

Delta Series

Highlights



Description

This wheel motor is the latest addition to the Char Lynn product line. The Delta motor provides torques up to 11,500 in-lbs. Eaton has packed this motor with many “best in class” features: the optimized geroler profile ensures smooth operation; the disc valve technology has the best performance and the bearing capacity is the highest in the industry for very demanding applications.

Delta Series

Geroler Element	12 Displacements
Flow l/min [GPM]	75 [20] Continuous**
	115 [30] Intermittent*
Speed RPM	670 Cont.**
	837 Inter.*
Pressure bar [PSI]	200 [3000] Cont.**
	275 [4000] Inter.*
Torque Nm [lb-in]	1015 [9000] Cont**.
	1185 [10500] Inter.*

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

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

Features:

- Excellent reliability with time proven Char-Lynn components
- Proven disc valve technology with the highest efficiencies in its class
- Leak resistant motor with the front bearing protecting the shaft seal
- Torque up to 10,500 lb-in intermittent duty / Flow up to 30 GPM intermittent
- 12 displacements available from 6.9 to 46 CID
- Shaft sizes up to 1-5/8 inch
- 3-1/4 inch front pilot and 5 inch rear pilot
- STC ports available

Benefits:

- Perfect replacement for Parker® TF-TG and White™ RE motors
- Lowest no load pressure drop which leads to longer life and lower temperature operation
- Highest overall efficiency: more available HP to the system than competitive motors
- The highest side load capacity with 4,500 lbs at 3” from the mount face

Applications:

- Scissor Lift
- Boom Lift
- Industrial Sweeper
- Mower

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White is a trademark of White Drive Products, Inc.



Boom Lift



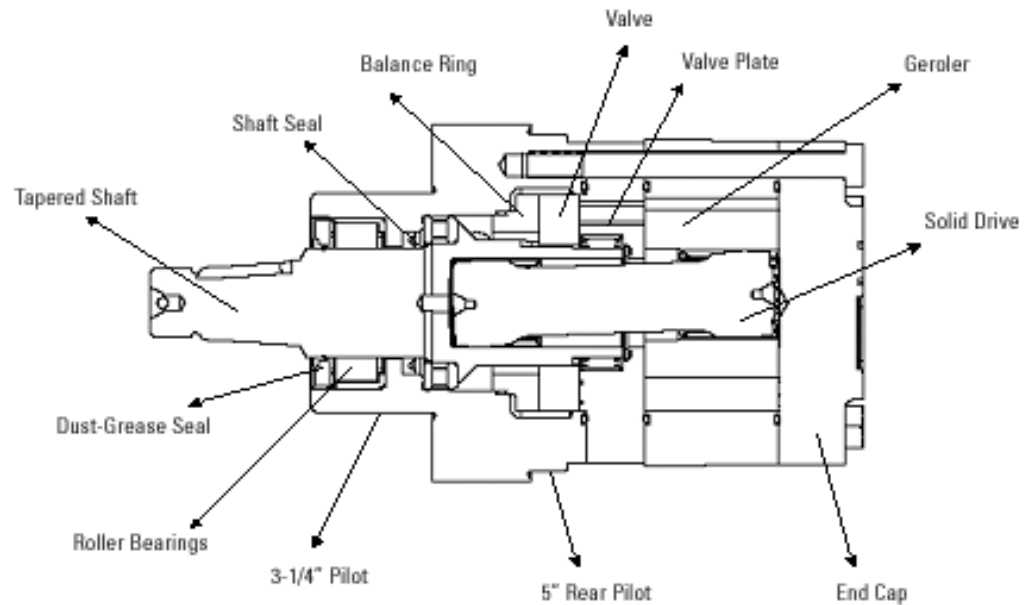
Sweeper



Mower

Delta Series

Specifications



DELTA SERIES MOTORS

Displ. cm ³ /r (in ³ /rev)		113 [6.9]	146 [8.9]	198 [12.1]	234 [14.3]	252 [15.4]	300 [18.3]	347 [21.2]	395 [24.1]	470 [28.7]	542 [33.1]	649 [39.6]	754 [46.0]
Max Speed (RPM)	Continuous	668	519	382	323	300	252	218	192	161	140	117	100
	Intermittent	831	778	516	485	450	379	327	288	241	209	175	151
@Flow													
Flow l/min [GPM]	Continuous	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Intermittent	95 [25]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]
Torque Nm [lb-in]	Continuous	320 [2834]	429 [3800]	554 [4904]	651 [5763]	712 [6311]	844 [7472]	933 [8260]	972 [8607]	1039 [9199]	994 [8809]	1028 [9102]	985 [8721]
	Intermittent	417 [3697]	563 [4984]	725 [6421]	852 [7543]	930 [8236]	1087 [9629]	1208 [10698]	1206 [10684]	1222 [10824]	1202 [10644]	1253 [11100]	1232 [10910]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	190 [2750]	170 [2500]	140 [2000]	120 [1750]	105 [1500]
	Intermittent	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	240 [3500]	205 [3000]	170 [2500]	155 [2250]	140 [2000]
Weight kg [lb]		12,7 [28.0]	12,9 [28.5]	13,8 [30.5]	14,3 [31.5]	15,0 [33.0]	15,0 [33.0]	15,4 [34.0]	16,1 [35.5]	16,8 [37.0]	17,5 [38.5]	18,4 [40.5]	19,1 [42.0]

Note:

Top assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

When pressurizing B port, all displacements have a continuous rating of 2000 psi.

Maximum Inlet Pressure:

310 bars (4500 PSI)

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

Recommended Fluids:

Premium quality, anti wear type hydraulic oil with a viscosity of no less than 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

Delta Series

113 cm³/r [6.9 in³/r]

Δ Pressure Bar [PSI]

Performance Data

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 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous
	Intermittent
	No operation

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	204	450	686	915	1140	1355	1593	1814	2018	2197	2349	2573	2776	2975	3182	3362
7.6	23	51	77	103	129	153	180	205	228	248	265	290	313	336	359	380
	65	64	63	62	60	60	59	57	56	55	56	54	52	48	49	44
4	210	457	706	950	1194	1436	1677	1906	2129	2351	2571	2790	3010	3231	3454	3660
15	24	52	80	107	135	162	189	215	240	265	290	315	340	365	390	413
	132	131	130	129	128	127	126	125	123	122	120	118	115	113	112	110
6	196	445	696	942	1186	1432	1674	1914	2144	2367	2587	2805	3027	3252	3476	3695
23	22	50	79	106	134	162	189	216	242	267	292	317	342	367	392	417
	199	196	196	195	193	192	191	190	189	185	183	182	180	177	174	172
8	176	425	677	921	1168	1420	1666	1906	2152	2386	2616	2834	3051	3265	3481	3697
30	20	48	76	104	132	160	188	215	243	269	295	320	344	369	393	417
	266	264	263	261	261	259	257	257	255	252	250	248	246	244	241	237
10	160	407	659	901	1149	1398	1650	1894	2134	2370	2601	2823	3044	3258	3457	3654
38	18	46	74	102	130	158	186	214	241	268	294	319	344	368	390	413
	333	333	329	326	324	323	321	320	318	314	312	309	306	303	301	295
12	134	382	632	876	1122	1372	1621	1868	2111	2353	2589	2821	3046	3270	3479	3680
45	15	43	71	99	127	155	183	211	238	266	292	319	344	369	393	415
	399	398	396	393	392	389	387	386	383	381	377	374	372	370	367	364
14	111	357	608	855	1102	1350	1599	1847	2090	2330	2569	2800	3024	3250	3455	3614
53	13	40	69	97	124	152	181	208	236	263	290	316	341	367	390	408
	466	465	462	460	457	455	453	451	449	446	442	438	436	433	429	415
16	81	325	577	822	1071	1321	1572	1817	2063	2307	2549	2781	3011	3237	3436	3578
61	9	37	65	93	121	149	177	205	233	260	288	314	340	365	388	404
	533	532	529	527	524	522	520	517	516	513	509	506	503	500	496	477
18	48	295	543	790	1036	1283	1535	1781	2027	2271	2512	2751	2984	3214	3431	3597
68	5	33	61	89	117	145	173	201	229	256	284	311	337	363	387	406
	601	600	597	593	591	587	586	583	581	577	573	570	568	564	559	542
20	14	263	510	758	1005	1249	1499	1746	1988	2231	2474	2712	2945	3176	3395	3597
76	2	30	58	86	113	141	169	197	224	252	279	306	332	359	383	406
	668	666	664	661	658	654	652	649	646	644	640	637	634	630	628	621
22		228	477	725	972	1218	1468	1712	1957	2201	2447	2686	2917	3149	3350	3523
83		26	54	82	110	138	166	193	221	249	276	303	329	355	378	398
		733	731	728	724	721	718	715	713	710	705	704	700	697	688	664
25		170	416	663	913	1153	1402	1646	1891	2136	2382	2622	2856	3081	3273	3452
95		19	47	75	103	130	158	186	214	241	269	296	322	348	369	390
		831	829	827	825	821	818	815	812	809	805	803	800	794	776	745
30		114	429	755	1076	1400	1725	2047	2368	2687	3003	3323	3635	3942	4249	4552
114		13	48	85	122	158	195	231	267	303	339	375	410	445	480	514
		778	777	773	770	765	759	756	753	749	746	744	742	740	737	735

