HTL

Member of the FLUIDPOWER group

Product Catalogue






www.htluk.co.uk

Specialists in complete mobile solutions

Providing innovative, cost-effective, long-term solutions

HTL has a strong reputation for providing proven, high quality, technical solutions to the mobile OEM market.

The synergy of hundreds of years of technical experience, together with high quality European suppliers including Walvoil and Casappa, has provided customers with innovative, cost-effective, long-term solutions.

Our extensive range and large stock holding allows us to provide our customers with a complete solution, from joysticks and cables to power packs and complete hydraulic drivetrains.

Our unique position in the market has allowed us to succeed and develop vast experience of serving many markets including agriculture, airport ground support equipment, construction, material handling and rail.

Customer focused team

Innovative electro-hydraulic solutions

Added value engineering • Full technical support • Innovative product • Complete mobile solutions

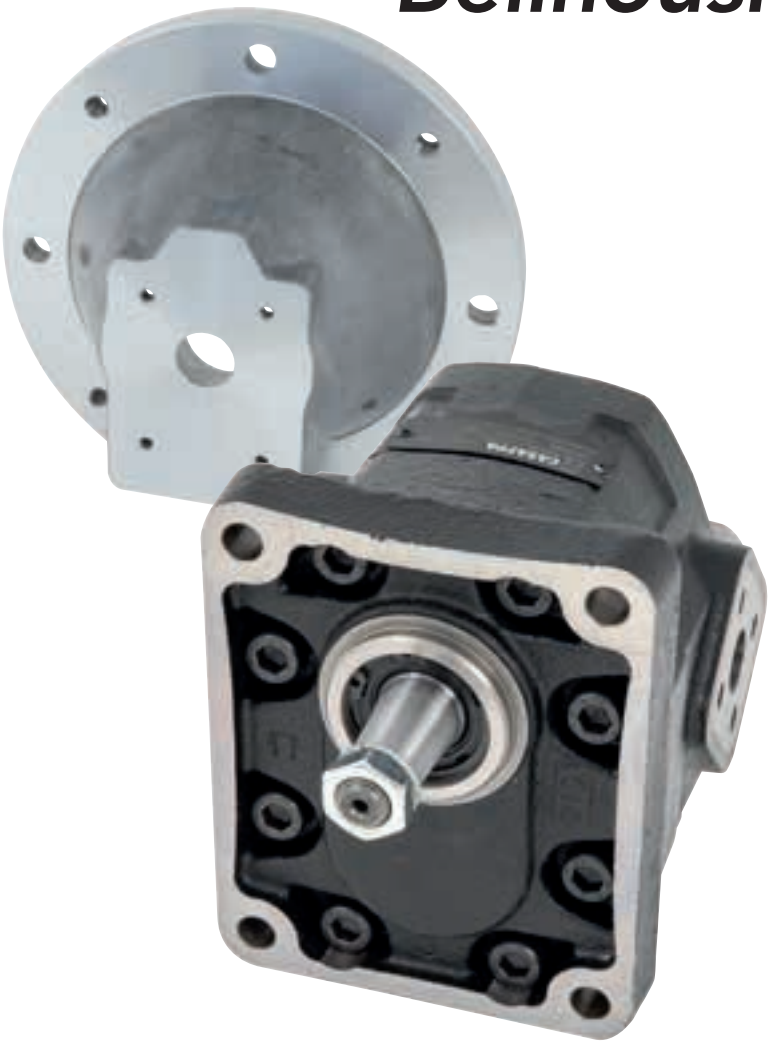
Contents

Exceeding Customer Expectations

- From initial design to commissioning, our key focus is customer satisfaction
- A technically experienced, customer-focused team
- Direct supplier relationships with online commercial and technical access
- Large stock holdings ready for next day deliveries. Bespoke builds are 2-3 days
- Easy to use E-commerce website with a wealth of technical information for download

Visit www.htluk.co.uk

Hydraulic Gear Pumps, Bellhousings & Couplings



The sole official distributor for Casappa in the UK is HTL.

We have worked together for over 40 years. HTL maintain stocks of over 600 Casappa part numbers and 6,500 units.

The pumps listed here are standard stock European mount/1:8 taper shaft/threaded BSP ports.

For alternative flange, shaft and port options, tandems, triples and cast iron versions, please call or email to discuss your requirements.

A full range of open and closed loop piston pumps are also available from HTL.

Aluminium Gear Pumps

Polaris is the result of more than fifty years of experience in the design and production of hydraulic components.

Considered to be the best aluminium-bodied gear pump available today, this premium quality product produces excellent mechanical and volumetric efficiencies.

Standard European group 1 mounting flange, 1:8 tapered shaft and BSP threaded ports.

Available with flange mounting ports, multiple pump combinations and many other shaft and mounting flange specifications.

Polaris 10

Group 1 Clockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
00372900	PLP10.1	1,07	3770 (260)	4060 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372902	PLP10.2	2,13	3770 (260)	4061 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372886	PLP10.2,5	2,67	3770 (260)	4062 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372904	PLP10.3,15	3,34	3770 (260)	4063 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372906	PLP10.4	4,27	3625 (250)	3915 (270)	4060 (280)	4000	650	3/8"	3/8"	**193.31**
00372908	PLP10.5	5,34	3625 (250)	3915 (270)	4060 (280)	4000	650	1/2"	1/2"	**193.31**
00372896	PLP10.5,8	6,20	3335 (230)	3625 (250)	3770 (260)	3500	650	1/2"	1/2"	**193.31**
00372910	PLP10.6,3	6,67	3335 (230)	3625 (250)	3770 (260)	3500	650	1/2"	1/2"	**193.31**
00372912	PLP10.8	8,51	2610 (180)	2900 (200)	3045 (210)	3500	650	1/2"	1/2"	**217.50**
00372914	PLP10.10	10,67	2030 (140)	2320 (160)	2465 (170)	3500	650	1/2"	1/2"	**232.86**

Polaris 10

Group 1 Anticlockwise

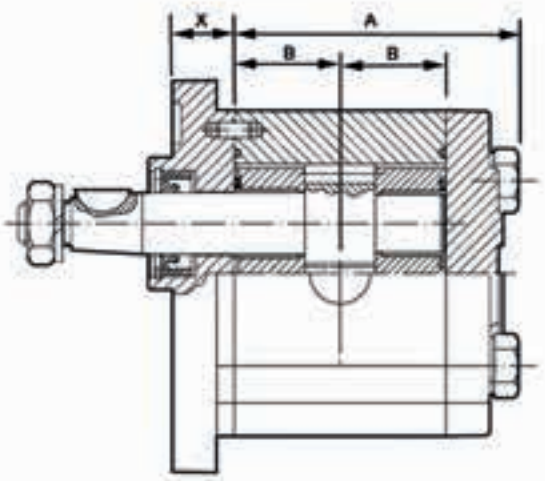
Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
00372901	PLP10.1	1,07	3770 (260)	4060 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372903	PLP10.2	2,13	3770 (260)	4061 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372887	PLP10.2,5	2,67	3770 (260)	4062 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372905	PLP10.3,15	3,34	3770 (260)	4063 (280)	4205 (290)	4000	650	3/8"	3/8"	**189.05**
00372907	PLP10.4	4,27	3625 (250)	3915 (270)	4060 (280)	4000	650	3/8"	3/8"	**193.31**
00372909	PLP10.5	5,34	3625 (250)	3915 (270)	4060 (280)	4000	650	1/2"	1/2"	**193.31**
00372897	PLP10.5,8	6,20	3335 (230)	3625 (250)	3770 (260)	3500	650	1/2"	1/2"	**193.31**
00372911	PLP10.6,3	6,67	3335 (230)	3625 (250)	3770 (260)	3500	650	1/2"	1/2"	**193.31**
00372913	PLP10.8	8,51	2610 (180)	2900 (200)	3045 (210)	3500	650	1/2"	1/2"	**217.50**
00372915	PLP10.10	10,67	2030 (140)	2320 (160)	2465 (170)	3500	650	1/2"	1/2"	**232.86**

The performance values refer to standard unidirectional pumps.

P1 = maximum continuous pressure. P2 = maximum intermittent pressure. P3 = maximum peak pressure.

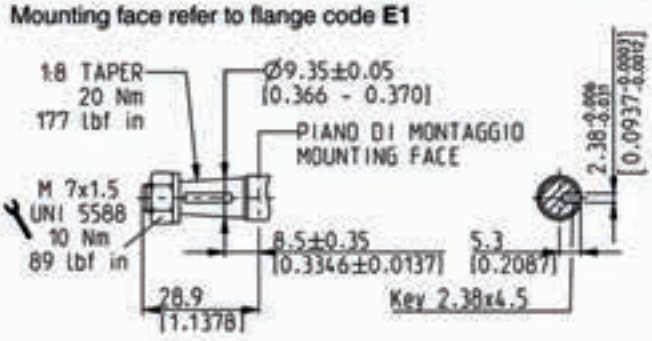
Table values refer to unidirectional pumps. Reversible pump maximum pressures are 15% lower.

Pump type / Motor type	A mm (inch)	B mm (inch)
PL. 10•1	52,2 (2.0551)	17,6 (0.6929)
PL. 10•1,5	53,8 (2.1181)	18,4 (0.7244)
PL. 10•2	55,4 (2.1811)	19,2 (0.7559)
PL. 10•2,5	57 (2.2441)	20 (0.7874)
PL. 10•3,15	59 (2.3228)	21 (0.8268)
PL. 10•4	61,8 (2.4331)	22,4 (0.8819)
PL. 10•5	65 (2.5591)	24 (0.9449)
PL. 10•5,8	67,6 (2.6614)	25,3 (0.9961)
PL. 10•6,3	69 (2.7165)	26 (1.0236)
PL. 10•8	74,5 (2.9331)	28,75 (1.1319)
PL. 10•10	81 (3.1890)	32 (1.2598)



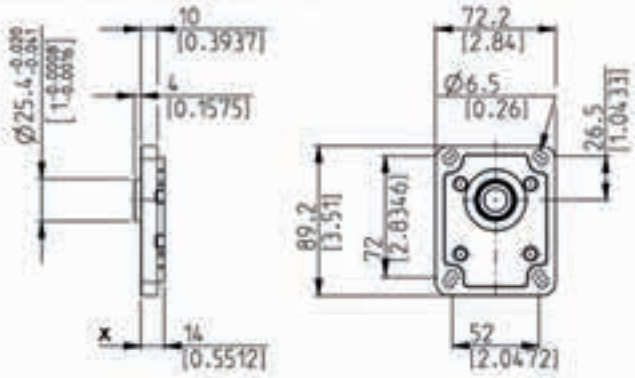
European Tapered 1:8 — 81

Mounting face refer to flange code **E1**



European — E1

Material: cast iron and aluminium



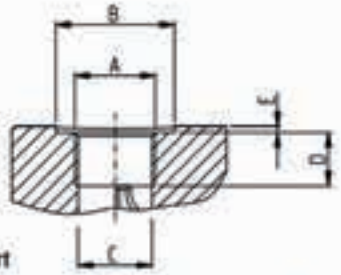
Gas Straight Thread Ports — BSPP

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

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

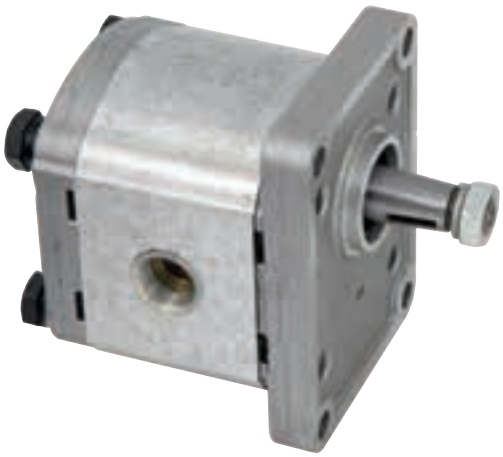


CODE	Nominal size	A	ØB mm (in)	ØC mm (in)	D mm (in)	E mm (in)	Nm (lbf in)	Nm (lbf in)
GC	3/8"	G 3/8	30 (#) (1.1811)	15 (0.5906)	10 (#) (0.3937)	2 (#) (0.0787)	15 +1 (#) (133 ÷ 142)	—
			—		14 (0.5512)	—	15 +1 (133 ÷ 142)	25 +1 (221 ÷ 230)
GD	1/2"	G 1/2	—	19 (0.7480)	14 (0.5512) / 17 (◆) (0.6693)	—	20 +1 (177 ÷ 186)	50 +2.5 (443 ÷ 465)

Aluminium Gear Pumps

Standard European group 2 mounting flange, 1:8 tapered shaft and BSP threaded ports.

Available with flange mounting ports, multiple pump combinations and many other shaft and mounting flange specifications.



Polaris 20

Group 2 Clockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
01999846	PLP204	4,95	3625 (250)	4060 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
01999848	PLP20.6,3	6,61	3625 (250)	4061 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
0200463N	PLP20.7,2	7,29	3625 (250)	4062 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
01999850	PLP20.8	8,26	3625 (250)	4063 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
02004747	PLP20.9	9,17	3625 (250)	4064 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
01999852	PLP20.11,2	11,23	3625 (250)	4065 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
01999854	PLP20.14	14,53	3625 (250)	4066 (280)	4350 (300)	3500	500	3/4"	1/2"	**268.87**
01999856	PLP20.16	16,85	3625 (250)	4067 (280)	4350 (300)	3000	500	3/4"	1/2"	**268.87**
0200463L	PLP20.19	19,09	2900 (200)	3190 (220)	3480 (240)	3000	500	3/4"	1/2"	**268.87**
01999858	PLP20.20	21,14	2900 (200)	3191 (220)	3480 (240)	3000	500	3/4"	1/2"	**268.87**
02004665	PLP20.25	26,42	2465 (170)	2755 (190)	3045 (210)	2500	500	3/4"	1/2"	**294.76**
02004667	PLP20.31,5	33,03	1885 (130)	2715 (150)	2465 (170)	2000	500	3/4"	1/2"	**312.84**

Polaris 20

Group 2 Anticlockwise

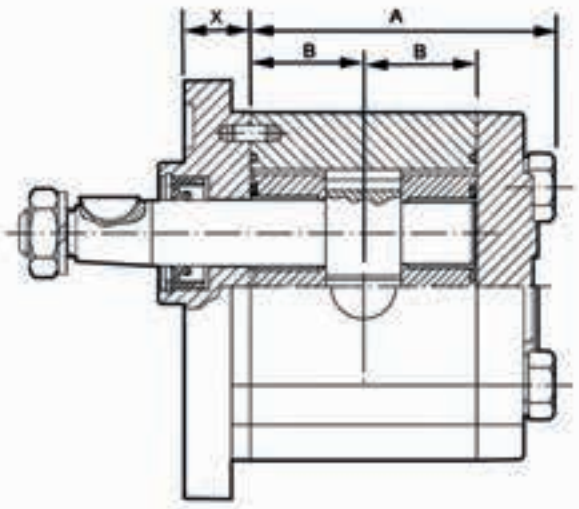
Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
01999847	PLP204	4,95	3625 (250)	4060 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
01999849	PLP20.6,3	6,61	3625 (250)	4061 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
0200464N	PLP20.7,2	7,29	3625 (250)	4060 (280)	4350 (300)	4000	600	1/2"	1/2"	**254.94**
01999851	PLP20.8	8,26	3625 (250)	4063 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
02004748	PLP20.9	9,17	3625 (250)	4064 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
01999853	PLP20.11,2	11,23	3625 (250)	4065 (280)	4350 (300)	3500	600	1/2"	1/2"	**254.94**
01999855	PLP20.14	14,53	3625 (250)	4066 (280)	4350 (300)	3500	500	3/4"	1/2"	**268.87**
01999857	PLP20.16	16,85	3625 (250)	4067 (280)	4350 (300)	3000	500	3/4"	1/2"	**268.87**
0200464L	PLP20.19	19,09	2900 (200)	3190 (220)	3480 (240)	3000	500	3/4"	1/2"	**268.87**
01999859	PLP20.20	21,14	2900 (200)	3191 (220)	3480 (240)	3000	500	3/4"	1/2"	**268.87**
01999856	PLP20.16	16,85	3625 (250)	4067 (280)	4350 (300)	3000	500	3/4"	1/2"	**268.87**
02004666	PLP20.25	26,42	2465 (170)	2755 (190)	3045 (210)	2500	500	3/4"	1/2"	**294.76**
02004668	PLP20.31,5	33,03	1885 (130)	2715 (150)	2465 (170)	2000	500	3/4"	1/2"	**312.84**

The performance values refer to standard unidirectional pumps.

P1 = maximum continuous pressure. P2 = maximum intermittent pressure. P3 = maximum peak pressure.

Table values refer to unidirectional pumps. Reversible pump maximum pressures are 15% lower.

Pump type / Motor type	A mm (inch)	B mm (inch)
PL. 20•4	75 (2.9528)	25,75 (1.0138)
PL. 20•6,3	77,5 (3.0512)	27 (1.0630)
PL. 20•7,2	78,5 (3.0905)	27,5 (1.0826)
PL. 20•8	80 (3.1496)	28,25 (1.1122)
PL. 20•9	81,3 (3.2008)	28,9 (1.1378)
PL. 20•10,5	84 (3.3070)	30,25 (1.1909)
PL. 20•11,2	84,5 (3.3268)	30,5 (1.2008)
PL. 20•14	89,5 (3.5236)	33 (1.2992)
PL. 20•16	93 (3.6614)	34,75 (1.3681)
PL. 20•19	96,4 (3.7952)	36,45 (1.4350)
PL. 20•20	99,5 (3.9173)	38 (1.4961)
PL. 20•24,5	105,1 (4.1378)	40,8 (1.6063)
PL. 20•25	107,5 (4.2323)	42 (1.6535)
PL. 20•27,8	110,2 (4.3386)	43,35 (1.7067)
PL. 20•31,5	117,5 (4.6260)	47 (1.8504)

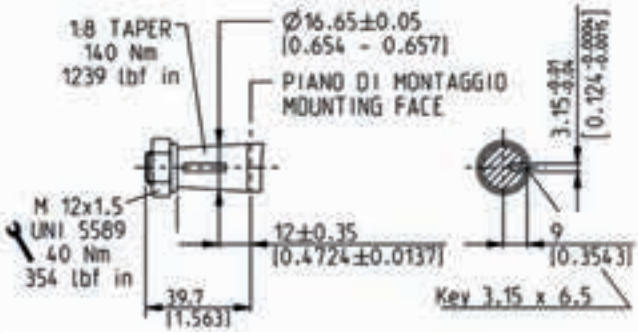


European Tapered 1:8 — 82

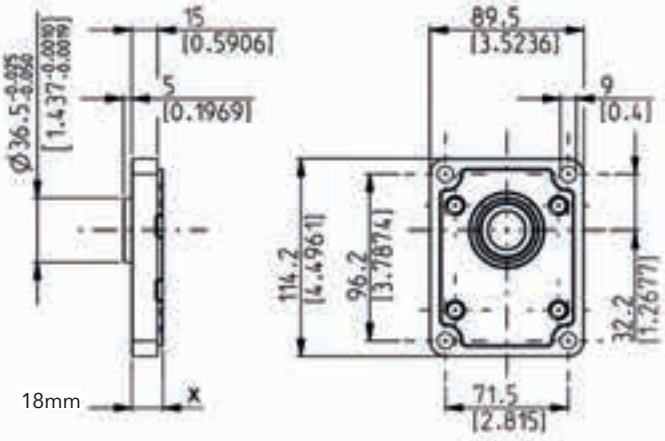
Not available with size:

20•10,5 20•24,5 20•27,8

Mounting face refer to flange code E2



European — E2



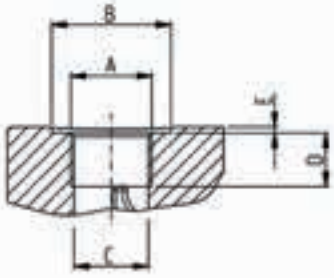
Gas Straight Thread Ports — BSPP

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

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



CODE	Nominal size	A	ØB mm (in)	ØC mm (in)	D mm (in)	E mm (in)	Nm (lbf in)	Nm (lbf in)
GD	1/2"	G 1/2	—	19 (0.7480)	(0.5512) 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)

Aluminium Gear Pumps

Standard European group 3 mounting flange, 1:8 tapered shaft and BSP threaded ports.

Available with flange mounting ports, multiple pump combinations and many other shaft and mounting flange specifications.

Polaris 30

Group 3 Clockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03590030	PLP30.22	21,99	3625 (250)	3915 (270)	4060 (280)	3000	350	1"	1"	**450.83**
03590032	PLP30.27	26,70	3625 (250)	3915 (270)	4060 (280)	3000	350	1"	1"	**450.83**
03590034	PLP30.34	34,55	3480 (240)	3770 (260)	3915 (270)	3000	350	1"	1"	**450.83**
03590036	PLP30.38	39,27	3480 (240)	3770 (260)	3915 (270)	3000	350	1"	1"	**465.72**
03590038	PLP30.43	43,98	3335 (230)	3625 (250)	3770 (260)	3000	350	1"	1"	**465.72**
03590040	PLP30.51	51,83	3045 (210)	3335 (230)	3480 (240)	2500	350	1"	1"	**465.72**
03590042	PLP30.61	61,26	2755 (190)	3045 (210)	3190 (220)	2500	350	1.1/4"	1"	**516.34**
03590044	PLP30.73	73,82	2465 (170)	2775 (190)	2900 (200)	2500	350	1.1/4"	1"	**531.52**

Polaris 30

Group 3 Anticlockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03590031	PLP30.22	21,99	3625 (250)	3915 (270)	4060 (280)	3000	350	1"	1"	**450.83**
03590033	PLP30.27	26,70	3625 (250)	3915 (270)	4060 (280)	3000	350	1"	1"	**450.83**
03590035	PLP30.34	34,55	3480 (240)	3770 (260)	3915 (270)	3000	350	1"	1"	**450.83**
03590037	PLP30.38	39,27	3480 (240)	3770 (260)	3915 (270)	3000	350	1"	1"	**465.72**
03590039	PLP30.43	43,98	3335 (230)	3625 (250)	3770 (260)	3000	350	1"	1"	**465.72**
03590041	PLP30.51	51,83	3045 (210)	3335 (230)	3480 (240)	2500	350	1"	1"	**465.72**
03590043	PLP30.61	61,26	2755 (190)	3045 (210)	3190 (220)	2500	350	1.1/4"	1"	**516.34**
03590045	PLP30.73	73,82	2465 (170)	2775 (190)	2900 (200)	2500	350	1.1/4"	1"	**531.52**

The performance values refer to standard unidirectional pumps.

P1 = maximum continuous pressure. P2 = maximum intermittent pressure. P3 = maximum peak pressure.

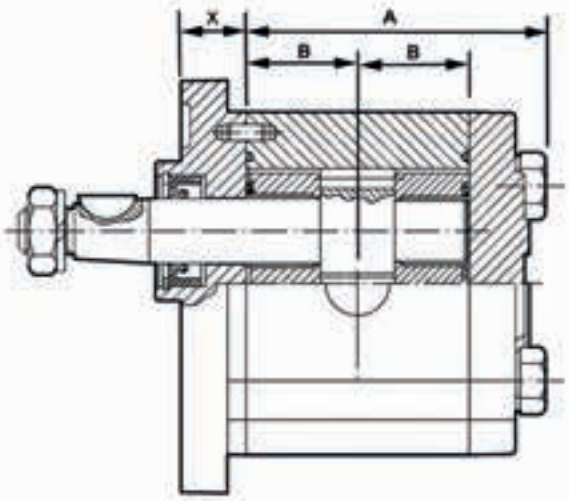
Table values refer to unidirectional pumps. Reversible pump maxim pressures are 15% lower.

Polaris

Seal Kits

Code	Pump Type	£
62046500	PLP10	**17.82**
62046601	PLP20	**21.38**
62046750	PLP30	**23.76**

Pump type / Motor type	A mm (inch)	B 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)

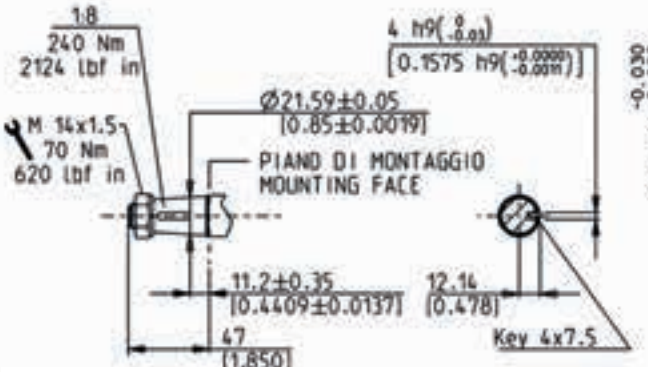


European Tapered 1:8 — 83

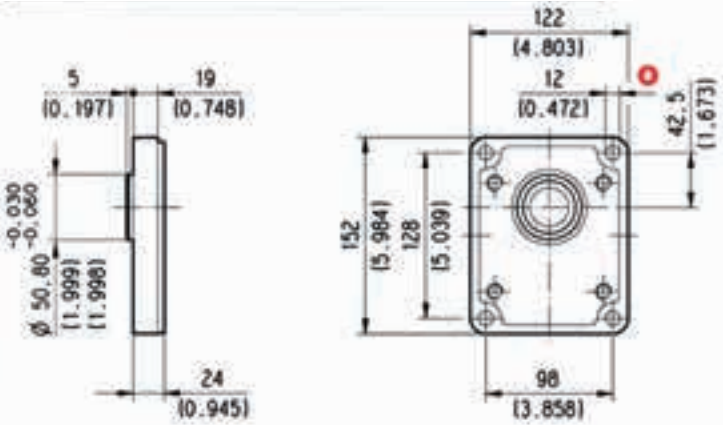
Not available with size:

30•82 30•90

Mounting face refer to flange code **E3**

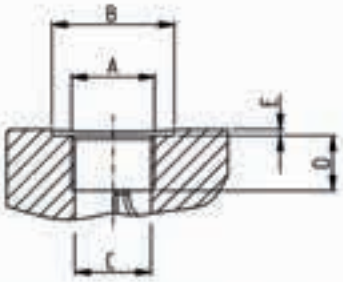


European — E3



Gas Straight Thread Ports — BSPP

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



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

CODE	Nominal size	A	ØB mm (in)	ØC mm (in)	D mm (in)	E mm (in)	Nm (lbf in)	Nm (lbf in)
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)

Cast Iron Gear Pumps

Kappa gear pumps made of cast iron in two pieces. The rigidity of assembly ensures reliability and high volumetric efficiency also at high operating pressures.

Group 2

Displacements: from 4,95 cm³/rev to 33 cm³/rev.

Continuous pressure: 140 to 285 bar, speed 2000 to 4000rpm.

Maximum peak pressure: 330 bar.

Available with viton seals and phosphor bronze thrust plates for water glycol applications.

