



INSTRUCTION MANUAL

DESCRIPTION:

The BMPH series, shaft distribution flow, hydraulic motors are a compact, highly efficient, low speed-high torque design which can be used in either parallel or series systems.

FEATURES:

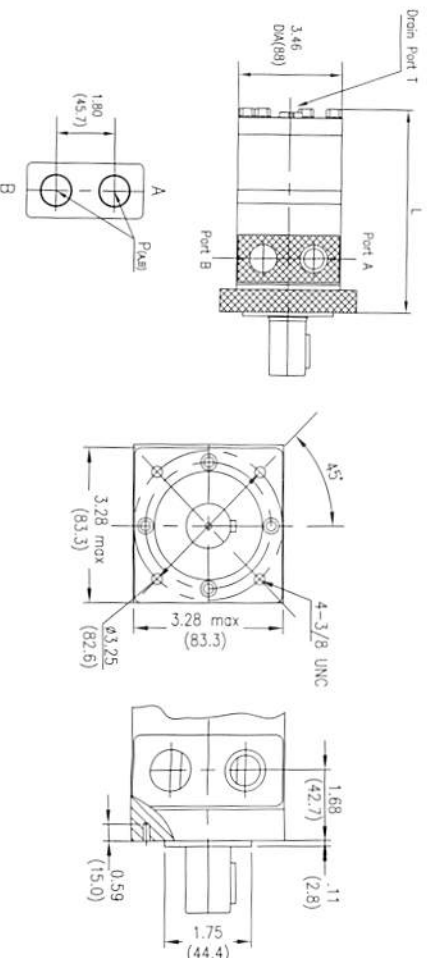
- 1.0" shaft diameter
- Port Size: 1/2-14NPTF
- Instantly reversible by reversing the flow
- 4 Bolt flange mounting type
- High-torque, low speed with gerotor
- Cross-over for many popular models in the market

MODEL	82322388	82331387	82347386	82358385	82372384	82385383	82312382	82314381	82319380	82324379
Displacement(cc/in/rev)	2.2	3.2	4.70	5.90	7.3	9.60	11.90	14.70	19.20	23.80
Maximum Speed RPM	Cont	1050	880	740	590	475	370	295	190	150
	Int	1270	975	825	675	595	465	370	295	165
Max Torque(lb-in)	Cont	512	717	1140	1425	1790	2170	2530	3185	3575
	Int	670	956	1514	1885	2372	3026	3450	4035	4470
Max Differential (psi)	Cont	1840	1840	1840	1840	1840	1840	1625	1625	1450
	Int	2425	2425	2425	2425	2425	2425	2425	2060	2060
Max Flow (gpm)	Cont	10	11.85	15.8	15.8	15.8	15.8	15.8	15.8	15.8
	Int	12	13.15	19.75	19.75	19.75	19.75	19.75	19.75	19.75
Weight(lbs)		12.1	12.3	12.54	13	13.2	13.65	14.1	14.5	16.3

Cont= max. of continuous operation

Int= max. operating range for 6 seconds per minute

INSTALLATION DIMENSION:



MODEL	82322388	82331387	82347386	82358385	82372384	82385383	82312382	82314381	82319380	82324379
L(in)	5.55	5.55	5.69	5.79	5.91	6.10	6.30	6.54	6.93	7.32
L1(in)	0.28	0.28	0.41	0.51	0.63	0.83	1.02	1.26	1.65	2.05

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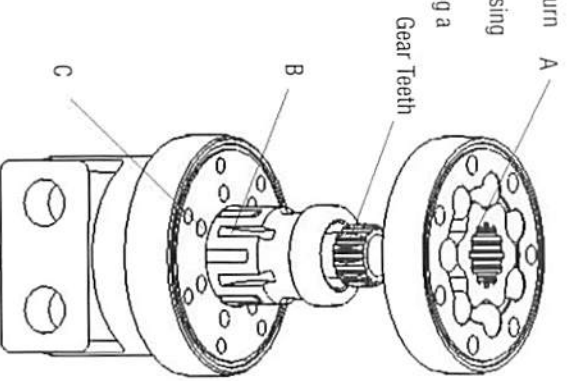
REBUILD THE MOTOR:

- **CLEANING:** All parts(except the seals) should be washed in a solvent on carbon base and then degreased.
- **MEASURING AND REPLACEMENT:** All parts should be measured and the actual dimensions should be compared with the nominal ones given in the technical documentation. Replace worn out parts with new ones. Replace all rubber and plastic parts.
- **LUBRICATION:** Lubricate all parts which should be assembled with grease or Vaseline film.
- 1. Place Balls(#13) in Check Valve(#12), close up after the sealing surface has been stamped.
- 2. Place the motor housing(#15) with the flange upwards and assemble check valves(#12) and O-rings(#11) in the holes by a plastic hammer.
- 3. Mark the rear ends of shaft(#8) before assembling, align the commutation slots. Grease the shaft. Assemble the shaft(#8) in the housing(#15).
- 4. Assemble the Axial Needle Bearing(#7)
- 5. Press the shaft seal(#4) in the front cover(#3) by plastic hammer.
- 6. Press the Dust Seal(#2) in the front cover(#3) by plastic hammer.
- 7. Place the thrust washer(#5) and O-ring(#6) in the front cover(#3).
- 8. Slide the front cover(#3) back on shaft(#8). Prevent the seals against damages.
- 9. Tighten the Screws(#1) using an Allen head spanner and 45 ~ 50Nm torque.
- 10. Press the key(#9) to the keyslot using a plastic hammer.
- 11. Place the O-ring(#17) it in the housing seal groove.
- 12. Place the Distributor Plate(#18) and Drive Link(#19) in the internal spline of the shaft(#8).

To ensure a correct direction of rotation.

- See Fig 2, put the shaft(#8) into the housing. Align the commutation slot on the shaft and hole C of the housing(#15).
- See Fig 2, put gerotor set(#20, #21, #31) A and Drive Link(#19) on a line, then put them into the housing(#15). In this time, they are clockwise rotation, otherwise, it is reversed running.

13. Place the end cover(#22) over the gear wheel set and turn it to fix the screw holes.
14. Install the Washers(#23) and fasten the screws(#24) using a hexagon socket and 40 ~ 45Nm torque.
15. Install the Washers(#25) and fasten the plug(#26) using a hexagon socket and 25 ~ 30Nm torque.



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PART LIST:

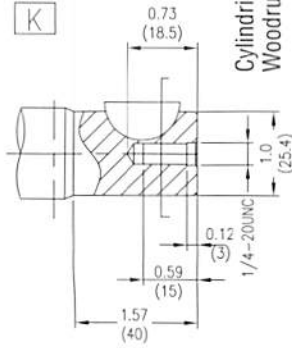
PARTS#	DESCRIPTION	QTY	PARTS#	DESCRIPTION	QTY
1	SCREW	4	14	PIN	1
2	DUST SEAL	1	15	HOUSING	1
3.1	FRONT COVER (H6 Flange)	1	16	PLUG	2
3.2	FRONT COVER (H2 Flange)	1	17	O-RING	3
3.3	FRONT COVER (H4 Flange)	1	18	DISTRIBUTOR PLATE	1
4	SHAFT SEAL	1	19	DRIVE LINK	1
5	THRUST WASHER	1	20	STATOR	1
6	O-RING	1	21	ROLLER	7
7	AXIAL NEEDLE BEARING	2	22	END COVER	1
8.1	SHAFT (K CYLINDRICAL SHAFT Ø25.4)	1	23	WASHER	7
8.2	SHAFT (6 SPLINE)	1	24	SCREW	7
8.3	SHAFT 0.315 CROSSHOLE	1	25	WASHER	1
8.4	SHAFT 0.406 CROSSHOLE	1	26	DRAIN PLUG	1
9.1	WOODRUFF KEY	1	27	NAME PLATE	1
9.2	PARALLEL KEY	1	28	RIVET	2
9.3	WOODRUFF KEY	1	29	WASHER	4
11	O-RING	4	30	O-RING	2
12	CHECK VALVE	2	31	ROTOR	1
13	BALL	2			

