GROUP 1 PUMPS

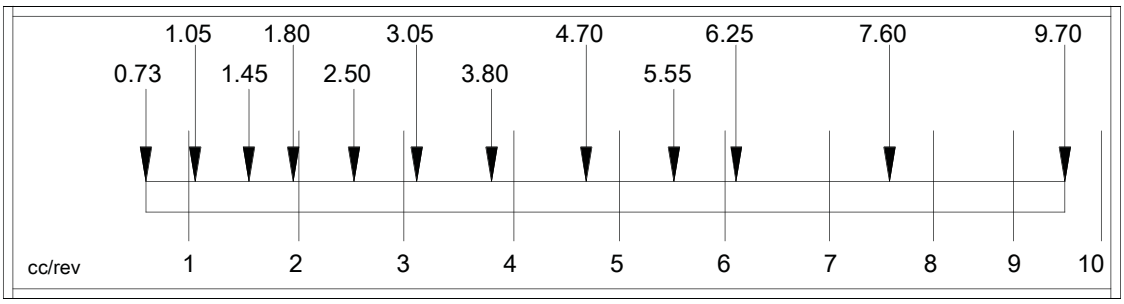
CONSTRUCTIVE CHARACTERISTICS:

PART	MATERIAL	CHARACTERISTICS
GEARS	**Hardened steel UNI 7846**	**Rs= 1250 N/mm²** **Rm= 1450 N/mm²**
FLANGE AND COVER	**G25 / G30 cast iron**	**Rs= 300 N/mm²** **Rm= 450 N/mm²**
BEARINGS	**Sical 3** **Bearings with DU**	**Rs= 350 N/mm²** **Rm= 390 N/mm²**
BODY	**Etruded in aluminium alloy** **Series 7020**	**Rs= 350 N/mm²** **Rm= 390 N/mm²**
O-RINGS	**Buna N** **Viton**	**90 Shore, up to 90°C** **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.

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WORKING CONDITIONS- LIMIT PERFORMANCES

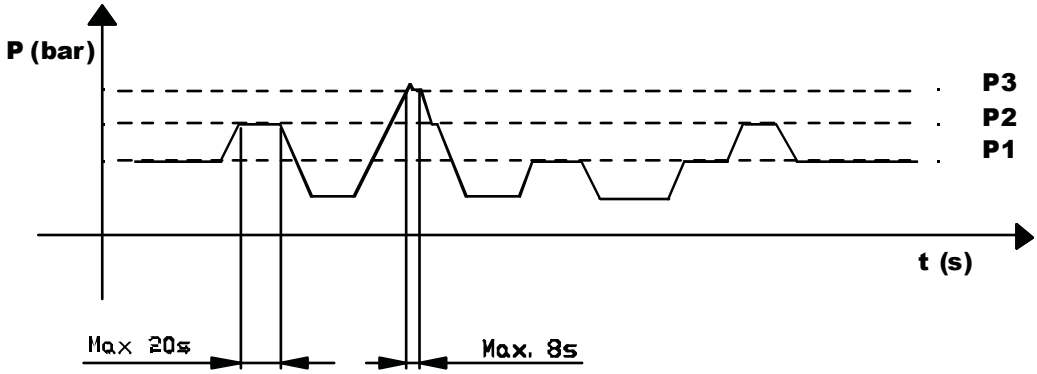
In normal working conditions there must be, in the suction pipe, a pressure lower than the atmospheric pressure.

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:

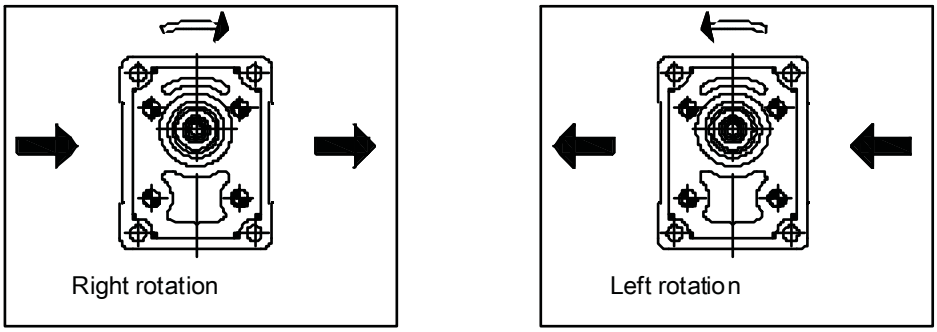


P3 Maximum peak pressure.
P2 Maximum intermittent pressure.
P1 Maximum continuous pressure.

