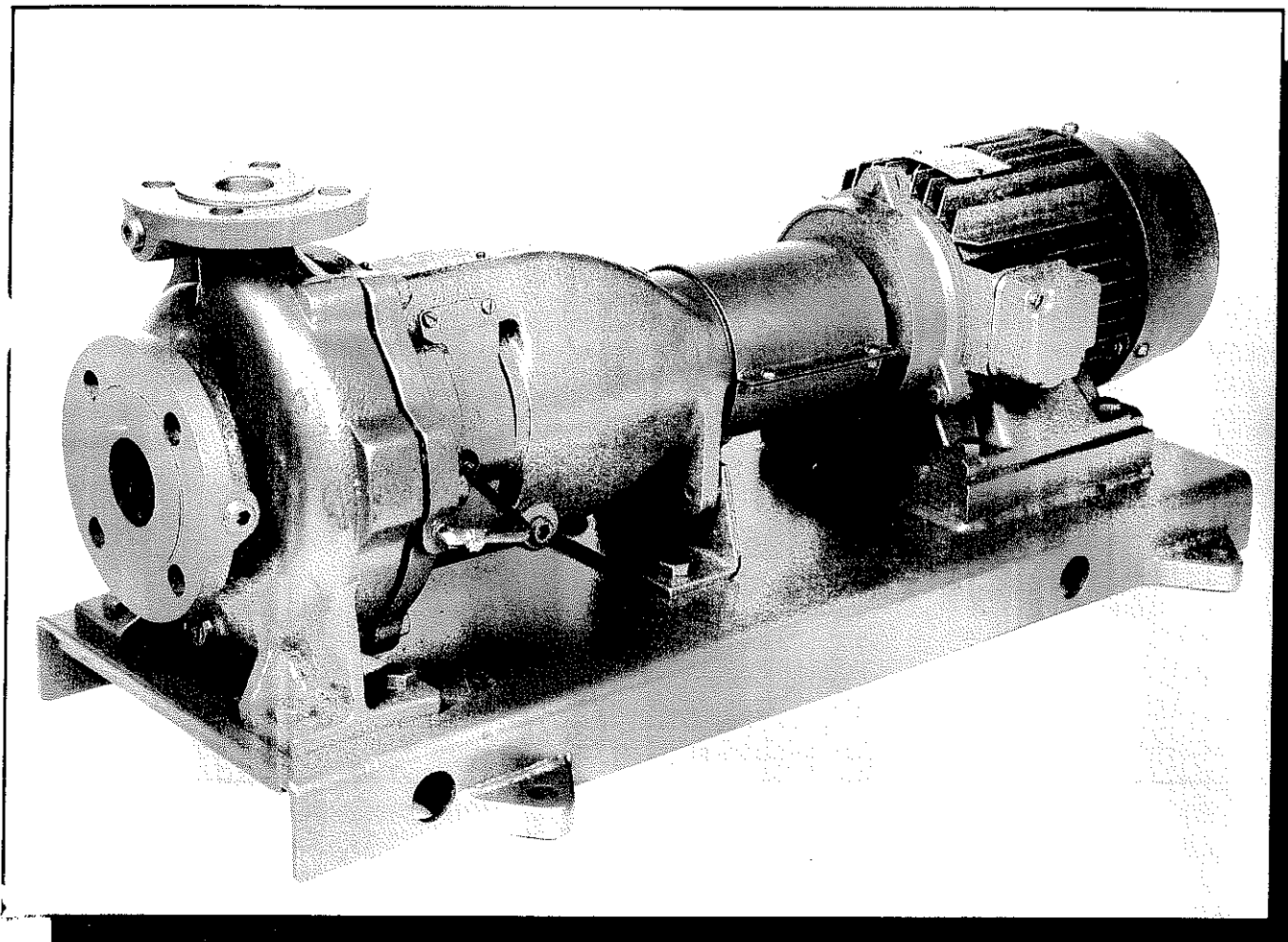


Starnorm

Horizontal Direct Coupled End Suction Pump



Holden and Brooke Limited
Haverford Street, Manchester M12 5JL, England.
Tel: 061-274 4242, Fax: 061-274 3068, Telex: 667318.

