

SIHI^{LPH-X} - Liquid Ring Vacuum Pump

Two Stage



SIHI® Pumps

LPH 65320, LPH 65327

Pressure Range: 33 to 1013 mbar
Suction Volume: 245 to 815 m³/h

CONSTRUCTION

SIHI liquid ring vacuum pumps have a simple but robust construction with the following features and benefits:

- Near isothermal compression
- Oil free, with no internal lubrication
- Capable of handling almost all gases and vapours
- Able to handle quantities of liquid "carry over"
- Low maintenance and safe operation
- Low noise and almost vibration free
- Available in a wide range of materials
- Broad range of applications
- O-ring sealing as standard
- Cavitation protection as standard
- Drain hole as standard
- Built-in solids drain
- Rotating metallic parts are non contacting to minimise wear
- ATEX compliance

SIHI liquid ring vacuum pumps of the range LPH 65320 and LPH 65327 are two stage pumps.

APPLICATIONS

Evacuation and pumping of dry gases and saturated vapours. The pumps can also handle liquids. These units offer pressures in the range of 33...900 mbar(a) to atmospheric. Much lower pressures are available by using ancillaries such as ejectors and lobular boosting pumps. Typical application areas include:

- Chemical and pharmaceutical industry for distillation, drying and degassing
- Food and beverage industry for low temperature cooking, and bottle filling
- Electronic industry for impregnation and drying
- Plastics & Rubber industry for degassing
- Healthcare for sterilisers and general vacuum



Note

By continuously feeding the pump with a small amount of service liquid (usually water), the heat due to gas/vapour compression is conducted away. This also replenishes the liquid ring and ensures that it does not become saturated with process media. Recharging the pump with service liquid at ambient temperature enables the unit to condense evacuated gases / vapours. It can therefore be used for solvent recovery. The condensed gas and liquid can be separated in a liquid separator. More information is provided in the accessory catalogues.

The integrated solids drain permits the removal of any entrained solids whilst the pump is operating. The service liquid can therefore, simply be re-circulated.

The rotation of the pump is clockwise when viewed from the drive end.

GENERAL TECHNICAL DATA

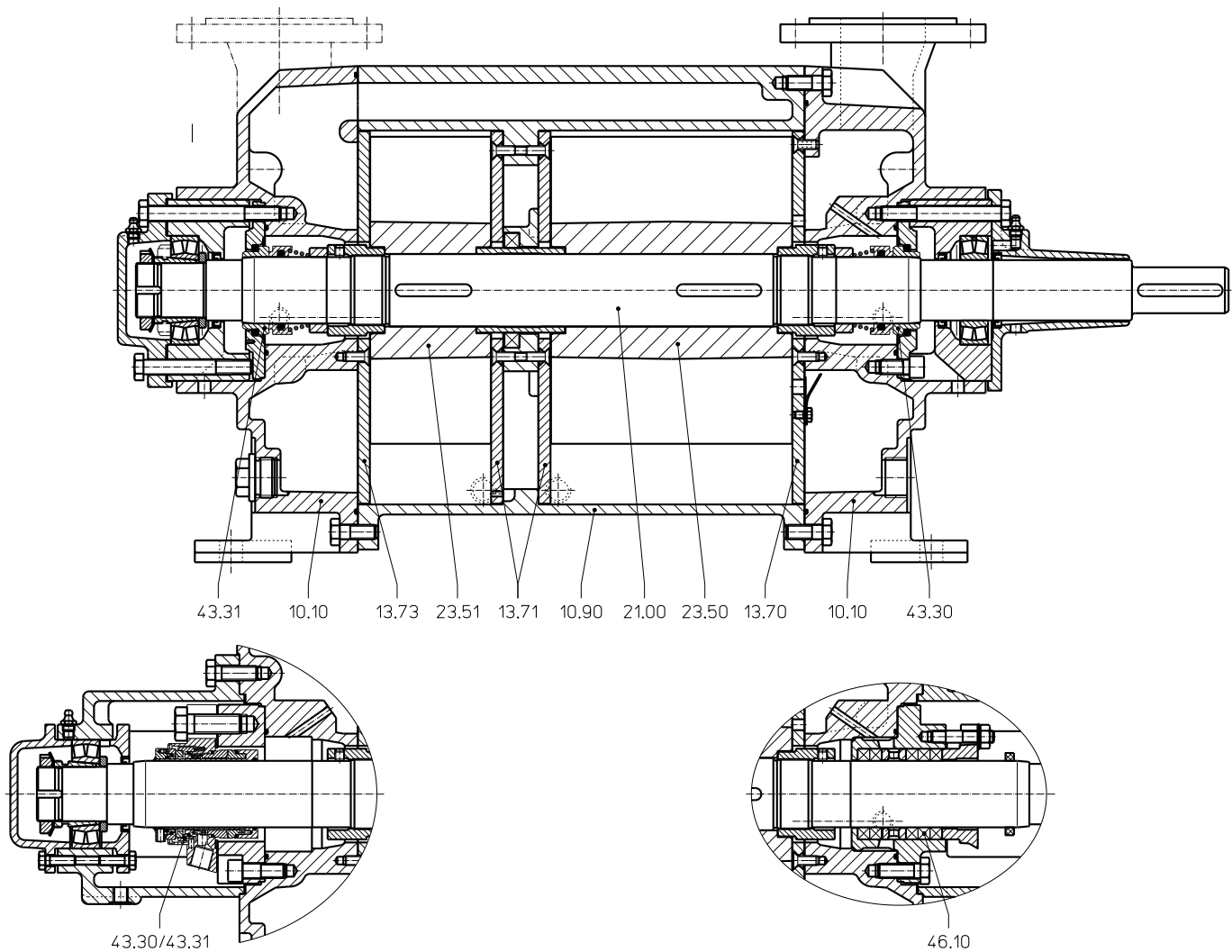
Pump Type	Units	LPH 65320	LPH 65327
Speed	50 Hz 60 Hz	rpm	1450 1740
Maximum overpressure on compression	bar	1.0	0.8
Permissible pressure difference between suction and discharge side	max. min.	bar	1.5 0.2
Hydraulic test pressure (overpressure)	bar	3.0	
Moment of inertia of rotating parts of pump and water content	kg · m ²	0.32	0.38
Noise level at 80 mbar suction pressure [50Hz]	dB (A)	68	72
Minimum permissible pulley diameter for V belt drive	mm	160	
Maximum gas temperature:	dry saturated	°C	200 100
Service liquid:			
Maximum permissible temperature	°C	80	
Minimum permissible temperature	°C	10	
Maximum viscosity	mm ² /s	90	
Maximum density	kg/m ³	1200	
Liquid capacity up to middle of shaft	litre	16.0	19.0
Maximum flow resistance of the heat exchanger	bar	0.2	

