HYDRAULIC MOTORS MLHS

APPLICATION

- Conveyors
- Metal working machines
- Machines for agriculture
- Road building machines
- Mining machinery
- Food industries
- Special vehicles etc.

CONTENTS

OPTIONS

- Model- Disc valve, roll-gerotor
- Flange and wheel mount
- Short motor
- Motor with Drum Brake
- Tacho connection
- Speed sensoring
- Side and rear ports
- Shafts- straight, splined and tapered
- SAE, Metric and BSPP ports
- Other special features

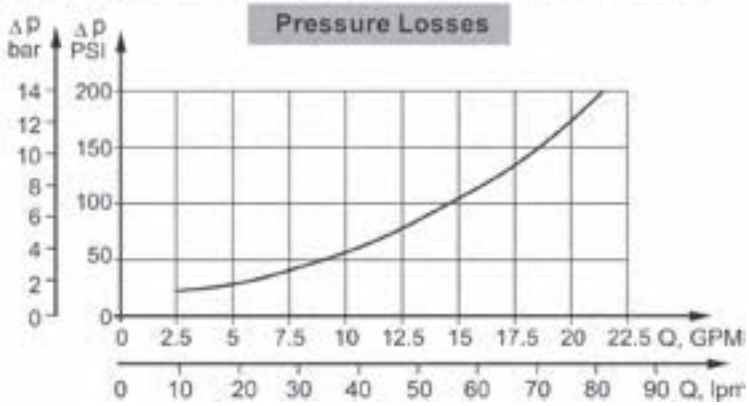
GENERAL

Displacement, in^3/rev [cm^3/rev.]	4.91÷34.47 [80,5÷564,9]
Max. Speed, [RPM]	130÷810
Max. Torque, in-lb [daNm]	2035÷5135 [23÷58]
Max. Output, HP [kW]	9÷26.2 [6,9÷19,5]
Max. Pressure Drop, PSI [bar]	1090÷2975 [75 200]
Max. Oil Flow, GPM [lpm]	20 [75]
Min. Speed, [RPM]	10÷5
Permissible Shaft Loads lbs [daN]	P_a=1125 [500]
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, °F [°C]	-22÷194 [-30÷90]
Optimal Viscosity range, SUS [mm^2/s]	98÷347 [20÷75]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

Oil flow in drain line

Pressure drop PSI [bar]	Viscosity SUS [mm^2/s]	Oil flow in drain line GPM [lpm]
2030 [140]	98 [20]	.396 [1,5]
	164 [35]	.264 [1]
3045 [210]	98 [20]	.793 [3]
	164 [35]	.528 [2]

Pressure Losses



SPECIFICATION DATA

Type		MLHS 80	MLHS 100	MLHS 125	MLHS 160	MLHS 200
Displacement, in.≥/rev. [cm.≥/rev.]		4.91 [80,5]	6.1 [100]	7.67 [125,7]	9.74 [159,7]	12.2 [200]
Max. Speed,	cont.	810	750	600	470	375
[RPM]	Int.*	1000	900	720	560	450
Max. Torque	cont.	1770 [20]	2585 [29,2]	3310 [37,4]	4070 [46]	4070 [46]
in- lb [daNm]	Int.*	2125 [24]	2830 [32]	3630 [41]	4560 [51,5]	5310 [60]
	peak**	2300 [26]	2830 [32]	3630 [41]	4560 [51,5]	5755 [65]
Max. Output	cont.	22 [16,4]	26.2 [19,5]	26.8 [20]	20.8 [15,5]	18.8 [14]
HP [kW]	int.*	29.5 [22]	34.9 [26]	32.2 [24]	29.4 [21,9]	28.2 [21]
Max. Pressure Drop	cont.	2540 [175]	2970 [205]	2970 [205]	2970 [205]	2320 [160]
PSI [bar]	Int.*	3050 [210]	3260 [225]	3260 [225]	3260 [225]	3045 [210]
	peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3262 [225]
Max. Oil Flow	cont.	17 [65]	20 [75]	20 [75]	20 [75]	20 [75]
GPM [lpm]	Int.*	21 [80]	24 [90]	24 [90]	24 [90]	24 [90]
Max. Inlet Pressure	cont.	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]
PSI [bar]	Int.*	3625 [250]	3625 [250]	3625 [250]	3625 [250]	3625 [250]
	peak**	4350 [300]	4350 [300]	4350 [300]	4350 [300]	4350 [300]
Max. Return Pressure	cont. 0-100 RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
without Drain Line or	cont. 100-300 RPM	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]
Max. Pressure	cont. >300 RPM	290 [20]	290 [20]	290 [20]	290 [20]	290 [20]
in Drain Line ,PSI [bar]	Int.* 0-max. RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
Max. Return Pressure	cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
with Drain Line	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
PSI [bar]	peak**	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		175 [12]	145 [10]	145 [10]	115 [8]	115 [8]
Min. Starting Torque	at max. press. drop cont.	1460 [16,5]	2115 [23,9]	2310 [26]	3265 [36,9]	3320 [37,5]
in- lb [daNm]	at max. press. drop Int.*	1720 [19,4]	2340 [26,4]	2750 [31]	3585 [40,5]	4295 [48,5]
Min. Speed***, [RPM]		10	10	8	8	6
Weight, lb [kg]	MLHS(F)	21.8 [9,9]	22.2 [10,1]	22.9 [10,4]	23.8 [10,8]	24.7 [11,2]
For Rear Ports	MLHSB	22.9 [10,4]	23.3 [10,6]	24 [10,9]	24.6 [11,3]	25.8 [11,7]
+ .88[0,40]	MLHSS(Z)	17.4 [7,9]	17.8 [8,1]	18.5 [8,4]	19.4 [8,8]	20.2 [9,2]
	MLHSV	12.8 [5,8]	13.2 [6]	13.9 [6,3]	14.8 [6,7]	15.6 [7,1]
	MLHSW(E)	22.7 [10,3]	23.2 [10,5]	23.8 [10,8]	24.7 [11,2]	25.6 [11,6]
	MLHSBD	37.3 [16,9]	37.7 [17,1]	38.3 [17,4]	39.2 [17,8]	41.1 [18,2]

* Intermittierent operation: the permissible values may occur for max. 10% of every minute.
** Peak load: the permissible values may occur for max. 1% of every minute.
*** For speeds of 5 RPM lower than given, consult factory or your regional manager.
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal foltration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 70 SUS[13mm≤/s] at 122° F [50° C].
5. Recommended maximum system operating temperature is 180° F [82° C].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

SPECIFICATION DATA (continued)

Type		MLHS 250	MLHS 315	MLHS 400	MLHS 475	MLHS 525	MLHS 565
Displacement, in.≥/rev. [cm.≥/rev.]		15.3 [250]	19.2 [314,9]	24.2 [397]	28.96 [474,6]	31.88 [522,7]	34.47[564,9]
Max. Speed,	cont.	300	240	190	160	145	130
[RPM]	Int.*	360	290	230	190	175	160
Max. Torque	cont.	4425 [50]	4780 [54]	5135 [58]	5130 [58]	5130 [58]	5130 [58]
in- lb [daNm]	Int.*	5575 [63]	5575 [63]	6110 [69]	6020 [68]	6105 [69]	6105 [69]
	peak**	6375 [72]	7435 [84]	7525 [85]	7430 [84]	7520 [85]	7520 [85]
Max. Output	cont.	18.1 [13,5]	15.4 [11,5]	13.4 [10]	11 [8,4]	10.2 [7,6]	9 [6,9]
HP [kW]	int.*	28.2 [21]	18.1 [13,5]	17.4 [13]	15 [11,3]	13.9 [10,4]	13 [9,6]
Max. Pressure Drop	cont.	2030 [140]	1740 [120]	1450 [100]	1230 [85]	1160 [80]	1090 [75]
PSI [bar]	Int.*	2540 [175]	2030 [140]	1740 [120]	1450 [100]	1310 [90]	1200 [85]
	peak**	2900 [200]	2680 [185]	2030 [140]	1700 [115]	1530 [105]	1450 [100]
Max. Oil Flow	cont.	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]
GPM [lpm]	Int.*	24 [90]	24 [90]	24 [90]	24 [90]	24 [90]	24 [90]
Max. Inlet Pressure	cont.	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]
PSI [bar]	Int.*	3625 [250]	3625 [250]	3625 [250]	3625 [250]	3625 [250]	3625 [250]
	peak**	4350 [300]	4350 [300]	4350 [300]	4350 [300]	4350 [300]	4350 [300]
Max. Return Pressure	cont. 0-100 RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
without Drain Line or	cont. 100-300 RPM	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]
Max. Pressure	cont. >300 RPM	-	-	-	-	-	-
in Drain Line ,PSI [bar]	Int.* 0-max. RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
Max. Return Pressure	cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
with Drain Line	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
PSI [bar]	peak**	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]	3050 [210]
Max. Starting Pressure with	Unloaded Shaft, PSI [bar]	115 [8]	115 [8]	115 [8]	115 [8]	115 [8]	115 [8]
Min. Starting Torque	at max. press. drop cont.	3540 [40]	4515 [51]	4780 [54]	4160 [47]	4160 [47]	4160 [47]
in- lb [daNm]	at max. press. drop Int.*	4425 [50]	5575 [63]	5575 [63]	4870 [55]	4870 [55]	4870 [55]
Min. Speed***, [RPM]		6	5	5	5	5	5
Weight, lb [kg]	MLHS(F)	25.8 [11,7]	27.3 [12,4]	29.3 [13,1]	31 [14,1]	32.2 [14,6]	33.1 [15]
For Rear Ports	MLHSB	26.9 [12,2]	28.4 [12,9]	30.4 [13,8]	32.2 [14,6]	33.3 [15,1]	34.1 [15,5]
+ .88[0,40]	MLHSS(Z)	21.4 [9,7]	22.9 [10,4]	24.9 [11,3]	26.7 [12.1]	27.8 [12,6]	28.6 [13]
	MLHSV	16.7 [7,6]	18.3 [8,3]	20.2 [9,2]	22 [10]	23.1 [10,5]	24 [10,9]
	MLHSW(E)	26.7 [12,1]	28.2 [12,8]	30.2 [13,7]	32 [14,5]	33.1 [15]	33.9 [15,4]
	MLHSBD	41.2 [18,7]	42.7 [19,4]	44.7 [20,3]	46.5 [21,1]	47.6 [21,6]	48.5 [23]

* Intermittierent operation: the permissible values may occur for max. 10% of every minute.
** Peak load: the permissible values may occur for max. 1% of every minute.
*** For speeds of 5 RPM lower than given, consult factory or your regional manager.
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal foltration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 70 SUS[13mm≤/s] at 122 ° F [50° C].
5. Recommended maximum system operating temperature is 180° F [82° C].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

SPECIFICATION DATA for MLHS...LSV

Low Speed Valve (LSV) **LSV** Series hydraulic motors have been designed to operate with normal pressure drop and to ensure smooth run at low speed (up to 200 RPM), as the best security for operation is guaranteed at frequency of rotation 20 ÷ 50 RPM . They have an increased starting pressure drop and are not recommended for using at pressure less than 580 PSI [40 bars].

Look at specification data for hydraulic motors standard version. The modification concerns only the following parameters : maximum speed , maximum output, maximum Oil flow and maximum starting pressure.

Type		MLHS 80	MLHS 100	MLHS 125	MLHS 160	MLHS 200	MLHS 250	MLHS 315	MLHS 400
Max. Speed,	Cont.	200	200	200	200	200	200	200	185
[RPM]	Int.*	250	250	250	250	250	250	250	225
Max. Output	Cont.	4.8 [3,6]	6.2 [4,6]	8.3 [6,2]	10.7 [8,0]	11.4 [8,5]	12.2 [9,1]	14.2 [10,6]	12.7 [9,5]
HP [kW]	Int.*	7.1 [5,3]	9 [6,7]	11,2 [8,4]	16.4 [12,2]	16.6 [12,4]	16.8 [12,5]	20 [15,0]	17.2 [12,8]
Max. Oil Flow	Cont.	4.2 [16]	5.3 [20]	6.6 [25]	8.5 [32]	10.5 [40]	13 [50]	17 [65]	20 [75]
GPM [lpm]	Int.*	5.3 [20]	6.6 [25]	8.5 [32]	10.5 [40]	13 [50]	16.5 [62,5]	21 [80]	24 [90]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		363 [25]	290 [20]	290 [20]	290 [20]	215 [15]	215 [15]	215 [15]	215 [15]

SPECIFICATION DATA for MLHS...LL

Low Leakage (LL) **LL** Series hydraulic motors have been designed to operate at the whole standard range of working conditions (pressure drop and frequency of rotation) , but with considerable decreased volumetric losses in the drainage ports. Their main purpose is to operate as series-connected motors in hydraulic systems.

For this version is permissible decreasing of the maximal torque with up to 5% (at middle speed) and up to 10% (at high speed) in comparison to the standard versions of motors.

