# Casappa Polaris hydraulic gear pump PLP20.25S0-82E2-LGE/GD-N-EL

Manufacturer: Casappa

Manufacturer part number / published order designation: PLP20.25S0-82E2-LGE/GD-N-EL

Published model: PLP20.25S0-82E2-LGE/GD-N-EL

## 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: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

## 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 25 displacement/rating/speed row with side-port single-rotation footnote |
| 13 | 6 | PLP20 curve test-fluid/temperature conditions and flow curves; exact size 25 legend |
| 17 | 7 | Exact size PLP20•25 input-power/torque versus speed and pressure charts |
| 36 | 8 | PL.20 side-port single-unit drawing and exact size 25 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 GE/GD inlet/outlet mapping for exact size 25 |
| 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: GE/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)<br>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

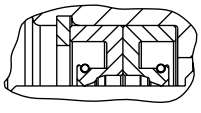
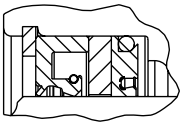
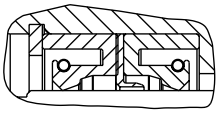
| | |
|---|---|
| Construction | External gear pumps and motors 3-piece construction |
| Mounting | EUROPEAN - SAE - GERMAN standard flanges |
| Ports | Threaded or flanged |
| Direction of rotation (looking on drive shaft) | Anti-clockwise (S) - clockwise (D) - reversible external drain (R - L) reversible internal drain (B) |
| Inlet pressure range for pumps | 0,7 ÷ 3 bar abs. (10 ÷ 44 psi)<br>If p > 1,5 bar abs. (22 psi) specific shaft sealing have to be applied.<br>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.<br>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**<br>**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<br>Reversible rotation pumps and motors | Max drain line pressure: 5 bar (73 psi) @ 350 $min^{-1}$ |  | | |

