POMPE GRUPPO 2

OT OilTechnology è una giovane azienda, costituita nel novembre del 2001 , che produce nell'hinterland di Parma una valida gamma di pompe ad ingranaggi esterni.

Dal punto di vista tecnico OT OilTechnology ha realizzato un progetto " aggiornato " che è la sintesi delle esperienze applicative e delle nuove esigenze di mercato.

Le chiavi del successo di OT sono:

- *SERVIZIO:* **Un servizio esemplare e flessibile per caratterizzare l'azienda.**

- *QUALITA':* **Costante monitoraggio del processo produttivo e adeguato collaudo finale prodotto al 100% per assicurare la migliore qualita'.**

- *PREZZO:* **Bassi costi di struttura uniti ad un processo produttivo efficiente per garantire prezzi competitivi.**

- *PROPORSI E DIVENIRE PARTNER DEI PROPRI CLIENTI:* **questa è la MISSION di OT OilTechnology.**

GROUP 2 PUMPS

OT OilTechnology is a young Company, founded in November 2001, which makes a comprehensive range of external gear pumps.

From the technical side OT Oiltechnology has realized an "up-to date" project that is in line with the new needs of the market.

The OT key to succes is the following:

- *SERVICE:* **A very good service, higly flexible, most important attribute of the Company.**

- *QUALITY:* **Costant quality control and 100% product resting to achieve the best results possible from our working processes.**

- *PRICE:* **Low overheads together with an efficient working process to offer competitive prices.**

- *TO BE A PARTNER OF OUR CUSTOMERS:* **This is the MISSION of OT OilTechnology.**

POMPE GRUPPO 2

INDICE GENERALE

- Caratteristiche costruttive, generali e di impiego	Pag. 4 - 6 - 8 - 10
- Inversione della rotazione	Pag. 12
- Verifica della durata del cuscinetto	Pag. 14
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- Pompe standard Europeo	Pag. 20 - 22
- Pompe standard Tedesco	Pag. 24 - 26 - 28 - 30 - 32 - 34
- Pompe standard Americano SAE "A"	Pag. 36 - 38 - 40 - 42 - 44 46 - 48 - 50 - 52
- Pompe con supporto	Pag. 54 - 56 - 58 - 60 - 62 - 64 66 - 68 - 70
- Pompe tandem	Pag. 72 - 74 - 76 - 78 - 80 - 82 84 - 86 - 88 - 90 - 92 - 94
-Pompe intermedie e componenti speciali	Pag. 96 - 98 - 100
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GROUP 2 PUMPS

GENERAL INDEX

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- Changing rotation	Page 13
- Verify of bearing duration	Page 15
- Characteristics curves - pump calculation	Page 17 - 19
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- German standard pumps	Page 25 - 27 - 29 - 31 - 33 - 35
- SAE "A" standard pumps	Page 37 - 39 - 41 - 43 - 45 47 - 49 - 51 - 53
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- Unidirectional motors	Page 103 - 105 - 107 - 109
- Reversible pumps and motors	Page 111 - 113 - 115 - 117 - 119 121
- Rear cover for pumps and motors	Page 123 - 125 - 127

GROUP 2 PUMPS

GEAR HOUSING

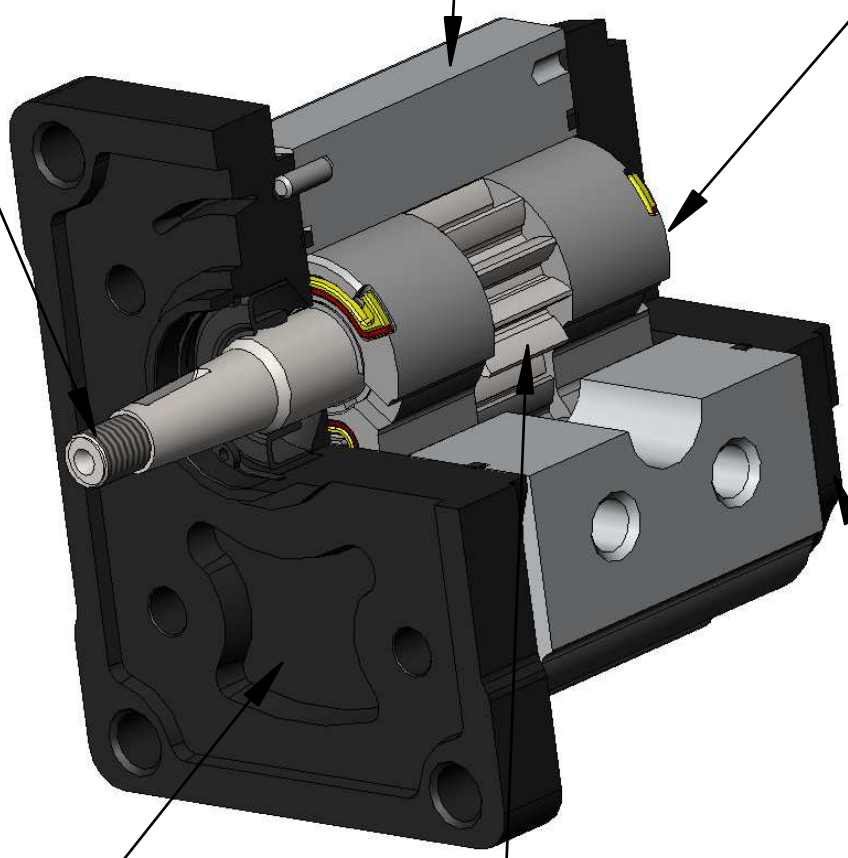
Extruded in aluminium alloy

DRIVE SHAFTS

Choice of several standard drive shafts

BEARINGS

Hi-resistant aluminium alloy with DU sleeve bearings to offer high performances.



MOUNTING FLANGES

Choice of several mounting flanges in cast iron

GEARS

Designed specifically to reduce the noise level and offer the best performance between flow pulsation and displacements

COVER

Made in cast iron material and available with suction port

GROUP 2 PUMPS

CONSTRUCTIVE CHARACTERISTICS:

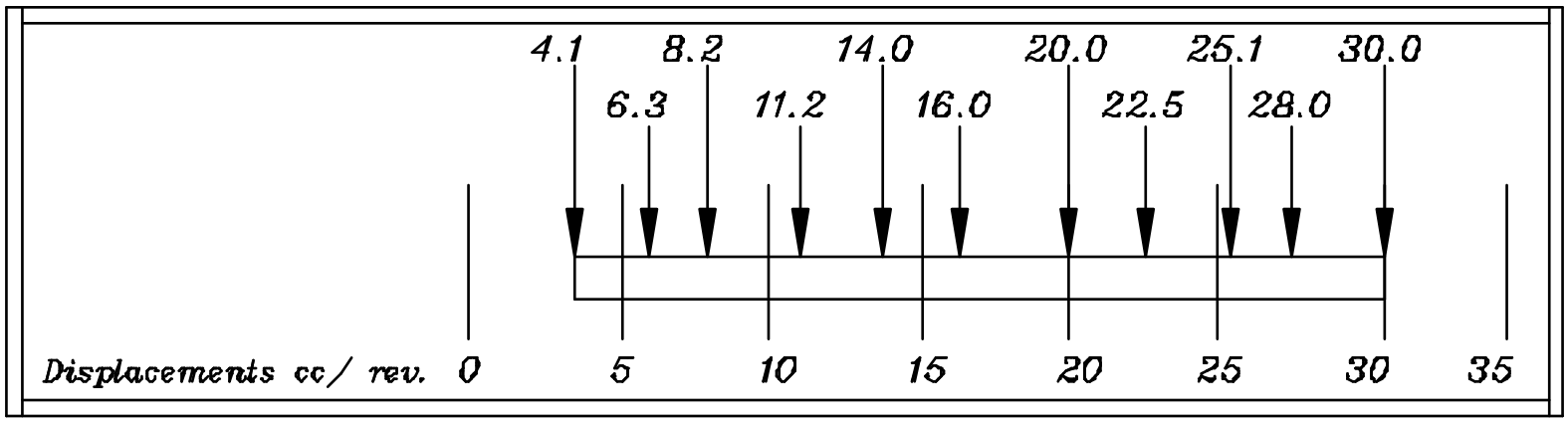
PART	*MATERIAL*	*CHARACTERISTICS*
GEARS	**Hardened steel UNI 7846**	**Rs= 1250 N/mm^2** **Rm= 1450 N/mm^2**
FLANCE AND COVER	**G25 / G30 cast iron**	**Rs= 300 N/mm^2** **Rm= 450 N/mm^2**
BEARINGS	**Avional** **Bearings with DU**	**Rs= 350 N/mm^2** **Rm= 390 N/mm^2**
BODY	**Etruded in aluminium alloy** **Series 7020**	**Rs= 350 N/mm^2** **Rm= 390 N/mm^2**
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 3.1 Kg to 4.3 kg
Maximum speed up to 4.000 rpm.
Type of shafts: **Taper 1:8 and 1:5**
Oldham
Slined DIN 5482 17x14.
SAE A splined-9 TEETH
SAE A cylindrical - Ø15.85 - SAE A 11 TEETH
Type of flanges: **European standard**
German standard
SAE A standard.

