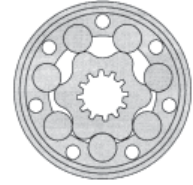




FLUID COMPONENTS, INC.

Hydraulic Motor Model BMRS



The BMRS series advanced **ROLORTORC™** gear set, shaft distribution flow, hydraulic motor is a compact, low noise, high efficient high torque low speed design. The **ROLORTORC™** gear set also affords a reliable smooth start up at low pressure. BMRS motors are available with optional radial needle bearings (by special order) for side load applications.

The low weight advanced construction design is manufactured in accordance with the requirements of ISO 9000-2000 quality system.

Technical Specifications

MODEL		BMRS 50	BMRS 80	BMRS 100	BMRS 125	BMRS 160	BMRS 200	BMRS 250	BMRS 315	BMRS 375
Displacement	<i>in³/rev</i>	3.15	4.97	6.22	7.76	9.59	11.87	15.46	19.36	23.27
	<i>(cm³/rev)</i>	(51.7)	(81.5)	(102)	(127.2)	(157.2)	(194.5)	(253.3)	(317.5)	(381.4)
Max Speed	Cont	960	750	600	475	378	310	240	190	155
	Int.	1150	940	750	600	475	385	300	240	190
Max Torque	Cont	885	1726	2124	2655	3186	3186	3451	3451	3230
	Int.	1115	1947	2478	3009	3805	3894	4336	4735	4381
Max Differential	Cont	2031	2321	2321	2321	2321	2321	2321	2031	1450
	Int.	2538	2900	2900	2900	2900	2900	2900	2538	2031
Max Flow	Cont	13.21	15.85	15.85	15.85	15.85	15.85	15.85	15.85	15.85
	Int.	15.85	19.81	19.81	19.81	19.81	19.81	19.81	19.81	19.81
Weight		16.20 lbs	16.80 lbs	17.35 lbs	17.95 lbs	18.65 lbs	19.35 lbs	20.65 lbs	22.10 lbs	23.30 lbs

Continuous = maximum of continuous operation. Intermittent = maximum operating range for 6 seconds per minute

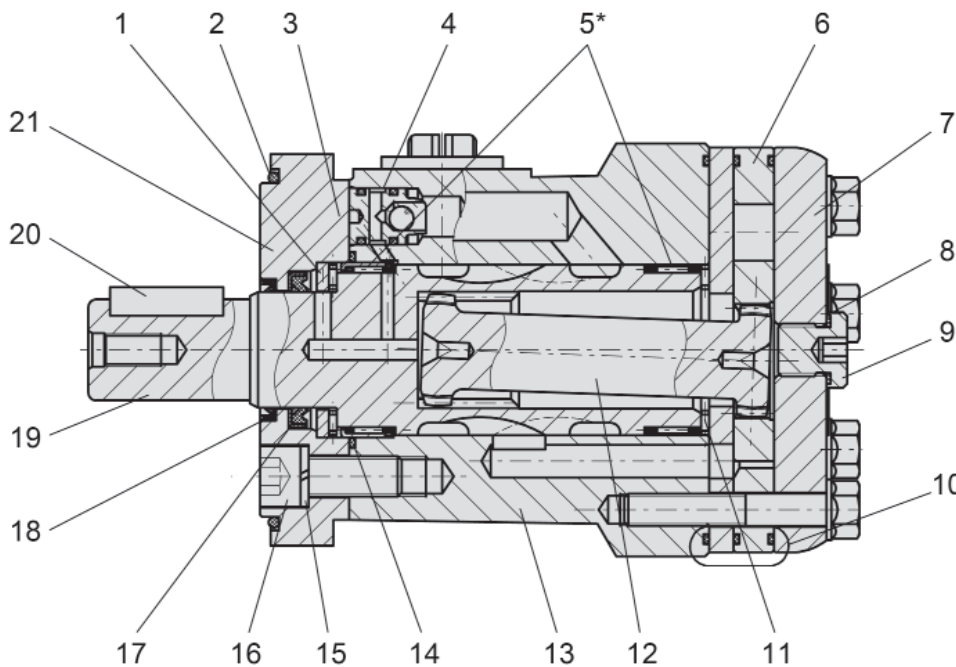
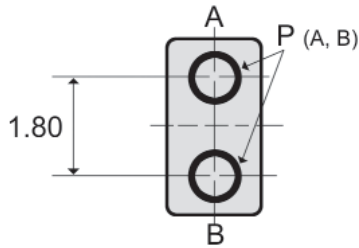
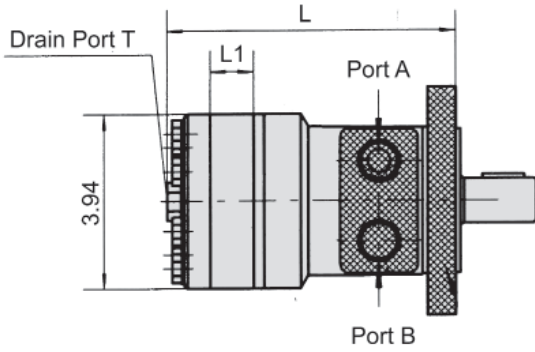