Look at specification data for hydraulic motors standard version. The modification concerns only the parameters: maximum torque, maximum output, minimum starting torque.

Type		MLHS 80	MLHS 100	MLHS 125	MLHS 160	MLHS 200	MLHS 250	MLHS 315	MLHS 400
Max. Torque	Cont.	1725 [19,5]	2460 [27,75]	3150 [35,6]	3875 [43,8]	3965 [44,8]	4310 [48,7]	4540 [51,3]	4880 [55,1]
in-lb [daNm]	Int.*	2070 [23,4]	2755 [31,1]	3450 [39]	4330 [48,9]	5170 [58,4]	5435 [61,4]	5310[60]	5810 [65,6]
Max. Output	Cont.	21.5 [16]	24.1 [18]	26 [19,4]	23.6 [17,6]	18.2 [13,6]	17.6 [13,1]	14.2 [10,6]	12.5 [9,3]
HP [kW]	Int.*	26.2 [19,5]	33.9 [25,3]	33 [24,6]	29.2 [21,8]	27.4 [20,4]	27.4 [20,4]	16.7 [12,5]	16.1 [12,0]
Min. Starting Torque	Cont.	1410 [15,9]	1990 [22,5]	2505 [28,3]	3180 [35,9]	3265 [36,9]	3460 [39,1]	3700 [41,8]	3960 [44,7]
in-lb [daNm]	Int.*	1665 [18,8]	2300 [25,9]	2815 [31,8]	3505 [39,6]	4230 [47,8]	4435 [50,1]	4380 [49,5]	4630 [52,3]

Performance Data MLHS 80

Flow [GPM]	Pressure (Δ PSI) 500	750	1000	1250	1500	1750	2000	2250	2540	Max. Cont. 2970	Max. Int. 3260	Speed (theor.)
1	258 / **45**	424 / **43**	612 / **41**	789 / **40**	971 / **37**	1156 / **35**	1328 / **33**	1505 / **30**	1687 / **27**	1963 / **22**	2197 / **13**	47
2	272 / **91**	431 / **89**	626 / **88**	816 / **85**	990 / **84**	1180 / **80**	1350 / **78**	1524 / **73**	1698 / **70**	1975 / **68**	2224 / **60**	94
4	285 / **186**	460 / **184**	645 / **183**	838 / **181**	1006 / **180**	1186 / **178**	1371 / **176**	1542 / **175**	1720 / **172**	1994 / **165**	2243 / **162**	188
6	300 / **279**	476 / **277**	653 / **274**	838 / **272**	1015 / **270**	1195 / **268**	1388 / **265**	1567 / **262**	1730 / **258**	2004 / **257**	2243 / **252**	282
8	296 / **373**	473 / **370**	650 / **369**	832 / **366**	1015 / **364**	1202 / **361**	1380 / **358**	1556 / **356**	1725 / **352**	2005 / **351**	2246 / **346**	376
10	288 / **467**	465 / **464**	645 / **462**	831 / **461**	1010 / **459**	1195 / **457**	1374 / **455**	1551 / **451**	1720 / **448**	1998 / **446**	2237 / **439**	470
12	275 / **651**	462 / **560**	636 / **558**	819 / **556**	998 / **555**	1183 / **553**	1360 / **551**	1542 / **548**	1706 / **543**	1977 / **541**	2220 / **534**	564
14	253 / **656**	435 / **654**	612 / **652**	800 / **650**	980 / **648**	1170 / **646**	1341 / **643**	1518 / **639**	1692 / **637**	1957 / **636**	2194 / **629**	658
Max. Cont. 17	217 / **797**	404 / **794**	582 / **792**	770 / **790**	946 / **788**	1132 / **787**	1306 / **784**	1485 / **781**	1660 / **777**	1918 / **775**	2158 / **763**	799
Max. Int. 21	163 / **984**	353 / **981**	529 / **979**	718 / **977**	895 / **974**	1070 / **972**	1250 / **968**	1420 / **965**	1605 / **961**	1872 / **960**	2092 / **959**	988
Torque (theor.) in-lb. [daNm]	391 [4,42]	586 [6,62]	782 [8,83]	977 [11,04]	1173 [13,25]	1368 [15,46]	1564 [17,67]	1760 [19,88]	1986 [22,44]	2267 [25,61]	2549 [28,8]	

4.9 in≥./rev. [80,5 cm≥./rev.]

Torque [in-lb] 2092
Speed [RPM] 959

Performance Data MLHS 100

Flow [GPM]	Pressure (Δ PSI) 500	750	1000	1250	1500	1750	2000	2250	2540	Max. Cont. 2970	Max. Int. 3260	Speed (theor.)
1	406 / **37.5**	628 / **37.5**	835 / **37**	1052 / **37**	1272 / **35.5**	1465 / **35**	1680 / **34.5**	1882 / **33**	2110 / **27**	2378 / **22**	2700 / **12**	38
2	417 / **75.5**	630 / **75**	852 / **73.5**	1065 / **70.5**	1290 / **70**	1502 / **69**	1720 / **66**	1936 / **64**	2166 / **59**	2404 / **56**	2737 / **47**	76
4	420 / **151**	634 / **150**	860 / **148**	1080 / **146**	1312 / **145**	1530 / **143**	1766 / **140**	1998 / **135**	2232 / **132**	2452 / **128**	2790 / **117**	151
6	417 / **227**	634 / **226**	855 / **224**	1074 / **220**	1315 / **218**	1542 / **216**	1780 / **214**	2014 / **208**	2244 / **194**	2469 / **192**	2800 / **188**	227
8	408 / **300**	624 / **299**	844 / **298**	1068 / **296**	1306 / **294**	1545 / **292**	1772 / **288**	1988 / **283**	2230 / **280**	2479 / **263**	2814 / **252**	303
10	392 / **374**	608 / **372**	828 / **370**	1042 / **368**	1295 / **363**	1525 / **361**	1764 / **356**	1985 / **352**	2218 / **348**	2470 / **341**	2797 / **329**	379
12	371 / **452**	584 / **451**	805 / **450**	1028 / **447**	1270 / **445**	1500 / **442**	1740 / **440**	1985 / **431**	2198 / **425**	2442 / **415**	2783 / **403**	454
14	345 / **528**	550 / **526**	780 / **524**	1018 / **521**	1248 / **518**	1482 / **515**	1720 / **512**	1945 / **507**	2172 / **501**	2412 / **493**	2756 / **479**	530
17	314 / **641**	544 / **639**	748 / **637**	976 / **635**	1218 / **633**	1442 / **629**	1682 / **623**	1902 / **619**	2130 / **615**	2376 / **606**	2721 / **593**	644
Max. Cont. 20	265 / **753**	480 / **751**	708 / **748**	935 / **746**	1170 / **744**	1400 / **739**	1642 / **732**	1876 / **727**	2092 / **722**	2340 / **712**	2684 / **697**	757
Max. Int. 24	202 / **904**	432 / **899**	647 / **893**	884 / **888**	1114 / **882**	1344 / **877**	1608 / **872**	1798 / **862**	2018 / **855**	2283 / **842**	2631 / **832**	909
Torque (theor.) in-lb. [daNm]	486 [5,49]	728 [8,23]	971 [10,97]	1214 [13,72]	1460 [16,5]	1699 [19,2]	1943 [21,95]	2185 [24,69]	2467 [27,87]	2816 [31,82]	3166 [35,77]	

6.1 in≥./rev. [100 cm≥./rev.]

Torque [in-lb] 2631
Speed [RPM] 832

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm≤/s] at 122° F [50° C].

Performance Data MLHS 125

Pressure (Δ PSI)

Flow [GPM]	500	750	1000	1250	1500	1750	2000	2250	2540 Max. Cont.	3050	3260 Max. Int.	Speed (theor.)
1	468 **30**	762 **29**	1036 **28**	1330 **27**	1590 **26**	1840 **25**	2126 **23**	2358 **22**	2600 **21**	3125 **17**	3360 **16**	30
2	490 **60**	768 **58**	1062 **56**	1336 **55**	1610 **53**	1875 **50**	2145 **49**	2396 **48**	2658 **45**	3162 **40**	3450 **38**	60
4	494 **117**	786 **116**	1074 **115**	1366 **114**	1632 **112**	1906 **110**	2164 **107**	2438 **103**	2726 **100**	3230 **93**	3496 **90**	120
6	494 **180**	786 **179**	1074 **176**	1366 **173**	1632 **170**	1898 **167**	2188 **163**	2460 **160**	2738 **156**	3270 **145**	3590 **141**	181
8	490 **239**	778 **237**	1058 **235**	1350 **232**	1618 **229**	1882 **226**	2172 **222**	2452 **218**	2734 **214**	3285 **204**	3580 **200**	241
10	470 **300**	760 **298**	1044 **296**	1330 **294**	1598 **291**	1872 **287**	2164 **283**	2444 **279**	2718 **279**	3276 **258**	3620 **255**	301
12	455 **358**	730 **356**	1025 **354**	1298 **351**	1582 **348**	1860 **345**	2150 **341**	2426 **336**	2700 **331**	3268 **320**	33600 **315**	361
14	420 **419**	720 **417**	990 **414**	1272 **411**	1552 **408**	1834 **405**	2126 **401**	2400 **397**	2680 **392**	3240 **380**	3582 **376**	422
17	365 **510**	640 **507**	926 **504**	1200 **502**	1492 **499**	1788 **495**	2088 **491**	2358 **486**	2630 **479**	3198 **465**	3540 **461**	512
Max. Cont. 20	318 **600**	608 **598**	874 **595**	1140 **592**	1442 **589**	1776 **586**	2024 **581**	2300 **575**	2886 **569**	3150 **555**	3490 **549**	602
Max. Int. 24	230 **720**	492 **717**	770 **714**	1064 **711**	1370 **707**	1640 **701**	1940 **696**	2182 **690**	2498 **682**			723
Torque (theor.) in-lb. [daNm]	610 [6,89]	916 [10,34]	1221 [13,79]	1526 [17,24]	1831 [20,69]	1898 [24,14]	2442 [27,59]	2746 [31,03]	3101 [35,04]	3724 [42,07]	3724 [42,07]	

7.67 in³./rev. [125,7 cm³./rev.]

Torque [in-lb] 3490
Speed [RPM] 549

Performance Data MLHS 160

Pressure (Δ PSI)

Flow [GPM]	500	750	1000	1250	1500	1750	2000	2250	2540 Max. Cont.	2970	3260 Max. Int.	Speed (theor.)
1	647 **23**	1062 **22**	1446 **21**	1810 **20**	2150 **19**	2450 **17**	2772 **16**	3122 **14**	3490 **12**	3705 **6.5**	- -	24
2	698 **47**	1098 **45**	1486 **44**	1830 **43**	2205 **42**	2460 **40**	2806 **39**	3192 **37**	3576 **34**	3793 **28**	4378 **191**	47
4	722 **94**	1118 **92**	1496 **90**	1845 **88**	2240 **86**	2500 **84**	2862 **82**	3256 **80**	3675 **77**	3903 **73**	4474 **65**	95
6	702 **141**	1088 **140**	1496 **139**	1860 **137**	2230 **136**	2520 **134**	2868 **133**	3272 **131**	3700 **127**	3962 **119**	4503 **112**	142
8	692 **189**	1082 **187**	1456 **186**	1825 **184**	2200 **183**	2530 **181**	2848 **178**	3262 **175**	3690 **171**	3973 **160**	4517 **149**	190
10	658 **236**	1036 **233**	1426 **231**	1795 **229**	2174 **226**	2490 **223**	2828 **220**	3252 **217**	3670 **213**	3940 **206**	4520 **196**	237
12	638 **283**	1002 **282**	1406 **280**	1755 **278**	2145 **276**	2474 **274**	2802 **272**	3216 **268**	3640 **262**	3905 **253**	4486 **243**	284
14	604 **331**	978 **329**	1376 **327**	1735 **325**	2130 **322**	2448 **318**	2798 **314**	3192 **310**	3615 **303**	3867 **295**	4453 **282**	332
17	538 **400**	918 **399**	1300 **397**	1695 **395**	2080 **393**	2402 **390**	2738 **387**	3142 **382**	3546 **378**	3788 **368**	4395 354	403
Max. Cont. 20	468 **473**	848 **470**	1230 **467**	1615 **464**	2010 **461**	2350 **458**	2692 **455**	3078 **450**	3480 **444**	3705 **433**	4312 **415**	474
Max. Int. 24	354 **567**	748 **566**	1132 **564**	1536 **562**	1930 **560**	2260 **558**	2602 **555**	2932 **546**	3215 **531**	3590 **525**	4184 **510**	569
Torque (theor.) in-lb. [daNm]	775 [8,76]	1163 [13,14]	1552 [17,53]	1938 [21,9]	2327 [26,29]	2715 [30,67]	3607 [35,1]	3490 [39,43]	3939 [44,5]	4496 [50,8]	5056 [57,13]	

9.74 in³./rev. [159,7 cm³./rev.]

Torque [in-lb] 4184
Speed [RPM] 510

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm≤/s] at 122°F [50° C].