# FEATURES

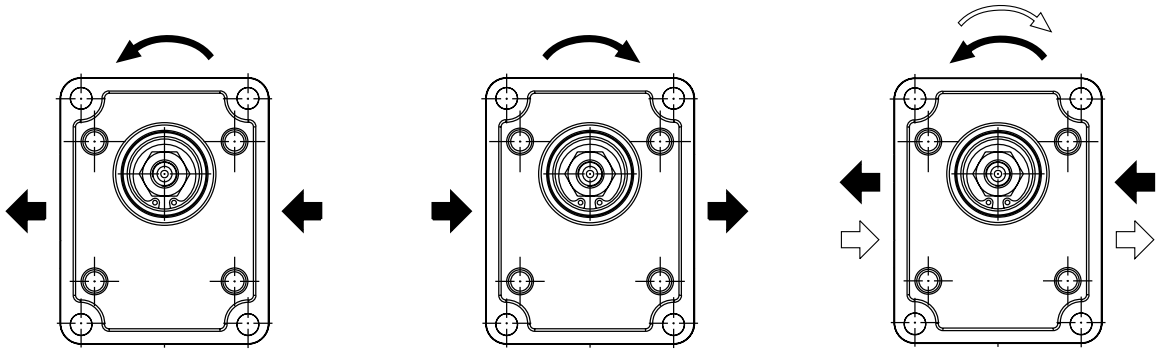
**Filtration**

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

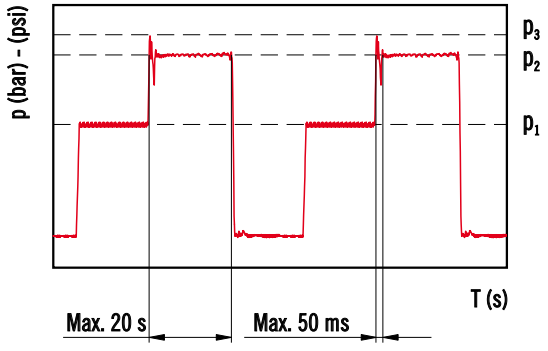


**Anti-Clockwise rotation** **Clockwise rotation** **Reversible rotation**

## 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

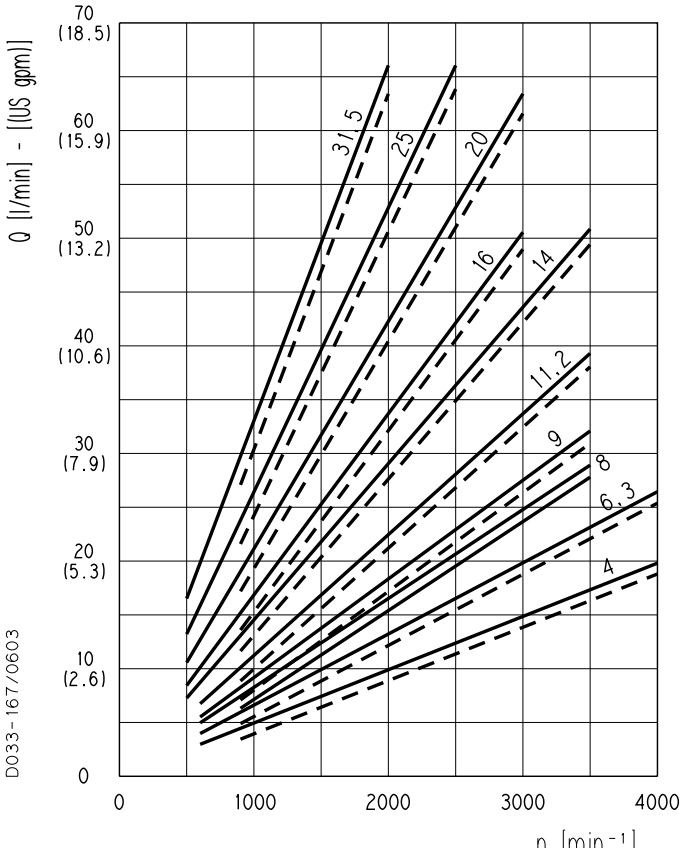
| Series | Pump type PLP<br>Motor type PLM | Displacement | Max. pressure | | | Max. speed | Min. speed |
|---|---|---|---|---|---|---|---|
| | | | $p_1$ | $p_2$ | $p_3$ | | |
| | | $cm^3/rev$ ($in^3/rev$) | bar (psi) | | | $min^{-1}$ | |
| POLARIS 10 | **PL. 10•1** | 1,07 (0.07) | 260 (3770) | 280 (4060) | 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 |

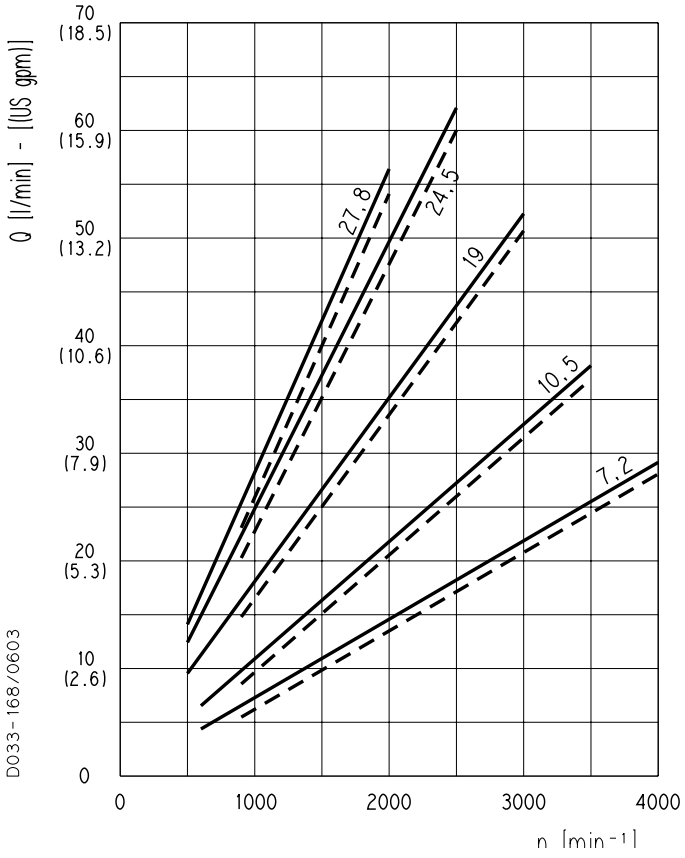
Pressure values in the table refer to side ports unidirectional pumps and motors.
For reversible pumps and motors, max pressures are 250 bar (3600 psi) excepted those with lower pressure values.
Please contuct us for different working conditions.

