

STARTING OF REFRIGERATION PLANT

Aim: To start the refrigeration plant.

Apparatus: Hand lever, wrench, spanner.

Working principle:

Refrigeration plant consists of a series of main units (components), each of which performs a special function. The working principle of this plant is based on vapour compression refrigeration system. This vapour compression refrigeration system consists of reciprocating compressor, flooded type evaporator, metering devices, evaporative condenser and receiver. In addition to this an oil separator, non-condensable gas purger and liquid separator are installed in this refrigeration plant. An electrical energy is used to start the refrigeration plant. The rotating power from the electrical motor driving pulley is transmitted to the crankshaft flywheel by means of 'V' belt arrangement. The rotating power is converted into reciprocating action of the piston by means of crankshaft and connecting rod mechanism. The reciprocating action of the piston makes the refrigeration plant in running condition.

Procedure:

- Start the main switch placed in the transformer board.
- Check the voltage and current for three phase by operating rotary switch fixed on the transformer and Control board (should be 400-440 volts in all three phases).
- Switch on the condenser and water cooling pump.
- Start the blower by pressing blower switch.
- Open the discharge valve and suction valve of the compressor by rotating the wheels in anti Clockwise direction.
- Start the compressor by pressing compressor motor switch.
- Check the oil level of the compressor through gauge glass.
- After the low pressure comes down near to 0 kg/cm² on low pressure gauge, open the liquid line relieve valve to feed the refrigerant to the evaporator.
- Enter the parameters taken in the observation column provided.

Precaution:

- Do not start the compressor if there is less voltage in one phase (< 440).

Observation:

Sl.No.	Parameters	
1.	Voltage (Volts)	
2.	Current (Amps)	
3.	Oil pressure (Kg./cm ²)	
4.	Suction pressure (kg/cm ²)	
5.	Discharge pressure (kg/cm ²)	
6.	Refrigerant level (mm)	
7.	Receiver capacity (kgs.)	

8.	Temperature gauge (°C)	
9.	Dry bulb temperature (°C)	
10.	Wet bulb temperature (°C)	
11.	Humidity (%)	
12.	HP of Motor (HP)	
13.	RPM of motor (RPM)	
14.	Type of belt	
15.	No. of belts	
16.	Type of compressor	
17.	No. of heads on each compressor	
18.	No. of cylinders on each compressor	
19.	No. of pistons in each compressor	
20.	Type of oil used	
21.	Type of refrigerant used	
22.	Refrigerant pressure in the receiver(kg/cm ²)	