

Danfoss Char-Lynn 2000 Series orbital motor 104-1015-006

Manufacturer: Danfoss

Manufacturer part number / published order designation: 104-1015-006

Published model: M02049AC05AA0100010000000AAAAF

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

Manufacturer card proves the complete factory PN and full type code. Ordering diagrams only decode that existing execution.

Typical performance envelopes are conditioned on 25 cSt and joint pressure/flow/duty limits; family maxima are not promoted to unconstrained full-execution ratings.

Applicable source components are AC flange, shaft 05, AA staggered ports and standard single-speed 2000 motor; no sensor/brake/two-speed/relief extras assigned.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Danfoss Char Lynn Orbital Motors Technical Information

Original pages	Compiled pages	Relevant content
110-112	2-4	2000 Series construction and operating principle for standard single-speed Geroler disc-valve motors.; Exact size-family specification row with distinct continuous/intermittent/peak limits and shaft/case limitations; not a new full SKU-specific test rating.; Duty definitions, break-in, fluid/viscosity/temperature/filtration, thermal shock and minimum differential requirements.
114	5	Actual motor size 80 typical torque/speed/pressure/flow envelope at 25 cSt; retain duty-region legend.
122	6	Standard-mount general body-length size row and rotation definition. Illustrated AF/AD port arrangements are not assigned; actual AA staggered ports are documented separately on physical page 134.
129	7	Actual AC SAE A two-bolt flange tolerances and mounting pattern; neighbouring flange choices not assigned.
131-134	8-11	Actual output shaft code 05 dimensional view, end-thread/key/spline and torque-capacity limits.; Tapered-bearing shaft side-load/life curves and load-position conditions.; Standard shaft-seal case-pressure speed limits and required/optional drain conditions.; Actual AA7/8-14 UNF-2B staggered main ports and 7/16-20 UNF-2B case-drain geometry.
137-139	12-14	Published base article-number table where listed; fullPN design suffix006 identity comes from exactcurrent factorycard, not manufactured from this table.; Decode already published M02 displacement/AC flange/shaft05 execution; no option-code generation.; Decode already published AA ports/defaultseal/check-valve/noaccessory configuration; optional features not included.

Description:

The popular 2000 Series provides torque up to 850 Nm. [7,500 lb-in]. This proven design is reliable and durable. Danfoss has added options that make the motor more flexible to use in a wide variety of applications. The expanded displacement range using patented "Drive in Drive" technology is the latest innovation in the 2000 series of motors.



Features:

- Three zone design for longer life and true bi-directionality
- Bearings that meet the highest standards of the industry
- Options to optimize performance in every application
- Integrated cross-over relief valve option

Benefits:

- Easy to design in a system
- Proven reliability and performance in tough applications
- Compact design that maximizes power density

Applications:

- Skid steer attachments
- Swing motor
- Brush cutters & mowers
- Harvesting equipment
- Directional Boring any place pressure relief protection is optimal for system or motor performance and life
- Turf equipment

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2000 Series

Geroler element	13 Displacements
Flow l/min [GPM]	75 [20] Continuous** 115 [30] Intermittent*
Speed RPM	1215 Cont.** 1215 Inter.*
Pressure bar [PSI]	205 [3000] Cont.** 310 [4500] Inter.*
Torque Nm [lb-in]	845 [7470] Cont.** 930 [8225] Inter.*

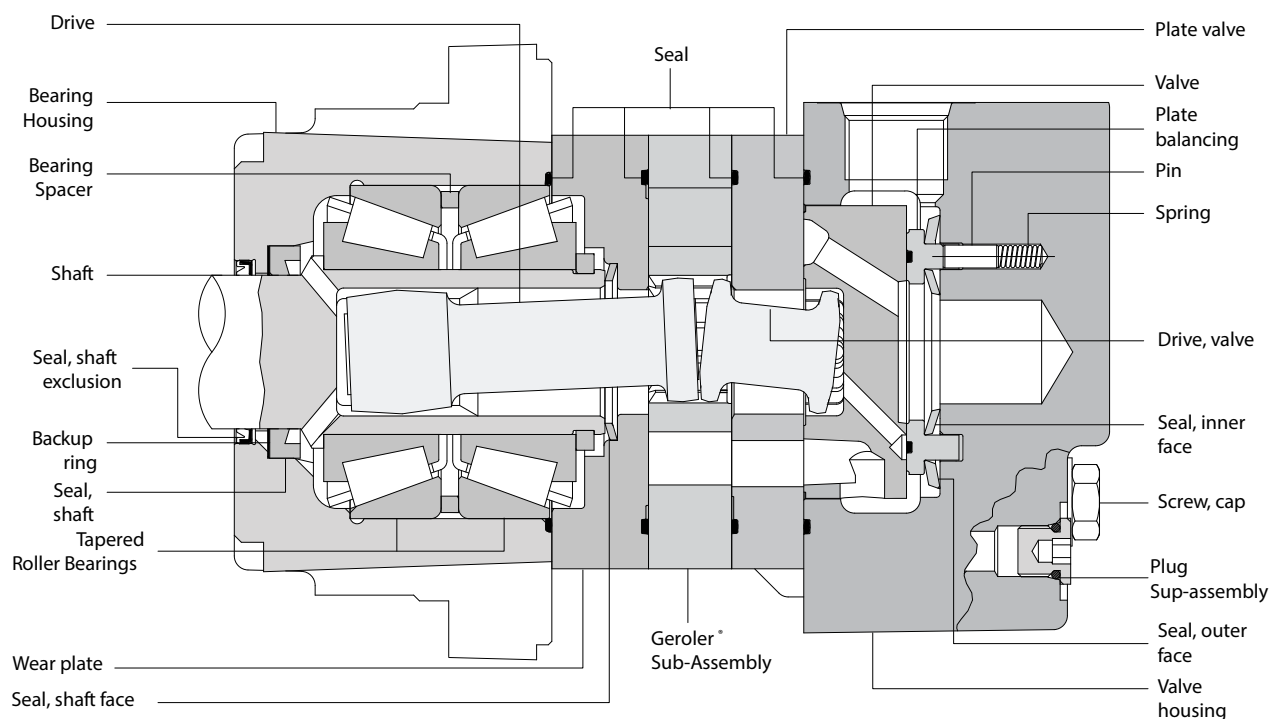
** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.

