

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

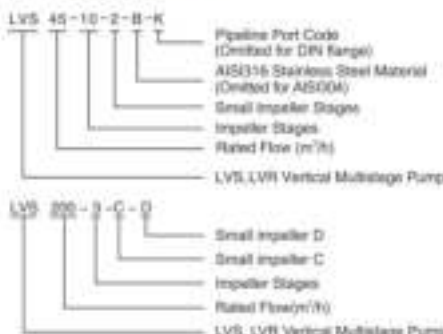
Operating Conditions

- 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.)

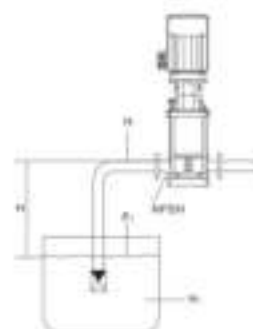
H_f = Friction loss in suction pipe in meters head. (At the highest flow the pump will be delivering.)

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

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.

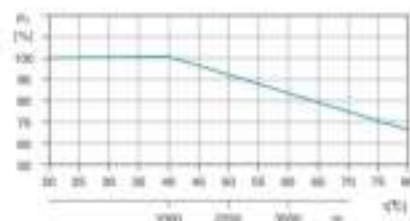
If the maximum permissible operating pressure is exceeded, the bearing in the motor may be damaged and the life of the shaft seal reduced.

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.

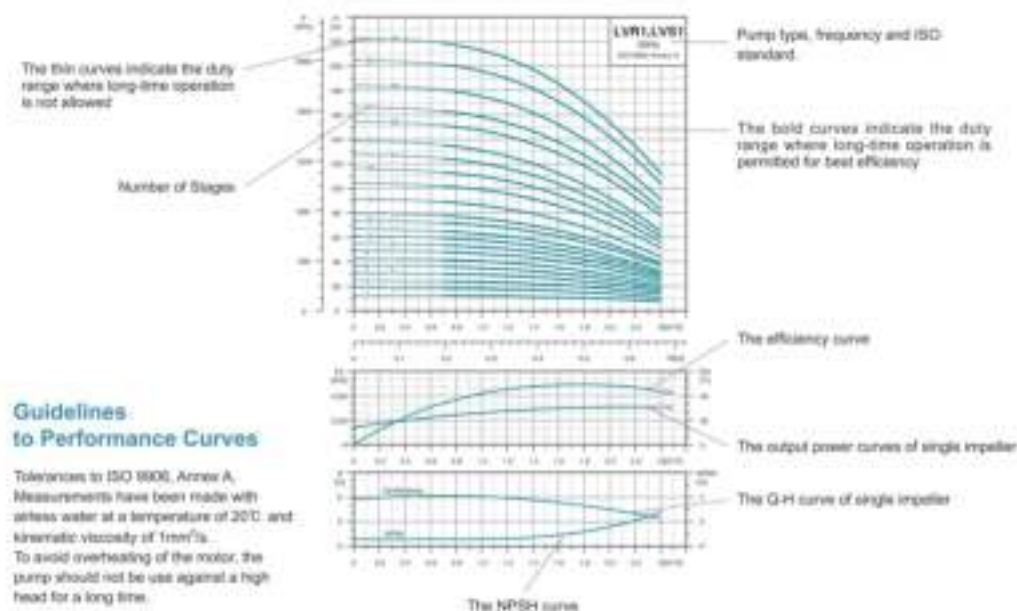


For example, when the pump is installed at altitude of more than 3500 meters above sea level, P_2 will be decreased to 88%. When the ambient temperature is 70°C, P_2 will be decreased to 78%.

LV5/LVR

Stainless Steel Vertical
Multistage Pump

How to Read The Curve Charts



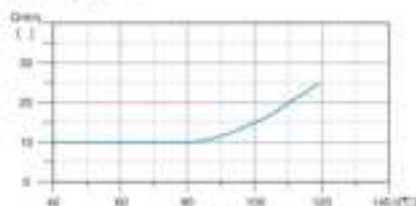
Guidelines to Performance Curves

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.

