Liquid ring vacuum pumps
with magnetic coupling

LPH 75320, LPH 75330, LPH 75340

FLOWSERVE
SIHI® Pumps

Pressure range: **33 to 1013 mbar**
Suction volume flow: **485 to 1615 m³/h**

CONSTRUCTION TYPE

Sterling SIHI liquid ring vacuum pumps with magnetic coupling are displacement pumps of simple and robust design meeting high demands on tightness. Two liquid surrounded sleeve bearings of tungsten and silicon carbide bear the shaft axially and radial. The application of high-grade magnetic materials with high density of energy guarantees the transmission of the nominal torque and safety during the start-up phase and in case of overload.
The modular magnetic system makes possible the optimal adaptation to different operating conditions. The main components of the pumps mostly are equal to those of the standard pumps, the connecting dimensions are identical.

The material design can be adapted to the operating conditions.

APPLICATION

The vacuum pumps with magnetic coupling are suitable for handling and exhausting of nearly all dry and humid gases.
They are applied wherever extremely high demands on tightness exist which cannot be met by pumps with shaft seal.

NOTE

The main fields of application are in the chemical and pharmaceutical industry where polluting, unhealthy or dangerous media are to be handled. Many different process vapours can be exhausted and the generated condensate possibly can be used as service liquid for the pump.
For that purpose the service liquid, separated from the gas in all liquid separator, is run in a circuit. For the cooling of the system a heat exchanger is arranged in the circulating liquid line.

GENERAL TECHNICAL DATA

Pump type		unit	LPH 75320	LPH 75330	LPH 75340
Normal speed	50 Hz	rpm		975	
Power of the electric motor [1]	IP 55	kW	37	45	55
	EEx e II T3	kW	40	46	64
Max. compression over pressure		bar		0,6	
Max. admissible pressure difference		bar		1,5	
Hydraulic test (over pressure)		bar		3	
Moment of the inertial of the rotating pump parts and of the water filling (without outer magnet)		kg · m²	2,89	3,56	3,99
Sound pressure level at a suction of 80 mbar		dB (A)		79	
Max. gas temperature	dry	°C		100	
	saturated	°C		50	
Service liquid					
max. admissible temperature		°C		50	
max. viscosity		mm²/s		90	
max. density		kg/m³		1200	
volume up to shaft		liter	39	50	57
Max. flow resistance of the heat exchanger		bar		0,2	
Leakage		$\frac{\text{mbar} \cdot \text{l}}{\text{s}}$		$< 1 \cdot 10^{-3}$	

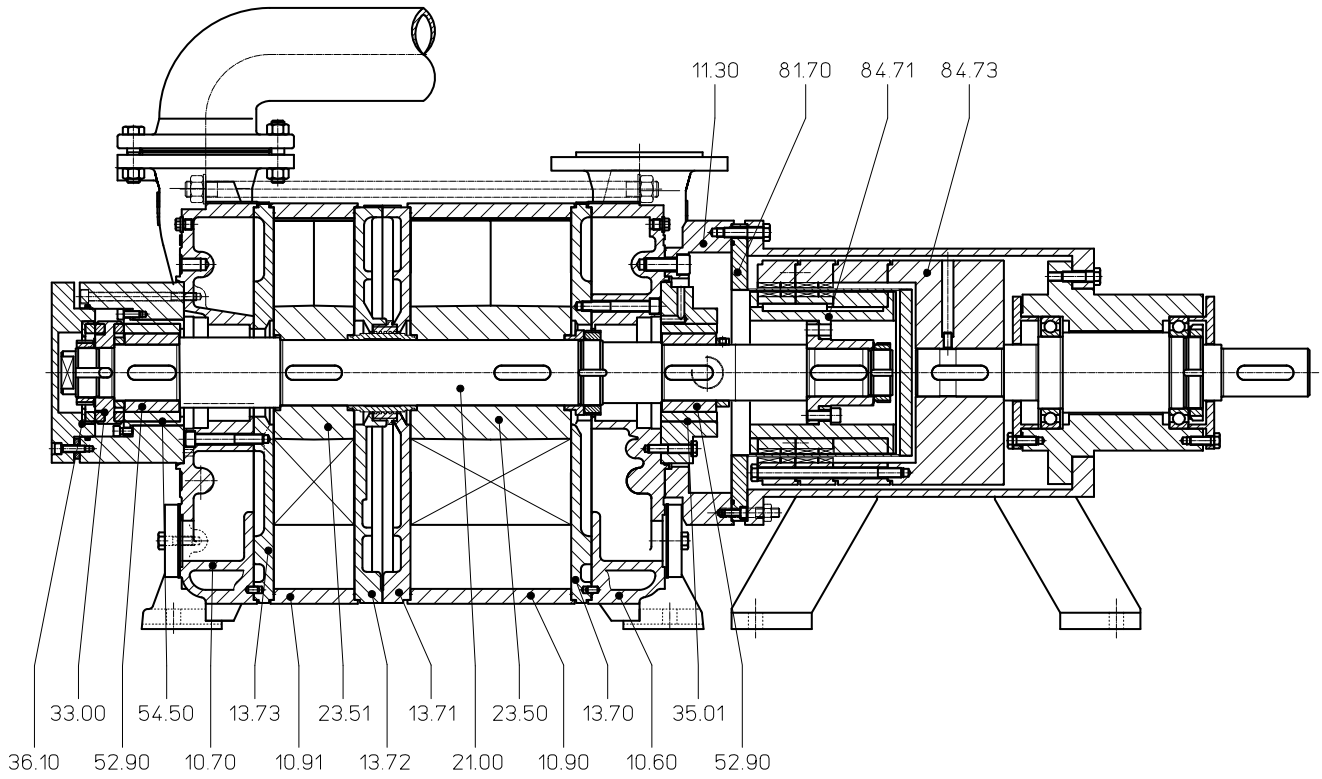
The combination of several limiting values is not admissible.

