiring harnesses and connectors for insulation damage, burned, overheated, loose, or broken conditions.
- Be certain the battery is fully charged.
- All accessories should be Off during diagnosis.

EQUIPMENT

Obtain the following test equipment or an equivalent:

- Spark Tester, Special Service Tool D81P-6666-A. See note.
- Engine Analyzer, Rotunda 002-00368.
- Digital Volt-Ohmmeter, Rotunda 014-00407.

NOTE

- A spark plug with a broken side electrode **is not** sufficient to check for spark and may lead to incorrect results.

Ignition Coil Secondary Voltage

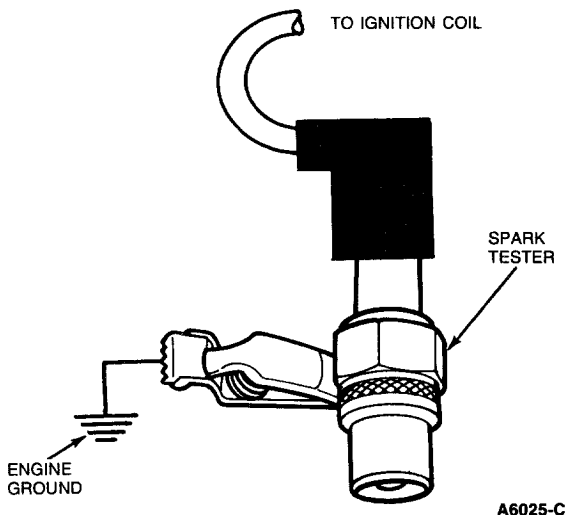
Part 1

Test 1

TEST EQUIPMENT: SPARK TESTER, VOM

TEST PROCEDURE

1. Connect spark tester between ignition coil wire and engine ground.
2. Crank engine.
3. Disconnect spark tester, reconnect coil wire to distributor cap.



TEST RESULT

TEST RESOLUTION

Spark

- Test Result OK.
- Go to Part 1, Test 2.

No Spark

- Inspect ignition coil for damage, carbon tracking.
- Measure resistance of ignition coil wire. Replace if greater than 7,000 ohms per foot.
- Go to: Part 2, Test 2

Secondary Display

Part 1

Test 2

TEST EQUIPMENT: ENGINE ANALYZER

TEST PROCEDURE

NOTE: If this portion of the diagnostic procedure is to provide **accurate** results, it is **essential** that the calibration of your engine analyzer be maintained. Refer to your equipment manual. If this is not available, an **estimate** of the calibration can be made by connecting the spark tester (Special Service Tool, D81P-6666-A or equivalent) to a properly operating ignition system and measuring the firing voltage of the spark tester **only**. **Do not include the firing voltage of the rotor-to-cap gap**. The spark tester firing voltage should be **approximately 28 KV**.

1. Connect engine analyzer to view **parade** display of ignition system secondary.
2. While **slowly** increasing engine rpm from idle to 2,000 rpm, compare engine analyzer display to the following illustrations. The illustrations shown are four cylinder but are typical for all engines.
3. Disconnect engine analyzer.

TEST RESULT

TEST RESOLUTION

TEST RESULT	TEST RESOLUTION

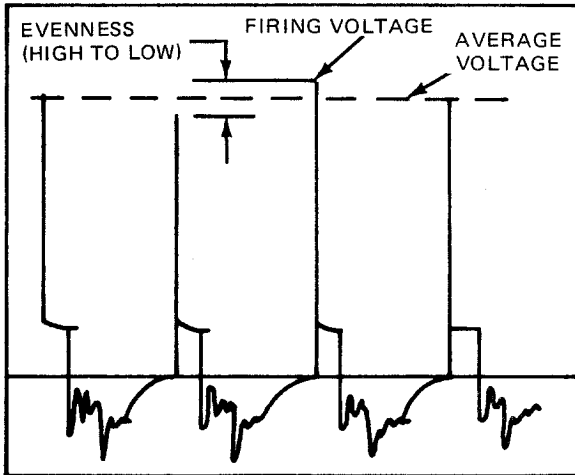
Secondary Display (Continued)

Part 1

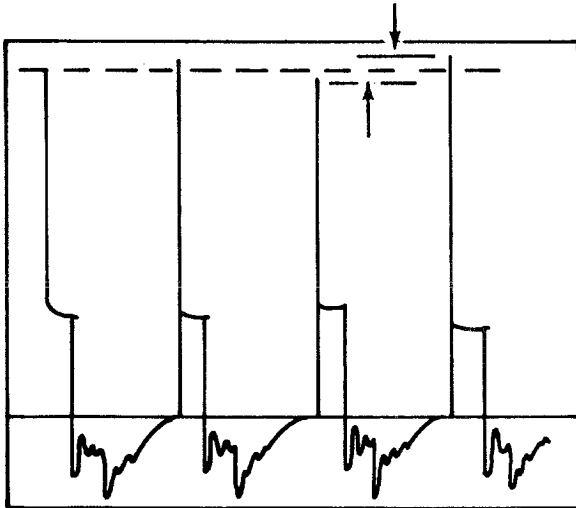
Test 2

TEST EQUIPMENT: ENGINE ANALYZER

TEST PROCEDURE



A6342-A



A6343-A

TEST RESULT

TEST RESOLUTION

Evenness of spark plug firing voltage: 5 KV or less

- These are normal values for a properly operating ignition system.

