

LOH, LPHC, LPH series

Two-stage Liquid Vacuum Pumps and Compressors



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LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors



Pressure Range: 80 to 1013 mbar
Suction Volume: 2.7 to 6.1 m³/h

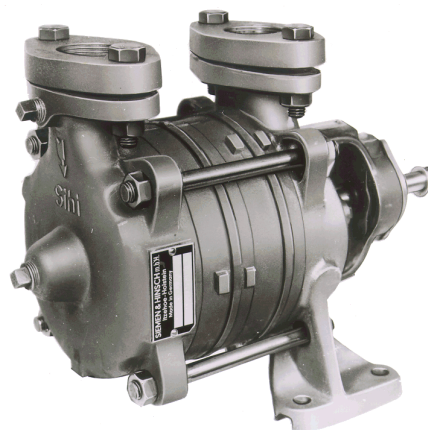
CONSTRUCTION

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

- Capable of handling almost all gases and vapours
- Near isothermal compression
- Oil free, with no internal lubrication
- Low maintenance and safe operation
- Low noise and almost vibration free
- Available in a wide range of materials
- Broad range of applications
- Rotating metallic parts are non contacting to minimise wear
- ATEX compliance

The LOH 05501 operates according to side channel principle and therefore the pump has the advantage, besides the above-mentioned features to handle large quantities of entrained liquid.

Sterling SIHI liquid ring vacuum pumps of the range LOH 05501 are two-stage pumps. They can be used as compressors up to a compression pressure of 2 bar without any modification. (See the Technical Catalogue - Liquid Ring Compressors)



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 service liquid can simply be re-circulated.

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

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.

Typical application areas include:

- Chemical and pharmaceutical industry for distillation, drying and degassing
- Electronic industry for impregnation and drying
- Plastics & Rubber industry for degassing etc.

GENERAL TECHNICAL DATA

Pump Type	Units	LOH 05501		
Speed	rpm	1150	1450	1700
Maximum overpressure on compression	bar		2	
Maximum permissible pressure difference	bar		3	
Hydraulic test pressure (overpressure)	bar		4	
Moment of inertia of rotating parts of pump and water content	kg · m²		0.0033	
Noise level at 80 mbar suction pressure	dB (A)	64	65	66
Minimum permissible pulley diameter for V belt drive	mm		100	
Maximum gas temperature	°C		200	
	°C		100	
Service liquid:				
Maximum permissible temperature	°C		100	
Maximum viscosity	mm²/s		90	
Maximum density	kg/m³		1200	
Liquid capacity up to middle of shaft	litre		1	
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.

LOH 05501

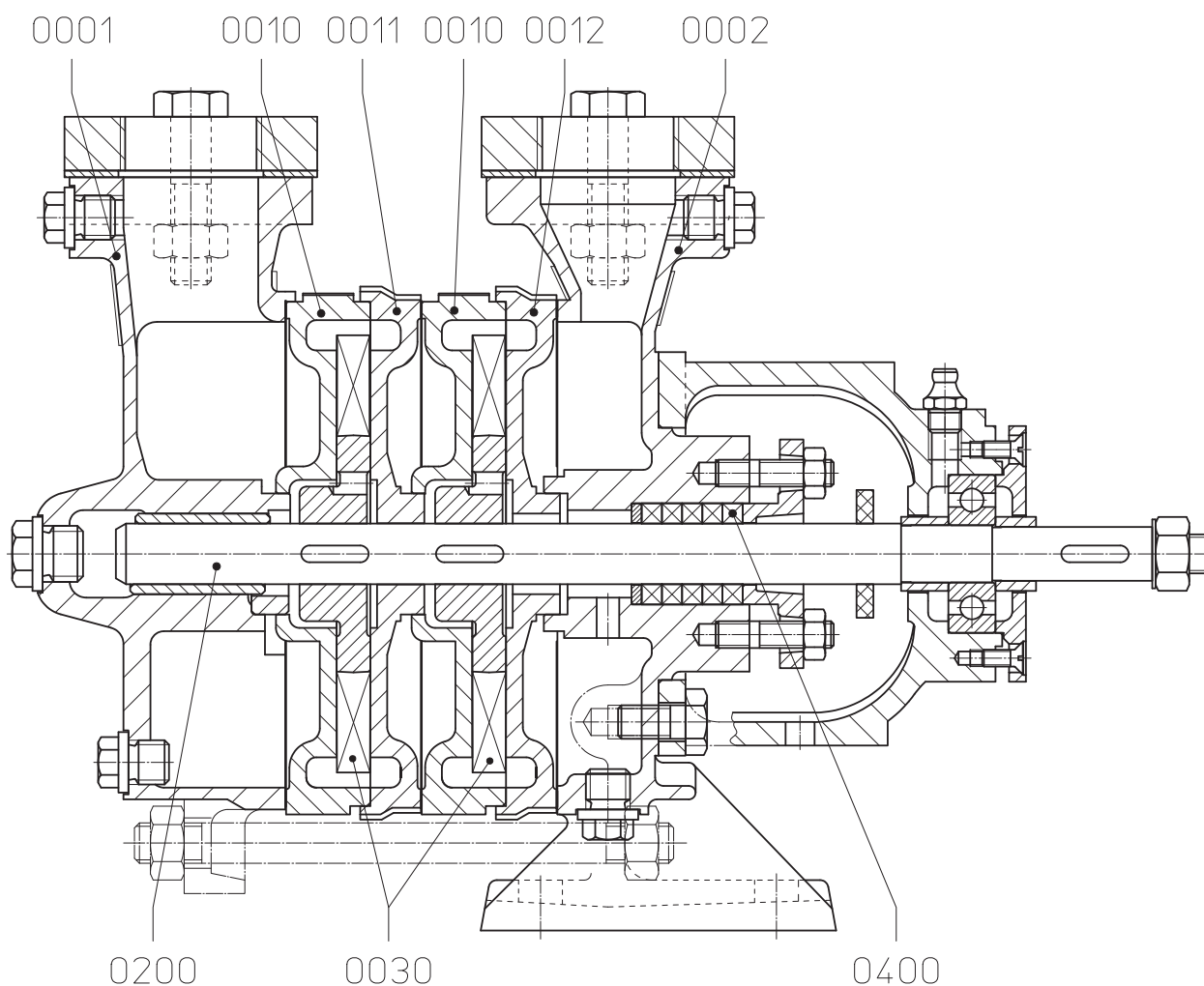
Two-stage Liquid Vacuum Pumps and Compressors



Materials

Position Number	Component	Materials	
		01	32
0001, 0002	Casing	0.6025	2.1050.01
0010, 0011, 0012	Intermediate pieces		G Sn Bz 16
0030	Impeller	2.0550	2.1052.01
0200	Shaft	1.4021	1.4401
0400	Gland Packing	RAMIE	

Cut-away diagram LOH 05501

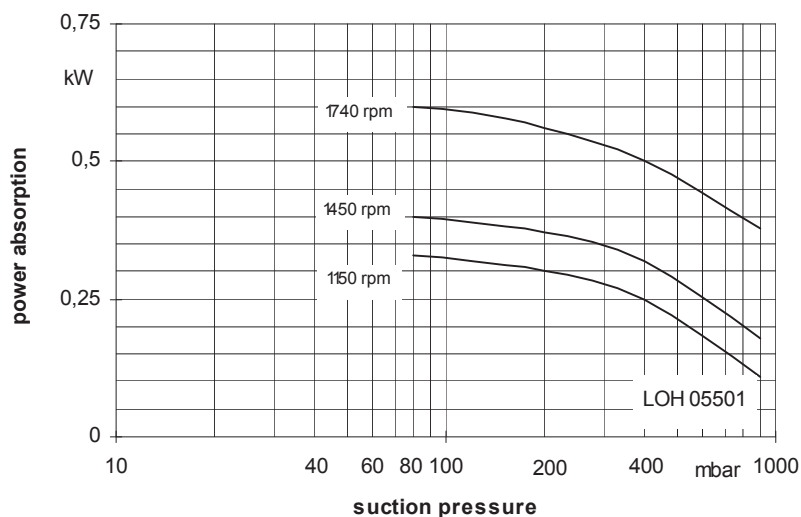
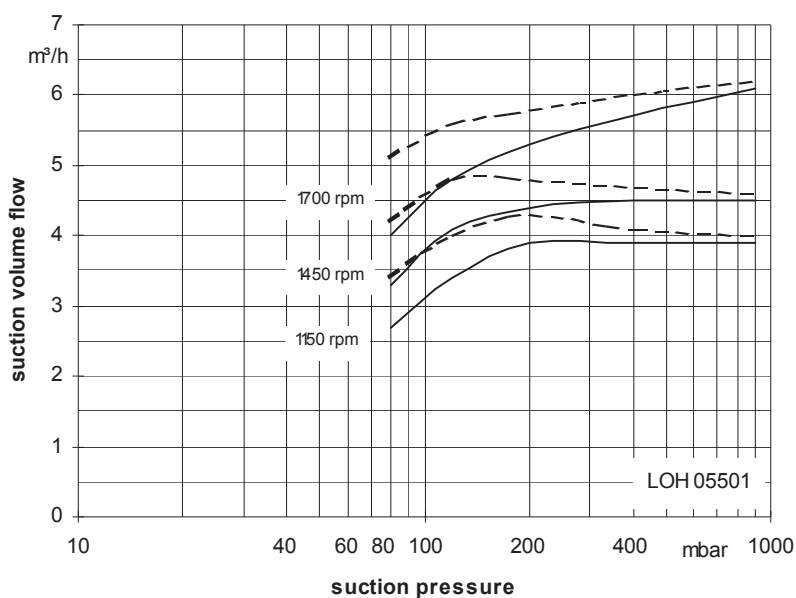


LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors



Performance Characteristics LOH 05501



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%.

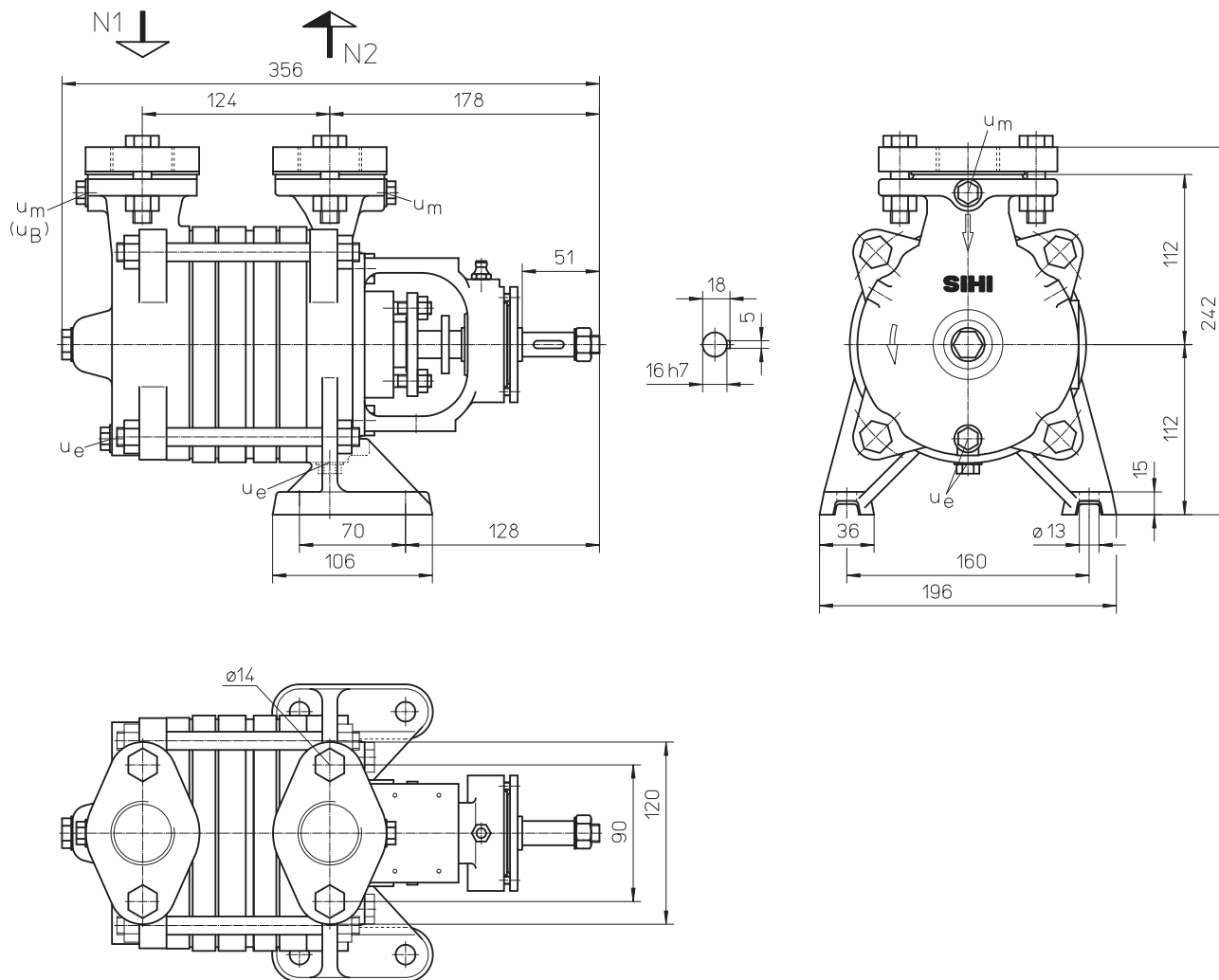
The maximum consumption of make up water occurs at the lowest suction pressure.

LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors



Dimensions LOH 05501



- N 1 = gas inlet G 1 ¼
- N 2 = gas outlet G 1 ¼
- u_e = connection for drain G ¼
- u_m = connection for pressure gauge G ¼

weight: 17 kg

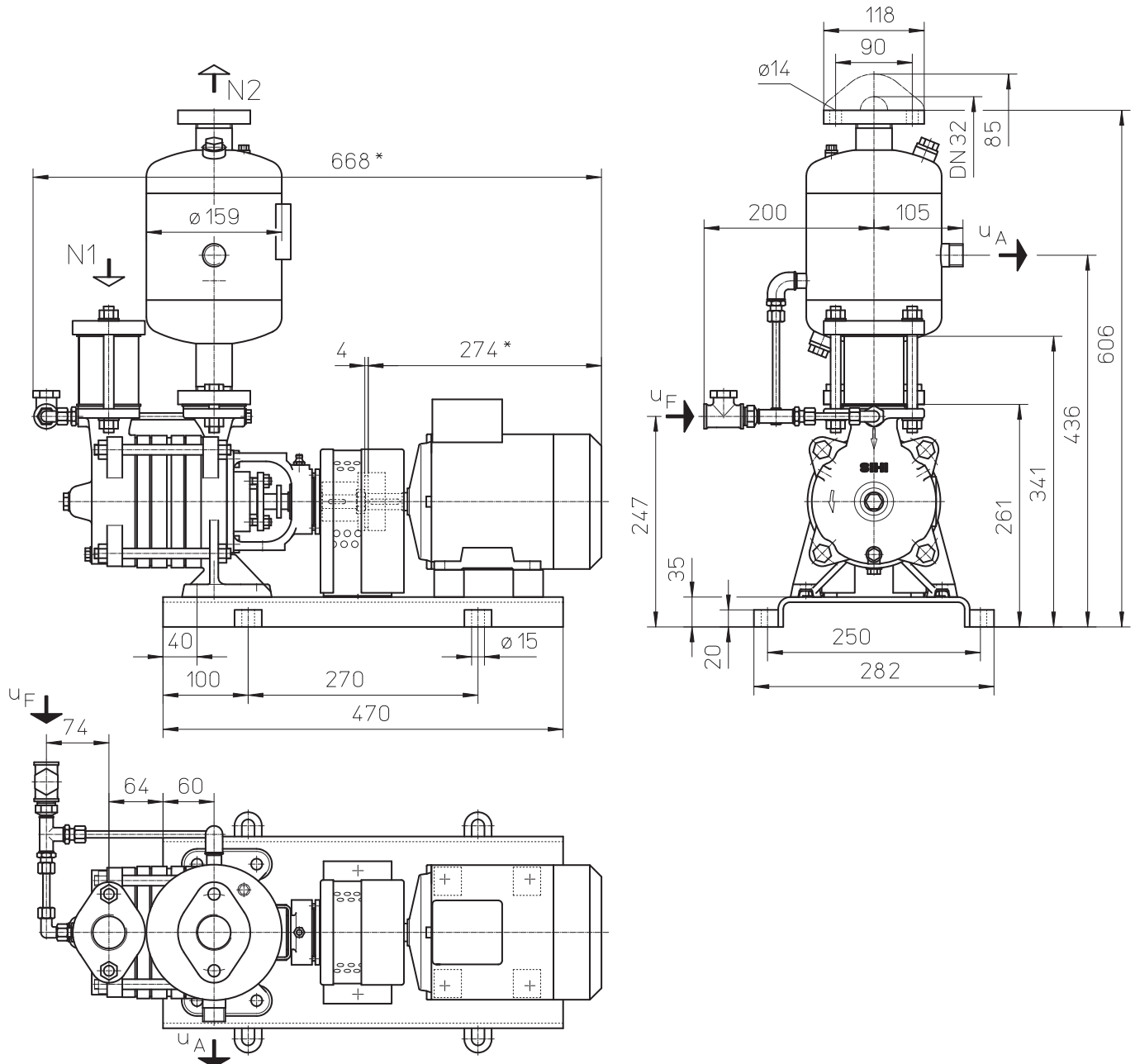
The service liquid is fed into the suction line of the pump.



LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors

LOH 05501 with top-mounted liquid separator



- N 1 = gas inlet G 1 ¼
N 2 = gas outlet DN 32
u_A = connection for liquid drain G ¾
u_F = connection for fresh liquid G ½

oval flanges according to DIN 2558 PN 6

	electric motor 50 Hz			approx. weight [kg]
	size	IP 55	EEEx e II T3	
LOH 05501	80	0.55	-	42
	80	-	0.55	
	80	-	0.75	44

* dimensions dependent upon motor supplier

LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors



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

Suction pressure in [mbar]		80				120				200				400			
Pump Type	Speed [rpm]	KB			FB	KB			FB	KB			FB	KB			FB
		Temperature Difference [°C]				Temperature Difference [°C]				Temperature Difference [°C]				Temperature Difference [°C]			
		10	5	2		10	5	2		10	5	2		10	5	2	
LOH 05501	1150	0.02	0.04	0.08	0.2	0.02	0.04	0.08	0.2	0.02	0.04	0.08	0.2	0.02	0.03	0.07	0.17
	1450	0.03	0.05	0.09		0.03	0.05	0.09		0.03	0.05	0.09		0.02	0.04	0.08	
	1750	0.04	0.07	0.11		0.04	0.07	0.11		0.04	0.06	0.11		0.03	0.06	0.09	

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 10 °C, 5 °C, 2 °C warmer than make-up water.

Product code - order details

Range + Size	Bearings + Sense of rotation	Shaft Seal	Materials	Casing Sealing
	A• One sleeve bearing, one greased roller bearing •N One shaft end, clockwise rotating	001 Gland Packing, standard design	01 Main parts of cast iron 32 Main parts of bronze	0 Liquid seal
LOH 05501	AN	001	01, 32	0

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:

LOHE 05501 AN 001 01 0 with 0.55 kW AC motor, 50 Hz, 230V Δ, IP55

LOH 05501

Two-stage Liquid Vacuum Pumps and Compressors



Accessories

Recommended Accessory		Material Execution	LOH 05501	
Top Mounted Liquid Separator		Type / Weight	XBa 342 / 5 kg	
Top mounted separator	Steel, galvanised	SIHI-Part No.	35 000 377	
Service liquid pipework	Steel, galvanised	SIHI-Part No.	20 054 547	
Sterling SIHI – Non Return Ball valve				
Intermediate flange execution XCK 32	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	20 072 744 / 1.2 kg 20 072 769 / 1.3 kg 20 029 488 / 3.0 kg	
Flange execution with glass cylinder XCK 324	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	20 072 832 / 7.0 kg 20 072 833 / 7.0 kg 20 072 831 / 7.0 kg	
Motor				
Motor Standard execution IP 55		Size Power Weight	80 0.55 kW 9 kg	
Coupling for Motor IP 55 Pump side Motor side		Type / Weight SIHI-Part No. SIHI-Part No.	B 68 / 0.6 kg 43 040 236 43 021 404	
Coupling guard	Steel	SIHI-Part No.	43 042 205	
Motor				
Motor in EEx e II T3 execution		Size Power Weight	80 0.55 kW 9 kg	80 0.75 kW 11 kg
Coupling for Motor EEx e II T3 Pump side Motor side		Type / Weight SIHI-Part No. SIHI-Part No.	BDS 76 / 0.8 kg 43 040 236 43 025 690	
Coupling guard	Brass	SIHI-Part No.	43 042 206	
Baseplate	Steel	Type / Weight SIHI-Part No.	S 005 / 7 kg 43 040 645	

LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors



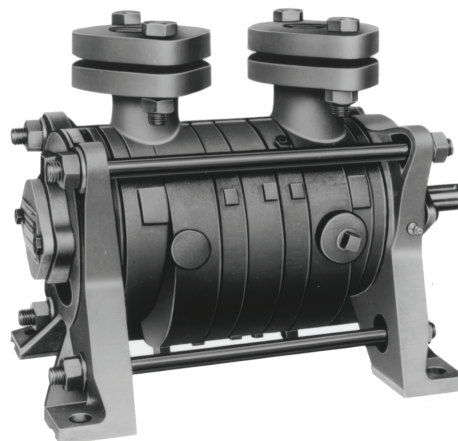
Pressure range: 150 to 1013 mbar
Suction volume flow: 7 to 58 m³/h

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 gases and vapours
- non-polluting due to nearly isothermal compression
- oil-free, as no lubrication in the working chamber
- small quantities of entrained liquid can be handled
- easy maintenance and reliable
- Low noise and nearly free from vibration
- wide choice of material, therefore applicable nearly everywhere
- incorporated central drain
- no metallic contact of the rotating parts

The Sterling SIHI liquid ring vacuum pumps LOH 20103 and LOH 20107 are single-stage ones. They can be applied without modification as compressors up to a compression pressure of 1 bar (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 150 to 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 operation the pump must be continuously supplied with service liquid, normally water, in order to eliminate the heat resulting from gas compression and in order 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).
Reuse of the service liquid is possible.

The direction of rotation of the pump is clockwise when looking from the drive on the pump.

GENERAL TECHNICAL DATA

	Unit	LOH 20103	LOH 20107
Speed	50 Hz 60 Hz	2800 ¹⁾ 3400	2800 ¹⁾ 3400
Max. compression over pressure	bar	1	
Max. admissible pressure difference	bar	1,5	
Hydraulic test (over pressure)	bar	3	
Moment of inertial of the rotating pump parts and of the water filling	kg · m²	0,0033	0,005
Sound pressure level at a suction pressure of 200 mbar	dB (A)	66	67
Min. pulley diameter permissible in case of V-belt drive	mm	80	
Max. gas temperature	°C	240	
	dry saturated	120	
Service liquid			
max. admissible temperature	°C	100	
max. viscosity	mm²/s	90	
max. density	kg/m³	1200	
volume up to shaft level	liter	0,9	1,0
Max. flow resistance of heat exchanger	bar	0,2	

The combination of several limiting values is not admissible.

¹⁾ normal speed

LOH 20103, 20107

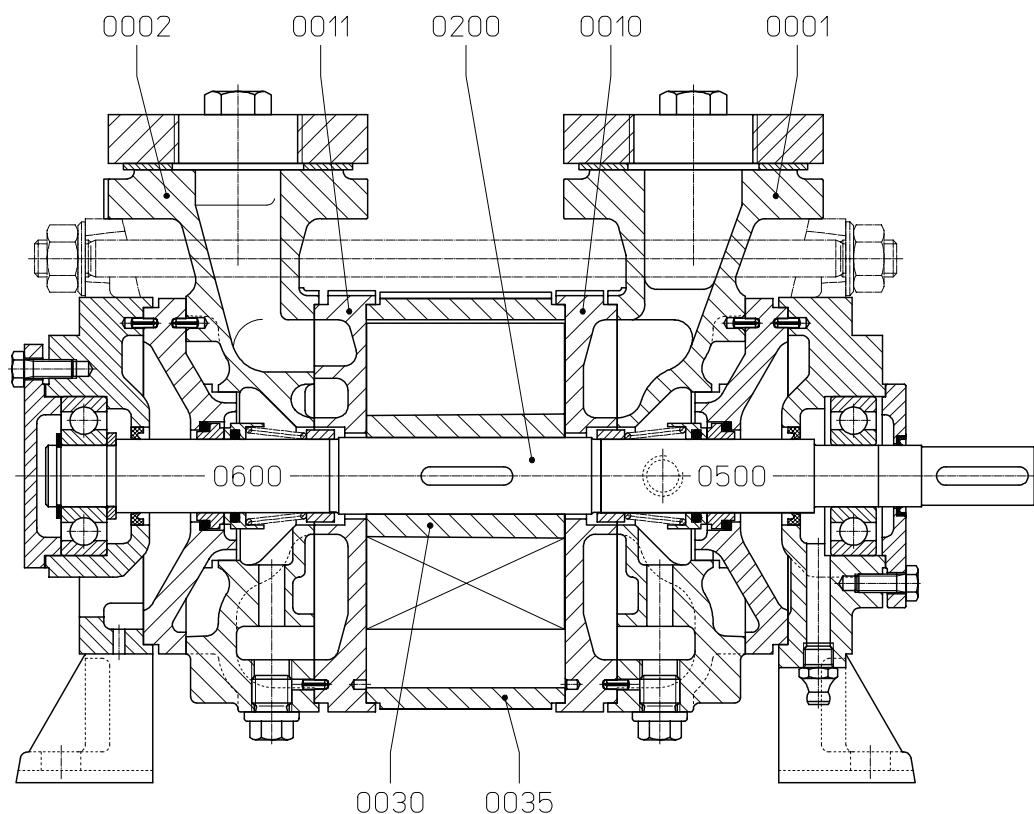
Two-stage Liquid Vacuum Pumps and Compressors



Material design

Item	COMPONENTS	MATERIAL DESIGN		
		01	02	42
0001, 0002	casing	0.6025		1.4408
0010, 0011	intermediate piece	0.6025		1.4408
0030	vane wheel impeller	RG 9	1.4027.05	1.4517
0035	central body	1.0570		1.4581
0200	shaft	1.4021		1.4401
0500, 0600	mechanical seal	Cr-steel / carbon / Perbunan		Cr Ni Mo-steel / carbon / Viton

Sectional drawing LOH 20103, LOH 20107

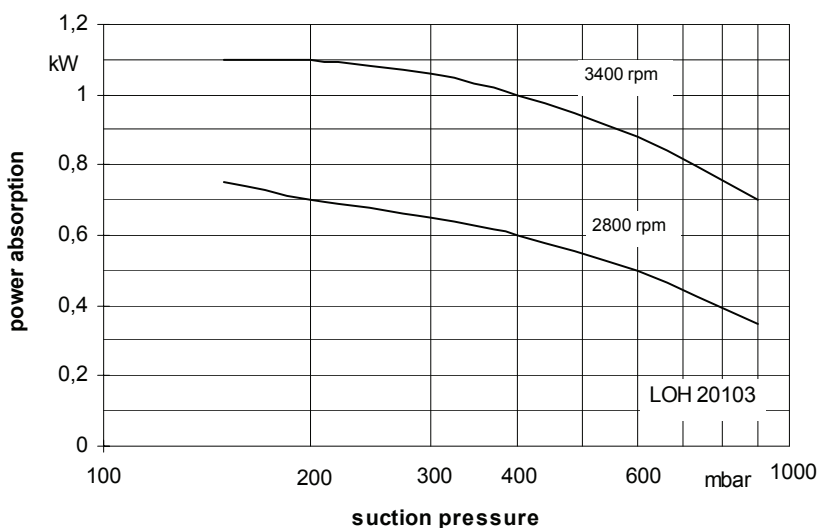
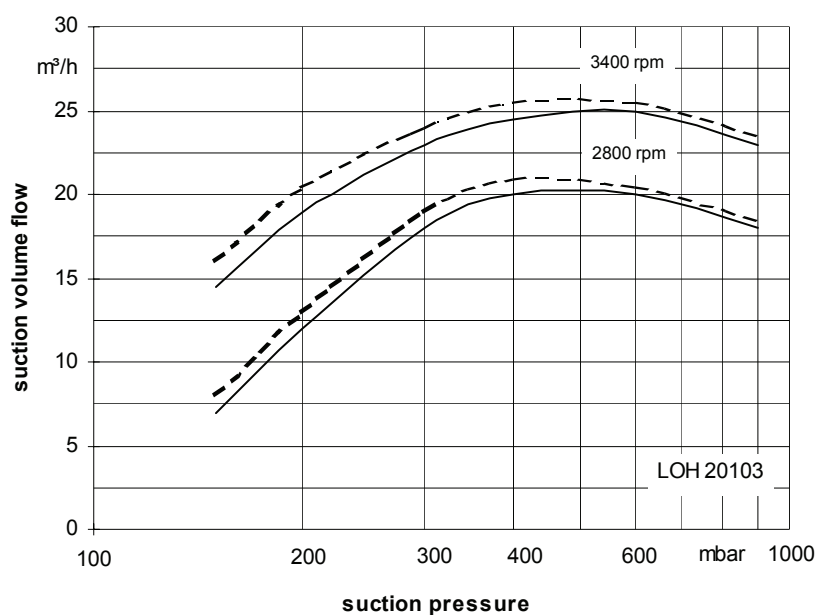


LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LOH 20103



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% and of the power absorption 5%.

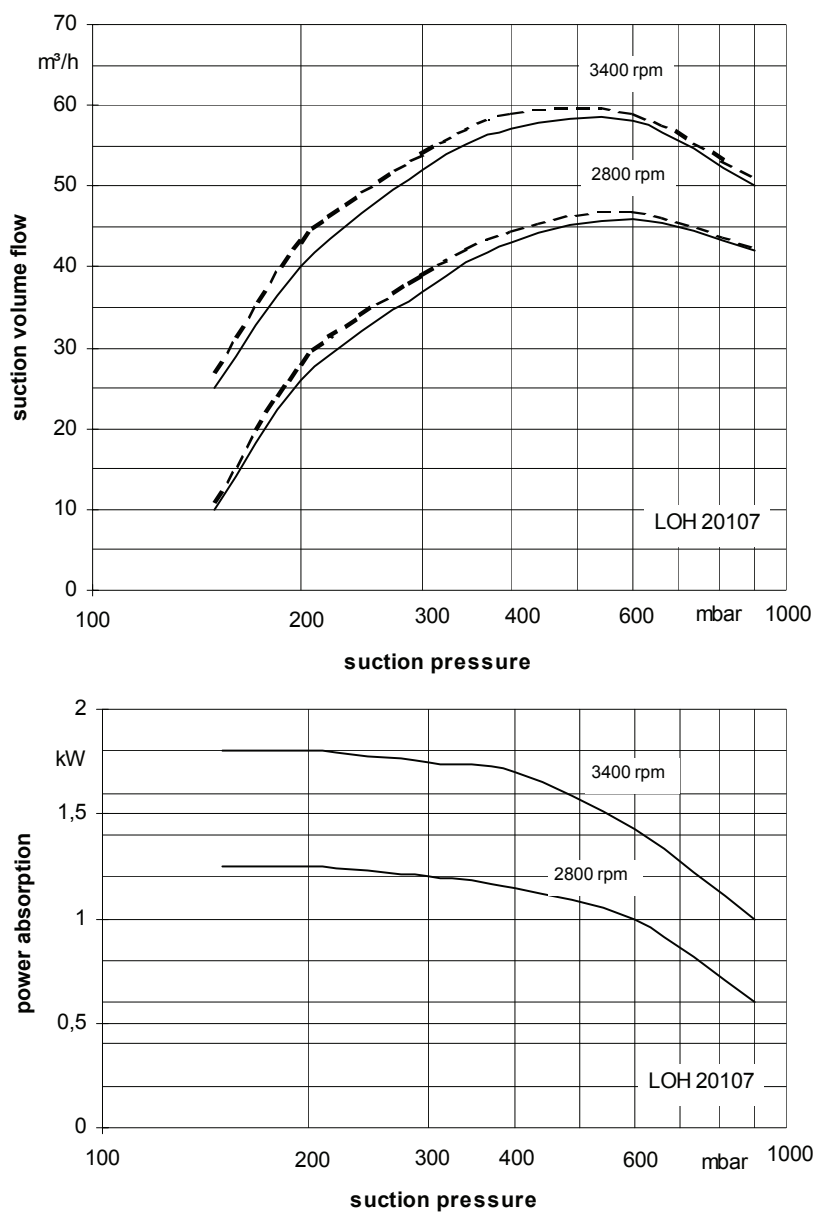
Max. fresh requirement at lowest suction pressure

LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LOH 20107



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% and of the power absorption 5%.

