Liquid ring compressors

LPH 70123, LPH 70530, LPH 70540

FLOWSERVE
SIHI® Pumps

Compression pressure: **0,2 to 1,5 bar**
Suction volume flow: **550 to 1850 m³/h**

CONSTRUCTION TYPE

Sterling SIHI liquid ring compressors are displacement compressors of simple and robust construction. They have the following important features:

- Handling of nearly all gases and vapours
- non-polluting due to nearly isothermal compression
- oil-free, as no lubrication in the working chamber
- additional liquid can be handled with the gas flow
- easy in maintenance and reliable operation
- low noise and nearly free of vibrations
- wide choice of material, therefore applicable nearly everywhere
- incorporated central drain
- no metallic contact of the rotating parts

The Sterling SIHI liquid ring compressors LPH 70123, LPH 70530 and LPH 70540 are single-stage compressors. They can be applied without modification as vacuum pump up to a suction pressure of 120 mbar (see catalogue part LI 5).

APPLICATION

Handling and compressing of dry and humid gases; entrained liquid can be handled during normal duty. The compressors are applied in all fields where a compression over pressure of up to 1,5 bar has to be created by robust compressors and only a small increase in temperature is admissible during compression.
Fields of application are e.g.:

- the plastics industry, for the recovery of process gases as vinyl chloride
- the petrochemical industry, for the compression of combustible gases as gasoline vapours or hydrogen
- transport of gases in general, e.g. to a reactor

NOTE

During operation the compressor must continuously be supplied with service liquid, normally water, in order to eliminate the heat resulting from the gas compression and in order to replenish the liquid ring, because part of the liquid is leaving the compressor together with the gas. This liquid can be separated from the gas in a pressure liquid separator (see catalogue part accessories).
It is possible to reuse the service liquid. The compressors are equipped with a device by which the contaminated service liquid can continuously be drained during operation, if necessary.
The direction of rotation is clockwise, when looking from the drive on the pump.