2000 Series

Specifications

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Specification data — 2000 series motors

Displ. cm ³ /r [in ³ /r]	34	41	66	80	90	100	130	160	195	245	305	395	490
	[2.1]	[2.5]	[4.0]	[4.9]	[5.5]	[6.2]	[8.0]	[9.6]	[11.9]	[14.9]	[18.7]	[24.0]	[29.8]
Max. Speed (RPM) @ Flow	Continuous	1215	1104	1075	908	836	742	576	477	385	308	246	153
	Intermittent	1215	1216	1214	908	1042	924	720	713	577	462	365	230
Flow l/min [GPM]	Continuous	42	45	72	75	75	75	75	75	75	75	75	75
		[11]	[12]	[19]	[20]	[20]	[20]	[20]	[20]	[20]	[20]	[20]	[20]
	Intermittent	42	53	87	75	95	95	95	115	115	115	115	115
		[11]	[14]	[23]	[20]	[25]	[25]	[25]	[30]	[30]	[30]	[30]	[30]
Torque* Nm [lb - in]	Continuous	98	112	186	235	265	295	385	455	540	660	765	845
		[864]	[988]	[1643]	[2065]	[2326]	[2630]	[3420]	[4040]	[4780]	[5850]	[6750]	[7470]
	Intermittent	142	169	276	345	390	445	560	570	665	820	885	930
		[1261]	[1497]	[2446]	[3035]	[3458]	[3950]	[4970]	[5040]	[5890]	[7250]	[7820]	[8225]
Pressure Δ bar [Δ PSI]	Continuous	205	205	205	205	205	205	205	205	205	205	155	120
		[3000]	[3000]	[3000]	[3000]	[3000]	[3000]	[3000]	[3000]	[3000]	[3000]	[2250]	[1750]
	Intermittent	310	310	310	310	310	310	310	260	260	260	240	190
		[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[3750]	[3750]	[3750]	[3500]	[2750]
	Peak	310	310	310	310	310	310	310	310	310	310	310	225
		[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[4500]	[3250]
Weight kg [lb]	Standard or Wheel mount	8.8	8.8	8.8	9.3	9.3	9.5	9.8	10.0	10.4	11.3	11.3	12.2
		[19.4]	[19.4]	[19.4]	[20.5]	[20.5]	[21.0]	[21.5]	[22.0]	[23.0]	[25.0]	[25.0]	[27.0]
	Bearingless	6.8	6.8	6.8	7.3	7.3	7.5	7.7	7.9	8.4	9.3	9.3	10.2
		[15.0]	[15.0]	[15.0]	[16.0]	[16.0]	[16.5]	[17.0]	[17.5]	[18.5]	[20.5]	[20.5]	[22.5]

Maximum case pressure: See case pressure seal limitation graph. *See shaft torque ratings for limitations.

Note: To assure best motor life, run motor in low speed high torque mode at approximately 30% of continuous pressure and 50% of continuous flow for 30 minutes in each direction before application of full load. Ensure that motor is filled with fluid prior to operation.

Maximum inlet pressure:

310 bar [4500 PSI]

Do not exceed Δ pressure rating (see chart above).

Maximum return pressure:

310 bar [4500 PSI] with case drain line installed.

Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI]

The true pressure difference between inlet port and outlet port

Continuous rating:

Motor may be run continuously at these ratings

Intermittent operation:

10% of every minute

Peak operation:

1% of every minute

Recommended fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 13 cSt [70 SUS] at operating temperature.

Recommended system operating temp:

-34°C to 82°C [-30°F to 180°F]

Recommended filtration:

per ISO Cleanliness Code, 4406: 20/18/13

Thermal shock warning:

Do not operate the motor with fluid that is 70F or more above the motor temperature.

Minimum delta pressure warning:

Motors must not run with equal inlet and outlet pressure 50 PSID minimum delta pressure between motor ports is required at all times (except when switching direction of rotation)

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 25 cSt [120 SUS]. Actual data may vary slightly from unit to unit in production.



Δ Pressure bar [PSI]
80 cm³/r [4.9 in³/r]

[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
34	69	103	138	172	207	241	276	310

Flow LPM [GPM]	Δ Pressure bar [PSI]								
	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
[0.25]	25	45							
0.95	3	1							
[0.5]	30	56	85						
1.9	17	8	3						
[1]	330	670	990	1300	1550	1800	1950	2110	
4	35	75	110	145	175	205	220	240	
	44	40	37	34	28	22	14	2	
[2]	330	670	995	1310	1580	1840	2100	2365	2630
8	35	75	110	150	180	210	235	265	295
	90	85	81	78	72	65	57	49	42
[4]	325	670	1005	1330	1620	1920	2200	2480	2765
15	35	75	115	150	185	215	250	280	310
	182	176	170	166	159	152	140	128	117
[6]	320	665	1010	1340	1655	1975	2270	2570	2880
23	35	75	115	150	185	225	255	290	325
	273	267	259	254	246	238	223	207	192
[8]	310	660	1015	1345	1685	2020	2330	2640	2960
30	35	75	115	150	190	230	265	300	335
	365	375	349	341	333	325	306	286	266
[10]	300	650	1010	1350	1700	2050	2370	2690	3010
38	35	75	115	155	190	230	270	305	340
	456	448	439	429	420	411	388	364	341
[12]	285	640	1005	1350	1705	2065	2390	2715	3035
45	30	70	115	155	195	235	270	305	345
	547	537	530	516	507	497	470	442	415
[14]	270	625	990	1340	1705	2065	2395	2720	3030
53	30	70	110	150	195	235	270	305	340
	638	629	622	603	593	584	553	521	490
[16]	255	610	975	1330	1690	2055	2385	2700	2995
61	30	70	110	150	190	230	270	305	340
	729	720	714	689	679	670	635	599	564
[18]	230	590	955	1310	1680	2025	2355	2660	2935
68	25	65	110	150	190	230	265	300	330
	818	810	795	775	765	756	717	677	638
[20]	210	570	930	1290	1645	1985	2305	2600	2845
76	25	65	105	145	185	225	260	295	320
	908	901	880	861	851	842	799	755	712

[570]
65 } Torque [lb-in]
1901 } Nm
Speed RPM

Δ Pressure bar [PSI]
90 cm³/r [5.5 in³/r]

[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
17	34	69	103	138	172	207	241	276	310

Flow LPM [GPM]	Δ Pressure bar [PSI]								
	[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]
[0.25]	14	26	53						
0.95	5	1							
[0.5]	133	273	555	832					
.9	15	31	63	94					
	15	13	6	2					
[1]	151	358	744	1091	1424	1697	1952	2189	2368
4	17	40	84	123	161	192	221	247	268
	39	39	35	32	28	21	13	12	2
[2]	151	358	744	1099	1439	1737	2015	2293	2570
8	17	40	84	124	163	196	228	259	290
	82	80	76	72	68	61	50	38	29
[4]	151	350	732	1113	1473	1800	2132	2454	2775
15	17	40	83	126	166	203	241	277	314
	167	163	158	152	148	139	126	115	102
[6]	142	348	736	1114	1492	1851	2208	2552	2898
23	16	39	83	126	169	209	249	288	327
	250	245	240	233	227	218	203	191	176
[8]	133	338	729	1128	1509	1890	2269	2635	3000
30	15	38	82	127	170	214	256	298	339
	335	328	329	314	306	295	281	266	249
[10]	124	331	724	1130	1521	1912	2309	2670	3036
38	14	37	82	128	172	216	261	302	343
	418	410	404	395	385	373	361	342	322
[12]	106	315	714	1127	1525	1924	2326	2704	3082
45	12	36	81	127	172	217	263	306	348
	502	493	485	477	464	451	441	417	394
[14]	98	298	706	1115	1525	1924	2326	2707	3080
53	11	34	80	126	172	217	263	306	348
	585	575	567	559	543	529	521	493	467
[16]	80	285	688	1107	1510	1907	2311	2697	3070
61	9	32	78	125	171	215	261	305	347
	670	658	650	641	622	607	610	568	541
[18]	62	262	673	1087	1490	1892	2281	2662	3030
68	7	30	76	123	168	214	258	301	342
	753	740	732	719	701	685	680	643	613
[20]	53	242	644	1045	1447	1850	2246	2617	2988
76	6	27	73	118	163	209	254	296	338
	836	822	814	796	780	765	748	719	686
[22]	35	231	639	1047	1437	1836	2218	2599	2981
83	4	26	72	118	162	207	251	294	337
	920	916	907	895	876	854	749	803	774
[24]	18	204	612	1011	1366	1792	2182	2573	2963
91	2	23	69	114	154	202	247	291	335
	1003	1000	991	978	960	940	918	882	850
[25]		195	594	994	1384	1765	2173	2564	
95		22	67	112	156	199	246	290	
		1042	1033	1020	1003	984	954	921	