Kappa 20

Group 2 Clockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03563980	KP20.4	4.95	4133 (285)	4350 (300)	4785 (330)	4000	350	M6 / EA	M6 / EA	**330.12**
03564020	KP20.6,3	6.61	4133 (285)	4350 (300)	4785 (330)	4000	350	M6 / EA	M6 / EA	**333.32**
03564040	KP20.8	8.26	4133 (285)	4350 (300)	4785 (330)	3500	350	M6 / EA	M6 / EA	**335.72**
03564080	KP20.11,2	11.23	3988 (275)	4205 (290)	4640 (320)	3500	350	M6 / EA	M6 / EA	**340.53**
03564120	KP20.14	14.53	3843 (265)	4205 (290)	4640 (320)	3500	350	M8 / EB	M8 / EB	**344.53**
03564140	KP20.16	16.85	3770 (260)	4205 (290)	4640 (320)	3000	300	M8 / EB	M8 / EB	**350.15**
03564160	KP20.20	21.14	3045 (210)	3335 (230)	3625 (250)	3000	300	M8 / EB	M8 / EB	**355.76**
03564180	KP20.25	26.42	2610 (180)	2900 (200)	3190 (220)	2500	300	M8 / EB	M8 / EB	**376.58**
03564200	KP20.31.5	33.03	2030 (140)	2320 (160)	2610 (180)	2500	300	M8 / EB	M8 / EB	**399.36**

Kappa 20

Group 2 Anticlockwise

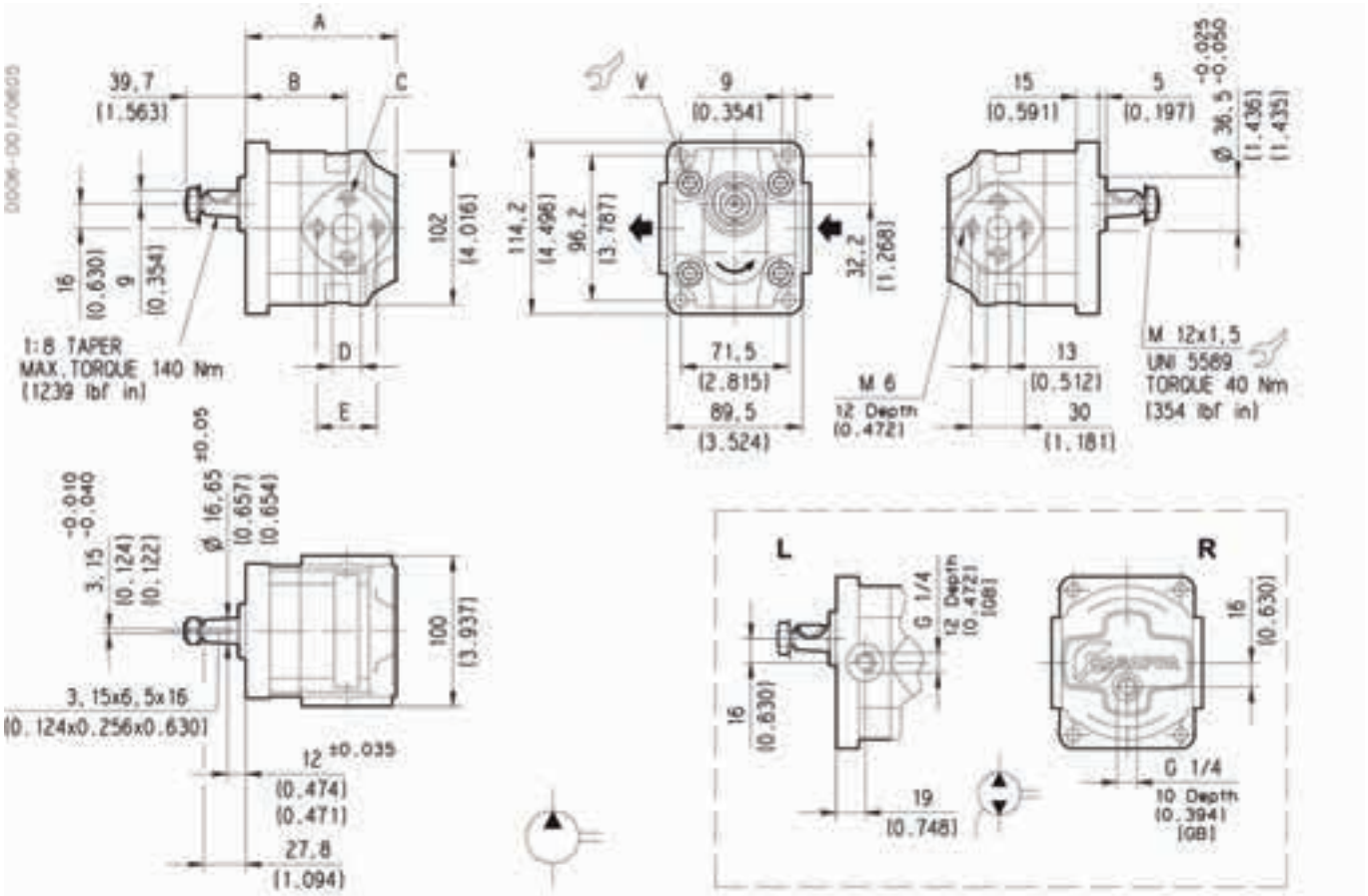
Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03563990	KP20.4	4.95	4133 (285)	4350 (300)	4785 (330)	4000	350	M6 / EA	M6 / EA	**330.12**
03564030	KP20.6,3	6.61	4133 (285)	4350 (300)	4785 (330)	4000	350	M6 / EA	M6 / EA	**333.32**
03564050	KP20.8	8.26	4133 (285)	4350 (300)	4785 (330)	3500	350	M6 / EA	M6 / EA	**335.72**
03564090	KP20.11,2	11.23	3988 (275)	4205 (290)	4640 (320)	3500	350	M6 / EA	M6 / EA	**340.53**
03564130	KP20.14	14.53	3843 (265)	4205 (290)	4640 (320)	3500	350	M8 / EB	M8 / EB	**344.53**
03564150	KP20.16	16.85	3770 (260)	4205 (290)	4640 (320)	3000	300	M8 / EB	M8 / EB	**350.15**
03564170	KP20.20	21.14	3045 (210)	3335 (230)	3625 (250)	3000	300	M8 / EB	M8 / EB	**355.76**
03564190	KP20.25	26.42	2610 (180)	2900 (200)	3190 (220)	2500	300	M8 / EB	M8 / EB	**376.58**
03564210	KP20.31.5	33.03	2030 (140)	2320 (160)	2610 (180)	2500	M8	M8 / EB	M8 / EB	**399.36**

The performance values refer to standard unidirectional pumps.

P1 = maximum continuous pressure. P2 = maximum intermittent pressure. P3 = maximum peak pressure.

Table values refer to unidirectional pumps. Reversible pump maximum pressures are 15% lower.

Installation Dimensions



V Screws tightening torque Nm (lbf in)
70 +7 (558 ÷ 682)

Pump type / Motor type			A	B	C	D	E
			mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
KP 20·4	S D L R B	0-82 E2-L EA/EA-N	87,5 (3.445)	60 (2.362)	M6 Depth 12 (0.472)	13 (0.512)	30 (1.181)
KP 20·6,3			90 (3.543)	62,5 (2.461)			
KP 20·8			92,5 (3.642)	65 (2.559)			
KP 20·11,2			96 (3.780)	68,5 (2.697)			
KP 20·14		0-82 E2-L EB/EA-N	100 (3.937)	67 (2.638)	M8 Depth 14 (0.551)	19 (0.748)	40 (1.575)
KP 20·16			105,5 (4.154)	72,5 (2.854)			
KP 20·20			112 (4.409)	79 (3.110)			
KP 20·25			120 (4.724)	72 (2.835)			
KP 20·31,5			130 (5.118)	82 (3.228)			

Rotation: S=left - D=right - L=reversible side drain - R=reversible rear drain - B=reversible internal drain

How to order:

KP 20·4 S0-82 E2-L EA/EA-N

Cast Iron Gear Pumps

Kappa gear pumps and motors made of cast iron in two pieces. The rigidity of assembly ensures reliability and high volumetric efficiency also at high operating pressures.

Group 3

Displacements: from 26.7 cm³/rev to 73.82 cm³/rev.

Continuous pressure: 180 to 280 bar, speed 2500 to 3000rpm.

Maximum peak pressure: 310 bar.

Available with viton seals and phosphor bronze thrust plates for water glycol applications.

Kappa 30

Group 3 Clockwise

Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03569800	KP30.27	26.7	4060 (280)	4350 (300)	4495 (310	3000	350	M10 / ED	M8	**548.10**
03570000	KP30.34	34.56	3770 (260)	4060 (280)	4350 (300)	3000	350	M10 / ED	M8 / EB	**552.08**
03570300	KP30.38	39.27	3770 (260)	4060 (280)	4350 (300)	3000	350	M10 / ED	M8 / EB	**560.07**
03570500	KP30.43	43.98	3625 (250)	3915 (270)	4205 (290)	3000	350	M10 / ED	M8 / EB	**564.86**
03570700	KP30.51	51.83	3335 (230)	3625 (250)	3915 (270)	2500	350	M10 / ED	M8 / EB	**611.12**
03570900	KP30.61	61.26	2900 (200)	3190 (220)	3480 (240)	2500	350	M10 / ED	M8 / EB	**643.84**
03571020	KP30.73	73.82	2610 (180)	2900 (200)	3190 (220)	2500	350	M12 / EF	M10 / ED	**686.44**

Kappa 30

Group 3 Anticlockwise

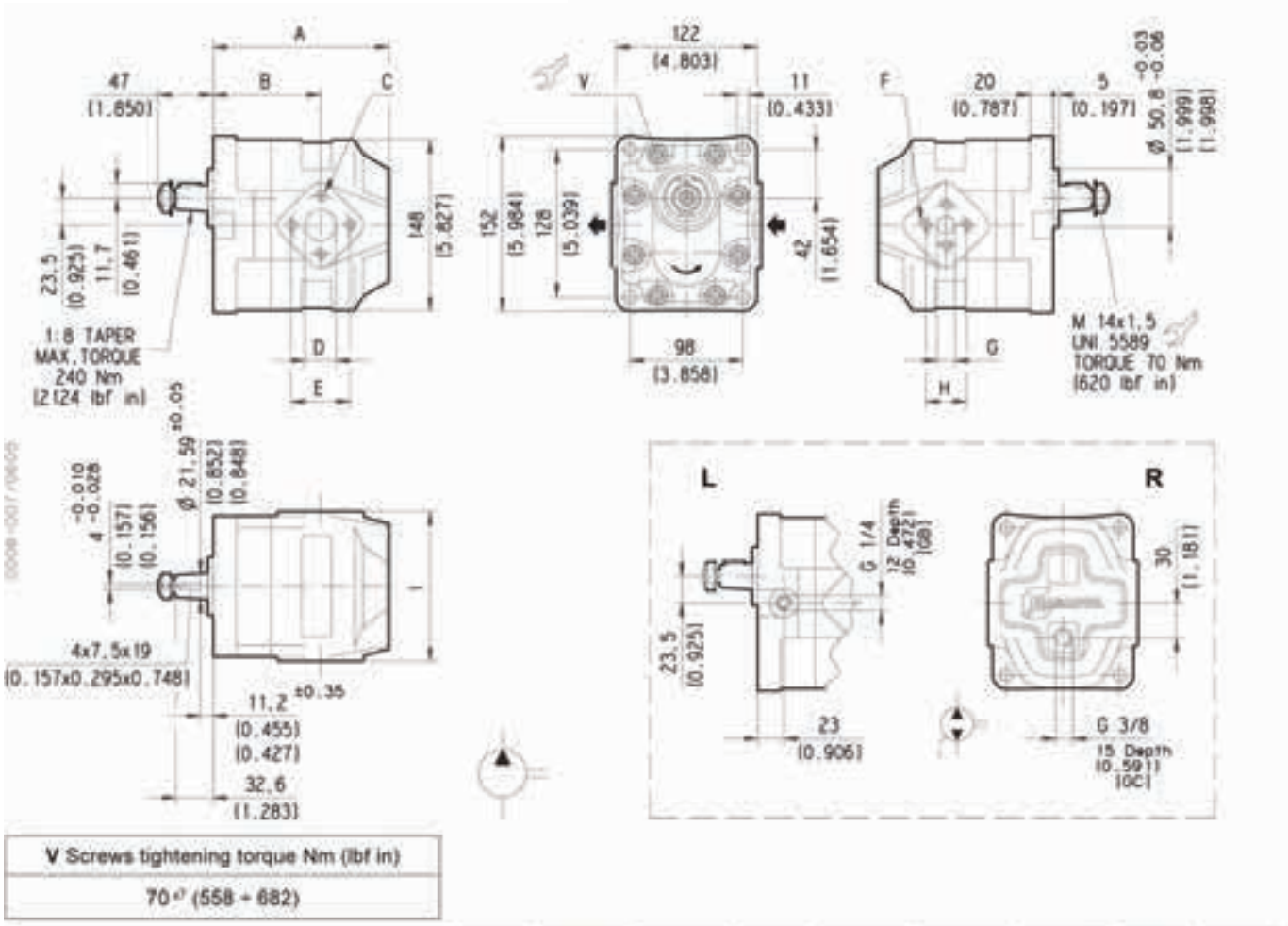
Code	Pump Type	cc/rev	Pressure Rating psi (bar) P1	Pressure Rating psi (bar) P2	Pressure Rating psi (bar) P3	Maximum Speed	Minimum Speed	Suction Port Size	Pressure Port Size	£
03569900	KP30.27	26.7	4060 (280)	4350 (300)	4495 (310	3000	350	M10	M8	**548.10**
03570100	KP30.34	34.56	3770 (260)	4060 (280)	4350 (300)	3000	350	M10	M8	**552.08**
03570350	KP30.38	39.27	3770 (260)	4060 (280)	4350 (300)	3000	350	M10	M8	**560.07**
03570600	KP30.43	43.98	3625 (250)	3915 (270)	4205 (290)	3000	350	M10	M8	**564.86**
03570800	KP30.51	51.83	3335 (230)	3625 (250)	3915 (270)	2500	350	M10	M8	**611.12**
03571000	KP30.61	61.26	2900 (200)	3190 (220)	3480 (240)	2500	350	M10	M8	**643.84**
03571030	KP30.73	73.82	2610 (180)	2900 (200)	3190 (220)	2500	350	M12	M10	**686.44**

The performance values refer to standard unidirectional pumps.

P1 = maximum continuous pressure. P2 = maximum intermittent pressure. P3 = maximum peak pressure.

Table values refer to unidirectional pumps. Reversible pump maximum pressures are 15% lower.

Installation Dimensions



V Screws tightening torque Nm (lbf in)
70 (558 ÷ 682)

Pump type / Motor type			A mm (inch)	B mm (inch)	C mm (inch)	D mm (inch)	E mm (inch)	F mm (inch)	G mm (inch)	H mm (inch)	I mm (inch)
KP 20·4	SDLRB	0-82 E2-L EA/EA-N	133 (5.236)	85 (3.346)	M10 Depth 17 (0.669)	27 (1.063)	51 (2.008)	M8 Depth 17 (0.669)	19 (0.748)	40 (1.575)	130 (5.118)
KP 20·4			138 (5.433)	90 (3.543)							
KP 20·4			141 (5.551)	93 (3.661)							
KP 20·4			144 (5.669)	96 (3.780)							
KP 20·4			149 (5.866)	93 (3.661)							
KP 20·4			152 (5.984)	97 (3.819)							
KP 20·4			155 (6.102)	100 (3.937)							
KP 30·73		0-83 E3-L EF/ED-N	163 (6.417)	108 (4.252)	M12 Depth 17 (0.669)	33 (1.299)	62 (2.441)	M10 Depth 17 (0.669)	27 (1.063)	51 (2.008)	135 (5.315)

Rotation: S=left - D=right - L=reversible side drain - R=reversible rear drain - B=reversible internal drain

How to order:

KP 30·27 S0-83 E3-L ED/EB-N

Port Elbows & Spline Couplings

Standard DIN5482 couplings for the connection of pumps to bearing supports, mechanical clutches and gearboxes.

Port Elbows

Group 1

Code	BSP Thread Size	Port Type	£
RB038-30-M	3/8"	BA/BB	7.25
RB012-30-M	1/2"	BA/BB	7.25

Group 2

Code	BSP Thread Size	Port Type	£
RPA1-038-M	3/8"	EA	8.25
RPA1-012-M	1/2"	EA	8.25

Group 2/3

Code	BSP Thread Size	Port Type	£
RPA2-012-M	1/2"	EB	11.04
RPA2-034-M	3/4"	EB	11.04

Group 3

Code	BSP Thread Size	Port Size	£
RPA3-034-M	3/4"	ED	18.09
RPA3-100-M	1"	ED	18.09
RPA35-114M12	1.1/4"	EF	28.70

Spline Couplings

Group 1

Code	Shaft Code	External Splines	£
31001000	81	14	15.29

Group 2

Code	Shaft Code	External Splines	£
31000700	82	14	13.02
31001900	82	15	12.33
31003900	82	18	13.27

Group 3

Code	Shaft Code	External Splines	£
31003500	83	18	13.80
31005800	83	20	27.11
31007200	83	23	21.78
31040800	83	24	61.61

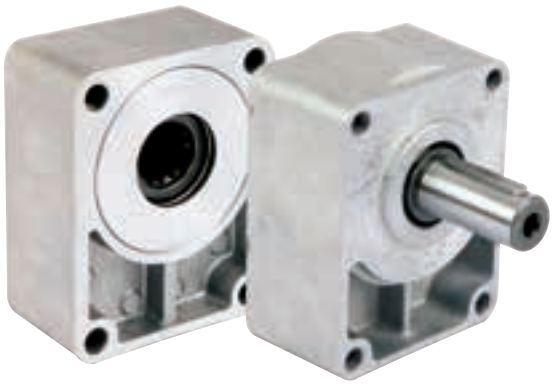
Order Online
Free Carriage on
Online Orders
Over £50

Bearing Adaptors & Clutches

The SU range of pulley supports are suited to drive hydraulic pumps by belts, chains, gears and other types of transmissions where heavy radial loads take place. They are directly flanged to the pump and connected by a splined coupling.

SU supports require 14 spline couplings.

SUR supports require 15 spline couplings.



Bearing Supports

Series SU & SUR

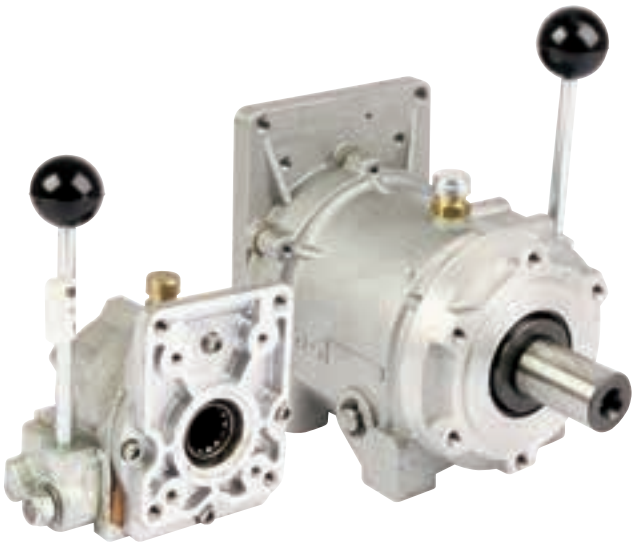
Code	Model Type	Pump Size	Output Shaft Type	£
12010002	SU/1-C	Group 1	Parallel 18mm	**132.18**
12010001	SU/1-D	Group 1	Taper 1:8	**132.18**
12020001	SU/2-C	Group 2	Parallel 18mm	**136.94**
12020004	SU/2-D	Group 2	Taper 1:8	**136.94**
12020007	SUR/2-C	Group 2	Parallel 22mm	**149.74**
12020008	SUR/2-D	Group 2	Taper 1:8	**149.74**
12030012	SUR/3-C	Group 3	Parallel 24mm	**178.66**
12030013	SUR/3-D	Group 3	Taper 1:8	**178.66**

Standard clutches have one direction of rotation only.

When controlling hydraulic pumps, it is necessary to operate the engagement and disengagement while pump is offload and at 1500rpm as a recommended speed.

IM05 clutches require 14 spline couplings.

IM1 clutches require 18 spline couplings.



Mechanical Clutches

Series IM

Code	Clutch Reference	Pump Size	Output Shaft Type	Direction	£
12100001	IM05-D-1/2	Group 1 & 2	Parallel 20mm	Clockwise	**409.06**
12110101	IM1-D-2/3	Group 2 & 3	Parallel 28mm	Clockwise	**454.62**
12100002	IM05-S-1/2	Group 1 & 2	Parallel 20mm	Anticlockwise	**409.06**
12110100	IM1-S-2/3	Group 2 & 3	Parallel 28mm	Anticlockwise	**454.62**

Bell Housings & Flexible Couplings

Aluminium bell housings for the connection of European standard pumps with electric motors according to UNEL-I.E.C. norm.

Coupling for the connection of European standard pumps with electric motors according to UNEL-I.E.C. norm.

Bell Housings

Group 1

Code	Pump Flange Type	Motor Frame Size	Power kW 4-Pole	Motor Flange Diameter (mm)	£
LS161	E1	71	0.25 - 0.37	160	**15.47**
LS201	E1	80 - 90	0.55 - 1.5	200	**17.25**
LS250	E1	100 - 112	2.2 - 4	250	**24.78**

Group 2

Code	Pump Flange Type	Motor Frame Size	Power kW 4-Pole	Motor Flange Diameter (mm)	£
LS203	E2	80 - 90	0.55 - 1.5	200	**18.42**
LS253	E2	100 - 112	2.2 - 4	250	**26.84**
LS300	E2	132	5.5 - 9	300	**42.31**
LS350	E2	160 - 180	11 - 22	350	**81.35**

Group 3

Code	Pump Flange Type	Motor Frame Size	Power kW 4-Pole	Motor Flange Diameter (mm)	£
LS255	E3	100 - 112	2.2 - 4	250	**26.84**
LS302	E3	132	5.5 - 9	300	**42.31**
LS352	E3	160 - 180	11 - 22	350	**81.35**

E1 = standard European group 1.
E2 = standard European group 2.
E3 = standard European group 3.

Flexible Couplings

Group 1

Code	Pump Shaft Type	Motor Frame Size	Power kW 4-Pole	Shaft Diameter (mm)	£
ND2	81	71	0.25 - 0.37	14	**11.10**
ND5	81	80	0.55 - 0.75	19	**12.16**
ND8	81	90	1.1 - 1.5	24	**16.58**
ND11	81	100 - 112	2.2 - 4	28	**18.20**

Group 2

Code	Pump Shaft Type	Motor Frame Size	Power kW 4-Pole	Shaft Diameter (mm)	£
ND7	82	80	0.55 - 0.75	19	**16.44**
ND10	82	90	1.1 - 1.5	24	**16.58**
ND61	82	100 - 112	2.2 - 4	28	**19.81**
ND16	82	132	5.5 - 9	38	**36.32**
ND43A	82	160	11 - 15	42	**62.76**
ND44A	82	180	18.5 - 22	48	**71.68**

Group 3

Code	Pump Shaft Type	Motor Frame Size	Power kW 4-Pole	Shaft Diameter (mm)	£
ND15	83	100 - 112	2.2 - 4	28	**29.04**
ND17	83	132	5.5 - 9	38	**36.28**
ND43C	83	160	11 - 15	42	**62.76**
ND44C	83	180	18.5 - 22	48	**71.68**

81 = standard European group 1, 1:8 taper.
82 = standard European group 2, 1:8 taper.
83 = standard European group 3, 1:8 taper.

Hydraulic Motors (Geroter & Geroler)

The Eaton Char-Lynn motor is the industry leader in low speed, high torque motor technology. These motors have been developed for over 50 years to offer optimum performance and longevity.

The products included here are all available ex stock. In instances where a specification needs to be built, delivery should be within 2-3 days.

Other options are available including alternative mountings, shafts and ports, low speed shafts, free running gear sets, Viton seals, high pressure shaft seals and more.

H Series Geroter Motor

A range of industry-standard interchangeable Gerotor motors supplied with SAE A two-bolt flange, 25mm keyed shaft and 1/2" BSP ports.

All models have a 1/4" BSP case drain port. It is recommended that this is connected to the tank when applications require motor speeds above 400 rpm and/or return line pressure when the motor exceeds 100 bar.

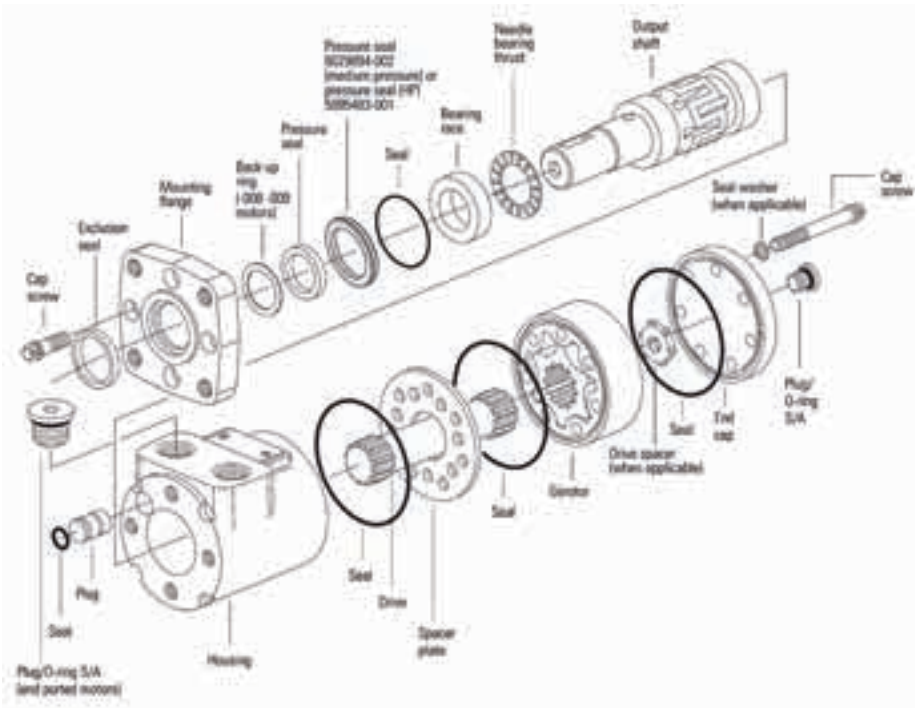
2 Bolt SAE A Mounting

25mm Keyed Shaft, 1/2" BSP Ports

Code	Displacement cc/rev	Max. Cont. Press. bar	Max. Peak Press. bar	Maximum Flow LPM	Maximum rpm	£
101-1745-009	36	124	165	38	960	**289.97**
101-1660-009	46	124	165	45	915	**296.15**
101-1746-009	59	124	165	57	910	**302.31**
101-1661-009	74	124	165	57	725	**303.36**
101-1662-009	97	124	165	57	560	**312.09**
101-1747-009	120	124	165	57	450	**319.53**
101-1748-009	146	117	159	57	370	**330.87**
101-1663-009	159	114	155	57	340	**335.93**
101-1664-009	185	110	148	57	295	**348.32**
101-1665-009	231	100	138	57	240	**369.66**
101-1666-009	293	93	124	57	185	**389.49**
101-1667-009	370	86	103	57	150	**425.84**

H Motor Seal Kits

Code	Type	£
60540-000	Buna	**30.28**
60545-000	Viton	**107.62**



T Series Geroler Motor

A range of industry-standard interchangeable Geroler motors supplied with SAE A two-bolt flange, 25mm keyed shaft and 1/2" BSP ports.

All models have a 1/4" BSP case drain port. It is recommended that this is connected to the tank when applications require motor speeds above 400 rpm and/or return line pressure when the motor exceeds 100 bar.