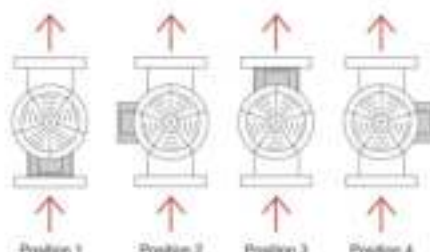
Air cooling apparatus



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

Terminal Box Positions

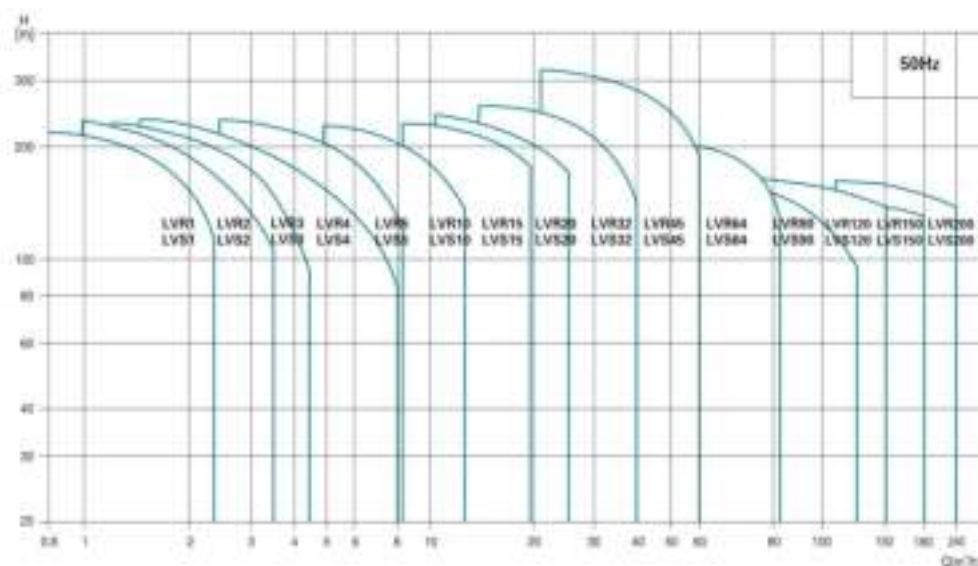
(Note: set to position 1 before delivery)



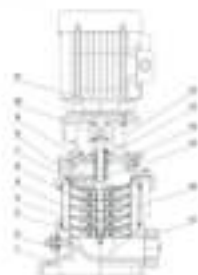
Product Range

MODEL	LV5R1	LV5R2	LV5R3	LV5R4	LV5R5	LV5R10	LV5R15	LV5R20	LV5R32	LV5R45	LV5R64	LV5R90	LV5R130	LV5R150	LV5R200
Rated flow (m ³ /h)	1	2	3	4	5	10	15	20	32	45	64	90	130	150	200
Flow range (m ³ /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	22-65	30-85	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	4-65	5.5-85	11-125	11-125	18.5-150
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	45	45	45	45	60	70	70	70	70	70	70	70	70	70
Pipe connection (VRS)															
Flange	G1	G1	G1	G1 1/4	G1 1/4	-	-	-	-	-	-	-	-	-	-
Flange	DN20	DN20	DN20	DN20	DN20	DN40	DN50	DN50	DN65	DN80	DN100	DN125	DN150	DN175	DN200
Pipe connection (VRS)															
Flange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flange	DN20	DN20	DN20	DN20	DN20	DN40	DN50	DN50	DN65	DN80	DN100	DN125	DN150	DN175	DN200
Clamp connector	1/2"	1/2"	1/2"	1/2"	1/2"	-	-	-	-	-	-	-	-	-	-
Threaded connector	G1 1/4	G1 1/4	G1 1/4	G1 1/4	G1 1/4	-	-	-	-	-	-	-	-	-	-

Scope of Performance-LVR, LV5

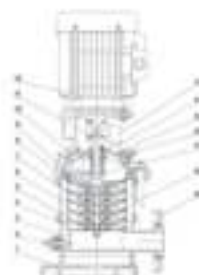


Cross Section



MODEL: LVR 10 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 Vee plug assembly	AISI304
15 Pump shaft	AISI304
16 Pump barrel	AISI304
17 Vee flange	HT200



MODEL: LVR 15 24 B

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



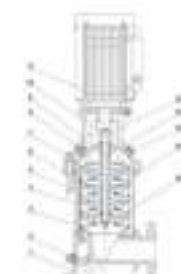
MODEL: LVR 20 24 B

Part	Material
1 Base plate	HT200
2 Flange	316SS
3 Primary effluent	AISI304
4 Medium effluent	AISI304
5 Diffuser with bearing	AISI304
6 Impeller	AISI304
7 Shaft sleeve assembly	
8 First shaft	AISI304
9 Vee plug assembly	AISI304
10 Motor base	HT200
11 Motor	
12 Coupling plate	AISI304
13 Coupling	316SS
14 Cartridge seal	
15 Vee plug assembly	HT200
16 Filling plug	AISI304
17 Second shaft	AISI304
18 Pump barrel	AISI304
19 Pump shaft	AISI304



