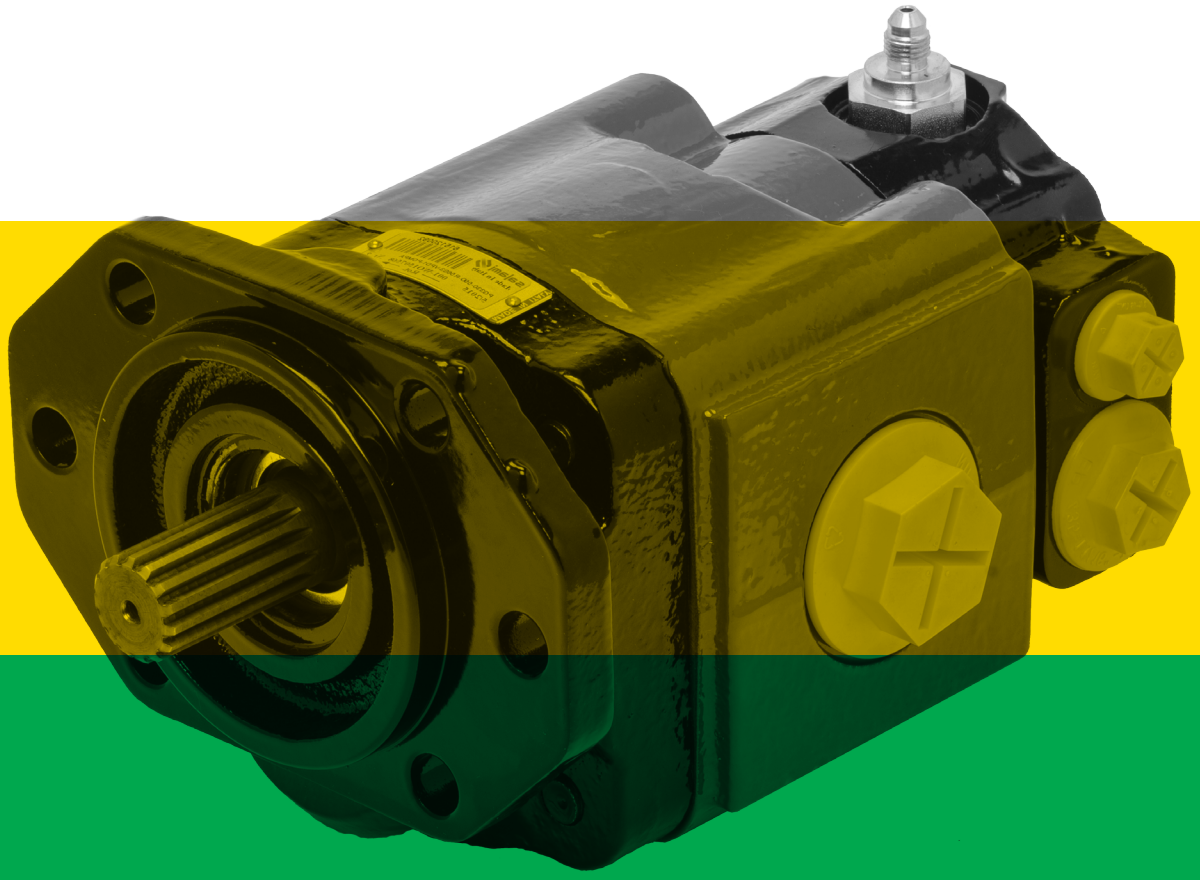
Gear Pumps and Motors

Cast Iron Gear Housing

Technical/Spare Parts Catalogue



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salami
FLUID POWER SYSTEMS ®

Final revised edition - July 2021

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If any doubts, please contact our sales department.

Contents

Gear Pumps

Cast Iron Gear Housing: 2PGE/PG330/PG331

Features

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Symbol Designation

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

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

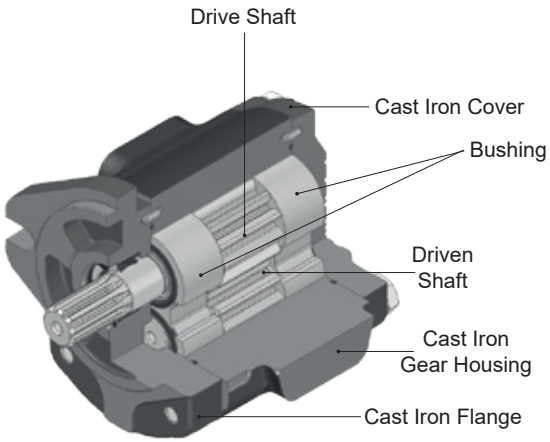
2PGE and PG330/331 Features

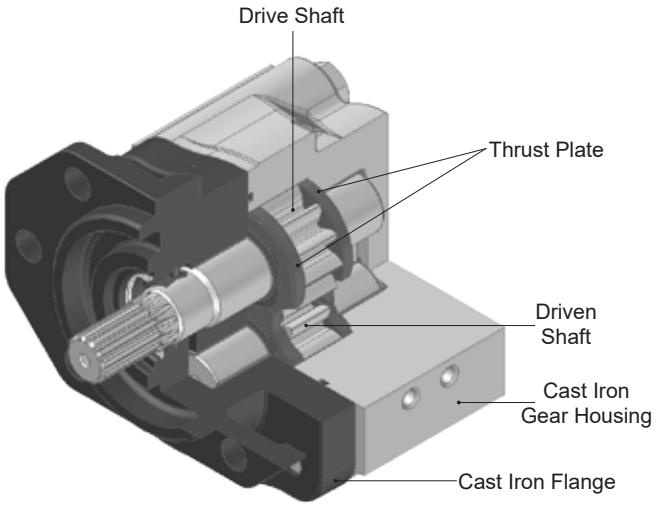
The PG330/PG331 and 2PGE Series Cast Iron Pumps has been specifically designed for high flow applications, demanding peak performance and long life in extreme operating conditions. PG330 optimized for high volume and for OEM's customers. Displacements available:

2PGE: 6.5 cm^3/rev to 26.6 cm^3/rev (from 0.40 cu.in/rev to 1.62 cu.in/rev)
PG330/PG331: 23.4 cm^3/rev to 80.6 cm^3/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 contruction.
- 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 strenght cast iron. Cast iron offers thermal stability, contamination resistance and strenght 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.

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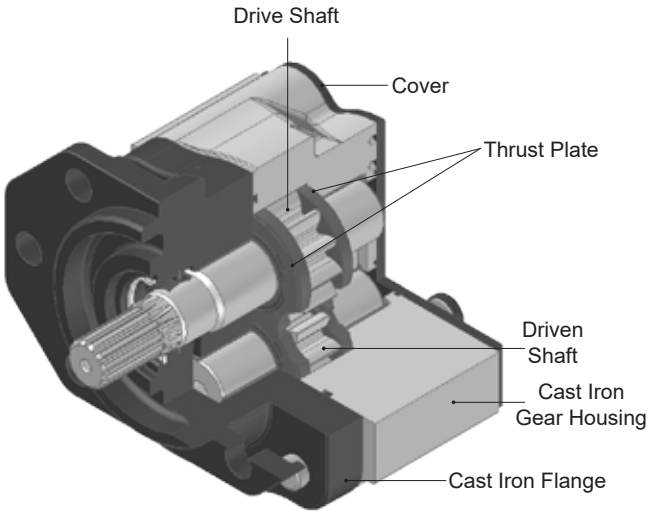
PG331 Features

PG331

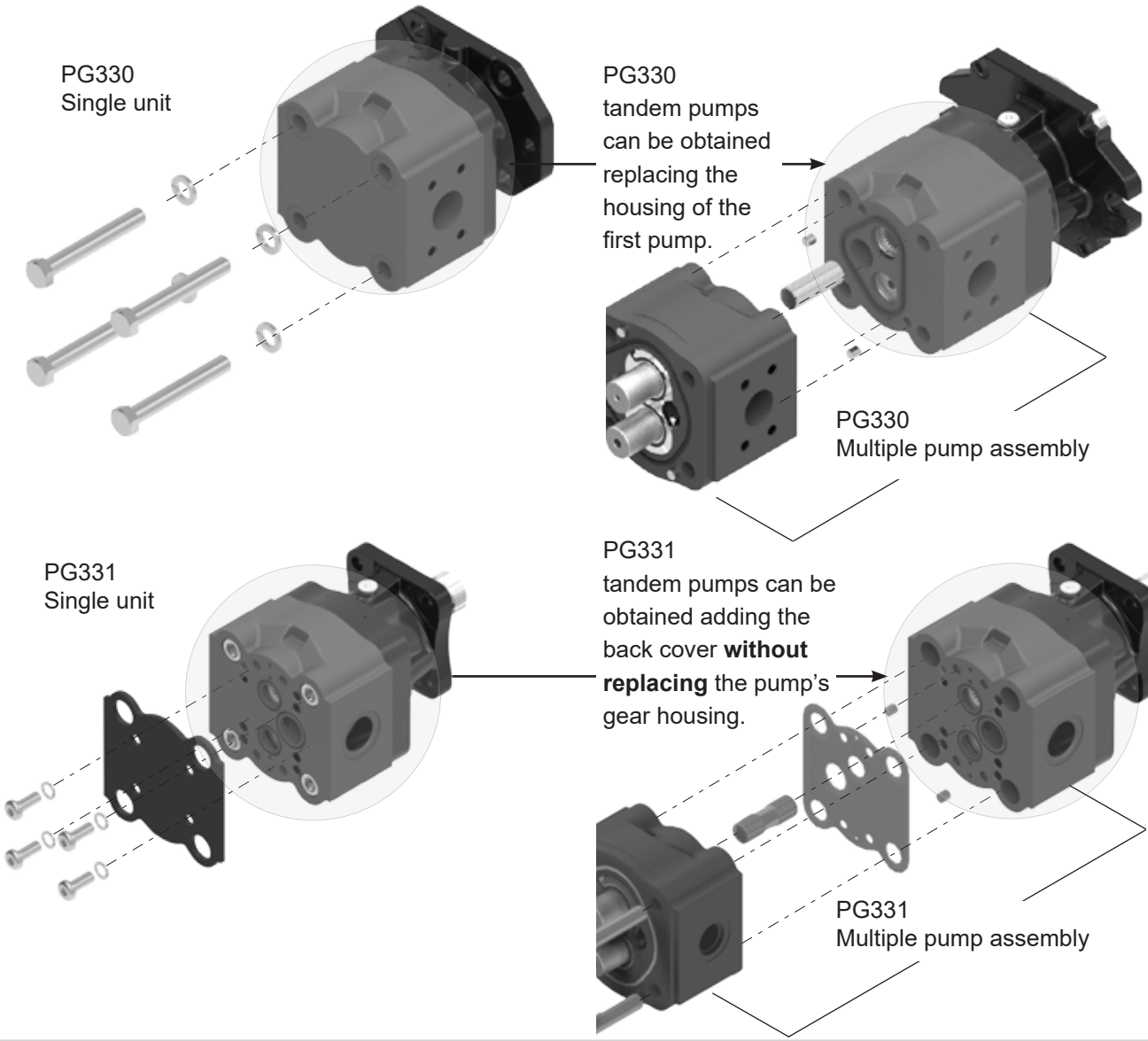
PG331 has been designed for Distributors and easing local conversion from single to multiple stage pump configuration.

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

Is available in single, double, triple version.



PG330/331 Pump assembly



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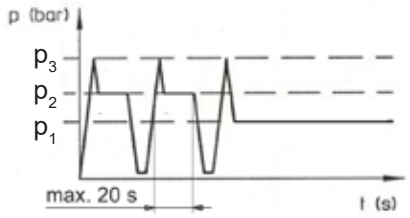
Definition of Pressures



p_3 = Peak pressure

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

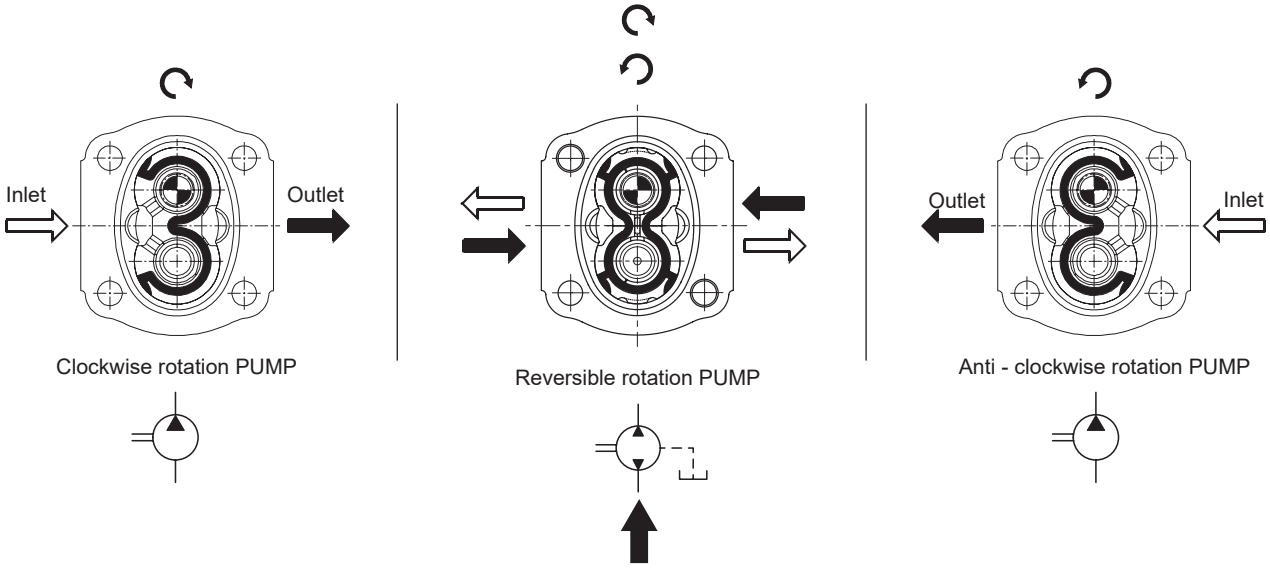
p_1 = Continuous operating pressure

Drive Shaft

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

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

Pump Rotation



Working Conditions

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

Pump inlet pressure (absolute pressure)		0.8 to 1.5 bar *(11.6 to 21.7 psi)*
Viscosity	Minimum operating fluid viscosity	12 mm²/sec
	Max starting viscosity	800 mm²/sec
	Suggested fluid viscosity range	17 ÷ 65 mm²/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

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 continuos duty. The highest value is recommended when the temperature difference is low and/or for intermittent duty.

ⓘ 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 β_x=75	15 µm	25 µm

Common Formulas

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

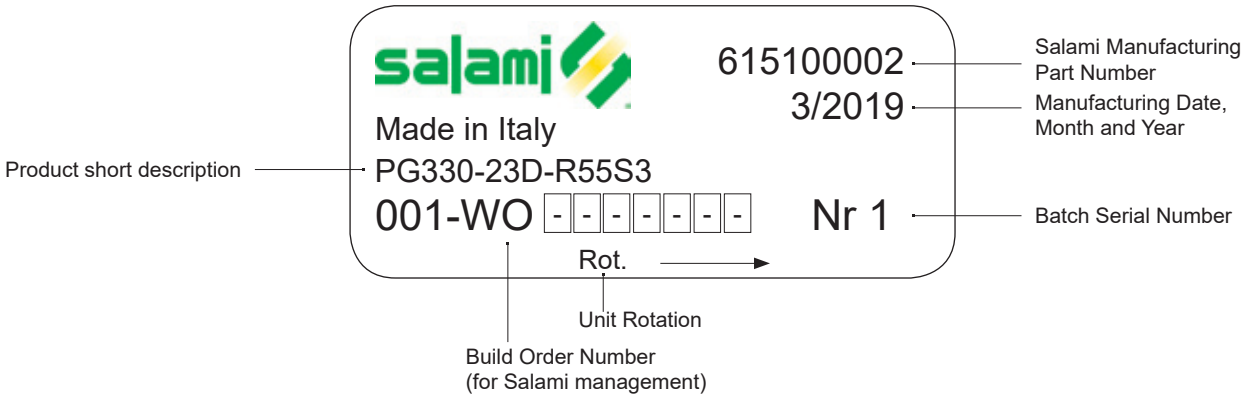
P = Input power $= \dfrac{q \cdot n \cdot \Delta p \; 10^{-3}}{600 \; \eta_m}$ (kW)

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

LEGENDA

Δp= Working pressure	(bar)
q= Displacement	(cm^3/rev)
n= Speed	(min^{-1})
η_m= Mechanical efficiency (0.92)	
η_v= Volumetric efficiency (0.95)	

Identification Label



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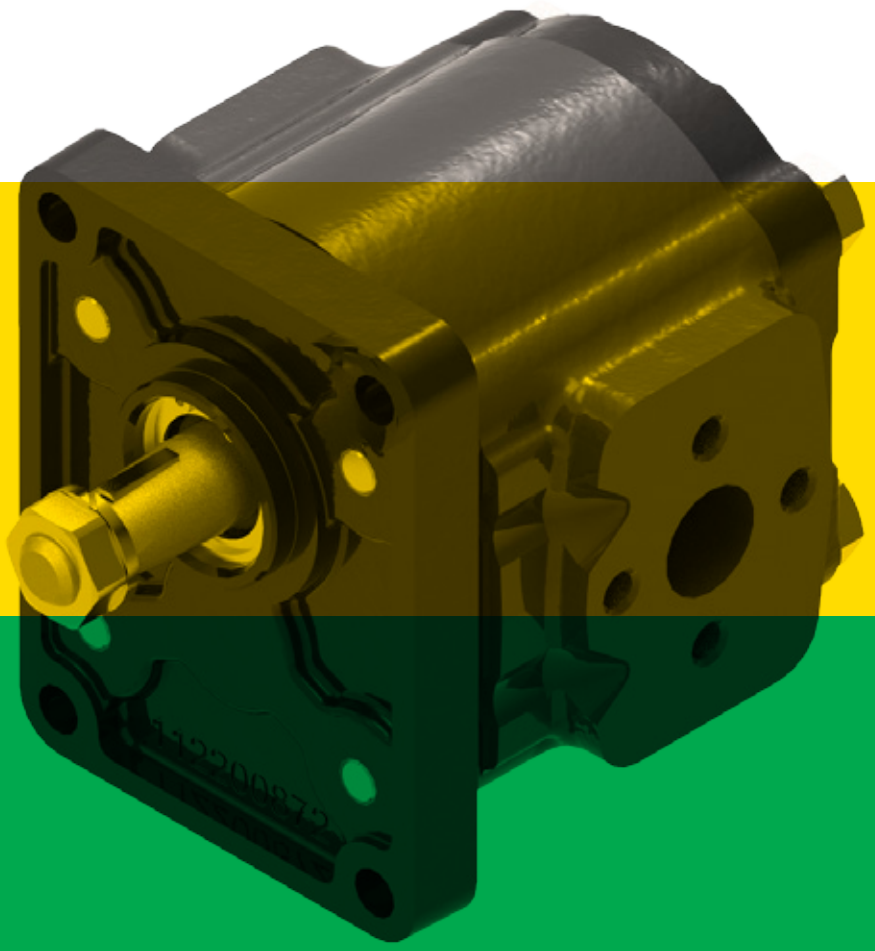
2PGE

Cast Iron Gear Pumps

Technical/Spare Parts Catalogue



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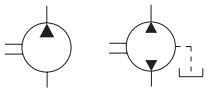
2PGE Single Pump - Dimensions and Technical Data



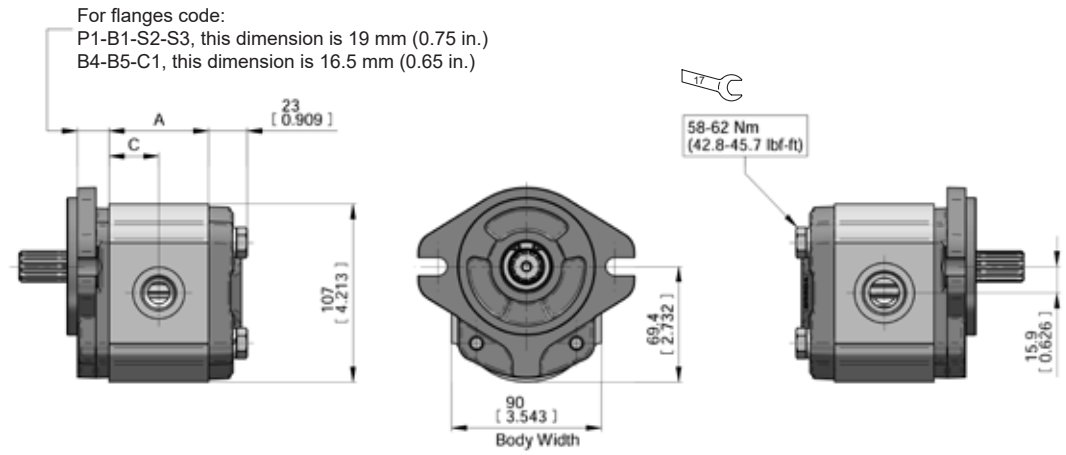
20 bar *(290 psi)*
Max pressure discharge

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

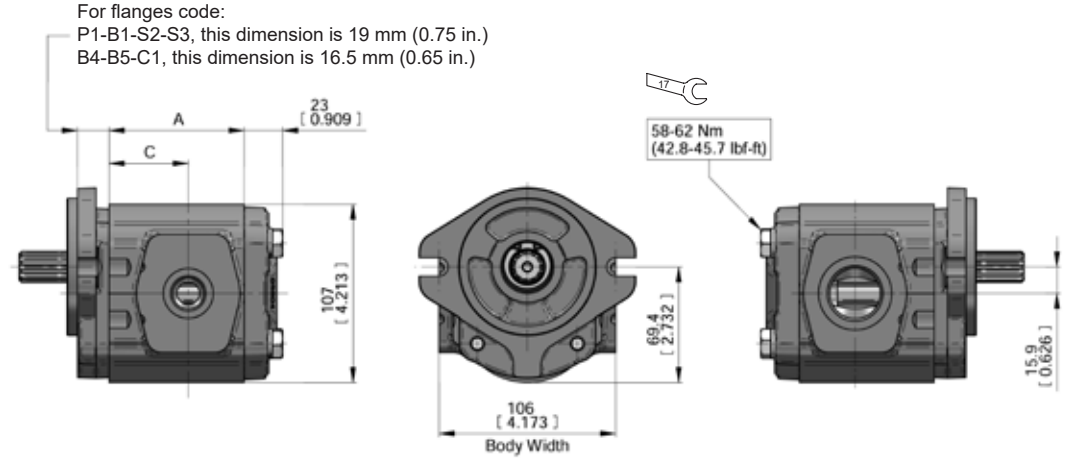
TYPE	Displacement		Dimension A		Dimension C		Continuous pressure p_1		Intermittent pressure p_2		Peak pressure p_3		Min. speed at p_1	Max. speed at p_2	Weight	
	cm^3/rev	*cu.in/rev*	mm	*in*	mm	*in*	bar	*psi*	bar	*psi*	bar	*psi*	rpm		kg	*lbs*
2PGE - 6.5	6.5	*0.40*	49.95	*1.97*	25	*0.98*	270	*3915*	300	*4350*	320	*4650*	600	4000	4.8	*10.58*
2PGE - 8.3	8.2	*0.50*	52.8	*2.07*	26.4	*1.04*	270	*3915*	300	*4350*	320	*4650*	500	3500	5.0	*11.02*
2PGE - 11.3	11.5	*0.68*	59.7	*2.35*	29.75	*1.17*	270	*3915*	300	*4350*	320	*4650*	500	3500	5.2	*11.46*
2PGE - 13.8	13.8	*0.84*	63.5	*2.50*	31.75	*1.25*	270	*3915*	300	*4350*	320	*4650*	500	3500	5.4	*11.90*
2PGE - 16	16.6	*1.01*	67.5	*2.65*	39.5	*1.56*	270	*3915*	300	*4350*	320	*4650*	500	3000	6.6	*14.55*
2PGE - 19	19.4	*1.18*	75.6	*2.97*	39.5	*1.56*	270	*3915*	300	*4350*	320	*4650*	500	3000	7.1	*15.65*
2PGE - 22.5	22.9	*1.37*	81	*3.19*	47.5	*1.87*	250	*3625*	280	*4060*	300	*4350*	500	2750	7.5	*16.53*
2PGE - 26	26.6	*1.62*	86.8	*3.42*	47.5	*1.87*	230	*3335*	260	*3750*	280	*4060*	500	2500	7.8	*17.20*

Max Speed must be lowered by 10% for system working continuosly at p[1] pressure.
Max pressure must be lowered by10% for bi-directional pump.

From Displacement 6.5 to 13.8



From Displacement 16 to 26



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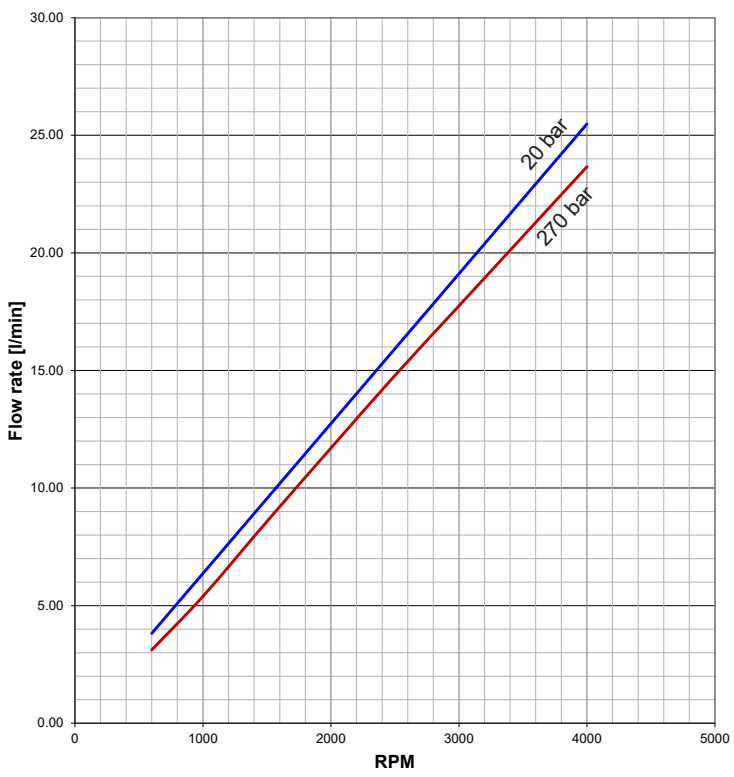
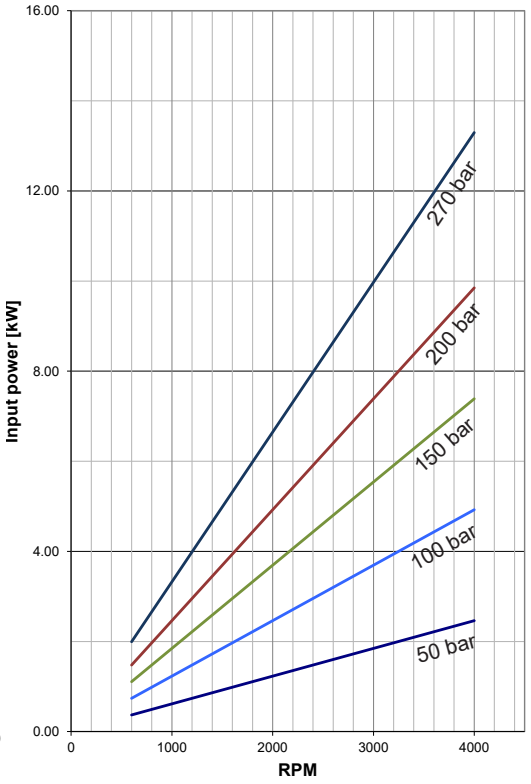
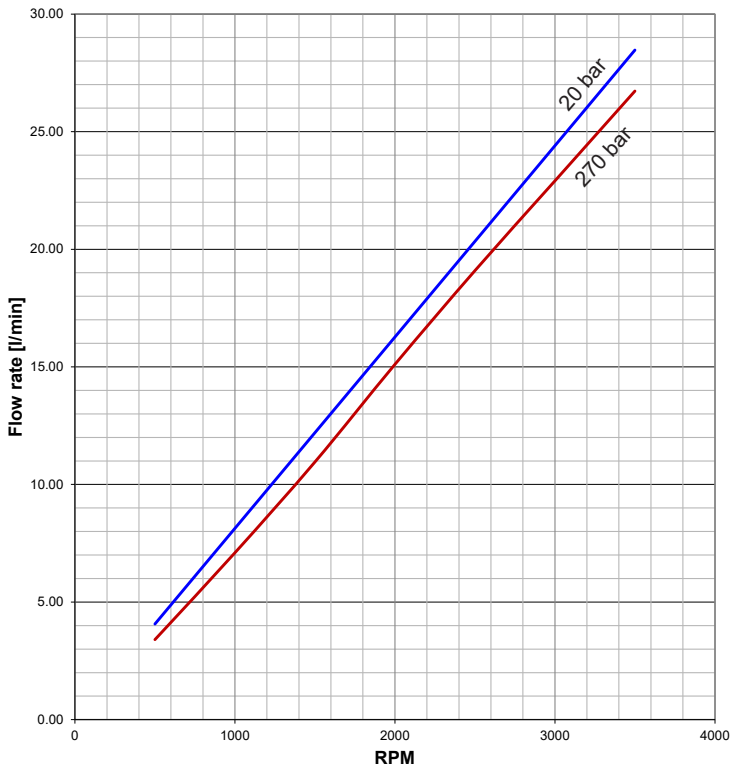
Pump Performance Charts

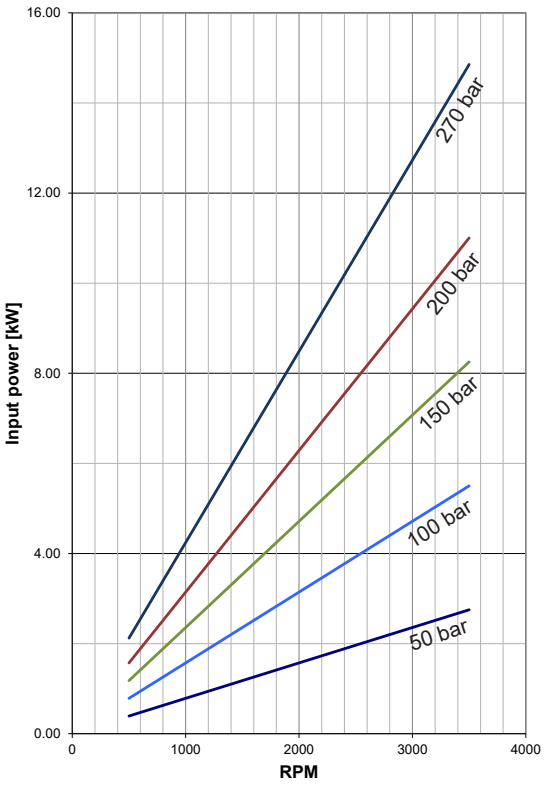
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





2PGE - 6.5





2PGE - 8.3

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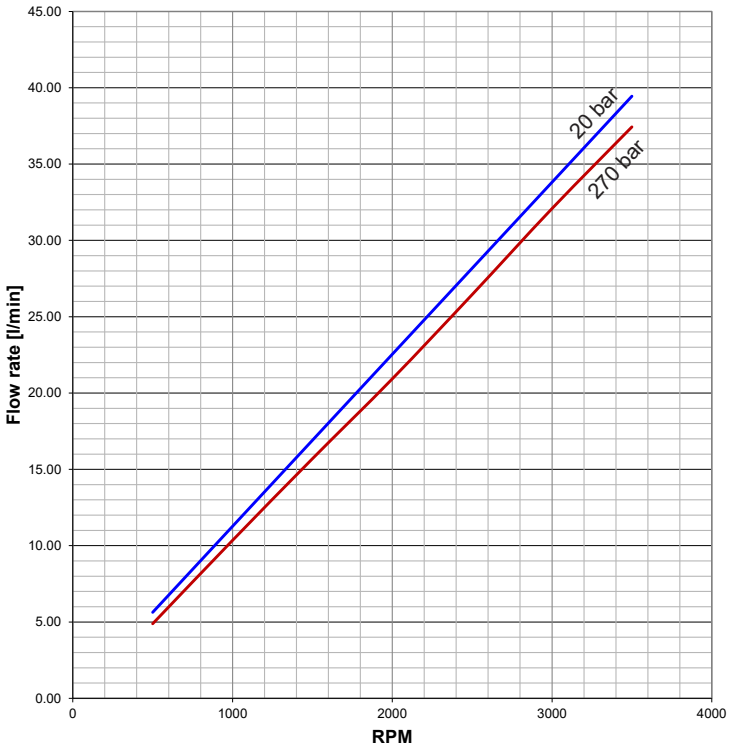
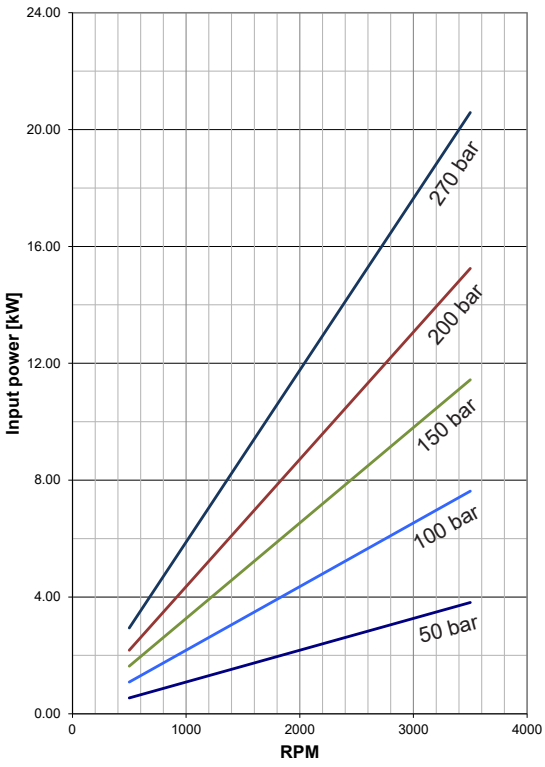
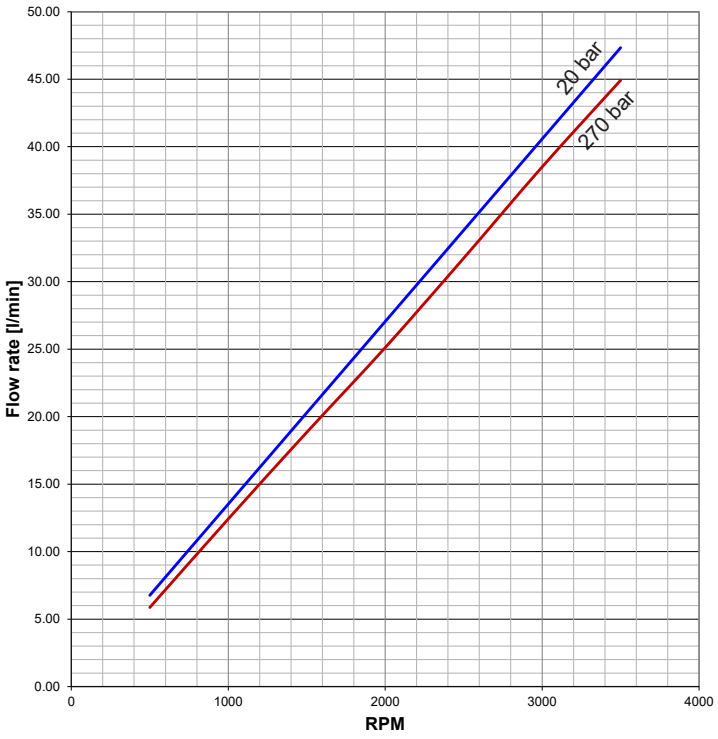
Pump Performance Charts

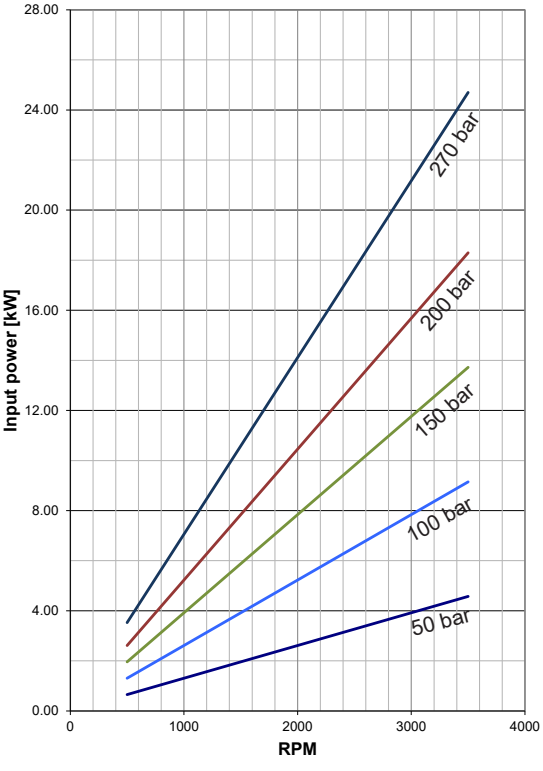
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





2PGE - 11.3

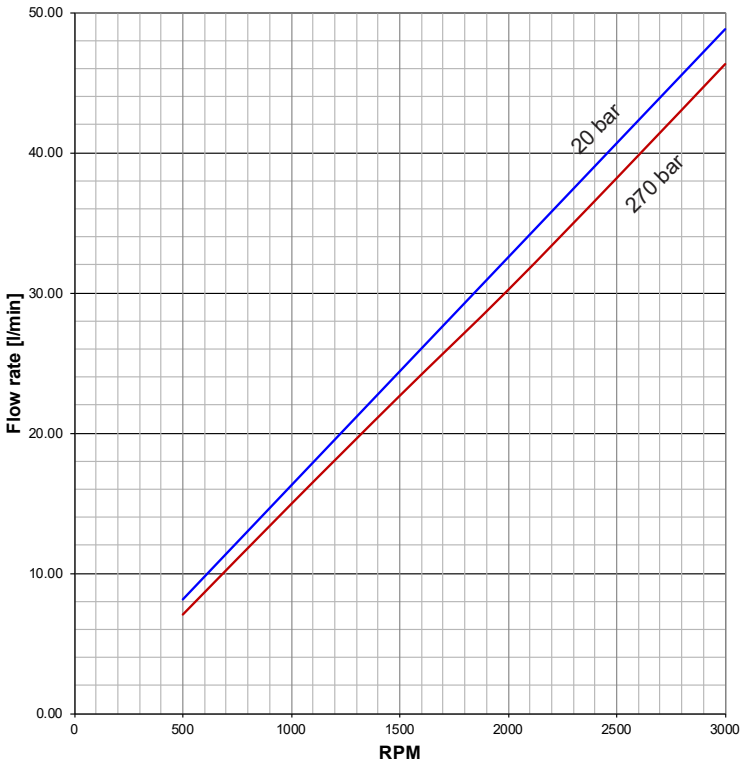


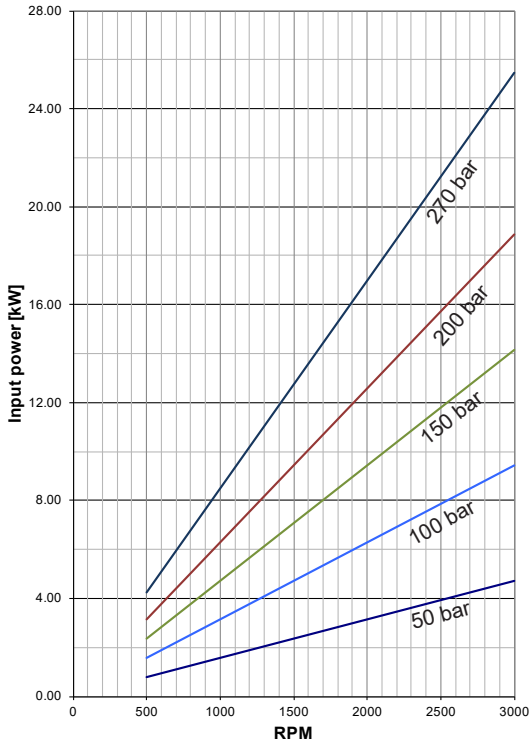


2PGE - 13.8

Pump Performance Charts

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





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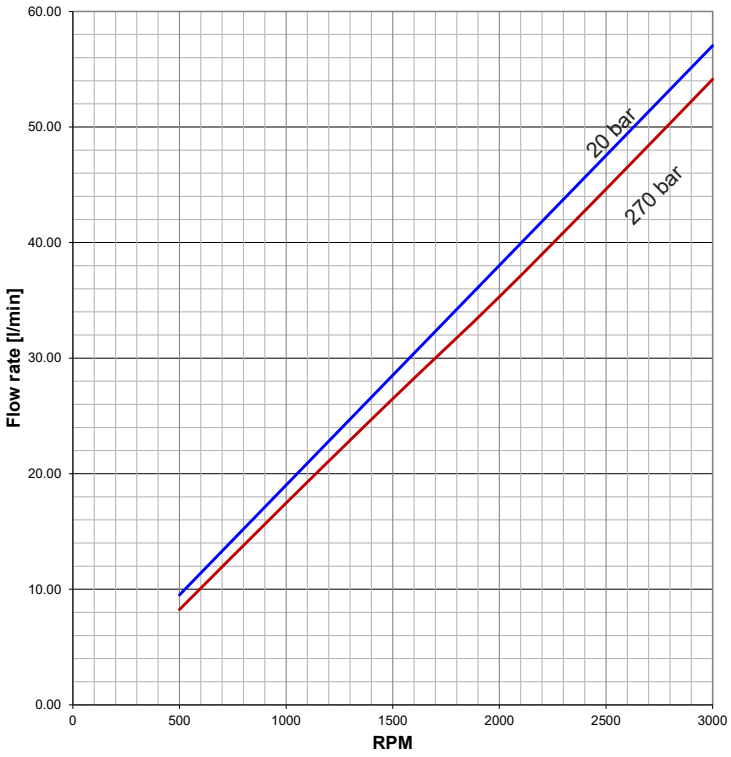

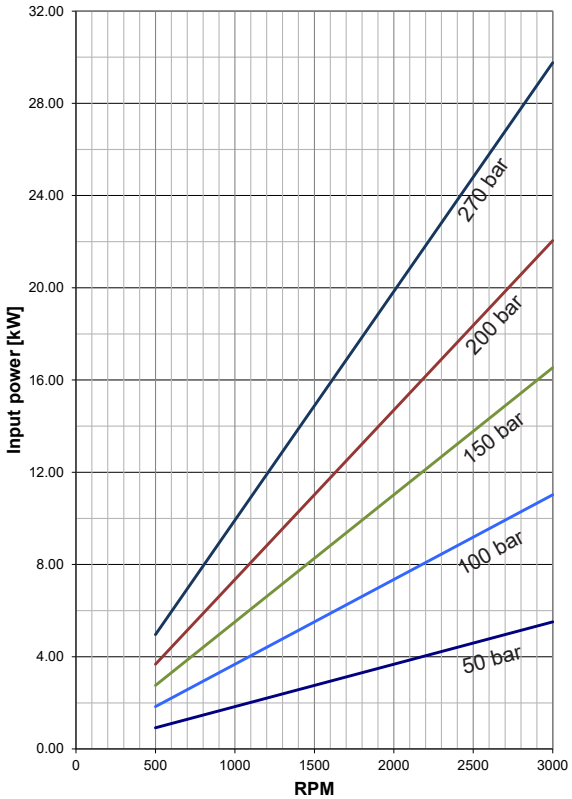

2PGE - 19

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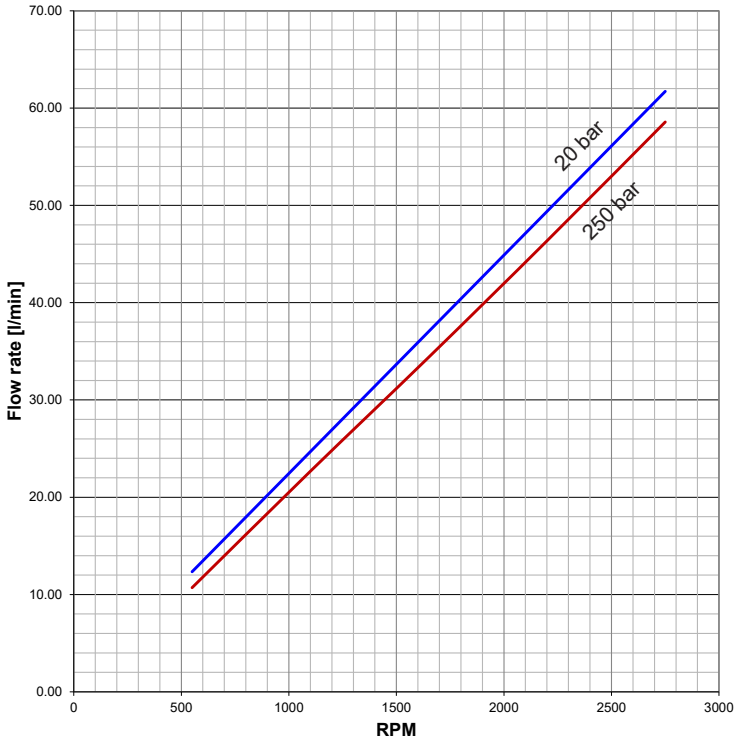
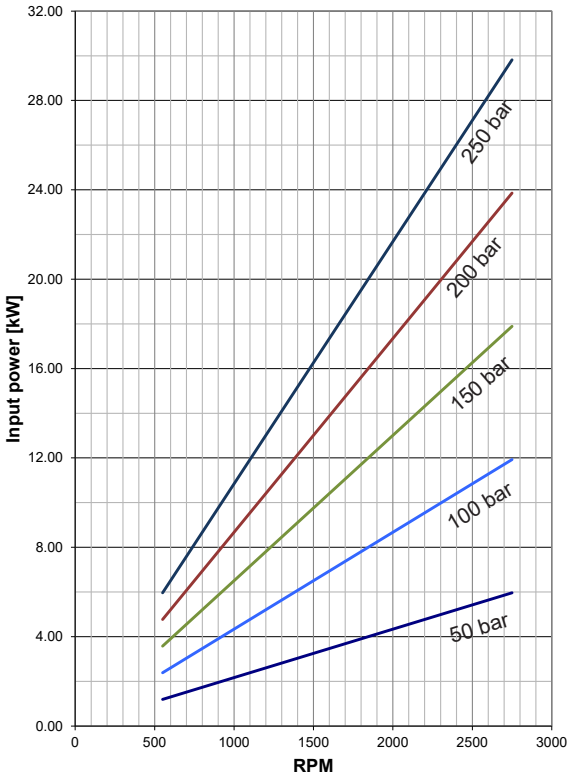
Pump Performance Charts

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





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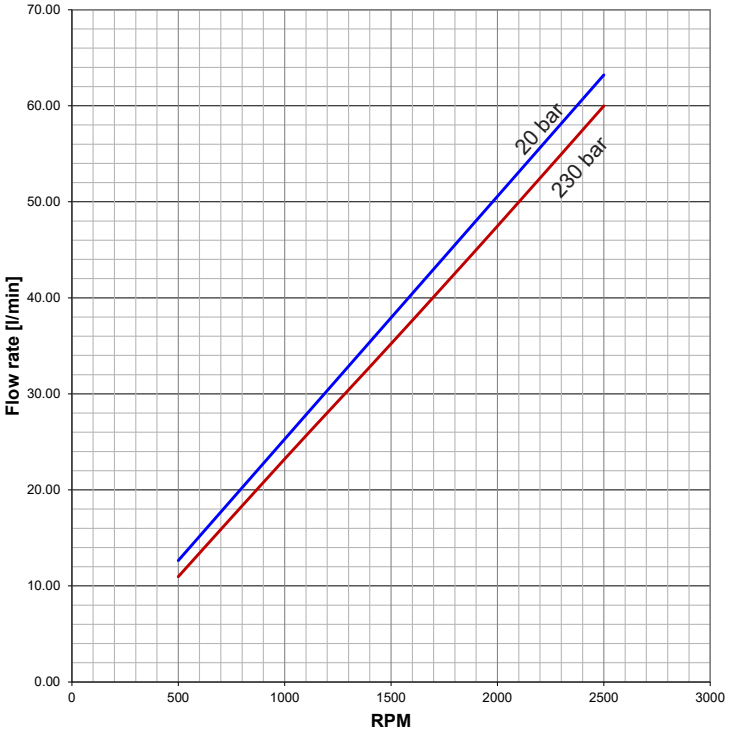
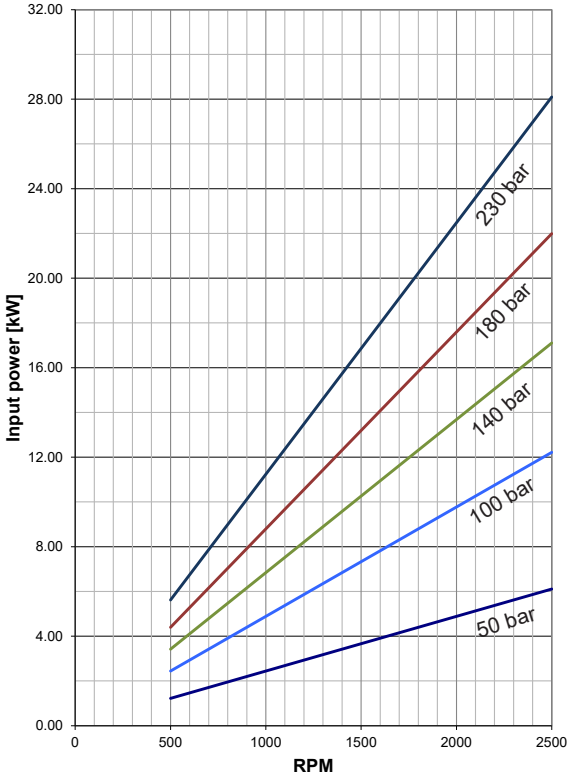
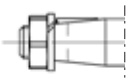
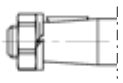
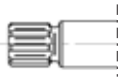
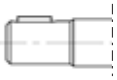




2PGE - 26

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						
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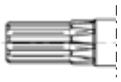
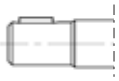
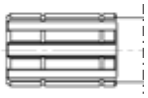
		FLANGES				
SHAFT	 CODE **52**	52S2		52S6		
	 CODE **54**	54S2		54S6		
	 CODE **55**		55S3			
	 CODE **82**	82S2		82S6		
	 CODE **85**	85S2		85S6		
CONTINENTAL SHAFT	 CODE **67**					67Z2
	 CODE **73**				73T1	

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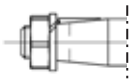
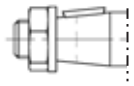
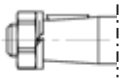
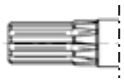
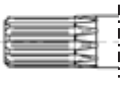
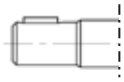
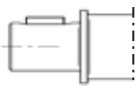
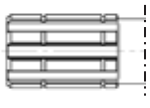
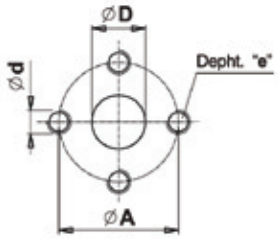
Continental Shaft and Flange With Outrigger Bearing Combinations

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

E0.146.0721.14.00IM00

Flanged Ports



code P

Flanged ports
european standard

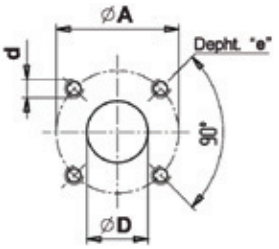
M6	8 Nm (5.9 lbf-ft)
M8	20 Nm (14.7 lbf-ft)

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

PUMPS	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 6.5 to 8.3	13 *(0.51”)*	30 *(1.18”)*	M6	13 *(0.51”)*	13 *(0.51”)*	30 *(1.18”)*	M6	13 *(0.51”)*
From 11.3 to 26	20 *(0.79”)*	40 *(1.57”)*	M8	13 *(0.51”)*	20 *(0.79”)*	40 *(1.57”)*	M8	13 *(0.51”)*



code B

Flanged ports
german standard

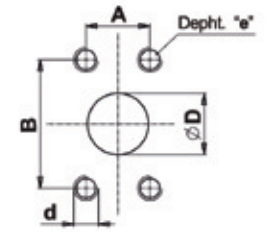
M6	8 Nm (5.9 lbf-ft)

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

PUMPS	INTLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 6.5 to 8.3	15 *(0.59”)*	35 *(1.38”)*	M6	13 *(0.51”)*	15 *(0.59”)*	35 *(1.38”)*	M6	13 *(0.51”)*
From 11.3 to 26	20 *(0.79”)*	40 *(1.57”)*	M6	13 *(0.51”)*	20 *(0.79”)*	40 *(1.57”)*	M6	13 *(0.51”)*



code W

Flanged ports
SAE J518 - METRIC THREAD

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

UNI-DIRECTIONAL

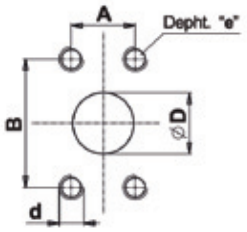
PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 19	19 *(0.75”)*	47.6 *(1.87”)*	22.2 *(0.87”)*	M10	15 *(0.59”)*	12.7 *(0.50”)*	38.1 *(1.50”)*	17.5 *(0.69”)*	M8	15 *(0.59”)*
From 22.5 to 26	25.4 *(1.00”)*	52.4 *(2.06”)*	26.2 *(1.03”)*	M10	15 *(0.59”)*	19 *(0.75”)*	47.6 *(1.87”)*	22.2 *(0.87”)*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

BI-DIRECTIONAL

PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 26	19 *(0.75”)*	47.6 *(1.87”)*	22.2 *(0.87”)*	M10	15 *(0.59”)*	19 *(0.75”)*	47.6 *(1.87”)*	22.2 *(0.87”)*	M10	15 *(0.59”)*

E0.146.0721.14.00IM00

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)

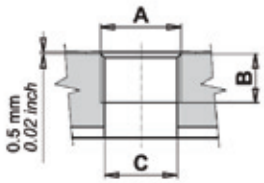
UNI-DIRECTIONAL

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 26	25.4 *(1.00")*	52.4 *(2.06")*	26.2 *(1.03")*	3/8-16 UNC	15 *(0.59")*	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*	3/8-16 UNC	15 *(0.59")*

BI-DIRECTIONAL

PUMPS	INLET					OUTLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 26	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*	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)

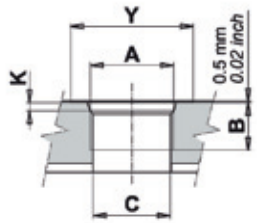
G1/2	60 Nm (44.3 lbf-ft)
G3/4	90 Nm (66.4 lbf-ft)
G1	130 Nm (95.8 lbf-ft)

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 26	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 26	G 3/4	17 *(0.67")*	18 *(0.71")*	G 3/4	17 *(0.67")*	18 *(0.71")*



code R

Threaded ports
SAE (ODT)

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

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 26	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 26	1-1/16-12 UN (SAE 12)	19 *(0.75")*	20 *(0.79")*	41 *(1.61")*	3.3 *(0.13")*	1-1/16-12UN (SAE 12)	19 *(0.75")*	20 *(0.79")*	41 *(1.61")*	3.3 *(0.13")*

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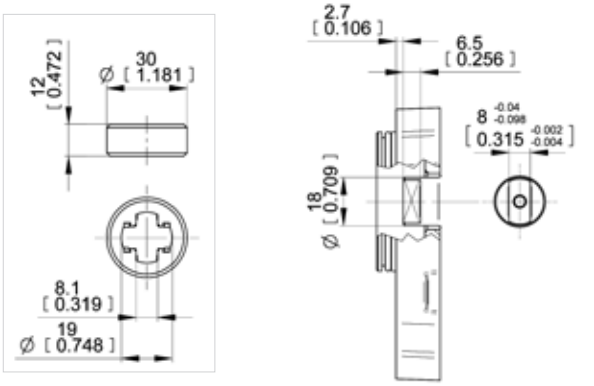
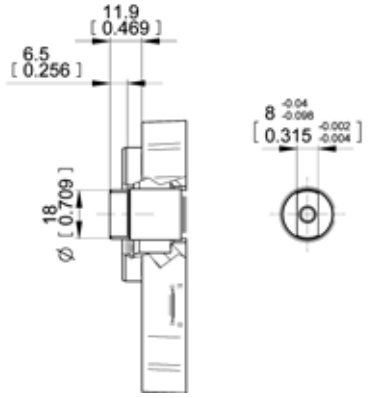
Drive Shaft



code 03	Max torque 70 Nm (620 lbf in)

TANG DRIVE FOR ELECTRIC MOTORS (without shaft seal)



code 04	Max torque 70 Nm (620 lbf in)

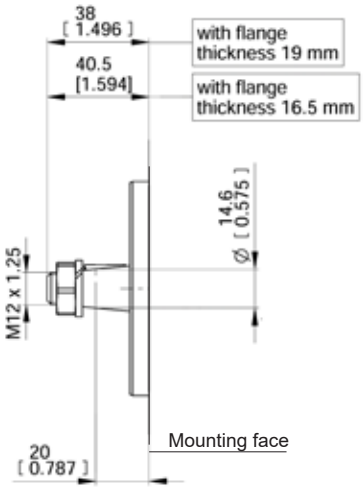
TANG DRIVE

Woodruff Key
3x6,5-UNI 6606
3x5 (for bearing version
CL-CF-CB)

Washer
M12 TE-UNI 1751B

Nut
M12x1,25-UNI 5589
40 Nm-29.7 lbf-ft

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



code 25	Max torque 130 Nm (1151 lbf in)

