

Liquid ring compressor

KLH 47005, KLH 47105

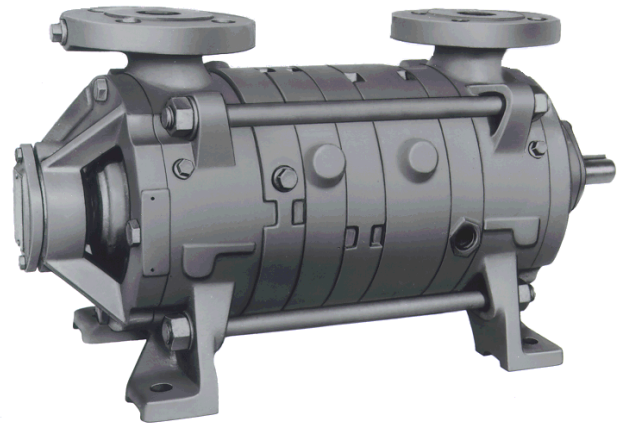
Compression pressures: 2 to 11 bar
Suction volume flow: 56 to 65 m³/h

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 looking from the drive on the pump.

GENERAL TECHNICAL DATA

Pump type	unit	KLH 47005	KLH 47105
Speed	50 Hz 60 Hz		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 · m ²	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	°C		80
max. viscosity	mm ² /s		90
max. density	kg/m ³		1200
volume up to shaft level	liter	1,8	2

The combination of several limiting values is not admissible.

