

USEFUL FORMULAS FOR COMPRESSED AIR

$$\text{COMPRESSOR RPM} = \frac{\text{motor pulley pitch diameter} \times \text{motor rpm}}{\text{compressor pulley pitch diameter}}$$

$$\text{MOTOR PULLEY pitch diameter} = \frac{\text{compressor pulley pitch diameter} \times \text{compressor rpm}}{\text{motor rpm}}$$

$$\text{COMPRESSOR PULLEY pitch diameter} = \frac{\text{motor pulley pitch diameter} \times \text{motor rpm}}{\text{compressor rpm}}$$

$$\text{MOTOR RPM} = \frac{\text{compressor pulley pitch diameter} \times \text{compressor rpm}}{\text{motor pulley pitch diameter}}$$

$$\text{FREE AIR DISPLACEMENT} = \text{piston displacement} \times \text{volumetric efficiency (\%)}$$

$$\text{REQUIRED PISTON DISPLACEMENT} = \frac{\text{free air}}{\text{vol. eff.}}$$

$$\text{GALLONS (volume)} = \frac{\text{cubic feet}}{0.134}$$

$$\text{CUBIC FEET} = \frac{\text{gallons}}{7.48}$$

$$\text{CU. FT. COMPRESSED AIR} = \frac{\text{cu. ft. free air} \times 14.7}{(\text{psig} \times 14.7)}$$

$$\text{CU. FT. FREE AIR} = \frac{\text{cu. ft. compressed air} \times (\text{psig} + 14.7)}{14.7}$$

$$\text{TANK PUMP UP TIME (in minutes)} = \frac{\text{volume (gal)} \times (\text{final pressure} - \text{initial pressure})}{7.48 \times \text{atmospheric pressure} \times \text{pump capacity (cfm)}}$$

$$\text{BAR (pressure)} = \frac{\text{psig}}{14.5}$$

$$\text{INCHES OF WATER COLUMN} = \text{psig} \times 27.686$$

$$\text{PSI} = \text{inches of water} \times 0.03612 \quad \text{or} \quad \text{inches of mercury} \times 0.4912$$

$$\text{INCHES OF MERCURY} = \text{psi} \times 2.036$$

$$\text{HP} = \text{kilowatts} \times 1.341$$

$$\text{KILOWATTS} = \text{HP} \times 0.7457$$