

Orbital Motors

Low Speed, High Torque Motors

BMH

Series



ANFIELD Orbital Motor Catalog BMH | Rev. - (06/18/2024)



Strength in Products,
Strength in Service

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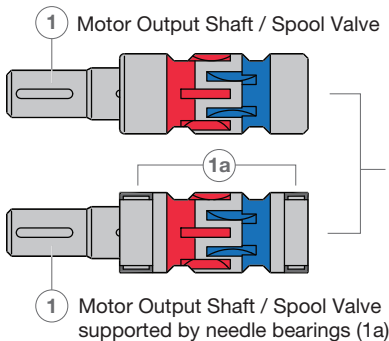
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DESCRIPTION

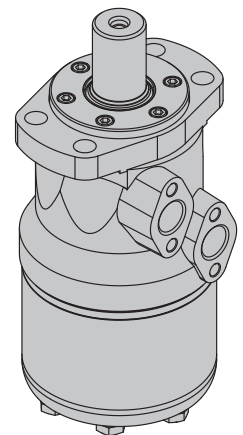
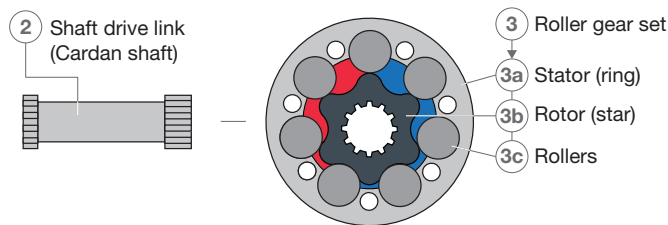
Anfield BMH series light-duty motors are the perfect balance between price and performance, producing high torque at a reasonable cost. BMH motors perform well in a wide range of applications, especially low flow, high pressure applications. The BMH motors exhibit smooth rotation throughout the speed transitions and the combination of shafts, mounts and displacements allow them to be configured for almost any application requirement.

BMH series motors have three moving components: rotor (fig. 3b), drive link (fig. 2), and output shaft (fig. 1) making them compact and highly efficient. A variety of displacements, mounts, shafts and port options provide design flexibility. Check valves integrated into the housing allow case pressure to drain internally. The robust high pressure shaft seals standard on all models can withstand high case pressure spikes. Output shaft supported by needle bearings is also available by special order on the BMH series motors which allow a higher permissible radial load in comparison to our standard slide bearing motors. The BMH motors are an ideal choice for light duty applications in either parallel or series systems.

Standard Slide Bearings



Optional Needle Bearings (Factory Order)



BMH

TYPICAL APPLICATIONS

Agricultural equipment, food processing equipment, augers, car wash brushes, conveyors, grain augers, machine tools, sweepers, spreaders, skid steer attachments, feed rollers, brush drives and more.

FEATURES

- “Roller Stator” motor design increases efficiency and life by using roller contact versus a solid, sliding contact design.
- Efficient, powerful and compact. Designed for light duty applications.
- Built-in check valves offer versatility and increased seal life.
- Variety of displacements and shafts provide flexibility in application design.
- Standard high pressure shaft seal offers superior seal life and performance.

BMH MOTOR CROSS REFERENCE GUIDE

Brand	Series
Danfoss®	OMH
Eaton Char-Lynn®	Delta (184-)
White®	-
Parker®	-
M+S®	MLHH, MH

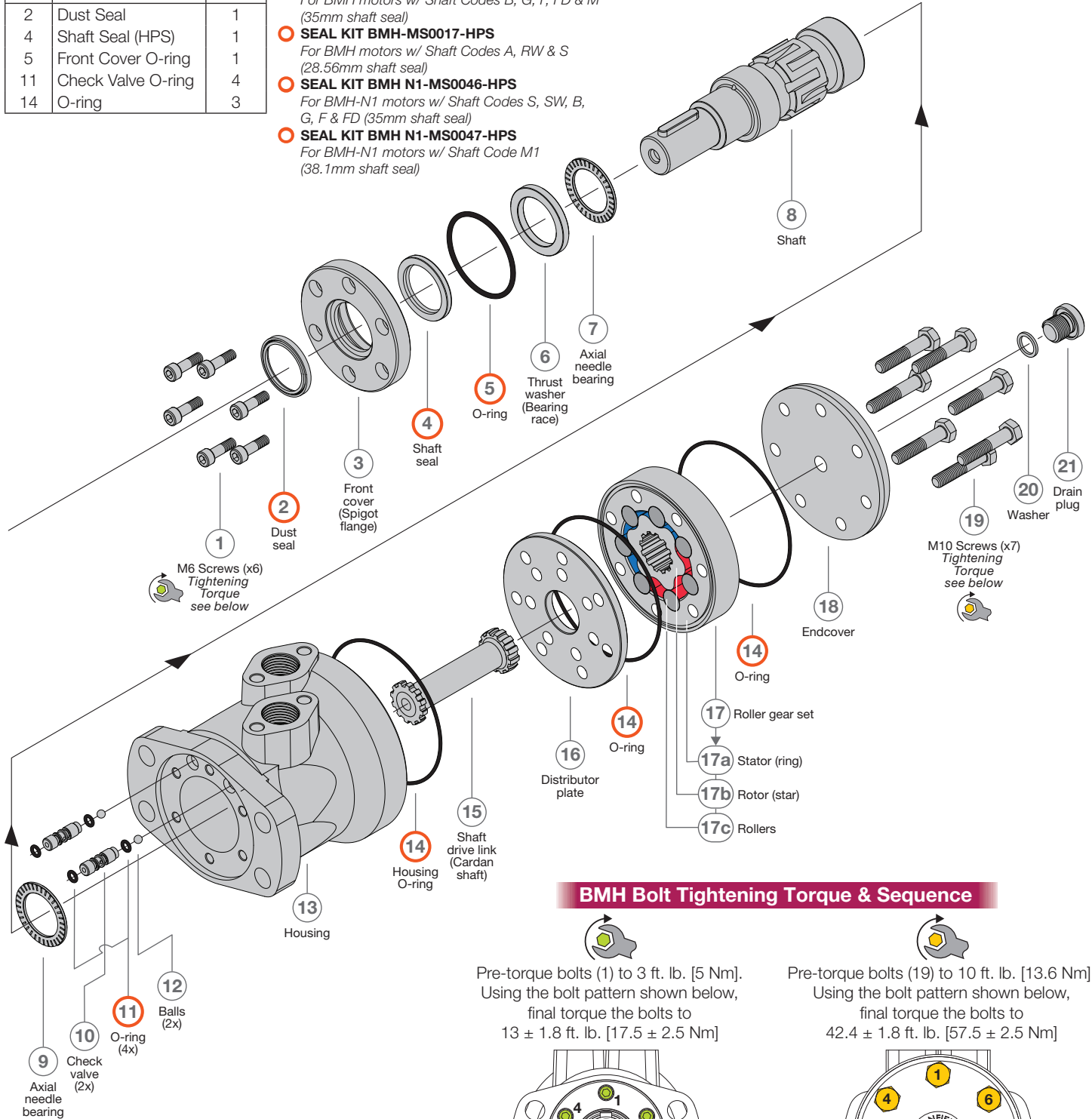
ASSEMBLY DIAGRAM - BMH SERIES

BMH Seal Kit

Item No.	Description	Qty /motor
2	Dust Seal	1
4	Shaft Seal (HPS)	1
5	Front Cover O-ring	1
11	Check Valve O-ring	4
14	O-ring	3

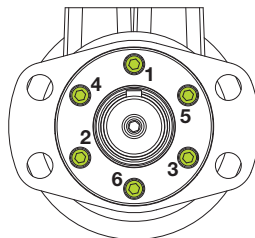
Anfield part no.