114 } Torque lb-in
13 } Nm
778 } Speed RPM

146 cm³/r [8.9 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	288	596	907	1184	1445	1718	1992	2247	2537	2810	3039	3290	3595	3846	3996	4265
7.6	32	67	102	134	163	194	225	254	286	317	343	371	406	434	451	482
	50	48	46	42	44	43	40	39	38	37	36	34	32	31	25	28
4	289	619	947	1267	1593	1914	2227	2482	2755	3042	3295	3615	3916	4135	4456	4680
15	33	70	107	143	180	216	251	280	311	343	372	408	442	467	503	528
	102	100	98	96	95	94	93	93	91	88	84	81	79	76	74	70
6	275	604	934	1259	1588	1908	2232	2552	2869	3181	3497	3800	4102	4397	4680	4955
23	31	68	105	142	179	215	252	288	324	359	395	429	463	496	528	559
	154	151	149	148	146	145	144	143	141	137	135	133	130	128	125	123
8	256	580	909	1235	1566	1887	2209	2528	2845	3160	3475	3783	4091	4397	4692	4984
30	29	66	103	139	177	213	249	285	321	357	392	427	462	496	530	563
	206	204	201	200	198	198	196	195	190	187	185	182	179	179	176	173
10	227	553	879	1204	1535	1861	2184	2504	2820	3133	3447	3757	4061	4369	4667	4963
38	26	62	99	136	173	210	247	283	318	354	389	424	459	493	527	560
	258	256	253	251	250	249	248	246	241	238	236	233	231	229	228	225
12	199	521	850	1172	1501	1825	2148	2469	2780	3091	3402	3714	4017	4324	4627	4922
45	23	59	96	132	170	206	243	279	314	349	384	419	454	488	522	556
	310	308	305	303	301	300	299	297	292	290	287	284	282	281	278	276
14	157	480	809	1130	1458	1784	2104	2426	2743	3057	3369	3679	3983	4291	4593	4892
53	18	54	91	128	165	201	238	274	310	345	380	415	450	484	519	552
	362	360	356	354	353	352	351	346	344	341	339	337	335	332	331	329
16	132	457	780	1102	1429	1753	2081	2397	2714	3025	3335	3645	3947	4255	4558	4857
61	15	52	88	124	161	198	235	271	306	342	377	412	446	480	515	548
	414	412	408	406	405	403	402	398	395	392	389	387	384	382	380	377
18	98	414	742	1065	1390	1715	2039	2360	2675	2986	3295	3605	3906	4213	4518	4817
68	11	47	84	120	157	194	230	266	302	337	372	407	441	476	510	544
	467	465	461	459	457	456	453	450	447	444	442	439	437	435	432	430
20	42	373	700	1020	1347	1670	1989	2308	2628	2944	3255	3568	3866	4172	4475	4774
76	5	42	79	115	152	189	225	261	297	332	368	403	436	471	505	539
	519	517	514	511	509	507	503	500	498	495	492	489	488	485	484	482
22	16	328	659	978	1306	1628	1950	2268	2586	2900	3211	3522	3823	4128	4429	4732
83	2	37	74	110	147	184	220	256	292	327	362	398	432	466	500	534
	571	569	565	562	559	559	555	552	549	546	544	541	538	536	534	531
25		253	576	899	1221	1544	1864	2179	2500	2811	3120	3433	3736	4036	4337	4639
95		29	65	102	138	174	210	246	282	317	352	388	422	456	490	524
		647	645	641	639	637	633	629	626	624	621	618	616	613	612	609
30		114	429	755	1076	1400	1725	2047	2368	2687	3003	3323	3635	3942	4249	4552
114		13	48	85	122	158	195	231								

Delta Series

Performance Data

198 cm³/r [12.1 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	313	732	1113	1480	1870	2249	2668	3059	3447	3822	4189	4544	4875	5194	5508	5948
7.6	35	83	126	167	211	254	301	345	389	432	473	513	550	586	622	671
4	367	809	1228	1640	2038	2437	2844	3234	3623	4010	4398	4779	5164	5545	5917	6275
15	41	91	139	185	230	275	321	365	409	453	497	540	583	626	668	708
6	365	799	1231	1654	2066	2473	2878	3270	3665	4056	4446	4833	5215	5598	5975	6347
23	41	90	139	187	233	279	325	369	414	458	502	546	589	632	675	717
8	343	782	1219	1648	2069	2484	2898	3300	3702	4093	4482	4865	5237	5607	5976	6349
30	39	88	138	186	234	280	327	373	418	462	506	549	591	633	675	717
10	322	759	1201	1633	2063	2483	2904	3316	3726	4125	4515	4904	5290	5672	6048	6421
38	36	86	136	184	233	280	328	374	421	466	510	554	597	640	683	725
12	283	719	1158	1590	2020	2448	2868	3279	3691	4096	4492	4883	5265	5644	6015	6385
45	32	81	131	180	228	276	324	370	417	462	507	551	594	637	679	721
14	238	671	1110	1538	1970	2396	2816	3228	3644	4050	4451	4846	5231	5613	5982	6357
53	27	76	125	174	222	271	318	364	411	457	503	547	591	634	675	718
16	191	625	1063	1493	1923	2345	2768	3182	3596	4003	4403	4801	5191	5576	5947	6316
61	22	71	120	169	217	265	312	359	406	452	497	542	586	630	671	713
18	139	567	1006	1438	1871	2299	2720	3133	3547	3956	4359	4760	5128	5492	5871	6247
68	16	64	114	162	211	260	307	354	400	447	492	537	579	620	663	705
20	99	457	886	1315	1745	2168	2590	3006	3418	3822	4224	4622	5018	5418	5816	6208
76	11	52	100	148	197	245	292	339	386	432	477	522	567	612	657	701
22	15	383	810	1243	1676	2096	2520	2938	3351	3759	4161	4558	4953	5339	5722	6095
83	2	43	91	140	189	237	284	332	378	424	470	515	559	603	646	688
25		272	700	1131	1559	1985	2408	2823	3231	3639	4042	4443	4842	5229	5617	5992
95		31	79	128	176	224	272	319	365	411	456	502	547	590	634	677
30		163	600	1037	1474	1902	2315	2723	3134	3536	3933	4338	4737	5125	5516	5899
114		18	68	117	166	215	261	307	354	399	444	490	535	579	623	666
		516	506	494	487	484	488	494	501	506	511	514	515	516	515	514

