AUTOMOTIVE Youth Educational Systems YES The Passport to a Rewarding Automotive Career

ASE CERTIFIED

# Modern Automotive Technology Chapter 75

## Heating and Air Conditioning Fundamentals

North Montco Technical Career Center

# Learning Objectives

- Explain the principles of refrigeration.
- Describe the four cycles of refrigeration.
- Describe the high- and low-pressure sides of an air conditioning system.
- Explain the basic function and construction of each major part of a typical heating and air conditioning system.
- Summarize the operation and interaction of heating, ventilation, and air conditioning systems.
- Describe safety precautions to be observed when working on heating and air conditioning systems.

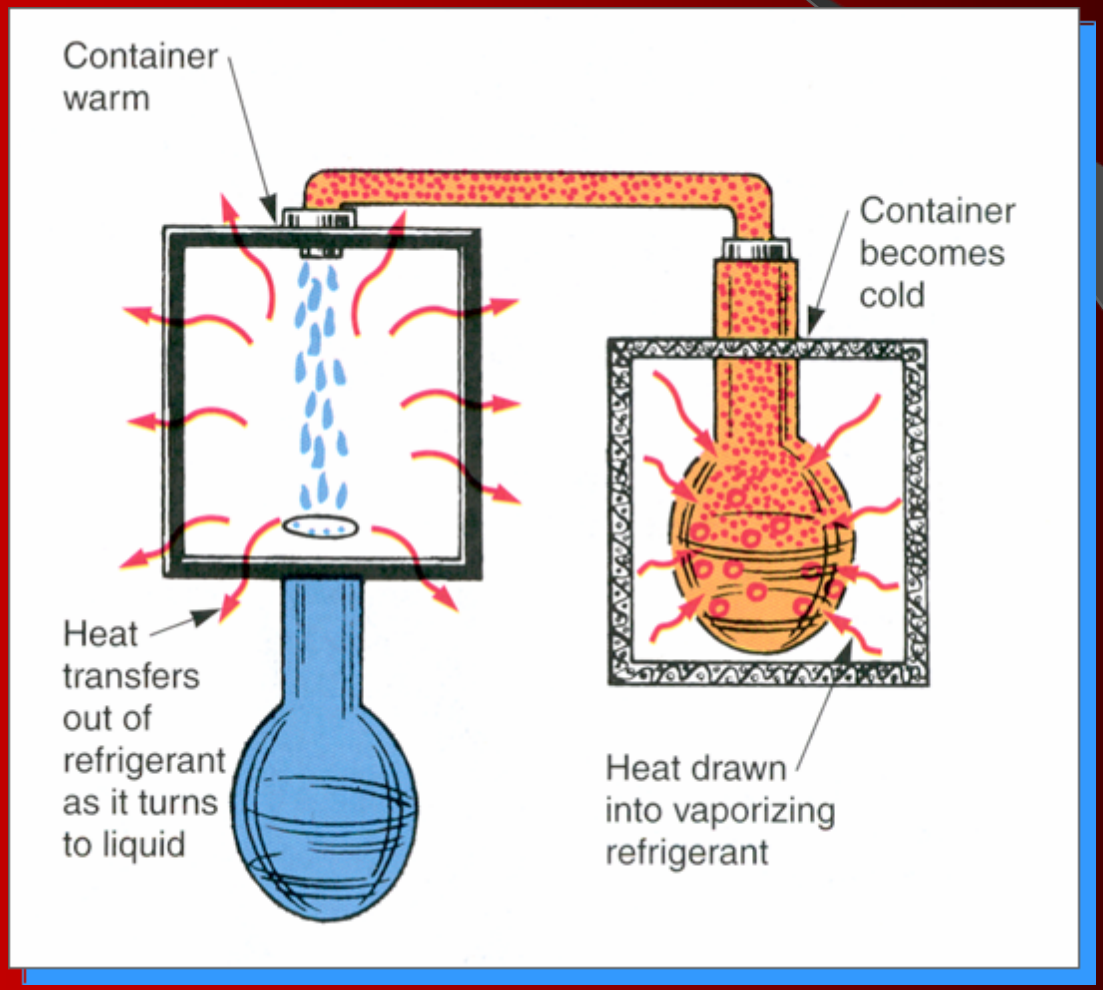
# Chapter 75

1 .The Super Heat Switch can be used to prevent compressor damage when the refrigerant level or oil level is too low.

2. The Heater Core is a small radiator-like unit that provides a large surface area for heat dissipation into passenger compartment.

# Refrigerant

Cools an object when it vaporizes.Releases the heat when it condenses



# Chapter 75

3. Condensation causes refrigerant to change from a gaseous state into a liquid state.
4. A Thermostatic Switch shuts compressor off when evaporator temperature nears freezing.
5. The Evaporator uses cooling action of vaporizing refrigerant to cool air inside vehicle.