Diagram Key

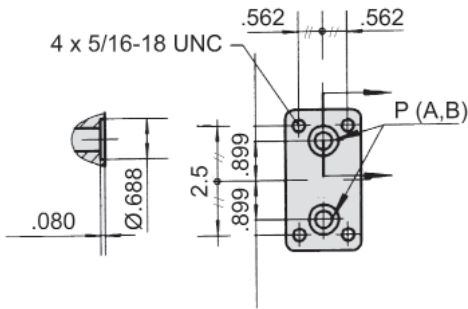
- 1 Thrust Washer
- 2 "O" Ring
- 3 Pin
- 4 Check Valve
- 5 Radial Needle Bearings
- 6 Rolortorc™ Gear Set
- 7 End Cover
- 8 Seal
- 9 Case Drain Plug
- 10 "O" Ring
- 11 Thrust Needle Bearing (2)
- 12 Drive Shaft
- 13 Housing
- 14 "O" Ring
- 15 Lock Washer
- 16 Bolt
- 17 Shaft Seal
- 18 Dust Seal
- 19 Output Shaft
- 20 Key
- 21 Front Cover

*Shown with optional radial needle bearings for side load applications.

BMRS Installation Data

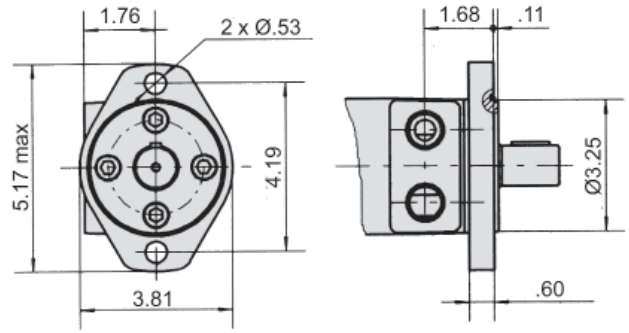


Manifold Port

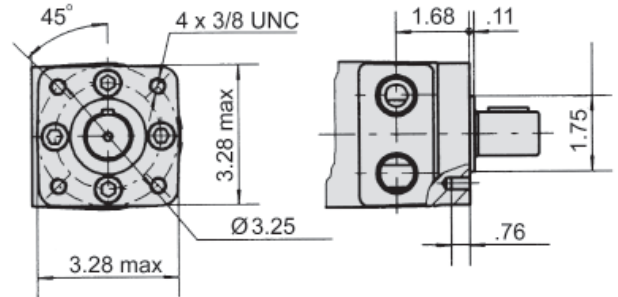


MODEL	L	L1
BMRS 50	5.67"	.39"
BMRS 80	5.90"	.63"
BMRS 100	6.06"	.79"
BMRS 125	6.26"	.98"
BMRS 160	6.51"	1.24"
BMRS 200	6.85"	1.57"
BMRS 250	7.24"	1.97"
BMRS 315	7.72"	2.44"
BMRS 375	8.19"	2.91"