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Performance Data MLHS 200

Flow [GPM]	Pressure (Δ PSI) 500	750	1000	1250	1500	1750	Max. Cont. 2050	2540	Max. Int. 2900	Speed (theor.)
1	787 **19**	1260 **18**	1705 **17**	2100 **16**	2515 **15**	2990 **13**	3462 **12**	4266 **9**	4768 **7.5**	19
2	817 **38**	1293 **37**	1728 **36**	2136 **35**	2557 **34**	3048 **33**	3540 **32**	4374 **27.5**	4844 **25**	38
4	817 **75**	1296 **73**	1769 **72**	2207 **70**	2651 **69**	3137 **67**	3610 **66**	4462 **61**	4948 **56**	76
6	817 **113**	1300 **112**	1776 **111**	2196 **110**	2657 **109**	3148 **107**	3645 **105**	4528 **101**	5018 **89.5**	114
8	799 **150**	1296 **149**	1769 **148**	2196 **147**	2657 **146**	3143 **144**	3622 **142**	4522 **137**	5044 **124**	151
10	769 **187**	1245 **186**	1728 **185**	2178 **183**	2604 **181**	3095 **179**	3600 **177**	4486 **172**	5022 **164**	189
12	722 **226**	1190 **225**	1705 **223**	2118 **221**	2551 **219**	3075 **217**	3552 **215**	4456 **210**	4972 **201**	227
14	698 **264**	1170 **262**	1651 **260**	2083 **258**	2515 **256**	3055 **254**	3522 **252**	4410 **246**	4905 **239**	265
17	609 **320**	1095 **317**	1585 **314**	2012 **311**	2438 **309**	2948 **306**	3432 **303**	4321 **296**	4796 **294**	322
Max. Cont. 20	515 **377**	1006 **375**	1479 **373**	1923 **371**	2355 **369**	2840 **366**	3344 **363**	4232 **356**	4734 **343**	379
Max. Int. 24	385 **452**	888 **450**	1355 **448**	1787 **446**	2207 **444**	2682 **442**	3196 **440**			454
Torque (theor.) in-lb. [daNm]	971 [10,97]	1457 [16,46]	1943 [21,95]	2425 [27,4]	2912 [32,9]	3399 [38,4]	3974 [44,9]	4930 [55,7]	5632 [63,63]	

12.2 in³./rev. [200 cm³./rev.]

Torque [in-lb] 4734
Speed [RPM] 343

Performance Data MLHS 250

Flow [GPM]	Pressure (Δ PSI) 500	750	1000	1400	1800	Max. Cont. 2200	Max. Int. 2540	Speed (theor.)
1	1196 **15**	1735 **14**	2330 **13**	3014 **12**	3990 **10**	4870 **8**	5400 **7**	15
2	1202 **30**	1816 **29**	2332 **28**	3090 **27**	4030 **25**	4952 **23**	5575 **19**	30
4	1185 **60**	1740 **58**	2336 **57**	3154 **55**	4088 **53**	5052 **45**	5620 **43**	61
6	1156 **90**	1722 **88**	2312 **86**	3190 **84**	4070 **82**	5086 **76**	5660 **67**	91
8	1140 **120**	1716 **118**	2290 **116**	3154 **114**	4052 **112**	5080 **104**	5710 **96**	121
10	1074 **150**	1652 **148**	2242 **146**	3125 **144**	4012 **140**	5046 **132**	5660 **120**	151
12	1005 **180**	1582 **178**	2185 **176**	3050 **174**	3970 **168**	4994 **158**	5575 **148**	182
14	958 **210**	1542 **208**	2138 **206**	2985 **204**	3900 **198**	4952 **188**	5490 **176**	212
17	846 **256**	1436 **254**	2050 **252**	2862 **249**	3790 **243**	4848 **233**	5400 **227**	257
Max. Cont. 20	742 **300**	1325 **298**	1932 **296**	2740 **293**	3668 **287**	4742 **276**	5310 **265**	303
Max. Int. 24	584 **360**	1168 **358**	1792 **356**	2546 **354**	3504 **347**			363
Torque (theor.) in-lb. [daNm]	1213 [13,7]	1823 [20,6]	2425 [27,4]	3399 [38,4]	4372 [49,4]	5346 [60,4]	6160 [69,6]	

15.25 in³./rev. [250 cm³./rev.]

Torque [in-lb] 5310
Speed [RPM] 265

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50° C].

Performance Data MLHS 315

Flow [GPM]	Pressure (Δ PSI) 500	750	1000	1200	1400	Max. Cont. 1700	Max. Int. 2000	Speed (theor.)
1	1406 **11.5**	2040 **11.5**	2708 **11**	3270 **10.5**	3850 **10**	4888 **9**	5550 **7.5**	12
2	1448 **23**	2092 **22.5**	2778 **22**	3330 **21.5**	3945 **21**	4924 **20**	5638 **17**	24
4	1460 **46**	2145 **45.5**	2838 **45**	3434 **44.5**	4056 **43.5**	4965 **41**	5750 **37.5**	48
6	1454 **70**	2145 **69**	2838 **68**	3418 **67**	4045 **66**	4982 **64**	5798 **61**	72
8	1448 **95**	2105 **94**	2790 **93**	3388 **62**	4010 **90**	4970 **86**	5798 **80**	96
10	1390 **119**	2040 **118**	2730 **117**	3364 **116**	3974 **114**	4924 **110**	5762 **105**	120
12	1342 **143**	1992 **142**	2678 **141**	3318 **140**	3934 **138**	4865 **134**	5702 **128**	144
14	1272 **167**	1934 **166**	2620 **165**	3235 **163**	3868 **160**	4782 **156**	5632 **150**	168
17	1155 **203**	1800 **202**	2498 **201**	3135 **200**	3750 **198**	4665 **195**	5498 **191**	204
Max. Cont. 20	996 **240**	1682 **237**	2368 **234**	2990 **231**	3658 **228**	4572 **223**	5370 **217**	240
Max. Int. 24	808 **288**	1488 **286**	2210 **284**	2838 **282**	3470 **279**	4366 **273**		289
Torque (theor.) in-lb. [daNm]	1529 [17,28]	2293 [25,91]	3059 [34,56]	3823 [43,19]	4282 [48,38]	5199 [58,74]	6117 [69,11]	

19.2 in³./rev. [314,9 cm³./rev.]

Torque [in-lb] 5370
Speed [RPM] 217

Performance Data MLHS 400

Flow [GPM]	Pressure (Δ PSI) 250	500	750	1000	Max. Cont. 1400	Max. Int. 1700	Speed (theor.)
2	865 **18.5**	1725 **18**	2592 **17.5**	3450 **17**	4702 **16.5**	5400 **15.5**	19
4	902 **37**	1800 **36.5**	2620 **36**	3475 **35.5**	4820 **34.5**	5595 **33**	38
6	918 **56**	1825 **55**	2700 **54**	3540 **53**	5035 **52**	5820 **50**	57
8	890 **75**	1775 **74**	2720 **73**	3530 **72**	4932 **71**	5755 **69**	76
10	865 **95**	1725 **94**	2675 **93**	3490 **92**	4892 **90**	5715 **88**	95
12	740 **113**	1675 **113**	2605 **112**	3415 **111**	4855 **109**	5690 **107**	114
14	650 **133**	1612 **132**	2525 **131**	3320 **130**	4735 **127**	5560 **123**	133
16	580 **152**	1520 **151**	2465 **150**	3230 **149**	4632 **147**	5485 **144**	153
18	508 **171**	1450 **170**	2375 **169**	3040 **168**	4540 **165**	5315 **162**	172
Max. Cont. 20	424 **190**	1240 **189**	2125 **188**	2955 **185**	4465 **181**	5230 **176**	191
Max. Int. 24	250 **228**	992 **227**	1885 **226**	2730 **225**	4260 **221**		229
Torque (theor.) in-lb. [daNm]	964 [10,89]	1928 [21,78]	2892 [32,67]	3856 [43,57]	5398 [60,99]	6554 [74,05]	

24.21 in³./rev. [397 cm³./rev.]

Torque [in-lb] 5230
Speed [RPM] 176

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50° C].

Performance Data MLHS 475

Flow, GPM [l/min]	Pressure, Δ PSI (bar) 250 [17,5]	500 [35]	750 [52,5]	1000 [70]	Max. Cont. 1200 [85]	Max. Int. 1450 [100]	Speed (theor.)
1.32 [5]	970 **9.5**	1940 **9**	2920 **8.5**	3980 **8**	4910 **7.5**	5570 **7**	10
2.64 [10]	1010 **20**	2010 **19.5**	3010 **18.5**	4070 **18**	4960 **17.5**	5750 **17**	21
4 [15]	1030 **30.5**	2080 **28**	3080 **27.5**	4080 **27.5**	5050 **27**	5930 **26.5**	31
5.28 [20]	1050 **40**	2090 **39.5**	3100 **38**	4150 **36.5**	5070 **35.5**	5970 **34.5**	41
8 [30]	1020 **61**	2120 **60**	3180 **57.5**	4140 **55**	5100 **54**	6030 **55**	62
10.56 [40]	970 **81.5**	2000 **81**	3130 **79**	4070 **77**	5060 **75**	5930 **74**	83
13.2 [50]	890 **102.5**	1910 **101.5**	2980 **99.5**	3950 **97**	4970 **95**	5800 **93**	103
16 [60]	750 **123.5**	1820 **122**	2850 **120**	3760 **117**	4790 **115**	5660 **113**	124
Max. Cont. 20 [75]	530 **152**	1520 **151**	2600 **148**	3500 **146**	4540 **143**	5490 **140**	155
Max. Int. 24 [90]	350 **183**	1280 **180**	2390 **176**	3280 **173**	4420 **168**	5310 **164**	186
Torque (theor.) in-lb. [daNm]	1170 [13,2]	2345 [26,5]	3520 [39,7]	4690 [53]	5680 [64,2]	6690 [76]	

Torque [in-lb] 5490
Speed [RPM] 140

28.96 in³./rev. [474,6 cm³./rev.]

Performance Data MLHS 525

Flow, GPM [l/min]	Pressure, Δ PSI (bar) 250 [17,5]	500 [35]	750 [52,5]	1000 [70]	Max. Cont. 1200 [85]	Max. Int. 1450 [100]	Speed (theor.)
1.32 [5]	1020 **9**	1770 **8.5**	3160 **8**	4230 **8.5**	5060 **7**	5420 **6.5**	9.5
2.64 [10]	1040 **19**	1900 **18**	3230 **17.5**	4340 **17**	5040 **16.5**	5580 **16**	19
4 [15]	1100 **28**	1900 **27.5**	3300 **26.5**	4430 **25.5**	5110 **25**	5720 **24.5**	29
5.28 [20]	1120 **37**	1950 **36.5**	3350 **35**	4470 **33.5**	5130 **33**	5780 **32**	38
8 [30]	1080 **57**	1930 **55.5**	3400 **53**	4480 **51**	5180 **50**	5840 **49**	58
10.56 [40]	1020 **75.5**	1840 **75**	3380 **73**	4380 **71.5**	5130 **70**	5760 **68.5**	76
13.2 [50]	970 **95**	1770 **94**	3250 **92**	4220 **90**	5070 **88**	5660 **86**	96
16 [60]	825 **114**	1680 **113**	3070 **111**	4120 **108.5**	4780 **106**	5480 **105**	115
Max. Cont. 20 [75]	570 **141**	1390 **140**	2740 **137**	3760 **135**	4560 **133**	5320 **130**	144
Max. Int. 24 [90]	310 **170**	1150 **167**	2510 **163**	3540 **160**	4420 **156**	5040 **153**	173
Torque (theor.) in-lb. [daNm]	1290 [14,6]	2570 [29]	3870 [43,7]	5150 [58,3]	5890 [66,6]	6630 [75]	

Torque [in-lb] 5320
Speed [RPM] 130

31.88 in³./rev. [522,7 cm³./rev.]

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm≤/s] at 122°F [50° C].

Performance Data MLHS 565

		Pressure, Δ PSI (bar)				Max. Cont.	Max. Int.	
		220 [15]	435 [30]	650 [45]	870 [60]	1000 [70]	1200 [85]	Speed (theor.)
Flow, GPM [l/min]	1.32 [5]	940 **8.5**	1870 **8**	2860 **7.5**	3860 **7**	4580 **6.5**	5400 **6**	**9**
	2.64 [10]	980 **17.5**	1980 **17**	2830 **16**	3950 **15.5**	4650 **15**	5560 **14.5**	**18**
	4 [15]	1000 **26**	2020 **25.5**	2980 **25**	4000 **24**	4730 **23**	5690 **22.5**	**27**
	5.28 [20]	1020 **34.5**	2040 **34**	3020 **32.5**	4030 **31**	4750 **30.5**	5750 **30**	**35**
	8 [30]	1000 **52**	2020 **51**	3070 **49**	4040 **47**	4770 **46**	5800 **45**	**53**
	10.56 [40]	950 **70**	1950 **69**	3050 **68**	3950 **66**	4740 **65**	5740 **63**	**71**
	13.2 [50]	860 **88**	1860 **87**	2920 **85**	3820 **83**	4650 **81**	5630 **80**	**89**
	16 [60]	730 **105**	1730 **104**	2760 **103**	3680 **101**	4470 **99**	5470 **97**	**106**
Max. Cont.	20 [75]	500 **130**	1450 **129**	2470 **127**	3390 **125**	4220 **123**	5260 **121**	**133**
Max. Int.	24 [90]	260 **157**	1170 **154**	2240 **151**	3170 **148**	4050 **145**	5020 **142**	**159**
Torque (theor.) in-lb. [daNm]		1200 [13,5]	2390 [27]	3580 [40,5]	4780 [54]	5570 [63]	6770 [76,5]	

34.47 in³./rev. [564,9 cm³./rev.]