Displacements from 4 cc/rev to 30cc/rev.
The displacements are available according this table:



There is also available a special version with built-in support.

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 2 PUMPS

WORKING CONDITIONS- LIMIT PERFORMANCES

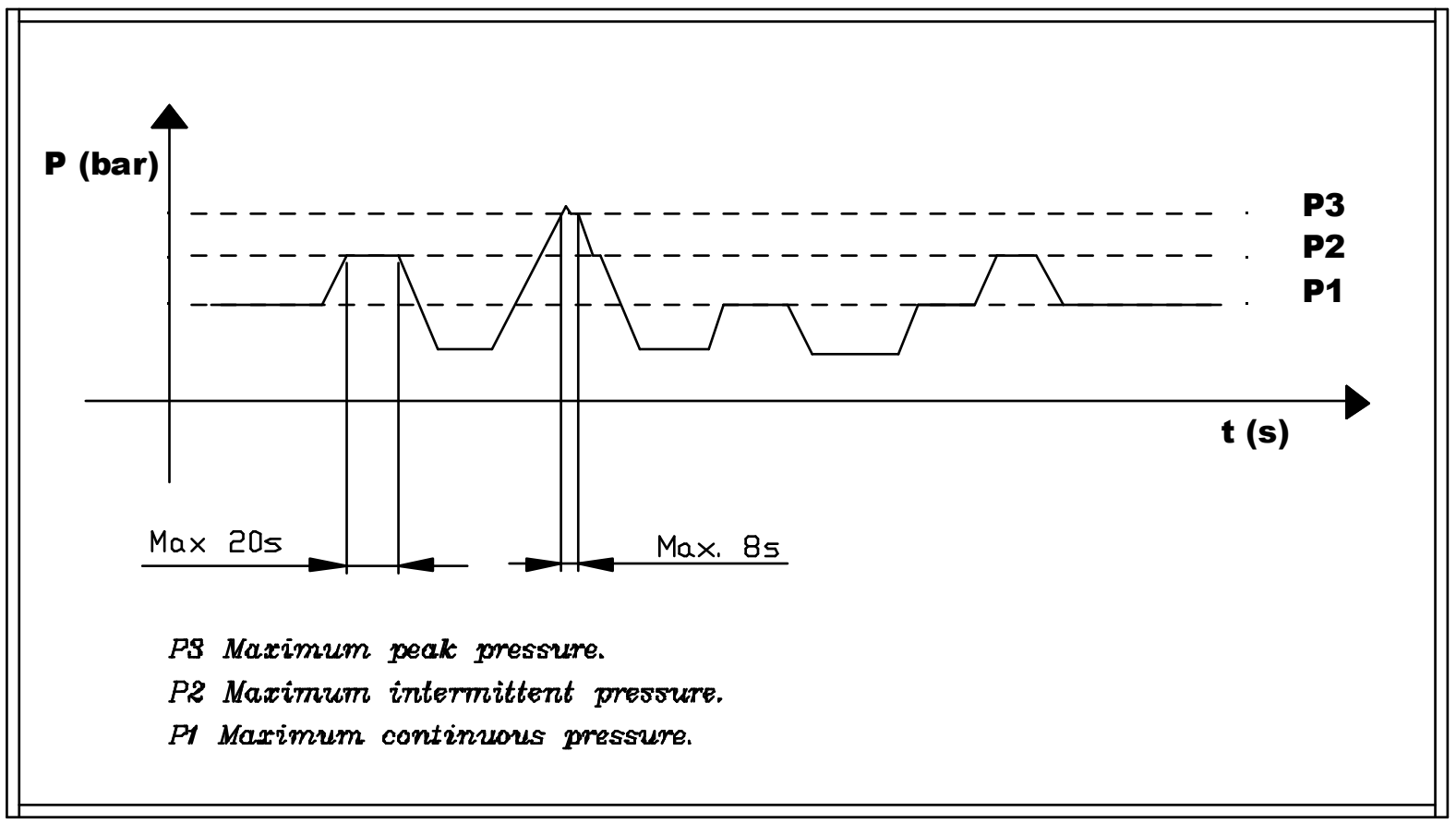
In normal working conditions there must be, in the suction pipe, a pressure lower than the atmospheric pressure.

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.

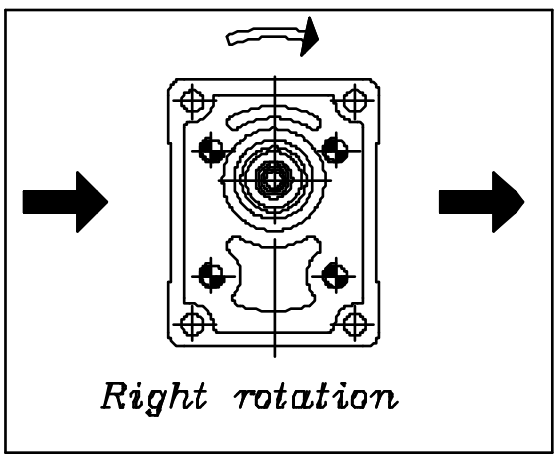
In the following table are described the admitted pressures:

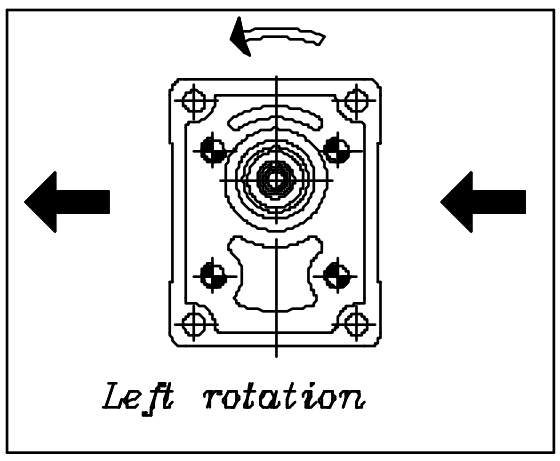


The standard working speeds (minimum and maximum) are the following:

Min. = 400 rpm	Max = (See following table)

DIRECTION OF ROTATION LOOKING AT THE SHAFT:





GROUP 2 PUMPS

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	**120 / 150 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 (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^2/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.