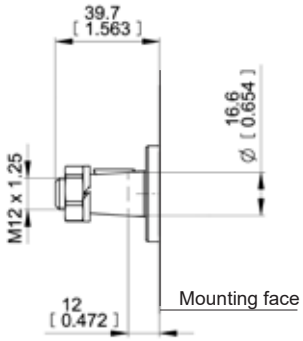
TAPERED 1:5

Woodruff Key
3,165x6,2

Washer
M12 TE-UNI 1751B

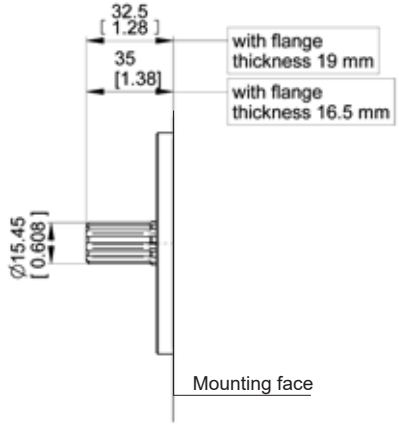
Nut
M12x1,25-UNI 5589
40 Nm-29.7 lbf-ft

Part Number
Kit Woodruff Key+Nut+Washer
R12280170



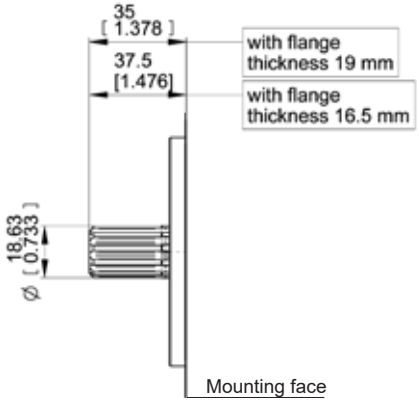
code 28	Max torque 130 Nm (1151 lbf in)

TAPERED 1:8



code 52	Max torque 110 Nm (974 lbt in)

SAE A 9T-16/32DP SPLINED

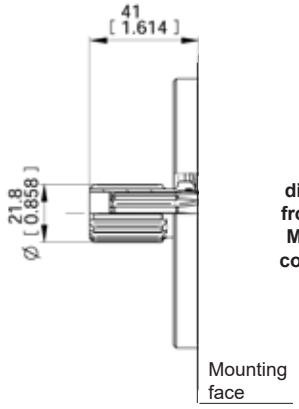


code 54	Max torque 160 Nm (1416 lbt in)

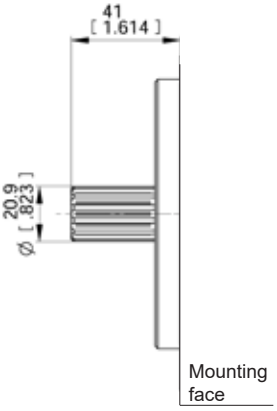
SAE A 11T-16/32DP SPLINED

Drive Shaft

Part Number
Coupling Sleeve+O ring
R12040210

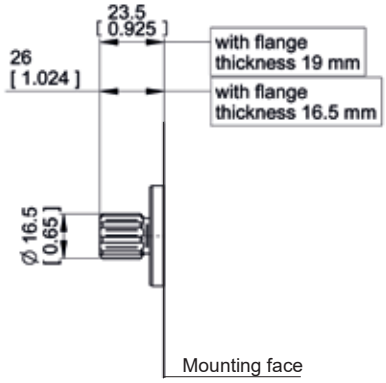


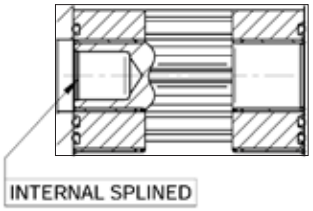
for displacements from 6.5 to 13.8 Mounting with coupling sleeve



for displacements from 16 to 26 Mounting with solid shaft.

code 55	
Max torque 100 Nm (885 lbt in)	Max torque 200 Nm (1770 lbt in)
SAE B 13T-16/32DP SPLINED	

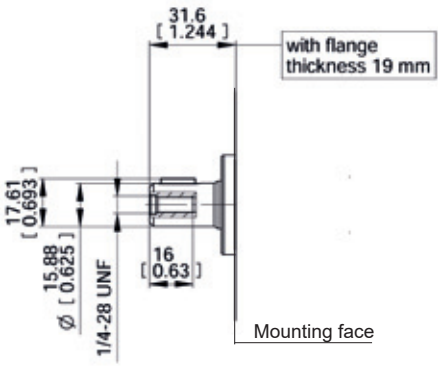




code 62	Max torque 140 Nm (1239 lbt in)	**code 60**	Max torque 100 Nm (885 lbt in)
9 TEETH DIN 5482 SPLINED		**DIN 5480 INTERNAL SPLINED (ONLY FOR REAR PUMPS)**	

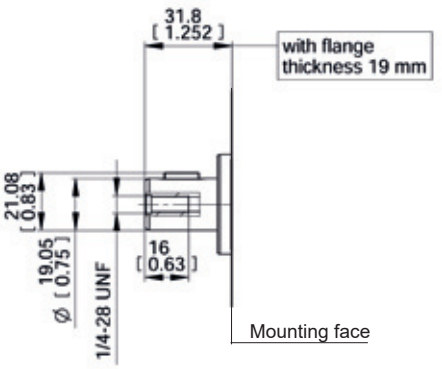
Key
3,97x3.97x12,7

Part Number
Key
796620700



Key
4,76x4,76x12,7

Part Number
Key
796621000



code 82	Max torque 75 Nm (664 lbt in)	**code 85**	Max torque 110 Nm (974 lbt in)
5/8” SAE A PARALLEL		**3/4” SAE A PARALLEL**	

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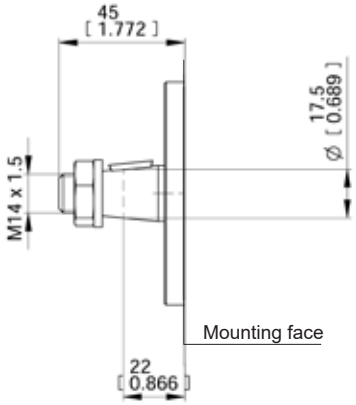
Continental Shaft

Woodruff Key
4x6,5 UNI 6606

Washer
M14 UNI 1751

Nut
M14x1,5 IS0 8675
40 Nm-29.7 lbf-ft

Part Number
Kit Woodruff Key+Nut+Washer
R12240080

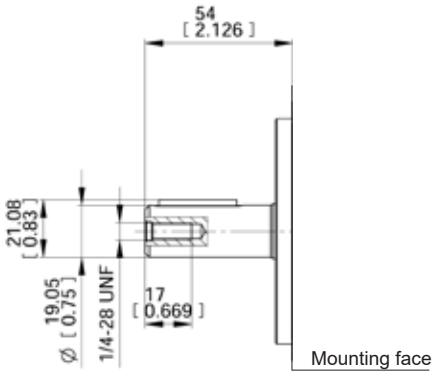


code 26	Max torque 100 Nm (885 lbt in)

TAPERED 1:5 (ONLY FOR CB, CL, CF)

Key
4,76x4,76x2

Part Number
Key
796622800

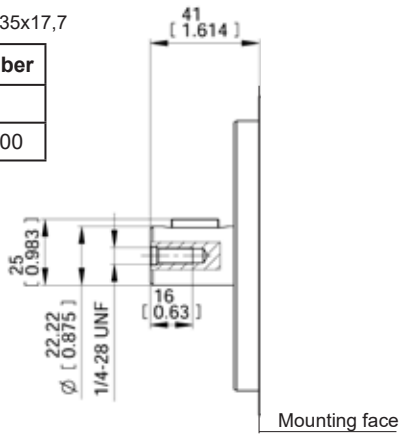


code 86	Max torque 100 Nm (885 lbt in)

3/4” SAE A PARALLEL

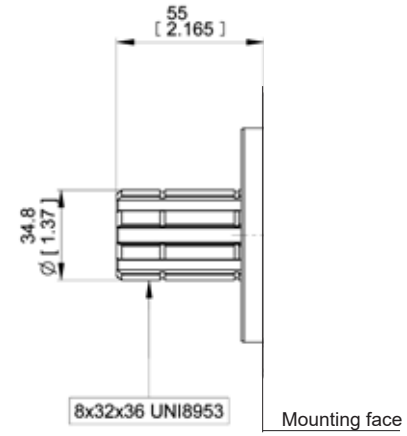
Key
6,35x6,35x17,7

Part Number
Key
796620800



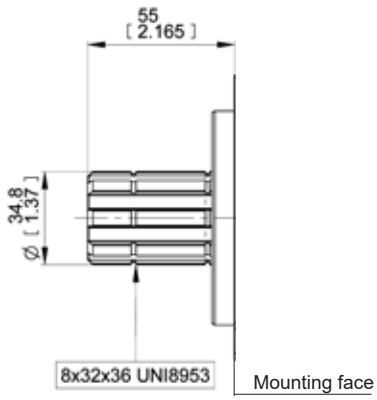
code 87	Max torque 200 Nm (1770 lbt in)

7/8” SAE B PARALLEL



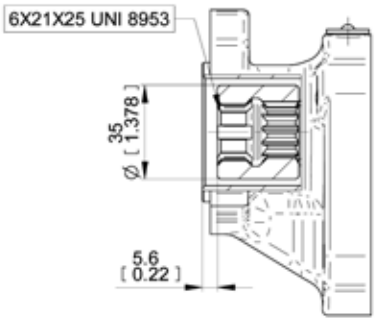
code 66	Max torque 200 Nm (1770 lbt in)

8X32X36 UNI 8953 SPLINED



code 67	Max torque 200 Nm (1770 lbt in)

8X32X36 UNI 8953 SPLINED

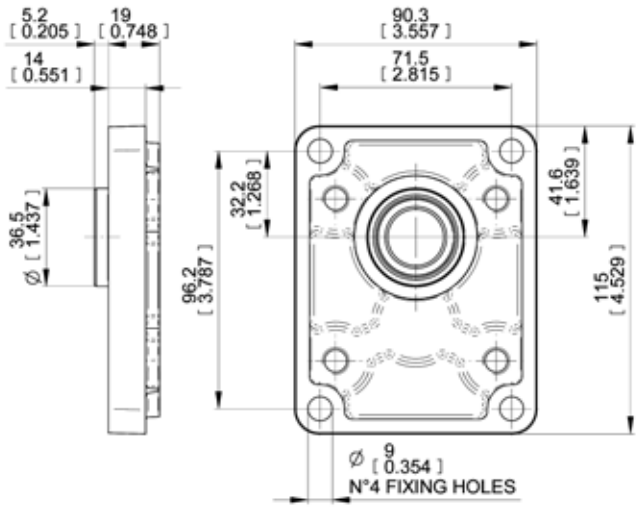


code 73	Max torque 200 Nm (1770 lbt in)

6X21X25 UNI 8953 INTERNAL SPLINED

E0.146.0721.14.00IM00

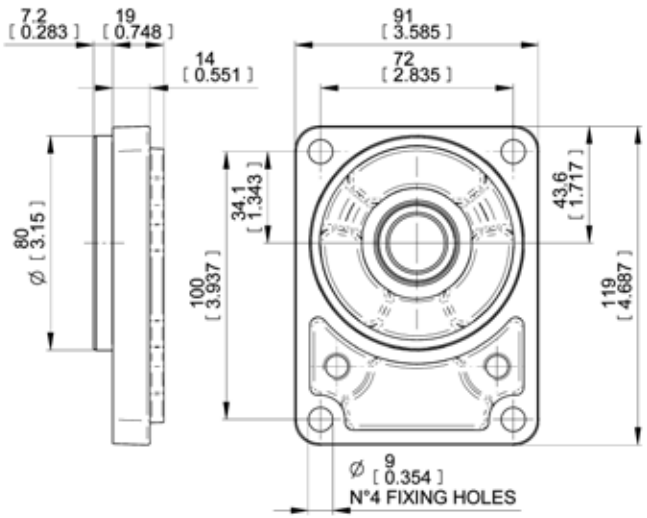
Mounting Flanges



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

code P1 — With shaft code 28-62-82

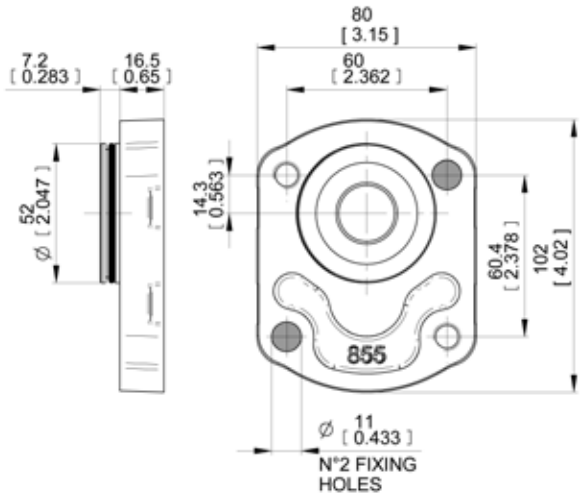
EUROPEAN STANDARD



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

code B1 — With shaft code 25-62

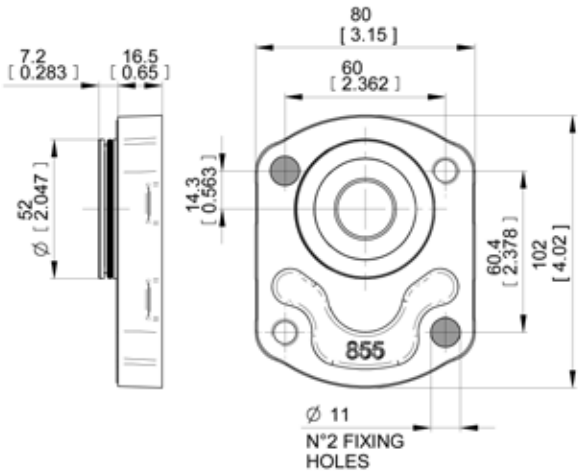
GERMAN STANDARD



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



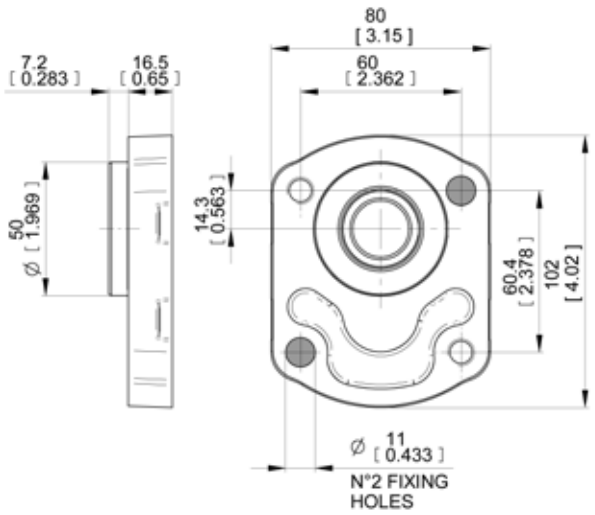
Code	Part Number (Unidirectional Pump)	
	Flange+O-ring	O-ring (OR3187-AT 47,29x2,62-NBR)
03B3	R12240050	799113400

code B3 — With shaft code 03

GERMAN STANDARD

E0.146.0721.14.00IM00

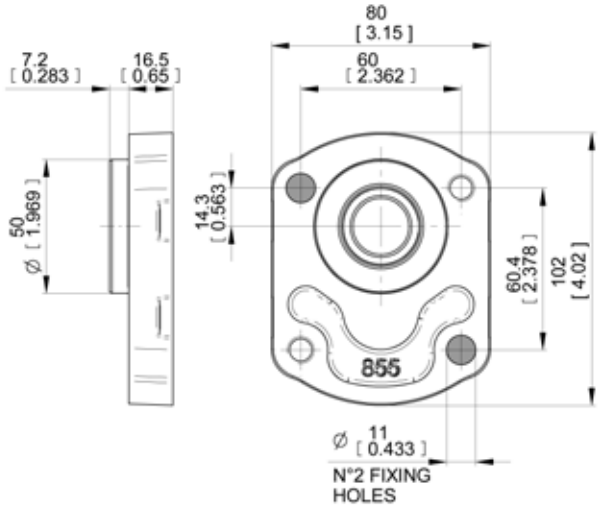
Mounting Flanges



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

B4 — With shaft code 04-25-62

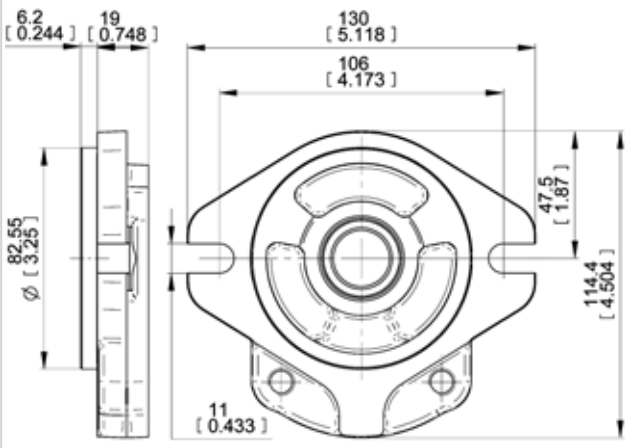
GERMAN STANDARD



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

B5 — With shaft code 04-25-62

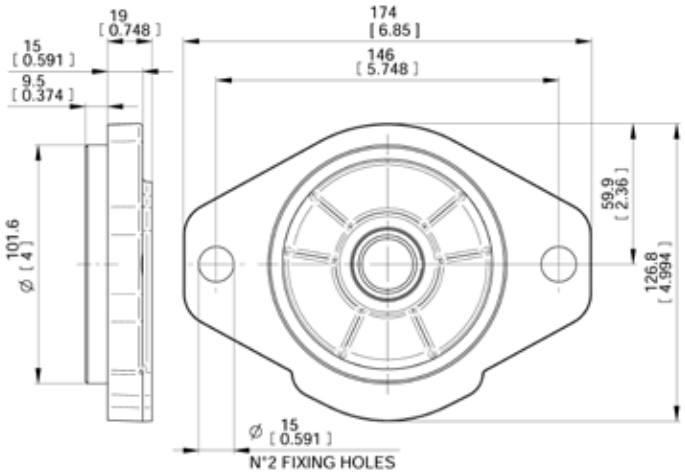
GERMAN STANDARD



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

S2 — With shaft code 52-54-82-85

SAE A 2 BOLTS

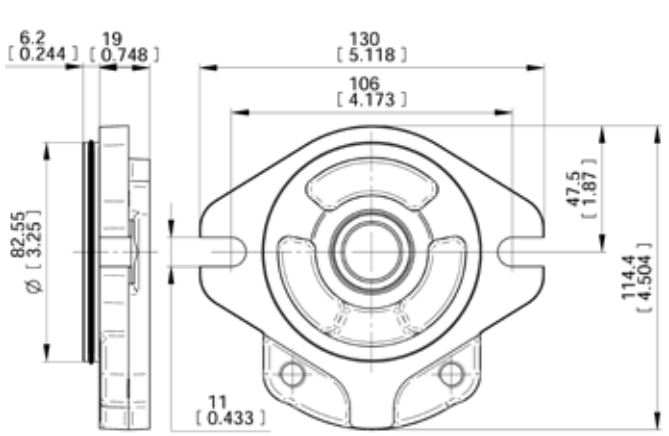


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
55S3 from cy 6.5 to 13.8	R12040310 (NBR) R12040311 (FPM)	R12240010 (NBR) R12240021 (FPM)
55S3 from cy 16 to 26	R14640050 (NBR) R14640060 (FPM)	R14640010 (NBR) R14640011 (FPM)

S3 — With shaft code 55

SAE B 2 BOLTS

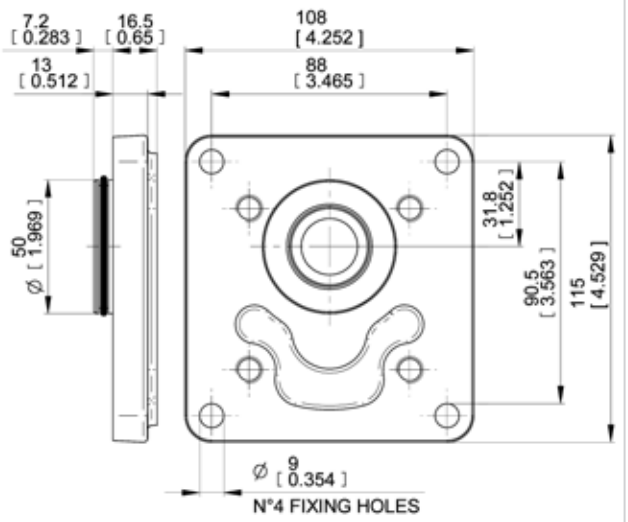
Mounting Flanges



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

S6 — With shaft code 52-54-82-85

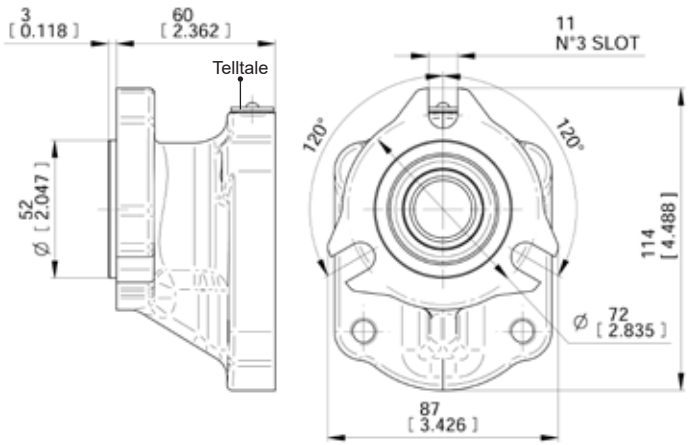
SAE A 2 BOLTS (with O-ring on the centering collar)

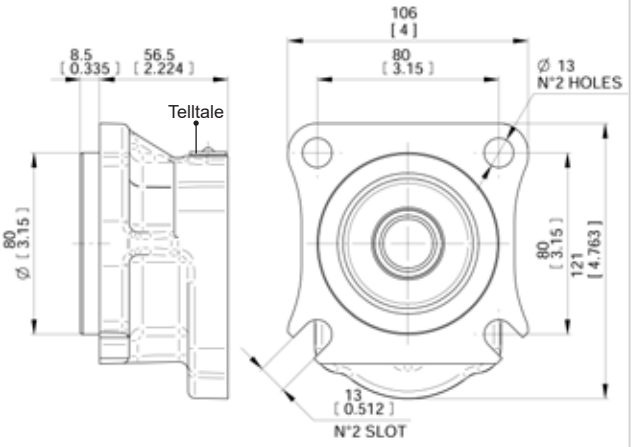


Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 43-44)
62C1	R12040300 (NBR) R12040301 (FPM)	R12240010 (NBR) R12240021 (FPM)

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.

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)
67Z2	R14620011 (NBR) R14620012 (FPM)	R14640010 (NBR) R14640011 (FPM)

Z2 — With shaft code 67

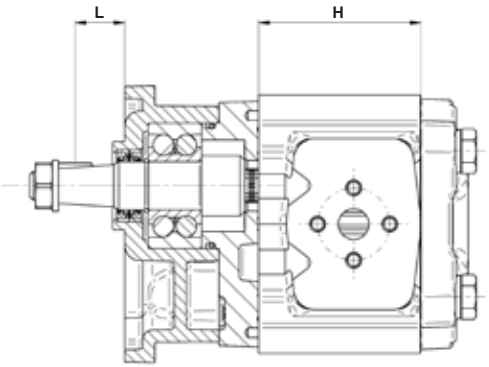
4 BOLTS FOR ZF GEAR BOX

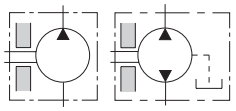
E0.146.0721.14.00IM00

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]

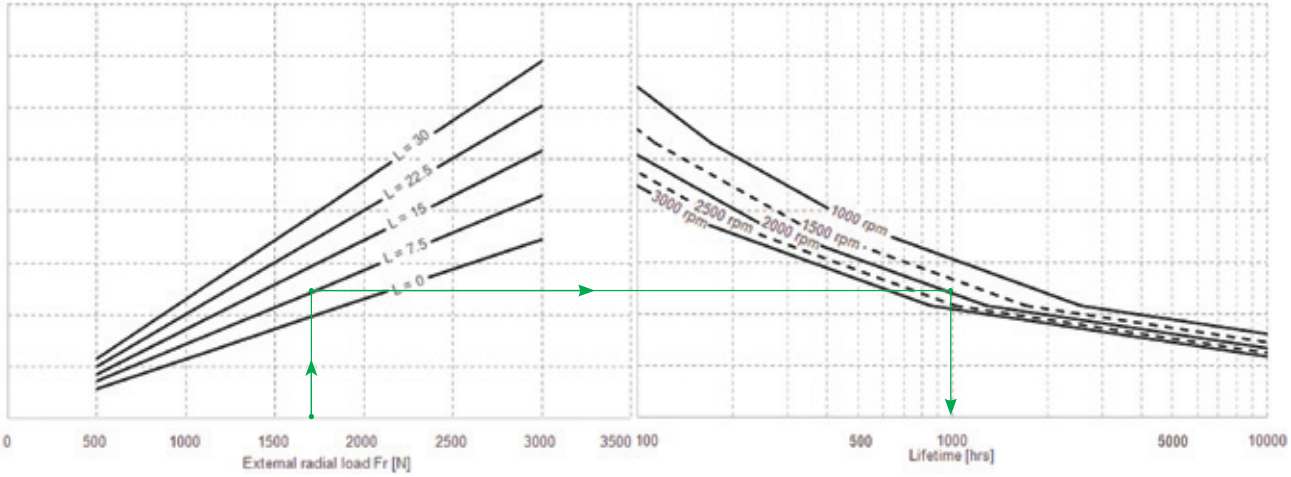




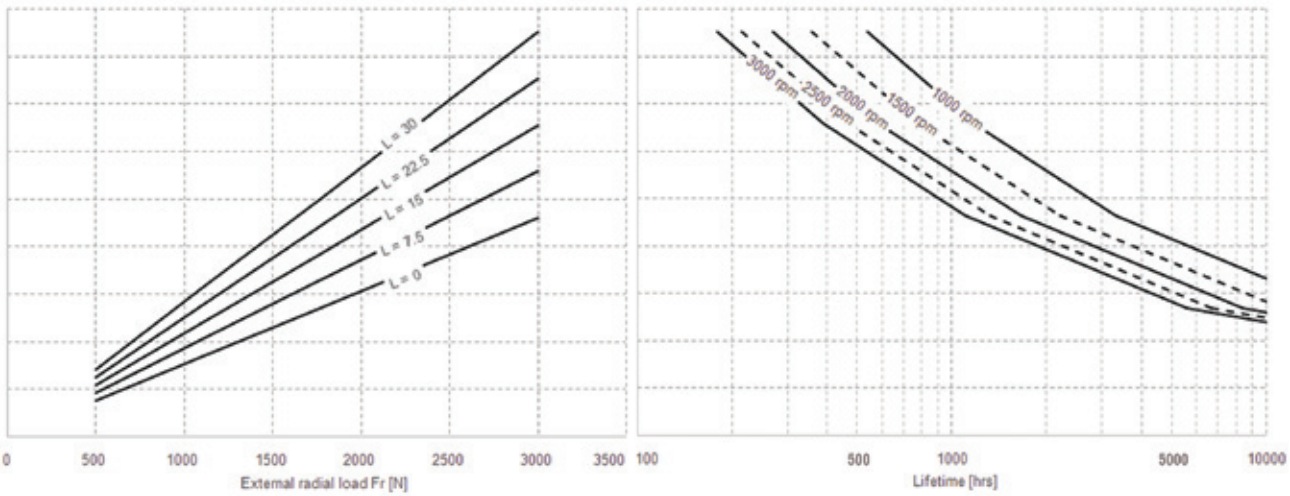
TYPE	H
6.5	49.95 (*1.97”*)
8.3	52.8 (*2.08”*)
11.3	59.7 (*2.35”*)
13.8	63.5 (*2.5”*)
16	67.5 (*2.66”*)
19	75.6 (*2.97”*)
22.5	81 (*3.19”*)
26	86.6 (*3.42”*)

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

For Code CP-CB-CL-CS

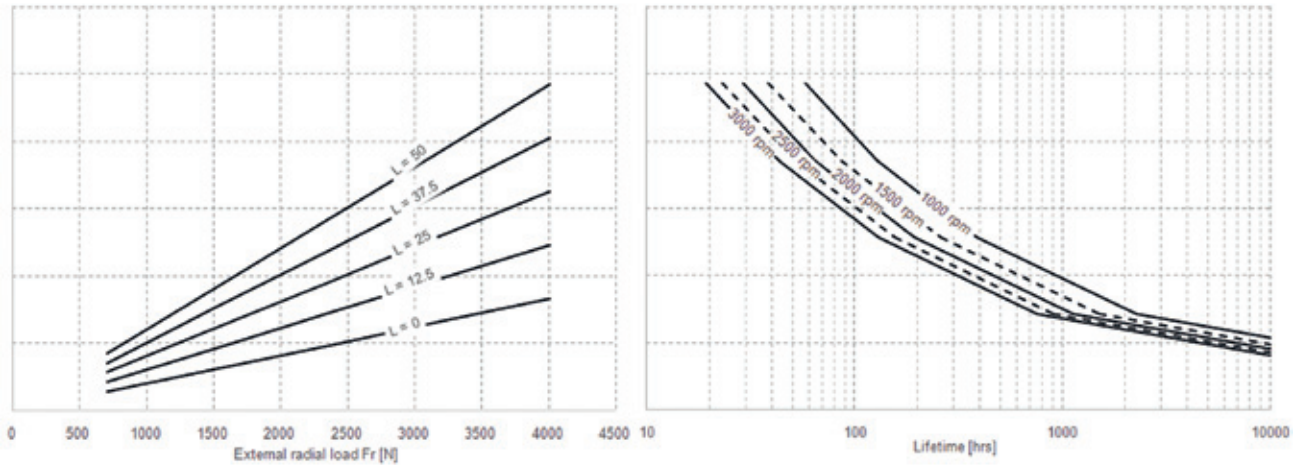


For Code CF

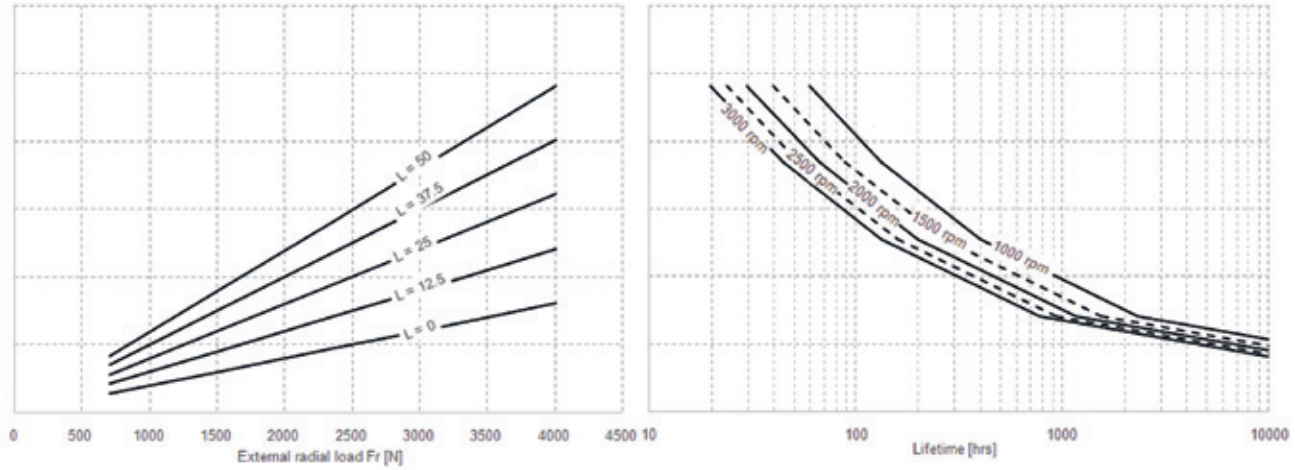


Mounting Flanges with Outrigger Bearing

For Code Z1



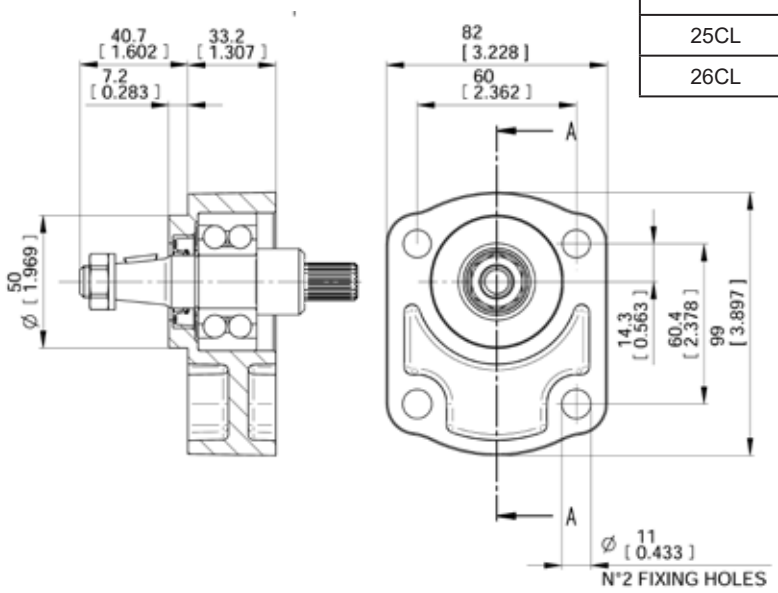
For Code CSB



E0.146.0721.14.00IM00

Aluminium Mounting Flanges with Outrigger Bearing

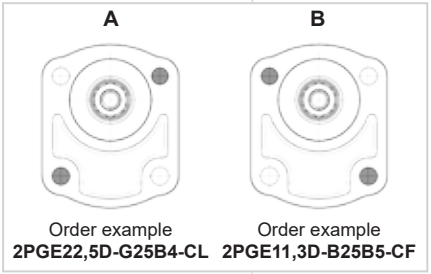
Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
25CL	R12040090	R12283030
26CL	R12040060	R12240080

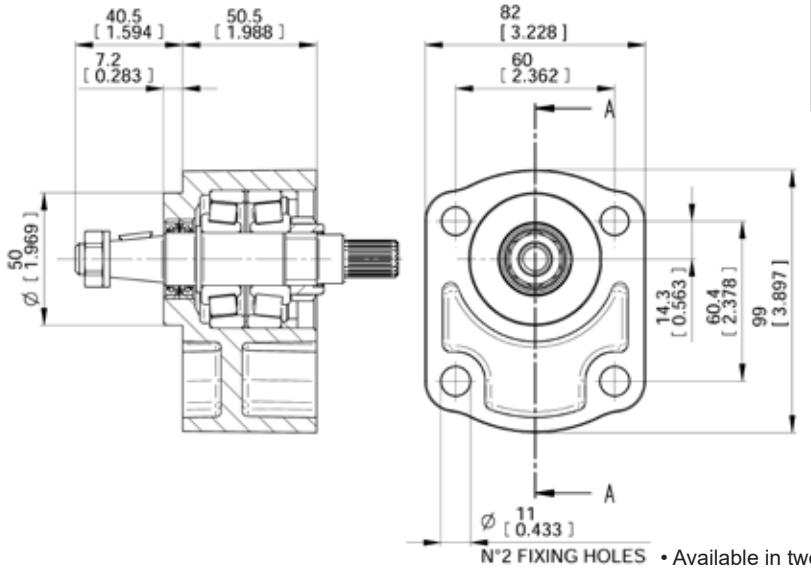


• Available in two positions: A - B

Mounting with shaft code 25

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





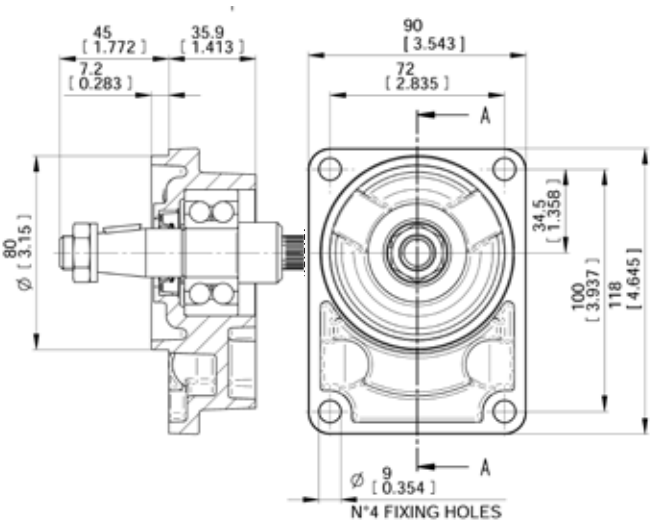
• Available in two positions: A - B

Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
25CF	R12040101	R12283030
26CF	R12040105	

Mounting with shaft code 25

CF	With shaft code 25-26 - Max torque 100 Nm (885 lbt in)
FOR INTERNAL COMBUSTION ENGINES WITH AXIAL AND RADIAL LOADS	

Aluminium Mounting Flanges with Outrigger Bearing

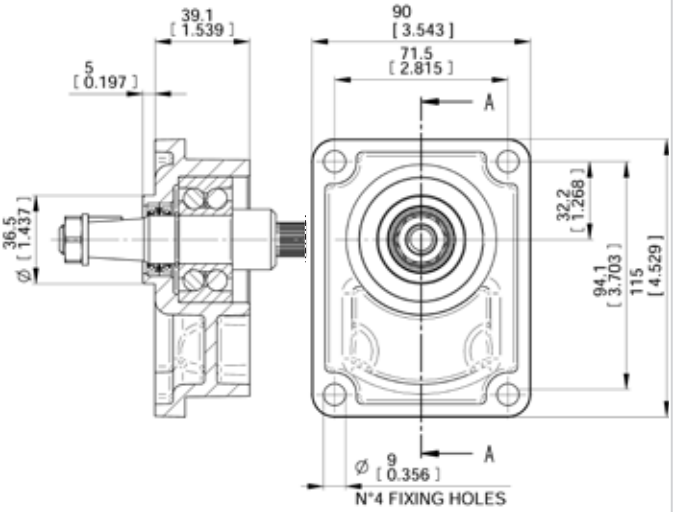


Mounting with shaft code 26

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

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

GERMAN STANDARD

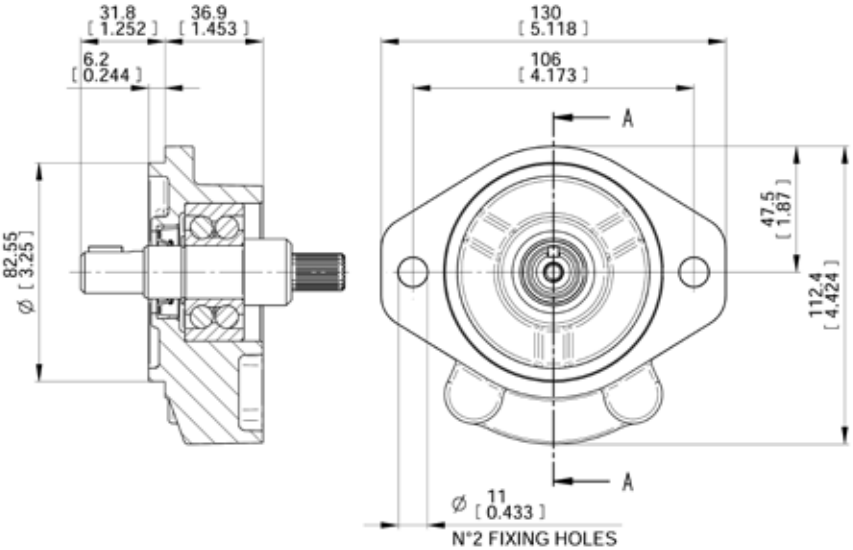


Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
28CP	R12040010	R12240070

CP	With shaft code 28 Max torque 100 Nm (885 lbt in)

EUROPEAN STANDARD

Mounting with shaft code 82



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

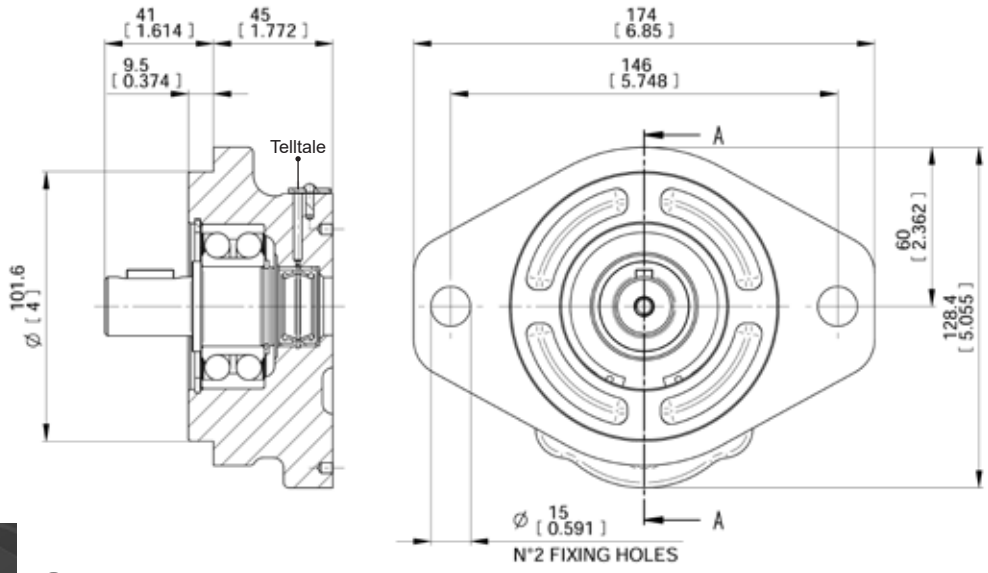
Code	Part Number	
	Flange+Bearing support	Key
82CS	R12040040	796620700
85CS	R12040050	796621000
86CS	R12010430	796622800

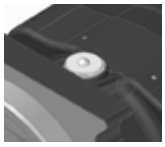
CS	With shaft code 52-54-82-85-86 - Max torque 100 Nm (885 lbt in)

SAE A

E0.146.0721.14.00IM00

Cast Iron Mounting Flanges with Outrigger Bearing

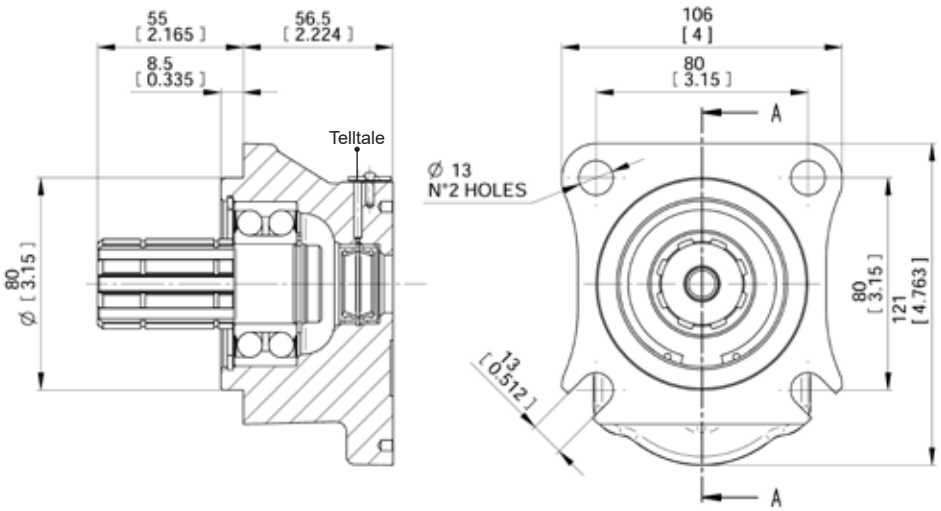




TellTale
drop in plug in case of failure, outside leakage trough the crossing hole is visible.

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

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

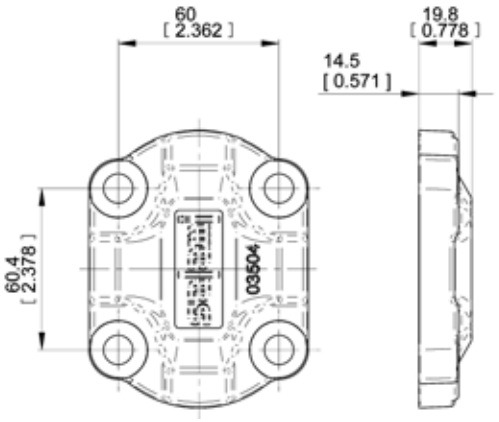


Available only for displacements from 11.3 to 26

Code	Part Number
	Flange+Bearing support
66Z1	R14620010

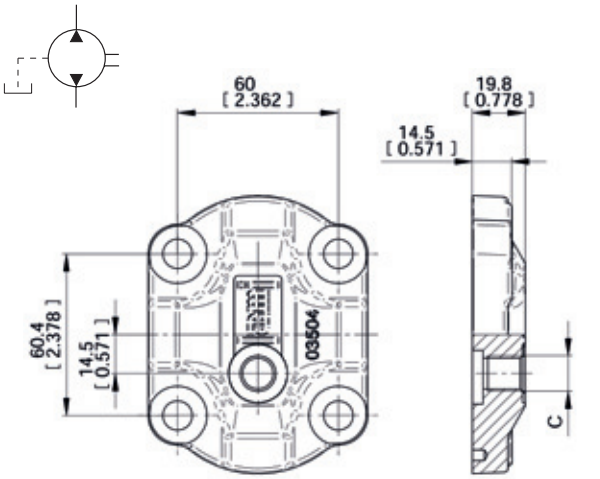
Z1	With shaft code 66 - Max torque 200 Nm (1770 lbt in)
4 BOLTS FOR ZF GEAR BOX	

Rear Covers



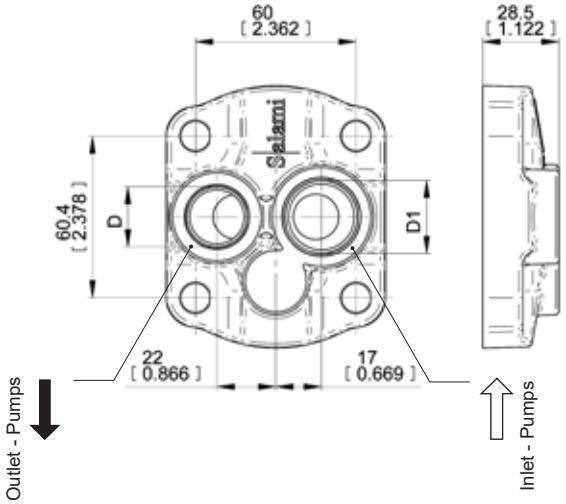
Code	Part Number
Standard Cover	312203529

STANDARD REAR COVER FOR UNIDIRECTIONAL PUMPS



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

REAR COVER WITH EXTERNAL DRAIN C FOR BIDIRECTIONAL PUMPS

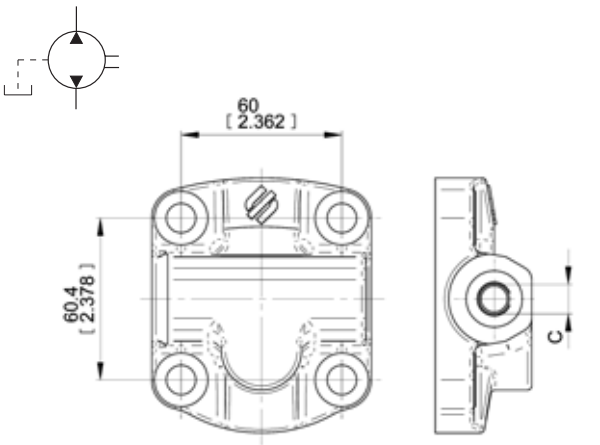


Code	Part Number	Threaded Ports	
		D (Outlet)	D1 (Inlet)
1 Cover with rear ports	312203535	7/8-14 UNF-2B SAE 10	1-1/16-12 UN-2B SAE 12
	312203543	G 1/2	G 3/4

On request outlet port only.

1

REAR COVER WITH REAR PORTS FOR UNIDIRECTIONAL PUMPS



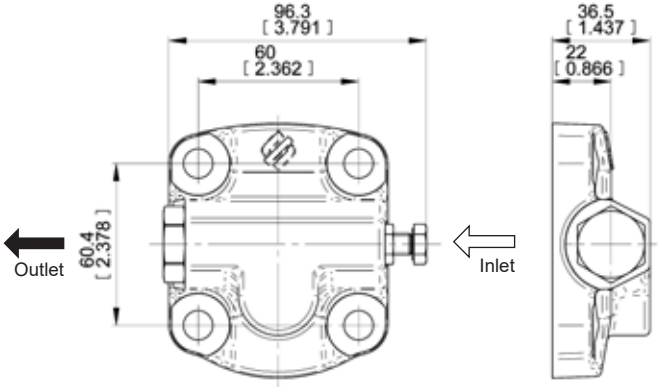
Code	Part Number	Threaded Port
		C (Drain)
LD Cover with External Drain	312203545	7/16-20 UNF-2B SAE 4
	312003509	G 1/4

LD

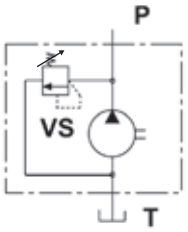
REAR COVER WITH LATERAL DRAIN FOR BIDIRECTIONAL PUMPS

E0.146.0721.14.00IM00

Rear Covers with Valves

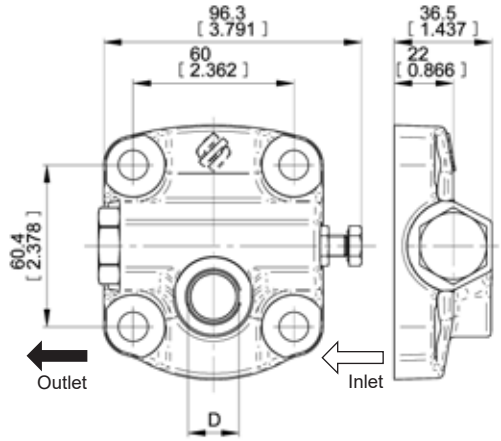


Code	Part Number	Pressure relief valve setting range
VS Internal Discharge	R12275013	15-30 bar
	R12275020	30-60 bar
	R12275040	61-120 bar
	R12275050	121-170 bar
	R12275060	171-250 bar

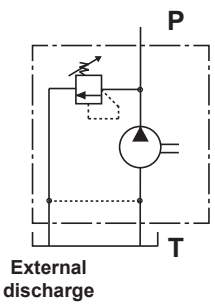


VS

INTERNAL DISCHARGE



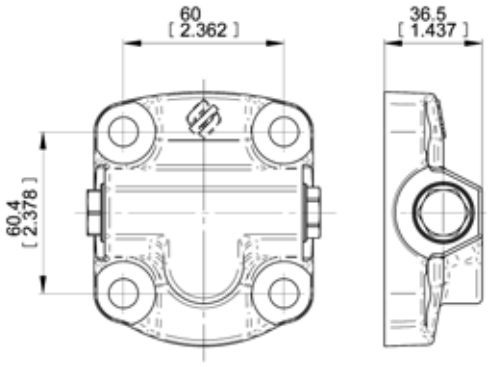
Code	Part Number	Pressure relief valve setting range	D (external discharge)
VSE External Discharge	R12275014	15-30 bar	SAE 8
	R12275021	30-60 bar	
	R12275041	61-120 bar	
	R12275051	121-170 bar	
	R12275061	171-250 bar	
	R12275015	15-30 bar	M18x1.5
	R12275022	30-60 bar	
	R12275042	61-120 bar	
	R12275052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



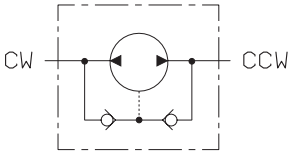
VSE

EXTERNAL DISCHARGE

Rear Covers with Valves



Code	Part Number
IDV Internal drain	R12203501



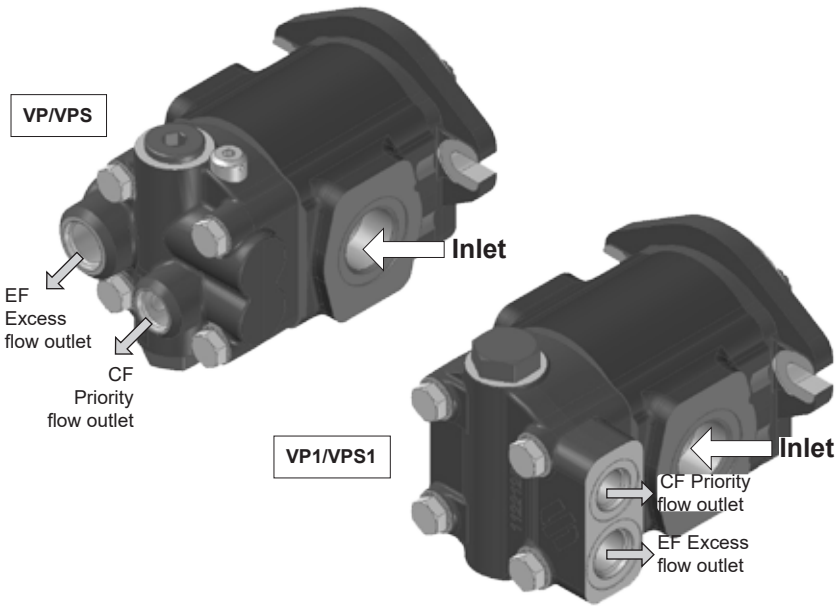
IDV

INTERNAL DRAIN FOR BIDIRECTIONAL PUMPS

E0.146.0721.14.00IM00

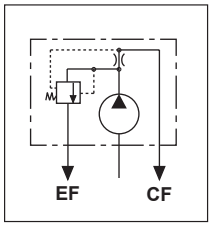
Rear Covers with Valves

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



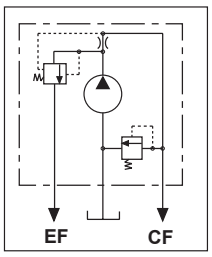
CF= Priority flow port
EF= Excess flow port

VP - VP1

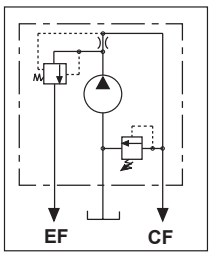


Priority flow valve, excess flow available to second actuator.

VPS



VPS1

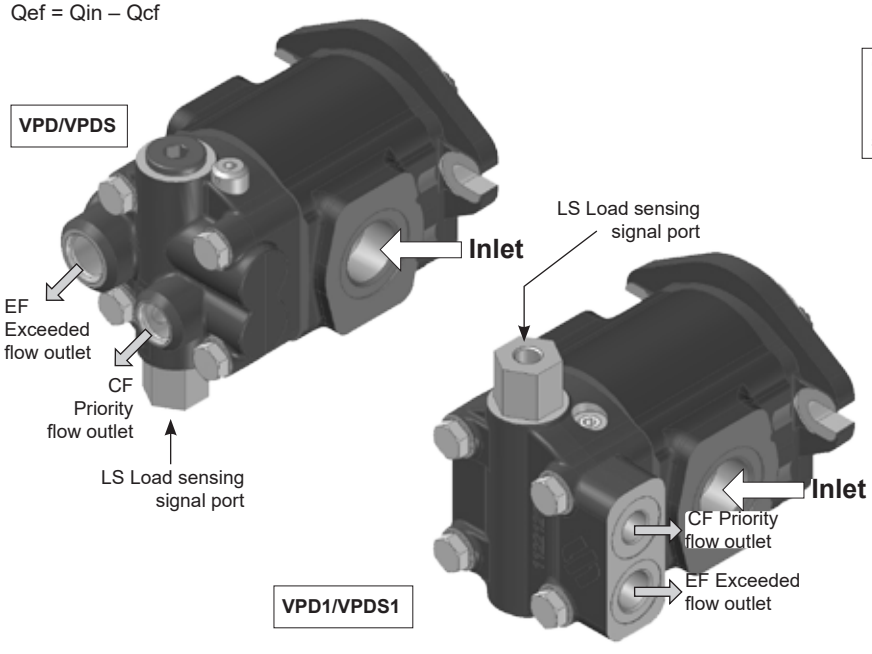


Priority flow valve, excess flow available to second actuator with pressure relief valve on priority flow line.

VP/VP1/VPS/VPS1	PRESSURE COMPENSATED PRIORITY FLOW VALVES

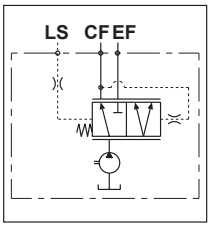
The load sensing priority valve is a control valve able to divide the flow generated by the pump, coming from the port P, in two different flows named Qcf and Qef. The Qcf flow follows the user request, the flow Qef changes according to the equation:
Qin = Qcf + Qef

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 funcions and complies with the equation:
Qef = Qin – Qcf



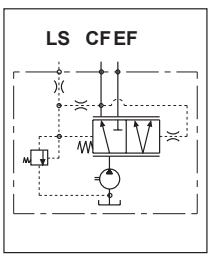
CF= Priority flow port
EF= Excess flow port
LS= Load sensing signal port

VPD - VPD1

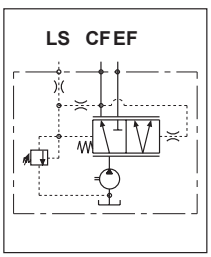


Load sensing priority valve with dynamic signal without pressure relief valve.

VPDS



VPDS1

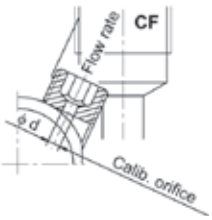


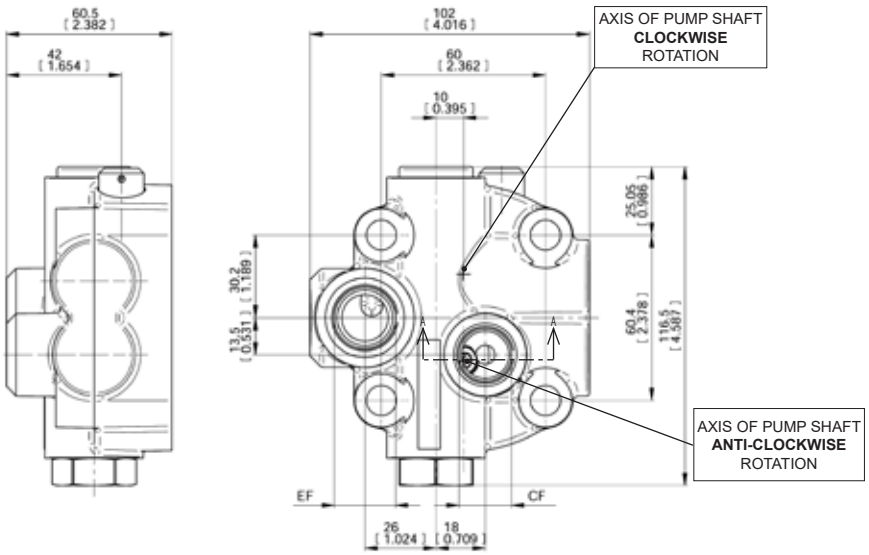
Load sensing priority valve with dinamic signal with pressure relief valve.

