
Gear Pumps


Cast Iron Gear Housing

Technical/Spare Parts Catalogue

E0.100.0921.02.01IM01



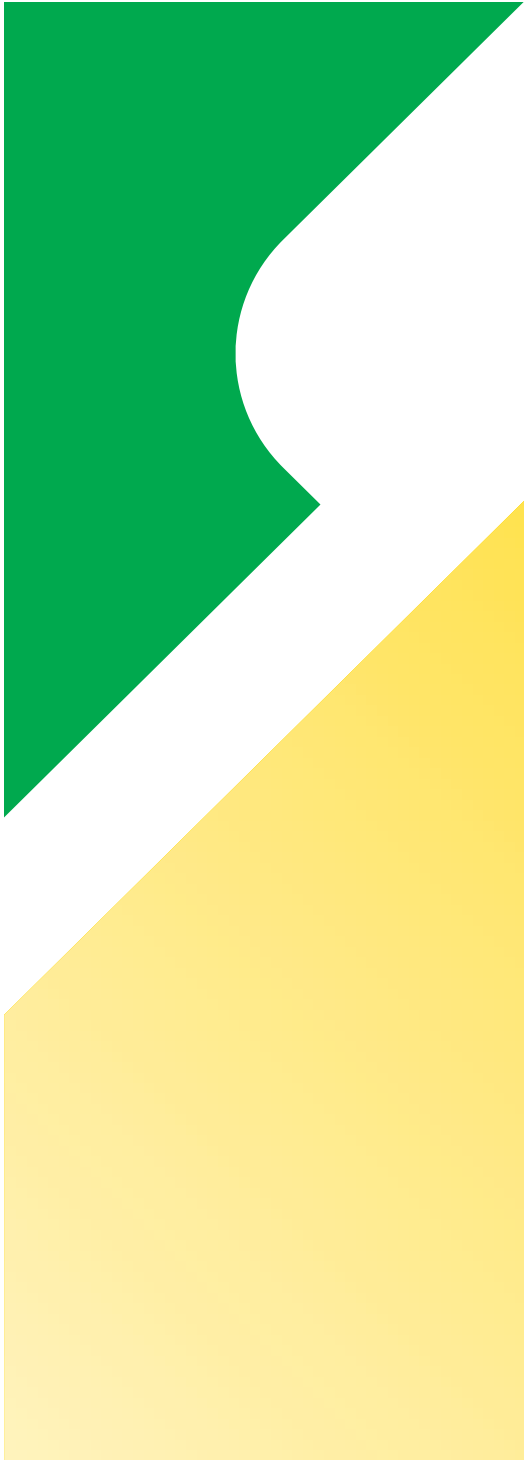
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sajami 
FLUID POWER SYSTEMS [®]

Final revised edition - September 2021

The data in this catalogue refers to the standard product. The policy of Salami S.p.A. consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information.

If any doubts, please contact our sales department.



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2PGE 9

PG330 49

Symbol Designation



INFORMATION:

Indicates reminders and communications to be taken into account for the correct configuration and mounting of the product.



CAUTION:

Indicates the recommendations and rules, to be observed before proceeding with the product's configuration.



REVIEW:

Indicates update or modify data.

Gear Pumps

Cast Iron Gear Housing:
2PGE/PG330/PG331

Features

E0.100.0921.02.01IM01



2PGE and PG330/331 Features

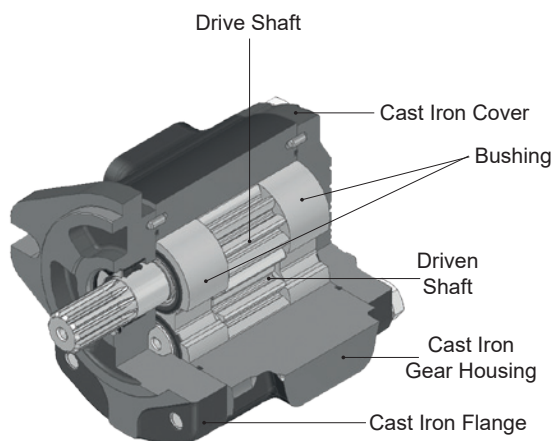
The PG330/PG331 and 2PGE Series Cast Iron Pumps has been specifically designed for high flow applications, demanding peak performance and long life in extreme operating conditions. PG330 optimized for high volume and for OEM's customers. Displacements available:

2PGE: 6.5 cm³/rev to 26.6 cm³/rev (from 0.40 cu.in/rev to 1.62 cu.in/rev)

PG330/PG331: 23.4 cm³/rev to 80.6 cm³/rev (from 1.43 cu.in/rev to 4.91 cu.in/rev)

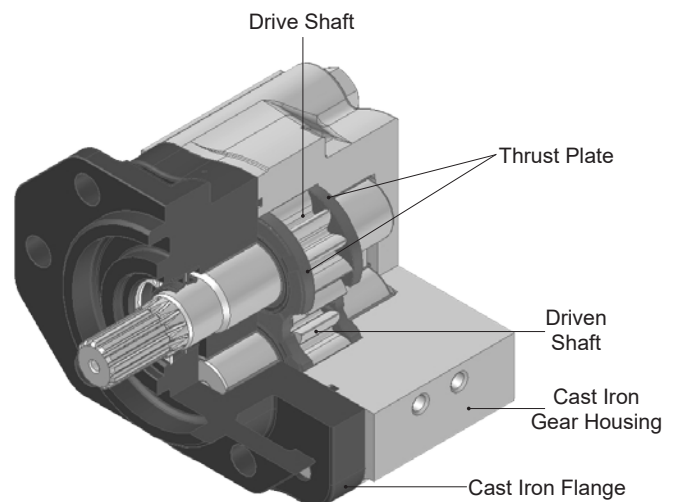
Several options of shafts, flanges and ports as for European, German and American standards are available for all the pumps.

- High volumetric efficiency thanks to an innovative design and an accurate control of machining tolerances.
- DU bearings to ensure high pressure capability.
- 12 teeth solid gear shaft.
- Cast iron construction.
- Double shaft seals.
- Standard nitrile seals and Viton seals for high temperature applications.
- All pumps are hydraulically tested after assembly to ensure the highest standard performance.
- Typical applications: construction, agriculture, material handling, municipality vehicles, light duty equipment, aerial working platforms, hoists, fan drive.



2PGE

- Cast iron body, flange and cover.
- Common parts with 2PE series.
- High resistance.
- Axial compensation achieved by the use of floating bushes that allow high volumetric efficiency throughout the working pressure range.
- Available with SAE 13T splined shaft that allow torque up to 200 Nm.
- Telltale leakage inspection hole on mounting flanges.



PG330

- Two pieces compact construction made with high strength cast iron. Cast iron offers thermal stability, contamination resistance and strength for consistent performance and durability in severe duty cycle applications.
- Advanced pressure-balanced thrust plates optimize volumetric efficiency across the range of operating speeds and pressures.
- Heavy duty low friction DU bushes provide long life in low viscosity and high pressure conditions.
- Compact design in single and double configuration is ideal for fitting into narrow spaces.
- PG330 Sharing the same features with PG331, in terms of dimensions and working conditions.
- Multiple pumps and combo with 2PE or 2PGE series available.



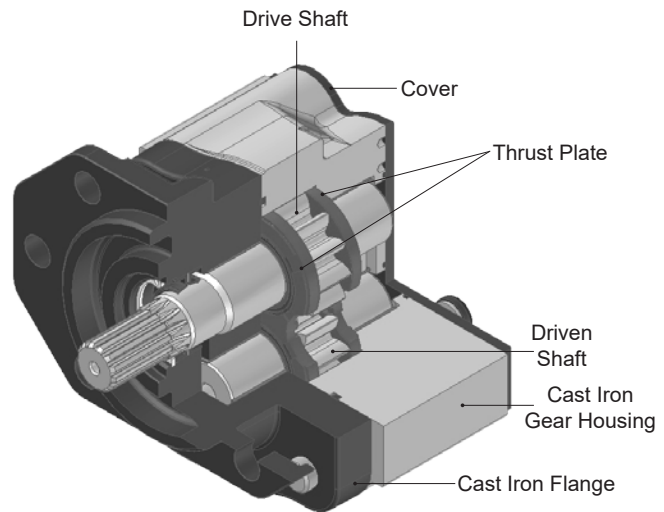
PG331 Features

PG331

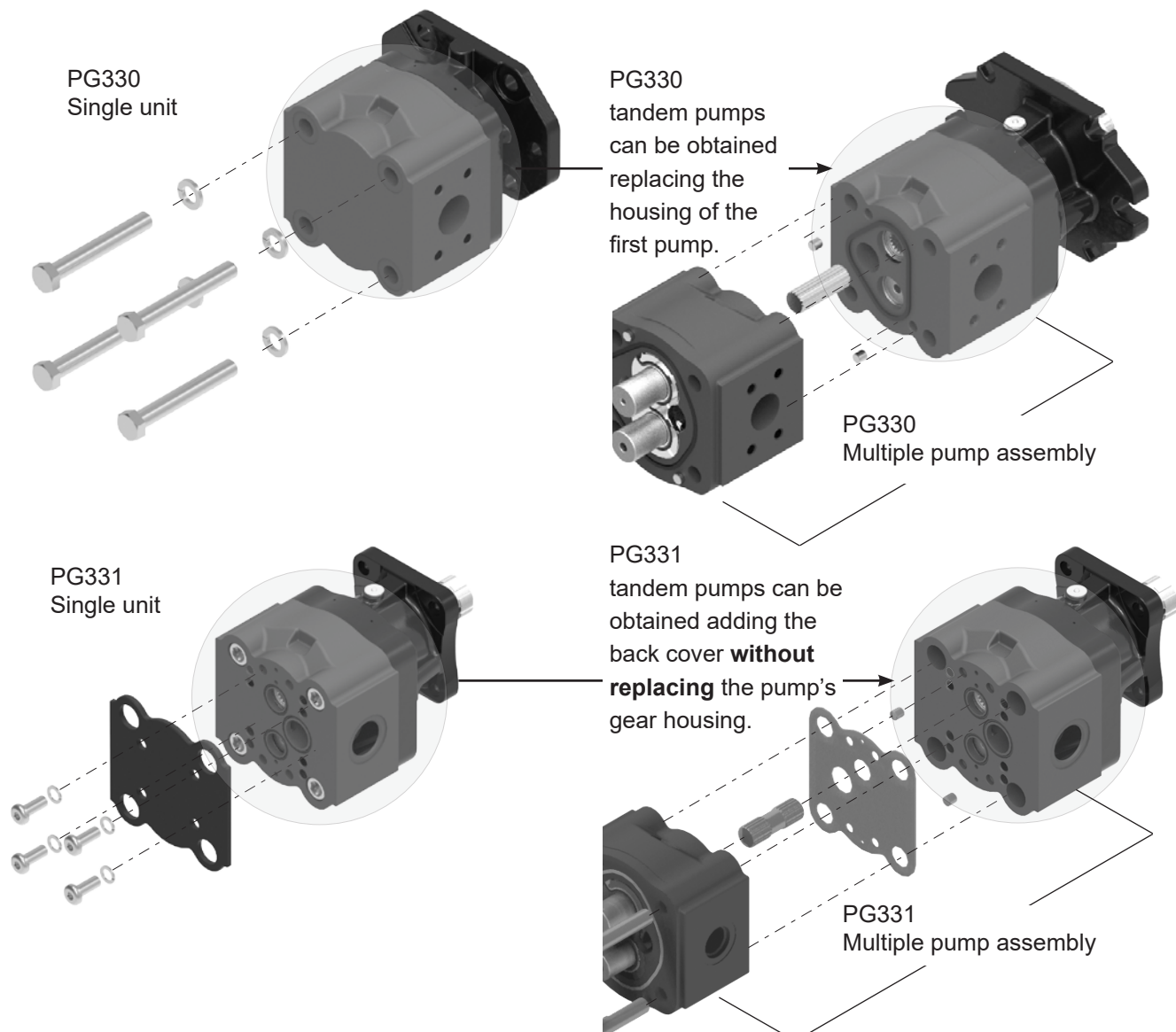
PG331 has been designed for Distributors and easing local conversion from single to multiple stage pump configuration.

- Sharing the same features with PG330, in terms of dimensions and working conditions.

Is available in single, double, triple version.



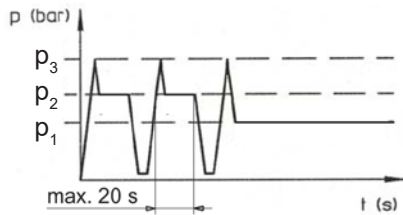
PG330/331 Pump assembly



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Definition of Pressures



p_3 = Peak pressure

p_2 = Intermittent operating pressure (1/3 of working time)

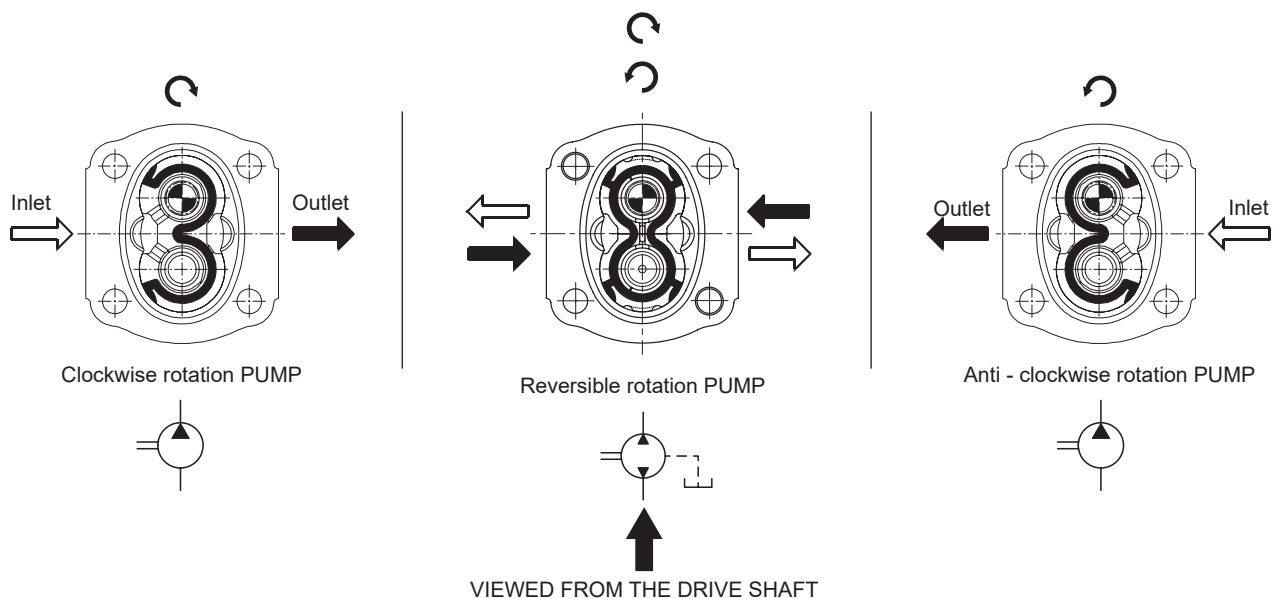
p_1 = Continuous operating pressure

! Drive Shaft

Radial and axial loads on the shafts must be avoided since they reduce the life of the unit.

In order to avoid misalignment during the assembly with the primary engine, a connection with "Oldham" coupling (or coupling having convex toothed hub) is recommended.

Pump Rotation



Working Conditions

HYDRAULIC FLUID

Mineral oil according to DIN 51524, other hydraulic fluids on request.

| | | |
|--|--|-----------------------------------|
| Pump inlet pressure (absolute pressure) | | 0.8 to 1.5 bar (11.6 to 21.7 psi) |
| Viscosity | Minimum operating fluid viscosity | 12 mm ² /sec |
| | Max starting viscosity | 800 mm ² /sec |
| | Suggested fluid viscosity range | 17 ÷ 65 mm ² /sec |
| Temperature | fluid operating temperature range | -25 ÷ 80 °C |
| | fluid operating temperature range with FPM seals (Viton) | -20 ÷ 110 °C |
| | fluid operating temperature range with HNBR seals* | -30 ÷ 110 °C |

* Available on request

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Hydraulic Pipe Line

To ensure favorable suction conditions it is important to keep pressure drop in suction pipe line to a minimum value (see Working Conditions). To calculate hydraulic pipe line size, the designer can use, as an approximate guide, the following fluid speed figures:

From 1 to 2 m/sec on suction pipe line
From 6 to 10 m/sec on pressure pipe line

From 3.28 to 6.36 ft/sec on suction pipe line
From 19.7 to 32.8 ft/sec on pressure pipe line

The lowest fluid speed values in pipe lines is recommended when the operating temperature range is high and/or for continuous duty. The highest value is recommended when the temperature difference is low and/or for intermittent duty.

i 2PGE: When tandem pumps are supplied by 2 different reservoirs with 2 different fluids it is mandatory to specify "AS" version.

Filtration Index Recommended

| Working pressure | >200 bar/2900 psi | <200 bar/2900 psi |
|-----------------------------------|-------------------|-------------------|
| Contamination class NAS 1638 | 9 | 10 |
| Contamination class ISO 4406 | 19/18/15 | 20/19/16 |
| Achieved with filter $\beta_x=75$ | 15 μm | 25 μm |

Common Formulas

$$C = \text{Input torque} = \frac{q \cdot \Delta p}{62.8 \cdot \eta_m} \text{ (Nm)}$$


$$P = \text{Input power} = \frac{q \cdot n \cdot \Delta p \cdot 10^{-3}}{600 \eta_m} \text{ (kW)}$$

$$Q = \text{Outlet flow} = \frac{q \cdot n \cdot \eta_v}{1000} \text{ (l/min)}$$

LEGENDA

Δp = Working pressure (bar)
 q = Displacement (cm³/rev)
 n = Speed (min⁻¹)
 η_m = Mechanical efficiency (0.92)
 η_v = Volumetric efficiency (0.95)

Identification Label



Made in Italy

PG330-23D-R55S3

001-WO - - - - -

Rot. \rightarrow

Unit Rotation

Build Order Number (for Salami management)

615100002

3/2019

Nr 1

Salami Manufacturing Part Number

Manufacturing Date, Month and Year

Batch Serial Number

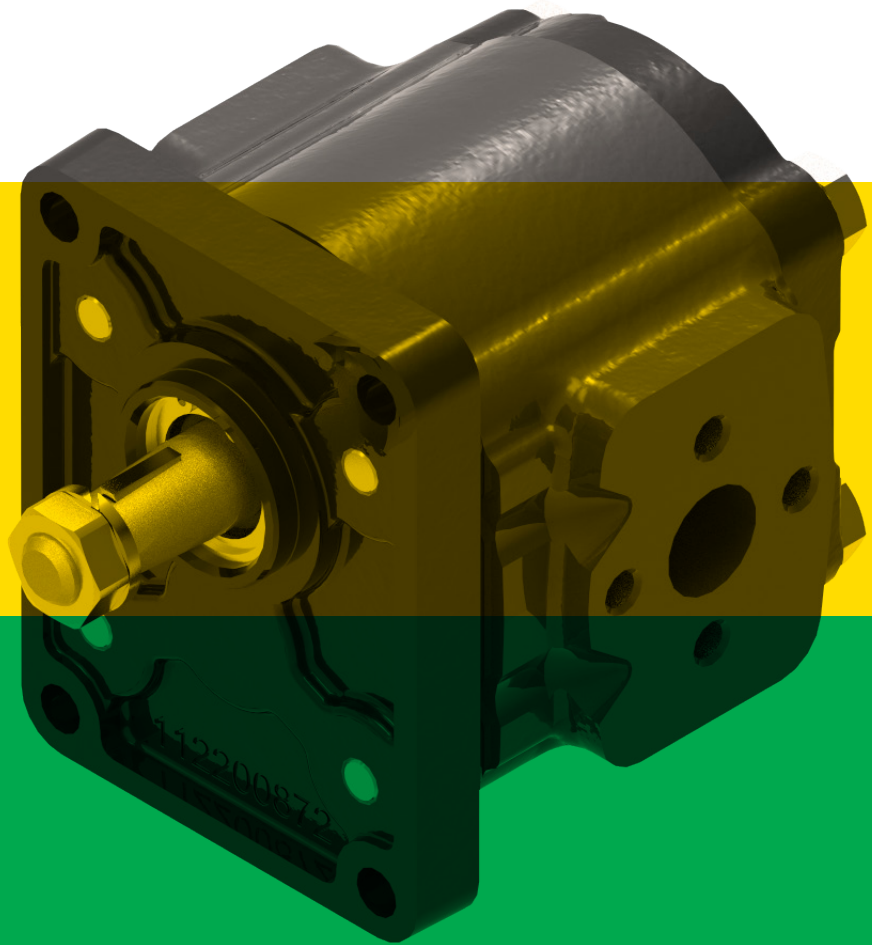
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2PGE

Cast Iron Gear Pumps

Technical/Spare Parts Catalogue

E0.146.0921.14.00IM01



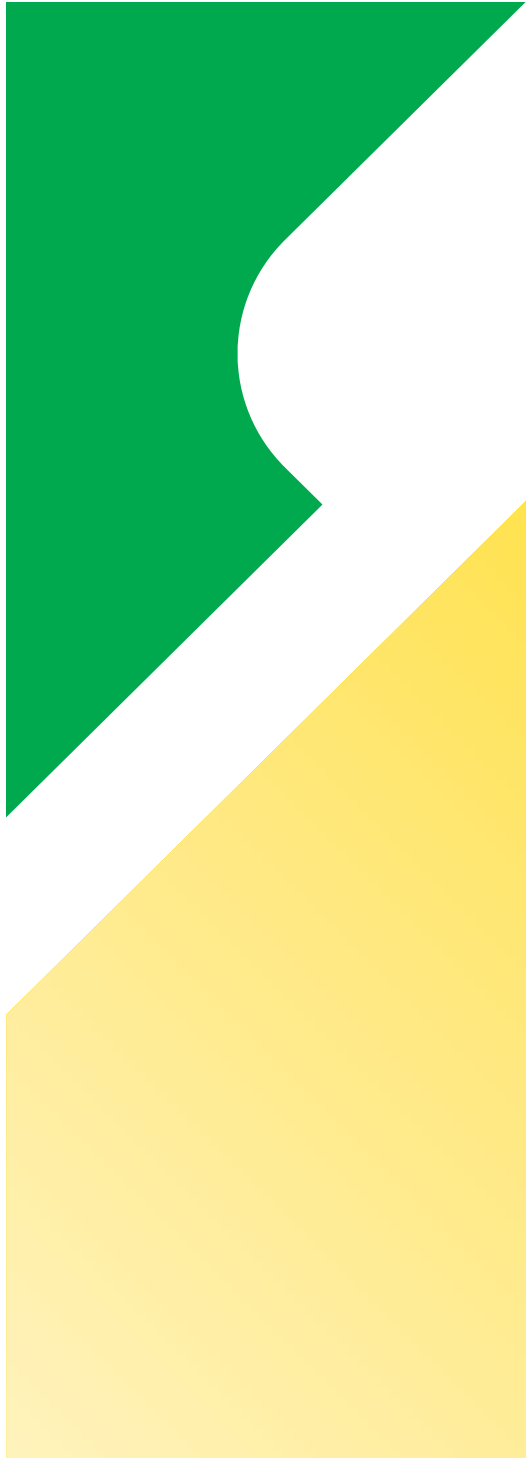
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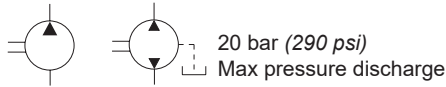
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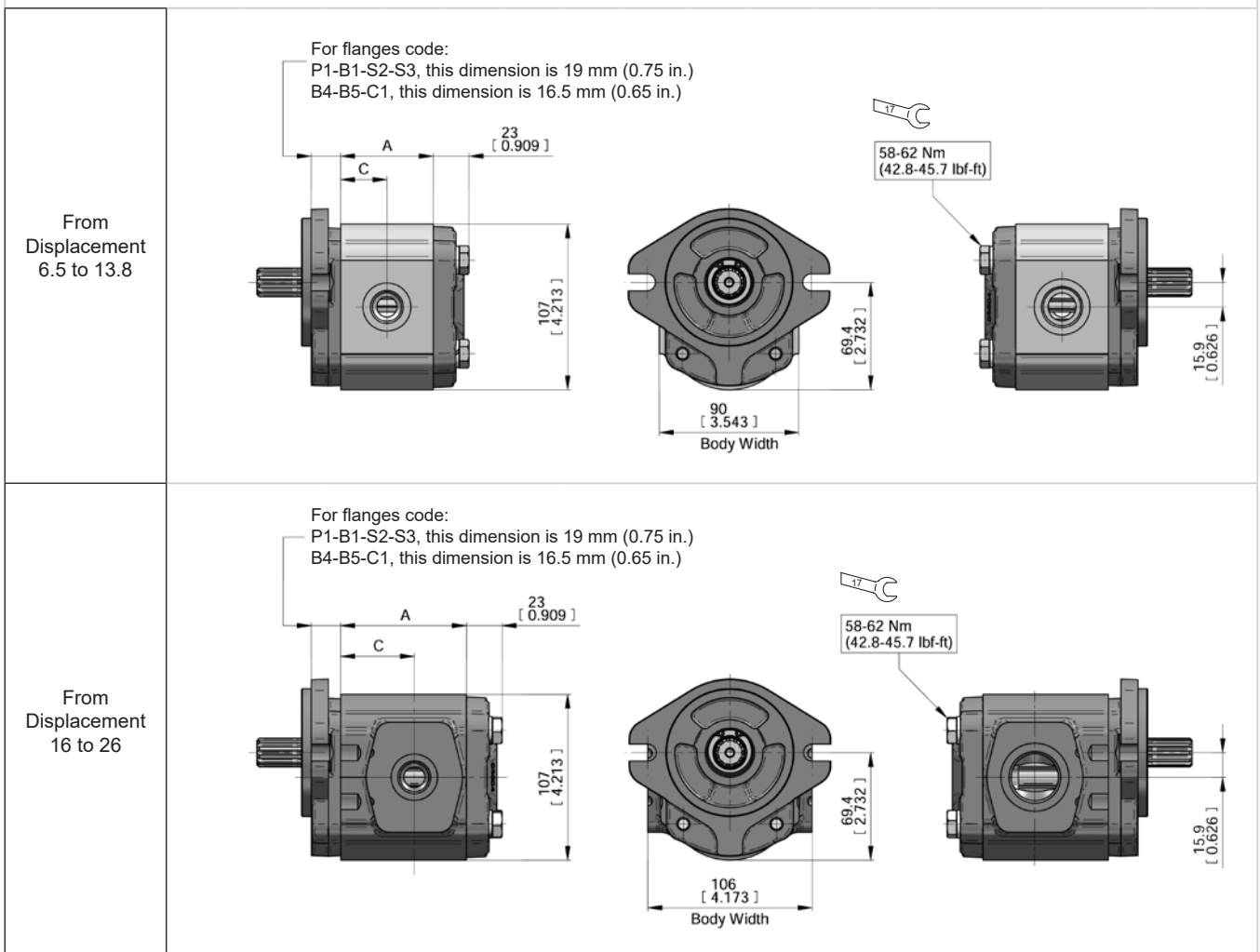
2PGE Single Pump - Dimensions and Technical Data



Displacements up to 26.6 cm³/rev - 1.62 cu.in./rev
Pressure up to 320 bar - 4650 psi

| TYPE | Displacement | | Dimension A | | Dimension C | | Continuous pressure p ₁ | | Intermittent pressure p ₂ | | Peak pressure p ₃ | | Min. speed at p ₁ | Max. speed at p ₂ | Weight | |
|-------------|----------------------|------------|-------------|------|-------------|------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------------------------|------------------------------|--------|-------|
| | cm ³ /rev | cu.in./rev | mm | in | mm | in | bar | psi | bar | psi | bar | psi | rpm | | kg | lbs |
| 2PGE - 6.5 | 6.5 | 0.40 | 49.95 | 1.97 | 25 | 0.98 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 600 | 4000 | 4.8 | 10.58 |
| 2PGE - 8.3 | 8.2 | 0.50 | 52.8 | 2.07 | 26.4 | 1.04 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 500 | 3500 | 5.0 | 11.02 |
| 2PGE - 11.3 | 11.5 | 0.68 | 59.7 | 2.35 | 29.75 | 1.17 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 500 | 3500 | 5.2 | 11.46 |
| 2PGE - 13.8 | 13.8 | 0.84 | 63.5 | 2.50 | 31.75 | 1.25 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 500 | 3500 | 5.4 | 11.90 |
| 2PGE - 16 | 16.6 | 1.01 | 67.5 | 2.65 | 39.5 | 1.56 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 500 | 3000 | 6.6 | 14.55 |
| 2PGE - 19 | 19.4 | 1.18 | 75.6 | 2.97 | 39.5 | 1.56 | 270 | 3915 | 300 | 4350 | 320 | 4650 | 500 | 3000 | 7.1 | 15.65 |
| 2PGE - 22.5 | 22.9 | 1.37 | 81 | 3.19 | 47.5 | 1.87 | 250 | 3625 | 280 | 4060 | 300 | 4350 | 500 | 2750 | 7.5 | 16.53 |
| 2PGE - 26 | 26.6 | 1.62 | 86.8 | 3.42 | 47.5 | 1.87 | 230 | 3335 | 260 | 3750 | 280 | 4060 | 500 | 2500 | 7.8 | 17.20 |

⚠ Max Speed must be lowered by 10% for system working continuously at p₁ pressure.
Max pressure must be lowered by 10% for bi-directional pump.

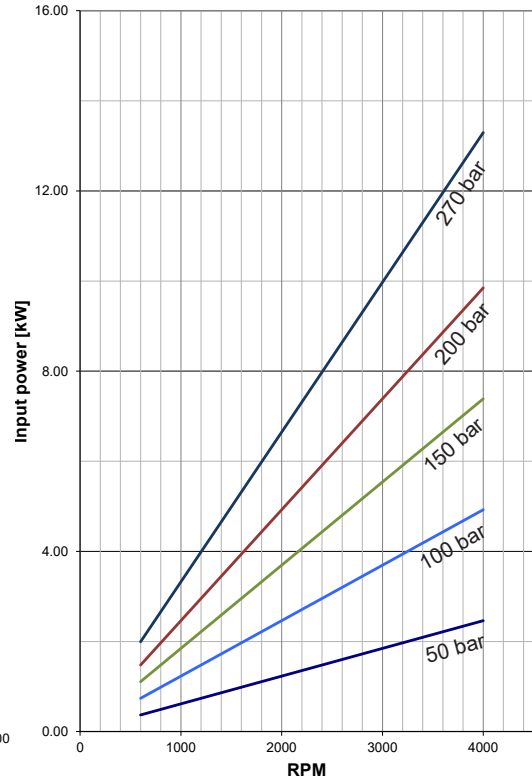
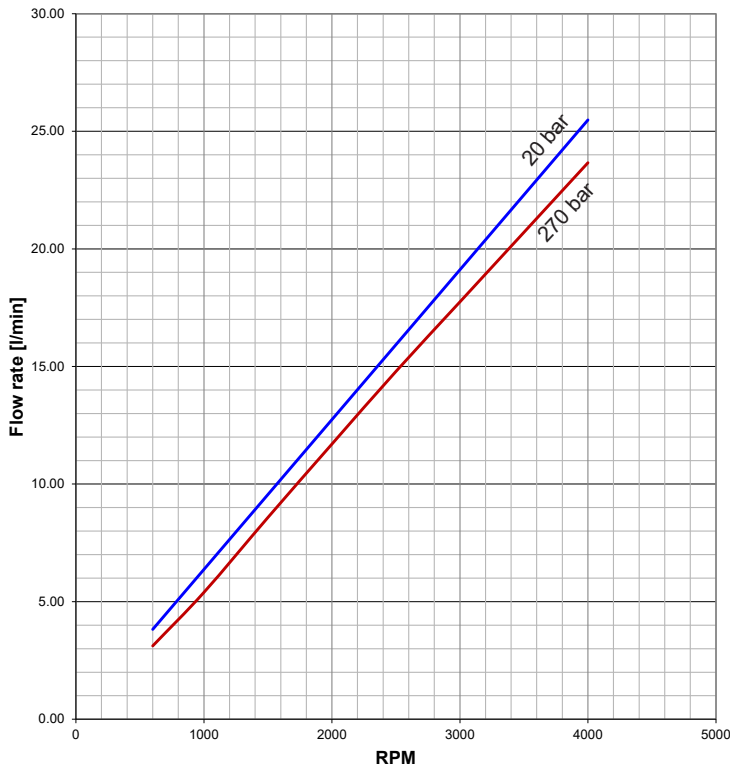


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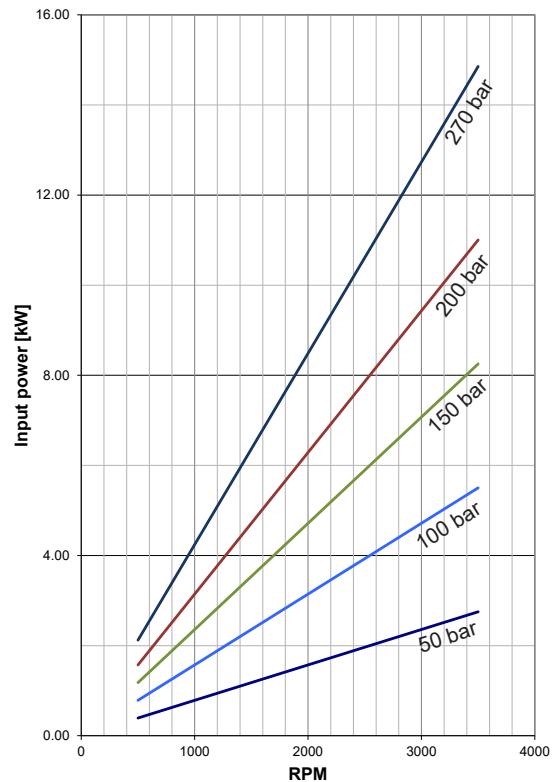
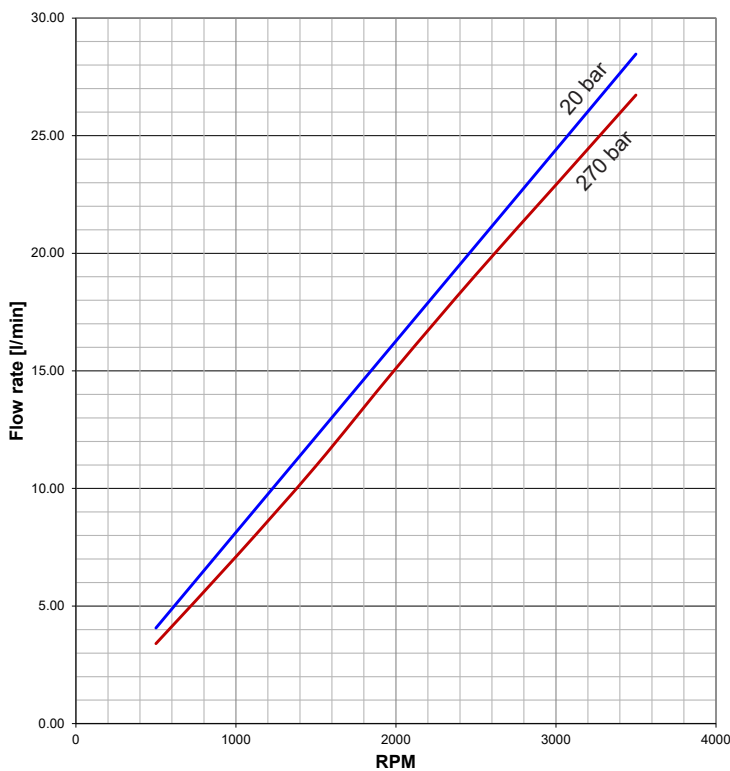


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



2PGE - 6.5



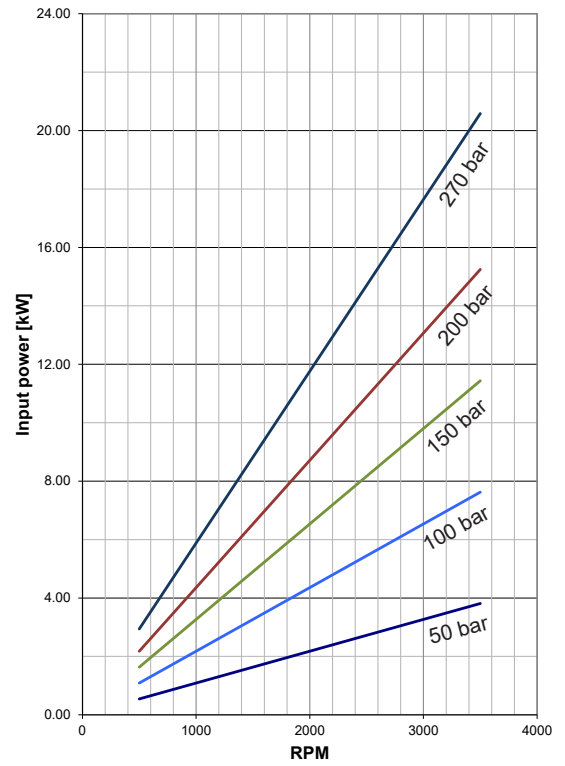
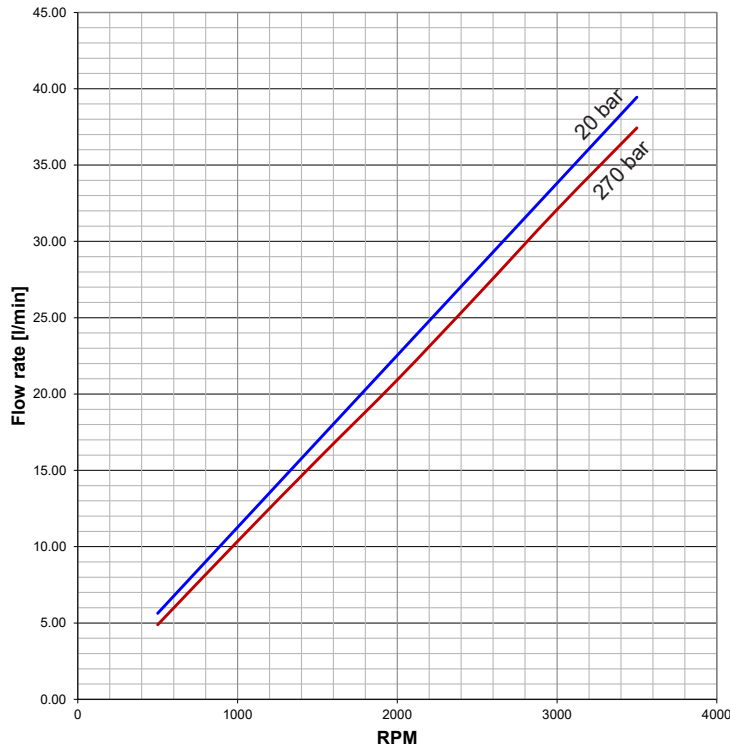
2PGE - 8.3

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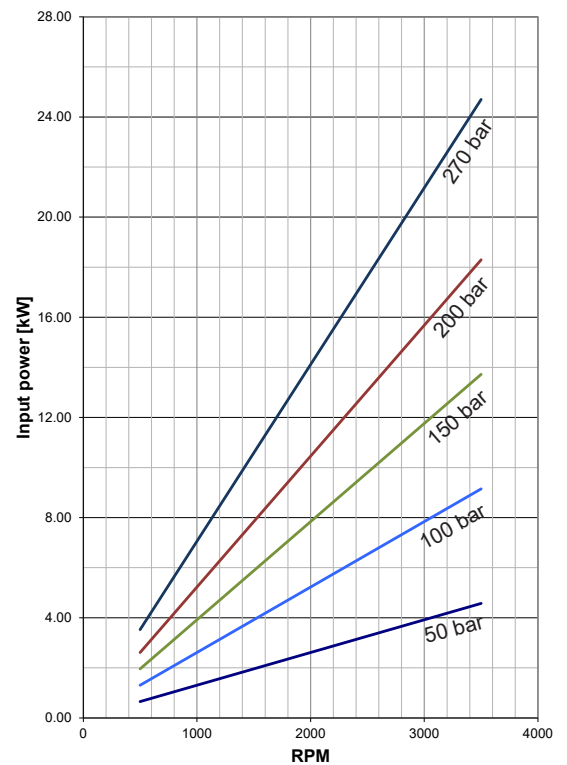
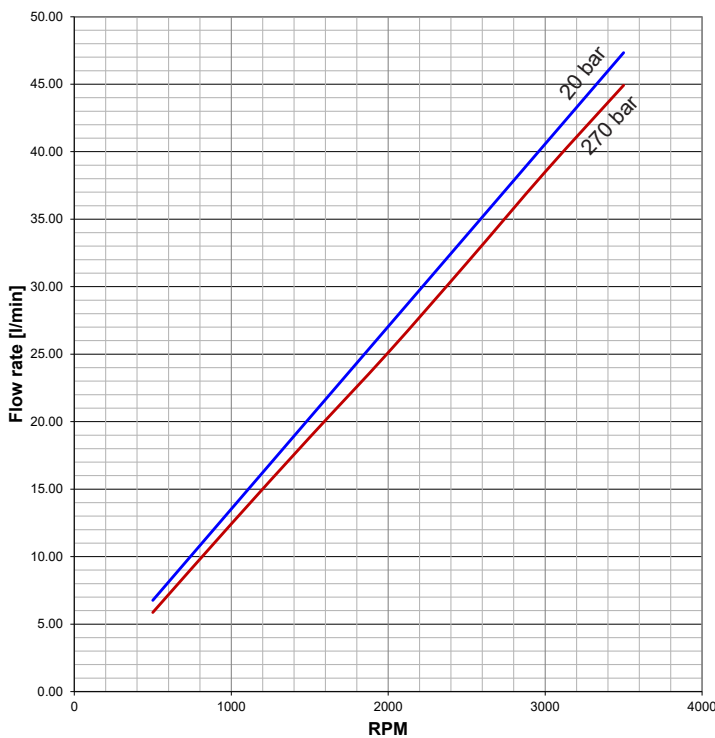


