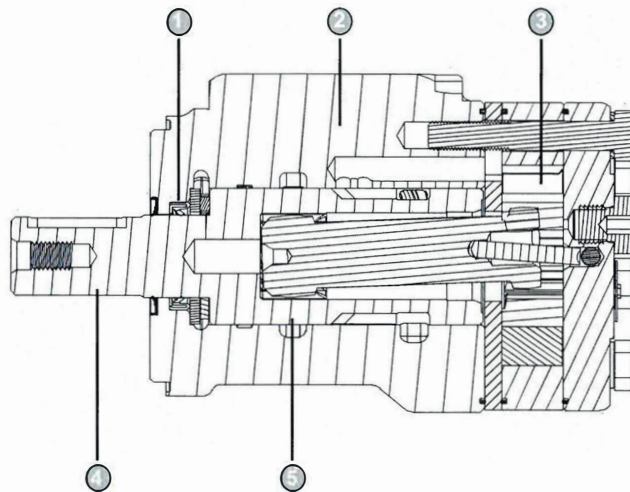


Orbitalmotor Gerotor BWRL

Moteur orbital Gerotor BWRL

The BWR Series motor incorporates the latest advances for smooth performance, efficiency and durability. It features an optimized Roller Stator® geometry with seven precision rollers to eliminate sliding friction and provide rolling contact between the rotor and stator. This increases motor efficiency. A three-zone spool valve, integral check valves and a provision for a case drain reduce pressure on internal seals to improve product life. A wide variety of mounting, shaft, motor displacement and porting options are available to meet all application needs.



- ① **High Pressure Shaft Seal** offers superior seal life and performance.
- ② **Built In Check Valves** in the housing offers versatility and increased seal life.
- ③ **Optimized Roller Stator®** geometry provides a smooth running high efficient product.
- ④ **Variety of Mounts and Shafts** provides flexibility in application design.
- ⑤ **Spool Valve Design** gives superior performance and smooth operation over a wide speed and torque range.

SPECIFICATIONS

CODE	Displacement cc [in ³ /rev]	Max. Speed rpm		Max. Flow lpm [gpm]		Max. Torque daNm [lb-in]		Max. Pressure bar [psi]		
		cont.	inter.	cont.	inter.	cont.	inter.	cont.	inter.	peak
040	41 [2.5]	1110	1300	45 [12]	53 [14]	8,0 [705]	9,9 [875]	138 [2000]	172 [2500]	224 [3250]
060	60 [3.6]	770	900	45 [12]	53 [14]	11,9 [1050]	14,6 [1290]	138 [2000]	172 [2500]	224 [3250]
070	70 [4.3]	870	1080	61 [16]	76 [20]	17,3 [1530]	20,7 [1835]	172 [2500]	207 [3000]	224 [3250]
090	88 [5.4]	690	860	61 [16]	76 [20]	21,8 [1925]	25,8 [2280]	172 [2500]	207 [3000]	224 [3250]
100	103 [6.3]	600	760	61 [16]	76 [20]	24,4 [2155]	29,0 [2565]	172 [2500]	207 [3000]	224 [3250]
115	113 [6.9]	540	680	61 [16]	76 [20]	27,1 [2400]	32,1 [2845]	172 [2500]	207 [3000]	224 [3250]
130	129 [7.9]	470	590	61 [16]	76 [20]	32,0 [2835]	36,9 [3265]	172 [2500]	207 [3000]	224 [3250]
160	161 [9.8]	375	470	61 [16]	76 [20]	38,1 [3370]	44,6 [3945]	172 [2500]	207 [3000]	224 [3250]
200	200 [12.2]	300	380	61 [16]	76 [20]	46,2 [4090]	54,4 [4810]	138 [2000]	207 [3000]	224 [3250]
240	241 [14.7]	250	320	61 [16]	76 [20]	54,7 [4845]	64,2 [5685]	103 [1500]	207 [3000]	207 [3000]
320	322 [19.7]	190	240	61 [16]	76 [20]	58,3 [5155]	69,3 [6135]	86 [1250]	121 [1750]	155 [2250]
400	400 [24.4]	150	190	61 [16]	76 [20]	63,1 [5585]	76,6 [6775]	69 [1000]	86 [1250]	138 [2000]

