HYMATEC GMBH
HYDRAULIK MASCHINEN TECHNIK

PL 01 T E

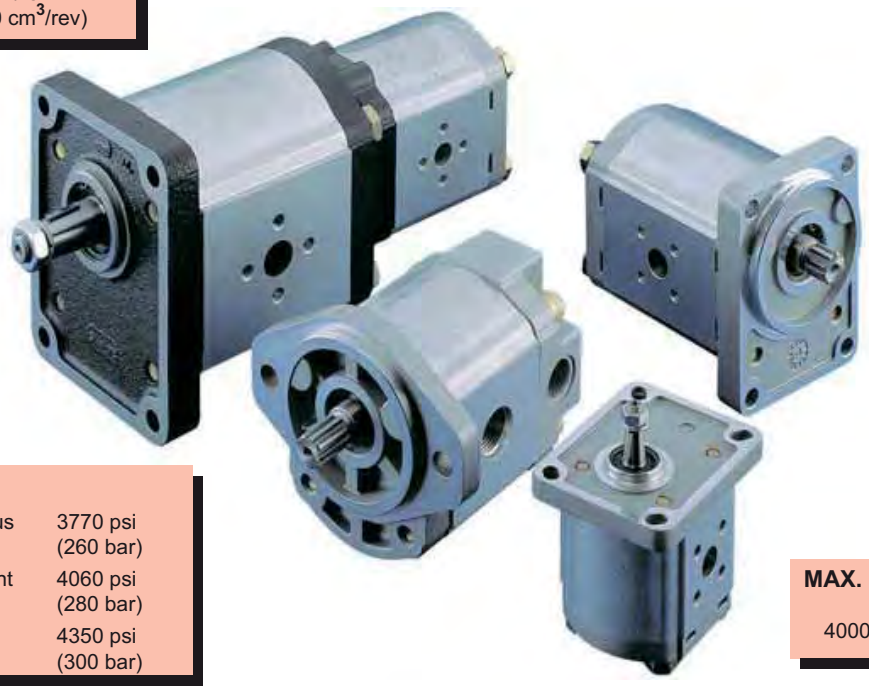
POLARIS®

Hydraulic gear pumps and motors

through bore aluminum body

DISPLACEMENTS

From	0.07 in^3/rev (1.07 cm^3/rev)
To	5.56 in^3/rev (91.10 cm^3/rev)



PRESSURE

Max. Continuous	3770 psi (260 bar)
Max. Intermittent	4060 psi (280 bar)
Max. Peak	4350 psi (300 bar)

MAX. SPEED

4000 min^{-1}

- Group 1, 2 and 3 with displacements from 0.07 in^3/rev (1,07 cm^3/rev) to 5.56 in^3/rev (91.10 cm^3/rev).
- Drive shafts, mounting flanges and ports according to the international standards.
- Combination of multiple pumps in standard version, common inlet and separated stages.
- Integrated outboard bearings for heavy duty application.
- Many types of built-in valves.

"POLARIS" more than fifty years of Casappa experience in design and production of hydraulic components, characterized by large investments in research and development in order to propose new and personalized solutions to the market. Our use of CAD 3D in the developement of this generation permit us the 3D modelling and the virtual simulation of the behaviour of the components inserted in the hydraulic circuit. This means that the process will take less time and the quality of the products is better.
Polaris pumps and motors are basically composed of a gear housing in aluminium alloy, two gear wheels supported by sleeve bearings and two end plates, the front and the rear cover, either in aluminium or in cast iron with excellent mechanical characteristics. Our success is based largely on the quality of our product. This guaranties the consistencies of the efficiencies and low level of noise emission during the life of our products.

Edition: 01/10.2003

CASAPPA®
FLUID POWER DESIGN

HYMATEC GMBH
Hymatec-GmbH – Hebbelstraße 22 94315 Straubing
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GENERAL DATA PUMPS AND MOTORS

