



AC and R

EM-300
Air Conditioning and
Refrigeration

ENABLING OBJECTIVES



- Define the following terms IAW NAVEDTRA 14151 (MM 3 & 2):
 - a. Refrigeration
 - b. Air Conditioning
- Understand how capacity is measured in the refrigeration cycle IAW NAVEDTRA 14151 (MM 3 & 2).

ENABLING OBJECTIVES



- Identify and describe the components of the basic refrigeration cycle using the refrigeration cycle diagram IAW NAVEDTRA 14151 (MM 3 & 2).
- Identify and describe the components of the Vapor Compression centrifugal unit (Air Conditioner) using the Vapor Compressor Centrifugal Diagram IAW NAVEDTRA 14151 (MM 3 & 2)

Refrigeration



- **Definition**

The process of removing heat from spaces, objects, or materials and maintaining them at a temperature below that of the surrounding atmosphere.

- **Purpose**

To maintain spaces at low temperatures.

Refrigeration



- **HEAT FLOW**
- Heat flows only from objects of higher temperature to objects of lower temperature
- You cannot cool anything by adding coolness, you have to REMOVE HEAT from it

Refrigeration



- **Capacity-**

Usually measured in
REFRIGERATION TONS

- **Refrigeration ton-**

Based on the cooling effect of 1 ton
(2,000 lbs) of ice at 32 degrees F melting in
24 hours (288,000 BTU's)

Refrigeration applications



- **Food Storage**
 - Walk in Freeze boxes
 - Walk in Chill boxes
 - Reach in Reefers
 - Milk boxes
- **Perishable Medical supplies**
 - Blood Bank
 - Vaccines
 - Antibiotics

Refrigeration

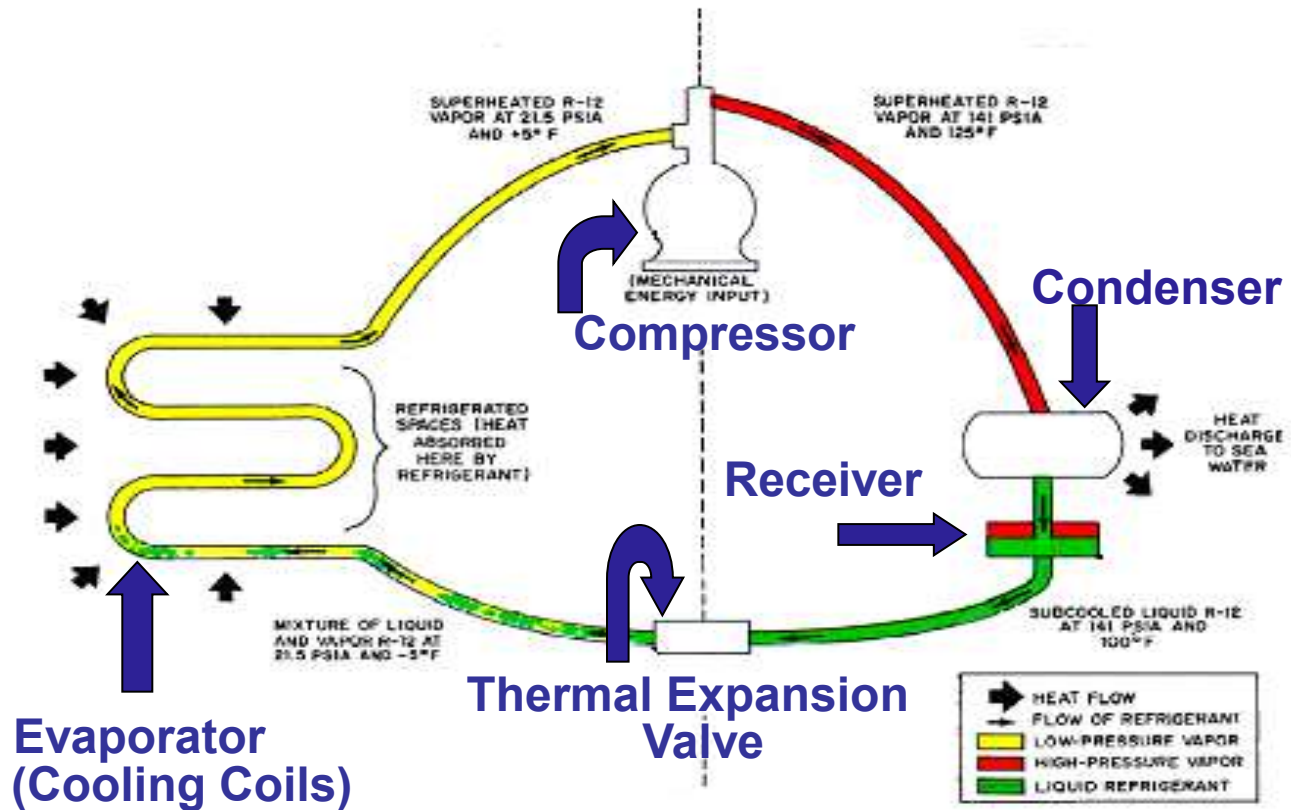


- **Compressor type**
Reciprocating
- **Types of Refrigerant (FREON) used**
R-12 (dichloroflouromethane)
R-114(dichlorotetraflouroethane)
R-134a(tetraflouroethane)

Refrigeration Cycle

Low Pressure

High Pressure



Schematic representation of refrigeration cycle.