In selecting a pump, avoid choosing one which is likely to be operating at a combination of its maximum permissible limits e.g. maximum viscosity and maximum permissible pressure difference.

Materials

Position Number	Component	MATERIALS	
		0B	4B
10.10	Vacuum casing	0.6025	1.4408
10.90	Central body		
13.70, 13.71, 13.73	Guide disc		1.4404
21.00	Shaft	1.4021	1.4408
23.50, 23.51	Impeller	1.0619	1.4408
43.30, 43.31	Mechanical seal, Type SIHI FK (AG•)	Cr-Steel / Carbon / Butadiene rubber	Cr Ni Mo-Steel / Carbon / Viton
43.30, 43.31	Double mechanical seal	on request	
46.10	Gland packing	GORE	-

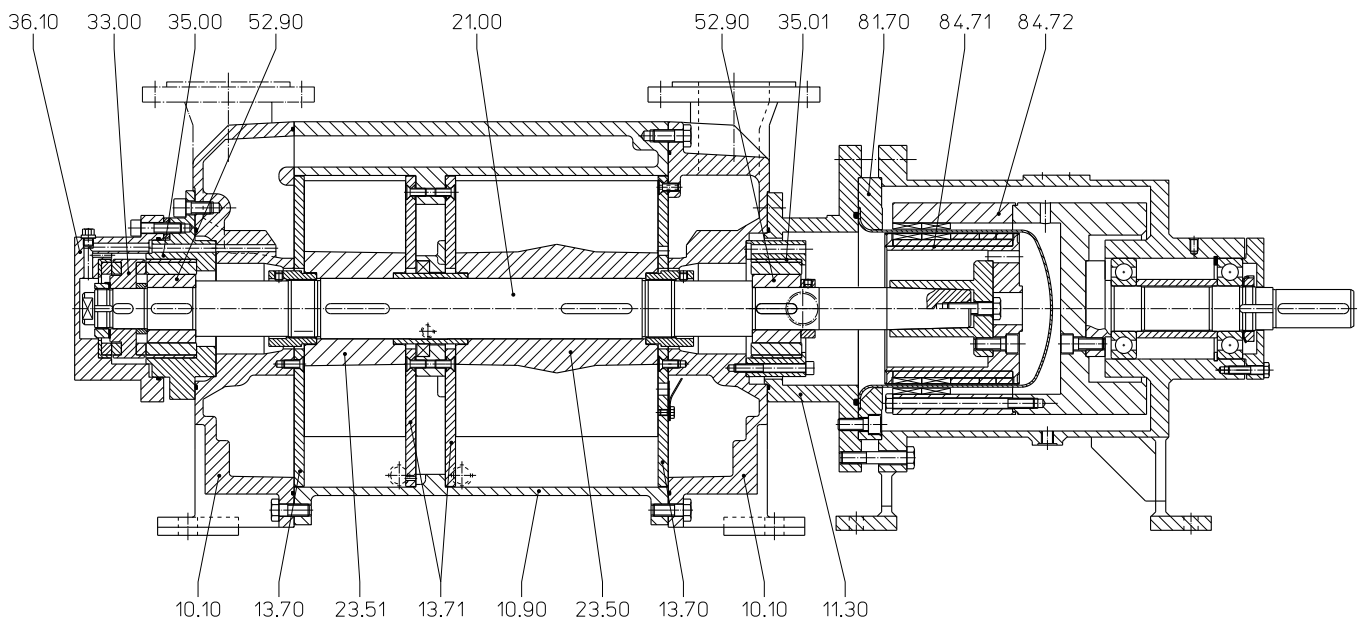
Cut-away diagram LPH 65320, LPH 65327 with single, double mechanical seal and gland packing