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



2PGE - 11.3



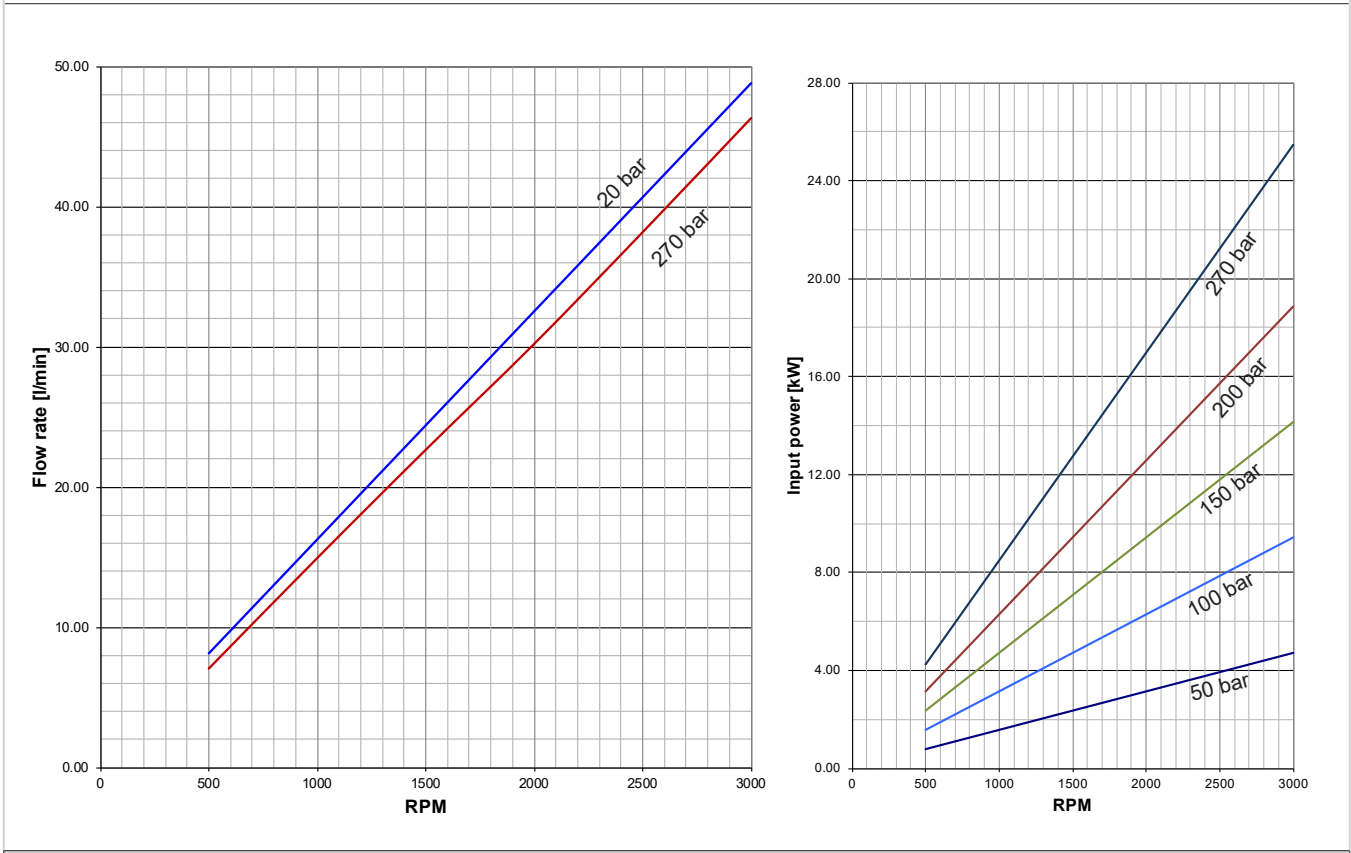
2PGE - 13.8

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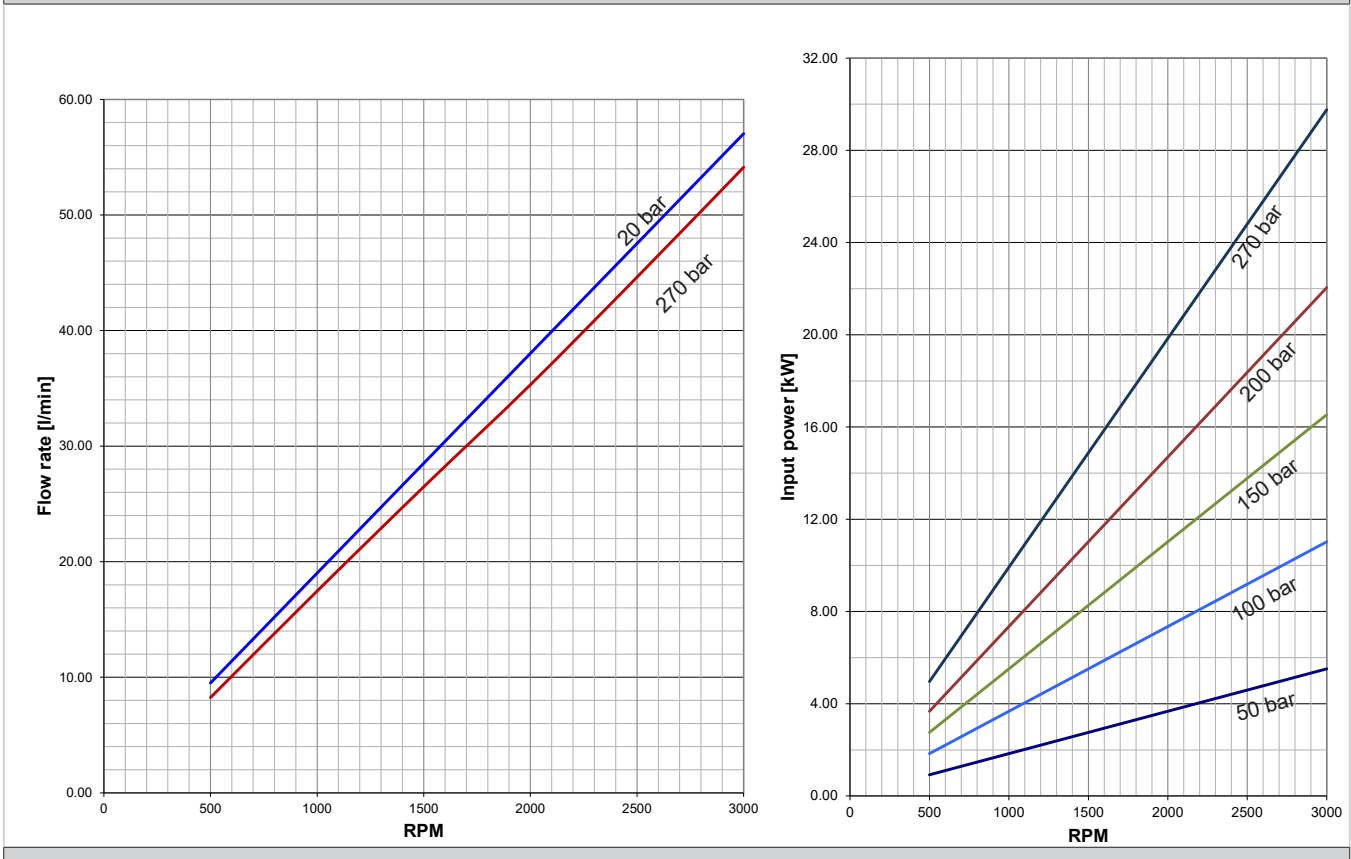


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



2PGE - 16



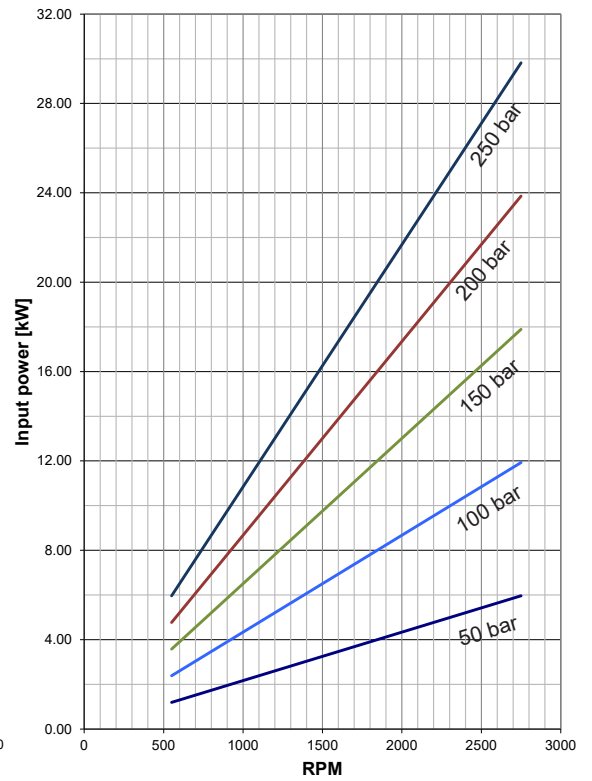
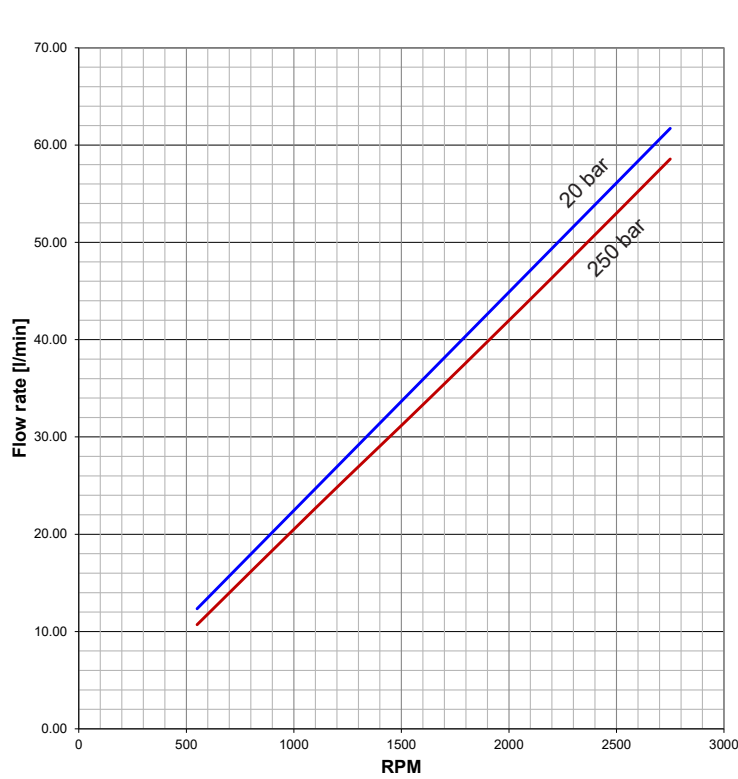
2PGE - 19

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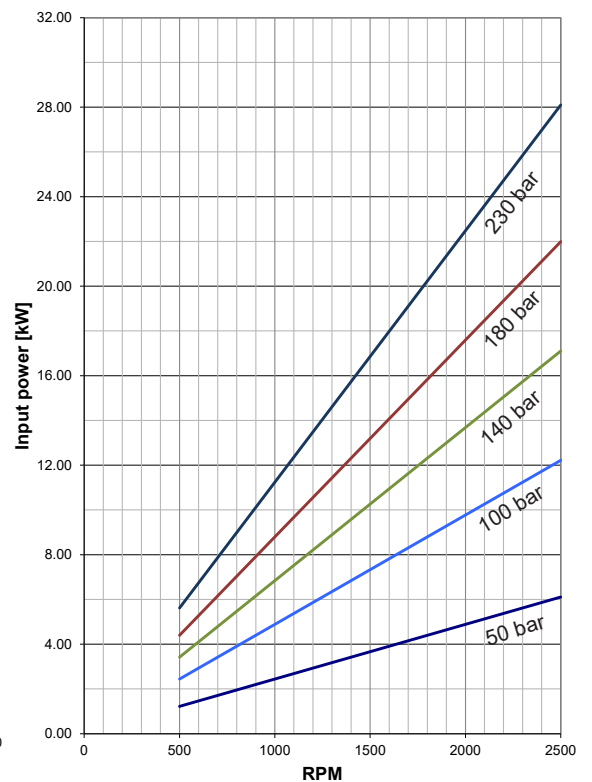
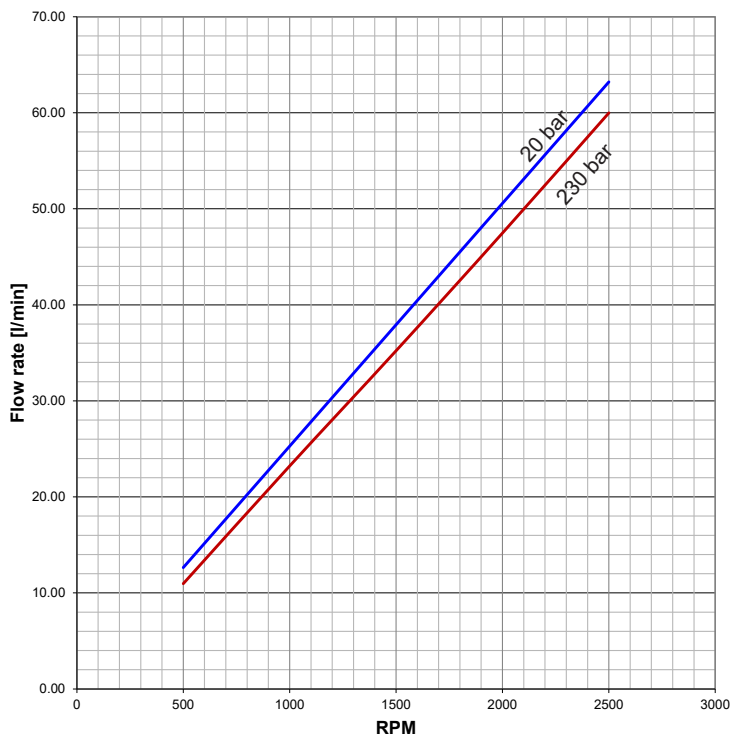


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



2PGE - 22.5








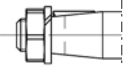
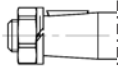
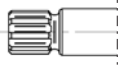
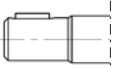


2PGE - 26

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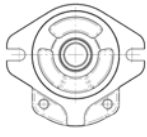

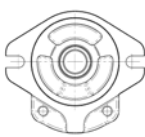


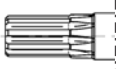
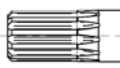

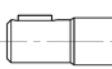

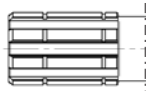

Shaft and Flange Combinations

| 2PGE |  |  |  |  |  |
|-------|--|---|---|---|---|
| | CODE P1 | CODE B1 | CODE B2-B3 | CODE B4-B5 | CODE C1 |
| | FLANGES | | | | |
| SHAFT |  CODE 03 | | 03B2 03B3 | | |
| |  CODE 04 | | | 04B4 04B5 | |
| |  CODE 25 | | 25B1 | 25B4 25B5 | |
| |  CODE 28 | 28P1 | | | |
| |  CODE 62 | 62P1 | 62B1 | 62B4 62B5 | 62C1 |
| |  CODE 82 | 82P1 | | | |
| | | | | | |

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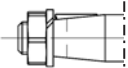
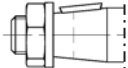
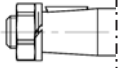

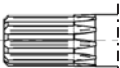
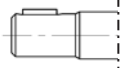



Shaft and Flange Combinations

| Shaft and Flange Combinations | | | | | |
|--|--|--|--|---|---|
| 2PGE |  |  |  |  |  |
| | CODE S2 | CODE S3 | CODE S6 | CODE T1 | CODE Z2 |
| | FLANGES | | | | |
| SHAFT |  CODE 52 | 52S2 | | 52S6 | |
| |  CODE 54 | 54S2 | | 54S6 | |
| |  CODE 55 | | 55S3 | | |
| |  CODE 82 | 82S2 | | 82S6 | |
| |  CODE 85 | 85S2 | | 85S6 | |
| | CONTINENTAL SHAFT |  CODE 67 | | | |
|  CODE 73 | | | | 73T1 | |

EO.146.0921.14.001M01



Continental Shaft and Flange With Outrigger Bearing Combinations

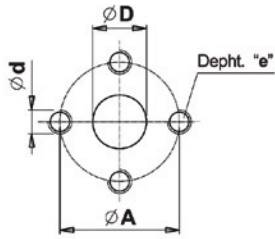
| 2PGE |  |  |  |  |  |  |  |
|--|---|---|---|---|--|---|---|
| | CODE CL | CODE CF | CODE CS | CODE CB | CODE CP | CODE CSB | CODE Z1 |
| | FLANGES WITH OUTRIGGER BEARING | | | | | | |
|  CODE 25 | 25CL | 25CF | | 25CB | | | |
|  CODE 26 | 26CL | | | 26CB | | | |
|  CODE 28 | | | | | 28CP | | |
|  CODE 52 | | | 52CS | | | | |
|  CODE 54 | | | 54CS | | | | |
|  CODE 82 | | | 82CS | | | | |
|  CODE 85 | | | 85CS | | | | |
|  CODE 87 | | | | | | 87CSB | |
|  CODE 66 | | | | | | | 66Z1 |

CONTINENTAL SHAFT

EO.146.0921.14.001M01



Flanged Ports



code P

Flanged ports
european standard

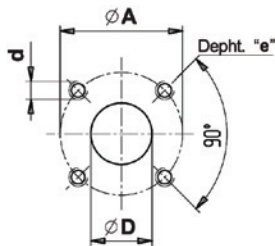
| | |
|----|---------------------|
| M6 | 8 Nm (5.9 lbf-ft) |
| M8 | 20 Nm (14.7 lbf-ft) |



| UNI-DIRECTIONAL | | | | | | | | | |
|-------------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|--|
| PUMPS | INLET | | | | OUTLET | | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e | |
| From 6.5 to 8.3 | 13 (0.51") | 30 (1.18") | M6 | 13 (0.51") | 13 (0.51") | 30 (1.18") | M6 | 13 (0.51") | |
| From 11.3 to 22.5 | 20 (0.79") | 40 (1.57") | M8 | 13 (0.51") | 13 (0.51") | 30 (1.18") | M6 | 13 (0.51") | |
| 26 | 22 (0.87") | | | | | | | 13 (0.51") | |



| BI-DIRECTIONAL | | | | | | | | | |
|-----------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|--|
| PUMPS | INLET | | | | OUTLET | | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e | |
| From 6.5 to 8.3 | 13 (0.51") | 30 (1.18") | M6 | 13 (0.51") | 13 (0.51") | 30 (1.18") | M6 | 13 (0.51") | |
| From 11.3 to 26 | 20 (0.79") | 40 (1.57") | M8 | 13 (0.51") | 20 (0.79") | 40 (1.57") | M8 | 13 (0.51") | |



code B

Flanged ports
german standard

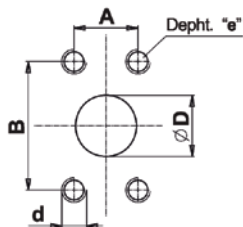
| | |
|----|-------------------|
| M6 | 8 Nm (5.9 lbf-ft) |
|----|-------------------|



| UNI-DIRECTIONAL | | | | | | | | | |
|------------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|--|
| PUMPS | INLET | | | | OUTLET | | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e | |
| From 6.5 to 22.5 | 20 (0.79") | 40 (1.57") | M6 | 13 (0.51") | 15 (0.59") | 35 (1.38") | M6 | 13 (0.51") | |
| 26 | 22 (0.87") | | | | 15 (0.59") | 35 (1.38") | | 13 (0.51") | |



| BI-DIRECTIONAL | | | | | | | | | |
|-----------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|--|
| PUMPS | INLET | | | | OUTLET | | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e | |
| From 6.5 to 8.3 | 15 (0.59") | 35 (1.38") | M6 | 13 (0.51") | 15 (0.59") | 35 (1.38") | M6 | 13 (0.51") | |
| From 11.3 to 26 | 20 (0.79") | 40 (1.57") | M6 | 13 (0.51") | 20 (0.79") | 40 (1.57") | M6 | 13 (0.51") | |



code W

Flanged ports
SAE J518 - METRIC THREAD

| | |
|-----|---------------------|
| M8 | 20 Nm (14.7 lbf-ft) |
| M10 | 35 Nm (25.8 lbf-ft) |



| UNI-DIRECTIONAL | | | | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|---------------|-----------------|-----------------|-----------------|-----|---------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 16 to 19 | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | M10 | 15 (0.59") | 12.7 (0.50") | 38.1 (1.50") | 17.5 (0.69") | M8 | 15 (0.59") |
| From 22.5 to 26 | 25.4 (1.00") | 52.4 (2.06") | 26.2 (1.03") | M10 | 15 (0.59") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | M10 | 15 (0.59") |

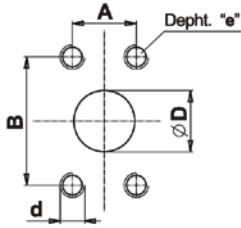


| BI-DIRECTIONAL | | | | | | | | | | |
|----------------|---------------|-----------------|-----------------|-----|---------------|---------------|-----------------|-----------------|-----|---------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 16 to 26 | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | M10 | 15 (0.59") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | M10 | 15 (0.59") |

EO.146.0921.14.00IM01



Flanged Ports



code S

Flanged ports
SAE J518
AMERICAN STANDARD THREAD

| | |
|-------------|---------------------|
| 5/16-18 UNC | 20 Nm (14.7 lbf-ft) |
| 3/8-16 UNC | 30 Nm (22.1 lbf-ft) |

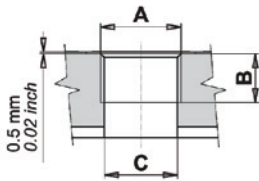


| PUMPS | UNI-DIRECTIONAL INLET | | | | | UNI-DIRECTIONAL OUTLET | | | | |
|-----------------|-----------------------|-----------------|-----------------|---------------|---------------|------------------------|-----------------|-----------------|----------------|---------------|
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 16 to 19 | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | 3/8-16 UNC | 15 (0.59") | 12.7 (0.50") | 38.1 (1.50") | 17.5 (0.69") | 5/16-18 UNC | 15 (0.59") |
| From 22.5 to 26 | 25.4 (1.00") | 52.4 (2.06") | 26.2 (1.03") | 3/8-16 UNC | 15 (0.59") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | 3/8-16 UNC | 15 (0.59") |



| PUMPS | BI-DIRECTIONAL INLET | | | | | BI-DIRECTIONAL OUTLET | | | | |
|---------------|----------------------|-----------------|-----------------|---------------|---------------|-----------------------|-----------------|-----------------|---------------|---------------|
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 16 to 26 | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | 3/8-16 UNC | 15 (0.59") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | 3/8-16 UNC | 15 (0.59") |

Threaded Ports



code G

Threaded ports
GAS (BSPP)

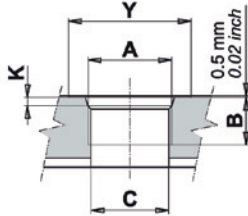
| | |
|------|----------------------|
| G1/2 | 60 Nm (44.3 lbf-ft) |
| G3/4 | 90 Nm (66.4 lbf-ft) |
| G1 | 130 Nm (95.8 lbf-ft) |



| PUMPS | UNI-DIRECTIONAL INLET | | | UNI-DIRECTIONAL OUTLET | | |
|-----------------|-----------------------|---------------|---------------|------------------------|---------------|---------------|
| | A | B | C | A | B | C |
| From 6.5 to 19 | G 3/4 | 17 (0.67") | 18 (0.71") | G 1/2 | 15 (0.59") | 13 (0.79") |
| From 22.5 to 26 | G1 | 20 (0.79") | 25 (0.98") | | | |



| PUMPS | BI-DIRECTIONAL INLET | | | BI-DIRECTIONAL OUTLET | | |
|-----------------|----------------------|---------------|---------------|-----------------------|---------------|---------------|
| | A | B | C | A | B | C |
| From 6.5 to 8.3 | G 1/2 | 15 (0.59") | 13 (0.79") | G 1/2 | 15 (0.59") | 13 (0.79") |
| From 11.3 to 26 | G 3/4 | 17 (0.67") | 18 (0.71") | G 3/4 | 17 (0.67") | 18 (0.71") |



code R

Threaded ports
SAE (ODT)

| | |
|--------|----------------------|
| SAE 10 | 60 Nm (44.3 lbf-ft) |
| SAE 12 | 90 Nm (66.4 lbf-ft) |
| SAE 16 | 130 Nm (95.8 lbf-ft) |



| PUMPS | UNI-DIRECTIONAL INLET | | | | | UNI-DIRECTIONAL OUTLET | | | | |
|-----------------|-----------------------------|---------------|---------------|---------------|----------------|---------------------------|---------------|---------------|---------------|----------------|
| | A | B | C | Y | K | A | B | C | Y | K |
| From 6.5 to 19 | 1-1/16-12 UN (SAE 12) | 19 (0.75") | 18 (0.71") | 41 (1.61") | 3.3 (0.13") | 7/8-14 UNF (SAE 10) | 17 (0.67") | 13 (0.79") | 34 (1.32") | 2.5 (0.10") |
| From 22.5 to 26 | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 25 (0.98") | 49 (1.93") | 3.3 (0.13") | | | | | |

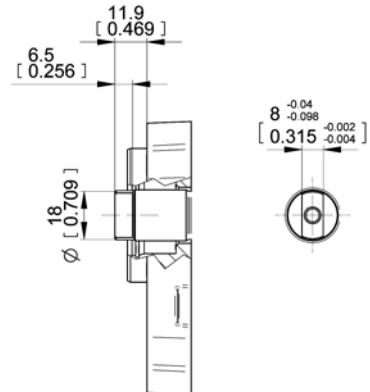
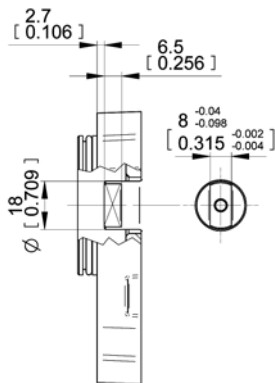
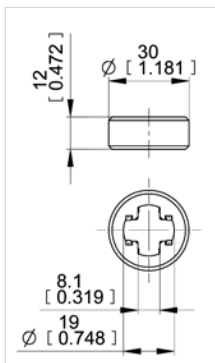


| PUMPS | BI-DIRECTIONAL INLET | | | | | BI-DIRECTIONAL OUTLET | | | | |
|-----------------|-----------------------------|---------------|---------------|---------------|----------------|-----------------------------|---------------|---------------|---------------|----------------|
| | A | B | C | Y | K | A | B | C | Y | K |
| From 6.5 to 8.3 | 7/8-14 UNF (SAE 10) | 17 (0.67") | 13 (0.79") | 34 (1.32") | 2.5 (0.10") | 7/8-14 UNF (SAE 10) | 17 (0.67") | 13 (0.79") | 34 (1.32") | 2.5 (0.10") |
| From 11.3 to 26 | 1-1/16-12 UN (SAE 12) | 19 (0.75") | 20 (0.79") | 41 (1.61") | 3.3 (0.13") | 1-1/16-12 UN (SAE 12) | 19 (0.75") | 20 (0.79") | 41 (1.61") | 3.3 (0.13") |

EO.146.0921.14.001M01



Drive Shaft



code 03

Max torque 70 Nm (620 lbf in)

code 04

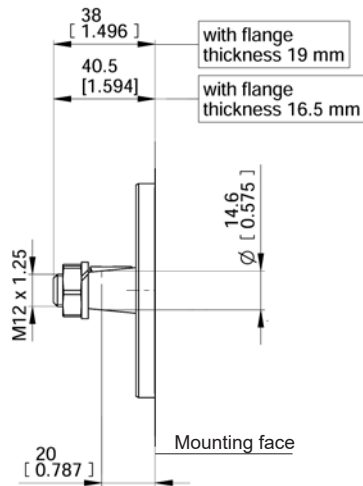
Max torque 70 Nm (620 lbf in)

TANG DRIVE FOR ELECTRIC MOTORS (without shaft seal)

TANG DRIVE

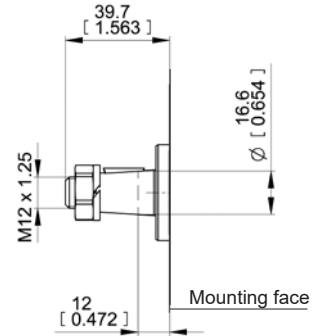
- Woodruff Key
3x6,5-UNI 6606
3x5 (for bearing version
CL-CF-CB)
- Washer
M12 TE-UNI 1751B
- Nut
M12x1,25-UNI 5589
40 Nm-29.7 lbf-ft

| Part Number |
|--------------------------------|
| Kit Woodruff Key+Nut+Washer |
| R12280180 |
| R12283030 (bearing version) |



- Woodruff Key
3,165x6,2
- Washer
M12 TE-UNI 1751B
- Nut
M12x1,25-UNI 5589
40 Nm-29.7 lbf-ft

| Part Number |
|--------------------------------|
| Kit Woodruff Key+Nut+Washer |
| R12280170 |



code 25

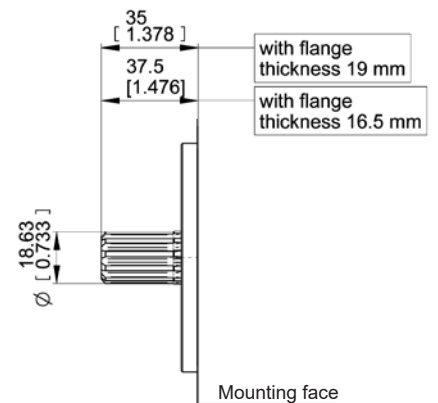
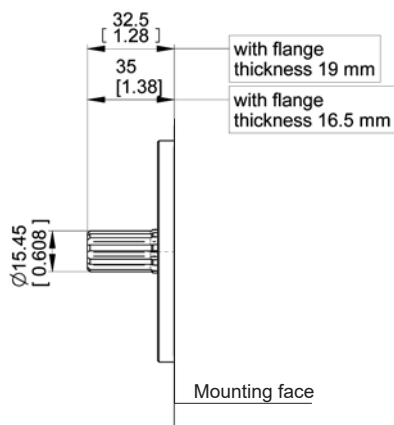
Max torque 130 Nm (1151 lbf in)

code 28

Max torque 130 Nm (1151 lbf in)

TAPERED 1:5

TAPERED 1:8



code 52

Max torque 110 Nm (974 lbf in)

code 54

Max torque 160 Nm (1416 lbf in)

SAE A 9T-16/32DP SPLINED

SAE A 11T-16/32DP SPLINED

EO.146.0921.14.001M01

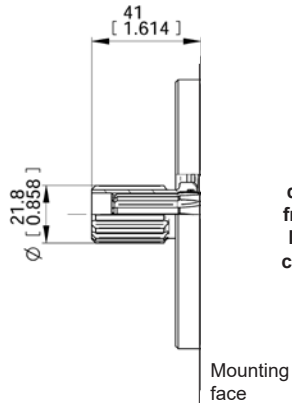


Drive Shaft

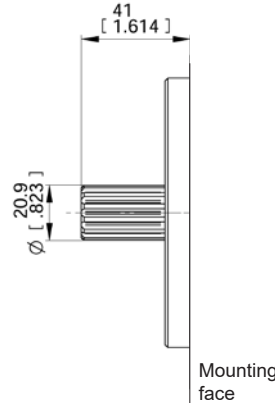
Part Number

Coupling
Sleeve+O ring

R12040210



i
for
displacements
from 6.5 to 13.8
Mounting with
coupling sleeve



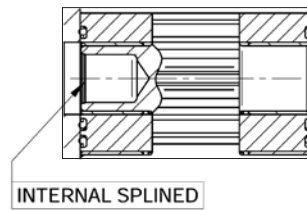
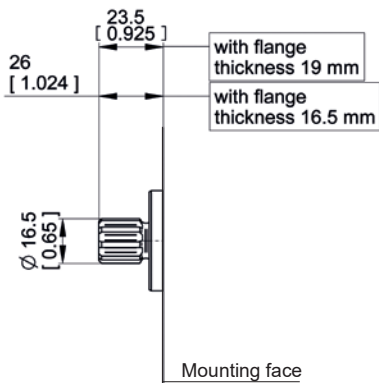
i
for
displacements
from 16 to 26
Mounting with
solid shaft.

code 55

Max torque 100 Nm (885 lbt in)

Max torque 200 Nm (1770 lbt in)

SAE B 13T-16/32DP SPLINED



code 62

Max torque 140 Nm (1239 lbt in)

code 60

Max torque 100 Nm (885 lbt in)

9 TEETH DIN 5482 SPLINED

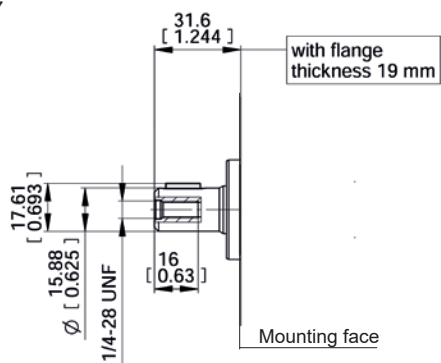
DIN 5480 INTERNAL SPLINED (ONLY FOR REAR PUMPS)

Key
3,97x3.97x12,7

Part Number

Key

796620700

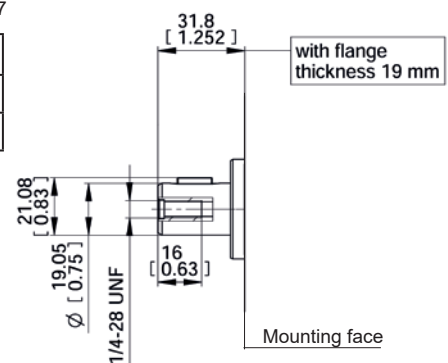


Key
4,76x4,76x12,7

Part Number

Key

796621000



code 82

Max torque 75 Nm (664 lbt in)

code 85

Max torque 110 Nm (974 lbt in)

5/8" SAE A PARALLEL

3/4" SAE A PARALLEL

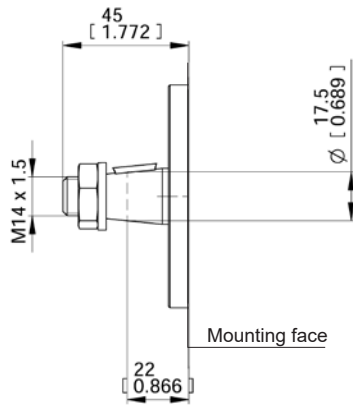
EO.146.0921.14.00IM01



Continental Shaft

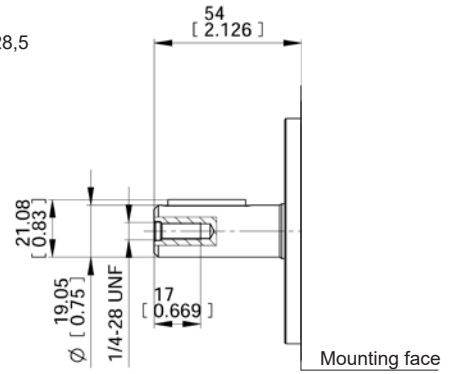
- Woodruff Key
4x6,5 UNI 6606
- Washer
M14 UNI 1751
- Nut
M14x1,5 ISO 8675
40 Nm-29.7 lbf-ft

| Part Number |
|--------------------------------|
| Kit Woodruff Key+Nut+Washer |
| R12240080 |



- Key
4,76x4,76x28,5

| Part Number |
|-------------|
| Key |
| 796622800 |



code 26

Max torque 100 Nm (885 lbt in)

code 86

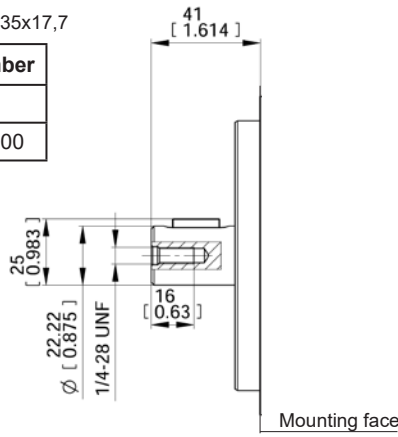
Max torque 100 Nm (885 lbt in)

TAPERED 1:5 (ONLY FOR CB, CL)

3/4" SAE A PARALLEL

- Key
6,35x6,35x17,7

| Part Number |
|-------------|
| Key |
| 796620800 |



code 87

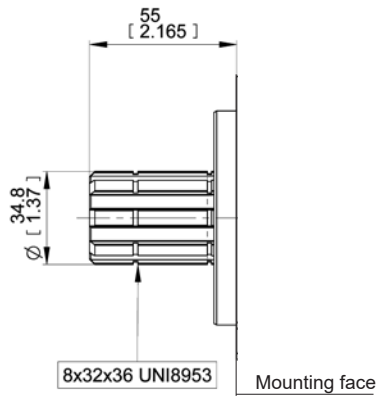
Max torque 200 Nm (1770 lbt in)

code 66

Max torque 200 Nm (1770 lbt in)

7/8" SAE B PARALLEL

8X32X36 UNI 8953 SPLINED



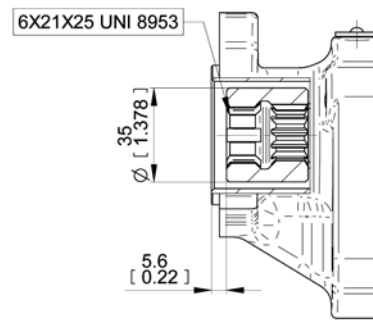
code 67

Max torque 200 Nm (1770 lbt in)

code 73

Max torque 200 Nm (1770 lbt in)

8X32X36 UNI 8953 SPLINED

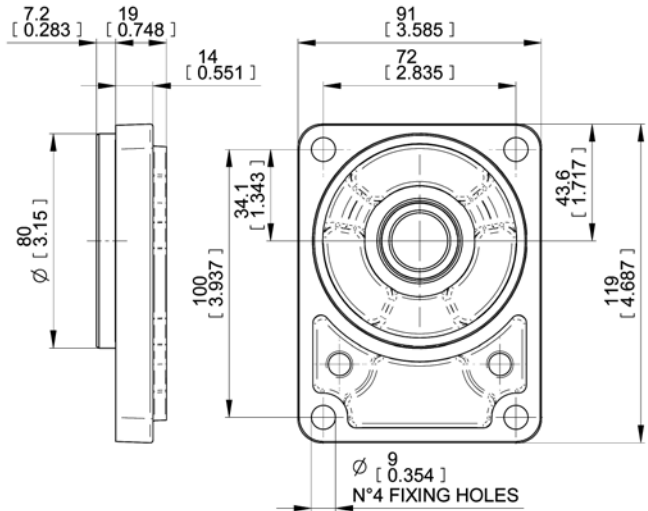
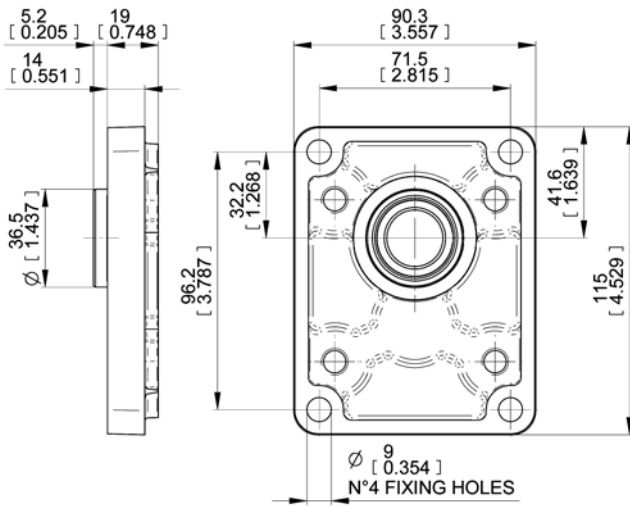


6X21X25 UNI 8953 INTERNAL SPLINED

EO:146.0921.14.001M01



Mounting Flanges

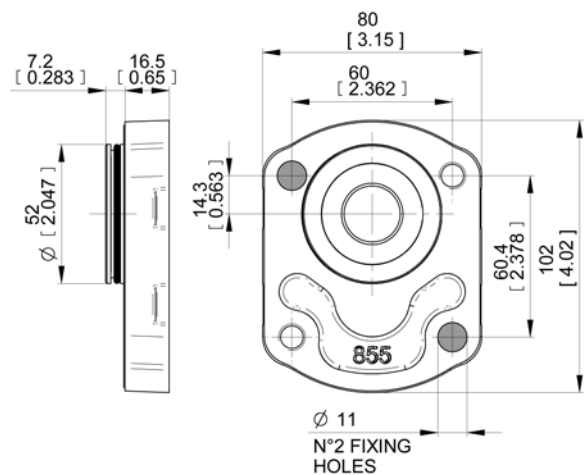
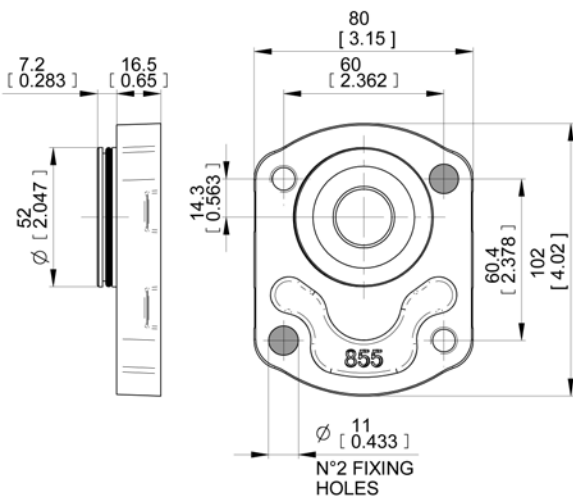


| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 28P1 | R12240012 (NBR) | R12240010 (NBR) |
| 62P1 | R12240420 (FPM) | R12240021 (FPM) |
| 82P1 | | |

| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 25B1 | R12240610 (NBR) | R12240010 (NBR) |
| 62B1 | R12240611 (FPM) | R12240021 (FPM) |

| | |
|--------------------------|--------------------------|
| code P1 | With shaft code 28-62-82 |
| EUROPEAN STANDARD | |

| | |
|------------------------|-----------------------|
| code B1 | With shaft code 25-62 |
| GERMAN STANDARD | |



| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|-----------------------------------|
| | Flange+O-ring | O-ring (OR3187-AT 47,29x2,62-NBR) |
| 03B2 | R12240050 | 799113400 |

| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|-----------------------------------|
| | Flange+O-ring | O-ring (OR3187-AT 47,29x2,62-NBR) |
| 03B3 | R12240050 | 799113400 |

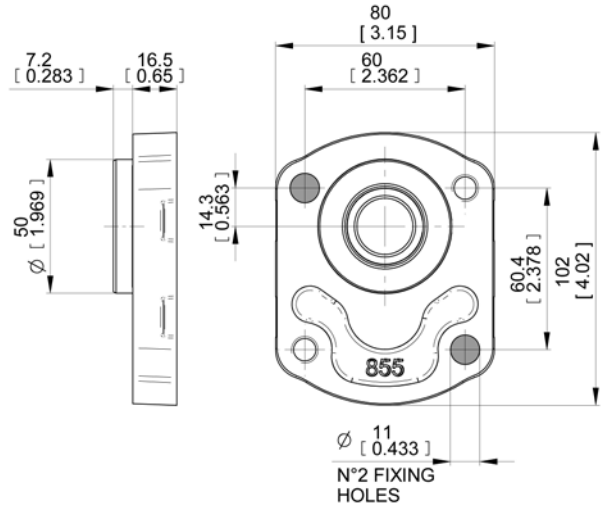
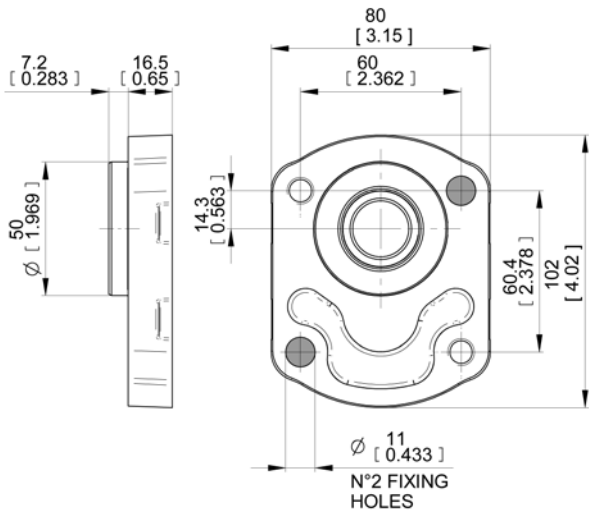
| | |
|------------------------|--------------------|
| code B2 | With shaft code 03 |
| GERMAN STANDARD | |

| | |
|------------------------|--------------------|
| code B3 | With shaft code 03 |
| GERMAN STANDARD | |