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

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

DIRECTION OF ROTATION LOOKING AT THE SHAFT:



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FLUID FILTRATION

It is known that in many cases the premature pump performances reduction is due to a non correct filtration in the circuit.
The presence of contamination particles in the fluid usually corresponds to an irreparable wear of the pump internal parts.
It is raccomanded to pay attention to the plant cleaning, mainly in the starting activity.
The starting fluid contamination it must be according to the Norms ISO 4406 and it should not exceed the Class 19/16 with a filter 3x75.

Here below the technical parameters to respect:

FILTRATION IN SUCTION LINE	**30 / 60 Nominal micron**
FILTRATION IN PRESSURE LINE	**10 / 25 absolute micron**
MAXIMUM SPEED IN SUCTION	**0.5 / 1.5 m/s**
MAXIMUM SPEED IN OUTPUT	**3.0 / 5.5 m/s**

Sometime in contaminated places it is racommended to improve the filtration in pressure line and fit also an air filter.

HYDRAULIC FLUIDS

It is recommended the use of fluids made for hydraulic circuits.
Usually they are hydraulic oils with mineral basis HLP HV (DIN 51524).
Here below the technical parameters to respect:

MINIMUM VISCOSITY	**10 mm^2/s**
MAXIMUM VISCOSITY	**100 mm^2/s**
SUGGESTED VISCOSITY	**20 mm^2/s / 100 mm /s**
SUGGESTED TEMPERATURE	**30°C / 50°C**
WORKING TEMPERATURE	**-15°C / +80°C**

For applications with water-glycol (HF-C) it is racommended to consider the following limitations: 1500 rpm maximum speed and 200 bar maximum pressure.
For applications with phosphate ester fluids, please contact our Technical department.

