

Liquid ring vacuum pumps

two stage



LPH 65320, LPH 65327

Pressure range: 33 to 1013 mbar
Suction volume flow: 300 to 700 m³/h

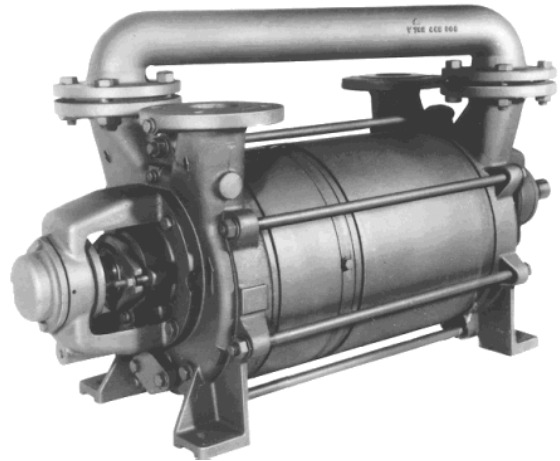
CONSTRUCTION TYPE

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 65320 and LPH 65327 are two stage pumps.

The pumps LPH 65320 and LPH 65327 can be applied without modification as compressors (see catalogue part K).



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 TECHNICAL DATA

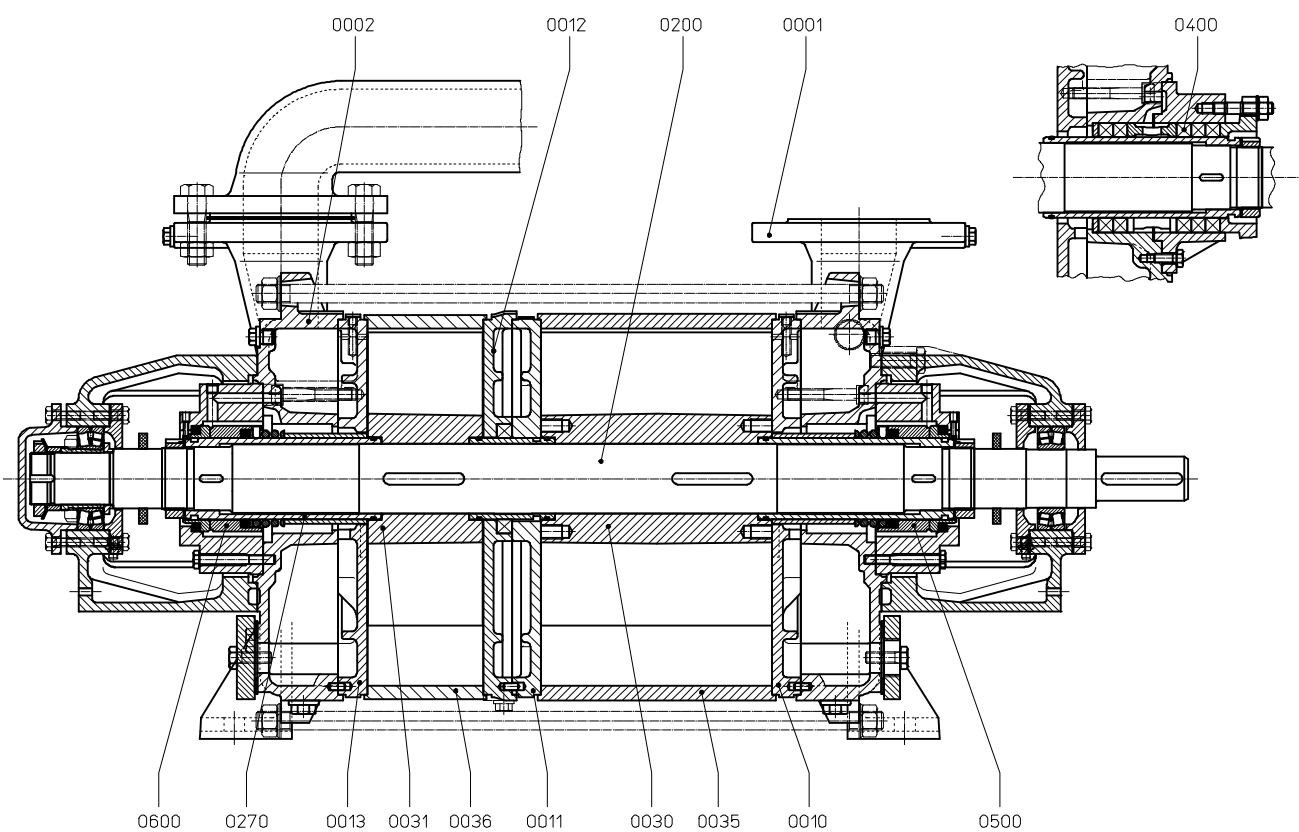
pump type		unit	LPH 65320			LPH 65327				
Speed (normal speed 1450)	50 Hz 60 Hz	rpm	1150	1450	1740	1150	1450	1740		
Max. compression over pressure		bar				2				
Max. admissible difference		bar	1,8	1,6	1,5		1,6	1,5	1,5	
in case of belt drive								1,1		
Hydraulic test (over pressure)		bar				3				
Moment of inertial of the rotating pump parts and of the water filling		kg · m ²	0,32				0,38			
Sound pressure level at a suction of 80 mbar		dB (A)	75	76	79		75	76	79	
Min. pulley diameter in case of V-belt drive		mm				160				
max. gas temperature	dry	°C				200				
	saturated	°C				100				
Service liquid										
max. admissible temperature		°C					80			
max. viscosity		mm ² /s					90			
max. density		kg/m ³					1200			
volume up to shaft		liter	16					19		
Max. flow resistance of the heat exchanger		bar				0,2				

