

Liquid ring vacuum pumps 液环式真空泵

With motor carrier design 带电机托架设计



LELC 90, 125, 150, 250, 325, 425

PRESSURE RANGE:

入口压力范围: **33 - 1013 mbar**

SUCTION VOLUME:

入口流量: **32 - 470 m³/h**

CONSTRUCTION TYPE

结构型式

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

SIHI液环式真空泵是结构简单使用可靠的容积变化式泵，具有如下特点：

nearly isothermal compression

几乎等温压缩

oil-free, as no lubrication in the working chamber therefore non-polluting

在工作腔内无需润滑，因而绝对无油，无污染

Capable of handling of nearly all gases and vapours
可处理几乎所有的气体和蒸汽

small quantities of entrained liquid can be handled
可处理少量的夹带液体

easy maintenance and reliable operation

易维护，高可靠性

low noise and nearly free from vibration

低噪音，几乎无振动

wide choice of materials, therefore applicable nearly everywhere

广泛的材质选择，基本上可用于所有场合

shaft not in contact with the medium

轴不接触介质

protection against cavitation as standard

气蚀保护作为标准配置

incorporated dirt drain

一体式排污

no metallic contact of the rotating parts

旋转部件没有金属接触

SIHI liquid ring vacuum pumps LELC are single-stage
SIHI LELC 系列液环式真空泵是单级泵。

APPLICATION

应用

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 generated.

干气和湿气的处理和抽除；正常条件下可处理夹带的液体。
此真空泵可用于所有需要33 mbar到900 mbar的场合。



NOTE

注意事项

During operation the pump must be supplied continuously 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 last page) and reused.

The pumps are equipped with a connection through which the contaminated service liquid can be drained continuously during operation (dirt drain), if necessary.

泵运转期间需连续不断地补充工作液（通常为水），以带走气体压缩而产生的热量和补充部分随气体排出的工作液。此部分工作液可在汽液分离器中与气体分开（请见样本附件部分），以重新利用。

泵可按需要配备一个连接，以保证在运转条件下连续地排放被污染的工作液。

The direction of rotation is clockwise, when looking from the motor towards the pump.

从泵的驱动端看，泵的旋转方向为顺时针。

GENERAL TECHNICAL DATA 常规技术数据

Pump type 泵型号	Unit 单位	LELC 90	LELC 125	LELC 150	LELC 250	LELC325	LELC 425
Synchronous speed 同步转速	50 Hz rpm	1500					
Max. compression over atmospheric pressure 最大背压	bar	0.3					
Max. admissible pressure difference 允许最大压差	bar	1.1					
Test pressure above atmospheric pressure 水压试验（表压）	bar	3					
Moment of inertia of the rotating pump parts and water filling 满水时转动部件的惯性力矩	kg · m²	0.035	0.053	0.069	0.097	0.14	0.21
Sound pressure level at a suction pressure of 80 mbar 在 80mbar 入口压力下的噪音	dB (A)	65				70	72
Max. gas temperature 最大吸气温度	Dry gas 干气 °C	200					
	Saturated gas 饱和气 °C	100					
Service liquid 工作液 max. recommended temperature for water as working liquid 工作液为水的最大推荐温度 max. admissible temperature for other suitable working liquids 对其他适合的工作液最大允许温度 max. kinematic viscosity 最大运动粘度 max. density 最大密度 volume up to shaft level 到轴中心线的容积	°C	40					
	°C	80					
	mm²/s	4					
	kg/m³	1200					
	liter	2.4	2.8	3.2	4.0	4.2	4.7

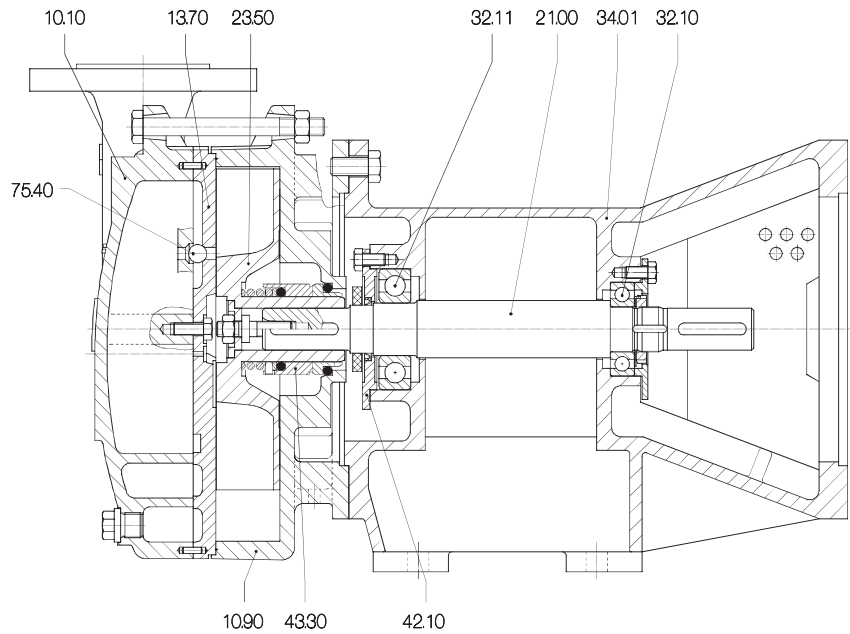
The combination of several limiting values is not admissible. 不允许将几种极限值同时选择