VPD/VPD1/VPDS/VPDS1	LOAD SENSING PRIORITY VALVES

E0.146.0721.14.00IM00

Pressure Compensated Priority Flow Valve

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

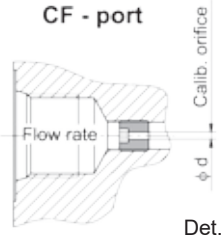


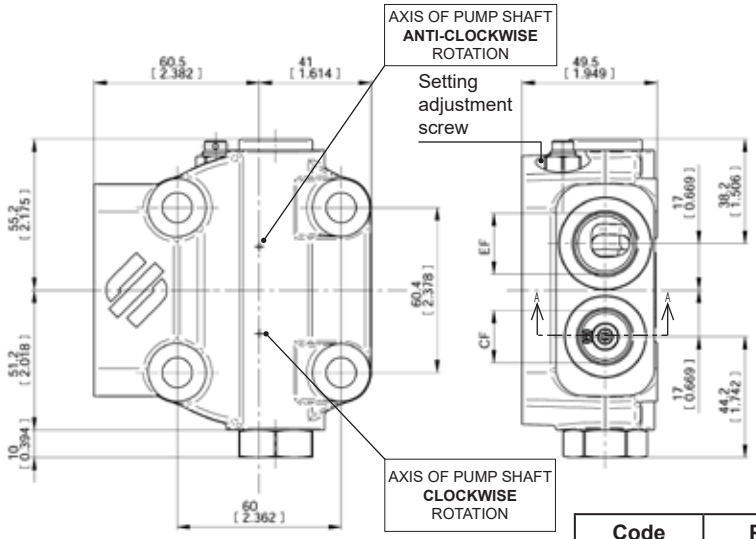
Threaded Port	
CF= Priority flow port	**EF= Excess flow port**
G 3/8	G 1/2
SAE 6 9/16-18 UNF-2B	SAE 8 3/4 - 16 UNF - 2B

Code	Part Number
VP - VPS	Please contact our sales department

Pressure Relief Valve setting range
20-240 bar

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

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



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

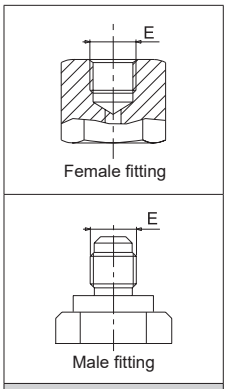
Code	Part Number
VP1 - VPS1	Please contact our sales department

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

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

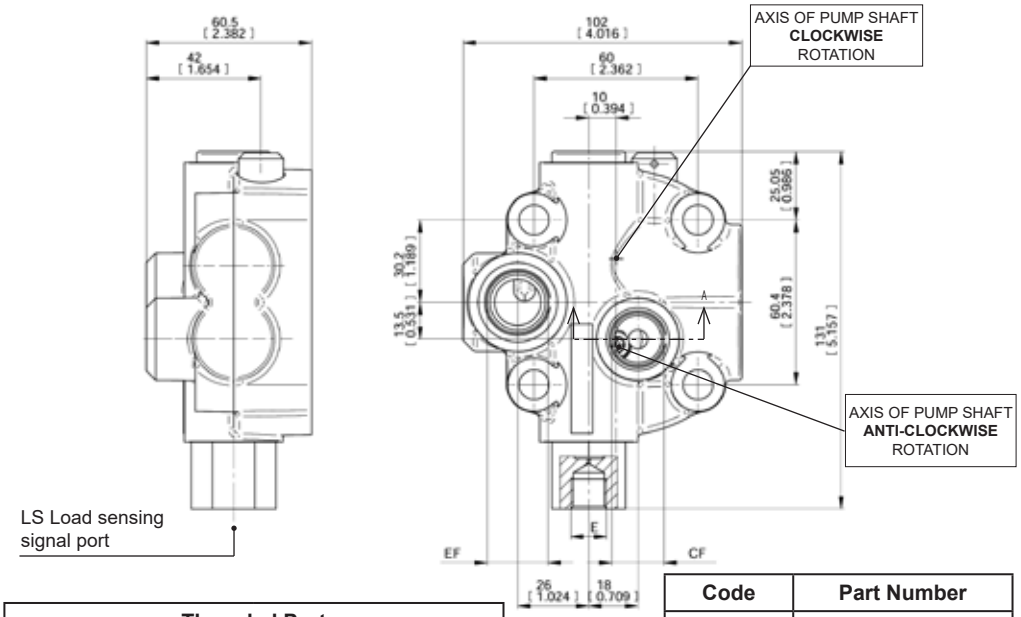
E0.146.0721.14.00IM00

Load Sensing Priority Valve



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

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

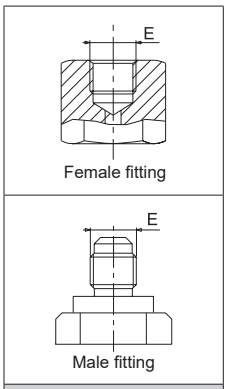


Threaded Port	
CF= Priority flow port	**EF= Excess flow port**
G 3/8	G 1/2
SAE 6 9/16-18 UNF-2B	SAE 8 3/4 - 16 UNF - 2B

Code	Part Number
VPD - VPDS	Please contact our sales department

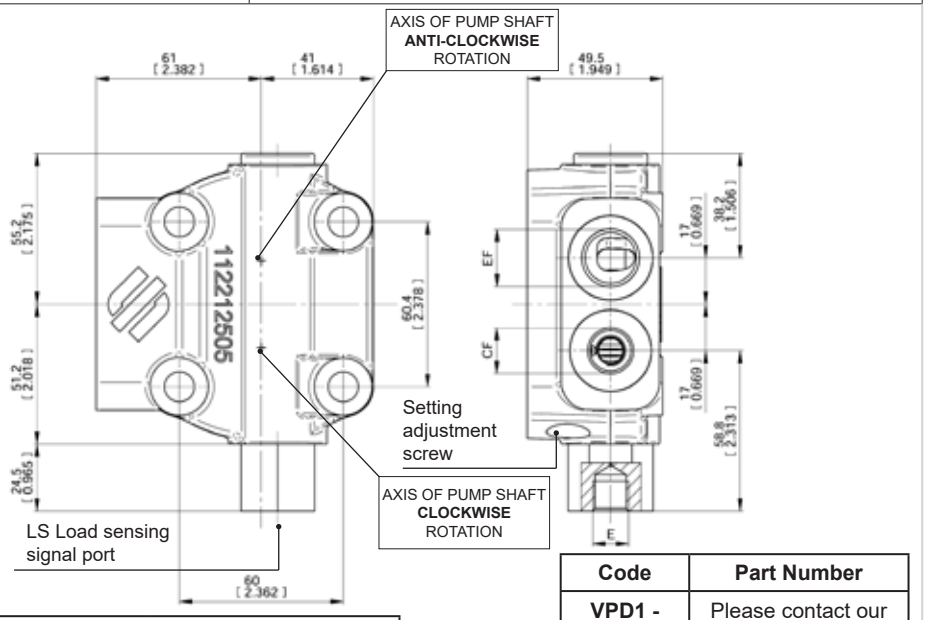
Pressure Relief Valve setting range
20-240 bar

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



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

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



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

Code	Part Number
VPD1 - VPDS1	Please contact our sales department

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

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

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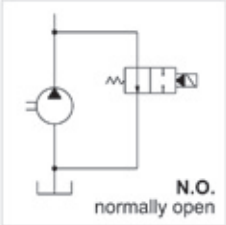
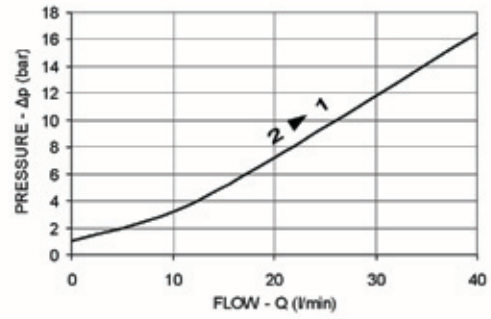
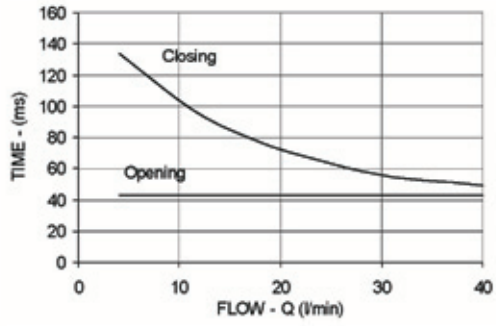
Rear Covers with Valves

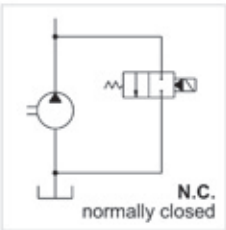
EV1 - 12 Vcc
EV2 - 24 Vcc

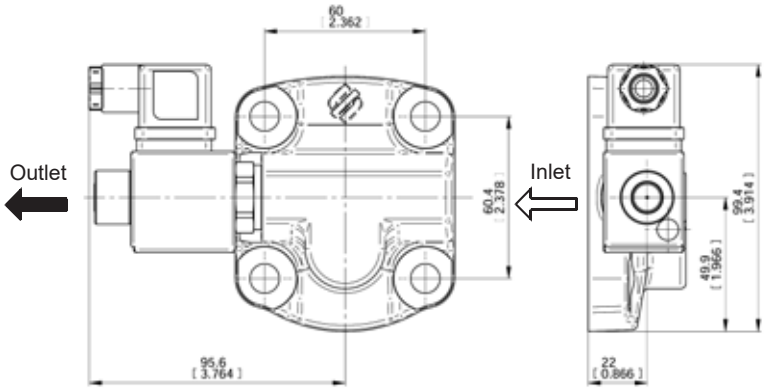




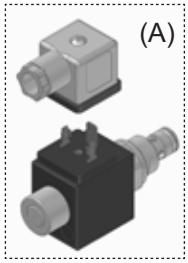


EV3 - 12 Vcc
EV4 - 24 Vcc





Code	Part Number
EV1	R12273273
EV2	R12273272
EV3	R12273275
EV4	R12273274



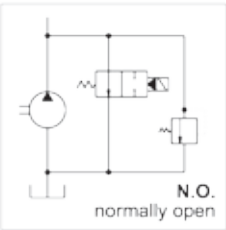
Part Number			
(A) Coil+Mech.Part+**Connector**			
EV1/EVS1	EV2/EVS2	EV3/EVS3	EV4/EVS4
796332680	796332681	412271232	412271233

Part Number
Connector DIN 43650 A/ISO 4400
796361600

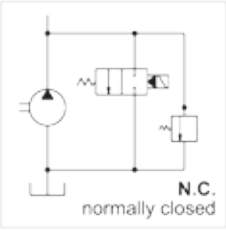
EV1-EV2-EV3-EV4

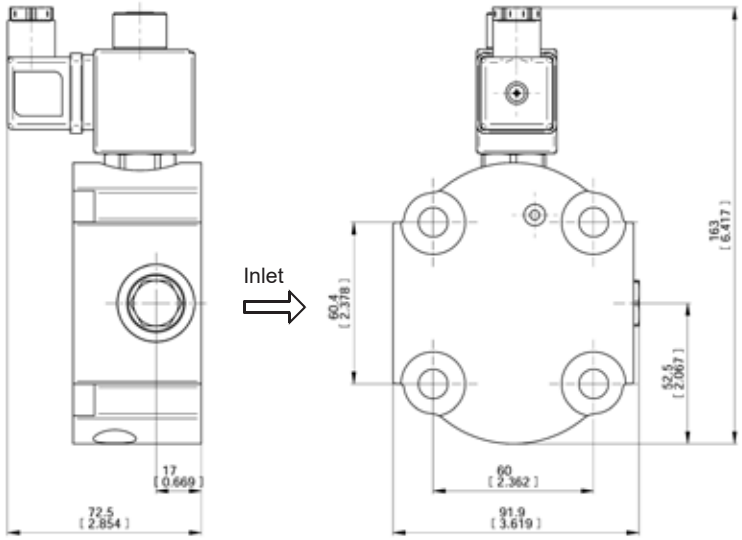
ELECTRIC UNLOADING VALVE

EVS1 - 12 Vcc
EVS2 - 24 Vcc



EVS3 - 12 Vcc
EVS4 - 24 Vcc





Pressure Relief Valve setting range
25-250 bar

Code	Part Number
EVS1	R12273290
EVS2	R12273291
EVS3	R12273292
EVS4	R12273293

EVS1-EVS2-EVS3-EVS4

ELECTRIC UNLOADING VALVE WITH BUILT-IN PRESSURE RELIEF VALVE

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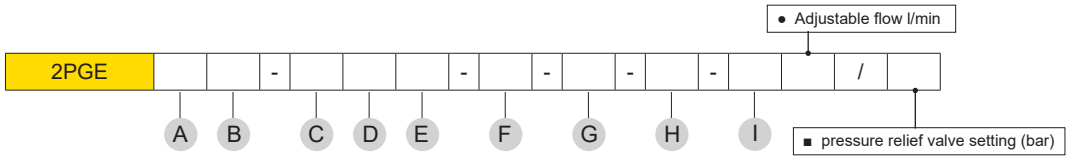


A TYPE	DISPLACEMENTS	
6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
13.8	13.8 cm³/rev.	*0.84 cu.in/rev.*
16	16.6 cm³/rev.	*1.01 cu.in/rev.*
19	19.4 cm³/rev.	*1.18 cu.in/rev.*
22.5	22.9 cm³/rev.	*1.37 cu.in/rev.*
26	26.6 cm³/rev.	*1.62 cu.in/rev.*

B ROTATION	CODE
Clockwise	D
Anti-clockwise	S
Reversible	R

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

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

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

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

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

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

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

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

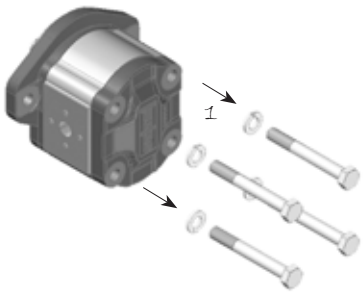
E0.146.0721.14.00IM00

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

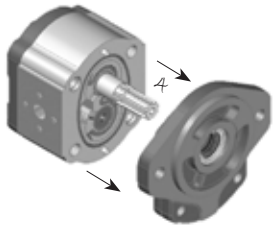
Inlet → Outlet



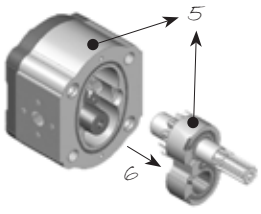
1 - Loosen and fully unscrew the bolts.

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.

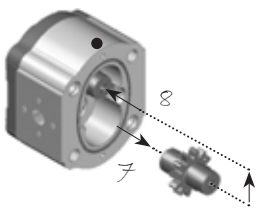


4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



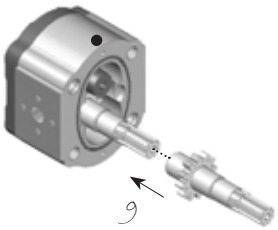
5 - Mark the position of the bushing and eventually of the thrust plate, as well, with reference to the body.

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

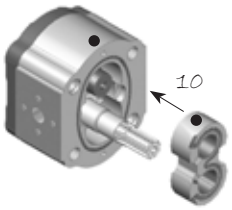


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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



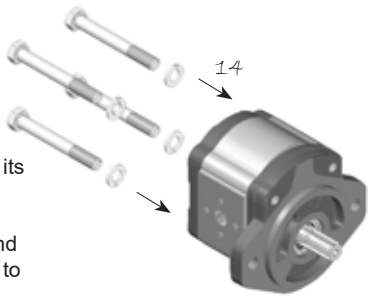
9 - Re-locate the driving gear in the position previously occupied by the driven gear.



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

Outlet ← Inlet

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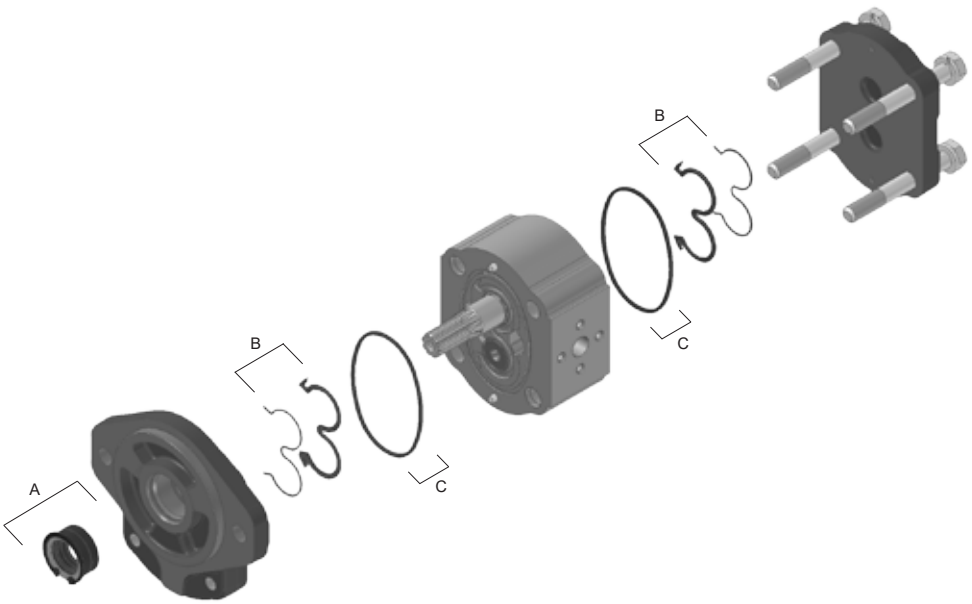
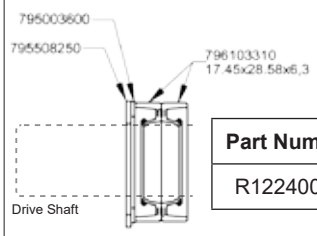
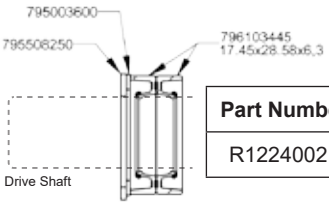
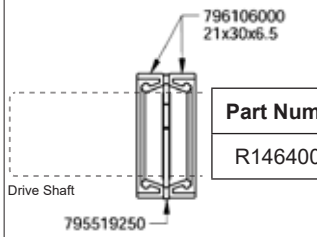
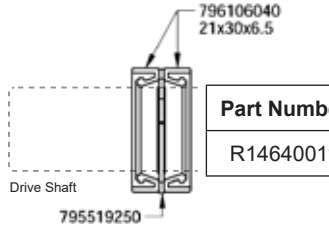
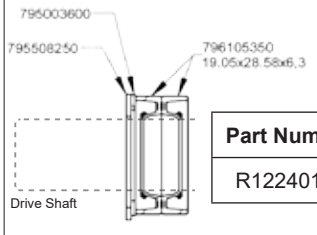
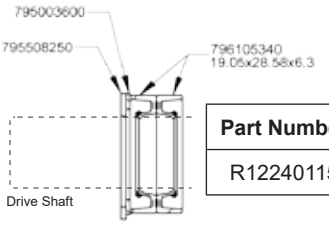
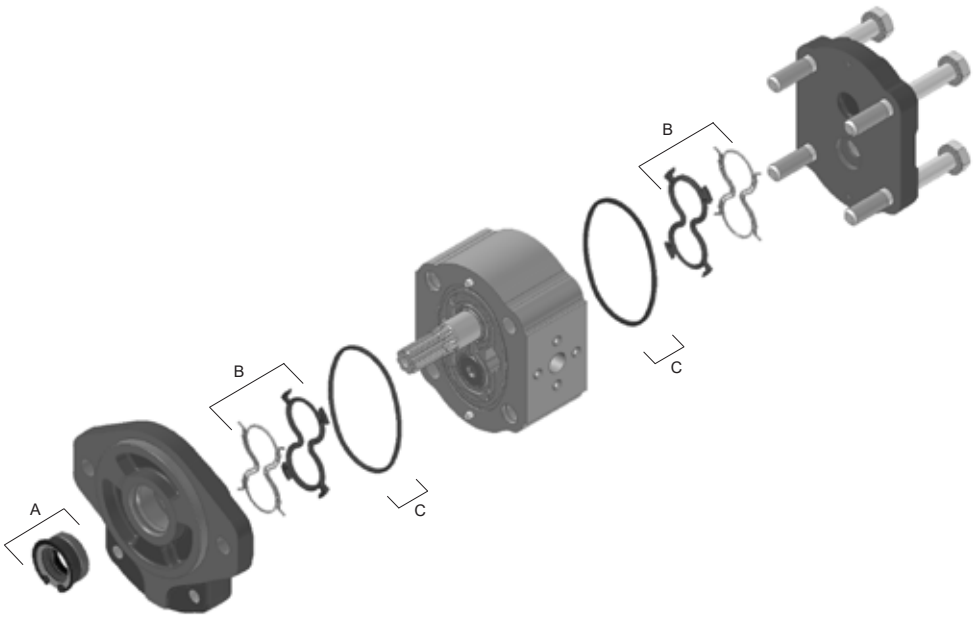
Unidirectional Pump Seal Spare Parts Kit



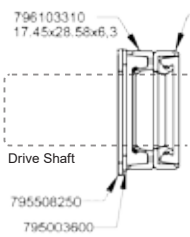
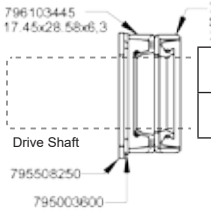
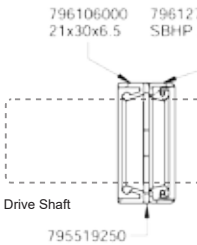
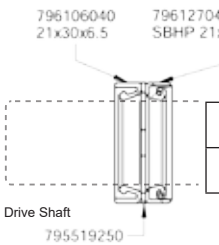
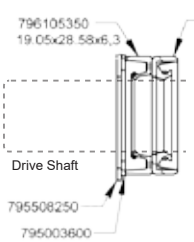
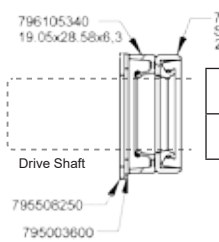
A	*Shaft seal*
B	*Bushing seal kit*
C	*Body seal kit*

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

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

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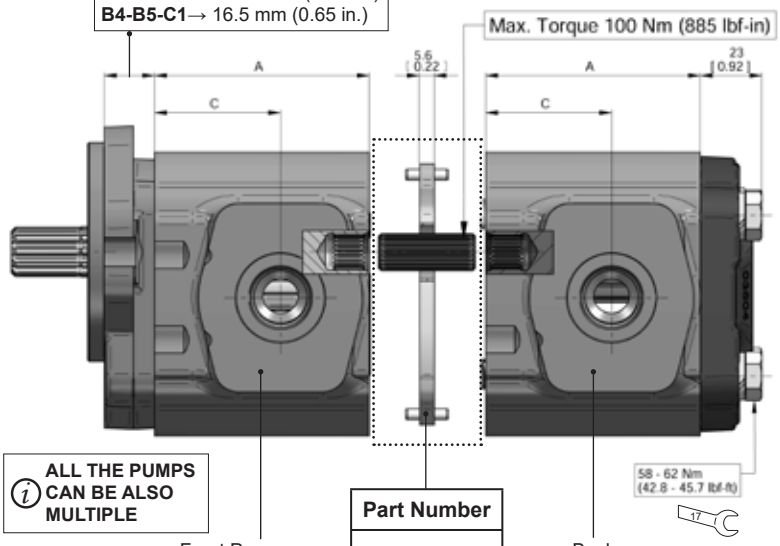
2PGE Multiple Pump - Dimensions

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

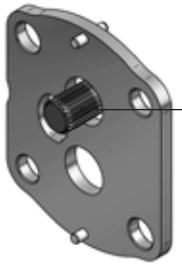


ALL THE PUMPS CAN BE ALSO MULTIPLE

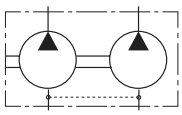
Front Pump:
drive shaft back end pre-arranged for second pump female splined end.

Part Number
Multiple pumps kit
R12030020

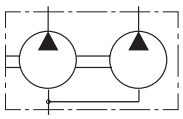
Back pump:
equipped with drive shaft suitable for multiple pumps, code 60.
Also available with 2PE Combination (Aluminium gear housing)



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



MULTIPLE GEAR PUMPS with individual inlet port



MULTIPLE GEAR PUMPS with common inlet port

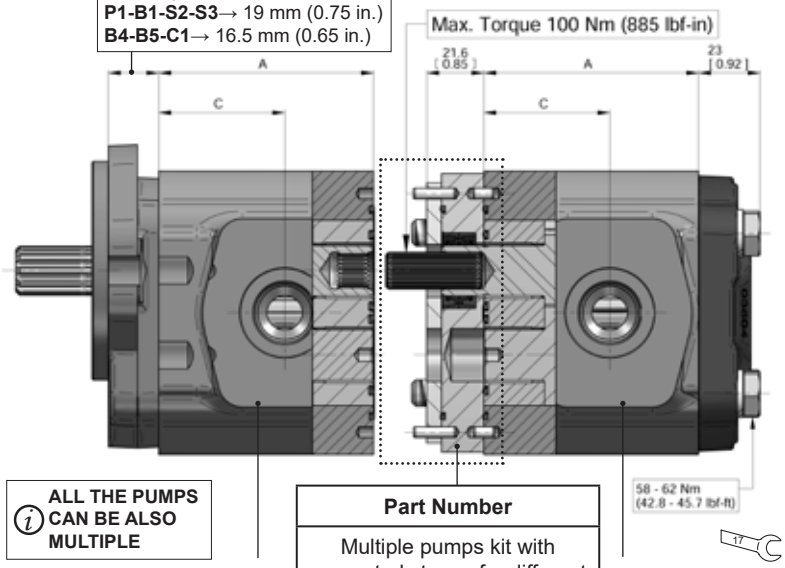
Recommended to limit the inflow of the downstream pump at 30 l/min MAX to avoid cavitation. Only for common suction port configuration:
Commercial code UA.

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

2PE-Type		3.2*	3.9*	4.5	6.5	8.3	10.5	11.3	12.5	13.8	16	19	22.5	26
Dimension A 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.)



ALL THE PUMPS CAN BE ALSO MULTIPLE

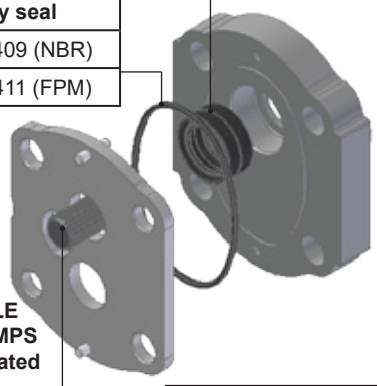
Front Pump:
drive shaft back end pre-arranged for second pump female splined end.

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

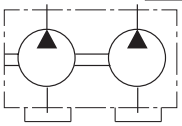
Back pump:
equipped with drive shaft suitable for multiple pumps, code 60.

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



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

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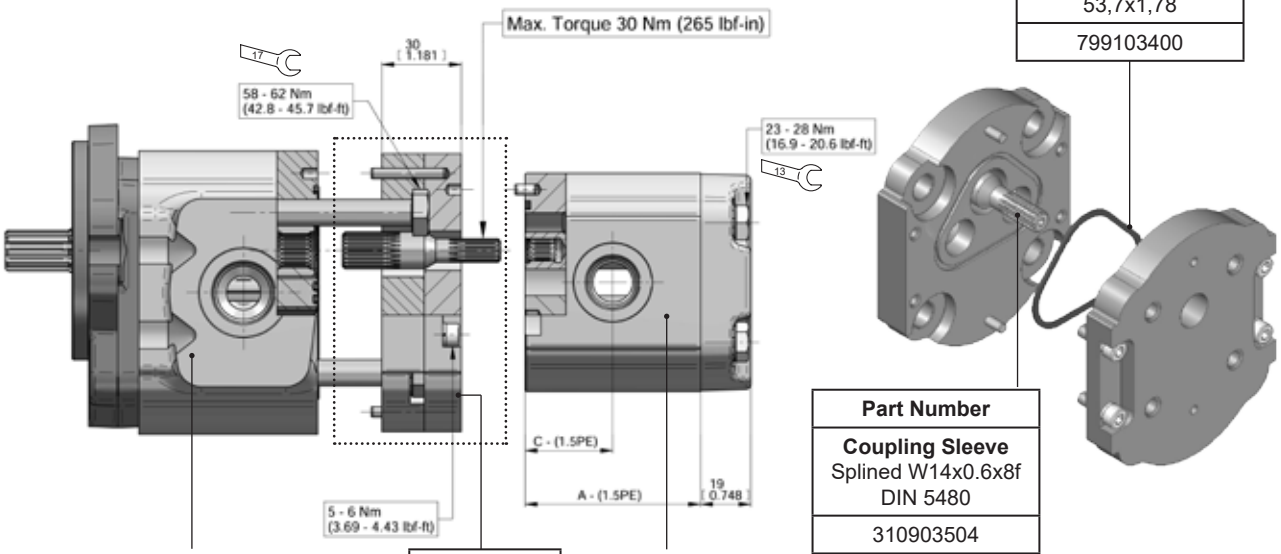
2PGE Combination with Pump 1.5PE (Aluminium gear housing)

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



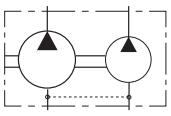
Part Number
O-ring 53,7x1,78
799103400

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

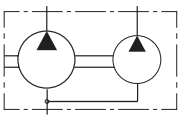
Front Pump:
drive shaft back end pre-arranged for second pump female splined end.

Part Number
Multiple pumps kit
R12090043

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



MULTIPLE GEAR PUMPS with individual inlet port



MULTIPLE GEAR PUMPS with common inlet port

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

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

ALL THE PUMPS CAN BE ALSO MULTIPLE

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

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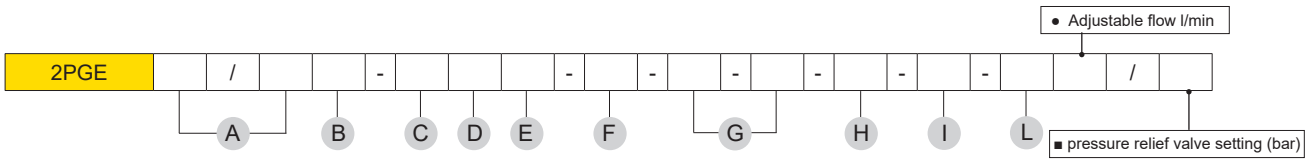

A TYPE	DISPLACEMENTS	
6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
13.8	13.8 cm³/rev.	*0.84 cu.in/rev.*
16	16.6 cm³/rev.	*1.01 cu.in/rev.*
19	19.4 cm³/rev.	*1.18 cu.in/rev.*
22.5	22.9 cm³/rev.	*1.37 cu.in/rev.*
26	26.6 cm³/rev.	*1.62 cu.in/rev.*

B ROTATION	CODE
Clockwise	D
Anti-clockwise	S

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

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

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

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

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

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

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

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

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

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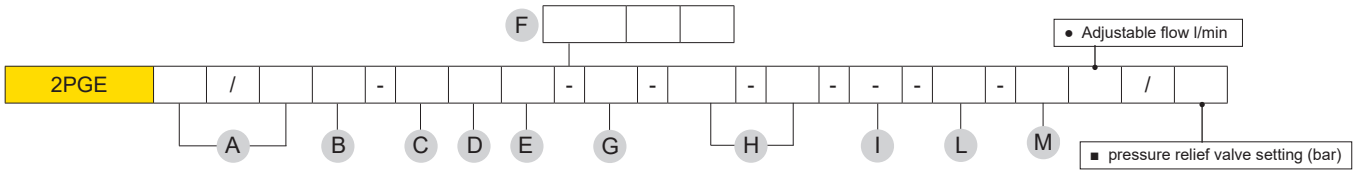
HOW TO ORDER MULTIPLE PUMP



A	TYPE	DISPLACEMENTS	
	6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
	8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
	11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
	13.8	13.8 cm³/rev.	*0.84 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	26.6 cm³/rev.	*1.62 cu.in/rev.*

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

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

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

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

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

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

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

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

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

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

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

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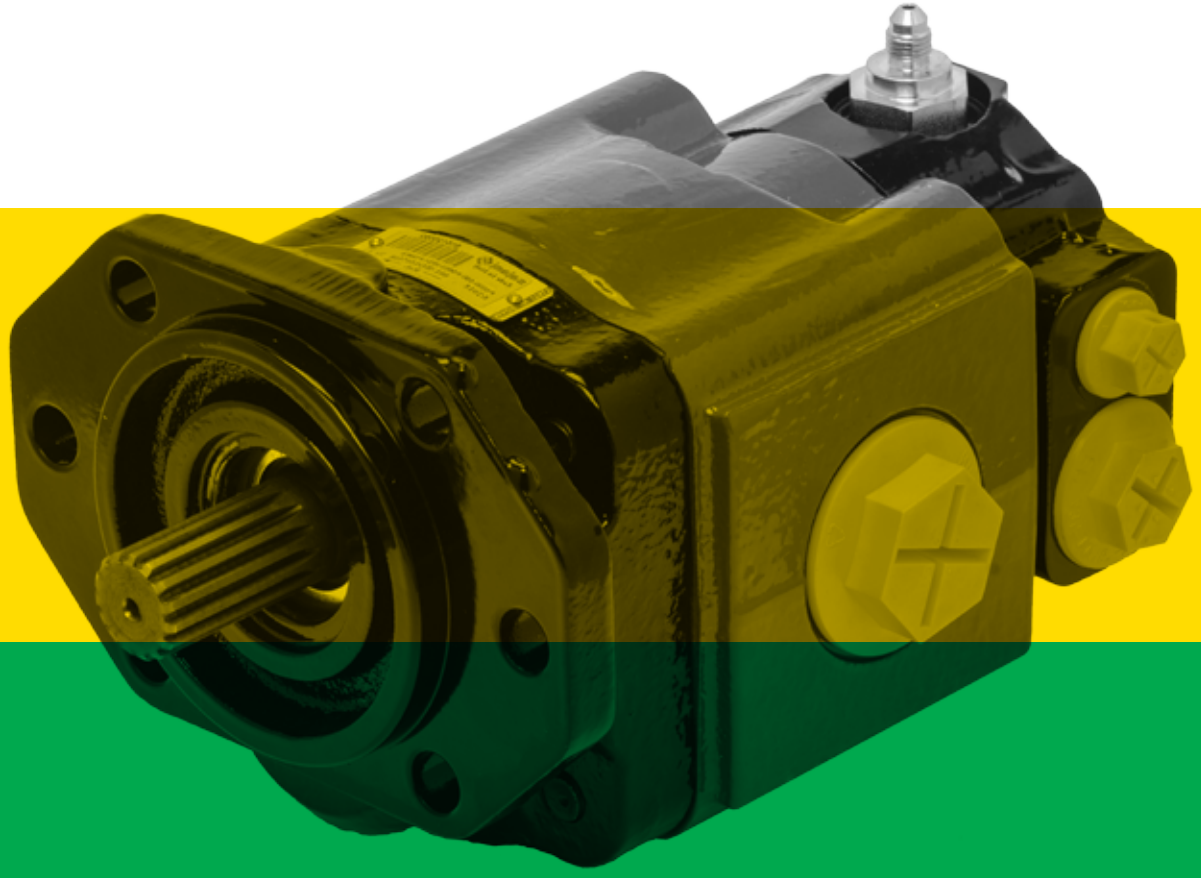
PG330

Cast Iron Gear Pumps

Technical/Spare Parts Catalogue



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COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

salami
FLUID POWER SYSTEMS ®

Final revised edition - July 2021

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

Contents

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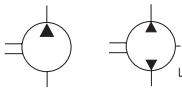
Symbol Designation

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

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

PG330 Single Pump - Dimensions and Technical Data



2 bar *(29 psi)*
Max pressure discharge

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

TYPE	Displacement		Dimension A		Dimension C		Continuous pressure p_1		Intermittent pressure p_2		Peak pressure p_3		Min. speed at p_1	Max. speed at p_2	Weight	
	cm^3/rev	*cu.in/rev*	mm	*in*	mm	*in*	bar	*psi*	bar	*psi*	bar	*psi*	rpm		kg	*lbs*
PG330 - 23	23.4	*1.43*	77	*3.03*	35	*1.38*	260	*3750*	280	*4060*	300	*4350*	400	3000	13.2	*29.10*
PG330 - 28	28.6	*1.74*	81	*3.19*	38	*1.49*	280	*4060*	300	*4350*	320	*4650*	400	3000	13.7	*30.20*
PG330 - 34	34.4	*2.10*	85.5	*3.36*	42.5	*1.67*	280	*4060*	300	*4350*	320	*4650*	400	3000	14.2	*31.30*
PG330 - 40	40.3	*2.46*	90	*3.54*	47	*1.85*	260	*3750*	280	*4060*	300	*4350*	400	2700	14.7	*32.41*
PG330 - 47	47.4	*2.89*	101.5	*3.40*	50	*1.97*	280	*4060*	300	*4350*	320	*4650*	400	2700	17.0	*37.48*
PG330 - 55	55.2	*3.37*	107.5	*4.23*	56	*2.20*	260	*3750*	280	*4060*	300	*4350*	400	2700	17.7	*39.02*
PG330 - 64	64.3	*3.92*	114.5	*4.51*	58	*2.28*	240	*3480*	260	*3750*	280	*4060*	350	2500	18.5	*40.79*
PG330 - 72	73.4	*4.48*	121.5	*4.78*	61	*2.40*	220	*3190*	240	*3480*	260	*3750*	350	2500	19.4	*42.77*
PG330 - 80	80.6	*4.91*	127.5	*5.02*	65	*2.56*	200	*2900*	220	*3190*	240	*3480*	350	2500	22.5	*49.60*

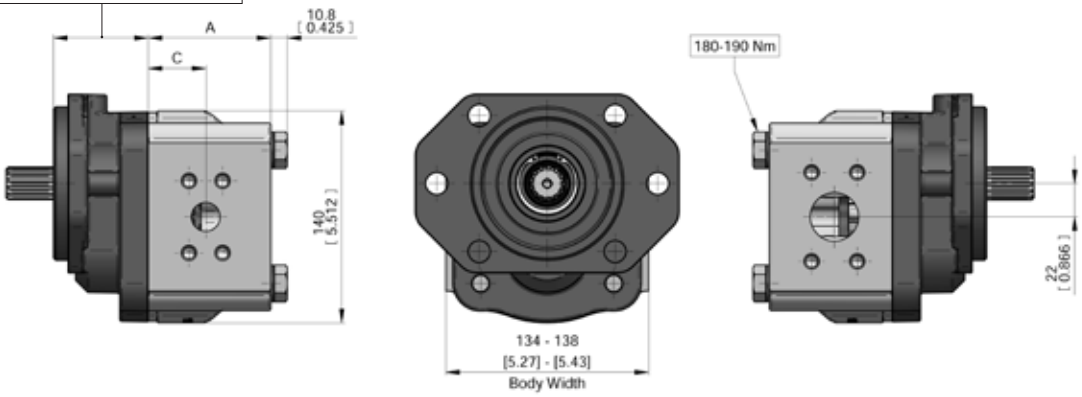
● Technical Data - Shaft 38/Flange P2

TYPE	Displacement		Continuous pressure p_1		Intermittent pressure p_2		Peak pressure p_3		Min. speed at p_1	Max. speed at p_2	Weight	
	cm^3/rev	*cu.in/rev*	bar	*psi*	bar	*psi*	bar	*psi*	rpm		kg	*lbs*
PG330 - 55 ●	55.2	*3.37*	230	*3335*	250	*3625*	270	*3915*	400	2700	17.7	*39.02*
PG330 - 64 ●	64.3	*3.92*	200	*2900*	220	*3190*	240	*3480*	350	2500	18.5	*40.79*
PG330 - 72 ●	73.4	*4.48*	170	*2465*	190	*2755*	210	*3045*	350	2500	19.4	*42.77*

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

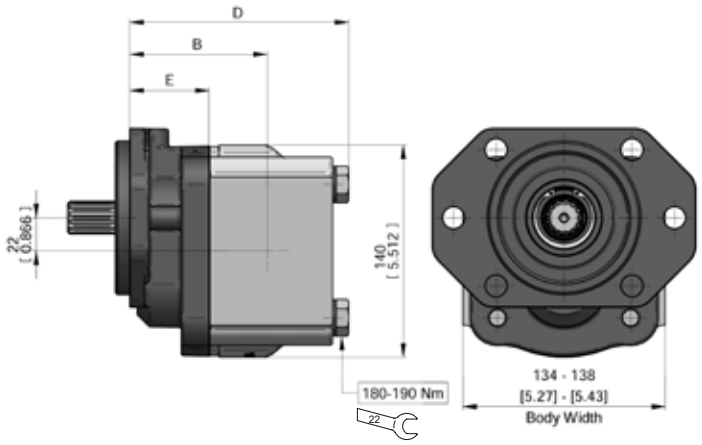
Max Speed must be lowered by 10% for system working continuosly at p^1 pressure.
Max pressure must be lowered by 10% for birectional pump.

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.)



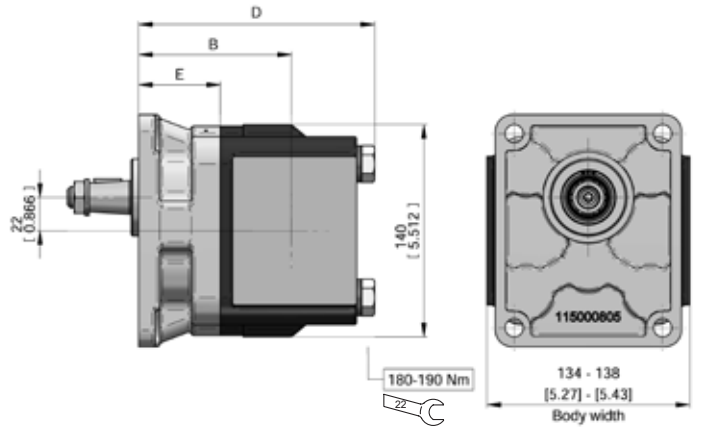
Dimensions - Shaft 55/Flange S3 (SAE B)

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*		



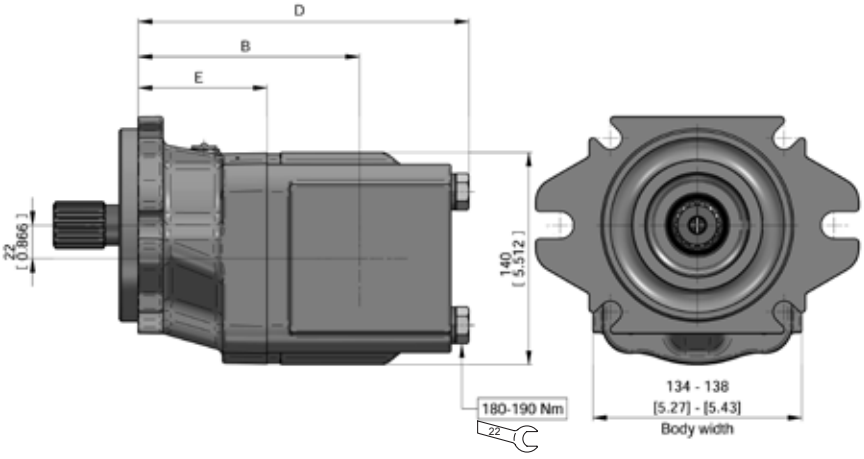
Dimensions - Shaft 38/Flange P2 (European)

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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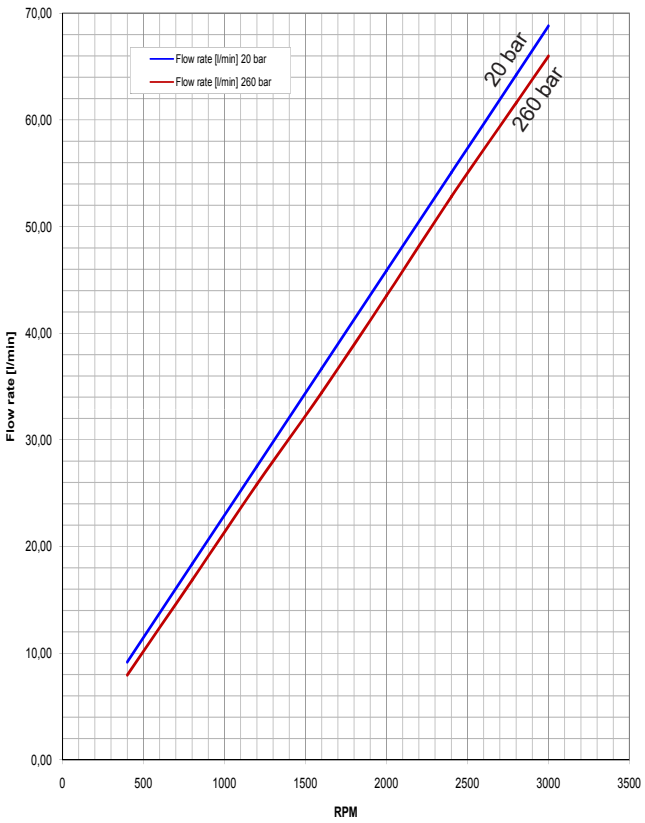
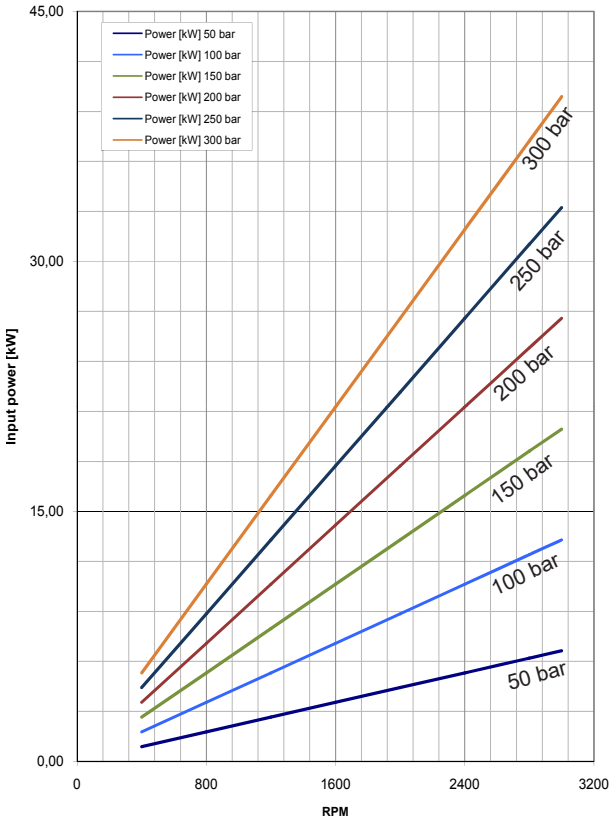
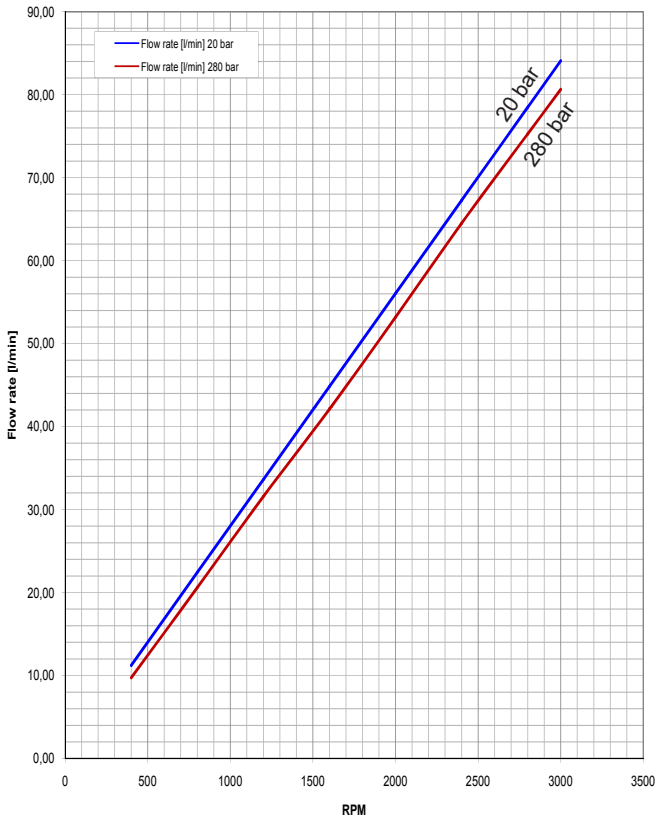
Pump Performance Charts

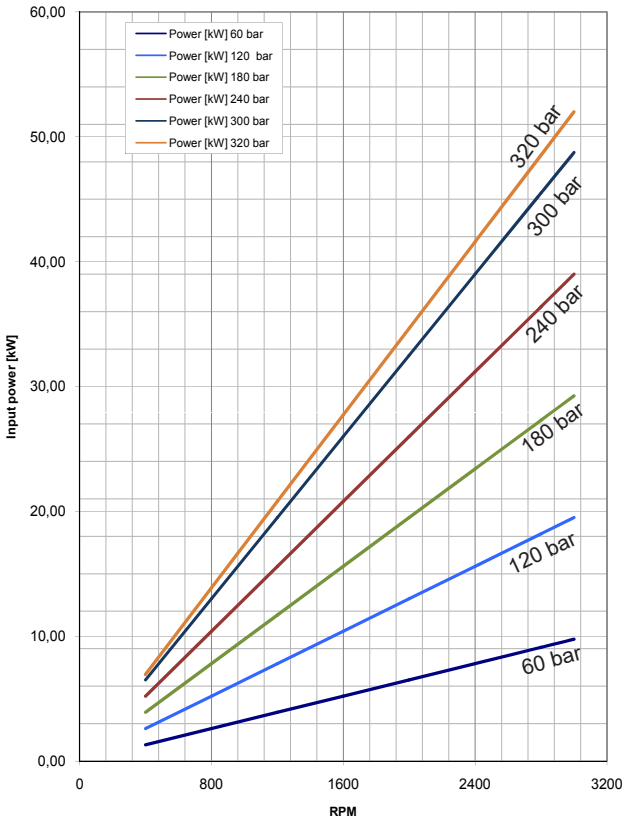
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





PG330 - 23

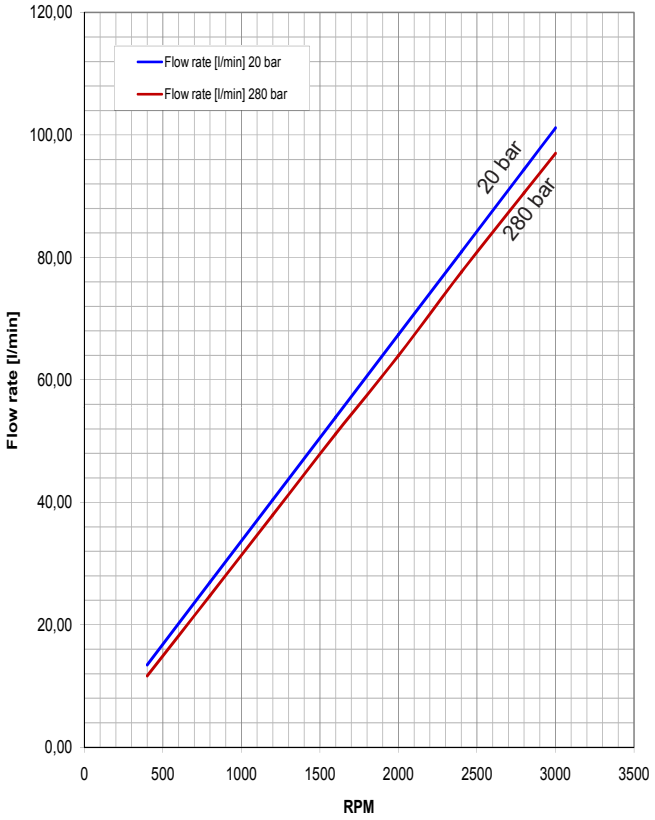


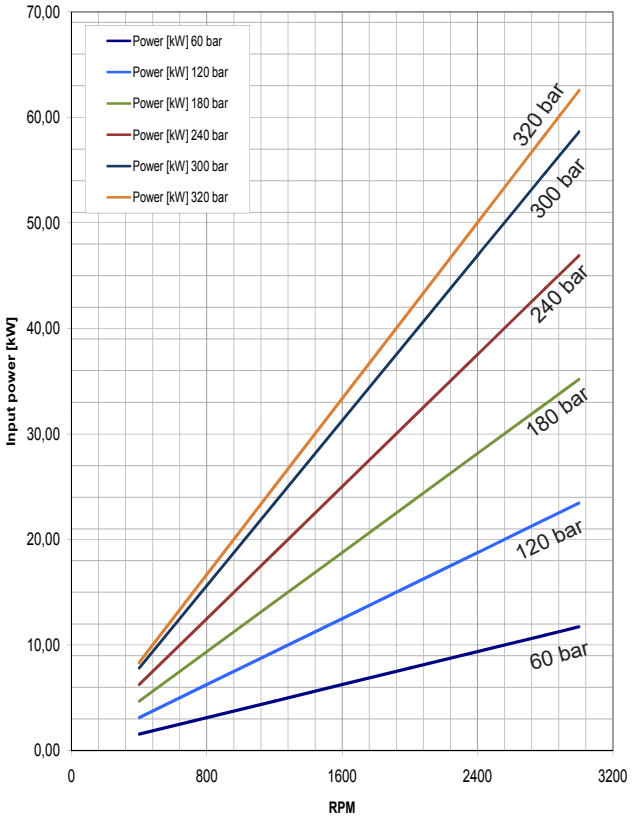


PG330 - 28

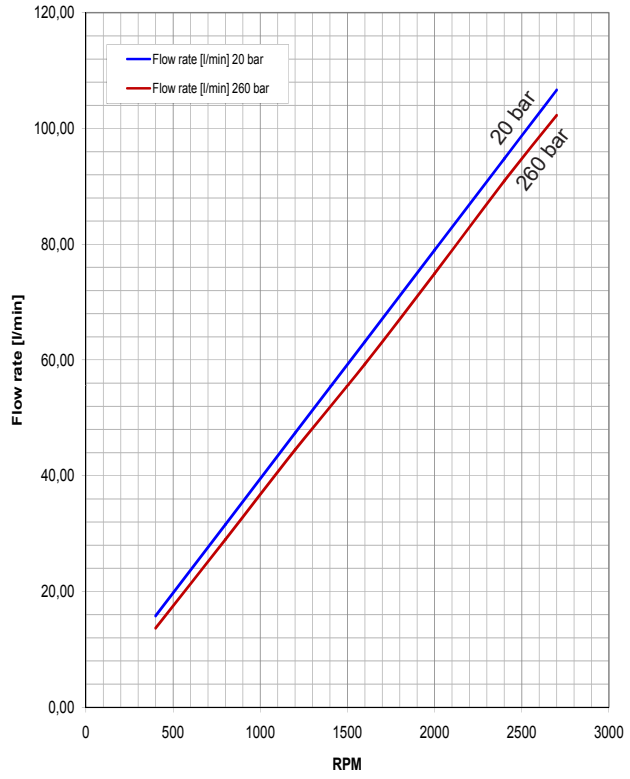
Pump Performance Charts

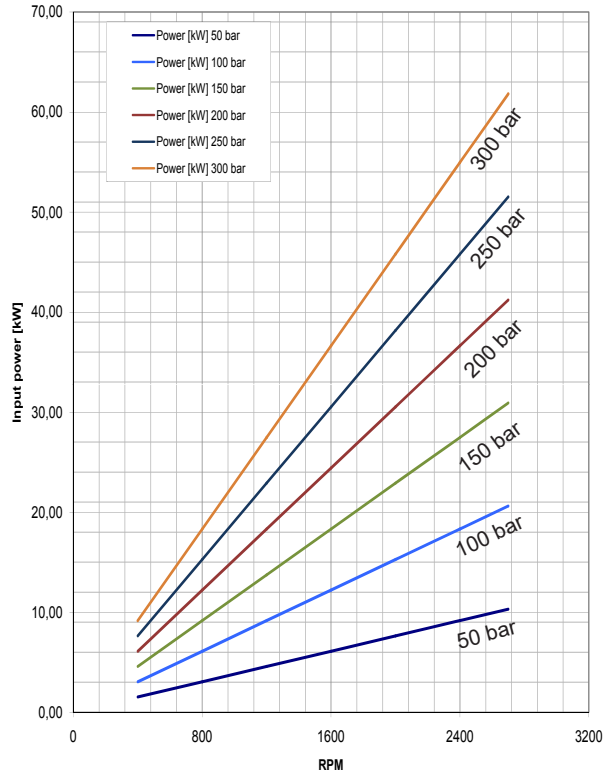
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





