



General

ISW series pumps, designed in accordance with ISO2858 standard, are single-stage single-suction horizontal centrifugal pumps featured by integrated simple construction for less space, easy installation, smooth operation with less noise and free of daily maintenance due to the introduction of high quality mechanical seals and closed coupling.

Features

- Integrated horizontal construction and smooth operation with closed coupling for space and cost saving.
- Low noise and Leak proof operation with mechanical seals of hard alloy materials.
- Vent valve designed on pump cover and water release at pump bottom, pressure detecting holes at flange inlet and outlet for on-line operation monitor.
- Working pressure up to 1.6Mpa.

4 types of ISW series pumps are available for different applications, namely:

- **ISW:** for application of clean water or similar liquids within the temperature range of $0 \sim 80^{\circ}\text{C}$, for instance cold/hot water circulation for air conditioning systems, water supply for high buildings, water boosting for fire fighting systems, long distance water delivery, process circulation boost for industrial production, sprinkling irrigation for gardens etc..
- **ISWR:** for pumping of hot water (up 120°C) circulating in greenhouse, boiler, bathroom and other HVAC systems. Also applicable to circulation boost of non-corrosive hot water in various industries.
- **ISWH:** for pumping and boosting of various kinds of corrosive liquids ($\leq 120^{\circ}\text{C}$) in industries like chemical, environment protection, foodstuff and brewery, pharmacy, papermaking and textiles etc..
- **ISWB:** for pumping of non-corrosive oil and petrochemicals or any other flammable and explosive liquids (viscosity $< 120\text{mm}^2/\text{s}$) within the temperature range of $-20 \sim 120^{\circ}\text{C}$.

Performance Data

Capacity Range: $1.5 \sim 1203\text{m}^3/\text{hr}$

Head Range: $8 \sim 133\text{m}$

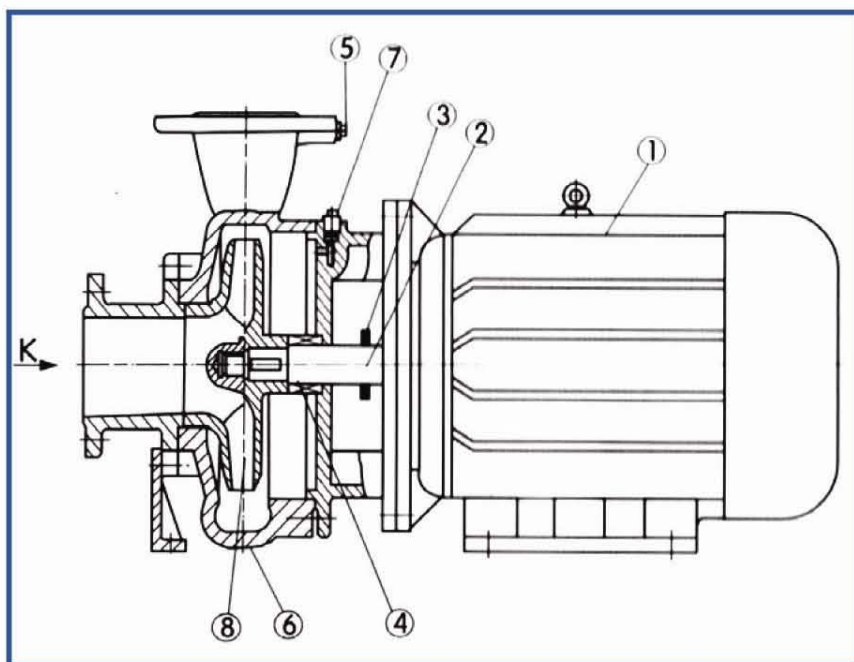
Speed: $1450\text{rpm}/2900\text{rpm}$

Max. working pressure: 1.6Mpa

Suction pressure: up to 1.0Mpa

Configuration Drawing

- 1 – Motor
- 2 – Shaft
- 3 – Deflector
- 4 – Mechanical Seal
- 5 – Pressure Monitoring Hole
- 6 – Pump Casing
- 7 – Pressure Release Plug
- 8 – Impeller



Performance Data Charts

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m³/H)	(l/s)					
1	15-18	1.1	0.3	8.5	26	2800	0.18	2.3
		1.5	0.42	8	34			
		2	0.55	7	34			
2	20-110	1.8	0.5	16	25	2800	0.37	2.3
		2.5	0.69	15	34			
		3.3	0.91	13.5	35			
3	20-160	1.8	0.5	33	19	2900	1.1	2.3
		2.5	0.69	32	25			
		2.2	0.91	30	23			
4	25-110	2.5	0.78	16	34	2900	0.55	2.3
		4	1.11	15	42			
		2.2	1.44	13.5	41			
5	25-125	2.8	0.78	20.6	28	2900	0.75	2.3
		4	1.11	20	36			
		5.2	1.44	18	35			
6	25-125A	2.5	0.69	17	27	2800	0.55	2.3
		3.6	1	16	35			
		4.6	1.28	14.4	34			
7	25-160	2.8	0.78	33	24	2900	1.5	2.3
		4	1.11	32	32			
		5.2	1.44	30	33			
8	25-160A	2.6	0.72	29	22	2900	1.1	2.3
		3.7	1.03	28	31			
		4.9	1.36	26	32			
9	32-125	3.5	0.97	22	40	2900	0.75	2.3
		5	1.39	20	44			
		6.5	1.8	18	42			
10	32-125A	3.1	0.86	17.6	38	2900	0.55	2.3
		4.5	1.25	16	42			
		5.8	1.61	14.4	40			
11	40-100	4.4	1.22	13.2	48	2900	0.55	2.3
		6.3	1.75	12.5	54			
		8.3	2.31	11.3	53			
12	40-100A	3.9	1.08	10.6	45	2900	0.37	2.3
		5.6	1.56	10	52			
		7.4	2.06	9	50			
13	40-125	4.4	1.22	21	41	2900	1.1	2.3
		6.3	1.75	20	46			
		8.3	2.31	18	43			
14	40-125A	3.9	1.08	17.6	40	2900	0.75	2.3
		5.6	1.56	16	45			
		7.4	2.06	14.4	41			
15	40-160	4.4	1.22	33	35	2900	2.2	2.3
		6.3	1.75	32	40			
		8.3	2.31	30	40			
16	40-160A	4.3	1.44	29	34	2900	1.5	2.3
		5.9	1.64	28	39			
		7.8	2.17	26.3	39			