Material design 材料设计

Material Design 材料设计		0K		0E	4B	
Pump Type 泵型号	LEMC 90,125,150	√			√	
	LEMC 250		√	√		√
	LEMC 325 425		√	√		√
Item 位号	Component 零件	Material 材料				
10.10	Casing	0.6025			1.4408	
10.90	泵盖					
13.70	Central body 中间体 Guide disc 导流盘					
21.00	Shaft 轴	45				
23.50	Vane wheel impeller 叶轮	1.4301		1.4408		
34.01	Motor Carrier 电机托架	0.6025				
43.30	Mechanical seal 机械密封	Q22BVGG Q22BM1GG	FBPFF GBM1GG	GBM1GG	Q22BM1GG	GBM1GG
		Q22 : SiC 碳化硅 B : Carbon 石墨 F : Cr-Ni-St 铬钢 G : Cr-Ni-Mo-St 铬镍钼钢 V : Viton 氟橡胶 P : Perbunan 丁苯橡胶 M1 : PTFE encapsulated 氟橡胶外包裹聚四氟乙烯				
75.40	Valve balls 阀球	PTFE 聚四氟乙烯				

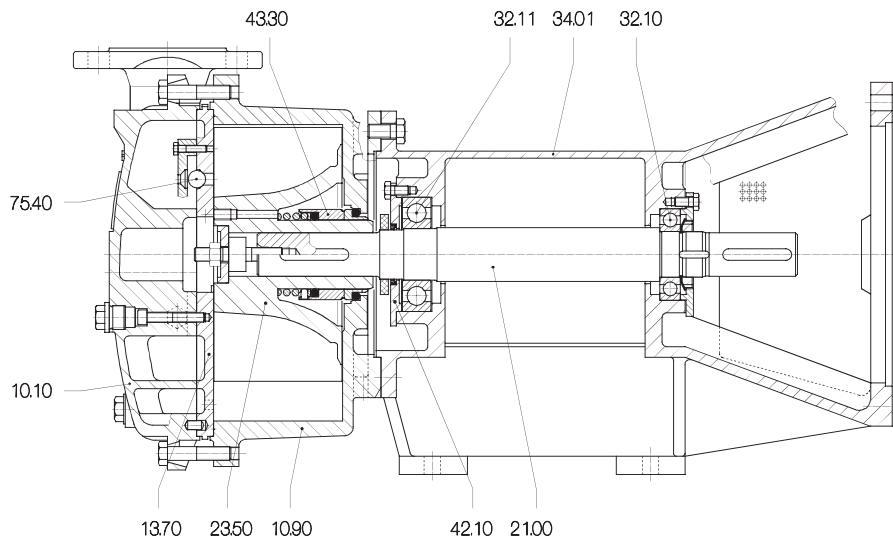
Sectional drawings 剖视图

LELC 90, 125, 150



10.10	Casing 泵盖
10.90	Central body 中间体
13.70	Guide disc 导流盘
21.00	Shaft 轴
23.50	Vane wheel impeller 叶轮
34.01	Motor Carrier 电机托架
43.30	Mechanical seal 机械密封
75.40	Valve balls 阀球
32.10	Ball bearing 球轴承
32.11	Ball bearing 球轴承
42.10	Radial Seal 径向密封

LELC 250



LELC 325, 425

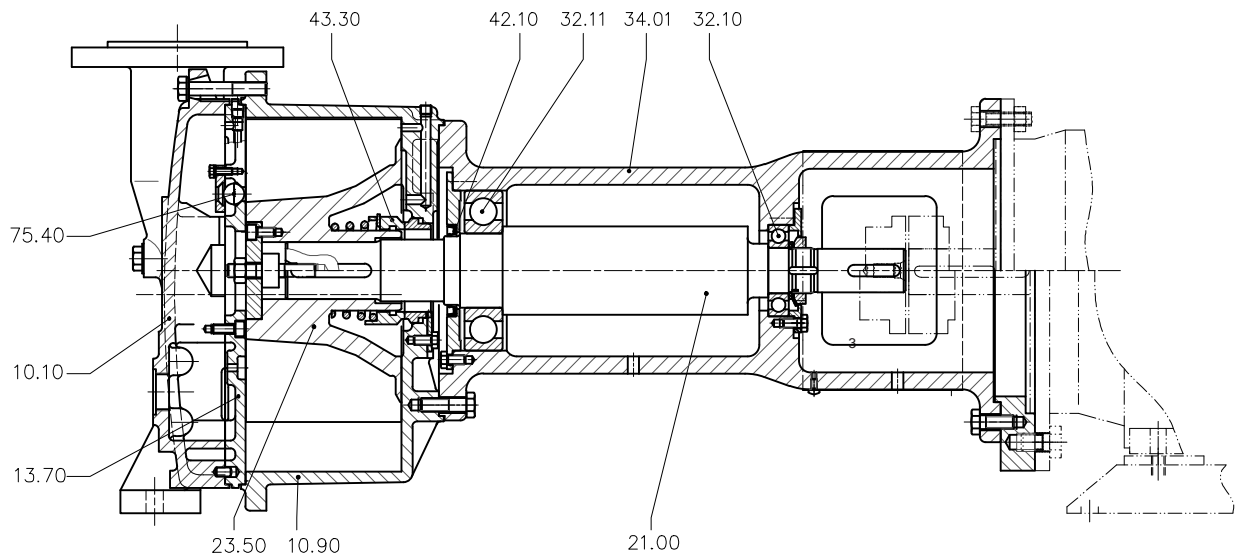
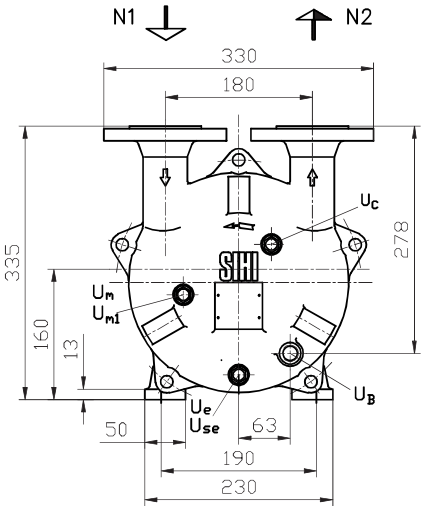
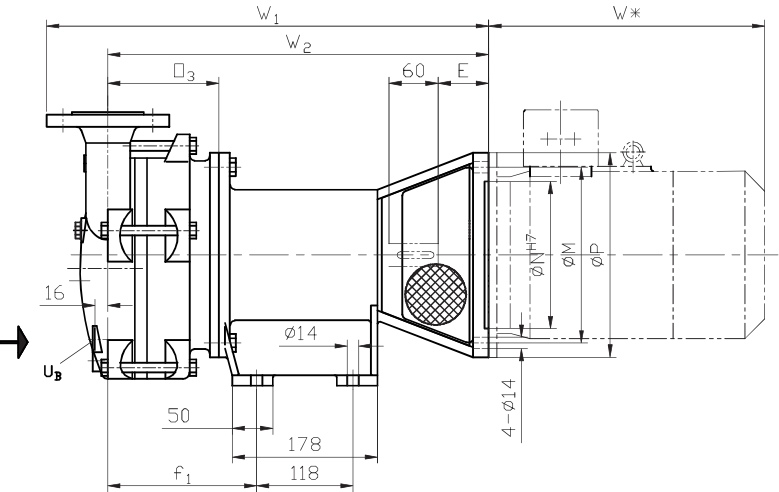