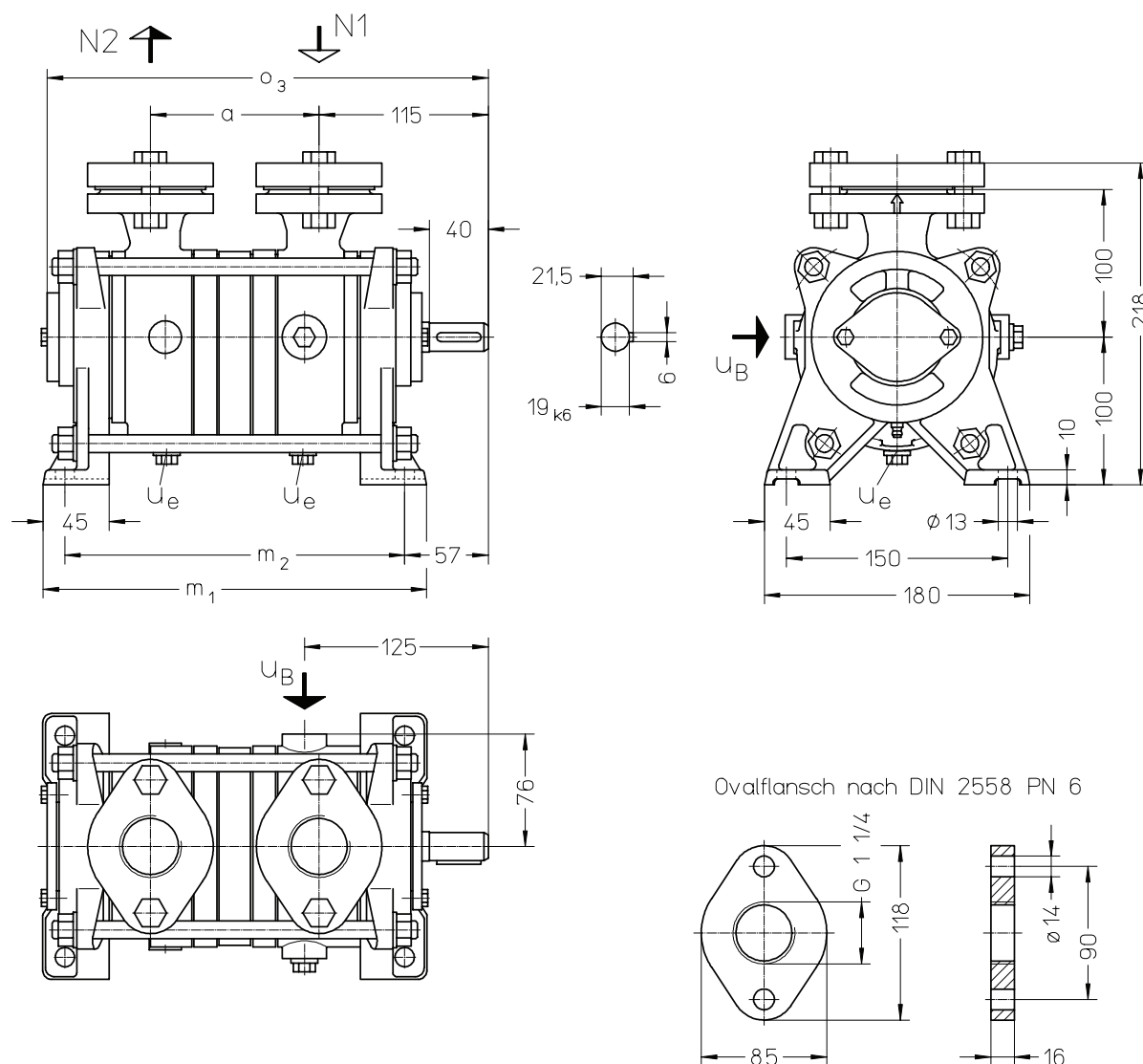
Max. fresh water requirement at lowest suction pressure.



LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors

Dimension table LOH 20103, LOH 20107



	a	m_1	m_2	o_3	weight abt. kg
LOH 20103	114	260	230	299	20
LOH 20107	149	295	265	334	21

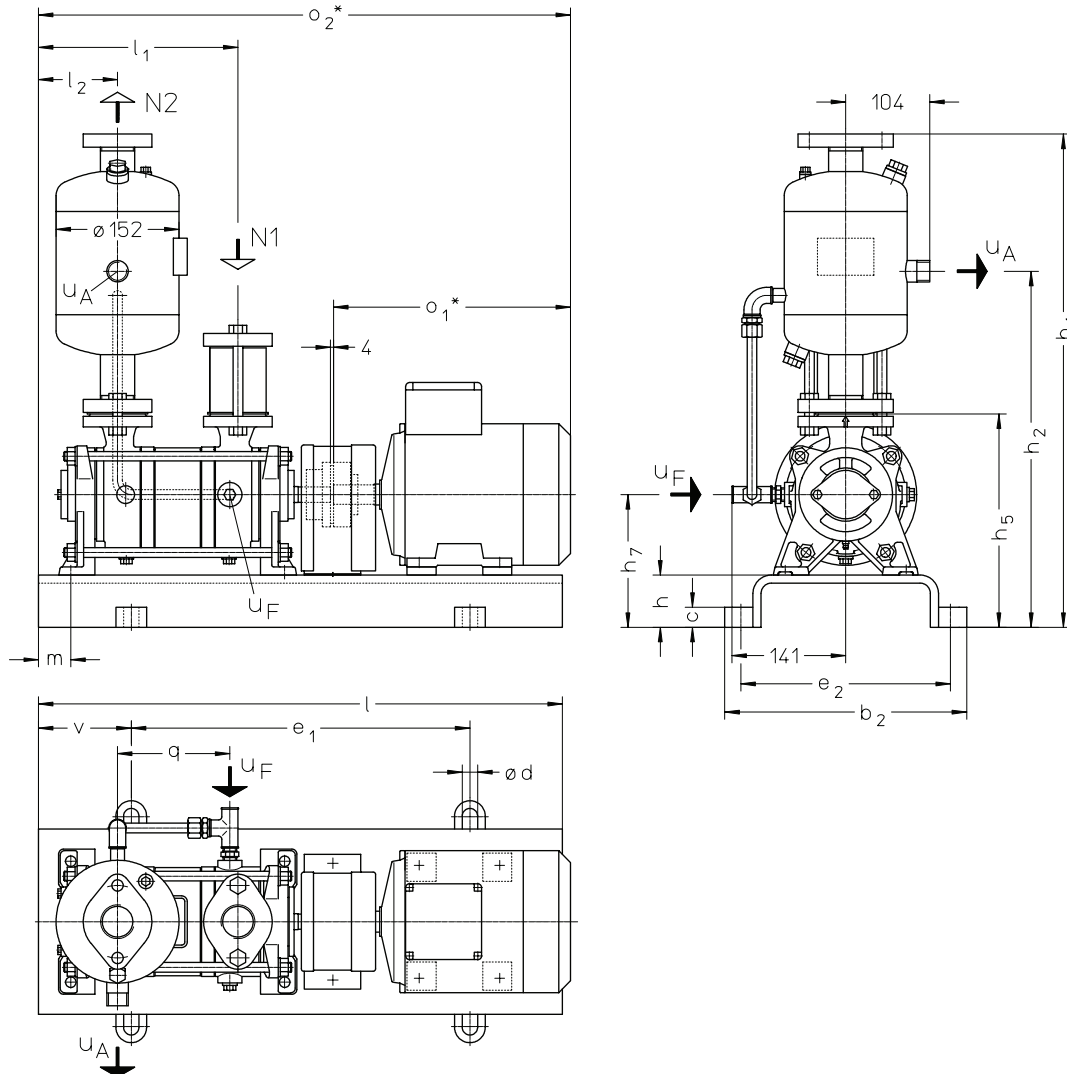
- $N 1$ = gas inlet G $1 \frac{1}{4}$
 $N 2$ = gas outlet G $1 \frac{1}{4}$
 U_B = connection for service liquid G $\frac{3}{8}$
 U_e = drain connection G $\frac{1}{4}$



LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors

Arrangement drawing LOH 20103, LOH 20107 with overhead liquid separator



- N 1 = gas inlet G 1½
N 2 = gas outlet G 1½
u_A = connection for liquid drain G ¾
u_F = connection for fresh liquid G ¾

	electric motor 50 Hz kW			b ₂	c	d	e ₁	e ₂	h	h ₁	h ₂	h ₅	h ₇	l	l ₁	l ₂	m	o ₁ *	o ₂ *	q	v	weight abt. kg
	size	IP 55	EEExe II T3																			
LOH 20103	80a	0,75	-	317	20	15	350	285	35	612	412	235	135	570	212	98	40	274	605	104	110	45
	80b	1,1	-															272	603			
	80a	-	0,75																			
	80b	-	1,1																			
LOH 20107	80b	1,1	-	300	25	19	420	260	65	582	442	265	165	650	267	118	60	274	660	139	115	58
	80b	-	1,1															272	658			
	90S	1,5	-												247	98	40	332	698			61
	90S	-	1,5															294	660			
	90L	-	2															319	685			63

* dimensions dependent on motor make

LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors



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

suction pressure mbar		150					400					600					900				
pump type	speed rpm	KB				FB	KB				FB	KB				FB	KB				FB
		difference in temperature °C					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	
LOH 20103	2800	0,03	0,05	0,09	0,16	0,3	0,02	0,04	0,07	0,13	0,27	0,02	0,04	0,06	0,11	0,21	0,01	0,02	0,04	0,06	0,1
	3400	0,04	0,07	0,12	0,18		0,04	0,07	0,11	0,17		0,03	0,06	0,09	0,14		0,02	0,04	0,05	0,08	
LOH 20107	2800	0,05	0,08	0,13	0,21	0,35	0,04	0,07	0,11	0,17	0,27	0,04	0,06	0,09	0,14	0,21	0,02	0,03	0,05	0,07	0,1
	3400	0,06	0,11	0,16	0,24		0,06	0,09	0,14	0,20		0,05	0,08	0,11	0,16		0,03	0,05	0,06	0,08	

FB = fresh liquid service

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

Data regarding the pump size - order notes

series + size	hydraulics + bearings	shaft sealing	material design	casing seal
	B• 2 antifriction bearings •N 1 shaft end, clockwise	131 mechanical seal	01 main parts grey cast iron 02 as above, without non-ferrous parts 42 Main parts of stainless steel	0 liquid seal
LOH 20103 20107	BN	131	01. 02. 42	0

Design- Motor selection table

	designation	electric motor 50 Hz					
pump with free shaft end	01	motor enclosure IP 55			motor enclosure EEx e II T3		
pump with coupling pre-drilled at motor side	04	kW	size	designation	kW	size	designation
as above but with motor for example 1,1 kW three-phase motor (50 Hz, 230 VΔ) with 2800 rpm	e.g. GA	0,75	80 A	FA	0,75	80 A	FJ
		1,1	80 B	GA	1,1	80 B	GJ
		1,5	90 S	HA	1,5	90 S	HJ
					2	90 L	JJ

Example for ordering:

The construction size LOH 20103 BN 131 02 0 with 1,1 kW three-phase ac motor (50 Hz, 230 VΔ) 2800 rpm has the complete order number.:

LOH• 20103 BN 131 02 0 GA

If motors with the other voltage or 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.

LOH 20103, 20107

Two-stage Liquid Vacuum Pumps and Compressors



Accessories

Recommended accessories		LOH 20103	LOH 20107
Overhead liquid separator material design 130 / steel galvanized 172 / 1.4571 service liquid line material design 072 / St 37-0 172 / 1.4571	type weight SIHI part No.	XBa 342 5 kg 35 000 377 35 000 378	
	SIHI part No.	20 054 559 20 054 560	
Non-return valve material design 767 / GG-25+Perbunan 784 / 1.4408+Teflon	type/weight SIHI part No.	XCk 32 / 1,2 kg resp. 3,1 kg 20 072 744 20 029 488	
Motor in case of standard design IP 55 EEx e II T3	size power weight	80 A 0,75 kW 8 kg	80 B 1,1 kW 10 kg
	size power weight	80 B 1,1 kW 10 kg	90 S 1,5 kW 13 kg
	size power weight	80 A 0,75 kW 11 kg	80 B 1,1 kW 12 kg
	size power weight	80 B 1,1 kW 12 kg	90 S 1,5 kW 14 kg
	size power weight		90 L 2 kW 16 kg
Coupling for motor IP 55 pump side motor side (for motor 80 A and 80 B) motor side (for motor 90 S) for motor EEx e II T3 pump side motor side (for motor 80 A and 80 B) motor side (for motor 90 S and 90 L)	type / weight SIHI part No.	B 80 / 1,5 kg 43 021 409 43 021 420 43 039 231	
	type / weight SIHI part No.	BDS 88 / 2 kg 43 024 676 43 025 933 43 028 108	
contact safety device material design 076 / steel 345 / 2.0321	SIHI part No.	43 042 201 43 042 202	
base frame material design 081 / RSt 37-2	type / weight SIHI part No.	S 007 / 8 kg 43 040 647	S 210 / 19,3 kg 43 040 630

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

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



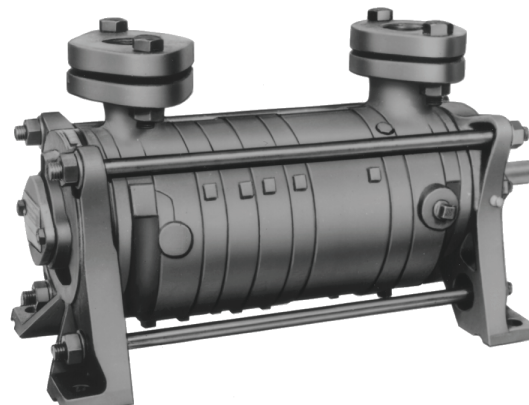
Pressure range: 33 to 1013 mbar
Suction volume flow: 11 to 60 m³/h

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 gases and vapours
- non-polluting due to 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 everywhere
- protection against cavitation as standard
- no metallic contact of the rotating parts

Die Sterling SIHI liquid ring vacuum pumps LOH 25003, LOH 25007 and LOH 25309 are two-stage ones. They can be applied without modification as compressors (see catalogue section liquid ring compressors).



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 to 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 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. The liquid can be separated from the gas in a liquid separator (see catalogue part accessories).

It is possible to reuse the service liquid.

The direction of rotation is clockwise, when looking from the drive on the pump.

GENERAL TECHNICAL DATA

Pump type	unit	LOH 25003	LOH 25007	LOH 25309
Speed 50 Hz	rpm	2800	2800	2900
60 Hz		3400	3400	3500
Max. compression over pressure	bar		2,6	
Max. admissible pressure difference	bar	2	2	1,2
Hydraulic test (over pressure)	bar		3	
Moment of inertial of the rotating pump parts and of the water filling	kg · m²	0,004	0,0065	0,00875
Sound pressure level		66	66	66
at suction pressure of 80 mbar	dB (A)	67	67	67
Min. Pulley diameter permissible in case of V-belt drive	mm	71 80	71 80	100
Max. gas temperature	dry °C saturated °C		200 100	
Service liquid				
max. admissible temperature	°C		100	
max. viscosity	mm²/s		90	
max. density	kg/m³		1200	
volume up to shaft level	Liter	1	1,2	1,4
Max. flow resistance of the heat exchanger	bar		0,2	

The combination of several limiting values is not admissible.

LOH 25003, 25007, 25309

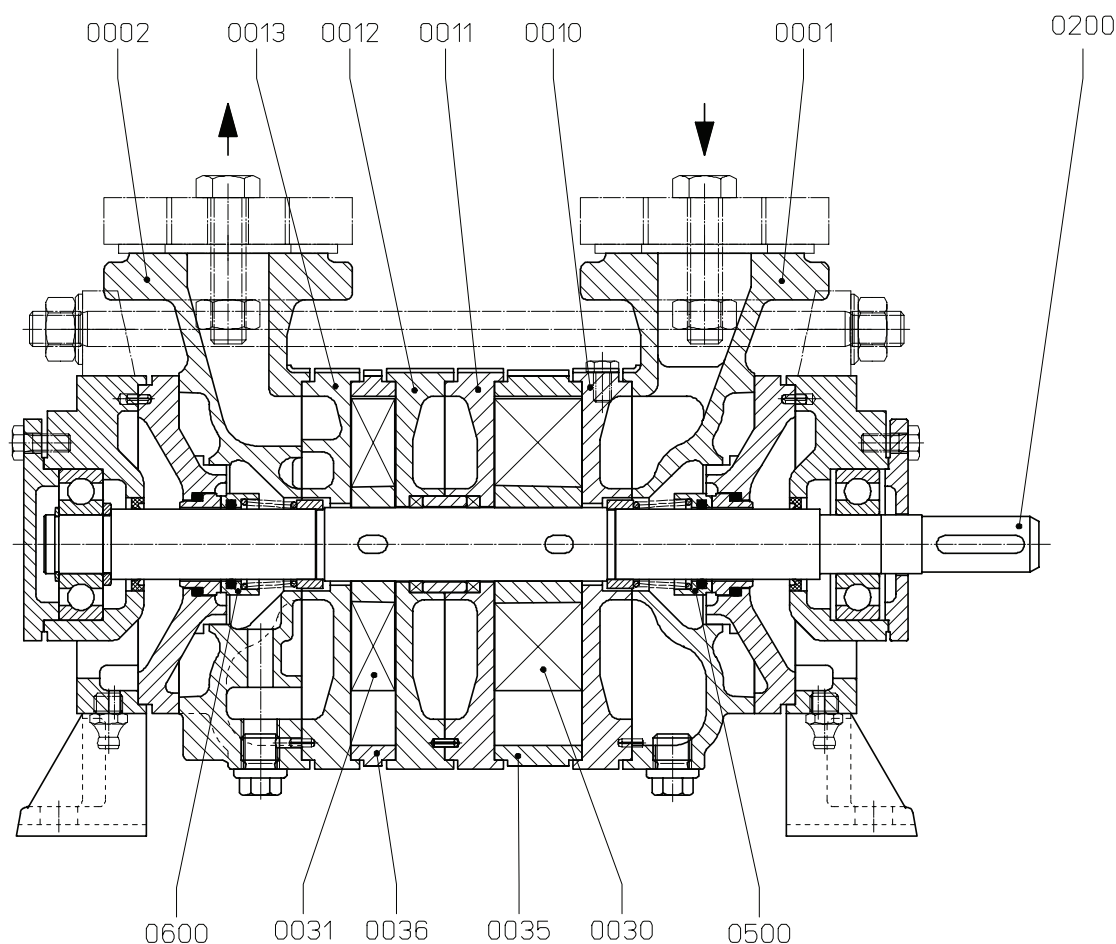
Two-stage Liquid Vacuum Pumps and Compressors



Material design

Item	COMPONENTS	MATERIAL DESIGN		
		01	02	42
0001, 0002	Casing	0.6025		1.4408
0035, 0036	Central body	0.6025 / 1.0570		
0010, 0011, 0012, 0013	Guide disk	0.6025		
0030, 0031	Vane wheel impeller	Rg9	1.4027.05	1.4517
0200	Shaft	1.4021		1.4401
0500, 0600	Mechanical seal	Cr Ni-steel / carbon / Perbunan		Cr Ni Mo-steel / carbon / Viton

Sectional drawing LOH 25003, LOH 25007, LOH 25309

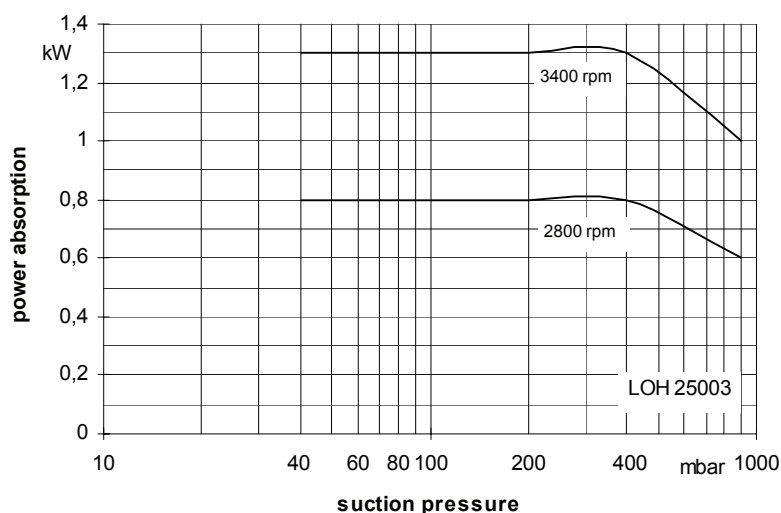
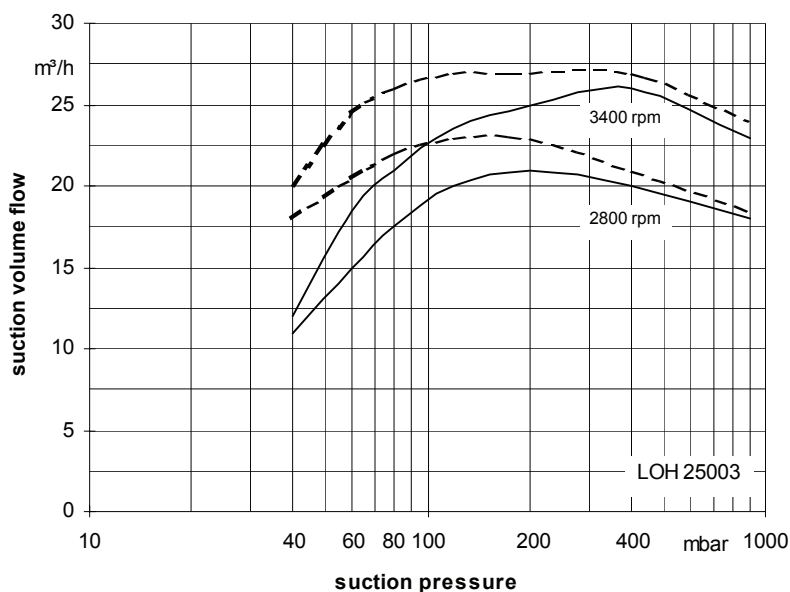


LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LOH 25003



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%

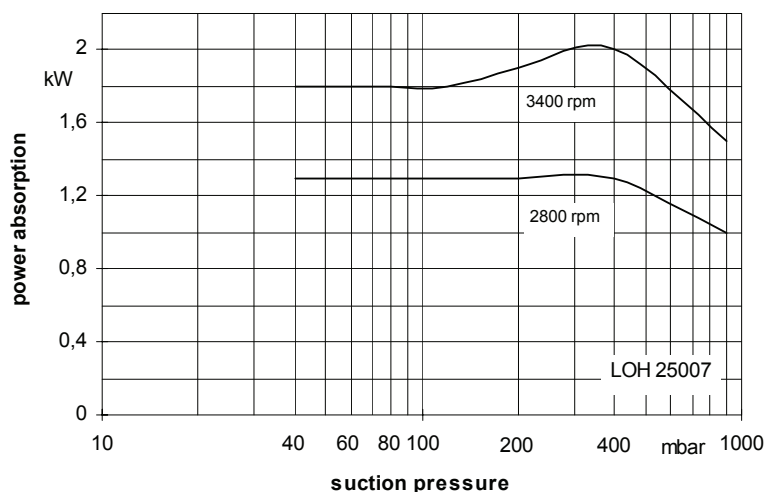
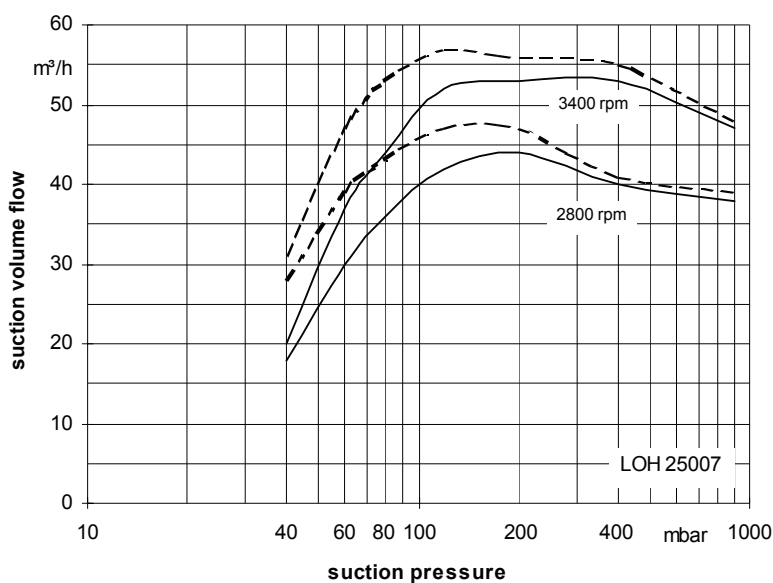
Max. fresh water need with the lowest suction pressure

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LOH 25007



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%

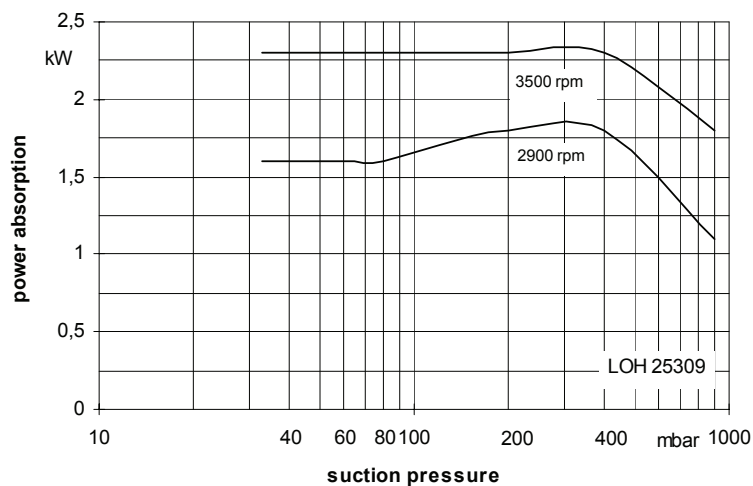
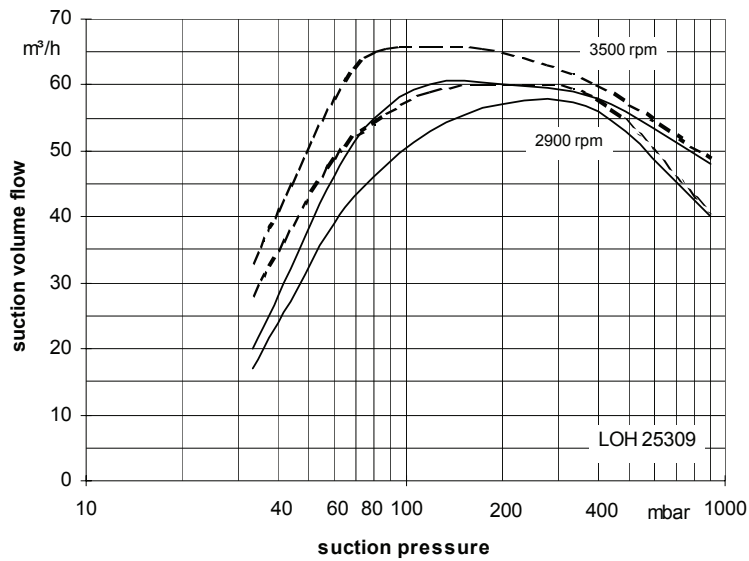
Max. fresh water need with the lowest suction pressure

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LOH 25309



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%

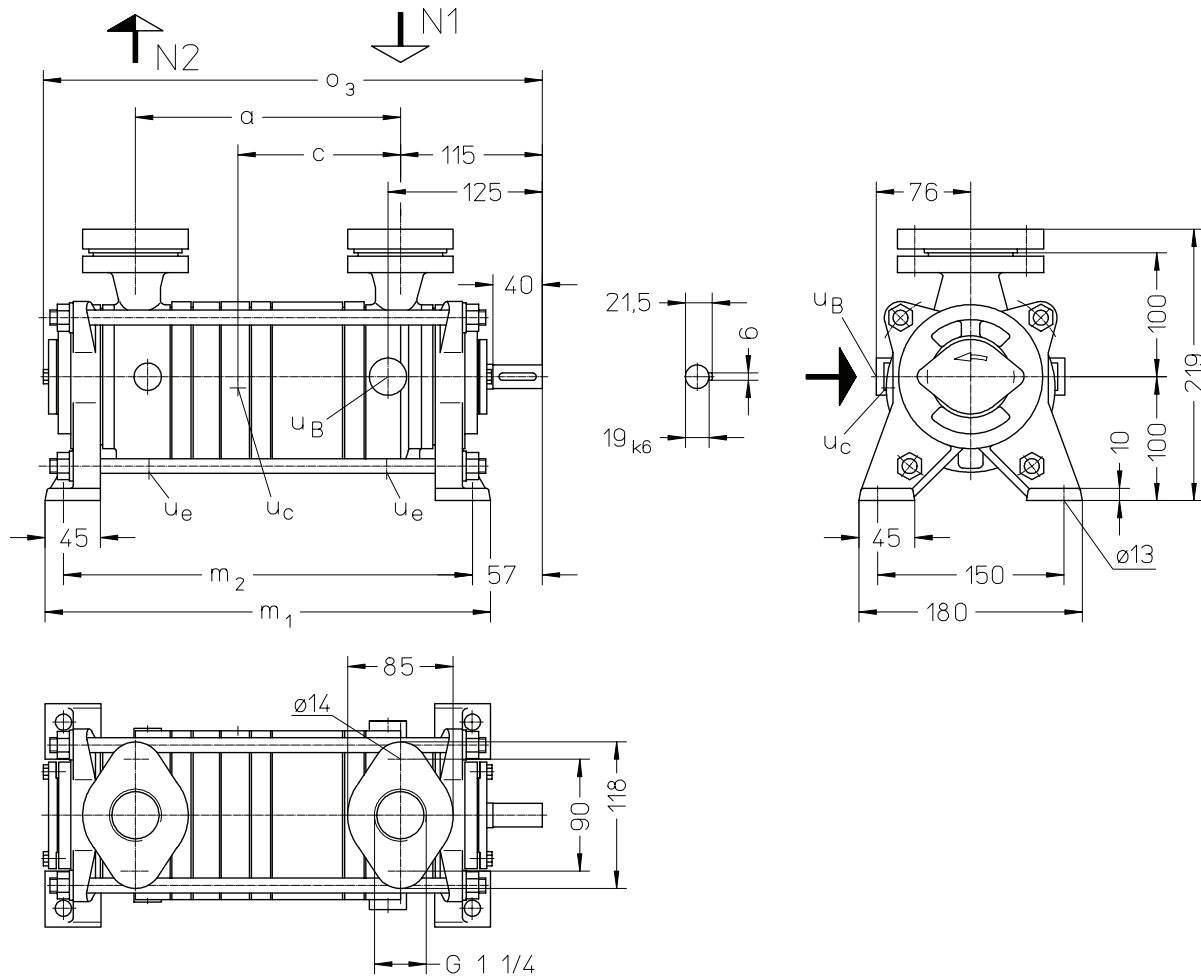
Max. fresh water need with the lowest suction pressure



LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors

Dimension table LOH 25003, LOH 25007



N 1 = gas inlet G 1 1/4

N 2 = gas outlet G 1 1/4

u_B = connection for service liquid G 3/8

u_c = connection for protection against cavitation G 1/8

u_e = drain connection G 1/4

Oval counter flanges are part of the design.