163 } Torque lb-in
18 } N/m
516 } Speed RPM

234 cm³/r [14.3 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	470	971	1457	1921	2414	2877	3348	3821	4275	4730	5164	5630	5997	6446	6863	7217
7.6	53	110	164	217	273	325	378	431	483	534	583	636	677	728	775	815
4	468	988	1504	1989	2482	2964	3447	3916	4384	4843	5302	5763	6213	6668	7113	7543
15	53	112	170	225	280	335	389	442	495	547	599	651	701	753	803	852
6	449	966	1484	1980	2470	2953	3445	3922	4397	4851	5304	5750	6197	6643	7085	7524
23	51	109	168	224	279	333	389	443	496	548	599	649	700	750	800	849
8	416	931	1446	1954	2458	2948	3438	3909	4381	4835	5280	5714	6150	6584	7015	7445
30	47	105	163	221	277	333	388	441	495	546	596	645	694	743	792	841
10	380	896	1410	1917	2425	2919	3412	3890	4373	4831	5280	5716	6148	6586	7017	7452
38	43	101	159	216	274	330	385	439	494	545	596	645	694	744	792	841
12	341	856	1366	1876	2384	2880	3370	3843	4319	4782	5229	5665	6102	6537	6962	7392
45	39	97	154	212	269	325	380	434	488	540	590	640	689	738	786	835
14	290	804	1312	1813	2320	2821	3315	3793	4268	4732	5181	5623	6057	6485	6907	7327
53	33	91	148	205	262	318	374	428	482	534	585	635	684	732	780	827
16	239	743	1249	1756	2264	2759	3255	3735	4207	4669	5122	5568	6004	6432	6845	7268
61	27	84	141	198	256	312	367	422	475	527	578	629	678	726	773	820
18	176	688	1187	1694	2203	2698	3195	3676	4146	4603	5055	5497	5930	6358	6774	7194
68	20	78	134	191	249	305	361	415	468	520	571	621	669	718	765	812
20	108	614	1121	1623	2124	2620	3118	3603	4077	4541	4990	5430	5865	6301	6720	7139
76	12	69	127	183	240	296	352	407	460	513	563	613	662	711	759	806
22	28	535	1081	1582	2082	2579	3071	3550	4018	4483	4943	5406	5855	6300	6723	7139
83	3	60	122	179	235	291	347	401	454	506	558	610	661	711	759	806
25		410	956	1460	1959	2454	2941	3419	3892	4356	4806	5251	5683	6117	6531	6939
95		46	108	165	221	277	332	386	439	492	543	593	642	691	737	783
30		171	700	1297	1735	2226	2718	3204	3689	4162	4623	5079	5519	5959	6377	6781
114		19	79	146	196	251	307	362	417	470	522	573	623	673	720	766
		485	485	485	483	481	480	478	476	474	472	472	471	471	471	471

Delta Series

Performance Data

252 cm³/r [15.4 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	485	1011	1520	2032	2564	3059	3569	4065	4561	5085	5589	6054	6536	6891	7388	7872
7.6	55	114	172	229	289	345	403	459	515	574	631	683	738	778	834	889
4	504	1062	1609	2145	2684	3213	3744	4263	4780	5294	5804	6311	6811	7308	7787	8236
15	57	120	182	242	303	363	423	481	540	598	655	712	769	825	879	930
6	478	1031	1585	2132	2670	3195	3717	4222	4726	5222	5721	6211	6700	7179	7658	8118
23	54	116	179	241	301	361	420	477	534	590	646	701	756	810	865	917
8	453	1012	1571	2115	2664	3191	3717	4224	4725	5215	5706	6194	6678	7161	7628	8076
30	51	114	177	239	301	360	420	477	533	589	644	699	754	808	861	912
10	398	957	1516	2063	2609	3137	3668	4181	4678	5157	5636	6116	6589	7059	7522	7974
38	45	108	171	233	295	354	414	472	528	582	636	690	744	797	849	900
12	370	914	1468	2011	2557	3085	3614	4125	4622	5102	5577	6059	6538	7017	7497	7966
45	42	103	166	227	289	348	408	466	522	576	630	684	738	792	846	899
14	290	842	1399	1948	2496	3024	3552	4065	4571	5066	5525	5987	6445	6905	7359	7813
53	33	95	158	220	282	341	401	459	516	571	624	676	728	780	831	882
16	239	795	1346	1891	2434	2962	3494	4003	4511	4995	5461	5919	6382	6841	7292	7743
61	27	90	152	213	275	334	395	452	509	564	616	668	720	772	823	874
18	157	716	1265	1810	2355	2881	3408	3921	4431	4924	5401	5860	6310	6749	7184	7627
68	18	81	143	204	266	325	385	443	500	556	610	662	712	762	811	861
20	96	650	1203	1750	2294	2820	3345	3857	4366	4865	5340	5801	6242	6686	7122	7553
76	11	73	136	198	259	318	378	435	493	549	603	655	705	755	804	853
22	26	569	1111	1656	2195	2725	3250	3763	4268	4769	5259	5733	6182	6609	7030	7459
83	3	64	125	187	248	308	367	425	482	538	594	647	698	746	794	842
25	425	967	1508	2042	2574	3093	3605	4110	4602	5084	5561	6028	6482	6899	7316	
95	48	109	170	231	291	349	407	464	520	574	628	681	732	779	826	
30	179	723	1266	1800	2330	2852	3364	3868	4368	4856	5338	5811	6269	6701	7096	
114	20	82	143	203	263	322	380	437	493	548	603	656	708	757	801	
	450	450	450	449	447	443	439	436	433	430	430	430	431	434	437	

Flow LPM [GPM]

179 } Torque lb-in
20 } Nm
450 } Speed RPM

300 cm³/r [18.3 in³/r]

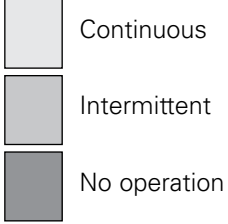
Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	608	1257	1919	2553	3196	3824	4475	5087	5707	6307	6901	7472	8015	8484	8962	9413
7.6	69	142	217	288	361	432	505	574	644	712	779	844	905	958	1012	1063
4	612	1283	1940	2587	3227	3856	4483	5094	5693	6293	6881	7462	8024	8574	9113	9629
15	69	145	219	292	364	435	506	575	643	710	777	842	906	968	1029	1087
6	570	1248	1906	2547	3178	3800	4420	5025	5619	6203	6773	7345	7899	8449	8992	9525
23	64	141	215	288	359	429	499	567	634	700	765	829	892	954	1015	1075
8	540	1210	1871	2522	3152	3781	4404	5008	5607	6186	6749	7319	7879	8433	8977	9512
30	61	137	211	285	356	427	497	565	633	698	762	826	890	952	1013	1074
10	496	1161	1825	2471	3110	3733	4362	4968	5574	6157	6721	7274	7811	8356	8887	9416
38	56	131	206	279	351	421	492	561	629	695	759	821	882	943	1003	1063
12	443	1108	1768	2418	3059	3688	4307	4918	5526	6114	6681	7239	7786	8338	8876	9411
45	50	125	200	273	345	416	486	555	624	690	754	817	879	941	1002	1062
14	387	1034	1701	2346	2985	3610	4227	4839	5452	6050	6622	7184	7723	8269	8816	9362
53	44	117	192	265	337	408	477	546	615	683	748	811	872	934	995	1057
16	366	961	1620	2264	2903	3530	4147	4753	5366	5960	6540	7098	7642	8169	8685	9211
61	202	202	201	199	197	195	192	190	189	188	188	189	191	194	196	196
18	291	893	1546	2187	2829	3450	4067	4678	5283	5873	6451	7005	7537	8064	8580	9103
68	33	101	175	247	319	390	459	528	596	663	728	791	851	910	969	1028
20	204	797	1444	2094	2736	3361	3974	4585	5184	5775	6353	6907	7448	7974	8489	8992
76	23	90	163	236	309	380	449	518	585	652	717	780	841	900	958	1015
22	102	710	1366	2013	2651	3270	3885	4496	5096	5689	6271	6831	7362	7877	8375	8880
83	12	80	154	227	299	369	439	508	575	642	708	771	831	889	945	1003
25	553	1208	1851	2489	3114	3726	4335	4930	5523	6108	6670	7220	7783	8298	8777	
95	62	136	209	281	352	421	489	557	624	690	753	815	879	937	991	
30	233	941	1539	2179	2811	3430	4028	4625	5217	5802	6385	6957	7522	8060	8565	
114	26	106	174	246	317	387	455	522	589	655	721	785	849	910	967	
	379	379	379	377	374	371	367	365	363	362	361	361	364	368	374	