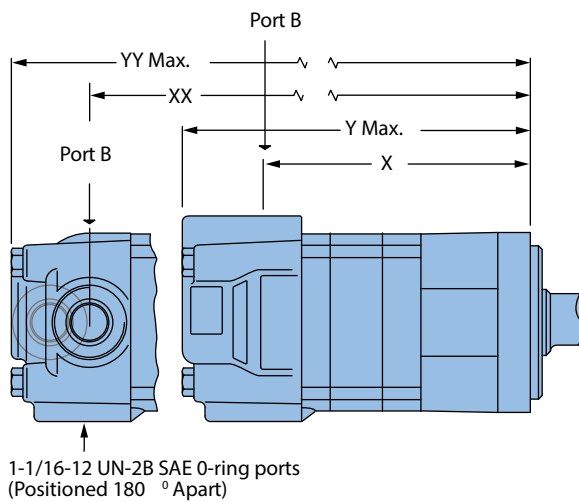
C-1

Standard mount

Ports

7/8 -14 UNF-2B SAE O-ring staggered ports (2)
 7/16 -20 UNF-2B SAE O-ring case drain port (1)
 1 1/16 -12 UN-2B SAE O-ring ports (positioned 180° apart) (2)
 7/16 -20 UNF-2B SAE O-ring case drain port (1)
 7/8 -14 UNF-2B SAE O-ring end ports (2)
 7/16 -20 UNF-2B SAE O-ring case drain port (1) or
 G 1/2 (BSP) staggered ports (2)
 G 1/4 (BSP) case drain port (1)

Standard mount

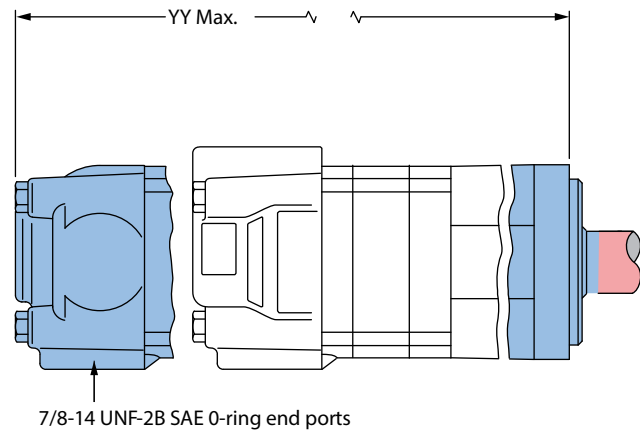


Manifold mount

7/16 -20 UNF-2B SAE O-ring case drain port (1)

Standard rotation viewed from shaft end

Port A Pressurized — CW
 Port B Pressurized — CCW



Standard mount motor dimensions

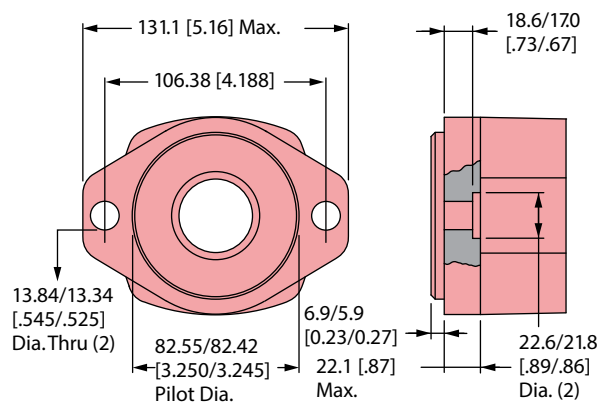
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
34 [2.1]	126.7 [4.99]	1740 [6.85]	1290 [5.08]	175.3 [6.90]
41 [2.5]	128.0 [5.04]	175.3 [6.90]	130.5 [5.14]	176.8 [6.96]
66 [4.0]	133.9 [5.27]	181.1 [7.13]	136.1 [5.36]	182.4 [7.18]
80 [4.9]	136.9 [5.39]	184.2 [7.25]	139.2 [5.48]	185.4 [7.30]
100 [6.2]	141.5 [5.57]	189.0 [7.44]	143.8 [5.66]	190.3 [7.49]
130 [8.0]	147.9 [5.83]	195.4 [7.69]	150.2 [5.92]	196.6 [7.74]
160 [9.6]	147.9 [5.83]	195.4 [7.69]	150.2 [5.92]	196.6 [7.74]
195 [11.9]	154.7 [6.09]	202.2 [7.96]	157.0 [6.18]	203.2 [8.00]
245 [14.9]	163.7 [6.45]	211.1 [8.31]	166.0 [6.54]	212.4 [8.36]
305 [18.7]	175.1 [6.90]	222.3 [8.75]	177.4 [6.99]	223.5 [8.80]
395 [24.0]	191.0 [7.52]	238.6 [9.39]	193.3 [7.61]	239.8 [9.44]
490 [29.8]	208.4 [8.21]	255.8 [10.07]	210.7 [8.30]	257.0 [10.12]