Table of Dimensions and weights 外形尺寸和重量列表
Motors on request 电机按需另配

LELC 90, LELC 125, LELC 150

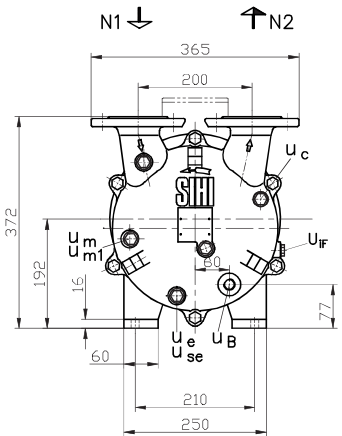
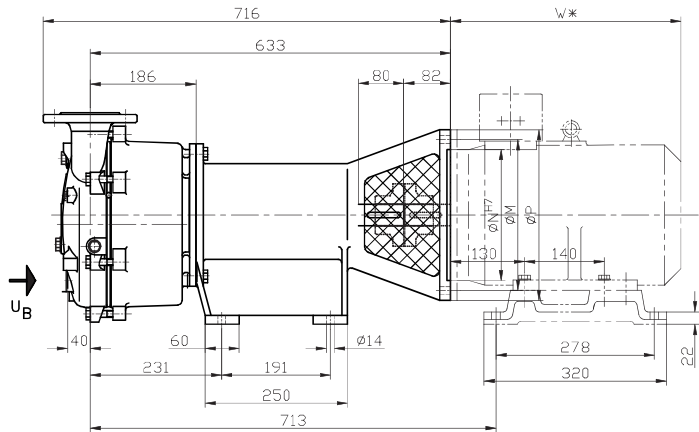


- N 1 = Gas inlet DN 40 吸气口 DN40
N 2 = Gas outlet DN40 排气口 DN 40
U_B = Connection for service liquid G ½ 工作液接口 G ½
U_c = Connection for protection against cavitation G ¾
汽蚀保护接口 G ¾

- U_e = Drain connection G ¾ 排液接口 G ¾
U_{se} = connection for dirt drain G ¾ 接排污口 G ¾
U_m = Connection for pressure gauge G ¾ 压力表接口 G ¾
U_{m1} = Connection for dirt drain ¾ 排水阀接口 G ¾

Pump 泵型号	Electric Motor 电机		f ₁	o ₃	w ₁	w ₂	E	M	N	P	Aprox. weight w/o motor and coupling (Kg) 单泵重量约 (Kg)
	Size 机座号	Power 功率(Kw)									
LELC 90	100 L1	2.2	182	136	541	466	62	215	180	250	62
	100 L2	3									
LELC 125	100 L2	3	191	145	550	475	62	215	180	250	65
	112 M	4									
LELC 150	112 M	4	208	162	567	492	82	265	230	300	67
	132 S	5.5									

LELC 250



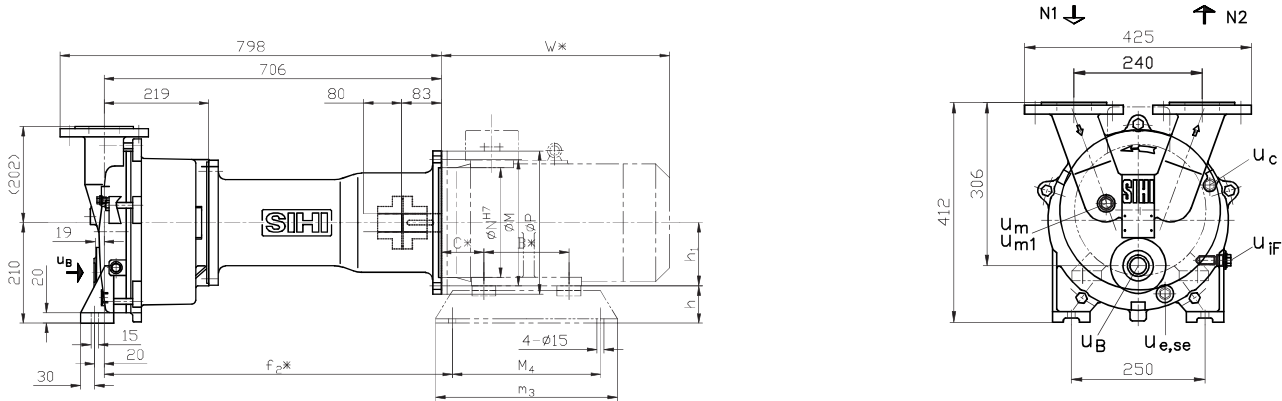
Pump 泵型号	Electric Motor 电机		M	N	P	Aprox. weight w/o motor and coupling 单泵重量约 (Kg)
	Size 机座号	Power 功率 (Kw)				
LELC250	132 S	5.5	265	230	300	94

