

POLARIS 30 SERIES

Hydraulic Gear Pumps and Motors

Replaces edition: 10.1995

PRESSURE

Max. continuous	3625 psi (250 bar)
Max. intermittent	3900 psi (270 bar)
Max. peak	4060 psi (280 bar)

DISPLACEMENT

From	1.33 in ³ /rev (21,89 cm ³ /rev)
To	5.53 in ³ /rev (90,66 cm ³ /rev)



SPEED

Min. speed	350 rpm
Max. speed	3000 rpm

POLARIS 30 gear pumps and motors meet a wide range of mobile and industrial applications. SAE and EUROPEAN mounting flanges and cast iron covers with extruded aluminum body houses single piece gear, journal, shaft assemblies with a pressure balancing system that provides the highest volumetric and overall efficiencies available. Exceptionally large bearings make possible longer life at high pressure. A complete range of drive shafts in spline, parallel keyed, and tapered versions to meet all SAE and EUROPEAN standards.

Edition: 02.1998

	POLARIS pump size	POLARIS motor size	Theoretical displacement		Min. (1) speed	Max. (1) speed	Max. (2) continuous pressure p ₁		Pump flow (3) @ 1800 rpm @ p ₁	Motor torque (4) @ 100 psi	Approx. weight	
			in ³ /rev	cm ³ /rev	rpm	rpm	psi	bar			US gpm	lbf in
POLARIS 30	PLP 30-22	PLM 30-22	1.33	21.89	350	3000	3625	250	9.83	18.36	11.00	24.26
	PLP 30-27	PLM 30-27	1.62	26.58	350	3000	3625	250	11.94	22.30	11.10	24.47
	PLP 30-34	PLM 30-34	2.09	34.39	350	3000	3480	240	15.45	28.84	11.20	24.70
	PLP 30-38	PLM 30-38	2.35	38.53	350	3000	3480	240	17.31	32.31	11.30	24.92
	PLP 30-43	PLM 30-43	2.67	43.77	350	3000	3300	230	19.66	36.71	11.55	25.47
	PLP 30-51	PLM 30-51	3.15	51.59	350	2500	3040	210	23.42	43.26	11.80	26.02
	PLP 30-61	PLM 30-61	3.72	60.97	350	2500	2755	190	27.97	51.13	12.00	26.46
	PLP 30-73	PLM 30-73	4.48	73.47	350	2500	2465	170	33.35	61.61	12.50	27.56
	PLP 30-82	PLM 30-82	4.96	81.29	350	2200	2320	160	36.90	68.17	12.70	28.00
	PLP 30-90	PLM 30-90	5.53	90.66	350	2200	2175	150	42.02	76.03	13.00	28.66

- (1) Minimum speeds can be reduced, maximum speeds can be increased. For specific operating conditions consult CASAPPA technical dept. for recommendations and approval.
- (2) Significantly higher intermittent pressures are allowed. Consult catalog or contact CASAPPA technical dept.
- (3) Flow shown is minimum allowed for production pump at rated pressure with 10 wt oil at 110° Fahrenheit and can be used to calculate minimum volumetric efficiency under these conditions.
- (4) Indicated torque is obtained by considering the average mechanical efficiency. Please contact your CASAPPA distributor for further assistance.



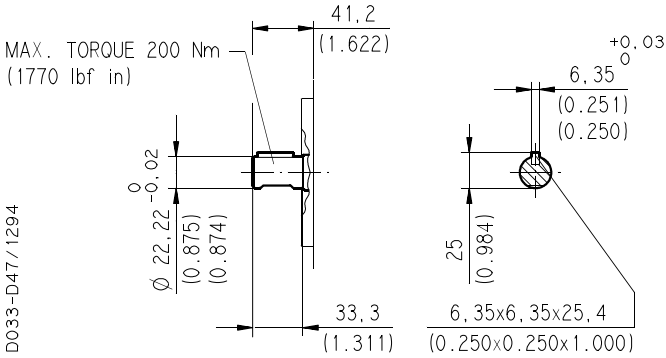
SHAFT OPTIONS

SAE "B" STRAIGHT 32

Mounting flange availability:

S5					
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 Dimensions refer to flange code **S5**



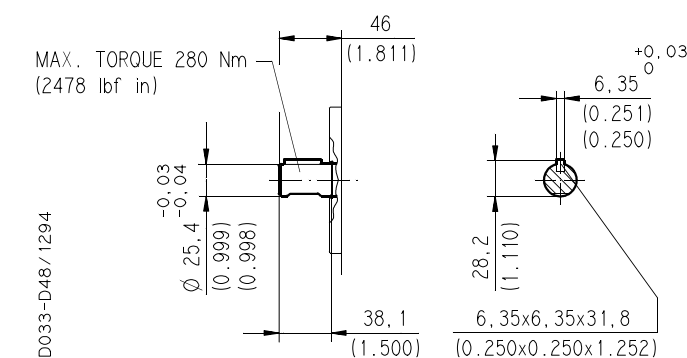
D033-D47/1294

SAE "B-B" STRAIGHT 33

Mounting flange availability:

S5					
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 Dimensions refer to flange code **S5**



