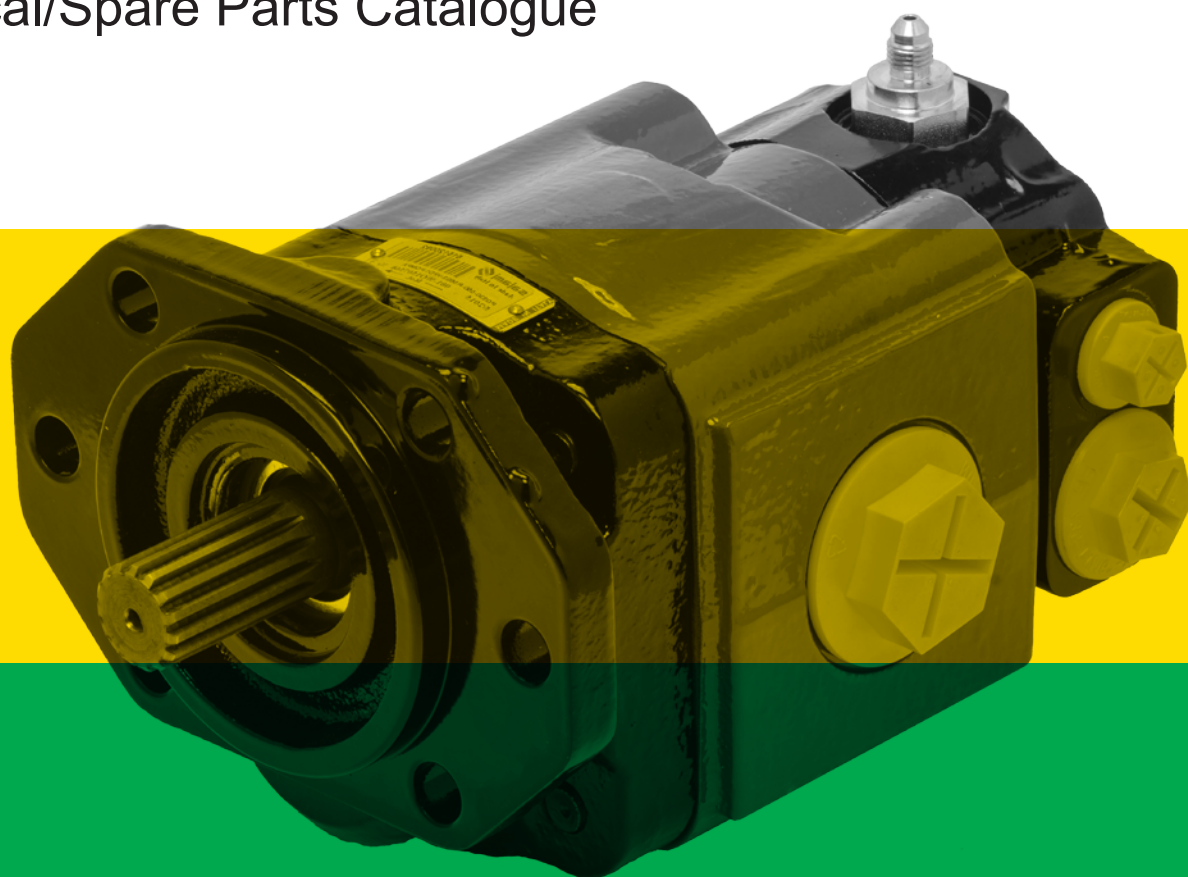


High Pressure Gear Pumps and Motors

Cast Iron Gear Housing

Technical/Spare Parts Catalogue

E0.100.0725.02.01IM03



COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

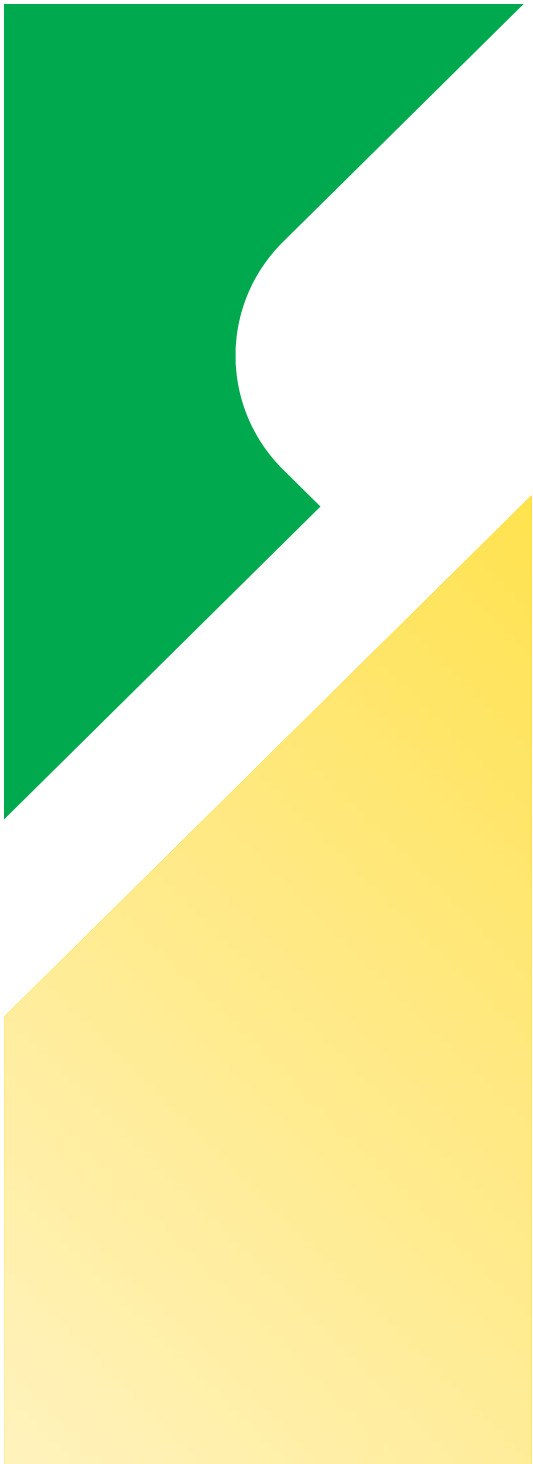


salami 
FLUID POWER SYSTEMS

Final revised edition - July 2025

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If any doubts, please contact our sales department.



Contents

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PG330 53

PG331 89

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.

High Pressure Gear Pumps

Cast Iron Gear Housing:
2PGE/PG330/PG331

Features

E0.100.0725.02.01IM03



2PGE and PG330/331 Features

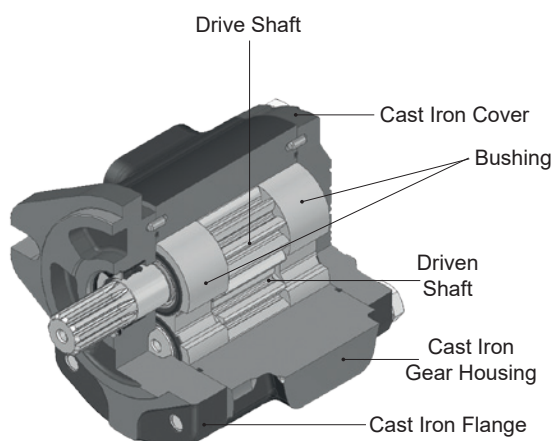
The PG330/PG331 and 2PGE Series Cast Iron Pumps has been specifically designed for high flow applications, demanding peak performance and long life in extreme operating conditions. PG330 optimized for high volume and for OEM's customers. Displacements available:

2PGE: 6.5 cm³/rev to 28.1 cm³/rev (from 0.40 cu.in/rev to 1.71 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)

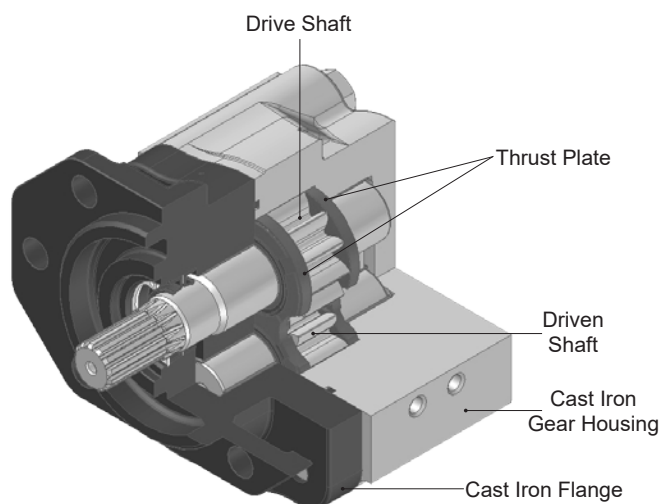
Several options of shafts, flanges and ports as for European, German and American standards are available for all the pumps.

- 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.

EO.100.0725.02.01M03



PG331 Features

PG331

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

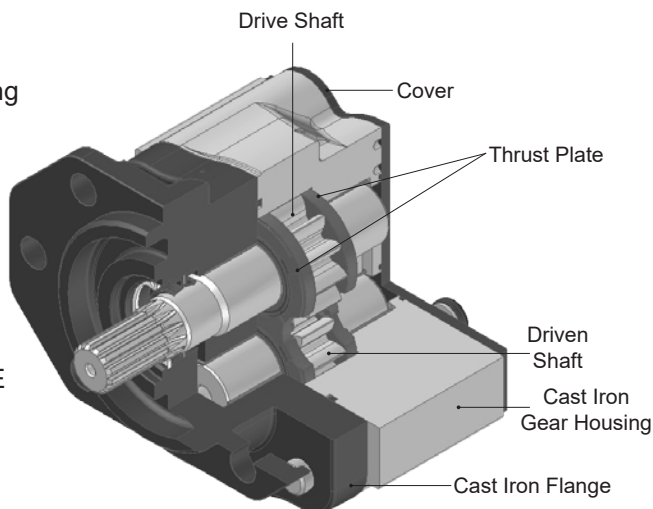
Sharing the same features with PG330:

- dimensions;
- working conditions;
- ports type, flanges and drive shafts.

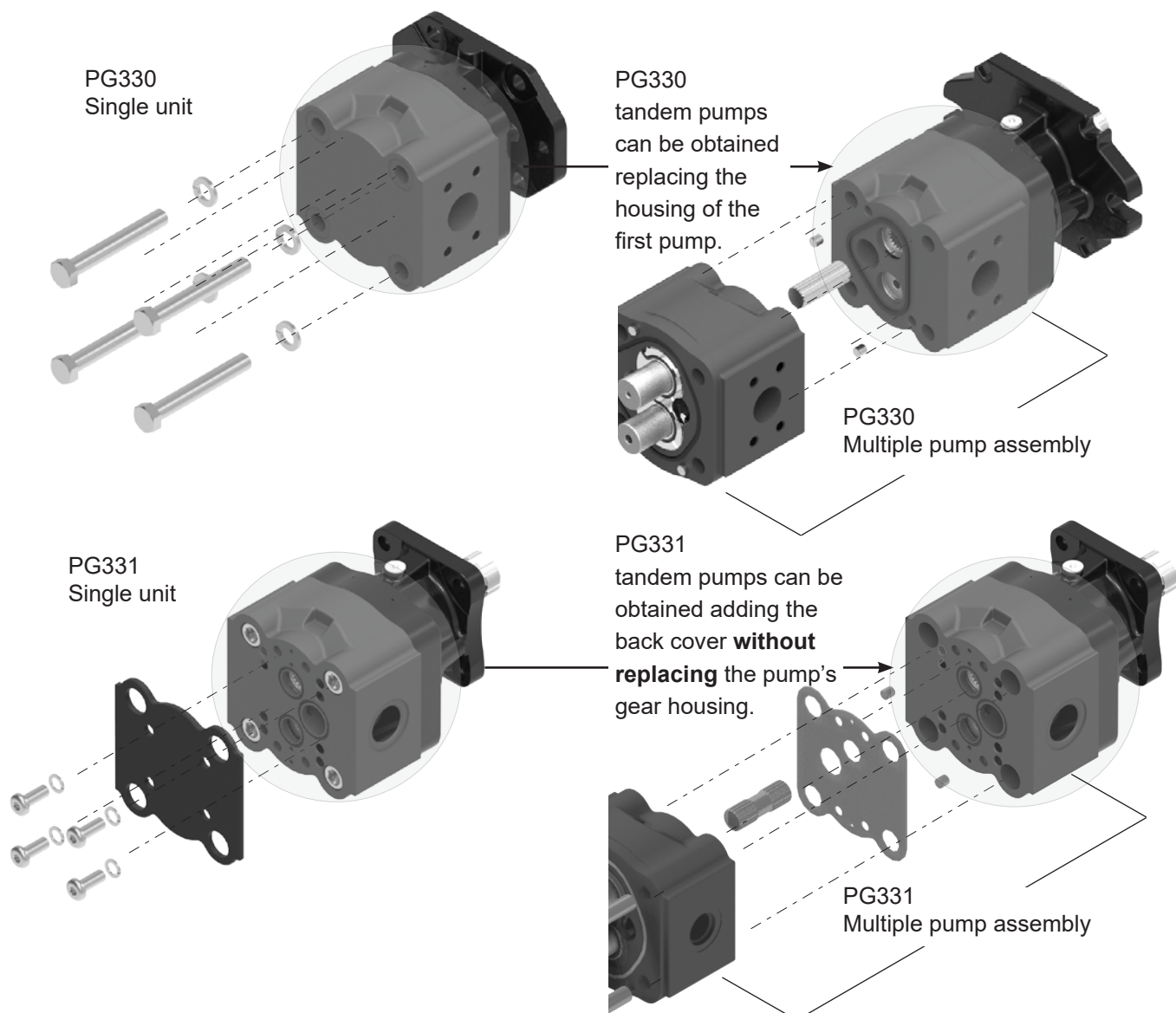
Is available in single, double (also with 2PE or 2PGE piggy back pump), triple and quadruple version.



Please see PG331 Product manual at page 87



PG330/331 Pump assembly

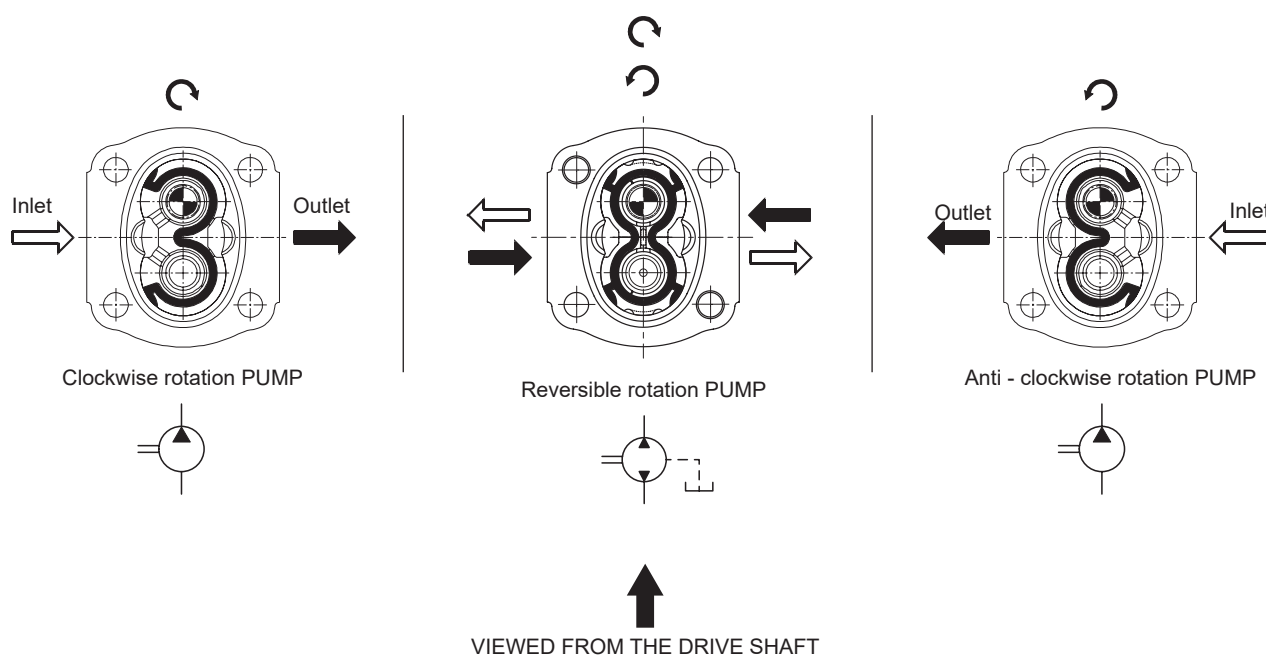


EO.100.0725.02.01IM03

Radial And Axial Loads

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

EO.100.0725.02.01M03



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

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

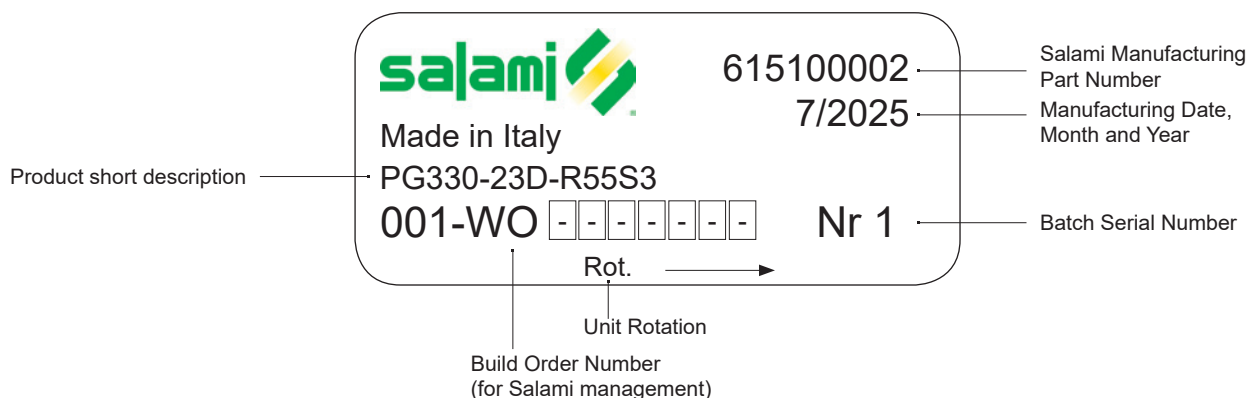
$$P = \text{Input power} = \frac{q \cdot n \cdot \Delta p \cdot 10^{-3}}{600 \eta_m} \text{ (kW)}$$

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

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



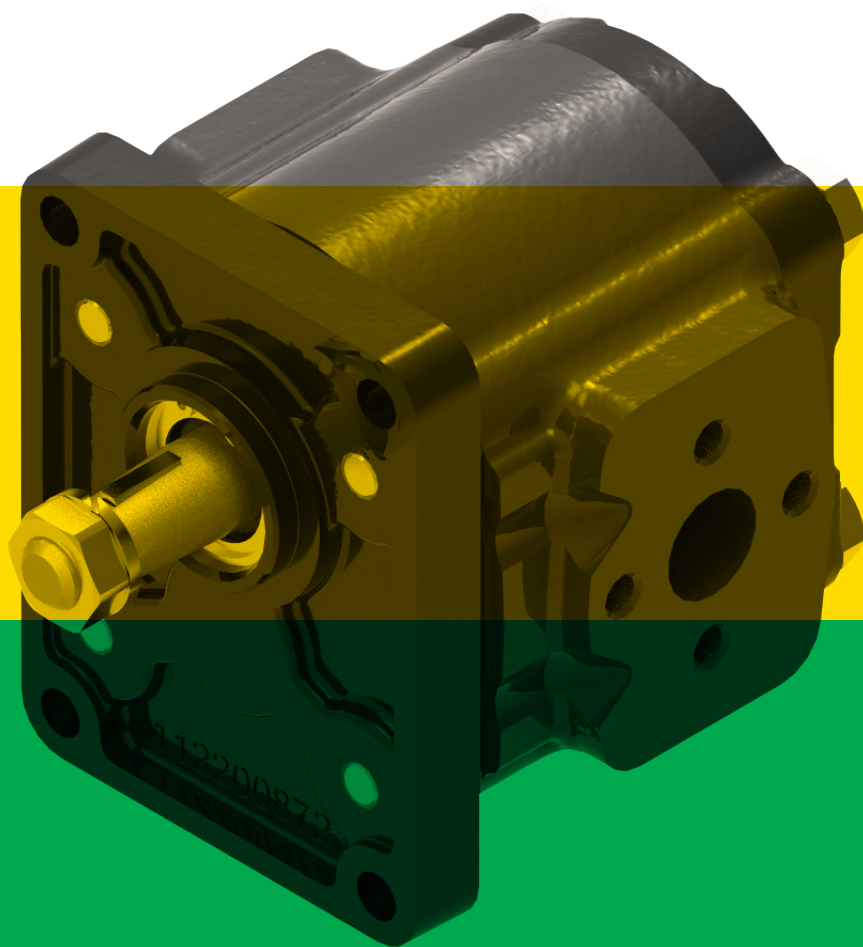
EO.100.0725.02.01M03

2PGE

High Pressure Cast Iron Gear Pumps

Technical/Spare Parts Catalogue

E0.146.0725.14.00IM03



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ISO 9001

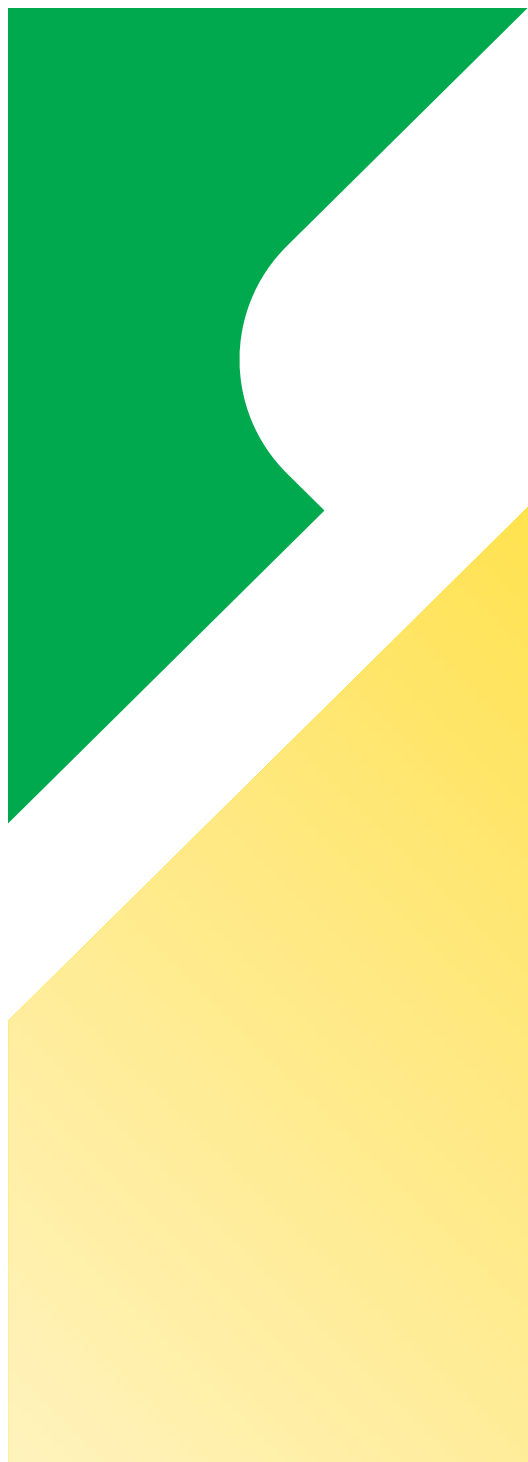


salami 
FLUID POWER SYSTEMS [®]

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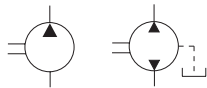
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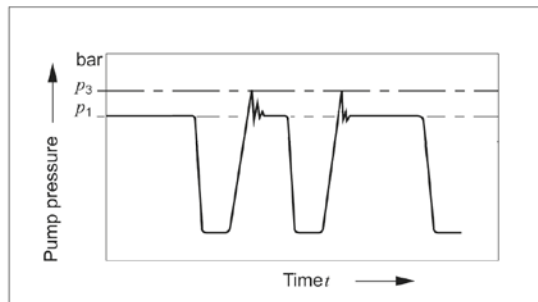
2PGE Single Pump - Dimensions and Technical Data



Displacements up to 28.1 cm³/rev - 1.71 cu.in./rev
Pressure up to 320 bar - 4650 psi

TYPE	Displacement		Dimension A		Dimension C		Max. Continuous pressure p ₁		Peak pressure p ₃		Min. speed at p ₁	Max. speed at p ₁	Weight	
	cm ³ /rev	cu.in./rev	mm	in	mm	in	bar	psi	bar	psi	rpm		kg	lbs
2PGE - 6.5	6.5	0.40	49.95	1.97	25	0.98	300	4350	320	4650	600	4000	4.8	10.58
2PGE - 8.3	8.3	0.51	52.8	2.07	26.4	1.04	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	300	4350	320	4650	500	3500	5.2	11.46
2PGE - 13.8	14	0.85	63.5	2.50	31.75	1.25	300	4350	320	4650	500	3500	5.4	11.90
2PGE - 16	16.6	1.01	67.5	2.65	39.5	1.56	300	4350	320	4650	500	3000	6.6	14.55
2PGE - 19	19.4	1.18	75.6	2.97	39.5	1.56	300	4350	320	4650	500	3000	7.1	15.65
2PGE - 22.5	22.9	1.37	81	3.19	47.5	1.87	280	4060	300	4350	500	2750	7.5	16.53
2PGE - 26	26.7	1.63	86.8	3.42	47.5	1.87	260	3750	280	4060	500	2500	7.8	17.20
2PGE - 28	28.1	1.71	89	3.50	48	1.89	230	3335	250	3625	500	2500	8.0	17.64

⚠ Max pressure must be lowered by 10% for bi-directional pump.



Definition of Pressures

p₃ = Peak pressure

p₁ = Max. Continuous pressure

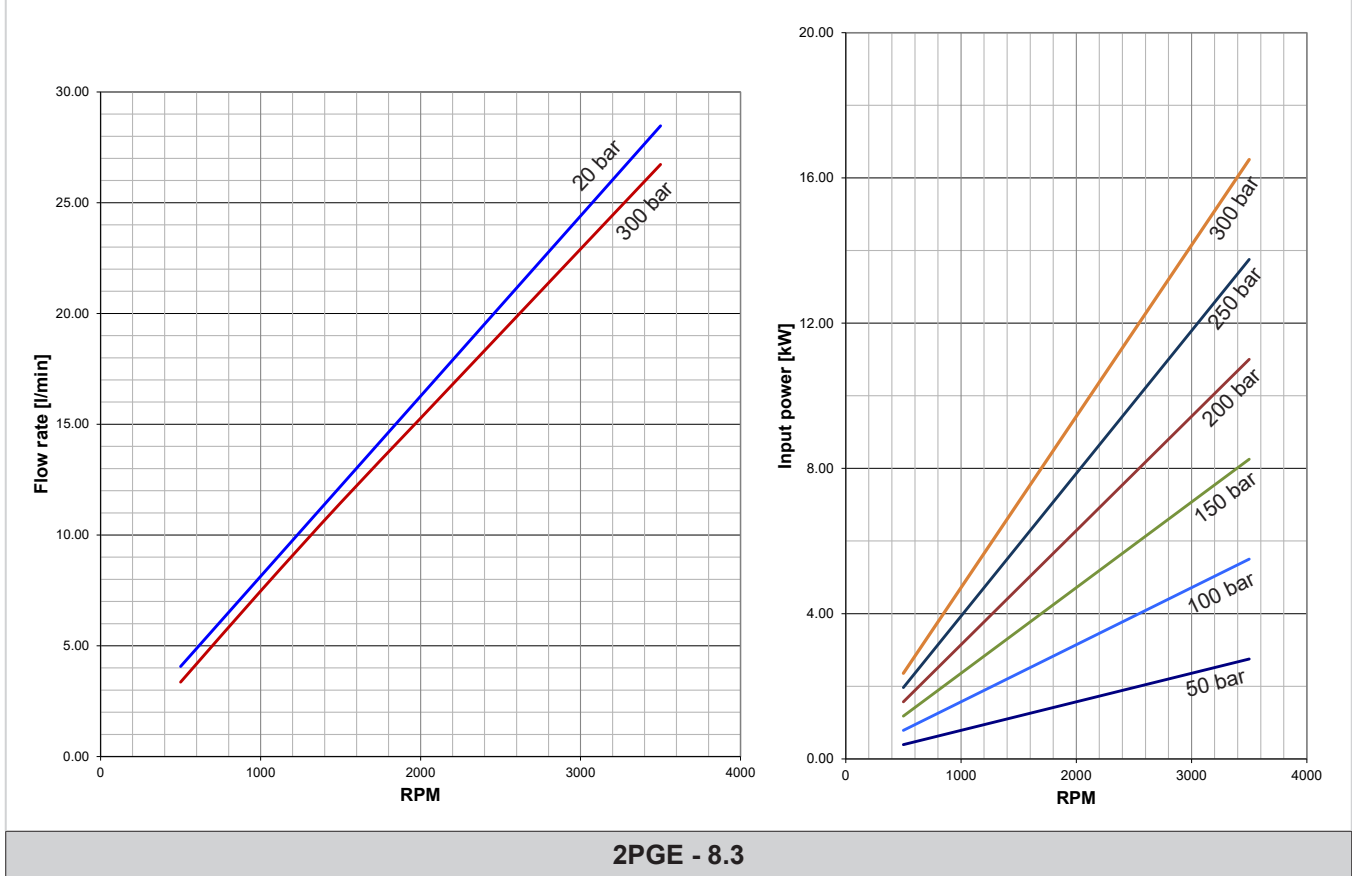
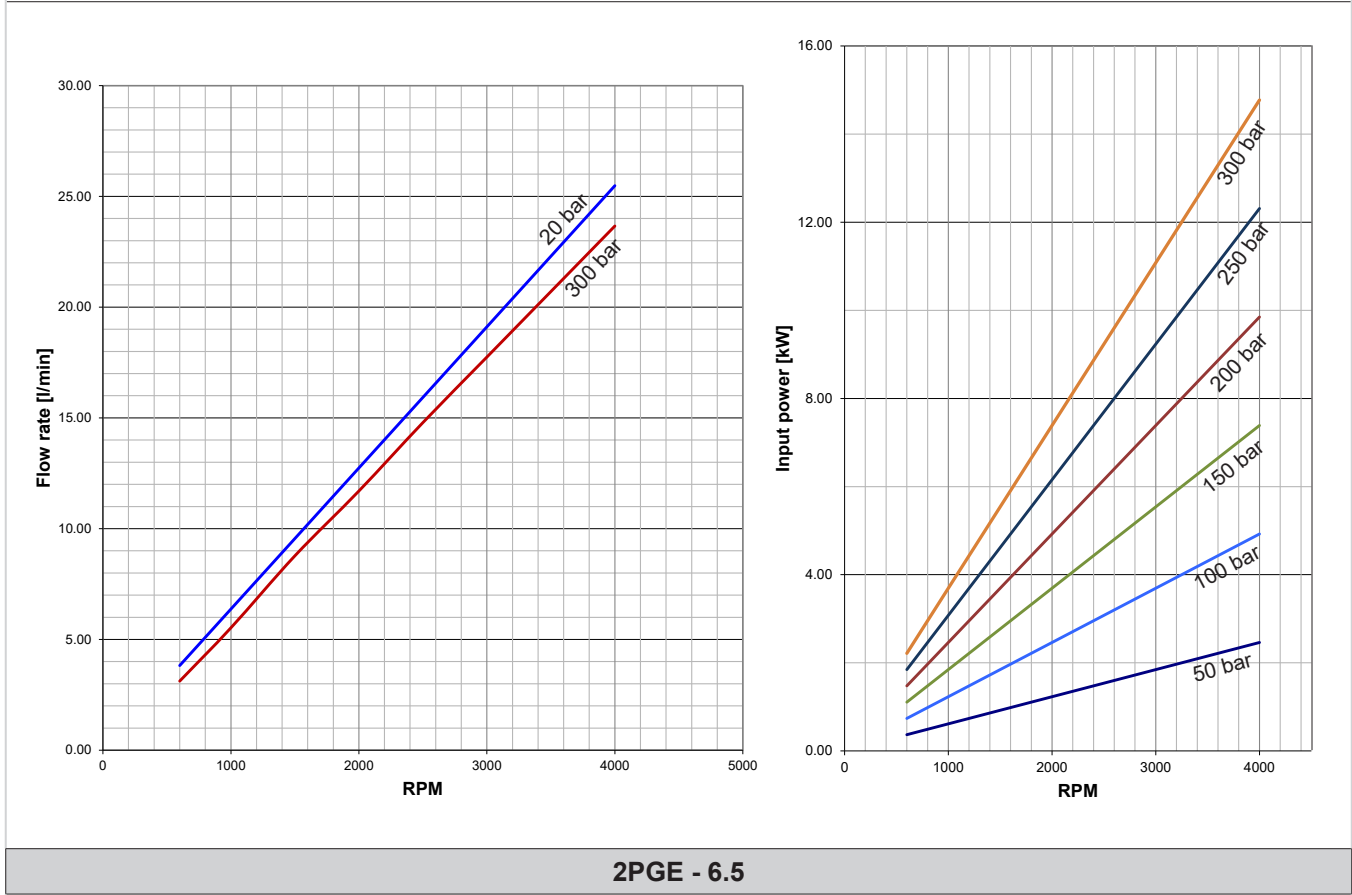
From Displacement 6.5 to 13.8	For flanges code: P1-B1-S2-S3, this dimension is 19 mm (0.75 in.) B4-B5-C1, this dimension is 16.5 mm (0.65 in.)					
	From Displacement 16 to 28					

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Pump Performance Charts

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

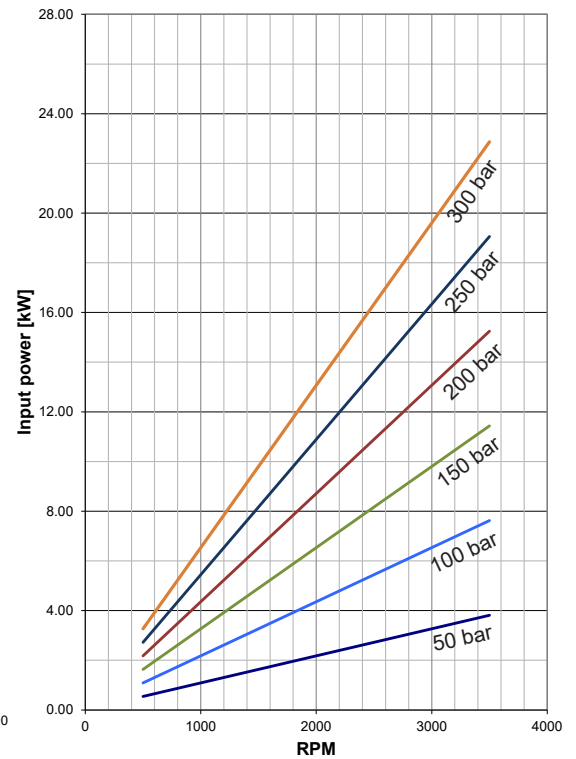
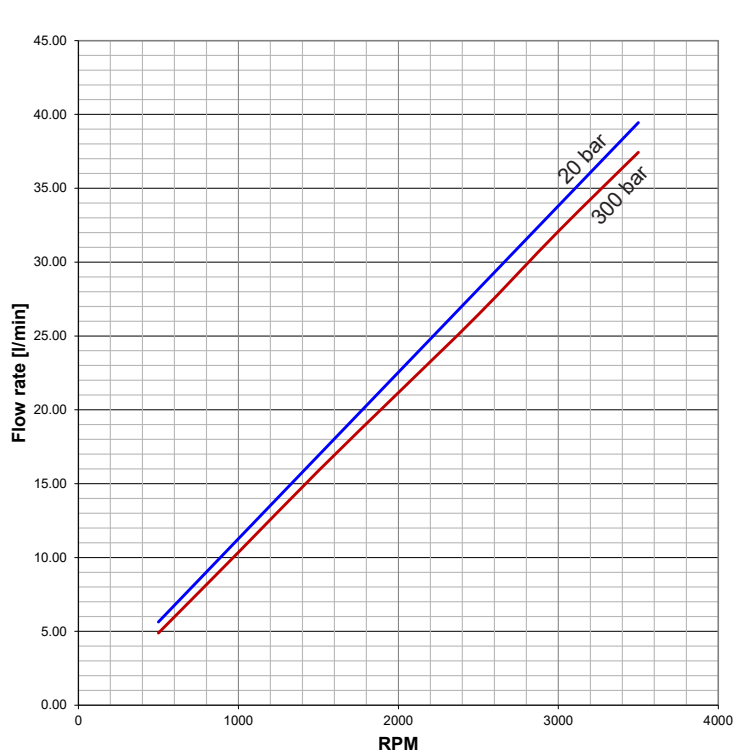


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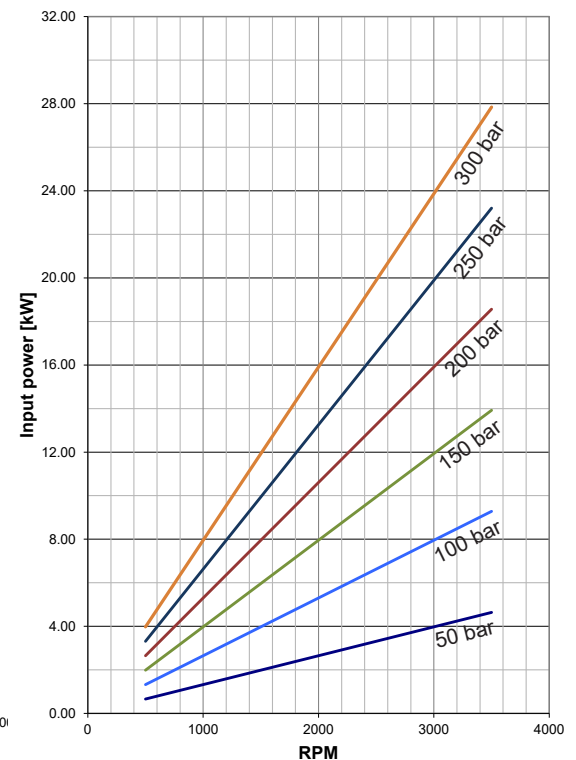
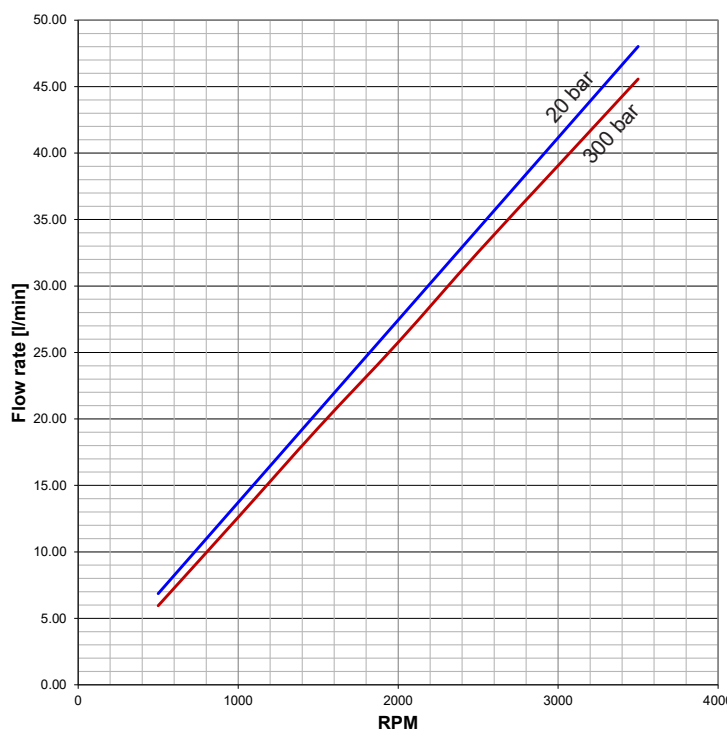


Pump Performance Charts

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



2PGE - 11.3



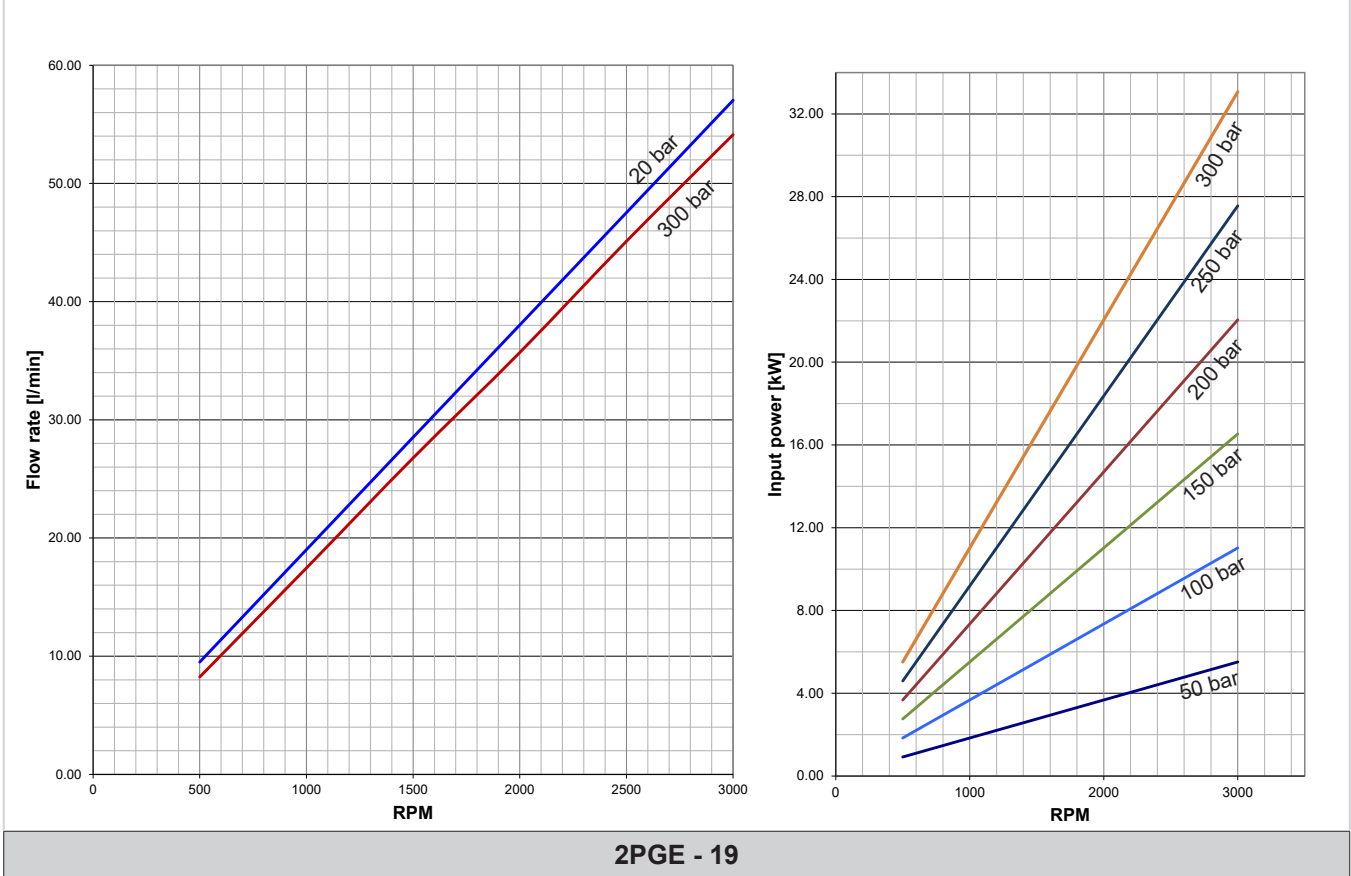
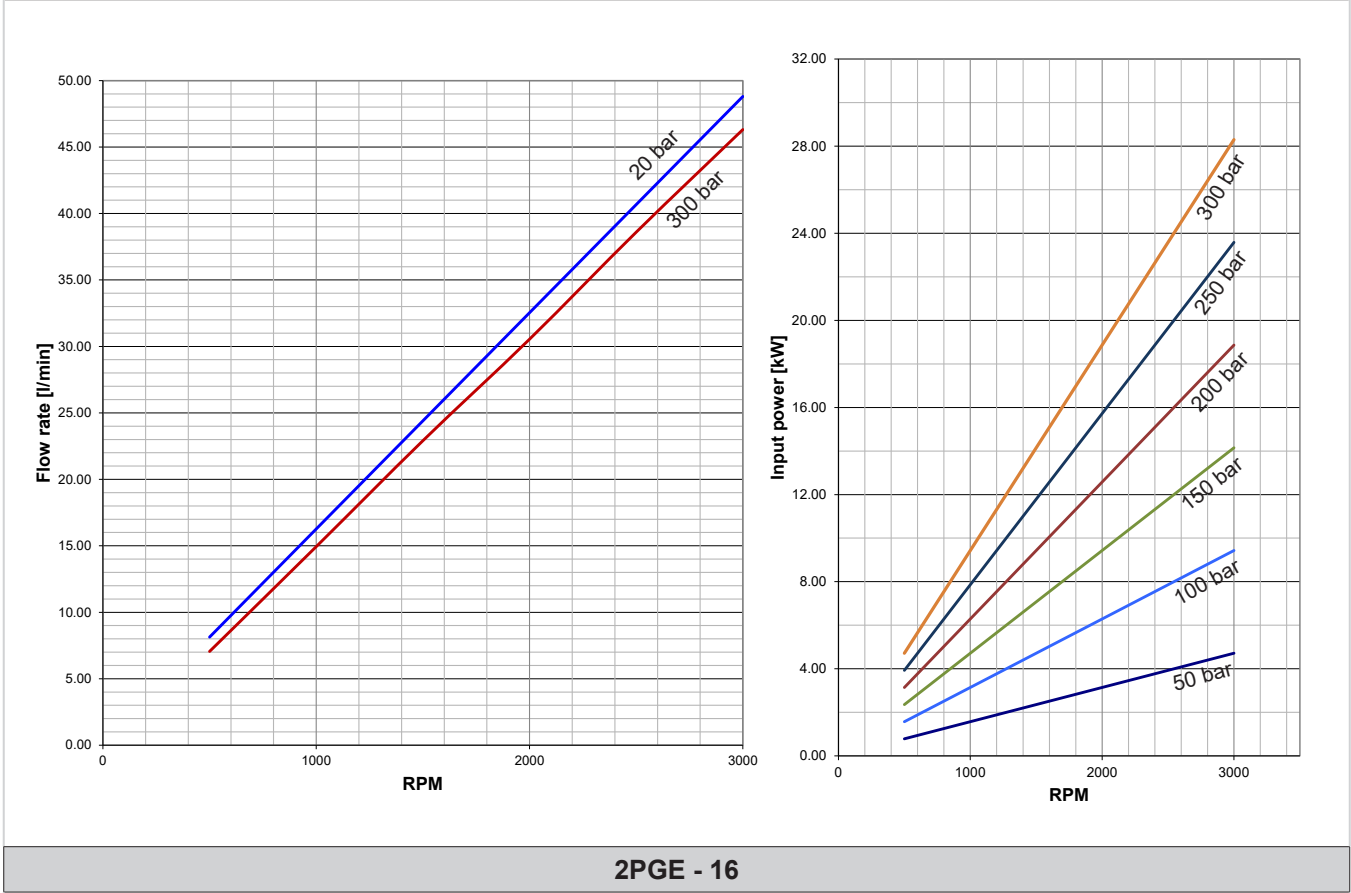
2PGE - 13.8

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Pump Performance Charts

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

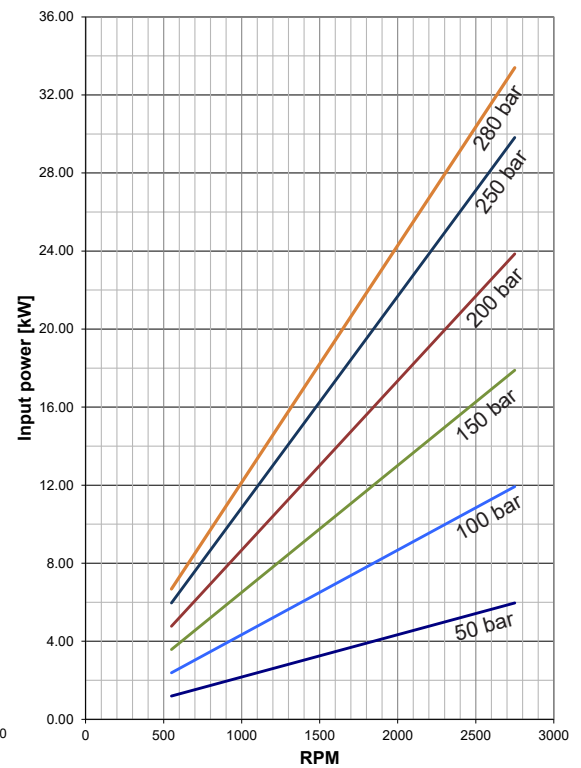
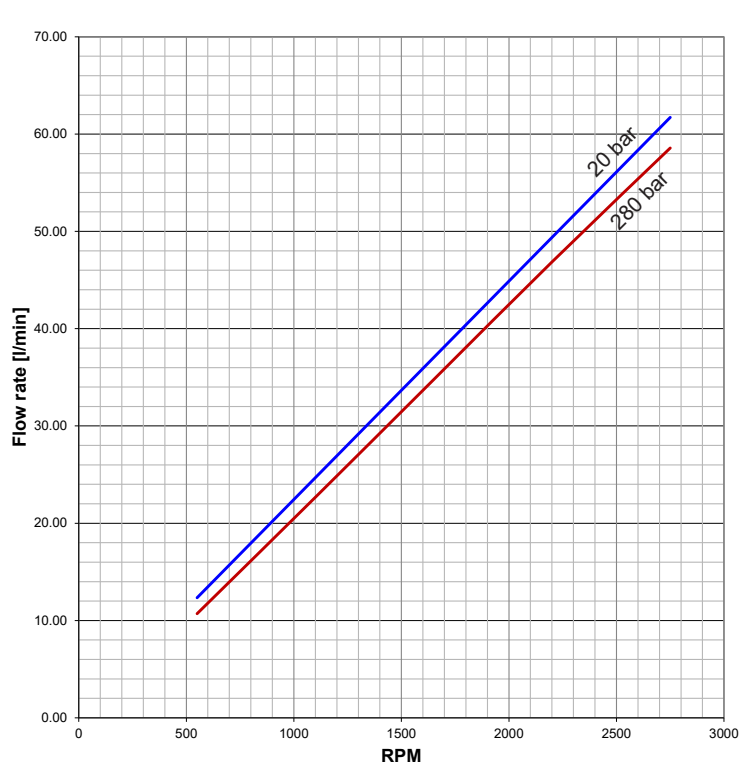


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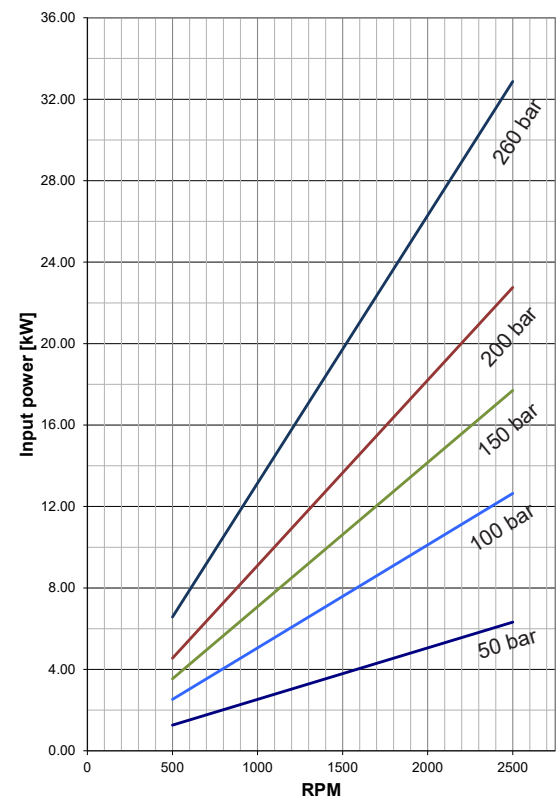
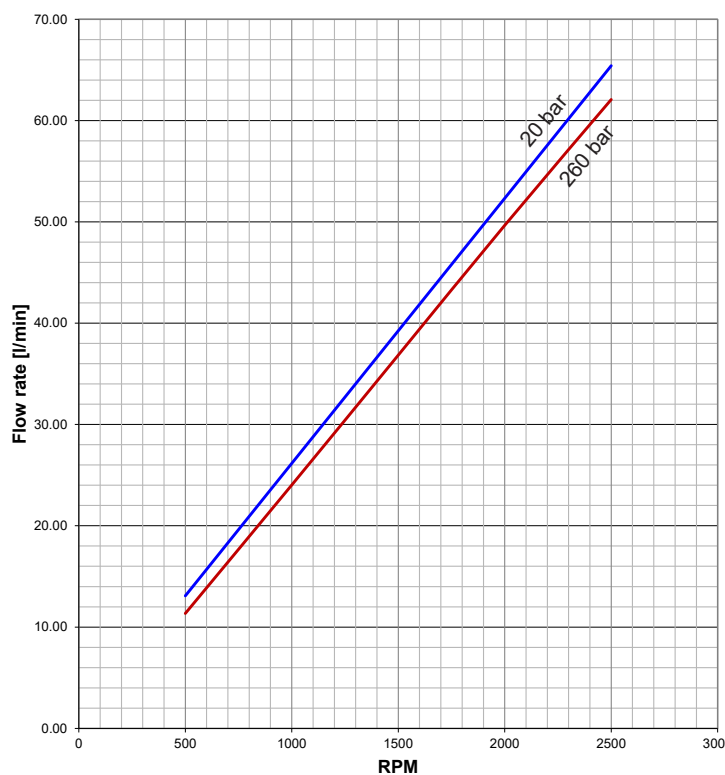