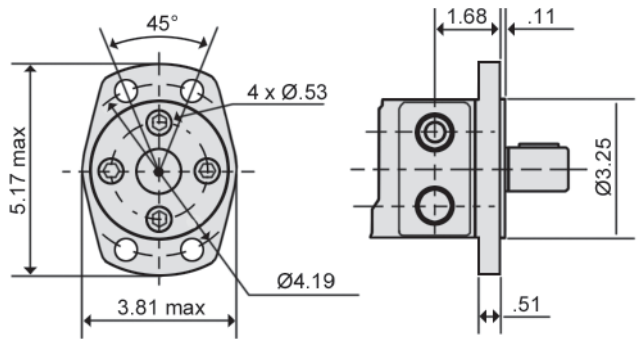
H2 - SAE "A" 2-Bolt



H4 - 4-Bolt



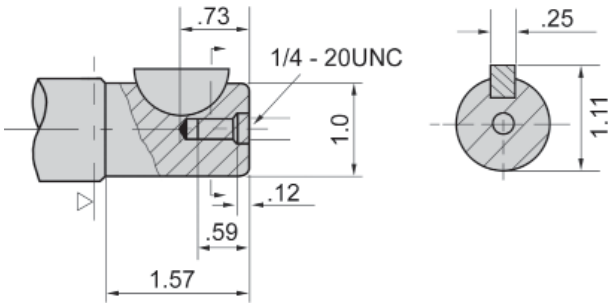
H6 - Magneto



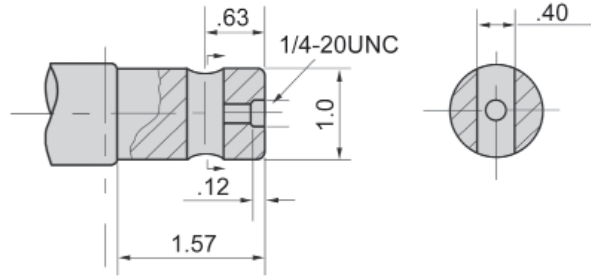
Ports	SAE Sizes	NPT Sizes
P (A, B)	7/8 - 14 SAE	1/2 - 14 NPTF
T	7/16 - 20 SAE	7/16 - 20 SAE

BMRS Drive Shaft Data

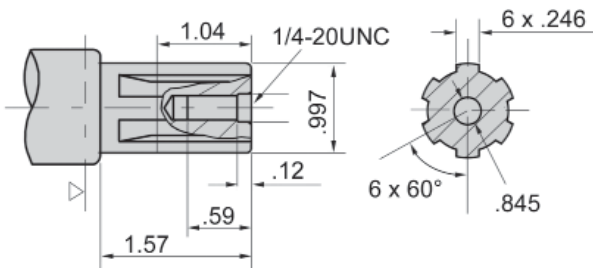
K - 1" Woodruff Key



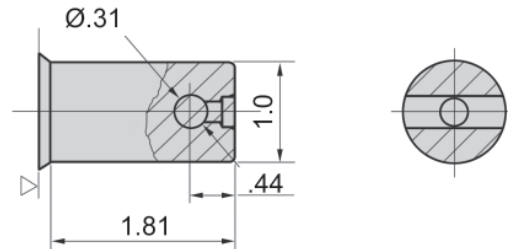
H - 1" Parallel .40 Dia. Cross Hole



S - SAE 6B Spline



H1 - 1" Parallel .31 Dia. Cross Hole



Ordering Example: Model **BMRS** - Frame Size **250** - Flange **H4** - Drive Shaft **K** - Ports **S** - Options

Model	Frame Size	Mounting Flange**	Drive Shaft**	Port Size	Options
BMRS	50 (3.15) 80 (4.97) 100 (6.22) 125 (7.76) 160 (9.59) 200 (11.87) 250 (15.46) 315 (19.38) 375 (23.27)	H2 = SAE "A" 2-Bolt H4 = SAE "A" 4-Bolt H6 = Magneto	K = 1" Woodruff Key S = SAE 6B Spline H = 1" Parallel .40 dia. Cross Hole H1 = 1" Parallel .31 dia. Cross Hole	P = 1/2 NPTF S = 7/8 -14 SAE F = Manifold	F* = Free Running N* = 1800 lb. Radial Load Bearings

*Special Order

**Additional flange and drive shaft options available please consult factory.

Seal kits for BMRS Motors are available for purchase. Order seal kit using item description: "BMRS Seal Kit".