And the average value of spark plug firing voltage: 15 KV or less

Evenness of spark plug firing voltage: 5 KV or less

- Problems affecting all cylinders:**
- Check ignition coil wire for proper installation in coil and distributor cap.
 - Measure resistance of ignition coil wire. Replace if greater than 7,000 ohms per foot.
 - Wide spark plug gaps — all cylinders, (usually from worn electrodes due to high mileage).
 - Inspect cap and rotor for problems causing excessive cap-to-rotor gap.
 - Inspect cap and rotor for lack of silicone compound. (Blade rotors only).

And the average value of spark plug firing voltage: greater than 15 KV

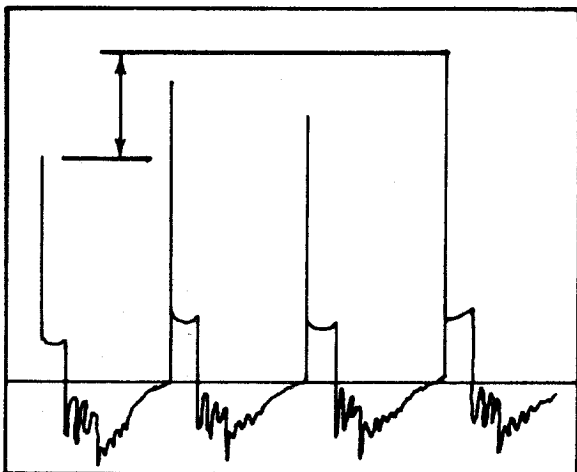
Secondary Display (Continued)

Part 1

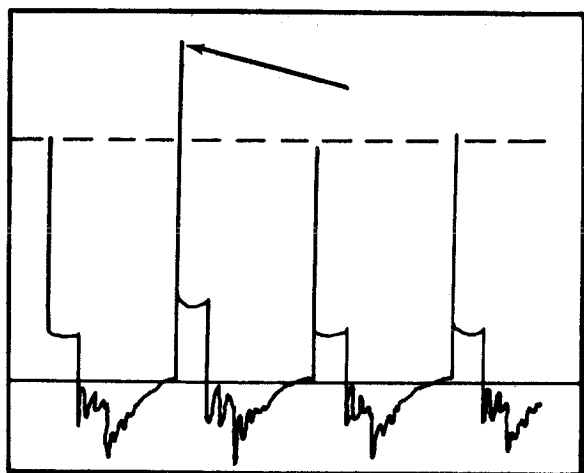
Test 2

TEST EQUIPMENT: ENGINE ANALYZER

TEST PROCEDURE



A6344-A



A6345-A

TEST RESULT

Evenness of spark plug firing voltage: greater than 5 KV

TEST RESOLUTION

Problems affecting some cylinders:

- Wide spark plug gap(s) or worn electrode(s).
- Improperly installed cap, adapter, or rotor.

Consistently high spark plug firing voltage in one or more cylinders

- Spark plug wire(s) not firmly connected to distributor cap or spark plug.
- Disconnected spark plug wire(s).
- Wide spark plug gap(s).
- Open plug wire(s). Go to Part 1, Test 3.

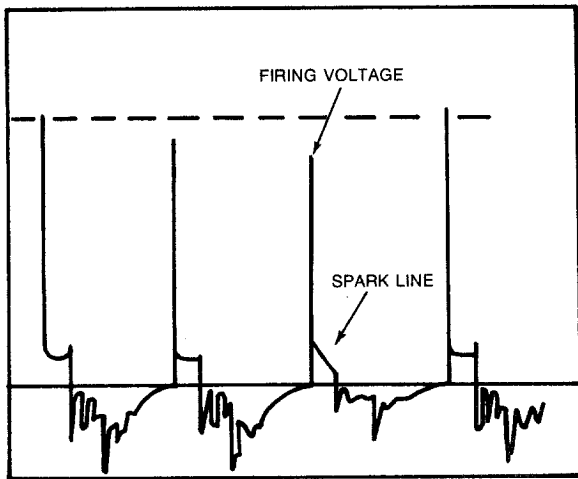
Secondary Display (Continued)

Part 1

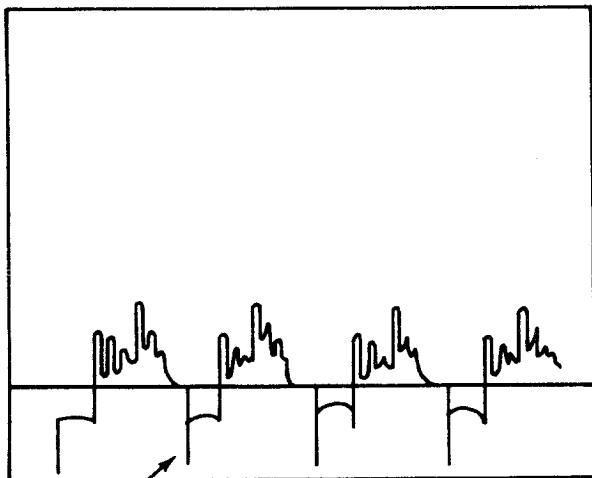
Test 2

TEST EQUIPMENT: ENGINE ANALYZER

TEST PROCEDURE



A6346-B



A6347-A

TEST RESULT

Consistently low spark plug firing voltage or sloping spark line in one or more cylinders

TEST RESOLUTION

- Fouled spark plug(s).
- Narrow spark plug gap(s).
- Spark plug wire(s) grounding on engine. Inspect for damage.
- Carbon tracking in cap and adapter.