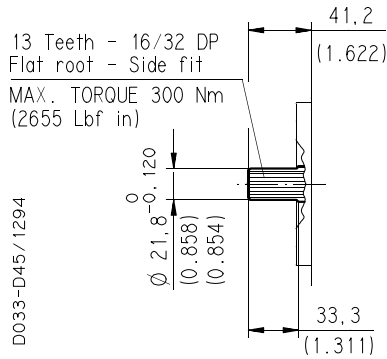
D033-D48/1294

SAE "B" SPLINE 04

Mounting flange availability:

S5					
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 Dimensions refer to flange code **S5**



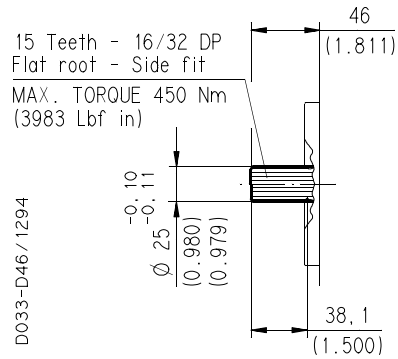
D033-D45/1294

SAE "B-B" SPLINE 05

Mounting flange availability:

S5					
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 Dimensions refer to flange code **S5**



D033-D46/1294

SAE "B" SPLINE (Special) A8

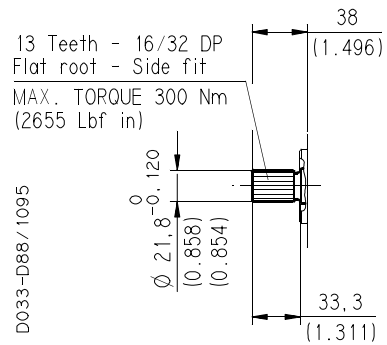
Not available with size:

30-82	30-90				
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 Mounting flange availability:

E3					
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 Dimensions refer to flange code **E3**



D033-D88/1095

STRAIGHT 41

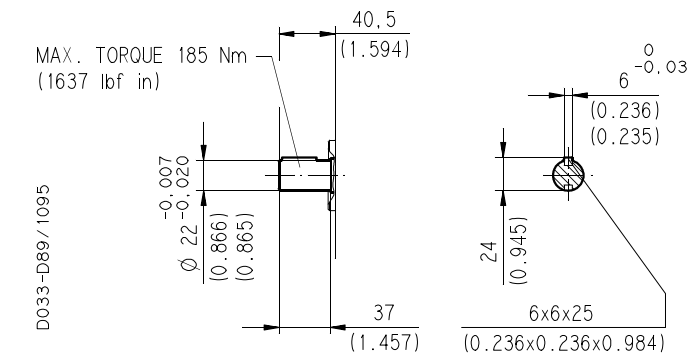
Not available with size:

30-82	30-90				
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 Mounting flange availability:

E3	E4				
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 Dimensions refer to flange code **E3**



D033-D89/1095

Replaces: D033-001/10.95

D033-001/02.98

SHAFT OPTIONS

EUROPEAN TAPERED 1:8 **83**

Not available with size:

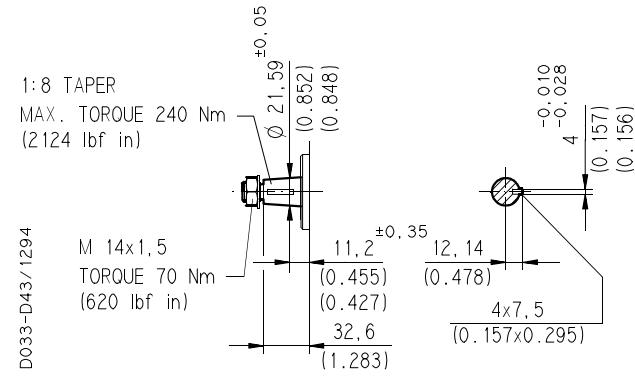
30-82	30-90						
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Mounting flange availability:

E3							
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Dimensions refer to flange code **E3**

Replaces: D033-001/10.95



GERMAN TAPERED 1:5 **56**

Not available with size:

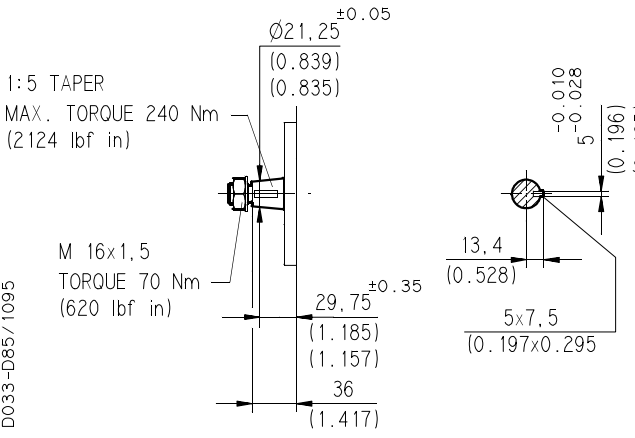
30-61	30-73	30-82	30-90				
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Mounting flange availability:

B3							
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Dimensions refer to flange code **B3**