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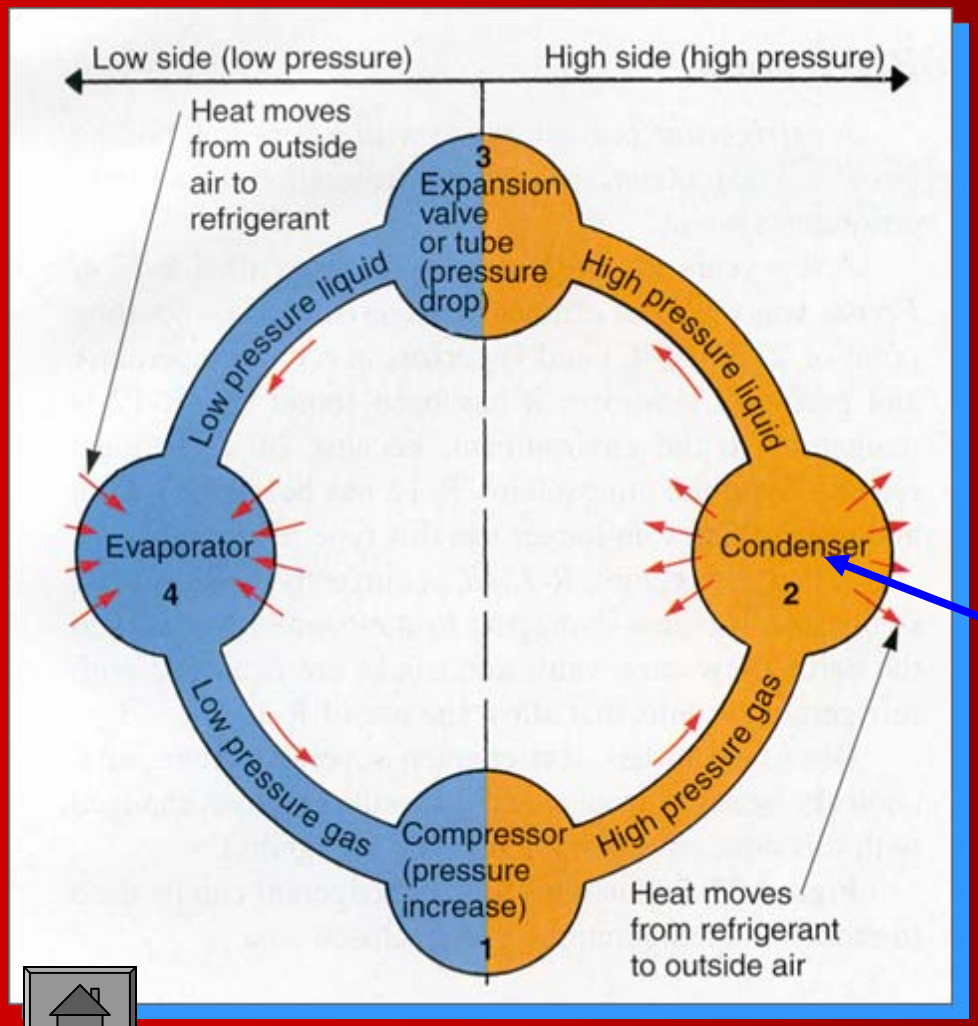
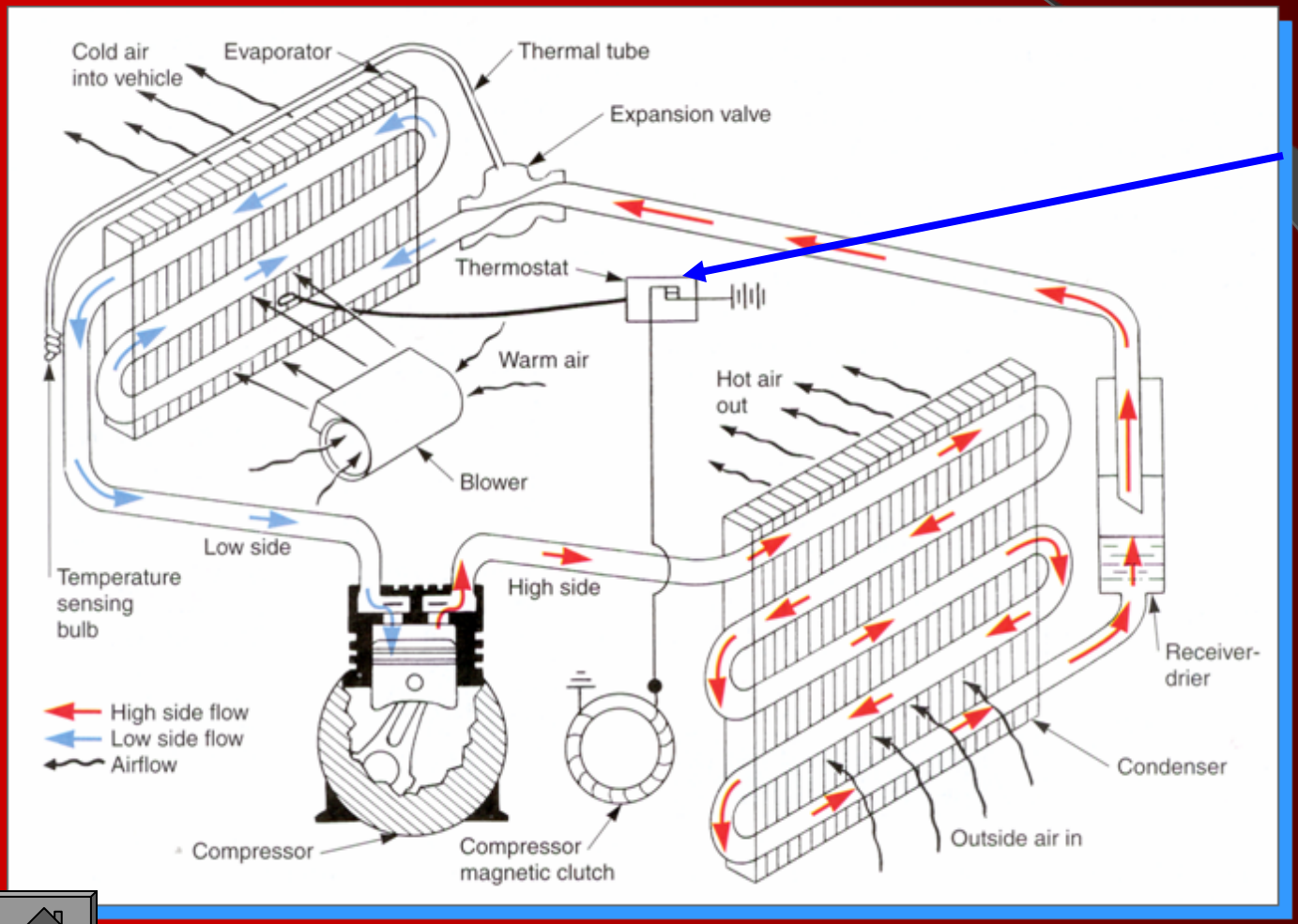
# Heating and Air Conditioning Fundamentals