The combination of several limiting values is not admissible.

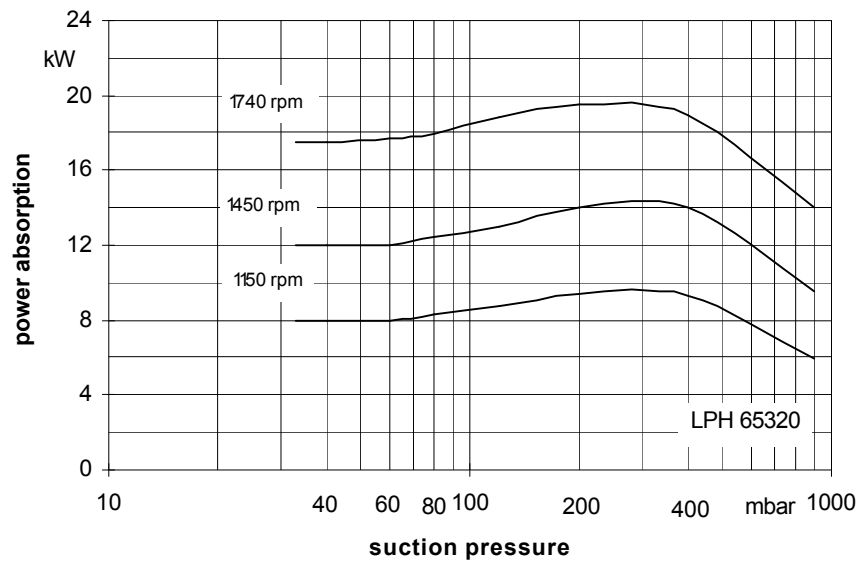
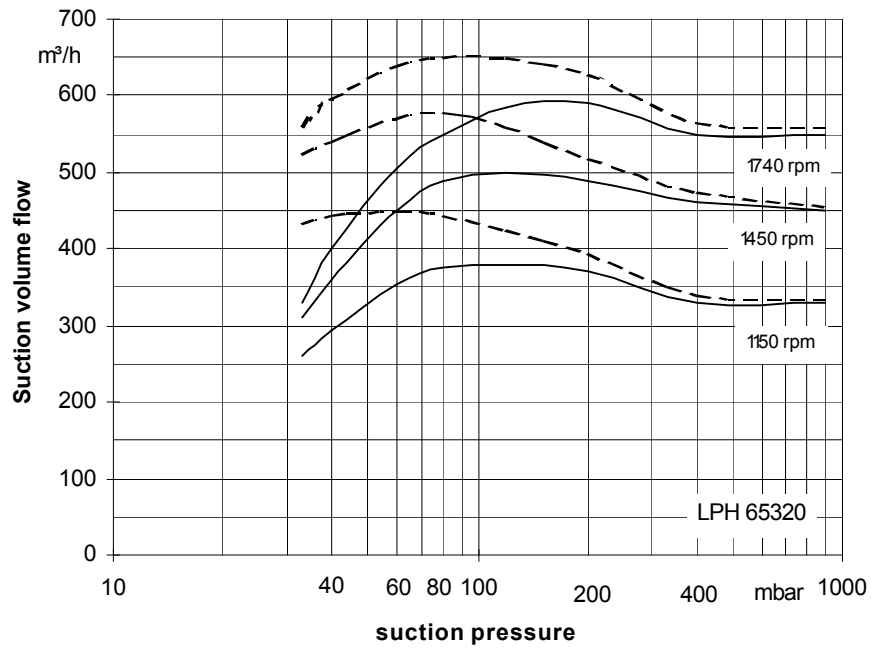
Material design