Series	Pump type PLP Motor type PLM	Displacement	Max. pressure			Max. speed	Min. speed
			p_1	p_2	p_3		
		in^3/rev (cm^3/rev)	psi (bar)			min^{-1}	
POLARIS 10	PL. 10•1	0.07 (1,07)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•1,5	0.10 (1,60)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•2	0.13 (2,13)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•2,5	0.16 (2,67)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•3,15	0.20 (3,34)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•4	0.26 (4,27)	3625 (250)	3915 (270)	4060 (280)	4000	650
	PL. 10•5	0.33 (5,34)	3625 (250)	3915 (270)	4060 (280)	4000	650
	PL. 10•5,8	0.38 (6,20)	3335 (230)	3625 (250)	3770 (260)	3500	650
	PL. 10•6,3	0.41 (6,67)	3335 (230)	3625 (250)	3770 (260)	3500	650
	PL. 10•8	0.52 (8,51)	2610 (180)	2900 (200)	3045 (210)	3500	650
	PL. 10•10	0.65 (10,67)	2030 (140)	2320 (160)	2465 (170)	3500	650
POLARIS 20	PL. 20•4	0.30 (4,95)	3625 (250)	4060 (280)	4350 (300)	4000	600
	PL. 20•6,3	0.40 (6,61)	3625 (250)	4060 (280)	4350 (300)	4000	600
	PL. 20•7,2	0.44 (7,29)	3625 (250)	4060 (280)	4350 (300)	4000	600
	PL. 20•8	0.50 (8,26)	3625 (250)	4060 (280)	4350 (300)	3500	600
	PL. 20•9	0.56 (9,17)	3625 (250)	4060 (280)	4350 (300)	3500	600
	PL. 20•10,5	0.66 (10,9)	3625 (250)	4060 (280)	4350 (300)	3500	600
	PL. 20•11,2	0.69 (11,23)	3625 (250)	4060 (280)	4350 (300)	3500	600
	PL. 20•14	0.89 (14,53)	3625 (250)	4060 (280)	4350 (300)	3500	500
	PL. 20•16	1.03 (16,85)	3625 (250)	4060 (280)	4350 (300)	3000	500
	PL. 20•19	1.16 (19,09)	2900 (200)	3190 (220)	3480 (240)	3000	500
	PL. 20•20	1.29 (21,14)	2900 (200)	3190 (220)	3480 (240)	3000	500
	PL 20•24,5	1.52 (24,84)	2465 (170)	2755 (190)	3045 (210)	2500	500
	PL. 20•25	1.61 (26,42)	2465 (170)	2755 (190)	3045 (210)	2500	500
	PL. 20•27,8	1.72 (28,21)	1885 (130)	2175 (150)	2465 (170)	2000	500
	PL. 20•31,5	2.01 (33,03)	1885 (130)	2175 (150)	2465 (170)	2000	500
POLARIS 30	PL. 30•22	1.34 (21,99)	3625 (250)	3915 (270)	4060 (280)	3000	350
	PL. 30•27	1.63 (26,70)	3625 (250)	3915 (270)	4060 (280)	3000	350
	PL. 30•34	2.11 (34,55)	3480 (240)	3770 (260)	3915 (270)	3000	350
	PL. 30•38	2.40 (39,27)	3480 (240)	3770 (260)	3915 (270)	3000	350
	PL. 30•43	2.68 (43,98)	3335 (230)	3625 (250)	3770 (260)	3000	350
	PL. 30•51	3.16 (51,83)	3045 (210)	3335 (230)	3480 (240)	2500	350
	PL. 30•61	3.74 (61,26)	2755 (190)	3045 (210)	3190 (220)	2500	350
	PL. 30•73	4.50 (73,82)	2465 (170)	2755 (190)	2900 (200)	2500	350
	PL. 30•82	4.98 (81,68)	2320 (160)	2465 (170)	2610 (180)	2200	350
	PL. 30•90	5.56 (91,10)	2175 (150)	2320 (160)	2465 (170)	2200	350

p_1= Max. continuous pressure p_2= Max. intermittent pressure p_3= Max. peak pressure

The values in the table refer to unidirectional pumps and motors.
Reversible pump and motors max pressures are 15% lower than those shown in table.
For different working conditions please consult our sales department.

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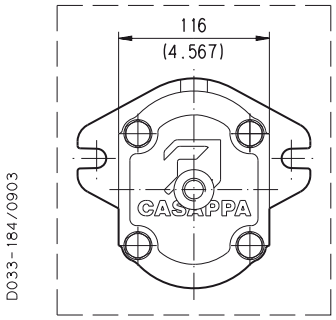
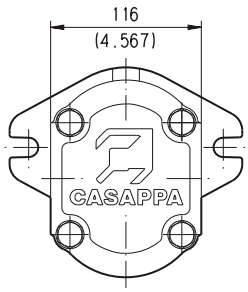
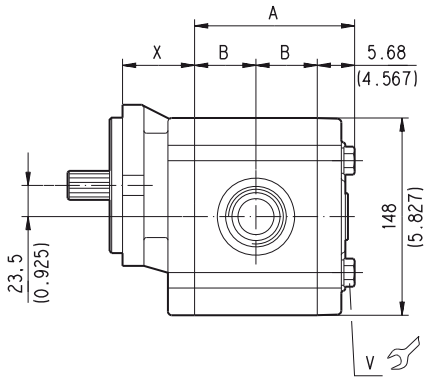
POLARIS 30 — SINGLE UNITS SIDE PORTS — L



Reversible R



Single rotation S - D



D033-184/0903

Mounting flange type version 0	X
	mm (inch)
E3	24 (0.945)
E4	25 (0.984)
B3	28 (1.102)
S5	54 (2.1260)
U3	20,8 (0.819)

DRIVE SHAFTS:
see page 55 and page 56
MOUNTING FLANGE:
see page 65 ÷ 67

Mounting flange material	V
	Screws tightening torque Nm (lbf in)
Cast iron	100 $^{+5}$ (885 ÷ 929)

Pump type Motor type	A	B
	mm (inch)	mm (inch)
PL. 30•22	106 (4.1732)	39 (1.5354)
PL. 30•27	109 (4.2913)	40,5 (1.5945)
PL. 30•34	114 (4.4882)	43 (1.6929)
PL. 30•38	117 (4.6063)	44,5 (1.7520)
PL. 30•43	120 (4.7244)	46 (1.8110)
PL. 30•51	125 (4.9212)	48,5 (1.9094)
PL. 30•61	131 (5.1575)	51,5 (2.0276)
PL. 30•73	139 (5.4724)	55,5 (2.1850)
PL. 30•82	144 (5.6693)	58 (2.2835)
PL. 30•90	150 (5.9055)	61 (2.4016)

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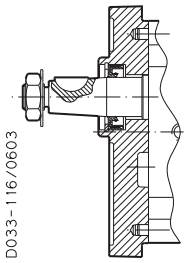
VERSIONS

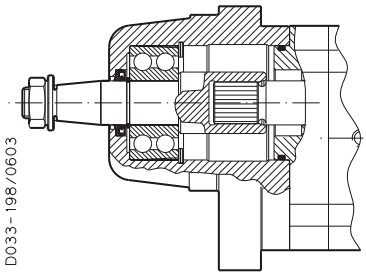
For each version, the possible combination between drive shafts and mounting flanges are shown on pages 57 ÷ 67.

