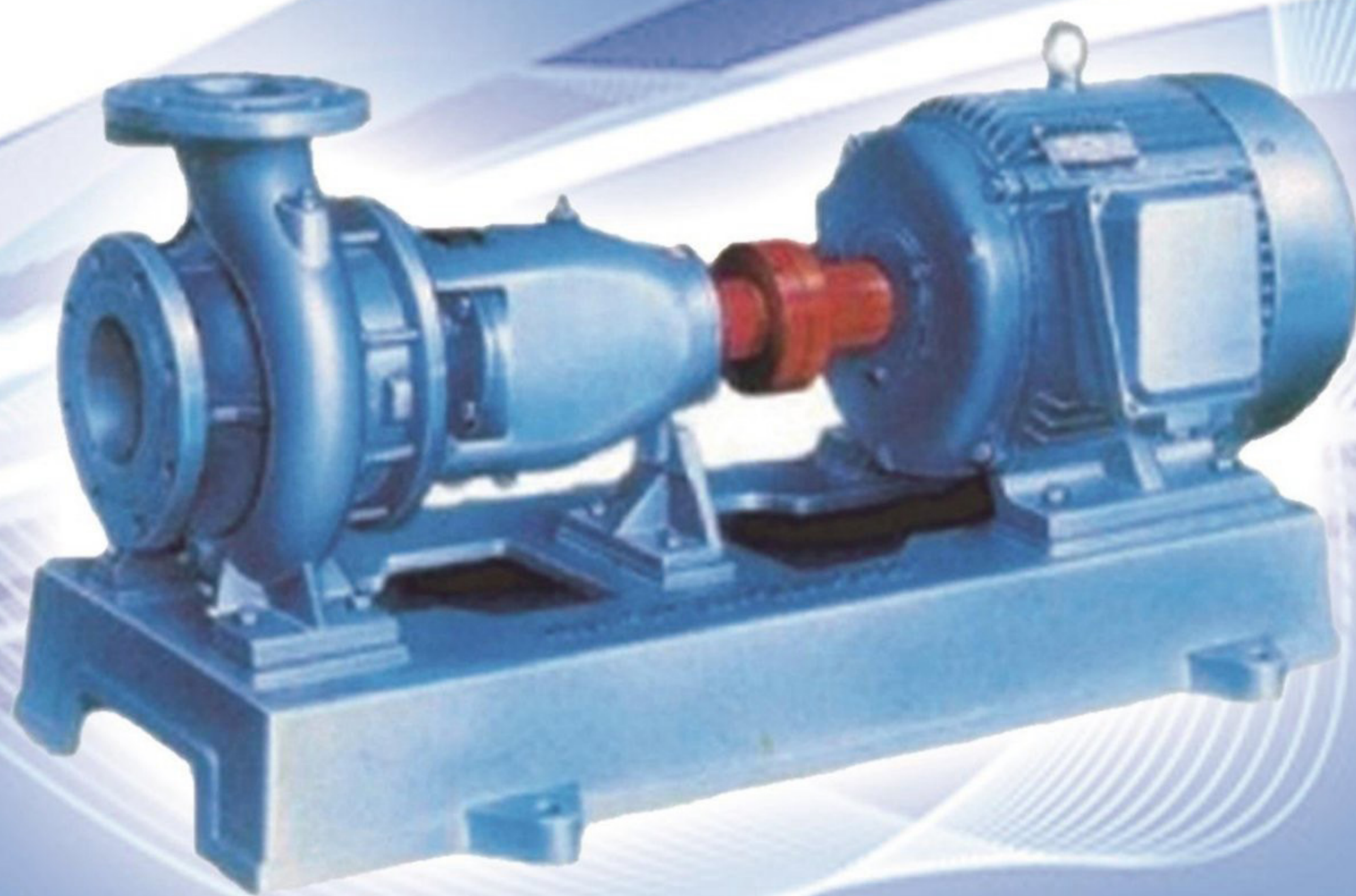


IS ISR

**Type Single-Stage, Single-Suction
Clean Water Centrifugal Pump
Type Hot Water Circulation
Centrifugal Pump**

User Manual



Hebei Ivy Pump Industry Co., Ltd.

I. Overview

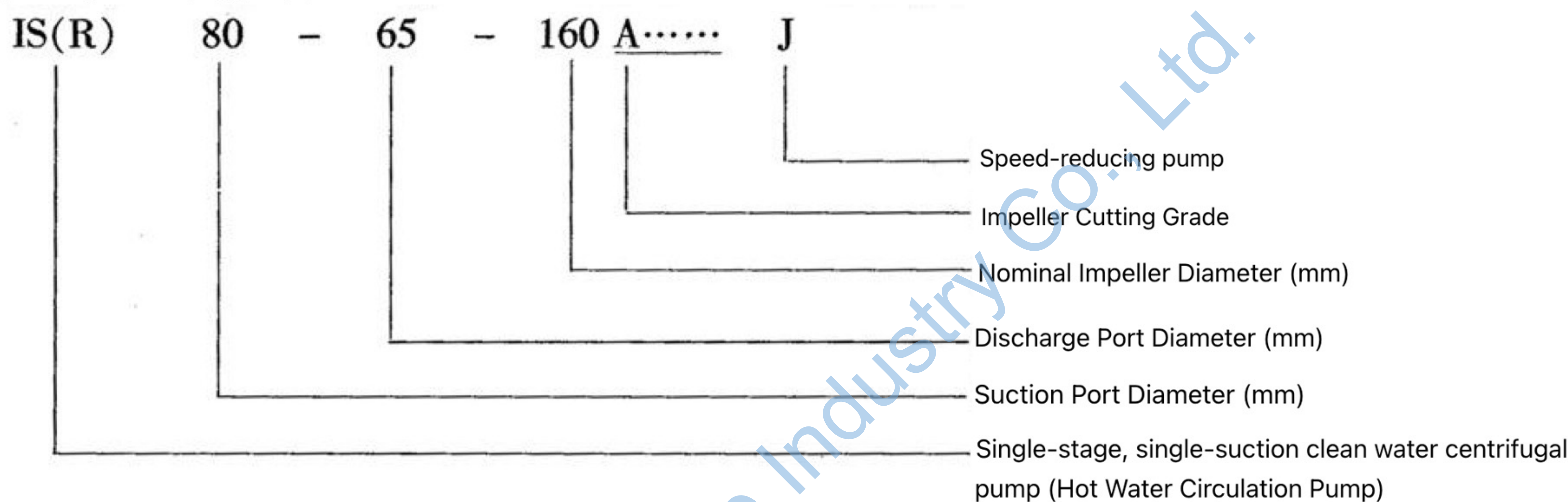
1. The IS series pumps are single-stage, single-suction centrifugal pumps designed in accordance with the international standard ISO 2858. They are the next-generation replacement for BA-type pumps and are suitable for industrial and municipal water supply and drainage, as well as for agricultural irrigation and drainage. They are intended for the conveyance of clean water or other liquids with physical and chemical properties similar to clean water, at temperatures not exceeding 80°C.

The ISR Series is a line of hot water pumps designed by our company in accordance with the performance and dimensional specifications of the international standard ISO 2858. It is suitable for hot water boiler feedwater and hot water circulation systems, and may also be used for industrial and municipal water supply, drainage, and irrigation, provided the temperature does not exceed 150°C.

2. IS(R) Performance Range (at design point):

- Speed: 2900 r/min and 1450 r/min
- Inlet Diameter: 50–200 mm
- Flow Rate: 6.3–400 m³/h
- Head: 5–125 m

3. Pump Designation (e.g., IS(R)80-65-160 A..... J):



4. Pump Selection: When selecting pump specifications, users should note the following points:

- (1) The flow rate of the selected pump should be less than the normal water yield of the well or other water source, and due consideration should be given to the dry season.
- (2) The head of the selected pump should be based on the actual required head, taking into account pipeline pressure losses.
- (3) When selecting a pump, the temperature of the fluid to be pumped must be considered; it must be lower than the specified temperature.
- (4) When selecting a pump, consider the installation height—that is, the vertical distance from the liquid suction surface to the pump shaft—which must be less than the pump's specified height.

Estimation of the pump installation height H_{sz} :

$$H_{sz} \leq H_v - F_v - \Delta H_s - [NPSH]$$

$$H_{sz} \leq 10.09 - \Delta H_s - [NPSH]$$

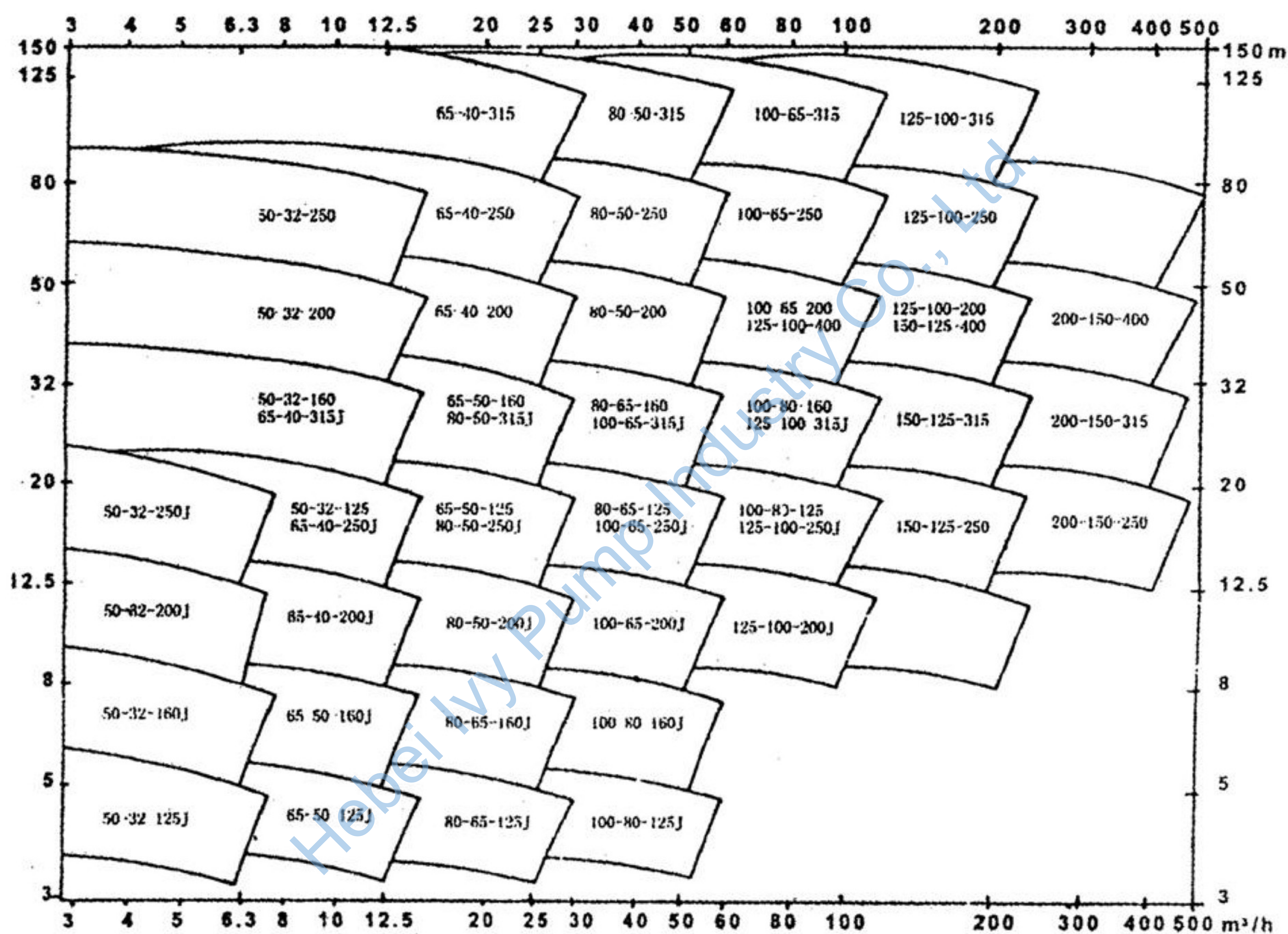
Where:

- $H_v = 10.33$ (m) at standard atmospheric pressure (water column)
- $F_v = 0.24$ (m) vapor pressure of clean water at room temperature (20°C) (water column)
- ΔH_s = Suction line head loss, calculated based on actual conditions.
- $[NPSH]$ = Allowable net positive suction head margin.
- $[NPSH] = [NPSH]_r + 0.3$ (m)
- $[NPSH]_r$ = Required net positive suction head margin specified in the performance data table.

