

LVS/LVR

Stainless Steel Vertical Multistage Pump



Application

- Suitable for transferring liquids of low viscosity, non-inflammable and non-explosive, not containing solid particles or fibers
- Water supply & drainage for high-rise buildings, filtration and transfer at waterworks, pressure boosting in main pipe
- Washing and cleaning systems, boiler feeding, cooling water circulation, water treatment systems, auxiliary system, support equipment
- Ultra-filtration systems, reverse-osmosis systems, distillation systems, separations, swimming pools
- Agricultural irrigation: sprinkler irrigation, drip-feed irrigation
- Food & beverage industry
- Fire-fighting system

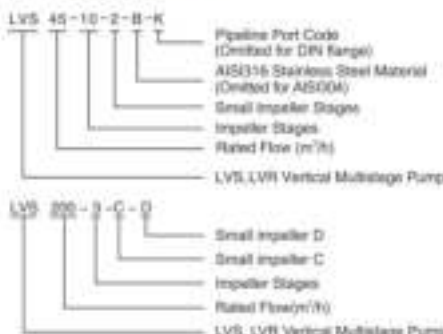
Operating Conditions

- Low viscosity, non-inflammable and non-explosive liquids not containing solid particles or fibers. The liquids must not chemically attack the pump materials. When pumping liquids with a density or viscosity is higher than that of water, a motor with a higher output power rating shall be used.
- Liquid temperature: -20°C ~ +120°C
- Flow range: 0.7-240 m³/h
- Liquid pH value: 4 ~ 10
- Max. ambient temperature: +40°C
- Max. operation pressure: 30 bar
- Altitude: up to 1000 m

Motor

- IE 2 motor (IE 3 motor optional)
- Totally enclosed & fan-cooled
- Protection class: IP55
- Standard voltage: 50/60 Hz 1 ~ 220V/3 ~ 380V

Identification Codes



LVS: Stainless steel wetted parts

LVR: Cast iron base & pump cover

Identifications codes of flange structure

A: Dual flange K: Clamp connector

G: Threaded connector

Minimum Inlet Pressure-Npsh

Calculation of the inlet pressure "H" is recommended in these situations:

The liquid temperature is high.

The flow is significantly higher than the rated flow.

Water is drawn from depths.

Water is drawn through long pipes.

Inlet conditions are poor.

To avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump. The maximum suction lift "H" in meters head can be calculated as follows:

$$H = P_b - 10.2 \cdot \text{NPSH} - H_f - H_v$$

P_b = Barometric pressure in bar. (Barometric pressure can be set to 1 bar). In closed systems, P_b indicates the system pressure in bar.

NPSH = Net Positive Suction Head in meters head. (To be read from the NPSH curve at the highest flow the pump will be delivering.)

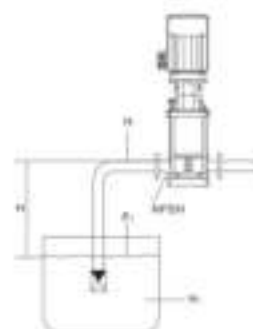
H_f = Friction loss in suction pipe in meters head. (At the highest flow the pump will be delivering.)

H_v = Vapor pressure in meters head. (To be read from the vapor pressure scale, "Hv" depends on the liquid temperature "Tm")

H_s = Safety margin=minimum 0.5 meters head.

If the "H" calculated is positive, the pump can operate at a suction lift of maximum "H" meters head.

If the "H" calculated is negative, an inlet pressure of minimum "H" meters head is required.



Note: To avoid cavitation, never select a pump with a duty point too far to the right on the NPSH curve. Always check the NPSH value of the pump at the highest possible flow.

Maximum Inlet Pressure

The following table shows the maximum permissible inlet pressure. However, the current inlet pressure + the pressure against a closed valve must always be lower than the Max. permissible operating pressure.

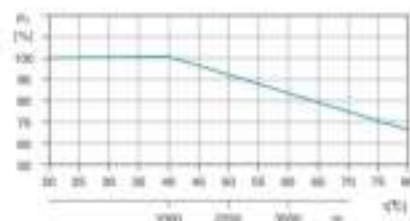
If the maximum permissible operating pressure is exceeded, the bearing in the motor may be damaged and the life of the shaft seal reduced.