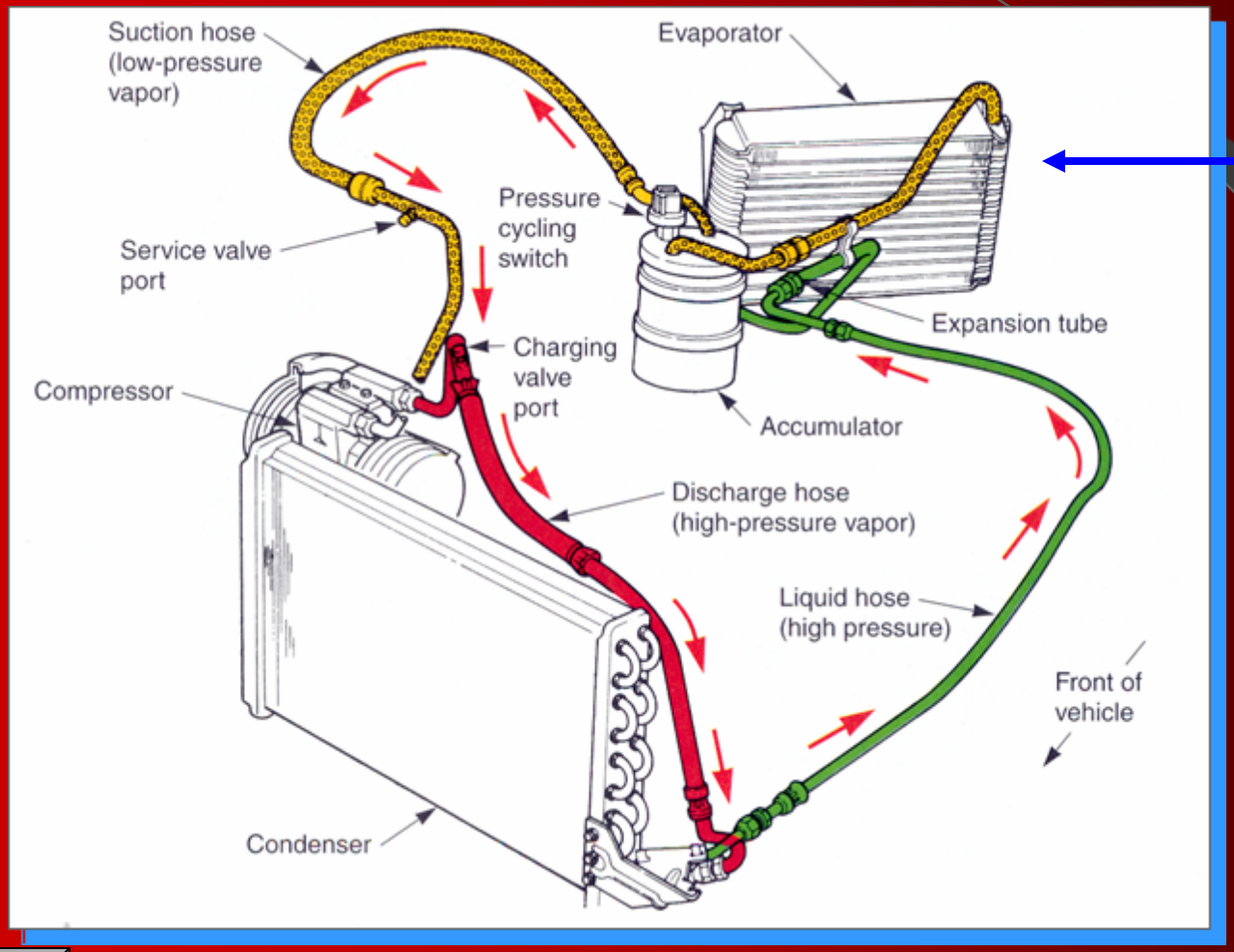

Condensation (refrigerant changes from high-pressure vapor to high- pressure liquid) takes place in the condenser. Heat is released from the refrigerant.

