

Liquid ring vacuum pumps

in compact design



LEM 25, LEM 50

Pressure range: 33 to 1013 mbar
Suction volume flow: 4 bis 60 m³/h

CONSTRUCTION TYPE

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

- non-polluting due to nearly isothermal compression
- oil-free, as no lubrication in the working chamber
- handling of nearly all gases and vapours
- 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
- shaft not contact with the medium
- protection against cavitation as standard
- incorporated dirt drain
- incorporated central drain
- no metallic contact of the rotating parts

The SIHI liquid ring vacuum pumps LEM are single-stage ones.

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.



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. 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 equipped with a device by which the contaminated service liquid can continuously be drained during operation (dirt drain), if necessary.

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

GENERAL TECHNICAL DATA

Pump type	unit	LEM 25	LEM 50
Speed	50 Hz 60 Hz		2800 3500
Max. compression over pressure	bar		0,3
Max. admissible pressure difference	bar		1,1
Moment of inertial of the rotating pump parts and of the water filling	kg · m ²	0,003	0,0095
Sound pressure level at a suction pressure of 80 mbar	dB (A)	68	69
Max. gas temperature	dry °C saturated °C		200 100
Service liquid			
max. admissible temperature	°C		80
material design: 0A, 0R, 4B	°C		40
7C			4
max. viscosity	mm ² /s		1200
max. density	kg/m ³		
volume up to shaft level	liter	0,3	0,4
Max. flow resistance of the heat exchanger	bar		0,2

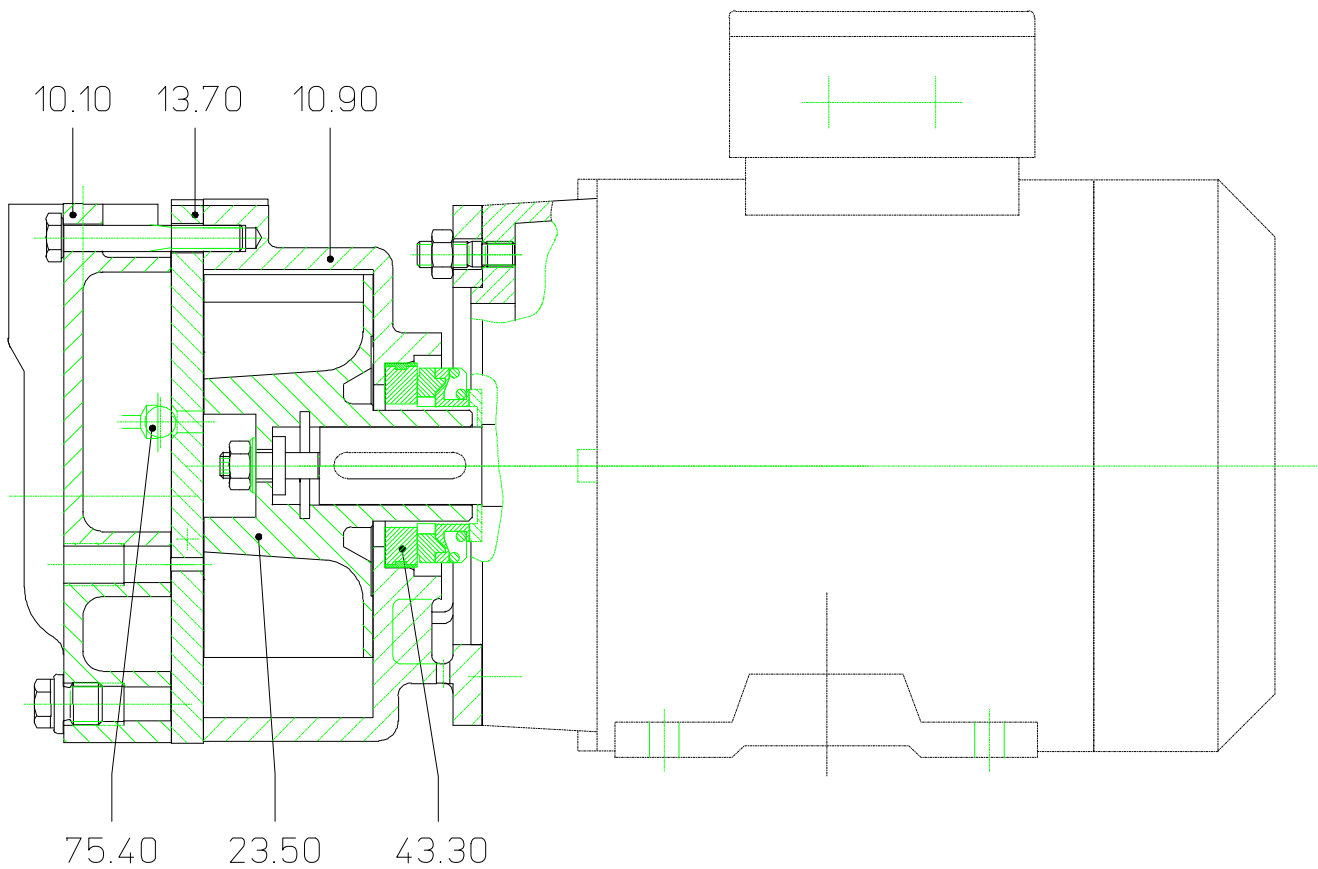
The combination of several limiting values is not admissible.