D033-001/02.98



EUROPEAN TAPERED 1:8 **84**

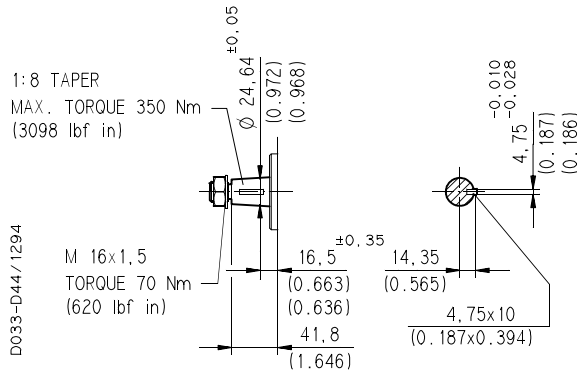
Not available with size:

30-22	30-27	30-34	30-38				
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Mounting flange availability:

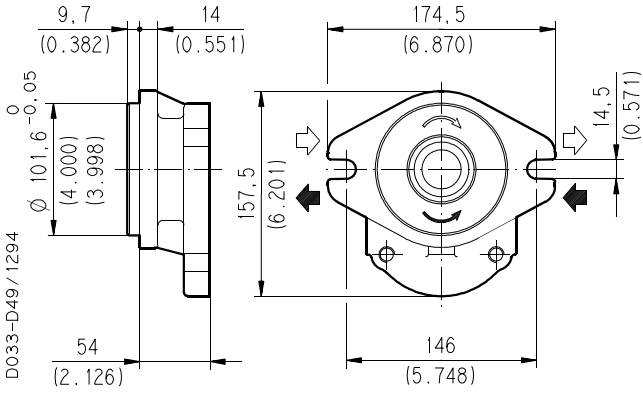
E4							
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Dimensions refer to flange code **E4**