Pump Performance Charts

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



2PGE - 22.5

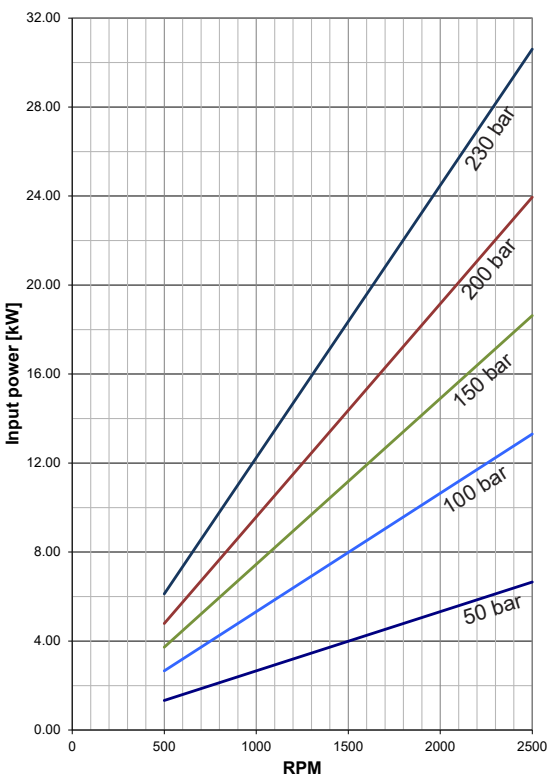
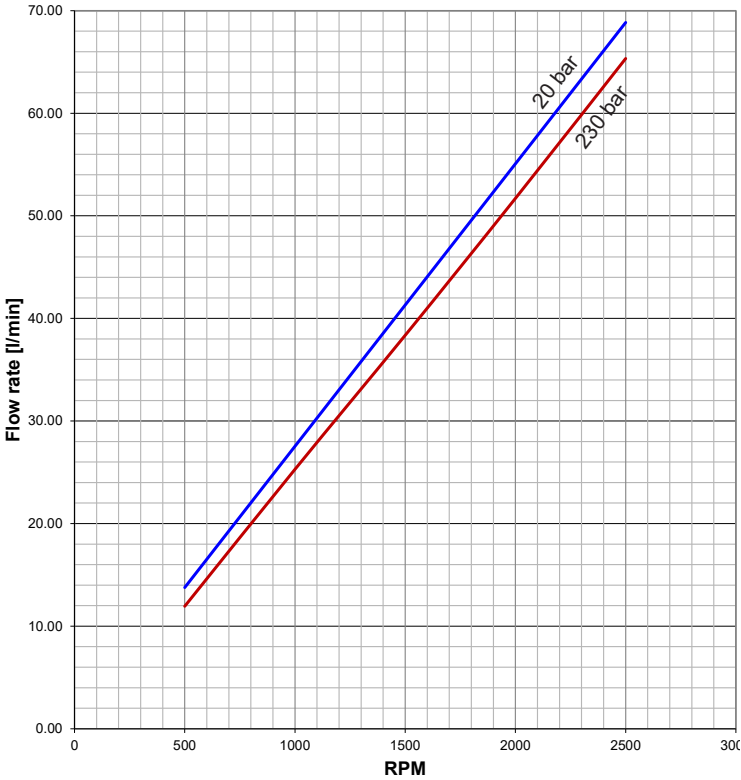


2PGE - 26

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Pump Performance Charts

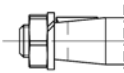
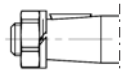
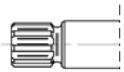
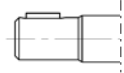
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



2PGE - 28

EO.146.0725.14.00IM03

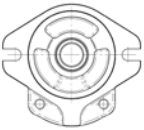
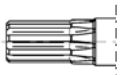
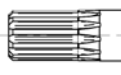
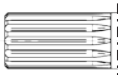
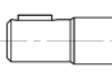
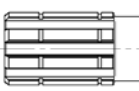


Shaft and Flange Combinations					
2PGE					
	CODE P1	CODE B1	CODE B2-B3	CODE B4-B5	CODE C1
	FLANGES				
SHAFT	 CODE 03		03B2 03B3		
	 CODE 04			04B4 04B5	
	 CODE 25	25B1		25B4 25B5	
	 CODE 28	28P1			
	 CODE 62	62P1	62B1	62B4 62B5	62C1
	 CODE 82	82P1			

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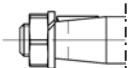
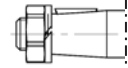
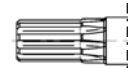
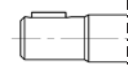
Shaft and Flange Combinations

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		
	 CODE 67					67Z2
CONTINENTAL SHAFT	 CODE 73				73T1	

EO.146.0725.14.00IM03



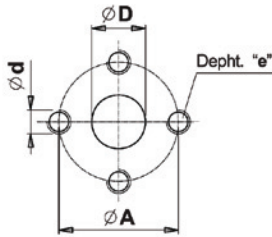
Continental Shaft and Flange With Outrigger Bearing Combinations

2PGE							
	CODE CL	CODE CF	CODE CS	CODE CB	CODE CP	CODE CSB	CODE Z1
	FLANGES WITH OUTRIGGER BEARING						
CONTINENTAL SHAFTS	 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

EO.146.0725.14.00IM03



Flanged Ports



code P

Flanged ports
european standard

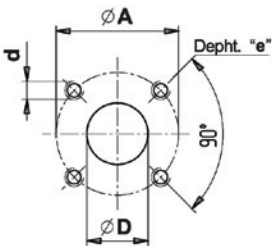
M6	8 Nm (5.9 lbf-ft)
M8	20 Nm (14.7 lbf-ft)



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")
From 26 to 28	22 (0.87")							



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 28	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

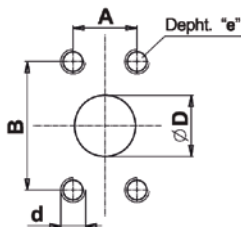
M6	8 Nm (5.9 lbf-ft)
----	-------------------



UNI-DIRECTIONAL								
PUMPS	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")							
28	25 (0.98")	55 (2.17")	M8	13 (0.51")				



BI-DIRECTIONAL								
PUMPS	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 28	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	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 28	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")

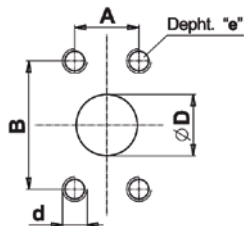


BI-DIRECTIONAL										
PUMPS	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 28	19 (0.75")	47.6 (1.87")	22.2 (0.87")	M10	15 (0.59")	19 (0.75")	47.6 (1.87")	22.2 (0.87")	M10	15 (0.59")

EO.146.0725.14.00IM03



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)

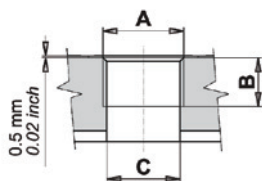


UNI-DIRECTIONAL										
PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 19	19 (0.75")	47.6 (1.87")	22.2 (0.87")	3/8-16 UNC	15 (0.59")	12.7 (0.50")	38.1 (1.50")	17.5 (0.69")	5/16-18 UNC	15 (0.59")
From 22.5 to 28	25.4 (1.00")	52.4 (2.06")	26.2 (1.03")	3/8-16 UNC	15 (0.59")	19 (0.75")	47.6 (1.87")	22.2 (0.87")	3/8-16 UNC	15 (0.59")



BI-DIRECTIONAL										
PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 28	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)

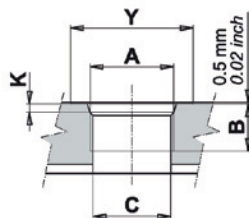
G1/2	60 Nm (44.3 lbf-ft)
G3/4	90 Nm (66.4 lbf-ft)
G1	130 Nm (95.8 lbf-ft)



UNI-DIRECTIONAL						
PUMPS	INLET			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 28	G1	20 (0.79")	25 (0.98")			



BI-DIRECTIONAL						
PUMPS	INLET			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 28	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)



UNI-DIRECTIONAL										
PUMPS	INLET					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 28	1-5/16-12 UN (SAE 16)	19 (0.75")	25 (0.98")	49 (1.93")	3.3 (0.13")					

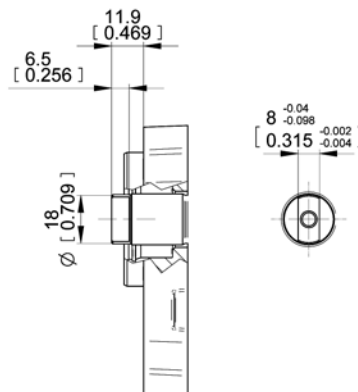
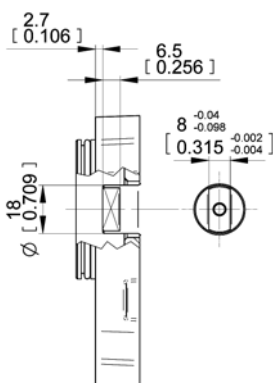
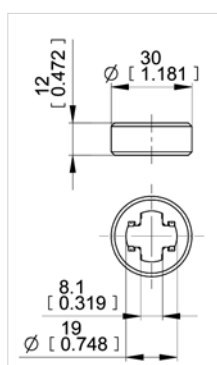


BI-DIRECTIONAL										
PUMPS	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 6.5 to 8.3	7/8-14 UNF (SAE 10)	17 (0.67")	13 (0.79")	34 (1.32")	2.5 (0.10")	7/8-14 UNF (SAE 10)	17 (0.67")	13 (0.79")	34 (1.32")	2.5 (0.10")
From 11.3 to 28	1-1/16-12 UN (SAE 12)	19 (0.75")	20 (0.79")	41 (1.61")	3.3 (0.13")	1-1/16-12 UN (SAE 12)	19 (0.75")	20 (0.79")	41 (1.61")	3.3 (0.13")

EO.146.0725.14.00IM03



Drive Shaft

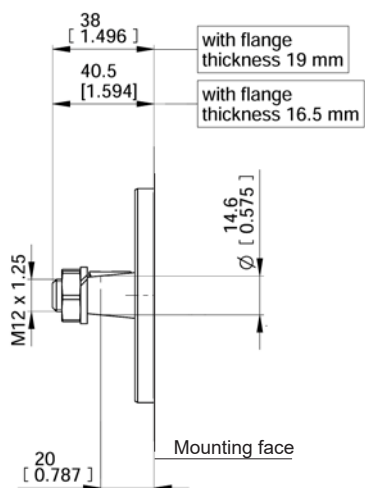


code 03

Max torque 70 Nm (620 lbf in)

Tang drive for electric motors (without shaft seal)

- 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

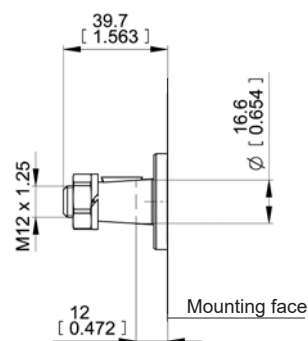
R12283030 (bearing version)

code 04

Max torque 70 Nm (620 lbf in)

Tang drive

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



Part Number

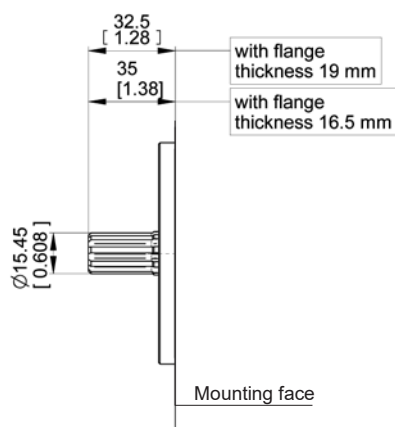
Kit Woodruff
Key+Nut+Washer

R12280170

code 25

Max torque 130 Nm (1151 lbf in)

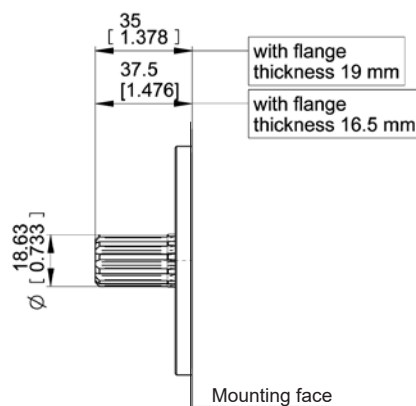
Tapered 1:5



code 28

Max torque 130 Nm (1151 lbf in)

Tapered 1:8



code 52

Max torque 110 Nm (974 lbf in)

SAE A 9T-16/32DP SPLINED

code 54

Max torque 160 Nm (1416 lbf in)

SAE A 11T-16/32DP SPLINED

EO.146.0725.14.00IM03

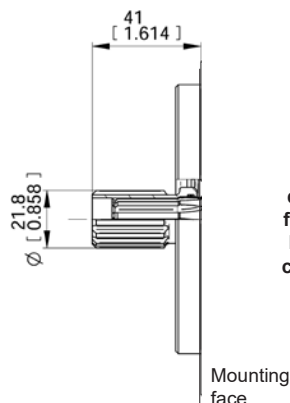


Drive Shaft

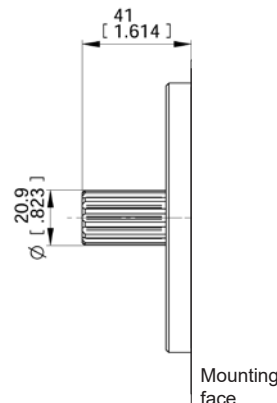
Part Number

Coupling
Sleeve+O ring

R12040210



for
displacements
from 6.5 to 13.8
Mounting with
coupling sleeve



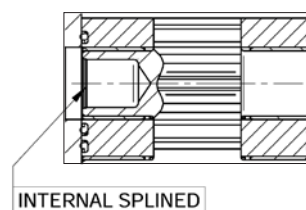
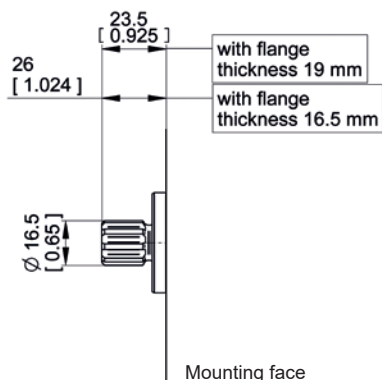
for
displacements
from 16 to 28
Mounting with
solid shaft.

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

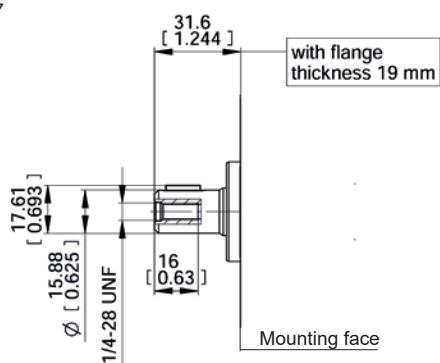
DIN 5480 internal splined (only for rear pumps)

Key
3,97x3.97x12,7

Part Number

Key

796620700

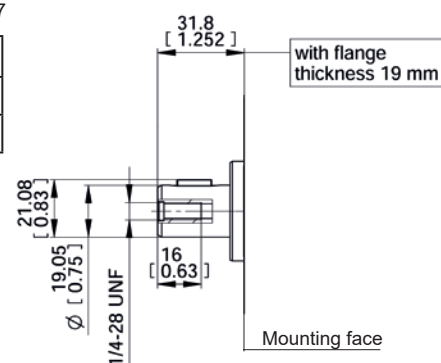


Key
4,76x4,76x12,7

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

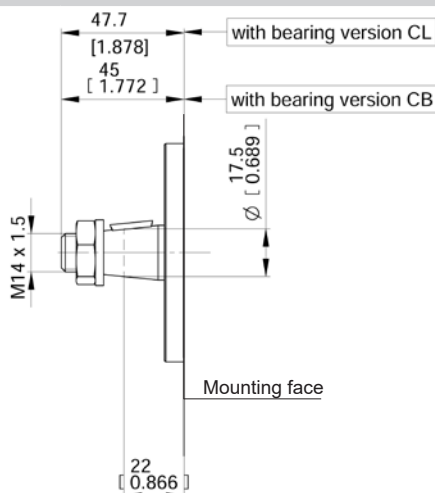
EO.146.0725.14.00IM03



Continental Shaft

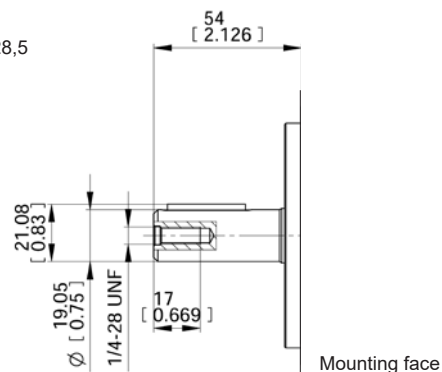
- Woodruff Key
4x6,5 UNI 6606
- Washer
M14 UNI 1751
- Nut
M14x1,5 ISO 8675
40 Nm-29.7 lbf-ft

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)

Tapered 1:5 (only for CB, CL)

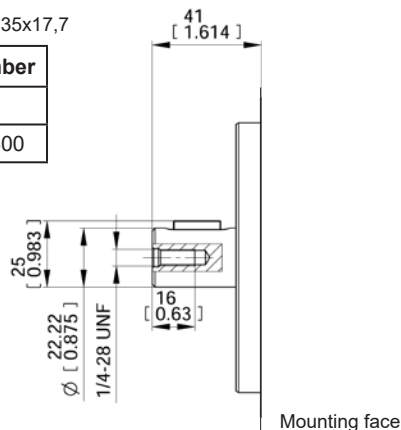
code 86

Max torque 100 Nm (885 lbt in)

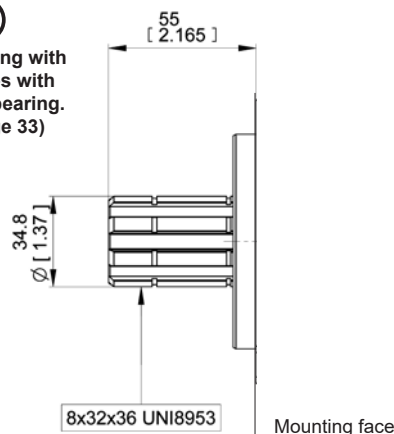
3/4" SAE A parallel

- Key
6,35x6,35x17,7

Part Number
Key
796620800



For mounting with
Z1 Flanges with
outrigger bearing.
(See page 33)



code 87

Max torque 200 Nm (1770 lbt in)

7/8" SAE B parallel

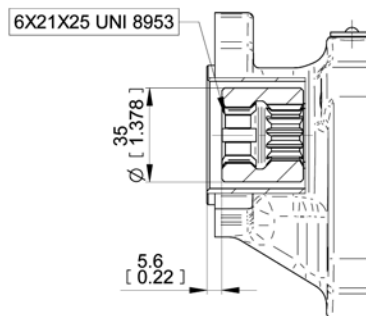
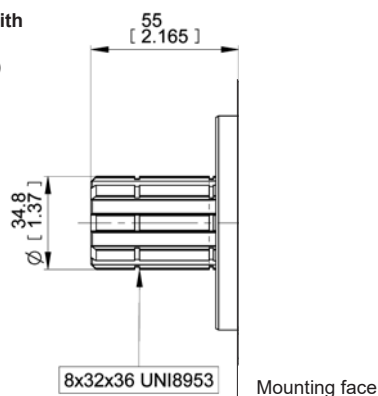
code 66

Max torque 200 Nm (1770 lbt in)

8x32x36 UNI 8953 SPLINED



For mounting with
Z2 Flanges.
(See page 28)



code 67

Max torque 200 Nm (1770 lbt in)

8x32x36 UNI 8953 SPLINED

code 73

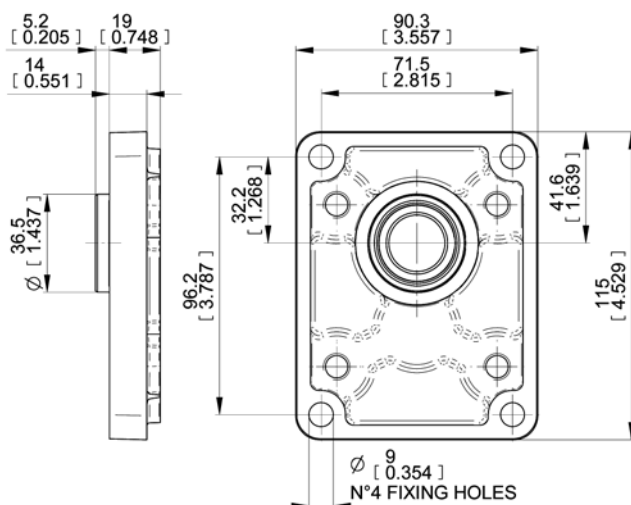
Max torque 200 Nm (1770 lbt in)

6x21x25 UNI 8953 INTERNAL SPLINED

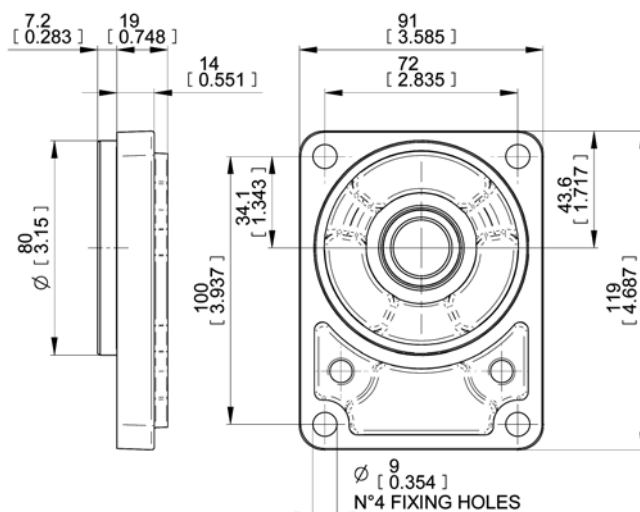
EO.146.0725.14.00IM03



Mounting Flanges



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

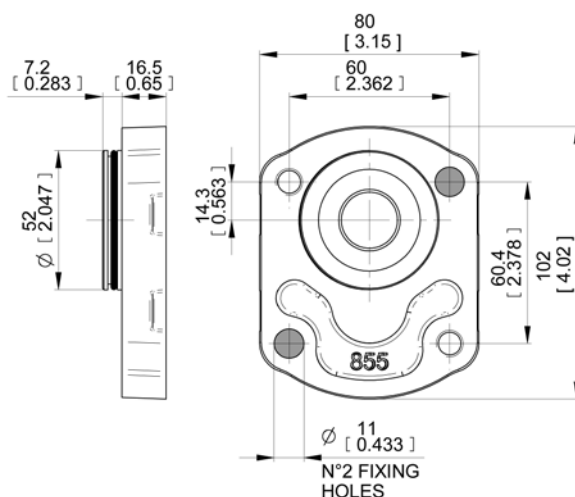
With shaft code 28-62-82

European standard

code B1

With shaft code 25-62

German standard

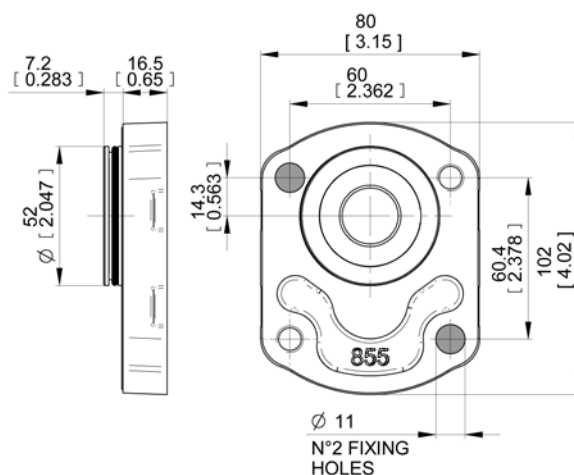


Code	Part Number (Unidirectional Pump)	
	Flange+O-ring	O-ring (OR3187-AT 47,29x2,62-NBR)
03B2	R12240050	799113400

code B2

With shaft code 03

German standard



Code	Part Number (Unidirectional Pump)	
	Flange+O-ring	O-ring (OR3187-AT 47,29x2,62-NBR)
03B3	R12240060	799113400

code B3

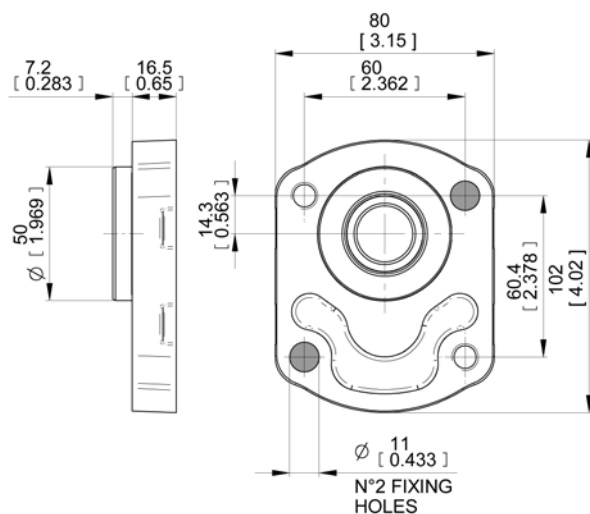
With shaft code 03

German standard

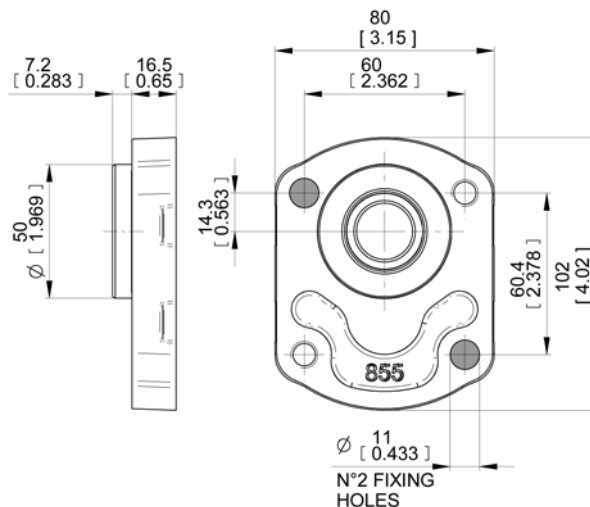
EO.146.0725.14.00IM03



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

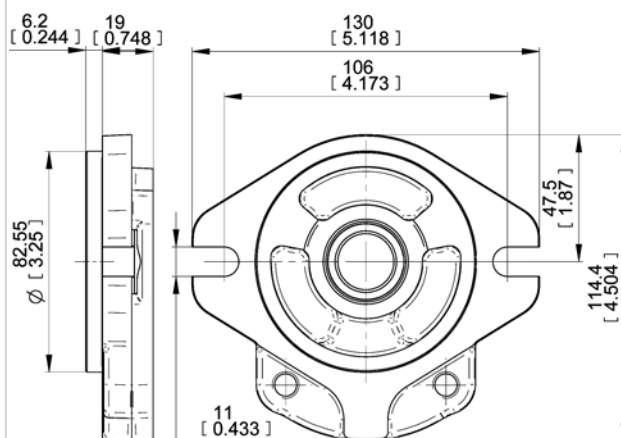
With shaft code 04-25-62

German standard

B5

With shaft code 04-25-62

German standard

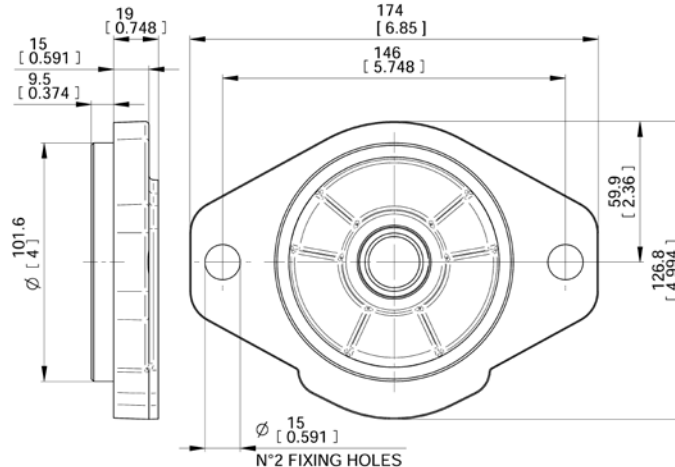


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
52S2	R14640100 (NBR)	R12240010 (NBR)
82S2	R14640101 (FPM)	R12240021 (FPM)
54S2	R14640110 (NBR)	R12240110 (NBR)
85S2	R14640111 (FPM)	R12240115 (FPM)

S2

With shaft code 52-54-82-85

SAE A 2 Bolts



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)

S3

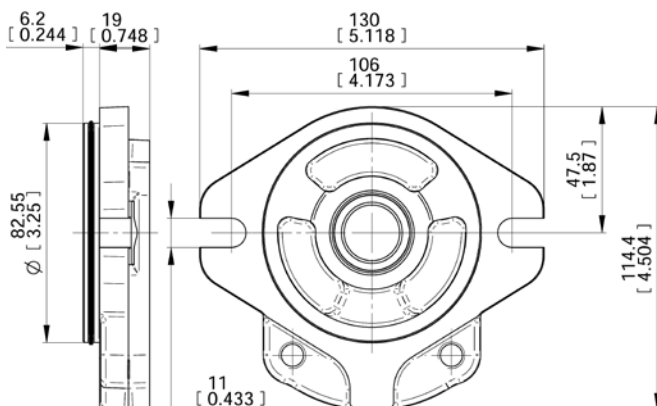
With shaft code 55

SAE B 2 Bolts

E0.146.0725.14.00IM03



Mounting Flanges

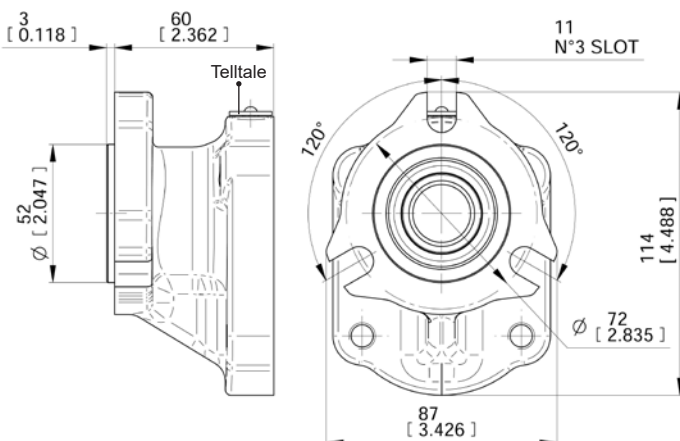


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
52S6	R14640020 (NBR)	R12240010 (NBR)
82S6	R14640021 (FPM)	R12240021 (FPM)
54S6	R14640022 (NBR)	R12240110 (NBR)
85S6	R14640023 (FPM)	R12240115 (FPM)

S6

With shaft code 52-54-82-85

SAE A 2 BOLTS (with O-ring on the centering collar)



Continental shaft 73 included.

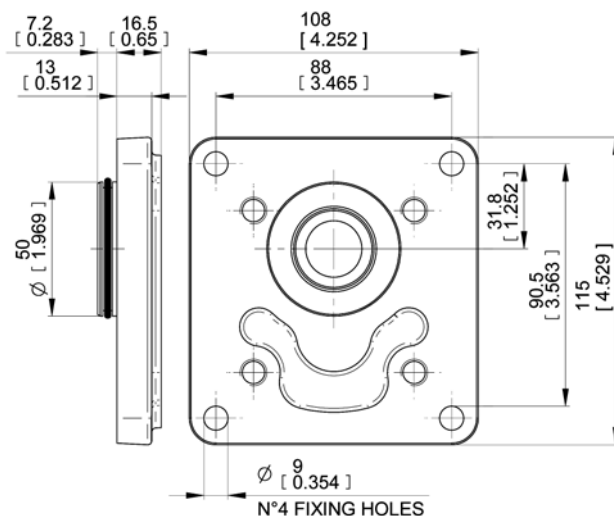


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
73T1	R14620030 (NBR) R14620031 (FPM)	R14640010 (NBR) R14640011 (FPM)

T1

With shaft code 73

3 Bolts UNI 8953 for gear box

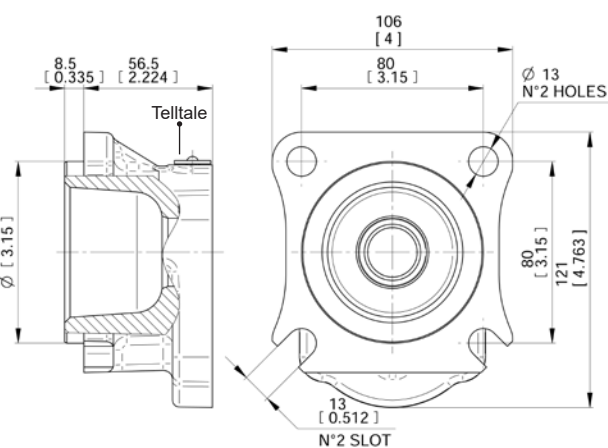


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
62C1	R12040300 (NBR) R12040301 (FPM)	R12240010 (NBR) R12240021 (FPM)

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.

Continental shaft 67 included.

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

Z2

With shaft code 67

4 Bolts for zf gear box

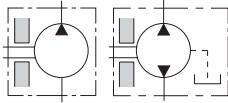
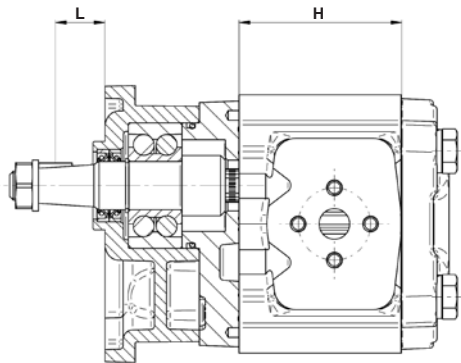
EO.146.0725.14.001M03



Mounting Flanges with Outrigger Bearing

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

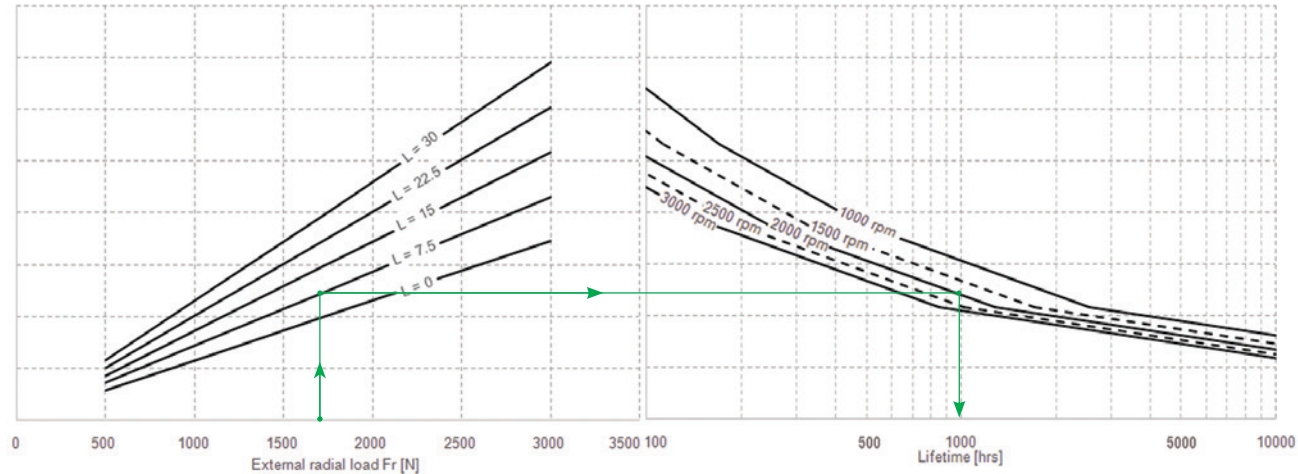
L=Distance between mounting flange and radial force point of application [mm-inches]



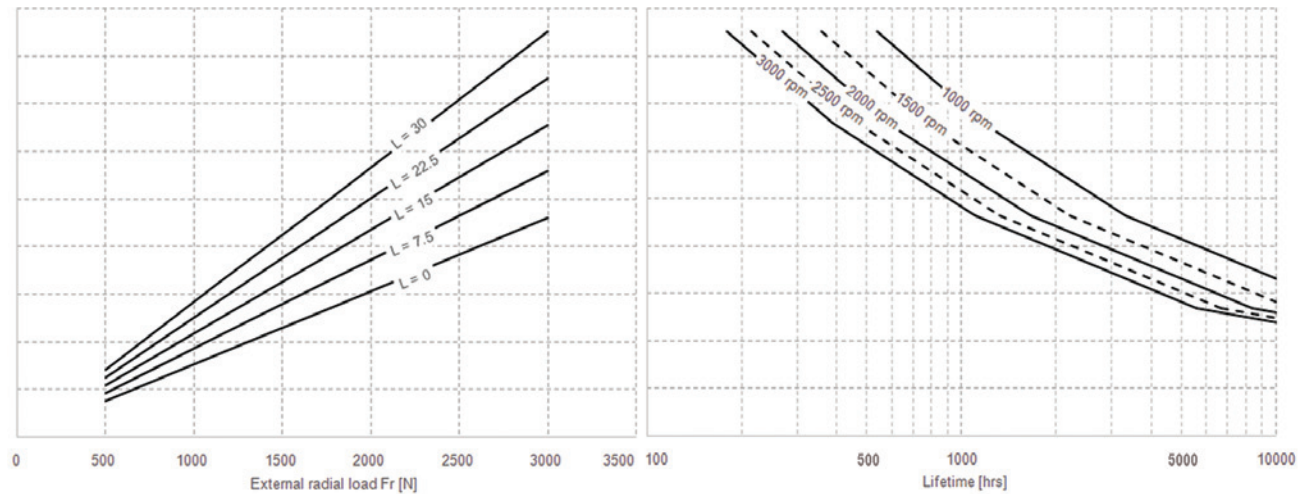
TYPE	H
6.5	49.95 (1.97")
8.3	52.8 (2.08")
11.3	59.7 (2.35")
13.8	63.5 (2.5")
16	67.5 (2.66")
19	75.6 (2.97")
22.5	81 (3.19")
26	86.6 (3.42")

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

For Code CP-CB-CL-CS



For Code CF

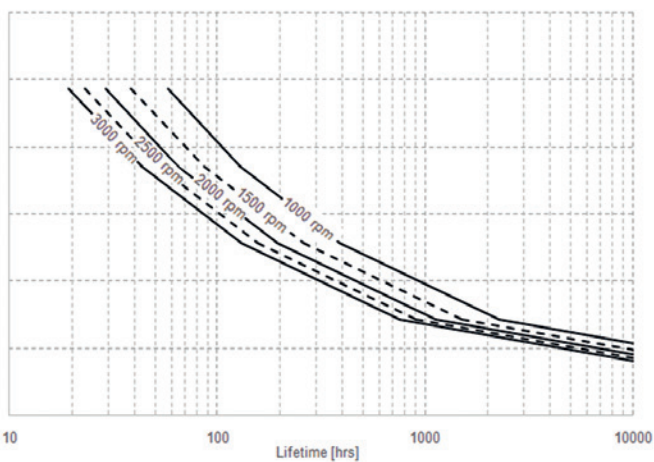
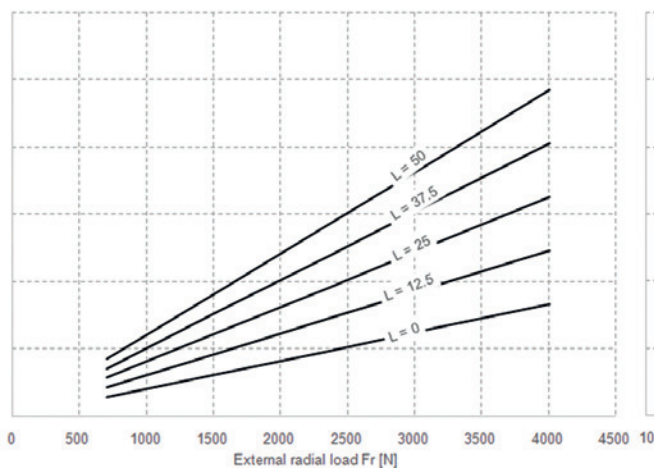


EO.146.0725.14.00IM03

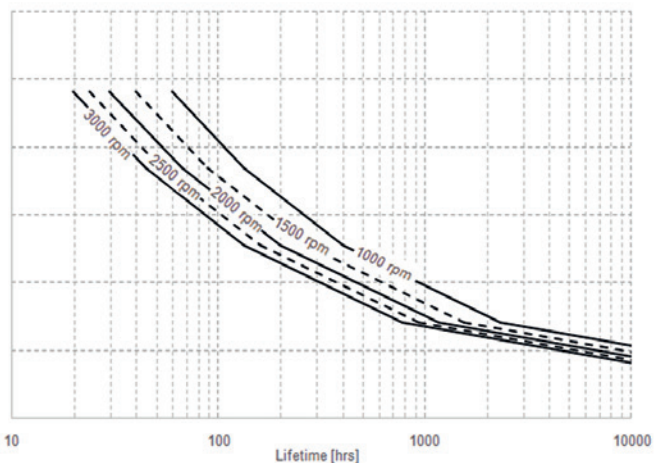
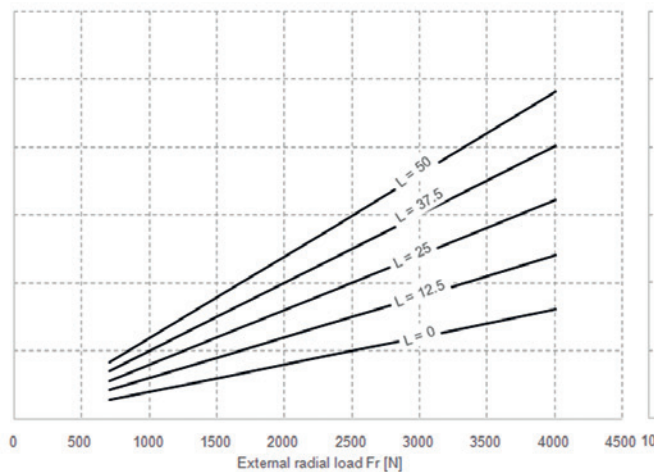


Mounting Flanges with Outrigger Bearing

For Code Z1

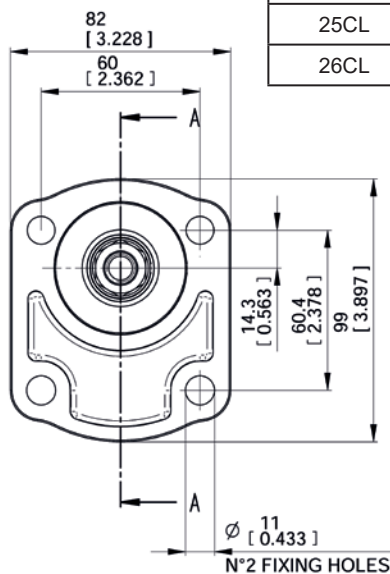
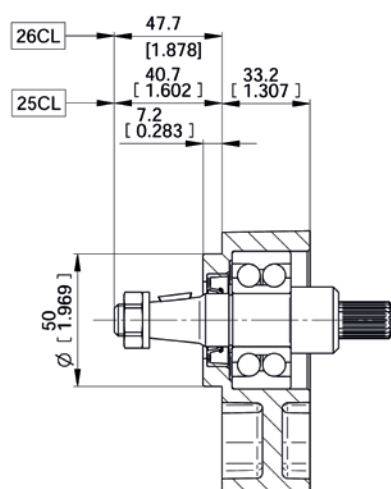


For Code CSB





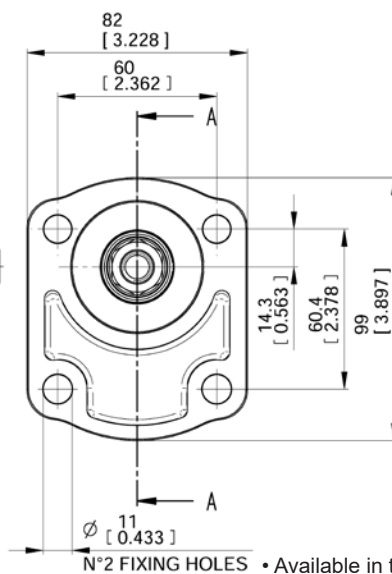
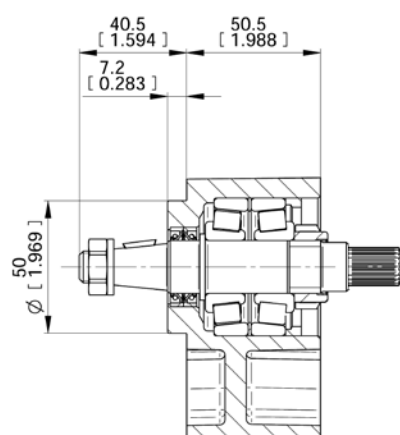
Aluminium Mounting Flanges with Outrigger Bearing



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	



A	B
Order example 2PGE22,5D-G25B4-CL R12240050	Order example 2PGE11,3D-B25B5-CF R12240060

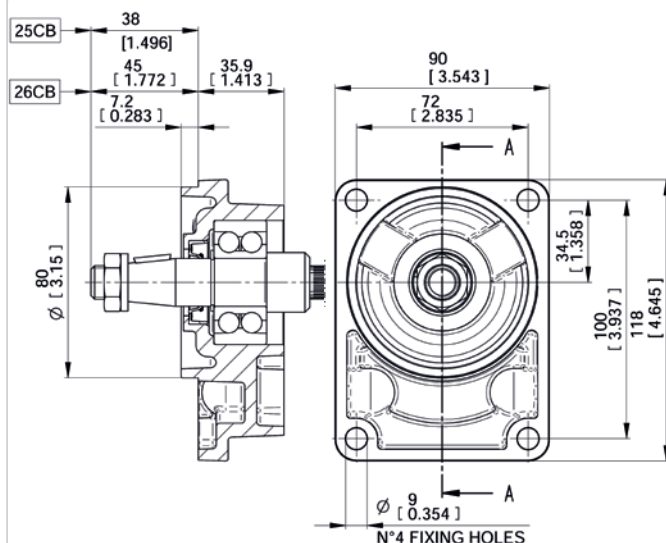
Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
25CF	R12040101	R12283030

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

EO.146.0725.14.00IM03

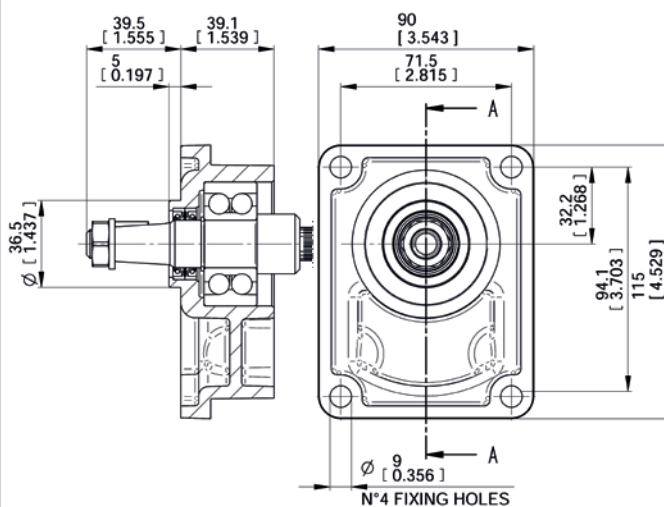


Aluminium Mounting Flanges with Outrigger Bearing



Mounting with shaft code 26

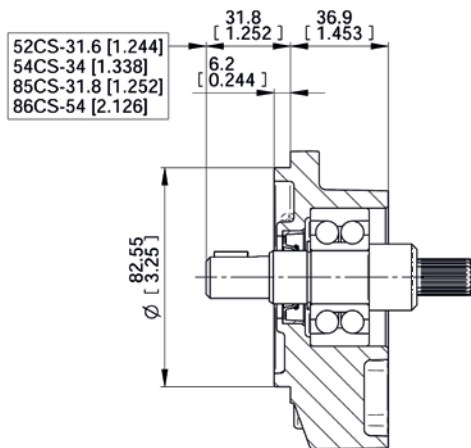
Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
25CB	R12040070	R12283030
26CB	R12040080	R12240080



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

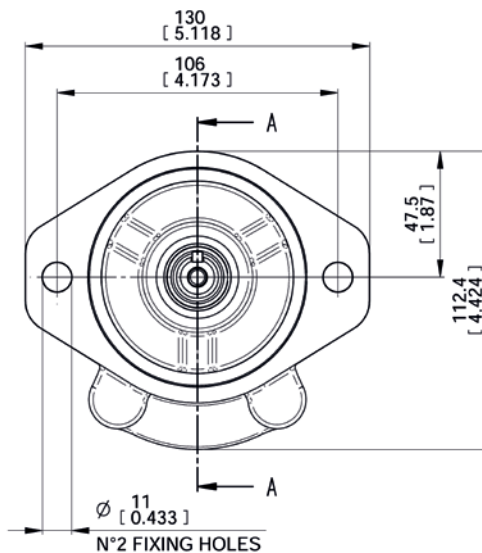
CB	With shaft code 25-26 Max torque 100 Nm (885 lbt in)
German standard	

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	



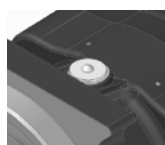
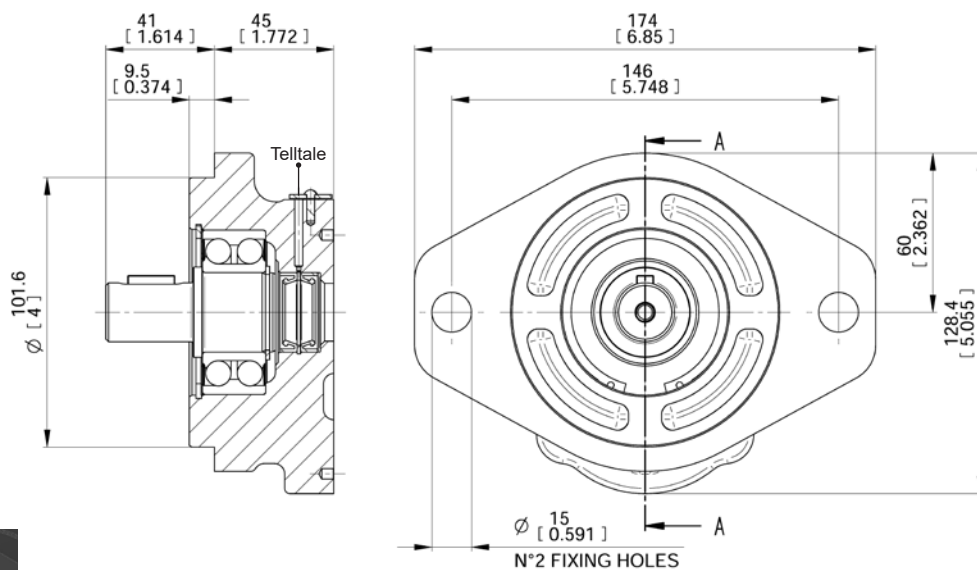
Code	Part Number	
	Flange+Bearing support	Key
82CS	R12040040	796620700
85CS	R12040050	796621000
86CS	R12040130	796622800

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

EO.146.0725.14.00IM03



Cast Iron Mounting Flanges with Outrigger Bearing



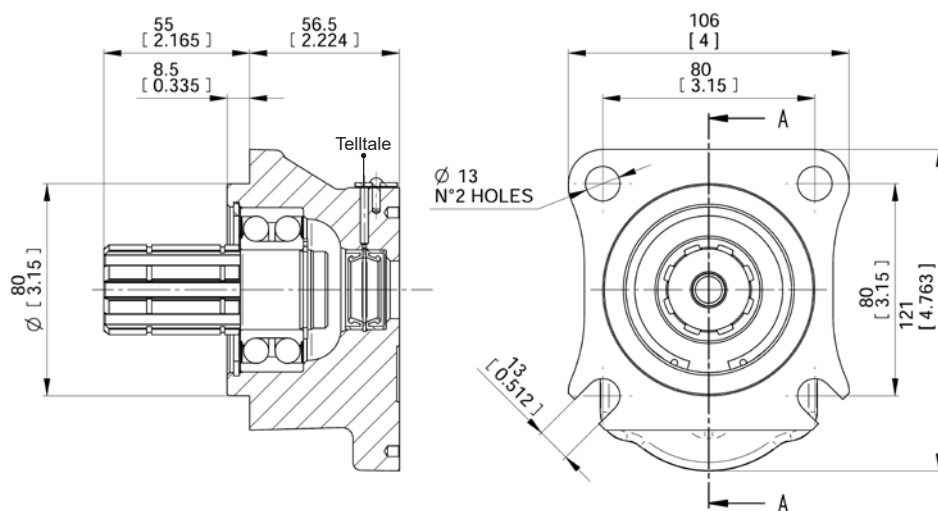
TellTale
drop in plug in case of failure,
outside leakage trough the
crossing hole is visible.

