

Expansion Valve Installation Instructions — Sensing Bulb (ZFC) Type

Prior to the installation of this DENSO First Time Fit[®] Expansion Valve kit, you must read these instructions completely.

Definition of Terms

⚠WARNING: Describes precautions that should be observed in order to prevent injury or death to the user during installation.

⚠CAUTION: Describes precautions that should be observed in order to prevent damage to the vehicle or its components, which may occur during installation if sufficient care is not taken.

NOTE: Provides additional information that facilitates installation work.

General Service Information and Requirements

⚠CAUTION: Only trained personnel who have a thorough knowledge of automotive air conditioning systems, the proper tools and an appropriate workspace should perform repairs to a vehicle's air conditioning system. In addition, only personnel trained in an approved refrigerant-handling program may recover refrigerant from and charge refrigerant to an automotive air conditioning system.

⚠WARNING: It has been determined that mixtures of R-134a and air can result in combustion when exposed to a spark. Shop air should not be used for leak checking.

SENSING BULB TYPE

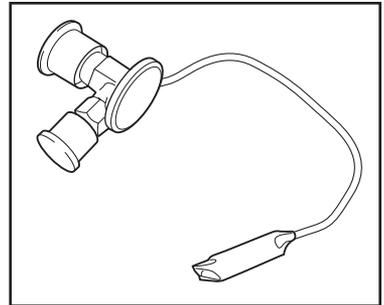


Fig. 1

REQUIRED TOOLS:

- Safety goggles
- Assorted hand tools
- Refrigerant recovery machine for specific (R-12/r-134a) refrigerant
- Charging station / A/C manifold gauge set for specific (R-12/R-134a) refrigerant
- Vacuum pump for specific (R-12/R-134a) refrigerant
- Electronic leak detector
- Torque wrench

SAFETY PRECAUTIONS

- Always wear safety goggles.
- Avoid skin contact with refrigerant or refrigerant oil.
- Work in a well-ventilated area.
- Never release refrigerant into the atmosphere.
- Never expose refrigerant container to direct heat or temperature in excess of 125°F.
- Never expose refrigerant to an open flame.

NOTE: Do not remove protective caps from the expansion valve (if equipped) until it is ready for installation.

Expansion Valve Removal

The information below explains necessary procedures and tools to remove and install sensing bulb type expansion valves.

NOTE: For more detailed instructions please refer to the vehicle manufacturer's service manual.

1. Remove the cooling unit following the vehicle manufacturer's recommended procedures (See Fig. 2).

⚠ CAUTION: When handling the cooling unit and it's components, be careful not to deform the cooling fins or piping. Be sure to note all wiring harness and harness clip locations for reassembly. Do not disturb the location of the thermistor. If the thermistor is removed from the evaporator core, it must be reinserted in exactly the same location for the cooling unit to operate optimally.

2. Separate the cooling unit's case and remove the evaporator assembly following the vehicle manufacturer's recommended procedures (See Fig. 3).

⚠ CAUTION: Carefully slice the foam packing of the evaporator case along the mating joint of the evaporator case halves where it will be separated.

NOTE: To remove the clips holding the evaporator case halves together, insert a flat blade screwdriver into the hooked end of the clip. Gently pull the clip away from its seat and remove.

3. Remove all packing from around the sensing bulb and clip (See Fig. 4).
4. Remove the clip securing the sensing bulb to the evaporator outlet tube.