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m³/H)	(l/s)					
17	40-160B	3.8	1.06	25.5	34	2900	1.1	2.3
		5.5	1.53	24	38			
		7.2	2	22.5	37			
18	40-200	4.4	1.22	51	26	2900	4	2.3
		6.3	1.75	50	33			
		8.3	2.31	48	32			
19	40-200A	4.1	1.14	45	26	2900	3	2.3
		5.9	1.64	44	31			
		7.8	2.17	42	30			
20	40-200B	3.7	1.03	38	23	2900	2.2	2.3
		5.3	1.47	36	29			
		7	1.94	34.5	27			
21	40-250	4.4	1.22	82	24	2900	7.5	2.3
		6.3	1.75	80	28			
		8.3	2.31	74	28			
22	40-250A	4.1	1.14	72	24	2900	5.5	2.3
		5.9	1.64	70	28			
		7.8	2.17	65	27			
23	40-250B	3.8	1.06	61.5	23	2900	4	2.3
		5.5	1.53	60	27			
		7	1.94	56	26			
24	40-100(I)	8.8	2.44	13.2	55	2900	1.1	2.3
		12.5	3.47	12.5	62			
		16.3	4.53	11.3	60			
25	40-100(I)A	8	2.22	10.6	52	2900	0.75	2.3
		11	3.05	10	60			
		14.5	4.03	9	56			
26	40-125(I)	8.8	2.44	21.2	49	2900	1.5	2.3
		12.5	3.47	20	58			
		16.3	4.53	17.8	57			
27	40-125(I)A	8	2.22	17	47	2900	1.1	2.3
		11	3.05	16	57			
		14.5	4.03	14	54			
28	40-160(I)	8.8	2.44	33	45	2900	3	2.3
		12.5	3.47	32	52			
		16.3	4.53	30	51			
29	40-160(I)A	8.2	2.28	29	44	2900	2.2	2.3
		11.7	3.25	28	51			
		15.2	4.22	26	50			
30	0-160(I)	7.3	2.38	23	42	2900	1.5	2.3
		10.4	2.89	22	49			
		13.5	3.75	20.5	47			
31	40-200(I)	8.8	2.44	51.2	38	2900	5.5	2.3
		12.5	3.47	50	46			
		16.3	4.53	48	46			
32	40-200(I)A	8.3	2.31	45	37	2900	4	2.3
		11.7	3.25	44	45			
		15.3	4.25	42	45			

Performance Data Charts

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
33	40-200(I)B	7.5	2.08	37	35	2900	3	2.3
		10.6	2.94	36	44			
		13.8	3.83	34	42			
34	40-250(I)	8.8	2.44	81.2	31	2900	11	2.3
		12.5	3.47	80	38			
		16.3	4.53	77.5	40			
35	40-250(I)A	8.2	2.28	71	28	2900	7.5	2.3
		11.6	3.22	70	38			
		15.2	4.22	68	39			
36	40-250(I)B	7.6	2.11	61.4	28	2900	7.5	2.3
		10.8	3	60	37			
		14	3.89	58	37			
37	40-250(I)C	7.1	1.97	53.2	26	2900	5.5	2.3
		10	2.78	52	36			
		13.1	3.64	50.4	35			
38	50-100	8.8	2.44	13.6	55	2900	1.1	2.3
		12.5	3.47	12.5	62			
		16.3	4.53	11.3	60			
39	50-100A	8	2.22	11	52	2900	0.75	2.3
		11	3.05	10	60			
		14.5	4.03	9	56			
40	50-125	8.8	2.44	21.5	49	2900	1.5	2.3
		12.5	3.47	20	58			
		16.3	4.53	17.8	57			
41	50-125A	8	2.22	17	47	2900	1.1	2.3
		11	3.05	16	57			
		14.5	4.03	14	54			
42	50-160	8.8	2.44	33	45	2900	3	2.3
		12.5	3.47	32	52			
		16.3	4.53	30	51			
43	50-160A	8.2	2.28	29	44	2900	2.2	2.3
		11.7	3.25	28	51			
		15.2	4.22	26	50			
44	50-160B	7.3	2.38	23	42	2900	1.5	2.3
		10.4	2.89	22	49			
		13.5	3.75	20.5	47			
45	50-200	8.8	2.44	52	38	2900	5.5	2.3
		12.5	3.47	50	46			
		16.3	4.53	48	46			
46	50-200A	8.3	2.31	45.8	37	2900	4	2.3
		11.7	3.25	44	45			
		15.3	4.25	42	45			
47	50-200B	7.5	2.08	37	35	2900	3	2.3
		10.6	2.94	36	44			
		13.8	3.83	34	42			
48	50-250	8.8	2.44	82	29	2900	11	2.3
		12.5	3.47	80	28			
		16.3	4.53	77.5	40			

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
49	50-250A	8.2	2.28	71.5	28	2900	7.5	2.3
		11.6	3.22	70	38			
		15.2	4.22	68	39			
50	50-250B	7.6	2.11	61.4	28	2900	7.5	2.3
		10.8	3	60	37			
		14	3.89	58	37			
51	50-250C	7.1	1.97	53.2	26	2900	5.5	2.3
		10	2.78	52	36			
		13.1	3.64	50.4	35			
52	50-100(I)	17.5	4.86	13.7	67	2900	1.5	2.5
		25	6.94	12.5	69			
		32.5	9.03	10.5	69			
53	50-100(I)A	15.6	4.3	11	65	2900	1.1	2.5
		22.3	6.19	10	67			
		29	8.1	8.4	68			
54	50-250(I)	17.5	4.86	21.5	60	2900	3	2.5
		25	6.94	20	68			
		32.5	9.03	18	67			
55	50-125(I)A	15.6	4.33	17	58	2900	2.2	2.5
		22.3	6.19	16	66			
		29	8.1	13.6	65			
56	50-160(I)	17.5	4.86	34.4	54	2900	4	2.5
		25	6.94	32	63			
		32.5	9.03	27.5	60			
57	50-160(I)A	16.4	4.56	30	54	2900	4	2.5
		23.4	6.5	28	62			
		30.4	8.44	24	59			
58	50-160(I)B	15	4.17	26	49	2900	3	2.5
		21.6	6	24	58			
		28	7.78	20.6	54			
59	50-200(I)	17.5	4.86	52.7	49	2900	7.5	2.5
		25	6.94	50	58			
		32.5	9.03	45.5	59			
60	50-200(I)A	16.4	4.56	46.4	48	2900	7.5	2.5
		23.5	6.53	44	57			
		30.5	8.47	40	58			
61	50-200(I)B	15.2	4.22	40	45	2900	5.5	2.5
		21.8	6.06	38	55			
		28.3	7.86	34.5	55			
62	50-250(I)	17.5	4.86	82	39	2900	15	2.5
		25	6.94	80	50			
		32.5	9.03	76.5	52			
63	50-250(I)A	16.4	4.56	71.5	39	2900	11	2.5
		23.4	6.5	70	50			
		30.5	8.47	67	52			
64	0-250(I)	15	4.17	61	38	2900	11	2.5
		21.6	6	60	49			
		28	7.78	57.4	54			