2 Bolt SAE A Mounting

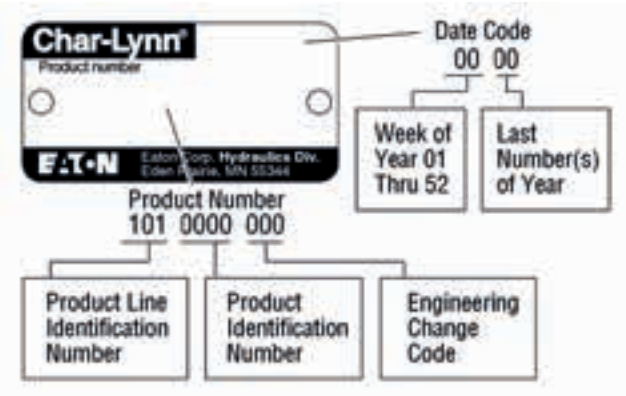
25mm Keyed Shaft, 1/2" BSP Ports

Code	Displacement cc/rev	Max. Cont. Press. bar	Max. Peak Press. bar	Maximum Flow LPM	Maximum rpm	£
158-3142-001	36	155	190	38	1000	**377.10**
158-3028-001	49	155	190	45	900	**388.36**
158-1463-001	80	155	190	57	690	**398.44**
158-1464-001	102	155	190	57	550	**404.74**
158-1607-001	131	138	172	57	425	**409.78**
158-1465-001	157	138	172	57	350	**412.30**
158-1466-001	195	138	172	57	290	**427.32**
158-1467-001	244	127	155	57	230	**445.07**
158-1468-001	306	110	131	57	180	**472.80**
158-1469-001	370	90	103	57	150	**498.01**

T Motor Seal Kits

Code	Type	£
60564-000	Buna	**37.85**
60565-000	Viton	**107.62**

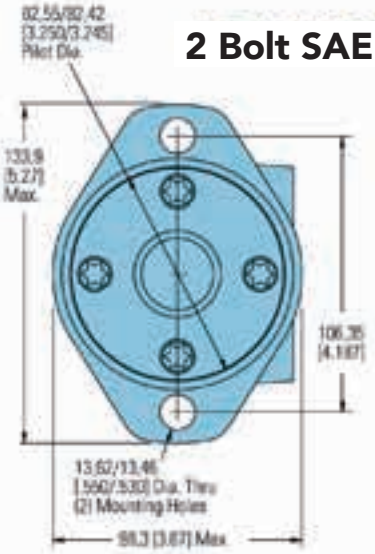
Motor Identification



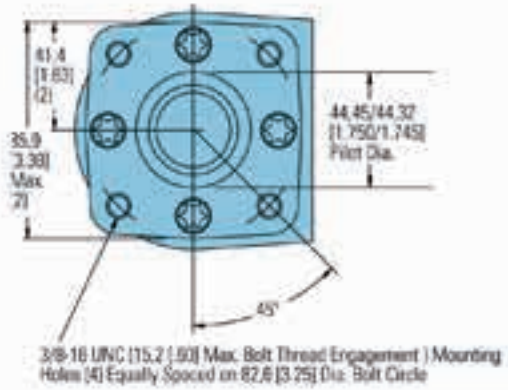
101 = H series
103 = S series
104 = 2000 series, standard
105 = 2000 series, wheel mount
106 = 2000 series, bearingless
109 = 4000 series, standard
112 = 6000 series, standard
119 = 10000 series, standard
158 = T series
193 = 2000 series, 2 speed

H & T Motor Standard Mounting, Shaft & Port Options

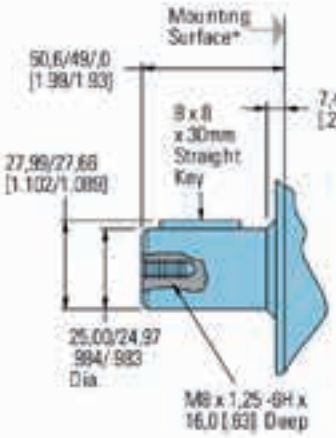
2 Bolt SAE A



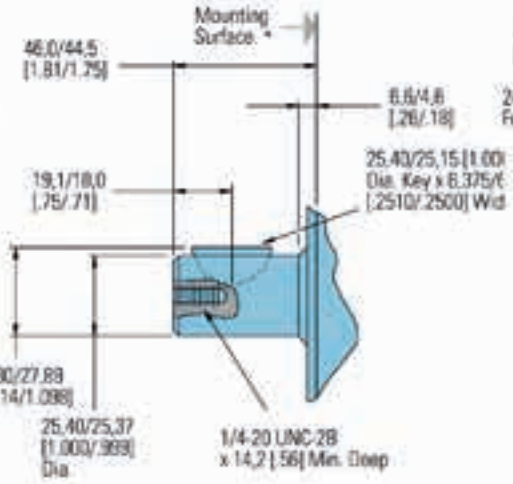
4 Bolt UNC



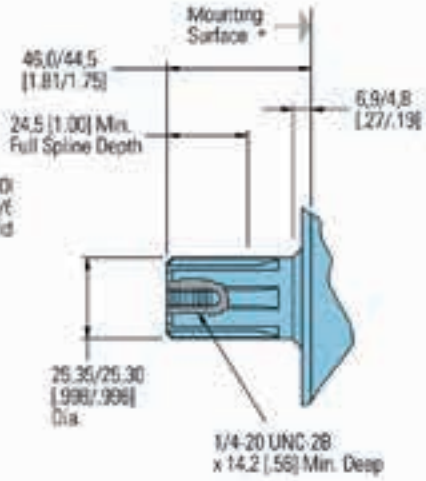
25mm Keyed



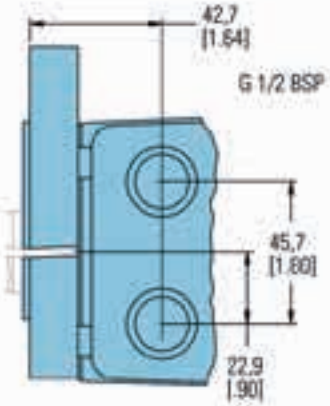
1" Keyed



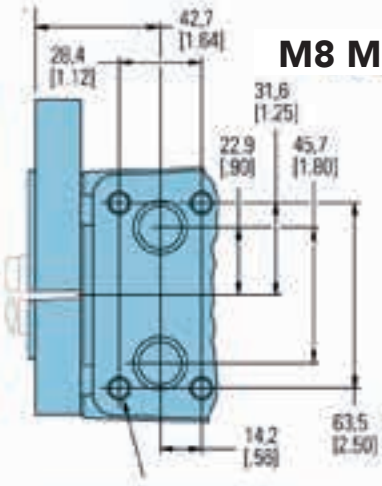
6B Spline



1/2" BSP



M8 Manifold



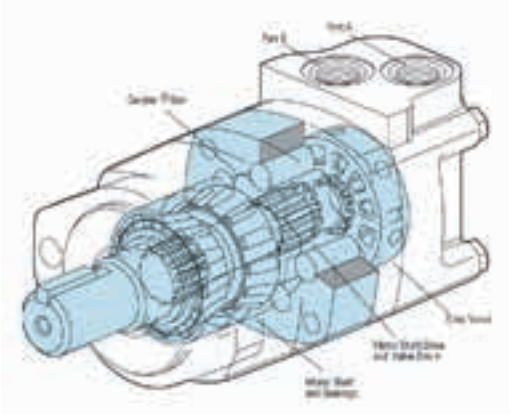
Price note: all combinations of 2 bolt/4 bolt flange and 25mm/1" shaft are the same price.

Many more options are available – please contact us to discuss your requirements.

2000 Series Geroler Motor

A range of industry standard, interchangeable Geroler motors supplied with SAE A four-bolt flange, 32mm keyed shaft and 1/2" BSP ports.

All models have a 1/4" BSP case drain port. It is recommended that this is connected to the tank when applications require motor return line pressure when the motor exceeds 140 bar.



4 Bolt Mounting Flange

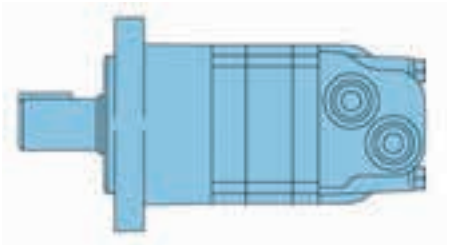
32mm Keyed Shaft, 1/2" BSP Ports

Code	Displacement cc/rev	Max. Cont. Press. bar	Max. Peak Press. bar	Maximum Flow LPM	Maximum rpm	£
104-1384-006	80	205	310	76	840	**636.79**
104-1385-006	100	205	310	76	660	**644.60**
104-1386-006	130	205	310	76	520	**648.46**
104-1387-006	160	205	260	76	440	**654.73**
104-1388-006	195	205	260	76	365	**665.33**
104-1389-006	245	205	260	76	300	**677.01**
104-1390-006	305	205	240	76	240	**692.43**
104-1391-006	395	155	190	76	190	**717.19**
104-1546-006	490	120	140	76	150	**802.64**

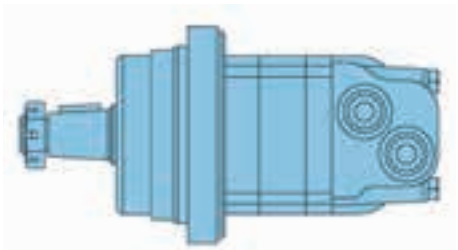
2,000 Series Motor Seal Kits

Code	Type	£
61258-000	Buna	**40.02**
61263-000	Viton	**124.39**

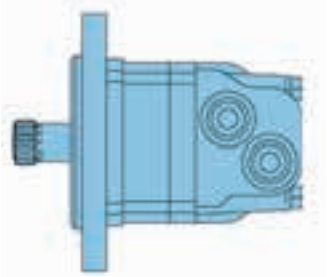
Three Versions Available



Standard Motor



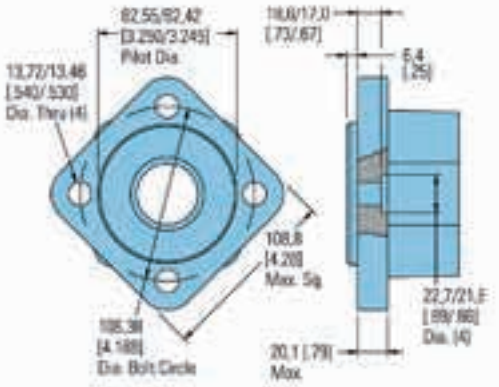
Wheel Motor



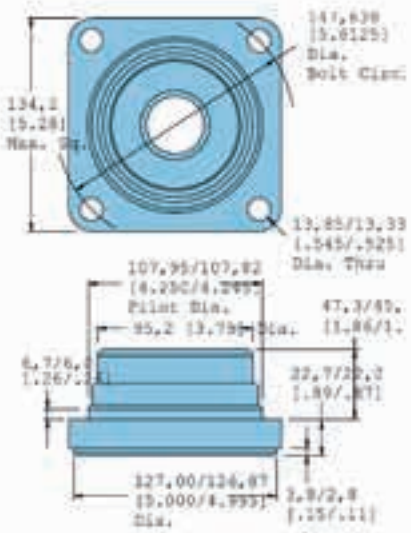
Bearingless Motor

2000 Series Motor, Standard Mounting, Shaft & Port Options

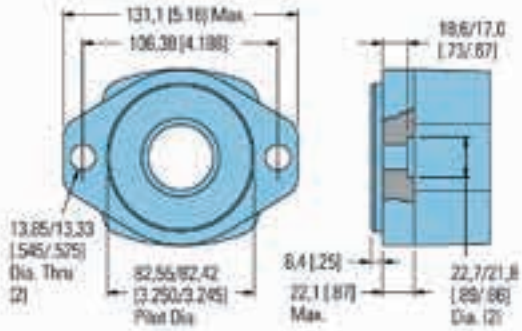
4 Bolt



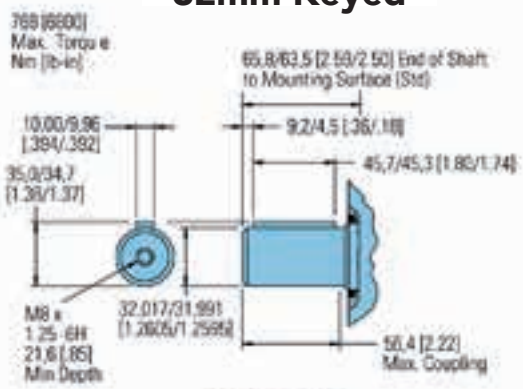
Wheel Mount



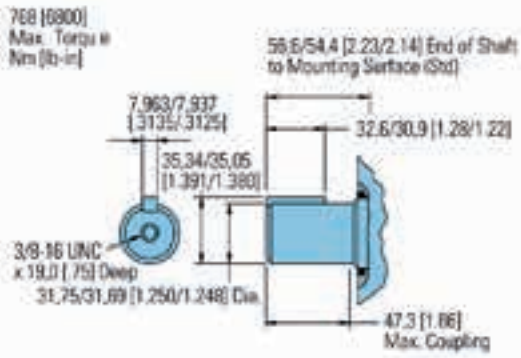
2 Bolt SAE A



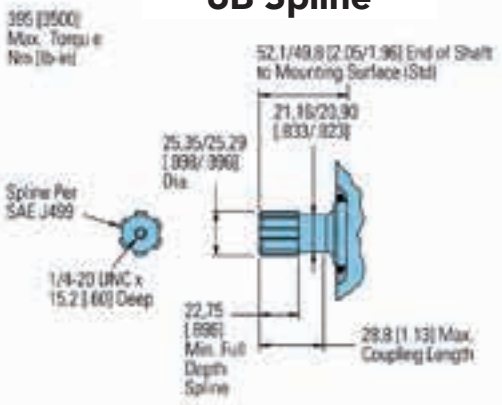
32mm Keyed



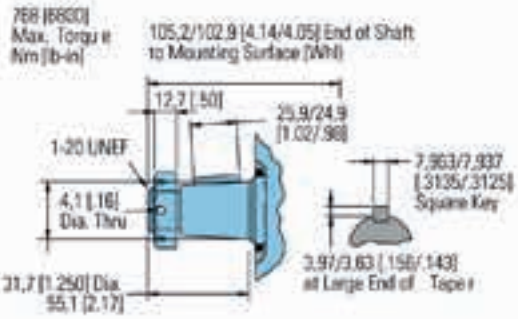
1-1/4" Keyed



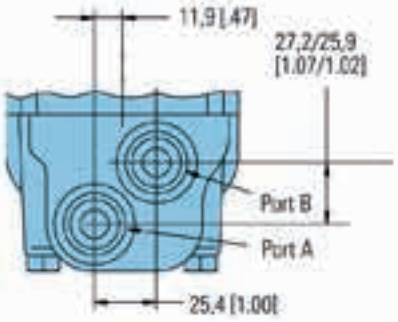
6B Spline



Tapered



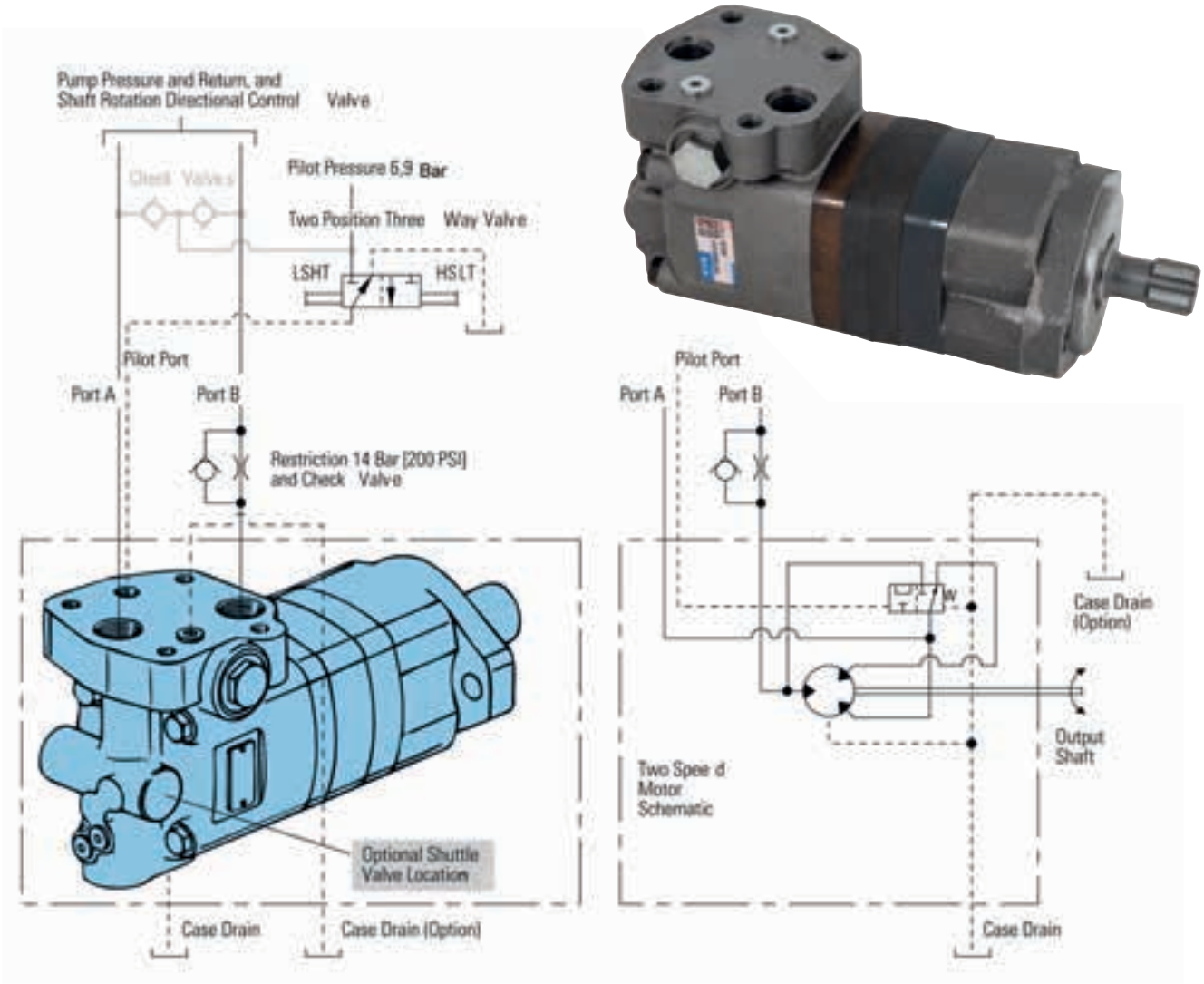
1/2" BSP



2000 Series Two-speed Geroler Motor

The unique Eaton Char-Lynn two-speed Geroler motor supplied with SAE A two-bolt flange, 32mm keyed shaft and 1/2" BSP ports, or alternatively an SAE A four-bolt flange, six spline shaft and 7/8" UNF ports.

All models have a 1/4" BSP case drain port. It is recommended that this is connected to the tank when applications require motor return line pressure when the motor exceeds 140 bar.



2 Bolt SAE A Mounting Flange

6 Spline Shaft, 7/8" UNF Ports

Code	Low Speed Displacement cc/rev	High Speed Displacement cc/rev	Maximum Continuous Pressure bar	Low Maximum rpm	High Maximum rpm	£
193-0026-001	80	40	205	500	1000	**1288.67**
193-0027-001	100	50	205	500	1000	**1293.82**
193-0028-001	130	65	205	495	990	**1298.96**

4 Bolt Mounting Flange

32mm Keyed Shaft, 1/2" BSP Ports

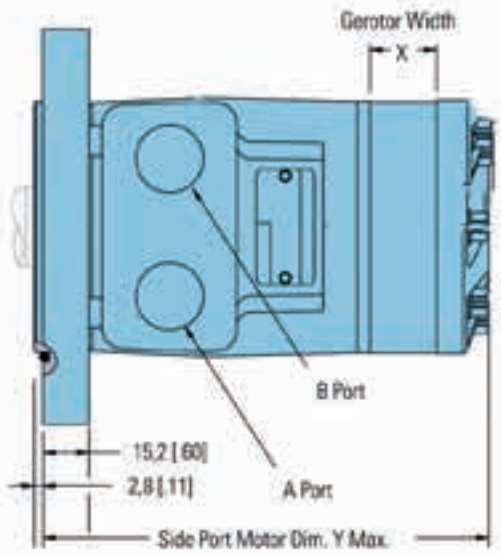
Code	Low Speed Displacement cc/rev	High Speed Displacement cc/rev	Maximum Continuous Pressure bar	Low Maximum rpm	High Maximum rpm	£
193-0087-001	160	80	205	430	860	**1372.19**
193-0089-001	245	120	205	280	560	**1395.32**
193-0090-001	305	155	205	225	450	**1361.91**

2,000 Series Two-speed Seal Kit

Code	£
61267-000	**107.62**

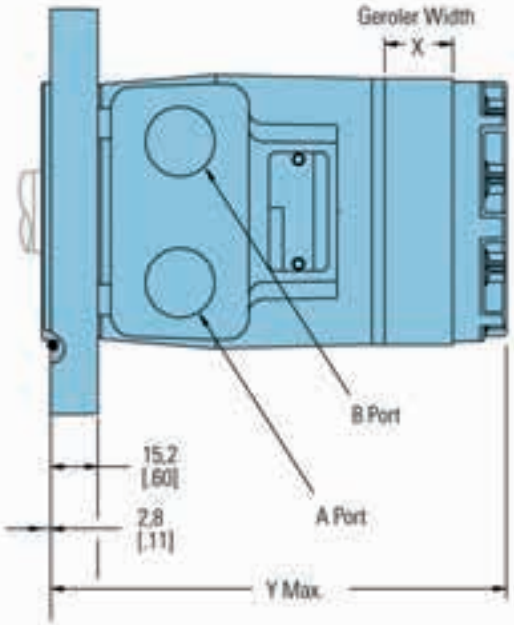
H, T & 2,000 Series

Motor Dimensions



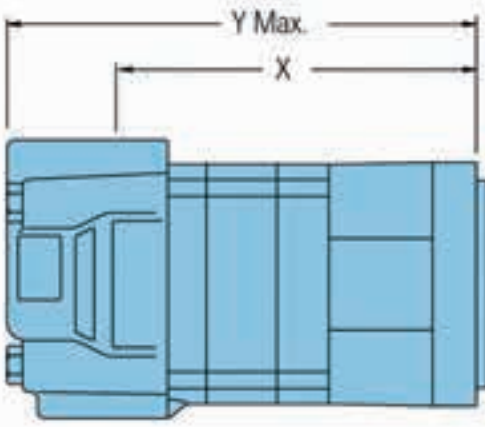
H

H Series Motors		
Displacement cm³/r (in³/r)	**X mm (inch)**	**Y mm (inch)**
36 (2.2)	6.4 (0.25)	132.1 (5.20)
46 (2.8)	6.4 (0.25)	132.1 (5.20)
59 (3.6)	10.2 (0.40)	135.9 (5.35)
74 (4.5)	10.2 (0.40)	135.9 (5.35)
97 (5.9)	13.2 (0.52)	139.0 (5.47)
120 (7.3)	16.5 (0.65)	142,3 (5.60)
146 (8.9)	20.1 (0.79)	145.1 (5.20)
159 (9.7)	21.9 (0.86)	147.6 (5.81)
185 (11.3)	25.4 (1.00)	151.2 (5.95)
231 (14.1)	31.8 (1.25)	157.5 (6.20)
293 (17.9)	40.4 (1.59)	166.2 (6.54)
370 (22.6)	50.8 (2.00)	176.6 (6.95)
739 (45.1)	101.6 (4.400)	227.4 (8.95)



T

T Series Motors		
Displacement cm³/r (in³/r)	**X mm (inch)**	**Y mm (inch)**
36 (2.2)	6.6 (0.25)	132.2 (5.21)
49 (3.0)	9.1 (0.25)	134.6 (5.30)
66 (4.0)	12.2 (0.48)	137.7 (5.42)
80 (4.9)	14.7 (0.58)	140.3 (5.53)
102 (6.2)	18.5 (0.73)	144.3 (5.68)
131 (8.0)	24.1 (0.95)	149,6 (5.89)
157 (9.6)	29.0 (1.14)	154.5 (6.09)
195 (11.9)	35.6 (1.40)	161.3 (6.71)
244 (14.9)	44.7 (1.76)	170.3 (6.71)
306 (18.7)	56.1 (2.21)	181.6 (7.16)
370 (22.6)	72.1 (2.84	197.9 (7.79)



2000

2,000 Series Motors		
Displacement cm³/r (in³/r)	**X mm (inch)**	**Y mm (inch)**
80 (4.9)	136.9 (5.39)	184.2 (7.25)
100 (6.2)	141.5 (5.57)	189.0 (7.44)
130 (8.0)	147.9 (5.83)	195.4 (7.69)
160 (9.6)	147.9 (5.83)	195.4 (7.69)
195 (11.9)	154.7 (6.09)	202.2 (7.96)
245 (14.9)	163.7 (6.45)	211.1 (8.31)
305 (18.7)	175.1 (6.90)	222.3 (8.75)
395 (924.0)	191.0 (7.52)	238.6 (9.39)
490 (29.8)	208.4 (8.21)	255.8 (10.07)

Also Available

Motor Type	Displacement Range cc/rev	Max. Cont. Torque	Max. Cont. Flow	Max. Cont. Pressure	Max. Cont. rpm
4000 Series	**110 - 625**	**320 - 970**	**75 - 95**	**225 - 115**	**690 - 151**
	Above performance ranges given from smallest to largest displacement, e.g. 625cc maximum rpm is 151				
Mounting Types	4 Bolt 127mm pcd / 4 Bolt SAE C 162mm pcd / Wheel Mount / Bearingless				
Shafts	1.1/4" Keyed / 40mm Keyed / 14 Spline / 17 Spline / Taper				
Ports	3/4" BSP / 7/8" SAE / 3/4" Split Flange				

Motor Type	Displacement Range cc/rev	Max. Cont. Torque	Max. Cont. Flow	Max. Cont. Pressure	Max. Cont. rpm
6000 Series	**195 - 985**	**575 - 1685**	**150**	**205 - 140**	**775 - 153**
	Above performance ranges given from smallest to largest displacement, e.g. 985cc maximum rpm is 153				
Mounting Types	4 Bolt SAE CC 162mm pcd / Wheel / Bearingless				
Shafts	1.1/2"Keyed / 40mm Keyed / 50mm Keyed / 17 Spline / Taper				
Ports	1"BSP / 1-5/16" SAE / 3/4" Split Flange				

Motor Type	Displacement Range cc/rev	Max. Cont. Torque	Max. Cont. Flow	Max. Cont. Pressure	Max. Cont. rpm
10,000 Series	**345 - 940**	**1040 - 2700**	**170**	**205 - 190**	**501 - 179**
	Above performance ranges given from smallest to largest displacement, e.g. 940cc maximum rpm is 179				
Mounting Types	4 Bolt SAE CC 162mm pcd / Wheel / Bearingless				
Shafts	2 - 1/4" Keyed / 16 Spline / Taper				
Ports	1.5/16" SAE / 1-1/4" Split Flange				

NB: performance figures given in this catalogue are for guidance only.

We reserve the right to change pricing without notification.

Many more motor types and specifications are available from Eaton

Please contact HTL for further details or refer to www.htluk.co.uk

NEW

For new applications, please consult an HTL engineer for assistance.

Complete end-to-end solution for OEMs

- Kitting service for ease of installation
- From simple kits for individual machine build to complex multi-point manufacturing assemblies
- Kits of components boxed and labelled to customer requirements, improving operational efficiencies and quality standards
- Where appropriate, component parameters can be set for speedy installation
- In-depth training from our experienced application engineers

Operational cost savings

Monoblock Directional Valves

HTL is the sole official UK agent and an accredited Walvoil Master Distributor.

We have worked together for over 40 years.

HTL maintain stock of over 1,500 Walvoil part numbers and 30,000 units.

The products included here are all available ex stock. In instances where a specification needs to be built, delivery should be within 2-3 days.

Many more options are available including electrical, hydraulic and pneumatic operation. Please give us a call to discuss your requirements.

Double Acting, Spring Return, Lever Operated

The high quality philosophy adopted and successfully achieved by Walvoil means this is probably the best value and most comprehensive range of valves currently available. Simple, compact and designed for heavy duty applications, these valves are used when dimensions, weight and price are extremely important.

Applications:

Walvoil monoblock valves are used in fields such as agriculture, earth moving machines, lifting equipment, cranes and aerial platforms.

SDM080

1/4" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	£
100810001	25	100 - 200	1	**151.17**
100820001	25	100 - 200	2	**215.00**
100830001	25	100 - 200	3	**278.74**
100840001	25	100 - 200	4	**342.62**
100850001	25	100 - 200	5	**409.02**
100860001	25	100 - 200	6	**473.81**

The above valves have number 1 (cylinder) spools and are 3 position spring return on all sections.

Code	Description
SD5	Valve Type
/3	Number of Banks/Spools
P	Parallel Circuit
N	Single Bank (AET) Only
KG3	Relief Valve Reference
(SV)	No Relief Fitted
18	A+B Blocked Centre (Cylinder) Spool / 3 Position Spring Return
28	A+B to Tank Centre (Motor) Spool / 3 Position Spring Return
111	A+B Blocked Centre (Cylinder) Spool / 3 Position Detent
211	A+B to Tank Centre (Cylinder) Spool / 3 Position Detent
38	Single Acting / Spring Return
311	Single Acting / Detent
AET	Open Centre to Tank
AEK	Closed Centre
AE	Carry Over

Valve Options:
No Relief Valve (SV), Carry Over Connector (AE), Closed Centre Plug (AEK).