GENERAL TECHNICAL DATA

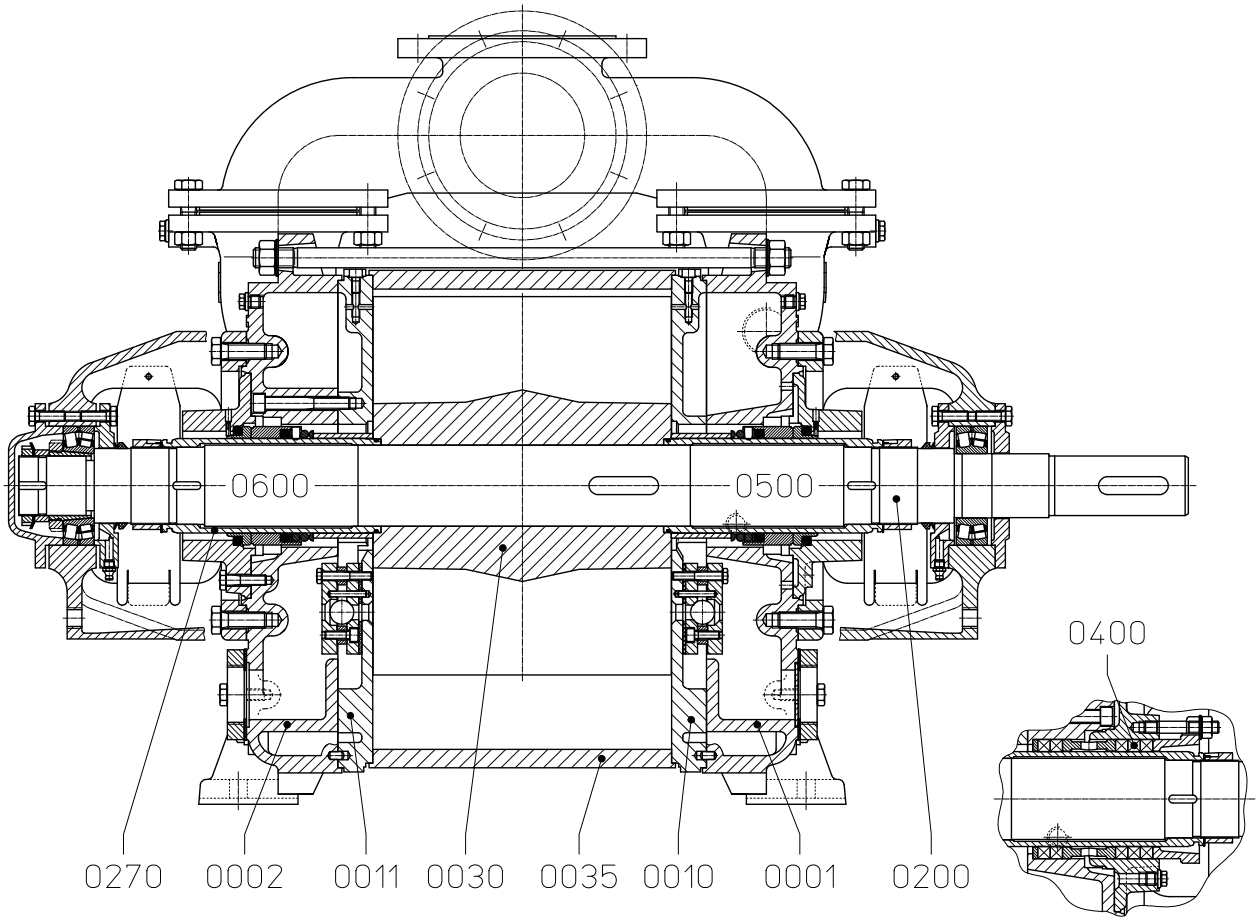
Pump type		unit	LPH 70123	LPH 70530	LPH 70540
Speed	50 Hz 60 Hz	rpm	975 1175	975 1175	975 1175
Max. compression over pressure		bar		1,5	
Hydraulic test (over pressure)		bar		3	
Moment of inertial of the rotating pump parts and the water filling		kg · m²	1,36	1,76	2,26
Sound pressure level of measuring area		dB (A)	81 82	81 82	81 82
Min. pulley diameter permissible in case of V-belt drive		mm	315 355	315 355	400
Max. gas temperature	dry saturated	°C °C		200 100	
Service liquid max. admissible temperature max. viscosity max. density volume up to shaft level		 °C mm²/s kg/m³ liter	 32	 80 90 1200 35	 38

The combination of several limiting values is not admissible.

