

Orbital Motors

Low Speed, High Torque Motors

BMSY

Series



ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)



Strength in Products,
Strength in Service

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DESCRIPTION

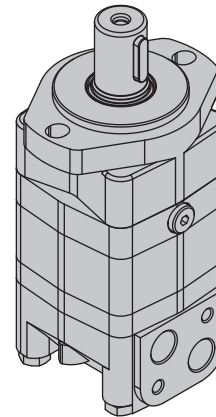
Anfield BMSY series motors use a two-piece rotor design. Seven precision rollers (fig. 3c) added to the lobes of the outer ring (fig. 3a) of the gear set provide sliding contact points which act as roller bearings and reduce friction. This increases mechanical efficiency and reduces wear in systems specially with low fluid viscosity, requiring lower pressure at start-up and providing superior drive life and smoother performance at all speeds.

The disc distributor valve (fig. 5) has been separated from the output shaft (fig. 1) and is driven synchronously by a dedicated short valve drive (fig. 4) ensuring that the individual chambers of the motor are filled and emptied precisely. This allows for higher permissible pressure and torque. The output shaft tapered roller bearings (fig. 1a) permit high axial and radial forces offering a smooth operation during low pressure start up and high pressure operation.

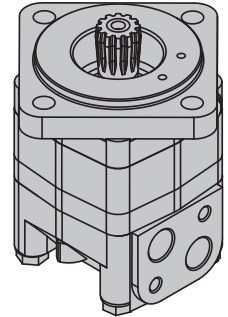
The BMSY series motors can be supplied with various options. The standard motor mount where the mounting flange is located as close to the output shaft as possible supports the motor close to the shaft load.

In traction drive applications, loads can be positioned over the motor bearings for best bearing life. In the W, W1 and WE wheel motors the mounting flanges are located near the center of the motor which permits part of the motor to be located inside the wheel or roller hub, positioning the load directly over the shaft bearing. These wheel motors provide design flexibility in many applications.

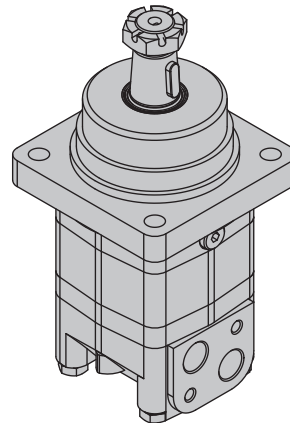
The BMSYS bearingless motor has the same drive components as the standard and wheel motors (with the exception that the motor is assembled without the output shaft (fig. 1), bearings (fig. 1a) and bearing housing). The bearingless motor is especially suited for applications such as gear boxes, winch drives, reel and roll drives. Bearingless motor applications must be designed with a bearing supported internal spline to mate with the bearingless motor drive.



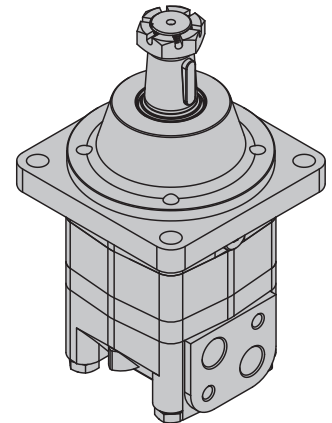
BMSY
Standard



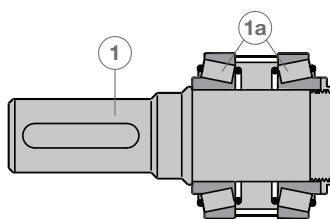
BMSYS
Bearingless



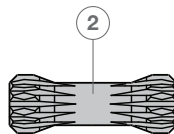
BMSY
Wheel Mount (WE)



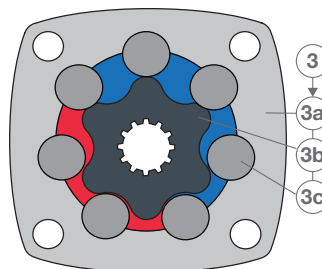
BMSY
Wheel Mount (W, W1)



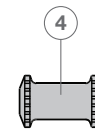
1) Bearing and Shaft Assembly.
Output shaft supported in
tapered roller bearings (1a)



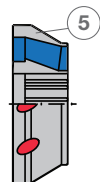
2) Shaft drive link
(Cardan shaft)



3) Roller gear set
3a) Stator (ring)
3b) Rotor (star)
3c) Rollers



4) Valve drive



5) Disc valve

FEATURES

- The BMSY series is a disc valve and roller gerotor design and is offered in standard, wheel and bearingless models.
- Roller gear set design increases efficiency and life by using roller contact versus a solid, sliding contact design.
- Output shaft supported in tapered roller bearings for high axial and radial forces.
- Available in 9 displacement sizes. A variety of mounting and shafts provide flexibility in application design.
- Standard case drain with integral internal drain for extended shaft seal life.
- Standard high pressure shaft seal offers superior seal life and performance.

TYPICAL APPLICATIONS

Conveyors, skid steer attachments, swing motor, metal working machines, road building machines, mining machinery, food industries, lawn and turf equipment, agricultural and harvesting equipment, special vehicles and more.

BMSY, BMSYS MOTOR CROSS REFERENCE GUIDE

<i>Brand</i>	<i>Series</i>
Danfoss®	OMS, OMSW, OMSS
Eaton Char-Lynn®	2000 (104-, 105-, 106-)
White®	WS (350/351/355/356/357/358), HB(300)
Parker®	TF
M&S®	MLHS, MLS, MLHSS
ROSS-TRW®	ME, MB
BREVINI - SAM®	HR

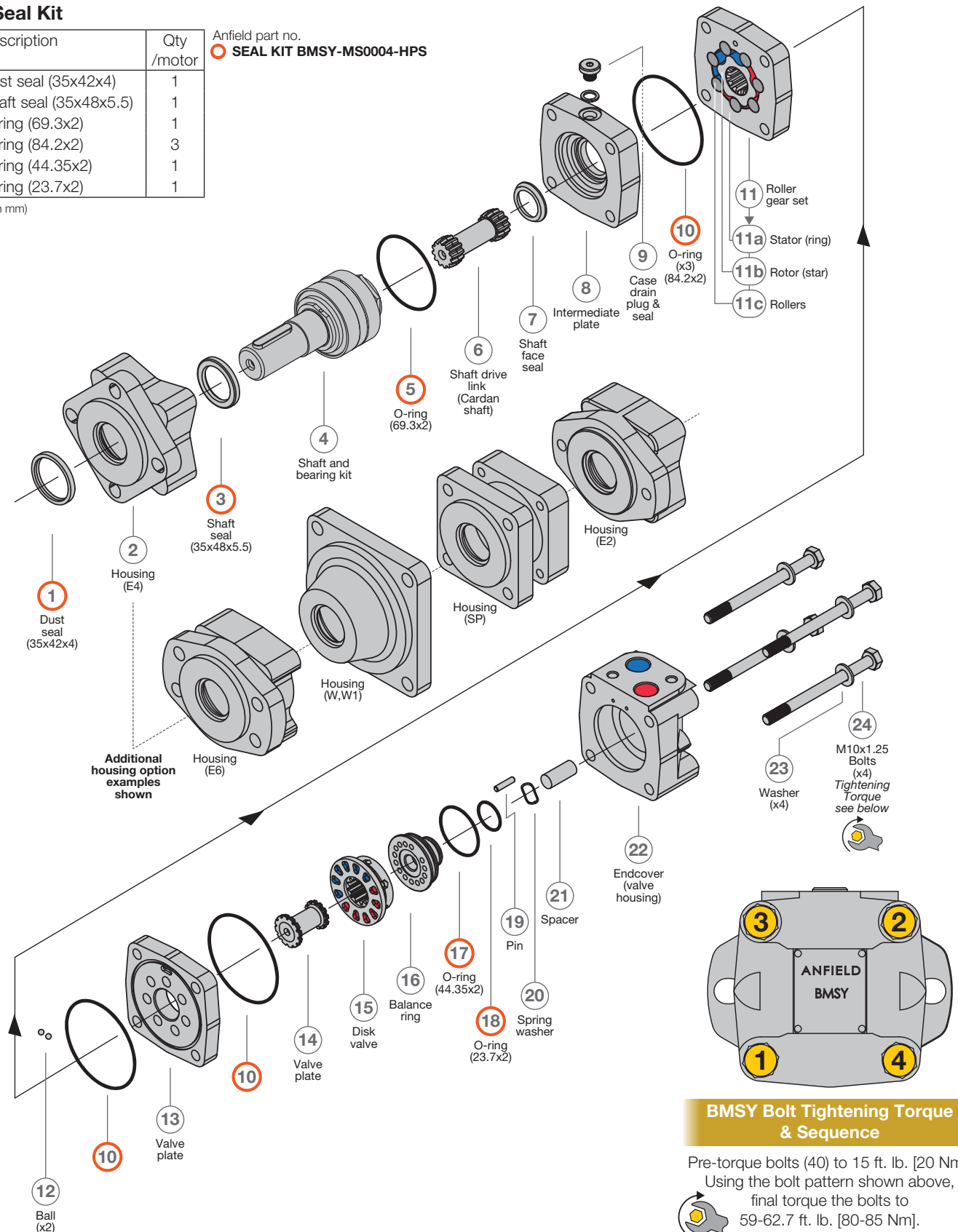
ASSEMBLY DIAGRAM - BMSY SERIES

BMSY Seal Kit

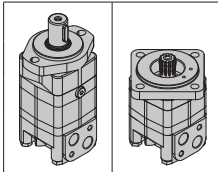
Item No.	Description	Qty /motor
1	Dust seal (35x42x4)	1
3	Shaft seal (35x48x5.5)	1
5	O-ring (69.3x2)	1
10	O-ring (84.2x2)	3
17	O-ring (44.35x2)	1
18	O-ring (23.7x2)	1

(Dimensions in mm)

Anfield part no.
SEAL KIT BMSY-MS0004-HPS



TECHNICAL SPECIFICATIONS - BMSY SERIES



			1	2	3	4	5	6	7	8	9
	BMSY	BMSYS	80	100	125	160	200	250	315	400	475
Geometric Displacement	in ³ /r		4.92	6.15	7.63	9.40	11.84	14.83	18.98	24.04	28.99
	cm ³ /r		80.6	100.8	125.0	154.0	194.0	243.0	311.0	394.0	475.0
Max. Speed	rpm	Cont.	800	748	600	470	375	300	240	185	155
		Inter.	988	900	720	560	450	360	280	225	185
Max. Flow	gpm	Cont.	17.2	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8
			65	75	75	75	75	75	75	75	75
	l/min	Inter.	21.2	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
			80	90	90	90	90	90	90	90	90
Max. Torque	lbf-ft	Cont.	166.1	214.0	269.4	357.9	432.5	522.5	649.4	649.4	671.6
			225	290	365	485	586	708	880	880	910
	Nm	Inter.	225.1	287.8	354.2	435.4	520.3	634.7	738.0	723.2	730.6
			305	390	480	590	705	860	1000	980	990
Max. Pressure Drop	Δ psi	Cont.	2973	2973	2973	3046	3046	2901	2901	2321	2031
			205	205	205	210	210	200	200	160	140
	Δ bar	Inter.	3989	3989	3989	3771	3626	3626	3481	2756	2176
			275	275	275	260	250	250	340	190	150
Max. Output	hp	Cont.	21.5	24.1	24.1	24.3	24.3	24.1	22.8	14.8	12.1
			16.0	18.0	18.0	18.1	18.1	18.0	17.0	11.0	9.0
	kW	Inter.	26.8	29.5	30.8	33.5	32.2	31.9	27.1	16.1	14.8
			20.0	22.0	23.0	25.0	24.0	23.8	20.2	12.0	11.0
Max. Inlet Pressure	Δ psi	Cont.	3626	3626	3626	3626	3626	3626	3626	3626	3626
			250	250	250	250	250	250	250	250	250
	Δ bar	Inter.	4351	4351	4351	4351	4351	4351	4351	4351	4351
			300	300	300	300	300	300	300	300	300
Weight	lbs		21.6	22.0	22.7	23.5	24.4	25.5	27.1	29.0	31.5
	kg		9.8	10.0	10.3	10.7	11.1	11.6	12.3	13.2	14.3

Notes:

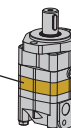
1. Continuous rating (Cont.): motor may be run continuously at these ratings.
2. Intermittent operation (Inter.): 10% of every minute. (6 sec.)
3. Peak: 1% of every minute. (0.6 sec.)
4. Δ Pressure: Δ psi [Δ bar] True pressure difference between inlet port and outlet port.
5. Motor Power (HP) = (Torque Output (In. lbs.) x RPM) / 63025
6. Simultaneous maximum torque & maximum speed NOT recommended and may damage the motor.

PERFORMANCE DATA - BMSY SERIES

BMSY 80

4.9 in³/rev. (80.6 cm³/rev.)

Performance data is based on the geroler displacement and applies to all models. BMSY, BMSYS



		Δ Pressure psi (bar) →					Max. Cont.	Max. Inter.
Torque Speed	lbf.ft (Nm) rpm	508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	2973 (205)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	25.8 (35) 180	59.0 (80) 175	88.5 (120) 168	116.5 (158) 164	143.8 (195) 158	168.2 (228) 151	183.7 (249) 143
	7.9 (30)	25.8 (35) 362	59.0 (80) 352	88.5 (120) 345	116.5 (158) 338	143.8 (195) 330	171.1 (232) 322	191.8 (260) 310
	10.6 (40)	25.8 (35) 487	58.3 (79) 480	87.8 (113) 468	114.3 (155) 457	142.3 (193) 446	167.4 (227) 438	184.4 (250) 425
	13.2 (50)	22.1 (30) 612	56.8 (77) 603	86.3 (117) 592	112.8 (153) 581	141.6 (192) 572	165.2 (224) 558	182.9 (248) 542
	15.9 (60)	20.7 (28) 735	56.8 (77) 726	86.3 (117) 718	112.8 (153) 703	141.6 (192) 687	165.2 (224) 673	179.2 (243) 646
	Max. Cont.	17.2 (65) 794	55.3 (75) 786	85.6 (116) 773	111.4 (151) 760	138.7 (188) 744	160.1 (217) 722	174.1 (236) 705
	Max. Inter.	21.1 (80) 981	53.1 (72) 968	80.4 (109) 955	104.7 (142) 925	129.8 (176) 893	151.9 (206) 870	167.4 (227) 832

☐ Continuous values

☐ Intermittent values (max 10% operation every minute)

BMSY 100

6.2 in³/rev. (100.8 cm³/rev.)


		Δ Pressure psi (bar) →					Max. Cont.	Max. Inter.
Torque Speed	lbf.ft (Nm) rpm	508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	2973 (205)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	35.4 (48) 146	70.1 (95) 144	110.6 (150) 139	147.5 (200) 135	184.4 (250) 130	208.0 (282) 120	228.6 (310) 105
	7.9 (30)	33.2 (45) 291	69.3 (94) 289	107.7 (146) 278	146.0 (198) 274	184.4 (250) 269	213.9 (290) 258	233.8 (317) 242
	10.6 (40)	31.7 (43) 387	65.6 (89) 384	104.7 (142) 374	144.6 (196) 359	182.9 (248) 350	212.4 (288) 335	233.1 (316) 320
	13.2 (50)	29.5 (40) 486	64.9 (88) 483	99.6 (135) 473	143.1 (194) 462	182.2 (247) 450	210.9 (286) 430	232.3 (315) 420
	15.9 (60)	27.3 (37) 588	64.9 (88) 584	97.4 (132) 574	136.4 (185) 562	180.0 (244) 550	208.7 (283) 538	230.1 (312) 520
	Max. Cont.	19.8 (75) 740	59.0 (80) 736	95.9 (130) 720	132.8 (180) 705	177.0 (240) 696	205.8 (279) 676	228.6 (310) 653
	Max. Inter.	23.8 (90) 850	55.3 (75) 840	91.5 (124) 810	125.4 (170) 787	174.1 (236) 770	199.9 (271) 750	223.5 (303) 747

☐ Continuous values

☐ Intermittent values (max 10% operation every minute)

Motors run with high efficiency in all areas until maximum continuous values are exceeded. For best service life of the motor select a motor to run with a torque and speed range printed in the light shaded area. Simultaneous maximum torque and maximum speed NOT recommended and may damage the motor.

