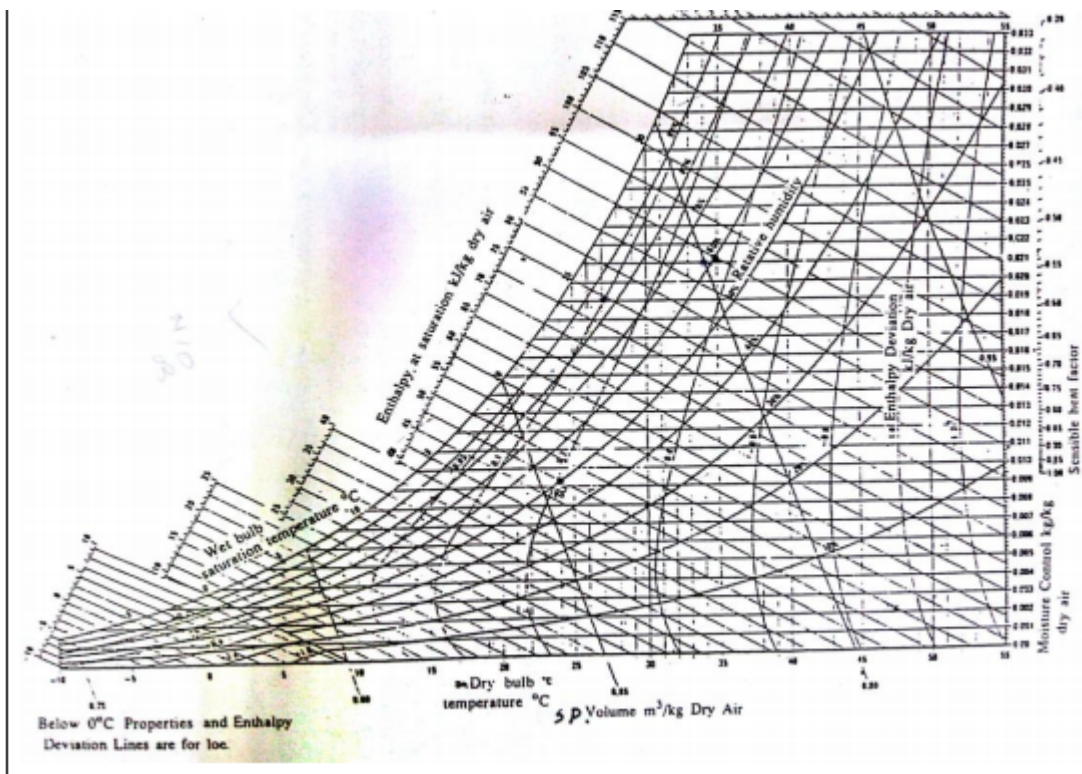


[Home](#) >

Sketch a psychrometric chart and show the following properties of air on it.....



Explain the following terms :- i) Daltons law of partial pressures

i) Daltons Law of partial pressure – It states that the total pressure of mixture of gases is equal to the sum of the partial pressures exerted by each gas when it occupies the mixture volume at the temperature of mixture.

Consider mixture of gas having constituents as gas a, gas b, gas c

Then, Total pressure $P_t = P_a + P_b + P_c$

ii) Relative humidity:- It is defined as the ratio of partial pressure of water vapour in a given volume of mixture to the partial pressure of water vapour when same volume of mixture is saturated at the same temperature.

$$\therefore \phi = \frac{P_v}{P_{v,sat}} \times 100$$

List out different pollutants in exhaust gases of petrol and diesel engine.....

The major air pollutants emitted by petrol & diesel engines are CO₂, CO, HC, NO_x, SO₂, smoke & lead vapour.

Effect of CO: □ Carbon monoxide combines with hemoglobin forming carboxy

hemoglobin, which reduces oxygen carrying capacity of blood. □ This leads to laziness, exhaustion of body & headache. □ Prolong exposure can even lead to death. □ It also affects cardiovascular system, thereby causing heart problem. Effect of CO₂: Causes respiratory disorder & suffocation.

State the applications of reciprocating compressor.....

Applications of Reciprocating Compressor 1. In spray painting shop. 2. In workshop for cleaning machines. 3. For operation of pneumatic tool like rock drill, vibrator etc. 4. In automobile service

station to clean vehicle. 5. To drive air motors in coal mines. 6. Food and beverage industry

State the methods to improve efficiency of air compressor.....

