

EXPANSION VALVES:-

- Also called as Throttle Valve.
- Divide High pressure and low pressure side.
- fixed b/w Condenser and evaporator.

Functions of expansion Valve:-

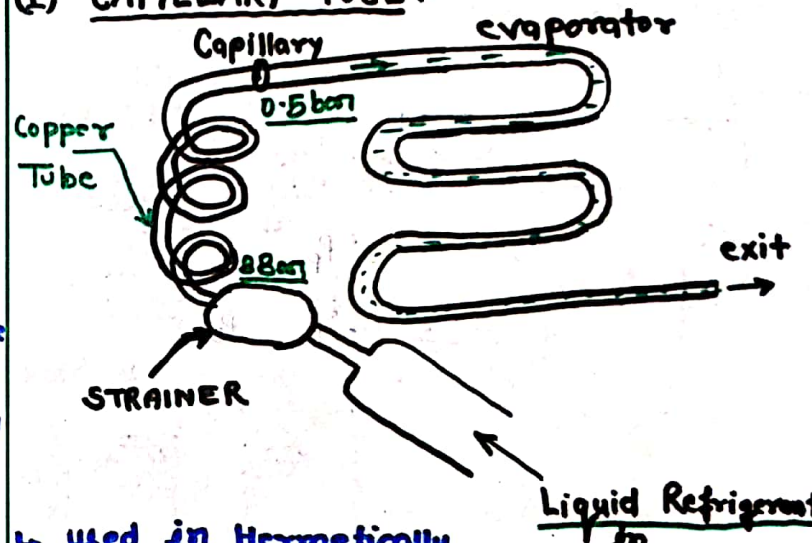
- Convert High pressure liquid Refrigerants into low pressure before sending to evaporation.
- Maintain Desired pressure between High pressure and Low pressure.
- Control flow of Refrigerant based on heat load on evaporator.

Types of Expansion Devices:-

- Capillary tube
- Hand operated expansion valve.
- Automatic or Constant pressure expansion Valve.
- Thermostatic expansion valve
- Low side float Valve.

→ High side float Valve.

(1) CAPILLARY TUBE:-



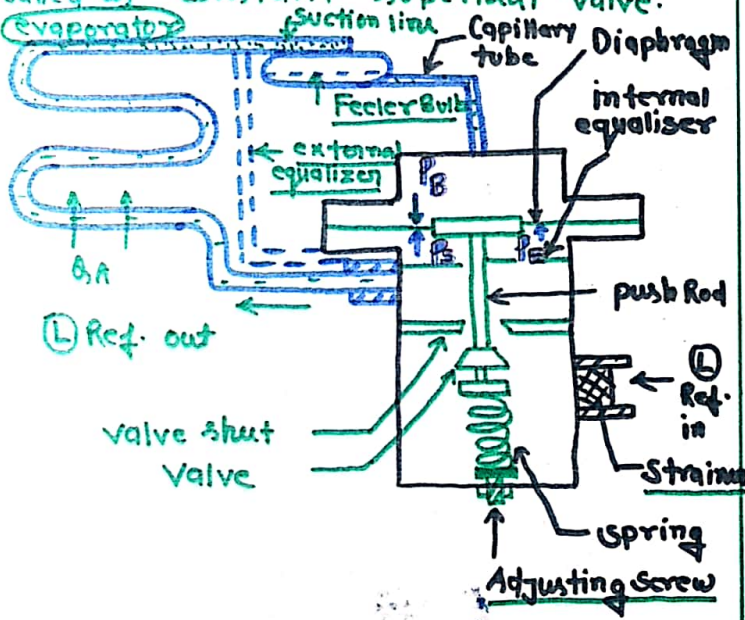
- used in Hermetically Sealed Compressor unit of low Capacity.
- Domestic Refrigerator, water cooler, Room AC, freezer

→ frictional Resistance $\propto \frac{1}{\text{pressure}}$ $\propto \frac{1}{\text{dia}^5}$ $\propto \frac{1}{\text{length}}$

(2)

THERMOSTATIC EXPANSION VALVE :-

- Used as Commercial and industrial Refrigeration unit.
- Called as constant superheat Valve.



- P_s → Spring pressure.
 P_B → feeler Bulb pressure.
 P_E → Evaporator pressure.

Main Components :-

Needle Valve ; Valve shut ; Diaphragm
 Spring ; Adjusting Screw
 Feeler (or) Thermal Bulb.