BWRL Series Performance

115 113 cc/rev [6.9 in³/rev]

Flow LPM (GPM)	Pressure, bars [psi]											Max. Cont.	Max. Inter.	Theo. RPM			
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]	190 [2750]				207 [3000]		
2 [0.5]	23 [202]	45 [401]	6														17
4 [1]	25 [224]	50 [440]	15	72 [641]													34
8 [2]	26 [234]	54 [478]	60	81 [717]	105 [926]	126 [1117]											68
15 [4]	26 [228]	54 [482]	83 [735]	111 [985]	139 [1232]	166 [1473]	191 [1688]	215 [1905]									136
23 [6]	24 [211]	52 [464]	81 [719]	110 [971]	138 [1222]	166 [1466]	194 [1712]	220 [1950]	247 [2185]	269 [2377]	303 [2684]						203
30 [8]	21 [182]	49 [437]	78 [690]	106 [937]	135 [1194]	163 [1444]	191 [1687]	218 [1927]	245 [2165]	271 [2402]	296 [2619]	321 [2843]					271
38 [10]	17 [147]	45 [401]	74 [657]	102 [906]	131 [1159]	159 [1411]	187 [1656]	215 [1899]	242 [2140]	268 [2375]	294 [2605]	320 [2835]					339
45 [12]	12 [106]	41 [360]	69 [614]	98 [867]	126 [1117]	154 [1367]	183 [1616]	210 [1860]	237 [2102]	264 [2336]	291 [2573]	318 [2814]					406
53 [14]	7 [62]	36 [315]	64 [568]	93 [820]	121 [1071]	149 [1319]	177 [1568]	204 [1809]	232 [2055]	259 [2294]	286 [2530]	312 [2765]					474
Max. Cont.	2 [21]	29 [259]	58 [513]	87 [765]	115 [1016]	143 [1266]	171 [1516]	199 [1763]	227 [2006]	254 [2247]	280 [2481]	307 [2715]					542
Max. Inter.	68 [18]	24 [208]	52 [458]	80 [710]	108 [959]	137 [1211]	165 [1457]	193 [1706]	220 [1948]	247 [2190]							609
	76 [20]	16 [139]	45 [397]	73 [646]	101 [896]	130 [1148]	158 [1396]	186 [1642]	213 [1888]	240 [2127]							677
		665	659	653	645	637	627	617	603	590							
	Theo. Torque	31 [272]	61 [544]	92 [815]	123 [1087]	154 [1359]	184 [1631]	215 [1902]	246 [2174]	276 [2446]	307 [2718]	338 [2989]	369 [3261]				

130 129 cc/rev [7.9 in³/rev]