Performance data is typical of randomly selected motors at back pressure of 72.5 to 145 psi [5 to 10 bar] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122 F].

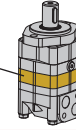
Actual data may vary slightly from one production motor to another.

PERFORMANCE DATA - BMSY SERIES

BMSY 125

7.6 in³/rev. (125 cm³/rev.)

Performance data is based on the geroler displacement and applies to all models. BMSY, BMSYS



Torque Speed lbf.ft (Nm) rpm		Δ Pressure psi (bar) ➡					Max. Cont.	Max. Inter.
		508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	2973 (205)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	40.6 (55) 115	88.5 (120) 113	129.8 (176) 110	180.7 (245) 104	227.9 (309) 98	254.5 (345) 90	276.6 (375) 84
	7.9 (30)	40.6 (55) 231	88.5 (120) 228	129.1 (175) 223	184.4 (250) 214	232.3 (315) 202	268.5 (364) 188	298.0 (454) 172
	10.6 (40)	39.1 (53) 312	87.0 (118) 309	131.3 (178) 290	184.4 (250) 289	232.3 (315) 278	268.5 (364) 262	297.2 (403) 235
	13.2 (50)	36.9 (50) 391	84.8 (115) 386	129.8 (176) 378	182.9 (248) 365	232.3 (315) 352	267.0 (362) 339	292.8 (397) 308
	15.9 (60)	33.2 (45) 469	83.3 (113) 461	126.1 (171) 450	177.8 (241) 437	227.2 (308) 425	264.0 (358) 400	292.8 (397) 372
	Max. Cont. 19.8 (75)	33.2 (45) 588	81.1 (110) 574	123.2 (167) 560	177.0 (240) 544	225.7 (306) 525	259.6 (352) 505	286.9 (389) 481
	Max. Inter. 23.8 (90)	29.5 (40) 710	77.4 (108) 696	119.5 (162) 680	174.8 (237) 661	222.0 (301) 646	253.0 (343) 628	278.8 (378) 610

Continuous values

Intermittent values (max 10% operation every minute)

BMSY 160

9.4 in³/rev. (154 cm³/rev.)



Torque Speed lbf.ft (Nm) rpm		Δ Pressure psi (bar) ➡					Max. Cont.	Max. Inter.
		508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	3046 (210)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	51.6 (70) 93	104.7 (142) 91	158.6 (215) 89	219.8 (298) 85	274.7 (372) 80	320.8 (435) 76	351.1 (476) 58
	7.9 (30)	53.8 (73) 189	111.4 (151) 187	166.0 (225) 181	230.1 (312) 176	281.7 (382) 170	336.3 (456) 162	362.9 (492) 153
	10.6 (40)	55.3 (75) 252	112.1 (152) 250	168.2 (228) 246	231.6 (314) 239	282.5 (383) 234	334.9 (454) 228	359.9 (488) 212
	13.2 (50)	51.6 (70) 313	109.2 (148) 310	166.0 (225) 306	225.0 (305) 298	274.4 (372) 293	328.2 (445) 285	354.0 (480) 272
	15.9 (60)	50.2 (62) 378	105.5 (143) 376	160.8 (218) 370	218.3 (296) 362	272.9 (370) 353	326.0 (442) 346	354.0 (480) 332
	Max. Cont. 19.8 (75)	45.7 (62) 475	103.3 (140) 469	155.6 (211) 461	214.6 (291) 450	269.2 (365) 441	323.8 (439) 432	350.3 (475) 414
	Max. Inter. 23.8 (90)	43.5 (59) 567	96.6 (131) 561	149.0 (202) 554	210.9 (286) 543	263.3 (357) 532	313.5 (425) 520	339.3 (460) 509

Continuous values

Intermittent values (max 10% operation every minute)

Motors run with high efficiency in all areas until maximum continuous values are exceeded. For best service life of the motor select a motor to run with a torque and speed range printed in the light shaded area. Simultaneous maximum torque and maximum speed NOT recommended and may damage the motor.

Performance data is typical of randomly selected motors at back pressure of 72.5 to 145 psi [5 to 10 bar] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122 F].

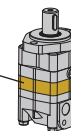
Actual data may vary slightly from one production motor to another.

PERFORMANCE DATA - BMSY SERIES

BMSY 200

11.8 in³/rev. (194 cm³/rev.)

Performance data is based on the geroler displacement and applies to all models.
BMSY, BMSYS



		Δ Pressure psi (bar) ➔					Max. Cont.	Max. Inter.
		508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	3046 (210)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	64.2 (87) 74	132.0 (179) 73	201.4 (273) 71	273.6 (371) 68	347.4 (471) 64	414.5 (562) 60	449.9 (610) 48
	7.9 (30)	67.1 (91) 150	140.1 (190) 148	212.4 (288) 143	284.7 (386) 140	360.7 (489) 134	421.9 (572) 128	455.8 (618) 119
	10.6 (40)	69.3 (94) 198	142.3 (193) 195	218.3 (296) 192	290.6 (394) 188	367.3 (498) 183	430.7 (584) 178	475.7 (645) 167
	13.2 (50)	66.4 (90) 248	140.9 (191) 246	215.4 (292) 241	286.9 (389) 236	363.6 (493) 230	427.8 (580) 223	467.6 (634) 212
	15.9 (60)	62.7 (85) 300	136.4 (185) 295	205.8 (279) 288	281.7 (382) 281	356.2 (483) 273	424.1 (575) 263	458.8 (622) 251
	Max. Cont.	19.8 (75) 374	129.8 (176) 370	199.9 (271) 364	272.9 (370) 360	348.1 (472) 352	413.8 (561) 340	449.9 (640) 331
	Max. Inter.	23.8 (90) 443	120.2 (163) 440	195.5 (265) 435	266.3 (361) 428	336.3 (456) 424	402.0 (545) 413	441.8 (599) 400

☐ Continuous values

☐ Intermittent values (max 10% operation every minute)

BMSY 250

14.8 in³/rev. (243 cm³/rev.)


		Δ Pressure psi (bar) ➔					Max. Cont.	Max. Inter.
		508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	2901 (200)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	81.1 (110) 59	170.4 (231) 58	258.9 (351) 56	340.9 (462) 53	431.5 (585) 50	502.3 (681) 46	573.8 (778) 35
	7.9 (30)	85.6 (116) 119	174.1 (236) 117	264.3 (359) 114	350.3 (475) 108	440.3 (597) 102	516.3 (700) 92	582.7 (790) 80
	10.6 (40)	87.0 (118) 162	177.8 (241) 159	267.7 (363) 156	354.0 (480) 150	441.8 (599) 143	520.7 (706) 134	587.1 (796) 121
	13.2 (50)	81.9 (111) 203	172.6 (234) 201	259.6 (352) 197	348.1 (472) 191	435.9 (591) 182	511.1 (693) 173	581.2 (788) 158
	15.9 (60)	78.2 (106) 244	165.2 (224) 242	254.5 (345) 237	340.8 (462) 230	429.3 (582) 220	505.2 (685) 208	569.4 (772) 194
	Max. Cont.	19.8 (75) 303	157.8 (214) 299	250.8 (340) 294	334.9 (454) 285	420.4 (570) 272	494.2 (670) 260	560.5 (760) 244
	Max. Inter.	23.8 (90) 363	154.2 (209) 359	247.1 (335) 354	329.7 (447) 348	412.3 (559) 340	484.6 (657) 328	552.4 (749) 303

☐ Continuous values

☐ Intermittent values (max 10% operation every minute)

Motors run with high efficiency in all areas until maximum continuous values are exceeded. For best service life of the motor select a motor to run with a torque and speed range printed in the light shaded area. Simultaneous maximum torque and maximum speed NOT recommended and may damage the motor.

Performance data is typical of randomly selected motors at back pressure of 72.5 to 145 psi [5 to 10 bar] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122 F].

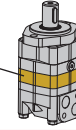
Actual data may vary slightly from one production motor to another.

PERFORMANCE DATA - BMSY SERIES

BMSY 315

19.0 in³/rev. (311 cm³/rev.)

Performance data is based on the geroler displacement and applies to all models. BMSY, BMSYS



		Δ Pressure psi (bar) ➡					Max. Cont.	Max. Inter.
Torque Speed	lbf.ft (Nm) rpm	508 (35)	1015 (70)	1523 (105)	2031 (140)	2538 (175)	2901 (200)	3263 (225)
Flow gpm (l/min) ↓	4.0 (15)	109.2 (148) 48	224.2 (304) 47	336.3 (456) 45	452.1 (613) 43	562.0 (762) 41	648.3 (879) 39	721.3 (978) 27
	7.9 (30)	114.3 (155) 95	231.6 (314) 93	343.0 (465) 91	468.4 (635) 89	573.8 (778) 86	652.0 (884) 82	728.7 (988) 67
	10.6 (40)	118.0 (160) 127	236.8 (321) 125	353.3 (479) 121	479.4 (650) 117	587.1 (796) 115	668.2 (906) 109	735.3 (997) 235
	13.2 (50)	114.3 (155) 159	231.6 (314) 157	343.0 (465) 153	470.6 (638) 149	575.3 (780) 145	653.5 (886) 142	728.7 (988) 128
	15.9 (60)	111.4 (151) 187	225.7 (306) 185	334.1 (453) 181	457.3 (620) 176	564.2 (765) 169	653.5 (886) 157	719.9 (976) 143
	Max. Cont. 19.8 (75)	107.7 (146) 238	221.3 (300) 236	328.2 (445) 232	452.1 (613) 227	556.9 (755) 224	645.4 (875) 220	712.5 (966) 195
Max. Inter.	23.8 (90)	99.6 (135) 286	209.5 (284) 283	321.6 (435) 278	443.3 (601) 272	545.8 (740) 265	636.5 (863) 257	702.2 (952) 232

□ Continuous values

■ Intermittent values (max 10% operation every minute)

BMSY 400

24.0 in³/rev. (394 cm³/rev.)



		Δ Pressure psi (bar) ➡				Max. Cont.	Max. Inter.
Torque Speed	lbf.ft (Nm) rpm	508 (35)	1015 (70)	1523 (105)	2031 (140)	2321 (160)	2538 (175)
Flow gpm (l/min) ↓	4.0 (15)	137.2 (186) 37	279.5 (379) 36	426.3 (578) 35	574.6 (779) 33	660.9 (896) 31	727.2 (986) 29
	7.9 (30)	140.1 (190) 75	286.2 (388) 73	435.2 (590) 71	583.4 (791) 68	667.5 (905) 65	730.9 (991) 61
	10.6 (40)	143.8 (195) 99	290.6 (394) 97	439.6 (596) 95	587.8 (797) 93	672.5 (912) 90	736.1 (998) 85
	13.2 (50)	140.9 (191) 125	286.2 (388) 123	432.9 (587) 118	579.0 (785) 114	666.8 (904) 109	725.0 (983) 102
	15.9 (60)	137.2 (186) 149	286.2 (388) 146	432.9 (587) 142	579.0 (785) 137	666.8 (904) 131	725.0 (983) 122
	Max. Cont. 19.8 (75)	133.5 (181) 187	274.4 (372) 183	424.8 (576) 177	567.9 (770) 171	657.2 (891) 164	717.6 (973) 153
Max. Inter.	23.8 (90)	129.8 (176) 226	270.7 (367) 221	421.1 (571) 214	565.0 (766) 208	651.3 (883) 199	711.7 (965) 183

□ Continuous values

■ Intermittent values (max 10% operation every minute)

Motors run with high efficiency in all areas until maximum continuous values are exceeded. For best service life of the motor select a motor to run with a torque and speed range printed in the light shaded area. Simultaneous maximum torque and maximum speed NOT recommended and may damage the motor.

Performance data is typical of randomly selected motors at back pressure of 72.5 to 145 psi [5 to 10 bar] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122 F].

Actual data may vary slightly from one production motor to another.

PERFORMANCE DATA - BMSY SERIES

BMSY 475

29.0 in³/rev. (475 cm³/rev.)


Performance data is based on the geroler displacement and applies to all models. BMSY, BMSYS

		Δ Pressure psi (bar) →			Max. Cont.	Max. Inter.
Torque	lbf.ft (Nm)	508 (35)	1015 (70)	1523 (105)	2031 (140)	2176 (150)
Speed	rpm					
Flow gpm (l/min) ↓	4.0 (15)	160.8 (218) 30	323.8 (439) 29	487.5 (661) 28	657.9 (892) 27	733.9 (995) 25
	7.9 (30)	164.5 (223) 61	331.9 (450) 60	498.6 (676) 58	671.2 (910) 56	739.0 (1002) 52
	10.6 (40)	168.2 (228) 82	340.0 (461) 80	508.2 (689) 77	683.7 (927) 74	750.1 (1017) 68
	13.2 (50)	165.2 (224) 103	336.3 (456) 101	503.0 (682) 97	678.6 (920) 92	743.5 (1008) 86
	15.9 (60)	162.3 (220) 123	332.6 (451) 121	499.3 (677) 450	673.4 (913) 112	736.1 (998) 105
	Max. Cont.	156.4 (212) 155	326.7 (443) 153	489.7 (664) 147	664.5 (901) 140	722.8 (980) 132
	Max. Inter.	144.6 (196) 186	310.5 (421) 184	474.3 (643) 178	646.8 (877) 170	707.3 (959) 157

□ Continuous values

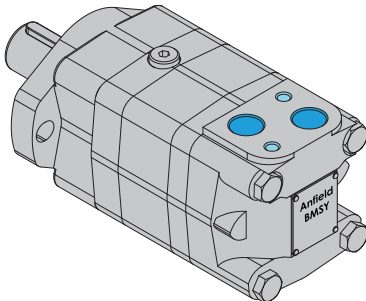
■ Intermittent values (max 10% operation every minute)

Motors run with high efficiency in all areas until maximum continuous values are exceeded. For best service life of the motor select a motor to run with a torque and speed range printed in the light shaded area. Simultaneous maximum torque and maximum speed NOT recommended and may damage the motor.

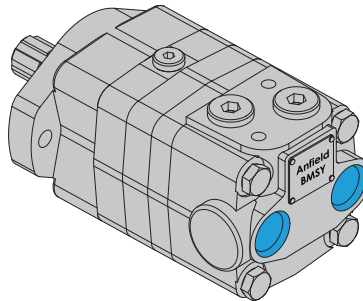
Performance data is typical of randomly selected motors at back pressure of 72.5 to 145 psi [5 to 10 bar] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122 F].

Actual data may vary slightly from one production motor to another.