DISASSEMBLE THE MOTOR:

1. Remove the Keys (#9.1, 9.2, 9.3) by hand
2. Remove the Plug(#16) and Drain Plug(#26) by Allen head spanner, remove O-ring(#30) by hand
3. Remove the Washer (#25) from drain plug(#26)
4. Use socket spanner to remove Screw(#24) and Washers(#23) and End Cover(#22)
5. Remove the Stator (#20), Roller(#21) and Rotor(#31). Holding by hand to prevent dropping of rollers and rotor while remove them. Do not dismantle it! Take out the O-ring(#17) from the gerotor set(#20, #21, #31)
6. Remove the Drive Link(#19)
7. Remove the Distributor Plate(#18)
8. Take out the O-ring(#17) from the housing and the Gerotor Set(#20, #21, #31)
9. Turn motor with shaft upwards and place it on a clean soft surface
10. Use Allen head spanner to remove Screws(#1) and Washers(#29)
11. Remove the Front Cover(#3.1/#3.2 & #3.3)
12. Remove the O-ring(#6), Thrust Washer(#5) and Shaft Seal(#4) by using plastic hammer.
13. Remove the Dust Seal(#2), Axial Needle Bearing(#7) and Shaft(#8.1/#8.2/#8.3/#8.4/#8.5)
14. Use a grinded 3.5mm screw tap to take the Balls(#13), Check valves(#12) and O-ring(#11) out

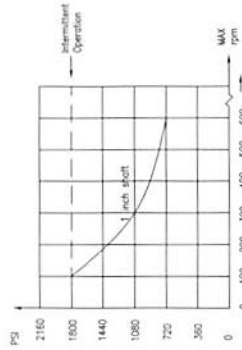
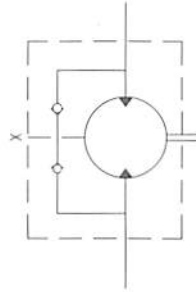
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SHAFT DIMENSION:

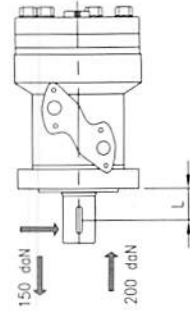
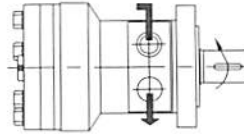
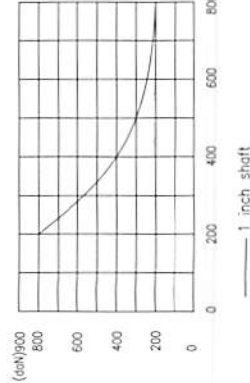


Cylindrical shaft Ø25.40
Woodruff key Ø25.40x0.25"

SHAFT SEAL RATED PRESSURE:



SHAFT ROTATION DIRECTION:



CASE DRAIN:

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

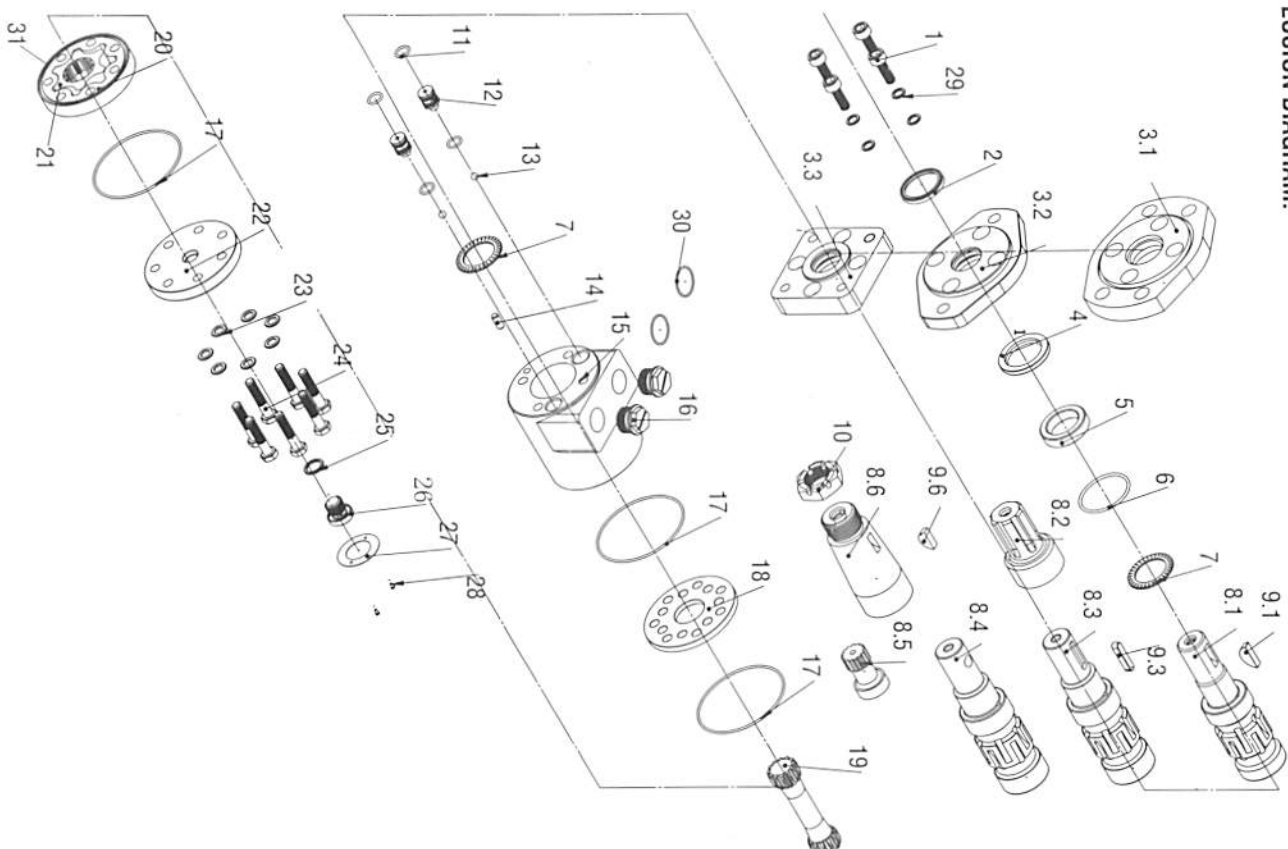
INSTRUCTION MANUAL

PERFORMANCE DATA:

82322388		2.20 Cu.in.REV						Max Cont.	Max Int.
Pressure(psi)		435	870	1015	1160	1450	1595	1813	2393
Torque (in lbs) & Speed(gpm) Specification									
F	2	115	221	257	301	381	425	0	0
	4	214	205	200	194	187	179	0	0
	5	406	398	391	383	374	366	353	324
	8	541	534	528	521	513	500	486	458
	12	106	213	257	301	381	425	496	673
L	2	115	213	257	301	381	425	496	673
	4	214	205	200	194	187	179	0	0
	5	406	398	391	383	374	366	353	324
	8	541	534	528	521	513	500	486	458
	12	106	213	257	301	381	425	496	673
W	2	115	213	257	301	381	425	496	673
	4	214	205	200	194	187	179	0	0
	5	406	398	391	383	374	366	353	324
	8	541	534	528	521	513	500	486	458
	12	106	213	257	301	381	425	496	673
Max Cont.	15	53	133	195	248	328	390	461	629
	16	27	97	159	217	286	357	434	533
	17	27	97	159	217	286	357	434	533
	18	27	97	159	217	286	357	434	533
	19	27	97	159	217	286	357	434	533
Max Int.	16	27	97	159	217	286	357	434	533
	17	27	97	159	217	286	357	434	533
	18	27	97	159	217	286	357	434	533
	19	27	97	159	217	286	357	434	533
	20	27	97	159	217	286	357	434	533