PG330 - 34





PG330 - 40

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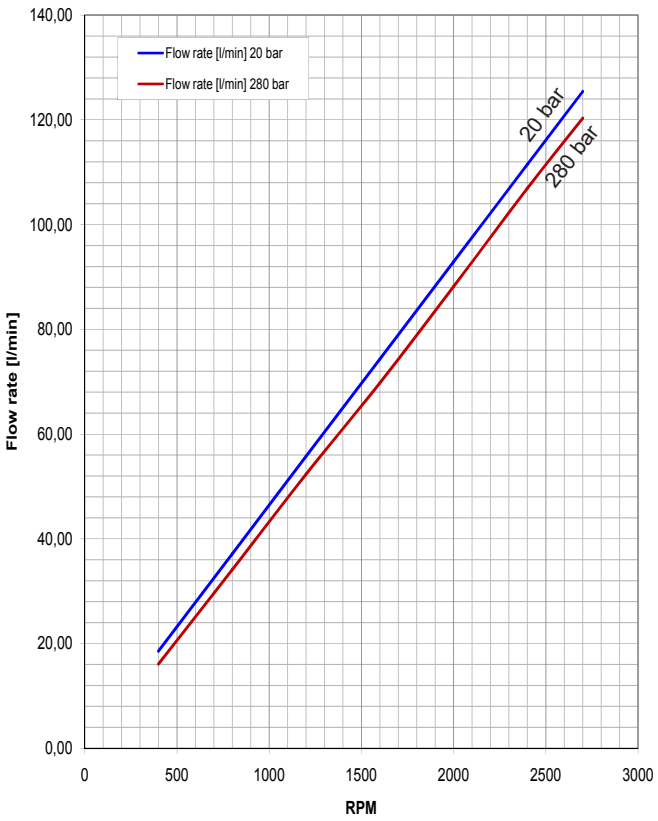
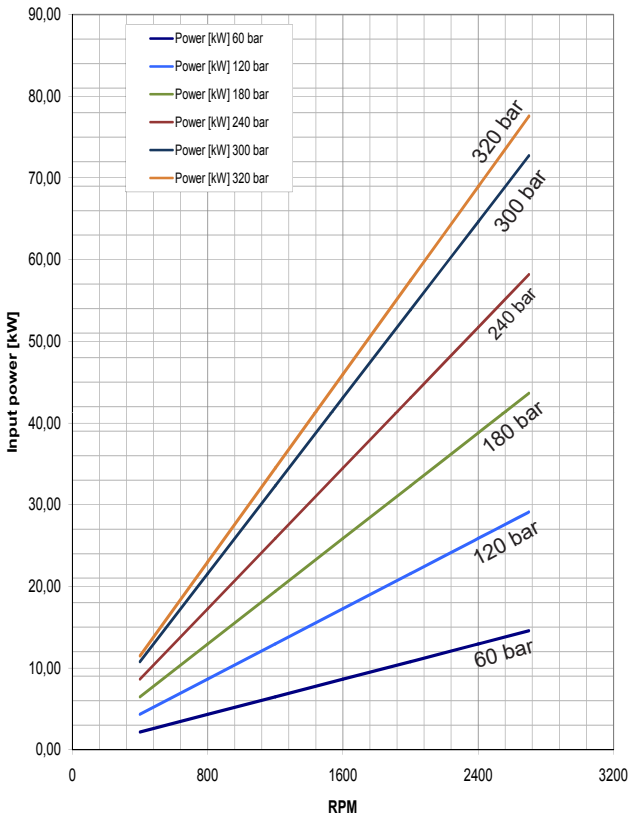
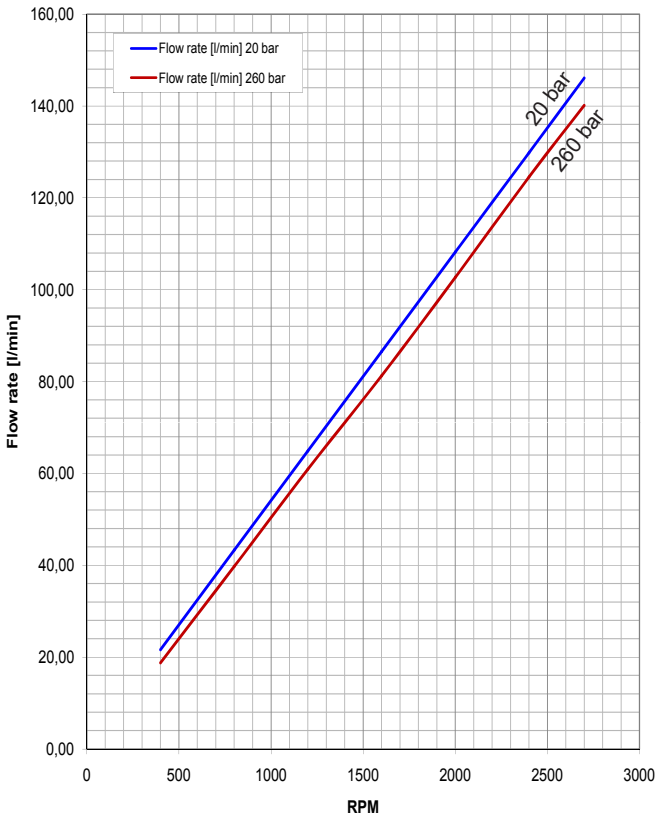
Pump Performance Charts

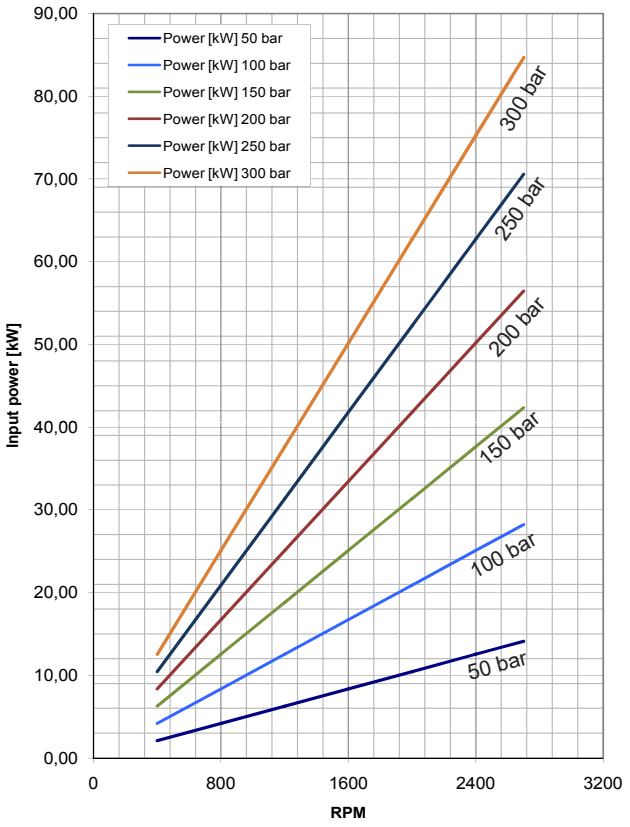
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





PG330 - 47

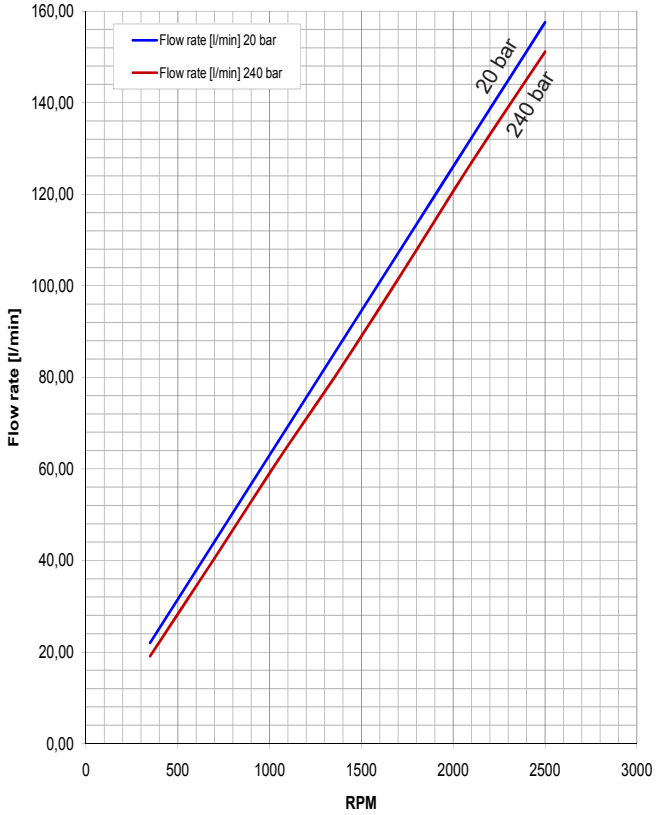


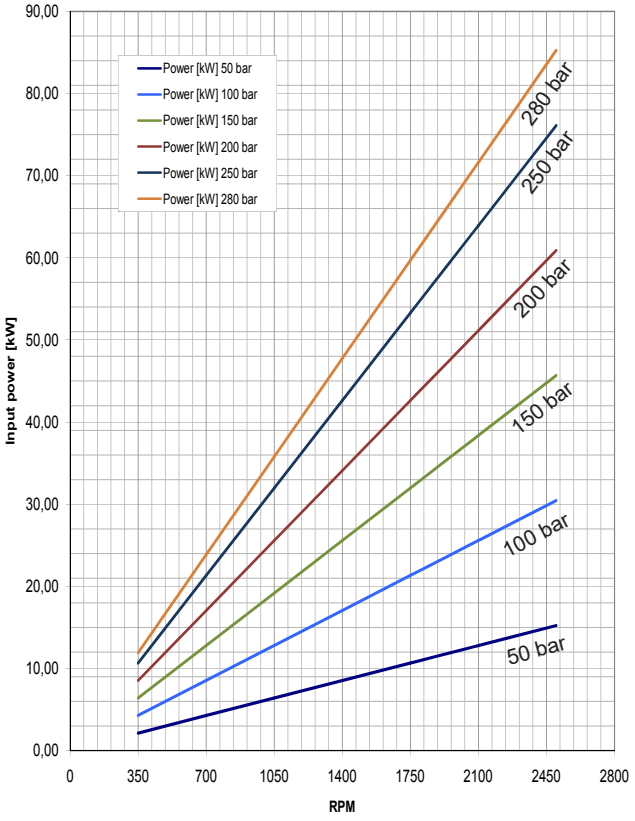


PG330 - 55

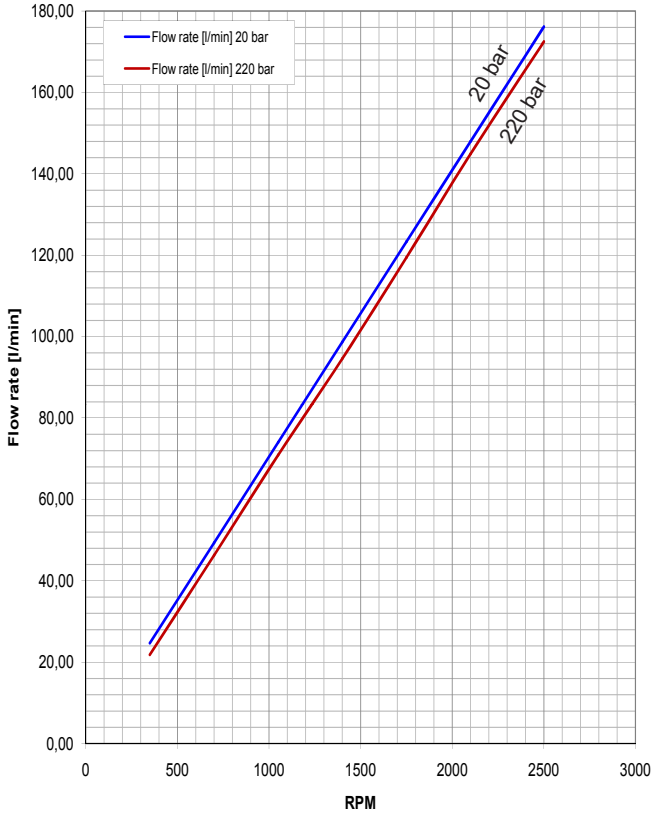
Pump Performance Charts

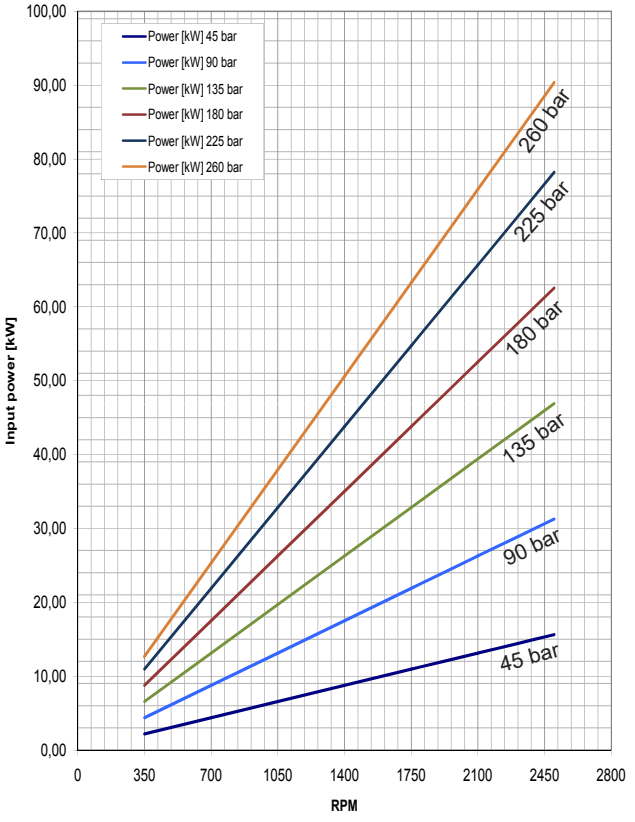
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





PG330 - 64





PG330 - 72

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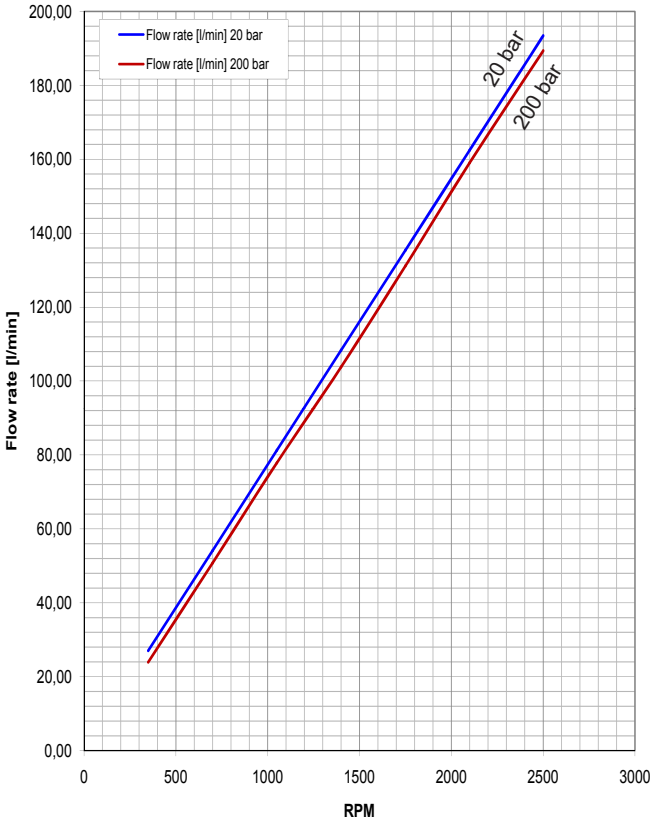
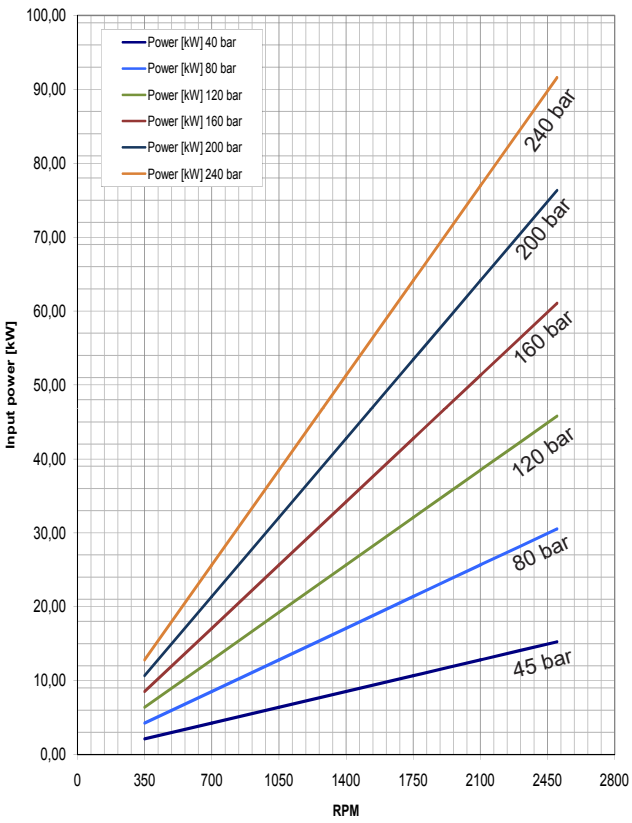
Pump Performance Charts

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





PG330 - 80

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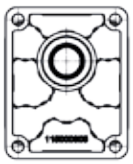
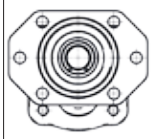
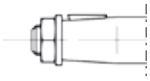
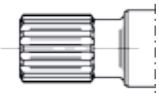
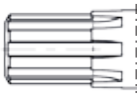
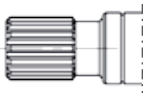
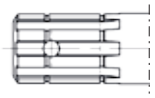
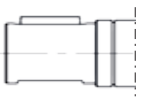
Shaft And Flange Combinations

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

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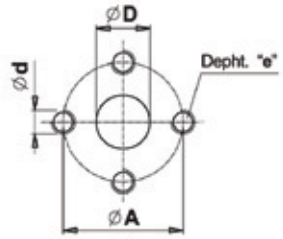
Flanged Ports



code P

Flanged ports
european standard

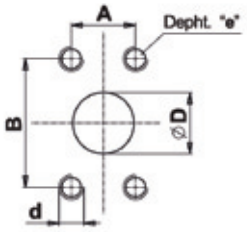
M8	20 Nm (14.7 lbf-ft)
M10	35 Nm (25.8 lbf-ft)
M12	65 Nm (47.9 lbf-ft)

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

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



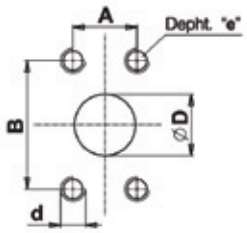
code W

Flanged ports
SAE J518
METRIC THREAD

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

UNI-DIRECTIONAL

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



code S

Flanged ports
SAE J518
AMERICAN STANDARD
THREAD

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

UNI-DIRECTIONAL

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

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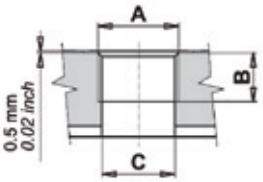
Threaded Ports



code G

Threaded ports
GAS (BSPP)

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

UNI-DIRECTIONAL

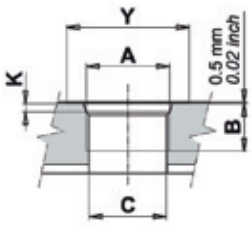
PUMPS	INLET			OUTLET		
	A	B	C	A	B	C
From 23 to 40	G1	22 *(0.87")*	30.5 *(1.2")*	G3/4	16 *(0.62")*	24.4 *(0.96")*
From 47 to 80	G1 1/4	24 *(0.94")*	37 *(1.46")*	G1	22 *(0.87")*	30.5 *(1.2")*

BI-DIRECTIONAL

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

BI-DIRECTIONAL - REAR PORTS

PUMPS	INLET			OUTLET		
	A	B	C	A	B	C
From 23 to 64	G1	22 *(0.87")*	30.5 *(1.2")*	G1	22 *(0.87")*	30.5 *(1.2")*



code R

Threaded ports
SAE (ODT)

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

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

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

BI-DIRECTIONAL - REAR PORTS

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

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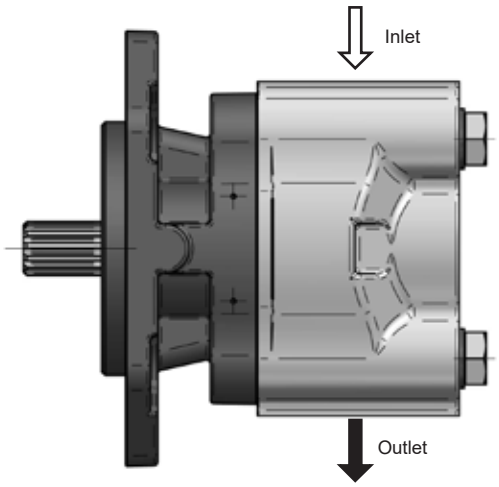
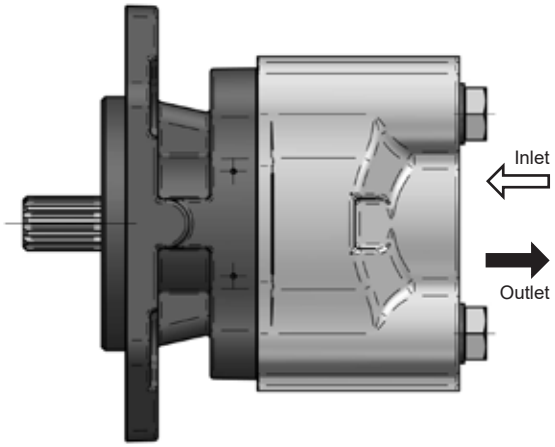
example with clockwise rotation / ✕ = plugged port

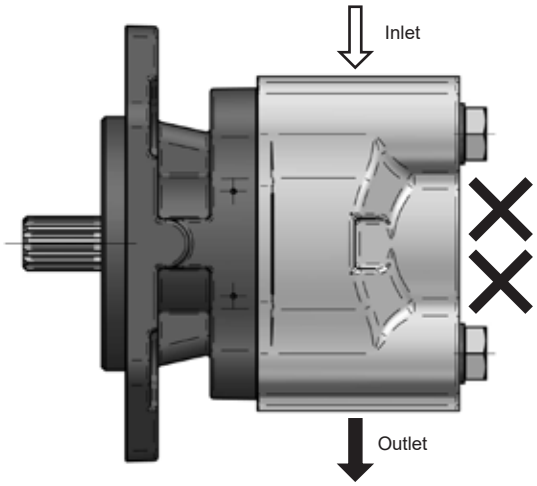
Ports layout - Single Pump



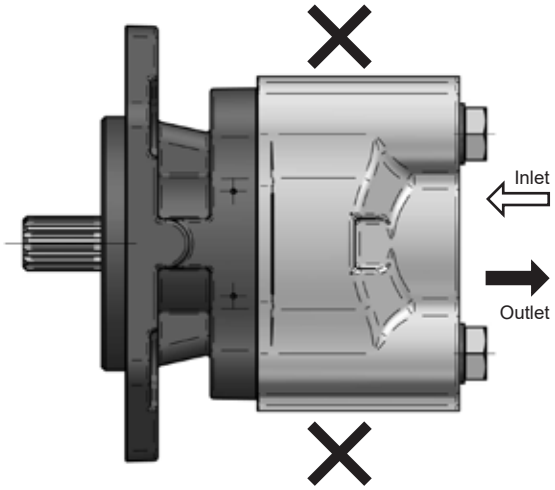
STANDARD CONFIGURATION



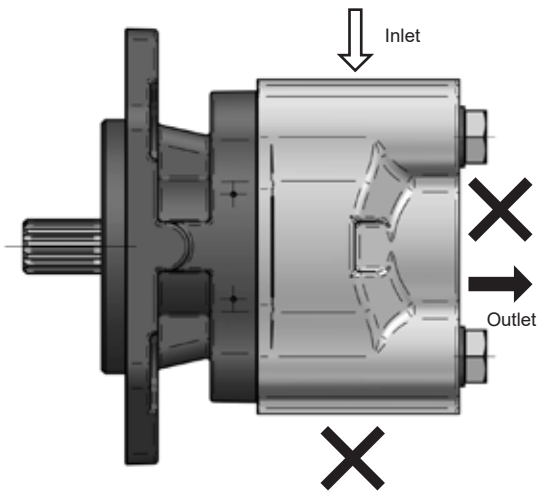
CODE 1



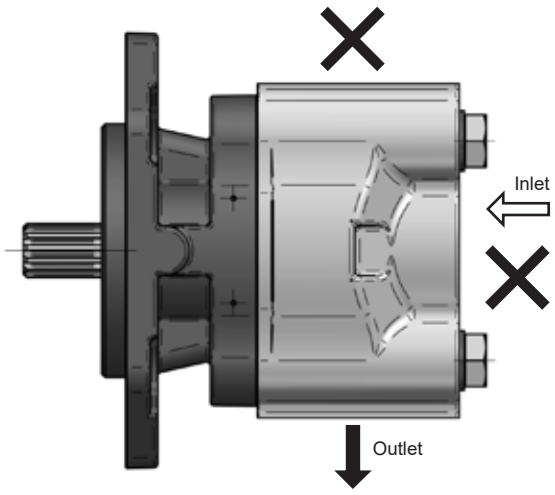
CODE 2



CODE 3

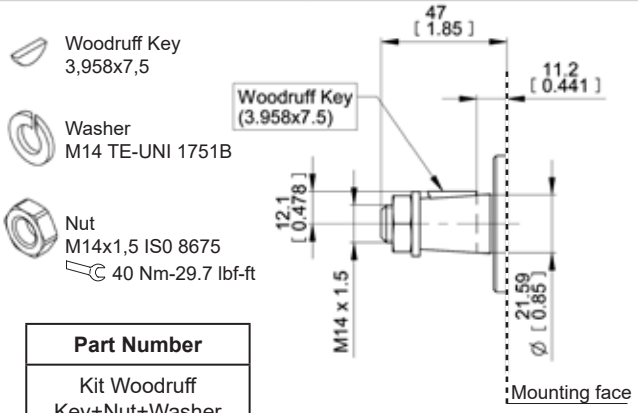


CODE 4



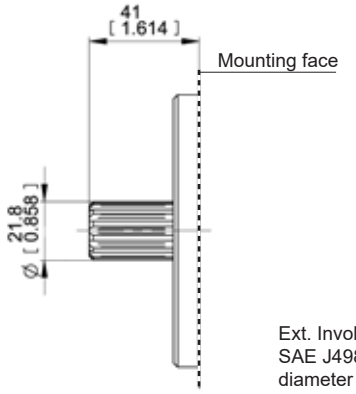
CODE 5

Drive Shaft



Part Number
Kit Woodruff Key+Nut+Washer
R12980070

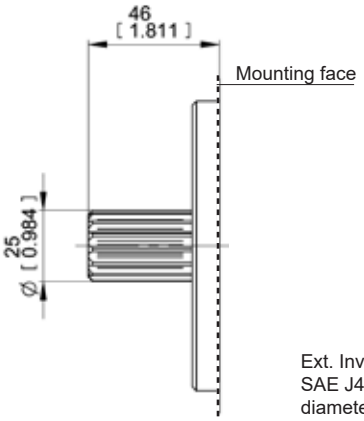
Pressure values are lower for displacement 55-64-72 cc/rev, see page 53.



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

code 38	Max torque 250 Nm (2213 lbf in)
Tapered 1:8	

code 55	Max torque 330 Nm (2921 lbf in)
SAE B 13T-16/32DP SPLINED	

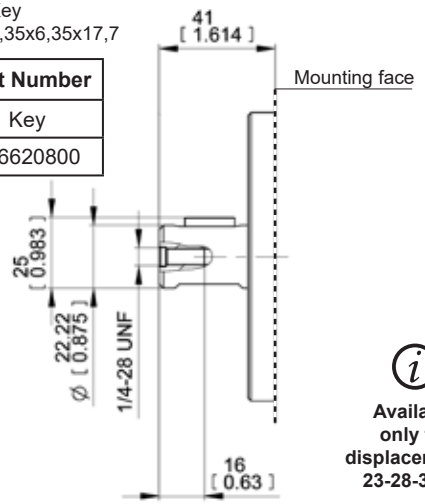


Ext. Involute Spline SAE J498B with outer diameter modified 15 teeth - 16/32 Pitch - 30 deg - Flat Root - Side fit - Class 1

code 56	Max torque 480 Nm (4250 lbf in)
SAE BB 15T-16/32DP SPLINED	

Key
6,35x6,35x17,7

Part Number
Key
796620800

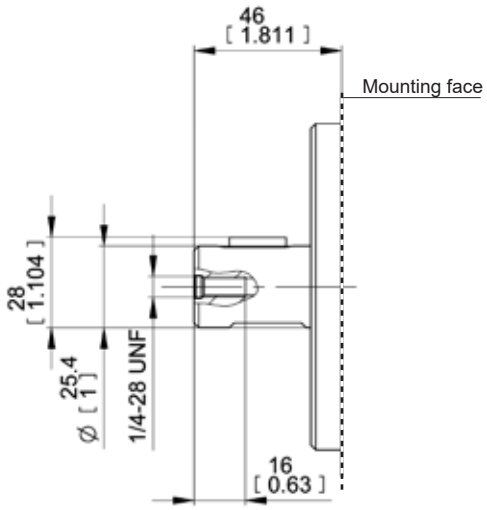


Available only for displacements: 23-28-34-40

code 87	Max torque 220 Nm (1950 lbt in)
SAE B PARALLEL	

Key
6,35x6,35x17,7

Part Number
Key
796620800



code 88	Max torque 320 Nm (2830 lbt in)
SAE BB PARALLEL	

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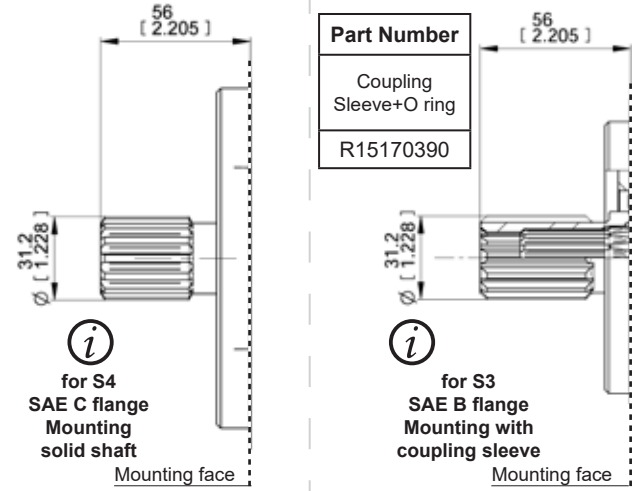
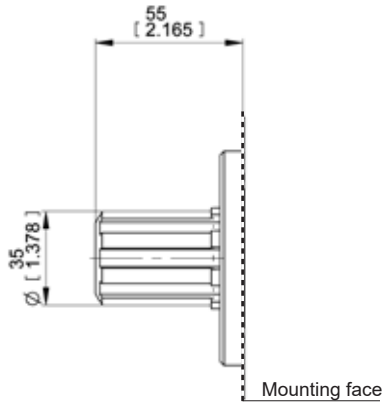
Continental Shaft

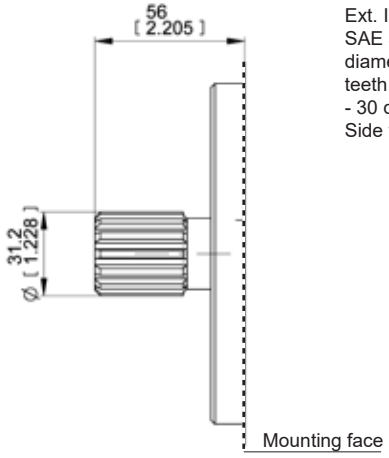


Ext. Involute Spline SAE J498B with outer diameter modified 14 teeth - 12/24 Pitch - 30 deg - Flat Root - Side fit - Class 1

code 58	
Max torque 480 Nm (4250 lbt in)	Max torque 330 Nm (4250 lbt in)
SAE C 14T-12/24DP SPLINED	

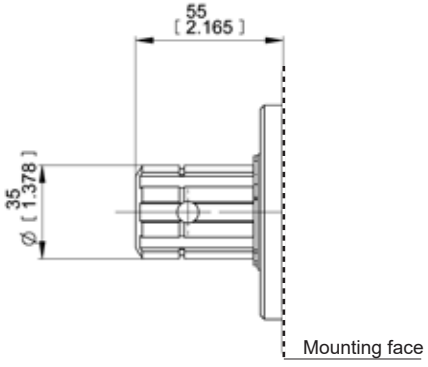


code 67	Max torque 480 Nm (4250 lbt in)
B8x32x36 DIN 5462 SPLINED	

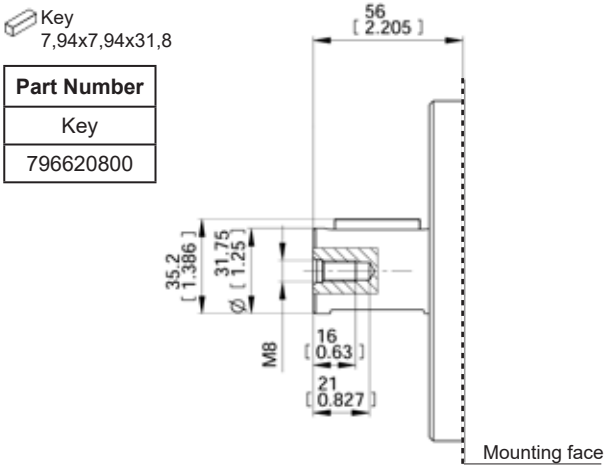


Ext. Involute Spline SAE J498B with outer diameter modified 14 teeth - 12/24 Pitch - 30 deg - Flat Root - Side fit - Class 1

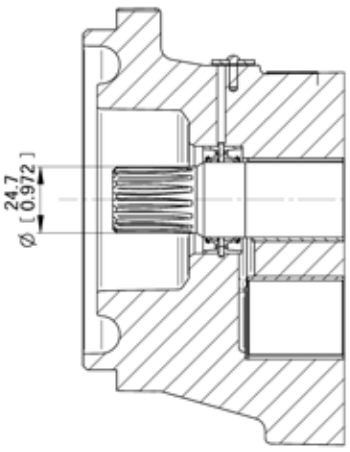
code 57	Max torque 480 Nm (4250 lbt in)
SAE C 14T-12/24DP SPLINED	



code 66	Max torque 480 Nm (4250 lbt in)
B8x32x36 DIN 5462 SPLINED	

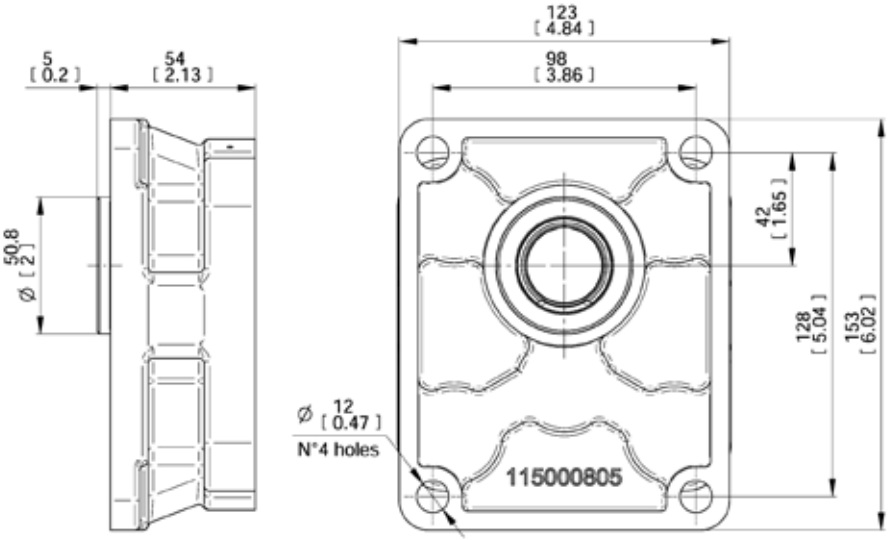


code 89	Max torque 480 Nm (4250 lbt in)
SAE C PARALLEL	



code 70	Max torque 480 Nm (4250 lbt in)
INTERNAL DRIVE SHAFT - W25X1.5X15X8F DIN 5480 SPLINED	

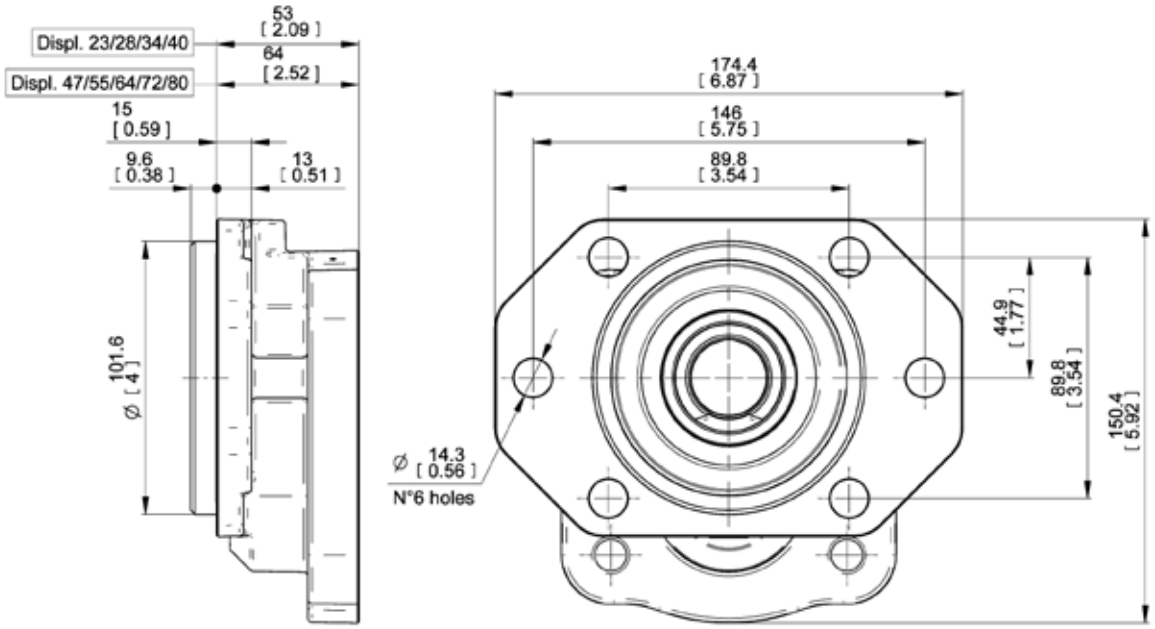
Mounting Flanges



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

P2	With shaft code 38

EUROPEAN STANDARD



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

S3	With shaft code 55-56-58-87-88

SAE B 2-4 BOLTS

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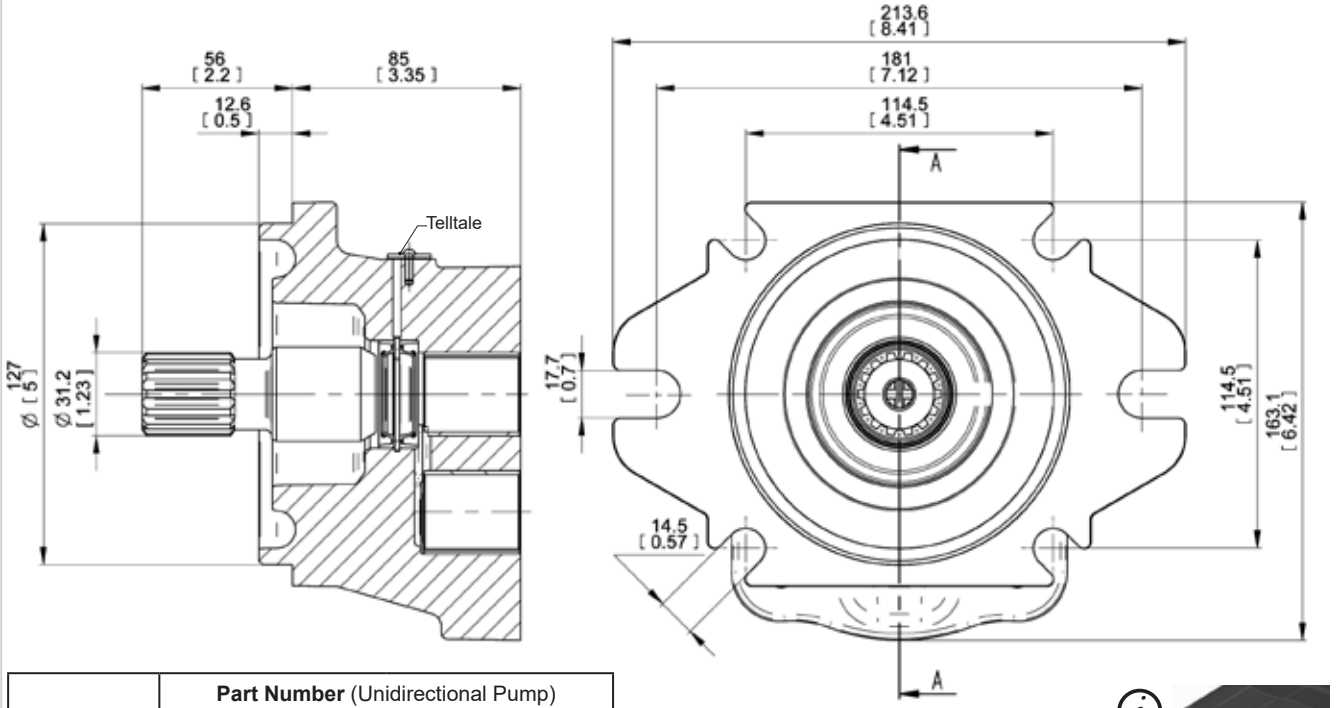
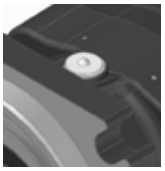
Mounting Flanges



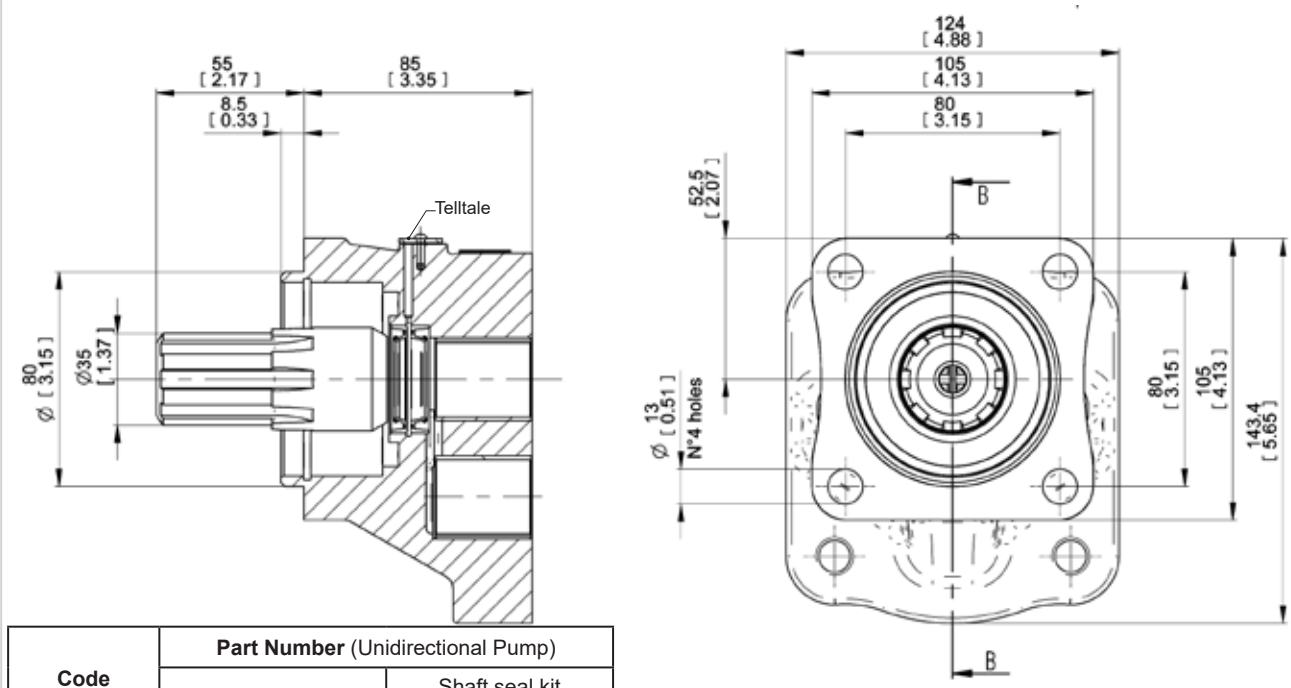
Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 76-77)
58S4	R15020015 (NBR) R15020017 (FPM)	R15020190 (NBR) R15020191 (FPM)

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



S4	With shaft code 58

SAE C 2-4 BOLTS



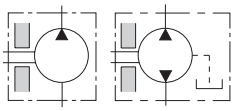
Code	Part Number (Unidirectional Pump)	
	Flange+Shaft seal kit	Shaft seal kit (See page 76-77)
67Z2	R15020013 (NBR) R15020120 (FPM)	R15020200 (NBR) R15020201 (FPM)

Z2	With shaft code 67

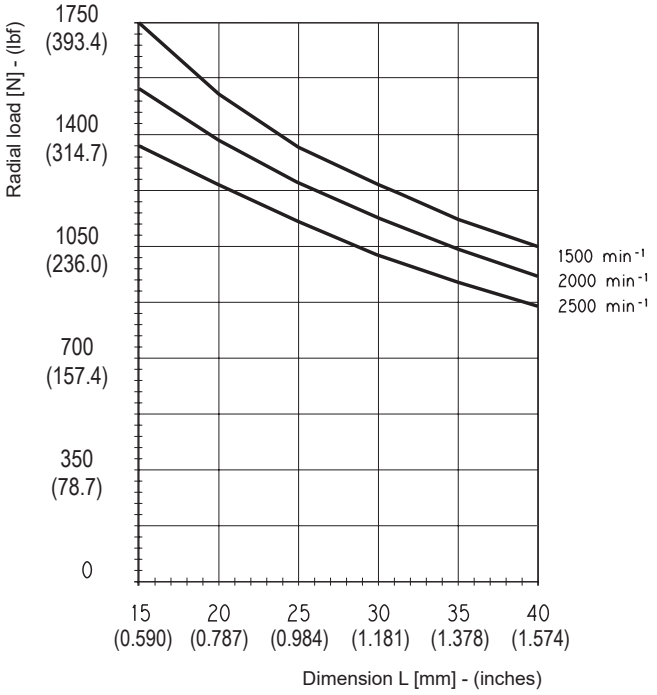
4 Bolts for ZF gear box

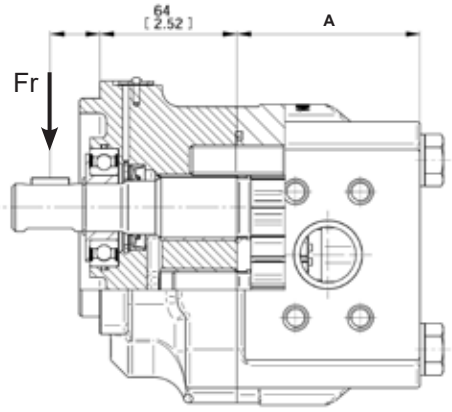
Mounting Flanges with Outrigger Bearing for Medium Loads (R3)

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 tipical mobile application, when duty cycle is less than 100%.



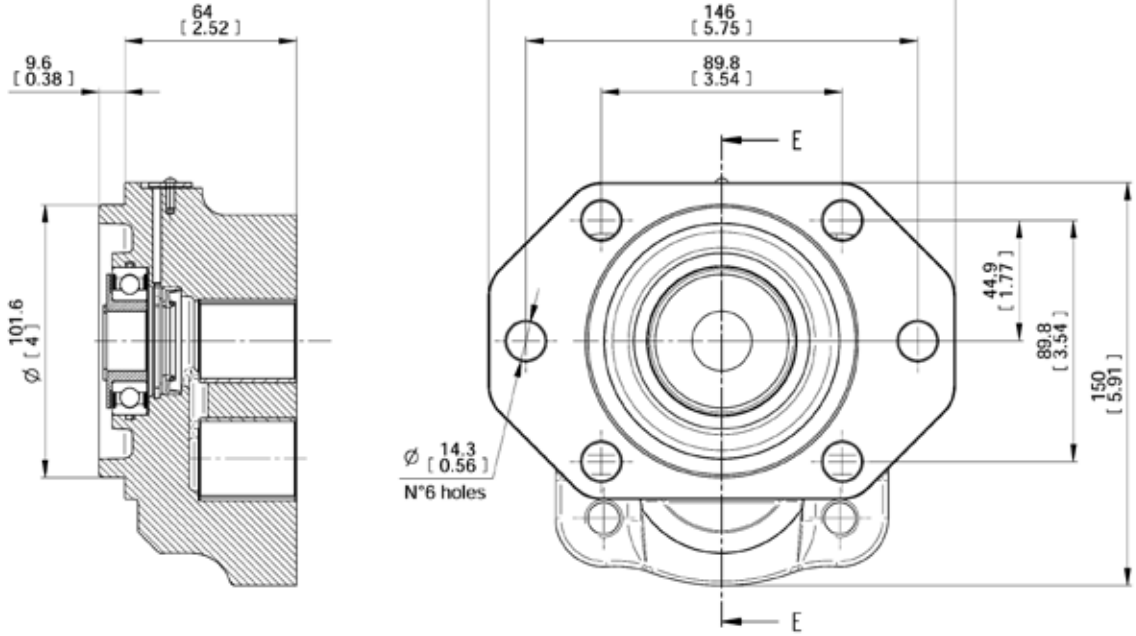
L=Distance between mounting flange and radial force point of application [mm-inches]





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

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



R3	With shaft code 55-56-87-88
SAE B 2-4 BOLTS	

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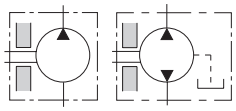
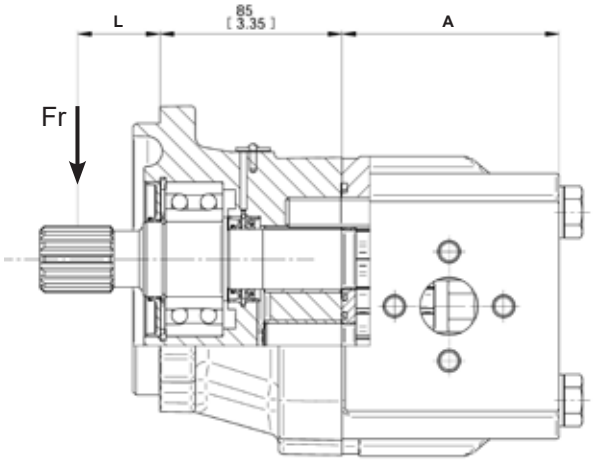
Mounting Flanges with Outrigger Bearing for Heavy Loads (Z1- R8)

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 tipical mobile application, when duty cycle is less than 100%.



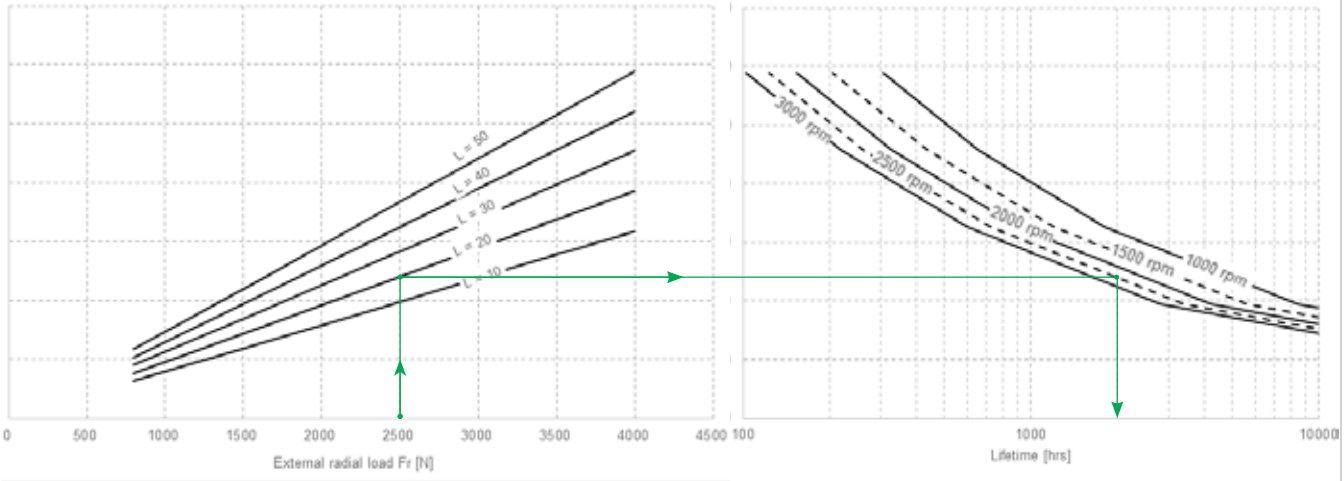
L=Distance between mounting flange and radial force point of application [mm-inches]



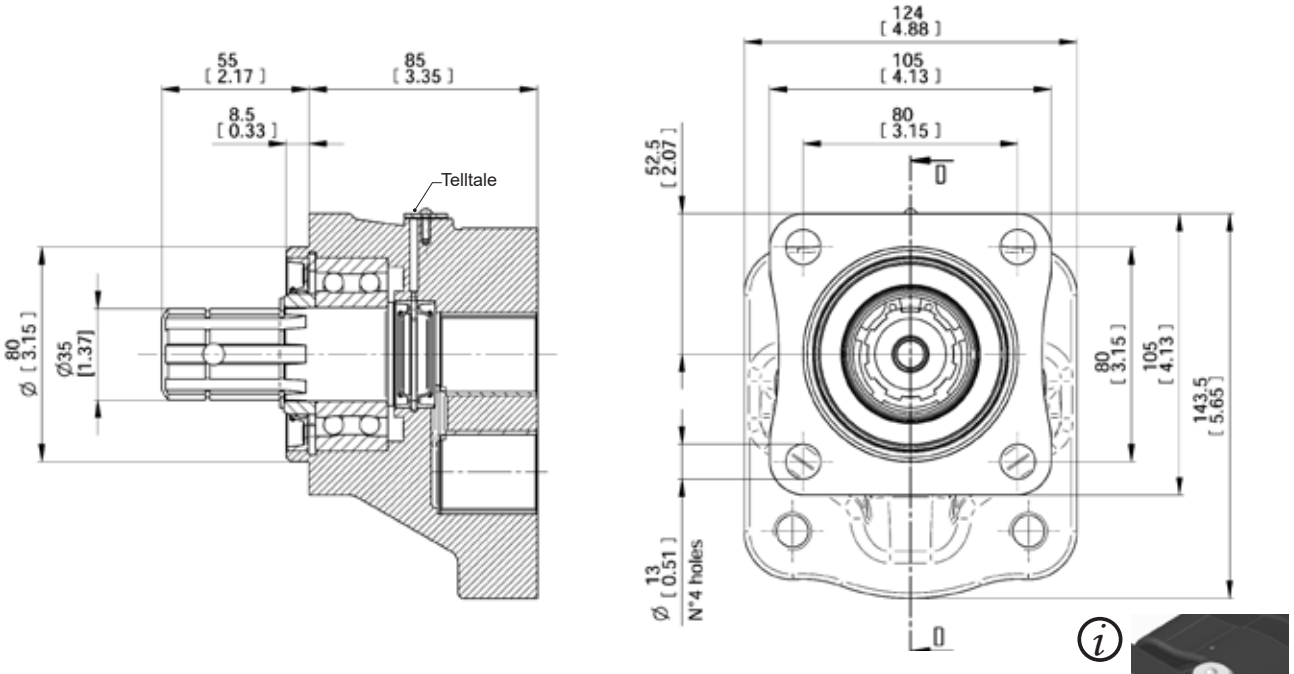
Type	A	
	mm	*in*
PG330 - 23	77	*3.03*
PG330 - 28	81	*3.19*
PG330 - 34	85.5	*3.36*
PG330 - 40	90	*3.54*
PG330 - 47	101.5	*3.40*
PG330 - 55	107.5	*4.23*
PG330 - 64	114.5	*4.51*
PG330 - 72	121.5	*4.78*
PG330 - 80	127.5	*5.02*

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

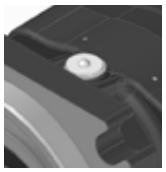
Code Z1 - R8



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



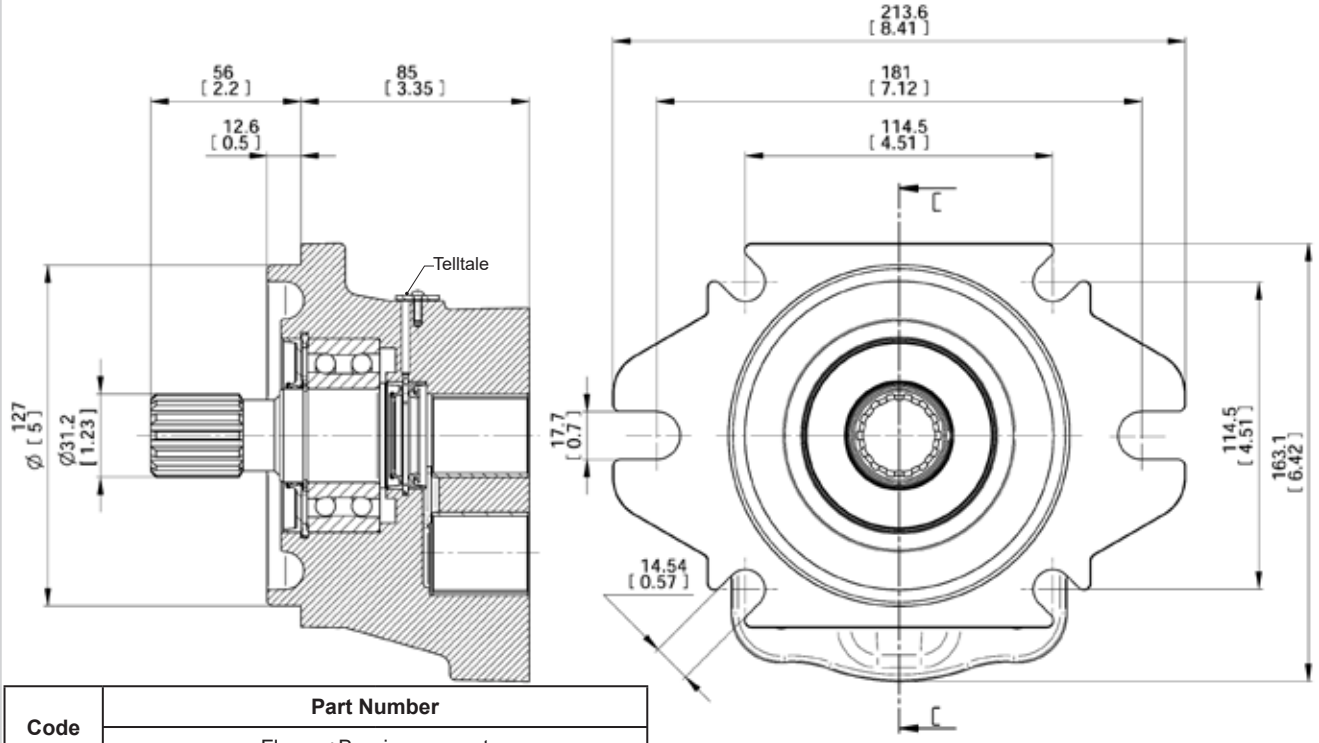
TellTale
drop in plug in case of failure, outside leakage trough the crossing hole is visible.