SD4

3/8" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	Spool & Return Type	£
101111001	45	50 - 220	1	18	**110.87**
101111003	45	50 - 220	1	111	**118.79**
101111004	45	50 - 220	1	28	**110.82**
101111005	45	50 - 220	1	211	**111.40**
101111006	45	50 - 220	1	38	**112.41**

Characteristics & Working Conditions						
	SMD080	**SD4**	**SD5**	**SD11**	**SD14**	**SD18**
Flow Rate LPM	25	45	45	70	120	160
Port Size	1/4"	3/8"	3/8"	1/2"	3/4"	3/4"
Maximum Pressure	315	250	315	315	250	250
Number of Spools	1-6	1	1-7	1-6	1	1-4
Fluid	Hydraulic Mineral Oil					
Fluid Temperature	-20°C to +80°C					
Ambient Temperature	-40°C to +60°C					
Viscosity	14/75 (mm^2/s) / (cSt)					
Filtration	ISO4406 / class 9/26					

Double Acting, Spring Return, Lever Operated

SD5

3/8" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	£
102111001	45	50 - 220	1	**144.79**
102131001	45	50 - 220	1	**160.08**
102211001	45	50 - 220	2	**230.34**
102311001	45	50 - 220	3	**299.44**
102411001	45	50 - 220	4	**368.25**
102511001	45	50 - 220	5	**458.07**
102611001	45	50 - 220	6	**548.05**
102711001	45	50 - 220	7	**637.22**

The above valves are 3 position spring return with number 1 (cylinder) spools on all sections.

Valve Options:
No Relief Valve (SV), Carry Over Connector (AE), Closed Centre Plug (AEK).

SD11

1/2" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	£
104111001	70	50 - 220	1	**199.65**
104161020	70	50 - 220	1	**223.83**
104211001	70	50 - 220	2	**326.40**
104311001	70	50 - 220	3	**435.50**
104411001	70	50 - 220	4	**547.47**
104511001	70	50 - 220	5	**656.40**
104611001	70	50 - 220	6	**787.81**

The above valves are 3 position spring return with number 1 (cylinder) spools on all sections.

Valve Options:
No Relief Valve (SV), Carry Over Connector (AE), Closed Centre Plug (AEK).

SDM080/SD4/SD5

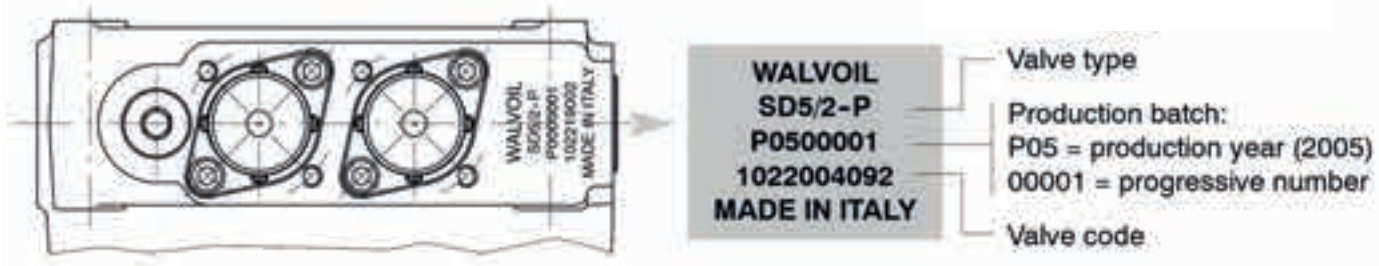
M8 Hand Levers

Code	Lever Length	£
170011012	120mm	**3.46**
170011015	150mm	**3.46**

SD11/SD14

M10 Hand Levers

Code	Lever Length	£
170012020	200mm	**3.46**
170012025	250mm	**4.11**



Double Acting, Spring Return, Lever Operated

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Applications:

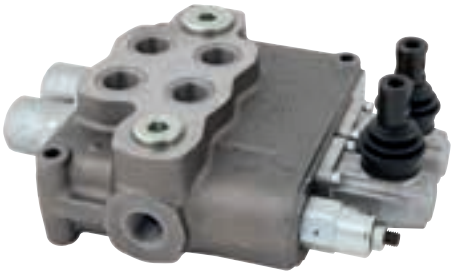
Walvoil monoblock valves are used in fields such as agriculture, earth moving machines, lifting equipment, cranes and aerial platforms.

SD14

3/4" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	Spool & Return Type	£
105111001	120	50 - 220	1	18	**226.36**
105111035	120	50 - 220	1	111	**247.48**
105111012	120	50 - 220	1	211	**238.31**
105111036	120	50 - 220	1	28	**240.67**
105111042	120	50 - 220	1	38	**247.48**
105111049	120	50 - 220	1	311	**246.91**

Valve Options:
No Relief Valve (SV).



SD18

3/4" Ports with Relief Valve

Code	Flow Rate LPM	Relief Valve Range bar	Number of Banks	£
106111001	160	50 - 220	1	**389.70**
106211001	160	50 - 220	2	**573.82**
106311001	160	50 - 220	3	**796.50**
106411001	160	50 - 220	4	**991.77**

The above valves are 3 position spring return with number 1 (cylinder) spools on all sections.

Valve Options:
No Relief Valve (SV), Carry Over Connector (AE), Closed Centre Plug (AEK).

SD11/SD14

M10 Hand Levers

Code	Lever Length	£
170012020	200mm	**3.46**
170012025	250mm	**4.11**

SD18

M12 Hand Levers

Code	Lever Length	£
170013025	250mm	**5.13**

Walvoil Sectional Valves

Please call or email us to discuss your sectional valve requirements. Specifications available include electro-proportional control and flow sharing technology.

HTL also stock the Walvoil Sectional Valve Range:

Characteristics & Working Conditions							
	SD6	**SDS100**	**SD8**	**SDS150**	**SD16**	**SD25**	**SDS400**
Flow Rate LPM	45	60	80	90	140	240	400
Port Size	3/8"	3/8"	1/2"	1/2"	3/4"	1"	1-1/2"
Maximum Pressure	315	315	315	315	315	315	315
Number of Spools	1-12	1-10	1-12	1-12	1-12	1-12	1-10

Lever Pivot Box

Code	Valve Type	£
5LEV102010	SDM080	14.16
5LEV105000	SD4 / SD5	16.55
5LEV110000	SD11 / SD14	19.87
5LEV120000	SD18	34.74

Spool No. 1, Cylinder

Code	Valve Type	£
3CU1010130	SDM080	15.04
3CU1110110	SD4	16.55
3CU1210130	SD5	18.19
3CU1410130	SD11	26.46
3CU1510140	SD14	26.46
3CU1610130	SD18	41.37

SV Plug

Code	Valve Type	£
XTAP524340	SDM080	7.53
XTAP623282	SD4 / SD5	3.35
XTAP526340	SD11 / SD14	3.34
3XTAP535410	SD18	7.53

Spring Return Kit, No. 8

Code	Valve Type	£
5V08102000	SDM080	6.63
5V08104000	SD4	8.27
5V08105000	SD5	8.27
5V08110000	SD11 / SD14	11.74
5V08120000	SD18	18.36

Spool No. 2, Motor

Code	Valve Type	£
3CU1025130	SDM080	15.04
3CU1125130	SD4	16.55
3CU1225130	SD5	18.19
3CU1425130	SD11	26.46
3CU1525600	SD14	26.46
3CU1625130	SD18	41.37

AEK Plug

Code	Valve Type	£
3XTAP722160	SDM080 (plug)	4.13
4TAP310007	SDM080 (insert)	1.73
3XTAP522282	SD5	4.07
3XTAP532450	SD11	7.53
3XTAP540560	SD18	14.16

Detent Kit, No. 11

Code	Valve Type	£
5V11102000	SDM080	15.04
5V11104000	SD4	16.55
5V11105000	SD5	16.55
5V11110000	SD11 / SD14	24.21
5V11120000	SD18	33.23

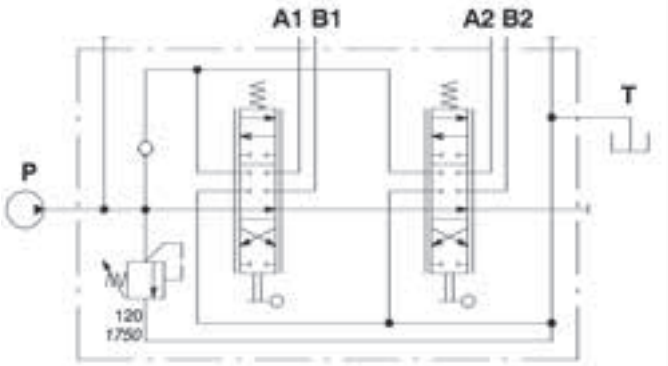
AE Carry Over Plug/Connector

Code	Valve Type	£
3XTAP722160	SDM080 (plug)	4.13
4TAP310007	SDM080 (insert)	1,73
3XGIU522460	SD5	5.88
XGIU532470	SD11	2.56
3XGIU451600	SD18	18.80

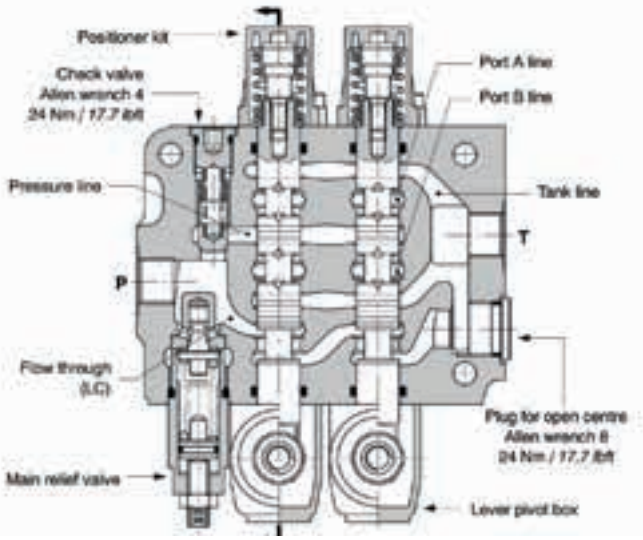
Port Plug

Code	Valve Type	£
3XTAP719150	SDM080	1.81
3XTAP722160	SD4 / SD5	1.64
3XTAP727180	SD11	2.62
3XTAP732200	SD14 / SD18	3.46

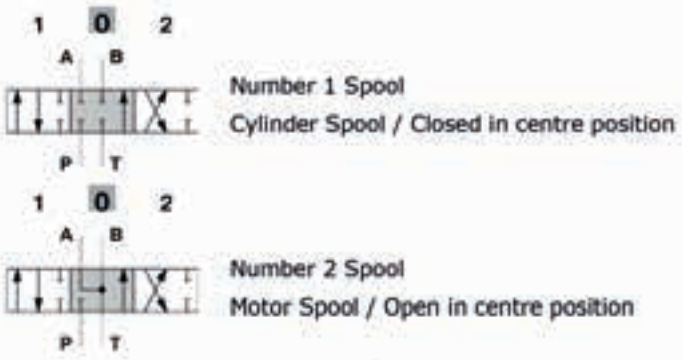
Standard Valve Circuit



Description example: SD5/2-P(KG3-120)/18L/18L/**AEK**

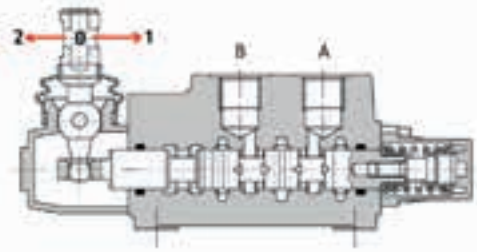


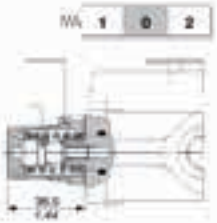
Lever & Spool Position



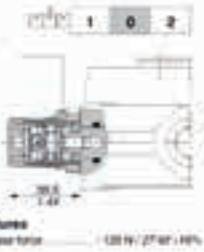
Number 1 Spool
Cylinder Spool / Closed in centre position

Number 2 Spool
Motor Spool / Open in centre position





Spool Position kit No.8
Standard Spring Return



Spool Position kit No.11
Detent

Circuit Valves

Relief Valves
- Direct Acting
- Dual Cross Line

Sequence Valves

Check Valves
- In-line
- Single Pilot Operated
- Dual Pilot Operated

Shuttle Valves

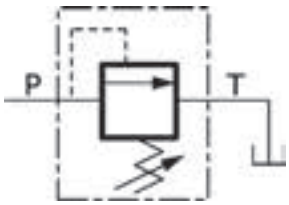
Flow Control Valves
- Barrel
- Adjustable
- Pressure Compensated
- 3-Way Priority
- Single Overcentre
- Dual Overcentre
- Hose Burst
- Divider / Combiner

2-Way Solenoid Operated Valves

Relief Valves

The P ports connect to the pressure line and the T port connects to the tank line.

When the pressure on port P exceeds the spring setting, the valve opens and allows flow to the tank. To adjust the setting of the spring, remove the cap from the end of the cartridge and adjust clockwise to increase the setting and anticlockwise to reduce the setting.

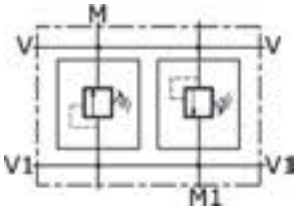


Direct Acting

Series VMD

Code	Port Size	Relief Setting bar	Flow L/min	Maximum Pressure bar	£
VMD3502B3	3/8"	40 - 210	35	210	**38.87**
VMD3503B3	1/2"	40 - 210	35	210	**40.86**
VMD8003B3	1/2"	20 - 260	80	260	**58.67**
VMD8004B3	3/4"	20 - 260	80	260	**60.67**

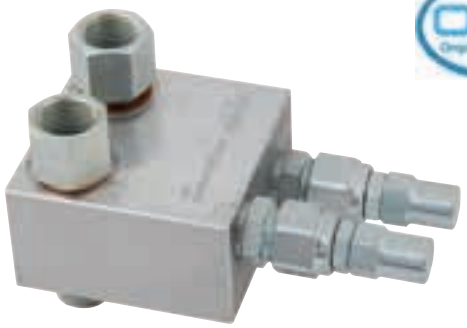
Connect one inlet pressure flow and one actuator to ports V, and one pressure and actuator to ports V1, allowing both flows straight through the valve. Pressure gauges fitted to M will show the pressure on line V-V, and port M1 will show the pressure on port V1-V1. When the pressure on line V exceeds the spring setting, the valve opens and allows flow to line V1 and vice versa.



Dual Cross Line

Series VMDI

Code	Port Size	Relief Setting bar	Flow L/min	Maximum Pressure bar	£
VMDI3502B3	3/8"	40 - 210	35	210	**92.91**
VMDI3503B3	1/2"	40 - 210	35	210	**101.23**
VMDI8003B3	1/2"	20 - 260	80	260	**128.54**
VMDI8004B3	3/4"	20 - 260	80	260	**183.61**



Dual Cross Line, Motor Mount

Series DPRCHLH

Code	Port Size	Flow L/min	Maximum Pressure bar	£
DPRCHLH-R3503C	1/2"	50	250	**133.94**

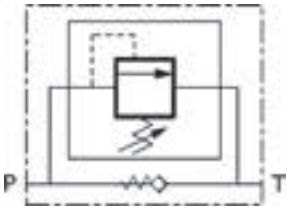
For mounting directly to Eaton Char-Lynn H and T series motors. Banjo bolt arrangement screws in to standard 1/2" BSP ports.

Sequence Valves

The P port connects to the outlet port of the first actuator, and the T port connects to the inlet port of the second actuator. When the first actuator exceeds the pre-set pressure, the valve opens and allows flow to the second actuator. To adjust the settings of the spring, remove the cap from the end of the cartridge and adjust clockwise to increase the setting, and anticlockwise to reduce the setting. A free-flow check allows reverse flow from port T to port P.

Line Mounted

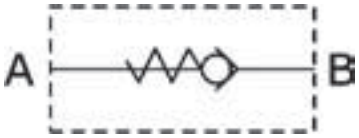
Series VS



Code	Port Size	Flow L/min	Pressure Adjustment bar	£
VS3502B3	3/8"	35	40 - 210	57.09
VS3503B3	1/2"	35	40 - 210	57.68

Check Valves

This valve allows flow from port B to port A, and blocks the flow in the opposite direction.



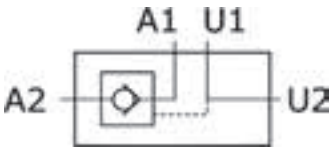
In-line

Series VUR

Code	Port Size	Flow (L/min)	Maximum Pressure bar	£
VUR01C	1/4"	30	400	11.44
VUR02C	3/8"	40	400	13.54
VUR03C	1/2"	90	350	15.68
VUR04C	3/4"	130	300	19.96
VUR05C	1"	180	280	34.07
VUR06C	1.1/4"	250	260	48.45
VUR07C	1.1/2"	380	220	65.29

Connect the actuator port to be controlled to A2, and the pressure flow to A1. Other ports, U1 or U2, can be connected with pilot pressure in the same port and blocks flow in the opposite direction.

When pilot pressure is applied to ports U1 or U2, it allows the return flow from A2 to A1.



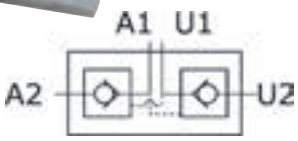
Single Pilot Operated

Series VRSE

Code	Port Size	Pilot Ratio	Flow (L/min)	Maximum Pressure bar	£
VRSE01FFF	1/4"	1:4	20	350	24.68
VRSE015FFF	3/8"	1:4	20	300	52.66
VRSE02FFF	3/8"	1:4	50	350	55.31
VRSE025FFF	1/2"	1:4	50	300	68.35

Check Valves

Connect the actuator ports to be controlled to A2 and U2, and connect the pressure flow to A1 and U1. When pressure is applied to port U1, the valve allows flow from port A2 to A1 and likewise, when pressure is applied to port A1, it allows flow from port U2 to U1.



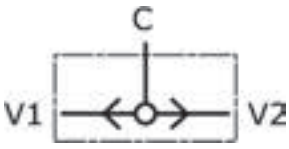
Dual Pilot Operated

Series VRDE

Code	Port Size	Pilot Ratio	Flow L/min	Maximum Pressure bar	£
VRDE01FFF	1/4"	1:4	30	350	29.34
VRDE02FFF	3/8"	1:4	50	300	49.20
VRDE03FFF	1/2"	1:4	80	300	71.77
VRDE04FFF	3/4"	1:4	120	300	106.20

Shuttle Valves

Connect V1 and V2 ports with pressure line and connect the C port with the actuator. C port takes pressure from between V1 and V2 ports and blocks the lower pressure.



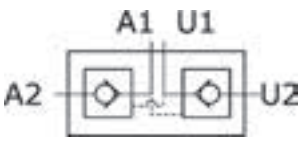
Shuttle Valves

Series VUSF

Code	Port Size	Flow L/min	Maximum Pressure bar	£
VUSF01	1/4"	35	500	18.67
VUSF02	3/8"	50	500	21.37
VUSF03	1/2"	90	500	25.13
VUSF04	3/4"	140	350	49.95
VUSF05	1"	180	300	68.78

Check Valves

Connect the actuator ports to be controlled to A2 and U2, and connect the pressure flow to A1 and U1. When pressure is applied to port U1, the valve allows flow form port A2 to A1 and likewise, when pressure is applied to port A1, it allows flow from U2 to U1.



Dual Pilot Operated, Line Mounting

Series VPDE

Code	Port Size	Pilot Ratio	Flow L/min	Maximum Pressure bar	£
VPDE01	1/4"	1:4	20	350	42.17
VPDE02	3/8"	1:7	35	350	55.67
VPDE03	1/2"	1:5	60	300	72.85

Flow Control Valves

These steel-bodied valves can be set and locked to restrict flow in both directions.

Flow setting can be made by rotating the outer sleeve of the VRB or the scaled hand knob of the VRFB.

Once the valve has been set, it can be locked using the locking nut (VRB) or locking screw on the VRFB.

Barrel Flow Control Valve

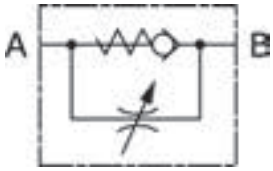
Series VRB

Code	Port Size	Flow A-B L/min	Maximum Pressure bar	£
VRB01	1/4"	30	350	17.09
VRB02	3/8"	40	350	18.85
VRB03	1/2"	70	350	23.08
VRB04	3/4"	100	300	43.04
VRB05	1"	150	250	79.30

Flow Control Valves

Regulate the speed of actuators in one direction and provide free-flow in the other direction through the check section. Pressure compensation is not provided and flow is affected by pressure and viscosity of fluid.

Check cracking pressure: 0.5 bar.



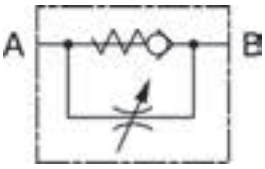
Barrel with Free-flow Check

Series VRF

Code	Port Size	Flow A-B L/min	Maximum Pressure bar	£
VRF01C	1/4"	30	350	23.01
VRF02C	3/8"	40	350	25.13
VRF03C	1/2"	50	350	33.09
VRF04C	3/4"	80	300	53.55
VRF05C	1"	130	250	100.49

Adjust the flow speed in one direction. In the opposite direction the flow is free. Connect actuator port to control with B valve port, and pressure flow with A port.

Cracking pressure: 0.5 bar.



With Free-flow Check

Series VRFU

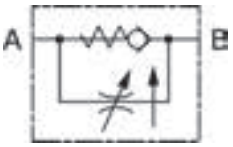
Code	Port Size	Flow A-B L/min	Maximum Pressure bar	£
VRFU9001	1/4"	30	350	33.23
VRFU9002	3/8"	40	350	35.05
VRFU9003	1/2"	50	350	40.32
VRFU9004	3/4"	80	320	74.92
VRFU9005	1"	110	300	84.68

Bidirectional

Series VRFB

Code	Port Size	Flow A-B L/min	Maximum Pressure bar	£
VRFB9001	1/4"	30	350	28.44
VRFB9002	3/8"	40	350	30.39
VRFB9003	1/2"	50	350	31.73
VRFB9004	3/4"	80	320	59.73
VRFB9005	1"	110	300	74.06

Adjust the speed of an actuator in one direction and allow the free return flow in the opposite direction. A high precision adjustment maintains a constant speed, even when the load varies. Connect the actuator port to be controlled to the B port, and the pressure to A.



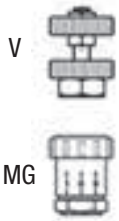
Pressure Compensated

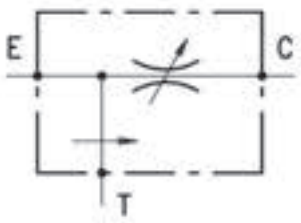
Series VRFU

Code	Port Size	Flow A-B L/min	Maximum Pressure bar	£
VRFU9001C	1/4"	17	250	58.79
VRFU9002C	3/8"	17	250	66.06

Flow Control Valves

Designed to provide flow adjustment from E to C. Exceeding flow is sent to tank. Best performance of the valve is ensured when the flow in E is at least 10% greater than in C. Pressure variation in C does not alter the checked oil flow. A pressure relief valve between the pump and flow regulator is recommended.





3-Way Priority

Series VPR

Code	Port Size	Maximum Inlet Flow L/min	Maximum Control Flow L/min	Maximum Pressure bar	Control Type	£
1620021100	3/8"	50	30	210	V	**138.27**
1620031100	1/2"	90	50	210	V	**138.27**
1620041100	3/4"	150	90	210	V	**194.51**
1620021101	3/8"	50	30	210	MG	**165.25**
1620031101	1/2"	90	50	210	MG	**165.25**
1620041101	3/4"	150	90	210	MG	**223.63**

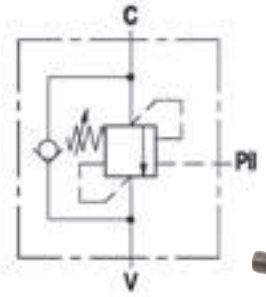
Overcentre Valves

The inlet flow is connected to V port, C with actuator port and 1/4" BSP to pilot pressure supply. The flow passes free from V to C. When descend control pressure is applied on pilot port, it opens gradually and flow passes from C to V and does not allow the increased flow to increase the actuator speed.

Note: the valve should be set 30% above maximum load-induced pressure.

Maximum working pressure: 350 Bar pilot.

Ratio 1:4:2.



Single Overcentre

Series WBCSE

Code	Port Size	Flow L/min	Pressure Range bar	£
WBCSE02B	3/8"	40	60 - 210	**67.42**
WBCSE03B	1/2"	60	100 - 350	**74.57**

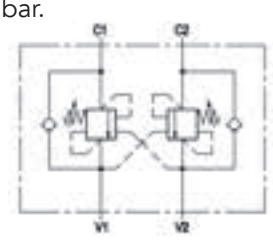
The inlet flow from the directional control valve connects to V1 and V2. Ports C1 and C2 connect to the actuator.

When pressure flow passes from V1 to C1, it controls the actuator port. At the same time, an internal pilot signal is made from V1 to C1 line which controls the opening of V2 to C2 line, which controls the actuator port.

Note: the value should be set 30% above the maximum load-induced pressure.

Maximum working pressure: 270 bar.

Pilot ratio: 1:4.25.



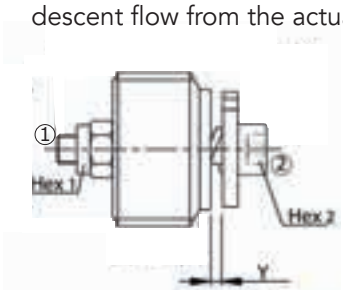
Dual Overcentre

Series WBCDE

Code	Port Size	Flow L/min	Pressure Range bar	£
WBCDE02B	3/8"	40	60 - 210	**142.97**
WBCDE03B	1/2"	60	100 - 350	**153.17**

Flow Control Valves

The flow is free in both directions under normal working conditions, however with a sudden increase in flow from 2 to 1, the valve immediately stops the flow. The burst flow can be set by increasing or decreasing dimension Y to be verified during final testing of machine. The setting of Y is recommended to be 1.5 times the maximum descent flow from the actuator port to be controlled.



Hose Burst Valve Cartridge

Series HBV

Code	Size BSP	Maximum Flow	Maximum Pressure	£
HBV01	1/4"	350	25	8.57
HBV02	3/8"	350	50	8.67
HBV03	1/2"	350	80	10.26
HBV04	3/4"	350	150	12.01

Hose Burst Valves

Series HBV FF

Code	Size BSP	Maximum Flow	Maximum Pressure	£
HBV01FF	1/4"	350	25	13.30
HBV02FF	3/8"	350	50	14.11
HBV03FF	1/2"	350	80	16.03
HBV04FF	3/4"	350	150	20.30

Hose Burst Valves

Series HBV MF

Code	Size BSP	Maximum Flow	Maximum Pressure	£
HBV01MF	1/4"	350	25	12.84
HBV02MF	3/8"	350	50	13.62
HBV03MF	1/2"	350	80	15.75
HBV04MF	3/4"	350	150	19.82

End Of Stroke Valves

The ESCS valve is normally closed B to A. While the button is pressed, flow is allowed in both directions.

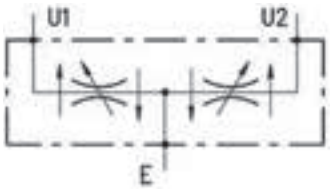
End Of Stroke Valves

Series ESCS

Code	Size BSP	Maximum Flow	Maximum Pressure	£
ESCS02	3/8"	350	30	50.05
ESCS03	1/2"	350	60	54.99

Flow Divider/Combiner

The valve is designed to divide the incoming flow in E into two separate deliveries, U1 and U2, depending on the valve divide ratio. Pressure variations in U1 and U2 do not alter the outlet delivery. In the opposite direction, the valve works by combining together the inlet flows U1 and U2.