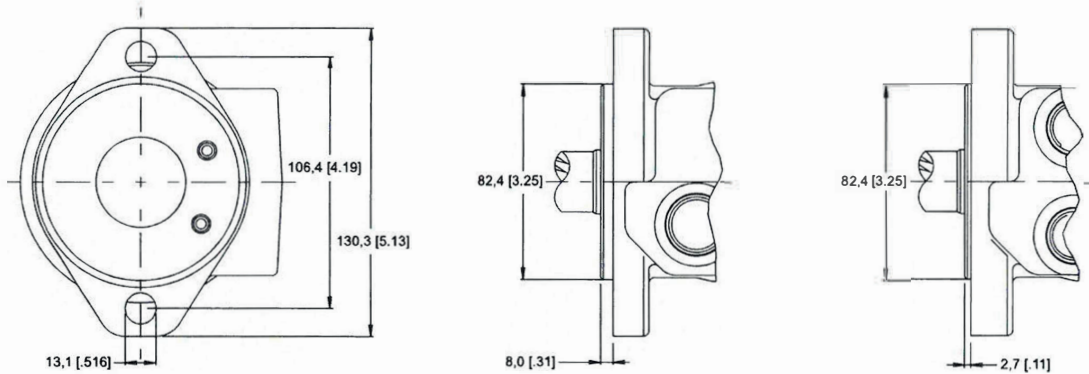
Flow LPM (GPM)	Pressure, bars [psi]											Max. Cont.	Max. Inter.	Theo. RPM			
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]	190 [2750]				207 [3000]		
2 [0.5]	28 [247]	56															15
4 [1]	30 [263]	61 [537]	92 [812]														30
8 [2]	29 [260]	62 [548]	94 [835]	126 [1118]	158 [1395]	188 [1666]	224 [1984]										59
15 [4]	115	112	109	105	100	95	92										118
23 [6]	27 [240]	60 [532]	93 [820]	125 [1109]	158 [1400]	190 [1678]	221 [1955]	252 [2229]	282 [2492]	321 [2837]							177
30 [8]	174	171	167	163	159	154	147	139	129	128							235
38 [10]	24 [211]	57 [503]	90 [793]	122 [1081]	155 [1369]	187 [1653]	219 [1937]	250 [2211]	280 [2482]	316 [2743]	341 [3017]	369 [3267]					294
45 [12]	232	229	226	222	217	211	202	191	183	173							353
53 [14]	20 [173]	52 [463]	85 [753]	118 [1045]	150 [1330]	183 [1618]	215 [1898]	246 [2176]	277 [2456]	308 [2727]	337 [2982]	368 [3253]					411
Max. Cont.	14 [128]	47 [418]	80 [707]	113 [997]	145 [1285]	178 [1574]	209 [1854]	241 [2135]	273 [2412]	305 [2698]	333 [2944]	364 [3219]					470
Max. Inter.	9 [76]	42 [368]	74 [656]	107 [943]	139 [1231]	171 [1515]	203 [1797]	235 [2083]	267 [2359]	298 [2634]	327 [2897]	358 [3172]					529
	349	346	342	338	333	327	320	311	301	289	271	258					588
	3 [24]	35 [307]	67 [594]	100 [884]	132 [1172]	165 [1457]	197 [1741]	228 [2021]	260 [2299]	291 [2573]	322 [2845]	352 [3112]					
	466	463	460	458	450	444	437	428	418	407	383	372					
	28 [246]	60 [530]	93 [821]	125 [1107]	156 [1396]	190 [1678]	222 [1960]	253 [2239]	284 [2513]								
	520	518	511	508	499	492	482	471	459								
	20 [176]	52 [457]	84 [745]	117 [1036]	149 [1323]	181 [1605]	213 [1886]	245 [2166]	276 [2443]								
	579	575	570	564	557	549	540	529	517								
	Theo. Torque	35 [313]	71 [626]	106 [939]	142 [1253]	177 [1566]	212 [1879]	248 [2192]	283 [2505]	318 [2616]	354 [3131]	369 [3445]	425 [3758]				

Torque, Nm [lb-in]
Speed, RPM

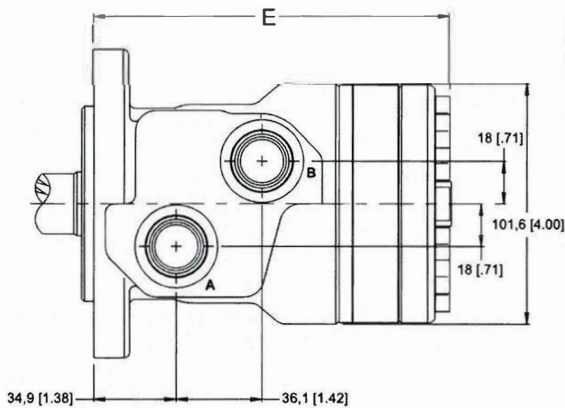
Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