82331387		3.20 Cu.in.REV						Max Cont.	Max Int.
Pressure(psi)		435	870	1160	1450	1813	2030	2320	2538
Torque (in lbs) & Speed(gpm) Specification									
F	2	177	363	496	611	788	842	0	0
	4	168	354	496	629	806	886	992	1063
	5	286	274	261	243	204	182	139	102
	8	151	345	487	629	815	895	1036	1134
	12	382	373	361	348	318	309	287	251
L	2	177	363	496	611	788	842	0	0
	4	168	354	496	629	806	886	992	1063
	5	286	274	261	243	204	182	139	102
	8	151	345	487	629	815	895	1036	1134
	12	382	373	361	348	318	309	287	251
W	2	177	363	496	611	788	842	0	0
	4	168	354	496	629	806	886	992	1063
	5	286	274	261	243	204	182	139	102
	8	151	345	487	629	815	895	1036	1134
	12	382	373	361	348	318	309	287	251
Max Cont.	16	89	283	416	567	735	833	957	1054
	17	89	283	416	567	735	833	957	1054
	18	89	283	416	567	735	833	957	1054
	19	89	283	416	567	735	833	957	1054
	20	89	283	416	567	735	833	957	1054
Max Int.	16	89	283	416	567	735	833	957	1054
	17	89	283	416	567	735	833	957	1054
	18	89	283	416	567	735	833	957	1054
	19	89	283	416	567	735	833	957	1054
	20	89	283	416	567	735	833	957	1054

EXPLOSION DIAGRAM:



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82319380		19.20 Cu.in.REV							
Pressure(psi)		435	725	1015	1305	1450	1813	2030	
		Torque (in.lbs) & Speed(rpm) Specification							
F	2 (gpm)	1090 25	1904 23	2587 21	3260 17	3587 11	0 0	0 0	
	4 (gpm)	1045 47	1869 46	2542 44	3251 40	3579 28	4385 21	5031 10	
	5 (gpm)	974 62	1816 61	2463 60	3189 57	3499 46	4376 40	5014 36	
	8 (gpm)	895 94	1736 93	2401 91	3091 88	3437 76	4340 68	5005 65	
	9 (gpm)	850 109	1655 107	2339 106	3021 104	3384 96	4234 89	4934 84	
W	12 (gpm)	788 141	1594 140	2250 138	2985 135	3295 127	4146 120	4898 115	
	15 (gpm)	673 173	1470 172	2117 170	2879 167	3207 160	4048 152	4854 143	
	16 (gpm)	576 188	1364 186	2011 184	2728 182	3083 178	3924 172	4686 163	
	20 (gpm)	354 236	1063 234	1780 232	2471 228	2861 226	3703 223	4402 214	
	Max Cont.								
Max Int.									

82324379		23.80 Cu.in.REV							
Pressure(psi)		435	653	798	943	1160	1450	1813	
		Torque (in.lbs) & Speed(rpm) Specification							
F	2 (gpm)	1470 20	2055 19	2542 18	3012 16	3703 12	0 0	0 0	
	4 (gpm)	1462 38	2020 36	2454 35	2885 33	3694 31	4394 27	5421 21	
	5 (gpm)	1435	1975	2418	2932	3658	4385	5386	
	8 (gpm)	1364	1913	2356	2817	3587	4305	5315	
	9 (gpm)	1293	1860	2268	2764	3499	4252	5209	
W	12 (gpm)	1169	1745	2152	2657	3393	4110	5102	
	15 (gpm)	1036	1630	2011	2507	3215	3986	4890	
	16 (gpm)	904	1444	1904	2409	3074	3862	4712	
	18 (gpm)	764	1244	1644	2109	2744	3444	4284	
	20 (gpm)	669	1134	1612	2073	2817	3463	4287	
Max Cont.									
Max Int.									