Spark plug firing voltage negative going.

Ignition coil primary circuit reversed. Check wiring harness for ignition coil primary circuit. If OK replace ignition coil.

Spark Plug Wire Resistance

Part 1

Test 3

TEST EQUIPMENT: VOM

TEST PROCEDURE

1. Remove distributor cap from distributor.
2. Check for spark plug wires firmly seated on cap.
3. Disconnect spark plug end of suspect wire(s).
4. Measure resistance from terminal in cap to spark plug terminal.
5. Reinstall distributor cap and connect spark plug wire to spark plug.

CAUTION: Do not, under any circumstances, puncture a spark plug wire when measuring resistance. Measure only as instructed.

TEST RESULT

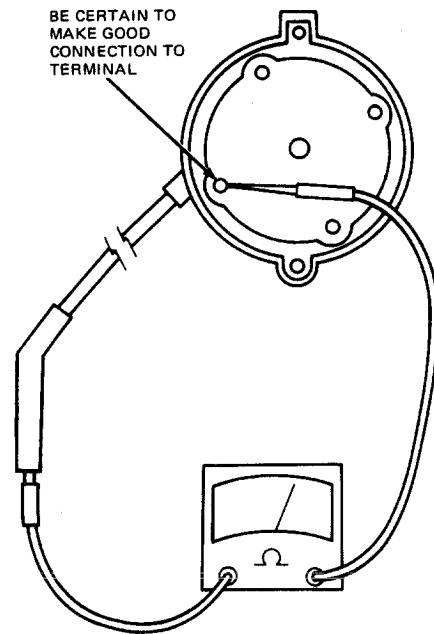
TEST RESOLUTION

Less than 7,000 ohms per foot

- Spark plug wire resistance OK.

Greater than 7,000 ohms per foot

- Replace spark plug wire(s).



A6166-B

PART 2
DURASPARK II
IGNITION SYSTEM

PART 2
TFI IV
IGNITION SYSTEM

Preliminary Checkout, Equipment & Notes

CHECKOUT

- Visually inspect the engine compartment to insure all vacuum hoses and spark plug wires are properly routed and securely connected.
- Examine all wiring harnesses and connectors for insulation damage, burned, overheated, loose, or broken conditions.
- Check that the TFI module is securely fastened to the distributor base.
- Be certain the battery is fully charged.
- All accessories should be Off during diagnosis.

EQUIPMENT

Obtain the following test equipment or an equivalent:

- Spark Tester, Special Service Tool D81P-6666-A. See note.
- Digital Volt-Ohmmeter, Rotunda 014-00407.
- 12 Volt Test Light.
- Small straight pin.

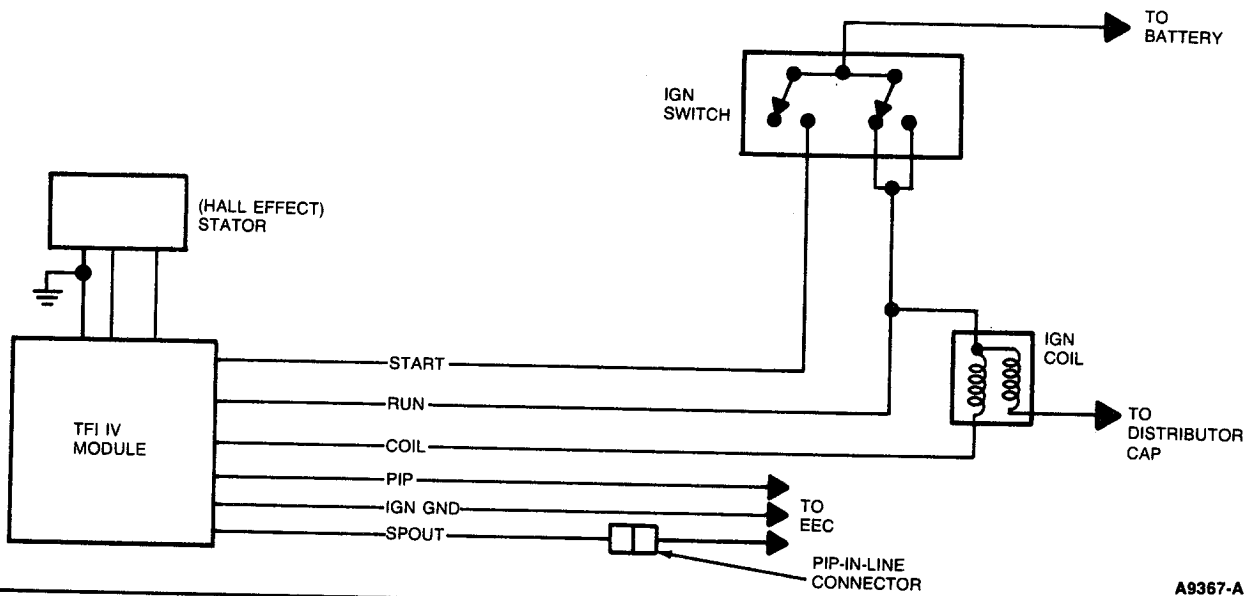
NOTES

- When instructed to inspect a wiring harness, both a visual inspection and a continuity test should be performed.
- When making measurements on a wiring harness or connector, it is good practice to wiggle the wires while measuring.
- A spark plug with a broken side electrode is **not** sufficient to check for spark and may lead to incorrect results.