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

Z1	With shaft code 66

4 BOLTS FOR ZF GEAR



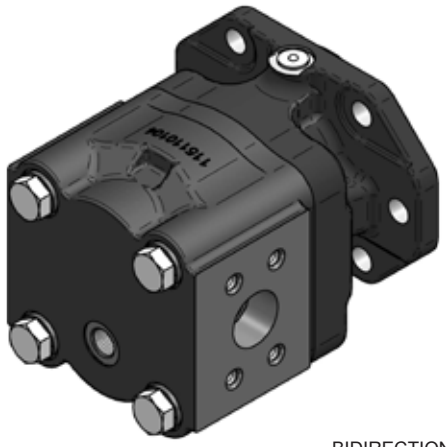
Code	Part Number	
	Flange+Bearing support	
57R8	R15020010 (NBR)	R15020030 (FPM)
89R8	R15020014 (NBR)	R15020040 (FPM)

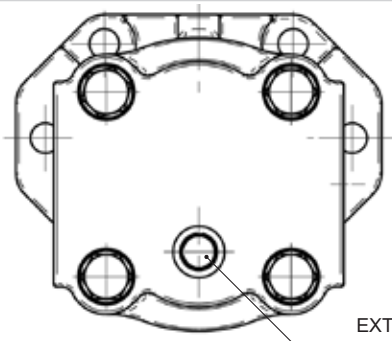
R8	With shaft code 57-89

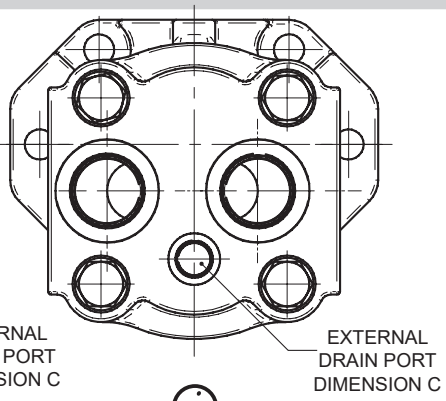
SAE C 2-4 BOLTS

E0.151.0721.14.00IM00

External Drain for Bidirectional Pump





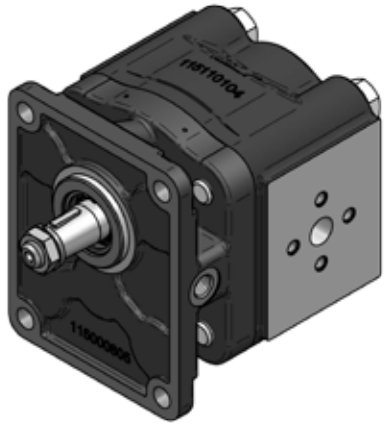


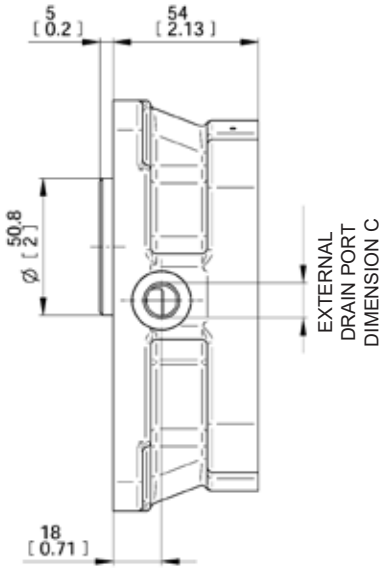
BIDIRECTIONAL ROTATION

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

Available only threaded ports see page 62

GEAR HOUSING TYPES



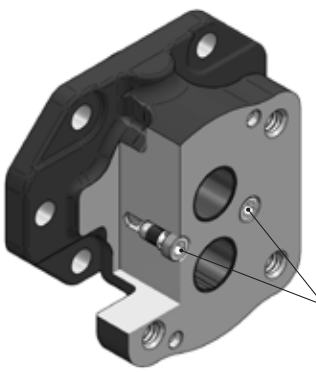


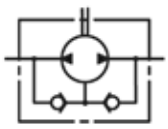
Code	Part Number	Threaded Drain Port
		C
P2 with lateral drain	R15000815	G1/4

BIDIRECTIONAL ROTATION

LD	P2 (EUROPEAN STANDARD) WITH LATERAL DRAIN

Internal Drain Valve for Bidirectional Pump





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

IDV	INTERNAL DRAIN FOR BI-DIRECTIONAL PUMP

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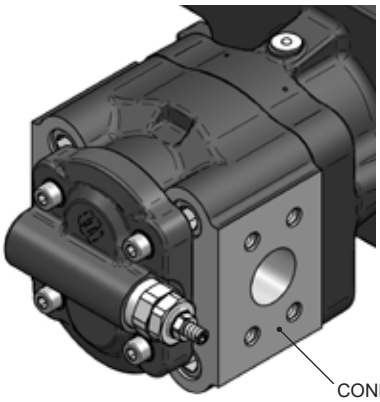
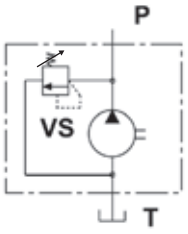
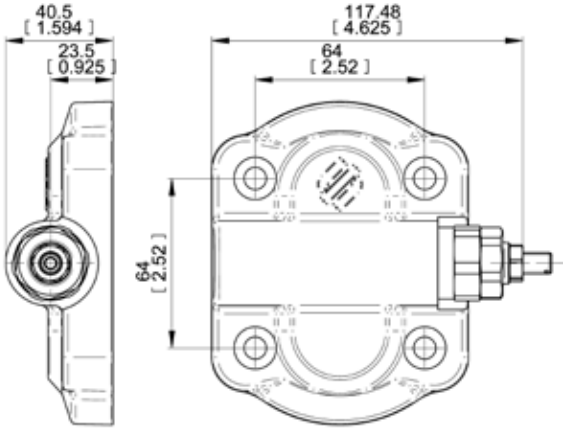
Rear Covers with Valves

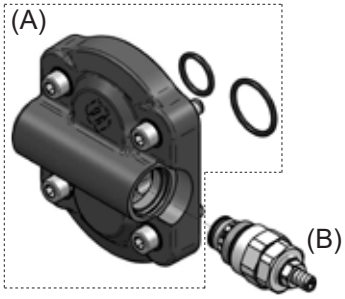




Available up to 80 l/min

CONFIGURATION WITH SPECIAL GEAR HOUSING



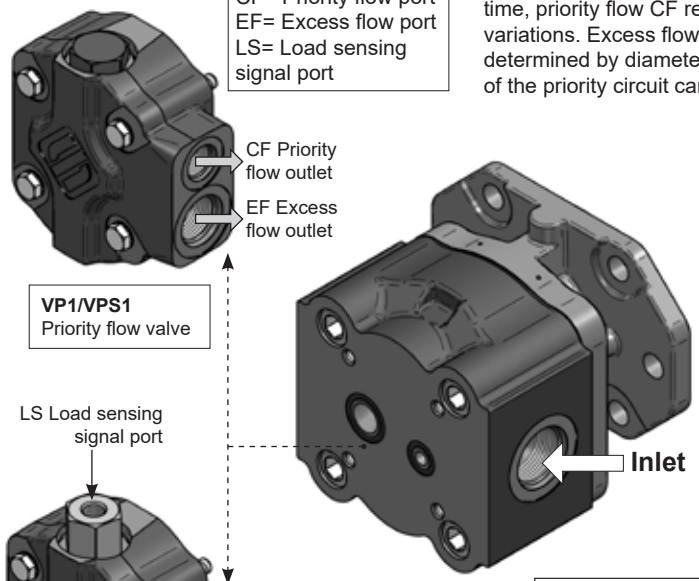


Code	Part Number		
	Cast iron Cover+O-ring (A)	Pressure relief valve (B) setting range	
VS Internal Discharge	R15030010	796366200	20-70 bar
		796366300	71-150 bar
		796366400	151-215 bar
		796366500	216-265 bar

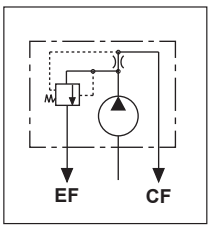
VS — **MAIN RELIEF VALVE**

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

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

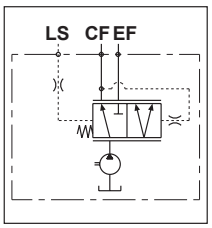


VP1

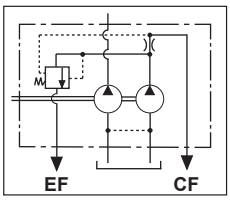


Priority flow valve, excess flow available to second actuator.

VPD1

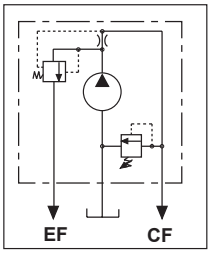


Load sensing priority valve with dynamic signal without main relief valve.



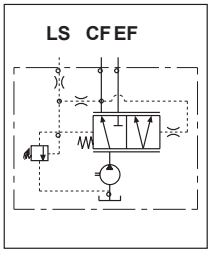
Multiple pump with Priority flow valve available. (Example VP1)

VPS1



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

VPDS1



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

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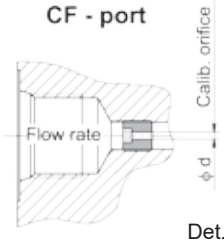
VP1-VPS1	**PRESSURE COMPENSATED PRIORITY FLOW VALVES**
VPD1-VPDS1	**LOAD SENSING PRIORITY VALVES**

Pressure Compensated Priority Flow Valve

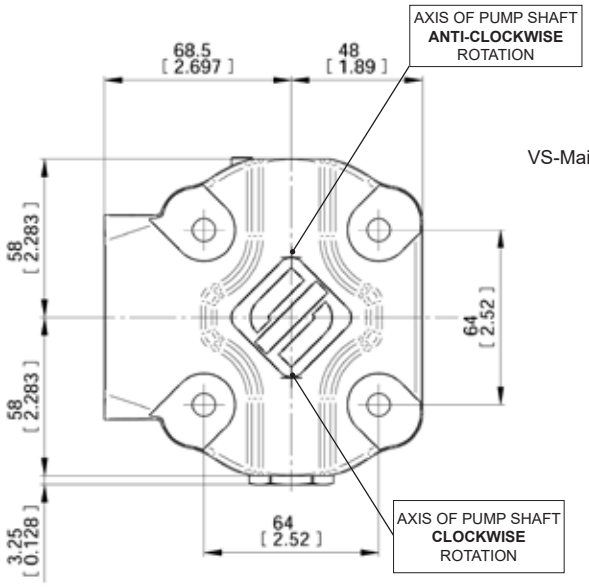
Flow Rate Table

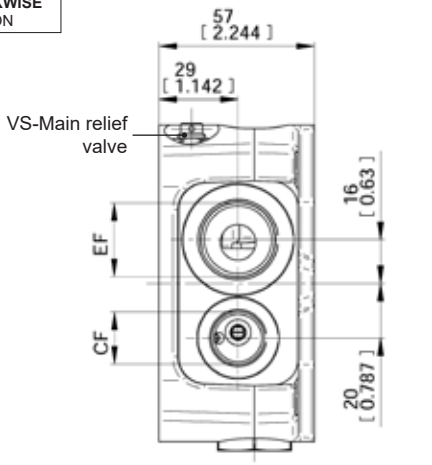
CF - port



Det. A-A

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





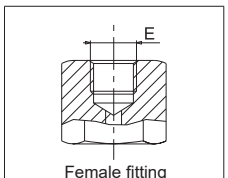
Threaded Port	
CF= Priority flow port	**EF= Excess flow port**
G 3/8	G 3/4
SAE8 3/4 - 16 UNF - 2B	SAE12 1-1/16 - 12 UN - 2A

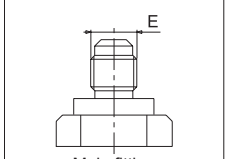
Code	Part Number
VP1 - VPS1	Please contact our sales department

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

VP1	VPS1
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

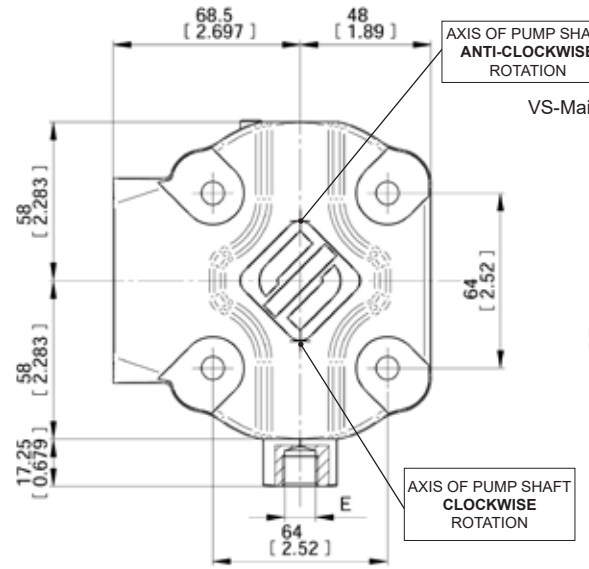
Load Sensing Priority Valve

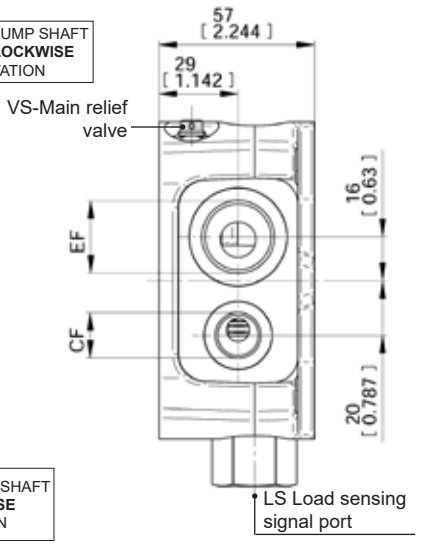




E
G 1/4
SAE4 7/16 - 20 UNF - 2B

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





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

Code	Part Number
VPD1 - VPDS1	Please contact our sales department

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

VPD1	VPDS1
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

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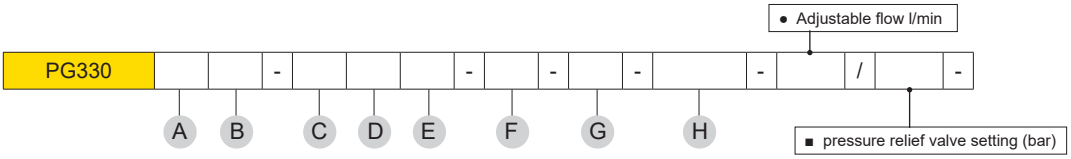

A	CODES	DISPLACEMENTS	
	23	23.4 cm³/rev.	*1.43 cu.in/rev.*
	28	28.6 cm³/rev.	*1.74 cu.in/rev.*
	34	34.4 cm³/rev.	*2.1 cu.in/rev.*
	40	40.3 cm³/rev.	*2.46 cu.in/rev.*
	47	47.5 cm³/rev.	*2.89 cu.in/rev.*
	55	55.2 cm³/rev.	*3.37 cu.in/rev.*
	64	64.3 cm³/rev.	*3.92 cu.in/rev.*
	72	73.4 cm³/rev.	*4.48 cu.in/rev.*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

B	ROTATION	CODES
	Clockwise	D
	Anti-clockwise	S
	Reversible	R

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

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

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

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

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

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

How to order Single pump: PG330 28D, ports European (P), drive shaft (38), mounting flange (P2) **PG330-28D-P38P2**
How to order Single pump with VPDS1:
PG330 23D, ports GAS-BSPP (G), drive shaft (67), mounting flange (Z2), Load sensing priority valve with dinaminc signal and main relief valve (VDPS1) **PG330-23D-G67Z2-VPDS1/200**

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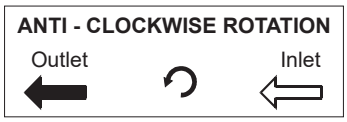
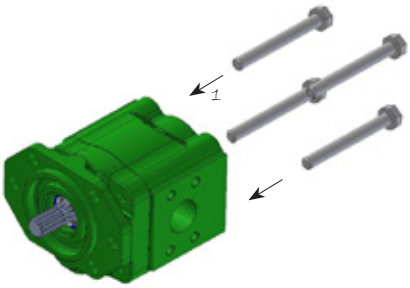
Single Pump Changing Rotation Instructions

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

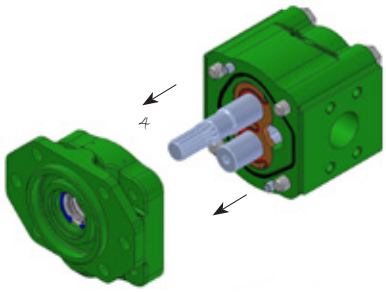




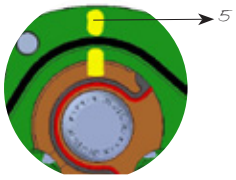
1 - Loosen and fully unscrew the bolts.

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.

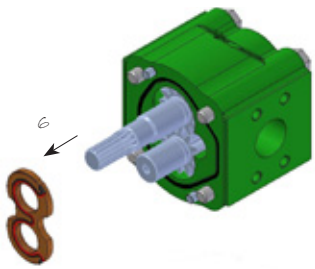


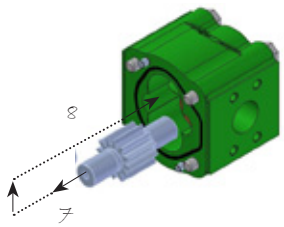
4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



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

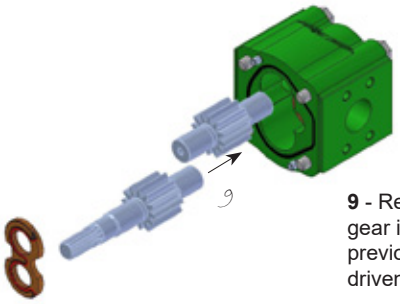
6 - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.



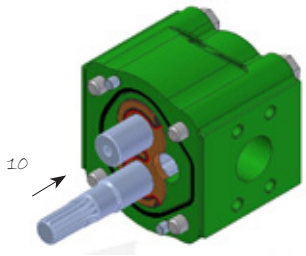


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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.



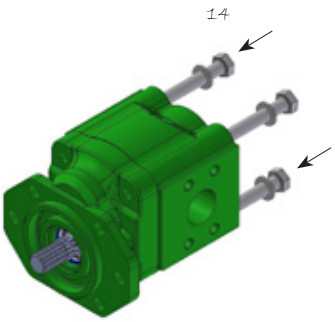
10 - Replace the bushing and thrust plate taking care that:
- marks are located as on the picture
- surface containing the seal is visible
- seal and its protection are correctly located.

11 - Clean the body and mounting flange facing surfaces.

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

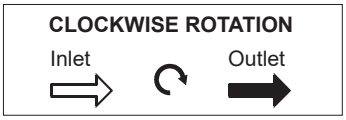
13 - Refit the mounting flange, turned 180° from its original position.

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



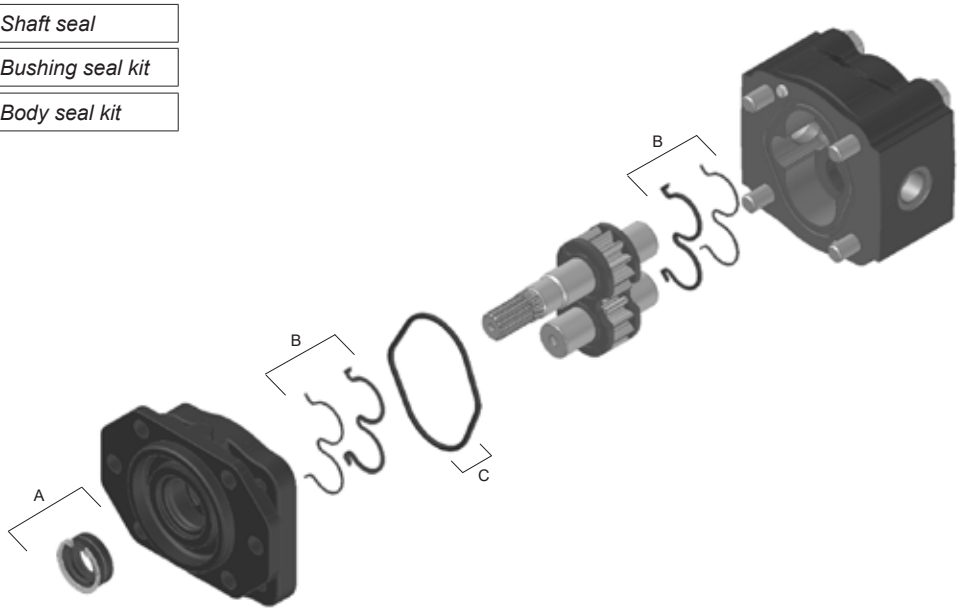
15 - Check that the shaft rotates freely.

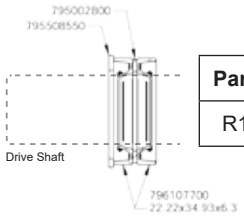
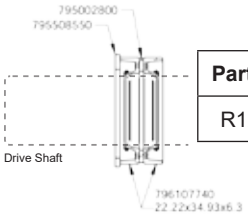
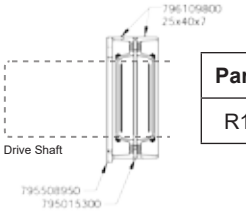
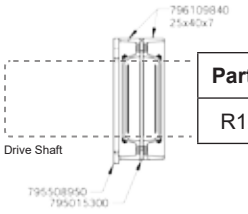
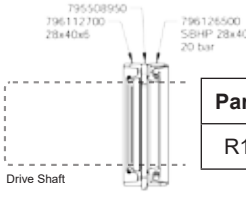
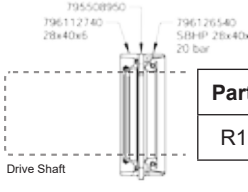
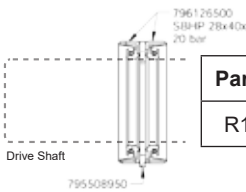
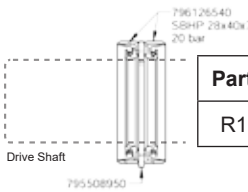
16 - Mark on the flange the new direction of rotation.



Unidirectional Pump Seal Spare Parts Kit

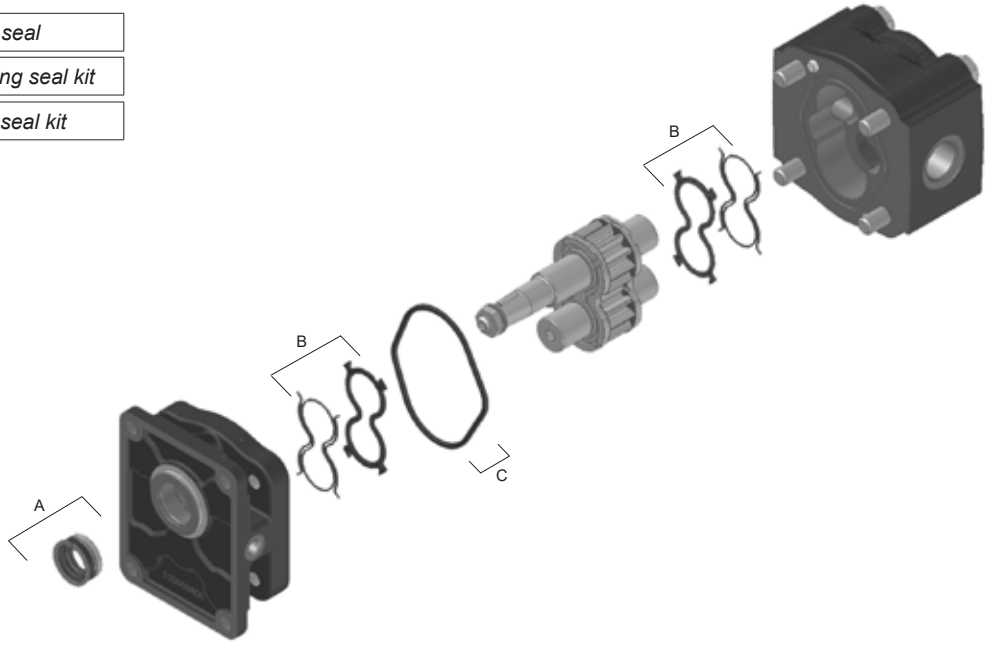
A	*Shaft seal*
B	*Bushing seal kit*
C	*Body seal kit*

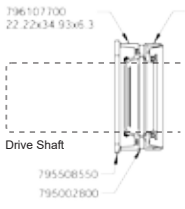
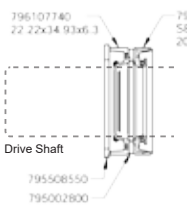
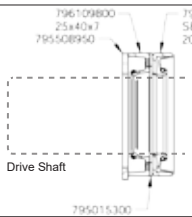
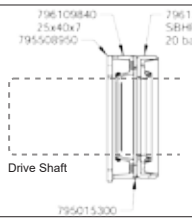
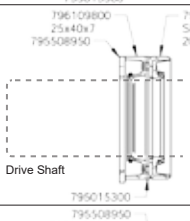
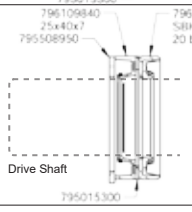
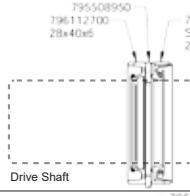
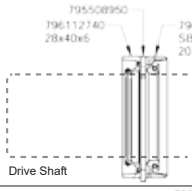
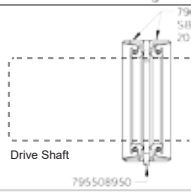
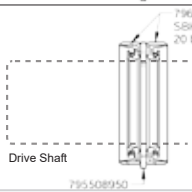


SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND	
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)
38P2	**Part Number** R15170010	 **Part Number** R12940010	**Part Number** R15170013	 **Part Number** R12940020
55S3 56S3 58S3 87S3 88S3	**Part Number** R15170020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

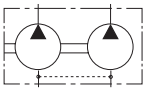
Bidirectional Pump Seal Spare Parts Kit

A	*Shaft seal*
B	*Bushing seal kit*
C	*Body seal kit*

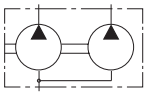


SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND	
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)
38P2	Part Number R15170350	 Part Number R12940080	Part Number R15170360	 Part Number R12940083
55S3 56S3 58S3 87S3	Part Number R15170370	 Part Number R15170140	Part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

PG330 Multiple Pump - Dimensions and Technical Data



DOUBLE GEAR PUMPS with individual inlet port



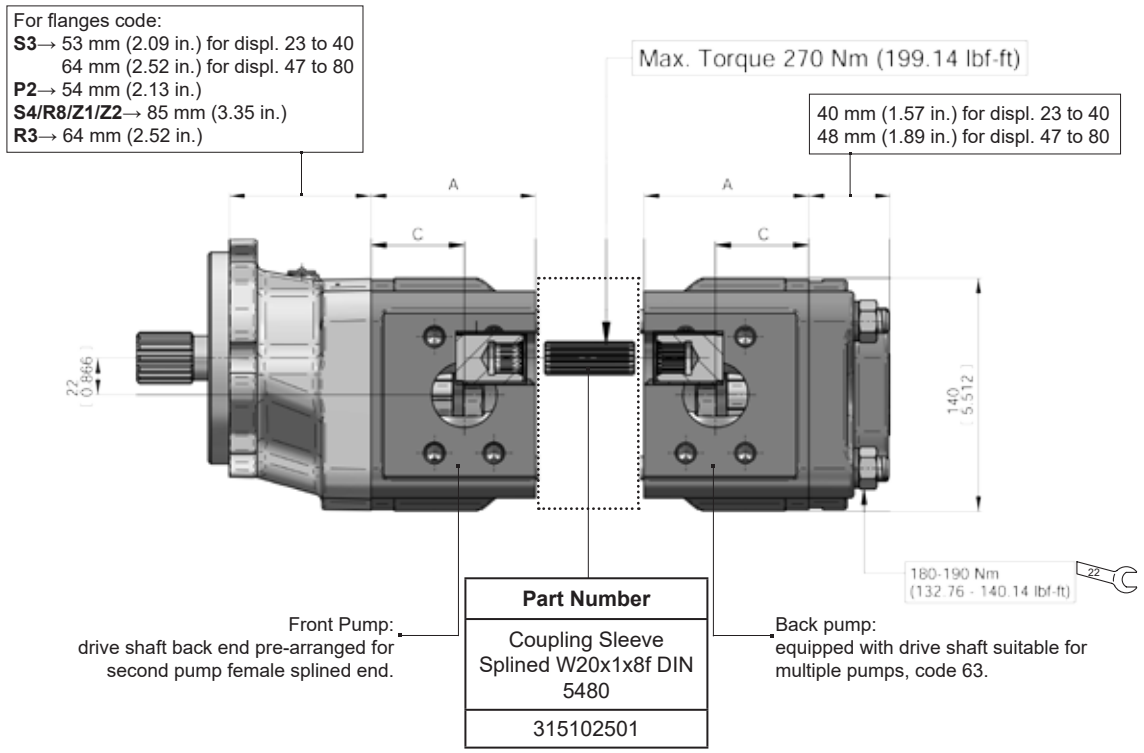
DOUBLE GEAR PUMPS with common inlet port

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

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

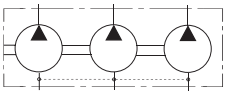
*Values of pressure with configuration **with Shaft 38-Flange P2** on the displacement 55-64-72, due to max Torque of 250 Nm.
Displacement 80 not available.

Max Speed must be lowered by 10% for system working continuosly at p^1 pressure.
Max pressure must be lowered by 10% for birectional pump.

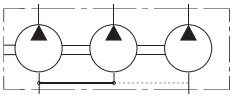


E0.151.0721.14.00IM00

PG330 Triple Pump - Dimensions and Technical Data



TRIPLE GEAR PUMPS
with individual inlet port

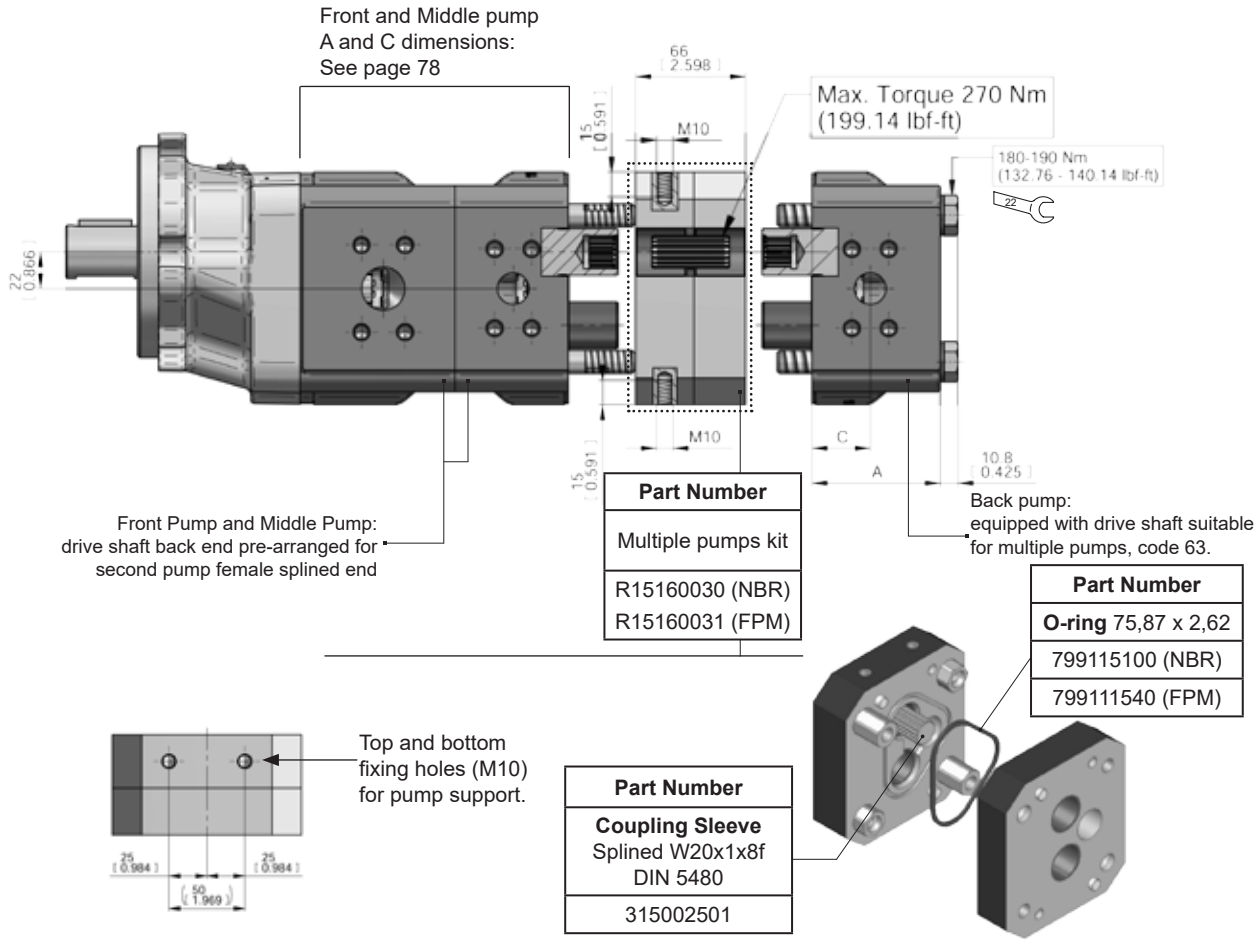


TRIPLE GEAR PUMPS
with common inlet port

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

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

Max Speed must be lowered by 10% for system working continuosly at p^1 pressure.
Max pressure must be lowered by 10% for birectional pump.



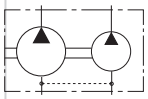
Part Number
Multiple pumps kit
R15160030 (NBR) R15160031 (FPM)

Part Number
O-ring 75,87 x 2,62
799115100 (NBR)
799111540 (FPM)

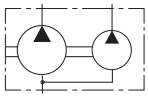
Part Number
Coupling Sleeve Splined W20x1x8f DIN 5480
315002501

E0.151.0721.14.00IM00

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.**

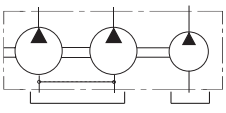
TYPE	Displacement		Dimension A		Dimension C (Front and Back pump)					
					Type port G-R		Type port P		Type port W-S	
	cm³/rev	*cu.in/rev*	mm	*in*	mm	*in*	mm	*in*	mm	*in*
PG330 - 23	23.4	*1.43*	72	*2.83*	35	*1.38*	35	*1.38*	*33*	*1.30*
PG330 - 28	28.6	*1.74*	76	*2.99*	38	*1.49*	34	*1.34*	*36*	*1.42*
PG330 - 34	34.4	*2.10*	80.5	*3.17*	42.5	*1.67*	37.5	*1.48*	*40*	*1.57*
PG330 - 40	40.3	*2.46*	85	*3.35*	47	*1.85*	42	*1.65*	*44.5*	*1.75*
PG330 - 47	47.4	*2.89*	96	*3.78*	50	*1.97*	50	*1.97*	*50*	*1.97*
PG330 - 55	55.2	*3.37*	102	*4.02*	56	*2.20*	52	*2.05*	*56*	*2.20*
PG330 - 64	64.3	*3.92*	109	*4.29*	58	*2.28*	58	*2.28*	*58*	*2.28*
PG330 - 72	73.4	*4.48*	116	*4.57*	61	*2.40*	61	*2.40*	*61*	*2.40*
PG330 - 80	80.6	*4.91*	122	*4.80*	65	*2.56*	65	*2.56*	*65*	*2.56*

TYPE		Displacement		Dimension A (2PGE-2PE)		Dimension C (2PGE-2PE)	
		cm³/rev	*cu.in/rev*	mm	*in*	mm	*in*
-	2PE - 3.2	3.2	*0.19*	47.1	*1.83*	23.55	*0.93*
-	2PE - 3.9	3.9	*0.24*				
-	2PE - 4.5	4.6	*0.27*				
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*
-	2PE - 10.5	10.6	*0.65*	56.3	*2.35*	28.15	*1.11*
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*				
2PGE - 13.8	2PE - 13.8	13.8	*0.84*	63.5	*2.5*	31.75	*1.25*
2PGE - 16	2PE - 16	16.6	*1.01*	67.5	*2.65*	33.75	*1.25*
2PGE - 19	2PE - 19	19.4	*1.15*	75.6	*2.97*	37.80	*1.49*
2PGE - 22.5	2PE - 22.5	22.9	*1.37*	81	*3.19*	40.5	*1.59*
2PGE - 26	2PE - 26	25.8	*1.58*	86.8	*3.42*	43.4	*1.71*

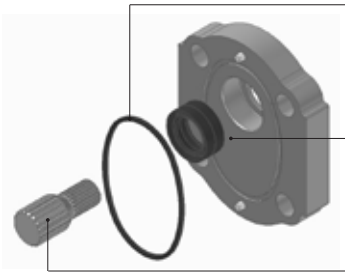
2PE and 2PGE can be single or multiple and/or with built in valve in the rear cover.

Available AS configuration

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

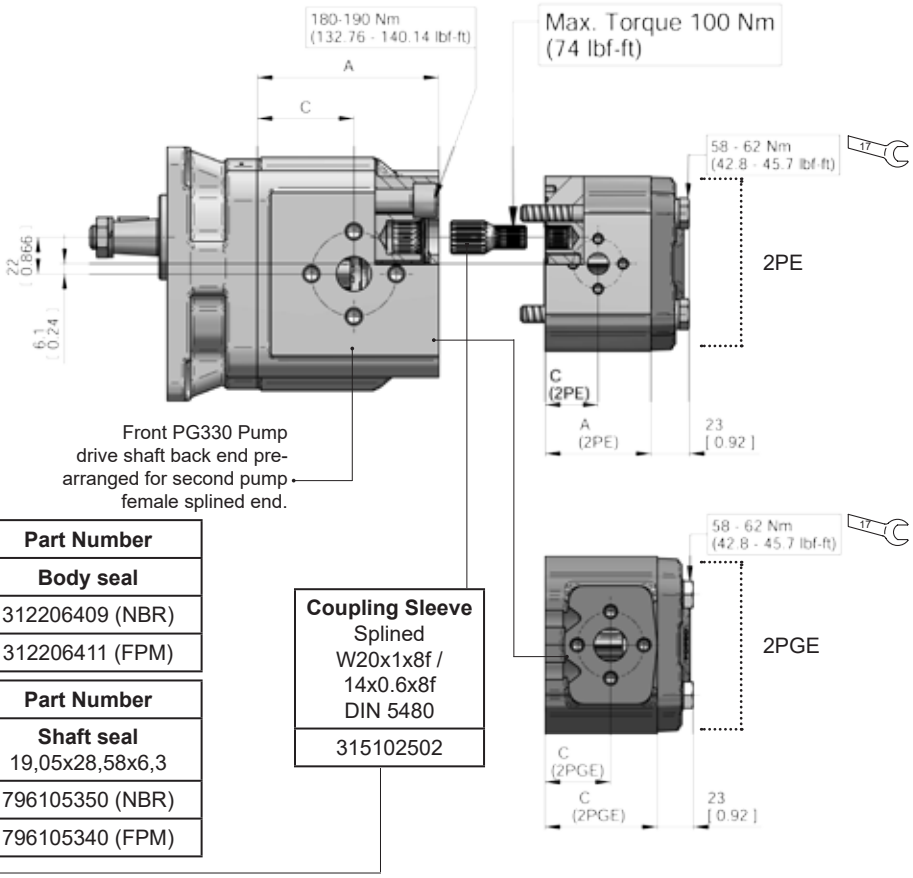


MULTIPLE GEAR PUMPS with separated stages
(Example: **Code AS2**= Separated inlet between second and third stage.)



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

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

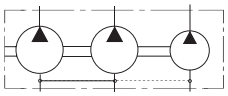


Front PG330 Pump drive shaft back end pre-arranged for second pump female splined end.

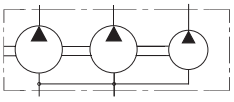
Coupling Sleeve
Splined W20x1x8f / 14x0.6x8f DIN 5480
315102502

E0.151.0721.14.00IM00

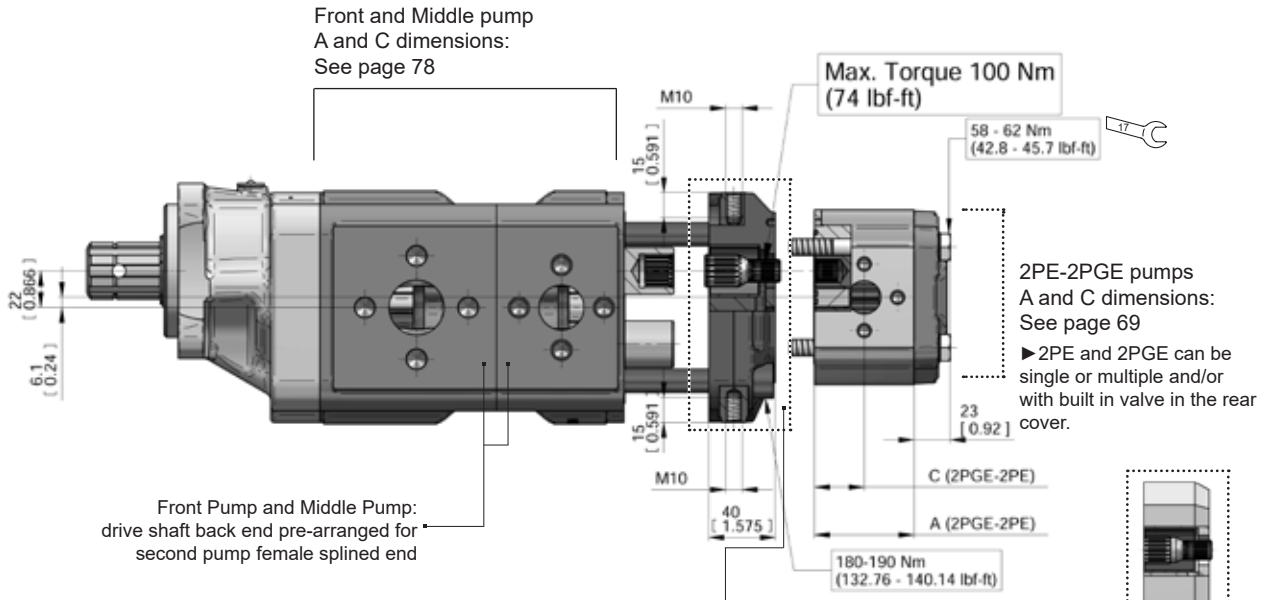
PG330 Multiple with Pump 2PE or 2PGE piggy back pump - Dimensions



MULTIPLE GEAR PUMPS
with individual inlet port

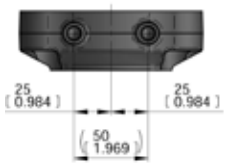


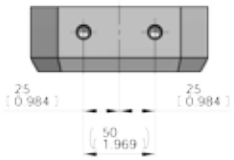
MULTIPLE GEAR PUMPS
with common inlet port on first two stages



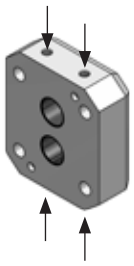
Part Number	
Multiple pumps kit	
R15160050 (Displ. from 23 to 40)	R15160060 (Displ. from 47 to 80)

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

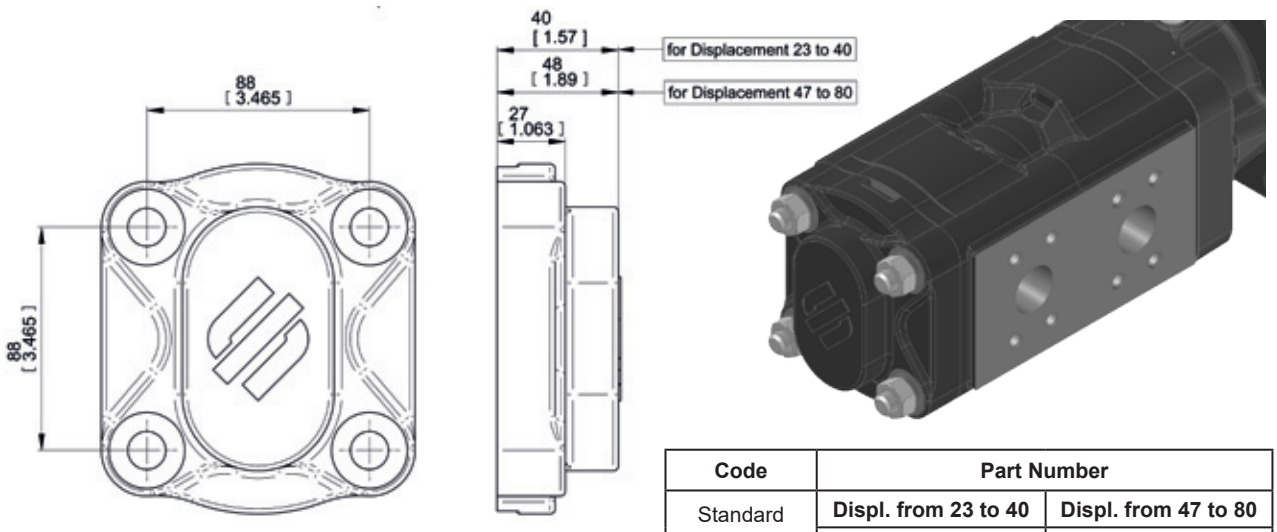




Top and bottom fixing holes (M10) for pump support.



Rear Cover - Dimensions



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

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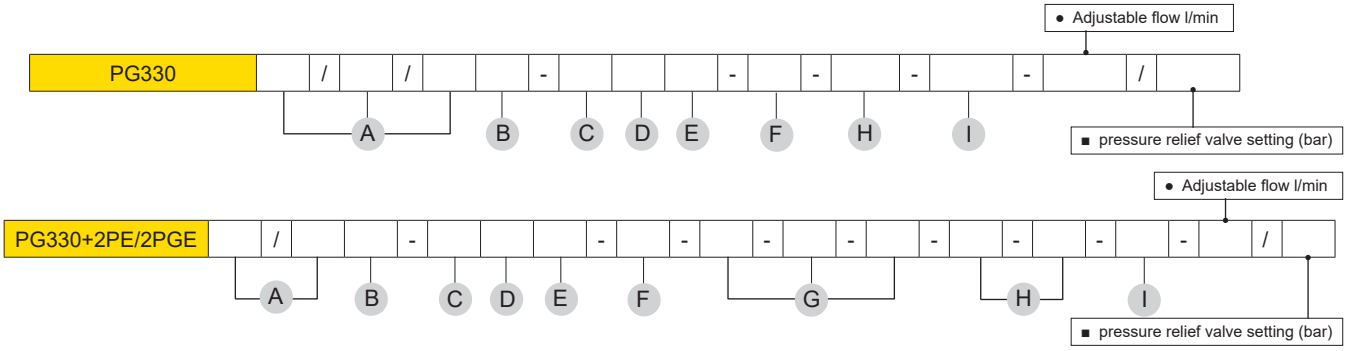
HOW TO ORDER MULTIPLE PUMP



A

CODES	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	CODES
Clockwise	D
Anti-clockwise	S
Reversible	R

C

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

D

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

I

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

H

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

G

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

F

SEAL	CODE
Buna standard (standard configuration)	-
Viton	V

E

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

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

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Gear Motors

Cast Iron body:
2MGE/MG330

Features

E0.100.0721.02.011M00

Symbol Designation

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

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

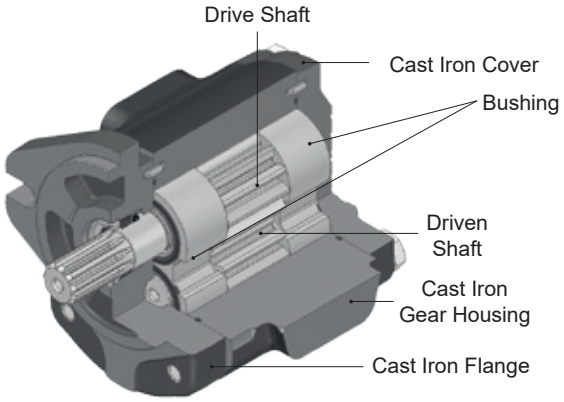
2MGE and MG330 Features

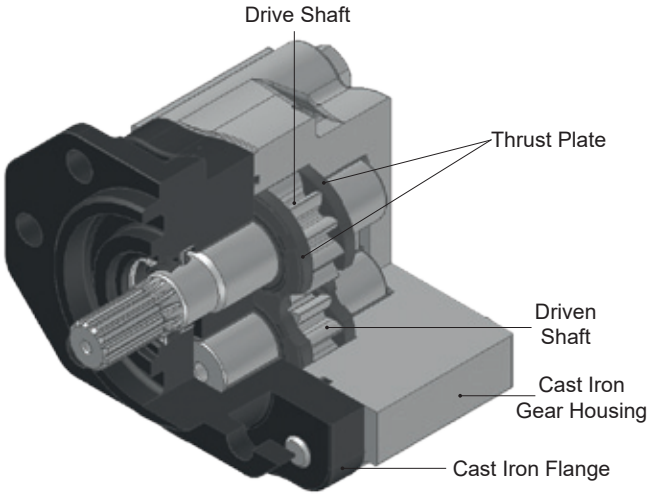
The MG330 and 2MGE Series Cast Iron Motors has been specifically designed for high flow applications, demanding peak performance and long life in extreme operating conditions. MG330 optimized for high volume and for OEM's customers. Displacements available:

2MGE: 6.5 cm^3/rev to 26.6 cm^3/rev (from 0.40 cu.in/rev to 1.62 cu.in/rev)
MG330: 23.4 cm^3/rev to 73.4 cm^3/rev (from 1.43 cu.in/rev to 4.48 cu.in/rev)

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

- Rated pressure up to 250 bar (*3625psi*).
- Speed up to 4000 rpm.
- Available in uni and bi-directional version for all the frame sizes, displacements and configurations.
- High volumetric efficiency by innovative design and accurate control of machining tolerances.
- DU bearings to ensure high pressure capability.
- 12 teeth integral gear and shaft.
- Cast iron contruction.
- Double shaft seals in all motor series, SBHP High Pressure Shaft Seals are employed in all the motors.
- Nitrile seals as standard and Viton seals in high temperature applications.
- Available with different valves and circuit configurations built-in rear cover.
- All Motors 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.





2MGE

- Cast iron body, flange and cover.
- 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.

MG330

- Two pieces compact construction made with high strenght cast iron. Cast iron offers thermal stability, contamination resistance and strenght 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 is ideal for fitting into narrow spaces.

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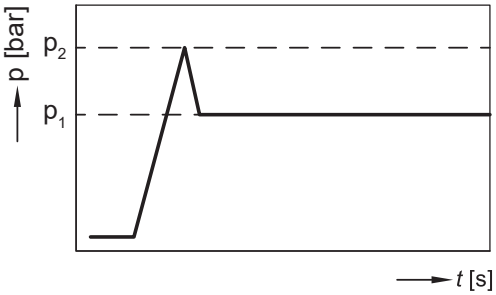
Definition of Pressures



p_2 = starting pressure
(depending on the application, this must be taken into consideration when setting the pressure of the hydraulic system's pressure relief valve).

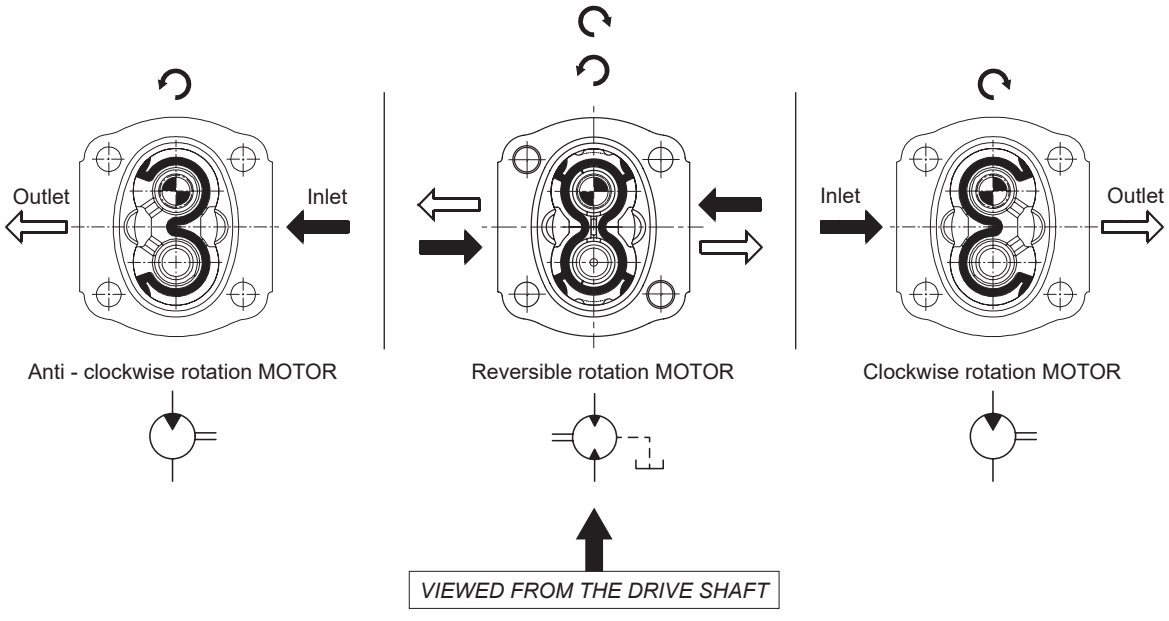
p_1 = max. continuous pressure

Drive Shaft

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

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

Motor Rotation



Working Conditions

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

Max pressure drain		20 bar *(290 psi)*
Viscosity	Minimum operating fluid viscosity	12 mm²/sec
	Permitted viscosity range	12 - 800 mm²/sec
	Max starting viscosity	2000 mm²/sec
	Suggested fluid viscosity range	20 ÷ 80 mm²/sec
Temperature	fluid operating temperature range	-25 ÷ 80 °C
	fluid operating temperature range with FPM seals (Viton)	-15 ÷ 110°C
	fluid operating temperature range with HNBR* seals	-30 ÷ 110°C

* Available on request

E0.100.0721.02.01IM00

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 continuos duty. The highest value is recommended when the temperature difference is low and/or for intermittent duty.

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 β_x=75	15 µm	25 µm

Common Formulas

Based on SI units

Input flow: $Q = \frac{V \cdot n}{1000 \cdot \eta_v}$ l/min

Output torque: $M = \frac{V \cdot \Delta p \cdot \eta_m}{20 \cdot \pi}$ Nm

Output power: $P = \frac{M \cdot n}{9550} = \frac{Q \cdot \Delta p \cdot \eta_t}{600}$ kW

Variables: SI units [US units]

Based on US units

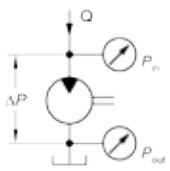
Input flow: $Q = \frac{V \cdot n}{231 \cdot \eta_v}$ [US gal/min]

Output torque: $M = \frac{V \cdot \Delta p \cdot \eta_m}{2 \cdot \pi}$ [lbf•in]

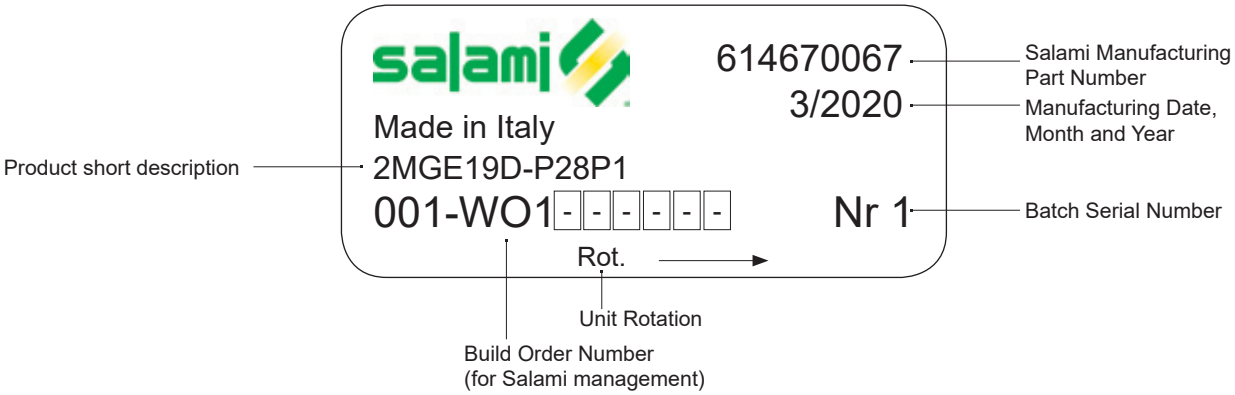
Output power: $P = \frac{M \cdot n}{63\,025} = \frac{Q \cdot \Delta p \cdot \eta_t}{1714}$ [hp]

LEGENDA

V= Displacement	cm³/rev [in³/rev]
P_{out}= Outlet pressure	bar [psi]
P_{in}= Inlet pressure	bar [psi]
$\Delta p = P_{out} - P_{in}$ (system pressure)	(rpm)
n= Speed min^{-1}	
$\eta_{m=}$ Mechanical efficiency	
$\eta_{v=}$ Volumetric efficiency	
$\eta_{t=}$ Overall efficiency ($\eta_v \cdot \eta_m$)	



Identification Label



2MGE

Cast Iron Gear Motors

Technical/Spare Parts Catalogue

E0.146.0721.14.00IM00

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

salami
FLUID POWER SYSTEMS ®

Final revised edition - July 2021
The data in this catalogue refers to the standard product.The policy of Salami S.p.A. consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information.
If any doubts, please contact our sales department.