BWRL Series Housings

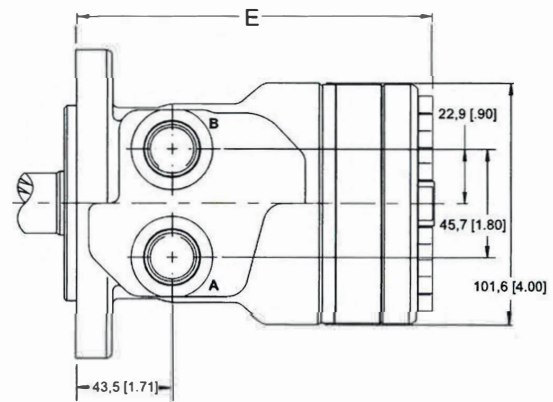
SAE A FLANGE



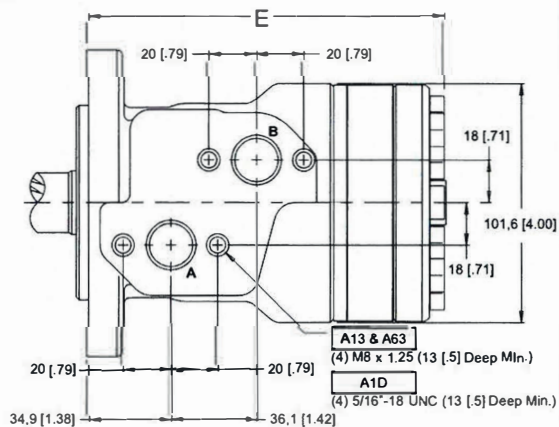
- A12** 2-Hole Offset Ports 1/2" BSP.F
- A19** 2-Hole Offset Ports 7/8" O-Ring
- A62** 2-Hole Offset Ports 1/2" BSP.F with Tall Pilot



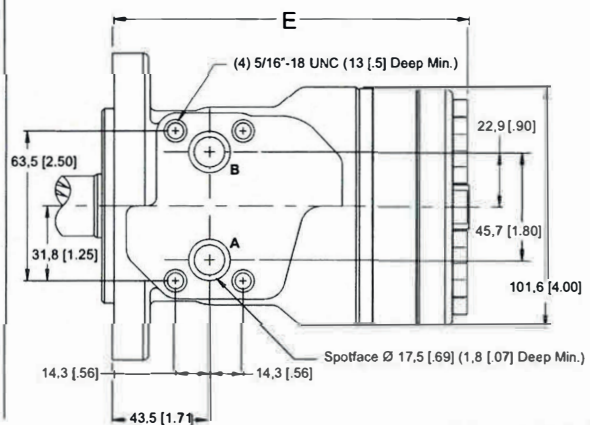
- A10** 2-Hole Front Ports 1/2" NPT
- A11** 2-Hole Front Ports 7/8" O-Ring



- A13** 2-Hole Offset Manifold Ports 1/2" BSP.F
- A1D** 2-Hole Offset Manifold Ports 7/8" O-Ring
- A63** 2-Hole Offset Manifold Ports 1/2" BSP.F with Tall Pilot



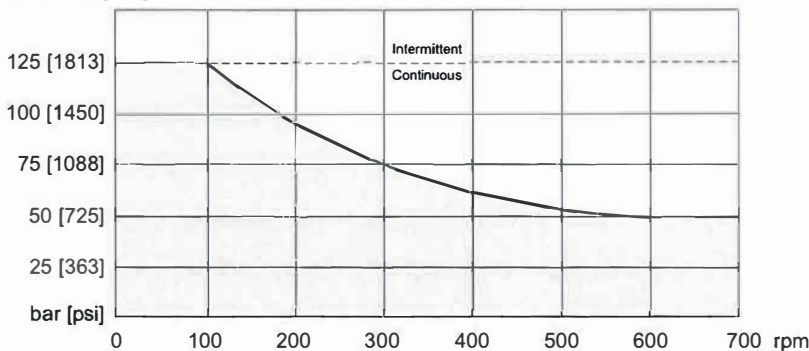
- A17** 2-Hole Manifold Ports 1/2" Drilled



BWRL Series Technical

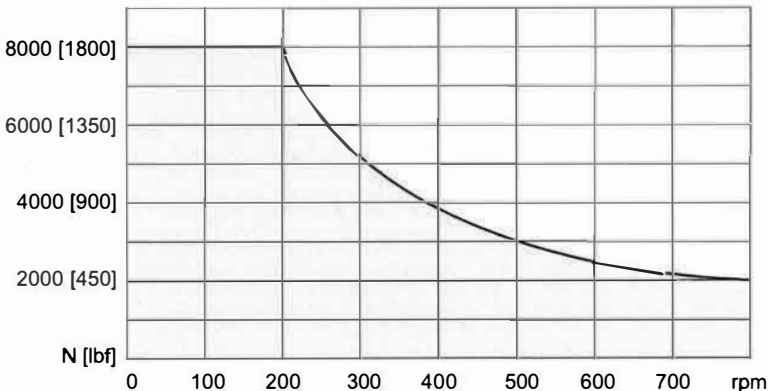
PERMISSIBLE SHAFT SEAL PRESSURE

The BWR has built-in check valves. The pressure on the shaft seal is identical to the output pressure.