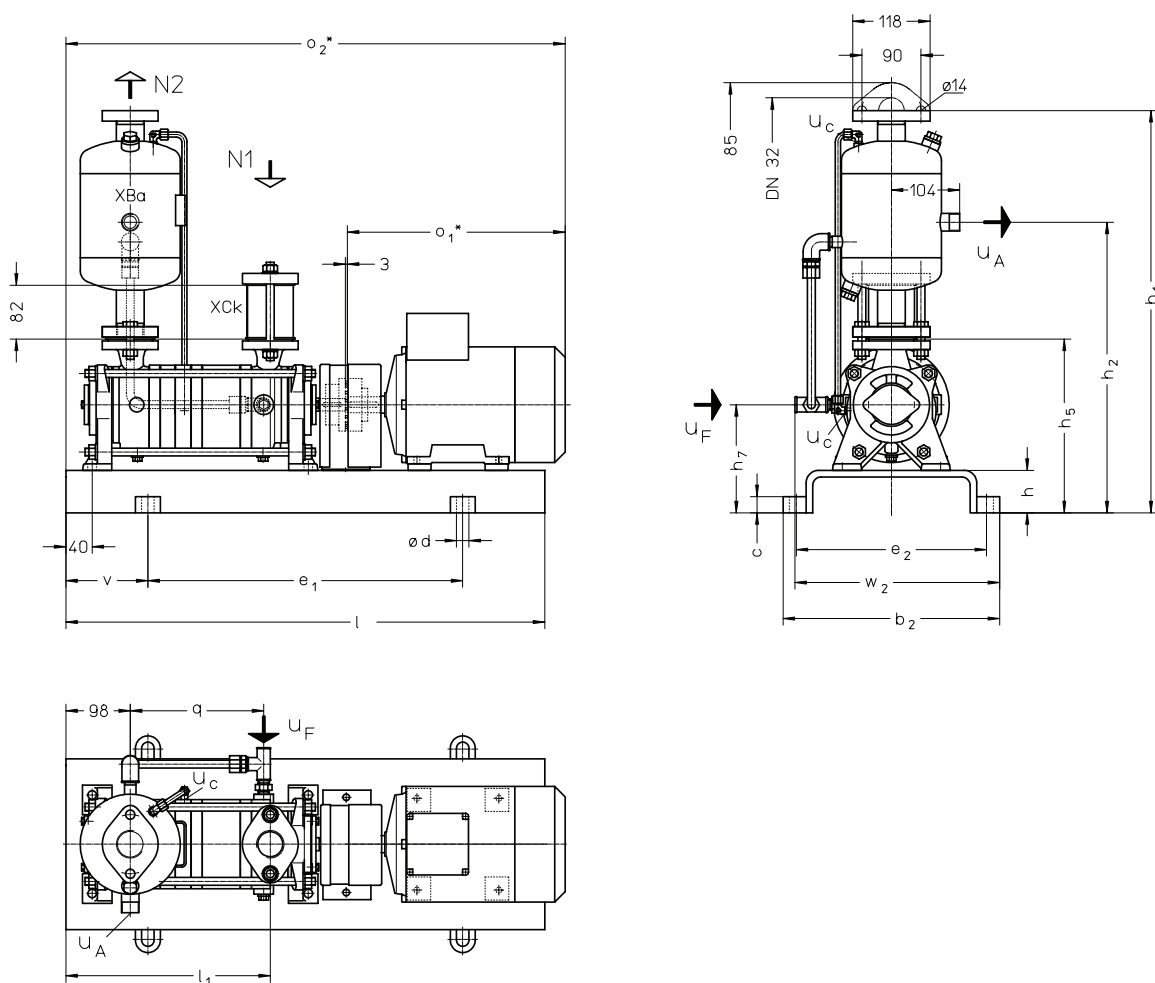
	a	c	m ₁	m ₂	o ₃	weight abt. kg
LOH 25003	163	96	309	279	348	22
LOH 25007	213	131	359	329	398	23

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Arrangement drawing LOH 25003, LOH 25007 with overhead liquid separator



- N 1 = gas inlet G 1 ¼
- N 2 = gas outlet DN 32
- u_A = connection for liquid drain R ¾
- u_C = connection for protection against cavitation G 1/8
- u_F = connection for fresh liquid G 3/8

Oval flanges according to DIN 2558 PN 6.

	electric motor 50 Hz			b ₂	c	d	e ₁	e ₂	h	h ₁	h ₂	h ₅	h ₇	l	l ₁	o ₁ *	o ₂ *	q	v	w ₂	weight abt. kg
	size	kW																			
LOH 25003	80	1,1	-	297	20	15	400	265	40	585	415	240	140	640	262	274	653	153	120	292	33
	80	-	1,1													272	651				35
LOH 25007	90S	1,5	-	330	25	19	480	290	65	610	440	265	165	730	311	332	761	204	125	312	50
	90L	-	2													319	748				54

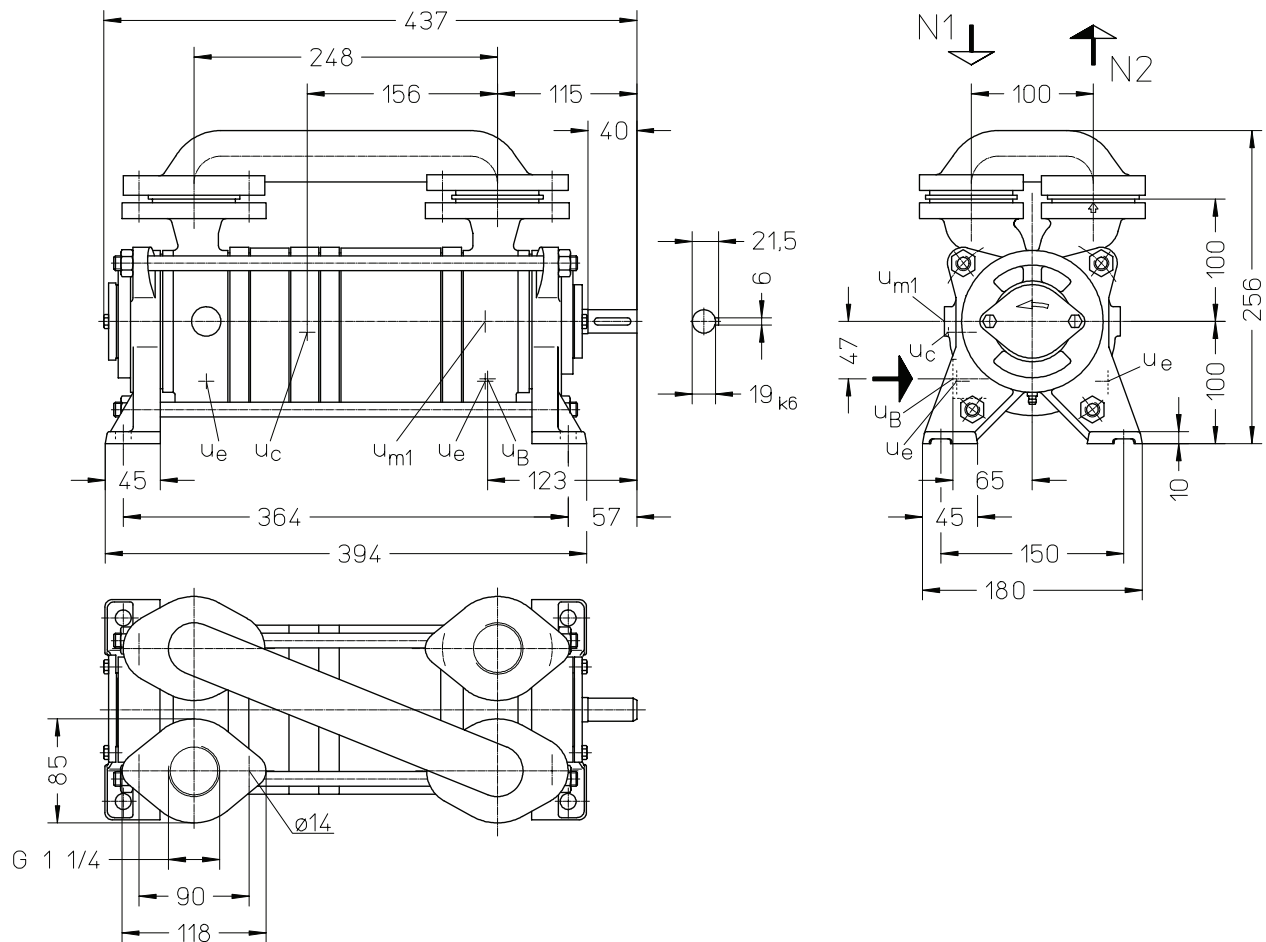
* dimensions dependent on the motor make

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Dimension table LOH 25309



- N 1 = gas inlet G 1 1/4
- N 2 = gas outlet G 1 1/4
- u_B = connection for service liquid G 1/2
- u_c = connection for protection against cavitation G 1/8
- u_e = drain connection G 1/4
- u_{m1} = connection for drain valve G 1/4

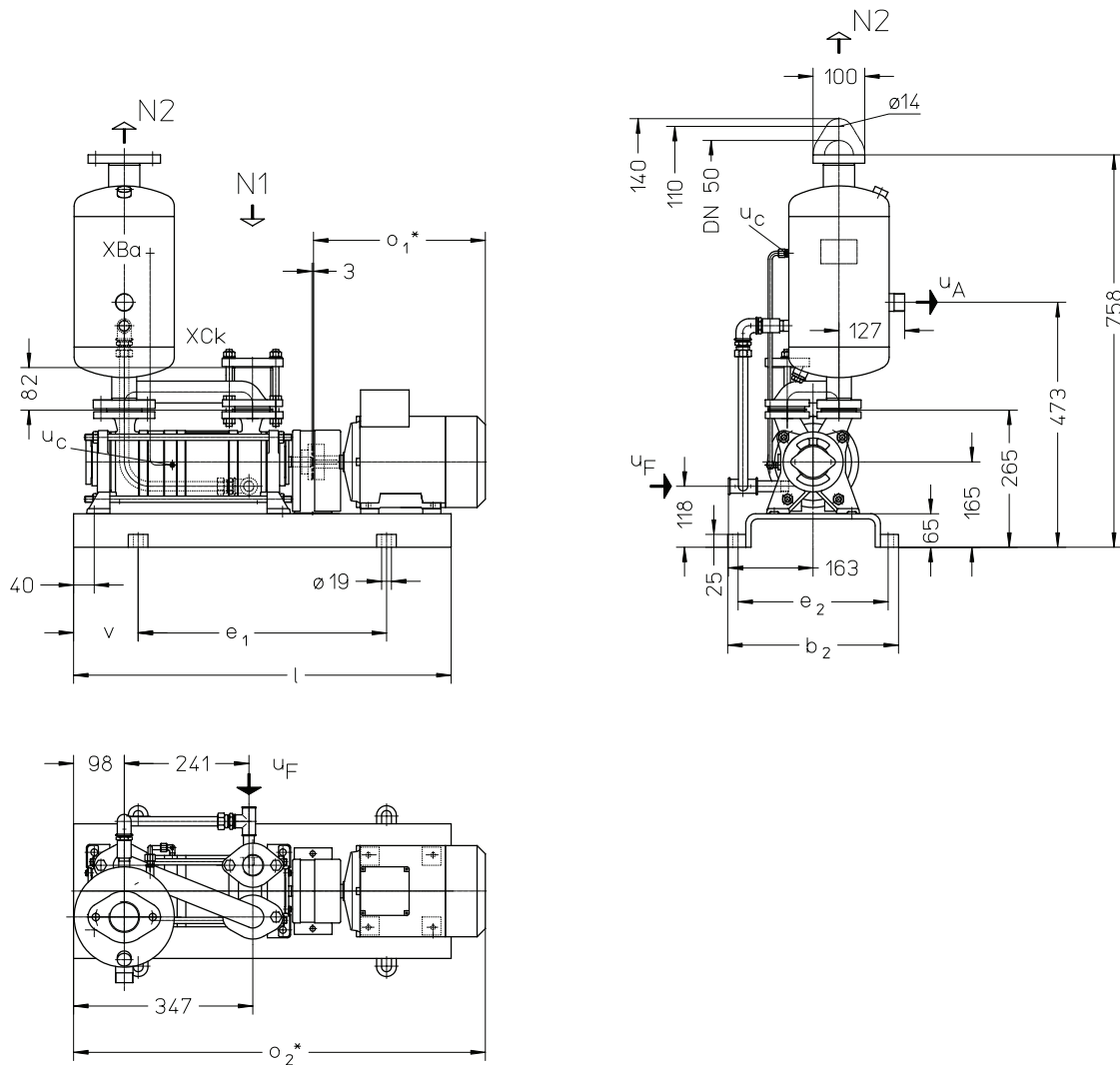
oval counter flanges are part of the design



LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors

Arrangement drawing LOH 25309 with overhead liquid separator



- N 1 = gas inlet G 1 1/4
N 2 = gas outlet DN 50
u A = connection for liquid drain R 1
u c = connection for protection against cavitation G 1/8
u F = connection for fresh liquid G 1/2

oval flanges to DIN 2558 PN 6

	electric motor 50 Hz			b ₂	e ₁	e ₂	l	v	o ₁ *	o ₂ *	weight abt. kg
	size	IP 55	kW EEx e II T3								
LOH 25309	90L	2,2	-	330	480	290	730	125	332	796	57
	100L	-	2,5	360	540	320	820	140	363	827	70

* dimensions dependent on the motor make

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



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

Suction pressure in mbar		40				120				200				400						
pump	speed [rpm]	KB			FB	KB				FB	KB				FB	KB				FB
		difference in temperature °C				difference in temperature °C					difference in temperature °C					difference in temperature °C				
		10	5	2		20	10	5	2		20	10	5	2		20	10	5	2	
LOH 25003	2800	0,06	0,10	0,17	0,35	0,03	0,06	0,09	0,16	0,3	0,03	0,06	0,09	0,16	0,3	0,03	0,05	0,09	0,15	0,26
	3400	0,08	0,14	0,22		0,05	0,08	0,13	0,20		0,05	0,08	0,13	0,20		0,05	0,08	0,12	0,18	
LOH 25007	2800	0,08	0,14	0,22	0,35	0,05	0,08	0,13	0,20	0,3	0,05	0,08	0,13	0,20	0,3	0,05	0,08	0,12	0,18	0,26
	3400	0,11	0,16	0,24		0,06	0,10	0,15	0,22		0,06	0,11	0,16	0,22		0,06	0,10	0,15	0,20	
LOH 25309	2900	0,12	0,20	0,36	0,75	0,07	0,12	0,21	0,36	0,71	0,07	0,13	0,21	0,36	0,68	0,07	0,12	0,20	0,32	0,55
	3500	0,16	0,27	0,47	0,90	0,09	0,16	0,27	0,46	0,86	0,09	0,16	0,27	0,45	0,82	0,09	0,15	0,25	0,39	0,65

FB = fresh liquid service

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

Data regarding the pump size - order notes

series + size	bearings + sence of rotation	shaft sealing	material design	casing seal
	B• two grease lubricated antifriction bearing •N one shaft end clockwise rotating	131 mechanical seal	01 main parts of GG 02 main parts of GG without non-ferrous metal 42 main parts of Cr Ni Mo-cast steel	0 liquid seal
LOH 25003 25007 25309	BN	131	01, 02, 42	0

Design - Motor selection table

	designation	electric motor 50 Hz					
pump with free shaft end	01	motor enclosure IP 55			motor enclosure EEx e II T3		
pump with coupling, pre-drilled at motor side	04	kW	size	designation	kW	size	designation
at above, but with motor,	e.g. HA	1,1	80 B	GA	1,1	80 B	GJ
for example 1,5 kW three-phase motor		1,5	90 S	HA	2,0	90 L	JJ
50 Hz, 230/400 V at 2800 rpm		2,2	90 L	JA	2,5	100 L	KJ

Example for ordering:

The construction size LOH. 25007 BN 131 02 0 with 1,5 kW three-phase motor (50 Hz, 230/400 V, 2800 rpm, IP55) has the complete order number:

LOH• 25007 BN 131 02 0 HA

If motors with other voltage or frequency are required a special information should be given.

LOH 25003, 25007, 25309

Two-stage Liquid Vacuum Pumps and Compressors



Accessories

Recommended accessories		LOH 25003	LOH 25007	LOH 25309
Overhead liquid separator material design 130 / St galvanized 172 / 1.4571 service liquid line material design 072 / St 37-0 172 / 1.4571 cavitation protection line material design 072 / St 37-0 172 / 1.4571	type weight SIHI part No.	XBa 342 5 kg 35 000 377 35 000 378		XBa 1041 10 kg 35 000 393 35 000 394
	SIHI part No.	20 054 559 20 054 560		20 054 886 20 054 887
	SIHI part No.	20 050 509 20 050 512	20 050 510 20 050 513	20 050 511 20 050 514
	SIHI part No.			
SIHI-gas ejector at service liquid temperature	15 + 30 °C	-	GOV 3211	GOV 3212
SIHI-ball non-return valve material design 767 / 0.6025+Perbunan 784 / 1.4408+Teflon	type / weight SIHI part No.	XCk 32 / 1,2 resp. 3 kg 20 072 744 20 029 488		
Motor in case of standard design IP 55 EEx e II T3	size power weight	80 B 1,1 kW 10 kg	90 S 1,5 kW 13 kg	90 L 2,2 kW 15 kg
	size power weight	80 B 1,1 kW 12 kg	90 L 2 kW 16 kg	100 L 2,5 kW 22 kg
Coupling for motor IP 55 pump side motor side	type / weight SIHI part No.	B 80 / 1,5 kg 43 021 409 43 021 420 43 039 231 43 039 231		
for motor EEx e II T3 pump side motor side	type / weight SIHI part No.	BDS 88 / 2 kg 43 024 676 43 025 933 43 028 108 43 024 707		
Contact safety device material design 076 / steel 345 / 2.0321	SIHI part No.	43 042 201 43 042 202		
Base frame for motor IP 55 material design 081 / 1.0038	type / weight SIHI part No.	S 008 / 10 kg 43 040 648	S 241 / 23,5 kg 43 040 631	S 241 / 23,5 kg 43 040 631
for motor EEx e II T3 material design 081 / 1.0038	type / weight SIHI part No.	S 008 / 10 kg 43 040 648	S 241 / 23,5 kg 43 040 631	S 272 / 28,3 kg 43 040 633

LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors



Pressure range: 33 to 1013 mbar

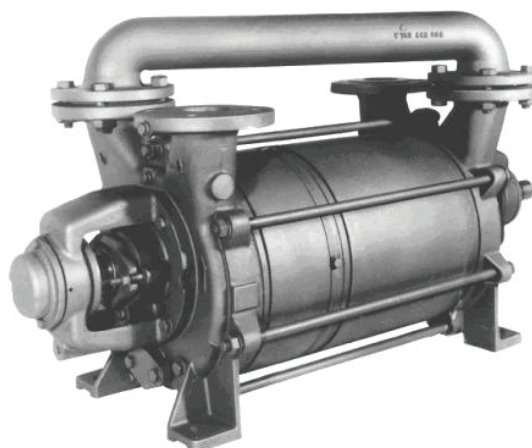
Suction volume flow: 300 to 700 m³/h

CONSTRUCTION TYPE

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

Sterling SIHI

- 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



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.

The Sterling SIHI liquid ring vacuum pumps LPHC 65320 and LPHC 65327 are two stage pumps.

The pumps LPHC 65320 and LPHC 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.

LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors



GENERAL TECHNICAL DATA

pump type		Unit	LPHC 65320		LPHC 65327	
Speed (normal speed)	50 Hz 60 Hz	rpm	1450	1740	1450	1740
Max. compression over pressure		bar			2	
Max. admissible difference		bar	1,6	1,5 1,1	1,5	1,5 1,1
in case of belt drive						
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)	76	79	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.

LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors

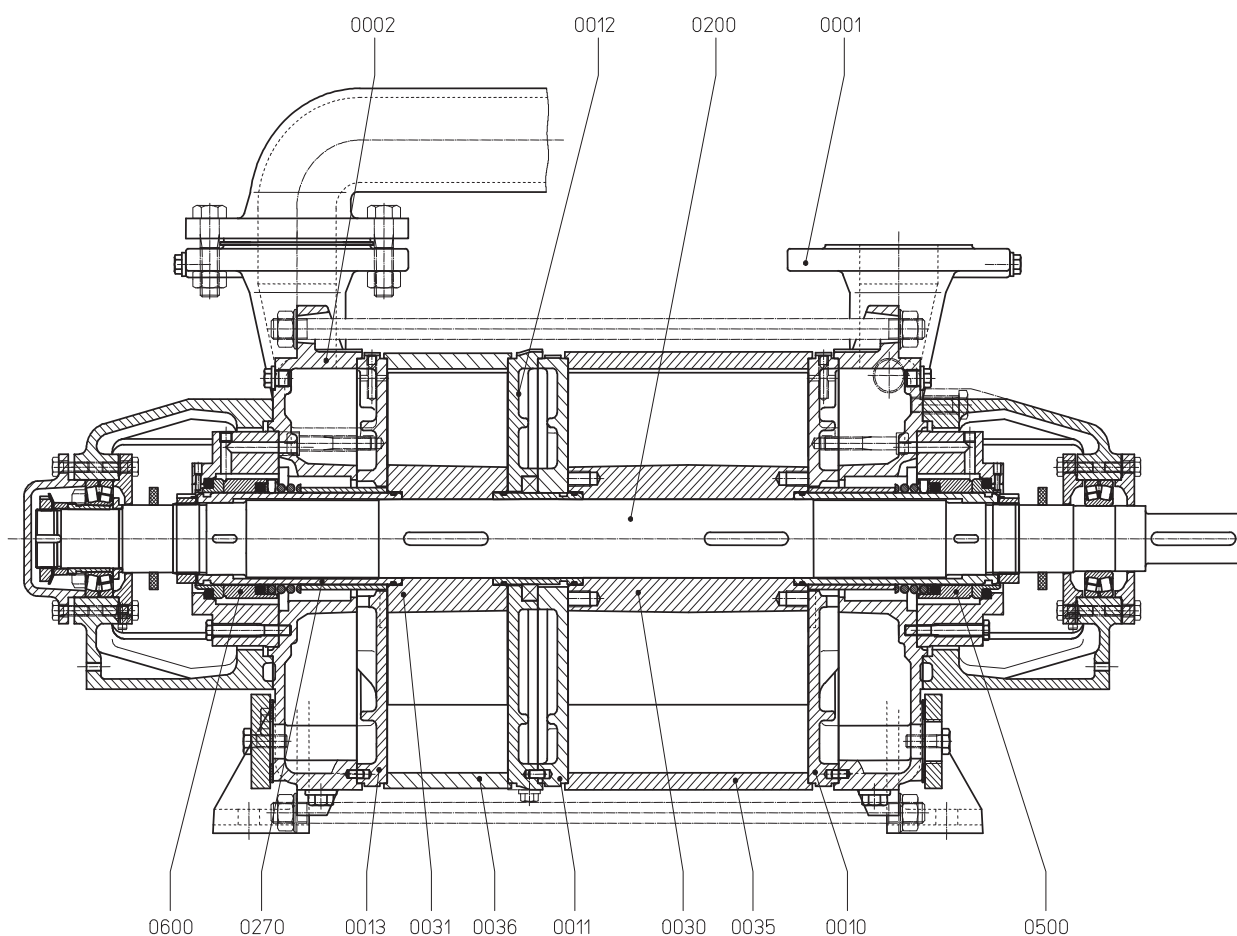


Material design

Item	COMPONENTS	MATERIAL DESIGN		
		OK	SZ	4B
0001, 0002	Casing	0.6025	0.6025	1.4408
0010, 0011, 0012, 0013	Guide disk	0.6025	1.4408	1.4408
0030, 0031	Vane wheel impeller	1.4308	1.4408	1.4408
0035, 0036	Central body	0.6025	0.6025	316
0200	Shaft	45		
0270	Shat sleeve	316		
0500, 0600	mechanical seal	FBPFF	FBPEF	GBMGG

Sectional drawing

LPHC 65320, LPHC 65327

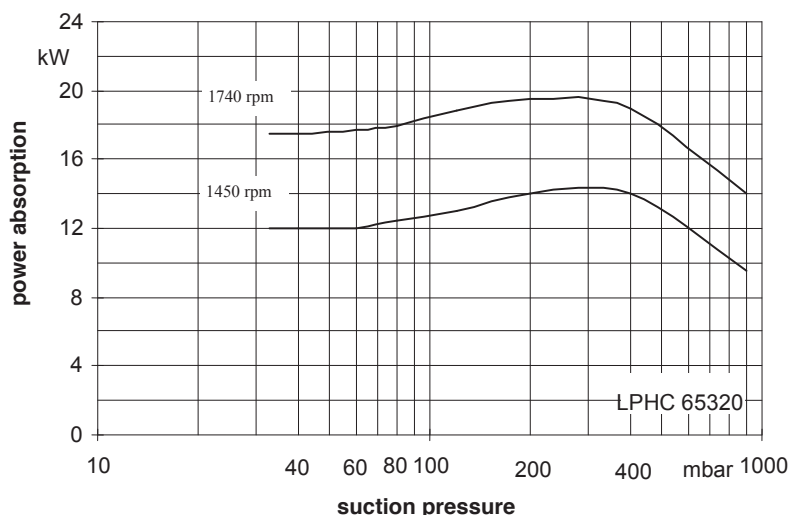
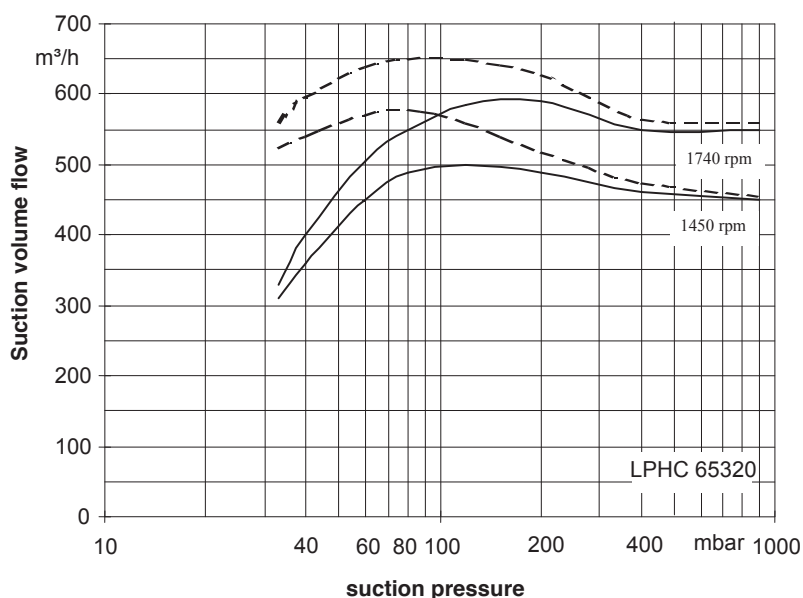


LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LPHC 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%

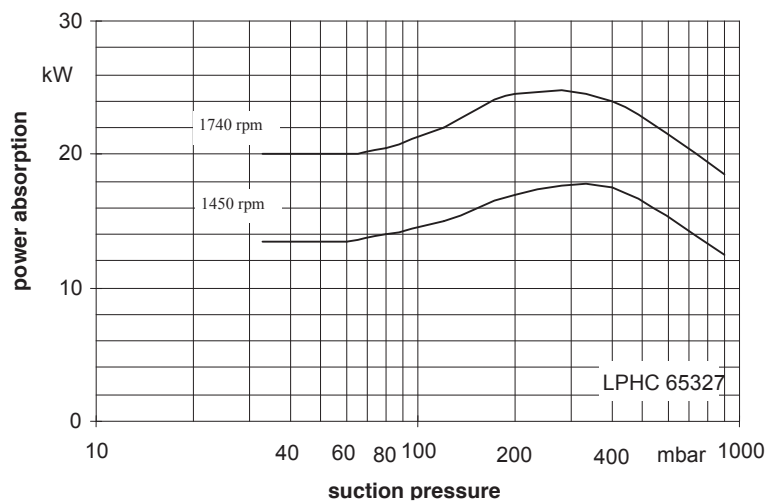
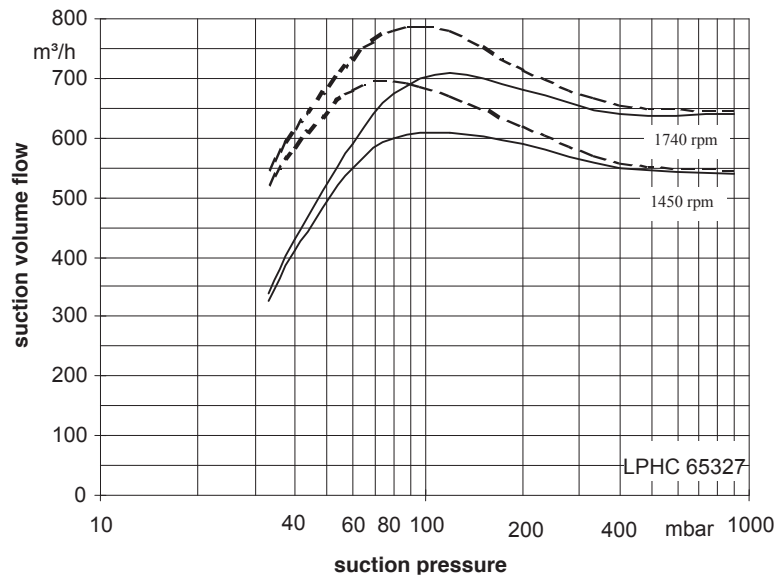
Max. fresh water need with lowest suction pressure

LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LPHC 65327



The operating data are applicable under the following conditions

- pumping medium
 - water vapour saturated air
- service liquid
 - water

20°C
20°C
15°C

Compression pressure 1013 mbar (atmospheric pressure)

The suction volume flow is applied to the suction pressure

Tolerance of the operating data 10%

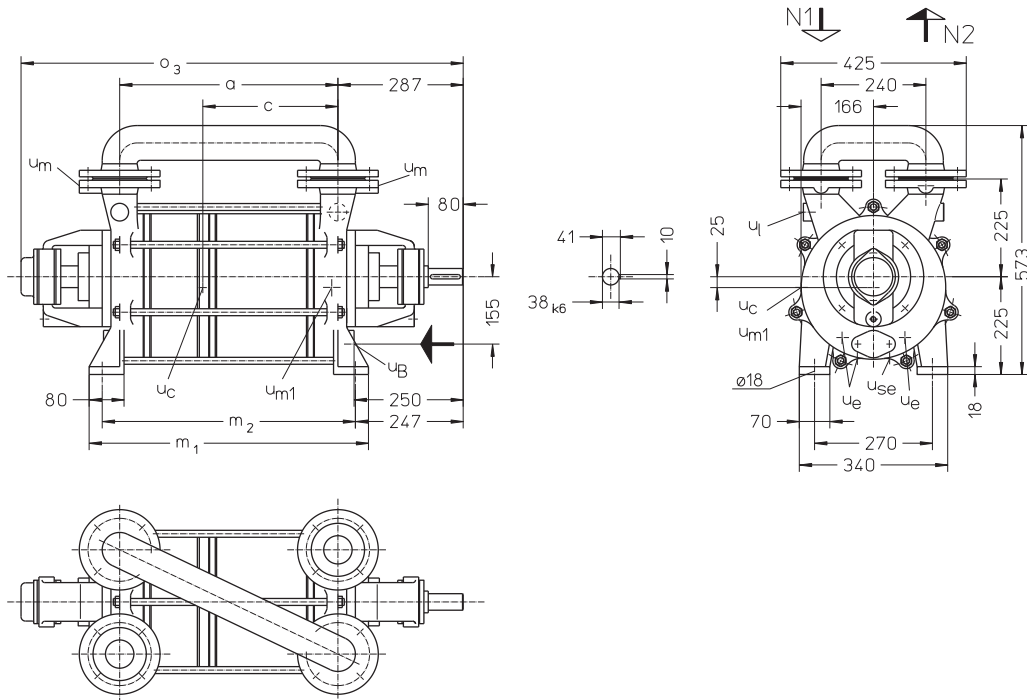
Max. fresh water need with lowest suction pressure



LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors

Dimension table LPHC 65320, LPHC 65327
LPHC 65320, LPHC 65327



N 1 = gas-inlet DN 65

u_i = connection for vent cock G ¾

N 2 = gas-outlet DN 65

u_m = connection for pressure gauge G ¾

u_B = connection for service liquid G 1

u_{m1} = connection for drain valve G ¾

u_c = connection for protection cavitation G ¼

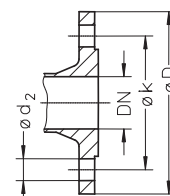
u_{se} = connection for dirt drain G ½

u_e = drain connection G ½

Pump	a	c	m ₁	m ₂	o ₃	weight abt. Kg for material design		
						OK	SZ	4B
LPHC 65320 BN	500	309	640	580	1013	215	217	221
LPHC 65327 BN	566	375	706	646	1079	240	242	245

flange connections as per DIN 2501 PN 10

DN	65
k	145
D	185
number x d ₂	4 x 18

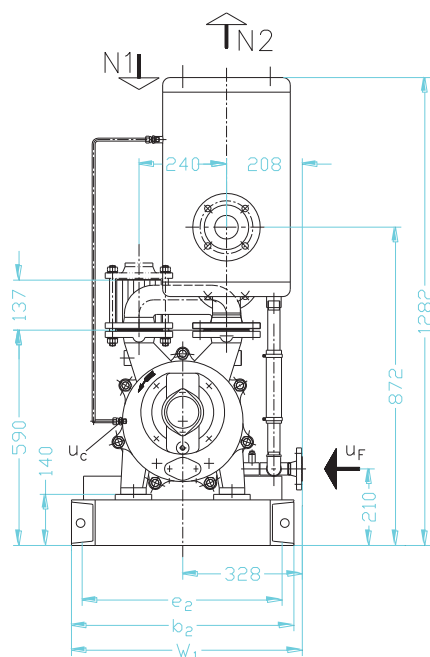
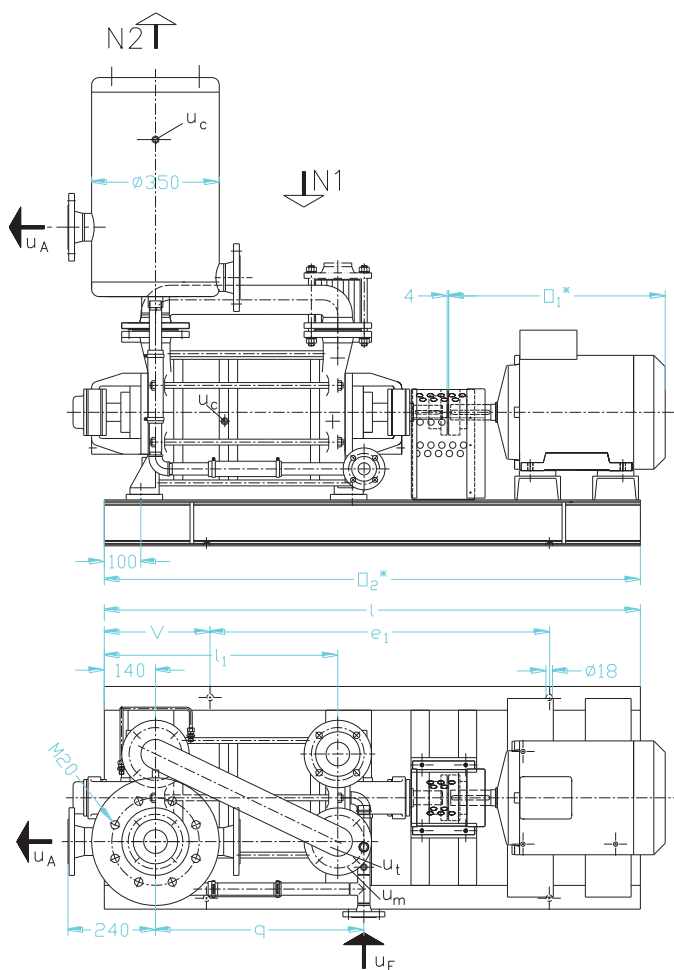




LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors

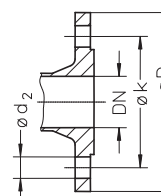
Arrangement drawing LPHC 65320, LPHC 65327 with overhead liquid separator
LPHC 65320, LPHC 65327



- 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 1/4
- u_F = connection for fresh liquid DN 25
- u_m = connection for pressure gauge G 1/4
- connection for thermometer G 1/2

Pump	electric motor 50 Hz			b ₂	e ₁	e ₂	l	l ₁	o ₁ [*]	o ₂ [*]	v	w ₁	q	weight abt. Kg.	
	size	IP 55	kW EEEx e II T3											at motor IP 55	EEEx e II T3
LPHC 65320	160 L	15	-	610	940	550	1470	640	640	1657	280	655	572	475	-
	180 M	-	15											-	-
LPHC 65327	180 M	18,5	-	660	1060	600	1620	706	730	1813	280	680	638	535	-
	180 L	-	17,5											-	-

flange connections to DIN 2501 PN 10			
DN	25	65	150
k	85	145	240
D	115	185	285
number x d2	4 x 14	4 x 18	8 x 22



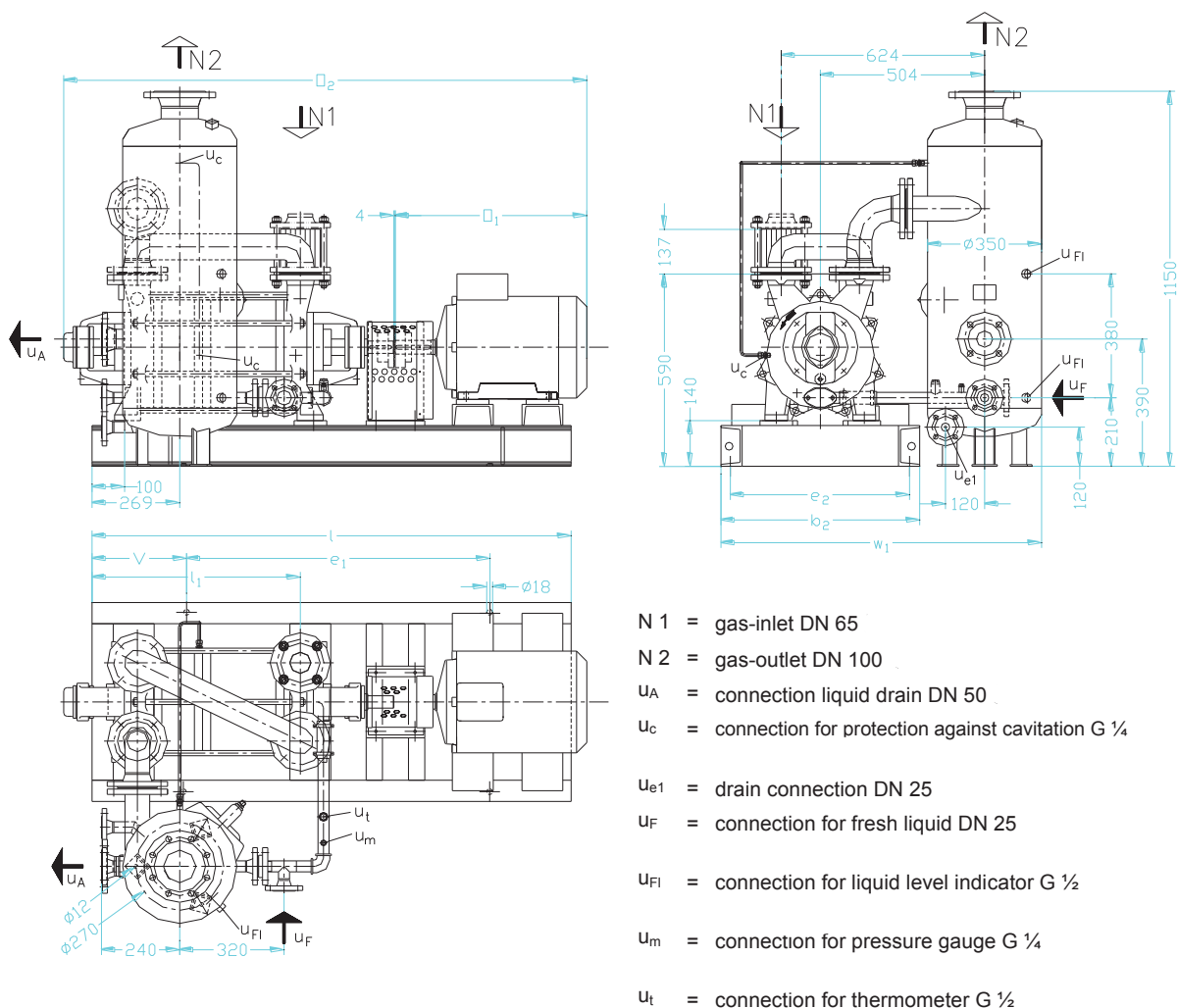
* Dimension depend on the motor make



LPHC 65320, 65327

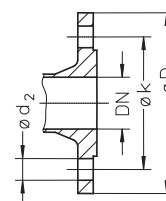
Two-stage Liquid Vacuum Pumps and Compressors

Arrangement drawing LPHC 65320, LPHC 65327 with upright liquid separator
LPHC 65320, LPHC 65327



Pump	electric motor 50 Hz			b ₂	e ₁	e ₂	l	l ₁	o ₁ *	o ₂ *	v	w ₁	weight abt.	
	size	kW											at motor	
LPHC 65320	160 L	15	-	610	940	550	1420	640	640	1657	280	984	495	-
	180 M	-	15										-	580
LPHC 65327	180 M	18,5	-	660	1060	600	1620	706	730	1813	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



* Dimension depend on the motor make

LPHC 65320, 65327

Two-stage Liquid Vacuum Pumps and Compressors



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

suction pressure		33					120					200					400				
pump type	Speed	KB				FB	KB				FB	KB				FB	KB				FB
		difference in temperature [°C]					difference in temperature [°C]					difference in temperature [°C]					difference in temperature [°C]				
	[rpm]	20	10	5	2	20	10	5	2	20	10	5	2	20	10	5	2				
LPHC65320	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	
LPHC65327	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
	B• two grease lubricated antifriction bearing	YTB	Standard mechanical seal O-rings Perbunan	OK	main parts GG	0 liquid seal
	•N one shaft end clockwise	XAE	Special mechanical seal O-rings Viton encapsulated with Teflon	SZ	Main parts from 0.6025, impeller \ guide disk from 1.4408	
				4B	main parts 1.4408	
LPHC 65320 65327	BN	YTB, XAE		OK, SZ, 4B		0

Design - Motor selection table

Pump-set construction type	electric motor 50 Hz					
Pump	motor protection IP 55			motor protection EEx e II T3		
Couplings	kW	Size	Designation	kW	Size	Designation
Motor three phase motor (50 Hz, 400 VΔ) at 1450 rpm	15,0	160 L	UB	15,0	180 M	VK
	18,5	180 M	VB	17,5	180 L	WK

Example for ordering

The pump size LPHC 65327 BN YTB OK 0 with 18.5 kW three phase motor (50 Hz, 400 VΔ) 1450 rpm IP55 has the complete order number:
LPHC 65327 BN YTB OK 0 VB

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

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



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 LPHC75320, LPHC75330 and LPHC75340 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 TECHNICAL DATA

pump type	Unit	LPHC 75320	LPHC 75330	LPHC 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 ²⁾ in case of belt drive	bar	1,8 1,8 1,4 ²⁾ 1,8	1,8 1,7 1,4 ²⁾ 1,6	1,7 1,6 1,4 ²⁾ 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	°C		200	
	°C		100	
Service liquid	°C		80	
max. admissible temperature	mm²/s		90	
max. viscosity	kg/m³		1200	
max. density	liter	36	47	54
volume up to shaft	bar		0,2	
Max. flow resistance of the heat exchanger				

The combination of several limiting values is not admissible.