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82347385		4.70 Cu.in.REV									
Pressure(psi)		435	870	1160	1450	1813	2030	2320	Max Cont.	Max Int.	
Torque (in lbs) & Speed(rpm) Specification											
F	2 (gpm)	283	549	753	921	1143	1276	0	0	0	0
	4 (gpm)	97	87	74	55	33	22	0	0	0	0
	5 (gpm)	283	558	744	948	1116	1276	1462	1462	1462	0
	6 (gpm)	186	181	170	154	132	118	86	1488	1488	1639
	8 (gpm)	251	243	236	225	207	196	178	178	178	155
L	2 (gpm)	275	549	735	939	1160	1293	1488	1488	1488	1648
	4 (gpm)	381	379	368	355	332	316	285	285	285	263
	5 (gpm)	266	523	717	904	1152	1276	1479	1479	1479	1639
	6 (gpm)	443	435	426	415	397	383	361	361	361	342
	8 (gpm)	221	514	700	886	1116	1258	1462	1462	1462	1612
O	2 (gpm)	204	505	691	859	1098	1240	1426	1426	1426	1586
	4 (gpm)	696	685	672	656	643	630	602	602	602	579
	5 (gpm)	177	469	664	833	1063	1214	1417	1417	1417	1568
	6 (gpm)	761	753	744	736	720	706	681	681	681	660
	8 (gpm)	124	390	593	771	992	1338	1497	1497	1497	1597
W	2 (gpm)	948	940	931	920	906	890	871	871	871	854
Max Cont.											
Max Int.											

82356385		5.90 Cu.in.REV									
Pressure(psi)		435	870	1160	1450	1813	2030	2320	Max Cont.	Max Int.	
Torque (in lbs) & Speed(rpm) Specification											
F	2 (gpm)	354	682	930	1152	1426	1594	0	0	0	0
	4 (gpm)	81	75	69	57	36	24	0	0	0	0
	5 (gpm)	345	682	939	1152	1417	1594	1842	1842	1842	0
	6 (gpm)	152	149	145	140	122	103	81	81	81	0
	8 (gpm)	319	655	921	1134	1426	1586	1816	1816	1816	2011
L	2 (gpm)	204	200	195	190	177	166	148	148	148	133
	4 (gpm)	292	638	912	1107	1417	1568	1798	1798	1798	1993
	5 (gpm)	308	304	298	290	280	268	255	255	255	231
	6 (gpm)	266	620	868	1081	1408	1559	1789	1789	1789	1984
	8 (gpm)	360	352	343	331	320	306	294	294	294	275
O	2 (gpm)	257	593	842	1045	1373	1541	1772	1772	1772	1949
	4 (gpm)	462	458	451	443	433	419	402	402	402	383
	5 (gpm)	221	567	824	1028	1346	1506	1754	1754	1754	1922
	6 (gpm)	566	558	549	540	529	515	498	498	498	478
	8 (gpm)	195	531	806	1010	1320	1479	1718	1718	1718	1897
W	2 (gpm)	618	611	604	589	580	570	558	558	558	540
	4 (gpm)	133	478	735	939	1249	1417	1648	1648	1648	1816
	5 (gpm)	771	763	755	744	735	724	708	708	708	693
Max Cont.											
Max Int.											

STANDARD GEROTOR MOTORS INSTRUCTION MANUAL

82372384		7.30 Cu.in.REV					Max Cont.	Max Int.
Pressure(psi)		435	870	1160	1450	1813	2030	2320
Torque (in lbs) & Speed(rpm) Specification								
F	2	452	868	1214	1488	1842	2090	0
	(gpm)	63	60	55	47	28	15	0
	4	452	865	1222	1488	1851	2090	0
	(gpm)	121	116	110	102	89	73	48
	5	425	868	1196	1479	1869	2099	2383
L	(gpm)	162	158	153	148	137	128	109
	8	407	850	1169	1453	1851	2055	2339
	(gpm)	243	239	234	227	216	202	189
	9	372	815	1152	1417	1825	2028	2303
	(gpm)	284	279	274	269	259	247	231
W	12	328	788	1107	1391	1780	1984	2312
	(gpm)	370	362	355	348	340	327	310
	15	292	744	1081	1346	1736	1931	2232
	(gpm)	452	446	438	431	420	412	402
	16	257	691	1036	1293	1692	1904	2197
Max Cont.	(gpm)	490	482	475	468	459	448	439
	20	159	585	948	1178	1586	1789	2090
	(gpm)	615	606	598	586	575	563	549
	Max Int.							528
	(gpm)							