Model	Maximum Inlet Pressure [bar]
LVS/LVR	
1-2 — 1-36	10
LVR/LVR	
2-2 — 2-12	8
2-3 — 2-26	10
2-13 — 2-26	15
LVR/LVR	
3-2 — 3-29	10
3-11 — 3-26	15
LVR/LVR	
4-2 — 4-11	8
4-3 — 4-11	10
4-12 — 4-22	15
LVR/LVR	
5-2 — 5-16	10
5-18 — 5-29	15
LVR/LVR	
10-1 — 10-6	8
10-7 — 10-22	10
LVR/LVR	
15-1 — 15-3	8
15-4 — 15-17	10
LVR/LVR	
20-1 — 20-3	8
20-4 — 20-17	10
LVR/LVR	
32-1-1 — 32-4	4
32-5-2 — 32-10	10
32-11 — 32-14	15
LVR/LVR	
45-1-1 — 45-2	4
45-3-2 — 45-6	10
45-6-2 — 45-13-2	15
LVR/LVR	
64-1-1 — 64-2-2	4
64-2-1 — 64-4-2	10
64-4-1 — 64-8-1	15
LVR/LVR	
90-1-1 — 90-1	4
90-2-2 — 90-3-2	10
90-3 — 90-6	15
LVR/LVR	
120-1 — 120-2-1	10
120-2 — 120-5-1	15
120-6 — 120-7	20
LVR/LVR	
150-1-1 — 150-2-2	10
150-2-1 — 150-4-1	15
150-4 — 150-6	20
LVR/LVR	
200-1-D	10
200-1-C — 200-2-2C	15
200-2-C — 200-4	20

Ambient Temperature

Max. ambient temperature: +40°C. Ambient temperature above 40°C or installation at altitude of more than 1000 meters above sea level require the use of an oversize motor. Because of low air density and poor cooling effects, the motor output power P_2 will be decreased. See the picture.

In such cases, it may be necessary to use a motor with a higher output power rating.

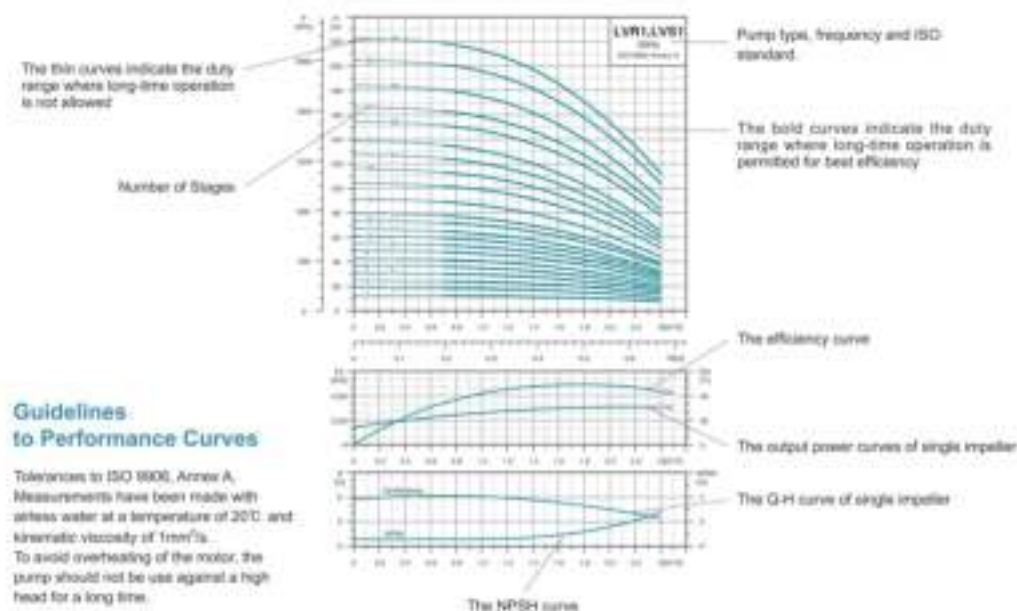


For example, when the pump is installed at altitude of more than 3500 meters above sea level, P_2 will be decreased to 88%. When the ambient temperature is 70°C, P_2 will be decreased to 78%.

