Liquid ring vacuum pumps
two stage

LPH 75320, LPH 75330, LPH 75340

Pressure range: **33 to 1013 mbar**
suction volume flow: **500 to 1700 m³/h**

CONSTRUCTION TYPE

Sterling SIHI liquid ring vacuum pumps are displacement pumps of uncomplicated and robust construction with the following particular features:

- handling of nearly all gasses and vapours
- non polluting due to a nearly isothermal compression
- oil-free, as no lubrication in the working chamber
- small quantities of entrained liquid can be handled
- easy maintenance and reliable operation
- low noise and nearly free from vibration
- wide choice of material, therefore applicable nearly anywhere
- protection against cavitation as standard
- incorporated dirt drain
- no metallic contact of the rotating parts

The Sterling SIHI liquid ring vacuum pumps LPH 75320, LPH 75330 and LPH 75340 are two stage pumps.

APPLICATION

Handling and exhausting of dry and humid gases; entrained liquid can be handled during normal duty. The pumps are applied in all fields where a pressure of 33...900 mbar must be created by robust vacuum pumps.
Fields of application are for example:

- chemistry and pharmacy for distilling and degassing,
- electric industry for impregnation and drying
- plastics industry for degassing etc.

NOTE

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

GENERAL TECHNICHAL DATA

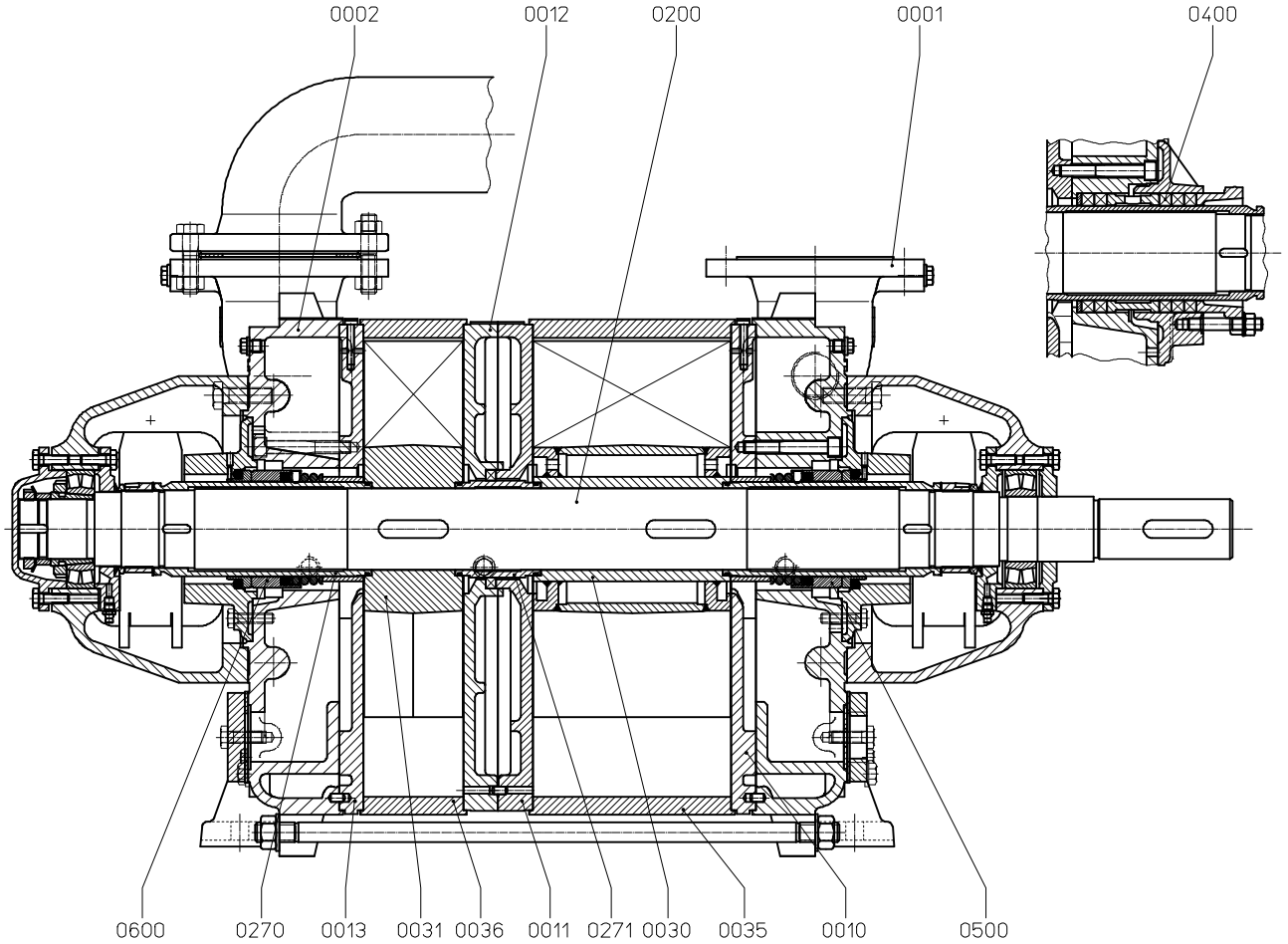
pump type	unit	LPH 75320	LPH 75330	LPH 75340
Speed [1] normal speed	rpm	880 975[1] 1175	880 975[1] 1175	880 975[1] 1175
Max. compression over pressure	bar		1,5	
Max. admissible difference	bar	1,8 1,8 1,4[2]	1,8 1,7 1,4[2]	1,7 1,6 1,4[2]
[2] in case of belt drive		1,8	1,6	1,5
Hydraulic test (over pressure)	bar		3	
Moment of inertial of the rotating pump parts and of the water filling	kg · m²	1,57	2,23	2,65
Sound pressure level at a suction of 80 mbar	dB (A)	78 79 80	78 79 80	78 79 80
Min. pulley diameter permissible in case of V-belt drive	mm	315	355	355
Max. gas temperature dry	°C		200	
saturated	°C		100	
Service liquid				
max. admissible temperature	°C		80	
max. viscosity	mm²/s		90	
max. density	kg/m³		1200	
volume up to shaft	liter	36	47	54
Max. flow resistance of the heat exchanger	bar		0,2	