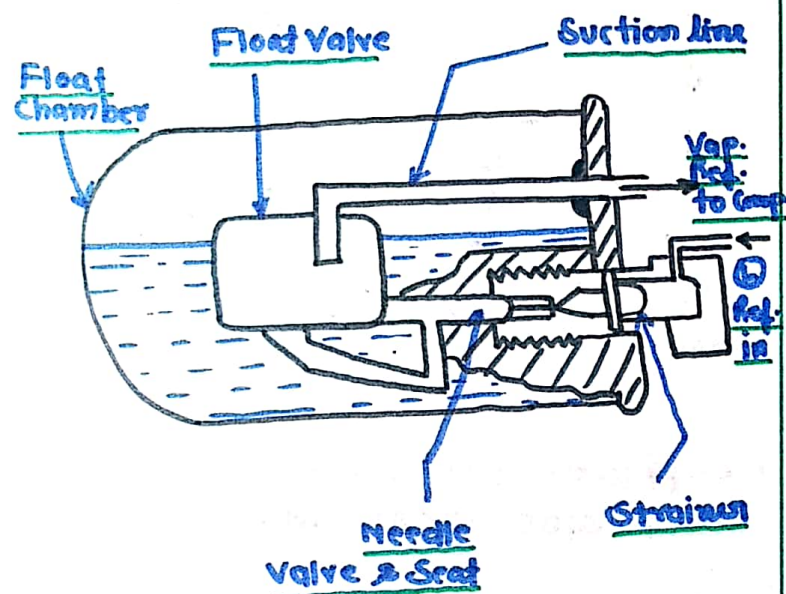
WORKING

When load increased (cooling)
 ↓
 Refrigerant evaporates faster rate
 ↓
 Degree of Superheat & pressure increases
 ↓
 It allow more flow of Refrigerant in evaporator.
 ↓↓
 Hence RE increased.

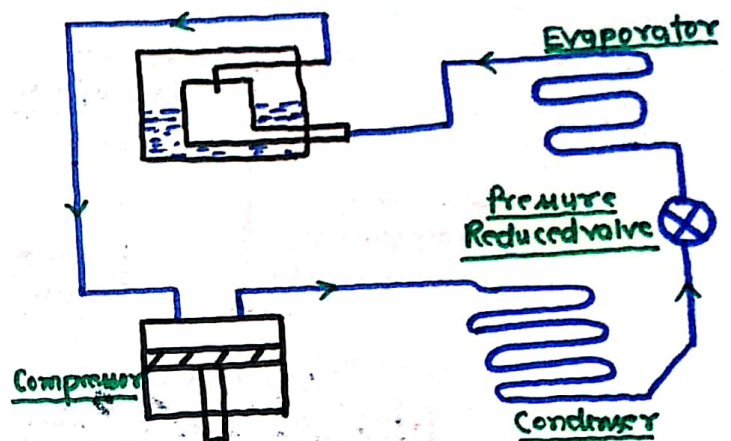
- It is the opposite of Automatic expansion Valve.
- Capable for varying load Requirements.

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(B) LOW - SIDE FLOAT VALVE:-

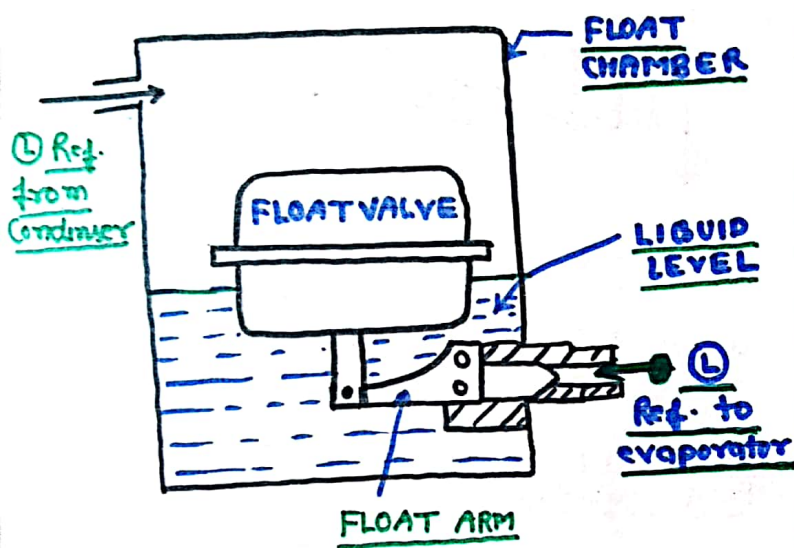


- Fixed b/w Low pressure side (B/w Compressor Suction line and evaporator)
- It maintains constant flow rate of Refrigerant (Liquid) in evaporator and float chamber.

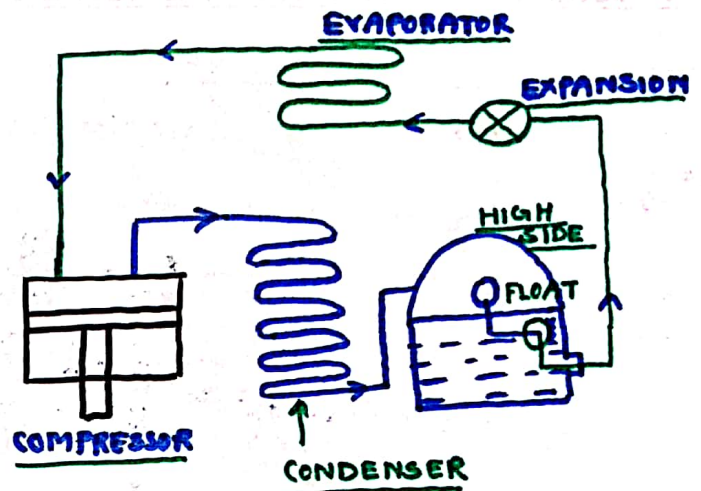


REFRIGERATION SYSTEM WITH LOW SIDE FLOAT VALVE:

(4) HIGH-SIDE FLOAT VALVE:-



- Fixed on High pressure side b/w Condenser and evaporator.
- Control flow of Refrigerant based on weight in evaporator and float room.



"REFRIGERATION SYSTEM WITH HIGH-SIDE FLOAT VALVE"