OPERATION

The **STARNORM** is a horizontal, direct coupled, end suction, single stage, centrifugal pump having performance, casing and seal cavity dimensions to ISO 2858 and BS 5257.

The generously sized shaft runs in grease lubricated, sealed for life bearings and the robust construction of the pump ensures trouble free operation with minimal maintenance even on the most arduous of operations.

The centre line discharge branches and the integral feet which are cast onto the hydraulic casing reduce the effect of and largely eliminate pipe strain being passed to the pedestals to upset the alignment of the rotating element.

Back vanes are an integral part of all the shrouded impellers which ensure hydraulic balance. Impellers are cast in one piece thereby removing stress and corrosion points.

The back pullout design enables the bearing pedestal/seal/impeller module to be withdrawn from the pump body casing without the necessity to break the pipework connections. If a spacer type coupling is fitted as an optional extra the drive motor can also be left fixed in position whilst withdrawing the pedestal and rotating elements. The direct drive unit comes completely assembled on a common bedplate and uses a flexible coupling between the pump and motor allowing the pump to be run at speeds up to 3600 R.P.M.

As the design is based around ISO 2858 and BS 5257 the **STARNORM** is interchangeable in pipe fixing dimensions and performance with any pump built to the same specification.

Where sound attenuation is advisable, anti-vibration mountings can be supplied as an optional extra. Maintenance to the unit is minimal using mechanical seals and sealed for life bearings as standard.

SPECIFICATION

Pump Body:	Cast Iron BS 1452 GR260
Impeller:	Gunmetal BS 1400 LG.2C. alternatively Cast Iron BS 1452 GR 260.
Pedestal/Seal Box:	Cast Iron BS 1452 GR 220.
Shaft:	Stainless Steel BS 970 GR 431 S29
Seal:	DIN 24960 Self Adjusting.
Bearings :	Medium series, ball, grease lubricated sealed for life.
Coupling:	Non Spacer Type-Spacer Type fitted as an optional extra.
Motor :	Totally enclosed fan ventilated-or drip proof metric sized foot mounted to BS 5000 and BS 4999.

Pumps can also be supplied with alternative materials of construction. In addition to the hydraulic pressure test to which the pump bodies and covers are subjected, each pump set is tested on our test bed to check (a) the mechanical assembly and (b) the hydraulic performance.

OPERATING CONDITIONS

Pressure:	10 Bar Maximum. Made up of system static plus developed head. Higher pressures can be accommodated-refer to local branch office for details.
Temperature:	Up to 130°C with carbon/ni-resist uncooled mechanical seal. Up to 150°C with carbon/sintered tungsten uncooled mechanical seal. Up to 175°C with water cooled packed gland.
Note:	Temperature and pressure limitations are the maximum in each case, not a combination of both.
Pump Flanges:	BS 4504-10Bar rating(16 Bar rating on 150-250 and above pumps).
Pump Speeds:	Up to 3600 R.P.M.
Rotation:	Anti clockwise viewed on inlet pipe flange.
Discharge:	North only.