Materials LPH 65320, LPH 65327 with magnetic coupling

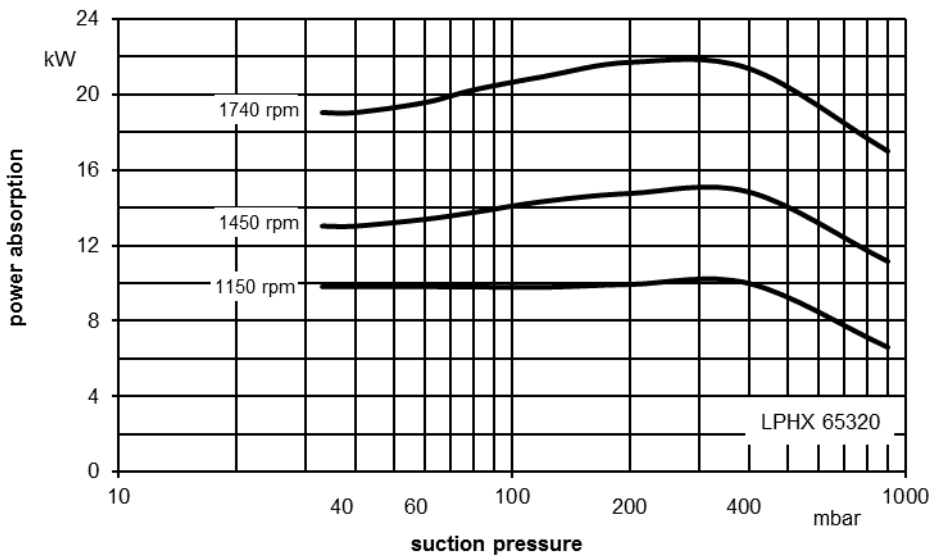
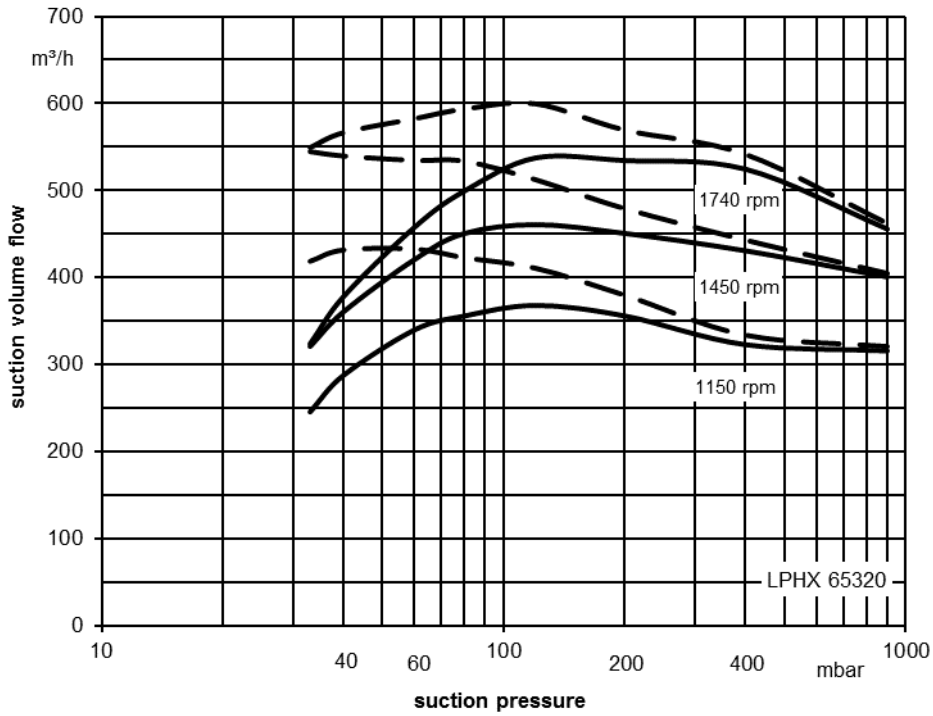
Position Number	COMPONENT	MATERIALS	
		0B	4B
10.60	Casing	0.6025	1.4408
10.90	Central body		
13.70, 13.71	Guide disc		
11.30	Intermediate casing	1.0553	1.4571
21.00	Shaft	1.4021	
23.50, 23.51	Vane wheel impeller	1.0553	1.4517
33.00	Thrust bearing	1.4462 / silicon carbide	
35.00, 35.01	Bearing housing	1.0553 / silicon carbide	1.4571 / silicon carbide
36.10	Bearing cover		
52.90, 52.91	Bushing	tungsten carbide	
81.70	Isolation shroud	1.4571 / 2.4610	
84.71	Inner magnet	1.4571 / 2.4610 / magnet	
84.72	Outer magnet	1.0553 / magnet	

Cut-away diagram LPH 65320, LPH 65327 with magnetic coupling



All information in this catalogue, like general technical data, performance data, dimensions, arrangement drawings, accessories, etc. don't refer to the magnetic coupling execution. Please contact the manufacturer about more information.

Performance Characteristics LPHX 65320



The operating data is valid under the following conditions:

- Process media:
 - dry air: 20°C —————
 - steam saturated air: 20°C - - - - -
- Service liquid:
 - water: 15°C

