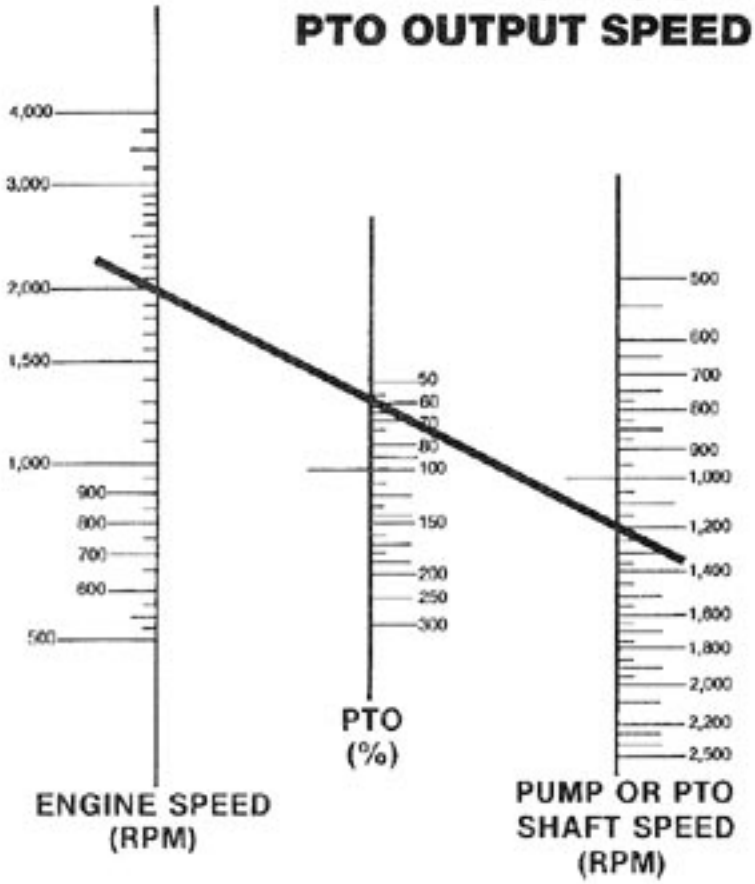
NOMOGRAPH INSTRUCTIONS FOR PUMP SELECTION

The nomographs on the following pages are designed to help in the selection of a hydraulic pump. Follow the instructions below, then refer to the pump specifications before the final pump selection is made.

1. Ask customer what the desired engine speed is and mark it on the left bar of (Engine Speed) Nomograph #1 (For Our Example: 2000 rpm).
2. Customer will need to supply the required flow rate for the accessory. Plot this value on the right bar (Pump Flow) of Nomograph #2 (Our Example: 15 gpm).
3. Customer will need to supply the transmission model number and the desired location for the PTO. By using this QR Catalog, select a PTO and plot its percent to engine speed on the center bar (PTO%) of Nomograph #1 (Our Example: 60%).
4. Draw a straight line through the engine speed and PTO% and extend it through the right bar (PTO Shaft Speed), record the result and mark it on the left bar of Nomograph #2 (Our Example: 1200 rpm).
5. Draw a straight line on Nomograph #2 connecting the PTO/Pump Shaft Speed (1200 rpm) with the desired output flow rate (15 gpm). The line crosses the center bar at the pump that will provide that flow at the input rpm calculated (Our Example: PL14).
6. The pump information on page 24 is provided to assist in pump selection based on rated pressure and rpm. If the pump selected in step 5 does not perform in the range desired then selection of another pump might be necessary. This can be done by changing the PTO% and or engine speed. Also, if the line does not cross at a pump listed, then the PTO % or engine speed will have to be changed and this can be done by using the Nomograph in reverse order.