Performance Data Charts

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
65	50-315(I)	17.5	4.86	128	30	2900	30	2.5
		25	6.94	125	40			
		32.5	9.03	122	44			
66	50-315(I)A	16.6	4.61	115	30	2900	22	2.5
		23.7	6.58	113	40			
		31	8.6	110	44			
67	50-315(I)B	15.7	4.36	103	30	2900	22	2.5
		22.5	6.25	101	39			
		29.2	8	98	42			
68	50-315(I)C	14.4	4	86	38	2900	15	2.5
		20.6	5.72	85	48			
		26.8	7.44	83	40			
69	65-100	17.5	4.86	13.7	67	2900	1.5	2.5
		25	6.94	12.5	69			
		21.5	9.03	10.5	69			
70	65-100A	15.6	4.3	11	65	2900	1.1	2.5
		22.3	4.19	10	67			
		29	8.1	8.4	68			
71	65-125	17.5	4.86	21.5	60	2900	3	2.5
		25	6.94	20	68			
		32.5	9.03	18	67			
72	65-125A	15.6	4.33	17	58	2900	2.2	2.5
		22.3	6.19	16	66			
		29	8.1	14.4	65			
73	65-160	17.5	4.86	34.4	54	2900	4	2.5
		25	6.94	32	63			
		32.5	9.03	27.5	60			
74	65-160A	16.4	4.56	30	54	2900	4	2.5
		23.4	6.5	28	63			
		30.4	8.44	24	59			
75	65-160B	15	4.17	26	49	2900	3	2.5
		21.6	6	24	58			
		28	7.78	20.6	54			
76	65-200	17.5	4.86	52.7	49	2900	7.5	2.5
		25	6.94	50	58			
		32.5	9.03	45.5	59			
77	65-200A	16.4	4.56	46.4	48	2900	7.5	2.5
		23.5	6.53	44	57			
		30.5	8.47	40	58			
78	65-200B	15.2	4.22	40	45	2900	5.5	2.5
		21.8	6.06	38	55			
		28.3	7.86	34.5	55			
79	65-250	17.5	4.86	82	39	2900	15	2.5
		25	6.94	80	50			
		32.5	9.03	76.5	52			
80	65-250A	16.4	4.56	71.5	39	2900	11	2.5
		23.4	6.5	70	50			
		30.5	8.47	67	52			

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
81	65-250B	15	4.17	61	38	2900	11	2.5
		21.6	6	60	49			
		28	7.78	57.4	54			
82	65-315	17.5	4.86	32	32	2900	30	2.5
		25	6.94	40	40			
		32.5	9.03	44	44			
83	65-315A	16.6	4.61	32	32	2900	22	2.5
		23.7	6.58	40	40			
		31	8.6	44	44			
84	65-315B	15.7	4.36	30	30	2900	22	2.5
		22.5	6.25	39	39			
		29.2	8	42	42			
85	65-315C	14.4	4	28	28	2900	15	2.5
		20.6	5.72	38	38			
		26.8	7.44	40	40			
86	65-100(I)	35	9.72	67	67	2900	3	2.5
		50	13.9	73	73			
		65	18.1	70	70			
87	65-100(I)A	31.3	8.7	66	66	2900	2.2	3
		44.7	12.4	72	72			
		58	16.1	69	69			
88	65-125(I)	35	9.72	67	67	2900	5.5	3
		50	13.9	72.5	72.5			
		65	18.1	70	70			
89	65-125(I)A	31.3	8.7	66	66	2900	4	3
		45	12.5	71	71			
		58	16.1	69	69			
90	65-160(I)	35	9.72	63	63	2900	7.5	3
		50	13.9	71	71			
		65	18.1	70	70			
91	65-160(I)A	32.7	9.1	62	62	2900	7.5	3
		46.7	13	72	70			
		61	16.9	69	69			
92	65-160(I)B	30.3	8.4	60	60	2900	5.5	3
		43.3	12	69	69			
		56.3	15.6	67	67			
93	65-200(I)	35	9.72	55	55	2900	15	3
		50	13.9	67	67			
		65	18.1	68	68			
94	65-200(I)A	32.8	9.1	54	54	2900	11	3
		47	13.1	66	66			
		61	16.9	67	67			
95	65-200(I)B	30.5	8.5	52	52	2900	7.5	3
		43.5	12.1	65	65			
		56.6	15.7	65	65			
96	65-250(I)	35	9.72	52	52	2900	22	3
		50	13.9	59	59			
		65	18.1	60	60			

Performance Data Charts

Item	Model	Capacity Q		Head H	Effi.	Speed	Motor Power	NPSHr
		(m ³ /H)	(l/s)					
97	65-250(I)A	32.5	9	73	52	2900	18.5	3
		46.7	13	70	59			
		61	16.9	63	60			
98	65-250(I)E	30	8.3	62	50	2900	15	3
		43.3	12	60	58			
		56	15.6	54	58			
99	65-315(I)	35	9.72	128	44	2900	37	3
		50	13.9	125	54			
		65	18.1	121	57			
100	65-315(I)A	32.5	9	112.6	43	2900	37	3
		46.5	12.9	110	54			
		60.5	16.8	106.4	57			
101	65-315(I)E	31	8.6	102.5	41	2900	30	3
		44.5	12.4	100	53			
		58	16.1	98	55			
102	65-315(I)C	29	8	98	38	2900	22	3
		41	11.4	85	50			
		53.6	14.9	83	52			
103	80-100	35	9.72	13.8	67	2900	3	3
		50	13.9	12.5	73			
		65	18.1	10	70			
104	80-100A	31.3	8.7	11	66	2900	2.2	3
		44.7	12.4	10	72			
		58	16.1	8	69			
105	80-125	35	9.72	22	67	2900	5.5	3
		50	13.9	20	72.5			
		65	18.1	17	70			
106	80-125A	31.3	8.7	17.5	66	2900	4	3
		45	12.5	16	71			
		58	16.1	13.6	69			
107	80-160	35	9.72	35	63	2900	7.5	3
		50	13.9	32	71			
		65	18.1	28	70			
108	80-160A	32.7	9.1	30.6	62	2900	7.5	3
		46.7	13	28	70			
		61	16.9	24	69			
109	80-160B	30.3	8.4	26	60	2900	5.5	3
		43.3	12	24	69			
		56.3	15.6	21	67			
110	80-200	35	9.72	53.5	55	2900	15	3
		50	13.9	50	67			
		65	18.1	46	68			
111	80-200A	32.8	9.1	47	55	2900	11	3
		47	13.1	44	66			
		61	16.9	40	67			
112	80-200B	30.5	8.5	40.6	52	2900	7.5	3
		43.5	12.1	38	65			
		56.6	15.7	33.4	65			