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

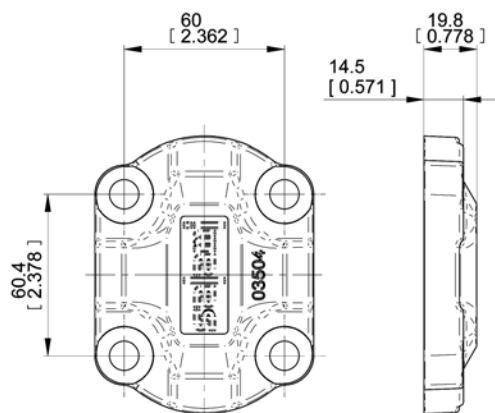
With shaft code 66 - Max torque 200 Nm (1770 lbt in)

4 Bolts for ZF gear box

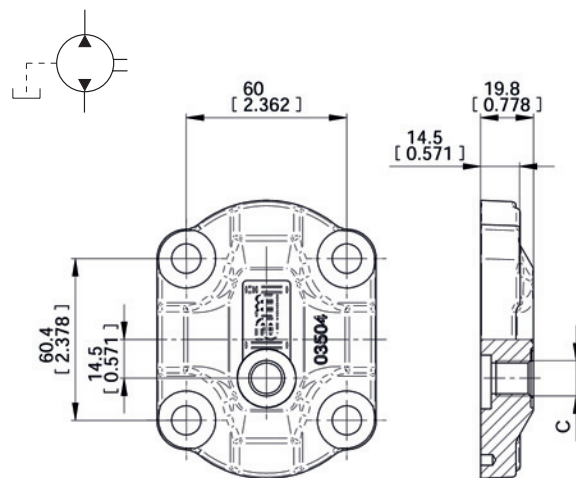
EO.146.0725.14.00IM03



Rear Covers



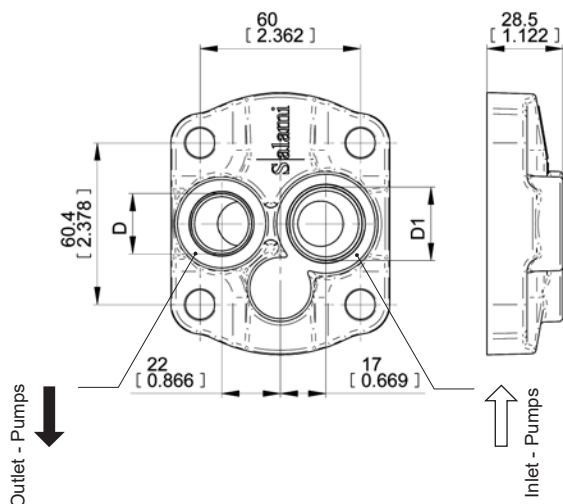
Code	Part Number
Standard Cover	312203529



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

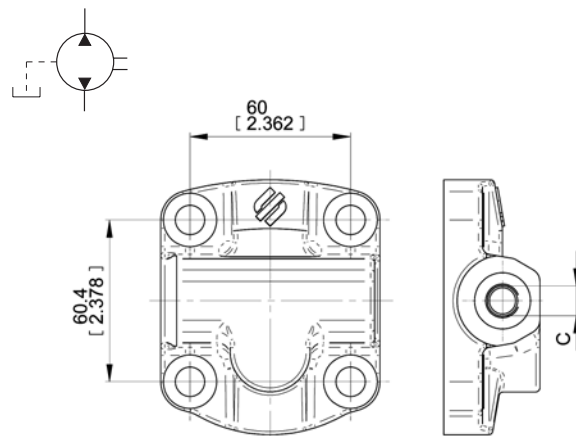
STANDARD REAR COVER
FOR UNIDIRECTIONAL PUMPS

STANDARD REAR COVER WITH EXTERNAL DRAIN PORT (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

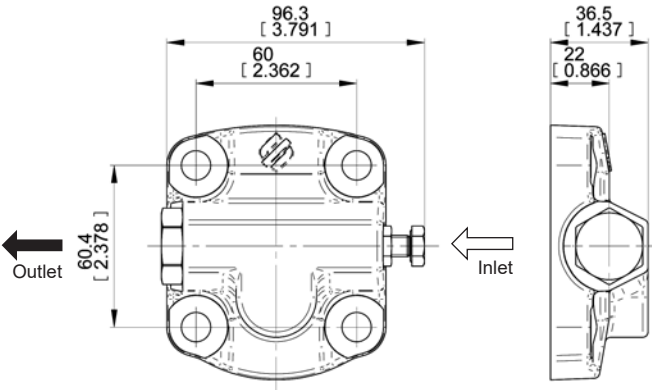
REAR COVER WITH PORTS
FOR UNIDIRECTIONAL PUMPS

REAR COVER WITH SIDE DRAIN PORT (C)
FOR BIDIRECTIONAL PUMPS

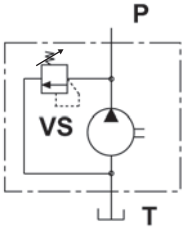
EO.146.0725.14.00IM03



Rear Covers with Valves

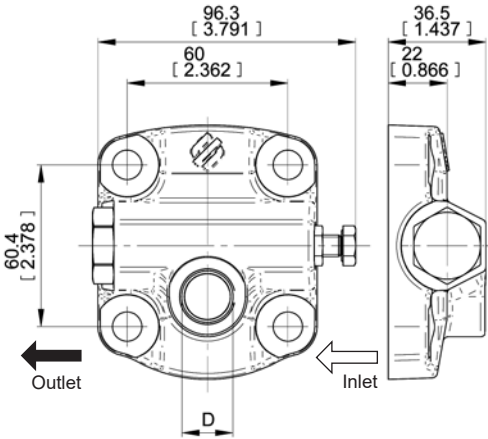
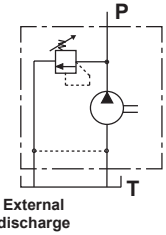


Code	Part Number	Pressure relief valve setting range
VS Internal Discharge	R12275013	15-30 bar
	R12275020	30-60 bar
	R12275040	61-120 bar
	R12275050	121-170 bar
	R12275060	171-250 bar



VS

INTERNAL DISCHARGE FOR UNIDIRECTIONAL PUMPS



Code	Part Number	Pressure relief valve setting range	D (external discharge)
VSE External Discharge for Unidirectional Pumps	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	
	R12275016	15-30 bar	G 3/8
	R12275023	30-60 bar	
	R12275043	61-120 bar	
	R12275053	121-170 bar	
	R12275063	171-250 bar	



Available VSE version
for Bidirectional
Pumps.

Please contact our
sales department

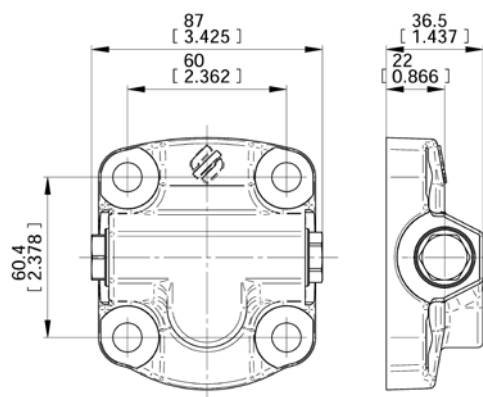
VSE

EXTERNAL DISCHARGE FOR UNIDIRECTIONAL PUMPS

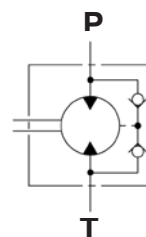
EO.146.0725.14.00IM03



Rear Covers with Valves



Code	Part Number
IDV Internal drain	R12203501



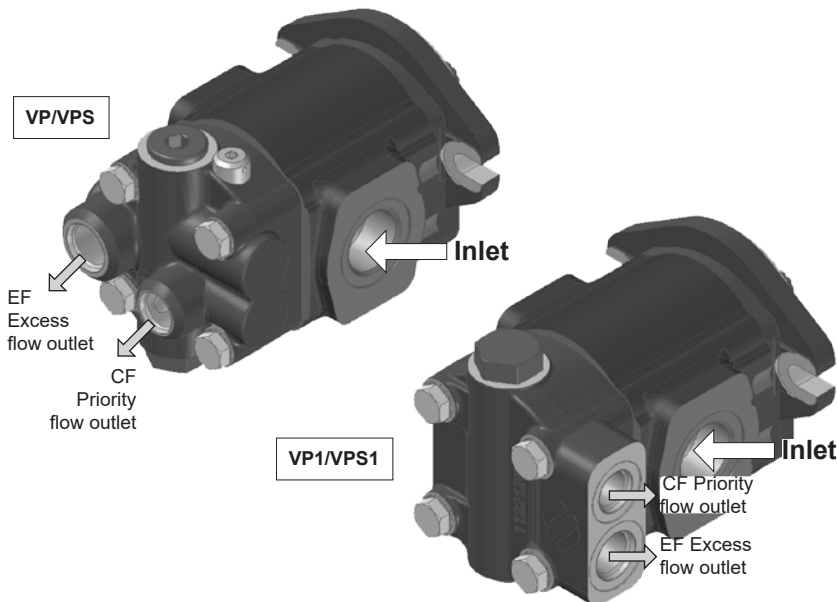
IDV

INTERNAL DRAIN FOR BIDIRECTIONAL PUMPS

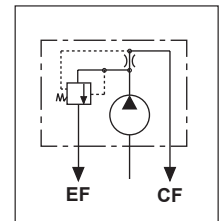


Rear Covers with Valves

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.



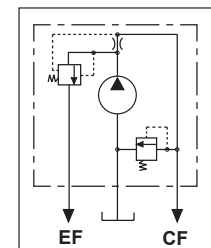
VP - VP1



Priority flow valve, excess flow available to second actuator.

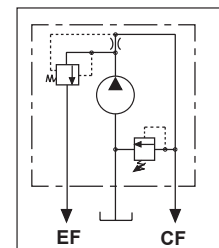
CF= Priority flow port
EF= Excess flow port

VPS



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

VPDS1



VP/VP1/VPS/VPS1

PRESSURE COMPENSATED PRIORITY FLOW VALVES

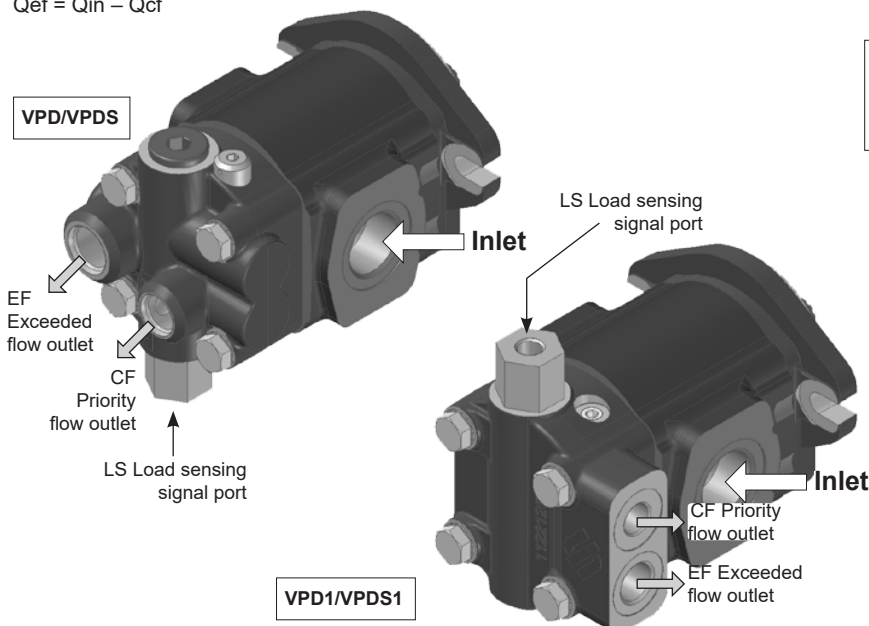
The load sensing priority valve is a control valve able to divide the flow generated by the pump, coming from the port P, in two different flows named Qcf and Qef. The Qcf flow follows the user request, the flow Qef changes according to the equation:

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

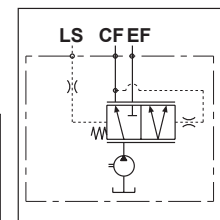
This valve is used in hydraulic steering systems, the CF port is connected to the inlet of power steering unit while the other functions (lifter etc...) are connected to the EF port. The load sensing LS signal of the valve is connected to the LS of powersteering unit.

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

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



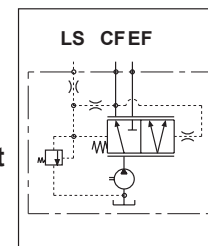
VPD - VPD1



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

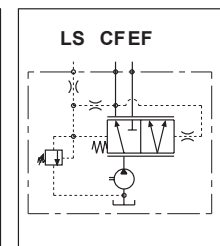
CF= Priority flow port
EF= Excess flow port
LS= Load sensing signal port

VPDS



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

VPDS1

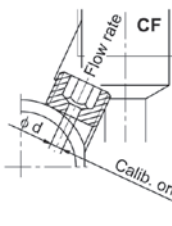


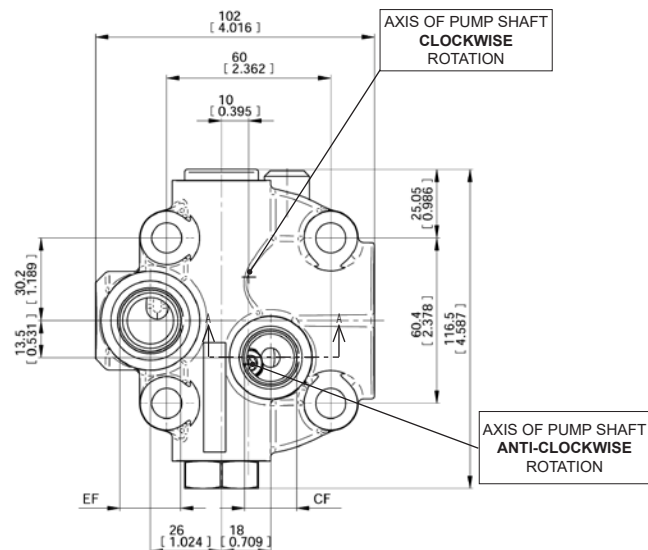
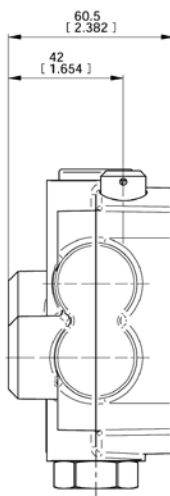
VPD/VPD1/VPDS/VPDS1

LOAD SENSING PRIORITY VALVES



Pressure Compensated Priority Flow Valve

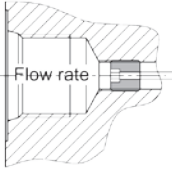
Flow Rate Table			
 Det. A-A			
Calibrated Orifice Φd		Flow Rate $\pm 10\%$	
mm	inch	l/min	gpm
1.5	0.06	2.5	0.66
2	0.08	4	1.06
2.4	0.09	6	1.59
2.8	0.11	8	2.11
3.1	0.12	10	2.64
3.5	0.14	12.5	3.30
4	0.16	16	4.23
4.4	0.17	20	5.28
4.9	0.19	25	6.61

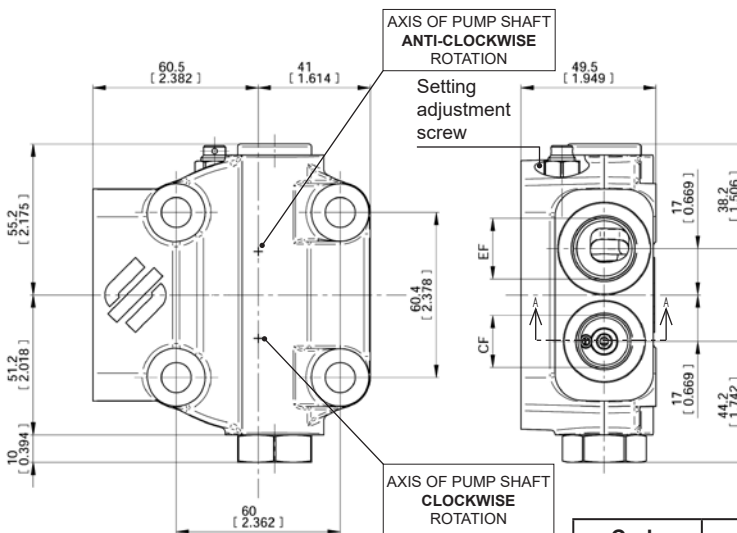


Threaded Port	
CF= Priority flow port	EF= Excess flow port
G 3/8	G 1/2
SAE 6 9/16-18 UNF-2B	SAE 8 3/4 - 16 UNF - 2B

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 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



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

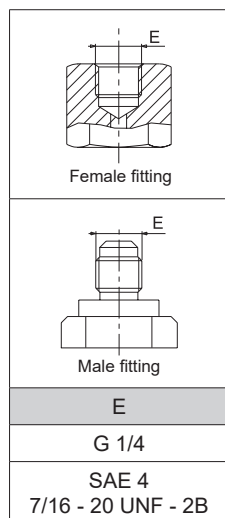
Code	Part Number
VP1 - VPS1	Please contact our sales department
Pressure Relief Valve setting range	
30-110 bar	
110-380 bar	

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

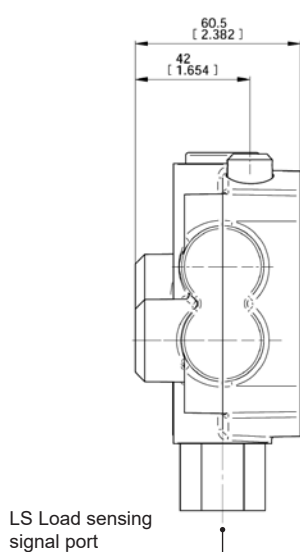
EO.146.0725.14.001M03



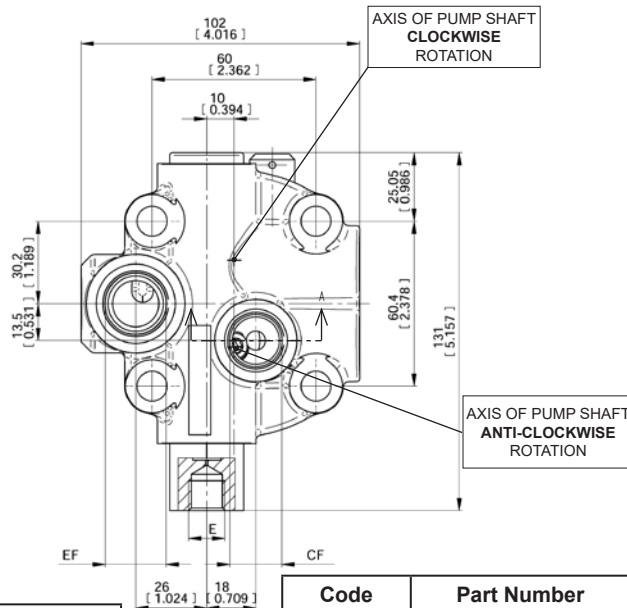
Load Sensing Priority Valve



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

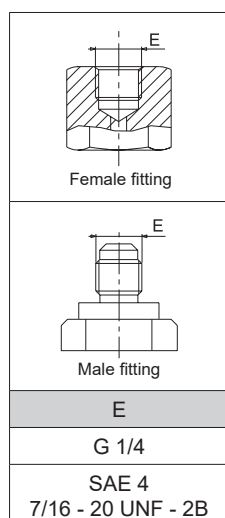
Pressure Relief Valve setting range
20-240 bar

VPD

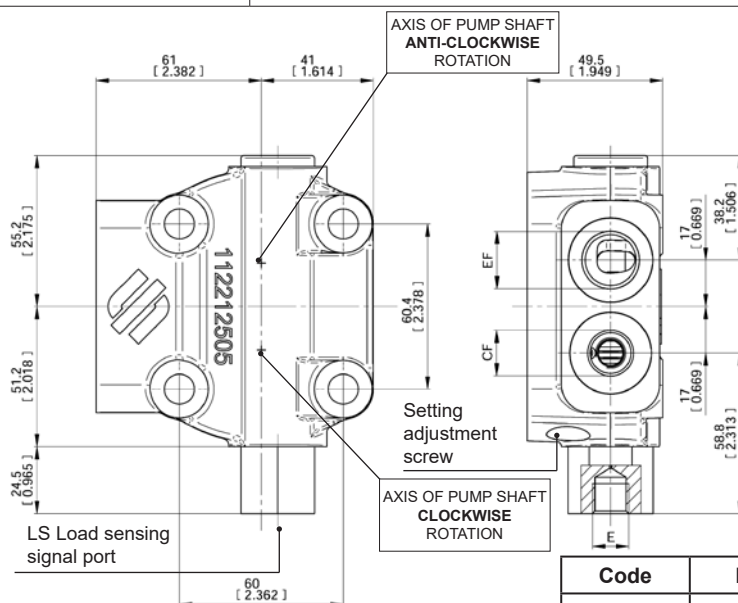
Dynamic signal without pressure relief valve
REAR PORTS

VPDS

Dynamic 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

Dynamic signal without pressure relief valve
SIDE PORTS

VPDS1

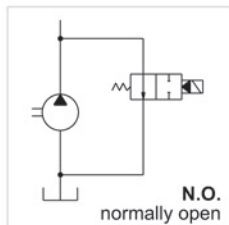
Dynamic signal with **adjustable setting** pressure relief valve
SIDE PORTS

EO.146.0725.14.00IM03

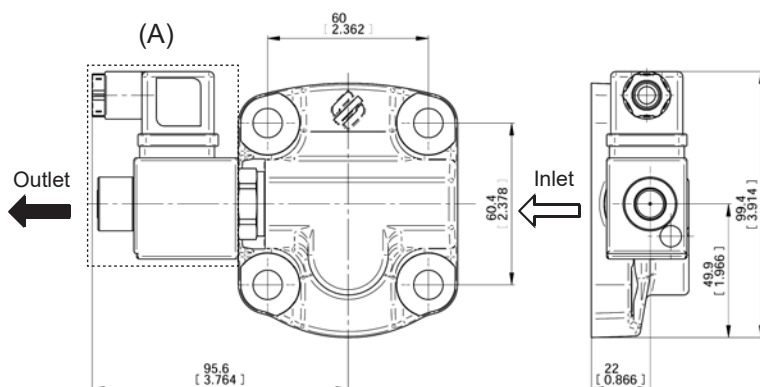
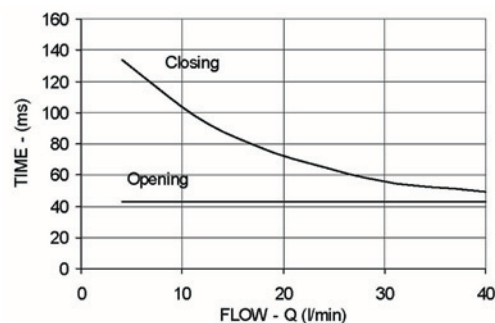
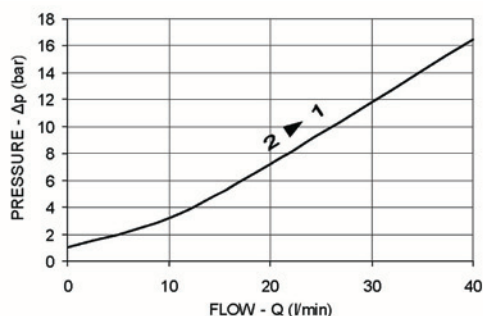
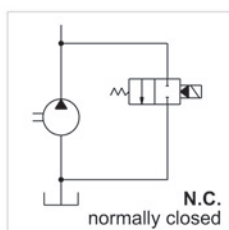


Rear Covers with Valves

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

UNLOADING 2W-2P SOLENOID VALVE

Part Number

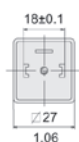
(A) Coil+Mech.Part+Connector

EV1/EVS1	EV2/EVS2	EV3/EVS3	EV4/EVS4
796332680	796332681	412271232	412271233

Part Number

Connector DIN 43650
A/ISO 4400

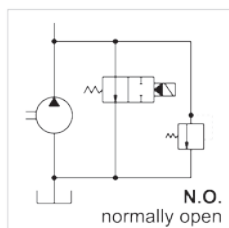
796361600



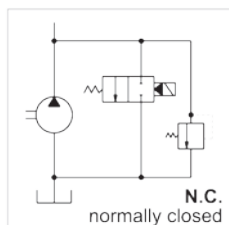
COIL SPECIFICATIONS - EV/EVS

- Coil resistance: 12 Vdc - 24 Vdc
- Coil power: 18W
- Connector: DIN 43650
- Protection index with connector: IP 65
- ED 100%

EVS1 - 12 Vcc
EVS2 - 24 Vcc

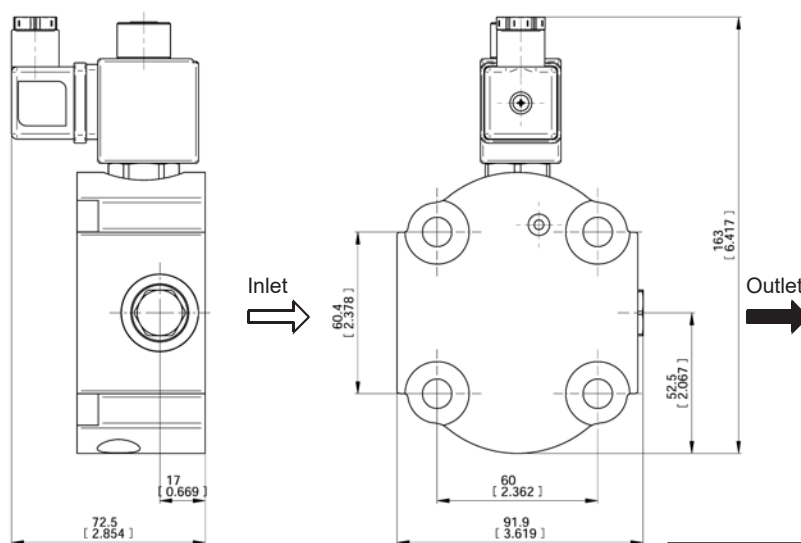


EVS3 - 12 Vcc
EVS4 - 24 Vcc



Pressure Relief Valve
setting range

25-210 bar



Code	Part Number
EVS1-EVS2 EVS3-EVS4	Please contact our sales department

EVS1-EVS2-EVS3-EVS4

UNLOADING 2W-2P SOLENOID VALVE AND RELIEF

EO.146.0725.14.00IM03



How to order Single Pump

2PGE, displacement (19),
clockwise rotation (D), ports SAE (R),
drive shaft (54), mounting flange (S2)=
2PGE19D-R54S2

2PGE			-				-		-		/		-	
A	B	C	D	E	F	G	H				I			

Adjustable flow l/min

pressure relief valve setting (bar)

A	CODE	DISPLACEMENTS	
	6.5	6.5 cm³/rev.	0.40 cu.in/rev.
	8.3	8.3 cm³/rev.	0.51 cu.in/rev.
	11.3	11.5 cm³/rev.	0.68 cu.in/rev.
	13.8	14 cm³/rev.	0.85 cu.in/rev.
	16	16.6 cm³/rev.	1.01 cu.in/rev.
	19	19.4 cm³/rev.	1.18 cu.in/rev.
	22.5	22.9 cm³/rev.	1.37 cu.in/rev.
	26	26.7 cm³/rev.	1.63 cu.in/rev.
	28	28.1 cm³/rev.	1.71 cu.in/rev.

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S
	Reversible	R

C	PORTS	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	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 (only for CB-CL) 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

E	MOUNTING FLANGES	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
	For Internal combustion engines with Outrigger bearing	CL
	For Internal combustion engines with axial and radial loads - with Outrigger bearing	CF
	SAE A with Outrigger bearing	CS
	German standard with Outrigger bearing	CB
	European standard with Outrigger bearing	CP
	SAE B with Outrigger bearing	CSB
	4 Bolts for ZF gear box with Outrigger bearing	Z1

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

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

H	REAR COVERS	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 dynamic signal	VPD-VPD1
	Load sensing priority valve with dynamic 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

I	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

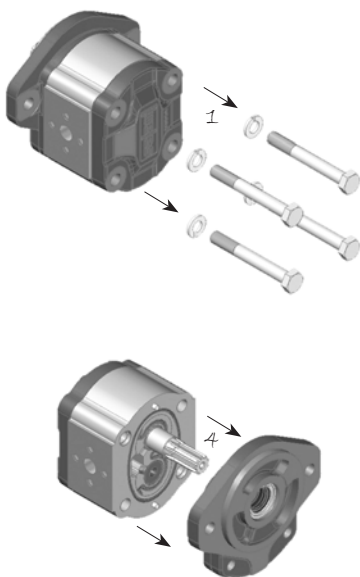


Single Pump Changing Rotation Instructions



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.

CLOCKWISE ROTATION

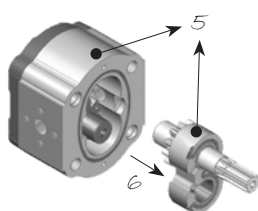


1 - Loosen and fully unscrew the bolts.

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

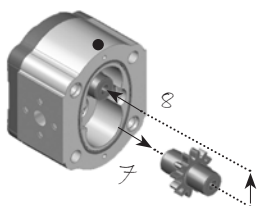
3 - Coat the shaft end with grease to avoid damaging the shaft seal.

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



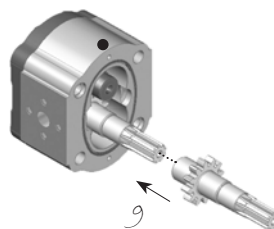
5 - Mark the position of the bushing and eventually of the thrust plate, as well, with reference to the body.

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

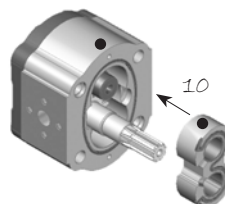


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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



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.

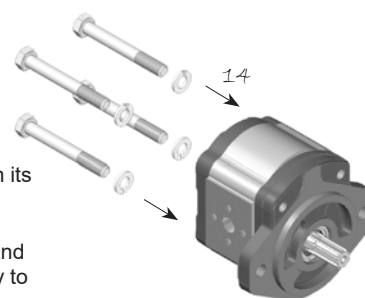
12 - Verify that the two plugs are located in the body.

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.

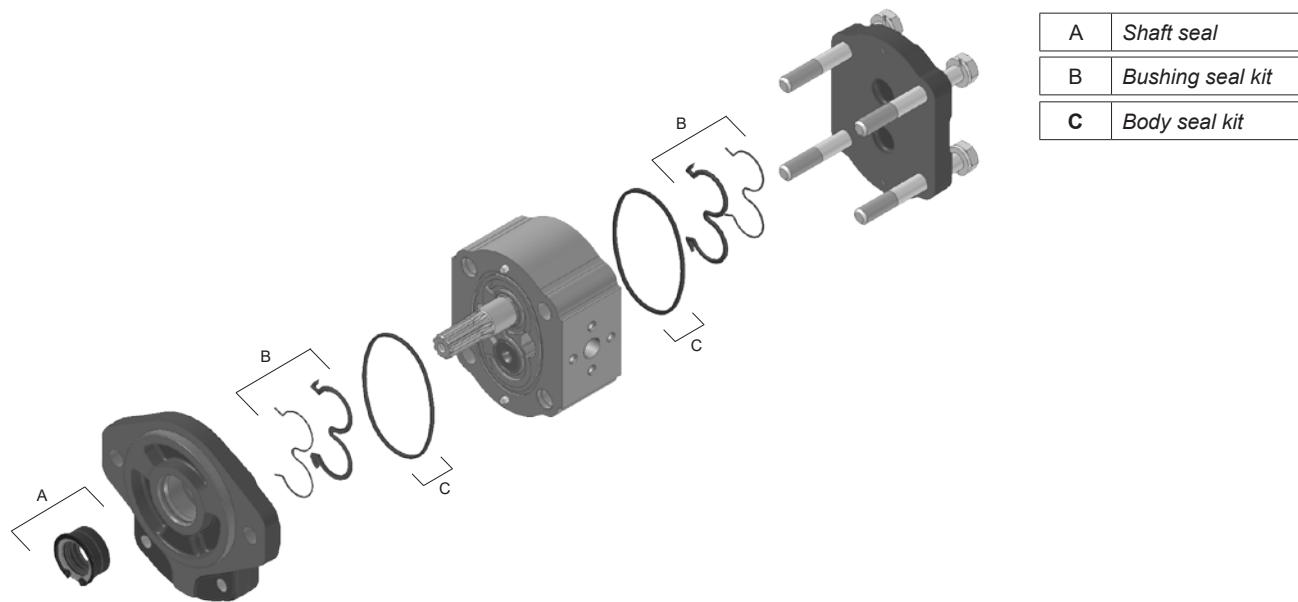


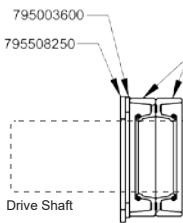
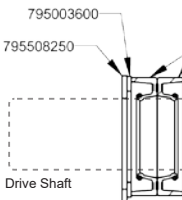
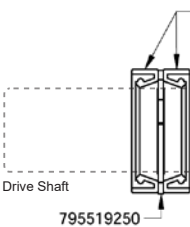
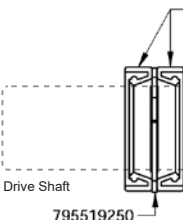
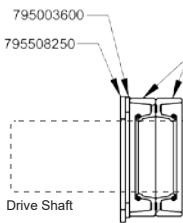
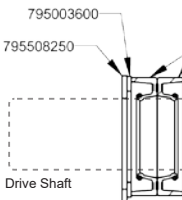
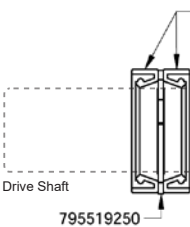
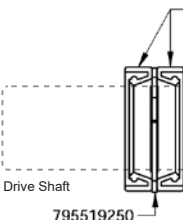
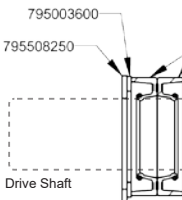
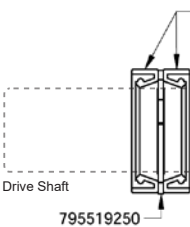
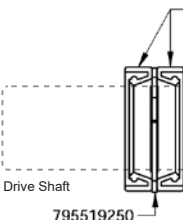
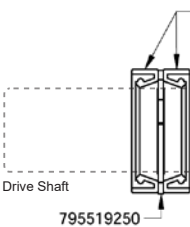
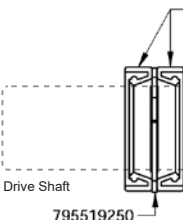
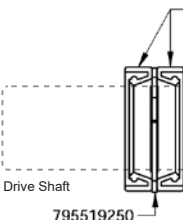
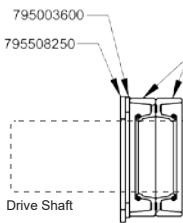
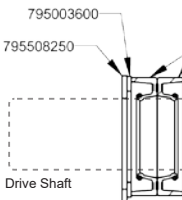
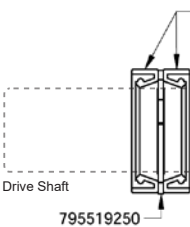
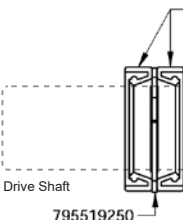
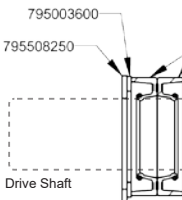
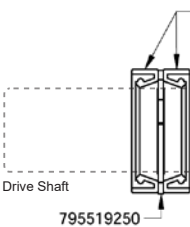
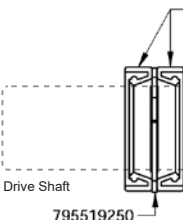
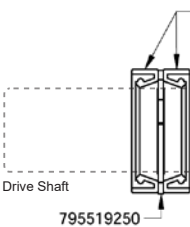
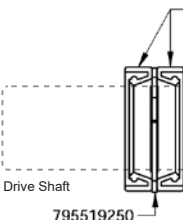
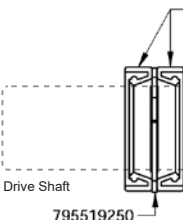
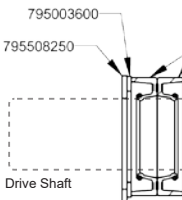
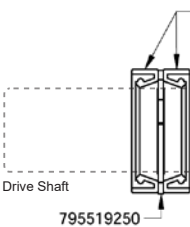
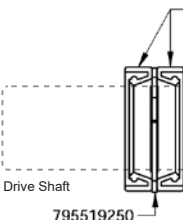
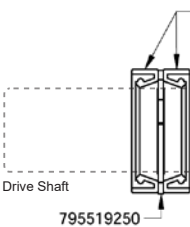
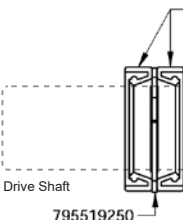
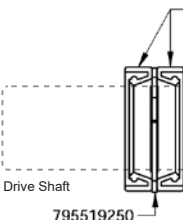
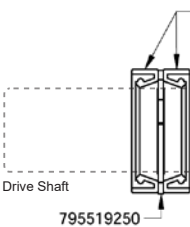
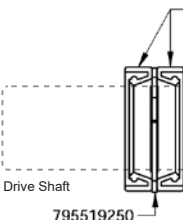
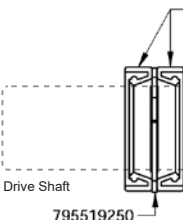
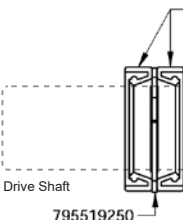
ANTI - CLOCKWISE ROTATION





Unidirectional Pump Seal Spare Parts Kit

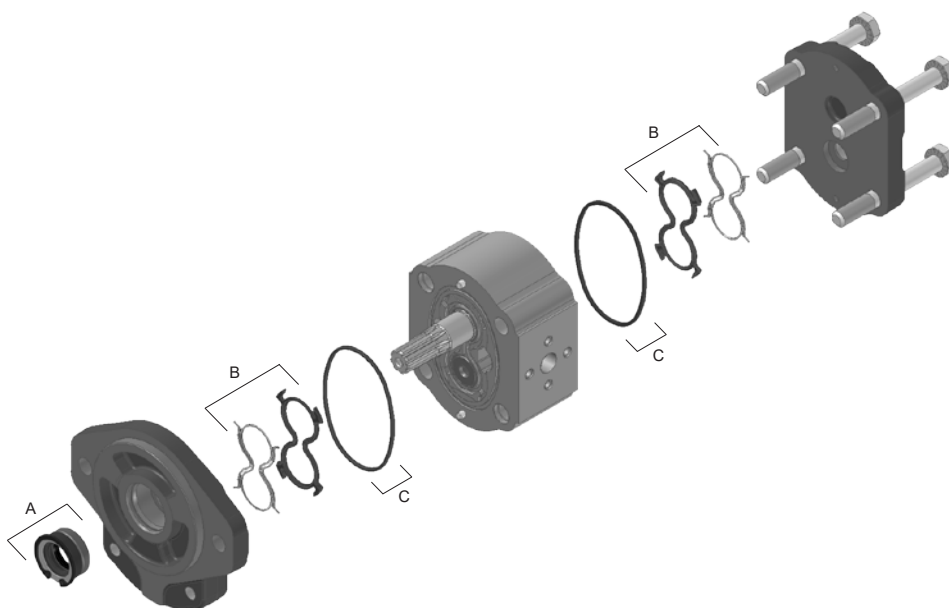


SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND																																														
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)																																													
28P1 25B1/B4/B5 62P1/B1/B4/B5 82P1/S2/S6 52S2/S6 55S3 (Coupling sleeve)	<table border="1"><tr><td>Part Number</td></tr><tr><td>R12292830</td></tr></table>	Part Number	R12292830	<table border="1"><tr><td></td><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R12240010</td></tr></table></td></tr><tr><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R12292950</td></tr></table></td><td><table border="1"><tr><td></td><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R12240021</td></tr></table></td></tr><tr><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R14690010</td></tr></table></td><td><table border="1"><tr><td></td><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R14640010</td></tr></table></td></tr><tr><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R14690020</td></tr></table></td><td><table border="1"><tr><td></td><td><table border="1"><tr><td>Part Number</td></tr><tr><td>R14640011</td></tr></table></td></tr><tr><td>54S2/S6 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EO.146.0725.14.00IM03



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)
28P1 25B1/B4/B5 62P1/B1/B4/B5 82P1/S2/S6 52S2/S6 55S3 (Coupling sleeve)	Part Number R12081820	Part Number R12040122	Part Number R12081830	Part Number R12040123
55S3 (Solid Shaft) 73T1 67Z2	Part Number R14690031	Part Number R14640012	Part Number R14690041	Part Number R14640013
54S2/S6 85S2/S6	Part Number R12092835	Part Number R12240114	Part Number R12092836	Part Number R12240113

EO.146.0725.14.00IM03



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]

A C

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)

ALL THE PUMPS
CAN BE ALSO
MULTIPLE

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

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

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	28
Dimension A 2PGE	mm	49.95	52.8	59.7	63.5	67.5	75.6	81	86.8	89
	in	1.97	2.07	2.35	2.5	2.65	2.97	3.19	3.42	3.50
Dimension C 2PGE	mm	25	26.4	29.75	31.75	39.5	39.5	47.5	47.5	48
	in	0.98	1.04	1.17	1.25	1.56	1.56	1.87	1.87	1.89

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 2PE	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 2PE	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]

A C

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.

ALL THE PUMPS
CAN BE ALSO
MULTIPLE

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

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

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

MULTIPLE
GEAR PUMPS
with separated
stages

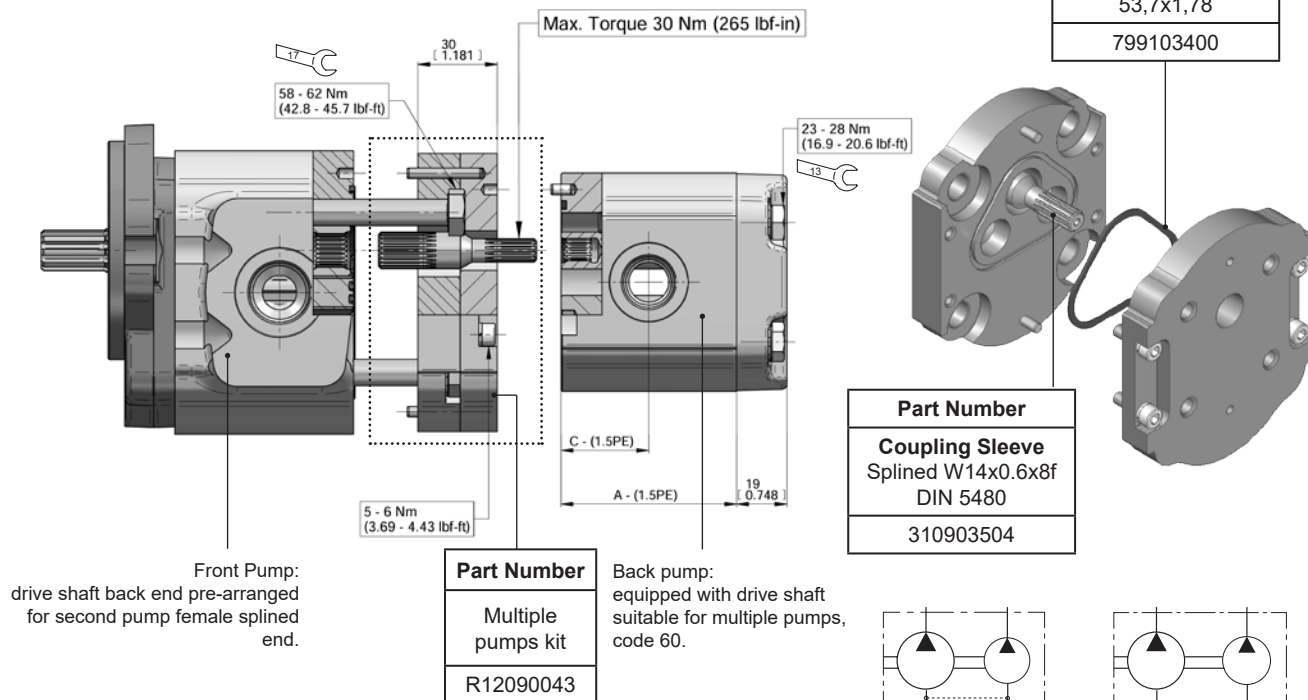
Coupling Sleeve
Splined W14x0.6x8f
DIN 5480
312002515

EO.146.0725.14.00IM03



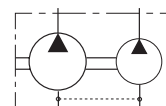
2PGE Combination with Pump 1.5PE (Aluminium gear housing)

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

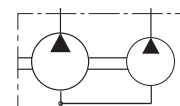


① Not available
combinations with
flange: B2-B3-B4-B5

① ALL THE PUMPS
CAN BE ALSO
MULTIPLE



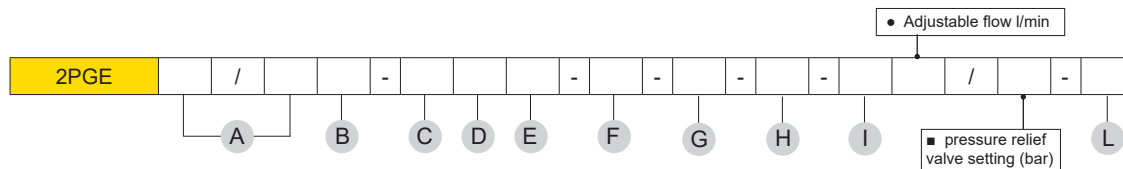
**MULTIPLE
GEAR PUMPS**
with individual
inlet port



**MULTIPLE
GEAR PUMPS** ①
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.

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



A	CODE	DISPLACEMENTS
	6.5	6.5 cm ³ /rev. 0.40 cu.in/rev.
	8.3	8.3 cm ³ /rev. 0.51 cu.in/rev.
	11.3	11.5 cm ³ /rev. 0.68 cu.in/rev.
	13.8	14 cm ³ /rev. 0.85 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	26.7 cm ³ /rev. 1.63 cu.in/rev.
	28	28.1 cm ³ /rev. 1.71 cu.in/rev.

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS	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	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 (only for CB-CL) 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

E	MOUNTING FLANGES	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
	For Internal combustion engines with Outtrigger bearing	CL
	For Internal combustion engines with axial and radial loads - with Outtrigger bearing	CF
	SAE A with Outtrigger bearing	CS
	German standard with Outtrigger bearing	CB
	European standard with Outtrigger bearing	CP
	SAE B with Outtrigger bearing	CSB
	4 Bolts for ZF gear box with Outtrigger bearing	Z1

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



Note

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

H	INLET PORTS	CODE
	Separated stages: Pump with separated stages for different fluid (2 tanks). <i>Number 1, 2 or 3 identify the body where Kit AS is mounted.</i>	AS
	Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. <i>Number 1, 2 or 3 identify the body where inlet port is open.</i>	UA

I	REAR COVERS	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 dynamic signal	VPD-VPD1
	Load sensing priority valve with dynamic 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

L	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

How to order Multiple pump

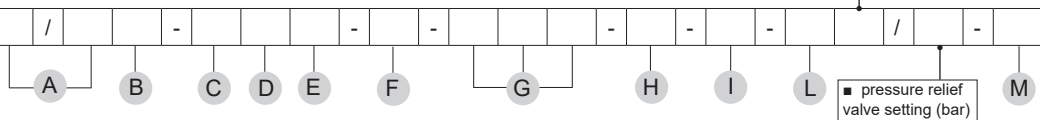
2PGE, displacement first stage (16), displacement second stage (16), clockwise rotation (D), ports European (P), drive shaft (55), mounting flange (S3)= **2PGE16/16D-P55S3**

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• Adjustable flow l/min

2PGE+2PE/1.5PE



A	CODE	DISPLACEMENTS	
	6.5	6.5 cm ³ /rev.	0.40 cu.in/rev.
	8.3	8.3 cm ³ /rev.	0.51 cu.in/rev.
	11.3	11.5 cm ³ /rev.	0.68 cu.in/rev.
	13.8	14 cm ³ /rev.	0.85 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	26.7 cm ³ /rev.	1.63 cu.in/rev.
	28	28.1 cm ³ /rev.	1.71 cu.in/rev.

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS	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	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 (only for CB-CL) 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

E	MOUNTING FLANGES	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
	For Internal combustion engines with Outtrigger bearing	CL
	For Internal combustion engines with axial and radial loads - with Outtrigger bearing	CF
	SAE A with Outtrigger bearing	CS
	German standard with Outtrigger bearing	CB
	European standard with Outtrigger bearing	CP
	SAE B with Outtrigger bearing	CSB
	4 Bolts for ZF gear box with Outtrigger bearing	Z1

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

EO.146.0725.14.00IM03



Note

G	COMBINATION WITH 1.5PE or 2PE
	1.5PE Piggy back configuration: • Displacement at page 46 • Port type See 1.5PE Technical catalogue at page 17 2PE Piggy back configuration: • Displacement at page 45 • Port type See 2PE Technical catalogue at page 35

H	INLET PORTS	CODE
	Separated stages: Pump with separated stages for different fluid (2 tanks). <i>Number 1, 2 or 3 identify the body where Kit AS is mounted.</i>	AS
	Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. <i>Number 1, 2 or 3 identify the body where inlet port is open.</i>	UA

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

L	REAR COVERS	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

M	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

How to order Multiple pump with 2PE or 1.5PE

2PGE, displacement first stage (16), displacement second stage (6.5), anti-clockwise rotation (S), ports European (P), drive shaft (28), mounting flange (P1)+1.5PE, displacement (2.1), ports European (P)=
2PGE16/6.5S-P28P1-1.5PE2.1P

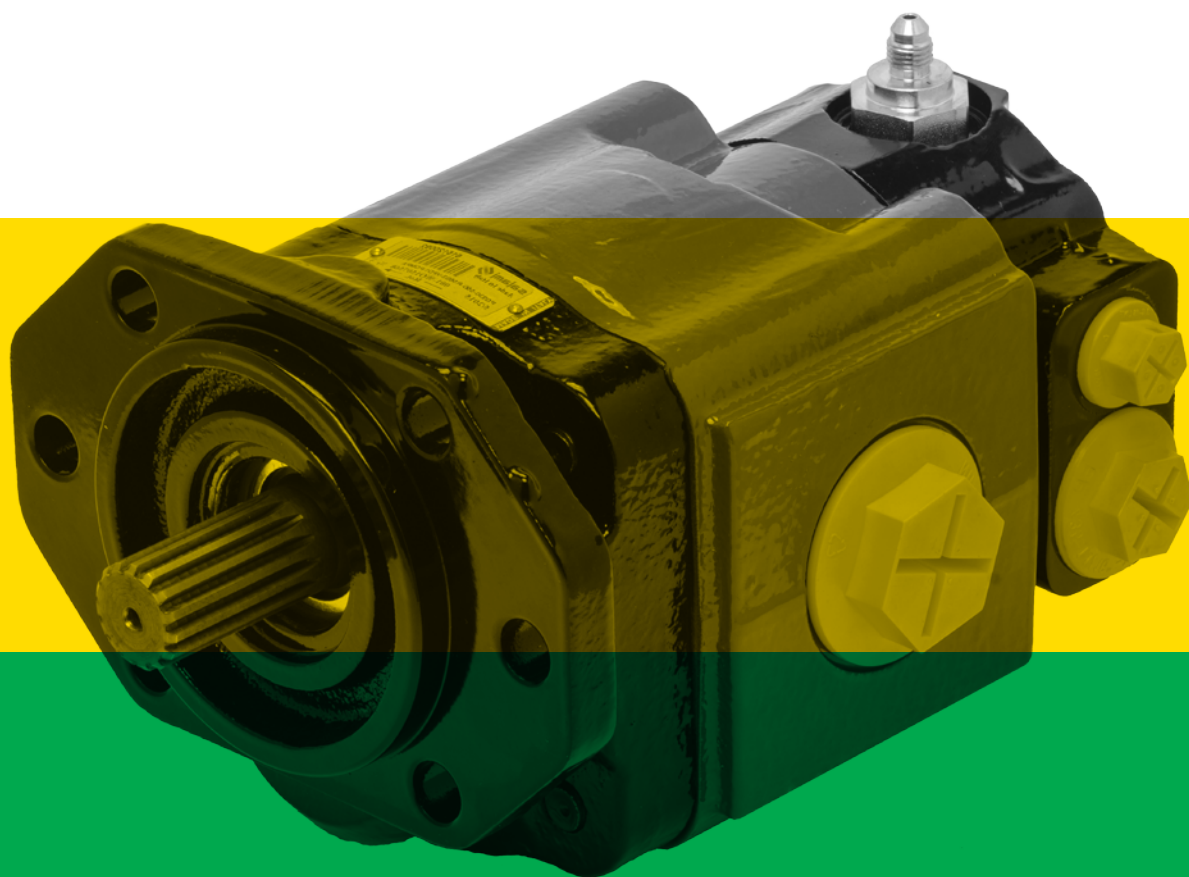
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PG330

High Pressure Cast Iron Gear Pumps

Technical/Spare Parts Catalogue



E0.151.0725.14.00IM02

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

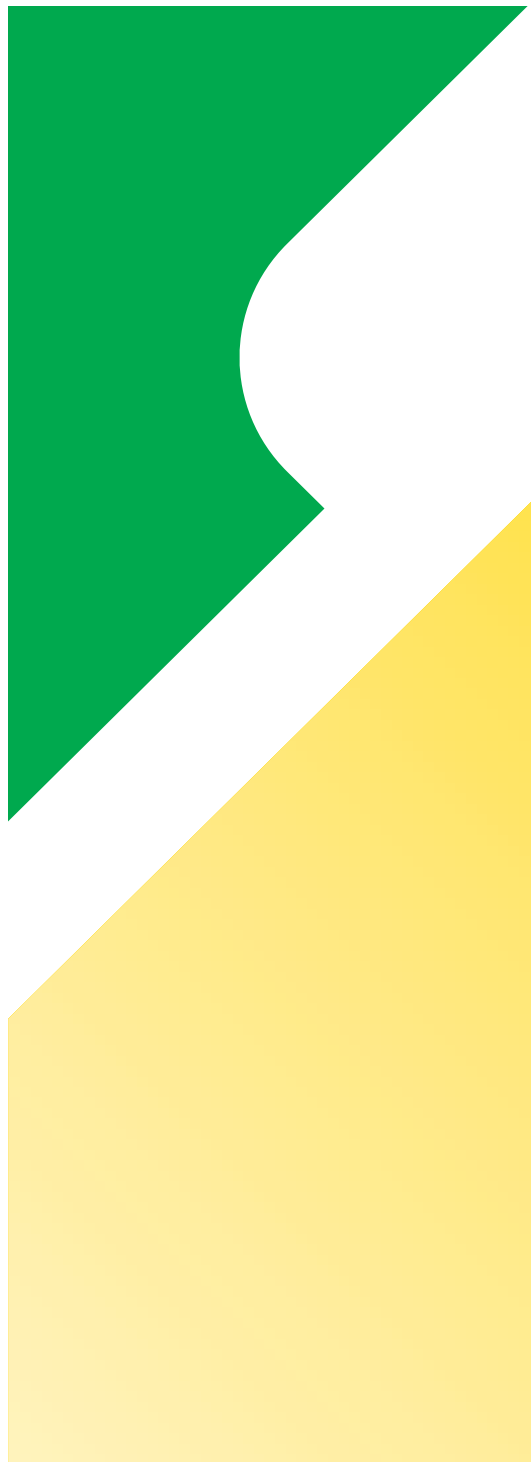


salami 
FLUID POWER SYSTEMS [®]

Final revised edition - July 2025

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.



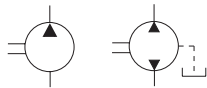
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PG330 Single Pump - Dimensions and Technical Data



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		Max. 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

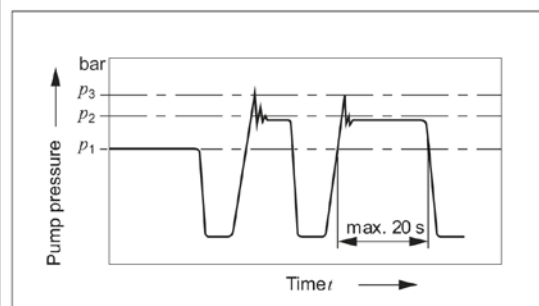
TYPE	Displacement		Max. Continuous pressure p ₁		Intermittent pressure p ₂		Peak pressure p ₃		Min. speed at p ₁	Max. speed at p ₂	Weight	
	cm ³ /rev	cu.in./rev	bar	psi	bar	psi	bar	psi	rpm		kg	lbs
PG330 - 55 •	55.2	3.37	230	3335	250	3625	270	3915	400	2700	17.7	39.02
PG330 - 64 •	64.3	3.92	200	2900	220	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 bidirectional pump.

Definition of Pressures

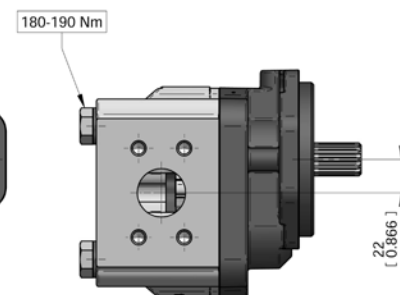
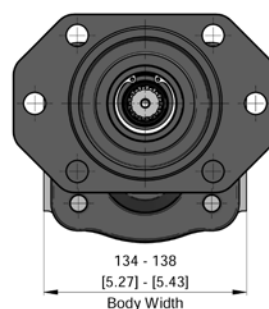
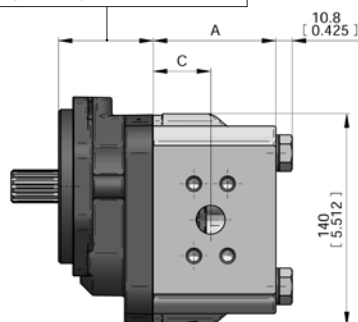


p₃ = Peak pressure

p₂ = Intermittent operating pressure (1/3 of working time)

p₁ = Max. Continuous operating pressure

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.)

