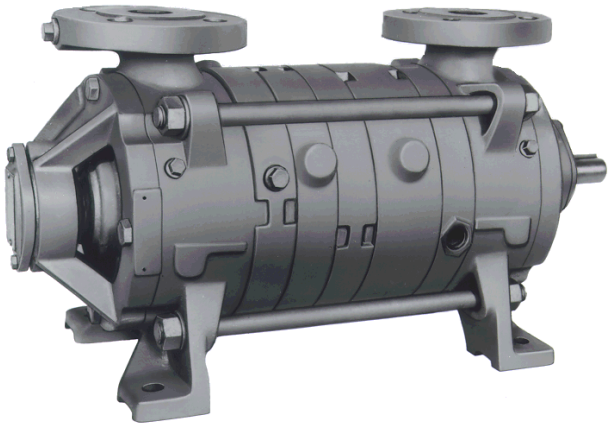
Liquid ring compressor

KLH 47005, KLH 47105

Compression pressures: **2 to 11 bar**
Suction volume flow: **56 to 65 m³/h**



CONSTRUCTION TYPE

Sterling SIHI liquid ring compressors are displacement compressors of simple and robust construction having following special characteristics:

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

The Sterling SIHI liquid ring compressors are three stage compressors (KLH 47005) resp. four stage compressors (KLH 47105) with double acting stages in each case.

APPLICATION

Every application where pumping gas has to be compressed carefully to a pressure of abt. 11 bar and only a small increase in temperature is admissible;
e.g. recovery of solvent or vinyl chloride vapour.

NOTE

During the operation the compressor 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 pressure liquid separator (see catalogue part accessories).
It is possible to reuse the service liquid.
The direction of rotation is clockwise when locking from the drive on the pump.

GENERAL TECHNICHAL DATA

Pump type	unit	KLH 47005	KLH 47105
Speed 50 Hz 60 Hz	rpm	2900 3500	
Max. compression over pressure	bar	8	11
Hydraulic test (over pressure)	bar	21	
Moment of inertial of the rotating pump parts and of the water filling	kg · m²	0,03	0,04
Sound pressure level of measuring area	dB (A)	67	
Min. pulley diameter permissible in case of V-belt drive	mm	160	180
Max. gas temperature	°C	100	
Service liquid max. admissible temperature max. viscosity max. density volume up to shaft level	 °C mm²/s kg/m³ liter	 80 90 1200 1,8	 2

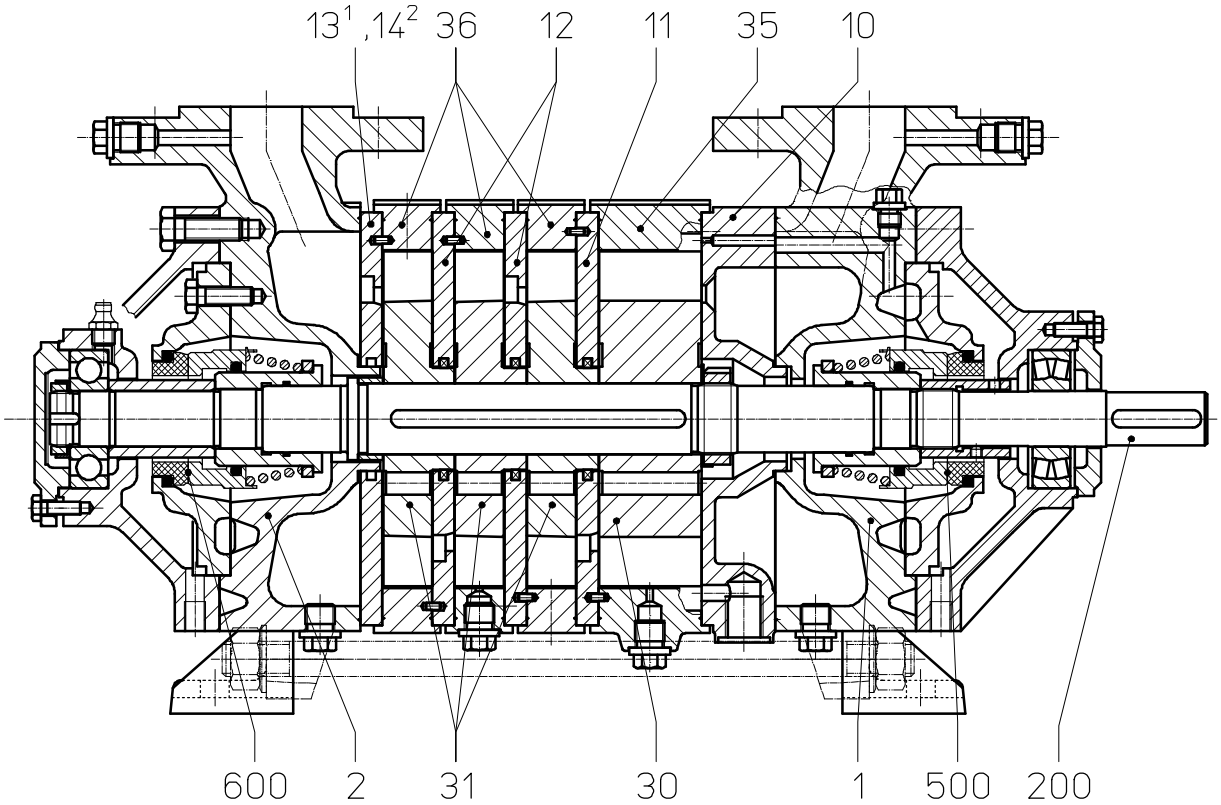
The combination of several limiting values is not admissible.