Item	Model	Capacity Q		Head H	Effi.	Speed	Motor Power	NPSHr
		(m ³ /H)	(l/s)					
113	80-250	35	9.72	83	52	2900	22	3
		50	13.9	80	59			
		65	18.1	72	60			
114	80-250A	32.5	9.03	73	52	2900	18.5	3
		46.7	13	70	59			
		61	16.9	63	60			
115	80-250B	30	8.3	62	50	2900	15	3
		43.3	12	60	58			
		56	15.6	54	58			
116	80-315	35	9.72	128	43	2900	37	3
		50	13.9	125	54			
		65	18.1	122	57			
117	80-315A	32.5	9.03	112.6	43	2900	37	3
		46.5	12.9	110	54			
		60.5	16.8	107.4	57			
118	80-315B	31	8.6	102.5	41	2900	30	3
		44.5	12.4	100	53			
		58	16.1	98	55			
119	80-315C	29	8.1	87	39	2900	22	3
		41	11.4	85	51			
		53.6	14.9	83	51			
120	80-100(I)	70	19.4	13.6	66	2900	5.5	4.5
		100	27.8	12.5	76			
		130	36.1	11	75			
121	80-100(I)A	62.6	17.4	11	64	2900	4	4.5
		89	24.7	10	74			
		116	32.2	8.8	74			
122	80-125(I)	70	19.4	23.5	70	2900	11	4.5
		100	27.8	20	76			
		130	36.1	14	65			
123	80-125(I)A	62.6	17.4	19	68	2900	7.5	4.5
		89	24.7	16	74			
		116	32.2	11	63			
124	80-160(I)	70	19.4	36.5	70	2900	15	4.5
		100	27.8	32	76			
		130	36.1	24	65			
125	80-160(I)A	65.4	18.5	32	68	2900	11	4.5
		93.5	26	28	74			
		121.6	33.8	21	67			
126	80-160(I)B	60.6	16.8	27	65	2900	11	4.5
		86.6	24.1	24	72			
		112.5	31.3	18	64			
127	80-200(I)	70	19.4	54	65	2900	22	4
		100	27.8	50	74			
		130	36.1	42	73			
128	80-200(I)A	65.4	18.2	47.5	65	2900	18.5	4
		93.5	26	44	73			
		121.6	33.8	37	72			

Performance Data Charts

Item	Model	Capacity Q		Head H	Effi.	Speed	Motor Power	NPSHr
		(m ³ /H)	(l/s)					
129	80-200(I)B	61	16.9	41	61	2900	15	4
		87	24.2	38	71			
		113	31.4	32	69			
130	80-250(I)	70	19.4	87	62	2900	37	4
		100	27.8	80	69			
		130	36.1	68	68			
131	80-250(I)A	65.4	18.2	76	61	2900	30	4
		93.5	26	70	68			
		121.6	33.8	59.5	67			
132	80-250(I)B	61	16.9	65	58	2900	30	4
		87	24.2	60	66			
		113	31.4	51	64			
133	80-315(I)	70	19.4	132	55	2900	75	4
		100	27.8	125	66			
		130	36.1	114	67			
134	80-315(I)A	66.5	18.5	119	55	2900	55	4
		95	26.4	113	66			
		123.6	34.3	103	67			
135	80-315(I)B	63	17.5	106.6	52	2900	45	4
		90	25	101	64			
		117	32.5	92	64			
136	80-315(I)C	58	16.1	90	50	2900	37	4
		82	22.8	85	62			
		107	29.7	76	61			
137	100-100	70	19.4	13.6	66	2900	5.5	4.5
		100	27.8	12.5	76			
		130	36.1	11	75			
138	100-100A	62.6	17.4	11	64	2900	4	4.5
		89	24.7	10	74			
		116	32.2	8.8	74			
139	100-125	70	19.4	23.5	70	2900	11	4.5
		100	27.8	20	76			
		130	36.1	14	65			
140	100-125A	62.6	17.4	19	68	2900	7.5	4.5
		89	24.7	16	74			
		116	32.2	11	63			
141	100-160	70	19.4	36.5	70	2900	15	4.5
		100	27.8	32	76			
		130	36.1	24	65			
142	100+160A	65.4	18.2	32	68	2900	11	4.5
		93.5	26	28	74			
		121.6	33.8	21	67			
143	100-160B	60.6	16.8	27	66	2900	11	4.5
		86.6	24.1	24	72			
		112.5	31.3	18	64			
144	100-200	70	19.4	54	65	2900	22	4
		100	27.8	50	74			
		130	36.1	42	73			

Item	Model	Capacity Q		Head H	Effi.	Speed	Motor Power	NPSHr
		(m ³ /H)	(l/s)					
145	100-200A	65.4	18.2	47.5	64	2900	18.5	4
		93.5	26	44	73			
		121.6	33.8	37	72			
146	100-200B	61	16.9	41	62	2900	15	4
		87	24.2	38	71			
		113	31.4	32	69			
147	100-250	70	19.4	87	62	2900	37	4
		100	27.8	80	69			
		130	36.1	68	68			
148	100-250A	65.4	18.2	76	61	2900	30	4
		93.5	26	70	68			
		121.6	33.8	59.5	67			
149	100-250B	61	16.9	65.8	59	2900	30	4
		87	24.2	60.5	68			
		113	31.4	51.4	66			
150	100-315	70	19.4	132	55	2900	75	4
		100	27.8	125	66			
		130	36.1	114	67			
151	100-315A	66.5	18.5	119	55	2900	55	4
		95	26.4	113	66			
		123.6	34.3	103	67			
152	100-315B	63	17.5	106.6	54	2900	45	4
		90	25	101	65			
		117	32.5	92	66			
153	100-315C	58	16.1	90	51	2900	37	4
		82	22.8	85	63			
		107	29.7	76	63			
154	125-100	96	26.7	13	63	2900	11	4
		160	44.4	12.5	80			
		192	53.3	12	76			
155	125-100A	86	23.9	10.4	60	2900	7.5	4
		143	39.7	10	77			
		172	47.8	9.6	74			
156	125-125	96	26.7	22.6	62	2900	15	4
		160	44.4	20	78			
		192	53.3	17	78			
157	125-125A	86	23.9	18	60	2900	11	4
		143	39.7	16	76			
		172	47.8	13.6	76			
158	125-160	96	26.7	36	64	2900	22	4
		160	44.4	32	78			
		192	53.3	28	66			
159	125-160A	90	25	31.5	62	2900	18.5	4
		150	41.7	28	76			
		180	50	24.5	64			
160	125-160B	83	21.7	27	58	2900	15	4
		138	38.3	24	73			
		166	46.1	21	60			

Performance Data Charts

Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (rpm)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
161	125-200	96	26.7	55	65	2900	37	5.5
		160	44.4	50	77			
		192	53.3	46	76			
162	125-200A	90	25	48.4	63	2900	30	5.5
		150	41.7	44	75			
		180	50	40.5	74			
163	125-200B	83	21.7	41.3	61	2900	22	5.5
		138	38.3	37.5	73			
		166	46.1	34.5	72			
164	125-250	96	26.7	87	61	2900	55	5
		160	44.4	80	75			
		192	53.3	73	72			
165	125-250A	90	25	76	60	2900	45	5
		150	41.7	70	74			
		180	50	64	71			
166	125-250B	83	21.7	65	58	2900	37	5
		138	38.3	60	72			
		166	46.1	55	68			
167	125-315	96	26.7	133	55	2900	90	5
		160	44.7	125	70			
		192	53.3	119	72			
168	125-315A	90	25	117	54	2900	75	5
		150	41.7	110	69			
		180	50	104.6	71			
169	125-315B	86	23.9	106.4	53	2900	75	5
		143	39.7	100	68			
		172	47.8	95.2	70			
170	125-315C	80.5	22.4	93.3	50	2900	55	5
		134	37.2	87.7	65			
		161	44.7	83.5	66			
171	150-200	140	38.9	13.8	68	1450	15	3
		200	55.6	12.5	78			
		260	72.2	10.6	78			
172	150-200A	125	34.7	11	66	1450	11	3
		179	49.7	10	76			
		232.5	64.6	8.5	76			
173	150-250	140	38.9	21.8	73	1450	18.5	3
		200	55.6	20	79			
		260	72.2	17	77			
174	150-250A	129	35.8	18.5	72	1450	15	3
		184.4	51.2	17	78			
		240	66.7	14.4	76			
175	150-250B	117	32.5	15.2	70	1450	11	3
		167	46.4	13.9	76			
		217.5	38.9	11.8	73			
176	150-315	140	55.6	33.8	70	1450	30	3.5
		200	72.2	32	78			
		260	36.4	28	73			