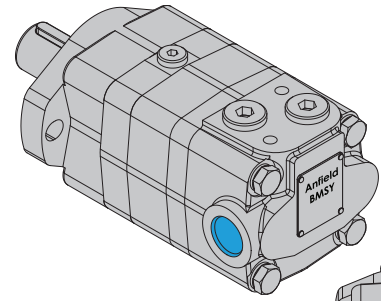
BMSY PORTING CODE OVERVIEW



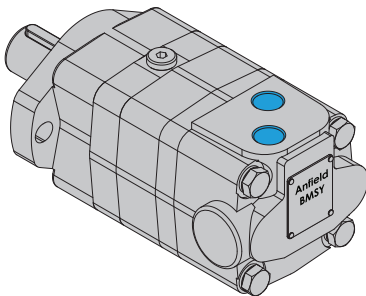
Typical Side Ports
Line/Manifold Mount
S, P, D, M



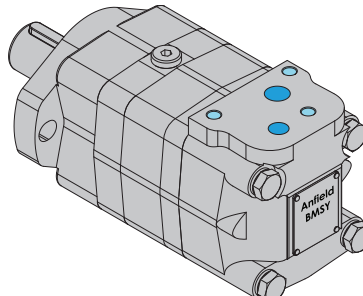
End Ports
Line Mount
EES2, EED, EEM2



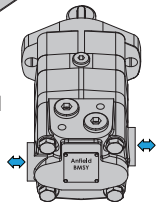
Side Ports
Line Mount 180° Oriented
ED



Alternative Ports
Line Mount
SU, SB, DU, DB, M4



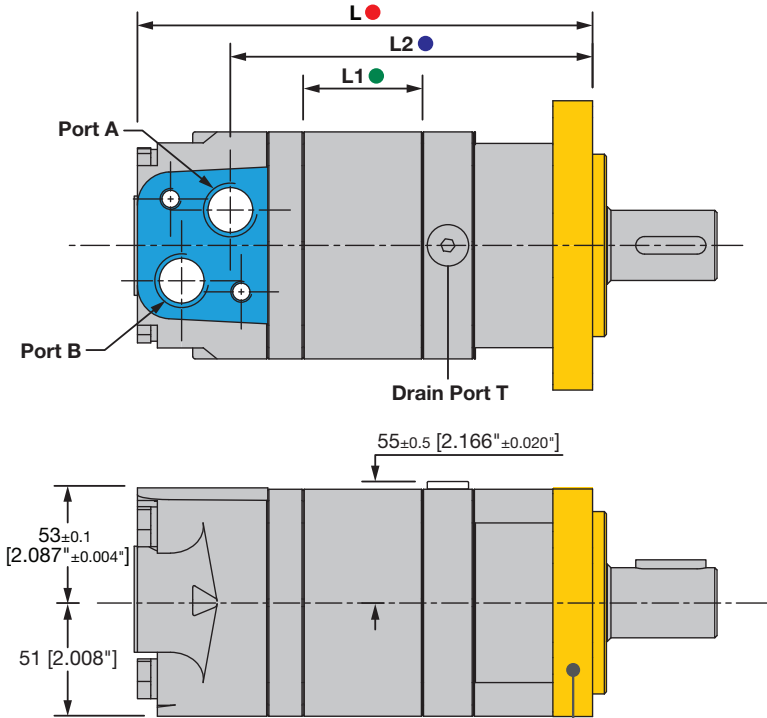
Alternative Ports
Manifold Mount
MU, MM



BMSY OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

Typical Side Ports (S, P, D, M)

(Similar to Danfoss® OMS series style of porting)



GEROLER WIDTH

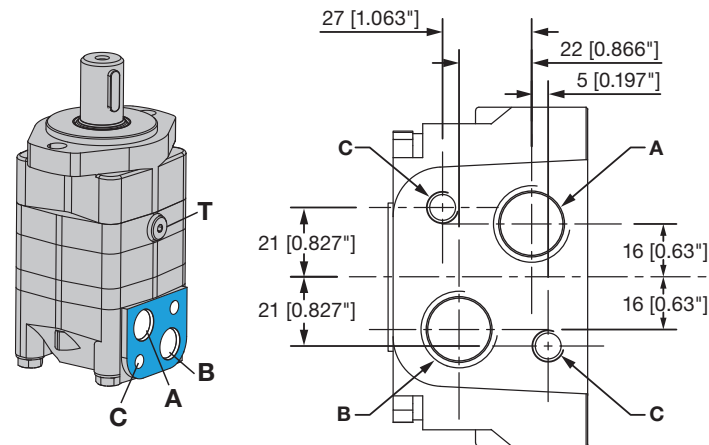
Model	L ● mm [in]	L1 ● mm [in]	L2 ● mm [in]
BMSY 80	170 [6.69"]	16 [0.63"]	126.5 [4.98"]
BMSY 100	174 [6.85"]	20 [0.79"]	130.5 [5.14"]
BMSY 125	179 [7.05"]	25 [0.98"]	135.5 [5.33"]
BMSY 160	181 [7.13"]	27 [1.06"]	137.5 [5.41"]
BMSY 200	188 [7.40"]	34 [1.34"]	144.5 [5.69"]
BMSY 250	196 [7.72"]	42 [1.65"]	152.5 [6.00"]
BMSY 315	208 [8.19"]	54 [2.13"]	164.5 [6.48"]
BMSY 400	223 [8.78"]	69 [2.72"]	179.5 [7.07"]
BMSY 475	237 [9.33"]	83 [3.27"]	193.5 [7.62"]

With Wheel Mount W & W1 GEROLER WIDTH

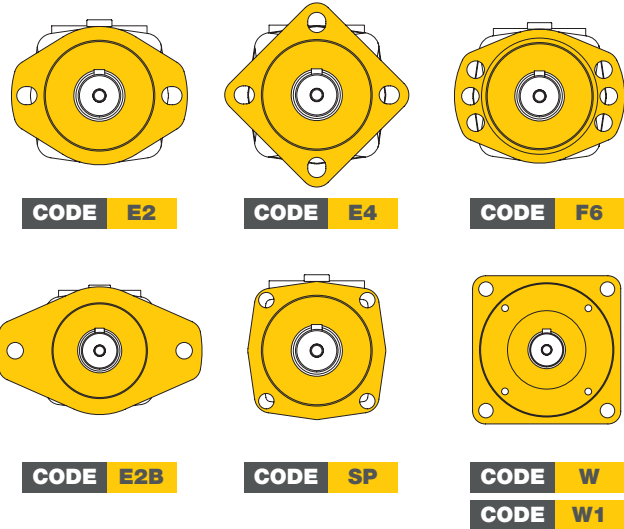
Model	L ● mm [in]	L1 ● mm [in]	L2 ● mm [in]
BMSY 80 W	132.5 [5.22"]	16 [0.63"]	89 [3.50"]
BMSY 100 W	136.5 [5.37"]	20 [0.79"]	93 [3.66"]
BMSY 125 W	141.5 [5.57"]	25 [0.98"]	98 [3.86"]
BMSY 160 W	143.5 [5.65"]	27 [1.06"]	100 [3.94"]
BMSY 200 W	150.5 [5.93"]	34 [1.34"]	107 [4.21"]
BMSY 250 W	158.5 [6.24"]	42 [1.65"]	115 [4.53"]
BMSY 315 W	170.5 [6.71"]	54 [2.13"]	127 [5.00"]
BMSY 400 W	185.5 [7.30"]	69 [2.72"]	142 [5.59"]
BMSY 475 W	199.5 [7.85"]	83 [3.27"]	156 [6.14"]

Note: If the mounting SP is used, add 12mm to dimensions L and L2.

BMSY PORT Line/Manifold Mount



BMSY MOUNTING FLANGES



BMSY PORT CODE				
	S	P	D	M
Connection	SAE ports	NPTF ports	BSPP ports	Metric ports
P (A,B)	7/8-14 UNF (17)	1/2-14 NPTF (15)	G 1/2" (15)	M22x1.5 (15) M
T	7/16-20 UNF (12)	7/16-20 UNF (12)	G 1/4" (12)	M14x1.5 (12) M
C (2x)	3/8-16 UNC (13) U	3/8-16 UNC (13) U	M10 (13) M	M10 (13) M

S : SAE straight thread (O-Ring Boss)

P : NPTF (National Pipe Tapered Fuel)

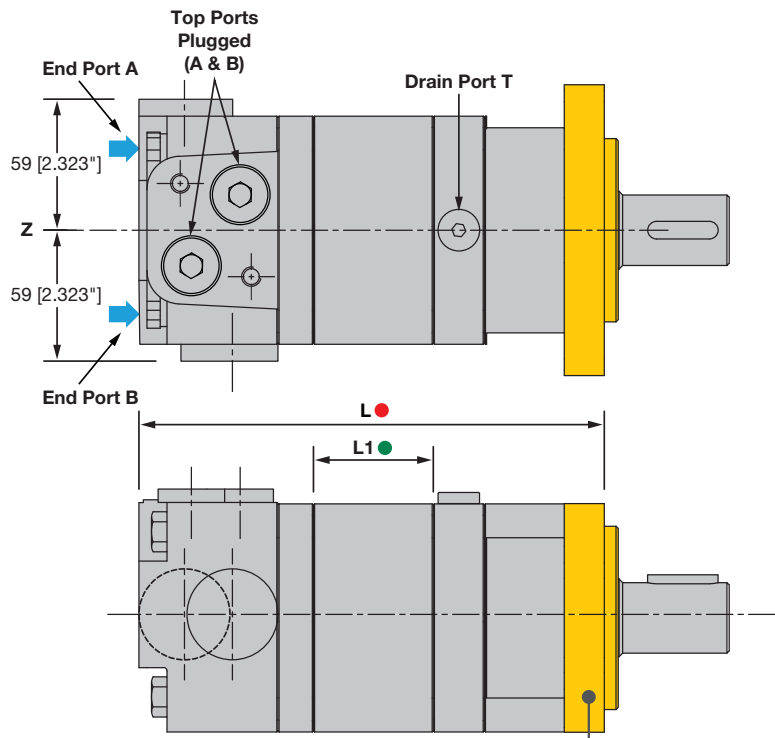
D : BSPP (British Standard Pipe Parallel) G thread

M : Metric port

(Depth in mm)

BMSY OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

End Ports (EES2, EED, EEM2)



GEROLER WIDTH

Model	L ● mm [in]	L1 ● mm [in]
BMSY 80	176 [6.93"]	16 [0.63"]
BMSY 100	180 [7.09"]	20 [0.79"]
BMSY 125	185 [7.28"]	25 [0.98"]
BMSY 160	187 [7.36"]	27 [1.06"]
BMSY 200	194 [7.64"]	34 [1.34"]
BMSY 250	202 [7.95"]	42 [1.65"]
BMSY 315	214 [8.43"]	54 [2.13"]
BMSY 400	229 [9.02"]	69 [2.72"]
BMSY 475	243 [9.57"]	83 [3.27"]

With Wheel Mount WE

GEROLER WIDTH

Model	L ● mm [in]	L1 ● mm [in]
BMSY 80 WE	148 [5.83"]	16 [0.63"]
BMSY 100 WE	152 [5.98"]	20 [0.79"]
BMSY 125 WE	157 [6.18"]	25 [0.98"]
BMSY 160 WE	159 [6.26"]	27 [1.06"]
BMSY 200 WE	166 [6.54"]	34 [1.34"]
BMSY 250 WE	174 [6.85"]	42 [1.65"]
BMSY 315 WE	186 [7.32"]	54 [2.13"]
BMSY 400 WE	201 [7.91"]	69 [2.72"]
BMSY 475 WE	215 [8.46"]	83 [3.27"]

BMSY PORT

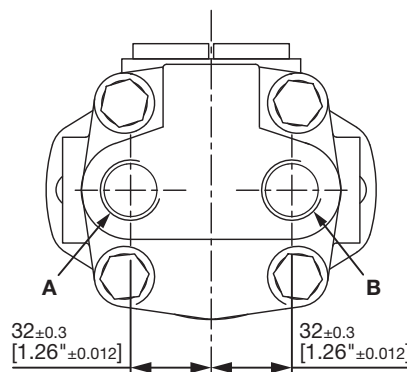
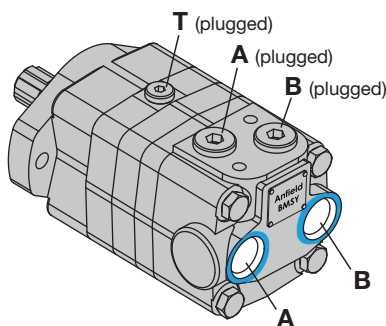
EES2

EED

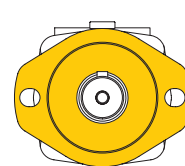
EEM2

Line Mount

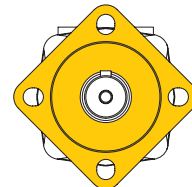
BMSY MOUNTING FLANGES



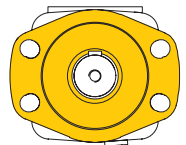
View Z



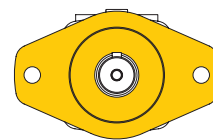
CODE E2



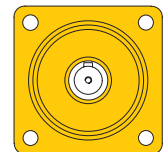
CODE E4



CODE E6



CODE E2B



CODE WE

Connection	BMSY PORT CODE		
	EES2	EED	EEM2
	SAE ports	BSPP ports	Metric ports
P (A,B)	7/8-14 O-Ring (17)	G 1/2 (15)	M22 x 1.5 (15)
T	7/16-20 UNF (12)	G 1/4 (12)	M14 x 1.5 (12)

EES2 : SAE straight thread (O-Ring Boss)

EED : BSPP (British Standard Pipe Parallel) G thread

EEM2 : Metric Port

(Depth in mm)

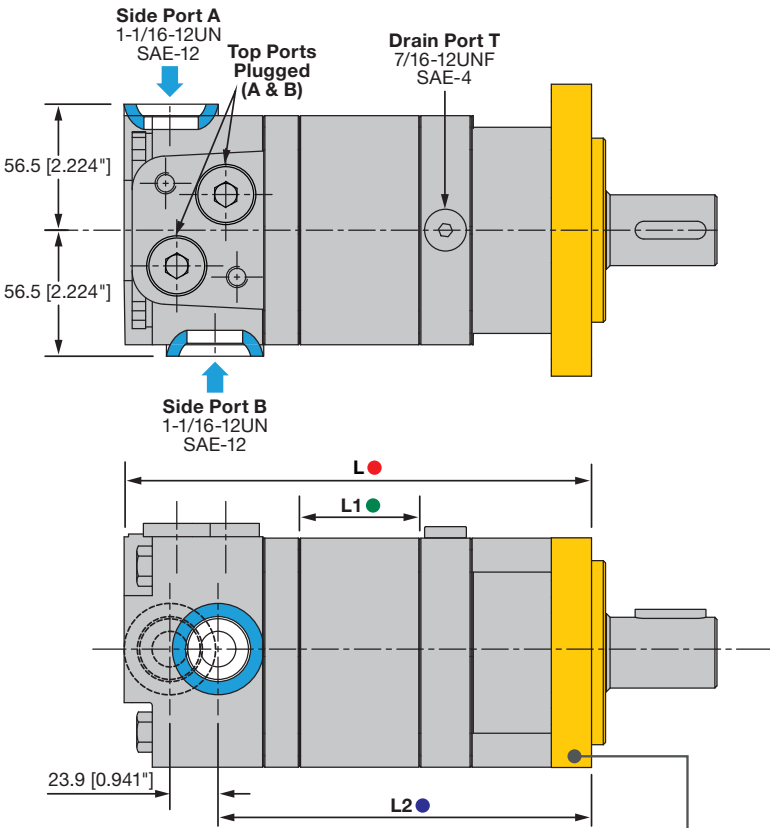
mm [inch]

