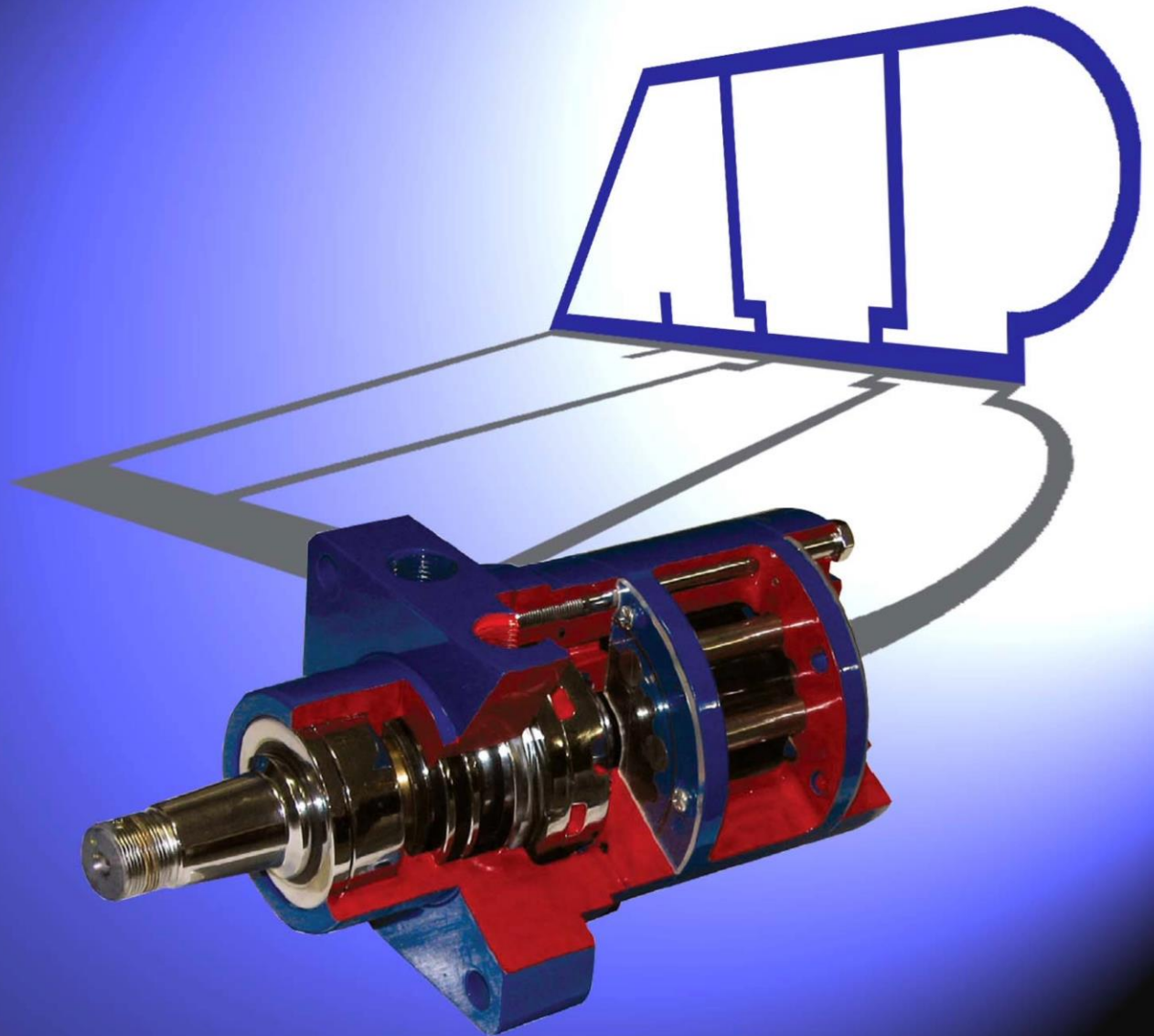


Hydraulikmotor Delta Series



B005-01 2025-07

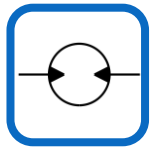
Ein Produkt von

Danfoss

Char-Lynn®



ATP HYDRAULIK

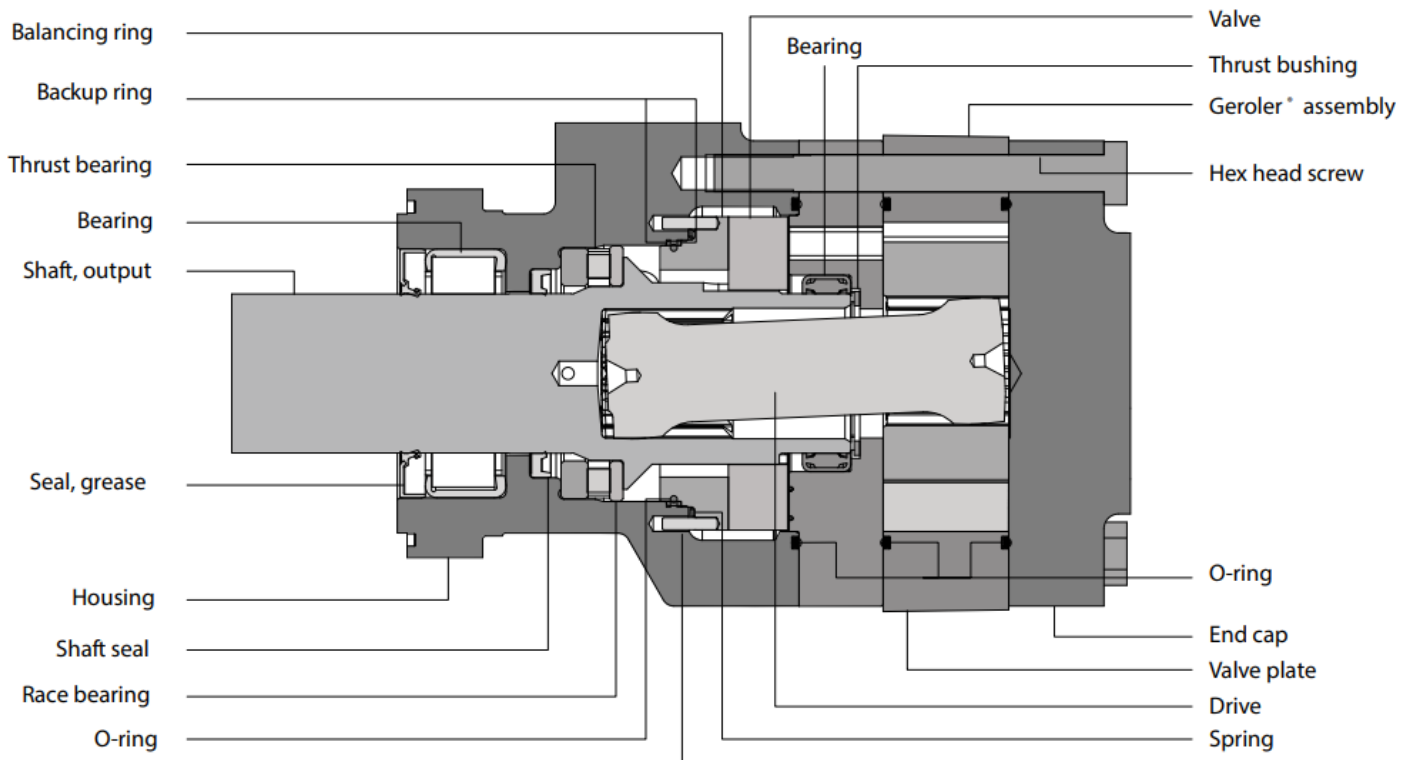


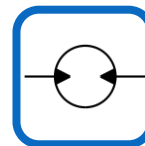
Delta Serie

Low Speed High Torque Motor for Wheel Applications

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General Information





Specification Data

Delta Series motors

Displ. cm ³ /r [in ³ /rev]		113 [6.9]	146 [8.9]	176 [10.7]	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) @ Flow	Continuous	668	519	432	382	323	300	252	218	192	161	140	117	100
	Intermittent	831	778	615	516	485	450	379	327	288	241	209	175	151
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]	75 [20]
	Intermittent	115 [30]	115 [30]	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]	500 [4427]	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]	658 [5822]	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]	205 [3000]	190 [2750]	170 [2500]	140 [2000]	120 [1750]	100 [1500]
	Intermittent	275 [4000]	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]	13.5 [29.7]	13.8 [30.5]	14.3 [31.5]	15 [33.0]	15 [33.0]	15.4 [34.0]	16.1 [36.5]	16.8 [37.0]	17.5 [38.5]	18.4 [40.5]	19.1 [42.0]

*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.

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 13 cSt [70 SUS] at operating temperature.