The combination of several limiting values is not admissible.

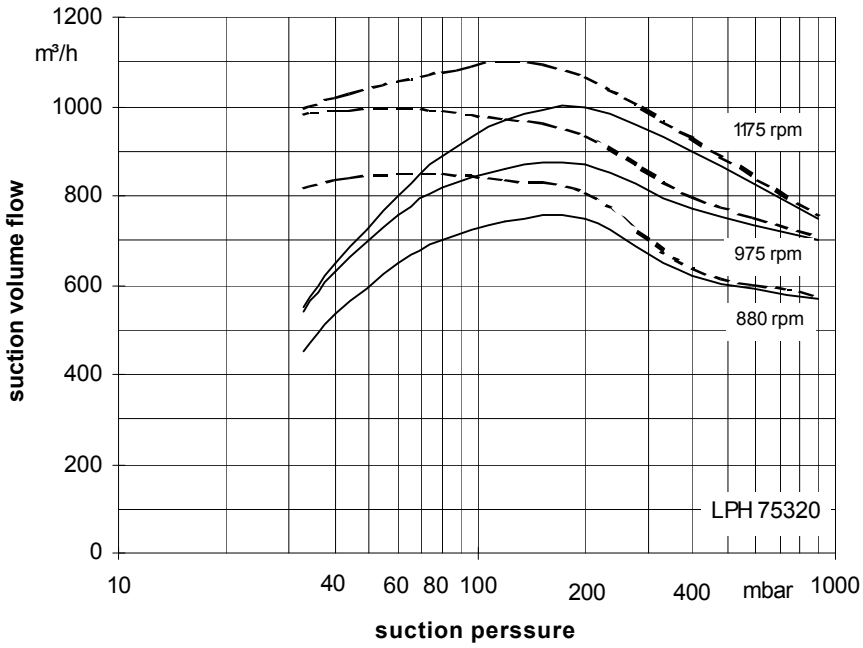
Material design

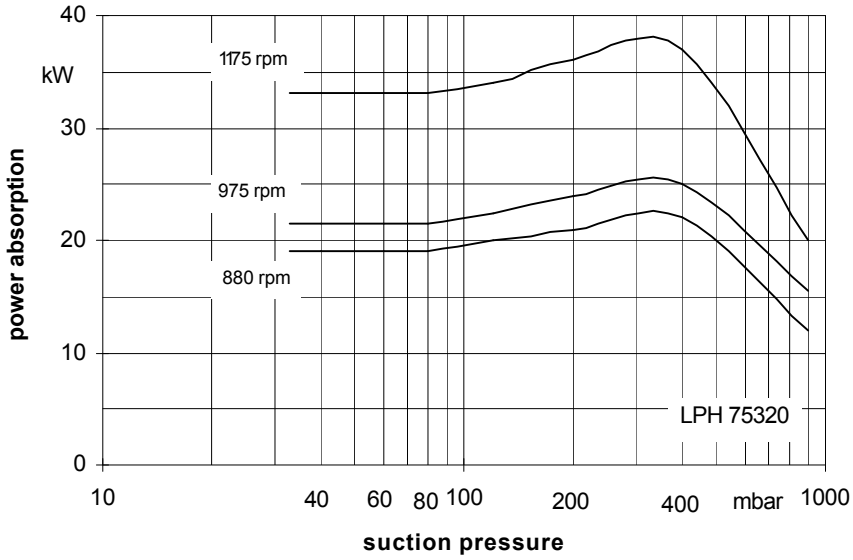
Item	COMPONENTS	MATERIAL DESIGN	
		02	42
0001, 0002	Casing	0.6025	1.4408
0010, 0011, 0012, 0013	Guide disk	0.6025	1.4408
0030, 0031	Vane wheel impeller	1.0570	1.4517
0035, 0036	Central body	1.0038	1.4408
0200	Shaft	1.0503	
0270, 0271	Shaft sleeve	1.4027.05	1.4581
0400	Gland packing	GORE	-
0500, 0600	Mechanical seal	Cr-steel / carbon / Perbunan	Cr Ni Mo-steel / carbon / Viton