04/10.2020

# PLP 20 POLARIS 20 GEAR PUMPS PERFORMANCE CURVES

## PLP 20



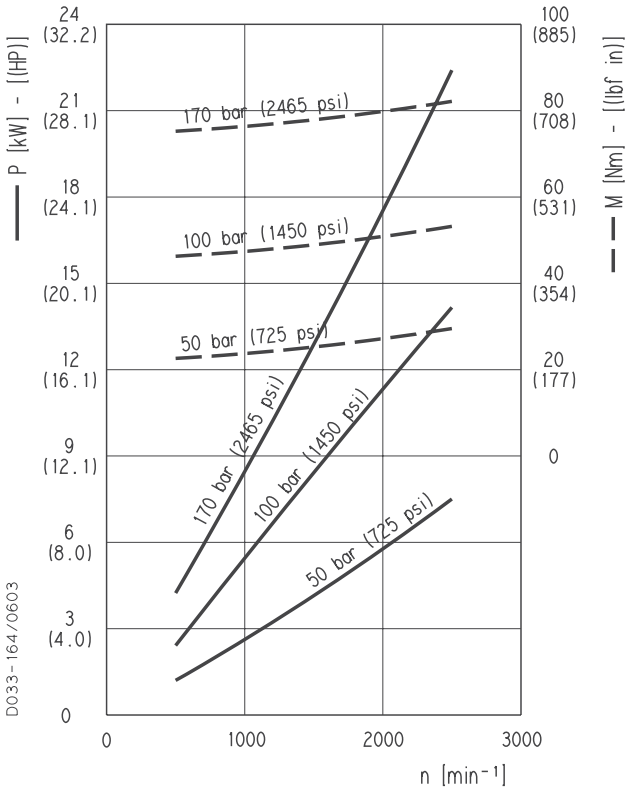

Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these pressures.

| | | |
|---|---|---|
| **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) |

