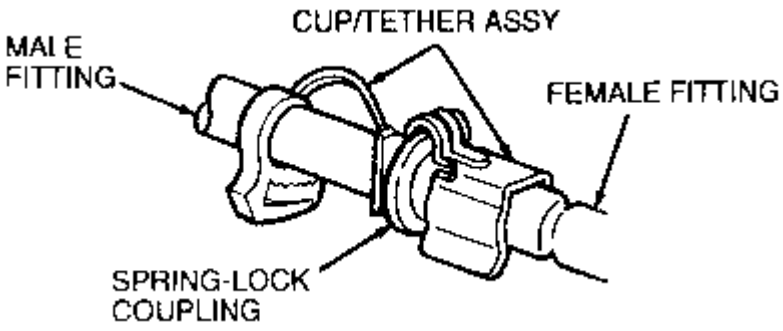
# FUEL LINE FITTINGS

## Spring Lock Coupling

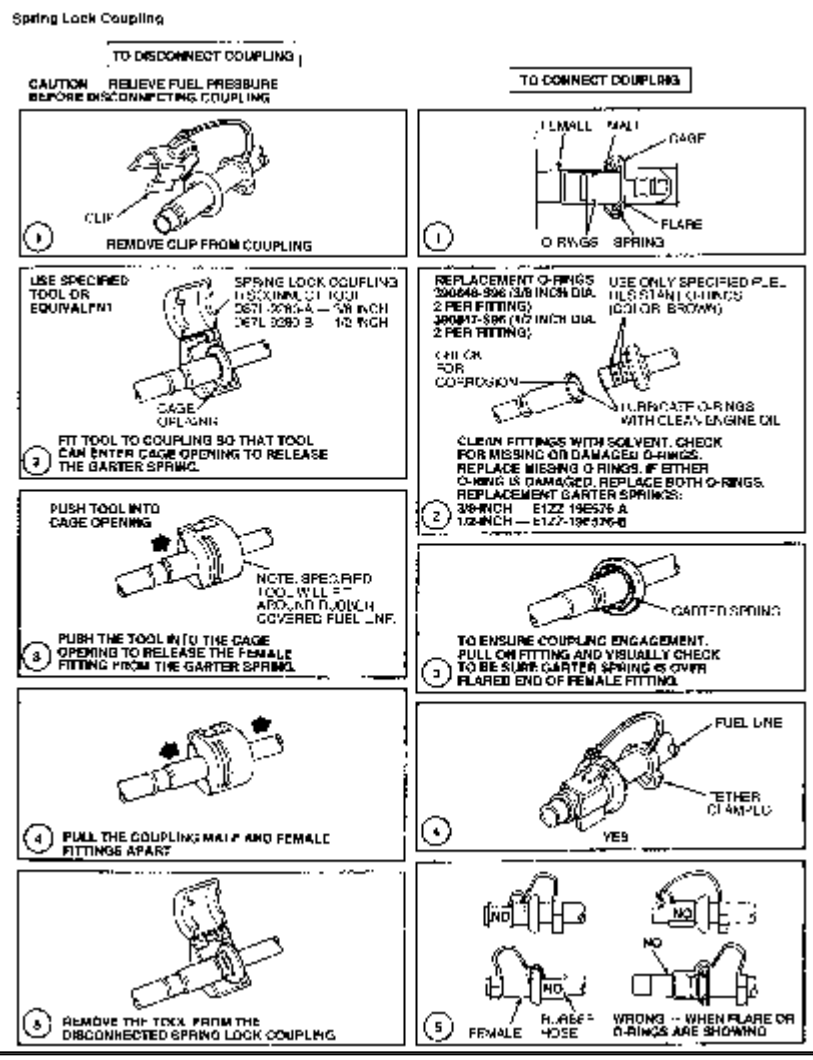
The spring lock coupling is a fuel line coupling held together by a garter spring inside a circular cage. When the coupling is connected, the flared end of the female fitting slips behind the garter spring inside the cage of the male fitting. The garter spring and cage then prevent the flared end of the female fitting from pulling out of the cage. As a redundant locking feature, a horseshoe-shaped retaining clip is used to improve the retaining ability of the spring lock coupling.