Recommended system operating temp:

-34°C to 82°C

[-30°F to 180°F]

Recommended filtration:

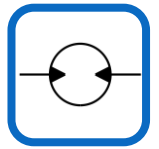
Per ISO Cleanliness code, 4406: 20/18/13

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 (expect when switching direction of rotation)



Features and Benefits

Description

The Delta motor provides torques up to 11,500 in-lbs. Danfoss 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	13 Displacements
Flow l/min [GPM]	76 [20] Continuous** 114 [30] Intermittent*
Speed RPM	668 Continuous** 831 Intermittent*
Pressure bar [PSI]	207 [3000] Continuous** 276 [4000] Intermittent*
Torque Nm [lb-in]	1039 [9199] Continuous** 1253[11100] Intermittent*

Features:

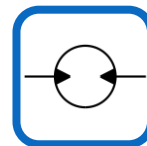
- Excellent reliability with time proven Char-Lynn design
- Proven disc valve technology with high efficiencies
- Leak resistant motor with the front bearing protecting the shaft seal
- Torque up to 10,500 lb-in intermittent duty / Flow up to 30 GPM intermittent
- 12 displacements available from 6.9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

Benefits:

- Perfect replacement for Parker [®] TF-TG and White [™] RE motors
- Torque of 4000 Series
- Lowest no load pressure drop which leads to longer life and lower temperature operation
- High overall efficiency: more available HP to the system than competitive motors
- High side load capacity with 4,500 lbs at 3" from the mount face

Applications:

- Scissor lift
- Boom lift
- Industrial sweeper
- Mower



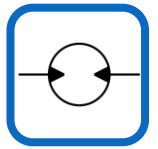
Note: For Delta Series Motors with a configuration not shown in the charts below contact your Danfoss representative.

Mounting	Shaft	Port size	Time	Displacement cm ³	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	184-0005-002	184-0006-002	184-0002-002	184-0001-002
			Standard -CW	184-0025-002	184-0026-002	184-0027-002	184-0028-002
	1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0013-002	184-0014-002	184-0015-002	184-0016-002
			Standard -CW	184-0037-002	184-0038-002	184-0039-002	184-0040-002
				252 [15.4]	300 [18.3]	347 [21.2]	395 [24.1]
	1-1/4 Inch Tapered	7/8" O-ring	Standard -CCW	184-0003-002	184-0004-002	184-0007-002	184-0008-002
			Standard -CW	184-0029-002	184-0030-002	184-0031-002	184-0032-002
	1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0017-002	184-0018-002	184-0019-002	184-0020-002
			Standard -CW	184-0041-002	184-0042-002	184-0043-002	184-0044-002
				470 [28.7]	542 [33.1]	649 [39.6]	649 [46.0]
	1-1/4 Inch Tapered	7/8" O-ring	Standard -CCW	184-0009-002	184-0010-002	184-0011-002	184-0012-002
			Standard -CW	184-0033-002	184-0034-002	184-0035-002	184-0036-002
	1-1/2 Inch 17 T Splined	7/8" O-ring	Standard -CCW	184-0021-002	184-0022-002	184-0023-002	184-0024-002
			Standard -CW	184-0045-002	184-0046-002	184-0047-002	184-0048-002

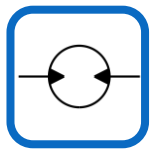


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Specific Performance Data



113cm³/r (6.9in³/rev)



Δ Pressure bar [PSI]
113 cm³/r [6.9 in³/r]

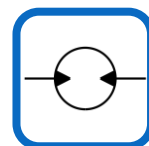
		[17]	[34]	[52]	[69]	[86]	[103]	[121]	[138]	[155]	[172]	[190]	[207]	[224]	[241]	[259]	[276]
		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
Flow LPM [GPM]	[2]	[204]	[450]	[686]	[915]	[1140]	[1355]	[1593]	[1814]	[2018]	[2197]	[2349]	[2573]	[2776]	[2975]	[3182]	[3362]
	23	51	77	103	129	153	180	205	228	248	265	290	313	336	359	380	
	7.6	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]
	24	52	80	107	135	162	189	215	240	265	290	315	340	365	390	413	
	15	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]
	22	50	79	106	134	162	189	216	242	267	292	317	342	367	392	417	
	23	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]
	20	48	76	104	132	160	188	215	243	269	295	320	344	369	393	417	
	30	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]
	18	46	74	102	130	158	186	214	241	268	294	319	344	368	390	413	
	38	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]
	15	43	71	99	127	155	183	211	238	266	292	319	344	369	393	415	
	45	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]
	13	40	69	97	124	152	181	208	236	263	290	316	341	367	390	408	
	53	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]
	9	37	65	93	121	149	177	205	233	260	288	314	340	365	388	404	
	61	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]
	5	33	61	89	117	145	173	201	229	256	284	311	337	363	387	406	
	68	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]
	2	30	58	86	113	141	169	197	224	252	279	306	332	359	383	406	
	76	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]
	26		54	82	110	138	166	193	221	249	276	303	329	355	378	398	
	83		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]
	19		47	75	103	130	158	186	214	241	269	296	322	348	369	390	
	95		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]
	13		48	85	122	158	195	231	267	303	339	375	410	445	480	514	
	114		778	777	773	770	765	759	756	753	749	746	744	742	740	737	735

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

Specific Performance Data



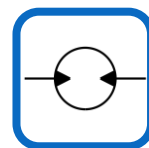
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146cm³/r (8.9in³/rev)

Δ Pressure bar [PSI]
146 cm³/r [8.9 in³/r]

		[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
Flow LPM [GPM]	[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	95	94	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	267	303	339	375	410	445	480	514
			778	777	773	770	765	759	756	753	749	746	744	742	740	737	735



Specific Performance Data

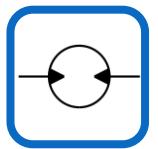
176cm³/r (10.7in³/rev)

Delta Pressure bar [PSI]
176cm³/r[10.7 in³/r]

		[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
Flow LPM [GPM]	[2]	[311]	[682]	[1037]	[1366]	[1695]	[2027]	[2027]	[2703]	[3049]	[3379]	[3679]	[3987]	[4317]	[4609]	[4837]	[5194]
	7.6	35	77	117	154	192	229	229	305	344	382	416	450	488	521	547	587
		41	40	38	36	36	35	35	32	31	30	28	27	25	23	20	22
	[4]	[336]	[730]	[1112]	[1487]	[1859]	[2228]	[2596]	[2922]	[3258]	[3602]	[3926]	[4286]	[4637]	[4938]	[5295]	[5588]
	15	38	82	126	168	210	252	293	330	368	407	444	484	524	558	598	631
		85	83	81	80	79	78	77	75	74	72	69	66	65	63	61	59
	[6]	[326]	[717]	[1106]	[1488]	[1868]	[2240]	[2614]	[2980]	[3345]	[3706]	[4068]	[4421]	[4772]	[5118]	[5455]	[5785]
	23	37	81	125	168	211	253	295	337	378	419	460	500	539	578	616	654
		127	126	125	123	121	120	119	117	115	113	111	109	106	106	103	102
	[8]	[305]	[694]	[1085]	[1471]	[1856]	[2232]	[2609]	[2979]	[3347]	[3709]	[4071]	[4425]	[4775]	[5122]	5463	[5803]
	30	35	78	123	166	210	252	295	337	378	419	460	500	539	579	617	656
		171	169	168	166	165	164	162	161	158	156	154	152	150	148	146	144
	[10]	[278]	[668]	[1059]	[1446]	[1835]	[2217]	[2597]	[2971]	[3342]	[3707]	[4069]	[4427]	[4780]	[5134]	[5480]	[5822]
	38	31	75	120	163	201	250	293	336	378	419	460	500	540	580	619	658
		214	213	211	209	208	206	205	203	200	198	196	194	192	190	188	186
	[12]	[245]	[631]	[1023]	[1408]	[1796]	[2179]	[2559]	[2934]	[3303]	[3669]	[4031]	[4392]	[4743]	[5095]	[5441]	[5782]
	45	28	71	116	159	203	246	289	331	373	415	455	496	536	576	615	653
		258	256	255	253	252	250	249	247	244	242	239	237	235	234	231	229
	[14]	[200]	[585]	[977]	[1359]	[1748]	[2132]	[2510]	[2886]	[3160]	[3628]	[3993]	[4354]	[4707]	[5061]	[5406]	[5751]
	53	23	66	110	154	197	241	284	326	368	410	451	492	532	572	611	650
		302	300	297	296	295	293	291	288	286	284	281	279	277	275	274	271
	[16]	[164]	[551]	[939]	[1323]	[1709]	[2091]	[2475]	[2848]	[3221]	[3588]	[3952]	[4314]	[4668]	[5023]	[5370]	[5712]
	61	19	62	106	149	193	236	280	322	364	405	446	487	527	568	607	645
		345	343	341	339	338	336	335	332	330	328	325	323	321	319	317	315
	[18]	[120]	[500]	[891]	[1276]	[1663]	[2048]	[2428]	[2804]	[3176]	[3544]	[3908]	[4271]	[4615]	[4961]	[5312]	[5658]
	68	14	56	101	144	188	231	274	317	359	400	442	483	521	561	600	639
		388	386	384	382	380	379	377	374	372	370	368	366	364	362	360	358
	[20]	[69]	[426]	[812]	[1195]	[1581]	[1962]	[2341]	[2717]	[3091]	[3460]	[3825]	[4188]	[4543]	[4904]	[5262]	[5615]
	76	8	48	92	135	179	222	264	307	349	391	432	473	513	554	594	634
		432	430	427	425	424	422	419	417	414	412	409	406	405	403	401	399
	[22]	[16]	[366]	[754]	[1138]	[1526]	[1906]	[2286]	[2663]	[3036]	[3405]	[3770]	[4133]	[4488]	[4842]	[5193]	[5539]
	83	2	41	85	129	172	215	258	301	343	385	426	467	507	547	587	626
		475	473	471	469	466	465	462	460	457	455	453	450	448	446	444	442
	[25]		[273]	[656]	[1040]	[1423]	[1806]	[2185]	[2558]	[2931]	[3299]	[3662]	[4028]	[4387]	[4738]	[5090]	[5438]
	95		31	74	118	161	204	247	289	331	373	414	455	496	535	575	614
			538	537	535	533	531	528	525	523	521	519	517	515	513	511	508
	[30]		[141]	[523]	[912]	[1299]	[1683]	[2061]	[2435]	[2809]	[3179]	[3544]	[3915]	[4280]	[4636]	[4993]	[5345]
	114		16	59	103	147	190	233	275	317	359	400	442	484	524	564	604
			615	609	601	595	592	592	594	596	597	599	600	600	600	598	596



