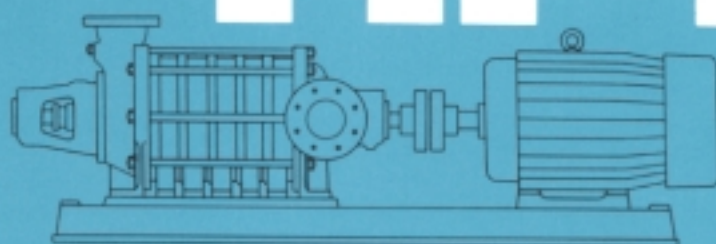


SULZER

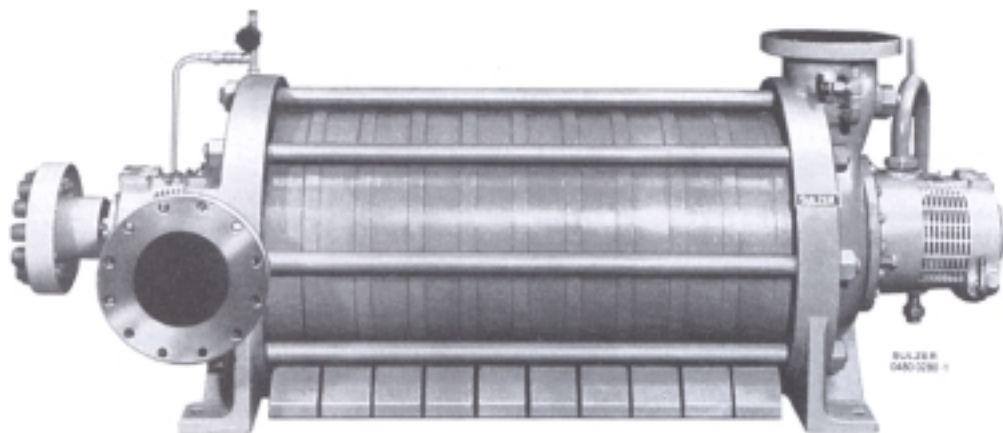
Pump Division

Stage casing pump

HPL



General description



The HPL pump range covers discharge rates from 40 to 1200 m³/h and delivery heads up to 450 m. The casings are suitable for a maximum hydrostatic test pressure of 60 bar and, depending upon the materials of construction, a temperature range from -20 °C to +105 °C.

Applications

These pumps are designed for operation at four-pole motor speed, particularly to meet the requirements of mine dewatering installations where the water pumped is slightly contaminated with abrasive particles. The relatively low internal fluid velocities minimise the erosive effects. For more heavily contaminated or corrosive fluids alternative materials of construction are possible. Since the range operates at low speed and is provided with sleeve journals the pumps also find application in public and industrial water supplies where quiet running and an efficient long working life are prime requirements.

