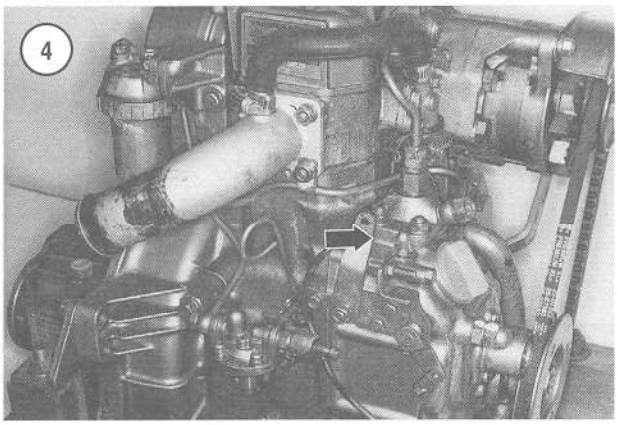


be operating properly to adequately protect the fuel injection system. Failure to maintain fuel filters and use clean fuel can result in engine stoppage and expensive replacement or repair of the injection pump or injectors.

Fuel Transfer Pump

The fuel transfer pump (A, **Figure 9**) moves fuel from the fuel tank to the fuel injection pump. The pump is necessary when the fuel tank is lower than the fuel injection pump. A primer lever on the side of the transfer pump permits manual operation of the fuel pump diaphragm. Priming or bleeding the fuel system requires operation of the primer lever so fuel flows to the injection system with the engine stopped.

FUEL INJECTION SYSTEM BLEEDING

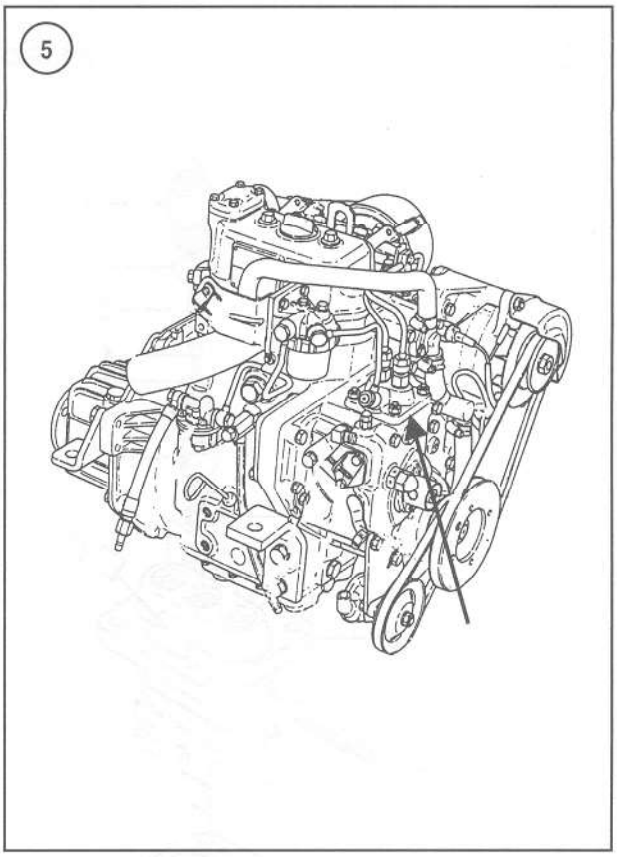
Air in the fuel system can cause rough engine operation or stoppage. Bleeding purges air from the system. Bleed the system anytime fuel line connections are disconnected or fuel components are removed. To ensure all air is removed, perform the complete bleeding procedure described in the following steps:

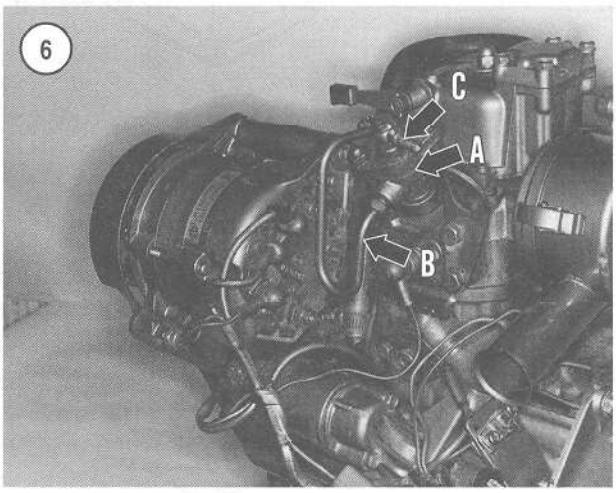
1. Open the bleed screw on the fuel filter (**Figure 10**). Make sure the fuel valve on the fuel tank is open.

NOTE

Be prepared to contain and wipe up expelled fuel.

2. Operate the priming lever (B, **Figure 9**) on the fuel transfer pump while observing the fuel expelled from the bleed screw hole. Continue to operate the priming lever until air-free fuel is expelled, then close the air bleed screw.





3. Open the air bleed screw (**Figure 11**) on the fuel injection pump.

4. Operate the priming lever (B, **Figure 9**) on the fuel transfer pump while observing the fuel expelled from the bleed screw hole. Continue to operate the priming lever until air-free fuel is expelled, then close the air bleed screw.

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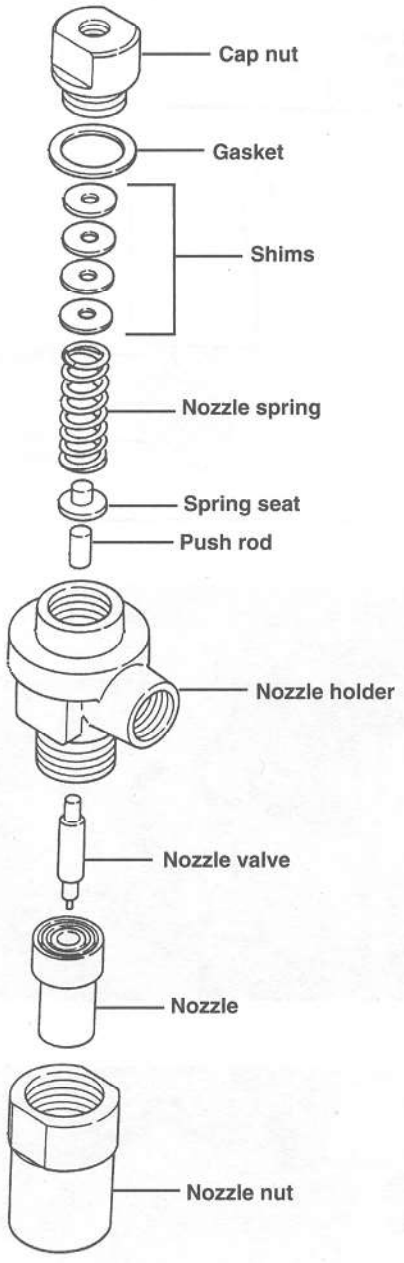
FUEL INJECTOR



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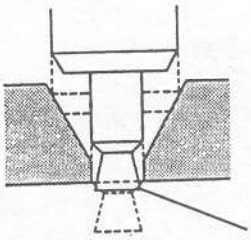

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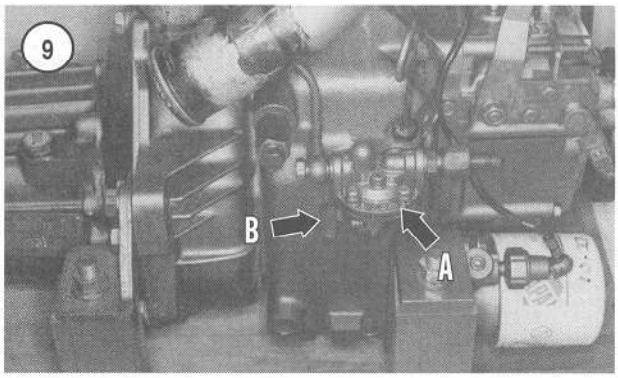