# Thermostatic Switch




Thermostatic Switch

# Heating and Air Conditioning Fundamentals

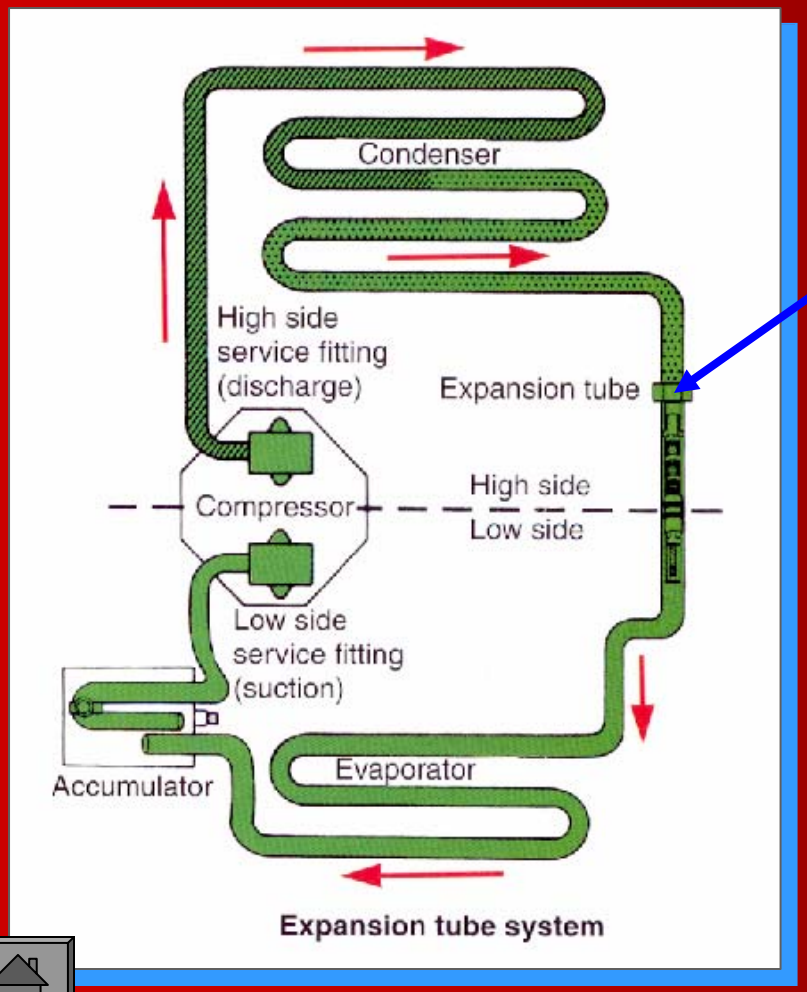



Evaporator

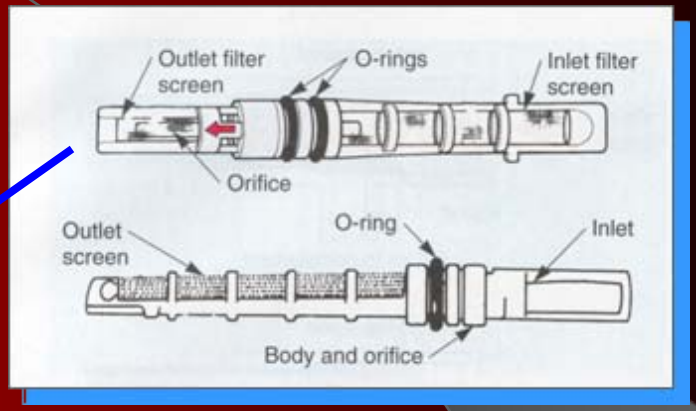
# Chapter 75

6. Refrigerant is the fluid that carries heat through system to lower air temperature in vehicle.
7. A Blower Fan forces air through evaporator and into passenger compartment.
8. An Expansion Tube a fixed opening (an orifice) that meters refrigerant flowing into the evaporator.

