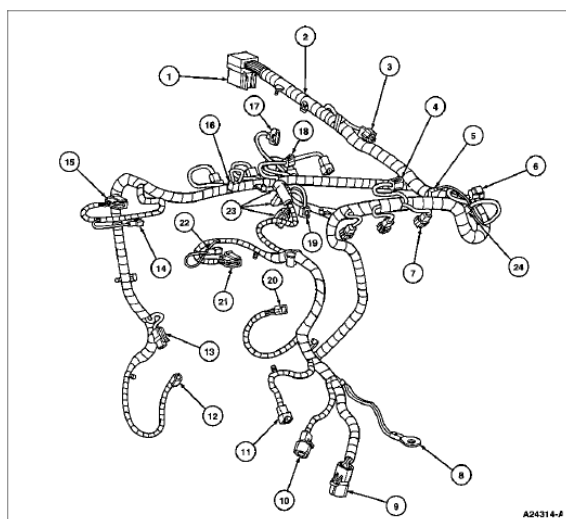


## Fuel Charging Wiring

### Removal and Installation

1. Remove air cleaner outlet tube (9B659). Refer to [Section 03-12](#) .
2. Disconnect battery ground cable (14301). Refer to [Section 14-01](#) .
3. Disconnect fuel charging wiring (9D930) from fuel injectors (9F593) and electronic engine controls.
4. Disconnect fuel charging wiring from engine control sensor wiring (12A581) and power distribution center.
5. Remove fuel charging wiring retainers and fuel charging wiring from engine.
6. To install, reverse Removal procedure. Verify all electrical connections.

### Fuel Charging Wiring



Item	Part Number	Description
1	^	To 12A581 Harness (Part of 9D930)
2	9D930	Fuel Charging Wiring
3	^	To RH HO2S (Part of 9D930)
4	^	To EVR Sensor (Part of 9D930)
5	^	To Fuel Injection Supply Manifold Ground (Part of 9D930)
6	^	To EGR Backpressure Transducer (Part of 9D930)
7	^	To Fuel Injectors (8 places, Part of 9D930)

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8	Â	To Power Distribution Box (Part of 9D930)
9	Â	To Oil Pressure Sensor (Part of 9D930)
10	Â	To 14290 Harness (Part of 9D930)
11	Â	To Electronic Variable Orifice (Part of 9D930)
12	Â	To CKP Sensor (Part of 9D930)
13	Â	To A/C Compressor (Part of 9D930)
14	Â	To RH Radio Ignition Interference Capacitor (Part of 9D930)
15	Â	To RH Ignition Coil (Part of 9D930)
16	Â	To Water Temperature Indicator Sensor Input (Part of 9D930)
17	Â	To TP Sensor (Part of 9D930)
18	Â	To IAC Valve (Part of 9D930)
19	Â	To ECT Sensor (Part of 9D930)
20	Â	To CMP Sensor (Part of 9D930)
21	Â	To LH Ignition Coil (Part of 9D930)
22	Â	To LH Radio Ignition Interference Capacitor (Part of 9D930)
23	Â	To Generator (Part of 9D930)
24	Â	To LH HO2S (Part of 9D930)

## Fuel Pump Relay

### Removal and Installation

1. Disconnect battery ground cable (14301). Refer to [Section 14-01](#) .
  2. Locate fuel pump relay (14N089) in the engine compartment power distribution center and remove fuel pump relay.
  3. To install, reverse Removal procedure.
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**Throttle Body**

**⚠ WARNING: DO NOT SMOKE OR CARRY LIGHTED TOBACCO OR OPEN FLAME OF ANY TYPE WHEN WORKING ON OR NEAR ANY FUEL-RELATED COMPONENT. HIGHLY FLAMMABLE MIXTURES ARE ALWAYS PRESENT AND MAY BE IGNITED, RESULTING IN POSSIBLE PERSONAL INJURY.**

The throttle body (9E926) for this vehicle is a sludge-resistant design with a coating on the bore and plate. Sludge accumulation will not affect the throttle body air flow. Any attempt to clean the bore and plate area will impair the effectiveness of the coating. **DO NOT** clean the bore and plate area of the throttle body.

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## Fuel Injector

### Testing/Cleaning

**⚠ CAUTION: The fuel injectors (9F593) for this vehicle have a deposit-resistant design and should NOT be cleaned.**

Test fuel injectors using Rotunda Fuel Injector Tester/Cleaner 164-R3750 or equivalent. Follow tool manufacturer's operating instructions.