Imperial Metric

ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)

BMSY OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

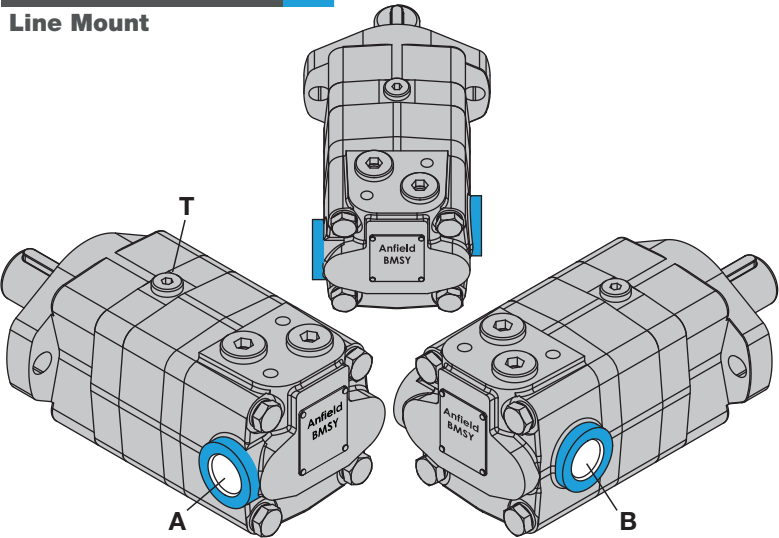
Side Ports Oriented 180° to Each Other (ED)



Model	GEROLER WIDTH		
	L mm [in]	L1 mm [in]	L2 mm [in]
BMSY 80	176 [6.93"]	16 [0.63"]	130 [5.12"]
BMSY 100	180 [7.09"]	20 [0.787"]	134 [5.28"]
BMSY 125	185 [7.28"]	25 [0.984"]	139 [5.47"]
BMSY 160	187 [7.36"]	27 [1.063"]	141 [5.55"]
BMSY 200	194 [7.64"]	34 [1.339"]	148 [5.83"]
BMSY 250	202 [7.95"]	42 [1.654"]	156 [6.14"]
BMSY 315	214 [8.43"]	54 [2.126"]	168 [6.61"]
BMSY 400	229 [9.02"]	69 [2.717"]	183 [7.20"]
BMSY 475	243 [9.57"]	83 [3.268"]	197 [7.76"]

Model	GEROLER WIDTH		
	L mm [in]	L1 mm [in]	L2 mm [in]
BMSY 80	148 [5.83"]	16 [0.63"]	102 [4.02"]
BMSY 100	152 [5.98"]	20 [0.79"]	106 [4.17"]
BMSY 125	157 [6.18"]	25 [0.98"]	111 [4.37"]
BMSY 160	159 [6.26"]	27 [1.06"]	113 [4.45"]
BMSY 200	166 [6.54"]	34 [1.34"]	119 [4.69"]
BMSY 250	178 [7.00"]	42 [1.65"]	127 [5.00"]
BMSY 315	190 [7.48"]	54 [2.13"]	139 [5.47"]
BMSY 400	205 [8.07"]	69 [2.72"]	154 [6.06"]
BMSY 475	219 [8.62"]	83 [3.27"]	168 [6.61"]

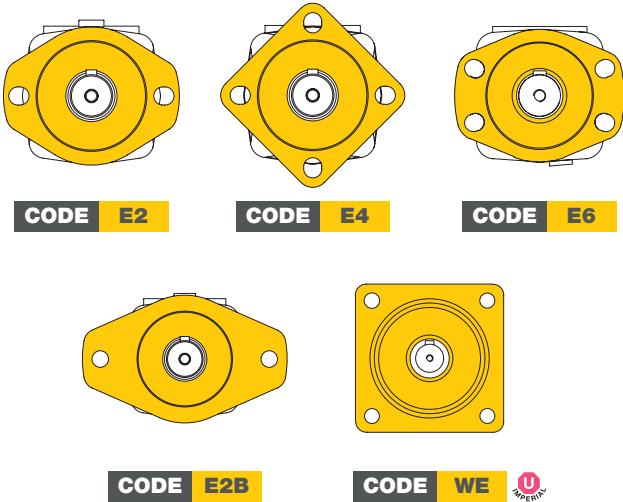
BMSY PORT ED
Line Mount



BMSY PORT CODE	
ED	
Connection	SAE ports
P (A,B)	1-1/16-12 UN (18)
T	7/16-20 UNF (12)

ED : SAE straight thread (O-Ring Boss) (Depth in mm)

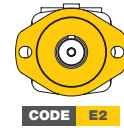
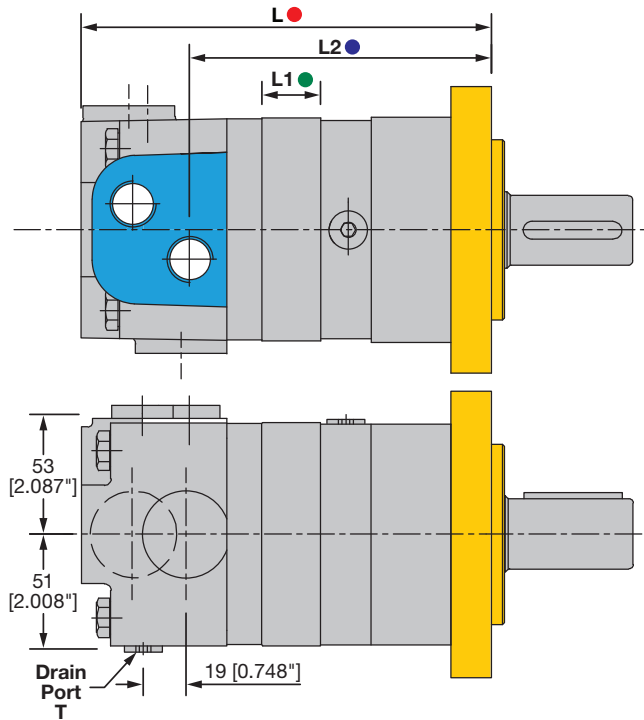
BMSY MOUNTING FLANGES



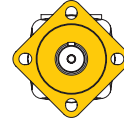
BMSY OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

Alternative Ports (SU, SB, DU, DB, M4, MU, MM)

(Similar to Char-Lynn® 2000 series style of porting)



CODE E2



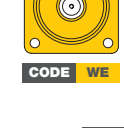
CODE E4



CODE E6



CODE E2B



CODE WE

GEROLER WIDTH

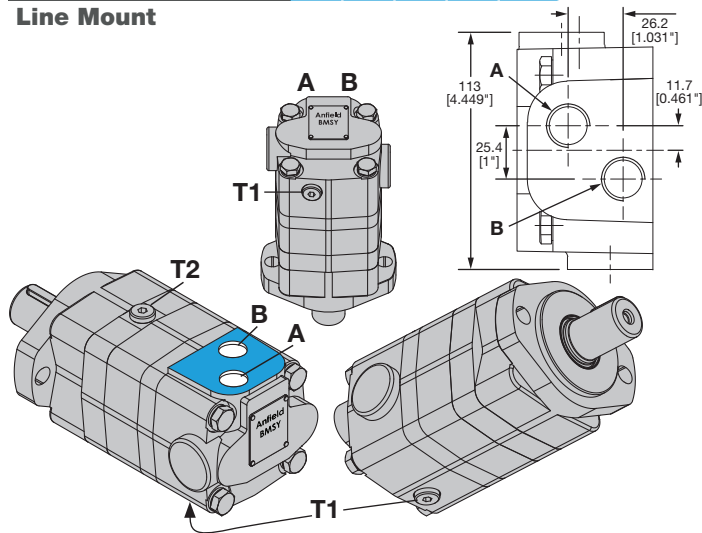
Model	L ● mm [in]	L1 ● mm [in]	L2 ● mm [in]
BMSY 80	177 [6.97"]	16 [0.63"]	126.5 [4.98"]
BMSY 100	181 [7.13"]	20 [0.79"]	130.5 [5.14"]
BMSY 125	186 [7.32"]	25 [0.98"]	135.5 [5.33"]
BMSY 160	188 [7.40"]	27 [1.06"]	137.5 [5.41"]
BMSY 200	195 [7.68"]	34 [1.34"]	144.5 [5.69"]
BMSY 250	203 [7.99"]	42 [1.65"]	152.5 [6.00"]
BMSY 315	215 [8.46"]	54 [2.13"]	164.5 [6.48"]
BMSY 400	230 [9.06"]	69 [2.72"]	179.5 [7.07"]
BMSY 475	244 [9.61"]	83 [3.27"]	193.5 [7.62"]

With Flange WE

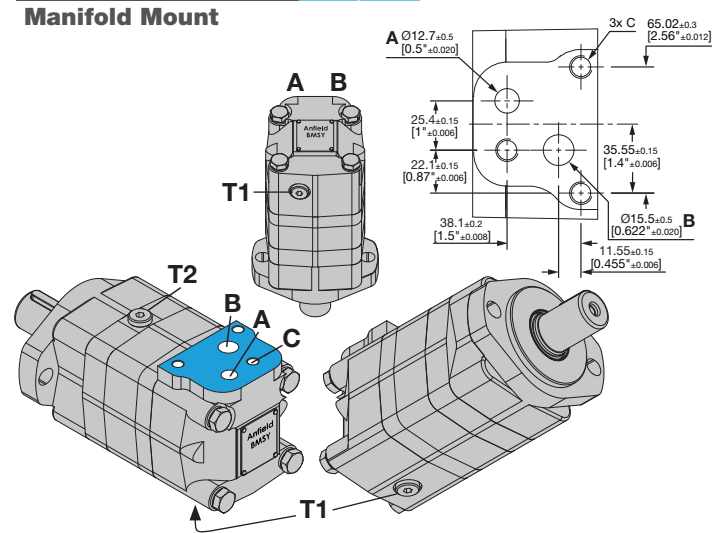
GEROLER WIDTH

Model	L ● mm [in]	L1 ● mm [in]	L2 ● mm [in]
BMSY 80 WE	132.5 [5.22"]	16 [0.63"]	89 [3.50"]
BMSY 100 WE	136.5 [5.37"]	20 [0.79"]	93 [3.66"]
BMSY 125 WE	141.5 [5.57"]	25 [0.98"]	98 [3.86"]
BMSY 160 WE	143.5 [5.65"]	27 [1.06"]	100 [3.94"]
BMSY 200 WE	150.5 [5.93"]	34 [1.34"]	107 [4.21"]
BMSY 250 WE	158.5 [6.24"]	42 [1.65"]	115 [4.53"]
BMSY 315 WE	170.5 [6.71"]	54 [2.13"]	127 [5.00"]
BMSY 400 WE	185.5 [7.30"]	69 [2.72"]	142 [5.59"]
BMSY 475 WE	199.5 [7.85"]	83 [3.27"]	156 [6.14"]

BMSY PORT SU SB DU DB M4 Line Mount



BMSY PORT MU MM Manifold Mount



BMSY PORT CODE							
	SU	SB	DU	DB	M4	MU	MM
Connection	SAE ports	SAE/BSPP	BSPP/SAE	BSPP ports	Metric ports	UNC/SAE	Metric/BSPP
P (A,B)	7/8-14 UNF (17)	7/8-14 UNF (17)	G 1/2" (15)	G 1/2" (15)	M22 x 1.5 (15) M	Ø12.7, Ø15.8	Ø12.7, Ø15.8
T	7/16-20 UNF (12)	G 1/4 (12)"	7/16-20 UNF (12)	G 1/4" (12)	M14 x 1.5 (12) M	7/16-20 UNF (12)	G 1/4" (12)
C x3	--	--	--	--	--	3/8-16 UNC U	M10 M

SU : All SAE O-Ring ports

SB : A,B: SAE O-Ring Ports; T1,T2: BSPP ports

DU : A,B: BSPP ports; T1,T2 ports: SAE O-Ring ports

DB : All BSPP ports

M4 : A,B,T1,T2 ports: Metric thread

MU : UNC thread manifold mount; T1,T2 ports: SAE O-Ring ports

MM : Metric thread manifold mount; T1,T2 ports: BSPP ports

mm [inch]

U Imperial M Metric

(Depth in mm)

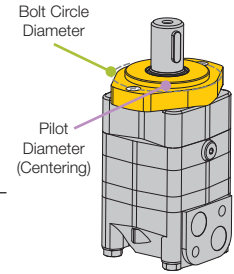
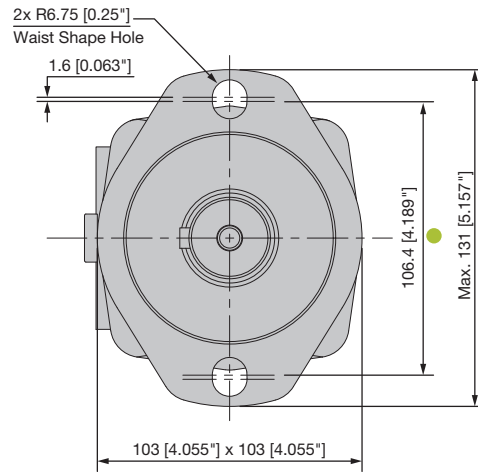
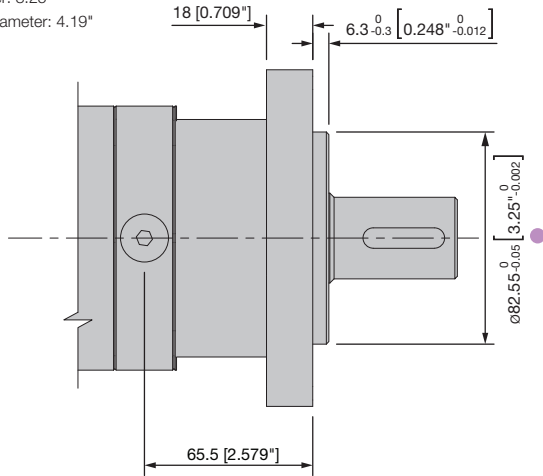
ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)

BMSY MOUNTING FLANGE

CODE
E2

2-Bolt, SAE A Mount

- Pilot Diameter: 3.25"
- Bolt Circle Diameter: 4.19"

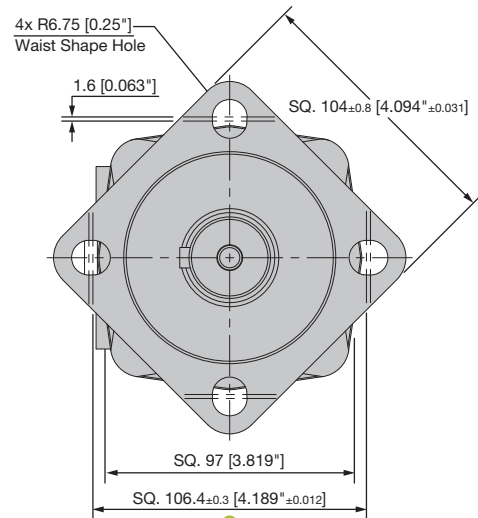
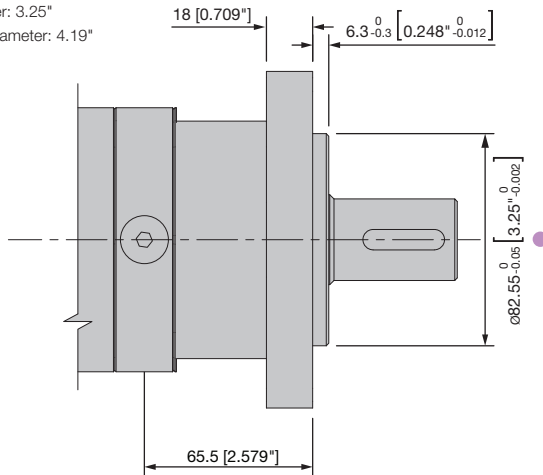


