# GROUP 1 PUMPS

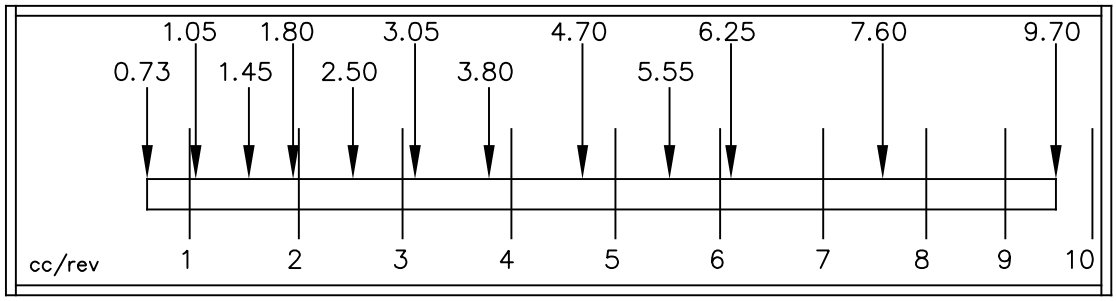
## CONSTRUCTIVE CHARACTERISTICS:

| PART | MATERIAL | CHARACTERISTICS |
|---|---|---|
| GEARS | **Hardened steel UNI 7846** | **Rs= 1250 N/mm²**<br>**Rm= 1450 N/mm²** |
| FLANGE AND COVER | **G25 / G30 cast iron** | **Rs= 300 N/mm²**<br>**Rm= 450 N/mm²** |
| BEARINGS | **Sical 3**<br>**Bearings with DU** | **Rs= 350 N/mm²**<br>**Rm= 390 N/mm²** |
| BODY | **Etruded in aluminium alloy**<br>**Series 7020** | **Rs= 350 N/mm²**<br>**Rm= 390 N/mm²** |
| O–RINGS | **Buna N**<br>**Viton** | **90 Shore, up to 90°C**<br>**80 Shore, for high temperature** |
| ANTIEXTRUSION | **Zitel** | **With glass fibres** |

**Rs= Enervation load**
**Rm= Breaking load**

## GENERAL CHARACTERISTICS:

**Maximum pressures up to 300 bar**
**Weight : from 0.9 Kg to 1.6 kg**
**Maximum speed up to 5.000 rpm**
**Type of shafts:** **Taper 1:8**
**Oldham**
**Slined DIN 5482**
**SAE AA**
**Keyed**
**Type of flanges:** **European standard**
**Standard for power units**
**SAE AA standard**
**Displacements from 0.73 cc/rev to 9.9 cc/rev**
**The displacements are available according this table:**




**There is also available a special version with built-in support and a bigger taper 1:8 shaft ( diameter Ø14 ) for 9.9 cc/rev pump.**
**In the range there are tandem pumps with unloading valve in the back cover and pumps with built in maximum pressure relief valve ( with internal or external drain )**

## DRIVE:

**The connection of the pump to the motor must be done preferably with the use of a flexible coupling to avoid any radial and/or axial force on the shaft, otherwise pump efficiency will dramatically drop due to early wear of inner moving parts.**
**In any applications where the motion is trasmitted through belts, it is necessary to use a support to avoid any radial or axial load to the pump shaft.**
**In any applications where are used splined shafts ot Oldham couplings, it is suggested to assure a costant lubrification through grease or similar products.**

# GROUP 1 PUMPS

## WORKING CONDITIONS- LIMIT PERFORMANCES

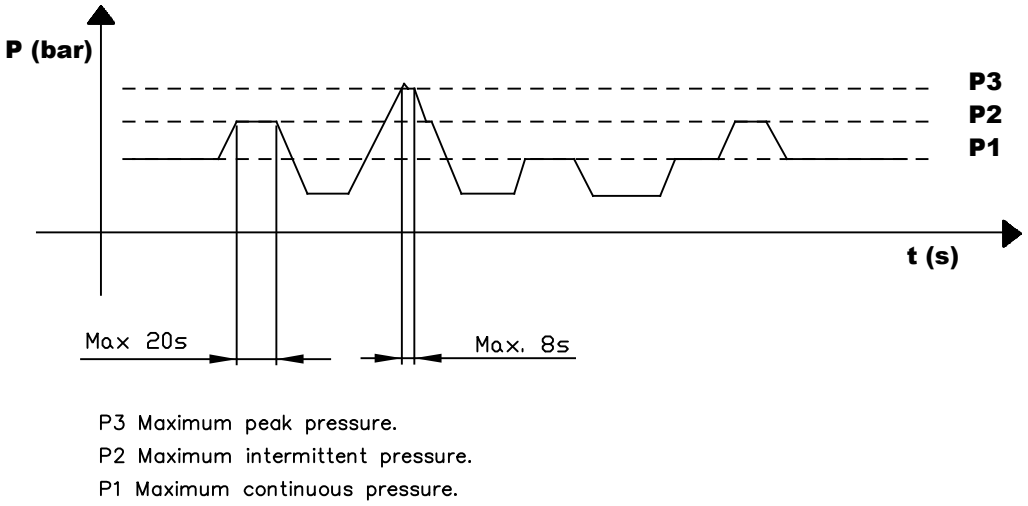
**In normal working conditions there must be, in the suction pipe, a pressure lower than the atmospheric pressure.**