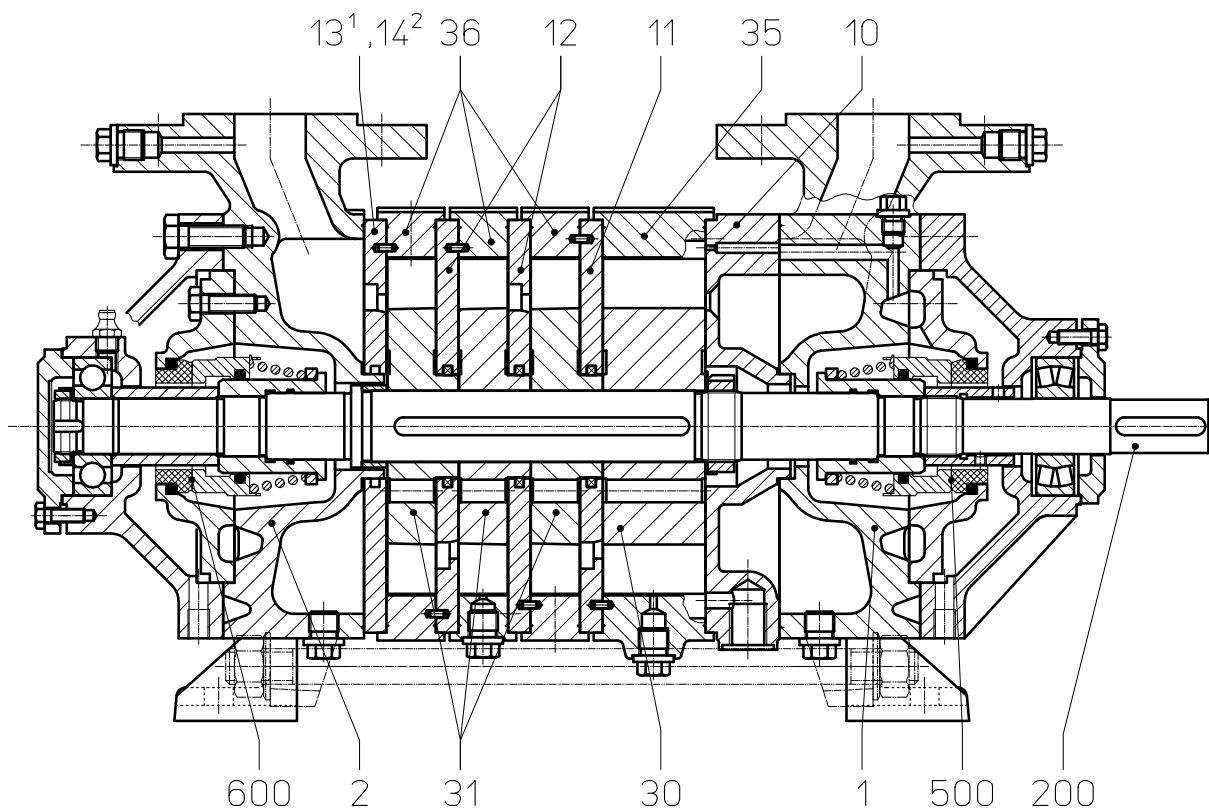
Material design

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

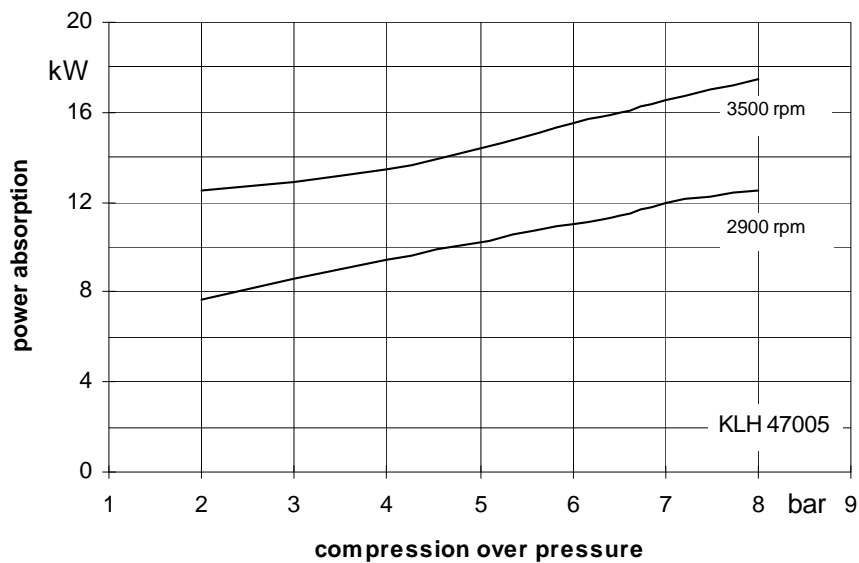
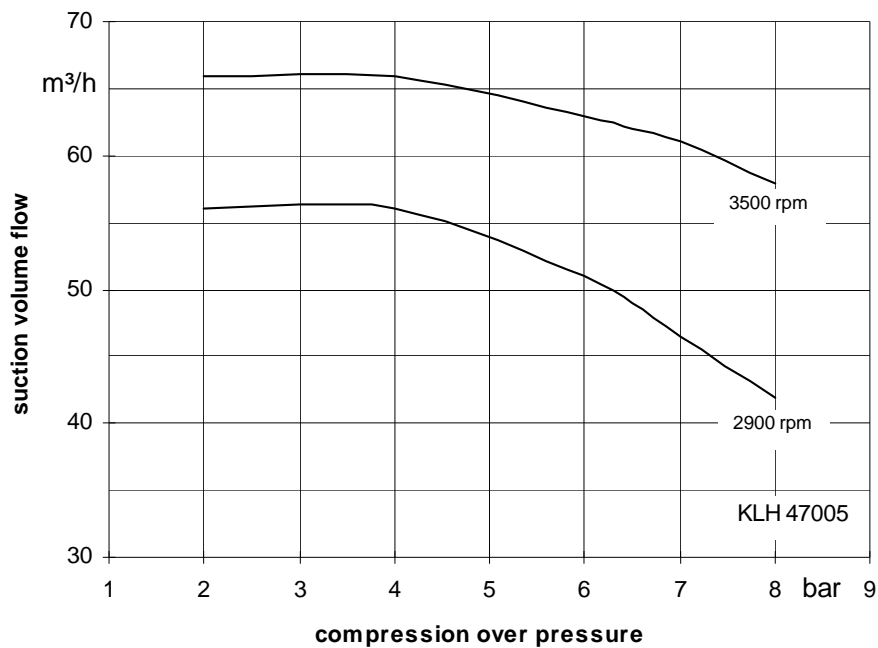
¹ only in case of KLH 47005

