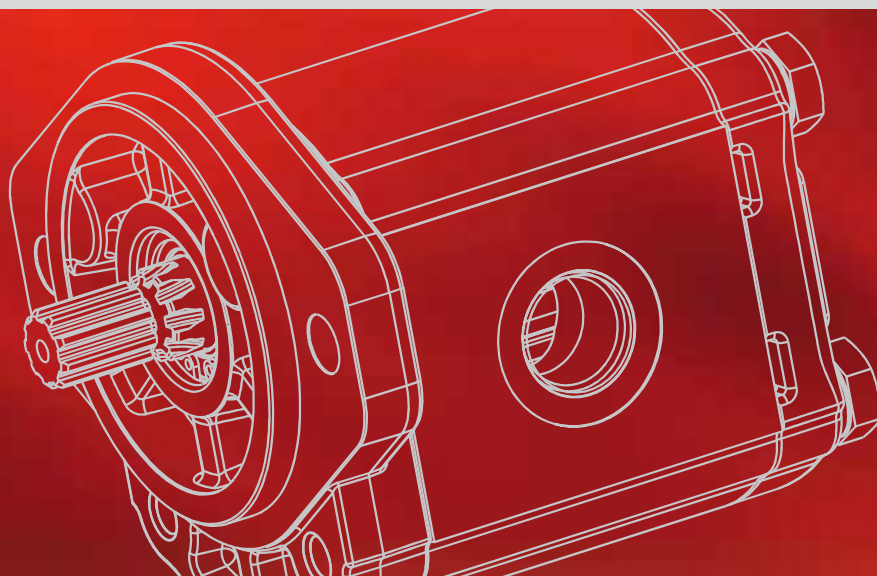


 **CASAPPA**[®]
FLUID POWER DESIGN



HYDRAULIC GEAR
PUMPS AND
MOTORS

POLARIS[®]

HOW TO ORDER POLARIS 20 SINGLE UNITS

PLP20.6,3 **D** **0** **82** **E2** **L** **BE/BC** **N** **EL** **-** **-** **-** **FS**
 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 |
|---|--|--------------------|--------------------|
| | 0.30 in ³ /rev (4,95 cm ³ /rev) | PLP 20-4 | PLM 20-4 |
| | 0.40 in ³ /rev (6,61 cm ³ /rev) | PLP 20-6,3 | PLM 20-6,3 |
| | 0.44 in ³ /rev (7,29 cm ³ /rev) | PLP 20-7,2 | PLM 20-7,2 |
| | 0.50 in³/rev (8,26 cm³/rev) | PLP 20-8 | PLM 20-8 |
| | 0.56 in ³ /rev (9,17 cm ³ /rev) | PLP 20-9 | PLM 20-9 |
| | 0.66 in ³ /rev (10,9 cm ³ /rev) | PLP 20-10,5 | PLM 20-10,5 |
| | 0.69 in ³ /rev (11,23 cm ³ /rev) | PLP 20-11,2 | PLM 20-11,2 |
| | 0.89 in ³ /rev (14,53 cm ³ /rev) | PLP 20-14 | PLM 20-14 |
| | 1.03 in ³ /rev (16,85 cm ³ /rev) | PLP 20-16 | PLM 20-16 |
| | 1.16 in ³ /rev (19,09 cm ³ /rev) | PLP 20-19 | PLM 20-19 |
| | 1.29 in ³ /rev (21,14 cm ³ /rev) | PLP 20-20 | PLM 20-20 |
| | 1.52 in ³ /rev (24,84 cm ³ /rev) | PLP 20-24,5 | PLM 20-24,5 |
| | 1.61 in ³ /rev (26,42 cm ³ /rev) | PLP 20-25 | PLM 20-25 |
| | 1.72 in ³ /rev (28,21 cm ³ /rev) | PLP 20-27,8 | PLM 20-27,8 |
| | 2.01 in ³ /rev (33,03 cm ³ /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 | Version | Code |
|---|---------------------------------|-----------|
| | Without outboard bearing | 0 |
| | With outboard bearing | W8 |
| | With outboard bearing | 4 |
| | With outboard bearing | 5 |
| | With outboard bearing | 6 |
| | With outboard bearing | 7 |
| | With outboard bearing | 8 |
| | 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 (only for version 8) | |
| 95 | Tang | |

| Code | Mounting flange | 5 |
|-----------|-----------------|---|
| E2 | European | |
| B2 | German | |
| B4 | German 2 bolt | |
| B5 | German 2 bolt | |
| B6 | German 4 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 |
| BC/BE | PLM 20 | 14-16-19-20-24,5-25 27,8-31,5 |
| 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 |
| EA/EB | PLM 20 | 27,8-31,5 |