Sectional drawing LPH 75320, LPH 75330, LPH 75340



Suction volume flow and power absorption LPH 75320



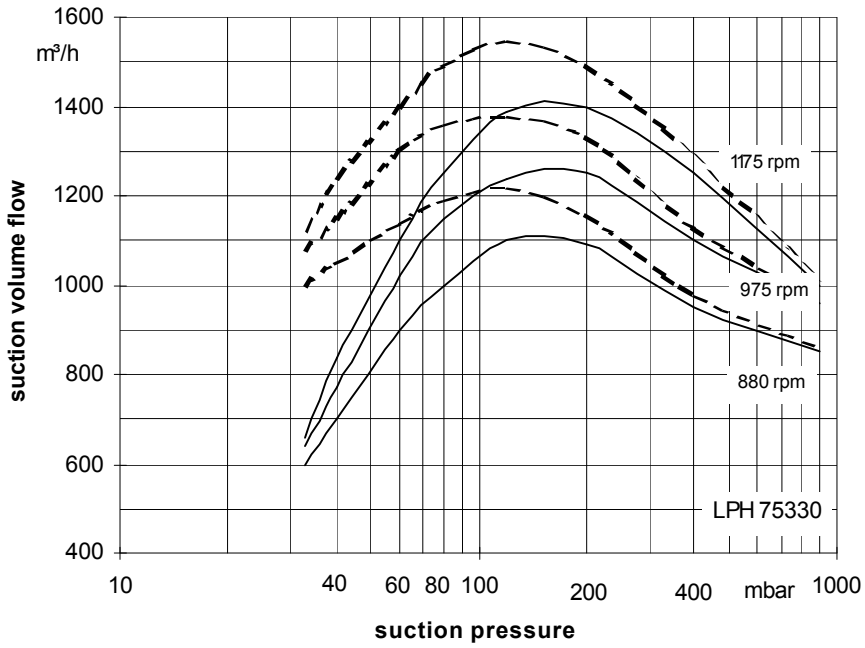


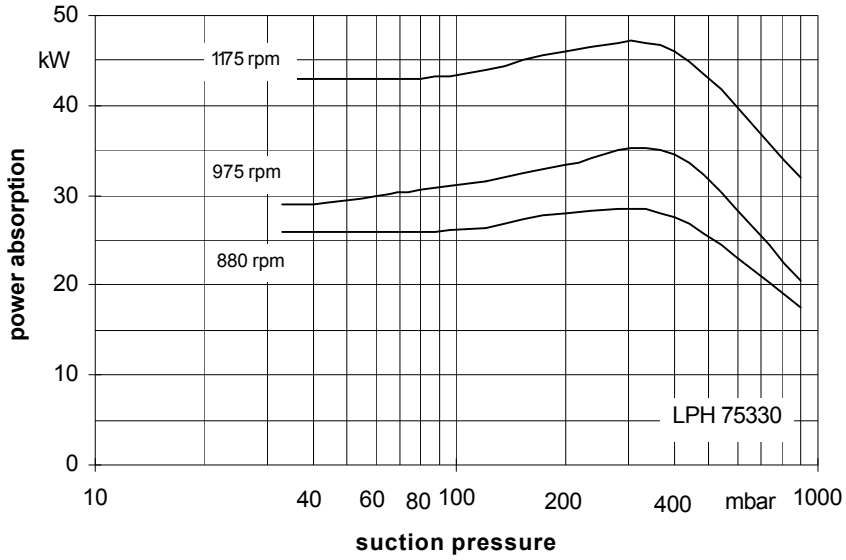
The operating data are applicable under the following conditions:

- pumping medium: - dry air: 20°C ——————
  - water vapour saturated air: 20°C - - - - - - - - - - - - - - -
- service liquid: - water: 15°C

Compression pressure 1013 mbar (atmospheric pressure)
The suction volume flow is applied to the suction pressure
Tolerance of the operating data 10%
Max. fresh water need with lowest suction pressure