ATP HYDRAULIK



Specific Performance Data

198cm³/r (12.1in³/rev)

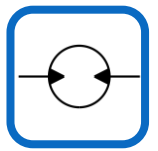
Δ Pressure bar [PSI]
198 cm³/r [12.1 in³/r]

	[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
	36	35	34	32	31	30	29	27	27	26	24	22	21	18	17	18
[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
	75	74	72	71	69	68	67	65	63	62	61	58	56	56	54	52
[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
	112	111	110	109	107	106	104	102	101	99	98	96	95	93	91	89
[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
	151	150	149	147	146	145	143	142	140	138	135	134	133	131	129	127
[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
	190	188	187	186	185	182	181	178	177	174	173	171	169	168	166	164
[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
	229	227	226	224	223	221	220	218	216	215	212	211	209	206	205	202
[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
	267	266	264	262	261	259	257	255	253	251	249	246	244	242	240	238
[16]	[191]	[625]	[1063]	[1493]	[1923]	[2345]	[2768]	[3182]	[3596]	[4003]	[4403]	[4801]	[5191]	[5576]	[5947]	[6316]
61	22	71	170	169	217	265	312	359	406	452	497	542	586	630	671	713
	305	304	303	301	300	298	296	295	293	291	289	287	285	284	281	279
[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
	342	341	340	339	337	335	333	331	330	328	326	324	322	321	319	317
[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
	382	380	378	377	375	373	371	369	366	364	362	359	358	356	354	352
[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
	420	417	416	415	413	411	409	407	405	403	401	399	397	395	392	390
[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
		476	475	474	472	470	468	466	465	463	461	459	457	455	453	450
[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 } Nm
516 } Speed RPM



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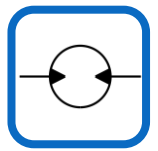
Specific Performance Data

234cm³/r (14.3in³/rev)

Δ Pressure bar [PSI]

234 cm³/r [14.3 in³/r]

		[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
Flow LPM [GPM]	[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
		31	30	29	28	26	25	25	25	24	23	22	21	19	20	19	15
	[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
		64	62	61	60	59	58	57	56	56	55	55	54	52	51	50	48
	[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
		96	95	93	92	92	91	90	89	88	88	88	87	86	86	84	83
	[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
		129	128	126	125	124	123	123	121	121	120	120	119	119	118	117	116
	[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
		161	160	158	157	156	155	154	153	153	152	151	150	149	148	147	146
	[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
		194	193	191	190	189	188	187	186	185	185	184	183	182	181	180	178
	[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
		226	225	224	222	221	220	219	218	217	216	216	215	214	212	211	209
	[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
		258	258	257	255	254	253	252	251	251	250	249	247	246	245	244	242
	[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
		291	291	289	287	286	285	284	283	282	281	279	278	277	276	276	275
	[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
		323	323	322	320	319	317	317	316	314	312	311	310	310	310	309	309
	[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
		355	355	355	352	351	350	349	348	345	343	342	341	341	341	341	341
	[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
			404	404	402	401	399	398	397	394	392	391	390	390	389	390	389
	[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



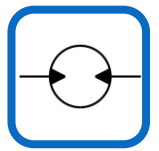
Specific Performance Data

252cm³/r (15.4in³/rev)

Δ Pressure bar [PSI]
252 cm³/r [15.4 in³/r]

		[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
Flow LPM [GPM]	[2]	[485]	[1011]	[1520]	[2032]	[2564]	[3059]	[3569]	[4065]	[4561]	[5085]	[5589]	[6054]	[6536]	[6891]	[7388]	[7872]
	55	114	172	229	289	345	403	459	515	574	631	683	738	778	834	889	
	7.6	28	27	26	26	25	24	23	23	22	23	23	22	22	19	19	20
	[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
		59	57	56	56	55	55	54	54	53	53	53	51	51	49	49	47
	[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
		89	88	86	85	85	84	84	84	84	84	83	82	82	80	78	78
	[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
		120	118	117	115	114	113	113	112	113	113	113	112	111	110	109	108
	[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
		149	148	147	145	144	143	142	142	142	143	142	142	141	140	139	138
	[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
		180	179	178	176	174	173	172	172	172	172	172	172	171	171	170	169
	[14]	[290]	[842]	[1399]	[1948]	[2496]	[3024]	[3552]	[4065]	[4571]	[5056]	[5525]	[5987]	[6445]	[6905]	[7359]	[7813]
	53	33	95	158	220	282	341	401	459	516	571	624	676	728	780	831	882
		210	209	208	206	205	203	202	201	200	199	199	200	200	200	200	199
	[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
		240	240	238	237	235	233	232	231	229	228	229	230	230	230	230	230
	[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
		270	270	269	267	265	264	261	261	258	256	256	258	259	260	260	260
	[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
		300	300	299	297	295	293	292	289	287	286	286	287	289	290	291	290
	[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
		330	330	330	328	327	324	322	320	316	314	313	314	316	318	320	320
	[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
			375	375	374	372	369	366	364	361	358	357	356	358	361	364	364
	[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	431	434	437	438

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



Specific Performance Data

300cm³/r (18.3in³/rev)

Δ Pressure bar [PSI]

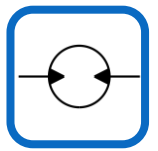
300 cm³/r [18.3 in³/r]

	[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]
	69	142	217	288	361	432	505	574	644	712	779	844	905	958	1012	1063
	24	23	23	22	21	21	21	20	19	18	17	16	15	13	11	11
[4]	[612]	[1283]	[1940]	[2587]	[3227]	[3856]	[4483]	[5094]	[5693]	[6293]	[6881]	[7462]	[8024]	[8574]	[9113]	[9629]
	69	145	219	292	364	435	506	575	643	710	777	842	906	968	1029	1087
	50	48	47	46	45	44	44	44	43	42	41	40	40	39	38	37
[6]	[570]	[1248]	[1906]	[2547]	[3178]	[3800]	[4420]	[5025]	[5619]	[6203]	[6773]	[7345]	[7899]	[8449]	[8992]	[9525]
	64	141	215	288	359	429	499	567	634	700	765	829	892	954	1015	1075
	76	74	73	71	70	69	68	68	69	68	68	67	66	65	64	63
[8]	[540]	[1210]	[1871]	[2522]	[3152]	[3781]	[4404]	[5008]	[5607]	[6186]	[6749]	[7319]	[7879]	[8433]	[8977]	[9512]
	61	137	211	285	356	427	497	565	633	698	762	826	890	952	1013	1074
	101	100	98	96	94	93	92	92	92	93	93	93	93	92	91	91
[10]	[496]	[1161]	[1825]	[2471]	[3110]	[3733]	[4362]	[4968]	[5574]	[6157]	[6721]	[7274]	[7811]	[8356]	[8887]	[9416]
	56	131	206	279	351	421	492	561	629	695	759	821	882	943	1003	1063
	126	126	124	122	120	118	115	113	113	113	114	116	118	118	117	117
[12]	[443]	[1108]	[1768]	[2418]	[3059]	[3688]	[4307]	[4918]	[5526]	[6114]	[6681]	[7239]	[7786]	[8338]	[8876]	[9411]
	50	125	200	273	345	416	486	555	624	690	754	817	879	941	1002	1062
	151	151	150	148	145	143	141	140	139	139	140	142	144	144	144	144
[14]	[387]	[1034]	[1701]	[2346]	[2985]	[3610]	[4227]	[4839]	[5452]	[6050]	[6622]	[7184]	[7723]	[8269]	[8816]	[9362]
	44	117	192	265	337	408	477	546	615	683	748	811	872	934	995	1057
	177	177	176	173	171	168	166	165	163	163	165	167	169	171	170	170
[16]	[366]	[961]	[1620]	[2264]	[2903]	[3530]	[4147]	[4753]	[5366]	[5960]	[6540]	[7098]	[7642]	[8169]	[8685]	[9211]
	41	109	183	256	328	399	468	537	606	673	738	801	863	922	980	1040
	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]
	33	101	175	247	319	390	459	528	596	663	728	791	851	910	969	1028
	227	227	227	224	222	219	217	215	213	211	212	214	217	220	221	221
[20]	[204]	[797]	[1444]	[2094]	[2736]	[3361]	[3974]	[4585]	[5184]	[5775]	[6353]	[6907]	[7448]	[7974]	[8489]	[8992]
	23	90	163	236	309	380	449	518	585	652	717	780	841	900	958	1015
	252	252	252	251	249	246	243	241	239	238	238	239	242	245	247	248
[22]	[102]	[710]	[1366]	[2013]	[2651]	[3270]	[3885]	[4496]	[5096]	[5689]	[6271]	[6831]	[7362]	[7877]	[8375]	[8880]
	12	80	154	227	299	369	439	508	575	642	708	771	831	889	945	1003
	278	278	278	277	274	272	269	267	265	264	263	265	269	273	275	275
[25]		[553]	[1208]	[1851]	[2489]	[3114]	[3726]	[4335]	[4930]	[5523]	[6108]	[6670]	[7220]	[7783]	[8298]	[8777]
		62	136	209	281	352	421	489	557	624	690	753	815	879	937	991
		316	316	316	313	310	307	303	301	299	298	298	301	306	310	312
[30]		[233]	[941]	[1539]	[2179]	[2811]	[3430]	[4028]	[4625]	[5217]	[5802]	[6385]	[6957]	[7522]	[8060]	[8565]
		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	364	368	374	376