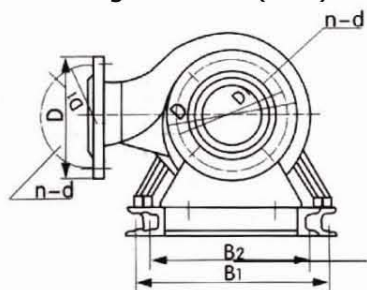
Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m ³ /H)	(l/s)					
177	150-315A	131	36.4	29.5	69	1450	22	3.5
		187	51.9	28	77			
		243	67.5	24.5	77			
178	150-315B	121	33.6	25	60	1450	18.5	3.5
		173	48.1	24	75			
		225	62.5	21	69			
179	150-400	140	38.9	53	68	1450	45	3.5
		200	55.6	50	75			
		260	72.2	44	71			
180	150-400A	131	36.4	46.6	67	1450	37	3.5
		187	51.9	4	74			
		243	67.5	38.3	70			
181	150-400B	122	33.9	40	66	1450	30	3.5
		174	48.3	38	73			
		226.5	62.9	33	68			
182	150-400C	112	31.3	34	64	1450	22	3.5
		160	44.4	32	71			
		208	57.8	28	65			
183	150-250(I)	120	33.3	87	65	2900	75	4.5
		200	55.6	80	76			
		240	66.7	72	74			
184	150-250(I)A	112	31.1	76	64	2900	55	4.5
		187	51.9	70	75			
		224	62.2	63	73			
185	150-250(I)B	104	28.9	65	63	2900	45	4.5
		173	48.1	60	74			
		208	57.8	54	72			
186	150-315(I)	120	33.3	133	58	2900	110	4.5
		200	55.6	125	73			
		240	66.7	120	75			
187	150-315(I)A	112	31.1	116	57	2900	90	4.5
		187	51.9	110	72			
		224	62.2	105	74			
188	150-315(I)B	104	28.9	100	55	2900	75	4.5
		173	48.1	95	70			
		208	57.8	91	72			
189	200-200	140	38.9	13.8	68	1450	15	3
		200	55.6	12.5	78			
		260	72.2	10.6	78			
190	200-200A	125	34.7	11	66	1450	11	3
		179	49.7	10	76			
		232.5	64.6	8.5	76			
191	200-250	140	38.9	21.8	73	1450	18.5	3
		200	55.6	20	79			
		260	72.2	17	77			
192	200-250A	129	35.8	18.5	72	1450	15	3
		184.4	51.2	17	78			
		240	66.7	14.4	76			

Performance Data Charts

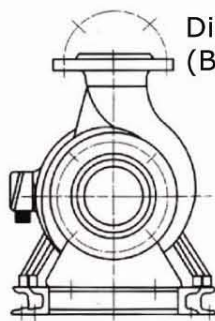
Item	Model	Capacity Q		Head H (m)	Effi. (%)	Speed (r/min)	Motor Power (kw)	NPSHr (m)
		(m³/H)	(l/s)					
193	200-250B	117	32.5	15.2	70	1450	11	3
		167	46.4	14	76			
		217.5	60.4	12	73			
194	200-315	140	38.9	33.8	70	1450	30	3.5
		200	55.6	32	78			
		260	72.2	28	78			
195	200-315A	131	36.4	29.5	69	1450	22	3.5
		187	51.9	28	77			
		243	67.5	24.5	77			
196	200-315B	121	33.6	25	67	1450	18.5	3.5
		173	48.1	24	75			
		225	62.5	21	74			
197	200-400	140	38.9	53	68	1450	45	3.5
		200	55.6	50	75			
		260	72.2	44	71			
198	300-400A	131	36.4	46.6	67	1450	37	3.5
		187	51.9	44	74			
		243	67.5	38.3	70			
199	200-400B	122	33.9	40	66	1450	30	3.5
		174	48.3	38	73			
		226.5	62.9	33	68			
200	200-400C	112	31.3	34	63	1450	22	3.5
		160	44.4	32	71			
		208	57.8	28	65			
201	200-200(I)	280	77.8	13.4	70	1450	22	4
		400	111.1	12.5	80			
		520	144	10.5	79			
202	200-200(I)A	250	69.4	10.7	68	1450	18.5	4
		358	99.4	10	78			
		465	129.2	8.5	77			
203	200-250(I)	280	77.8	22.2	75	1450	30	4
		400	111.4	20	80			
		520	144	14	72			
209	200-400(I)	280	77.8	54.5	75	1450	75	75
		400	111.4	50	81			
		520	144	39	77			
210	200-400(I)A	262	72.8	47.6	74	1450	75	75
		374	103.9	43.7	80			
		486	135	34.1	76			
211	200-400(I)B	242	67.2	40.8	72	1450	55	55
		246	96.1	37.4	78			
		450	125	29.2	74			
212	200-400(I)C	224	62.2	34.9	70	1450	45	45
		320	88.9	32	76			
		416	115.6	25	71			
213	300-235	480	133.3	20	77	970	55	55
		720	200	18	81			
		900	250	15.5	74			
214	300-235A	438	121.7	16.7	75	970	45	45
		657	182.5	15	79			
		821	228.1	12.9	72			
215	300-235B	400	111.1	13.9	73	970	37	37
		600	167	12.5	77			
		750	208.3	10.8	70			
216	300-300	480	133.3	31	77	970	75	75
		720	200	28	81			
		900	250	25	77			
217	300-300A	444	123.3	26.5	76	970	75	75
		666	185	24	80			
		833	231.4	21.4	76			
218	300-300B	415	115.3	23	74	970	55	55
		623	173.1	21	78			
		779	216.4	18.5	73			
219	300-380	480	133.3	48	75	970	132	132
		720	200	44	84			
		900	250	34	79			

Installation Drawings

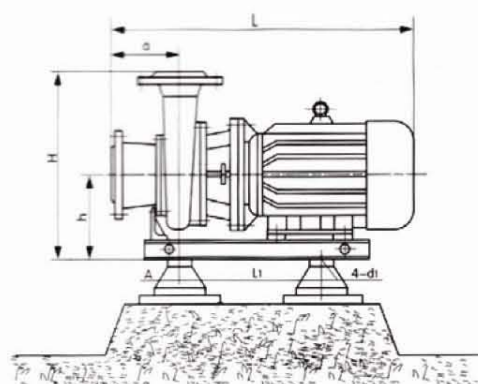
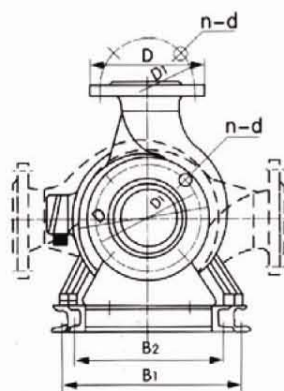
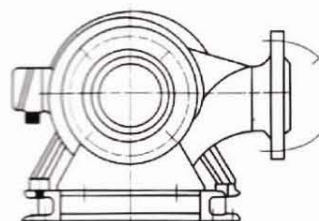
Discharge K View (Left)



