Casappa Polaris hydraulic gear pump PLP20.9D0-82E2-LGD/GD-N-EL-FS

Manufacturer: Casappa

Manufacturer part number / published order designation: PLP20.9D0-82E2-LGD/GD-N-EL-FS

Published model: PLP20.9D0-82E2-LGD/GD-N-EL-FS

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: applicable family/component reference. Exact execution documentation remains incomplete. Do not treat standard component or stage drawings as approval of the complete custom assembly.

Execution notes and conditions

Exact manufacturer assembly/rear female-spline drawing for the FS execution.

FS is decoded as female spline on p81, but its execution-specific female-spline geometry is not supplied by shaft82 front-drive drawing.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Casappa Polaris Aluminium Gear Pumps And Motors

Original pages	Compiled pages	Relevant content
4-7	2-5	Installation, alignment, clean start, cold-start restrictions and maintenance; Series construction, inlet pressure, viscosity and NBR seal temperature conditions; Rotation viewed from drive shaft, filtration and p1/p2/p3 duty definitions; Exact PL.20 size 9 displacement/rating/speed row with side-port single-rotation footnote
13	6	PLP20 curve test-fluid/temperature conditions and flow curves; exact size 9 legend
15	7	Exact size PLP20•9 input-power/torque versus speed and pressure charts
36	8	PL.20 side-port single-unit drawing and exact size 9 A/B/C/D row; use S-D single-rotation view
53	9	Actual shaft 82 mechanical drawing (European 1:8 taper)
61	10	Actual flange E2 drawing and version0 shaft82 compatibility row
70	11	Side-port GD/GD inlet/outlet mapping for exact size 9
74	12	Actual BSPP port mechanical definition and GD=G1/2 / GE=G3/4 rows, depth and tightening torque
80-81	13-14	Decode existing published designation: size, D/S rotation, version0, shaft82, flangeE2, L side ports; Decode existing designation: GD/GD, N seals, EL aluminium flange/cover where stated; FS option only if stated

INSTRUCTIONS

INSTALLATION

Pump
The direction of rotation of single-rotation pumps must be the same as that of the drive shaft. Check that the coupling flange correctly aligns the transmission shaft and the pump shaft. Flexible couplings should be used (never rigid fittings) which will not generate an axial or radial load on the pump shaft.

Motor
The direction of rotation of single-rotation motors must match circuit connections. Check that the coupling flange correctly aligns the transmission shaft and the motor shaft. Flexible couplings should be used (never rigid fittings) which will not generate an axial or radial load on the motor shaft.

TANK
Tank capacity must be sufficient for the system's operating conditions (~ 3 times the amount of oil in circulation) to avoid overheating of the fluid. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

LINES
The lines must have a major diameter which is at least as large as the diameter of pump or motor ports, and must be perfectly sealed. To reduce loss of power, the lines should be as short as possible, reducing the sources of hydraulic resistance (elbow, throttling, gate valves, etc.) to a minimum. A length of flexible tubing is recommended to reduce the transmission of vibrations. All return lines must end below the minimum oil level, to prevent foaming. Before connecting the lines, remove any plugs and make sure that the lines are perfectly clean.

HYDRAULIC FLUID
Use hydraulic fluid conforming to viscosity data as specified in the first pages of the catalogue. Avoid using mixtures of different oils which could result in decomposition and reduction of the oil's lubricating power.

FILTERS
We recommend filtering the entire system flow. Filters on suction and return line must be fitted in according to the contamination class as indicated in the first pages of the catalogue. Casappa recommends to use its own production filters:

IKRON® Fluid Filtration

STORAGE
The storage must be in a dry environment.
Max storage time in ideal conditions is 24 months.
The ideal storage temperature is between 5 °C (41 °F) and 20 °C (68 °F). No problem in case of temperature between -40 °C (-40 °F) and 50 °C (122 °F). Below -40 °C (-40 °F) please consult our pre-sales department.

STARTING UP
Check that all circuit connections are tight and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting. Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank.
If the difference between pump or motor temperature and fluid temperature exceeds 10 °C (18 °F), rapidly switch the system on and off to heat it up gradually. Then gradually increase the pressure and speed of rotation until the pre-set operating levels as specified in the catalogue are attained.

COLD START
Cold start is meant short term and low idle. During cold start of the machine the following limits can be applied:

Minimum inlet pressure	0,5 bar abs. (7 psi)
Outlet pressure (pumps) Inlet pressure (motors)	≤ 50 bar (725 psi)
Max drain pressure / Max back pressure for single rotation motors	+ 50% of standard values
Speed	≤ 1500 min^{-1}
Minimum temperature	-40 °C (-40 °F)
Max oil viscosity	2000 mm^2/s (cSt) [9100 SSU]

If the ambient temperature is lower than -20 °C (-4 °F) the system speed and pressure must be limited until the hydraulic oil temperature exceeds -20 °C (-4 °F).

PERIODICAL CHECKS - MAINTENANCE
Keep the outside surface clean especially in the area of the drive shaft seal. In fact, abrasive powder can accelerate wear on the seal and cause leakage. Replace filters regularly to keep the fluid clean. The oil level must be checked and oil replaced periodically depending on the system's operating conditions.

05/04.2023

FEATURES

Replaces: 05/04.2023

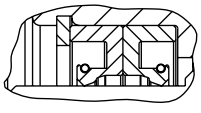
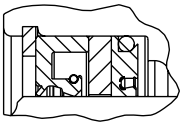
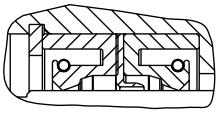
Construction	External gear pumps and motors 3-piece construction
Mounting	EUROPEAN - SAE - GERMAN standard flanges
Ports	Threaded or flanged
Direction of rotation (looking on drive shaft)	Anti-clockwise (S) - clockwise (D) - reversible external drain (R - L) reversible internal drain (B)
Inlet pressure range for pumps	0,7 ÷ 3 bar abs. (10 ÷ 44 psi) If p > 1,5 bar abs. (22 psi) specific shaft sealing have to be applied. Please consult our pre-sales department.
Max back pressure for single rotation motors	5 bar (73 psi) continuous @ min. speed 350 min^{-1}
	1 bar (14.5 psi) continuous @ max. speed (see page 7)
Max drain line pressure on reversible rotation motors	5 bar (73 psi) continuous @ min. speed 350 min^{-1}
	1 bar (14.5 psi) continuous @ max. speed (see page 7)
Max back pressure on in series motors	150 bar (2175 psi)
Fluid temperature range	See table (1)
Fluid	Mineral oil based hydraulic fluids to ISO/DIN. Please contact us for other fluids
Viscosity range	From 12 to 100 mm^2/s (cSt) [60 to 456 SSU] recommended
	Up to 750 mm^2/s (cSt) [3410 SSU] permitted
Filtering requirement and recommended fluid contamination	See table (2) page 6