NOMOGRAPH #1

PTO OUTPUT SPEED – ENGINE SPEED



$$\text{PTO SPEED} = \text{ENGINE SPEED} \times \text{PTO\%}$$

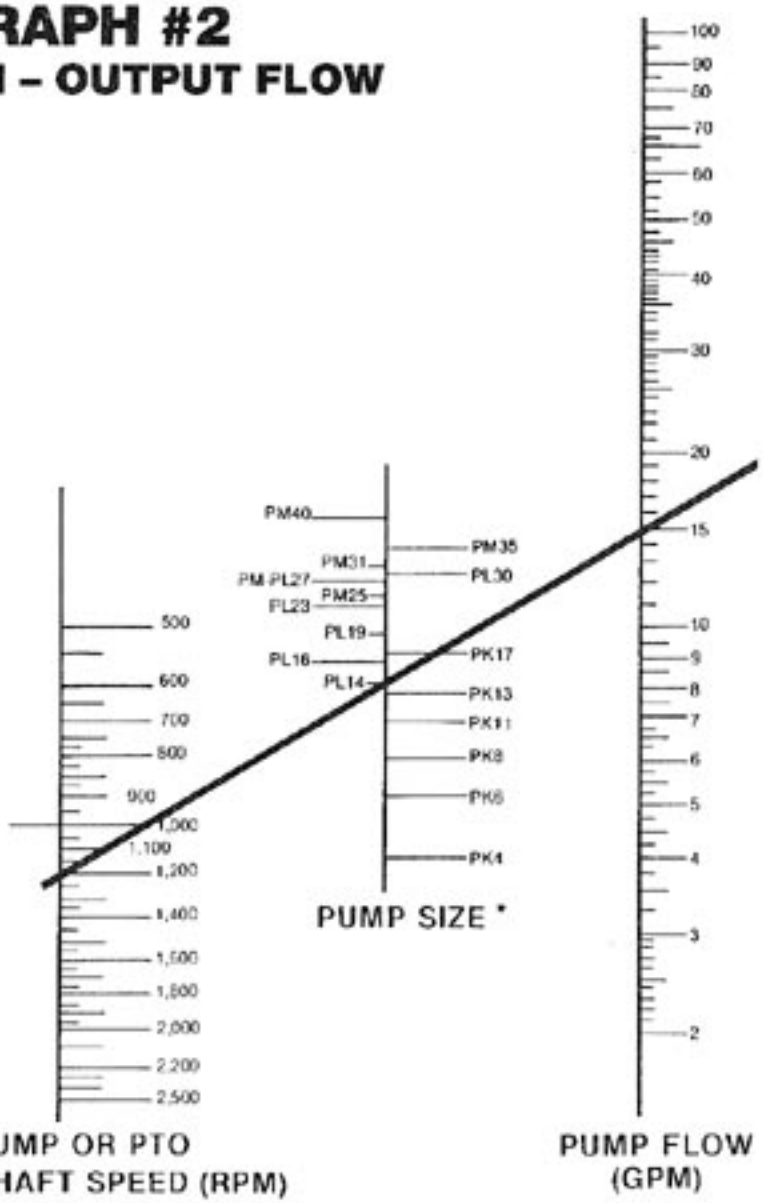
$$\text{PTO\%} = \frac{\text{PTO SPEED}}{\text{ENGINE SPEED}}$$

NOMOGRAPH #2

PUMP SELECTION – OUTPUT FLOW

$$\text{PUMP FLOW} = \frac{\text{Disp.} \times \text{Pump Shaft Speed} \times \text{Eff.}}{231}$$

$$\text{PUMP SIZE} = \frac{\text{Pump Flow} \times 231}{\text{Pump Shaft Speed} \times \text{Eff.}}$$