Spring lock coupling assembly

### REMOVAL & INSTALLATION

1. **Disconnect the negative battery cable, then properly relieve the fuel system pressure. For details, please refer to the procedure covered in the appropriate fuel system in this section.**
2. **Using your hand only, remove the retaining clip from the spring lock coupling. Do NOT use any sharp tool or screwdriver because it may damage the coupling.**
3. **Twist the fitting to free it from any adhesion at the O-ring seals.**
4. **Fit Spring Lock Coupling Disconnect Tool D87L-9280-A ($^3/_8$ in.) or D87L-9280-B ($^1/_2$ in.), or equivalent, to coupling.**
5. **Close the tool and push into the open side of the cage to expand the garter spring and release the female fitting.**
6. **After the garter spring is expanded, pull the fittings apart.**
7. **Remove the tool from the disconnected coupling.**




Disconnecting and connecting the spring lock coupling

**Click to enlarge**

8. **Make sure that the garter spring is in the cage of the male fitting. If the garter spring is missing, install a new spring by pushing it into the cage opening. If the garter spring is damaged, remove it from the cage with a small wire hook (do NOT use a screwdriver) and install a new spring.**
9. **Clean all dirt and/or foreign material from both pieces of the coupling.**

**Flexible fuel vehicles use special Methanol compatible O-rings.**

10. **Replace any missing or damaged O-rings. Only use the fuel resistant O-rings specified in the accompanying figure. For all vehicles except flexible fuel vehicles, lubricate the male fitting, O-rings and the inside of the female fitting with clean engine oil. For flexible fuel vehicles, lubricate with oil that has an API designation of Multi-Fuel Vehicles (MFV).**

**Use only the specified (brown) O-rings because they are made of a special material. The use of other types of O-rings, may cause the connection to leak during engine operation.**

11. **Fit the female fitting to the male fitting and push until the garter spring snaps over the flared end of the female fitting.**
12. **Make sure the coupling is engaged or fastened securely by pulling on the fitting**

**and visually checking to make sure the garter spring is over the flared end of the female fitting.**

**All vehicles require the large black clip to be installed on the supply-side fuel line and the small grey clip to be installed on the return-side fuel line.**

13. **Position the retaining clip over the metal portion of the spring lock coupling. Firmly push the retaining clip onto the spring lock coupling. Make sure that the horseshoe portion of the clip is over the coupling. Do not install the retaining clip over the rubber fuel line.**

## Push Connect Fittings

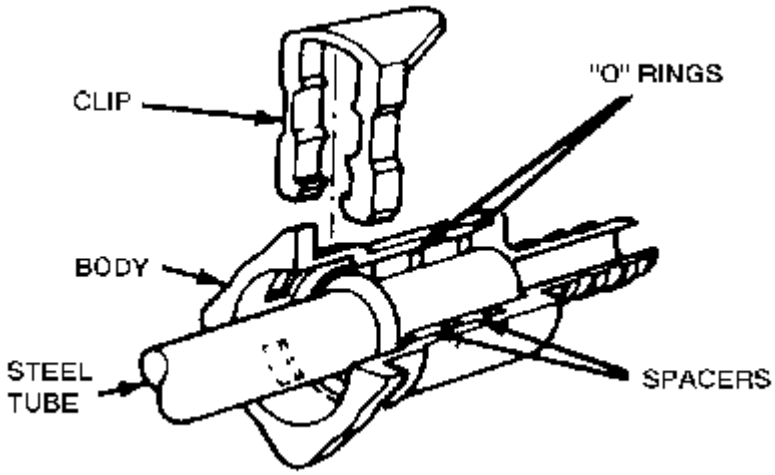
Push connect fittings are designed with two different retaining clips. The fittings used with 8mm diameter tubing use a hairpin clip, while the fittings used with 6mm and 12.7mm diameter tubing use a "duck bill'' clip. Each type of fitting requires different procedures for service.

**Push connect fitting disassembly must be accomplished prior to fuel component removal (filter, pump, etc.), except for the fuel tank, where removal is necessary for access to the push connect fittings.**

### REMOVAL & INSTALLATION

#### Hairpin Clip Fittings ($^{5}/_{16}$ in.)

1. **Inspect the internal portion of the fitting for dirt accumulation. If more than a light coating of dust is present, clean the fitting before disassembly.**




