

## 4-7 [M7A0] 7. Expansion Valve

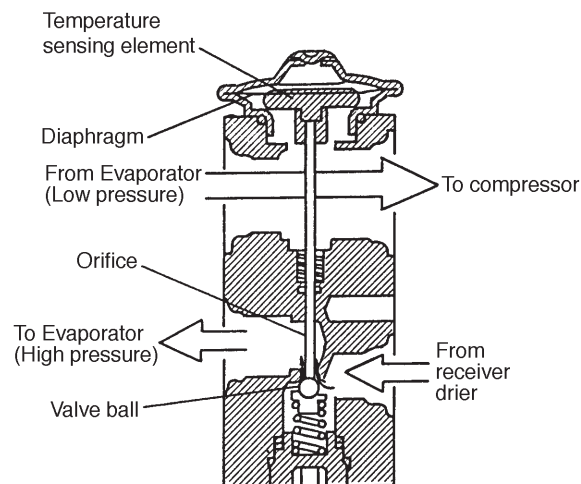
## MECHANISM AND FUNCTION

### 7. Expansion Valve

#### A: MECHANISM

The expansion valve is attached to the evaporator inlet and outlet pipe. It converts high pressure liquid refrigerant which comes from the liquid tank to misty, low pressure refrigerant, and delivers to the evaporator. Being at low pressure and low temperature, the liquid refrigerant evaporates in the evaporator removing heat from the compartment. It automatically controls the flow rate of refrigerant to obtain the necessary cooling ability required by the fluctuating heat load.

The refrigerant temperature is sensed by the temperature sensing element installed at the low pressure refrigerant passage in the expansion valve, and the flow rate of the refrigerant is controlled by changing the lift of the valve ball at the high pressure side.

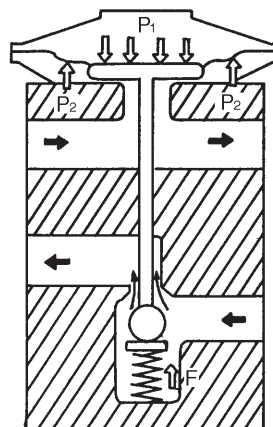


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#### B: FUNCTION

If the heat load of the air conditioner system increases, the refrigerant temperature at the evaporator outlet rises and therefore increases the pressure  $P_1$  at around the temperature sensing area. As this pressure  $P_1$  becomes higher than the resultant force of evaporator outlet (low pressure side) pressure  $P_2$  and the spring force  $F$  ( $P_1 > P_2 + F$ ), the diaphragm is pressed down, opening the valve ball connected to the diaphragm to increase the flow of the refrigerant.

If the heat load decreases, the action contrary to the one mentioned above takes place, closing the valve to decrease the flow of the refrigerant.



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