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	0.6025	1.4408
0200	Shaft	1.0503	
0270	Shat 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 65320, LPH 65327



Suction volume flow and power absorption LPH 65320



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 _____

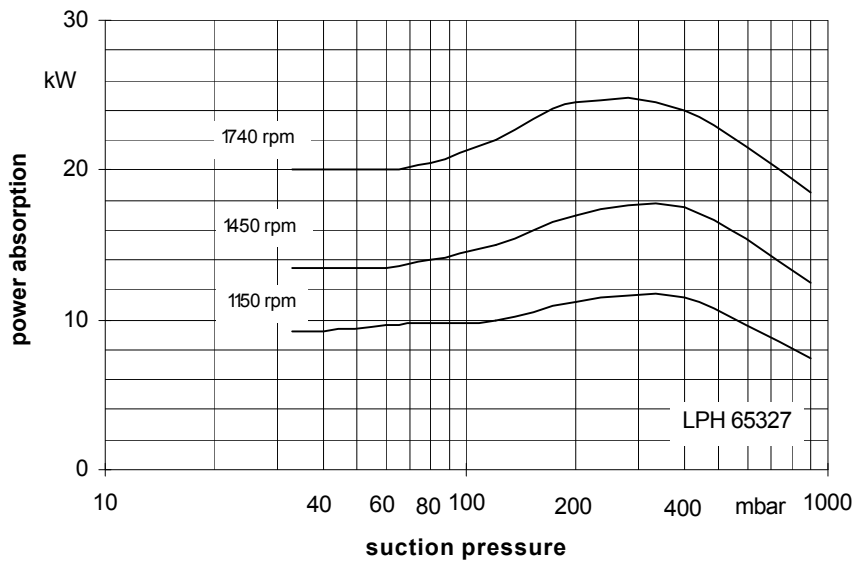
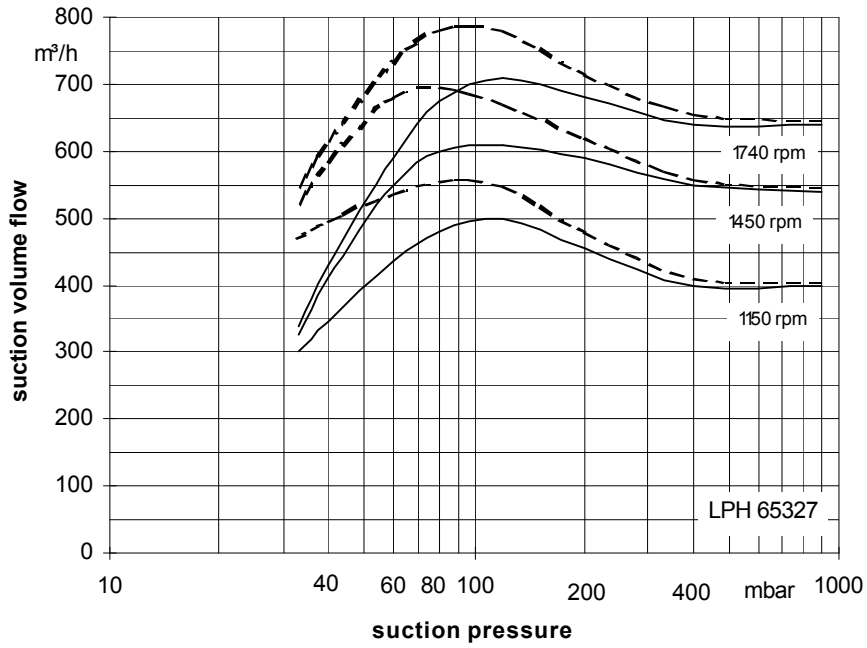
Compression pressure 1013 mbar (atmospheric pressure)