Torque [in-lb] 5020
Speed [RPM] 142

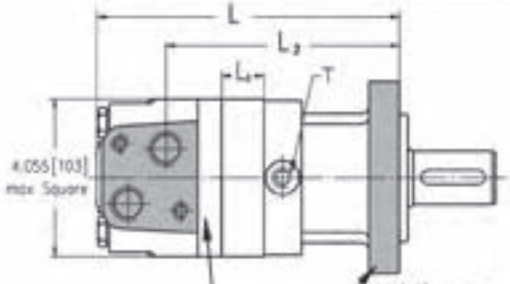
The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm≤/s] at 122°F [50° C].

The Perfomance data was collected at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm≤/s] at 122°F [50° C].

Metric Conversions

Flow 1 lpm = .2642 GPM
Pressure 1 bar = 14.51 PSI
Torque 1 Nm = 8.85 in-lb

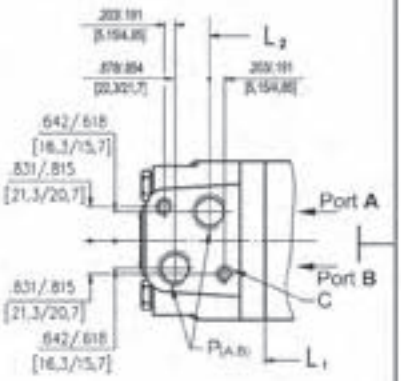
DIMENSIONS AND MOUNTING DATA



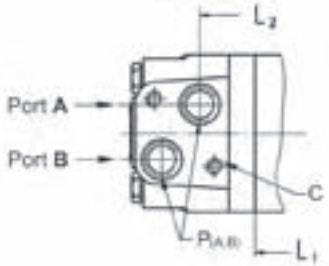
Porting

Side Ports

Version 2 3 5



Version 4



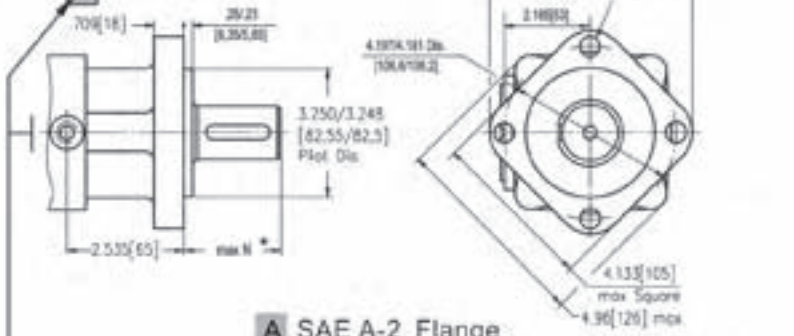
Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

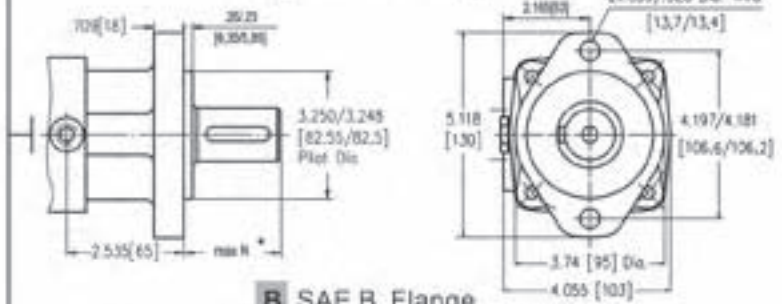
Type	L, in. [mm]	L2, in. [mm]	L1, in. [mm]
MLHS(A,F,B) 80	6.61 [168]	4.88 [124]	.55 [14,0]
MLHS(A,F,B) 100	6.73 [171]	5.04 [128]	.69 [17,4]
MLHS(A,F,B) 125	6.93 [176]	5.20 [132]	.86 [21,8]
MLHS(A,F,B) 160	7.17 [182]	5.43 [138]	1.09 [27,8]
MLHS(A,F,B) 200	7.44 [189]	5.71 [145]	1.37 [34,8]
MLHS(A,F,B) 250	7.76 [197]	6.06 [154]	1.71 [43,5]
MLHS(A,F,B) 315	8.23 [209]	6.50 [165]	2.16 [54,8]
MLHS(A,F,B) 400	8.78 [223]	7.05 [179]	2.73 [69,4]
MLHS(A,F,B) 475	9.33 [237]	7.60 [193]	3.25 [82,6]
MLHS(A,F,B) 525	9.02 [229]	7.28 [185]	2.93 [74,5]
MLHS(A,F,B) 565	9.25 [235]	7.52 [191]	3.16 [80,2]

Mounting

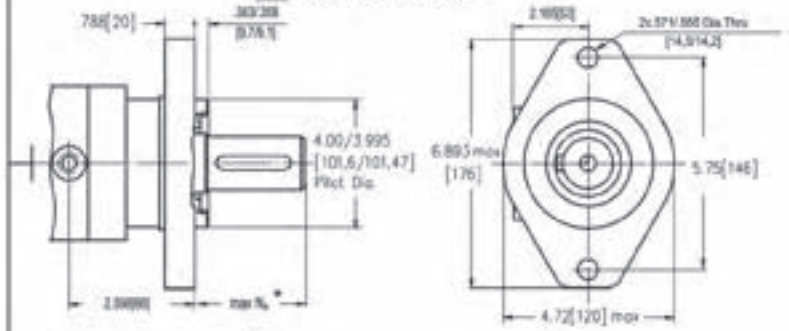
SAE A-4 Flange



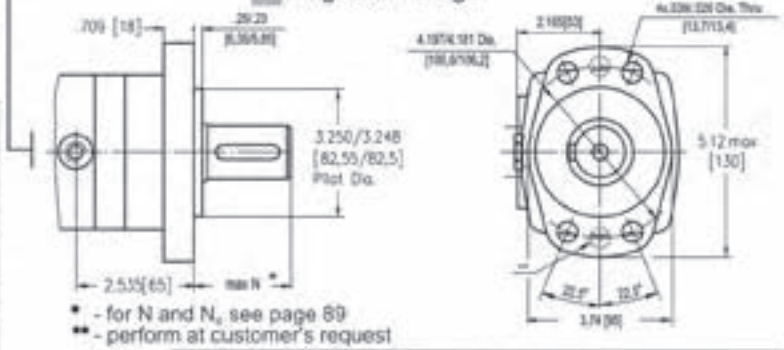
A SAE A-2 Flange



B SAE B Flange



F Magneto Flange



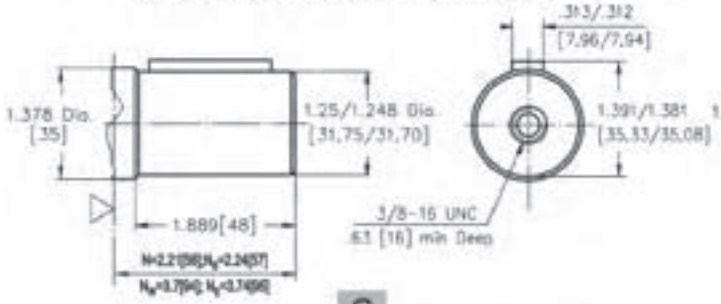
* - for N and N_o see page 89
** - perform at customer's request

	Versions			
	2	3	4	5
C	2xM10	2xM10	2x⅜-16UNC	2x⅜-16UNC
$P_{(A,B)}$	2xGΩ	2xM22x1,5	2x⅞-14UNF	2xΩ-14NPTF
T	G°	M14x1,5	⅛-20UNF	⅛-20UNF

SHAFT EXTENSIONS

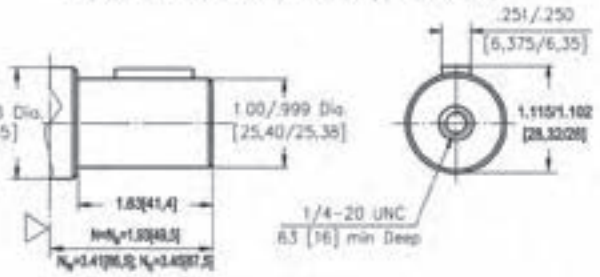
C

1⁰" [31,75] straight, Parallel key 5/16"x 5/16"x 1 ⁰" BS46
Max. Torque 6815 in-lb [77 daNm]



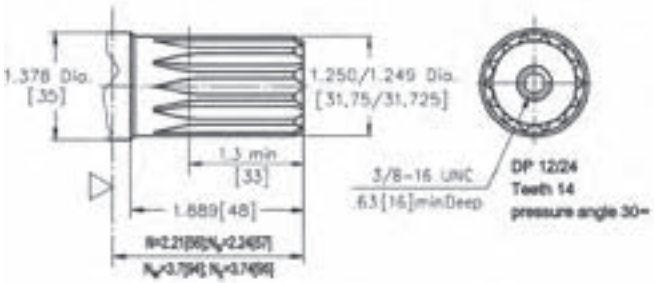
D

1" [25,4] straight, Parallel key ⁰"x ⁰"x 1" BS46
Max. Torque 3900 in-lb [44 daNm]



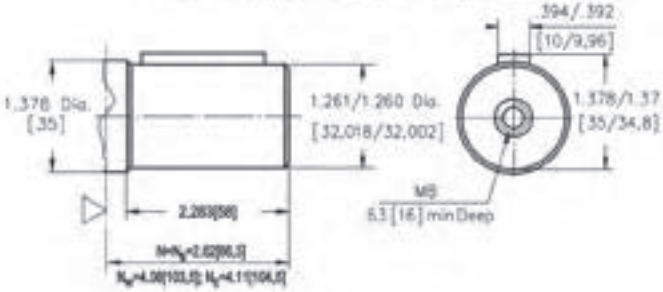
G

14T Splined, 1⁰" [31,75], ANS B92.1-1976
Max. Torque 6815 in-lb [77 daNm]



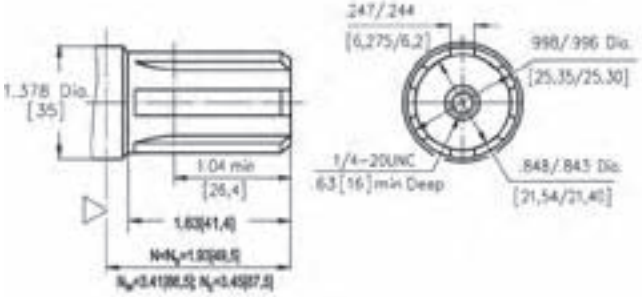
M

⁰32 straight, Parallel key A10x8x45 DIN 6885
Max. Torque 6815 in-lb [77 daNm]



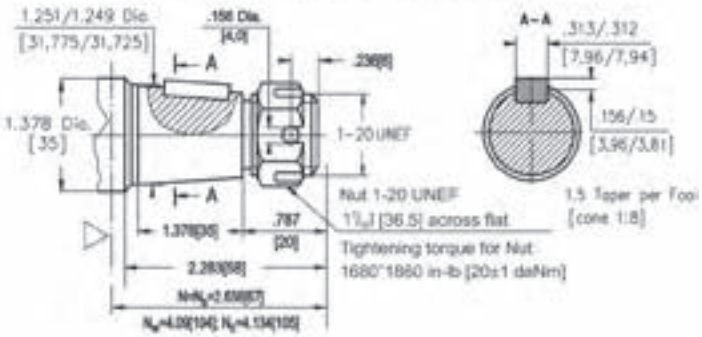
S

1" [25,4], SAE 6B Splined BS2059
Max. Torque 3900 in-lb [44 daNm]



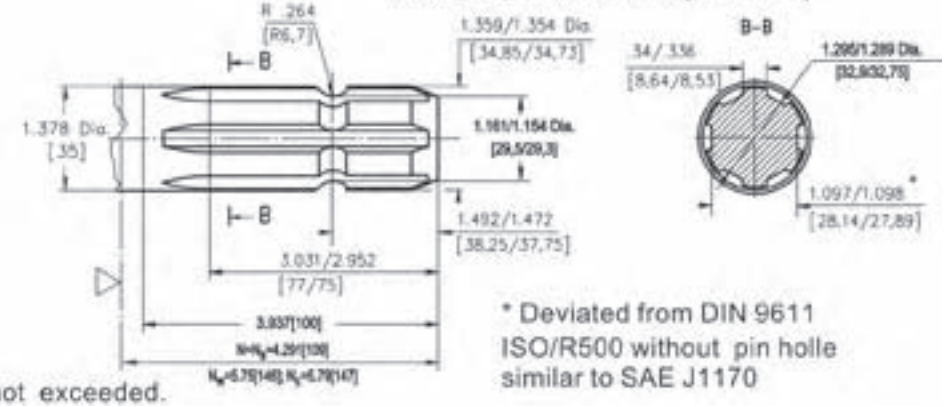
T

1⁰" [31,75] SAE J501 Tapered
Parallel key 5/16"x5/16."x 1" BS46
Max. Torque 6815 in-lb [77 daNm]



P

⁰34,85, p.t.o.,DIN 9611 Form 1
Max. Torque 6815 in-lb [77 daNm]



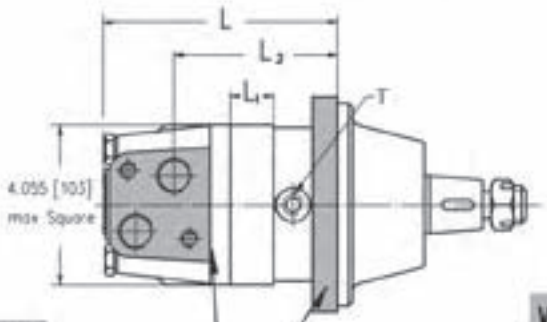
N - for standart, A and F flange
N_B - for B flange
N_W - for W flange
N_E - for E flange

▽- Motor Mounting Surfase

Requirement max. Torque must be not exceeded.