Tab. 1

Type	Fluid composition	Max pressure bar (psi)	Max speed min^{-1}	Temperature - °C (°F)			Seals (●)	Shaft seals option (◆)
				Min	Max continuous	Max peak		
ISO/DIN	Mineral oil basedhydraulic fluid to ISO/DIN	See page 7	See page 7	-25 (-13)	80 (176)	100 (212)	**N**	**D** **C1**
				-25 (-13)	110 (230)	125 (257)	**V**	
				-25 (-13)	110 (230)	125 (257)	**T-PV**	

(●) **N** = Buna NBR (standard) - V = Viton-FKM - T-PV = Hydrogenated buna HNBR seals with Viton-FKM shaft seals (only for PLP20)

O 06/02.2024

	D (◆) shaft seals with wiper seal		**C1** (◆) High pressure special shaft seal	
Single rotation pumps	Max drain line pressure: 0,5 bar (7 psi)		Max drain line pressure: 10 bar (145 psi) @ 2000 min^{-1} **O**	
Single rotation motors Reversible rotation pumps and motors	Max drain line pressure: 5 bar (73 psi) @ 350 min^{-1}			

FEATURES

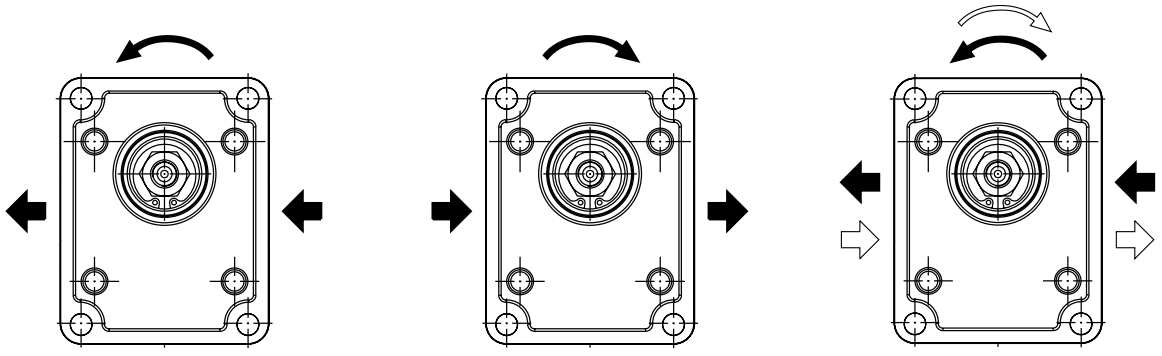
Filtration

Casappa recommends to use its own production filters:

Tab. 2

Working pressure bar (psi)	Δp < 140 (2030)	140 < Δp < 210 (2030) (3045)	Δp > 210 (3045)
Contamination class NAS 1638	10	9	8
Contamination class ISO 4406	21/19/16	20/18/15	19/17/14
Achieved with filter $ß_{10}$ (c) ≥ 75 according to ISO 16889	-	10 µm	10 µm
Achieved with filter $ß_{25}$ (c) ≥ 200 according to ISO 16889	25 µm	-	-

DEFINITION OF ROTATION DIRECTION LOOKING AT THE DRIVE SHAFT

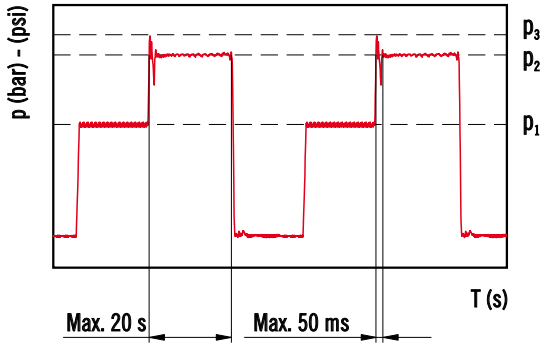


Anti-Clockwise rotation **Clockwise rotation** **Reversible rotation**

GENERAL NOTES

Available with different inlet and outlet ports.
Please contact us for more information.

PRESSURE DEFINITION



p_1 Constant operating pressure
p_2 System pressure (relief valve setting)
p_3 Peak of pressure

The peak of pressure is the max pressure allowed and it corresponds to the overshoot of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.
If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Casappa limit.

Please contuct us for high frequency applications.