LV5/LVR

Stainless Steel Vertical
Multistage Pump

How to Read The Curve Charts



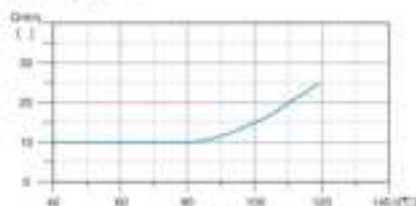
Guidelines to Performance Curves

Tolerances to ISO 9906, Annex A. Measurements have been made with clean water at a temperature of 20°C and kinematic viscosity of 1mm²/s. To avoid overheating of the motor, the pump should not be used against a high head for a long time.

Minimum Flow Rate

Due to the risk of overheating, the pump should not be used at a flow below the minimum flow rate. The curve below shows the minimum flow rate as a percentage of the nominal flow rate in relation to the liquid temperature.

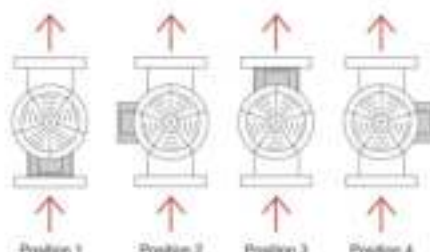
Air cooling apparatus



Note: The outlet valve must be opened when the pump is in operation.

Terminal Box Positions

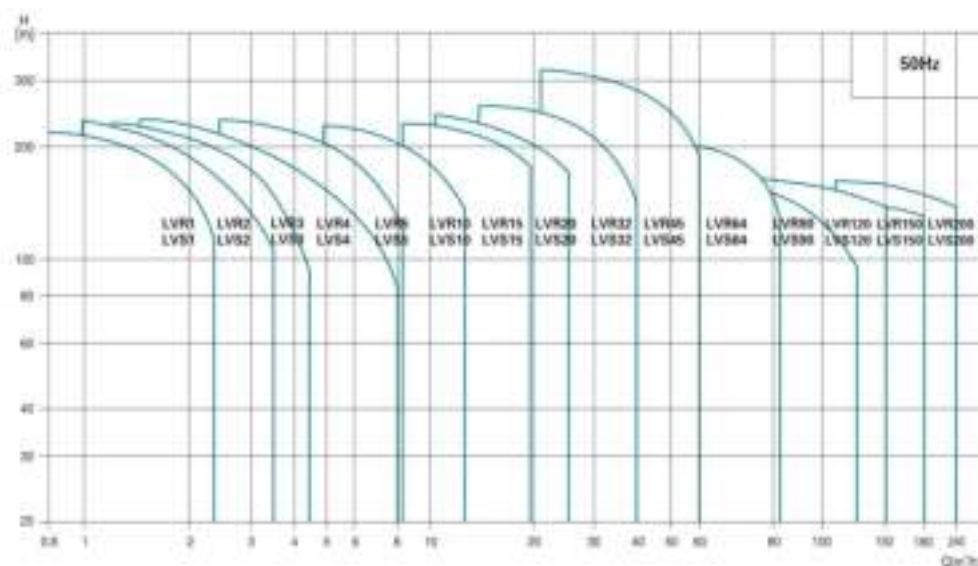
(Note: set to position 1 before delivery)



