

## HOW TO ORDER POLARIS 20 SINGLE UNITS

PLM20.8 R 0 82 E2 - L EA/EA - N - EL  
 1 2 3 4 5 6 7 8 9 10 11 12 13  
 - PLP20-4 - E - 0 - 82 - E2 - L - EA/EA - N - EL - C - GB - FS -

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

## GENERAL DATA PUMPS AND MOTORS

Series	Pump type PLP Motor type PLM	Displacement in <sup>3</sup> /rev (cm <sup>3</sup> /rev)	Max. pressure			Max. speed	Min. speed min <sup>-1</sup>
			p <sub>1</sub>	p <sub>2</sub>	p <sub>3</sub>		
			psi (bar)				
POLARIS 10	PL. 10•1	0.07 (1,07)	3770 (260)	4060 (280)	4205 (290)	4000	650
	PL. 10•1,5	0.10 (1,6)	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<sub>1</sub>= Max. continuous pressure

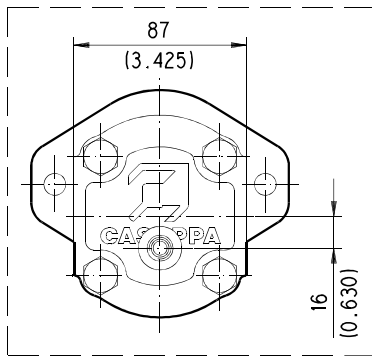
p<sub>2</sub>= Max. intermittent pressure

p<sub>3</sub>= Max. peak pressure

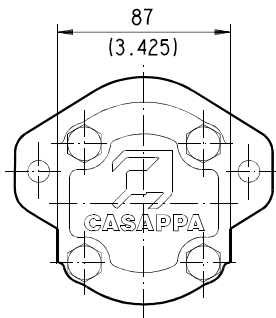
The values in the table refer to unidirectional pumps and motors. Reversible pumps and motors max pressures are 15% lower than those shown in table. For different working conditions please consult our sales department.

**POLARIS 20**

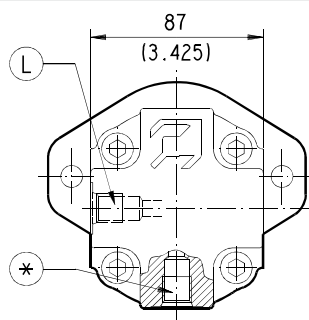
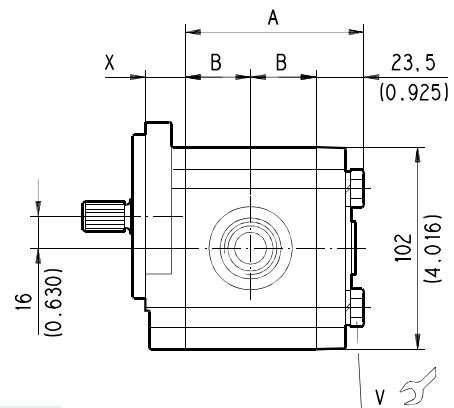
**SINGLE UNITS SIDE PORTS**



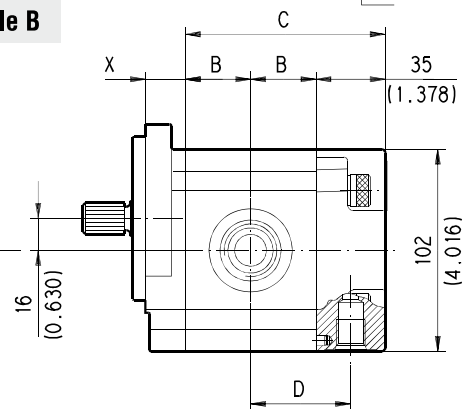
**Reversible R**



**Single rotation S - D and Reversible B**



**Reversible L**



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

DRAIN PORTS POSITION  
L = Side \* = Bottom

DRIVE SHAFTS: see page 53 ÷ 55  
MOUNTING FLANGE: see page 61 ÷ 65  
PORTS: see page. 69 ÷ 74