Air Conditioning



- **Definition**

- **The cooling, heating, dehumidifying, ventilating and purifying of air**

A/C Applications



- **Provide mechanical cooling or ventilation to:**
 - **Crew berthing and work spaces**
 - **Ammunition storage spaces**
 - **Gas cylinder storage spaces**
 - **Electrical/ electronic equipment spaces**

Air Conditioning



- **Compressor type**

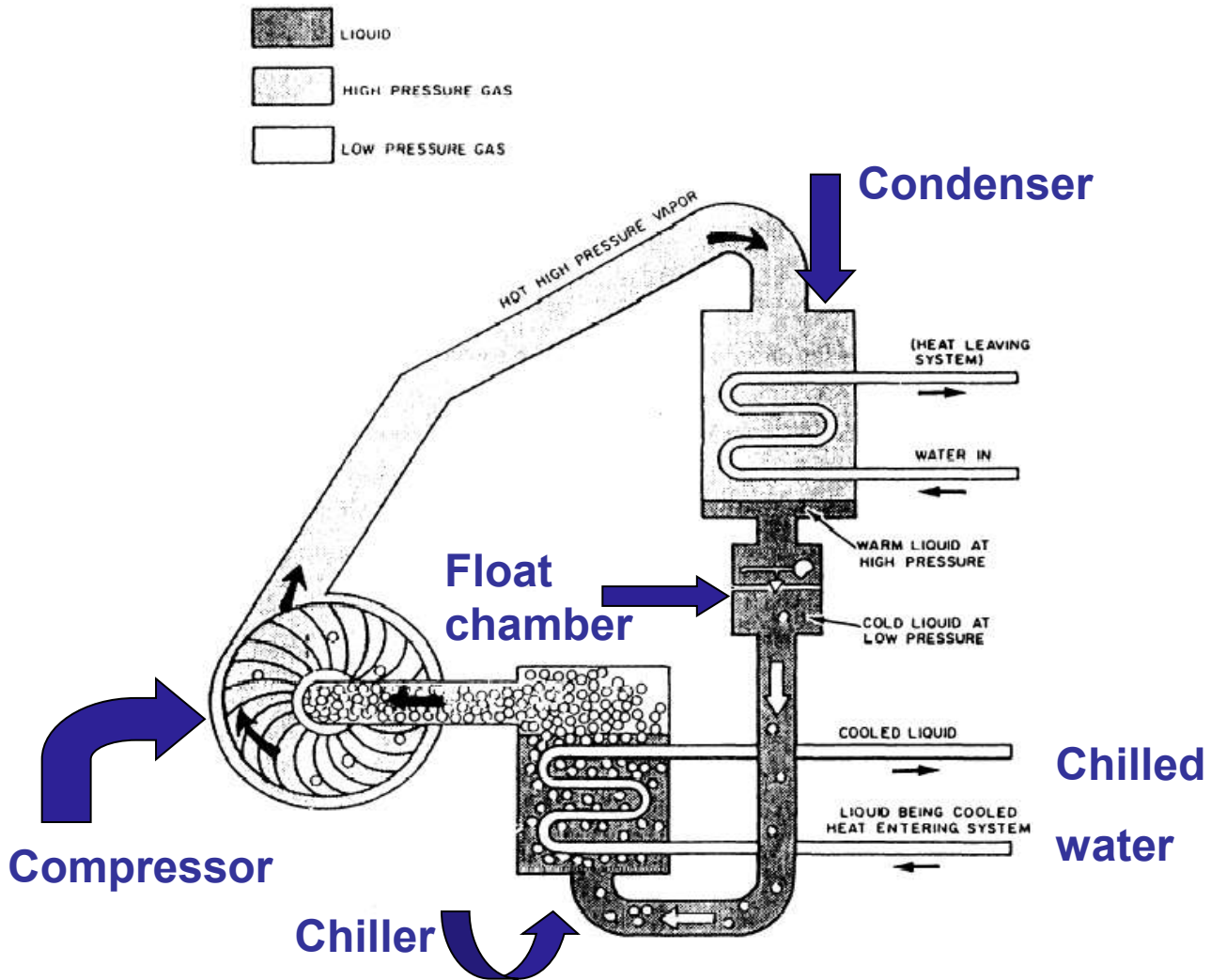
Centrifugal turbo

- **Types of Refrigerant used**

R-114 (dichloroflouroethane)

R-134a (tetraflouroethane)

A/C Basic Operation



Vapor compressor (centrifugal) unit.