Motor feet are accessories and not part of the standard supply of LELC
电机底脚是附件但不是LELC的标准配置
Flange connections see page 9 法兰连接请见第9页

- N 1 = Gas inlet DN50 吸气口 DN50
N 2 = Gas outlet DN50 出气口 DN50
U_B = Connection for service liquid G ½
工作液连接接口 G ½
U_c = Connection for protection against cavitation G ¼
汽蚀保护接口 G ¼
U_e = Drain connection G ½ 排液接口 G ½
U_{se} = Connection for dirt drain G ½ 排污接口 G ½
U_m = Connection for pressure gauge G ½ 压力表接口 G ½
U_{m1} = Connection for drain valve G ½ 排水阀接口 G ½
U_F = Adjusting screw for internal liquid return
内循环液调节螺丝

Table of Dimensions and weights 外形尺寸和重量列表
Motors on request 电机可按需求另配

LELC 325



Pump 泵型号	Electric Motor 电机		h	h1	m ₃	m ₄	B*	C*	f ₂ *	M	N	P	Aprox. weight w/o motor intermediate ring 单泵重量(不含转 接环)约 (Kg)
	Size 机座 号	Power 功率 (Kw)											
LELC325	132 M	7.5	78	132	380	310	178	89	742.5	265	230	300	123
	160 M	11.0	50	160	415	375	210	108		300	250	350	

- N 1 = Gas inlet DN65 吸气口 DN65

N 2 = Gas outlet DN65 出气口 DN65

u_B = Connection for service liquid G1
工作液连接口 G1

u_c = Connection for protection against cavitation G ¼
汽蚀保护接口 G ¼

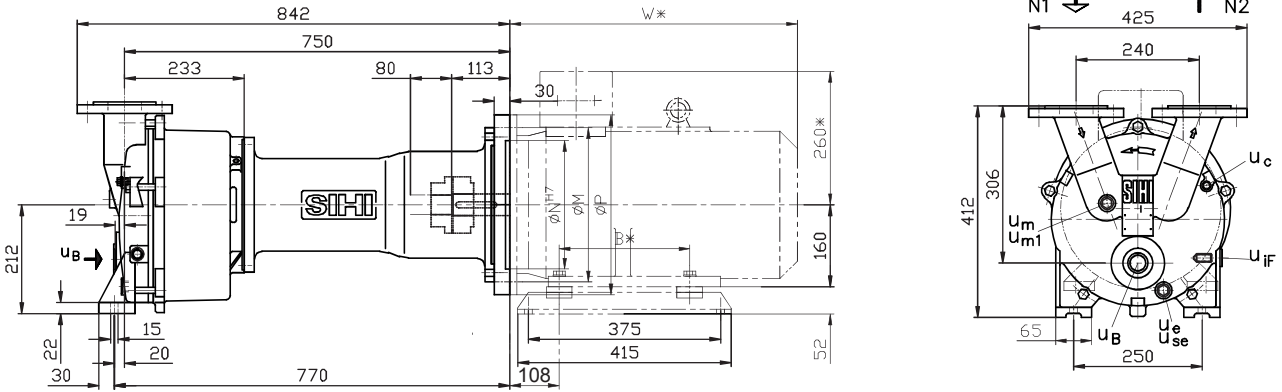
u_e = Drain connection G ½ 排水接口 G ½
- u_{se} = Connection for dirt drain G ½
排污接口 G ½

u_m = Connection for pressure gauge G ½
压力表接口 G ½

u_{m1} = Connection for drain valve G ½
排水阀接口 G ½

u_{IF} = Adjusting screw for internal liquid return
内循环液调节螺丝

LELC 425



Pump 泵型号	Electric Motor 电机		B*	M	N	P	Aprox. weight of pump with intermediate ring but w/o motor 单泵重量约 (Kg)
	Size 机座 号	Power 功率 (Kw)					
LELC425	160M	11	210	300	250	350	139
	160L	15	254				

Length of intermediate ring included in length of pump
泵长度包括转接环长度

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电机底脚是附件但不是LELC的标准配置
Flange connections see page 9 法兰连接请见第9页

- N 1 = Gas inlet DN65 吸气口 DN65

N 2 = Gas outlet DN65 出气口 DN65

u_B = Connection for service liquid G1
工作液连接口 G1

u_c = Connection for protection against cavitation G ¼
汽蚀保护接口 G ¼

u_e = Drain connection G ½ 排水接口 G ½

u_{se} = Connection for dirt drain G ½ 排污接口 G ½

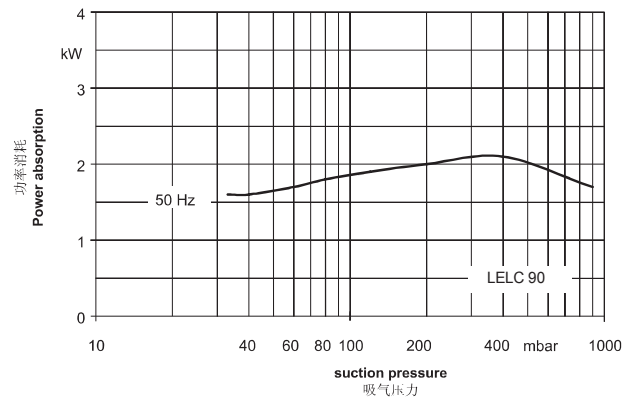
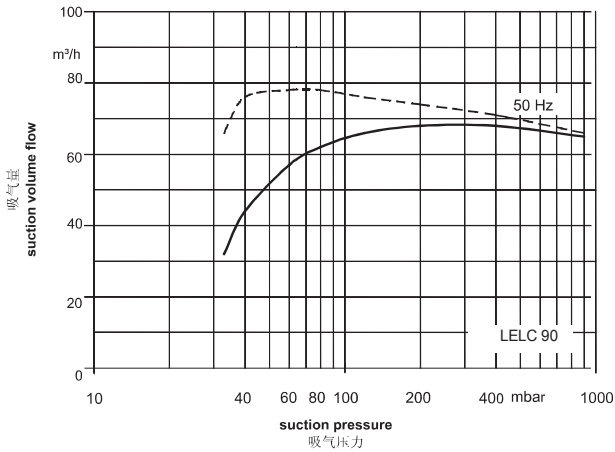
u_m = Connection for pressure gauge G ½ 压力表接口 G ½