EO.146.0921.14.00IM01



Mounting Flanges



| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 04B4 | R12240136 (NBR) | R12240110 (NBR) |
| | R12240137 (FPM) | R12240115 (FPM) |
| 25B4 | R12240100 (NBR) | R12240010 (NBR) |
| 62B4 | R12240102 (FPM) | R12240021 (FPM) |

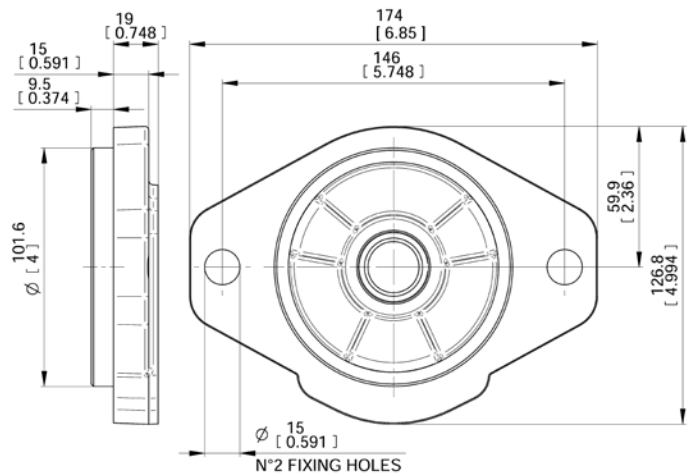
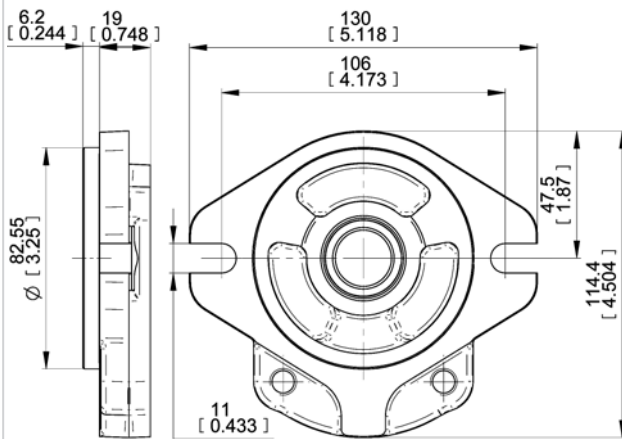
| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 04B5 | R12240134 (NBR) | R12240110 (NBR) |
| | R12240138 (FPM) | R12240115 (FPM) |
| 25B5 | R12240130 (NBR) | R12240010 (NBR) |
| 62B5 | R12240133 (FPM) | R12240021 (FPM) |

B4 With shaft code 04-25-62

B5 With shaft code 04-25-62

GERMAN STANDARD

GERMAN STANDARD



| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 52S2 | R14640100 (NBR) | R12240010 (NBR) |
| 82S2 | R14640101 (FPM) | R12240021 (FPM) |
| 54S2 | R14640110 (NBR) | R12240110 (NBR) |
| 85S2 | R14640111 (FPM) | R12240115 (FPM) |

| Code | Part Number (Unidirectional Pump) | |
|-----------------------------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 55S3 from cy 6.5 to 13.8 | R12040310 (NBR) | R12240010 (NBR) |
| | R12040311 (FPM) | R12240021 (FPM) |
| 55S3 from cy 16 to 26 | R14640050 (NBR) | R14640010 (NBR) |
| | R14640060 (FPM) | R14640011 (FPM) |

S2 With shaft code 52-54-82-85

S3 With shaft code 55

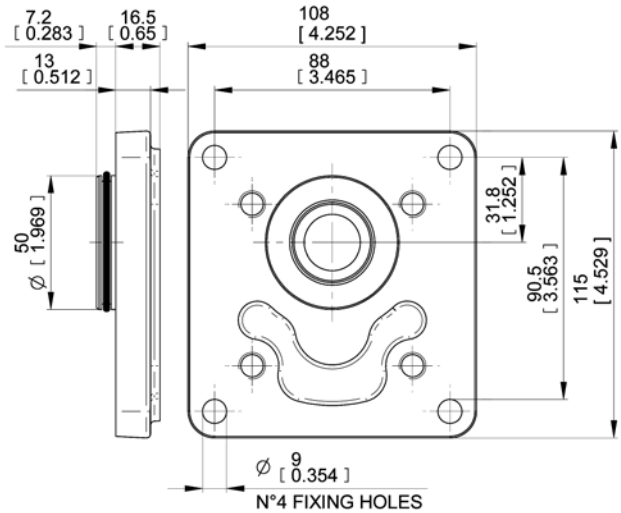
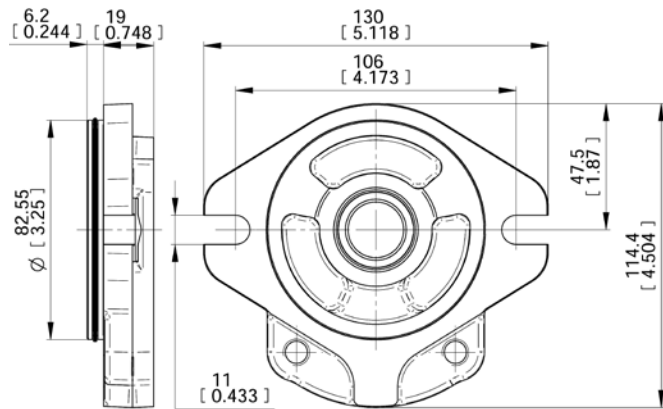
SAE A 2 BOLTS

SAE B 2 BOLTS

EO.146.0921.14.001M01



Mounting Flanges

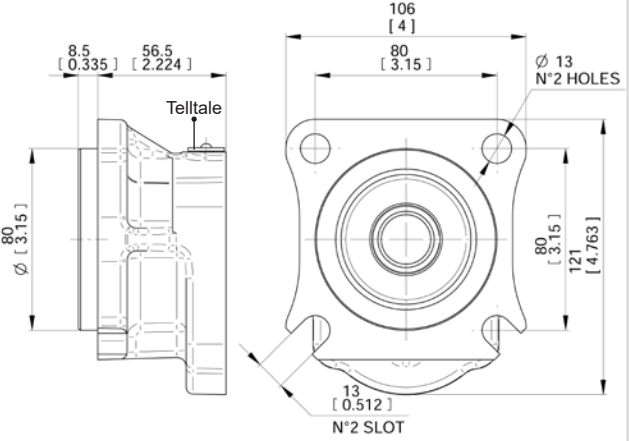
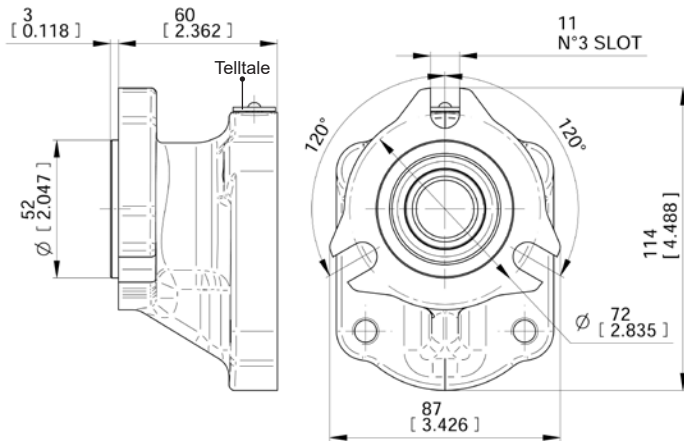


| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 52S6 | R14640020 (NBR) | R12240010 (NBR) |
| 82S6 | R14640021 (FPM) | R12240021 (FPM) |
| 54S6 | R14640022 (NBR) | R12240110 (NBR) |
| 85S6 | R14640023 (FPM) | R12240115 (FPM) |

| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 62C1 | R12040300 (NBR) | R12240010 (NBR) |
| | R12040301 (FPM) | R12240021 (FPM) |

S6 With shaft code 52-54-82-85
SAE A 2 BOLTS (with O-ring on the centering collar)

C1 With shaft code 62
4 BOLTS FOR IVECO ENGINES



TellTale drop in plug in case of failure, outside leakage trough the crossing hole is visible.

| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 73T1 | R14620030 (NBR) | R14640010 (NBR) |
| | R14620031 (FPM) | R14640011 (FPM) |

| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 43-44) |
| 67Z2 | R14620011 (NBR) | R14640010 (NBR) |
| | R14620012 (FPM) | R14640011 (FPM) |

T1 With shaft code 73
3 BOLTS UNI 8953 FOR GEAR BOX

Z2 With shaft code 67
4 BOLTS FOR ZF GEAR BOX

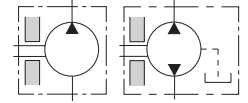
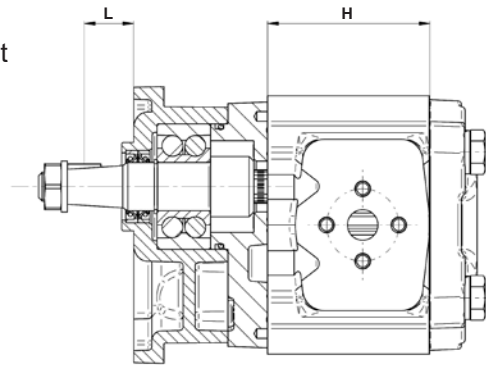
EO.146.0921.14.00IM01



Mounting Flanges with Outrigger Bearing

The following diagrams show radial load capacity of the bearing.
Calculation according to ISO 281 at 10 cSt

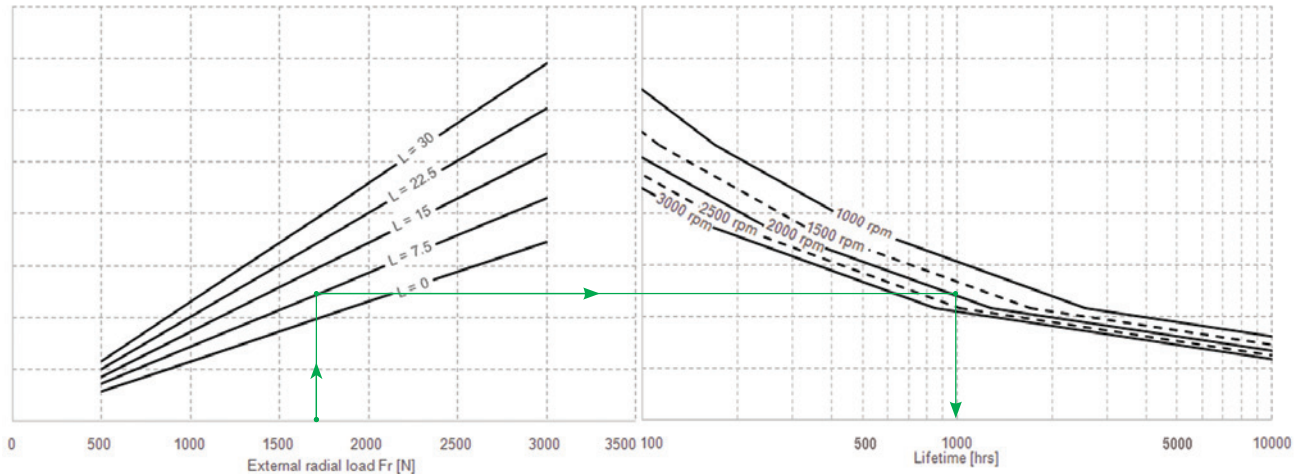
L=Distance between mounting flange and radial force point of application [mm-inches]



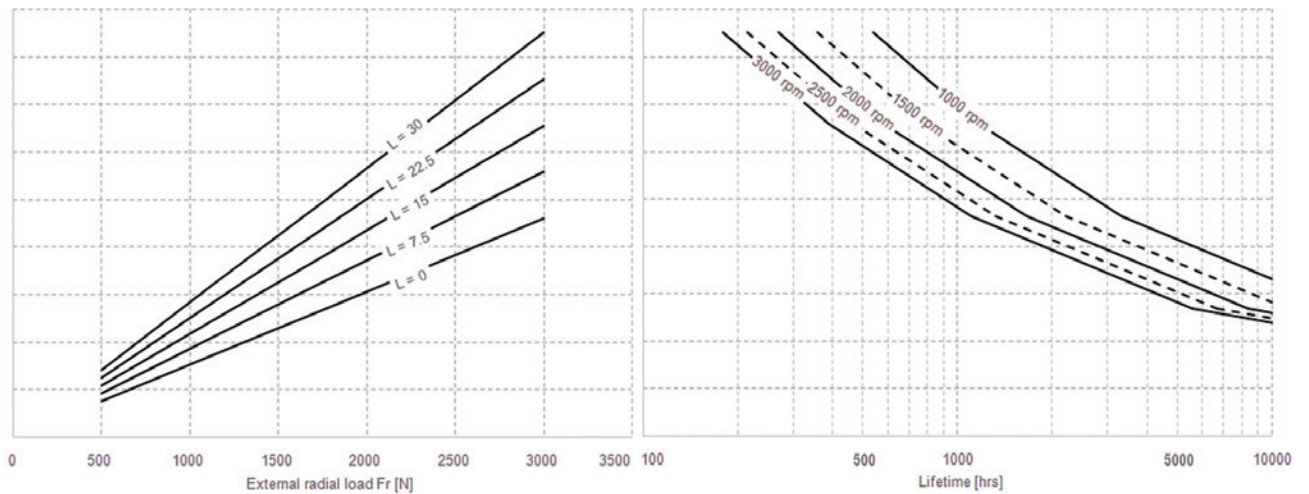
Example:
Fr = 1700 N
L = 7.5
Speed = 2000 rpm
→ Expected life: 1000 hrs

| TYPE | H |
|------|---------------|
| 6.5 | 49.95 (1.97") |
| 8.3 | 52.8 (2.08") |
| 11.3 | 59.7 (2.35") |
| 13.8 | 63.5 (2.5") |
| 16 | 67.5 (2.66") |
| 19 | 75.6 (2.97") |
| 22.5 | 81 (3.19") |
| 26 | 86.6 (3.42") |

For Code CP-CB-CL-CS



For Code CF

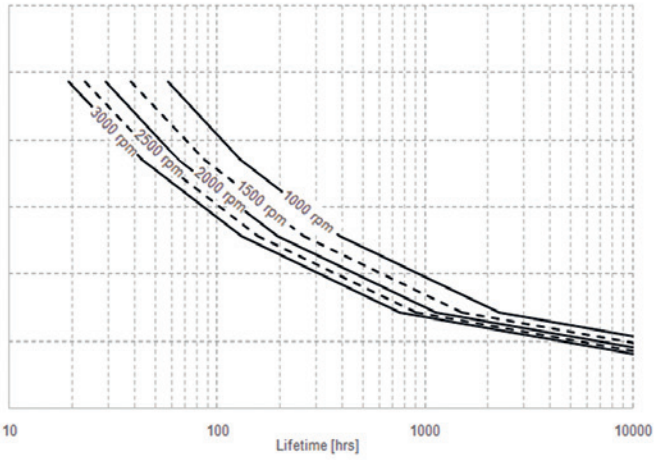
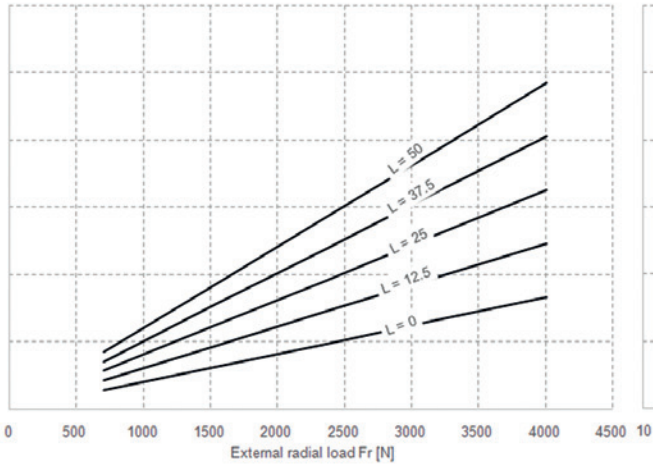


EO:146.0921.14.00IM01

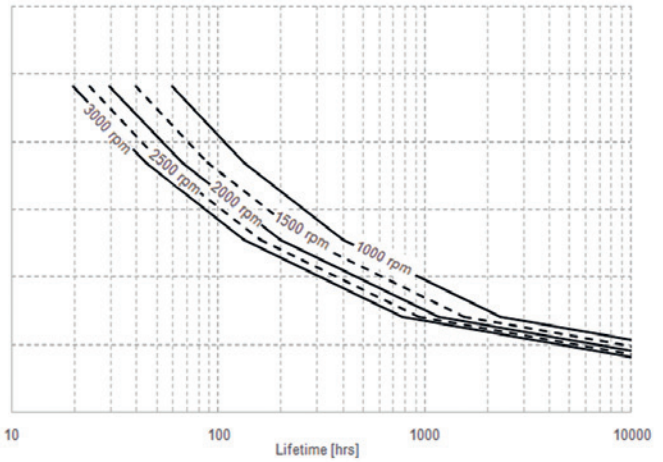
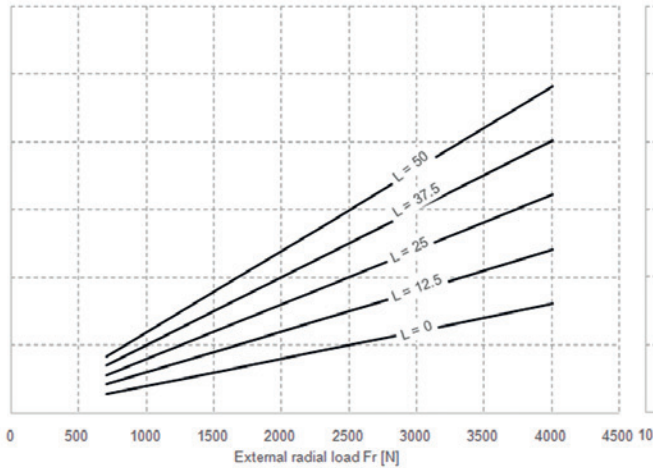


Mounting Flanges with Outrigger Bearing

For Code Z1



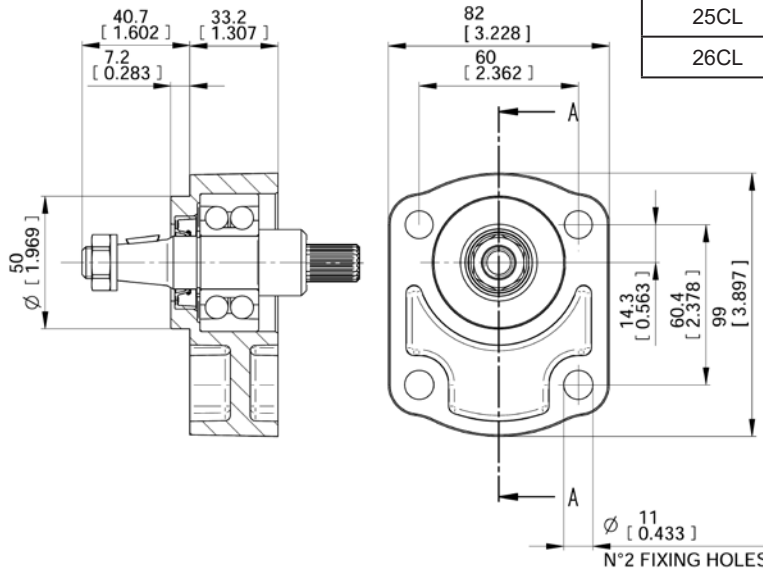
For Code CSB



EO.146.0921.14.00IM01



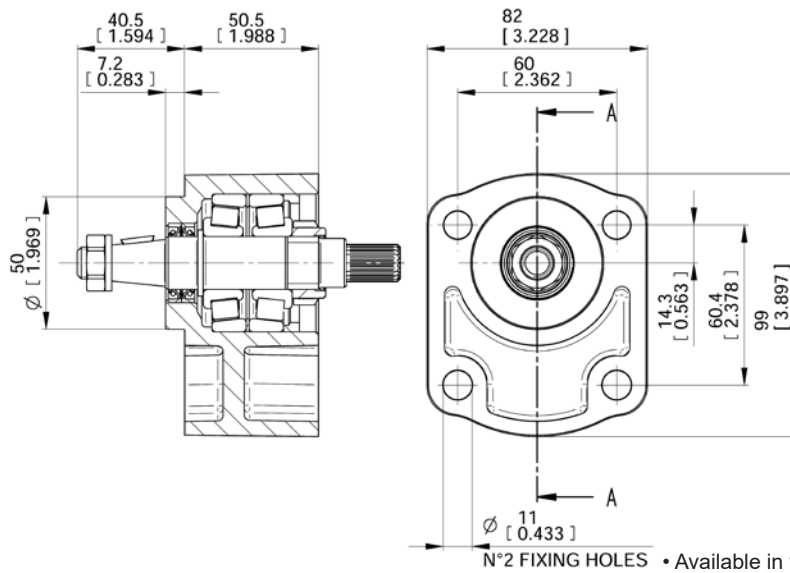
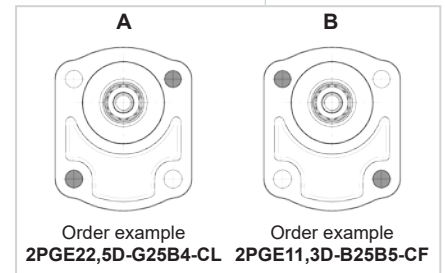
Aluminium Mounting Flanges with Outrigger Bearing



| Code | Part Number | |
|------|------------------------|-----------------------------|
| | Flange+Bearing support | Kit Woodruff Key+Nut+Washer |
| 25CL | R12040090 | R12283030 |
| 26CL | R12040060 | R12240080 |

Mounting with shaft code 25

| | |
|--|--|
| CL | With shaft code 25-26 - Max torque 100 Nm (885 lbt in) |
| FOR INTERNAL COMBUSTION ENGINES | |



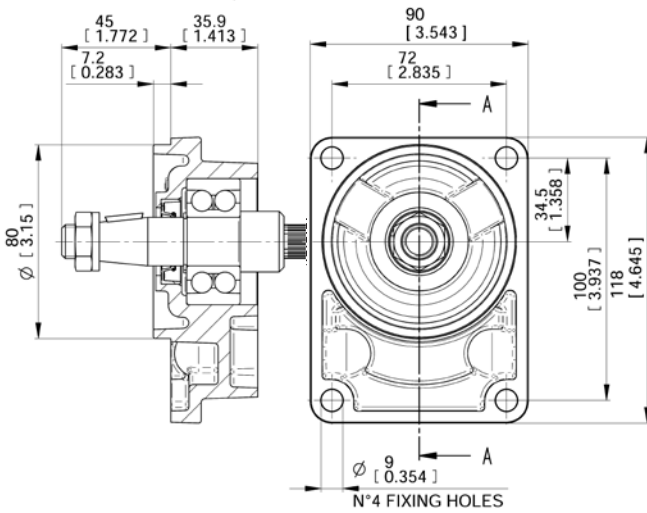
| Code | Part Number | |
|------|------------------------|-----------------------------|
| | Flange+Bearing support | Kit Woodruff Key+Nut+Washer |
| 25CF | R12040101 | R12283030 |

| | |
|--|---|
| CF | With shaft code 25 - Max torque 100 Nm (885 lbt in) |
| FOR INTERNAL COMBUSTION ENGINES WITH AXIAL AND RADIAL LOADS | |

EO.146.0921.14.001M01

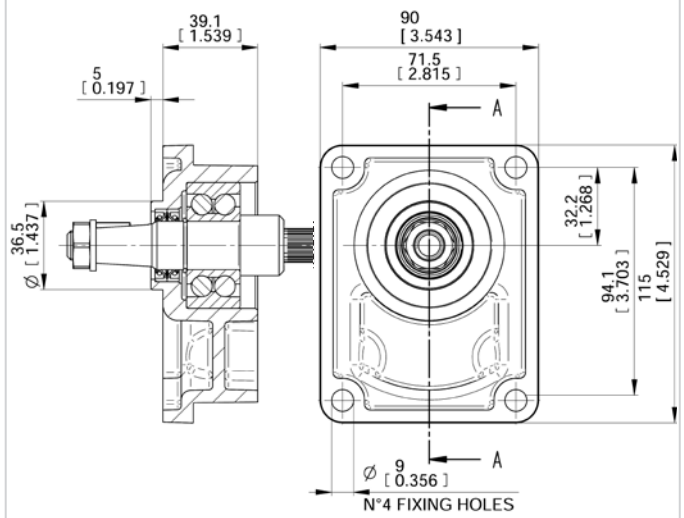


Aluminium Mounting Flanges with Outrigger Bearing



Mounting with shaft code 26

| Code | Part Number | |
|------|------------------------|-----------------------------|
| | Flange+Bearing support | Kit Woodruff Key+Nut+Washer |
| 25CB | R12040070 | R12283030 |
| 26CB | R12040080 | R12240080 |

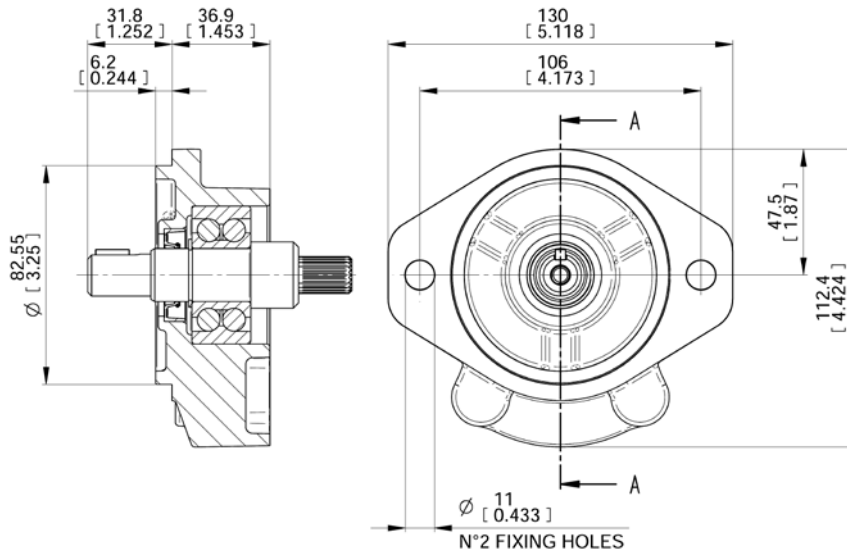


| Code | Part Number | |
|------|------------------------|-----------------------------|
| | Flange+Bearing support | Kit Woodruff Key+Nut+Washer |
| 28CP | R12040010 | R12240070 |

| | |
|------------------------|---|
| CB | With shaft code 25-26 Max torque 100 Nm (885 lbt in) |
| GERMAN STANDARD | |

| | |
|--------------------------|--|
| CP | With shaft code 28 Max torque 100 Nm (885 lbt in) |
| EUROPEAN STANDARD | |

Mounting with shaft code 82



| Code | Part Number |
|------|------------------------|
| | Flange+Bearing support |
| 52CS | R12040030 |
| 54CS | R12040020 |

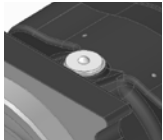
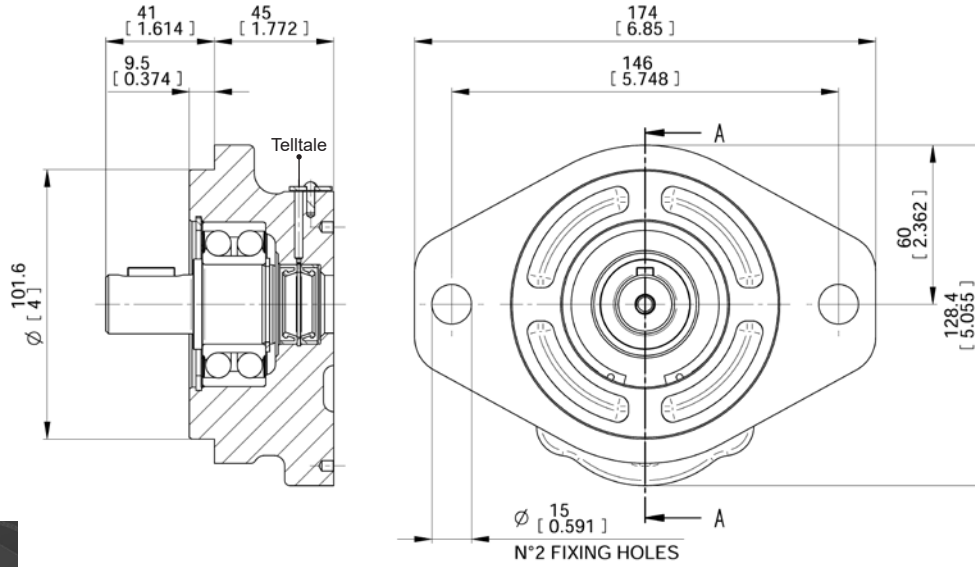
| Code | Part Number | |
|------|------------------------|-----------|
| | Flange+Bearing support | Key |
| 82CS | R12040040 | 796620700 |
| 85CS | R12040050 | 796621000 |
| 86CS | R12010430 | 796622800 |

| | |
|--------------|---|
| CS | With shaft code 52-54-82-85-86 - Max torque 100 Nm (885 lbt in) |
| SAE A | |

EO.146.0921.14.001M01



Cast Iron Mounting Flanges with Outrigger Bearing



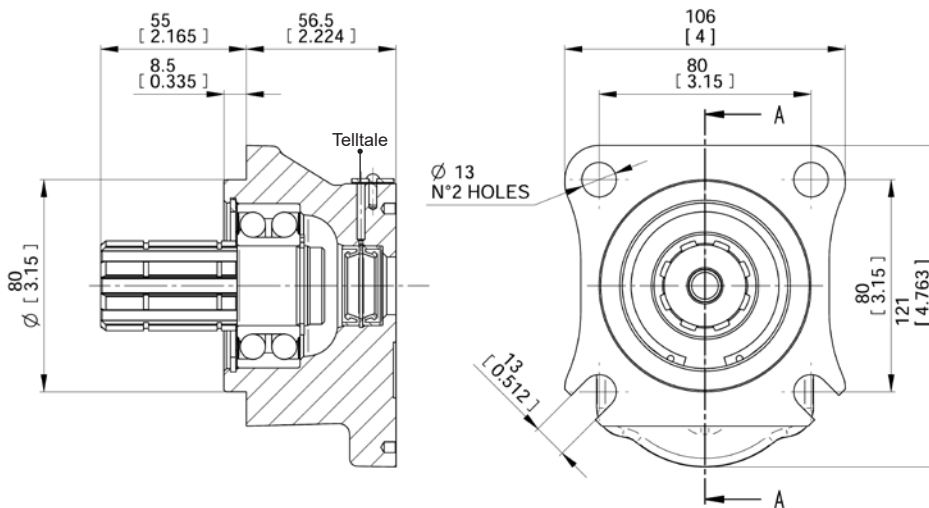
TellTale
drop in plug in case of failure,
outside leakage trough the
crossing hole is visible.

| Code | Part Number | |
|-------|------------------------|-----------|
| | Flange+Bearing support | Key |
| 87CSB | R14620020 | 796620800 |

CSB

With shaft code 87 - Max torque 200 Nm (1770 lbt in)

SAE B



Available only for
displacements
from 11.3 to 26

| Code | Part Number | |
|------|------------------------|--|
| | Flange+Bearing support | |
| 66Z1 | R14620010 | |

Z1

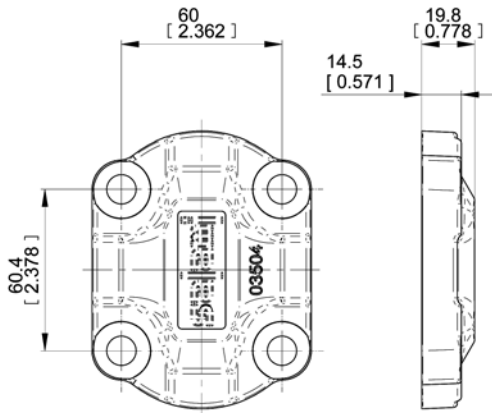
With shaft code 66 - Max torque 200 Nm (1770 lbt in)

4 BOLTS FOR ZF GEAR BOX

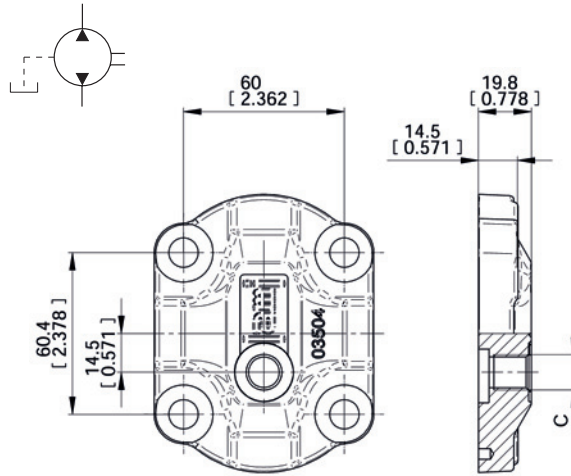
EO:146.0921.14.001M01



Rear Covers



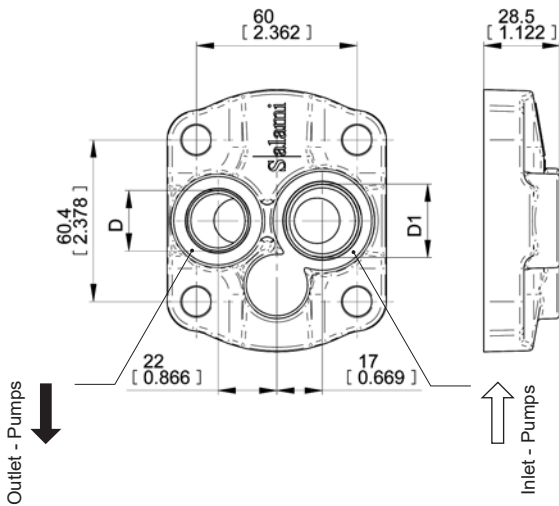
| Code | Part Number |
|----------------|-------------|
| Standard Cover | 312203529 |



| Code | Part Number | Threaded Port |
|---------------------------|-------------|----------------------|
| | | C (Drain) |
| Cover with External Drain | 312203552 | 7/16-20 UNF-2B SAE 4 |
| | 312203551 | G 1/4 |

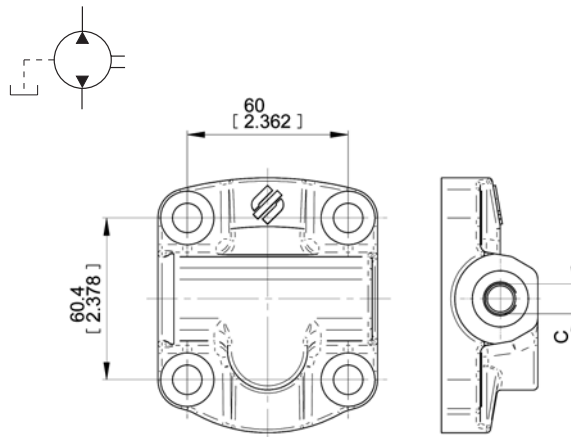
STANDARD REAR COVER FOR UNIDIRECTIONAL PUMPS

REAR COVER WITH EXTERNAL DRAIN C FOR BIDIRECTIONAL PUMPS



| Code | Part Number | Threaded Ports | |
|----------------------------|-------------|----------------------|------------------------|
| | | D (Outlet) | D1 (Inlet) |
| 1 Cover with rear ports | 312203535 | 7/8-14 UNF-2B SAE 10 | 1-1/16-12 UN-2B SAE 12 |
| | 312203543 | G 1/2 | G 3/4 |

On request outlet port only.



| Code | Part Number | Threaded Port |
|---------------------------------|-------------|----------------------|
| | | C (Drain) |
| LD Cover with External Drain | 312203545 | 7/16-20 UNF-2B SAE 4 |
| | 312003509 | G 1/4 |

1

LD

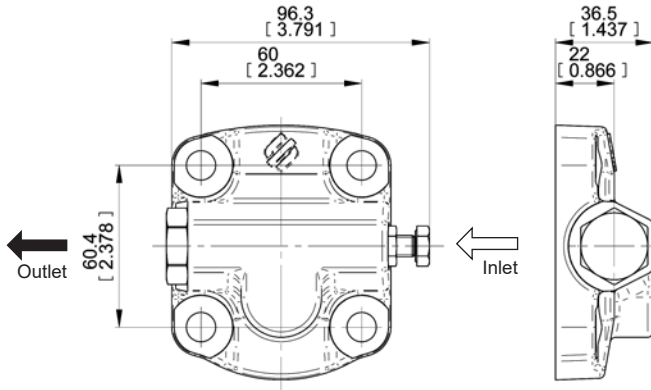
REAR COVER WITH REAR PORTS FOR UNIDIRECTIONAL PUMPS

REAR COVER WITH LATERAL DRAIN FOR BIDIRECTIONAL PUMPS

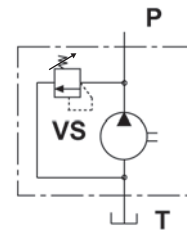
EO.146.0921.14.001M01



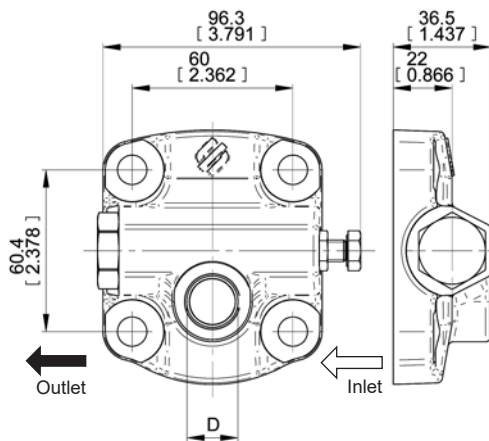
Rear Covers with Valves



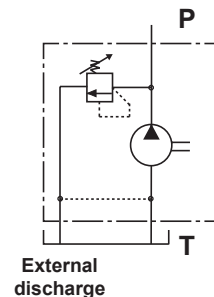
| Code | Part Number | Pressure relief valve setting range |
|--------------------------|-------------|-------------------------------------|
| VS Internal Discharge | R12275013 | 15-30 bar |
| | R12275020 | 30-60 bar |
| | R12275040 | 61-120 bar |
| | R12275050 | 121-170 bar |
| | R12275060 | 171-250 bar |



VS
INTERNAL DISCHARGE



| Code | Part Number | Pressure relief valve setting range | D (external discharge) |
|---------------------------|-------------|-------------------------------------|------------------------|
| VSE External Discharge | R12275014 | 15-30 bar | SAE 8 |
| | R12275021 | 30-60 bar | |
| | R12275041 | 61-120 bar | |
| | R12275051 | 121-170 bar | |
| | R12275061 | 171-250 bar | |
| | R12275015 | 15-30 bar | M18x1.5 |
| | R12275022 | 30-60 bar | |
| | R12275042 | 61-120 bar | |
| | R12275052 | 121-170 bar | |
| | R12275062 | 171-250 bar | G 3/8 |
| | R12275016 | 15-30 bar | |
| | R12275023 | 30-60 bar | |
| | R12275043 | 61-120 bar | |
| | R12275053 | 121-170 bar | |
| | R12275063 | 171-250 bar | |

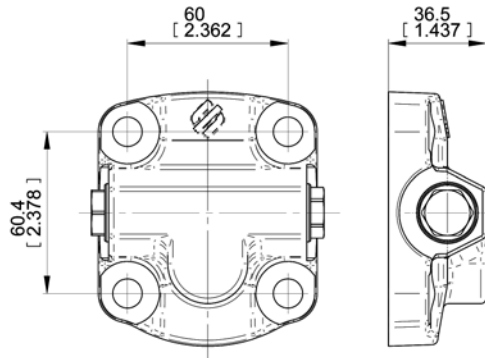


VSE
EXTERNAL DISCHARGE

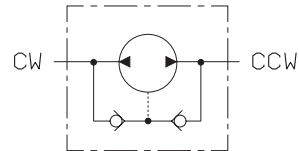
EO.146.0921.14.001M01



Rear Covers with Valves



| Code | Part Number |
|------------------------------|-------------|
| IDV Internal drain | R12203501 |



IDV

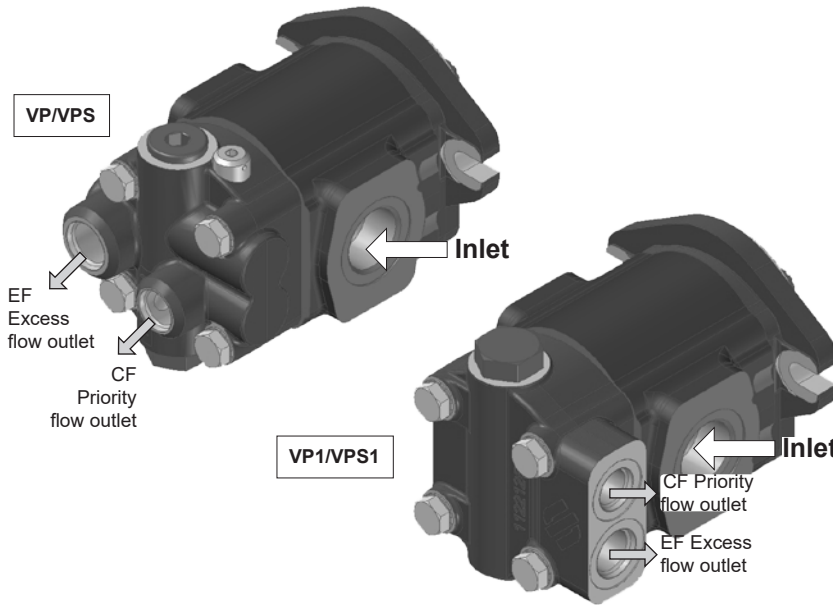
INTERNAL DRAIN FOR BIDIRECTIONAL PUMPS

EO.146.0921.14.00IM01



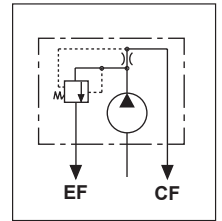
Rear Covers with Valves

Pressure compensated priority flow valve to feed two pressurized circuit at the same time, priority flow CF remains constant regardless of pump speed and system pressure variations. Excess flow EF is directly proportional to pump speed. Priority flow is determined by diameter of calibrated orifice, (see table at page 38). The max. pressure of the priority circuit can be limited by valve which relieves into pump suction line.



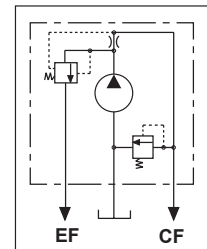
CF= Priority flow port
EF= Excess flow port

VP - VP1

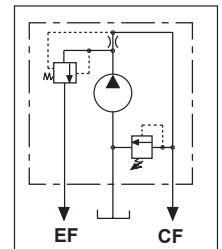


Priority flow valve, excess flow available to second actuator.

VPS



VPS1



Priority flow valve, excess flow available to second actuator with pressure relief valve on priority flow line.