- SEAL KIT BMH-MS0002-HPS**
For BMH motors w/ Shaft Codes B, G, F, FD & M (35mm shaft seal)
- SEAL KIT BMH-MS0017-HPS**
For BMH motors w/ Shaft Codes A, RW & S (28.56mm shaft seal)
- SEAL KIT BMH N1-MS0046-HPS**
For BMH-N1 motors w/ Shaft Codes S, SW, B, G, F & FD (35mm shaft seal)
- SEAL KIT BMH N1-MS0047-HPS**
For BMH-N1 motors w/ Shaft Code M1 (38.1mm shaft seal)

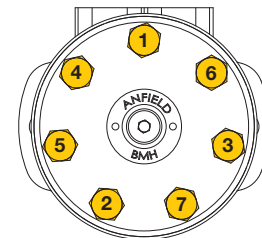


BMH Bolt Tightening Torque & Sequence

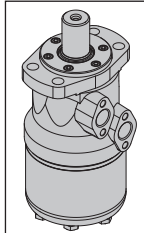
Pre-torque bolts (1) to 3 ft. lb. [5 Nm].
Using the bolt pattern shown below,
final torque the bolts to
13 ± 1.8 ft. lb. [17.5 ± 2.5 Nm]



Pre-torque bolts (19) to 10 ft. lb. [13.6 Nm].
Using the bolt pattern shown below,
final torque the bolts to
42.4 ± 1.8 ft. lb. [57.5 ± 2.5 Nm]



TECHNICAL SPECIFICATIONS - BMH SERIES



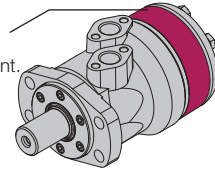
			1	2	3	4	5
		BMH	200	250	315	400	500
Geometric Displacement	in ³ /r		12.40	15.62	19.29	24.80	29.85
	cm ³ /r		203.2	255.9	316.1	406.4	489.2
Max. Speed	rpm	Cont.	366	290	236	183	155
		Inter.	439	348	282	220	184
Max. Flow	gpm	Cont.	19.8	19.8	19.8	19.8	19.8
			l/min	75	75	75	75
	Inter.	23.8	23.8	23.8	23.8	23.8	
		90	90	90	90	90	
Max. Torque	lbf-ft	Cont.	376.4	458.3	546.1	627.3	612.5
			Nm	510	621	740	850
	Inter.	427.3	518.1	610.3	730.6	767.5	
		579	702	827	990	1040	
	Peak	480.4	583.0	723.2	805.9	863.5	
		651	790	980	1092	1170	
Max. Pressure Drop	Δ psi	Cont.	2538	2538	2538	2248	1813
			Δ bar	175	175	175	155
	Inter.	2901	2901	2901	2756	2321	
		200	200	200	190	160	
	Peak	3263	3263	3263	3046	2611	
		225	225	255	210	180	
Max. Output	hp	Cont.	21.5	21.5	18.8	16.8	14.8
			kW	16	16	14	12.5
	Inter.	24.8	24.8	20.8	20.1	18.8	
		18.5	18.5	15.5	15	14	
Max. Inlet Pressure	Δ psi	Cont.	2538	2538	2538	2538	2538
			Δ bar	175	175	175	175
	Inter.	2901	2901	2901	2901	2901	
		200	200	200	200	200	
	Peak	3263	3263	3263	3263	3263	
		225	225	225	225	225	
Max. Return Pressure with drain line	Δ psi	Cont.	2901	2901	2901	2901	2901
			Δ bar	200	200	200	200
	Inter.	3263	3263	3263	3263	3263	
		225	225	225	225	225	
	Peak	3626	3626	3626	3626	3626	
		250	250	250	250	250	
Weight	lbs		23.1	24.2	25.3	27.1	28.6
	kg		10.5	11	11.5	12.3	13.0

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 - BMH SERIES

Performance data is based on the motor displacement.



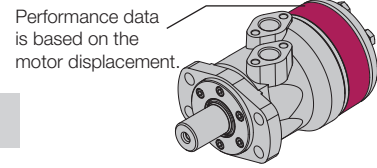
BMH 200

12.4 in³/rev. (203.2 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)	2901 (200)
Flow gpm (l/min) ↓	1.3 (5)	72.3 (98)	143.1 (194)	209.5 (284)			
		25	25	22			
	2.6 (10)	74.5 (101)	150.5 (204)	222.0 (301)	288.4 (391)	355.5 (482)	
		43	41	36	29	14	
	5.3 (20)	73.0 (99)	148.2 (201)	224.2 (304)	296.5 (402)	375.4 (509)	424.8 (576)
		100	97	93	85	69	56
	7.9 (30)	71.5 (97)	145.3 (197)	221.3 (300)	296.5 (402)	376.2 (510)	427.0 (579)
		145	143	139	130	114	101
	10.6 (40)	66.4 (90)	140.1 (190)	215.4 (292)	294.3 (399)	373.9 (507)	426.3 (578)
		200	200	200	188	168	153
13.2 (50)	60.5 (82)	135.0 (183)	209.5 (284)	289.1 (392)	368.8 (500)	421.1 (571)	
	248	246	244	235	213	199	
15.9 (60)	53.8 (73)	128.3 (174)	202.1 (274)	283.2 (384)	363.6 (493)	415.2 (563)	
	292	290	287	279	260	244	
18.5 (70)	46.5 (63)	120.2 (163)	194.7 (264)	275.8 (374)	354.8 (481)	408.6 (554)	
	352	350	349	338	318	301	
Max. Cont. 19.8 (75)	43.5 (59)	115.8 (157)	191.0 (259)	269.9 (366)	350.3 (475)	403.4 (547)	
	366	365	363	355	335	319	
21.1 (80)	39.1 (53)	110.6 (150)	186.6 (253)	264.0 (358)	343.7 (466)	396.8 (538)	
	381	381	380	371	352	338	
Max. Inter. 23.8 (90)	28.8 (39)	103.3 (140)	177.8 (241)	256.7 (348)	336.3 (456)	388.0 (526)	
	439	437	434	426	407	392	

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 - BMH SERIES


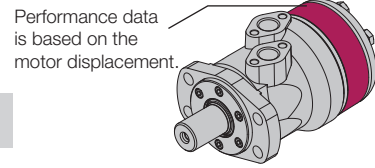
BMH 250 15.6 in³/rev. (255.9 cm³/rev.)