LPHC 75320, 75330, 75340

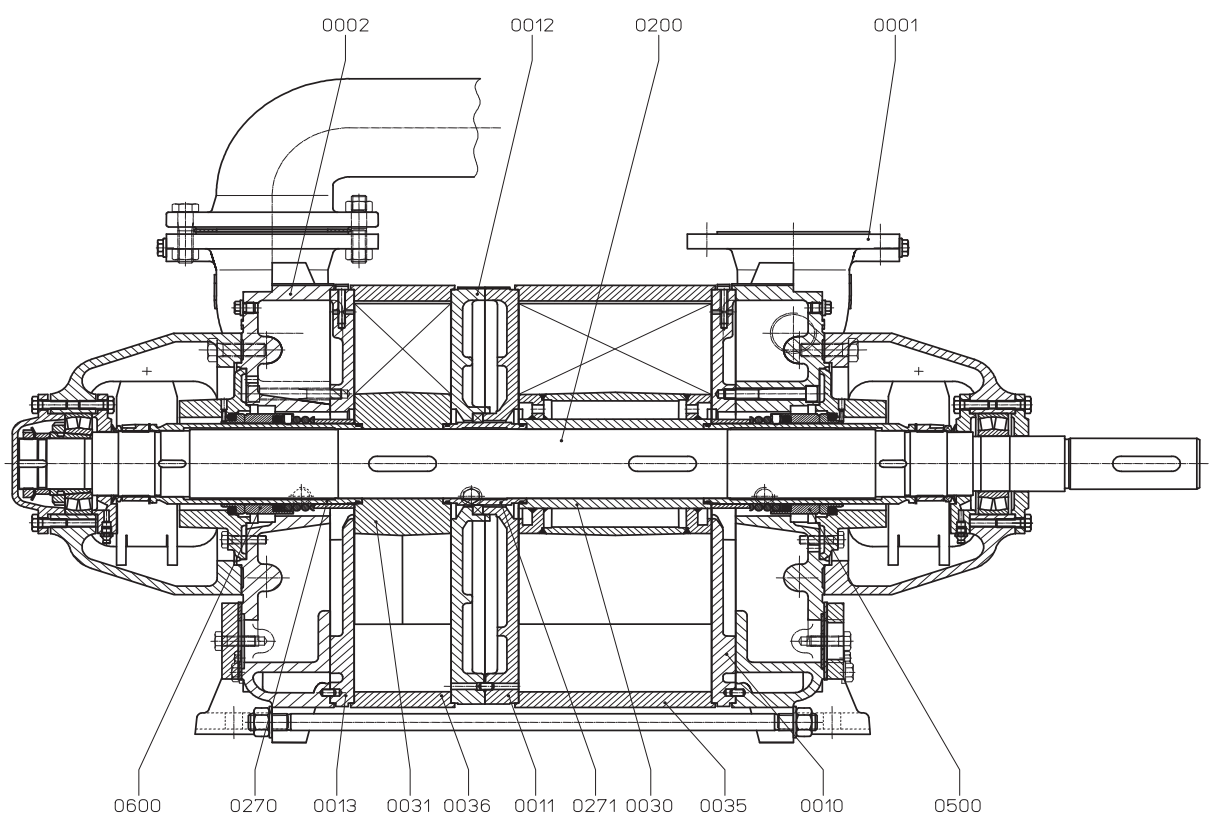
Two-stage Liquid Vacuum Pumps and Compressors



Material design

Item	COMPONENTS	MATERIAL DESIGN		
		0K	SZ	4B
0001, 0002	Casing	0,6025	0,6025	1,4408
0010, 0011 0012, 0013	Guide disk	0,6025	1,4408	1,4408
0030, 0031	Vane wheel impeller	1,0619	1,4517	1,4517
0035, 0036	Central body	20	20	316
0200	Shaft	45		
0270, 0271	Shaft sleeve	304	304	316
0500, 0600	Mechanical seal	Q22BVFF	Q22BVFF	Q22BM1GG

Sectional drawing LPHC 75320, LPHC 75330, LPHC 75340

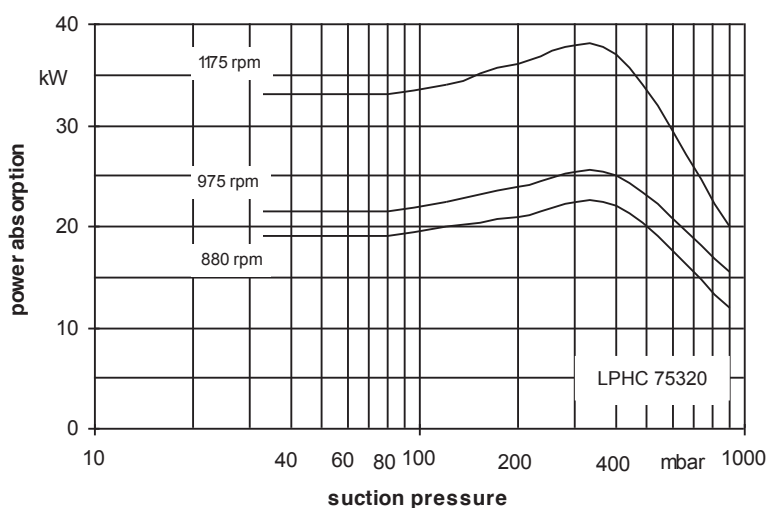
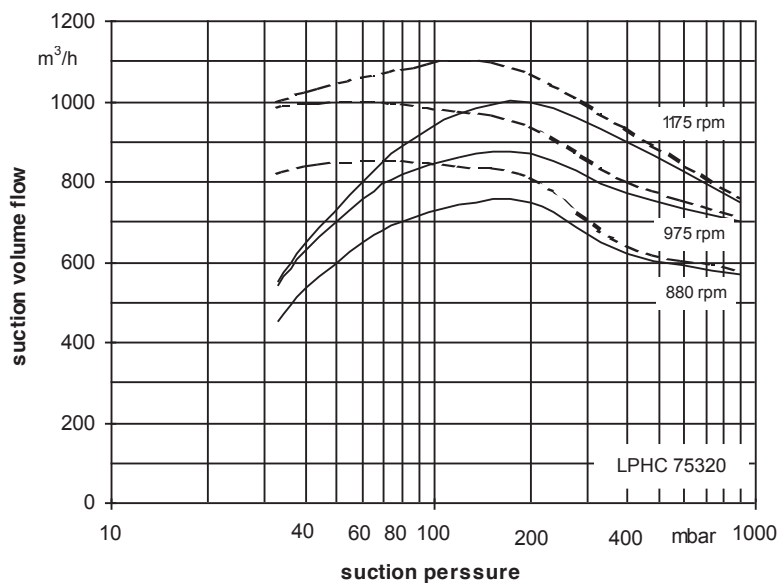


LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LPHC 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%

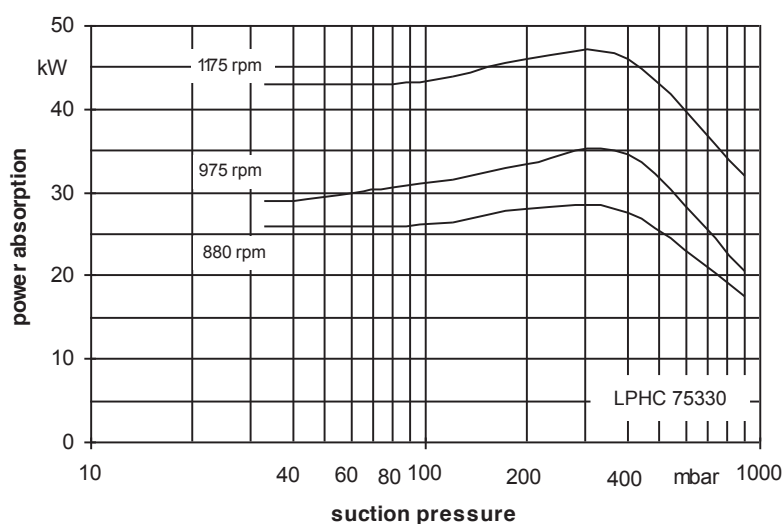
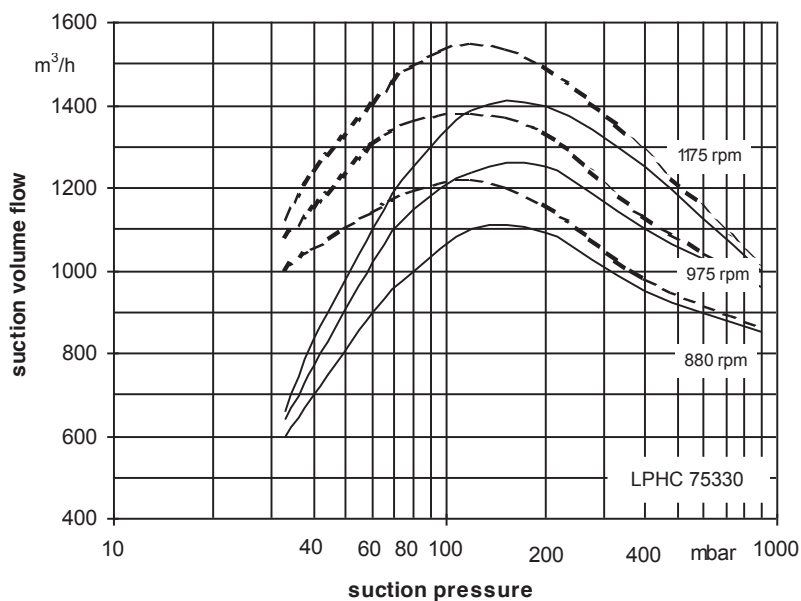
Max. fresh water need with lowest suction pressure

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LPHC 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%

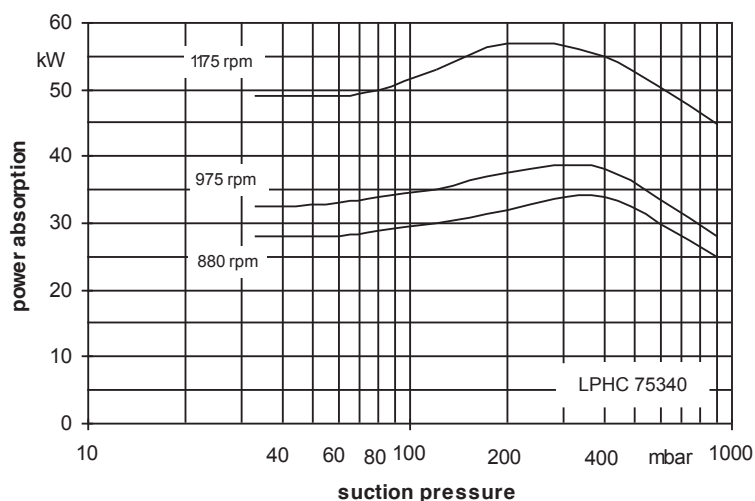
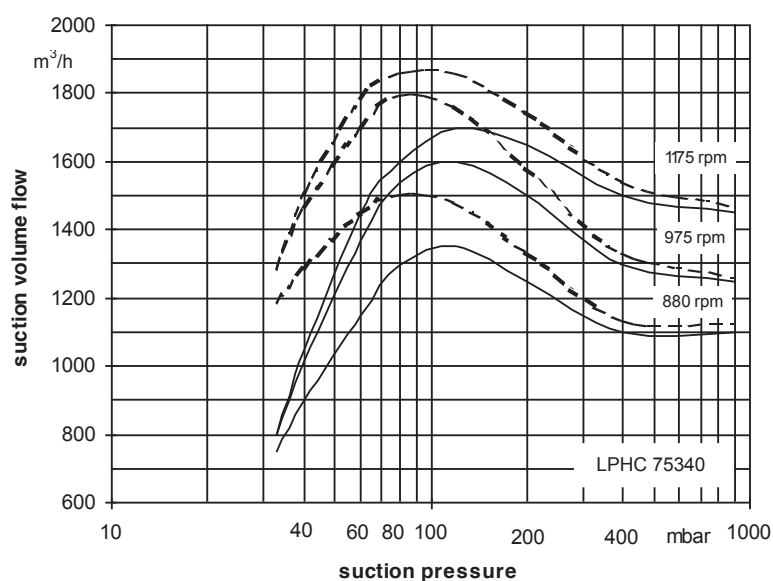
Max. fresh water need with lowest suction pressure

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



Suction volume flow and power absorption LPHC 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%

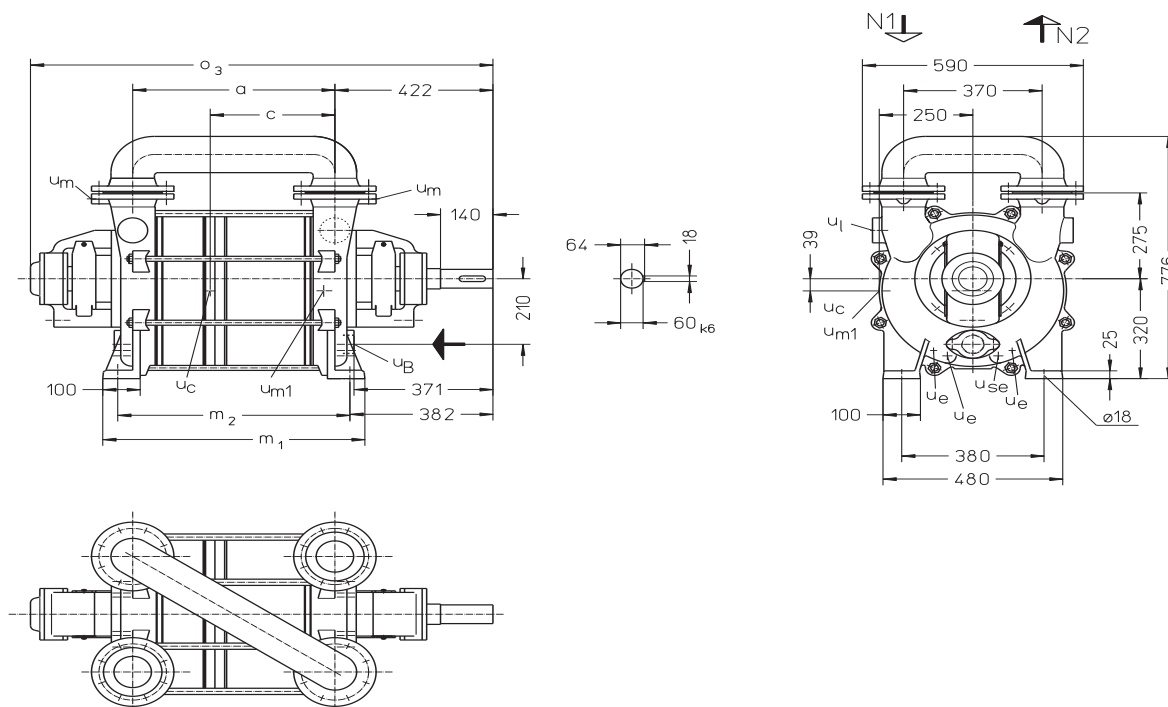
Max. fresh water need with lowest suction pressure

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



Dimension table LPHC 75320, LPHC 75330, LPHC 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 1/4

u_l = connection for vent cock G 1 1/2

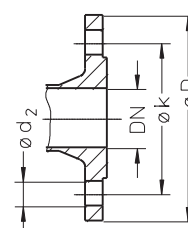
u_m = connection for pressure gauge G 3/8

u_{m1} = connection for drain valve G 1/2

u_{se} = connection for dirt drain G 1/2

Pump	a [mm]	c [mm]	m ₁ [mm]	m ₂ [mm]	o ₃ [mm]	approx. weight [kg] for material design		
						0K	SZ	4B
LPHC 75320	540	333	700	620	1235	450	465	485
LPHC 75330	690	434	850	770	1385	570	590	620
LPHC 75340	790	534	950	870	1485	640	660	690

flange connections to DIN 2501 PN 10 [mm]	
DN	100
k	180
D	220
number x d ₂	8 x 18

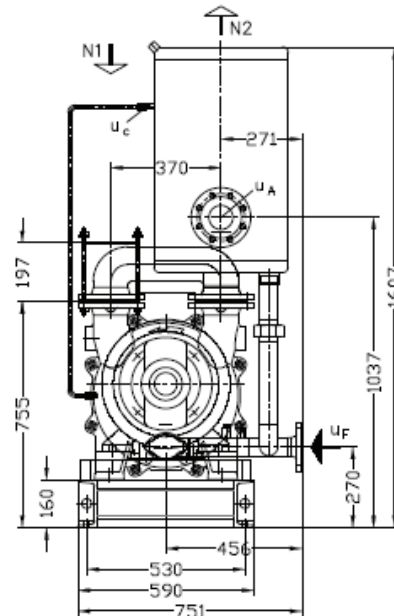
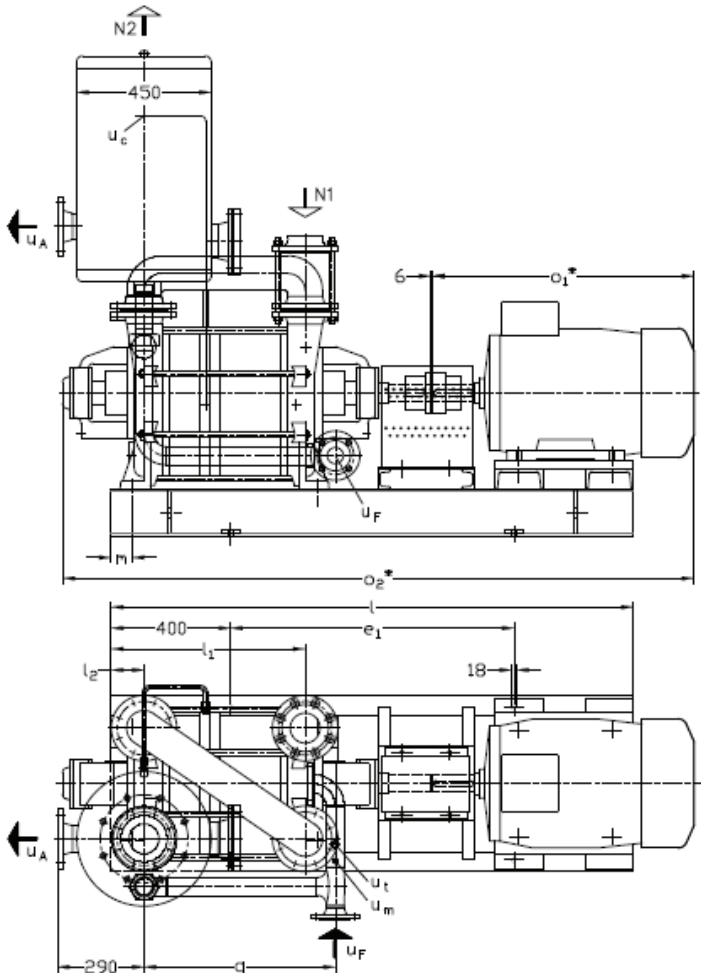




LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors

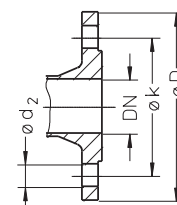
Arrangement drawing LPHC 75320, LPHC 75330, LPHC 75340 with overhead liquid separator



- 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 1/4
- u_F = connection for fresh liquid DN 50
- u_M = connection for pressure gauge G 1/4
- u_T = connection for thermometer G 1/2

Pump	E-Motor 50 Hz			e ₁ [mm]	l [mm]	l ₁ [mm]	l ₂ [mm]	m [mm]	o ₁ [*] [mm]	o ₂ [*] [mm]	q [mm]	approx. weight [kg]	
	size-	IP 55	kW EXdII BT4 Gb									at motor IP 55	EXdII BT4 Gb
LPHC 75320	225 M	30	-	950	1750	650	110	70	970	2211	641	938	-
	225 M	-	30						950	2191		-	1060
LPHC 75330	250 M	37	-				210	170	1050	2291	791	1260	-
	250 M	-	37						1050	2291		-	1420
LPHC 75340	280 S	45	-	1300	2200	900	110	70	1110	2351	891	1460	-
	280 S	-	45						1110	2351		-	1490

flange connections to DIN 2501 PN 10 [mm]				
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



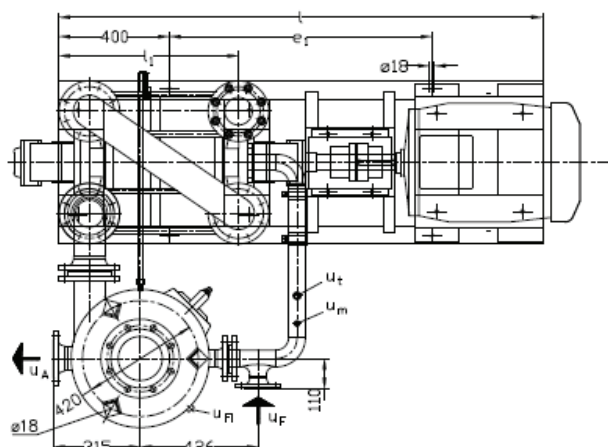
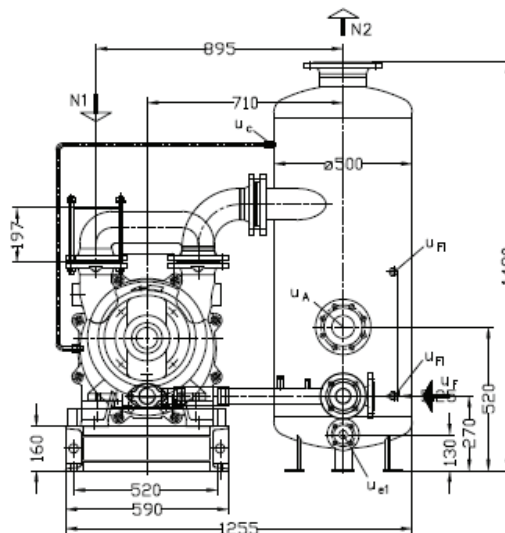
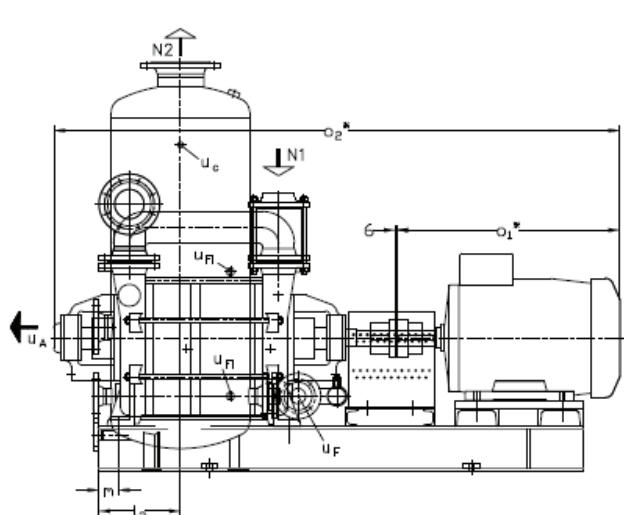
* dimensions depend on the motor make

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



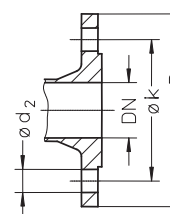
Arrangement drawing LPHC 75320, LPHC 75330, LPHC 75340 with upright liquid separator



- 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_{F1} = connection for liquid level indicator G ¹/₂
- u_M = connection for pressure gauge G ¹/₄
- u_T = connection for thermometer G ¹/₂

Pump	E-Motor 50 Hz			e ₁ [mm]	l [mm]	l ₁ [mm]	l ₂ [mm]	m [mm]	o ₁ [*] [mm]	o ₂ [*] [mm]	approx. weight [kg] at motor	
	size	IP 55	kW EXdII BT4 Gb								IP 55	EXdII BT4 Gb
LPHC 75320	225 M	30	-	950	1750	650	295	70	970	2211	965	-
	225 M	-	30						950	2191	-	1090
LPHC 75330	250 M	37	-	1300	2200	900	395	170	1050	2291	1290	-
	250 M	-	37						1050	2291	-	1450
LPHC 75340	280 S	45	-				295	70	1110	2351	1490	-
	280 S	-	45						1110	2351	-	1520

flange connections to DIN 2501 PN 10 [mm]					
DN	25	40	50	100	150
k	85	110	125	180	240
D	115	150	165	220	285
number x d ₂	4 x 14	4 x 18	4 x 18	8 x 18	8 x 22



* Dimensions depend on the motor make

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



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	KB				FB
		difference in temperature [°C]					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	
LPHC 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	
LPHC 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	
LPHC 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
LPHC 75320 75330 75340	B• two grease lubricated antifriction bearing •N one shaft end clockwise	YTE	Standard mechanical seal O-rings Viton	OK	main parts GG	0 liquid seal
		YTF	Special mechanical seal O-rings Viton encapsulated with Teflon	SZ	Main parts from 0.6025, impeller \ guide disk from stainless steel	
		BCK	Special mechanical seal O-rings Viton encapsulated with Teflon;	4B	Main parts stainless steel	
LPHC 75320 75330 75340	BN	YTE, YTF, BCK		OK, SZ, 4B		0

Pump-set Design

Motor Selection Table

Pump-set construction type	electric motor 50 Hz					
Pump	motor protection IP 55			motor protection EXdIIBT4 Gb		
Part group and Couplings	kW	Size	Designation	kW	Size	Designation
three phase motor (50 Hz, 380 VΔ) at 1450 rpm	30	225 M	AC	30	225 M	AL
	37	250 M	BC	37	250 M	BL
	45	280 S	CC	45	280 S	CL

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

LPHC 75320, 75330, 75340

Two-stage Liquid Vacuum Pumps and Compressors



Accessories

Recommended accessories			LPHC 75320		LPHC 75330		LPHC 75340	
Overhead liquid separator			Type	XBa 10040				
			Weight	70 kg				
material design	Steel, galvanised		SIHI part no.	43156714				
	AISI 316			43156715				
service liquid line								
material design	20 steel		SIHI part no.	43156719	43156721	43156723		
	AISI 316			43156720	43156722	43156724		
cavitation protection line								
material design	20 steel		SIHI part no.	on request				
	AISI 316							
blank flange DN 100								
material design	45 steel		SIHI part no.	43156732				
	AISI 316			43156733				
Upright liquid separator			Type	XBp 2311				
			Weight	96 kg				
material design	Steel, galvanised		SIHI part no.	43156716				
	1.4571			43156718				
service liquid line								
material design	1.0254		SIHI part no.	43156725	43156727	43156730		
	1.4571			43156726	43156728	43156731		
cavitation protection line								
material design	1.0254		SIHI part no.	on request				
	1.4571							
discharge line (bend)								
material design	1.0254		SIHI part no.	43156736				
	1.4571			43156737				
Sterling SIHI ball type non-return valve			type/weight	XCk 100 / 16 resp. 17,5 kg				
Sterling SIHI								
material design	0.6025 + Butadiene rubber		SIHI part no.	43156738				
	1.4408 + Teflon			43156739				
Motor in case of standard design			Size	225 M	250 M	280 S		
			Power	30 kW	37 kW	45 kW		
IP 55			Weight	225 kg	410 kg	540 kg		
EXdIIBT4 Gb			Size	225 M	280 S	280 M		
			Power	27 kW	40 kW	46 kW		
			Weight	350 kg	570 kg	625 kg		
Couplings			type/weight	XL8 / 11 kg			XL9 / 18 kg	
Material design	steel			60/60	60/65	60/75		
	Rubber		SIHI part no.	43156907	43156908	43156909		
Contact safety device								
material design	Steel		SIHI part no.	43156910				
	AL			43156912				
Base frame								
material design	Steel		SIHI part no.	43156935	43156936			
			weight	142 kg	160 kg			

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

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



Pressure Range: 33 to 1013 mbar
Suction Volume: 55 to 258 m³/h

CONSTRUCTION

Sterling 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

Sterling SIHI liquid ring vacuum pumps of the range LPH 45008, LPH 45311 and LPH 45316 are two stage pumps. In addition, the LPH 45008 and LPH 45316 can be used as compressors without any modification. (see the Technical Catalogue - Liquid Ring Compressors)



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 45008	LPH 45311	LPH 45316
Speed	50 Hz 60 Hz	rpm rpm	1450 1740	
Maximum overpressure on compression	bar		1.5	
Maximum permissible pressure difference	bar	1.5	1.5	1.2
Hydraulic test pressure (Overpressure)	bar		3.0	
Moment of inertia of rotating parts of pump and water content	kg · m²	0.05	0.063	0.09
Noise level at 80 mbar suction pressure	dB (A)		65	
Minimum permissible pulley diameter for V belt drive	mm		160	
Max. gas temperature:	dry saturated	°C °C	120 100	
Service liquid:				
Maximum permissible temperature	°C		100	
Maximum viscosity	mm²/s		90	
Maximum density	kg/m³		1200	
Liquid capacity up to middle of shaft	litre	4.0	5.5	7.0
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.