Contents

E0.146.0721.14.00IM00

Symbol Designation

INFORMATION:
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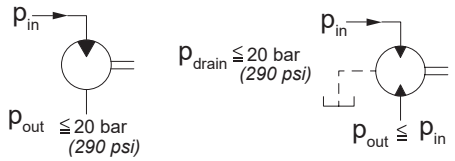
2MGE Motor - Dimensions and Technical Data

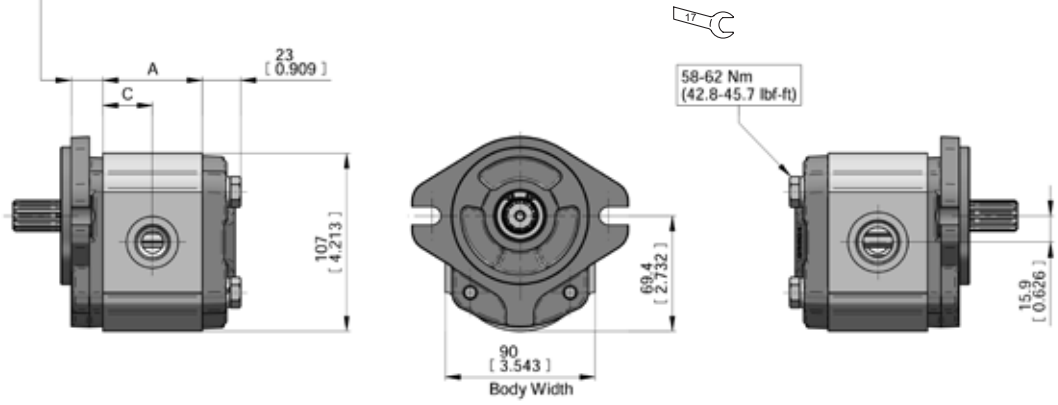


Displacements up to 26.6 cm3/rev - *1.62 cu.in./rev*
Pressure up to 280 bar - *4060 psi*

TYPE	Displacement		Dimension A		Dimension C		Max continuous pressure p[1]		Max starting pressure p[2]		Min. speed	Max. speed	Weight	
	cm³/rev	*cu.in/rev*	mm	*in*	mm	*in*	bar	*psi*	bar	*psi*	min⁻¹		kg	*lbs*
2MGE - 6.5	6.5	*0.40*	49.95	*1.97*	25	*0.98*	250	*3625*	280	*4060*	600	4000	4.8	*10.6*
2MGE - 8.3	8.2	*0.50*	52.8	*2.07*	26.4	*1.04*	250	*3625*	280	*4060*	600	3600	5.0	*11.0*
2MGE - 11.3	11.5	*0.68*	59.7	*2.35*	29.75	*1.17*	250	*3625*	280	*4060*	600	3500	5.2	*11.5*
2MGE - 13.8	13.8	*0.84*	63.5	*2.50*	31.75	*1.25*	250	*3625*	280	*4060*	600	3400	5.4	*11.9*
2MGE - 16	16.6	*1.01*	67.5	*2.65*	39.5	*1.56*	250	*3625*	280	*4060*	450	3200	6.6	*14.5*
2MGE - 19	19.4	*1.18*	75.6	*2.97*	39.5	*1.56*	220	*3190*	240	*3480*	450	3200	7.1	*15.6*
2MGE - 22.5	22.9	*1.37*	81	*3.19*	47.5	*1.87*	200	*2900*	220	*3190*	450	3000	7.5	*16.5*
2MGE - 26	26.6	*1.62*	86.8	*3.42*	47.5	*1.87*	180	*2615*	200	*2900*	450	2850	7.8	*17.2*

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 26

For flanges code:
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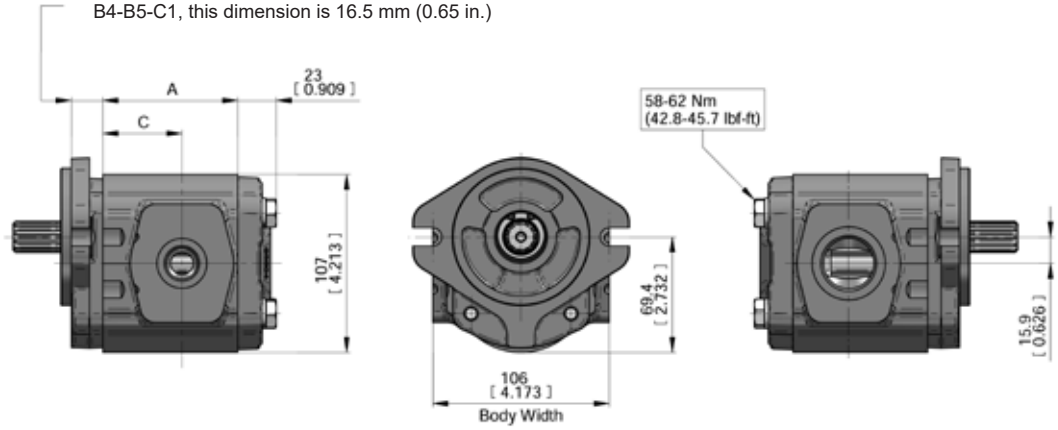
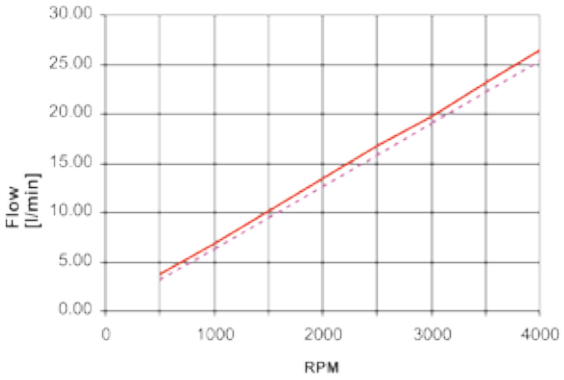
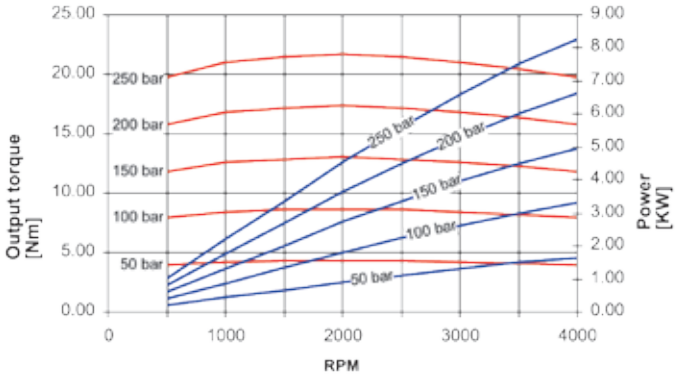
B4-B5-C1, this dimension is 16.5 mm (0.65 in.)



Motor Performance Charts

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





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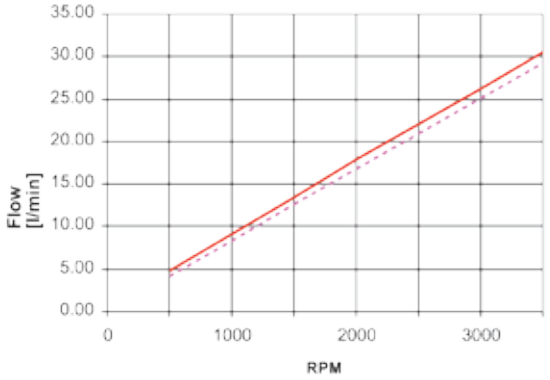
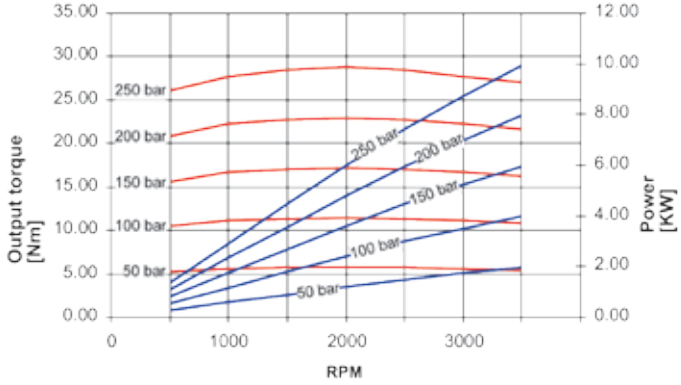
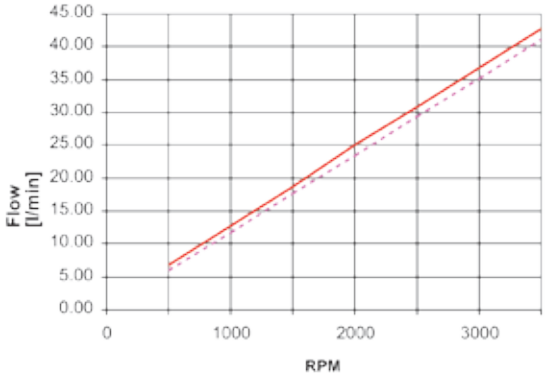
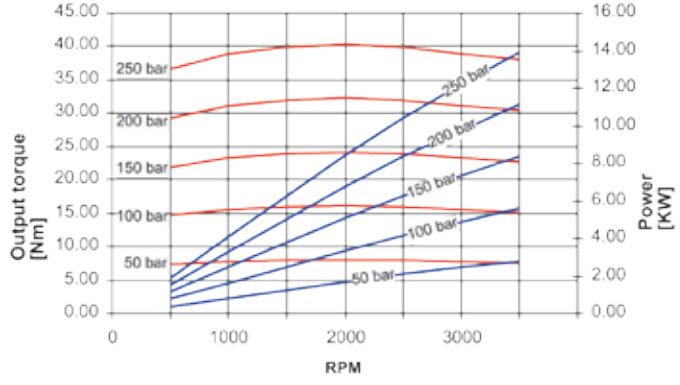




2MGE - 8.3





2MGE - 11.3

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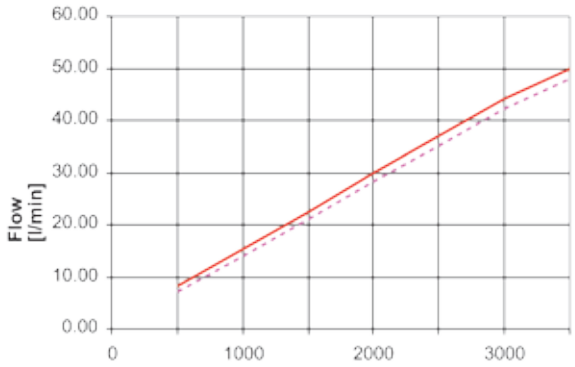
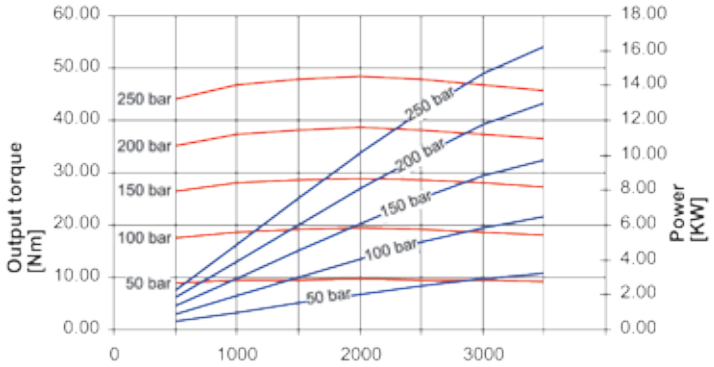
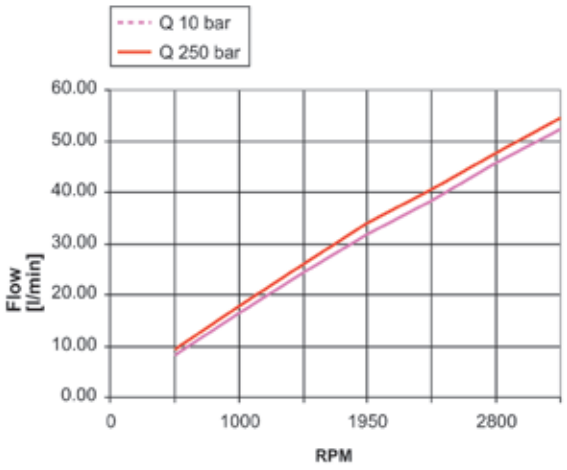
Motor Performance Charts

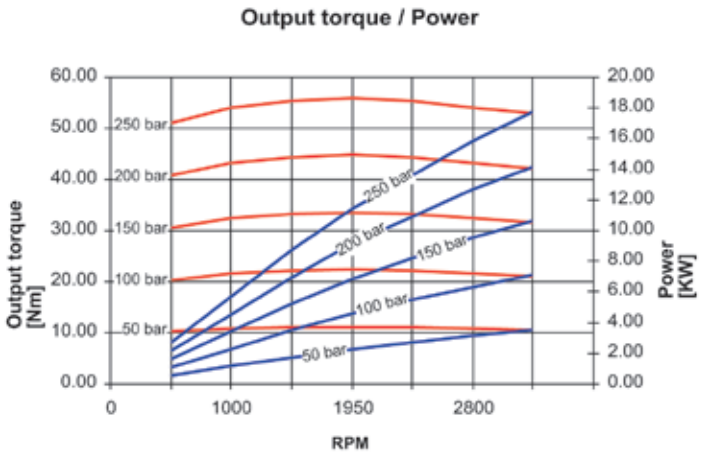
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



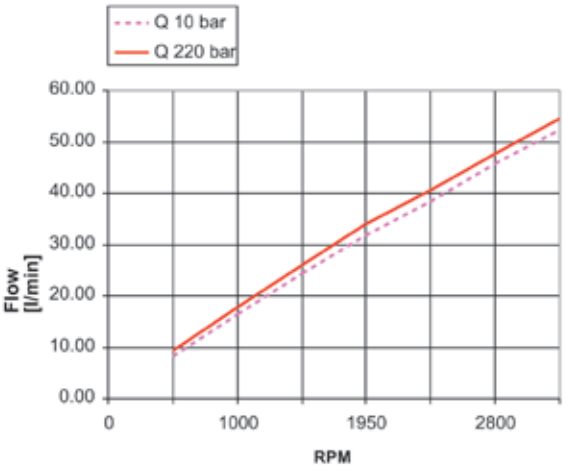


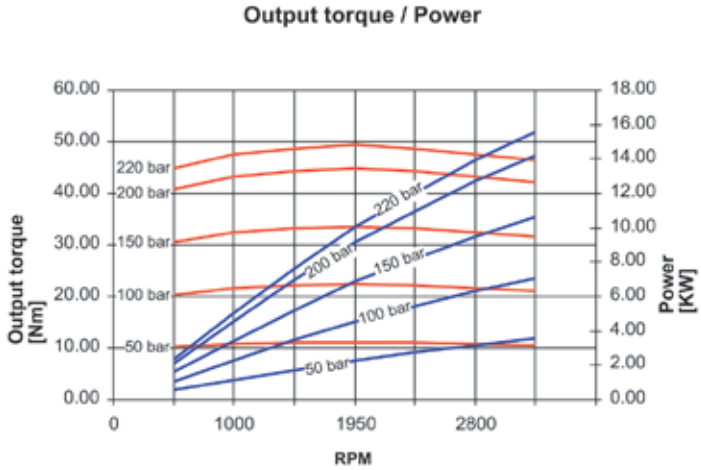
2MGE - 13.8





2MGE - 16



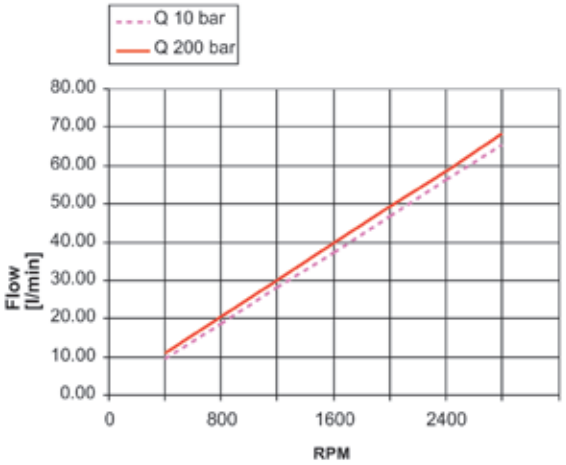


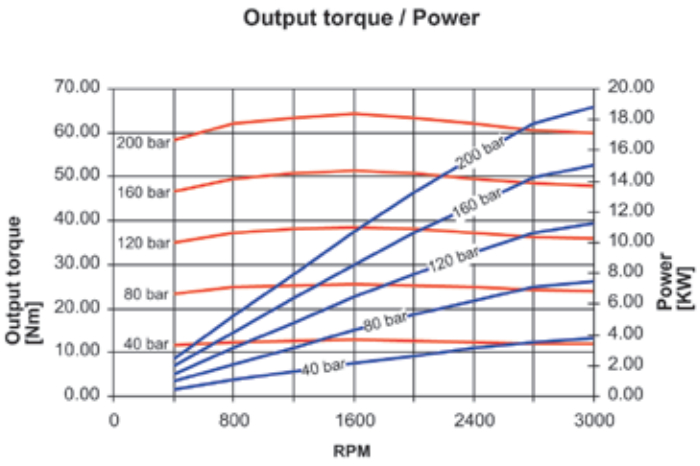
2MGE - 19

E0.146.0721.14.00IM00

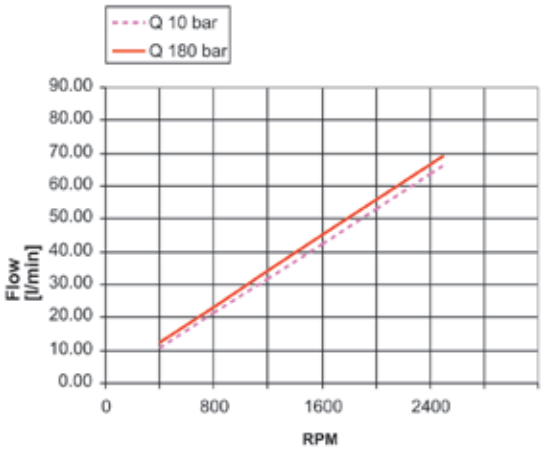
Motor Performance Charts

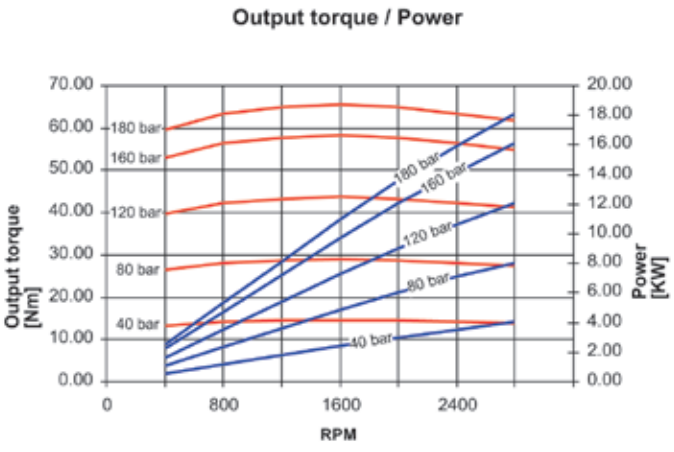
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C





2MGE - 22.5

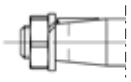
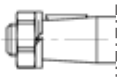
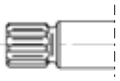
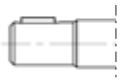




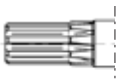
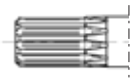
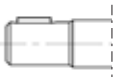
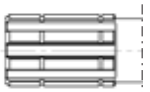
2MGE - 26

E0.146.0721.14.00IM00

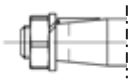
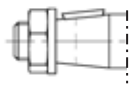
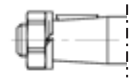
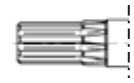
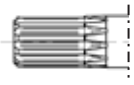
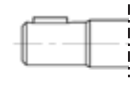
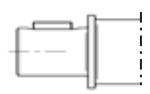
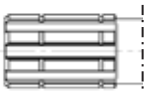
Shaft and Flange Combinations

2MGE				
	CODE **P1**	CODE **B1**	CODE **B2-B3**	CODE **B4-B5**
	FLANGES			
SHAFT END  CODE **03**			03B2 03B3	
 CODE **25**		25B1		25B4 25B5
 CODE **28**	28P1			
 CODE **62**	62P1	62B1		62B4 62B5
 CODE **82**	82P1			

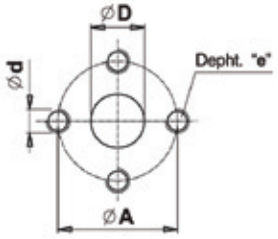
Shaft and Flange Combinations

2MGE		 CODE **S2**	 CODE **S6**	 CODE **T1**	 CODE **Z2**
		FLANGES		**FLANGES WITH OUTRIGGER BEARING**	
SHAFT END	 CODE **52**	52S2	52S6		
	 CODE **54**	54S2	54S6		
	 CODE **82**	82S2	82S6		
	 CODE **85**	85S2	85S6		
CONTINENTAL SHAFT END	 CODE **67**				67Z2
	 CODE **73**			73T1	

Continental Shaft and Flange With Outrigger Bearing Combinations

2MGE								
		CODE **CL**	CODE **CF**	CODE **CS**	CODE **CB**	CODE **CP**	CODE **CSB**	CODE **Z1**
		FLANGES WITH OUTRIGGER BEARING						
CONTINENTAL SHAFT END	 CODE **25**	25CL	25CF		25CB			
	 CODE **26**	26CL	26CF		26CB			
	 CODE **28**					28CP		
	 CODE **52**			52CS				
	 CODE **54**			54CS				
	 CODE **82**			82CS				
	 CODE **85**			85CS				
	 CODE **87**						87CSB	
	 CODE **66**							66Z1

Flanged Ports



code P

Flanged ports
european standard

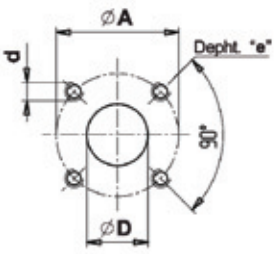
M6	8 Nm (5.9 lbf-ft)
M8	20 Nm (14.7 lbf-ft)

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

MOTORS	OUTLET				INLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 6.5 to 16	13 *(0.51")*	30 *(1.18")*	M6	13 *(0.51")*	13 *(0.51")*	30 *(1.18")*	M6	13 *(0.51")*
From 19 to 26	20 *(0.79")*	40 *(1.57")*	M8	13 *(0.51")*	20 *(0.79")*	40 *(1.57")*	M8	13 *(0.51")*



code B

Flanged ports
german standard

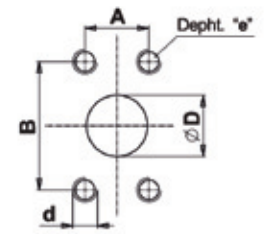
M6	8 Nm (5.9 lbf-ft)

UNI-DIRECTIONAL

MOTORS	OUTLET				INLET			
	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")*							

BI-DIRECTIONAL

MOTORS	OUTLET				INLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 6.5 to 16	15 *(0.59")*	35 *(1.38")*	M6	13 *(0.51")*	15 *(0.59")*	35 *(1.38")*	M6	13 *(0.51")*
From 19 to 26	20 *(0.79")*	40 *(1.57")*	M6	13 *(0.51")*	20 *(0.79")*	40 *(1.57")*	M6	13 *(0.51")*



code W

Flanged ports
SAE J518
METRIC THREAD

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

UNI-DIRECTIONAL

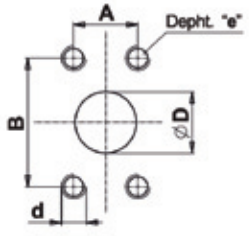
MOTORS	OUTLET					INLET				
	ØD	B	A	d	e	ØD	B	A	d	e
From 16 to 19	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*	M10	15 *(0.59")*	12.7 *(0.50")*	38.1 *(1.50")*	17.5 *(0.69")*	M8	15 *(0.59")*
From 22.5 to 26	25.4 *(1.00")*	52.4 *(2.06")*	26.2 *(1.03")*	M10	15 *(0.59")*	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*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

BI-DIRECTIONAL

MOTORS	OUTLET					INLET				
	ØD	B	A	d	e	ØD	B	A	d	e
16	12.7 *(0.50")*	38.1 *(1.50")*	17.5 (0.69")	M8	15 *(0.59")*	12.7 *(0.50")*	38.1 *(1.50")*	17.5 *(0.69")*	M8	15 *(0.59")*
From 22.5 to 26	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*	M10	15 *(0.59")*	19 *(0.75")*	47.6 *(1.87")*	22.2 *(0.87")*	M10	15 *(0.59")*

E0.146.0721.14.00M00

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)

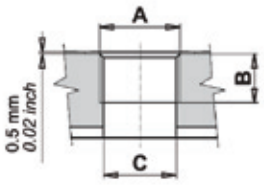
UNI-DIRECTIONAL

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

BI-DIRECTIONAL

MOTORS	OUTLET					INLET				
	ØD	B	A	d	e	ØD	B	A	d	e
16	12.7 *(0.50”)*	38.1 *(1.50”)*	17.5 *(0.69”)*	5/16-18 UNC	15 *(0.59”)*	12.7 *(0.50”)*	38.1 *(1.50”)*	17.5 *(0.69”)*	5/16-18 UNC	15 *(0.59”)*
From 22.5 to 26	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)

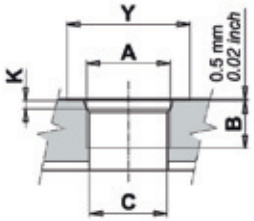
G1/2	60 Nm (44.3 lbf-ft)
G3/4	90 Nm (66.4 lbf-ft)
G1	130 Nm (95.8 lbf-ft)

UNI-DIRECTIONAL

MOTORS	OUTLET			INLET		
	A	B	C	A	B	C
From 6.5 to 19	G 3/4	17 *(0.67”)*	18 *(0.71”)*	G 1/2	15 *(0.59”)*	13 *(0.79”)*
From 22.5 to 26	G1	20 *(0.79”)*	25 *(0.98”)*			

BI-DIRECTIONAL

MOTORS	OUTLET			INLET		
	A	B	C	A	B	C
From 6.5 to 16	G 1/2	15 *(0.59”)*	13 *(0.79”)*	G 1/2	15 *(0.59”)*	13 *(0.79”)*
From 19 to 26	G 3/4	17 *(0.67”)*	20 *(0.79”)*	G 3/4	17 *(0.67”)*	20 *(0.79”)*



code R

Threaded ports
SAE (ODT)

SAE10	60 Nm (44.3 lbf-ft)
SAE12	90 Nm (66.4 lbf-ft)
SAE16	130 Nm (95.8 lbf-ft)

UNI-DIRECTIONAL

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

BI-DIRECTIONAL

MOTORS	OUTLET					INLET				
	A	B	C	Y	K	A	B	C	Y	K
From 6.5 to 16	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 19 to 26	1-1/16 12 UN (SAE 12)	19 *(0.75”)*	20 *(0.79”)*	41 *(1.61”)*	3.3 *(0.13”)*	1-1/16 12 UN (SAE 12)	19 *(0.75”)*	20 *(0.79”)*	41 *(1.61”)*	3.3 *(0.13”)*

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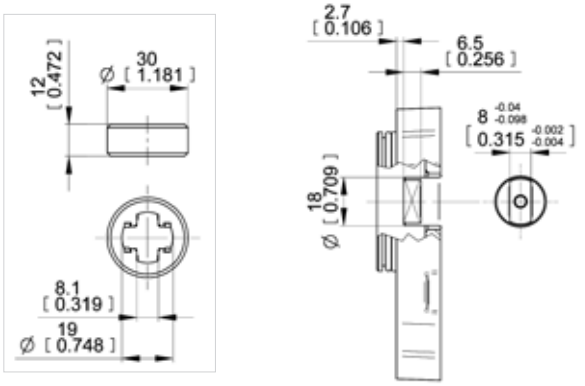
Drive Shaft



code 03	Max torque 70 Nm (620 lbf in)

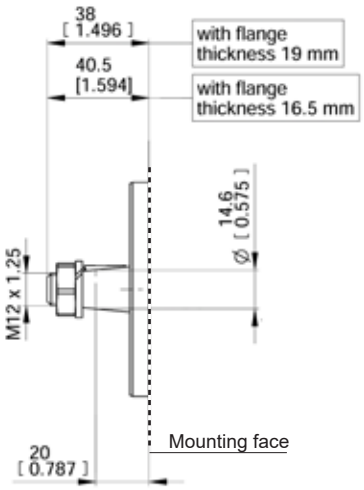
TANG DRIVE FOR ELECTRIC MOTORS (without shaft seal)

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 25	Max torque 130 Nm (1151 lbf in)

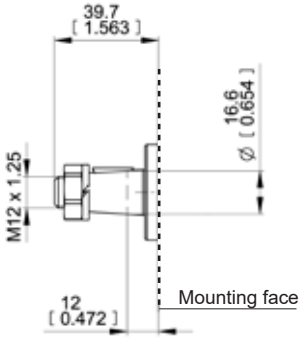
TAPERED 1:5

Woodruff Key
3,165x6,2

Washer
M12 TE-UNI 1751B

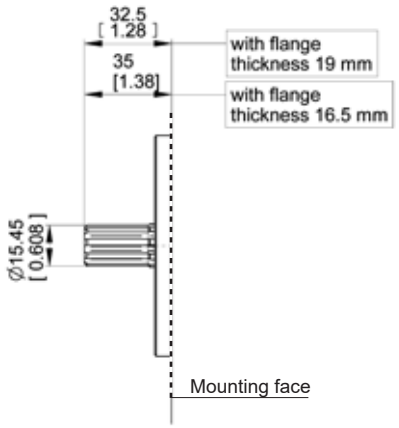
Nut
M12x1,25-UNI 5589
40 Nm-29.7 lbf-ft

Part Number
Kit Woodruff Key+Nut+Washer
R12280170



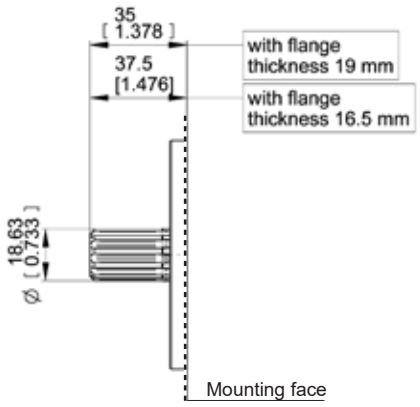
code 28	Max torque 130 Nm (1151 lbf in)

TAPERED 1:8



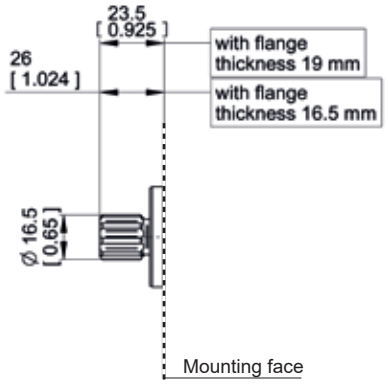
code 52	Max torque 110 Nm (974 lbt in)

SAE A 9T-16/32DP SPLINED



code 54	Max torque 160 Nm (1416 lbt in)

SAE A 11T-16/32DP SPLINED



code 62	Max torque 140 Nm (1239 lbt in)

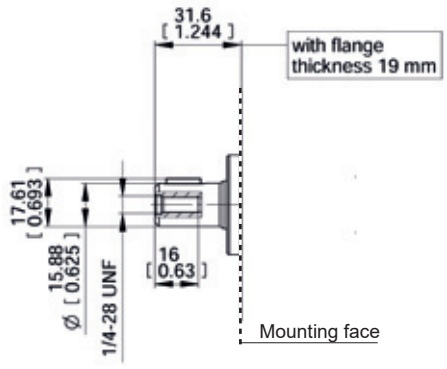
9 TEETH DIN 5482 SPLINED

E0.146.0721.14.00IM00

Drive Shaft

Key
3,97x3.97x12,7

Part Number
Key
796620700

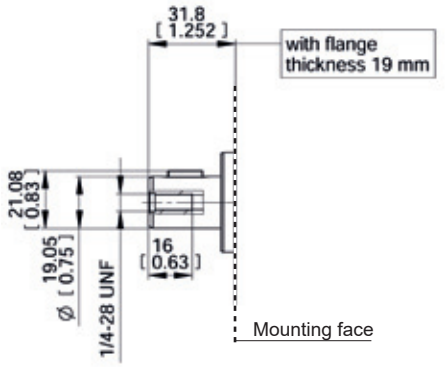


code 82	Max torque 75 Nm (664 lbt in)

5/8” SAE A PARALLEL

Key
4,76x4,76x12,7

Part Number
Key
796621000



code 85	Max torque 110 Nm (974 lbt in)

3/4” SAE A PARALLEL

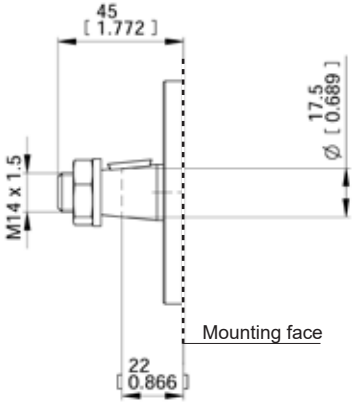
Continental Shaft

Woodruff Key
4x6,5 UNI 6606

Washer
M14 UNI 1751

Nut
M14x1,5 IS0 8675
40 Nm-29.7 lbf-ft

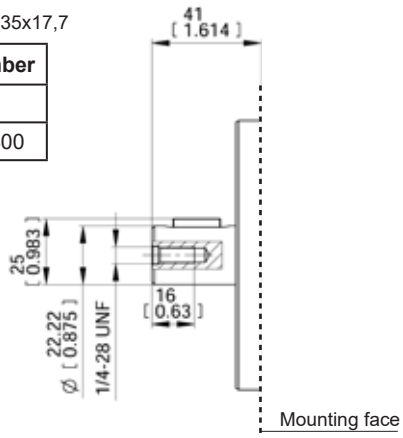
Part Number
Kit Woodruff Key+Nut+Washer
R12240080



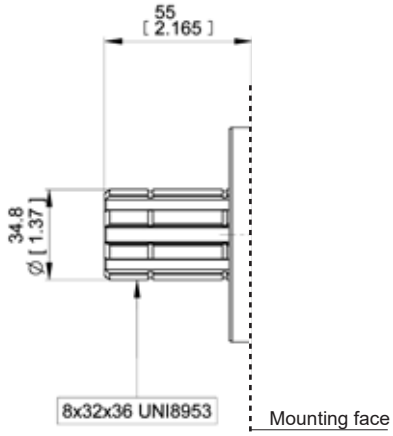
code 26	Max torque 100 Nm (885 lbt in)
TAPERED 1:5 (ONLY FOR CB, CL, CF)	

Key
6,35x6,35x17,7

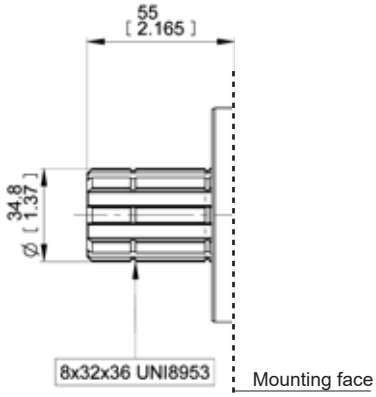
Part Number
Key
796620800



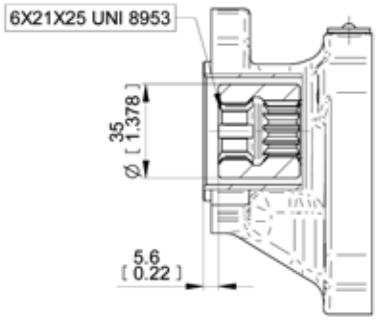
code 87	Max torque 200 Nm (1770 lbt in)
7/8” SAE B PARALLEL	



code 66	Max torque 200 Nm (1770 lbt in)
8X32X36 UNI 8953 SPLINED	



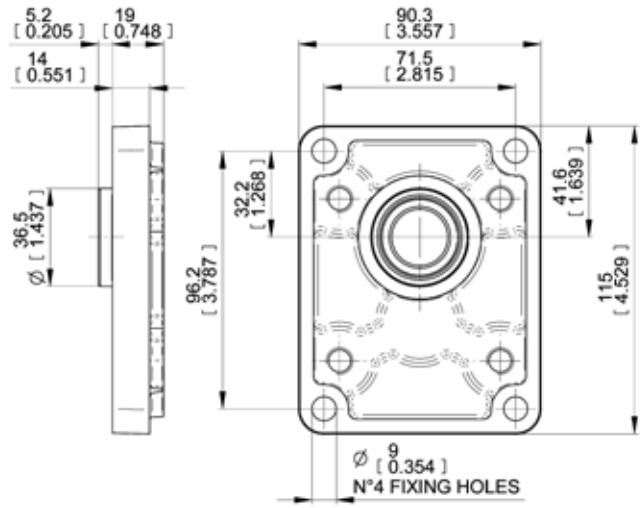
code 67	Max torque 200 Nm (1770 lbt in)
8X32X36 UNI 8953 SPLINED	



code 73	Max torque 200 Nm (1770 lbt in)
6X21X25 UNI 8953 INTERNAL SPLINED	

E0.146.0721.14.00IM00

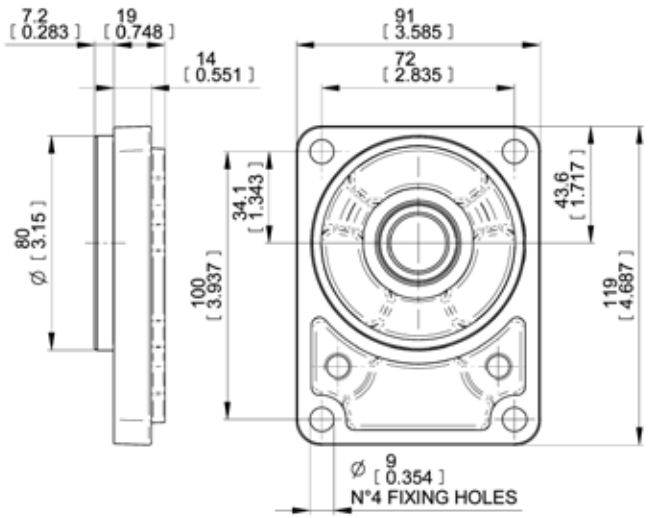
Mounting Flanges



Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
28P1	R12040320 (NBR) R12040321 (FPM)	R12040122 (NBR) R12040123 (FPM)
62P1		
82P1		

code P1 — With shaft code 28-62-82

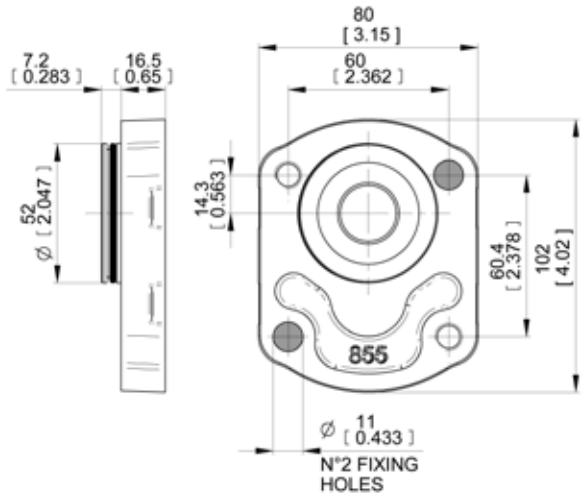
EUROPEAN STANDARD



Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
25B1	R12240131 (NBR) R12040330 (FPM)	R12040122 (NBR) R12040123 (FPM)
62B1		

code B1 — With shaft code 25-62

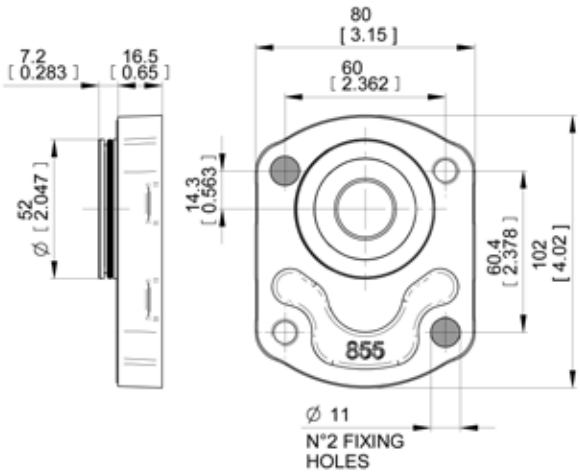
GERMAN STANDARD



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

code B2 — With shaft code 03

GERMAN STANDARD

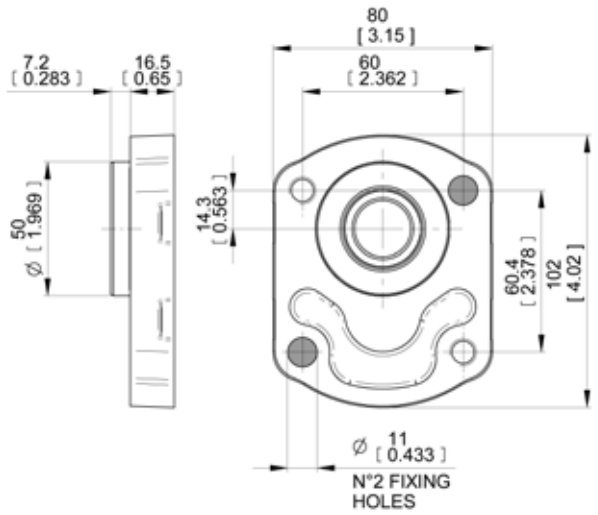


Code	Part Number	
	Flange+O-ring	O-ring (OR3187-AT 47,29x2,62-NBR)
03B3	R12240050	799113400

code B3 — With shaft code 03

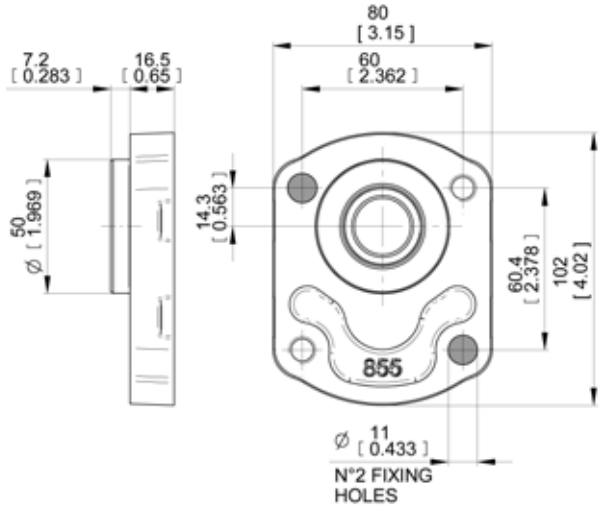
GERMAN STANDARD

Mounting Flanges



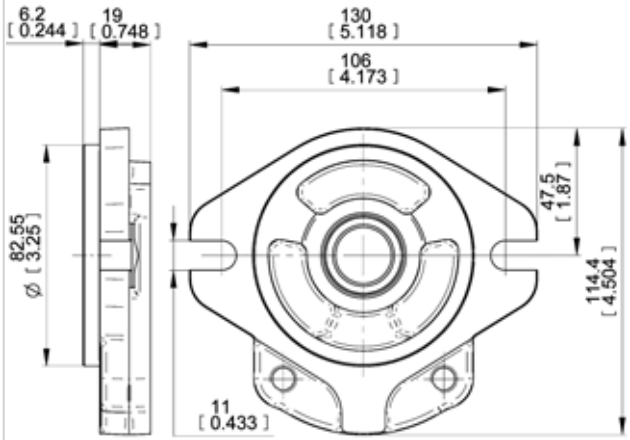
Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
25B4	R12240101 (NBR) R12240103 (FPM)	R12040122 (NBR) R12040123 (FPM)
62B4		

B4	With shaft code 04-25-62
GERMAN STANDARD	



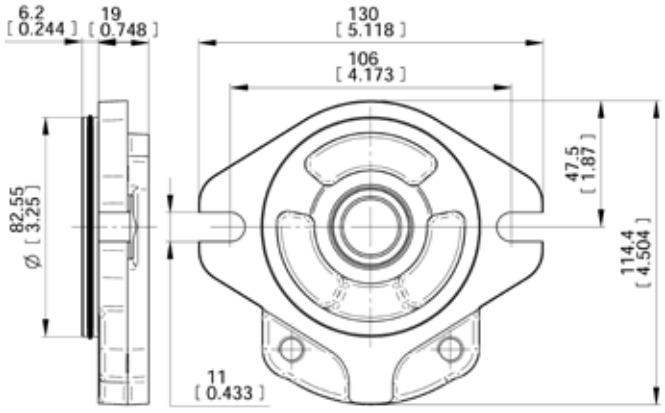
Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
25B5	R12240139 (NBR) R12240135 (FPM)	R12040122 (NBR) R12040123 (FPM)
62B5		

B5	With shaft code 04-25-62
GERMAN STANDARD	



Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
52S2	R14640030 (NBR) R14640031 (FPM)	R12040122 (NBR) R12040123 (FPM)
82S2		
54S2	R14640040 (NBR) R14640041 (FPM)	R12240114 (NBR) R12240113 (FPM)
85S2		

S2	With shaft code 52-54-82-85
SAE A 2 BOLTS	

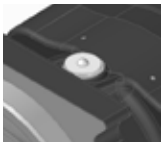


Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
52S6	R14640024 (NBR) R14640025 (FPM)	R12040122 (NBR) R12040123 (FPM)
82S6		
54S6	R14640026 (NBR) R14640027 (FPM)	R12240114 (NBR) R12240113 (FPM)
85S6		

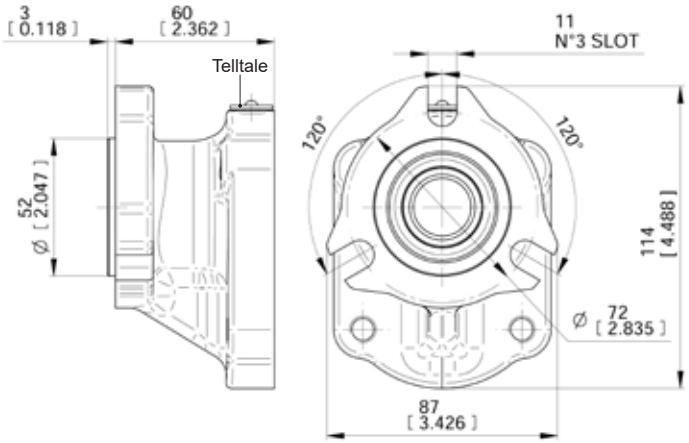
S6	With shaft code 52-54-82-85
SAE A 2 BOLTS (with O-ring on the centering collar)	

E0.146.0721.14.00IM00

Mounting Flanges



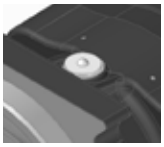
TellTale
drop in plug in case of failure, outside leakage trough the crossing hole is visible.



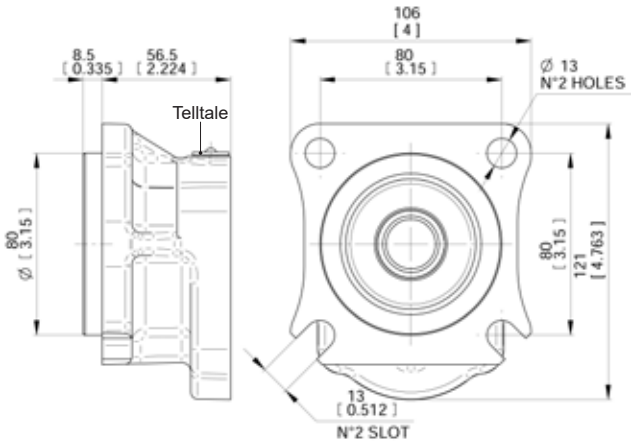
Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
73T1	R14640080 (NBR) R14640081 (FPM)	R14640012 (NBR) R14640013 (FPM)

T1	With shaft code 73

3 BOLTS UNI 8953 FOR GEAR BOX



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



Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 119-120)
67Z2	R14640090 (NBR) R14640091 (FPM)	R14640012 (NBR) R14640013 (FPM)

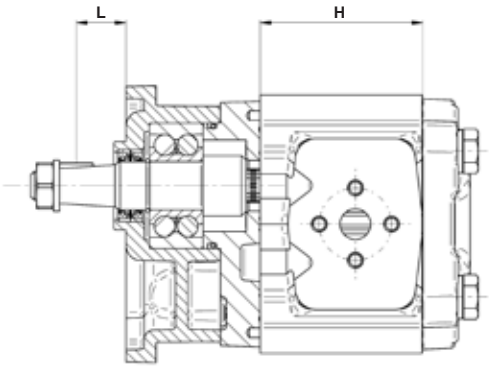
Z2	With shaft code 67

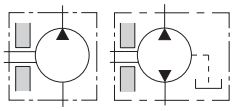
4 BOLTS FOR ZF GEAR BOX

Mounting Flanges with Outrigger Bearing

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

L=Distance between mounting flange and radial force point of application.

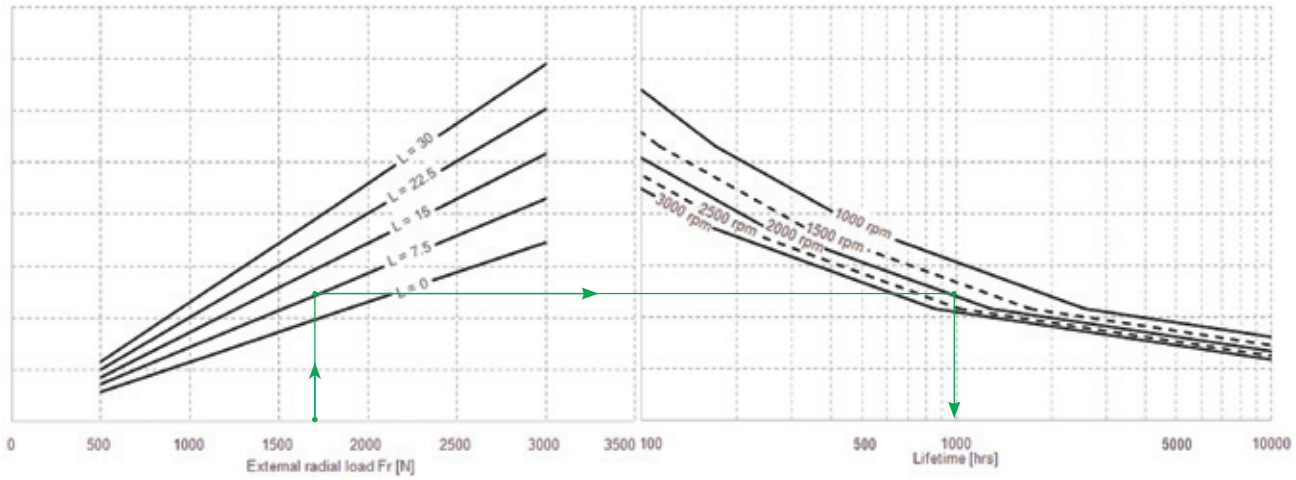




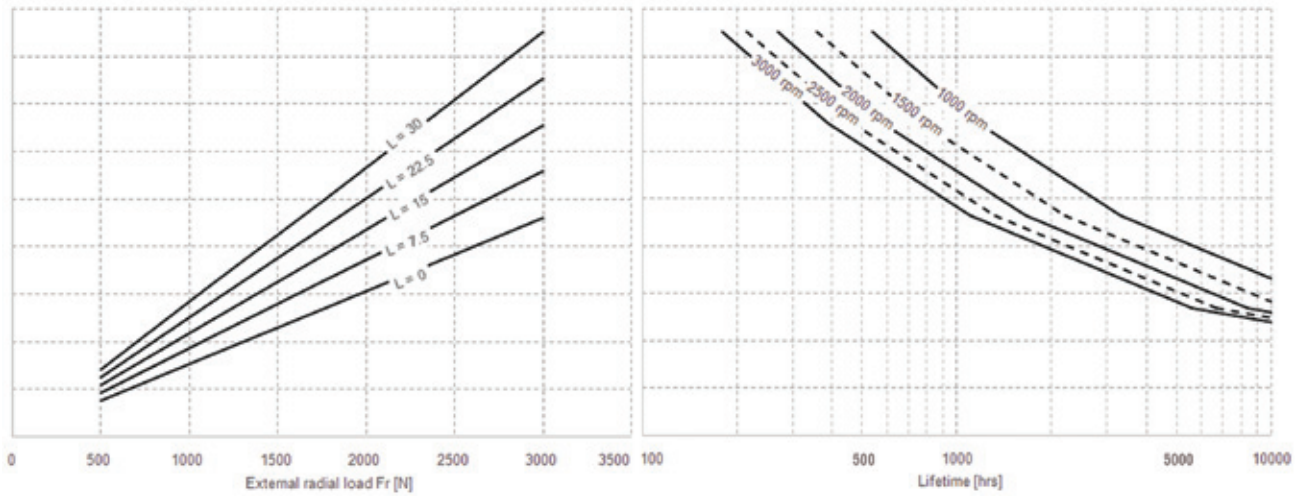
TYPE	H
6.5	49.95 (*1.97”*)
8.3	52.8 (*2.08”*)
11.3	59.7 (*2.35”*)
13.8	63.5 (*2.5”*)
16	67.5 (*2.66”*)
19	75.6 (*2.97”*)
22.5	81 (*3.19”*)
26	86.6 (*3.42”*)

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

For Code CP-CB-CL-CS



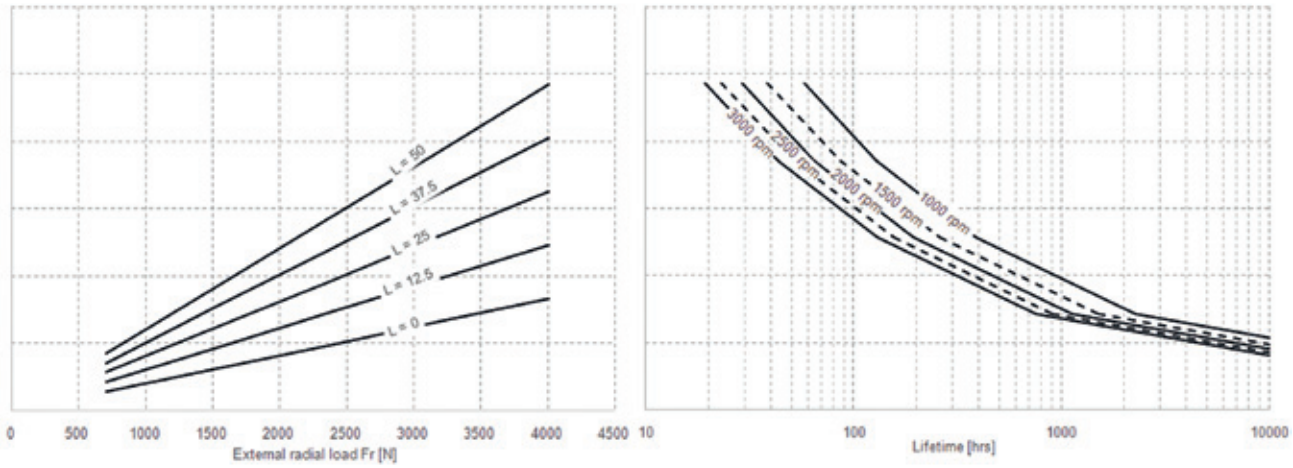
For Code CF



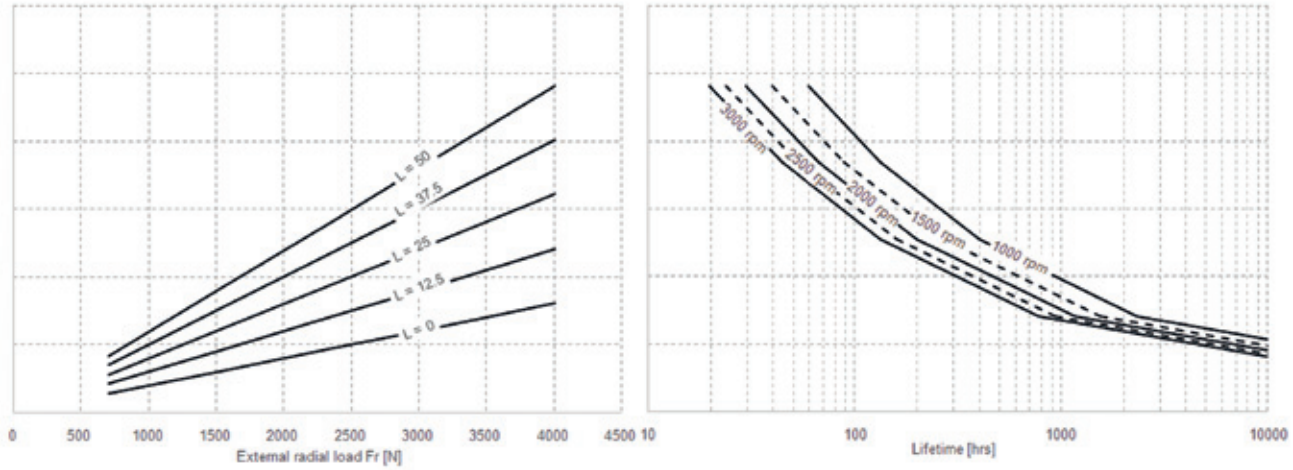
E0.146.0721.14.00IM00

Mounting Flanges with Outrigger Bearing

For Code Z1



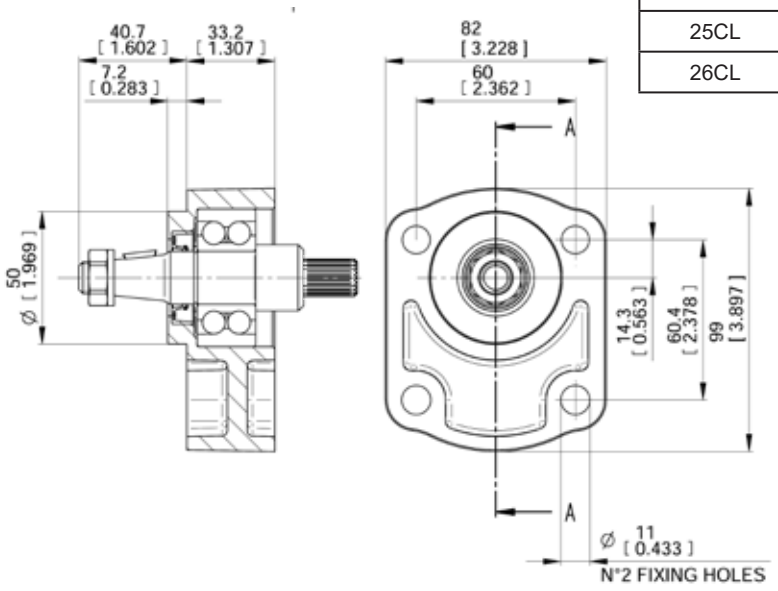
For Code CSB



Aluminium Mounting Flanges with Outrigger Bearing

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

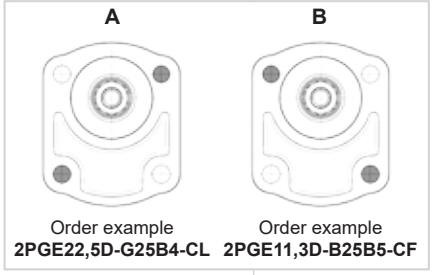
Coupling Sleeve Splined W14x0.6x8f DIN 5480
312002515

