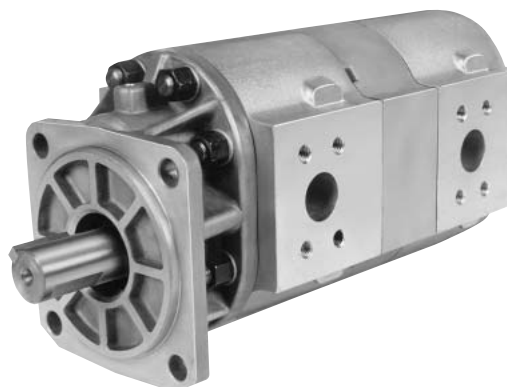


## Specifications for TP20 Series

Description ..... Gear Pumps (Two-place)  
 Flow Range ..... To 98 GPM Per Section (370.9 LTR.)  
 Displacements ..... To 9.10 C.I.R. Per Section (149.12 CC's/REV.)  
 Maximum Pressure to ..... 2500 PSI (172 BAR)  
 Maximum Speed to ..... 2500 RPM  
 Rotation ..... A or C  
 Bearing ..... Journal  
 Construction ..... Aluminum or Cast Iron\*



## Performance Data Per Section

| Pump Model | Section Size | Displacement/Revolution (Theoretical) |              |        |                   |                  | Maximum Pressure |     | Maximum Speed |
|------------|--------------|---------------------------------------|--------------|--------|-------------------|------------------|------------------|-----|---------------|
|            |              | US Gallons                            | Cubic Inches | Liters | Cubic Centimeters | Imperial Gallons | PSI              | BAR | RPM           |
| TP20       | 080**        | .0070                                 | 1.62         | .0265  | 26.498            | .0058            | 2500             | 172 | 2500          |
| TP20       | 100**        | .0087                                 | 2.01         | .0330  | 32.938            | .0072            | 2500             | 172 | 2500          |
| TP20       | 150          | .0131                                 | 3.02         | .0496  | 49.498            | .0108            | 2500             | 172 | 2500          |
| TP20       | 200          | .0175                                 | 4.04         | .0662  | 66.204            | .0146            | 2500             | 172 | 2500          |
| TP20       | 250          | .0219                                 | 5.06         | .0829  | 82.919            | .0182            | 2500             | 172 | 2500          |
| TP20       | 300          | .0262                                 | 6.05         | .0992  | 99.142            | .0218            | 2500             | 172 | 2500          |
| TP20       | 350          | .0306                                 | 7.07         | .1158  | 115.857           | .0255            | 2500             | 172 | 2500          |
| TP20       | 400          | .0350                                 | 8.08         | .1325  | 132.408           | .0292            | 2500             | 172 | 2500          |
| TP20       | 450          | .0394                                 | 9.10         | .1491  | 149.123           | .0328            | 2500             | 172 | 2500          |

All data based on SAE 10W oil at 150°F. Available with Viton® Seals.

\*Some models and sizes are available for pressure up to 3500 PSI. Cast-iron not available on all models. Consult factory for availability.



**CAUTION:** "Inlet vacuum" should not exceed 5" Hg at normal operating speed and temperature. Operation of pumps in excess of 5" Hg requires factory approval.

\*\*080 and 100 Sizes Available for Rear Sections Only.