BMRS 50		3.15 in ³ /rev (51.7 cm ³ /rev)							Max Cont.	Max Int.
Pressure (psi →)	725	1015	1305	1450	1740	2031	2321	2538		
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification								
	1.32	310	398	540	593	682	779			
		93 rpm	84 rpm	76 rpm	73 rpm	69 rpm	46 rpm			
	2.64	319	407	549	611	708	841	956	1062	
		186 rpm	178 rpm	166 rpm	162 rpm	153 rpm	136 rpm	118 rpm	97 rpm	
	3.96	310	434	558	646	779	885	965	1089	
		283 rpm	277 rpm	269 rpm	261 rpm	250 rpm	230 rpm	211 rpm	185 rpm	
	5.28	305	416	540	611	735	850	965	1115	
		377 rpm	375 rpm	365 rpm	361 rpm	346 rpm	330 rpm	302 rpm	270 rpm	
	7.93	292	389	531	593	708	841	956	1115	
		576 rpm	569 rpm	561 rpm	554 rpm	542 rpm	531 rpm	500 rpm	465 rpm	
	10.57	266	363	513	584	699	814	938	1080	
		760 rpm	758 rpm	753 rpm	750 rpm	738 rpm	724 rpm	700 rpm	670 rpm	
11.89	261	354	504	575	690	797	929	1071		
	856 rpm	853 rpm	849 rpm	845 rpm	835 rpm	815 rpm	796 rpm	770 rpm		
13.21 Max Cont.	230	327	469	531	646	752	876	1009		
	950 rpm	940 rpm	925 rpm	906 rpm	880 rpm	852 rpm	832 rpm	801 rpm		
15.85 Max Int.	177	292	425	496	611	717	841	965		
	1138 rpm	1124 rpm	1100 rpm	1075 rpm	1056 rpm	1028 rpm	1006 rpm	970 rpm		

BMRS 80		4.97 in ³ /rev (81.5 cm ³ /rev)							Max Cont.	Max Int.
Pressure (psi →)	725	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification								
	1.32	443	566	779	956	1177				
		59 rpm	56 rpm	50 rpm	44 rpm	38 rpm				
	2.64	478	682	876	956	1142	1328	1531		
		118 rpm	113 rpm	106 rpm	97 rpm	86 rpm	79 rpm	56 rpm		
	5.28	504	690	903	982	1186	1372	1567	1735	1991
		238 rpm	234 rpm	227 rpm	216 rpm	203 rpm	190 rpm	178 rpm	154 rpm	135 rpm
	7.93	478	664	885	956	1159	1345	1558	1726	1974
		360 rpm	352 rpm	340 rpm	332 rpm	316 rpm	302 rpm	290 rpm	274 rpm	250 rpm
	10.57	425	646	850	929	1124	1310	1522	1682	1947
		480 rpm	470 rpm	458 rpm	445 rpm	430 rpm	418 rpm	403 rpm	388 rpm	359 rpm
	13.21	372	620	823	903	1097	1301	1505	1664	1929
		604 rpm	595 rpm	582 rpm	570 rpm	556 rpm	540 rpm	521 rpm	504 rpm	487 rpm
15.85 Max Cont.	327	584	788	867	1071	1275	1469	1629	1885	
	726 rpm	715 rpm	704 rpm	692 rpm	678 rpm	663 rpm	647 rpm	622 rpm	594 rpm	
18.49	283	531	735	841	1027	1239	1416	1567	1841	
	845 rpm	834 rpm	820 rpm	802 rpm	789 rpm	767 rpm	754 rpm	730 rpm	705 rpm	
19.82 Max Int.	186	443	690	797	982	1195	1363	1513	1770	
	910 rpm	895 rpm	881 rpm	867 rpm	852 rpm	830 rpm	806 rpm	787 rpm	756 rpm	