VP/VP1/VPS/VPS1

PRESSURE COMPENSATED PRIORITY FLOW VALVES

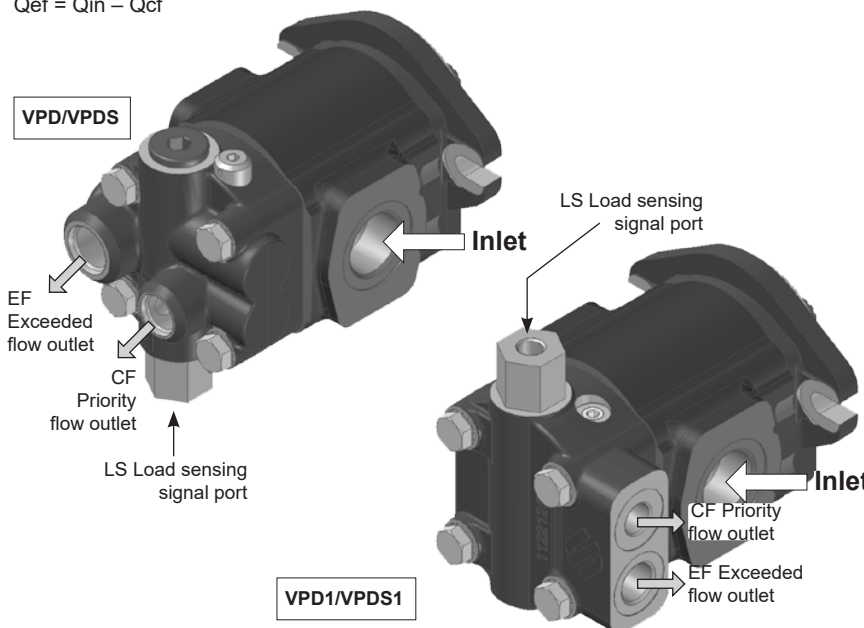
The load sensing priority valve is a control valve able to divide the flow generated by the pump, coming from the port P, in two different flows named Qcf and Qef. The Qcf flow follows the user request, the flow Qef changes according to the equation:

$$Q_{in} = Q_{cf} + Q_{ef}$$

This valve is used in hydraulic steering systems, the CF port is connected to the inlet of power steering unit while the other functions (lifter etc...) are connected to the EF port. The load sensing LS signal of the valve is connected to the LS of powersteering unit.

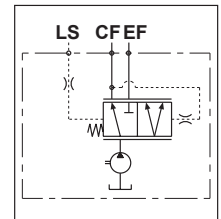
The regulated flow Qcf depends on the steering speed, the remaining flow Qef is available for the other functions and complies with the equation:

$$Q_{ef} = Q_{in} - Q_{cf}$$



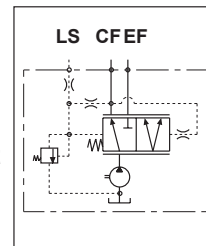
CF= Priority flow port
EF= Excess flow port
LS= Load sensing signal port

VPD - VPD1

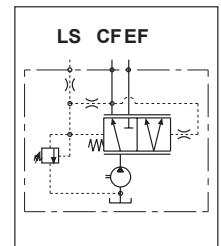


Load sensing priority valve with dynamic signal without pressure relief valve.

VPDS



VPDS1



Load sensing priority valve with dynamic signal with pressure relief valve.

VPD/VPD1/VPDS/VPDS1

LOAD SENSING PRIORITY VALVES

EO.146.0921.14.001M01

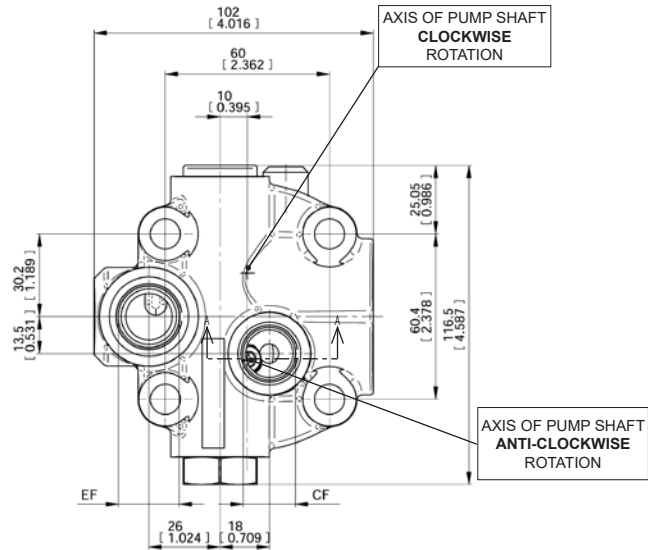
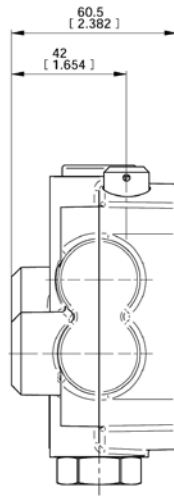


Pressure Compensated Priority Flow Valve

Flow Rate Table

Det. A-A

| Calibrated Orifice Φ d | | Flow Rate ± 10% | |
|---------------------------|------|--------------------|------|
| mm | inch | l/min | gpm |
| 1.5 | 0.06 | 2.5 | 0.66 |
| 2 | 0.08 | 4 | 1.06 |
| 2.4 | 0.09 | 6 | 1.59 |
| 2.8 | 0.11 | 8 | 2.11 |
| 3.1 | 0.12 | 10 | 2.64 |
| 3.5 | 0.14 | 12.5 | 3.30 |
| 4 | 0.16 | 16 | 4.23 |
| 4.4 | 0.17 | 20 | 5.28 |
| 4.9 | 0.19 | 25 | 6.61 |



| Threaded Port | |
|-------------------------|----------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 1/2 |
| SAE 6 9/16-18 UNF-2B | SAE 8 3/4 - 16 UNF - 2B |

| Code | Part Number |
|--|-------------------------------------|
| VP - VPS | Please contact our sales department |
| Pressure Relief Valve setting range | |
| 20-240 bar | |

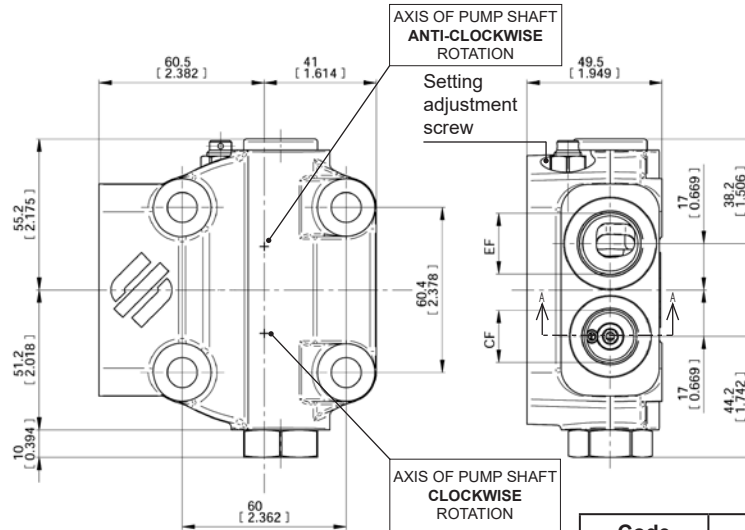
| VP | VPS |
|---|---|
| Excess flow available to second actuator - REAR PORTS | Excess flow available to second actuator with fixed setting pressure relief valve on priority flow line - REAR PORTS |

Flow Rate Table

CF - port

Det. A-A

| Calibrated Orifice Φ d | | Flow Rate ± 10% | |
|---------------------------|------|--------------------|------|
| mm | inch | l/min | gpm |
| 1.5 | 0.06 | 2.5 | 0.66 |
| 2 | 0.08 | 4 | 1.06 |
| 2.4 | 0.09 | 6 | 1.59 |
| 2.8 | 0.11 | 8 | 2.11 |
| 3.1 | 0.12 | 10 | 2.64 |
| 3.5 | 0.14 | 12.5 | 3.30 |
| 4 | 0.16 | 16 | 4.23 |
| 4.4 | 0.17 | 20 | 5.28 |
| 4.9 | 0.19 | 25 | 6.61 |



| Threaded Port | |
|----------------------------|-----------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 1/2 |
| SAE 8 3/4 - 16 UNF - 2B | SAE 10 7/8 - 14 UNF - 2B |

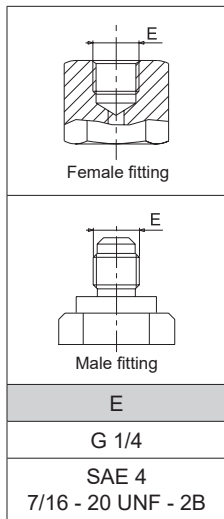
| Code | Part Number |
|--|-------------------------------------|
| VP1 - VPS1 | Please contact our sales department |
| Pressure Relief Valve setting range | |
| 30-110 bar | |
| 110-380 bar | |

| VP1 | VPS1 |
|---|--|
| Excess flow available to second actuator - SIDE PORTS | Excess flow available to second actuator with adjustable setting pressure relief valve on priority flow line - SIDE PORTS |

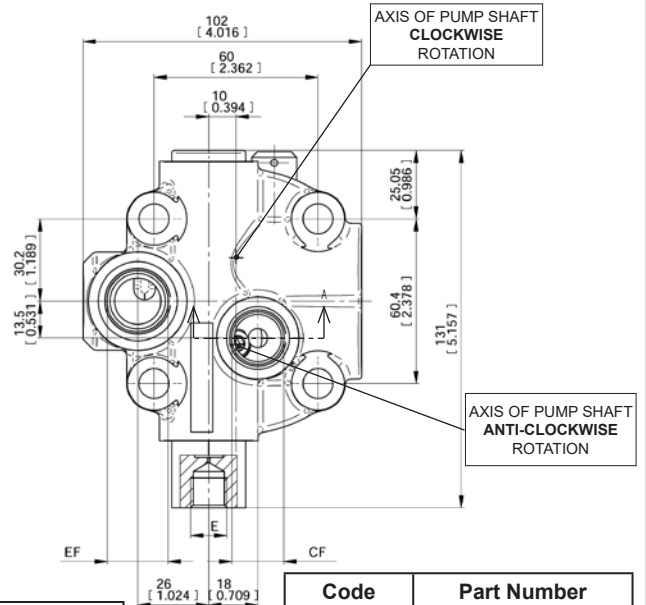
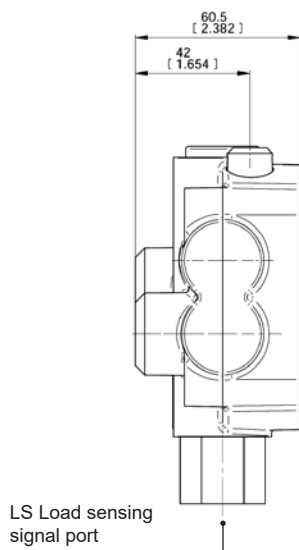
EO.146.0921.14.001M01



Load Sensing Priority Valve



Minimum load sensing signal (LS) = 4 bar (28 psi)

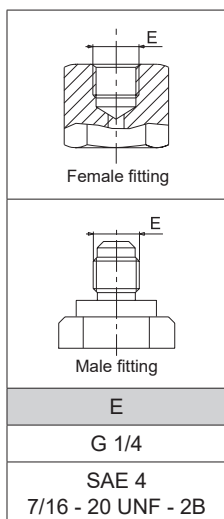


| Threaded Port | |
|-------------------------|----------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 1/2 |
| SAE 6 9/16-18 UNF-2B | SAE 8 3/4 - 16 UNF - 2B |

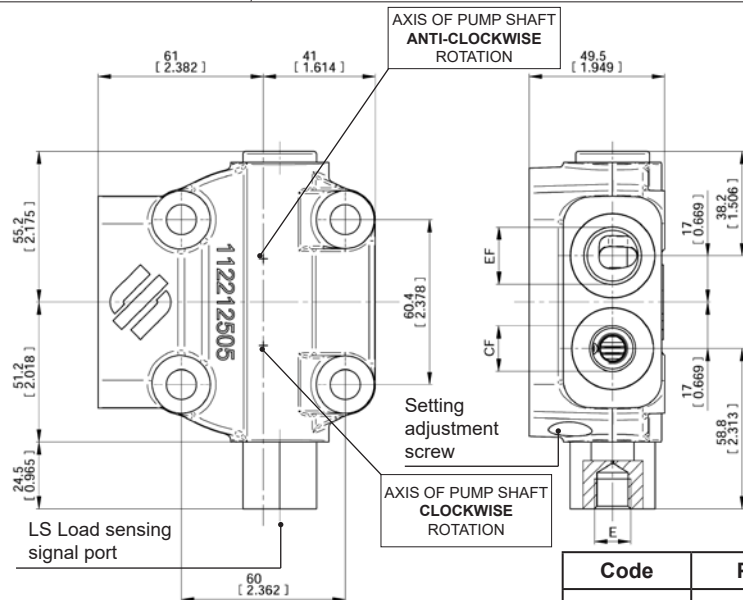
| Code | Part Number |
|------------|-------------------------------------|
| VPD - VPDS | Please contact our sales department |

| Pressure Relief Valve setting range |
|-------------------------------------|
| 20-240 bar |

| VPD | VPDS |
|--|--|
| Dynamic signal without pressure relief valve REAR PORTS | Dinamic signal with fixed setting pressure relief valve REAR PORTS |



Minimum load sensing signal (LS) = 4 bar (28 psi)



| Threaded Port | |
|----------------------------|-----------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 1/2 |
| SAE 8 3/4 - 16 UNF - 2B | SAE 10 7/8 - 14 UNF - 2B |

| Code | Part Number |
|--------------|-------------------------------------|
| VPD1 - VPDS1 | Please contact our sales department |

| Pressure Relief Valve setting range |
|-------------------------------------|
| 30-110 bar |
| 110-380 bar |

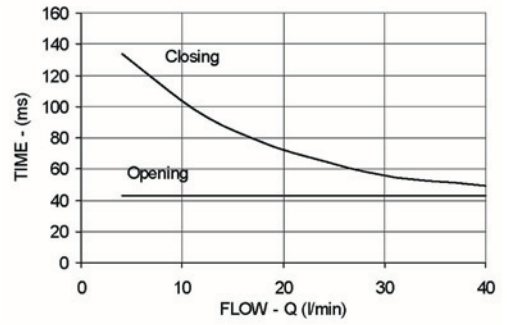
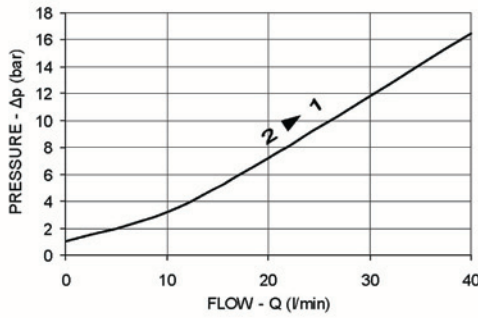
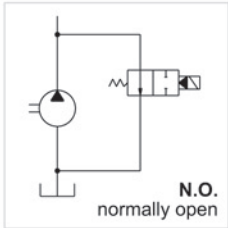
| VPD1 | VPDS1 |
|--|---|
| Dynamic signal without pressure relief valve SIDE PORTS | Dinamic signal with adjustable setting pressure relief valve SIDE PORTS |

EO.146.0921.14.001M01

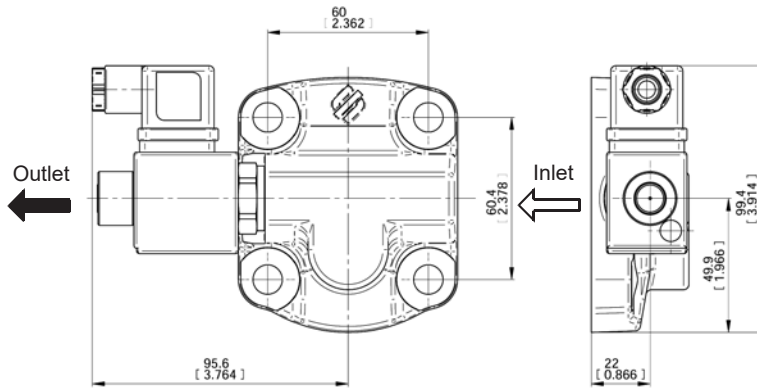
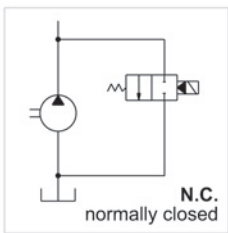


Rear Covers with Valves

EV1 - 12 Vcc
EV2 - 24 Vcc



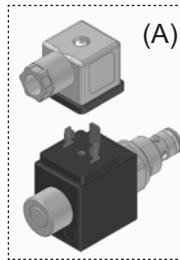
EV3 - 12 Vcc
EV4 - 24 Vcc



| Code | Part Number |
|------|-------------|
| EV1 | R12273273 |
| EV2 | R12273272 |
| EV3 | R12273275 |
| EV4 | R12273274 |

EV1-EV2-EV3-EV4

ELECTRIC UNLOADING VALVE

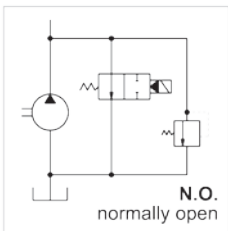


| Part Number | | | |
|------------------------------|-----------|-----------|-----------|
| (A) Coil+Mech.Part+Connector | | | |
| EV1/EVS1 | EV2/EVS2 | EV3/EVS3 | EV4/EVS4 |
| 796332680 | 796332681 | 412271232 | 412271233 |

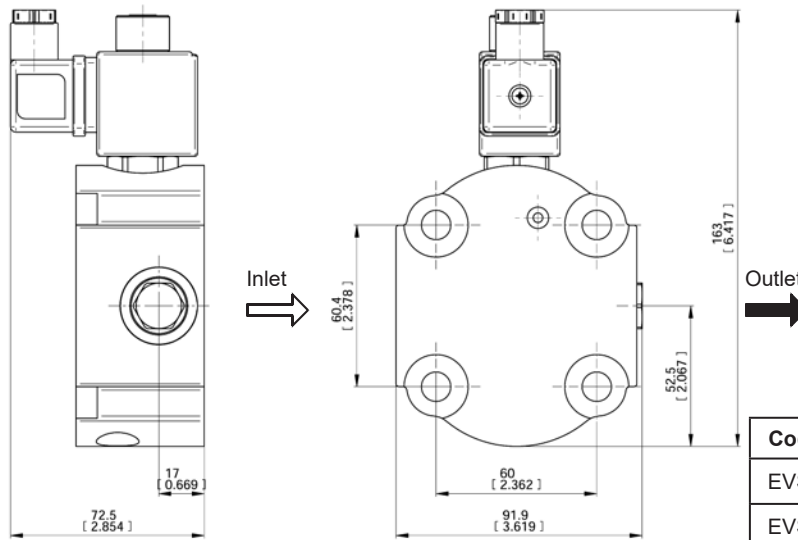
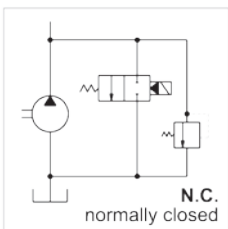


| Part Number |
|-----------------------------------|
| Connector DIN 43650 A/ISO 4400 |
| 796361600 |

EVS1 - 12 Vcc
EVS2 - 24 Vcc



EVS3 - 12 Vcc
EVS4 - 24 Vcc



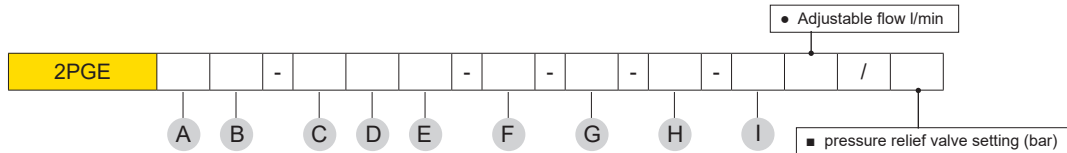
| Code | Part Number |
|------|-------------|
| EVS1 | R12273290 |
| EVS2 | R12273291 |
| EVS3 | R12273292 |
| EVS4 | R12273293 |

Pressure Relief Valve
setting range
25-250 bar

EVS1-EVS2-EVS3-EVS4

ELECTRIC UNLOADING VALVE WITH BUILT-IN PRESSURE RELIEF VALVE

EO.146.0921.14.001M01



| A | TYPE | DISPLACEMENTS | |
|---|------|----------------------------|-----------------|
| | 6.5 | 6.5 cm ³ /rev. | 0.40 cu.in/rev. |
| | 8.3 | 8.2 cm ³ /rev. | 0.50 cu.in/rev. |
| | 11.3 | 11.5 cm ³ /rev. | 0.68 cu.in/rev. |
| | 13.8 | 13.8 cm ³ /rev. | 0.84 cu.in/rev. |
| | 16 | 16.6 cm ³ /rev. | 1.01 cu.in/rev. |
| | 19 | 19.4 cm ³ /rev. | 1.18 cu.in/rev. |
| | 22.5 | 22.9 cm ³ /rev. | 1.37 cu.in/rev. |
| | 26 | 26.6 cm ³ /rev. | 1.62 cu.in/rev. |

| B | ROTATION | CODE |
|---|----------------|------|
| | Clockwise | D |
| | Anti-clockwise | S |
| | Reversible | R |

| C | PORTS (page 21) | CODE |
|---|---|------|
| | Flanged ports european standard | P |
| | Flanged ports german standard | B |
| | Flanged ports SAE J518 Metric thread | W |
| | Flanged ports SAE J518 American standard thread | S |
| | Threaded ports GAS (BSPP) | G |
| | Threaded ports SAE (ODT) | R |

| D | DRIVE SHAFT (page 23) | CODE |
|---|---|------|
| | Tang drive for electric motors | 03 |
| | Tang drive | 04 |
| | Tapered 1:5 | 25 |
| | Tapered 1:8 | 28 |
| | SAE A splined 9T | 52 |
| | SAE A splined 11T | 54 |
| | SAE B splined 13T | 55 |
| | 9 teeth DIN 5482 splined | 62 |
| | DIN 5480 internal splined (only for rear pumps-see page 24) | 60 |
| | 5/8" SAE A parallel | 82 |
| | 3/4" SAE A parallel (Mounting face 31.8 mm) | 85 |
| | Tapered 1:5 Continental shaft | 26 |
| | 3/4" SAE A Parallel Continental shaft (Mounting face 54 mm) | 86 |
| | 7/8" SAE B Parallel Continental shaft | 87 |
| | 8x32x36 UNI 8953 splined Continental shaft | 66 |
| | 8x32x36 UNI 8953 splined Continental shaft | 67 |
| | 6x21x25 UNI 8953 splined Continental shaft | 73 |

| I | REAR COVERS (page 34) | CODE |
|---|---|--------------|
| | Lateral drain | LD |
| | Adjustable pressure relief valve-Internal discharge | ■ VS |
| | Adjustable setting pressure relief valve-External discharge | ■ VSE |
| | Internal drain valve | IDV |
| | Priority flow valve with excess flow to 2nd actuator | • VP-VP1 |
| | Priority flow valve with excess flow to 2nd actuator with pressure relief valve | ■ VPS-VPS1 |
| | Load sensing priority valve with dinamic signal | • VPD-VPD1 |
| | Load sensing priority valve with dinamic signal and pressure relief valve | ■ VPDS VPDS1 |
| | Electric unloading valve (12V) | EV1/EV3 |
| | Electric unloading valve (24V) | EV2/EV4 |
| | Pressure relief and electric unloading valves (12V) | EVS1/EVS3 |
| | Pressure relief and electric unloading valves (24V) | EVS2/EVS4 |
| | Pre-arranged for 1.5PE rear | PD1.5 |

| H | OUTRIGGER BEARING (page 31) | CODE |
|---|---|------|
| | For Internal combustion engines | CL |
| | For Internal combustion engines with axial and radial loads | CF |
| | SAE A | CS |
| | German standard | CB |
| | European standard | CP |
| | SAE B | CSB |
| | 4 Bolts for ZF gear box | Z1 |

| G | PORTS POSITION | CODE |
|---|-------------------------------------|------|
| | Side ports (standard configuration) | - |
| | Rear ports | 1 |

| F | SEAL | CODE |
|---|--|------|
| | Buna standard (standard configuration) | - |
| | Viton | V |

| E | MOUNTING FLANGES (page 26) | CODE |
|---|---|-------|
| | European standard | P1 |
| | German standard Ø80 | B1 |
| | German standard Ø52 | B2-B3 |
| | German standard Ø50 | B4-B5 |
| | 4 bolts for Iveco engines | C1 |
| | SAE A 2 bolts | S2 |
| | SAE B 2 bolts | S3 |
| | SAE A 2 Bolts (with o-ring on the centering collar) | S6 |
| | 3 BOLT UNI 8953 for gear box | T1 |
| | 4 Bolts for ZF gear box | Z2 |

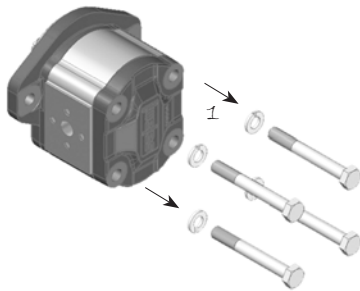
How to order Single Pump: 2PGE 19D, ports SAE (R), drive shaft (54), mounting flange (S2).
2PGE19D-R54S2

EO.146.0921.14.001M01



Single Pump Changing Rotation Instructions

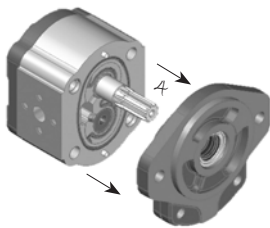
! Keep the working surface cleaned as well as the exterior of the pump before starting and avoid inner contamination of the pump. The pump shown below is a clockwise rotating pump. To achieve anti-clockwise rotation, please read the following instructions carefully.



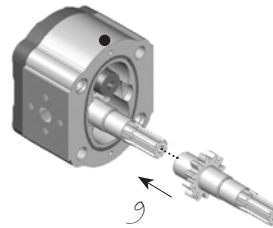
1 - Loosen and fully unscrew the bolts.

2 - Lay the pump on the working area in order to have the mounting flange turned upside.

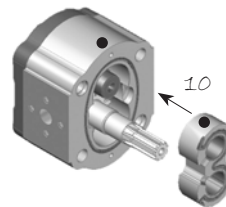
3 - Coat the shaft end with grease to avoid damaging the shaft seal.



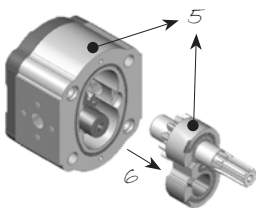
4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



9 - Re-locate the driving gear in the position previously occupied by the driven gear.

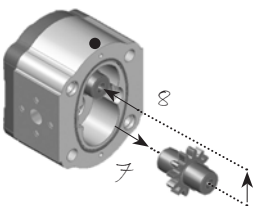


10 - Replace the bushing and thrust plate taking care that:
- marks are located as on the picture
- surface containing the seal is visible
- seal and its protection are correctly located.



5 - Mark the position of the bushing and eventually of the thrust plate, as well, with reference to the body.

6 - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.



7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

8 - Re-locate the driven gear in the position previously occupied by the driving gear.

11 - Clean the body and mounting flange facing surfaces.

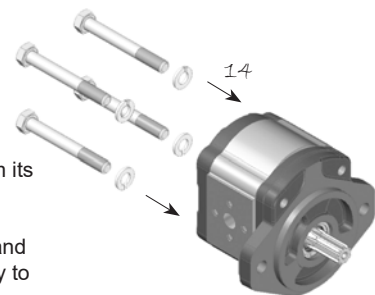
12 - Verify that the two plugs are located in the body.

13 - Refit the mounting flange, turned 180° from its original position.

14 - Replace the bolts and tighten clockwise evenly to an appropriate torque.

15 - Check that the shaft rotates freely.

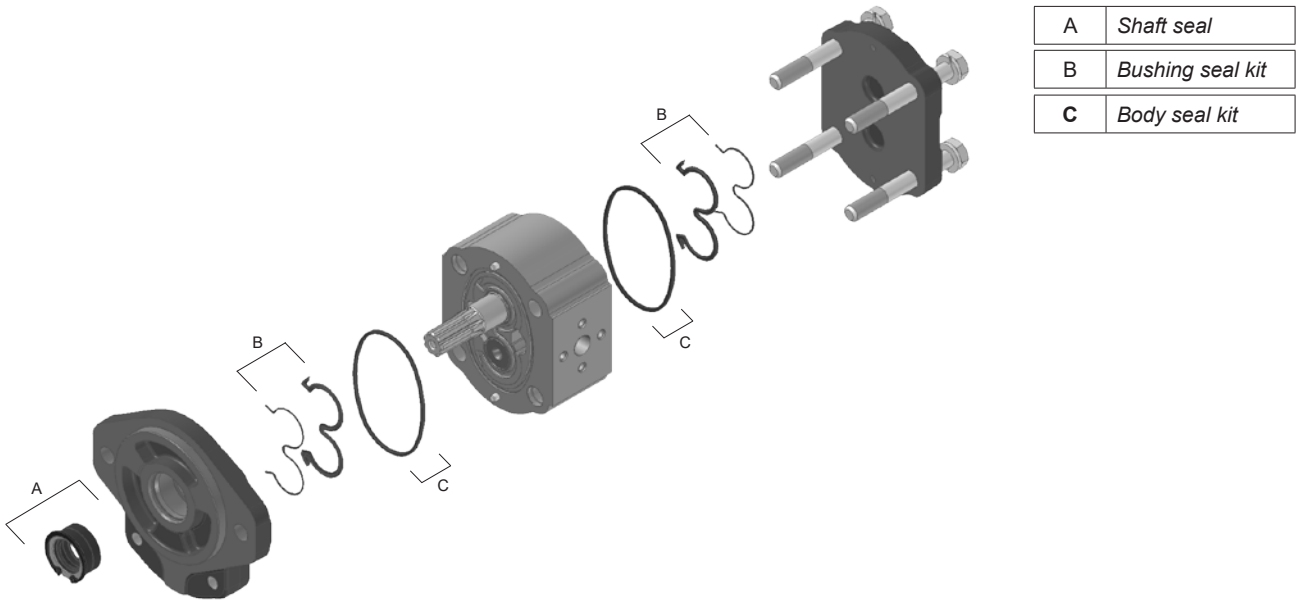
16 - Mark on the flange the new direction of rotation.



EO.146.0921.14.00IM01



Unidirectional Pump Seal Spare Parts Kit

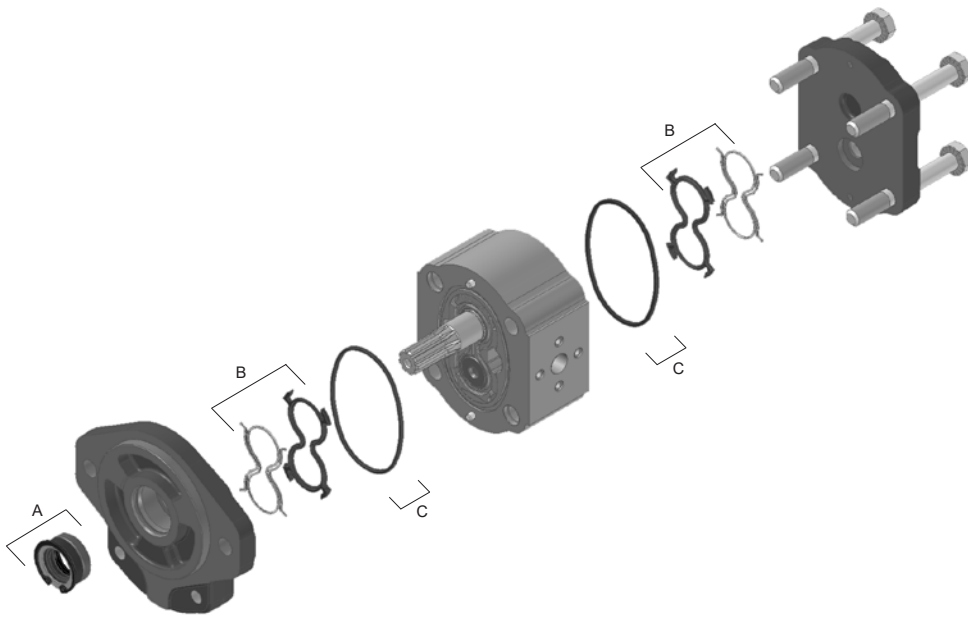


| SHAFT & FLANGE TYPE | NBR COMPOUND | | FPM COMPOUND | |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | Complete seal kit (A+B+C) | Shaft seal kit (A) | Complete seal kit (A+B+C) | Shaft seal kit (A) |
| 28P1 25B1/B4/B5 62P1/B1/B4/B5 82P1/S2/S6 52S2/S6 55S3 (Coupling sleeve) | Part Number R12292830 | Part Number R12240010 | Part Number R12292950 | Part Number R12240021 |
| 55S3 (Solid Shaft) 73T1 67Z2 | Part Number R14690010 | Part Number R14640010 | Part Number R14690020 | Part Number R14640011 |
| 54S2/S6 85S2/S6 04B4/B5 | Part Number R12292833 | Part Number R12240110 | Part Number R12292834 | Part Number R12240115 |

E0.146.0921.14.00IM01



Bidirectional Pump Seal Spare Parts Kit



| | |
|---|------------------|
| A | Shaft seal |
| B | Bushing seal kit |
| C | Body seal kit |

| SHAFT & FLANGE TYPE | NBR COMPOUND | | FPM COMPOUND | |
|---|---|---|---|---|
| | Complete seal kit (A+B+C) | Shaft seal kit (A) | Complete seal kit (A+B+C) | Shaft seal kit (A) |
| <p>28P1 25B1/B4/B5 62P1/B1/B4/B5 82P1/S2/S6 52S2/S6</p> <p>55S3 (Coupling sleeve)</p> | <p>Part Number R12081820</p> | <p>Part Number R12040122</p> | <p>Part Number R12081830</p> | <p>Part Number R12040123</p> |
| <p>55S3 (Solid Shaft)</p> <p>73T1 67Z2</p> | <p>Part Number R14690031</p> | <p>Part Number R14640012</p> | <p>Part Number R14690041</p> | <p>Part Number R14640013</p> |
| <p>54S2/S6 85S2/S6</p> | <p>Part Number R12092835</p> | <p>Part Number R12240114</p> | <p>Part Number R12092836</p> | <p>Part Number R12240113</p> |

EO.146.0921.14.001M01



2PGE Multiple Pump - Dimensions

For flanges code:
P1-B1-S2-S3 → 19 mm (0.75 in.)
B4-B5-C1 → 16.5 mm (0.65 in.)

Max. Torque 100 Nm (885 lbf-in)

5.6 [0.22] 23 [0.92]

| Part Number | |
|--|-----------|
| Coupling Sleeve Splined W14x0.6x8f DIN 5480 | 312002515 |

ALL THE PUMPS CAN BE ALSO MULTIPLE

Front Pump:
drive shaft back end pre-arranged for second pump female splined end.

| Part Number | |
|--------------------|-----------|
| Multiple pumps kit | R12030020 |

58 - 62 Nm (42.8 - 45.7 lbf-ft)

Back pump:
equipped with drive shaft suitable for multiple pumps, code 60.
Also available with 2PE Combination (Aluminium gear housing)

MULTIPLE GEAR PUMPS with individual inlet port

MULTIPLE GEAR PUMPS with common inlet port

Recommended to limit the inflow of the downstream pump at 30 l/min MAX to avoid cavitation. Only for common suction port configuration:
Commercial code UA.

| 2PGE-Type | | 6.5 | 8.3 | 11.3 | 13.8 | 16 | 19 | 22.5 | 26 |
|-------------|----|-------|------|-------|-------|------|------|------|------|
| Dimension A | mm | 49.95 | 52.8 | 59.7 | 63.5 | 67.5 | 75.6 | 81 | 86.8 |
| | in | 1.97 | 2.07 | 2.35 | 2.5 | 2.65 | 2.97 | 3.19 | 3.42 |
| Dimension C | mm | 25 | 26.4 | 29.75 | 31.75 | 39.5 | 39.5 | 47.5 | 47.5 |
| | in | 0.98 | 1.04 | 1.17 | 1.25 | 1.56 | 1.56 | 1.87 | 1.87 |

| 2PE-Type | | 3.2* | 3.9* | 4.5 | 6.5 | 8.3 | 10.5 | 11.3 | 12.5 | 13.8 | 16 | 19 | 22.5 | 26 |
|-------------|----|-------|-------|------|-------|-------|-------|-------|-------|------|------|----|------|----|
| Dimension A | mm | 47.1 | 49.95 | 52.8 | 56.3 | 59.7 | 63.5 | 67.5 | 75.6 | 81 | 86.8 | | | |
| | in | 1.83 | 1.97 | 2.07 | 2.22 | 2.35 | 2.5 | 2.65 | 2.97 | 3.19 | 3.42 | | | |
| Dimension C | mm | 23.55 | 25 | 26.4 | 28.15 | 29.75 | 31.75 | 33.75 | 37.80 | 40.5 | 43.4 | | | |
| | in | 0.93 | 0.98 | 1.04 | 1.11 | 1.17 | 1.25 | 1.33 | 1.49 | 1.59 | 1.71 | | | |

*Available only as rear pump

For flanges code:
P1-B1-S2-S3 → 19 mm (0.75 in.)
B4-B5-C1 → 16.5 mm (0.65 in.)

Max. Torque 100 Nm (885 lbf-in)

21.6 [0.85] 23 [0.92]

| Part Number | |
|--------------------------------------|-----------------|
| Shaft seal 19,05x28,58x6,3 | 796105350 (NBR) |
| | 796105340 (FPM) |

ALL THE PUMPS CAN BE ALSO MULTIPLE

Front Pump:
drive shaft back end pre-arranged for second pump female splined end.

| Part Number | |
|---|------------------------------------|
| Multiple pumps kit with separated stages for different fluid (2 tanks) - Code AS | R12090020 (NBR) R12090021 (FPM) |

58 - 62 Nm (42.8 - 45.7 lbf-ft)

Back pump:
equipped with drive shaft suitable for multiple pumps, code 60.

| Part Number | |
|------------------|------------------------------------|
| Body seal | 312206409 (NBR) 312206411 (FPM) |

MULTIPLE GEAR PUMPS with separated stages

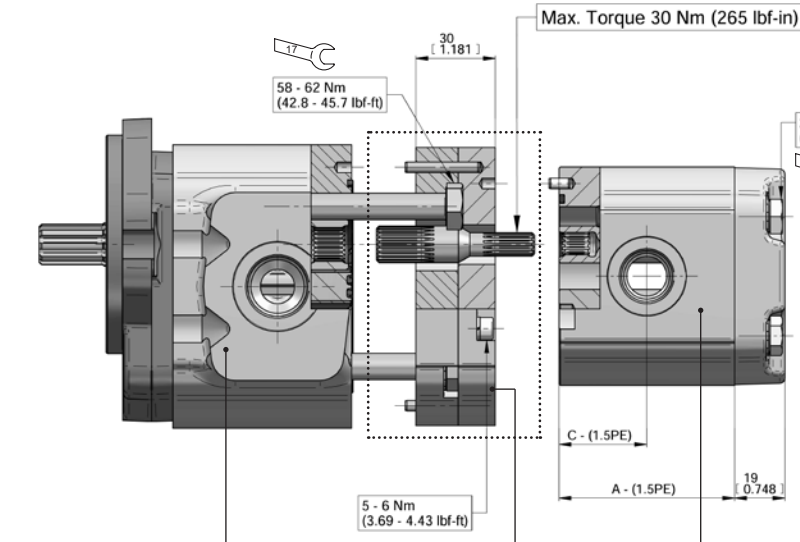
| Part Number | |
|--|-----------|
| Coupling Sleeve Splined W14x0.6x8f DIN 5480 | 312002515 |

EO.146.0921.14.001M01



2PGE Combination with Pump 1.5PE (Aluminium gear housing)

PD1.5 Multiple pumps kit
Pre-arranged for 1.5PE rear.



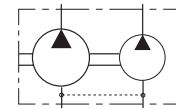
Front Pump:
drive shaft back end pre-arranged
for second pump female splined
end.

Part Number
Multiple
pumps kit
R12090043

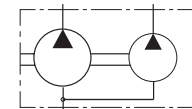
Back pump:
equipped with drive shaft
suitable for multiple pumps,
code 60.

Part Number
O-ring
53,7x1,78
799103400

Part Number
Coupling Sleeve
Splined W14x0.6x8f
DIN 5480
310903504



**MULTIPLE
GEAR PUMPS
with individual
inlet port**



**MULTIPLE
GEAR PUMPS** **!**
with common
inlet port

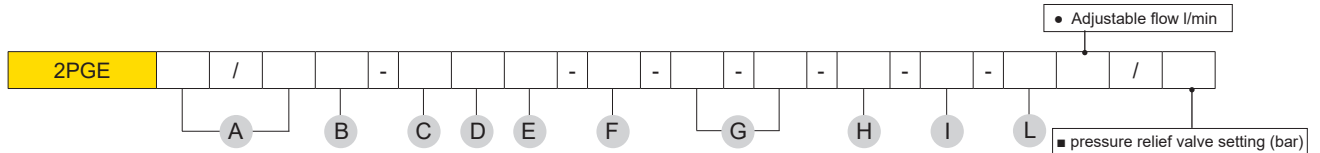
Recommended to limit the
inflow of the downstream
pump at 12 l/min MAX
to avoid cavitation. Only
for common suction port
configuration:
Commercial code UA.