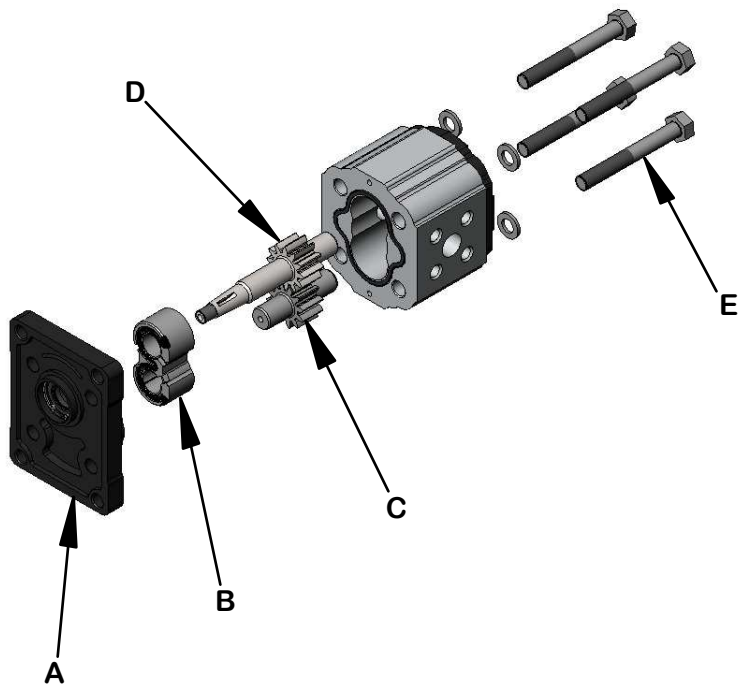
ISTALLATION INSTRUCTION

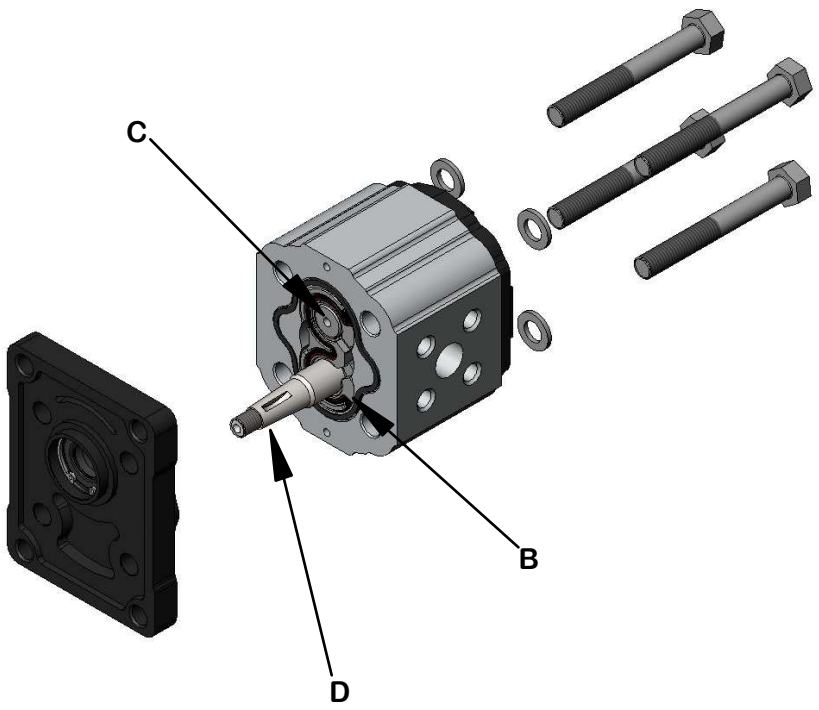
During the first starting it is racommended:
- to set the maximum pressure relief valves to a low value and gradually increase the pressure.
- to check, with single rotation pumps, that the rotation direction it is correct.
- to check that the connection betwen the motor and pump shaft is correct: without 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.

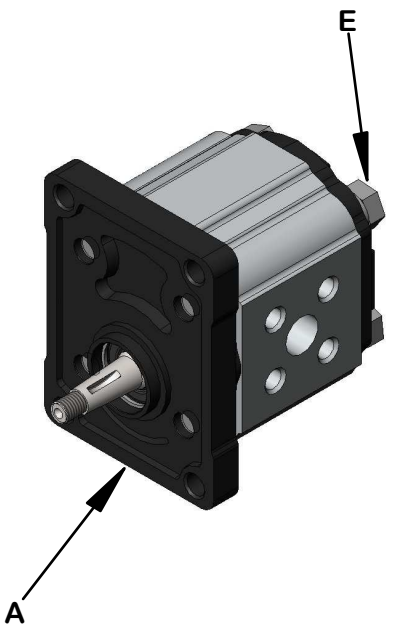
GROUP 2 PUMPS- CHANGING ROTATION

TO CHANGE ROTATION OF OT200 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.

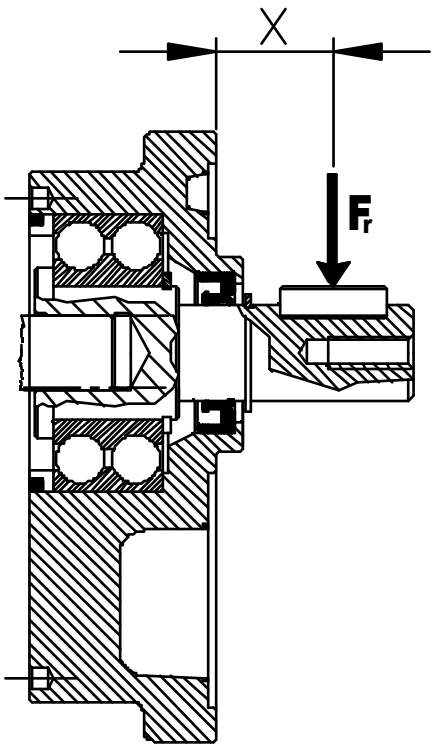






GROUP 2 PUMPS- WITH FRONT BEARING

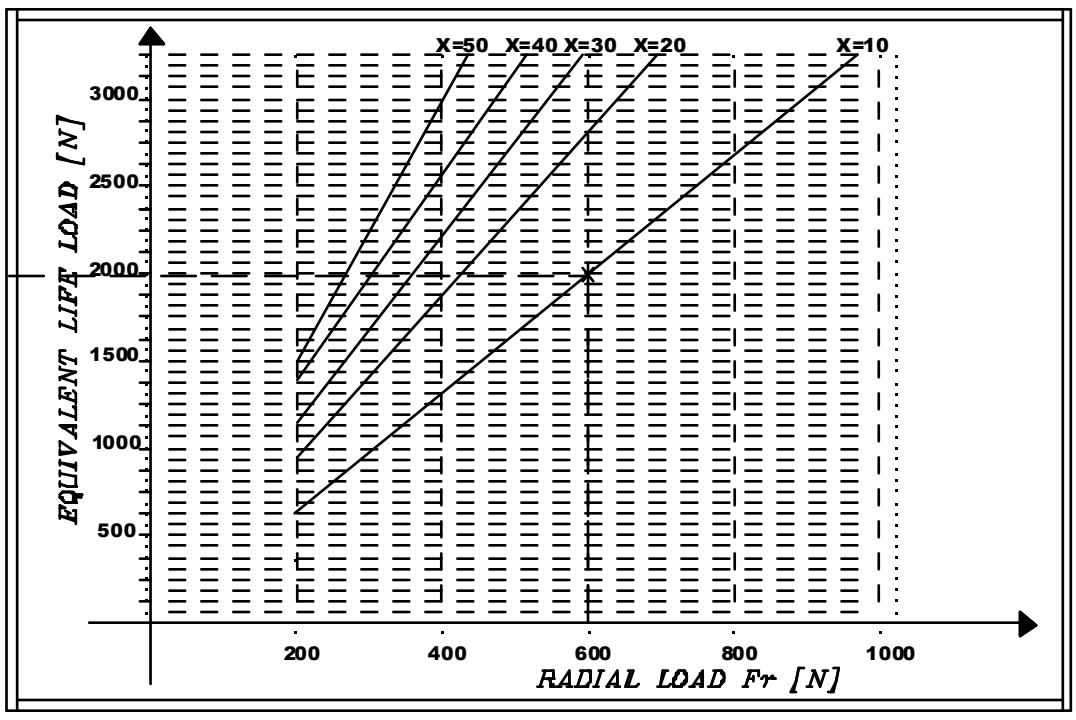
VERIFY OF BEARING LIFE

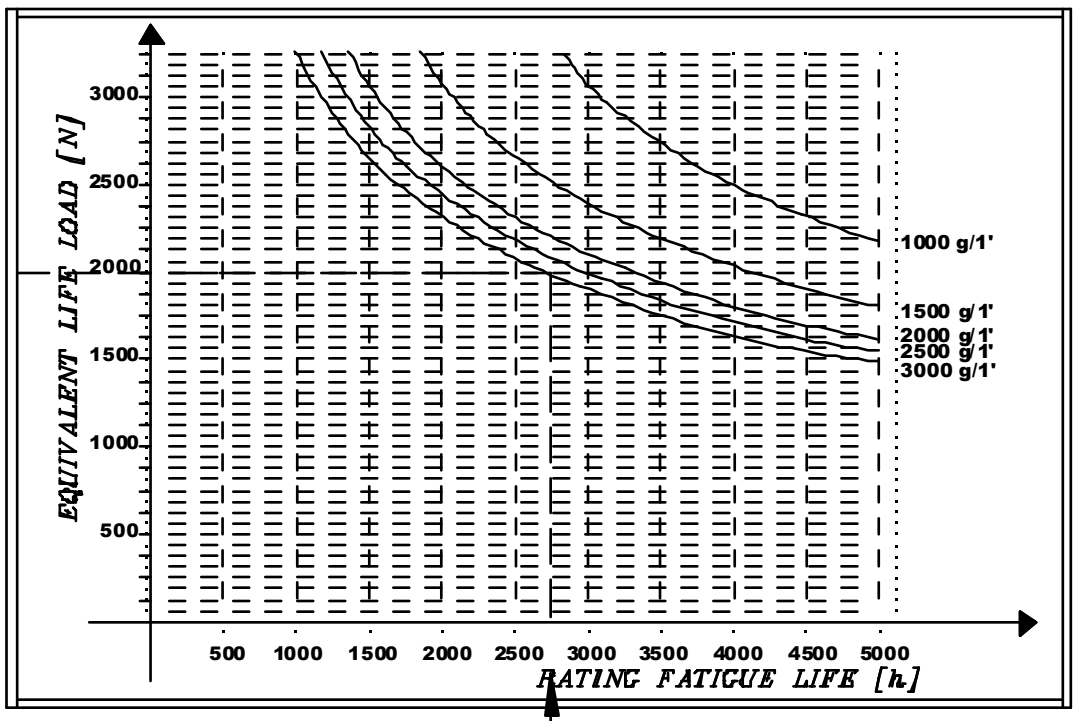


X = Distance of the radial flange result from the mounting flange

Each curve has been obtained at:
Lubrificant oil ISO VG 46
Temperature 60° C (140° F)
Without or with very low axial load