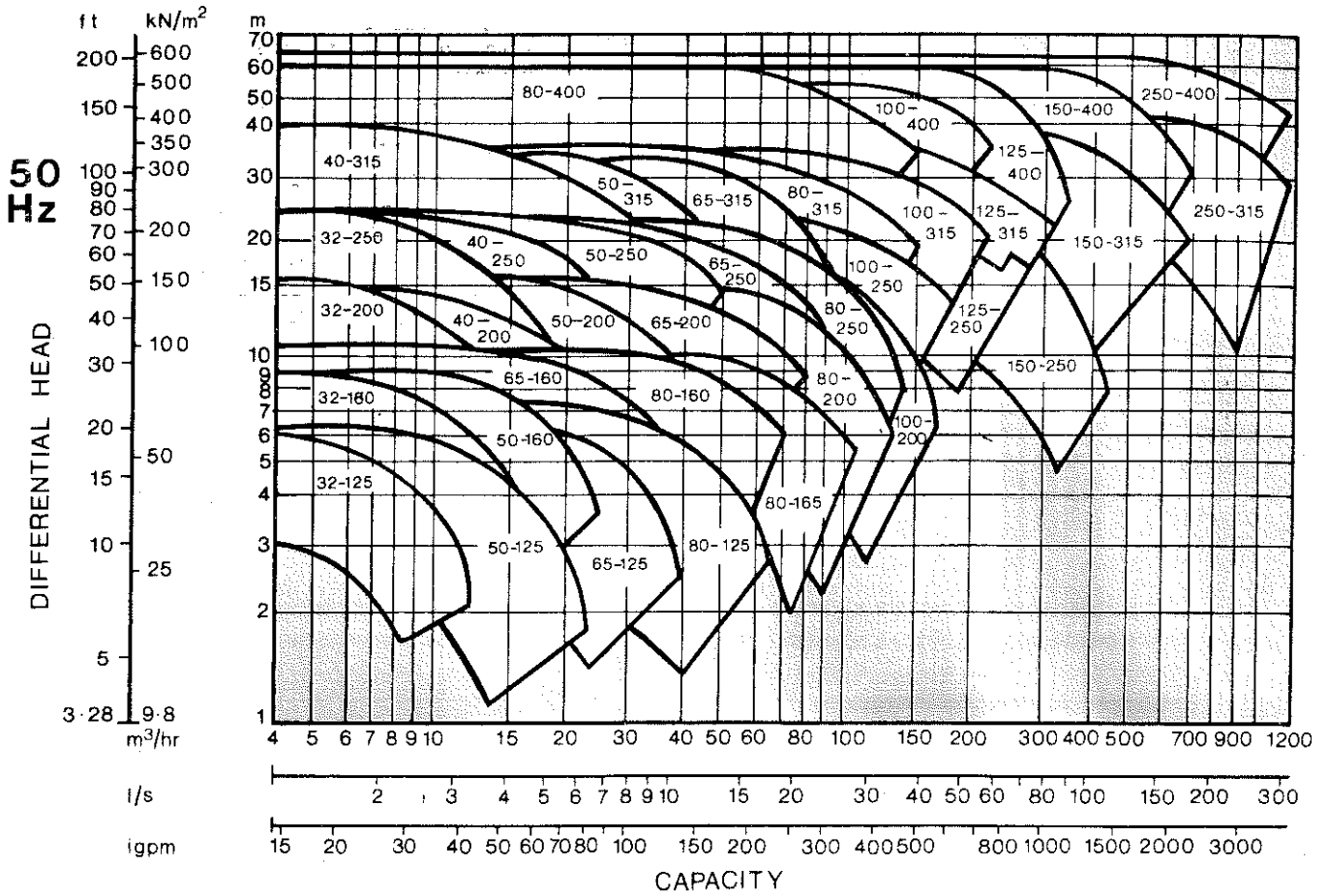
APPLICATION

Hot and cold water circulation, process liquid transfer, industrial liquid transfer, boosting and pressurisation installations.