# Expansion Tube



Expansion tube system

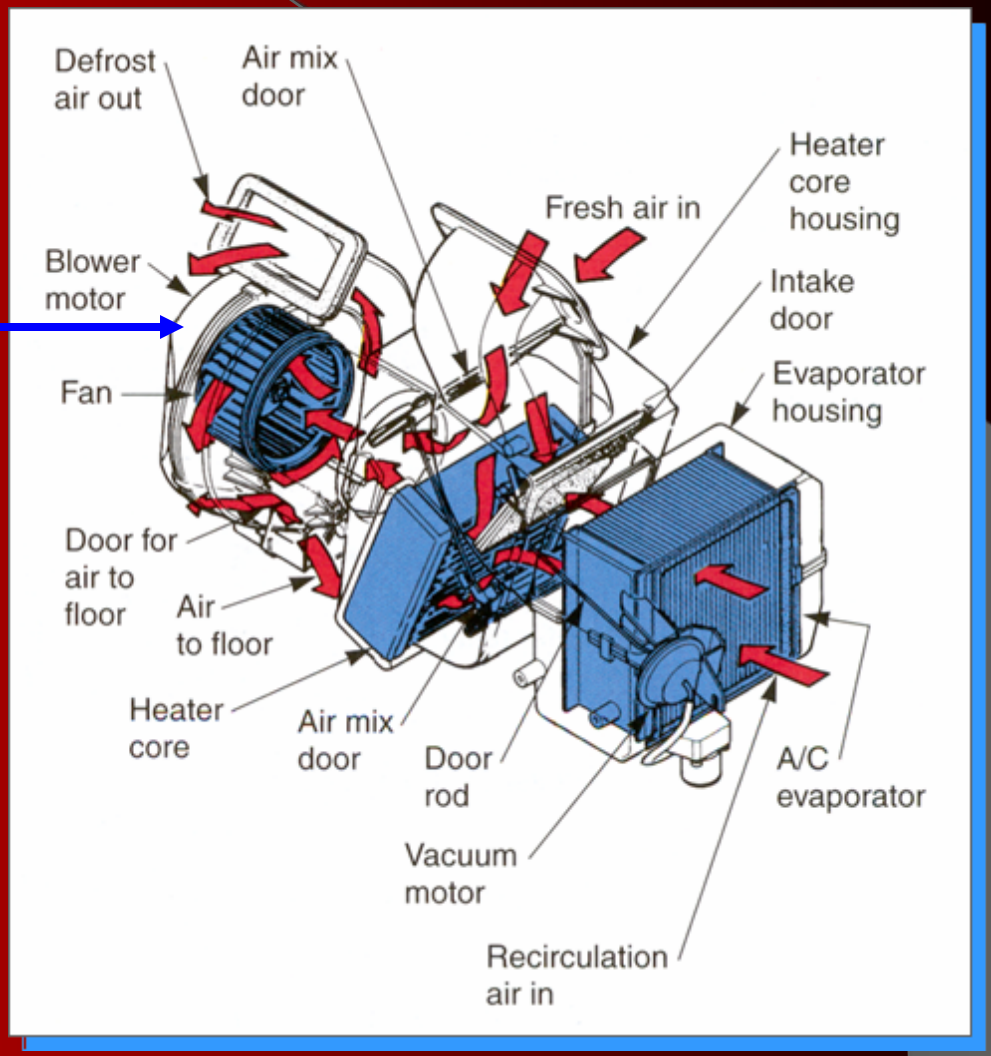



Expansion Tube

Has a fixed opening that controls the amount of refrigerant entering the evaporator.