Material design

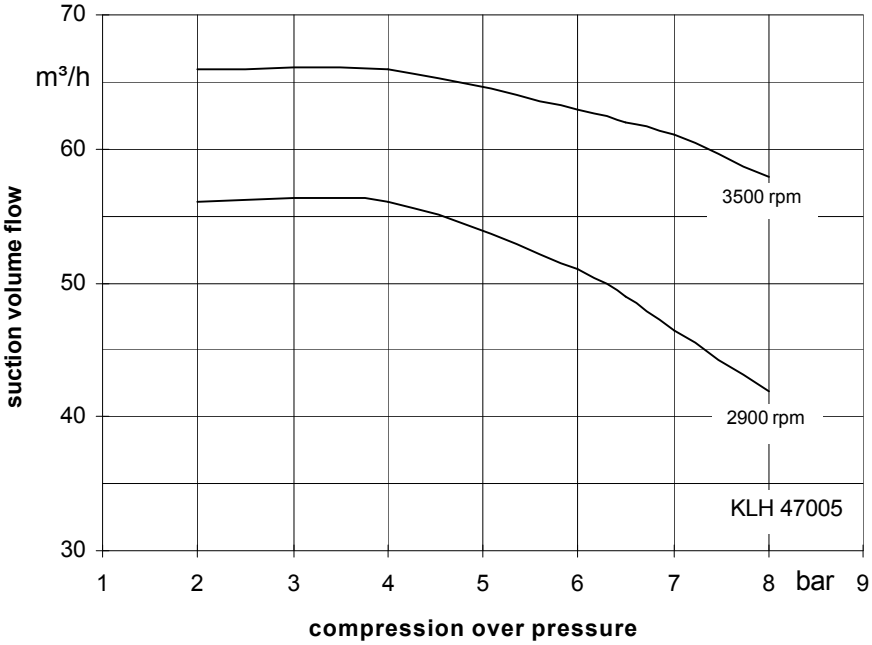
Item	COMPONENTS	MATERIAL DESIGN 01	42
1 / 2	Casing	0.6025	1.4408
10 / 11 / 12 / 13[1] / 14[2]	Guide disk	0.6025	1.4408
30 / 31	Vane wheel impeller	2.1096.01	1.4517
35 / 36	Central body	0.6025	1.4408
200	Shaft	1.4021	1.4401
500 / 600	Mechanical seal	Cr-steel / carbon / Perbunan	Cr Ni Mo-steel / carbon / Viton