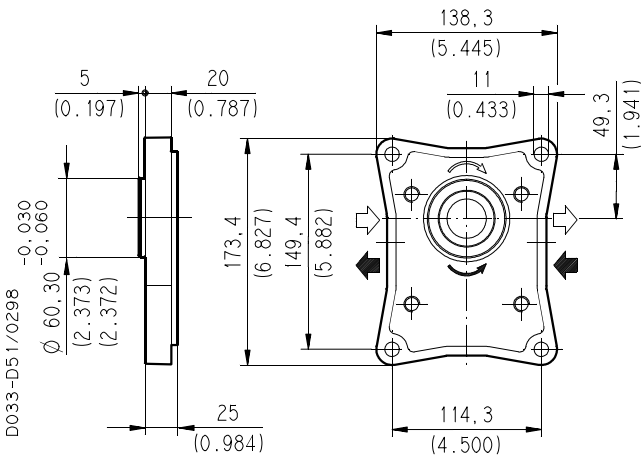


MOUNTING FLANGE OPTIONS

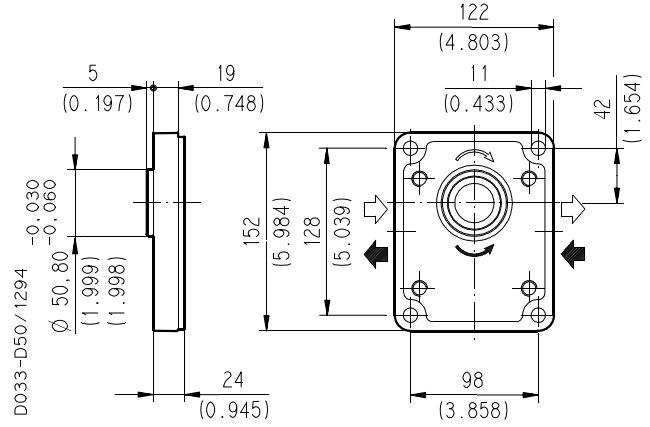
SAE "B" 2 BOLT S5



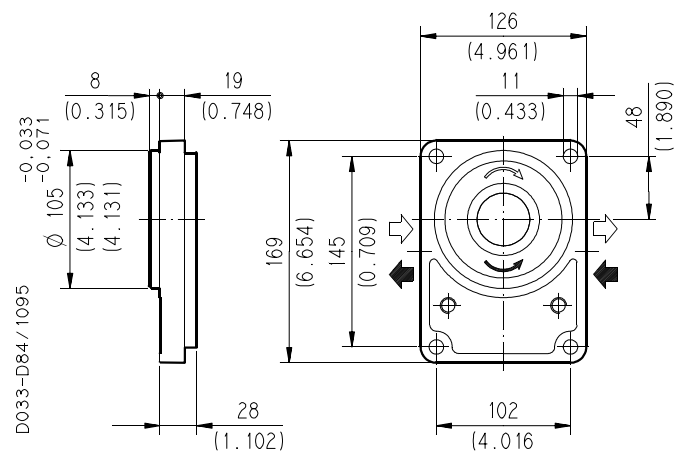
EUROPEAN RECTANGULAR E4



EUROPEAN RECTANGULAR E3



GERMAN RECTANGULAR B3



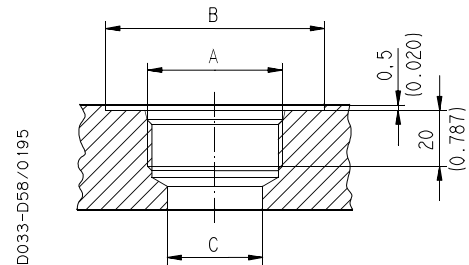
Replaces: D033-001/10.95

D033-001/02.98

PORT OPTIONS

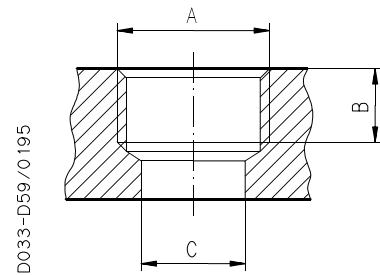
SAE STRAIGHT THREAD PORTS O-RING BOSS

CODE	NOMINAL SIZE	A	B	C
			mm (in)	mm (in)
OD	5/8	1-1/16-12 UN-2B	41 (1.614)	19 (0.748)
OF	1	1-5/16-12 UN-2B	49 (1.929)	27 (1.063)
OG	1-1/4	1-5/8-12 UN-2B	58 (2.283)	32 (1.260)
OH	1-1/2	1-7/8-12 UN-2B	65 (2.559)	32 (1.260)



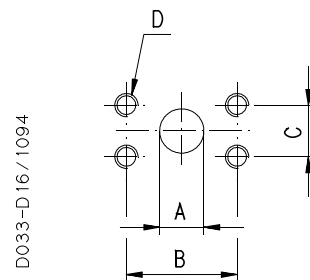
BSP STRAIGHT THREAD PORTS

CODE	NOMINAL SIZE	A	B	C
			mm (in)	mm (in)
GF	1	G 1	22 (0.866)	27 (1.063)
GG	1-1/4	G 1-1/4	22 (0.866)	33 (1.299)
GH	1-1/2	G 1-1/2	24 (0.945)	38 (1.496)



METRIC SAE SPLIT PORTS SAE J518 C (STANDARD PRESSURE SERIES)

CODE	NOMINAL SIZE	A	B	C	D
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)
MA	1/2	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	M 8 22 (0.866)
MB	3/4	19 (0.748)	47,6 (1.874)	22,2 (0.874)	M 10 22 (0.866)
MC	1	25,4 (1.000)	52,4 (2.063)	26,2 (1.031)	
MD	1 1/4	30,5 (1.201)	58,7 (2.311)	30,2 (1.189)	
ME	1 1/2	39,3 (1.547)	69,8 (2.748)	35,7 (1.406)	M 12 22 (0.866)
MF	2	51 (2.008)	77,8 (3.063)	42,9 (1.689)	

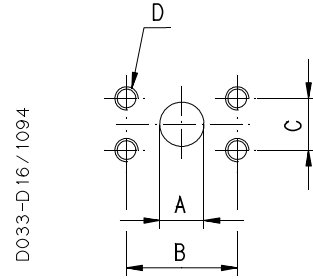


D033-001/10.95

PORT OPTIONS

SAE SPLIT PORTS SAE J518 C (STANDARD PRESSURE SERIES)

CODE	NOMINAL SIZE	A	B	C	D
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)
SA	1/2	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	5/16-18 UNC-2B 22 (0.866)
SB	3/4	19 (0.748)	47,6 (1.874)	22,2 (0.874)	3/8-16 UNC-2B 22 (0.866)
SC	1	25,4 (1.000)	52,4 (2.063)	26,2 (1.031)	
SD	1 1/4	30,5 (1.201)	58,7 (2.311)	30,2 (1.189)	7/16-14 UNC-2B 22 (0.866)
SE	1 1/2	39,3 (1.547)	69,8 (2.748)	35,7 (1.406)	1/2-13 UNC-2B 22 (0.866)
SF	2	51 (2.008)	77,8 (3.063)	42,9 (1.689)	



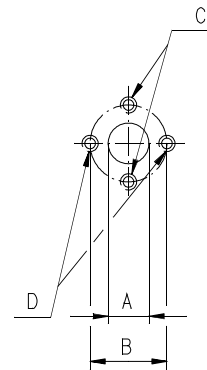
D033-D16/1094

Replaces: D033-001/10.95

EUROPEAN 4 BOLT FLANGE

CODE	A	B	C	D
	mm (in)	mm (in)	Thread Depth mm (in)	Thread Depth mm (in)
EB	19 (0.748)	40 (1.575)	M 8 18 (0.709)	M 8 18 (0.709)
ED	27 (1.063)	51 (2.008)	M 10 18 (0.709)	M 10 18 (0.709)
EF	33 (1.299)	62 (2.441)	M12 10 (0.394)	M12 18 (0.709)

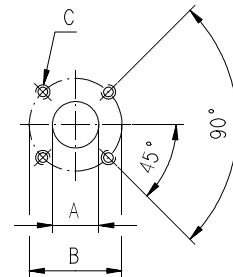
D033-D96/0298



EUROPEAN 4 BOLT FLANGE

CODE	A	B	C
	mm (in)	mm (in)	Thread Depth mm (in)
BL	19 (0.748)	55 (2.165)	M 8 18 (0.709)
BM	27 (1.063)	55 (2.165)	M 8 18 (0.709)