BMSY MOUNTING FLANGE

CODE
E4

4-Bolt, Square Mount

- Pilot Diameter: 3.25"
- Bolt Circle Diameter: 4.19"

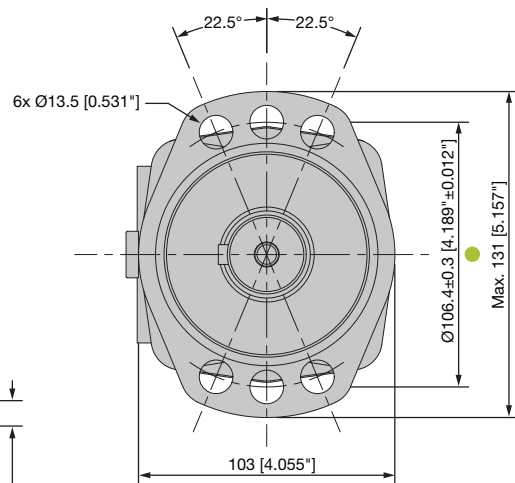
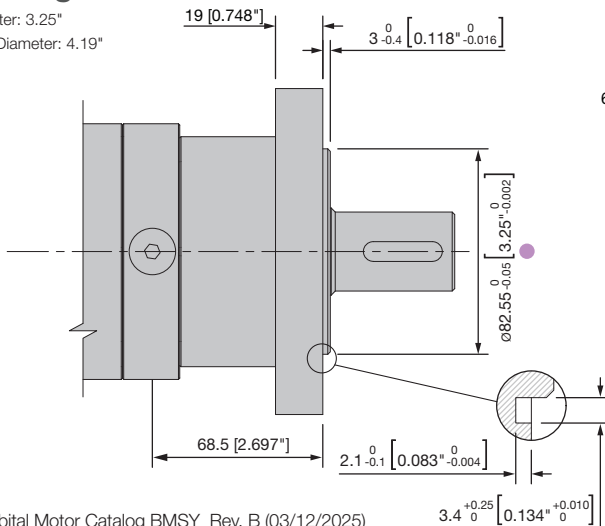


BMSY MOUNTING FLANGE

CODE
F6

6-Bolt, Magneto Mount

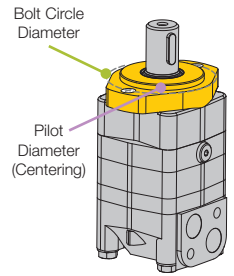
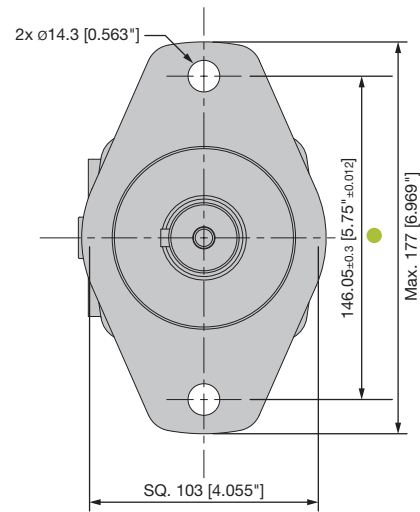
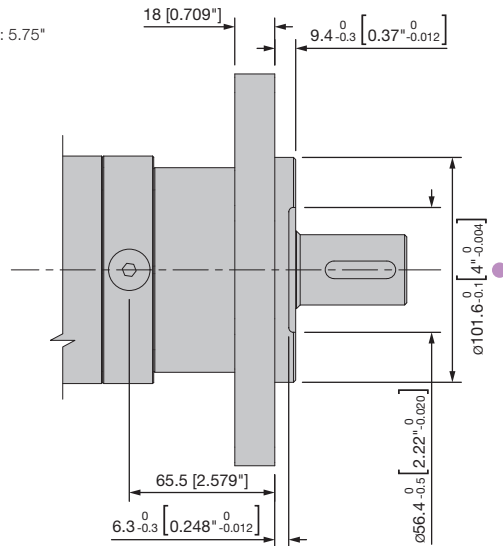
- Pilot Diameter: 3.25"
- Bolt Circle Diameter: 4.19"



BMSY MOUNTING FLANGE CODE E2B

2-Bolt, SAE B Mount

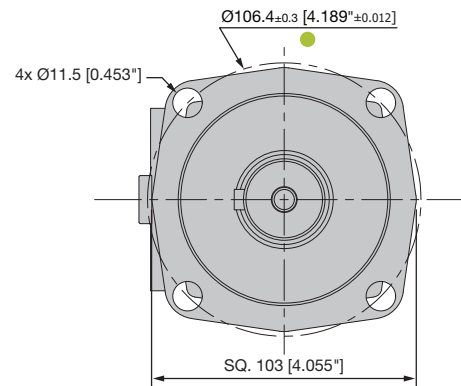
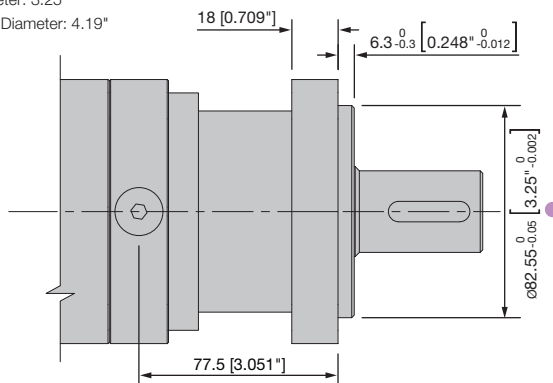
- Pilot Diameter: 4"
- Bolt Circle Diameter: 5.75"



BMSY MOUNTING FLANGE CODE SP

4-Bolt, Square Mount

- Pilot Diameter: 3.25"
- Bolt Circle Diameter: 4.19"



BMSY MOUNTING FLANGE CODE W M W1 U

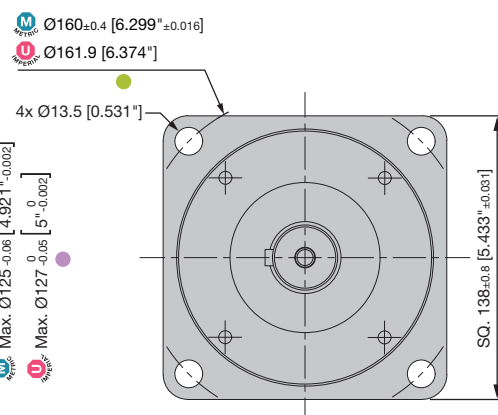
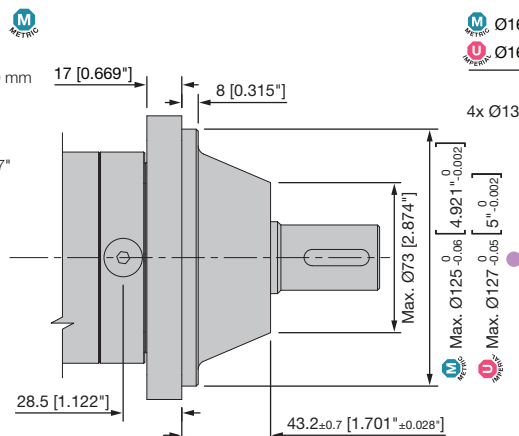
4-Bolt, Wheel Mount

W European Version M METRIC

- Pilot Diameter: 125 mm
- Bolt Circle Diameter: 160 mm

W1 U.S. Version U IMPERIAL

- Pilot Diameter: 5"
- Bolt Circle Diameter: 6.37"



mm [inch] Pilot Diameter
U Imperial M Metric Bolt Circle Diameter

CODE

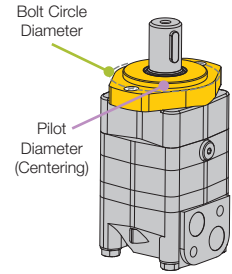
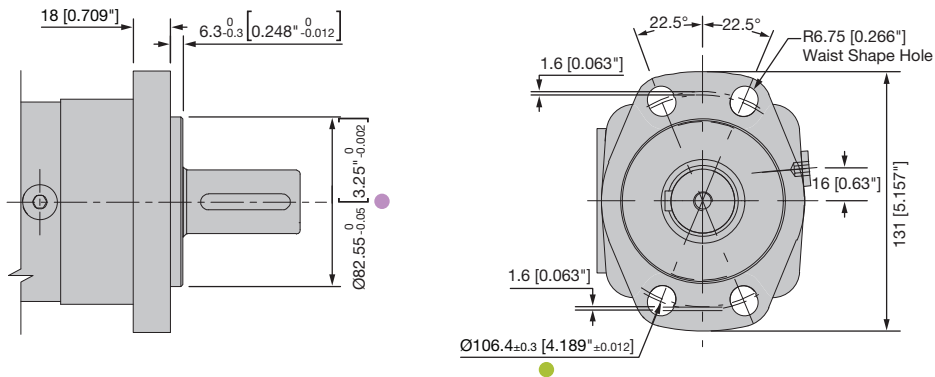
BMSY MOUNTING FLANGE

E6

4-Bolt, Magneto Mount

Pilot Diameter: 3.25"

Bolt Circle Diameter: 4.19"



CODE

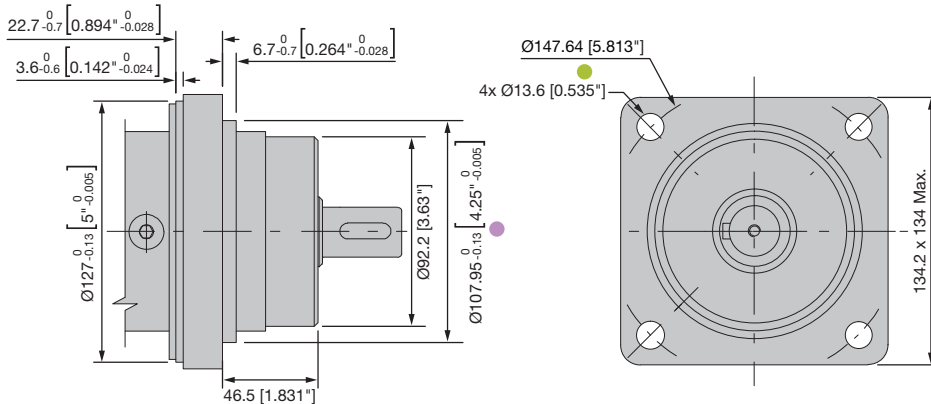
BMSY MOUNTING FLANGE

WE

4-Bolt, Wheel Mount

Pilot Diameter: 4.25"

Bolt Circle Diameter: 5.81"



BMSY SHAFT EXTENSIONS

IMPORTANT:

Ensure that the torque rating of your motor does not exceed shaft torque limitations stated below. Please refer to performance data charts.

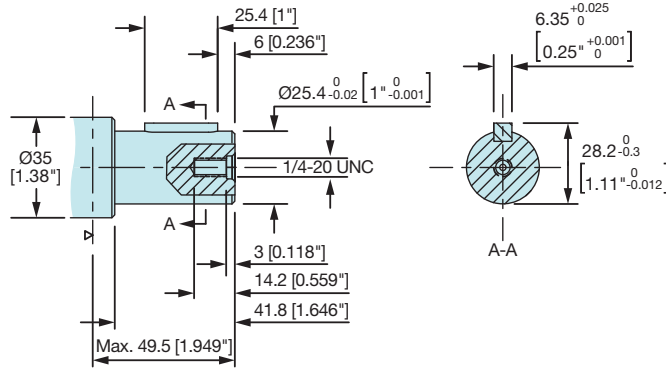
BMSY SHAFT EXTENSION

CODE
D


1" Straight Keyed

Max. Torque
290 lbf.ft [395 Nm]

Parallel key 1/4"x1/4"x1"



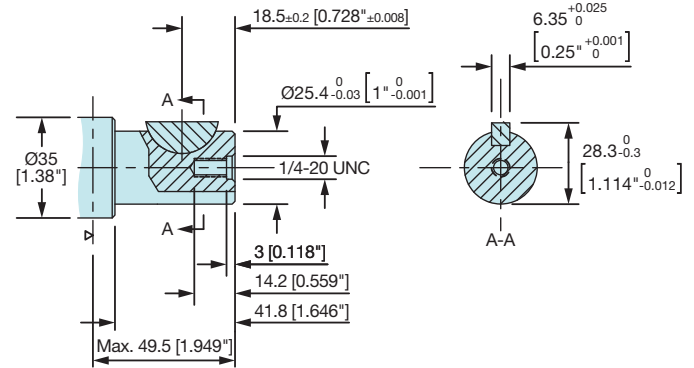
BMSY SHAFT EXTENSION

CODE
K


1" Straight Keyed

Max. Torque
290 lbf.ft [395 Nm]

Woodruff key 1/4"x1"



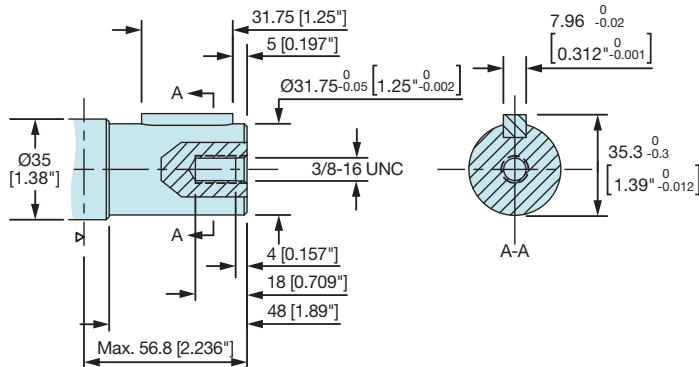
BMSY SHAFT EXTENSION

CODE
G


1 1/4" Straight Keyed

Max. Torque
568 lbf.ft [770 Nm]

Parallel key 5/16"x5/16"x1 1/4"



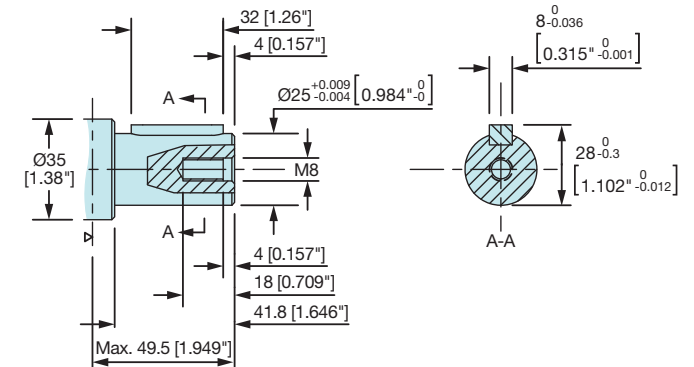
BMSY SHAFT EXTENSION

CODE
A


25 mm Straight Keyed

Max. Torque
290 lbf.ft [395 Nm]

Parallel key 8x7x32



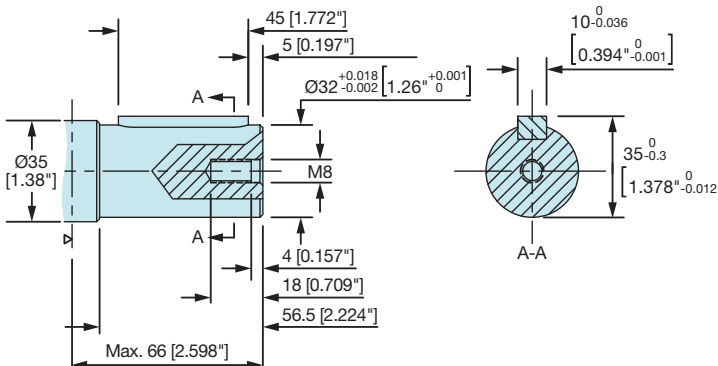
BMSY SHAFT EXTENSION

CODE
B


32 mm Straight Keyed

Max. Torque
568 lbf.ft [770 Nm]

Parallel key 10x8x45

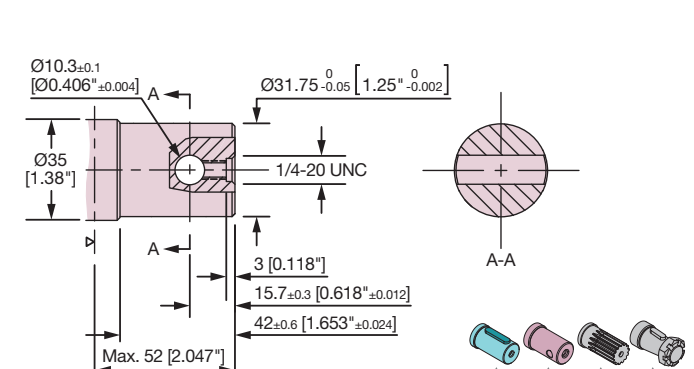


BMSY SHAFT EXTENSION

CODE
H1


1 1/4" Straight w/ .406 Crosshole

Max. Torque
290 lbf.ft [395 Nm]



mm [inch]

Imperial Metric

BMSY SHAFT EXTENSIONS

IMPORTANT:

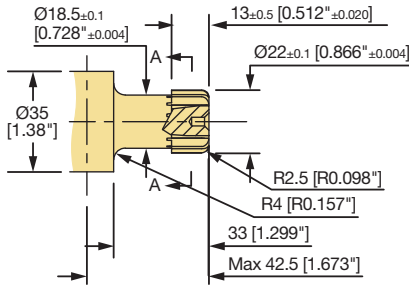
Ensure that the torque rating of your motor does not exceed shaft torque limitations stated below. Please refer to performance data charts.