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 65327



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 _____

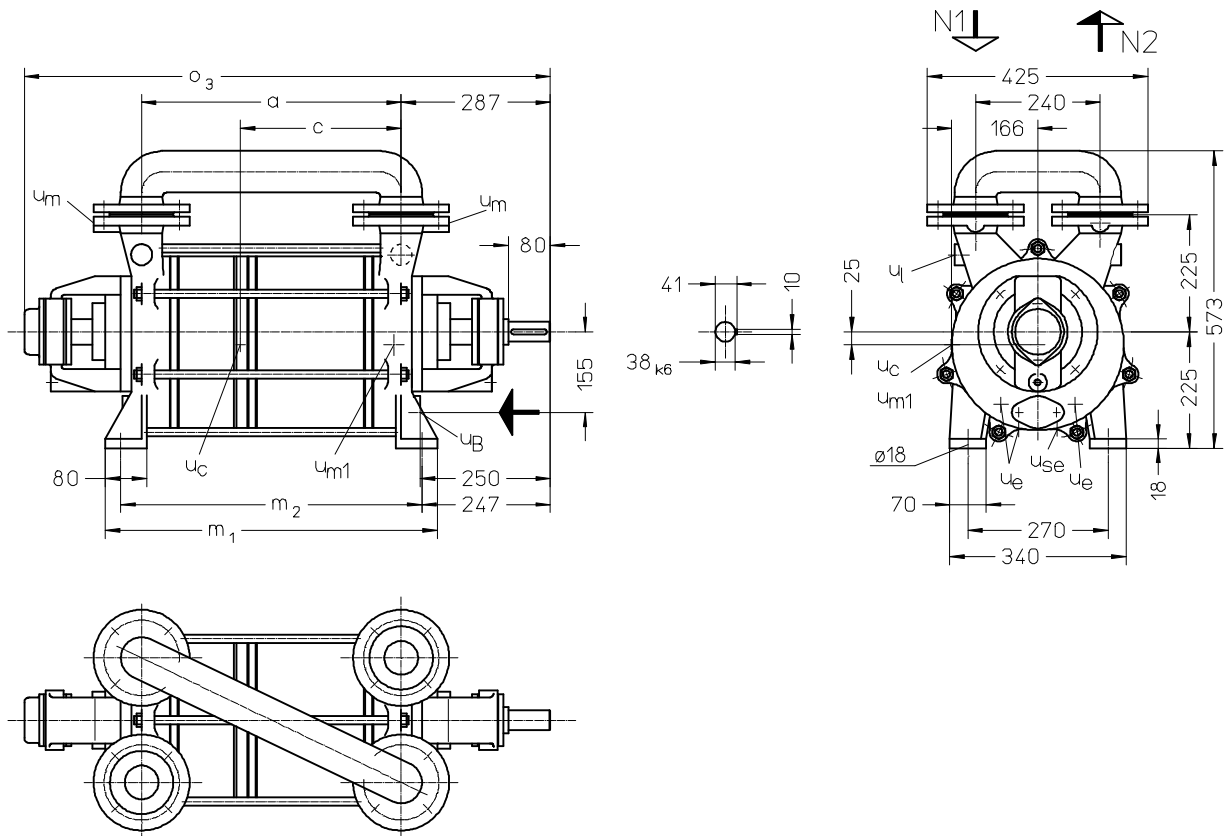
Compression pressure 1013 mbar (atmospheric pressure)