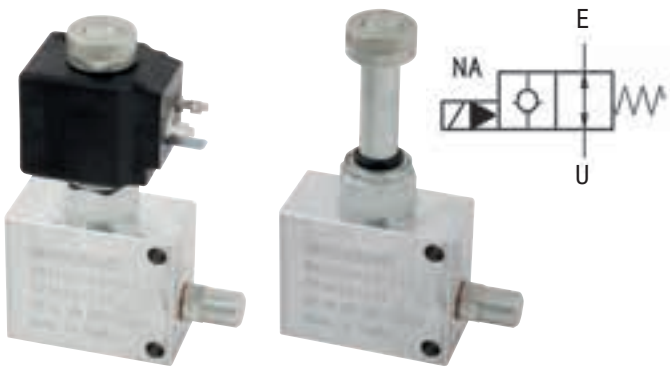
50:50 Flow Divider/Combiner

Series VDFR

Code	Port Size	Inlet Flow Range L/min	Maximum Pressure bar	£
1650021107	3/8"	4 - 12	210	131.83
1650021114	3/8"	12 - 24	210	131.83
1650031100	1/2"	24 - 40	210	136.63
1650031104	1/2"	12 - 40	210	139.80
1650041100	3/4"	40 - 90	210	225.00

Solenoid Operated Valves

When the NA (normally open) valve is de-energised. the oil flow path is free E to U and visa versa. When the solenoid is energised, the flow is stopped from E to U and is free U to E.

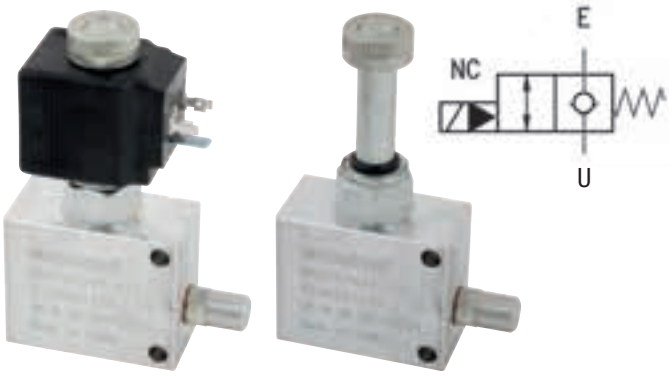


2-Way Normally Open

Series VE/B

Code	Port Size	Maximum Inlet Flow L/min	Coil Type	£
1720011101	1/4"	20	BE	**97.65**
1720021106	3/8"	40	BE	**100.80**
1720031103	1/2"	60	BT	**154.22**
1720041105	3/4"	75	BT	**164.90**

When the NC (normally closed) valve is de-energised. the oil flow path is blocked from E to U. When the solenoid is energised, the flow is free from E to U and U to E.



2-Way Normally Closed

Series VE/B

Code	Port Size	Maximum Inlet Flow L/min	Coil Type	£
1720011100	1/4"	20	BE	**97.65**
1720021105	3/8"	40	BE	**97.68**
1720031102	1/2"	60	BT	**154.22**
1720041104	3/4"	75	BT	**164.90**

Coils

To Suit Normally Open/Normally Closed

Code	Voltage	Coil Type	£
4SL1000120	12V	BE	**12.65**
4SL1000240	24V	BE	**12.65**
4SL3000120	12V	BT	**14.29**
4SL3000240	24V	BT	**14.29**

Technical Support

- Team of experienced engineers
- Advice on product configuration

Diverter Valves

HTL is the sole official UK agent and an accredited Walvoil Master Distributor.

We have worked together for over 40 years.

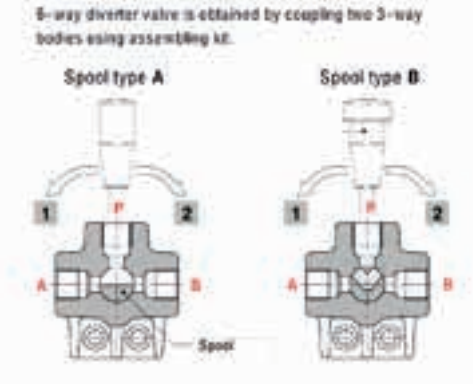
HTL maintains stock of 1,500 Walvoil part numbers and 30,000 units.

The products included here are all available ex stock. In instances where a specification needs to be built, delivery should be within 2-3 days.

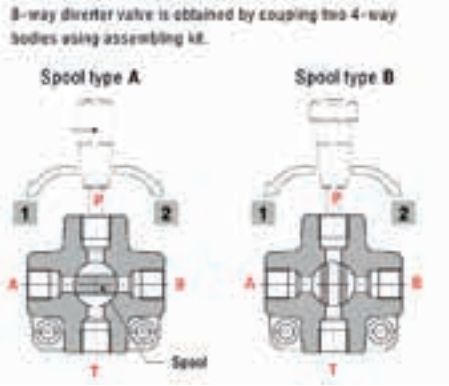
Rotary Spool Diverter

- Manual rotary spool
- 3 and 4 way
- Can be coupled to create 6 and 8 way
- Flows up to 280 LPM

3 Way & 6 Way



4 Way & 8 Way



Rotary

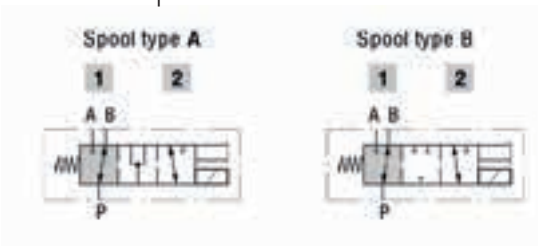
Series DH

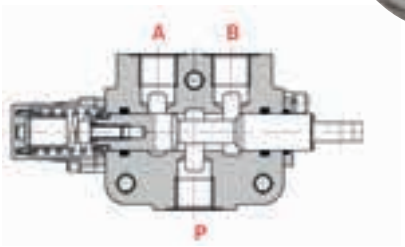
Code	Model Number	Port Size	Ports	Flow Rate L/min	Maximum Pressure bar	£
132031110	DH5/3A	3/8"	3-Way	60	315	**49.14**
132041110	DH5/4A	3/8"	4-Way	60	315	**67.56**
132061110	DH5/6A	3/8"	6-Way	60	315	**99.79**
134031110	DH10/3A	1/2"	3-Way	90	315	**58.36**
134041110	DH10/4A	1/2"	4-Way	90	315	**85.98**
134061110	DH10/6A	1/2"	6-Way	90	315	**122.91**
136031110	DH20/3A	3/4"	3-Way	140	315	**79.89**
136041110	DH20/4A	3/4"	4-Way	140	315	**118.32**
136061110	DH20/6A	3/4"	6-Way	140	315	**176.55**

Characteristics & Working Conditions				
		DH5	**DH10**	**DH20**
Available Ways		3-4-6-8	3-4-6-8	3-4-6-8
Nominal Flow Rate L/min		60	90	140
Maximum Operating Pressure		315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi
Hydraulic Fluid		Mineral-based oil		
Fluid Temperature	With NBR seals	From -20°C to +80°C		
	With FPM seals	From -20°C to +100°C		
Internal Leakage A(B) – T at 100 bar	Δp = 100 bar, 1450 psi, with fluid & valve at +40°C	3cm³/min 0.18in³/min	3cm³/min 0.18in³/min	3cm³/min 0.18in³/min
Filtration		ISO4406/class 19/16		
Viscosity	Operating range	From 15 to 75mm²/s – from 15 to 75 cSt		
	Minimum	12mm²/s – 12 cSt		
	Maximum	400mm²/s – 400 cSt		
Maximum Level of Contamination		-/19/16 – ISO 4406		
Ambient Temperature for Working Conditions		From -40°C to 60°C		

Spool Diverter

- Manual spool
- 2, 3 and 6 way
- Lever, pneumatic, hydraulic cam and on/off electro-hydraulic controls
- Open and closed spool transits
- Flows up to 220 LPM





Manual

Series DF

Code	Model Number	Port Size	Ports	Flow Rate L/min	Maximum Pressure bar	Transit	Control	£
122052040	DF5/3A/12L	3/8"	3-Way	60	315	Open	Detent	**97.24**
122054040	DF5/3A/17L	3/8"	3-Way	60	315	Open	Spring to 1	**90.86**
122074040	DF5/3B/17L	3/8"	3-Way	60	315	Closed	Spring to 1	**90.86**
122082040	DF5/6A/12L	3/8"	6-Way	60	315	Open	Detent	**114.77**
122084040	DF5/6A/17L	3/8"	6-Way	60	315	Open	Spring to 1	**108.42**
124052040	DF10/3A/12L	1/2"	3-Way	90	315	Open	Detent	**134.78**
124054040	DF10/3A/17L	1/2"	3-Way	90	315	Open	Spring to 1	**122.02**
124082040	DF10/6A/12L	1/2"	6-Way	90	315	Open	Detent	**156.97**
124084040	DF10/6A/17L	1/2"	6-Way	90	315	Open	Spring to 1	**144.20**
126052040	DF20/3A/12L	3/4"	3-Way	140	315	Open	Detent	**192.70**
126054040	DF20/3A/17L	3/4"	3-Way	140	315	Open	Spring to 1	**178.39**
126082040	DF20/6A/12L	3/4"	6-Way	140	315	Open	Detent	**219.84**
126084040	DF20/6A/17L	3/4"	6-Way	140	315	Open	Spring to 1	**203.67**
127052040	DF25/3A/12L	1"	3-Way	200	250	Open	Detent	**288.40**
127054040	DF25/3A/17L	1"	3-Way	200	250	Open	Spring to 1	**264.36**

Handlevers

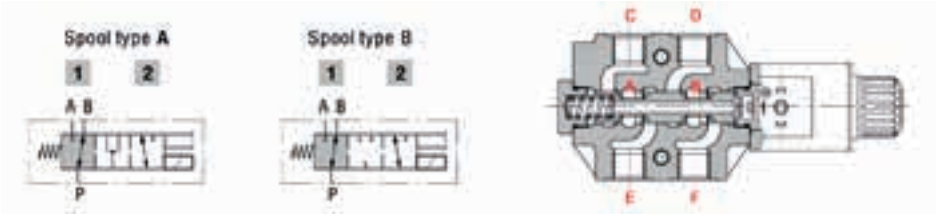
To suit DF5 – DF25

Code	To Suit	Size	£
170011012	DF5	M8 x 120mm	**3.46**
170012020	DF10	M10 x 200mm	**3.46**
170013025	DF20 / DF25	M12 x 250mm	**5.13**

Characteristics & Working Conditions					
		DF5	**DF10**	**DF20**	**DF25**
Available Ways		2-3-6	2-3-6	2-3-6	3
Nominal Flow Rate L/min		60	90	140	280
Max. Operating Pressure		315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi
Hydraulic Fluid		Mineral-based oil			
Internal Leakage A(B) – T	Δp = 100 bar, 1450 psi, with fluid & valve at +40°C	5cm³/min 0.31in³/min	5cm³/min 0.31in³/min	8cm³/min 0.49in³/min	8cm³/min 0.49in³/min
Fluid Temperature	With NBR seals	From -20°C to +80°C			
	With FPM seals	From -20°C to +100°C			
Viscosity	Operating range	From 15 to 75mm²/s – from 15 to 75 cSt			
	Minimum	12mm²/s – 12 cSt			
	Maximum	400mm²/s – 400 cSt			
Maximum Level of Contamination		-/19/16 – ISO 4406			
Ambient Temperature for Working Conditions	With mechanical control	From -40°C to +60°C			
	With hydraulic & pneumatic controls	From -30°C to +60°C			
	With electric controls	From -20°C to +50°C			

Solenoid Diverter Valves

- Solenoid operated
- Monoblock
- 2, 3, 6 and 8 way
- 12 and 24V DC
- Open and closed spool transits
- Flows up to 120 LPM



Solenoid

Series DFE

Code	Model Number	Port Size	Ports	Flow Rate L/min	Transit	Voltage ES	£
12A240020	DFE052/3A18ES-12	3/8"	3-Way	60	Open	12V DC	**140.30**
12A240040	DFE052/3A18ES-24	3/8"	3-Way	60	Open	24V DC	**140.30**
12A270033	DFE052/6A18ES-12	3/8"	6-Way	60	Open	12V DC	**149.72**
12A270026	DFE052/6B18ES-12	3/8"	6-Way	60	Closed	12V DC	**149.99**
12A270023	DFE052/6A18ES-24	3/8"	6-Way	60	Open	24V DC	**149.99**
12A270031	DFE052/6B18ES-24	3/8"	6-Way	60	Closed	24V DC	**149.99**
12A440013	DFE10/3A18ES-12	1/2"	3-Way	90	Open	12V DC	**191.75**
12A440025	DFE10/3A18ES-24	1/2"	3-Way	90	Open	24V DC	**191.75**
12A470013	DFE10/6A18ES-12	1/2"	6-Way	90	Open	12V DC	**215.80**
12A480013	DFE10/6B18ES-12	1/2"	6-Way	90	Closed	12V DC	**215.80**
12A470025	DFE10/6A18ES-24	1/2"	6-Way	90	Open	24V DC	**215.80**
12A640014	DFE20/3A18ES-12	3/4"	3-Way	140	Open	12V DC	**253.34**
12A640026	DFE20/3A18ES-24	3/4"	3-Way	140	Open	24V DC	**253.34**
12A670014	DFE20/6A18ES-12	3/4"	6-Way	140	Open	12V DC	**285.17**
12A670026	DFE20/6A18ES-24	3/4"	6-Way	140	Open	24V DC	**285.17**

Hirschmann Connector

DIN4360 ISO4400

Code	£
V86050002	**2.51**

Drain Connector

To Suit DFE052, DFE10 & DFE20

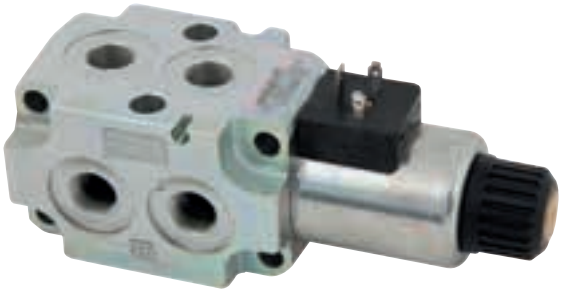
Code	To Suit	£
5GIU001	DFE052	**10.09**
5GIU004	DFE010	**11.73**
5GIU007	DFE020	**13.41**

Characteristics & Working Conditions				
		DFE052	**DFE10**	**DFE20**
Available ways		2-3-6-8	3-6	3-6
Nominal Flow Rate L/min	In steady conditions	60	90	140
Port Size		3/8"	1/2"	3/4"
Maximum Operating Pressure	Without drain	200 bar, 2900 psi		
	With drain	315 bar, 4600 psi		
*Solenoid will not operate at simultaneous maximum flow and maximum pressure				
Available Nominal Voltage	V DC	12-24 48-110	12-24-48	12-24
	V AC 50Hz (with C04 connector)	24-110-220	110-220	24-110-220
Nominal Power	W	38	60	60
Hydraulic Fluid		Mineral-based oil		
Internal Leakage A(B) – T at 100 bar	Δp = 100 bar, 1450 psi, with fluid & valve at +40°C	7cm³/min 0.43in³/min	10cm³/min 0.61in³/min	15cm³/min 0.92in³/min
Fluid Temperature	With NBR seals	From -20°C to +80°C		
	With FPM seals	From -20°C to +100°C		
Viscosity	Operating range	From 15mm²/s – from 15 to 75 cSt		
	Minimum	12mm²/s – 12 cSt		
	Maximum	400mm²/s – 400 cSt		
Maximum Level of Contamination		-/19/16 – ISO 4406		
Ambient Temperature for Working Conditions		From -20°C to +50°C		

Sectional Solenoid Diverter Valves

walvoil HYDRAULIC CONTROL SYSTEMS

- Solenoid operated
- Sectional
- 6 way
- Combine to create 8 and 10 way
- 12 and 24V DC
- Open and closed spool transits
- Flows up to 80 LPM



Solenoid

Series DFE

Code	Model Number	Port Size	Ports	Flow Rate L/min	Transit	Voltage ES	£
12F060001	DFE080/6A18ES-12	3/8"	6-Way	25	Open	12V DC	**160.31**
12G060010	DFE100/6A18ES-12	1/2"	6-Way	50	Open	12V DC	**170.74**
12C060009	DFE140/6A18ES-12	3/4"	6-Way	80	Open	12V DC	**234.20**

Hirschmann Connector

DIN4360 ISO4400

Code	£
V86050002	**2.51**

Drain Connector

To Suit DFE080, DFE100 & DFE140

Code	To Suit	£
5GIU016	DFE080	**11.73**
5GIU013	DFE100	**10.09**
5GIU010	DFE140	**12.79**

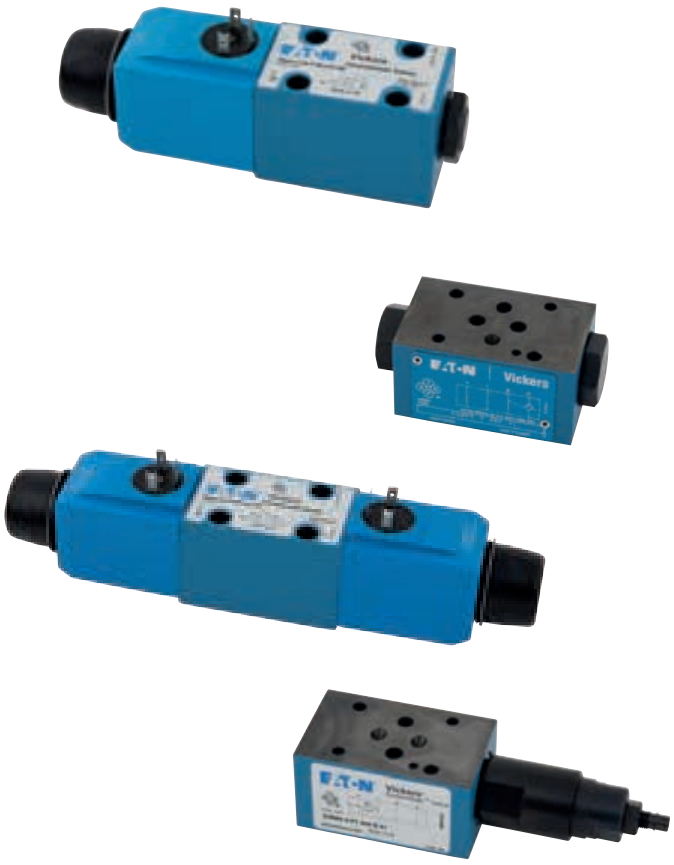
Characteristics & Working Conditions				
		DFE080	**DFE100**	**DFE140**
Available ways		6 - 8 - 10	6 - 8 - 10	6 - 8 - 10
Nominal Flow Rate L/min	In steady conditions	25	50	80
Port Size		3/8"	1/2"	3/4"
Maximum Operating Pressure	Without drain	200 bar, 2900 psi		
	With drain	315 bar, 4600 psi		
*Solenoid will not operate at simultaneous maximum flow and maximum pressure				
Available Nominal Voltage	V DC	12-24	12-24	12-24
	V AC 50Hz (with C04 connector)	24-110-220	24-110-220	24-110-220
Nominal Power	W	38	60	60
Hydraulic Fluid		Mineral-based oil		
Internal Leakage A(B) – T at 100 bar	Δp = 100 bar, 1450 psi, with fluid & valve at +40°C	7cm³/min 0.43in³/min	10cm³/min 0.61in³/min	10cm³/min 0.61in³/min
Tie Rods Tightening Torque		9.8 Nm 7.2 lbft	18 Nm 13.3 lbft	25 Nm 18.4 lbft
Fluid Temperature	With NBR seals	From -20°C to 80°C		
	With FPM seals	From -20°C to 100°C		
Viscosity	Operating Range	From 15 to 75mm²/s – from 15 to 75 cSt		
	Minimum	12mm²/s – 12 cSt		
	Maximum	400mm²/s – 400 cSt		
Maximum level of contamination		-/19/16 – ISO 4406		
Ambient Temperature for Working Conditions		from -20°C to +50°C		

Bespoke products configured to suit customers' requirements

- Experienced technical team advising customers on the best valve configurations to minimise cost and maximise efficiencies
- Bespoke valve assemblies are designed to customer requirements, providing ease of installation, from simple coil changes to complex multi-block valve systems
- Modular power units are constructed and tested to specification
- Skilled engineers configure products to meet customers' requirements

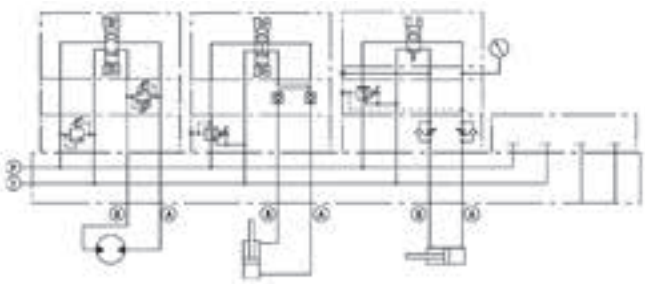
Technical advice
Minimise costs

Cetop 3 & SystemStak Valves



SystemStak valves make compact hydraulic systems in which specific function valves are 'sandwich' mounted between a directional valve and a standard mounting surface.

This eliminates inter-valve piping and leak-prone tube and pipe connections. Installed cost is less than when using conventional valves.



Cetop 3

Solenoid operated directional control valves are for directing and stopping flow at any point in a hydraulic system.

- Efficient control of greater hydraulic powers without increasing solenoid power consumption.
- Installed cost and space savings from higher power/weight-and-size ratios.
- Installation flexibility resulting from choice of numerous combinations of solenoid connectors and locations.

Single Solenoid

2 Position, Spring Return

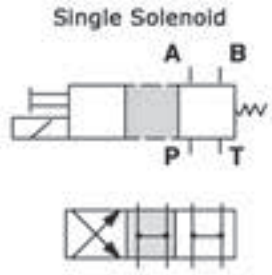
Code	Manufacturer Number	Voltage	£
869959	DG4V 3 2A H M U G7 60	12V DC	**109.71**
870221	DG4V 3 2A H M U H7 60	24V DC	**109.71**
871358	DG4V 3 2A H M U B6 60	110/120V 50/60Hz	**109.71**
869951	DG4V 3 0B H M U G7 60	12V DC	**158.14**
870804	DG4V 3 0B H M U H7 60	24V DC	**158.14**
02-333103	DG4V 3 0B H M U B6 60	110/120V 50/60Hz	**157.08**

Double Solenoid

3 Position, All Ports Open, Spring Centred, Water-resistant Override

Code	Manufacturer Number	Voltage	£
870518	DG4V 3 0C H M U G7 60	12V DC	**122.58**
869960	DG4V 3 0C H M U H7 60	24V DC	**122.58**
869952	DG4V 3 6C H M U G7 60	12V DC	**122.58**
869953	DG4V 3 6C H M U H7 60	24V DC	**124.52**
02-146111	DG4V 3 6C H M U B6 60	110/120V 50/60Hz	**124.52**
870378	DG4V 3 2C H M U G7 60	12V DC	**122.58**
870177	DG4V 3 2C H M U H7 60	24V DC	**122.58**
02-110345	DG4V 3 2C H M U B6 60	110/120V 50/60Hz	**122.58**
02-144940	DG4V 3 8C H VM U G7 61	12V DC	**141.24**
02-309716	DG4V 3 8C H VM U H7 61	24V DC	**141.24**

OB



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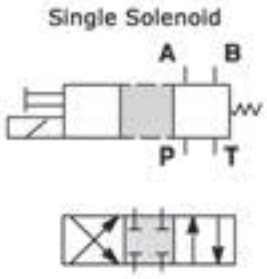

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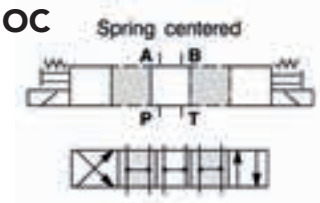

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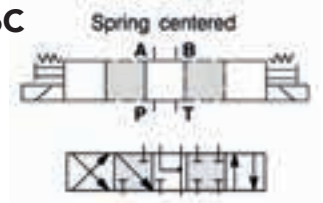

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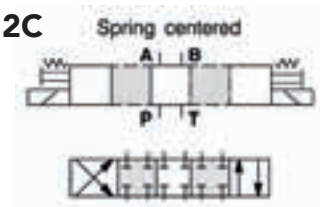

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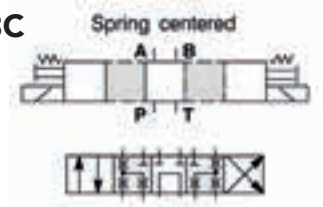


Cetop 3 SystemStak Valves

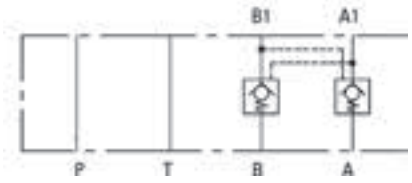
These valves provide pilot operated check functions in one or both service lines (A or B), the operating pilot supply coming from the opposite service line. Thus, with pressure in one service line the check valve in the other service line will be open (subject to system/actuator pressures being correct for the valve area ratios). A 3:1 area ratio of pilot piston to check valve seat is supplemented by an optional 10:1 decompression feature.

Pilot Operated Check Valves

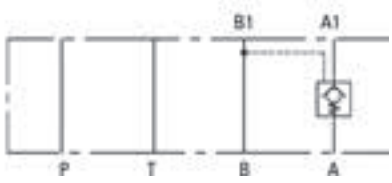
Series DGMPC

Code	Manufacturer Number	Flow Rate L/min	Maximum Pressure bar	Description	£
694400	DGMPC 3 ABK BAK 41	60	315	Dual PO Check	**160.06**
870024	DGMPC 3 ABK 41	60	315	A Piloted from B	**149.25**
870023	DGMPC 3 BAK 41	60	315	B Piloted from A	**149.25**

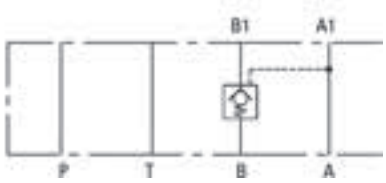
DGMPC-3-(D)AB*-(D)BA*



DGMPC-3-(D)AB*



DGMPC-3-(D)BA*



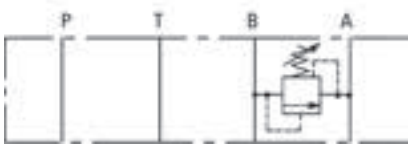
These two-stage adjustable pressure relief valves limit the maximum pressure in the line(s) controlled by the integral relief valve elements. Pressure adjustment options of control knob (with or without key lock) or screw/locknut design are available. The two-stage operation is basically identical to long-established balanced piston valves, described in detail in Eaton Industrial hydraulics manual.

Pressure Relief

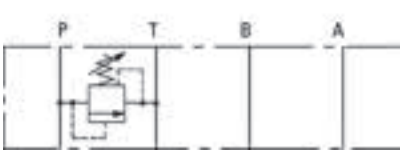
Series DGMC

Code	Manufacturer Number	Flow Rate L/min	Maximum Pressure bar	Description	£
870235	DGMC 3 PTG WB 41	60	315	P to T 50-315 bar	**163.76**
02-147185	DGMC 3 ABG WB 41	60	315	A to B 50-315 bar	**163.76**
871708	DGMC 2 3 ABG WB AG W 41	60	315	Dual Crossline 50-315 bar	**257.89**

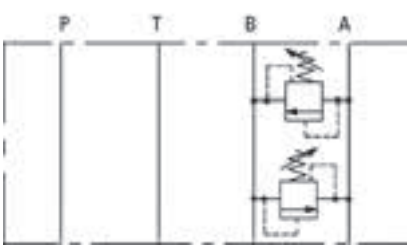
DGMC-3-BA-41



DGMC-3-PT-41



DGMC2-3-AB-**-BA-41



Cetop 3 SystemStack Valves

These valves regulate flow by means of an adjustable orifice which is not pressure compensated, and flow through the valve is entirely dependent upon pressure drop at any particular setting of the orifice. Dual service-line models with an integral non-return valve around each control orifice provide for meter-in or meter-out control.

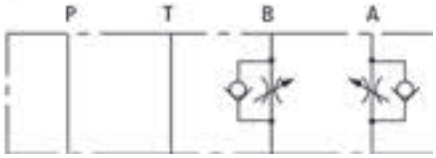
For flow restriction in P or T lines (where reverse free flow is not required) models without check valves are available. Adjustment options are either screw/locknut or hand knob.