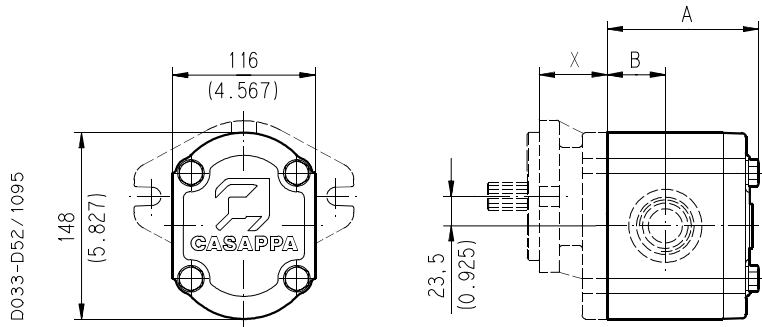
D033-D13/1094



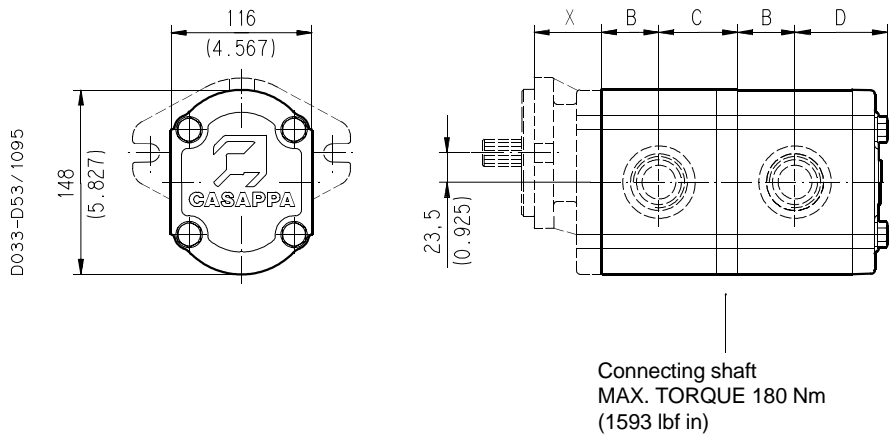
D033-001/02.98

DIMENSIONS

Single pumps and motors



Multiple pumps same groups PLP 30/30



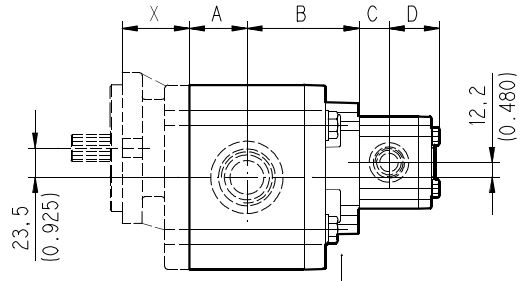
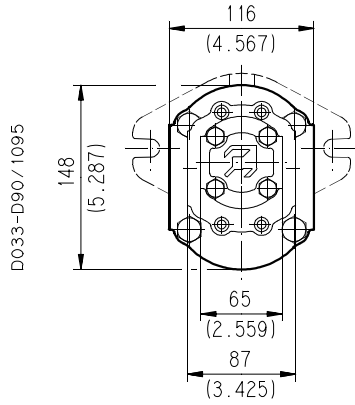
Note: For X dimension see mounting flanges at page 4.

D033-001/10.95

Pump size	Motor size	A		B		C		D	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)
PLP 30-22	PLM 30-22	106	(4.173)	39	(1.535)	56	(2.205)	67	(2.638)
PLP 30-27	PLM 30-27	109	(4.291)	40,5	(1.594)	57,5	(2.264)	68,5	(2.697)
PLP 30-34	PLM 30-34	114	(4.488)	43	(1.693)	60	(2.362)	71	(2.795)
PLP 30-38	PLM 30-38	117	(4.606)	44,5	(1.752)	61,5	(2.421)	72,5	(2.854)
PLP 30-43	PLM 30-43	120	(4.724)	46	(1.811)	63	(2.480)	74	(2.913)
PLP 30-51	PLM 30-51	125	(4.921)	48,5	(1.909)	65,5	(2.579)	76,5	(3.012)
PLP 30-61	PLM 30-61	131	(5.157)	51,5	(2.028)	68,5	(2.697)	79,5	(3.130)
PLP 30-73	PLM 30-73	139	(5.472)	55,5	(2.185)	72,5	(2.854)	83,5	(3.287)
PLP 30-82	PLM 30-82	144	(5.669)	58	(2.283)	75	(2.953)	86	(3.386)
PLP 30-90	PLM 30-90	150	(5.906)	61	(2.402)	78	(3.071)	89	(3.504)

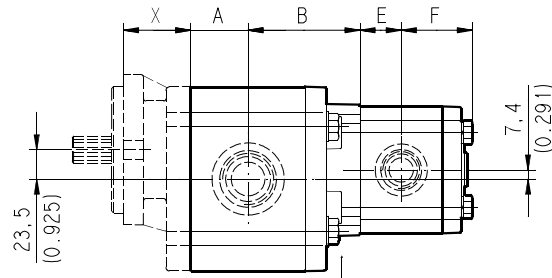
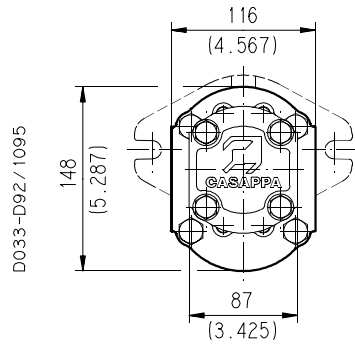
MULTIPLE PUMPS DIFFERENT GROUPS DIMENSIONS