VERSION	0	
Available for group:		
10	20	30

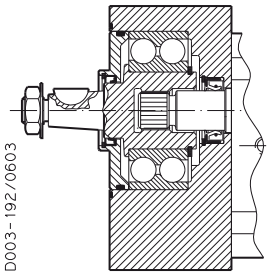


Version for applications without radial and axial load on the drive shaft.

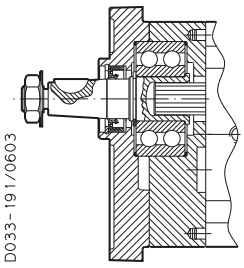
VERSION	W8
Available for group:	
20	



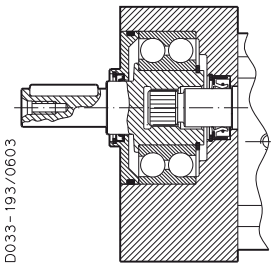
VERSION	4
Available for group:	
20	



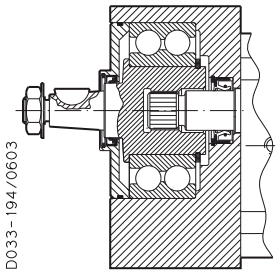
VERSION	5
Available for group:	
20	



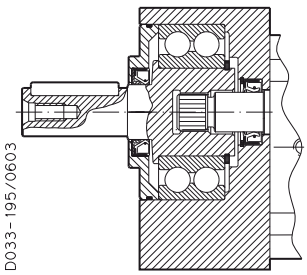
VERSION	6
Available for group:	
20	



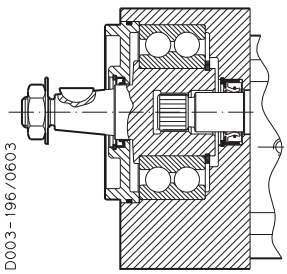
VERSION	7
Available for group:	
20	



VERSION	8
Available for group:	
20	



VERSION	9
Available for group:	
20	



For the outboard bearing life expectancy, diagrams providing approximate selection data well be found on subsequent pages. For particular applications please consult our technical sales department.

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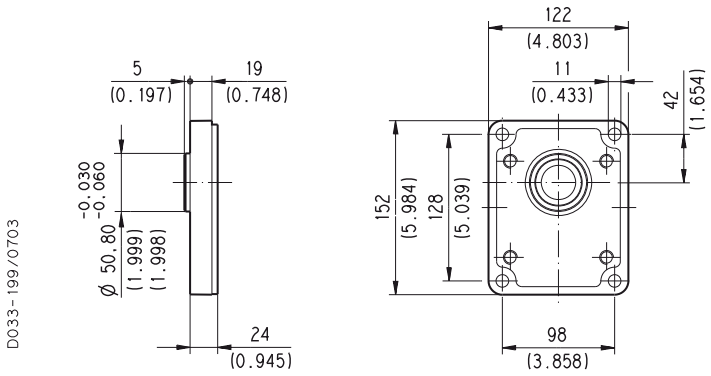
POLARIS 30 — MOUNTING FLANGES AND TABLE OF COMPATIBILITY

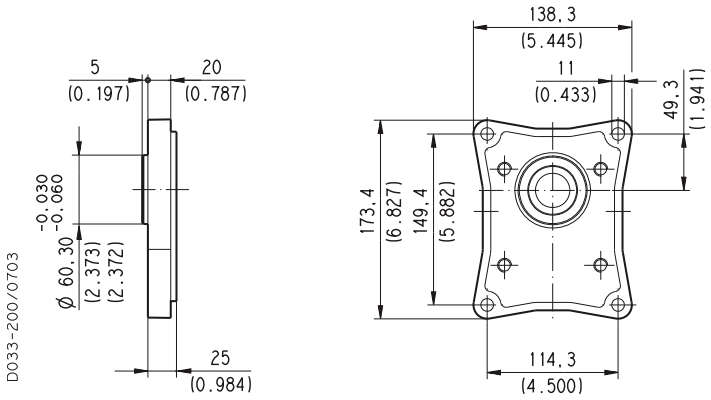
EUROPEAN E3



	DRIVE SHAFTS See page 55 e 56							
VERSIONS See page 46	**83**	**41**	**04**	**05**	**32**	**33**	**A5**	**A8**
0	#	#	x	x	x	x	x	x

Standard combination
x Available combination

EUROPEAN E4



	DRIVE SHAFTS See page 55 e 56			
VERSIONS See page 46	**84**	**41**	**A5**	**A8**
0	#	x	x	x

Standard combination
x Available combination

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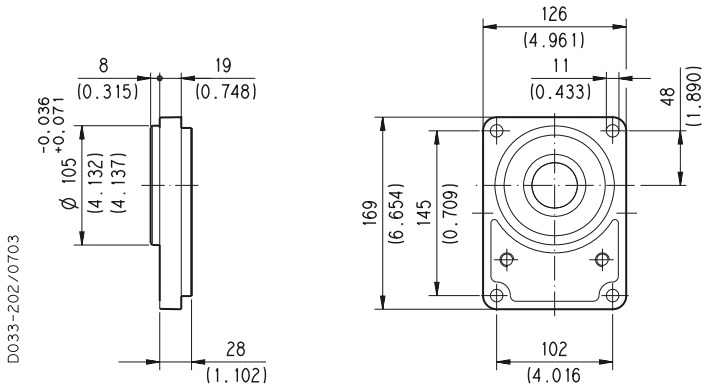
POLARIS 30