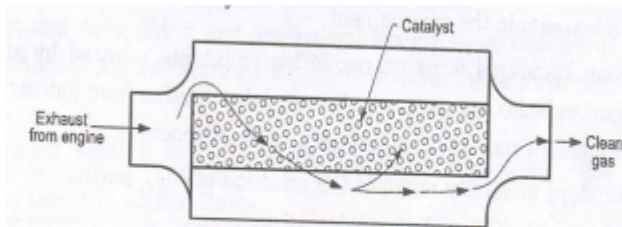
Following are the methods to improve efficiency of air compressor 1. Cooling cylinder by spraying water during compression stroke. 2. Circulation of water surrounding to cylinder by providing jackets 3. Installing inter cooler between two cylinders 4. Providing greater fins on cylinder 5. By selecting suitable material for cylinder 6. By providing suitable choice of cylinder proportions i.e. short stroke and large bore in construction with sleeve valve Two stage reciprocating air compressor :

Draw superimposed p-v diagram of Otto cycle, Diesel cycle and Dual cycle to compare their efficiencies for same compression ratio (R_c) and heat rejection (Q_r).

Superimposed P-V Diagram of Otto, Diesel & Dual Cycle: A comparison of the cycles (Otto, Diesel and Dual) on the p-v and T-s diagrams for the same compression ratio and heat supplied is shown in the Fig. Since all the cycles reject their heat at the same specific volume, process line from state 4 to 1, the quantity of heat rejected from each cycle is represented by the appropriate area under the line 4 to 1 on the T-s diagram. As is evident from the cycle which has the least heat rejected will have the highest efficiency.

What is meant by catalytic converter ?.....

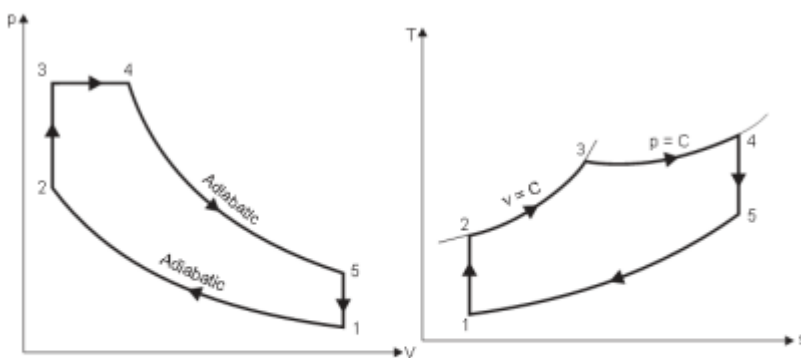
Catalytic converter:



Catalytic converter is a device which converts harmful pollutants to

Explain w.r.to. dual cycle i) cutoff ratio ii) pressure ratio.

Dual cycle:

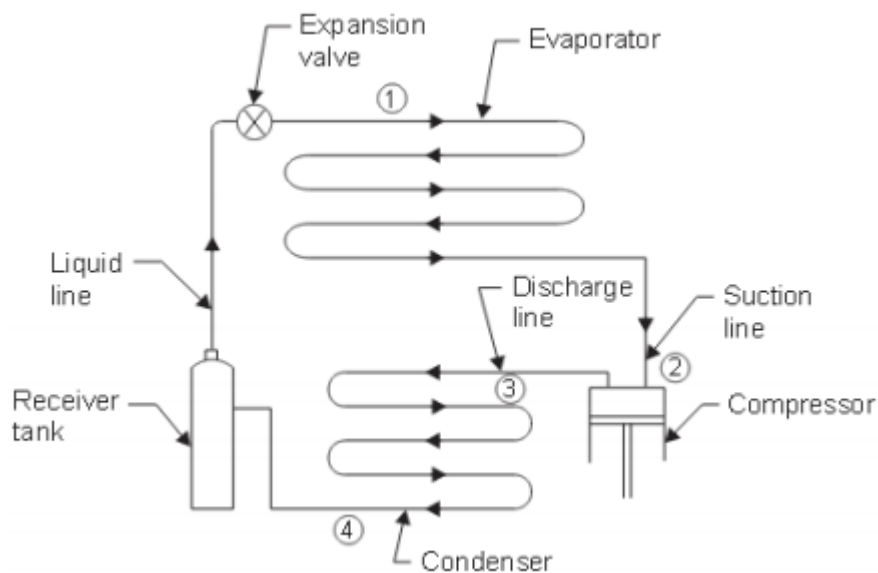


(i) Cut off ratio w.r.t. Dual Cycle: $\rho = V_4/V_3$

(ii) Pressure ratio w.r.t. Dual Cycle: $\alpha = P_3/P_2$

Draw a neat block diagram of vapour compression cycle.

Block diagram of Vapour Compression cycle :-



Explain the term swept volume (V_s) w.r.to.

(i) **Swept Volume (V_s) w.r.t I.C.Engine:** The volume swept through by the piston in moving between top dead centre and bottom dead centre is called swept volume or piston displacement. It is denoted by V_s . It is equal to the area of the piston multiplied by its stroke length.

Therefore, Swept Volume = $\pi/4 \times D^2 \times L$

Where D = bore of the cylinder in m, and

L = stroke length in m.

Pages

[« first](#)
[< previous](#)

...

[8](#)

[9](#)

[10](#)

[11](#)

12

[13](#)

[14](#)

[15](#)

[16](#)

...

[next >](#)

[last »](#)