Suction volume flow and power absorption LPH 75330



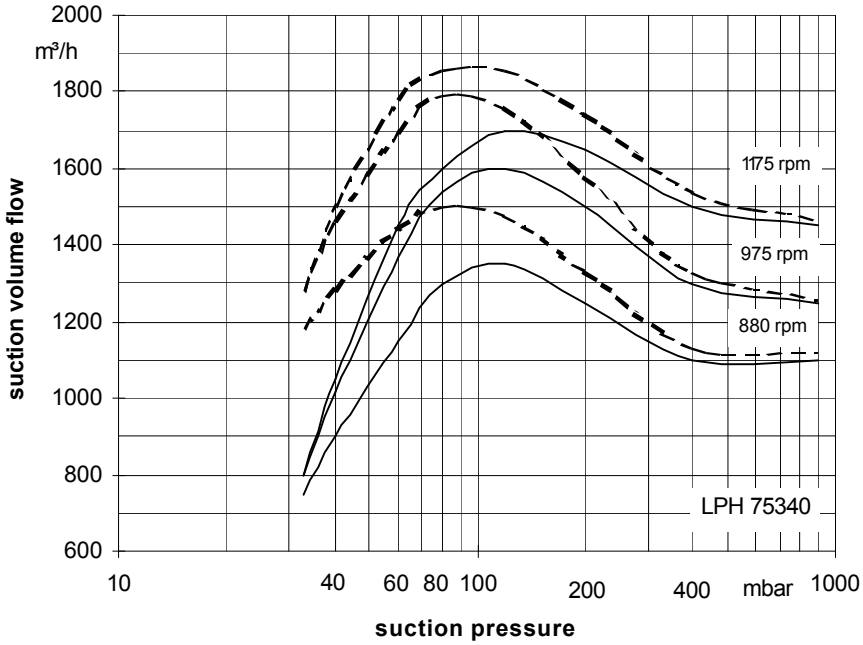


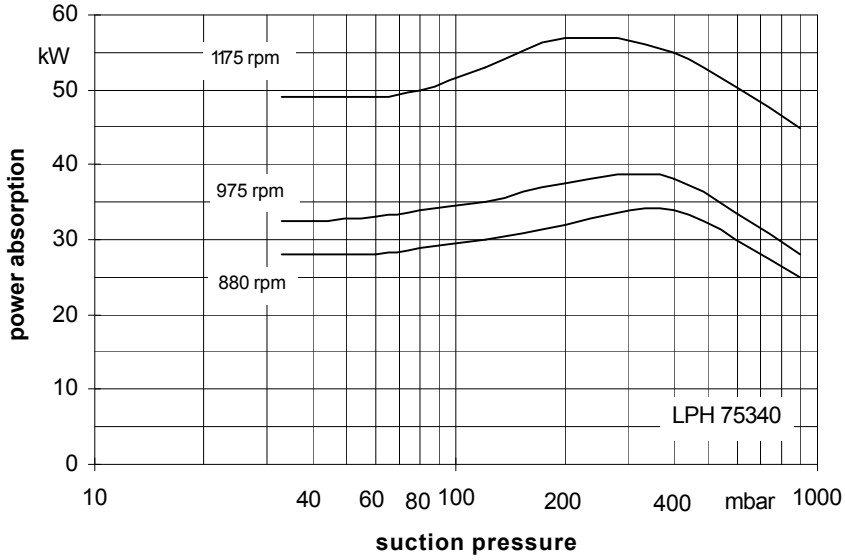
The operating data are applicable under the following conditions:

- pumping medium: - dry air: 20°C ——————
  - water vapour saturated air: 20°C - - - - - - - - - - - - - -
- service liquid: - water: 15°C

Compression pressure 1013 mbar (atmospheric pressure)
The suction volume flow is applied to the suction pressure
Tolerance of the operating data 10%
Max. fresh water need with lowest suction pressure