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

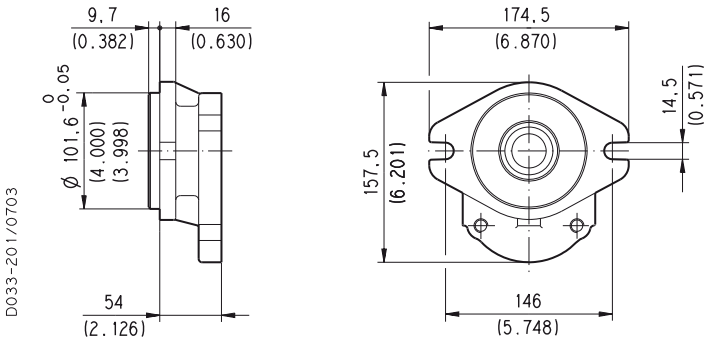
GERMAN **B3**



	DRIVE SHAFTS See page 55 e 56			
VERSIONS See page 46	**56**	**83**	**A5**	**A8**
0	**#**	**x**	**x**	**x**

Standard combination
x Available combination

SAE "B" 2 BOLTS **S5**



	DRIVE SHAFTS See page 55 e 56			
VERSIONS See page 46	**04**	**05**	**32**	**33**
0	**#**	**#**	**#**	**#**

Standard combination
x Available combination

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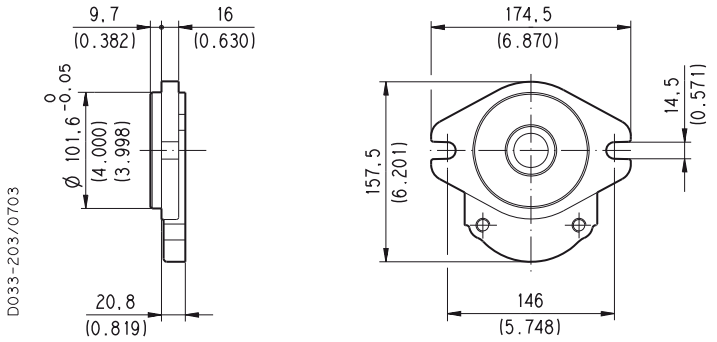
POLARIS 30

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

SAE "B" 2 BOLTS **U3**



	DRIVE SHAFTS See page 55 e 56		
VERSIONS See page 46	**A5**	**A8**	**83**
0	**#**	**#**	**x**

Standard combination
x Available combination

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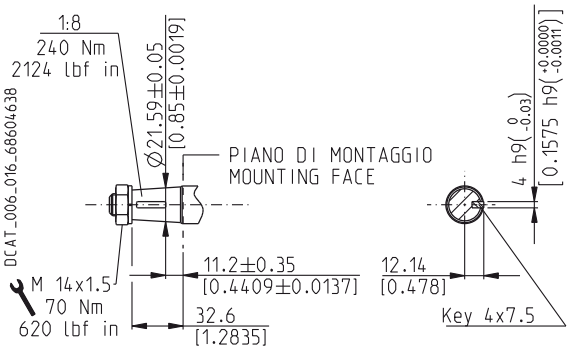
POLARIS 30 — DRIVE SHAFTS

EUROPEAN TAPERED 1:8 — 83

Not available with size:

30•82 - 30•90

Mounting face refer to flange code **E3**

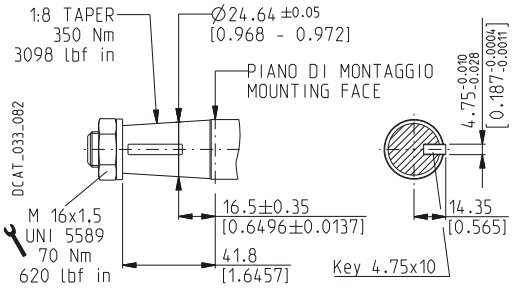


EUROPEAN TAPERED 1:8 — 84

Not available with size:

30•22 - 30•27 - 30•34 - 30•38

Mounting face refer to flange code **E4**

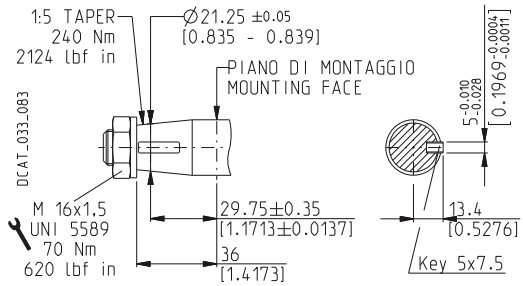


GERMAN TAPERED 1:5 — 56

Not available with size:

30•61 - 30•73 - 30•82 - 30•90

Mounting face refer to flange code **B3**

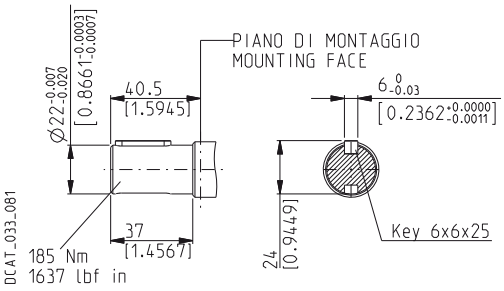


STRAIGHT — 41

Not available with size:

30•82 - 30•90

Mounting face refer to flange code **E3**

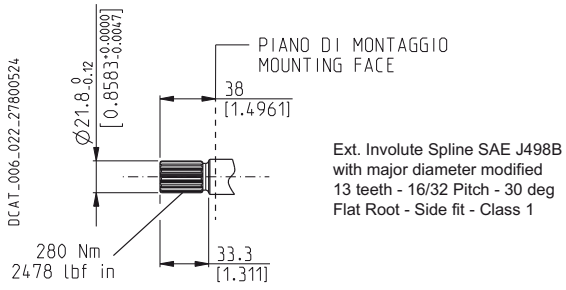


SAE "B" SPLINE — A8

Not available with size:

30•82 - 30•90

Mounting face refer to flange code **U3**



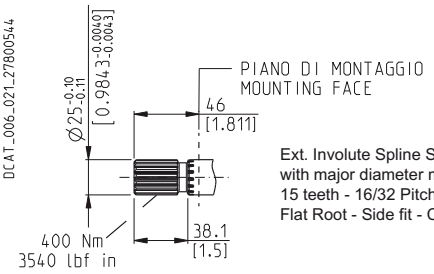
Ext. Involute Spline SAE J498B
with major diameter modified
13 teeth - 16/32 Pitch - 30 deg
Flat Root - Side fit - Class 1

SAE "BB" SPLINE — A5

Not available with size:

30•22 - 30•38 - 30•82 - 30•90

Mounting face refer to flange code **U3**



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

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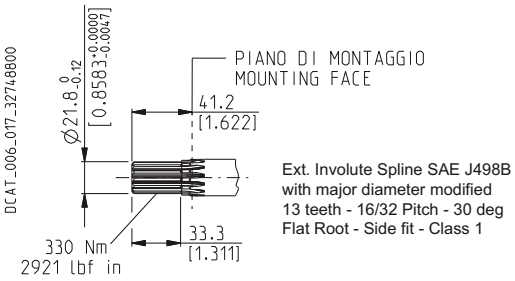
POLARIS 30 — DRIVE SHAFTS

SAE "B" SPLINE — 04

Mounting face refer to flange code **S5**



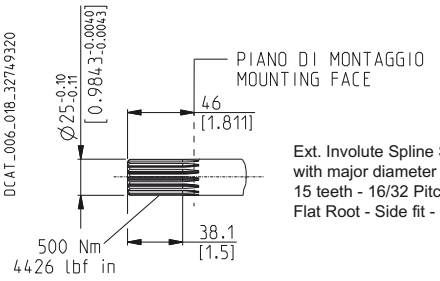
Ext. Involute Spline SAE J498B
with major diameter modified
13 teeth - 16/32 Pitch - 30 deg
Flat Root - Side fit - Class 1

SAE "BB" SPLINE — 05

Not available with size:

30•90

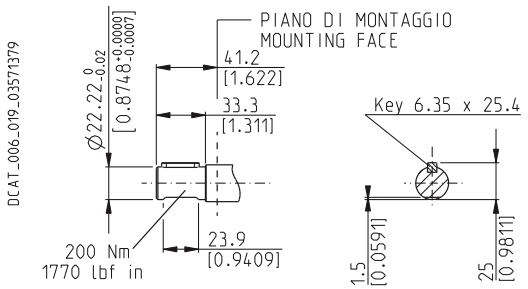
Mounting face refer to flange code **S5**



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

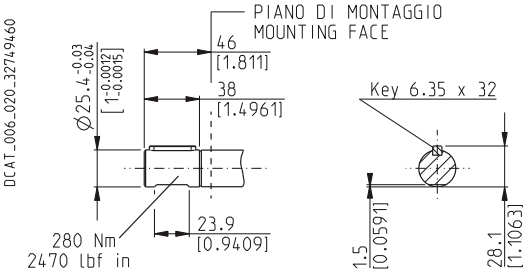
SAE "B" STRAIGHT — 32

Mounting face refer to flange code **S5**



SAE "BB" STRAIGHT — 33

Mounting face refer to flange code **S5**



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IN/OUT PORTS TYPE

	SIDE PORTS												REAR PORTS			
PORTS TYPE	German		European		Split SSM		Split 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•46	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				

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EXTERNAL DRAIN PORTS

IN/OUT PORTS TYPE	SIDE PORTS						REAR PORTS	
	German	European	Split SSM	Split SSS	Gas BSPP	SAE ODT	Gas BSPP	SAE ODT
PL. 10	GA	–	–	–	GA	03	GA	03
PL. 20	TA	GB	GB	03	GB	03	GB	03
PL. 30	GC	GC	GC	OA	GC	OA	–	–

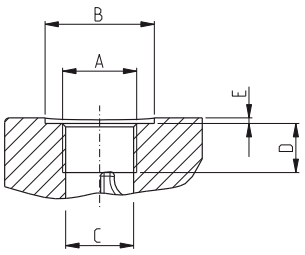
DRAIN PORTS SIZES

Tightening torque for low pressure side port.