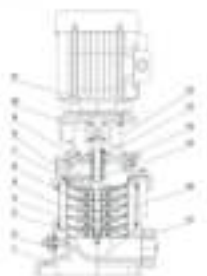
Product Range

MODEL	LV5R1	LV5R2	LV5R3	LV5R4	LV5R5	LV5R10	LV5R15	LV5R20	LV5R32	LV5R40	LV5R64	LV5R90	LV5R130	LV5R150	LV5R200
Rated flow (m³/h)	1	2	3	4	5	10	15	20	32	40	64	90	130	150	200
Flow range (m³/h)	0.7-2.4	1.0-3.5	1.2-4.5	1.5-6	2.0-8.5	3-15	5-25	7.5-35	15-45	22-60	35-85	45-120	65-150	80-180	100-240
Max. pressure (bar)	20	20	20	21	24	30	35	35	35	35	35	35	35	35	35
Motor power (kW)	0.37-0.2	0.2-0.2	0.2-0.2	0.2-0.4	0.2-0.4	1.1-2.5	1.1-10	1.1-15.5	1.5-30	2-45	4-45	5.5-45	11-75	11-75	18.5-110
Temperature range (°C)	-20°C to +120°C (Note: Both the Max. permissible pressure and liquid temperature range refer to the pump capacity)														
Max. pump efficiency (%)	45	48	50	50	50	50	70	72	78	78	80	81	78	75	75
Pipe connection (VRS)															
Oral flange	G1	G1	G1	G1 1/4	G1 1/4	-	-	-	-	-	-	-	-	-	-
Drift flange	DN20	DN25	DN25	DN32	DN32	DN40	DN50	DN50	DN65	DN65	DN80	DN100	DN125	DN125	DN150
Pipe connection (VRS)															
Oral flange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drift flange	DN20	DN25	DN25	DN32	DN32	DN40	DN50	DN50	DN65	DN65	DN80	DN100	DN125	DN125	DN150
Clamp connector	40	40	40	40	40	-	-	-	-	-	-	-	-	-	-
Threaded connector	G1 1/4	G1 1/4	G1 1/4	G1 1/4	G1 1/4	-	-	-	-	-	-	-	-	-	-

Scope of Performance-LVR, LV5

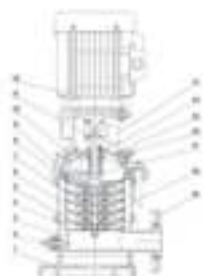


Cross Section



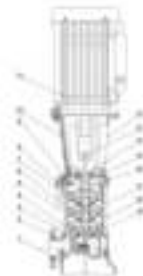
MODEL: LVR 15 24 B

Part	Material
1 Base plate	HT200
2 Overhang plug assembly	AISI304
3 Primary effluent	AISI304
4 Diffuser with bearing	AISI304
5 Medium effluent	AISI304
6 Impeller	AISI304
7 Pump shaft	AISI304
8 Motor base	HT200
9 Filling plug	AISI304
10 Coupling	See latest product handbook
11 Motor	
12 Coupling plate	AISI304
13 Cartridge seal	
14 Vort plug assembly	AISI304
15 Pump shaft	AISI304
16 Pump barrel	AISI304
17 Vase flange	HT200



MODEL: LVR 15 24 B

Part	Material	Optional Material
1 Base plate	HT200	AISI316
2 Overhang plug assembly	AISI304	316L
3 Primary effluent	AISI304	AISI316
4 Diffuser with bearing	AISI304	AISI316
5 Medium effluent	AISI304	AISI316
6 Impeller	AISI304	AISI316
7 Pump shaft	AISI304	AISI316
8 Motor base	HT200	AISI316
9 Filling plug	AISI304	AISI316
10 Coupling	See latest product handbook	
11 Motor		
12 Coupling plate	AISI304	
13 Cartridge seal		
14 Vort plug assembly	AISI304	316L
15 Pump shaft	AISI304	AISI316
16 Pump barrel	AISI304	AISI316
17 Vase flange	HT200	



MODEL: LVR 15 24 B

Part	Material
1 Base plate	HT200
2 Overhang plug assembly	AISI304
3 Primary effluent	AISI304
4 Diffuser with bearing	AISI304
5 Medium effluent	AISI304
6 Impeller	AISI304
7 Pump shaft	AISI304
8 Motor base	HT200
9 Filling plug	AISI304
10 Coupling	See latest product handbook
11 Motor	
12 Coupling plate	AISI304
13 Cartridge seal	
14 Vort plug assembly	AISI304
15 Pump shaft	AISI304
16 Pump barrel	AISI304
17 Vase flange	HT200