Material design

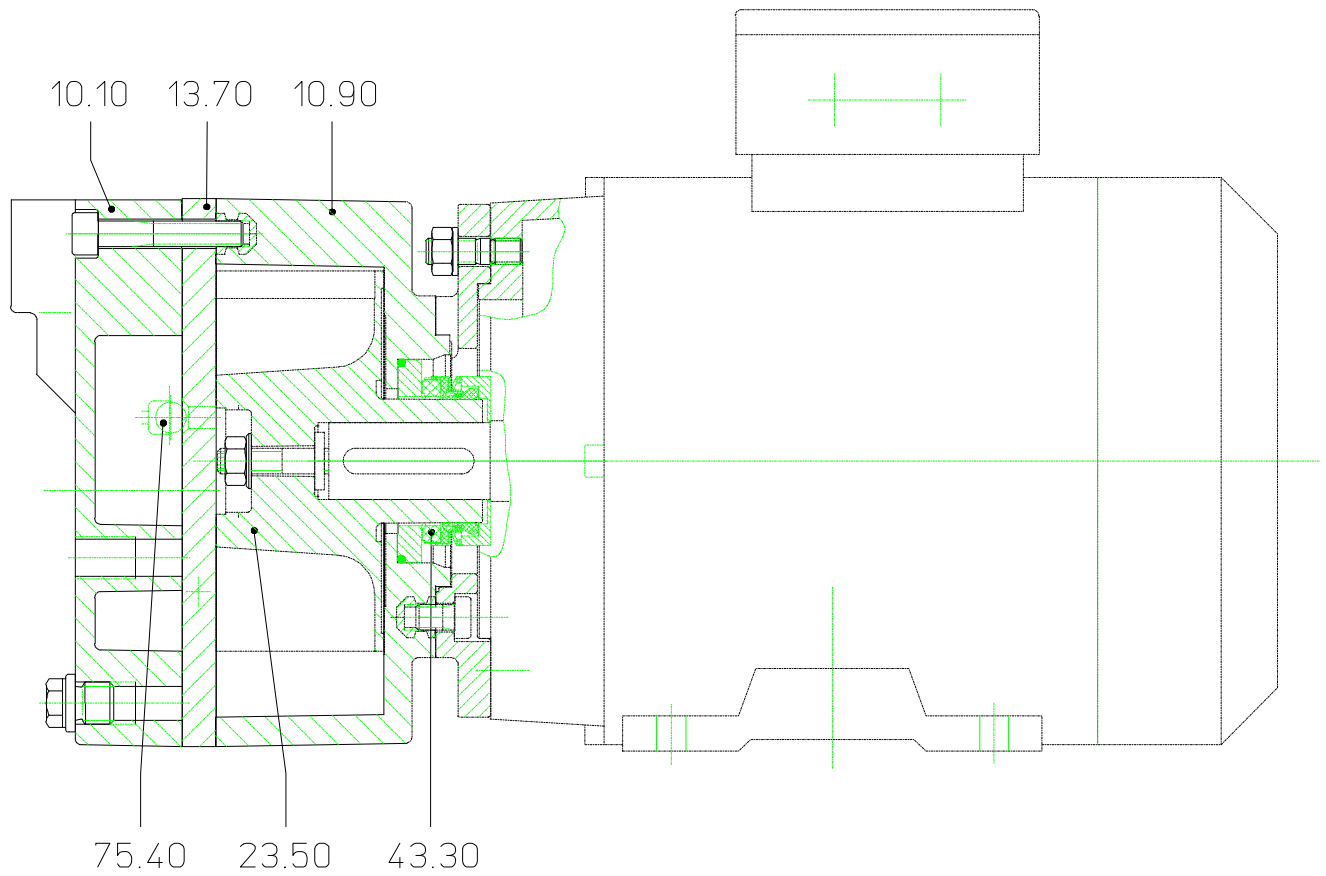
Item	COMPONENTS	MATERIAL DESIGN			
		0A	0R	4B*	7C
10.10	Casing	0.6025		1.4408	epoxy-resin, glass-fibre reinforced
10.90	Central body				
13.70	Guide disk				
23.50	Vane wheel impeller	2.0970.02		1.4517	
-	Steel parts in contact with the medium	1.4401			
43.30	Standard mechanical seal	Cr Ni Mo-steell / carbon / Perbunan		Cr Ni Mo-steel / carbon / Viton	
75.40	Valve balls	polyamide A		PTFE	