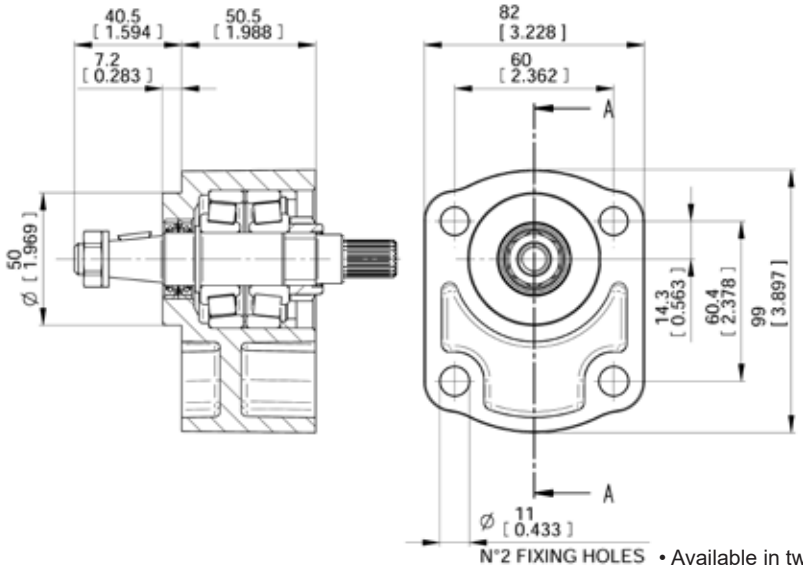


• Available in two positions: A - B

Mounting with shaft code 25

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





• Available in two positions: A - B

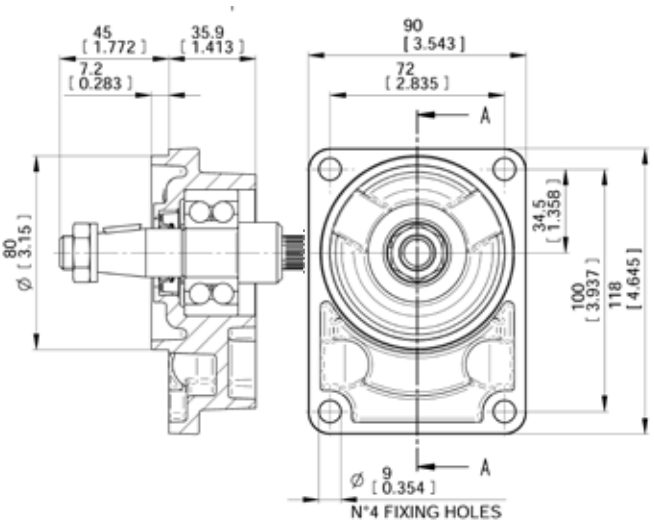
Code	Part Number	
	Flange+Bearing support	Kit Woodruff Key+Nut+Washer
25CF	R12040101	R12283030
26CF	R12040105	

Mounting with shaft code 25

CF	With shaft code 25-26 - Max torque 100 Nm (885 lbt in)
FOR INTERNAL COMBUSTION ENGINES WITH AXIAL AND RADIAL LOADS	

E0.146.0721.14.00IM00

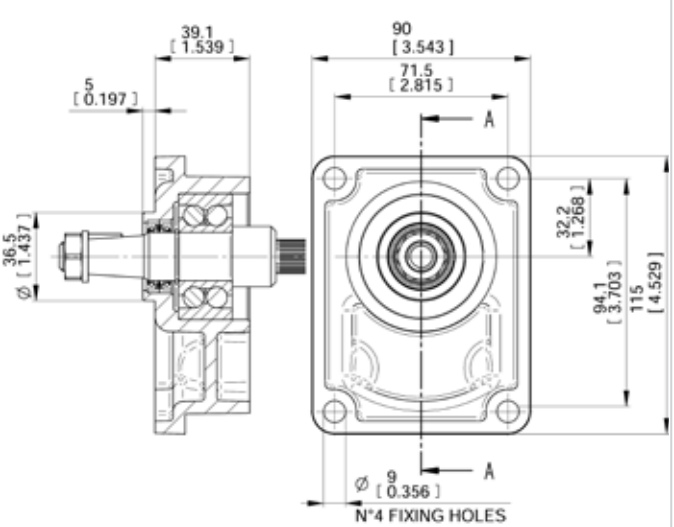
Aluminium Mounting Flanges with Outrigger Bearing



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

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

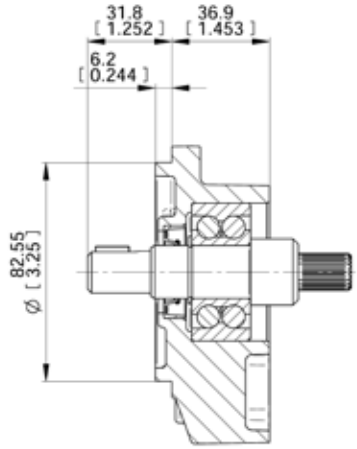
GERMAN STANDARD



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

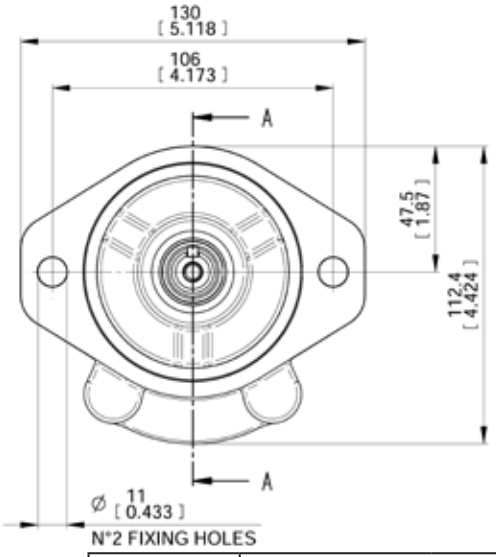
CP	With shaft code 28 Max torque 100 Nm (885 lbt in)

EUROPEAN STANDARD



Example with shaft code 82

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

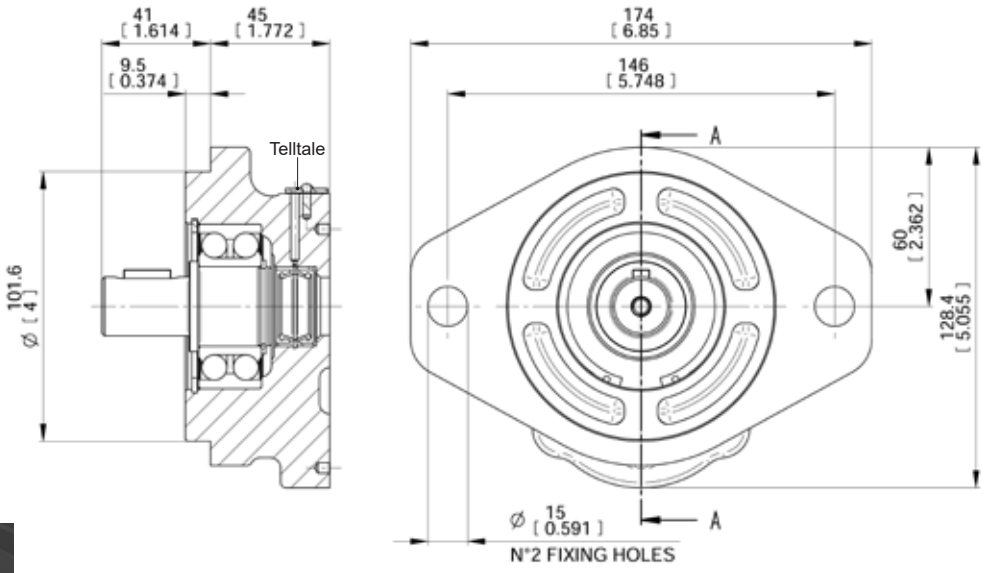


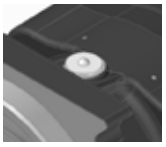
Code	Part Number	
	Flange+Bearing support	Key
82CS	R12040040	796620700
85CS	R12040050	796621000
86CS	R12010430	796622800

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

SAE A

Cast Iron Mounting Flanges with Outrigger Bearing

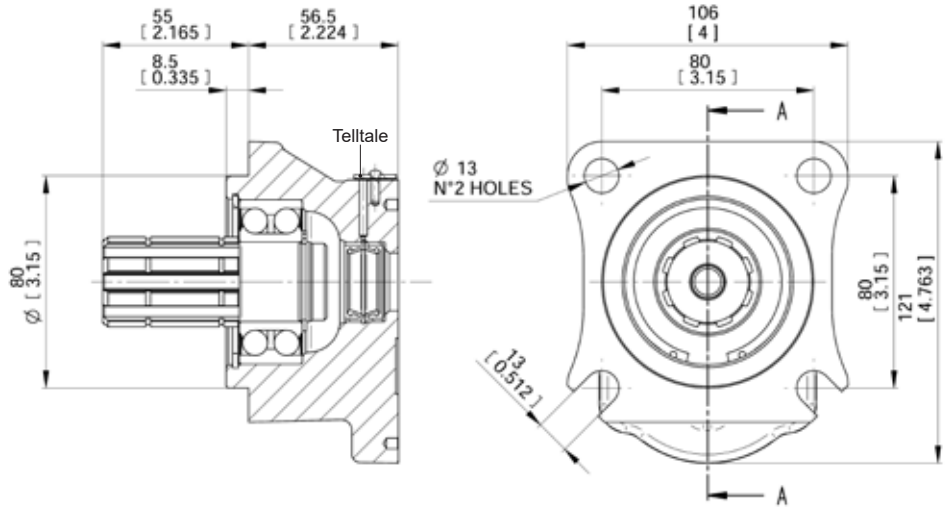




TellTale
drop in plug in case of failure, outside leakage trough the crossing hole is visible.

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	

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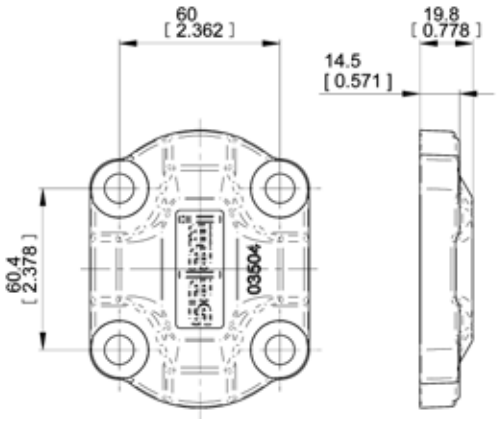
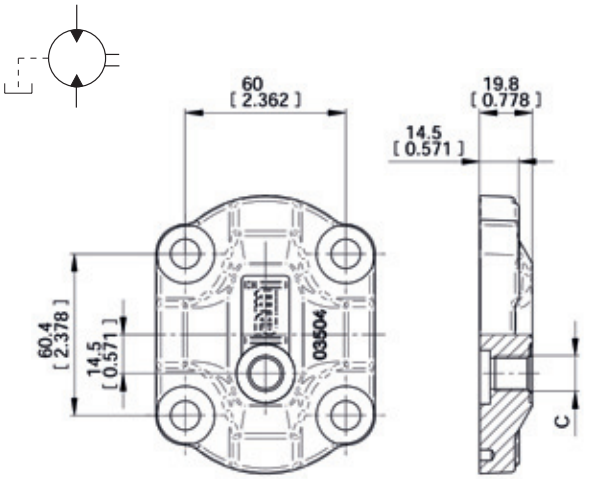
Rear Covers



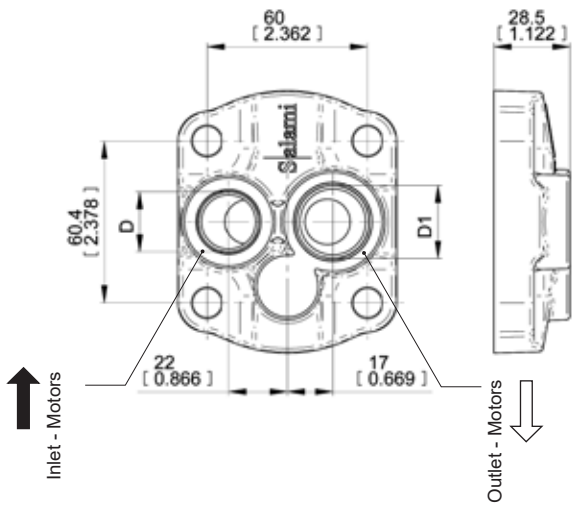
Code	Part Number
Standard Cover	312203529

STANDARD REAR COVER FOR UNIDIRECTIONAL MOTORS



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

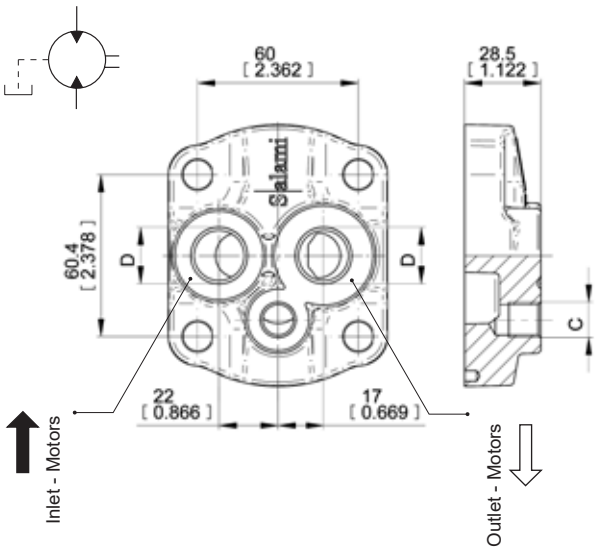
REAR COVER WITH EXTERNAL DRAIN C FOR BIDIRECTIONAL MOTORS



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.

REAR COVER WITH REAR PORTS FOR UNIDIRECTIONAL MOTORS



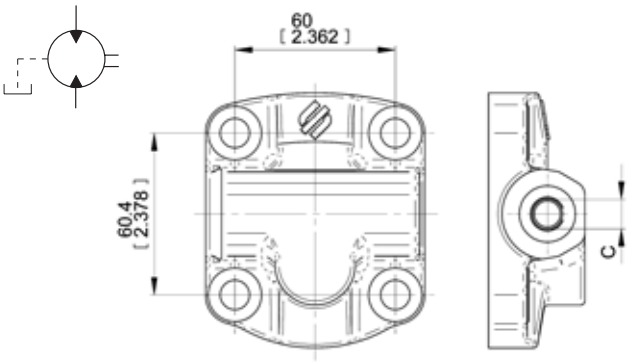
For motors with threaded rear ports until 22 l/min delivery.

Code	Part Number	Threaded Ports	
		D (Inlet/ Outlet)	C (Drain)
1 Cover with rear ports with drain	312203526	M18x1,5	G1/4
	312203527	7/8-14 UNF-2B SAE 10	7/16-20 UNF-2B SAE 4
	312203528	G 1/2	G 1/4

For rear ports if requested please advise type using note.

REAR COVER WITH REAR PORTS FOR BIDIRECTIONAL MOTORS WITH EXTERNAL DRAIN C

Rear Covers

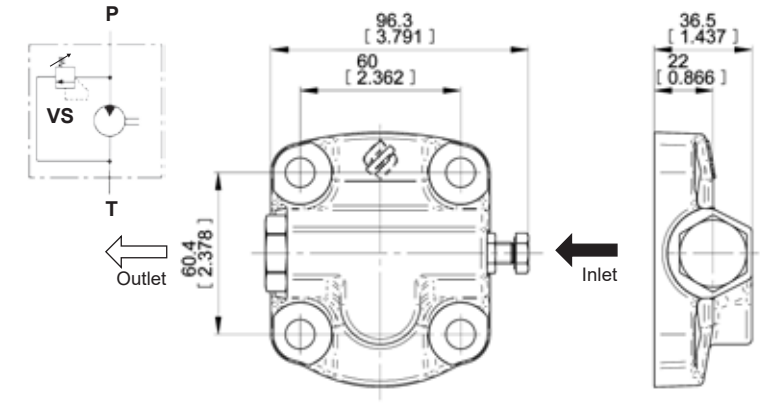


Code	Part Number	Threaded Port
		C (Drain)
LD Cover with External Drain	312203545	7/16-20 UNF-2B SAE 4
	312003509	G 1/4

LD

REAR COVER WITH LATERAL DRAIN FOR BIDIRECTIONAL PUMPS

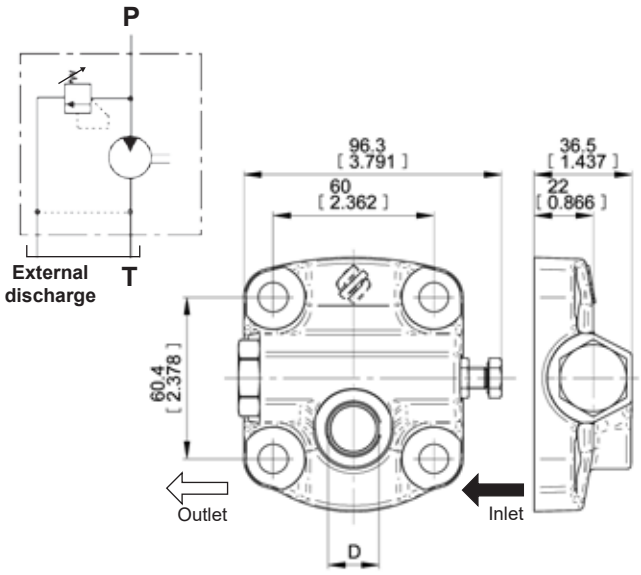
Rear Covers with Valves



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

VS

INTERNAL DISCHARGE



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

VSE

EXTERNAL DISCHARGE

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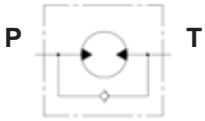
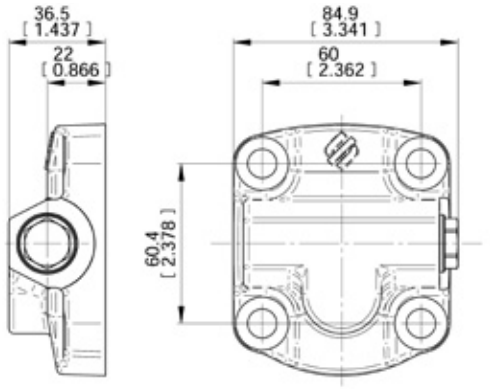
Rear Covers with Valves

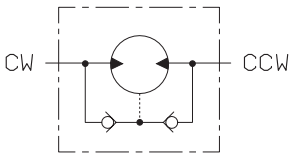


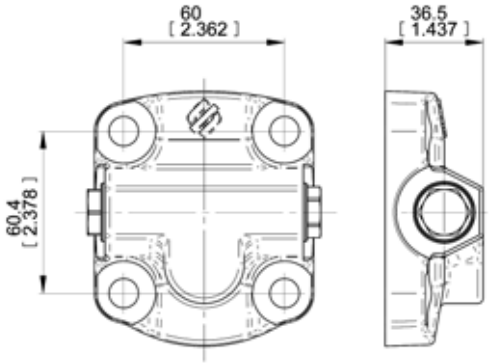


Code	Part Number
VR Anti-cavitation	R12203502

VR

ANTI-CAVITATION VALVE





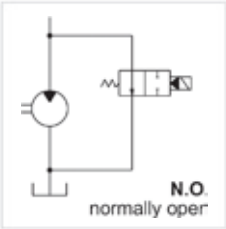
Code	Part Number
IDV Internal drain	R12203501

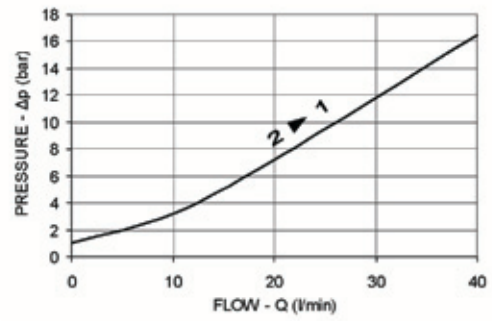
IDV

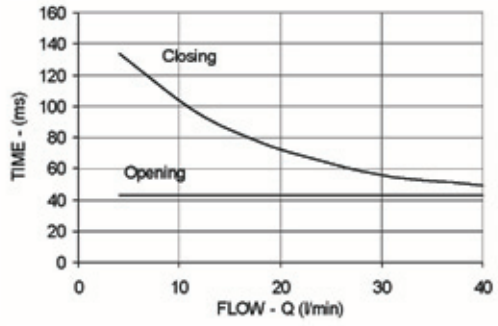
REAR COVERS WITH INTERNAL DRAIN

Rear Covers with Valves

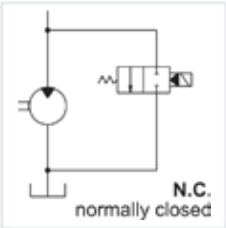
EV1 - 12 Vcc
EV2 - 24 Vcc

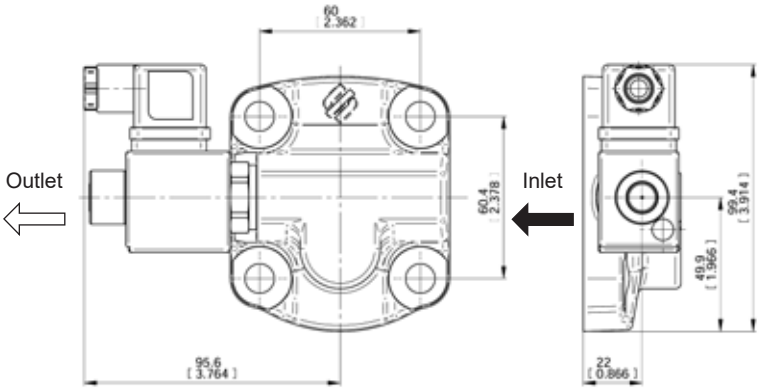






EV3 - 12 Vcc
EV4 - 24 Vcc

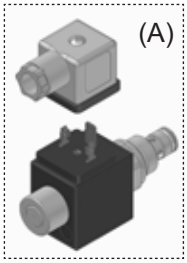




Code	Part Number
EV1	R12273273
EV2	R12273272
EV3	R12273275
EV4	R12273274

EV1-EV2-EV3-EV4

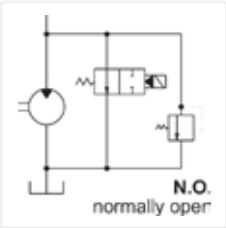
ELECTRIC UNLOADING VALVE



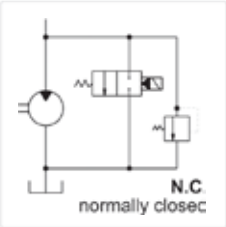
Part Number			
(A) Coil+Mech.Part+**Connector**			
EV1/EVS1	EV2/EVS2	EV3/EVS3	EV4/EVS4
796332680	796332681	412271232	412271233

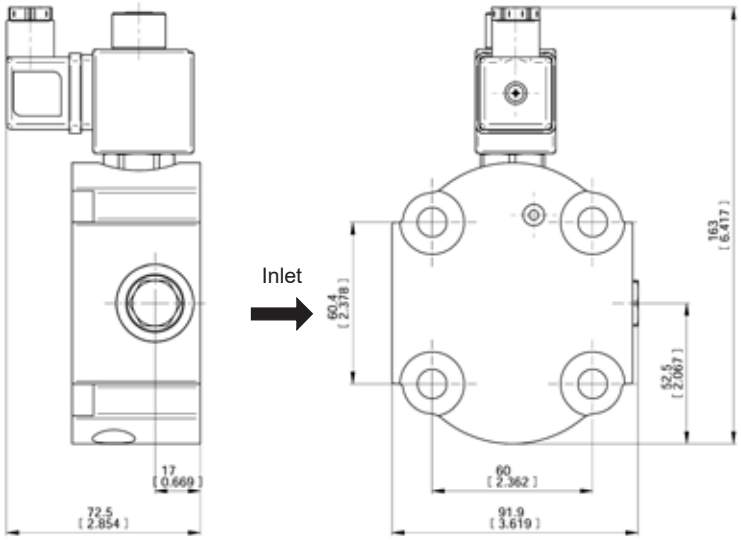
Part Number
Connector DIN 43650 A/ISO 4400
796361600

EVS1 - 12 Vcc
EVS2 - 24 Vcc



EVS3 - 12 Vcc
EVS4 - 24 Vcc





Code	Part Number
EVS1	R12273290
EVS2	R12273291
EVS3	R12273292
EVS4	R12273293

PRESSURE RELIEF VALVE setting ranges
25-250 bar

EVS1-EVS2-EVS3-EVS4

ELECTRIC UNLOADING VALVE WITH BUILT-IN PRESSURE RELIEF VALVE

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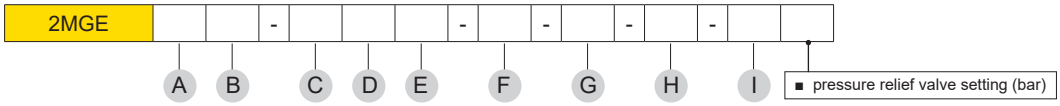

A CODES	DISPLACEMENTS	
6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
13.8	13.8 cm³/rev.	*0.84 cu.in/rev.*
16	16.6 cm³/rev.	*1.01 cu.in/rev.*
19	19.4 cm³/rev.	*1.18 cu.in/rev.*
22.5	22.9 cm³/rev.	*1.37 cu.in/rev.*
26	26.6 cm³/rev.	*1.62 cu.in/rev.*

B ROTATION	CODES
Clockwise	D
Anti-clockwise	S
Reversible	R

C PORTS (page 100)	CODES
Flanged ports european standard	P
Flanged ports german standard	B
Flanged ports SAE J518 Metric thread	W
Flanged ports SAE J518 American standard thread	S
Threaded ports GAS (BSPP)	G
Threaded ports SAE (ODT)	R

D DRIVE SHAFT (page 102)	CODES
Tang drive for electric motors	03
Tapered 1:5	25
Tapered 1:5 (only for CB)	26
Tapered 1:8	28
SAE A splined 9T	52
SAE A splined 11T	54
9 teeth DIN 5482 splined	62
5/8" SAE A parallel	82
3/4" SAE A parallel	85
SAE B Parallel Continental shaft	87
8x32x36 UNI 8953 splined Continental shaft	66
8x32x36 UNI 8953 splined Continental shaft	67
6x21x25 UNI 8953 splined Continental shaft	73

I REAR COVERS (page 114)	CODES
Lateral drain	LD
Adjustable main relief valve-Internal discharge	■ VS
Adjustable setting main relief valve-External discharge	■ VSE
Internal drain	IDV
Anti-cavitation valve	VR
Electric unloading valve (12V)	EV1/EV3
Electric unloading valve (24V)	EV2/EV4
Main relief and electric unloading valves (12V)	EVS1/ EVS3
Main relief and electric unloading valves (24V)	EVS2/ EVS4

H OUTRIGGER BEARING (page 108)	CODES
For engine endothermic motors	CL
For endothermic motors with axial and radial loads	CF
SAE A	CS
German standard	CB
European standard	CP
SAE B	CSB
4 Bolts for ZF gear box	Z1

G PORTS LAYOUT	CODE
Side ports (standard configuration)	-
Rear ports (page 119)	1

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

E MOUNTING FLANGES (page 105)	CODES
European standard	P1
German standard Ø80	B1
German standard Ø52	B2-B3
German standard Ø50	B4-B5
SAE A 2 bolts	S2
SAE A 2 Bolts (with o-ring on the centering collar)	S6
3 BOLT UNI 8953 for gear box	T1
4 Bolts for ZF gear box	Z2

How to order Motor: 2MGE19D, ports SAE (R), drive shaft (54), mounting flange (S2).
2MGE19D-R54S2

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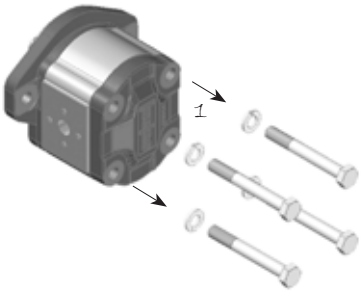
Motor Changing Rotation Instructions

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

ANTI - CLOCKWISE ROTATION

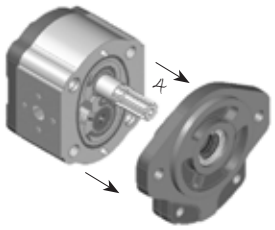
Outlet ⇦ ↶ ⬅ Inlet



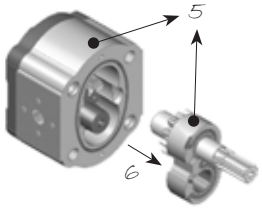
1 - Loosen and fully unscrew the screws.

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

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

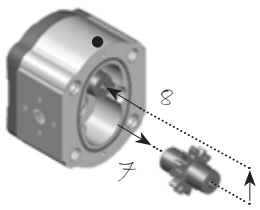


4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



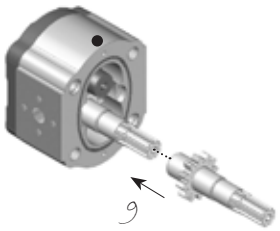
5 - Mark the position of the bushing and eventually the thrust plate, relative to the body.

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

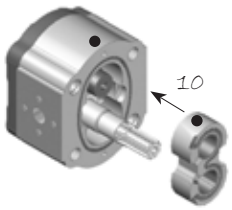


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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



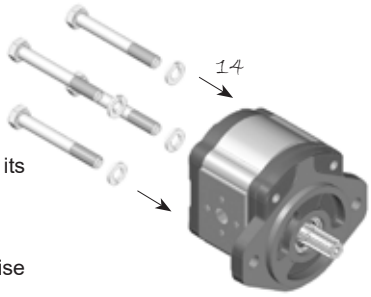
9 - Re-locate the driving gear in the position previously occupied by the driven gear.



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 body and mounting flange refaced 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 clamp bolts and tighten crosswise evenly to an appropriate torque.

15 - Check that the shaft rotates freely.

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

CLOCKWISE ROTATION

Inlet ⬅ ↷ ⇨ Outlet

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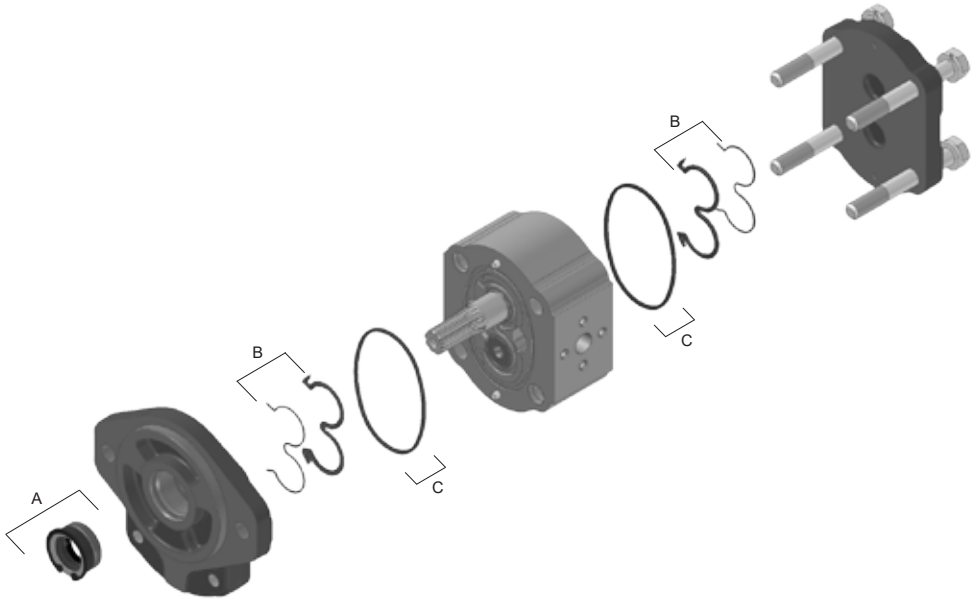
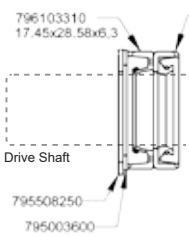
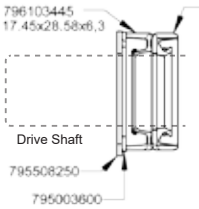
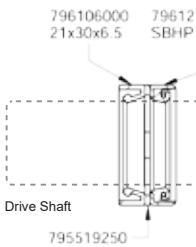
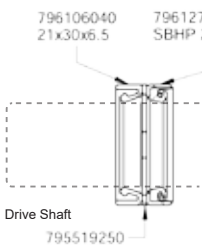
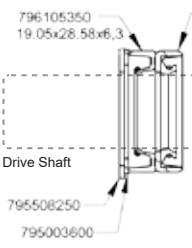
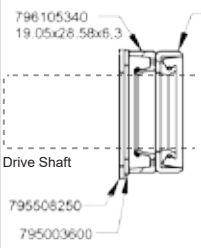
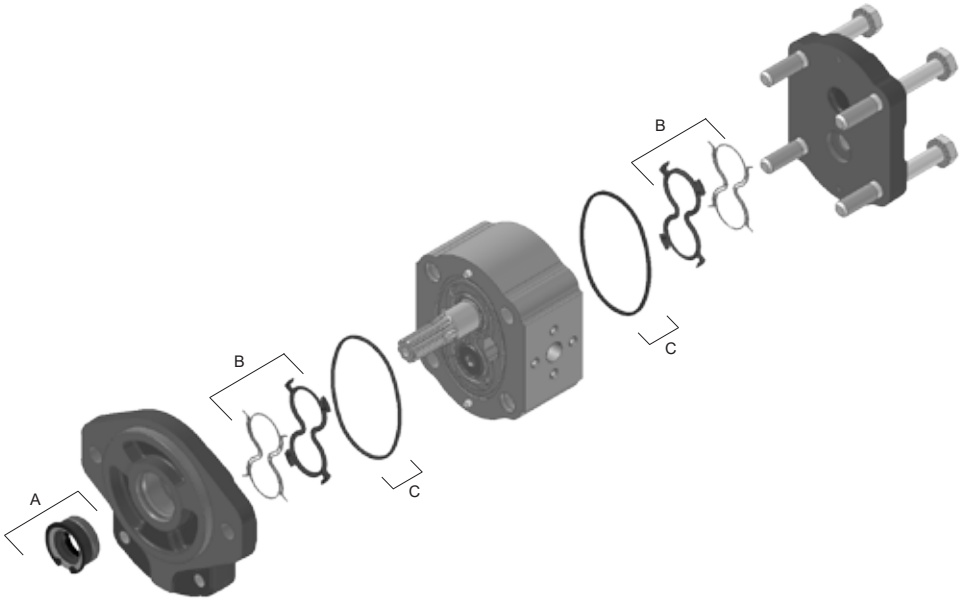
Unidirectional Motor Seal Spare Parts Kit



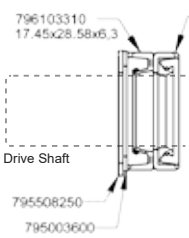
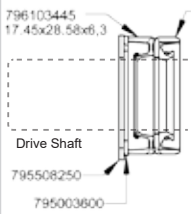
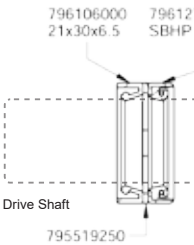
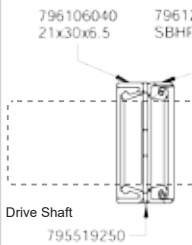
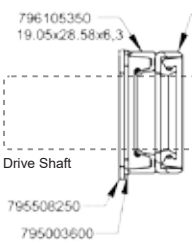
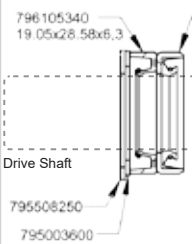
A	*Shaft seal*
B	*Bushing seal kit*
C	*Body seal kit*

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	**Part Number** R12092850	 **Part Number** R12040122	**Part Number** R12092860	 **Part Number** R12040123
73T1 67Z2	**Part Number** R14690030	 **Part Number** R14640012	**Part Number** R14690040	 **Part Number** R14640013
54S2/S6 85S2/S6	**Part Number** R12092870	 **Part Number** R12240114	**Part Number** R12092880	 **Part Number** R12240113

Bidirectional Motor 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	**Part Number** R12081820	 **Part Number** R12040122	**Part Number** R12081830	 **Part Number** R12040123
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

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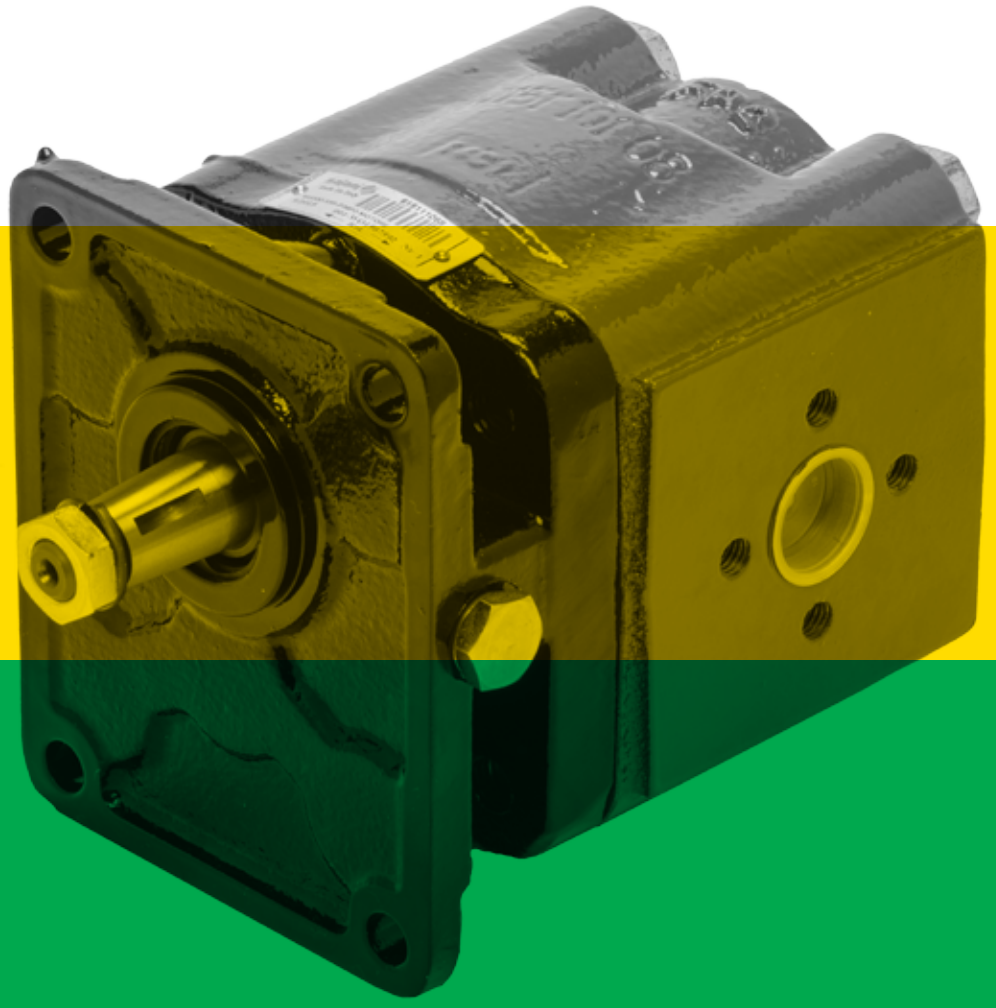
MG330

Cast Iron Gear Motors

Technical/Spare Parts Catalogue



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COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

salami
FLUID POWER SYSTEMS ®

Final revised edition - July 2021

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

Contents

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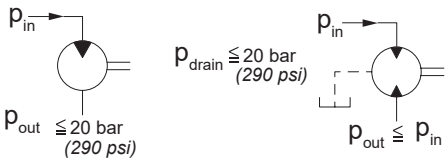
MG330 Motor - Dimensions and Technical Data

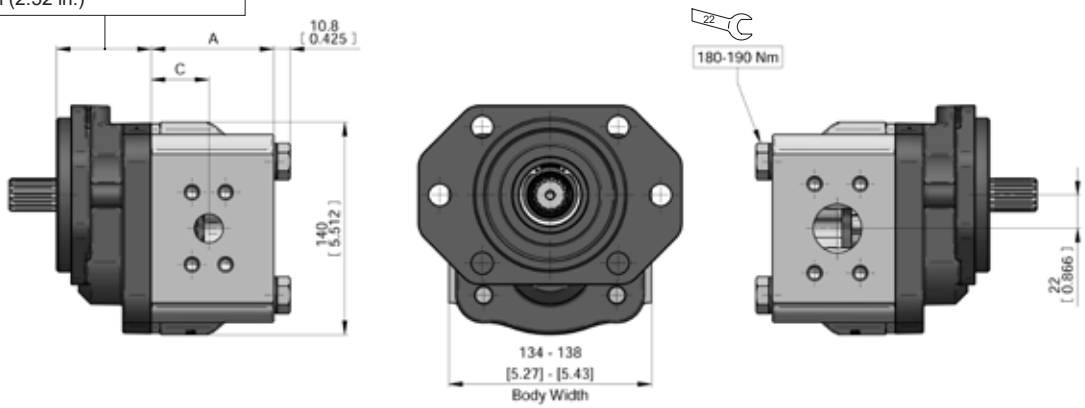


Displacements up to 73.4 cm3/rev - *4.48 cu.in./rev*
Pressure up to 300 bar - *4350 psi*

TYPE	Displacement		Dimension A		Dimension C		Max. continuous pressure p[1]		Max. starting pressure p[2]		Min. speed at p[2]	Max. speed at p[1**]	Weight	
	cm³/rev	*cu.in/rev*	mm	*in*	mm	*in*	bar	*psi*	bar	*psi*	min⁻¹		kg	*lbs*
MG330 - 23	23.4	*1.43*	77	*3.03*	35	*1.38*	240	*3480*	300	*4350*	600	3000	13.2	*29.21*
MG330 - 28	28.6	*1.74*	81	*3.19*	38	*1.49*	240	*3480*	300	*4350*	600	3000	13.7	*30.20*
MG330 - 34	34.4	*2.10*	85.5	*3.36*	42.5	*1.67*	240	*3480*	300	*4350*	600	3000	14.2	*31.30*
MG330 - 40	40.3	*2.46*	90	*3.54*	47	*1.85*	220	*3190*	280	*4060*	550	2700	14.7	*32.41*
MG330 - 47	47.4	*2.89*	101.5	*3.40*	50	*1.97*	240	*3480*	280	*4060*	550	2700	17.0	*37.48*
MG330 - 55	55.2	*3.37*	107.5	*4.23*	56	*2.20*	220	*3190*	280	*4060*	550	2700	17.7	*39.02*
MG330 - 64	64.3	*3.92*	114.5	*4.51*	58	*2.28*	200	*2900*	260	*3750*	500	2500	18.5	*40.79*
MG330 - 72	73.4	*4.48*	121.5	*4.78*	61	*2.40*	200	*2900*	260	*3750*	500	2500	19.4	*42.77*

**Permissible drain pressure decrease with encreasing speed

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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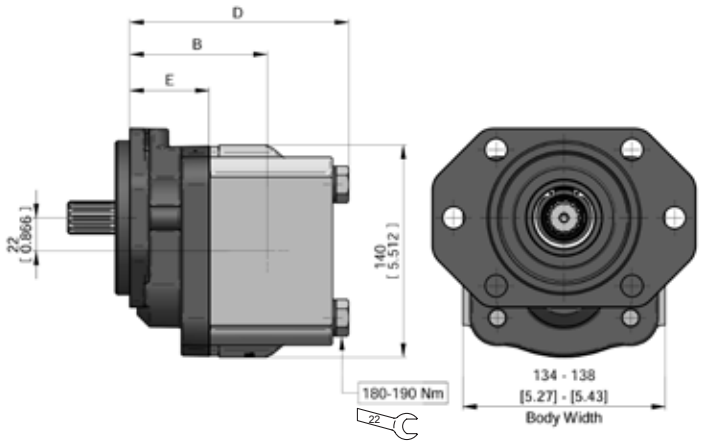
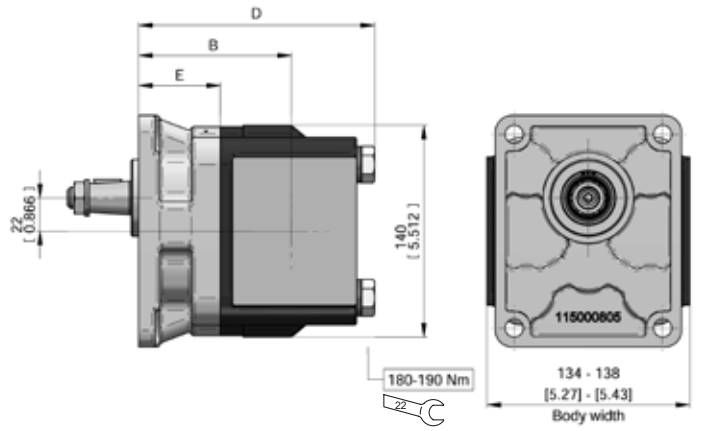
Dimensions - Shaft 55/Flange S3 (SAE B)

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*		



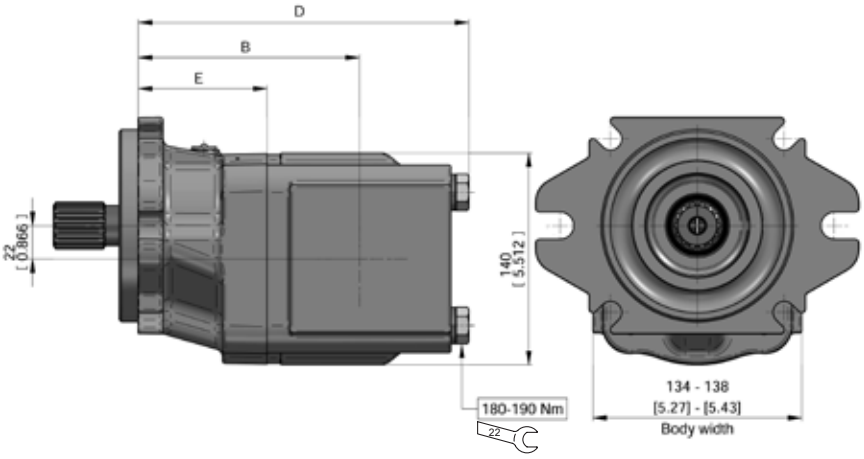
Dimensions - Shaft 38/Flange P2 (European)

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*		



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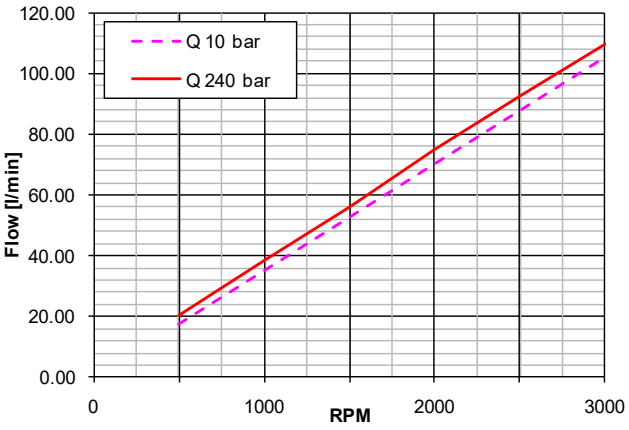
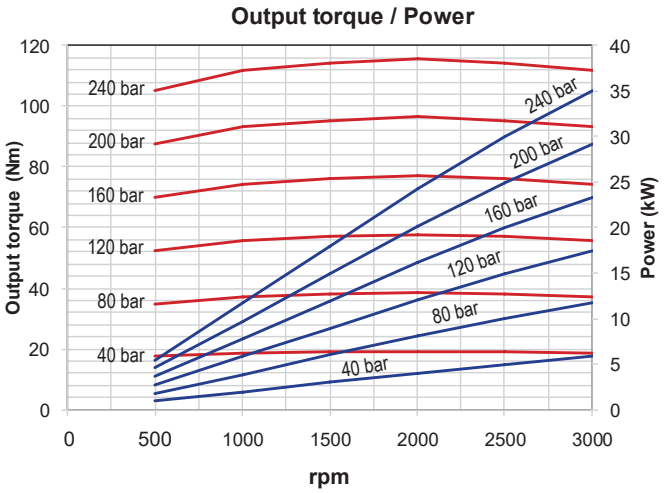
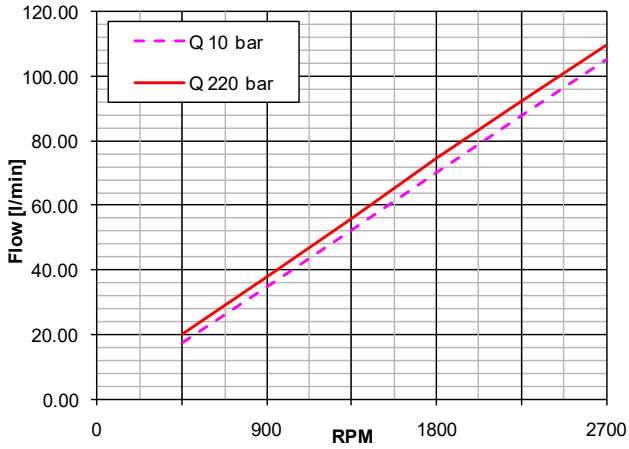
Motor Performance Curves

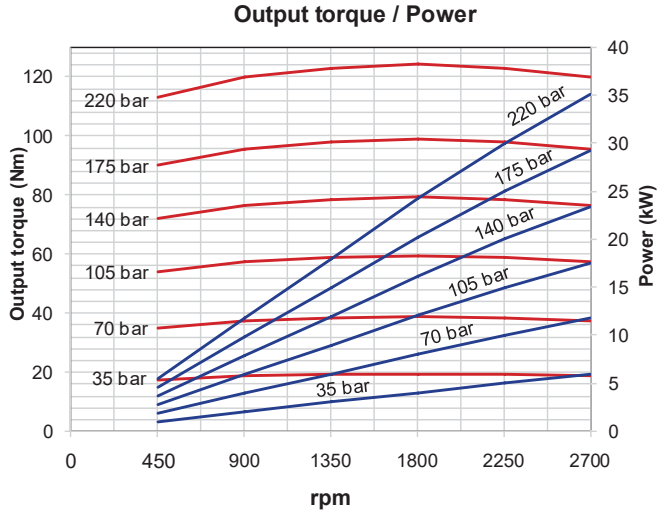
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



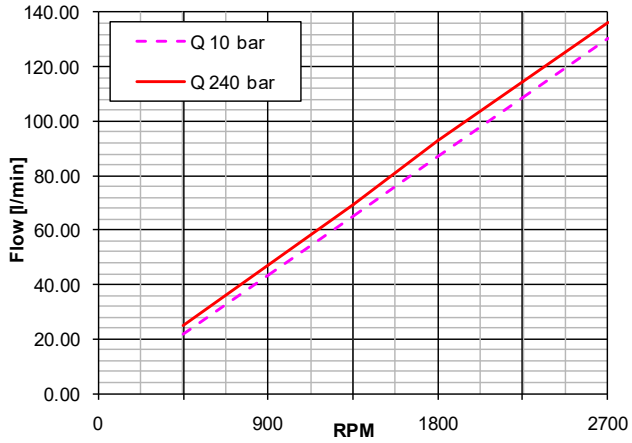


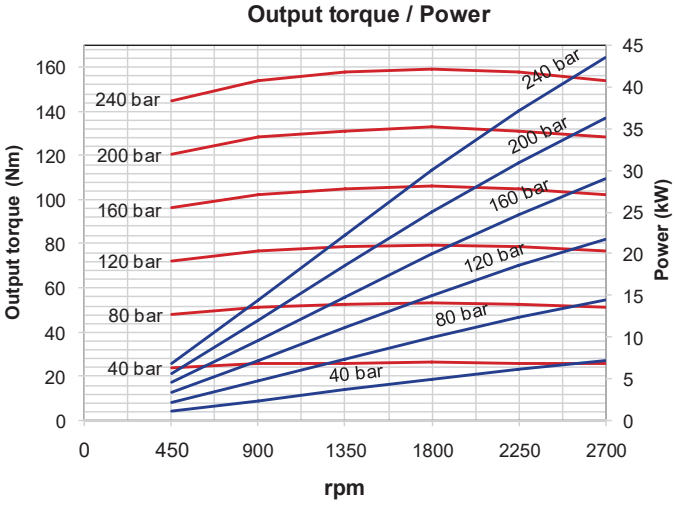
MG330 - 34





MG330 - 40

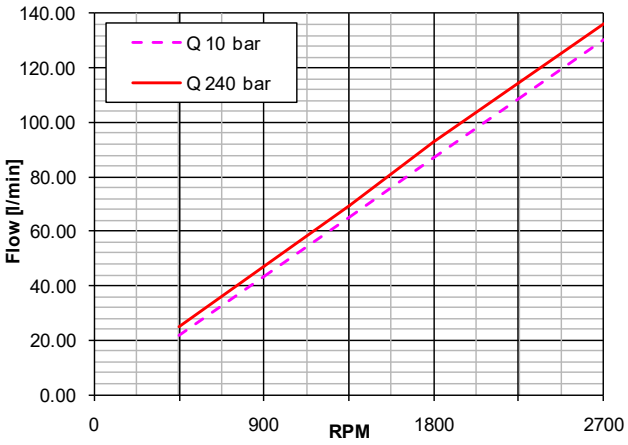


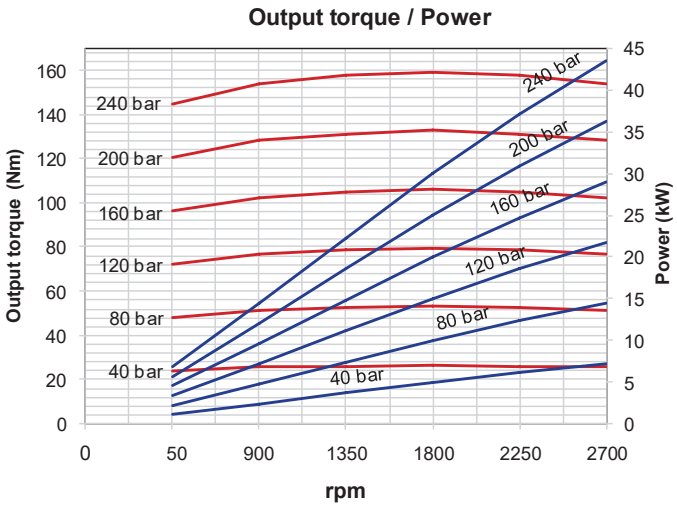


2MGE - 47

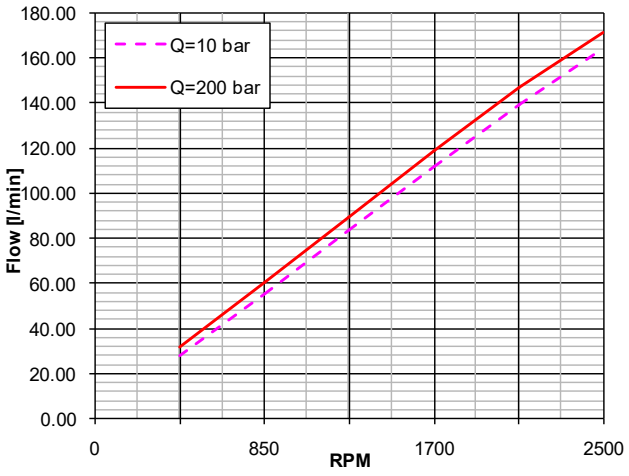
Motor Performance Curves

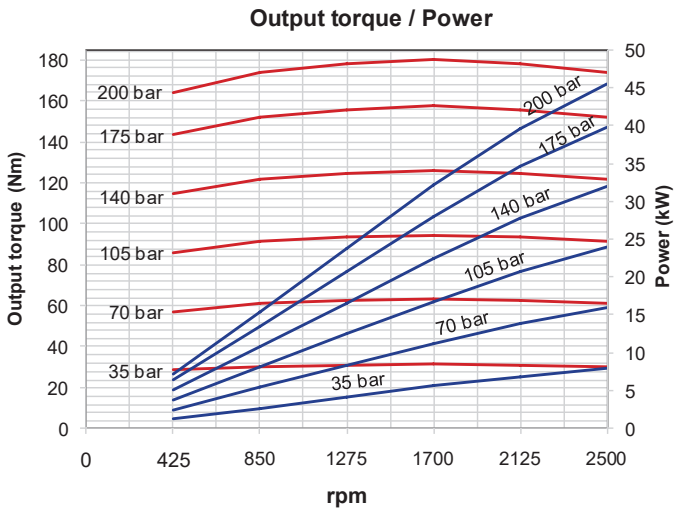
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



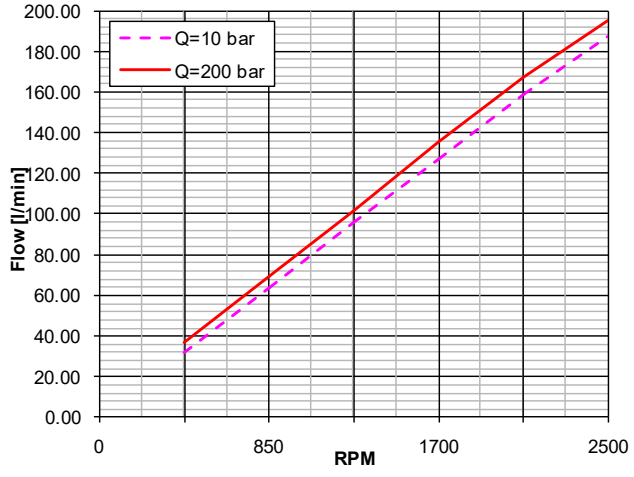


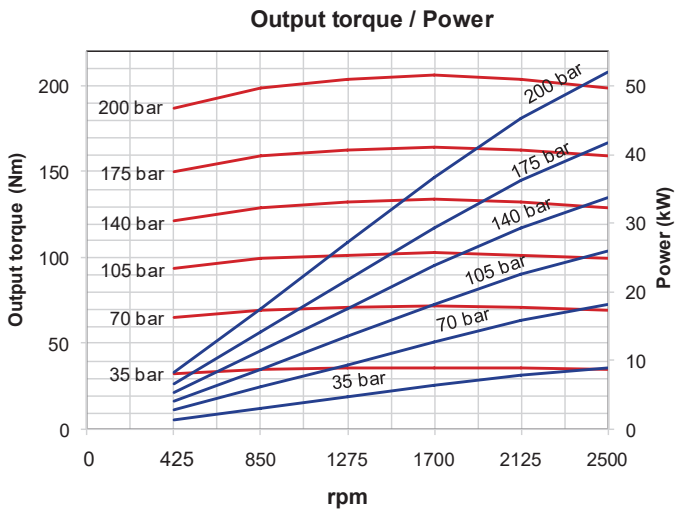
MG330 - 55





MG330 - 64





MG330 - 72

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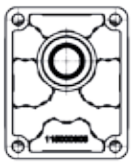
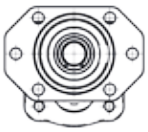
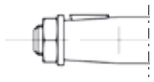
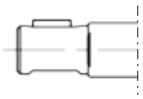
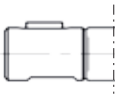
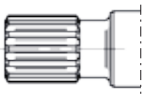
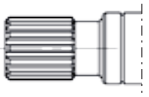
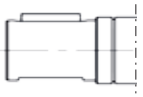
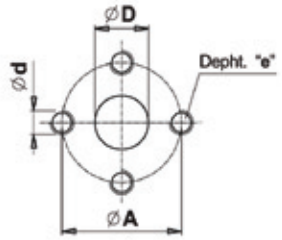
Shaft And Flange Combinations