PLP 30/10



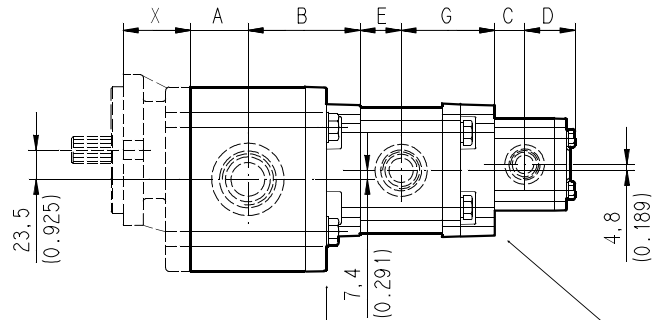
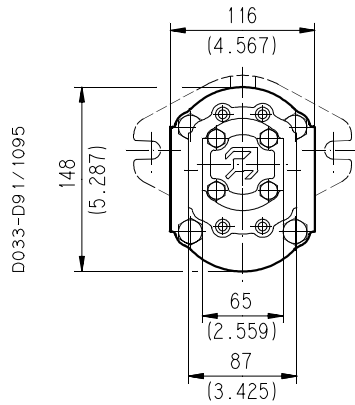
Connecting shaft
MAX. TORQUE 30 Nm
(266 lbf in)

PLP 30/20



Connecting shaft
MAX. TORQUE 110 Nm
(974 lbf in)

PLP 30/20/10



Connecting shaft
MAX. TORQUE 110 Nm
(974 lbf in)

Connecting shaft
MAX. TORQUE 30 Nm
(266 lbf in)

D033-001/10.95

MULTIPLE PUMPS DIFFERENT GROUPS DIMENSIONS
Polaris 30

Pump size	A		B	
	mm	(in)	mm	(in)
PLP 30-22	39	(1.535)	83	(3.268)
PLP 30-27	40,5	(1.594)	84,5	(3.327)
PLP 30-34	43	(1.693)	87	(3.425)
PLP 30-38	44,5	(1.752)	88,5	(3.484)
PLP 30-43	46	(1.811)	90	(3.543)
PLP 30-51	48,5	(1.909)	92,5	(3.642)
PLP 30-61	51,5	(2.028)	95,5	(3.760)
PLP 30-73	55,5	(2.185)	99,5	(3.917)
PLP 30-82	58	(2.283)	102	(4.016)
PLP 30-90	61	(2.402)	105	(4.134)

Polaris 10

Pump size (1)	C		D	
	mm	(in)	mm	(in)
PLP 10-1	17,6	(0.693)	34,1	(1.343)
PLP 10-2	19,2	(0.756)	35,7	(1.406)
PLP 10-3,15	21	(0.827)	37,5	(1.476)
PLP 10-4	22,4	(0.882)	38,9	(1.531)
PLP 10-5	24	(0.945)	40,5	(1.594)
PLP 10-6,3	26	(1.024)	42,5	(1.673)
PLP 10-8	28,8	(1.134)	45,3	(1.783)
PLP 10-10	32	(1.260)	48,5	(1.909)

Polaris 20

Pump size (1)	E		F		G	
	mm	(in)	mm	(in)	mm	(in)
PLP 20-4	25,8	(1.016)	49,3	(1.941)	67,8	(2.669)
PLP 20-6,3	27	(1.063)	50,5	(1.988)	69	(2.717)
PLP 20-8	28,3	(1.114)	51,8	(2.039)	70,3	(2.768)
PLP 20-9	28,9	(1.138)	52,4	(2.063)	70,9	(2.791)
PLP 20-11,2	30,5	(1.201)	54	(2.126)	72,5	(2.854)
PLP 20-14	33	(1.299)	56,5	(2.224)	75	(2.953)
PLP 20-16	34,8	(1.370)	58,3	(2.295)	76,8	(3.024)
PLP 20-20	38	(1.496)	61,5	(2.421)	80	(3.150)
PLP 20-25	42	(1.654)	65,5	(2.579)	84	(3.307)
PLP 20-31,5	47	(1.850)	70,5	(2.776)	89	(3.504)

D033-001/10.95

(1) Technical data of POLARIS 10 and 20 are shown in the respective catalogues.

HOW TO ORDER SINGLE PUMPS AND MOTORS

1	2	3	4	5	6	7	8	9
PLP 30-34	S	0	- 04	S5	- L	OF/OD	- N	- H

1		Size	PUMP CODE	MOTOR CODE
in ³ /rev	cm ³ /rev			
1.33	21.89		PLP 30-22	PLM 30-22
1.62	26.58		PLP 30-27	PLM 30-27
2.09	34.39		PLP 30-34	PLM 30-34
2.35	38.53		PLP 30-38	PLM 30-38
2.67	43.77		PLP 30-43	PLM 30-43
3.15	51.59		PLP 30-51	PLM 30-51
3.72	60.97		PLP 30-61	PLM 30-61
4.48	73.47		PLP 30-73	PLM 30-73
4.96	81.29		PLP 30-82	PLM 30-82
5.53	90.66		PLP 30-90	PLM 30-90