II. Performance Parameters

1. Data for the IS(R) pump series. (See Figure 1)
2. Rated Performance Parameters Table (See Table 1)

IS(R) Pump Selection Chart (Table) (Fig. 1)



(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m ³ /h	l/s			Shaft Power KW	Motor Power KW		
IS (R) 50 – 32 – 125	2900	7.5	2.08	22	47	0.96	2.2	2.0	
		12.5	3.47	20	60	1.13		2.0	
		15	4.17	18.5	60	1.26		2.5	
IS (R) 50 – 32 – 125A	1450	11.2	3.11	16	60	1.18	1.5	2.0	
IS (R) 50 – 32 – 125J		6.3	1.74	5.0	54	0.16	0.55	2.0	
IS (R) 50 – 32 – 125JA		5.6	1.56	4.0	55	1.10		2.5	
IS (R) 50 – 32 – 160	2900	7.5	2.08	34.3	44	1.59	3	2.0	
		12.5	3.47	32	54	2.02		2.0	
		15	4.17	29.6	56	2.16		2.5	
IS (R) 50 – 32 – 160A	1450	11.7	3.25	28	54	1.65	2.2	2.0	
IS (R) 50 – 32 – 160B		10.8	3.01	24	54	1.32		2.0	
IS (R) 50 – 32 – 160J		6.3	1.74	8.0	48	0.29	0.55	2.0	
IS (R) 50 – 32 – 160JA	1450	5.9	1.64	7.0	48	0.21		2.0	
IS (R) 50 – 32 – 160JB		5.4	1.5	6.0	47	0.165		2.5	
IS (R) 50 – 32 – 200	2900	7.5	2.08	52.5	38	2.82	5.5	2.0	
		12.5	3.47	50	48	3.54		2.0	
		15	4.17	48	51	3.95		2.5	
IS (R) 50 – 32 – 200A	1450	11.85	3.25	45	48	3.07	4	2.0	
IS (R) 50 – 32 – 200B		11.18	3.08	40	48	2.54	3	2.0	
IS (R) 50 – 32 – 200C		10.63	2.95	36	48	2.17		2.5	
IS (R) 50 – 32 – 200J	1450	6.3	1.74	12.5	42	0.51	0.75	2.0	
IS (R) 50 – 32 – 200JA		5.9	1.64	11	43	0.36	0.55	2.0	
IS (R) 50 – 32 – 200JB		5.4	1.5	9.5	41	0.55		2.5	
IS (R) 50 – 32 – 250	2900	7.5	2.08	82	28.5	5.87	11	2.0	
		12.5	3.47	80	38	7.16		2.0	
		15	4.17	78.5	41	7.38		2.5	
IS (R) 50 – 32 – 250A	1450	12.1	3.36	75	38	6.49	7.5	2.0	
IS (R) 50 – 32 – 250B		11.7	3.25	70	38	5.87		2.0	
IS (R) 50 – 32 – 250C		11.6	3.12	65	38	5.2	5.5	2.0	
IS (R) 50 – 32 – 250D	1450	10.8	3.01	60	38	4.62		2.0	
IS (R) 50 – 32 – 250E		10.3	2.88	55	38	4.09		2.0	
IS (R) 50 – 32 – 250J		6.3	1.74	20	32	1.07	1.5	2.0	
IS (R) 50 – 32 – 250JA	1450	5.9	1.64	17.5	32	0.91	1.1	2.0	
IS (R) 50 – 32 – 250JB		5.4	1.5	15	35	1.14	0.75	2.5	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m ³ /h	l/s			Shaft Power KW	Motor Power KW		
IS (R) 65 – 50 – 125	2900	15	4.17	21.8	58	1.54	3.0	2.0	
		25	6.94	20	69	1.97		2.5	
		30	8.3	18.5	68	2.22		3.0	
IS (R) 65 – 50 – 125A		22.4	6.22	16	69	1.41	2.2	2.5	
IS (R) 65 – 50 – 125J	1450	12.5	3.47	5.0	64	0.27	0.55	2.0	
IS (R) 65 – 50 – 125JA		11.2	3.11	4.0	65	0.17		2.5	
IS (R) 65 – 50 – 160	2900	15	4.17	35	54	2.65	5.5	2.0	
		25	6.94	32	65	3.35		2.0	
		30	8.33	30	66	3.71		2.5	
IS (R) 65 – 50 – 160A		23.4	6.5	28	65	2.75	4	2.0	
IS (R) 65 – 50 – 160B		21.7	6.03	24	65	2.18	3	2.0	
IS (R) 65 – 50 – 160J	1450	12.5	3.47	8.0	60	0.45	0.75	2.0	
IS (R) 65 – 50 – 160JA		11.7	3.25	7.0	60	0.34	0.55	2.0	
IS (R) 65 – 50 – 160JB		10.8	3.01	6.0	60	0.27		2.5	
IS (R) 65 – 40 – 200	2900	15	4.17	53	49	4.42	7.5	2.0	
		25	6.94	50	60	5.67		2.0	
		30	8.33	47	61	6.29		2.5	
IS (R) 65 – 40 – 200A		23.7	6.58	45	60	4.83	5.5	2.0	
IS (R) 65 – 40 – 200B		22.3	6.2	40	60	4.05		2.0	
IS (R) 65 – 40 – 200C		21.2	5.9	36	60	3.48	4	2.0	
IS (R) 65 – 40 – 200J	1450	12.5	3.47	12.5	55	0.77	1.1	2.0	
IS (R) 65 – 40 – 200JA		11.7	3.25	11	55	0.58	0.75	2.0	
IS (R) 65 – 40 – 200JB		10.8	3.01	9.5	54	0.47		2.5	
IS (R) 65 – 40 – 250	2900	15	4.17	82	37	9.05	15	2.0	
		25	6.94	80	50	10.89		2.0	
		30	3.88	78	53	12.02		2.5	
IS (R) 65 – 40 – 250A		24.2	6.72	75	50	8.87	11	2.0	
IS (R) 65 – 40 – 250B		23.4	6.5	70	50	8.42		2.0	
IS (R) 65 – 40 – 250C		22.5	6.26	65	50	8.00	7.5	2.0	
IS (R) 65 – 40 – 250D		21.7	6.03	60	50	6.69		2.0	
IS (R) 65 – 40 – 250E		20.75	5.76	55	50	6.22		2.0	
IS (R) 65 – 40 – 250J	1450	12.5	3.47	20	46	1.48	2.2	2.0	
IS (R) 65 – 40 – 250JA		11.7	3.25	17.5	48	1.05	1.5	2.0	
IS (R) 65 – 40 – 250JB		10.8	3.01	15	48	0.83	1.1	2.5	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m ³ /h	l/s			Shaft Power KW	Motor Power KW		
IS (R) 65 – 40 – 315	2900	15	4.17	127	28	18.5	30	2.5	
		25	6.94	125	40	21.3		2.5	
		30	8.33	123	44	22.8		3.0	
IS (R) 65 – 40 – 315A		23.9	6.64	114	40	18.58	22	2.5	
IS (R) 65 – 40 – 315B		22.7	6.3	103	39	15.94	18.5	2.5	
IS (R) 65 – 40 – 315C		21.4	5.94	92	38	13.4	15	2.5	
IS (R) 65 – 40 – 315J	1450	12.5	3.47	32	37	2.94	4	2.5	
IS (R) 65 – 40 – 315JA		11.9	3.32	28.2	37	2.32	3	2.5	
IS (R) 65 – 40 – 315JB		11.3	3.15	25.8	36	1.99		3.0	
IS (R) 80 – 65 – 125	2900	30	8.33	22.5	64	2.87	5.5	3.0	
		50	13.9	20	74	3.63		3.0	
		60	16.7	18	74	3.98		3.5	
IS (R) 80 – 65 – 125A	1450	44.7	12.42	16	75	2.27	4	3.0	
IS (R) 80 – 65 – 125J		25	6.94	5.0	71	0.48	0.75	2.5	
IS (R) 80 – 65 – 125JA		22.4	6.22	4	71	0.34	0.55	3.0	
IS (R) 80 – 65 – 160	2900	30	8.33	36	61	4.82	7.5	2.5	
		50	13.9	32	73	5.97		2.5	
		60	16.7	29	72	6.59		3.0	
IS (R) 80 – 65 – 160A	1450	46.8	13	28	73	4.80	5.5	2.5	
IS (R) 80 – 65 – 160B		43.3	12.4	24	73	3.80	4	2.5	
IS (R) 80 – 65 – 160J		25	6.94	8	69	0.79	1.5	2.5	
IS (R) 80 – 65 – 160JA	1450	23.4	6.5	7	69	0.6	1.1	2.5	
IS (R) 80 – 65 – 160JB		21.7	6.03	6	68	0.48	0.75	3.0	
IS (R) 80 – 50 – 200	2900	30	8.33	53	55	7.87	15	2.5	
		50	13.9	50	59	9.87		2.5	
		60	16.7	47	71	10.8		3.0	
IS (R) 80 – 50 – 200A	1450	46.8	13	44	69	8.14	11	2.5	
IS (R) 80 – 50 – 200B		40	11.11	38	69	6.52	7.5	2.5	
IS (R) 80 – 50 – 200C		40	11.1	32	69	5.05		2.5	
IS (R) 80 – 50 – 200J	1450	25	6.94	12.5	65	1.31	2.2	2.5	
IS (R) 80 – 50 – 200JA		23.4	6.5	11	65	1.01	1.5	2.5	
IS (R) 80 – 50 – 200JB		21.7	6.08	9.5	64	0.81	1.1	3.0	
IS (R) 80 – 50 – 250	2900	30	8.33	84	52	13.2	22	2.5	
		50	13.9	80	63	7.3		2.5	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m ³ /h	l/s			Shaft Power KW	Motor Power KW		
IS (R) 80 – 50 – 250	2900	60	16.7	75	64	19.2	22	3.0	
IS (R) 80 – 50 – 250A		46.81	13.00	70	63	14.18	18.5	2.5	
IS (R) 80 – 50 – 250B		43.3	12.4	60	63	11.23	15	2.5	
IS (R) 80 – 50 – 250J	1450	25	6.94	20	60	2.27	3	2.5	
IS (R) 80 – 50 – 250JA		23.4	6.5	17.5	60	1.77	2.2	2.5	
IS (R) 80 – 50 – 250JB		21.7	6.03	15	60	1.4		3.0	
IS (R) 80 – 50 – 315	2900	30	8.33	128	41	25.5	37	2.5	
		50	13.9	125	54	31.5		2.5	
		60	16.7	123	57	35.3		2.5	
IS (R) 80 – 50 – 315A		47.7	13.25	114	54	27.8	30	2.5	
IS (R) 80 – 50 – 315B		45.4	12.6	103	54	23.6		2.5	
IS (R) 80 – 50 – 315C		42.9	11.9	92	54	19.83	22	2.5	
IS (R) 80 – 50 – 315J	1450	25	6.94	32	52	4.19	5.5	2.5	
IS (R) 80 – 50 – 315JA		23.4	4.17	28.5	52	3.34	4	2.5	
IS (R) 80 – 50 – 315JB		22.3	6.3	25.3	51	2.94		3.0	
IS (R) 100 – 80 – 125	2900	60	16.7	24	69	5.86	11	4.0	
		100	27.8	20	78	7.0		4.5	
		120	33.3	16.5	74	7.28		5.0	
IS (R) 100 – 80 – 125A		89.4	24.83	16	78	5.0	7.5	4.5	
IS (R) 100 – 80 – 125J	1450	50	13.9	5	75	0.91	1.5	2.5	
IS (R) 100 – 80 – 125JA		44.7	12.42	4	75	0.62	1.1	3.0	
IS (R) 100 – 80 – 160	2900	60	16.7	36	70	8.42	15	2.5	
		100	27.8	32	78	11.2		4.0	
		120	33.3	28	75	12.2		5.0	
IS (R) 100 – 80 – 160A		93.51	26	28	78	9.16	11	4.0	
IS (R) 100 – 80 – 160B		86.6	24.1	24	78	7.24		4.0	
IS (R) 100 – 80 – 160C		79	21.9	20	77	5.52	7.5	4.0	
IS (R) 100 – 80 – 160J	1450	50	13.9	8.0	75	1.45	2.2	2.5	
IS (R) 100 – 80 – 160JA		46.8	13	7	75	1.14	1.5	2.0	
IS (R) 100 – 80 – 160JB		43.3	12.4	6	74	0.90	1.1	3.5	
IS (R) 100 – 65 – 200	2900	60	16.7	54	65	13.6	22	3.0	
		100	27.8	50	76	17.9		3.6	
		120	33.3	47	77	19.9		4.8	
IS (R) 100 – 65 – 200A		95	26.4	45	76	15.35	18.5	3.6	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m³/h	l/s			Shaft Power KW	Motor Power KW		
IS (R) 100 – 65 – 200B	2900	89.4	24.7	40	76	12.79	15	3.6	
IS (R) 100 – 65 – 200C		85	23.57	36	76	10.99		3.6	
IS (R) 100 – 65 – 200J	1450	50	13.9	12.5	73	2.33	4	2.0	
IS (R) 100 – 65 – 200JA		46.8	13	11	72	1.84	3	2.0	
IS (R) 100 – 65 – 200JB		43.3	12.04	9.5	72	1.48	2.2	2.5	
IS (R) 100 – 65 – 250	2900	60	16.7	87	61	23.4	37	3.5	
		100	27.8	80	72	30.3		3.8	
		120	33.3	74.5	73	33.3		4.8	
IS (R) 100 – 65 – 250A		93.5	26	70	72	26.6	30	3.8	
IS (R) 100 – 65 – 250B		86.6	24.1	60	72	17.03	22	3.8	
IS (R) 100 – 65 – 250C		79	22	50	72	14.90	18.5	3.8	
IS (R) 100 – 65 – 250J	1450	50	13.91	20	68	4.00	5.5	2.0	
IS (R) 100 – 65 – 250JA		46.8	3	17.5	68	3.09	4	2.0	
IS (R) 100 – 65 – 250JB		43.3	12.04	15	67	2.03	3	2.5	
IS (R) 100 – 65 – 315	2900	60	16.7	133	55	39.6	75	3.0	
		100	27.8	125	66	51.6		3.6	
		120	33.3	118	67	57.5		4.0	
IS (R) 100 – 65 – 315A		95.5	26.53	114	66	45.03	55	3.6	
IS (R) 100 – 65 – 315B		90.8	25.2	103	66	38.63	45	3.6	
IS (R) 100 – 65 – 315C		85.8	23.83	92	66	32.52	37	3.6	
IS (R) 100 – 65 – 315D	81	22.5	87.5	66	27.4	30	3.6		
IS (R) 100 – 65 – 315J	1450	50	13.9	32	63	6.92	11		2.0
IS (R) 100 – 65 – 315JA		47.7	13.25	28.5	63	5.62	7.5		2.0
IS (R) 100 – 65 – 315JB		45.4	12.5	25.8	62	4.82			2.5
IS (R) 100 – 65 – 315JC		42.9	11.9	23	61	4.06	5.5		2.5
IS (R) 125 – 100 – 200	2900	120	33.3	57.5	67	28.0	45	4.5	
		200	55.5	50	81	33.6		4.5	
		240	66.7	44.5	80	36.4		5.0	
IS(R)125 – 100 – 200A		190	52.7	45	81	28.8	37	4.5	
IS(R)125 – 100 – 200B		179	49.7	40	81	24	30	4.5	
IS(R)125 – 100 – 200C		170	47.2	36	81	20.63	22	4.5	
IS(R)125 – 100 – 200J	1450	100	27.8	12.5	76	4.48	7.5	2.5	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg
		m ³ /h	l/s			Shaft Power KW	Motor Power KW		
IS(R)125 – 100 – 200JA	1450	93.5	26	11	76	3.46	5.5	2.5	
IS(R)125 – 100 – 200JB		86.5	24.1	9.5	75	2.79	4	3.0	
IS(R)125 – 100 – 250	2900	120	33.3	87	66	43.0	75	3.8	
		200	55.6	80	78	55.9		4.2	
		240	66.7	72	75	62.8		5.0	
IS(R)125 – 100 – 250A		193.6	53.78	75	78	50.7	55	4.0	
IS(R)125 – 100 – 250B		187	52	70	78	45.73		4.0	
IS(R)125 – 100 – 250C		180	50	65	78	36.9	45	4.0	
IS(R)125 – 100 – 250D		173	48.1	60	78	36.4		4.0	
IS(R)125 – 100 – 250E		160	44.4	55	78	31.9	37	4.0	
IS(R)125 – 100 – 250J	1450	100	27.8	20	76	7.17	11	2.5	
IS(R)125 – 100 – 250JA		93.5	26	17.5	76	5.71	7.5	2.5	
IS(R)125 – 100 – 250JB		86.5	24.1	15	75	4.5	5.5	3.0	
IS(R)125 – 100 – 315	2900	120	33.3	132.5	60	72.1	110	4.0	
		200	55.6	125	75	90.8		4.5	
		240	66.7	120	77	101.9		5.0	
IS(R)125 – 100 – 315A		194	53.89	117.5	75	82.87	90	4.5	
IS(R)125 – 100 – 315B		187	51.94	110	75	74.3		4.5	
IS(R)125 – 100 – 315C		180	50	102.5	75	66.19	75	4.5	
IS(R)125 – 100 – 315D		174	48.33	95	75	59.8		4.5	
IS(R)125 – 100 – 315E		167	46.38	87.5	75	53.24		4.5	
IS(R)125 – 100 – 315J	1450	100	27.5	32	73	11.9	15	2.5	
IS(R)125 – 100 – 315JA		95.5	26.53	28.5	73	9.81	11	2.5	
IS(R)125 – 100 – 315JB		90.8	25.2	25.8	72	8.51		3.0	
IS(R)125 – 100 – 400	1450	60	16.7	52	53	16.1	30	2.5	
		100	27.8	50	65	21.0		2.5	
		120	33.3	48.5	67	23.6		3.0	
IS(R)125 – 100 – 400A	1450	95	26.38	45	65	18	22	2.5	
IS(R)125 – 100 – 400B		89.4	24.8	40	65	15	18.5	2.5	
IS(R)125 – 100 – 400C		84.8	20	36	65	12.89	15	2.5	
IS(R)150– 125 – 250	1450	120	33.3	22.5	71	10.4	18.5	3.0	
		200	55.6	20	81	13.5		3.0	
		240	66.7	17.5	78	14.7		3.5	
IS(R)150– 125 – 250A		187	52	17.5	81	11.08	15	3.0	