u_{m1} = Connection for drain valve G ½ 排水阀接口 G ½

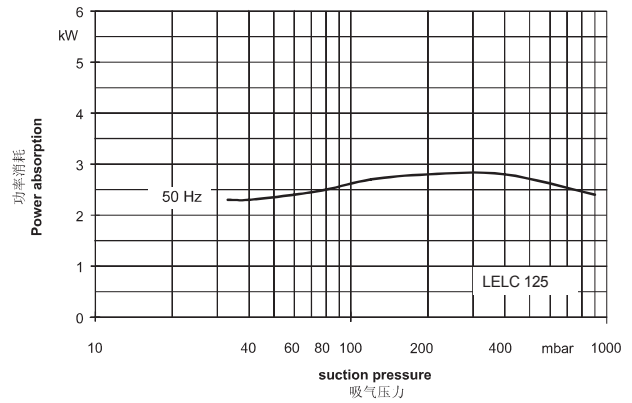
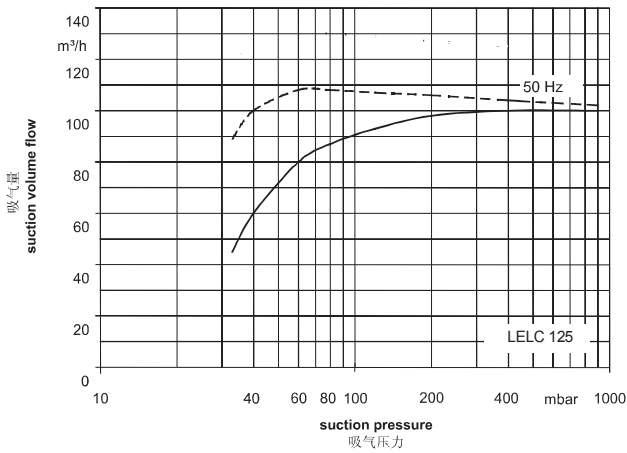
u_{IF} = Adjusting screw for internal liquid return
内循环液调节螺丝

Performance Curves 泵的性能曲线

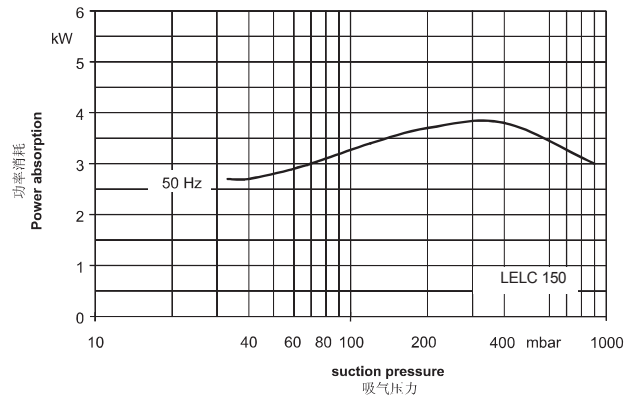
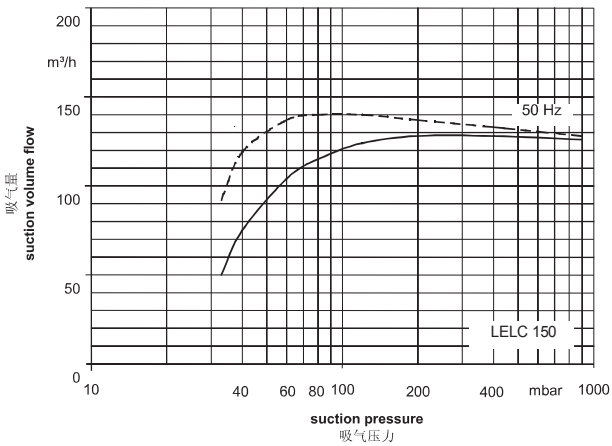
LELC 90



LELC 125



LELC150



The operating data are applicable under the following conditions 性能曲线基于如下工况:

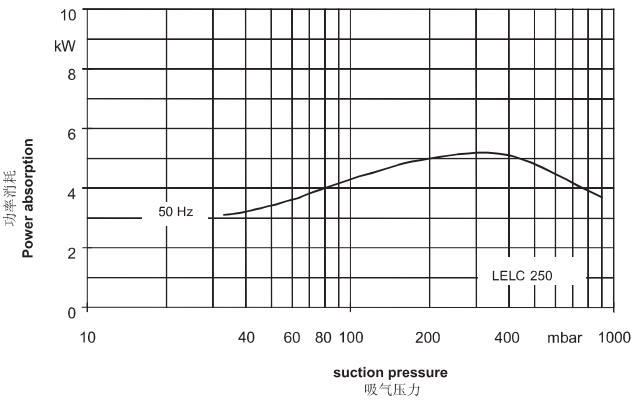
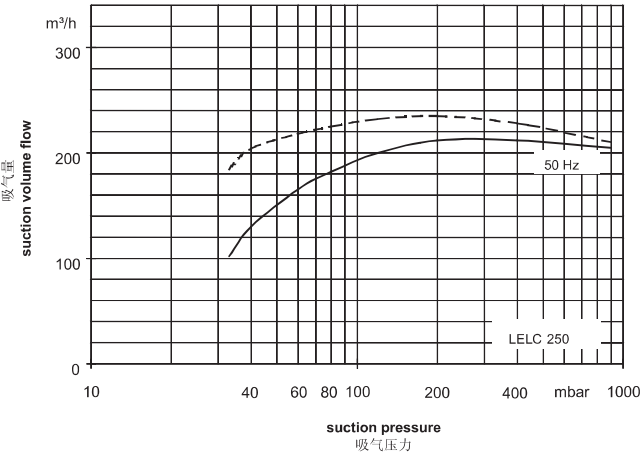
pumping medium 吸气介质:	- dry air干空气	at:	20°C
	- water vapour saturated air饱和空气	at:	20°C
service liquid 工作液:	- water 水	at:	15°C