Flow LPM [GPM]

Delta Series

Performance Data



347 cm³/r [21.2 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	687	1415	2128	2824	3532	4248	4947	5633	6298	6964	7575	8182	8743	9209	9624	10081
7.6	78	160	240	319	399	480	558	636	711	786	855	924	987	1040	1087	1138
4	689	1443	2179	2891	3606	4302	4986	5653	6316	6965	7615	8260	8891	9515	10120	10698
15	78	163	246	326	407	486	563	638	713	786	860	933	1004	1074	1143	1208
6	648	1406	2154	2866	3580	4276	4970	5641	6290	6921	7563	8190	8812	9427	10029	10630
23	73	159	243	324	404	483	561	637	710	781	854	925	995	1064	1132	1200
8	606	1356	2105	2825	3545	4241	4943	5621	6274	6899	7522	8144	8768	9388	9998	10598
30	68	153	238	319	400	479	558	635	708	779	849	919	990	1060	1129	1196
10	550	1295	2041	2765	3488	4188	4891	5585	6264	6899	7505	8091	8672	9238	9885	10477
38	62	146	230	312	394	473	552	631	707	779	847	913	979	1048	1116	1184
12	478	1227	1976	2698	3411	4108	4802	5479	6146	6782	7396	7992	8585	9176	9767	10345
45	54	139	223	305	385	464	542	619	694	766	835	902	969	1036	1103	1168
14	409	1151	1896	2624	3344	4048	4742	5418	6083	6722	7339	7939	8541	9142	9738	10318
53	46	130	214	296	378	457	535	612	687	759	829	896	964	1032	1100	1165
16	339	1033	1774	2494	3209	3907	4605	5280	5956	6610	7243	7850	8438	9014	9582	10166
61	38	117	200	282	362	441	520	596	672	746	818	886	953	1018	1083	1148
18	245	943	1676	2401	3113	3809	4500	5175	5837	6477	7107	7711	8308	8895	9466	10040
68	28	106	189	271	351	430	508	584	659	731	802	871	938	1004	1069	1133
20	143	832	1571	2290	3003	3697	4386	5050	5715	6351	6968	7569	8147	8721	9297	9855
76	16	94	177	259	339	417	495	570	645	717	787	855	920	985	1050	1113
22	34	715	1454	2175	2896	3594	4280	4950	5602	6236	6854	7449	8027	8590	9150	9705
83	4	81	164	246	327	406	483	559	632	704	774	841	906	970	1033	1096
25		523	1251	1969	2693	3395	4081	4756	5414	6057	6687	7296	7882	8457	9011	9534
95		59	141	222	304	383	461	537	611	684	755	824	890	955	1017	1076
30		152	1072	1749	2434	3123	3802	4468	5114	5763	6400	7018	7633	8232	8819	8997
114		327	327	327	327	327	323	319	315	314	313	315	319	323	327	327

152 } Torque lb-in
17 } N/m
327 } Speed RPM

395 cm³/r [24.1 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500
2	782	1622	2436	3237	4034	4837	5650	6428	7213	7911	8607	9235	9798	10439
7.6	88	183	275	365	455	546	638	726	814	893	972	1043	1106	1179
4	770	1643	2476	3287	4088	4860	5617	6357	7103	7838	8566	9285	9990	10684
15	87	186	280	371	462	549	634	718	802	885	967	1048	1128	1206
6	746	1609	2460	3280	4083	4867	5644	6384	7103	7811	8520	9232	9930	10616
23	84	182	278	370	461	549	637	721	802	882	962	1042	1121	1199
8	699	1561	2430	3249	4062	4852	5638	6398	7126	7820	8506	9198	9884	10565
30	79	176	274	367	459	548	637	722	805	883	960	1038	1116	1193
10	630	1489	2345	3180	4008	4819	5622	6397	7142	7856	8525	9142	9776	10438
38	71	168	265	359	453	544	635	722	806	887	962	1032	1104	1178
12	556	1412	2264	3090	3898	4689	5473	6225	6976	7710	8415	9081	9681	10304
45	63	159	256	349	440	529	618	703	788	870	950	1025	1093	1163
14	469	1325	2178	2999	3819	4611	5391	6137	6867	7581	8274	8942	9598	10234
53	53	150	246	339	431	521	609	693	775	856	934	1010	1084	1155
16	360	1220	2069	2894	3715	4506	5290	6048	6782	7495	8190	8873	9534	10181
61	41	138	234	327	419	509	597	683	766	846	925	1002	1076	1149
18	334	1098	1951	2777	3591	4386	5172	5924	6665	7387	8087	8763	9418	10048
68	38	124	220	314	405	495	584	669	752	834	913	989	1063	1134
20	221	993	1837	2660	3479	4259	5030	5780	6518	7238	7939	8613	9258	9892
76	25	112	207	300	393	481	568	653	736	817	896	972	1045	1117
22	115	862	1698	2521	3337	4135	4895	5641	6366	7067	7752	8414	9062	9702
83	13	97	192	285	377	467	553	637	719	798	875	950	1023	1095
25		637	1473	2296	3117	3909	4687	5434	6163	6861	7536	8192	8829	9475
95		72	166	259	352	441	529	613	696	775	851	925	997	1070
30		211	1079	1903	2725	3526	4311	5079	5824	6547	7240	7921	8577	9228
114		288	288	288	288	286	283	280	277	274	273	275	280	287

Delta Series

Performance Data

470 cm³/r [28.7 in³/r]

Δ Pressure Bar [PSI]