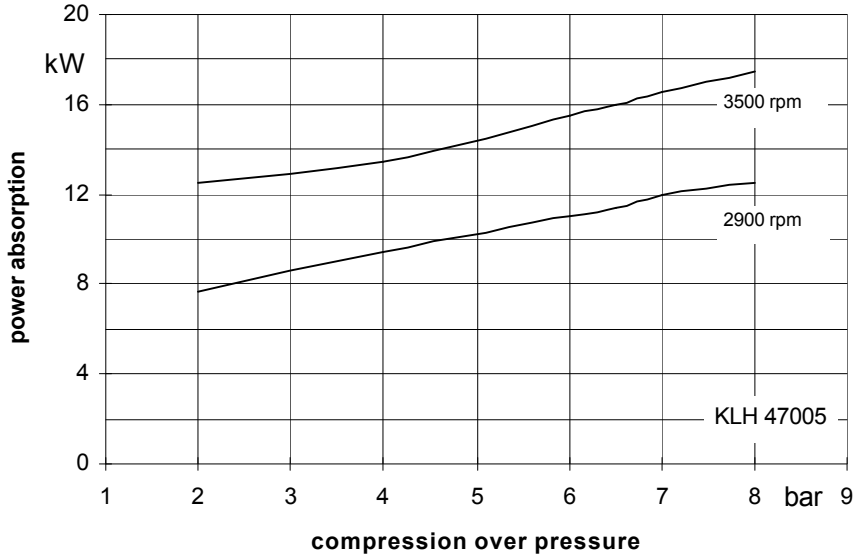
[1] only in case of KLH 47005
[2] only in case of KLH 47105