01/10.03

HOW TO ORDER POLARIS 20 SINGLE UNITS

Replaces: 01/10.03

| 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 | MA/MA | |
| | PLM 20 | | |
| 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 | SA/SA | |
| | PLM 20 | | |
| 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 | GD/GD | GD/GD |
| | PLM 20 | | |
| 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 | OC/OC | OC/OC |
| | PLM 20 | | |
| 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 |

| 9 Cover options (b) Code | | |
|---|--|-----------|
| Cast iron mounting flange and rear cover (standard - 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 | |
|---|----------|
| High back pressure seal with wiper seal | C |
| Standard seal with wiper seal | D |
| High back pressure seal | H |

| 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 | 4-6,3-7,2-8-9-10,5-11,2 | |
| | PLM 20 | 24,5-25-27,8-31,5 | |

| IN/OUT EUROPEAN FLANGED PORTS | | | |
|-------------------------------|--------|-------------------------|--|
| Side | Rear | Type | |
| GB | PLP 20 | 4-6,3-7,2-8-9-10,5-11,2 | |
| | PLM 20 | 24,5-25-27,8-31,5 | |

| IN/OUT SAE FLANGED PORTS (SSM) | | | |
|--------------------------------|--------|-------------------------|--|
| Side | Rear | Type | |
| GB | PLP 20 | 4-6,3-7,2-8-9-10,5-11,2 | |
| | PLM20 | 24,5-25-27,8-31,5 | |

| IN/OUT SAE FLANGED PORTS (SSS) | | | |
|--------------------------------|--------|-------------------------|--|
| Side | Rear | Type | |
| 03 | PLP 20 | 4-6,3-7,2-8-9-10,5-11,2 | |
| | PLM 20 | 24,5-25-27,8-31,5 | |

| IN/OUT GAS STRAIGHT THREAD PORTS (BSPP) | | | |
|---|-----------|--------|-------------------------|
| Side | Rear | Type | |
| GB | GB | PLP 20 | 4-6,3-7,2-8-9-10,5-11,2 |
| | | PLM 20 | 24,5-25-27,8-31,5 |

| IN/OUT SAE STRAIGHT THREAD PORTS (ODT) | | | |
|--|-----------|--------|-------------------------|
| Side | Rear | Type | |
| 03 | 03 | PLP 20 | 4-6,3-7,2-8-9-10,5-11,2 |
| | | PLM 20 | 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 ÷ 65
Rear cover material on page 34 ÷ 35

02/07.2006

POLARIS 20

DRIVE SHAFTS

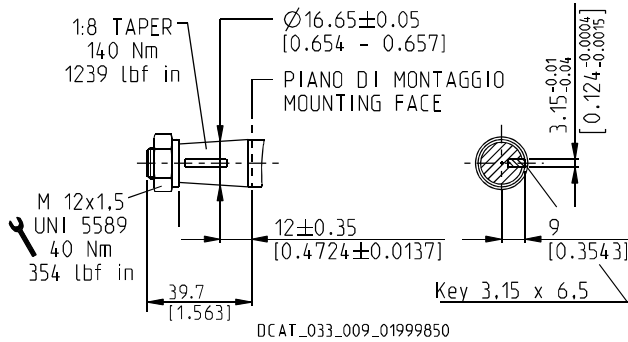
EUROPEAN TAPERED 1:8

82

Not available with size:

20•10,5 20•24,5 20•27,8

Mounting face refer to flange code **E2**



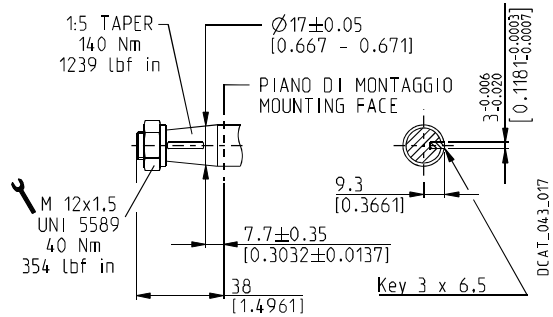
GERMAN TAPERED 1:5

54

Not available with size:

20•7,2 20•10,5 20•19 20•24,5 20•27,8 20•31,5

Mounting face refer to flange code **B2**

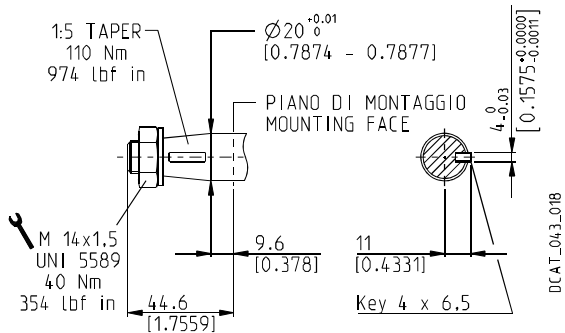


GERMAN TAPERED 1:5

55

Only for version **5, 9** and **W8** with outboard bearing

Mounting face refer to flange code **B2**



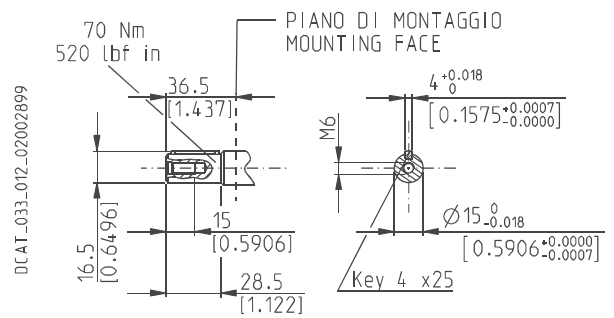
STRAIGHT

46

Not available with size:

20•7,2 20•10,5 20•19 20•24,5 20•25 20•27,8 20•31,5

Mounting face refer to flange code **E2**



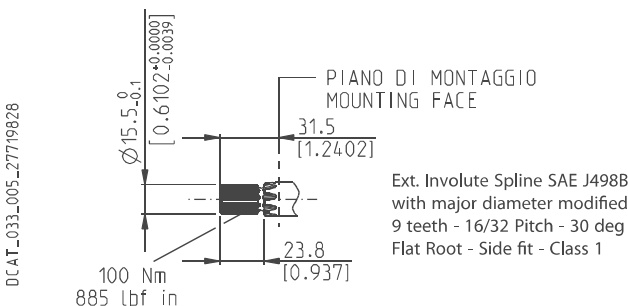
SAE "A" SPLINE

03

Not available with size:

20•24,5 20•27,8

Mounting face refer to flange code **S1**



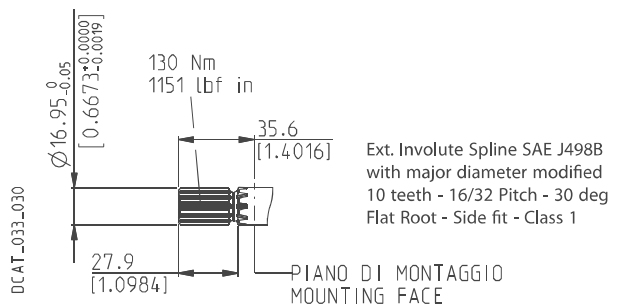
SPLINE

01

Not available with size:

20•6,3 20•9 20•10,5 20•19

Mounting face refer to flange code **S1**



01/10.03

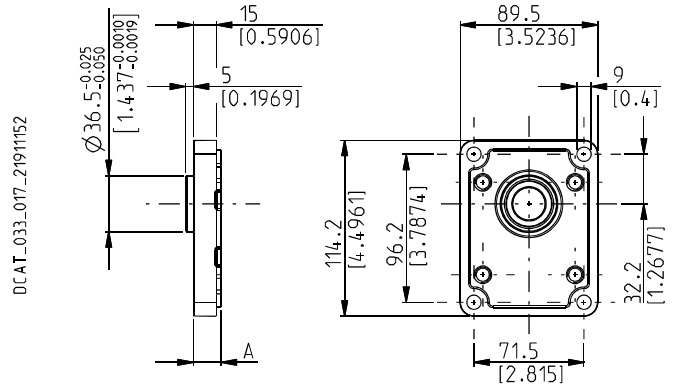
POLARIS 20

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

EUROPEAN

E2

Material: cast iron and aluminium



DRIVE SHAFTS

See page 53 ÷ 55

| VERSIONS See page 47 | A mm (in) | 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 |
| 4 | 55,4 (2.1811) | # | | | | | | | | | | | |
| 5 | 43,6 (1.7165) | # | | X | X | | | | | | X | X | X |
| 6 | 55,4 (2.1811) | | | | | | | | | # | | | |
| 7 | 59,4 (2.3386) | # | | | | | | | | | | | |
| 8 | 59,4 (2.3386) | | | # | | | | | | | | | |