Functional Schematic

TFI-IV

The TFI-IV system electrical schematic is shown below. For detailed information, refer to the vehicle wiring diagram.



Ignition Coil Secondary Voltage

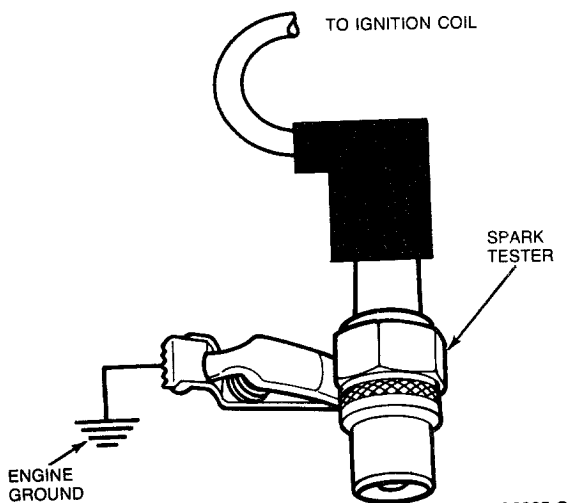
TFI-IV

Part 2
Test 1

TEST EQUIPMENT: SPARK TESTER, VOM

TEST PROCEDURE

1. Connect spark tester between ignition coil wire and engine ground.
2. Crank engine.



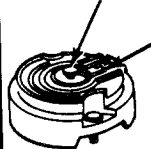
TEST RESULT

TEST RESOLUTION

Spark

- Test result OK.
- Inspect distributor cap, rotor for damage, carbon tracking, lack of silicone compound, if applicable.
- If engine starts, Go to Part 1, Test 2, otherwise continue to Test 5.

NO COMPOUND ON THIS SURFACE.



COAT COMPLETE SURFACE—TOP, BOTTOM, AND EDGES OF ROTOR BLADE TIP WITH SILICONE COMPOUND—1/32" THICK.

*DO NOT USE SILICONE COMPOUND ON MULTIPOINT ROTOR.

No spark

- Measure resistance of ignition coil wire. Replace if greater than 7,000 ohms per foot.
- Inspect ignition coil for damage, carbon tracking.
- Crank engine to verify distributor rotation. Refer to Shop Manual, Group 23 and service as required.
- Go to Test 2.

Ignition Coil Primary Circuit Switching

TFI-IV

Part 2
Test 2

TEST EQUIPMENT: 12V TEST LIGHT

TEST PROCEDURE

1. Separate wiring harness connector from ignition module. Inspect for dirt, corrosion, and damage. Reconnect harness.

NOTE: PUSH connector tabs to separate.

2. Attach 12V DC test light between coil Tach terminal and engine ground.
3. Crank engine.
4. Remove test light.

TEST RESULT

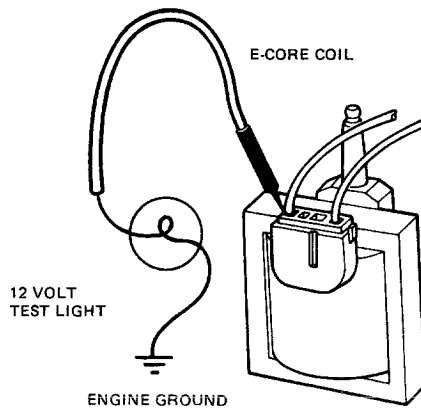
TEST RESOLUTION

Light flashes
or
Light but no
flash

- Go to Test 3.

No light or
very dim light

- Go to Test 10.



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Ignition Coil Primary Resistance**TFI-IV****Part 2
Test 3****TEST EQUIPMENT: VOM****TEST PROCEDURE**

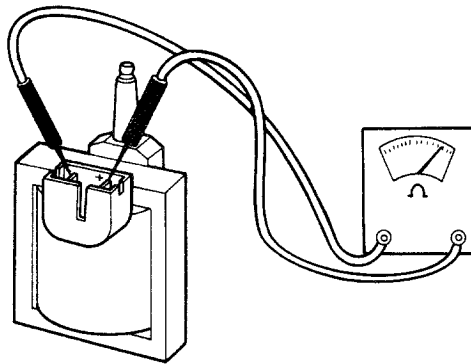
1. Turn ignition switch to Off.
2. Disconnect ignition coil connector. Inspect for dirt, corrosion, and damage.
3. Measure resistance from positive (+) to negative (—) terminal of ignition coil.

TEST RESULT**TEST RESOLUTION**0.3 to 1.0
ohm

- Test result OK.
- Go to Test 4.

Less than
0.3 ohm or
greater than
1.0 ohm

- Replace ignition coil.



