Important Factors of Compressor Formulas PDF

Formulas
Examples
with Units

List of 12
Important Factors of Compressor Formulas

1) Clearance factor in compressor Formula

Evaluate Formula

Formula

$$C = \frac{V_c}{V_p}$$

Example with Units

$$0.01 = \frac{0.1\,\text{m}^3}{10\,\text{m}^3}$$

2) Clearance Volume given Clearance Factor Formula

Evaluate Formula

Formula

$$V_c = C \cdot V_p$$

Example with Units

$$0.1\,\text{m}^3 = 0.01 \cdot 10\,\text{m}^3$$

3) Compression Ratio given Pressure Formula

Evaluate Formula

Formula

$$r = \frac{P_2}{P_1}$$

Example with Units

$$4.75 = \frac{8\,\text{Bar}}{1.68421052631579\,\text{Bar}}$$

4) Compression Ratio given Volume Formula

Evaluate Formula

Formula

$$r = \frac{V_s}{V_2}$$

Example with Units

$$4.75 = \frac{20\,\text{m}^3}{4.210526\,\text{m}^3}$$

5) Discharge Pressure given Compression Ratio Formula

Evaluate Formula

Formula

$$P_2 = r \cdot P_1$$

Example with Units

$$8\,\text{Bar} = 4.75 \cdot 1.68421052631579\,\text{Bar}$$

6) Discharge Volume given Compression Ratio Formula

Evaluate Formula

Formula

$$V_2 = \frac{V_s}{r}$$

Example with Units

$$4.2105\,\text{m}^3 = \frac{20\,\text{m}^3}{4.75}$$

7) Piston Displacement Volume given Clearance Factor Formula

Evaluate Formula

Formula

$$V_p = \frac{V_c}{C}$$

Example with Units

$$10\,\text{m}^3 = \frac{0.1\,\text{m}^3}{0.01}$$

8) Piston Displacement Volume given Volumetric Efficiency in Compressor Formula

Evaluate Formula

Formula

$$V_p = \frac{V_s}{\eta_v}$$

Example with Units

$$10\,\text{m}^3 = \frac{20\,\text{m}^3}{2}$$

9) Suction Pressure given Compression Ratio Formula

Evaluate Formula

Formula

$$P_1 = \frac{P_2}{r}$$

Example with Units

$$1.6842\,\text{Bar} = \frac{8\,\text{Bar}}{4.75}$$

10) Suction Volume given Compression Ratio Formula

Evaluate Formula

Formula

$$V_s = r \cdot V_2$$

Example with Units

$$20\,\text{m}^3 = 4.75 \cdot 4.210526\,\text{m}^3$$

11) Suction Volume given Volumetric Efficiency in Compressor Formula

Evaluate Formula

Formula

$$V_s = \eta_v \cdot V_p$$

Example with Units

$$20\,\text{m}^3 = 2 \cdot 10\,\text{m}^3$$

12) Volumetric efficiency in compressor Formula

Evaluate Formula

Formula

$$\eta_v = \frac{V_s}{V_p}$$

Example with Units

$$2 = \frac{20\,\text{m}^3}{10\,\text{m}^3}$$

Variables used in list of Factors of Compressor Formulas above

- **C** Clearance Factor
- P_1 Suction Pressure *(Bar)*
- P_2 Discharge Pressure of Refrigerant *(Bar)*
- **r** Compression Ratio
- V_2 Discharge Volume *(Cubic Meter)*
- V_c Clearance Volume *(Cubic Meter)*
- V_p Piston Displacement Volume *(Cubic Meter)*
- V_s Suction Volume *(Cubic Meter)*
- η_v Volumetric Efficiency

Constants, Functions, Measurements used in list of Factors of Compressor Formulas above

- Measurement: **Volume** in Cubic Meter (m^3)
  Volume Unit Conversion
- Measurement: **Pressure** in Bar (Bar)
  Pressure Unit Conversion

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