Suction volume flow and power absorption LPH 75340



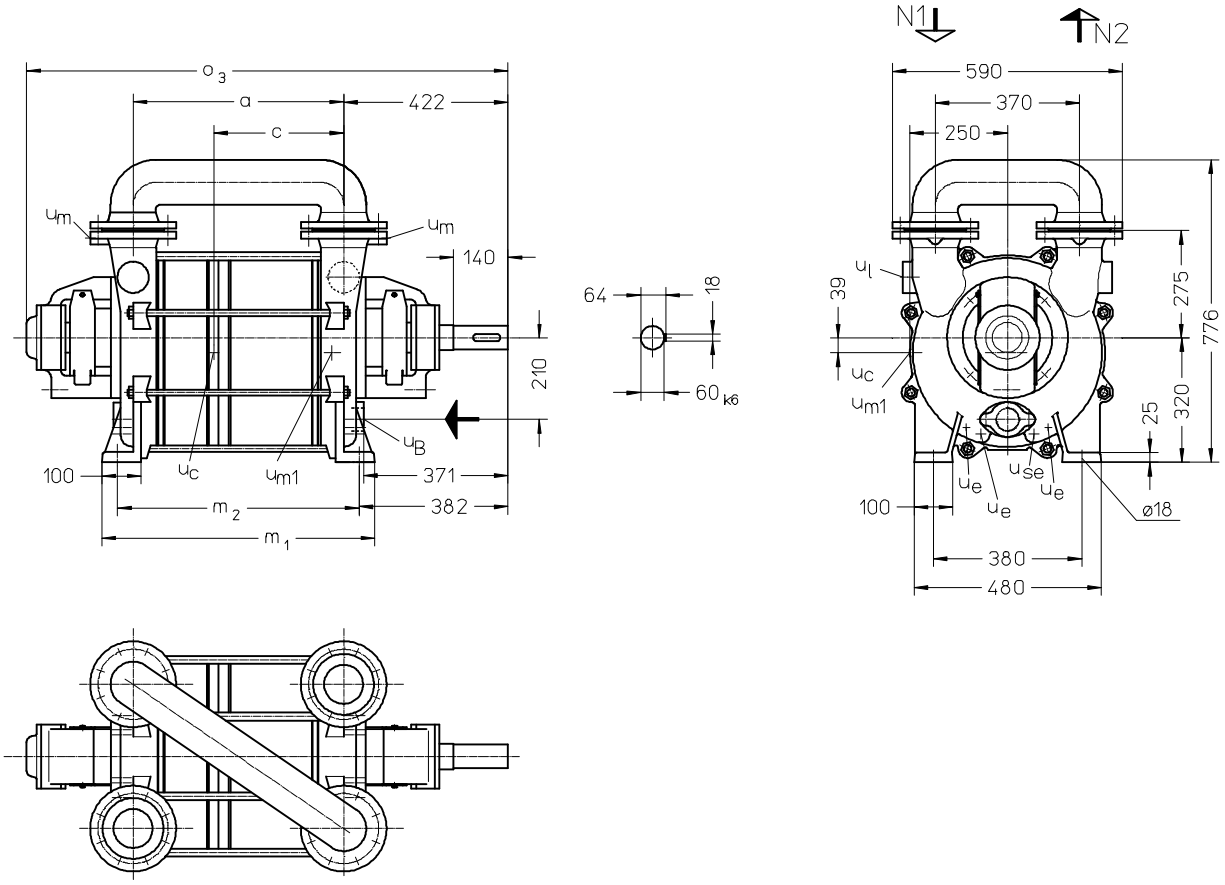


The operating data are applicable under the following conditions:

- pumping medium: - dry air: 20°C
  - water vapour saturated air: 20°C
- service liquid: - water: 15°C

Compression pressure 1013 mbar (atmospheric pressure)
The suction volume flow is applied to the suction pressure
Tolerance of the operating data 10%
Max. fresh water need with lowest suction pressure

Dimension table LPH 75320, LPH 75330, LPH 75340



N 1 = gas-inlet DN 100

N 2 = gas-outlet DN 100

u_B = connection for service liquid G 2

u_c = connection for protection against cavitation G 3/8

u_e = drain connection G ¼

u_l = connection for vent cock G 1 ½

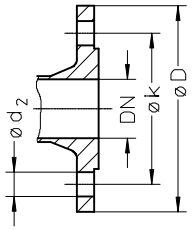
u_m = connection for pressure gauge G 3/8