! Not available
combinations with
flange: B2-B3-B4-B5

! ALL THE PUMPS
CAN BE ALSO
MULTIPLE

| 1.5PE-Type | | 1.4 | 2.1 | 2.8 | 3.5 | 4.1 | 5.2 | 6.2 | 7.6 | 9.3 | 11 |
|-------------|----|------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| Dimension A | mm | 44 | 45.9 | 47.9 | 49.9 | 51.6 | 54.7 | 57.5 | 61.5 | 66.3 | 71.1 |
| 1.5PE | in | 1.73 | 1.81 | 1.89 | 1.96 | 2.03 | 2.15 | 2.26 | 2.42 | 2.61 | 2.80 |
| Dimension C | mm | 22 | 22.95 | 23.95 | 24.95 | 25.8 | 27.35 | 28.75 | 30.75 | 33.15 | 35.55 |
| 1.5PE | in | 0.87 | 0.90 | 0.94 | 0.98 | 1.02 | 1.08 | 1.13 | 1.21 | 1.31 | 1.40 |

EO.146.0921.14.00IM01



| A | TYPE | DISPLACEMENTS | |
|---|------|----------------------------|-----------------|
| | 6.5 | 6.5 cm ³ /rev. | 0.40 cu.in/rev. |
| | 8.3 | 8.2 cm ³ /rev. | 0.50 cu.in/rev. |
| | 11.3 | 11.5 cm ³ /rev. | 0.68 cu.in/rev. |
| | 13.8 | 13.8 cm ³ /rev. | 0.84 cu.in/rev. |
| | 16 | 16.6 cm ³ /rev. | 1.01 cu.in/rev. |
| | 19 | 19.4 cm ³ /rev. | 1.18 cu.in/rev. |
| | 22.5 | 22.9 cm ³ /rev. | 1.37 cu.in/rev. |
| | 26 | 26.6 cm ³ /rev. | 1.62 cu.in/rev. |

| B | ROTATION | CODE |
|---|----------------|------|
| | Clockwise | D |
| | Anti-clockwise | S |

| C | PORTS (page 21) | CODE |
|---|---|------|
| | Flanged ports european standard | P |
| | Flanged ports german standard | B |
| | Flanged ports SAE J518 Metric thread | W |
| | Flanged ports SAE J518 American standard thread | S |
| | Threaded ports GAS (BSPP) | G |
| | Threaded ports SAE (ODT) | R |

| D | DRIVE SHAFT (page 23) | CODE |
|---|---|------|
| | Tang drive for electric motors | 03 |
| | Tang drive | 04 |
| | Tapered 1:5 | 25 |
| | Tapered 1:8 | 28 |
| | SAE A splined 9T | 52 |
| | SAE A splined 11T | 54 |
| | SAE B splined 13T | 55 |
| | 9 teeth DIN 5482 splined | 62 |
| | DIN 5480 internal splined (only for rear pumps-see page 24) | 60 |
| | 5/8" SAE A parallel | 82 |
| | 3/4" SAE A parallel (Mounting face 31.8 mm) | 85 |
| | Tapered 1:5 Continental shaft | 26 |
| | 3/4" SAE A parallel Continental shaft (Mounting face 54 mm) | 86 |
| | 7/8" SAE B parallel Continental shaft | 87 |
| | 8x32x36 UNI 8953 splined Continental shaft | 66 |
| | 8x32x36 UNI 8953 splined Continental shaft | 67 |
| | 6x21x25 UNI 8953 splined Continental shaft | 73 |

| L | REAR COVERS (page 34) | CODE |
|---|--|--------------|
| | Lateral drain | LD |
| | Adjustable pressure relief valve | ■ VS |
| | Adjustable setting pressure relief valve | ■ VSE |
| | Internal drain valve | IDV |
| | Priority flow divider with excess flow to 2nd actuator | ● VP-VP1 |
| | Like VP with pressure relief valve | ■ VPS-VPS1 |
| | Priority flow divider with Load sensing with dynamic signal | ● VPD-VPD1 |
| | Load sensing priority valve with dynamic signal with pressure relief valve | ■ VPDS VPDS1 |
| | Electric unloading valve (12V) | EV1/EV3 |
| | Electric unloading valve (24V) | EV2/EV4 |
| | Main relief and electric unloading valves (12V) | EVS1/EVS3 |
| | Main relief and electric unloading valves (24V) | EVS2/EVS4 |
| | Pre-arranged for 1.5PE rear | PD1.5 |

| I | OUTRIGGER BEARING (page 31) | CODE |
|---|---|------|
| | For Internal combustion engines | CL |
| | For Internal combustion engines with axial and radial loads | CF |
| | SAE A | CS |
| | German standard | CB |
| | European standard | CP |
| | SAE B | CSB |
| | 4 Bolts for ZF gear box | Z1 |

| H | PORTS POSITION | CODE |
|---|-------------------------------------|------|
| | Side ports (standard configuration) | - |
| | Rear ports | 1 |

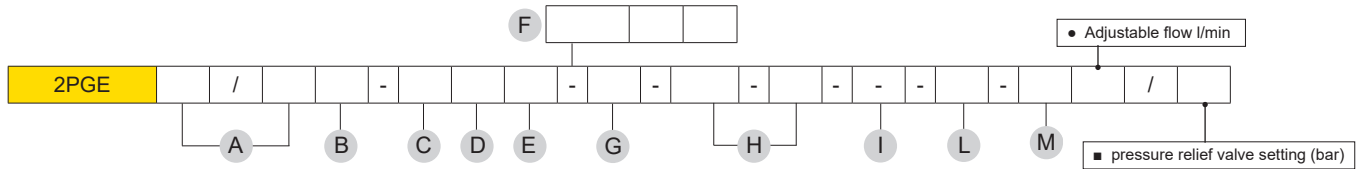
| G | INLET PORTS | CODE |
|---|--|------|
| | Separated stages: Pump with separated stages for different fluid (2 tanks) Code 1 - 2 or 3 correspond to the body where Kit AS is mounted. | AS |
| | Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. Code 1 - 2 or 3, correspond to the body where inlet is located. | UA |

| F | SEAL | CODE |
|---|--|------|
| | Buna standard (standard configuration) | - |
| | Viton | V |

| E | MOUNTING FLANGES (page 26) | CODE |
|---|---|-------|
| | European standard | P1 |
| | German standard Ø80 | B1 |
| | German standard Ø52 | B2-B3 |
| | German standard Ø50 | B4-B5 |
| | 4 bolts for Iveco engines | C1 |
| | SAE A 2 bolts | S2 |
| | SAE B 2 bolts | S3 |
| | SAE A 2 Bolts (with o-ring on the centering collar) | S6 |
| | 3 Bolts UNI 8953 for gear box | T1 |
| | 4 Bolts for ZF gear box | Z2 |

How to order Multiple pump: 2PGE 16/16D, ports European (P), drive shaft (55), mounting flange (S3) 2PGE16/16D-P55S3.

EO.146.0921.14.001M01



| A | TYPE | DISPLACEMENTS | |
|---|------|----------------------------|-----------------|
| | 6.5 | 6.5 cm ³ /rev. | 0.40 cu.in/rev. |
| | 8.3 | 8.2 cm ³ /rev. | 0.50 cu.in/rev. |
| | 11.3 | 11.5 cm ³ /rev. | 0.68 cu.in/rev. |
| | 13.8 | 13.8 cm ³ /rev. | 0.84 cu.in/rev. |
| | 16 | 16.6 cm ³ /rev. | 1.01 cu.in/rev. |
| | 19 | 19.4 cm ³ /rev. | 1.18 cu.in/rev. |
| | 22.5 | 22.9 cm ³ /rev. | 1.37 cu.in/rev. |
| | 26 | 26.6 cm ³ /rev. | 1.62 cu.in/rev. |

| B | ROTATION | CODE |
|---|----------------|------|
| | Clockwise | D |
| | Anti-clockwise | S |

| C | PORTS (page 21) | CODE |
|---|---|------|
| | Flanged ports european standard | P |
| | Flanged ports german standard | B |
| | Flanged ports SAE J518 Metric thread | W |
| | Flanged ports SAE J518 American standard thread | S |
| | Threaded ports GAS (BSPP) | G |
| | Threaded ports SAE (ODT) | R |

| D | DRIVE SHAFT (page 23) | CODE |
|---|---|------|
| | Tang drive for electric motors | 03 |
| | Tang drive | 04 |
| | Tapered 1:5 | 25 |
| | Tapered 1:5 (only for CB) | 26 |
| | Tapered 1:8 | 28 |
| | SAE A splined 9T | 52 |
| | SAE A splined 11T | 54 |
| | SAE B splined 13T | 55 |
| | 9 teeth DIN 5482 splined | 62 |
| | DIN 5480 internal splined (only for rear pumps-see page 24) | 60 |
| | 5/8" SAE A parallel | 82 |
| | 3/4" SAE A parallel (Mounting face 31.8 mm) | 85 |
| | 3/4" SAE A parallel Continental shaft (Mounting face 54 mm) | 86 |
| | 7/8" SAE B parallel Continental shaft | 87 |
| | 8x32x36 UNI 8953 splined Continental shaft | 66 |
| | 8x32x36 UNI 8953 splined Continental shaft | 67 |
| | 6x21x25 UNI 8953 splined Continental shaft | 73 |

How to order Multiple pump: 2PGE 16/6.5S, ports European (P), drive shaft (28), mounting flange (P1) - 1.5PE 2.1
2PGE16/6.5S-P28P1-1.5PE2.1.

| M | REAR COVERS (page 34) | CODE |
|---|--|--------------|
| | Lateral drain | LD |
| | Adjustable pressure relief valve | ■ VS |
| | Adjustable setting pressure relief valve | ■ VSE |
| | Internal drain valve | IDV |
| | Priority flow divider with excess flow to 2nd actuator | ● VP-VP1 |
| | Like VP with pressure relief valve | ■ VPS-VPS1 |
| | Priority flow divider with Load sensing with dynamic signal | ● VPD-VPD1 |
| | Load sensing priority valve with dynamic signal with pressure relief valve | ■ VPDS VPDS1 |
| | Electric unloading valve (12V) | EV1/EV3 |
| | Electric unloading valve (24V) | EV2/EV4 |
| | Main relief and electric unloading valves (12V) | EVS1/EVS3 |
| | Main relief and electric unloading valves (24V) | EVS2/EVS4 |

| L | OUTRIGGER BEARING (page 31) | CODE |
|---|---|------|
| | For Internal combustion engines | CL |
| | For Internal combustion engines with axial and radial loads | CF |
| | SAE A | CS |
| | German standard | CB |
| | European standard | CP |
| | SAE B | CSB |
| | 4 Bolts for ZF gear box | Z1 |

| I | PORTS POSITION | CODE |
|---|-------------------------------------|------|
| | Side ports (standard configuration) | - |
| | Rear ports | 1 |

| H | INLET PORTS | CODE |
|---|--|------|
| | Separated stages: Pump with separated stages for different fluid (2 tanks) Code 1 - 2 or 3 correspond to the body where Kit AS is mounted. | AS |
| | Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. Code 1 - 2 or 3, correspond to the body where inlet is located. | UA |

| G | SEAL | CODE |
|---|--|------|
| | Buna standard (standard configuration) | - |
| | Viton | V |

| F | COMBINATION WITH 2PE or 1.5PE (page 46) |
|---|---|
| | 2PE or 1.5PE Piggy back configuration: Displacement - Port type |

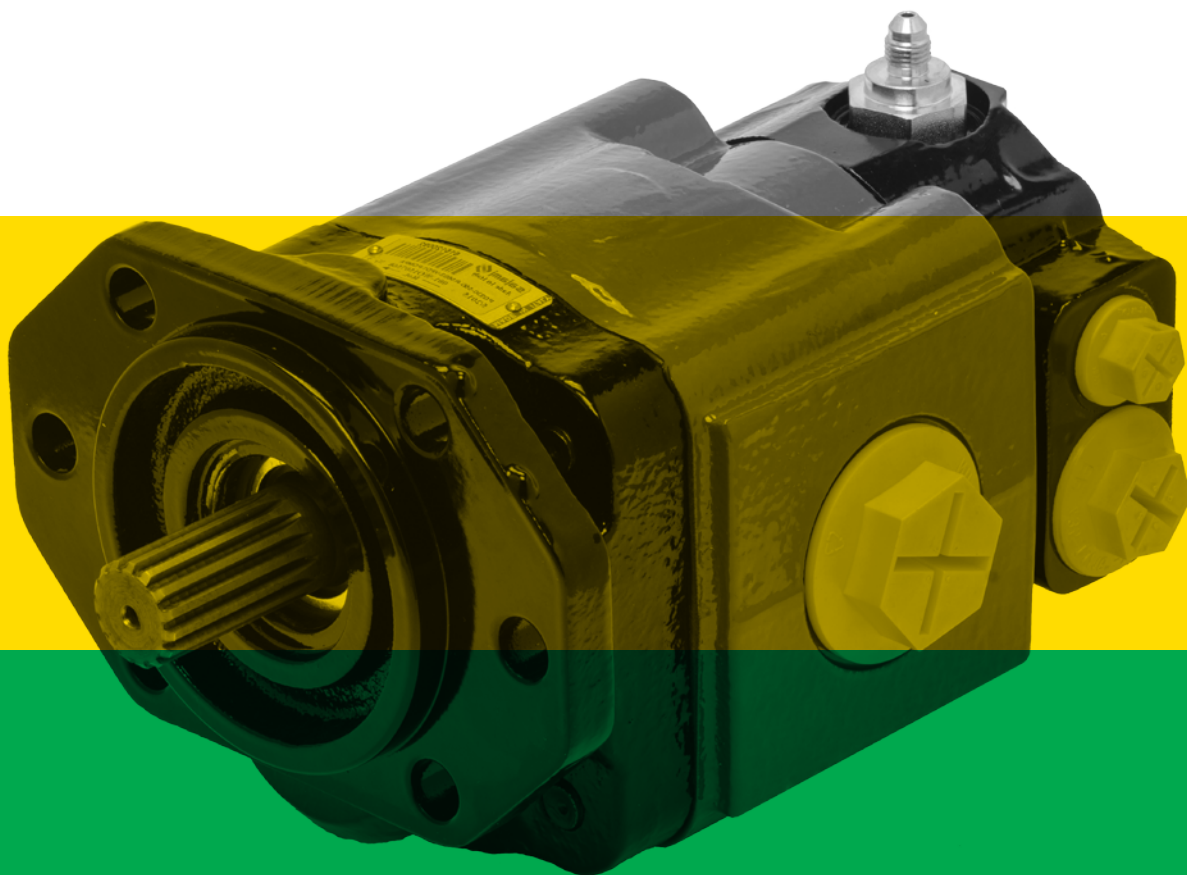
| E | MOUNTING FLANGES (page 26) | CODE |
|---|---|-------|
| | European standard | P1 |
| | German standard Ø80 | B1 |
| | German standard Ø52 | B2-B3 |
| | German standard Ø50 | B4-B5 |
| | 4 bolts for Iveco engines | C1 |
| | SAE A 2 bolts | S2 |
| | SAE B 2 bolts | S3 |
| | SAE A 2 Bolts (with o-ring on the centering collar) | S6 |
| | 3 Bolts UNI 8953 for gear box | T1 |
| | 4 Bolts for ZF gear box | Z2 |

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PG330

Cast Iron Gear Pumps

Technical/Spare Parts Catalogue



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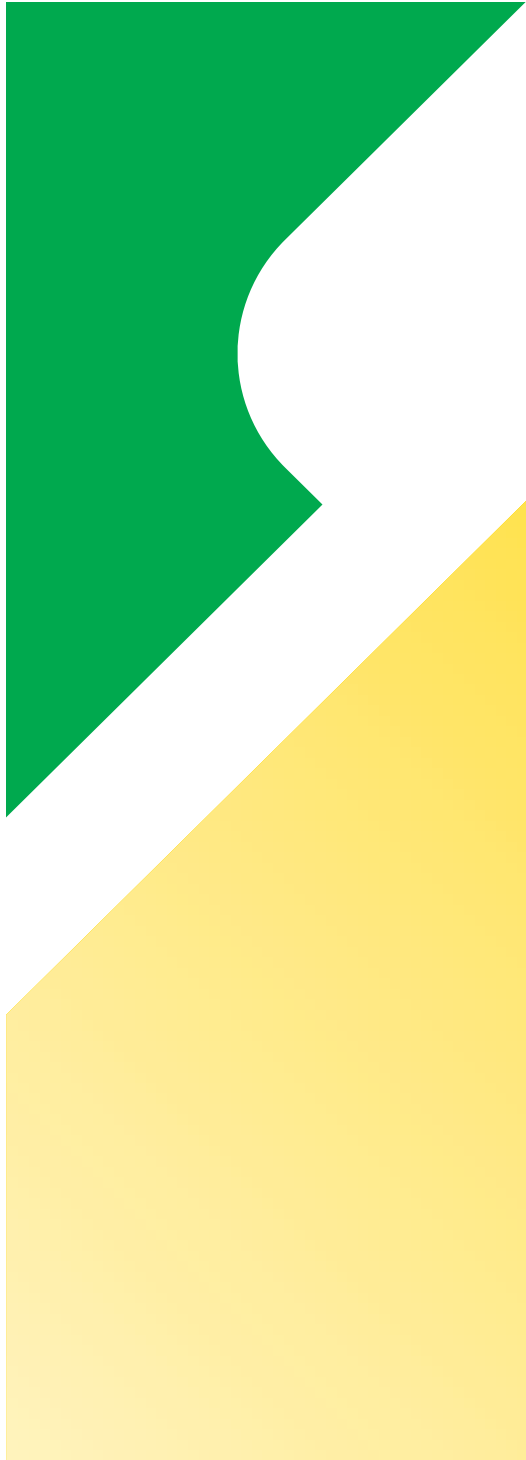
COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

sajami 
FLUID POWER SYSTEMS [®]

Final revised edition - July 2021

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If any doubts, please contact our sales department.



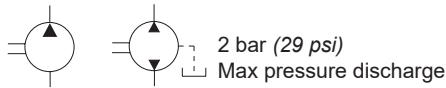
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PG330 Single Pump - Dimensions and Technical Data



Displacements up to 80.6 cm³/rev - 4.91 cu.in./rev
Pressure up to 320 bar - 4650 psi

| TYPE | Displacement | | Dimension A | | Dimension C | | Continuous pressure p ₁ | | Intermittent pressure p ₂ | | Peak pressure p ₃ | | Min. speed at p ₁ | Max. speed at p ₂ | Weight | |
|------------|----------------------|------------|-------------|------|-------------|------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------------------------|------------------------------|--------|-------|
| | cm ³ /rev | cu.in./rev | mm | in | mm | in | bar | psi | bar | psi | bar | psi | rpm | | kg | lbs |
| PG330 - 23 | 23.4 | 1.43 | 77 | 3.03 | 35 | 1.38 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 3000 | 13.2 | 29.10 |
| PG330 - 28 | 28.6 | 1.74 | 81 | 3.19 | 38 | 1.49 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 | 13.7 | 30.20 |
| PG330 - 34 | 34.4 | 2.10 | 85.5 | 3.36 | 42.5 | 1.67 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 | 14.2 | 31.30 |
| PG330 - 40 | 40.3 | 2.46 | 90 | 3.54 | 47 | 1.85 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 | 14.7 | 32.41 |
| PG330 - 47 | 47.4 | 2.89 | 101.5 | 3.40 | 50 | 1.97 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 2700 | 17.0 | 37.48 |
| PG330 - 55 | 55.2 | 3.37 | 107.5 | 4.23 | 56 | 2.20 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 | 17.7 | 39.02 |
| PG330 - 64 | 64.3 | 3.92 | 114.5 | 4.51 | 58 | 2.28 | 240 | 3480 | 260 | 3750 | 280 | 4060 | 350 | 2500 | 18.5 | 40.79 |
| PG330 - 72 | 73.4 | 4.48 | 121.5 | 4.78 | 61 | 2.40 | 220 | 3190 | 240 | 3480 | 260 | 3750 | 350 | 2500 | 19.4 | 42.77 |
| PG330 - 80 | 80.6 | 4.91 | 127.5 | 5.02 | 65 | 2.56 | 200 | 2900 | 220 | 3190 | 240 | 3480 | 350 | 2500 | 22.5 | 49.60 |

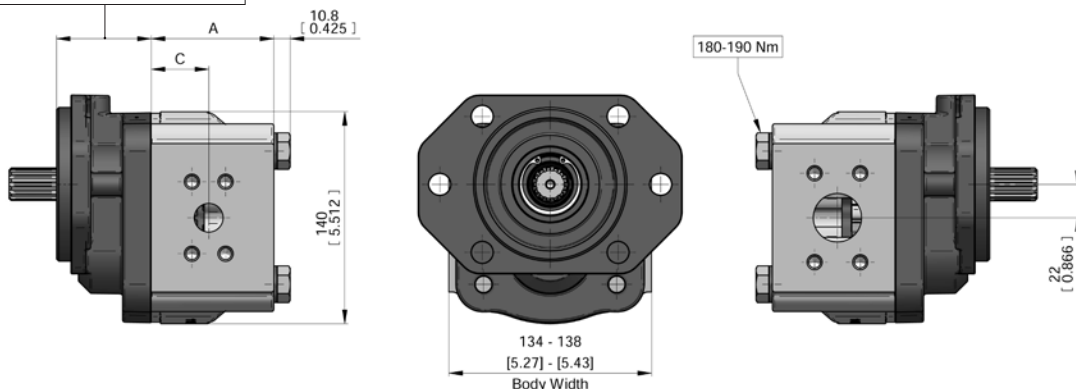
• Technical Data - Shaft 38/Flange P2

| TYPE | Displacement | | Continuous pressure p ₁ | | Intermittent pressure p ₂ | | Peak pressure p ₃ | | Min. speed at p ₁ | Max. speed at p ₂ | Weight | |
|--------------|----------------------|------------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------------------------|------------------------------|--------|-------|
| | cm ³ /rev | cu.in./rev | bar | psi | bar | psi | bar | psi | rpm | | kg | lbs |
| PG330 - 55 • | 55.2 | 3.37 | 230 | 3335 | 250 | 3625 | 270 | 3915 | 400 | 2700 | 17.7 | 39.02 |
| PG330 - 64 • | 64.3 | 3.92 | 200 | 2900 | 220 | 3190 | 240 | 3480 | 350 | 2500 | 18.5 | 40.79 |
| PG330 - 72 • | 73.4 | 4.48 | 170 | 2465 | 190 | 2755 | 210 | 3045 | 350 | 2500 | 19.4 | 42.77 |

•=Max torque of 250 Nm for the displacements 55-64-72 cc/rev

! Max Speed must be lowered by 10% for system working continuously at p₁ pressure.
Max pressure must be lowered by 10% for birectional pump.

For flanges code:
S3 → 53 mm (2.09 in.) for displ. 23 to 40
64 mm (2.52 in.) for displ. 47 to 80
P2 → 54 mm (2.13 in.)
S4/R8/Z1/Z2 → 85 mm (3.35 in.)
R3 → 64 mm (2.52 in.)

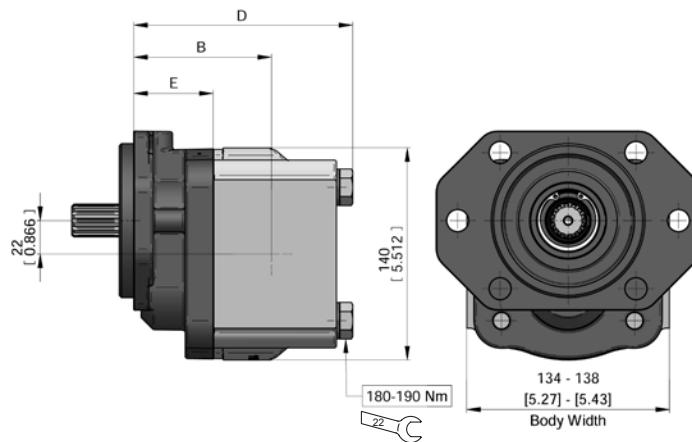


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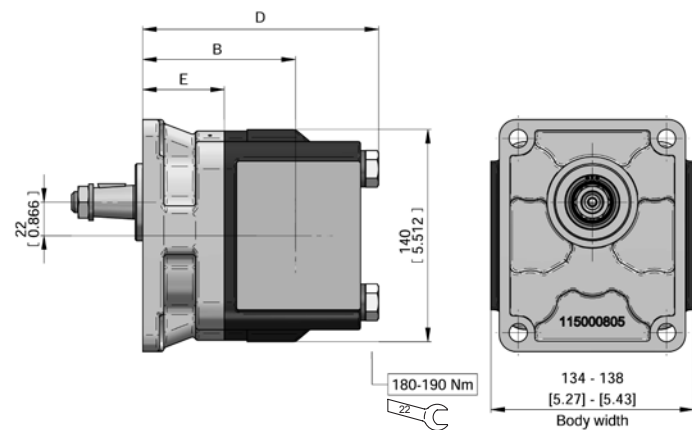
Dimensions - Shaft 55/Flange S3 (SAE B)

| TYPE | Dimension D | | Dimension B | | Dimension E | |
|------|-------------|------|-------------|------|-------------|------|
| | mm | in | mm | in | mm | in |
| 23 | 140.8 | 5.54 | 88 | 3.46 | 53 | 2.09 |
| 28 | 144.8 | 5.70 | 91 | 3.58 | | |
| 34 | 149.3 | 5.88 | 95.5 | 3.76 | | |
| 40 | 153.8 | 6.00 | 100 | 3.94 | | |
| 47 | 176.3 | 6.94 | 114 | 4.49 | 64 | 2.52 |
| 55 | 182.3 | 7.18 | 120 | 4.72 | | |
| 64 | 189.3 | 7.45 | 122 | 4.80 | | |
| 72 | 196.3 | 7.73 | 125 | 4.92 | | |
| 80 | 202.3 | 7.96 | 129 | 5.08 | | |



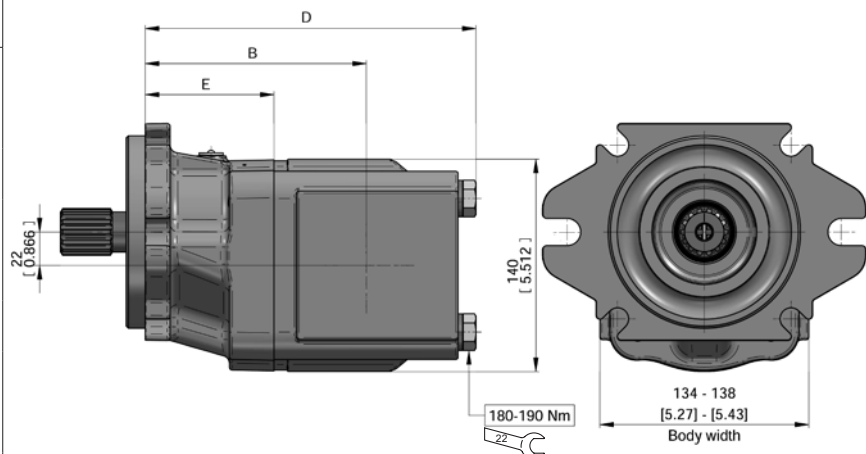
Dimensions - Shaft 38/Flange P2 (European)

| TYPE | Dimension D | | Dimension B | | Dimension E | |
|------|-------------|------|-------------|------|-------------|------|
| | mm | in | mm | in | mm | in |
| 23 | 141.8 | 5.58 | 89 | 3.50 | 54 | 2.13 |
| 28 | 145.8 | 5.74 | 92 | 3.62 | | |
| 34 | 150.3 | 5.92 | 96.5 | 3.80 | | |
| 40 | 154.3 | 6.10 | 101 | 3.98 | | |
| 47 | 166.3 | 6.55 | 104 | 4.10 | | |
| 55 | 172.3 | 6.78 | 110 | 4.33 | | |
| 64 | 179.3 | 7.05 | 112 | 4.41 | | |
| 72 | 186.3 | 7.33 | 115 | 4.53 | | |



Dimensions - Shaft 58/Flange S4 (SAE C)

| TYPE | Dimension D | | Dimension B | | Dimension E | |
|------|-------------|------|-------------|------|-------------|------|
| | mm | in | mm | in | mm | in |
| 23 | 172.8 | 6.80 | 120 | 4.72 | 85 | 3.35 |
| 28 | 176.8 | 6.96 | 123 | 4.84 | | |
| 34 | 181.3 | 7.14 | 127.5 | 5.02 | | |
| 40 | 185.3 | 7.30 | 132 | 5.20 | | |
| 47 | 197.3 | 7.77 | 135 | 5.31 | | |
| 55 | 203.3 | 8.00 | 141 | 5.55 | | |
| 64 | 210.3 | 8.28 | 143 | 5.63 | | |
| 72 | 217.3 | 8.55 | 146 | 5.75 | | |
| 80 | 223.3 | 8.79 | 150 | 5.91 | | |

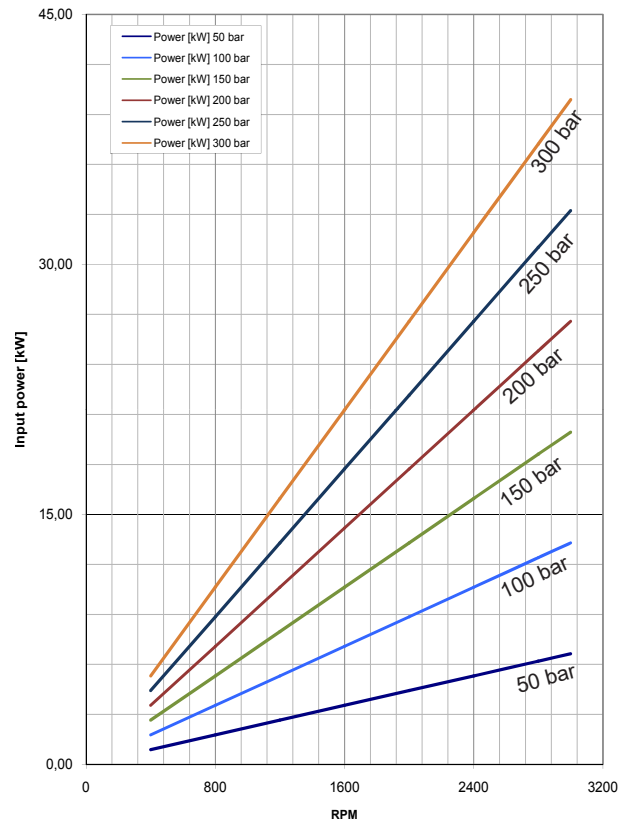
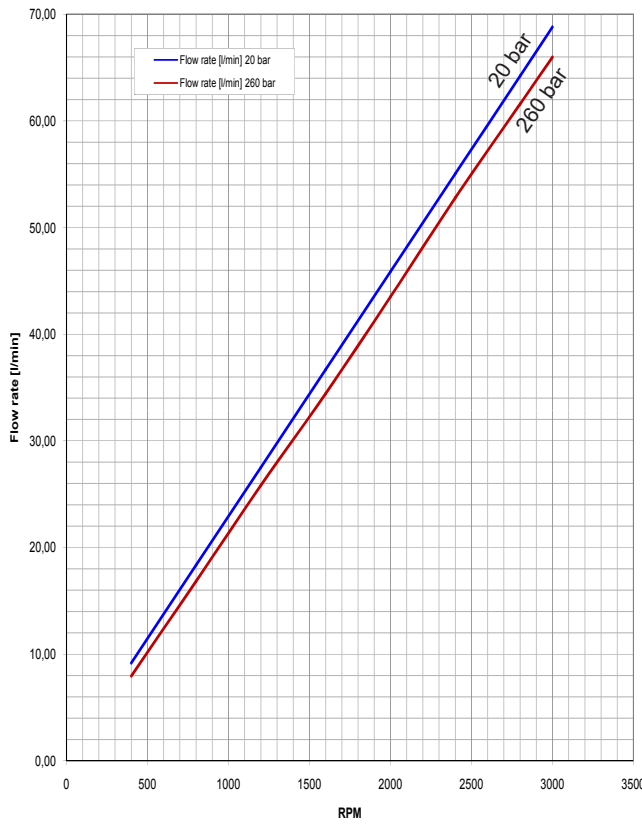


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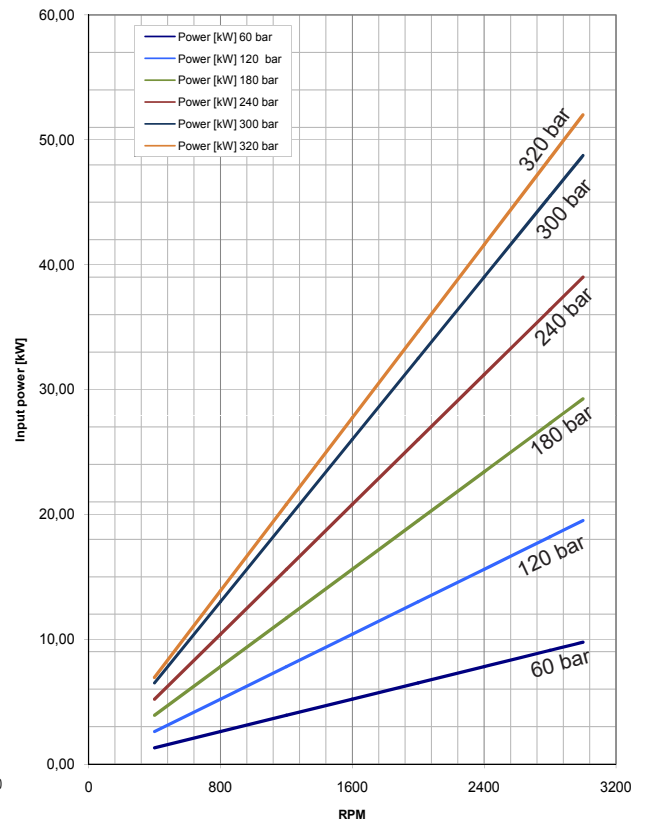
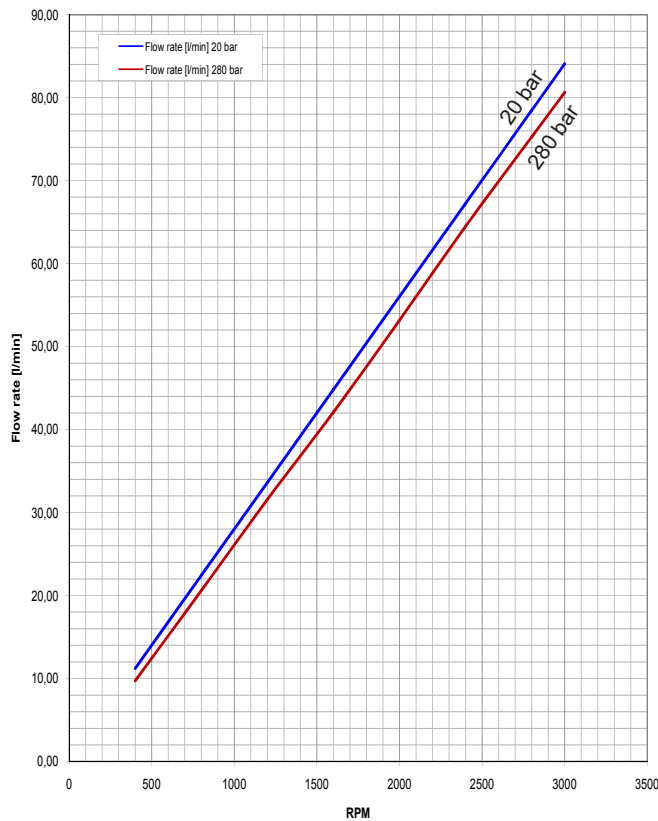


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



PG330 - 23



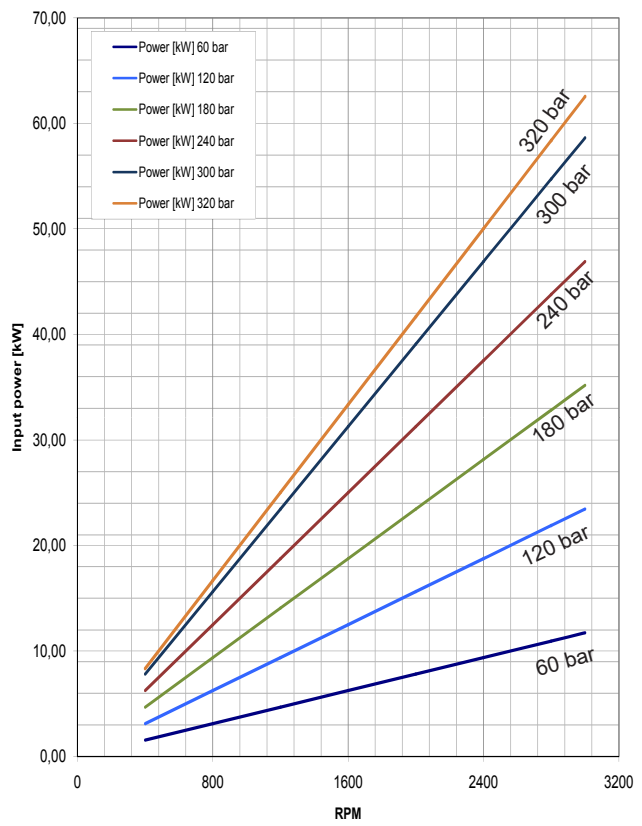
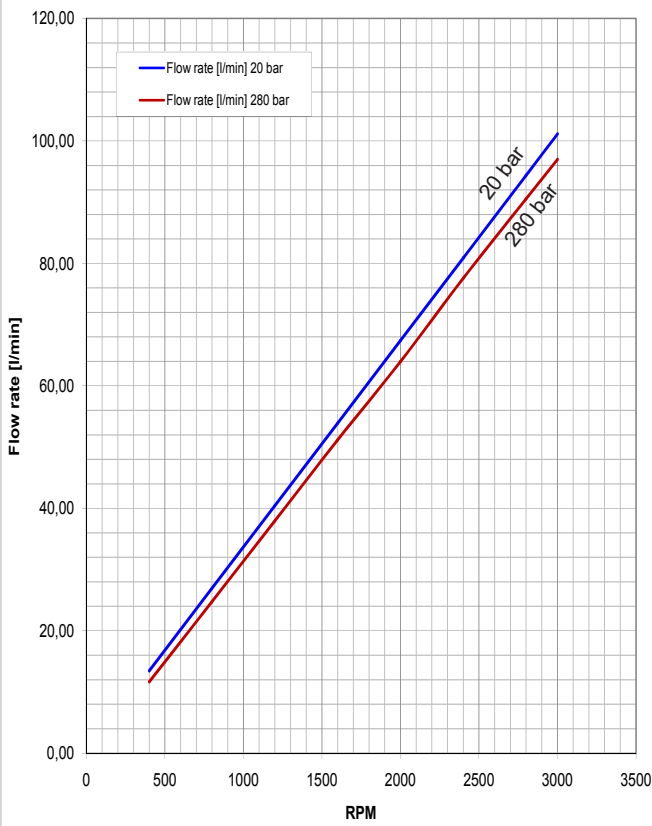
PG330 - 28

EO:151.0721.14.00IM00

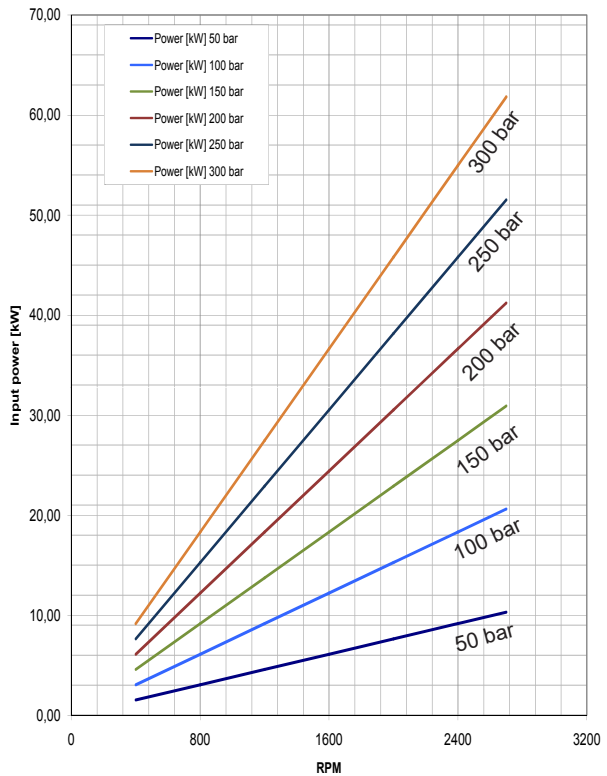
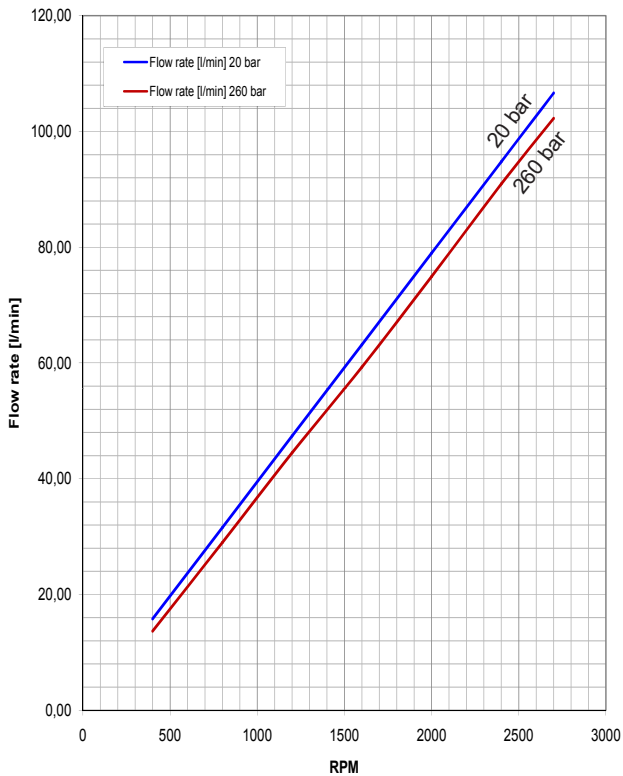


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



PG330 - 34



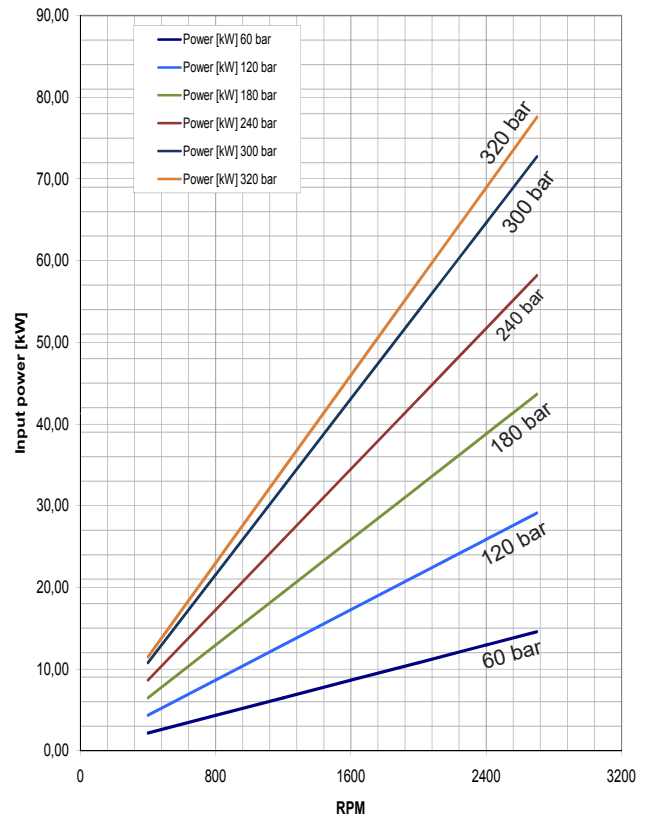
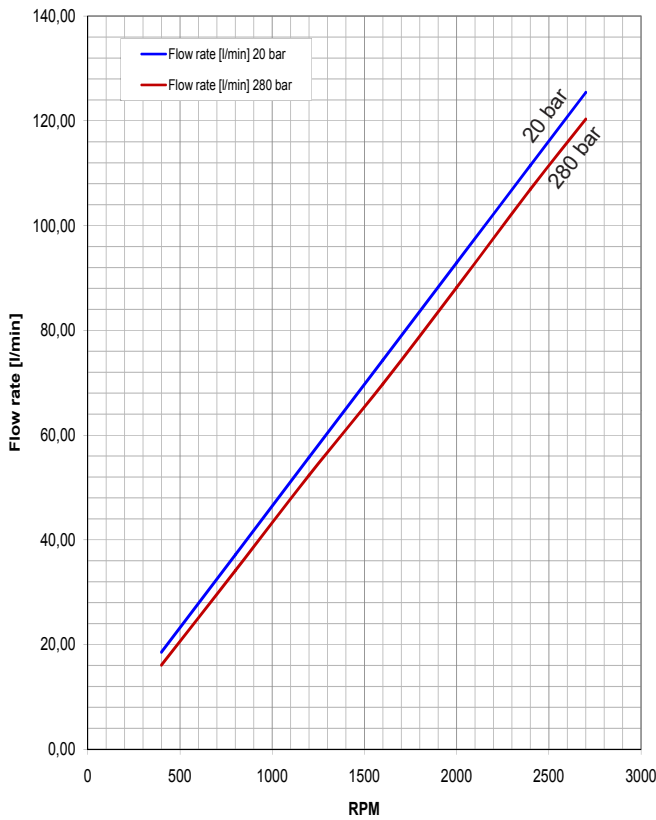
PG330 - 40