BMSY SHAFT EXTENSION **I**



7/8" SAE B 13T Splined

Max. Torque
103 lbf.ft [140 Nm]

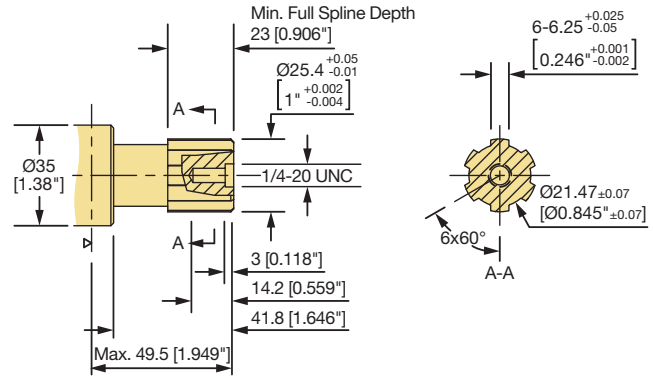


BMSY SHAFT EXTENSION **S1**



1" SAE 6B Splined

Max. Torque
290 lbf.ft [395 Nm]

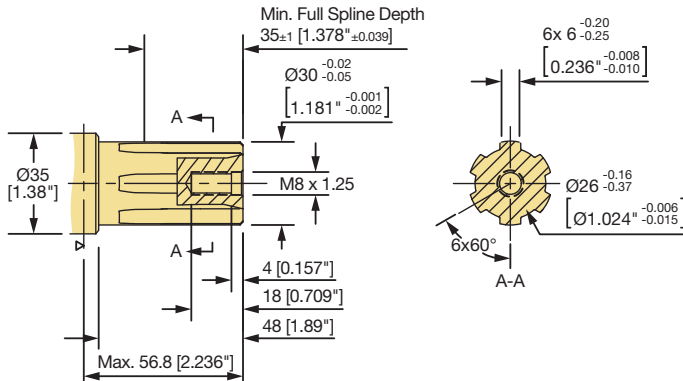


BMSY SHAFT EXTENSION **N**



6 Tooth Splined Shaft 6-30x26x6

Max. Torque
568 lbf.ft [770 Nm]

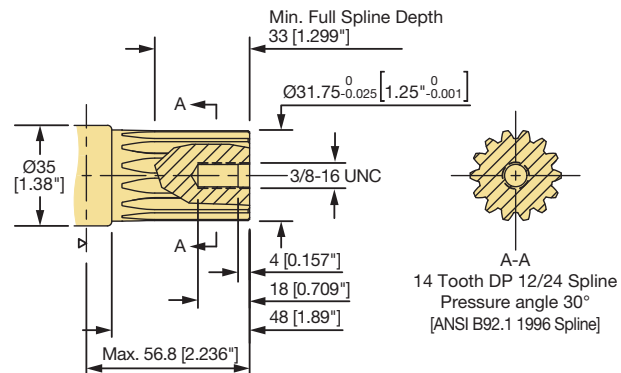


BMSY SHAFT EXTENSION **F**



1 1/4" 14 Tooth Splined

Max. Torque
568 lbf.ft [770 Nm]

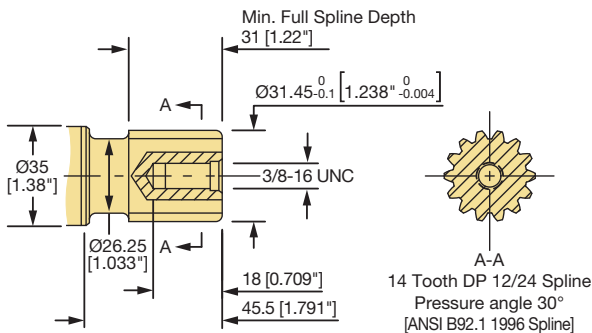


BMSY SHAFT EXTENSION **FE**



1 1/4" 14 Tooth Splined

Max. Torque
568 lbf.ft [770 Nm]

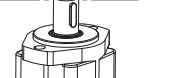
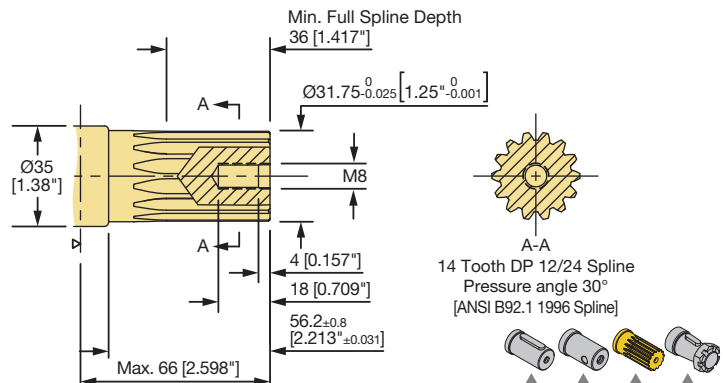


BMSY SHAFT EXTENSION **FD**



1 1/4" 14 Tooth Splined (Extended)

Max. Torque
568 lbf.ft [770 Nm]



BMSY SHAFT EXTENSIONS

IMPORTANT:

Ensure that the torque rating of your motor does not exceed shaft torque limitations stated below. Please refer to performance data charts.

BMSY SHAFT EXTENSION

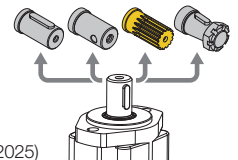
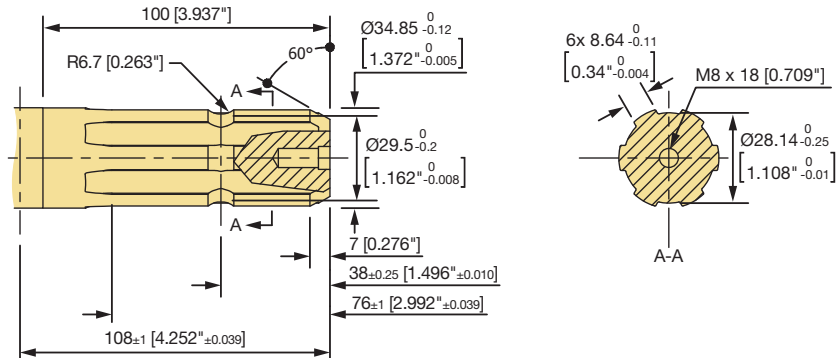
CODE

SL



Ø1 3/8" 6 Tooth Splined (PTO)
(34.85 x 28.14 x 8.64)

Max. Torque
568 lbf.ft [770 Nm]



BMSY SHAFT EXTENSIONS

IMPORTANT:

Ensure that the torque rating of your motor does not exceed shaft torque limitations stated below. Please refer to performance data charts.

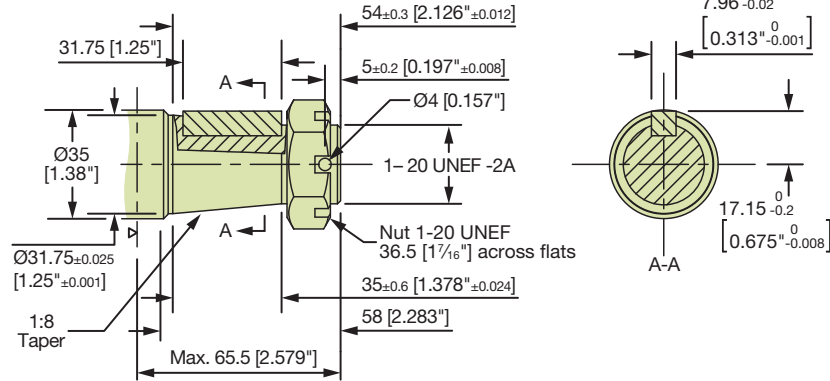
BMSY SHAFT EXTENSION **T3**

 **1 1/4" Tapered (1:8) w/ Nut**

 Parallel Key 5/16"x5/16"x1 1/4"

 Tightening Torque 200±10 Nm

Max. Torque
568 lbf.ft [770 Nm]



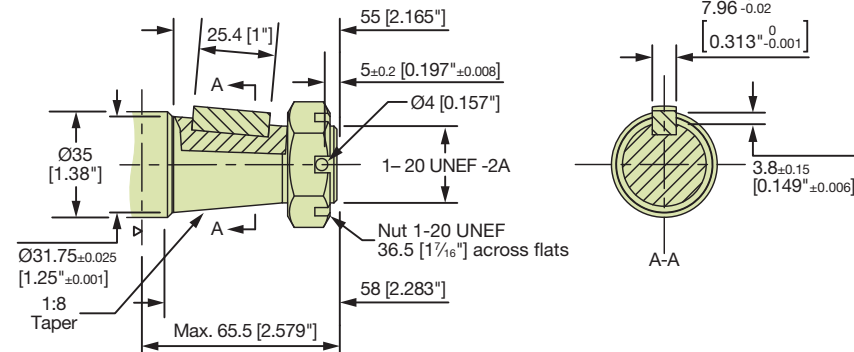
BMSY SHAFT EXTENSION **T4**

 **1 1/4" Tapered (1:8) w/ Nut**

 Parallel Key 5/16"x5/16"x1"

 Tightening Torque 200±10 Nm

Max. Torque
568 lbf.ft [770 Nm]



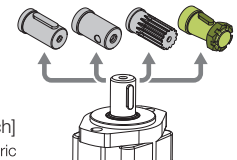
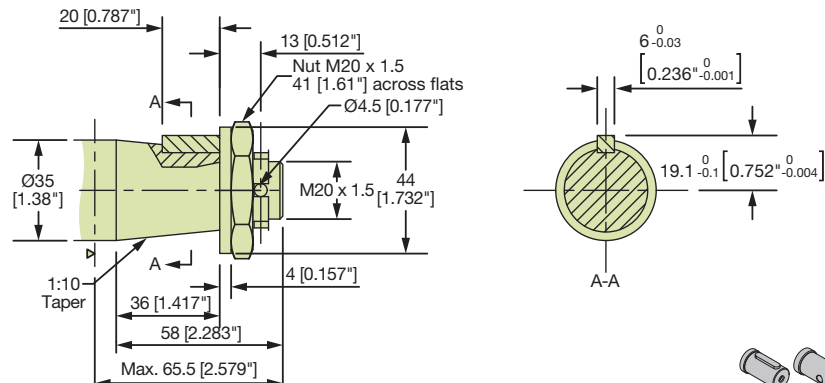
BMSY SHAFT EXTENSION **T1**

 **35mm Tapered (1:10) w/ Nut**

 Parallel Key B6x6x20

 Tightening Torque 200±10 Nm

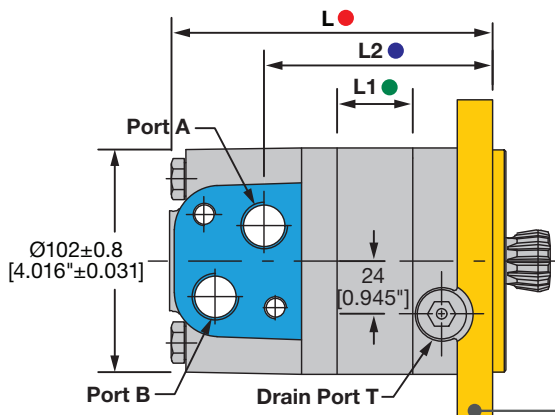
Max. Torque
568 lbf.ft [770 Nm]



BMSYS (BEARINGLESS) OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

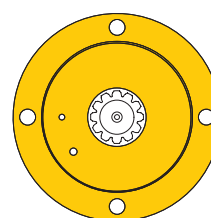
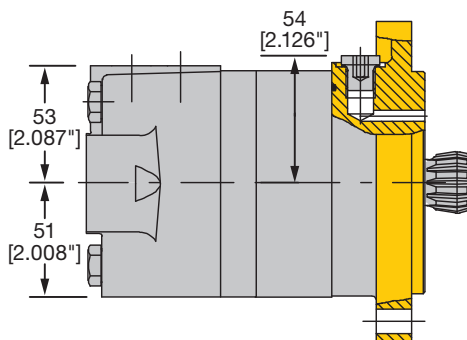
Typical Side Ports (S, P, D, M)

The BMSYS bearingless motor has the same drive components as the standard and wheel motors (with the exception that the motor is assembled without the output shaft, bearings and bearing housing). The bearingless motor is especially suited for applications such as gear boxes, winch drives, reel and roll drives. Bearingless motor applications must be designed with a bearing supported internal spline to mate with the bearingless motor drive.