u_{m1} = connection for drain valve G ½

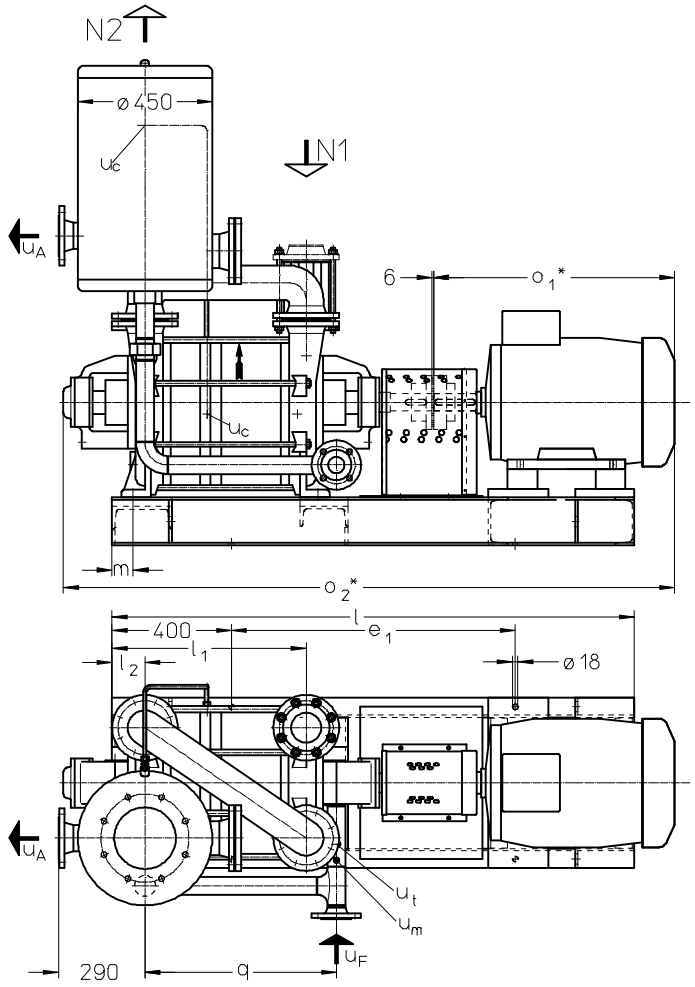
u_{se} = connection for dirt drain G ½

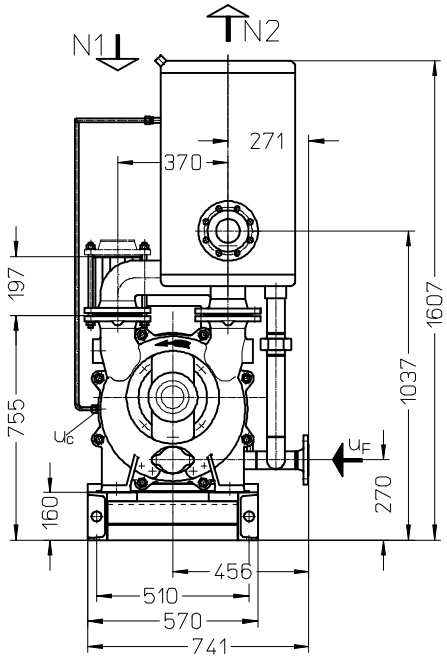
	a	c	m_1	m_2	o_3	weight abt. kg for material design 02	42
LPH 75320 BN	540	333	700	620	1235	450	485
LPH 75330 BN	690	434	850	770	1385	570	620
LPH 75340 BN	790	534	950	870	1485	640	690

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



Arrangement drawing LPH 75320, LPH 75330, LPH 75340 with overhead liquid separator





N 1 = gas-inlet DN 100

N 2 = gas-outlet DN 200

u_A = connection for liquid drain DN 80

u_c = connection for protection against cavitation G ¼

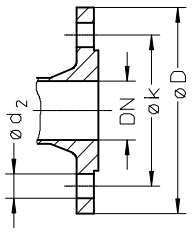
u_F = connection for fresh liquid DN 50

u_m = connection for pressure gauge G ¼

u_t = connection for thermometer G ½

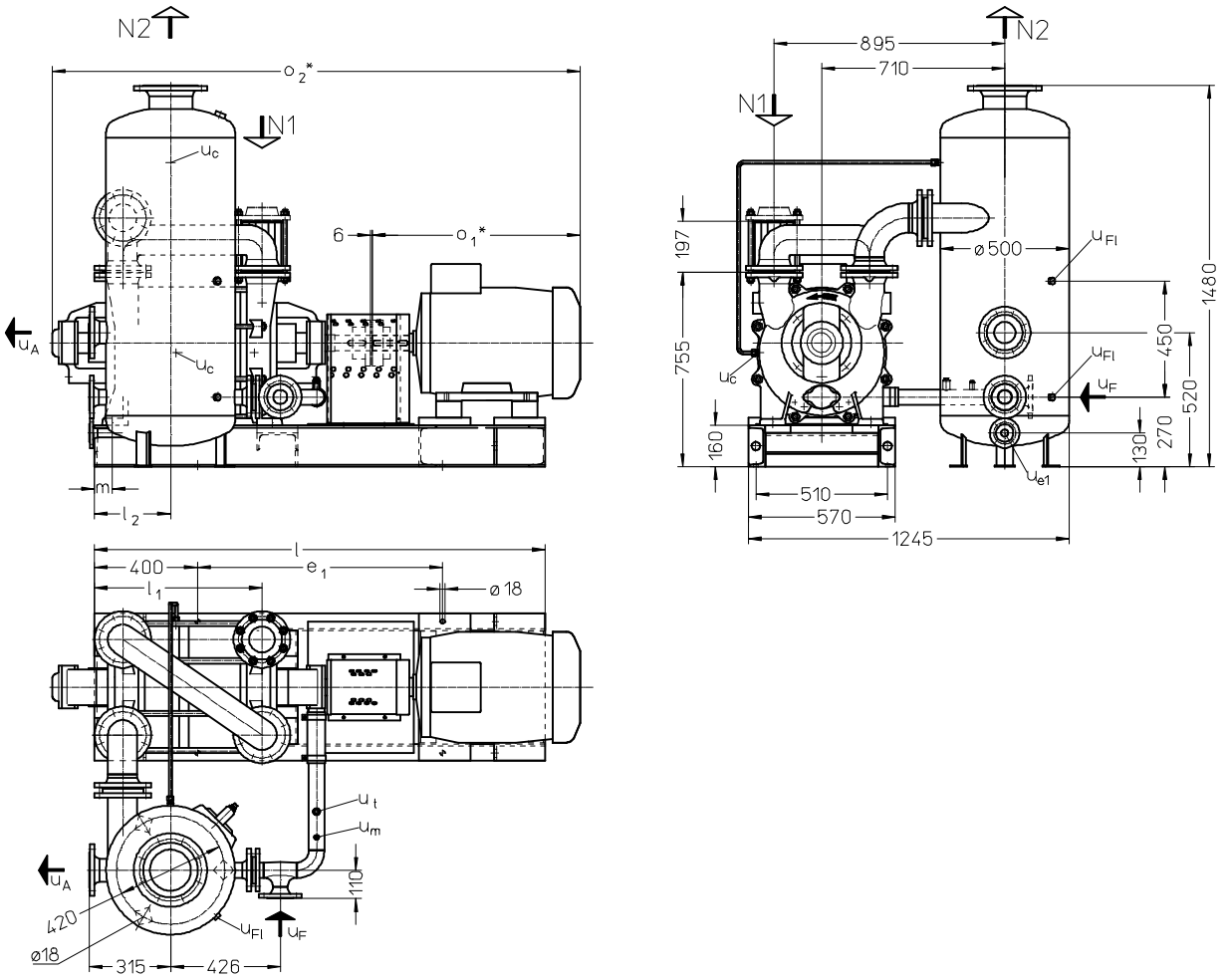
	E-Motor 50 Hz size-	kW IP 55	kW EEx e II T3	e_1	l	l_1	l_2	m	o_1*	o_2*	q	weight abt. kg at motor IP 55	weight abt. kg at motor EEx e II T3
LPH 75320	225 M	30	-	950	1750	650	110	70	807	2048	641	938	-
	225 M	-	27						875	2116		-	1060
LPH 75330	250 M	37	-				210	170	930	2321	791	1260	-
	280 S	-	40			900			1044	2435		-	1420
	280 S	45	-	1300	2100		110	70	1005	2496		1460	-
LPH 75340	280 S	-	40						1044	2535	891	-	1490
	280 M	-	46			870	80	40	1095	2586		-	1546