* only for LEM 50

Sectional drawing LEM 25, LEM 50 material design 0A, 0R, 4B



Sectional drawing LEM 25, LEM 50 material design 7C



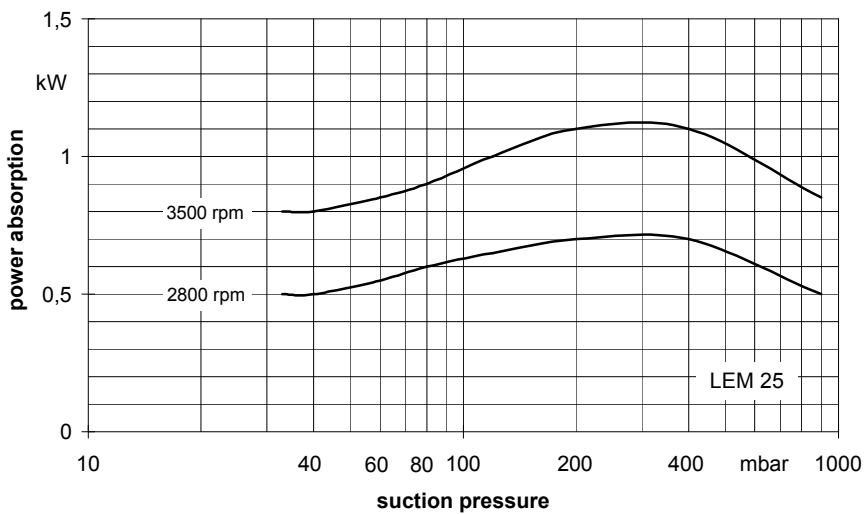
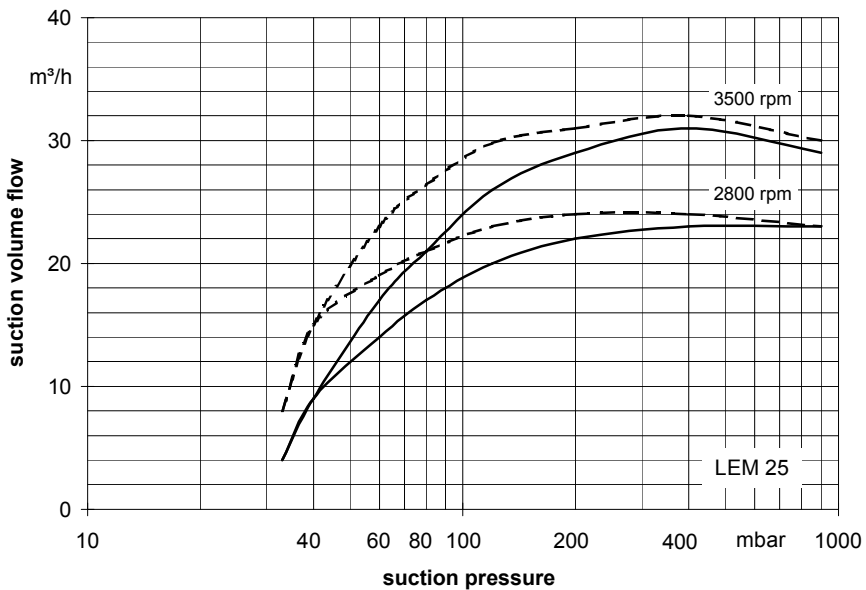
Fresh water requirements in [m³/h] in dependent on suction pressure, speed, mode of operation and difference in temperature