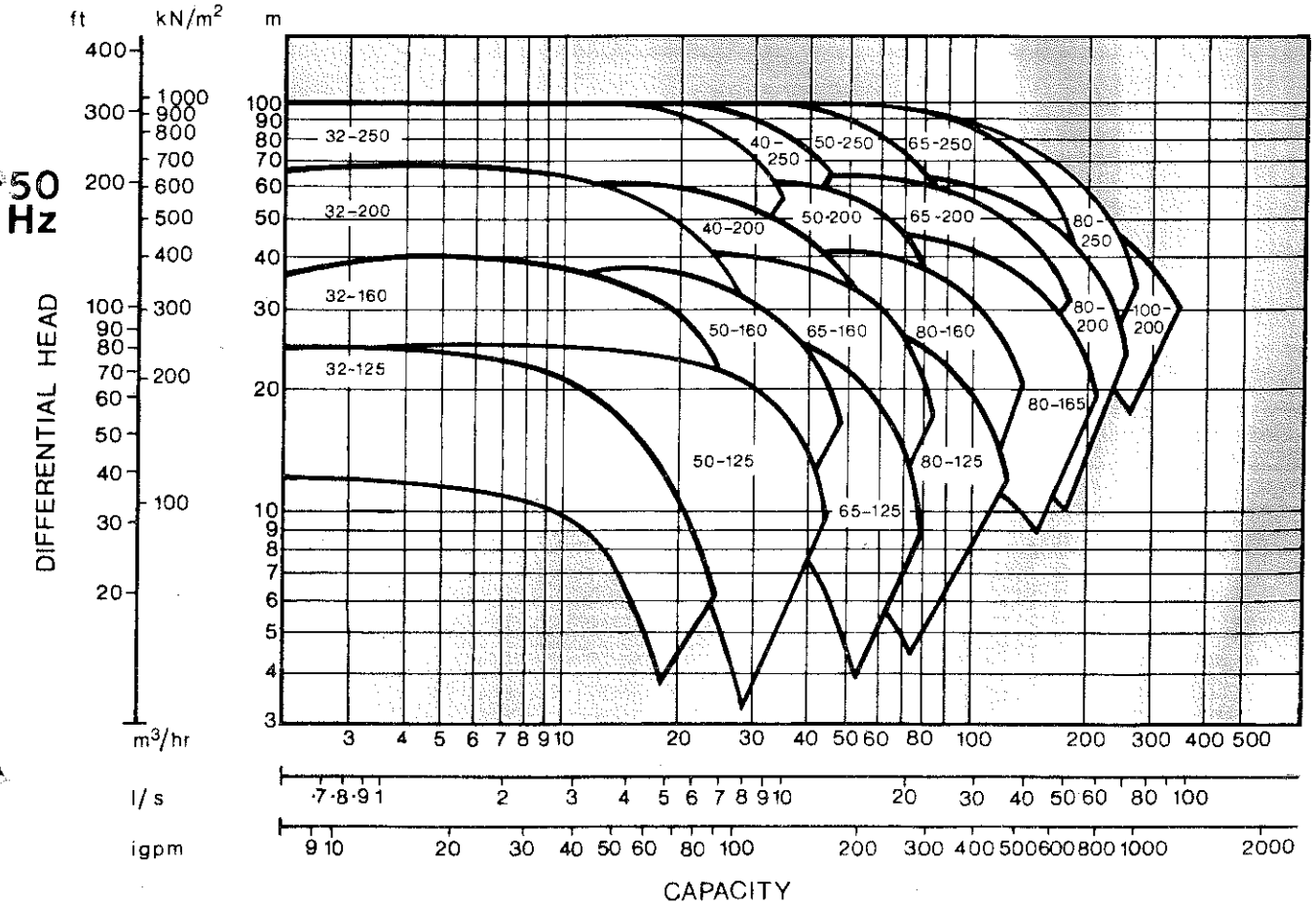
NOTE:-Now Available Uncooled Mechanical Seal Up To 160°C.

Designed and made in Britain to International Standards Organisation(ISO) and British Standards Specifications.

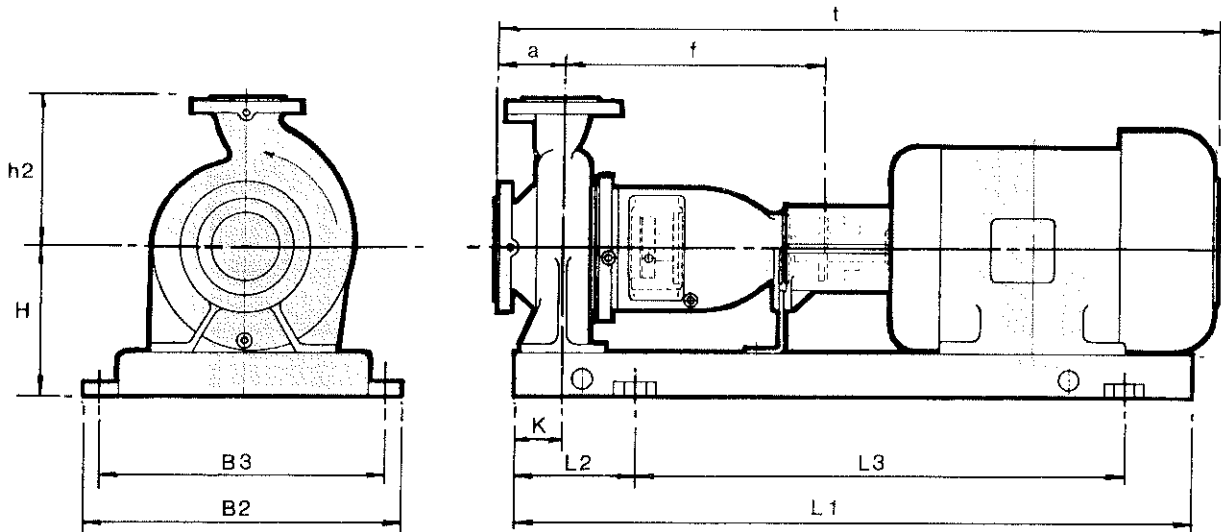
SELECTION CHART STAR RANGE
 END SUCTION PUMPS 1450 RPM
 PERFORMANCE ON WATER SG = 1.0