2000 Series

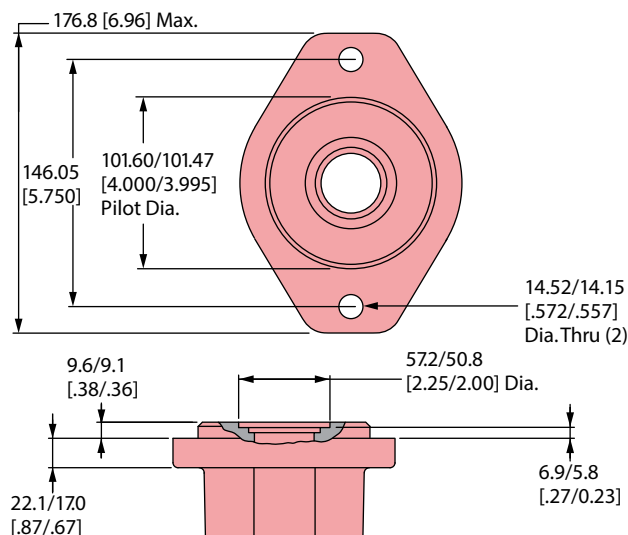
Dimensions

Mounting options

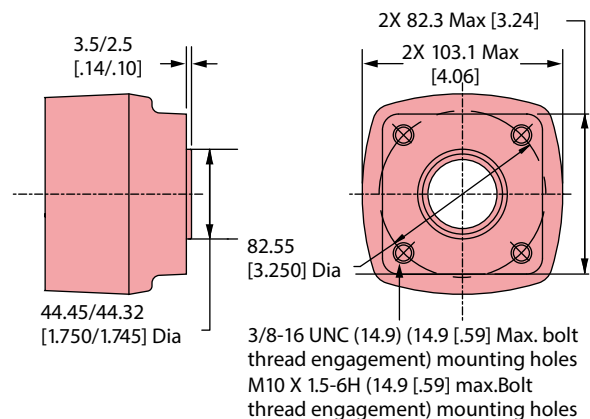
Code:AC SAE A - Two bolt (Standard motor)



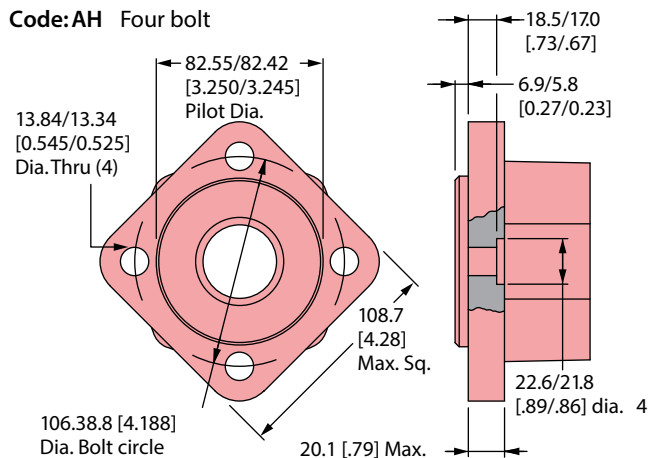
Code:AF SAE B - Two bolt



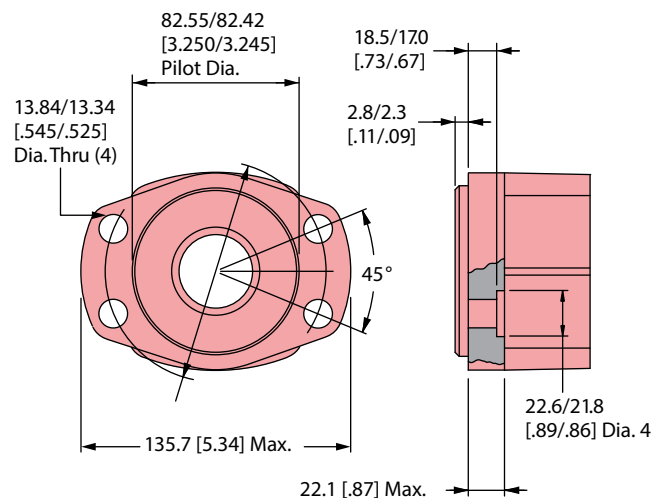
Code:BY Four bolt (Standard motor)



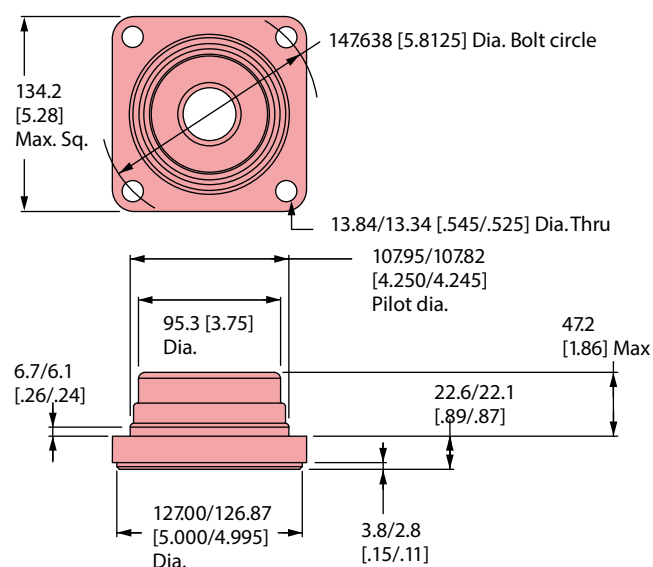
Code:AH Four bolt



Code:AJ Four bolt magneto



Code:AB Four bolt (Wheel motor)



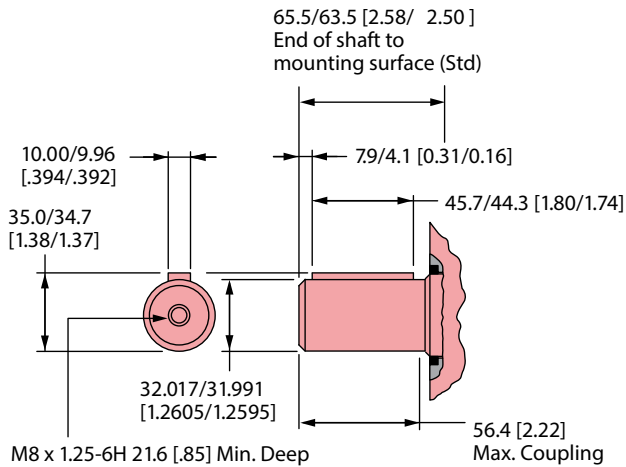
2000 Series

Dimensions

Shafts

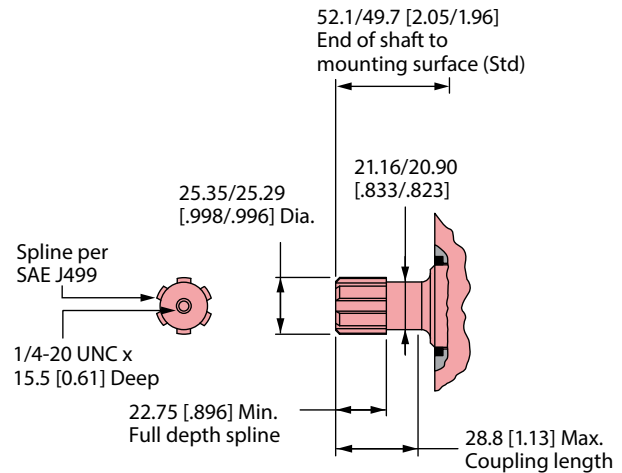
Code: 16 32 mm straight

768 [6800] Max.Torque Nm [lb-in]