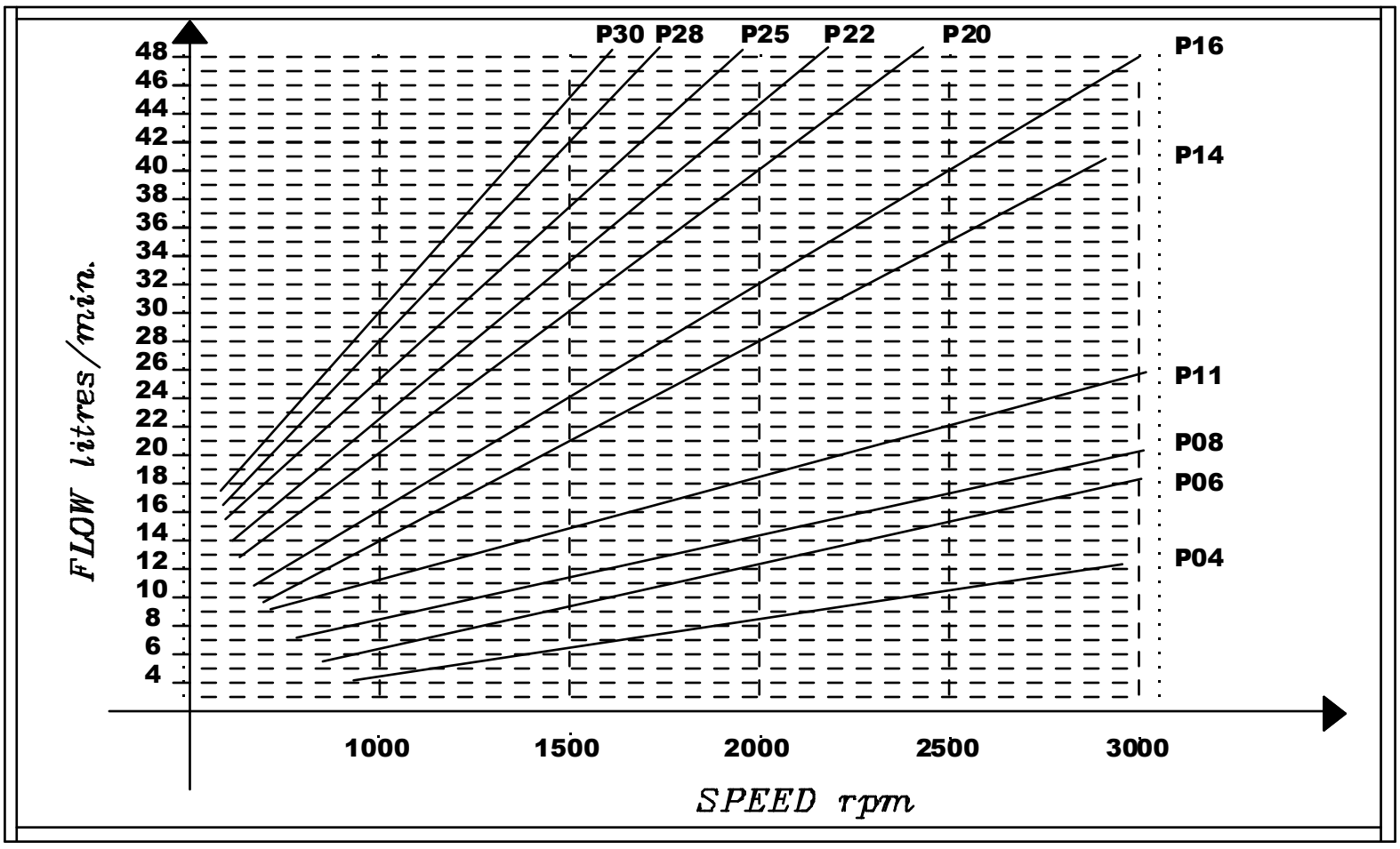
Example
Fr = 600 N
X = 20 mm
Speed = 3000 rpm
Rating fatigue life ≈ 2750 h



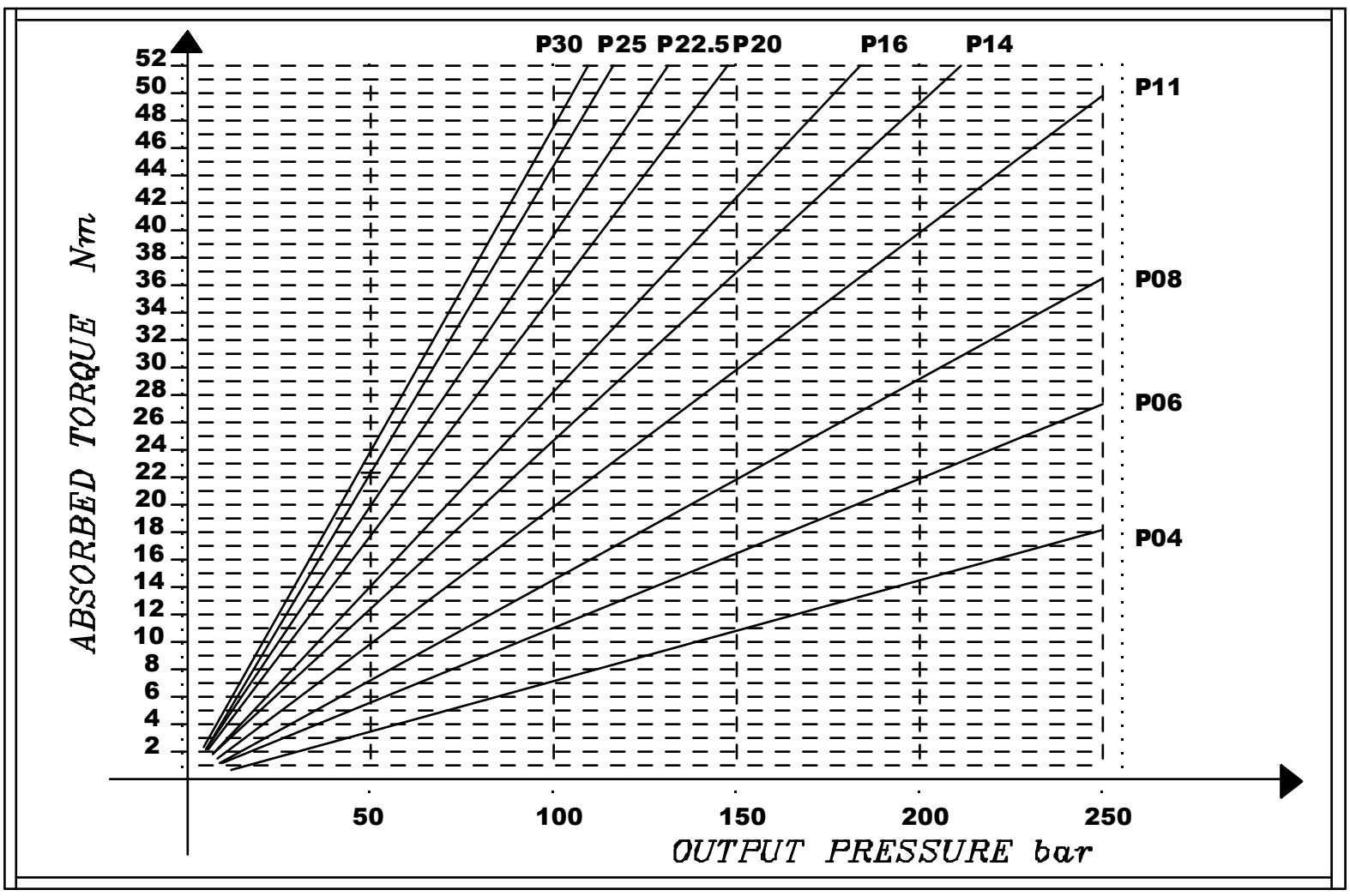


GROUP 2 PUMPS

FLOW CHARACTERISTICS CURVES



ABSORBED TORQUE



NOTE

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

GROUP 2 PUMPS

PUMP CALCULATION

V	**Displacement**	**cc / rev**
Q	**Flow**	**l/min**
P	**Power**	**kW**
C	**Torque**	**Nm**
N	**Speed**	**rpm**
ΔP	**Pressure**	**bar**
n_v	**Volumetric efficiency**	**0.85**
n_m	**Mechanical efficiency**	**0.9**
n_t	**Total efficiency**	**0.80**