Torque Speed	lbf.ft (Nm) rpm	Δ Pressure psi (bar) →				Max. Cont. Max. Inter.			
		508 (35)	1015 (70)	1305 (90)	1740 (120)	2103 (145)	2538 (175)	2901 (200)	
Flow gpm (l/min) ↓	1.3 (5)	89.2 (121) 19	181.4 (246) 19	234.5 (318) 18	293.5 (398) 14				
	2.6 (10)	95.9 (130) 34	190.3 (258) 33	244.1 (331) 31	313.5 (425) 29	379.8 (515) 23	438.8 (595) 12		
	5.3 (20)	95.9 (130) 78	190.3 (258) 77	244.9 (332) 76	318.6 (432) 73	383.5 (520) 65	458.0 (621) 53	517.8 (702) 42	
	7.9 (30)	90.0 (122) 115	185.1 (251) 113	241.2 (327) 111	316.4 (429) 105	383.5 (520) 96	458.0 (621) 84	516.3 (700) 75	
	10.6 (40)	84.8 (115) 157	177.0 (240) 157	238.2 (323) 156	311.3 (422) 150	378.4 (513) 139	454.3 (616) 127	514.8 (698) 114	
	13.2 (50)	77.4 (105) 196	171.1 (232) 195	231.6 (314) 192	303.1 (411) 185	372.5 (505) 173	447.0 (606) 159	506.7 (687) 147	
	15.9 (60)	69.3 (94) 232	162.3 (220) 230	222.7 (302) 226	295.8 (401) 218	365.8 (496) 206	439.6 (596) 192	498.6 (676) 180	
	18.5 (70)	59.7 (81) 274	154.2 (209) 274	212.4 (288) 274	286.9 (389) 266	357.0 (484) 252	429.3 (582) 238	491.2 (666) 222	
	Max. Cont.	19.8 (75)	53.1 (72) 290	149.7 (203) 289	206.5 (280) 287	281.0 (381) 279	350.3 (475) 266	423.4 (574) 251	486.1 (659) 236
		21.1 (80)	48.7 (66) 303	143.1 (194) 302	201.4 (273) 298	273.6 (371) 290	344.4 (467) 279	417.5 (566) 264	480.2 (651) 249
Max. Inter.	23.8 (90)	36.1 (49) 348	131.3 (178) 347	188.8 (256) 345	261.8 (355) 337	334.1 (453) 325	407.1 (552) 309	467.6 (634) 292	

Continuous values
 Intermittent values
 (max. 10% operation every minute)

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PERFORMANCE DATA - BMH SERIES



BMH 315 19.3 in³/rev. (316.1 cm³/rev.)

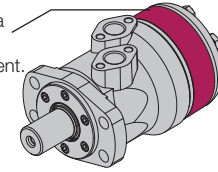
Torque Speed	lbf.ft (Nm) rpm	Δ Pressure psi (bar) →				Max. Cont.		Max. Inter.	
		508 (35)	1088 (75)	1450 (100)	1958 (135)	2248 (155)	2538 (175)	2901 (200)	
Flow gpm (l/min) ↓	1.3 (5)	114.3 (155) 16	239.7 (325) 13						
	2.6 (10)	120.2 (163) 27	252.2 (342) 24	334.9 (454) 18	410.1 (556) 14				
	5.3 (20)	124.6 (169) 63	257.4 (349) 61	345.9 (469) 55	429.3 (582) 48	489.7 (664) 40	540.6 (733) 32	596.7 (809) 19	
	7.9 (30)	121.7 (165) 93	253.7 (344) 89	346.7 (470) 82	427.8 (580) 77	493.4 (669) 67	545.8 (740) 59	607.8 (824) 46	
	10.6 (40)	113.6 (154) 126	248.6 (337) 126	343.0 (465) 119	425.6 (577) 111	489.0 (663) 99	543.6 (737) 88	610.0 (827) 73	
	13.2 (50)	104.0 (141) 159	239.7 (325) 155	335.6 (455) 148	418.9 (568) 139	483.8 (656) 126	536.9 (728) 115	607.8 (824) 98	
	15.9 (60)	89.2 (121) 187	230.1 (312) 186	342.5 (440) 179	409.3 (555) 169	474.3 (643) 154	527.4 (715) 143	598.9 (812) 124	
	18.5 (70)	76.0 (103) 222	219.8 (298) 222	313.5 (425) 215	399.0 (541) 205	465.4 (631) 187	518.5 (703) 176	590.0 (800) 157	
	Max. Cont.	19.8 (75)	69.3 (94) 236	211.7 (287) 233	307.6 (417) 224	390.2 (529) 215	459.5 (623) 196	513.3 (696) 184	584.1 (792) 166
		21.1 (80)	60.5 (82) 246	204.3 (277) 244	299.4 (406) 236	382.1 (518) 228	450.6 (611) 210	507.4 (688) 197	578.2 (784) 174
Max. Inter.	23.8 (90)	45.7 (62) 282	188.8 (256) 280	284.7 (386) 275	365.8 (496) 266	437.4 (593) 248	493.4 (669) 234	565.7 (767) 209	

Continuous values
 Intermittent values
 (max. 10% operation every minute)

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PERFORMANCE DATA - BMH SERIES

Performance data is based on the motor displacement.


BMH 400

 24.8 in³/rev. (406.4 cm³/rev.)

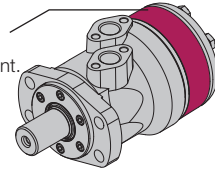
Torque Speed	lbf.ft (Nm) rpm	Δ Pressure psi (bar) →				Max. Cont.	Max. Inter.	
		508 (35)	870 (60)	1523 (105)	1813 (125)	2248 (155)	2756 (190)	
Flow gpm (l/min) ↓	1.3 (5)	144.6 (196) 13	256.7 (348) 13	380.6 (516) 10				
	2.6 (10)	151.2 (205) 22	267.7 (363) 21	402.7 (546) 21	517.8 (702) 17	633.6 (859) 11		
	5.3 (20)	154.2 (209) 50	269.9 (366) 49	400.5 (543) 46	522.2 (708) 41	644.6 (874) 36	728.7 (988) 31	
	7.9 (30)	148.2 (201) 73	263.3 (357) 72	399.8 (542) 70	520.7 (706) 63	637.3 (864) 56	725.8 (984) 51	
	10.6 (40)	143.8 (195) 99	255.2 (346) 98	392.4 (532) 96	517.0 (701) 86	632.8 (858) 77	717.6 (973) 71	
	13.2 (50)	127.6 (173) 123	244.9 (332) 122	382.1 (518) 118	506.7 (687) 107	625.5 (848) 97	706.6 (958) 90	
	15.9 (60)	113.6 (154) 146	235.3 (319) 144	369.5 (501) 141	492.7 (668) 128	614.4 (833) 115	696.3 (944) 106	
	18.5 (70)	101.8 (138) 174	225.0 (305) 173	354.0 (480) 169	478.7 (649) 156	600.4 (814) 141	682.2 (925) 130	
	Max. Cont.	19.8 (75)	94.4 (128) 183	216.8 (294) 181	343.7 (466) 177	469.8 (637) 163	591.5 (802) 149	671.9 (911) 138
		21.1 (80)	83.3 (113) 192	204.3 (277) 191	332.6 (451) 188	458.0 (621) 174	579.7 (786) 158	663.1 (899) 144
Max. Inter.	23.8 (90)	66.4 (90) 220	188.8 (256) 220	319.4 (433) 215	438.8 (595) 202	565.7 (767) 183	649.8 (881) 165	

Continuous values
 Intermittent values
 (max. 10% operation every minute)

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PERFORMANCE DATA - BMH SERIES

Performance data is based on the motor displacement.