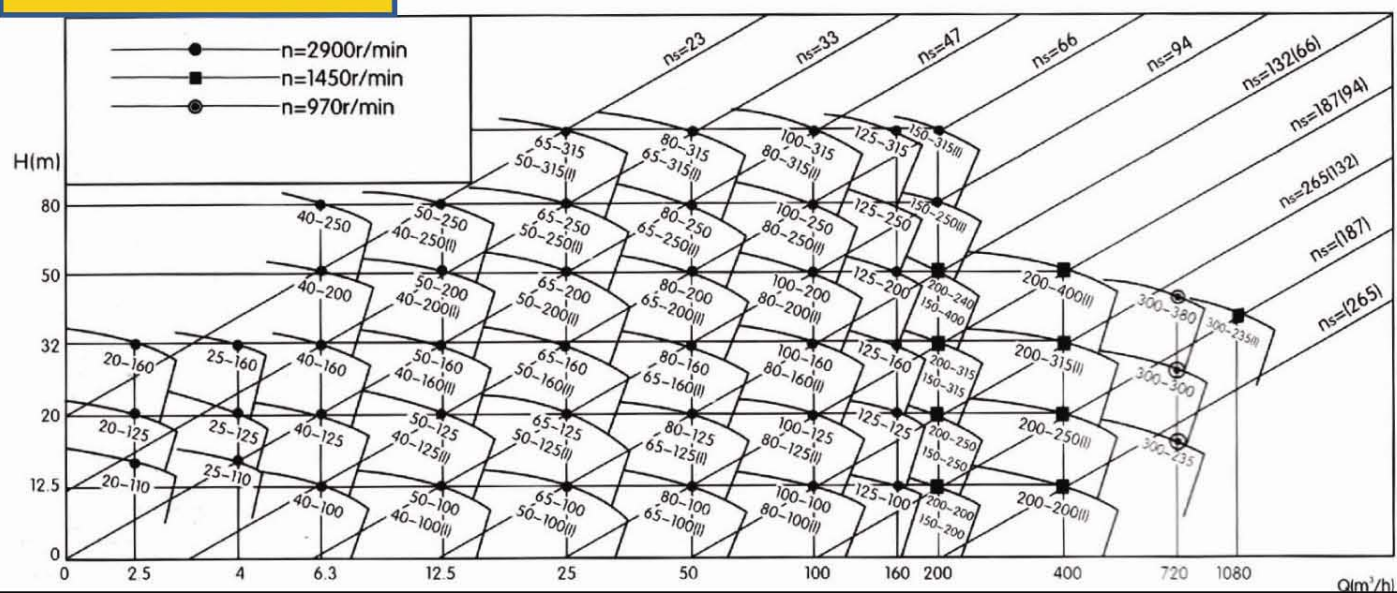
Discharge K View (Bottom)



Discharge K View (Right)



Family Curves



Installation Dimensions

Item	Model	Motor		LB	LZ	LO	HB	HA	Wt.(kg)	Seat Code	Inlet/Discharge Flange			
		(kw)	Model								Dia.	D	D1	n-d
1	40-100	0.55	A02-7112	80	430	30	121	130	49	D37	40	150	110	4-φ18
2	40-100A	0.37	A02-7112	80	430	30	121	130	49	D37				
3	40-125	1.1	Y802-2	80	462	30	130	150	51	D37				
4	40-125A	0.75	Y801-2	80	422	30	130	150	49	D37				
5	40-160	2.2	Y90L-2	80	498	40	145	170	64	D48				
6	40-160A	1.5	Y90S-2	80	473	40	145	170	59	D48				
7	40-160B	1.1	Y802-2	80	463	30	130	170	50	D37				
8	40-200	4	Y112M-2	80	573	40	167	170	92	D48				
9	40-200A	3	Y100L-2	80	553	40	155	170	82	D48				
10	40-200B	2.2	Y90L-2	80	503	40	145	170	72	D48				
11	40-250	7.5	Y132S2-2	80	626	45	210	200	132	D53				
12	40-250A	5.5	Y132S1-2	80	626	45	210	200	122	D53				
13	40-250B	4	Y112M-2	80	575	40	167	200	86	D48				
14	40-100(I)	1.1	Y802-2	80	460	30	130	145	46	D37				
15	40-100(I)A	0.75	Y801-2	80	420	30	130	145	45	D37				
16	40-125(I)	1.5	Y90S-2	80	473	40	145	150	56	D48				
17	40-125(I)A	1.1	Y802-2	80	463	30	130	150	47	D37	50	165	125	4-φ18
18	40-160(I)	3	Y100L-2	80	552	40	155	160	73	D48				
19	40-160(I)A	2.2	Y90L-2	80	502	40	145	160	64	D48				
20	40-160(I)B	1.5	Y90S-2	80	477	30	145	160	54	D48				
21	40-200(I)	5.5	Y132S1-2	100	645	45	210	180	119	D53				
22	40-200(I)A	4	Y112M-2	100	594	40	167	180	89	D48				
23	40-200(I)B	3	Y100L-2	100	574	40	155	180	79	D48				
24	40-250(I)	11	Y160M1-2	100	815	50	230	220	189	D74				
25	40-250(I)A	7.5	Y132S2-2	100	657	45	210	220	132	D53				
26	40-250(I)B	7.5	Y132S1-2	100	657	45	210	220	132	D53				
27	40-250(I)C	5.5	Y132S1-2	100	657	45	210	220	116	D53				
28	50-100	1.1	Y802-2	80	460	30	130	150	48	D37				
29	50-100A	0.75	Y801-2	80	420	30	130	150	47	D37				
30	50-125	1.5	Y90S-2	80	473	40	145	150	59	D48				
31	50-125A	1.1	Y802-2	80	463	30	130	150	50	D37				
32	50-160	3	Y100L-2	80	552	40	155	160	76	D48				
33	50-160A	2.2	Y90L-2	80	502	40	145	160	67	D48				
34	50-160B	1.5	Y160M1-2	80	477	30	145	160	57	D48				
35	50-200	5.5	Y132S2-2	100	645	45	210	180	124	D53				
36	50-200A	4	Y112M-2	100	594	40	167	180	93	D48				
37	50-200B	3	Y100L-2	100	574	40	155	180	83	D48				
38	50-250	11	Y160M1-2	100	815	50	230	225	194	D74				
39	50-250A	7.5	Y132S2-2	100	657	45	210	225	137	D53				
40	50-250B	7.5	Y132S2-2	100	657	45	210	225	137	D53				
41	50-250C	5.5	Y132S1-2	100	657	45	210	225	129	D53				
42	50-100(I)	1.5	Y90S-2	80	473	40	145	160	58	D48				
43	50-100(I)A	1.1	Y802-2	80	463	30	130	160	47	D37				
44	50-125(I)	3	Y100L-2	80	555	40	155	190	72	D48				
45	50-125(I)A	2.2	Y90L-2	80	505	40	145	190	62	D48				
46	50-160(I)	4	Y112M-2	80	573	40	167	180	92	D48				
47	50-160(I)A	4	Y112M-2	80	573	40	167	180	89	D48				
48	50-160(I)B	3	Y100L-2	80	553	40	155	180	79	D48				
49	50-200(I)	7.5	Y132S2-2	100	645	45	210	190	127	D53				
50	50-200(I)A	7.5	Y132S2-2	100	645	45	210	190	125	D53				
51	50-200(I)B	5.5	Y132S1-2	100	645	45	210	190	118	D53				
52	50-250(I)	15	Y160M2-2	100	811	50	230	240	216	D74				
53	50-250(I)A	11	Y160M1-2	100	811	50	230	240	206	D74				
54	50-250(I)B	11	Y160M1-2	100	811	50	230	240	204	D74				