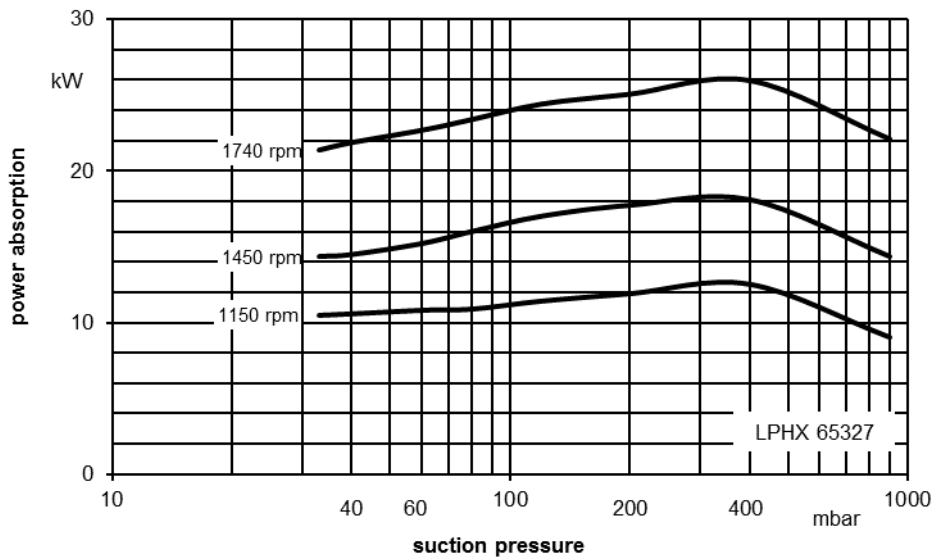
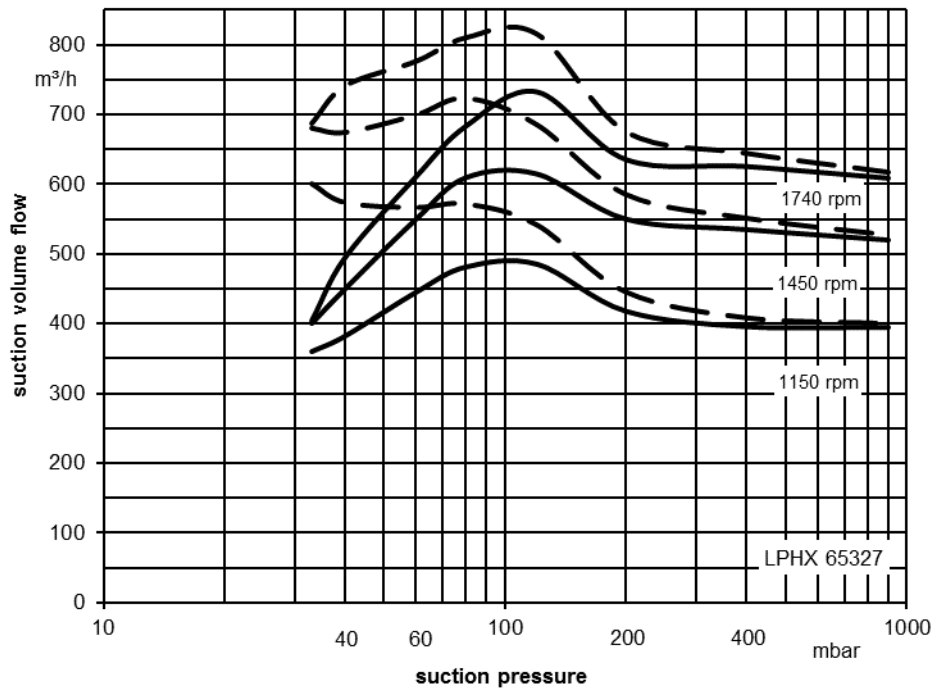
Pressure of gas to be evacuated: 1013 mbar (atmospheric pressure)

The suction volume is related to the suction pressure.

Tolerance on operating data is 10%.

The maximum consumption of make-up water occurs at the lowest suction pressure.

Performance Characteristics LPHX 65327



The operating data is valid under the following conditions:

- Process media:
 - dry air: 20°C ————
 - steam saturated air: 20°C - - - - -
- Service liquid:
 - water: 15°C

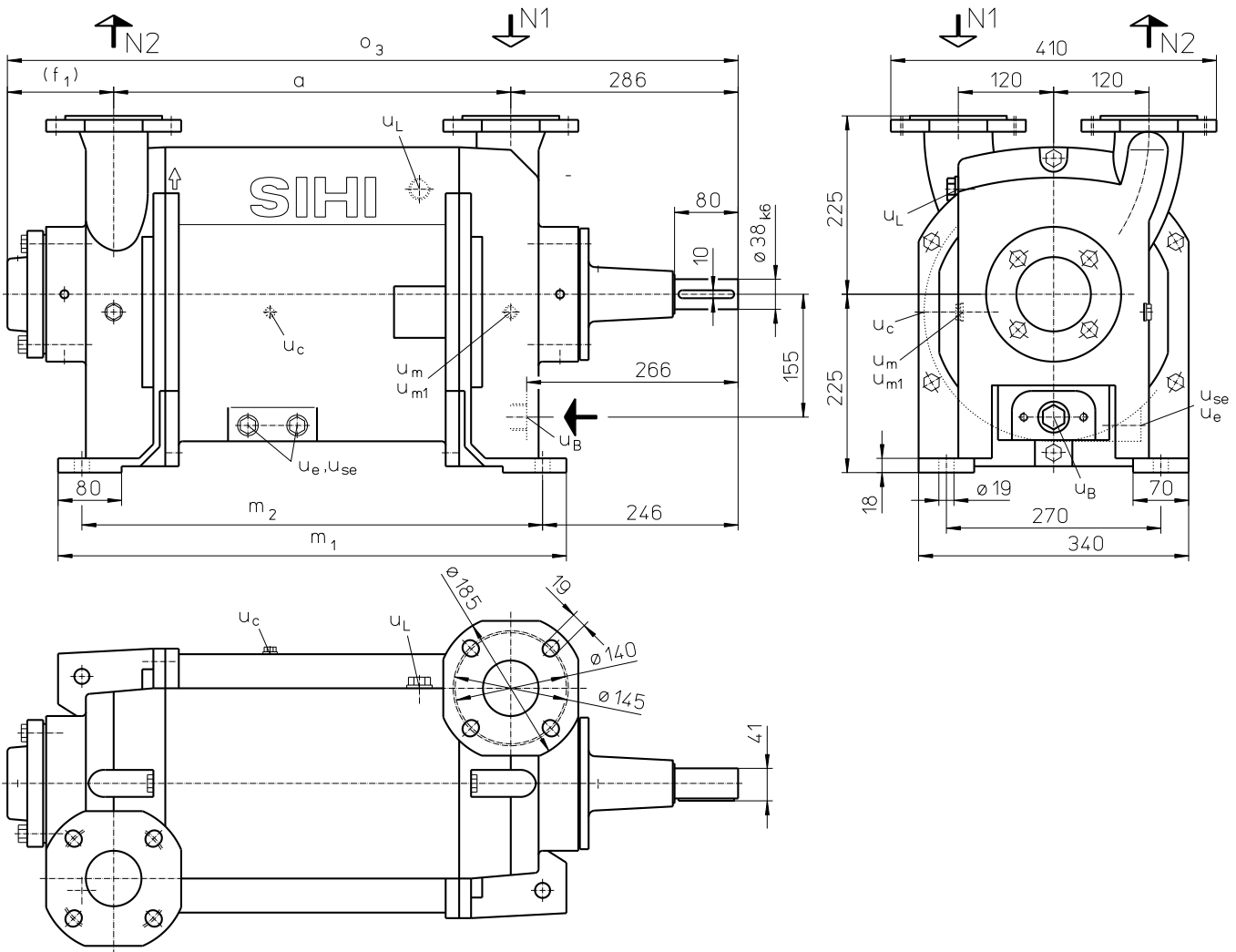
Pressure of gas to be evacuated: 1013 mbar (atmospheric pressure)