Flow Control Valve

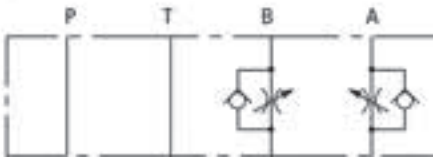
Series DGMFN

Code	Manufacturer Number	Flow Rate L/min	Maximum Pressure bar	Description	£
694414	DGMFN 3 X A2W B2W 41	60	315	Dual Flow Control, Meter In	**126.41**
694412	DGMFN 3 Y A2W B2W 41	60	315	Dual Flow Control, Out	**126.41**

DGMFN-3-X-A**-B**



DGMFN-3-Y-A**-B**



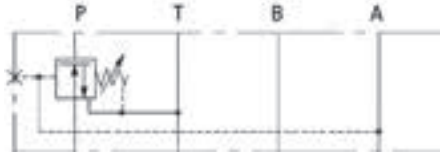
These single-stage valves operate by the application of pressure on the end of the valve spool, acting against a spring which is loaded by means of the adjustment mechanism. In the counterbalance and sequence valves, the spool is offset by the spring such that flow cannot pass through the valve. When the force exerted by the pilot pressure on the spool end exceeds the force of the main spring, the spool is moved to allow flow through the valve. In the pressure reducing valve, the flow path is normally open and is closed as the pilot pressure exceeds the setting of the valve. Excessive pressure in the reduced-pressure line is prevented by a pressure relieving function. Pressure adjustment options of control knob (with or without key lock) or screw/locknut design are available.

Pressure Reducing Valve

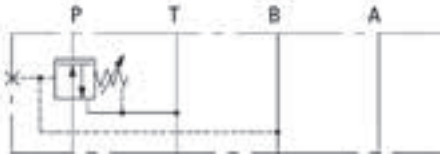
Series DGMX

Code	Manufacturer Number	Flow Rate L/min	Maximum Pressure bar	Description	£
870033	DGMX2 3 PA FW B 40	60	315	Reduce in P from A 20-250 bar	**214.15**
870179	DGMX2 3 PB FW B 40	60	315	Reduce in P from B 20-250 bar	**214.15**
870038	DGMX2 3 PP FW B 40	60	315	Reduce in P from P 20-250 bar	**214.15**

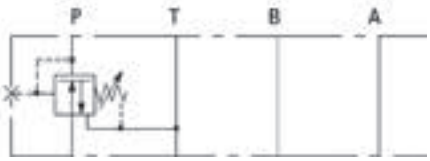
DGMX*-3-PA



DGMX*-3-PB



DGMX*-3-PP



Cetop 3 Accessories

Maximum working pressure:
345 bar

Steel Manifold

Ports: P & T 1/2", A & B 3/8" BSPP

Code	Number of Stations	£
CM3-1G	1	36.93
CM3-2G	2	60.35
CM3-3G	3	90.52
CM3-4G	4	120.75
CM3-5G	5	150.87
CM3-6G	6	181.04

Maximum working pressure:
345 bar

Steel Manifold with Pressure Relief

Ports: P & T 1/2", A & B 3/8" BSPP

Code	Number of Stations	£
CM3-1G-ADJ	1	108.85
CM3-2G-ADJ	2	125.83
CM3-3G-ADJ	3	159.90
CM3-4G-ADJ	4	187.05
CM3-5G-ADJ	5	214.30
CM3-6G-ADJ	6	241.44

Maximum Working Pressure:
207 bar

Aluminium Manifold

Ports: P & T 1/2", A & B 3/8" BSPP

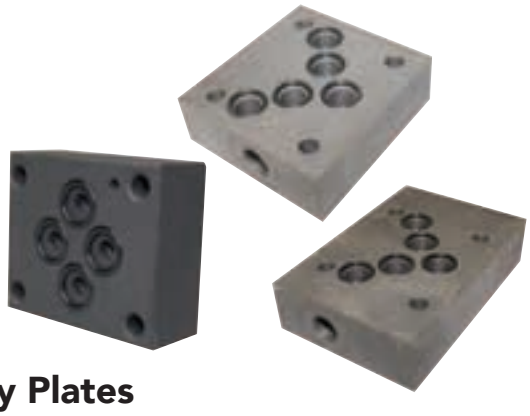
Code	Number of Stations	£
CM3-1G/ALU	1	40.29
CM3-2G/ALU	2	67.16
CM3-3G/ALU	3	100.58
CM3-4G/ALU	4	134.11
CM3-5G/ALU	5	167.69
CM3-6G/ALU	6	201.11

Maximum working pressure:
345 bar

Side Entry Subplate

BSPP

Code	Thread BSPP	£
CSP-03	3/8"	16.82



Auxiliary Plates

Blanking, Cross Over & Tapping

Code	Type	£
CBP-03	Blanking Plate	10.11
CCOP-PA-03	Cross Over Plate P-A	11.79
CCOP-PB-03	Cross Over Plate P-B	13.47
CTP-AB-03	Tapping Plate A & B	26.93
CTP-PT-03	Tapping Plate P & T	30.23

Bolt Kits

To Suit Cetop 3

Code	Size	Number of Valves in Stack	£
BKC3M5030	M5 x 30mm	1	1.93
BKC3M5070	M5 x 70mm	2	2.31
BKC3M5110	M5 x 110mm	3	2.69
BKC3M5150	M5 x 150mm	4	3.47

Hirschmann Connector

DIN4360 ISO4400

Code	Colour	£
V86050002	Black	2.51
V86050004	Grey	2.51

In-house testing providing reassurance to customers

- In-house fixed bed test rig
- Up to 200 bar pressure and adjustable flow rate from 0-30 l/min
- Components testing includes valves, manifolds, cylinders and hydraulic motors

Peace of Mind

Hydraulic Accessories

HTL is the sole UK agent for this quality range of accessories from Italian manufacturer Miselli.

With over 35 years of experience, Miselli has developed their range to offer reliable performance in many diverse applications.

Using transparent polyamide Trogamid T, thermoplastic polyamide 66, brass and aluminium, the materials have been carefully selected across the full range of level gauges, plugs, breathers and dipsticks.

Please visit our website to obtain a full Miselli catalogue.

Level Gauges

76mm size indicates fixing hole centres – overall length 100mm.

127mm – overall length 150mm.

254mm – overall length 286mm.

Fixing bolts are M10 or M12 as indicated.

Thermometer scale: 0°C to +100°C (+50°F to +200°F).

Maximum temperature: +100°C.

Maximum pressure: 2 bar.

Vertical

Series SLV

Code	Centres mm	Thread	Maximum Temperature	Max. Pressure bar	£
SLV76XM10	76	M10	+100°C	2	17.28
SLV127XM12	127	M12	+100°C	2	21.34

Vertical with Thermometer

Series SLV

Code	Centres mm	Thread	Maximum Temperature	Max. Pressure bar	£
SLVT76XM10	76	M10	+100°C	2	21.41
SLT127XM12	127	M12	+100°C	2	23.36

Vertical with Protective Metal Cover

Series XL

Code	Centres mm	Thread	Maximum Temperature	Max. Pressure bar	£
XL03/M10	76	M10	+100°C	2	20.75
XL05/M12	127	M12	+100°C	2	26.09

Vertical with Protective Metal Cover & Thermometer

Series XL/T

Code	Centres mm	Thread	Maximum Temperature	Max. Pressure bar	£
XL03/T/M10	76	M10	+100°C	2	23.36
XL05T/M12	127	M12	+100°C	2	27.25
XL10T/M12	254	M12	+100°C	2	58.40

Oil Fill Plugs

Hex threaded oil fill plugs in thermoplastic material (polyamide 66) ensuring high mechanical resistance at both low and high temperatures.

Maximum operating temperature: +100°C.

Hex Head Plastic

Series TCN

Code	Thread Size BSP	£
TCN-14	1/4"	0.70
TCN-38	3/8"	0.74
TCN-12	1/2"	0.90
TCN-34	3/4"	1.21
TCN-1	1"	1.68
TCN-114	1.1/4"	2.49

With Breather & Anti-splash Disc

Series TCSA

Code	Thread Size BSP	£
TCSA-14	1/4"	1.95
TCSA-38	3/8"	1.95
TCSA-12	1/2"	2.02
TCSA-34	3/4"	2.73
TCSA-1	1"	3.19
TCSA-114	1.1/4"	4.28

Sight Glasses

Dome shaped transparent level glasses, enabling oil level to be read from any angle.

Made from polyamide which provides good mechanical resistance and is impervious to mineral oil, gasoline, lubricants, petroleum, solvents and most chemical agents.

Avoid contact with alcohol-based solutions, antifreeze liquids at high temperatures and hot water over +80°C.

Fibre gasket (optional NBR flat seal available on request).

Dome Shaped Level

Series LSB

Code	Thread Size BSP	£
LSB-38	3/8"	1.63
LSB-12	1/2"	1.87
LSB-34	3/4"	2.34
LSB-1	1"	3.12

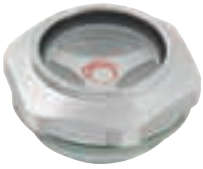
Threaded hex-head indicators manufactured from aluminium.

Made from polyamide which provides good mechanical resistance and is impervious to mineral oil, gasoline, lubricants, petroleum, solvents and most chemical agents.

Avoid contact with alcohol-based solutions, antifreeze liquids at high temperatures and hot water over +80°C.

Standard version maximum pressure: 10 bar.

High pressure version maximum pressure: 20 bar.



Aluminium Level

Series SM

Code	Thread Size BSP	Type	£
SM-14	1/4"	Standard	3.16
SM-38	3/8"	Standard	3.77
SM-12	1/2"	Standard	4.99
SM-34	3/4"	Standard	6.50
SM-1	1"	Standard	13.12
SM-114	1.1/4"	Standard	17.79
SM-12/HP	1/2"	High Pressure	10.36
SM-34/HP	3/4"	High Pressure	13.12
SM-1/HP	1"	High Pressure	22.97

The Miselli SLNT are hex head threaded oil level indicators, utilised in oil tanks, gearboxes and general machinery.

Made from high density transparent polyamide resin. Flat sight glass with centre dot and contrast screen.

With Contrast Screen

Series SLNT

Code	Thread Size BSP	£
SLNT-38	3/8"	2.14
SLNT-12	1/2"	2.38
SLNT-34	3/4"	2.92
SLNT-1	1"	3.70
SLNT-114	1.1/4"	5.41
SLNT-112	1.1/2"	6.97
SLNT-2	2"	9.30

Drain & Filler Plugs

Hex plug with magnet.

Thermoplastic material (polyamide 66) ensuring high mechanical resistance at both low and high temperatures.

The plug is fitted to the bottom of the transmission or tank to be used as a drain plug; the magnet attracts ferrous metal parts, preventing damage to gears and other moving parts.

Maximum operating temperature: +100°C

Plastic with Magnet

Series TM

Code	Thread Size BSP	£
TM-14	1/4"	2.65
TM-38	3/8"	3.46
TM-12	1/2"	3.97
TM-34	3/4"	5.30
TM-1	1"	6.89

Hex plugs manufactured from aluminium, complete with FASIT 202 fibre gasket (aluminium washer also available).

This plug is equipped with a pressed-in cylindrical magnet located at the base of the plug.

These plugs are fitted to the bottom of the reservoir or tank and will collect ferrous particles that are floating in the oil, helping to protect pumps, valves and cylinders.

Aluminium with Magnet

Series TMA

Code	Thread Size BSP	£
TMA-14	1/4"	3.31
TMA-38	3/8"	3.50
TMA-12	1/2"	4.67
TMA-34	3/4"	6.42
TMA-1	1"	9.73

Brass plugs with two breather holes located under the hex head providing adequate airflow capacity. KMF is equipped with a metal filter inside (filtration: 200 microns) to avoid pollution of the oil.

Brass with 50 Micron Filter

Series KMF

Code	Thread Size BSP	£
KMF-14	1/4"	4.09
KMF-38	3/8"	5.45
KMF-12	1/2"	6.62

Brass plugs with two breather holes located under the hex head providing adequate airflow capacity.

KMV is used when venting of the reservoir is required in case of over-pressurisation. The pre-tensioned spring will allow the valve disc to be lifted from its seat at a pressure of 0.20 to 0.25 bar (3 to 3.6 psi) allowing the air to escape.

When the pressure is reduced after venting, the valve will close and stop air entering the reservoir and also prevent oil overflow through the plug's valve due to oil movement whilst in the closed position.

Brass with 50 Micron Filter & 0.4 bar Vent Valve

Series KMV

Code	Thread Size BSP	£
KMV-14	1/4"	4.67
KMV-38	3/8"	5.65
KMV-12	1/2"	6.77

Hex threaded oil fill plugs with dipstick, made from thermoplastic material (polyamide 66) ensuring high mechanical resistance at both low and high temperatures.

Maximum operating temperature: +100°C.

Hex Head with 200mm Dipstick

Series TCA

Code	Thread Size BSP	£
TCA-14	1/4"	1.90
TCA-38	3/8"	1.90
TCA-12	1/2"	2.14
TCA-34	3/4"	2.53
TCA-1	1"	3.12
TCA-114	1.1/4"	4.28

Hex threaded oil fill plugs with dipstick, made from thermoplastic material (polyamide 66) ensuring high mechanical resistance at both low and high temperatures

Maximum operating temperature: 100°C.

The TCAS model has a breathr hole located on the side of the hex with a diameter from 2 to 3.5mm depending on the size of the plug.

Hex Head with 200mm Dipstick & Breather Hole

Series TCAS

Code	Thread Size BSP	£
TCAS-14	1/4"	1.90
TCAS-38	3/8"	1.95
TCAS-12	1/2"	2.14
TCAS-34	3/4"	2.65
TCAS-1	1"	3.31
TCAS-114	1.1/4"	4.67

Filler Breather Caps

The TSF range has a specially designed cavity to prevent oil escaping through the breather holes when splashed in an upward direction due to rotating gears. The conical cavity inside the TSF traps oil but allows air to escape.

With 40 Micron Filter

Series TSF

Code	Thread Size BSP	£
TSF-14	1/4"	2.49
TSF-38	3/8"	2.53
TSF-12	1/2"	2.61

Threaded filler breathers, cylinder head with easy grip vertical ribs. Manufactured from thermoplastic material (polyamide 66).

Maximum operating temperature: +100°C (+212°F).

The check valve will open when a pressure is reached of 0.25 bar and will close/reset at similar pressure.

With Check Valve, 40 Micron Filter & 200mm Dipstick

Series TSAV

Code	Thread Size BSP	£
TSAV-14	1/4"	4.87
TSAV-38	3/8"	4.87
TSAV-12	1/2"	4.91

Female threaded filler breather caps.

Produced from polyamide 66, this cap offers high mechanical resistance at both high and low temperatures (maximum: +100°C).

Note: TFA2 comes complete with 200mm dipstick.

With 40 Micron Filter

Series TF

Code	Thread Size BSP	£
TF2-OIL	2"	7.55
TFA2	2"	9.30

Cylindrical filler breather with easy grip vertical ribs.

The standard filler breather is produced from thermoplastic material, and features excellent dimensional stability whilst shock proof.

They offer high mechanical resistance at both low and high temperatures.

Working temperature: +100°C (+212°F)

With One Way Vent

Series TMDV

Code	Thread Size BSP	£
TMDV-38	3/8"	4.28
TMDV-12	1/2"	4.40
TMDV-34	3/4"	4.79
TMDV-1	1"	5.65
TMDV-114	1.1/4"	6.77

Round-headed filler breather with vertical ribs for better grip (polyamide 66). Standard black and red lid, marked with UNI fill symbol and the word 'OIL', provides air passage at high volume through vents located at the bottom of the head. Recommended for use in systems where a large amount of oil level changes take place in a short amount of time, allowing the air to enter and leave the system without any unwanted air pressure increase or decrease.

Without Filter

Series TMD

Code	Thread Size BSP	£
TMD-38	3/8"	2.38
TMD-12	1/2"	2.68
TMD-34	3/4"	3.12
TMD-1	1"	3.89
TMD-114	1.1/4"	5.02

Filler Breather Caps

Round-headed filler breather with vertical ribs for better grip and a threaded connection.

Manufactured from polyamide 66, ensuring high mechanical resistance in both low and high temperatures.

Maximum working temperature: +100°C (+212°F).

With Filter

Series TMDF

Code	Thread Size BSP	£
TMDF-38	3/8"	2.80
TMDF-12	1/2"	3.19
TMDF-34	3/4"	3.55
TMDF-1	1"	4.40
TMDF-114	1.1/4"	5.57

With 200mm Dipstick & Filter

Series TMDFA

Code	Thread Size BSP	£
TMDFA-38	3/8"	3.82
TMDFA-12	1/2"	4.21
TMDFA-34	3/4"	4.63
TMDFA-1	1"	5.41
TMDFA-114	1.1/4"	6.58

Filler breather with strainer basket for tank-top installation. Top cap with breather (polyamide 66) with an internal head that screws onto the main body located in the tank. The filter contained in the cap is made of 50 micron polyurethane. Complete with safety chain to secure cap to body.

Push Fit with Chain to Cap

Series CTR

Code	Size	£
CTR/C	55mm	25.31

Chrome-plated, steel ventilated cap, polyurethane filter element, 40 microns.

Airflow capacity: 720 litres/minute maximum.
Base: flange mounted with 6 bolts. Cap with bayonet fitting. Standard metal strainer.

Supplied with gasket and M5 fixing bolts.

FSB25BM version comes with rugged cast aluminium housing for side mounting on the tank.

Metal

Series FSB

Code	Mounting	Airflow	£
FSB05	3 x 6mm on 41.3mm PCD	150LPM	15.96
FSB25	6 x 6mm on 71.5mm PCD	720LPM	21.80
FSB25BM	6 x 7mm on 101mm Square	720LPM	22.58

Dipstick

Press-fit dipstick with eye handle, made from zinc-plated round section steel.

Handle produced from thermoplastic material.

Breather hole located on the shoulder of the dipstick handle.

Standard dipstick length is 183mm.

Press-fit with 2 O-Ring Seals

Series AL

Code	Size	£
AL2-12	12mm	2.61
AL2-14	14mm	2.65
AL2-18	18mm	2.73
AL2-20	20mm	2.73

Improving the Reliability of Trains

Challenge

- Replace unreliable wax stat system
- Due to the on/off functionality of this system, it puts a high demand on the various components and therefore reduces its efficiency and reliability. Over time, as the wax degrades, the demands on the cooling system increase due to the variance in the temperature at which the wax melts

Solution

- Innovative electro-hydraulic proportional fan drive system – 'plug and play' solution from Casappa
- Electro-hydraulic proportional fan drive system, consisting of a kit of parts including wiring, hose assemblies, temperature sensors and an electronic fan control system
- Live diagnostics data
- Option to integrate a variable displacement pump at a later date for further energy savings

Benefits

- This system provides improved flexibility with live diagnostics data, available via a laptop, which allows engineers to adjust parameters with ease whilst optimising the efficiency of the cooling system
- 100 cars will benefit from this solution by the end of 2018
- The parts required are supplied in a complete kit, allowing for quick and easy installation and commissioning
- Our team pre-sets the parameters for convenience but these can be easily adjusted if required
- The new system requires reduced pipework and therefore has lower installation costs
- Ultimately a vast increase in the reliability of train journeys, through decreased down time and reduced maintenance requirements

Complete Hydraulic Solutions

Challenge

- We are committed to helping all our customers improve their operations and one such example is our long-term collaborative partnership with SFM. Our account managers for SFM continuously seek new methods and configurations of components to improve their machines
- Help develop bespoke harvesting equipment and innovative energy-efficient machinery

Solution

- Our chief technical engineer recommended the best mix of components to meet the pressures, temperatures and speeds of the machine whilst also giving optimum efficiency savings
- Bespoke kit of hydraulic parts coupled with electrical controls to suit each machine
- Supply of complete solution including: gear pumps, gearboxes, motors, control valves, steering units, steering valves and electronic controls
- Configure bespoke solutions to suit the requirements of each machine using Walvoil flow sharing valves

Benefits

- The Walvoil flow sharing valve provides an easy-to-install solution
- The load-sensing valves ensure that demand for oil is controlled, resulting in improved machine efficiency
- Bespoke design and build services to suit requirement of individual machine requirements

08

Levers, Joysticks & Cable Controls

High quality range of cables, levers & joysticks which have been tested to ensure quality standards are exceeded. The range of components have been extensively used across many applications including off-highway/earth moving machines, agricultural tractors market and automotive.

Our extensive range of cables have a variety of connection options including kook end and ball ends to suit customers' application requirements.

For our customers' convenience a bespoke kit of parts can be ordered and assembled allowing for easy and simply installations.

Cables & Levers

Single linear lever with compact aluminium body, suitable for all kinds of spool valves.
It can be supplied as single lever or groups.

Modular Lever

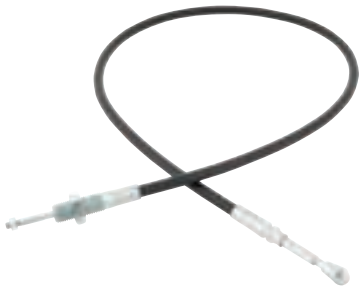
Single

Code	Handle	Description	£
IS-3047	M8 Black x 270mm	Single Lever	36.23
IS-3473	M8 Red x 214mm	Single Lever with Anti Reverse	32.40
IC-3217	M8 Black x 270mm	Handle Only	17.35
IC-3219	M8 Black x 220mm	Handle Only	15.75

Morse Type

Push/Pull (30 Degrees) 228mm Lever

Code	£
IS-3430	39.36



Clevis End

Series IT-3056

Code	Length m	£
IT-3056/00.75	0.75	47.61
IT-3056/01.00	1.00	49.20
IT-3056/01.25	1.25	50.68
IT-3056/01.50	1.50	52.30
IT-3056/02.00	2.00	58.89
IT-3056/03.50	3.50	66.12
IT-3056/04.00	4.00	69.12

Hook End

Series IB-431216

Code	Length m	£
IB-732491/01.50	1.50	41.23
IB-732491/01.75	1.75	44.04
IB-732491/02.00	2.00	46.86
IB-732491/02.50	2.50	52.90
IB-732491/03.00	3.00	58.09
IB-732491/03.50	3.50	63.07

Cable to Valve Connection Kits

Walvoil Valves

Code	Description	£
FK-212059-I	Connection to SDM080, SDM081	10.23
FK-211623-I	Connection to SD4, SD5, SD6	10.49
FK-212094-I	Connection to SD11, SD14, SDS150, DF10	11.44

Full Kitting Service

- Kits of parts delivered for ease of installation

Joysticks

Joystick with zinc alloy die-cast fulcrum and cables with ball ending.
Together with high efficiency cables, it can be used for any type of spool valves.

Standard

Dual Axis Loader

Code	Description	£
ID-3371	Dual Axis Loader Joystick	89.98
IC-3845	2 Switch Handle Only Conversion	93.19
ID-6022	Dual Axis Loader Joystick with 2 Switches	154.44

Ball End Cables

Series IB-431216

Code	Length m	£
IB-431216/01.50	1.50	45.16
IB-431216/01.75	1.75	45.64
IB-431216/02.00	2.00	49.86
IB-431216/02.50	2.50	52.31
IB-431216/03.00	3.00	54.62

Clevis & Clip

Cable

Code	Description	£
IC-496497	M6 Clevis	6.71
IC-496498	Clevis Clip	1.19

Heavy Duty Joysticks

Joystick with steel fulcrum, designed for heavy duty applications.
Together with high efficiency cables, it can be used for any type of spool valves.

Heavy Duty

Dual Axis Loader with Locking Collar

Code	Description	£
ID-3335	Dual Axis Loader Joystick	124.78
ID-3369	Dual Axis Loader Joystick with 2 Switches	194.37

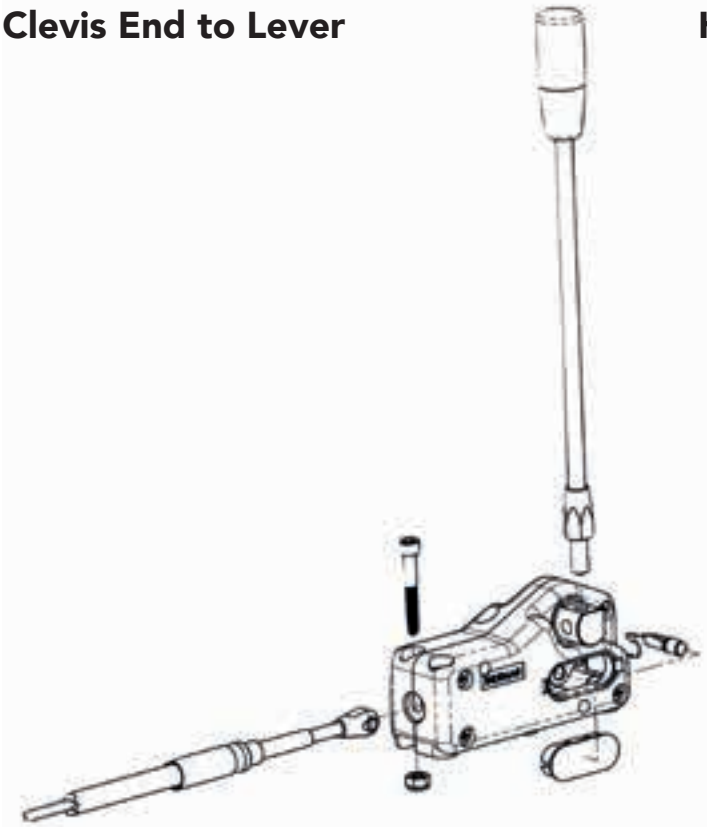
Clevis End

Series IT-3056

Code	Lengths m	£
IT-3056/00.75	0.75	51.49
IT-3056/01.00	1.00	53.21
IT-3056/01.25	1.25	54.81
IT-3056/01.50	1.50	56.56
IT-3056/02.00	2.00	63.69
IT-3056/03.50	3.50	71.51
IT-3056/04.00	4.00	74.75

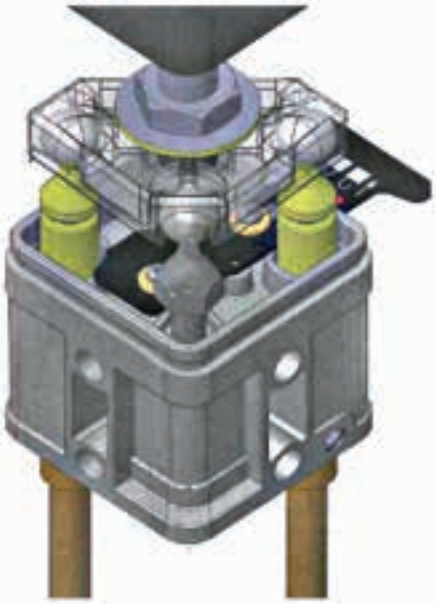
Connection Methods

Clevis End to Lever

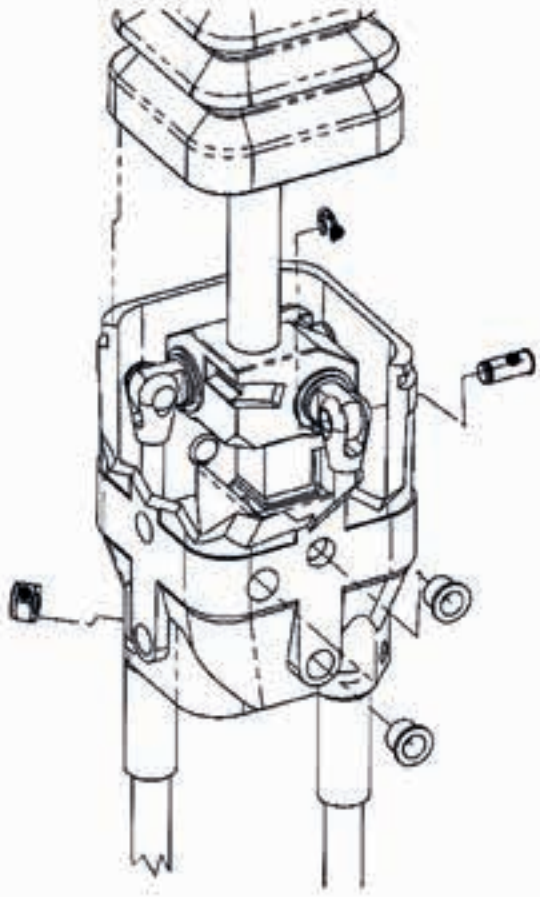


Hook End to Morse Type

Ball End to Joystick



Clevis to Joystick



PTO Gearboxes

Speed increase gearboxes with aluminium and cast iron bodies.