LPH 45008, 45311, 45316

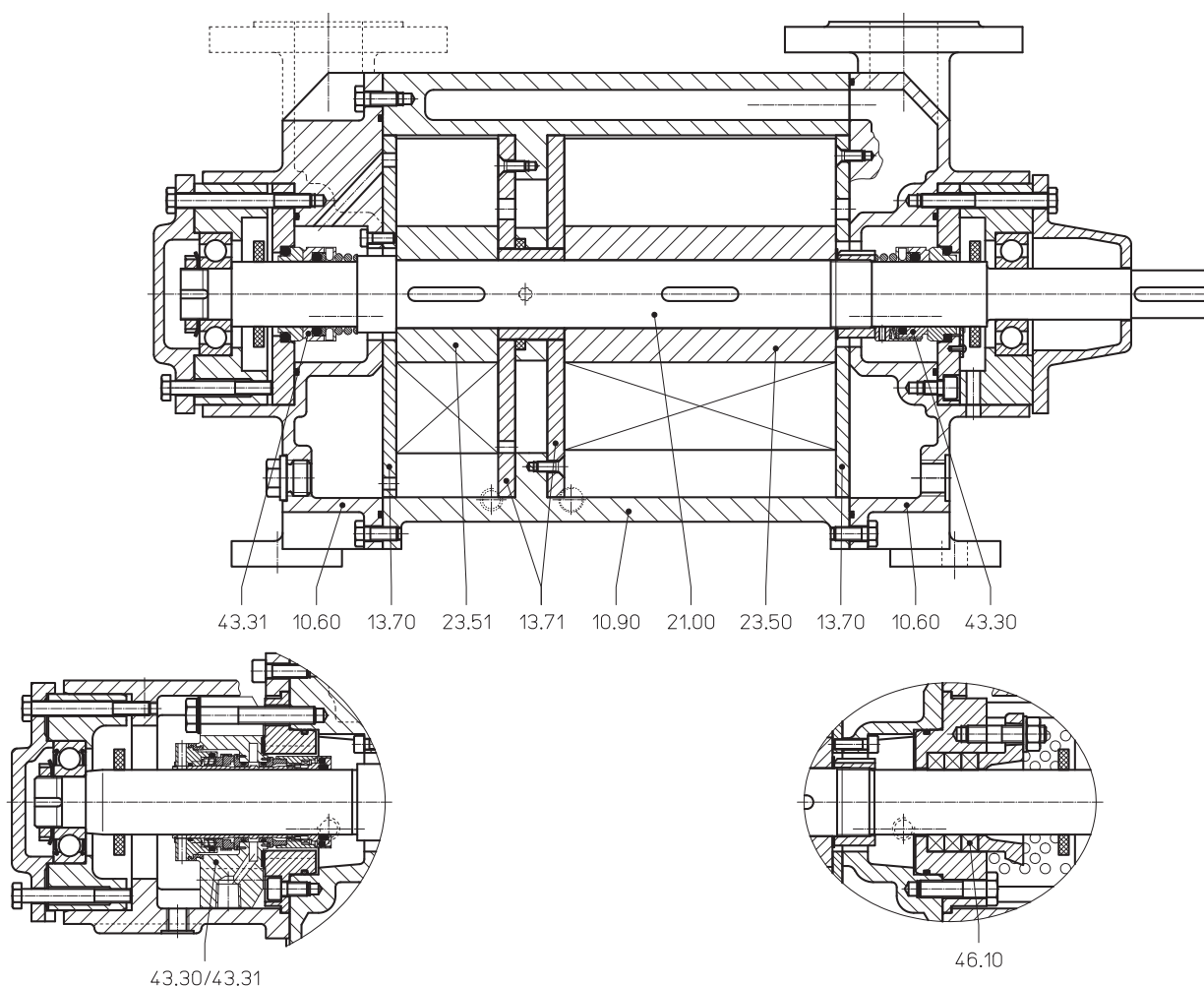
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials LPH 45008, LPH 45311, LPH 45316 with single, double mechanical seal and gland packing

Position Number	COMPONENT	MATERIALS				
		0A	0B	0K	SZ	4B
10.60	Casing	0.6025				1.4408
10.90	Central Body					
13.70, 13.71	Guide Disc	0.6025			1.4404	
23.50, 23.51	Impeller	2.1096.01	1.0619	1.4301	1.4517	
21.00	Shaft	1.4021				1.4404
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	Mechanical Seal, Type Sterling GNZ (AF●)	SiC / Carbon / Viton				SiC / Carbon / Teflon
43.30, 43.31	Double Mechanical Seal	on request				
46.10	Gland Packing	GORE	-			

Cut-away diagram LPH 45008, LPH 45311, LPH 45316 with single, double mechanical seal and gland packing



LPH 45008, 45311, 45316

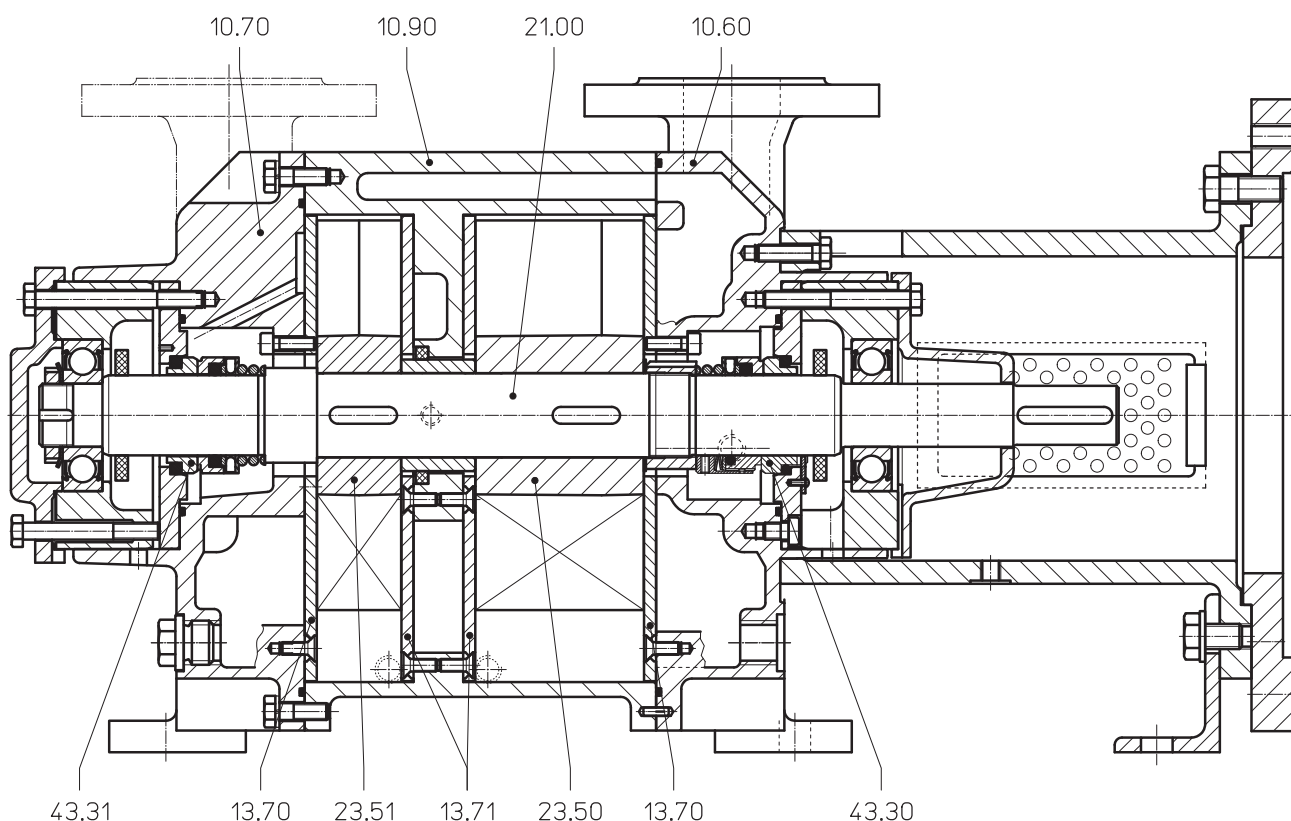
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials LPH 45008, LPH 45311, LPH 45316 with motor carrier

Position Number	COMPONENT	MATERIALS	
		0A	4B
10.60, 10.70	Casing	0.6025	1.4408
10.90	Central Body		1.4404
13.70, 13.71	Guide Disc		
23.50, 23.51	Impeller	2.1096.01	1.4517
21.00	Shaft	1.4021	1.4404
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	Mechanical Seal, Type Sterling GNZ (AF●)	SiC / Carbon / Viton	SiC / Carbon / Teflon

Cut-away diagram LPH 45008, LPH 45311, LPH 45316 with motor carrier



LPH 45008, 45311, 45316

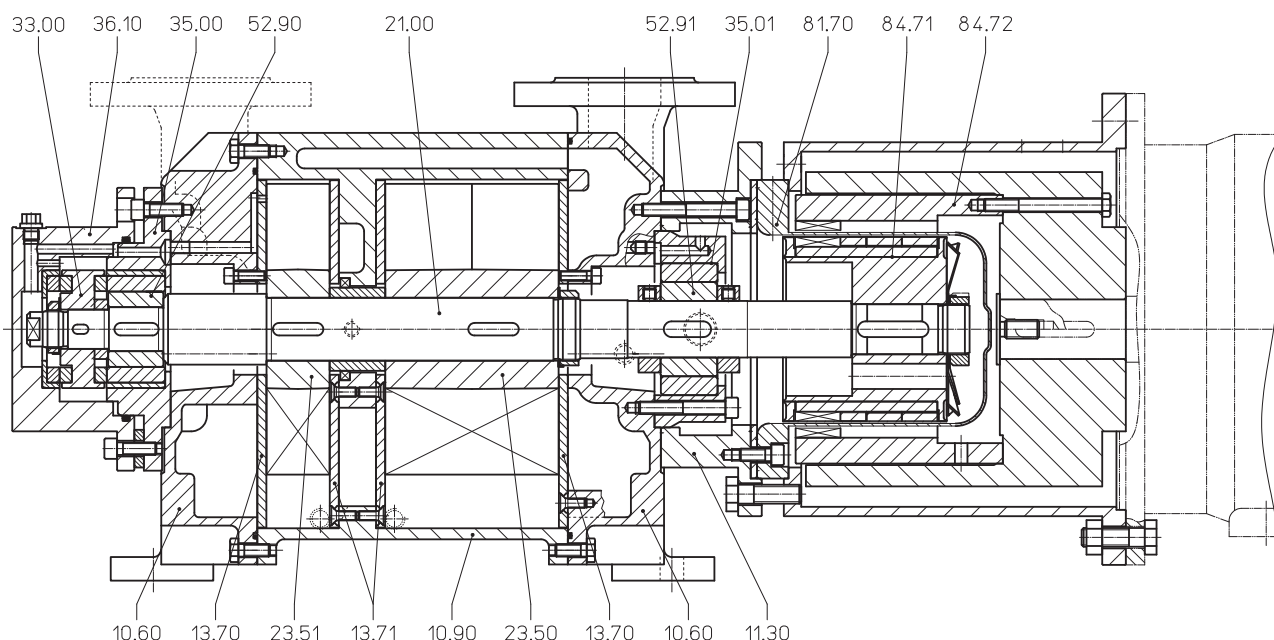
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials LPH 45008, LPH 45311, LPH 45316 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	1.0619	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 45008, LPH 45311, LPH 45316 with magnetic coupling



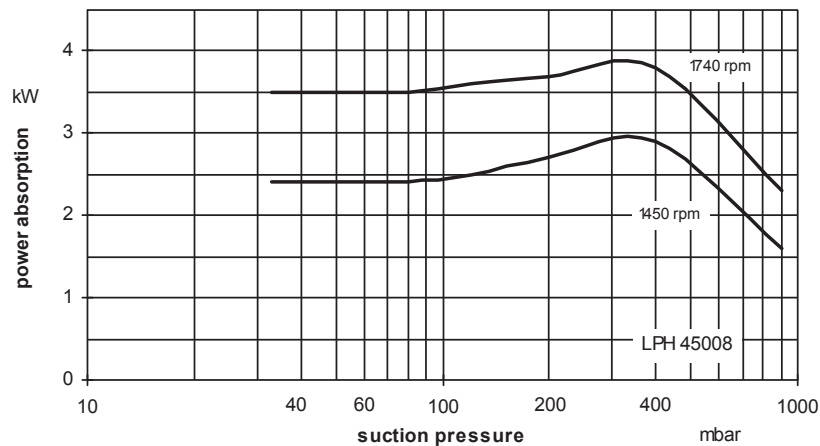
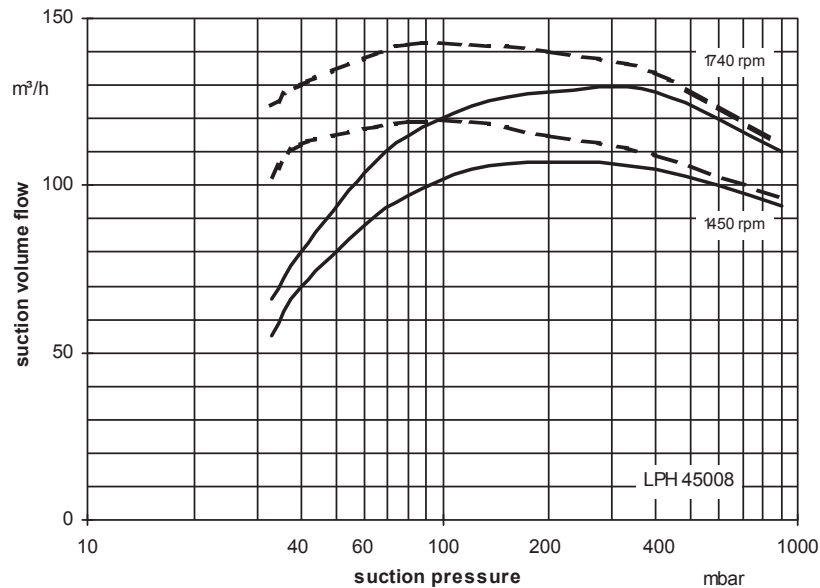
All information in this catalogue, like general technical data, performance data, dimensions, arrangement drawings, accessories, etc. don't refer to the magnetic coupling execution.
Please contact the manufacturer about more information.



LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors

Performance Characteristics LPH 45008



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%

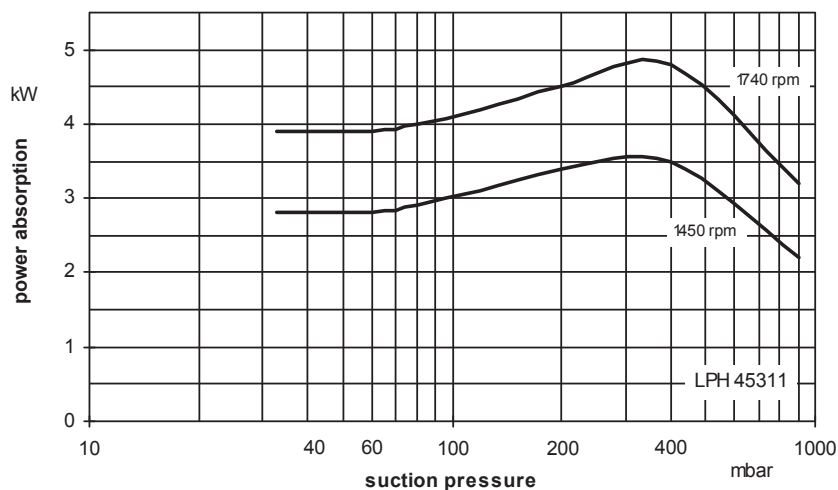
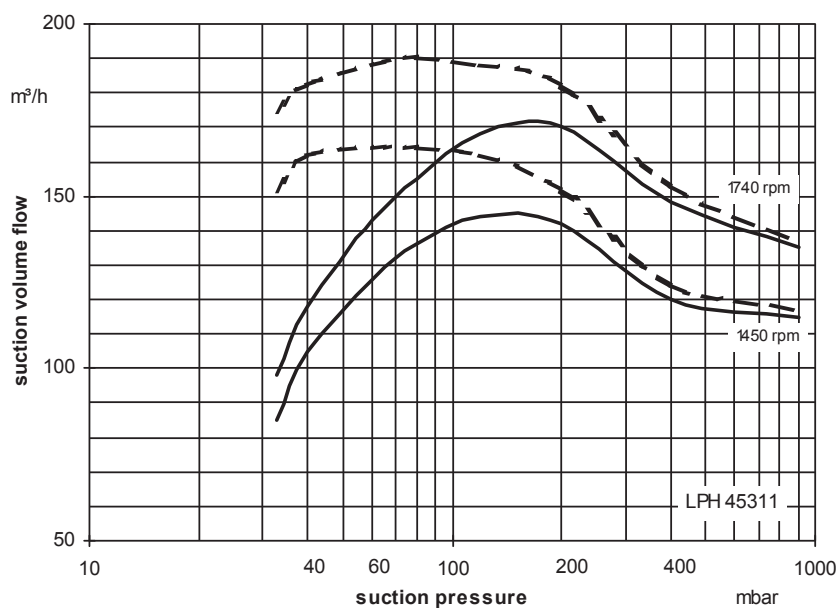
The maximum consumption of make up water occurs at the lowest suction pressure

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 45311



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%

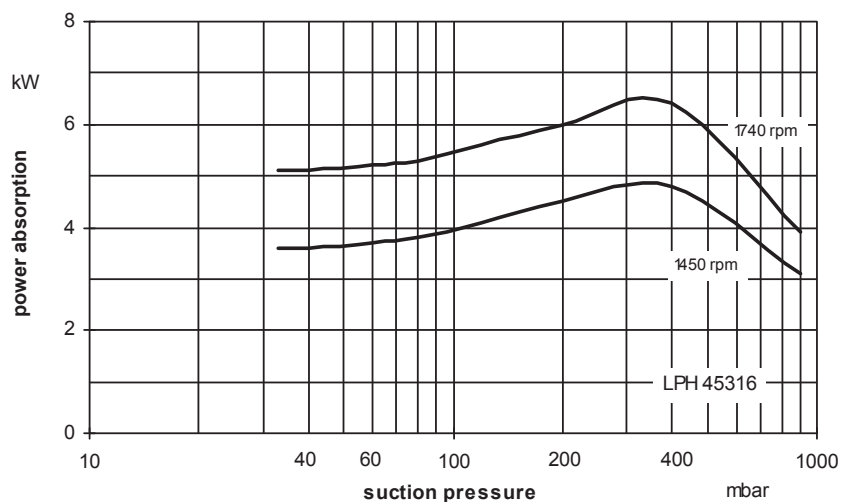
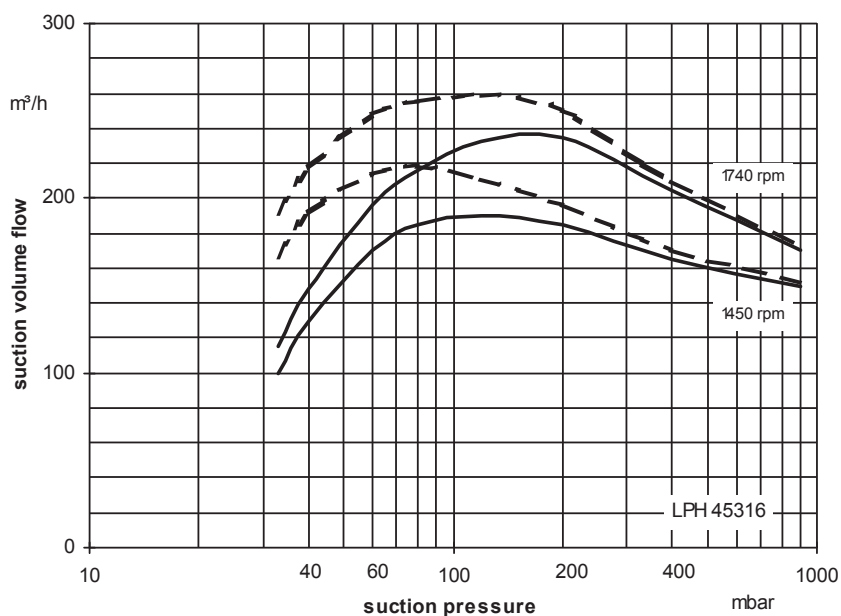
Maximum consumption of make up water occurs at the lowest suction pressure

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 45316



The operating data is valid under the following conditions:

- Process media:
 - dry air: 20°C (solid line)
 - steam saturated air: 20°C (dashed line)
- 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%

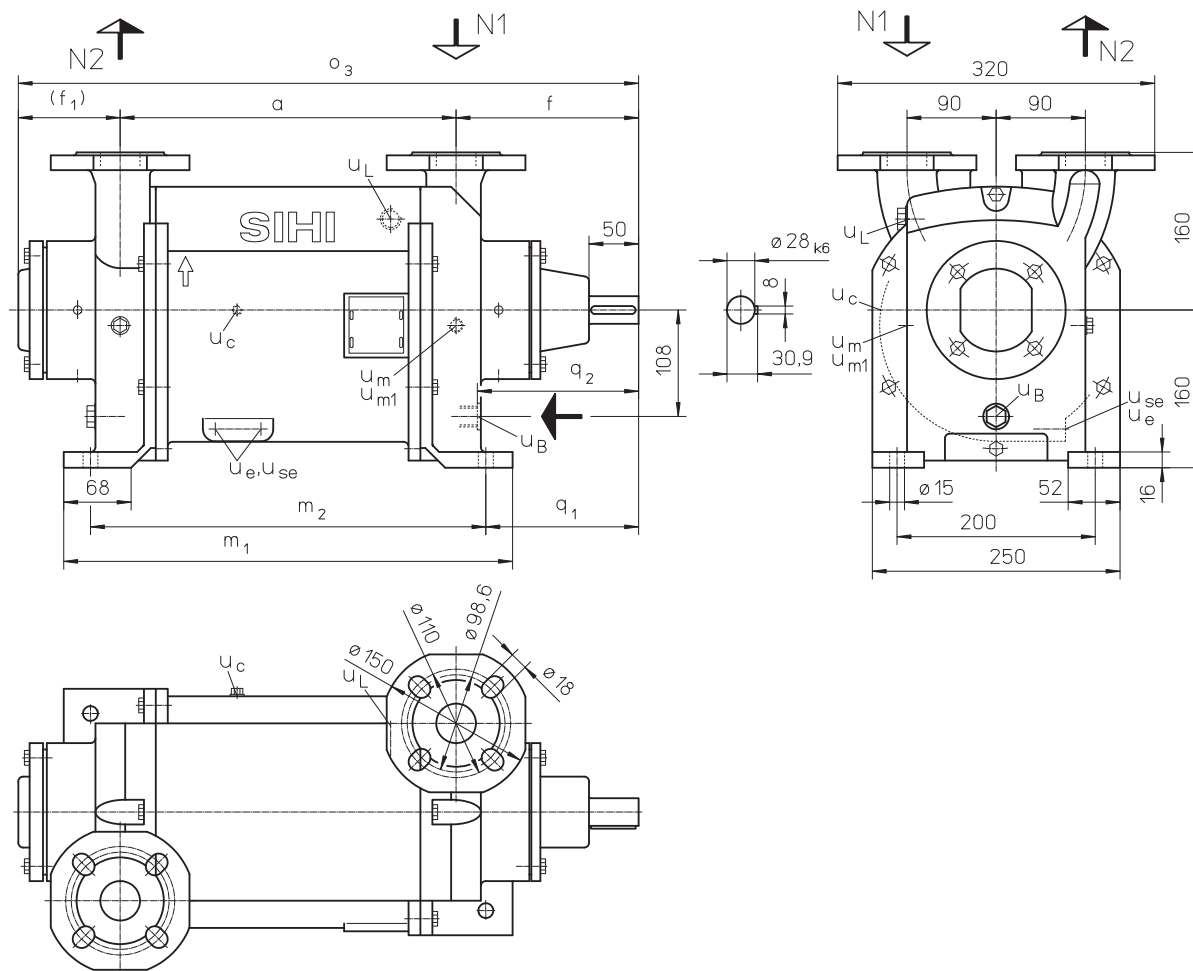
Maximum consumption of make up water occurs at the lowest suction pressure



LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors

Dimensions LPH 45008, LPH 45311, LPH 45316 with single mechanical seal and gland packing



N 1 = Gas-Inlet DN 40

N 2 = Gas-Outlet DN 40

u_B = connection for service liquid G ¹/₂

u_c = connection for cavitation protection G ¹/₈

u_e = connection for drain G ¹/₈

u_{se} = connection for dirt drain G ¹/₈

u_L = connection for air cock G ¹/₂

u_m = connection for pressure gauge G ¹/₄

u_{m1} = connection for drainage valve or liquid level sensor G ¹/₄

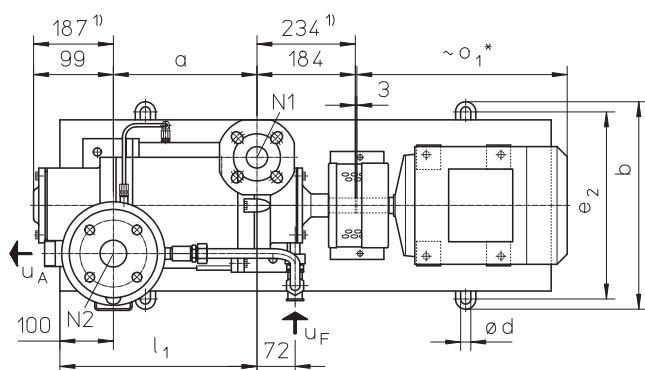
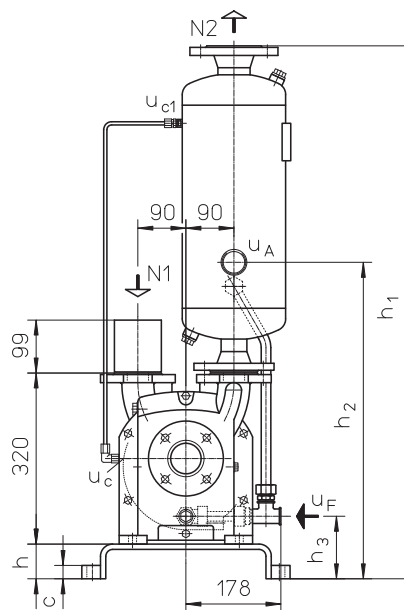
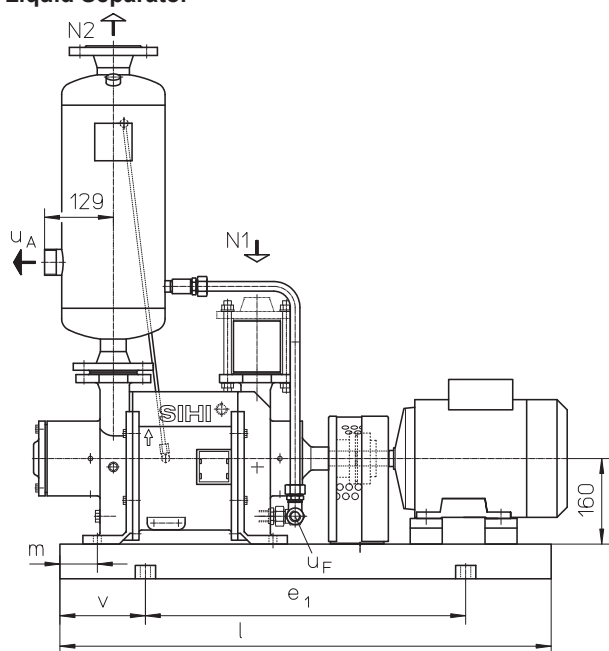
	execution	a [mm]	f [mm]	f ₁ [mm]	m ₁ [mm]	m ₂ [mm]	o ₃ [mm]	q ₁ [mm]	q ₂ [mm]	approx. weight [kg]
LPH 45008	Mechanical Seal	239	184	103	353	299	526	154	163	68
	Gland Packing		234	187			660	204	212	77
LPH 45311	Mechanical Seal	269	184	103	383	329	556	154	163	72
	Gland Packing		234	187			690	204	212	81
LPH 45316	Mechanical Seal	339	184	103	453	399	626	154	163	79
	Gland Packing		234	187			760	204	212	88

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



LPH 45008, LPH 45311, LPH 45316 with single mechanical seal, gland packing and with Top-Mounted Liquid Separator



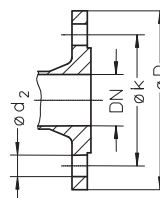
- N 1 = Gas-Inlet DN 40
N 2 = Gas-Outlet DN 50
u_A = Liquid Drain G 1 for LPH 45008,
G 1½ for LPH 45311 and 45316
u_F = Connection for Make-Up Liquid G ½
u_C = Connection for Cavitation Protection G ⅓
u_{C1} = Connection for Cavitation Protection G ⅓

[illegible]

* Dimensions dependent upon motor supplier

- 1) Execution with gland packing

Flange dimensions according to DIN 2501 PN 10 [mm]		
DN	40	50
k	110	125
D	150	165
Number x d ₂	4 x 18	4 x 18

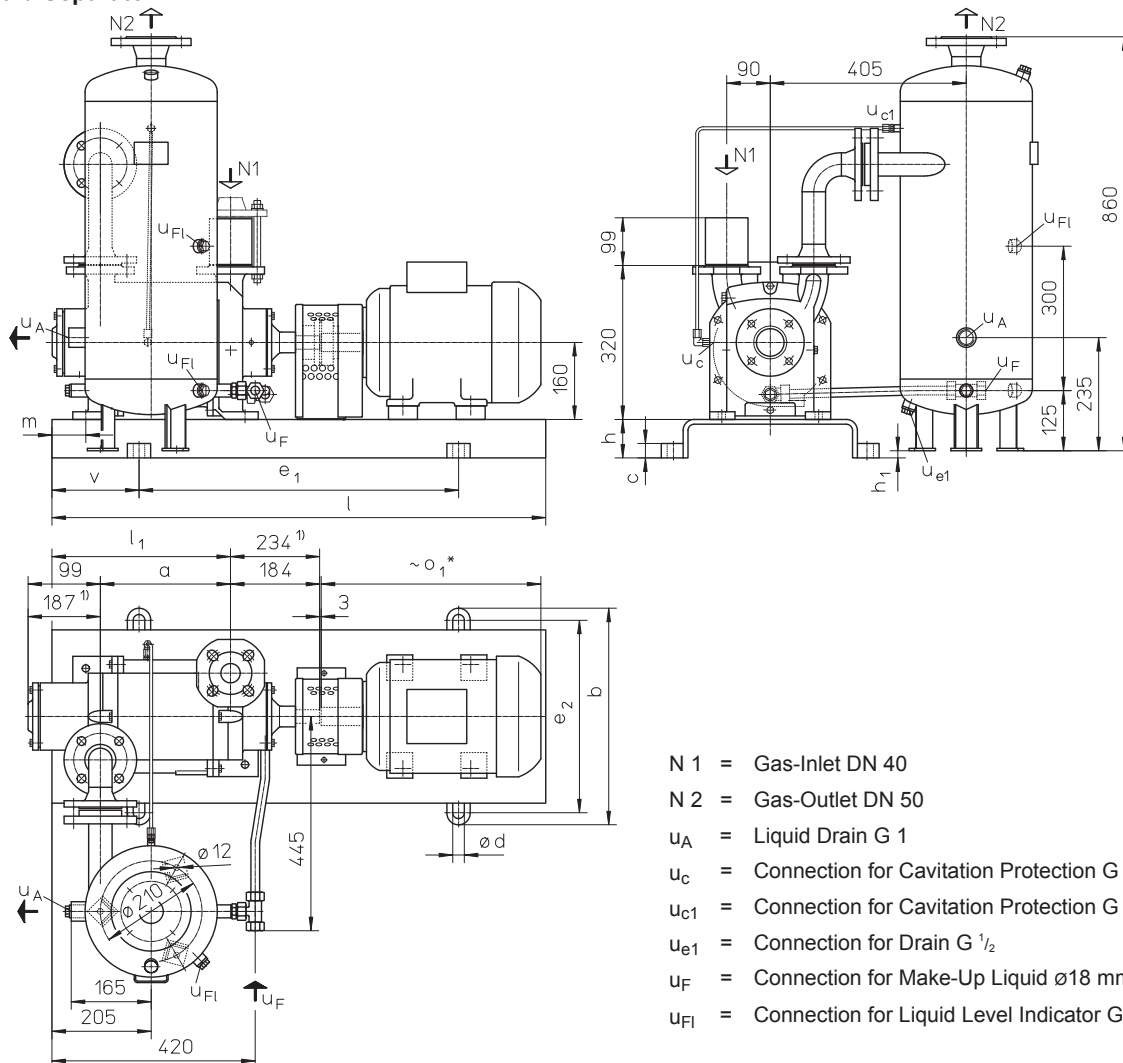


LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



LPH 45008, LPH 45311, LPH 45316 with single mechanical seal, gland packing and with Side-Mounted Liquid Separator

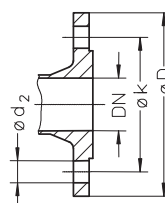


	E-Motor 50 Hz			Base-plate	a [mm]	b [mm]	c [mm]	d [mm]	e ₁ [mm]	e ₂ [mm]	h [mm]	h ₁ [mm]	l [mm]	l ₁ [mm]	m [mm]	o ₁ * [mm]	v [mm]	Approx. Weight [kg]
	Size	IP 55	kW EEx e II T3															
LPH	100 L	3.0	-	S303	239	390	25	19	600	350	65	0	920	339	70	375	160	160
45008	112 M	-	3.6													395		170
LPH	112 M	4.0	-													369		170
45311	132 S	-	5.0	S344	269	450	30	24	660	400	80	15	1020	439	40	455	180	210
LPH	132 S	5.5	-													495		215
45316	132 M	-	6.8													495		250

* Dimensions dependent upon motor supplier

- 1) Execution with gland packing

Flange dimensions according to DIN 2501 PN 10 [mm]		
DN	40	50
k	110	125
D	150	165
Number x d ₂	4 x 18	4 x 18