04/10.2020

FEATURES

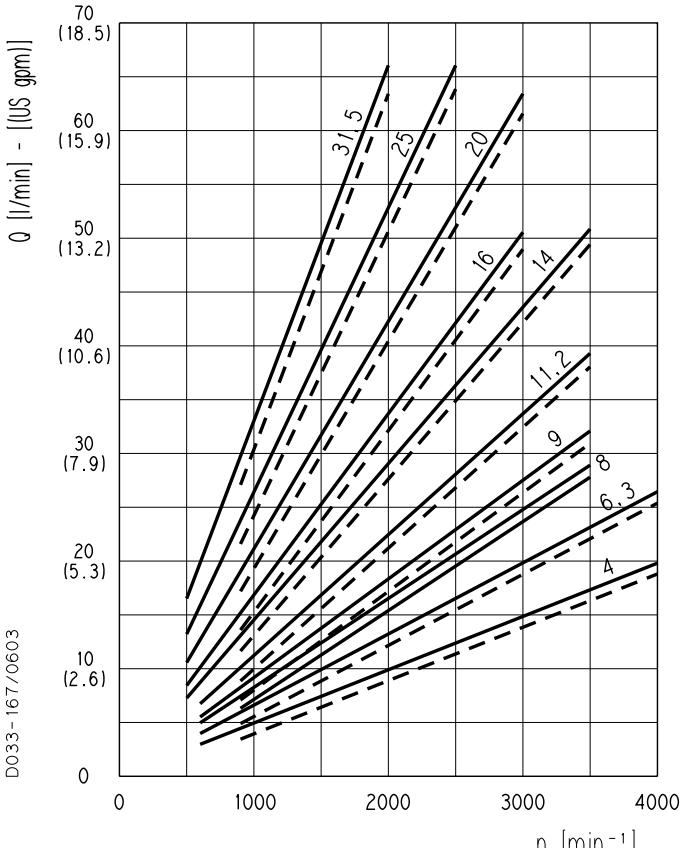
Series	Pump type PLP Motor type PLM	Displacement	Max. pressure			Max. speed	Min. speed
			p_1	p_2	p_3		
		cm^3/rev (in^3/rev)	bar (psi)			min^{-1}	
POLARIS 10	**PL. 10•1**	1,07 (0.07)	260 (3770)	280 (4060)	290 (4205)	4000	650
	PL. 10•1,5	1,60 (0.10)	260 (3770)	280 (4060)	290 (4205)	4000	650
	PL. 10•2	2,13 (0.13)	260 (3770)	280 (4060)	290 (4205)	4000	650
	PL. 10•2,5	2,67 (0.16)	260 (3770)	280 (4060)	290 (4205)	4000	650
	PL. 10•3,15	3,34 (0.20)	260 (3770)	280 (4060)	290 (4205)	4000	650
	PL. 10•4	4,27 (0.26)	250 (3625)	270 (3915)	280 (4060)	4000	650
	PL. 10•5	5,34 (0.33)	250 (3625)	270 (3915)	280 (4060)	4000	650
	PL. 10•5,8	6,20 (0.38)	230 (3335)	250 (3625)	260 (3770)	3500	650
	PL. 10•6,3	6,67 (0.41)	230 (3335)	250 (3625)	260 (3770)	3500	650
	PL. 10•8	8,51 (0.52)	180 (2610)	200 (2900)	210 (3045)	3500	650
	PL. 10•10	10,67 (0.65)	140 (2030)	160 (2320)	170 (2465)	3500	650
POLARIS 20	**PL. 20•4**	4,95 (0.30)	250 (3625)	280 (4060)	300 (4350)	4000	600
	PL. 20•6,3	6,61 (0.40)	250 (3625)	280 (4060)	300 (4350)	4000	600
	PL. 20•7,2	7,29 (0,44)	250 (3625)	280 (4060)	300 (4350)	4000	600
	PL. 20•8	8,26 (0.50)	250 (3625)	280 (4060)	300 (4350)	3500	600
	PL. 20•9	9,17 (0.56)	250 (3625)	280 (4060)	300 (4350)	3500	600
	PL. 20•10,5	10,9 (0.66)	250 (3625)	280 (4060)	300 (4350)	3500	600
	PL. 20•11,2	11,23 (0.69)	250 (3625)	280 (4060)	300 (4350)	3500	600
	PL. 20•14	14,53 (0.89)	250 (3625)	280 (4060)	300 (4350)	3500	500
	PL. 20•16	16,85 (1.03)	250 (3625)	280 (4060)	300 (4350)	3000	500
	PL. 20•19	19,09 (1.16)	200 (2900)	220 (3190)	240 (3480)	3000	500
	PL. 20•20	21,14 (1.29)	200 (2900)	220 (3190)	240 (3480)	3000	500
	PL. 20•24,5	24,84 (1.52)	170 (2465)	190 (2755)	210 (3045)	2500	500
	PL. 20•25	26,42 (1.61)	170 (2465)	190 (2755)	210 (3045)	2500	500
	PL. 20•27,8	28,21 (1.72)	130 (1885)	150 (2175)	170 (2465)	2000	500
	PL. 20•31,5	33,03 (2.01)	130 (1885)	150 (2175)	170 (2465)	2000	500
POLARIS 30	**PL. 30•22**	21,99 (1.34)	250 (3625)	270 (3915)	280 (4060)	3000	350
	PL. 30•27	26,70 (1.63)	250 (3625)	270 (3915)	280 (4060)	3000	350
	PL. 30•34	34,55 (2.11)	240 (3480)	260 (3770)	270 (3915)	3000	350
	PL. 30•38	39,27 (2.40)	240 (3480)	260 (3770)	270 (3915)	3000	350
	PL. 30•43	43,98 (2.68)	230 (3335)	250 (3625)	260 (3770)	3000	350
	PL. 30•51	51,83 (3.16)	210 (3045)	230 (3335)	240 (3480)	2500	350
	PL. 30•61	61,26 (3.74)	190 (2755)	210 (3045)	220 (3190)	2500	350
	PL. 30•73	73,82 (4.50)	170 (2465)	190 (2755)	200 (2900)	2500	350
	PL. 30•82	81,68 (4.98)	160 (2320)	170 (2465)	180 (2610)	2200	350
	PL. 30•90	91,10 (5.56)	150 (2175)	160 (2320)	170 (2465)	2200	350

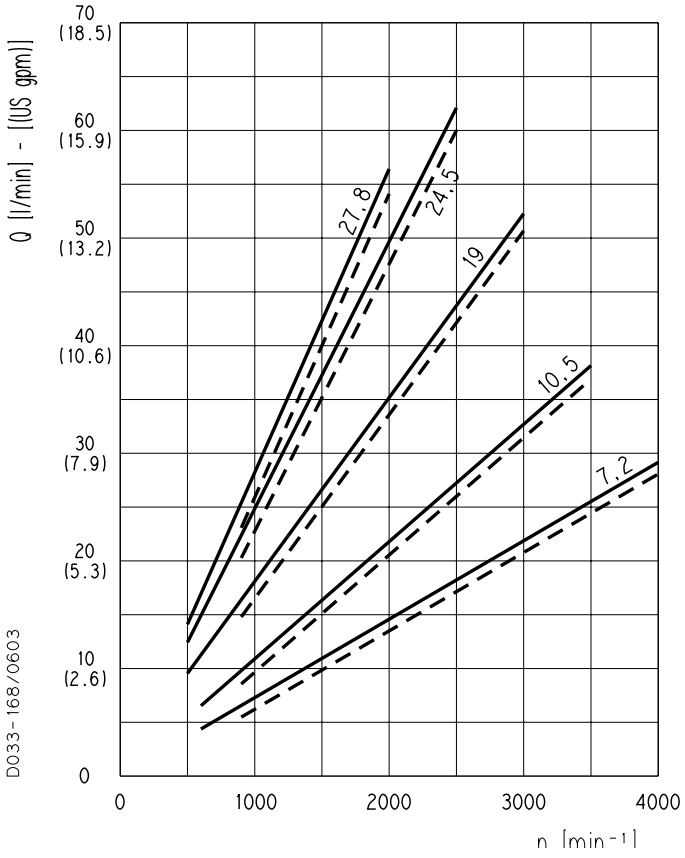
Pressure values in the table refer to side ports unidirectional pumps and motors.
For reversible pumps and motors, max pressures are 250 bar (3600 psi) excepted those with lower pressure values.
Please contuct us for different working conditions.