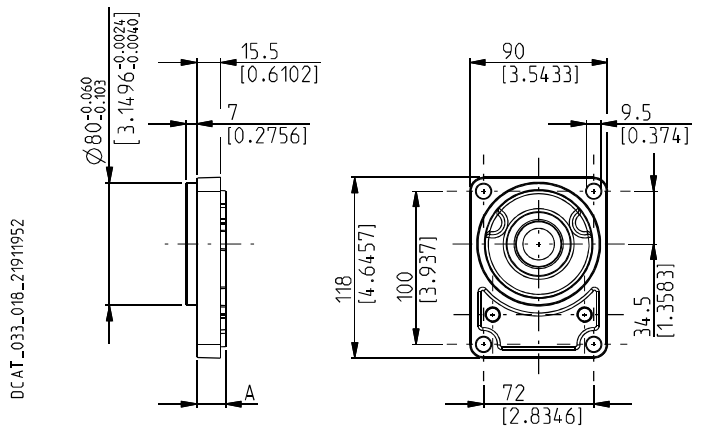
Standard combination

X Available combination

GERMAN

B2

Material: cast iron and aluminium



DRIVE SHAFTS

See page 53 ÷ 55

| VERSIONS See page 47 | A mm (in) | 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

Replaces: 01/10.03

02/07.2006

PORTS SIZE

 Tightening torque for low pressure side port



 Tightening torque for high pressure side port [values obtained at 5075 psi (350 bar)]

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

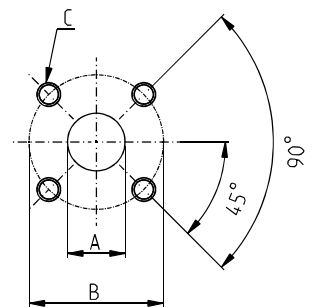
GERMAN FLANGED PORTS - 4 Bolts

GERMAN

Metric thread ISO 60° conforms to ISO/R 262

| CODE | A | B | C |  |  |
|-----------|----------------|----------------|-------------------------|---|---|
| | mm (in) | mm (in) | Thread Depth mm (in) | Nm (lbf in) | Nm (lbf in) |
| BA | 8 (0.3150) | 30 (1.1811) | M6 12 (0.4724) | 8 ^{+0.5} (71 ÷ 75) | 8 ^{+0.5} (71 ÷ 75) |
| BB | 13 (0.5118) | 30 (1.1811) | M6 12 (0.4724) | 8 ^{+0.5} (71 ÷ 75) | 8 ^{+0.5} (71 ÷ 75) |
| BC | 15 (0.5906) | 35 (1.3780) | M6 12 (0.4724) | 8 ^{+0.5} (71 ÷ 75) | 8 ^{+0.5} (71 ÷ 75) |
| BE | 20 (0.7874) | 40 (1.5748) | M6 12 (0.4724) | 8 ^{+0.5} (71 ÷ 75) | 8 ^{+0.5} (71 ÷ 75) |
| BL | 19 (0.7480) | 55 (2.1654) | M8 18 (0.7087) | 15 ⁺¹ (133 ÷ 142) | 20 ⁺¹ (177 ÷ 186) |
| BM | 27 (1.0630) | 55 (2.1654) | M8 18 (0.7087) | 15 ⁺¹ (133 ÷ 142) | 20 ⁺¹ (177 ÷ 186) |

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EUROPEAN FLANGED PORTS - 4 Bolts

EUROPEAN

Metric thread ISO 60° conforms to ISO/R 262

01/10.03

| CODE | A | B | C |  |  |
|-----------|----------------|----------------|-------------------------|---|---|
| | mm (in) | mm (in) | Thread Depth mm (in) | Nm (lbf in) | Nm (lbf in) |
| EA | 13 (0.5118) | 30 (1.1811) | M 6 13 (0.5118) | 8 ^{+0.5} (71 ÷ 75) | 8 ^{+0.5} (71 ÷ 75) |
| EB | 19 (0.7480) | 40 (1.5748) | M 8 14 (0.5512) | 15 ⁺¹ (133 ÷ 142) | 15 ⁺¹ (133 ÷ 142) |
| | | | M 8 (◆) 18 (0.7087) | 15 ⁺¹ (◆) (133 ÷ 142) | 15 ⁺¹ (◆) (133 ÷ 142) |
| ED | 27 (1.0630) | 51 (2.0079) | M 10 18 (0.7087) | 20 ⁺¹ (177 ÷ 186) | 30 ^{+2.5} (266 ÷ 288) |
| EF | 33 (1.2992) | 62 (2.4409) | M 12 18 (0.7087) | 25 ⁺¹ (221 ÷ 230) | 50 ^{+2.5} (443 ÷ 465) |

(◆) For POLARIS 30

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