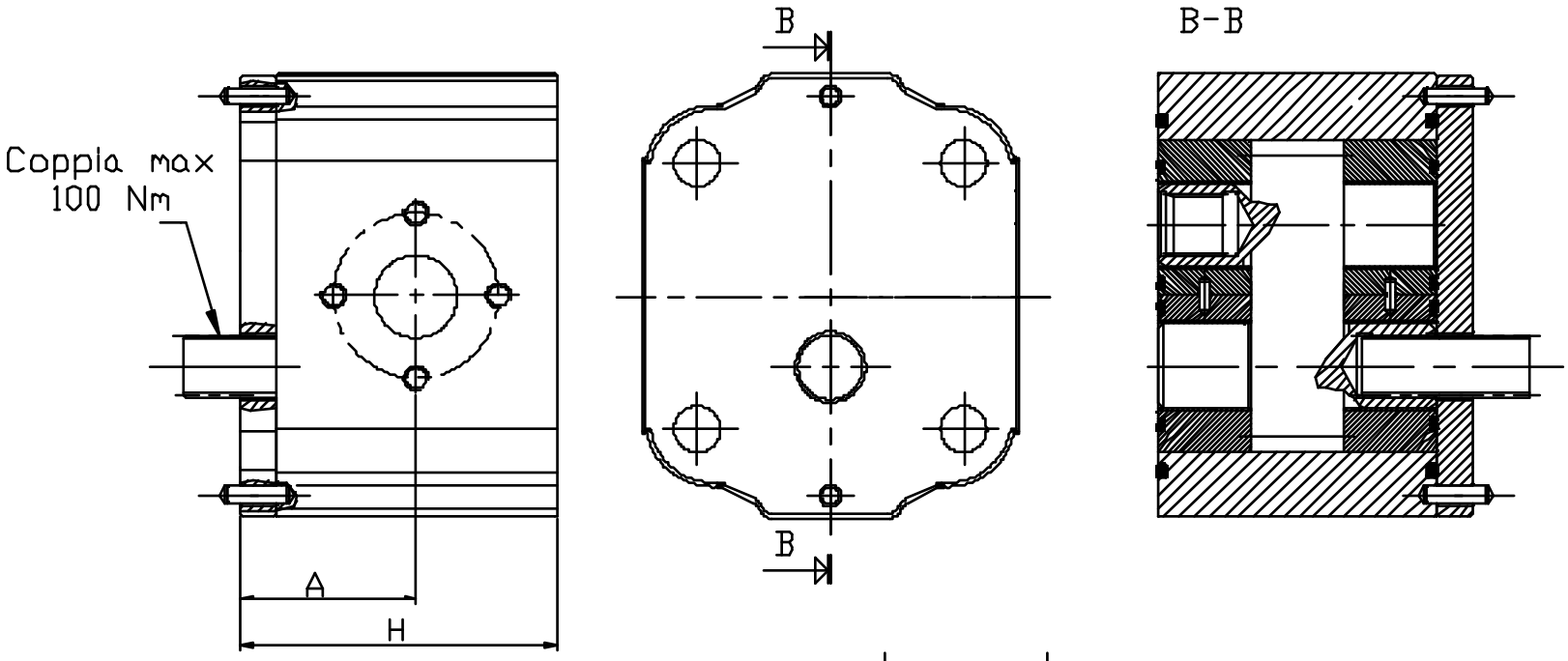
$$Q = V \cdot n_v \cdot N \cdot 10^{-3} \qquad l/min$$

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

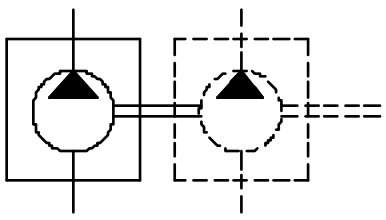
$$P = \frac{\Delta P \cdot V \quad N}{612000 \cdot n_t} \qquad kW$$

POMPE GRUPPO 2 INTERMEDIE PER TANDEM

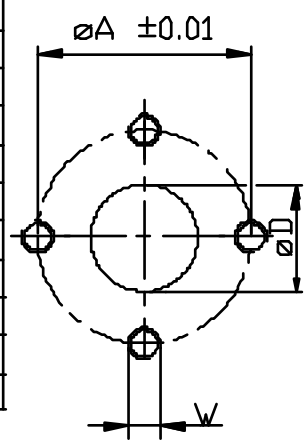
VERSIONE: P X X INTERMEDIA



NOTE : Coppia di serraggio viti 48 Nm



Tipo	Cilindrata	Pressione massima continua P1	Pressione di punta P3	Velocita' massima	Dimensione		Bocca di aspirazione			Bocca di mandata		
	(cc/giro)	(bar)	(bar)	(giri/min.)	H (mm)	A	ØD	ØA	W	ØD	ØA	W
OT 200 P04	04,10	250	300	4000	55.50	31.50	13	30	M6	13	30	M6
OT 200 P06	06,20	250	300	3500	58.50	33.00	13	30	M6	13	30	M6
OT 200 P08	08,20	250	300	3500	61.50	34.50	13	30	M6	13	30	M6
OT 200 P11	11,20	250	300	3500	65.80	36.65	13	30	M6	13	30	M6
OT 200 P14	14,00	240	300	3000	69.80	36.65	20	40	M8	13	30	M6
OT 200 P16	16,00	240	300	3000	72.70	40.10	20	40	M8	13	30	M6
OT 200 P20	20,00	200	240	3000	78.50	43.00	20	40	M8	13	30	M6
OT 200 P22	22,50	170	210	2500	90.20	48.85	20	40	M8	13	30	M6
OT 200 P25	25,10	170	210	2500	94.00	50.75	20	40	M8	13	30	M6
OT 200 P28	28,00	140	180	2500	98.20	52.85	20	40	M8	13	30	M6
OT 200 P30	30,00	130	170	2000	101.00	54.25	20	40	M8	13	30	M6