Installation Dimensions

Item	Model	Motor		LB	LZ	LO	HB	HA	Wt (kg)	Seat Code	Suction/Discharge Flange			
		(kw)	Model								Dia.	D	D1	n-d
55	50-315 (I)	30	Y200L1-2	135	1030	60	290	270	395	D84	50	165	125	4- φ18
56	50-315 (I) A	22	Y180M-2	135	923	60	290	270	336	D84				
57	50-315 (I) B	22	Y180M-2	135	899	60	290	270	303	D84				
58	50-315 (I) C	15	Y160M2-2	135	854	60	290	270	282	D84				
59	65-100	1.5	Y90S-2	80	473	40	145	160	61	D48	65	185	145	4- φ18
60	65-100A	1.1	Y802-2	80	463	30	130	160	51	D37				
61	65-125	3	Y100L-2	80	555	40	155	180	74	D48				
62	65-125A	2.2	Y90L-2	80	505	40	145	180	64	D48				
63	65-160	4	Y112M-2	80	573	40	167	190	94	D48				
64	65-160A	4	Y112M-2	80	573	40	167	190	92	D48				
65	65-160B	3	Y100L-2	80	553	40	155	190	82	D48				
66	65-200	7.5	Y132S2-2	100	645	45	210	190	130	D53				
67	65-200A	7.5	Y132S2-2	100	645	45	210	190	128	D53				
68	65-200B	5.5	Y132S1-2	100	645	45	210	190	118	D53				
69	65-250	15	Y160M2-2	100	811	50	230	230	224	D74				
70	65-250A	11	Y160M1-2	100	811	50	230	230	212	D74				
71	65-250B	11	Y160M1-2	100	811	50	230	230	210	D74				
72	65-315	30	Y200L1-2	135	1030	60	290	300	403	D84				
73	65-315A	22	Y180M-2	135	923	60	290	300	343	D84				
74	65-315B	22	Y180M-2	135	899	60	290	300	311	D84				
75	65-315C	15	Y160M2-2	135	854	60	290	300	291	D84				
76	65-100 (I)	3	Y100L-2	100	575	40	155	200	78	D48				
77	65-100 (I) A	2.2	Y90L-2	100	525	40	145	200	67	D48				
78	65-125 (I)	5.5	Y132S1-2	100	651	45	210	200	123	D53				
79	65-125 (I) A	4	Y112M-2	100	600	40	167	200	89	D48				
80	65-160 (I)	7.5	Y132S2-2	100	647	45	210	200	124	D53				
81	65-160 (I) A	7.5	Y132S2-2	100	647	45	210	200	122	D53				
82	65-160 (I) B	5.5	Y132S1-2	100	647	45	210	200	112	D53				
83	65-200 (I)	15	Y160M2-2	125	815	50	230	215	202	D74				
84	65-200 (I) A	11	Y160M1-2	125	815	50	230	215	179	D74				
85	65-200 (I) B	7.5	Y132S2-2	125	657	45	210	215	119	D53				
86	65-250 (I)	22	Y180M2-2	125	909	60	270	240	313	D84				
87	65-250 (I) A	18.5	Y160L-2	125	885	50	250	240	242	D74				
88	65-250 (I) B	15	Y160M2-2	125	840	50	250	240	223	D74				
89	65-315 (I)	37	Y200L2-2	135	1030	60	290	300	426	D84				
90	65-315 (I) A	37	Y200L2-2	135	1030	60	290	300	426	D84				
91	65-315 (I) B	30	Y200L1-2	135	1030	60	290	300	410	D84				
92	65-315 (I) C	22	Y180M-2	135	923	60	290	300	350	D84				
93	80-100	3	Y100L-2	100	575	40	155	200	81	D48	80	200	160	4- φ18
94	80-100A	2.2	Y90L-2	100	525	40	145	200	68	D48				
95	80-125	5.5	Y132S1-2	100	651	45	210	200	123	D53				
96	80-125A	4	Y112M-2	100	600	40	167	200	88	D48				
97	80-160	7.5	Y132S2-2	100	647	45	210	200	126	D53				
98	80-160A	7.5	Y132S2-2	100	647	45	210	200	124	D53				
99	80-160B	5.5	Y132S1-2	100	647	45	210	200	115	D53				
100	80-200	15	Y160M2-2	100	815	50	230	225	204	D74				
101	80-200A	11	Y160M1-2	100	815	50	230	225	184	D74				
102	80-200B	7.5	Y132S2-2	100	657	45	210	225	122	D53				
103	80-250	22	Y180M-2	125	909	60	270	250	313	D84				
104	80-250A	18.5	Y160L-2	125	885	50	250	250	244	D74				
105	80-250B	15	Y160M2-2	125	840	50	250	250	224	D74				
106	80-315	37	Y200L2-2	135	1030	60	290	300	428	D84				
107	80-315A	37	Y200L2-2	135	1030	60	290	300	428	D84				
108	80-315B	30	Y200L1-2	135	1030	60	290	300	413	D84				