**The pressure range in suction must be:**

| | |
|---|---|
| Min. 0.75 bar (absolute) | Max 2,0 bar (absolute) |

**The maximun pressure values "P1" are referred to a continuous working at 1500 rpm with standard hydraulic fluids with minimum viscosity of 10 cSt.**
**For heavier working conditions ( viscosity or high temperature ) it is necessary to reduce the "P1" values.**

**In the following table are described the admitted pressures:**

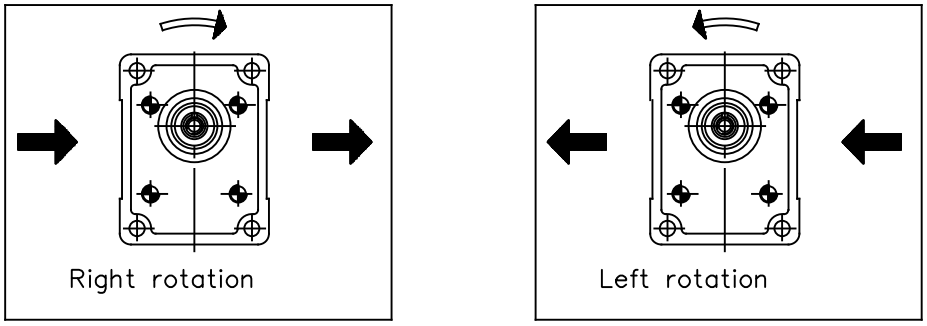



P3 Maximum peak pressure.
P2 Maximum intermittent pressure.
P1 Maximum continuous pressure.

**The standard working speeds ( minimum and maximum) are the following:**

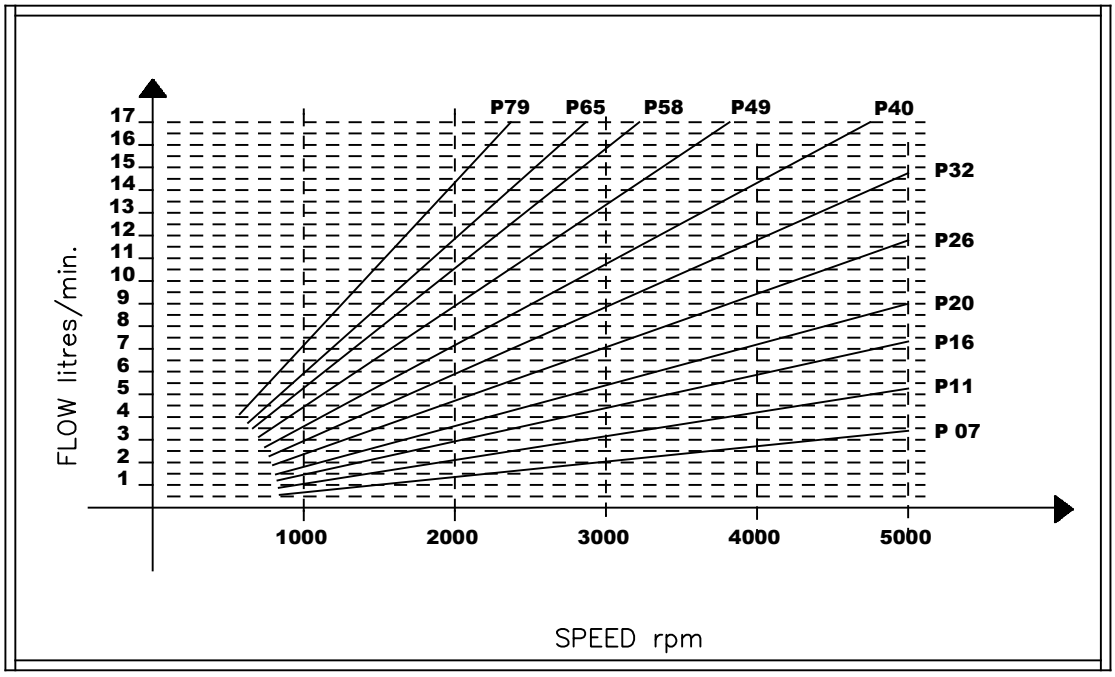
| | |
|---|---|
| Min. = 750 rpm | Max = ( See following tables ) |