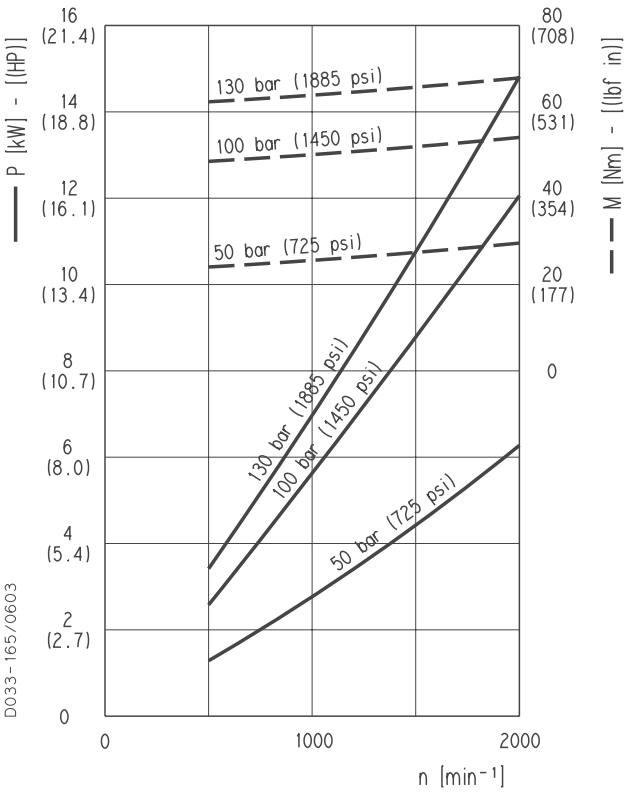
01/10.2003

# PLP 20 POLARIS 20 GEAR PUMPS PERFORMANCE CURVES

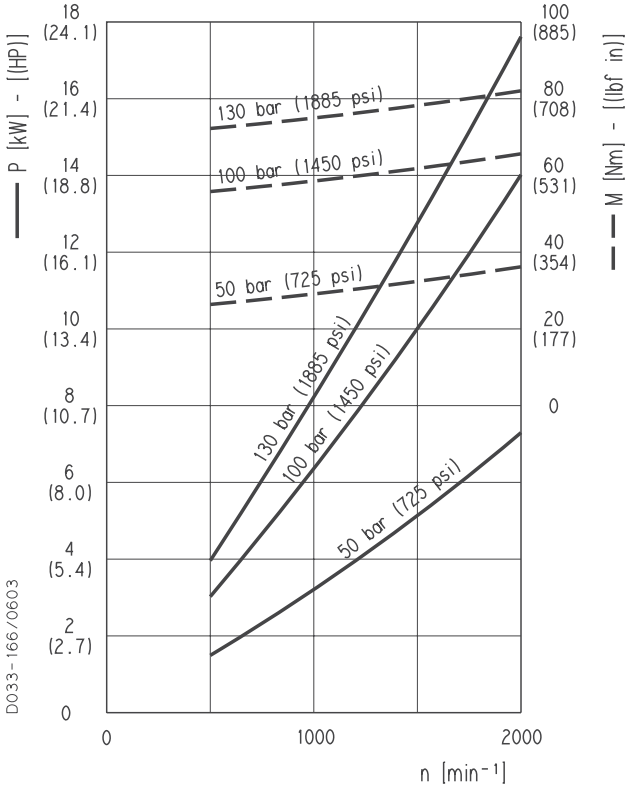
## PLP 20•25




## PLP 20•27,8




## PLP 20•31,5

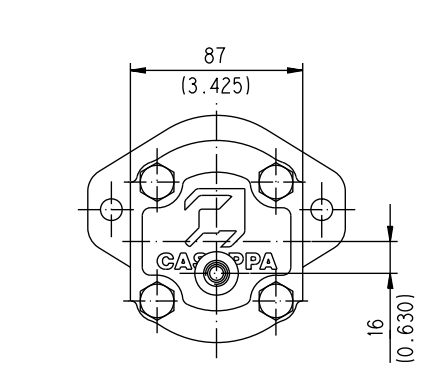



01/10.2003

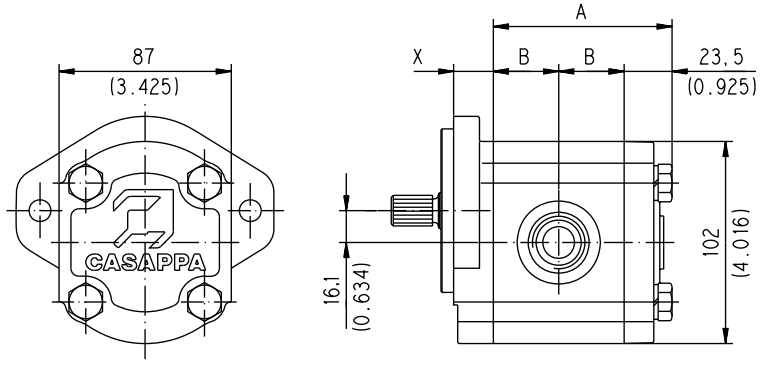
# POLARIS 20 SINGLE UNITS DIMENSIONS - SIDE PORTS L

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

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

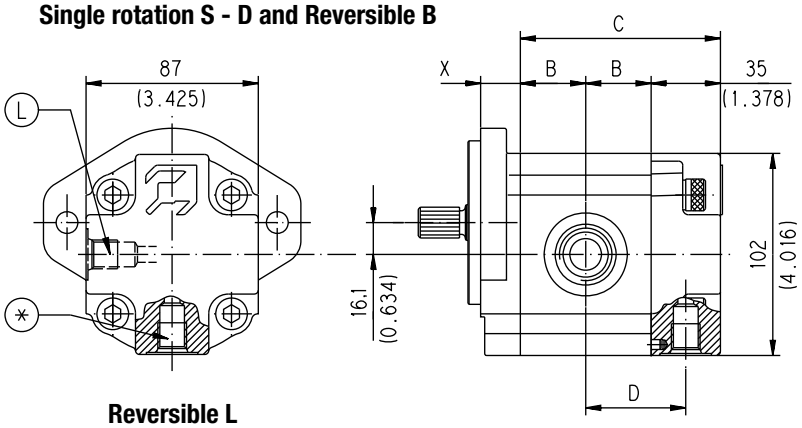



**Reversible R**




**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<br>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

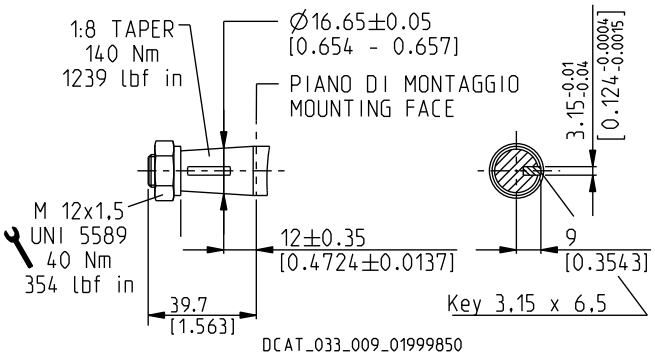