The suction volume is related to the suction pressure.

Tolerance on operating data is 10%.

Maximum consumption of make-up water occurs at the lowest suction pressure.

Dimensions LPH 65320, LPH 65327 with single mechanical seal and gland packing



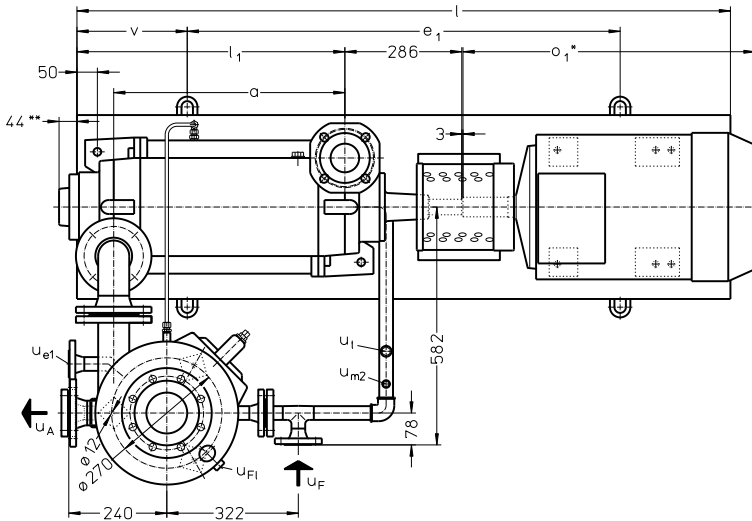
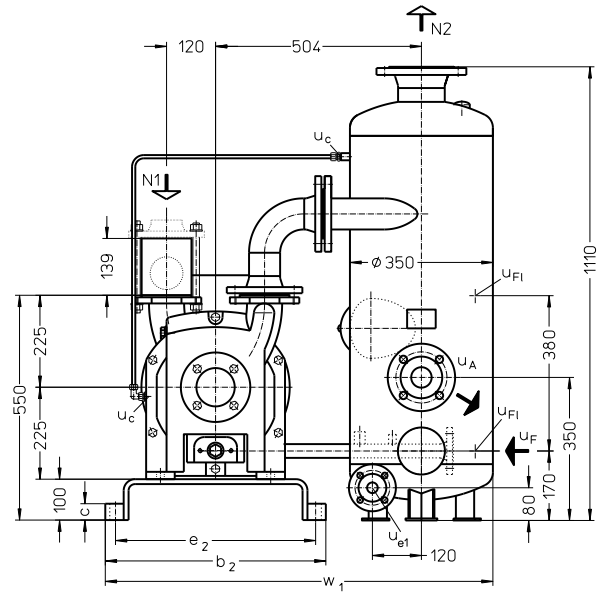
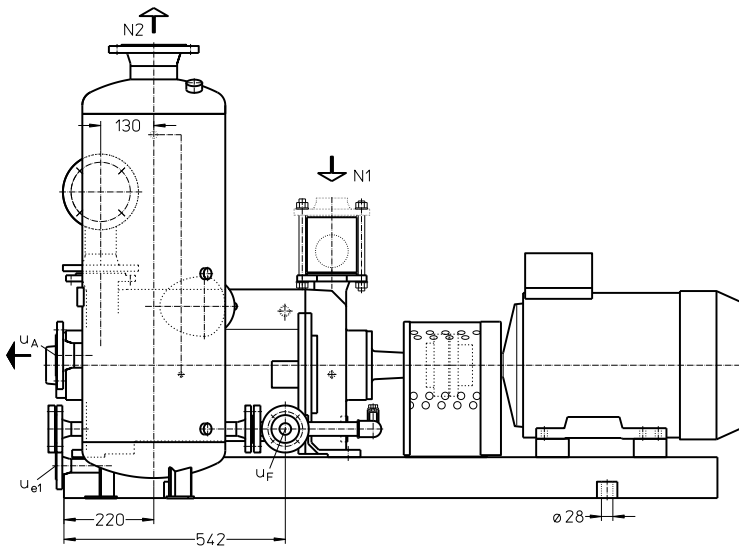
- N 1 = Gas inlet DN 65, 4 bolt (according to DIN EN 1092 PN 10)
Gas inlet 2 1/2" (according to ANSI 150 lbs)
- N 2 = Gas outlet DN 65, 4 bolt (according to DIN EN 1092 PN 10)
Gas outlet 2 1/2" (according to ANSI 150 lbs)
- u_B = Connection for service liquid G 1
- u_c = Connection for cavitation protection G 1/4
- u_e = Connection for drain G 1/2
- u_{se} = Connection for dirt drain G 1/2
- u_L = Connection for air cock G 3/4
- u_m = Connection for pressure gauge G 3/8 (Grey cast iron)
Connection for pressure gauge G 3/4 (Stainless steel)
- u_{m1} = Connection for drainage valve or liquid level sensor G 3/8 (grey cast iron)
Connection for drainage valve or liquid level sensor G 3/4 (stainless steel)