BMH 500

29.9 in³/rev. (489.2 cm³/rev.)

Torque Speed	lbf.ft (Nm) rpm	Δ Pressure psi (bar) →				Max. Cont.	Max. Inter.	
		363 (25)	725 (50)	1233 (85)	1450 (100)	1813 (125)	2321 (160)	
Flow gpm (l/min) ↓	1.3 (5)	121.7 (165) 11	233.8 (317) 11	380.6 (516) 8				
	2.6 (10)	131.3 (178) 20	247.1 (335) 19	409.3 (555) 17	493.4 (669) 15	583.4 (791) 13	714.7 (969) 9	
	5.3 (20)	130.5 (177) 42	244.1 (331) 42	412.3 (559) 41	496.4 (673) 38	589.3 (799) 36	728.7 (988) 29	
	7.9 (30)	126.9 (172) 64	236.0 (320) 63	407.9 (553) 61	489.0 (663) 57	584.1 (792) 53	725.0 (983) 47	
	10.6 (40)	120.2 (163) 85	227.9 (309) 85	399.0 (541) 83	482.4 (654) 79	577.5 (783) 75	716.2 (971) 67	
	13.2 (50)	107.7 (146) 103	218.3 (296) 103	385.7 (523) 103	468.4 (635) 97	566.4 (768) 93	703.6 (954) 85	
	15.9 (60)	89.2 (121) 124	202.8 (275) 124	370.3 (502) 123	452.9 (614) 117	551.0 (747) 113	688.9 (934) 103	
	18.5 (70)	71.5 (97) 148	188.8 (256) 148	355.5 (482) 148	440.3 (597) 140	537.7 (729) 134	676.3 (917) 122	
	Max. Cont.	19.8 (75)	58.3 (79) 155	177.0 (240) 155	345.9 (469) 155	429.3 (582) 152	526.6 (714) 144	665.3 (902) 130
		21.1 (80)	44.3 (60) 166	166.7 (226) 166	334.1 (453) 166	420.4 (570) 159	517.0 (701) 153	652.0 (884) 139
Max. Inter.	23.8 (90)	25.1 (34) 184	148.2 (201) 183	310.5 (421) 182	405.7 (550) 177	496.4 (673) 166	640.9 (869) 155	

Continuous values
 Intermittent values
 (max. 10% operation every minute)

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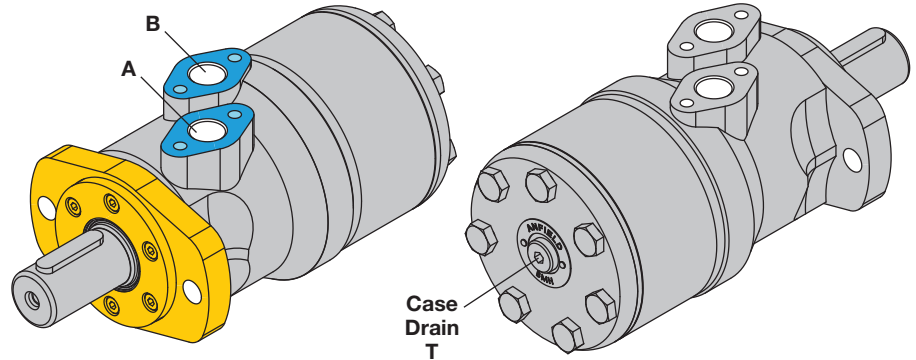
BMH DIMENSIONS, PORT & MOUNTING DETAILS

BMH MOUNTING FLANGE
CODE
2

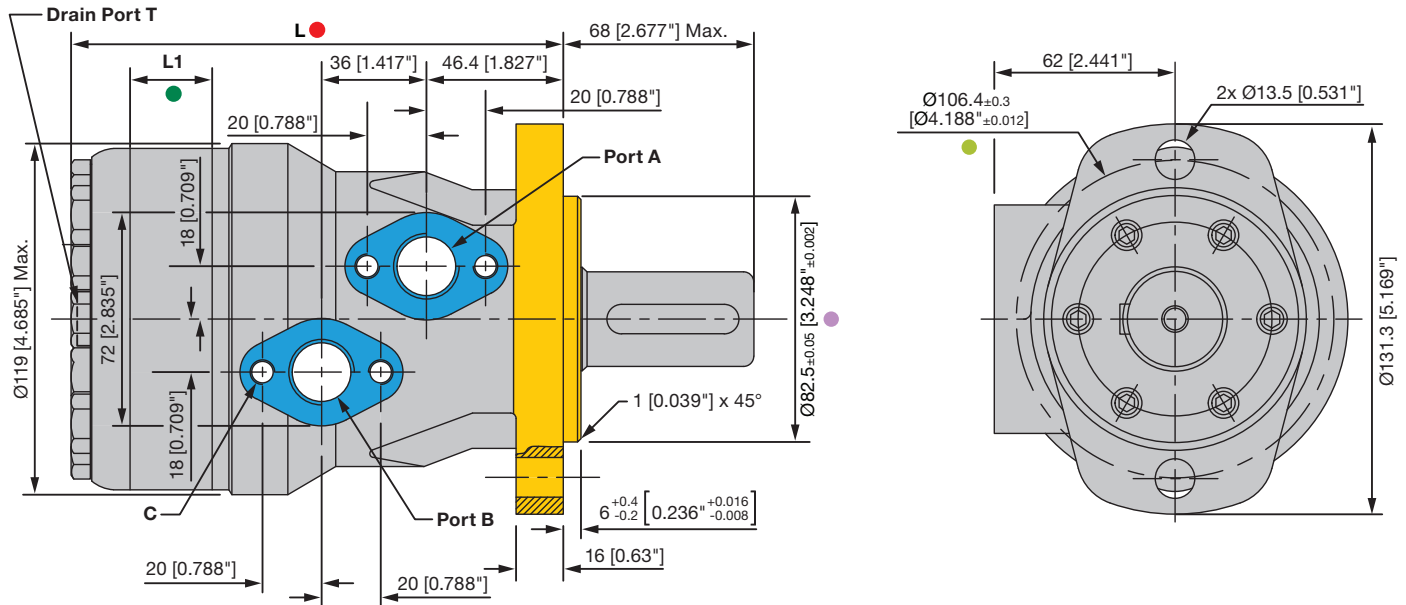
2-Bolt, SAE A Mount

● Pilot Diameter: 3.25"