1) The dimensioning of the magnetic coupling and of the electric motor depends on the physical data of the service liquid and of the suction and discharge pressure of the pump.

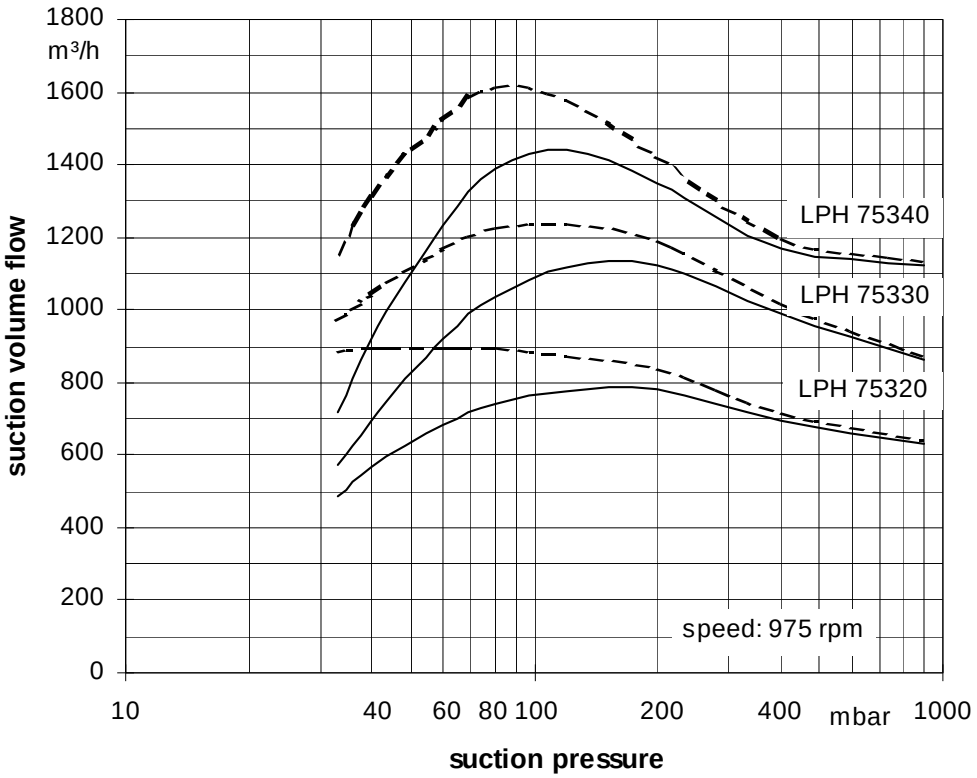
Material design LPH 75320, LPH 75330, LPH 75340 with magnetic coupling