* Deviated from DIN 9611
ISO/R500 without pin holle
similar to SAE J1170

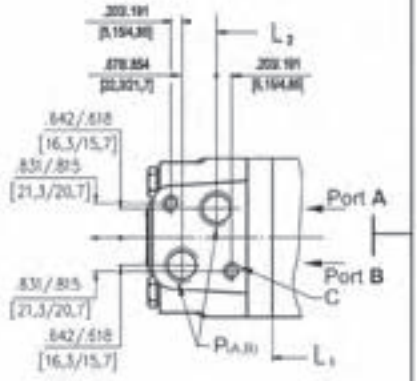
DIMENSIONS AND MOUNTING DATA - MLHSW and MLHSE



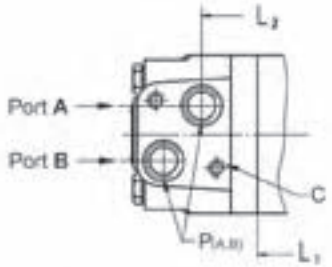
Porting

Side Ports

Version 2 3 5



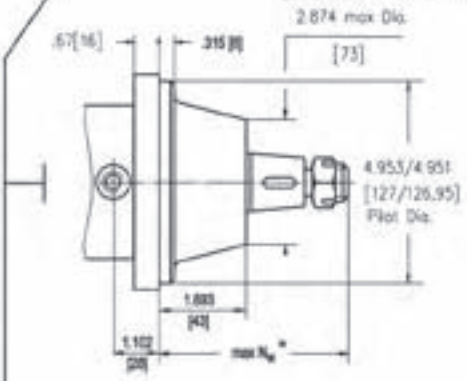
Version 4

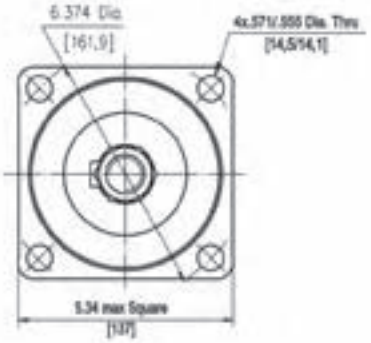


* - for N_W and N_E see page 89

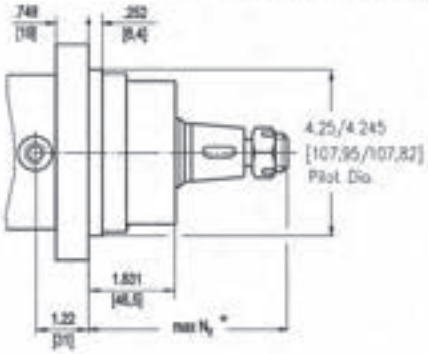
Mounting

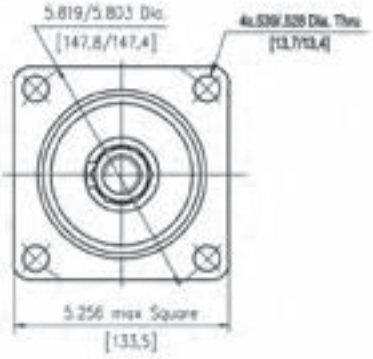
W Wheel Flange





E Wheel Flange





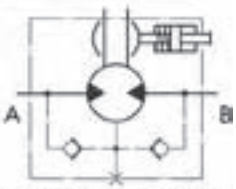
	Versions			
	2	3	4	5
C	2xM10	2xM10	2x⅜-16UNC	2x⅜-16UNC
$P_{A,B}$	2xGΩ	2xM22x1,5	2x⅞-14UNF	2xΩ-14NPTF
T	G°	M14x1,5	⅞-20UNF	⅞-20UNF

Type	L,in. [mm]	L_2,in.[mm]	Type	L,in. [mm]	L_2,in.[mm]	L_1,in.[mm]
MLHSW 80	5.16 [131]	3.43 [87]	MLHSE 80	5.24 [133]	3.60 [91,5]	.55 [14,0]
MLHSW 100	5.28 [134]	3.58 [91]	MLHSE 100	5.39 [137]	3.74 [95]	.69 [17,4]
MLHSW 125	5.47 [139]	3.74 [95]	MLHSE 125	5.55 [141]	3.90 [99]	.86 [21,8]
MLHSW 160	5.71 [145]	3.98 [101]	MLHSE 160	5.79 [147]	4.13 [105]	1.09 [27,8]
MLHSW 200	5.98 [152]	4.25 [108]	MLHSE 200	6.06 [154]	4.41 [112]	1.37 [34,8]
MLHSW 250	6.30 [160]	4.61 [117]	MLHSE 250	6.42 [163]	4.76 [121]	1.71 [43,5]
MLHSW 315	6.73 [171]	5.04 [128]	MLHSE 315	6.85 [174]	5.20 [132]	2.16 [54,8]
MLHSW 400	7.32 [186]	5.63 [143]	MLHSE 400	7.44 [189]	5.79 [147]	2.73 [69,4]
MLHSW 475	7.87 [200]	6.14 [156]	MLHSE 475	7.95 [202]	6.26 [159]	3.25 [82,6]
MLHSW 525	7.56 [192]	5.83 [148]	MLHSE 525	7.64 [194]	5.95 [151]	2.93 [74,5]
MLHSW 565	7.79 [198]	6.06 [154]	MLHSE 565	7.87 [200]	6.18 [157]	3.16 [80,2]

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

DIMENSIONS AND MOUNTING DATA - MLHSBD (MOTOR WITH DRUM BRAKE)



Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum. Releasing the level, the springs pull it and the brake pads back to the initial position. The motor output shaft is released.

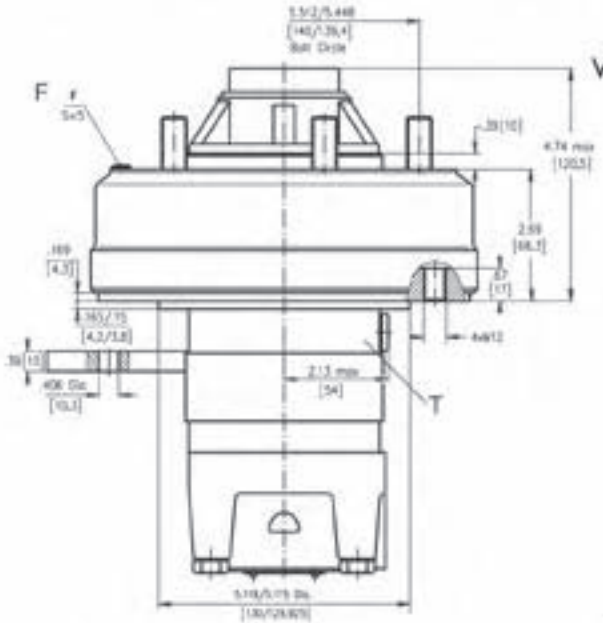
Minimum angle adjustment is 10°. It can be adjusted by dismantling the level.

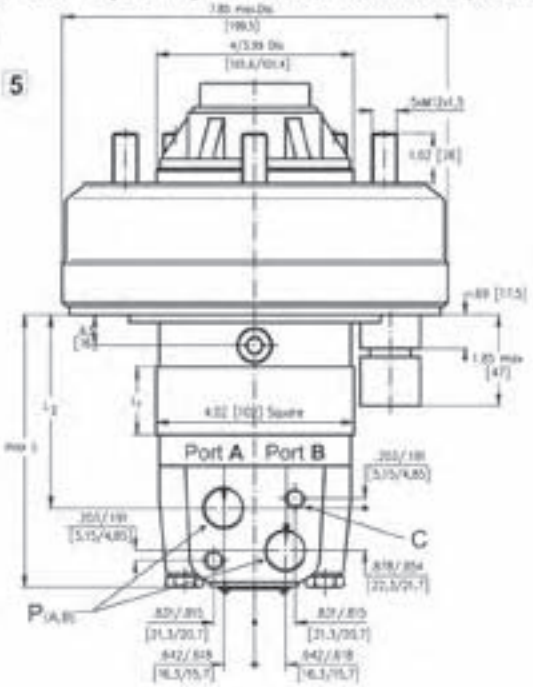
Depending on the application You can choose the actuating direction of the brake level.

The rod connection actuating the brake should be capable of moving at last .975 in. [25 mm] from neutral to extreme position.