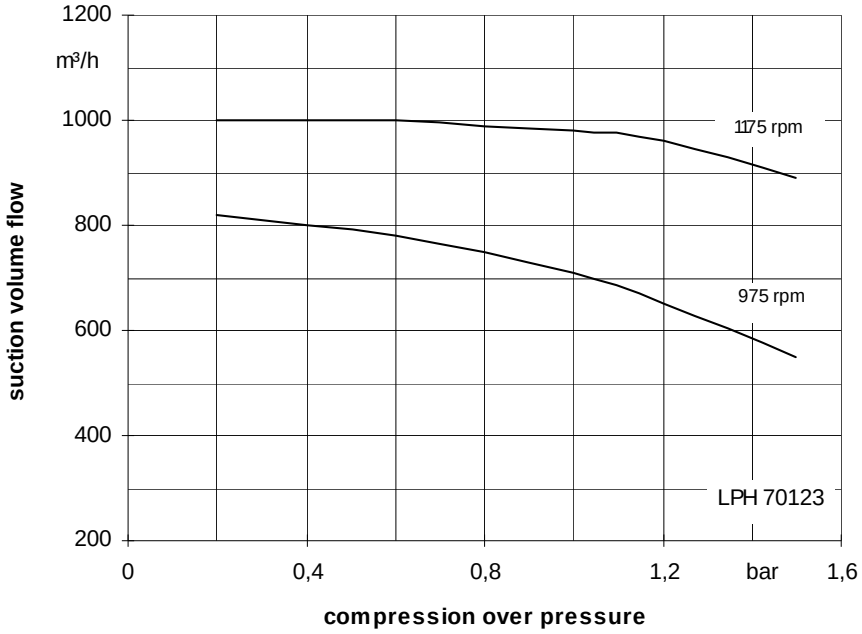
Material design

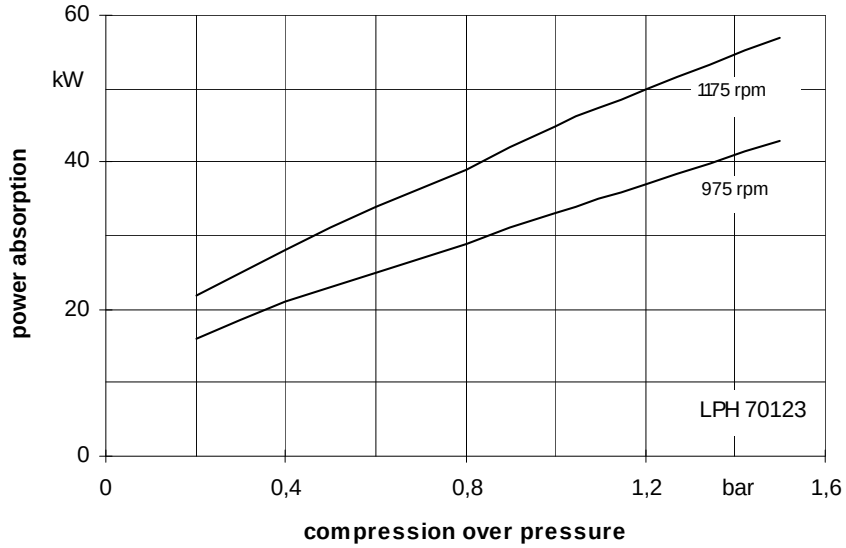
Item.	COMPONENTS	MATERIAL DESIGN	
		02	42
0001, 0002	Casing	0.6025	1.4408
0010, 0011	Guide disk	0.6025	1.4408
0030	Vane wheel impeller	1.0570	1.4517
0035	Central body	1.0038	1.4571
0200	Shaft	1.0503	
0270	Shaft sleeve	1.4027.05	1.4571
0400	Gland packing	GORE	-
0500, 0600	Mechanical seal	Cr-steel / carbon / Perbunan	Cr Ni Mo-steel / carbon / Viton