● Bolt Circle Diameter: 4.19"


GEROLER WIDTH

Model	L ● mm [in]	L1 ● mm [in]
BMH 200	168 [6.61"]	27 [1.06"]
BMH 250	175 [6.89"]	34 [1.34"]
BMH 315	184 [7.24"]	42 [1.65"]
BMH 400	195 [7.68"]	54 [2.13"]
BMH 500	206 [8.11"]	65 [2.56"]


BMH PORT CODE

Connection	S	P	D	R	M
	SAE ports	NPTF ports	BSPP ports	BSPT ports	Metric ports
P (A,B)	7/8-14UNF O-Ring (15)	1/2-14 NPTF (15)	G 1/2 (15)	PT (RC) 1/2 (15)	M22 x 1.5 (15) M
T	7/16-20UNF (12)	7/16-20UNF (12)	G 1/4 (12)	PT (RC) 1/4 (12)	M14 x 1.5 (12) M
C (4x)	5/16-18UNC (13) U	5/16-18UNC (13) U	M8 (13) M	M8 (13) M	M8 (13) M

S : SAE straight thread (O-Ring Boss)

P : NPTF (National Pipe Tapered Fuel)

D : BSPP (British Standard Pipe Parallel) G thread

R : BSPT (British Standard Pipe Taper) Rc thread

M : Metric port

(Depth in mm)

mm [inch]

Imperial Metric

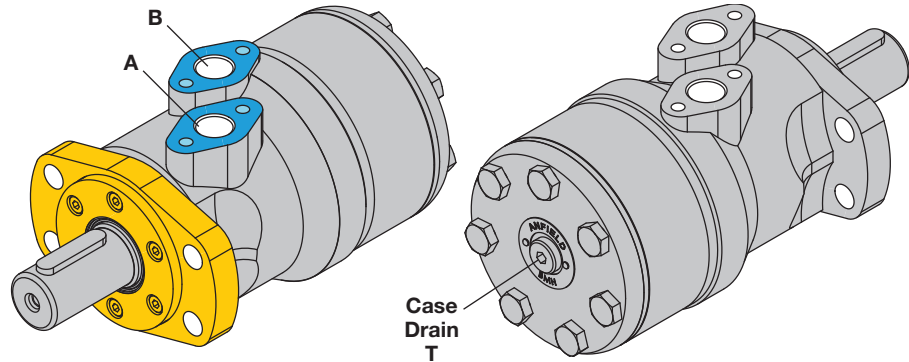
ANFIELD Orbital Motor Catalog BMH Rev.- (06/18/2024)

BMH DIMENSIONS, PORT & MOUNTING DETAILS

BMH MOUNTING FLANGE CODE 4 U IMPERIAL

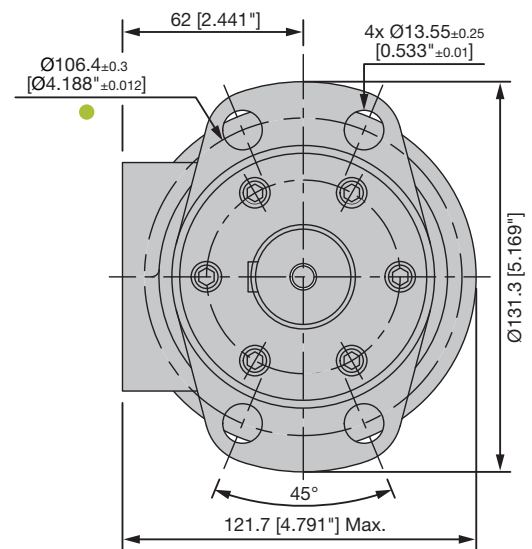
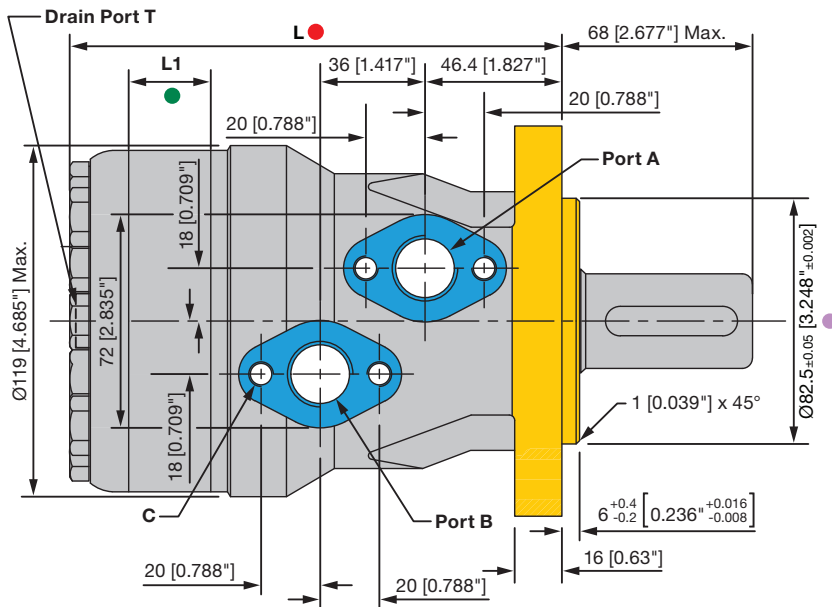
4-Bolt, SAE A Magneto Mount

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



GEROLER WIDTH

Model	L ● mm [in]	L1 ● mm [in]
BMH 200	168 [6.61"]	27 [1.06"]
BMH 250	175 [6.89"]	34 [1.34"]
BMH 315	184 [7.24"]	42 [1.65"]
BMH 400	195 [7.68"]	54 [2.13"]
BMH 500	206 [8.11"]	65 [2.56"]



Connection	BMH PORT CODE				
	S	P	D	R	M
S SAE ports	7/8-14UNF O-Ring (15)	1/2-14 NPTF (15)	BSPP ports	BSPT ports	Metric ports
P (A,B)	7/8-14UNF O-Ring (15)	1/2-14 NPTF (15)	G 1/2 (15)	PT (RC) 1/2 (15)	M22 x 1.5 (15) M
T	7/16-20UNF (12)	7/16-20UNF (12)	G 1/4 (12)	PT (RC) 1/4 (12)	M14 x 1.5 (12) M
C (4x)	5/16-18UNC (13) U	5/16-18UNC (13) U	M8 (13) M	M8 (13) M	M8 (13) M