BMRS 100		6.22 in ³ /rev (102 cm ³ /rev)							Max Cont.	Max Int.
Pressure (psi →)	725 psi	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification								
	1.32	584	814	1062	1195	1381				
		45 rpm	42 rpm	38 rpm	34 rpm	27 rpm				
	2.64	602	850	1106	1221	1407	1664	1876		
		93 rpm	90 rpm	86 rpm	81 rpm	74 rpm	57 rpm	42 rpm		
	5.28	575	832	1089	1213	1372	1646	1859	2106	2425
		189 rpm	185 rpm	180 rpm	173 rpm	165 rpm	158 rpm	150 rpm	139 rpm	118 rpm
	7.93	558	814	1062	1177	1354	1637	1850	2080	2390
		286 rpm	281 rpm	275 rpm	266 rpm	257 rpm	246 rpm	237 rpm	225 rpm	207 rpm
	10.57	504	779	1036	1151	1345	1637	1841	2062	2363
		385 rpm	378 rpm	365 rpm	355 rpm	345 rpm	332 rpm	320 rpm	314 rpm	297 rpm
	13.21	425	699	974	1089	1328	1620	1806	2018	2301
		482 rpm	477 rpm	470 rpm	460 rpm	448 rpm	435 rpm	420 rpm	405 rpm	389 rpm
15.85 Max Cont.	336	620	929	1062	1275	1575	1770	1947	2230	
	580 rpm	572 rpm	560 rpm	548 rpm	535 rpm	523 rpm	510 rpm	500 rpm	478 rpm	
18.49	283	575	885	1044	1248	1558	1744	1903	2177	
	678 rpm	670 rpm	660 rpm	648 rpm	638 rpm	626 rpm	615 rpm	606 rpm	580 rpm	
19.82 Max Int.	204	522	823	982	1204	1505	1699	1859	2124	
	728 rpm	720 rpm	710 rpm	695 rpm	681 rpm	667 rpm	650 rpm	634 rpm	618 rpm	

BMRS 125		7.76 in ³ /rev (127.2 cm ³ /rev)						Max Cont.	Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification									
	1.32	673	974	1283	1478	1673					
		36 rpm	31 rpm	25 rpm	19 rpm	13 rpm					
	2.64	743	1044	1372	1558	1788	2018	2239			
		73 rpm	70 rpm	60 rpm	48 rpm	36 rpm	25 rpm	19 rpm			
	5.28	726	1036	1354	1540	1770	2036	2292	2602	2938	
		153 rpm	151 rpm	148 rpm	144 rpm	138 rpm	128 rpm	117 rpm	104 rpm	73 rpm	
	7.93	699	1027	1336	1513	1752	2018	2275	2584	2912	
		231 rpm	228 rpm	224 rpm	218 rpm	210 rpm	201 rpm	183 rpm	168 rpm	137 rpm	
	10.57	637	1009	1310	1487	1735	2000	2266	2567	2894	
		309 rpm	307 rpm	303 rpm	298 rpm	292 rpm	280 rpm	270 rpm	252 rpm	218 rpm	
	13.21	549	929	1266	1460	1726	1974	2248	2540	2859	
		389 rpm	386 rpm	382 rpm	378 rpm	370 rpm	360 rpm	344 rpm	328 rpm	292 rpm	
	15.85 Max Cont.	460	867	1204	1416	1690	1947	2213	2496	2823	
467 rpm		463 rpm	459 rpm	456 rpm	448 rpm	427 rpm	410 rpm	399 rpm	352 rpm		
18.49	363	797	1151	1381	1655	1903	2142	2460	2770		
	545 rpm	542 rpm	538 rpm	534 rpm	529 rpm	520 rpm	508 rpm	486 rpm	430 rpm		
19.82 Max Int.	283	699	1115	1310	1593	1841	2071	2319	2655		
	586 rpm	583 rpm	578 rpm	570 rpm	560 rpm	546 rpm	532 rpm	520 rpm	480 rpm		