² only in case of KLH 47105

Sectional drawing KLH 47005, KLH 47105



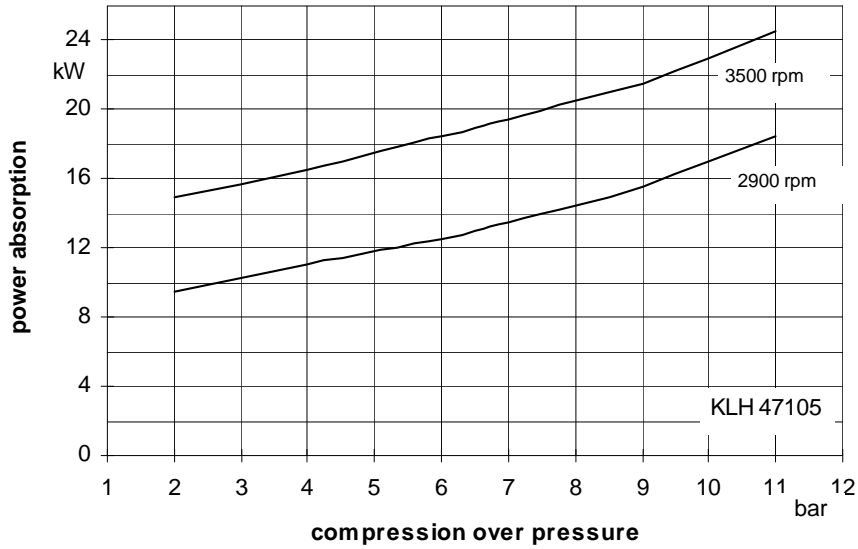
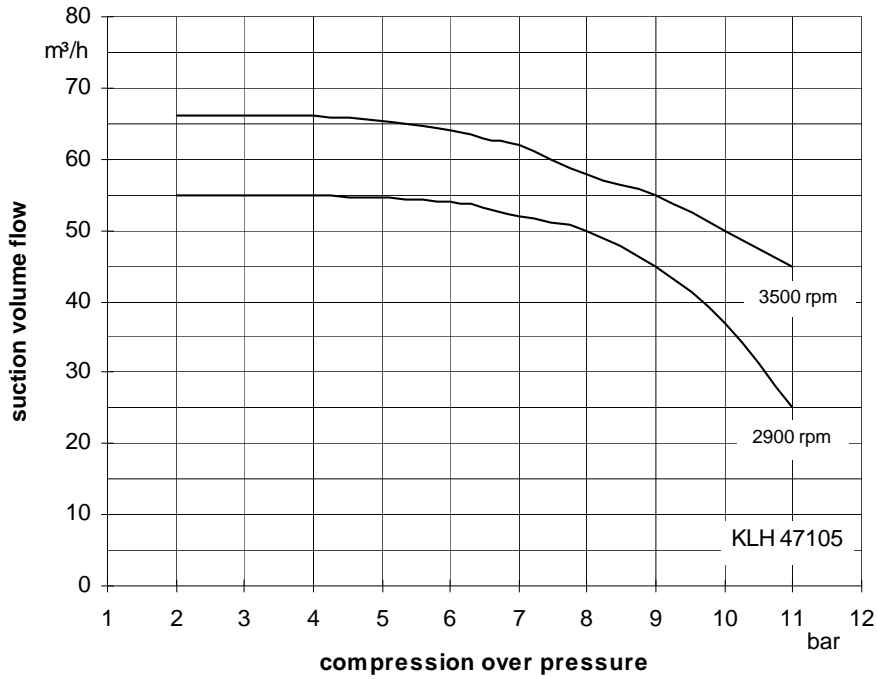
Suction volume flow and power absorption KLH 47005



