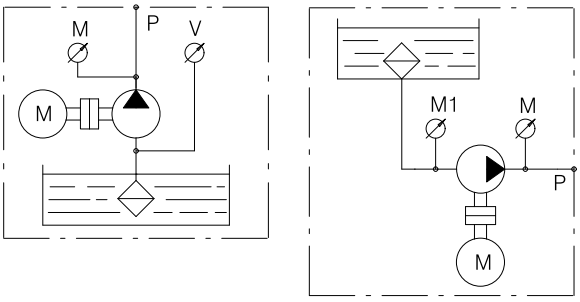
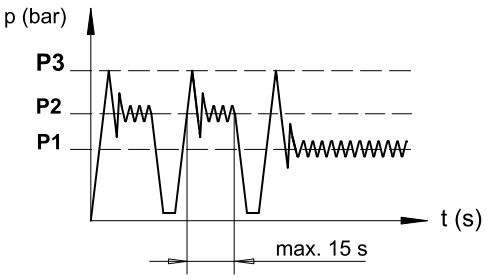
Attention: Use of pumps at temperatures above 80°C must always be agreed upon with our Technical Office, and in any case this can cause a significant worsening in the volumetric efficiency. For use under conditions different from those indicated in this catalogue, please contact our Sales Center.




## 2.1.4 Outlet




Pressure levels:

P1 = continuous operating pressure

P2 = intermittent operating pressure

P3 = peak pressure

The recommended delivery pipe oil speed is between:

v = 2 - 5 m/s

In the next pages are indicated the performances for each pump.

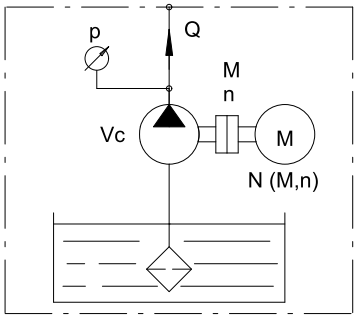
Example of the values in the table

| AP100 Pump type | Displacement | | L | | Max pressure | | | | | | n min. | n max. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P1 | | P2 | | P3 | | | |
| | $cm^3$/ rev | Cu.In. P.R. | mm | inch. | bar | PSI | bar | PSI | bar | PSI | | |
| AP100/2.5 S309 | 2.5 | .152 | 86.4 | 3.40 | 210 | 3000 | 230 | 3300 | 250 | 3600 | 650 | 5000 |

## 2.1.5 Calculating the specifications of a gear pump

The equations for calculating the following parameters are given below:

Vc = (cm3/g) pump displacement;
n = (g/min) Drive shaft rpm;
Q = (l/min) flow rate;
P = (bar) Operating pressure;
M = (Nm) Torque;
N = (kW) Power
hv = (%) Volumetric efficiency
hm = (%) Mechanical efficiency
ht = (%) Total efficiency




$$Q = \frac{Vc \cdot n}{100000} \cdot \eta_v \qquad Vc = \frac{100000 \cdot Q}{n \cdot \eta_v} \qquad n = \frac{100000 \cdot Q}{Vc \cdot \eta_v}$$

$$N = \frac{Vc \cdot n \cdot p}{6120 \cdot \eta_m} \qquad N = \frac{Q \cdot p}{6.12 \cdot \eta_t} \qquad p = \frac{N \cdot 6.12 \cdot \eta_t}{Q} \qquad p = \frac{N \cdot 6120 \cdot \eta_m}{Vc \cdot n}$$

$$M = 9555 \cdot \frac{N}{n} \qquad \eta_t = \eta_v \cdot \eta_m$$

Example

AP100/2.5 Vc= 2.5 $cm^3$/r n= 1500 r/min p=200 bar $\eta^v$= 94% $\eta^m$= 87%

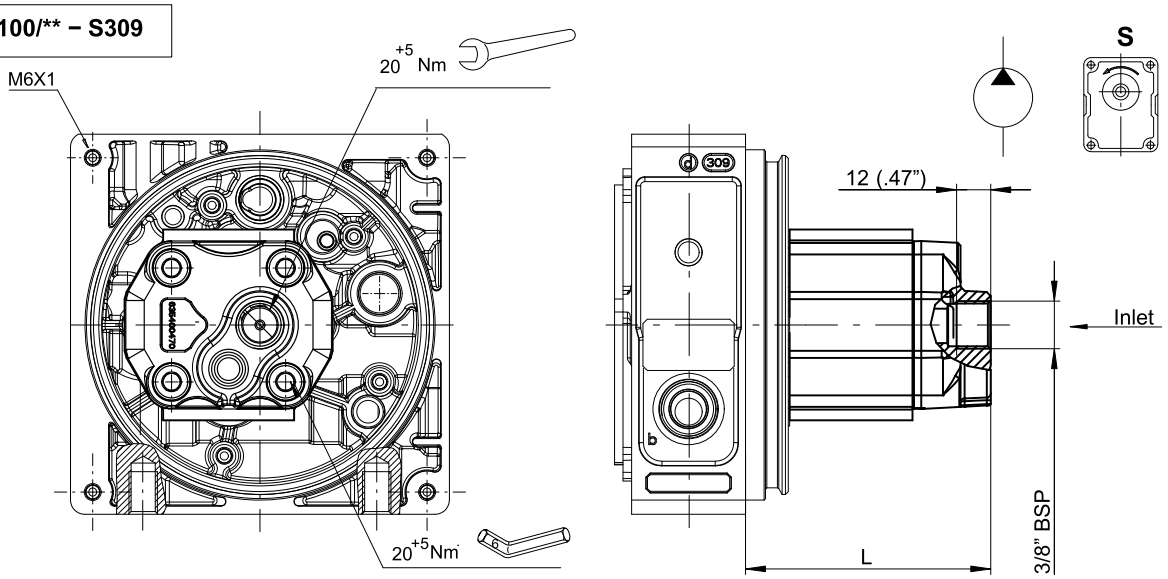
$$Q = \frac{2.5 \cdot 1500}{100000} \cdot 94 = 3.52 \text{ l/min.} \qquad \eta_t = 0.94 \cdot 0.87 = 0.82 = 82\%$$