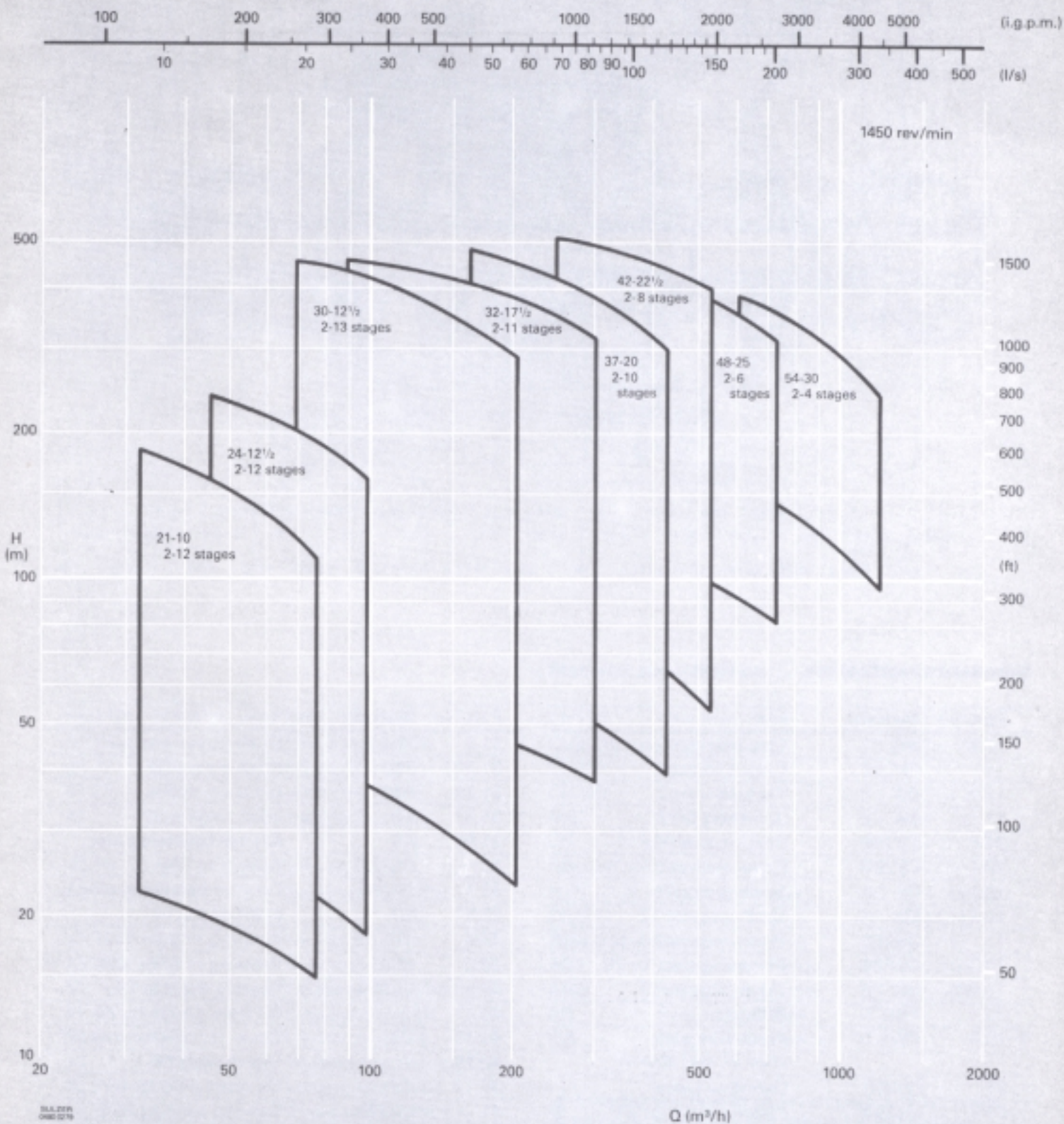
Construction

The pumps are of robust construction and embody the latest advances in hydraulic design to provide reliability and economy in operation. Rigid quality control and manufacturing standards ensure complete interchangeability between similar parts. The casing elements are sealed by means of circular "O" rings and clamped together by external tie bolts. Axial hydraulic thrust is accommodated automatically by a self adjusting hydraulic balancing device which operates from the fluid pumped. Oil ring lubricated sleeve journal bearings are employed and the shaft is allowed freedom of axial movement within specific limits. Extras available include auxiliary pipework for the balance device and drains, special finishes, and mechanical seals which can be arranged by agreement according to the customers requirements which must be known to us at the enquiry stage. For certain applications a cooling-water harness is provided.