04/10.2020

PLP 20 POLARIS 20 GEAR PUMPS PERFORMANCE CURVES

PLP 20





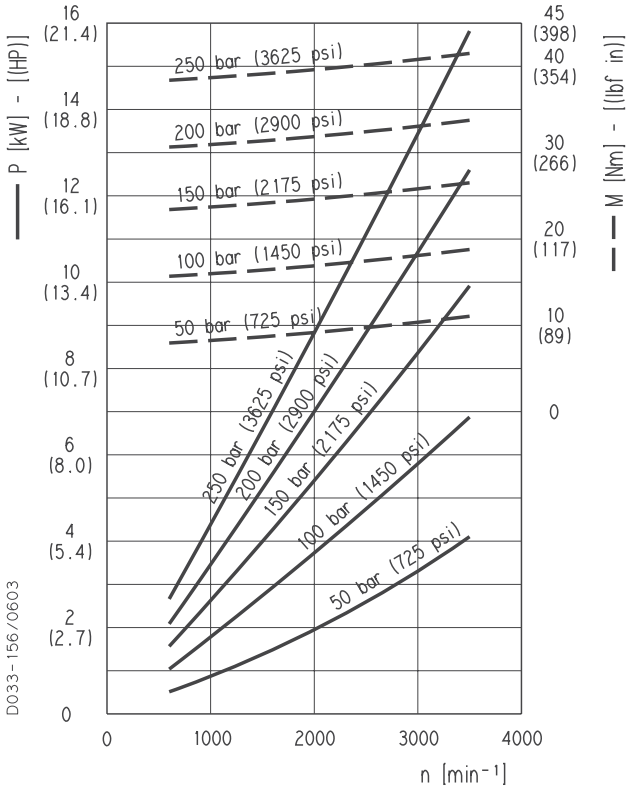
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these pressures.

PLP 20•4	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•6,3	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•8	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•9	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•11,2	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•14	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•16	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•20	———	20 bar (290 psi)
	– – –	200 bar (2900 psi)
PLP 20•25	———	20 bar (290 psi)
	– – –	170 bar (2465 psi)
PLP 20•31,5	———	20 bar (290 psi)
	– – –	130 bar (1885 psi)
PLP 20•7,2	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•10,5	———	20 bar (290 psi)
	– – –	250 bar (3625 psi)
PLP 20•19	———	20 bar (290 psi)
	– – –	200 bar (2900 psi)
PLP 20•24,5	———	20 bar (290 psi)
	– – –	270 bar (2465 psi)
PLP 20•27,8	———	20 bar (290 psi)
	– – –	130 bar (1885 psi)

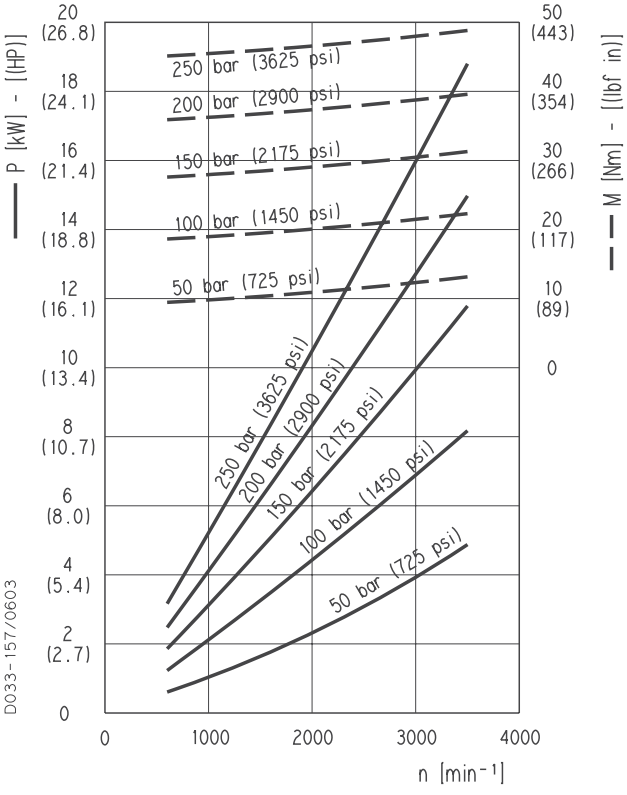
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PLP 20 POLARIS 20 GEAR PUMPS PERFORMANCE CURVES