$$N = \frac{3.52 \cdot 200}{6.12 \cdot 82} = 1.4 \text{ kW} \qquad M = 9555 \cdot \frac{1.4}{1500} = 9 \text{ Nm}$$

## 2.2 Single unidirectional pumps - Counterclockwise rotation

### 2.2.1 Standard single pump AP100

**AP100/** – S309**




Example

| | Pump | | | | | | | | | | | | | Hi-Lo | Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | A | P | 1 | 0 | 0 | / | 2 | , | 5 | | | | | | | S | 3 | 0 | 9 |

O-Ring replacement kit: 200974001450

| Displacement | | AP100 | Order code | L | | Max. pressure | | | | | | n. min. | n. max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P1 | | P2 | | P3 | | | |
| cm³/rev | Cu.In-P.R. | Pump type | | mm | inch | bar | PSI | bar | PSI | bar | PSI | | |
| 1.2 | .073 | AP100/1.2 S309 | 200748210270 | 86.1 | 3.39 | 230 | 3330 | 250 | 3620 | 280 | 4060 | 800 | 5000 |
| 1.7 | .103 | AP100/1.7 S309 | 200748220230 | 88.1 | 3.47 | 230 | 3330 | 250 | 3620 | 280 | 4060 | 650 | 5000 |
| 2.5 | .152 | AP100/2.5 S309 | 200748230340 | 91.4 | 3.60 | 230 | 3330 | 250 | 3620 | 280 | 4060 | 650 | 5000 |
| 3.5 | .213 | AP100/3.5 S309 | 200748240240 | 95.7 | 3.77 | 230 | 3330 | 250 | 3620 | 280 | 4060 | 650 | 4000 |
| 4.3 | .262 | AP100/4.3 S309 | 200748250160 | 99.3 | 3.91 | 230 | 3330 | 250 | 3620 | 270 | 3910 | 550 | 4000 |
| 5.0 | .305 | AP100/5 S309 | 200748260230 | 102.1 | 4.02 | 220 | 3190 | 230 | 3330 | 250 | 3620 | 500 | 3500 |
| 6.5 | .396 | AP100/6.5 S309 | 200748270260 | 107.1 | 4.22 | 220 | 3190 | 230 | 3330 | 250 | 3480 | 500 | 3000 |
| 7.8 | .476 | AP100/8 S309 | 200748280130 | 112.7 | 4.44 | 190 | 2750 | 210 | 3040 | 230 | 3330 | 500 | 3000 |
| 10 | .610 | AP100/10 S309 | 200748290800 | 121.8 | 4.79 | 160 | 2320 | 180 | 2610 | 200 | 2900 | 500 | 2500 |

### 2.2.2 Heavy usage (Run-in @ 270 bar) for limited duty service

| Displacement | | AP100 | Order code |
|---|---|---|---|
| cm³/rev | Cu.In-P.R. | Pump type | |
| 1.2 | .073 | AP100/1.2 S309 | 200748210340 |
| 1.7 | .103 | AP100/1.7 S309 | 200748220310 |
| 2.5 | .152 | AP100/2.5 S309 | 200748230410 |
| 3.5 | .213 | AP100/3.5 S309 | 200748240320 |
| 4.3 | .262 | AP100/4.3 S309 | 200748250220 |
| 5.0 | .305 | AP100/5 S309 | 200748260280 |
| 6.5 | .396 | AP100/6.5 S309 | 200748270320 |
| 7.8 | .476 | AP100/8 S309 | 200748280180 |
| 10 | .610 | AP100/10 S309 | 200748290850 |

Attention: Use of pumps at temperatures above 80°C must always be agreed upon with our Technical Office, and in any case this can cause a significant worsening in the volumetric efficiency.

Heavy usage pumps should be utilized just for short time duty service applications and for a limited number of cycles. Please contact our sales office for more information