SELECTION CHART STAR RANGE
 END SUCTION PUMPS 2900 RPM
 PERFORMANCE ON WATER SG = 1.0



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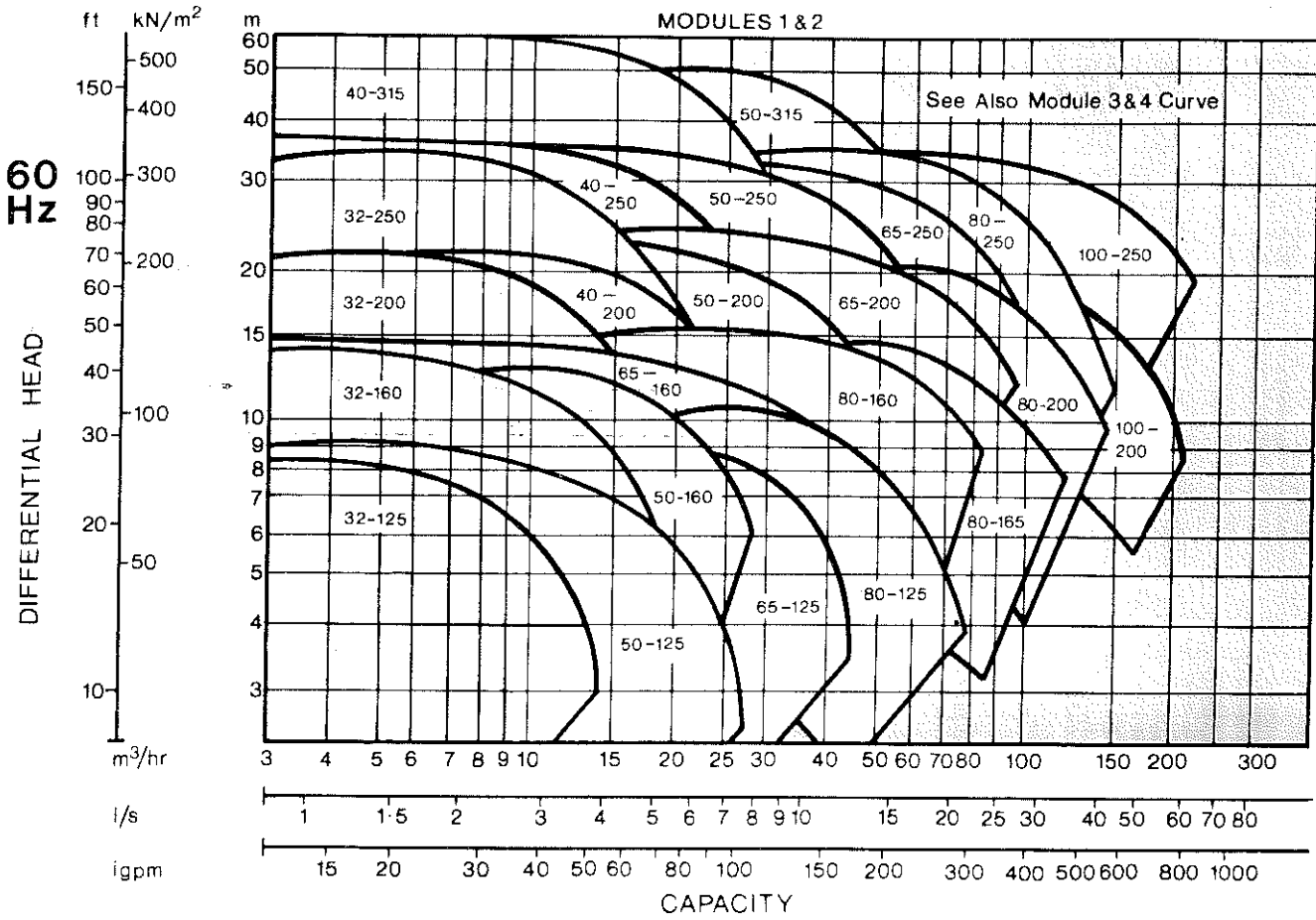