suction pressure [mbar]		33				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		10	5	2		10	5	2		10	5	2	
LEM 25	2800	0,04	0,06	0,12	0,26	0,05	0,08	0,13	0,26	0,05	0,08	0,14	0,26	0,05	0,08	0,12	0,2
	3500	0,05	0,09	0,15		0,06	0,10	0,16		0,07	0,11	0,16		0,06	0,10	0,14	
LEM 50	2800	0,07	0,13	0,23	0,5	0,09	0,15	0,25	0,48	0,09	0,15	0,25	0,45	0,09	0,14	0,22	0,35
	3500	0,11	0,18	0,29		0,12	0,20	0,31		0,13	0,20	0,30		0,12	0,18	0,25	

FB = fresh liquid service

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

Suction volume flow and power absorption LEM 25

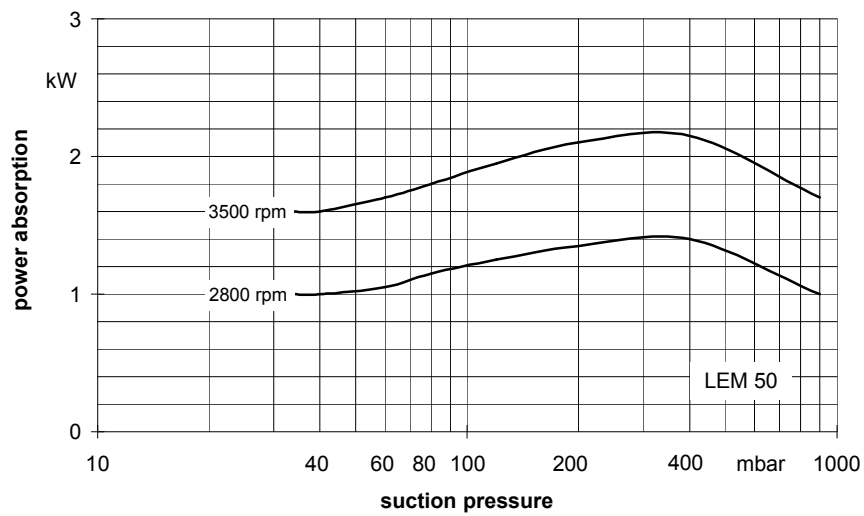
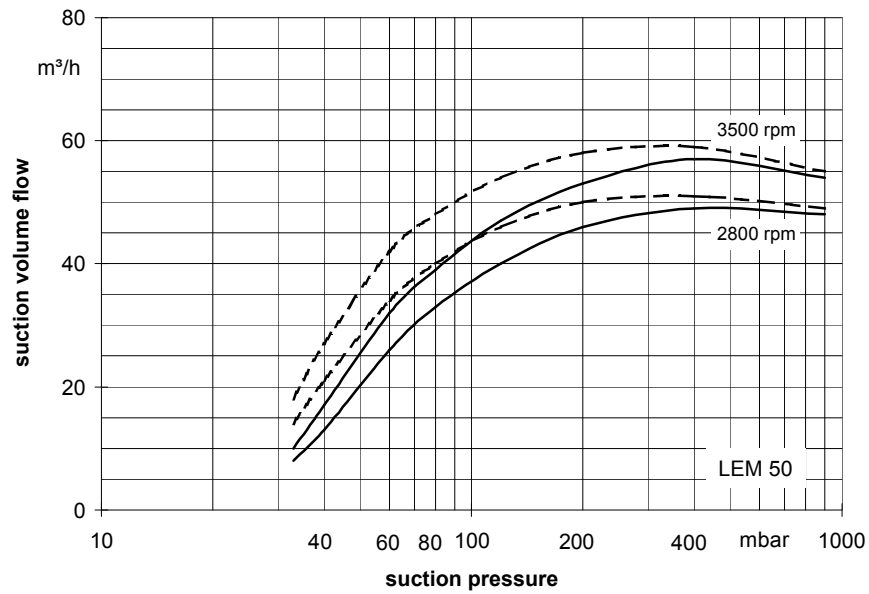


