BASIC FUEL SYSTEM DIAGNOSIS

When there is a problem starting or driving a vehicle, two of the most important checks involve the ignition and the fuel systems. The questions most mechanics attempt to answer first, "is there spark?" and "is there fuel?" will often lead to solving most basic problems. For ignition system diagnosis and testing, please refer to the information on engine electrical components and ignition systems found earlier in this manual. If the ignition system checks out (there is spark), then you must determine if the fuel system is operating properly (is there fuel?).

FUEL LINES AND FITTINGS

Quick-connect (push type) fuel line fittings must be disconnected using proper procedure or the fitting may be damaged. There are two types of retainers used on the push connect fittings. Line sizes of 3/8 and 5/16 in. diameter use a hairpin clip retainer. The 1/4 in. diameter line connectors use a duck-bill clip retainer. In addition, some engines use spring-lock connections, secured by a garter spring, which require a special fuel line disconnect tool for removal.

CAUTION

Observe all applicable safety precautions when working around fuel. Whenever servicing the fuel system, always work in a well ventilated area. Do not allow fuel spray or vapors to come in contact with a spark or open flame. Keep a dry chemical fire extinguisher near the work area. Always keep fuel in a container specifically designed for fuel storage; also, always properly seal fuel containers to avoid the possibility of fire or explosion.

Hairpin Clip Fitting

REMOVAL & INSTALLATION

See Figures 1 and 2

1. Clean all dirt and grease from the fitting. Spread the two clip legs about 1/8 in. (3mm) each to disengage from the fitting and pull the clip outward from the fitting. Use finger pressure only; do not use any tools.
2. Grasp the fitting and hose assembly and pull away from the steel line. Twist the fitting and hose assembly slightly while pulling, if the assembly sticks.
3. Inspect the hairpin clip for damage, replacing the clip if necessary. Reinstall the clip in position on the fitting.

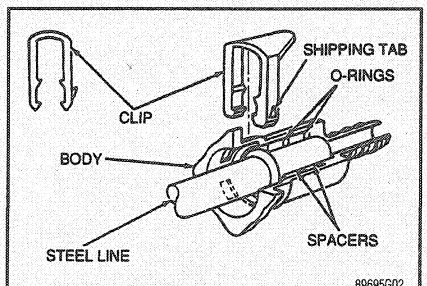

Fig. 1 Cutaway view of the hairpin clip fitting

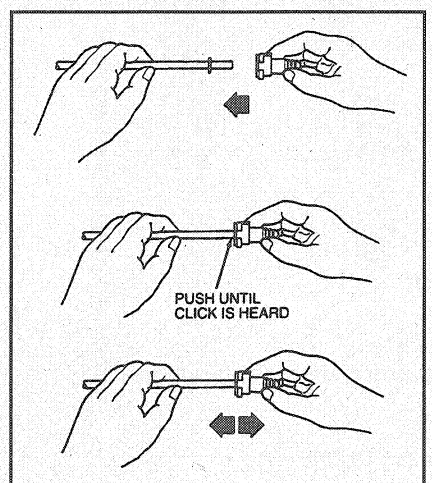

Fig. 2 When assembling the fitting, push the pipe into the fitting until a click is heard

4. Inspect the fitting and inside of the connector to ensure freedom from dirt or obstruction. Install the fitting into the connector and push together. A click will be heard when the hairpin snaps into the proper connection. Pull on the line to insure full engagement.

Duckbill Clip Fitting

REMOVAL & INSTALLATION

See Figure 3

1. A special tool is available from Ford and other manufacturers for removing the retaining clips. Use Ford Tool T90T-9550-B or C or equivalent. If the tool is not on hand, go onto step 2. Align the slot on the push connector disconnect tool with either tab on the retaining clip. Pull the line from the connector.
2. If the special clip tool is not available, use a pair of narrow 6-inch slip-jaw pliers with a jaw width of 0.2 in (5mm) or less. Align the jaws of the pliers with the openings of the fitting case and compress the part of the retaining clip that engages the case. Compressing the retaining clip will release the fitting, which may be pulled from the connector. Both sides of the clip must be compressed at the same time to disengage.
3. Inspect the retaining clip, fitting end and connector. Replace the clip if any damage is apparent.
4. Push the line into the steel connector until a click is heard, indicating the clip is in place. Pull on the line to check engagement.

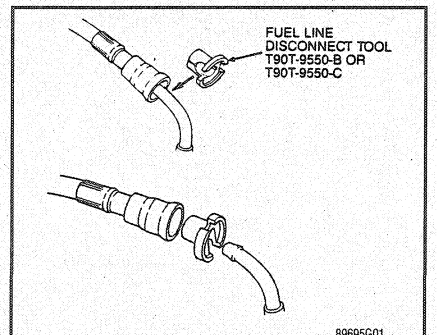

Fig. 3 A fuel line disconnect tool is required to properly separate a duckbill clip fitting

Spring Lock Coupling

REMOVAL & INSTALLATION

See Figures 4 thru 14

The spring lock coupling is held together by a garter spring inside a circular cage. When the cou-

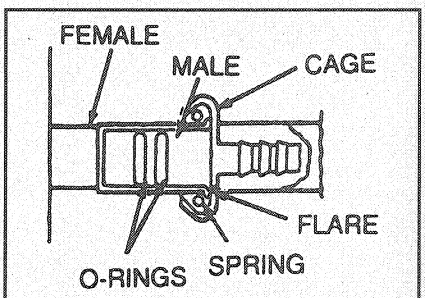

Fig. 4 Cutaway view of a spring lock coupling

Fig. 5 Remove the safety clip from the fuel lines, the clip is attached to a small wire that keeps it from getting lost