## DIRECTION OF ROTATION LOOKING AT THE SHAFT:

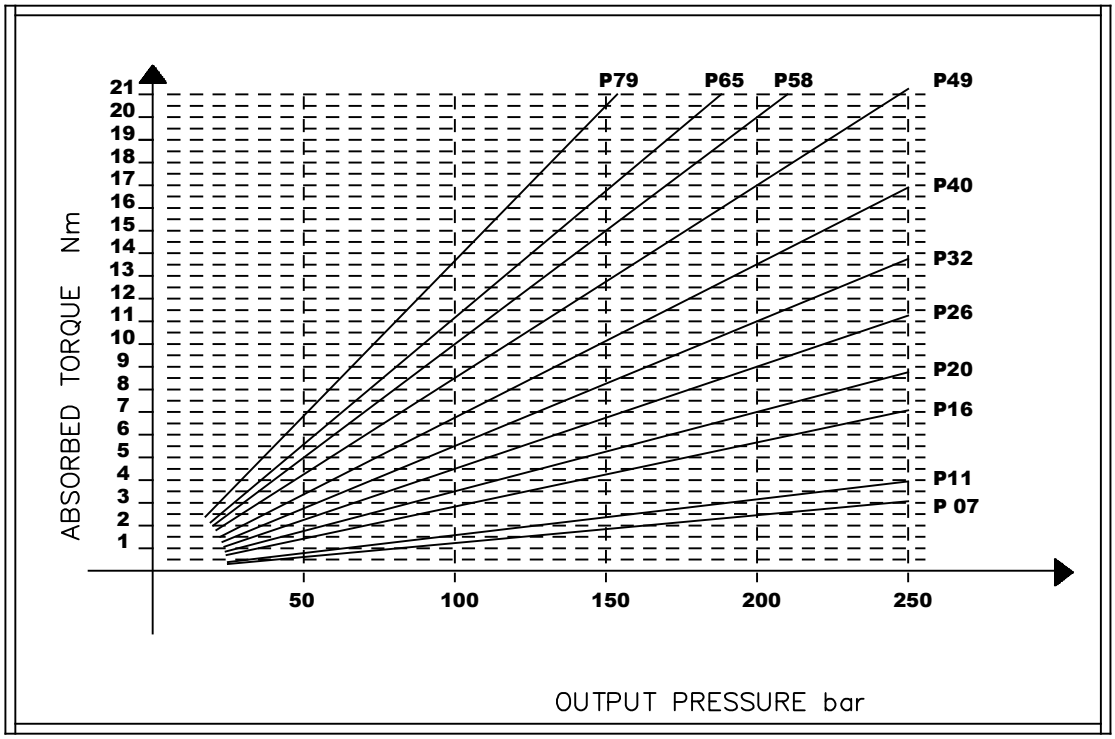


# GROUP 1 PUMPS

## FLOW CHARACTERISTICS CURVES




## ABSORBED TORQUE




## NOTE

**Above flow characteristics curves have been made considering a volumetric efficiency of 95%**

# GROUP 1 PUMPS

## PUMP CALCULATION

| | | |
|---|---|---|
| V | **Displacement** | **cc / rev** |
| Q | **Flow** | **l/min** |
| P | **Power** | **kW** |
| C | **Torque** | **N · m** |
| N | **Speed** | **rpm** |
| ΔP | **Pressure** | **bar** |
| $n_v$ | **Volumetric efficiency** | **0.95** |
| $n_m$ | **Mechanical efficiency** | **0.9** |
| $n_t$ | **Total efficiency** | **0.85** |