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

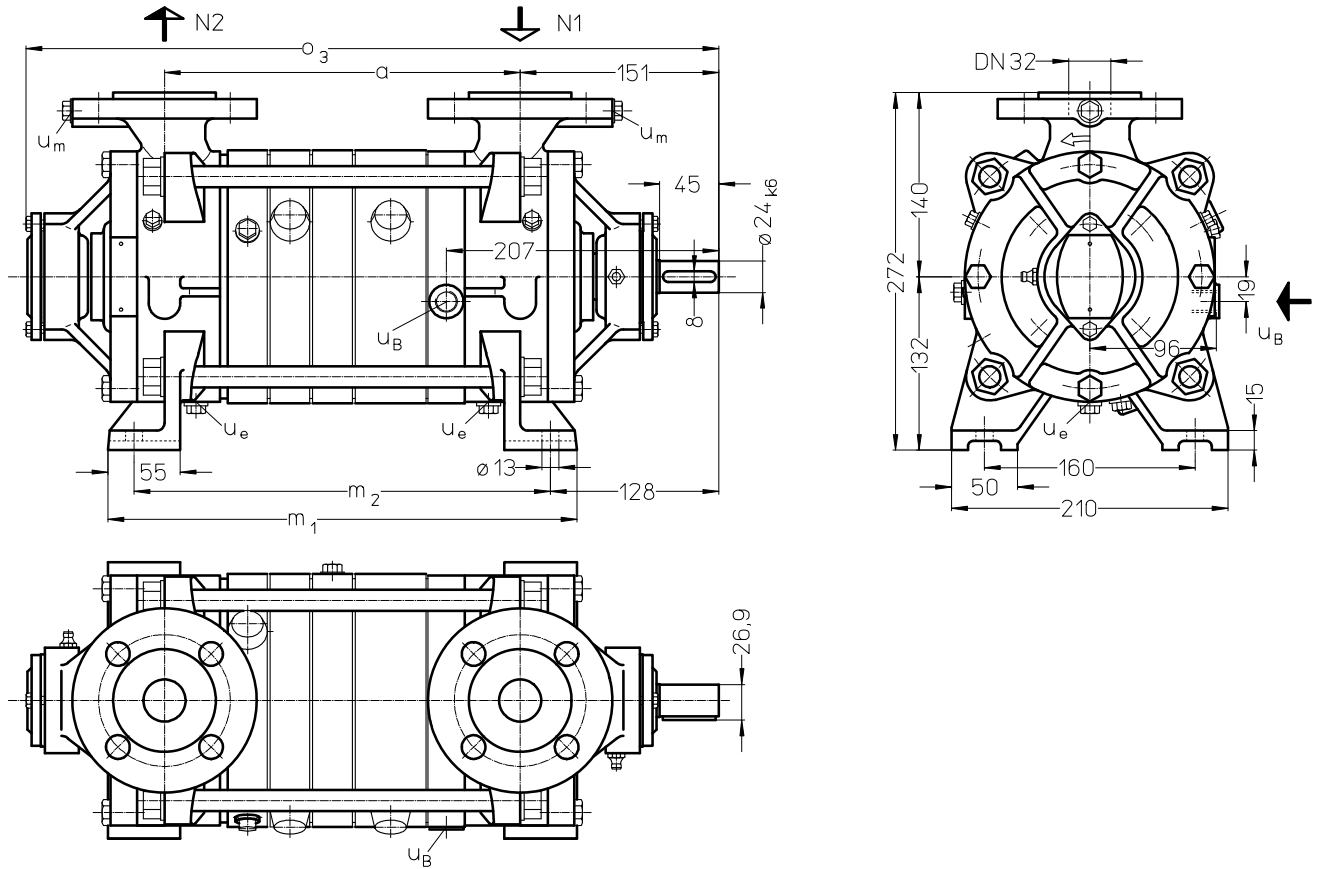


The values indicated for volume and power absorption are valid for compression of dry air at 20°C from atmospheric pressure (1013 mbar) of the respective compression pressure with water at 20°C as service liquid. Tolerance of the curve values is 10%. The compression pressure in bar is indicated as pressure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