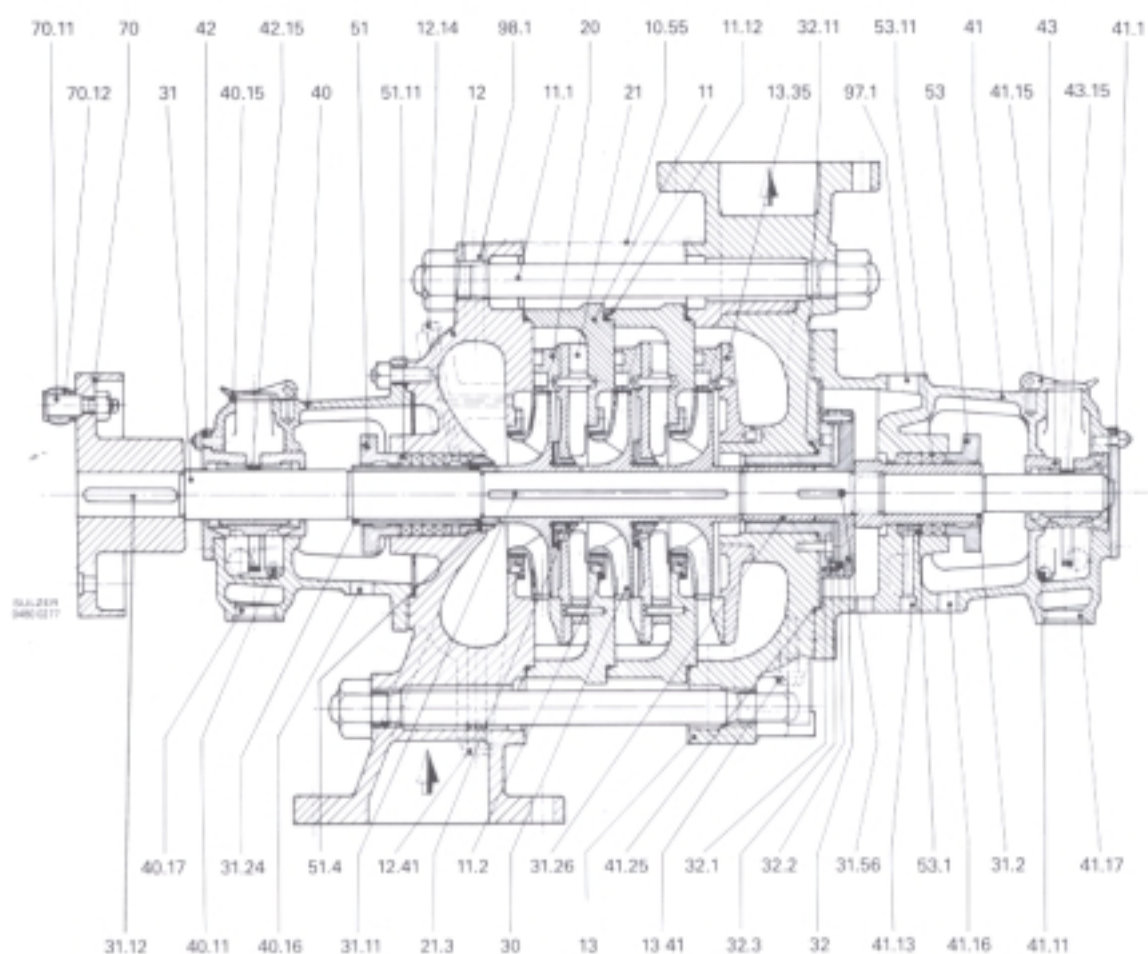
Characteristics

Several combinations of impeller and diffuser are available for each frame size which enables the overall field of application to be covered at high efficiency. The selection of the optimum hydraulic combination can be achieved when the complete operating conditions are made known to us. In keeping with our policy of constant development the details given in this brochure are for general guidance only and are subject to amendment without notice.

Capacity range (HPL)