# Blower Fans/Motors

Blower Motor/Blower Fan Assembly

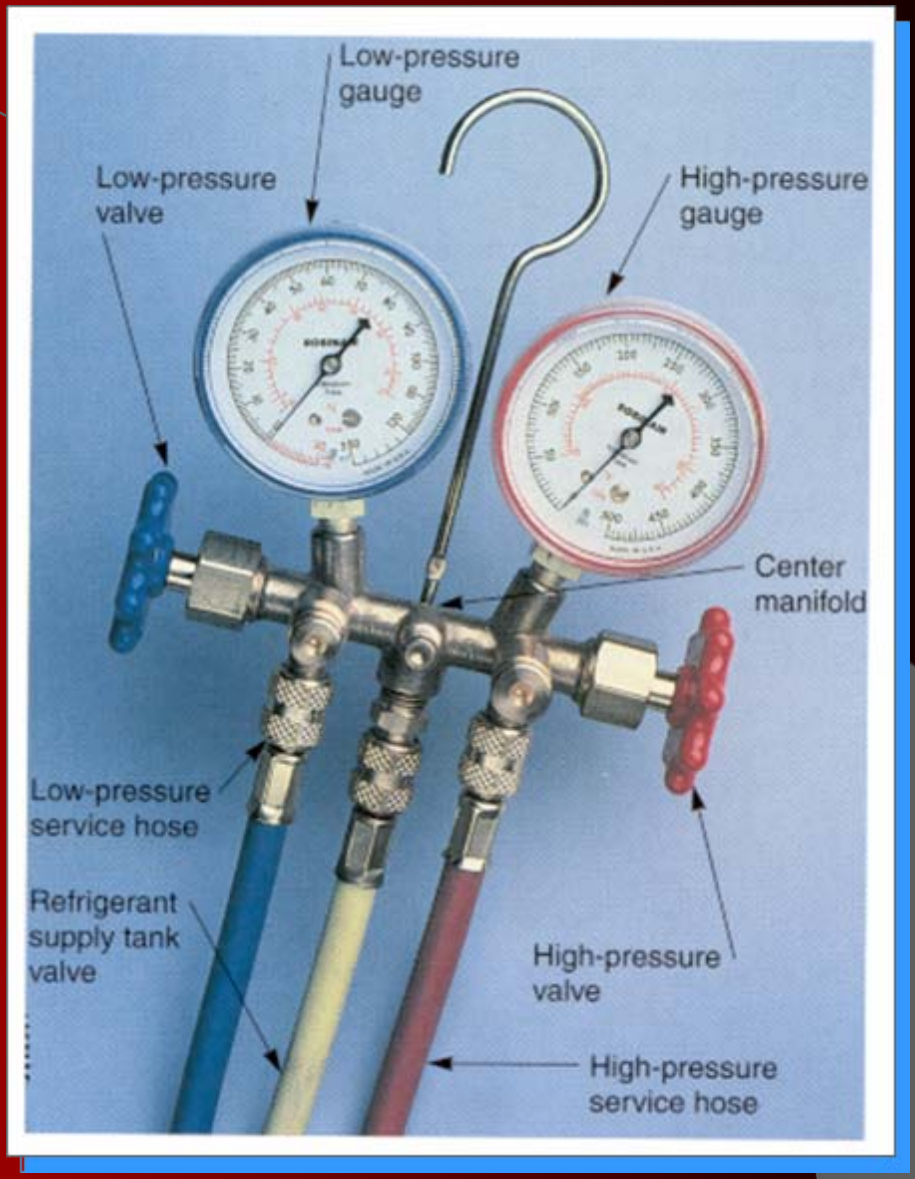


# Chapter 75

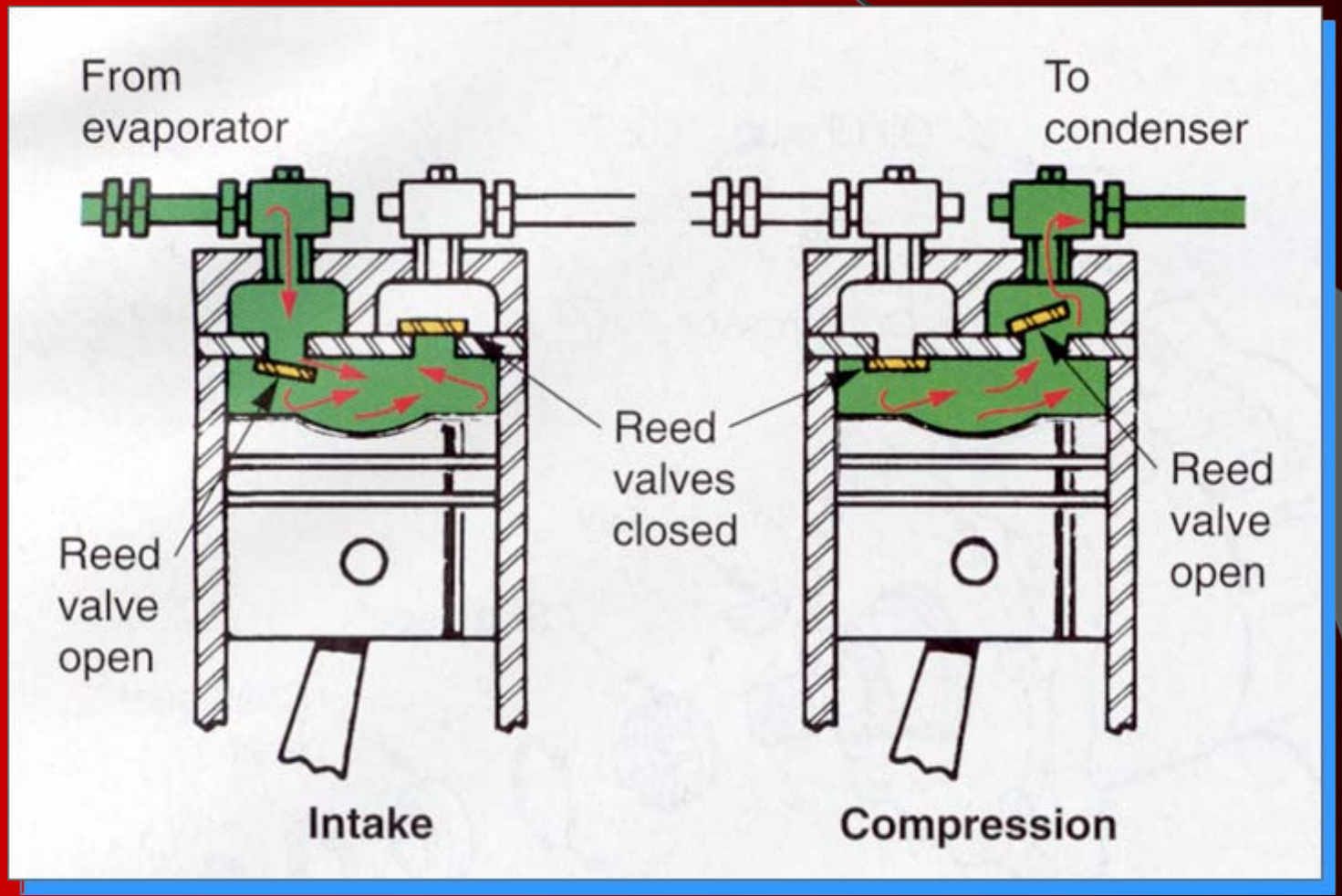
9. The Wide Open Throttle Switch shuts off the compressor during rapid acceleration to save power.