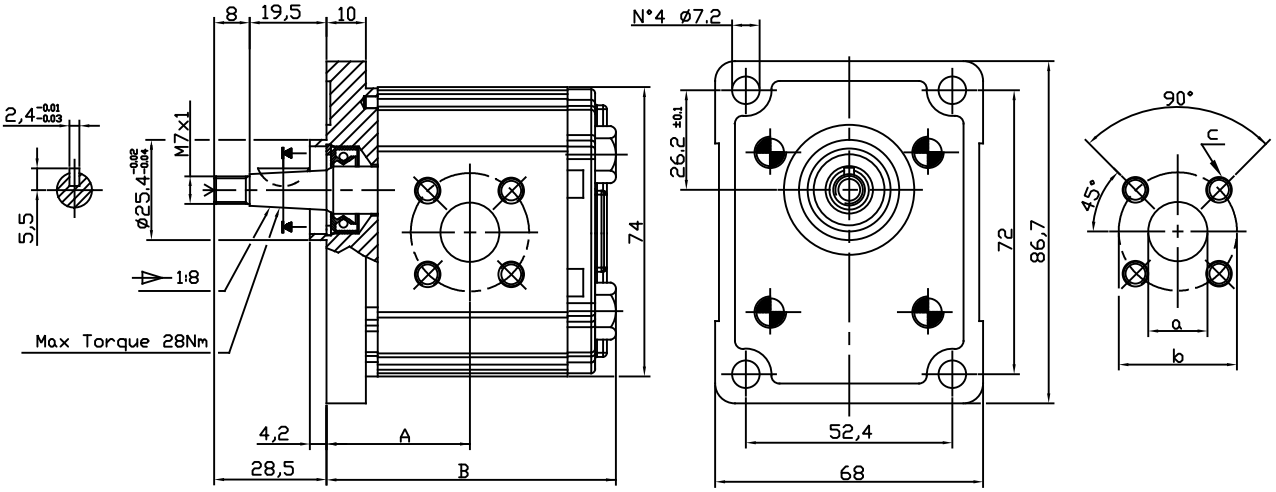
$$Q = \frac{V_v \cdot n \cdot N}{10^3} \quad l/min$$

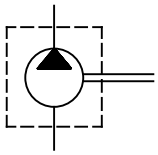
$$C = \frac{\Delta P \cdot V}{62.8 \cdot n_m} \quad N \cdot m$$

$$P = \frac{\Delta P \cdot V \cdot N}{612000 \cdot n_t} \quad kW$$

# GROUP 1 PUMPS - EUROPEAN STANDARD

**VERSION: B18 P1**



| Port | a | b | c |
|---|---|---|---|
| | mm | mm | Thread |
| Outlet | 13 | 30 | M6x12 |
| Inlet | 13 | 30 | M6x12 |

| Type | Displacement ( cc/rev ) | Max working pressure P1 ( bar ) | Peak pressure P3 ( bar ) | Max speed ( r.p.m) | Dimension A ( mm ) | Dimension B ( mm ) | Absorbed torque at 150 bar ( Nm ) | Code ( Anti-clockwise ) | Code ( Clockwise ) |
|---|---|---|---|---|---|---|---|---|---|
| **OT 100 P07** | 0.73 | 200 | 240 | 5000 | 31.30 | 64.5 | 1.8 | PS1007081S | PS1007081D |
| **OT 100 P11** | 1.05 | 250 | 290 | 5000 | 31.90 | 65.6 | 2.4 | PS1007082S | PS1007082D |
| **OT 100 P16** | 1.45 | 260 | 300 | 5000 | 32.75 | 67.3 | 4.2 | PS1007083S | PS1007083D |
| **OT 100 P20** | 1.80 | 260 | 300 | 5000 | 33.45 | 68.7 | 5.2 | PS1007084S | PS1007084D |
| **OT 100 P25** | 2.45 | 260 | 300 | 5000 | 34.50 | 70.8 | 6.7 | PS1007085S | PS1007085D |
| **OT 100 P32** | 3.05 | 260 | 300 | 5000 | 35.50 | 72.8 | 8.3 | PS1007086S | PS1007086D |
| **OT 100 P40** | 3.80 | 260 | 300 | 4500 | 36.90 | 75.6 | 10.1 | PS1007087S | PS1007087D |
| **OT 100 P49** | 4.70 | 240 | 280 | 4500 | 38.45 | 78.7 | 12.7 | PS1007088S | PS1007088D |
| **OT 100 P58** | 5.55 | 200 | 240 | 4000 | 40.00 | 81.8 | 15.0 | PS1007089S | PS1007089D |
| **OT 100 P65** | 6.25 | 190 | 230 | 3750 | 41.25 | 84.3 | 16.8 | PS1007090S | PS1007090D |
| **OT 100 P79** | 7.60 | 170 | 220 | 3500 | 43.60 | 89.0 | 20.5 | PS1017091S | PS1017091D |

## EXAMPLE OF ORDERING CODE

**OT100 P 20 S / B 18 P1**

- OT100 — Series
- P — Pump
- 20 — Displacement ( see above table )
- S — Rotation: S Anti-clockwise, D Clockwise
- B — Body for European flanges
- 18 — Taper shaft ( 1:8 )
- P1 — European standard flange

AVAILABLE FOR QUANTITIES