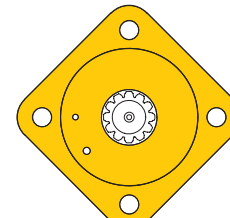


Model	GEROLER WIDTH		
	L ● mm [in]	L1 ● mm [in]	L2 ● mm [in]
BMSYS 80	129 [5.08"]	16 [0.63"]	85 [3.35"]
BMSYS 100	133 [5.24"]	20 [0.79"]	89 [3.50"]
BMSYS 125	138 [5.43"]	25 [0.98"]	94 [3.70"]
BMSYS 160	140 [5.51"]	27 [1.06"]	96 [3.78"]
BMSYS 200	147 [5.79"]	34 [1.34"]	103 [4.06"]
BMSYS 250	155 [6.10"]	42 [1.65"]	111 [4.37"]
BMSYS 315	167 [6.57"]	54 [2.13"]	123 [4.84"]
BMSYS 400	182 [7.17"]	69 [2.72"]	138 [5.43"]
BMSYS 475	196 [7.72"]	83 [3.27"]	152 [5.98"]

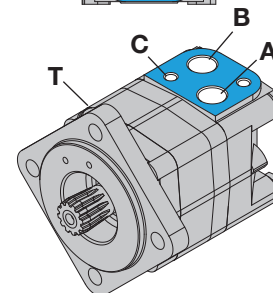
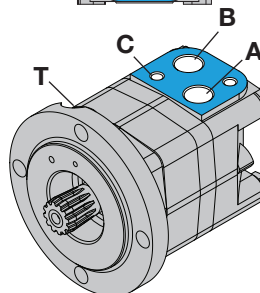
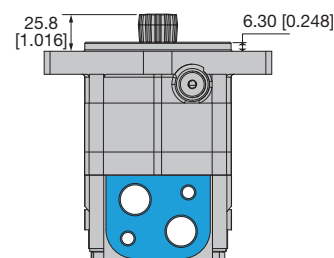
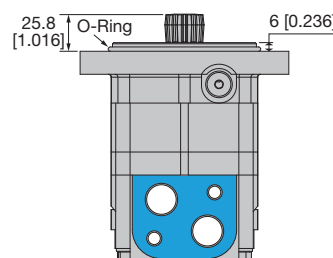
BMSYS MOUNTING FLANGES



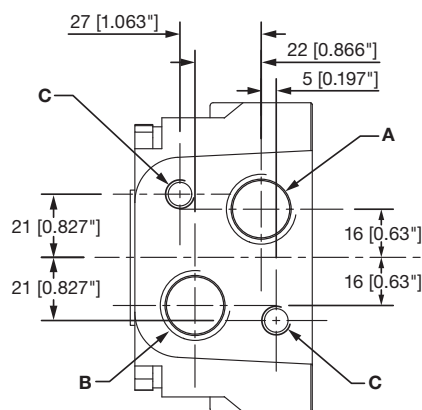
CODE D M



CODE E U



BMSY PORT Line/Manifold Mount



BMSY PORT CODE

Connection	S	P	D	M
	SAE ports	NPTF ports	BSPP ports	Metric ports
P (A,B)	7/8-14 UNF (17)	1/2-14 NPTF (15)	G 1/2" (15)	M22x1.5 (15) M
T	7/16-20 UNF (12)	7/16-20 UNF (12)	G 1/4" (12)	M14x1.5 (12) M
C (2x)	3/8-16 UNC (13) U	3/8-16 UNC (13) U	M10 (13) M	M10 (13) M

S : SAE straight thread (O-Ring Boss)

P : NPTF (National Pipe Tapered Fuel)

U Imperial M Metric mm [Inch]

D : BSPP (British Standard Pipe Parallel) G thread

M : Metric port

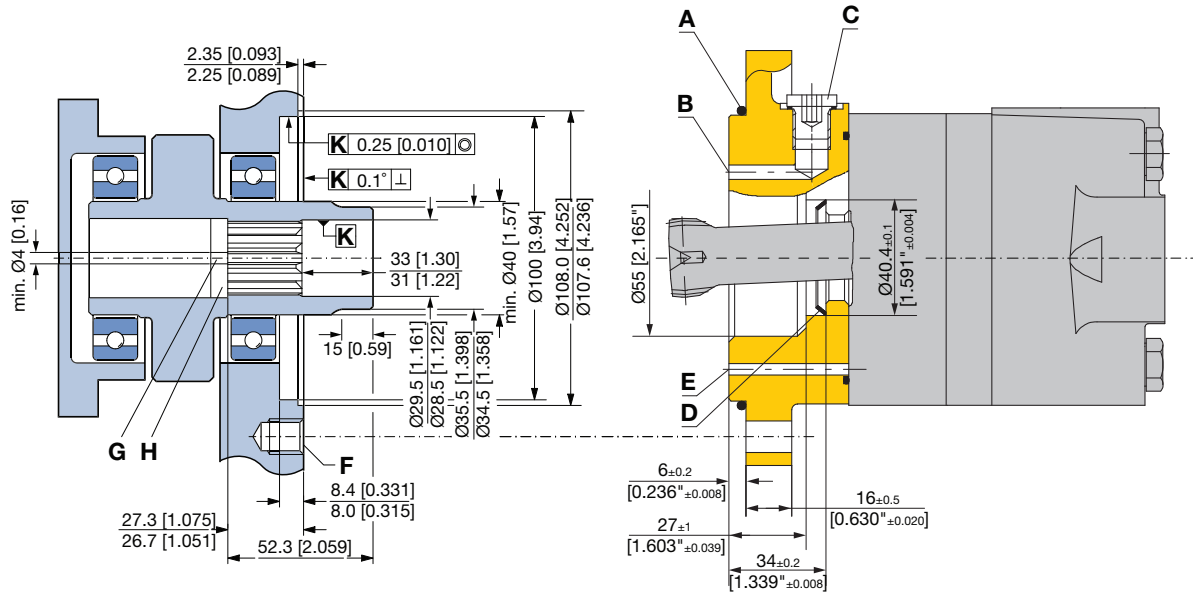
(Depth in mm)

ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)

BMSYS (BEARINGLESS) OVERALL DIMENSIONS, PORT & MOUNTING OPTIONS

Side Ports (S, P, D, M)

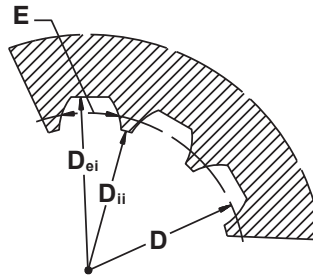
Attached Component Dimensions



- A** O-ring: 100 × 3 mm
- B** External drain channel
- C** Drain connection G 1/4; 12 mm [0.47 in] deep
- D** Conical seal ring
- E** Internal drain channel
- F** M10; min. 15 mm [0.59 in] deep
- G** Oil circulation hole
- H** Hardened stop plate

Internal Spline Data for the Component to be Attached

Flat Root Side Fit		Inch	mm
Number of Teeth	z	12	12
Diametral Pitch	DP	12/24	12/24
Pressure Angle		30°	30°
Pitch Diameter	D	1	25.4
Major Diameter	D_{ei}	$1.1 + 1.098$	$28.0_{-0.1}$
Minor Diameter	D_{ii}	$0.907 + 0.905$	$23.0_{+0.033}$
Space Width [Circular]	E	$0.1704 + 0.1688$	$4.308_{\pm 0.020}$



Use the drain line when pressure in the return line exceeds the permissible pressure on the shaft seal of the attached component.

Motor or Attached Drain Connection

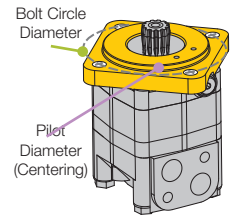
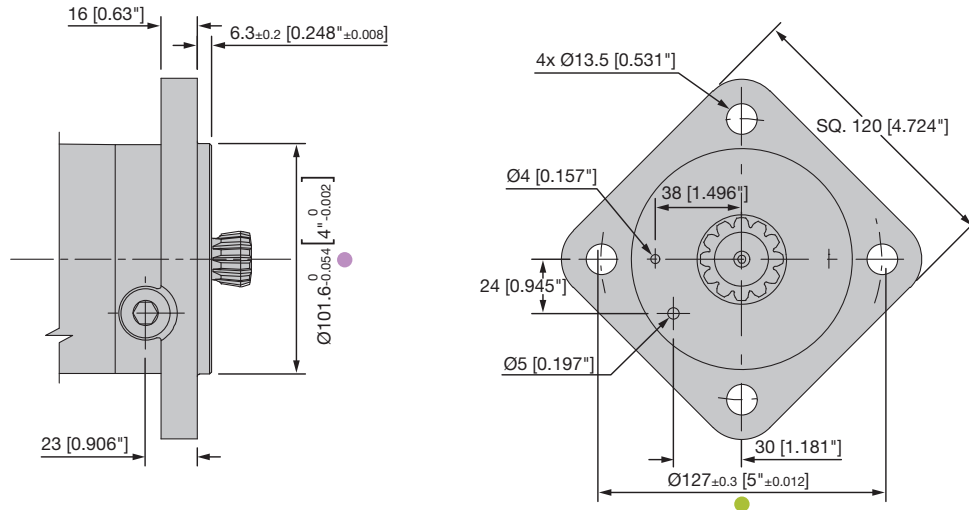
Connect the drain line either at the:

- Motor drain connection
- Drain connection of the attached component

If a drain line is fitted to the attached component, it must be possible for oil to flow freely between motor and attached component. The drain line must be led to the tank in such a way that there is no risk of the motor and attached component being drained of oil when at rest. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

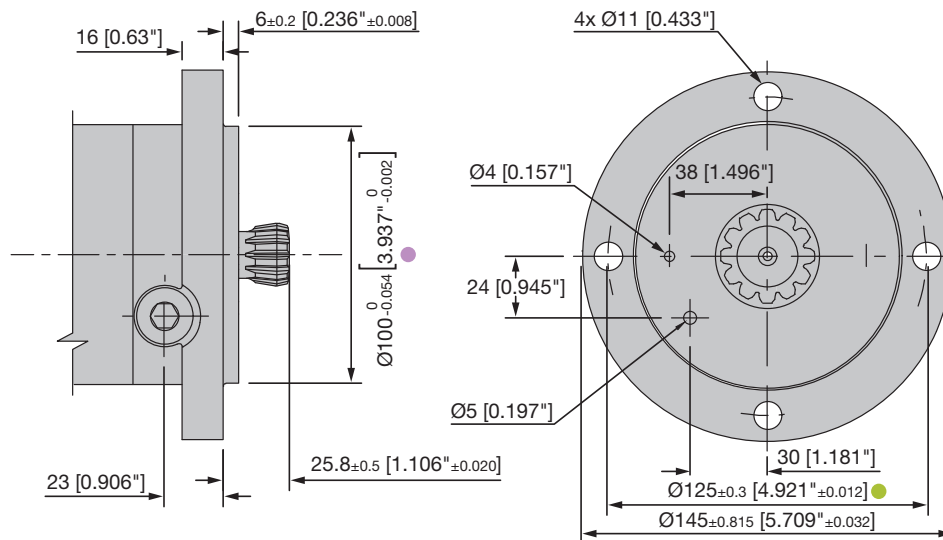
BMSYS MOUNTING FLANGE **CODE E**
Short Mount, 4-Bolt Square Flange (U.S. version)

- Pilot Diameter: 4"
- Bolt Circle Diameter: 5"

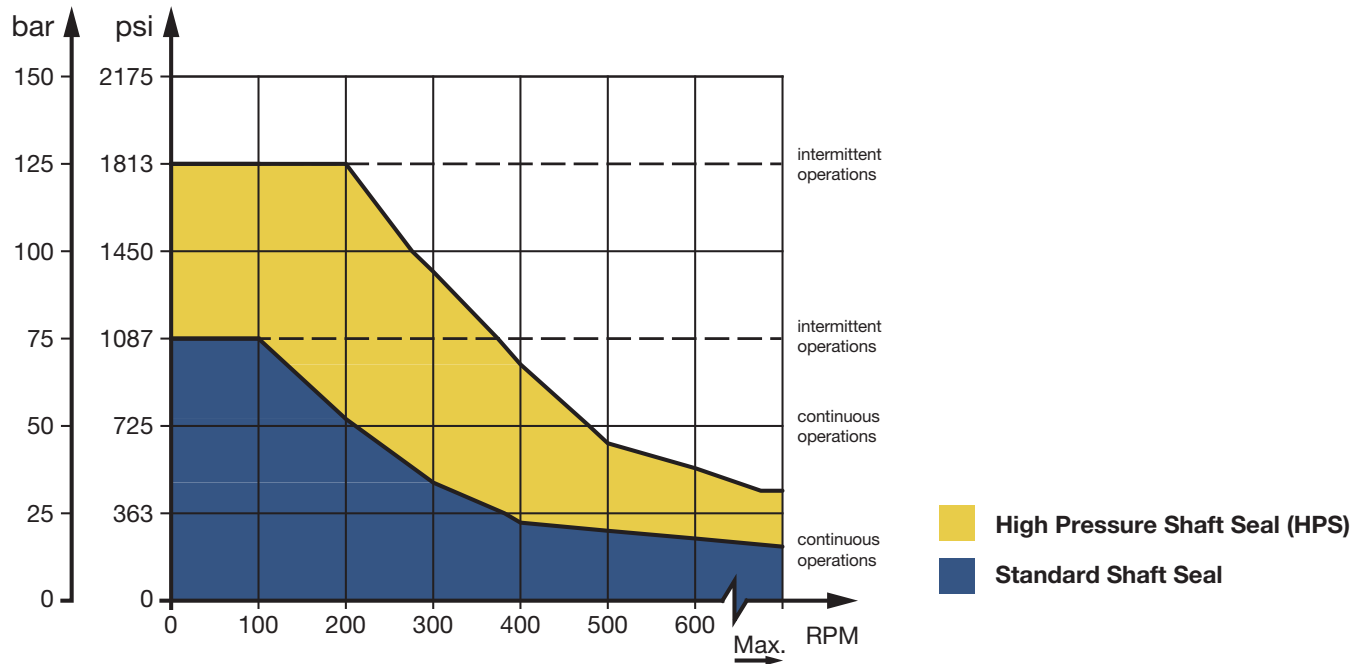


BMSYS MOUNTING FLANGE **CODE D**
Short Mount, 4-Bolt Round Flange (European version)

- Pilot Diameter: 100 mm
- Bolt Circle Diameter: 125 mm



PERMISSIBLE SHAFT SEAL PRESSURES - BMSY SERIES



Internal Drain, Permissible back pressure and case pressure:

The internal drain option is standard on all BMSY series motors. There are Built-In Check Valves integrated in the housing of the motor that connect the case area of the motor to each of the work ports (A and B). During normal operation, pressure in the input and return lines of the motor close the corresponding check valves. However, when the pressure in the motor case becomes greater than that of the return line, the check valve between the case and low pressure return line opens, allowing the case leakage to flow into the return line. Since the operation of the check valves is dependent upon a pressure differential, the internal drain option operates in either direction of motor rotation and whichever work port (A or B) has the lower pressure. This offers versatility and increased seal life as the drain line relieves the pressure on the shaft seal to tank.¹⁾

Schematic 1 - External Drain

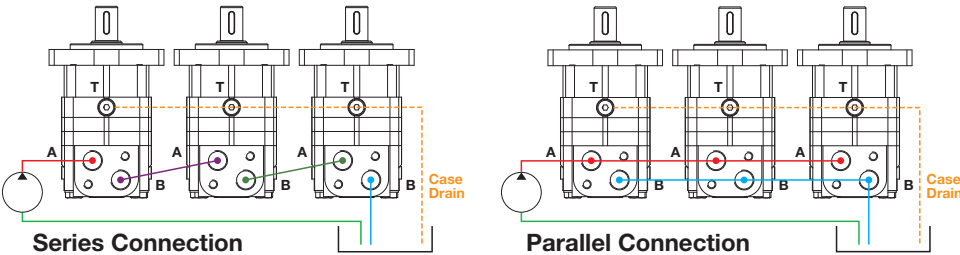
With case drain port used, the shaft seal pressure = pressure at drain.

Schematic 2 - Internal Drain

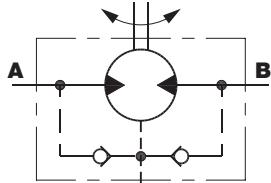
With case drain port not in use, the shaft seal pressure = pressure at the return line.