10. The Compressor is a pump that pressurizes refrigerant and forces it through system.

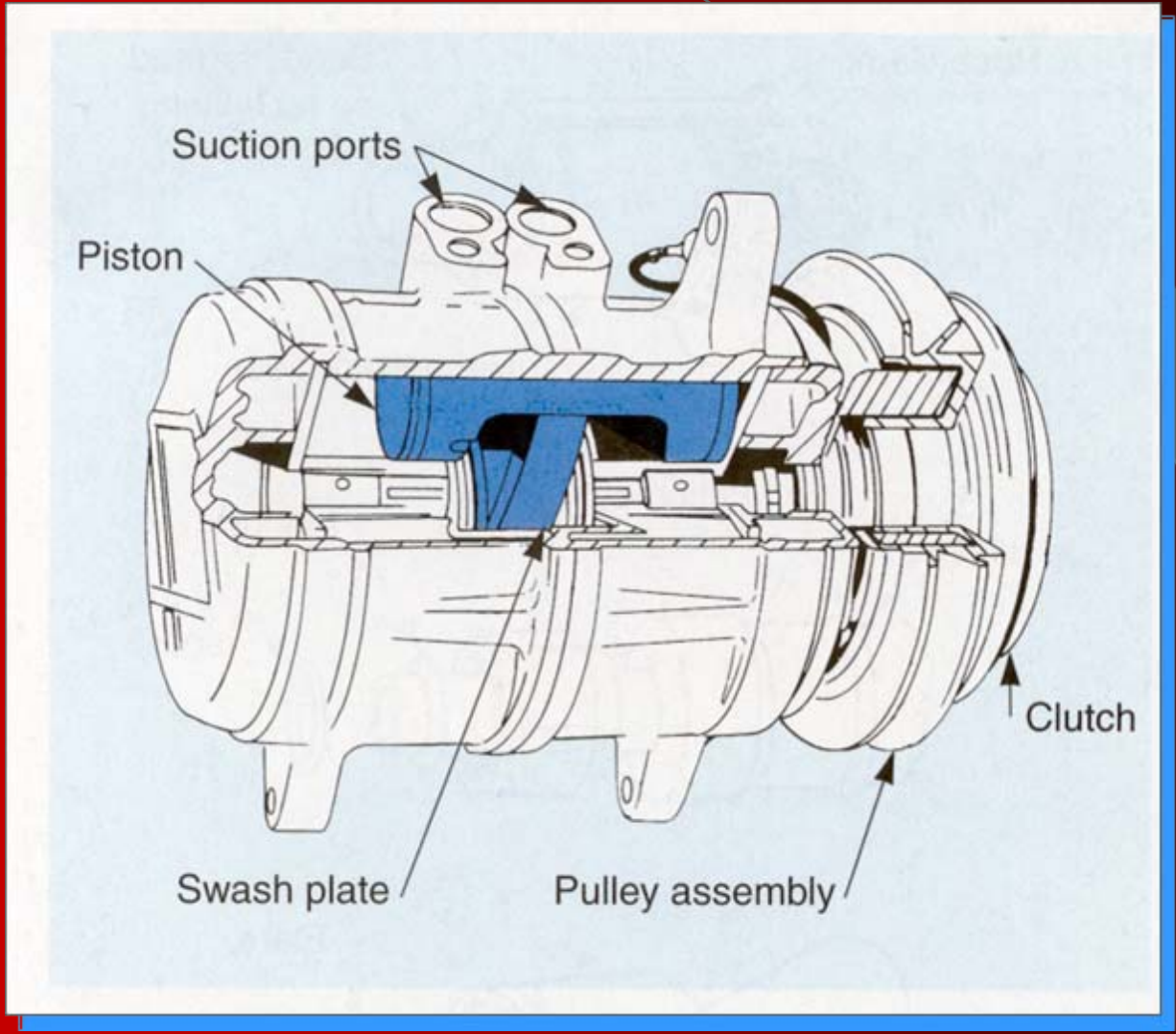
# Pressure Gauge Assembly



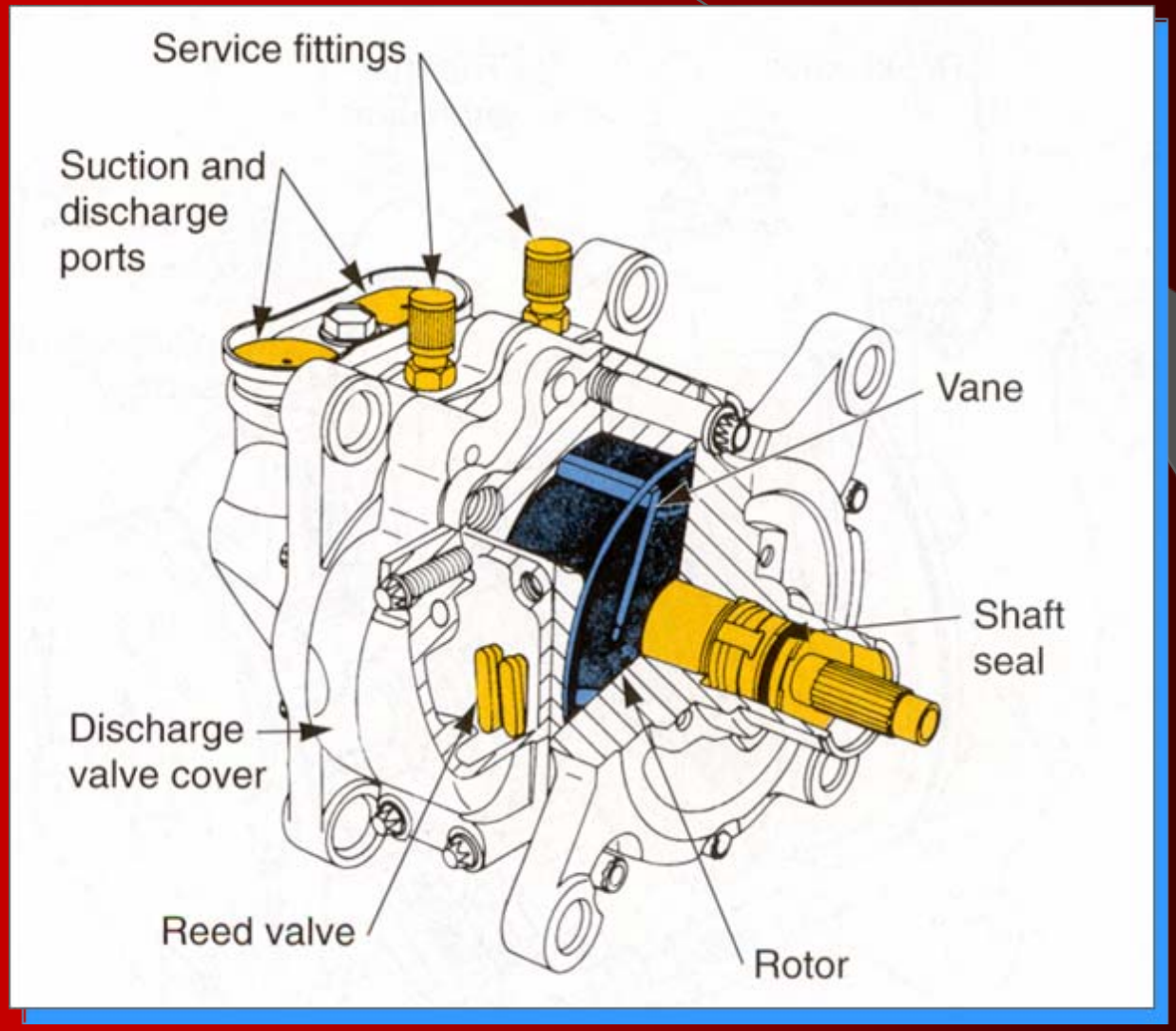