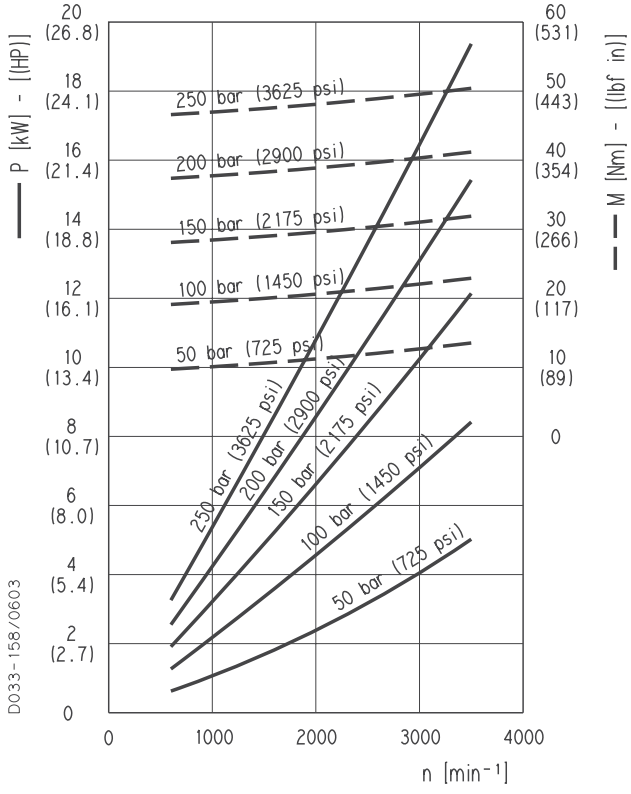
PLP 20•9



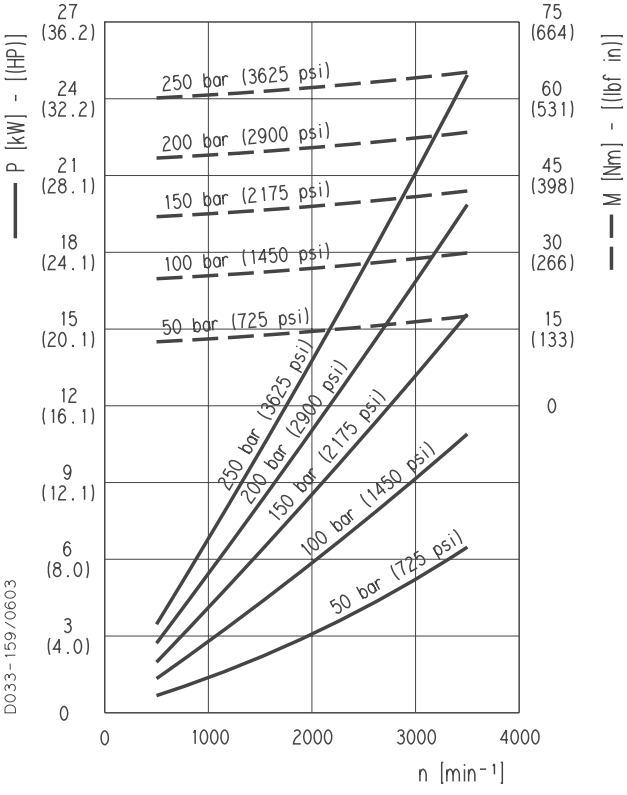
PLP 20•10,5



PLP 20•11,2



PLP 20•14

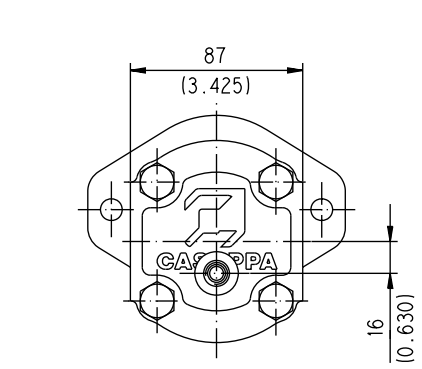


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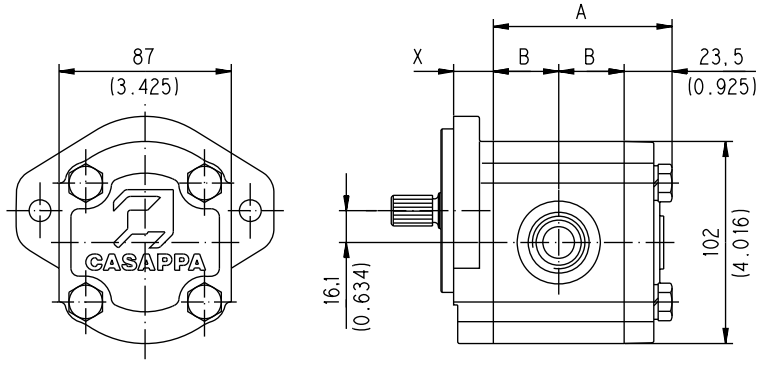
POLARIS 20 SINGLE UNITS DIMENSIONS - SIDE PORTS L

Drive shafts: page 53 ÷ 55
Mounting flange: for X dimension see page 61 ÷ 66

Ports availability: European, Split, Gas, SAE German. See page 70

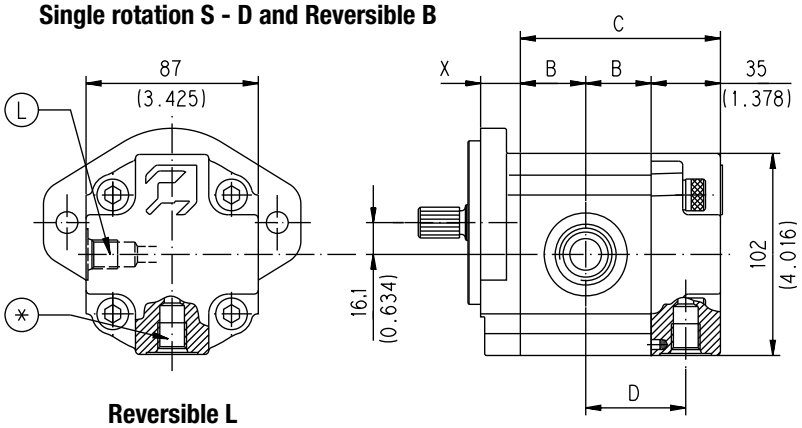


Reversible R



Single rotation S - D and Reversible B

D033-182/0903



Reversible L

For single rotation S - D and reversible B and R the rear cover is available in cast iron and aluminium.
For reversible rotation L the rear cover is in aluminium only.

Reversible L drain port position:
L = Side
✱= Bottom

Pump type Motor type	A	B	C	D
	mm (in)	mm (in)	mm (in)	mm (in)
PL. 20•4	75 (2.9528)	25,75 (1.0138)	86,5 (3.4055)	43,25 (1.7028)
PL. 20•6,3	77,5 (3.0512)	27 (1.0630)	89 (3.5039)	44,5 (1.7520)
PL. 20•7,2	78,5 (3.0917)	27,5 (1.083)	90 (3.5445)	45 (1.7722)
PL. 20•8	80 (3.1496)	28,25 (1.1122)	91,5 (3.6024)	45,75 (1.8012)
PL. 20•9	81,3 (3.2008)	28,9 (1.1378)	92,8 (3.6535)	46,4 (1.8268)
PL. 20•10,5	84 (3.3070)	30,25 (1.1909)	95,5 (3.7598)	47,75 (1.8799)
PL. 20•11,2	84,5 (3.3268)	30,5 (1.2008)	96 (3.7795)	48 (1.8898)
PL. 20•14	89,5 (3.5236)	33 (1.2992)	101 (3.9764)	50,5 (1.9882)
PL. 20•16	93 (3.6614)	34,75 (1.3681)	104,5 (4.1142)	52,25 (2.0571)
PL. 20•19	96,4 (3.7952)	36,45 (1.4350)	107,9 (4.2480)	53,9 (2.12)
PL. 20•20	99,5 (3.9173)	38 (1.4961)	111 (4.3701)	55,5 (2.1850)
PL. 20•24,5	105,1 (4.1378)	40,8 (1.6063)	116,6 (4.5905)	58,3 (2.2953)
PL. 20•25	107,5 (4.2323)	42 (1.6535)	119 (4.6850)	59,5 (2.3425)
PL. 20•27,8	110,2 (4.3386)	43,35 (1.7067)	121,7 (4.7913)	60,85 (2.3957)
PL. 20•31,5	117,5 (4.6260)	47 (1.8504)	129 (5.0787)	64,5 (2.5394)