82395383		9.60 Cu.in.REV					Max Cont.	Max Int.
Pressure(psi)		435	870	1160	1450	1813	2030	2320
Torque (in lbs) & Speed(rpm) Specification								
F	2	549	1063	1506	1878	2330	2569	0
	(gpm)	49	48	46	42	26	14	0
	4	531	1081	1524	1904	2339	2604	3012
	(gpm)	93	91	88	85	76	68	48
	5	505	1063	1506	1896	2321	2569	3012
L	(gpm)	125	123	120	117	110	106	92
	8	469	1019	1453	1825	2294	2551	2967
	(gpm)	187	184	181	178	175	168	155
	9	434	974	1417	1789	2259	2516	2905
	(gpm)	220	216	213	209	205	202	192
W	12	390	904	1364	1736	2197	2463	2843
	(gpm)	283	280	276	272	267	260	250
	15	354	877	1311	1692	2152	2409	2799
	(gpm)	345	342	340	336	331	328	320
	16	292	833	1276	1665	2165	2428	2819
Max Cont.	(gpm)	377	374	371	367	363	359	353
	20	168	709	1098	1506	1913	2232	2622
	(gpm)	473	469	465	459	453	447	440
	Max Int.							424
	(gpm)							

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82312382		11.90 Cu.in.REV					Max Cont.	Max Int.
Pressure(psi)		435	870	1160	1450	1813	2030	2320
Torque (in lbs) & Speed(rpm) Specification								
F	2	700	1453	1834	2215	2855	3189	0
	(gpm)	40	39	38	35	28	22	0
	4	691	1435	1816	2215	2852	3198	3632
	(gpm)	76	75	74	71	66	61	51
	5	673	1400	1798	2188	2835	3171	3570
L	(gpm)	100	98	97	95	92	89	73
	8	620	1355	1772	2170	2790	3100	3525
	(gpm)	151	149	147	145	142	139	131
	9	585	1320	1718	2055	2631	3038	3419
	(gpm)	177	175	173	171	168	166	160
W	12	558	1293	1683	2037	2604	3012	3393
	(gpm)	228	226	224	221	218	215	210
	15	478	1240	1603	1984	2533	2959	3266
	(gpm)	280	278	276	274	271	269	263
	16	337	1125	1453	1878	2392	2879	3153
Max Cont.	(gpm)	304	302	300	294	291	286	272
	20	195	850	1284	1701	2082	2595	2843
	(gpm)	382	378	374	371	368	364	350
	Max Int.							
	(gpm)							

82314381		14.70 Cu.in.REV					Max Cont.	Max Int.
Pressure(psi)		435	870	1160	1450	1813	2030	2320
Torque (in lbs) & Speed(rpm) Specification								
F	2	850	1683	2374	2888	3570	0	0
	(gpm)	30	28	24	21	11	0	0
	4	868	1718	2392	2897	3587	3986	4518
	(gpm)	60	58	54	50	40	30	12
	5	815	1665	2365	2879	3567	4039	4553
L	(gpm)	82	80	77	76	69	64	52
	8	753	1594	2294	2835	3543	3968	4544
	(gpm)	123	120	118	114	106	98	87
	9	682	1559	2232	2755	3446	3862	4464
	(gpm)	143	141	139	135	128	122	112
W	12	620	1488	2152	2657	3339	3791	4385
	(gpm)	185	182	178	174	168	161	152
	15	558	1408	2099	2569	3269	3694	4278
	(gpm)	226	223	218	213	209	202	193
	16	531	1329	2020	2480	3171	3605	4190
Max Cont.	(gpm)	248	243	239	233	226	215	207
	20	301	1134	1789	2339	3029	3428	3968
	(gpm)	309	306	302	297	292	286	278
	Max Int.							264
	(gpm)							