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

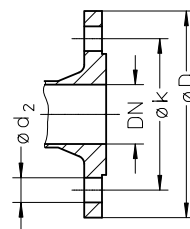
Dimension table KLH 47005, KLH 47105



- N 1 = gas-inlet DN 32
- N 2 = gas-outlet DN 32
- u_B = Service liquid G 3/8
- u_e = drain connection G 1/4
- u_m = connection for pressure gauge G 1/4

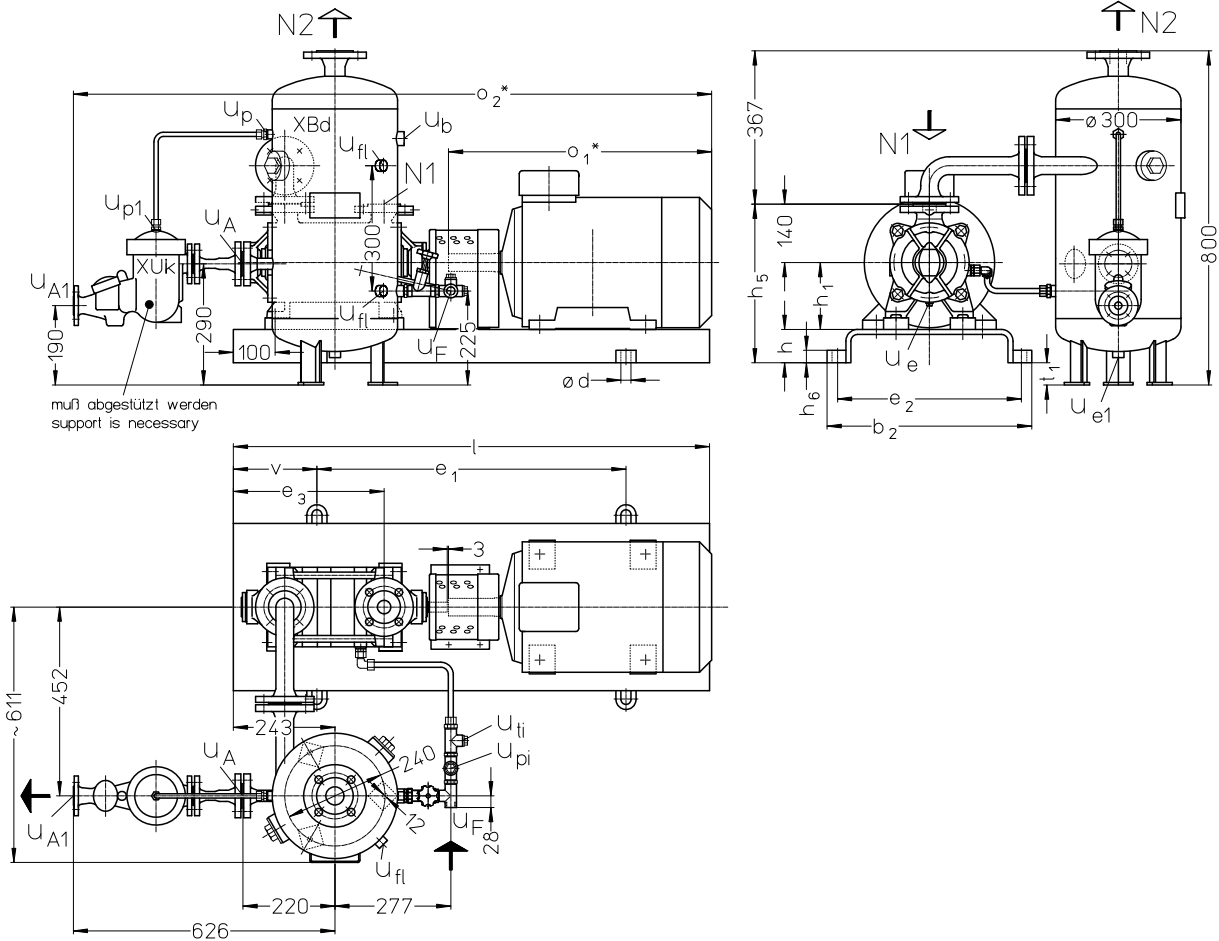
	a	m ₁	m ₂	o ₃	weight abt. kg
KLH 47005	238	324	284	494	55
KLH 47105	270	356	316	526	60