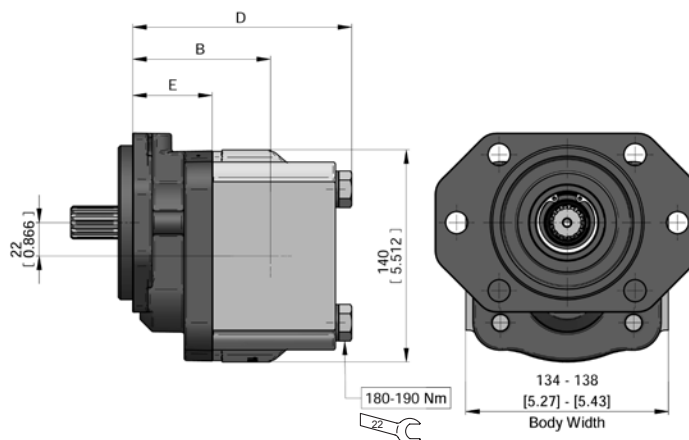


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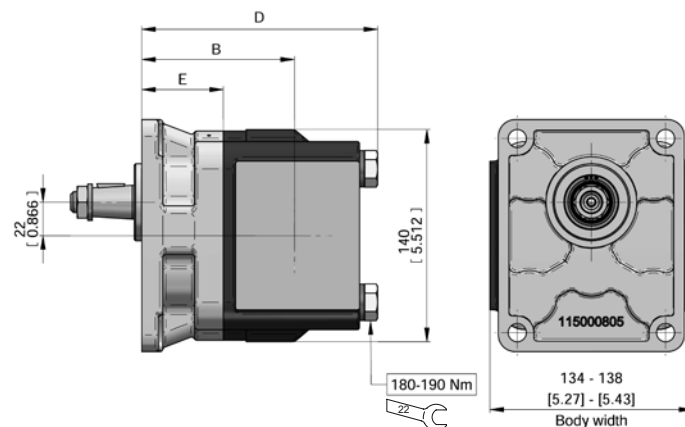
Dimensions - Shaft 55/Flange S3 (SAE B)

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		



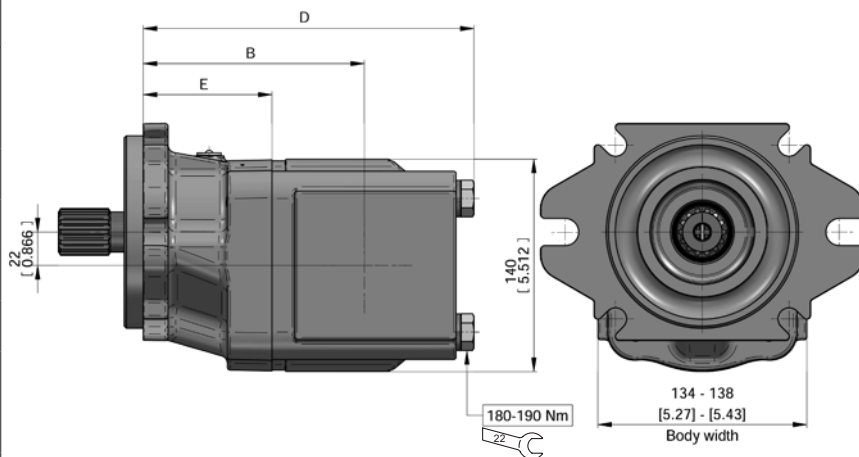
Dimensions - Shaft 38/Flange P2 (European)

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		

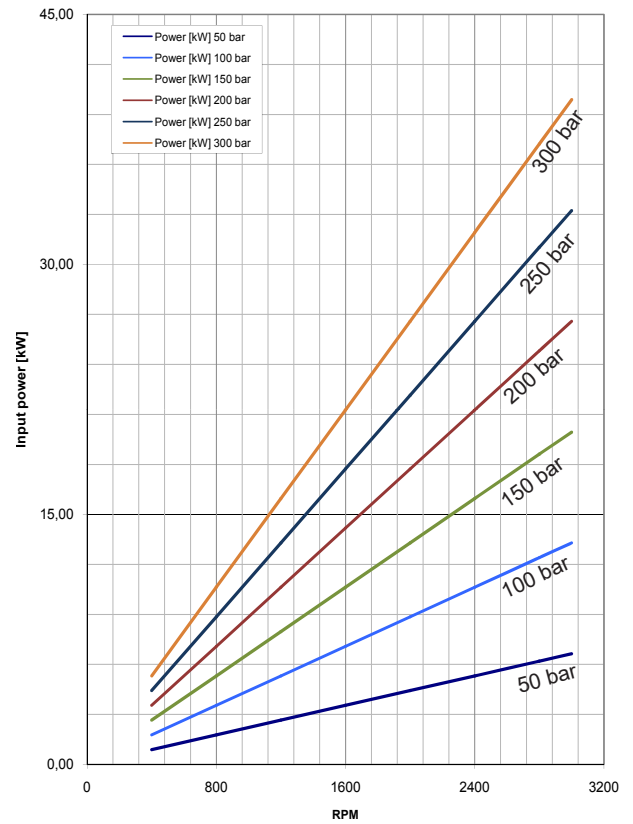
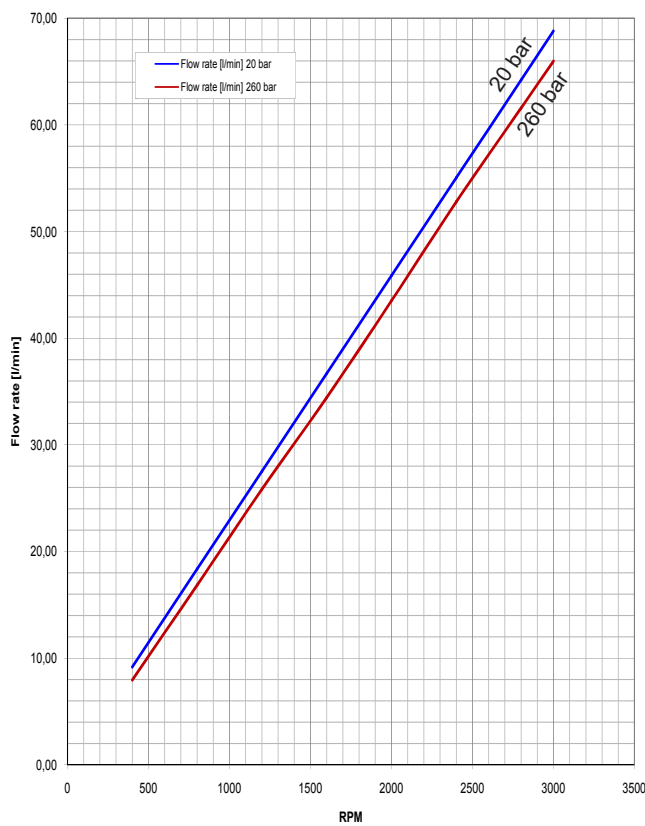


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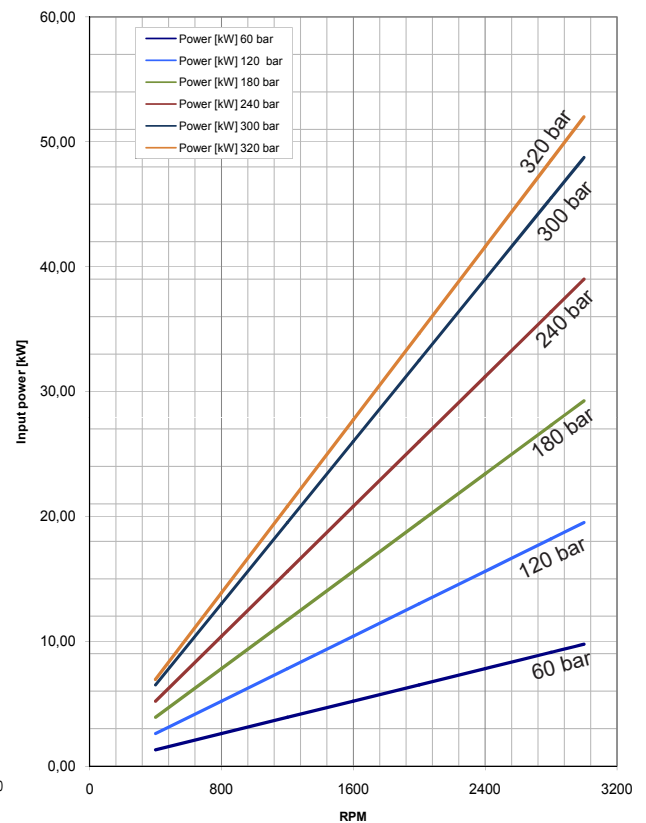
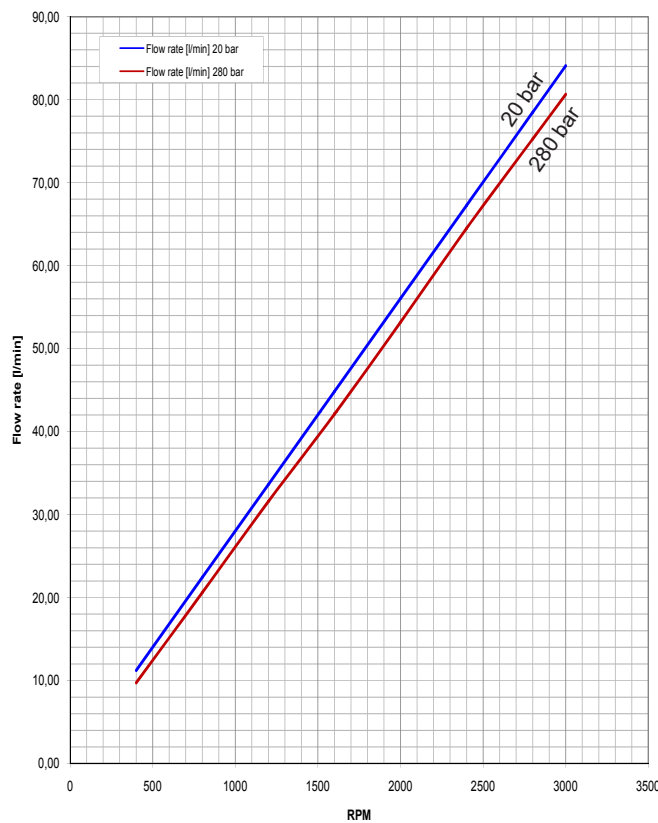


Pump Performance Charts

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



PG330 - 23



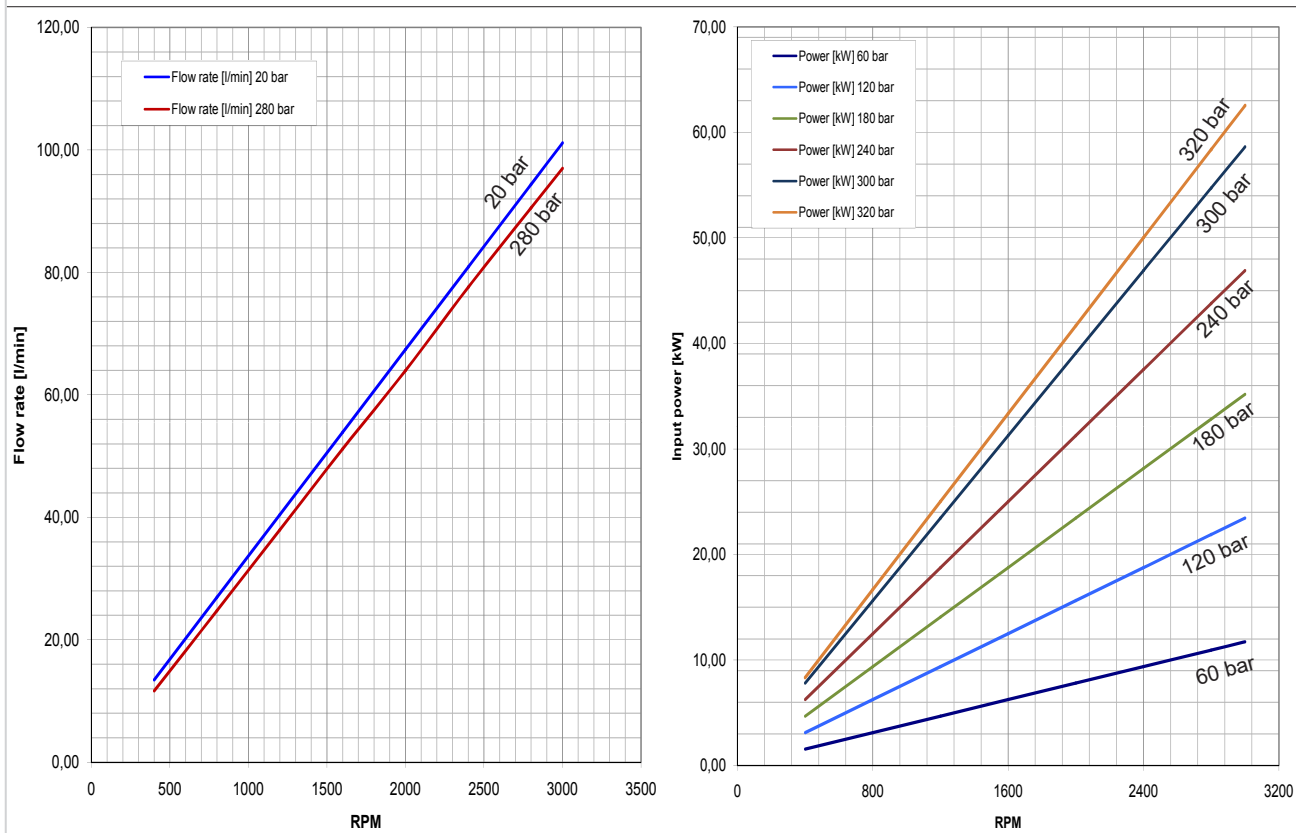
PG330 - 28

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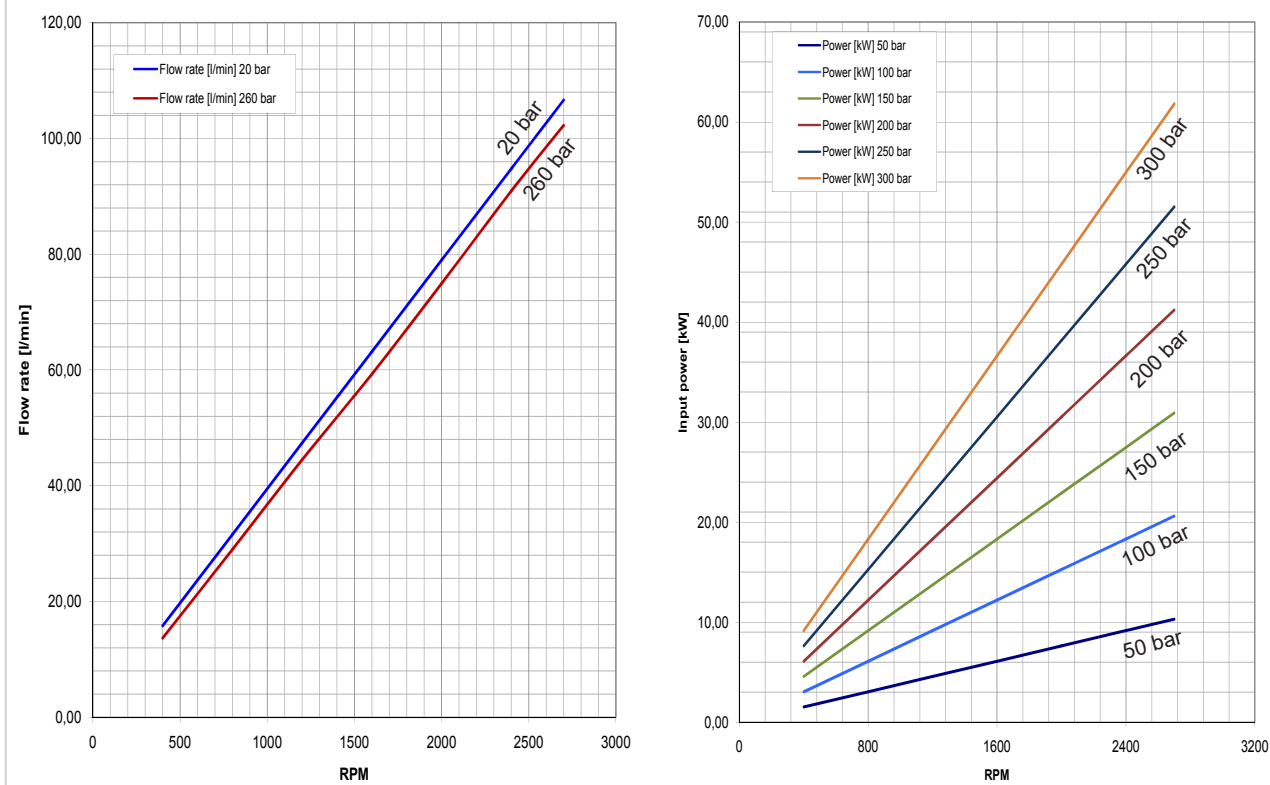


Pump Performance Charts

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



PG330 - 34



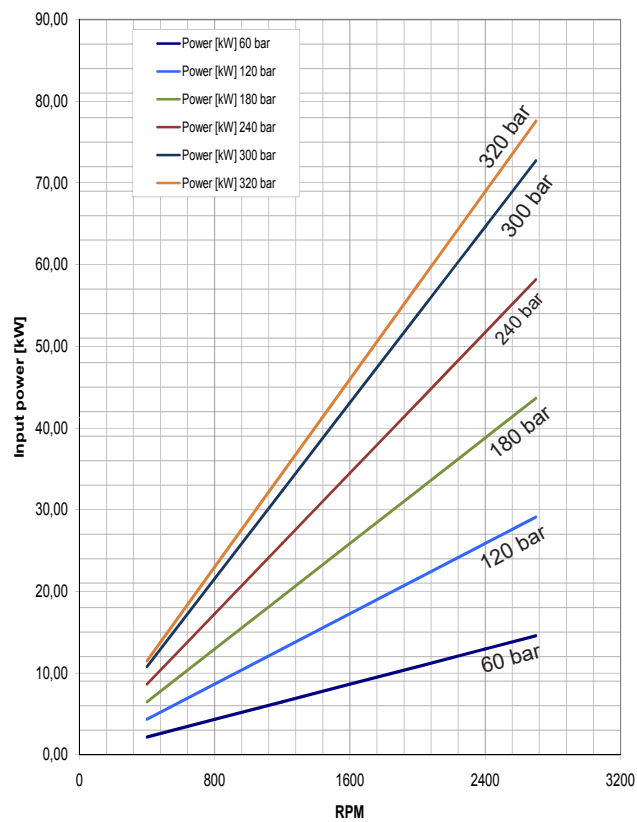
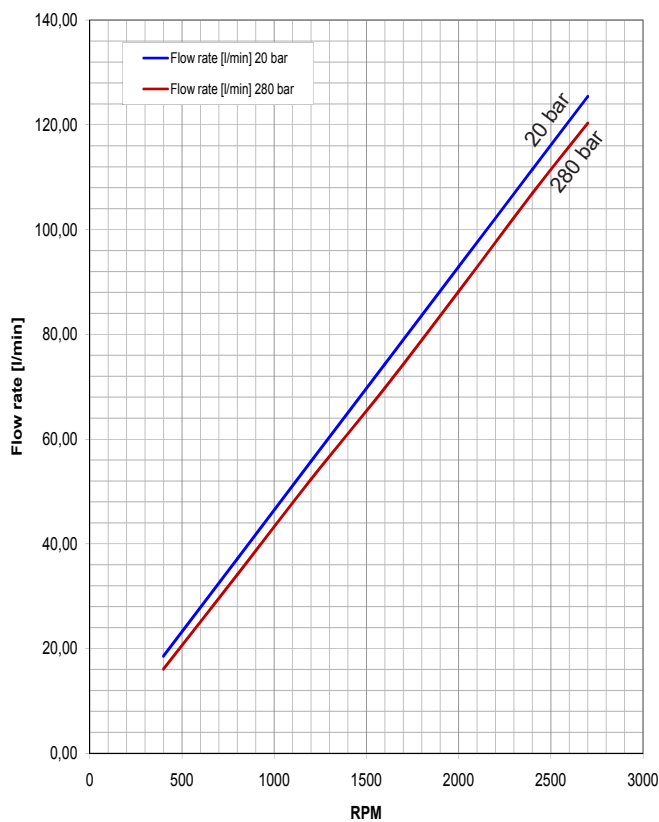
PG330 - 40

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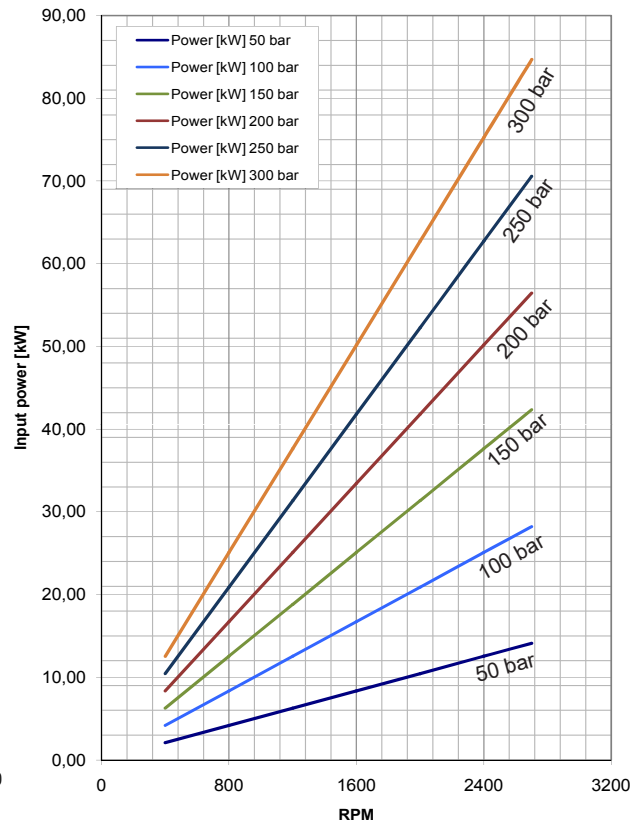
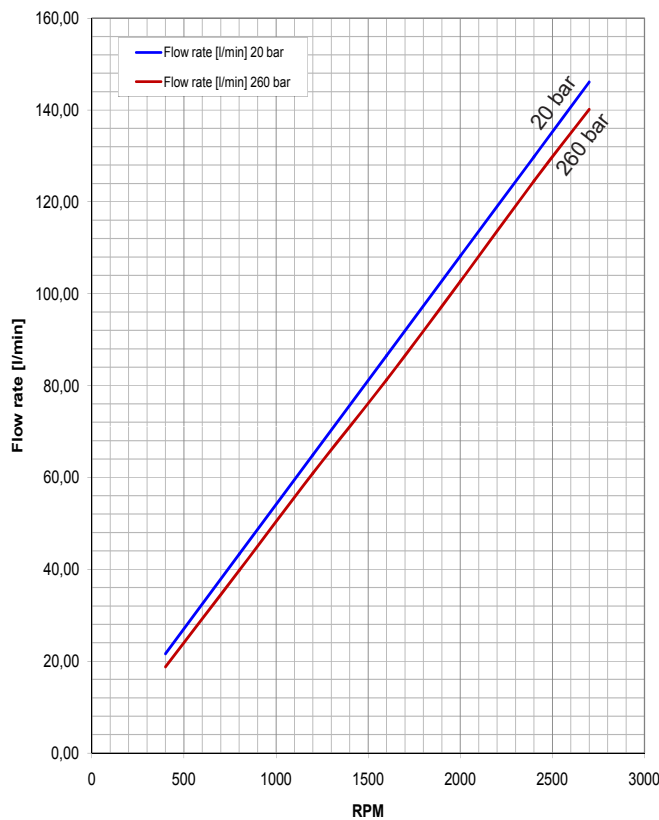


Pump Performance Charts

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



PG330 - 47



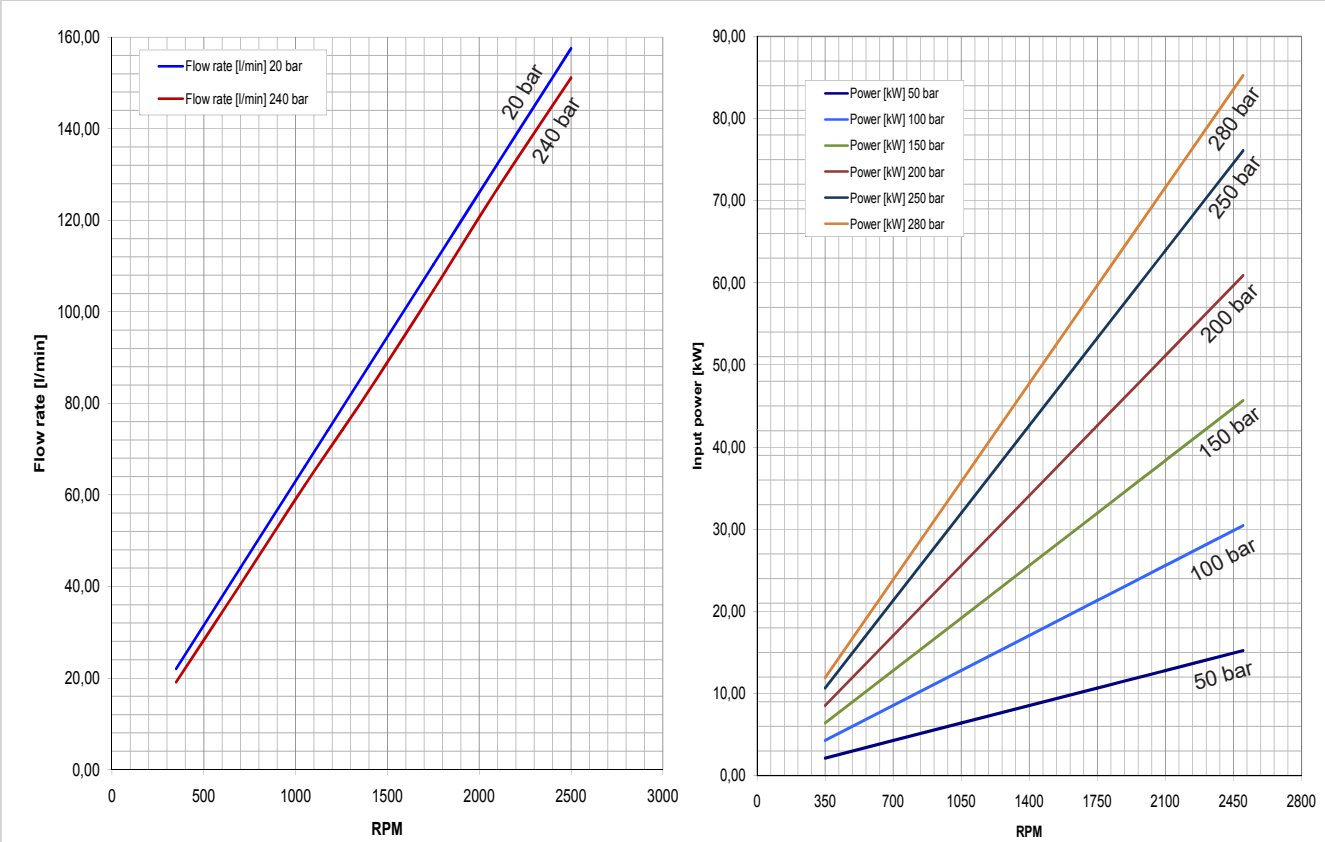
PG330 - 55

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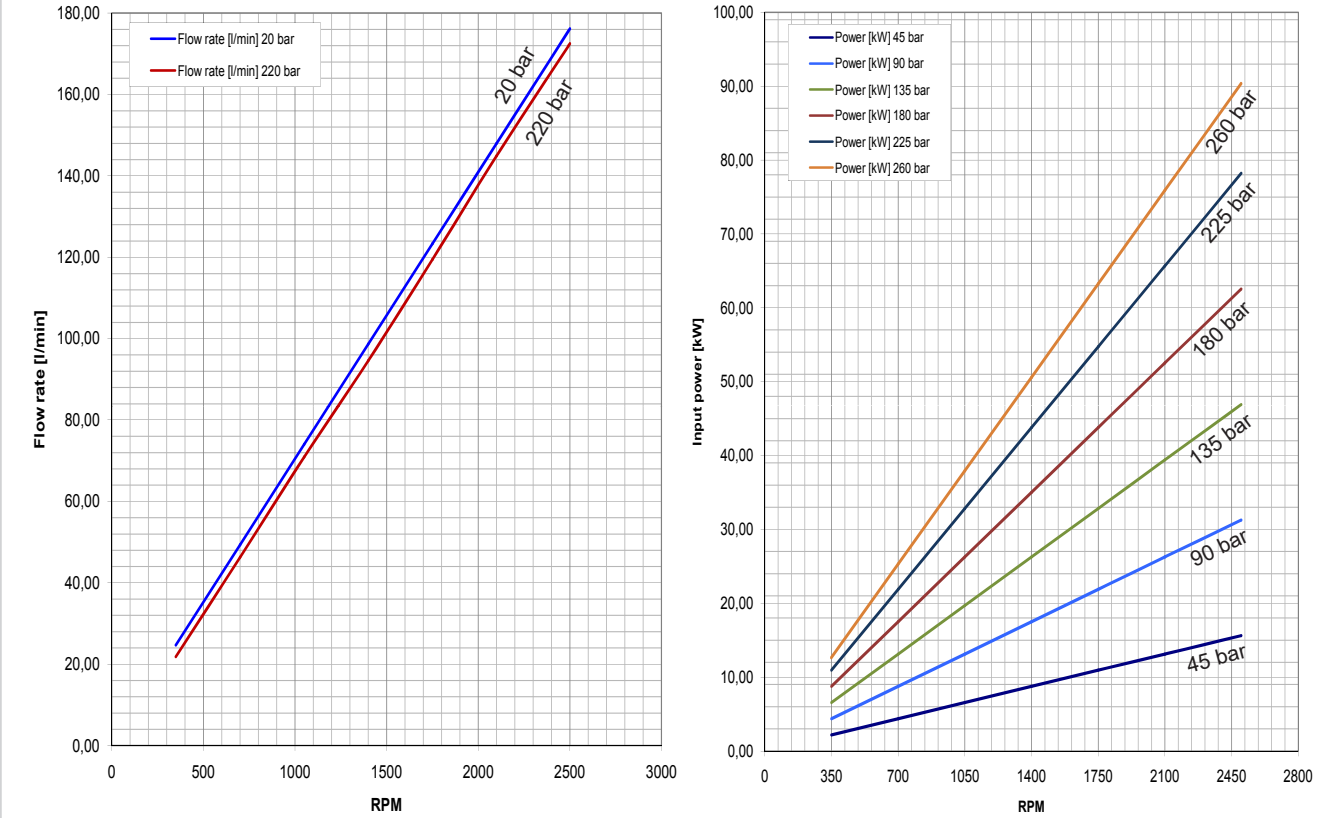


Pump Performance Charts

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



PG330 - 64



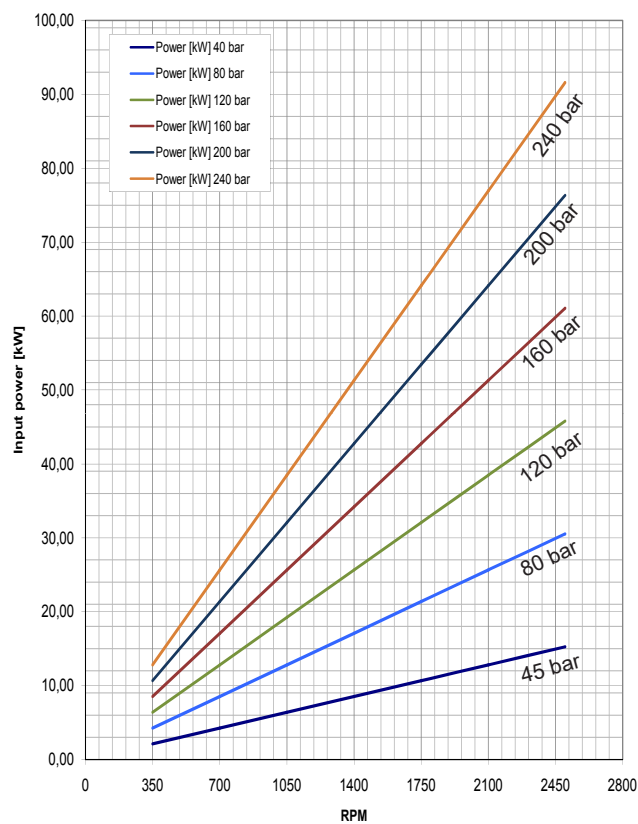
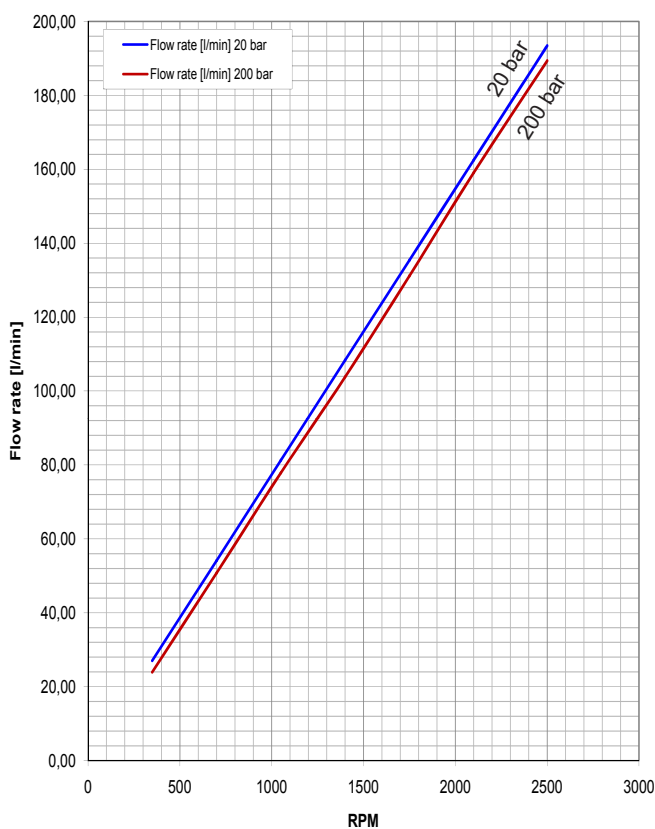
PG330 - 72

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Pump Performance Charts

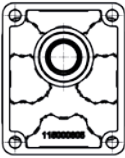
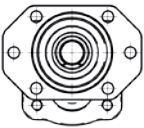
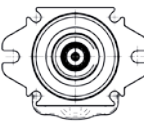
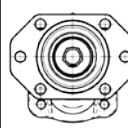
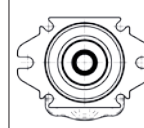
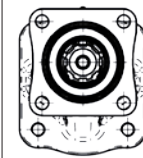
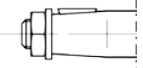
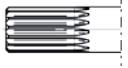
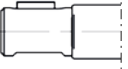
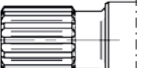
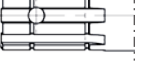
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



PG330 - 80



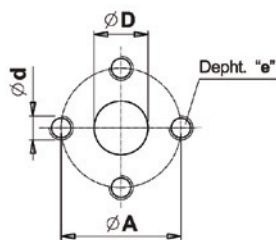
Shaft And Flange Combinations

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

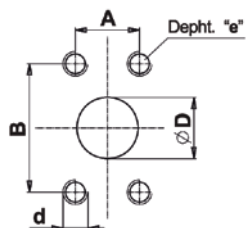
M8	20 Nm (14.7 lbf-ft)
M10	35 Nm (25.8 lbf-ft)
M12	65 Nm (47.9 lbf-ft)



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")



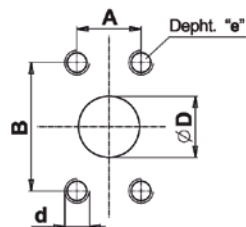
code W

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)

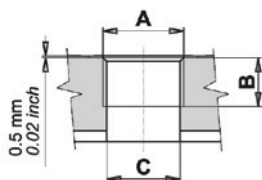


UNI-DIRECTIONAL										
PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 23 to 47	32 (1.26")	58.72 (2.31")	30.18 (1.19")	7/16-14 UNC	18 (0.71")	19 (0.75")	47.6 (1.87")	22.2 (0.87")	3/8-16 UNC	18 (0.71")
From 55 to 80	39.3 (1.55")	69.8 (2.75")	35.7 (1.40")	1/2-13 UNC	15 (0.59")	32 (1.26")	58.72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

EO.151.0725.14.00IM02



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)



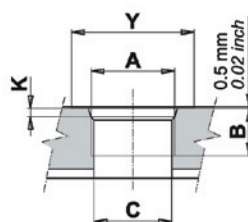
UNI-DIRECTIONAL						
PUMPS	INLET			OUTLET		
	A	B	C	A	B	C
From 23 to 40	G1	22 (0.87")	30.5 (1.2")	G3/4	16 (0.62")	24.4 (0.96")
From 47 to 80	G1 1/4	24 (0.94")	37 (1.46")	G1	22 (0.87")	30.5 (1.2")



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")



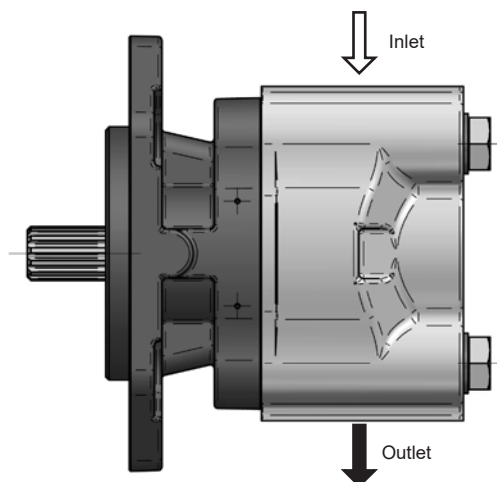
BI-DIRECTIONAL - REAR PORTS										
PUMPS	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 23 to 64	1-5/16-12 UN (SAE 16)	19 (0.75")	31 (1.22")	49 (1.93")	3.3 (0.13")	1-5/16-12 UN (SAE 16)	19 (0.75")	31 (1.22")	49 (1.93")	3.3 (0.13")

E0.151.0725.14.00IM02

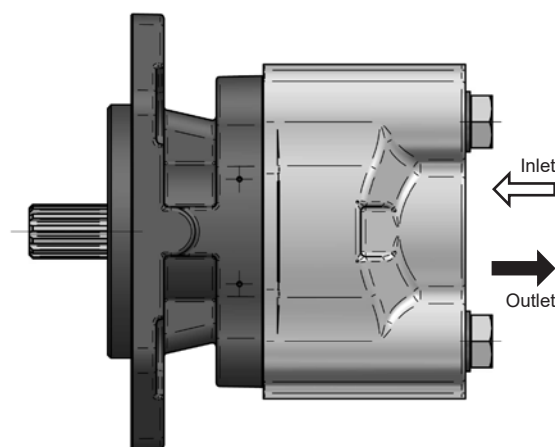


 example with clockwise rotation / **X** = plugged port

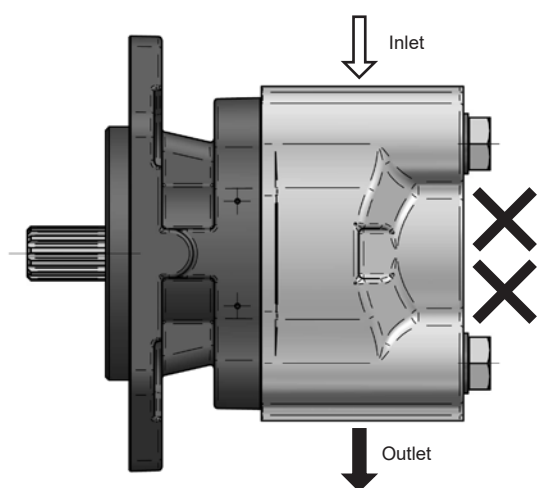
Ports layout - Single Pump



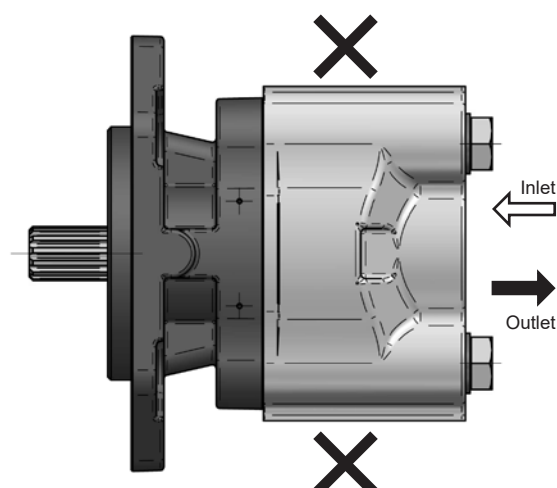
STANDARD CONFIGURATION



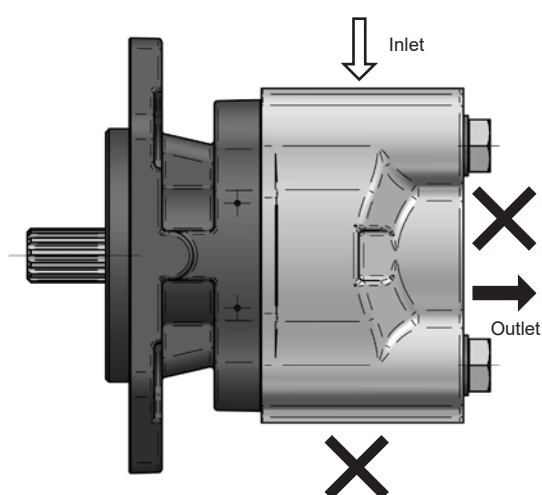
CODE 1



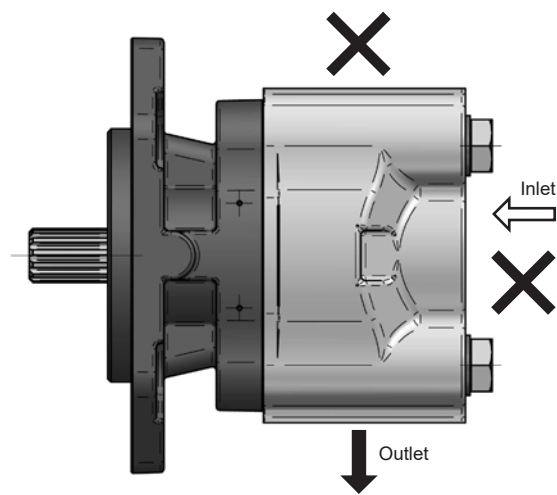
CODE 2



CODE 3



CODE 4



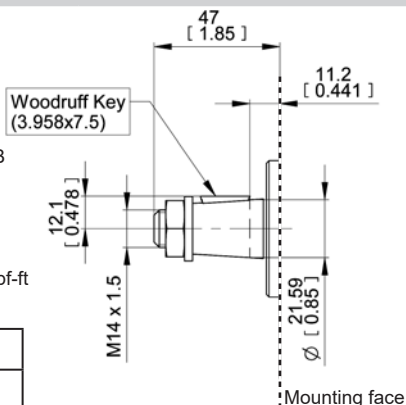
CODE 5

EO.151.0725.14.001M02



Drive Shaft

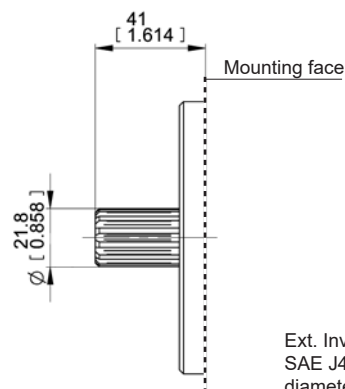
- Woodruff Key
3,958x7,5
- Washer
M14 TE-UNI 1751B
- Nut
M14x1,5 ISO 8675
- 40 Nm-29.7 lbf-ft



Part Number
Kit Woodruff Key+Nut+Washer
R12980070



Pressure values are lower for
displacement 55-64-72 cc/rev,
see page 57.



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

code 38



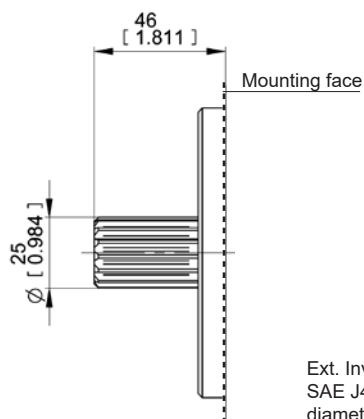
Max torque 250 Nm (2213 lbf in)

code 55

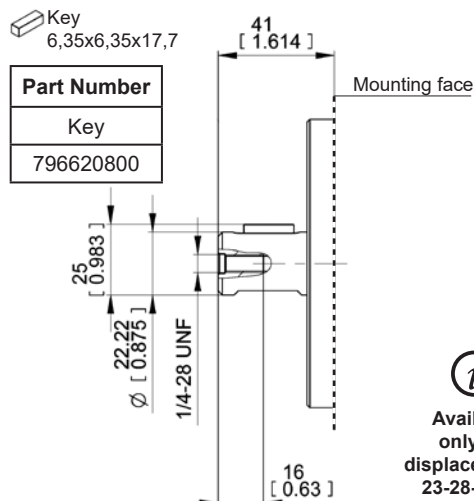
Max torque 330 Nm (2921 lbf in)

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



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

code 56

Max torque 480 Nm (4250 lbf in)

code 87

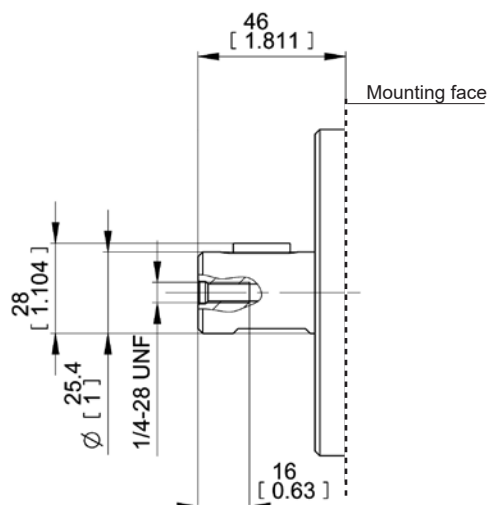
Max torque 220 Nm (1950 lbf in)

SAE BB 15T-16/32DP SPLINED

SAE B PARALLEL

- Key
6,35x6,35x17,7

Part Number
Key
796620800



code 88

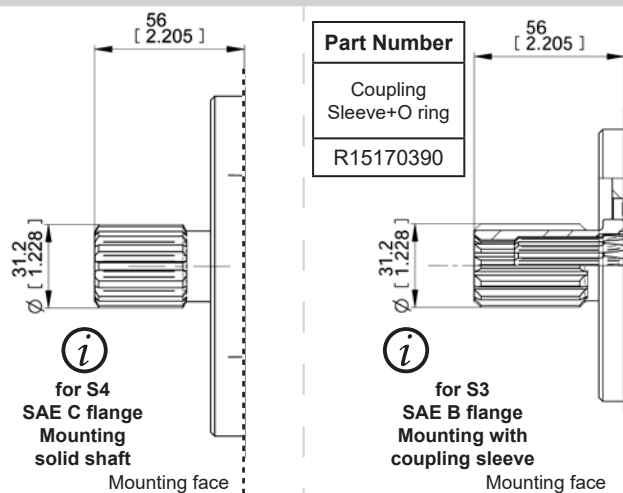
Max torque 320 Nm (2830 lbf in)

SAE BB PARALLEL

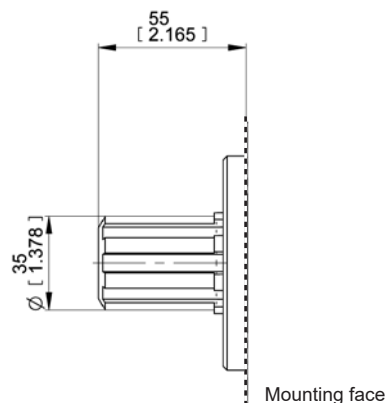
E0.151.0725.14.00IM02



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

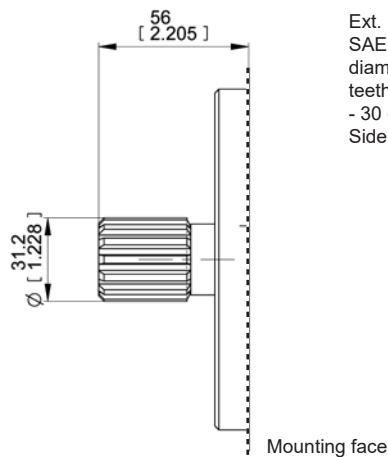
Max torque 480 Nm (4250 lbt in) Max torque 330 Nm (4250 lbt in)

SAE C 14T-12/24DP SPLINED

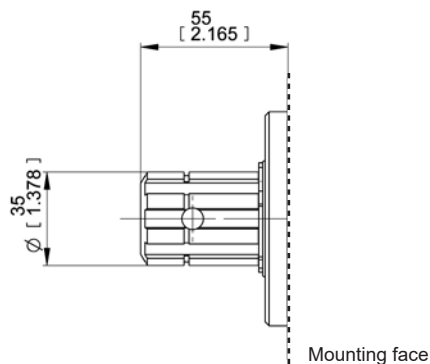
code 67

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

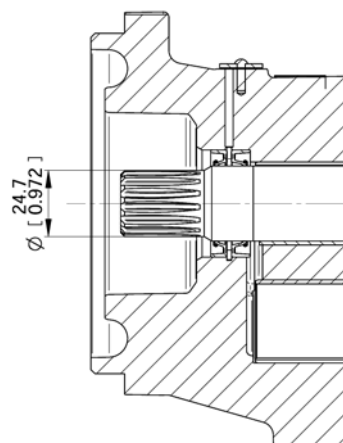
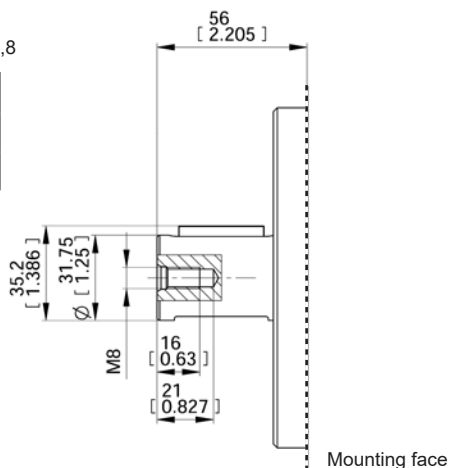
code 66

Max torque 480 Nm (4250 lbt in)

B8x32x36 DIN 5462 SPLINED

Key
7,94x7,94x31,8

Part Number
Key
796620800



code 89

Max torque 480 Nm (4250 lbt in)

SAE C PARALLEL

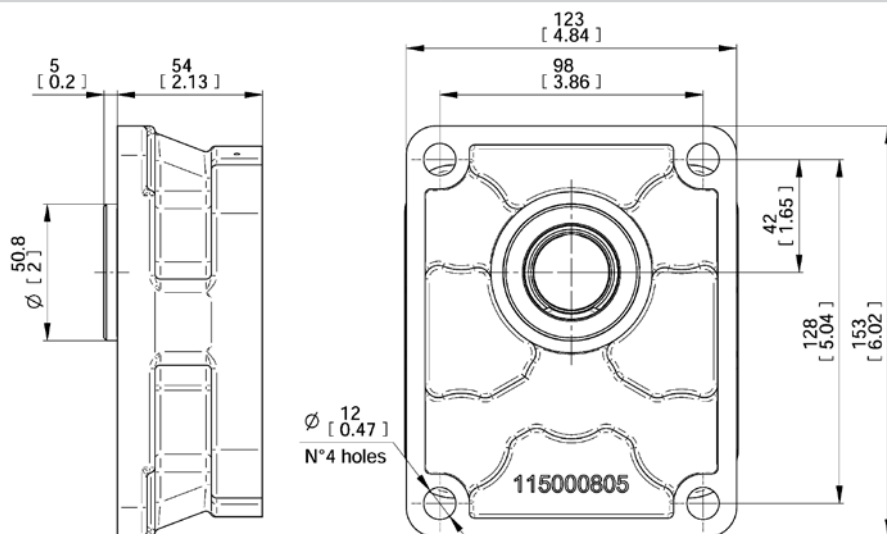
code 70

Max torque 480 Nm (4250 lbt in)

INTERNAL DRIVE SHAFT - W25X1.5X15X8F DIN 5480 SPLINED



Mounting Flanges

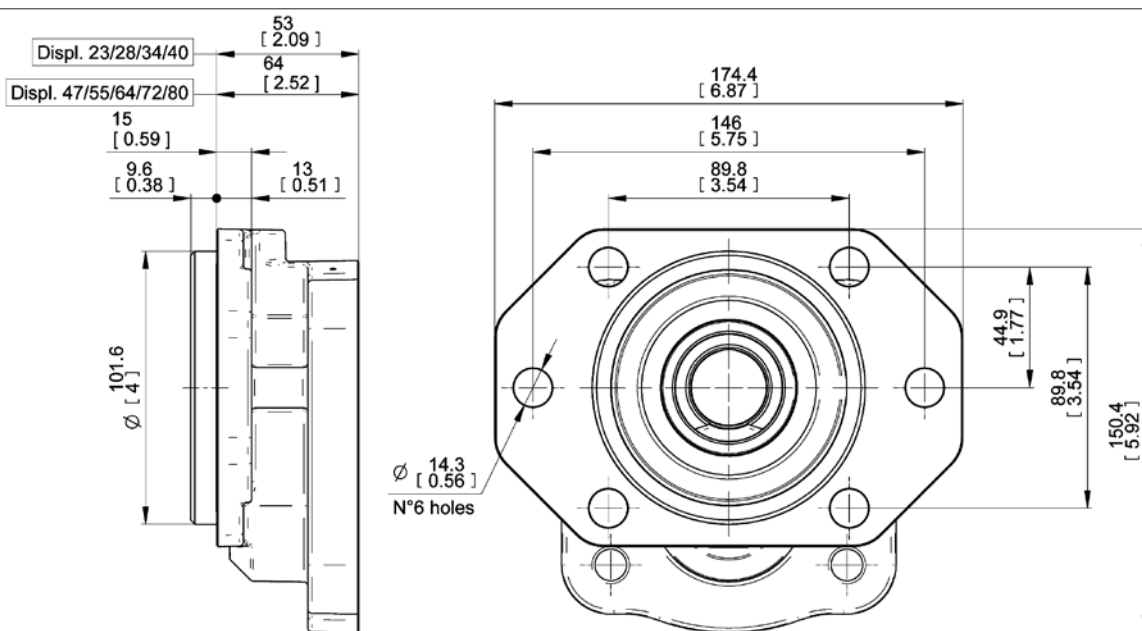


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 80-81)
38P2	R15240030 (NBR)	R12940010 (NBR)
	R15240031 (FPM)	R12940020 (FPM)

P2

With shaft code 38

EUROPEAN STANDARD



Code	Part Number (Unidirectional Pump)			
	Flange+Shaft seal kit		Shaft seal kit (See page 80-81)	
55S3	Displ. from 23 to 40	R15240010 (NBR) R15240011 (FPM)	Displ. from 47 to 80	R12940030 (NBR) R12940033 (FPM)
56S3				
87S3				
88S3				
58S3	Displ. from 23 to 40	R15240012 (NBR) R15240013 (FPM)	Displ. from 47 to 80	R15020190 (NBR) R15020191 (FPM)

S3

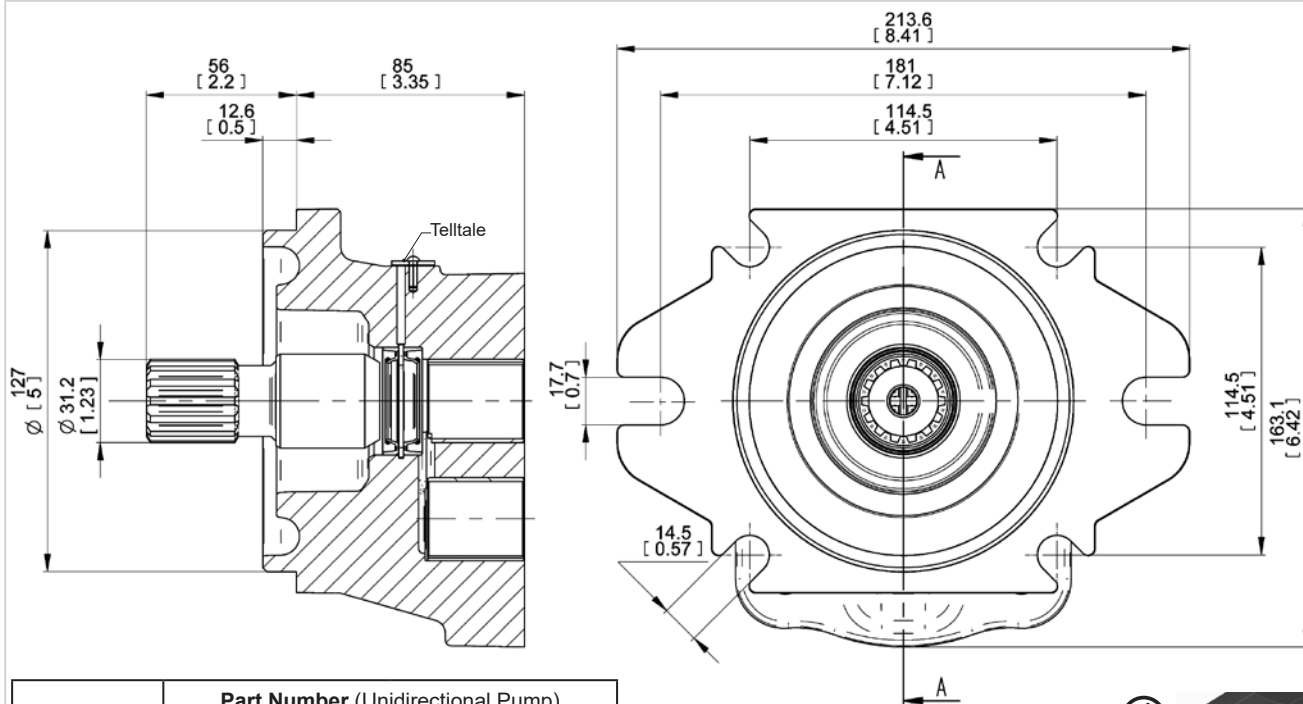
With shaft code 55-56-58-87-88

SAE B 2-4 BOLTS

E0.151.0725.14.00IM02



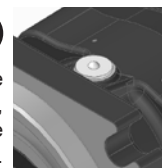
Mounting Flanges



Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 80-81)
58S4	R15020015 (NBR)	R15020190 (NBR)
	R15020017 (FPM)	R15020191 (FPM)



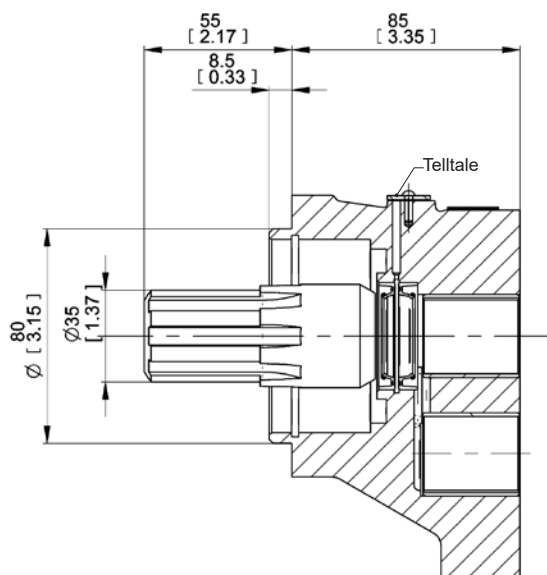
TellTale
drop in plug in case of failure,
outside leakage trough the
crossing hole is visible.