Continuous
 Intermittent
 No operation

	17	34	52	69	86	103	121	138	155	172	190	207
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
2	925	1885	2820	3727	4639	5526	6404	7270	8129	8978	9794	10551
7.6	104	213	318	421	524	624	723	821	918	1014	1106	1191
	14	14	13	12	12	11	11	10	9	9	8	7
4	942	1942	2917	3849	4776	5692	6594	7488	8352	9199	10014	10824
15	106	219	329	435	539	643	744	845	943	1039	1131	1222
	31	30	29	29	28	27	27	26	25	24	23	23
6	906	1921	2892	3833	4772	5676	6572	7440	8309	9152	9974	10786
23	102	217	327	433	539	641	742	840	938	1033	1126	1218
	47	46	45	45	44	43	43	42	42	41	41	40
8	856	1866	2853	3795	4730	5634	6520	7379	8230	9075	9895	10693
30	97	211	322	428	534	636	736	833	929	1025	1117	1207
	63	62	62	61	60	58	57	57	56	55	54	53
10	780	1799	2800	3745	4685	5594	6479	7337	8177	9009	9843	10638
38	88	203	316	423	529	632	731	828	923	1017	1111	1201
	79	79	78	77	76	75	74	72	72	71	70	70
12	699	1709	2711	3661	4597	5508	6403	7258	8101	8916	9719	10506
45	79	193	306	413	519	622	723	819	915	1007	1097	1186
	96	95	94	93	92	91	90	89	89	88	87	86
14	596	1612	2609	3561	4490	5390	6268	7112	7941	8743	9519	10282
53	67	182	295	402	507	608	708	803	897	987	1075	1161
	112	111	111	110	109	107	106	104	103	101	102	104
16	467	1486	2480	3440	4371	5268	6152	6992	7810	8601	9370	10118
61	53	168	280	388	493	595	695	789	882	971	1058	1142
	129	128	127	126	125	123	122	120	119	117	116	116
18	332	1353	2357	3317	4256	5157	6043	6892	7713	8501	9270	10026
68	37	153	266	375	481	582	682	778	871	960	1047	1132
	145	145	144	143	142	140	138	136	135	134	132	133
20	304	1226	2218	3172	4102	4994	5873	6731	7557	8365	9147	9922
76	34	138	250	358	463	564	663	760	853	944	1033	1120
	161	161	160	159	158	157	155	153	152	150	149	150
22	137	1059	2048	3004	3945	4840	5727	6576	7399	8198	8967	9715
83	15	120	231	339	445	546	647	742	835	926	1012	1097
	177	177	177	176	175	174	172	170	169	167	166	166
25		833	1816	2765	3680	4575	5455	6313	7133	7928	8691	9436
95		94	205	312	415	517	616	713	805	895	981	1065
		201	201	201	200	198	196	194	193	191	191	192
30		491	1318	2295	3232	4142	5022	5881	6721	7522	8300	9320
114		55	149	259	365	468	567	664	759	849	937	1052
		241	241	241	241	240	237	236	236	233	232	227

491 } Torque lb-in
 55 } N/m
 241 } Speed RPM

542 cm³/r [33.1 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172
	250	500	750	1000	1250	1500	1750	2000	2250	2500
2	1131	2304	3433	4558	5668	6725	7732	8683	9645	10457
7.6	128	260	388	515	640	759	873	980	1089	1181
	13	12	11	11	11	11	10	8	8	7
4	1139	2352	3515	4638	5735	6781	7819	8809	9752	10644
15	129	266	397	524	648	766	883	994	1101	1202
	27	26	25	25	25	25	24	23	23	22
6	1063	2267	3433	4549	5643	6694	7697	8675	9630	10571
23	120	256	388	514	637	756	869	979	1087	1192
	41	40	39	38	38	38	39	38	37	36
8	992	2186	3354	4475	5578	6646	7665	8608	9535	10449
30	112	247	379	505	630	750	865	972	1076	1180
	56	55	54	53	52	52	51	52	52	51
10	897	2090	3259	4378	5482	6555	7602	8578	9482	10343
38	101	236	368	494	619	740	858	968	1071	1168
	70	69	68	67	67	65	64	64	64	65
12	807	1980	3138	4256	5365	6440	7494	8481	9403	10275
45	91	224	354	481	606	727	846	957	1062	1160
	84	83	83	81	80	79	78	77	76	77
14	693	1873	3028	4138	5218	6268	7318	8304	9235	10105
53	78	211	342	467	589	708	826	937	1043	1141
	98	98	97	96	95	93	91	90	91	92
16	554	1732	2882	3993	5083	6107	7118	8089	9032	9928
61	63	196	325	451	574	689	804	913	1020	1121
	112	112	111	110	109	108	106	104	104	106
18	409	1582	2738	3844	4924	5952	6956	7928	8874	9772
68	46	179	309	434	556	672	785	895	1002	1103
	126	126	126	125	124	123	121	119	119	121
20	355	1428	2587	3696	4767	5804	6813	7786	8732	9624
76	40	161	292	417	538	655	769	879	986	1087
	140	140	140	139	138	137	136	134	134	135
22	310	1259	2412	3518	4595	5619	6618	7589	8536	9438
83	35	142	272	397	519	634	747	857	964	1065
	154	154	154	154	152	151	150	148	148	149
25		958	2107	3215	4281	5310	6305	7264	8204	9110
95		108	238	363	483	599	712	820	926	1029
		174	174	174	174	173	171	170	168	169
30		521	1599	2696	3769	4804	5809	6776	7705	8617
114		59	181	304	425	542	656	765	870	973
		209	209	209	209	208	207	207	205	205

Delta Series

Performance Data

649 cm³/r [39.6 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]	17		34		52		69		86		103		121		138		155	
	250	500	750	1000	1250	1500	1750	2000	2250	250	500	750	1000	1250	1500	1750	2000	2250
2	1365	2787	4156	5488	6775	7949	9102	10174	11100	154	315	469	620	765	897	1028	1149	1253
7.6	10	10	10	9	9	8	7	6	3									
4	1326	2770	4113	5400	6632	7819	8973	10030	11015	150	313	464	610	749	883	1013	1132	1244
15	22	22	21	20	21	20	19	19	18									
6	1258	2663	3998	5270	6521	7692	8774	9808	10809	142	301	451	595	736	868	991	1107	1220
23	35	34	33	32	32	32	32	32	31									
8	1154	2558	3902	5195	6455	7659	8775	9770	10708	130	289	441	587	729	865	991	1103	1209
30	47	46	45	44	42	42	42	42	43									
10	1045	2442	3787	5076	6331	7541	8691	9685	10573	118	276	428	573	715	851	981	1093	1194
38	58	58	57	56	55	53	53	54	55									
12	928	2321	3662	4939	6193	7385	8536	9577	10469	105	262	413	558	699	834	964	1081	1182
45	70	70	70	68	67	66	65	65	66									
14	740	2127	3469	4746	5989	7188	8352	9433	10439	84	240	392	536	676	812	943	1065	1179
53	82	82	82	81	80	79	77	76	76									
16	614	1990	3318	4588	5795	6942	8081	9154	10141	69	225	375	518	654	784	912	1033	1145
61	93	93	93	93	92	91	90	89	90									
18	448	1830	3158	4414	5619	6754	7853	8890	9873	51	207	356	498	634	763	887	1004	1115
68	105	105	105	105	104	103	102	102	104									
20	281	1618	2944	4198	5410	6551	7653	8689	9676	32	183	332	474	611	740	864	981	1092
76	117	117	117	117	117	116	114	114	115									
22	276	1518	2842	4099	5313	6453	7554	8596	9576	31	171	321	463	600	728	853	970	1081
83	128	128	128	128	128	128	126	125	126									
25		1079	2393	3646	4834	5969	7071	8112	9105		122	270	412	546	674	798	916	1028
95		146	146	146	146	146	145	144	144									
30		436	1747	3013	4225	5356	6454	7489	8479		49	197	340	477	605	729	845	957
114		175	175	175	175	175	174	174	175									

- Continuous
- Intermittent
- No operation

754 cm³/r [46.0 in³/r]

Δ Pressure Bar [PSI]