The operating data are applicable under the following conditions:

- pumping medium:
 - dry air: 20°C (solid line)
 - water vapour saturated air: 20°C (dashed line)
- 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

Suction volume flow and power absorption LEM 50

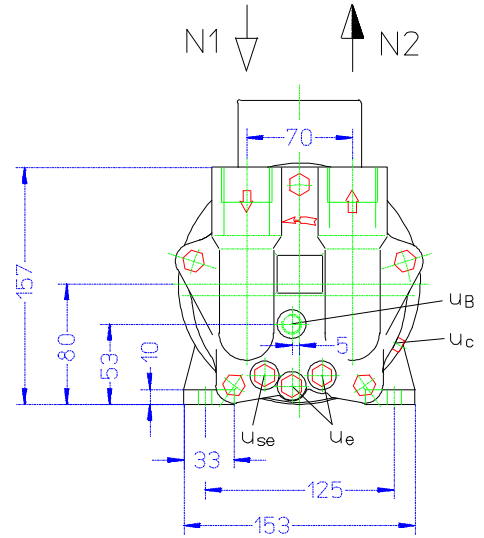
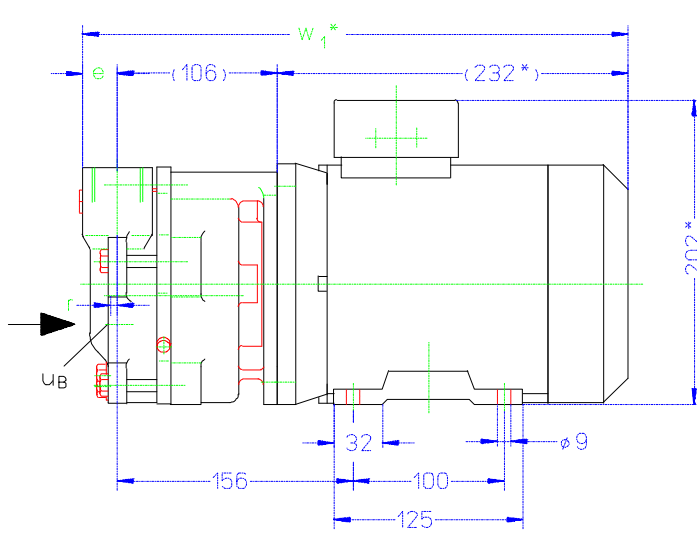