ATP HYDRAULIK

Specific Performance Data



347cm³/r (21.2in³/rev)

Δ Pressure bar [PSI]
347 cm³/r [21.2 in³/r]

		[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]
		78	160	240	319	399	480	558	636	711	786	855	924	987	1040	1087	1138
	7.6	20	19	18	18	17	18	17	17	16	15	14	13	12	9	8	4
[4]		[689]	[1443]	[2179]	[2891]	[3606]	[4302]	[4986]	[5653]	[6316]	[6965]	[7615]	[8260]	[8891]	[9515]	[10120]	[10698]
		78	163	246	326	407	486	563	638	713	786	860	933	1004	1074	1143	1208
	15	42	41	41	40	39	37	38	38	39	38	38	37	37	35	33	31
[6]		[648]	[1406]	[2154]	[2866]	[3580]	[4276]	[4970]	[5641]	[6290]	[6921]	[7563]	[8190]	[8812]	[9427]	[10029]	[10630]
		73	159	243	324	404	483	561	637	710	781	854	925	995	1064	1132	1200
	23	64	64	63	61	60	58	57	57	59	60	60	59	58	57	56	55
[8]		[606]	[1356]	[2105]	[2825]	[3545]	[4241]	[4943]	[5621]	[6274]	[6899]	[7522]	[8144]	[8768]	[9388]	[9998]	[10598]
		68	153	238	319	400	479	558	635	708	779	849	919	990	1060	1129	1196
	30	87	86	85	84	82	81	79	78	79	81	82	81	81	80	78	77
[10]		[550]	[1295]	[2041]	[2765]	[3488]	[4188]	[4891]	[5585]	[6264]	[6899]	[7505]	[8091]	[8672]	[9283]	[9885]	[10488]
		62	146	230	312	394	473	552	631	707	779	847	913	979	1048	1116	1184
	38	109	108	107	106	104	103	100	98	97	98	100	103	103	103	102	101
[12]		[478]	[1227]	[1976]	[2698]	[3411]	[4108]	[4802]	[5479]	[6146]	[6782]	[7396]	[7992]	[8585]	[9176]	[9767]	[10345]
		54	139	223	305	385	464	542	619	694	766	835	902	969	1036	1103	1168
	45	131	130	130	129	127	125	122	119	117	115	115	119	123	125	125	124
[14]		[409]	[1151]	[1896]	[2624]	[3344]	[4048]	[4742]	[5418]	[6083]	[6722]	[7339]	[7939]	[8541]	[9142]	[9738]	[10318]
		46	130	214	296	378	457	535	612	687	759	829	896	964	1032	1099	1165
	53	153	153	152	152	149	147	145	142	140	139	139	143	147	148	147	147
[16]		[339]	[1033]	[1774]	[2494]	[3209]	[3907]	[4605]	[5280]	[5956]	[6610]	[7243]	[7850]	[8438]	[9014]	[9592]	[10166]
		38	117	200	282	362	441	520	596	672	746	818	886	953	1018	1083	1148
	61	174	174	174	174	172	169	166	164	162	159	159	160	165	168	170	170
[18]		[245]	[943]	[1676]	[2401]	[3113]	[3809]	[4500]	[5175]	[5837]	[6477]	[7107]	[7711]	[8308]	[8895]	[9466]	[10040]
		28	106	189	271	351	430	508	584	659	731	802	871	938	1004	1069	1133
	68	196	196	196	195	193	192	189	187	185	183	181	182	185	188	192	193
[20]		[143]	[832]	[1571]	[2290]	[3003]	[3697]	[4386]	[5050]	[5715]	[6351]	[6968]	[7569]	[8147]	[8721]	[9297]	[9855]
		16	94	177	259	339	417	495	570	645	717	787	855	920	985	1050	1113
	76	218	218	218	218	216	214	212	209	207	205	203	203	205	210	214	215
[22]		[34]	[715]	[1454]	[2175]	[2896]	[3594]	[4280]	[4950]	[5602]	[6236]	[6854]	[7449]	[8027]	[8590]	[9150]	[9705]
		4	81	164	246	327	406	483	559	632	704	774	841	906	970	1033	1096
	83	240	240	240	240	240	238	236	233	230	228	226	226	228	231	237	240
[25]		[523]	[1251]	[1969]	[2693]	[3395]	[4081]	[4756]	[5414]	[6057]	[6687]	[7296]	[7882]	[8457]	[9011]	[9534]	
		59	141	222	304	383	461	537	611	684	755	824	890	955	1017	1076	
	95	272	272	272	272	272	269	266	263	261	259	259	261	265	270	272	
[30]		[152]	[1072]	[1749]	[2434]	[3123]	[3802]	[4468]	[5114]	[5763]	[6400]	[7018]	[7633]	[8232]	[8819]	[8997]	
		17	121	197	275	353	429	504	577	651	723	792	862	929	996	1016	
	114	327	327	327	327	327	323	319	315	314	313	315	319	323	327	327	

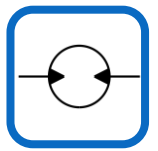
152 } Torque [lb-in]
17 } Nm
327 } Speed RPM

Specific Performance Data

395cm³/r (24.1in³/rev)

Δ Pressure bar [PSI]
395 cm³/r [24.1 in³/r]

	[17] 250	[34] 500	[52] 750	[69] 1000	[86] 1250	[103] 1500	[121] 1750	[138] 2000	[155] 2250	[172] 2500	[190] 2750	[207] 3000	[224] 3250	[241] 3500
[2] 7.6	[782] 88 18	[1622] 183 17	[2436] 275 17	[3237] 365 16	[4034] 455 16	[4837] 546 16	[5650] 638 17	[6428] 726 16	[7213] 814 15	[7911] 893 15	[8607] 972 15	[9235] 1043 14	[9798] 1106 13	[10439] 1179 12
[4] 15	[770] 87 38	[1643] 186 37	[2476] 280 36	[3287] 371 35	[4088] 462 33	[4860] 549 33	[5617] 634 35	[6357] 718 36	[7103] 802 36	[7838] 885 35	[8566] 967 35	[9285] 1048 34	[9990] 1128 34	[10684] 1206 33
[6] 23	[746] 84 58	[1609] 182 57	[2460] 278 55	[3280] 370 54	[4083] 461 52	[4867] 549 51	[5644] 637 50	[6384] 721 51	[7103] 802 53	[7811] 882 54	[8520] 962 55	[9232] 1042 54	[9930] 1121 53	[10616] 1199 53
[8] 30	[699] 79 77	[1561] 176 76	[2430] 274 75	[3249] 367 74	[4062] 459 72	[4852] 548 70	[5638] 637 68	[6398] 722 67	[7126] 805 69	[7820] 883 72	[8506] 960 74	[9198] 1038 74	[9884] 1116 74	[10565] 1193 73
[10] 38	[630] 71 96	[1489] 168 96	[2345] 265 95	[3180] 359 93	[4008] 453 91	[4819] 544 90	[5622] 635 87	[6397] 722 85	[7142] 806 83	[7856] 887 83	[8525] 962 88	[9142] 1032 93	[9776] 1104 93	[10438] 1178 93
[12] 45	[556] 63 115	[1412] 159 115	[2264] 256 115	[3090] 349 113	[3898] 440 111	[4689] 529 109	[5473] 618 107	[6225] 703 105	[6976] 788 102	[7710] 870 100	[8415] 950 100	[9081] 1025 105	[9681] 1093 110	[10304] 1163 113
[14] 53	[469] 53 134	[1325] 150 134	[2178] 246 134	[2999] 339 133	[3819] 431 131	[4611] 521 128	[5391] 609 126	[6137] 693 124	[6867] 775 122	[7581] 856 120	[8270] 934 119	[8942] 1010 123	[9598] 1084 133	[10234] 1155 134
[16] 61	[360] 41 153	[1220] 138 153	[2069] 234 153	[2894] 327 153	[3715] 419 151	[4506] 509 148	[5290] 597 145	[6048] 683 143	[6782] 766 140	[7495] 846 138	[8190] 925 138	[8873] 1002 139	[9534] 1076 145	[10181] 1149 151
[18] 68	[334] 38 173	[1098] 124 173	[1951] 220 173	[2777] 314 173	[3591] 405 171	[4386] 495 169	[5172] 584 166	[5924] 669 162	[6665] 752 161	[7387] 834 159	[8087] 913 157	[8763] 989 158	[9418] 1063 162	[10048] 1134 169
[20] 76	[221] 25 192	[993] 112 192	[1837] 207 192	[2660] 300 192	[3479] 393 191	[4259] 481 189	[5030] 568 186	[5780] 653 183	[6518] 736 181	[7238] 817 179	[7939] 896 177	[8613] 972 178	[9258] 1045 182	[9892] 1117 188
[22] 83	[115] 13 211	[862] 97 211	[1698] 192 211	[2521] 285 211	[3337] 377 211	[4135] 467 209	[4895] 553 206	[5641] 637 203	[6366] 719 201	[7067] 798 200	[7752] 875 199	[8414] 950 200	[9062] 1023 204	[9702] 1095 209
[25] 95		[637] 72 240	[1473] 166 240	[2296] 259 240	[3117] 352 240	[3909] 441 238	[4687] 529 235	[5434] 613 232	[6163] 696 229	[6861] 775 227	[7536] 851 227	[8192] 925 228	[8829] 997 233	[9475] 1070 240
[30] 114		[211] 24 288	[1079] 122 288	[1903] 215 288	[2725] 308 288	[3526] 398 286	[4311] 487 283	[5079] 573 280	[5824] 658 277	[6547] 739 274	[7240] 817 273	[7921] 894 275	[8577] 968 280	[9228] 1042 287