8479
957
175 } Torque lb-in
Nm
Speed RPM

Flow LPM [GPM]	17		34		52		69		86		103		121		138		155	
	250	500	750	1000	1250	1500	1750	2000	250	500	750	1000	1250	1500	1750	2000	2250	
2	1561	3128	4605	6014	7422	8721	9978	10910	176	353	520	679	838	985	1127	1232	1323	1422
7.6	9	8	8	8	7	7	6	5										
4	1548	3142	4650	6029	7350	8605	9785	10892	175	355	525	681	830	971	1105	1230	1330	1427
15	19	18	18	18	18	18	17	17										
6	1470	3084	4608	6022	7346	8555	9722	10850	166	348	520	680	829	966	1098	1225	1325	1422
23	30	29	28	27	27	27	27	27										
8	1359	2975	4504	5925	7263	8488	9638	10694	153	336	509	669	820	958	1088	1207	1307	1404
30	40	39	38	38	37	36	37	38										
10	1240	2844	4364	5815	7185	8458	9603	10584	140	321	493	656	811	955	1084	1195	1295	1392
38	50	50	49	48	47	46	46	47										
12	1079	2686	4207	5641	7008	8248	9390	10400	122	303	475	637	791	931	1060	1174	1274	1371
45	60	60	60	59	58	57	57	57										
14	932	2512	4038	5477	6850	8124	9274	10286	105	284	456	618	773	917	1047	1161	1261	1358
53	70	70	70	70	69	68	67	67										
16	753	2328	3834	5246	6577	7831	8999	10040	85	263	433	592	742	884	1016	1133	1233	1330
61	80	80	80	80	80	79	78	78										
18	547	2119	3632	5024	6320	7551	8706	9721	62	239	410	567	714	852	983	1097	1207	1307
68	90	90	90	90	90	90	90	90										
20	310	1919	3430	4826	6126	7339	8466	9430	35	217	387	545	692	829	956	1065	1165	1262
76	100	100	100	100	100	100	100	100										
22	248	1666	3172	4571	5878	7102	8254	9269	28	188	358	516	664	802	932	1046	1146	1243
83	110	110	110	110	110	110	110	110										
25		1261	2784	4191	5504	6727	7873	8911		142	314	473	621	759	889	1006	1106	1203
95		126	126	126	126	126	126	126										
30		545	2055	3474	4800	6036	7175	8231		62	232	392	542	681	810	929	1029	1126
114		151	151	151	151	151	151	151										

Delta Series

Dimensions

Wheel Mount

Ports

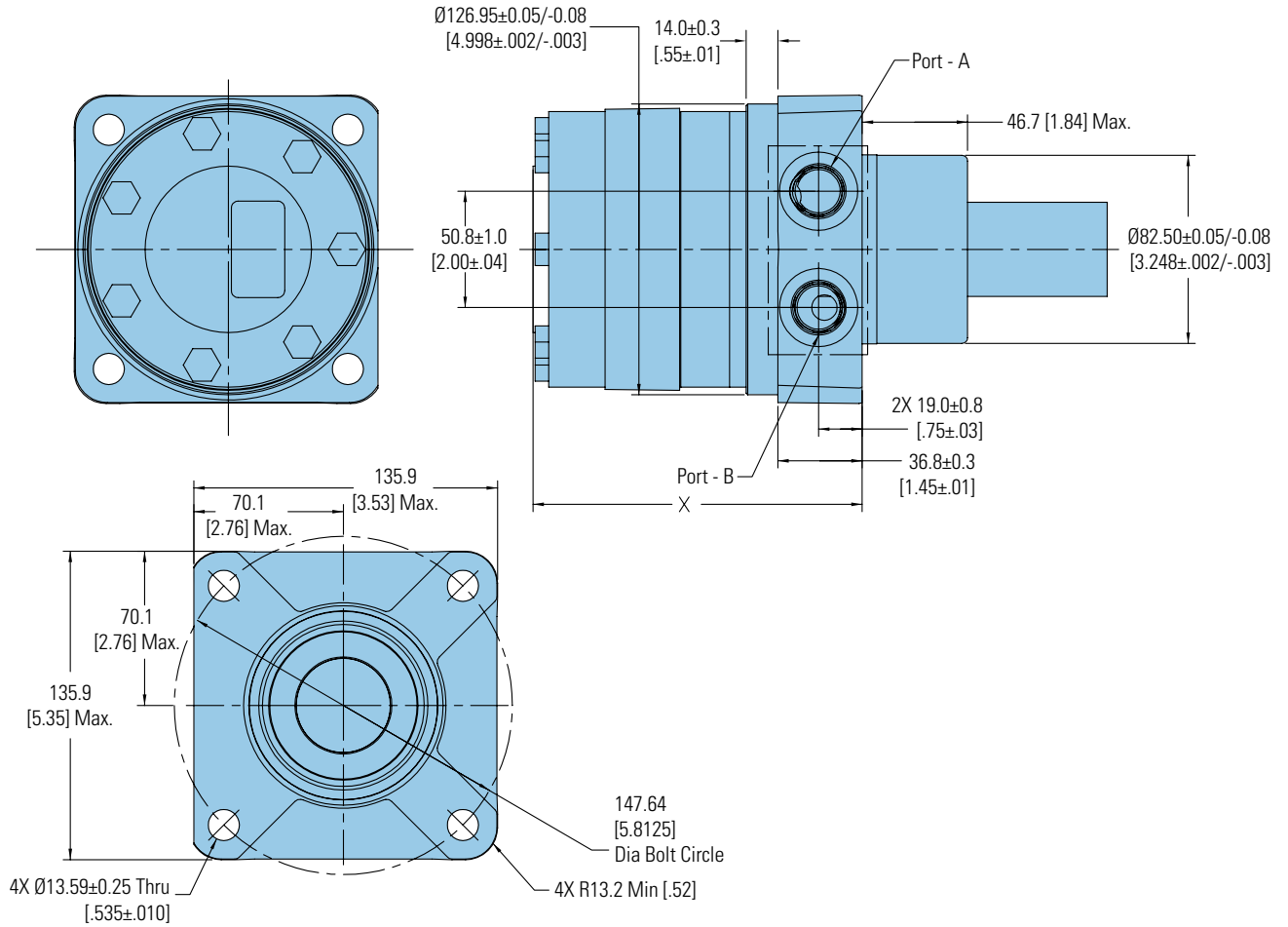
7/8 -14 UNF-2B SAE O-ring Ports

G 1/2 (BSP) Ports

Standard Rotation Viewed from Shaft End

Port A Pressurized — CCW

Port B Pressurized — CW



DISPLACEMENT CODE	X MAX	CODE	MAX
069	130.6 [5.14]	212	156.5 [6.16]
089	135.9 [5.35]	241	162.6 [6.40]
121	144.3 [5.68]	287	172.5 [6.79]
143	150.4 [5.92]	331	181.9 [7.16]
154	153.2 [6.03]	396	195.6 [7.70]
183	150.4 [5.92]	460	209.0 [8.23]