# POLARIS 20 DRIVE SHAFTS

## EUROPEAN TAPERED 1:8 82

Not available with size:

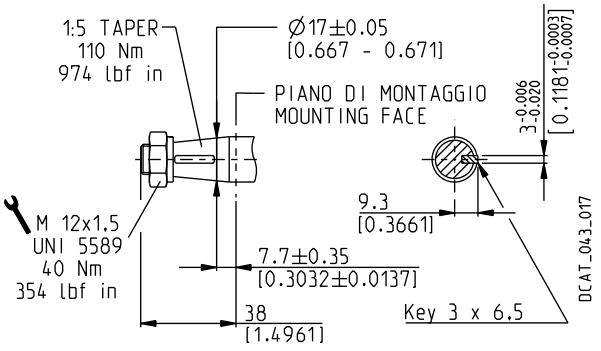
**20•24,5**

Mounting face refer to flange code **E2**



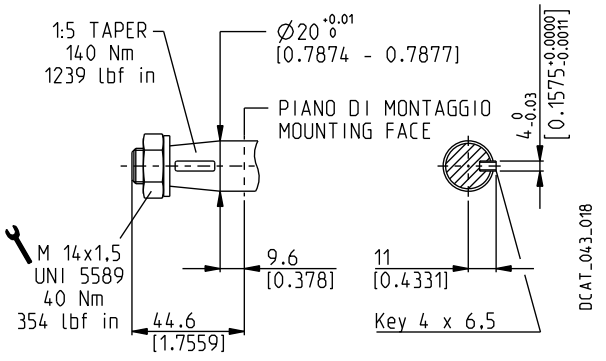

## GERMAN TAPERED 1:5 54

Mounting face refer to flange code **B2**




## GERMAN TAPERED 1:5 55

Mounting face refer to flange code **B2**

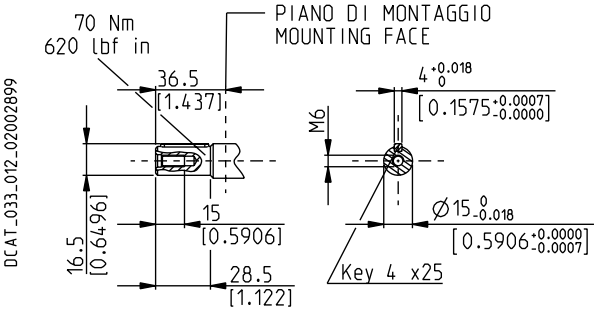



## STRAIGHT 46

Not available with size:

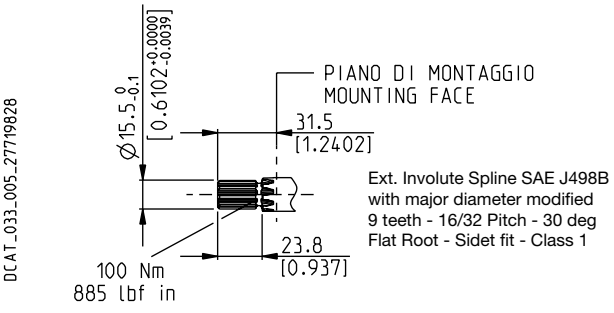
**20•7,2** **20•19** **20•24,5** **20•27,8**