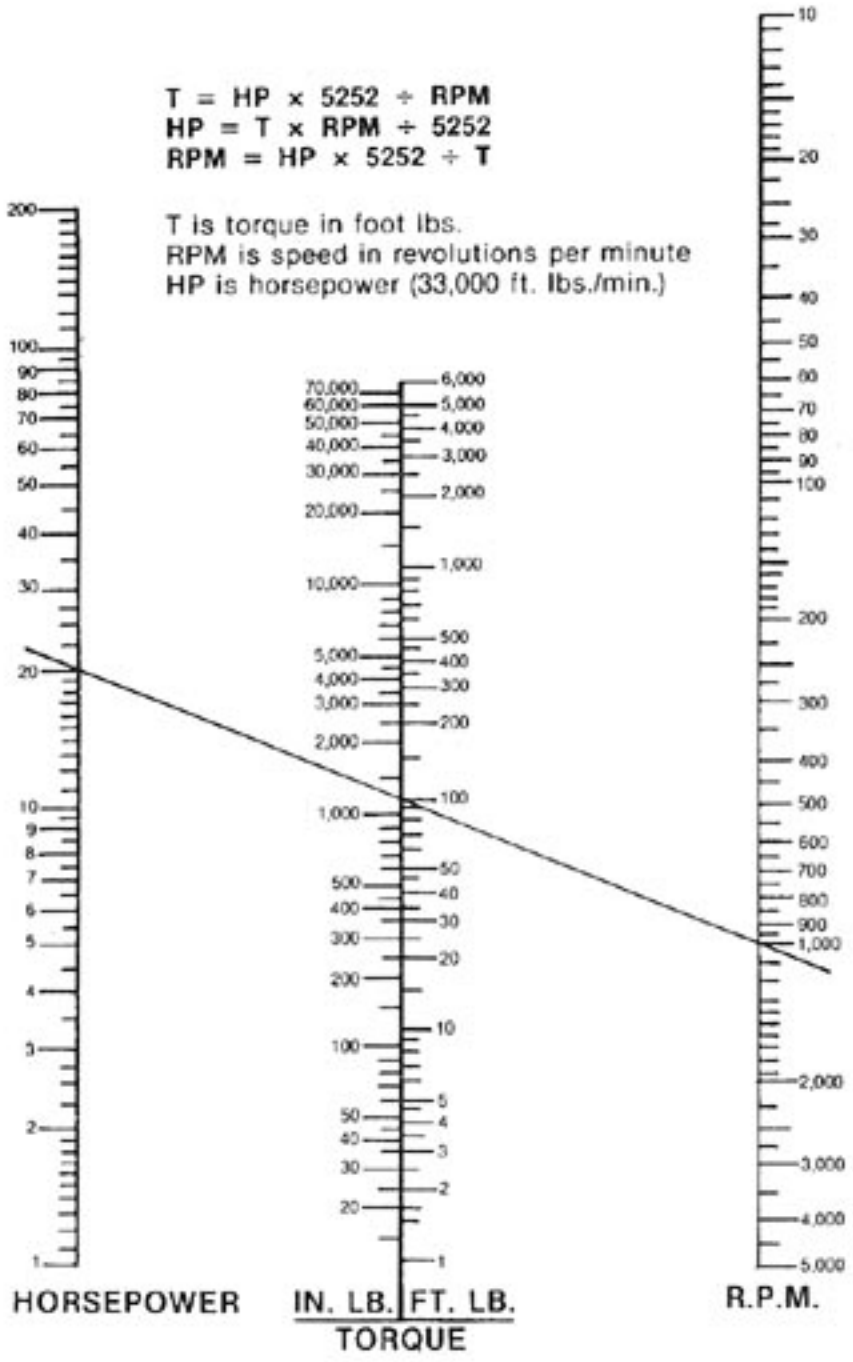


* Be sure that the pump series you have selected is compatible with the flow and pressure requirements of your system and that it is not operated above or below its rated speed. Refer to page 24 for pump performance ratings.