Sectional drawing KLH 47005, KLH 47105



Suction volume flow and power absorption KLH 47005



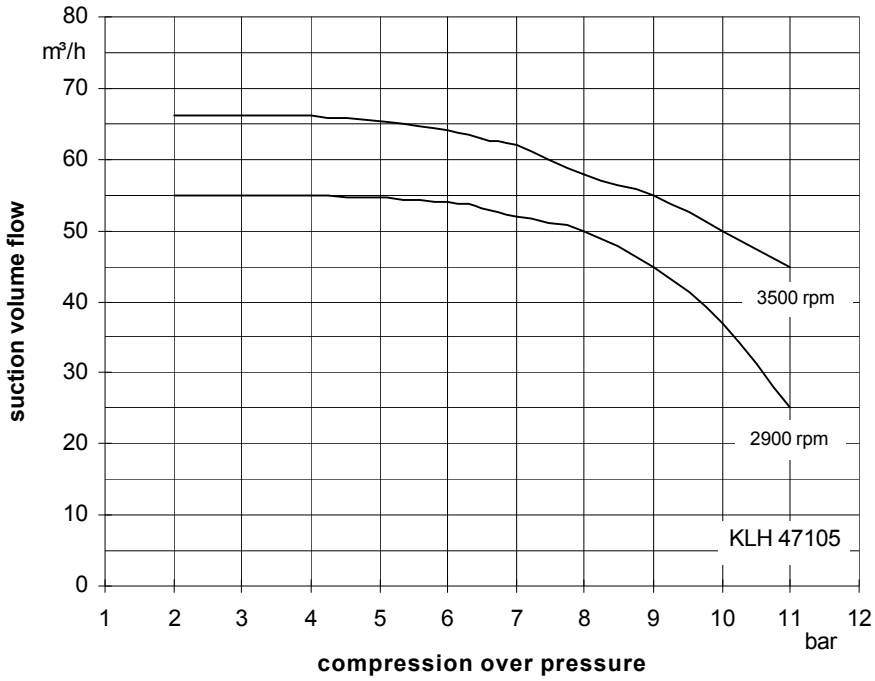


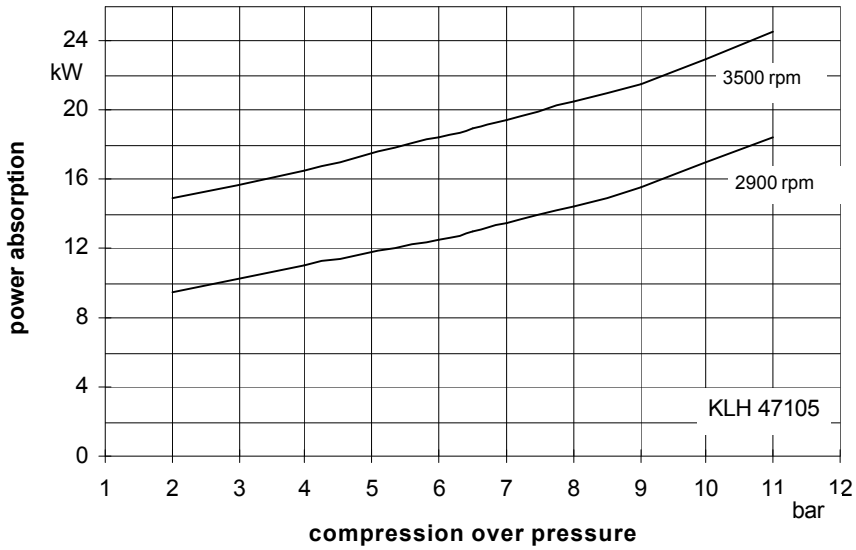
The values indicated for volume and power absorption are valid for compression of dry air at 20°C from atmospheric pressure (1013 mbar) of the respective compression pressure with water at 20°C as service liquid. Tolerance of the curve values is 10%. The compression pressure in bar is indicated as pressure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

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

For determination of service data for deviating service conditions please see catalogue section TH.

Suction volume flow and power absorption KLH 47105





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

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

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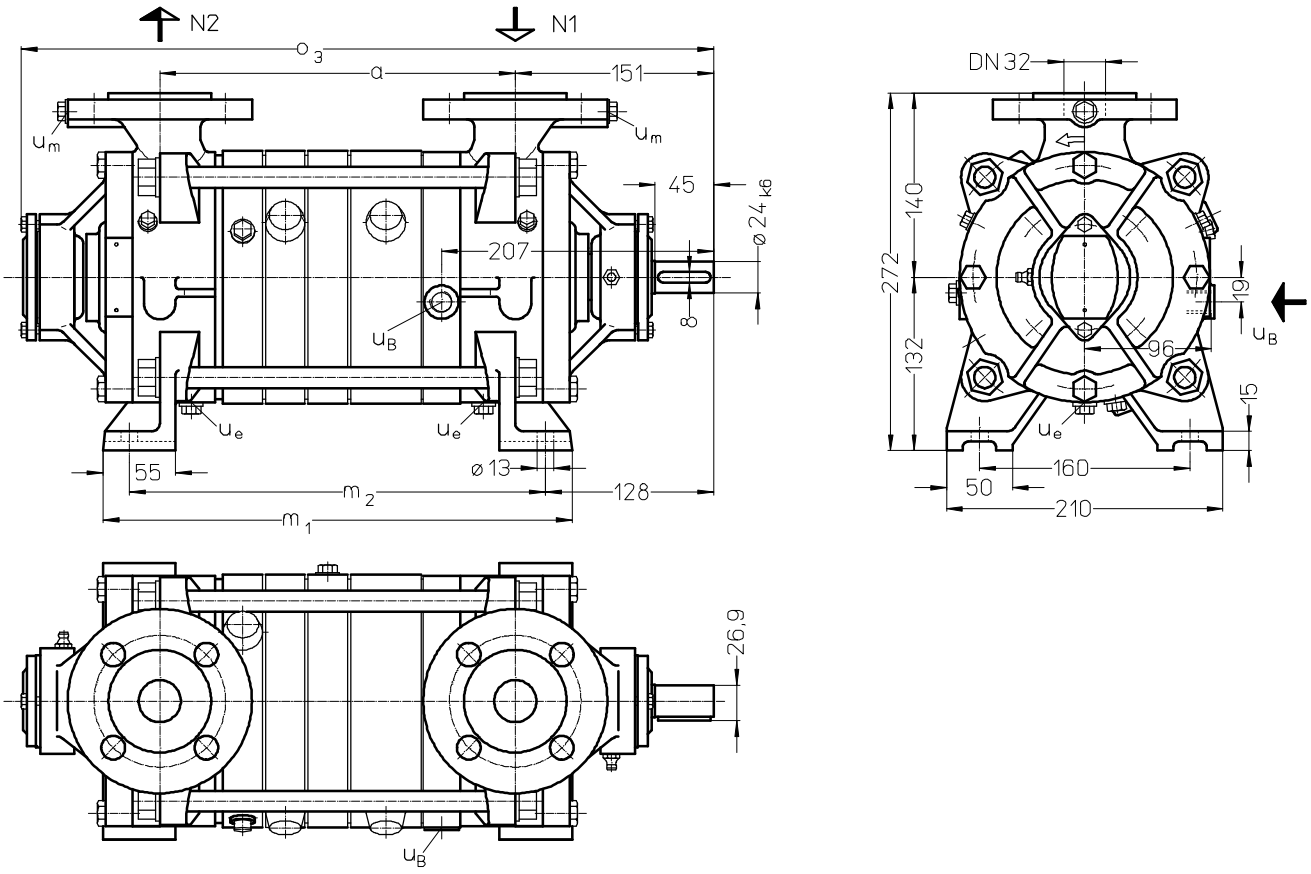
Dimension table KLH 47005, KLH 47105