flange connections to DIN 2501 PN 10				
DN	50	80	100	200
k	125	160	180	295
D	165	200	220	340
number x d_2	4 x 18	8 x 18	8 x 18	8 x 22



* Dimensions depend on the motor make

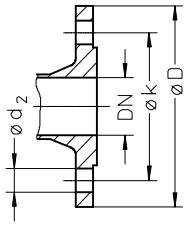
Arrangement drawing LPH 75320, LPH 75330, LPH 75340 with upright liquid separator



N 1 = gas-inlet DN 100
N 2 = gas-outlet DN 150
u_A = connection for liquid drain DN 80
u_c = connection for protection against cavitation G $^3/_8$
u_{e1} = drain connection DN 25
u_F = connection for fresh liquid DN 50
u_{Fl} = connection for liquid level indicator G ½
u_m = connection for pressure gauge G ¼
u_t = connection for thermometer G ½

	E-Motor 50 Hz size	kW IP 55	kW EEx e II T3	e_1	l	l_1	l_2	m	o_1*	o_2*	weight abt. kg at motor IP 55	weight abt. kg at motor EEx e II T3
LPH 75320	225 M	30	-	950	1750	650	295	70	807	2048	965	-
	225 M	-	27						875	2116	-	1090
LPH 75330	250 M	37	-				395	170	930	2321	1290	-
	280 S	-	40			900			1044	2435	-	1450
	280 S	45	-	1300	2100		295	70	1005	2496	1490	-
LPH 75340	280 S	-	40						1044	2535	-	1520
	280 M	-	46			870	265	40	1095	2586	-	1575

flange connections to DIN 2501 PN 10					
DN	25	40	50	100	150
k	85	110	125	180	240
D	115	150	165	220	285
Anzahl x d_2	4 x 14	4 x 18	4 x 18	8 x 18	8 x 22



* Dimensions depend on the motor make

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

suction pressure [mbar]		33					120					200					400				
pump type	speed	KB difference in temperature [°C]				FB	KB difference in temperature [°C]				FB	KB difference in temperature [°C]				FB	KB difference in temperature [°C]				FB
	rpm	20	10	5	2		20	10	5	2		20	10	5	2		20	10	5	2	
LPH 75320	880	0,7	1,3	2,2	3,8	7	0,8	1,3	2,2	3,5	6	0,8	1,3	2,1	3,2	5	0,7	1,2	1,7	2,3	3
	975	0,8	1,5	2,4	4,0		0,8	1,5	2,4	3,7		0,9	1,5	2,3	3,4		0,8	1,3	1,8	2,3	
	1175	1,2	2,0	3,1	4,7		1,2	2,0	3,0	4,3		1,2	1,9	2,8	3,8		1,0	1,5	2,0	2,5	
LPH 75330	880	1,0	1,7	2,7	4,3	7	1,0	1,7	2,6	3,9	6	1,0	1,6	2,5	3,5	5	0,8	1,3	1,8	2,4	3
	975	1,1	1,8	2,9	4,5		1,1	1,9	2,8	4,2		1,1	1,8	2,7	3,7		1,0	1,5	2,0	2,5	
	1175	1,5	2,4	3,6	5,1		1,4	2,3	3,3	4,6		1,4	2,2	3,1	4,0		1,2	1,7	2,2	2,6	
LPH 75340	880	1,0	1,8	2,9	4,4	7	1,1	1,8	2,8	4,1	6	1,1	1,8	2,6	3,7	5	1,0	1,5	2,0	2,5	3
	975	1,2	2,0	3,1	4,7		1,2	2,0	3,0	4,3		1,2	2,0	2,8	3,8		1,1	1,6	2,1	2,5	
	1175	1,6	2,6	3,8	5,3		1,7	2,6	3,6	4,7		1,6	2,5	3,3	4,2		1,3	1,8	2,3	2,7	