flange connections to DIN 2501 PN 25	
DN	32
k	100
D	140
number x d ₂	4x18



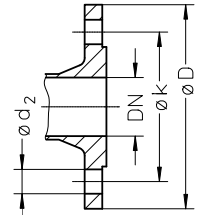
Arrangement drawing KLH 47005, KLH 47105 with pressure liquid separator

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 3/4
- U e1 = drain connection
- U F = connection for fresh liquid G 1/2
- U fi = connection for liquid level indicator G 1/2
- 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 1/2
- U ti = connection for thermometer G 1/2

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 EEExe II T3			b ₂	d	e ₁	e ₂	e ₃	h	h ₁	h ₅	h ₆	l	o ₁ *	o ₂ *	t ₁	v
	size	kW	kW														
KLH 47005	160M	15		490	24	740	440	361	80	160	380	30	1140	630	1528	53	200
	180M		15	540			490										
KLH 47105	160L	18,5		490	28	840	440	393	100	200	440	40	1250	630	1561	53	205
	200L		20	610			550				775			1710	-7		

* 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	as above + XBd + bend + XUK + reduction
					abt. kg	abt. kg
KLH 47005	160M	S 385	XBd 0470	XUK 1608	215	275
	180M EEEx e II T3	S 435			290	350
KLH 47105	160L	S 385		XUK 1613	240	300
	200L EEEx 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	132 balanced mechanical seal	01 main parts cast iron	0 liquid seal
	·N one shaft end clockwise rotating		42 main parts Cr Ni Mo- steel	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 material design	130 / 1.0425 galvanized	type / weight	XBd 0470 / 35 kg	
	172 / 1.4571	SIHI part No.	35 000 303	
			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 material design	762 / GG20+1.4541	type / weight	XUk 1608 / 11 kg	XUk 1613 / 11 kg
		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 material design	762 / GG20+1.4541	SIHI part No.	XUk 1608 / 11 kg	XUk 2113 / 12 kg
		SIHI part No.	43 014 794	43 014 799
	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	on request
Motor dependent on operating point e.g.: IP 55		power	15 kW	18,5 kW
		size	160 M	160 L
EEx e II T3		weight	95 kg	110 kg
		power	15 kW	20 kW
		size	180 M	200 L
		weight	165 kg	220 kg
coupling for motor IP 55 pump side		type / weight	B 95 / 3 kg	
	motor side	SIHI part No.	43 021 425	
for motor EEx e II T3 pump side		type / weight	BDS 118 / 4 kg	BDS 135 / 6 kg
	motor side	SIHI part No.	43 026 100	43 028 550
			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	43 042 257	
	for EX-motor 200 L	345 / 2.0321		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	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	4x 43 041 071 +	
	for motor size 200	003 / 0.6025	4x 43 041 069	4x 43 041 071 +
				4x 43 041 075

Any changes in the technical development are reserved.

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