

Handy Field Formulas



- ▶ Stroke is plunger or piston stroke in inches
- ▶ Diameter is diameter of the plunger or piston in inches
- ▶ Velocity is in feet per second
- ▶ Areas are in square inches
- ▶ Lift is in inches

$$\text{Average plunger velocity} = \frac{\text{stroke} \times \text{RPM}}{360}$$

$$\text{Average valve port velocity} = \frac{\frac{\text{plunger velocity} \times \text{plunger area}}{\text{valve port area}}}{\frac{\text{Stroke} \times \text{RPM} \times \text{dia.}^2}{458 \times \text{valve port area}}}$$

$$\text{Average lift velocity} = \frac{\frac{\text{plunger velocity} \times \text{plunger area}}{\text{lift area}}}{\frac{\text{stroke} \times \text{dia.}^2 \times \text{RPM}}{1440 \times \text{valve size} \times \text{lift}}}$$

$$\text{Lift} = \frac{\text{stroke} \times \text{dia.}^2 \times \text{RPM}}{1440 \times \text{valve size} \times \text{average lift velocity}}$$

$$\text{Lift area} = \text{Valve size} \times \text{lift} \times 3.14$$