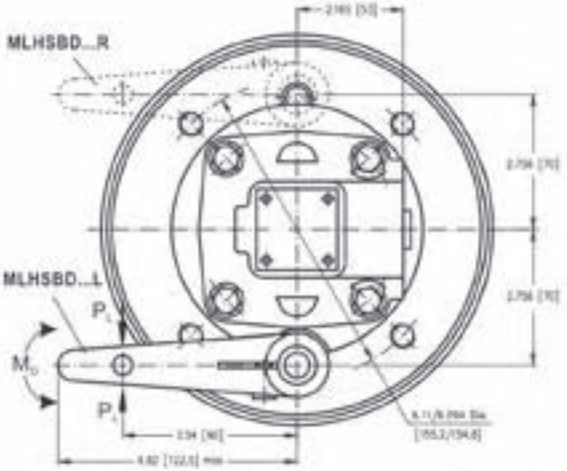
BD Flange

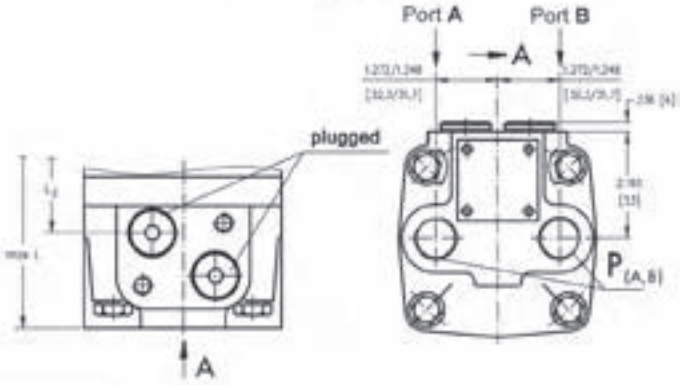
Versions 2 3 4 5





Versions 6 7 8 9





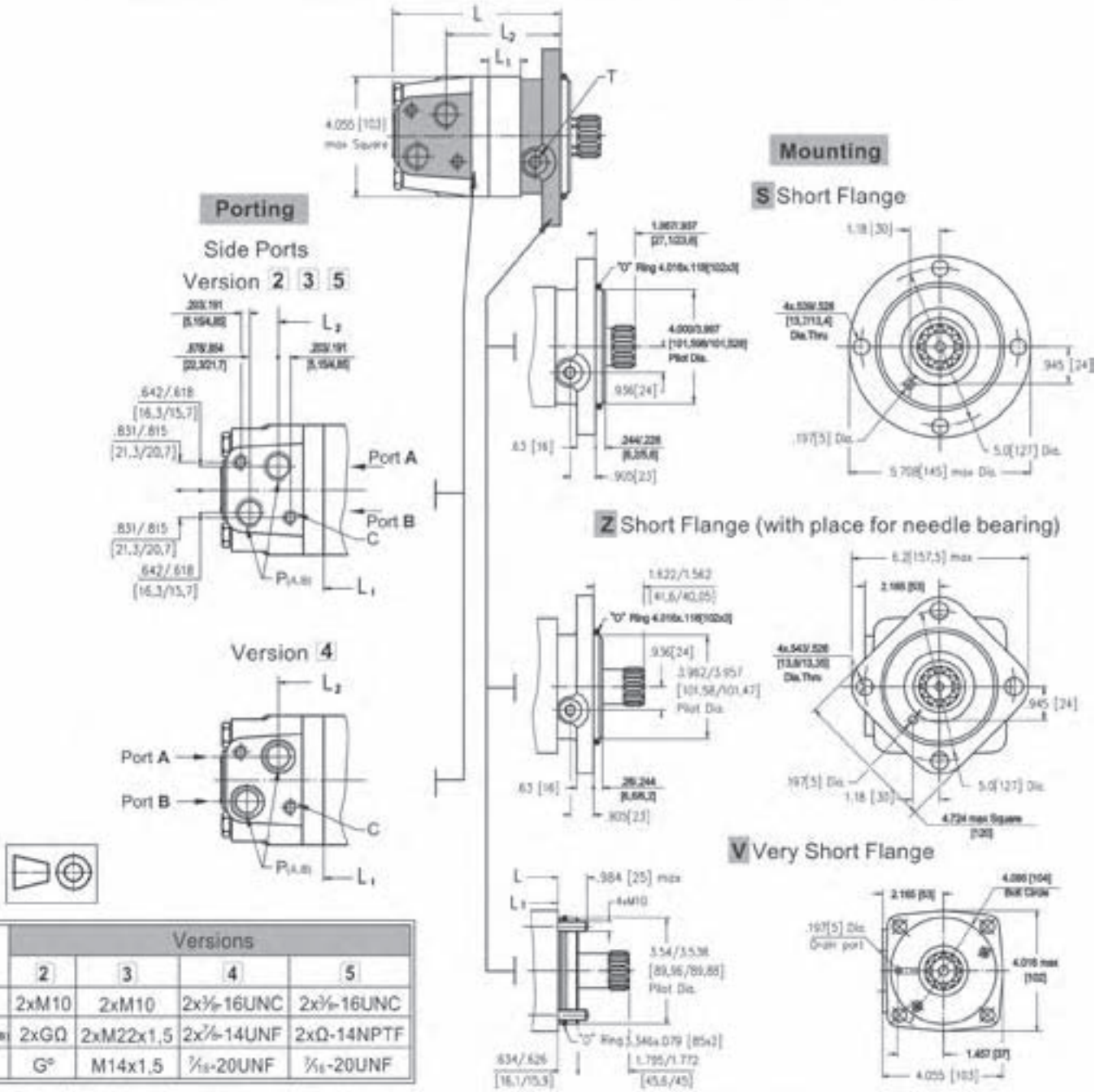
Type	L max, in. [mm]		L1, in. [mm]	L2, in. [mm]
	Versions 2,3,4,5	Versions 6,7,8,9		
MLHSBD 80	4.69 [119]	5.00 [127]	.55 [14,0]	2.91 [74]
MLHSBD 100	4.80 [122]	5.12 [130]	.69 [17,4]	3.03 [77]
MLHSBD 125	4.96 [126]	5.28 [134]	.86 [21,8]	3.23 [82]
MLHSBD 160	5.20 [132]	5.51 [140]	1.09 [27,8]	3.47 [88]
MLHSBD 200	5.47 [139]	5.79 [147]	1.37 [34,8]	3.74 [95]
MLHSBD 250	5.83 [148]	6.14 [156]	1.71 [43,5]	4.33 [110]
MLHSBD 315	6.26 [159]	6.57 [167]	2.16 [54,8]	4.53 [115]
MLHSBD 400	6.85 [174]	7.17 [182]	2.73 [69,4]	5.12 [130]
MLHSBD 475	7.40 [188]	7.72 [196]	3.25 [82,6]	5.63 [143]
MLHSBD 525	7.09 [180]	7.40 [188]	2.93 [74,5]	5.32 [135]
MLHSBD 565	7.32 [186]	7.56 [192]	3.16 [80,2]	5.55 [141]

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

	Versions			
	2, 6	3, 9	4, 7	5, 8
C	2xM10	2xM10	2x⅜-16UNC	2x⅜-16UNC
P(A,B)	2xGΩ	2xM22x1,5	2x½-14UNF	2xΩ-14NPTF
T	G¾	M14x1,5	7/16-20UNF	7/16-20UNF
F	Inspection hole for checking brake lining			

DIMENSIONS AND MOUNTING DATA - MLHSS, MLHSV and MLHSZ



	Versions			
	2	3	4	5
C	2xM10	2xM10	2x⅜-16UNC	2x⅜-16UNC
$P_{A,B}$	2xGΩ	2xM22x1,5	2x⅞-14UNF	2xΩ-14NPTF
T	G°	M14x1,5	⅞-20UNF	⅞-20UNF

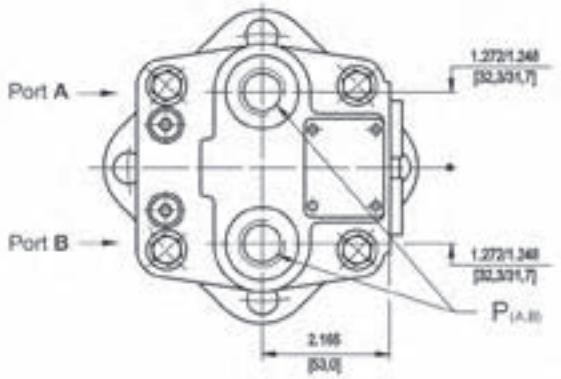
Type	L, in. [mm]	L_2, in.[mm]	Type	L, in. [mm]	L_2, in.[mm]	L_1, in.[mm]
MLHSS(Z) 80	4.92 [125]	3.27 [83]	MLHSV 80	3.58 [91]	2.05 [52,0]	.55 [14,0]
MLHSS(Z) 100	5.08 [129]	3.43 [87]	MLHSV 100	3.70 [94]	2.19 [55,5]	.69 [17,4]
MLHSS(Z) 125	5.24 [133]	3.54 [90]	MLHSV 125	3.90 [99]	2.36 [60,0]	.86 [21,8]
MLHSS(Z) 160	5.47 [139]	3.78 [96]	MLHSV 160	4.13 [105]	2.60 [66,0]	1.09 [27,8]
MLHSS(Z) 200	5.75 [146]	4.05 [103]	MLHSV 200	4.41 [112]	2.87 [73,0]	1.37 [34,8]
MLHSS(Z) 250	6.10 [155]	4.41 [112]	MLHSV 250	4.72 [120]	3.21 [81,5]	1.71 [43,5]
MLHSS(Z) 315	6.54 [166]	4.84 [123]	MLHSV 315	5.20 [132]	3.66 [93,0]	2.16 [54,8]
MLHSS(Z) 400	7.13 [181]	5.43 [138]	MLHSV 400	5.75 [146]	4.25 [108]	2.73 [69,4]
MLHSS(Z) 475	7.64 [194]	5.98 [152]	MLHSV 475	6.30 [160]	4.76 [121]	3.25 [82,6]
MLHSS(Z) 525	7.32 [186]	5.67 [144]	MLHSV 525	5.98 [152]	4.45 [113]	2.93 [74,5]
MLHSS(Z) 565	7.56 [192]	5.91 [150]	MLHSV 565	6.22 [158]	4.68 [119]	3.16 [80,2]

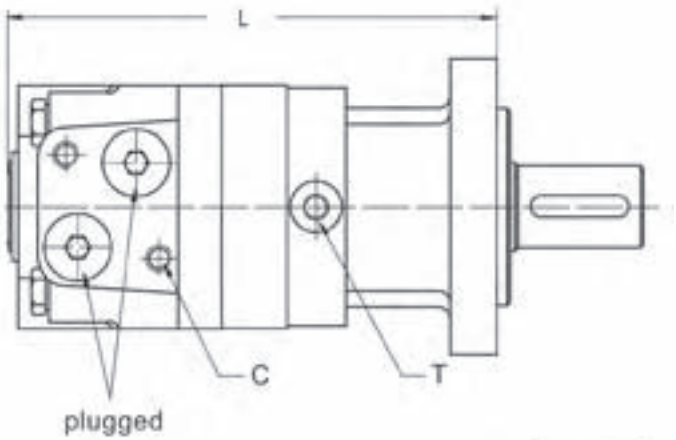
Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

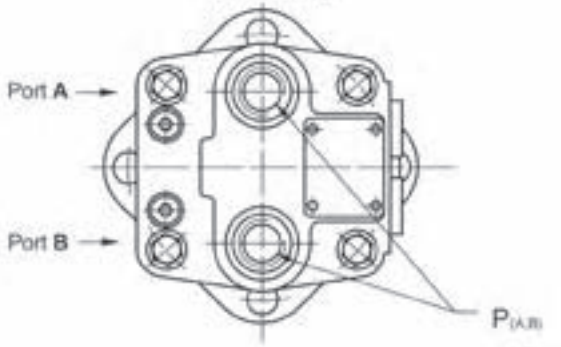
MLHS -REAR PORTS

Version 6 8 9





Version 7



	Versions			
	6	7	8	9
C	2xM10	2x⅜-16UNC	2x⅜-16UNC	2xM10
P(A,B)	2xGΩ	2x⅞-14UNF	2xΩ-14NPTF	2xM22x1,5
T	G°	⅛-20UNF	⅛-20UNF	M14x1,5

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

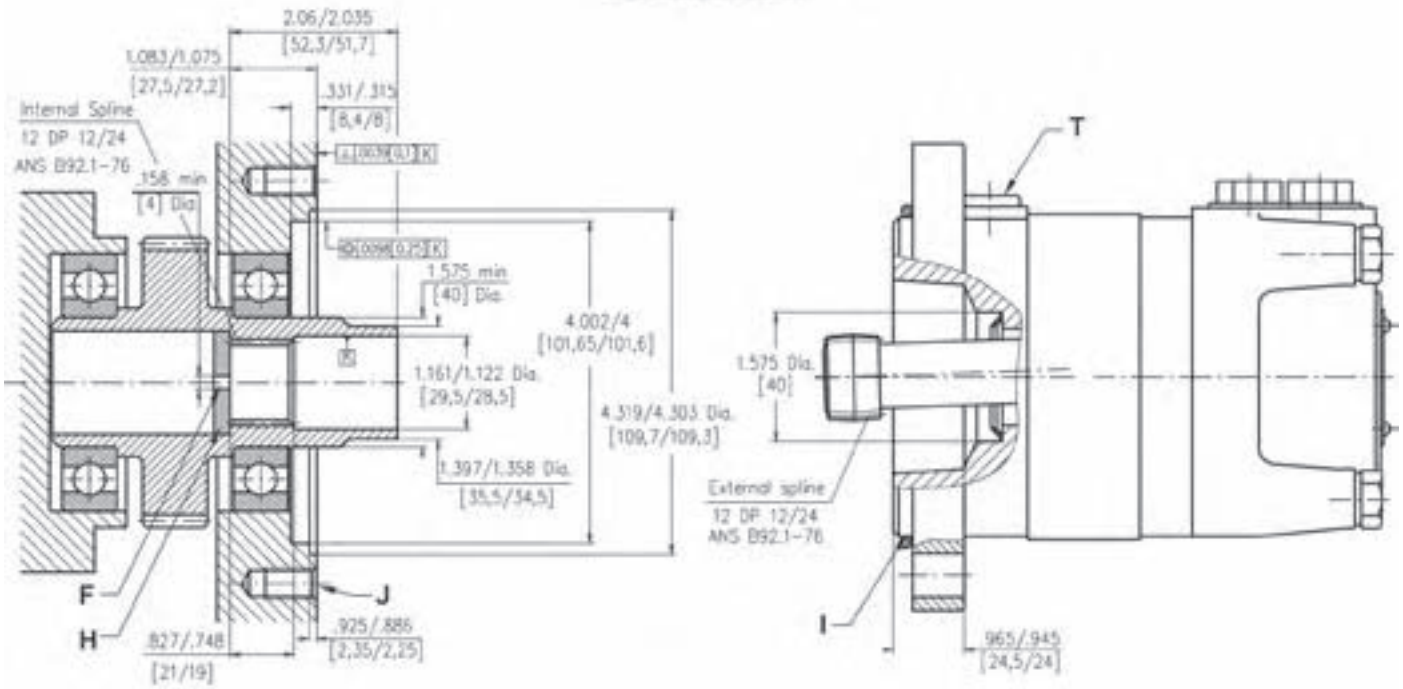
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Type	L,in. [mm]	Type	L,in. [mm]
MLHSS(Z) 80	5.28 [134]	MLHSV 80	3.82 [97]
MLHSS(Z) 100	5.43 [138]	MLHSV 100	3.94 [100]
MLHSS(Z) 125	5.55 [141]	MLHSV 125	4.13 [105]
MLHSS(Z) 160	5.79 [147]	MLHSV 160	4.37 [111]
MLHSS(Z) 200	6.06 [154]	MLHSV 200	4.64 [118]
MLHSS(Z) 250	6.42 [163]	MLHSV 250	4.96 [126]
MLHSS(Z) 315	6.85 [174]	MLHSV 315	5.43 [132]
MLHSS(Z) 400	7.44 [189]	MLHSV 400	6.02 [153]
MLHSS(Z) 475	7.99 [203]	MLHSV 475	6.54 [166]
MLHSS(Z) 525	7.68 [195]	MLHSV 525	6.22 [158]
MLHSS(Z) 565	7.91 [201]	MLHSV 565	6.46 [164]