Installation Dimensions

Item	Model	Motor		LB	LZ	LO	HB	HA	W t (kg)	Seat Code	Suction/Discharge Flange			
		(kw)	Model								Dia.	D	D1	n-d
109	80-315C	22	Y180M-2	135	923	60	290	300	355	D84	DN 80	DN 200	DN 160	8-DN 18
110	80-100(I)	5.5	Y132S1-2	100	656	45	210	230	126	D53				
111	80-100(I)A	4	Y112M-2	100	605	45	210	230	100	D53				
112	80-125(I)	11	Y160M1-2	100	819	50	230	225	186	D74				
113	80-125(I)A	7.5	Y132S2-2	100	661	45	210	225	124	D53				
114	80-160(I)	15	Y160M2-2	100	819	50	230	250	204	D74				
115	80-160(I)A	11	Y160M1-2	100	819	50	230	250	190	D74				
116	80-160(I)B	11	Y160M1-2	100	819	50	230	250	190	D74				
117	80-200(I)	22	Y180M-2	100	888	60	270	250	303	D84				
118	80-200(I)A	18.5	Y160L-2	100	864	50	250	250	238	D74				
119	80-200(I)B	15	Y160M2-2	100	819	50	250	250	217	D74				
120	80-250(I)	37	Y200L2-2	125	1020	60	290	270	421	D84				
121	80-250(I)A	30	Y200L1-2	125	1020	60	290	270	398	D84				
122	80-250(I)B	30	Y200L1-2	125	1020	60	290	270	398	D84				
123	80-315(I)	75	Y280S-2	125	1236	90	390	315	798	D105				
124	80-315(I)A	55	Y250M-2	125	1160	80	350	315	654	D104	DN 100	DN 220	DN 180	8-DN 180
125	80-315(I)B	45	Y225M-2	125	1073	80	350	315	569	D104				
126	80-315(I)C	37	Y200L2-2	125	1031	80	350	315	506	D104				
127	100-100	5.5	Y132S1-2	100	656	45	210	230	134	D53				
128	100-100A	4	Y112M-2	100	605	45	210	230	107	D53				
129	100-125	11	Y160M1-2	100	819	50	230	225	194	D74				
130	100-125A	7.5	Y132S2-2	100	661	45	210	225	132	D53				
131	100-160	15	Y160M2-2	100	819	50	230	250	214	D74				
132	100-160A	11	Y160M1-2	100	819	50	230	250	199	D53				
133	100-160B	11	Y160M1-2	100	819	50	230	250	196	D74				
134	100-200	22	Y180M-2	100	888	60	270	250	308	D74				
135	100-200A	18.5	Y160L-2	100	864	50	250	250	244	D74				
136	100-200B	15	Y160M2-2	100	819	50	250	250	224	D74				
137	100-250	37	Y200L2-2	125	1020	60	290	290	423	D84				
138	100-250A	30	Y200L1-2	125	1020	60	290	290	403	D84				
139	100-250B	30	Y200L1-2	125	1020	60	290	290	398	D84	DN 125	DN 250	DN 210	8-DN 18
140	100-315	75	Y280S-2	125	1236	90	390	390	800	D105				
141	100-315A	55	Y250M-2	125	1160	80	350	350	664	D104				
142	100-315B	45	Y225M-2	125	1073	80	350	350	574	D104				
143	100-315C	37	Y200L2-2	125	1031	80	350	350	512	D104				
144	125-100	11	Y160M1-2	125	806	50	230	230	234	D74				
145	125-100A	7.5	Y132S2-2	125	685	45	210	210	172	D53				
146	125-125	15	Y160M2-2	125	844	50	230	230	264	D74				
147	125-125A	11	Y160M1-2	125	811	50	230	230	254	D74				
148	125-160	22	Y180M-2	125	913	60	270	270	335	D84				
149	125-160A	18.5	Y160L-2	125	889	50	250	250	274	D74				
150	125-160B	15	Y160M2-2	140	844	50	250	250	254	D74				
151	125-200	37	Y200L2-2	140	1046	60	290	290	473	D84				
152	125-200A	30	Y200L1-2	140	1046	60	290	290	455	D84				
153	125-200B	22	Y180M-2	140	939	60	290	290	395	D84				
154	125-250	55	Y250M-2	140	1175	60	340	340	656	D90				
155	125-250A	45	Y225M-2	140	1088	60	340	340	556	D90				
156	125-250B	37	Y200L2-2	140	1046	60	340	340	495	D84				
157	125-315	90	Y280M-2	140	1301	90	390	390	890	D105				
158	125-315A	75	Y280S-2	140	1251	90	390	390	805	D105				
159	125-315B	75	Y280S-2	140	1251	90	390	390	800	D105				
160	125-315C	55	Y250M-2	140	1175	60	340	340	631	D90	DN 150	DN 285	DN 240	8-DN 22
161	1250-200	15	Y160L-4	140	915	40	340	340	326	D83				
162	150-200A	11	Y160M-4	140	870	40	340	340	306	D83				

Installation Dimensions

Item	Model	Motor		LB	LZ	LO	HB	HA	Wt (kg)	Seat Code	Suction/Discharge Flange			
		(kw)	Model								Dia.	D	D1	n-d
163	150-250	18.5	Y180M-4	140	939	40	340	360	366	D83	DN150	DN285	DN240	8-DN22
164	150-250A	15	Y160L-4	140	915	40	340	360	346	D83				
165	150-250B	11	Y160M-4	140	870	40	340	360	334	D83				
166	150-315	30	Y200L-4	165	1071	40	360	400	476	D83				
167	150-315A	22	Y180L-4	165	1004	40	340	400	406	D83				
168	150-315B	18.5	Y180M-4	165	964	40	340	400	381	D83				
169	150-400	45	Y225M-4	165	1113	60	400	400	587	D87				
170	150-400A	37	Y225S-4	165	1088	60	400	400	547	D87				
171	150-400B	30	Y200L-4	165	1071	40	390	400	513	D84A				
172	150-400C	22	Y180L-4	165	1004	40	390	400	443	D84A				
173	150-250(I)	75	Y280S-2	140	1251	90	390	360	790	D105				
174	150-250(I)A	55	Y250M-2	140	1175	60	340	360	616	D90				
175	150-250(I)B	45	Y225M-2	140	1088	60	340	360	612	D90				
176	150-315(I)	110	Y315S-2	165	1470	100	460	400	1355	D108				
177	150-315(I)A	90	Y280M-2	165	1326	90	390	400	930	D105				
178	150-315(I)B	75	Y280S-2	165	1275	90	390	400	854	D105				
179	200-200	15	Y160L-4	140	915	40	340	345	336	D83	DN200	DN340	DN295	12-DN22
180	200-200A	11	Y160M-4	140	870	40	340	345	316	D83				
181	200-250	18.5	Y180M-4	140	939	40	340	380	406	D83				
182	200-250A	15	Y160L-4	140	915	40	340	380	376	D83				
183	200-250B	11	Y160M-4	140	870	40	340	380	356	D83				
184	200-315	30	Y200L-4	165	1071	40	360	380	486	D83				
185	200-315A	22	Y180L-4	165	1004	40	340	380	411	D83				
186	200-315B	18.5	Y180M-4	165	964	40	340	380	388	D83				
187	200-400	45	Y225M-4	165	1113	60	400	410	602	D87				
188	200-400A	37	Y225S-4	165	1088	60	400	410	562	D87				
189	200-400B	30	Y200L-4	165	1071	40	390	410	525	D84A				
190	200-400C	22	Y180L-4	165	1004	40	390	410	453	D84A				
191	200-200(I)	22	Y180L-4	160	1004	40	390	380	463	D84A				
192	200-200(I)A	18.5	Y180M-4	160	964	40	390	380	438	D84A				
193	200-250(I)	30	Y200L-4	160	1066	40	390	400	553	D84A				
194	200-250(I)A	22	Y180L-4	160	999	40	390	400	475	D84A				
195	200-250(I)B	18.5	Y180M-4	160	959	40	390	400	448	D84A				
196	200-315(I)	55	Y250M-4	160	1210	80	400	460	779	D104				