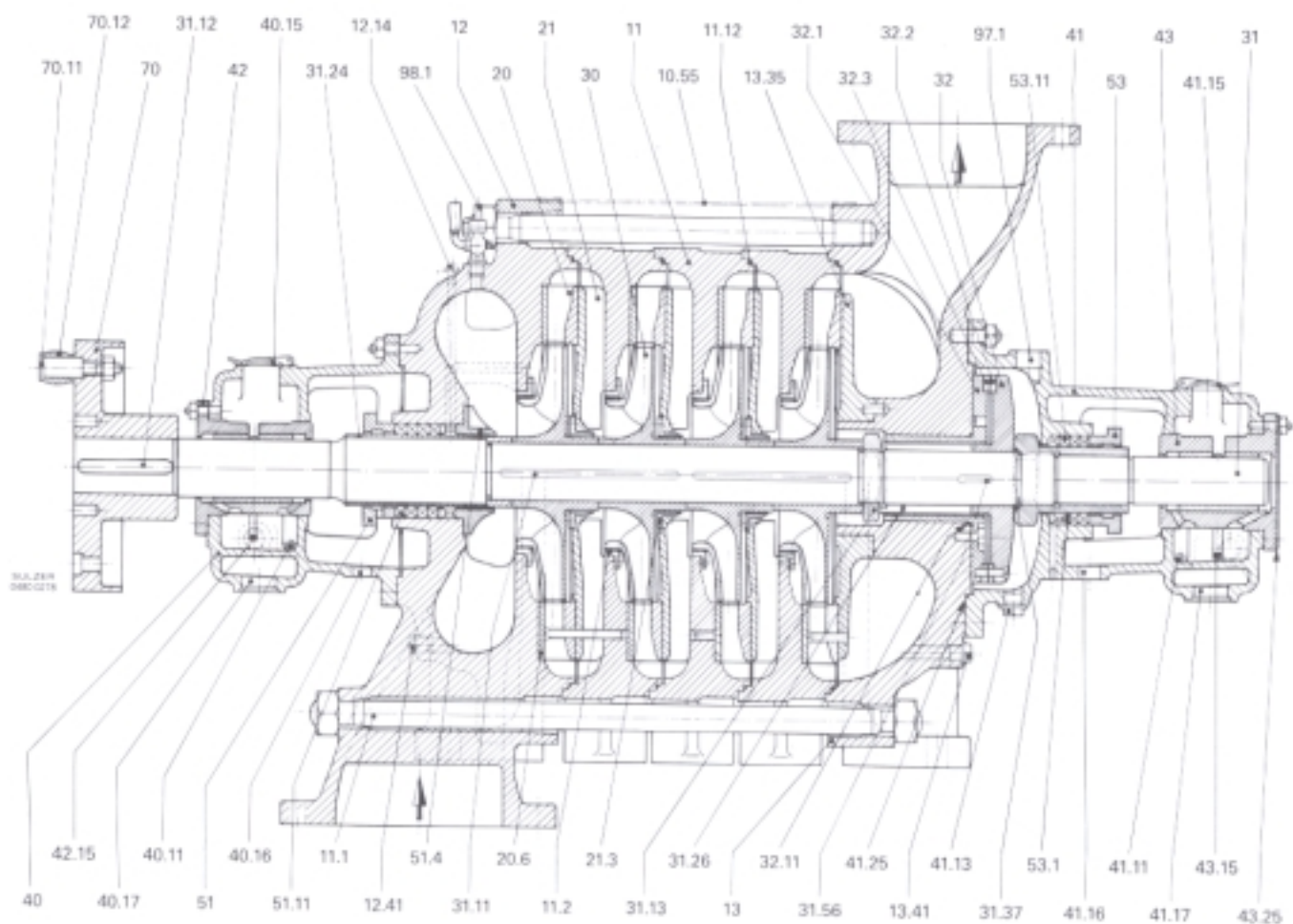
Sectional drawing of HPL pump sizes 21–32



Standard specification

Part No.	Material	Item	Part No.	Material	Item
10.55	MS	Cleading (optional extra)	* 31.2	PB2	Shaft sleeve and nut
11	CI/220	Casing element	31.24	PB2	Shaft sleeve DE
11.1	CS	Tie bolt	31.26	PB2	Distance sleeve
11.12	SR	Joint ring for 11	** 31.37	SR	Joint ring for 32
11.2	CI/180	Packing bush for 11	31.56	KS	Key for balancing disc
12	CI/220	Cover with suction branch	32	PB/CTI	Balancing disc
12.14	CS	Sealing plug for 12	32.1	CI/180	Counter balancing disc
12.41	CS	Drain plug for 12	32.11	SR	Joint ring
13	CI/260	Cover with discharge branch	32.2	AB1	Wearing ring for 32
13.35	CI/220	Mounting disc for 20	32.3	PB2	Wearing ring for 32.1
13.41	CS	Drain plug for 13	40	CI/180	Bearing support DE
20	PB/CTI	Diffuser	40.11	–	Oil level gauge for 40
** 20.6	PB/CTI	Protection plate (size 37 and above)	40.15	PB	Cover for oil chamber DE
21	CI/220	Overflow piece	40.16	–	Gland drain DE
21.3	CI/180	Packing bush for 21	40.17	CS	Oil drain plug for 40
30	AB2	Impeller	41	CI/220	Bearing support NDE
31	HTS	Shaft	* 41.1	CI/220	Bearing cap NDE
31.11	KS	Keys for impellers	41.11	–	Oil level gauge for 41
31.12	KS	Key for coupling	41.13	CS	Balance water drain plug
** 31.13	PB2	Shaft nut	41.15	PB	Cover for oil chamber NDE