	execution	a [mm]	f_1 [mm]	m_1 [mm]	m_2 [mm]	o_3 [mm]	approx. weight [kg]
LPH 65320	mechanical seal	500	134	640	580	920	200
	gland packing		223			1009	
LPH 65327	mechanical seal	566	134	706	646	986	215
	gland packing		223			1075	

SIHI LPH-X

LPH 65320, LPH 65327

with single mechanical seal, gland packing and with side-mounted liquid separator



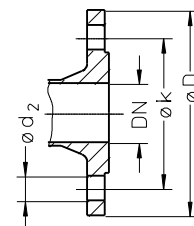
- N 1 = Gas inlet DN 65, 4 bolt
- N 2 = Gas outlet DN 100
- U_A = Liquid drain DN 50
- U_c = Connection for cavitation protection G ¼
- U_{e1} = Connection for drain DN 25
- U_F = Connection for make-up liquid DN 25
- U_{F1} = Connection for liquid level indicator G ½
- U_{m2} = Connection for pressure gauge G ¼
- U_t = Connection for thermometer G ½

	E-Motor 50 Hz			base-plate	a [mm]	b ₂ [mm]	c [mm]	e ₁ [mm]	e ₂ [mm]	l [mm]	l ₁ [mm]	o ₁ * [mm]	v [mm]	w ₁ [mm]	approx. weight [kg]
	size	IP 55	kW EEEx e II T3												
LPH 65320	160 L	15.0	-	S487	500	610	35	940	550	1420	590	588	240	984	473
	180 M	-	15.0									715			553
LPH 65327	180 M	18.5	-	S388	566	540	40	1060	490	1600	656	712	270	949	512
	180 L	-	17.5									715			576

* Dimensions dependent upon motor supplier

** Dimension +89mm at execution with gland packing

Flange dimensions according to DIN EN 1092 PN 10 [mm]				
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



Make-up Liquid Consumption in [m³/h] dependent upon suction pressure, speed, drive type and temperature difference.

Suction pressure in [mbar]		33				120				200				400							
Pump type	Speed [1/min]	KB				FB	KB				FB	KB				FB					
		Temperature Difference [°C]					Temperature Difference [°C]					Temperature Difference [°C]									
		20	10	5	2		20	10	5	2		20	10	5	2		20	10	5	2	
LPH 65320	1150	0.36	0.62	0.97	1.49	2.3	0.35	0.60	0.93	1.40	2.1	0.35	0.60	0.92	1.36	2.0	0.34	0.57	0.85	1.22	1.7
	1450	0.45	0.75	1.13	1.63		0.48	0.78	1.14	1.57		0.48	0.78	1.12	1.52		0.47	0.73	1.02	1.34	
	1750	0.60	0.95	1.35	1.79		0.63	0.97	1.33	1.70		0.64	0.96	1.3	1.65		0.60	0.88	1.16	1.43	
LPH 65327	1150	0.38	0.65	1.01	1.52	2.3	0.40	0.67	1.01	1.47	2.1	0.41	0.68	1.01	1.44	2.0	0.41	0.66	0.95	1.29	1.7
	1450	0.49	0.80	1.19	1.68		0.54	0.86	1.22	1.63		0.55	0.87	1.21	1.59		0.53	0.81	1.10	1.40	
	1750	0.66	1.02	1.41	1.84		0.70	1.05	1.4	1.75		0.70	1.04	1.36	1.69		0.67	0.97	1.23	1.48	

FB = Total service liquid flow rate on once-through system

KB = Flow of make-up water when combined with partial recirculation liquid at a temperature of 20°C, 10°C, 5°C, 2°C, warmer than make-up water.