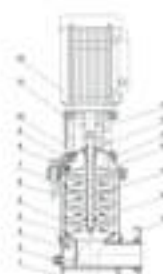
MODEL: LVR 30 24 B

Part	Material	Optional Material
1 Base plate	HT200	
2 Flange	316SS	
3 Coupling	316SS	316L
4 Primary effluent	AISI304	AISI316
5 Medium effluent	AISI304	AISI316
6 Diffuser with bearing	AISI304	AISI316
7 Impeller	AISI304	AISI316
8 Shaft sleeve assembly		
9 First shaft	AISI304	AISI316
10 Vee plug assembly	AISI304	AISI316
11 Motor base	HT200	
12 Motor		
13 Coupling plate	AISI304	
14 Coupling	316SS	
15 Cartridge seal		
16 Vee plug assembly	316SS	316L
17 Filling plug	AISI304	AISI316
18 Second shaft	AISI304	AISI316
19 Pump barrel	AISI304	AISI316
20 Pump shaft	AISI304	AISI316



MODEL: LVR 40 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 Filling plug	AISI304
9 Motor base	HT200
10 Coupling	See latest product handbook
11 Motor	
12 Coupling plate	AISI304
13 Cartridge seal	
14 Vee plug assembly	AISI304
15 Pump shaft	AISI304
16 Pump barrel	AISI304



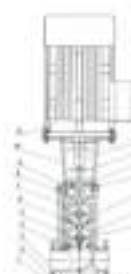
MODEL: LVR 50 24 B

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



MODEL: LVR 60 24 B

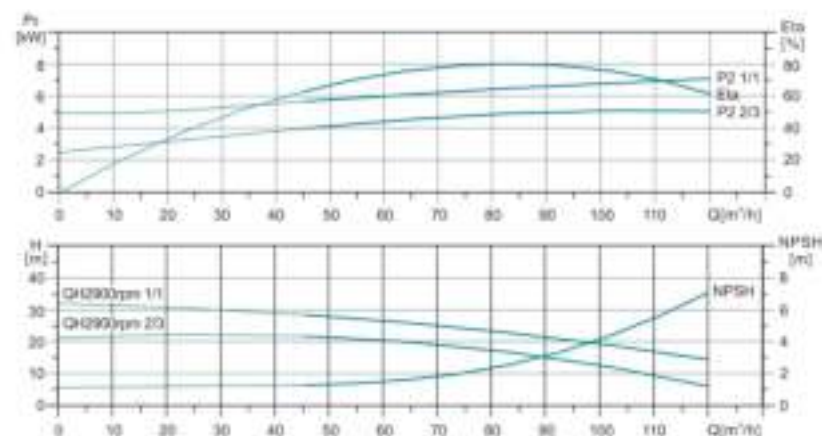
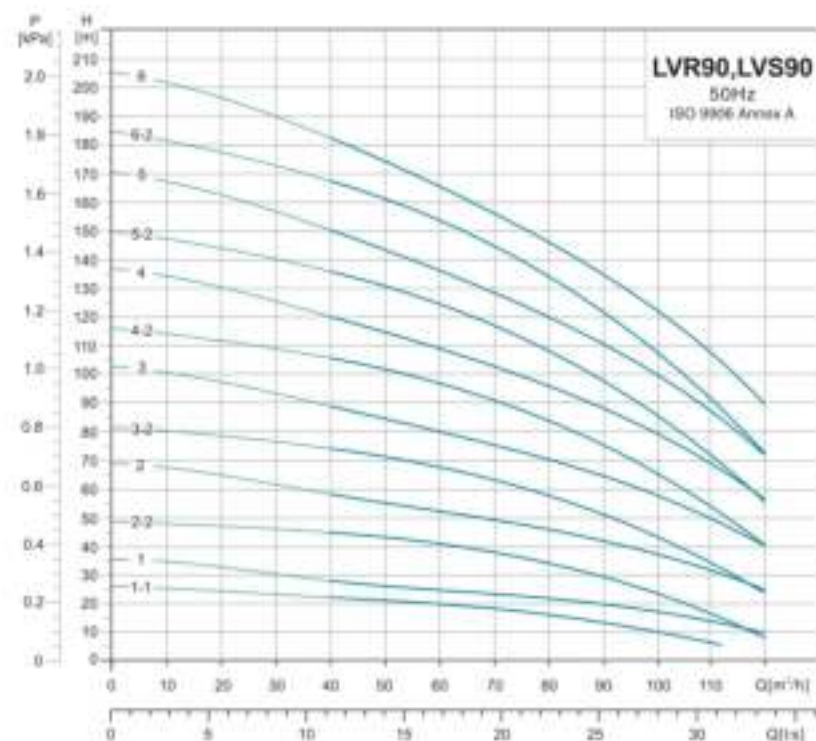
Part	Material
1 Base plate	HT200
2 Flange	316SS
3 Base	HT200
4 Primary effluent	AISI304
5 Medium effluent	AISI304
6 Diffuser with bearing	AISI304
7 Impeller	AISI304
8 First shaft	AISI304
9 Pump barrel	HT200
10 Motor base	HT200
11 Motor	
12 Coupling plate	316SS
13 Coupling plate	AISI304
14 Cartridge seal	
15 Filling plug	AISI304
16 Second shaft	316SS
17 Pump barrel	AISI304
18 Pump shaft	AISI304