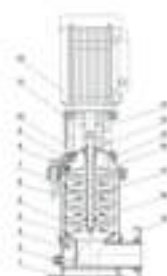
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Part	Material	Optional Material
1 Base plate	HT200	
2 Overhang plug assembly	AISI304	316L
3 Primary effluent	AISI304	AISI316
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5 Medium effluent	AISI304	AISI316
6 Impeller	AISI304	AISI316
7 Pump shaft	AISI304	AISI316
8 Motor base	HT200	AISI316
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12 Coupling plate	AISI304	
13 Cartridge seal		
14 Vort plug assembly	AISI304	316L
15 Pump shaft	AISI304	AISI316
16 Pump barrel	AISI304	AISI316
17 Vase flange	HT200	



MODEL: LVR 15 24 B

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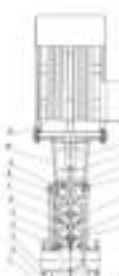
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6 Impeller	AISI304	AISI316
7 Pump shaft	AISI304	AISI316
8 Motor base	HT200	AISI316
9 Filling plug	AISI304	AISI316
10 Coupling	See latest product handbook	
11 Motor		
12 Coupling plate	AISI304	
13 Cartridge seal		
14 Vort plug assembly	AISI304	AISI316
15 Pump shaft	AISI304	AISI316
16 Pump barrel	AISI304	AISI316
17 Vase flange	HT200	



MODEL: LVR 15 24 B

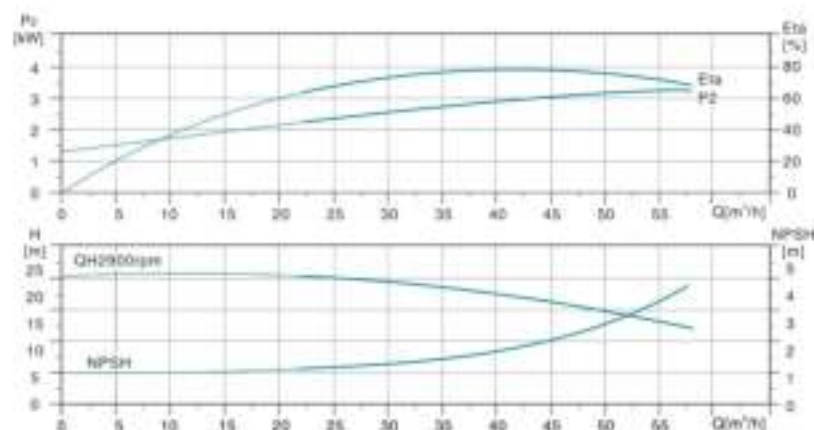
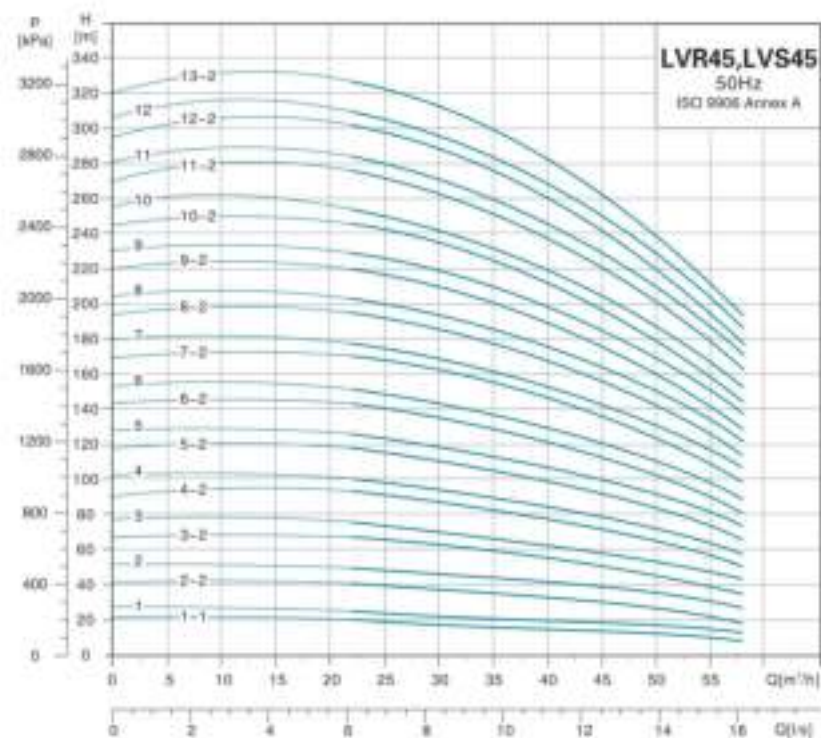
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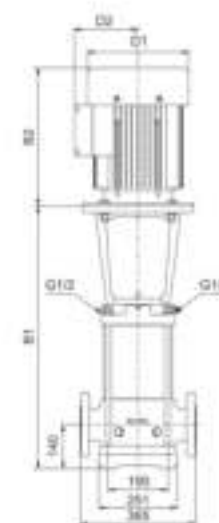
MODEL: LVR 15 24 B