ALLOWABLE SHAFT LOAD

Operating conditions within the shaded area will maintain acceptable oil film lubrication with recommended fluids. Operating conditions outside the shaded area are susceptible to motor failure due to oil starvation and/or excessive heat generation. Fluids with low lubricity or low viscosity may require the maximum load and speed ratings to be derated to provide acceptable motor life and performance.



Bearing Curve: The bearing curve above represents the side load capacity of the motor at the centerline of the key for various motor speeds.

SHAFT LENGTHS (DIMENSION H)

Code	SAE "A" Flange mm [in]	4-Hole Flange mm [in]	SAE "B" Flange mm [in]
01	40 [1.59]	38 [1.49]	40 [1.59]
02	48 [1.88]	45 [1.78]	48 [1.88]
04	48 [1.88]	45 [1.78]	48 [1.88]
05	48 [1.88]	45 [1.78]	48 [1.88]
10	48 [1.88]	45 [1.78]	48 [1.88]
11	48 [1.88]	45 [1.78]	48 [1.88]
12	48 [1.88]	45 [1.78]	48 [1.88]
13	64 [2.52]	61 [2.42]	64 [2.52]
15	64 [2.52]	61 [2.42]	64 [2.52]
16	64 [2.52]	61 [2.42]	64 [2.52]
53	48 [1.88]	45 [1.78]	48 [1.88]
66	48 [1.88]	45 [1.78]	48 [1.88]

For Tall Pilot Housings add 2,5 [1.0] to distance.

LENGTH AND WEIGHT TABLES

SAE "A" Flange		
Code	E mm [in]	Weight kg [lb]
040	142 [5.60]	6,6 [14.5]
060	146 [5.74]	6,7 [14.7]
070	147 [5.80]	6,7 [14.7]
090	151 [5.96]	6,8 [15,0]
100	154 [6.06]	6,9 [15.2]
115	156 [6.15]	7,1 [15.6]
130	160 [6.28]	7,3 [16.1]
160	166 [6.53]	7,5 [16.5]
200	173 [6.83]	8,0 [17.6]
240	182 [7.15]	8,5 [18.7]
320	198 [7.78]	9,0 [19.8]
400	213 [8.39]	9,8 [21.6]

For Tall Pilot Housings subtract 2,5 [1.0] from distance.

SAE "B" Flange		
Code	F mm [in]	Weight kg [lb]
040	142 [5.60]	7,8 [17.2]
060	146 [5.74]	7,9 [17.4]
070	147 [5.80]	7,9 [17.4]
090	151 [5.96]	8,0 [17.6]
100	154 [6.06]	8,1 [17.8]
115	156 [6.15]	8,3 [18.3]
130	160 [6.28]	8,5 [18.7]
160	166 [6.53]	8,7 [19.1]
200	173 [6.83]	9,2 [20.2]
240	182 [7.15]	9,7 [21.3]
320	198 [7.78]	10,2 [22.4]
400	213 [8.39]	11,0 [24.2]

4-Hole Square Flange		
Code	G mm [in]	Weight kg [lb]
040	145 [5.70]	5,4 [11.9]
060	149 [5.85]	5,5 [12.1]
070	150 [5.91]	5,5 [12.1]
090	154 [6.07]	5,6 [12.3]
100	156 [6.16]	5,7 [12.5]
115	159 [6.26]	5,9 [13.0]
130	162 [6.39]	6,1 [13.4]
160	169 [6.64]	6,3 [13.9]
200	176 [6.94]	6,8 [15.0]
240	184 [7.25]	7,3 [16.1]
320	200 [7.89]	7,8 [17.2]
400	216 [8.49]	8,6 [18.9]

WR motor weights vary ± 0,45 kg [1 lb] depending upon motor configuration.