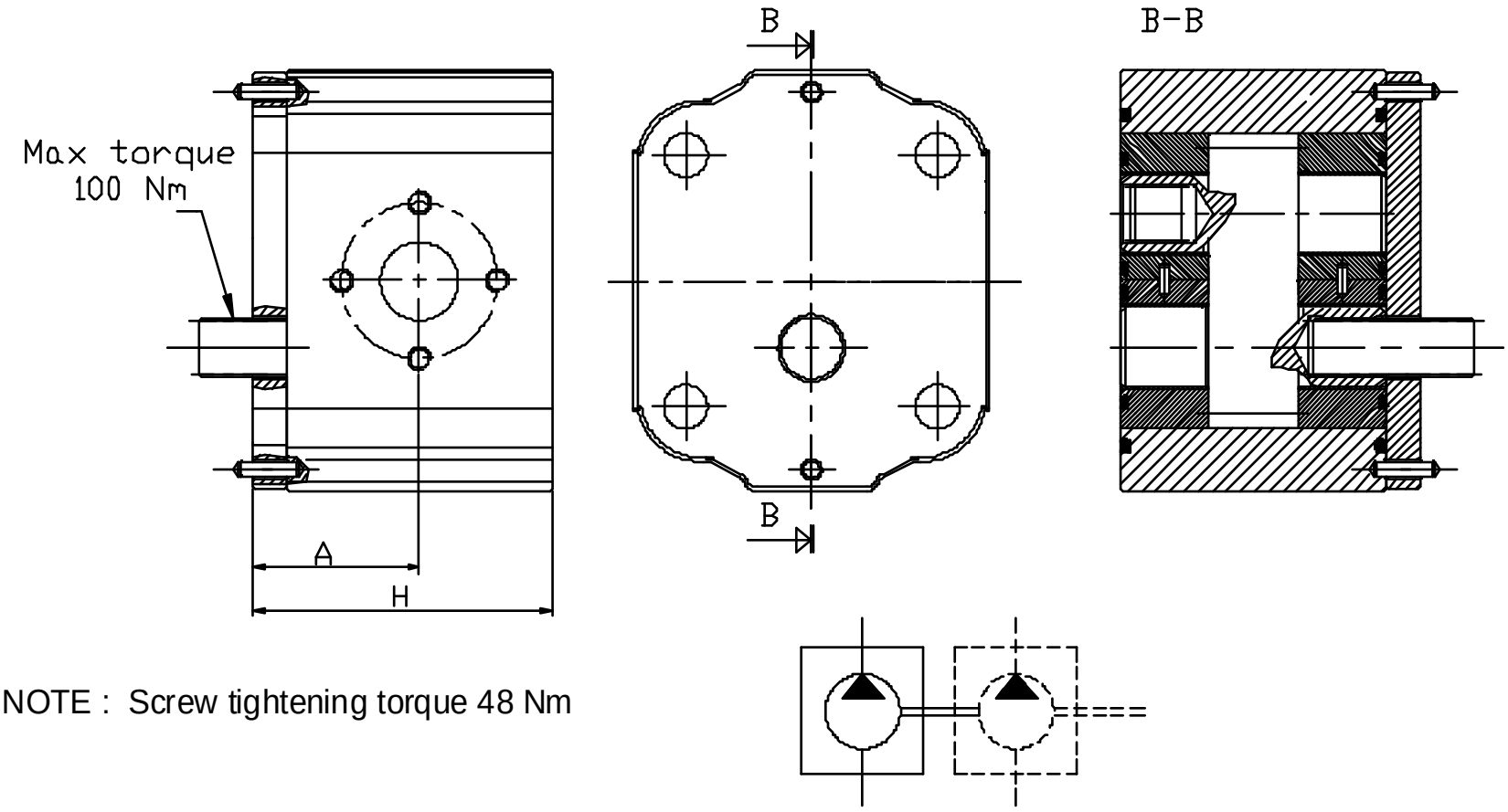
ESEMPIO DI CODICE D'ORDINAZIONE

OT200 P 08 S / P X X INTERMEDIA

- Serie
- Pompa
- Cilindrata (vedere tabella)
- Rotazione: S Sinistra; D Destra
- Corpo con bocche a flangia

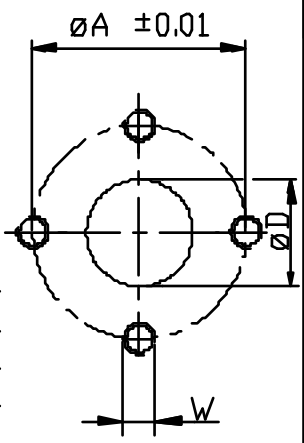
INTERMEDIATE GROUP 2 PUMPS FOR TANDEM UNITS

VERSION : P X X INTERMEDIATE



NOTE : Screw tightening torque 48 Nm

Type	Displacement (cc/rev)	Max working pressure P1 (bar)	Peak pressure P3 (bar)	Max speed (r.p.m)	Dimension H (mm)	Dimension A (mm)	Inlet port ØD	Inlet port ØA	Inlet port W	Outlet port ØD	Outlet port ØA	Outlet port W
OT 200 P04	04,10	250	300	4000	55.50	31.50	13	30	M6	13	30	M6
OT 200 P06	06,20	250	300	3500	58.50	33.00	13	30	M6	13	30	M6
OT 200 P08	08,20	250	300	3500	61.50	34.50	13	30	M6	13	30	M6
OT 200 P11	11,20	250	300	3500	65.80	36.65	13	30	M6	13	30	M6
OT 200 P14	14,00	240	300	3000	69.80	36.65	20	40	M8	13	30	M6
OT 200 P16	16,00	240	300	3000	72.70	40.10	20	40	M8	13	30	M6
OT 200 P20	20,00	200	240	3000	78.50	43.00	20	40	M8	13	30	M6
OT 200 P22	22,50	170	210	2500	90.20	48.85	20	40	M8	13	30	M6
OT 200 P25	25,10	170	210	2500	94.00	50.75	20	40	M8	13	30	M6
OT 200 P28	28,00	140	180	2500	98.20	52.85	20	40	M8	13	30	M6
OT 200 P30	30,00	130	170	2000	101.00	54.25	20	40	M8	13	30	M6



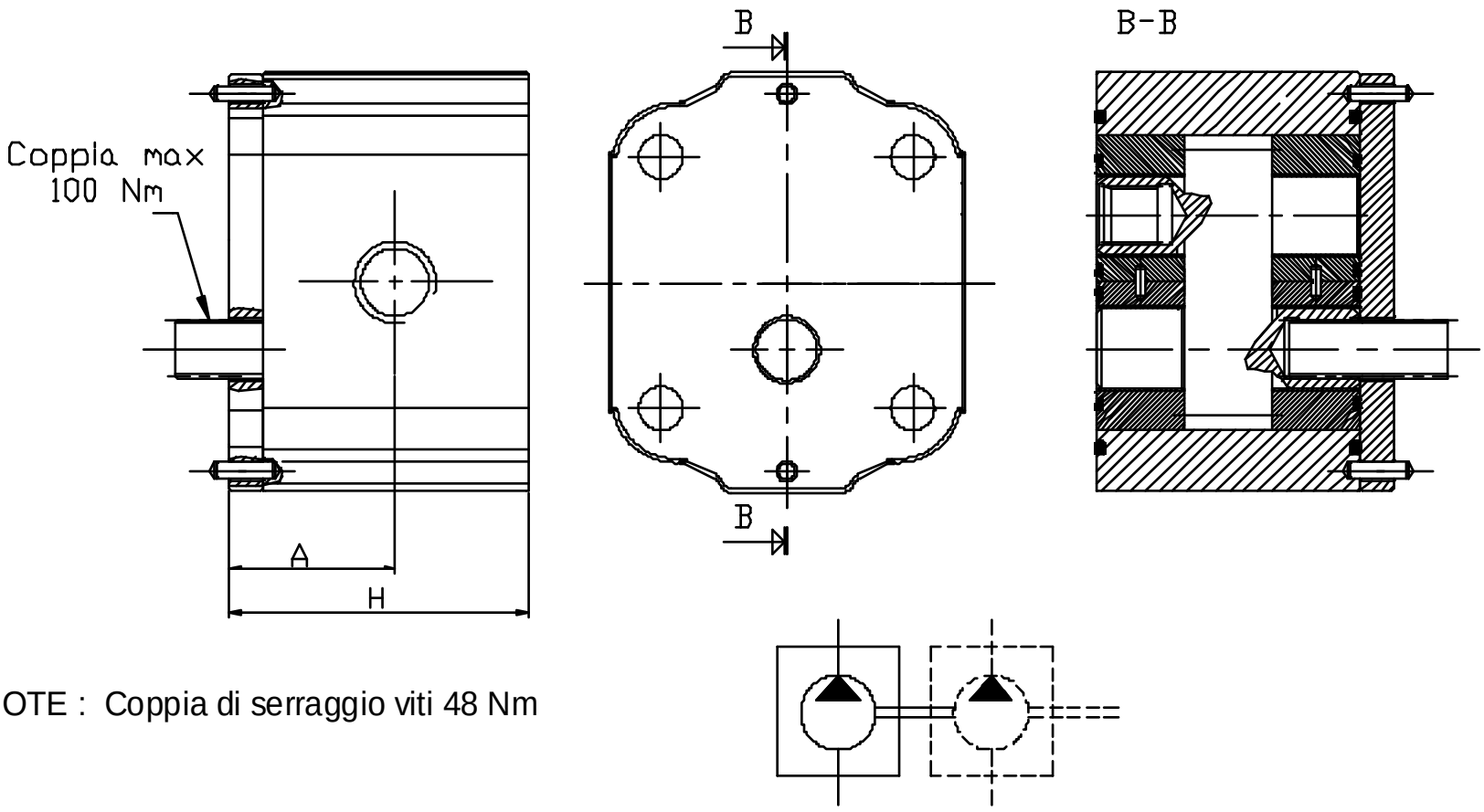
EXAMPLE OF ORDERING CODE

OT200 P 08 S / P X X INTERMEDIATE

- OT200 — Series
- P — Pump
- 08 — Displacement (see above table)
- S — Rotation: S Anti-clockwise; D Clockwise
- P — Body for European flanges