Push connect fittings with a hairpin clip

Click to enlarge

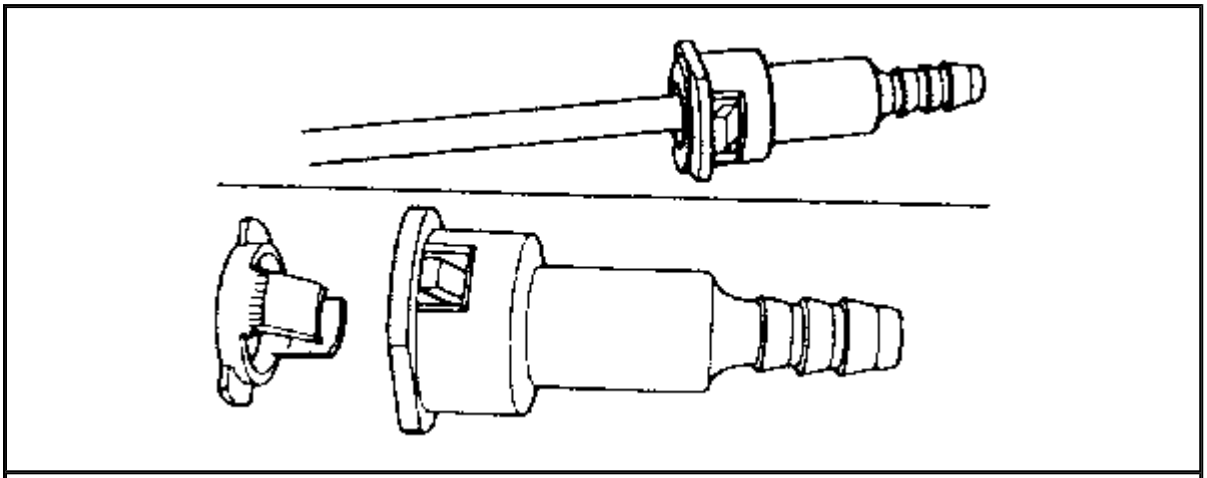
2. **Remove the hairpin type clip from the fitting. This is done (using hands only) by spreading the two clip legs about 3mm each to disengage the body and pushing the legs into the fitting. Complete removal is accomplished by lightly pulling from the triangular end of the clip and working it clear of the tube and fitting.**

**Do not use any tools.**

3. **Grasp the fitting and hose assembly and pull in an axial direction to remove the fitting from the steel tube. Adhesion between sealing surfaces may occur. A slight twist of the fitting may be required to break this adhesion and permit effortless removal.**
4. **When the fitting is removed from the tube end, inspect clip to ensure it has not been damaged. If damaged, replace the clip. If undamaged, immediately reinstall the clip, insert the clip into any two adjacent openings with the triangular portion pointing away from the fitting opening. Install the clip to fully engage the body (legs of hairpin clip locked on outside of body). Piloting with an index finger is necessary.**
5. **Before installing the fitting on the tube, wipe the tube end with a clean cloth. Inspect the inside of the fitting to ensure it is free of dirt and/or obstructions.**
6. **To reinstall the fitting onto the tube, lubricate the sealing O-rings with clean engine oil, align the fitting and tube axially and push the fitting onto the tube end. When the fitting is engaged, a definite click will be heard. Pull on the fitting to ensure it is fully engaged.**

## Duck Bill Clip Fittings

The fitting consists of a body, spacers, O-rings and a duck bill retaining clip. The clip maintains the fitting to the steel tube juncture. When disassembly is required for service, be sure to use the appropriate following method.