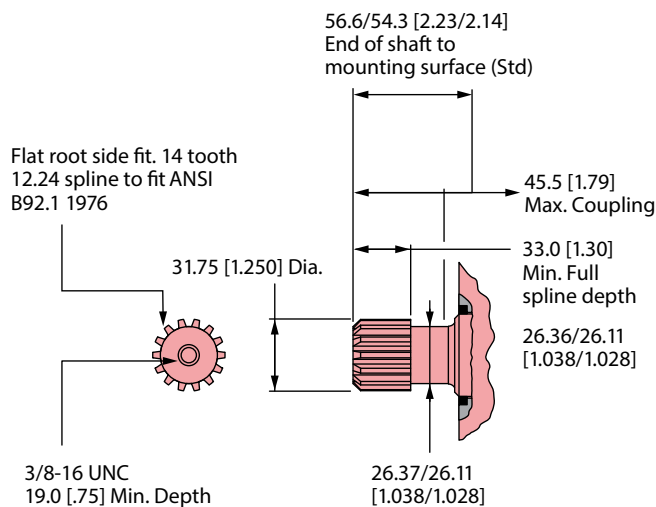
Code: 05 SAE 6B splined

395 [3500] Max.Torque Nm [lb-in]



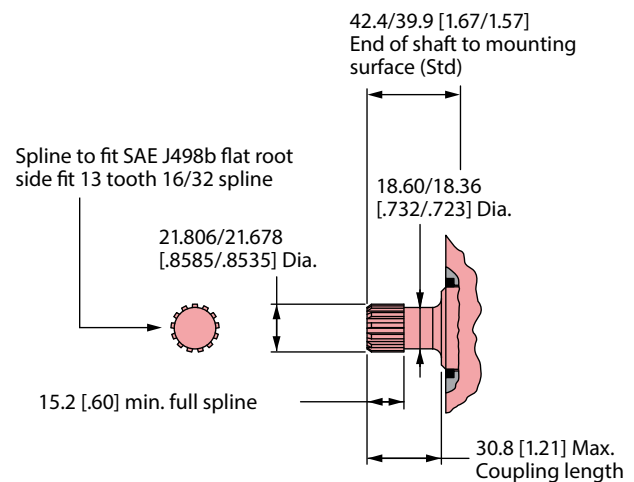
Code: 04 1 1/4 -14 Tooth splined

768 [6800] Max.Torque Nm [lb-in]



Code: 07 13 Tooth splined

141 [1250] Max.Torque Nm [lb-in]

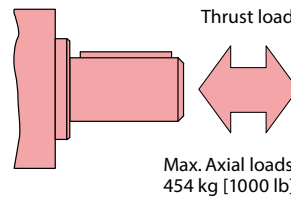


These curves indicate the radial load capacity on the motor shaft at various locations with an allowable external thrust load of 454 kg [1000 lb].

Note: Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 61 kg/7 Bar [135 lb/100 PSI].

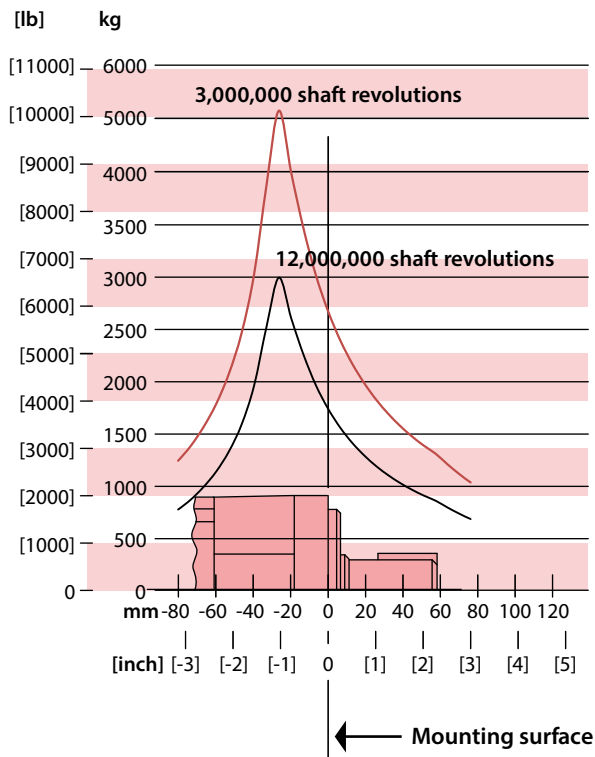
Each curve is based on B 10 bearing life (2000 Hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

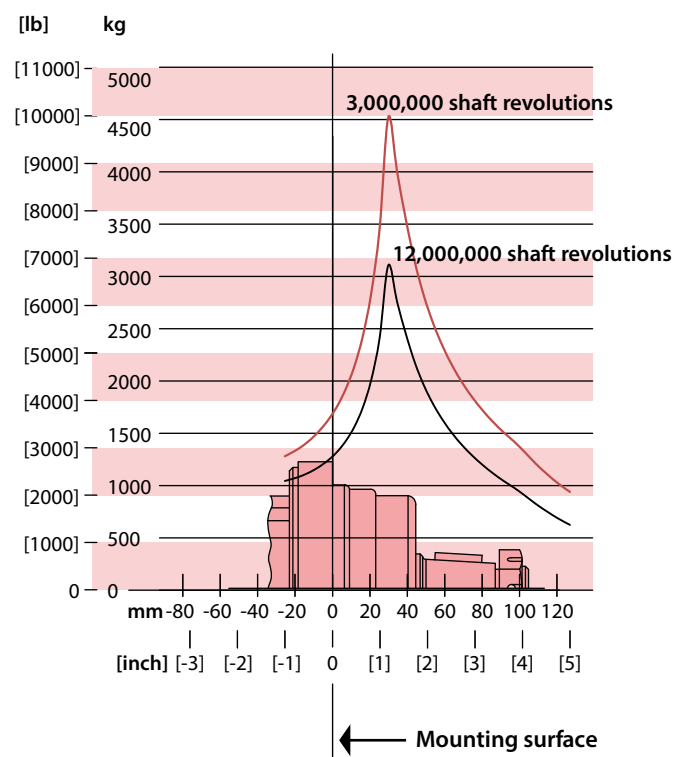


RPM	Multiplication factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

Standard motor straight and splined shafts



Wheel motor Tapered shaft



2000 Series

Case pressure and case porting

Char-Lynn 2000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.

Case porting advantages:

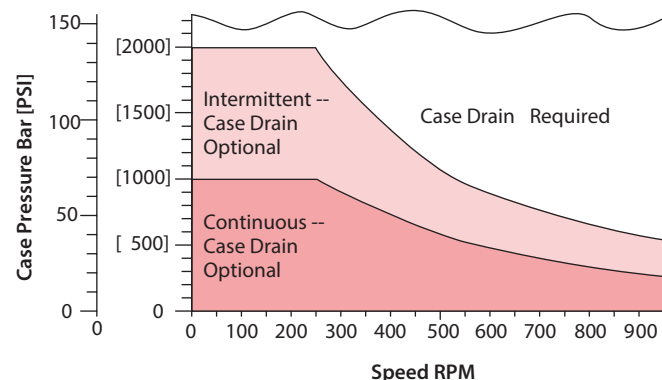
Contamination control — flushing the motor case.