DIMENSIONS

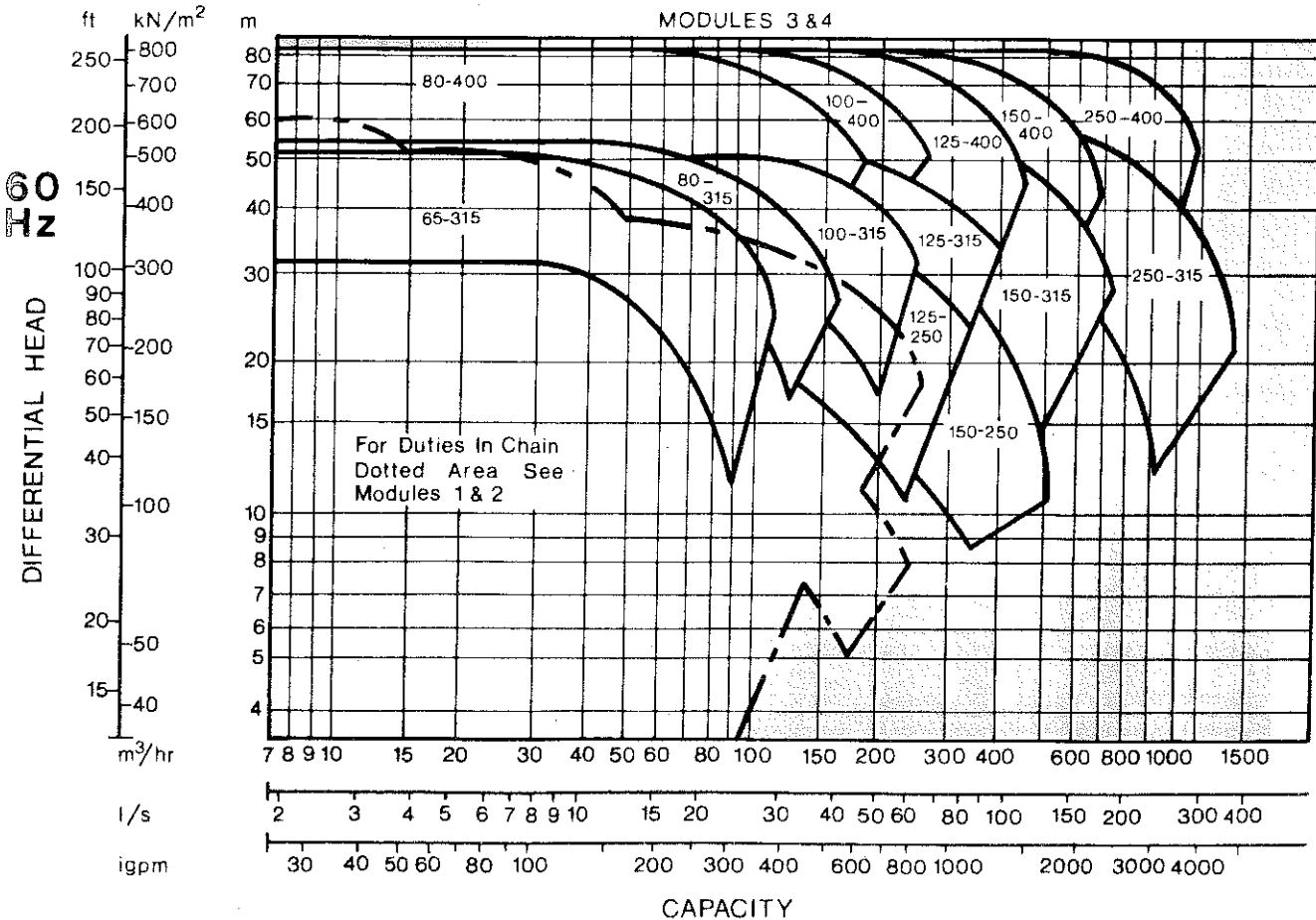
PUMP DATA						MOTOR & BASEPLATE DATA (BASED ON MAXIMUM FRAME SIZE)															
PUMP TYPE	Inlet Size	Outlet Size	f	a	h2	No Of Poles	Max Motor Frame	kW Rating	B2	B3	H	K	L1	L2	L3	t	Approx Weight Kg				
32-125	50	32	385	80	140	4	B56	0.37	360	320	172	60	730	130	540	780	94				
						2	D90L	2.2	390	350			820	150	600	820	103				
160					4	B56	0.55	360	320	192	730		130	540	780	102					
					2	D132S	5.5	450	400	202	910		170	660	950	179					
180					4	D90S	1.1	360	320	220	730		130	540	795	113					
					2	D160M	11.0	450	400	230	910		170	660	1095	236					
32-200			500	100	225	100	4	D100L	2.2	450	400	250	75	910	170	660	995	188			
							2	C160L	15.0	540	490	260	1170	205	840	1255	315				
2			D160L	1275	326																
32-250			65	40	385	100	180	4	D90L	1.5	390	350	220	60	820	150	600	840	127		
2	D160M	11.0						490	440	230	1020	190	740		1115	241					
40-200	500	225					4	D100L	3.0	450	400	250	75		910	170	660	995	189		
							2	C160L	22.0	540	490	260	1170		205	840	1255	326			
2	D180M	1310			374																
40-315	125	250			4	D132S	5.5	490	440	270	75	1020	190	740	1150	265					
50-125	65	50			385	80	140	4	B56	0.37	360	320	172	60	730	130	540	780	100		
2								D112M	4.0	390	350	820			150	600	880	142			
50-160							100	160	4	B56	0.75	360	320		192	730	130	540	795	108	