Mounting face refer to flange code **E2**



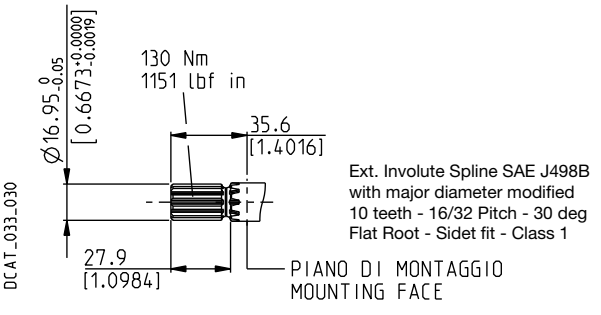

## SAE “A” SPLINE 03

Mounting face refer to flange code **S1**




## SPLINE 01

Mounting face refer to flange code **S1**

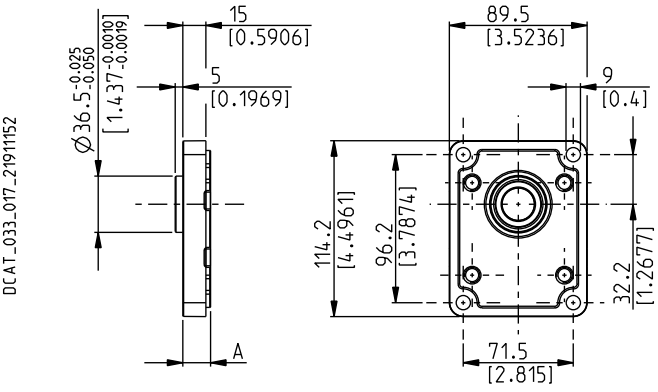



04/10.2020

# POLARIS 20 MOUNTING FLANGES AND TABLE OF COMPATIBILITY

## EUROPEAN E2

Material: cast iron and aluminium

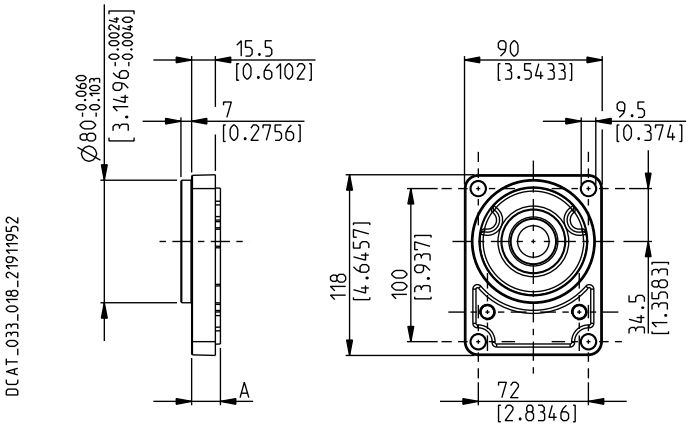



| VERSIONS See page 48 | A mm (in) | DRIVE SHAFTS See page 53 ÷ 55 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 82 | 46 | B1 | 03 | 04 | 07 | 12 | 31 | 48 | 49 | 50 | 54 |
| 0 | 18 (0.7087) | # | # | | x | x | x | x | x | x | x | x | x |
| 5 | 43,6 (1.7165)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

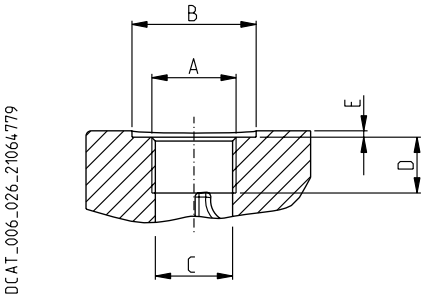
Tightening torque for low pressure side port.

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