Cooler motor — exiting oil draws motor heat away.

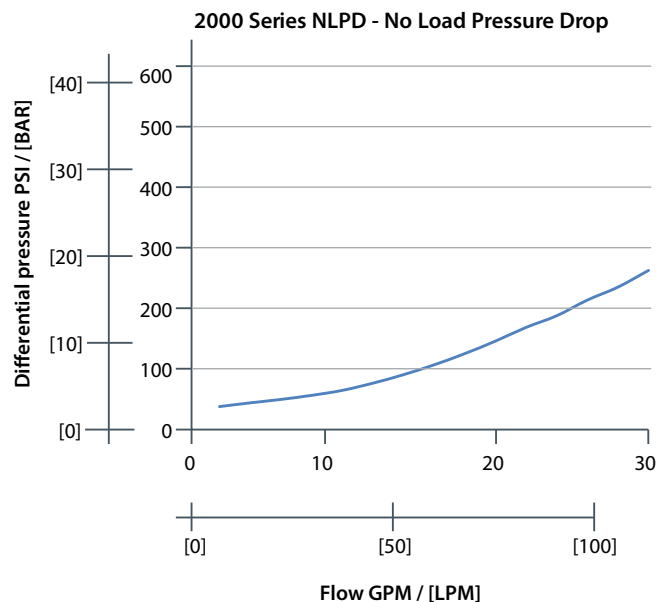
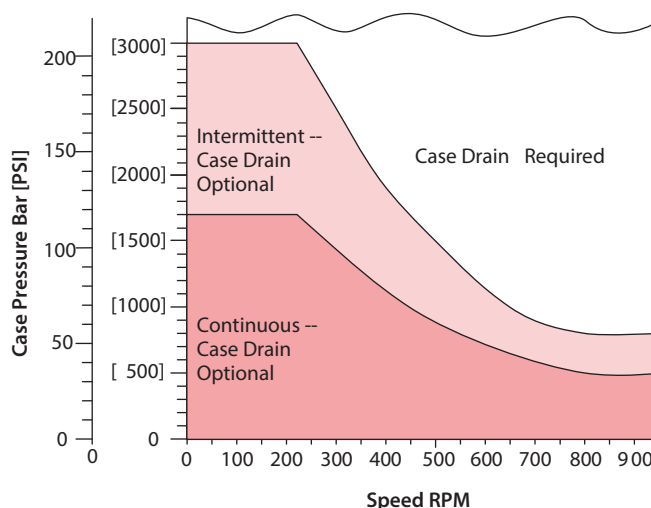
Extend motor seal life — maintain low case pressure with a preset restriction in the case drain line.

Case pressure seal limitation

Standard shaft seal



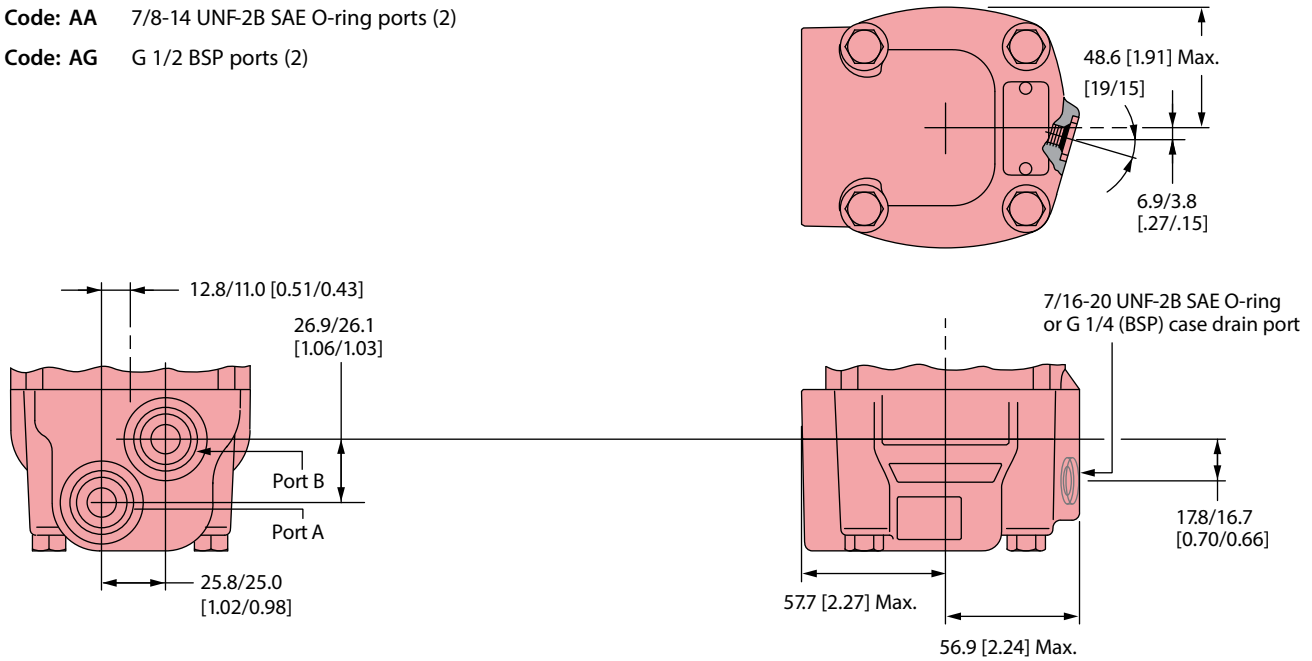
High pressure shaft seal



Ports

Code: AA 7/8-14 UNF-2B SAE O-ring ports (2)

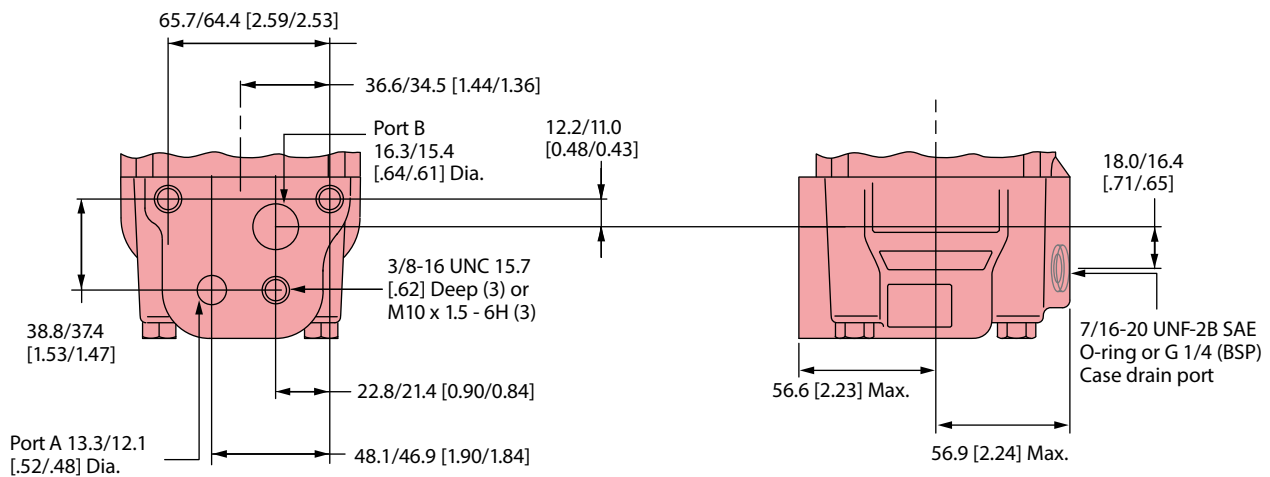
Code: AG G 1/2 BSP ports (2)