Sectional drawing LPH 70123, LPH 70530, LPH 70540



Suction volume flow and power absorption LPH 70123

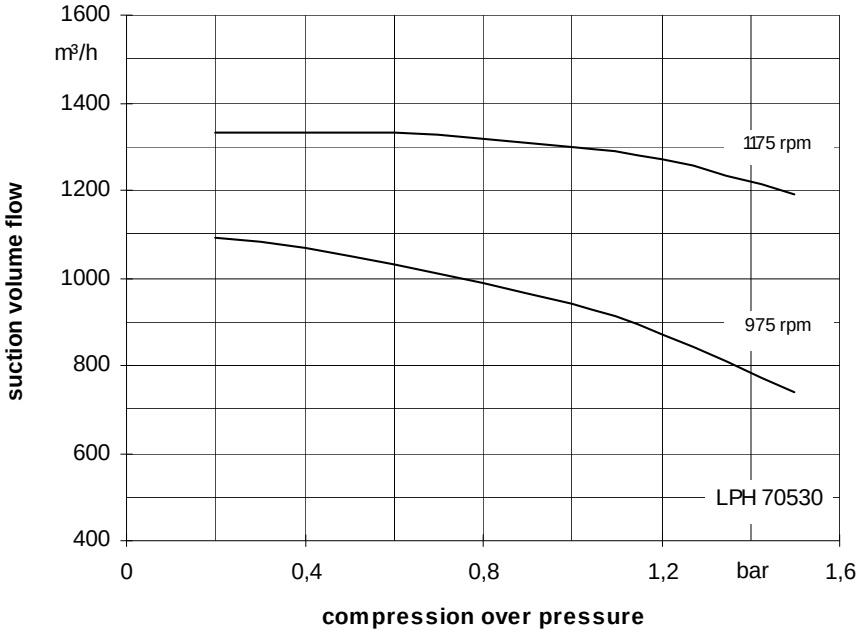


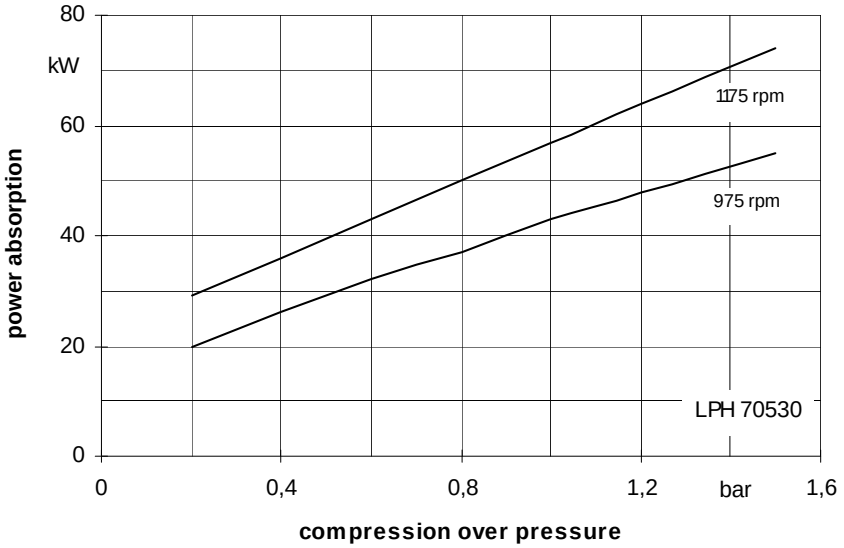


The values indicated for volume flow and power absorption are valid for compression of dry air at 20°C from atmospheric pressure (1013 mbar) to the respective compression pressure with water at 20°C as service liquid. Tolerance of the curve values is 10 %. The compression pressure in bar is indicated as pressure above the atmospheric pressure.

The data indicated change with deviating service conditions, such as deviating physical data of the gas to be handled or of the service liquid (vapour pressure, temperature, density, viscosity) when handling entrained liquid, at a suction pressure deviating from atmospheric pressure, when handling gas-vapours mixtures.
For determination of service data for deviating service conditions please see catalogue section TH.

Suction volume flow and power absorption LPH 70530





The values indicated for volume flow and power absorption are valid for compression of dry air at 20°C from atmospheric pressure (1013 mbar) to the respective compression pressure with water at 20°C as service liquid. Tolerance of the curve values is 10 %. The compression pressure in bar is indicated as pressure above the atmospheric pressure.