Sectional drawing of HPL pump sizes 37–54



Material specification

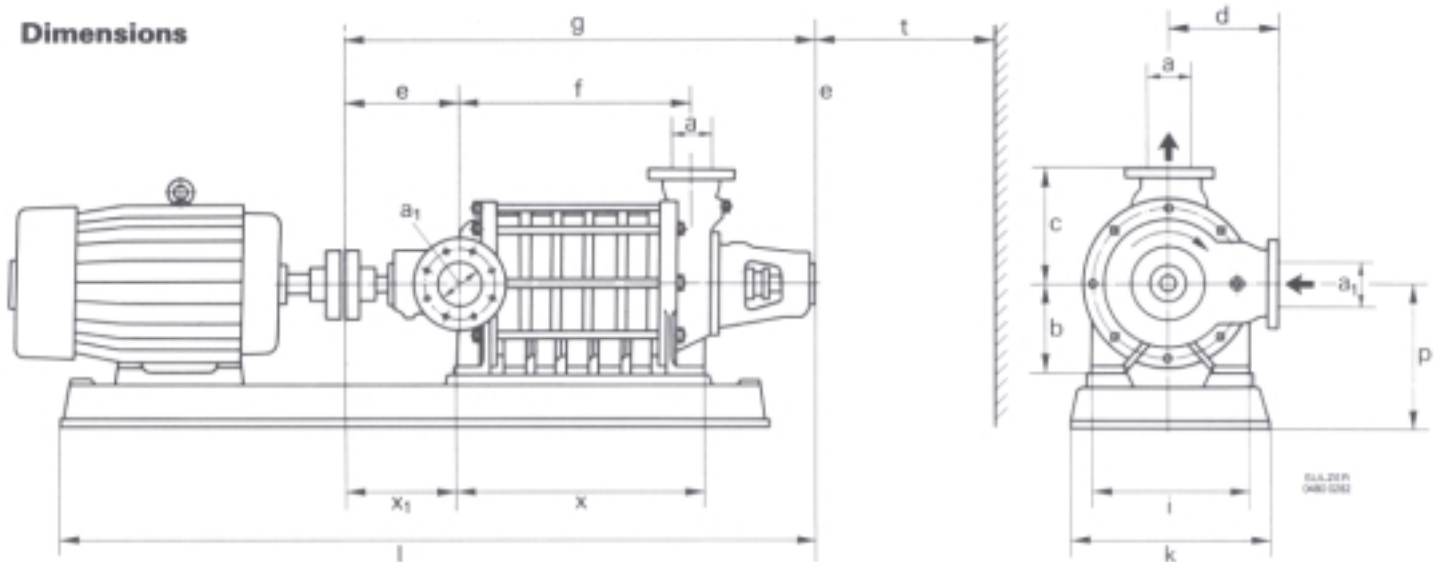
Part No.	Material	Item
41.16	–	Gland drain NDE
41.17	CS	Oil drain plug for 41
41.25	SR	Joint ring for 41
42	CI/180 white metallised	Bearing bush DE
42.15	MS	Oil ring DE
43	CI/180 white metallised	Bearing bush NDE
43.15	MS	Oil ring NDE
** 43.25	MS	Bearing cap
51	CI/300	Stuffing box gland DE
51.11	GA	Gland packing DE
51.4	PB2	Lantern bush DE
53	CI/300	Stuffing box gland NDE
53.1	PB2	Lantern bush NDE
53.11	GA	Gland packing NDE
70	CI	Pump half coupling
70.11	KS	Coupling pin for 70
70.12	SR	Coupling buffer for 70
97.1	–	Balance water discharge
98.1	–	Air cock for 12
CI/180	Cast iron	BS 1452 Gr 180
CI/220	Cast iron	BS 1452 Gr 220
CI/260	Cast iron	BS 1452 Gr 260
CI/300	Cast iron	BS 1452 Gr 300
MS	Mild steel	BS 1449
CS	Steel	BS 970 070 M20
KS	Key steel	BS 970 080 M40
HTS	High tensile steel	BS 970 150 M36
PB/CTI	Phosphor bronze	BS 1400 CTI
PB2	Phosphor bronze	BS 1400 PB2
AB1	Aluminium bronze	BS 1400 AB1
AB2	Aluminium bronze	BS 1400 AB2
SR	Synthetic rubber	
GA	Graphited asbestos	

Accessories include oil level gauges, drain plugs, air cock, first filling of packing for the stuffing boxes, and one set special tools for each contract. Optional extras, cleveland, auxiliary pipework and drains.