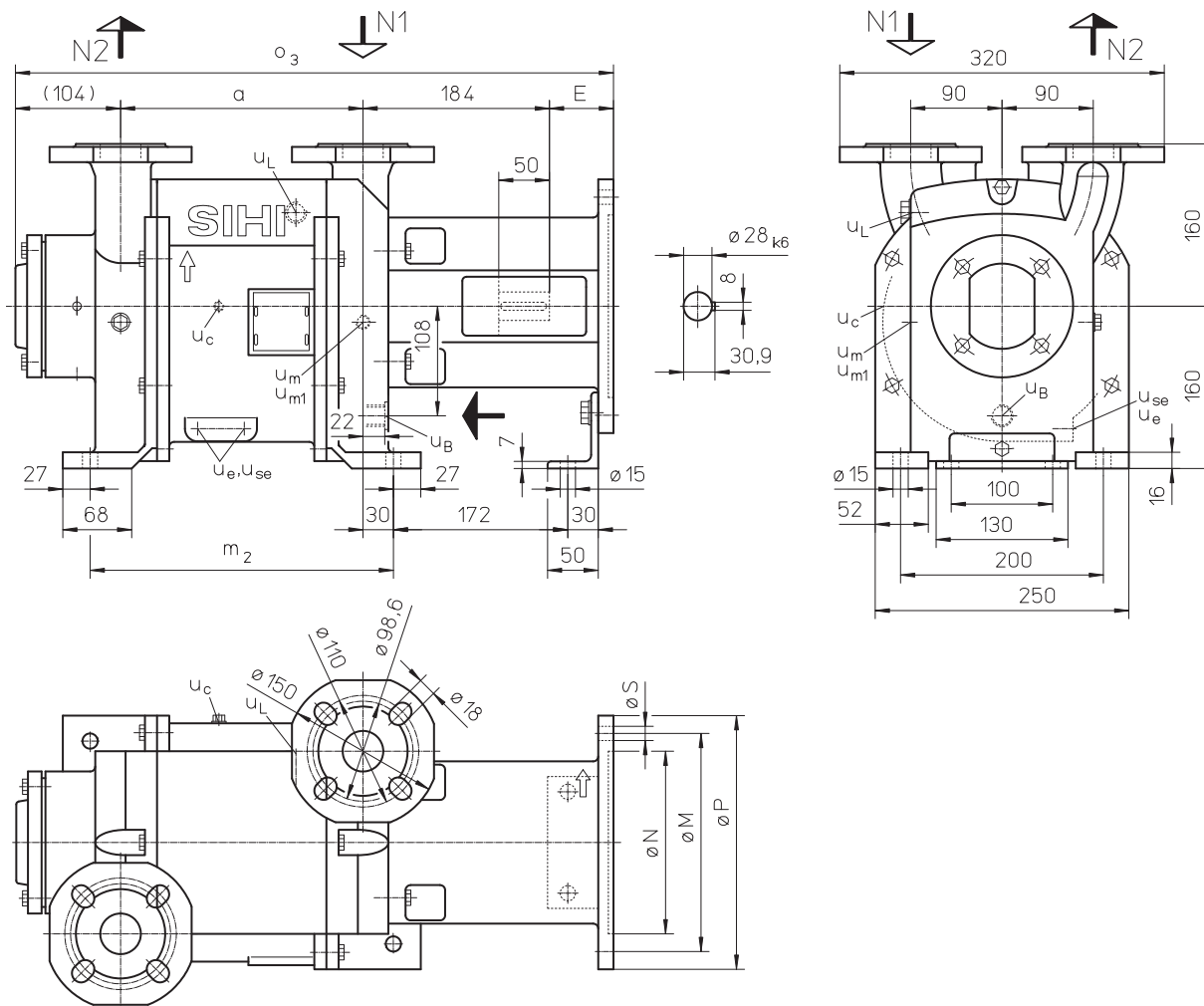


LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



Dimensions LPH 45008, LPH 45311, LPH 45316 with motor carrier



N 1 = Gas-Inlet DN 40

N 2 = Gas-Outlet DN 40

u_B = connection for service liquid G ¹/₂

u_c = connection for cavitation protection G ¹/₈

u_e = connection for drain G ¹/₈

u_{se} = connection for dirt drain G ¹/₈

u_L = connection for air cock G ¹/₂

u_m = connection for pressure gauge G ¹/₄

u_{m1} = connection for drainage valve or liquid level sensor G ¹/₄

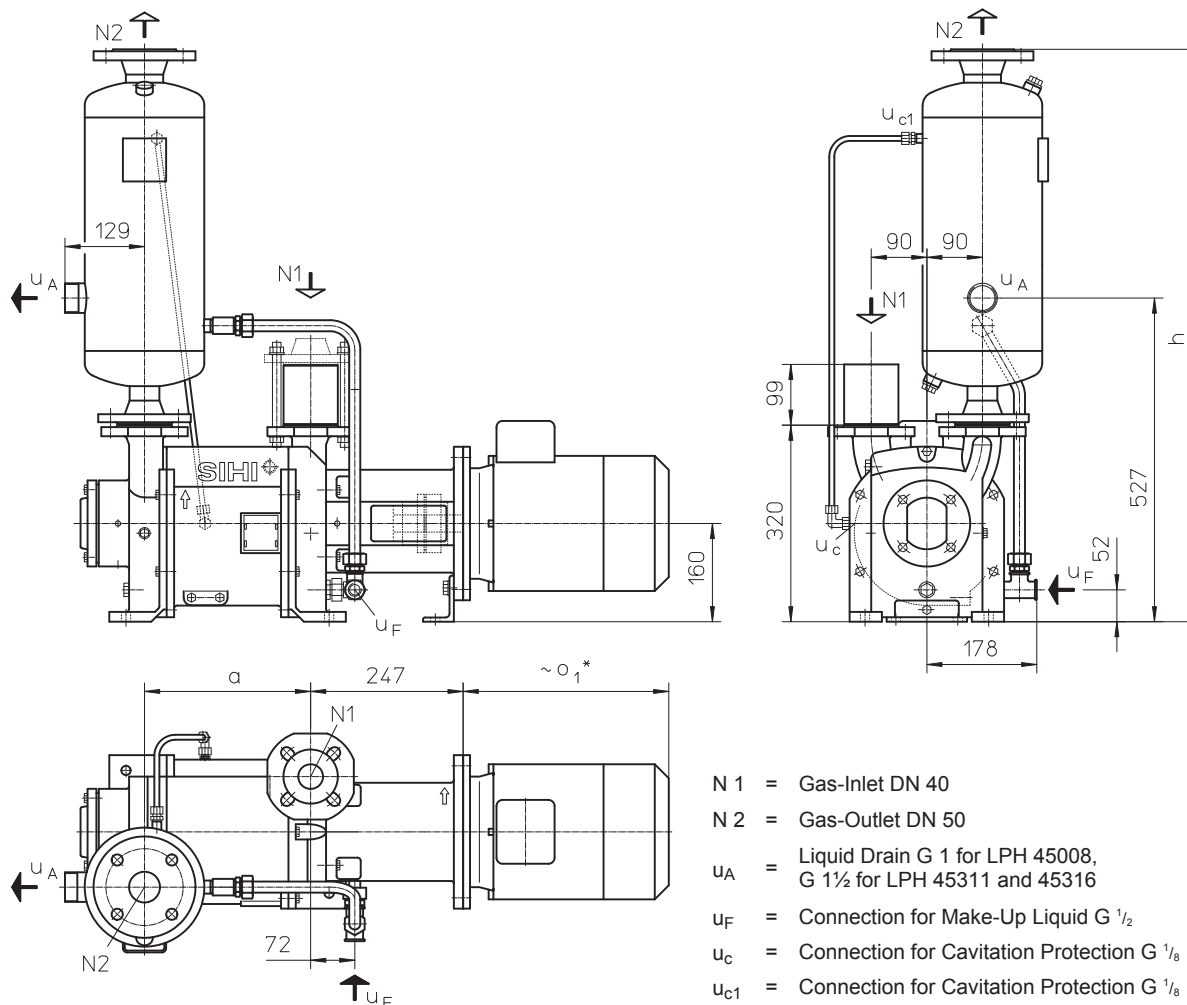
	code	for motor size	a [mm]	m ₂ [mm]	o ₃ [mm]	E [mm]	M [mm]	N [mm]	P [mm]	S [mm]	approx. weight [kg]
LPH 45008	LS	100L / 112M	239	299	590	63	215	180	250	4 x Ø14	79
LPH 45311	LS	112 M	269	329	620	83	265	230	300	4 x M12	82
	MS	132 S/M			640						90
LPH 45316	MS	132 S/M	339	399	710						97

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



LPH 45008, LPH 45311, LPH 45316 with motor carrier and with Top-Mounted Liquid Separator

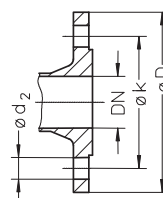


- N 1 = Gas-Inlet DN 40
- N 2 = Gas-Outlet DN 50
- U_A = Liquid Drain G 1 for LPH 45008,
G 1½ for LPH 45311 and 45316
- U_F = Connection for Make-Up Liquid G ½
- U_C = Connection for Cavitation Protection G ⅛
- U_{C1} = Connection for Cavitation Protection G ⅛

	E-Motor 50 Hz			a [mm]	h [mm]	o ₁ * [mm]	Approx. Weight [kg]
	Size	kW IP 55	EEEx e II T3				
LPH 45008	100 L	3,0	-	239	812	312	118
	112 M	-	3,6			333	128
LPH 45311	112 M	4,0	-	269	932	333	133
	132 S	-	5,0			373	178
LPH 45316	132 S	5,5	-	339		373	165
	132 M	-	6,8				200

* Dimensions dependent upon motor supplier

Flange dimensions according to DIN 2501 PN 10 [mm]		
DN	40	50
k	110	125
D	150	165
Number x d ₂	4 x 18	4 x 18

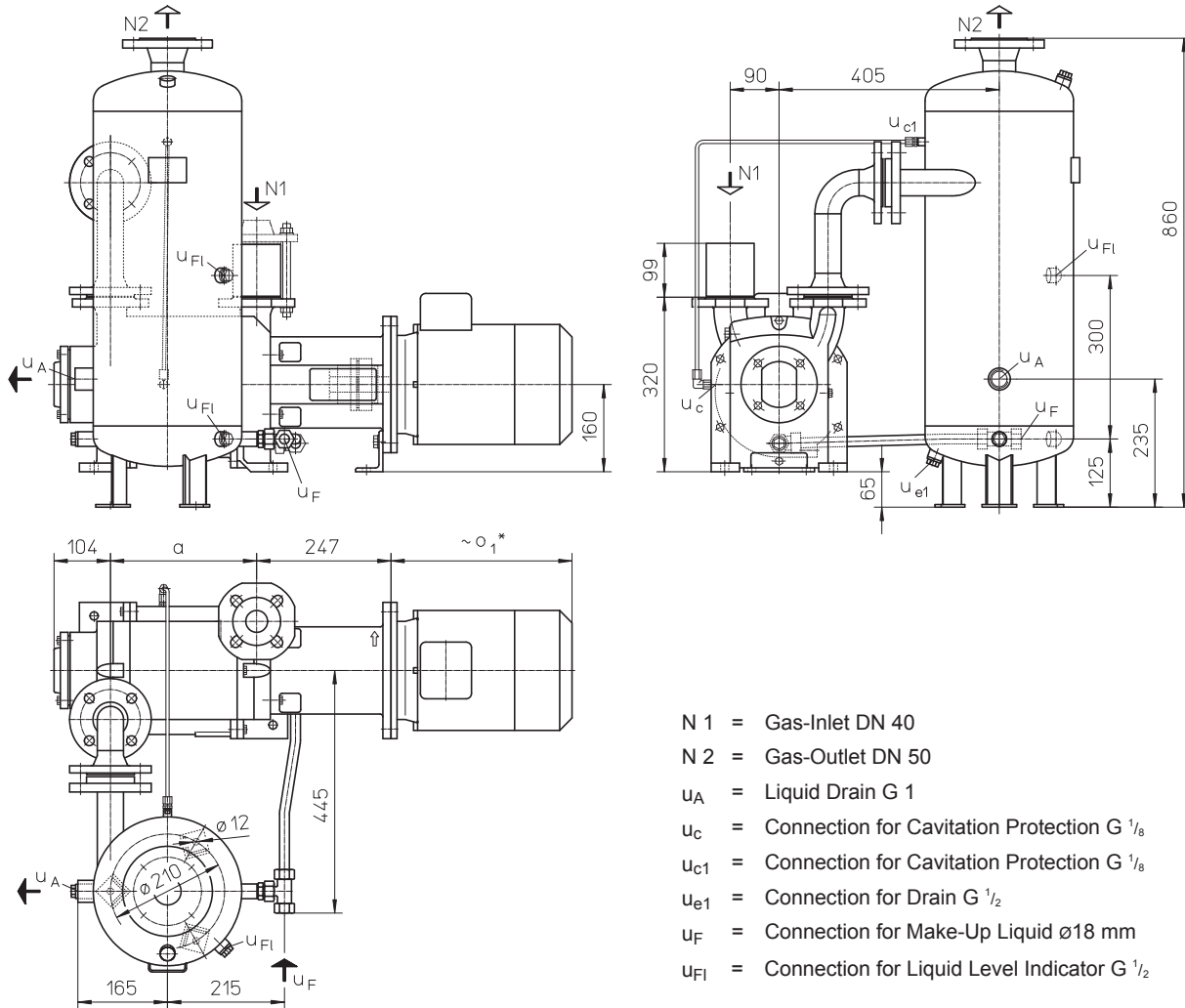




LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors

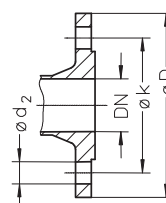
LPH 45008, LPH 45311, LPH 45316 with motor carrier and with Side-Mounted Liquid Separator



	E-Motor 50 Hz			a [mm]	o ₁ * [mm]	Approx. Weight [kg]	
	Size	IP 55	kW EEx e II T3				
LPH 45008	100 L	3,0	-	239	312	142	
	112 M	-	3,6		333	152	
LPH 45311	112 M	4,0	-	269		373	153
	132 S	-	5,0		198		
LPH 45316	132 S	5,5	-	339	373		185
	132 M	-	6,8				220

* Dimensions dependent upon motor supplier

Flange dimensions according to DIN 2501 PN 10 [mm]		
DN	40	50
k	110	125
D	150	165
Number x d ₂	4 x 18	4 x 18



LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



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 [rpm]	KB			FB	KB			FB	KB			FB	KB			FB
		Temperature Difference [°C]				Temperature Difference [°C]				Temperature Difference [°C]				Temperature Difference [°C]			
		10	5	2		10	5	2		10	5	2		10	5	2	
LPH 45008	1450	0.17	0.28	0.48	0.9	0.17	0.28	0.46	0.8	0.18	0.29	0.46	0.75	0.18	0.28	0.43	0.6
	1750	0.23	0.36	0.56		0.22	0.35	0.53		0.22	0.34	0.51		0.22	0.33	0.46	
LPH 45311	1450	0.19	0.31	0.51		0.20	0.32	0.50		0.21	0.33	0.50		0.21	0.31	0.45	
	1750	0.24	0.38	0.59		0.25	0.38	0.55		0.26	0.38	0.54		0.25	0.36	0.49	
LPH 45316	1450	0.24	0.38	0.61	1.0	0.25	0.40	0.60	0.9	0.27	0.40	0.59	0.85	0.25	0.36	0.49	
	1750	0.30	0.47	0.69		0.31	0.47	0.65		0.32	0.47	0.64		0.30	0.41	0.53	

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 10°C, 5°C, 2°C, warmer than make-up water.

Product Code – order details

Range + Size	Hydraulic + Bearings	Shaft Seal	Materials	Casing Sealing	Delivery without motor : code of motor connection
	A• 1. Hydraulic •B Two greased roller bearings •Z Two greased roller bearings, with motor carrier	001 Gland Packing AGE Mechanical Seal Type SIHI FK, O-Rings Butadiene rubber AG1 Mechanical Seal Type SIHI FK, O-Rings Viton AFJ Mechanical Seal Type Sterling GNZ, O-Rings Viton AFK Mechanical Seal Type Sterling GNZ, O-Rings Teflon coated (Viton heart)	0A Main parts from cast iron (GG) and impellers in bronze 0B Similar to 0A, but impellers in steel 0K Similar to 0A, but impellers in low alloyed steel SZ Similar to 0A, however impellers and guide discs are in stainless steel 4B Main parts out of stainless steel	1 O-Ring Sealing	LS for IMB5 motor 100L resp. 112M flange Ø 250 MS for IMB5 motor 132S resp. 132M flange Ø 300
45008	AB	001	0A	1	-
LPH 45311		AGE, AFJ	0A, 0B, 0K, SZ		
45316		AG1, AFK	4B		
45008	AZ	AGE, AFJ	0A	1	LS
LPH 45311		AGE, AFJ	0A		LS, MS
45316		AG1, AFK	4B		MS

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:

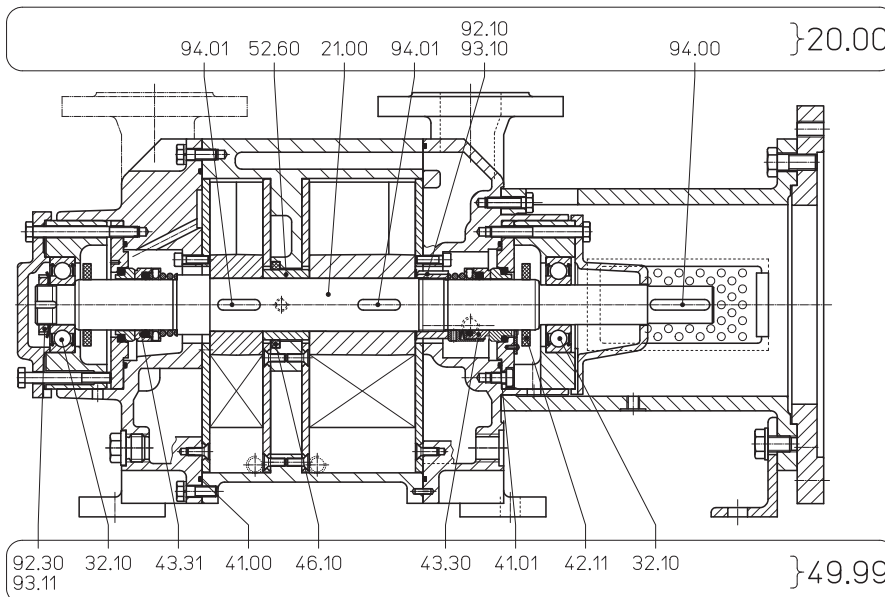
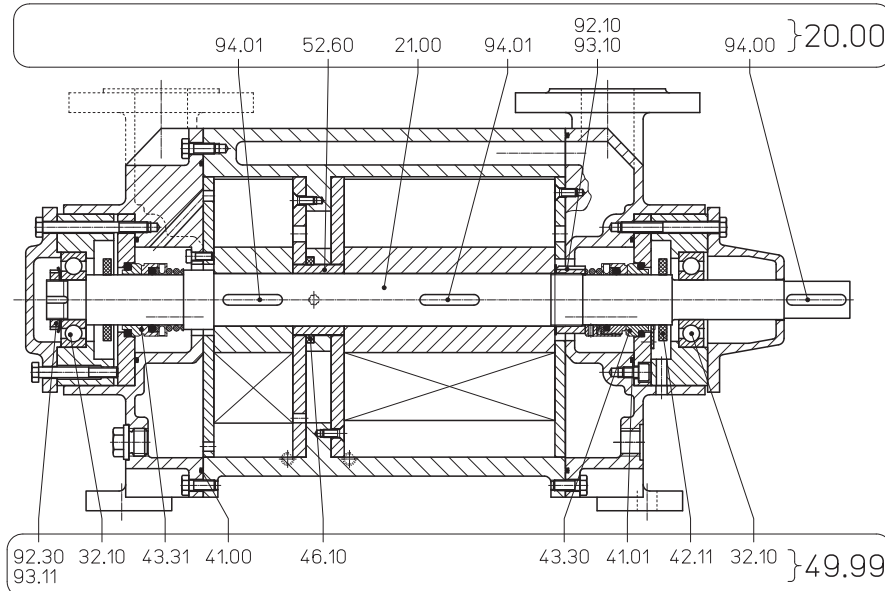
LPHX 45311 AB AGE 0A 1 with 4.0 kW AC motor, 50 Hz, 400V Δ, IP55



LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors

Spare Parts Order Number



Material Design 0A				
Group	Spare Parts Kit	LPH 45008	LPH 45311	LPH 45316
20.00	Shaft	65 006 712	65 006 711	65 006 710
49.99	Basic Repair AGE	65 008 221		
49.99	Basic Repair AFJ	65 008 222		

Material Design SZ				
Group	Spare Parts Kit	LPH 45008	LPH 45311	LPH 45316
20.00	Shaft	65 006 712	65 006 711	65 006 710
49.99	Basic Repair AGE	65 008 221		
49.99	Basic Repair AFJ	65 008 222		

Material Design 0B				
Group	Spare Parts Kit	LPH 45008	LPH 45311	LPH 45316
20.00	Shaft	65 006 712	65 006 711	65 006 710
49.99	Basic Repair AGE	65 008 221		
49.99	Basic Repair AFJ	65 008 222		

Material Design 4B				
Group	Spare Parts Kit	LPH 45008	LPH 45311	LPH 45316
20.00	Shaft	65 006 757	65 006 758	65 006 759
49.99	Basic Repair AG1	65 008 223		
49.99	Basic Repair AFK	65 008 224		

LPH 45008, 45311, 45316

Two-stage Liquid Ring Vacuum Pumps and Compressors



Accessories

Recommended Accessory	Material Execution		LPH 45008	LPH 45311	LPH 45316
Top Mounted Liquid Separator		Type / Weight	XBa 1040 / 10 kg		
Top mounted separator	Steel, galvanised 1.4571	SIHI-Part No.	XBa 1340 / 14 kg		
			35 000 388 35 000 389	35 000 408 35 000 409	
Service liquid pipework, standard execution	Steel, galvanised 1.4571	SIHI-Part No.	20 058 985 20 058 993		
Service liquid pipework, thermostatic control 24V	Steel, galvanised +Brass 1.4571 + Brass	SIHI-Part No.	20 059 008 20 048 978		
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 040 424 20 040 423		
Side Mounted Liquid Separator		Type / Weight	XBp 0413 / 28 kg		
Side mounted separator	Steel, galvanised 1.4571	SIHI-Part No.	35 000 502 35 000 503		
Service liquid pipework, standard execution	Steel, galvanised 1.4571	SIHI-Part No.	20 058 979 20 058 987	20 058 980 20 058 988	20 058 981 20 058 989
Service liquid pipework, thermostatic control 24V	Steel, galvanised +Brass 1.4571 + Brass	SIHI-Part No.	20 049 503 20 050 725		
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 044 682 20 044 681		
Pressure pipework (bend)	1.0254 1.4571	SIHI-Part No.	35 003 165 35 003 166		
Liquid level indicator	Brass + Plexiglas 1.4571 + Plexiglas	SIHI-Part No.	43 014 911 43 040 384		
Sterling SIHI - Gas Ejector see Technical Catalogue – Gas Ejector					
At service liquid temperature 15 °C		Type / Weight	GPV 4011 / 13 kg	-	GPV 4012 / 20 kg
At service liquid temperature 30 °C		Type / Weight	GPV 4311 / 12 kg	GPV 4312 / 13 kg	GPV 4313 / 13 kg
Sterling SIHI - Non Return Ball Valve					
Intermediate flange execution XCK 40	0.6025 +Butadiene Rubber 0.6025 +Teflon 1.4408 +Teflon	SIHI-Part No. Weight	20 072 746 / 2.8 kg		
			20 072 745 / 2.8 kg 20 029 494 / 5.2 kg		
Flange execution with glass cylinder XCK 406	0.6025 +Butadiene Rubber 0.6025 +Teflon 1.4408 +Teflon	SIHI-Part No. Weight	20 072 835 / 7.0 kg		
			20 072 836 / 7.0 kg 20 072 834 / 7.0 kg		
Drain Valve XCg 015	Steel 1.4571	SIHI-Part No.	43 014 545 43 014 546		
Double nipple ½"-¾"	Steel, galvanised 1.4571	SIHI-Part No.	43 049 216 43 013 084		
Air Inlet Valve	Brass 1.4408	SIHI-Part No.	43 014 257 + 43 060 102 43 014 271		
Motor					
Motor Standard execution IP 55		Size Power Weight	100 L 3.0 kW 20 kg	112 M 4.0 kW 28 kg	132 S 5.5 kW 45 kg
Coupling for Motor IP 55 Pump side Motor side		Type / Weight SIHI-Part No.	B 95 / 2.6 kg 43 021 426 43 021 432		B 95 / 2.6 kg 43 021 426 43 021 433
Coupling guard	Steel	SIHI-Part No.	43 042 248		
Motor in EEx e II T3 execution		Size Power Weight	112 M 3.6 kW 30 kg	132 S 5.0 kW 65 kg	132 M 6.8 kW 80 kg
Coupling for Motor EEx e II T3 Pump side Motor side		Type / Weight SIHI-Part No.	BDS 103 / 3.1 kg 43 026 564 43 025 940	BDS 103 / 3.1 kg 43 026 564 43 025 941	
Coupling guard	Brass	SIHI-Part No.	43 042 249		
Baseplate	Steel	Type / Weight SIHI-Part No.	S 303 / 36 kg 43 040 635		S 344 / 48 kg 43 040 637

Designs subject to change without prior notice.

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Pressure Range: 33 to 1013 mbar
Suction Volume: 120 to 470 m³/h

CONSTRUCTION

Sterling 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

Sterling SIHI liquid ring vacuum pumps of the range LPH 55312, LPH 55316 and LPH 55320 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 55312	LPH 55316	LPH 55320
Speed	50 Hz 60 Hz	rpm rpm	1450 1740	
Maximum overpressure on compression	bar		2.0	
Maximum permissible pressure difference	bar	1.5	1.5 or 1.3 ¹⁾	1.1
Hydraulic test pressure (overpressure)	bar		3.0	
Moment of inertia of rotating parts of pump and water content	kg · m ²	0.137	0.162	0.205
Noise level at 80 mbar suction pressure	dB (A)		66	
Minimum permissible pulley diameter for V belt drive	mm	200	200	not allowed
Maximum gas temperature:	dry saturated	°C °C	200 120	
Service liquid:				
Maximum permissible temperature	°C		80	
Maximum viscosity	mm ² /s		90	
Maximum density	kg/m ³		1200	
Liquid capacity up to middle of shaft	litre	9.0	10.0	12.0
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.

¹⁾ at 60 Hz

LPH 55312, 55316, 55320

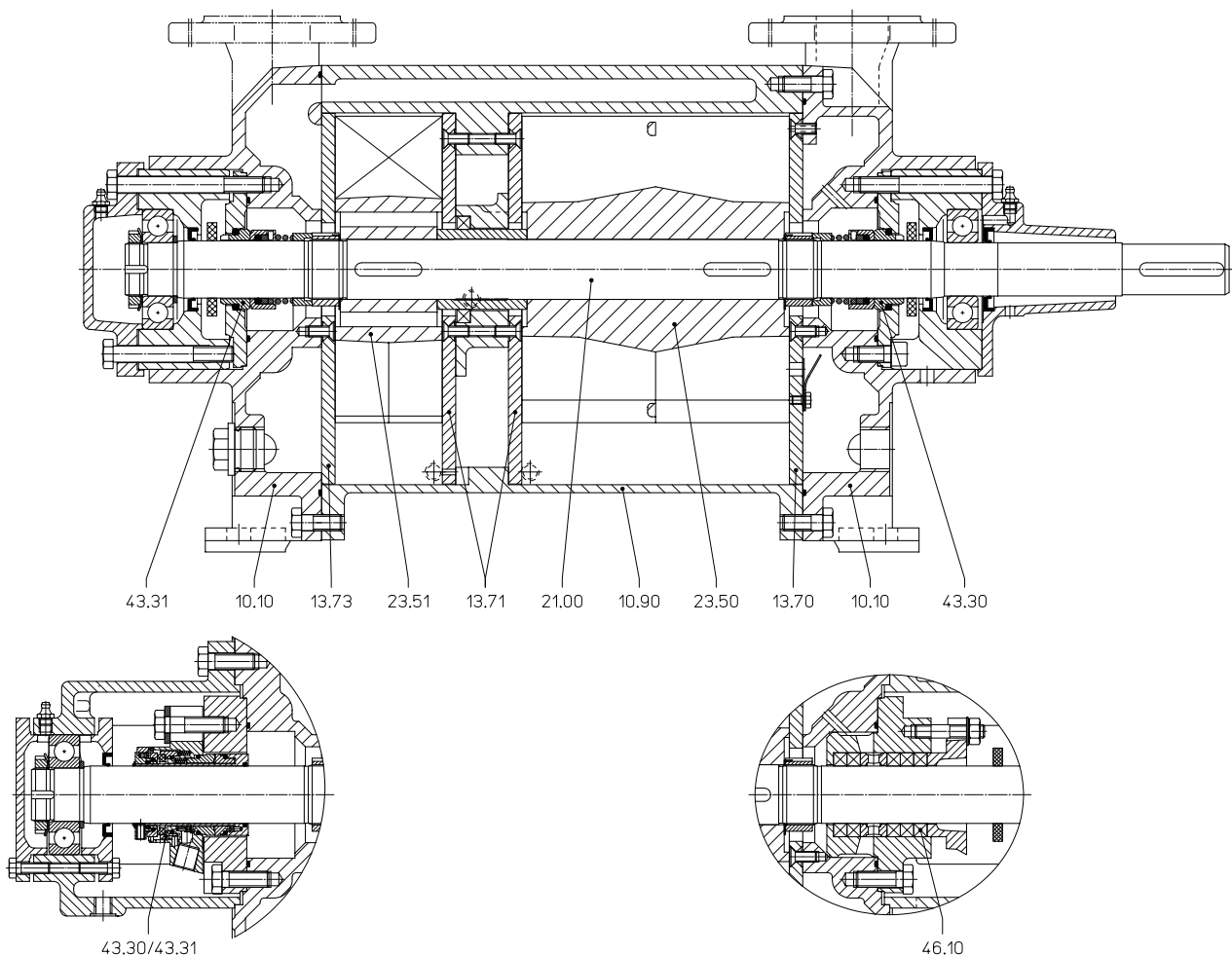
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials

Position Number	Component	MATERIALS			
		0A	0E	SZ	4B
10.10	Casing	0.6025			1.4408
10.90	Central Body	0.6025			1.4408
13.70, 13.71, 13.73	Guide Disc	0.6025		1.4404	
23.50, 23.51	Impeller	2.1096.01	1.4408		
21.00	Shaft	1.4021			1.4401
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	Mechanical Seal, Type Sterling GNZ (AF●)	SiC / Carbon / Viton			SiC / Carbon / Teflon
43.30, 43.31	Double Mechanical Seal	on request			
46.10	Gland Packing	GORE	-		

Cut-away diagram LPH 55312, LPH 55316, LPH 55320 with single, double mechanical seal and gland packing



LPH 55312, 55316, 55320

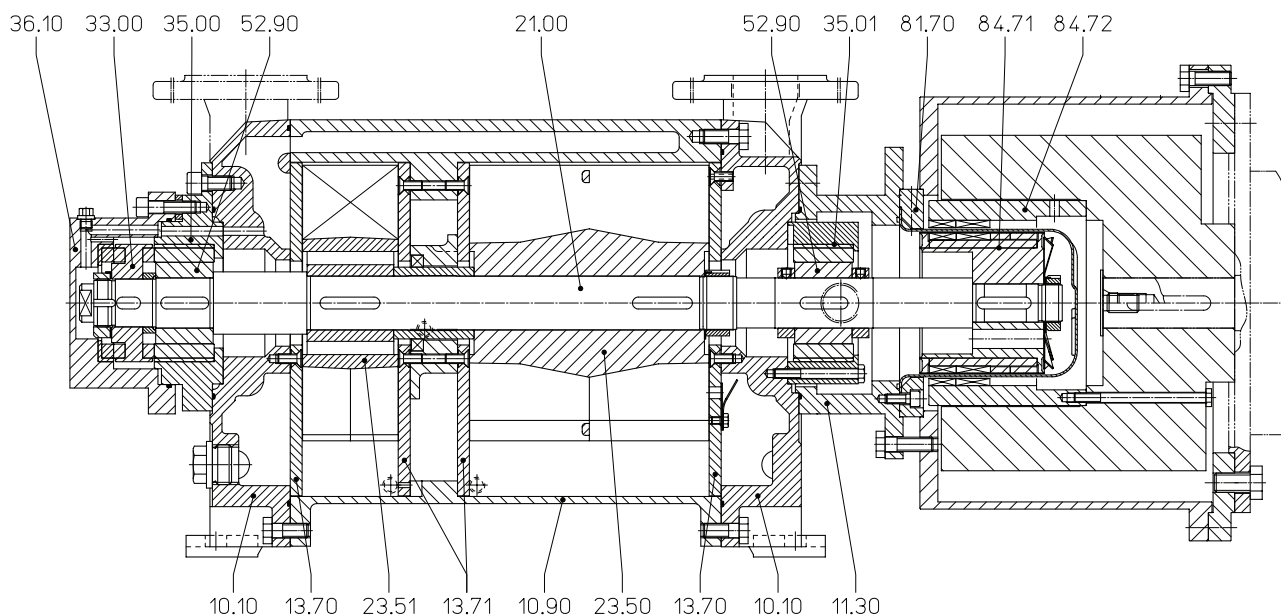
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials LPH 55312, LPH 55316, LPH 55320 with magnetic coupling

Position Number	COMPONENT	MATERIALS	
		0E	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	1.4517	
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 55312, LPH 55316, LPH 55320 with magnetic coupling



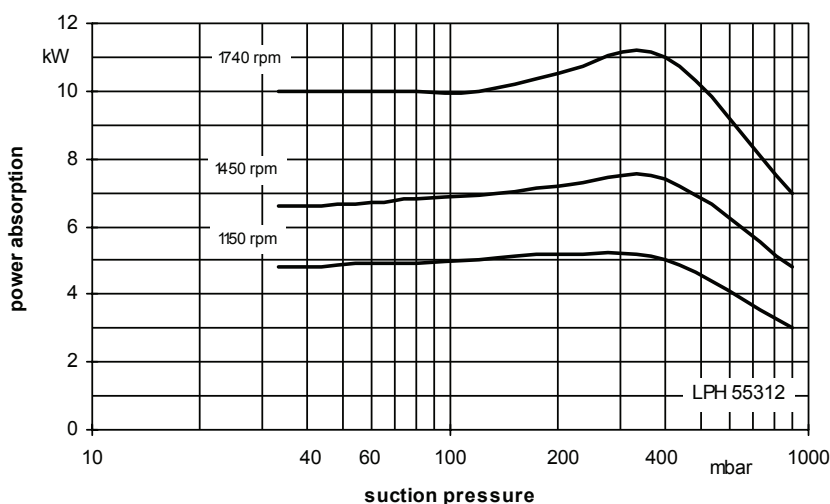
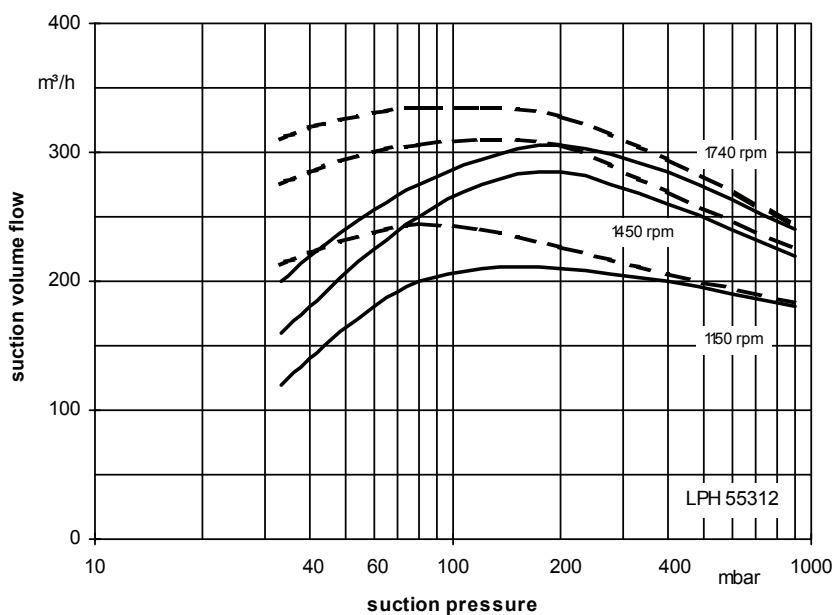
All information in this catalogue, like general technical data, performance data, dimensions, arrangement drawings, accessories, etc. don't refer to the magnetic coupling execution.
Please contact the manufacturer about more information.