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Max. fresh water need with lowest suction pressure

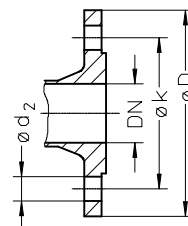
Dimension table LPH 65320, LPH 65327



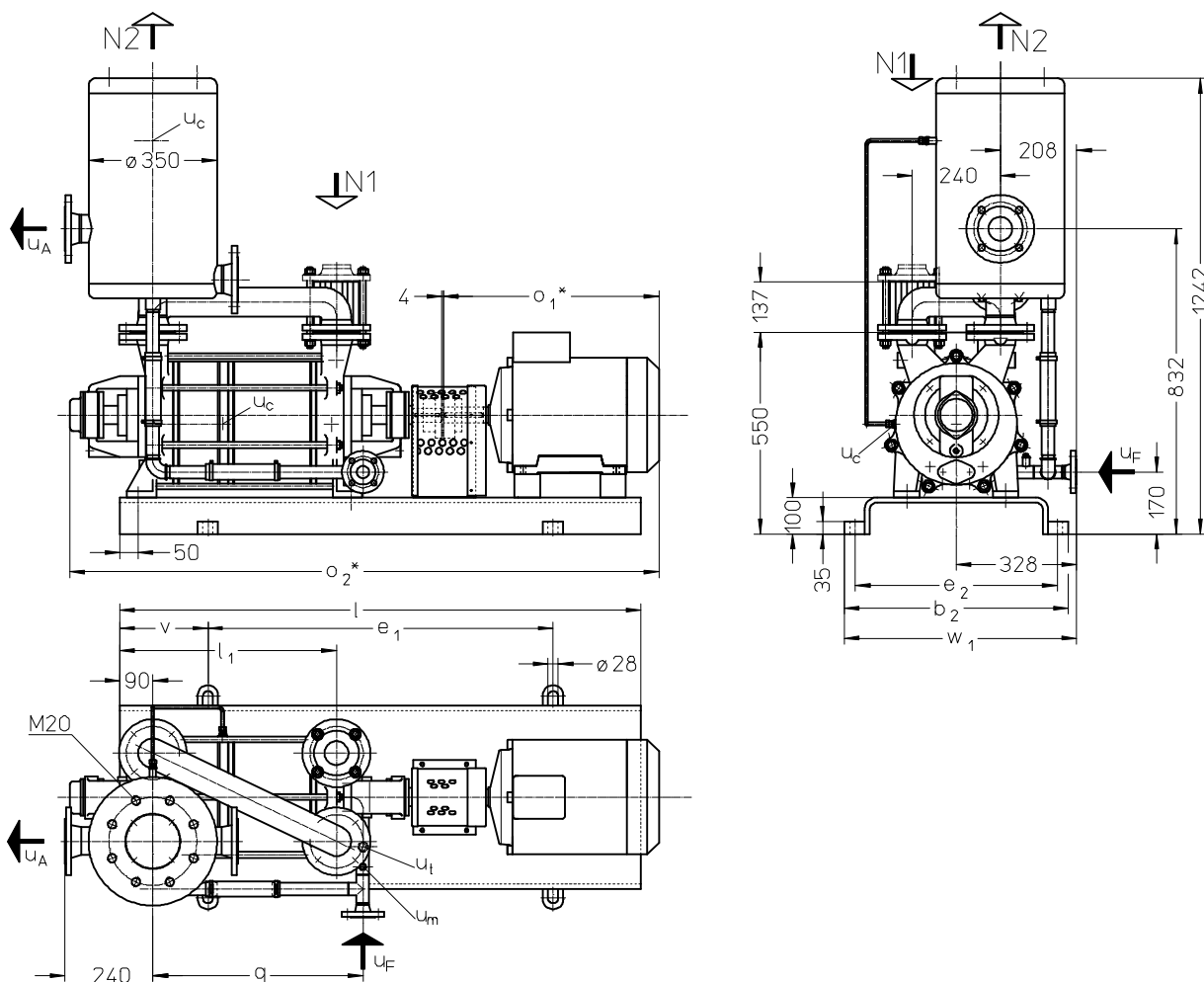
- N 1 = gas-inlet DN 65
- N 2 = gas-outlet DN 65
- u_B = connection for service liquid G 1
- u_c = connection for protection cavitation G ¼
- u_e = drain connection G ½
- u_l = connection for vent cock G ¾
- u_m = connection for pressure gauge G ¼
- u_{m1} = connection for drain valve G 3/8
- u_{se} = connection for dirt drain G ½