									2	D132S	5.5	450	400		202	910	170	660	950	185	
50-200			500	125			225	100	4	D100L	2.2	390	350		220	75	820	15	600	870	141
									2	D160L	18.5	490	440		230	1020	190	740	1200	274	
2			D200L	250																	
50-250			500	125	225	125	4	D132S	5.5	490	440	250	75	1020	190	740	1110	260			
							2	C180L	37.0	540	490	280	1170	205	840	1339	402				
2			D200L	610	550	280	1300	230										940	1425	490	
50-315	280	4	D132M	7.5	490	440	295	75	1020	190	740	1150	278								
65-125	80	65	385	100	132	4	B56	0.75	360	320	192	60	730	150	540	815	103				
2						D132S	7.5	450	400	202	910		170	660	970	180					
65-160					500	225	4	D90L	1.5	390	350		220	75	820	150	600	840	117		
							2	D160M	11.0	490	440		230	1020	190	740	1115	231			
65-200					500	225	4	D132S	5.5	490	440		250	75	1020	190	740	1085	234		
							2	C180L	37.0	610	550		260	1300	230	940	1314	423			
2			D200L	30.0	280	1400	472														
65-250			500	125	250	125	4	D132M	7.5	490	440	270	90	1020	190	740	1150	266			
							2	C200L	55.0	610	550	280	1300	230	940	1419	493				
2			D250S	660	600	350	1450	270										1060	1730	724	
65-315	530	280	125	280	4	C280S	110.0	730	670	380	90	1650	300	1200	1625	939					
					2	D280M											2000	1107			

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SELECTION CHART STAR RANGE
 END SUCTION PUMPS 1750 RPM
 PERFORMANCE ON WATER SG = 1.0