(Table 1): Main Performance Parameters of IS(R) Pumps

Pump Model	Speed r/min	Flow Rate		Head m	Efficiency %	Power		Required NPSH m	Weight Kg	
		m³/h	l/s			Shaft Power KW	Motor Power KW			
IS(R)150 – 125 – 250B	1450	173	48.1	15	80	8.74	11	2.5		
IS(R)150 – 125 – 315		120	33.3	34	70	15.86	30	2.5		
		200	55.6	32	79	22.08		2.5		
		240	66.7	29	80	23.71		3.0		
IS(R)150 – 125 – 315A			187	52	28	79	18.1	22	2.5	
IS(R)150 – 125 – 315B			173	48.1	24	79	14.33	18.5	2.5	
IS(R)150 – 125 – 315C			160	44	20	78	11.7	15	2.0	
IS(R)150 – 125 – 400	1450	120	33.3	53	62	27.9	45	2.0		
		200	55.6	50	75	36.3		2.8		
		240	66.7	46	74	40.6		3.5		
IS(R)150 – 125 – 400A			187	52	44	75	29.9	37	2.8	
IS(R)150 – 125 – 400B			173	48.1	38	75	24.09	30	2.8	
IS(R)150 – 125 – 400C			160	44.4	32	75	18.8	22	2.8	
IS(R)200 – 150 – 250		1450	240	66.7	22.6	70	21.1	37	3.6	
	400		111.1	20.0	83	26.2	4.6			
	460		127.8	17.2	79	27.3	4.9			
IS(R)200 – 150 – 250A			374	103.8	17.5	83	21.83	30	4.6	
IS(R)200 – 150 – 250B			346	96.2	15	80	17.24	22	4.6	
IS(R)200 – 150 – 315	1450	240	66.7	37	70	34.6	55	3.0		
		400	111.1	32	82	42.5		3.5		
		460	127.8	28.5	80	44.6		4.0		
IS(R)200 – 150 – 315A			374	103.8	28	82	35.38	45	3.5	
IS(R)200 – 150 – 315B			346	96.2	24	80	28.12	37	3.5	
IS(R)200 – 150 – 400	1450	240	66.7	55	74	48.6	90	3.0		
		400	111.1	50	81	67.2		3.8		
		460	127.8	45	76	74.2		4.5		
IS(R)200 – 150 – 400A			374	103.8	44	81	55.4	75	3.8	
IS(R)200 – 150 – 400B			346	96.2	38	81	45.58	55	3.8	
IS(R)200 – 150 – 400C			330	91.6	34	81	37.57	45	3.8	
IS(R)125 – 80– 160	2900	160	44.4	32	80	17.5	22	5.6		
IS(R)125 – 80– 160J	1450	80	22.2	8	77	2.26	3	2.5		
IS(R)125 – 80– 200	2900	160	44.4	50	80	27.2	37	5.2		
IS(R)125 – 80– 200J	1450	80	22.2	12.5	77	3.54	4	2.5		
IS(R)125 – 80– 250	2900	160	44.4	80	77	45.3	55	4.8		
IS(R)125 – 80– 250J	1450	80	22.2	20	74	5.89	7.5	2.2		

III. Structural Description

The IS series pumps are designed in accordance with the performance and dimensional specifications set forth in the international standard ISO 2858. They primarily consist of the pump casing (1), pump cover (2), impeller (3), shaft (4), seal ring (5), shaft sleeve (8), and suspension bearing assembly (12) (Fig. 2).