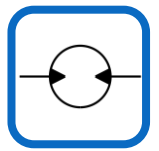


470cm³/r (28.7in³/rev)

Δ Pressure bar [PSI]
470 cm³/r [28.7 in³/r]

		[17]	[34]	[52]	[69]	[86]	[103]	[121]	[138]	[155]	[172]	[190]	[207]
		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
Flow LPM [GPM]	[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	12	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	58	58	57	56
	[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	74	74	74
	[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	90	90	91
	[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 } Nm
241 } Speed RPM

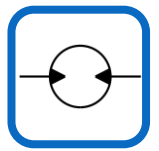


Specific Performance Data

542cm³/r (33.1in³/rev)

Δ Pressure bar [PSI]
542 cm³/r [33.1 in³/r]

		[17] 250	[34] 500	[52] 750	[69] 1000	[86] 1250	[103] 1500	[121] 1750	[138] 2000	[155] 2250	[172] 2500
Flow LPM [GPM]	[2] 76	[1131] 128 13	[2304] 260 12	[3433] 388 11	[4558] 515 11	[5668] 640 11	[6725] 759 11	[7732] 873 10	[8683] 980 8	[9645] 1089 8	[10457] 1181 7
	[4] 15	[1139] 129 27	[2352] 266 26	[3515] 397 25	[4638] 524 25	[5735] 648 25	[6781] 766 25	[7819] 883 24	[8809] 994 23	[9752] 1101 23	[10644] 1202 22
	[6] 23	[1063] 120 41	[2267] 256 40	[3433] 388 39	[4549] 514 38	[5645] 637 38	[6694] 756 38	[7697] 869 39	[8675] 979 38	[9630] 1087 37	[10557] 1192 36
	[8] 30	[992] 112 56	[2186] 247 55	[3354] 379 54	[4475] 505 53	[5578] 630 52	[6646] 750 52	[7665] 865 51	[8608] 972 52	[9535] 1076 52	[10449] 1180 51
	[10] 38	[897] 101 70	[2090] 236 69	[3259] 368 68	[4378] 494 67	[5482] 619 67	[6555] 740 65	[7602] 858 64	[8578] 968 64	[9482] 1071 64	[10343] 1168 65
	[12] 45	[807] 91 84	[1980] 224 83	[3138] 354 83	[4256] 481 81	[5365] 606 80	[6440] 727 79	[7494] 846 78	[8481] 957 77	[9403] 1062 76	[10275] 1160 77
	[14] 53	[693] 78 98	[1873] 211 98	[3028] 342 97	[4138] 467 96	[5218] 589 95	[6268] 708 93	[7318] 826 91	[8304] 937 90	[9235] 1043 91	[10105] 1141 92
	[16] 61	[554] 63 112	[1732] 196 112	[2882] 325 111	[3993] 451 110	[5083] 574 109	[6107] 689 108	[7118] 804 106	[8089] 913 104	[9032] 1020 104	[9928] 1121 106
	[18] 68	[409] 46 126	[1582] 179 126	[2738] 309 126	[3844] 434 125	[4924] 556 124	[5952] 672 123	[6956] 785 121	[7928] 895 119	[8874] 1002 119	[9772] 1103 121
	[20] 76	[355] 40 140	[1428] 161 140	[2587] 292 140	[3696] 417 139	[4767] 538 138	[5804] 655 137	[6813] 769 136	[7786] 879 134	[8732] 986 134	[9624] 1087 135
	[22] 83	[310] 35 154	[1259] 142 154	[2412] 272 154	[3518] 397 154	[4595] 519 152	[5619] 634 151	[6618] 747 150	[7589] 857 148	[8536] 964 148	[9438] 1065 149
	[25] 95		[958] 108 174	[2107] 238 174	[3215] 363 174	[4281] 483 174	[5310] 599 173	[6305] 712 171	[7264] 820 170	[8204] 926 168	[9110] 1029 169
	[30] 114		[521] 59 209	[1599] 181 209	[2696] 304 209	[3769] 425 209	[4804] 542 208	[5809] 656 207	[6776] 765 207	[7705] 870 205	[8617] 973 205



649cm³/r (39.6in³/rev)

Δ Pressure bar [PSI]
649 cm³/r [39.6 in³/r]

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

8479 } Torque [lb-in]
957 } Nm
175 } Speed RPM

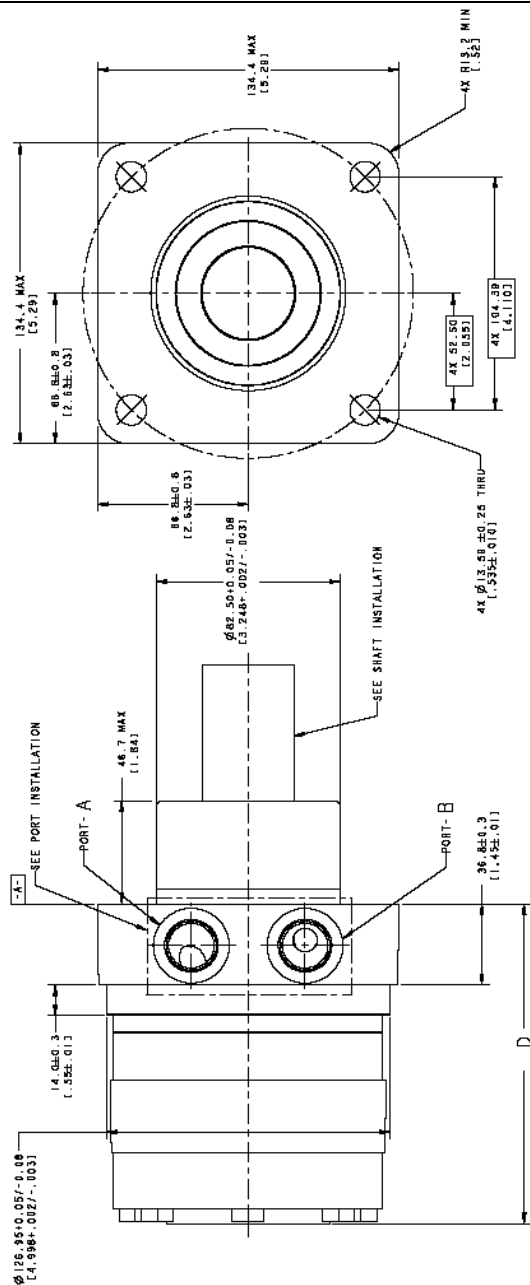
Model Code

M	DL	***	**	**	**	0	*	*	**	00	**	**	00	B
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

1	Product M Motor	11 12	Ports AA .875-14 UNF-2B SAE O-Ring AC G 1/2 BSP Straight Thread
2 3	Series DL Delta Series	13	Pressure/flow option 0 None
4 5 6	Displacement cm³/r [in³/r] 069 113 [6.9] 089 146 [8.9] 107 176 [10.7] 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]	14	Geroler option 0 Standard B Tight fitting Geroler C Reduced Noise* *Option C required on all displacements higher than 20 CID
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	15	Seal option 0 Standard 1 Viton 4 Seal guard 5 Viton with seal guard A Extreme duty seal guard
9 10	Output shaft 01 38.10 [1.500] Dia. Straight with .375-16 UNC-2B Thread, and 9.52 [.375] Sq x 38.10 [1.500] 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, 7938 [.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 1.000-20 UNEF-2A thread in end, 7938 [.3125] Sq x 31.75 [1.250] Key	16 17	Accessories 00 None 01 Spring applied pressure release brake
		18 19	Special features (hardware) 00 None
		20 21	Special features (assembly) 00 Standard rotation - CCW 01 Reverse rotation - CW
		22 23	Paint/packaging AA No paint, individual box AB Low gloss black primer, individual box AS Epoxy coated black, individual box AE No paint, bulk box AF Low gloss black primer, bulk box
		24 25	Customer identification 00 None
		26	Design code B Two