The data indicated change with deviating service conditions, such as deviating physical data of the gas to be handled or of the service liquid (vapour pressure, temperature, density, viscosity) when handling entrained liquid, at a suction pressure deviating from atmospheric pressure, when handling gas-vapours mixtures.
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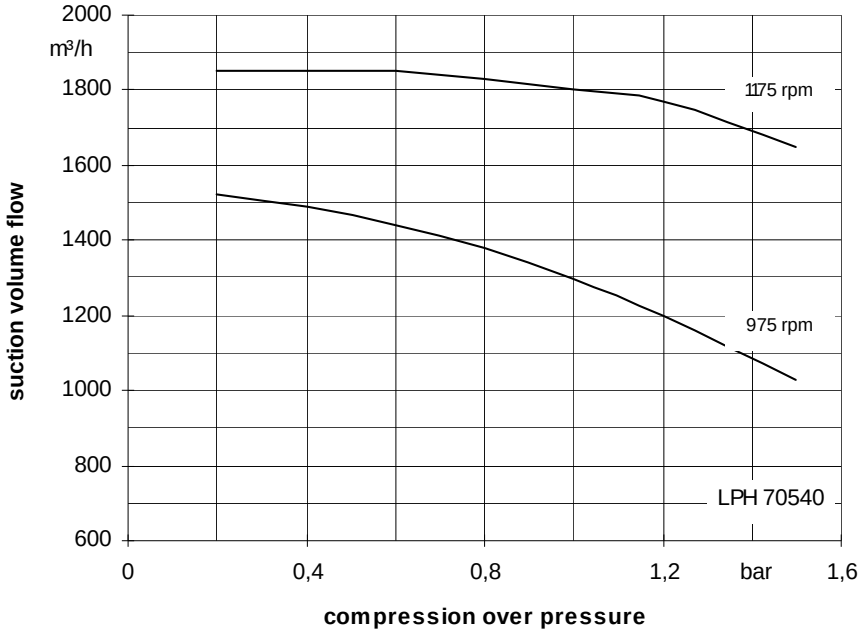
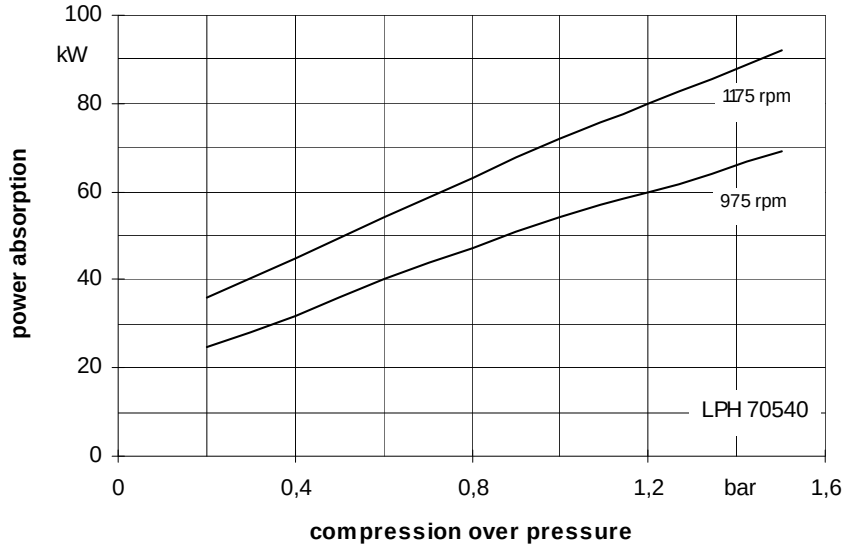
Suction volume flow and power absorption LPH 70540