S4

With shaft code 58

SAE C 2-4 BOLTS



Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 80-81)
67Z2	R15020013 (NBR)	R15020200 (NBR)
	R15020120 (FPM)	R15020201 (FPM)

Z2

With shaft code 67

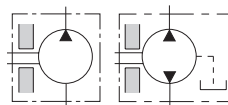
4 Bolts for ZF gear box

EO.151.0725.14.001M02

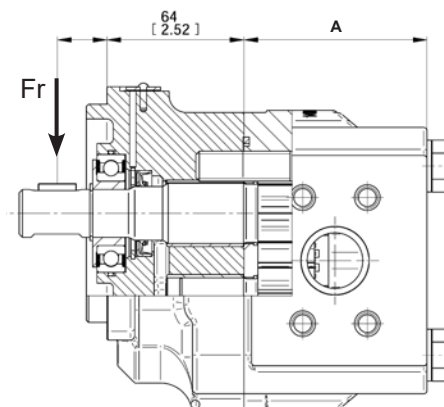
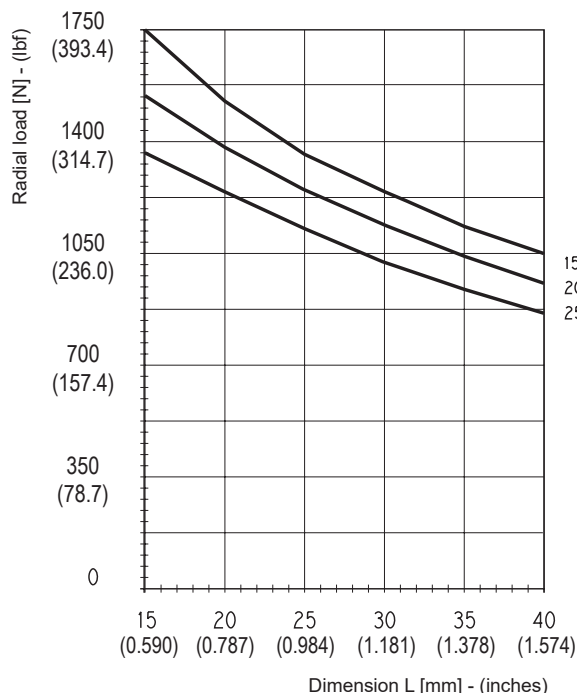


Mounting Flanges with Outrigger Bearing for Medium Loads (R3)

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]

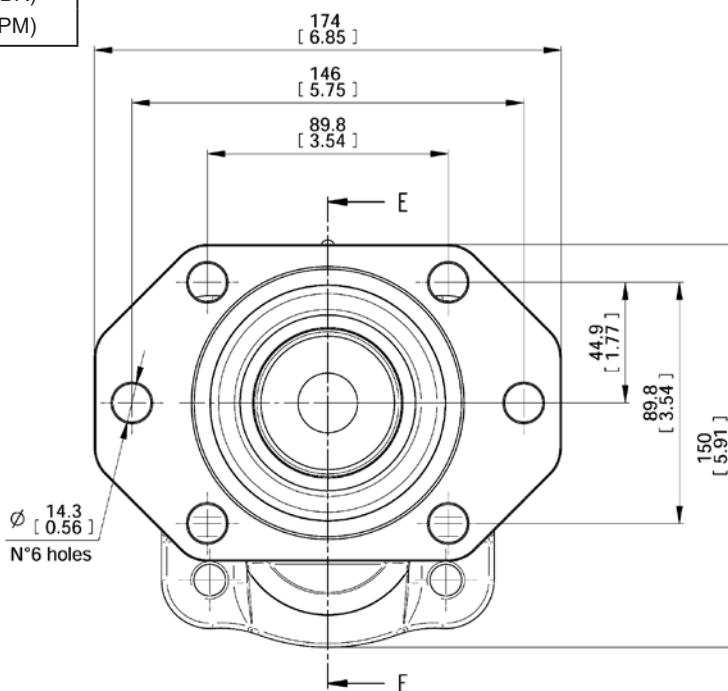
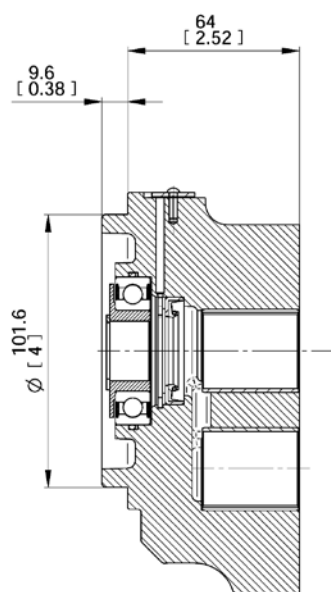


Type	A	
	mm	in
PG330 - 23	77	3.03
PG330 - 28	81	3.19
PG330 - 34	85.5	3.36
PG330 - 40	90	3.54
PG330 - 47	101.5	3.40
PG330 - 55	107.5	4.23
PG330 - 64	114.5	4.51
PG330 - 72	121.5	4.78
PG330 - 80	127.5	5.02

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



Mounting with special shafts.
(Please contact our sales department).



R3



With shaft code 55-56-87-88

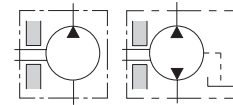
SAE B 2-4 BOLTS

E0.151.0725.14.00IM02

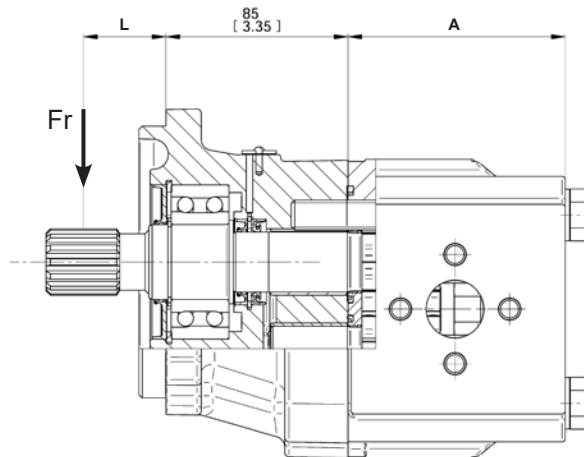


Mounting Flanges with Outrigger Bearing for Heavy Loads (Z1- R8)

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%.



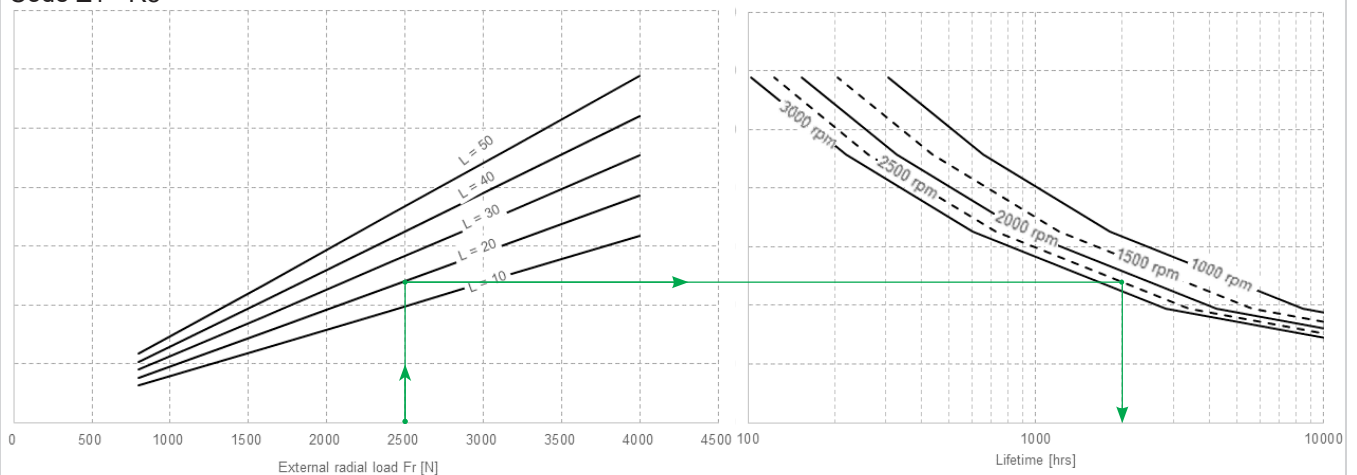
L=Distance between mounting flange and radial force point of application [mm-inches]



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

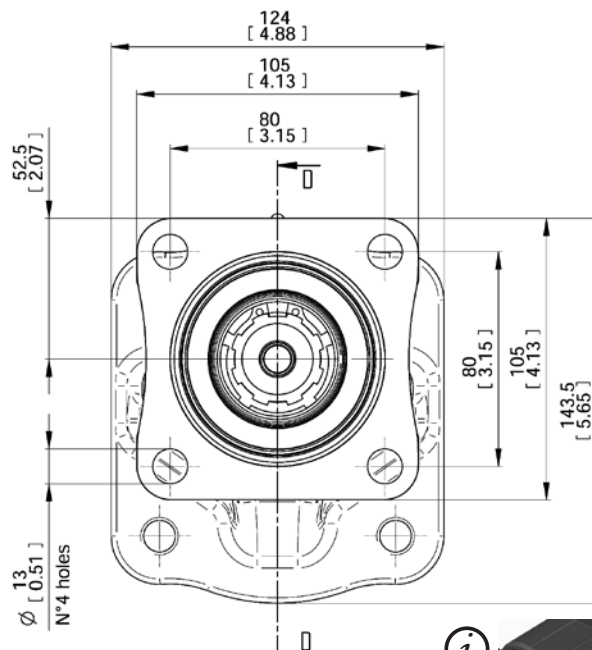
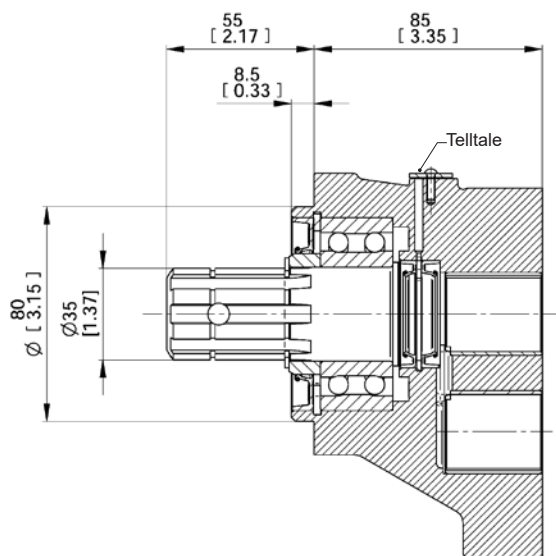
Code Z1 - R8



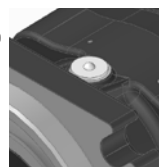
EO.151.0725.14.00IM02



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.

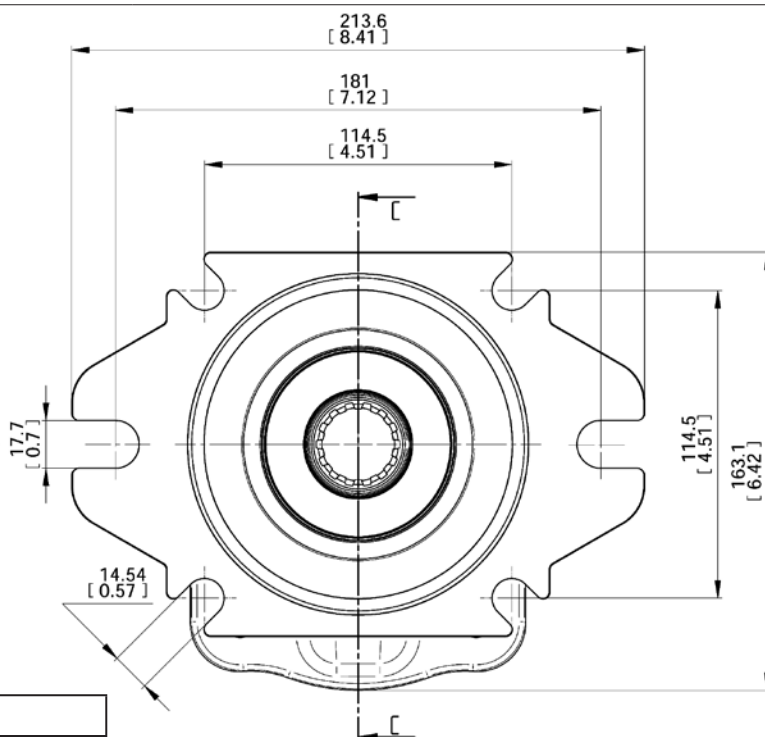
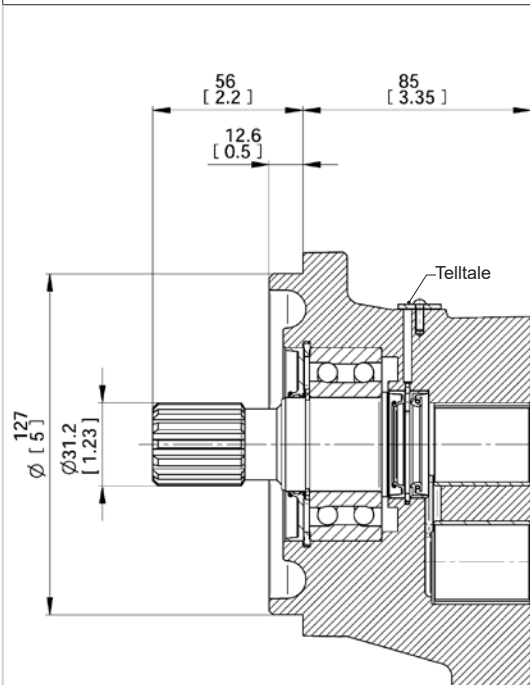


Code	Part Number	
	Flange+Bearing support	
66Z1	R15020012 (NBR)	R15020018 (FPM)

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

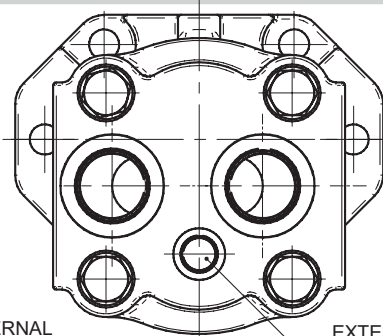
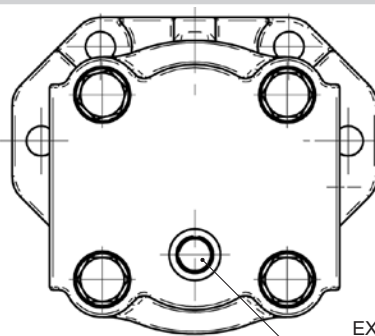
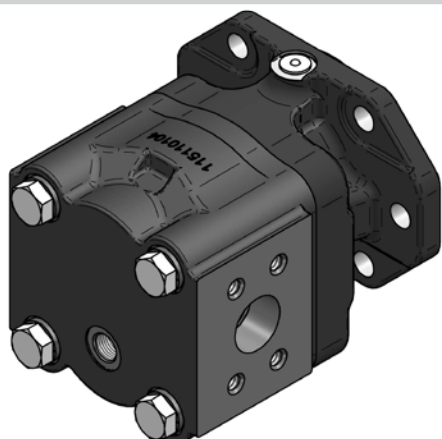
With shaft code 57-89

SAE C 2-4 BOLTS

E0.151.0725.14.00IM02



External Drain for Bidirectional Pump



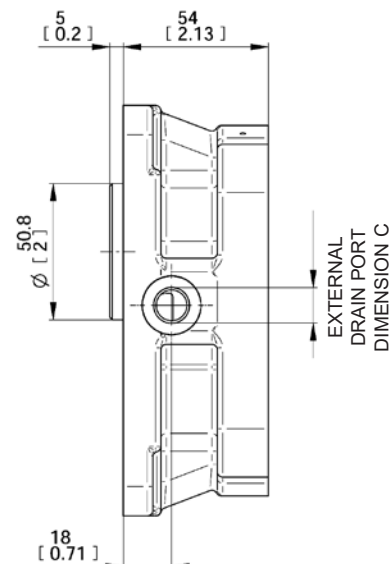
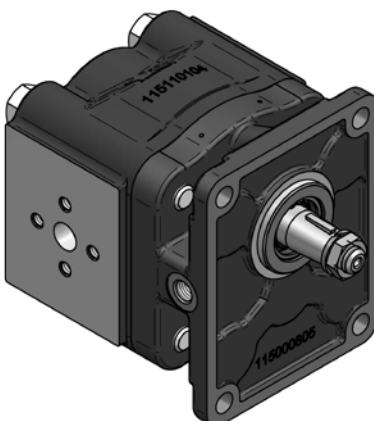
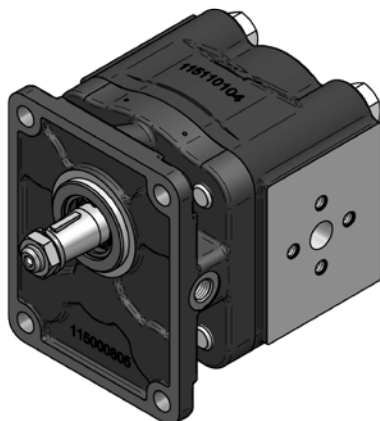
EXTERNAL
DRAIN PORT
DIMENSION C

EXTERNAL
DRAIN PORT
DIMENSION C

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

 Available only threaded
ports see page 66

GEAR HOUSING TYPES



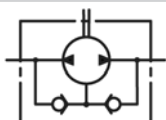
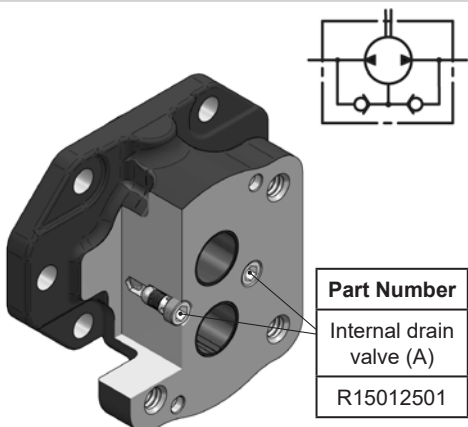
Code	Part Number	Threaded Drain Port
		C
P2 with lateral drain	R15000815	G1/4



LD

P2 (EUROPEAN STANDARD) WITH LATERAL DRAIN

Internal Drain Valve for Bidirectional Pump



Part Number
Internal drain valve (A)
R15012501

Code	Part Number			
	Flange+Shaft seal kit+Internal drain valve (A)			
P2-IDV	R15030020 (NBR)		R15030030 (FPM)	
S3-IDV	shafts 55-56-58-87	shaft 88	shafts 55-56-58-87	shaft 88
	R15012503 (NBR) (from 23cc to 40cc)	R15012511 (NBR) (from 23cc to 40cc)	R15012505 (FPM) (from 23cc to 40cc)	R15012512 (FPM) (from 23cc to 40cc)
	R15012502 (NBR) (from 47cc to 80cc)	R15012513 (NBR) (from 47cc to 80cc)	R15012506 (FPM) (from 47cc to 80cc)	R15012514 (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)	

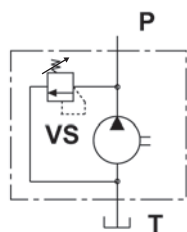
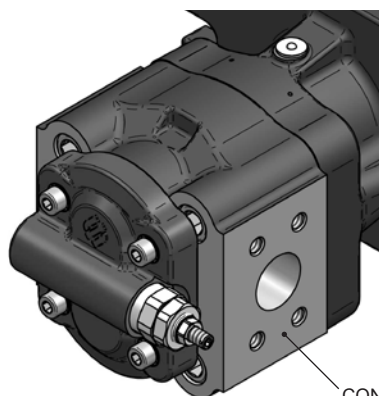
IDV

INTERNAL DRAIN FOR BI-DIRECTIONAL PUMP

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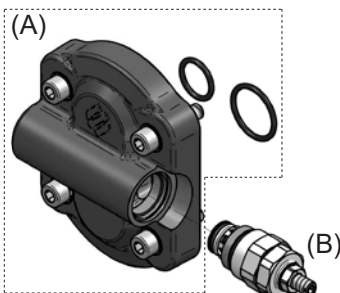
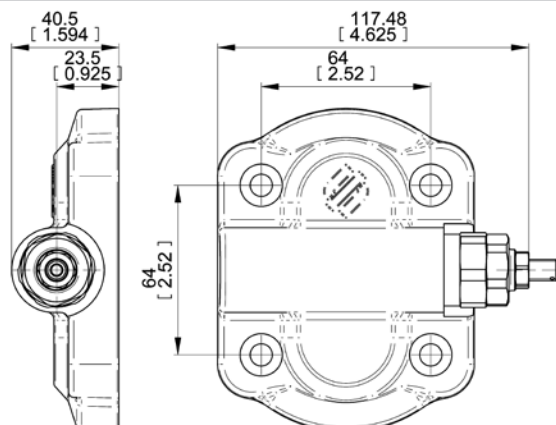


Rear Covers with Valves



Available up to 80 l/min

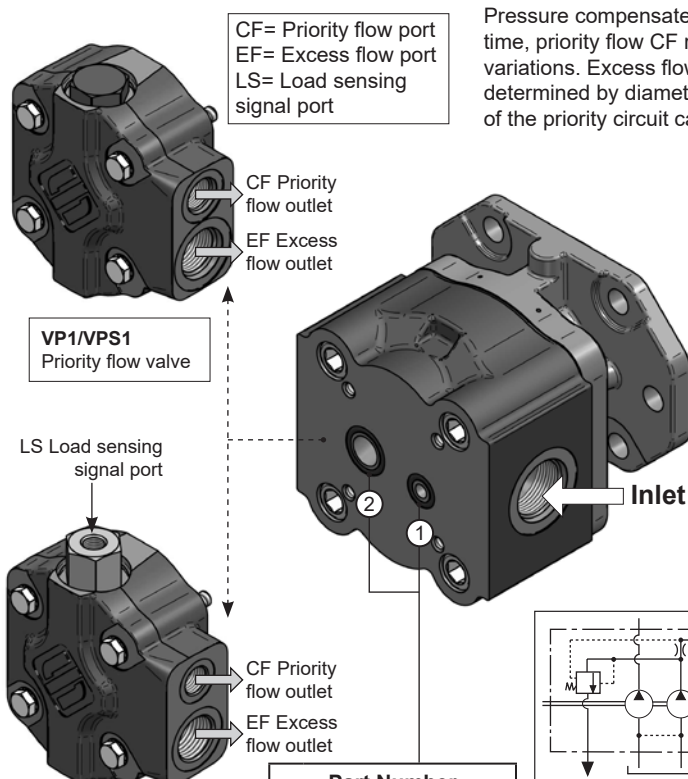
CONFIGURATION WITH SPECIAL
GEAR HOUSING



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

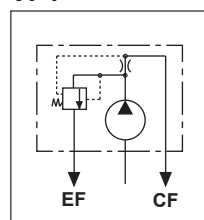
VS

MAIN RELIEF VALVE



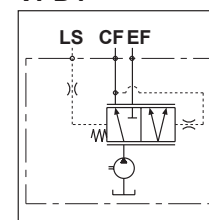
Pressure compensated priority flow valve to feed two pressurized circuit at the same time, priority flow CF remains constant regardless of pump speed and system pressure variations. Excess flow EF is directly proportional to pump speed. Priority flow is determined by diameter of calibrated orifice, see table at page 77). The max. pressure of the priority circuit can be limited by valve which relieves into pump suction line.

VP1



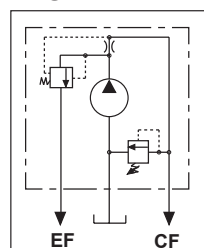
Priority flow valve, excess flow available to second actuator.

VPD1



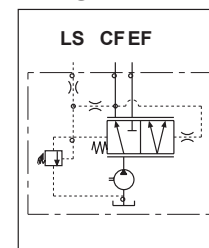
Load sensing priority valve with dynamic signal without main relief valve.

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.

Part Number

O-Ring

1	799111200 (NBR)
2	799111900 (NBR)

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

VP1-VPS1

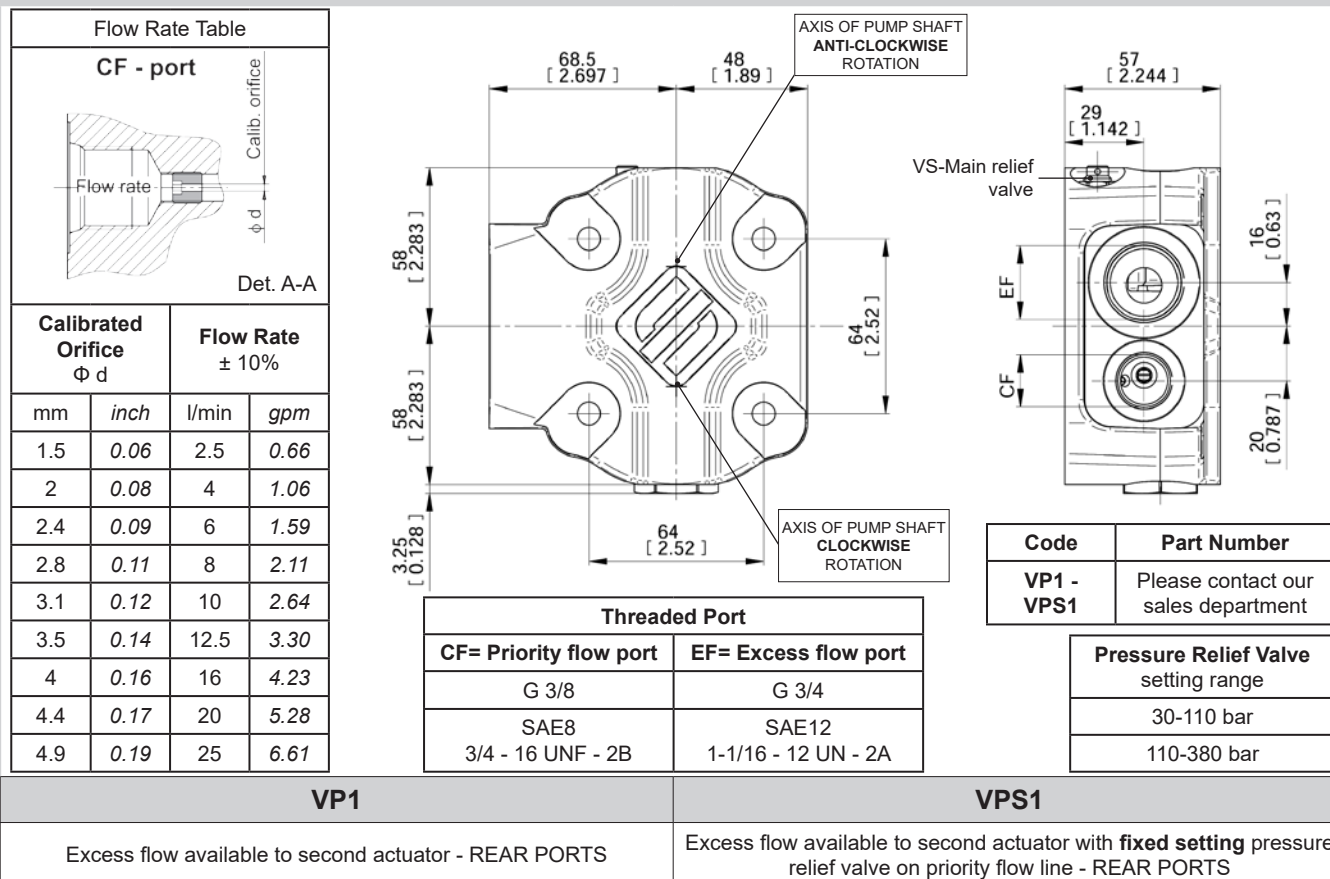
PRESSURE COMPENSATED PRIORITY FLOW VALVES

VPD1-VPDS1

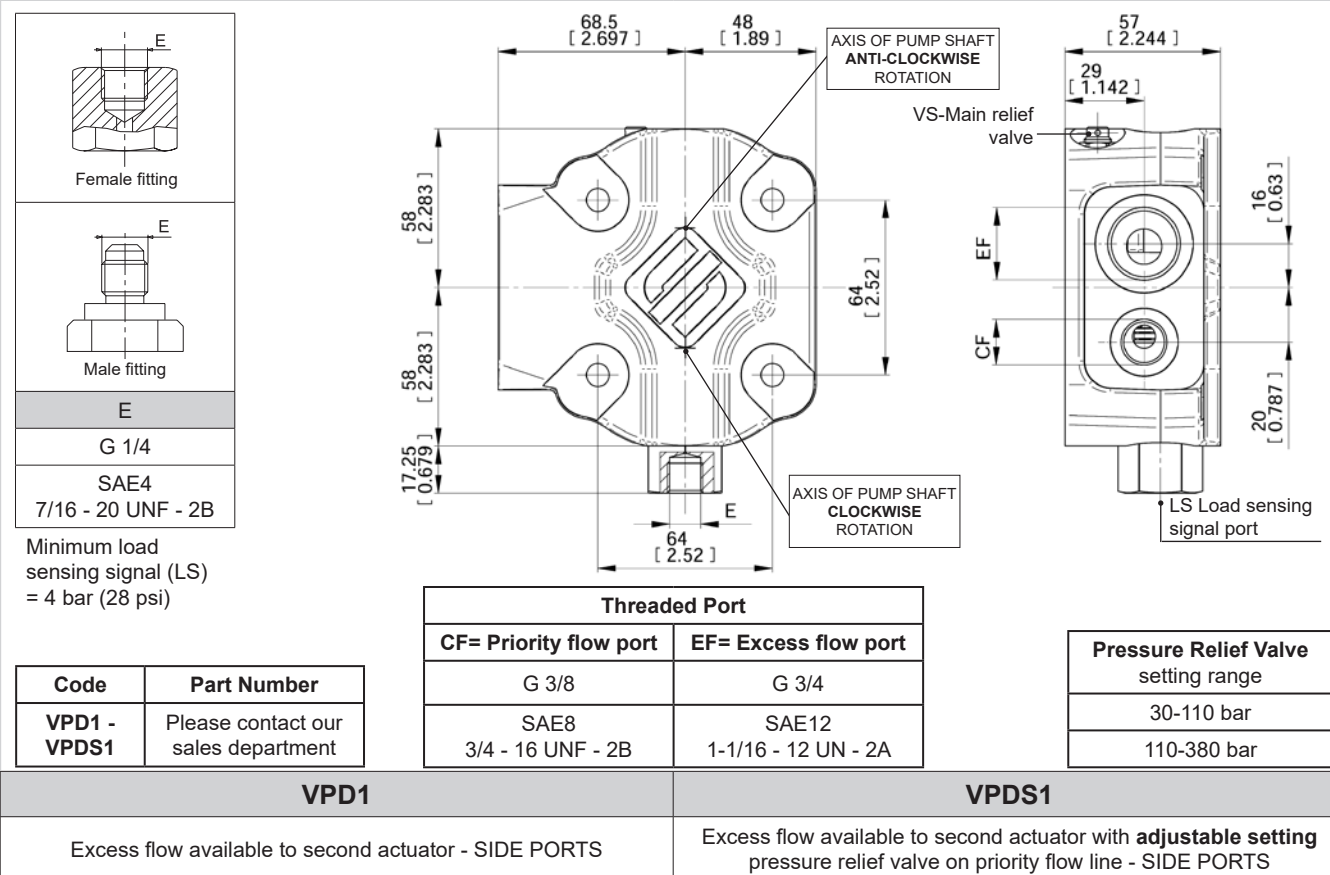
LOAD SENSING PRIORITY VALVES



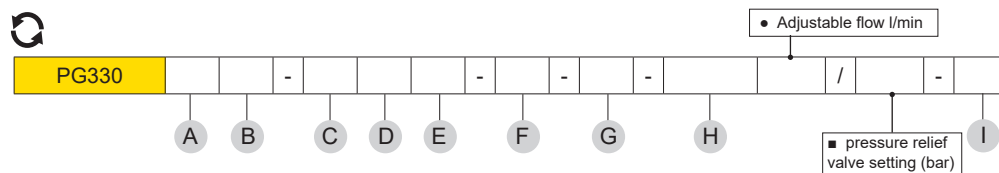
Pressure Compensated Priority Flow Valve



Load Sensing Priority Valve



EO.151.0725.14.001M02



A	CODE	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	CODE
	Clockwise	D
	Anti-clockwise	S
	Reversible	R

C	PORTS	CODE
	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	CODE
	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

E	MOUNTING FLANGES	CODE
	European standard Ø50.8	P2
	SAE B 2-4 BOLTS	S3
	SAE C 2-4 BOLTS	S4
	4 BOLTS FOR ZF GEAR BOX	Z2
	SAE B 2-4 BOLTS - Medium Loads with Outtrigger bearing	R3
	SAE C 2-4 BOLTS - Heavy Loads with Outtrigger bearing	R8
	4 BOLTS FOR ZF GEAR with Outtrigger bearing	Z1

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

G	PORTS LAYOUT	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

H	FLANGES AND REAR COVERS	CODE
	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

I	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

How to order Single pump

PG330, displacement (28), clockwise rotation (D), ports European (P), drive shaft (38), mounting flange (P2)= **PG330-28D-P38P2**

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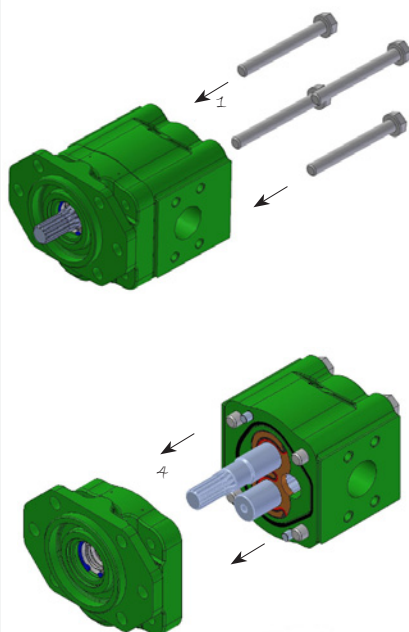


Single Pump Changing Rotation Instructions



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

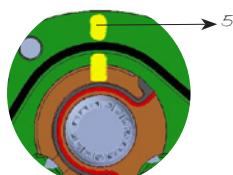


1 - Loosen and fully unscrew the bolts.

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

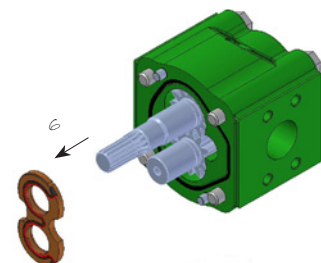
3 - Coat the shaft end with grease to avoid damaging the shaft seal.

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



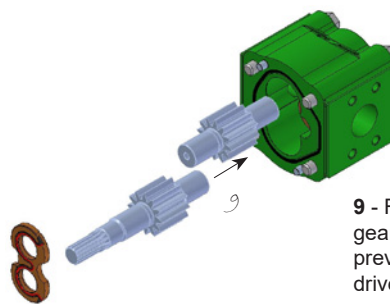
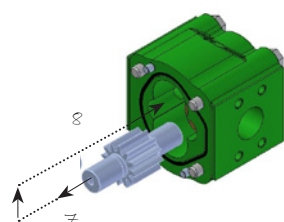
5 - Mark the position of the bushing and eventually of the thrust plates, as well with reference to the body.

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

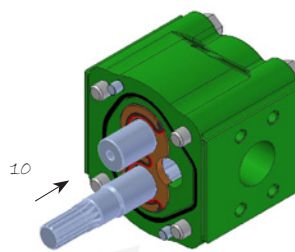


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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.

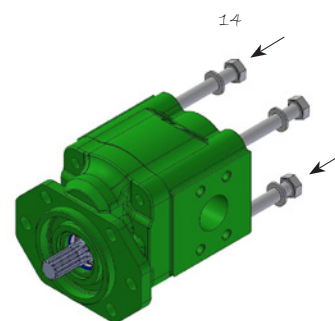
12 - Verify that the two plugs are located in the body.

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.



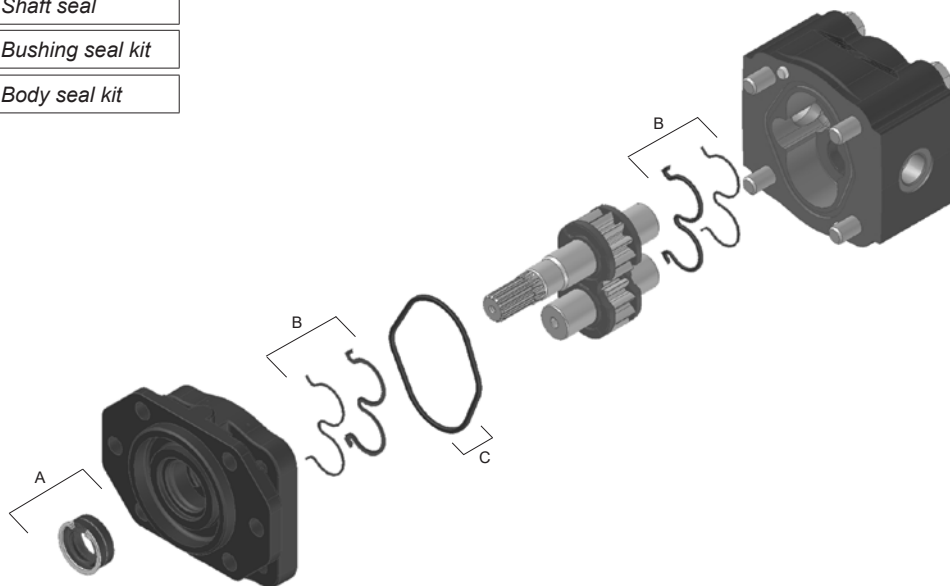
CLOCKWISE ROTATION





Unidirectional Pump Seal Spare Parts Kit

A	Shaft seal
B	Bushing seal kit
C	Body seal kit



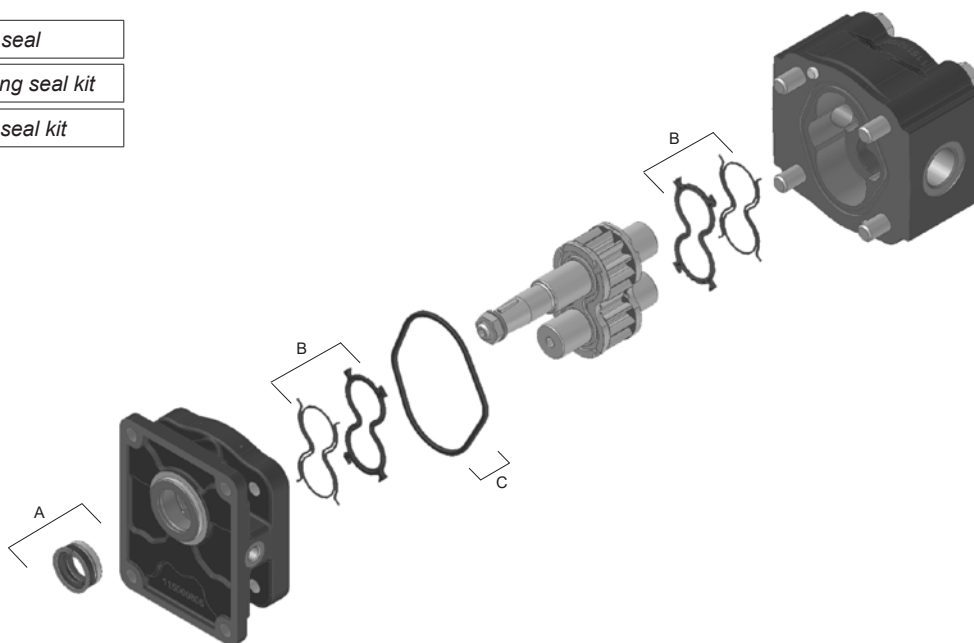
SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND	
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)
38P2	Part Number R15170010		Part Number R15170013	
	Part Number R12940010	Part Number R12940020	Part Number R12940013	Part Number R12940020
55S3 56S3 58S3 87S3 88S3	Part Number R15170020		Part Number R15170023	
	Part Number R12940030	Part Number R12940033	Part Number R15170023	Part Number R12940033
58S4	Part Number R15170030		Part Number R15170031	
	Part Number R15020190	Part Number R15020191	Part Number R15170031	Part Number R15020191
67Z2	Part Number R15170430		Part Number R15170431	
	Part Number R15020200	Part Number R15020201	Part Number R15170431	Part Number R15020201

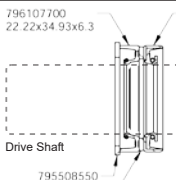
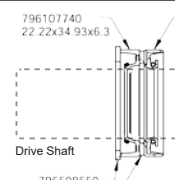
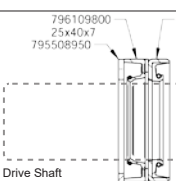
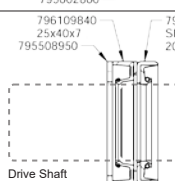
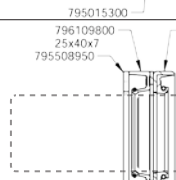
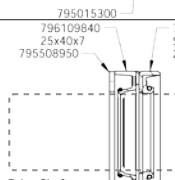
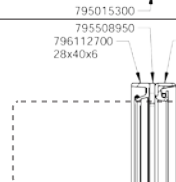
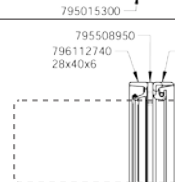
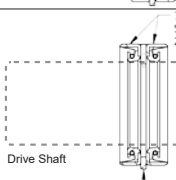
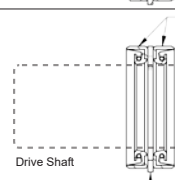
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Bidirectional Pump Seal Spare Parts Kit

A	Shaft seal
B	Bushing seal kit
C	Body seal kit

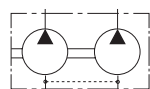
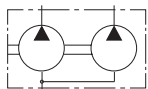


SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND	
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)
38P2	Part Number R15170350	 796107700 22.22x34.93x6.3 796127100 SBHP 22.22x34.93x6.3 20 bar 795508550 795002800	Part Number R15170360	 796107740 22.22x34.93x6.3 796127140 SBHP 22.22x34.93x6.3 20 bar 795508550 795002800
	Part Number R15170370	 796109800 25x40x7 795508950 796126600 SBHP 25x40x7 20 bar 795015300	Part Number R15170380	 796109840 25x40x7 795508950 796126640 SBHP 25x40x7 20 bar 795015300
88S3	Part Number R15170160	 796109800 25x40x7 795508950 796126700 SBHP 25.4x40x7 20 bar 795015300	Part Number R15170400	 796109840 25x40x7 795508950 796126740 SBHP 25.4x40x7 20 bar 795015300
	Part Number R15170410	 795508950 796112700 28x40x6 796126500 SBHP 28x40x7 20 bar	Part Number R15170420	 795508950 796112740 28x40x6 796126540 SBHP 28x40x7 20 bar
67Z2	Part Number R15170470	 796126500 SBHP 28x40x7 20 bar 795508950	Part Number R15170471	 796126540 SBHP 28x40x7 20 bar 795508950

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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.

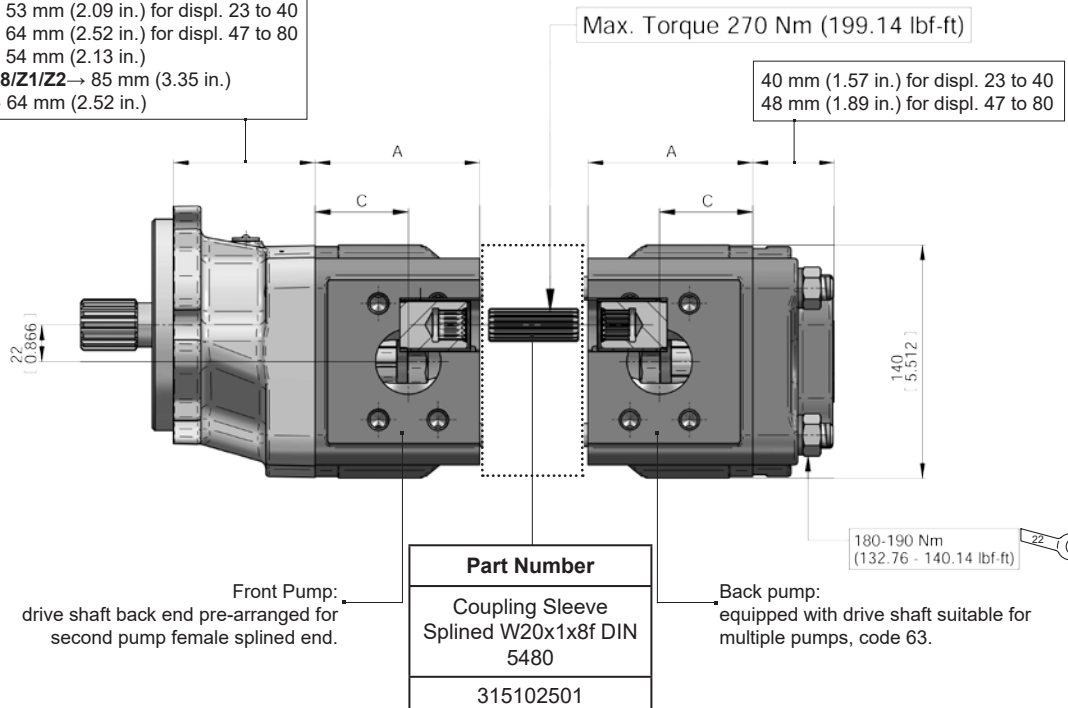
TYPE	Displacement		Dimension A		Dimension C (Front and Back pump)						Max. Continuous pressure p_1		Intermittent pressure p_2		Peak pressure p_3		Min. speed at p_1	Max. speed at p_2
	cm ³ /rev	cu.in/rev	mm	in	Type port G-R		Type port P		Type port W-S		bar	psi	bar	psi	bar	psi	rpm	
					mm	in	mm	in	mm	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 p_1 pressure.
Max pressure must be lowered by 10% for birectional pump.

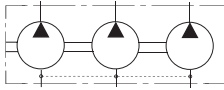
For flanges code:
S3→ 53 mm (2.09 in.) for displ. 23 to 40
64 mm (2.52 in.) for displ. 47 to 80
P2→ 54 mm (2.13 in.)
S4/R8/Z1/Z2→ 85 mm (3.35 in.)
R3→ 64 mm (2.52 in.)



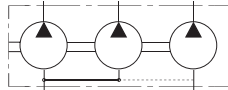
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PG330 Triple Pump - Dimensions and Technical Data



**TRIPLE
GEAR PUMPS**
with individual inlet port

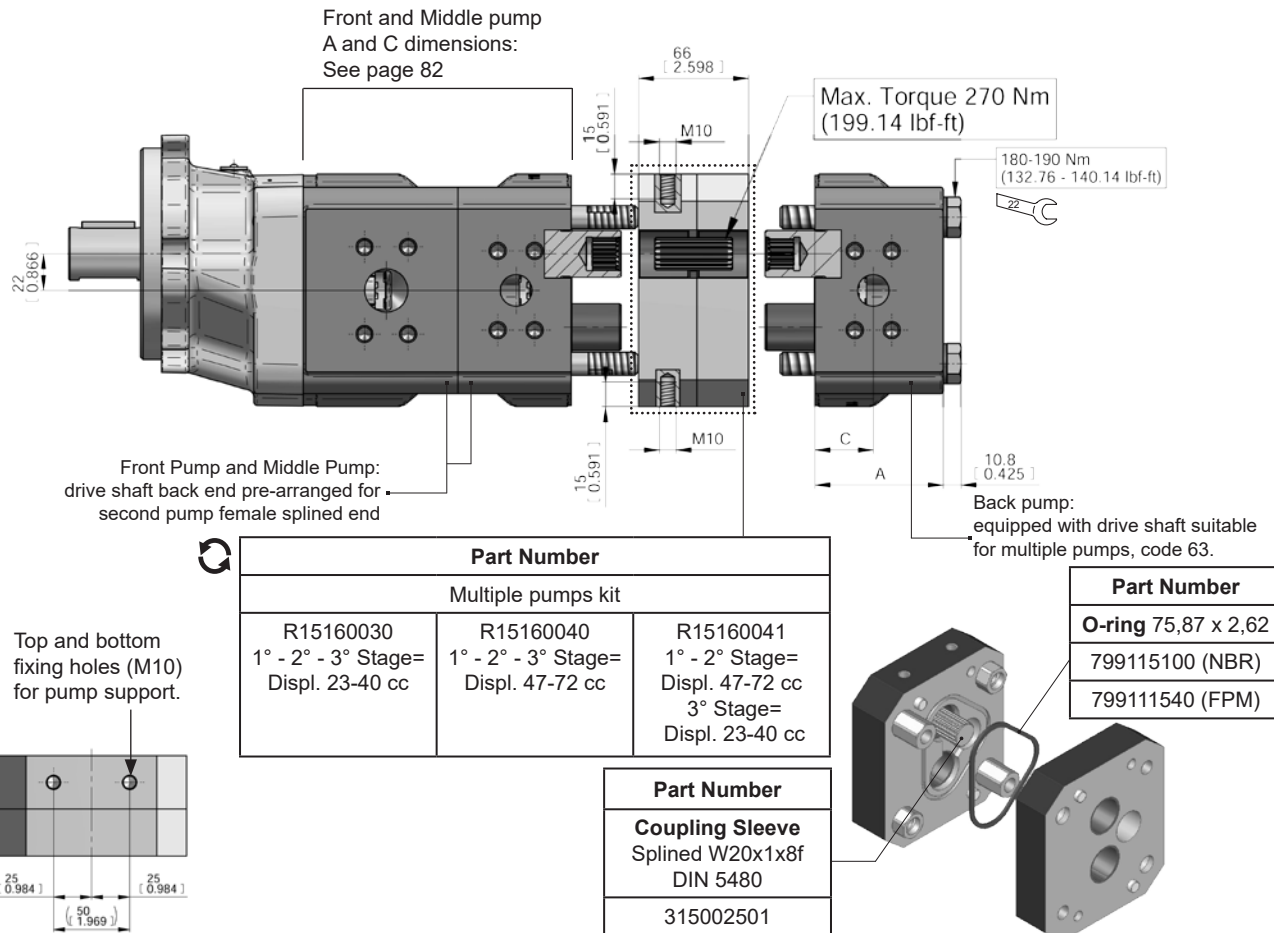


**TRIPLE
GEAR PUMPS**
with common inlet port

TYPE	Displacement		Dimension A (Back pump)		Dimension C (Back pump)		Max. 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.