Compression pressure 排气压力: 1013 mbar (atmospheric pressure大气压)

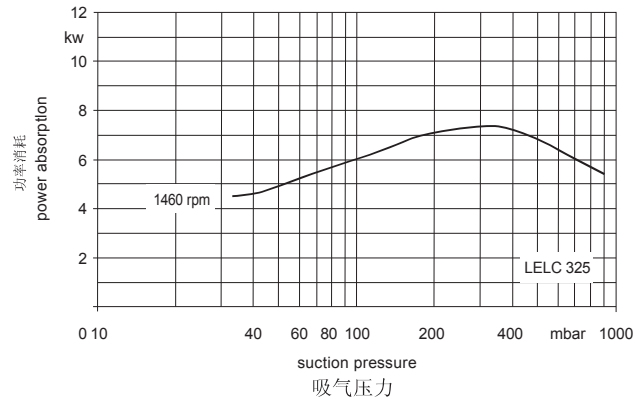
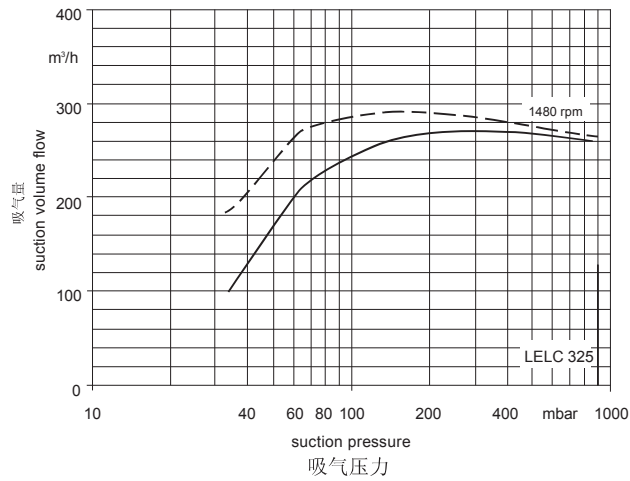
Tolerance of the operating data 10% 性能允许误差10%

Performance Curves 泵的性能曲线

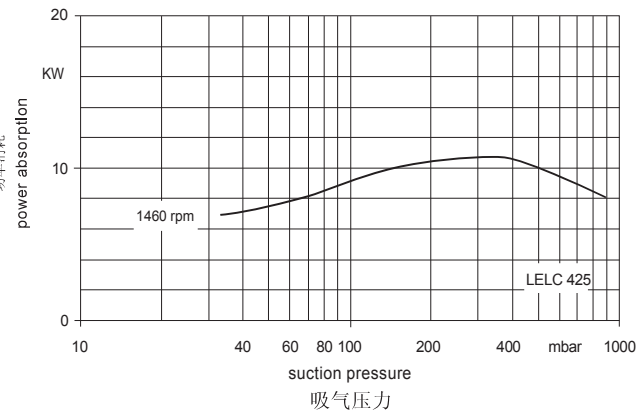
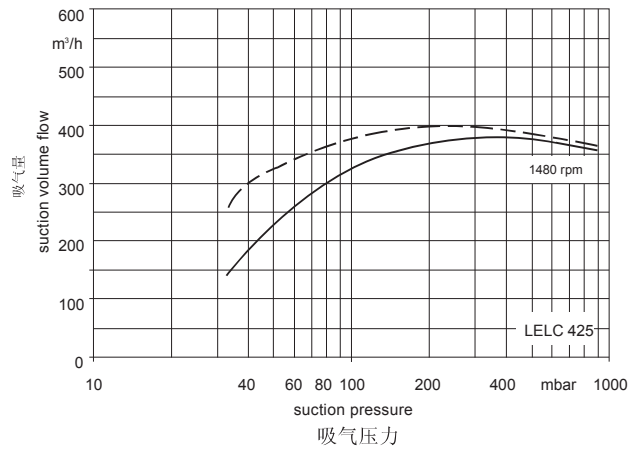
LELC 250



LELC 325



LELC 425



The operating data are applicable under the following conditions 性能曲线基于如下工况:

- pumping medium 吸气介质:
 - dry air: 干气 20°C
 - water vapour saturated air: 饱和空气 20°C

- service liquid 工作液:
 - water: 水 15°C

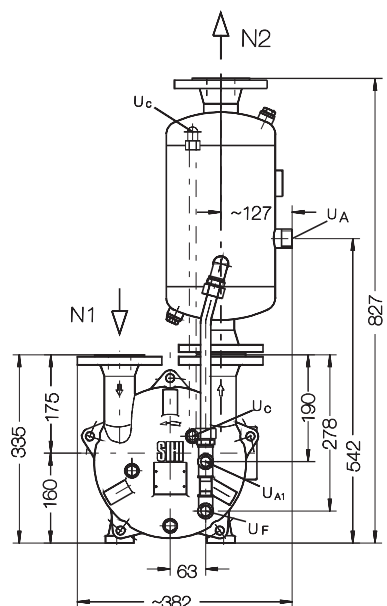
Compression pressure 排气压力: 1013 mbar (atmospheric pressure 大气压)