The pump casing and cover of the IS-type pump are split at the rear of the impeller, a configuration commonly referred to as a “rear-opening” design. The advantage of this design is that it facilitates maintenance; repairs can be performed without moving the pump casing or the suction piping.

The pump casing (i.e., the pump body and pump cover) forms the pump’s working chamber. The impeller, shaft, and rolling bearings constitute the pump’s rotor. The suspension bearing assembly supports the pump’s rotor components, while the rolling bearings bear the pump’s radial and axial forces.

To balance the pump’s axial forces, most pumps are equipped with seal rings on both the front and rear sides of the impeller, and a balancing hole is provided on the rear impeller cover plate. Since the axial forces in some pumps are relatively small, no seal rings or balancing holes are provided on the back of the impeller.

The pump’s axial seal consists of a packing gland (9), packing rings (10), and packing (11), which prevent air ingress or significant water leakage. If the pump’s impeller has balancing holes, the cavity containing the soft packing is connected to the impeller’s suction inlet. If the liquid at the impeller inlet is under vacuum, air can easily enter along the surface of the shaft sleeve; therefore, a packing ring is installed in the packing chamber to draw pressure from the pump chamber through a small hole in the pump cover to the packing ring, thereby providing a seal. If the pump impeller does not have a balance hole, there is no risk of air ingress because the liquid pressure on the back of the impeller is greater than atmospheric pressure; therefore, a packing ring is not required.

The pump’s axial seal assembly consists of a mechanical seal sleeve, a mechanical seal gland, and the mechanical seal itself, providing a relatively reliable seal. Users can choose between packing seals and mechanical seals based on their needs. It should be noted that due to the high-temperature resistance of the special materials used in mechanical seals, they are now widely used in hot water pumps; compared to hot water circulation systems, they are simpler, more convenient, and more practical.

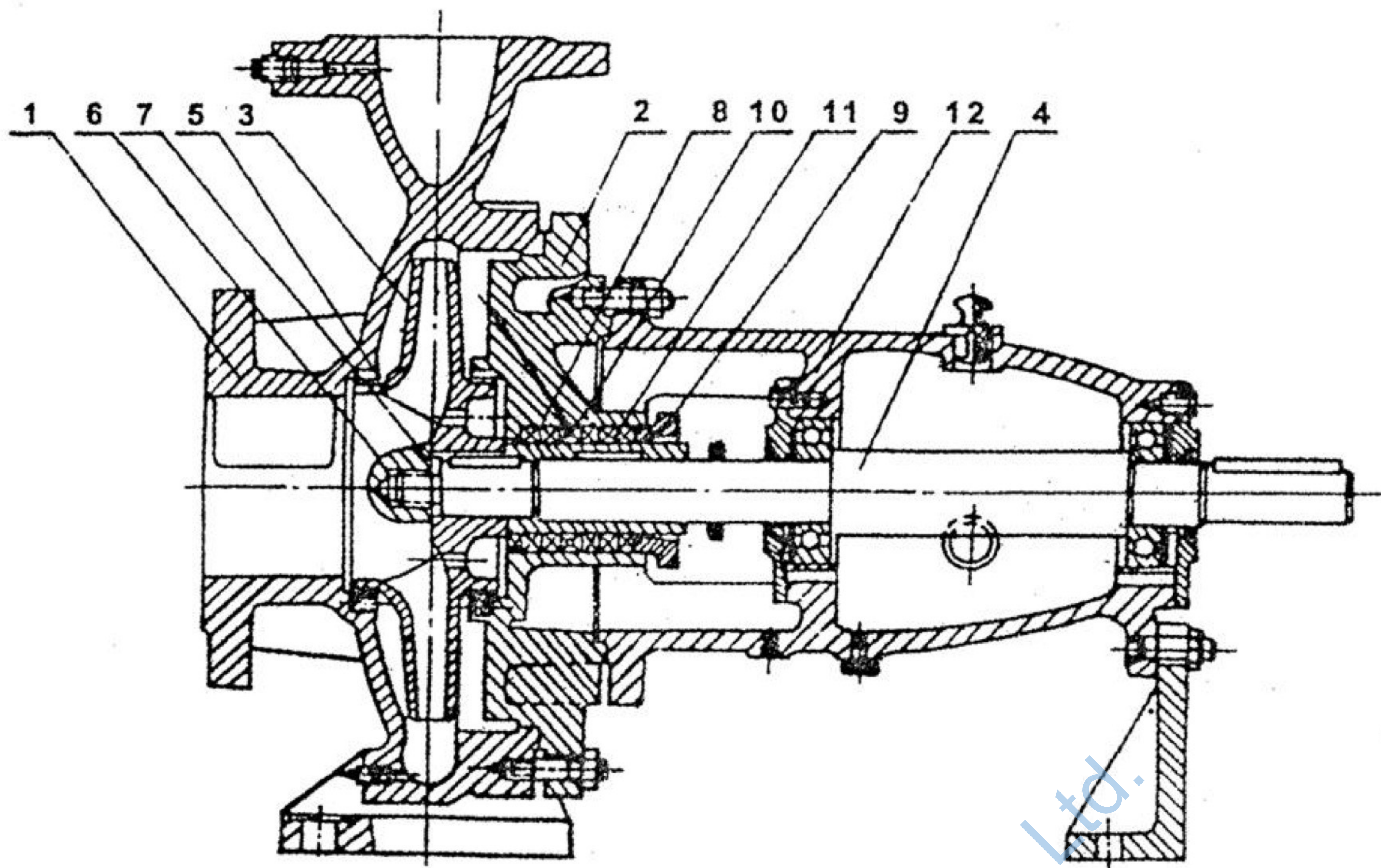
The ISR-type hot water circulation pump is designed with a water-cooling system to accommodate the transfer of high-temperature liquids, based on the standard model. (See Figure 3) It consists of a pump cover, a water-cooling chamber ring cover, and water-cooling hose fittings. The pump cover and the water-cooling chamber ring cover form the water-cooling chamber, while the two O-rings on the water-cooling chamber ring cover provide the seal. To achieve water cooling, cooling circulating water can be injected into the water-cooling chamber through the lower of the two water-cooling hose fittings to cool the stuffing box, pump shaft, and packing; the other water-cooling hose fitting is used to recover the cooling water. If the cooling effect is unsatisfactory, cooling water can be introduced into the packing chamber (see the packing chamber connection in Figure 4). To prevent air from entering the packing chamber, our products are shipped with this port plugged with a G ¹/₄ threaded plug; users can replace it with a G ¹/₄ cooling water connection as needed. The water cooling pressure is $P \approx 0.15\text{--}0.3\text{ MPa}$, and the

water seal requirement: $0.2\text{--}0.3\text{ m}^3/\text{n}$; cooling circulation water flow: $0.3\text{--}0.1\text{ m}^3/\text{n}$. The water consumption figures listed above are for reference only; users may adjust them based on actual conditions. Our products are supplied with packing seals as standard; if a mechanical seal is required, please specify this when placing an order.

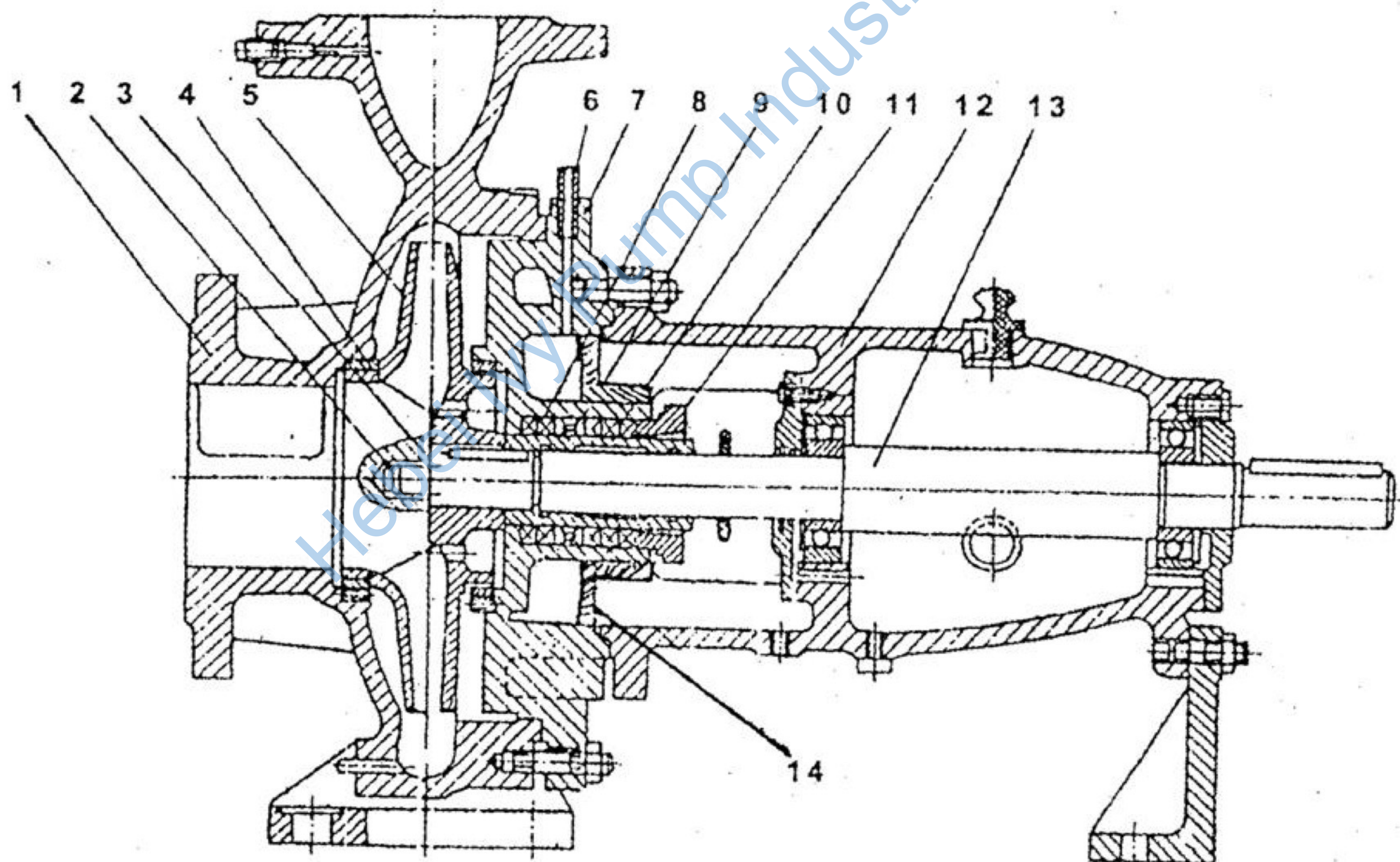
To prevent shaft wear, a shaft sleeve is installed to protect the section of the shaft passing through the packing chamber. An O-ring is installed between the shaft sleeve and the shaft to prevent air ingress or water leakage along the mating surfaces.