# Compressor Operation



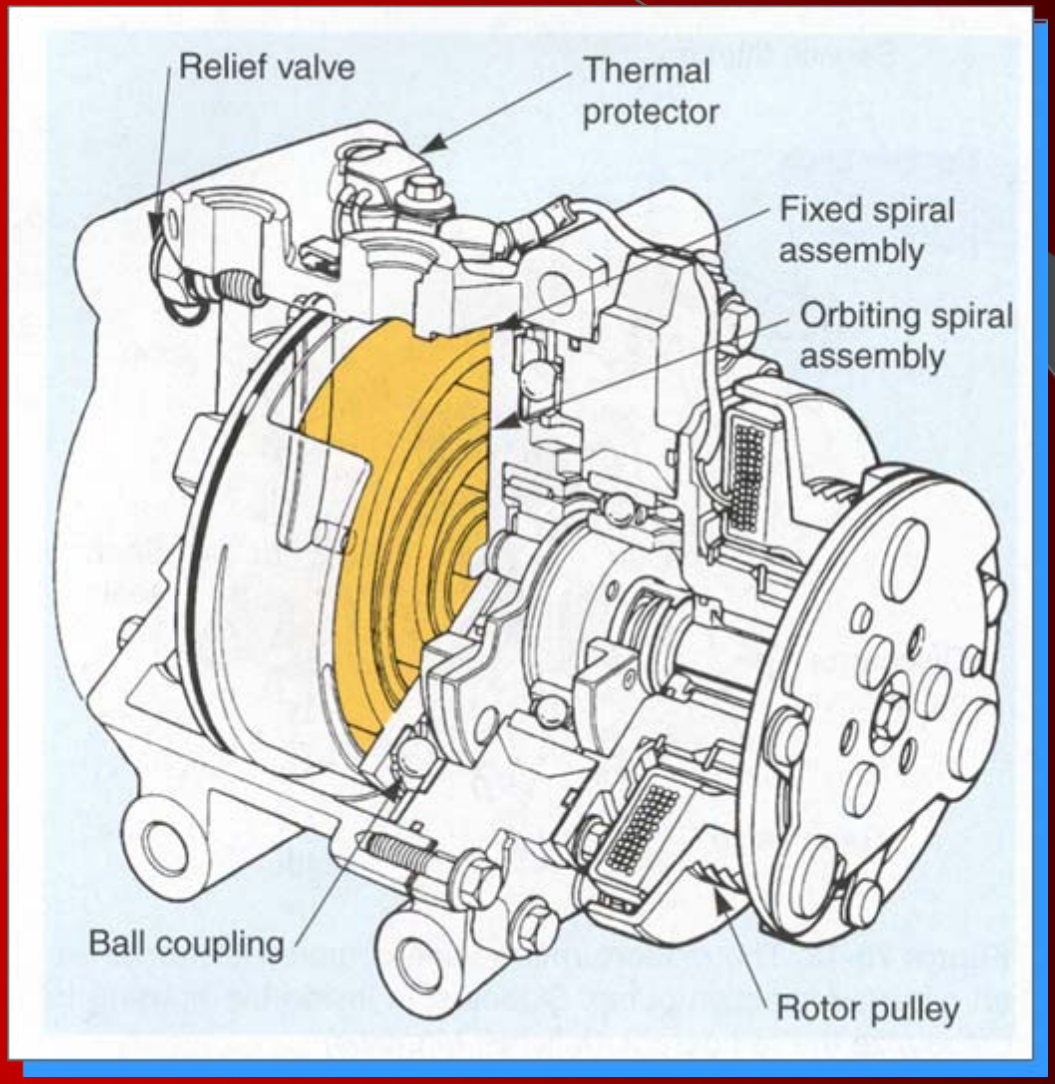
# Axial Compressor



# Rotary Vane Compressor



# Scroll Compressor



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