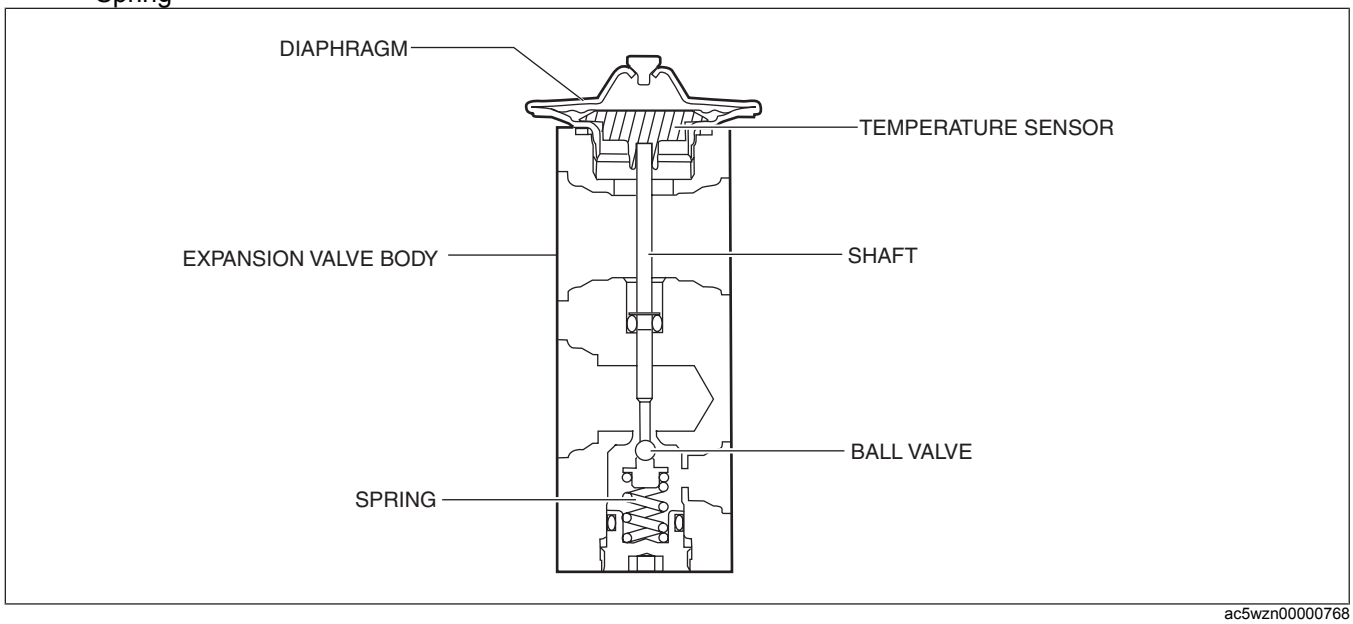
## EXPANSION VALVE

id071100290300

**Purpose**
- The expansion valve atomizes liquid refrigerant to facilitate cooling of the evaporator.

**Function**
- The expansion valve reduces the pressure of liquid refrigerant rapidly to facilitate vaporization of the atomized refrigerant at the evaporator, and adjusts the refrigerant amount sent into the evaporator.

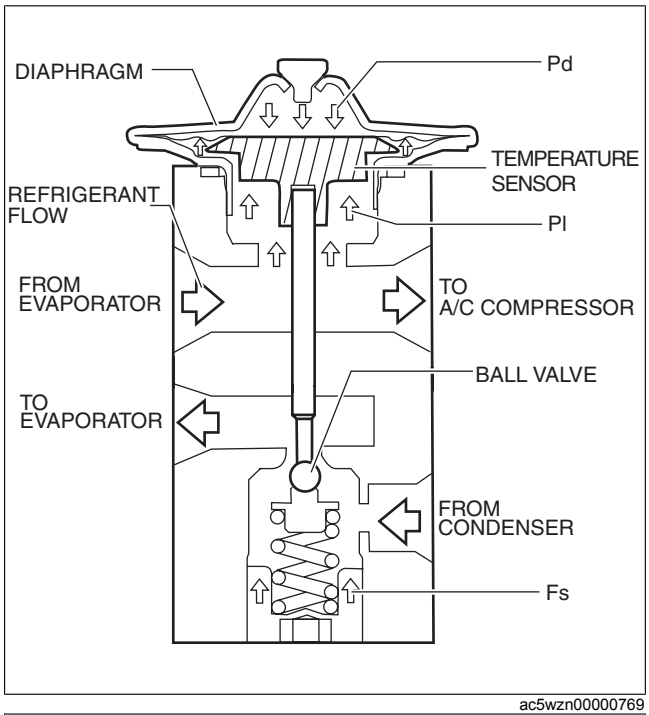
**Construction**
- The expansion valve consists of the following parts:
  - — Diaphragm
  - — Temperature sensor
  - — Shaft
  - — Expansion valve body
  - — Ball valve
  - — Spring