GAS STRAIGHT THREAD PORTS — BSPP

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

CODE	Nominal size	A	∅ B	∅ C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)
GA	1/8"	G 1/8	16,5 (0.6496)	8,75 (0.3444)	12 (0.4724)	1 (0.0394)	$5^{+0,25}$ (44 ÷ 46)
GB	1/4"	G 1/4	21,5 (0.8465)	12 (0.4724)	15 (0.5906)	1,5 (0.0591)	15^{+1} (133 ÷ 142)



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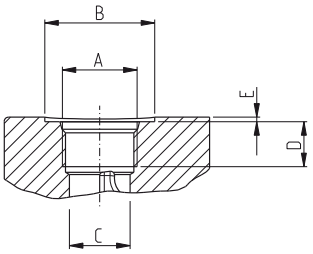
METRIC STRAIGHT THREAD PORTS ISO 6149 — METRIC

Metric thread ISO 60° conforms to ISO/R 262

CODE	A	∅ B	∅ C	D	E	
		mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)
TA	M 10x1	22 (0.8661)	9 (0.3543)	13 (0.5118)	0,5 (0.0197)	$10^{+0,5}$ (89 ÷ 93)



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SAE STRAIGHT THREAD PORTS J514 — ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	A	∅ B	∅ C	D	E	
		mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)
03	7/16"-20 UNF-2B	21 (0.8267)	9,5 (0.3740)	14 (0.5512)	1 (0.0394)	12^{+1} (106 ÷ 115)

Other drain ports are shown on subsequent pages.

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PORTS SIZES

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)	M 6 12 (0.4724)	8 $^{+0,5}$ (71 ÷ 75)	8 $^{+0,5}$ (71 ÷ 75)
BE	20 (0.7874)	40 (1.5748)	M 6 12 (0.4724)	15 $^{+1}$ (133 ÷ 142)	15 $^{+1}$ (133 ÷ 142)
BL	19 (0.7480)	55 (2.1654)	M8 18 (0.7087)	20 $^{+1}$ (177 ÷ 186)	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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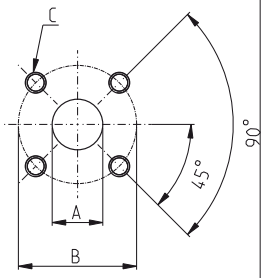

EUROPEAN FLANGED PORTS - 4 Bolts — EUROPEAN

Metric thread ISO 60° conforms to ISO/R 262

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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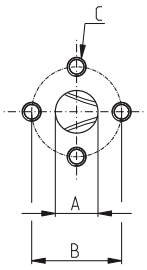

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PORTS SIZES

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.

SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI — SSM

Metric thread ISO 60° conforms to ISO/R 262

CODE	A mm (in)	B mm (in)	C mm (in)	D Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
MA	12,5 (0.4921)	38,1 (1.50))	17,5 (0.6890)	M 8 14 (0.5512)	15 +1 (133 ÷ 142)	15 +1 (133 ÷ 142)
				M8 (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	20 +1 (◆) (177 ÷ 186)
MB	19 (0.7480)	47,6 (1.8740)	22,2 (0.8740)	M 10 14 (0.5512)	20 +1 (177 ÷ 186)	25 +1 (266 ÷ 288)
				M 10 (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	35 +2,5 (◆) (310 ÷ 332)
MC	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10 14 (0.5512)	20 +1 (177 ÷ 186)	25 +1 (266 ÷ 288)
				M 10 (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	35 +2,5 (◆) (310 ÷ 332)
MD	30,5 (1.2008)	58,7 (2.3110)	30,2 (1.1890)	M 10 15 (0,5906)	20 +1 (177 ÷ 186)	30 +2,5 (266 ÷ 288)
				M 10 (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	35 +2,5 (◆) (310 ÷ 332)
ME	39,3 (1.5472)	69,8 (2.7480)	35,7 (1.4055)	M 12 22 (0.8661)	30 +2,5 (266 ÷ 288)	60 +5 (531 ÷ 575)
MF	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 12 22 (0.8661)	30 +2,5 (266 ÷ 288)	60 +5 (531 ÷ 575)

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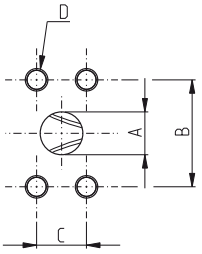


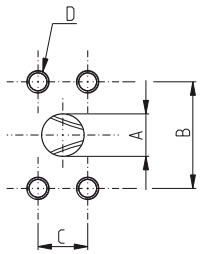
(◆) For POLARIS 30

SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI — SSS

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	A mm (in)	B mm (in)	C mm (in)	D Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
SA	12,5 (0.4921)	38,1 (1.50))	17,5 (0.6890)	5/16-18 UNC-2B 14 (0.5512)	15 +1 (133 ÷ 142)	15 +1 (133 ÷ 142)
				5/16-18 UNC-2B (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	20 +1 (◆) (177 ÷ 186)
SB	19 (0.7480)	47,6 (1.8740)	22,2 (0.8740)	3/8 - 16 UNC-2B 14 (0.5512)	20 +1 (177 ÷ 186)	20 +1 (177 ÷ 186)
				3/8 - 16 UNC-2B (◆) 22 (0.8661)	30 +2,5 (◆) (266 ÷ 288)	20 +1 (◆) (177 ÷ 186)
SC	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8 - 16 UNC-2B 14 (0.5512)	20 +1 (177 ÷ 186)	25 +1 (221 ÷ 230)
				3/8 - 16 UNC-2B (◆) 22 (0.8661)	20 +1 (◆) (177 ÷ 186)	30 +2,5 (◆) (266 ÷ 288)
SD	30,5 (1.2008)	58,7 (2.3110)	30,2 (1.1890)	7/16 - 14 UNC-2B 22 (0.8661)	20 +1 (177 ÷ 186)	45 +2,5 (398 ÷ 420)
SE	39,3 (1.5472)	69,8 (2.7480)	35,7 (1.4055)	1/2 - 13 UNC-2B 22 (0.8661)	30 +2,5 (266 ÷ 288)	70 +5 (620 ÷ 664)
SF	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	1/2 - 13 UNC-2B 22 (0.8661)	30 +2,5 (◆) (266 ÷ 288)	70 +5 (620 ÷ 664)