The pump is driven by an electric motor via a flexible coupling. Viewed from the drive end, the pump rotates clockwise.

See Figure 4 and Table 2 for the pump dimensions; see Figure 5 and Table 3 for the flange dimensions of the suction and discharge ports. If a reducer pipe is used—that is, when the suction pipe diameter is the same as the discharge pipe diameter—the discharge port flange connection dimensions are the same as those of the suction port flange.



1. Pump Body 2. Pump Cover 3. Impeller 4. Shaft 5. Sealing Ring 6. Impeller Nut 7. Lock Washer
8. Shaft Sleeve 9. Packing Gland 10. Packing Ring 11. Packing 12. Suspension Bearing Assembly



1. Pump Body 2. Impeller Nut 3. Lock Washer 4. Sealing Ring 5. Impeller 6. Water-Cooling Pipe Fitting 7. Pump Cover 8. Shaft Sleeve 9. Packing Ring 10. Packing 11. Packing 12. Suspension Bearing Assembly 13. Shaft 14. Water-Cooling Chamber Ring Cover

IS, IR Pump Dimensional Drawing (Fig. 4)

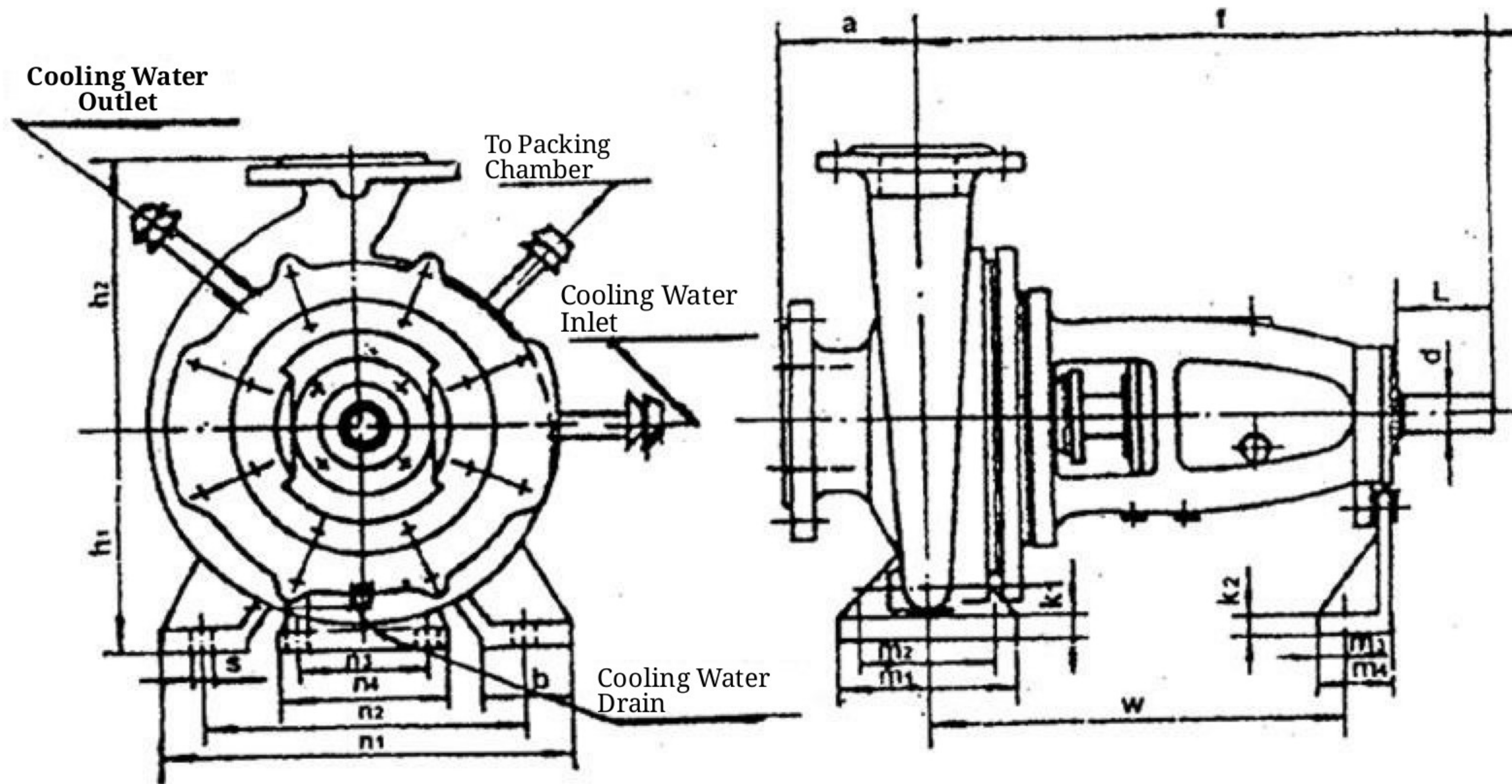


Table 2

Product Model	a	f	h_1	h_2	b	m_1	m_2	m_3	m_4	n_1	n_2	n_3	n_4	k_1	k_2	w	s_1	s_2	d	L
IS(R)50 - 32 - 125	80	385	112	140	50	100	70	19	60	190	140	110	145	14	10	285	4 - $\Phi 14.5$	2 - $\Phi 14.5$	24	50
IS(R)50 - 32 - 160			132	160						240	190			16	10	285				
IS(R)50 - 32 - 200			160	180						240	190			16	10	285				
IS(R)50 - 32 - 250	100	500	180	225	65	125	95	25	65	320	250	110	145	20	14	370	4 - $\Phi 14.5$	2 - $\Phi 14.5$	32	80
IS(R)65 - 50 - 125	80	385	112	140	50	100	70	19	60	210	160			14	10	285			24	50
IS(R)65 - 50 - 160			132	160						240	190			16	10	285				
IS(R)65 - 40 - 200			160	180						265	212			16	10	285				
IS(R)65 - 40 - 250	100	500	180	225	65	125	95	25	65	320	250	110	145	20	14	370	4 - $\Phi 14.5$	2 - $\Phi 14.5$	32	80
IS(R)65 - 40 - 315	125	500	200	250						345	280									
IS(R)80 - 65 - 125	100	385	132	160						240	190			16	10	285	4 - $\Phi 14.5$	2 - $\Phi 14.5$	24	50
IS(R)80 - 65 - 160			160	180						265	212									
IS(R)80 - 50 - 200			200	250						265	212									
IS(R)80 - 50 - 250	125	500	180	225	65	125	95	25	65	320	250	110	145	20	14	370	4 - $\Phi 14.5$	2 - $\Phi 14.5$	32	80
IS(R)80 - 50 - 315	125	500	225	280						345	280									
IS(R)100 - 80 - 125	100	385	160	180						280	212			16	10	285	4 - $\Phi 14.5$	2 - $\Phi 14.5$	24	50
IS(R)100 - 80 - 160			200	250						280	212									
IS(R)100 - 65 - 200			225	280						280	212									
IS(R)100 - 65 - 250	125	530	180	225	80	160	120	25	65	320	250	110	145	20	14	370	4 - $\Phi 14.5$	2 - $\Phi 14.5$	32	80
IS(R)100 - 65 - 315			200	250						360	280									
IS(R)125 - 100 - 200			225	280						400	315									
IS(R)125 - 100 - 250	140	530	250	315	100	200	150	28	65	360	280	110	145	20	14	370	4 - $\Phi 18.5$	2 - $\Phi 14.5$	42	110
IS(R)125 - 100 - 315			280	355						400	315									
IS(R)150 - 125 - 250			315	400						400	315									
IS(R)150 - 125 - 315	160	670	280	355	100	200	150	28	65	400	315	110	145	25	14	370	4 - $\Phi 18.5$	2 - $\Phi 14.5$	42	110
IS(R)150 - 125 - 400			315	400						500	400									
IS(R)200 - 150 - 250			355	450						500	400									
IS(R)200 - 150 - 315	160	670	315	400	100	200	150	38	80	550	450	140	200	30	20	500	4 - $\Phi 24$	2 - $\Phi 18.5$	48	110
IS(R)200 - 150 - 400			315	450						550	450									