The operating data are applicable under the following conditions:

- 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 LEM 25

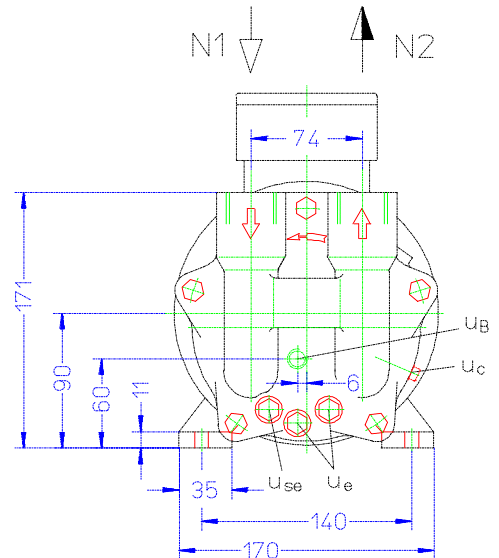
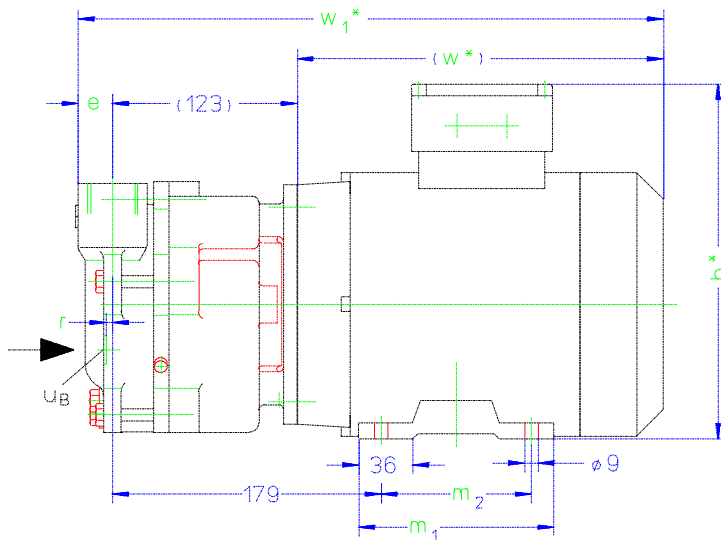


	electric motor IP 55		material	e	r	w ₁ *	weight abt. kg	
	size	kW						
LEM 25	80	50 Hz	60 Hz	0A, 0R	23	5	361	19
				0.75	1.1	7C	26	6

other motors on request

- N 1 = gas inlet G 1
- N 2 = gas outlet G 1
- u_B = connection for service liquid G ¼
- u_C = connection for protection against cavitation M5
- u_e = drain connection G ¼
- u_{se} = connection for dirt drain G ¼

Dimension table LEM 50



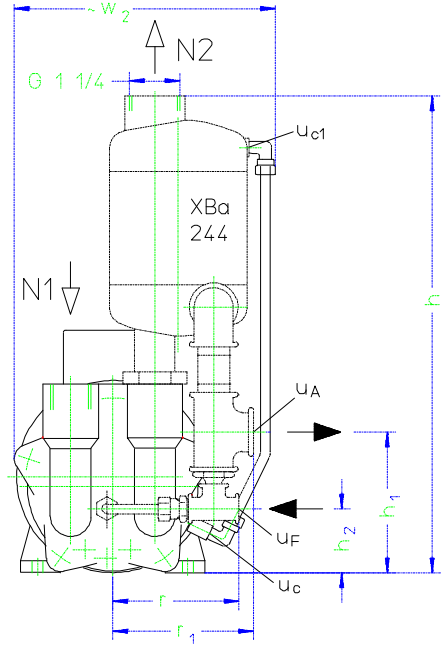
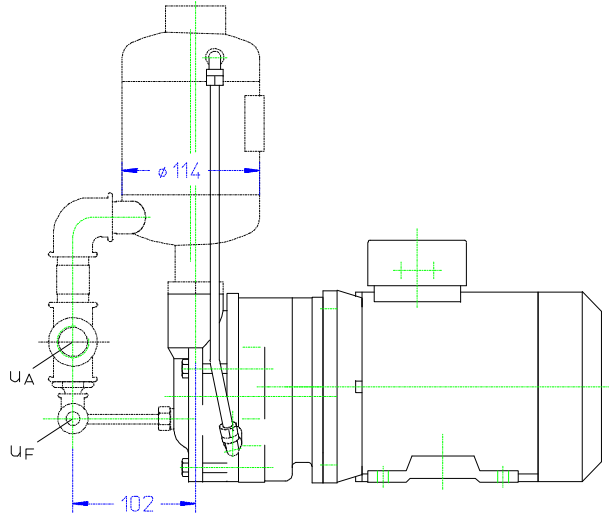
- N 1 = gas inlet G 1
- N 2 = gas outlet G 1
- u_B = connection for service liquid G ¼
- u_C = connection for protection against cavitation M5
- u_e = drain connection G ¼
- u_{se} = connection for dirt drain G ¼