04/10.2020

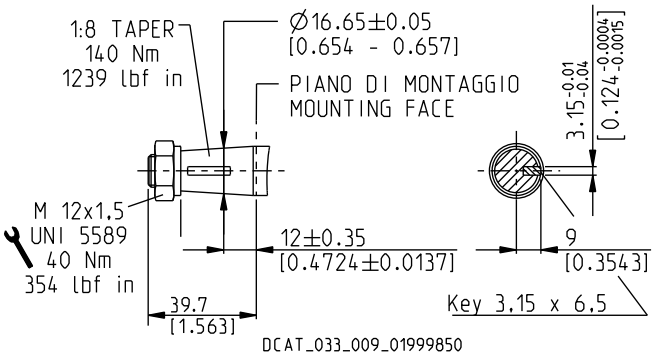
POLARIS 20 DRIVE SHAFTS

EUROPEAN TAPERED 1:8 82

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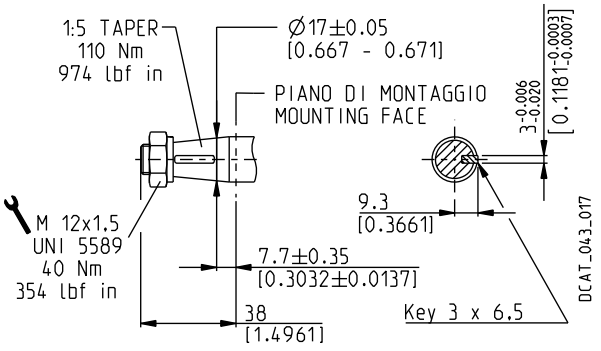
20•24,5

Mounting face refer to flange code **E2**



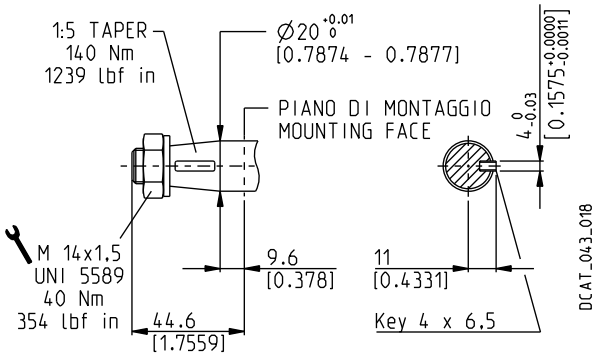
GERMAN TAPERED 1:5 54

Mounting face refer to flange code **B2**



GERMAN TAPERED 1:5 55

Mounting face refer to flange code **B2**

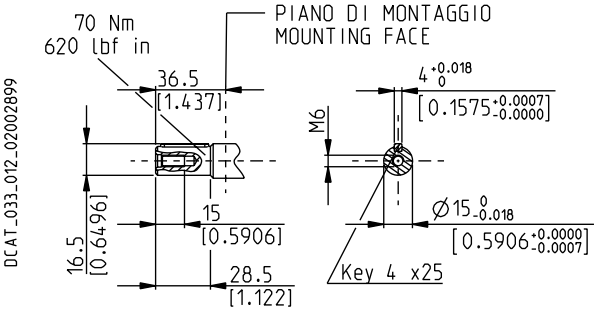


STRAIGHT 46

Not available with size:

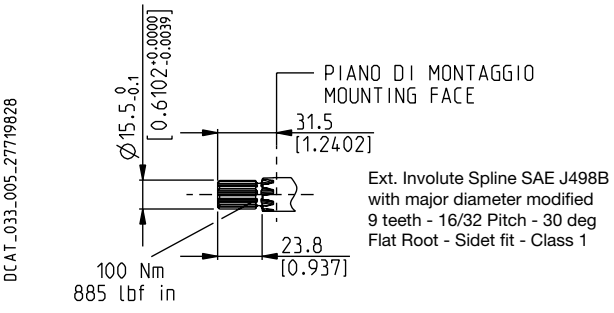
20•7,2 **20•19** **20•24,5** **20•27,8**

Mounting face refer to flange code **E2**



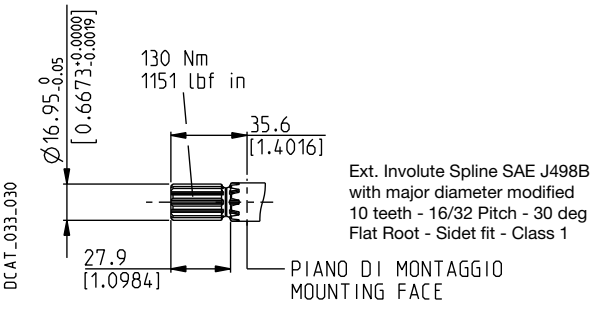
SAE “A” SPLINE 03

Mounting face refer to flange code **S1**



SPLINE 01

Mounting face refer to flange code **S1**

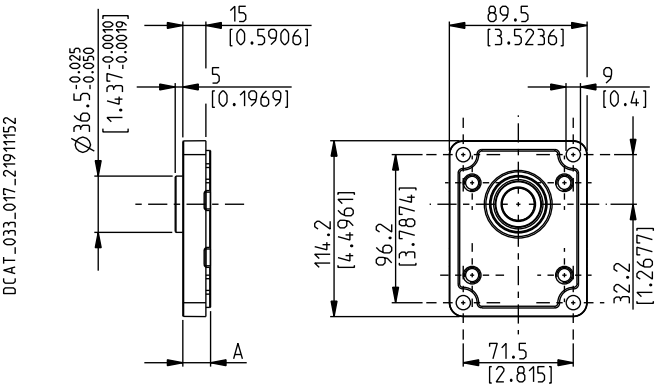


04/10.2020

POLARIS 20 MOUNTING FLANGES AND TABLE OF COMPATIBILITY

EUROPEAN E2

Material: cast iron and aluminium

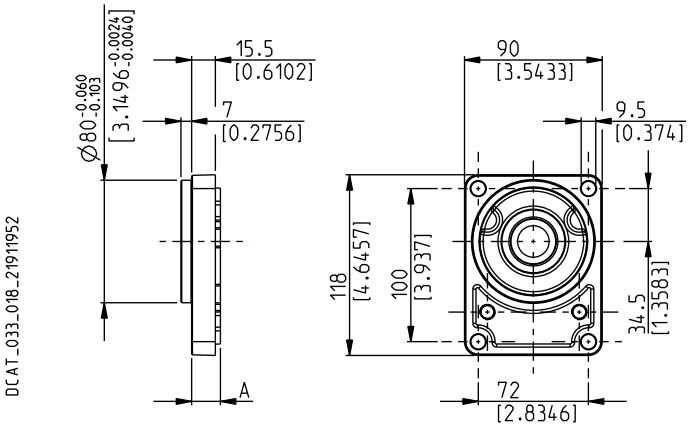


VERSIONS See page 48	A mm (in)	DRIVE SHAFTS See page 53 ÷ 55											
		82	46	B1	03	04	07	12	31	48	49	50	54
0	18 (0.7087)	#	#		x	x	x	x	x	x	x	x	x
5	43,6 (1.7165)	#		x	x					#	x	x	x
7	59,4 (2.3386)	#											
8	59,4 (2.3386)			#									