2		Rotation	CODE
		Left	S
		Right	D

3		Version	CODE
		No outboard bearing	0

4		Drive shaft	CODE
		SAE "B" straight	32
		SAE "B-B" straight	33
		SAE "B" spline	04
		SAE "B-B" spline	05
		SAE "B" spline (special)	08
		Straight	41
		European tapered 1:8	83
		European tapered 1:8	84
		German tapered 1:5	56

5		Mounting flange	CODE
		SAE "B" 2 bolt	S5
		European rectangular (50,8 mm pilot, 98x128 mm bolt pattern)	E3
		European rectangular (60,3 mm pilot, 114,3x149,4 mm bolt pattern)	E4
		German rectangular (105 mm pilot, 102x145 mm bolt pattern)	B3

6		Ports position	CODE
		Side	L

7		Inlet/outlet ports	CODE
SAE STRAIGHT THREAD PORTS O-RING BOSS			
		Series and size	Side ports
PLP 30	22 - 27 - 34		OF/OD
PLM 30		OD/OF	
PLP 30	38 - 43 - 51		OG/OF
PLM 30		OF/OG	
PLP 30	61 - 73 - 82 - 90		OH/OG
PLM 30		OG/OH	

CODE	Inlet/outlet ports		7
BSP STRAIGHT THREAD PORTS			
Side ports	Series and size		
GF/GF	PLP 30	22 - 27 - 34 - 38 - 43 - 51	
	PLM 30		
GG/GF	PLP 30	61 - 73	
	PLM 30		
GF/GG	PLP 30	82 - 90	
	PLM 30		
GH/GG	PLP 30		
GG/GH	PLM 30		
METRIC SAE SPLIT PORTS SAE J518 C			
Side ports	Series and size		
MB/MA	PLP 30	22	
	PLM 30		
MA/MB	PLM 30	27 - 34	
MC/MB	PLP 30		
MB/MC	PLM 30	38 - 43 - 51	
MD/MC	PLP 30		
MC/MD	PLM 30	61 - 73 - 82	
ME/MD	PLP 30		
MD/ME	PLM 30	90	
MF/ME	PLP 30		
ME/MF	PLM 30		
SAE SPLIT PORTS SAE J518 C			
Side ports	Series and size		
SB/SA	PLP 30	22	
	PLM 30		
SA/SB	PLM 30	27 - 34	
SC/SB	PLP 30		
SB/SC	PLM 30	38 - 43 - 51	
SD/SC	PLP 30		
SC/SD	PLM 30	61 - 73 - 82	
SE/SD	PLP 30		
SD/SE	PLM 30	90	
SF/SE	PLP 30		
SE/SF	PLM 30		
EUROPEAN 4 BOLT FLANGE			
Side ports	Series and size		
ED/EB	PLP 30	22 - 27 - 34 - 38 - 43 - 51 - 61 (mounting flange E3)	
	PLM 30		
EB/ED	PLM 30	43 - 51 (mounting flange E4)	
ED/ED	PLP 30		
ED/ED	PLM 30	73 (mounting flange E3 - E4) 61 - 82 - 90 (mounting flange E4)	
EF/ED	PLP 30		
ED/EF	PLM 30		
GERMAN 4 BOLT FLANGE			
Side ports	Series and size		
BM/BL	PLP 30	22 - 27 - 34 - 38 - 43 - 51	
	PLM 30		
BL/BM	PLM 30		

CODE	Seals	8
N	Buna (standard)	
V	Viton	

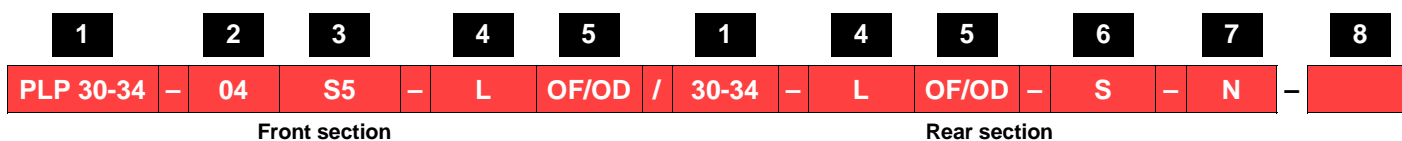
CODE	Shaft seal options	9
C	High back pressure seal with wiper seal	
D	Standard seal with wiper seal	
H	High back pressure seal	

Replaces: D033-001/10.95

D033-001/02.98

HOW TO ORDER MULTIPLE PUMPS

DOUBLE PUMPS



Replaces: D033-001/10.95

1	Pump size		CODE
	in ³ /rev	cm ³ /rev	
	1.33	21.89	PLP 30-22
	1.62	26.58	PLP 30-27
	2.09	34.39	PLP 30-34
	2.35	38.53	PLP 30-38
	2.67	43.77	PLP 30-43
	3.15	51.59	PLP 30-51
	3.72	60.97	PLP 30-61
	4.48	73.47	PLP 30-73
	4.96	81.29	PLP 30-82
	5.53	90.66	PLP 30-90

2	Drive shaft	CODE
	SAE "B" straight	32
	SAE "B-B" straight	33
	SAE "B" spline	04
	SAE "B-B" spline	05
	SAE "B" spline (special)	08
	Straight	41
	European tapered 1:8	83
	European tapered 1:8	84
	German tapered 1:5	56