BMRS 160		9.59 in ³ /rev (157.2 cm ³ /rev)						Max Cont.	Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification									
	1.32	920	1292	1682	1859	2168					
		26 rpm	23 rpm	20 rpm	16 rpm	10 rpm					
	2.64	947	1328	1726	1912	2213	2567	2965			
		59 rpm	56 rpm	50 rpm	45 rpm	37 rpm	30 rpm	22 rpm			
	5.28	903	1336	1752	1947	2275	2638	3027	3275	3717	
		121 rpm	118 rpm	115 rpm	113 rpm	108 rpm	102 rpm	97 rpm	90 rpm	78 rpm	
	7.93	859	1292	1682	1921	2266	2611	3009	3257	3682	
		184 rpm	178 rpm	173 rpm	170 rpm	164 rpm	155 rpm	143 rpm	128 rpm	103 rpm	
	10.57	788	1239	1637	1859	2230	2567	2965	3213	3646	
		246 rpm	241 rpm	235 rpm	228 rpm	220 rpm	210 rpm	194 rpm	177 rpm	150 rpm	
	13.21	637	1133	1584	1788	2160	2514	2894	3169	3620	
		310 rpm	307 rpm	300 rpm	295 rpm	287 rpm	278 rpm	262 rpm	247 rpm	210 rpm	
	15.85 Max Cont.	531	1027	1505	1752	2124	2469	2841	3115	3540	
374 rpm		367 rpm	359 rpm	354 rpm	346 rpm	338 rpm	323 rpm	306 rpm	265 rpm		
18.49	434	947	1452	1708	2062	2399	2735	3045	3452		
	437 rpm	430 rpm	421 rpm	415 rpm	403 rpm	393 rpm	381 rpm	365 rpm	318 rpm		
19.82 Max Int.	319	867	1345	1637	2000	2345	2655	2956	3354		
	472 rpm	463 rpm	450 rpm	441 rpm	431 rpm	420 rpm	405 rpm	389 rpm	365 rpm		

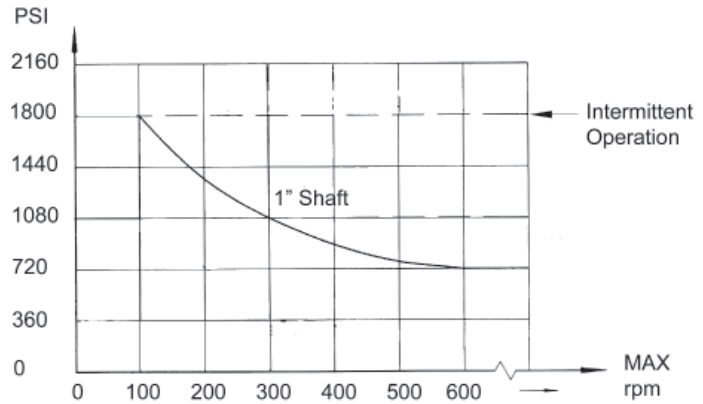
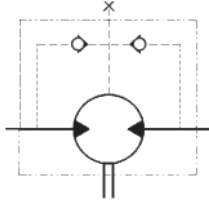
BMRS 200		11.87 in ³ /rev (194.5 cm ³ /rev)						Max Cont.	Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in·lbf) Speed Specification									
	1.32	1168	1602	2106	2319	2744					
		24 rpm	22 rpm	18 rpm	13 rpm	10 rpm					
	2.64	1195	1646	2124	2337	2788	3151	3567			
		49 rpm	47 rpm	45 rpm	43 rpm	38 rpm	33 rpm	24 rpm			
	5.28	1159	1620	2106	2301	2779	3169	3576	3877	4408	
		99 rpm	97 rpm	94 rpm	92 rpm	88 rpm	83 rpm	74 rpm	64 rpm	56 rpm	
	7.93	1115	1575	2062	2248	2753	3142	3558	3815	4301	
		149 rpm	147 rpm	144 rpm	141 rpm	135 rpm	126 rpm	113 rpm	105 rpm	91 rpm	
	10.57	991	1496	2018	2213	2717	3115	3540	3770	4222	
		200 rpm	197 rpm	194 rpm	191 rpm	185 rpm	174 rpm	160 rpm	151 rpm	127 rpm	
	13.21	841	1381	1956	2177	2655	3098	3523	3726	4160	
		252 rpm	249 rpm	246 rpm	243 rpm	238 rpm	228 rpm	212 rpm	194 rpm	161 rpm	
	15.85 Max Cont.	690	1283	1885	2106	2558	3027	3416	3646	4062	
304 rpm		301 rpm	298 rpm	294 rpm	286 rpm	276 rpm	262 rpm	243 rpm	218 rpm		
18.49	593	1195	1823	2018	2452	2974	3319	3611	4009		
	355 rpm	353 rpm	349 rpm	340 rpm	329 rpm	316 rpm	300 rpm	288 rpm	257 rpm		
19.82 Max Int.	513	1106	1744	1947	2390	2841	3186	3523	3912		
	382 rpm	379 rpm	373 rpm	362 rpm	350 rpm	337 rpm	322 rpm	312 rpm	278 rpm		