Important:

- 1) Installing motors with "internal drainage" in series or when the motor operates in a meter-out circuit is not recommended unless overall pressure drop over all motors is below the maximum allowable backpressure.

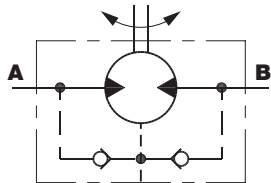


Schematic 1



Drain
CASE PRESSURE DRAINED TO TANK
Shaft Seal Pressure = Pressure at Drain

Schematic 2



Drain (Plugged)
CASE PRESSURE DRAINED INTERNALLY
Shaft Seal Pressure = Pressure at Return Line

Oil Flow In Drain Line

The table shows the Max. oil flow in the drain line at a return pressure less than 72-145 psi (5-10 bar)

Pressure Drop psi (bar)	Viscosity mm ² /s	Oil Flow in the Drain Line gpm (l/min)
2030 (140)	20	0.40 (1.5)
	35	0.26 (1.0)
3045 (210)	20	0.79 (3.0)
	35	0.53 (2.0)

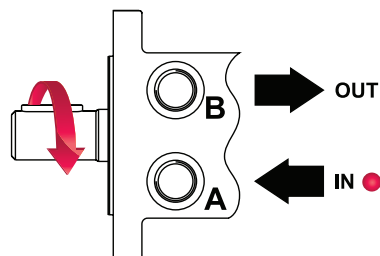
DIRECTION OF SHAFT ROTATION - BMSY SERIES

Standard Rotation

(Viewed from Shaft End)

Port **A** Pressurized - **CW**

Port **B** Pressurized - **CCW**

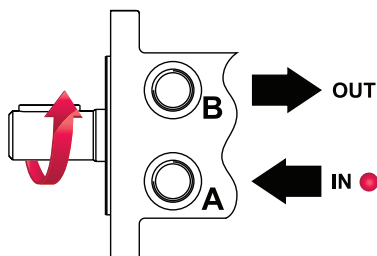


Reverse Rotation

(Viewed from Shaft End)

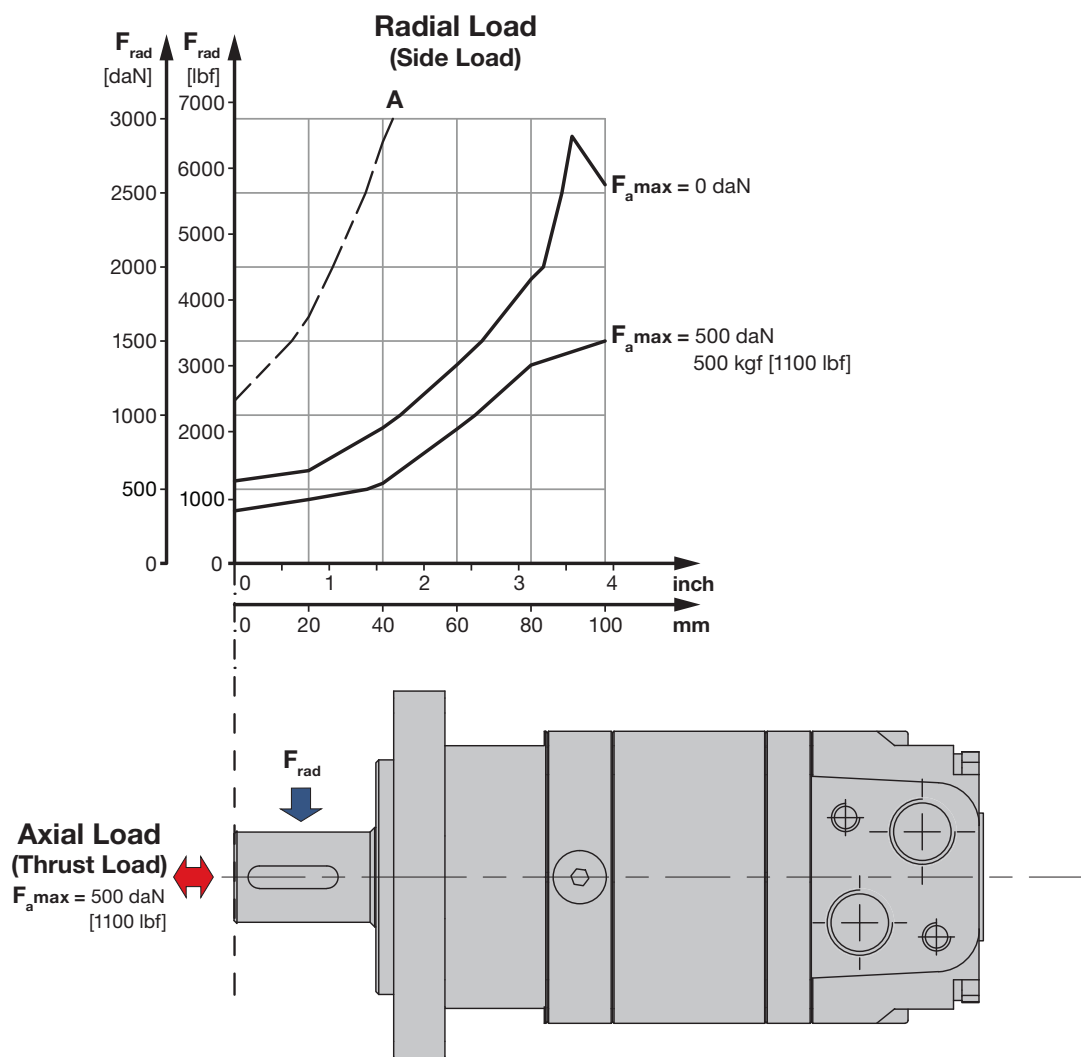
Port **A** Pressurized - **CCW**

Port **B** Pressurized - **CW**



PERMISSIBLE SHAFT LOADS FOR BMSY MOTORS

The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "A" shows max. radial shaft load. Any shaft load exceeding the values of the curve will seriously reduce motor life and in some cases cause shaft failure.



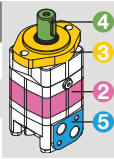
BMSY DESIGNATION & ORDERING CODE

Typical Side Ports (S, P, D, M)

BMSY - 200 - E2 - G - S - ... - ... - CV - HPS

1 Series

BMSY



2 Displacement

	cm³/rev	in³/rev
80	80.6	4.92
100	100.8	6.15
125	125.0	7.63
160	154.0	9.40
200	194.0	11.84
250	243.0	14.83
315	311.0	18.98
400	394.0	24.04
475	475.0	28.99

*Pages 6-10 for performance details.

3 Mounting Type

Code	Description	Icon
E2	2-Bolt, SAE A	
E4	4-Bolt, Square	
F6	6-Bolt, Magneto	
E2B	2-Bolt, SAE B	
SP	4-Bolt, Square	
W	4-Bolt, Wheel	
W1	4-Bolt, Wheel	

*Pages 15-17 for mounting details.

4 Output Shaft

Code	Description	Icon
D	1" Straight Keyed (1/4"x1/4"x1" key)	
G	1 1/4" Straight Keyed (5/16"x5/16"x1-1/4" key)	
A	25 mm Straight Keyed (8x7x32 mm key)	
B	32 mm Straight Keyed (10x8x45 mm key)	
H1	1 1/4" Straight w/ .406 Crosshole	
I	7/8" SAE B 13T Splined	
S1	1" SAE 6B Splined	
N	6 Tooth Splined Shaft 6-30x26x6	
F	1 1/4" 14 Tooth Splined	
FE	1 1/4" 14 Tooth Splined	
FD	1 1/4" 14 Tooth Splined (Ext.)	
SL	1 3/8" 6 Tooth Splined (PTO)	
T3	1 1/4" Tapered (1:8)	
T1	35mm Tapered (1:10)	

*Pages 18-20 for shaft details.

9 Shaft Seal Version

HPS High Pressure Shaft Seal

8 Built-In Check Valves

CV Installed in the end cover

7 Options

Code	Description
Omit	None
F	Free Running Rotor ¹
LS	Low Speed Valve ²

*Contact Anfield if option required is not listed.

6 Rotation

Code	Description
Omit	Standard Rotation
R	Reverse Rotation

*Page 25 for rotation details.

5 Ports (A&B,T)

Code	Description	Icon
S	SAE Ports (-10,-4)	
P	NPTF Ports (1/2,-4)	
D	BSPP Ports (G1/2,G1/4)	
M	Metric Ports (M22,M14)	

*Page 11 for port details.

Anfield "standard" series motors are painted black and "J" series motors are painted industrial gray.

BMSY motors with any of the S,P,D,M ports allow for the use of the following manifolds:

- Single crossover relief valve type FYSA (relief on A), FYSB (relief on B).
- Dual crossover relief valve type FYSD.
- Single crossover relief valve type FYSHA (relief on A), FYSHB (relief on B).
- Dual crossover relief valve type FYSHD.

- Free Running Rotors:** The Free Running Rotor Set, have increased clearance in all friction parts, allowing the shaft to rotate more freely with less mechanical drag. The increased clearance also improves lubrication of the wear surfaces of gear set and friction parts. Additional advantages of "F" version are prolonging of the life of the hydraulic motors at high speeds, as well as the possibility to use them in systems with wide variation of the loading. "F" version motors are designed to operate with high speed (typically over 300 rpm) and low pressure drop. Volumetric efficiency may be reduced slightly due to increased clearances.
- Low Speed Motors:** Low speed valve feature optimizes the motor for low-speed performance. Motors with this valving provide very low speed while maintaining high torque. They are designed to run continuously at low speed (typically up to 200 rpm) and normal pressure drop and reduced flow. Optimal run is guaranteed at speeds of 20 to 50 rpm. Motors with this valving have an increased starting pressure and are not recommended for use at pressure drop less than 580 psi (40 bar).

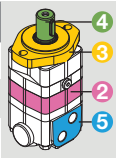
BMSY DESIGNATION & ORDERING CODE

End Ports (EES2, EED, EEM2) and Alternative Ports (SU, SB, DU, DB, M4, MU, MM)

BMSY - 200 - E2 - G - SU - ... - ... - ... - ... - HPS

1 Series

BMSY



2 Displacement

	cm ³ /rev	in ³ /rev
80	80.6	4.92
100	100.8	6.15
125	125.0	7.63
160	154.0	9.40
200	194.0	11.84
250	243.0	14.83
315	311.0	18.98
400	394.0	24.04
475	475.0	28.99

**Pages 6-10 for performance details.*

3 Mounting Type

E2	2-Bolt, SAE A	
E4	4-Bolt, Square	
E6	4-Bolt, Magneto	
E2B	2-Bolt, SAE B	
WE	4-Bolt, Square	

**Pages 15-17 for mounting details.*

4 Output Shaft

K	1" Straight Keyed (1/4"x1" Woodruff key)	
G	1 1/4" Straight Keyed (5/16"x5/16"x1-1/4" key)	
A	25 mm Straight Keyed (8x7x32 mm key)	
B	32 mm Straight Keyed (10x8x45 mm key)	
H1	1 1/4" Straight w/ .406 Crosshole	
I	7/8" SAE B 13T Splined	
S1	1" SAE 6B Splined	
F	1 1/4" 14 Tooth Splined	
FE	1 1/4" 14 Tooth Splined	
T4	1 1/4" Tapered (1:8)	

**Pages 18-20 for shaft details.*

9 Shaft Seal Version

HPS High Pressure Shaft Seal

8 Built-In Check Valves

Omit	Installed between end cover and geroler section
CV	Installed in the end cover EES2, EED, EEM2 models ONLY

7 Options

Omit	None
F	Free Running Rotor ¹
LS	Low Speed Valve ²

**Contact Anfield if option required is not listed.*

6 Rotation

Omit	Standard Rotation
R	Reverse Rotation

**Page 25 for rotation details.*

5 Ports (A&B,T)

EES2	SAE End Ports (-10,-4)	
EED	BSPP End Ports (G1/2,G1/4)	
EEM2	Metric End Ports (M22,M14)	
ED	SAE Ports at 180° (-12,-4)	
SU	SAE Staggered Ports (-10,-4)	
SB	SAE Staggered Ports (-10,G1/4)	
DU	BSPP Staggered Ports (G1/2,-4)	
DB	BSPP Staggered Ports (G1/2,G1/4)	
M4	SAE Staggered Ports (M22,M14)	
MU	Manifold Ports (3/8 UNC bolts,-4)	
MM	Manifold Ports (M10 bolts,G1/4)	

**Pages 12-14 for port details.*

Anfield "standard" series motors are painted black and "J" series motors are painted industrial gray.

1. Free Running Rotors:

The Free Running Rotor Set, have increased clearance in all friction parts, allowing the shaft to rotate more freely with less mechanical drag. The increased clearance also improves lubrication of the wear surfaces of gear set and friction parts. Additional advantages of "F" version are prolonging of the life of the hydraulic motors at high speeds, as well as the possibility to use them in systems with wide variation of the loading. "F" version motors are designed to operate with high speed (typically over 300 rpm) and low pressure drop. Volumetric efficiency may be reduced slightly due to increased clearances.

2. Low Speed Motors:

Low speed valve feature optimizes the motor for low-speed performance. Motors with this valving provide very low speed while maintaining high torque. They are designed to run continuously at low speed (typically up to 200 rpm) and normal pressure drop and reduced flow. Optimal run is guaranteed at speeds of 20 to 50 rpm. Motors with this valving have an increased starting pressure and are not recommended for use at pressure drop less than 580 psi (40 bar).

BMSYS DESIGNATION & ORDERING CODE

Bearingless Motor with Typical Side Ports (S, P, D, M)

1

BMSYS

2

3

4

5

6

7

7

1

Series

BMSYS

Bearingless

4

3

2

5

2

Displacement

cm³/rev

in³/rev

80

80.6

4.92

100

100.8

6.15

125

125.0

7.63

160

154.0

9.40

200

194.0

11.84

250

243.0

14.83

315

311.0

18.98

400

394.0

24.04

475

475.0

28.99

7

Options

Omit

None

F

Free Running Rotor¹

LS

Low Speed Valve²

6

Rotation

Omit

Standard Rotation

R

Reverse Rotation

5

Ports (A&B,T)

S

SAE Ports (-10,-4)

U

Imperial

P

NPTF Ports (1/2,-4)

U

Imperial

D

BSPP Ports (G1/2,G1/4)

M

Metric

M

Metric Ports (M22,M14)

M

Metric

3

Mounting Type

E

4-Bolt, Square

U

Imperial

D

4-Bolt, Round

M

Metric

4

Output Shaft

Omit

Short, 12T 12/24DP

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Anfield "standard" series motors are painted black and "J" series motors are painted industrial gray.

BMSY motors with any of the S,P,D,M ports allow for the use of the following manifolds:

- Single crossover relief valve type FYSA (relief on A), FYSB (relief on B).
- Dual crossover relief valve type FYSD.
- Single crossover relief valve type FYSHA (relief on A), FYSHB (relief on B).
- Dual crossover relief valve type FYSHD.

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ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)

U Imperial M Metric

29

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Strength in Products, Strength in Service

- Pressure Switches
- Temperature Switches
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- Vacuum Switches
- Transducers
- Gear Pumps
- Vane Pumps
- Dump Pumps
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- Orbital Motors
- Vane Motors
- Gear Motors
- Monoblock Valves
- High Pressure Ball Valves
- Flow Controls & Needle Valves
- Drive Couplings
- Flanges
- Gauges
- Test Points

ANFIELD Orbital Motor Catalog BMSY Rev. B (03/12/2025)



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