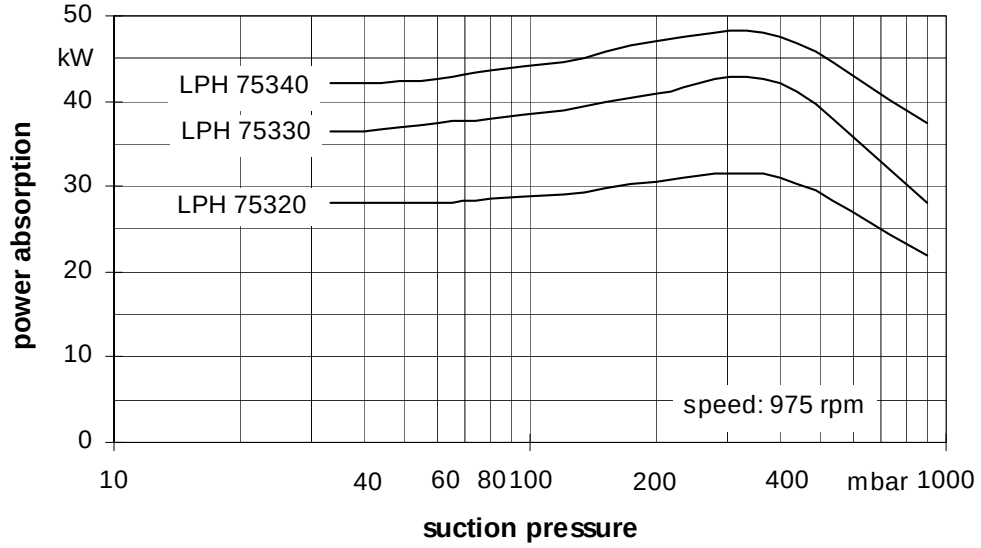
Item	COMPONENTS	MATERIAL DESIGN	
		0B	4B
10.60, 10.70	Casing	0.6025	1.4408
10.90, 10.91	Central body	1.0038	1.4581
13.70, 13.71, 13.72, 13.73	Guide disk, intermediate piece	0.6025	1.4408
11.30	Intermediate casing	1.0553	1.4571
21.00	Shaft	1.4021	
23.50, 23.51	Vane wheel impeller	1.0553	
33.00	Thrust bearing	1.4462 / silicon carbide	
35.01	Bush	1.0553 / silicon carbide	1.4571/ silicon carbide
36.10	Bearing cover	1.0553 / 1.4462 / silicon carbide	1.4571 / 1.4462 / silicon carbide
52.90	Bushing	tungsten carbide	
54.50	Bush	1.4571 / silicon carbide	
81.70	Isolation shroud	1.4571 / 2.4610	
84.71	Inner magnet	1.4571 / Magnet	
84.73	Magnetic bell	1.0553 / Magnet	

Sectional drawing LPH 75320, LPH 75330, LPH 75340 with magnetic coupling



Suction volume flow and power absorption LPH 75320, LPH 75330, LPH 75340 with magnetic coupling