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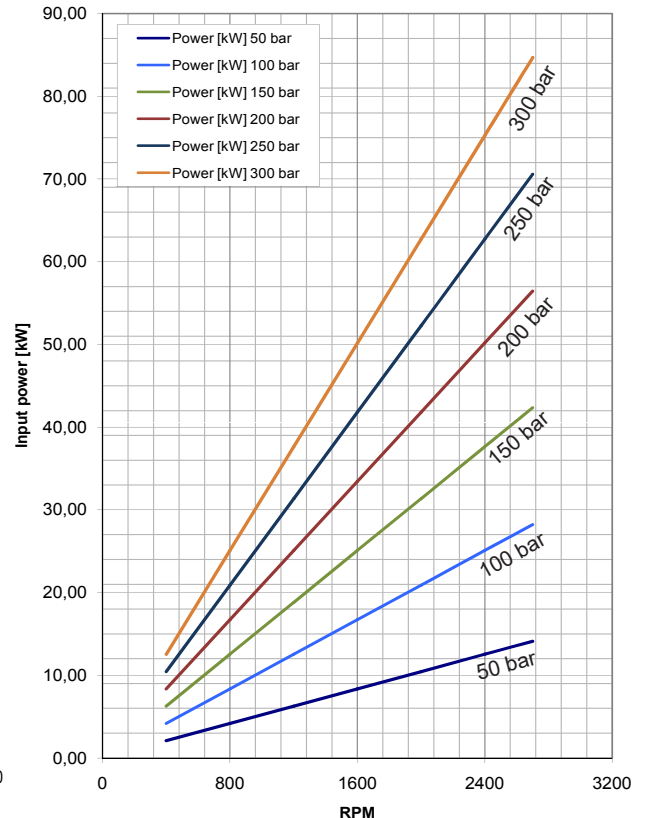
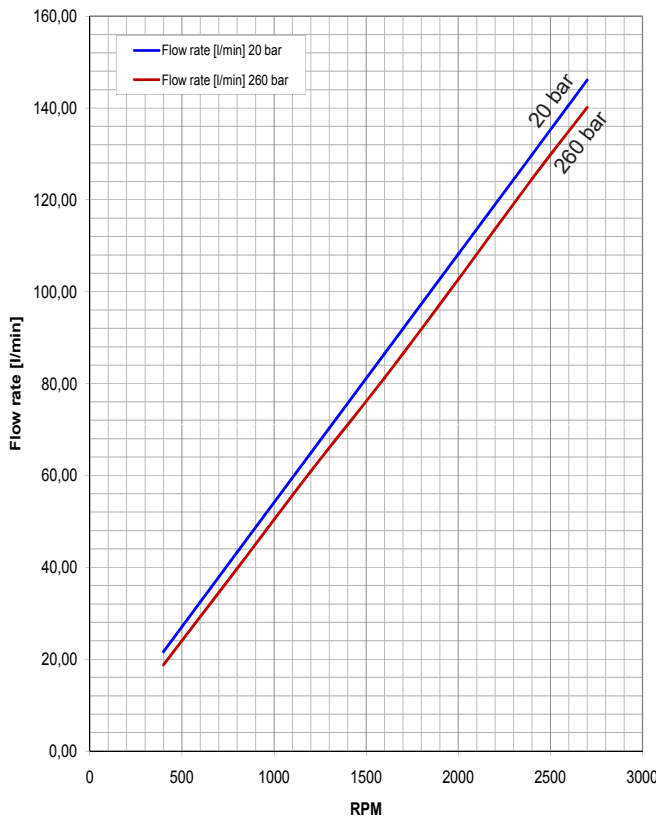


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



PG330 - 47



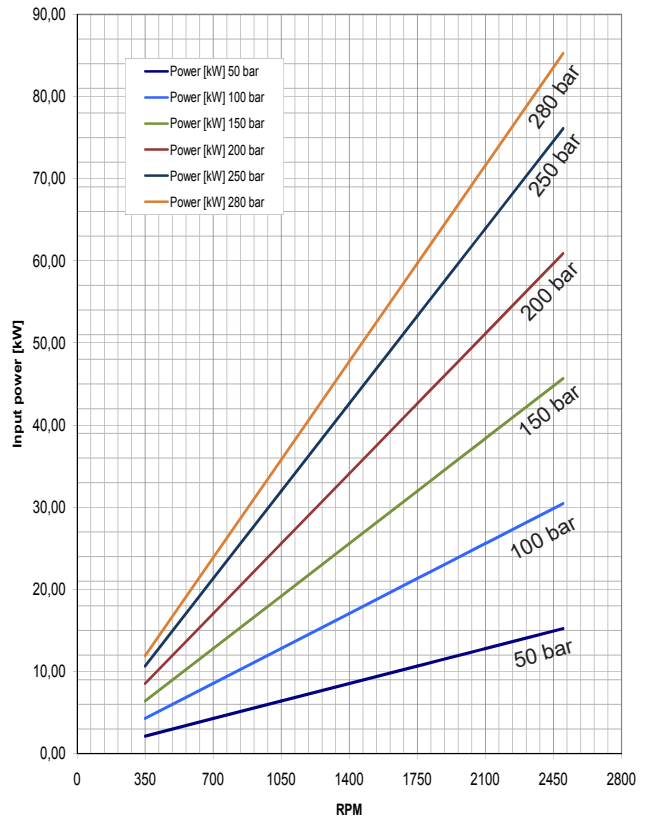
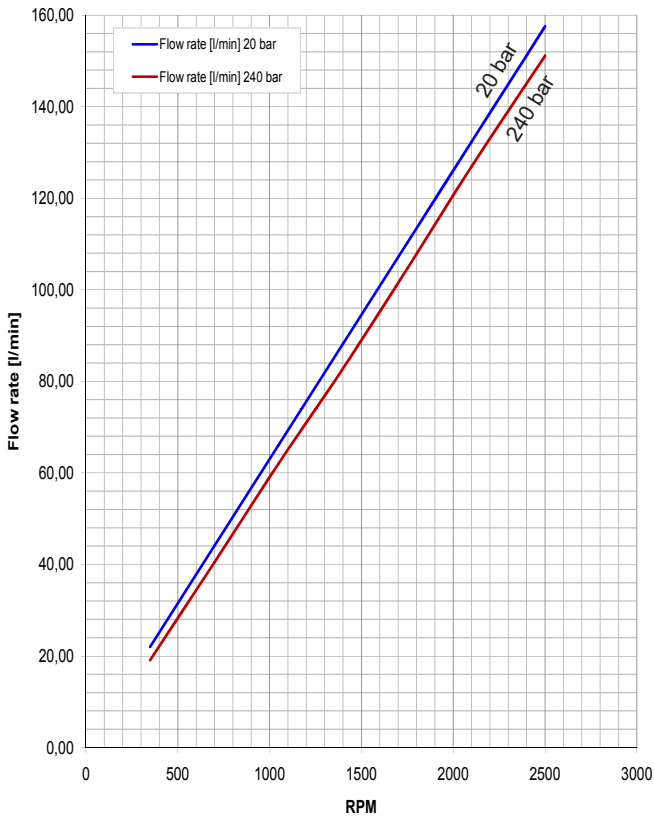
PG330 - 55

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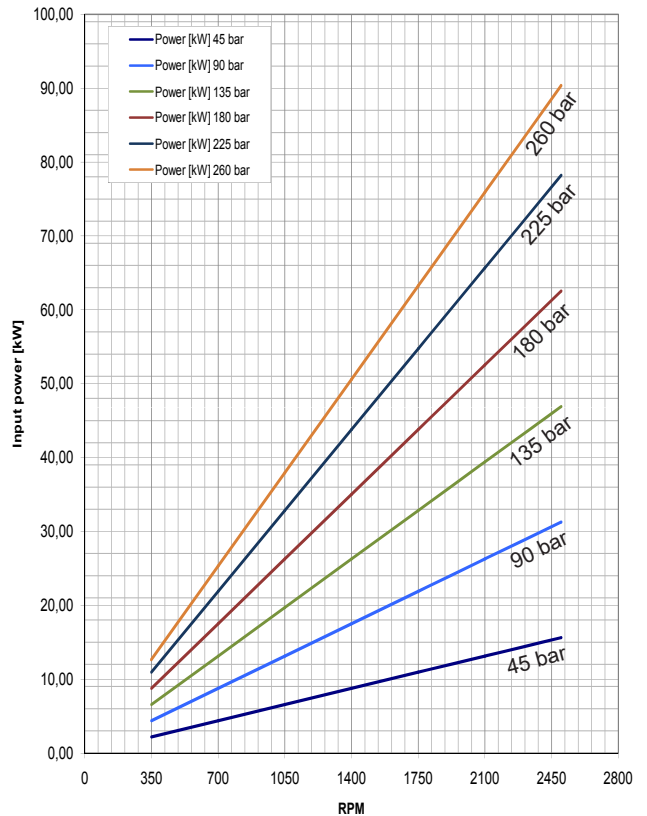
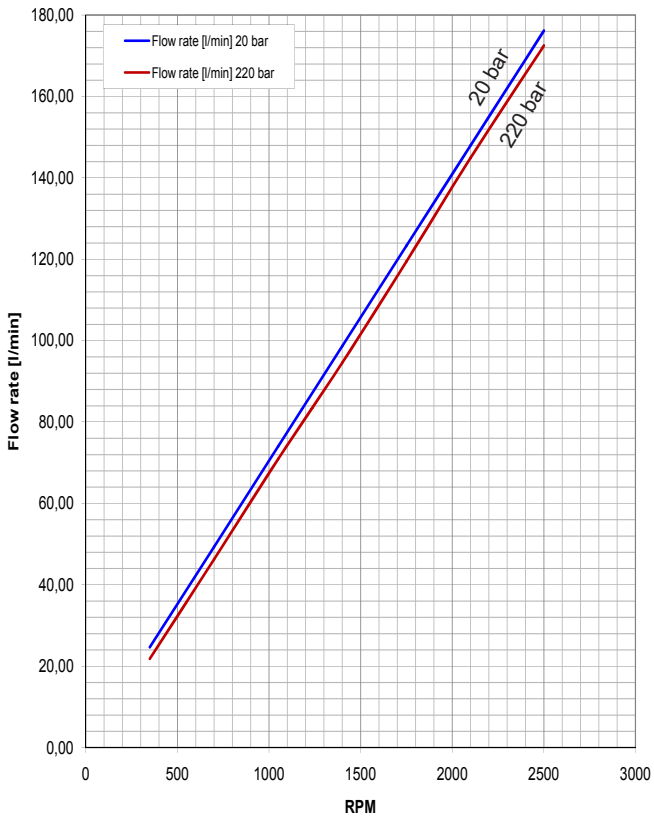


Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



PG330 - 64

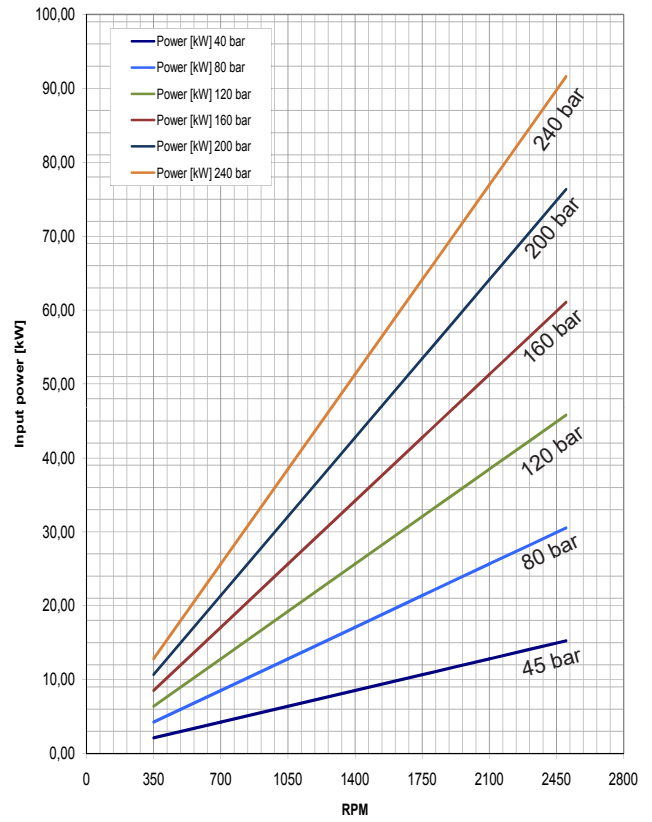
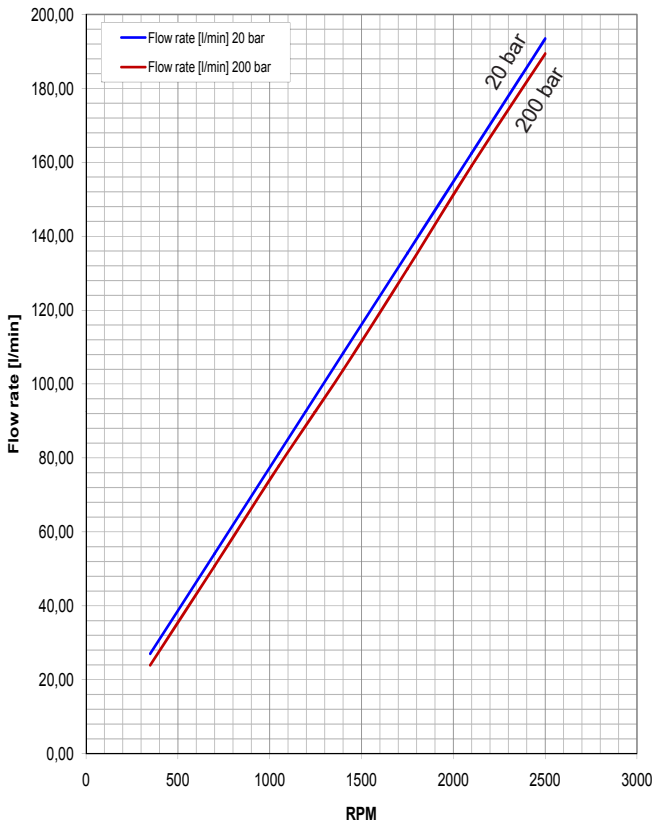


PG330 - 72



Pump Performance Charts

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C

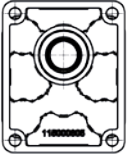
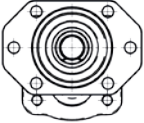


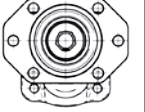


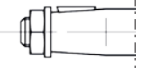




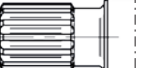
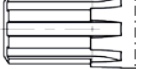
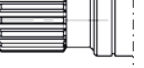
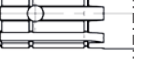



PG330 - 80

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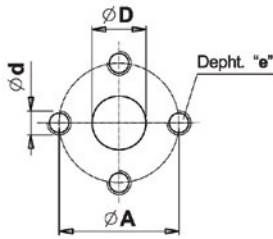
Shaft And Flange Combinations

| PG330 | |  |  |  |  |  |  |  |
|-----------------------|---|---|---|---|---|--|---|---|
| | | CODE P2 | CODE S3 | CODE S4 | CODE Z2 | CODE R3 | CODE R8 | CODE Z1 |
| | | FLANGES | | | | FLANGES WITH OUTRIGGER BEARING | | |
| SHAFT END |  CODE 38 | 38P2 | | | | | | |
| |  CODE 55 | | 55S3 | | | 55R3 | | |
| |  CODE 56 | | 56S3 | | | 56R3 | | |
| |  CODE 87 | | 87S3 | | | 87R3 | | |
| |  CODE 88 | | 88S3 | | | 88R3 | | |
| CONTINENTAL SHAFT END |  CODE 58 | | 58S3 | 58S4 | | | | |
| |  CODE 67 | | | | 67Z2 | | | |
| |  CODE 57 | | | | | | 57R8 | |
| |  CODE 66 | | | | | | | 66Z1 |
| |  CODE 89 | | | | | | 89R8 | |

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Flanged Ports



code P

Flanged ports
european standard

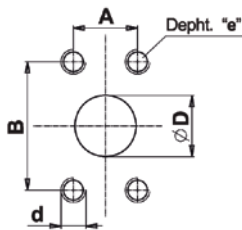
| | |
|-----|---------------------|
| M8 | 20 Nm (14.7 lbf-ft) |
| M10 | 35 Nm (25.8 lbf-ft) |
| M12 | 65 Nm (47.9 lbf-ft) |



| UNI-DIRECTIONAL | | | | | | | | |
|------------------|---------------|---------------|-----|---------------|---------------|---------------|-----|---------------|
| PUMPS | INLET | | | | OUTLET | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e |
| 23 | 20 (0.79") | 40 (1.57") | M8 | 16 (0.63") | 16 (0.63") | 40 (1.57") | M8 | 16 (0.63") |
| From 28 to 47 | 27 (1.07") | 51 (2.01") | M10 | 16 (0.63") | 16 (0.63") | 40 (1.57") | M8 | 16 (0.63") |
| From 55 to 72 | 33 (1.3") | 62 (2.44") | M12 | 16 (0.63") | 21 (0.83") | 51 (2.01") | M10 | 16 (0.63") |



| BI-DIRECTIONAL | | | | | | | | |
|------------------|---------------|---------------|-----|---------------|---------------|---------------|-----|---------------|
| PUMPS | INLET | | | | OUTLET | | | |
| | Ø D | Ø A | d | e | Ø D | Ø A | d | e |
| 23 | 20 (0.79") | 40 (1.57") | M8 | 16 (0.63") | 20 (0.79") | 40 (1.57") | M8 | 16 (0.63") |
| From 28 to 47 | 27 (1.07") | 51 (2.01") | M10 | 16 (0.63") | 27 (1.07") | 51 (2.01") | M10 | 16 (0.63") |
| From 55 to 72 | 33 (1.3") | 62 (2.44") | M12 | 16 (0.63") | 33 (1.3") | 62 (2.44") | M12 | 16 (0.63") |



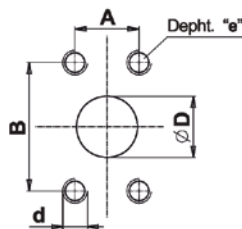
code W

Flanged ports
SAE J518
METRIC THREAD

| | |
|-----|---------------------|
| M10 | 35 Nm (25.8 lbf-ft) |
| M12 | 65 Nm (47.9 lbf-ft) |



| UNI-DIRECTIONAL | | | | | | | | | | |
|------------------|-----------------|------------------|------------------|-----|---------------|---------------|------------------|------------------|-----|---------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 23 to 47 | 32 (1.26") | 58.72 (2.31") | 38.18 (1.19") | M10 | 18 (0.71") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | M10 | 18 (0.71") |
| From 55 to 80 | 39.3 (1.55") | 69.8 (2.75") | 35.7 (1.40") | M12 | 15 (0.59") | 32 (1.26") | 58.72 (2.31") | 30.18 (1.19") | M10 | 18 (0.71") |



code S

Flanged ports
SAE J518
AMERICAN STANDARD
THREAD

| | |
|-------------|---------------------|
| 3/8-16 UNC | 35 Nm (25.8 lbf-ft) |
| 7/16-14 UNC | 45 Nm (33.2 lbf-ft) |
| 1/2-13 UNC | 65 Nm (47.9 lbf-ft) |

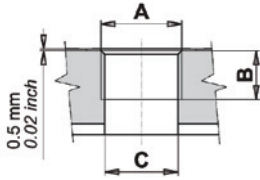


| UNI-DIRECTIONAL | | | | | | | | | | |
|------------------|-----------------|------------------|------------------|----------------|---------------|---------------|------------------|------------------|---------------|---------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | ØD | B | A | d | e | ØD | B | A | d | e |
| From 23 to 47 | 32 (1.26") | 58.72 (2.31") | 30.18 (1.19") | 7/16-14 UNC | 18 (0.71") | 19 (0.75") | 47.6 (1.87") | 22.2 (0.87") | 3/8-16 UNC | 18 (0.71") |
| From 55 to 80 | 39.3 (1.55") | 69.8 (2.75") | 35.7 (1.40") | 1/2-13 UNC | 15 (0.59") | 32 (1.26") | 58.72 (2.31") | 30.18 (1.19") | 3/8-16 UNC | 18 (0.71") |

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Threaded Ports



code G

Threaded ports
GAS (BSPP)

| | |
|--------|-----------------------|
| G3/4 | 90 Nm (66.4 lbf-ft) |
| G1 | 130 Nm (95.8 lbf-ft) |
| G1 1/4 | 170 Nm (125.4 lbf-ft) |



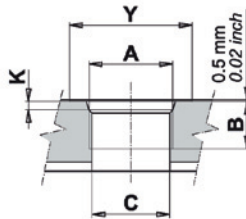
| UNI-DIRECTIONAL | | | | | | |
|-----------------|--------|---------------|----------------|--------|---------------|-----------------|
| PUMPS | INLET | | | OUTLET | | |
| | A | B | C | A | B | C |
| From 23 to 40 | G1 | 22 (0.87") | 30.5 (1.2") | G3/4 | 16 (0.62") | 24.4 (0.96") |
| From 47 to 80 | G1 1/4 | 24 (0.94") | 37 (1.46") | G1 | 22 (0.87") | 30.5 (1.2") |



| BI-DIRECTIONAL | | | | | | |
|----------------|--------|---------------|----------------|--------|---------------|----------------|
| PUMPS | INLET | | | OUTLET | | |
| | A | B | C | A | B | C |
| From 23 to 40 | G1 | 22 (0.87") | 30.5 (1.2") | G1 | 22 (0.87") | 30.5 (1.2") |
| From 47 to 80 | G1 1/4 | 24 (0.94") | 37 (1.46") | G1 1/4 | 24 (0.94") | 37 (1.46") |



| BI-DIRECTIONAL - REAR PORTS | | | | | | |
|-----------------------------|-------|---------------|----------------|--------|---------------|----------------|
| PUMPS | INLET | | | OUTLET | | |
| | A | B | C | A | B | C |
| From 23 to 64 | G1 | 22 (0.87") | 30.5 (1.2") | G1 | 22 (0.87") | 30.5 (1.2") |



code R

Threaded ports
SAE (ODT)

| | |
|-------|-----------------------|
| SAE12 | 90 Nm (66.4 lbf-ft) |
| SAE16 | 130 Nm (95.8 lbf-ft) |
| SAE20 | 170 Nm (125.4 lbf-ft) |



| UNI-DIRECTIONAL | | | | | | | | | | |
|-----------------|-----------------------|---------------|-----------------|---------------|----------------|-----------------------|---------------|-----------------|---------------|----------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | A | B | C | Y | K | A | B | C | Y | K |
| From 23 to 40 | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") | 1-1/16-12 UN (SAE 12) | 19 (0.75") | 24.7 (0.97") | 41 (1.16") | 3.3 (0.13") |
| From 47 to 80 | 1-5/8-12 UN (SAE 20) | 19 (0.75") | 38.9 (1.53") | 58 (2.28") | 3.3 (0.13") | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") |



| BI-DIRECTIONAL | | | | | | | | | | |
|----------------|-----------------------|---------------|-----------------|---------------|----------------|-----------------------|---------------|-----------------|---------------|----------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | A | B | C | Y | K | A | B | C | Y | K |
| From 23 to 40 | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") |
| From 47 to 80 | 1-5/8-12 UN (SAE 20) | 19 (0.75") | 38.9 (1.53") | 58 (2.28") | 3.3 (0.13") | 1-5/8-12 UN (SAE 20) | 19 (0.75") | 38.9 (1.53") | 58 (2.28") | 3.3 (0.13") |



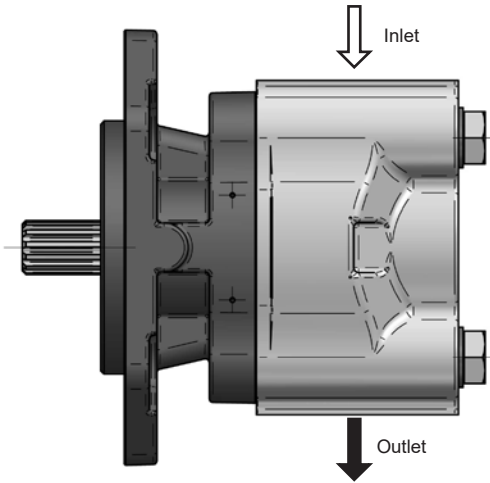
| BI-DIRECTIONAL - REAR PORTS | | | | | | | | | | |
|-----------------------------|-----------------------|---------------|---------------|---------------|----------------|-----------------------|---------------|---------------|---------------|----------------|
| PUMPS | INLET | | | | | OUTLET | | | | |
| | A | B | C | Y | K | A | B | C | Y | K |
| From 23 to 64 | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") | 1-5/16-12 UN (SAE 16) | 19 (0.75") | 31 (1.22") | 49 (1.93") | 3.3 (0.13") |

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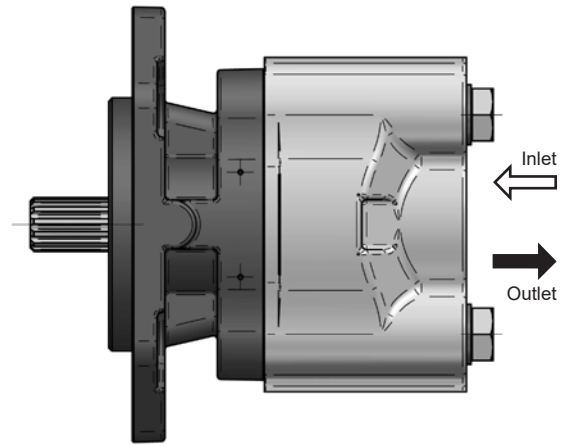


example with clockwise rotation / **X** = plugged port

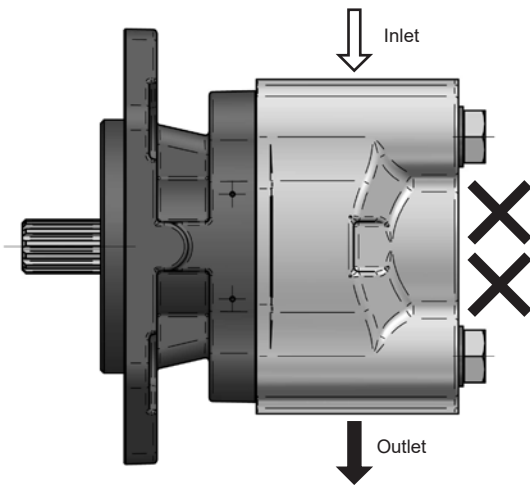
Ports layout - Single Pump



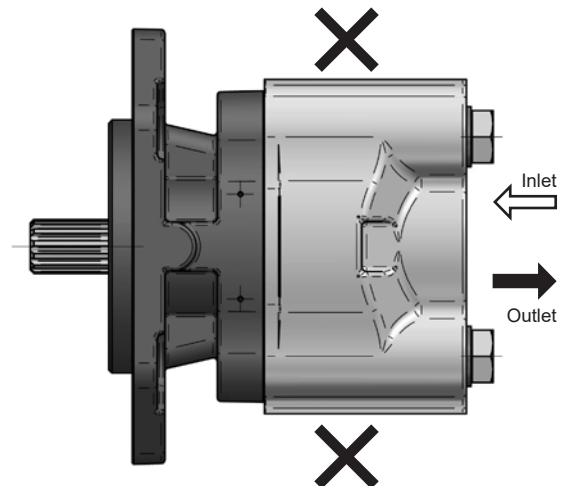
STANDARD CONFIGURATION



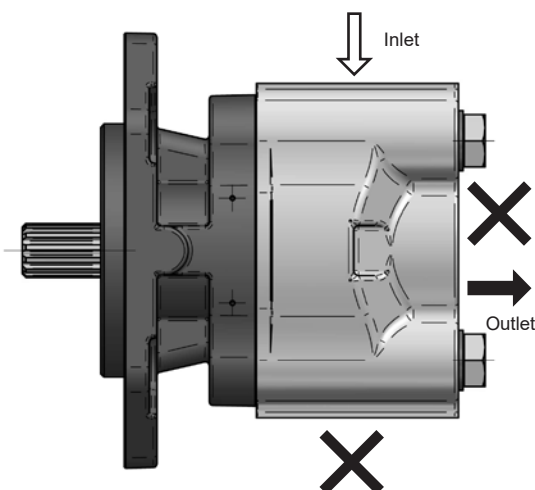
CODE 1



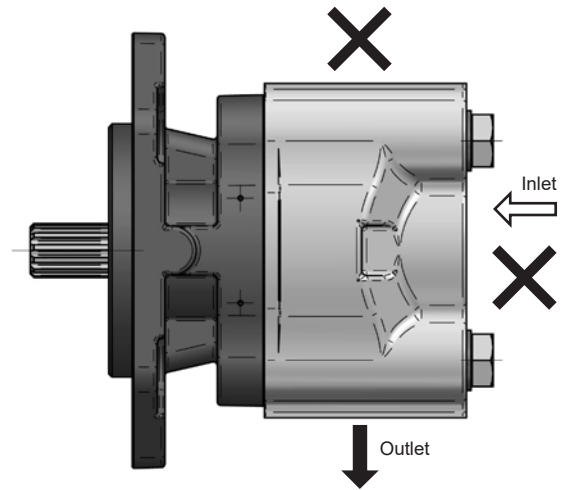
CODE 2



CODE 3



CODE 4



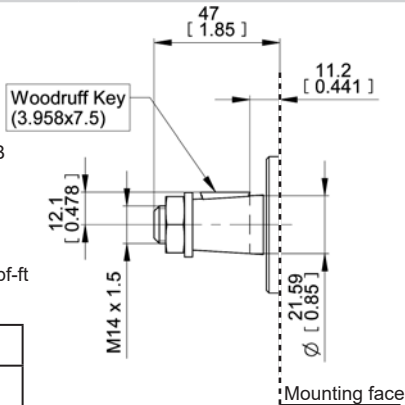
CODE 5

EO.151.0721.14.00IM00



Drive Shaft

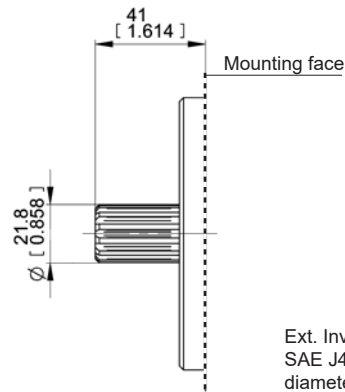
- Woodruff Key
3,958x7,5
- Washer
M14 TE-UNI 1751B
- Nut
M14x1,5 ISO 8675
 40 Nm-29.7 lbf-ft



| Part Number |
|-----------------------------|
| Kit Woodruff Key+Nut+Washer |
| R12980070 |



Pressure values are lower for displacement 55-64-72 cc/rev, see page 53.



Ext. Involute Spline
SAE J498B with outer diameter modified 13 teeth - 16/32 Pitch - 30 deg - Flat Root - Side fit - Class 1

code 38



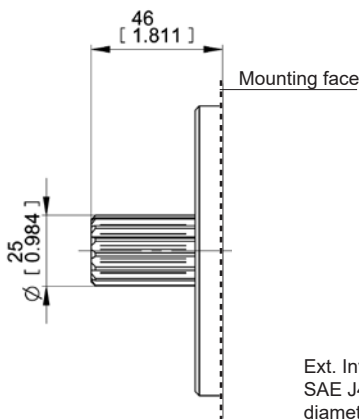
Max torque 250 Nm (2213 lbf in)

code 55

Max torque 330 Nm (2921 lbf in)

Tapered 1:8

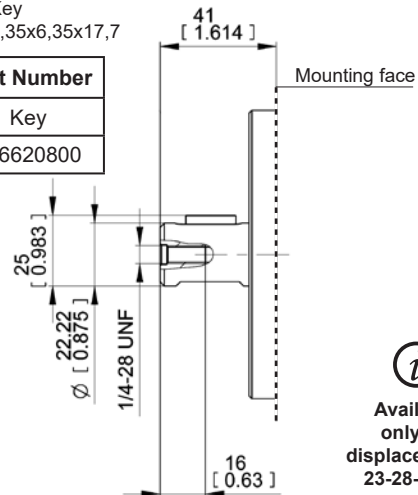
SAE B 13T-16/32DP SPLINED



Ext. Involute Spline
SAE J498B with outer diameter modified 15 teeth - 16/32 Pitch - 30 deg - Flat Root - Side fit - Class 1

- Key
6,35x6,35x17,7

| Part Number |
|-------------|
| Key |
| 796620800 |



Available only for displacements: 23-28-34-40

code 56

Max torque 480 Nm (4250 lbf in)

code 87

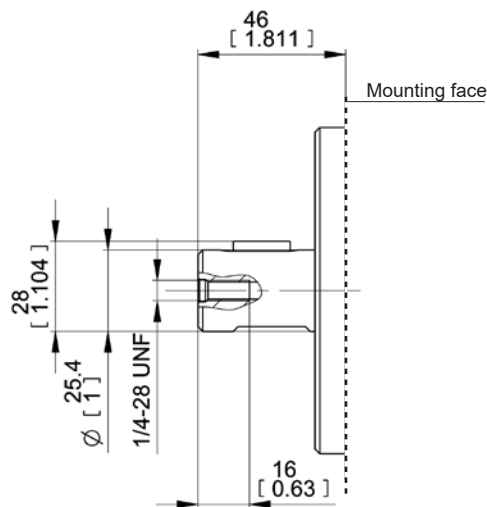
Max torque 220 Nm (1950 lbf in)

SAE BB 15T-16/32DP SPLINED

SAE B PARALLEL

- Key
6,35x6,35x17,7

| Part Number |
|-------------|
| Key |
| 796620800 |



code 88

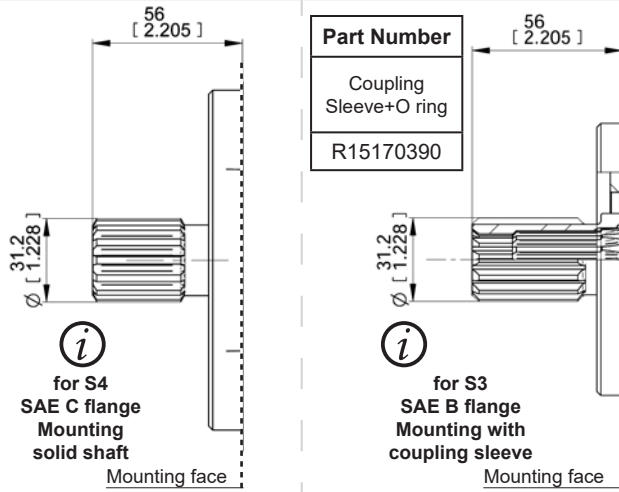
Max torque 320 Nm (2830 lbf in)

SAE BB PARALLEL

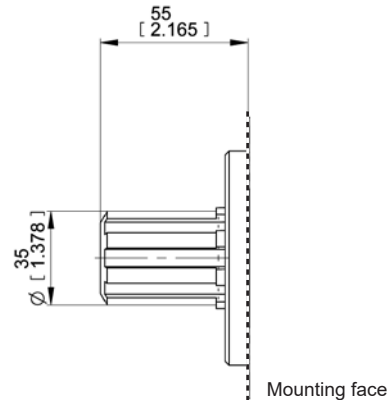
E0.151.0721.14.00IM00



Continental Shaft



Ext. Involute Spline SAE J498B with outer diameter modified 14 teeth - 12/24 Pitch - 30 deg - Flat Root - Side fit - Class 1



code 58

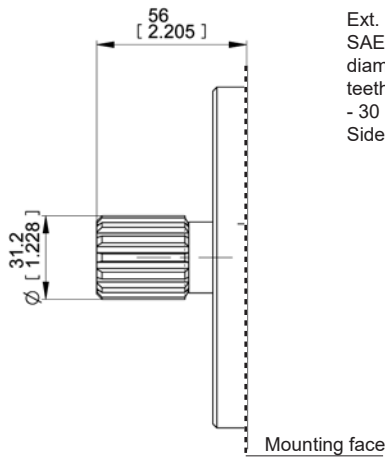
Max torque 480 Nm (4250 lbt in) Max torque 330 Nm (4250 lbt in)

SAE C 14T-12/24DP SPLINED

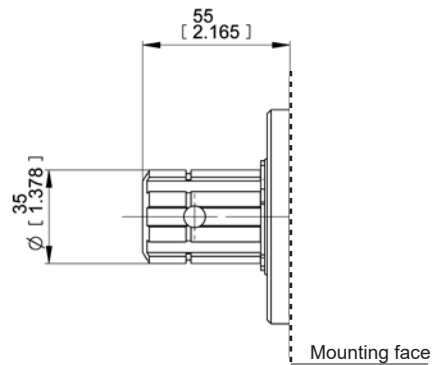
code 67

Max torque 480 Nm (4250 lbt in)

B8x32x36 DIN 5462 SPLINED



Ext. Involute Spline SAE J498B with outer diameter modified 14 teeth - 12/24 Pitch - 30 deg - Flat Root - Side fit - Class 1



code 57

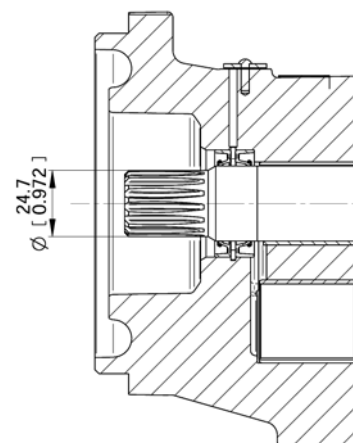
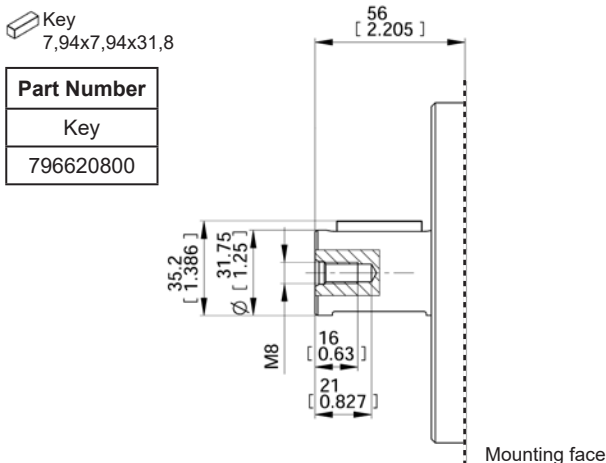
Max torque 480 Nm (4250 lbt in)

SAE C 14T-12/24DP SPLINED

code 66

Max torque 480 Nm (4250 lbt in)

B8x32x36 DIN 5462 SPLINED



code 89

Max torque 480 Nm (4250 lbt in)

SAE C PARALLEL

code 70

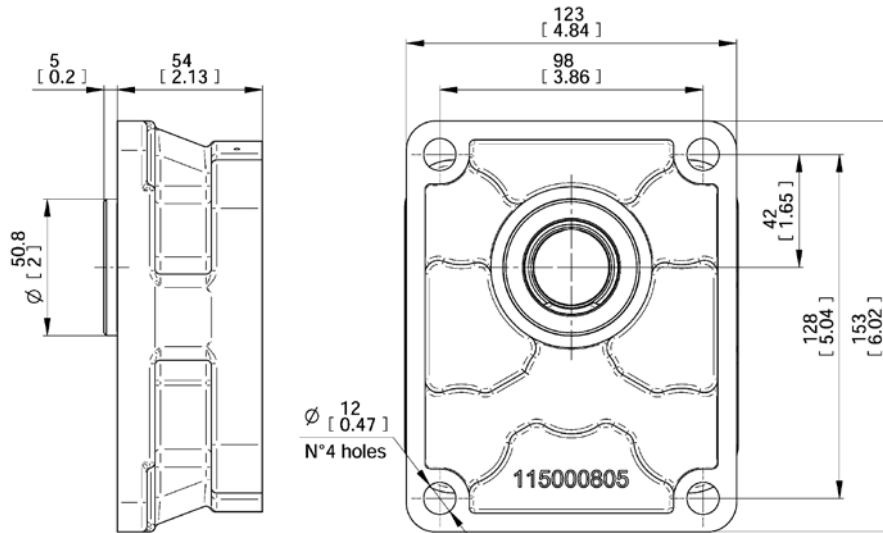
Max torque 480 Nm (4250 lbt in)

INTERNAL DRIVE SHAFT - W25X1.5X15X8F DIN 5480 SPLINED

EO.151.0721.14.00IM00



Mounting Flanges

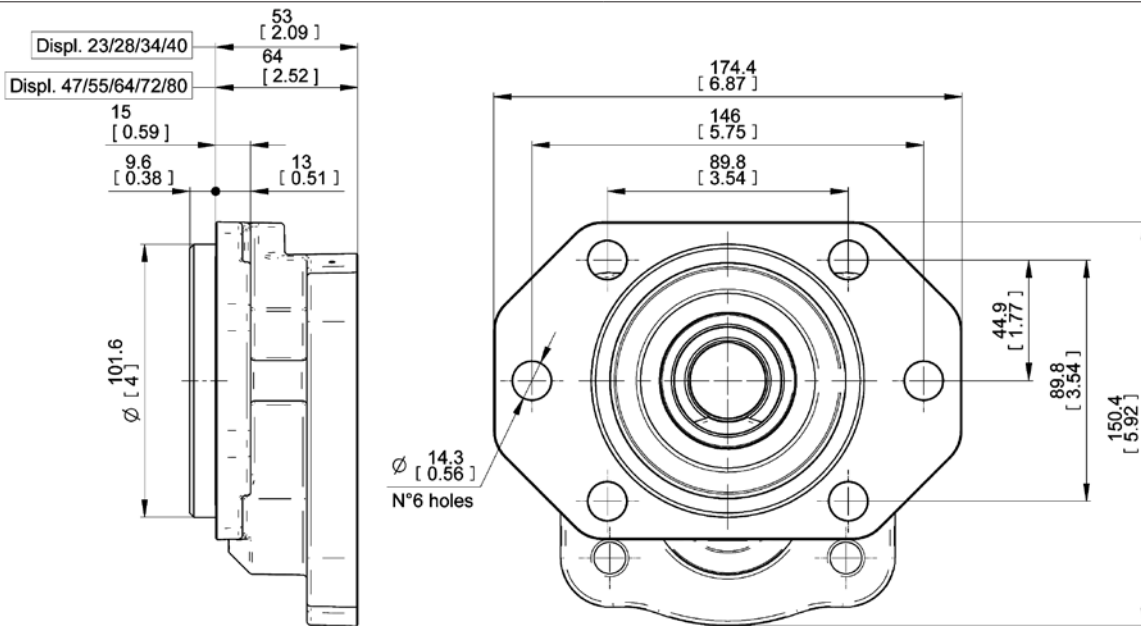


| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|---------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 76-77) |
| 38P2 | R15240030 (NBR) | R12940010 (NBR) |
| | R15240031 (FPM) | R12940020 (FPM) |