S: SAE straight thread (O-Ring Boss) **R**: BSPT (British Standard Pipe Taper) Rc thread (Depth in mm)
P: NPTF (National Pipe Tapered Fuel) **M**: Metric port
D: BSPP (British Standard Pipe Parallel) G thread

BMH SHAFT EXTENSIONS

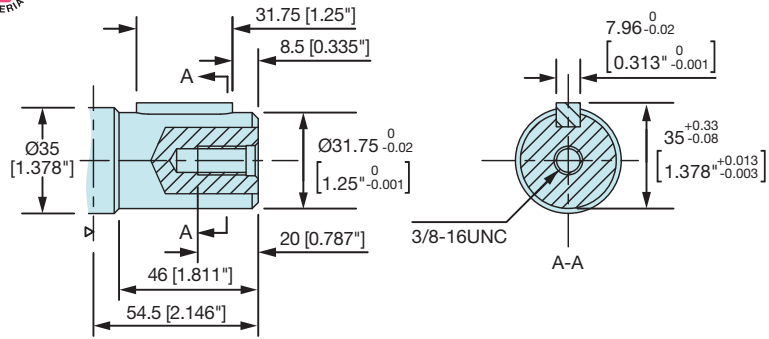
IMPORTANT:

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

BMH SHAFT EXTENSION **CODE G**

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

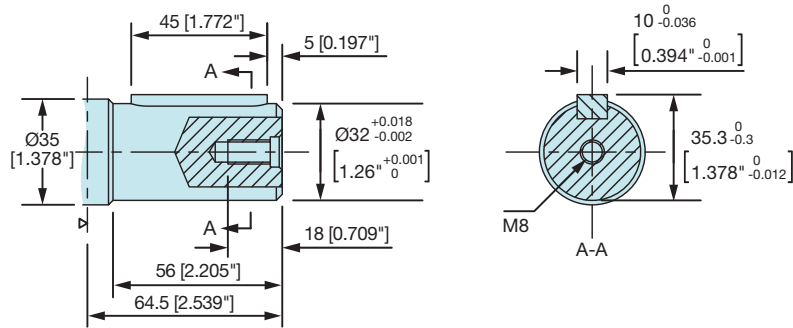
Max. Torque
568 lbf.ft [770 Nm]



BMH SHAFT EXTENSION **CODE B**

32 mm Straight Keyed
Parallel key 10x8x45

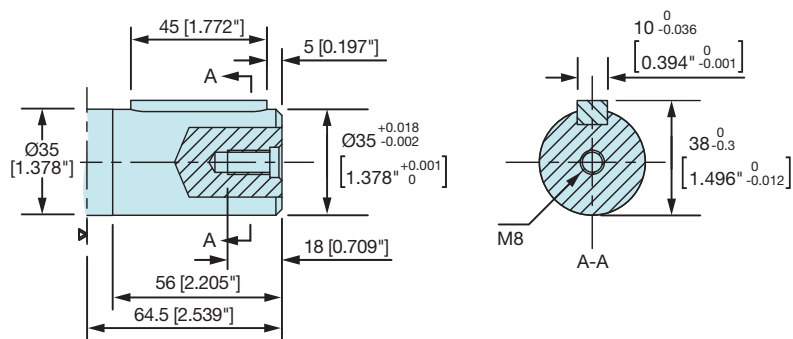
Max. Torque
568 lbf.ft [770 Nm]



BMH SHAFT EXTENSION **CODE M**

35 mm Straight Keyed
Parallel key 10x8x45

Max. Torque
700 lbf.ft [950 Nm]

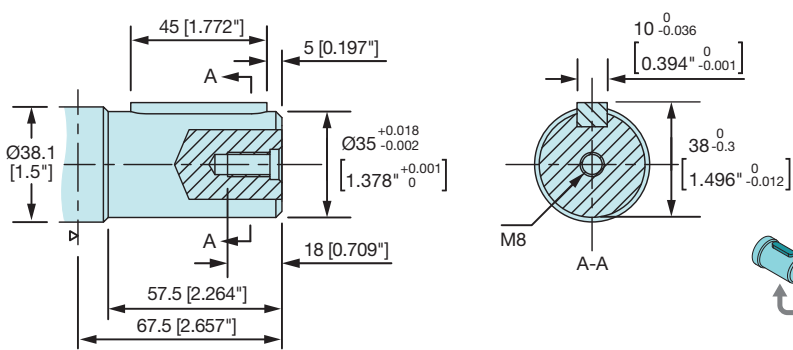


BMH SHAFT EXTENSION **CODE M1**

35 mm Straight Keyed
Parallel key 10x8x45

Max. Torque
700 lbf.ft [950 Nm]

M1 shaft is only available with needle bearing model BMH-N1



mm [Inch]
 Imperial Metric

BMH SHAFT EXTENSIONS

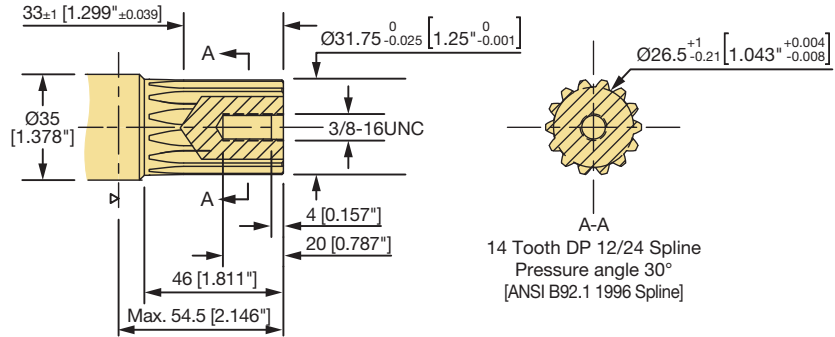
IMPORTANT:

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

BMH SHAFT EXTENSION **CODE F**

1 1/4" 14 Tooth Splined

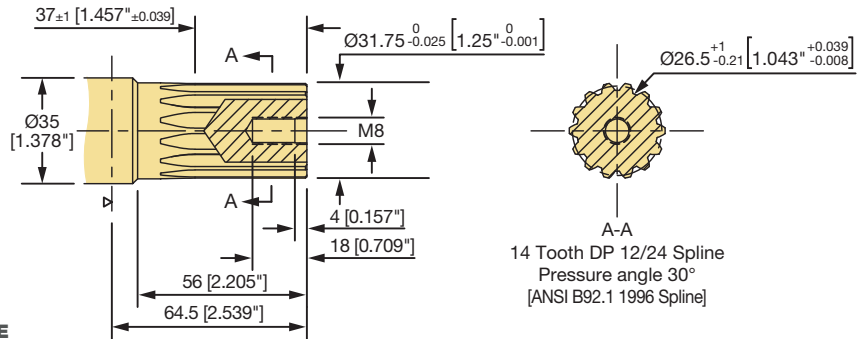
Max. Torque
568 lbf.ft [770 Nm]