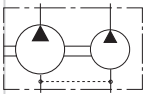
ⓘ **Max Speed must be lowered by 10% for system working continuously at p_1 pressure.**
Max pressure must be lowered by 10% for birectional pump.



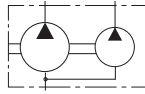
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PG330 with Pump 2PE or 2PGE piggy back pump - Dimensions



**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.

TYPE	Displacement		Dimension A		Dimension C (Front and Back pump)						TYPE	Displacement		Dimension A (2PGE-2PE)		Dimension C (2PGE-2PE)		
	cm³/rev	cu.in/rev	mm	in	Type port G-R		Type port P		Type port W-S									
					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				
											-	2PE - 4.5	4.6	0.27				
PG330 - 34	34.4	2.10	80.5	3.17	42.5	1.67	37.5	1.48	40	1.57	2PGE - 6.5	2PE - 6.5	6.5	0.40	49.95	1.97	25	0.98
											2PGE - 8.3	2PE - 8.3	8.2	0.50	52.8	2.07	26.4	1.04
PG330 - 40	40.3	2.46	85	3.35	47	1.85	42	1.65	44.5	1.75	-	2PE - 10.5	10.6	0.65	56.3	2.35	28.15	1.11
PG330 - 47	47.4	2.89	96	3.78	50	1.97	50	1.97	50	1.97	2PGE - 11.3	2PE - 11.3	11.5	0.68	59.7	2.35	29.75	1.17
											-	2PE - 12.5	12.7	0.77				
PG330 - 55	55.2	3.37	102	4.02	56	2.20	52	2.05	56	2.20	2PGE - 13.8	2PE - 13.8	13.8	0.84	63.5	2.5	31.75	1.25
PG330 - 64	64.3	3.92	109	4.29	58	2.28	58	2.28	58	2.28	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
PG330 - 72	73.4	4.48	116	4.57	61	2.40	61	2.40	61	2.40	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
PG330 - 80	80.6	4.91	122	4.80	65	2.56	65	2.56	65	2.56	2PGE - 28	-	28.71	1.71	89	3.50	48	1.89

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

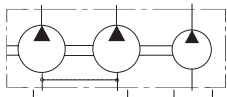
Available AS configuration

Part Number

Multiple pumps kit with separated stages for different fluid (2 tanks) - **Code AS**

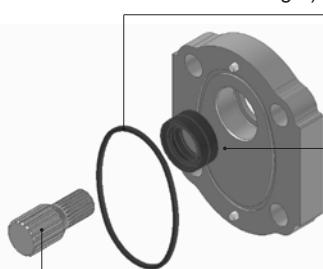
R15190010 (NBR)

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

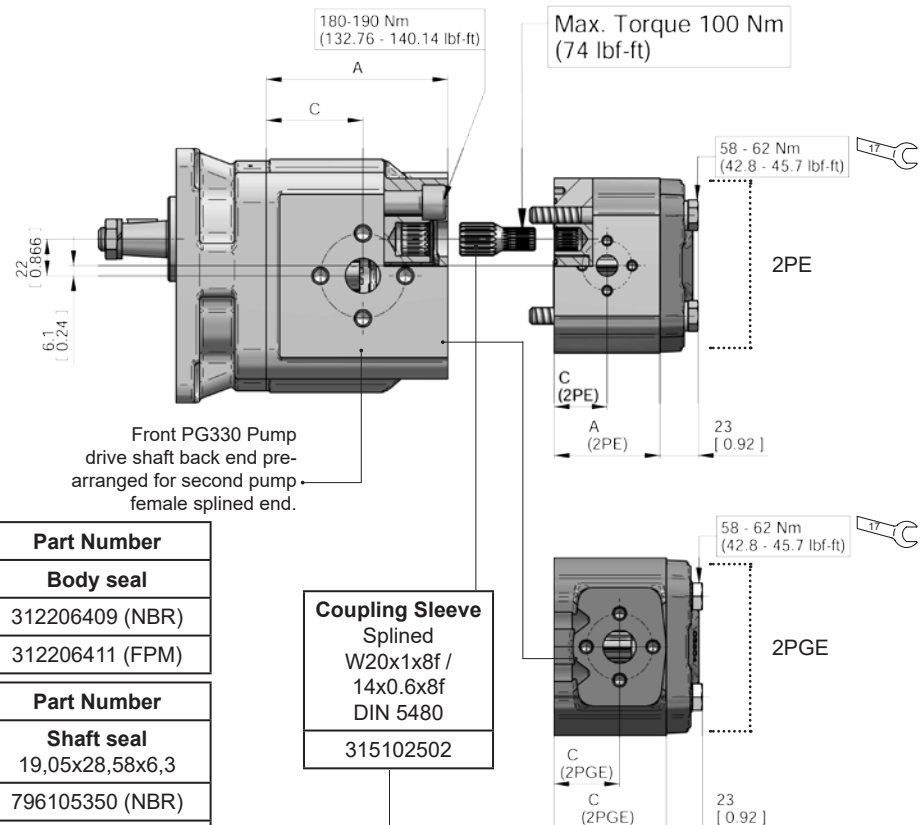
796105350 (NBR)

796105340 (FPM)

Coupling Sleeve

Splined
W20x1x8f /
14x0.6x8f
DIN 5480

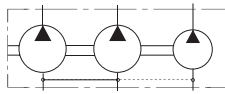
315102502



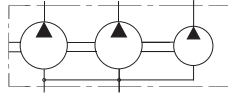
E0.151.0725.14.00IM02



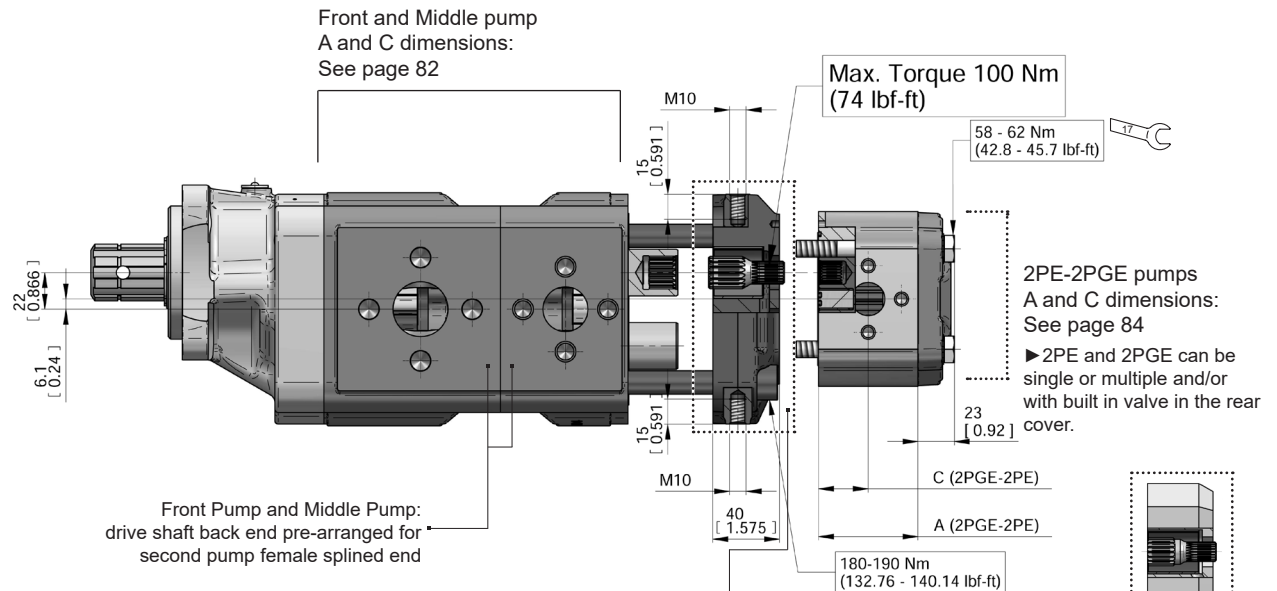
PG330 Multiple with Pump 2PE or 2PGE piggy back pump - Dimensions



**MULTIPLE
GEAR PUMPS**
with individual inlet port



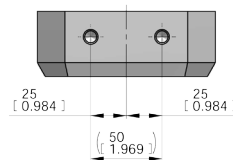
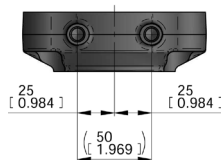
**MULTIPLE
GEAR PUMPS**
with common inlet port on first two stages



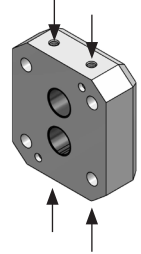
Part Number	
Multiple pumps kit	
R15160070 (Displ. from 23 to 40)	R15160080 (Displ. from 47 to 80)



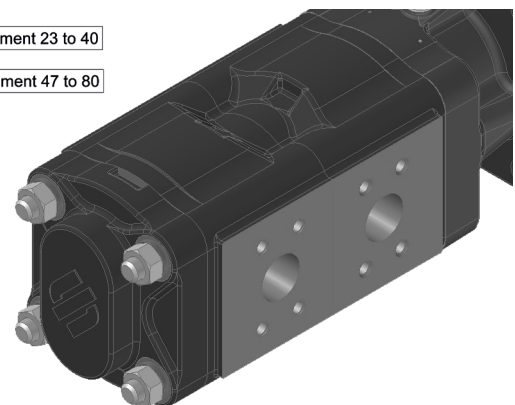
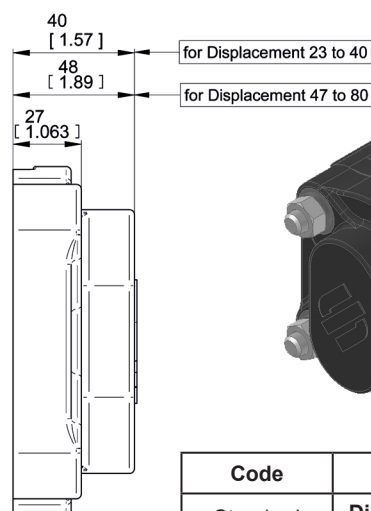
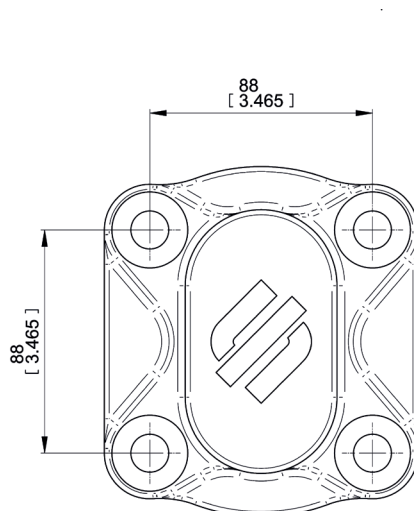
Top and bottom
fixing holes (M10)
for pump support.



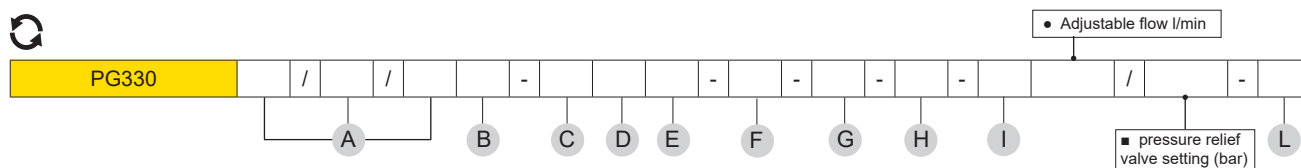
Top and bottom
fixing holes (M10)
for pump support.



Rear Cover - Dimensions



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



A	CODE	DISPLACEMENTS
	23	23.4 cm³/rev. 1.43 cu.in/rev.
	28	28.6 cm³/rev. 1.74 cu.in/rev.
	34	34.4 cm³/rev. 2.1 cu.in/rev.
	40	40.3 cm³/rev. 2.46 cu.in/rev.
	47	47.5 cm³/rev. 2.89 cu.in/rev.
	55	55.2 cm³/rev. 3.37 cu.in/rev.
	64	64.3 cm³/rev. 3.92 cu.in/rev.
	72	73.4 cm³/rev. 4.48 cu.in/rev.
	80	80.6 cm³/rev. 4.91 cu.in/rev.

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS	CODE
	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	CODE
	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

E	MOUNTING FLANGES	CODE
	European standard Ø50.8	P2
	SAE B 2-4 BOLTS	S3
	SAE C 2-4 BOLTS	S4
	4 BOLTS FOR ZF GEAR BOX	Z2
	SAE B 2-4 BOLTS - Medium Loads with Outtrigger bearing	R3
	SAE C 2-4 BOLTS - Heavy Loads with Outtrigger bearing	R8
	4 BOLTS FOR ZF GEAR with Outtrigger bearing	Z1

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

G	PORTS LAYOUT	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

H	INLET PORTS	CODE
	Common Inlet: Pump with one inlet port opened, all the other inlet port are closed. Number 1, 2 or 3 identify the body where inlet port is open.	UA

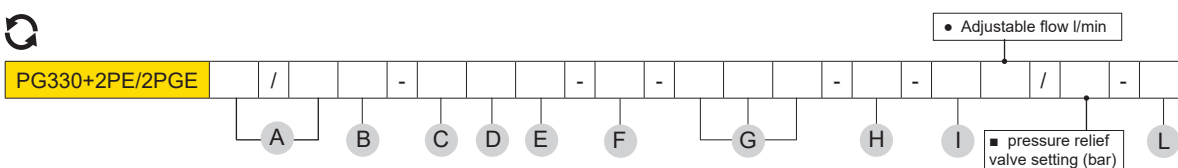
I	FLANGES AND REAR COVERS	CODE
	Priority flow valve with excess flow to 2nd actuator	• VP1
	Priority flow valve with excess flow to 2nd actuator with main relief valve	■ VPS1
	Load sensing priority valve with dinamic signal	• VPD1
	Load sensing priority valve with dinamic signal and main relief valve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

L	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

How to order Multiple pump

PG330, displacement first stage (40), displacement second stage (28), clockwise rotation (D), ports European (P), drive shaft (38), mounting flange (P2)= **PG330-40/28D-P38P2**

E0.151.0725.14.00IM02



A	CODE	DISPLACEMENTS
	23	23.4 cm³/rev. 1.43 cu.in/rev.
	28	28.6 cm³/rev. 1.74 cu.in/rev.
	34	34.4 cm³/rev. 2.1 cu.in/rev.
	40	40.3 cm³/rev. 2.46 cu.in/rev.
	47	47.5 cm³/rev. 2.89 cu.in/rev.
	55	55.2 cm³/rev. 3.37 cu.in/rev.
	64	64.3 cm³/rev. 3.92 cu.in/rev.
	72	73.4 cm³/rev. 4.48 cu.in/rev.
	80	80.6 cm³/rev. 4.91 cu.in/rev.

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS	CODE
	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	CODE
	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

How to order Multiple pump with 2PE or 2PGE

PG330, displacement first stage (47), displacement second stage (28), clockwise rotation (D), ports European (P), drive shaft (55), mounting flange (S3) + 2PE, displacement (8.3), ports European (P)= PG330-47/28D-P55S3-2PE8.3P

E	MOUNTING FLANGES	CODE
	European standard Ø50.8	P2
	SAE B 2-4 BOLTS	S3
	SAE C 2-4 BOLTS	S4
	4 BOLTS FOR ZF GEAR BOX	Z2
	SAE B 2-4 BOLTS - Medium Loads WITH OUTRIGGER BEARING	R3
	SAE C 2-4 BOLTS - Heavy Loads with Outtrigger bearing	R8
	4 BOLTS FOR ZF GEAR with Outtrigger bearing	Z1

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

G	COMBINATION WITH 2PE or 2PGE
	2PE Piggy back configuration: - Displacement at page 84 - Port type See 2PE Technical catalogue at page 35 2PGE Piggy back configuration: - Displacement at page 84 - Port type See 2PE Technical catalogue at page 21/22

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

I	FLANGES AND REAR COVERS	CODE
	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

L	PAINTING	CODE
	Not painted (standard configuration)	-
	Black painted RAL 9005	BP

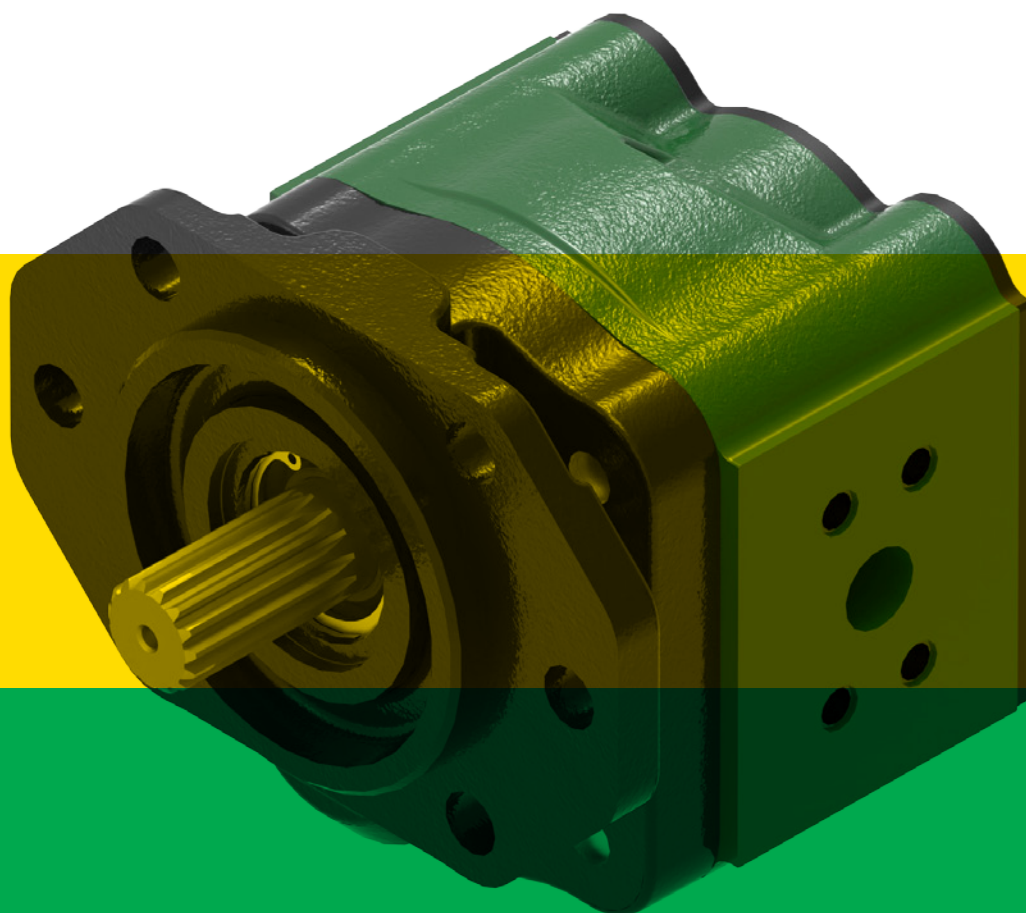
Note



PG331

High Pressure Cast Iron Gear Pumps

Product Manual



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COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

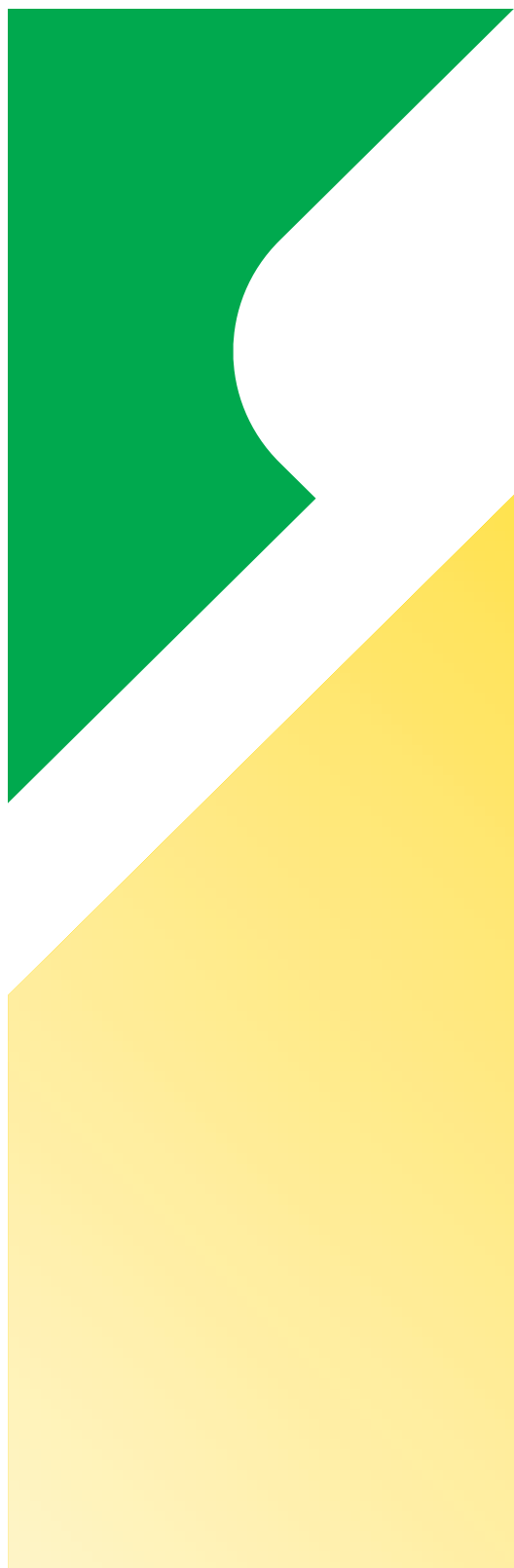


salami 
FLUID POWER SYSTEMS [®]

Final revised edition - July 2025

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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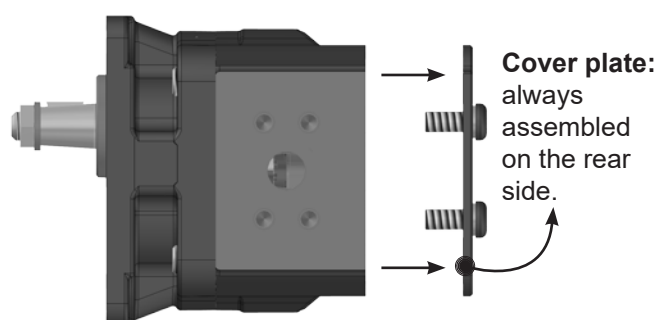
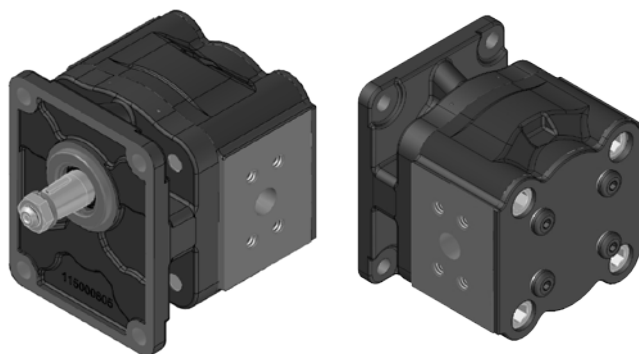
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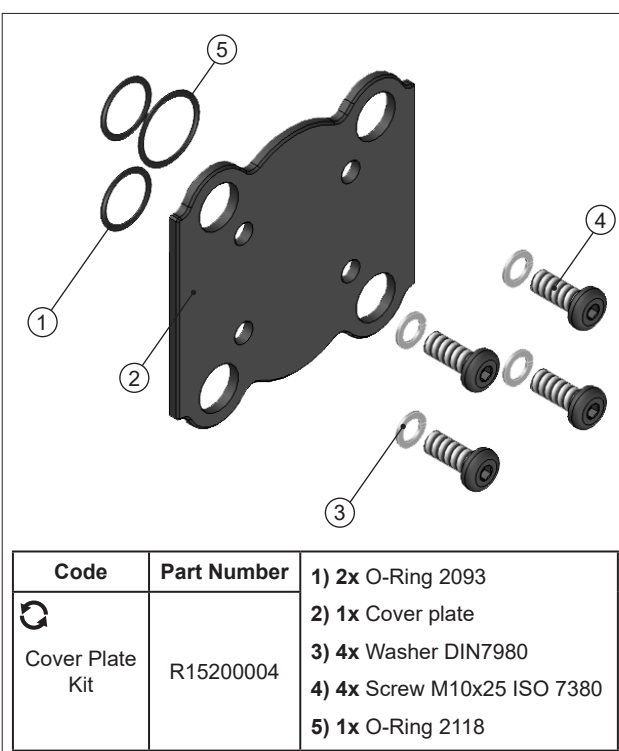
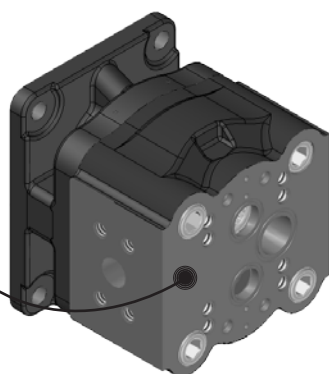
Features

It's never been so easy to build multiple stage pumps, until the PG331 Series arrived in the market. Unlike the PG330, the PG331 Series has been designed to provide Salami's Distributors the possibility of an easy build of multiple stage pumps, without compromising the compact design of the PG330 Series.

To accomplish this flexible option, in the rear side of the gear housing, the PG331 Series employs all the machining required for an easy fit of a second PG331 as well as a 2PE or 2PGE Series second pump. Cost effective dedicated assembling kits are provided for all the different multiple stage pump assemblies.



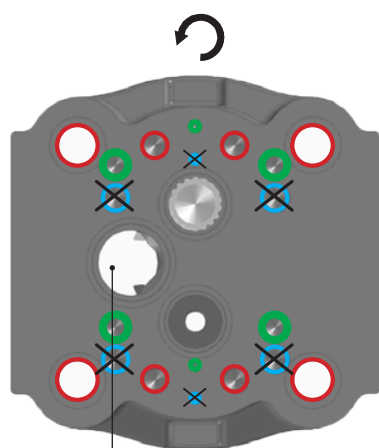
Rear side: machining
with provision for a
PG331 second pump
or Group 2 pumps
(2PE-2PGE).



Anti - clockwise rotation

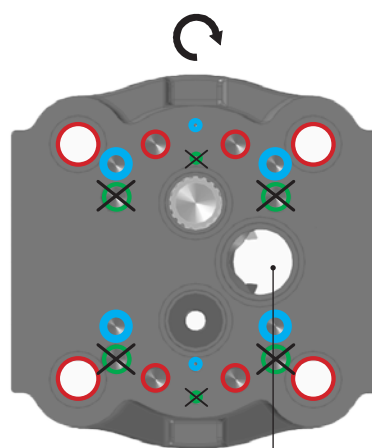
REAR SIDE MACHINING

Clockwise rotation



Internal suction passage

- Machining for 2PE-2PGE assembling
Clockwise rotation
- Machining for 2PE-2PGE assembling
Anti Clockwise rotation
- Machining for PG331 assembling



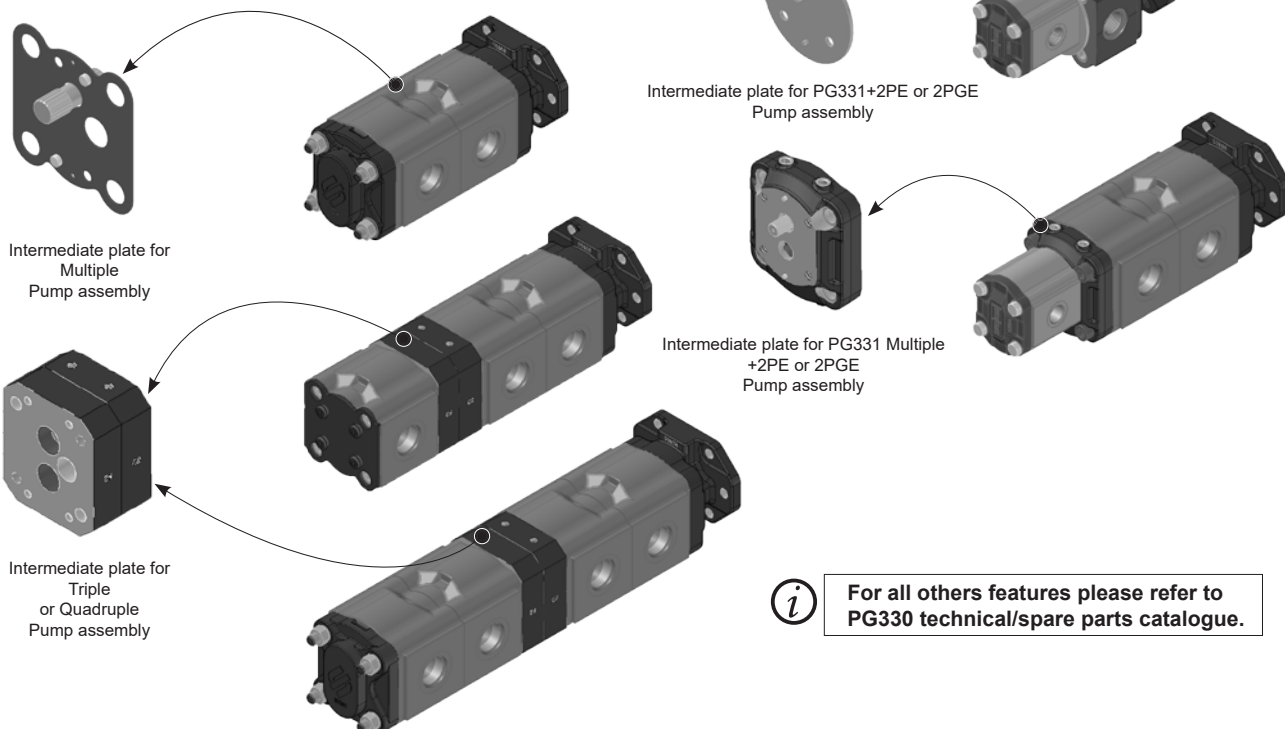
Internal suction passage

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Features

Intermediate plates: by replacing the rear cover code R15200004 you can obtain multiple pumps with different displacements and pump groups.



For all others features please refer to PG330 technical/spare parts catalogue.

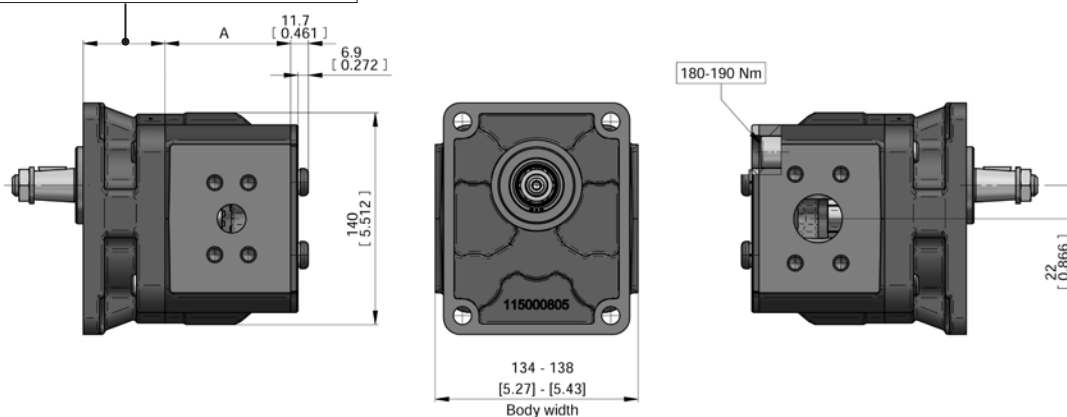
For flanges code:

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.)



TYPE	Displacement		Dimension A	
	cm ³ /rev	cu.in/rev	mm	in
PG331 - 23	23.4	1.43	70	2.75
PG331 - 28	28.6	1.74	74	2.91
PG331 - 34	34.4	2.10	78.5	3.10
PG331 - 40	40.3	2.46	83	3.27

TYPE	Displacement		Dimension A	
	cm ³ /rev	cu.in/rev	mm	in
PG331 - 47	47.4	2.89	94.5	3.72
PG331 - 55	55.2	3.37	100.5	3.96
PG331 - 64	64.3	3.92	107.5	4.23
PG331 - 72	73.4	4.48	114.5	4.50
PG331 - 80	80.6	4.91	120.5	4.74

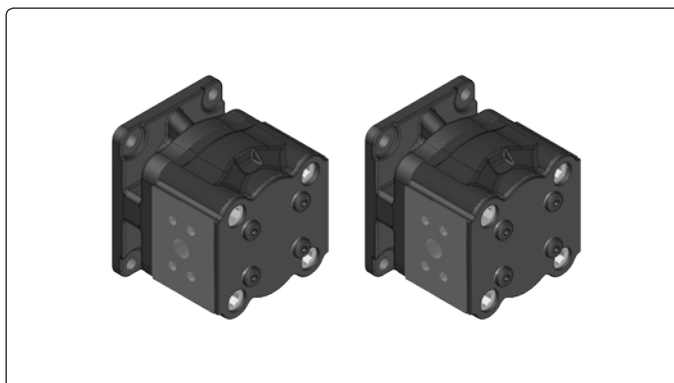


Assembling Multiple pumps

What you need from stock

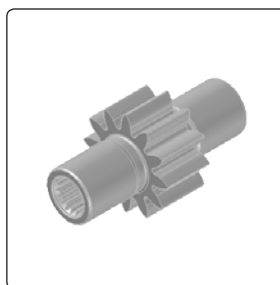
➔ **2x PG331**D Single Pumps**
(with requested cc/rev)

Part Number
see configurations at pages 118-121



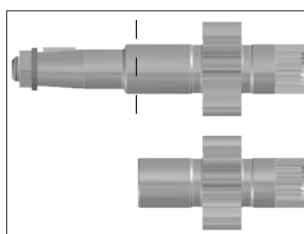
➔ **1x Drive shaft for rear pump**
(with same cc/rev)

Part Number
see table below



Drive shaft for rear pump dimensions

MODELLO	A	B	C	D	CODICE
23	91	18	36.5	36.5	3150 003 41
28	95	22	36.5	36.5	3150 003 42
34	99.5	26.5	36.5	36.5	3150 003 43
40	104	31	36.5	36.5	3150 003 44
47	121.5	36.5	42.5	42.5	3150 003 45
55	127.5	42.5	42.5	42.5	3150 003 46
64	134.5	49.5	42.5	42.5	3150 003 47
72	141.5	56.5	42.5	42.5	3150 003 48

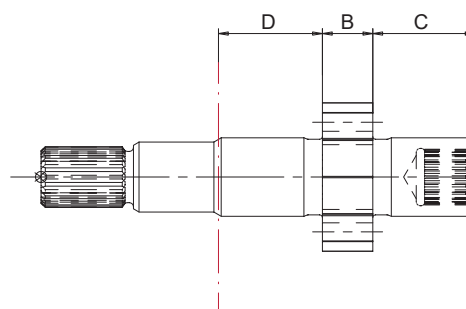
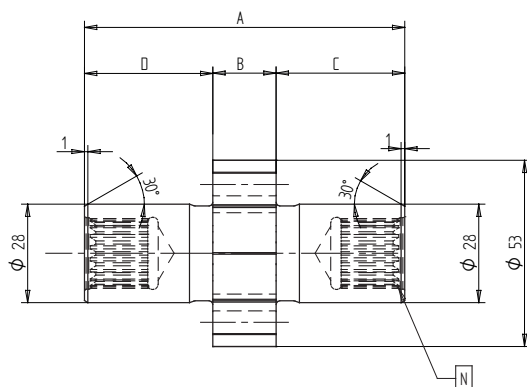


If not available, cut the Drive shaft of the second single pump as indicated in figure A. See instructions below.

Figure A

Cutting instructions:

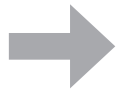
First measure the dimension "C" and then cut the drive end in order to get the requested "D" dimension.



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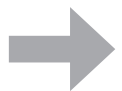
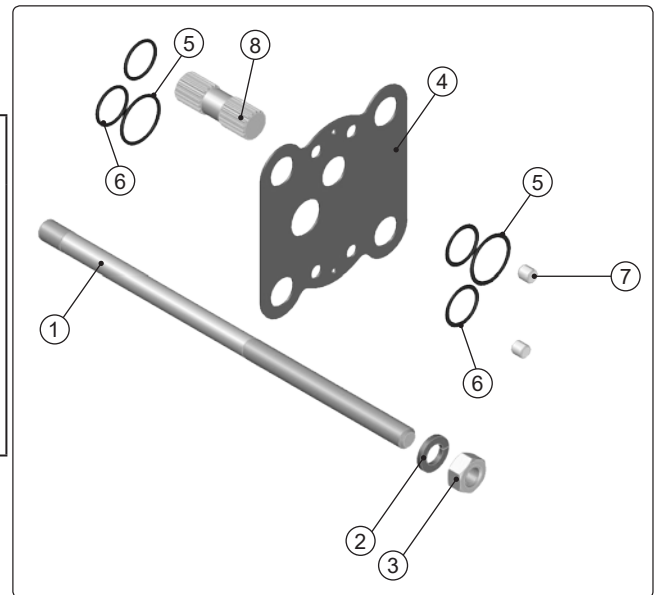


Assembling Multiple pumps



1x Multiple pump kit

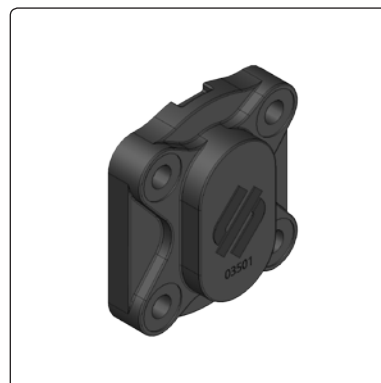
Code	Part Number	
Multiple pump kit	R15200002	1) 4x Tie rods M14x310 CL.10.9
		2) 4x Washer UNI 9195
		3) 4x Nut M14 UNI 5588 - CL.10
		4) 1x Intermediate plate PG331/PG331
		5) 2x O-Ring 2118
		6) 4x O-Ring 2093
		7) 2x Pin - DIN 5402
		8) 1x PG331-Coupling Sleeve



1x Rear cover



Part Number
Displ. from 23 to 40
R15003501
Displ. from 47 to 80
R15003508



see page 85 (PG330
technical/spare parts
catalogue)

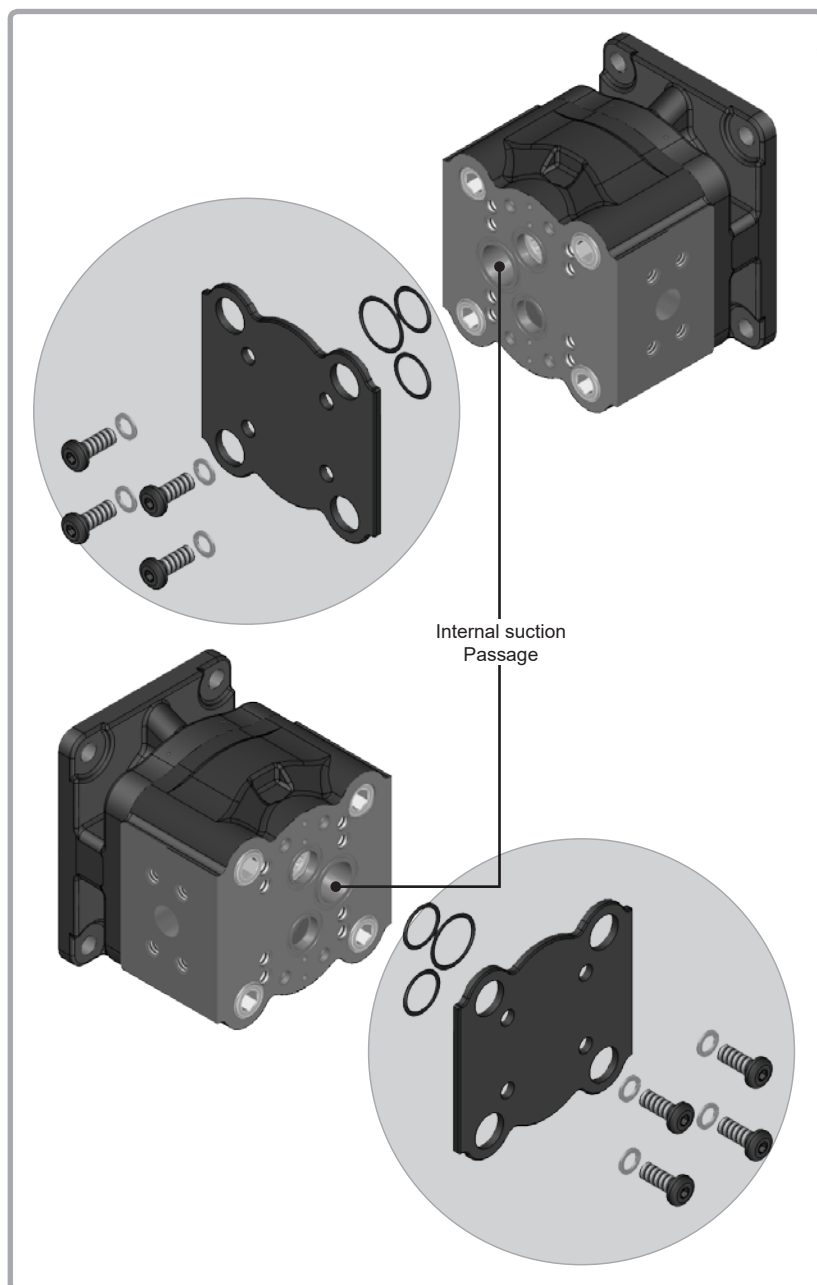


Assembling Multiple pumps

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

Proceed as follows:

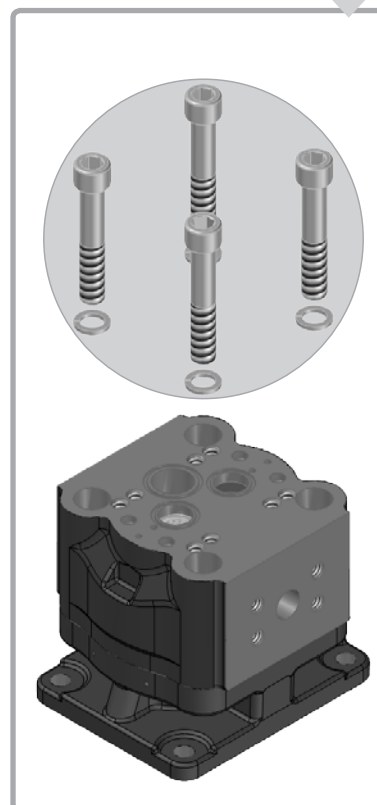


STEP 1 - Single pumps:
Remove cover plate from both pumps.



During assembling of multiple pumps, the internal suction passage must always be aligned. In this case, the rear pump must be rotated upside down, in order to have the internal suction passage aligned with the first stage.

STEP 2:
Clamp the first pump in vertical position. Loosen and fully unscrew the 4xM14 screws. Do not yet disassemble the pump. Repeat the operation for the second pump.



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Assembling Multiple pumps

STEP 3:

Place the second pump on a flat and clean surface, remove the front flange but don't disassemble shaft seals and circlip. Remove the thrust plate with his seals, the drive and driven shafts. After assembly is completed, the thrust plate must be relocated exactly in the same position.

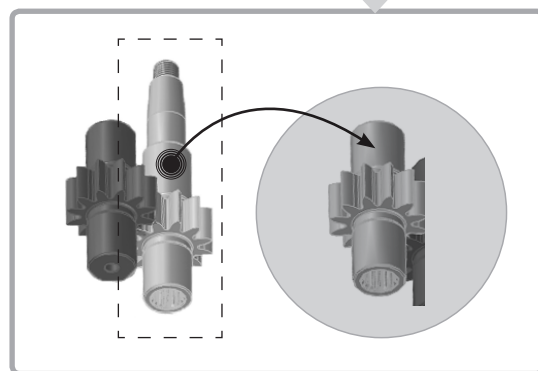


Mark the position of the thrust plate with reference to the body.



STEP 4:

Swap the drive shaft with the drive shaft for second pump of the same cc/rev.

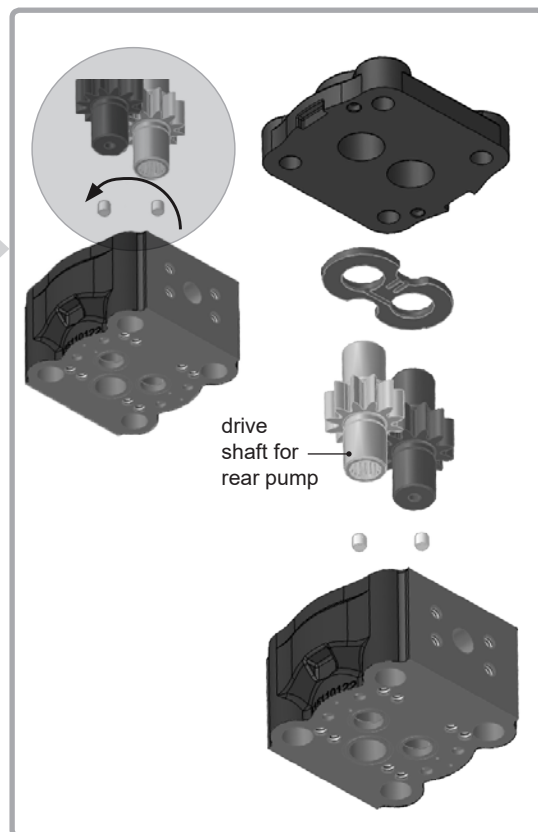


STEP 5:

Reverse the shaft positions and mount the drive shaft for rear pump. Insert the dowel pins, if not already in place.



After assembly is completed, the thrust plate must be relocated exactly in the same position.

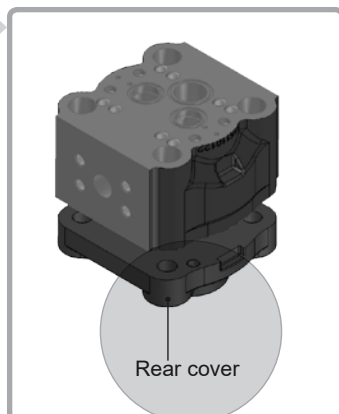




Assembling Multiple pumps

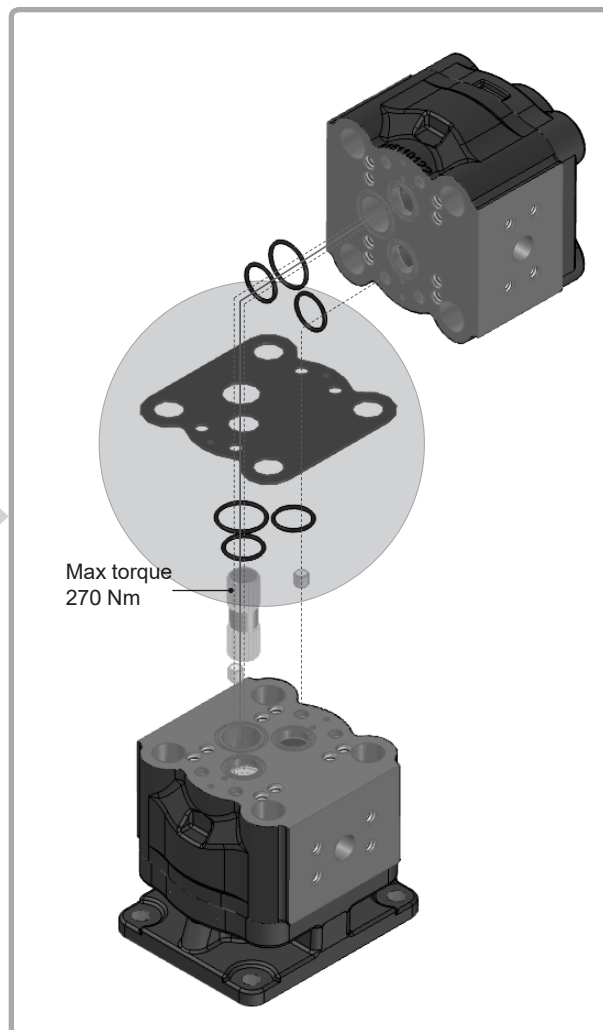
STEP 6:

By using the dowel pins as a reference, fit the rear end cover in the right position on the pump's body.



STEP 7:

Clamp the front pump in vertical position, fit the dowel pins and in case replace the o-rings, fit the intermediate plate and the coupling shaft. Be careful to not damage the pins when installing the rear pump on the front pump.



Max
150 ± 5% Nm



STEP 8:

Cut tie rods at right length (see Appendix A at page 126) screw tie rods into the front flange and make sure that the shorter threaded end is fit into the front flange proceed with washers and nuts. Tight at torque.

EO.152.0725.05.00IM03

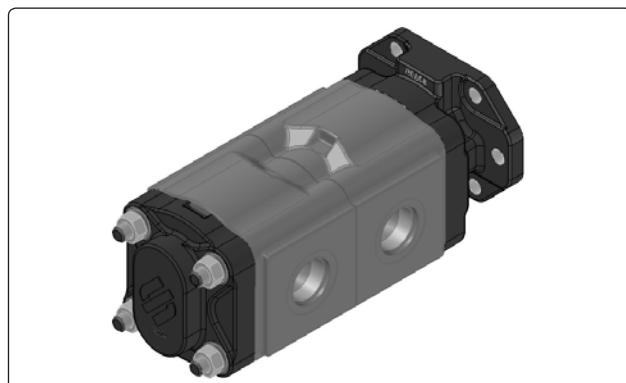


Assembling Triple pumps

What you need from stock



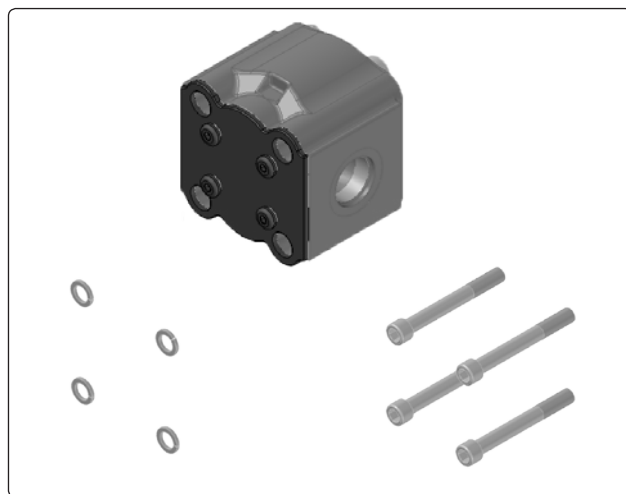
1x PG331D Multiple Pump**
(with requested cc/rev)



1x Rear pump

Part Number

see configurations
at pages 122-125



4x Washer DIN 7980

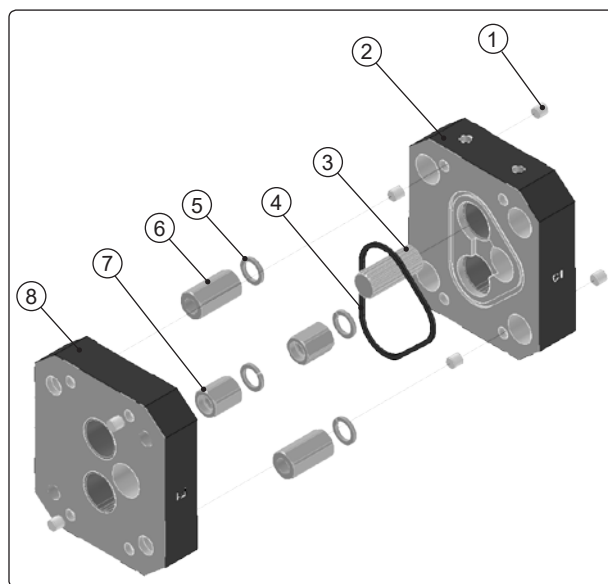


4x Hex socket head cup M14 x
(see Appendix B at page 127)



1x Triple pump kit

Code	Part Number	
Triple pump Kits	R15160030 1° - 2° - 3° Stage= Displ. 23-40 cc	1) 6x Pin - DIN 5402 2) 1x Plate for Displ. 23-40 cc (H=35) or for Displ. 47-72 cc (H=41) 3) 1x PG331-Coupling Sleeve 4) 1x O-RING 2-151 5) 4x Washer DIN 7980 6) 2x Special Nut M14 (longer) 7) 2x Special Nut M14 (shorter) 8) 1x Plate for Displ. 23-40 cc (H=31) or for Displ. 47-72 cc (H=37)
	R15160040 1° - 2° - 3° Stage= Displ. 47-72 cc	
	R15160041 1° - 2° Stage =Displ. 47-72 cc 3° Stage = Displ. 23-40 cc	



Nut (7) are partially threaded and shorter
Nut (6) are completely threaded and longer

EO.152.0725.05.00IM03



Assembling Triple pumps

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

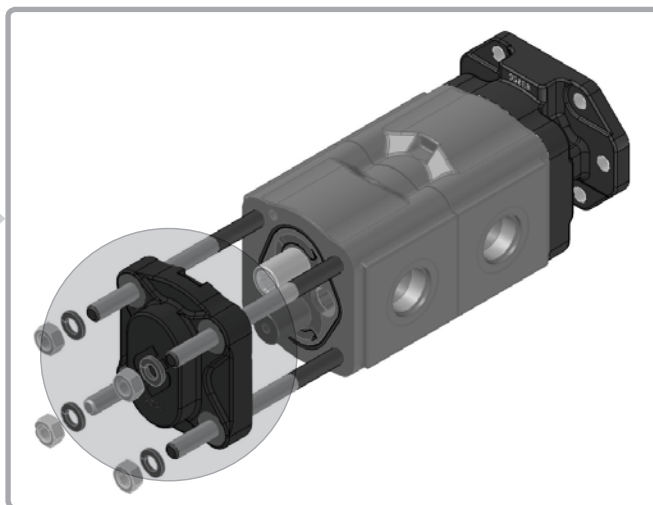
Proceed as follows:

STEP 1 - Multiple pump:

Remove the cover and screw the tie rods to the front flange.
Cut tie rods at right length.
(See Appendix B at page 127)



Assembling instructions
Double pump at page 94.