P2

With shaft code 38

EUROPEAN STANDARD



| Code | Part Number (Unidirectional Pump) | | | | |
|------|-----------------------------------|------------------------------------|------------------------------------|-----------------|------------------------------------|
| | Flange+Shaft seal kit | | Shaft seal kit (See page 76-77) | | |
| 55S3 | Displ. from 23 to 40 | R15240010 (NBR) R15240011 (FPM) | Displ. from 47 to 80 | R15240020 (NBR) | R12940030 (NBR) R12940033 (FPM) |
| 56S3 | | | | R15240021 (FPM) | |
| 87S3 | | R15240012 (NBR) R15240013 (FPM) | R15240022 (NBR) R15240023 (FPM) | R15020190 (NBR) | |
| 88S3 | | | | R15020191 (FPM) | |
| 58S3 | | | | | |

S3

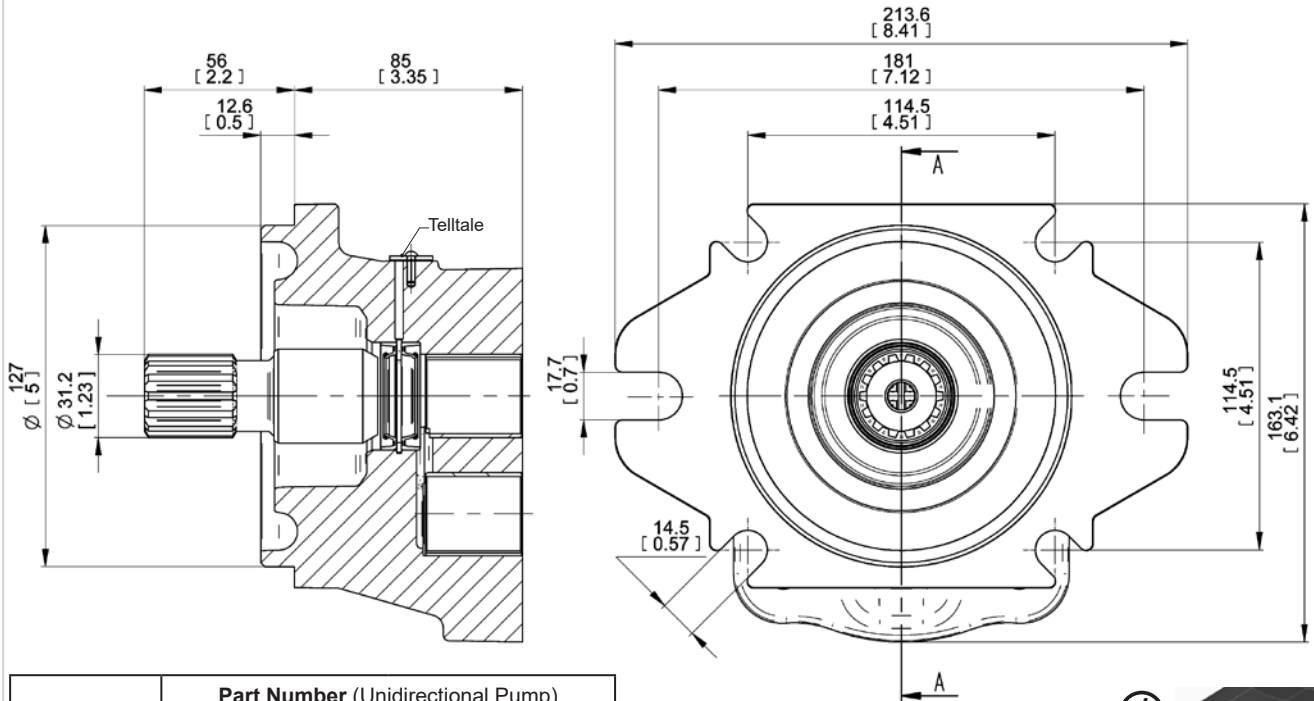
With shaft code 55-56-58-87-88

SAE B 2-4 BOLTS

E0.151.0721.14.001M00



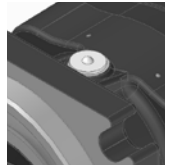
Mounting Flanges



| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|------------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 76-77) |
| 58S4 | R15020015 (NBR) | R15020190 (NBR) |
| | R15020017 (FPM) | R15020191 (FPM) |



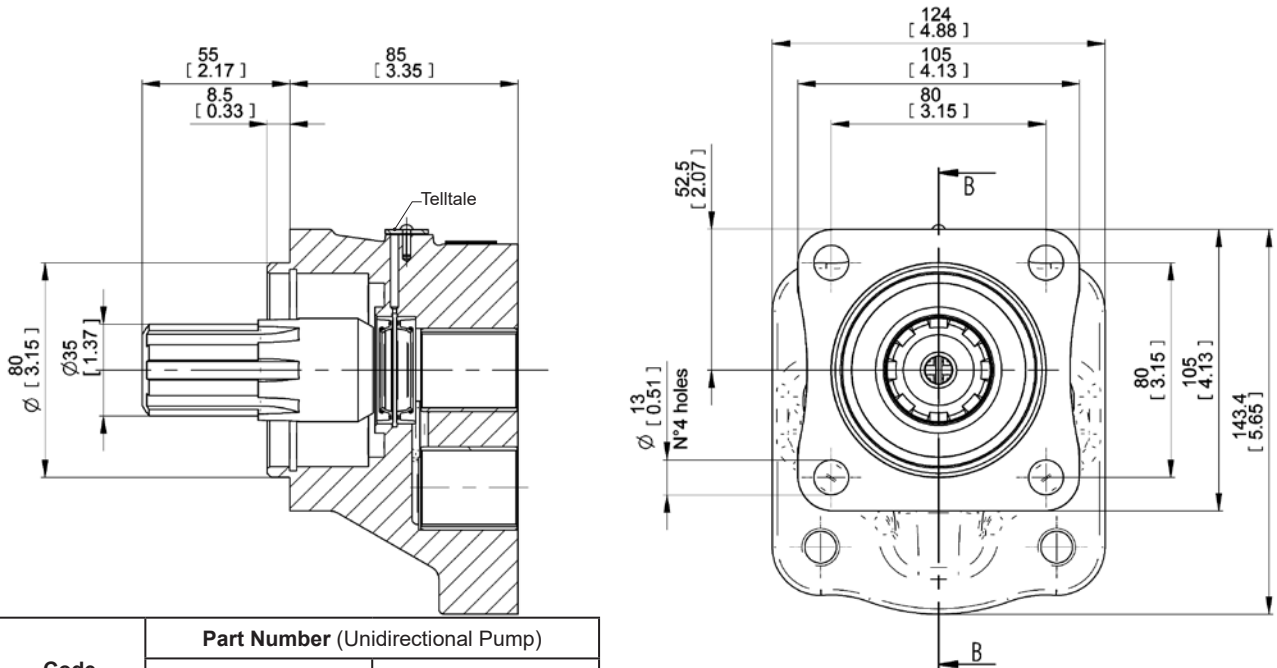
TellTale
drop in plug in case of failure,
outside leakage trough the
crossing hole is visible.



S4

With shaft code 58

SAE C 2-4 BOLTS



| Code | Part Number (Unidirectional Pump) | |
|------|-----------------------------------|------------------------------------|
| | Flange+Shaft seal kit | Shaft seal kit (See page 76-77) |
| 67Z2 | R15020013 (NBR) | R15020200 (NBR) |
| | R15020120 (FPM) | R15020201 (FPM) |

Z2

With shaft code 67

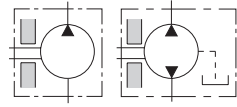
4 Bolts for ZF gear box

EO.151.0721.14.00IM00

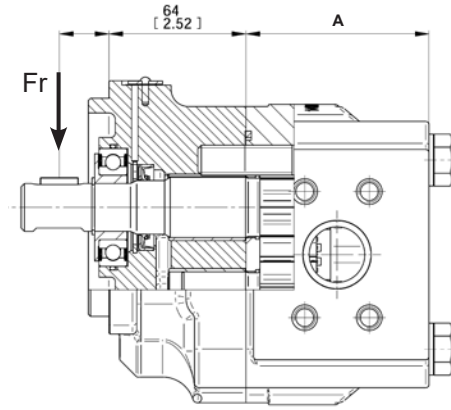
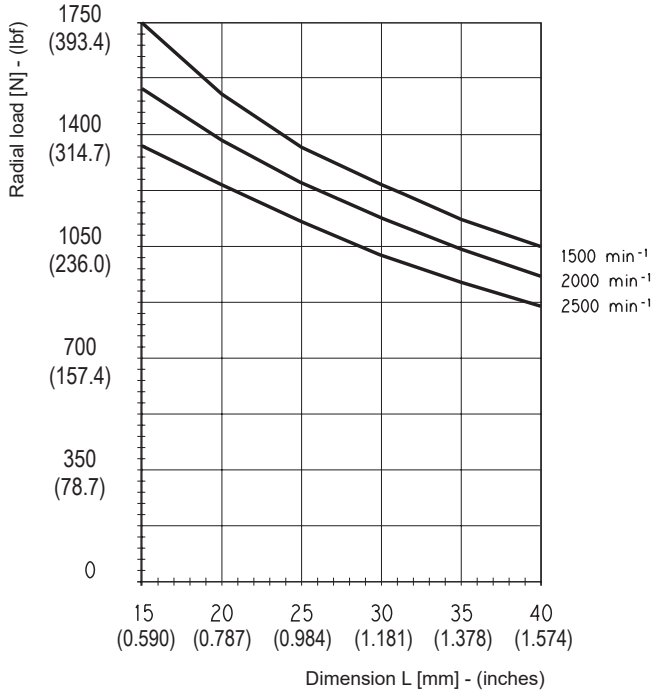


Mounting Flanges with Outrigger Bearing for Medium Loads (R3)

The following diagram shows radial load bearing capacity, in case of parallel axis drag.
The duty life of 3500 - 4000 hours is referred to a typical mobile application, when duty cycle is less than 100%.

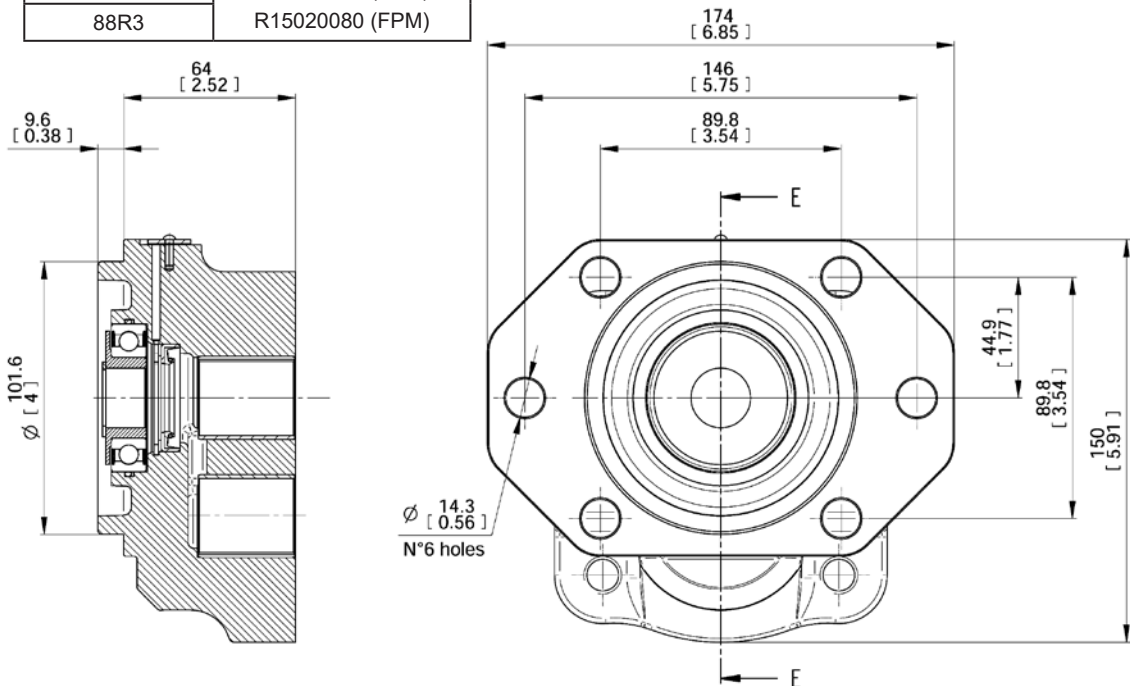


L=Distance between mounting flange and radial force point of application [mm-inches]



| Type | A | |
|------------|-------|------|
| | mm | in |
| PG330 - 23 | 77 | 3.03 |
| PG330 - 28 | 81 | 3.19 |
| PG330 - 34 | 85.5 | 3.36 |
| PG330 - 40 | 90 | 3.54 |
| PG330 - 47 | 101.5 | 3.40 |
| PG330 - 55 | 107.5 | 4.23 |
| PG330 - 64 | 114.5 | 4.51 |
| PG330 - 72 | 121.5 | 4.78 |
| PG330 - 80 | 127.5 | 5.02 |

| Code | Part Number |
|------|------------------------|
| | Flange+Bearing support |
| 55R3 | R15020023 (NBR) |
| 87R3 | R15020090 (FPM) |
| 56R3 | R15020021 (NBR) |
| 88R3 | R15020080 (FPM) |



R3

With shaft code 55-56-87-88

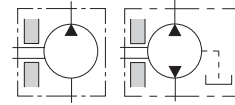
SAE B 2-4 BOLTS

EO.151.0721.14.00IM00

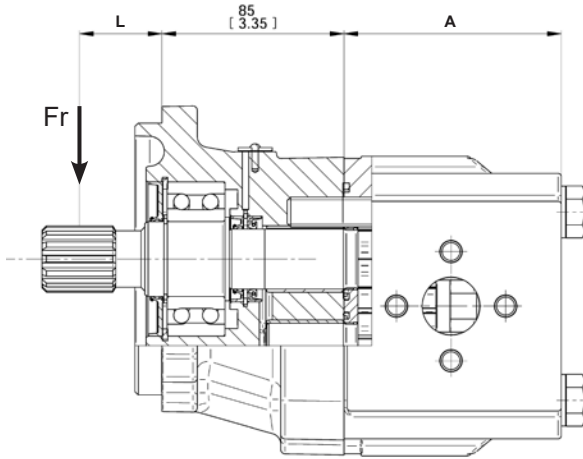


Mounting Flanges with Outrigger Bearing for Heavy Loads (Z1- R8)

The following diagram shows radial load bearing capacity, in case of parallel axis drag.
The duty life of 3500 - 4000 hours is referred to a typical mobile application, when duty cycle is less than 100%.



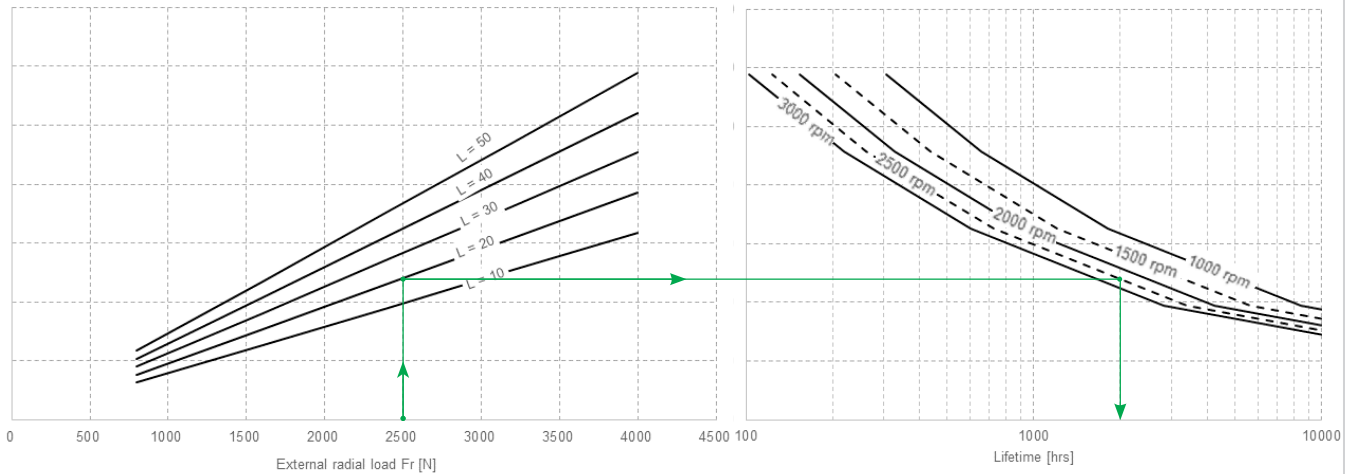
L=Distance between mounting flange and radial force point of application [mm-inches]



| Type | A | |
|------------|-------|------|
| | mm | in |
| PG330 - 23 | 77 | 3.03 |
| PG330 - 28 | 81 | 3.19 |
| PG330 - 34 | 85.5 | 3.36 |
| PG330 - 40 | 90 | 3.54 |
| PG330 - 47 | 101.5 | 3.40 |
| PG330 - 55 | 107.5 | 4.23 |
| PG330 - 64 | 114.5 | 4.51 |
| PG330 - 72 | 121.5 | 4.78 |
| PG330 - 80 | 127.5 | 5.02 |

Example:
Fr = 2500 N
L = 20 → Expected life: 2000 hrs
Speed = 2500 rpm

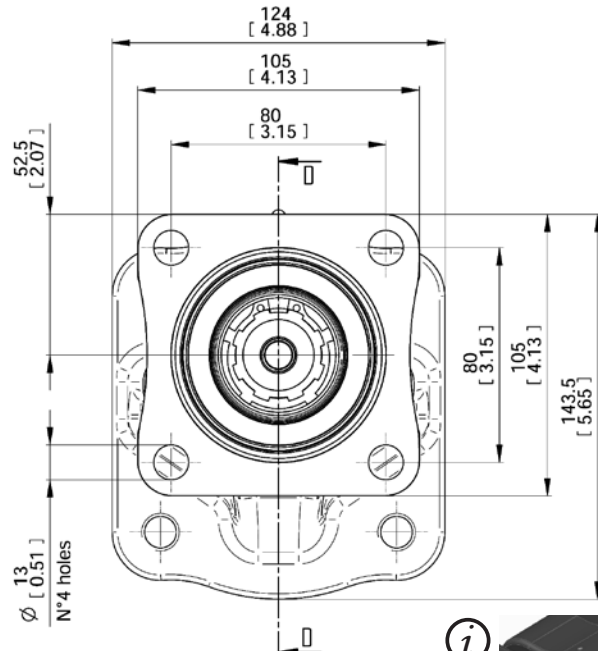
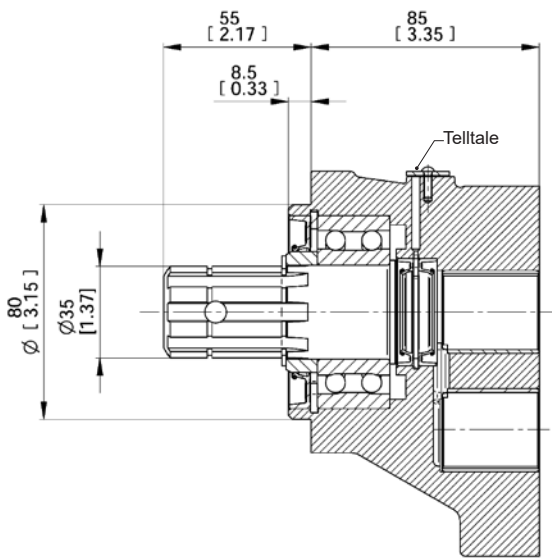
Code Z1 - R8



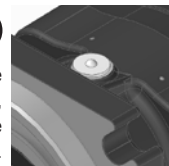
EO.151.0721.14.00IM00



Mounting Flanges with Outrigger Bearing for Heavy Loads (Z1- R8)



TellTale drop in plug in case of failure, outside leakage trough the crossing hole is visible.

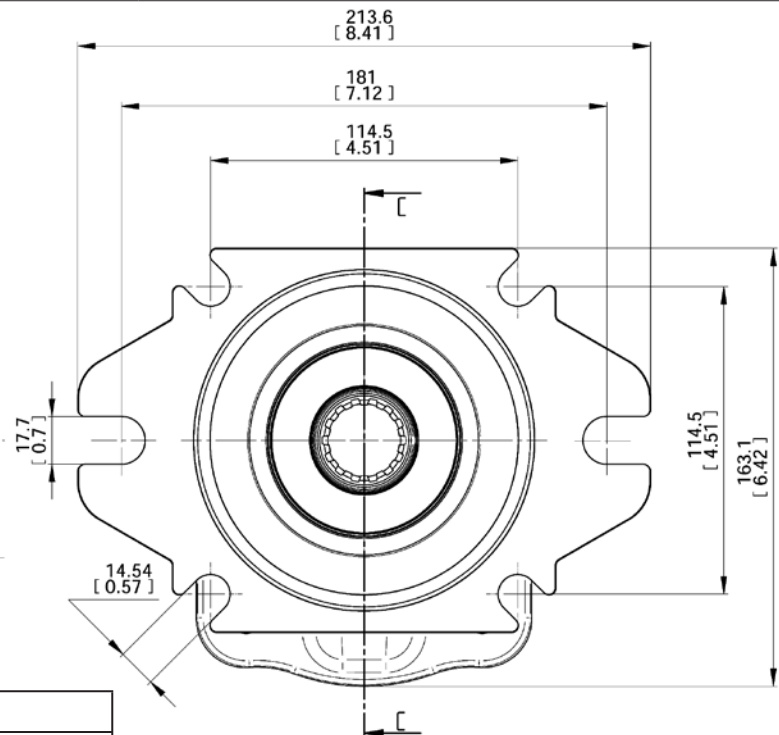
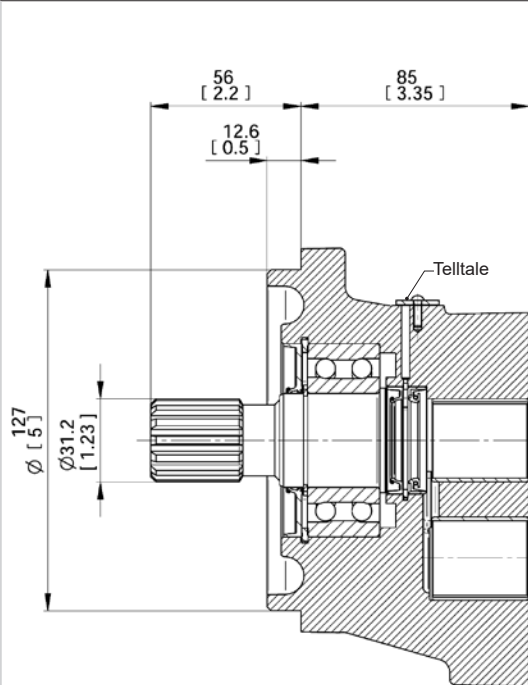


| Code | Part Number | |
|------|------------------------|-----------------|
| | Flange+Bearing support | |
| 66Z1 | R15020012 (NBR) | R15020018 (FPM) |

Z1

With shaft code 66

4 BOLTS FOR ZF GEAR



| Code | Part Number | |
|------|------------------------|-----------------|
| | Flange+Bearing support | |
| 57R8 | R15020010 (NBR) | R15020030 (FPM) |
| 89R8 | R15020014 (NBR) | R15020040 (FPM) |

R8

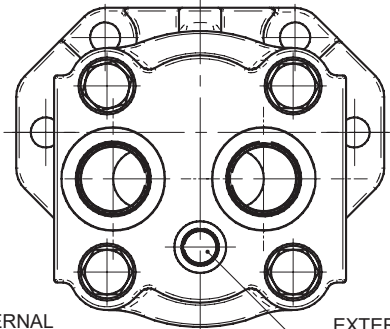
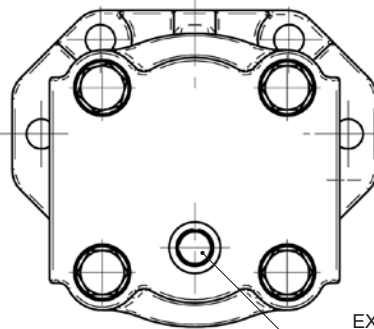
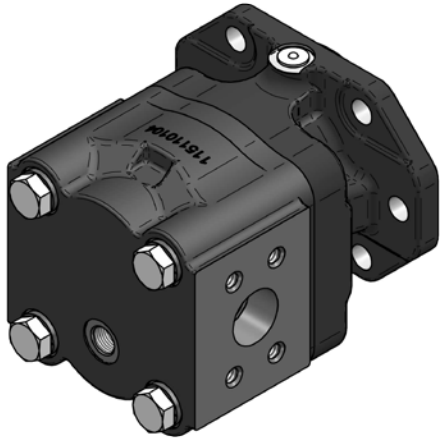
With shaft code 57-89

SAE C 2-4 BOLTS

EO.151.0721.14.00IM00



External Drain for Bidirectional Pump



| Threaded Drain Port |
|-------------------------|
| C |
| 9/16-18 UNF-2B SAE 6 |
| G 3/8 |

EXTERNAL DRAIN PORT DIMENSION C

EXTERNAL DRAIN PORT DIMENSION C

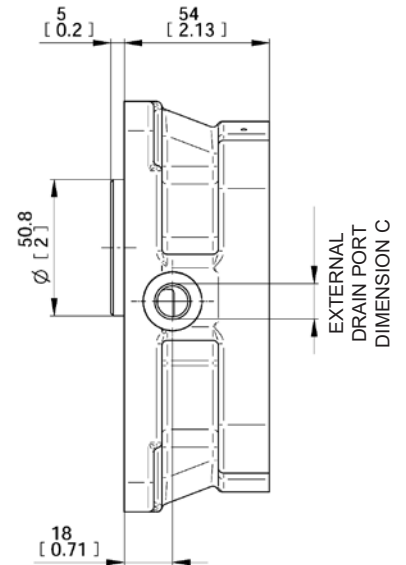
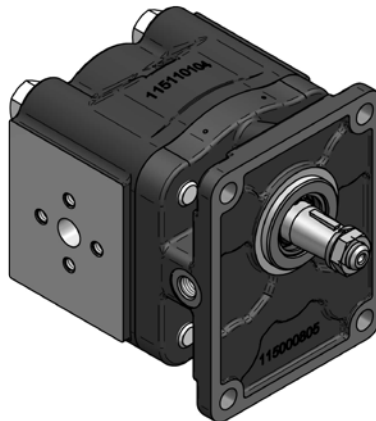
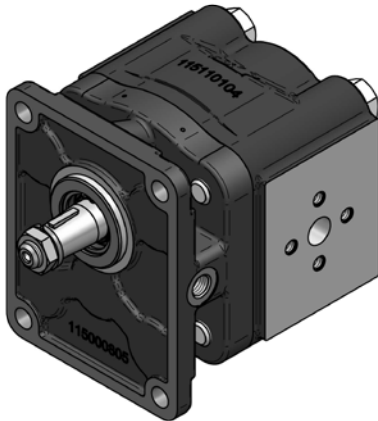


Available only threaded ports see page 62



BIDIRECTIONAL ROTATION

GEAR HOUSING TYPES



| Code | Part Number | Threaded Drain Port |
|-----------------------|-------------|---------------------|
| | | C |
| P2 with lateral drain | R15000815 | G1/4 |

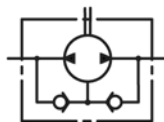
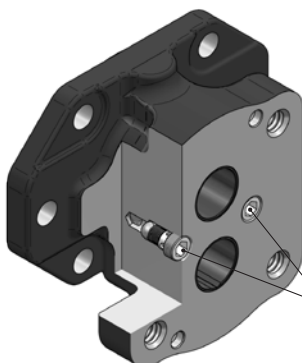


BIDIRECTIONAL ROTATION

LD

P2 (EUROPEAN STANDARD) WITH LATERAL DRAIN

Internal Drain Valve for Bidirectional Pump



Internal drain valve (A)

| Code | Part Number | | Internal drain valve (A) |
|--------|--|--|--------------------------|
| | Flange+Shaft seal kit+Internal drain valve | | |
| P2-IDV | R15030020 (NBR) | R15030030 (FPM) | R15012501 |
| S3-IDV | R15012503 (NBR) (from 23cc to 40cc) | R15012505 (FPM) (from 23cc to 40cc) | |
| | R15012502 (NBR) (from 47cc to 80cc) | R15012506 (FPM) (from 47cc to 80cc) | |
| S4-IDV | R15012507 (NBR) | R15012508 (FPM) | |
| R8-IDV | R15012509 (NBR) | R15012510 (FPM) | |
| Z1-IDV | R15170460 (NBR) | R15170461 (FPM) | |
| Z2-IDV | R15030040 (NBR) | R15030050 (FPM) | |

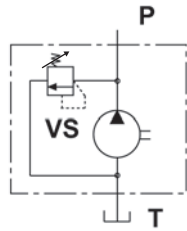
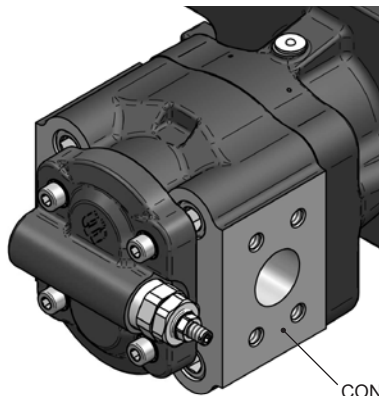
IDV

INTERNAL DRAIN FOR BI-DIRECTIONAL PUMP

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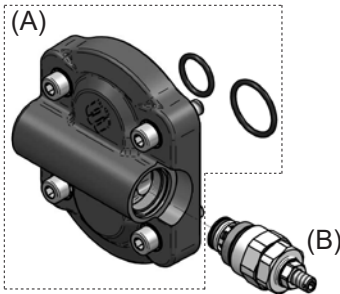
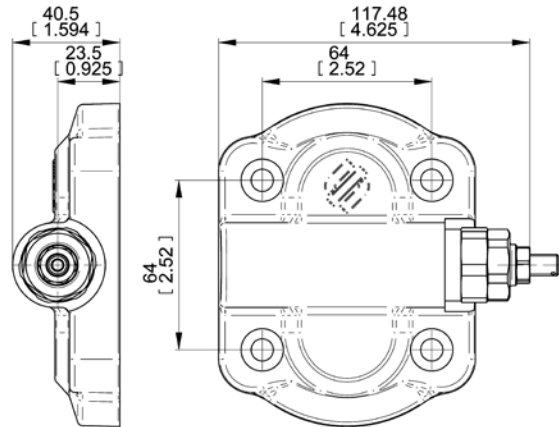


Rear Covers with Valves



Available up to 80 l/min

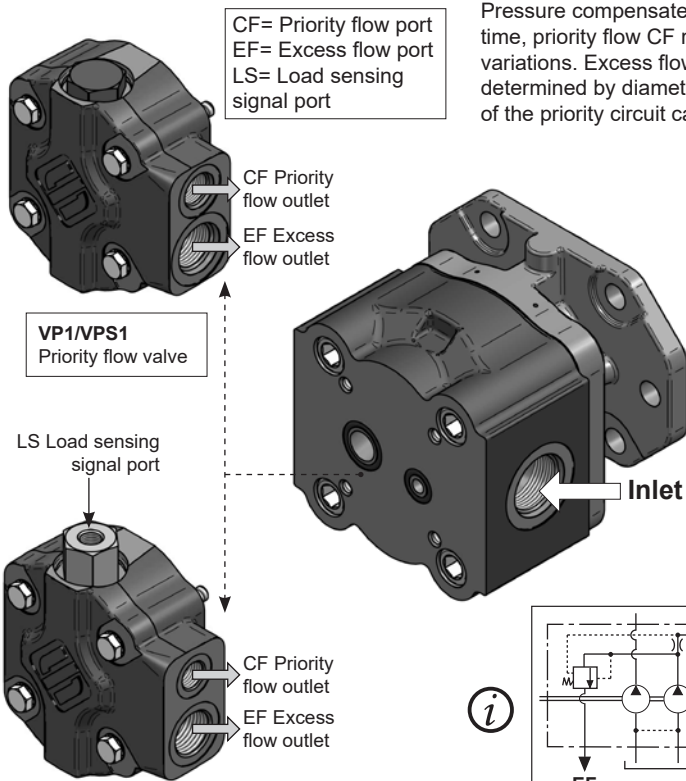
CONFIGURATION WITH SPECIAL GEAR HOUSING



| Code | Part Number | |
|--------------------------|----------------------------|---|
| | Cast iron Cover+O-ring (A) | Pressure relief valve (B) setting range |
| VS Internal Discharge | R15030010 | 796366200 20-70 bar |
| | | 796366300 71-150 bar |
| | | 796366400 151-215 bar |
| | | 796366500 216-265 bar |

VS

MAIN RELIEF VALVE

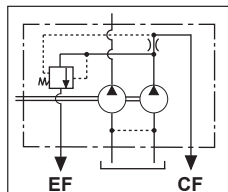


CF= Priority flow port
EF= Excess flow port
LS= Load sensing signal port

VP1/VPS1
Priority flow valve

LS Load sensing signal port

VPD1/VPDS1
Load sensing priority valve

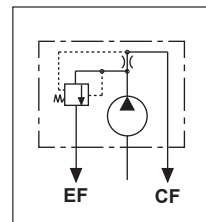


Multiple pump with Priority flow valve available. (Example VP1)



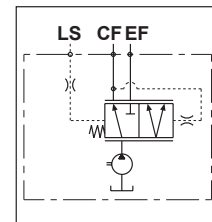
Pressure compensated priority flow valve to feed two pressurized circuit at the same time, priority flow CF remains constant regardless of pump speed and system pressure variations. Excess flow EF is directly proportional to pump speed. Priority flow is determined by diameter of calibrated orifice, see table at page 73). The max. pressure of the priority circuit can be limited by valve which relieves into pump suction line.

VP1



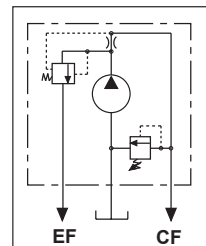
Priority flow valve, excess flow available to second actuator.

VPD1



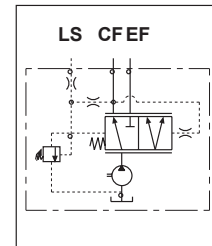
Load sensing priority valve with dynamic signal without main relief valve.

VPS1



Priority flow valve, excess flow available to second actuator with pressure relief valve on priority flow line.

VPDS1



Load sensing priority valve with dynamic signal with main relief valve.

VP1-VPS1

PRESSURE COMPENSATED PRIORITY FLOW VALVES

VPD1-VPDS1

LOAD SENSING PRIORITY VALVES



Pressure Compensated Priority Flow Valve

Flow Rate Table

CF - port

Det. A-A

| Calibrated Orifice ϕd | | Flow Rate $\pm 10\%$ | |
|-----------------------------|------|----------------------|------|
| mm | inch | l/min | gpm |
| 1.5 | 0.06 | 2.5 | 0.66 |
| 2 | 0.08 | 4 | 1.06 |
| 2.4 | 0.09 | 6 | 1.59 |
| 2.8 | 0.11 | 8 | 2.11 |
| 3.1 | 0.12 | 10 | 2.64 |
| 3.5 | 0.14 | 12.5 | 3.30 |
| 4 | 0.16 | 16 | 4.23 |
| 4.4 | 0.17 | 20 | 5.28 |
| 4.9 | 0.19 | 25 | 6.61 |

AXIS OF PUMP SHAFT
ANTI-CLOCKWISE
ROTATION

AXIS OF PUMP SHAFT
CLOCKWISE
ROTATION

| Threaded Port | |
|---------------------------|------------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 3/4 |
| SAE8 3/4 - 16 UNF - 2B | SAE12 1-1/16 - 12 UN - 2A |

| Code | Part Number |
|------------|-------------------------------------|
| VP1 - VPS1 | Please contact our sales department |

| Pressure Relief Valve setting range | |
|-------------------------------------|--|
| 30-110 bar | |
| 110-380 bar | |

VP1

Excess flow available to second actuator - REAR PORTS

VPS1

Excess flow available to second actuator with **fixed setting** pressure relief valve on priority flow line - REAR PORTS

Load Sensing Priority Valve

Female fitting

Male fitting

| |
|----------------------------|
| E |
| G 1/4 |
| SAE4 7/16 - 20 UNF - 2B |

Minimum load sensing signal (LS) = 4 bar (28 psi)

| Code | Part Number |
|--------------|-------------------------------------|
| VPD1 - VPDS1 | Please contact our sales department |

AXIS OF PUMP SHAFT
ANTI-CLOCKWISE
ROTATION

AXIS OF PUMP SHAFT
CLOCKWISE
ROTATION

| Threaded Port | |
|---------------------------|------------------------------|
| CF= Priority flow port | EF= Excess flow port |
| G 3/8 | G 3/4 |
| SAE8 3/4 - 16 UNF - 2B | SAE12 1-1/16 - 12 UN - 2A |

| Pressure Relief Valve setting range | |
|-------------------------------------|--|
| 30-110 bar | |
| 110-380 bar | |

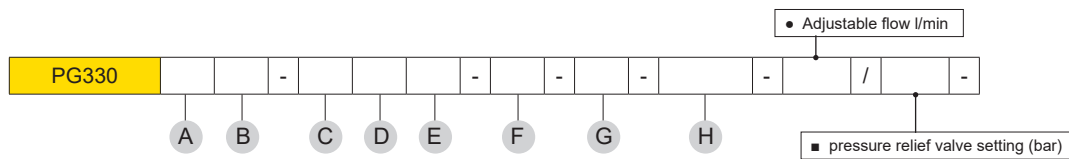
VPD1

Excess flow available to second actuator - SIDE PORTS

VPDS1

Excess flow available to second actuator with **adjustable setting** pressure relief valve on priority flow line - SIDE PORTS

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| A | CODES | DISPLACEMENTS | |
|---|-------|----------------------------|-----------------|
| | 23 | 23.4 cm ³ /rev. | 1.43 cu.in/rev. |
| | 28 | 28.6 cm ³ /rev. | 1.74 cu.in/rev. |
| | 34 | 34.4 cm ³ /rev. | 2.1 cu.in/rev. |
| | 40 | 40.3 cm ³ /rev. | 2.46 cu.in/rev. |
| | 47 | 47.5 cm ³ /rev. | 2.89 cu.in/rev. |
| | 55 | 55.2 cm ³ /rev. | 3.37 cu.in/rev. |
| | 64 | 64.3 cm ³ /rev. | 3.92 cu.in/rev. |
| | 72 | 73.4 cm ³ /rev. | 4.48 cu.in/rev. |
| | 80 | 80.6 cm ³ /rev. | 4.91 cu.in/rev. |

| B | ROTATION | CODES |
|---|----------------|-------|
| | Clockwise | D |
| | Anti-clockwise | S |
| | Reversible | R |

| C | PORTS (page 61) | CODES |
|---|---|-------|
| | Flanged ports european standard | P |
| | Flanged ports SAE J518 Metric thread | W |
| | Flanged ports SAE J518 American standard thread | S |
| | Threaded ports GAS (BSPP) | G |
| | Threaded ports SAE (ODT) | R |

| D | DRIVE SHAFT END (page 64) | CODES |
|---|--|-------|
| | Tapered 1:8 | 38 |
| | SAE B splined 13T | 55 |
| | SAE BB splined 15T | 56 |
| | SAE B PARALLEL | 87 |
| | SAE BB PARALLEL | 88 |
| | SAE C 14T-12/24DP Continental Shaft | 58 |
| | 8x32x36 UNI 8953 splined Continental Shaft | 67 |
| | SAE C 14T-12/24DP Continental Shaft | 57 |
| | 8x32x36 UNI 8953 splined Continental Shaft | 66 |
| | SAE C PARALLEL Continental Shaft | 89 |

| H | FLANGES AND REAR COVERS (page 71) | CODES |
|---|---|---------|
| | Priority flow valve with excess flow to 2nd actuator | ● VP1 |
| | Priority flow valve with excess flow to 2nd actuator with main relief valve | ■ VPS1 |
| | Load sensing priority valve with dinamic signal | ● VPD1 |
| | Load sensing priority valve with dinamic signal and main relief valve | ■ VPDS1 |
| | Adjustable main relief valve | ■ VS |
| | Internal drain valve (Flange) | IDV |
| | Lateral drain on P2 (Flange European standard) | LD |

| G | PORTS LAYOUT (page 63) | CODE |
|---|-------------------------------------|------|
| | Side ports (standard configuration) | - |
| | Rear ports | 1 |
| | Side ports - Rear ports plugged | 2 |
| | Rear ports - Side ports plugged | 3 |
| | Side Inlet port - Rear outlet port | 4 |
| | Rear Inlet port - Side outlet port | 5 |

| F | SEAL | CODE |
|---|--|------|
| | Buna standard (standard configuration) | - |
| | Viton | V |

| E | MOUNTING FLANGES (page 66) | CODES |
|---|--------------------------------|-------|
| | European standard Ø50.8 | P2 |
| | SAE B 2-4 BOLTS | S3 |
| | SAE C 2-4 BOLTS | S4 |
| | SAE B 2-4 BOLTS (Medium Loads) | R3 |
| | SAE C 2-4 BOLTS (Heavy Loads) | R8 |
| | 4 BOLTS FOR ZF GEAR | Z1 |
| | 4 Bolts for ZF gear box | Z2 |

How to order Single pump: PG330 28D, ports European (P), drive shaft (38), mounting flange (P2) **PG330-28D-P38P2**

How to order Single pump with VPDS1: PG330 23D, ports GAS-BSPP (G), drive shaft (67), mounting flange (Z2), Load sensing priority valve with dinamic signal and main relief valve (VPDS1) **PG330-23D-G67Z2-VPDS1/200**

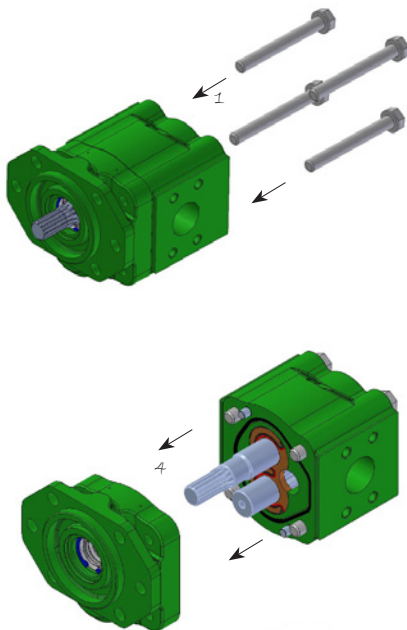
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Single Pump Changing Rotation Instructions

! Keep the working surface cleaned as well as the exterior of the pump before starting and avoid inner contamination of the pump. The pump shown below is a anti - clockwise rotating pump. To achieve clockwise rotation, please read the following instructions carefully.

ANTI - CLOCKWISE ROTATION

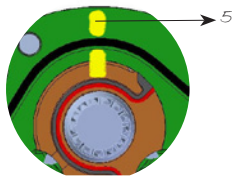


1 - Loosen and fully unscrew the bolts.

2 - Lay the pump on the working area in order to have the mounting flange turned upside.

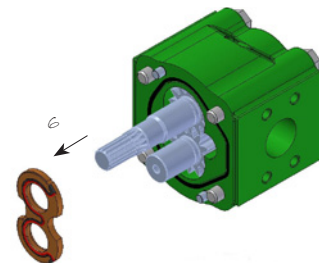
3 - Coat the shaft end with grease to avoid damaging the shaft seal.