N 1 = gas-inlet DN 32

N 2 = gas-outlet DN 32

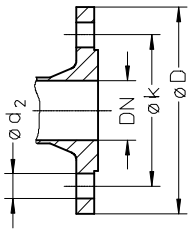
u_B = Service liquid G $^3/_8$

u_e = drain connection G ¼

u_m = connection for pressure gauge G ¼

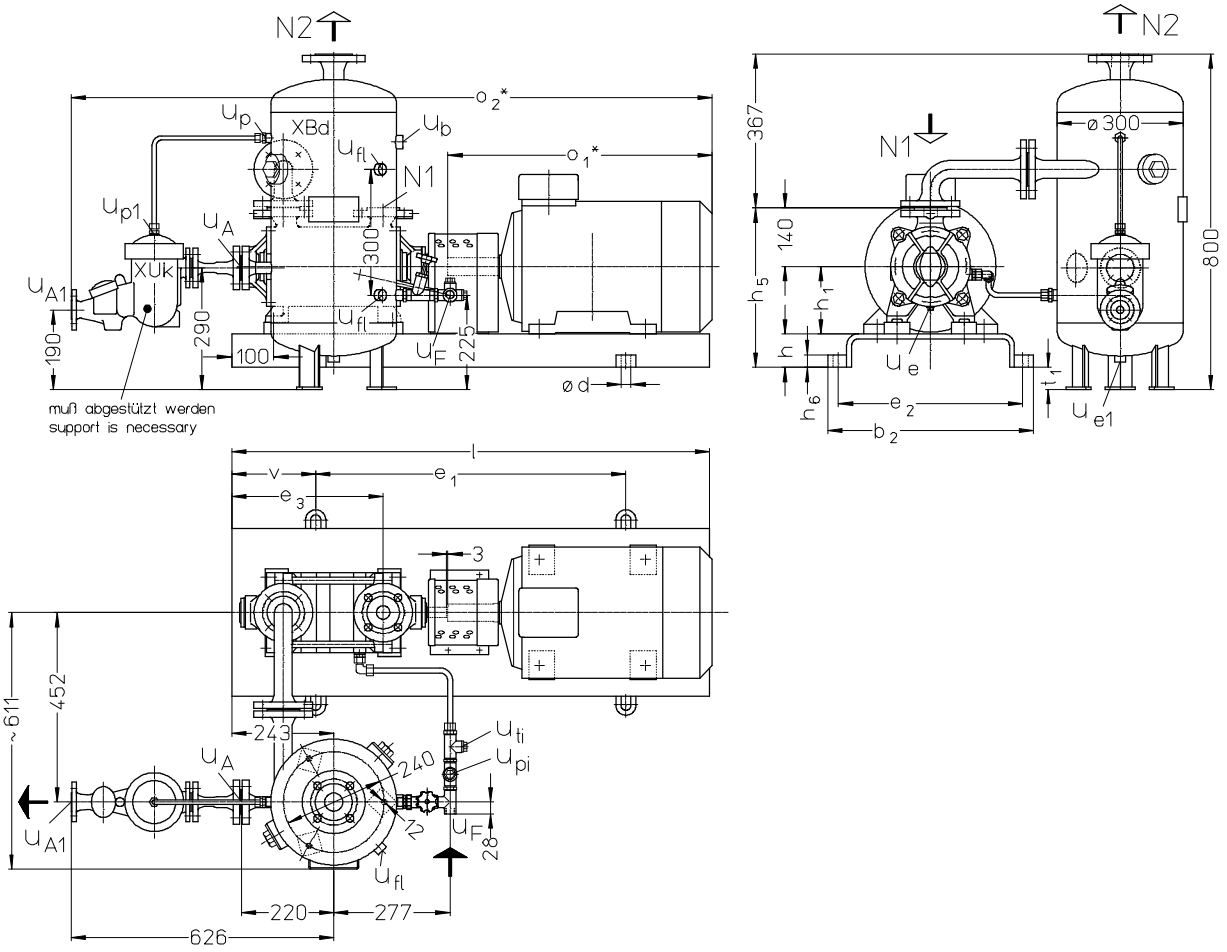
	a	m_1	m_2	o_3	weight abt. kg
KLH 47005	238	324	284	494	55
KLH 47105	270	356	316	526	60