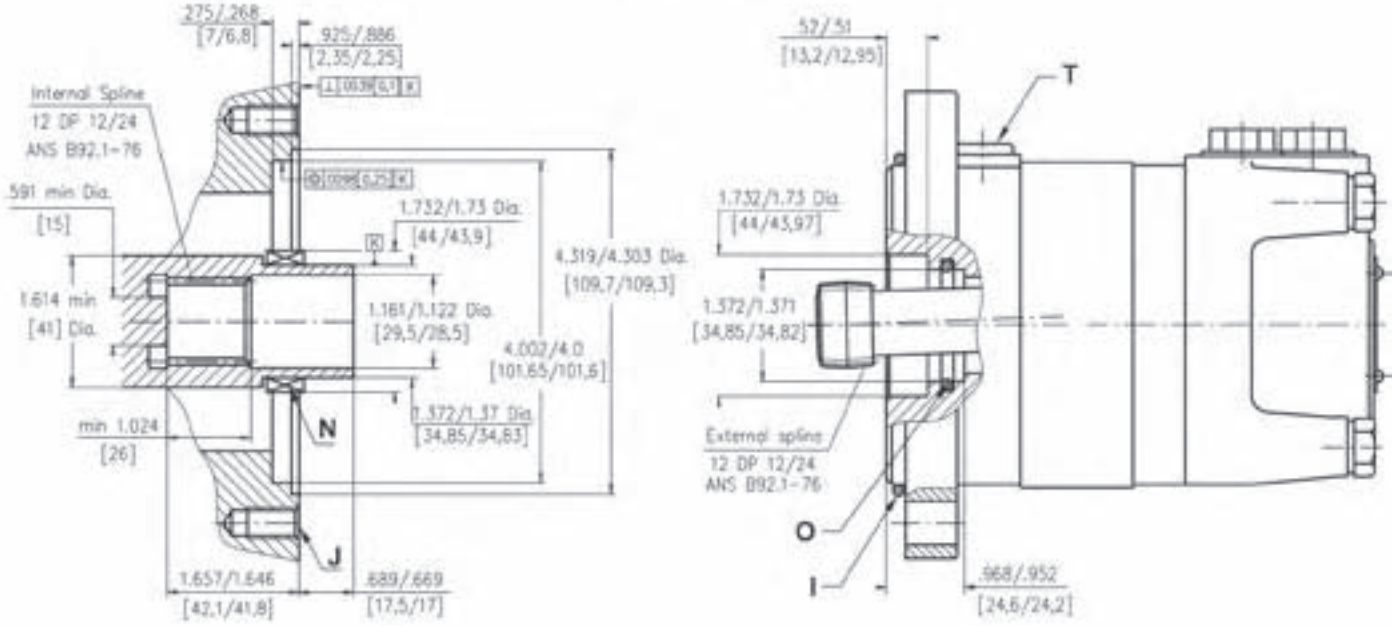
Type	L,in. [mm]	Type	L,in. [mm]	Type	L,in. [mm]
MLHS(A,F,B) 80	6.89 [175]	MLHSW 80	5.43 [138]	MLHSE 80	5.51 [140]
MLHS(A,F,B) 100	7.05 [179]	MLHSW 100	5.59 [142]	MLHSE 100	5.67 [144]
MLHS(A,F,B) 125	7.21 [183]	MLHSW 125	5.75 [146]	MLHSE 125	5.83 [148]
MLHS(A,F,B) 160	7.44 [189]	MLHSW 160	5.99 [152]	MLHSE 160	6.06 [154]
MLHS(A,F,B) 200	7.72 [196]	MLHSW 200	6.26 [159]	MLHSE 200	6.34 [161]
MLHS(A,F,B) 250	8.07 [205]	MLHSW 250	6.62 [168]	MLHSE 250	6.69 [170]
MLHS(A,F,B) 315	8.50 [216]	MLHSW 315	7.05 [179]	MLHSE 315	7.13 [181]
MLHS(A,F,B) 400	9.05 [230]	MLHSW 400	7.64 [194]	MLHSE 400	7.72 [196]
MLHS(A,F,B) 475	9.61 [244]	MLHSW 475	8.15 [207]	MLHSE 475	8.23 [209]
MLHS(A,F,B) 525	9.29 [236]	MLHSW 525	7.84 [199]	MLHSE 525	7.91 [201]
MLHS(A,F,B) 565	9.53 [242]	MLHSW 565	8.07 [205]	MLHSE 565	8.15 [207]

DIMENSIONS OF THE ATTACHED COMPONENT

For MLHSS



For MLHSZ

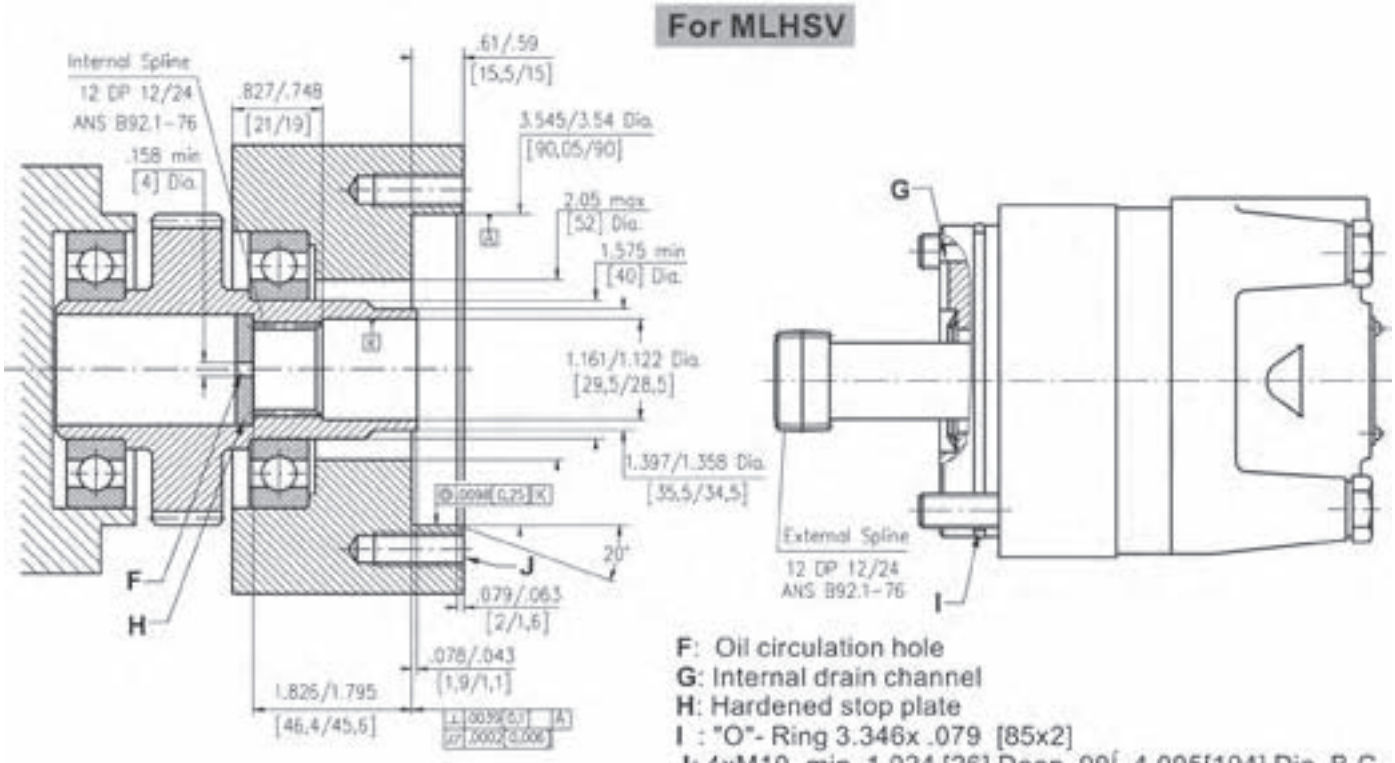


F: Oil circulation hole
H: Hardened stop plate
I: "O"- Ring 4.016x .118 [102x3]

J: 4xΩ UN- min .61 [15] Deep, 90°, 5.00[127] Dia. B.C.
N: Needle bearing 1⅜"x 1æ"
O: "O"- Ring 1.358x .104 [34,5x2,65]
T: Drain connection G1/4, M14x1,5 or ⅛ -20UNF

DIMENSIONS OF THE ATTACHED COMPONENT (continued)

For MLHSV



F: Oil circulation hole
G: Internal drain channel
H: Hardened stop plate
I : "O"- Ring 3.346x .079 [85x2]
J: 4xM10- min 1.024 [26] Deep, 90°, 4.095[104] Dia. B.C.

DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

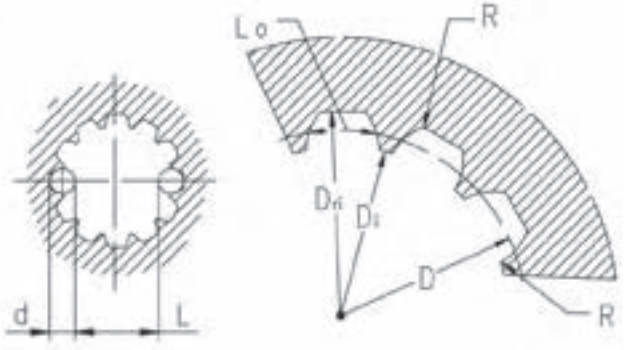
- For MLHSS, MLHSZ at the drain port of the motor;
- For MLHSV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

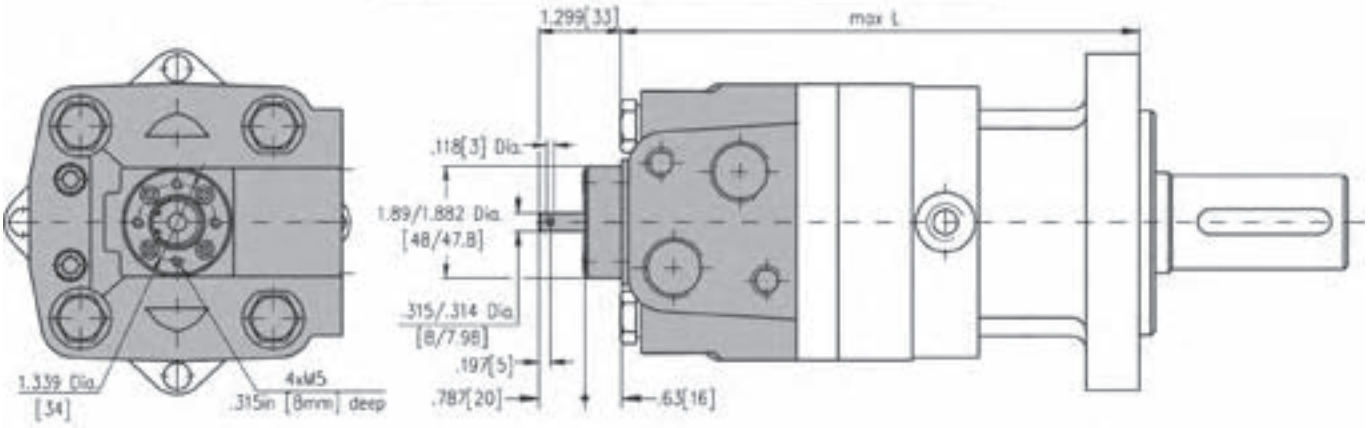
Standard ANS B92.1-1976, class 5
[m=2.1166; corrected x.m=0.8]

Fillet Root Side Fit		inch	mm
Number of Teeth	z	12	12
Diametral Pitch	DP	12/24	12/24
Pressure Angle		30°	30°
Pitch Dia.	D	1	25,4
Major Dia.	Dri	1.1 ~ 1.098	$28,0_{-0,1}$
Minor Dia.	Di	.907 ~ .905	$23,0^{+0,033}$
Space Width [Circular]	Lo	.1704 ~ .1688	4,308±0,020
Fillet Radius	R	.008	0,2
Max. Measurement between Pins	L	.699 ~ .694	$17,62^{+0,15}$
Pin Dia.	d	.19039".19031	4,835±0,001