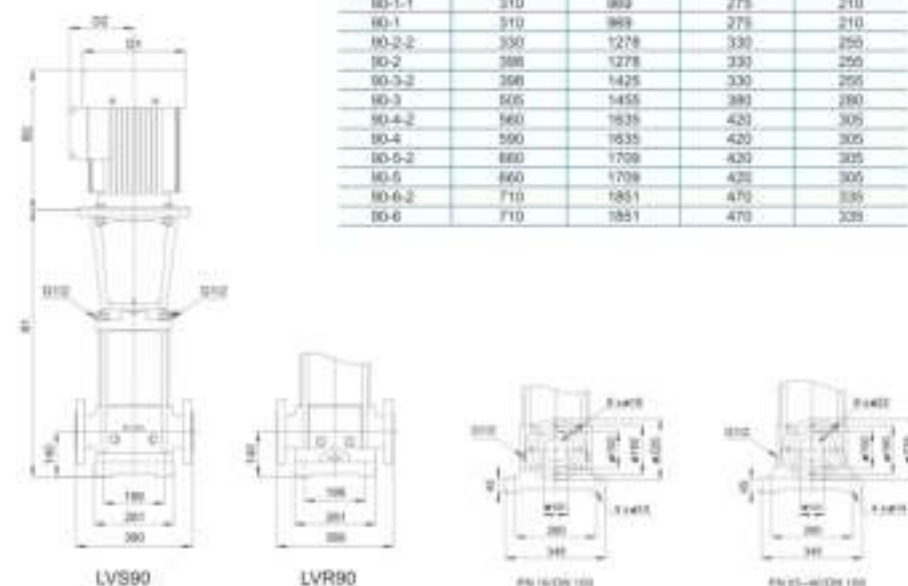
MODEL: LVR 80 24 B

Part	Material	Optional Material
1 Base plate	HT200	
2 Flange	316SS	
3 Coupling	316SS	316L
4 Primary effluent	AISI304	AISI316
5 Medium effluent	AISI304	AISI316
6 Diffuser with bearing	AISI304	AISI316
7 Impeller	AISI304	AISI316
8 First shaft	AISI304	AISI316
9 Pump barrel	316SS	316L
10 Motor base	HT200	
11 Motor		
12 Coupling plate	316SS	
13 Coupling plate	AISI304	
14 Cartridge seal		
15 Filling plug	AISI304	AISI316
16 Second shaft	AISI304	AISI316
17 Pump barrel	AISI304	AISI316
18 Pump shaft	AISI304	AISI316

Hydraulic Performance Curves



Dimension Drawing



MODEL	DN FLANGE (mm) L x H		T1	T2
	91	91 x 93		
90-1-1	310	993	275	210
90-1	310	993	275	210
90-2-2	330	1278	330	250
90-2	330	1278	330	250
90-3-2	358	1425	330	250
90-3	358	1425	330	250
90-4-2	360	1635	420	305
90-4	360	1635	420	305
90-5-2	360	1708	420	305
90-5	360	1708	420	305
90-6-2	710	1851	470	335
90-6	710	1851	470	335

MODEL	POWER [kW]	Q [m³/h]	33	40	75	90	98	130	110
90-1-1	5.5	H20	21	20	18	16	14	10.5	6.5
90-1	7.5		25	25	23.5	22	20	17.5	14
90-2-2	11		43	41	38	34.5	30	24	17
90-2	15		55	52	49	46	42.5	37.5	31.5
90-3-2	18.5		71.5	68	63.5	58	51.5	44	35
90-3	22		84.5	80	75.5	70.5	63	56.5	50.5
90-4-2	30		102	97	91	84.5	78	65.5	54
90-4	30		114	109	103	96	88.5	79.5	68.5
90-5-2	37		131	126	119	109	98.5	86.5	72
90-5	37		144	138	129	121	111	101	87
90-6-2	45		161	156	145	135	123	108	91.5
90-6	45		175	166	156	146	135	123	108