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**SPECIFICATIONS**

## LUBRICANT/ADHESIVE/CLEANER SPECIFICATIONS


Description	Part Number	Ford Specification
Engine Oil	XO-10W30-QSP or -DSP	ESE-M2C153-E

## TORQUE SPECIFICATIONS

Description	Nm	Lb-In
Throttle Body-to-Intake Manifold Adapter	8-12	71-106
Fuel Pressure Relief Valve to Fuel Injection Supply Manifold	7.75	69
Fuel Pressure Regulator-to-Fuel Injection Supply Manifold	3-4.5	27-39
Fuel Injection Supply Manifold -to- Intake Manifold	8-12	71-106
Fuel Pressure Relief Valve Cap	0.6	6

**SPECIAL SERVICE TOOLS/EQUIPMENT**

## SPECIAL SERVICE TOOLS REQUIRED

Tool Number/ Description	Illustration
T80L-9974-B Multiport Fuel Injection (MFI) Fuel Pressure Gauge	

## SPECIAL SERVICE TOOLS DESIRED

Tool Number	Description
D87L-9280-A	Spring Lock Coupling Disconnect Tool (3/8 Inch)
D87L-9280-B	Spring Lock Coupling Disconnect Tool (1/2 Inch)

## ROTUNDA EQUIPMENT

Model	Description
164-R3750	Fuel Injector Tester/Cleaner

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## Fuel System

**⚠ WARNING: DO NOT SMOKE, CARRY LIGHTED TOBACCO OR OPEN FLAME OF ANY TYPE WHEN WORKING ON OR NEAR ANY FUEL-RELATED COMPONENT. HIGHLY FLAMMABLE MIXTURES ARE ALWAYS PRESENT AND MAY BE IGNITED, RESULTING IN POSSIBLE PERSONAL INJURY.**

An on-board vehicle powertrain control module (PCM) (12A650):

- accepts signals from various electronic engine sensors to compute the required fuel flow rate necessary to maintain a prescribed air/fuel ratio throughout the entire engine operational range.
- sends a command to the fuel injectors (9F593) to meter the appropriate quantity of fuel.
- determines and compensates for the age of the vehicle and its uniqueness.
- automatically senses and compensates for changes in altitude (for example, from sea level to mountains).
- permits push starting the vehicle if it becomes necessary.

All engines use a closed-type positive crankcase ventilation (PCV) system and exhaust emission system to control engine emissions within government specifications.

To maintain the required exhaust emission levels, the fuel delivery system must be:

- kept in good operating condition.
- adjusted to specifications listed in the applicable section of the Powertrain Control/Emissions Diagnosis Manual, the applicable section of this group or on the vehicle emission control information decal.

Additional engine performance checks are required to keep the exhaust emissions at the specified minimum pollutant level. Refer to [Section 00-03](#) for these performance checks and recommended intervals.

The unleaded fuel only nomenclature must appear:

- near the fuel filler opening.
- on the instrument cluster.

The fuel delivery sub-system delivers fuel to the fuel charging system and consists of:

- a high-pressure, in-tank mounted, fuel pump (9350).
- a fuel filter/reservoir delivering fuel from the fuel tank (9002) through a 20-micron fuel filter (9155) to a fuel injection supply manifold (9F792).
- the fuel injection supply manifold which incorporates electrically-actuated fuel injectors directly above each of the engine's intake ports.
- the fuel injectors, which when energized, spray a metered quantity of fuel into the intake air stream.

A constant fuel pressure drop is maintained across the fuel injectors by a fuel pressure regulator (9C968) which is:

- connected in series with the fuel injectors.
- positioned downstream from fuel injectors.



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Excess fuel supplied by the fuel pump, but not required by the engine, passes through the fuel pressure regulator and returns to the fuel tank through a fuel return line.

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## Fuel Injection Timing

For fuel injection timing:

- each fuel injector (9F593) is energized once every other crankshaft revolution in sequence with ignition firing order.
  - the period of time that the fuel injectors are energized (injector on time or pulse width) is controlled by the vehicle's powertrain control module (PCM) (12A650).
  - air entering the engine is monitored by flow pressure and temperature sensors.
  - the outgoing signals of the electronic engine control sensors are processed by the powertrain control module.
  - the powertrain control module determines the needed injector pulse width and sends a command to the fuel injectors to meter the exact quantity of fuel.
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## Sequential Multiport Fuel Injection (SFI)

The sequential multiport fuel injection (SFI) system is classified as:

- multi-point.
- pulse time.
- mass air flow controlled.

Fuel is metered into each intake port in sequence with the ignition firing order in accordance with engine demand through the fuel injectors (9F593) mounted on a tuned intake manifold (9424).

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