A6385-A

Ignition Coil Secondary Resistance

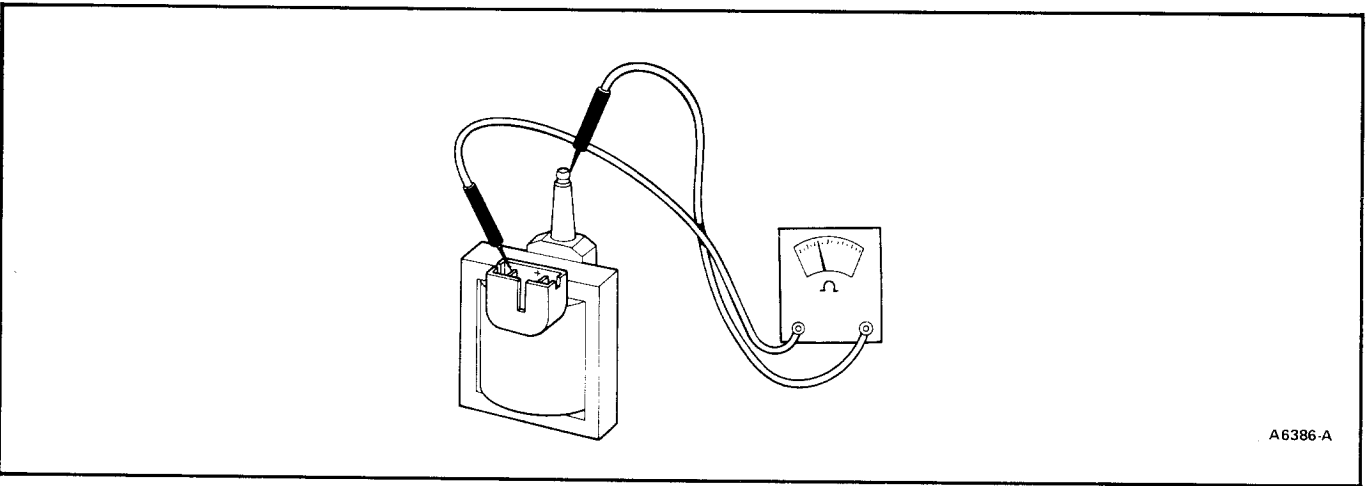
TFI-IV

**Part 2
Test 4**

TEST EQUIPMENT: VOM

TEST PROCEDURE
<ol style="list-style-type: none"> 1. Measure resistance from negative (-) terminal to high voltage terminal of ignition coil. 2. Reconnect ignition coil connector.

TEST RESULT	TEST RESOLUTION
6,500 to 11,500 ohms	<ul style="list-style-type: none"> ● Test result OK. ● Go to Test 5.
Less than 6,500 ohms or greater than 11,500 ohms	<ul style="list-style-type: none"> ● Replace ignition coil.



Wiring Harness

TFI-IV

Part 2 Test 5

TEST EQUIPMENT: VOM, STRAIGHT PIN

TEST PROCEDURE

1. Separate wiring harness connector from ignition module. Inspect for dirt, corrosion, and damage.
- NOTE: PUSH connector tabs to separate.**
2. Disconnect wire at S terminal of starter relay.
 3. Attach negative (-) VOM lead to distributor base.
 4. Measure battery voltage.
 5. Following table below, measure connector terminal voltage by attaching VOM to small straight pin inserted into connector terminal and turning ignition switch to position shown.

CAUTION: Do not allow straight pin to contact electrical ground.

CONNECTOR TERMINAL	WIRE/CIRCUIT	IGNITION SWITCH TEST POSITION
#2	TO IGNITION COIL (-) TERMINAL	RUN
#3	RUN CIRCUIT	RUN AND START
#4	START CIRCUIT	START

6. Turn ignition switch to Off position.
7. Remove straight pin.
8. Reconnect wire to S terminal of starter relay.

TEST RESULT

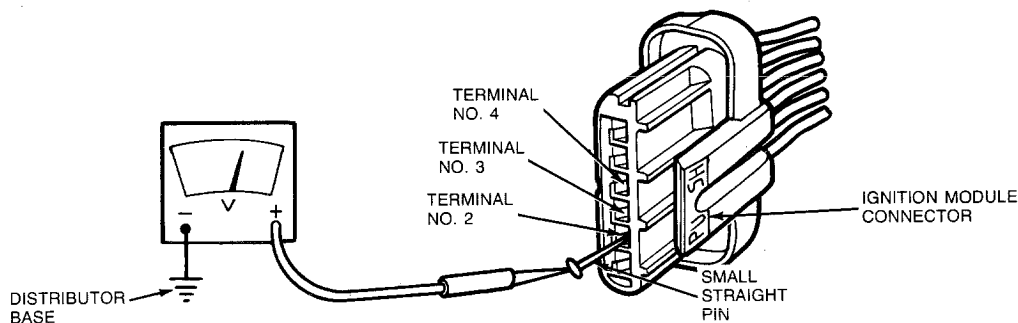
TEST RESOLUTION

90 percent of battery voltage minimum

- Test result OK.
- Go to Part 2, Test 6.

Less than 90 percent of battery voltage

- Inspect for faults in wiring harness and connectors.
- Refer to vehicle wiring diagram for appropriate circuit.
- Damaged or worn ignition switch. Refer to Shop Manual, Group 33.



Stator

TFI-IV

**Part 2
Test 6**

TEST EQUIPMENT: VOLT-OHMMETER

TEST PROCEDURE
<ol style="list-style-type: none"> 1. Turn ignition switch to Off position. 2. Remove coil wire and ground it. 3. Attach negative (-) VOM lead to distributor base. 4. Disconnect the pin-in-line connector near distributor and attach positive (+) VOM lead to TFI module side of connector. 5. Turn ignition switch to On position. 6. Bump the starter and measure voltage levels with the engine not moving. (Allow sufficient time for digital voltage reading to stabilize before taking measurement.) Record all values for possible use in additional tests.