DCAT_006_028_21060740



(◆) For POLARIS 30

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PORTS SIZES

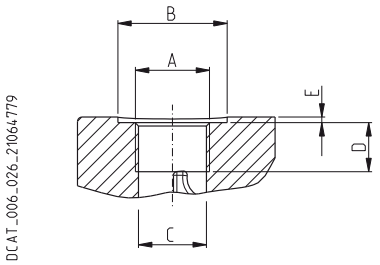
Tightening torque for low pressure side port.

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.

GAS STRAIGHT THREAD PORTS — BSPP

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



CODE	Nominal size	A	∅ B	∅ C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
GC	3/8"	G 3/8	25 (0.9843)	15 (0.5906)	14 (0.5512)	2 (#) (0.0787)	15 $^{+1}$ (#) (133 ÷ 142)	–
			–			–	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)	–	20 $^{+1}$ (◆) (177 ÷ 186)	50 $^{+2,5}$ (◆) (443 ÷ 465)
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

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PORTS SIZES

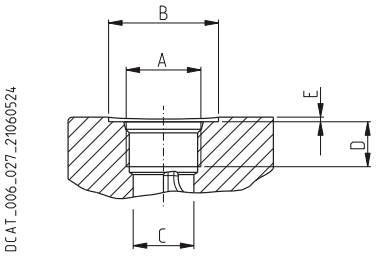
Tightening torque for low pressure side port.

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.

SAE STRAIGHT THREAD PORTS J514 — ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



CODE	Nominal size	A	∅ B	∅ C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
OA	3/8"	9/16" - 12 UNF - 2B	26 (1.0236)	13 (0.5118)	15 (0.5906)	1 (0.03934)	15 $^{+1}$ (133 ÷ 142)	25 $^{+1}$ (221 ÷ 230)
						2 (#) (0.0787)	15 $^{+1}$ (#) (133 ÷ 142)	–
OB	1/2"	3/4" - 16 UNF - 2B	32 (1.2598)	17,5 (0.690)	15 (0.5906)	–	20 $^{+1}$ (177 ÷ 186)	45 $^{+2,5}$ (398 ÷ 420)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	15 (◆) (0.5906)	0,5 (0.0197)	30 $^{+2,5}$ (266 ÷ 288)	70 $^{+5}$ (620 ÷ 664)
					17 (0.6693)			
OD	3/4"	1 1/16" - 12 UNF - 2B	42 (1.6535)	24,8 (0.9764)	20 (0.7874)	0,5 (0.0197)	40 $^{+2,5}$ (354 ÷ 376)	120 $^{+10}$ (1062 ÷ 1151)
OF	1"	1 5/16" - 12 UNF - 2B	49 (1.9291)	30,5 (1.2008)	20 (0.7874)	0,5 (0.0197)	60 $^{+5}$ (531 ÷ 575)	170 $^{+10}$ (1505 ÷ 1593)
OG	1" 1/4	1 5/8" - 12 UNF - 2B	58 (2.2835)	39,1 (1.5394)	20 (0.7874)	0,5 (0.0197)	70 $^{+5}$ (620 ÷ 664)	200 $^{+10}$ (1770 ÷ 1858)
OH	1" 1/2	1 7/8" - 12 UNF - 2B	65 (2.5591)	45 (1.7717)	20 (0.7874)	0,5 (0.0197)	100 $^{+5}$ (885 ÷ 929)	270 $^{+15}$ (2389 ÷ 2522)

(#) Drain port
(◆) For POLARIS 10

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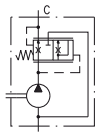
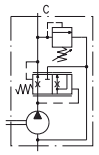
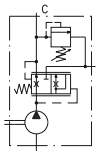
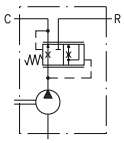
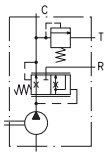
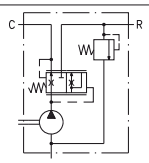
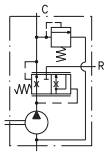
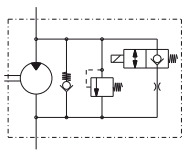
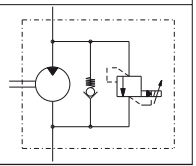
VALVE OPTIONS (◆)

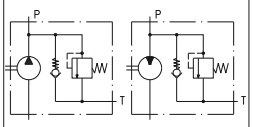
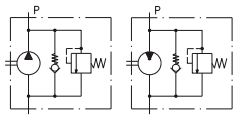
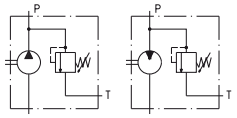
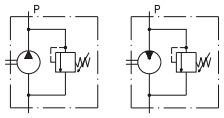
PRIORITY VALVE

P1	Costant delivery and internal recirculation of excess flow.	
P2	Costant delivery at controlled pressure. Internal recirculation of excess flow and drain valve.	
P3	Costant delivery at controlled pressure. Excess flow and drain valve must be connected to tank.	
P4	Costant delivery and excess flow can both be used under load.	
P5T	Costant delivery at controlled pressure with drain valve connected to tank. Excess flow can be used under load.	
P7	Costant delivery. Excess flow at controlled pressure can be used under load. Internal recirculation of drain valve.	
P9	Costant delivery at controlled pressure. Internal recirculation of valve drain. Excess flow can be used under load.	