Mounting Type

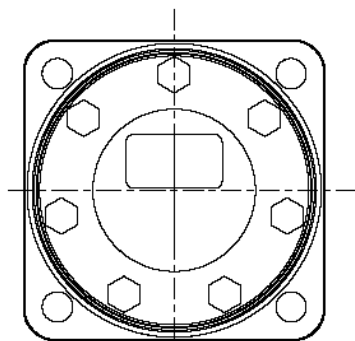
AA – Wheel, 4 Bolt, Circle Ø 127,6 [5,00]



NOTE:

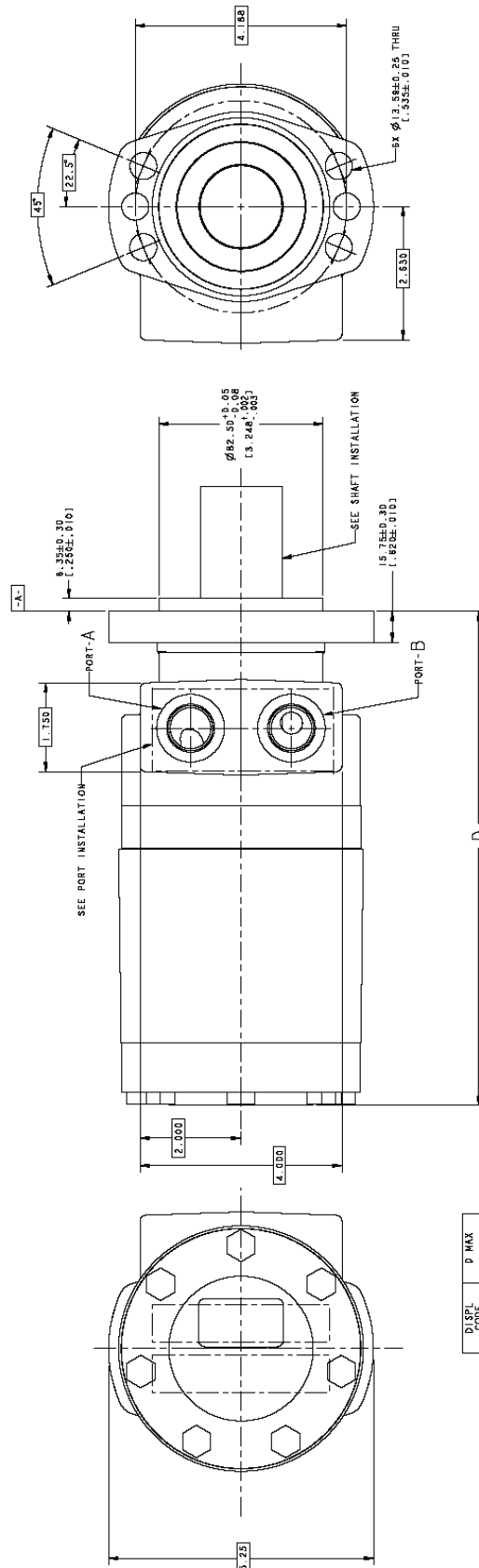
1 MOUNTING TYPE AA
WHEEL: 4 BOLT Ø82.5 [3.25] PILOT Ø13.59 [0.535]
HOLES ON Ø147.6 [5.813] BOLT CIRCLE
Ø127.65 [5.021] REAR MOUNT PILOT

2 ROTATION:
STANDARD: WHEN FACING SHAFT, END OF MOTOR, SHAFT TO ROTATE:
CLOCKWISE WHEN "B" PORT IS PRESSURIZED
REVERSE: WHEN FACING SHAFT, END OF MOTOR, SHAFT TO ROTATE:
COUNTERCLOCKWISE WHEN "B" PORT IS PRESSURIZED
CLOCKWISE WHEN "A" PORT IS PRESSURIZED



DISPL CODE	D MAX
060	130.6 [5.143]
080	137.4 [5.393]
121	144.3 [5.683]
143	150.4 [5.923]
154	153.2 [6.033]
183	158.4 [6.233]
212	161.2 [6.353]
241	162.8 [6.413]
287	172.5 [6.793]
331	191.8 [7.553]
386	195.8 [7.713]
460	203.2 [8.003]

AC – Standard, 6 Bolt, Circle Ø 250,0 [6,35]



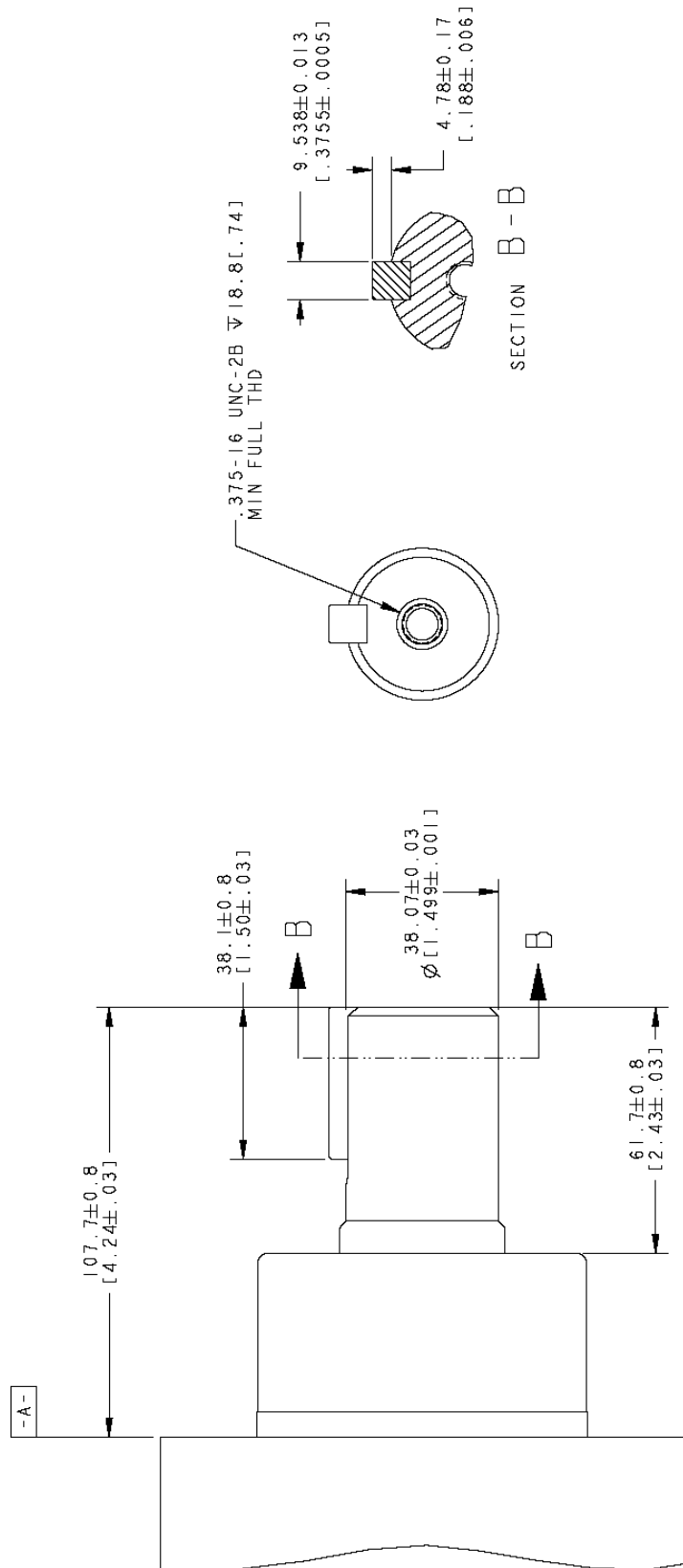
NOTE:

1 MOUNTING TYPE: AC
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DISPL CODE	D MAX
069	16.9 [.669]
089	17.5 [.693]
121	18.3 [.724]
143	19.0 [.752]
154	19.8 [.780]
183	19.0 [.748]
212	19.6 [.772]
241	20.2 [.799]
287	21.2 [.835]
331	22.2 [.871]
396	23.0 [.905]
460	24.8 [.976]