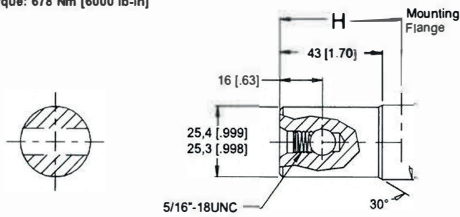
BWRL Series Shafts

05 1" Pinhole with 9,5 [.375] thru hole

53 1" Pinhole with 10,3 [.406] thru hole

66 1" Pinhole with 8,0 [.315] thru hole

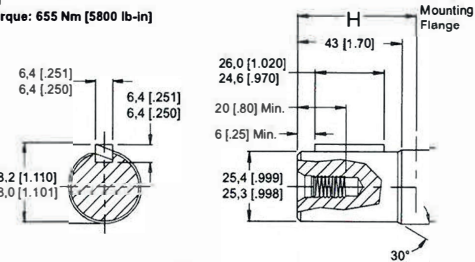
Max. Torque: 678 Nm [6000 lb-in]



10 1" Straight with 5/16" - 18 UNC tap

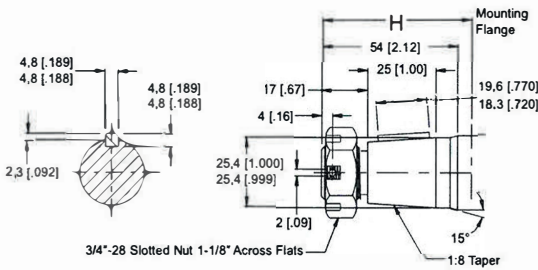
11 1" Straight with M8x1.25 tap

Max. Torque: 655 Nm [5800 lb-in]



13 1" Tapered

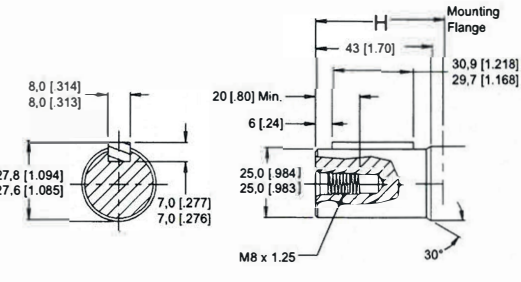
Max. Torque: 655 Nm [5800 lb-in]



Note: A slotted nut is standard on this shaft.

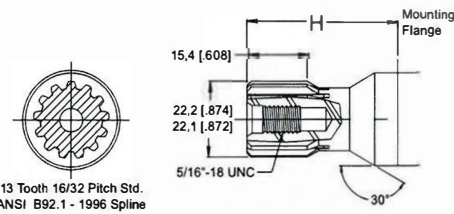
12 25 mm Straight

Max. Torque: 678 Nm [6000 lb-in]



01 13 Tooth Spline

Max. Torque: 170 Nm [1500 lb-in]

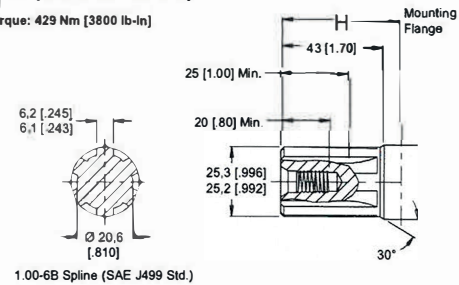


13 Tooth 16/32 Pitch Std.
ANSI B92.1 - 1996 Spline

02 6B Spline with 5/16" - 18 UNC tap

04 6B Spline with M8x1.25 tap

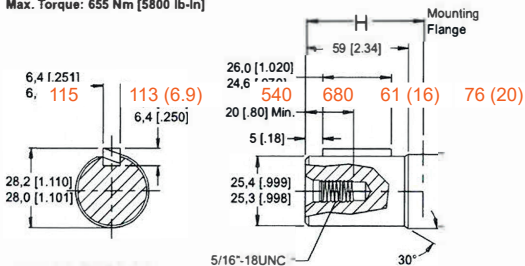
Max. Torque: 429 Nm [3800 lb-in]



1.00-6B Spline (SAE J499 Std.)