BMRS 250		15.46 in ³ /rev (253.3 cm ³ /rev)					Max Cont.		Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538	2901	
FLOW	(gpm ↓)	Torque (in•lbf) Speed Specification									
	1.32	1549	2151	2691	3027	3602					
		17 rpm	16 rpm	14 rpm	12 rpm	10 rpm					
	2.64	1575	2177	2744	3045	3620	4116	4647			
		37 rpm	35 rpm	31 rpm	28 rpm	23 rpm	18 rpm	11 rpm			
	5.28	1549	2160	2726	3009	3611	4098	4602	4939	5629	
		75 rpm	73 rpm	72 rpm	70 rpm	66 rpm	58 rpm	53 rpm	50 rpm	42 rpm	
	7.93	1434	2080	2691	2938	3540	4027	4567	4868	5496	
		114 rpm	111 rpm	108 rpm	106 rpm	100 rpm	92 rpm	83 rpm	77 rpm	65 rpm	
	10.57	1266	1974	2655	2912	3505	3956	4532	4832	5461	
		154 rpm	152 rpm	150 rpm	147 rpm	143 rpm	132 rpm	120 rpm	110 rpm	90 rpm	
	13.21	1097	1841	2558	2859	3399	3894	4452	4735	5310	
		193 rpm	190 rpm	187 rpm	174 rpm	168 rpm	160 rpm	149 rpm	140 rpm	116 rpm	
15.85 Max Cont.	912	1699	2478	2779	3284	3770	4328	4549	5116		
	233 rpm	230 rpm	227 rpm	224 rpm	218 rpm	205 rpm	190 rpm	181 rpm	155 rpm		
18.49	779	1575	2337	2664	3151	3700	4239	4408	4956		
	273 rpm	270 rpm	267 rpm	263 rpm	252 rpm	242 rpm	226 rpm	209 rpm	173 rpm		
19.82 Max Int.	549	1460	2266	2549	3071	3646	4195	4301	4797		
	294 rpm	291 rpm	287 rpm	283 rpm	274 rpm	263 rpm	249 rpm	236 rpm	211 rpm		

BMRS 315		19.38 in ³ /rev (317.5 cm ³ /rev)					Max Cont.		Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538		
FLOW	(gpm ↓)	Torque (in•lbf) Speed Specification									
	1.32	1903	2673								
		13 rpm	11 rpm								
	2.64	1929	2699	3390	3735	4319	4877	5505			
		28 rpm	27 rpm	25 rpm	24 rpm	21 rpm	18 rpm	13 rpm			
	5.28	1903	2682	3363	3700	4293	4859	5487	5841		
		60 rpm	59 rpm	57 rpm	55 rpm	52 rpm	49 rpm	45 rpm	42 rpm		
	7.93	1806	2620	3319	3655	4248	4797	5425	5788		
		91 rpm	89 rpm	86 rpm	84 rpm	81 rpm	78 rpm	72 rpm	67 rpm		
	10.57	1735	2540	3257	3629	4222	4771	5390	5753		
		122 rpm	120 rpm	117 rpm	112 rpm	106 rpm	100 rpm	94 rpm	85 rpm		
	13.21	1558	2390	3151	3478	4080	4655	5284	5709		
		154 rpm	151 rpm	147 rpm	140 rpm	131 rpm	120 rpm	109 rpm	100 rpm		
15.85 Max Cont.	1434	2177	3000	3310	3947	4523	5187	5558			
	185 rpm	182 rpm	177 rpm	172 rpm	163 rpm	152 rpm	140 rpm	134 rpm			
18.49	1266	2080	2868	3169	3806	4363	4974	5434			
	217 rpm	213 rpm	208 rpm	201 rpm	190 rpm	178 rpm	166 rpm	158 rpm			
19.82 Max Int.	1106	1876	2682	3000	3691	4257	4806	5151			
	232 rpm	228 rpm	222 rpm	216 rpm	208 rpm	200 rpm	183 rpm	171 rpm			