C-1

Code: AB 3/8-16 UNC threaded holes

Code: AE M10x1.5 -6H threaded holes



2000 Series

Product numbers

Note: For 2000 Series Motors with a configuration **Not Shown** in the charts below: Use model code number system on the next page to specify product in detail.

Use digit prefix — 104-, 105-, or 106- plus four digit number from charts for complete product number— Example 106-1043.

Orders will not be accepted without three digit prefix.

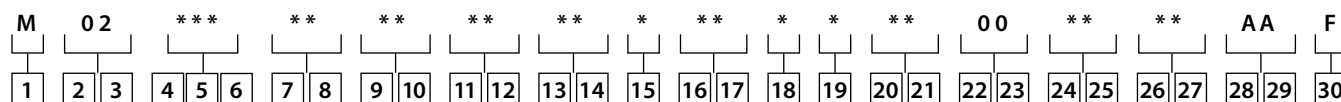
C-1

Mounting	Shaft	Port size	Displ. cm ³ / r [in ³ /r] / product number											
			41	80	90	100	130	160	195	245	305	395	490	
			[2.5]	[4.9]	[5.5]	[6.2]	[8.0]	[9.6]	[11.9]	[14.9]	[18.7]	[24.0]	[29.8]	
2 Bolt sae A flange	1 Inch straight	7/8 -14 O-ring staggered	104-4708	-1001	—	-1002	-1003	-1004	-1005	-1006	-1007	-1143	—	
		1 1/16 -12 O-ring 180° apart	104-----	-1037	—	-1038	-1039	-1040	-1041	-1042	-1043	-1044	—	
	1 ¼ Inch straight	7/8 -14 O-ring staggered	104-4774	-1022	—	-1023	-1024	-1025	-1026	-1027	-1028	-1228	-1420	
		1 1/16 -12 O-ring 180° apart	104-----	-1061	—	-1062	-1063	-1064	-1065	-1066	-1067	-1068	-1421	
	1 ¼ Inch - 14 T splined	7/8 -14 O-ring staggered	104-4764	-1029	—	-1030	-1031	-1032	-1033	-1034	-1035	-1229	-1422	
		1 1/16 -12 O-ring 180° apart	104-----	-1087	—	-1088	-1089	-1090	-1091	-1092	-1093	-1094	-1423	
2 Bolt SAE B flange	1 ¼ Inch straight	7/8-14 O-ring staggered	104-----	-1200	—	1201	-1202	-1203	-1204	-1205	-1206	-1207	—	
	1 ¼ Inch involute SAE C splined	7/8 -14 O-ring staggered	104-----	-1208	—	-1209	-1210	-1211	-1212	-1213	-1214	-1215	—	
	1 Inch SAE 6B splined	7/8 -14 O-ring staggered	104-----	-1193	—	-1194	-1195	-1196	-1197	-1198	-1199	—	—	
	7/8 Inch SAE B splined	7/8 -14 O-ring staggered	104-----	-1216	—	-1217	-1218	-1219	-1220	—	—	—	—	
Standard with 4 bolt flange	32 mm Straight	G 1/2 (BSP))	104-4672	-1384	—	-1385	-1386	-1387	-1388	-1389	-1390	-1391	—	
	1 ¼ Inch 14 T splined	G 1/2 (BSP)	104-----	-1376	—	-1377	-1378	-1379	-1380	-1381	-1382	-1383	—	
Wheel motor	1 ¼ Inch straight	7/8 -14 O-ring staggered	105-----	—	—	—	—	—	—	—	—	—	-1148	
		1 1/16 -12 O-ring 180° Apart	105-----	—	—	—	—	—	—	—	—	—	-1149	
	32 mm straight	G 1/2 (BSP)	105-----	-1134	—	-1135	-1136	-1137	-1138	-1139	-1140	-1141	—	
	1 ¼ Inch tapered	7/8 -14 O-ring staggered	105-----	-1001	—	-1002	-1003	-1004	-1005	-1006	-1007	-1060	-1152	
		1 1/16 -12 O-ring 180° apart	105-----	-1071	—	-1072	-1073	-1074	-1075	-1076	-1077	-1078	—	
	1 ¼ Inch 14 T splined	7/8 -14 O-ring staggered	105-----	-1029	—	-1030	-1031	-1032	-1033	-1034	-1035	-1096	—	
1 1/16 -12 O-ring 180° apart		105-----	-1079	—	—	—	-1082	-1083	-1084	-1085	-1086	—		
Bearingless	7/8 -14 O-ring staggered		106-----	-1008	—	-1009	-1010	-1011	-1012	-1013	-1014	-1015	-1047	
	G 1/2 (BSP)		106-----	-1038	—	-1039	-1040	-1041	-1042	-1043	-1044	-1045	—	

↑
106-1044

Mounting	Shaft	Port size	Displ. cm ³ / r [in ³ /r] / product number										
			41	80	90	100	130	160	195	245	305	395	490
			[2.5]	[4.9]	[5.5]	[6.2]	[8.0]	[9.6]	[11.9]	[14.9]	[18.7]	[24.0]	[29.8]
2 Bolt SAE A flange	1 Inch straight	7/8 -14 O-ring Staggered	04----	-1528	—	-1529	-1530	-1531	-1532	-1533	-1534	-1519	-1535
	1 1/4 Inch straight	7/8 -14 O-ring	104----	-3615	—	-1536	-1537	-1568	-1539	-1452	-1479	-1509	-1489

The following 30-digit coding system has been developed to identify all of the configuration options for the 2000 Series motor. Use this model code to specify a motor with the desired features. All 30 digits of the code must be present when ordering.