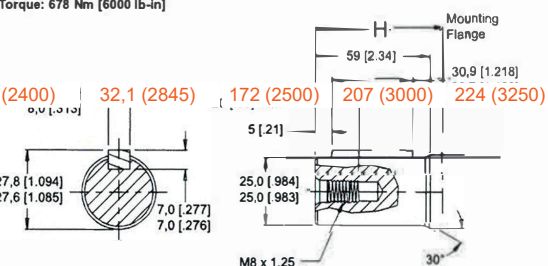
15 1" Straight Extended

Max. Torque: 655 Nm [5800 lb-in]



16 25mm Straight Extended

Max. Torque: 678 Nm [6000 lb-in]



BWRL Series Performance

115

SERIES
BWRL — REVERSED TIMING
 BWRR

DISPLACEMENT **HOUSING** **SHAFT** **OPTIONS** **MISCELLANEOUS**

Code	Displacements
040	41cc [2.5 in ³ /rev]
060	60cc [3.6 in ³ /rev]
070	70cc [4.3 in ³ /rev]
090	88cc [5.4 in ³ /rev]
100	103cc [6.3 in ³ /rev]
115	113cc [6.9 in ³ /rev]
130	129cc [7.9 in ³ /rev]
160	161cc [9.8 in ³ /rev]
200	200cc [12.2 in ³ /rev]
240	241cc [14.7 in ³ /rev]
320	322cc [19.7 in ³ /rev]
400	400cc [24.4 in ³ /rev]

Code	Housings
A10	2-Hole 1/2" NPT Aligned Ports
A11	2-Hole 7/8" O-Ring Aligned Ports
A12	2-Hole 1/2" BSPF Offset Ports
A13	2-Hole 1/2" BSPF Offset Manifold
A17	2-Hole Manifold Ports
*A19	2-Hole 7/8" O-Ring Offset w/ Valve Cavity
A1D	2-Hole 7/8" O-Ring Offset Manifold
**A62	2-Hole 1/2" BSPF Offset w/ Tall Pilot
A63	2-Hole 1/2" BSPF Offset Manifold w/ Tall Pilot
AC3	4-Hole 1/2" BSPF Offset Manifold w/ Tall Pilot
A30	4-Hole 1/2" NPT Aligned Ports
A31	4-Hole 7/8" O-ring Aligned Ports
A33	4-Hole 1/2" BSPF Offset Manifold
A3D	4-Hole 7/8" O-Ring Offset Manifold
B11	2-Hole 7/8" O-Ring Aligned Ports
B18	2-Hole 1/2" BSPF Aligned Ports
F30	4-Hole 1/2" NPT Aligned Ports
F31	4-Hole 7/8" O-Ring Aligned Ports
F33	4-Hole 1/2" BSPF Offset Manifold
F37	4-Hole Manifold
F38	4-Hole 1/2" BSPF Aligned Ports
*F39	4-Hole 7/8 O-Ring Offset w/ Valve Cavity
F3D	4-Hole 7/8" O-Ring Offset Manifold
G37	4-Hole Manifold
G38	4-Hole 1/2" BSPF Aligned Ports w/ Metric Mount

Code	Shafts
01	7/8" 13 Tooth
02	1" 6-B Spline 5/16"-18 UNC tap
04	1" 6B Spline M8x1.5 tap
05	1" Pinhole 9,5 [.375] thru hole
10	1" Straight 5/16"-18 UNC tap
11	1" Straight M8x1.25 tap
12	25mm Straight
13	1" Tapered
15	1" Straight Ext.
16	25mm Ext.
53	1" Pinhole 10,3 [.406] thru hole
66	1" Pinhole 8,0 [.315] thru hole

Code	Options
AA	None

ADD ONS

Code	Options
A	Standard
B	Lock Nut
C	Solid Hex Nut

CAVITY

Code	Options
A	None
B	Relief Valve Cavity
C	69 bar [1000 psi] Relief Valve Installed
D	86 bar [1250 psi] Relief Valve Installed
E	104 bar [1500 psi] Relief Valve Installed
F	121 bar [1750 psi] Relief Valve Installed
G	138 bar [2000 psi] Relief Valve Installed

PAINT

Code	Options
A	Dark Metallic Gray
B	Dark Metallic Gray (Unpainted Flange Face)
C	Black
D	Black (Unpainted Flange Face)

* Must be ordered with a Valve Cavity
 ** Can be ordered with a Valve Cavity

BWRR	BWRL

ROTATION

For applications requiring the motor to rotate in only one direction, shaft seal life may be prolonged by pressurizing the "B" port of the motor. To obtain the desired direction of shaft rotation, use the graphic above to determine the rotation code for the motor. For bi-directional applications, the 255 series is recommended. Preferred rotation is based on rotor timing. Changing preferred direction requires no additional parts.