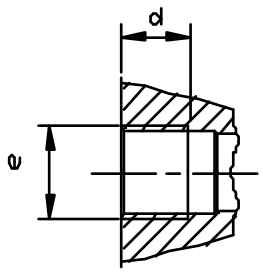
POMPE GRUPPO 2 INTERMEDIE PER TANDEM

VERSIONE: G X X INTERMEDIA



NOTE : Coppia di serraggio viti 48 Nm

Tipo	Cilindrata (cc/giro)	Pressione massima continua P1 (bar)	Pressione di punta P3 (bar)	Velocita' massima (giri/min.)	Dimensione H (mm)	Dimensione A (mm)	Bocca di aspirazione e	Bocca di aspirazione d	Bocca di mandata e	Bocca di mandata d
OT 200 P04	04,10	250	300	4000	55.50	31.50	G1/2	14	G1/2	14
OT 200 P06	06,20	250	300	3500	58.50	33.00	G1/2	14	G1/2	14
OT 200 P08	08,20	250	300	3500	61.50	34.50	G1/2	14	G1/2	14
OT 200 P11	11,20	250	300	3500	65.80	36.65	G1/2	14	G1/2	14
OT 200 P14	14,00	240	300	3000	69.80	36.65	G3/4	16	G3/4	16
OT 200 P16	16,00	240	300	3000	72.70	40.10	G3/4	16	G3/4	16
OT 200 P20	20,00	200	240	3000	78.50	43.00	G3/4	16	G3/4	16
OT 200 P22	22,50	170	210	2500	90.20	48.85	G3/4	16	G3/4	16
OT 200 P25	25,10	170	210	2500	94.00	50.75	G3/4	16	G3/4	16
OT 200 P28	28,00	140	180	2500	98.20	52.85	G3/4	16	G3/4	16
OT 200 P30	30,00	130	170	2000	101.00	54.25	G3/4	16	G3/4	16



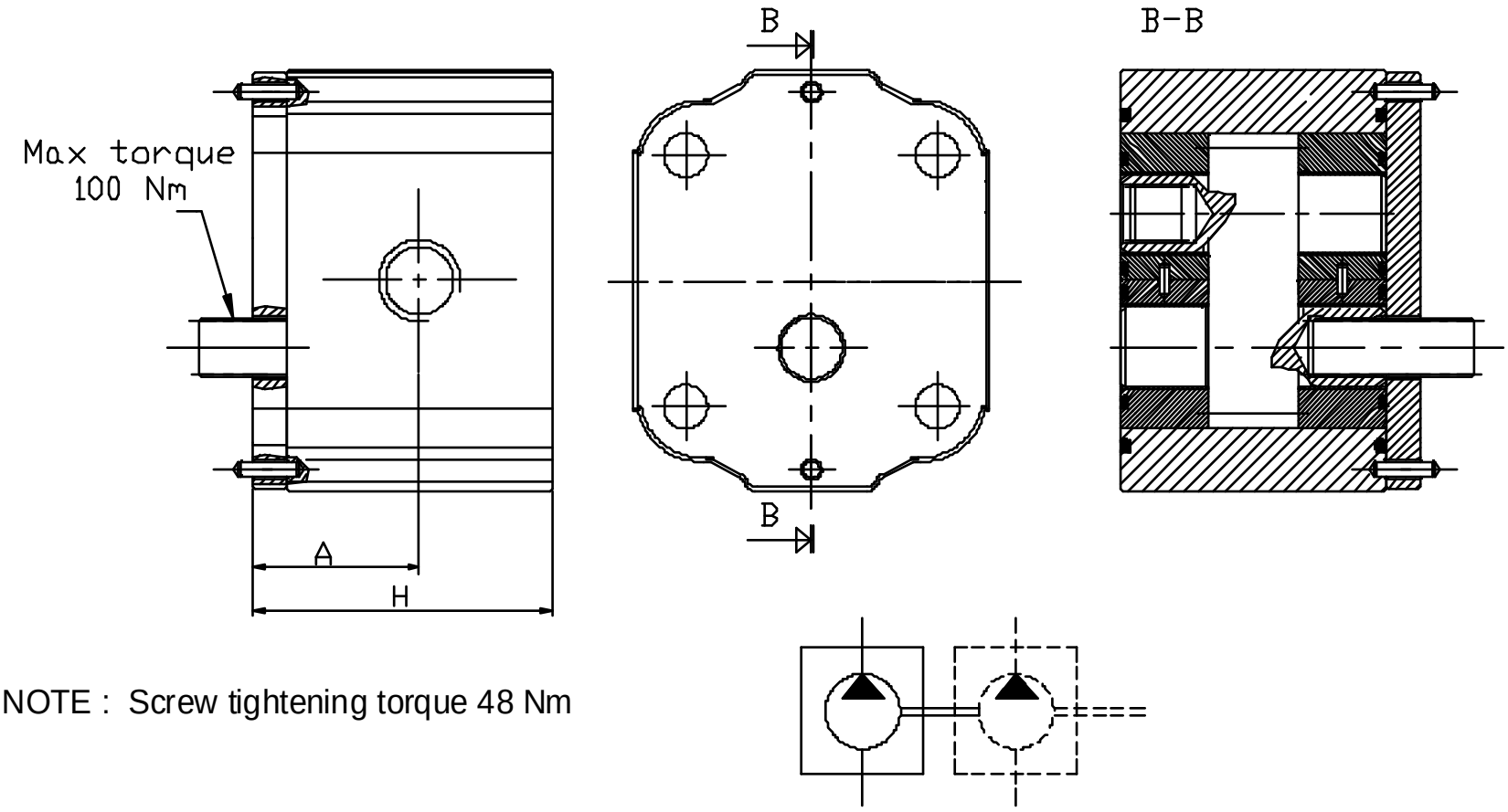
ESEMPIO DI CODICE D'ORDINAZIONE

OT200 P 08 S / G X X INTERMEDIA

- OT200 — Serie
- P — Pompa
- 08 — Cilindrata (vedere tabella)
- S — Rotazione: S Sinistra; D Destra
- G — Corpo con bocche filettate (BSP)
- X X — INTERMEDIA

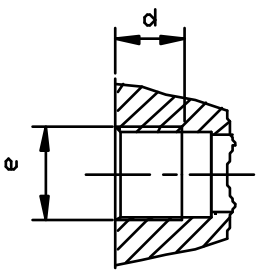
INTERMEDIATE GROUP 2 PUMPS FOR TANDEM UNITS

VERSION : G X X INTERMEDIATE



NOTE : Screw tightening torque 48 Nm

Type	Displacement (cc/rev)	Max working pressure P1 (bar)	Peak pressure P3 (bar)	Max speed (r.p.m)	Dimension H (mm)	Dimension A (mm)	Inlet port e	Inlet port d	Outlet port e	Outlet port d
OT 200 P04	04,10	250	300	4000	55.50	31.50	G1/2	14	G1/2	14
OT 200 P06	06,20	250	300	3500	58.50	33.00	G1/2	14	G1/2	14
OT 200 P08	08,20	250	300	3500	61.50	34.50	G1/2	14	G1/2	14
OT 200 P11	11,20	250	300	3500	65.80	36.65	G1/2	14	G1/2	14
OT 200 P14	14,00	240	300	3000	69.80	36.65	G3/4	16	G3/4	16
OT 200 P16	16,00	240	300	3000	72.70	40.10	G3/4	16	G3/4	16
OT 200 P20	20,00	200	240	3000	78.50	43.00	G3/4	16	G3/4	16
OT 200 P22	22,50	170	210	2500	90.20	48.85	G3/4	16	G3/4	16
OT 200 P25	25,10	170	210	2500	94.00	50.75	G3/4	16	G3/4	16
OT 200 P28	28,00	140	180	2500	98.20	52.85	G3/4	16	G3/4	16
OT 200 P30	30,00	130	170	2000	101.00	54.25	G3/4	16	G3/4	16