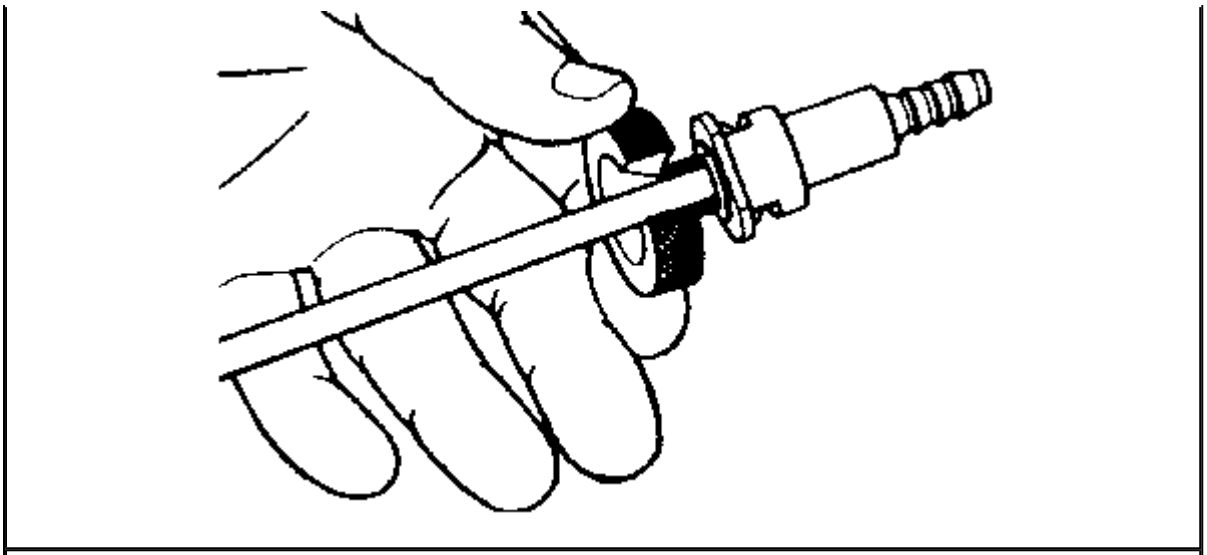


Push connect fittings with a duck bill clip

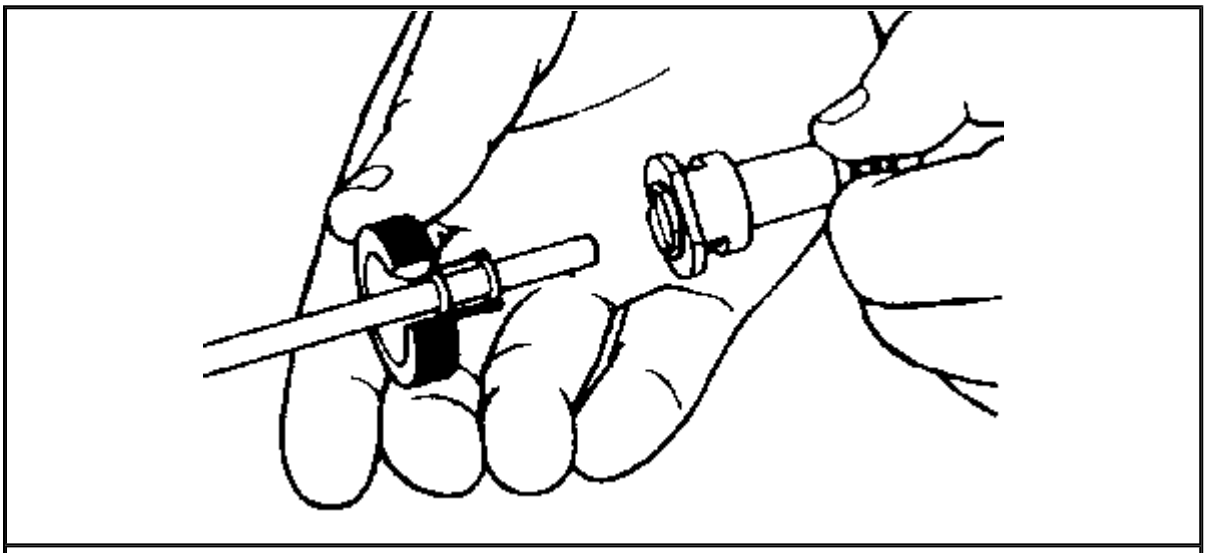
### 1/4 IN. FITTINGS

To disengage the tube from the fitting, align the slot on the Push Connect Disassembly Tool T82L-9500-AH, or equivalent, with either tab on the clip (90° from slots on side of fitting), then insert the tool. This disengages the duck bill from the tube. Holding the tool and the tube with one hand, pull the fitting away from the tube.

**Only moderate effort is required if the tube has been properly disengaged. Use hands only. After disassembly, inspect and clean the tube sealing surface. Also inspect the inside of the fitting for damage to the retaining clip. If the retaining clip appears to be damaged, replace it. Some fuel tubes have a secondary bead which aligns with the outer surface of the clip. These beads can make tool insertion difficult. If there is extreme difficulty, use the following disassembly method.**



Removing the push connect fitting using the proper tool



Removing the push connect fitting

## 1/2 IN. FITTING (AND ALTERNATE METHOD FOR 1/4 IN. FITTING)

This method of disassembly disengages the retaining clip from the fitting body.

Use a pair of narrow pliers (6 in. locking pliers are ideal). The pliers must have a jaw width of 5mm or less.

Align the jaws of the pliers with the openings in the side of the fitting case and compress the portion of the retaining clip that engages the fitting case. This disengages the retaining clip from the case (often one side of the clip will disengage before the other. It is necessary to disengage the clip from both openings). Pull the fitting off the tube.

**Only moderate effort is required if the retaining clip has been properly disengaged. Use hands only.**

The retaining clip will remain on the tube. Disengage the clip from the tube bead and remove. Replace the retaining clip if it appears to be damaged.

**The clip's ring will often have a slight oval shape. If there are no visible**

**cracks and the ring will pinch back to its circular configuration, it is not damaged. If there is any doubt, replace the clip.**

Install the clip into the body by inserting one of the retaining clip serrated edges on the duck bill portion into one of the window openings. Push on the other side until the clip snaps into place. Lubricate the O-rings with clean engine oil and slide the fuel line back into the clip.