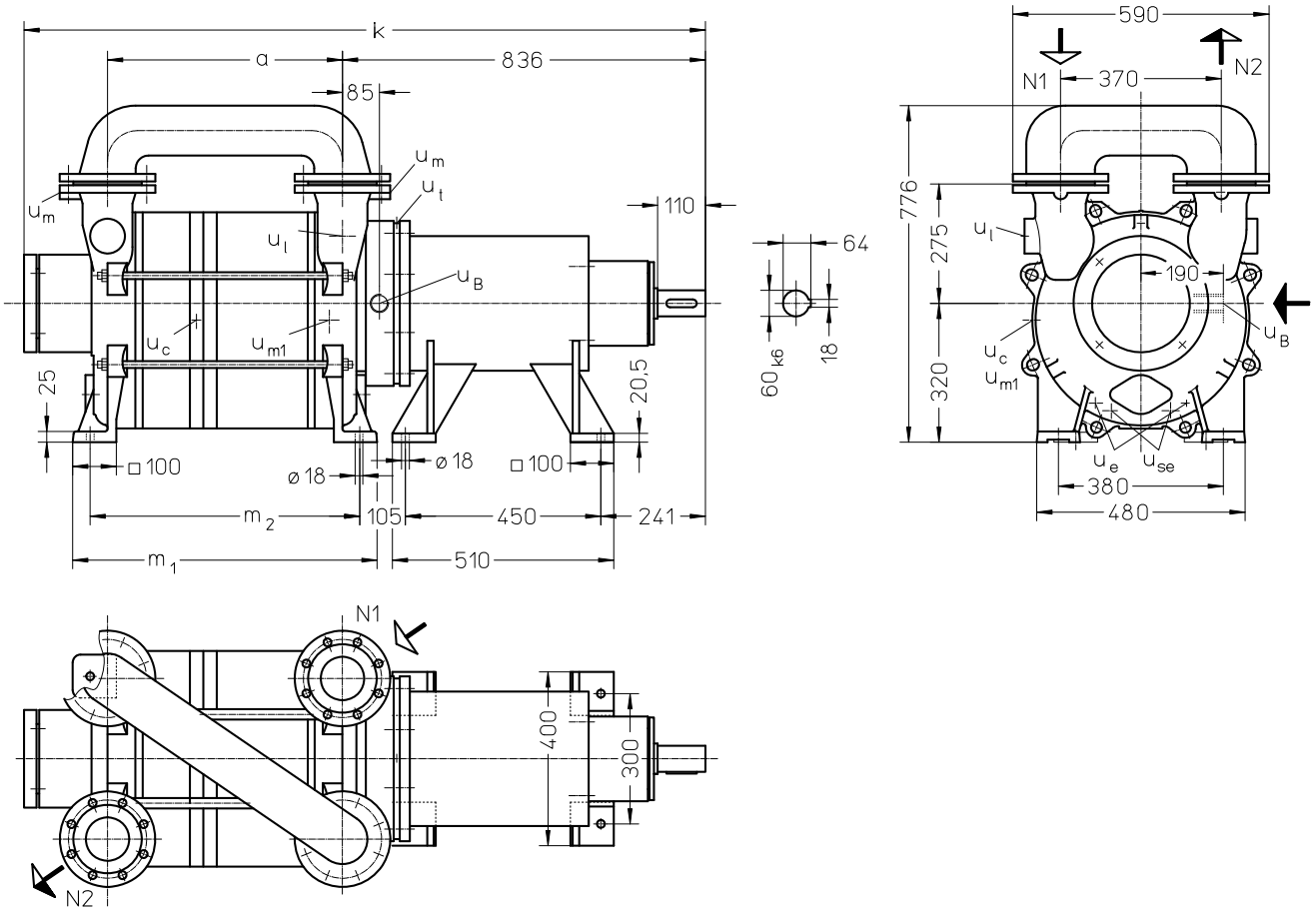


The operating data are applicable under the following conditions:

- 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

Dimension table LPH 75320, LPH 75330, LPH 75340 with magnetic coupling



N 1 = gas-inlet DN 100

N 2 = gas-outlet DN 100

u_B = connection for service liquid G 1¼

u_c = connection for protection against cavitation G ³/₈

u_e = drain connection G ¼

u_l = connection for vent cock G 1½

u_m = connection for pressure gauge G ³/₈

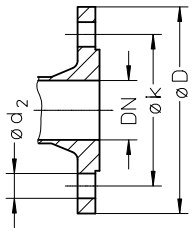
u_{m1} = connection for drain valve G ½

u_{se} = connection for dirt drain G ½

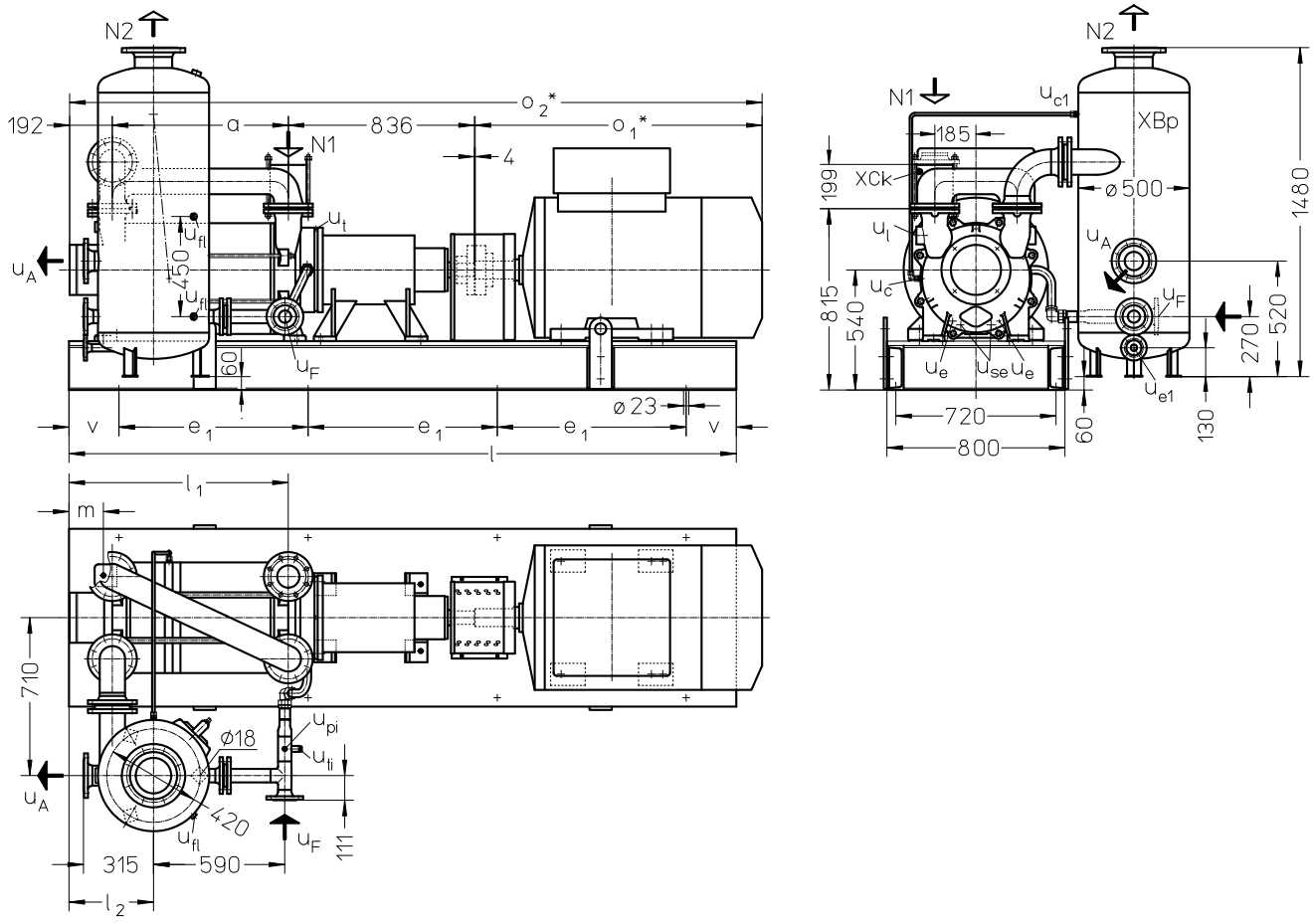
u_t = connection for temperature monitoring M12x1

	a	m_1	m_2	o_3	weight abt. kg
LPH 75320	541	701	621	1570	780
LPH 75330	691	851	771	1720	870
LPH 75340	791	951	871	1820	930

flange connections to DIN 2501 PN 10	
DN	100
k	180
D	220
number x d_2	8 x 18



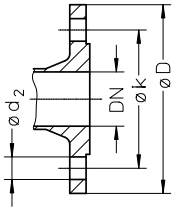
Arrangement drawing LPH 75320, LPH 75330, LPH 75340 with magnetic coupling



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 c1 = connection for protection against cavitation G ³/₈
u e1 = drain connection DN 25
u F = connection for fresh liquid DN 50
u fl = connection for liquid level indicator G ½
u pi = connection for pressure gauge G ¼
u t = connection for temperature monitoring M12x1
u ti = connection for thermometer G ½

	electric motor 50 Hz			a	e 1	l	l 1	l 2	m	v	o 1*	o 2*	weight	
	size	kW											pump + motor + coupling + base frame abt. kg	as above + XBp + XCk + pipelines abt. kg
		IP 55	EEx e II T3											
LPH	250 M	37	-	541	750	2800	886	530	305	275	930	2503	1790	1930
75320	280 S	-	40								1044	2617	1950	2090
LPH	280 S	45	-	691				380	155		1005	2728	1990	2130
75330	280 M	-	46								1095	2818	2075	2215
LPH	280 M	55	-	791	850	3000	986			225	1005	2828	2090	2230
75340	315 S	-	64								1220	3043	2420	2560

flange connection to DIN 2501 PN 10					
DN	25	50	80	100	150
k	85	125	160	180	240
D	115	165	200	220	285
number x d_2	4 x 14	4 x 18	8 x 18	8 x 18	8 x 22