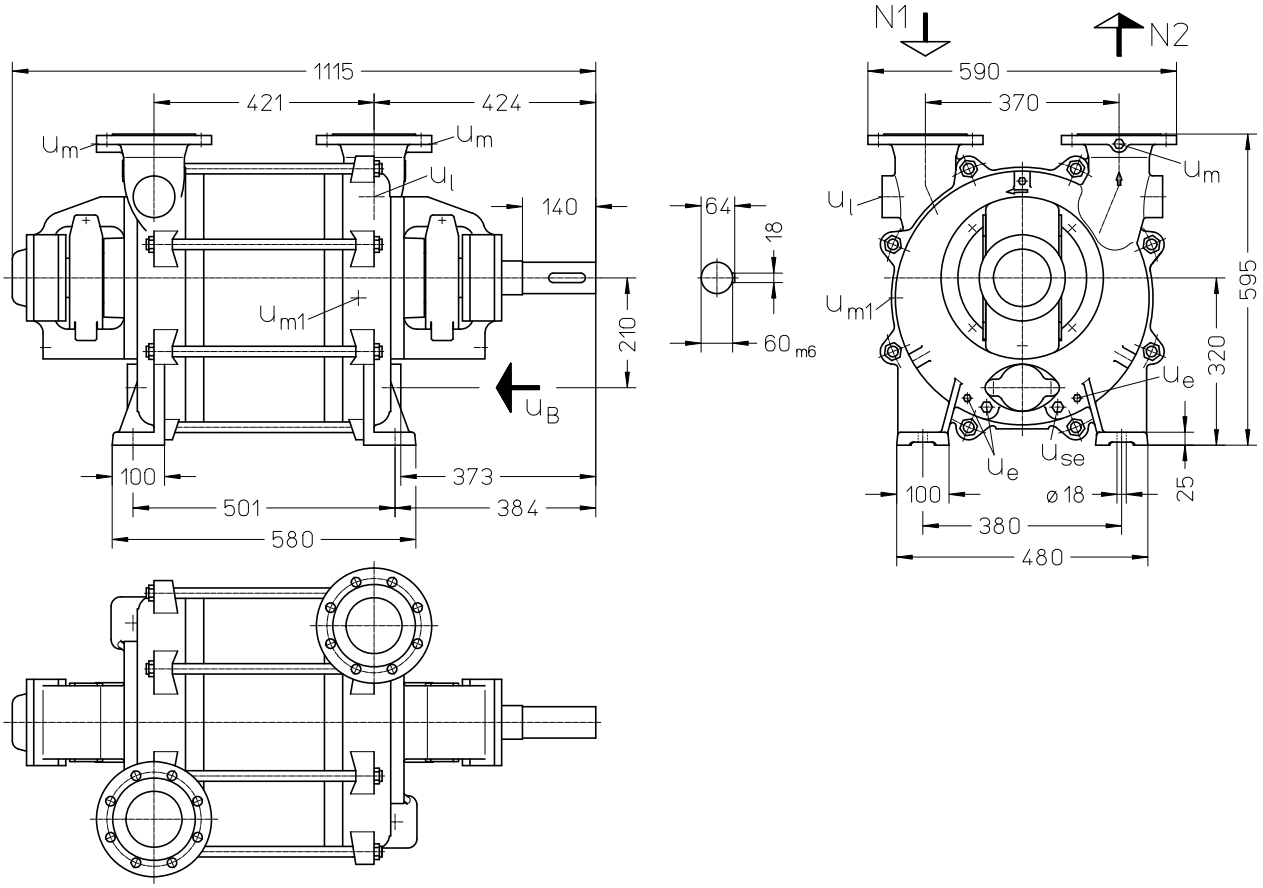




The values indicated for volume flow and power absorption are valid for compression of dry air at 20°C from atmospheric pressure (1013 mbar) to the respective compression pressure with water at 20°C as service liquid. Tolerance of the curve values is 10 %. The compression pressure in bar is indicated as pressure above the atmospheric pressure.

The data indicated change with deviating service conditions, such as deviating physical data of the gas to be handled or of the service liquid (vapour pressure, temperature, density, viscosity) when handling entrained liquid, at a suction pressure deviating from atmospheric pressure, when handling gas-vapours mixtures.
For determination of service data for deviating service conditions please see catalogue section TH.