Output Shaft

01 – Straight with UNC-2B



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

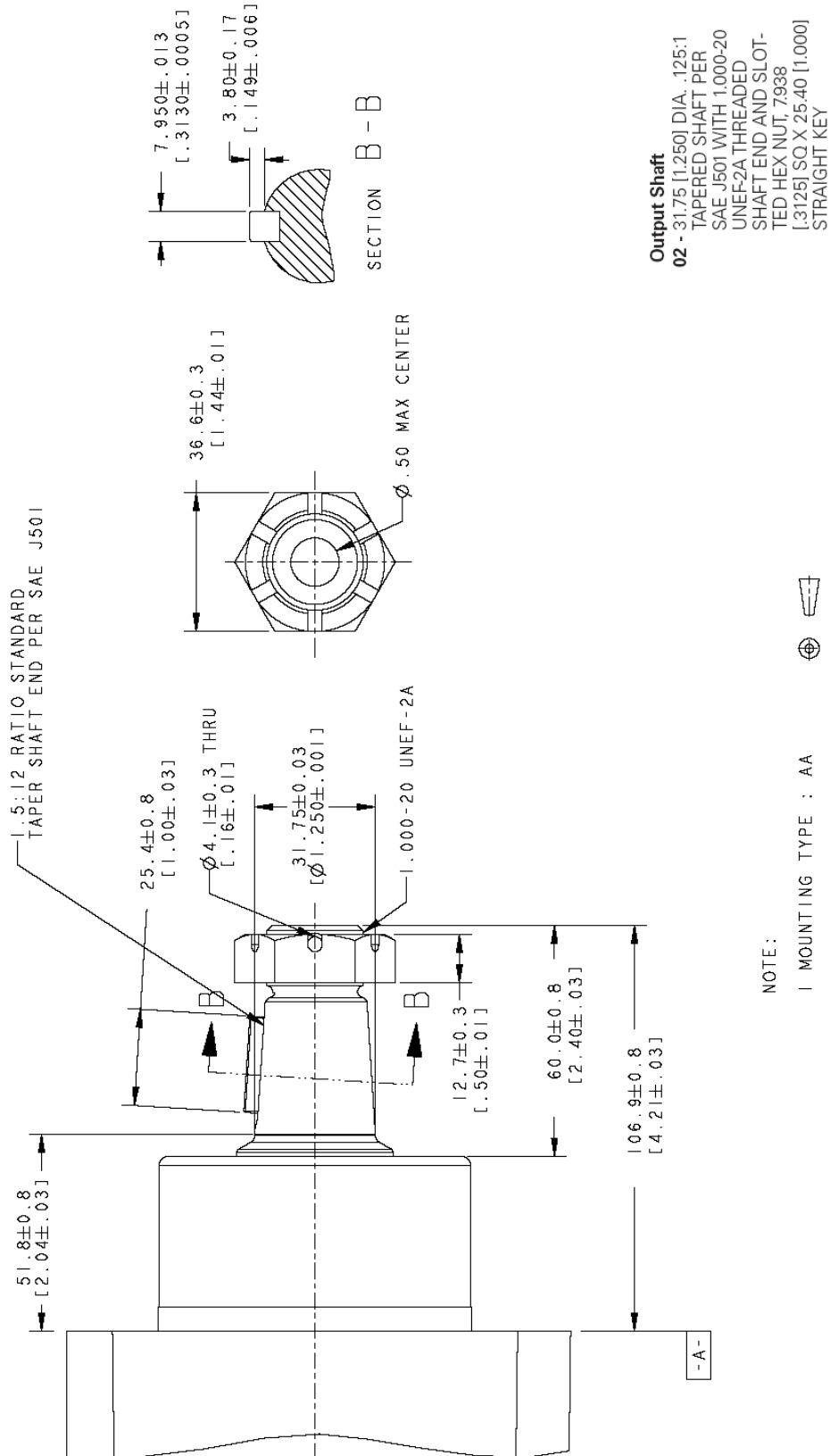
NOTE:

- 1 MOUNTING TYPE : AA
- 2 OUTPUT SHAFT : 01



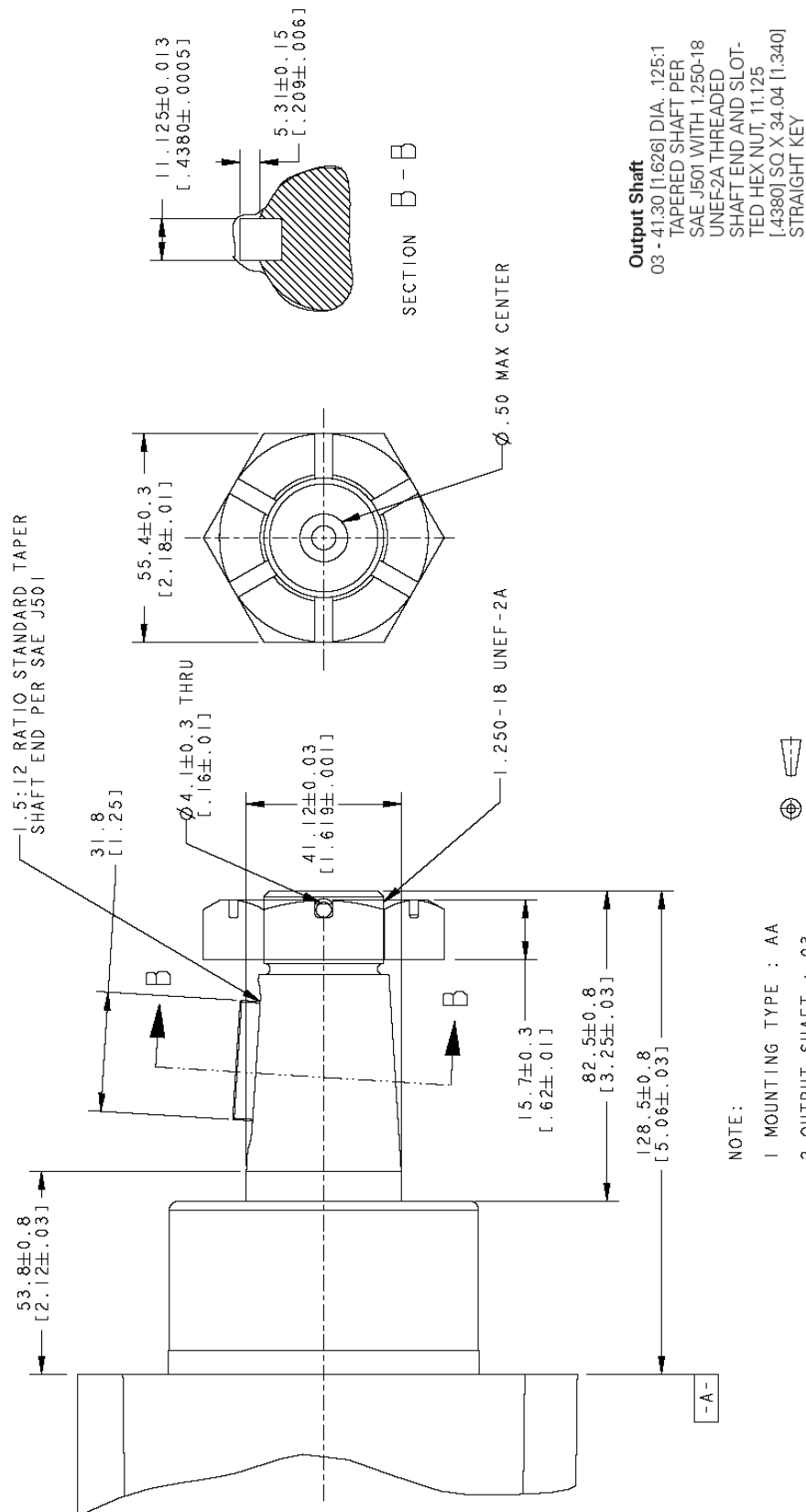
Output Shaft

02 – Tapered Shaft with SAE J501 (5:12)



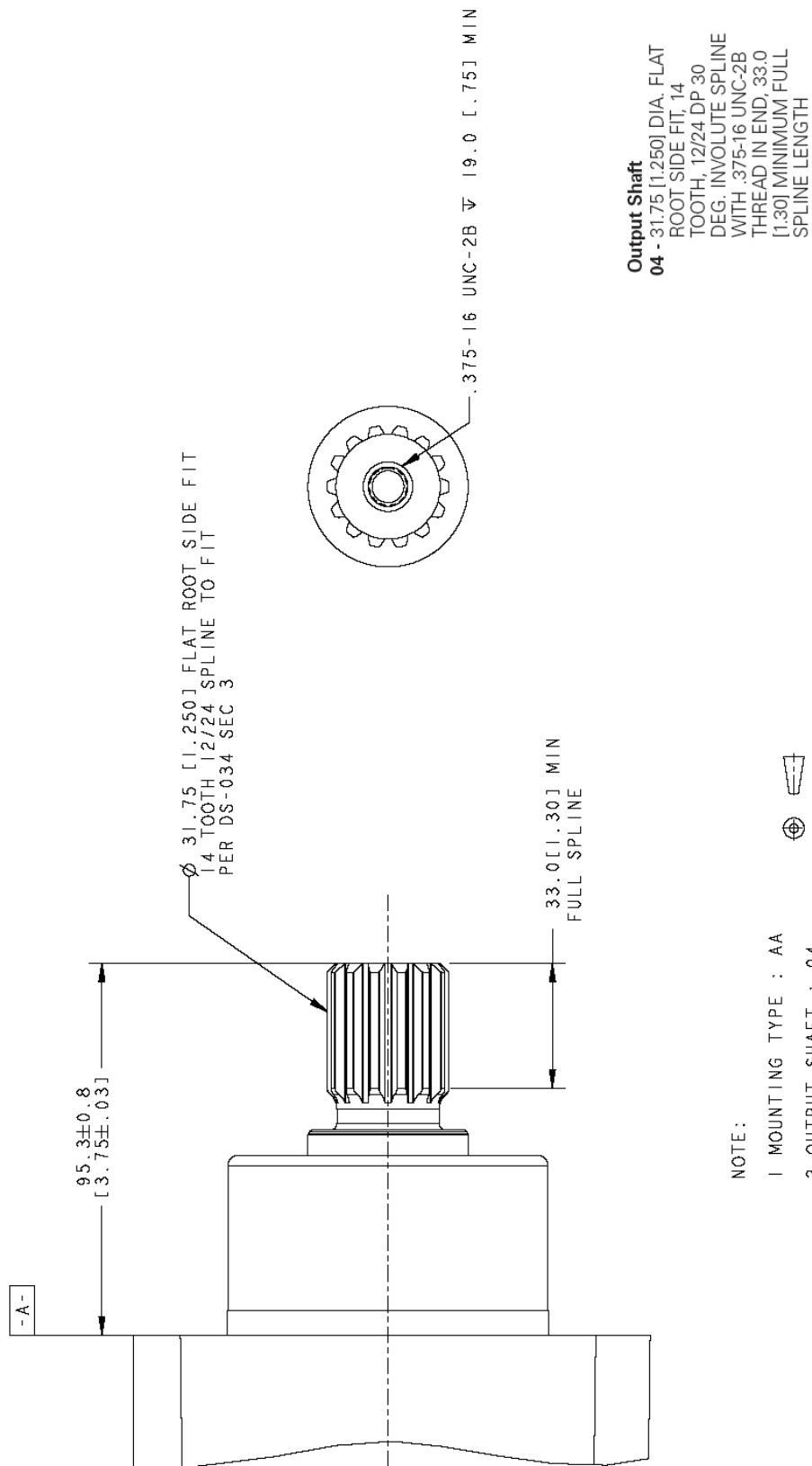
Output Shaft

03 – Tapered Shaft with SAE J501 (5:12)