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16 Pump barrel	AISI304	AISI316
17 Vase flange	HT200	

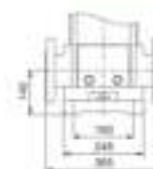
Hydraulic Performance Curves



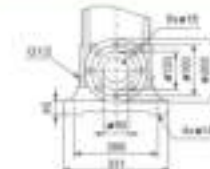
Dimension Drawing



DIN FLANGE(LVS)F



DIN FLANGE(LVR)F



P0 15-25-40 DIN 66

MODEL	DIN FLANGE(LVR, LVS)		D1	D2
	H1	H1+H2		
45-1-1	939	894	198	120
45-1	959	921	220	134
45-2-2	839	1030	220	134
45-2	839	1030	220	134
45-3-2	829	1327	304	263
45-3	829	1327	304	263
45-4-2	909	1407	304	263
45-4	909	1407	304	263
45-5-2	989	1487	304	263
45-5	989	1487	304	263
45-6-2	1069	1631	382	309
45-6	1069	1631	382	309
45-7-2	1149	1809	420	372
45-7	1149	1809	420	372
45-8-2	1229	1889	420	372
45-8	1229	1889	420	372
45-9-2	1309	1969	420	372
45-9	1309	1969	420	372
45-10-2	1389	2049	420	372
45-10	1389	2049	420	372
45-11-2	1469	2145	458	427
45-11	1469	2145	458	427
45-12-2	1549	2225	458	427
45-12	1549	2225	458	427
45-13-2	1629	2305	458	427

MODEL	POWER/kW	Q(m³/h)	25	28	32	40	45	50	55
45-1-1	3	20	19.8	18	17	15	12.5	10.8	
45-1	4	24	23	22	20.8	19	17.5	15	
45-2-2	5.5	41	39	37	34	30.8	28.5	22	
45-2	7.5	48.8	46.8	44.5	42	39	36	31	
45-3-2	11	88	84	81	80.8	52	46	40	
45-3	11	73.8	71	68	64	59.5	54	47.5	
45-4-2	15	91	88	84	78.8	72	64.5	56	
45-4	15	88.8	85	81	85.8	79.5	73.5	64	
45-5-2	18.5	118	113	107	101	92.5	83.5	73	
45-5	18.5	124	120	118	108	100	91.5	81	
45-6-2	22	142	137	131	122	113	103	90	
45-6	22	149	144	138	130	121	111	98	
45-7-2	30	188	183	178	167	158	143	128	
45-7	30	178	173	163	155	144	132	118	
45-8-2	30	193	187	179	168	155	142	128	
45-8	30	202	194	187	178	164	149	134	
45-9-2	30	217	211	202	189	175	160	142	
45-9	37	228	218	210	198	183	170	151	
45-10-2	37	243	236	225	212	196	179	168	
45-10	37	251	243	233	220	205	187	168	
45-11-2	45	273	264	253	238	222	201	179	
45-11	45	281	272	261	246	230	209	187	
45-12-2	45	298	289	278	261	242	220	198	
45-12	45	306	298	284	268	251	228	204	
45-13-2	45	323	313	300	283	263	239	212	