Mounting flange material	Screw tightening torque	
	Nm (lbf in)	
<b>V</b>		
<b>Aluminium</b>	45 <sup>+4,5</sup> (358 ÷ 438)	
<b>Cast iron</b>	70 <sup>+7</sup> (558 ÷ 682)	

Mounting flange type version 0	X	
	mm (inch)	
<b>E2</b>	18 (0.7087)	
<b>B2</b>	18,8 (0.7402)	
<b>B4</b>	16 (0.6299)	
<b>B5</b>	16 (0.6299)	
<b>B6</b>	17,7 (0.6969)	
<b>S1</b>	20 (0.7874)	
<b>S2</b>	20 (0.7874)	
<b>S9</b>	20 (0.7874)	
<b>S5</b>	20 (0.7874)	
<b>W8</b>	32,1 (1.2638)	

Pump type Motor type	A	B	C	D
	mm (inch)	mm (inch)	mm (inch)	mm (inch)
<b>PL. 20•4</b>	75 (2.9528)	25,75 (1.0138)	86,5 (3.4055)	43,25 (1.7028)
<b>PL. 20•6,3</b>	77,5 (3.0512)	27 (1.0630)	89 (3.5039)	44,5 (1.7520)
<b>PL. 20•7,2</b>	78,5 (3.0905)	27,5 (1.0826)	90 (3.5433)	45 (1.7716)
<b>PL. 20•8</b>	80 (3.1496)	28,25 (1.1122)	91,5 (3.6024)	45,75 (1.8012)
<b>PL. 20•9</b>	81,3 (3.2008)	28,9 (1.1378)	92,8 (3.6535)	46,4 (1.8268)
<b>PL. 20•10,5</b>	84 (3.3070)	30,25 (1.1909)	95,5 (3.7598)	47,75 (1.8799)
<b>PL. 20•11,2</b>	84,5 (3.3268)	30,5 (1.2008)	96 (3.7795)	48 (1.8898)
<b>PL. 20•14</b>	89,5 (3.5236)	33 (1.2992)	101 (3.9764)	50,5 (1.9882)
<b>PL. 20•16</b>	93 (3.6614)	34,75 (1.3681)	104,5 (4.1142)	52,25 (2.0571)
<b>PL. 20•19</b>	96,4 (3.7952)	36,45 (1.4350)	107,9 (4.2480)	53,45 (2.1043)
<b>PL. 20•20</b>	99,5 (3.9173)	38 (1.4961)	111 (4.3701)	55,5 (2.1850)
<b>PL. 20•24,5</b>	105,1 (4.1378)	40,8 (1.6063)	116,6 (4.5905)	58,3 (2.2953)
<b>PL. 20•25</b>	107,5 (4.2323)	42 (1.6535)	119 (4.6850)	59,5 (2.3425)
<b>PL. 20•27,8</b>	110,2 (4.3386)	43,35 (1.7067)	121,7 (4.7913)	60,85 (2.3957)
<b>PL. 20•31,5</b>	117,5 (4.6260)	47 (1.8504)	129 (5.0787)	64,5 (2.5394)

Replaces: 01/10.03

○ 02/07.2006

**POLARIS 20**

**DRIVE SHAFTS**

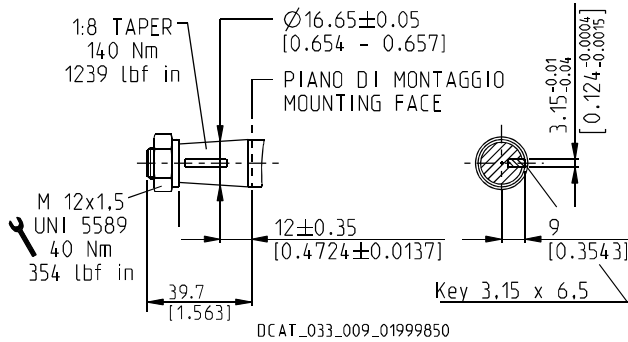
**EUROPEAN TAPERED 1:8**

**82**

Not available with size:

**20•10,5    20•24,5    20•27,8**

Mounting face refer to flange code **E2**



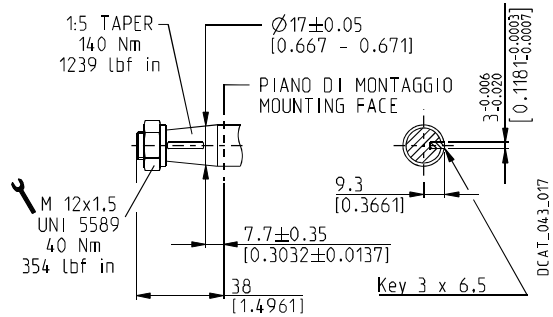
**GERMAN TAPERED 1:5**

**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**

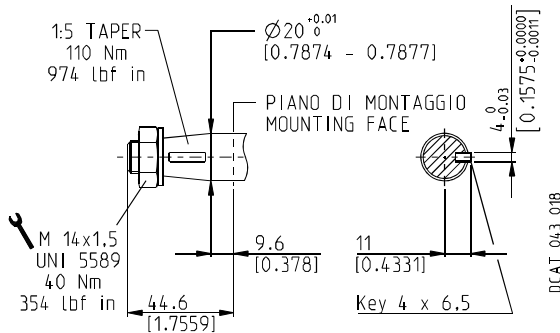


**GERMAN TAPERED 1:5**

**55**

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

Mounting face refer to flange code **B2**



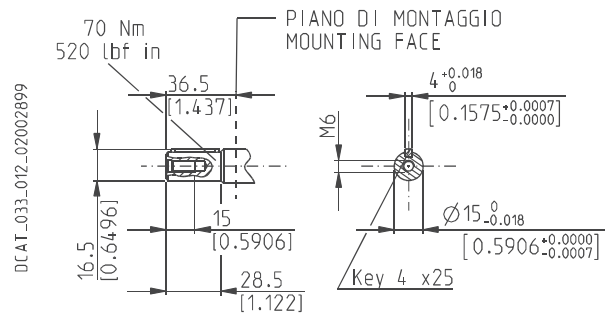
**STRAIGHT**

**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**



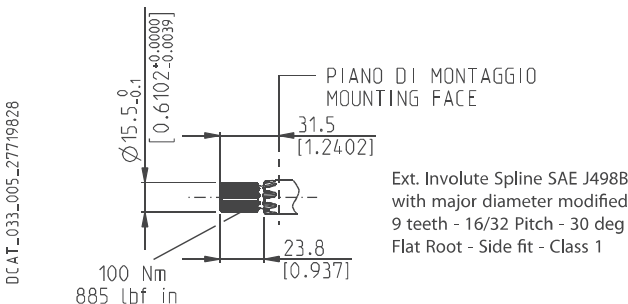
**SAE "A" SPLINE**

**03**

Not available with size:

**20•24,5    20•27,8**

Mounting face refer to flange code **S1**



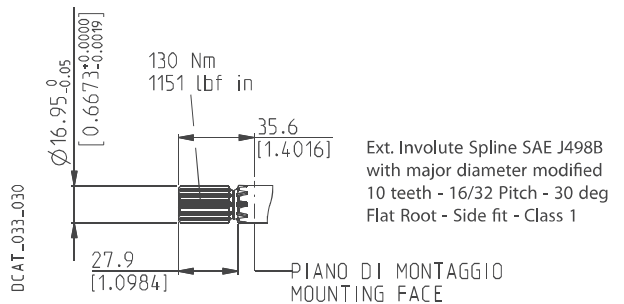
**SPLINE**

**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**

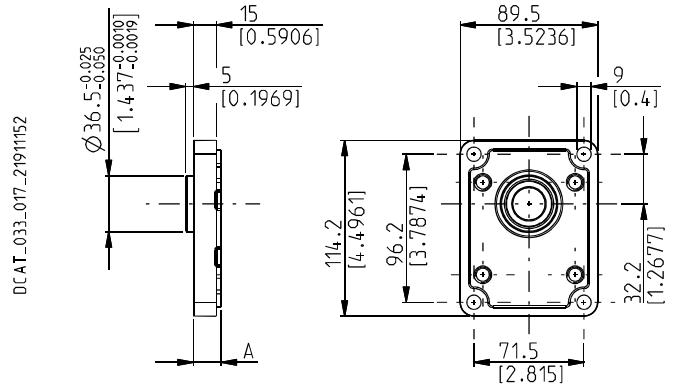
**MOUNTING FLANGES AND TABLE OF COMPATIBILITY**

Replaces: 01/10.03

**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)			#									

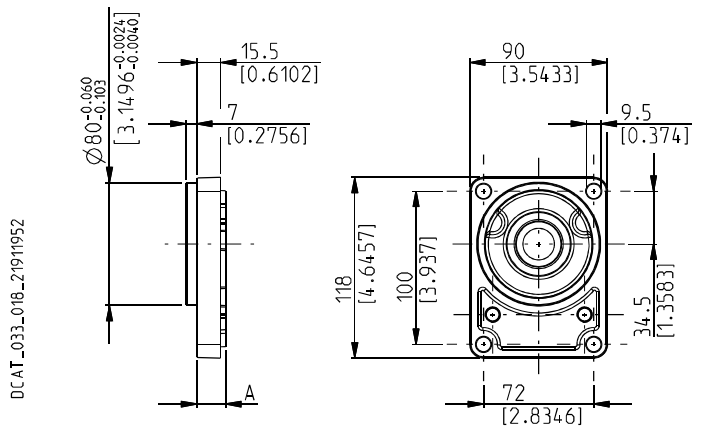
# Standard combination

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

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

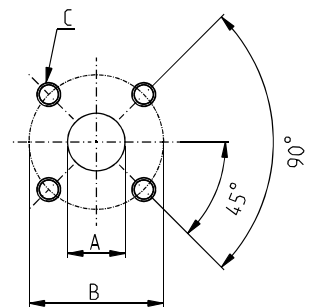
### GERMAN FLANGED PORTS - 4 Bolts

**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)
<b>BA</b>	8 (0.3150)	30 (1.1811)	M6 12 (0.4724)	8 <sup>+0.5</sup> (71 ÷ 75)	8 <sup>+0.5</sup> (71 ÷ 75)
<b>BB</b>	13 (0.5118)	30 (1.1811)	M6 12 (0.4724)	8 <sup>+0.5</sup> (71 ÷ 75)	8 <sup>+0.5</sup> (71 ÷ 75)
<b>BC</b>	15 (0.5906)	35 (1.3780)	M6 12 (0.4724)	8 <sup>+0.5</sup> (71 ÷ 75)	8 <sup>+0.5</sup> (71 ÷ 75)
<b>BE</b>	20 (0.7874)	40 (1.5748)	M6 12 (0.4724)	8 <sup>+0.5</sup> (71 ÷ 75)	8 <sup>+0.5</sup> (71 ÷ 75)
<b>BL</b>	19 (0.7480)	55 (2.1654)	M8 18 (0.7087)	15 <sup>+1</sup> (133 ÷ 142)	20 <sup>+1</sup> (177 ÷ 186)
<b>BM</b>	27 (1.0630)	55 (2.1654)	M8 18 (0.7087)	15 <sup>+1</sup> (133 ÷ 142)	20 <sup>+1</sup> (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)
<b>EA</b>	13 (0.5118)	30 (1.1811)	M 6 13 (0.5118)	8 <sup>+0.5</sup> (71 ÷ 75)	8 <sup>+0.5</sup> (71 ÷ 75)
<b>EB</b>	19 (0.7480)	40 (1.5748)	M 8 14 (0.5512)	15 <sup>+1</sup>	15 <sup>+1</sup>
			M 8 (◆) 18 (0.7087)	15 <sup>+1</sup> (◆)	15 <sup>+1</sup> (◆)
<b>ED</b>	27 (1.0630)	51 (2.0079)	M 10 18 (0.7087)	20 <sup>+1</sup> (177 ÷ 186)	30 <sup>+2.5</sup> (266 ÷ 288)
			M 12 18 (0.7087)	25 <sup>+1</sup> (221 ÷ 230)	50 <sup>+2.5</sup> (443 ÷ 465)

(◆) For POLARIS 30

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