TEST RESULT	TEST RESOLUTION
Highest value greater than 90 percent of battery voltage	<ul style="list-style-type: none"> ● Go to Part 2, Test 7.
Highest value less than 90 percent of battery voltage	Replace stator assembly.

Stator

TFI-IV

**Part 2
Test 7**

TEST EQUIPMENT: VOLT-OHMMETER

TEST PROCEDURE
Use values obtained from Part 2, Test 6.

TEST RESULT	TEST RESOLUTION
Lowest value greater than .5 volts	Remove distributor from engine. Remove TFI module from distributor and inspect stator connector terminals and TFI terminals for misalignment. Service as necessary. If OK, replace stator assembly.
Lowest value less than .5 volts	Go to Part 2, Test 8.

Stator	TFI-IV	Part 2 Test 8
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TEST EQUIPMENT: VOLT-OHMMETER

TEST PROCEDURE	TEST RESULT	TEST RESOLUTION
<p>Use values obtained from Part 2, Test 6.</p>	<p>Value between .5 volts and 90 percent of battery voltage</p>	<p>Replace stator assembly.</p>
	<p>No values between .5 volts and 90 percent of battery voltage.</p>	<p>Go to Part 2, Test 9.</p>

EEC IV – TFI IV

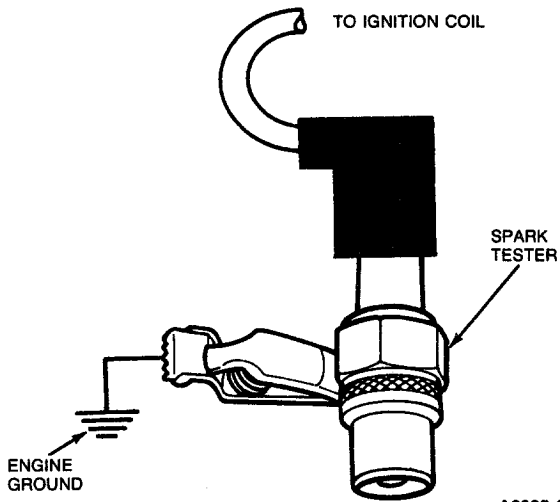
TFI-IV

**Part 2
Test 9**

TEST EQUIPMENT: SPARK TESTER, VOM

TEST PROCEDURE

1. Connect spark tester between ignition coil wire and engine ground.
2. Crank engine.



TEST RESULT

TEST RESOLUTION

Spark

Check PIP and Ignition ground wires for continuity. Repair as necessary. If OK, GO to EEC IV Diagnostics.

No spark

Replace TFI-IV module.

Primary Circuit Continuity

TFI-IV

Part 2
Test 10

TEST EQUIPMENT: VOM, STRAIGHT PIN

TEST PROCEDURE

1. Separate wiring harness connector from ignition module. Inspect for dirt, corrosion, and damage.

NOTE: PUSH connector tabs to separate.

2. Attach negative (-) VOM lead to distributor base.
3. Measure battery voltage.
4. Attach VOM to small straight pin inserted into connector terminal No. 2.

CAUTION: Do not allow straight pin to contact electrical ground.

5. Turn ignition switch to Run position and measure terminal No. 2 voltage.
6. Turn ignition switch to Off position.
7. Remove straight pin.

TEST RESULT

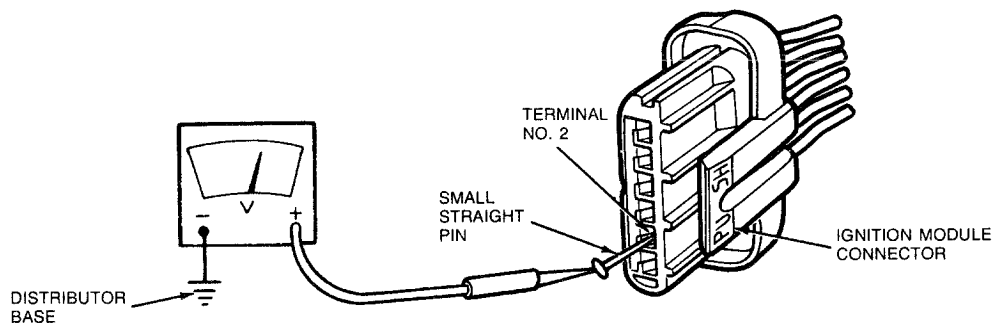
TEST RESOLUTION

90 percent of battery voltage minimum

- Go to Part 2, Test 5.

Less than 90 percent of battery voltage

- Go to Part 2, Test 11.



Ignition Coil Primary Voltage

TFI-IV

Part 2
Test 11

TEST EQUIPMENT: VOM

TEST PROCEDURE

1. Attach negative (—) VOM lead to distributor base.
2. Measure battery voltage.
3. Turn ignition switch to Run position.
4. Measure voltage at NEGATIVE (—) terminal of ignition coil.
5. Turn ignition switch to Off position.