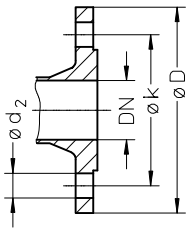
Dimension table LPH 70123



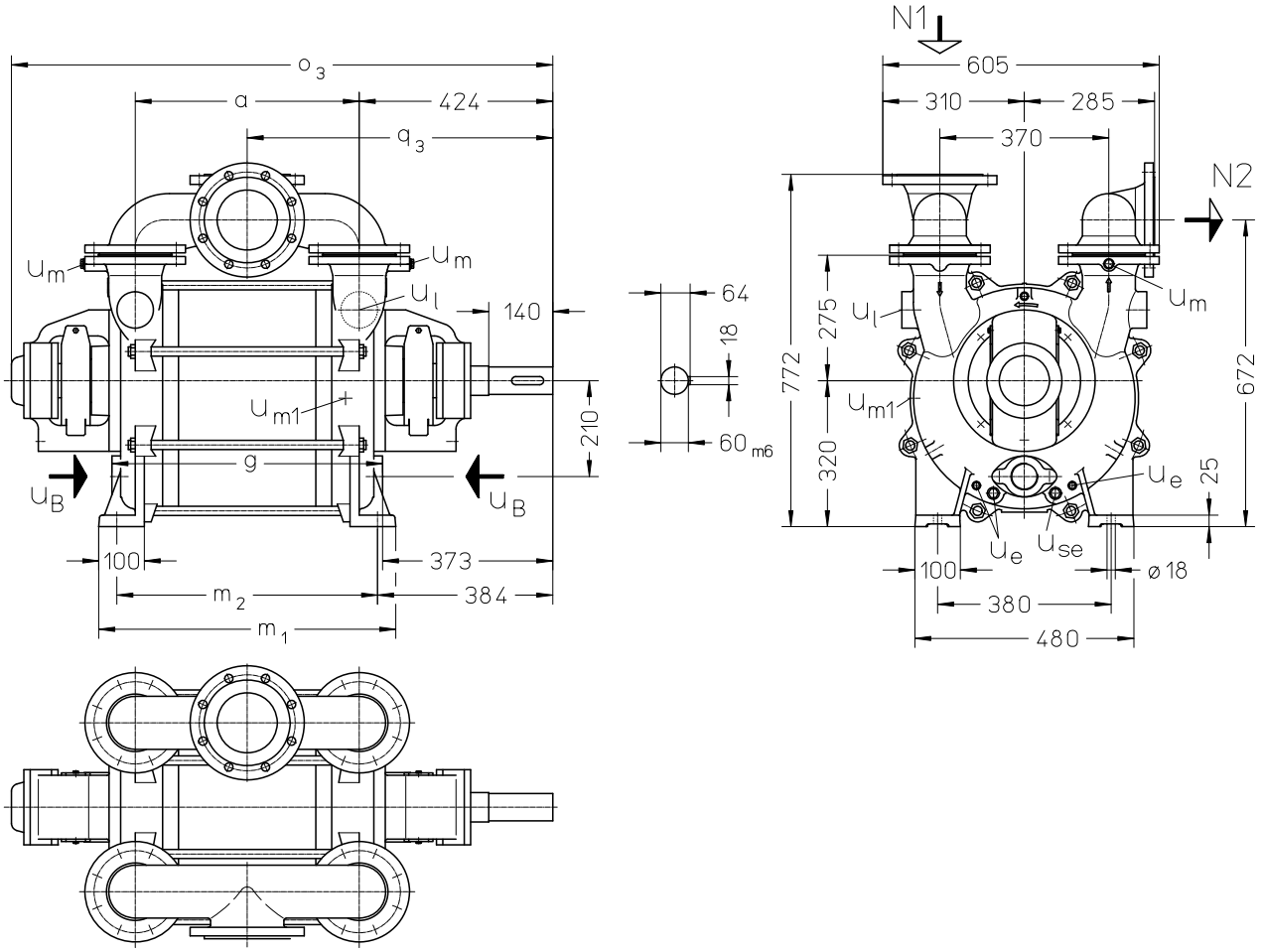
weight: abt. 370 kg

N 1 = gas inlet DN 100
N 2 = gas outlet DN 100
u_B = connection for service liquid G 2
u_e = drainage (screwed plug) G ¼
u_l = connection for vent cock G 1 ½
u_m = connection for pressure gauge G $^3/_8$
u_{m1} = connection for drain valve G ½
u_{se} = connection for dirt drain G ½

flange connection to DIN 2501 PN 10	
DN	100
k	180
D	220
number x d_2	8 x 18



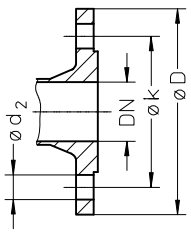
Dimension table LPH 70530, LPH 70540



N 1 = gas inlet DN 125
N 2 = gas outlet DN 125
u_B = connection for service liquid G 2
u_e = drainage (screwed plug) G ¼
u_l = connection vent cock G 1 ½
u_m = connection for pressure gauge G ⅜
u_{m1} = connection for drain valve G ½
u_{se} = connection for dirt drain G ½

	a	g	m_1	m_2	o_3	q_3	weight abt. kg
LPH 70530	491	593	650	571	1185	669	490
LPH 70540	591	693	750	671	1285	719	540

flange connection to DIN 2501 PN 10	
DN	125
k	210
D	250
number x d_2	8 x 18



Fresh water requirement in [m³/h] dependent on compression pressure, speed, mode of operation and difference in temperature