	a	c	m ₁	m ₂	o ₃	weight abt. kg for material design	
						02	42
LPH 65320 BN	500	309	640	580	1013	215	221
LPH 65327 BN	566	375	706	646	1079	240	245

flange connections as per DIN 2501 PN 10	
DN	65
k	145
D	185
number x d ₂	4 x 18



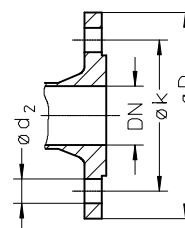
Arrangement drawing LPH 65320, LPH 65327 with overhead liquid separator



- N 1 = gas-inlet DN 65
- N 2 = gas-outlet DN 150
- u_A = connection for liquid drain DN 65
- u_c = connection for protection against cavitation G ¼
- u_F = connection for fresh liquid DN 25
- u_m = connection for pressure gauge G ¼
- u_t = connection for thermometer G ½

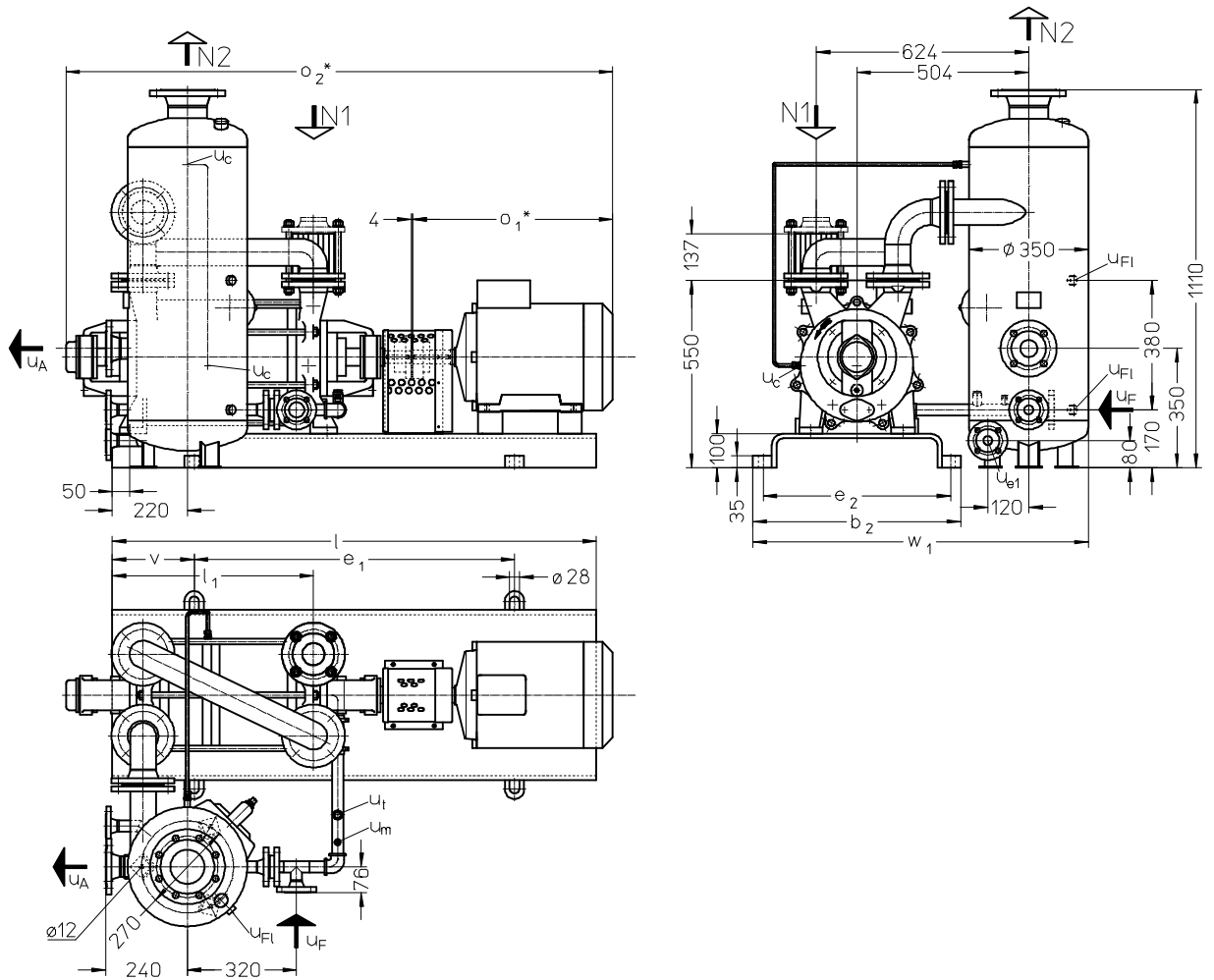
	electric motor 50 Hz		b ₂	e ₁	e ₂	l	l ₁	o ₁ *	o ₂ *	v	w ₁	q	weight abt. kg at motor		
	size	kW											IP 55	EEx e II T3	IP 55
LPH 65320	160 L	15	-	610	940	550	1420	590	588	1605	240	633	572	475	-
	180 M	-	15	-	-	-	-	-	650	1667	-	-	-	-	560
LPH 65327	180 M	18,5	-	660	1060	600	1620	656	712	1795	280	658	638	535	-
	180 L	-	17,5	-	-	-	-	-	688	1771	-	-	-	-	625