	MG330					
		CODE **P2**	CODE **S3**	CODE **S4**	CODE **R3**	CODE **R8**
		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 **57**					57R8
	 CODE **89**					89R8

Flanged Ports



code P

Flanged ports
european standard

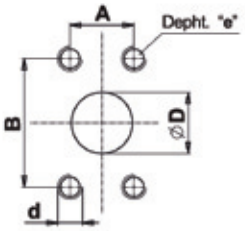
M8	20 Nm (14.7 lbf-ft)
M10	35 Nm (25.8 lbf-ft)
M12	65 Nm (47.9 lbf-ft)

UNI-DIRECTIONAL

MOTORS	OUTLET				INLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 23 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

MOTORS	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 23 to 47	16 *(0.63)*	40 *(1.57")*	M8	16 *(0.63")*	16 *(0.63)*	40 *(1.57")*	M8	16 *(0.63")*
From 55 to 72	27 *(1.07")*	51 *(2.01")*	M10	16 *(0.63")*	27 *(1.07")*	51 *(2.01")*	M10	16 *(0.63")*



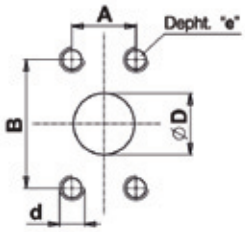
code W

Flanged ports
SAE J518
METRIC THREAD

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

UNI-DIRECTIONAL

MOTORS	OUTLET					INLET				
	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 72	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

MOTORS	OUTLET					INLET				
	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 72	39.3 *(1.55")*	69.8 *(2.75")*	35.7 *(1.40")*	1/2-13 UNC	15 *(0.59")*	32 *(1.26")*	58.72 *(2.31")*	30.18 *(1.19")*	3/8-16 UNC	18 *(0.71")*

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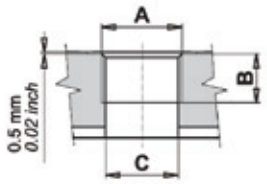
Threaded Ports



code G

Threaded ports
GAS (BSPP)

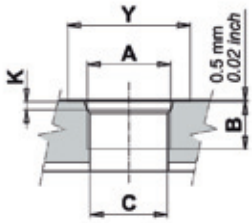
G 3/4	90 Nm (66.4 lbf-ft)
G 1	130 Nm (95.8 lbf-ft)
G 1 1/4	170 Nm (125.4 lbf-ft)

UNI-DIRECTIONAL

MOTORS	OUTLET			INLET		
	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 72	G1 1/4	24 *(0.94”)*	37 *(1.46”)*	G1	22 *(0.87”)*	30.5 *(1.2”)*

BI-DIRECTIONAL/REAR PORTS (CODE 1)

MOTORS	INLET			OUTLET		
	A	B	C	A	B	C
From 23 to 40	G3/4	16 *(0.62”)*	24.4 *(0.96”)*	G3/4	16 *(0.62”)*	24.4 *(0.96”)*
From 47 to 72	G1	22 *(0.87”)*	30.5 *(1.2”)*	G1	22 *(0.87”)*	30.5 *(1.2”)*



code R

Threaded ports
SAE (ODT)

SAE 12	90 Nm (66.4 lbf-ft)
SAE 16	130 Nm (95.8 lbf-ft)
SAE 20	170 Nm (125.4 lbf-ft)

UNI-DIRECTIONAL

MOTORS	OUTLET					INLET				
	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 72	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/REAR PORTS (CODE 1)

MOTORS	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 23 to 40	1-1/16-12 UN (SAE 12)	19 *(0.75”)*	24.7 *(0.97”)*	41 *(1.16”)*	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 72	1-5/16-12 UN (SAE 16)	19 *(0.75”)*	31 *(1.22”)*	49 *(1.93”)*	3.3 *(0.13”)*	1-5/16-12 UN (SAE 16)	19 *(0.75”)*	31 *(1.22”)*	49 *(1.93”)*	3.3 *(0.13”)*

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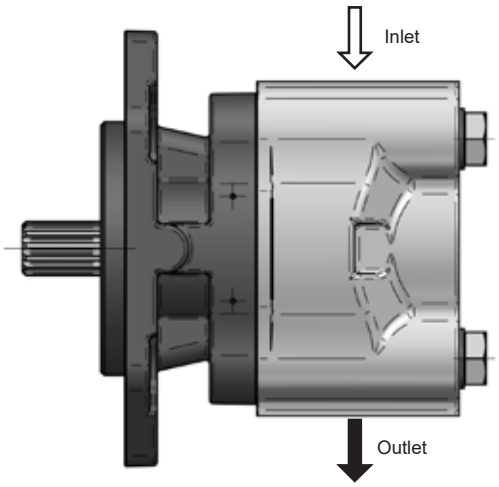
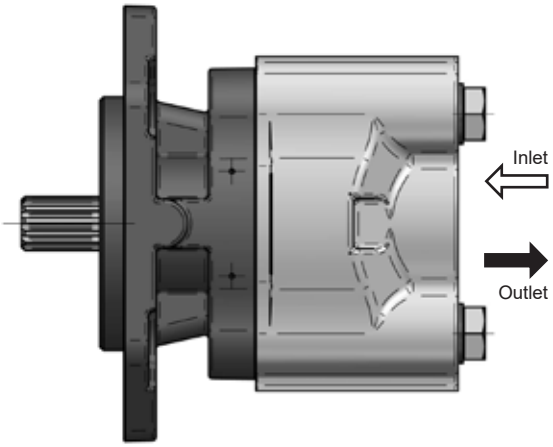
Ports layout

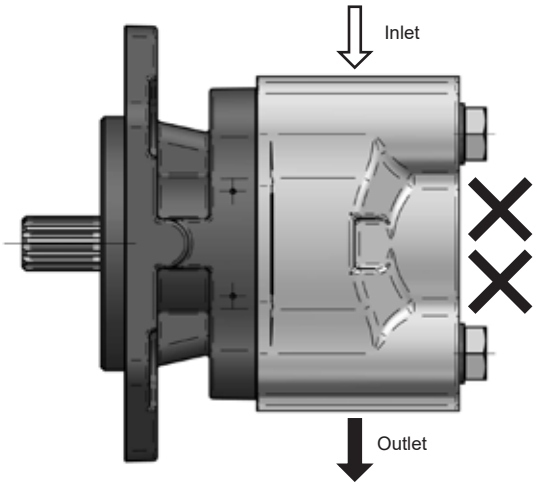
example with anti -clockwise rotation



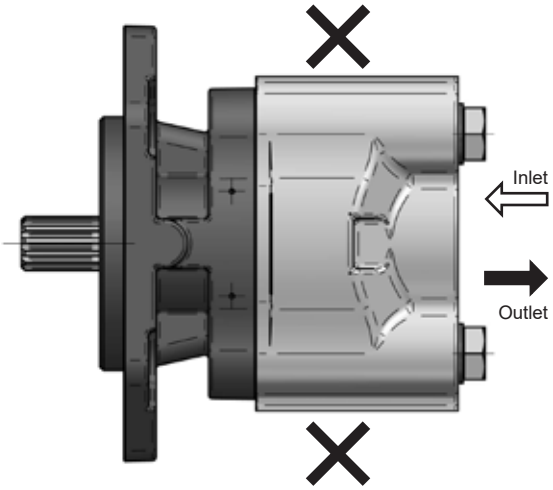
CODE 0



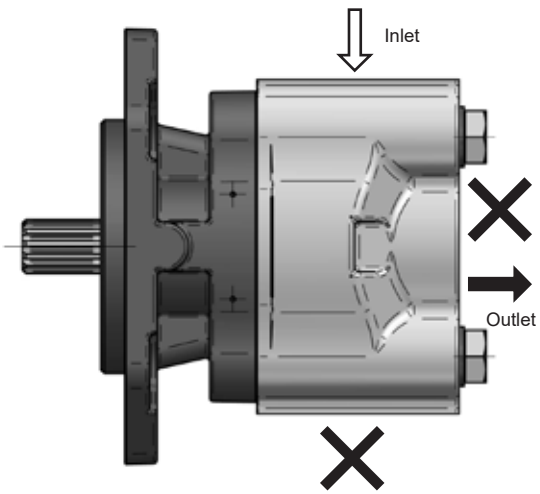
CODE 1



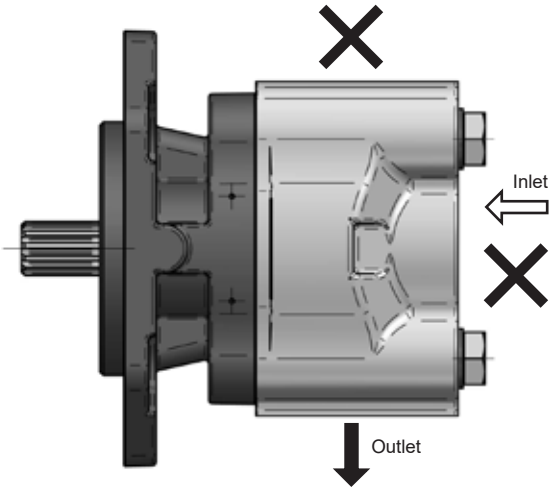
CODE 2



CODE 3



CODE 4



CODE 5

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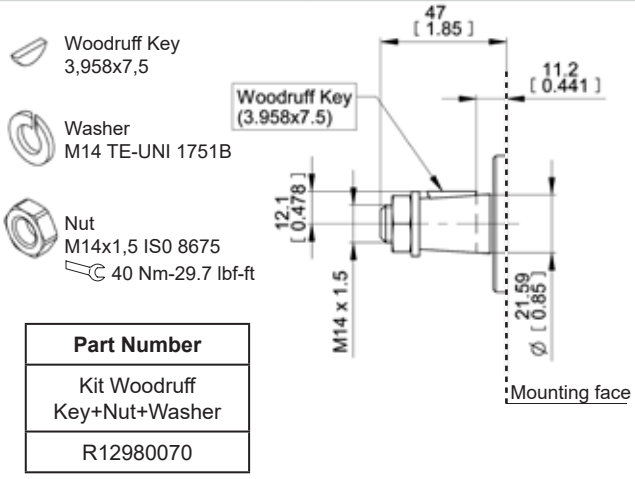
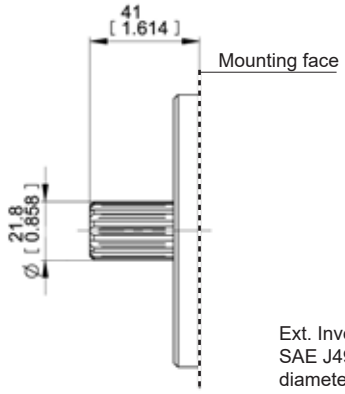
Drive Shaft



Part Number
Kit Woodruff Key+Nut+Washer
R12980070



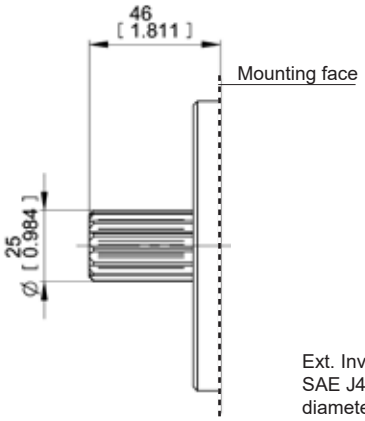
Ext. Involute Spline SAE J498B with outer diameter modified 13 teeth - 16/32 Pitch - 30 deg - Flat Root - Side fit - Class 1

code 38	Max torque 250 Nm (2213 lbf in)

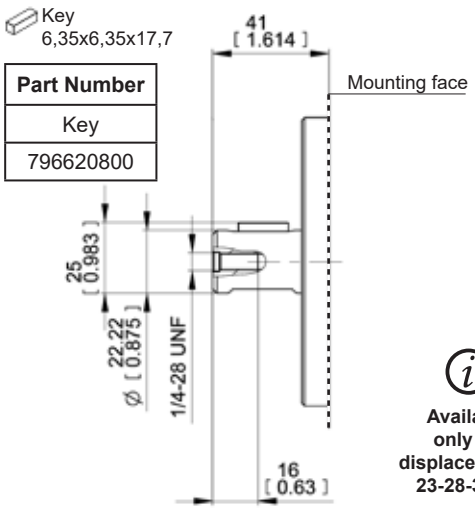
TAPERED 1:8

code 55	Max torque 330 Nm (2921 lbf in)

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



Part Number
Key
796620800

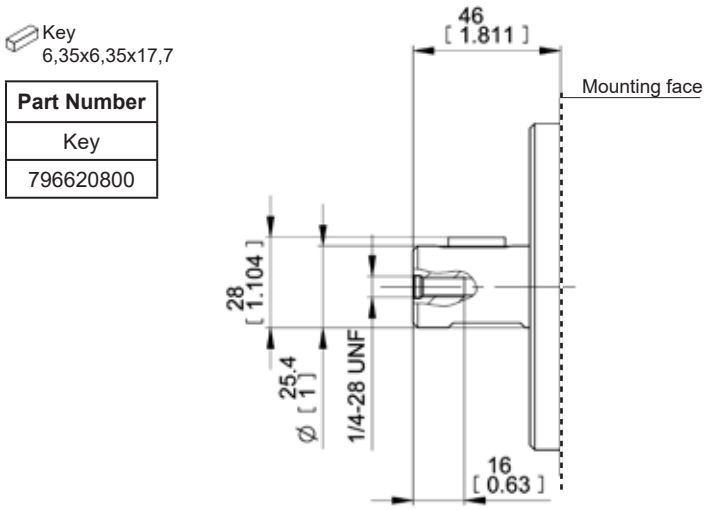
Available only for displacements: 23-28-34-40

code 56	Max torque 480 Nm (4250 lbf in)

SAE BB 15T-16/32DP SPLINED

code 87	Max torque 220 Nm (1950 lbt in)

SAE B PARALLEL



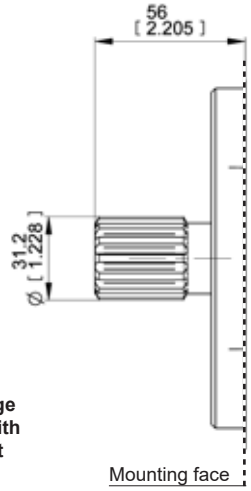
Part Number
Key
796620800

code 88	Max torque 320 Nm (2830 lbt in)

SAE BB PARALLEL

E0.151.0721.14.00IM00

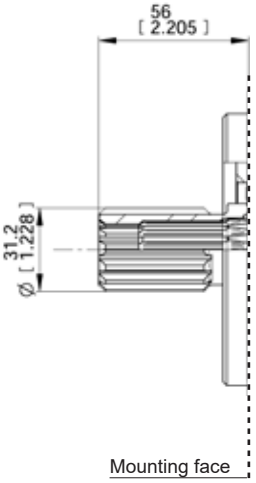
Continental Shaft



for S4
SAE C flange
Mounting with solid shaft

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

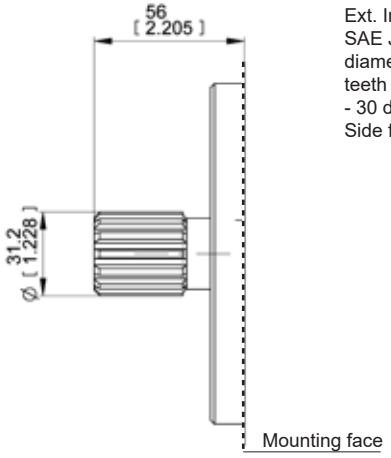
Part Number
Coupling Sleeve+O ring
R15170390



for S3
SAE B flange
Mounting with coupling sleeve

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	

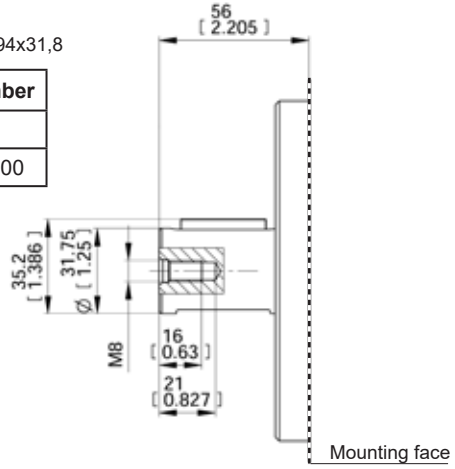


Ext. Involute Spline SAE J498B with outer diameter modified 14 teeth - 12/24 Pitch - 30 deg - Flat Root - Side fit - Class 1

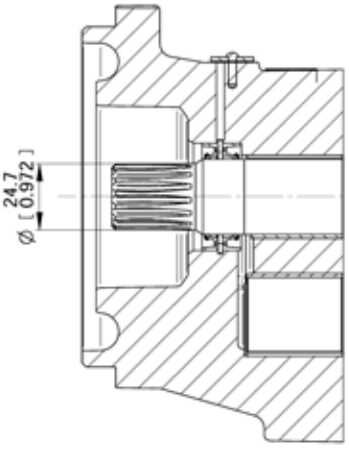
code 57	Max torque 480 Nm (4250 lbt in)
SAE C 14T-12/24DP SPLINED	

Key 7,94x7,94x31,8

Part Number
Key
796620800



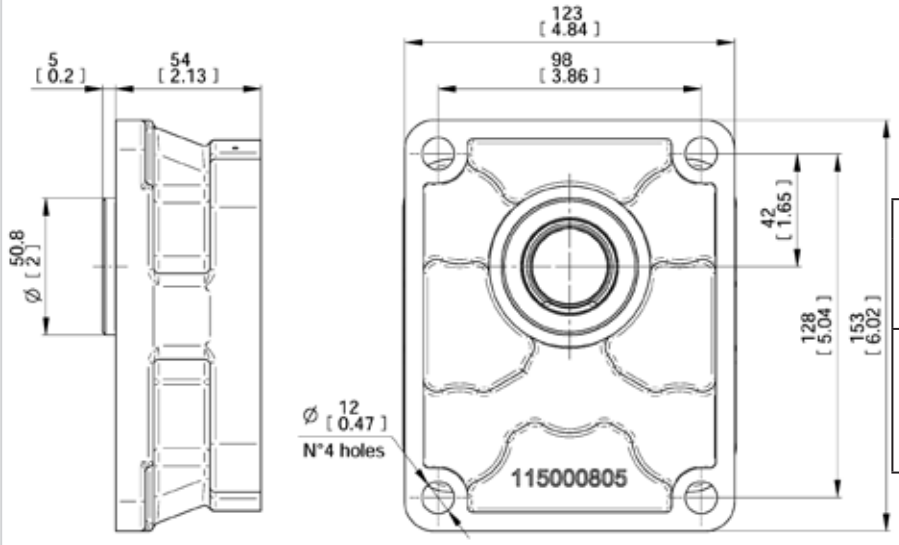
code 89	Max torque 480 Nm (4250 lbt in)
SAE C PARALLEL	



code 70	Max torque 480 Nm (4250 lbt in)
INTERNAL DRIVE SHAFT - W25X1.5X15X8F DIN 5480 SPLINED	

E0.151.0721.14.00IM00

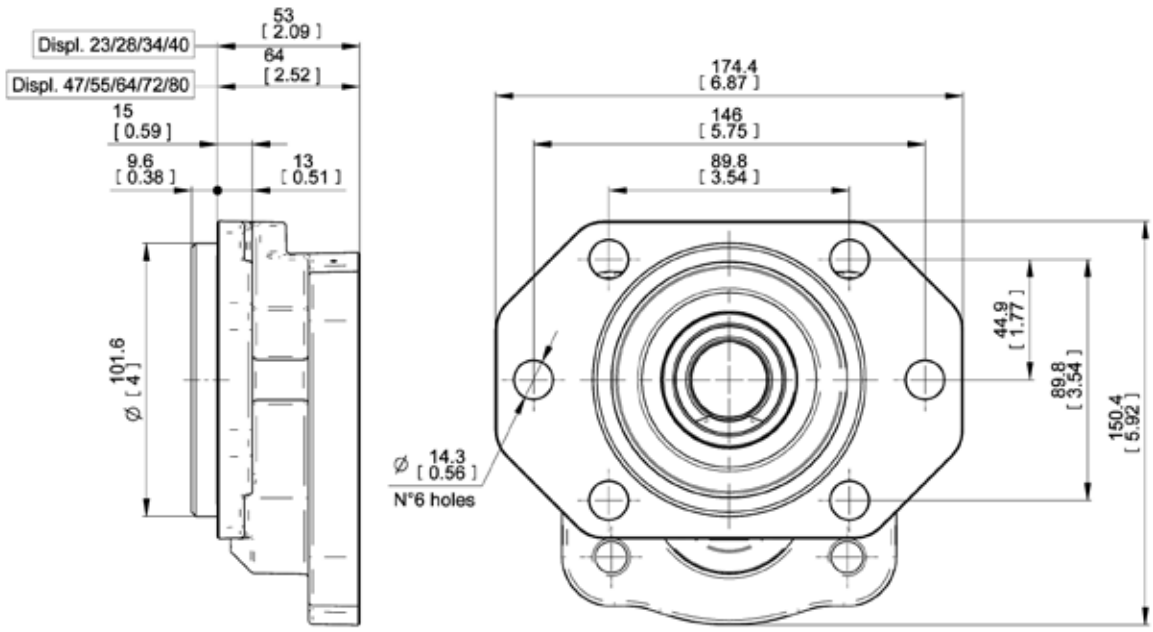
Mounting Flanges



Code	Part Number	
	Flange+ Shaft seal kit	Shaft seal kit (See page 143-144)
38P2	R15170210 (NBR) R15170220 (FPM)	R12940080 (NBR) R12940083 (FPM)

P2	With shaft code 38

EUROPEAN STANDARD

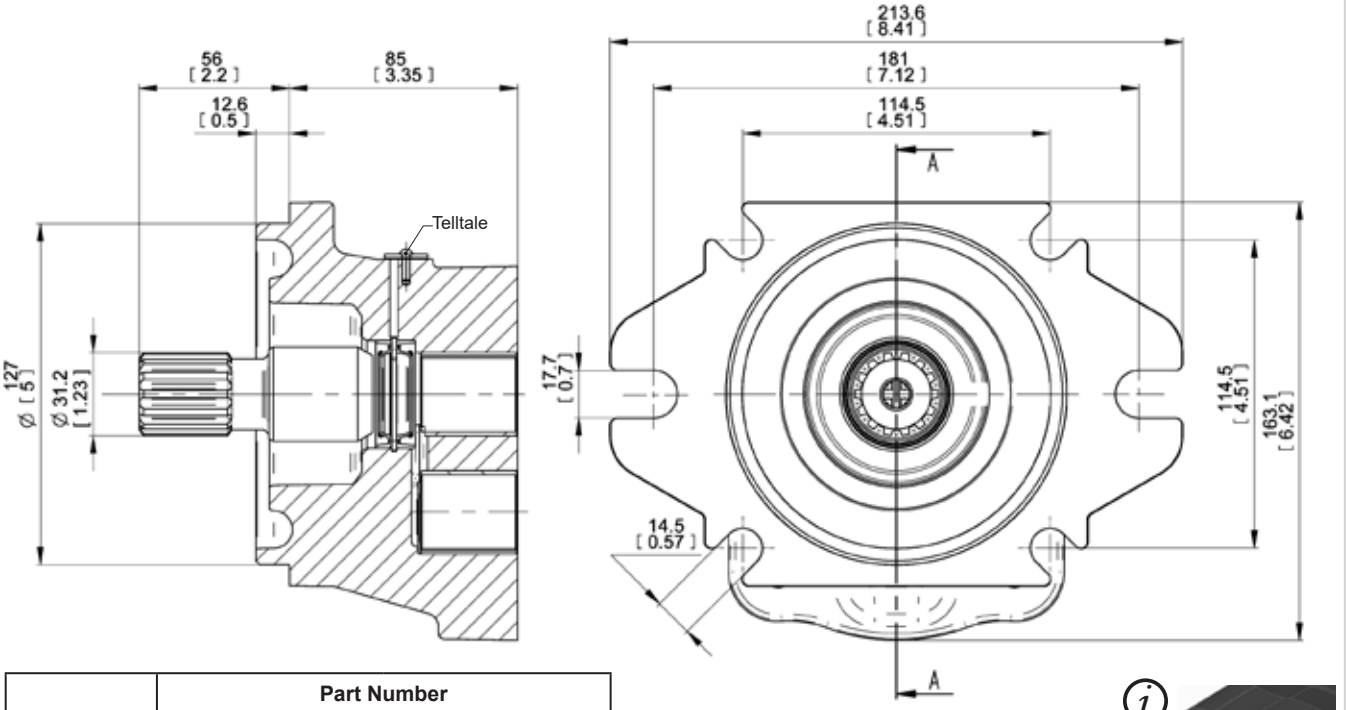


Code	Part Number				
	Flange+Shaft seal kit				Shaft seal kit (See page 143-144)
55S3	Displ. from 23 to 40	R15170230 (NBR) R15170240 (FPM)	Displ. from 47 to 80	R15170250 (NBR) R15170260 (FPM)	R15170140 (NBR) R15170080 (FPM)
56S3					
87S3					
88S3		R15170270 (NBR) R15170280 (FPM)		R15170290 (NBR) R15170300 (FPM)	R15170130 (NBR) R15170131 (FPM)
58S3		R15170310 (NBR) R15170320 (FPM)		R15170330 (NBR) R15170340 (FPM)	R15020190 (NBR) R15020191 (FPM)

S3	With shaft code 55-56-58-87-88

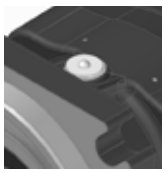
SAE B 2-4 BOLTS

Mounting Flanges



Code	Part Number	
	Flange+Shaft seal kit	Shaft seal kit (See page 143-144)
58S4	R15020015 (NBR) R15020017 (FPM)	R15020190 (NBR) R15020191 (FPM)

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

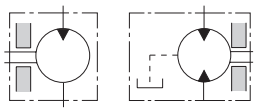


S4	With shaft code 58
SAE C 2-4 BOLTS	

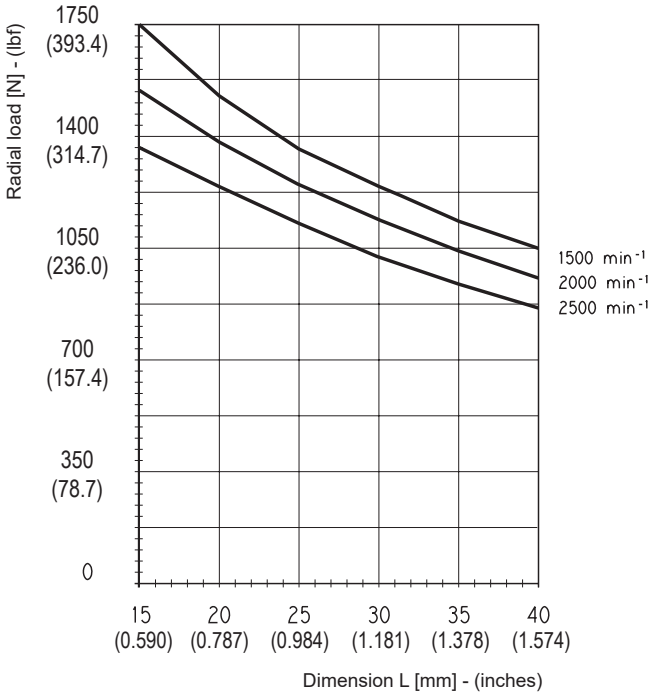
E0.151.0721.14.00IM00

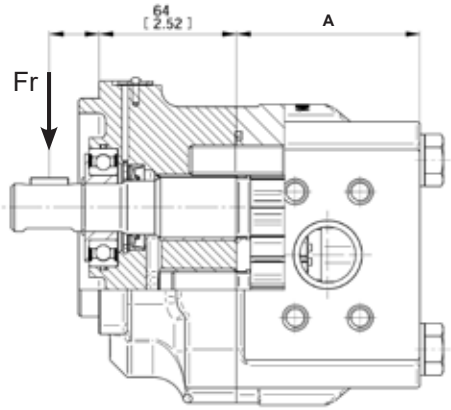
Mounting Flanges with Outrigger Bearing for Medium Loads (R3)

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



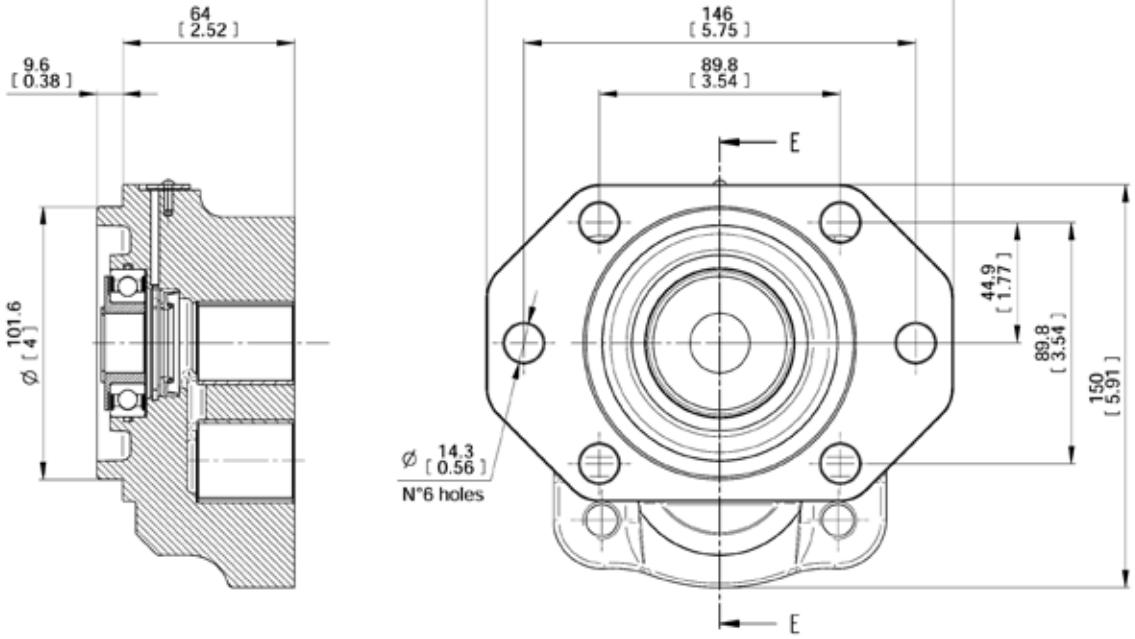
L=Distance between mounting flange and radial force point of application [mm-inches]





Type	A	
	mm	*in*
MG330 - 23	77	*3.03*
MG330 - 28	81	*3.19*
MG330 - 34	85.5	*3.36*
MG330 - 40	90	*3.54*
MG330 - 47	101.5	*3.40*
MG330 - 55	107.5	*4.23*
MG330 - 64	114.5	*4.51*
MG330 - 72	121.5	*4.78*
MG330 - 80	127.5	*5.02*

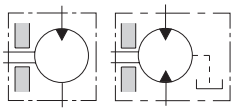
Code	Part Number
	Flange+Bearing support
55R3	R15020023 (NBR)
87R3	R15020090 (FPM)
56R3	R15020021 (NBR)
88R3	R15020080 (FPM)



R3	With shaft code 55-56-87-88
SAE B 2-4 BOLTS	

Mounting Flanges with Outrigger Bearing for Heavy Loads (R8)

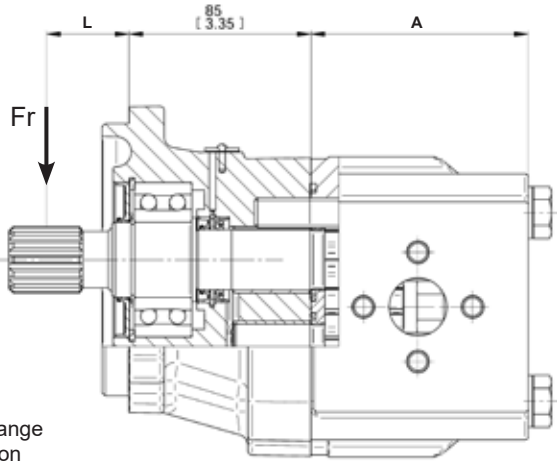
The following diagram shows radial load bearing capacity, in case of parallel axis drag. The duty life of 3500 - 4000 hours is referred to a tipical mobile application, when duty cycle is less than 100%.



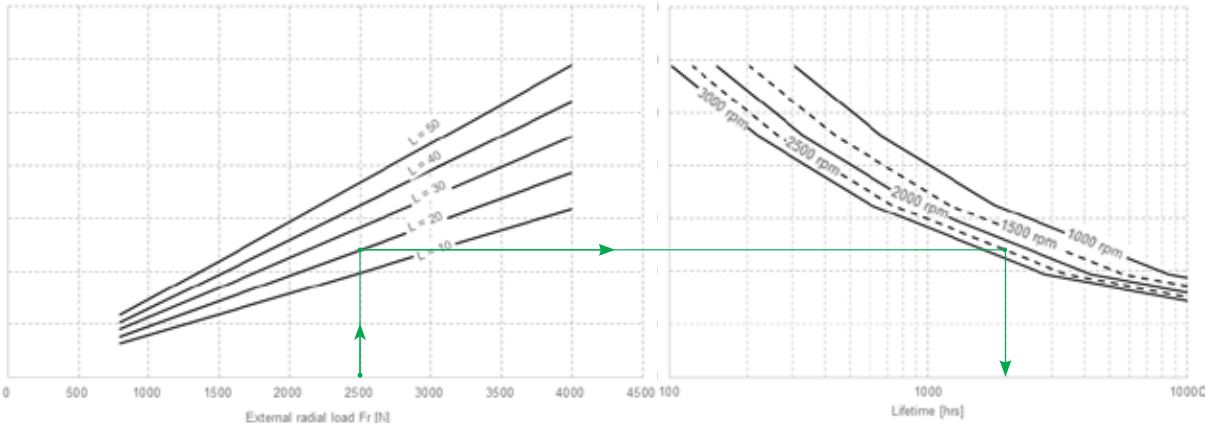
Example:
Fr = 2500 N
L = 20 → Expected life: 2000 hrs
Speed = 2500 rpm

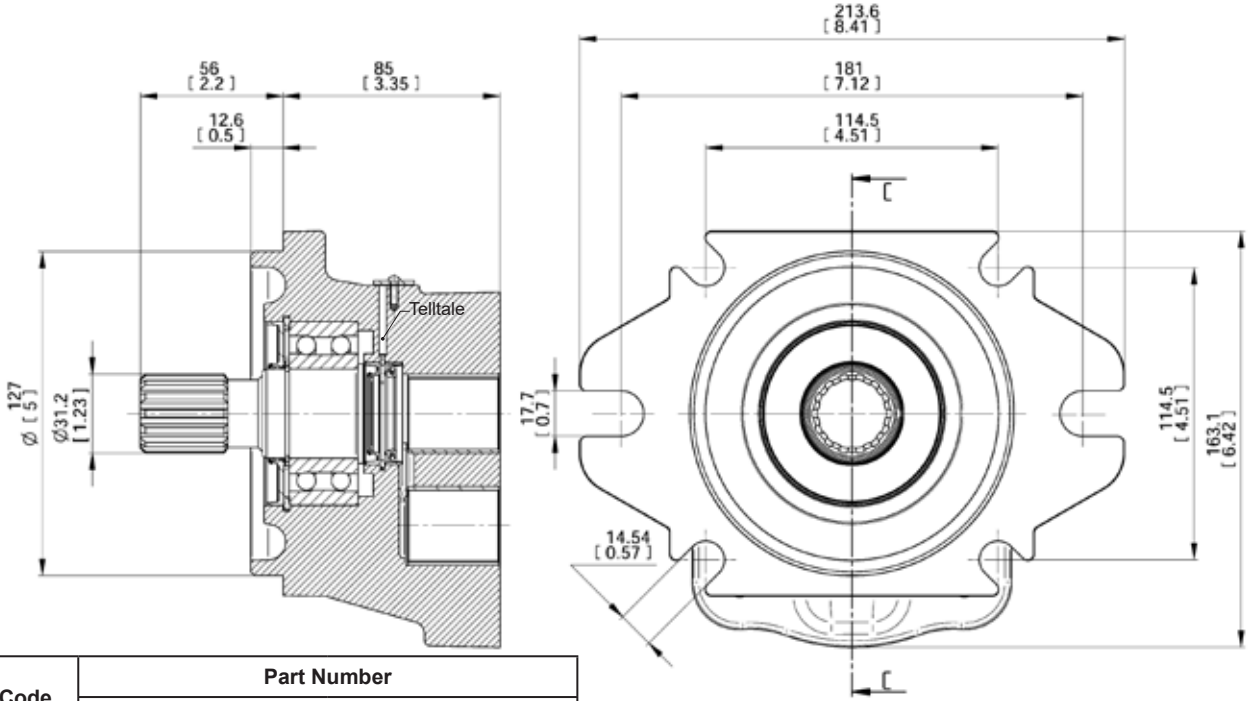
Type	A	
	mm	*in*
MG330 - 23	77	*3.03*
MG330 - 28	81	*3.19*
MG330 - 34	85.5	*3.36*
MG330 - 40	90	*3.54*
MG330 - 47	101.5	*3.40*
MG330 - 55	107.5	*4.23*
MG330 - 64	114.5	*4.51*
MG330 - 72	121.5	*4.78*
MG330 - 80	127.5	*5.02*

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



Code R8





Code	Part Number	
	Flange+Bearing support	
57R8	R15020060 (NBR)	R15020061 (NBR)
89R8	R15020070 (NBR)	R15020071 (NBR)

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

R8	With shaft code 57-89
SAE C 2-4 BOLTS	

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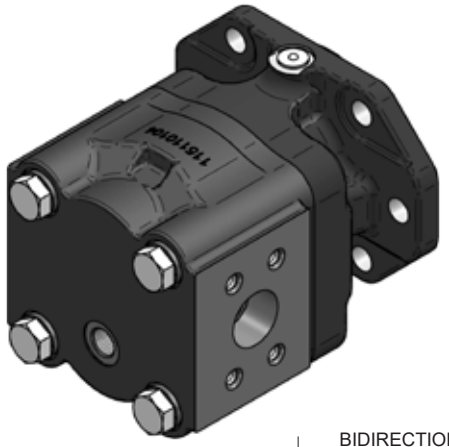
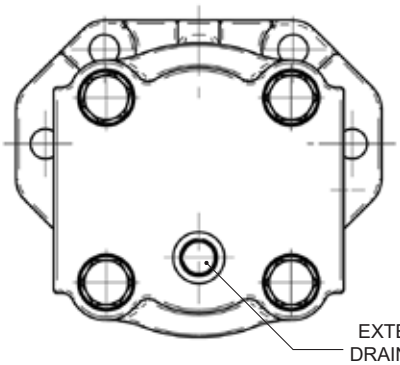
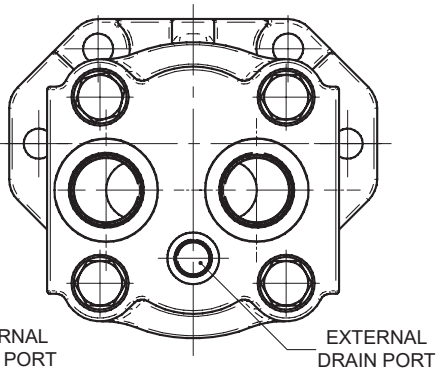
External Drain for Bidirectional Motor



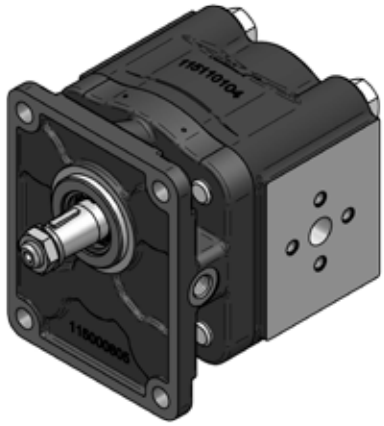


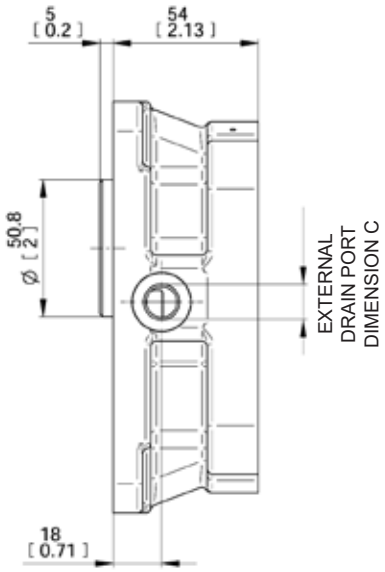


Threaded Drain Port
C
9/16-18 UNF-2B SAE 6
G 3/8

Available only threaded ports see page 131

GEAR HOUSING TYPES

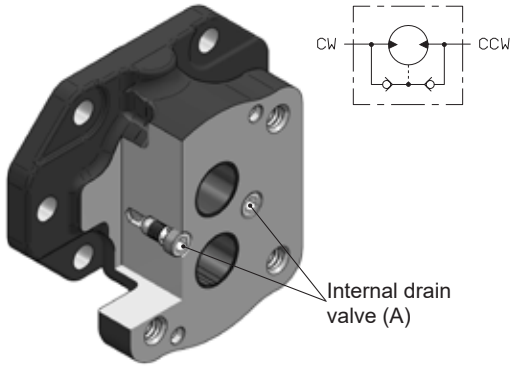




Code	Part Number	Threaded Drain Port
		C
P2 with lateral drain	R15080015 (GAS)	G 1/4

LD	P2 (EUROPEAN STANDARD) WITH LATERAL DRAIN

Internal Drain Valve for Bidirectional Motor

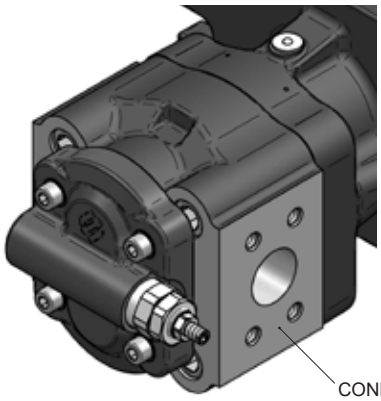


Code	Part Number		
	Flange+Shaft seal kit+Internal drain valve		Internal drain valve (A)
P2-IDV	R15030020 (NBR)	R15030030 (FPM)	R15012501
S3-IDV	R15012503 (NBR) (from 23cc to 40cc) R15012502 (NBR) (from 47cc to 72cc)	R15012505 (FPM) (from 23cc to 40cc) R15012506 (FPM) (from 47cc to 72cc)	
S4-IDV	R15012507 (NBR)	R15012508 (FPM)	
R8-IDV	R15012509 (NBR)	R15012510 (FPM)	

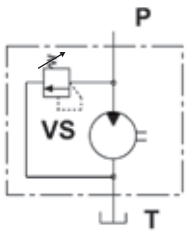
IDV	INTERNAL DRAIN FOR BI-DIRECTIONAL PUMP

E0.151.0721.14.00IM00

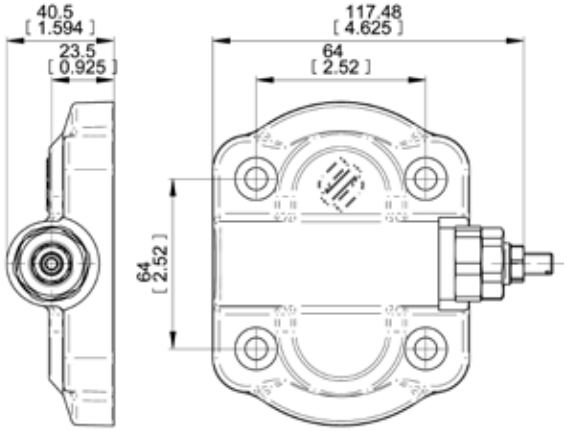
Rear Cover with Valves

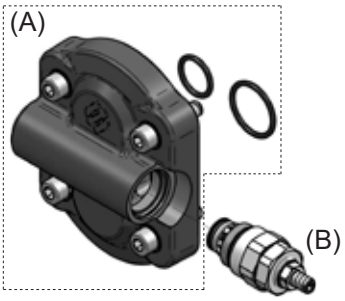


CONFIGURATION WITH SPECIAL GEAR HOUSING



Available up to 80 l/min

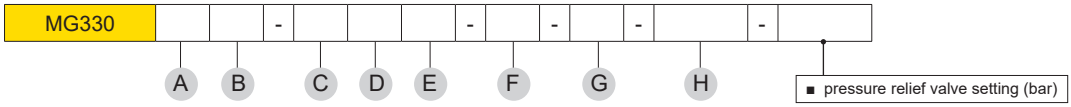




Code	Part Number		
	Cast iron Cover+O-ring (A)	Pressure relief valve (B) setting range	
VS Internal Discharge	R15030010	796366200	20-70 bar
		796366300	71-150 bar
		796366400	151-215 bar
		796366500	216-265 bar

VS - MAIN RELIEF VALVE

E0.151.0721.14.00IM00



A CODES	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.*

B ROTATION	CODES
Clockwise	D
Anti-clockwise	S
Reversible	R

C PORTS (page 130)	CODES
Flanged ports european standard	P
Flanged ports SAE J518 Metric thread	W
Flanged ports SAE J518 American standard thread	S
Threaded ports GAS (BSPP)	G
Threaded ports SAE (ODT)	R

D DRIVE SHAFT (page 134)	CODES
Tapered 1:8	38
SAE B splined 13T	55
SAE BB splined 15T	56
SAE B PARALLEL	87
SAE BB PARALLEL	88
SAE C 14T-12/24DP Continental Shaft	58
SAE C 14T-12/24DP Continental Shaft	57
SAE C PARALLEL Continental Shaft	89

H FLANGES AND REAR COVERS (page 139)	CODES
Adjustable main relief valve	■ VS
Internal drain valve (Flange)	IDV
Lateral drain on P2 (Flange European standard)	LD

G PORTS LAYOUT (page 132)	CODE
Side ports (standard configuration)	-
Rear ports	1
Side ports - Rear ports plugged	2
Rear ports - Side ports plugged	3
Side Inlet port - Rear outlet port	4
Rear Inlet port - Side outlet port	5

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

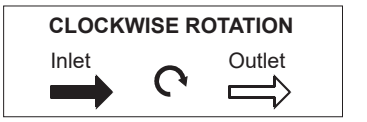
E MOUNTING FLANGES (page 135)	CODES
European standard Ø50.8	P2
SAE B 2-4 BOLTS	S3
SAE C 2-4 BOLTS	S4
SAE B 2-4 BOLTS (Medium Loads)	R3
SAE C 2-4 BOLTS (Heavy Loads)	R8

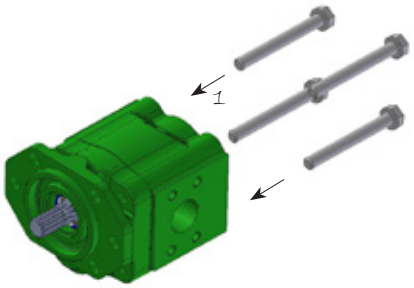
How to order Motor: MG330 28D, ports European (P), drive shaft (38), mounting flange (P2) **MG330-28D-P38P2**

E0.151.0721.14.00IM00

Motor Changing Rotation Instructions

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

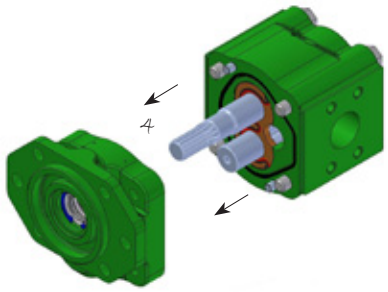




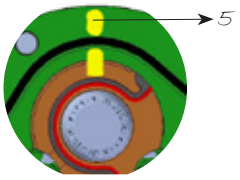
1 - Loosen and fully unscrew the screws.

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

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

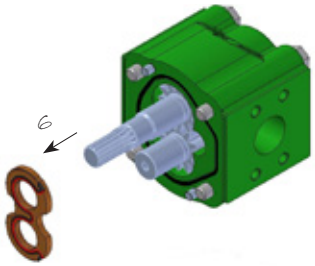


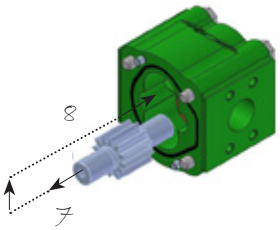
4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



5 - Mark the position of the bushing and eventually the thrust plate, relative to the body.

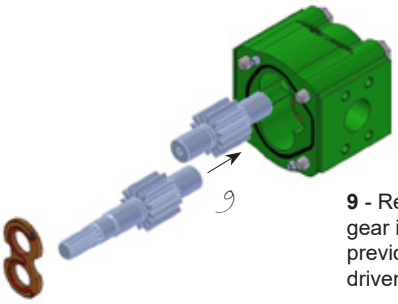
6 - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.



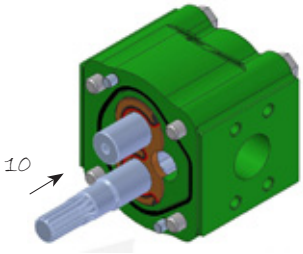


7 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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



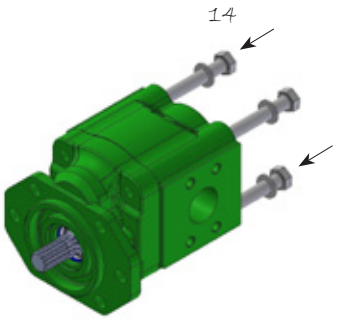
9 - Re-locate the driving gear in the position previously occupied by the driven gear.



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 body and mounting flange refaced surfaces.

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

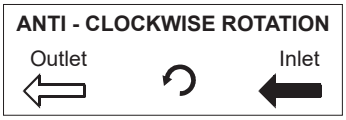


13 - Refit the mounting flange, turned 180° from its original position.

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

15 - Check that the shaft rotates freely.

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



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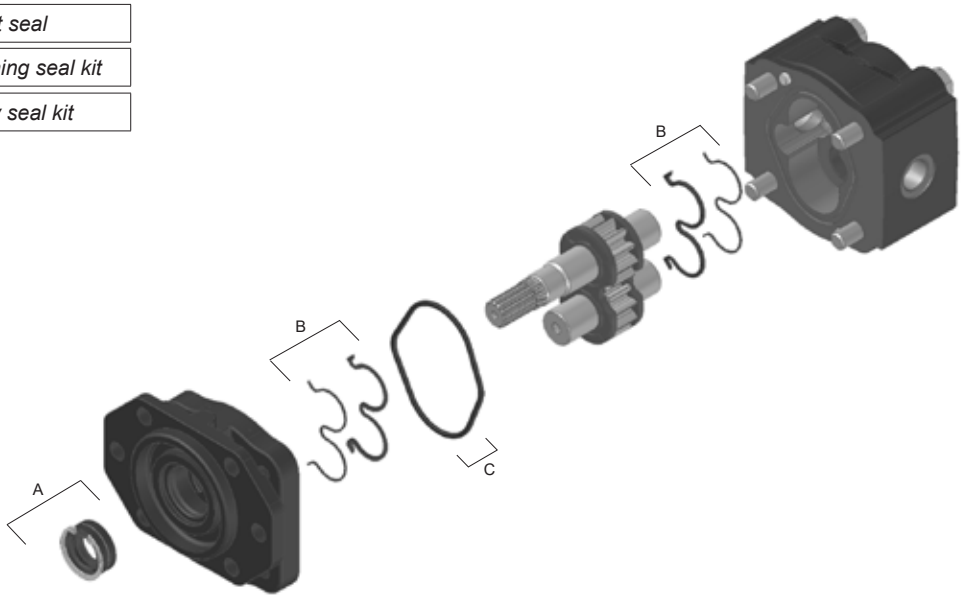
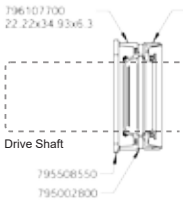
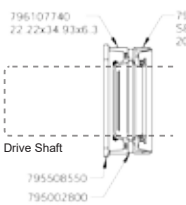
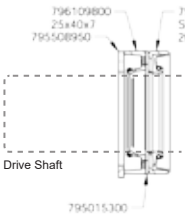
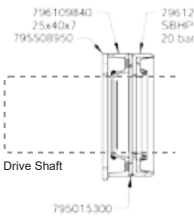
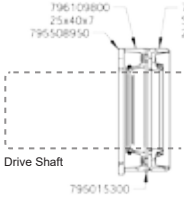
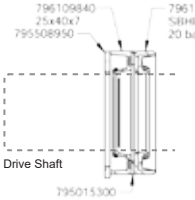
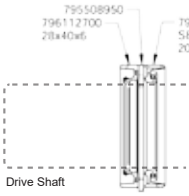
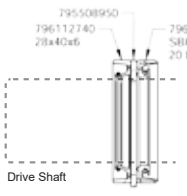
Unidirectional Motor Seal Spare Parts Kit

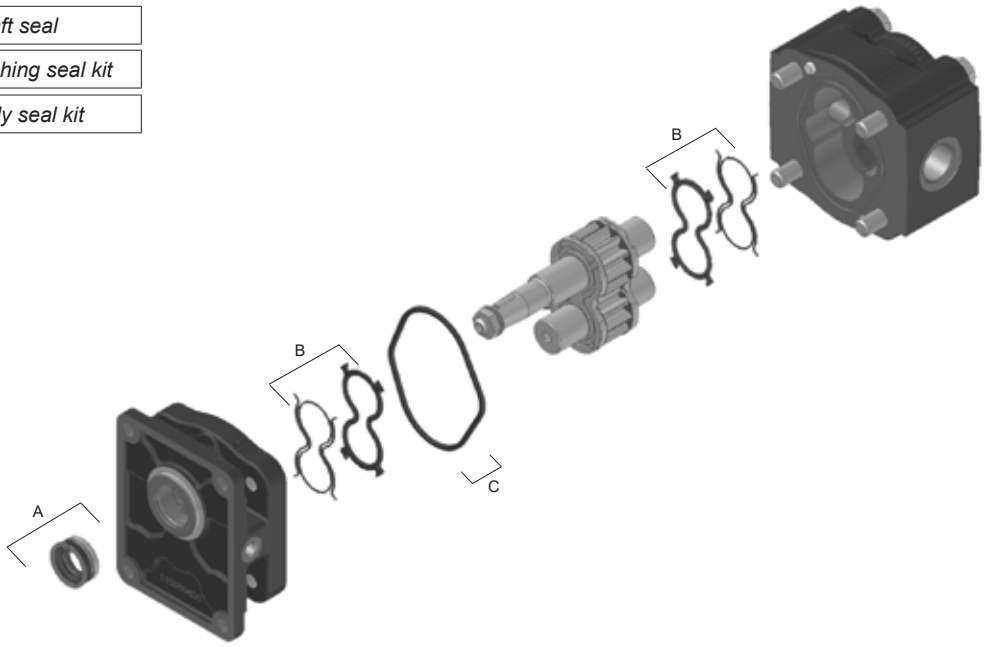
A	*Shaft seal*
B	*Bushing seal kit*
C	*Body seal kit*

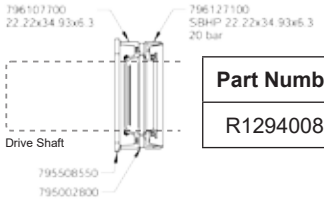
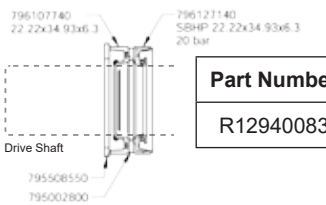
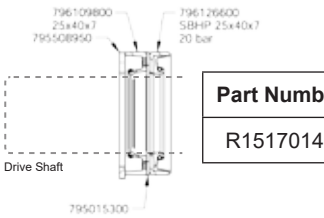
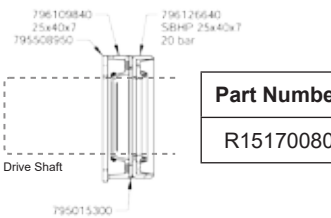
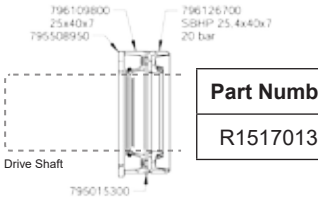
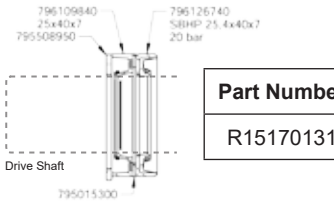
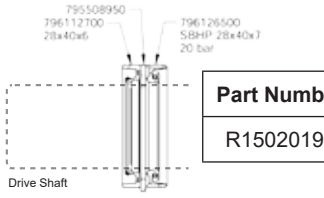
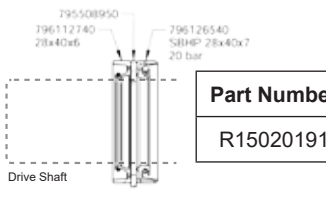


SHAFT & FLANGE TYPE	NBR COMPOUND		FPM COMPOUND	
	Complete seal kit (A+B+C)	Shaft seal kit (A)	Complete seal kit (A+B+C)	Shaft seal kit (A)
38P2	**Part Number** R15170351	 **Part Number** R12940080	**Part Number** R15170361	 **Part Number** R12940083
55S3 56S3 58S3 87S3	**Part Number** R15170371	 **Part Number** R15170140	**Part Number** R15170381	 **Part Number** R15170080
88S3	**Part Number** R15170391	 **Part Number** R15170130	**Part Number** R15170401	 **Part Number** R15170131
58S4	**Part Number** R15170030	 **Part Number** R15020190	**Part Number** R15170421	 **Part Number** R15020191

Bidirectional Motor 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	 **Part Number** R12940080	**Part Number** R15170360	 **Part Number** R12940083
55S3 56S3 58S3 87S3	**Part Number** R15170370	 **Part Number** R15170140	**Part Number** R15170380	 **Part Number** R15170080
88S3	**Part Number** R15170160	 **Part Number** R15170130	**Part Number** R15170400	 **Part Number** R15170131
58S4	**Part Number** R15170410	 **Part Number** R15020190	**Part Number** R15170420	 **Part Number** R15020191

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Note

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Note

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