The suction volume flow is applied to the suction pressure 吸气量是入口压力下的流量

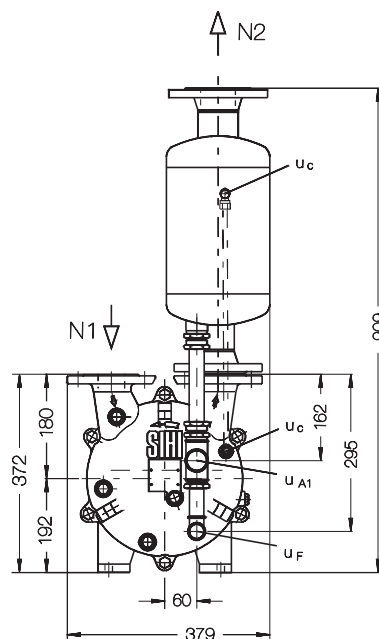
Tolerance of the operating data 10% 性能允许误差10%

Max. fresh water need with lowest suction pressure 最大新鲜水用量是最低入口压力下的流量

LELC 90, LELC 125, LELC 150



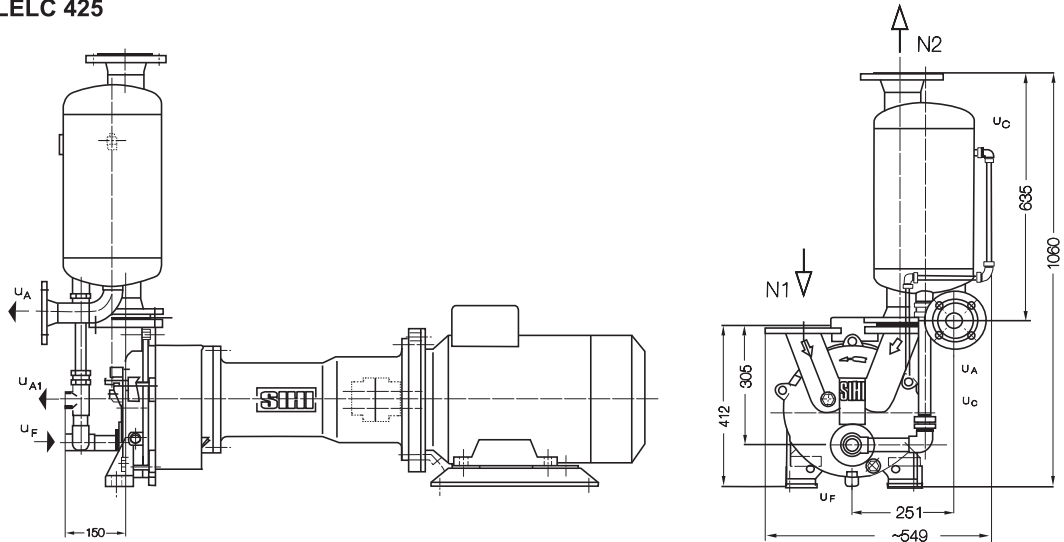
Flange connections see page 9 法兰连接请见第9页



Flange connections see page 9 法兰连接请见第9页

Arrangement Drawings with Accessories 带附件外形图

LELC 325, LELC 425



N 1=gas inlet DN 65 吸气口 DN 65

N 2=gas outlet DN 80 排气口 DN80

u_F =connection for fresh liquid G ½工作液接口 G ½

u_c =connection for protection against cavitation G ¼
气蚀保护管接口 G¼

u_{A1} = connection for dirt drain G1 排污接口 G 1

u_{A2} = connection for liquid drain G1 排液接口 G 1

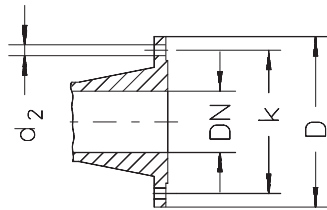
Motor feet are accessories and not part of the standard supply

电机底脚是附件但不是标准配置

Connection lines : see P11 list of accessories 连接管线见 P11 附件

Flange Connections to DIN 2501 PN10 法兰尺寸 按DIN 2501 PN10 标准

Flange connections to DIN 2501 PN 10 法兰尺寸				
DN	40	50	65	80
k	110	125	145	160
D	150	165	185	200
number数量 x d ₂	4 x 18	4 x 18	4 x 18	8 x 18



Water flow requirements 水流量需求

Suction pressure 入口压力 [mbar]		33				120				200				400			
Pump 泵型号	Syn- speed 转速	KB			FB	KB			FB	KB			FB	KB			FB
		Difference in temperature 温差 [°C]				Difference in temperature 温差 [°C]				Difference in temperature 温差 [°C]				Difference in temperature 温差 [°C]			
	[rpm]	10	5	2		10	5	2		10	5	2		10	5	2	
LELC 90	1500	0.12	0.22	0.41	1.0	0.14	0.24	0.44	0.95	0.14	0.25	0.44	0.9	0.15	0.24	0.41	0.75
LELC 125	1500	0.17	0.28	0.50	1.0	0.19	0.31	0.52	0.95	0.19	0.31	0.51	0.9	0.18	0.29	0.46	0.75
LELC 150	1500	0.19	0.32	0.54	1.0	0.22	0.36	0.58	0.95	0.23	0.37	0.57	0.9	0.23	0.35	0.51	0.75
LELC 250	1500	0.22	0.37	0.63	1.2	0.29	0.45	0.70	1.1	0.30	0.46	0.68	1.0	0.28	0.42	0.59	0.8
LELC 325	1500	0.31	0.52	0.88	1.6	0.4	0.63	0.97	1.5	0.42	0.65	0.96	1.4	0.40	0.60	0.84	1.15
LELC 425	1500	0.46	0.74	1.19	2.0	0.56	0.85	1.23	1.75	0.57	0.84	1.18	1.6	0.54	0.76	1.01	1.3

FB [m³/h] = fresh water service 新鲜工作水

KB [m³/h] = combined liquid service with service water 10 °C, 5 °C, 2 °C warmer than the fresh water.