* Sizes HPL 21–32

** Sizes HPL 37–54

Dimensions

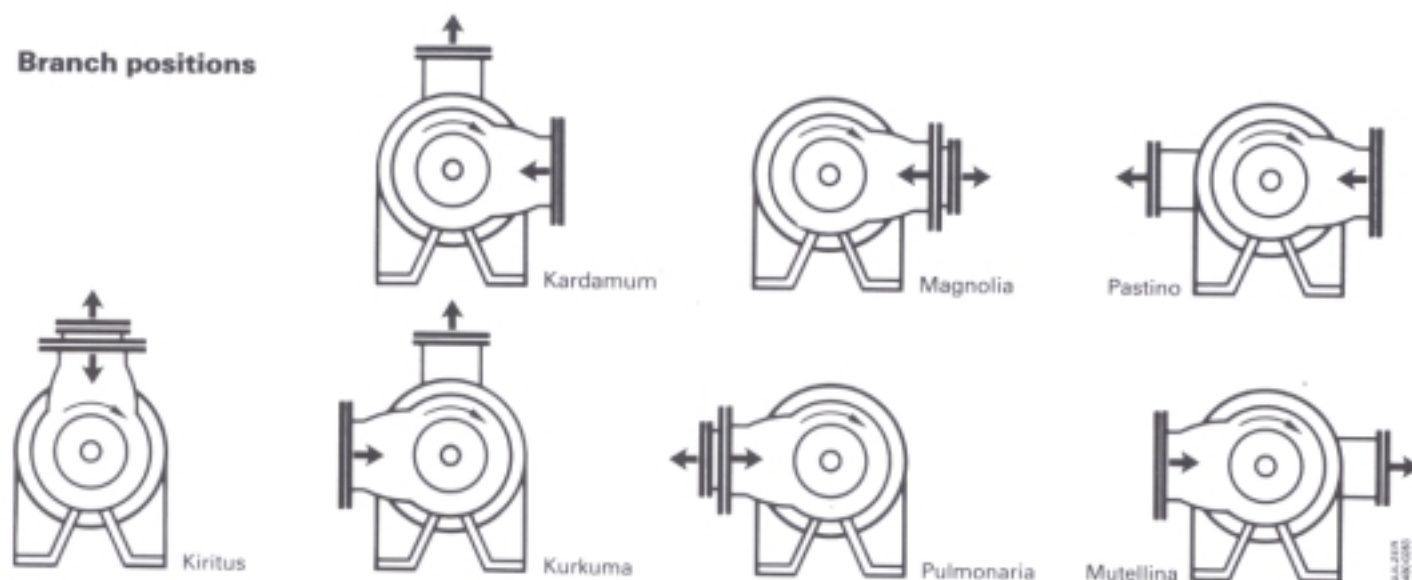


Flange bolting dimensions are in accordance with BS 4504, Part 1 NP40.

- Dimension t – is the space required for dismantling
- Arrangement "D" – provides the pump, coupling, coupling guard and combined bedplate for pump and driver
- Arrangement "N" – provides the pump and coupling only