C-3

Delta Series

Dimensions

Standard Mount

Ports

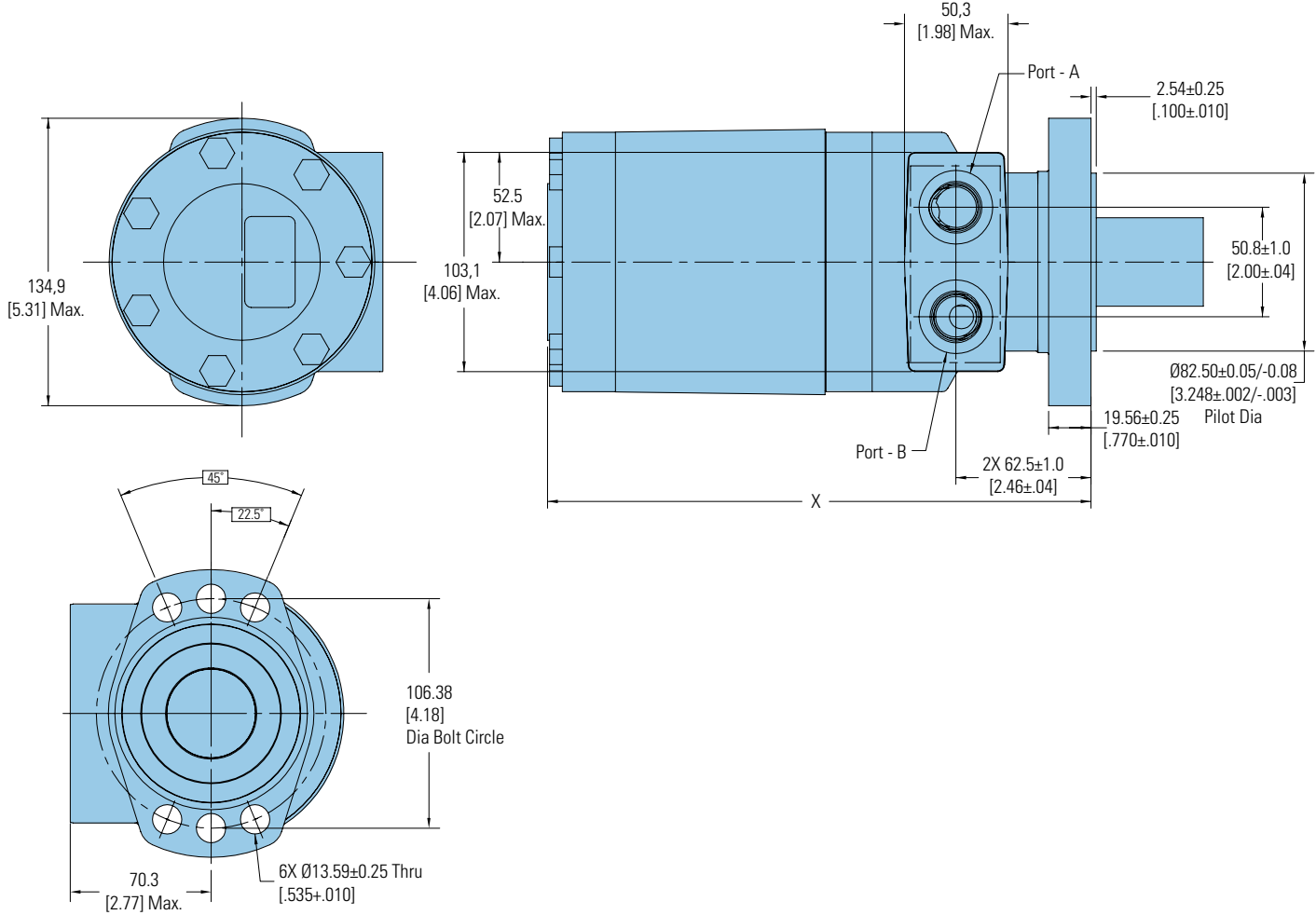
7/8 -14 UNF-2B SAE O-ring Ports

G 1/2 (BSP) Ports

Standard Rotation Viewed from Shaft End

Port A Pressurized — CCW

Port B Pressurized — CW



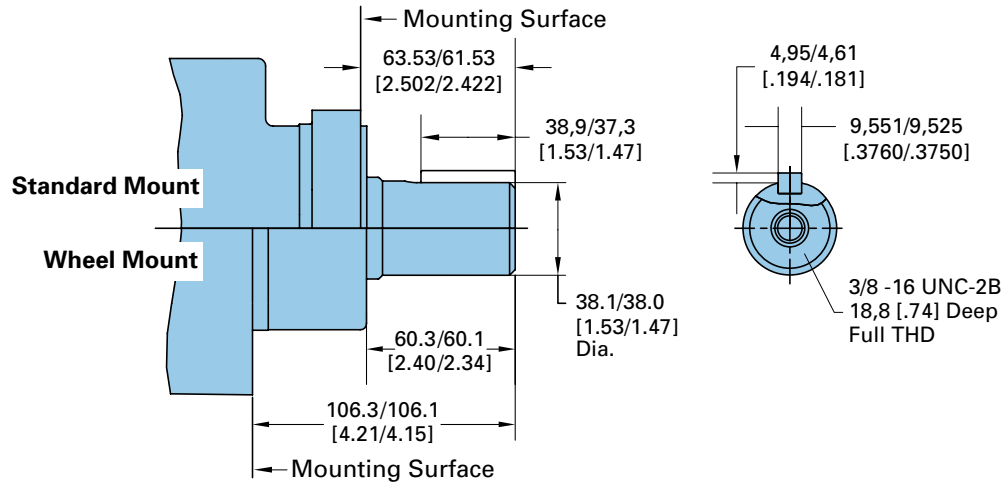
DISPLACEMENT CODE	X MAX	CODE	MAX
069	173.8 [6.84]	212	199.8 [7.87]
089	179.7 [7.08]	241	206.0 [8.11]
121	187.7 [7.39]	287	215.8 [8.50]
143	193.7 [7.63]	331	225.1 [8.86]
154	196.5 [7.74]	396	238.8 [9.40]
183	193.7 [7.63]	460	252.3 [9.93]