TEST RESULT

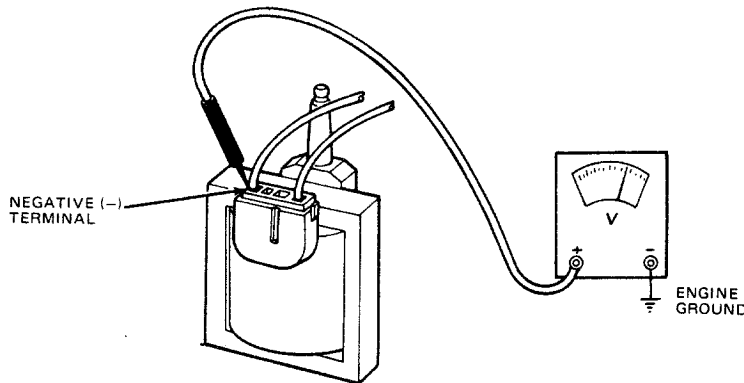
TEST RESOLUTION

90 percent of battery voltage minimum

- Inspect wiring harness between ignition module and coil negative (—) terminal.

Less than 90 percent of battery voltage

- Inspect wiring harness between ignition module and coil negative (—) terminal.
- Go to Part 2, Test 12.



A6391-A

Ignition Coil Supply Voltage

TFI-IV

Part 2
Test 12

TEST EQUIPMENT: VOM

TEST PROCEDURE

1. Remove coil connector.
2. Attach negative (-) VOM lead to distributor base.
3. Measure battery voltage.
4. Turn ignition switch to Run position.
5. Measure voltage at POSITIVE (+) terminal of ignition coil.
6. Turn ignition switch to Off position.
7. Reconnect ignition module connector.

TEST RESULT

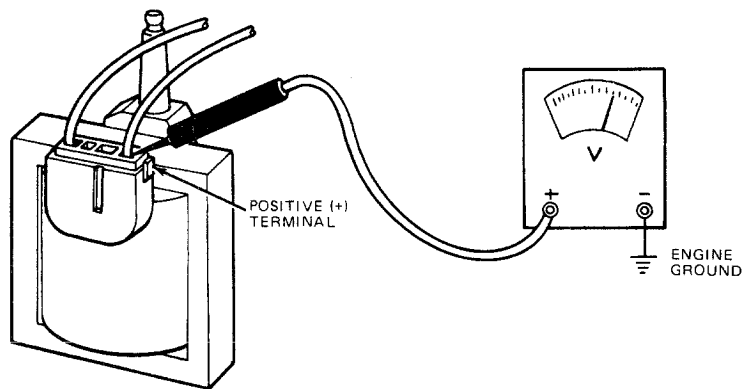
90 percent of battery voltage minimum

Less than 90 percent of battery voltage

TEST RESOLUTION

- Inspect ignition coil connector for dirt, corrosion, and damage.
- Inspect ignition coil terminals for dirt, corrosion, and damage.
- Replace ignition coil.

- Inspect and service wiring between ignition coil and ignition switch. Refer to vehicle wiring diagram.
- Worn or damaged ignition switch. Refer to Shop Manual, Group 33.



A6392-A

PART 3
TFI IV
IGNITION SYSTEM

Preliminary Checkout, Equipment & Notes

CHECKOUT

- Be certain the battery is fully charged.
- All accessories should be Off during diagnosis.
- Cold soak the vehicle and verify the symptom prior to performing the test procedure. The test procedure must be performed with the vehicle at or below the temperature where the symptom occurs (except as noted).

EQUIPMENT

Obtain the following test equipment or an equivalent:

- Digital Volt-Ohmmeter, Rotunda 014-00407.

Stator

TFI-IV

**Part 3
Test 1**

SYMPTOM: ROUGH IDLE OR SPARK KNOCK WHEN COLD, OK WHEN WARM

TEST PROCEDURE

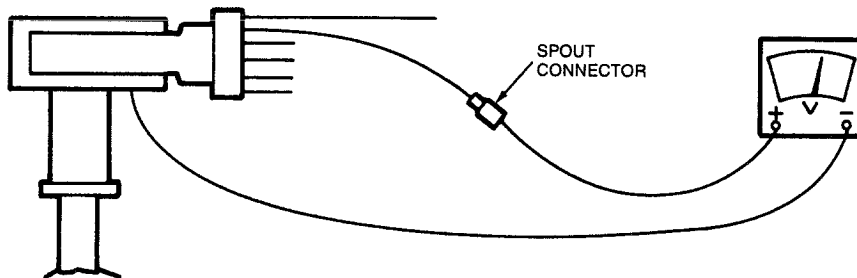
1. Cold soak vehicle.
NOTE: This procedure must be performed with the vehicle at or below temperature where symptom occurs (except where noted).
2. Key in Off position.
3. Disconnect the pin-in-line connector near the TFI module (SPOUT).
4. Attach the negative (-) VOM lead to the distributor base.
5. Start the engine and measure the battery voltage at 1200-1500 rpm.
6. Measure the voltage on the TFI module side of the pin-in-line connector at 1200-1500 rpm.
7. Is the result greater than 40 percent of the battery voltage?

TEST RESULT

TEST RESOLUTION

TEST RESULT	TEST RESOLUTION
Yes	Go to Part 3, Test 2.
No	Replace stator assembly.

DISTRIBUTOR ASSY



Stator	TFI-IV	Part 3 Test 2
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SYMPTOM: ROUGH IDLE OR SPARK KNOCK WHEN COLD, OK WHEN WARM

TEST PROCEDURE
<p>1. Using the same set up procedure in Part 3, Test 1, measure the voltage on the TFI module side of the pin-in-line connector at approximately 1200 rpm and at approximately 4000 rpm. SAFETY CAUTION: Close hood for this test.</p> <p>2. Is the voltage at 4000 rpm less than 90 percent of the voltage at 1200 rpm.</p>

TEST RESULT	TEST RESOLUTION
Yes	Replace stator assembly.
No	Go to Part 3, Test 3.