## Dimensional Data

| Pump<br>Sizes | Port Sizes     |            |                 |            |                |            | Mounting Dimensions |               |               |              |
|---------------|----------------|------------|-----------------|------------|----------------|------------|---------------------|---------------|---------------|--------------|
|               | Common Suction |            | Discharge Front |            | Discharge Rear |            |                     |               |               |              |
|               | Hole Dia.      | Conn. Size | Hole Dia.       | Conn. Size | Hole Dia.      | Conn. Size | A                   | B             | C             | J            |
| TP20150-080   | 38.1 (1.50)    | 1 1/2      | 19.0 (.75)      | 3/4        | 19.0 (.75)     | 3/4        | 91.4 (3.60)         | 198.8 (7.83)  | 239.7 (9.44)  | 95.2 (3.75)  |
| TP20150-100   | 38.1 (1.50)    | 1 1/2      | 19.0 (.75)      | 3/4        | 19.0 (.75)     | 3/4        | 91.4 (3.60)         | 201.4 (7.93)  | 242.8 (9.56)  | 95.2 (3.75)  |
| TP20150-150   | 38.1 (1.50)    | 1 1/2      | 19.0 (.75)      | 3/4        | 19.0 (.75)     | 3/4        | 91.4 (3.60)         | 201.4 (7.93)  | 250.1 (9.85)  | 95.2 (3.75)  |
| TP20200-080   | 38.1 (1.50)    | 1 1/2      | 25.4 (1.00)     | 1          | 19.0 (.75)     | 3/4        | 95.2 (3.75)         | 222.5 (8.76)  | 263.6 (10.38) | 98.0 (3.86)  |
| TP20200-100   | 38.1 (1.50)    | 1 1/2      | 25.4 (1.00)     | 1          | 19.0 (.75)     | 3/4        | 95.2 (3.75)         | 225.0 (8.86)  | 266.7 (10.50) | 98.0 (3.86)  |
| TP20200-150   | 50.8 (2.00)    | 2          | 25.4 (1.00)     | 1          | 19.0 (.75)     | 3/4        | 95.2 (3.75)         | 225.0 (8.86)  | 274.0 (10.79) | 98.0 (3.86)  |
| TP20200-200   | 50.8 (2.00)    | 2          | 25.4 (1.00)     | 1          | 25.4 (1.00)    | 1          | 95.2 (3.75)         | 241.3 (9.50)  | 307.8 (12.12) | 98.0 (3.86)  |
| TP20250-080   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 101.6 (4.00)        | 229.8 (9.05)  | 271.0 (10.67) | 101.6 (4.00) |
| TP20250-100   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 101.6 (4.00)        | 232.4 (9.15)  | 274.0 (10.79) | 101.6 (4.00) |
| TP20250-150   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 101.6 (4.00)        | 232.4 (9.15)  | 281.1 (11.07) | 101.6 (4.00) |
| TP20250-200   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 25.4 (1.00)    | 1          | 101.6 (4.00)        | 248.6 (9.79)  | 315.2 (12.41) | 101.6 (4.00) |
| TP20250-250   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 34.7 (1.25)    | 1 1/4      | 101.6 (4.00)        | 255.0 (10.04) | 325.1 (12.80) | 101.6 (4.00) |
| TP20300-080   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 105.1 (4.14)        | 236.7 (9.32)  | 278.1 (10.95) | 105.1 (4.14) |
| TP20300-100   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 105.1 (4.14)        | 239.2 (9.42)  | 281.1 (11.07) | 105.1 (4.14) |
| TP20300-150   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 105.1 (4.14)        | 239.2 (9.42)  | 288.0 (11.34) | 105.1 (4.14) |
| TP20300-200   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 25.4 (1.00)    | 1          | 105.1 (4.14)        | 255.7 (10.07) | 322.3 (12.69) | 105.1 (4.14) |
| TP20300-250   | 50.8 (2.00)    | 2          | 30.2 (1.19)     | 1 1/4      | 34.7 (1.25)    | 1 1/4      | 105.1 (4.14)        | 262.1 (10.32) | 332.4 (13.09) | 105.1 (4.14) |
| TP20300-300   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 30.2 (1.19)    | 1 1/4      | 105.1 (4.14)        | 262.1 (10.32) | 339.5 (13.37) | 105.1 (4.14) |
| TP20350-080   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 244.3 (9.62)  | 285.4 (11.24) | 110.2 (4.34) |
| TP20350-100   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 246.8 (9.72)  | 288.5 (11.36) | 110.2 (4.34) |
| TP20350-150   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 246.8 (9.72)  | 295.6 (11.64) | 110.2 (4.34) |
| TP20350-200   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 25.4 (1.00)    | 1          | 110.4 (4.35)        | 262.8 (10.35) | 329.6 (12.98) | 110.2 (4.34) |
| TP20350-250   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 34.7 (1.25)    | 1 1/4      | 110.4 (4.35)        | 269.2 (10.60) | 339.5 (13.37) | 110.2 (4.34) |
| TP20350-300   | 63.5 (2.50)    | 2 1/2      | 30.2 (1.19)     | 1 1/4      | 30.2 (1.19)    | 1 1/4      | 110.4 (4.35)        | 269.2 (10.60) | 346.9 (13.66) | 110.2 (4.34) |
| TP20400-080   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 251.4 (9.90)  | 292.6 (11.52) | 110.2 (4.34) |
| TP20400-100   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 254.0 (10.00) | 295.6 (11.64) | 110.2 (4.34) |
| TP20400-150   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 110.4 (4.35)        | 254.0 (10.00) | 302.7 (11.92) | 110.2 (4.34) |
| TP20400-200   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 25.4 (1.00)    | 1          | 110.4 (4.35)        | 270.2 (10.64) | 336.8 (13.26) | 110.2 (4.34) |
| TP20400-250   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 34.7 (1.25)    | 1 1/4      | 110.4 (4.35)        | 276.6 (10.89) | 346.9 (13.66) | 110.2 (4.34) |
| TP20400-300   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 30.2 (1.19)    | 1 1/4      | 110.4 (4.35)        | 276.6 (10.89) | 354.0 (13.94) | 110.2 (4.34) |
| TP20450-080   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 118.3 (4.66)        | 258.5 (10.18) | 299.7 (11.80) | 110.2 (4.34) |
| TP20450-100   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 118.3 (4.66)        | 261.1 (10.28) | 302.7 (11.92) | 110.2 (4.34) |
| TP20450-150   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 19.0 (.75)     | 3/4        | 118.3 (4.66)        | 261.1 (10.28) | 309.8 (12.20) | 110.2 (4.34) |
| TP20450-200   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 25.4 (1.00)    | 1          | 118.3 (4.66)        | 277.3 (10.92) | 343.9 (13.54) | 110.2 (4.34) |
| TP20450-250   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 34.7 (1.25)    | 1 1/4      | 118.3 (4.66)        | 283.7 (11.17) | 354.0 (13.94) | 110.2 (4.34) |
| TP20450-300   | 61.7 (2.43)    | 2 1/2      | 34.7 (1.37)     | 1 1/2      | 30.2 (1.19)    | 1 1/4      | 118.3 (4.66)        | 283.7 (11.17) | 361.1 (14.22) | 110.2 (4.34) |