Speed decrease gearboxes in aluminium.

The units listed are from our standard stock range designed for vertical mounting.
If you require a specification that is not listed, please use the model code breakdowns provided to ensure that it is available, and contact our sales office for price and delivery.

Speed Increasing

Speed increase gearbox for Group 2 European pumps.
Male 1-3/8" PTO shaft input.
3:1 ratio.

For Group 2 Pumps

Series ML32, Male

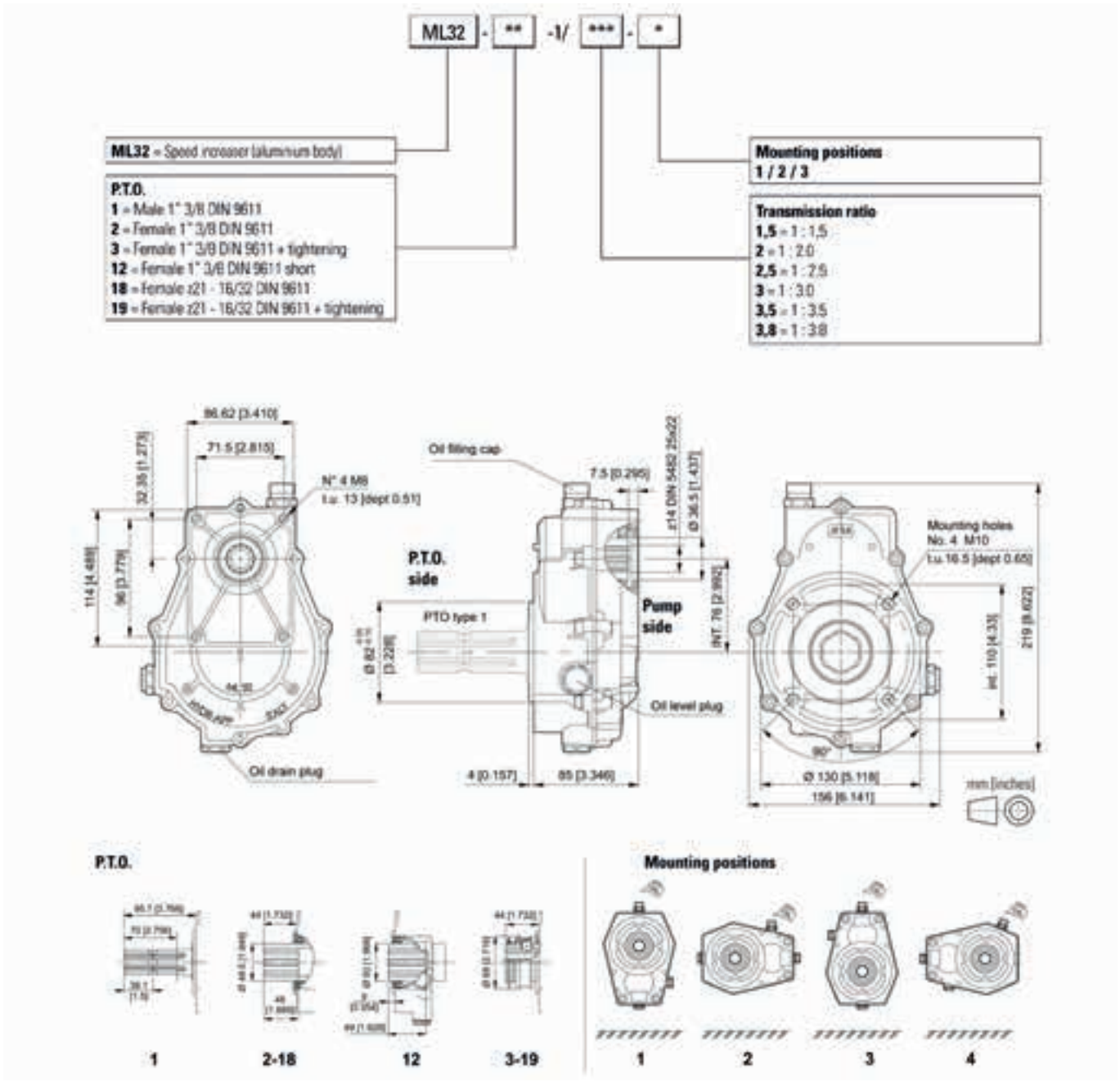
Code	Input Type	Ratio	£
12610005	1 - 3/8" Male Spline Shaft (1)	1:3	**232.52**
12610002	1 - 3/8" Male Spline Shaft (1)	1:3.8	**254.15**

Speed increase gearbox for Group 2 European pumps.
Female quick release 1-3/8" PTO shaft input.
3:1 ratio.

For Group 2 Pumps

Series ML32, Female

Code	Input Type	Ratio	£
12610026	1 - 3/8" Female Quick Release (3)	1:3	**246.58**
12610025	1 - 3/8" Female Quick Release (3)	1:3.5	**258.48**
12610023	1 - 3/8" Female Quick Release (3)	1:3.8	**248.75**



Speed Increasing

For Group 2 & 3 Pumps

Series ML52, Male Spine Shaft

Code	Input Type	Ratio	£
12380003	1 - 3/8"	1:3	297.41
12380001	1 - 3/8"	1:3.8	286.60

For Group 2 & 3 Pumps

Series ML52, Female Spine

Code	Input Type	Ratio	£
12380012	1 - 3/8"	1:2	369.01

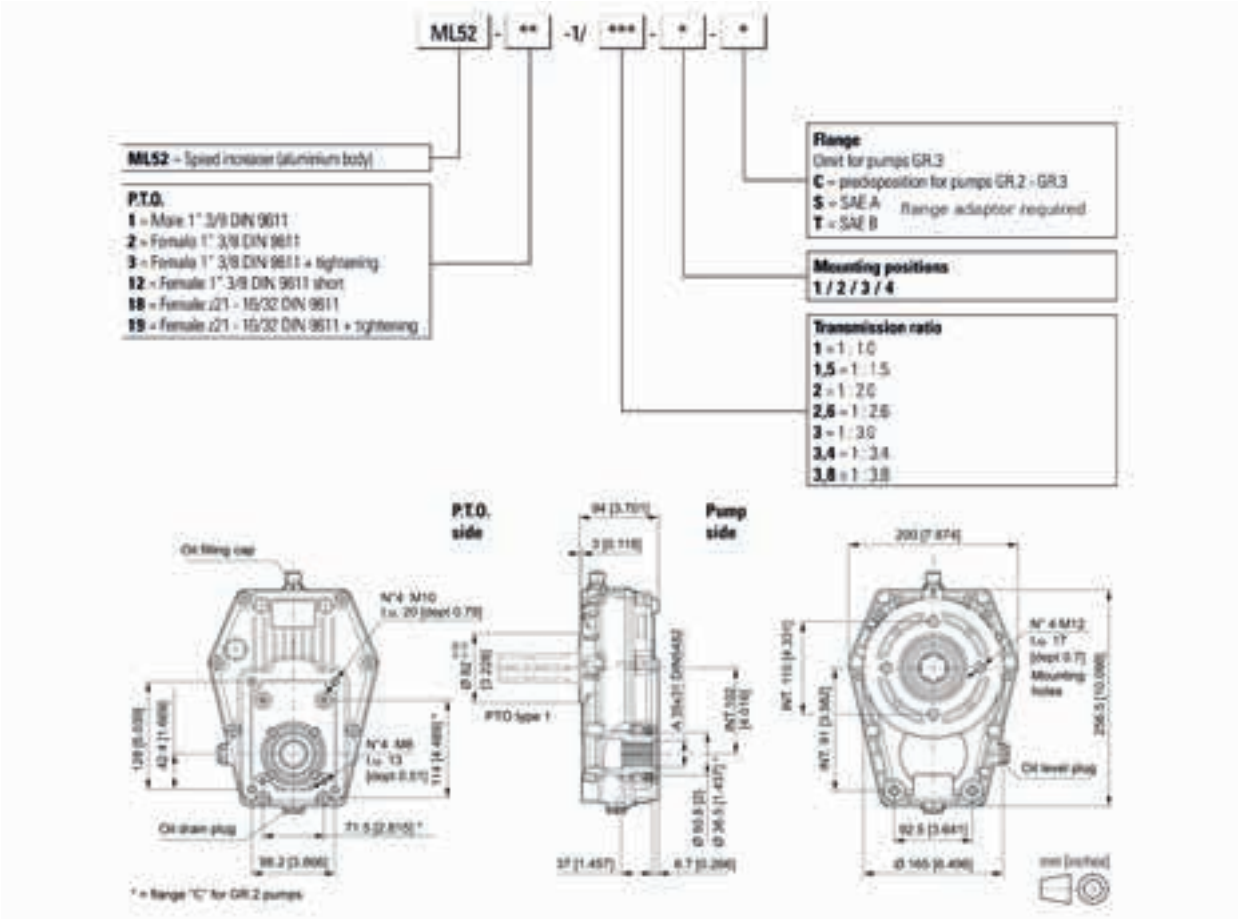
For Group 2 & 3 Pumps

Series ML52, Female Quick Release

Code	Input Type	Ratio	£
12380024	1 - 3/8"	1:3	304.51
12380023	1 - 3/8"	1:3.4	310.07
12380022	1 - 3/8"	1:3.8	346.08

Brevini / Hydrapp PTO step up gearbox with female 1-3/8" quick release PTO and mounting for Group 3 gear pumps.

3:1 ratio.



Spline Couplings

Spline

To Suit Series ML32

Code	Type	1:8 Taper	£
31001000	DIN5482 z14 25x22	Group 1	15.29
31000700	DIN5482 z14 25x22	Group 2	13.02

Spline

To Suit Series ML52

Code	Type	1:8 Taper	£
31003900	DIN5482 z18 35x31	Group 2	13.27
31003500	DIN5482 z18 35x31	Group 3	13.80

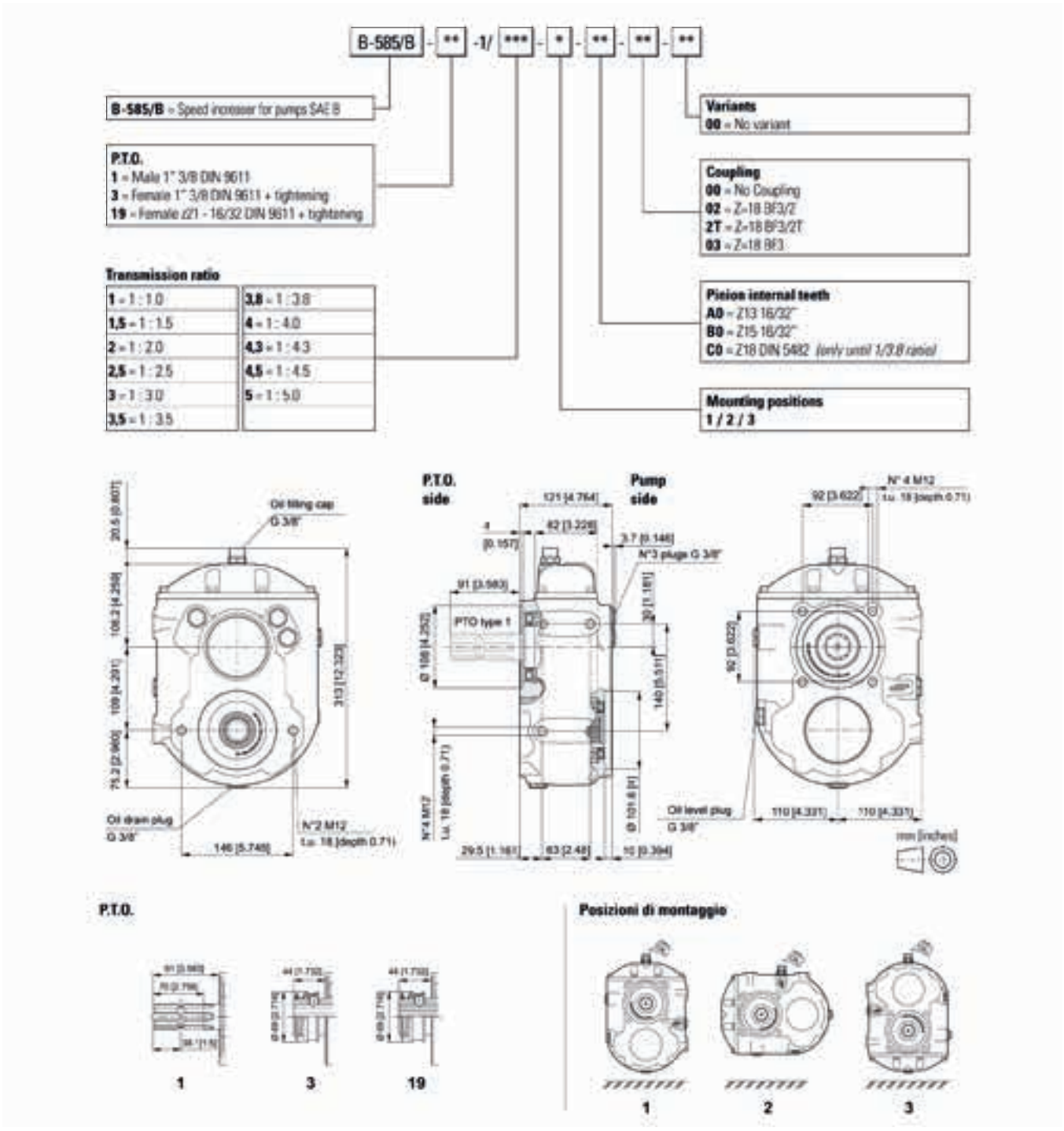
Speed Increasing

Cast iron PTO gearbox.
1-3/8" 6 spline male PTO shaft input.
Group 2 and Group 3 European pump mountings, 18 spline requires spline hub connector.
Hedgecutter/flail mower applications.

Cast Iron for SAE B Pumps

Series B585/B, Male Spline Shaft

Code	Input Type	Ratio	Output	£
12330037	1 - 3/8"	1:3	SAE B/z13	**622.94**
12330018	1 - 3/8"	1:3.8	SAE B/z18	**622.94**
12330019	1 - 3/8"	1:4	SAE B/z15	**622.94**



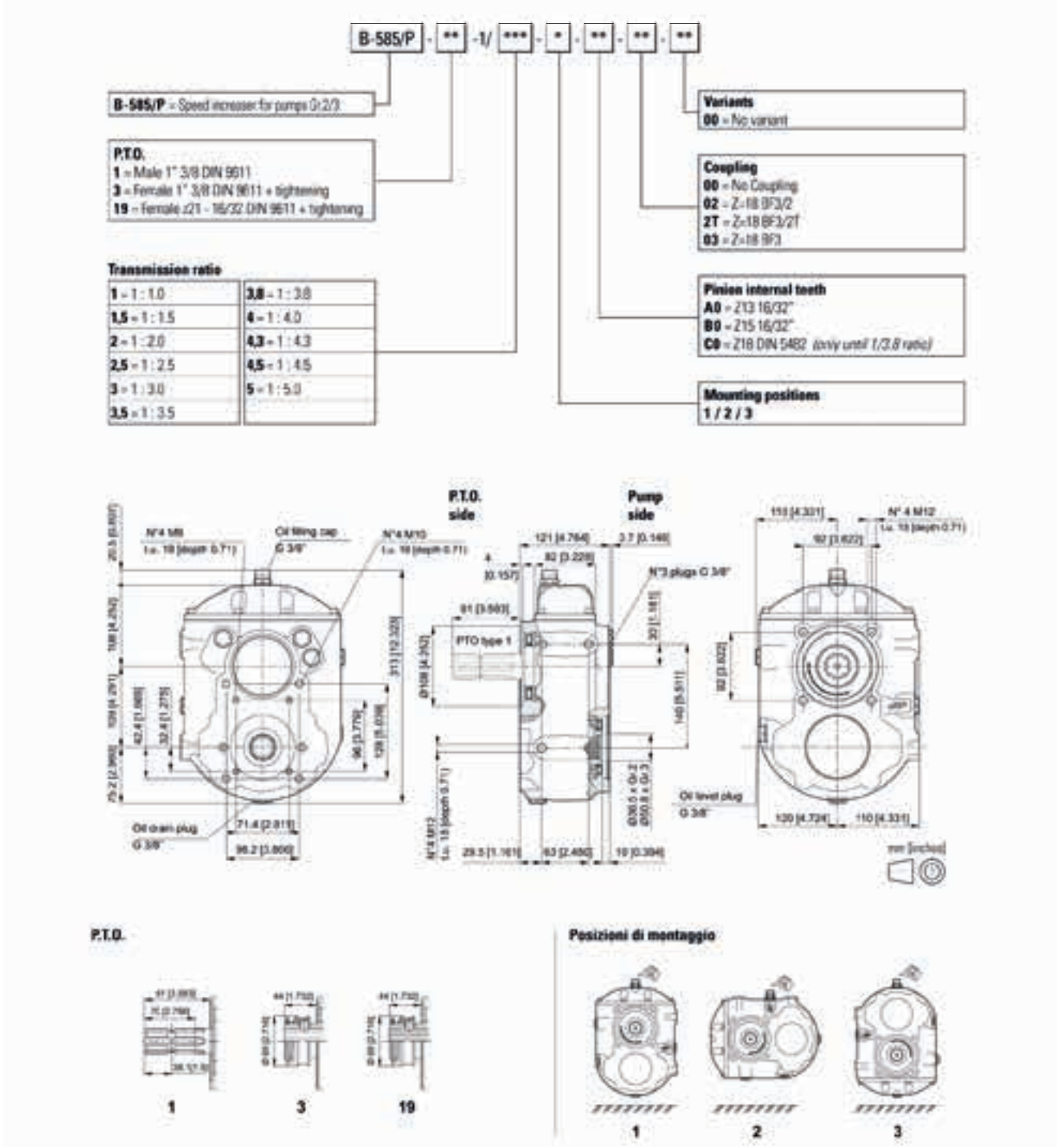
Speed Increasing

Cast iron PTO gearbox.
1-3/8" 6 spline male PTO shaft input.
Group 2 and Group 3 European pump mountings, 18 spline requires spline hub connector.
Hedgecutter/flail mower applications.

Cast Iron for Groups 2 & 3 Pumps

Series B585/P, Male Spline Shaft

Code	Input Type	Ratio	Output	£
12330028	1 - 3/8"	1:3.8	Grp 2&3/z18	**622.94**

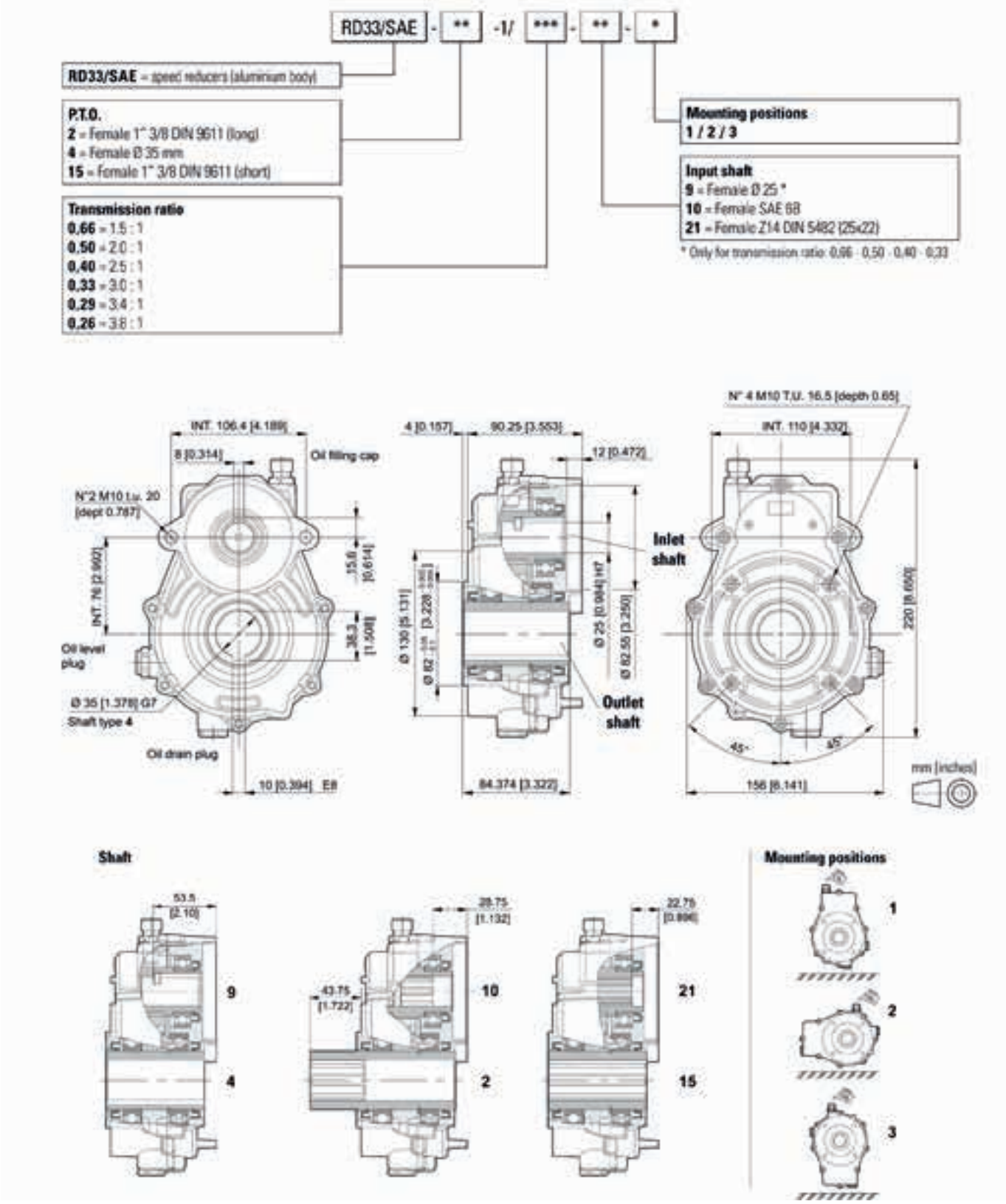


Speed Decreasing

Keyed

Series RD33, Female

Code	Input Type	Ratio	Output	£
12680009	SAE A/25mm	3:1	35mm (4)	**300.67**

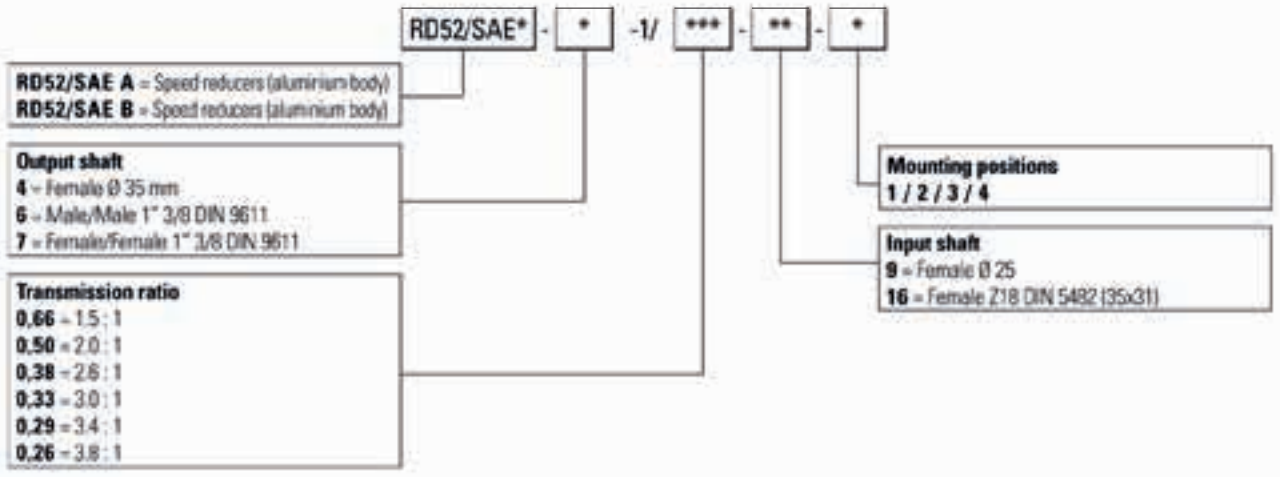


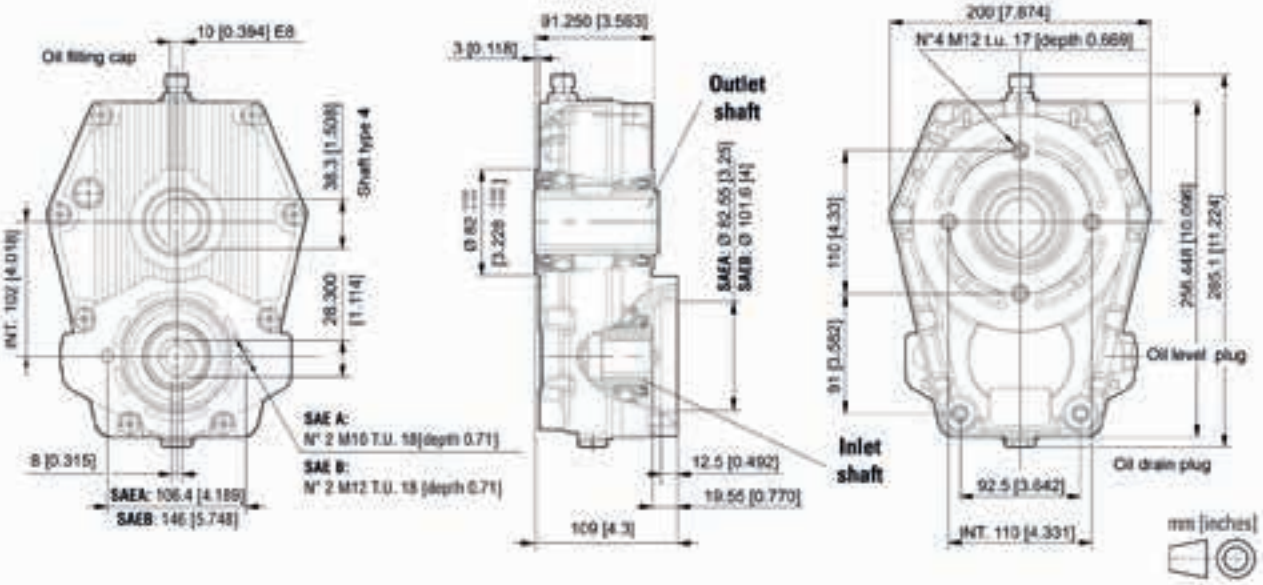
Speed Decreasing

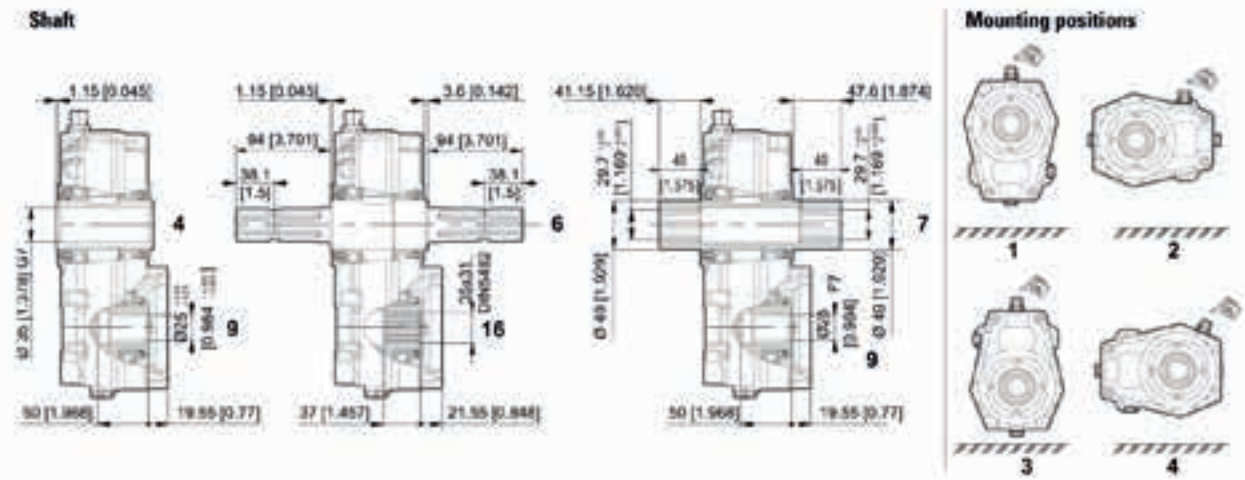
Keyed

Series RD52, Female

Code	Input Type	Ratio	Output	£
12650008	SAE A/25mm	3:1	35mm (4)	**346.08**
12650036	SAE A/25mm	3.4:1	35mm (4)	**389.34**