1	Product	9 10	Output shaft
M	2000 Series motor	00	None (Bearingless)
2 3	Product series	01	25.40 [1.000] Dia. Straight shaft with 1/4-20UNC-2B Thread in End, 6.35 [.250] wide x 25.40 [1.000] Dia. Woodruff key
02	2000 Series Motor	02	31.75 [1.250] Dia. Straight shaft with .375-16UNC-2B Thread in end, 7.938 [.3125] Sq x 31.75 [1.250] straight key
4 5 6	Displacement	03	31.75 [1.250] Dia. 0.125:1 tapered shaft per SAE J501 with /1.000-20 UNEF-2A Threaded shaft end and slotted hex nut, 7.938 [.3125] Sq x 25.40 [1.0] straight key
021	34.0 cm ³ /r [in ³ /r]	04	31.75 [1.250] Dia. Flat root side fit, 14 tooth, 12/24 DP 30° involute spline w/ .375-16UNC-2B Thread in end, 33.0 [1.30] Min. Full spline length
025	40.8 cm ³ /r [in ³ /r]	05	25.40 [1.000] Dia. 6B spline per SAE J499 with .250-20UNC-2B thread in end, 22.76 [.896] Min. Full spline length
040	66.5 cm ³ /r [in ³ /r]	07	22.22 [.875] Dia. Flat root side fit, 13 tooth, 16/32 DP 30° SAE B Involute Spline, 15.2 [.60] Min. Full Spline Length
049	80.6 cm ³ /r [4.92 in ³ /r]	16	32.00 [1.260] Dia. Straight Shaft with M8 x 1.25-6H Thread in End, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L Key
055	90.6 cm ³ /r [5.53 in ³ /r]	17	31.75 [1.250] Dia. Straight shaft with 3/8 -16 UNC-2B Thread in end, 7.938 [.3125] Sq x 31.75 [1.250] straight key, corrosion resistant (seal area to shaft end)
062	101.6 cm ³ /r [6.20 in ³ /r]	19	25.00 [.984] Dia. Straight shaft with M8 x 1.25-6h thread in end, 7.982 [.3142] W x 6.954 [.2738] H x 31.82 [1.254] L key
080	130.6 cm ³ /r [7.97 in ³ /r]	41	35.00 [1.378] Dia. 10:1 Tapered shaft per ISO R775 with M20 x 1.5-6g threaded shaft end and slotted hex nut, 6.00 [.236] Sq. X 20.00 [.787] Key
096	158.1 cm ³ /r [9.65 in ³ /r]	42	35.00 [1.378] Dia. Straight shaft with M8 x 1.25-6h thread in end, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L key
119	194.8 cm ³ /r [11.89 in ³ /r]		
149	244.3 cm ³ /r [14.91 in ³ /r]		
187	306.6 cm ³ /r [18.71 in ³ /r]		
240	393.8 cm ³ /r [24.03 in ³ /r]		
298	489.0 cm ³ /r [29.84 in ³ /r]		
7 8	Mounting type		
AB	Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt circle. 127.0 [5.00] Dia. Rear mount pilot		
AC	Standard, 2 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt circle. SAE A		
AD	Bearingless (w/ leakage slots), 4 Bolt: 101.6 [4.00] Pilot Dia. 13.59 [.535] Dia. Holes on 127.0 [5.00] Dia. Bolt circle		
AF	Standard, 2 Bolt: 101.6 [4.00] Pilot dia. 14.35 [.565] Dia. Holes on 146.0 [5.75] Dia. Bolt circle. SAE B		
AH	Standard, 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt circle		
AJ	Standard (Magnet), 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. 2.79 [.110] Pilot Length		
AL	Wheel (European), 4 Bolt: 125 [4.92] Pilot Dia. 13.79 [.543] Dia. Holes on 159.99 [6.299] Dia. Bolt Circle		
AP	Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear mount pilot. Spigot reduced to 88.9 [3.50] Dia. by 25.4 [1.00] Depth.		
AZ	Bearingless (w/ leakage slots), 4 Bolt: 100.0 [3.94] Pilot Dia. 11.0 [.43] Dia. Holes on 125.0 [4.92] Dia bolt circle (european)		

2000 Series

Model code

M	02		***			**		**		**		**		*	**		*	*	**		00		**		**		AA		F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

11 12

Ports

- AA** .875-14 UNF-2B SAE O-ring Ports - Staggered Ports
- AB** 12.70 [.500] and 15.88 [.625] Dia. Manifold ports with 3 x .375-16 UNC-2B port block mounting holes
- AC** .875-14 UNF-2B SAE O-ring ports - ports oriented 180° to each other
- AE** 12.70 [.500] and 15.88 [.625] Dia. Manifold ports with 3 x M10 x 1.5-6H Port block mounting holes
- AF** 1.0625-12 UN-2B SAE O-ring ports - ports oriented 180° to each other
- AG** G-1/2 BSP straight THD ports - staggered ports
- AN** G-1/2 BSP Straight THD Ports - end ported
- AS** G-1/2 Bsp Straight THD ports - staggered port with 2 x M10 x 1.5-6H port block mounting holes - european

13 14

Case flow options

(Shuttles available with port code AA only)

- 01** .4375-20 UNF-2B SAE O-Ring Port
- 02** G 1/4 BSP Straight THD Port
- 13** Reverse flow shuttle valve w/ .4375-20 UNF-2B SAE O-Ring port, .062 Dia. Shuttle flow orifice

15

Low pressure relief

- 0** None
- A** Set at 4.5 bar [65 lbf/in²]
- B** Set at 15.2 bar [220 lbf/in²]
- C** Set at 20.7 bar [300 lbf/in²]
- E** Set at 11.03 bar [160 lbf/in²]

16 17

Pressure/flow option

- 0** None
- Integral cross-over relief valve:
- 30** Set at 103.4 bar [1500 lbf/in²]
- 31** Set at 120.6 bar [1750 lbf/in²]
- 32** Set at 137.9 bar [2000 lbf/in²]
- 33** Set at 155.1 bar [2250 lbf/in²]
- 34** Set at 172.4 bar [2500 lbf/in²]
- 35** Set at 189.6 bar [2750 lbf/in²]
- 36** Set at 206.8 bar [3000 lbf/in²]
- 37** Set at 234.4 bar [3400 lbf/in²]

18

Geroler option

- 1** Standard
- 2** Free running
- 6** Reduced side clearance, no warranty for galling

19

Seal option

- 0** Standard
- 1** Viton
- 2** Viton shaft seal
- 3** High pressure shaft seal
- 4** Seal guard
- 5** Extreme duty seal guard
- 6** High pressure shaft seal, seal guard

20 21

Accessories

- 00** None
- AA** Digital speed pickup (30 pulse), 127 [5.0] lead wire with weather pack shroud connector (A=Power, B=Signal, C=Common)
- AD** Digital speed pickup (30 pulse), M12 connector (A=Power, B=Common, C=Signal)
- AG** M12 connector (60 pulse per rev speed signal and one directional signal, (Pin 1=Power, Pin 2= Direction, Pin 3=Common, Pin 4=Speed)

22 23

Special features (hardware)

- 00** None

24 25

Special features (assembly)

- 00** None
- AA** Flange rotated 90 degrees
- AB** Reverse rotation
- AE** Flange rotated 45 degrees

26 27

Paint/packageing

- AA** No paint, indiv. Box
- AB** Low gloss black primer, indiv. Box
- AT** Epoxy coated black, individual box
- BJ** Nickel plated motor (excluding shaft), individual box

28 29

Customer ID

- AA** None

30

Design code

- F** Sixth

C-1