ac5wzn00000768

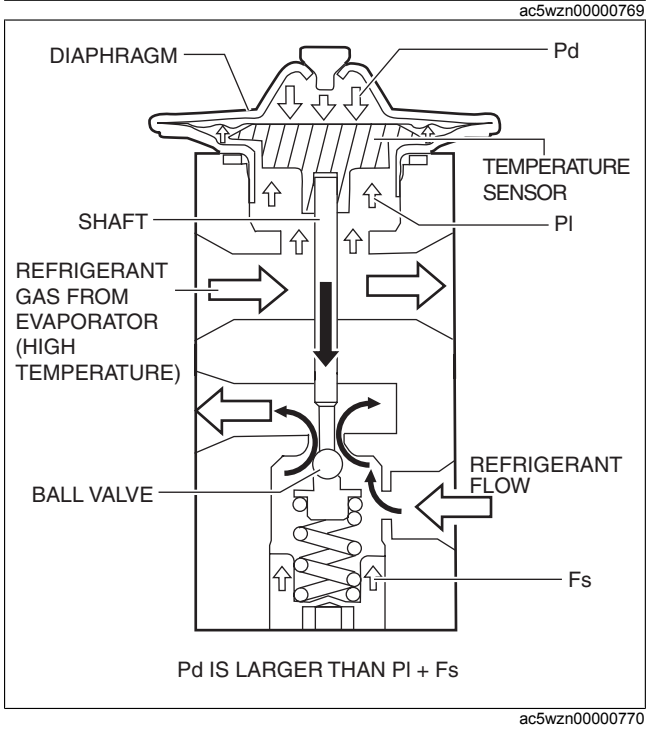
**Operation**
- Adjustment of the refrigerant amount supplied to the evaporator is performed by the ball valve opening angle in the expansion valve.

- The opening angle adjustment is performed according to the balance of the following forces:
  — Refrigerant pressure (Pd) in diaphragm
  — Refrigerant gas pressure (PI) of evaporator under diaphragm
  — Spring force (Fs) pushing up ball valve



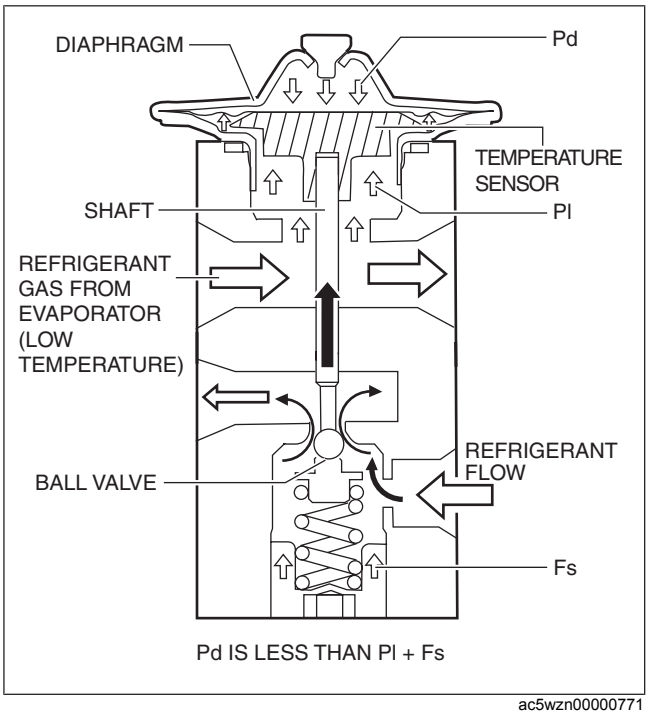
ac5wzn00000769

- If the refrigerant gas temperature from the evaporator increases, the expansion valve increases the amount of refrigerant according to the following operations:
  1. The temperature of the temperature sensor tightly sealed against the diaphragm increases.
  2. The refrigerant in the diaphragm warms and the Pd increases.
  3. If this Pd increases more than PI + Fs, the diaphragm is pressed down.
  4. The shaft installed to the temperature sensor end presses down the ball valve.
  5. The amount of refrigerant is increased.



ac5wzn00000770

- If the refrigerant gas temperature from the evaporator decreases, the expansion valve decreases the amount of refrigerant flow according to the following operation:
  1. The temperature of the temperature sensor tightly sealed against the diaphragm decreases.
  2. The refrigerant temperature in the diaphragm decreases and the Pd decreases.
  3. The Pd decreases less than PI + Fs.
  4. The ball valve installed to the temperature sensor end is pressed up.
  5. The amount of refrigerant is decreased.



ac5wzn00000771

**Fail-safe**

- Function not equipped.