Standard combination
X Available combination

GERMAN B2

Material: cast iron and aluminium



VERSIONS See page 48	A mm (in)	DRIVE SHAFTS See page 53 ÷ 55								
		12	54	55	01	03	31	46	49	82
0	18,8 (0.7402)	#	#		x	x	x	x	x	x
5	44,4 (1.7480)		x	x		x			x	x
9	59,4 (1.7441)			x						

Standard combination
X Available combination

04/10.2020

PORTS POSITION AND TYPE

	SIDE PORTS												REAR PORTS			
PORTS TYPE	German		European		Split SSM		Spit SSS		Gas BSPP		SAE ODT		Gas BSPP		SAE ODT	
Pump type	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Motor type	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN
PL. 10•1	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•1,5	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•2	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•2,5	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•3,15	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•4	BB	BA							GC	GC	OB	OA	GC	GC	OB	OA
PL. 10•5	BB	BA							GD	GD	OB	OA	GD	GD	OB	OA
PL. 10•5,8	BB	BA							GD	GD	OB	OA	GD	GD	OB	OA
PL. 10•6,3	BB	BA							GD	GD	OB	OA	GD	GD	OB	OA
PL. 10•8	BB	BA							GD	GD	OC	OB	GD	GD	OB	OB
PL. 10•10	BB	BA							GD	GD	OC	OB	GD	GD	OB	OB
PL. 20•4	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•6,3	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•7,2	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•8	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•9	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•10,5	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•11,2	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC	GD	GD	OC	OC
PL. 20•14	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•16	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•19	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•20	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•24,5	BE	BC	EB	EA	MC	MB	SC	SB	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•25	BE	BC	EB	EA	MC	MB	SC	SB	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•27,8	BE	BC	EB	EA	MC	MB	SC	SB	GE	GD	OD	OC	GE	GD	OD	OC
PL. 20•31,5	BE	BC	EB	EA	MC	MB	SC	SB	GE	GD	OD	OC	GE	GD	OD	OC
PL. 30•22	BM	BL	ED	EB	MB	MA	SB	SA	GF	GF	OF	OD				
PL. 30•27	BM	BL	ED	EB	MC	MB	SC	SB	GF	GF	OF	OD				
PL. 30•34	BM	BL	ED	EB	MC	MB	SC	SB	GF	GF	OF	OD				
PL. 30•38	BM	BL	ED	EB	MD	MC	SD	SC	GF	GF	OG	OF				
PL. 30•43	BM	BL	ED	EB	MD	MC	SD	SC	GF	GF	OG	OF				
PL. 30•51	BM	BL	ED	EB	MD	MC	SD	SC	GF	GF	OG	OF				
PL. 30•61	BM	BL	ED	EB	ME	MD	SE	SD	GG	GF	OH	OG				
PL. 30•73	BM	BL	EF	ED	ME	MD	SE	SD	GG	GF	OH	OG				
PL. 30•82	BM	BL	EF	ED	ME	MD	SE	SD	GH	GG	OH	OG				
PL. 30•90	BM	BL	EF	ED	MF	ME	SF	SE	GH	GG	OH	OG				

01/10.2003

PORTS SIZE

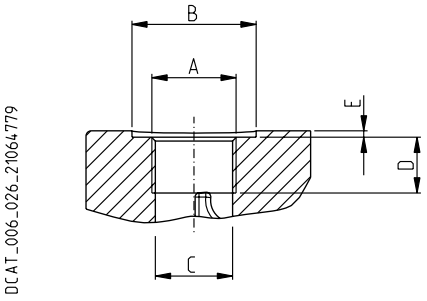
Tightening torque for low pressure side port.

Tightening torque for high pressure side port.

For reversible rotation, please consult only the tightening torque for high pressure side port.

GAS STRAIGHT THREAD PORTS — BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
GC	3/8”	G 3/8	30 (#) (1.1811)	15 (0.5906)	10 (#) (0.3937)	2 (#) (0.0787)	15 +1 (#) (133 ÷ 142)	—
			—		14 (0.5512)	—	15 +1 (133 ÷ 142)	25 +1 (221 ÷ 230)
GD	1/2”	G 1/2	—	19 (0.7480)	14 (0.5512)	—	20 +1 (177 ÷ 186)	50 +2,5 (443 ÷ 465)
					17 (◆) (0.6693)			
GE	3/4”	G 3/4	—	24,5 (0.9646)	18 (0.7087)	—	30 +2,5 (266 ÷ 288)	90 +5 (797 ÷ 841)
GF	1”	G 1	—	30,5 (1.2008)	18 (0.7086)	—	50 +2,5 (443 ÷ 465)	130 +10 (1151 ÷ 1239)
GG	1” 1/4	G 1 1/4	—	39 (1.5354)	22 (0.8661)	—	60 +5 (531 ÷ 575)	170 +10 (1505 ÷ 1593)
GH	1” 1/2	G 1 1/2	—	45 (1.7716)	24 (0.9448)	—	70 +5 (620 ÷ 664)	210 +15 (1859 ÷ 1992)