Delta Series

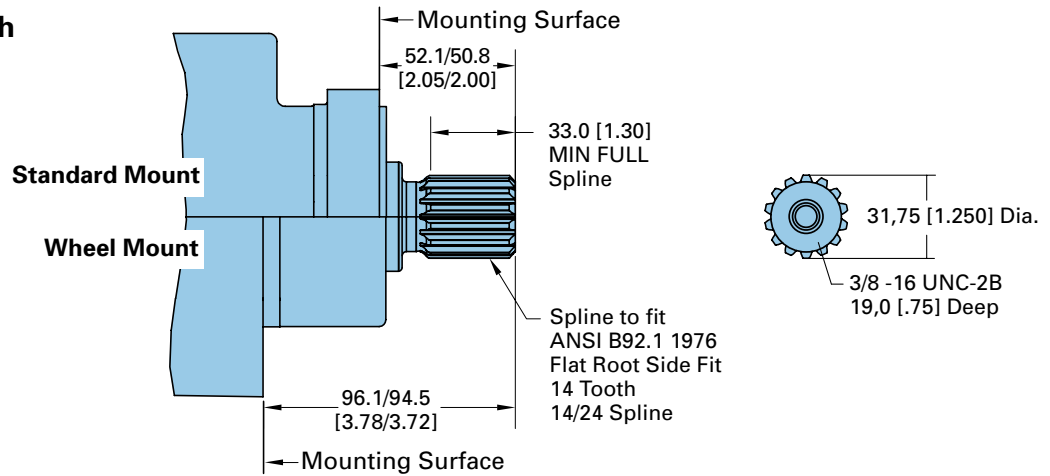
Dimensions

Shafts

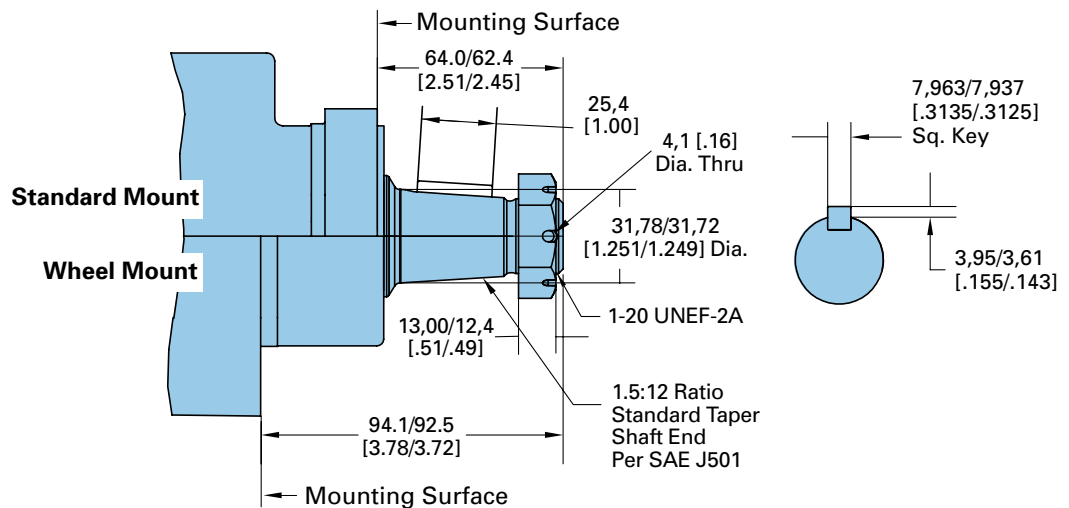
1 1/2 Inch Straight



1 1/4 Inch 14 Tooth Splined



1 1/4 Inch Tapered



Delta Series

Shaft Side Load Capacity

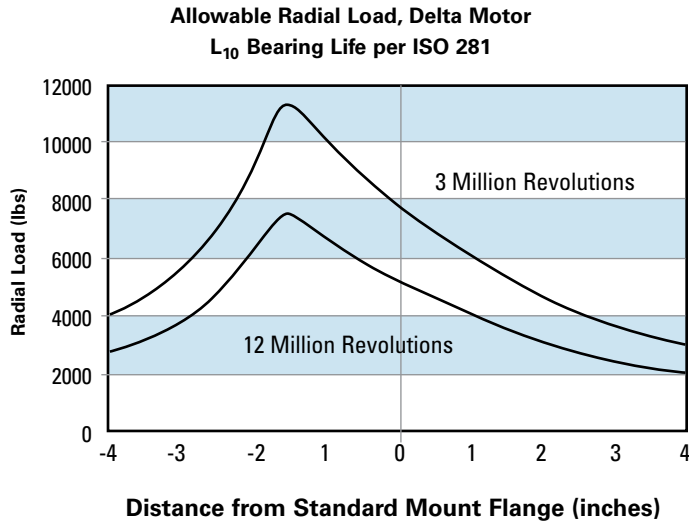
These curves indicate the radial load capacity on the motor shaft(s) at various locations.

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

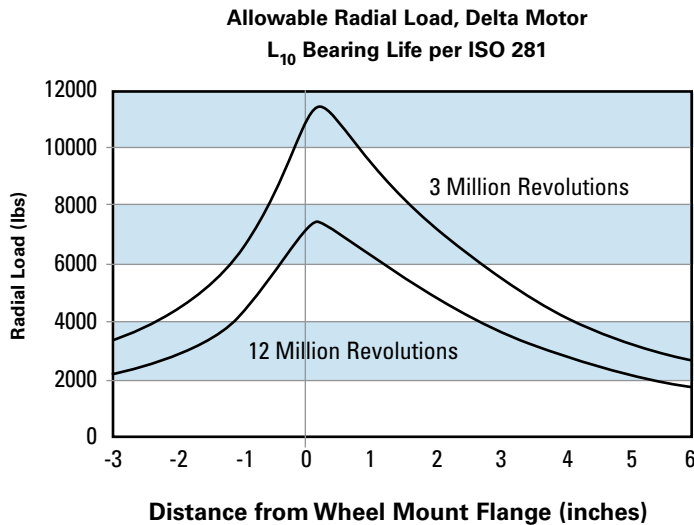
To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

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

Side Load Chart for Standard Mount



Side Load Chart for Wheel Mount



Delta Series

Product Numbers

Note:

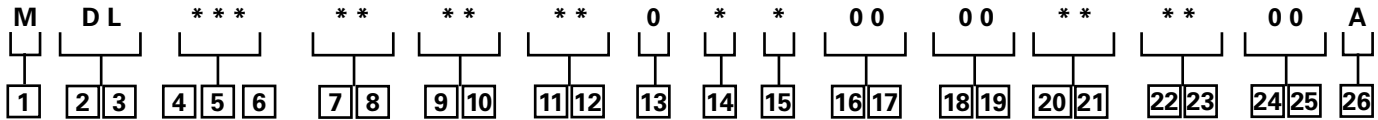
For Delta Series Motors with a configuration **Not Shown** in the charts below contact your Eaton Representative.

Mounting	Shaft	Port Size	Timing	Displacement cm^3/r [in^3/r] / Product Number					
				113 [6.9]	146 [8.9]	198 [12.1]	234 [14.3]		
Wheel Motor	1-1/4 Inch Tapered	7/8" O-ring	Standard -CCW	184-0005-001	184-0006-001	184-0002-001	184-0001-001		
			Standard -CW	184-0025-001	184-0026-001	184-0027-001	184-0028-001		
	1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0013-001	184-0014-001	184-0015-001	184-0016-001		
			Standard -CW	184-0037-001	184-0038-001	184-0039-001	184-0040-001		
	Wheel Motor	1-1/4 Inch Tapered	7/8" O-ring	Standard -CCW	184-0003-001	184-0004-001	184-0007-001	184-0008-001	
				Standard -CW	184-0029-001	184-0030-001	184-0031-001	184-0032-001	
		1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0017-001	184-0018-001	184-0019-001	184-0020-001	
				Standard -CW	184-0041-001	184-0042-001	184-0043-001	184-0044-001	
		Wheel Motor	1-1/4 Inch Tapered	7/8" O-ring	Standard -CCW	184-0009-001	184-0010-001	184-0011-001	184-0012-001
					Standard -CW	184-0033-001	184-0034-001	184-0035-001	184-0036-001
			1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0021-001	184-0022-001	184-0023-001	184-0024-001
					Standard -CW	184-0045-001	184-0046-001	184-0047-001	184-0048-001

Delta Series

Model Code

The following 26-digit coding system has been developed to identify all of the configuration options for the Delta Low Speed High Torque motor. Use this model code to specify a motor with the desired features. All 26 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



1 Product

M – Motor

2, 3 Series

DL – Delta Series

4, 5, 6 Displacement cm³/r [in³/r]

069 – 113 [6.9]

089 – 146 [8.9]

121 – 198 [12.1]

143 – 234 [14.3]

154 – 252 [15.4]

183 – 300 [18.3]

212 – 347 [21.2]

241 – 395 [24.1]

287 – 470 [28.7]

331 – 542 [33.1]

396 – 649 [39.6]

460 – 754 [46.0]

7, 8 Mounting Type

AA – Wheel, 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes On 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear Mount Pilot

AB – Standard, 6 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. .100 [2.54] Pilot Length. Sae A, Magneto

AC – Standard, 6 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. .250 [6.35] Pilot Length. SAE A, Magneto

9, 10 Output Shaft

01 – 38.10 [1.500] Dia. Straight with .375-16 UNC-2B Thread, and 9.52 [.375] Sq x 25.40 [1.000] Straight Key

02 – 31.75 [1.250] Dia. .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 [1.000] Straight Key

03 – 41.30 [1.626] Dia. .125:1 Tapered Shaft per SAE J501 with 1.250-18 UNEF-2A Threaded Shaft End and Slotted Hex Nut, 11.125 [.4380] Sq x 34.04 [1.340] Straight Key

04 – 31.75 [1.250] Dia. Flat Root Side Fit, 14 Tooth, 12/24 DP 30 Deg. Involute Spline with .375-16 UNC-2B Thread in End, 33.0 [1.30] Minimum Full Spline Length

05 – 38.10 [1.500] Dia. Flat Root Side Fit, 17 Tooth, 12/24 DP 30 Deg. Involute Spline, 31.8 [1.25] Minimum Full Spline Length, with .375-16 UNC-2B Thread in End

06 – 38.10 [1.500] Dia. Tapered Shaft per SAE J501 with 1.125-18 UNEF-2A Thread in End, 7.938 [.3125] Sq x 31.75 [1.250] Key

11, 12 Ports

AA – .875-14 UNF-2B SAE O-Ring

AC – G 1/2 BSP Straight Thread

13 Pressure/Flow Option

0 – None

14 Geroler Option

0 – Standard

B – Tight Fitting Geroler

15 Seal Option

0 – Standard

1 – Viton

4 – Seal Guard

16, 17 Accessories

00 – None

18, 19 Special Features (Hardware)

00 – None

20, 21 Special Features (Assembly)

00 – Standard Rotation - CCW

01 – Standard Rotation - CW

22, 23 Paint/Packaging

AA - No Paint, Individual Box

AB - Low Gloss Black Primer, Individual Box

AC - Epoxy Coated (Frost Gray), Individual Box

AE - No Paint, Bulk Box

AF - Low Gloss Black Primer, Bulk Box

24, 25 Customer Identification

00 – None

26 Design Code

A – One (1)

Feature in **bold** are preferred and allow for shorter lead time.