比新鲜水温高10 °C, 5 °C, 2°C 的混合工作液

Data regarding the pump size 关于泵规格的数据

Order notes 定单代码

Series + Size 系列+规格	Hydraulics + Bearings 水力性能+轴承结构	Shaft Sealing 轴密封	Material Design 材料设计	Casing Seal 泵体密封
	<div><div>A</div><div>Hydraulic A 水力性能 A Thread Connection (for LEM 25, 50) 螺纹连接用于 LEM25, 50) Flange connection (for LEM 90 ... 250) 法兰连接（用于 LEM9...250）</div></div> <div><div>B</div><div>Two external bearings 有两个外置轴承</div></div> <div><div>1</div><div>Special execution 特殊配置</div></div>	<div><div>YTE</div><div>Mechanical Seal 机械密封 O-rings Viton O 型圈为氟橡胶</div></div> <div><div>YTF</div><div>Mechanical Seal 机械密封 O-rings Viton encapsulated with Teflon O 型圈为氟橡胶外包裹聚四氟乙烯</div></div> <div><div>YTB</div><div>Mechanical Seal 机械密封 O-rings Perbunan O 型圈为丁苯橡胶</div></div> <div><div>XAE</div><div>Mechanical Seal 机械密封 O-rings Viton encapsulated with Teflon O 型圈为氟橡胶外包裹聚四氟乙烯</div></div>	<div><div>0K</div><div>Main parts from 0.6025 主要零件材质为铸铁 Impeller from 1.4301 叶轮为 1.4301 不锈钢</div></div> <div><div>0E</div><div>Main parts from 0.6025 主要零件材质为铸铁 Impeller from 1.4408 叶轮为 1.4408 不锈钢</div></div> <div><div>4B</div><div>Main parts from 1.4408 主要零件材质为 1.4408 不锈钢</div></div>	<div>Liquid sealing 液封</div> <div>0</div>
LELC 90	AB	YTE / YTF	0K / 4B	
LELC125				
LELC150				
LELC250	AB	YTB / XAE	0K / 0E / 4B	
LELC325	A1			
LELC425				

Motor and Coupling data 电机和联轴器数据

Series+size 系列+规格	Motor 电机						Coupling 联轴器	
	Y-voltage Y-电压 V +/- 5%	Power 功率 kW	Length 长 M	Weight 重量 Kg	Size 规格	Motor-design 电机代码	Size 规格	Weight 重量 (Kg)
LELC 90	380/220	2.2	367	43.2	100 L1	FS	4- ϕ 28/ ϕ 28	2
		3	367	47.2	100 L2		4- ϕ 28/ ϕ 28	2
LELC 125	380/220	3	367	47.2	100 L2		4- ϕ 28/ ϕ 28	2
		4	402	60	112 M		4- ϕ 28/ ϕ 28	2
LELC 150	660/380	4	402	60	112 M		4- ϕ 28/ ϕ 28	2
		5.5	430	70	132 S		4- ϕ 28/ ϕ 38	4.2
LELC 250	660/380	5.5	430	70	132 S	GS	6- ϕ 38/ ϕ 38	4.2
LELC 325	660/380	7.5	470	90	132M		6- ϕ 38/ ϕ 38	4.2
		11	535*	124*	160 M	NS	6- ϕ 38/ ϕ 42	4.1
LELC 425	660/380	11	505	122	160 M		6- ϕ 38/ ϕ 42	4.1
		15	560	146	160 L		6- ϕ 38/ ϕ 42	4.1

Dimensions and weighs of motors are valid for standard motors used by SIHI Pumps (Shanghai)

电机尺寸和电机重量对于希赫泵业 (上海) 使用的标准电机有效

* included intermediate ring 包括转接环

Example for ordering: 定单范例

The pump size LELC 250 in cast iron with impeller in stainless steel with standard mechanical seal prepared to accept a 5.5kW motor has the order code: LELC 250 AB YTB 0E 0 GS. Motor, motor feet and coupling are not included in this code, and must be ordered separately.

Please indicate if you require a standard motor or other motors on request, the required voltage, the required motor frequency and if you need motor feet.

配置为不锈钢叶轮,标准机械密封和5.5kW电机的LELC 250铸铁泵订单号码为: LELC 250 AB YTB 0E 0 GS。电机底脚和联轴器并不包括在这个代码中,必须单独订购。

如果需要标准电机或是其它类型电机, 电机电压、电机频率请单独注明。

Accessories 附件

LELC 90 ~ 425

Recommended accessories 推荐附件		LELC 90	LELC 125	LELC 150	LELC 250	LELC325	LELC 425
Overhead liquid separator 上置式汽液分离器	Type 型号	XBa 1042			XBa 940	XBa 2040	
	Material design 材质	20 / 304					
	Weight 重量	9.7 kg			10.5 kg	20 kg	
Service liquid line 工作液管路	Material design 材质	20 / 304					
Cavitation protection line 气蚀保护管路	Material design 材质	20 / 304					
SIHI Gas ejector SIHI 大气喷射器	Type 型号	GEVB 90A	GEVB125A	GEVB150A	GEV 250A	GEV 25A/B	GEV 425A/B
	Service liquid temp. °C 工作液温度 °C	15 - 30 °C					
	Drive nozzle 喷嘴	2.0401/1.4408/聚四氟乙烯					
	Venturi tube 文丘里管	2.0401/1.4408/聚四氟乙烯					
	Casing 壳体	0.6025/1.4408					
	Venturi tube holder 文丘里管撑	0.6025/1.4408					
	Insert ring 插入环	1.4408					
Disc type non-return valve 止回阀	Type 型号	C-NRV-150- OE- 0001			C-NRV-250-OE or 4B- 0001	C-NRV-425 OE or 4B- 0001	
	Weight 重量	2.6 kg			3.2 kg	4.5 kg	
	Material design 材质	Casing: 阀体：1.4408 或 0.6025 Valve discs: 阀板：1.4401 Sealing disc: Teflon 密封板：聚四氟乙烯					
Support feet 支撑脚	Material design 材质	0.6025					
	Weight 重量	(Part of standard supply) 3.15 kg/foot （标准配置）底脚 3.15 kg			5.4 kg / foot 底脚 5.4 kg		

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

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