BMRS 375		23.27 in ³ /rev (381.4 cm ³ /rev)					Max Cont.		Max Int.		
Pressure (psi →)		725	1015	1305	1450	1740	2031	2321	2538		
FLOW	(gpm ↓)	Torque (in•lbf) Speed Specification									
	1.32	1354	2053								
		12 rpm	10 rpm								
	2.64	1390	2089	2514	2983	3593	4399	5417	5912		
		24 rpm	23 rpm	22 rpm	21 rpm	19 rpm	17 rpm	15 rpm	12 rpm		
	5.28	1328	2053	2478	2938	3549	4337	5364	5841		
		49 rpm	48 rpm	47 rpm	46 rpm	44 rpm	41 rpm	38 rpm	32 rpm		
	7.93	1257	1903	2425	2894	3523	4275	5337	5771		
		76 rpm	75 rpm	74 rpm	73 rpm	71 rpm	67 rpm	63 rpm	50 rpm		
	10.57	1115	1876	2372	2832	3478	4222	5248	5620		
		103 rpm	101 rpm	99 rpm	97 rpm	95 rpm	92 rpm	88 rpm	70 rpm		
	13.21	929	1655	2142	2673	3328	4027	5160	5381		
		128 rpm	126 rpm	124 rpm	121 rpm	118 rpm	115 rpm	111 rpm	96 rpm		
15.85 Max Cont.	797	1478	2027	2487	3204	3930	5009	5310			
	154 rpm	152 rpm	150 rpm	148 rpm	145 rpm	138 rpm	130 rpm	121 rpm			
18.49	797	1319	1770	2283	3018	3762	4832	5133			
	180 rpm	179 rpm	178 rpm	176 rpm	173 rpm	168 rpm	160 rpm	148 rpm			
19.82 Max Int.	496	1106	1611	2133	2832	3611	4638	5001			
	195 rpm	194 rpm	193 rpm	191 rpm	189 rpm	185 rpm	178 rpm	170 rpm			

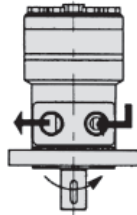
Shaft Seal Rated Pressure



Case Drain

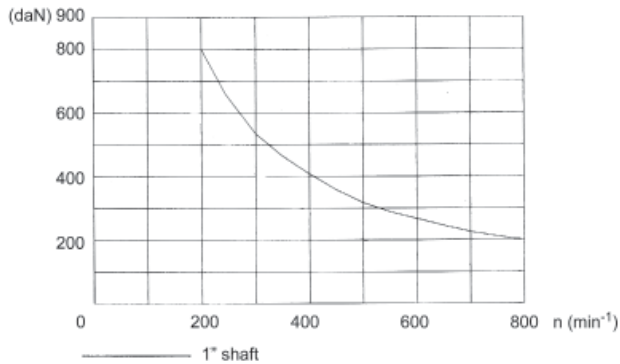
In applications without a motor drain line, the pressure exerted on the shaft seal is marginally in excess of the return line pressure. When the drain line is used, the pressure exerted on the shaft seal is equal to the return line pressure.

Shaft Rotation Direction

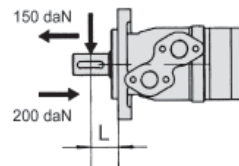


Radial Forces

Status of the Shaft's Radial Force



$$F_r = \frac{800}{n} * \frac{25000}{95 + L}$$



F_r = Radial Force (daN)
 L = Distance (mm)
 n = Speed (rpm)

Rhomb Flange $L=30\text{mm}$
 Square Flange $L=24\text{mm}$