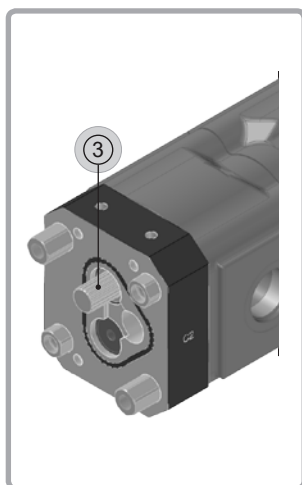
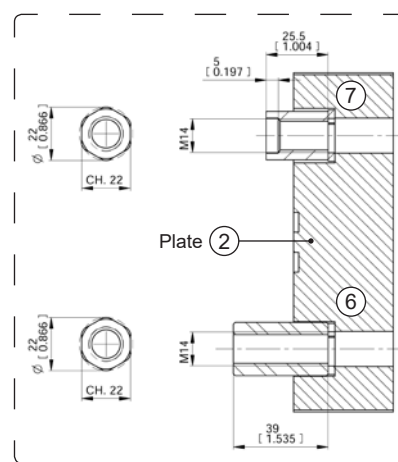
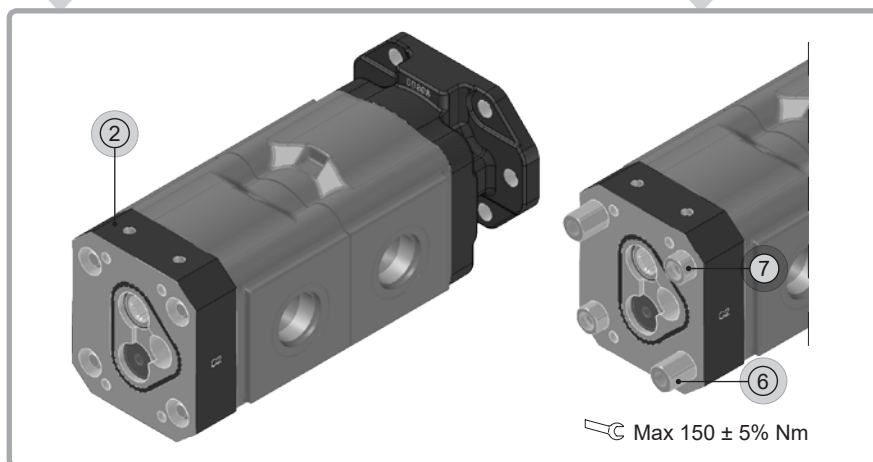


STEP 2:

Fit the plate (2)
on the rear pump

STEP 3:

Screw special
nuts (6) and (7)

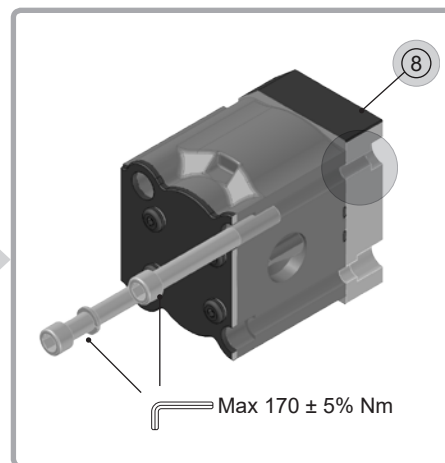


STEP 4:

Insert the coupling
shaft (3).

STEP 5:

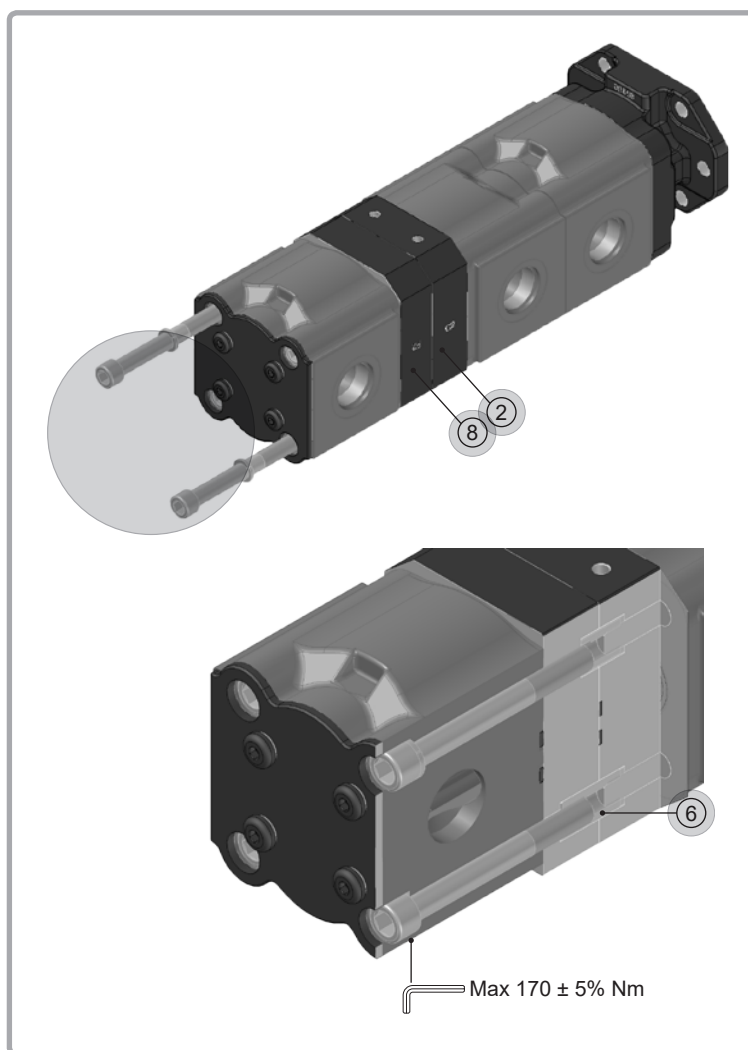
By using the dowel pins as a
reference, fit the rear pump
on the plate (8). The plate has
four assembling holes, two are
threaded M14, two are through
holes $\varnothing 14.5$ mm. Insert washers
and screw the screws into the
threaded holes (see Appendix B
page 127 for right length).



EO.152.0722.05.00IM02



Assembling Triple pumps



STEP 6:

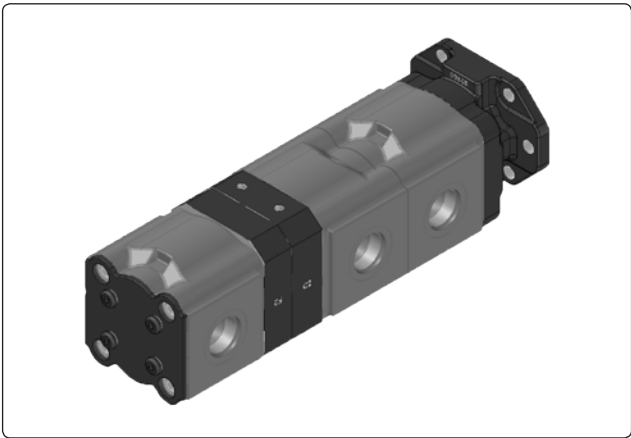
By using the dowel pins as a reference, fit the third stage with plate (8) prepared, on the rear plate (2). Match properly the coupling shaft with the inner shaft of the rear pump. Insert washers and screw the two screws into the special longer nuts (6).



Assembling Quadruple pumps

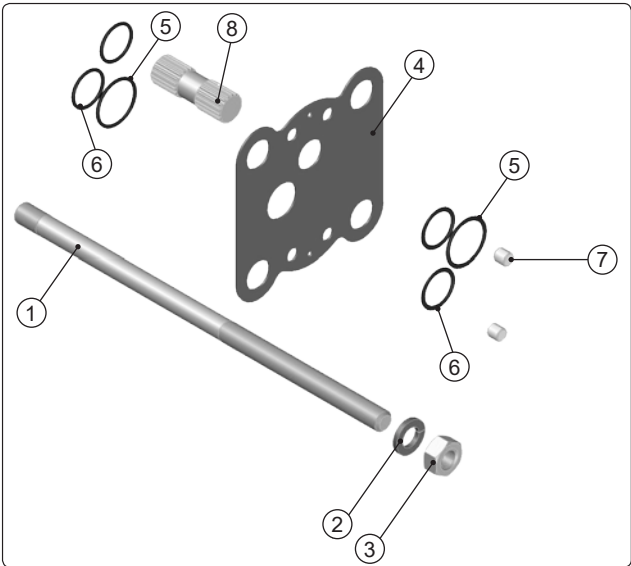
What you need from stock

➔ **1x PG331**D Triple Pump**
(with requested cc/rev)



➔ **1x Multiple pump kit**

Code	Part Number	
Multiple pump Kit	R15200002	1) 4x Tie rods M14x310 CL.10.9
		2) 4x Washer UNI 9195
		3) 4x Nut M14 UNI 5588 - CL.10
		4) 1x Intermediate plate PG331/PG331
		5) 2x O-Ring 2118
		6) 4x O-Ring 2093
		7) 2x Pin - DIN 5402
		8) 1x PG331-Coupling Sleeve



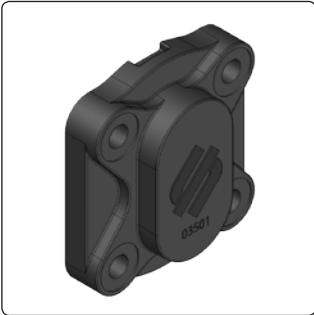
➔ **1x Rear pump**

Part Number
see configurations at pages 122-125



➔ **1x Rear cover**

Part Number
Displ. from 23 to 40
R15003501
Displ. from 47 to 80
R15003508



i see page 85 (PG330 technical/spare parts catalogue)

EO.152.0725.05.00IM03

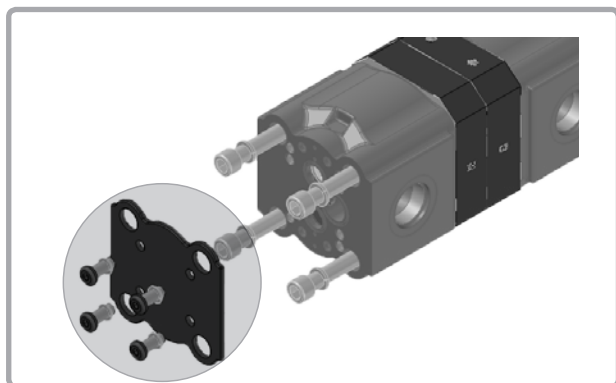


Assembling Quadruple pumps

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

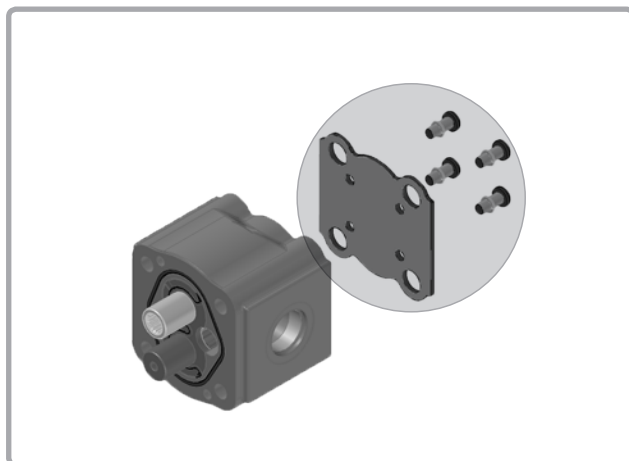
Proceed as follows:



STEP 1 - Triple pump:
Remove cover plate from last stage.

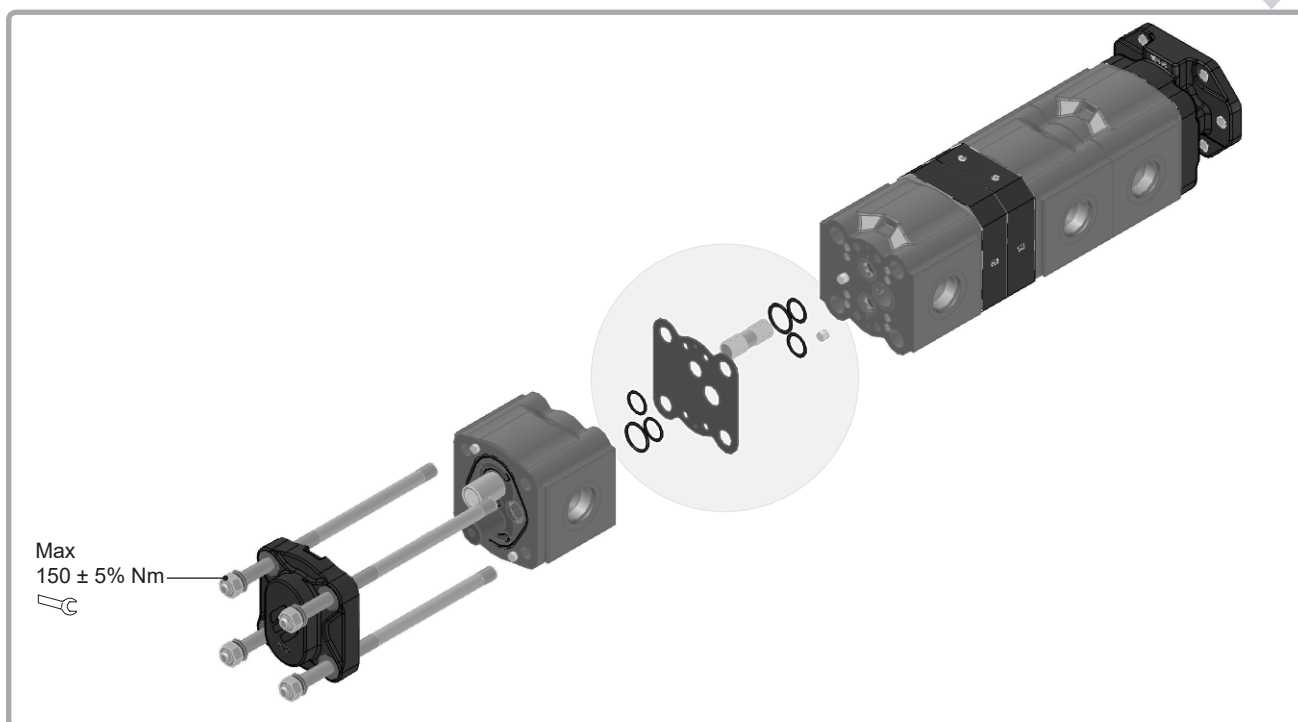


Assembling instructions Triple pump at page 99.



STEP 2 - Rear pump:
Remove cover plate.

STEP 3:
Fit the fourth stage on the triple pump by using the same instruction already given on page 98 (Step 7).
Cut tie rods at right length.
(See Appendix C at page 128).



EO.152.0725.05.001M03



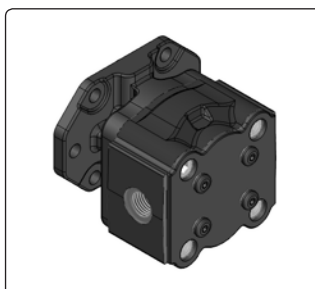
Assembling Single pump with 2PE

What you need from stock



1x PG331D Single Pump**
(with requested cc/rev)

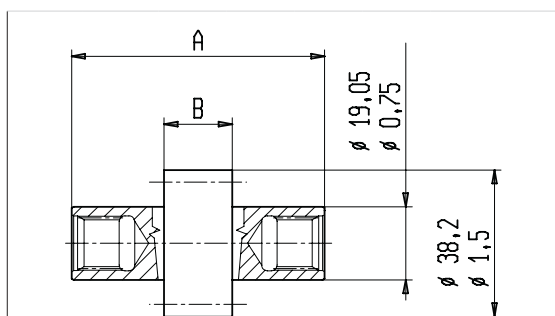
Part Number
see configurations at pages 118-121



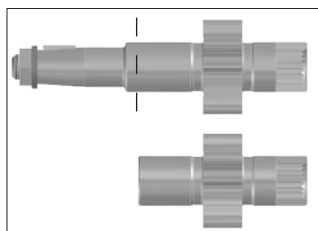
1x 2PED-Rear pump**
(with requested cc/rev)



If not available, use a 2PE single pump. The full list of 2PE Single and Rear Pumps are available on our DEALER 2PE SPARE PARTS CATALOGUE.



Displacement		Dimensions				Part Number
		A		B		
cm ³ /rev	cu.in/rev	mm	in	mm	in	
3.2	0.19	46.7	1.84	5.1	0.20	312000310
3.9	0.24			6.1	0.24	312050306
4.6	0.27			7.1	0.28	312000314
6.5	0.40	49.55	1.95	9.95	0.39	312060302
8.2	0.50	52.4	2.06	12.8	0.50	312050309
11.5	0.68	59.3	2.33	17.7	0.70	312050312
13.8	0.84	63.1	2.48	21.5	0.85	312000315
16.6	1.01	67.1	2.64	25.5	1.00	312000316
19.4	1.18	75.2	2.96	29.8	1.17	312000317
22.9	1.37	80.6	3.17	35.2	1.39	312000318
26.6	1.62	86.4	3.40	41	1.61	312000319

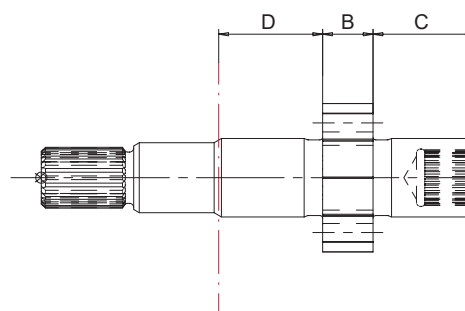


Cut the Drive shaft of 2PE single pump as indicated in figure A to obtain a rear drive shaft. See instructions below.

Figure A

Cutting instructions:

First measure the dimension "C" and then cut the drive end in order to get the requested "D" dimension.



EO.152.0725.05.00IM03

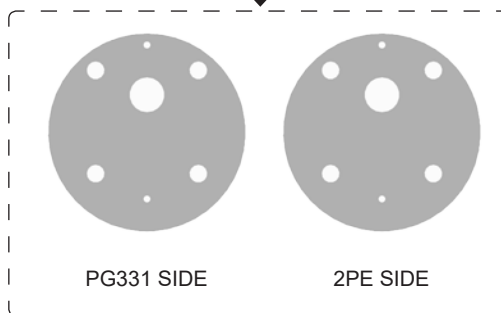
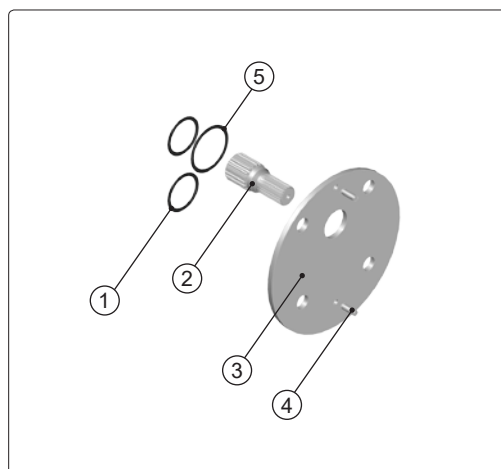


Assembling Single pump with 2PE



1x Multiple pump kit 2PE-2PGE

Code	Part Number	
Multiple pump kit	R15200001	1) 4x O-Ring 2093 2) 1x PG331/2PE-Coupling Sleeve 3) 1x Intermediate plate PG331/2PE-2PGE 4) 2x Pin - UNI 1707 5) 2x O-Ring 2118



Multiple pump kit doesn't provide the Common Suction Option. As shown in the picture, it doesn't have a preferred mounting orientation.

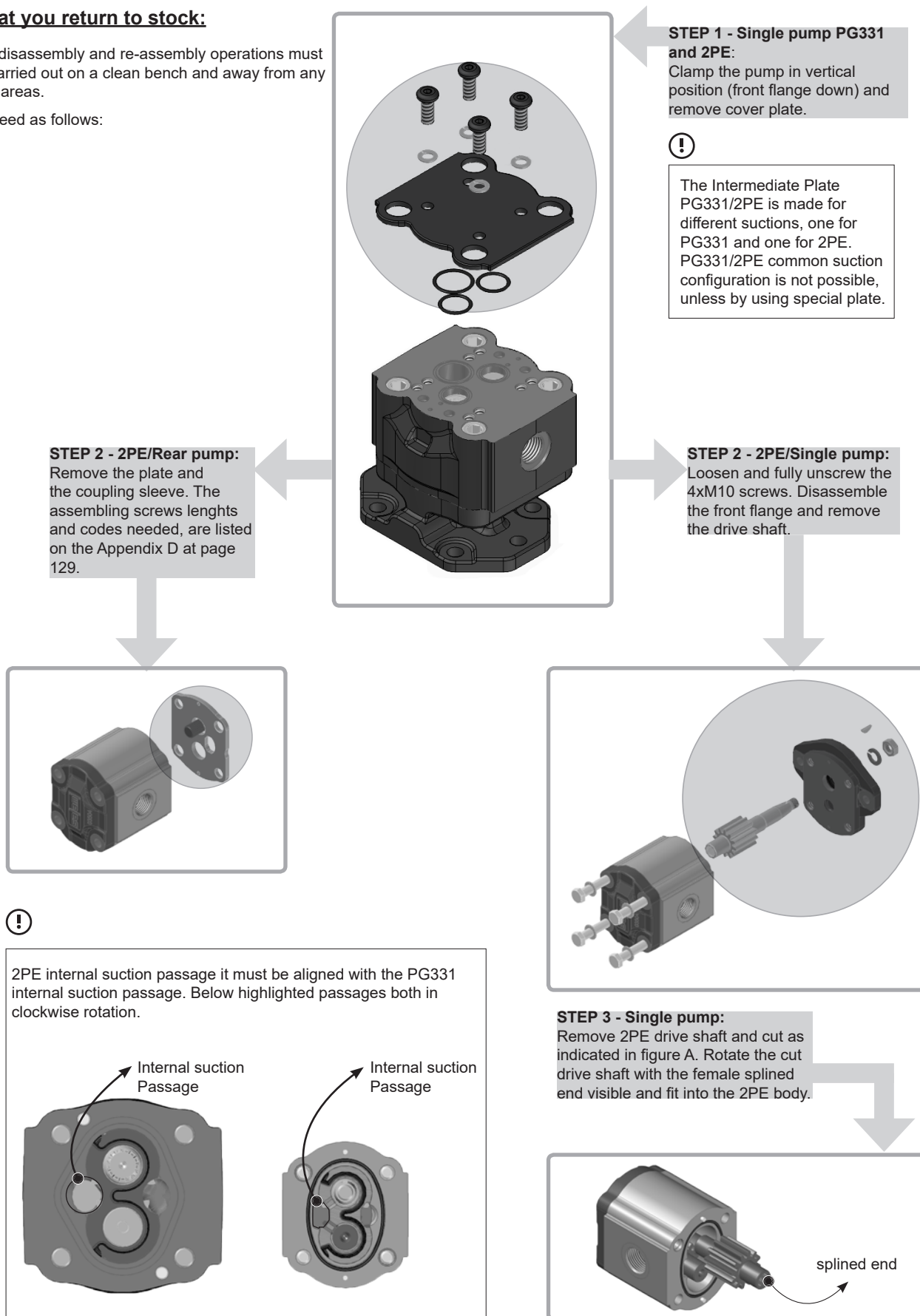


Assembling Single pump with 2PE

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

Proceed as follows:



EO.152.0725.05.00IM03

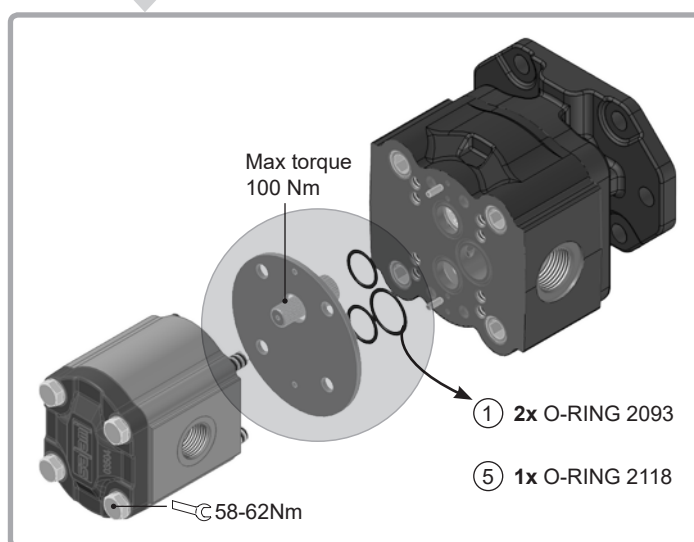


Assembling Single pump with 2PE

STEP 4: Fit the coupling shaft and the two dowel pins into the central top and bottom dowel pin holes. Fit the multiple pump kit and the 2PE rear pump.



Replace damaged O-Rings by using brand new ones (items 1&5 in the PG331/2PE assembling kit).



The PG331/2PE build employ individual suction ports. In case you want to build a PG331/2PE for different fluids you need to assemble a 2PE rear pump "AS" type.

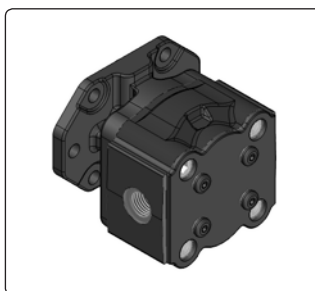


Assembling Single pump with 2PGE

What you need from stock

1x PG331D Single Pump**
(with requested cc/rev)

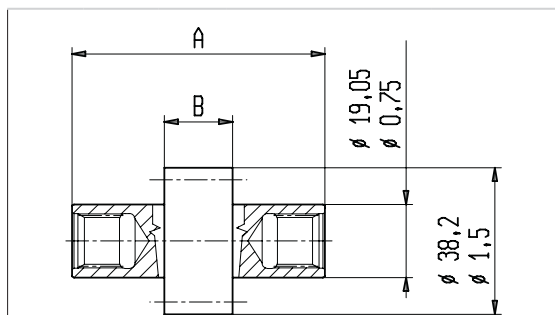
Part Number
see configurations at pages 118-121



1x 2PGED-Rear pump**
(with requested cc/rev)



If not available, use a 2PGE single pump.



Displacement		Dimensions				Part Number
		A		B		
cm ³ /rev	cu.in/rev	mm	in	mm	in	
3.2	0.19	46.7	1.84	5.1	0.20	312000310
3.9	0.24			6.1	0.24	312050306
4.6	0.27			7.1	0.28	312000314
6.5	0.40	49.55	1.95	9.95	0.39	312060302
8.2	0.50	52.4	2.06	12.8	0.50	312050309
11.5	0.68	59.3	2.33	17.7	0.70	312050312
13.8	0.84	63.1	2.48	21.5	0.85	312000315
16.6	1.01	67.1	2.64	25.5	1.00	312000316
19.4	1.18	75.2	2.96	29.8	1.17	312000317
22.9	1.37	80.6	3.17	35.2	1.39	312000318
26.6	1.62	86.4	3.40	41	1.61	312000319

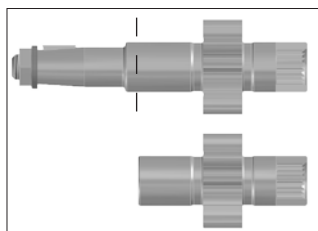


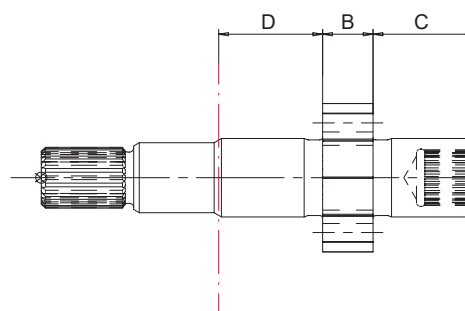
Figure A



Cut the Drive shaft of 2PGE single pump as indicated in figure A to obtain a rear drive shaft. See instructions below.

Cutting instructions:

First measure the dimension "C" and then cut the drive end in order to get the requested "D" dimension.



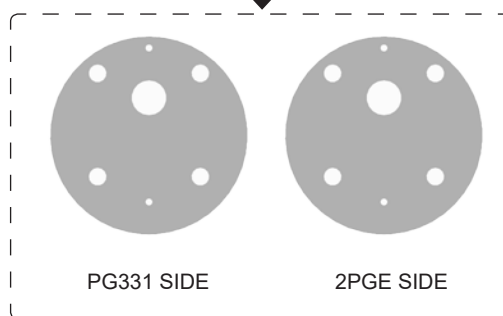
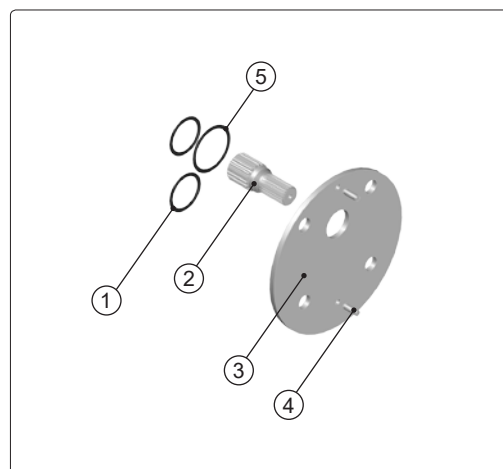


Assembling Single pump with 2PGE



1x Multiple pump kit 2PE-2PGE

Code	Part Number	
Multiple pump kit	R15200001	1) 4x O-Ring 2093 2) 1x PG331/2PE-Coupling Sleeve 3) 1x Intermediate plate PG331/2PE-2PGE 4) 2x Pin - UNI 1707 5) 2x O-Ring 2118



Multiple pump kit doesn't provide the Common Suction Option. As shown in the picture, it doesn't have a preferred mounting orientation.

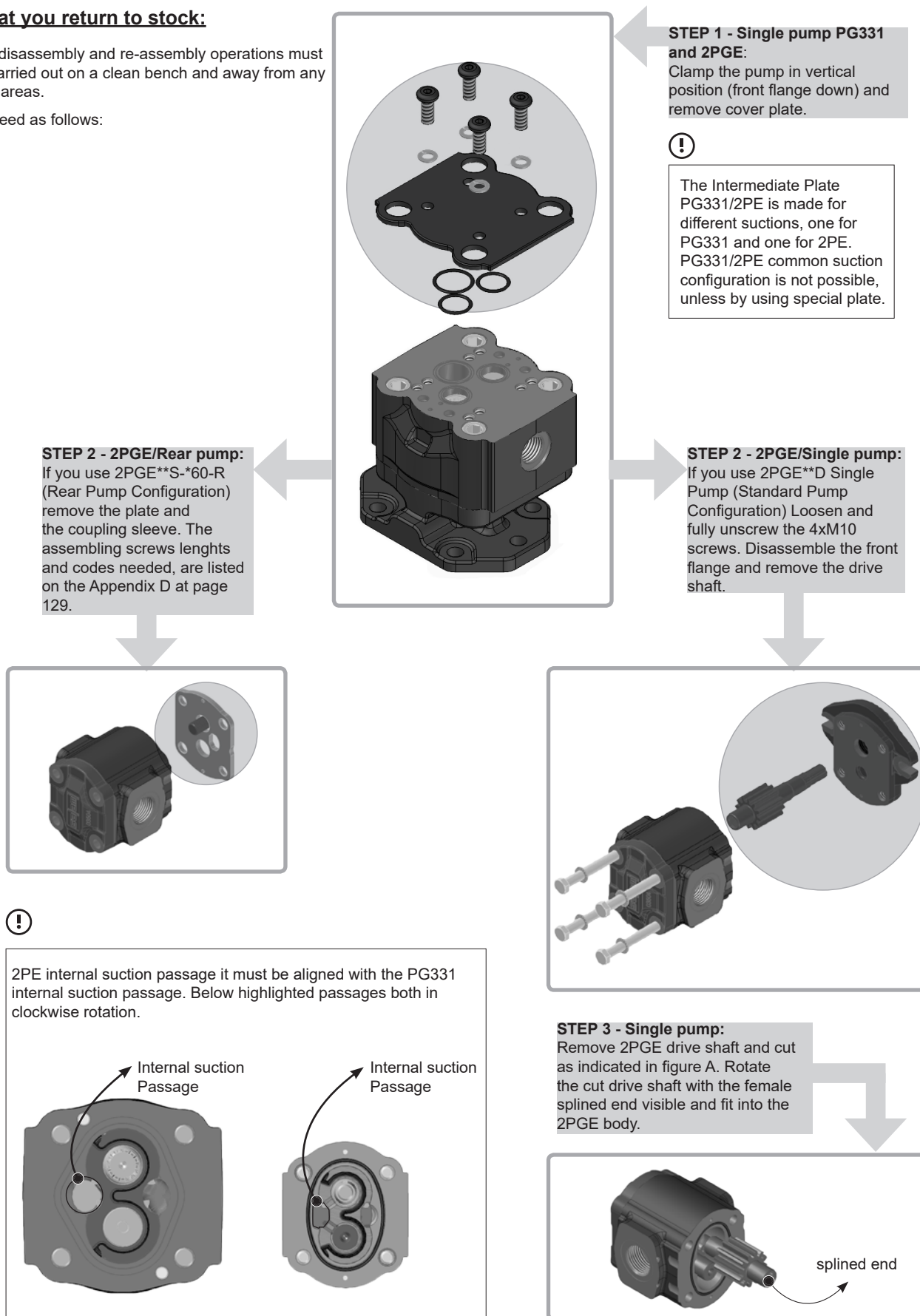


Assemble Single pump with 2PGE

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

Proceed as follows:



EO.152.0725.05.00IM03

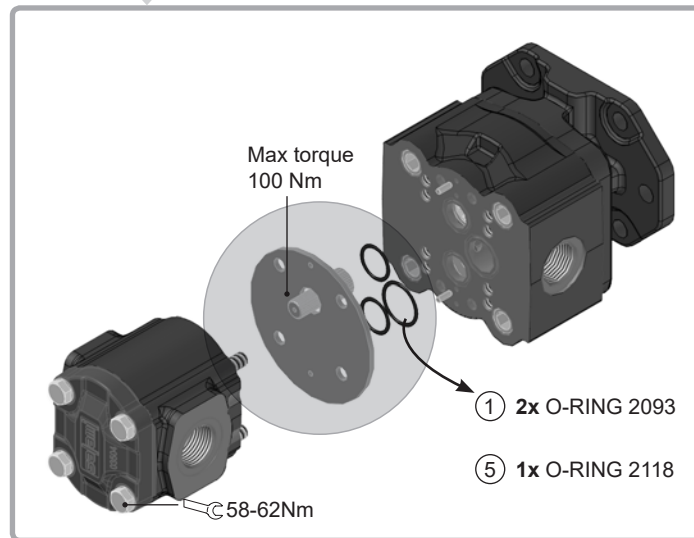


Assemble Single pump with 2PGE

STEP 4: Fit the coupling shaft and the two dowel pins into the central top and bottom dowel pin holes. Fit the multiple pump kit and the 2PGE rear pump.



Replace damaged O-Rings by using brand news ones (items 1&5 in the PG331/2PE assembling kit).



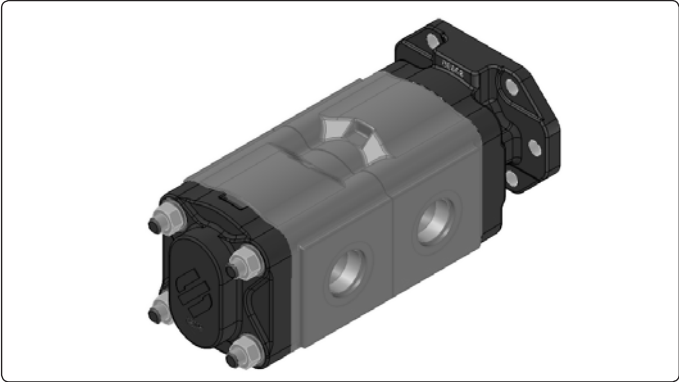
The PG331/2PGE build employ individual suction ports. In case you want to build a PG331/2PGE for different fluids you need to assemble a 2PGE rear pump "AS" type.



Assembling multiple pump with 2PE

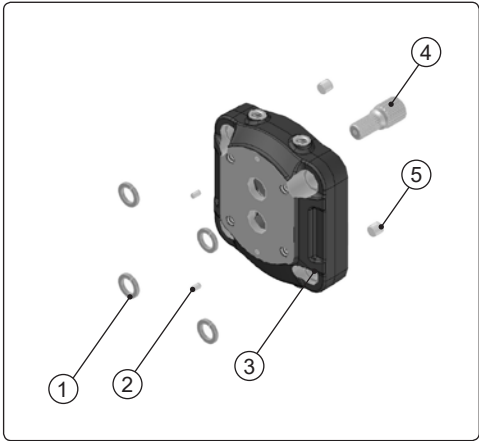
What you need from stock

➔ **1x PG331**D Multiple Pump**
(with requested cc/rev)



➔ **1x Multiple pump kit 2PE/2PGE**

Code	Part Number	
 Multiple pump Kit	R15160050 Displ. 23-40 cc	1) 4x Washer DIN 7980 2) 2x Pin - UNI 1707 3) 1x Plate for Displ. 23-40 cc or for Displ. 47-72 cc
	R15160060 Displ. 47-72 cc	4) 1x PG331/2PE-Coupling Sleeve 5) 2x Pin - DIN 5402



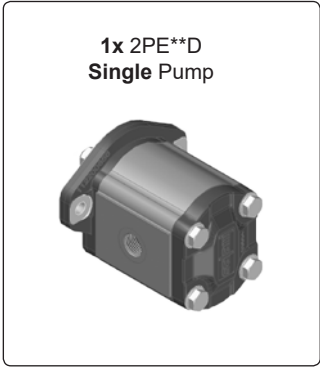
➔ **1x 2PE**D-Rear pump**
(with requested cc/rev)



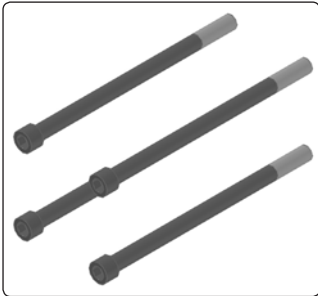
If not available, use a 2PE single pump. The full list of 2PE Single and Rear Pumps are available on our DEALER 2PE SPARE PARTS CATALOGUE.



Mounting also available with 2PGE pump.



➔ **4x Screw M14 x**
(see Appendix D at page 129)



EO.152.0725.05.00IM03



Assembling multiple pump with 2PE

What you return to stock:

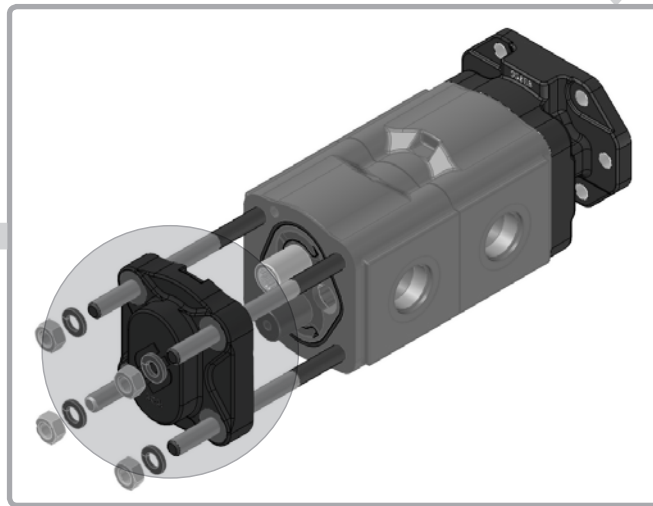
The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

Proceed as follows:

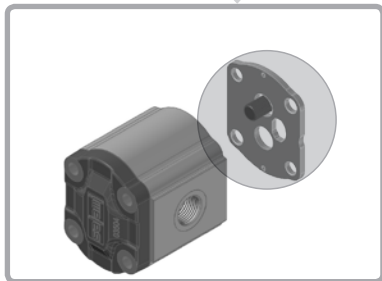
STEP 1 - Multiple pump:
Remove the rear cover, tie rods, nuts and washers.



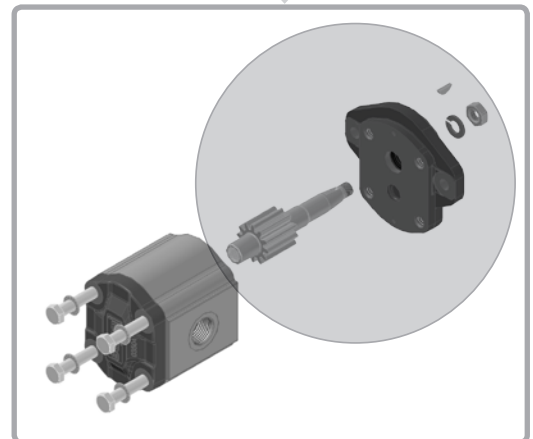
Assembling instructions
Double pump at page 94.



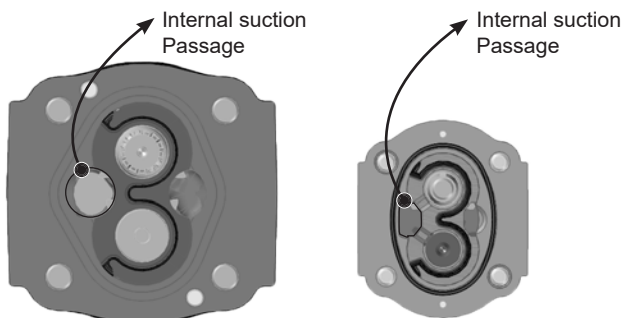
STEP 2 - 2PE/Rear pump:
Remove the plate and the coupling sleeve. The assembling screws lengths and codes needed, are listed on the Appendix D at page 129.



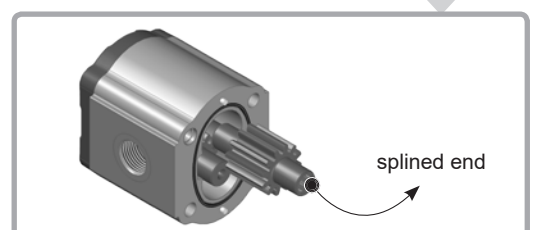
STEP 2 - 2PE/Single pump:
Loosen and fully unscrew the 4xM10 screws. Disassemble the front flange and remove the drive shaft.



2PE internal suction passage it must be aligned with the PG331 internal suction passage. Below highlighted passages both in clockwise rotation.



STEP 3 - Single pump:
Remove 2PE drive shaft and cut as indicated in figure A. Rotate the cut drive shaft with the female splined end visible and fit into the 2PE body.



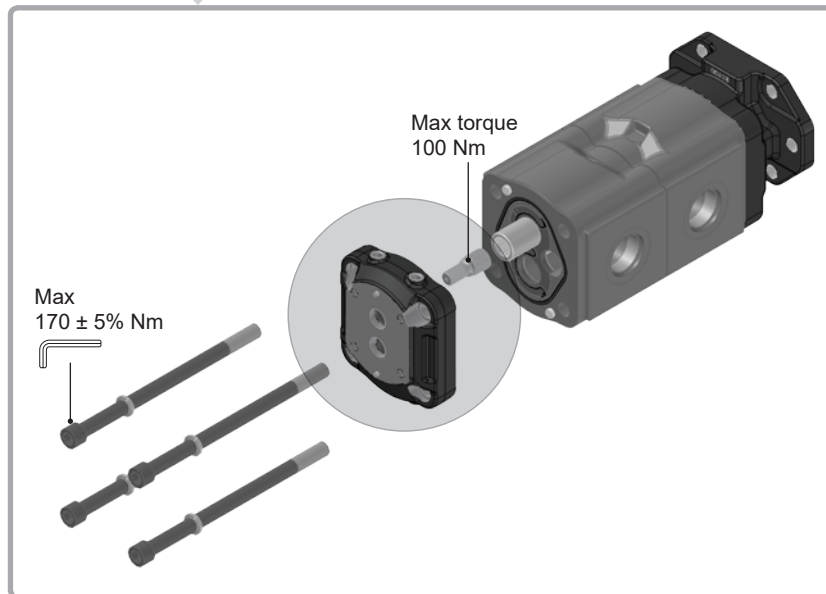
EO.152.0725.05.001M03



Assembling multiple pump with 2PE

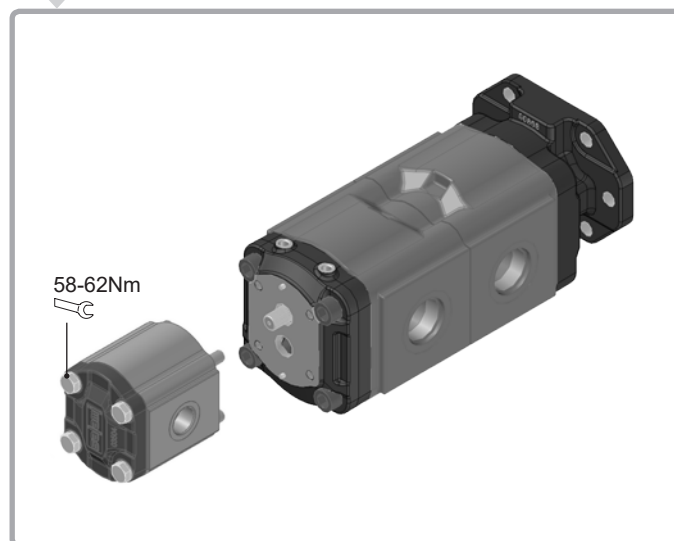
STEP 4: Insert the coupling shaft (4) into the drive shaft on the second stage of the PG331.

By using the dowel pins (5) as a reference, assemble the plate (3) to the Multiple pump fit washers and screws M14.



STEP 5:

By using the dowel pins as a reference, assemble 2PE pump on the plate. Match properly the coupling shaft with the inner shaft of the 2PE pump.



EO.152.0725.05.00IM03



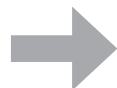
Replacing mounting flange with outrigger bearing

What you need from stock



1x PG331D Single Pump**
(with requested cc/rev)

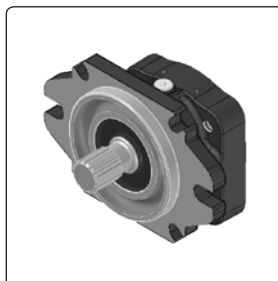
Part Number
see configurations at pages 118-121



**1x Mounting flange with
bearing type R8 or Z1.**



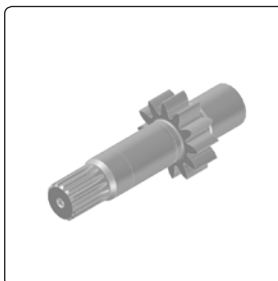
see page 73 (PG330
technical/spare parts
catalogue)



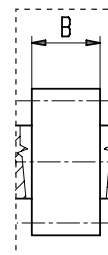
1x Drive shaft type 70
(with same cc/rev)



see page 68 (PG330
technical/spare parts
catalogue)



Code	Displacement	B	Part Number
70	23	18	315000371
	28	22	315000372
	34	26.5	315000373
	40	31	315000374
	47	36.5	315000375
	55	42.5	315000376
	64	49.5	315000377
	72	56.5	315000378
	80	62	315000379



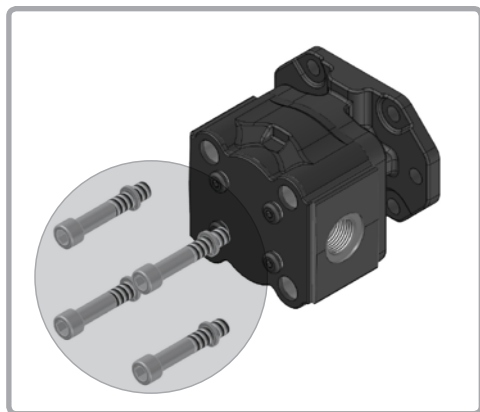


Replacing mounting flange with outrigger bearing

What you return to stock:

The disassembly and re-assembly operations must be carried out on a clean bench and away from any dirty areas.

Proceed as follows:

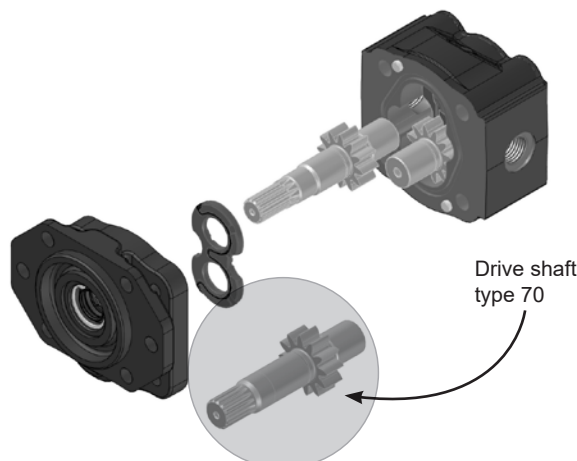


STEP 1 - Single pump PG331
(with mounting flange type P2/S3/
S4/Z2):
Unscrew the screws and remove
the washers.

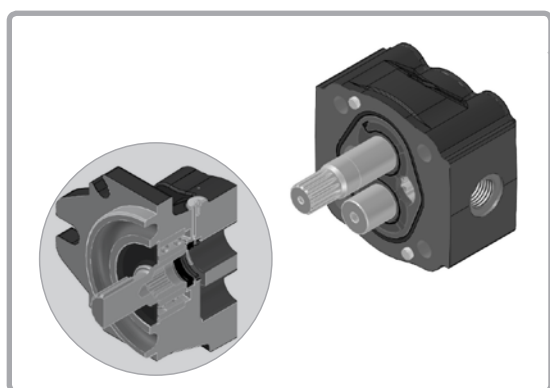
STEP 2: Disassemble the front
flange, mark the position of the
trust plate with reference to the
body. Remove the thrust plate with
seals and the drive shaft.
Replace it with the shaft code 70
please see the table below.
Reassemble the thrust plate with
seals in the same position you
found it.



Mark the position of the trust plate
with reference to the body.

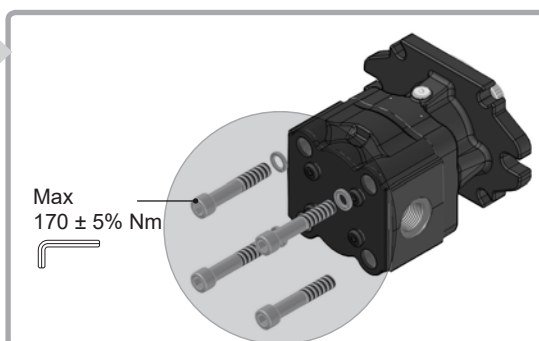


Drive shaft
type 70



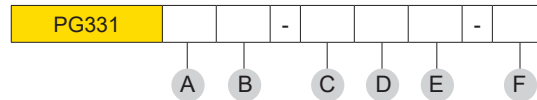
STEP 3: Replace the flange with
the outrigger bearing type and
by using the dowel pins as a
reference.
Apply grease on the shaft code 70,
by pay attention to not damage the
shaft seals.
Match the male splined end of
shaft code 70 with the female
spline of the continental shaft
already assembled on the
outrigger bearing kit.

STEP 4: Fit the screws and
washers disassembled before.