flange connections to DIN 2501 PN 10			
DN	25	65	150
k	85	145	240
D	115	185	285
number x d ₂	4 x 14	4 x 18	8 x 22



* Dimension depend on the motor make

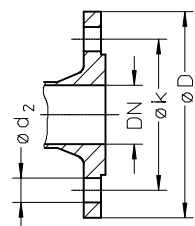
Arrangement drawing LPH 65320, LPH 65327 with upright liquid separator



- N 1 = gas-inlet DN 65
- N 2 = gas-outlet DN 100
- U_A = connection liquid drain DN 50
- U_c = connection for protection against cavitation G $\frac{1}{4}$
- U_{e1} = drain connection DN 25
- U_F = connection for fresh liquid DN 25
- U_{FI} = connection for liquid level indicator G $\frac{1}{2}$
- U_m = connection for pressure gauge G $\frac{1}{4}$
- U_t = connection for thermometer G $\frac{1}{2}$

	electric motor 50 Hz			b_2	e_1	e_2	l	l_1	o_1^*	o_2^*	v	w_1	weight abt. kg at motor	
	size	IP 55	kW EEx e II T3										IP 55	Eex e II T3
LPH 65320	160 L	15	-	610	940	550	1420	590	588	1605	240	984	495	-
	180 M	-	15										-	580
LPH 65327	180 M	18,5	-	660	1060	600	1620	656	712	1795	280	1009	560	-
	180 L	-	17,5										-	645

flange connections to DIN 2501 PN 10				
DN	25	50	65	100
k	85	125	145	180
D	115	165	185	220
number x d_2	4 x 14	4 x 18	4 x 18	8 x 18