FB = fresh liquid requirements

KB = combined liquid service water 20°C, 10 °C, 5 °C, 2 °C warmer than the fresh water.

Data regarding the pump size - order hints

series + size	bearing + direction of rotation	shaft sealing	material design	casing seal
	B• two grease lubricated antifriction bearing •N one shaft end clockwise	041 double gland packing 135 mechanical seal with built-in flashing O-rings Perbunan	02 main parts GG without non-ferrous metal 42 main parts Cr Ni Mo-cast steel	0 liquid seal
LPH 75320 / 75330 / 75340	BN	041, 135	02, 42	0

Design - Motor selection table

	designation	electric motor 50 Hz					
pump with free shaft end	01	motor protection IP 55			motor protection EEx e II T3		
pump with couplings, rough-drilled at motor side	04	kW	size	designation	kW	size	designation
as above, but with motor,		30	225 M	AC	27	225 M	AL
e.g. 37 kW three phase motor	e.g. BC	37	250 M	BC	40	280 S	CL
(50 Hz, 400 V∆) at 975 rpm		45	280 S	CC	46	280 M	DL

Example for ordering:

The pump size LPH 75330 BN 041 42 0 with 37 kW three phase motor (50 Hz, 400 V∆) 975 rpm IP55 has the complete order number:

LPH· 75330 BN 041 42 0 BC

Motor: If motors with the other voltage and frequency are required a special information should be given.

On delivery the point (•) in the fourth place of the type code is replaced by a letter in the factory.

Accessories

Recommended accessories			LPH 75320	LPH 75330	LPH 75340
Overhead liquid separator		type	XBa 10040		
		weight	70 kg		
material design	130 / galvanized	SIHI part no.	35000443		
	172 / 1.4571		35000444		
service liquid line					
material design	072 / St 37-0	SIHI part no.	35003195	35003197	35003199
	172 / 1.4571		35003196	35003198	35003200
cavitation protection line					
material design	072 / St 37-0	SIHI part no.	on request		
	172 / 1.4571				
Upright liquid separator		type	XBp 2311		
		weight	96 kg		
material design	130 / galvanized	SIHI part no.	35000568		
	172 / 1.4571		35000569		
service liquid line					
material design	072 / St 37-0	SIHI part no.	35003180	35003182	35003183
	172 / 1.4571		35003181	20027246	35003184
cavitation protection line					
material design	072 / St 37-0	SIHI part no.	on request		
	172 / 1.4571				
discharge line (bend)					
material design	072 / St 37-0	SIHI part no.	35003231		
	172 / 1.4571		35003232		
Sterling SIHI ball type non-return valve		type/weight	XCk 100 / 16 resp. 17,5 kg		
material design	767 / GG-25	SIHI part no.	43016898		
	784 / 1.4408		43029322		
Motor in case of standard design					
IP 55		size	225 M	250 M	280 S
		power	30 kW	37 kW	45 kW
		weight	225 kg	410 kg	540 kg
EEx e II T3		size	225 M	280 S	280 M
		power	27 kW	40 kW	46 kW
		weight	350 kg	570 kg	625 kg
Couplings					
for motor IP 55		type/weight	A 180 / 14 kg		
pump side		SIHI part no.	43035527		
motor side			43021496	43034392	43021495
for motor EEx e II T3		type/weight	ADS 194 / 17,5 kg		ADS 218 / 24 kg
pump side		SIHI part no.	43040600		43040602
motor side			43028518	43035601	43038708
Contact safety device					
material design	076 / steel	SIHI part no.	43042330		43042359
	345 / 2.0321		43042331		43042360
Base frame					
material design	003 / GG-25	type/weight	142 kg	160 kg	
		SIHI part no.	35002930	35002954	

Any changes in the interest of the technical development are reserved.

Sterling SIHI GmbH
Lindenstraße 170, D-25524 Itzehoe, Germany, Telephone +49 (0) 48 21 / 7 71 - 01, Fax +49 (0) 48 21 / 7 71 - 274