BMH SHAFT EXTENSION **CODE FD**

1 1/4" 14 Tooth Splined

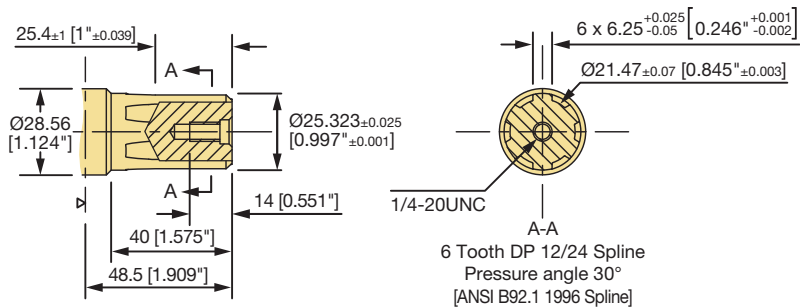
Max. Torque
568 lbf.ft [770 Nm]



BMH SHAFT EXTENSION **CODE S**

1" 6 Tooth Splined

Max. Torque
290 lbf.ft [395 Nm]

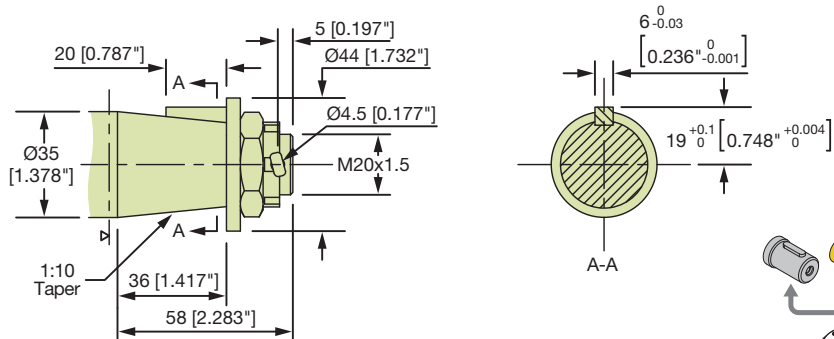


BMH SHAFT EXTENSION **CODE T1**

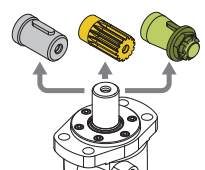
35 mm Tapered (1:8) w/ Nut

- Parallel key 6x6x20
- Tightening Torque 200±10 Nm

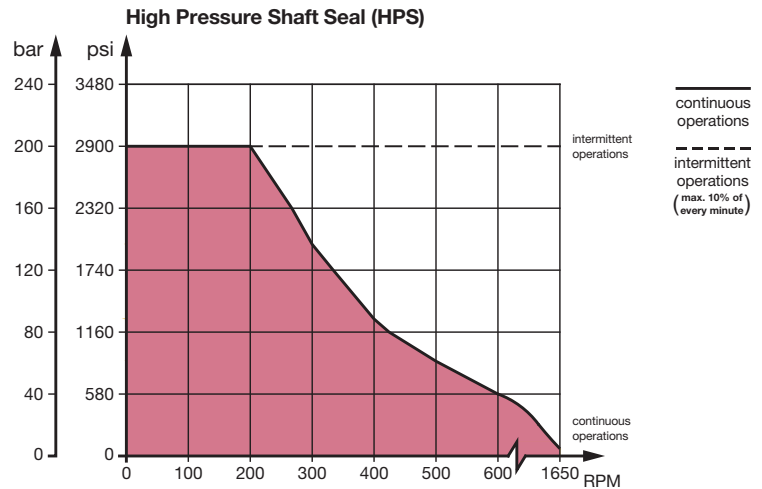
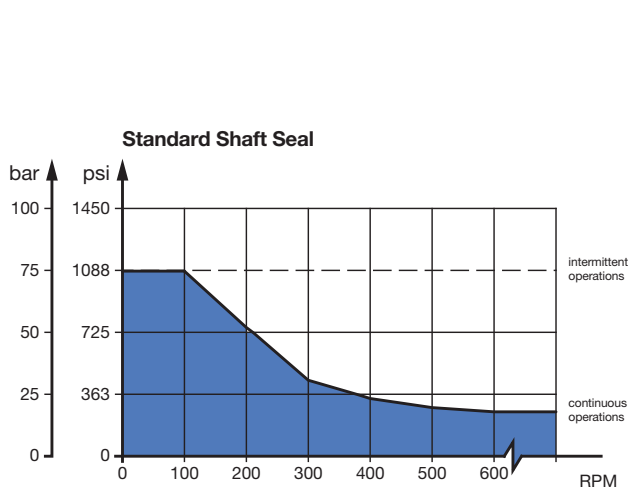
Max. Torque
700 lbf.ft [950 Nm]



mm [inch]
 Imperial Metric



PERMISSIBLE SHAFT SEAL PRESSURES - BMH SERIES



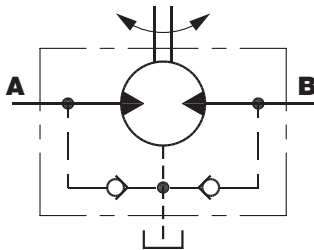
High Pressure Shaft Seals (HPS)

More robust shaft seal that can withstand high case pressure spikes. The seal is designed to withstand case pressures up to 2900 psi [200 bar] at 200 rpm.

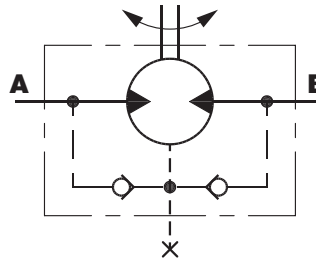
Internal Drain, Permissible back pressure and case pressure:

The internal drain option is standard on all BMH 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
 CASE PRESSURE DRAINED TO TANK
 Shaft Seal Pressure = Pressure at Drain



Schematic 2 Internal Drain
 CASE PRESSURE DRAINED INTERNALLY
 Shaft Seal Pressure = Pressure at Return Line



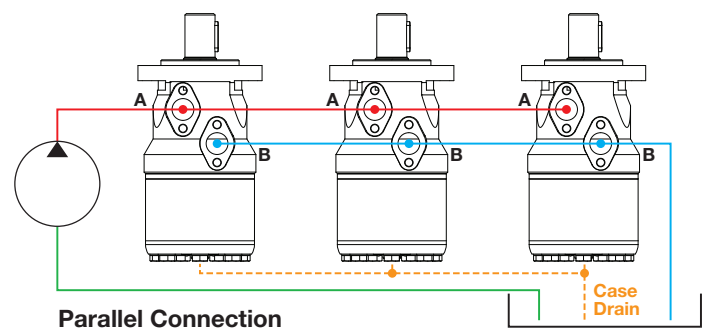
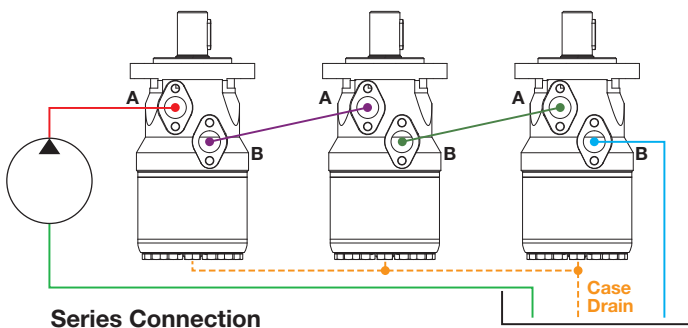
Oil Flow In Drain Line

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)
1450 (100)	20	0.66 (2.5)
	35	0.48 (1.8)
2030 (140)	20	0.93 (3.5)
	35	0.75 (2.8)

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.