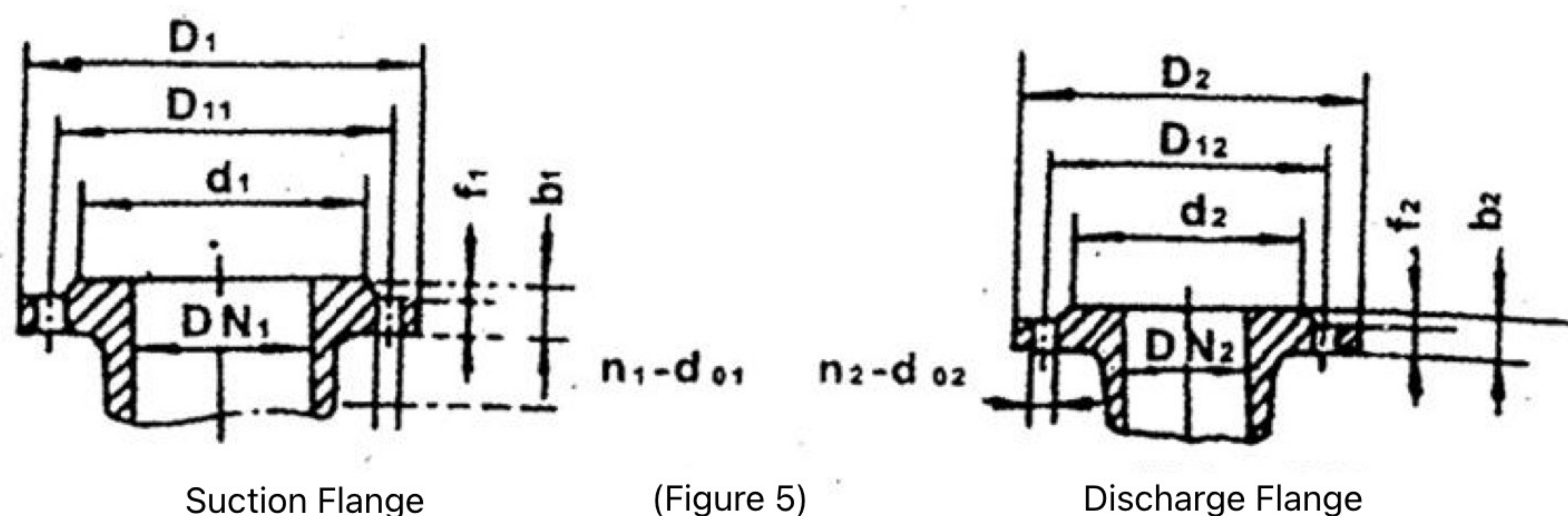


Table 3

Product Model	Suction Flange Dimensions							Discharge Flange Dimensions						
	DN ₁	D ₁	D ₁₁	d ₁	b ₁	f ₁	n ₁ -d ₀₁	DN ₂	D ₂	D ₁₂	d ₂	b ₂	f ₂	n ₂ -d ₀₂
IS(R)50 - 32 - 125	50	165	125	102	20	3	4 - 17.5	32	140	100	78	18	2	4 - 17.5
IS(R)50 - 32 - 160														
IS(R)50 - 32 - 200														
IS(R)50 - 32 - 250														
IS(R)65 - 50 - 125	65	185	145	122	20	3	4 - 17.5	50	165	125	102	20	3	4 - 17.5
IS(R)65 - 50 - 160								40	150	110	88	18	3	4 - 17.5
IS(R)65 - 40 - 200														
IS(R)65 - 40 - 250														
IS(R)65 - 40 - 315	80	200	160	132	22	3	8 - 17.5	65	185	145	122	20	3	4 - 17.5
IS(R)80 - 65 - 125								50	165	125	102	20	3	4 - 17.5
IS(R)80 - 65 - 160														
IS(R)80 - 50 - 200														
IS(R)80 - 50 - 250														
IS(R)80 - 50 - 315	100	220	180	158	24	3	8 - 17.5	80	200	160	133	22	3	8 - 17.5
IS(R)100 - 80 - 125								65	185	145	122	20	3	4 - 17.5
IS(R)100 - 80 - 160														
IS(R)100 - 65 - 200														
IS(R)100 - 65 - 250														
IS(R)100 - 65 - 315	125	250	210	184	26	3	8 - 17.5	100	220	180	158	24	3	8 - 17.5
IS(R)125 - 100 - 200														
IS(R)125 - 100 - 250														
IS(R)125 - 100 - 315														
IS(R)125 - 100 - 400	150	285	240	212	26	3	8 - 22	125	250	210	184	26	3	8 - 17.5
IS(R)150 - 125 - 250														
IS(R)150 - 125 - 315														
IS(R)150 - 125 - 400														
IS(R)200 - 150 - 250	200	340	295	368	30	3	12 - 22	150	285	240	212	26	3	8 - 22
IS(R)200 - 150 - 315														
IS(R)200 - 150 - 400														

IV. Assembly and Disassembly

Before assembling the pump, first inspect the parts for any defects that might affect assembly, and clean them thoroughly before proceeding with assembly.

1. In advance, tighten all connecting bolts, plugs, and other fasteners onto their respective parts.
2. O-rings, paper gaskets, oil seals, and other components may be placed on their respective parts in advance.
3. The sealing ring, packing ring, and packing gland may be installed in sequence inside the pump cover in advance. For hot water pumps, the water-cooling chamber ring cover may be connected to the pump cover in advance using two rubber O-rings.
4. Install the rolling bearings onto the shaft, then mount the shaft into the suspension assembly. Close the cover to secure the rolling bearings, and slip a water-stop ring onto the shaft.
5. Mount the shaft sleeve onto the shaft, then mount the pump cover onto the suspension. Next, install the impeller, lock washer, impeller nut, and other components, and tighten them. Finally, install the above assembly into the pump body and tighten the connecting bolts on the pump body and pump cover.

During the assembly process described above, special attention should be paid to small parts such as flat keys, water-stop rings, and O-rings inside the shaft sleeve, as they are easily overlooked or installed in the wrong order.

The pump disassembly sequence can generally be performed in the reverse order of the assembly sequence.

V. Installation

Proper pump installation has a significant impact on the pump's operation and service life; therefore, installation and alignment must be performed with great care. Refer to Figure 6 and Table 4 for the pump's external dimensions and installation specifications.

1. Installation and Alignment

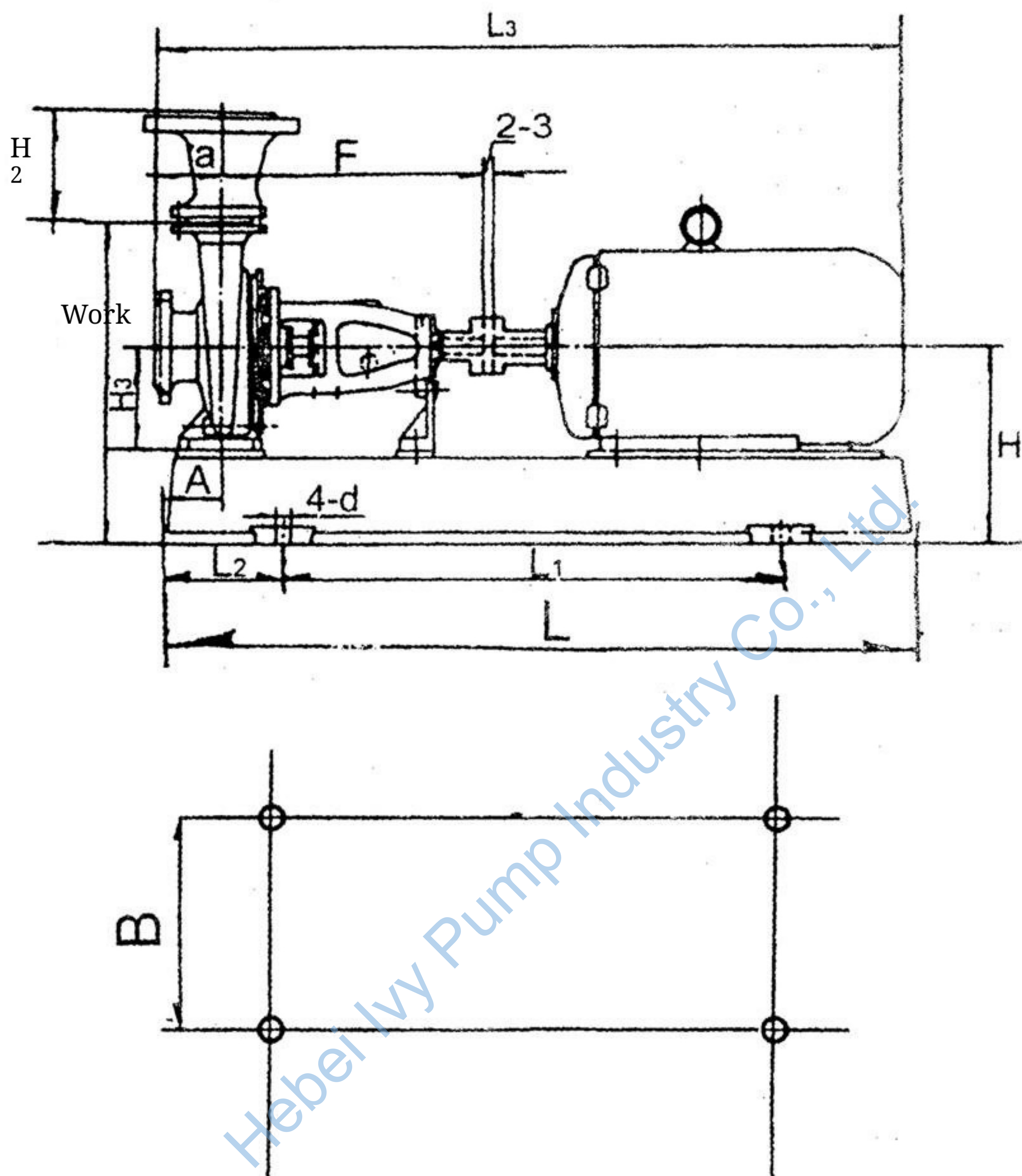
- (1) Remove grease and dirt from the pump base, then place the base on the foundation.
- (2) Check the levelness of the base with a spirit level; shims may be used for leveling.
- (3) Pour concrete into the base and the anchor bolt holes.
- (4) After the concrete has set, check the base and anchor bolt holes for looseness; once everything is secure, tighten the anchor bolts and recheck the level.
- (5) Clean the support surfaces of the base, as well as the flat surfaces of the pump and motor feet, and mount the pump and motor onto the base.
- (6) Maintain a certain clearance between the couplings, generally 2 millimeters. Check whether the centrelines of the pump shaft and motor shaft are aligned; use thin shims to adjust them for concentricity.

Measure the outer circumference of the coupling; the difference between the top and bottom, and between the left and right sides, must not exceed 0.1 mm. The difference between the maximum and minimum gaps around the circumference of the coupling end faces must not exceed 0.3 mm.

2. Installation Instructions:

- (1) The pump's installation height, as well as the length, diameter, and flow velocity of the piping, should conform to actual conditions to minimize unnecessary losses.
- (2) For long-distance conveyance, use a larger pipe diameter. The pump piping must have its own supports; the weight of the piping must not be borne by the pump to prevent damage to the pump.
- (3) If a check valve is installed in the discharge line, it should be located upstream of the gate valve.

Outline and Installation Dimensions (Fig. 6)



Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions																						
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B		4-d									
50 - 32 - 125	90L - 2/2.2	60	80	385	312	100	112	172	740	480	130	854	270		Φ20									
50 - 32 - 125A	90S - 2/1.5											765												
50 - 32 - 160	100L - 2/3.0	65	80	385	357	100	132	197	770	495	135	860	295		Φ20									
50 - 32 - 160A	90L - 2/2.2											854												
50 - 32 - 160B	90L - 2/2.2																							
50 - 32 - 200	132S ₁ - 2/5.5	80	80	385	405	100	160	225	840	600	125	955	360		Φ20									
50 - 32 - 200A	112M - 2/4.0				410											230	800	575	880	340				
50 - 32 - 200B	100L - 2/3.0																780	600	85	860	340			
50 - 32 - 200C	100L - 2/3.0																							
50 - 32 - 250	160M ₁ - 2/11	90	100	500	475	100	180	250	1190	735	180	1223	400		Φ20									
50 - 32 - 250A	132S ₂ - 2/7.5							250	980	740	135	1098	400											
50 - 32 - 250B	132S ₂ - 2/7.5																							
50 - 32 - 250C	132S ₁ - 2/5.5																							
50 - 32 - 250D	132S ₁ - 2/5.5																							
50 - 32 - 250E	132S ₁ - 2/5.5																							
60 - 50 - 125	100L - 2/3.0	65	80	385	312	105	112	172	770	540	105	860	270		Φ20									
60 - 50 - 125A	90L - 2/2.2								750	480		790	270											
60 - 50 - 160	132S ₁ - 2/5.5	70	80	385	357	105	132	197	840	585	130	955	340		Φ20									
60 - 50 - 160A	112M - 2/4.0	70			357			197	830	575	125	880	340											
60 - 50 - 160B	100L - 2/3.0	70			357			197	770	495	80	860	295											
65 - 40 - 200	132S ₂ - 2/7.5	80	100	385	450	150	160	225	840	600	125	955	360		Φ20									
65 - 40 - 200A	132S ₁ - 2/5.5															230	800	575	85	880	340			
65 - 40 - 200B	132S ₁ - 2/5.5																							
65 - 40 - 200C	112M - 2/4.0				410																			
65 - 40 - 250	160M ₂ - 2/15	90	100	500	475	150	180	250	1190	735	180	1223	400		Φ20									
65 - 40 - 250A	160M ₁ - 2/11																							
65 - 40 - 250B	160M ₁ - 2/11																							
65 - 40 - 250C	160M ₁ - 2/11																							
65 - 40 - 250D	132S ₁ - 2/7.5																							
65 - 40 - 250E	132S ₂ - 2/7.5								980	735	135	1098	400											
65 - 40 - 315	200L ₁ - 2/30	85	125	500	530	150	200	280	1215	940	140	1423	460		Φ20									
65 - 40 - 315A	180M - 2/22				550					300		1150	850			1318	455							
65 - 40 - 315B	160M ₂ - 2/18.5	100									160		1293			430								
65 - 40 - 315C	160M ₂ - 2/15																							
80 - 65 - 125	132S ₁ - 2/5.5	65	100	385	357	105	132	197	840	585	130	975	340		Φ20									
80 - 65 - 125A	112M - 2/4.0	75			362			202	780	575	90	900	340											
80 - 65 - 160	132S ₂ - 2/7.5	80			405			225	840	600	125	975	360											

Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions																						
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B		4-d									
80 - 65 - 160A	132S ₁ - 2/5.5	80	100	385	405	105	160	225	840	600	125	975	360		Φ20									
80 - 65 - 160B	112M - 2/4.0	70			410			230	800	575	85	900	340											
80 - 50 - 200	160M ₂ - 2/15	70	100	385	420	175	160	240	940	655	145	1100	395		Φ20									
80 - 50 - 200A	160M ₁ - 2/11				70			425	225	820	600	80	975			360								
80 - 50 - 200B	132S ₂ - 2/7.5	70						485	260	1150	870	110	1318			440								
80 - 50 - 200C	132S ₂ - 2/7.5																85	125	500	175	180	860	1293	415
80 - 50 - 250	180M - 2/22	80	485	260	1100	735	150	1248	400															
80 - 50 - 250A	160L - 2/18.5	80	125	500	615	175	225	335	1250	805	160	1423	500				Φ20							
80 - 50 - 250B	160M ₂ - 2/15							110	605	325	1150	850	160					1318	430					
80 - 50 - 315	200L ₂ - 2/37	100												605	325					1150	850	160	1318	430
80 - 50 - 315A	200L ₁ - 2/30							100	605	325	1150	850	160					1318	430					
80 - 50 - 315B	200L ₁ - 2/30	100	605	325	1150	850	160							1318	430									
80 - 50 - 315C	180M - 2/22							100	605	325	1150	850	160			1318	430							
100 - 80 - 125	160M ₁ - 2/11	70	100	385	420	150	160							240	940			655	145	1100	395		Φ20	
100 - 80 - 125A	132S ₂ - 2/7.5	70			405			225	850	600	80	975	360											
100 - 80 - 160	160M ₂ - 2/15	80	100	500	440	150	160	240	1100	750	150	1223	400		Φ20									
100 - 80 - 160A	160M ₁ - 2/11							85	445	175	160	245	980			750	140	1093	350					
100 - 80 - 160B	160M ₁ - 2/11																			85	445	175	160	245
100 - 80 - 160C	132S ₂ - 2/7.5	85						445	175	160	245	980	750			140	1093	350						
100 - 65 - 200	180M - 2/22		85	100	500	485	175							180	260				1150	870	110	1293	440	
100 - 65 - 200A	160L - 2/18.5	80				480		255	1120	860	155	1286	415											
100 - 65 - 200B	160M ₂ - 2/15		80			465		240	1100	735	150	1223	400											
100 - 65 - 200C	160M ₂ - 2/15	90				125		500	535	175	200	285	1250		940	135	1423	460		Φ20				
100 - 65 - 250	200L ₂ - 2/37		90	535	175		200							285							1250	940	135	1423
100 - 65 - 250A	200L ₁ - 2/30	100																						
100 - 65 - 250B	180M - 2/22		100	550	300		1150							820							160	1318	455	
100 - 65 - 250C	160L - 2/18.5	130				125		530	670	175	225	390	1470		1055	170	1686	615		Φ20				
100 - 65 - 315	280S - 2/7.5		115	635	355		1400		1060			190	1616	570										
100 - 65 - 315A	250M - 2/5.5	110		620	340		1320		940			170	1501	535										
100 - 65 - 315B	225M - 2/4.5		110										620		340	1320	940	170			1461	535		
100 - 65 - 315C	200L ₂ - 2/37	100		580	300	1150	820	160	1318	455														
100 - 65 - 315D	200L ₁ - 2/30		100								580	300	1150	820	160	1318	455							
125 - 100 - 200	225M - 2/4.5	100		90	500	600	150	200	285	1260								930	165	1463	505		Φ20	
125 - 100 - 200A	200L ₂ - 2/37	110	535			285			1250	940	135	1423	460											
125 - 100 - 200B	200L ₁ - 2/30													100	580	300	1150	820	160	1318	455			
125 - 100 - 200C	180M - 2/22	130	530			670			150	225	390	1470	1055											170
125 - 100 - 250	280S - 2/7.5			130	140		530	670						150	225	390	1470	1055	170	1701	615	Φ25		

Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions													
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B		4-d
125 - 100 - 250A	250M - 2/55	115	140	530	635	150	225	355	1400	1060	190	1631	570		Φ25
125 - 100 - 250B	250M - 2/55														
125 - 100 - 250C	225M - 2/45	110	140	530	620	150	225	340	1320	940	170	1516	535		Φ25
125 - 100 - 250D	225M - 2/45														
125 - 100 - 315	315S - 2/110	110	140	530	715	150	250	400	1560	1200	180	1891	740		Φ25
125 - 100 - 315A	280M - 2/90														
125 - 100 - 315B	280M - 2/90	110	140	530	715	150	250	400	1480	950	165	1751	670		Φ25
125 - 100 - 315C	280S - 2/75														
125 - 100 - 315D	280S - 2/75														
125 - 100 - 315E	280S - 2/75														

The above lists the outline and installation dimension table and specific data for pumps fitted with 2-pole motors.

Note: When fitted with 2-pole motors, the maximum pump model is IS(R)125-100-315.

Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions													
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B		4-d
50 - 32 - 125J	80 ₁ - 4/0.55	80	80	385	337	100	112	192	720	550	80	765	270		Φ20
50 - 32 - 125JA	80 ₁ - 4/0.55														
50 - 32 - 160J	80 ₁ - 4/0.55	80	80	385	372	100	132	212	720	565	80	765	315		Φ20
50 - 32 - 160JA	80 ₁ - 4/0.55														
50 - 32 - 160JB	80 ₁ - 4/0.55														
50 - 32 - 200J	80 ₂ - 4/0.55	70	80	38.5	410	100	160	230	750	595	85	765	355		Φ20
50 - 32 - 200JA	80 ₁ - 4/0.55														
50 - 32 - 200JB	80 ₁ - 4/0.55														
50 - 32 - 250J	90L - 4/1.5	100	100	500	505	100	180	280	920	550	180	958	400		Φ20
50 - 32 - 250JA	90S - 4/1.1											933			
50 - 32 - 250JB	80 ₂ - 4/0.75											908			
65 - 50 - 125J	80 ₁ - 4/0.55	80	80	385	332	105	112	192	720	550	80	765	285		Φ20
65 - 50 - 125JA	80 ₁ - 4/0.55														
65 - 50 - 160J	80 ₂ - 4/0.75	80	80	385	372	105	132	212	720	565	80	765	315		Φ20
65 - 50 - 160JA	80 ₁ - 4/0.55														
65 - 50 - 160JB	80 ₁ - 4/0.55														
65 - 40 - 200J	90S - 4/1.1	70	100	385	410	150	160	230	750	590	85	790	355		Φ20
65 - 40 - 200JA	80 ₂ - 4/0.75											765			
65 - 40 - 200JB	80 ₂ - 4/0.75														
65 - 40 - 250J	100L ₁ - 4/2.2	100	100	500	485	150	180	260	920	555	180	1003	400		Φ20
65 - 40 - 250JA	90L - 4/1.5											963			
65 - 40 - 250JB	90S - 4/1.1											938			
65 - 40 - 315J	112M - 4/4.0	100	125	500	530	150	200	280	1050	645	150	1048	420		Φ20
65 - 40 - 315JA	100L ₂ - 4/3.0											1028			
65 - 40 - 315JB	100L ₂ - 4/3.0														
80 - 65 - 125J	80 ₂ - 4/0.75	80	100	385	372	105	132	212	720	565	80	785	315		Φ20
80 - 65 - 125JA	80 ₁ - 4/0.55														
80 - 65 - 160J	90L - 4/1.5	70	100	385	410	105	160	230	750	590	85	835	355		Φ20
80 - 65 - 160JA	90S - 4/1.1											810			
80 - 65 - 160JB	80 ₂ - 4/0.75											785			
80 - 50 - 200J	100L ₁ - 4/2.2	80	100	385	430	175	160	230	770	600	95	880	345		Φ20
80 - 50 - 200JA	90L - 4/1.5											840			
80 - 50 - 200JB	90S - 4/1.1											815			
80 - 50 - 250J	100L ₂ - 4/3.0	100	125	500	505	175	180	280	920	550	180	1028	400		Φ20
80 - 50 - 250JA	100L ₁ - 4/2.2														
80 - 50 - 250JB	100L ₁ - 4/2.2														
80 - 50 - 315J	132S - 4/5.5	100	125	500	585	175	225	305	1050	645	150	1123	420		Φ20

Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions																		
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B	B ₁	4-d					
80 - 50 - 315JA	112M - 4/4.0	100	125	500	585	175	225	305	1050	740	150	1048	430		Φ20					
80 - 50 - 315JB	112M - 4/4.0																			
100 - 80 - 125J	90L - 4/1.5	80	100	385	410	150	160	230	770	590	95	835	355		Φ20					
100 - 80 - 125JA	90S - 4/1.1											810								
100 - 80 - 160J	100L ₁ - 4/2.2	100	100	500	460	150	160	260	920	590	180	1003	350		Φ20					
100 - 80 - 160JA	90L - 4/1.5											963								
100 - 80 - 160JB	90S - 4/1.1											938								
100 - 65 - 200J	112M - 4/4.0	100	100	500	485	175	180	260	1050	700	150	1023	400		Φ20					
100 - 65 - 200JA	100L ₂ - 4/3.0									550		1003								
100 - 65 - 200JB	100L ₁ - 4/2.2																			
100 - 65 - 250J	132S - 4/5.5	100	125	500	530	175	200	280	1050	725	150	1123	440		Φ20					
100 - 65 - 250JA	112M - 4/4.0									645		1048	420							
100 - 65 - 250JB	100L ₂ - 4/3.0									1028										
100 - 65 - 315J	160M - 4/11	105	125	530	585	175	225	305	1160	830	160	1280	480		Φ20					
100 - 65 - 315JA	132M - 4/7.5	110			605															
100 - 65 - 315JB	132M - 4/7.5				325											1100	830	160	1190	480
100 - 65 - 315JC	132S - 4/5.5				1150															
125 - 100 - 200J	132M - 4/7.5	100	125	500	550	150	200	270	1050	725	150	1163	440		Φ20					
125 - 100 - 200JA	132S - 4/5.5									645		1123	420							
125 - 100 - 200JB	112M - 4/4.0									1048										
125 - 100 - 250J	160M - 4/11	105	140	530	585	150	200	305	1160	830	160	1295	480		Φ20					
125 - 100 - 250JA	132M - 4/7.5	110			605							325	1100			830	160	1205	480	
125 - 100 - 250JB	132S - 4/5.5				1165															
125 - 100 - 315J	160L - 4/15	100	140	530	645	150	250	330	1200	910	150	1340	480		Φ20					
125 - 100 - 315JA	160M - 4/11											1295								
125 - 100 - 315JB	160M - 4/11																			
125 - 100 - 400	200L - 4/30	140	140	530	745	150	280	390	1300	1060	160	1470	595		Φ25					
125 - 100 - 400A	180L - 2/22	130			730							375	1270			990	140	1405		
125 - 100 - 400B	180M - 4/18.5				1365							590								
125 - 100 - 400C	160L - 4/15				1345															
150 - 125 - 250	180M - 4/18.5	100	140	530	695	150	250	340	1200	925	160	1365	480		Φ25					
150 - 125 - 250A	160L - 4/15									915		1345								
150 - 125 - 250B	160M - 4/11									1300										
150 - 125 - 315	200L - 4/30	140	140	530	745	150	280	390	1300	1060	160	1470	595		Φ25					
150 - 125 - 315A	180L - 4/22	130			725							370	1270			985	160	1405		
150 - 125 - 315B	180M - 4/18.5				1365							590								
150 - 125 - 315C	160L - 4/15				1345															