Stator

TFI-IV

**Part 3
Test 3**

SYMPTOM: ROUGH IDLE OR SPARK KNOCK WHEN COLD, OK WHEN WARM

TEST PROCEDURE
<ol style="list-style-type: none"> 1. Warm the engine to normal operating temperature. 2. Using the same set-up procedure as Part 3, Test 1, measure the voltage on the TFI module side of the pin-in-line connector at 1200-1500 rpm. 3. Is the voltage obtained in Part 3, Test 1, Step 6 less than 90 percent of the voltage obtained in Step 2 of this test.

TEST RESULT	TEST RESOLUTION
Yes	Replace stator assembly.
No	Stator assembly is OK.

INTERMITTENT DIAGNOSIS PROCEDURE

Preliminary Checkout and Notes

NOTES

- This procedure begins with an owner complaint that the engine stops at unexpected times but can be restarted. In situations like this these are two things that are very important. The technician must obtain as much information directly from the owner about the conditions under which the problem occurs, and the service history of the vehicle must be thoroughly reviewed to avoid repeat replacement of good components. For example, replacing a stator assembly a second time will not correct a problem if the problem is actually in another area.
- Two testers are available for assistance with intermittent diagnosis. **Rotunda Ignition System Tester D80L-50-BIT** is used to diagnose problems in the primary circuit of the Duraspark ignition systems. It provides a means to direct the technician to a specific area in the primary circuit. **Rotunda Ignition System Tester 007-00008** provides a quick means of separating primary ignition system problems from fuel, carburetion, EGR or other system problems causing similar vehicle symptoms. It can be used on most ignition systems. It will detect any primary ignition system problem, but it is particularly useful in detection of intermittent problems.

CHECKOUT

- Visually inspect the engine compartment to ensure all vacuum hoses and spark plug wires are properly routed and securely connected.
- Examine all wiring harnesses and connectors for insulation damage, burned, overheated, loose or broken conditions.

Intermittent Diagnosis

TEST PROCEDURE		TEST RESULT	TEST RESOLUTION
STEP 1	<ul style="list-style-type: none"> • Talk to owner. 		<ul style="list-style-type: none"> • Symptoms.
STEP 2	<ul style="list-style-type: none"> • Review vehicle service history. 		<ul style="list-style-type: none"> • Number of previous repairs and components replaced.
STEP 3	<ul style="list-style-type: none"> • Is a Rotunda Ignition System Tester model, 007-00008 or equivalent available? 	Yes	<ul style="list-style-type: none"> • Follow test procedure instructions supplied with tester.
		No	<ul style="list-style-type: none"> • Go to Step 4.
STEP 4	<ul style="list-style-type: none"> • Will engine start? 	Yes	<ul style="list-style-type: none"> • Go to Step 5.
		No	<ul style="list-style-type: none"> • Go to Ignition System Diagnostic Procedure, Part 2, Test 1 for engine ignition system (Duraspark II, or TFI).

Intermittent Diagnosis

TEST PROCEDURE	
STEP 5	<ul style="list-style-type: none"> ● Engine at idle, raise hood, shake wiring harness and pull wires at connectors for ignition components. <p>Does engine quit?</p>
STEP 6	<ul style="list-style-type: none"> ● Engine at idle, close hood, A/C On, blower on medium speed: allow engine to run for 15 minutes. <p>Does engine quit?</p>
STEP 7	<ul style="list-style-type: none"> ● Engine Off, hood closed, hot soak for 10 minutes. <p>Will engine restart?</p>
STEP 8	<ul style="list-style-type: none"> ● Engine at idle, raise hood, shake wiring harness and pull wires at connectors for ignition components. <p>Does engine quit?</p>

TEST RESULT	TEST RESOLUTION
Yes	<ul style="list-style-type: none"> ● Repair wiring harness or connector.
No	<ul style="list-style-type: none"> ● Go to Step 6.
Yes	<ul style="list-style-type: none"> ● Go to Step 10.
No	<ul style="list-style-type: none"> ● Go to Step 7.
Yes	<ul style="list-style-type: none"> ● Go to Step 8.
No	<ul style="list-style-type: none"> ● Go to Ignition System Diagnostic Procedure, Part 2, Test 1 for engine ignition system (Duraspark II, or TFI).
Yes	<ul style="list-style-type: none"> ● Repair wiring harness or connector
No	<ul style="list-style-type: none"> ● Go to Step 9.

Intermittent Diagnosis

TEST PROCEDURE	
STEP 9	<ul style="list-style-type: none"> ● Road test. <p style="margin-left: 20px;">Does engine quit?</p>
STEP 10	<ul style="list-style-type: none"> ● Raise hood, shake wiring harness, pull wires at connectors, separate and reconnect connectors for ignition components. <p style="margin-left: 20px;">Does engine start?</p>

TEST RESULT	TEST RESOLUTION
Yes	<ul style="list-style-type: none"> ● Go to Step 10.
No	<ul style="list-style-type: none"> ● Test complete. (Problem not duplicated).
Yes	<ul style="list-style-type: none"> ● Repair wiring harness or connector.
No	<ul style="list-style-type: none"> ● Go to Ignition System Diagnostic Procedure, Part 2, Test 1 for engine ignition system (Duraspark II, or TFI).