Product Code – order details

Range + Size	Hydraulic + Bearings	Shaft Seal	Materials	Casing Sealing
	<ul style="list-style-type: none"> A• 1. Hydraulic •B two greased roller bearings 	041 Gland Packing AGE Mechanical Seal type SIHI FK, O-Rings Butadiene rubber AG1 Mechanical Seal type SIHI FK, O-Rings Viton	0B Main parts from grey cast iron and impellers in steel 4B Main parts out of stainless steel	1 O-Ring Sealing
LPH 65320 65327	AB	041, AGE AG1	0B 4B	1

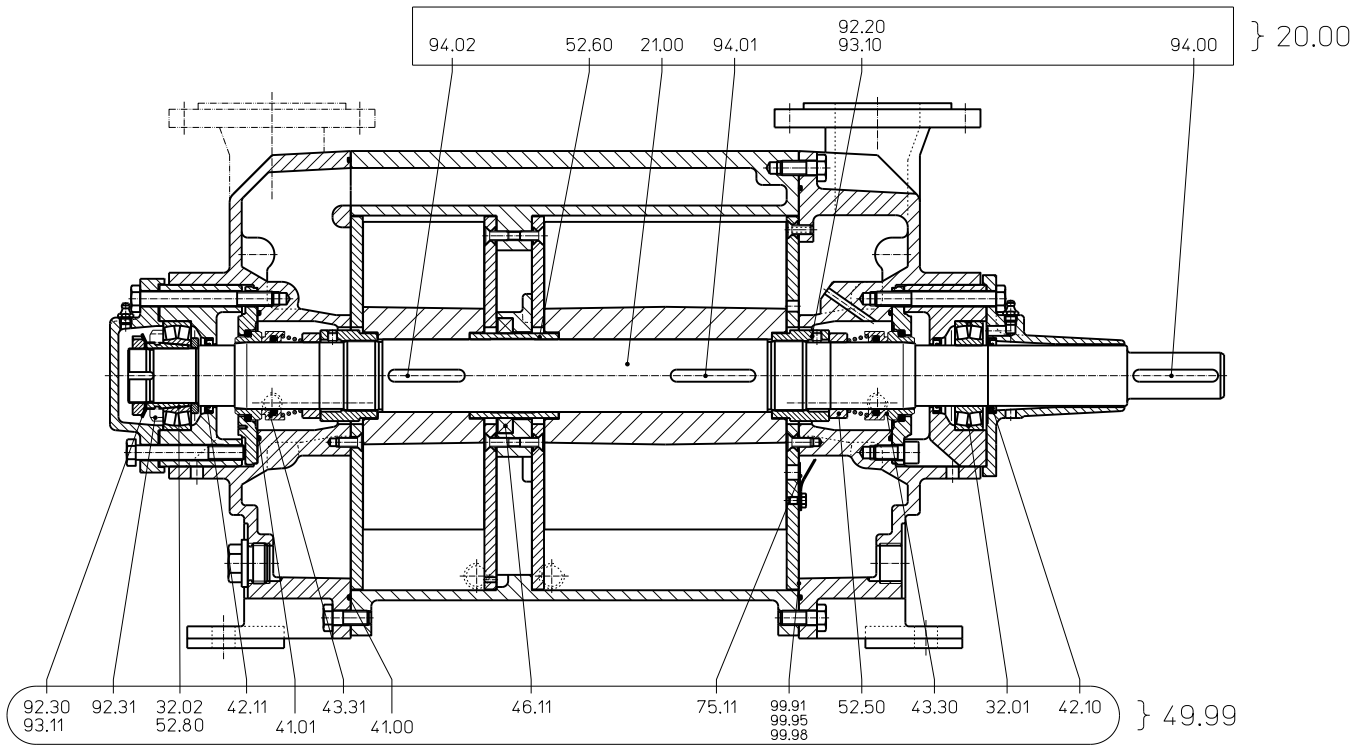
Motor Selection

For our products we offer a lot of different motor types. To identify the right motor please specify frequency, voltage and protection class.

Example of an Order:

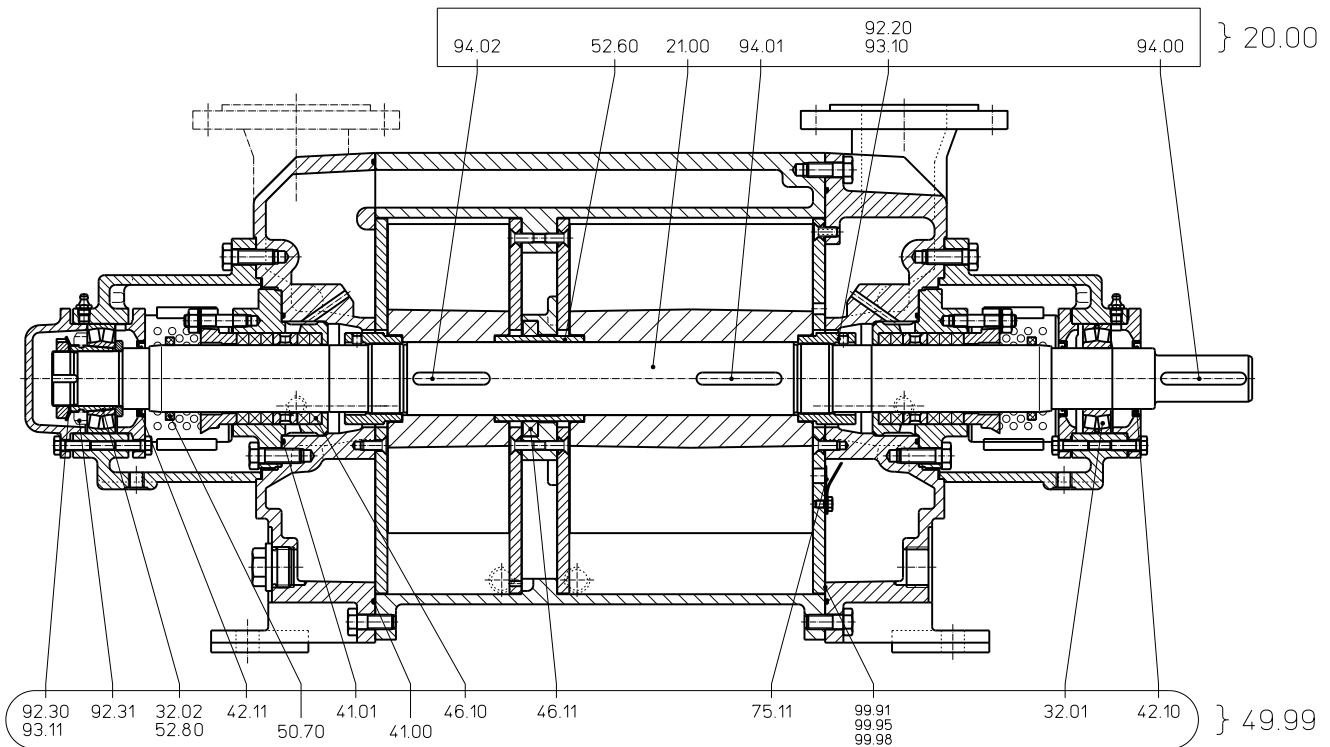
LPHX 65327 AB AGE 0B 1 with 18.5 kW AC motor, 50 Hz, 400V Δ, IP55