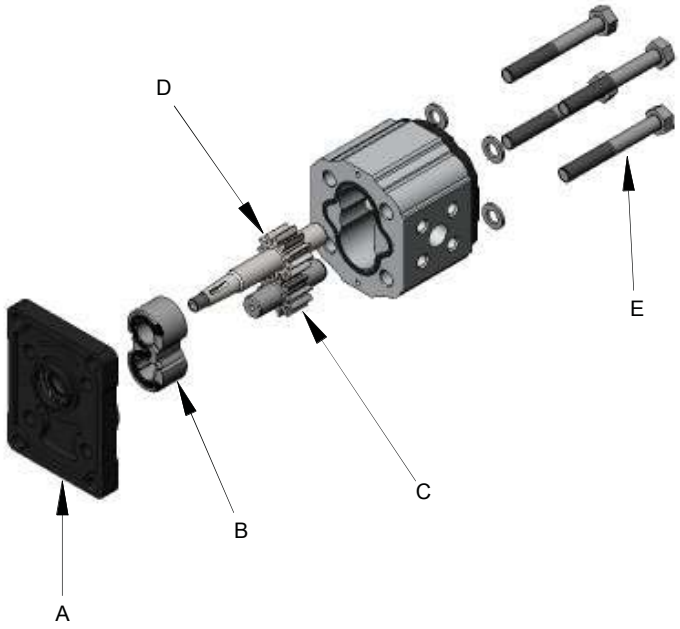
ISTALLATION INSTRUCTION

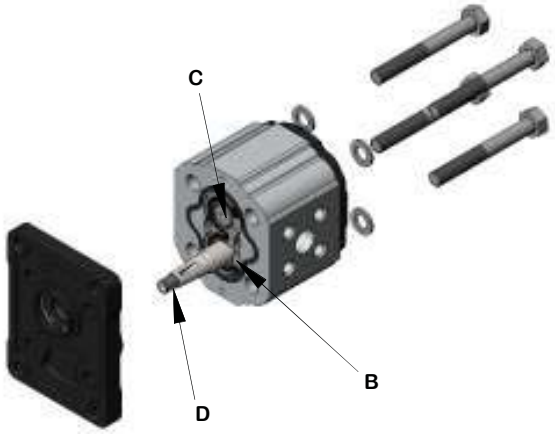
During the first starting it is racommended:
- to set the maximum pressure relief valves to a low value and gradually increase the pressure.
- to check, with single rotation pumps, that the rotation direction it is correct.
- to check that the connection betwen the motor and pump shaft is correct: without radial or axial load.
- to avoid starting under pressure in low temperature conditions or after long period of inactivity
- to check the fluid level in the tank
- to disconnect the return pipe and purge any air in the circuit
- to protect the pumpshaft seal when painting power pack
- to use suitable systems in the return lines to tank, to avoid turbulence in the circuit and ingress of air, water or contamination
- to check the torque that must be lower than the maximum torque admissible on the pump shaft
- to use new oil filters with absence of water or any other emulsifying substance
- to avoid starting with a air-oil solution
It is important to specify an oil tank at least twice the flow from the pump.

GROUP 1 PUMPS- CHANGING ROTATION

TO CHANGE ROTATION OF OT100 PUMP IT'S NECESSARY TO OPERATE IN THE FOLLOWING WAY:

1. **Clean the pump externally with care.**
2. **Loosen, and remove, the clamp bolts (E).**
3. **Coat the sharp edges of the drive shaft (D) with adesive tape and smear a layer of clean grease on the shaft end extension to avoid damaging the lip of the shaft seal when removing the mounting flange.**
4. **Remove the mounting flange (A), taking care to keep the flange as straight as possible during removal. Ensure that while removing the front mounting flange, the drive shaft and other components ramain in position.**
5. **Ease the drive gear (D) up to facilitate removal of bearings (B), taking care that the precision ground surfaces do not become damaged, and removed the drive gear.**
6. **Remove the driven gear (D) without overturning. The rear flange has not to be removed.**
7. **Re-locate the driven gear (C) in the position previously occupied by the drive gear (D).**
8. **Re-locate the drive gear (D) in the position previously occupied by the driven gear (C).**
9. **Replace the front flange (A) in its original position.**
10. **Gently wipe the machined surface of the front flange (A) and the body with a canvas.**
11. **Refit the front mounting flange (A) turned by 180° from its original position.**
12. **Refit the clamp bolts (E).(SCREW TIGHTENING TORQUE = 28 Nm)**
13. **Check that the pump rotates freely when the drive shaft (D) is turned by hand. If not a pressure plate seal may be pinched.**
14. **The pump is ready for installation with the original rotation reversed.**