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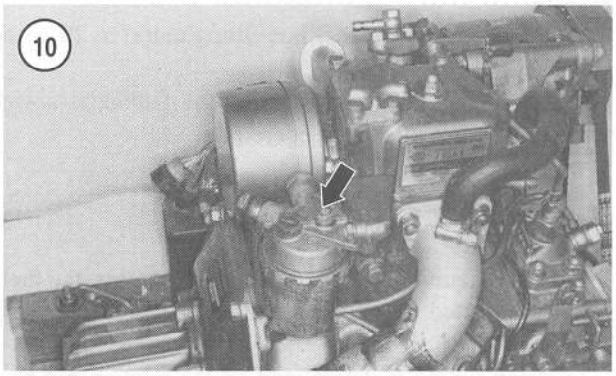

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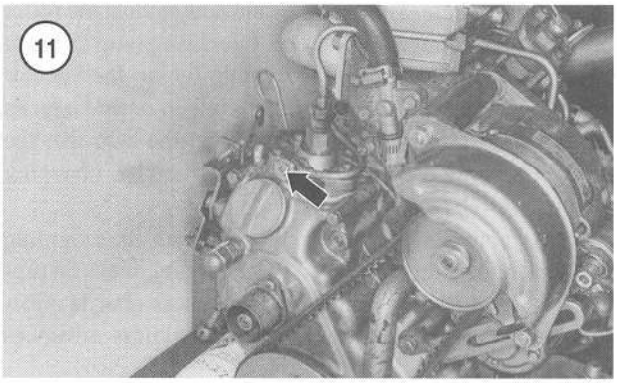

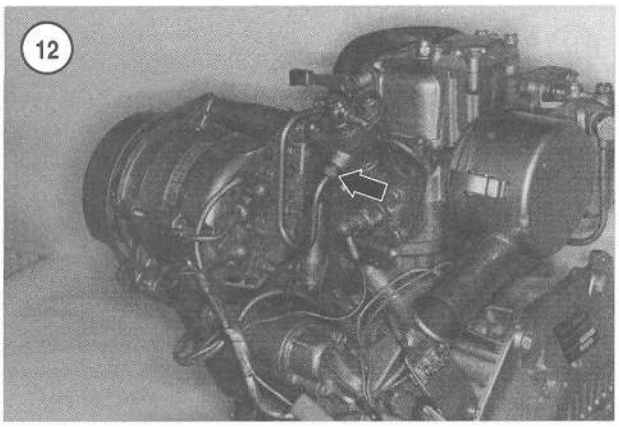

5. Loosen the fitting nut (**Figure 12**) on the injector(s) just enough to expel fuel.
6. Move the engine speed control to the full throttle position.
7. Move the decompression lever to the ON position.

NOTE

Do not operate the starter for more than 30 seconds; otherwise the starter may be damaged due to overheating.

8. Operate the starter until air-free fuel flows from the injector(s).
9. Tighten the injector fuel line fitting nut(s) to 20 N•m (15 ft.-lb.).
10. Operate the starter and listen for the distinctive noise that indicates the injector is operating.

FUEL INJECTION TIMING

Similar to ignition timing on a gasoline engine, the fuel must be injected at the proper time to obtain optimum combustion.

Injection timing is determined by the relationship between the injection pump plunger and the injection camshaft in the engine. The rotating cam acts against the roller on the pump plunger in the fuel injection pump (**Figure 13**) to force up the plunger and pump fuel to the injector nozzle. Moving the fuel injection pump up or down on its mounting surface changes the point on the cam that the plunger begins vertical movement, thereby changing when injection occurs.

Shims between the injection pump and its mounting surface on the engine are used to adjust fuel injection timing (**Figure 13**). Increasing shim thickness retards injection timing, while decreasing shim thickness advances injection timing.