Pump size	rev/min	stages	a	a ₁	b	c	d	e	f	g	i	k	l	p	t	x ₁	x	weight/kg	
																		"N" arrgt.	"D" arrgt.
HPL 21-10	1450	2	100	125	250	340	340	360	270	985	480	560	1475	400	510	330	345	382	772
		3	100	125	250	340	340	360	354	1070	480	560	1565	400	510	330	430	441	902
		4	100	125	250	340	340	360	438	1155	480	560	1750	400	510	330	510	500	1015
		5	100	125	250	340	340	360	522	1240	480	560	1780	400	510	330	595	559	1121
		6	100	125	250	340	340	360	606	1325	480	560	1880	400	510	330	680	618	1229
		7	100	125	250	340	340	360	690	1405	480	560	2085	400	510	330	765	677	1414
		8	100	125	250	340	340	360	774	1490	480	560	2160	400	510	330	850	736	1496
		9	100	125	250	340	340	360	858	1575	480	610	2265	425	510	330	930	795	1578
		10	100	125	250	340	340	360	942	1660	480	610	2390	425	510	330	1015	854	1726
		11	100	125	250	340	340	360	1026	1745	480	610	2480	425	510	330	1100	913	1808
		12	100	125	250	340	340	360	1110	1830	480	610	2585	425	510	330	1185	972	1955
		HPL 24-12 1/2	1450	2	125	150	280	375	375	360	314	1035	540	610	1580	425	560	325	395
3	125			150	280	375	375	360	408	1130	540	610	1825	445	560	325	490	597	1154
4	125			150	280	375	375	360	502	1225	540	610	1905	450	560	325	580	678	1390
5	125			150	280	375	375	360	596	1315	540	610	2035	450	560	325	675	758	1588
6	125			150	280	375	375	360	690	1410	540	610	2165	455	560	325	770	839	1773
7	125			150	280	375	375	360	784	1505	540	610	2270	455	560	325	865	918	2131
8	125			150	280	375	375	360	878	1600	540	610	2310	470	560	325	960	998	2263
9	125			150	280	375	375	360	972	1695	540	770	2450	480	560	325	1050	1081	2493
10	125			150	280	375	375	360	1066	1790	540	770	2600	480	560	325	1145	1164	2628
11	125			150	280	375	375	360	1160	1885	540	770	2730	480	560	325	1240	1249	2865
12	125			150	280	375	375	360	1254	1980	540	770	2850	480	560	325	1335	1330	3070
HPL 30-12 1/2	1450			2	125	150	335	420	420	420	348	1145	620	610	1845	475	710	385	435
		3	125	150	335	420	420	420	454	1300	620	610	2030	475	710	385	540	900	2090
		4	125	150	335	420	420	420	560	1405	620	610	2195	475	710	385	650	1023	2365
		5	125	150	335	420	420	420	666	1515	620	685	2380	475	710	385	755	1146	2626
		6	125	150	335	420	420	420	772	1620	620	685	2580	535	710	385	860	1269	2907
		7	125	150	335	420	420	420	878	1725	620	685	2620	535	710	385	965	1392	3275
		8	125	150	335	420	420	420	984	1830	620	770	2905	535	710	385	1070	1515	3575
		9	125	150	335	420	420	420	1090	1935	620	770	3015	575	710	385	1180	1638	3805
		10	125	150	335	420	420	420	1196	2090	620	865	3125	625	710	385	1285	1761	3985
		11	125	150	335	420	420	420	1302	2150	620	865	3235	655	710	385	1390	1884	4365
		12	125	150	335	420	420	420	1408	2255	620	985	3350	680	710	385	1495	2007	4545
		13	125	150	335	420	420	420	1514	2360	620	985	3460	680	710	385	1600	2130	4870
		HPL 32-17 1/2	1450	2	175	200	375	475	475	410	415	1235	700	610	2005	575	760	375	440
3	175			200	375	475	475	410	535	1355	700	610	2135	625	760	375	610	1022	2443
4	175			200	375	475	475	410	655	1480	700	770	2360	625	760	375	730	1190	2777
5	175			200	375	475	475	410	775	1600	700	770	2575	625	760	375	850	1358	3318
6	175			200	375	475	475	410	895	1720	700	865	2695	655	760	375	970	1526	3601
7	175			200	375	475	475	410	1015	1840	700	865	3125	655	760	375	1090	1694	4034
8	175			200	375	475	475	410	1135	1960	700	985	3150	655	760	375	1210	1862	4267
9	175			200	375	475	475	410	1255	2080	700	990	3160	655	760	375	1330	2030	4500
10	175			200	375	475	475	410	1375	2200	700	990	3300	720	760	375	1450	2198	4883
11	175			200	375	475	475	410	1495	2320	700	990	3400	720	760	375	1570	2366	5295

Branch positions



Rotation is clockwise looking on the pump coupling face. The dimensions are given in millimeters, not binding and subject to amendment.

Branch position Kardamum is supplied as standard unless otherwise called for at time of order.