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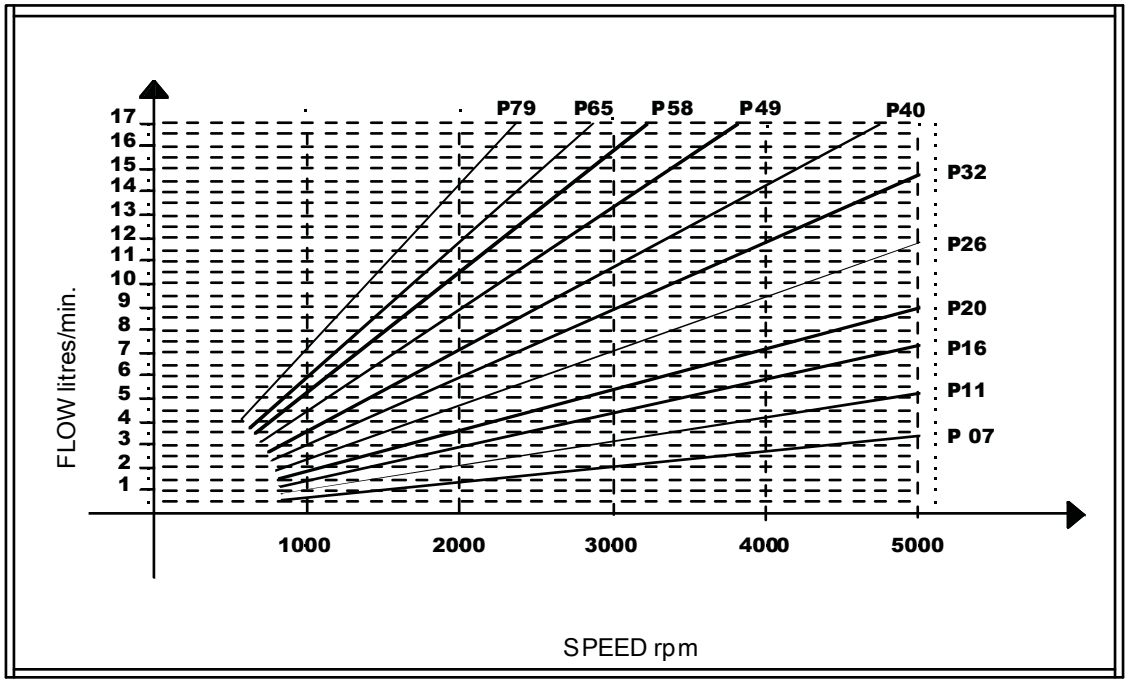
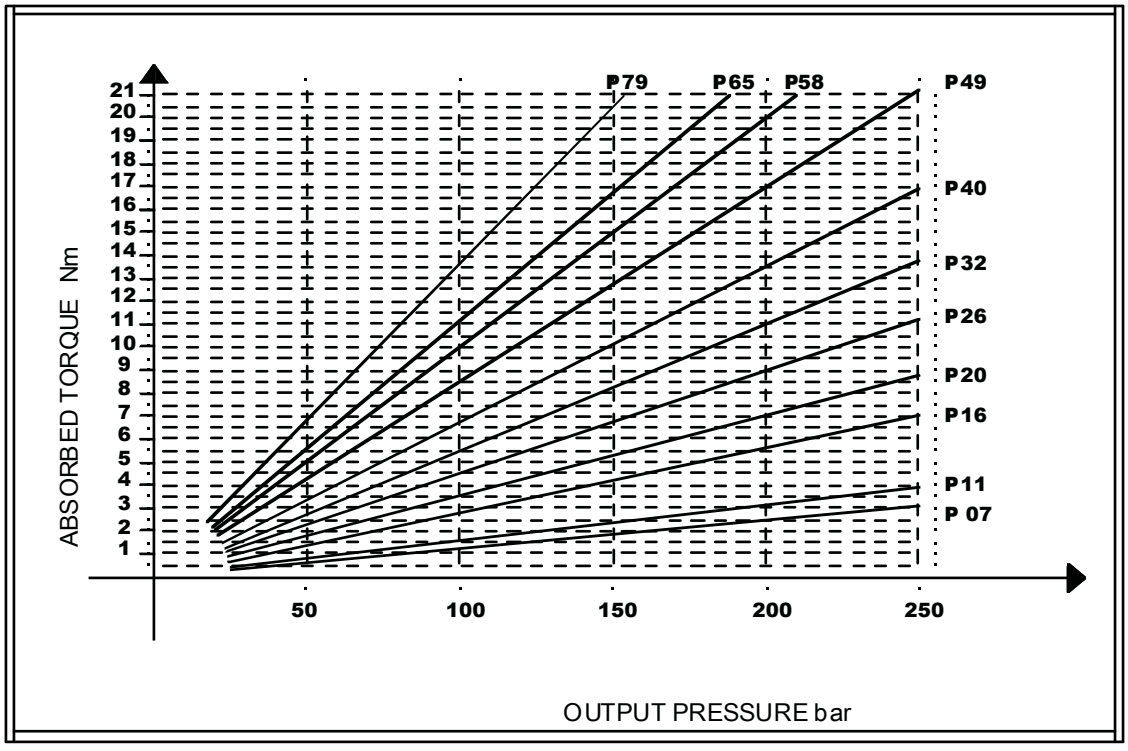
FLOW CHARACTERISTICS CURVES



ABSORBED TORQUE



NOTE

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

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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**

$$Q = V \cdot n_v \cdot N \cdot 10^{-3} \qquad l/min$$

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

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