NOMOGRAPH #3
HP – SPEED – TORQUE

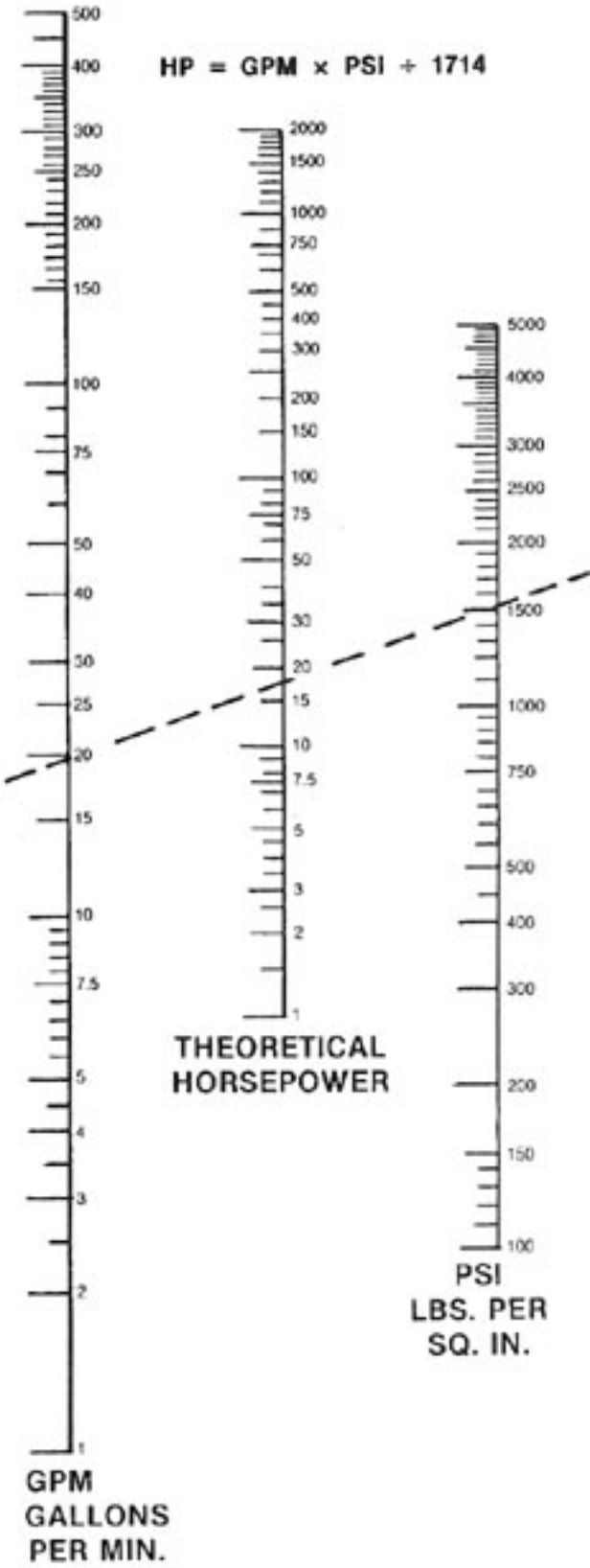
$T = HP \times 5252 \div RPM$
$HP = T \times RPM \div 5252$
$RPM = HP \times 5252 \div T$

T is torque in foot lbs.
RPM is speed in revolutions per minute
HP is horsepower (33,000 ft. lbs./min.)



NOMOGRAPH #4
GPM – PSI – HP

HP = GPM × PSI ÷ 1714



OIL RECOMMENDATIONS

Muncie does not promote specific manufacturers' brands of oil. Specifications below are guidelines and the oil manufacturer should be consulted for your exact application needs.

Viscosity (ASTM D-88-56) — @ 100°F (40°C)-173/187 SSU (37 CS)
[Ref. 210°F (100°C) - Approx. 45 SSU (5.9 CS) Minimum]
Viscosity Index (ASTM D-567-53) — 100°F (82°C) Optimum
Gravity °API (ASTM D-287-64) — 29°F (-2°C) Minimum
Flash Point (ASTM D-92-57) — 400°F (204°C) Minimum
Fire Point (ASTM D-92-57) — 430°F (221°C) Minimum (Ref.)
Pour Point (ASTM D-97-57) — 15°F (-10°C) Maximum

Foam Resistance (ASTM D-892, Test. Seq. II)
Viscosity at Startup [7500 SSU (1620 CS) Maximum]
Rust Resistance (ASTM D-665-60) — No Rust
Corrosion Resistance (ASTM D-130-65) — Class. 1
Oxidation Stability (ASTM D-943) — 1500 Hours Min.
Aniline Point (ASTM D-611-64) — 180–220°F (82–104°C)
Anti-Wear Additive — .06% Zinc Minimum

Note: Cold weather operation requires special oil considerations. Viscosity should not exceed 7500 SSU (1620 CS) at lowest startup temperature. Continuous operation should range between 60–1000 SSU (10.5–216 CS) for all temperature ranges.

FLOW CAPACITIES

For Pipe, Tube and Hose at Recommended Flow Capacities