Spare Parts Order Number



Material Design 0B			
Group	Spare parts kit	LPH 65320	LPH 65327
20.00	Shaft	65 007 930	65 007 771
49.99	Basic repair AGE	65 007 772	

Material Design 4B			
Group	Spare parts kit	LPH 65320	LPH 65327
20.00	Shaft	65 007 931	65 007 540
49.99	Basic repair AG1	65 007 886	



Material Design 0B			
Group	Spare parts kit	LPH 65320	LPH 65327
20.00	Shaft	65 007 896	65 007 932
49.99	Basic repair 041	65 007 897	

Accessories

Recommended Accessory	Material Execution		LPH 65320	LPH 65327
Top Mounted Liquid Separator		Type / Weight	XBa 5541 / 37 kg	
Top mounted separator	1.4571	SIHI-Part No.	43 253 600	
Service liquid pipework, standard execution	Steel 1.4571	SIHI-Part No.	35 003 119 35 003 120	35 003 121 35 003 122
Service liquid pipework, thermostatic control 24V	Steel + Brass 1.4571 + Brass	SIHI-Part No.	20 073 220 20 073 221	
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 039 166 20 039 167	
Side Mounted Liquid Separator		Type / Weight	XBp 0912 / 51 kg	
Side mounted separator	1.4571	SIHI-Part No.	35 000 535	
Service liquid pipework, standard execution	Steel 1.4571	SIHI-Part No.	35 003 112 35 003 113	35 003 115 35 003 117
Service liquid pipework, thermostatic control 24V	Steel + Brass 1.4571 + Brass	SIHI-Part No.	20 073 312 20 073 313	
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 054 090 20 036 462	
Pressure pipework (bend)	1.0254 1.4571	SIHI-Part No.	35 003 224 35 003 226	
Liquid level indicator	Brass + Plexiglas 1.4571 + Plexiglas	SIHI-Part No.	43 014 912 43 040 384	
Sterling SIHI - Gas Ejector		Type / Weight	GPV 6011 / 47 kg	GPV 6012 / 47 kg
at service liquid temperature 15 °C		Type / Weight	GPV 6311 / 48 kg	GPV 6312 / 48 kg
at service liquid temperature 30 °C				
Sterling SIHI - Non Return Ball Valve				
Intermediate flange execution XCk 65	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	20 072 794 / 5.6 kg 20 072 793 / 5.6 kg 20 029 500 / 15.8 kg	
Flange execution with glass cylinder XCk 656	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	20 072 851 / 10.0 kg 20 072 852 / 10.0 kg 20 072 850 / 10.0 kg	
Drain Valve + Double nipple				
XCg 015	Steel + Teflon	SIHI-Part No.	43 166 248 + 43 013 086	
XCg 015	1.4571 + Teflon		43 014 547 + 43 013 097	
Air Inlet Valve + Double nipple				
	Brass 1.4408	SIHI-Part No.	43 045 945 + 43 013 090 43 053 736 + 43 013 091	
Motor standard execution IP 55		Size Power Weight	160 L 15.0 kW 85 kg	180 M 18.5 kW 113 kg
Coupling for motor IP 55 Pump side Motor side		Type / Weight SIHI-Part No.	B 125 / 6.2 kg 43 021 460 43 021 464	B 125 / 6.2 kg 43 021 460 43 021 462
Coupling guard ¹⁾	Steel	SIHI-Part No.	43 042 306	
Coupling guard ²⁾	Steel	SIHI-Part No.	43 042 304	
Motor in EEx e II T3 execution		Size Power Weight	180 M 15.0 kW 165 kg	180 L 17.5 kW 177 kg
Coupling for motor EEx e II T3 Pump side Motor side		Type / Weight SIHI-Part No.	BDS 135 / 6.6 kg 43 111 062 43 090 912	
Coupling guard ¹⁾	Brass	SIHI-Part No.	43 042 307	
Coupling guard ²⁾	Brass	SIHI-Part No.	43 042 305	
Baseplate		Type / Weight SIHI-Part No.	S 487 / 105 kg 43 040 642	S 388 / 95 kg 43 040 969

¹⁾ execution with mechanical seal

²⁾ execution with gland packing

Designs subject to change without prior notice.

Flowserve SIHI Germany GmbH

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