	electric motor IP 55		material	e	h*	m ₁	m ₂	r	w*	w ₁ *	weight abt. kg	
	size	kW										
LEM 50	90 S	1.5	-	0A, 0R, 4B	23	237	130	100	5	243	390	27
				7C							26	393
	90 L	-	2.2	0A, 0R, 4B	23	229	155	125	5	268	415	30
				7C							26	418

other motors on request

* dimensions dependent on the motor make

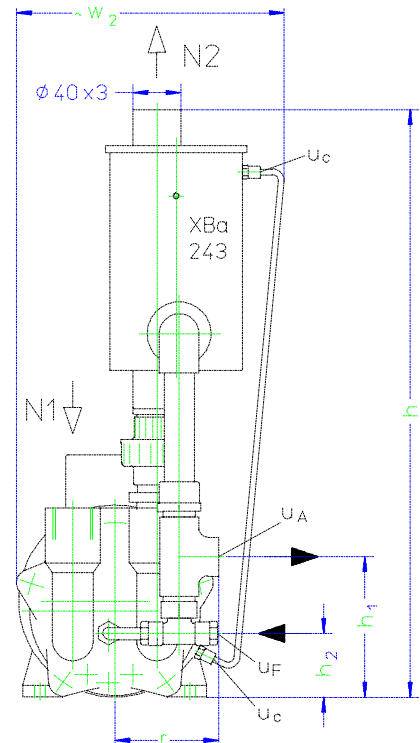
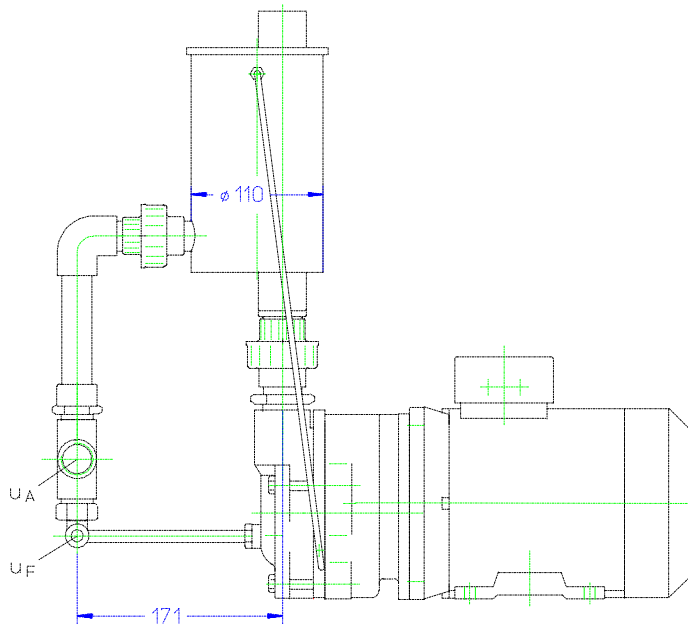
Arrangement drawing LEM 25, LEM 50 material design 0A, 0R, 4B