4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



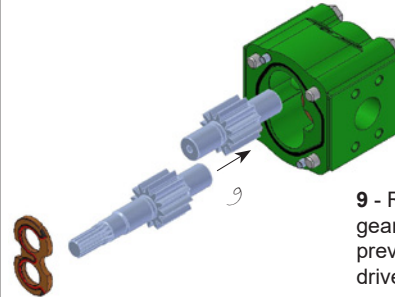
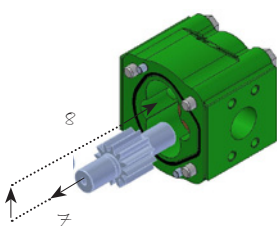
5 - Mark the position of the bushing and eventually of the thrust plates, as well with reference to the body.

6 - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.

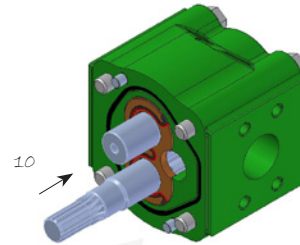


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

8 - Re-locate the driven gear in the position previously occupied by the driving gear.



9 - Re-locate the driving gear in the position previously occupied by the driven gear.



10 - Replace the bushing and thrust plate taking care that:
- marks are located as on the picture
- surface containing the seal is visible
- seal and its protection are correctly located.

11 - Clean the body and mounting flange facing surfaces.

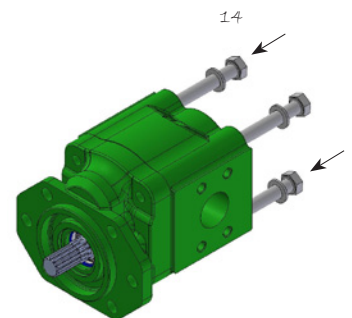
12 - Verify that the two plugs are located in the body.

13 - Refit the mounting flange, turned 180° from its original position.

14 - Replace the bolts and tighten clockwise evenly to an appropriate torque.

15 - Check that the shaft rotates freely.

16 - Mark on the flange the new direction of rotation.



CLOCKWISE ROTATION

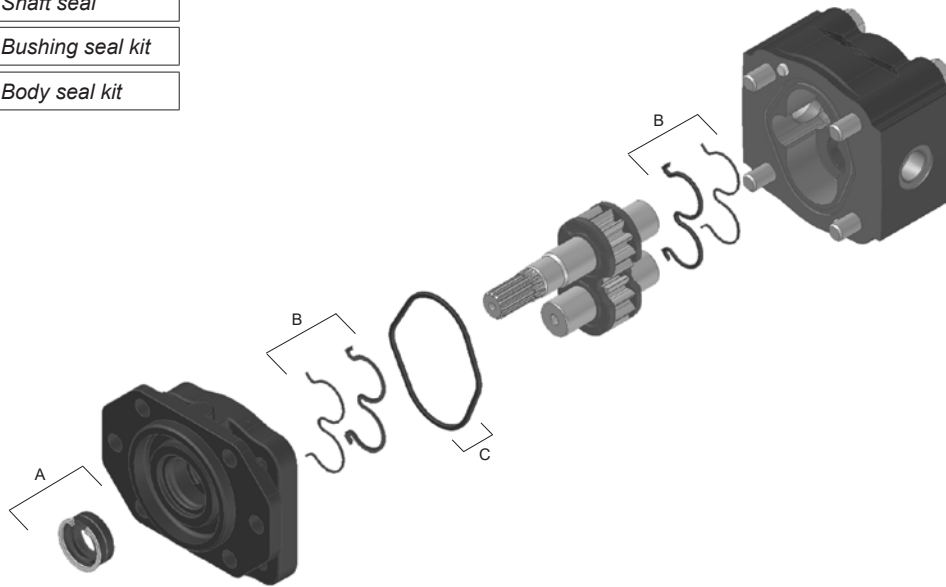


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Unidirectional Pump Seal Spare Parts Kit

| | |
|---|------------------|
| A | Shaft seal |
| B | Bushing seal kit |
| C | Body seal kit |



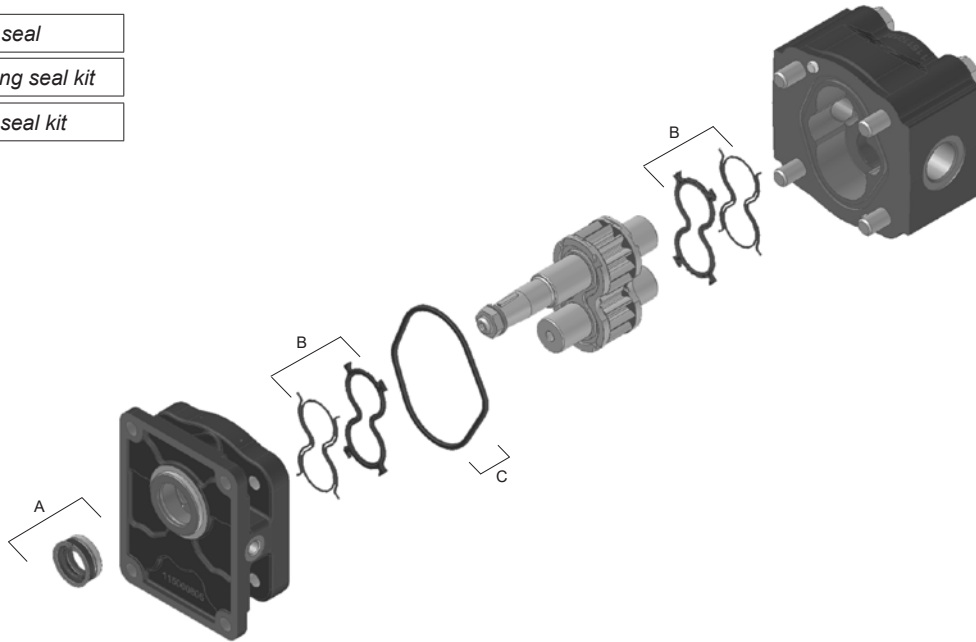
| SHAFT & FLANGE TYPE | NBR COMPOUND | | FPM COMPOUND | | | | | | | | | |
|---|---|--------------------|---------------------------|---|-------------|-----------|---|-------------|-----------|---|-------------|-----------|
| | Complete seal kit (A+B+C) | Shaft seal kit (A) | Complete seal kit (A+B+C) | Shaft seal kit (A) | | | | | | | | |
| 38P2 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170010</td></tr> </table> | Part Number | R15170010 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R12940010</td></tr> </table> | Part Number | R12940010 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170013</td></tr> </table> | Part Number | R15170013 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R12940020</td></tr> </table> | Part Number | R12940020 |
| Part Number | | | | | | | | | | | | |
| R15170010 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R12940010 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15170013 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R12940020 | | | | | | | | | | | | |
| 55S3 56S3 58S3 87S3 88S3 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170020</td></tr> </table> | Part Number | R15170020 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R12940030</td></tr> </table> | Part Number | R12940030 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170023</td></tr> </table> | Part Number | R15170023 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R12940033</td></tr> </table> | Part Number | R12940033 |
| Part Number | | | | | | | | | | | | |
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| Part Number | | | | | | | | | | | | |
| R12940030 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15170023 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R12940033 | | | | | | | | | | | | |
| 58S4 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170030</td></tr> </table> | Part Number | R15170030 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15020190</td></tr> </table> | Part Number | R15020190 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170031</td></tr> </table> | Part Number | R15170031 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15020191</td></tr> </table> | Part Number | R15020191 |
| Part Number | | | | | | | | | | | | |
| R15170030 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15020190 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15170031 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15020191 | | | | | | | | | | | | |
| 67Z2 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170430</td></tr> </table> | Part Number | R15170430 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15020200</td></tr> </table> | Part Number | R15020200 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15170431</td></tr> </table> | Part Number | R15170431 | <table border="1"> <tr><td>Part Number</td></tr> <tr><td>R15020201</td></tr> </table> | Part Number | R15020201 |
| Part Number | | | | | | | | | | | | |
| R15170430 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15020200 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15170431 | | | | | | | | | | | | |
| Part Number | | | | | | | | | | | | |
| R15020201 | | | | | | | | | | | | |

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Bidirectional Pump Seal Spare Parts Kit

| | |
|---|------------------|
| A | Shaft seal |
| B | Bushing seal kit |
| C | Body seal kit |

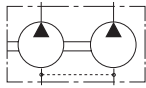


| SHAFT & FLANGE TYPE | NBR COMPOUND | | FPM COMPOUND | | | | | | | | | |
|--|---|--------------------|---------------------------|---|--------------------|-----------|---|--------------------|-----------|---|--------------------|-----------|
| | Complete seal kit (A+B+C) | Shaft seal kit (A) | Complete seal kit (A+B+C) | Shaft seal kit (A) | | | | | | | | |
| 38P2 | <table border="1"> <tr> <td>Part Number</td> <td>R15170350</td> </tr> </table> | Part Number | R15170350 | <table border="1"> <tr> <td>Part Number</td> <td>R12940080</td> </tr> </table> | Part Number | R12940080 | <table border="1"> <tr> <td>Part Number</td> <td>R15170360</td> </tr> </table> | Part Number | R15170360 | <table border="1"> <tr> <td>Part Number</td> <td>R12940083</td> </tr> </table> | Part Number | R12940083 |
| Part Number | R15170350 | | | | | | | | | | | |
| Part Number | R12940080 | | | | | | | | | | | |
| Part Number | R15170360 | | | | | | | | | | | |
| Part Number | R12940083 | | | | | | | | | | | |
| 55S3 56S3 58S3 87S3 | <table border="1"> <tr> <td>Part Number</td> <td>R15170370</td> </tr> </table> | Part Number | R15170370 | <table border="1"> <tr> <td>Part Number</td> <td>R15170140</td> </tr> </table> | Part Number | R15170140 | <table border="1"> <tr> <td>Part Number</td> <td>R15170380</td> </tr> </table> | Part Number | R15170380 | <table border="1"> <tr> <td>Part Number</td> <td>R15170080</td> </tr> </table> | Part Number | R15170080 |
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| Part Number | R15170140 | | | | | | | | | | | |
| Part Number | R15170380 | | | | | | | | | | | |
| Part Number | R15170080 | | | | | | | | | | | |
| 88S3 | <table border="1"> <tr> <td>Part Number</td> <td>R15170160</td> </tr> </table> | Part Number | R15170160 | <table border="1"> <tr> <td>Part Number</td> <td>R15170130</td> </tr> </table> | Part Number | R15170130 | <table border="1"> <tr> <td>Part Number</td> <td>R15170400</td> </tr> </table> | Part Number | R15170400 | <table border="1"> <tr> <td>Part Number</td> <td>R15170131</td> </tr> </table> | Part Number | R15170131 |
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| Part Number | R15170130 | | | | | | | | | | | |
| Part Number | R15170400 | | | | | | | | | | | |
| Part Number | R15170131 | | | | | | | | | | | |
| 58S4 | <table border="1"> <tr> <td>Part Number</td> <td>R15170410</td> </tr> </table> | Part Number | R15170410 | <table border="1"> <tr> <td>Part Number</td> <td>R15020190</td> </tr> </table> | Part Number | R15020190 | <table border="1"> <tr> <td>Part Number</td> <td>R15170420</td> </tr> </table> | Part Number | R15170420 | <table border="1"> <tr> <td>Part Number</td> <td>R15020191</td> </tr> </table> | Part Number | R15020191 |
| Part Number | R15170410 | | | | | | | | | | | |
| Part Number | R15020190 | | | | | | | | | | | |
| Part Number | R15170420 | | | | | | | | | | | |
| Part Number | R15020191 | | | | | | | | | | | |
| 67Z2 | <table border="1"> <tr> <td>Part Number</td> <td>R15170470</td> </tr> </table> | Part Number | R15170470 | <table border="1"> <tr> <td>Part Number</td> <td>R15020200</td> </tr> </table> | Part Number | R15020200 | <table border="1"> <tr> <td>Part Number</td> <td>R15170471</td> </tr> </table> | Part Number | R15170471 | <table border="1"> <tr> <td>Part Number</td> <td>R15020201</td> </tr> </table> | Part Number | R15020201 |
| Part Number | R15170470 | | | | | | | | | | | |
| Part Number | R15020200 | | | | | | | | | | | |
| Part Number | R15170471 | | | | | | | | | | | |
| Part Number | R15020201 | | | | | | | | | | | |

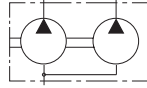
EO.151.0721.14.001M00



PG330 Multiple Pump - Dimensions and Technical Data



DOUBLE GEAR PUMPS with individual inlet port



DOUBLE GEAR PUMPS with common inlet port



Recommended to limit the inflow of the downstream pump at 60 l/min MAX to avoid cavitation. Only for common suction port configuration:
Commercial code UA.

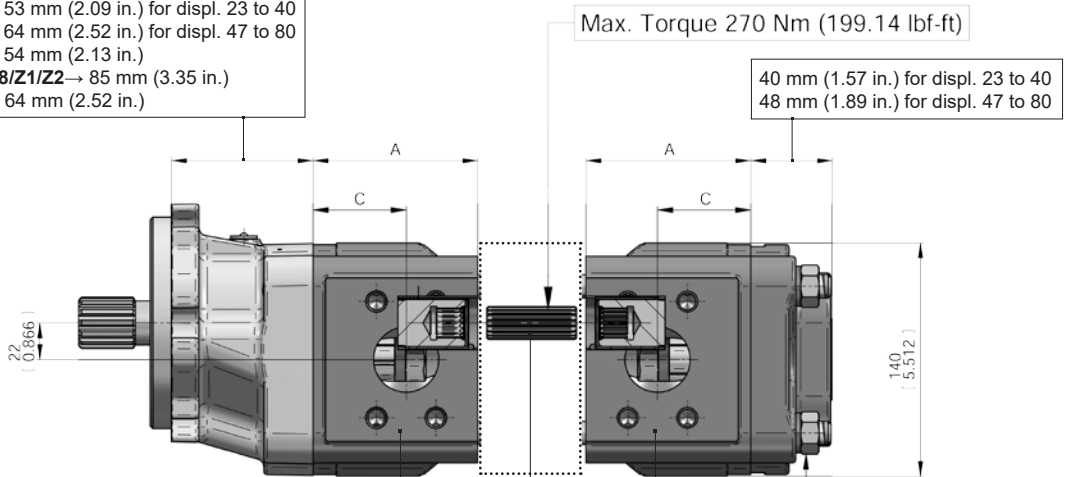
| TYPE | Displacement | | Dimension A | | Dimension C (Front and Back pump) | | | | | | Continuous pressure p ₁ | | Intermittent pressure p ₂ | | Peak pressure p ₃ | | Min. speed at p ₁ | Max. speed at p ₂ |
|------------|----------------------|-----------|-------------|------|-----------------------------------|------|-------------|------|---------------|------|------------------------------------|-------|--------------------------------------|-------|------------------------------|-------|------------------------------|------------------------------|
| | cm ³ /rev | cu.in/rev | mm | in | Type port G-R | | Type port P | | Type port W-S | | bar | psi | bar | psi | bar | psi | rpm | rpm |
| | | | | | mm | in | mm | in | mm | in | | | | | | | | |
| PG330 - 23 | 23.4 | 1.43 | 68 | 2.68 | 35 | 1.38 | 35 | 1.38 | 33 | 1.30 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 3000 |
| PG330 - 28 | 28.6 | 1.74 | 72 | 2.83 | 38 | 1.49 | 34 | 1.34 | 36 | 1.42 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 |
| PG330 - 34 | 34.4 | 2.10 | 76.5 | 3.01 | 42.5 | 1.67 | 37.5 | 1.48 | 40 | 1.57 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 |
| PG330 - 40 | 40.3 | 2.46 | 81 | 3.19 | 47 | 1.85 | 42 | 1.65 | 44.5 | 1.75 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 |
| PG330 - 47 | 47.4 | 2.89 | 93 | 3.66 | 50 | 1.97 | 50 | 1.97 | 50 | 1.97 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 2700 |
| PG330 - 55 | 55.2 | 3.37 | 99 | 6.78 | 56 | 2.20 | 52 | 2.05 | 56 | 2.20 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 |
| | | | | | | | | | | | 230* | 3335* | 250* | 3625* | 270* | 3915* | | |
| PG330 - 64 | 64.3 | 3.92 | 106 | 7.05 | 58 | 2.28 | 58 | 2.28 | 58 | 2.28 | 240 | 3480 | 260 | 3750 | 280 | 4060 | 350 | 2500 |
| | | | | | | | | | | | 200* | 2900* | 220* | 3190* | 240* | 3480* | | |
| PG330 - 72 | 73.4 | 4.48 | 113 | 7.33 | 61 | 2.40 | 61 | 2.40 | 61 | 2.40 | 220 | 3190 | 240 | 3480 | 260 | 3750 | 350 | 2500 |
| | | | | | | | | | | | 170* | 2465* | 190* | 2755* | 210* | 3045* | | |
| PG330 - 80 | 80.6 | 4.91 | 119 | 7.57 | 65 | 2.56 | 65 | 2.56 | 65 | 2.56 | 200 | 2900 | 220 | 3190 | 240 | 3480 | 350 | 2500 |

*Values of pressure with configuration with Shaft 38-Flange P2 on the displacement 55-64-72, due to max Torque of 250 Nm.
Displacement 80 not available.



Max Speed must be lowered by 10% for system working continuously at p¹ pressure.
Max pressure must be lowered by 10% for birectional pump.

For flanges code:
S3 → 53 mm (2.09 in.) for displ. 23 to 40
 64 mm (2.52 in.) for displ. 47 to 80
P2 → 54 mm (2.13 in.)
S4/R8/Z1/Z2 → 85 mm (3.35 in.)
R3 → 64 mm (2.52 in.)



Front Pump: drive shaft back end pre-arranged for second pump female splined end.

Part Number
 Coupling Sleeve
 Splined W20x1x8f DIN
 5480
 315102501

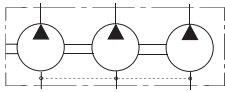
Back pump: equipped with drive shaft suitable for multiple pumps, code 63.

180-190 Nm
 (132.76 - 140.14 lbf-ft)

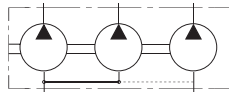
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PG330 Triple Pump - Dimensions and Technical Data



TRIPLE GEAR PUMPS with individual inlet port

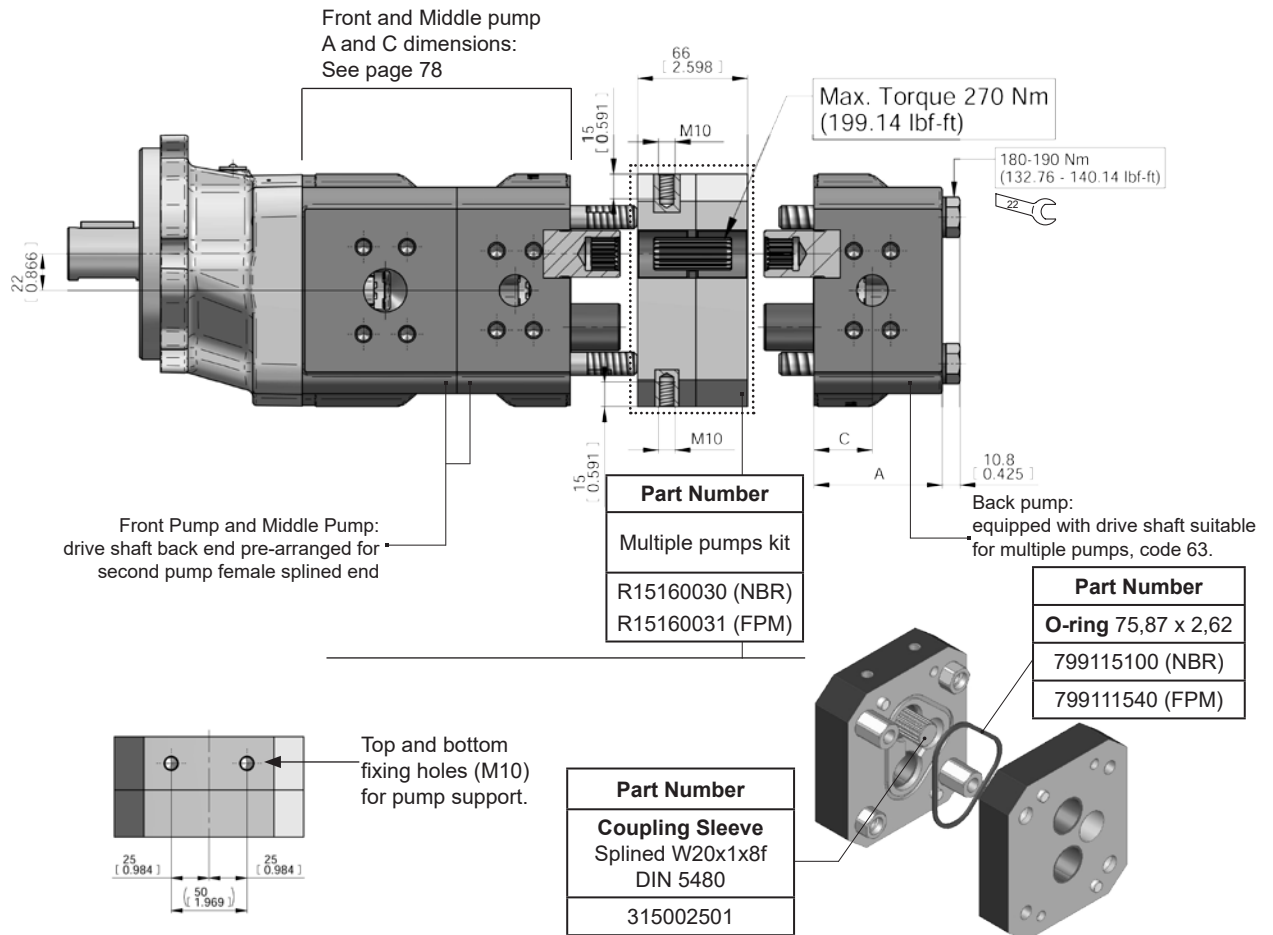


TRIPLE GEAR PUMPS with common inlet port

| TYPE | Displacement | | Dimension A (Back pump) | | Dimension C (Back pump) | | Continuous pressure p_1 | | Intermittent pressure p_2 | | Peak pressure p_3 | | Min. speed at p_1 | Max. speed at p_2 |
|------------|----------------------|-----------|-------------------------|------|-------------------------|------|---------------------------|-------|-----------------------------|-------|---------------------|-------|---------------------|---------------------|
| | cm ³ /rev | cu.in/rev | mm | in | mm | in | bar | psi | bar | psi | bar | psi | rpm | |
| PG330 - 23 | 23.4 | 1.43 | 77 | 3.03 | 35 | 1.38 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 3000 |
| PG330 - 28 | 28.6 | 1.74 | 81 | 3.19 | 38 | 1.49 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 |
| PG330 - 34 | 34.4 | 2.10 | 85.5 | 3.36 | 42.5 | 1.67 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 3000 |
| PG330 - 40 | 40.3 | 2.46 | 90 | 3.54 | 47 | 1.85 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 |
| PG330 - 47 | 47.4 | 2.89 | 101.5 | 3.40 | 50 | 1.97 | 280 | 4060 | 300 | 4350 | 320 | 4650 | 400 | 2700 |
| PG330 - 55 | 55.2 | 3.37 | 107.5 | 4.23 | 56 | 2.20 | 260 | 3750 | 280 | 4060 | 300 | 4350 | 400 | 2700 |
| | | | | | | | 230* | 3335* | 250* | 3625* | 270* | 3915* | | |
| PG330 - 64 | 64.3 | 3.92 | 114.5 | 4.51 | 58 | 2.28 | 240 | 3480 | 260 | 3750 | 280 | 4060 | 350 | 2500 |
| | | | | | | | 200* | 2900* | 220* | 3190* | 240* | 3480* | | |
| PG330 - 72 | 73.4 | 4.48 | 121.5 | 4.78 | 61 | 2.40 | 220 | 3190 | 240 | 3480 | 260 | 3750 | 350 | 2500 |
| | | | | | | | 170* | 2465* | 190* | 2755* | 210* | 3045* | | |
| PG330 - 80 | 80.6 | 4.91 | 127.5 | 5.02 | 65 | 2.56 | 200 | 2900 | 220 | 3190 | 240 | 3480 | 350 | 2500 |

*Values of pressure with configuration with Shaft 38-Flange P2 on the displacement 55-64-72, due to max Torque of 250 Nm. Displacement 80 not available.

ⓘ Max Speed must be lowered by 10% for system working continuously at p_1 pressure. Max pressure must be lowered by 10% for birectional pump.



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PG330 with Pump 2PE or 2PGE piggy back pump - Dimensions



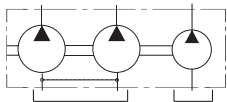
⚠ Recommended to limit the inflow of the downstream pump at 30 l/min MAX to avoid cavitation. Only for common suction port configuration:
Commercial code UA.

| TYPE | Displacement | | Dimension A | | Dimension C (Front and Back pump) | | | | | | TYPE | Displacement | | Dimension A (2PGE-2PE) | | Dimension C (2PGE-2PE) | | |
|------------|----------------------|------------|-------------|------|-----------------------------------|------|-------------|------|---------------|------|-------------|----------------------|------------|------------------------|-------|------------------------|-------|------|
| | cm ³ /rev | cu.in./rev | mm | in | Type port G-R | | Type port P | | Type port W-S | | | cm ³ /rev | cu.in./rev | mm | in | mm | in | |
| | | | | | mm | in | mm | in | mm | in | | | | | | | | |
| PG330 - 23 | 23.4 | 1.43 | 72 | 2.83 | 35 | 1.38 | 35 | 1.38 | 33 | 1.30 | - | 2PE - 3.2 | 3.2 | 0.19 | 47.1 | 1.83 | 23.55 | 0.93 |
| PG330 - 28 | 28.6 | 1.74 | 76 | 2.99 | 38 | 1.49 | 34 | 1.34 | 36 | 1.42 | - | 2PE - 3.9 | 3.9 | 0.24 | | | | |
| PG330 - 34 | 34.4 | 2.10 | 80.5 | 3.17 | 42.5 | 1.67 | 37.5 | 1.48 | 40 | 1.57 | - | 2PE - 4.5 | 4.6 | 0.27 | | | | |
| PG330 - 40 | 40.3 | 2.46 | 85 | 3.35 | 47 | 1.85 | 42 | 1.65 | 44.5 | 1.75 | 2PGE - 6.5 | 2PE - 6.5 | 6.5 | 0.40 | 49.95 | 1.97 | 25 | 0.98 |
| PG330 - 47 | 47.4 | 2.89 | 96 | 3.78 | 50 | 1.97 | 50 | 1.97 | 50 | 1.97 | 2PGE - 8.3 | 2PE - 8.3 | 8.2 | 0.50 | 52.8 | 2.07 | 26.4 | 1.04 |
| PG330 - 55 | 55.2 | 3.37 | 102 | 4.02 | 56 | 2.20 | 52 | 2.05 | 56 | 2.20 | - | 2PE - 10.5 | 10.6 | 0.65 | 56.3 | 2.35 | 28.15 | 1.11 |
| PG330 - 64 | 64.3 | 3.92 | 109 | 4.29 | 58 | 2.28 | 58 | 2.28 | 58 | 2.28 | 2PGE - 11.3 | 2PE - 11.3 | 11.5 | 0.68 | 59.7 | 2.35 | 29.75 | 1.17 |
| PG330 - 72 | 73.4 | 4.48 | 116 | 4.57 | 61 | 2.40 | 61 | 2.40 | 61 | 2.40 | - | 2PE - 12.5 | 12.7 | 0.77 | | | | |
| PG330 - 80 | 80.6 | 4.91 | 122 | 4.80 | 65 | 2.56 | 65 | 2.56 | 65 | 2.56 | 2PGE - 13.8 | 2PE - 13.8 | 13.8 | 0.84 | 63.5 | 2.5 | 31.75 | 1.25 |
| | | | | | | | | | | | 2PGE - 16 | 2PE - 16 | 16.6 | 1.01 | 67.5 | 2.65 | 33.75 | 1.25 |
| | | | | | | | | | | | 2PGE - 19 | 2PE - 19 | 19.4 | 1.15 | 75.6 | 2.97 | 37.80 | 1.49 |
| | | | | | | | | | | | 2PGE - 22.5 | 2PE - 22.5 | 22.9 | 1.37 | 81 | 3.19 | 40.5 | 1.59 |
| | | | | | | | | | | | 2PGE - 26 | 2PE - 26 | 25.8 | 1.58 | 86.8 | 3.42 | 43.4 | 1.71 |

ⓘ 2PE and 2PGE can be single or multiple and/or with built in valve in the rear cover.

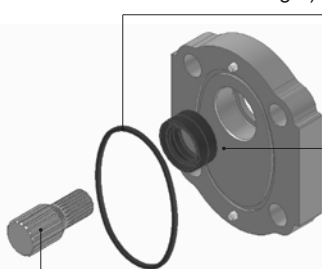
ⓘ Available AS configuration

| Part Number |
|--|
| Multiple pumps kit with separated stages for different fluid (2 tanks) - Code AS |
| R15190010 (NBR) |
| R15190011 (FPM) |



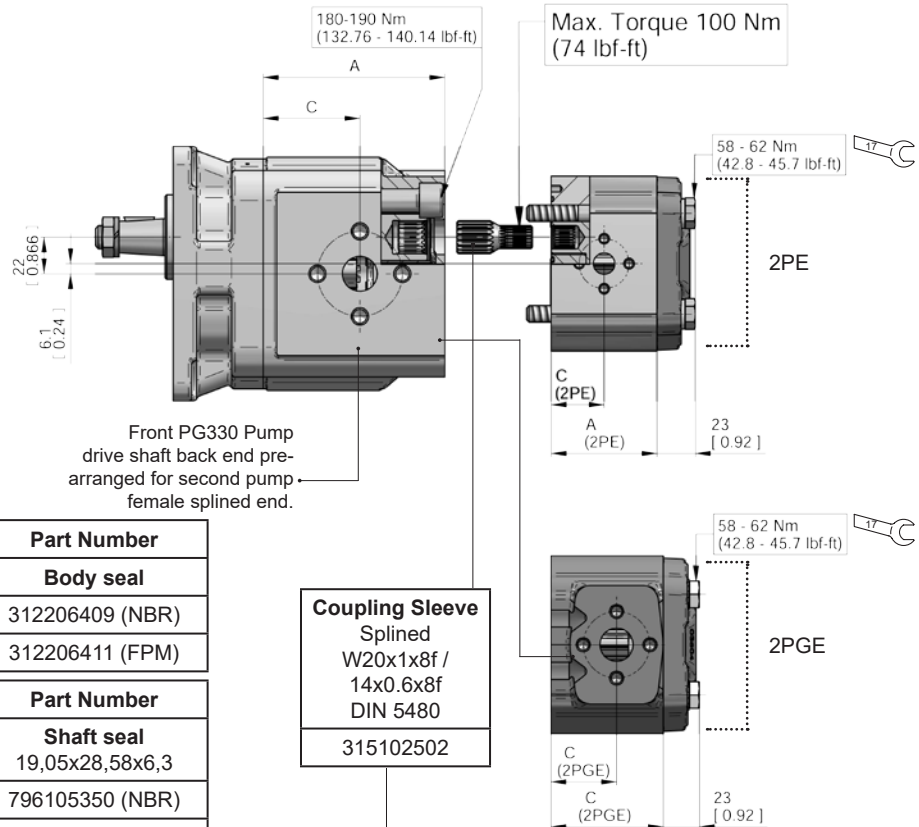
MULTIPLE GEAR PUMPS with separated stages

(Example: Code AS2= Separated inlet between second and third stage.)



| Part Number |
|--------------------|
| Body seal |
| 312206409 (NBR) |
| 312206411 (FPM) |
| Part Number |
| Shaft seal |
| 19,05x28,58x6,3 |
| 796105350 (NBR) |
| 796105340 (FPM) |

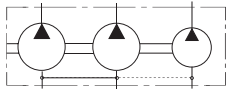
| Part Number |
|------------------------|
| Coupling Sleeve |
| Splined |
| W20x1x8f / 14x0.6x8f |
| DIN 5480 |
| 315102502 |



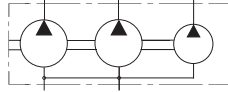
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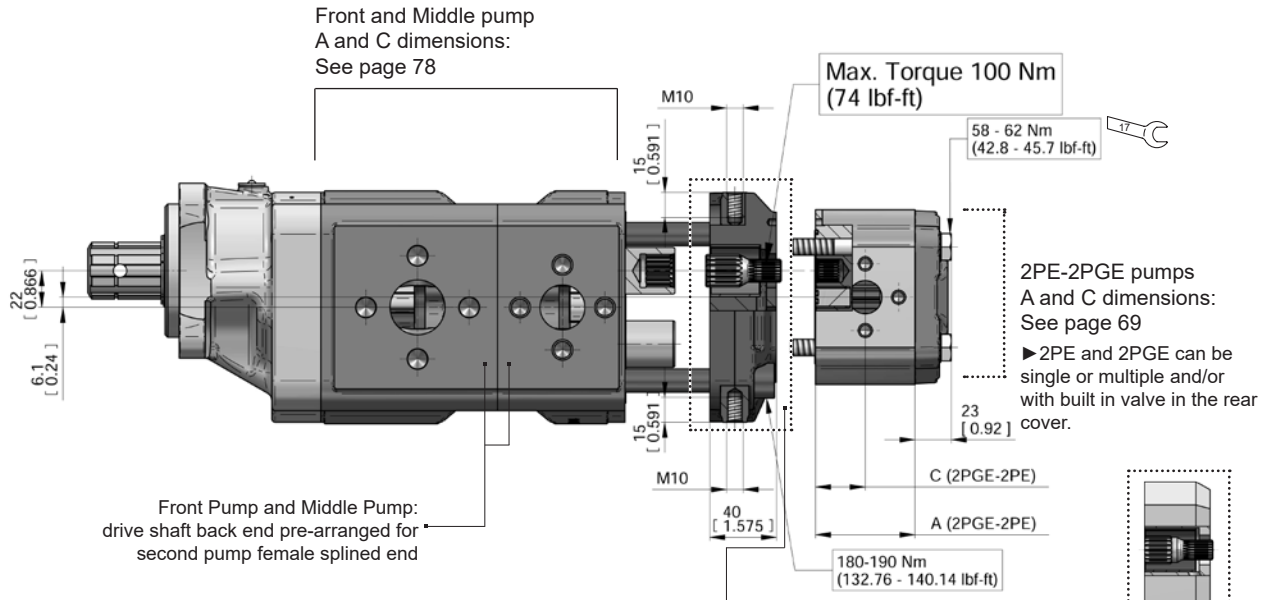
PG330 Multiple with Pump 2PE or 2PGE piggy back pump - Dimensions



MULTIPLE GEAR PUMPS
with individual inlet port



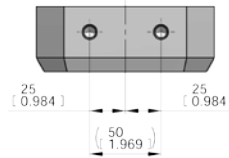
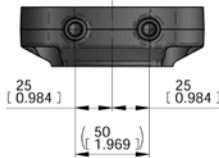
MULTIPLE GEAR PUMPS
with common inlet port on first two stages



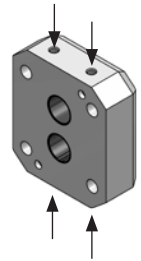
| Part Number | |
|----------------------------------|----------------------------------|
| Multiple pumps kit | |
| R15160050 (Displ. from 23 to 40) | R15160060 (Displ. from 47 to 80) |



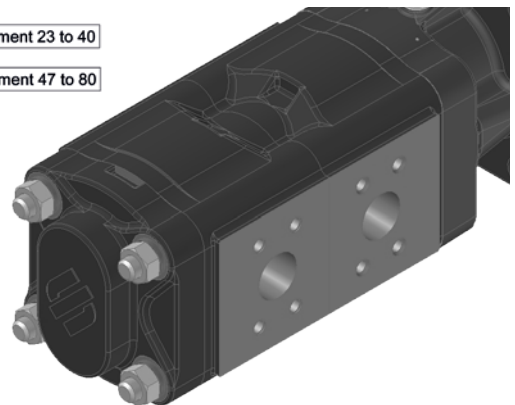
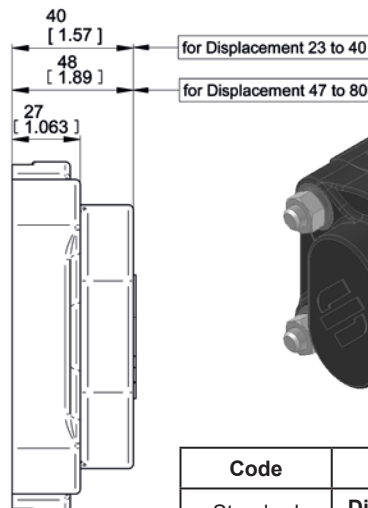
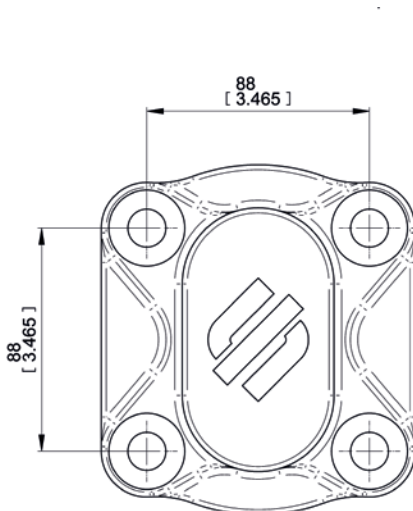
Top and bottom
fixing holes (M10)
for pump support.



Top and bottom
fixing holes (M10)
for pump support.

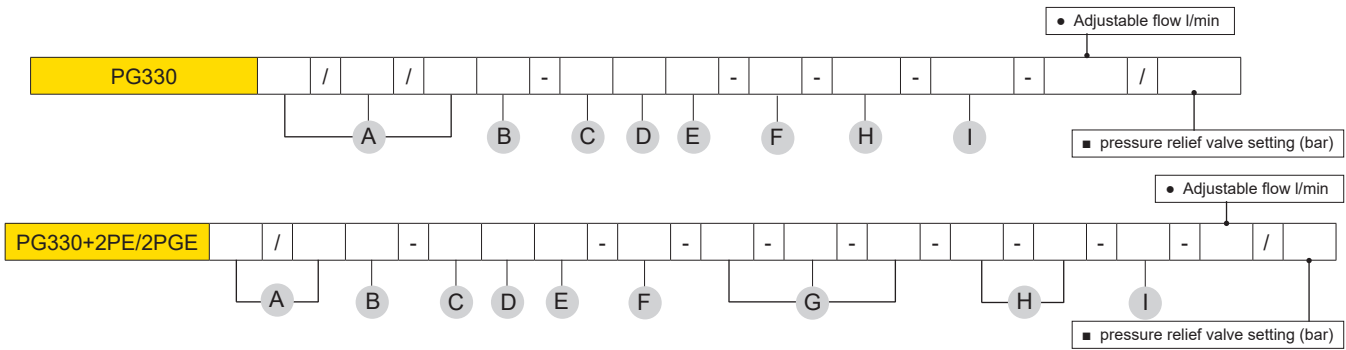


Rear Cover - Dimensions



| Code | Part Number | |
|----------------|----------------------|----------------------|
| | Displ. from 23 to 40 | Displ. from 47 to 80 |
| Standard Cover | R15003501 | R15003508 |

EO.151.0721.14.00IM00



| A | CODES | DISPLACEMENTS | |
|---|-------|----------------------------|-----------------|
| | 23 | 23.4 cm ³ /rev. | 1.43 cu.in/rev. |
| | 28 | 28.6 cm ³ /rev. | 1.74 cu.in/rev. |
| | 34 | 34.4 cm ³ /rev. | 2.1 cu.in/rev. |
| | 40 | 40.3 cm ³ /rev. | 2.46 cu.in/rev. |
| | 47 | 47.5 cm ³ /rev. | 2.89 cu.in/rev. |
| | 55 | 55.2 cm ³ /rev. | 3.37 cu.in/rev. |
| | 64 | 64.3 cm ³ /rev. | 3.92 cu.in/rev. |
| | 72 | 73.4 cm ³ /rev. | 4.48 cu.in/rev. |
| | 80 | 80.6 cm ³ /rev. | 4.91 cu.in/rev. |

| B | ROTATION | CODES |
|---|----------------|-------|
| | Clockwise | D |
| | Anti-clockwise | S |
| | Reversible | R |

| C | PORTS (page 61) | CODES |
|---|---|-------|
| | Flanged ports european standard | P |
| | Flanged ports SAE J518 Metric thread | W |
| | Flanged ports SAE J518 American standard thread | S |
| | Threaded ports GAS (BSPP) | G |
| | Threaded ports SAE (ODT) | R |

| D | DRIVE SHAFT (page 64) | CODES |
|---|--|-------|
| | Tapered 1:8 | 38 |
| | SAE B splined 13T | 55 |
| | SAE BB splined 15T | 56 |
| | SAE B PARALLEL | 87 |
| | SAE BB PARALLEL | 88 |
| | SAE C 14T-12/24DP Continental Shaft | 58 |
| | 8x32x36 UNI 8953 splined Continental Shaft | 67 |
| | SAE C 14T-12/24DP Continental Shaft | 57 |
| | 8x32x36 UNI 8953 splined Continental Shaft | 66 |
| | SAE C PARALLEL Continental Shaft | 89 |

| I | FLANGES AND REAR COVERS (page 71) | CODES |
|---|---|---------|
| | Priority flow valve with excess flow to 2nd actuator | • VP1 |
| | Priority flow valve with excess flow to 2nd actuator with main relief valve | ■ VPS1 |
| | Load sensing priority valve with dinamic signal | • VPD1 |
| | Load sensing priority valve with dinamic signal and main relief valve | ■ VPDS1 |
| | Adjustable main relief valve | ■ VS |
| | Internal drain valve (Flange) | IDV |
| | Lateral drain on P2 (Flange European standard) | LD |

| H | INLET PORTS | CODE |
|---|---|------|
| | Separated stages: Pump with separated stages for different fluid (2 tanks) Code 1-2 or 3 correspond to the body where Kit AS is mounted. NOT AVAILABLE FOR MULTIPLE PUMP PG330 | AS |
| | Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. Code 1 - 2 or 3, correspond to the body where inlet is located. | UA |

| G | COMBINATION WITH 2PE or 2PGE (page 80) |
|---|---|
| | 2PE or 2PGE Piggy back configuration: Displacement - Port type |

| F | SEAL | CODE |
|---|--|------|
| | Buna standard (standard configuration) | - |
| | Viton | V |

| E | MOUNTING FLANGES (page 66) | CODES |
|---|--------------------------------|-------|
| | European standard Ø50.8 | P2 |
| | SAE B 2-4 BOLTS | S3 |
| | SAE C 2-4 BOLTS | S4 |
| | SAE B 2-4 BOLTS (Medium Loads) | R3 |
| | SAE C 2-4 BOLTS (Heavy Loads) | R8 |
| | 4 BOLTS FOR ZF GEAR | Z1 |
| | 4 Bolts for ZF gear box | Z2 |

How to order Multiple pump: PG330 40/28D, ports European (P), drive shaft (38), mounting flange (P2) **PG330-40/28D-P38P2**.
How to order Multiple or Triple pump with 2PE: PG330 47/28D, 2PE 8.3/6.5, ports European (P), drive shaft (55), mounting flange (S3), **PG330-47/28D-P55S3-2PE8.3/6.5**.

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