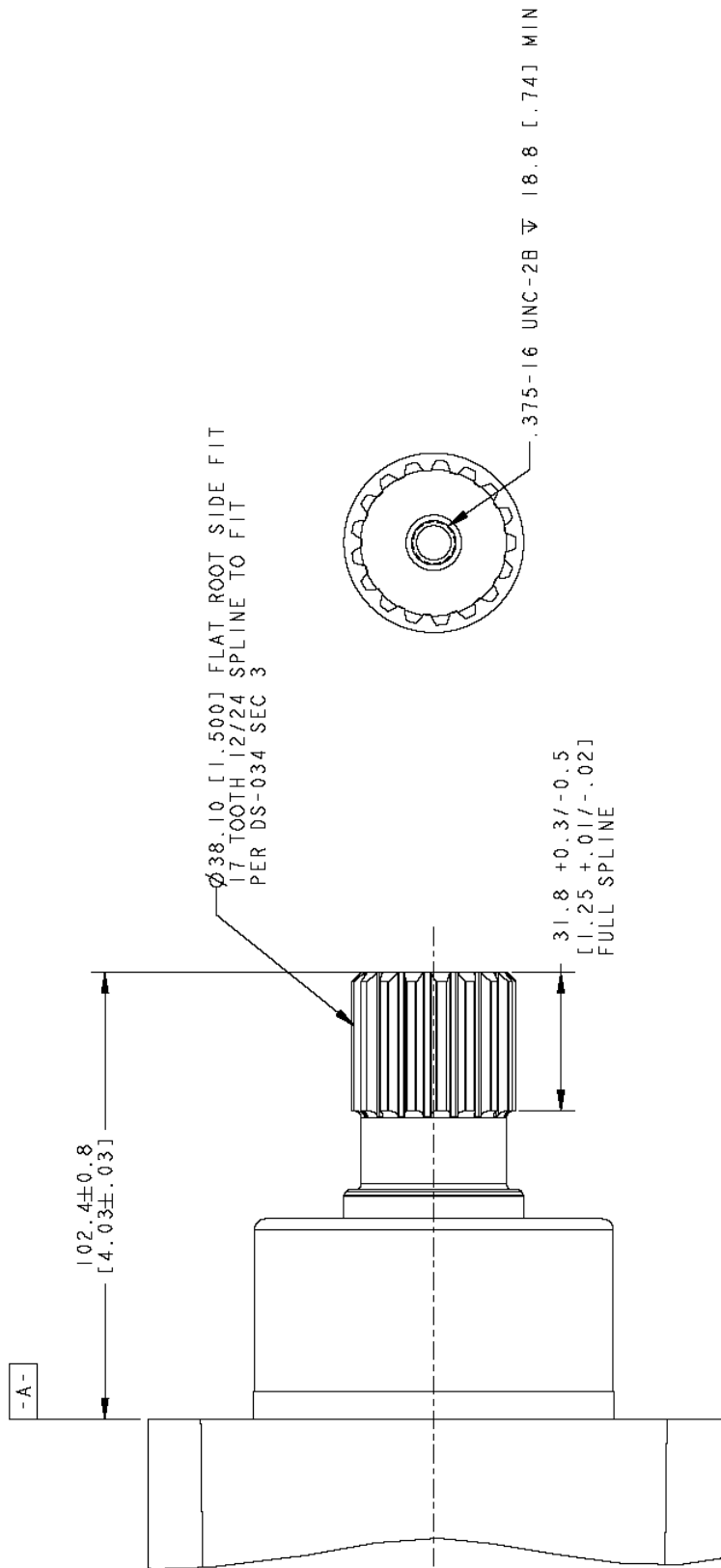
Output Shaft

04 – Flat root Side fit 14 Tooth



Output Shaft

05 – Flat root Side fit 17 Tooth



Output Shaft

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

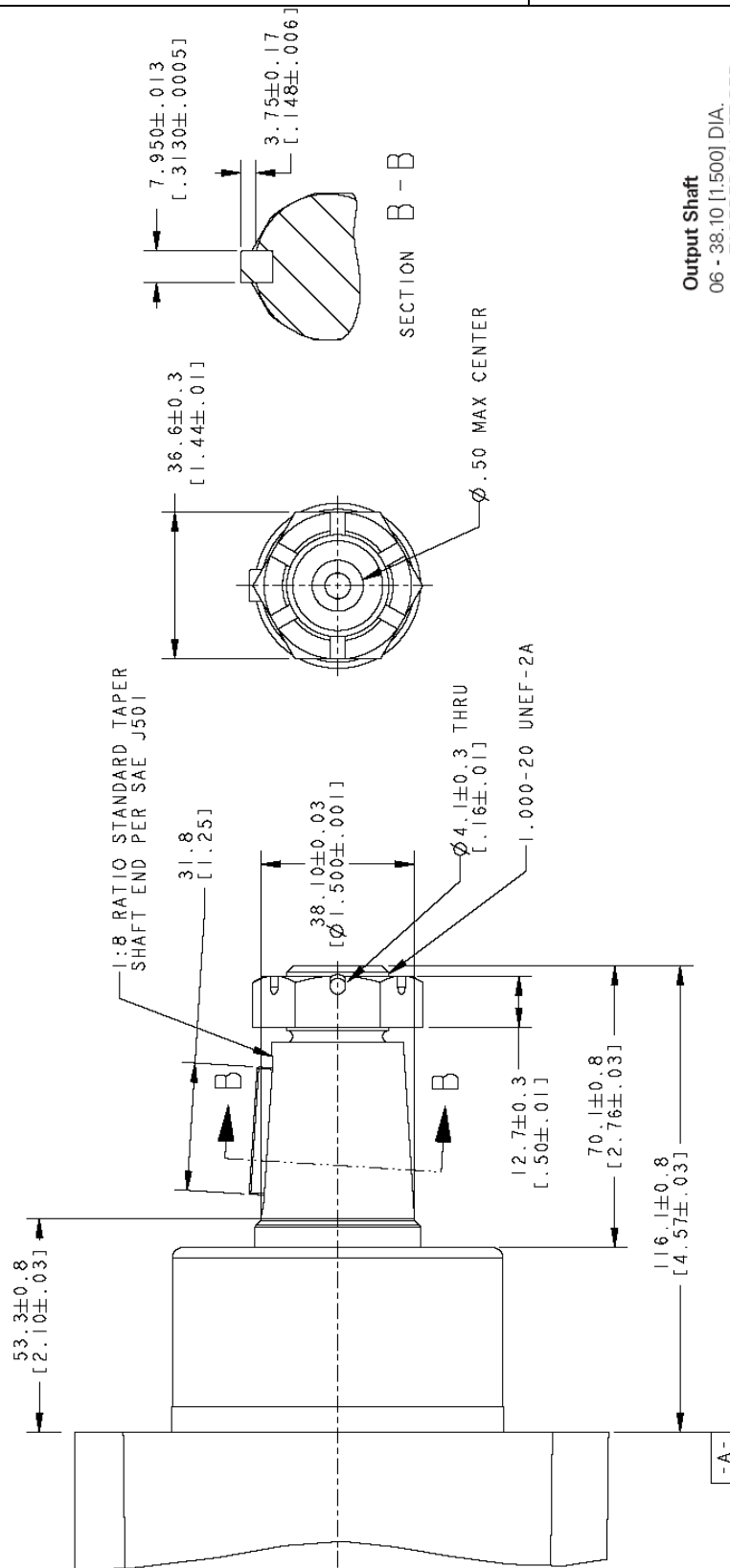
NOTE:

- 1 MOUNTING TYPE : AA
- 2 OUTPUT SHAFT : 05



Output Shaft

06 – Tapered Shaft with SAE J501 (1:8)



Output Shaft
 06 - 38.10 [1.500] DIA.
 TAPERED SHAFT PER
 SAE J501 WITH 1.250-18
 UNEF-2A THREAD IN
 END, 7938 [3125] SQ X
 31.75 [1.250] KEY

NOTE:
 1 MOUNTING TYPE : AA
 2 OUTPUT SHAFT : 06

Allowable Radial Load

ISO 281