pump	speed [rpm]	compression pressure in bar																			
		0,4					0,8					1,2					1,5				
		KB				FB	KB				FB	KB				FB	KB				FB
		difference in temperature [°C]					difference in temperature [°C]					difference in temperature [°C]					difference in temperature [°C]				
		30	20	10	5		30	20	10	5		30	20	10	5		30	20	10	5	
LPH 70123	975	0,45	0,60	0,90	1,20	1,8	0,64	0,86	1,32	1,79	2,8	0,84	1,14	1,77	2,46	4	0,99	1,35	2,12	2,98	5
	1175	0,54	0,70	1,00	1,26	1,7	0,77	1,00	1,43	1,82	2,5	1,02	1,33	1,93	2,49	3,5	1,20	1,59	2,35	3,08	4,5
LPH 70530	975	0,61	0,85	1,36	1,96	3,5	0,87	1,21	1,94	2,80	5	1,15	1,59	2,60	3,79	7	1,33	1,85	3,04	4,48	8,5
	1175	0,78	1,04	1,57	2,11	3,2	1,10	1,48	2,27	3,08	4,8	1,43	1,93	2,98	4,09	6,5	1,68	2,27	3,54	4,91	8
LPH 70540	975	0,75	1,02	1,63	2,32	4	1,08	1,48	2,33	3,27	5,5	1,40	1,92	3,06	4,34	7,5	1,62	2,23	3,57	5,12	9
	1175	0,96	1,28	1,92	2,55	3,8	1,34	1,78	2,65	3,51	5,2	1,73	2,31	3,47	4,64	7	2,01	2,70	4,10	5,53	8,5

FB = fresh liquid service

KB = combined liquid service with service water 30 °C, 20 °C, 10 °C, 5 °C warmer than the fresh water.

Data regarding the size - order notes

series + size		hydraulics + bearings	shaft sealing	material design	case sealing
		B• 2 antifriction bearings •N 1 shaft end, clockwise	041 double gland packing 135 mechanical seal, SIHI-FN	02 normal design cast iron, but without non-ferrous metal 42 main parts of Cr Ni Mo steel	0 liquid seal
LPH	70123	BN	041	02	0
	70530		135	02	
	70540		135	42	

Accessories

Recommended accessories			LPH 70123		LPH 70530		LPH 70540	
Pressure liquid separator		type weight			XBd 2312 107 kg			
material design	130 / St-galvanized 172 / 1.4571	SIHI part No.			35 000 332 35 000 333			
service liquid line								
material design	072 / St 37-0 172 / 1.4571	SIHI part No	35 003 173 35 003 174		35 003 176 35 003 177		35 003 178 35 003 179	
bend								
material design	072 / St 37-0	SIHI part No	35 003 235		-		-	
Liquid discharge trap		type / weight	XUk 3302 / 22 kg		XUk 4102 / 31 kg			
material design	762 / GG20+1.4541	SIHI part No	43 014 805		43 014 809			
reduction								
material design	072 / St 37-0	SIHI part No	35 009 225		-			
hanging gas line								
material design	072 / St 37-0	SIHI part No	upon request		upon request			
Motor dependent on operating point, for example								
IP 55		size	280S	280M	280 M	315 S	315 S	315 M
		power	45 kW	55 kW	55 kW	75 kW	75 kW	90 kW
		weight	540 kg	580 kg	580 kg	770 kg	770 kg	830 kg
EEx e II T3		size	280M	315S	315S	315M	315M	315M
		power	46 kW	64 kW	64 kW	76 kW	76 kW	95 kW
		weight	625 kg	910 kg	910 kg	960 kg	960 kg	1000 kg
Coupling								
for motor IP 55		type / weight						
pump side		SIHI part No.			upon request			
motor side								
for motor EEx e II T3		type / weight						
pump side		SIHI part No.			upon request			
motor side								
Contact safety device								
material design	076 / steel 345 / 2.0321	SIHI part No.			upon request			
Base frame								
material design	081 / RSt 37-2	SIHI part No.	35 002 939		35 002 944		35 002 950	
		weight	180 kg		190 kg		180 kg	
for motor size 280 M								
material design	081 / RSt 37-2	SIHI part No.			35 002 942			
		weight			190 kg			

Any changes in the interest of technical development are reserved.

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