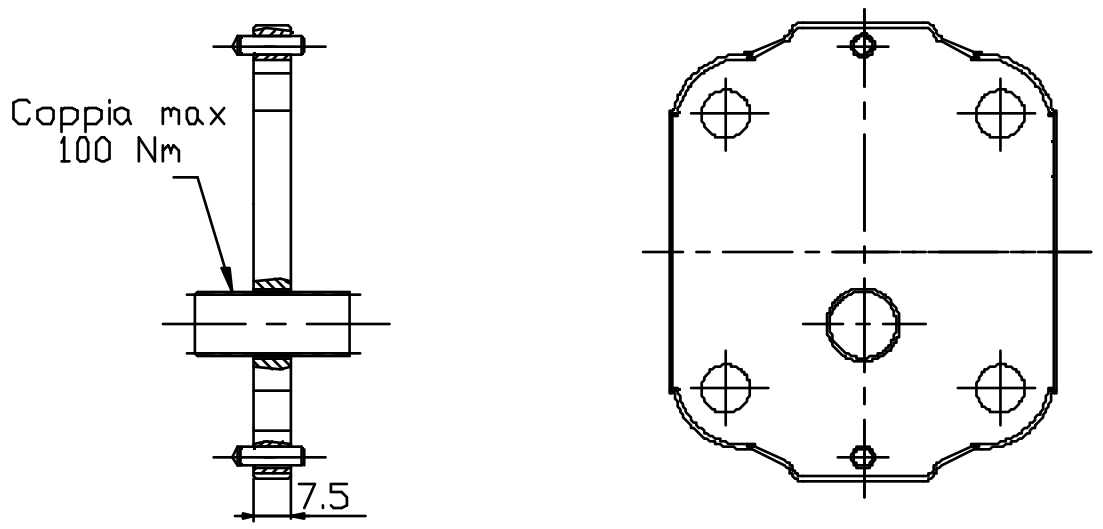
EXAMPLE OF ORDERING CODE

OT200 P 08 S / G X X INTERMEDIATE

- OT200 — Series
- P — Pump
- 08 — Displacement (see above table)
- S — Rotation: S Anti-clockwise; D Clockwise
- G X X — Body with threated ports (BSP)

COMPONENTI PER POMPE GRUPPO 2 TANDEM

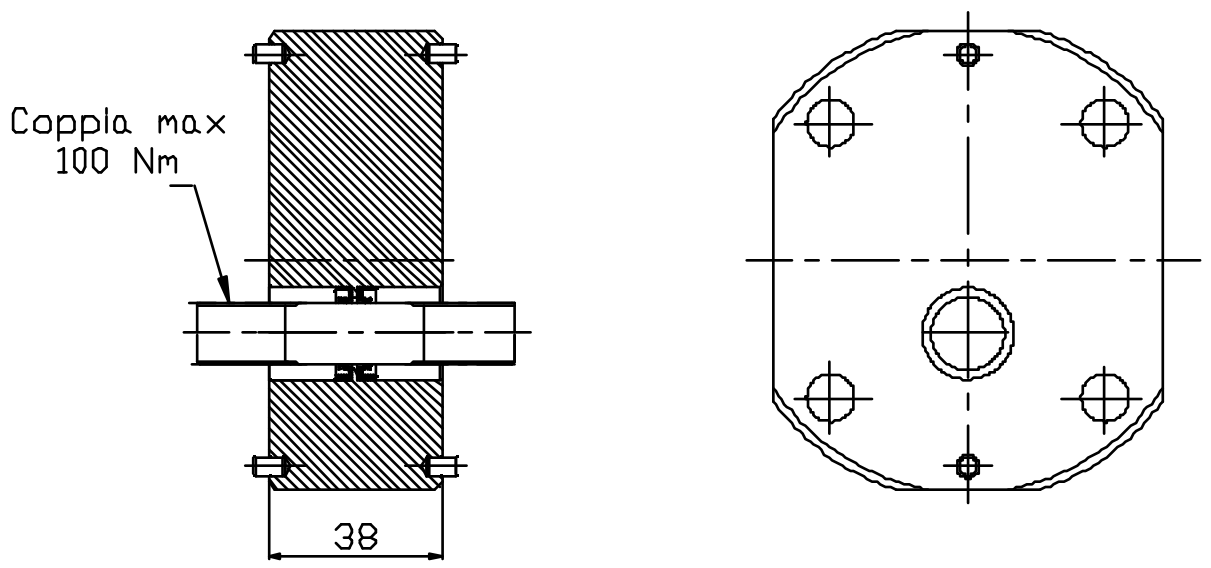
KIT MONTAGGIO OT200+OT200



NOTE : Coppia di serraggio viti 48 Nm

CODICE D'ORDINAZIONE: PS20370001

KIT MONTAGGIO OT200+OT200 PER STADI SEPARATI



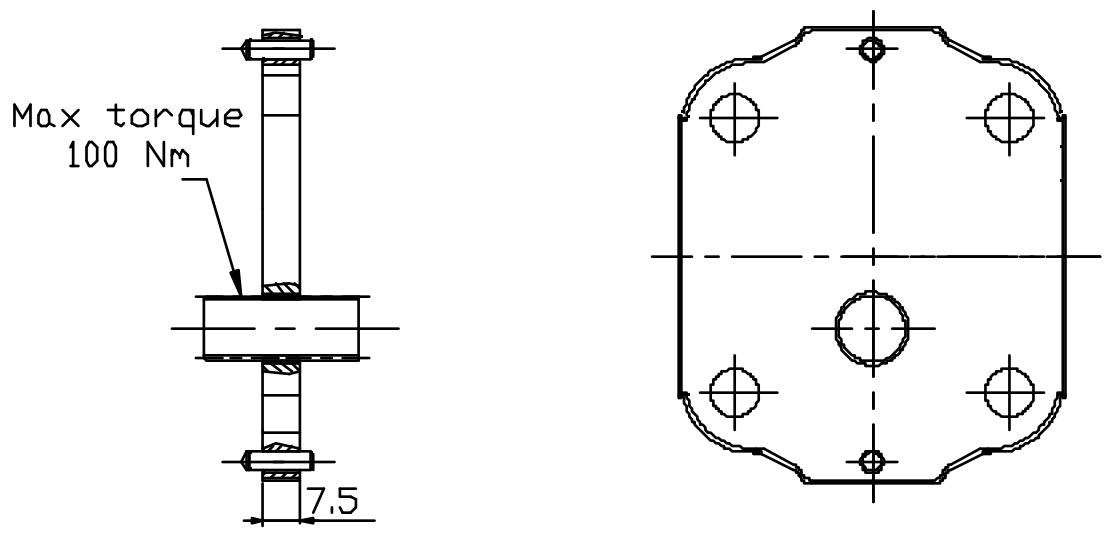
NOTE : Coppia di serraggio viti 48 Nm

CODICE D'ORDINAZIONE: PS20370050

OILTECHNOLOGY

COMPONENTS FOR GROUP2 TANDEM PUMPS

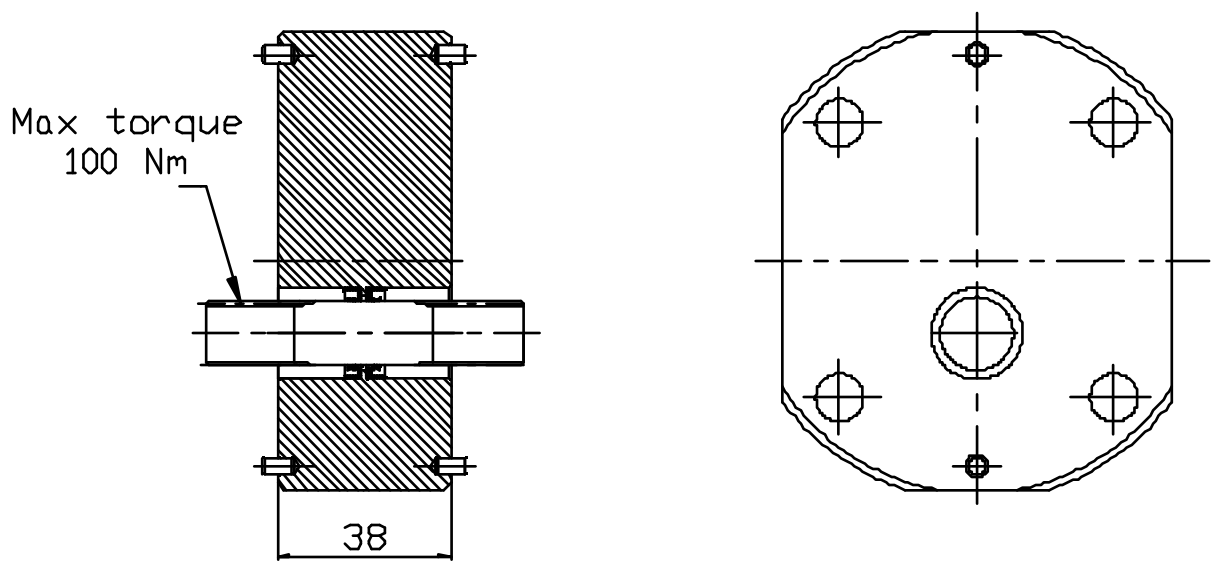
OT 200+OT200 MOUNTING KIT



NOTE : Screw tightening torque 48 Nm

ORDERING CODE: PS20370001

OT200+OT200 MOUNTING KIT FOR SEPARATE UNITS



NOTE : Screw tightening torque 48 Nm

ORDERING CODE: PS20370050