**Dimensional Data**

| SAE 4-Bolt Connector Ports |             |              |             |              |           |
|----------------------------|-------------|--------------|-------------|--------------|-----------|
| Size                       | D           | E            | F           | G            | H         |
| 3/4"                       | 10.9 (.43)  | 22.2 (.875)  | 23.6 (.93)  | 47.6 (1.875) | 3/8-16NC  |
| 1"                         | 12.9 (.51)  | 26.1 (1.031) | 26.1 (1.03) | 52.3 (2.062) | 3/8-16NC  |
| 1-1/4"                     | 14.9 (.59)  | 30.1 (1.188) | 29.2 (1.15) | 58.7 (2.313) | 7/16-14NC |
| 1-1/2"                     | 17.9 (.70)  | 35.7 (1.406) | 34.7 (1.37) | 69.8 (2.750) | 1/2-13NC  |
| 2"                         | 21.3 (.84)  | 42.8 (1.688) | 38.8 (1.53) | 77.7 (3.062) | 1/2-13NC  |
| 2-1/2"                     | 25.4 (1.00) | 50.8 (2.000) | 44.4 (1.75) | 88.9 (3.500) | 1/2-13NC  |

SAE 4-Bolt NPT Connectors are available. See Accessory Section.

**PD Factors**

| Drive Shaft       | Factors |
|-------------------|---------|
| #1 - 1 1/4 Spline | 187     |
| #3 - 1 1/4 Keyed  | 187     |
| #5 - 1 1/4 Keyed  | 187     |
| Coupling          | 110     |

The maximum size and number of sections of a tandem pump for a given application is limited to the torque capability of the input drive shaft and the spline coupling between the sections. To determine this capability, a "PD Factor" is used:

P = PSI (The relief setting of each individual section).

D = Displacement (In U.S. gallon per revolution of each section).

*Example:* Assume a double pump TP20450-450A-3D with front and rear sections on pressure at the same time at 2500 PSI.

A. Drive Shaft:

$$PD = (2500) (.0394) + (2500) (.0394) = 197 \text{ vs. } 187.$$

Capability of drive shaft is not OK.

B. Coupling between front and rear sections:

$$PD = (2500) (.0394) = 98.5 \text{ vs. } 110.$$

Capability of coupling is OK.

*NOTE:* If the rear section of this tandem pump was limited to 2000 PSI, the combination of both sections would be acceptable:

$$PD = (2500) (.0394) + (2000) (.0394) = 177.3 \text{ vs. } 187.$$

Capability of drive shaft is OK.

Inch equivalents for millimeter dimensions are shown in (\*\*).