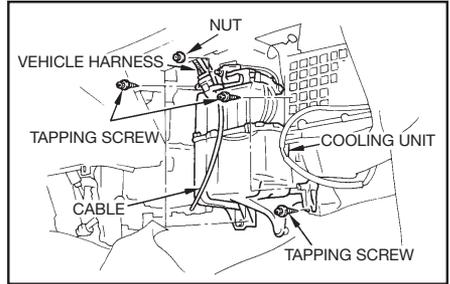


Fig. 2

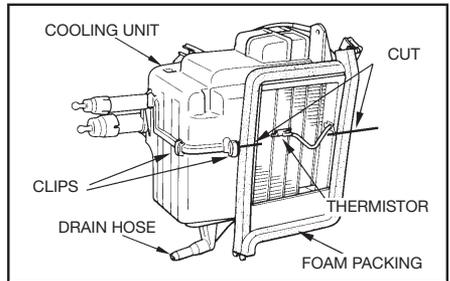


Fig. 3

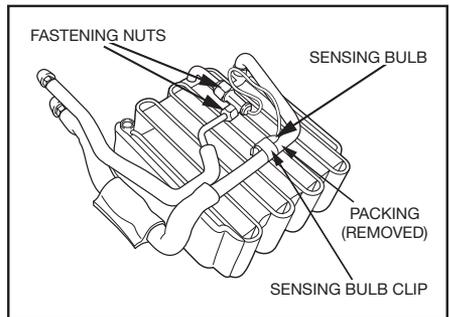


Fig. 4

⚠CAUTION: When removing the sensing bulb clip note the shape of the clip. The clip must be reinstalled in the same orientation as when it was removed (small end around the sensing bulb).

5. Note the position of the liquid tube and using two wrenches to prevent damage, loosen the two fastening nuts and disconnect the liquid tube from the expansion valve, then remove the expansion valve from the evaporator.

Expansion Valve Installation

1. Using the proper refrigerant oil, lubricate and install the new o-rings (provided) onto the liquid tube and evaporator.
2. Remove the protective caps from the new expansion valve and temporarily install the expansion valve onto the evaporator, hand tighten the fastening nut.
3. Temporarily install the liquid tube to the expansion valve and hand tighten the fastening nut checking for proper alignment of each component.
4. Using two wrenches to prevent damage, tighten and torque the fasteners.

Tightening Torque: Liquid Tube Nut
13.7 N•m (140 kgf•cm, 10.0 ft•lbf)

Tightening Torque: Evaporator Nut
22.5 N•m (230 kgf•cm, 17.0 ft•lbf)

5. Lay the sensing bulb inside the indentation of the evaporator and secure it with the original clip (See Fig. 5).

| | | |
|------------------------------|----------------------|------------------|
| Refrigerant | R-134a (HFC 134a) | R-12 (CFC 12) |
| Compressor | | |
| Reciprocating Swash Plate | ND-OIL 8 | ND-OIL 6 |
| Rotary Through Vane | ND-OIL 9 | ND-OIL 7 |

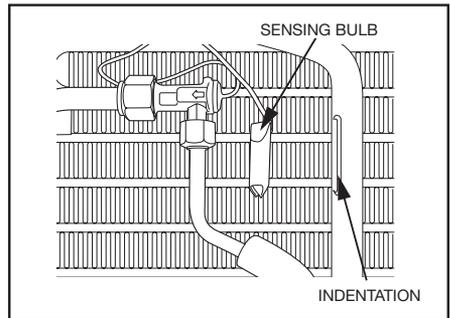


Fig. 5

NOTE: If the original clip is unusable, secure the sensing bulb inside the indentation of the evaporator with the plastic tie (provided) being careful while tightening the tie not to damage the sensing bulb.

⚠CAUTION: For optimal performance, be sure the entire length of the sensing bulb makes contact with the outlet tube.

6. Apply the packing (provided) completely around the clip, sensing bulb and tube.
7. Assemble the cooling unit to the original configuration following the vehicle manufacturer's recommended procedures.
8. Reinstall the cooling unit following the vehicle manufacturer's recommended procedures.

⚠CAUTION: When handling the cooling unit and its components, be careful not to deform the cooling fins or piping. Be sure to reinstall all wiring harness and harness clips in their proper locations for reassembly. Do not disturb the location of the thermistor. If the thermistor is removed from the evaporator core, it must be reinserted in exactly the same location for the cooling unit to operate optimally.