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 55312



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%

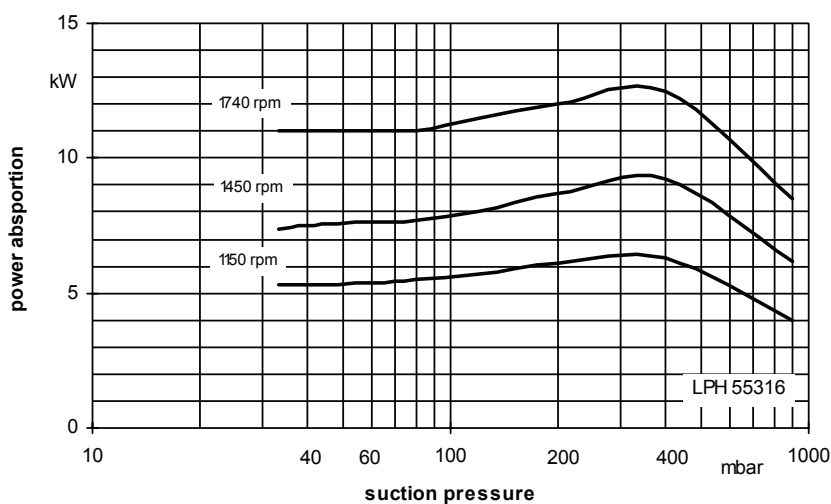
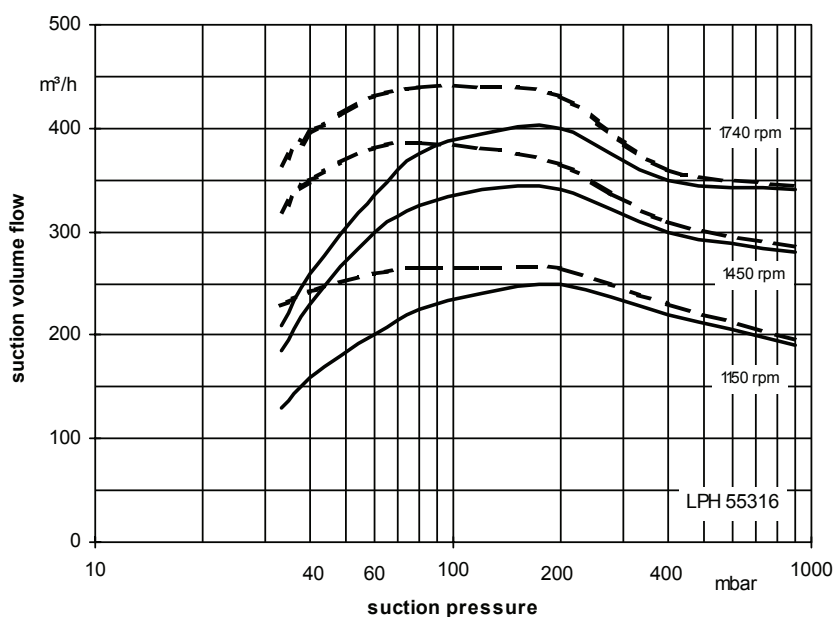
The maximum consumption of make up water occurs at the lowest suction pressure

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 55316



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%

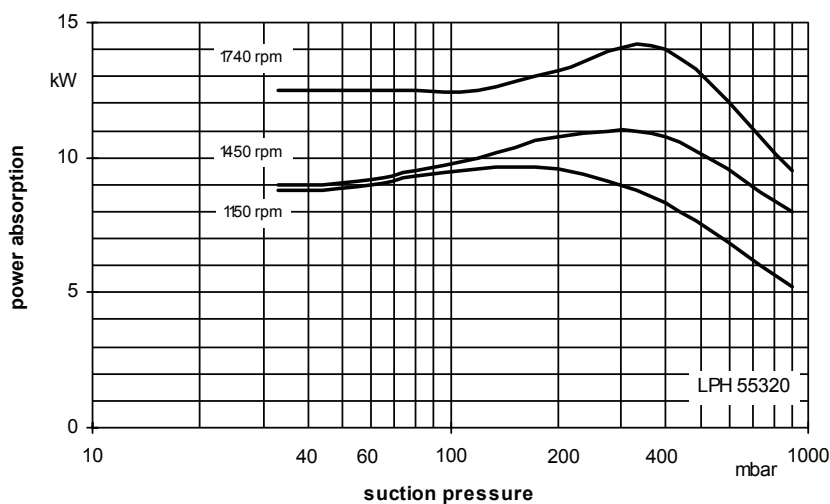
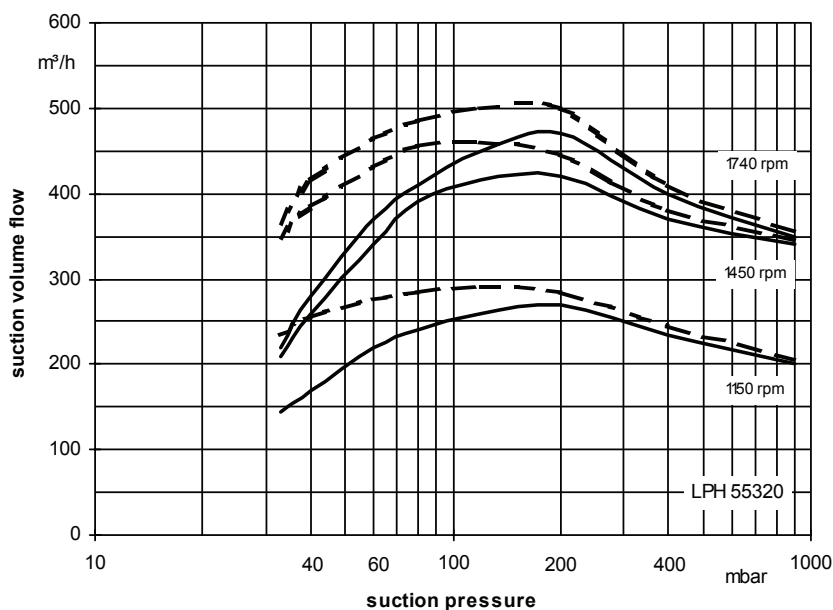
Maximum consumption of make up water occurs at the lowest suction pressure

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 55320



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%

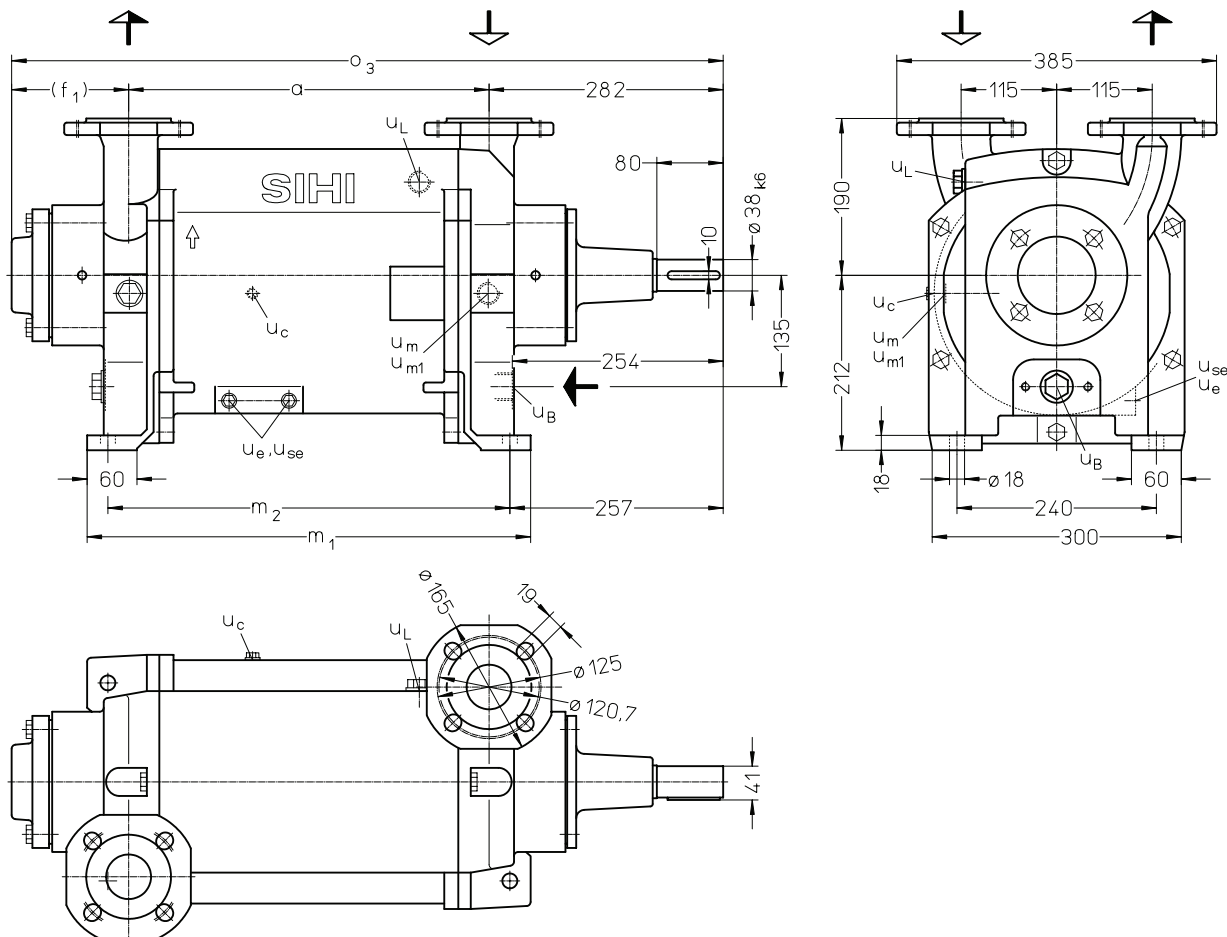
Maximum consumption of make up water occurs at the lowest suction pressure

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Dimensions LPH 55312, LPH 55316, LPH 55320 with single mechanical seal and gland packing



- N 1 = Gas-Inlet DN 50
- N 2 = Gas-Outlet DN 50
- u_B = Connection for Service Liquid G 1
- u_c = Connection for Cavitation Protection G 1/4
- u_e = Connection for Drain G 1/4 *
- u_{se} = Connection for Dirt Drain G 1/4 *
- u_L = Connection for Air Cock G 3/4
- u_m = Connection for Pressure Gauge G 3/4
- u_{m1} = Connection for Drainage Valve or Liquid Level Sensor G 3/4

* u_e, u_{se} = G 1/2 for stainless steel execution

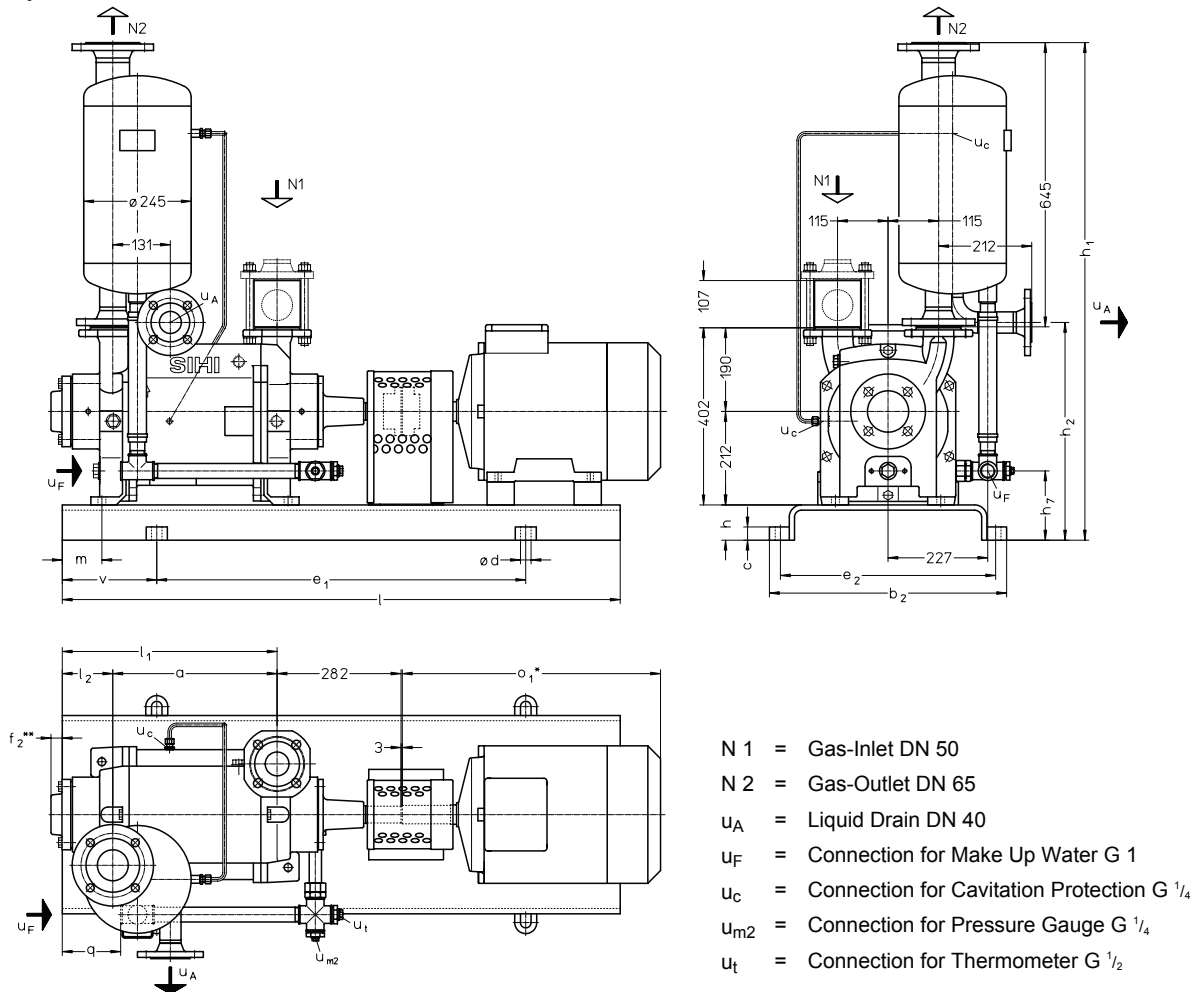
	Execution	a [mm]	f ₁ [mm]	m ₁ [mm]	m ₂ [mm]	o ₃ [mm]	Approx. Weight [kg]
LPH 55312	Mechanical Seal	334	141	434	384	757	140
	Gland Packing		191			807	
LPH 55316	Mechanical Seal	374	141	474	424	797	150
	Gland Packing		191			847	
LPH 55320	Mechanical Seal	434	141	534	484	857	180
	Gland Packing		191			907	

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



LPH 55312, LPH 55316, LPH 55320 with single mechanical, gland packing and with Top-Mounted Liquid Separator

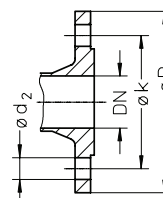


	E-Motor 50 Hz			Base-plate	a [mm]	b ₂ [mm]	c [mm]	d [mm]	e ₁ [mm]	e ₂ [mm]	f ₂ ** [mm]	h [mm]	h ₁ [mm]	h ₂ [mm]	h ₇ [mm]	l [mm]	l ₁ [mm]	l ₂ [mm]	m [mm]	o ₁ * [mm]	q [mm]	v [mm]	Approx. Weight [kg]																	
	Size	IP 55	EEx e II T3																																					
LPH 55312	132 M	7,5	-	S385	334	490	30	24	740	440	26	80	1129	494	157	1140	449	115	90	453	133	200	286																	
	160 M	11,0	-			S436			374	540													840	490	66	1270	489	628	588	93	215	324								
	160 M	-	10,0																													321								
LPH 55316	160 M	11,0	-	S436	374	540	30	24	840	490	66	80	1129	494	157	1270	489	75	50	628	93	215	334																	
	160 M	-	10,0						331																															
	160 L	-	13,5						374																															
LPH 55320	160 M	11,0	-	S487	434	610	35	28	940	550	26	100	1149	514	177	1420	549	115	90	628	133	240	413																	
	160 L	15,0	-						S487	434													610	35	28	940	550	26	100	1149	514	177	1420	549	115	90	628	133	240	438
	160 L	-	13,5																																					438

* Dimensions dependent upon motor supplier

** Dimension +50mm at execution with gland packing

Flange dimensions according to DIN 2501 PN 10 [mm]			
DN	40	50	65
k	110	125	145
D	150	165	185
Number x d ₂	4 x 18	4 x 18	4 x 18

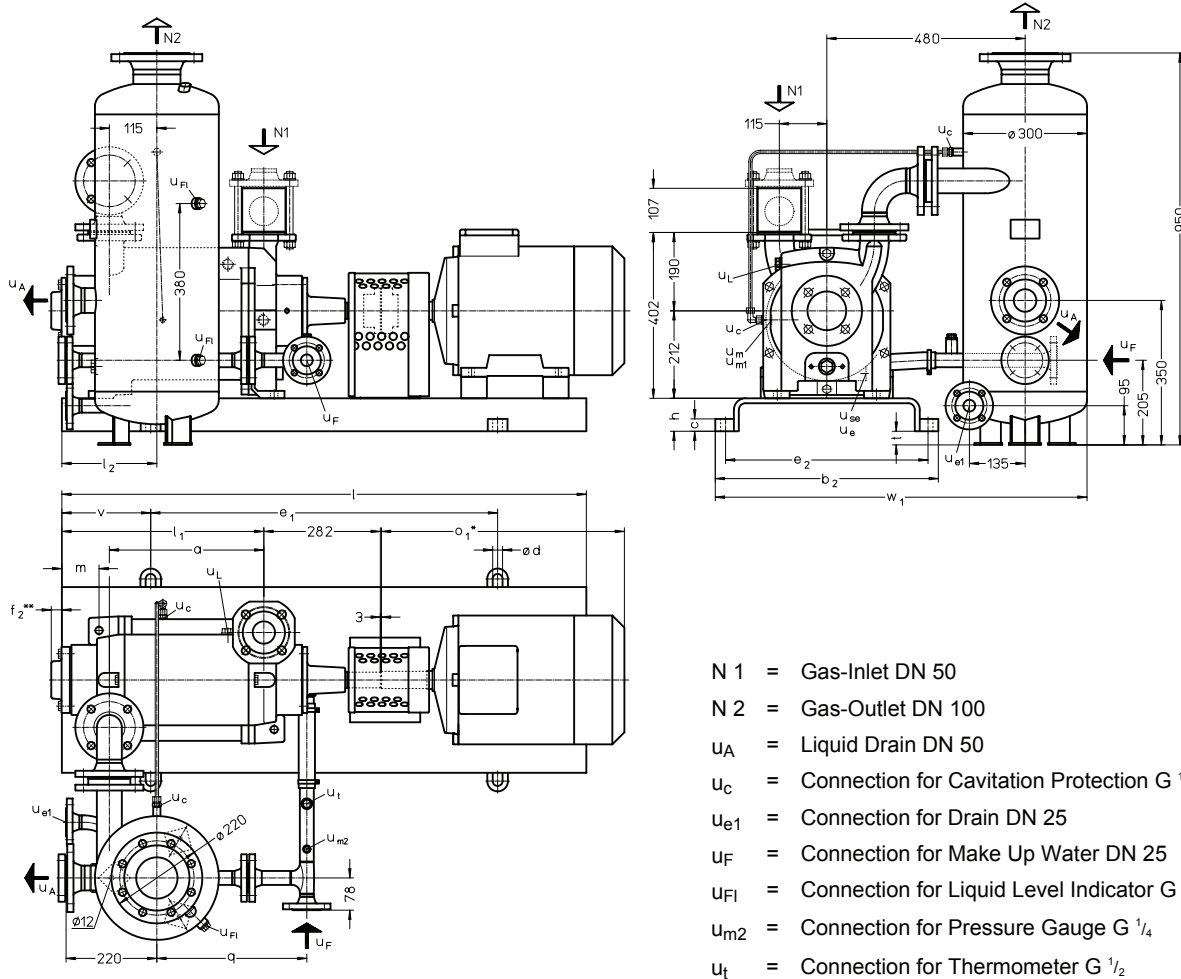




LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors

LPH 55312, LPH 55316, LPH 55320 with single mechanical, gland packing and with Side-Mounted Liquid Separator

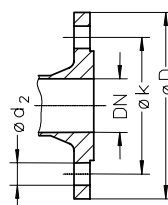


	Size	E-Motor 50 Hz		Base-	a	b ₂	c	d	e ₁	e ₂	f ₂ **	h	l	l ₁	l ₂	m	o ₁ *	q	t	v	w ₁	Approx. Weight [kg]
	IP 55	EE	e II T3	plate	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
LPH 55312	132 M	7,5	-	S385		490			740	440			1140				453			200	875	308
	160 M	11,0	-		334									449				323				346
	160 M	-	10,0								26				230	90	588					343
LPH 55316	160 M	11,0	-	S436			30	24				80										356
	160 M	-	10,0		374	540			840	490			1270	489				363		215	900	353
	160 L	-	13,5								66			449			628					396
LPH 55320	160 M	11,0	-											509	190	50	588					386
	160 L	15,0	-	S487	434													423				435
	160 L	-	13,5			610	35	28	940	550	26	100	1420	549	230	90	628		13	240	935	460

* Dimensions dependent upon motor supplier

** Dimension +50mm at execution with gland packing

Flange dimensions according to DIN 2501 PN 10 [mm]			
DN	25	50	100
k	85	125	180
D	115	165	220
Number x d ₂	4 x 14	4 x 18	8 x 18



LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



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 [rpm]	KB				FB	KB				FB	KB				FB	KB				FB
		Temperature Difference [°C]					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 55312	1150	0.19	0.36	0.65	1.22	3.0	0.20	0.36	0.63	1.13	2.4	0.20	0.37	0.62	1.06	2.0	0.18	0.32	0.52	0.81	1.3
	1450	0.26	0.48	0.82	1.46		0.26	0.48	0.79	1.33		0.27	0.47	0.76	1.21		0.26	0.43	0.64	0.92	
	1750	0.38	0.67	1.09	1.77		0.36	0.63	1.00	1.54		0.37	0.62	0.95	1.39		0.35	0.55	0.77	1.02	
LPH 55316	1150	0.21	0.40	0.70	1.29	3.0	0.22	0.41	0.70	1.21	2.4	0.23	0.42	0.69	1.13	2.0	0.22	0.38	0.59	0.88	1.3
	1450	0.29	0.52	0.89	1.54		0.30	0.53	0.87	1.41		0.31	0.54	0.86	1.30		0.30	0.49	0.71	0.98	
	1750	0.41	0.72	1.16	1.84		0.41	0.70	1.08	1.62		0.41	0.68	1.02	1.44		0.38	0.59	0.81	1.05	
LPH 55320	1150	0.34	0.60	1.01	1.67	3.0	0.35	0.61	0.98	1.52	2.4	0.34	0.58	0.90	1.35	2.0	0.28	0.46	0.68	0.95	1.3
	1450	0.34	0.61	1.02	1.69		0.36	0.63	1.00	1.54		0.38	0.63	0.96	1.40		0.34	0.54	0.76	1.02	
	1750	0.46	0.79	1.25	1.92		0.44	0.74	1.13	1.66		0.44	0.72	1.06	1.48		0.41	0.62	0.84	1.07	

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
	A• 1. Hydraulic •B two greased roller bearings	041 Gland Packing	0A Main parts from cast iron (GG) and impellers in bronze 0E Similar to 0A, but impellers in stainless steel SZ Similar to 0A, however impellers and guide discs are in stainless steel 4B Main parts out of stainless steel	1 O-Ring Sealing
		AGE Mechanical Seal type SIHI FK, O-Rings Butadiene rubber		
		AG1 Mechanical Seal type SIHI FK, O-Rings Viton		
		AFJ Mechanical Seal type Sterling GNZ, O-Rings Viton		
		AFK Mechanical Seal type Sterling GNZ, O-Rings Teflon coated (Viton heart)		
55312	AB	041	0A	1
LPH 55316		AGE, AFJ	0A, 0E, SZ	
55320		AG1, AFK	4B	

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:

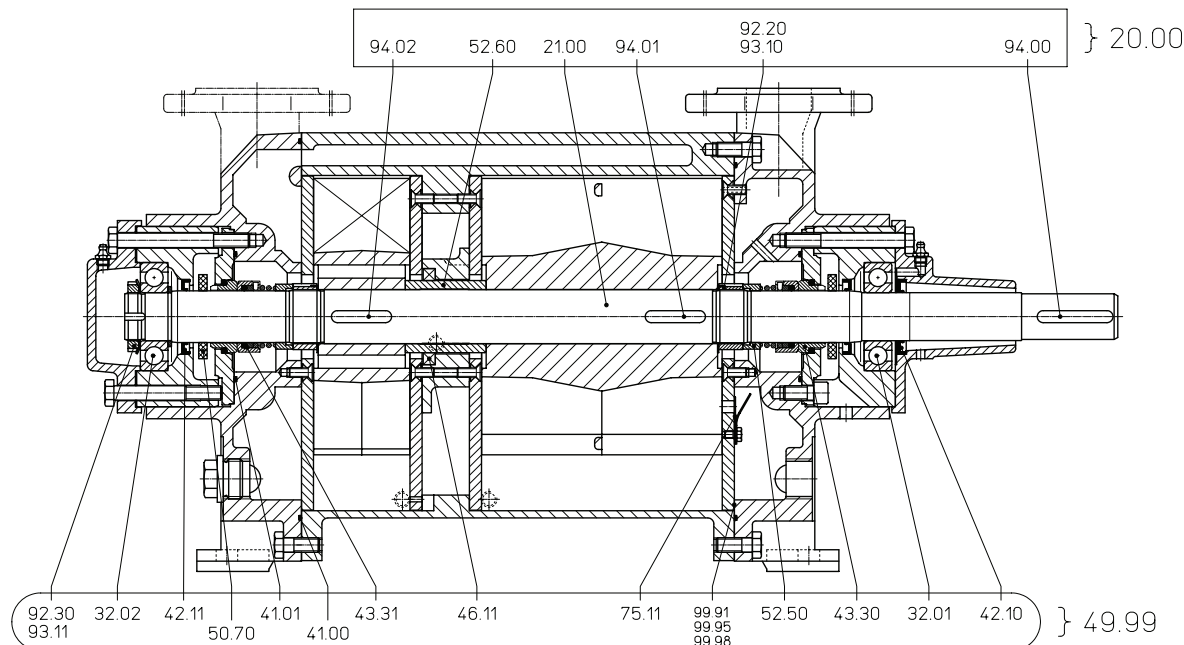
LPHX 55316 AB AGE 0E 1 with 11.0 kW AC motor, 50 Hz, 400V Δ, IP55



LPH 55312, 55316, 55320

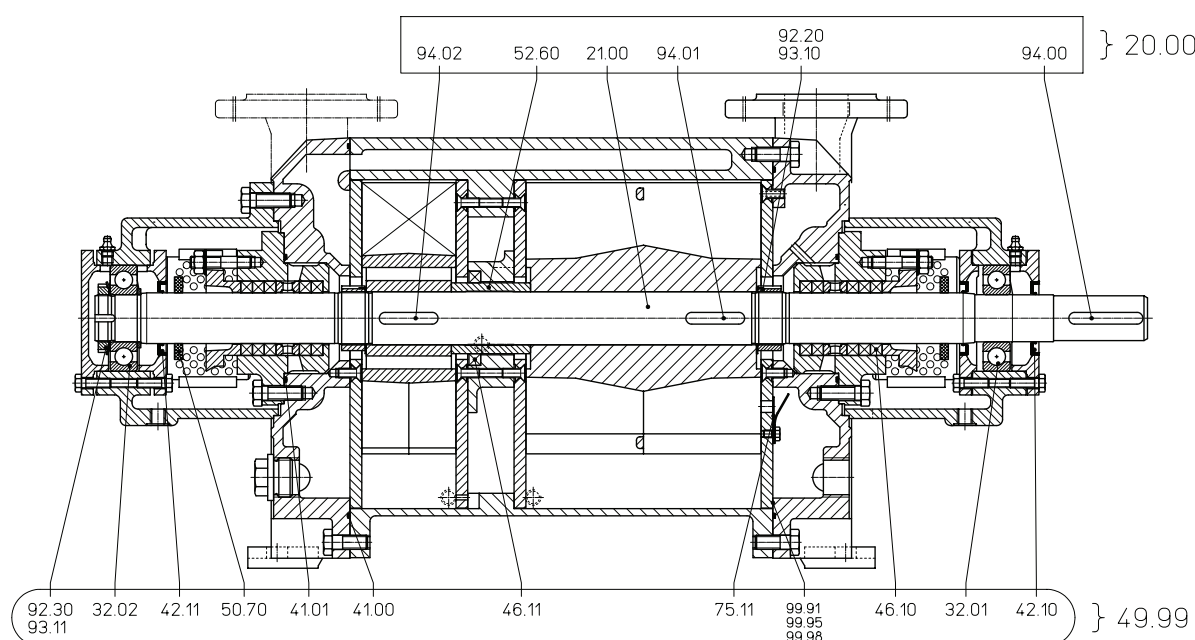
Two-stage Liquid Ring Vacuum Pumps and Compressors

Spare Parts Order Number



Material Design 0A, 0E, SZ				
Group	Spare parts kit	LPH 55312	LPH 55316	LPH 55320
20.00	Shaft	65 007 935	65 007 937	65 007 891
49.99	Basic repair AGE	65 007 892		
49.99	Basic repair AFJ	65 007 955		

Material Design 4B				
Group	Spare parts kit	LPH 55312	LPH 55316	LPH 55320
20.00	Shaft	65 007 936	65 007 938	65 007 889
49.99	Basic repair AG1	65 007 910		
49.99	Basic repair AFK	65 007 954		



Material Design 0A				
Group	Spare parts kit	LPH 55312	LPH 55316	LPH 55320
20.00	Shaft	65 007 939	65 007 943	65 007 944
49.99	Basic repair 041	65 007 940		

LPH 55312, 55316, 55320

Two-stage Liquid Ring Vacuum Pumps and Compressors



Accessories

Recommended Accessory	Material Execution		LPH 55312	LPH 55316	LPH 55320
Top Mounted Liquid Separator		Type / Weight	XBa 2041 / 23 kg		
Top mounted separator	Steel, galvanised 1.4571	SIHI-Part No.	35 000 419 35 000 420		
Service liquid pipework, standard execution	Steel, galvanised 1.4571	SIHI-Part No.	20 067 931 20 067 932	20 067 933 20 067 934	20 067 935 20 067 936
Service liquid pipework, thermostatic control 24V	Steel, galvanised + Brass 1.4571 + Brass	SIHI-Part No.	On Request On Request		
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 050 621 20 042 945		
Side Mounted Liquid Separator		Type / Weight	XBp 0512 / 40 kg		
Side mounted separator	Steel, galvanised 1.4571	SIHI-Part No.	35 000 518 35 000 519		
Service liquid pipework, standard execution	Steel 1.4571	SIHI-Part No.	35 003 137 35 003 138	35 003 146 35 011 251	35 003 139 35 003 141
Service liquid pipework, thermostatic control 24V	Steel + Brass 1.4571 + Brass	SIHI-Part No.	On Request On Request		
Cavitation protection pipework	Steel, galvanised 1.4571	SIHI-Part No.	20 040 460 20 043 589		
Pressure pipework (bend)	1.0254 1.4571	SIHI-Part No.	35 003 203 35 003 205		
Liquid level indicator	Brass + Plexiglas 1.4571 + Plexiglas	SIHI-Part No.	43 014 912 43 040 384		
Sterling SIHI - Gas Ejector		Type / Weight	GPV 5011 / 25 kg	-	GPV 5012 / 30 kg
at service liquid temperature 15 °C		Type / Weight	GPV 5311 / 25 kg	GPV 5312 / 25 kg	GPV 5313 / 25 kg
Sterling SIHI - Non Return Ball Valve					
Intermediate flange execution XCK 50	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	43 016 892 / 3.6 kg 43 016 893 / 3.8 kg 43 039 284 / 10.8 kg		
Flange execution with glass cylinder XCK 506	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	43 014 659 / 8.5 kg 43 014 660 / 8.5 kg 43 014 658 / 8.5 kg		
Drain Valve XCg 015	Steel 1.4571	SIHI-Part No.	43 014 545 43 014 546		
Double nipple $\frac{3}{4}$ " - $\frac{1}{2}$ "	Steel, galvanised 1.4571	SIHI-Part No.	43 013 096 43 013 097		
Air Inlet Valve	Brass 1.4571	SIHI-Part No.	43 014 260 43 014 271 + 43 013 033		
Motor					
Motor standard execution IP 55		Size Power Weight	132 M 7.5 kW 49 kg	160 M 11.0 kW 73 kg	160 L 15.0 kW 85 kg
Coupling for motor IP 55 Pump side Motor side		Type / Weight SIHI-Part No.	B 95 / 2.6 kg 43 021 429 43 021 433	B 110 / 3.9 kg 43 021 446 43 021 448	B 125 / 6.2kg 43 021 460 43 021 464
Coupling guard	Steel	SIHI-Part No.	43 042 267	43 042 269	43 042 304
Motor in EEx e II T3 execution		Size Power Weight	160 M 10.0 kW 67 kg	160 L 13.5 kW 107 kg	
Coupling for motor EEx e II T3 Pump side Motor side		Type / Weight SIHI-Part No.	BDS 118 / 4.0 kg 43 025 958 43 000 737	BDS 135 / 6.6 kg 43 028 122 43 036 564	
Coupling guard	Brass	SIHI-Part No.	43 042 270	43 042 305	
Baseplate	Steel	Type / Weight SIHI-Part No.	S 385 / 58 kg 43 040 639	S 436 / 71 kg 43 040 641	S 487 / 105 kg 43 040 642

Designs subject to change without prior notice.