Pump size	rev/ min	stages	a	a ₁	b	c	d	e	f	g	i	k	l	p	t	x ₁	x	weight/kg "N"-angl. "D"-angl.	
HPL 37-20	1450	2	200	250	425	570	570	580	515	1635	800	865	3210	625	660	565	560	1770	3390
		3	200	250	425	570	570	580	645	1765	800	865	3380	625	660	565	690	2000	4000
		4	200	250	425	570	570	580	775	1895	800	865	3550	625	660	565	820	2230	4552
		5	200	250	425	570	570	580	905	2025	800	865	3730	625	660	565	950	2460	5854
		6	200	250	425	570	570	580	1035	2155	800	865	3900	625	660	565	1080	2690	6156
		7	200	250	425	570	570	580	1165	2285	800	865	4030	625	660	565	1210	2920	6458
		8	200	250	425	570	570	580	1295	2415	800	865	4160	625	660	565	1340	3150	6760
		9	200	250	425	570	570	580	1425	2545	800	865	4290	625	660	565	1470	3380	7062
		10	200	250	425	570	570	580	1555	2675	800	865	4410	625	660	565	1600	3610	7364
		HPL 42-22^{1/2}	1450	2	250	300	475	630	630	570	590	1695	920	985	3405	705	660	565	625
3	250			300	475	630	630	570	735	1840	920	985	3580	720	660	565	770	2700	6275
4	250			300	475	630	630	570	880	1985	920	985	3755	755	660	565	915	3040	6729
5	250			300	475	630	630	570	1025	2130	920	1200	3930	755	660	565	1060	3380	7184
6	250			300	475	630	630	570	1170	2275	920	1200	4105	825	660	565	1205	3720	7638
7	250			300	475	630	630	570	1315	2420	920	1200	4380	845	660	565	1350	4060	8092
8	250			300	475	630	630	570	1460	2565	920	1200	4600	845	660	565	1495	4400	8346
HPL 48-25	1450			2	250	300	530	660	660	700	660	1935	1000	985	3930	780	710	695	695
		3	250	300	530	660	660	700	825	2100	1000	1200	4100	780	710	695	860	3850	7739
		4	250	300	530	660	660	700	990	2265	1000	1200	4270	780	710	695	1025	4340	8171
		5	250	300	530	660	660	700	1155	2430	1000	1310	4440	850	710	695	1190	4830	8603
		6	250	300	530	660	660	700	1320	2595	1000	1310	4610	850	710	695	1355	5320	11136
		HPL 54-30	1450	2	300	350	600	750	750	695	735	2010	1170	1310	3975	875	710	640	870
3	300			350	600	750	750	695	920	2195	1170	1310	4175	880	710	640	1056	5200	10760
4	300			350	600	750	750	695	1105	2380	1170	1310	4375	880	710	640	1240	5880	11893

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Pump Division

Product range

Power generation

Manufacturing programme
Boiler feed pumps
Booster pumps
Condensate and heater extraction pumps
Hot-water circulation pumps
Cooling-water pumps
Auxiliary pumps

Liquid transport

Manufacturing programme
Pumps for transporting water (for large flows over long distances with high heads)
Drinking-water supply pumps
Irrigation and drainage pumps
Crude oil pipeline pumps
Oil-field injection pumps (both fresh and salt water)
Effluent transport pumps

Industry

Manufacturing programme
Pumps for:
Refineries
Petrochemical applications
Chemical industry
Sugar refineries
Pulp and paper industry
Sewerage installations
Mining applications
Major fire-fighting installations
Other applications such as marine, hot-water systems, etc.

Group activity programme

Hot water and steam-generating plants
Components for nuclear power stations
Gas turbines
Diesel engines
Marine equipment
Water turbines
Storage pumps and pump-turbines
Valves and control systems for power stations
Pumps, compressors and blowers
Machinery for the asbestos-cement industry
Plants for the manufacture of paper and mill board
Textile machines
Air conditioning and heating systems
Plumbing and fire-protection systems
Refrigerating and cryogenic plants, heat pumps
Heat exchangers
Plants for distillation, evaporation and drying
Centrifuges and mixing processes
Machines for the processing of plastics
Water and waste-water treatment plants
Water cooling systems
Irradiation plants
Medical engineering products
Locomotives and railcars
Electronic regulating and control devices
Industrial gears
Parts manufacture
Foundry products
Engineering of complete plants