SELECTION CHART STAR RANGE
 END SUCTION PUMPS 1750 RPM
 PERFORMANCE ON WATER SG = 1.0



PUMP DATA						MOTOR & BASEPLATE DATA (BASED ON MAXIMUM FRAME SIZE)											
PUMP TYPE	Inlet Size	Outlet Size	f	a	h2	No Of Poles	Max Motor Frame	kW Rating	B2	B3	H	K	L1	L2	L3	T	Approx Weight Kg
80-125	100	80	385	100	180	4	D90L	1.5	390	350	220	75	820	150	600	840	114
						2	D160M	11.0	490	440	230		1020	190	740	1115	228
80-160	100	80	385	100	200	4	D100L	2.2	450	400	230	75	910	170	660	995	168
						2	C160L D160L	18.5	540	490	240		1170	205	840	1255 1310	305 316
80-165	125	80	500	125	225	4	D112M	4.0	490	440	250	75	1020	190	740	1090	207
						2	C180M D200L	30.0 37.0	540 610	490 550	260 280		1170 1300	205 230	840 940	1301 1425	346 470
80-200	125	80	500	125	250	4	D132M	7.5	490	440	250	75	1020	190	740	1150	260
						2	C180L D200L	37.0	610	550	260 280		1300	230	940	1339 1425	438 487
80-250	125	80	530	125	280	4	D160M	11.0	540	490	305	90	1170	205	840	1255	331
						2	C225M D250M	75.0	610 660	550 600	305 350		1300 1450	230 270	940 1060	1411 1830	543 808
80-315	125	80	530	125	315	4	C280S D280M	110.0	730	670	380	90	1650	300	1200	1625	953
						2	C250S D250M										75.0
80-400	125	80	530	125	355	4	C250S D250M	75.0	660	600	380	90	1450	270	1060	1485	785
						2	C225M D250M									75.0	610 660
100-200	125	100	500	125	280	4	D132M	7.5	490	440	270	90	1020	190	740	1150	268
						2	C225M D250M	75.0	610 660	550 600	305 350		1300 1450	230 270	940 1060	1411 1830	530 787
100-250	125	100	530	140	315	4	C280S D280M	110.0	730	670	380	90	1650	300	1200	1640	919
						2	C250S D250M									75.0	660
100-315	125	100	530	140	355	4	C280S D280M	110.0	730	670	380	110	1650	300	1200	1640	955
						2	C250S D250M									75.0	660
100-400	125	100	530	140	355	4	C280S D280M	110.0	730	670	380	110	1650	300	1200	1640	1019
						2	C250S D250M									75.0	660
125-250	150	125	530	140	355	4	C200L D225M	45.0	610	550	330	90	1300	230	940	1465	572
						2	C250S D250M	75.0	660	600	380		1800	681			
125-315	150	125	530	140	400	4	C250S D250M	90.0	730	670	415	110	1450	270	1060	1500	763
						2	C280S D280M	110.0	730	670	440		1890	884			
125-400	150	125	530	140	400	4	C250S D280S	90.0	660	600	380	110	1650	300	1200	1540	891
						2	C280S D280M	110.0	730	670	440		1950	1094			
150-250	200	150	530	160	400	4	C250M D280S	90.0	660	600	380	110	1450	270	1060	1560	818
						2	C250S D250M	75.0	660	600	380		1970	1021			
150-315	200	150	670	160	450	4	C250S D280M	110.0	730	670	440	110	1650	300	1200	1660	891
						2	C280S D280M	110.0	730	670	440		2045	1045			
150-400	200	150	670	160	450	4	C280S D280M	110.0	730	670	440	110	1800	300	1200	1800	1121
						2	C250S D250M	75.0	660	600	380		2175	1297			
250-315	300	250	670	225	560	4	C280S D280M	110.0	890	830	550	170	1900	300	1200	1865	1291
						2	C315S D315L	185.0 200.0	890 830	550 575	2150		1500	2240	1487		
250-400	300	250	880	225	600	4	C315S D315L	185.0 200.0	890	830	575	170	2150	300	1500	2165	1663
						2	C280S D280M	110.0	730	670	440		2645	2036			

NOTE:

- 'C' Frame Motors Are Drip Proof Enclosure
- 'D' Frame Motors Are Totally Enclosed Fan Ventilated
- Motors Shaded Are 2900 RPM
- Certified Drawings Will Be Supplied On Application
- Pumps Can Be Fitted With Anti Vibration Isolators As An Optional Extra

Note: Improvements in general design and modifications in detail will be embodied for the benefit of clients as and when introduced; consequently this specification is subject to alteration, as may be necessary, without notice.

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