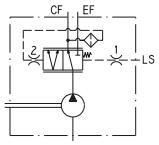
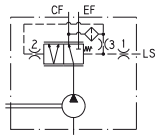
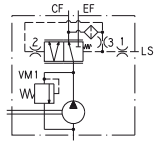
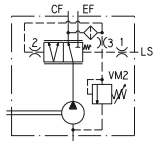
ELECTRIC VALVE FOR MOTORS

EC08..	By-pass valve normally closed with max. pressure relief valve and anti-cavitation valve.	
DBVSA..	Proportional relief valve and anti-cavitation valve.	

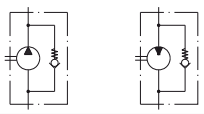
MAX PRESSURE RELIEF VALVE

VPEF..	Fixed setting with external drain.	
VPIF..	Fixed setting with internal drain.	
VPER..	Adjustable setting with external drain.	
VPIR..	Adjustable setting with internal drain.	

LOAD SENSING VALVE

...	Static.	
...	Dynamic.	
...	Dynamic with relief valve fitted on the main line.	
...	Dynamic with relief valve fitted on controlled line.	

CHECK VALVE

V8	Anti-cavitation valve.	

(◆) For more information please consult our technical sales department.

01/10.03

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HYMATEC GMBH
HYDRAULIK MASCHINEN TECHNIK

CASAPPA

HOW TO ORDER POLARIS 30 SINGLE UNITS

1		2		3		4	5		6		7		8		9		10
PLP30•22	-	R		0		83	E3	-	L	-	ED/EB	-	N	-	C	-	FS

1 Type	PUMP TYPE	MOTOR TYPE
in³/rev (cm³/rev)		
1.34 (21,99)	PLP 30•22	PLM 30•22
1.63 (26,70)	PLP 30•27	PLM 30•27
2.11 (34,55)	PLP 30•34	PLM 30•34
2.40 (39,27)	PLP 30•38	PLM 30•38
2.68 (43,98)	PLP 30•43	PLM 30•43
3.16 (51,83)	PLP 30•51	PLM 30•51
3.74 (61,26)	PLP 30•61	PLM 30•61
4.50 (73,82)	PLP 30•73	PLM 30•73
4.98 (81,68)	PLP 30•82	PLM 30•82
5.56 (91,10)	PLP 30•90	PLM 30•90

2 Rotation	CODE
Left	S
Right	D
Reversible rear external drain	R

3 Version	CODE
Without outboard bearing	0

4 Drive shaft	CODE
European tapered 1:8	83
European tapered 1:8	84
German tapered 1:5	56
Straight	41
SAE “B” spline	A8
SAE "BB" spline	A5
SAE "B" spline	04
SAE "BB" spline	05
SAE "B" straight	32
SAE "BB" straight	33

5 Mounting flange	CODE
European	E3
European	E4
German	B3
SAE "B" 2 bolt	S5
SAE “B” 2 bolt	U3

6 Ports position	CODE
Side	L

7 Ports IN/OUT		CODE
GERMAN FLANGED PORTS		
Type		Side
22-27-34-38-43 46-51-61-73-82-90	PLP30	BM/BL
	PLM30	BL/BM
EUROPEAN FLANGED PORTS		
Type		Side
22-27-34-38-43 46-51-61	PLP30	ED/EB
	PLM30	EB/ED
73-82-90	PLP30	EF/ED
	PLM30	ED/EF

CODE	7 Ports IN/OUT	
SAE FLANGED PORTS (SSM)		
Side	Type	
MB/MA	PLP 30	22
MA/MB	PLM 30	
MC/MB	PLP 30	27-34
MB/MC	PLM 30	
MD/MC	PLP 30	38-43-46-51
MC/MD	PLM 30	
ME/MD	PLP 30	61-73-82
MD/ME	PLM 30	
MF/ME	PLP 30	90
ME/MF	PLM 30	
SAE FLANGED PORTS (SSS)		
Side	Type	
SB/SA	PLP 30	22
SA/SB	PLM 30	
SC/SB	PLP 30	27-34
SB/SC	PLM 30	
SD/SC	PLP 30	38-43-46-51
SC/SB	PLM 30	
SE/SD	PLP 30	61-73-82
SD/SE	PLM 30	
SF/SE	PLP 30	90
SE/SF	PLM 30	
GAS STRAIGHT THREAD PORTS (BSPP)		
Side	Type	
GF/GF	PLP 30	22-27-34-38-43-46-51
	PLM 30	
GG/GF	PLP 30	61-73
GF/GG	PLM 30	
GH/GG	PLP 30	82-90
GG/GH	PLM 30	
SAE STRAIGHT THREAD PORTS (ODT)		
Side	Type	
OF/OD	PLP 30	22-27-34
OD/OF	PLM 30	
OG/OF	PLP 30	38-43-46-51
OF/OG	PLM 30	
OH/OG	PLP 30	61-73-82-90
OG/OH	PLM 30	

CODE	8 Seals (a)
N	Buna (standard)
V	Viton

CODE	9 Shaft seal options
C	High back pressure seal with wiper seal
D	Standard seal with wiper seal
H	High back pressure seal

CODE	10 Shaft arrangement
FS	Female spline

(a) Choose the seals according to the temperature shown on page 3.

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