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 [rpm]	KB				FB	KB				FB	KB				FB					
		difference in temperature[°C]					difference in temperature[°C]					difference in temperature[°C]									
		20	10	5	2		20	10	5	2		20	10	5	2		20	10	5	2	
LPH 65320	1150	0,30	0,55	0,91	1,51	2,7	0,33	0,58	0,94	1,50	2,5	0,34	0,59	0,93	1,42	2,2	0,32	0,52	0,77	1,09	1,5
	1450	0,43	0,75	1,17	1,77		0,46	0,77	1,18	1,73		0,47	0,78	1,15	1,61		0,43	0,67	0,92	1,20	
	1750	0,59	0,97	1,42	2,00		0,61	0,98	1,41	1,91		0,61	0,95	1,33	1,74		0,53	0,78	1,03	1,27	
LPH 65327	1150	0,34	0,61	1,00	1,60	2,7	0,37	0,64	1,02	1,58	2,5	0,39	0,67	1,03	1,51	2,2	0,37	0,60	0,85	1,15	1,5
	1450	0,48	0,81	1,25	1,84		0,51	0,85	1,27	1,80		0,55	0,88	1,25	1,69		0,50	0,75	1,00	1,25	
	1750	0,65	1,05	1,51	2,05		0,69	1,08	1,50	2,00		0,71	1,08	1,44	1,82		0,61	0,87	1,10	1,31	

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
	<ul style="list-style-type: none"> • B two grease lubricated antifriction bearing • N one shaft end clockwise 	041 single 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 65320 65327	BN	041, 135	02, 42	0

Design - Motor selection table

	construction type	electric motor 50 Hz					
		motor protection IP 55			motor protection EEx e II T3		
		kW	size	designation	kW	size	designation
pump with free shaft end	01						
pump with couplings, rough-drilled at motor side	04						
as above, but with motor,, e.g. 4.0 kW three phase motor (50 Hz, 400 VΔ) at 1450 rpm	e.g. VB	15,0 18,5	160 L 180 M	UB VB	15,0 17,5	180 M 180 L	VK WK

Example for ordering:

The pump size LPH 65327 BN 041 42 0 with 18,5 kW three phase motor (50 Hz, 400 VΔ) 1450 rpm IP55 has the complete order number:

LPH 65327 BN 041 42 0 VB

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 65320	LPH 65327
Overhead liquid separator	type / weight	XBa 5540 35 kg	
material design 130 / galvanized 172 / 1.4571	SIHI part No.	35000440 35000441	
service liquid line			
material design 072 / St 37-0 172 / 1.4571	SIHI part No.	350003119 350003120	350003121 350003122
cavitation protection line			
material design 072 / St 37-0 172 / 1.4571	SIHI part No.	20039166 20039167	
Upright liquid separator	type / weight	XBp 0912 51 kg	
material design 130 / galvanized 172 / 1.4571	SIHI part No.	35000534 35000535	
service liquid line			
material design g 072 / St 37-0 172 / 1.4571	SIHI part No.	35003112 35003113	35003115 35003117
cavitation protection line			
material design 072 / St 37-0 172 / 1.4571	SIHI part No.	20036462	
discharge line (bend)			
material design 072 / St 37-0 172 / 1.4571	SIHI part No.	35003224 35003226	
Sterling SIHI gas injector			
at service liquid temperature	15 °C	GPV 6011	GPV 6012
at service liquid temperature	30 °C	GPV 6311	GPV 6312
Sterling SIHI ball type non-return valve	type / weight	XCk 65 / 4,4 resp. 14,2 kg	
material design 767 / GG-25 784 / 1.4408	SIHI part No.	43016894 43039285	
Motor in case of standard design			
IP 55	size power weight	160 L 15 kW 98 kg	180 M 18,5 kW 112 kg
EEx e II T3	size power weight	180 M 15 kW 185 kg	180 L 17,5 kW 200 kg
Couplings			
for motor IP 55	type / weight	B 125 / 6,2 kg	B 140 / 6,9 kg
pump side	SIHI part No.	43021460	43021474
motor side		43021464	43021478
for motor Eex e II T3	type / weight	BDS 135 / 6,1	BDS 152 / 8,6
pump side	SIHI part No.	43028122	43025967
motor side		43028552	43025973
Contact safety device			
material design 076 / steel 345 / 2.0321	SIHI part No.	43042269 43042270	
Base frame			
material design 081 / St 37	type / weight SIHI part No.	S 487 / 105 kg 43040642	S538 / 128 kg 43040643

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

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