flange connections to DIN 2501 PN 25	
DN	32
k	100
D	140
number x d_2	4x18



Arrangement drawing KLH 47005, KLH 47105 with pressure liquid separator

Dimensions and scheme of the liquid discharge trap XUk for combined operation only.



N 1 = gas-inlet DN 32

N 2 = gas-outlet DN 40

u_A = liquid drain DN 20

u_{A1} = liquid drain DN 15

u_b = connection for safety valve G ¾

u_{e1} = drain connection

u_F = connection for fresh liquid G ½

u_{fl} = connection for liquid level indicator G ½

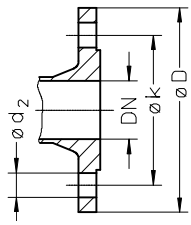
u_p = connection for hanging gas line G $^3/_8$

u_{p1} = connection for hanging gas line G $^1/_4$

u_{pi} = connection for pressure gauge G ½

u_{ti} = connection for thermometer G ½

flange connections to DIN 2501 PN 25				
DN	15	20	32	40
k	65	75	100	110
D	95	105	140	150
number x d_2	4x14	4x14	4x18	4x18



	electric motor 50Hz size	kW	EExe II T3 kW	b_2	d	e_1	e_2	e_3	h	h_1	h_5	h_6	l	o_1 *	o_2 *	t_1	v
KLH 47005	160M	15		490			440	361		160	380			630	1528	53	
	180M		15	540	24	740	490		80	180	400	30	1140	700	1598	33	200
KLH 47105	160L	18,5		490			440	393		160	380			630	1561	53	
	200L		20	610	28	840	550		100	200	440	40	1250	775	1710	-7	205

* Dimensions and position of the connection box depend on the motor make

	electric motor	base plate	pressure liquid separator	liquid trap	compressor + coupling + motor + base frame abt. kg	as above + XBd + bend + XUk + reduction abt. kg
KLH 47005	160M	S 385	XBd 0470	XUk 1608	215	275
	180M EEx e II T3	S 435			290	350
KLH 47105	160L	S 385		XUk 1613	240	300
	200L EEx e II T3	S 486			380	440

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

compressor	speed [rpm]	* [bar]	FB not depending on the pressure	KB= combined liquid service with service liquid 30°C, 20°C, 10°C, 5°C warmer than the make-up water															
				compression over pressure															
				2 bar				4 bar				6 bar				8 bar			
				difference in temperature [°C]				difference in temperature [°C]				difference in temperature [°C]				difference in temperature [°C]			
				30	20	10	5	30	20	10	5	30	20	10	5	30	20	10	5
KLH· **47005**	2900	1,8	0,8	0,17	0,23	0,36	0,50	0,20	0,27	0,40	0,54	0,23	0,30	0,43	0,56	0,25	0,32	0,46	0,58
	3500	2,5	1,0	0,26	0,35	0,52	0,68	0,28	0,37	0,54	0,70	0,31	0,40	0,57	0,73	0,33	0,43	0,60	0,75

compressor	speed [rpm]	* [bar]	FB not depending on the pressure	KB= combined liquid service with service liquid 30°C, 20°C, 10°C, 5°C warmer than the make-up water															
				compression over pressure															
				4 bar				6 bar				8 bar				11 bar			
				difference in temperature [°C]				difference in temperature [°C]				difference in temperature [°C]				difference in temperature [°C]			
				30	20	10	5	30	20	10	5	30	20	10	5	30	20	10	5
KLH· **47105**	2900	1,8	0,8	0,23	0,30	0,43	0,56	0,25	0,32	0,46	0,58	0,27	0,35	0,49	0,61	0,32	0,40	0,53	0,64
	3500	2,5	1,0	0,32	0,41	0,59	0,74	0,35	0,44	0,61	0,76	0,37	0,47	0,64	0,78	0,41	0,51	0,68	0,81