Operating Characteristics

ML32

Transmission ratio	Maximum torque Nm [lbf·ft]				Weight kg [lb]
	540 rpm		1000 rpm		
	C1*	C2*	C1*	C2*	
1 : 1.5	190 [140.1]	127 [93.7]	183 [135]	122 [90]	4.3 [9.5]
1 : 2.0	170 [125.4]	85 [62.7]	156 [115.1]	78 [57.5]	4.3 [9.5]
1 : 2.5	178 [131.3]	71 [52.4]	163 [120.2]	65 [47.9]	4.2 [9.3]
1 : 3.0	201 [148.2]	67 [49.4]	—	—	4.1 [9]
1 : 3.5	213 [157.1]	61 [45]	—	—	4 [8.8]
1 : 3.8	182 [134.2]	47 [34.7]	—	—	4 [8.8]

* Maximum torque on pump *Maximum output speed 3000rpm

C1= maximum starting torque; C2= maximum torque for continuous duty

ML52

Transmission ratio	Maximum torque Nm [lbf·ft]				Weight kg [lb]
	540 rpm		1000 rpm		
	C1*	C2*	C1*	C2*	
1 : 1.0	604 [445]	318 [235]	585 [431]	308 [227]	9 [19.8]
1 : 1.5	486 [358]	256 [189]	467 [344]	246 [181]	8.4 [18.5]
1 : 2.0	414 [305]	218 [161]	395 [291]	208 [153]	8 [17.6]
1 : 2.6	339 [250]	178 [131]	319 [235]	168 [124]	7.9 [17.4]
1 : 3.0	306 [226]	161 [119]	—	—	7.7 [17]
1 : 3.4	253 [187]	133 [98]	—	—	8.1 [17.9]
1 : 3.8	231 [170]	122 [89]	—	—	8.1 [17.9]

B585/B

Transmission ratio	Maximum torque Nm [lbf·ft]				Weight kg [lb]
	540 rpm		1000 rpm		
	C1*	C2*	C1*	C2*	
1 : 1.0	910 [671]	492 [363]	756 [558]	408 [301]	19.5 [43]
1 : 1.5	608 [448]	403 [297]	481 [355]	319 [235]	19.5 [43]
1 : 2.0	483 [356]	297 [219]	347 [256]	213 [157]	19 [41.9]
1 : 2.5	322 [237]	240 [177]	209 [154]	156 [115]	19 [41.9]
1 : 3.0	268 [197]	207 [153]	160 [118]	123 [91]	19.5 [43]
1 : 3.5	228 [168]	137 [101]	—	—	19.5 [43]
1 : 3.8	213 [157]	136 [100]	—	—	19.5 [43]
1 : 4.0	201 [148]	134 [99]	—	—	20 [44]
1 : 4.3	192 [142]	130 [96]	—	—	20 [44]
1 : 4.5	174 [128]	115 [85]	—	—	21 [46.3]
1 : 5.0	157 [116]	89 [66]	—	—	22 [48.5]

B585/P

Transmission ratio	Maximum torque Nm [lbf·ft]				Weight kg [lb]
	540 rpm		1000 rpm		
	C1*	C2*	C1*	C2*	
1 : 1.0	910 [671]	492 [363]	756 [558]	408 [301]	19.5 [43]
1 : 1.5	608 [448]	403 [297]	481 [355]	319 [235]	19.5 [43]
1 : 2.0	483 [356]	297 [219]	347 [256]	213 [157]	19 [41.9]
1 : 2.5	322 [237]	240 [177]	209 [154]	156 [115]	19 [41.9]
1 : 3.0	268 [197]	207 [153]	160 [118]	123 [91]	19.5 [43]
1 : 3.5	228 [168]	137 [101]	—	—	19.5 [43]
1 : 3.8	213 [157]	136 [100]	—	—	19.5 [43]
1 : 4.0	201 [148]	134 [99]	—	—	20 [44]
1 : 4.3	192 [142]	130 [96]	—	—	20 [44]
1 : 4.5	174 [128]	115 [85]	—	—	21 [46.3]
1 : 5.0	157 [116]	89 [66]	—	—	22 [48.5]

RD33

Transmission ratio	Maximum torque Nm [lbf·ft]		Weight kg [lb]
	200 rpm		
	C1*	C2*	
0.66	236 [174]	124 [91]	4.3 [9.5]
0.50	158 [117]	83 [61]	4.4 [9.7]
0.40	139 [103]	73 [54]	4.3 [9.5]
0.33	121 [89]	64 [47]	4.4 [9.7]
0.29	114 [84]	60 [44]	4.7 [10.4]
0.26	89 [65]	46 [34]	4.4 [9.7]

RD52

Transmission ratio	Maximum torque Nm [lbf·ft]		Weight kg [lb]
	200 rpm		
	C1*	C2*	
0.66	608 [448]	320 [236]	9.5 [20.9]
0.50	460 [339]	242 [178]	7.9 [17.4]
0.38	397 [293]	209 [154]	8.3 [18.3]
0.33	359 [265]	189 [139]	8.2 [18.1]
0.29	298 [220]	157 [116]	8.8 [19.4]
0.26	261 [193]	137 [101]	7.9 [17.4]

Filtration

IKRON Fluid Filtration, founded in 1997, evolved within Casappa, a company that has always been mindful of the need to maintain the quality and performance of its product range.

Filters are, in fact, a strategic component for safeguarding the hydraulic circuit.

HF410 Series Filters

The HF410 suction line filters are directly connected to the circuit's suction line and protect the system's components against contaminant particles.

The filters can be supplied with by-pass valve set at 2.9 psi (0.2 bar).

Stainless steel wire mesh 125 micron filtration.

Pressure:

Element collapse pressure rating
(conforming to ISO 2941) 14.50 psi (1 bar).

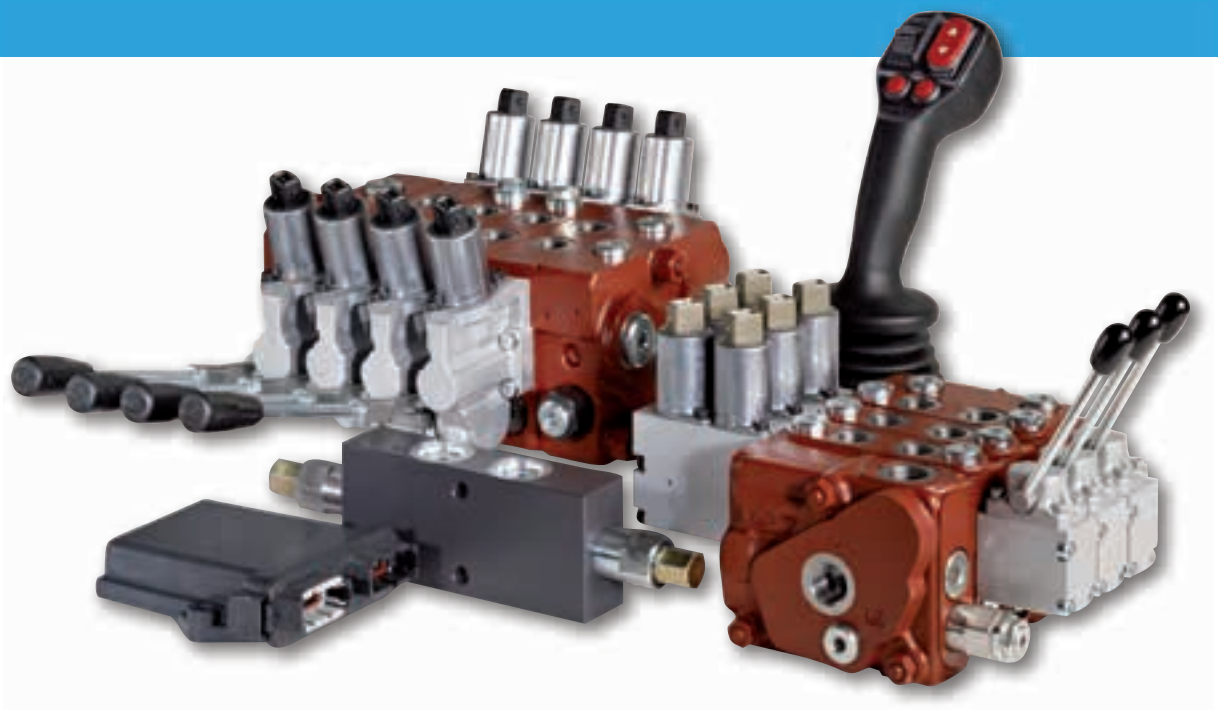
Suction Strainers

HF410 Series Tank Submerged Suction Filters

Code	Port Size BSP	Max Flow L/min	£
HHB00010	3/8"	15	**15.25**
HHB04002	1/2"	20	**17.91**
HHB10002	3/4"	40	**20.87**
HHB20002	1"	60	**26.76**
HHB24002	1.1/4"	105	**27.83**
HHB30020	1.1/2"	140	**38.40**
HHB42002	2"	190	**42.99**
HHB46002	2"	220	**48.21**

Innovative Electro-hydraulic Solutions

- Simple parameter management via plug & play to fine tune hydraulic systems
- On-site support
- Full training provided
- Solutions include sophisticated flow sharing valves for maximum efficiency and load sensing valves for more intricate applications



HF620 Series Filters

The HF620 series filters are specifically designed to be connected on the suction or in the return line of the hydraulic circuit and provide versatility to safeguard the circuit components from contaminating particles.

By-pass valve:

By-pass setting 2.9 psi (0.2 bar) (suction).

By-pass setting 25 psi (1.7 bar) (return).

Pressure:

Working pressure 116 psi (8 bar).

Testing pressure 174 psi (12 bar).

Burst pressure 232 psi (16 bar).

Element collapse pressure rating (conforming to ISO 2941) 145 psi (10 bar).

In-line Filters & Elements

25 Micron Tank Top Return Line Filters

Code	Port Size BSP	Max Flow L/min	£
HHE13174	3/4"	60	**70.37**
HHE20028	1.1/4"	180	**99.57**
HHE25218	1.1/4"	190	**113.60**

Replacement Elements, Tank Top Return Line Filters 25 Micron

Code	Replacement to Suit	£
HHC01841	HHE13174	**21.39**
HHC01843	HHE20028	**40.19**
HHC01816	HHE25218	**54.40**

10 Micron Tank Top Return Line Filters

Code	Port Size BSP	Max Flow L/min	£
HHE13576	3/4"	50	**74.79**
HHE20032	1.1/4"	140	**99.57**
HHE24123	1.1/4"	160	**111.99**

Replacement Elements, Tank Top Return Line Filters 10 Micron

Code	Replacement to Suit	£
HHC01838	HHE13576	**21.39**
HHC01834	HHE20032	**40.19**
HHC01832	HHE24123	**54.40**

25 Micron Suction Line Filters

Code	Port Size BSP	Max Flow L/min	£
HHE13185	3/4"	30	**68.75**
HHE24124	1.1/4"	60	**111.99**

Replacement Elements, Suction Line Filters

Code	Replacement to Suit	£
HHC01841	HHE13185	**21.39**
HHC01816	HHE24124	**54.40**

HF502 Series Filters

The HF502 series tank-mounted filters are specifically designed to be directly connected on the return line of hydraulic circuit to safeguard it from contaminating particles.

Pressure:
Working pressure 116 psi (8 bar).
Testing pressure 174 psi (12 bar).
Burst pressure 232 psi (16 bar).
Element collapse pressure rating (conforming to ISO 2941) 145 psi (10 bar).

Tank Top Return Filters & Elements

25 Micron Tank Top Return Line Filters

Code	Port Size BSP	Max Flow L/min	£
HHR00576	1/2"	35	51.54
HHR03900	3/4"	45	62.09
HHR15900	1"	90	99.92
HHR20492	1.1/4"	130	127.87

Replacement Elements, Tank Top Return Line Filters 25 Micron

Code	Replacement to Suit	£
HHC03430	HHR00576	13.26
HHC03561	HHR03900	15.66
HHC03619	HHR15900	22.06
HHC10191	HHR20492	27.96

10 Micron Tank Top Return Line Filters

Code	Port Size BSP	Max Flow L/min	£
HHR00670	1/2"	20	51.54
HHR03795	3/4"	40	93.89
HHR15462	1"	70	116.46
HHR20430	1.1/4"	95	145.17

Replacement Elements, Tank Top Return Line Filters 10 Micron

Code	Replacement to Suit	£
HHC03423	HHR00670	13.26
HHC03554	HHR04105	15.66
HHC03612	HHR15460	22.06
HHC10192	HHR20460	27.96

Visual & Electrical Indicators Available

HF745 Series Filters

The filters of the HF745 series are connected to the pressure line of the circuit and protect the system's components against contaminant particles. The standard filters are supplied with by-pass valve calibrated at 87 psi (6 bar).

Pressure:

Working pressure 4496 psi (310 bar).

Testing pressure 6744 psi (465 bar).

Burst pressure 8992 psi (620 bar).

Element collapse pressure rating (conforming to ISO 2941) 290 psi (20 bar) (version LC), 3045 psi (210 bar) (version HC).

Medium Pressure In-line Filters & Elements

25 Micron Return Line Filters

Code	Max Flow L/min	Port Size	£
HHP50625	40	1/2" BSP	**296.75**
HHP51623	70	3/4" BSP	**303.33**
HHP52674	90	3/4" BSP	**325.99**

Replacement Elements, Return Line Filters 25 Micron

Code	Replacement to Suit	£
HHC01903	HHP50625	**35.54**
HHC01907	HHP51623	**38.52**
HHC01911	HHP52674	**56.37**

10 Micron Return Line Filters

Code	Max Flow L/min	Port Size	£
HHP50425	40	1/2" BSP	**302.51**
HHP51412	50	3/4" BSP	**312.36**
HHP52472	70	3/4" BSP	**339.66**

Replacement Elements, Return Line Filters 10 Micron

Code	Replacement to Suit	£
HHC01902	HHP50425	**41.59**
HHC01906	HHP51412	**46.39**
HHC01910	HHP52472	**68.99**

Alternative Micron Ratings & Filter Media Available

HF705 Series Filters

The HF705 series represents the last crash barrier for the hydraulic components of a circuit's pressure line.

Characterised by the small space occupied, the high working pressure and the sintered bronze element, the HF705 is suggested for mounting on pilotage devices and for quick-release couplings.

HF705 series filters are devoid of by-pass valves and are not arranged to adopt clogging indicators.

To highlight the element's clogging level, we advise to mount three-way connections on the inlet and outlet threads, so that they can receive suitable pressure gauges with end-scale conformed to the maximum working pressure.

High Pressure In-line Filters & Elements

Standard Flow Rate

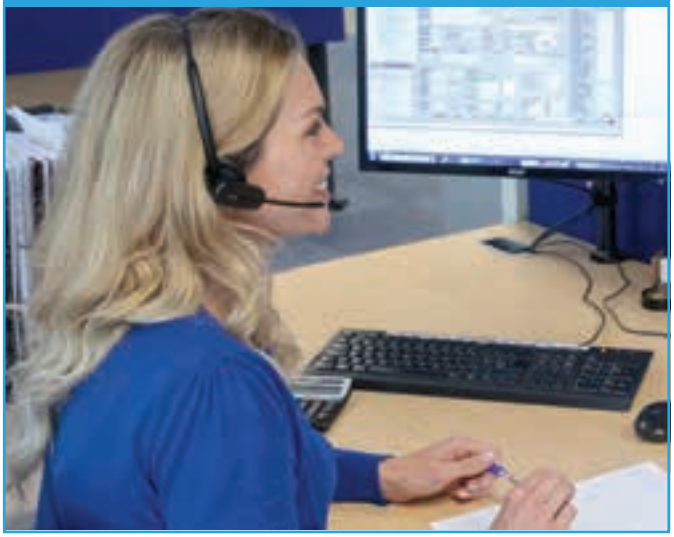
Code	Port Size BSP	Max Flow L/min	Element	Seal	£
HHQ00020	3/8"	1.8	SB010	Buna	**70.23**
HHQ00045	1/2"	17.2	SB060	Buna	**70.23**
HHQ00047	1/2"	7.9	SB025	Buna	**70.23**

High Flow Rate

Code	Port Size BSP	Max Flow L/min	Element	Seal	£
HHQ00520	3/4"	10.6	SB025	Buna	**90.73**
HHQ00540	3/4"	30.4	SB060	Buna	**90.73**

Full Customer Support

- Friendly team on-hand to help
- Full technical support
- Bespoke product configuration to suit customer requirements
- Next day delivery
- Kits of part delivered as one for easy installation



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- Leak-free, welded construction cylinders

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- Assembled and tested in house
- Technical advise on correct configuration for application
- Specification of motor, mounting, central manifold, gear pump, hydraulic valve cavity, external valves tanks & mounting style, external manifolds & accessories and external Valves

Tested in-house

Technical advice

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and electro pump units

AC & DC MICRO Hydraulic Power Packs

- Extremely compact and lightweight
- Flow: 0,2 ÷ 6 l/min
- Pressure: up to 250 bar
- DC motors up to 2,2 kW
- AC motors up to 1,8 kW
- High modularity: core components in mass production, shared with other Hydronit ranges
- High flexibility: single, double acting & reversible circuits
- Main valves on one side in most configurations for enhanced positioning in small machines

AC & DC COMPACT Hydraulic Power Packs

- Over 12 years of serial production
- Hundreds of thousands of power packs reliably running worldwide
- Flow: 0,2 ÷ 25 l/min
- Low pressure drop
- Pressure: up to 300 bar or more
- DC motors up to 4 kW
- AC motors up to 7,5 kW
- High modularity: core components in mass production, shared with other Hydronit ranges
- High flexibility: single, double acting & reversible circuits
- Ideal choice for hydraulic distributors & assemblers

DC Hydraulic Electropumps

- 0,15 ÷ 4 kW, 12 & 24V DC motors (same motors used in Micro and Compact power packs)
- Fan cooled heavy duty motors are available
- 0,19 ÷ 7,9 cc/rev gear pumps (same pumps used in Micro and Compact power packs. As alternative lateral ports pumps are available, too)
- High modularity: core components in mass production, shared with other Hydronit ranges
- Optional relief valve, starter switch, thermal protection, foot mounting support

Technical Information

General Formulae

Hydraulic Pumps & Motors	
FLOW RATE (l/min) Q	$\mathbf{Q} = \frac{Dn}{1000}$
SHAFT TORQUE (Nm)	$\mathbf{T} = \frac{Dp}{20\pi}$
SHAFT POWER (kW)	$\mathbf{p} = \frac{Tn}{9554}$
HYDRAULIC POWER (kW)	$\mathbf{p} = \frac{QP}{600}$
D = Displacement cm^3 /rev **n = RPM** **P = Pressure Bars** **T = Torque Nm**	

Hydraulic Pumps & Motors			
Q	=	$D \times n \times \eta_v$	L/min
T	=	$\frac{\Delta p \times D \times \eta_m}{20\pi}$	Nm
P	=	$\frac{Qp \times P \times t}{600}$	kW

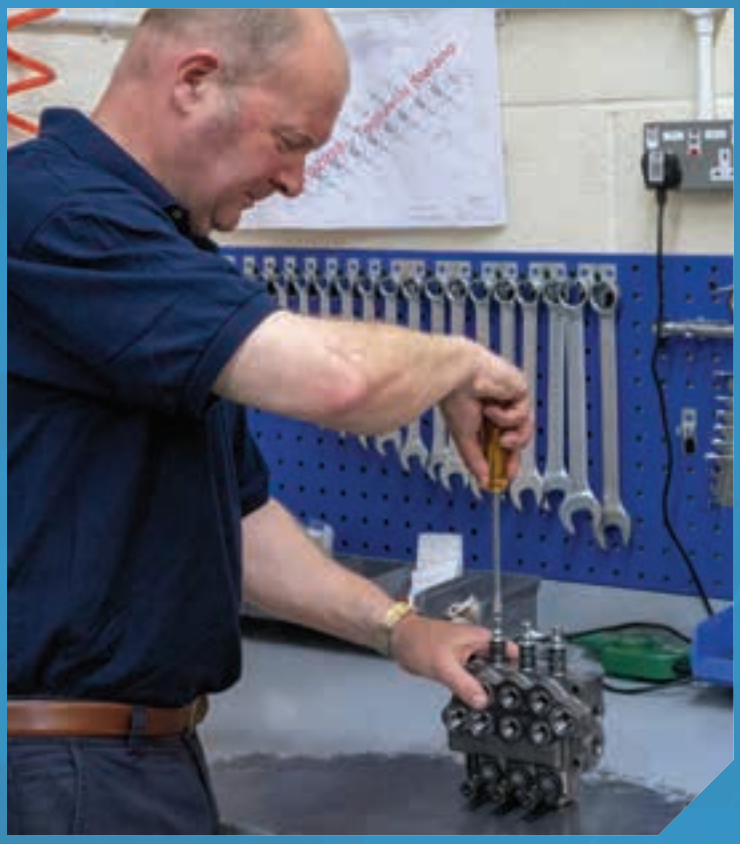
Typical Efficiencies - Gear Pumps		
$\eta_v = \eta_{v(}V, \Delta p, n)$	Volumetric efficiency	(≈0,97)
$\eta_m = \eta_{m(}V, \Delta p, n)$	Mechanical efficiency	(≈0,88)
$\eta_t = \eta_v - \eta_m$	Overall efficiency	(≈0,85)

Conversion Table

TO CONVERT		INTO		MULTIPLY BY
INTO		TO CONVERT		DIVIDE BY
Unit	**Symbol**	**Unit**	**Symbol**	**Factor**
bar	bar	pounds/square Inch	In	14.5
centimetres	cm	inches	In	0.3937
centimetres per sec	cm/sec	feet per minute	ft/min	1.969
centimetres per sec	cm/sec	feet per second	ft/sec	0.03281
Celsius	°C	Fahrenheit	°F	(F - 32) ÷ 1.8
cubic centimetres	cm^3	cubic inches	in^3	0.06102
cubic feet	cu ft	gallons US	US gallons	7.481
cubic feet	cu ft	cubic metres	m^3	0.0283168
cubic inches	in^3	cubic centimetres	cm^3	16.3871
cubic inches	in^3	gallons US	US gal	0.004329
Fahrenheit	°F	Celsius	°C	(C x 1.8) + 32
feet	ft	metres	m	0.3048
feet of oil (sg = 0.87)		pounds/square inch	psi	0.377
feet of oil (sg = 0.87)		inches of mercury	in Hg	0.768
feet per minute	ft/min	centimetres per sec	cm/sec	0.5080
feet per second	ft/sec	centimetres per sec	cm/sec	30.48
feet per minute	ft/min	miles per hour	mph	0.01136
feet per second	ft/sec	miles per hour	mph	0.6818
horsepower	hp	pounds feet per sec	lbs-ft/ sec	550
horsepower	hp	kilowatts	kW	0.7457
inches	in	centimetres	cm	2.54
inches	in	millimetres	mm	25.4
inch pounds	in-lbs	kilogram/metre	kgm	0.01152
inch pounds	in-lbs	Newton metre	Nm	0.1130
kilogram	kg	pound	lb	2.205
kilogram	kg	Newton	N	9.80665
kilogram metre	kgm	Newton metre	Nm	9.80665
kilogram metre	kgm	inch pounds	in-lbs	86.80
kilogram metre	kgm	foot pound	ft-lb	7.233
kilogram per square centimetre	kg/cm^2	bar	bar	0.980665
litres	L	gallons UK	UK gallons	0.2199
litres	L	gallons US	US gal	0.2642
Newton	N	pound	lb	0.2248
Newton metre	Nm	pounds feet	lb-ft	0.7376
Newton metre	Nm	inch pounds	in-lbs	8.851
Newtons per square centimetre	N/cm^2	bar	bar	0.1
Newtons per square metre	N/m^2	bar	bar	0.00001
pint UK	UK pt	litres	l	0.568245
pounds	lb	grams	g	453.6
pounds	lb	Newton	N	4.448
pounds feet	lb-ft	kilogram metre	kgm	0.1383
pounds feet	lb-ft	Newton metre	Nm	1.356
pounds feet	lb-ft	joule	J	1.35582
pounds/square inch	psi	bar	bar	0.06895
pounds/cubic foot	$lb-ft^3$	Kilograms/cubic metre	$kg-m^3$	16.02
square inches	in^2	square centimetres	cm^2	6.5416
square feet	ft^2	square metres	m^2	0.09290304

Innovative electro-hydraulic solutions

- Sophisticated flow sharing hydraulic system for maximum efficiency
- Simple parameter management via plug and play electronic control to fine tune the hydraulic system
- On-site support
- Full training provided
- Solutions include sophisticated flow sharing valves for maximum efficiency and load sensing valves for more intricate applications
- Products configured to meet customer requirement



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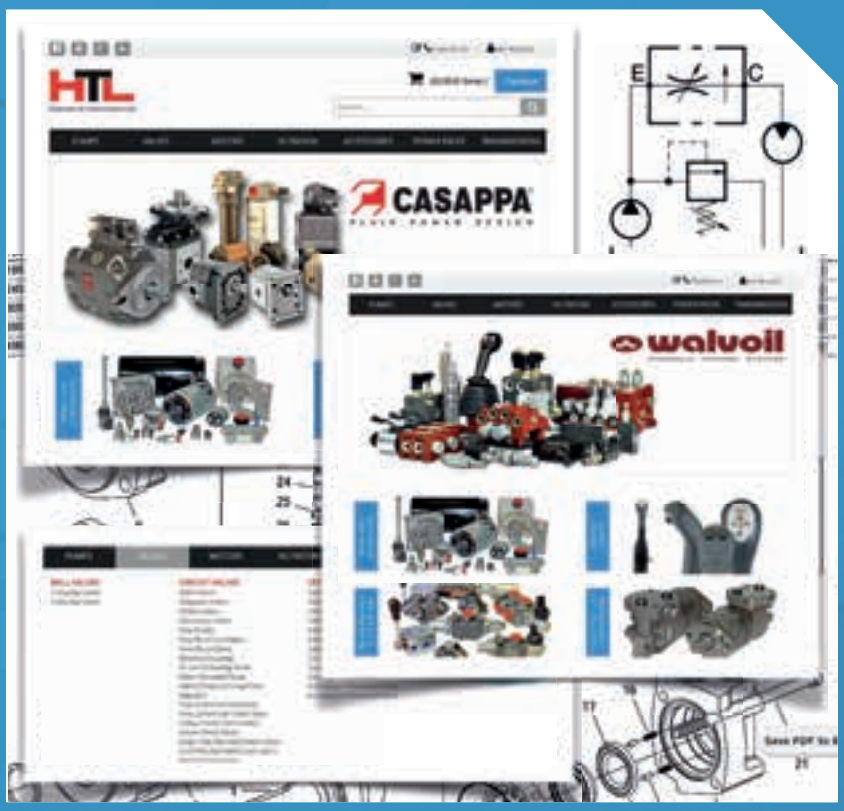
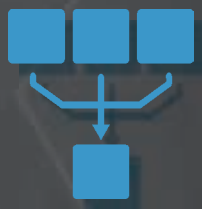


The complete hydraulic solution for the mobile market



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Experienced application engineers

Bespoke product configuration

Helpful friendly team

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Committed to finding cost saving solutions

Product innovation

Extensive product range

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