(#) = Drain port

(◆) For POLARIS 20

02/07.2006

HOW TO ORDER POLARIS 20 SINGLE UNITS

1	2	3		4	5		6	7		8		9		10		11	12		13
PLP 20-4	L	0	-	82	E2	-	L	EA/EA	-	N	-	EL	-	C	-	*	GB	-	FS

1 Type	Pump type	Motor type
4,95 cm³/rev (0.30 in³/rev)	PLP 20-4	PLM 20-4
6,61 cm³/rev (0.40 in³/rev)	PLP 20-6,3	PLM 20-6,3
7,29 cm³/rev (0.44 in³/rev)	PLP 20-7,2	PLM 20-7,2
8,26 cm³/rev 0.50 in³/rev)	PLP 20-8	PLM 20-8
9,17 cm³/rev 0.56 in³/rev)	PLP 20-9	PLM 20-9
10,9 cm³/rev (0.66 in³/rev)	PLP 20-10,5	PLM 20-10,5
11,23 cm³/rev (0.69 in³/rev)	PLP 20-11,2	PLM 20-11,2
14,53 cm³/rev (0.89 in³/rev)	PLP 20-14	PLM 20-14
16,85 cm³/rev (1.03 in³/rev)	PLP 20-16	PLM 20-16
19,09 cm³/rev (1.16 in³/rev)	PLP 20-19	PLM 20-19
21,14 cm³/rev (1.29 in³/rev)	PLP 20-20	PLM 20-20
24,84 cm³/rev 1.52 in³/rev)	PLP 20-24,5	PLM 20-24,5
26,42 cm³/rev (1.61 in³/rev)	PLP 20-25	PLM 20-25
28,21 cm³/rev (1.72 in³/rev)	PLP 20-27,8	PLM 20-27,8
33,03 cm³/rev (2.01 in³/rev)	PLP 20-31,5	PLM 20-31,5

2 Rotation	Code
Left	S
Right	D
Reversible rear external drain	R
Reversible side external drain	L
Reversible internal drain	B

3 Versions - Outboard bearing options	Code
Without outboard bearing	0
With outboard bearing	W8
With outboard bearing	5
With outboard bearing	6
With outboard bearing	7
With outboard bearing	9

4 Drive shaft	Code
European tapered 1:8	82
German tapered 1:5	54
German tapered 1:5	55
Straight	46
SAE “A” spline (9 teeth)	03
SAE spline (10 teeth)	01
SAE “A” spline (11 teeth)	07
SAE “A” straight	31

Code	Drive shaft 4
49	Straight
50	Straight
04	SAE “B” spline
32	SAE “B” straight
12	DIN 54 82
48	Straight (only for version 6)
B1	Straight (for version 5 and 8)
95	Tang

Code	Mounting flange 5
E2	European
B2	German
B4	German 2 bolt
B5	German 2 bolt
B6	German 4 bolt
U2	German 2 bolt
S1	SAE “A” 2 bolt
S2	SAE “A” 2 bolt
S9	SAE “A” 2 bolt
S5	SAE “B” 2 bolt
W8	German

Code	Ports position 6
L	Side
P	Rear

Code	Ports IN/OUT 7		
GERMAN FLANGED PORTS			
Side	Rear		Type
BE/BC		PLP 20	4-6,3-7,2-8-9-10,5-11,2-14-16-19-20-24,5-25-27,8-31,5
BC/BE		PLM 20	
EUROPEAN FLANGED PORTS			
Side	Rear		Type
EA/EA		PLP 20	4-6,3-7,2-8-9-10,5-11,2
		PLM 20	
EB/EA		PLP 20	14-16-19-20-24,5-25-27,8-31,5
EA/EB		PLM 20	

04/10.2020

HOW TO ORDER POLARIS 20 SINGLE UNITS

7	Ports IN/OUT		Code
SAE FLANGED PORTS (SSM)			
Type		Side	Rear
4-6,3-7,2-8-9-10,5-11,2	PLP 20 / PLM 20	MA/MA	
14-16-19-20	PLP 20	MB/MA	
	PLM 20	MA/MB	
24,5-25-27,8-31,5	PLP 20	MC/MB	
	PLM 20	MB/MC	
SAE FLANGED PORTS (SSS)			
Type		Side	Rear
4-6,3-7,2-8-9-10,5-11,2	PLP 20 / PLM 20	SA/SA	
14-16-19-20	PLP 20	SB/SA	
	PLM 20	SA/SB	
24,5-25-27,8-31,5	PLP 20	SC/SB	
	PLM 20	SB/SC	
GAS STRAIGHT THREAD PORTS (BSPP)			
Type		Side	Rear
4-6,3-7,2-8-9-10,5-11,2	PLP 20 / PLM 20	GD/GD	GD/GD
14-16-19-20-24,5-25 27,8-31,5	PLP 20	GE/GD	GE/GD
	PLM 20	GD/GE	GD/GE
SAE STRAIGHT THREAD PORTS (ODT)			
Type		Side	Rear
4-6,3-7,2-8-9-10,5-11,2	PLP 20 / PLM 20	OC/OC	OC/OC
14-16-19-20-24,5-25 27,8-31,5	PLP 20	OD/OC	OD/OC
	PLM 20	OC/OD	OC/OD

8	Seals (a)	Code
Buna (standard)		N
Viton		V
Hydrogenated buna HNBR seals with Viton-FKM shaft seals		T-PV

9	Cover options (b)	Code
Cast iron mounting flange and rear cover (no code)		
Aluminium mounting flange and cast iron rear cover		E
Cast iron mounting flange and aluminium rear cover		L
Aluminium mounting flange and rear cover		EL

10	Shaft seal options	Code
Standard seal with wiper seal		D
High back pressure seal		C1

Code	Drain port position - Rev. rotation L	11
L	Side drain with side port position	
*	Side drain with bottom port position	

Code	Drain port		12
IN/OUT GERMAN FLANGED PORTS			
Side	Rear		Type
TA		PLP 20 / PLM 20	4-6,3-7,2-8-9-10,5-11,2-24,5-25-27,8-31,5
IN/OUT EUROPEAN FLANGED PORTS			
Side	Rear		Type
GB		PLP 20 / PLM 20	4-6,3-7,2-8-9-10,5-11,2-24,5-25-27,8-31,5
IN/OUT SAE FLANGED PORTS (SSM)			
Side	Rear		Type
GB		PLP 20 / PLM20	4-6,3-7,2-8-9-10,5-11,2-24,5-25-27,8-31,5
IN/OUT SAE FLANGED PORTS (SSS)			
Side	Rear		Type
03		PLP 20 / PLM 20	4-6,3-7,2-8-9-10,5-11,2-24,5-25-27,8-31,5
IN/OUT GAS STRAIGHT THREAD PORTS (BSPP)			
Side	Rear		Type
GB	GB	PLP 20 / PLM 20	4-6,3-7,2-8-9-10,5-11,2-24,5-25-27,8-31,5
IN/OUT SAE STRAIGHT THREAD PORTS (ODT)			
Side	Rear		Type
03	03	PLP 20 / PLM 20	4-6,3-7,2-8-9-10,5-11,2 24,5-25-27,8-31,5

Code	Shaft arrangement	13
FS	Female spline	

(a) Choose the seals according to the temperature shown on page 4.

(b) Mounting flange material on page 61 ÷ 66
Rear cover material on page 34 ÷ 35

04/10.2020