3	Mounting flange	CODE
	SAE "B" 2 bolt	S5
	European rectangular (50,8 mm pilot, 98x128 mm bolt pattern)	E3
	European rectangular (60,3 mm pilot, 114,3x149,4 mm bolt pattern)	E4
	German rectangular (105 mm pilot, 102x145 mm bolt pattern)	B3

4	Ports position	CODE
	Side	L

5	Inlet/outlet ports	CODE
SAE STRAIGHT THREAD PORTS O-RING BOSS		
	Series and size	Side ports
	PLP 30 22 - 27 - 34	OF/OD
	PLP 30 38 - 43 - 51	OG/OF
	PLP 30 61 - 73 - 82 - 90	OH/OG

D033-001/02.98

CODE	Inlet/outlet ports	5
BSPP STRAIGHT THREAD PORTS		
Side ports	Series and size	
GF/GF	PLP 30 22 - 27 - 34 - 38 - 43 - 51	
GG/GF	PLP 30 61 - 73	
GH/GG	PLP 30 82 - 90	
METRIC SAE SPLIT PORTS SAE J518 C		
Side ports	Series and size	
MB/MA	PLP 30 22	
MC/MB	PLP 30 22 - 27 - 34	
MD/MC	PLP 30 38 - 46 - 51	
ME/MD	PLP 30 61 - 73 - 82	
MF/ME	PLP 30 90	
SAE SPLIT PORTS SAE J518 C		
Side ports	Series and size	
SB/SA	PLP 30 22	
SC/SB	PLP 30 27 - 34	
SD/SC	PLP 30 38 - 46 - 51	
SE/SD	PLP 30 61 - 73 - 82	
SF/SE	PLP 30 90	
EUROPEAN 4 BOLT FLANGE		
Side ports	Series and size	
ED/EB	PLP 30 22 - 27 - 34 - 38 - 43 - 51 - 61 (mounting flange E3)	
ED/ED	PLP 30 43 - 51 (mounting flange E4)	
EF/ED	PLP 30 73 (mounting flange E3 and E4) 61 - 82 - 90 (mounting flange E4)	
GERMAN 4 BOLT FLANGE		
Side ports	Series and size	
BM/BL	PLP 30 22 - 27 - 34 - 38 - 43 - 51	

CODE	Rotation	6
S	Left	
D	Right	

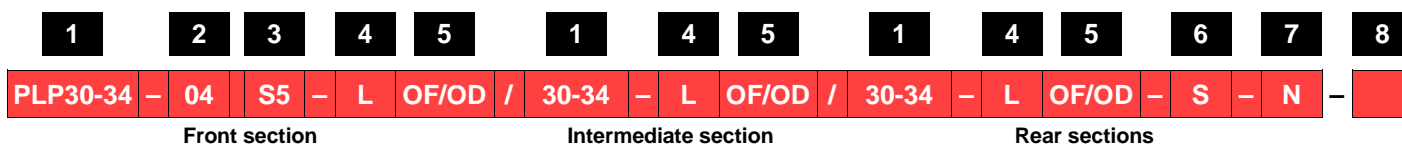
CODE	Seals	7
N	Buna (standard)	
V	Viton	

CODE	Special covers	8
L	Cast iron mounting flange and aluminum rear cover (b)	

(a) Technical data of POLARIS 10 and 20 are shown in the respective catalogue.

(b) Only for multiple pumps different groups.

TRIPLE PUMPS



ORDER EXAMPLE

SINGLE PUMPS AND MOTORS

Standard pump **PLP 30-34 S 0-04 S5-L OF/OD-N**

Standard motor **PLM 30-34 S 0-04 S5-L OD/OF-N**

Pump with special features **PLM 30-34 S 0-04 S5-L OD/OF-N-C**

DOUBLE PUMPS

Standard double pump same groups **PLP 30-34 04 S5-LOF/OD / 30-34 L OF/OD-S-N**

Standard double pump different groups **PLP 30-34 04 S5-LOF/OD / 10-2 L OB/OA-S-N**

Double pump with special features **PLP 30-34 04 S5-LOF/OD / 10-2 L OB/OA-S-N-L**

TRIPLE PUMPS

Standard triple pump same groups **PLP 30-34 04 S5-L OF/OD / 30-34 L OF/OD / 30-34 L OF/OD-S-N**

Standard triple pump different groups **PLP 30-34 04 S5-L OF/OD / 20-8 L OC/OC / 10-2 L OB/OA-S-N**

Triple pump with special features **PLP 30-34 04 S5-L OF/OD / 20-8 L OC/OC / 10-2 L OB/OA-S-N-L**

Replaces: D033-001/10.95

D033-001/02.98



CASAPPA S.p.A. - Parma - Italy - Tel.: + 39 521 304111 - Fax: + 39 521 804600

CASAPPA Corp. - Batavia, IL 60510 U.S.A. - Phone: 630 761-0041 - Fax: 630 761-0048

CASAPPA GmbH - Stuttgart - Germany - Tel.: + 49 711 7811770 - Fax: + 49 711 7811771

CASAPPA SARL - Janneyrias - France - Tel.: + 33 4 72462112 - Fax: + 33 4 72462100

www.casappa.com
e-mail: info@casappa.com