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



Pressure Range: 33 to 1013 mbar
Suction Volume: 300 to 700 m³/h

CONSTRUCTION

Sterling 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

Sterling 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 rpm	1450 1740
Maximum overpressure on compression	bar	2.0	
Maximum permissible pressure difference with belt drive	bar	1.5 1.1	
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	dB (A)	76	
Minimum permissible pulley diameter for V belt drive	mm	160	
Maximum gas temperature:	dry °C saturated °C	200 100	
Service liquid:			
Maximum permissible temperature	°C	80	
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.

LPH 65320, 65327

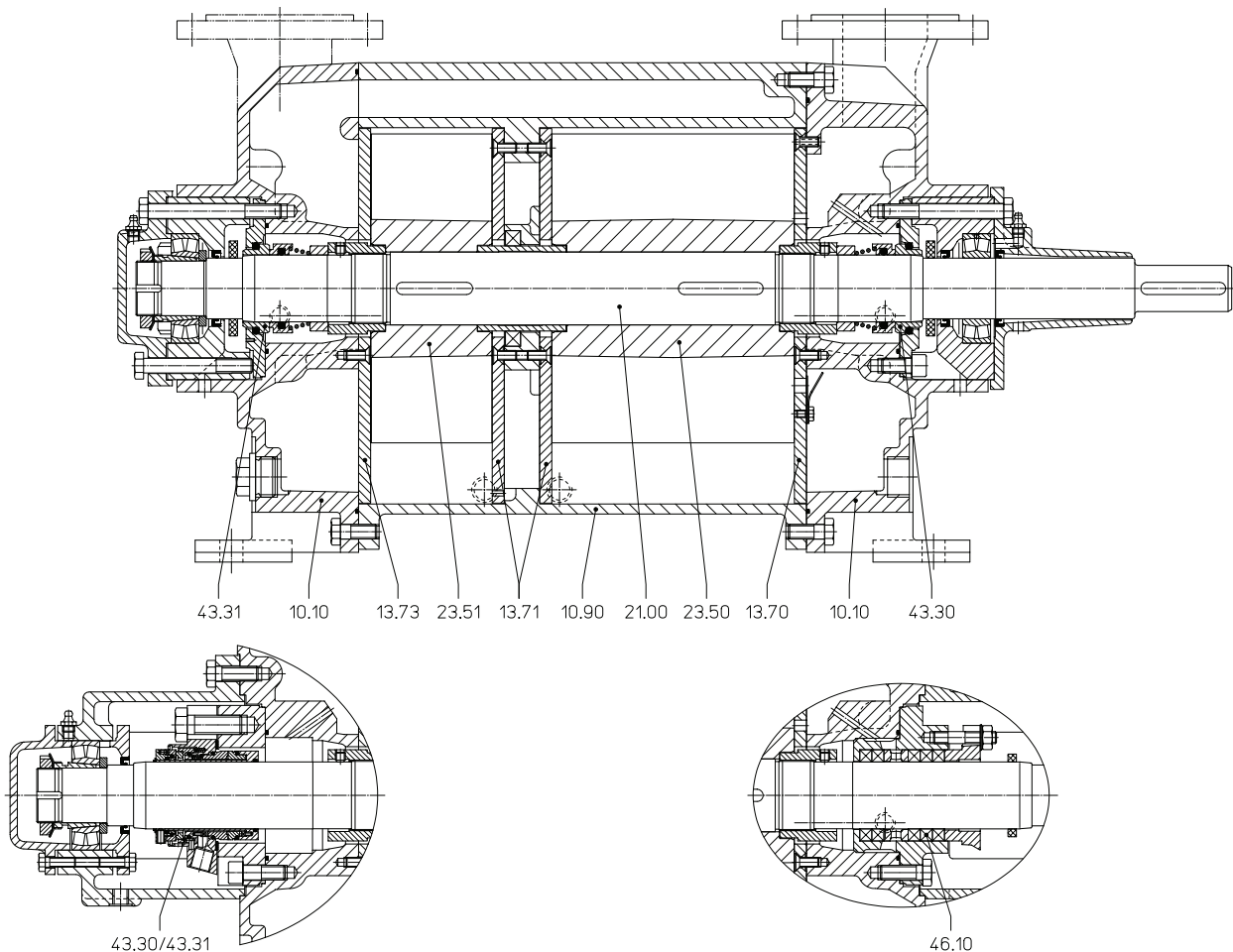
Two-stage Liquid Ring Vacuum Pumps and Compressors



Materials

Position Number	Component	MATERIALS		
		0B	SZ	4B
10.10	Casing	0.6025		1.4408
10.90	Central Body	0.6025		1.4408
13.70, 13.71, 13.73	Guide Disc	0.6025	1.4404	
23.50, 23.51	Impeller	1.0553	1.4408	
21.00	Shaft	1.4021		1.4404
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	Mechanical Seal, Type Sterling GNZ (AF●)	SiC / Carbon / Viton		SiC / Carbon / Teflon
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



LPH 65320, 65327

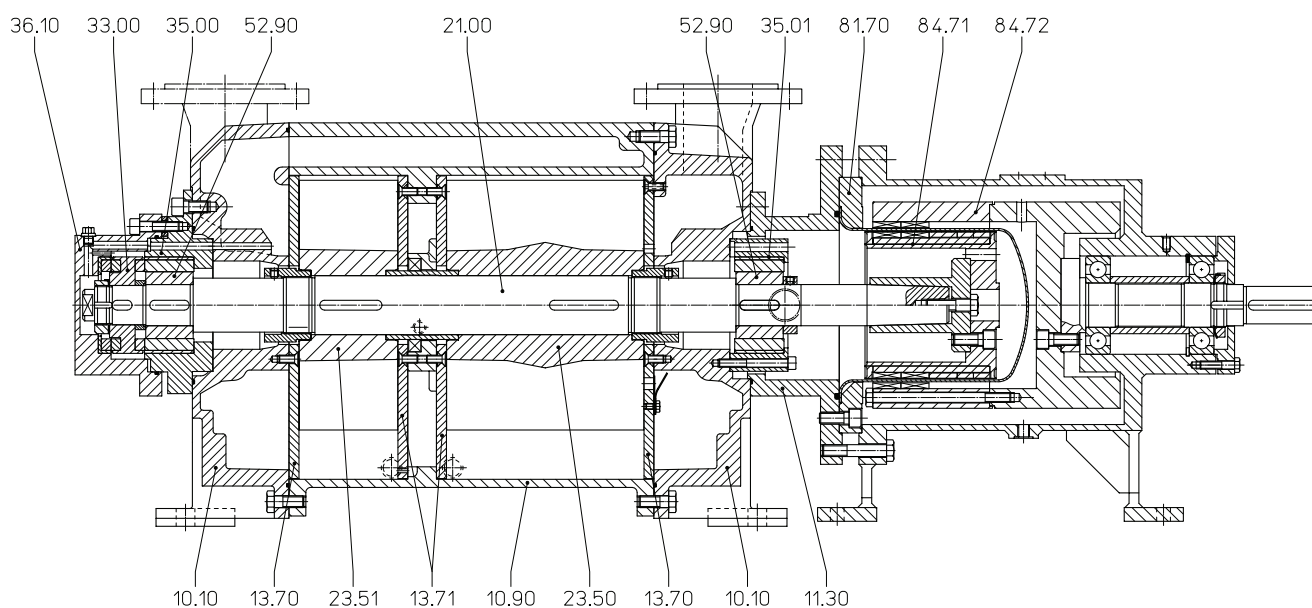
Two-stage Liquid Ring Vacuum Pumps and Compressors



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



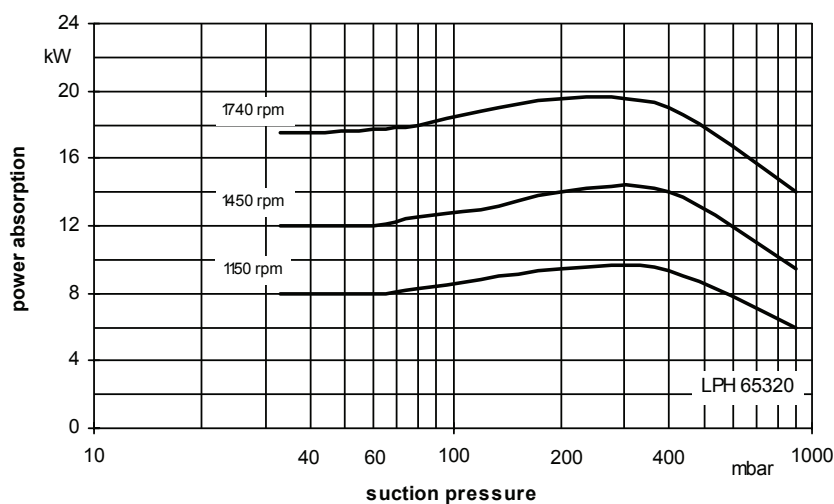
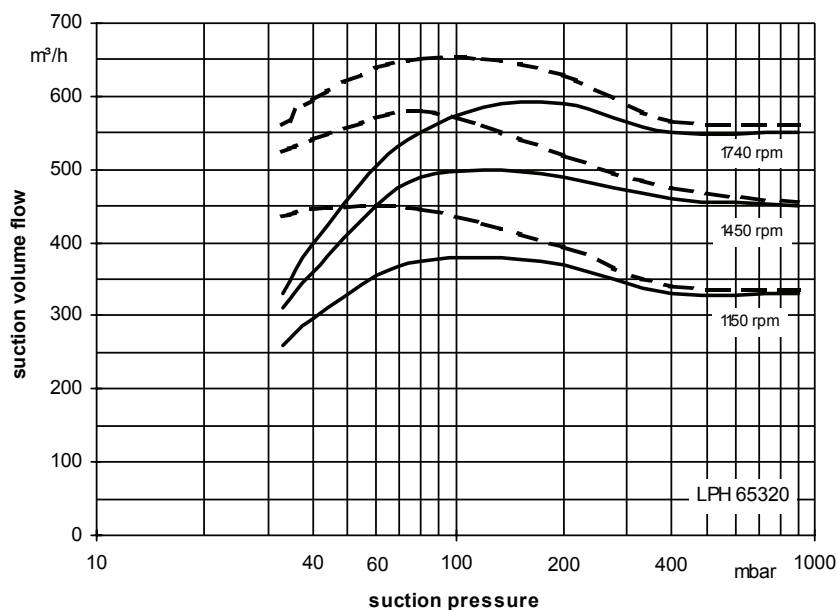
All information in this catalogue, like general technical data, performance data, dimensions, arrangement drawings, accessories, etc. don't refer to the magnetic coupling execution.
Please contact the manufacturer about more information.

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 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%

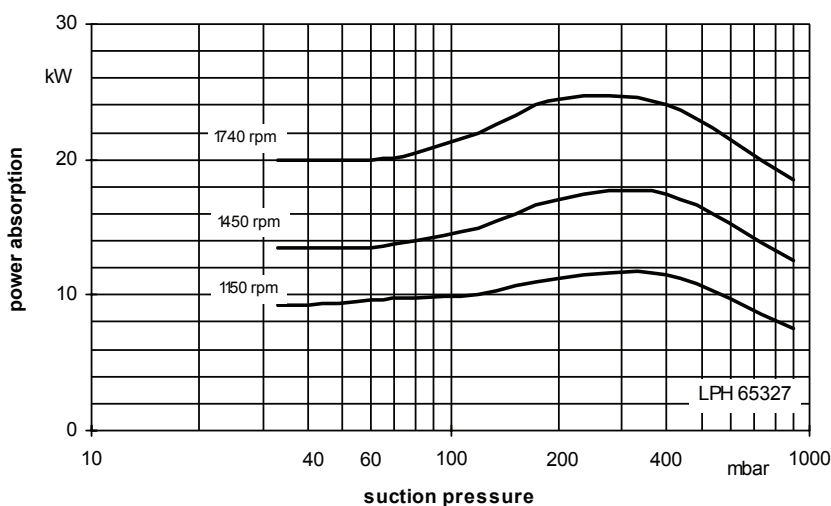
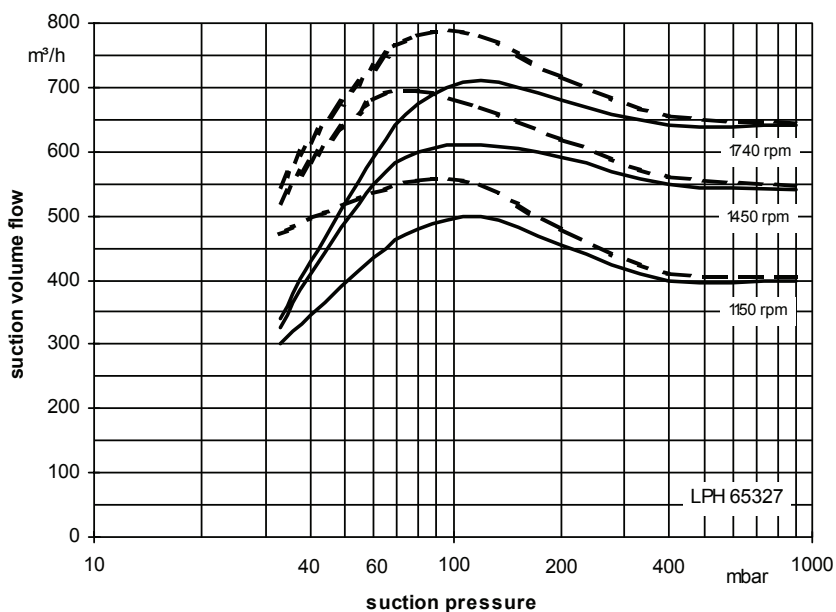
The maximum consumption of make up water occurs at the lowest suction pressure

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



Performance Characteristics LPH 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%

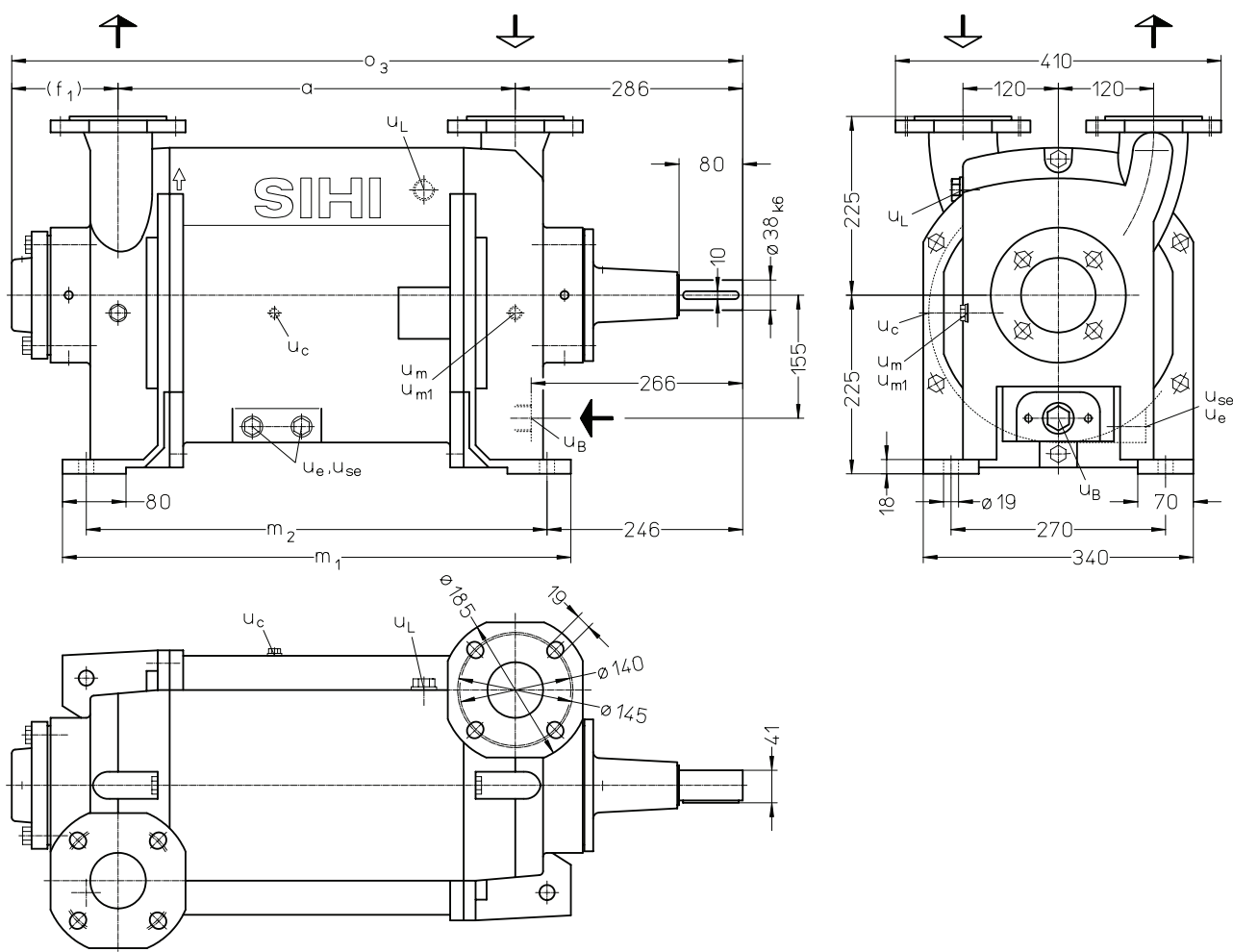
Maximum consumption of make up water occurs at the lowest suction pressure

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



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



N 1 = Gas-Inlet DN 65

N 2 = Gas-Outlet DN 65

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

u_{m1} = Connection for Drainage Valve or Liquid Level Sensor G ³/₈

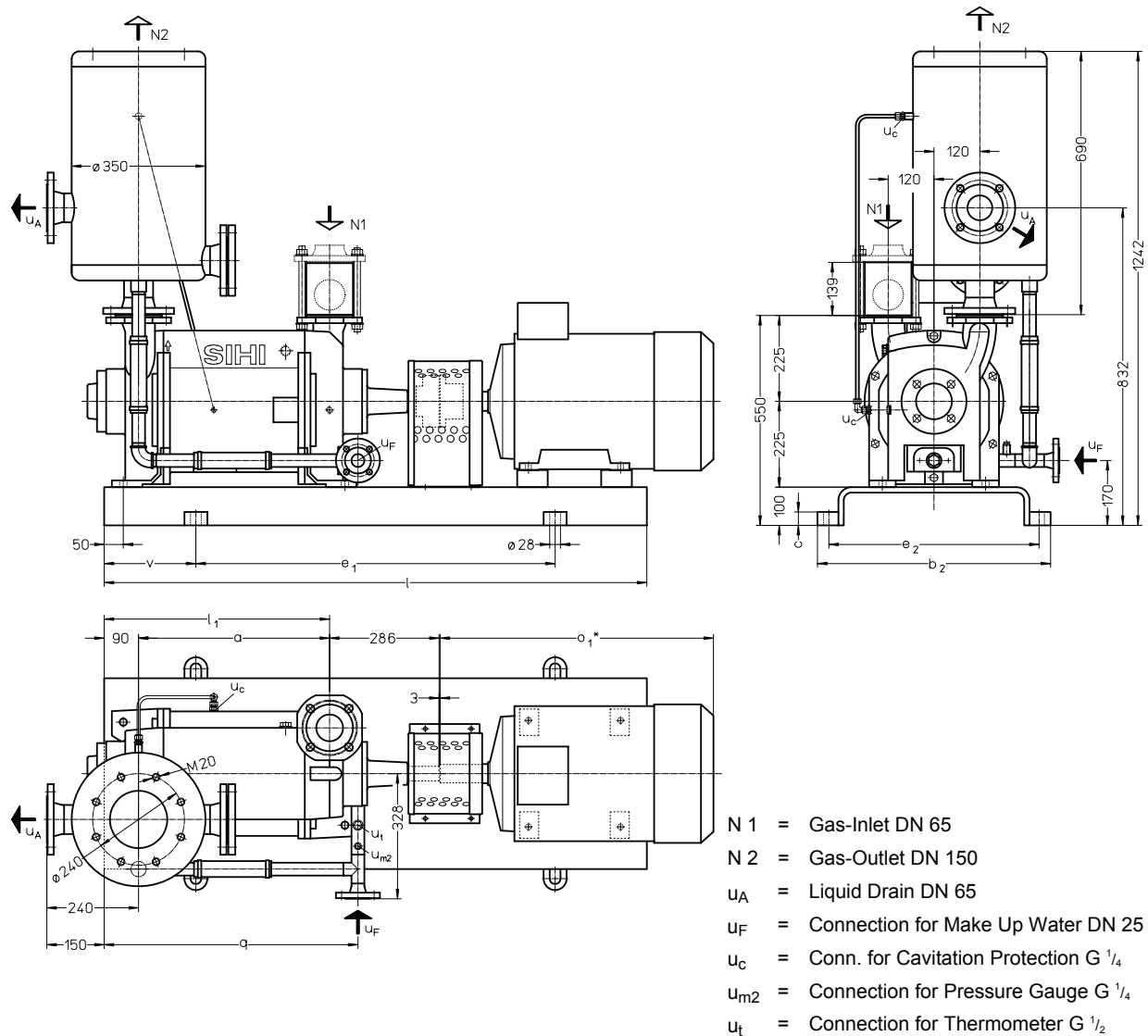
	Execution	a [mm]	f ₁ [mm]	m ₁ [mm]	m ₂ [mm]	o ₃ [mm]	Approx. Weight [kg]
LPH 65320	Mechanical Seal	500	134	640	580	920	200
	Gland Packing		223			1009	
LPH 65327	Mechanical Seal	566	134	706	646	986	215
	Gland Packing		223			1075	

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



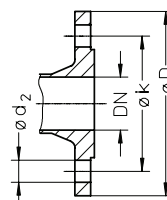
LPH 65320, LPH 65327 with single mechanical, gland packing and with Top-Mounted Liquid Separator



	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]	q [mm]	v [mm]	Approx. Weight [kg]
	Size	kW												
LPH 65320	160 L	15.0	-	500	610	35	940	550	1420	590	588	664	240	455
	180 M	-	15.0								715			535
LPH 65327	180 M	18.5	-	566	540	40	1060	490	1600	656	712	730	270	491
	180 L	-	17.5								715			555

* Dimensions dependent upon motor supplier

Flange dimensions according to DIN 2501 PN 10 [mm]		
DN	25	65
k	85	145
D	115	185
Number x d ₂	4 x 14	4 x 18

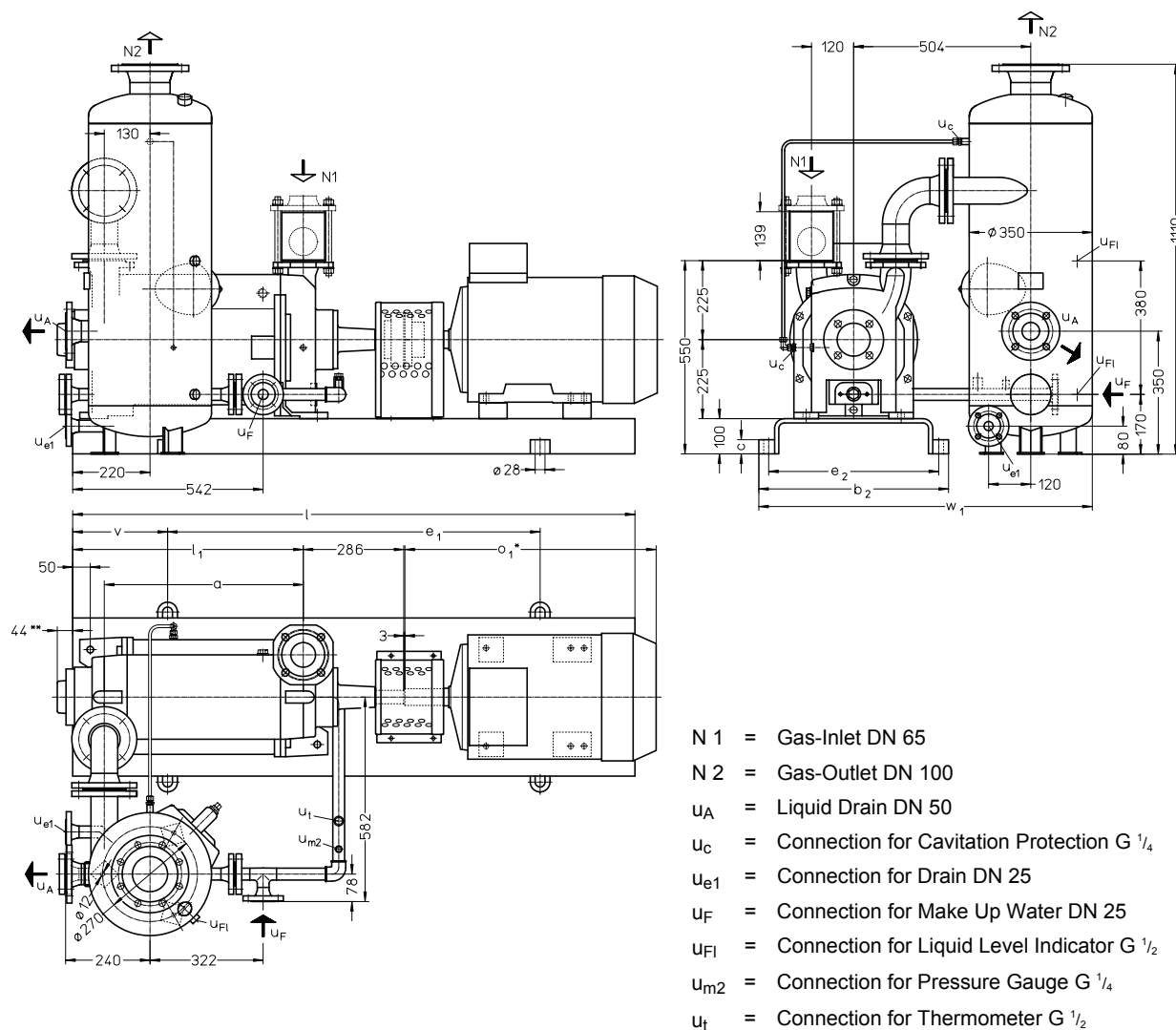




LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors

LPH 65320, LPH 65327 with single mechanical, gland packing and with Side-Mounted Liquid Separator

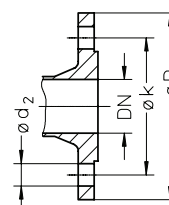


	E-Motor 50 Hz			Base-plate	a [mm]	b ₂ [mm]	c [mm]	e ₁ [mm]	e ₂ [mm]	l [mm]	l ₁ [mm]	o ₁ * [mm]	v [mm]	w ₁ [mm]	Approx. Weight [kg]
	Size	IP 55	kW EEx e II T3												
LPH 65320	160 L	15.0	-	S487	500	610	35	940	550	1420	590	588	240	984	473
	180 M	-	15.0									715			553
LPH 65327	180 M	18.5	-	S388	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 2501 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



LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



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	KB				FB	KB				FB	KB				FB	KB				FB
		Temperature Difference [°C]					Temperature Difference [°C]					Temperature Difference [°C]					Temperature Difference [°C]				
	[1/min]	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 = 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
	A• 1. Hydraulic •B two greased roller bearings	041 Gland Packing	0B Main parts from cast iron (GG) and impellers in steel SZ Similar to 0B, but impellers and guide discs are in stainless steel 4B Main parts out of stainless steel	1 O-Ring Sealing
		AGE Mechanical Seal type SIHI FK, O-Rings Butadiene rubber		
		AG1 Mechanical Seal type SIHI FK, O-Rings Viton		
		AFJ Mechanical Seal type Sterling GNZ, O-Rings Viton		
		AFK Mechanical Seal type Sterling GNZ, O-Rings Teflon coated (Viton heart)		
LPH 65320 65327	AB	041, AGE, AFJ	0B	1
		AGE, AFJ	SZ	
		AG1, AFK	4B	

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:

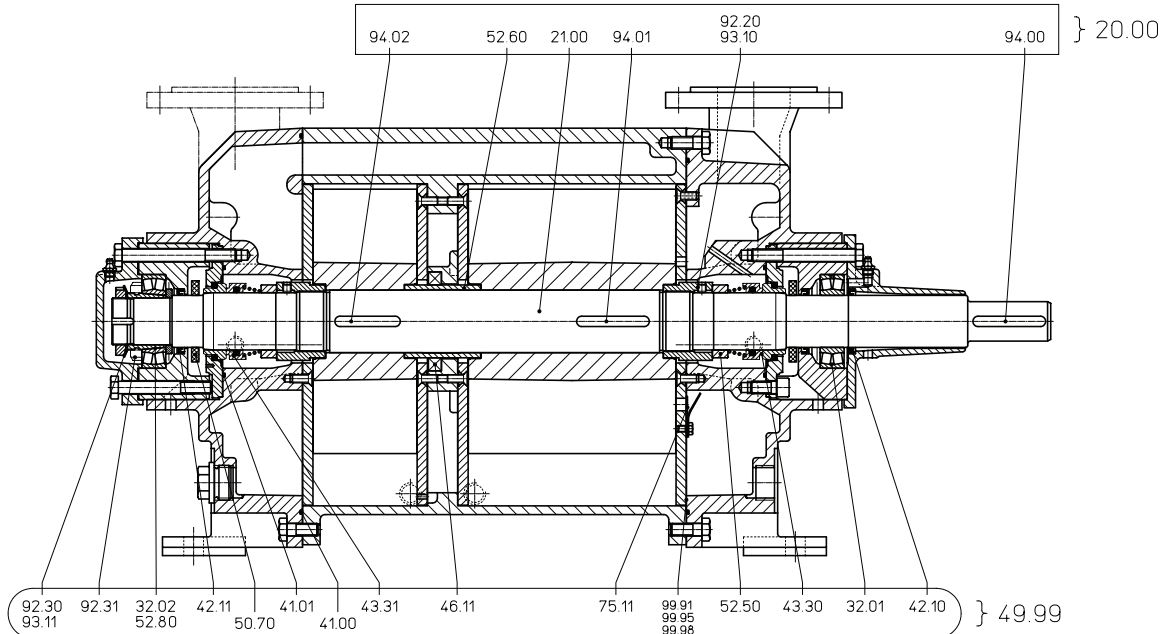
LPHX 65327 AB AGE 0B 1 with 18.5 kW AC motor, 50 Hz, 400V Δ, IP55



LPH 65320, 65327

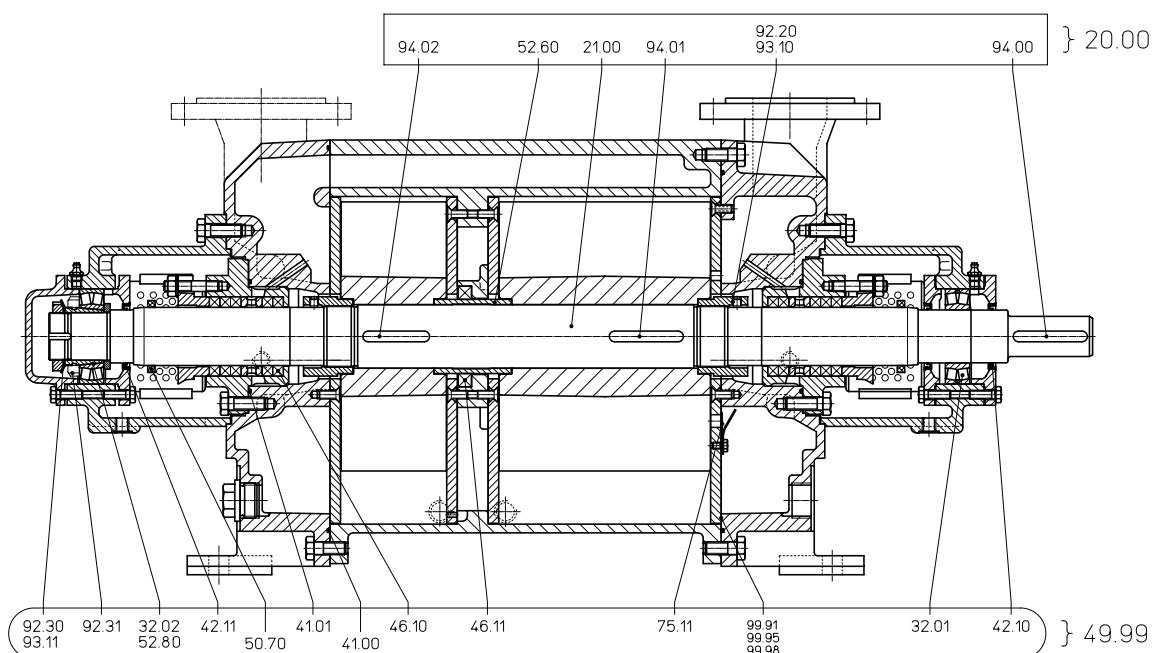
Two-stage Liquid Ring Vacuum Pumps and Compressors

Spare Parts Order Number



Material Design 0B, SZ			
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	
49.99	Basic repair AFJ	65 007 957	

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	
49.99	Basic repair AFK	65 007 956	



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	

LPH 65320, 65327

Two-stage Liquid Ring Vacuum Pumps and Compressors



Accessories

Recommended Accessory	Material Execution		LPH 65320	LPH 65327
Top Mounted Liquid Separator		Type / Weight	XBa 5540 / 35 kg	
Top mounted separator	Steel, galvanised 1.4571	SIHI-Part No.	35 000 440 35 000 441	
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.	On Request On Request	
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	Steel, galvanised 1.4571	SIHI-Part No.	35 000 534 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.	On Request On Request	
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
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	43 016 894 / 5.6 kg 43 016 895 / 5.6 kg 43 039 285 / 15.8 kg	
Flange execution with glass cylinder XCk 656	0.6025 + Butadiene rubber 0.6025 + Teflon 1.4408 + Teflon	SIHI-Part No. Weight	43 014 666 / 10.0 kg 43 014 667 / 10.0 kg 43 014 665 / 10.0 kg	
Drain Valve XCg 010	Steel 1.4571	SIHI-Part No.	43 014 541 43 014 542	
Air Inlet Valve	Brass 1.4571	SIHI-Part No.	43 014 260 43 014 271 + 43 013 033	
Motor				
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	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 43 028 122 43 028 552	
Coupling guard	Brass	SIHI-Part No.	43 042 305	
Baseplate	Steel	Type / Weight SIHI-Part No.	S 487 / 105 kg 43 040 642	S 388 / 95 kg 43 040 969

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Tauriko

Hawke's Bay

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