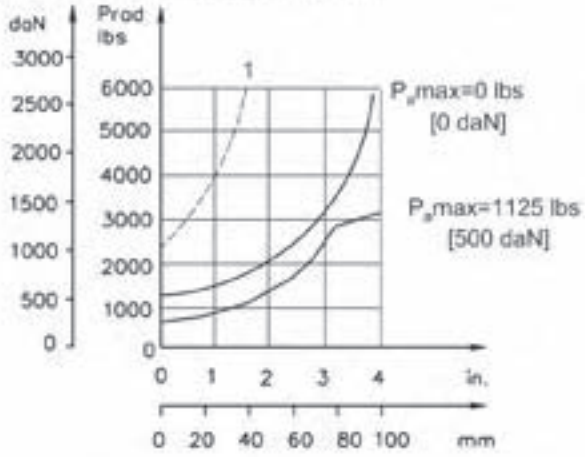
Hardering Specification:
HRC 60±2
HRC 52
.035-.019 [0,7±0,2] effective case depth
Materiall 20 MoCr4 DIN 17210 or better

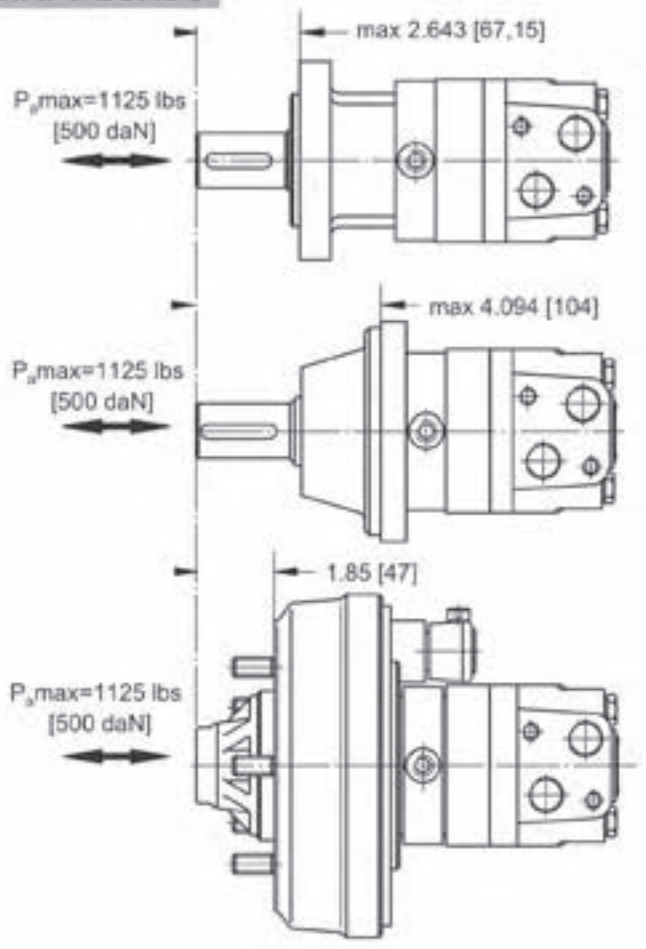
MOTORS WITH TACHO CONNECTION



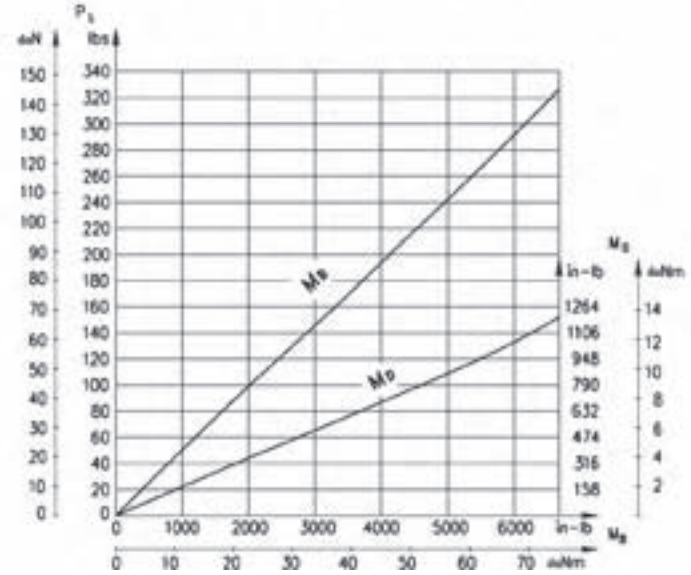
PERMISSIBLE SHAFT LOADS

The output shaft runs in tapered bearings that permit high axial and radial forces.
Curve "1" shows max radial shaft load. Any shaft loads exceeding the values quoted in the curve will involve a risk of breakage. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



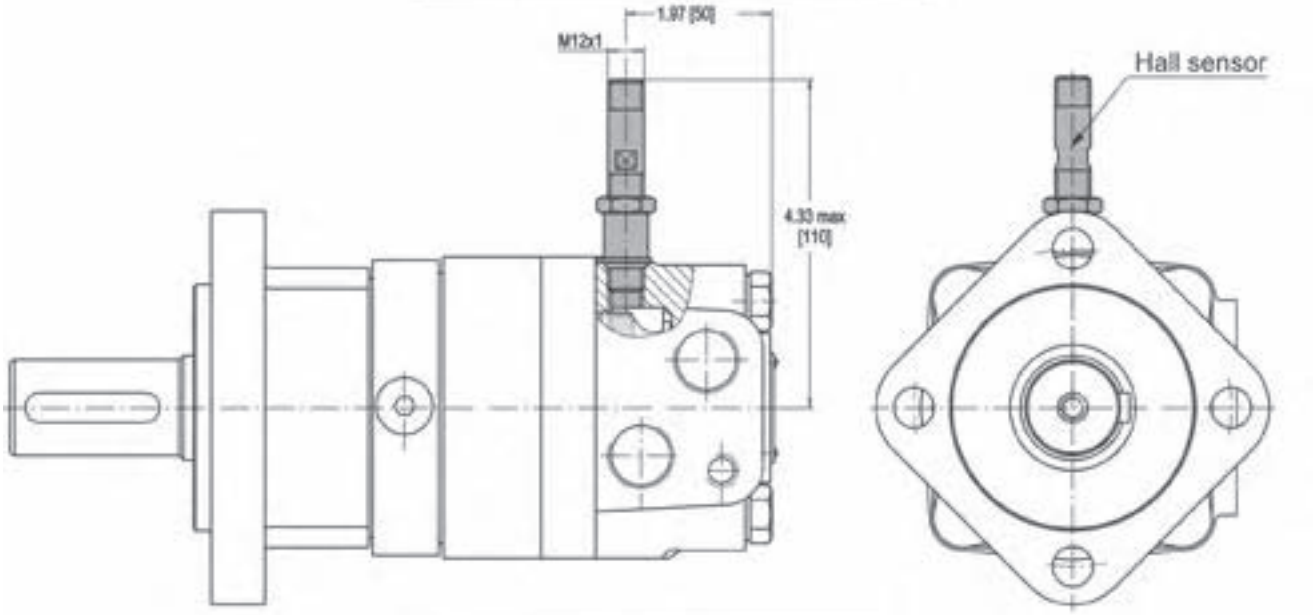


FUNCTION DIAGRAM MLHSBD



P_L - Brake Lever Load
M_B - Brake Torque
M_D - Brake Lever Torque

MOTORS WITH SPEED SENSOR

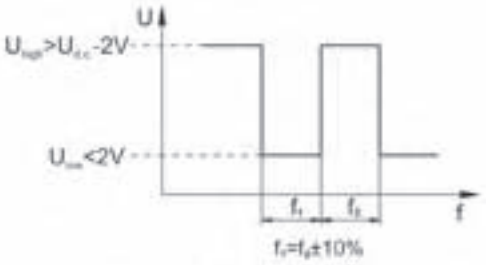


Differential Hall Sensor

Technical data

Frequency range	3...20 000 Hz
Output	PNP, NPN
Power supply	10...36 VDC
Current input	20 mA (@24 VDC)
Current load	500 mA (@24 VDC;24°C)
Ambient Temperature	minus 40... plus 125°C
Protection	IP 67
Plug connector	M12-Series
Mounting principle	ISO 6149
Pulses per revolution	54

Output signal



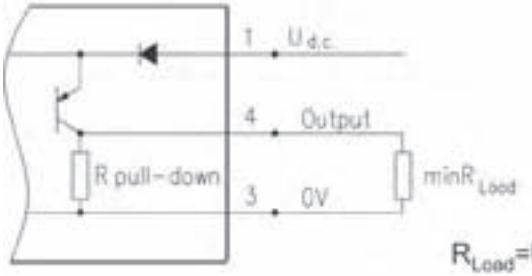
$f_x=f_y\pm10\%$

Load max.:$I_{high}=I_{low}$<50mA

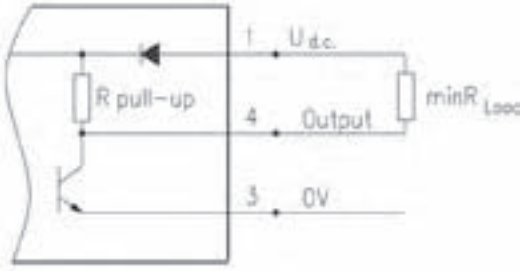
No load current, max: 20 mA

Wiring diagrams

PNP

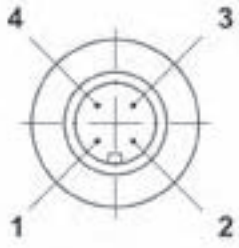


NPN



$R_{Load}=U_{d.c.}/I_{max}$ (=50mA)

Stik type



Terminal No.	Connection
1	$U_{d.c.}$
2	No connection
3	0V
4	Output signal

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ORDER CODE

	1	2	3	4	5	6	7	8	9	10
MLHS										

Pos.1 - Mounting Flange

omit	- SAE A-4, four holes
A	- SAE A-2, two holes
B	- SAE B, two holes
E	- Wheel mount, 4.25 Pilot Dia.***
F	- Magneto, four holes (six holes at customer's request)
S	- Short
V	- Very short
W	- Wheel mount, 5.00 Pilot Dia.
Z	- Short, with place for needle bearing
BD	- With drum brake

Pos.2 - Displacement code

80	- 4.91 [80,5] in.³/rev. [cm.³/rev.]
100	- 6.10 [100,0] in.³/rev. [cm.³/rev.]
125	- 7.67 [125,7] in.³/rev. [cm.³/rev.]
160	- 9.74 [159,7] in.³/rev. [cm.³/rev.]
200	- 12.20 [200,0] in.³/rev. [cm.³/rev.]
250	- 15.30 [250,0] in.³/rev. [cm.³/rev.]
315	- 19.20 [314,9] in.³/rev. [cm.³/rev.]
400	- 24.20 [397,0] in.³/rev. [cm.³/rev.]
475	- 28.96 [474,6] in.³/rev. [cm.³/rev.]
525	- 31.88 [522,7] in.³/rev. [cm.³/rev.]
565	- 34.47 [564,9] in.³/rev. [cm.³/rev.]

Pos.3 - Shaft Extensions*

omit	- for **S, Z** and **V** mounting flange
C	- 1⁶⁄₄" [31,75] straight, Parallel key
D	- 1" [25,4] straight, Parallel key
G	- 1⁶⁄₄" [31,75] 14T Splined
M	- 32 mm straight, Parallel key
P	- 34,85 mm Splined, p.t.o. DIN 9611 Form 1
S	- 1" [25,4] SAE 6B Splined
T	- 1⁶⁄₄" [31,75] J501 Tapered

Pos. 4 - Actuating Direction [for MLHSBD only]

R	- right
L	- left

Pos. 5 - Port Size/Type [standard manifold to each]

2	- side ports, 2xG1/2, G1/4, BSP thread, ISO 228
3	- side ports, 2xM22x1,5; M14x1,5; metric thread, ISO 262
4	- side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF
5	- side ports, 2x1/2-14 NPTF, 7/16-20 UNF
6	- rear ports, 2xG1/2; G1/4; BSP thread, ISO 228
7	- rear ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF
8	- rear ports, 2x1/2-14 NPTF, 7/16-20 UNF
9	- rear ports, 2xM22x1,5, M14x1,5; metric thread, ISO 262

Pos. 6 - Speed Monitoring

omit	- none
T	- with tacho connection (only for side ports)
RS-P	- with speed sensor (PNP pull-down resistor)
RS-N	- with speed sensor (NPN pull-up resistor)

Pos. 7 - Special Features [see Specification data-page 81]

omit	- none
LL	- Low Leakage
LSV	- Low Speed Valve

Pos. 8 - Rotation

omit	- Standard Rotation
R	- Reverse Rotation

Pos. 9 - Option [Paint]**

omit	- no Paint
P	- Painted
PC	- Corrosion Protected Paint

Pos.10 - Design Series

omit - Factory specified

*Notes : * The permissible output torque for shafts must be not exceeded!*
*** Color at customer's request.*
**** The motor MLHSE is not available with shafts D, P, S.*

The hydraulic motors are mangano phosphatized as standard.