FB = make-up liquid service

* = In order to secure the service liquid flow the service liquid pressure shall be higher than the suction pressure by the following values

Data regarding the pump size - order hints

In the following listed are our standard compressors, special design on request.

	bearing	shaft sealing	material design	case sealing
	B· two antifriction bearings ·N one shaft end clockwise rotating	132 balanced mechanical seal	01 main parts cast iron 42 main parts Cr Ni Mo- steel	0 liquid seal 4 sealing cord
KLH 47005	BN	132	01	0
KLH 47005	BN	132	42	4
KLH 47105	BN	132	01	0
KLH 47105	BN	132	42	4

Accessories

recommended accessories			KLH 47005	KLH 47105
Pressure liquid separator		type / weight	XBd 0470 / 35 kg	
material design	130 /1.0425 galvanized	SIHI part No.	35 000 303	
	172 / 1.4571		35 000 304	
Bend				
material design	072 / 1.0254	SIHI part No.	35 003 154	
	172 / 1.4571		35 003 155	
Service liquid line				
material design	072 / 1.0254	SIHI part No.	35 003 092	35 003 094
	172 / 1.4571		35 003 093	on request
Liquid discharge trap for combined service		type / weight	XUk 1608 / 11 kg	XUk 1613 / 11 kg
material design	762 / GG20+1.4541	SIHI part No.	43 014 794	43 014 795
Reduction DN20-DN15				
material design	072 / 1.0254	SIHI part No.	35 002 764	
Hanging gas line				
material design	072 / 1.0254	SIHI part No.	on request	
Liquid discharge trap for fresh liquid service		SIHI part No.	XUk 1608 / 11 kg	XUk 2113 / 12 kg
material design	762 / GG20+1.4541	SIHI part No.	43 014 794	43 014 799
Reduction DN20-DN15				
material design	072 / 1.0254	SIHI part No.	35 002 764	not required
Hanging gas line				
material design	072 / 1.0254	SIHI part No.	on request	on request
Motor dependent on operating point e.g.:				
IP 55		power	15 kW	18,5 kW
		size	160 M	160 L
		weight	95 kg	110 kg
EEx e II T3		power	15 kW	20 kW
		size	180 M	200 L
		weight	165 kg	220 kg
coupling				
for motor IP 55		type / weight	B 95 / 3 kg	
pump side		SIHI part No.	43 021 425	
motor side			43 021 436	
for motor EEx e II T3		type / weight	BDS 118 / 4 kg	BDS 135 / 6 kg
pump side		SIHI part No.	43 026 100	43 028 550
motor side			43 028 139	43 028 119
Contact safety device				
for motor 160 M/L	076 / 1.0330	SIHI part No.	43 042 250	
for EX-motor 180 M	345 / 2.0321	SIHI part No.	43 042 257	
for EX-motor 200 L	345 / 2.0321	SIHI part No.		43 042 205
Base plate				
for motor size 160M/L	081 / 1.0038	type / weight	S385 / 62 kg	
		SIHI part No.	43 040639	
for motor size 180M	081 / 1.0038	type / weight	S 435 / 68 kg	
		SIHI part No.	43 040 640	
for motor size 200L	081 / 1.0038	type / weight		S 486 / 85 kg
		SIHI part No.		43 040 967
Base support				
for motor size 160	003 / 0.6025	SIHI part No.	4x 43 041 071	
for motor size 180	003 / 0.6025	SIHI part No.	4x 43 041 071 + 4x 43 041 069	
for motor size 200	003 / 0.6025	SIHI part No.		4x 43 041 071 + 4x 43 041 075

Any changes in the technical development are reserved.

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