Product Model IS(R)	Frame Size / Power	Overall and Installation Dimensions													
		A	a	F	H ₁	H ₂	H ₃	H	L	L ₁	L ₂	L ₃	B	B ₁	4-d
150 - 125 - 400	225M - 4/45	130	140	530	800	150	315	400	1380	1045	150	1546	590		Φ25
150 - 125 - 400A	225S - 4/37				790			390	1330	1060	160	1521			
150 - 125 - 400B	200L - 4/30				775			375	1270	1000	140	1476			
150 - 125 - 400C	180L - 4/22				775			375	1270	1000	140	1411			
200 - 150 - 250	225S - 4/37	130	160	530	745	250	280	370	1350	1020	150	1541	595		Φ25
200 - 150 - 250A	200L - 4/30	140			765			390	1330	1060	160	1496	595		
200 - 150 - 250B	180L - 4/22	130			750			375	1270	990	140	1431	590		
200 - 150 - 315	250M - 4/55	140			160			760	825	250	315	425	1550		
200 - 150 - 315A	225M - 4/45		815	415		1500	1065		1706			630			
200 - 150 - 315B	225S - 4/37		120	815		415	1500		1070			215	1681	630	
200 - 150 - 400	280M - 4/90		140	160		760	880		250			315	430	1700	1060
200 - 150 - 400A	280S - 4/75	865			415		1600	1010		265	1861		655		
200 - 150 - 400B	250M - 4/55	865			415		1600	1010			1791		655		
200 - 150 - 400C	225M - 4/45	865			415		1500	1065			1706		630		

The above lists the outline and installation dimension table and specific data for pumps fitted with 4-pole motors.

Note: J in the table stands for "reduced speed".

VI. Starting, Operation, Stopping, and Maintenance

1. Startup:

- (1) Before starting, check that the pump rotates freely and that the motor is rotating in the correct direction.
- (2) Add bearing lubricating oil to the suspension; ensure the oil level is between the two markings on the dipstick.
- (3) For hot water pumps, connect the water cooling system according to the method described in the structural description above.
- (4) Close the gate valve and gauges on the discharge line.
- (5) Fill the pump with water, or prime it using a vacuum pump.
- (6) Connect the power supply. Once the pump reaches normal speed, gradually open the gate valve and instruments on the discharge line, and adjust the operation to the required operating conditions (the pump should ideally operate under specified conditions to ensure long-term operation near the point of maximum efficiency, thereby achieving the best energy-saving results).
- (7) With the gate valve on the discharge line closed, the pump must not operate continuously for more than 3 minutes.

2. Operation:

- (1) During startup and operation, carefully monitor instrument readings, bearing temperature, packing leakage and temperature, as well as pump vibration and noise to ensure normal operation. If any abnormalities are detected, address them promptly.
- (2) The maximum bearing temperature shall not exceed 80°C, and the bearing temperature shall not exceed the ambient temperature by more than 40°C.
- (3) Under normal conditions, packing leakage should be minimal and uniform, generally not exceeding 60 drops per minute.
- (4) The bearing oil level should be maintained at the normal level; it must not be too high or too low. If the level is too low, lubricating oil should be replenished promptly.
- (5) If the clearance between the seal ring and the impeller has worn excessively, replace the seal ring with a new one.

3. Shutdown:

Gradually close the gate valves and instruments on the discharge line, then turn off the power supply.

4. Maintenance:

- (1) During the first month of operation, change the lubricating oil after 100 hours of operation; thereafter, change the oil every 500 hours.
- (2) During operation, frequently adjust the tightness of the packing to ensure normal water leakage.
- (3) Periodically inspect the pump's bearings, seal rings, and shaft sleeves for wear; replace them promptly if excessive wear is detected.
- (4) When shutting down the pump in ambient temperatures below 0°C, drain the liquid from the pump housing through the plug hole at the bottom of the housing to prevent the housing from cracking due to freezing.
- (5) When the pump is out of service for an extended period, it must be completely disassembled, cleaned, lubricated, and then packaged for storage.

VII. Causes of Malfunctions and Solutions

Fault	Cause	Solution
1. The pump fails to draw water. The pointers on the pressure gauge and vacuum gauge fluctuate violently.	1. Insufficient water was filled into the pump before startup. 2. Air is leaking into the suction line or gauges. 3. The suction inlet is not submerged in water.	1. Shut down the pump and prime it with water. 2. Tighten the leak to prevent air from entering the water. 3. Lower the suction inlet so that it is submerged in water.
2. The pump is not drawing water. The vacuum gauge indicates a high vacuum.	1. The foot valve is not open or is clogged. 2. There is excessive resistance in the suction line. 3. The suction lift is too high. 4. The suction section is not submerged deeply enough.	1. Inspect, clean, or replace the foot valve. 2. Clean or replace the suction line. 3. Lower the suction height. 4. Increase the submersion depth of the suction section.
3. The pressure gauge shows pressure, but the pump is not delivering water.	1. Excessive resistance in the discharge piping. 2. Incorrect rotation direction. 3. Blockage in the impeller flow path. 4. Insufficient rotational speed.	1. Inspect and shorten the discharge piping. 2. Correct the motor's rotation direction. 3. Remove the suction pipe fitting and clean the impeller flow path. 4. Increase the pump's rotational speed to the rated requirement.
4. Insufficient flow rate.	1. The pump is clogged. 2. The clearance between the impeller and the pump casing is too large due to wear. 3. The discharge gate valve is not fully open, or there is a leak in the discharge piping. 4. The rotational speed is below the specified value.	1. Clean the pump and suction piping. 2. Replace the impeller and adjust the clearance. 3. Open the gate valve sufficiently, seal any leaks, or replace the piping. 4. Adjust to the rated speed.
5. Excessive power consumption during pump operation.	1. The rotor is rubbing against stationary parts. 2. The bearings are worn or damaged. 3. The flow rate is too high.	1. Identify the cause and eliminate the contact. 2. Replace the damaged bearings. 3. Reduce the flow rate.
6. Abnormal noise inside the pump; the pump fails to deliver water.	1. Excessive resistance in the suction line. 2. Suction head is too high. 3. Air is entering at the suction point. 4. The temperature of the pumped liquid is too high. 5. Flow rate is too high.	1. Clean the suction line and foot valve. 2. Reduce the suction head. 3. Seal the air leak. 4. Lower the suction temperature. 5. Partially close the discharge valve and reduce the flow rate.
7. Pump shaft overheating.	1. Insufficient lubricating oil. 2. The pump shaft and motor shaft are not aligned on the same centerline. 3. No cooling water.	1. Add lubricating oil. 2. Align the pump shaft and motor shaft so they are on the same centerline. 3. Supply cooling water.
8. The pump is vibrating abnormally.	1. The pump is experiencing cavitation. 2. The pump shaft and motor shaft are not aligned. 3. The anchor bolts are loose.	1. Adjust the discharge gate valve so that the pump operates within the specified performance range. 2. Align the pump shaft and motor shaft so that they are on the same centerline. 3. Tighten the anchor bolts.

Pipe Diameter Reference Table

Pipe Diameter (mm)	Flow Rate (L/S)																									
	1	2	4	6	8	10																				
25	32.7	13.0					Brief Table of Friction Loss in Straight Pipe (for estimation) Loss head in meters per 100 m straight pipe (based on new malleable iron pipe; double the value for old pipes)																			
38	3.5	14	55				15	20																		
50	0.8	3.1	13	29					25	30																
65		0.8	3.2	7.1	13	20					40	50														
75		0.4	1.6	3.3	5.9	9.6	21.6						60	70												
100			0.4	0.8	1.3	2.1	6.8	8.6	13	19.4					80	90										
125				0.23	0.4	0.63	1.3	2.7	4.1	5.9	10.7						100	110								
150					0.16	0.26	0.58	1.1	1.6	2.3	4.2	6.4	9.4						120	130						
175						0.11	0.27	0.5	0.74	1.05	1.9	2.9	4.3	5.8	7.7	9.6					140	160				
200							0.13	0.26	0.37	0.53	0.93	1.5	2.1	2.9	3.7	4.7	6.1	7.2	8.5				180	200		
250								0.07	0.12	0.18	0.30	0.48	0.68	0.93	1.2	1.5	1.9	2.3	2.8	3.3	3.7	4.9	0.2			
300											0.07	0.12	0.19	0.27	0.37	0.49	0.61	0.75	0.9	1.1	1.3	1.5	2.0	0.4	3.0	

Equivalent straight pipe length for each valve and elbow

Type	Multiples of Pipe Diameter for Equivalent Length	Remarks
Fully open gate valve	13	Double if not fully open
Standard elbow	25	
Check valve	100	
Foot valve	100	Double if partially clogged

Example: For a pipe with 100 mm diameter, the foot valve equivalent length = 100 × pipe diameter = 100 × 100 = 10000 mm = 10 m straight pipe.

Assume flow rate = 18 L/s. Check the table above: friction loss is 1.3 m per 100 m straight pipe.

Then the loss for 10 m pipe = 0.13 m.

That is, a 100 mm foot valve will cause a head loss of 0.13 m at a flow rate of 8 L/s.

Maximum flow limit for a given pipe diameter (L/S)

Pipe Diameter (mm)	Max. Flow (L/S)	Max. Velocity (m/S)	Pipe Diameter (mm)	Max. Flow (L/S)	Max. Velocity (m/S)
25	1	2.04	125	30.0	2.44
38	2.5	1.69	150	43.0	2.45
50	4.17	2.12	175	60.0	2.49
65	6.67	2.01	200	83.0	2.69
75	10.0	2.26	250	133.3	2.72
100	18.4	2.33	300	192.0	2.71

If this limit is exceeded, pipeline loss will increase significantly.