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

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	KB difference in temperature [°C]			FB	KB difference in temperature [°C]			FB	KB difference in temperature [°C]			FB	KB difference in temperature [°C]			FB
		[rpm]	10	5	2		10	5	2		10	5	2		10	5	2	
LPH	75320	975	1,90	3,15	5,15	9	1,90	3,05	4,85	8	1,90	3,00	4,55	7	1,60	2,30	3,10	4
	75330		2,35	3,70	5,70		2,35	3,65	5,40		2,35	3,50	5,00		1,90	2,55	3,25	
	75340		2,60	4,00	6,00		2,60	3,90	5,65		2,55	3,75	5,20		2,00	2,70	3,35	

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

Data regarding the pump size - order hints

series + size		hydraulics + bearings	shaft sealing + magnetic coupling	material design	casing seal
		A • hydraulic A • F two grease lubricated antifriction bearings	5 • • 36-pole magnet • A • glandless with isolation shroud • • M • • N • • P torque of the magnetic coupling[1)]	0B main parts GG without non-ferrous metal 4B main parts Cr Ni Mo-cast steel	4 soft Teflon
LPH	75320	AF	5AM	alternative 0B, 4B	4
	75330		5AN		
	75340		5AP		

1) The dimensioning of the magnetic coupling and of the electric motor depends on the physical data of the service liquid and of the suction and discharge pressure of the pump.
In case of deviation from standard, please request further information and give details of your problem.

Motor selection table **delivery with motor**

	IMB3; 50 Hz; 400 VΔ ; 975 rpm					
	motor protection IP 55			motor protection EEx e II T3		
	power	size	designation	power	size	designation
LPH 75320	37 kW	250 M	BC	40 kW	280 S	CL
LPH 75330	45 kW	280 S	CC	46 kW	280 M	DL
LPH 75340	55 kW	280 M	DC	64 kW	315 S	EL

Example for ordering:

The construction size LPH 75330 AF 5AN 4B 4 with 45 kW three-phase motor (IMB3; 50 Hz; 400 VΔ) 975 rpm has the complete order number **LPH• 75330 AF 5AN 4B 4 CC**

If motors with 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.

Accessories LPH 75320, LPH 75330, LPH 75340 with magnetic coupling

recommended accessories			LPH 75320	LPH 75330	LPH 75340
Upright liquid separator		type / weight	XBp 2311 / 96 kg		
material design	130 / galvanized	SIHI part No.	35 000 568		
	172 / 1.4571		35 000 569		
service liquid line					
material design	072 / St 37-0	SIHI part No.	on request		
	172 / 1.4571		on request		
cavitation protection line					
material design	072 / St 37-0	SIHI part No.	on request		
	172 / 1.4571		on request		
discharge line (bend)					
material design	072 / St 37-0	SIHI part No.	35 003 231		
	172 / 1.4571		35 003 232		
Sterling SIHI ball type non-return valve		type	XCk 100		
material design	767 / 0.6025+NBR	SIHI part No. /weight	43 016 898 / 16,0 kg		
	784 / 1.4408+PTFE		43 029 322 / 17,5 kg		
Motor					
IP 55		size	250 M	280 S	280 M
		power	37 kW	45 kW	55 kW
		weight	410 kg	540 kg	580 kg
EEx e II T3		size	280 S	280 M	315 S
		power	40 kW	46 kW	64 kW
		weight	570 kg	625 kg	910 kg
Coupling					
for motor IP 55		type / weight	A 180 / 14 kg	A 180 / 14 kg	
pump side		SIHI part No.	43 035 527	43 035 527	
motor side			43 034 392	43 021 495	
for motor EEx e II T3		type / weight	ADS 194 / 17,5 kg		ADS 218 / 24 kg
pump side		SIHI part No.	43 040 600		43 040 602
motor side			43 038 678		43 040 603
Contact safety device					
material design	076 / steel	SIHI part No.	35 004 816		35 004 800
	345 / 2.0321		35 004 817		35 004 801
Base frame		weight, abt.	500 kg		550 kg
material design	081 / 1.0254	SIHI part No.	on request		on request
Base support					
for motor size 250	003 / 0.6025	SIHI part No.	8x 43 041 080 / 8x2,3 kg		
for motor size 280	003 / 0.6025	SIHI part No.	8x 43 041 077 / 8x1,3 kg		
for motor size 315	081 / steel	SIHI part No.			4x 49 064 175 / 4x 0,6 kg
Resistance thermometer		type	PT 100-EEx i		
		SIHI part No.	43 039 552		
lengthening piece M12x1-G ½					
material design	172 / 1.4571	SIHI part No.	20 000 532		
Smooth starter		type / weight	on request		

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

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