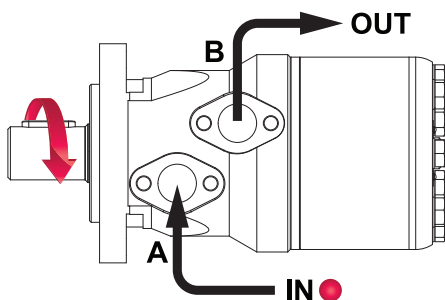
DIRECTION OF SHAFT ROTATION - BMH SERIES

Standard Rotation

(Viewed from Shaft End)

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

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

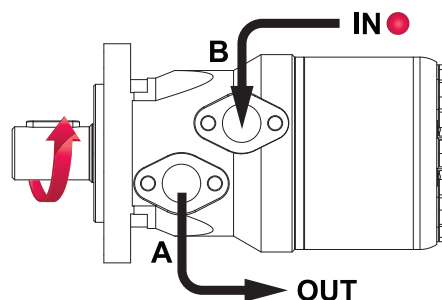


Reverse Rotation

(Viewed from Shaft End)

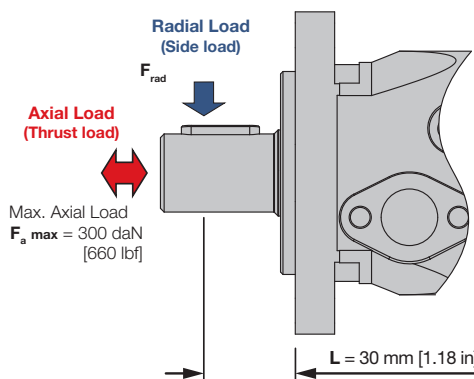
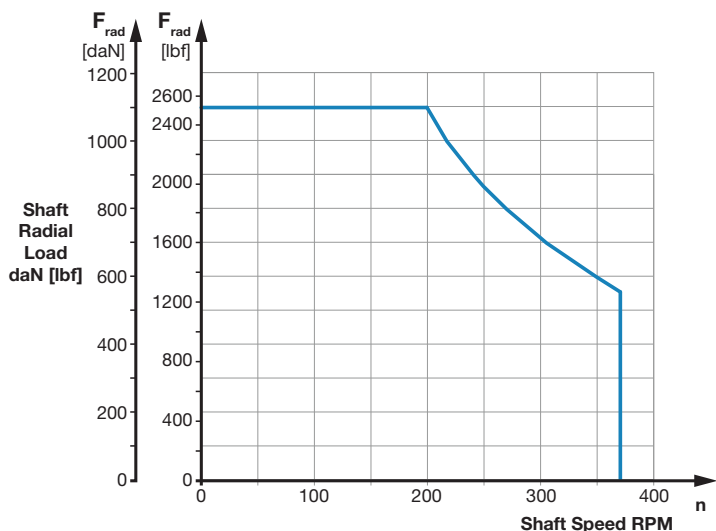
Port **A** Pressurized - **CCW**

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



PERMISSIBLE SHAFT LOADS FOR BMH MOTORS

The permissible shaft load (F_{rad}) is calculated from the speed (n) and the distance (L) between the point of load application and the mounting flange.



F_{rad} Radial Shaft Load (side load)	Imperial formula	$= \frac{1100}{n} \times \frac{2215}{4.075+L}$	L in inch $L \leq 2.36 \text{ in}$ $n \geq 200 \text{ rpm}$
	Metric formula	$= \frac{1100}{n} \times \frac{25000}{103.5+L}$	L in mm $L \leq 60 \text{ mm}$ $n \geq 200 \text{ rpm}$

* $n > 200 \text{ rpm}$; $L < 2.36 \text{ in [60 mm]}$

$n < 200 \text{ rpm}$; $\geq PR_{max} = 2475 \text{ lbf [11000 N]}$

1 Dekanewton [daN] = 10 Newton [N] = 2.248 Pound-force [lbf]

BMH DESIGNATION & ORDERING CODE

BMH - ... - 400 - 4 - G - S - ... - ... - ... - HPS

1 Series

2 Bearing

Omit	Standard Slide Bearings
N1	Needle Bearings ¹ (Optional)

**N1 will be factory delivery.*

3 Displacement

	cm ³ /rev	in ³ /rev
200	203.2	12.40
250	255.9	15.62
315	316.1	19.29
400	406.4	24.80
500	489.2	29.85

**Pages 5-9 for performance details.*

4 Mounting Type

2	2-Bolt, SAE A	
4	4-Bolt, SAE A Magneto	

**Page 10 for mounting details.*

5 Output Shaft

G	1 1/4" Straight Keyed (5/16"x5/16"x1-1/4" key)	
B	32 mm Straight Keyed (10x8x45 key)	
M	35 mm Straight Keyed (10x8x45 key)	
M1	35 mm Straight Keyed (10x8x45 key)	
F	1 1/4" 14-Tooth Splined	
FD	1 1/4" 14-Tooth Splined	
S	1" 6-Tooth Splined	
T1	35 mm Tapered (1:8)	

**Page 11-12 for shaft details.*

9 Shaft Seal Version

HPS	High Pressure Shaft Seal ²
-----	---------------------------------------

8 Options

Omit	None
0	No Case Drain
F	Free Running Rotor ³
LS	Low Speed Valve ⁴

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

7 Rotation

Omit	Standard Rotation
R	Reverse Rotation

**Page 14 for rotation details.*

6 Ports (A&B,T)

S	SAE Ports (-10,-4)	
P	NPTF Ports (1/2,-4)	
D	BSPP Ports (G1/2,G1/4)	
R	BSPT Ports (Rc1/2,Rc1/4)	
M	Metric Ports (M22,M14)	

**Page 10 for port details.*

Anfield "standard" series motors are painted black.

- Needle Bearing:** Anfield standard BMH motors have the slide bearing. For shafts supported by needle bearings use the N1 code (e.g., BMH-N1). Motors with needle bearings are suitable for operating conditions such as frequent start and stops, vibration on the shaft, high static and dynamic radial loads in short operating terms.
- High Pressure Shaft Seal:** The high pressure shaft seals allow the motors to withstand high case pressures at high speeds without external drain line.
- Free Running Rotors:** The Free Running Rotor Set has 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).

Strength in Products, Strength in Service

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

Drain



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