- N 1 = gas inlet G 1
- N 2 = gas outlet
- U_A = connection for liquid drain G ³/₄
- U_F = connection for fresh liquid G ¹/₄
- U_c = connection for protection against cavitation M5
- U_{c1} = connection for protection against cavitation G ¹/₈

	h	h ₁	h ₂	r	r ₁	w ₂	weight ca. kg
LEM 25	398	117	54	105	117	217	22
LEM 50	411	123	60	107	119	225	29

Arrangement drawing LEM 25, LEM 50 material design 7C



- N 1 = gas inlet G 1
- N 2 = gas outlet
- U_A = connection for liquid drain G ³/₄
- U_F = connection for fresh liquid G ¹/₄
- U_c = connection for protection against cavitation M5
- U_{c1} = connection for protection against cavitation G ¹/₈

	h	h ₁	h ₂	r	w ₂	weight ca. kg
LEM 25	490	117	54	86	223	17
LEM 50	503	123	60	88	231	23

Data regarding the pump size - order notes

series + size	hydraulics + bearings	shaft sealing	material design	casing seal
	<ul style="list-style-type: none"> A• hydraulic A •Z two grease lubricated antifriction bearings arranged in the motor 	B90 mechanical seal carbon / Viton FAA mechanical seal carbon / Perbunan GA1 mechanical seal carbon / Viton	0A main parts of GG 0R as 0A, but guide disk of non-ferrous metal 4B main parts of Cr Ni Mo cast steel 7C EP-resin	0 liquid seal
LEM 25	AZ	FAA, GA1	0A, 0R, 7C	0
LEM 50		B90, FAA, GA1	0A, 0R, 7C, 4B	

Motor selection

		motor enclosure IP 55 50 Hz					motor enclosure IP 55 60 Hz				
		Y-voltage V +/- 5%	Δ-voltage V +/- 5%	power kW	size	motor- design.	Y-voltage V +/- 5%	Δ-voltage V +/- 5%	power kW	size	motor- design.
LEM	25	346-440	200-254	0,75	80	BW	346-480	200-277	1,1	80	AW
LEM	50	346-440	200-254	1,5	90 S	HX	346-480	200-277	2,2	90 L	JX

Example for ordering:

The construction size LEM 25 AZ FAA 0A 0 with 0,75 kW three-phase ac motor (50 Hz, 230 VΔ) 2800 rpm has the complete order number:

LEM · 25 AZ FAA 0A 0 BW

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.

Accessories LEM 25, LEM 50

Recommended accessories			LEM 25	LEM 50
Overhead liquid separator		type	XBa 243	
material design	PVC	weight	0,6 kg	
service liquid line		SIHI part no.	35 000 372	
material design	Al-Pe / PVC	SIHI part no.	35 003 034	
cavitation protection line		SIHI part no.	20 027 269	
material design	nylon	SIHI part no.	20 027 269	
Overhead liquid separator		type	XBa 244	
material design	130 / galvanized	weight	2,8 kg	
	172 / 1.4571	SIHI part no.	35 000 374	
service liquid line		SIHI part no.	35 000 375	
material design	072 / St 37-0	SIHI part no.	35 003 035	
	172 / 1.4571	SIHI part no.	35 003 036	
cavitation protection line		SIHI part no.	35 003 358	
material design	072 / St 37-0	SIHI part no.	35 003 359	
	172 / 1.4571	SIHI part no.	35 003 359	
SIHI-gas ejector		at service liquid temperature	15 °C	GEV 25 A
		at service liquid temperature	30 °C	GEV 25 A
				GEV 50 A
				GEV 50 A
Ball type non-return valve		size / weight	G1 / 0,7 kg	
material design	776 / brass	SIHI part no.	20 044 637	
	172 / 1.4571	SIHI part no.	43 038 310	

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

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