Max
 $170 \pm 5\%$ Nm

EO.152.0725.05.00IM03



A	CODE	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	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS	CODE
	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	CODE
	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

E	MOUNTING FLANGES	CODE
	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

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

How to order Single pump

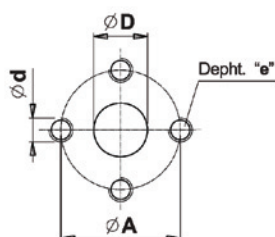
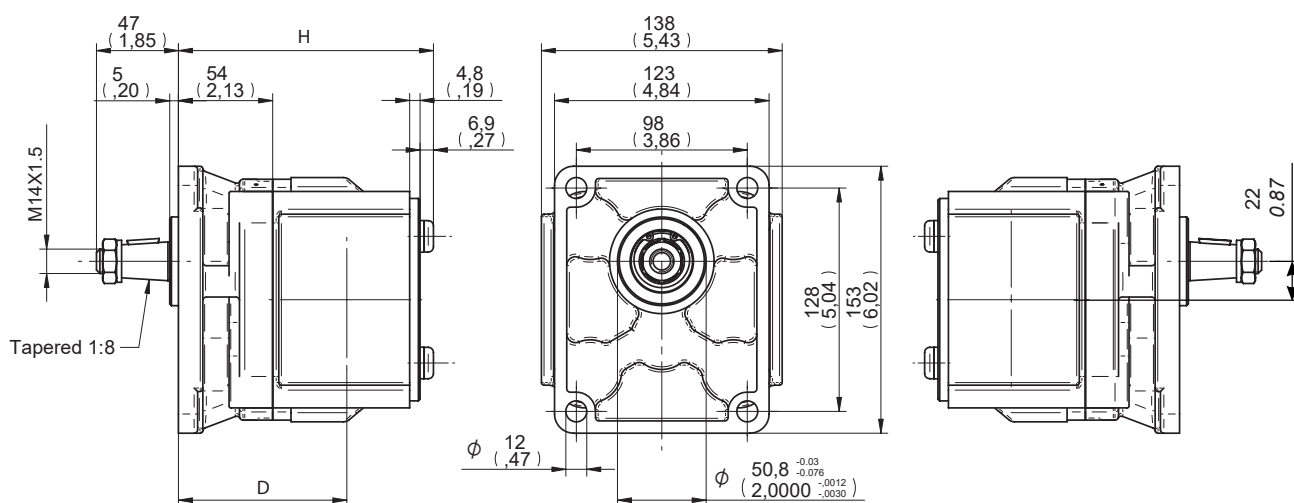
PG331, displacement first stage (28), clockwise rotation (D), ports European (P), drive shaft (38), mounting flange (P2)=
PG331-28D-P38P2

**PG330 Technical/Spare parts catalogue reference**

C	Flanged and Threaded Port see pages 65/66
D	Drive shaft see pages 68/69
E	Mounting flanged see pages 70/74



Configuration - P38P2



code P

Flanged ports
european standard



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")

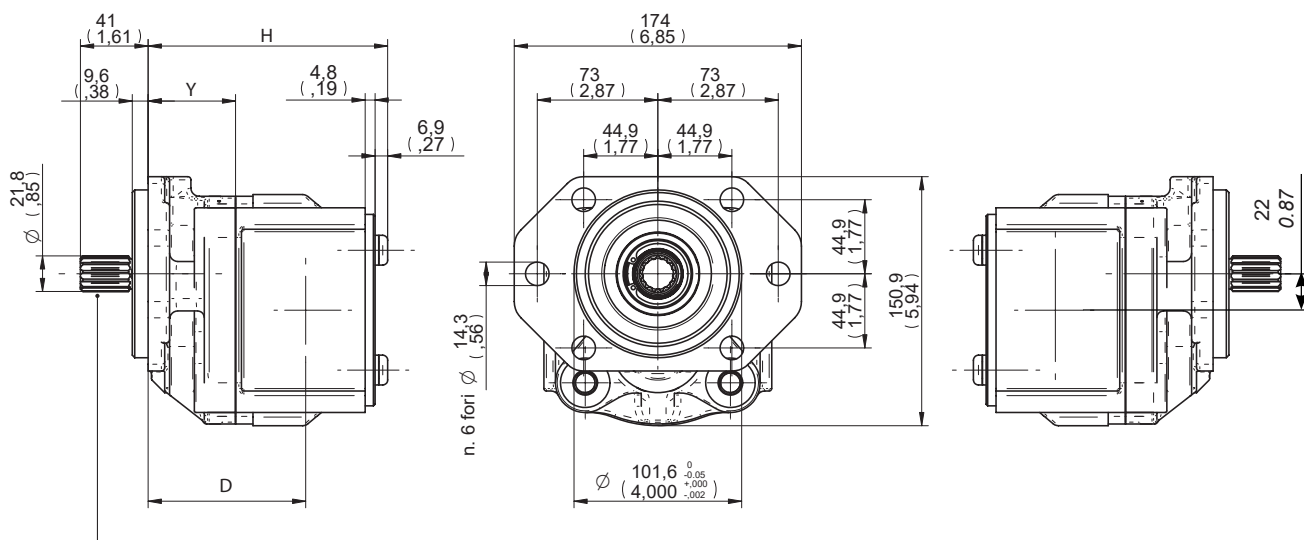
M8	20 Nm (14.7 lbf-ft)
M10	35 Nm (25.8 lbf-ft)
M12	65 Nm (47.9 lbf-ft)

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	89	3.50	135.8	5.35	615200201	615200202
28.6	1.74	88	3.46	139.8	5.50	615200211	615200212
34.4	2.10	91.5	3.60	144.3	5.68	615200221	615200222
40.3	2.46	96	3.80	148.8	5.85	615200231	615200232
47.4	2.89	104	4.09	160.3	6.31	615200241	615200242
55.2	3.37	106	4.17	167.3	6.59	615200251	615200252
64.3	3.92	112	4.41	173.3	6.82	615200261	615200262
73.4	4.48	115	4.53	180.3	7.10	615200271	615200272

EO.152.0725.05.00IM03



Configuration - G55S3



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



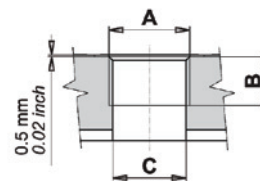
Y → 53 mm (2.09 in.) for displ. 23 to 40
64 mm (2.52 in.) for displ. 47 to 80



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")



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



code G

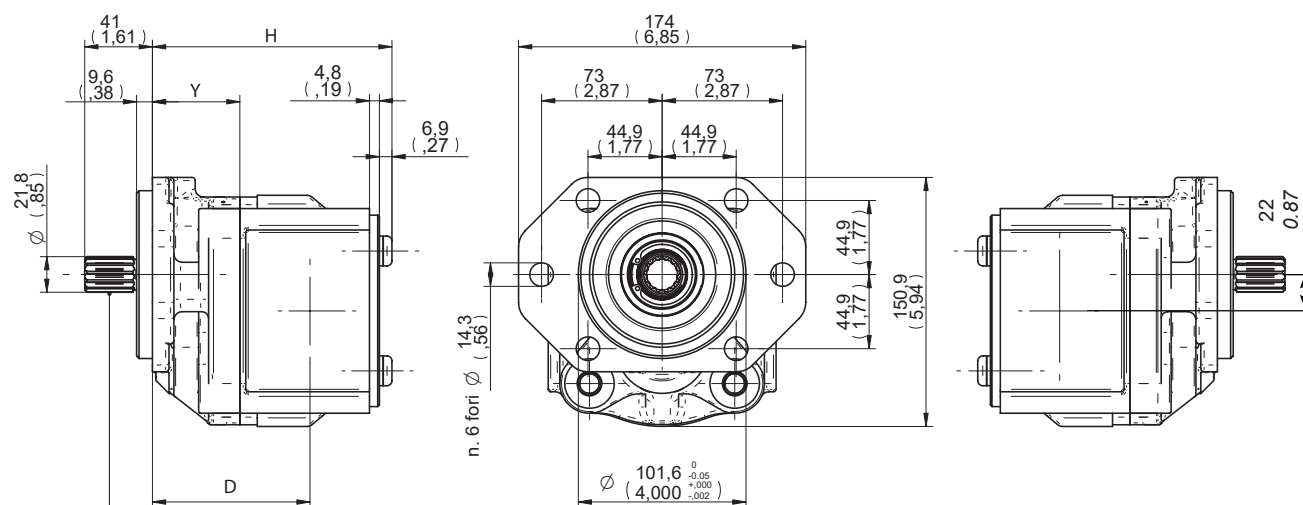
Threaded ports
GAS (BSPP)

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	88	3.46	136.7	5.38	615200101	615200102
28.6	1.74	91	3.58	140.7	5.54	615200111	615200112
34.4	2.10	95.5	3.76	145.2	5.72	615200121	615200122
40.3	2.46	100	3.94	149.7	5.89	615200131	615200132
47.4	2.89	114	4.49	172.2	6.78	615200141	615200142
55.2	3.37	120	4.72	179.2	7.06	615200151	615200152
64.3	3.92	122	4.80	185.2	7.29	615200161	615200162
73.4	4.48	125	4.92	192.2	7.57	615200171	615200172
80.6	4.92	129	5.08	198.2	7.80	615200181	615200182

EO.152.0725.05.00IM03



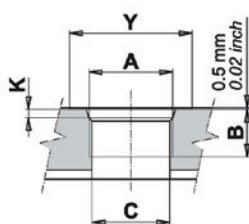
Configuration - R55S3



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



Y → 53 mm (2.09 in.) for displ. 23 to 40
64 mm (2.52 in.) for displ. 47 to 80



code R

Threaded ports
SAE (ODT)



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")

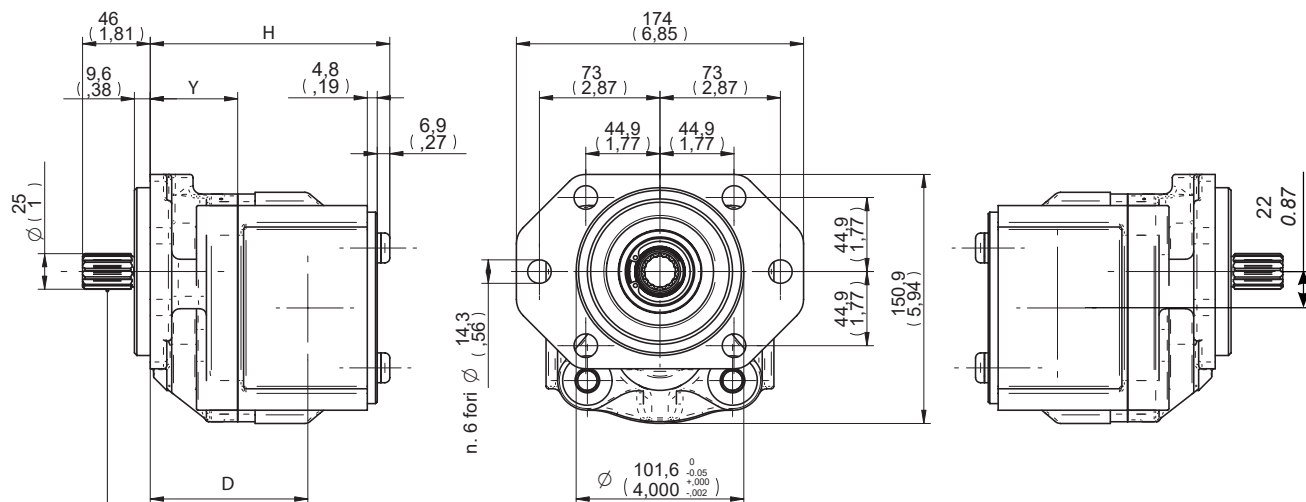
SAE12	90 Nm (66.4 lbf-ft)
SAE16	130 Nm (95.8 lbf-ft)
SAE20	170 Nm (125.4 lbf-ft)

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm³/rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	88	3.46	136.7	5.38	615200001	615200002
28.6	1.74	91	3.58	140.7	5.54	615200011	615200012
34.4	2.10	95.5	3.76	145.2	5.72	615200021	615200022
40.3	2.46	100	3.94	149.7	5.89	615200031	615200032
47.4	2.89	114	4.49	172.2	6.78	615200041	615200042
55.2	3.37	120	4.72	179.2	7.06	615200051	615200052
64.3	3.92	122	4.80	185.2	7.29	615200061	615200062
73.4	4.48	125	4.92	192.2	7.57	615200071	615200072
80.6	4.92	129	5.08	198.2	7.80	615200081	615200082

EO.152.0725.05.00IM03



Configuration - W56S3



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



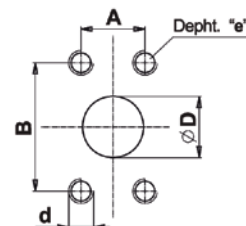
Y → 53 mm (2.09 in.) for displ. 23 to 40
64 mm (2.52 in.) for displ. 47 to 80



PUMPS	UNI-DIRECTIONAL									
	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")



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



code W

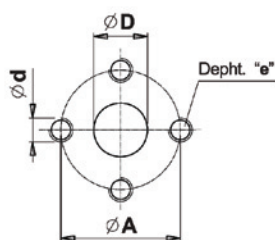
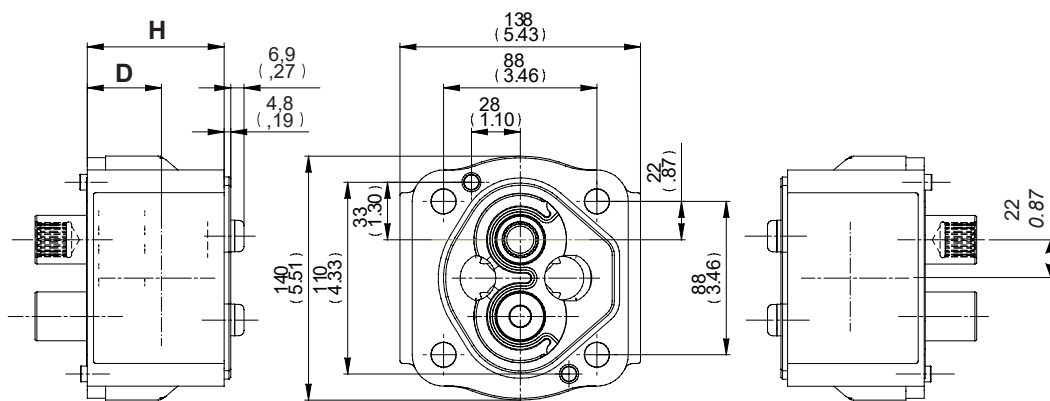
Flanged ports
SAE J518
METRIC THREAD

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm³/rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	84	3.31	136.7	5.38	615200411	615200412
28.6	1.74	88	3.46	140.7	5.54	615200421	615200422
34.4	2.10	92.5	3.64	145.2	5.72	615200431	615200432
40.3	2.46	97	3.82	149.7	5.89	615200441	615200442
47.4	2.89	114	4.49	172.2	6.78	615200451	615200452
55.2	3.37	120	4.72	178.2	7.02	615200461	615200462
64.3	3.92	122	4.80	185.2	7.29	615200471	615200472
73.4	4.48	125	4.92	192.2	7.57	615200481	615200482
80.6	4.92	129	5.08	198.2	7.80	615200491	615200492

EO.152.0725.05.00IM03



Configuration - P63-R



code P

Flanged ports
european standard



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")

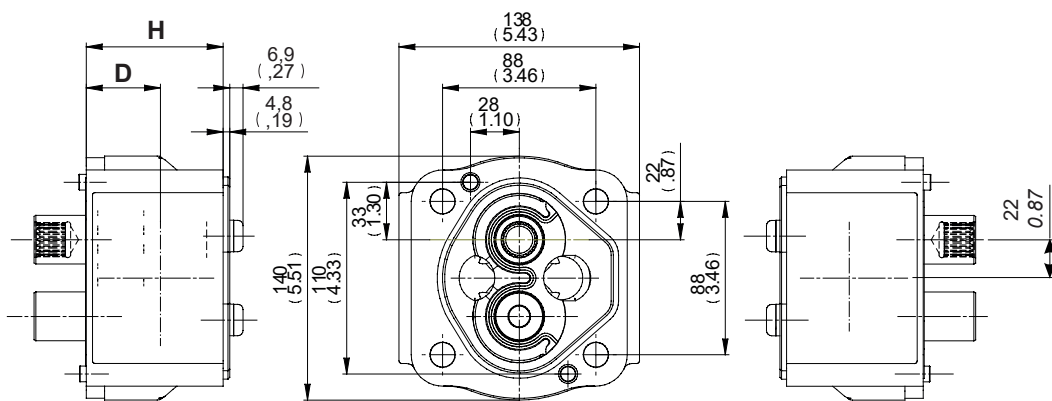
M8	20 Nm (14.7 lbf-ft)
M10	35 Nm (25.8 lbf-ft)
M12	65 Nm (47.9 lbf-ft)

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm³/rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	35	1.38	70	2.76	615210011	615210012
28.6	1.74	34	1.34	74	2.91	615210021	615210022
34.4	2.10	37.5	1.48	78.5	3.09	615210031	615210032
40.3	2.46	42	1.65	83	3.27	615210041	615210042
47.4	2.89	50	1.97	94.5	3.72	615210051	615210052
55.2	3.37	52	2.05	100.5	3.96	615210061	615210062
64.3	3.92	58	2.28	107.5	4.23	615210071	615210072
73.4	4.48	61	2.40	114.5	4.51	615210081	615210082

EO.152.0725.05.00IM03



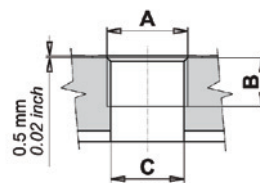
Configuration - G63-R



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")



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



code G

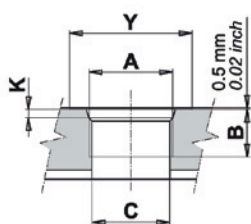
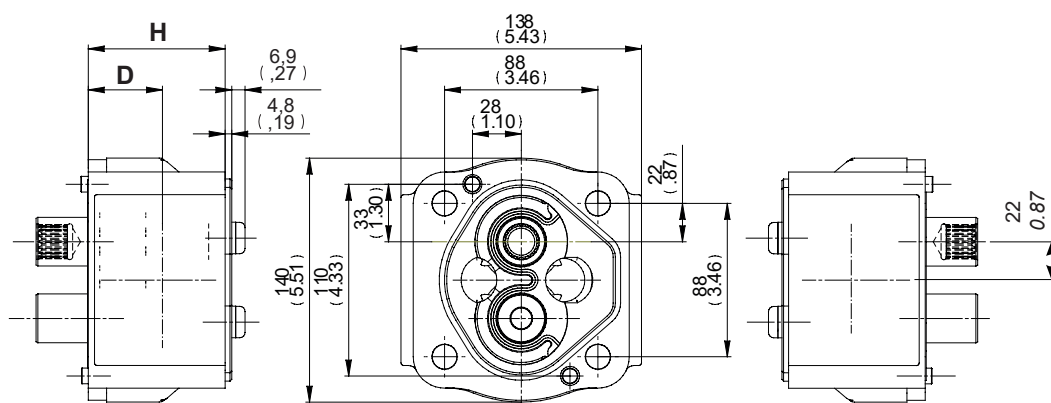
Threaded ports
GAS (BSPP)

Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm³/rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	35	1.38	70	2.76	615210091	615210092
28.6	1.74	38	1.50	74	2.91	615210101	615210102
34.4	2.10	42.5	1.67	78.5	3.09	615210111	615210112
40.3	2.46	47	1.85	83	3.27	615210121	615210122
47.4	2.89	50	1.97	94.5	3.72	615210131	615210132
55.2	3.37	56	2.20	100.5	3.96	615210141	615210142
64.3	3.92	58	2.28	107.5	4.23	615210151	615210152
73.4	4.48	61	2.40	114.5	4.51	615210161	615210162

EO.152.0725.05.00IM03



Configuration - R63-R



code R

Threaded ports
SAE (ODT)



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")

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

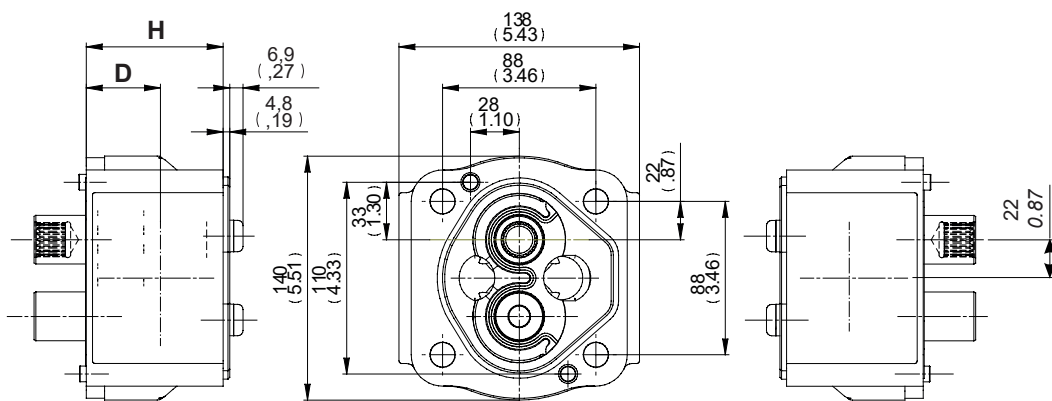


Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	35	1.38	70	2.76	615210171	615210172
28.6	1.74	38	1.50	74	2.91	615210181	615210182
34.4	2.10	42.5	1.67	78.5	3.09	615210191	615210192
40.3	2.46	47	1.85	83	3.27	615210201	615210202
47.4	2.89	50	1.97	94.5	3.72	615210211	615210212
55.2	3.37	56	2.20	100.5	3.96	615210221	615210222
64.3	3.92	58	2.28	107.5	4.23	615210231	615210232
73.4	4.48	61	2.40	114.5	4.51	615210241	615210242

EO.152.0725.05.00IM03



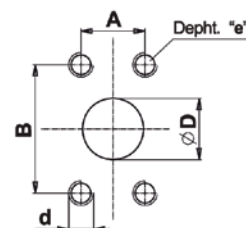
Configuration - W63-R



PUMPS	UNI-DIRECTIONAL									
	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")



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



code W

Flanged ports
SAE J518
METRIC THREAD

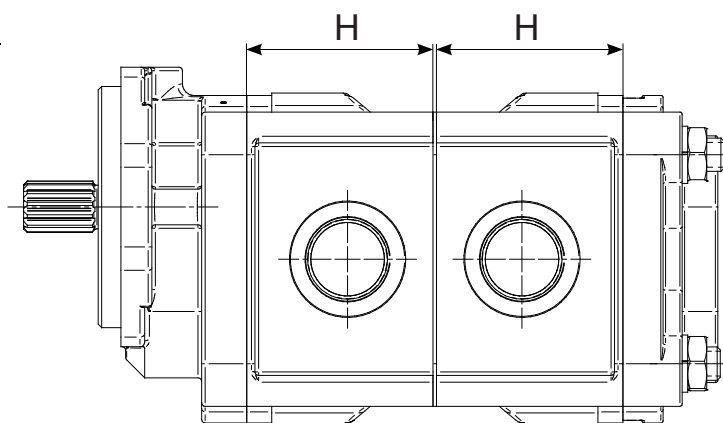
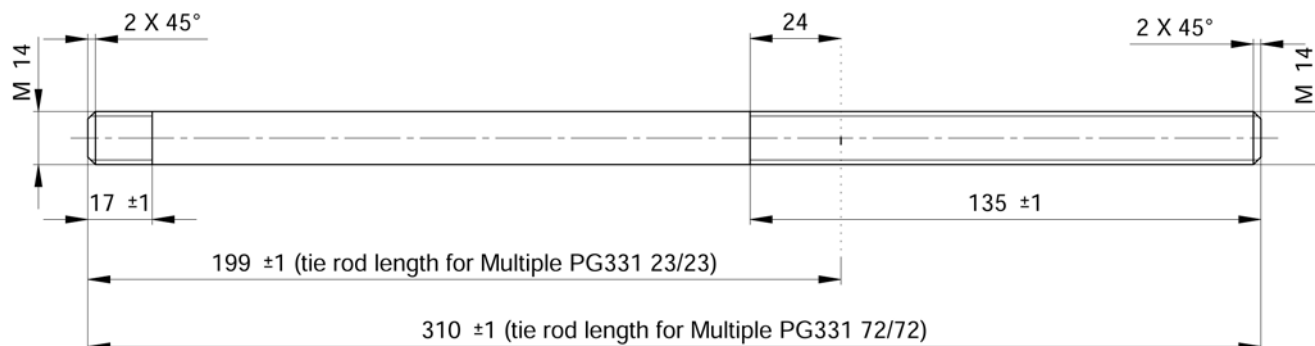
Displacement		Dimensions				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm³/rev	cu.in/rev	mm	in	mm	in		
23.4	1.43	31	1.22	70	2.76	615210251	615210252
28.6	1.74	35	1.38	74	2.91	615210261	615210262
34.4	2.10	39.5	1.56	78.5	3.09	615210271	615210272
40.3	2.46	44	1.73	83	3.27	615210281	615210282
47.4	2.89	50	1.97	94.5	3.72	615210291	615210292
55.2	3.37	56	2.20	100.5	3.96	615210301	615210302
64.3	3.92	58	2.28	107.5	4.23	615210311	615210312
73.4	4.48	61	2.40	114.5	4.51	615210321	615210322

EO.152.0725.05.00IM03



Appendix A - Tie rods length calculation (Multiple pump)

1°- 2° Stages (tie rods 339514937 M14X310 CL. 10.9)



To calculate the length of tie rods, you have to make the sum of all these lengths:
 $(H)+H)+(1)+(2)+(3)+(4)+(5)+(6)$



For cutting length calculation an automatic excel file is available, please contact our sales department.

Table for the double PG331 tie-rod calculation

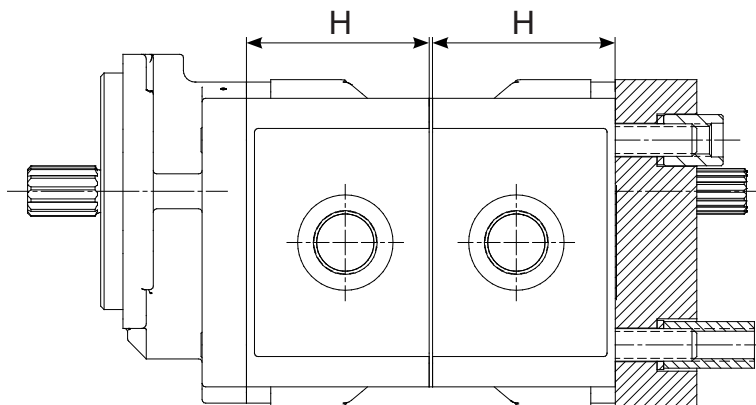
TYPE			23	28	34	40	47	55	64	72
(H)	Dimension H	mm in	70 2.76	74 2.91	78.5 3.09	83 3.27	94.5 3.72	100.5 3.96	107.5 4.23	114.5 4.51
(1)	Spessore filetto in presa sulla flangia Grip length	mm in	22 0.87							
(2)	Spessore coperchio std. Thickness of the std. cover	mm in	26.5 1.04							
(3)	Spessore dado M14 UNI5588 Thickness of the nut M14 UNI5588	mm in	11 0.43							
(4)	Spessore rondella UNI9195 Thickness of the washer UNI9195	mm in	3.5 0.14							
(5)	Spessore piastra PG331/PG331 Thickness of the plate PG331/PG331	mm in	1.5 0.06							
(6)	Sporgenza sulle estremità del tirante Overhang on the tie-rods	mm in	8 0.31							

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Appendix B - Tie rods length calculation and Screws (Triple pump)

1° - 2° Stages (tie rods 339514937 M14X310 CL. 10.9)



To calculate the length of tie rods, you have to make the sum of all these lengths:
(H)+(H)+(1)+[(2) Displ. 23-40 cc or (3) Displ. 47-72 cc]+(4)

Table for tie-rod calculation of a double PG331 pre-arranged to become a triple or quadruple PG331

TYPE			23	28	34	40	47	55	64	72
(H)	Dimension H	mm in	70 2.76	74 2.91	78.5 3.09	83 3.27	94.5 3.72	100.5 3.96	107.5 4.23	114.5 4.51
(1)	Spessore filetto in presa sulla flangia Grip length	mm in	22 0.87							
(2)	Lunghezza fissa cil. 23 - 40 Fixed length for displ. 23 - 40	mm in	34.5 1.36							
(3)	Lunghezza fissa cil. 47 - 72 Fixed length for displ. 47 - 72	mm in	40.5 1.59							
(4)	Spessore piastra PG331/PG331 Thickness of the plate PG331/PG331	mm in	1.5 0.06							

3° Stage/Rear pump (screws M14 TCEI UNI 5931 - CL. 12.9 - Burnished)

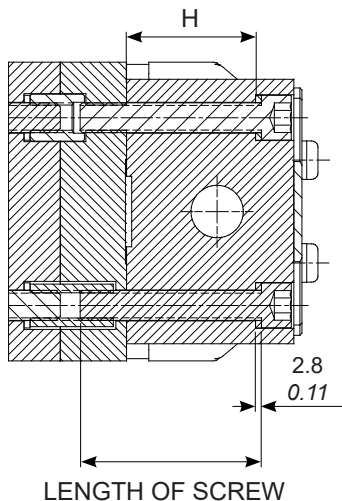


Tabella lunghezze viti TCEI PG331 terzo stadio
Table for third stage PG331 length of TCEI screws

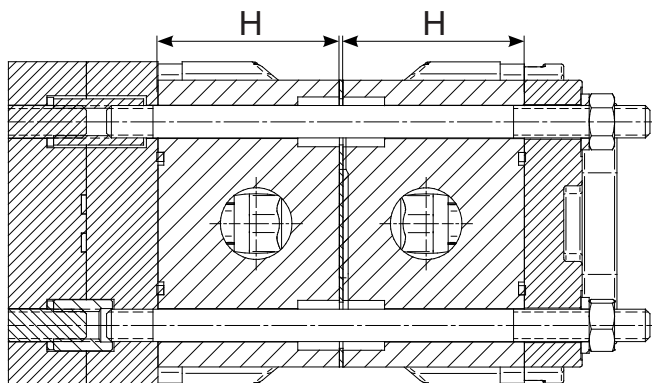
DISPLACEMENT OF THE THIRD STAGE	LENGTH OF SCREW	CODE
23	75	790677900
	2.95	
28	80	790622900
	3.15	
34	85	790623000
	3.35	
40	90	790623100
	3.54	
47	110	790677431
	4.33	
55	110	790677431
	4.33	
64	120	790623400
	4.72	
72	130	790623500
	5.12	

EO.152.0725.05.001M03



Appendix C - Tie rods length calculation (Quadruple pump)

3°- 4° Stages (tie rods 339514937 M14X310 CL. 10.9)



To calculate the length of tie rods, you have to make the sum of all these lengths:
 $(H)+H)+(1)+(2)+(3)+(4)+(5)+(6)$

Table for the double PG331 tie-rod calculation

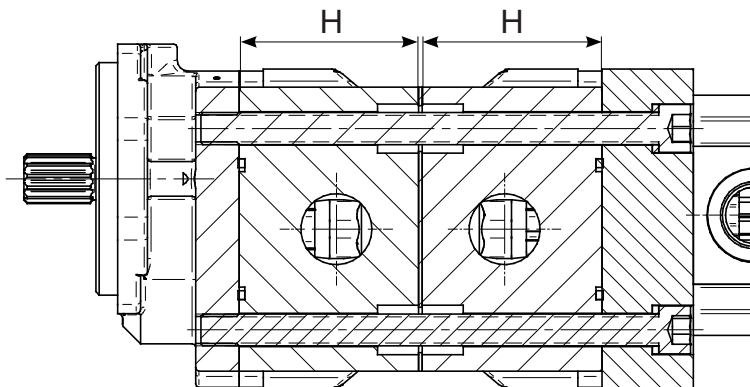
TYPE			23	28	34	40	47	55	64	72
(H)	Dimension H	mm in	70 2.76	74 2.91	78.5 3.09	83 3.27	94.5 3.72	100.5 3.96	107.5 4.23	114.5 4.51
(1)	Spessore filetto in presa sulla flangia Grip length	mm in	22 0.87							
(2)	Spessore coperchio std. Thickness of the std. cover	mm in	26.5 1.04							
(3)	Spessore dado M14 UNI5588 Thickness of the nut M14 UNI5588	mm in	11 0.43							
(4)	Spessore rondella UNI9195 Thickness of the washer UNI9195	mm in	3.5 0.14							
(5)	Spessore piastra PG331/PG331 Thickness of the plate PG331/PG331	mm in	1.5 0.06							
(6)	Sporgenza sulle estremità del tirante Overhang on the tie-rods	mm in	8 0.31							

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Appendix D - Screws (Multiple PG331+2PE)

1° - 2° Stages (screws M14 TCEI UNI 5931 - CL. 12.9 - Burnished)

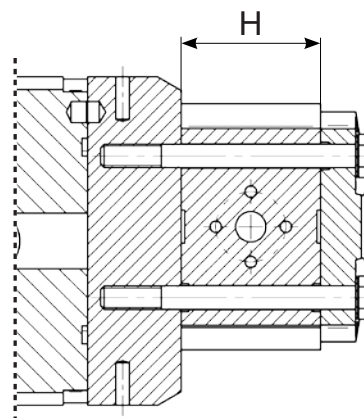
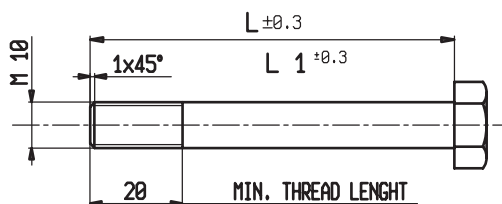


To calculate the length of tie rods, you have to make the sum of all these lengths:
(H)+(H)+(1)+[(2) Displ. 23-40 cc or (3) Displ. 47-72 cc]

Table for double PG331 with 2PE TCEI screw calculation

Table for double PG331 with 2PE TCEI screw calculation										
TYPE			23	28	34	40	47	55	64	72
(H)	Dimension H	mm in	70 2.76	74 2.91	78.5 3.09	83 3.27	94.5 3.72	100.5 3.96	107.5 4.23	114.5 4.51
(1)	Spessore filetto in presa sulla flangia Grip length	mm in	20 0.79							
(2)	Lunghezza fissa cil. 23 - 40 Fixed length for displ. 23 - 40	mm in	25 0.98							
(3)	Lunghezza fissa cil. 47 - 72 Fixed lenath for displ. 47 - 72	mm in	31 1.22							

2PE Rear pump (screws M10 UNI 5737 - CL. 10.9)

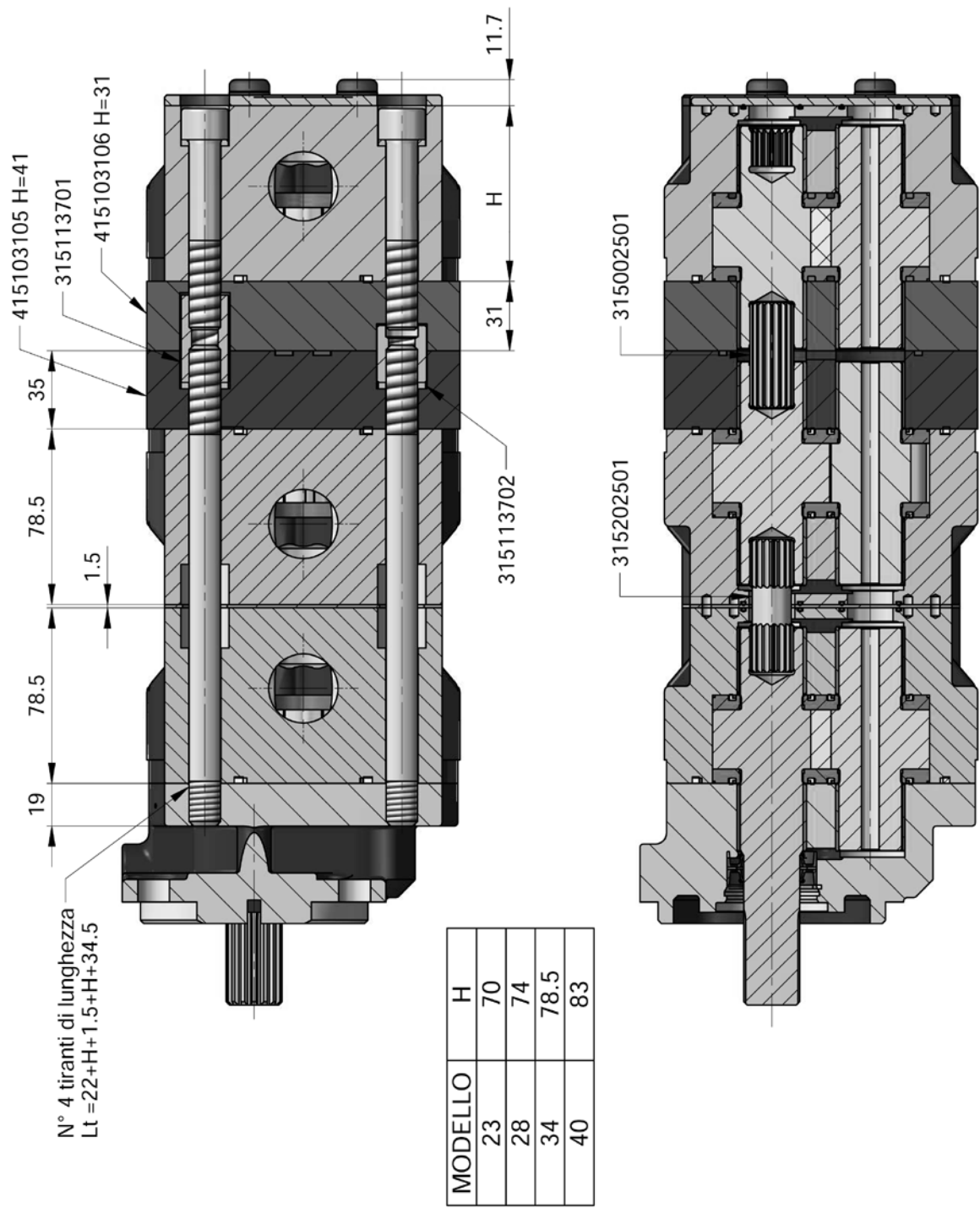


DISPLACEMENT	BODY H	FLANGE (H=19)		*SR* WASHER THICKN.	
		SCREW LENGTH M 10 L1	CODE	*SR*	CODE
3.2-3.9-4.5-6.2	47.1	80	7901 170 31	1	7952 524 51
5.5	48.6	80	7901 170 31	1	7952 524 51
8.3	52.8	85	7901 171 31	1	7952 524 51
10.5	56.3	90	7901 172 31	2.2	7952 396 51
11.3-12.5	59.7	90	7901 172 31	1	7952 524 51
13.8	63.5	95	7901 173 31	1	7952 524 51
16	67.5	100	7901 174 31	1	7952 524 51
19	75.6	110	7901 176 31	2.2	7952 396 51
22.5	81	115	7901 177 31	2.2	7952 396 51
26	86.8	120	7901 178 31	1	7952 524 51

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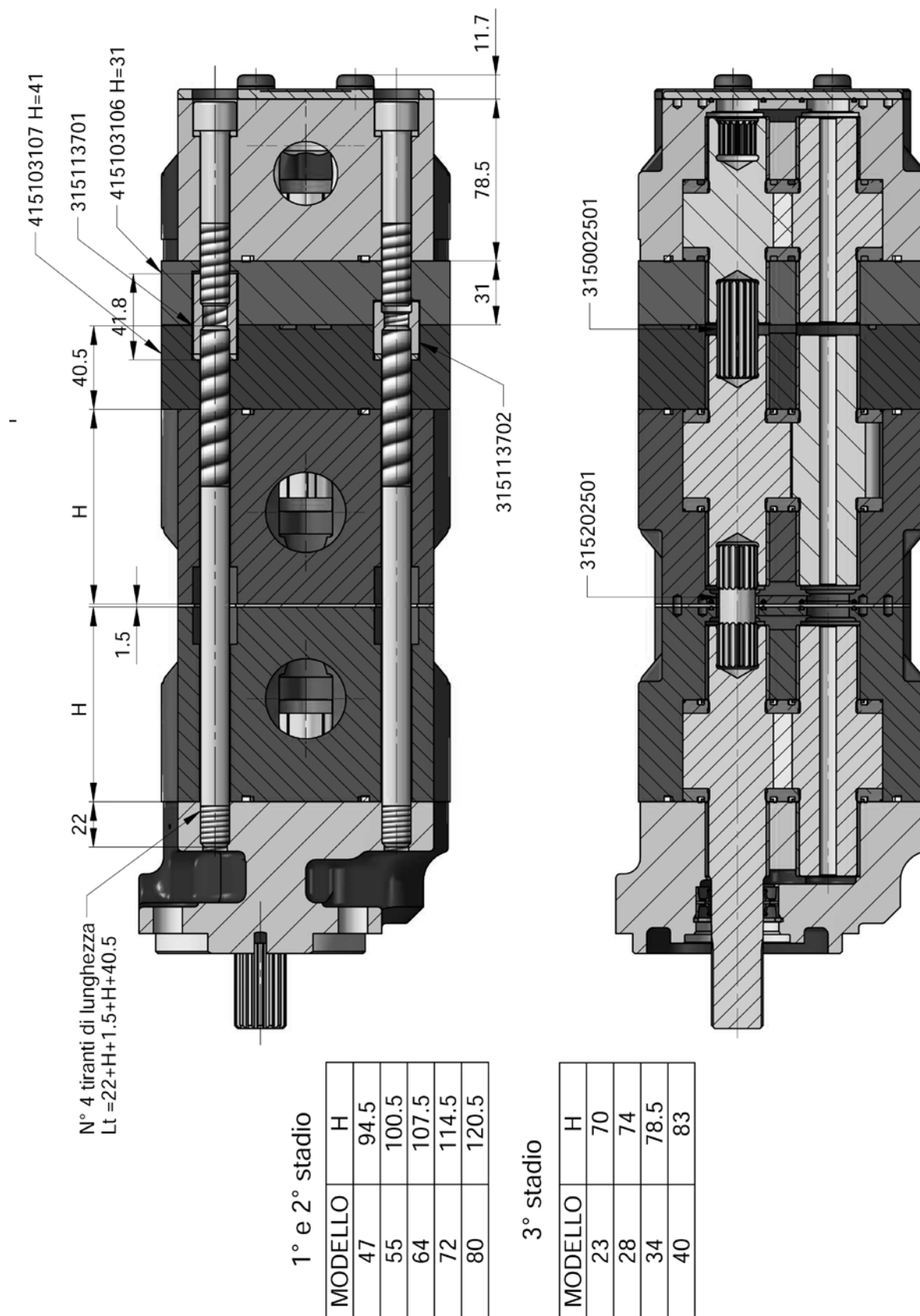
Appendix E - (Triple pump) 1°/2°/3° Stage Displ. 23-40 cc



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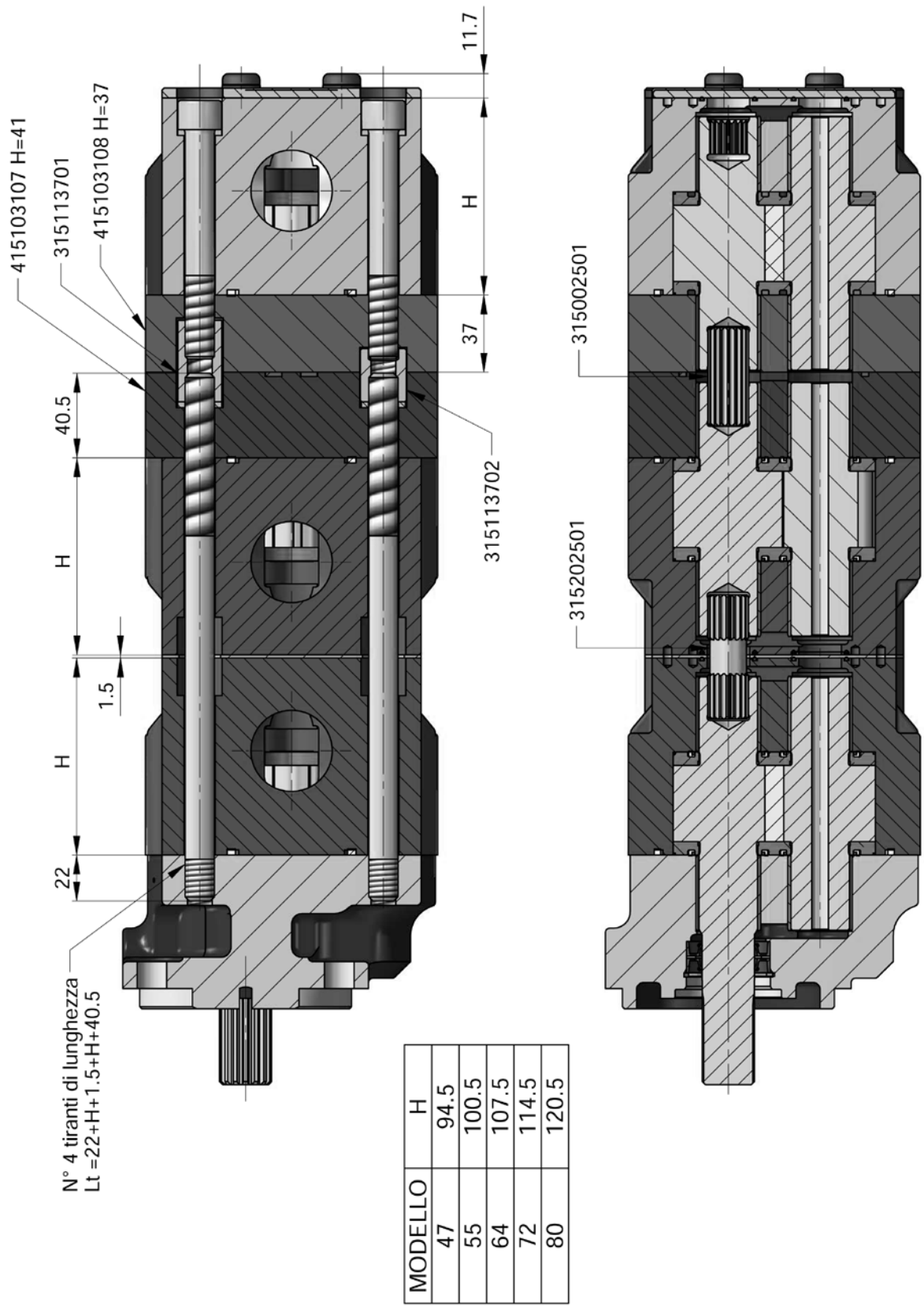
Appendix E - (Triple pump) 1°/2° Stage Displ. 47-80 cc/3° Stage Displ. 23-40 cc



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Appendix E - (Triple pump) 1°/2°+3° Stage Displ. 47-80 cc

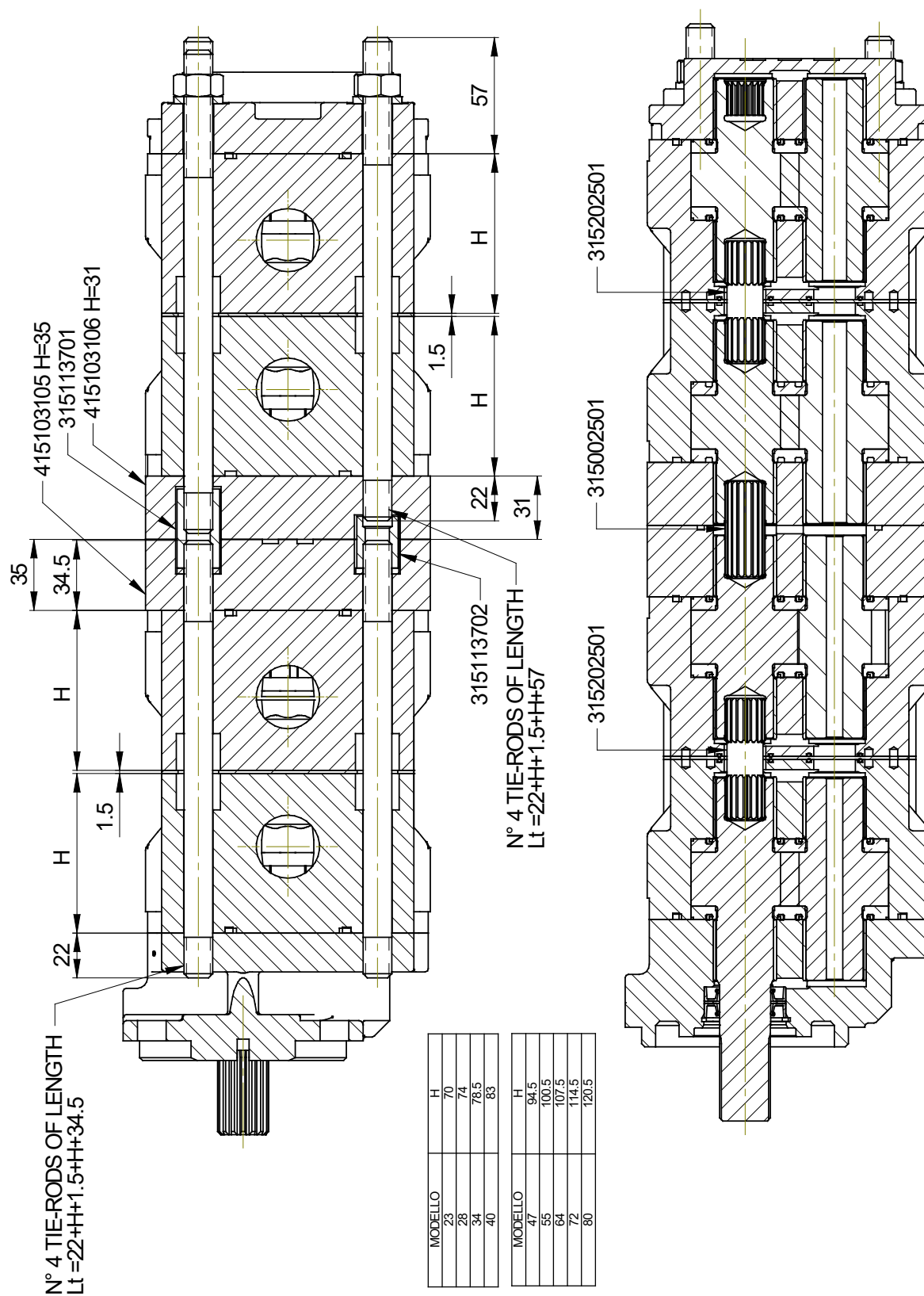


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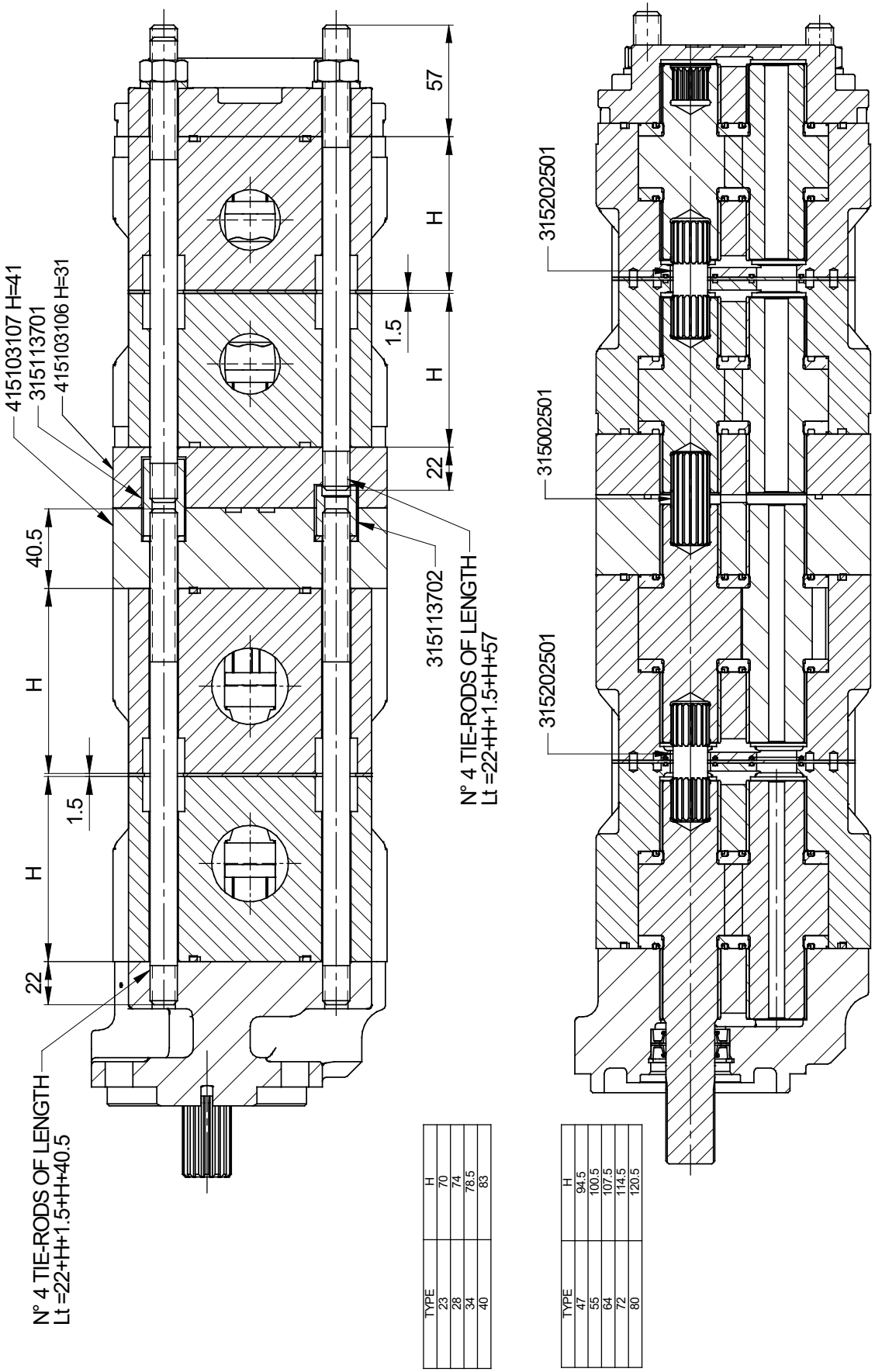
Appendix F - (Quadruple pump) 1°/2°+3°/4° Stage Displ. 23-40 cc

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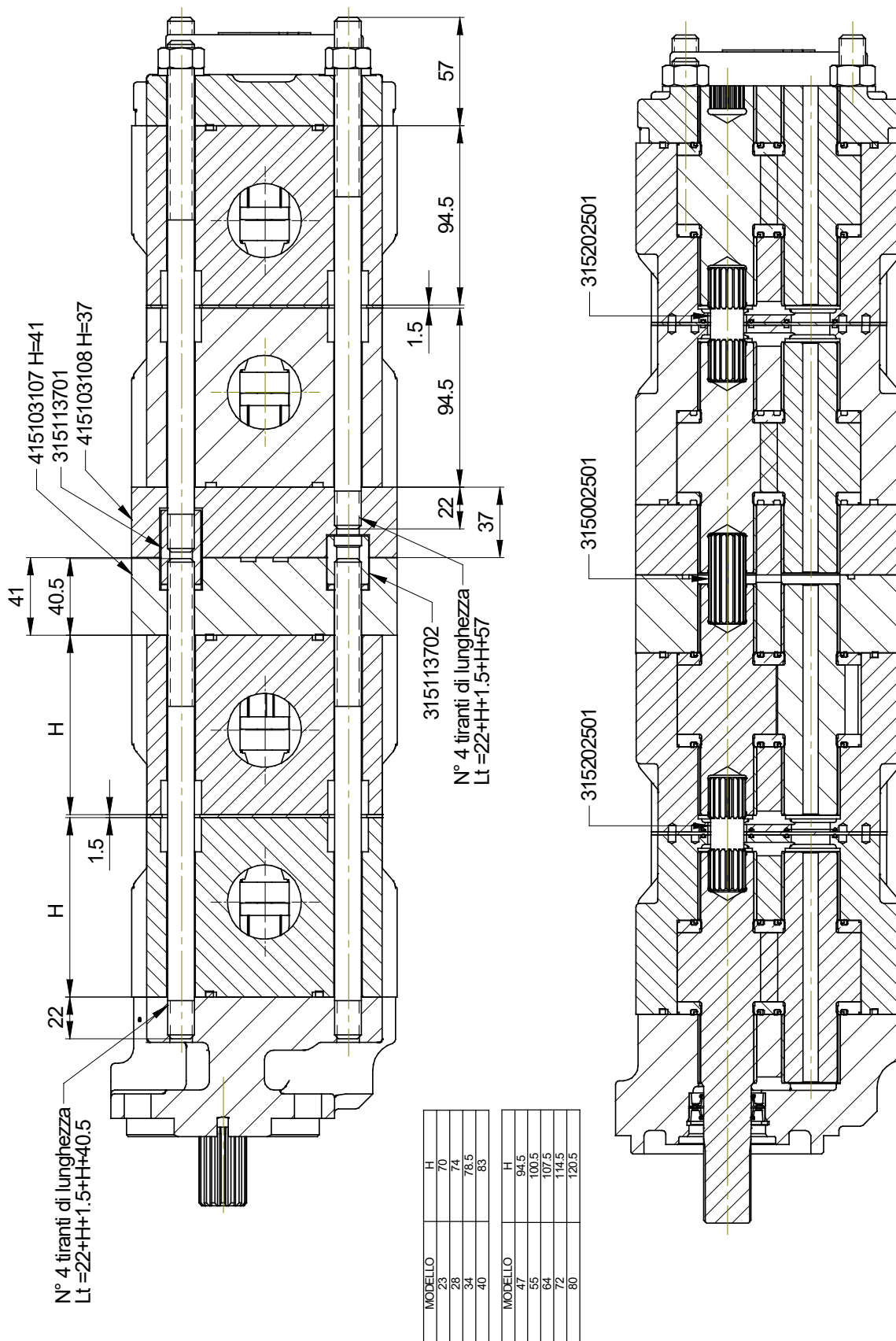
Appendix F - (Quadruple pump) 1°/2° Stage Displ. 47-80 cc+3°/4° Stage Displ. 23-40 cc



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Appendix F - (Quadruple pump) $1\frac{1}{2}^{\circ}+3\frac{3}{4}^{\circ}$ Stage Displ. 47-80 cc



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