

# Liquid ring Vacuum pumps 液环式真空泵

In close coupled design 机泵同轴设计



VE 95, 130, 155, 255

## PRESSURE RANGE:

入口压力范围： 33 – 1013 mbar

## SUCTION VOLUME:

入口流量： 60 -240 m³/h



## CONSTRUCTION TYPE

### 结构型式

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

ABS 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

ABs liquid ring Vacuum pumps VE are single-stage  
ABs VE 系列液环式真空泵是单级泵。

## 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。此部分工作液可在气液分离器中与气体分开（请见样本附件部分），以重新利用。

泵可按需要配备连接管线，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。

## 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。

## GENERAL TECHNICAL DATA 常规技术数据

Pump type 泵型号		Unit 单位	VE 95	VE 130	VE 155	VE 255
Synchronous speed 同步转速	50 Hz 60 HZ	rpm	1500 1750			
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 · m <sup>2</sup>	0.035	0.053	0.069	0.097
Noise level at a suction pressure of 80 mbar 在80mbar 入口压力下的噪音		dB (A)	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			
		mm <sup>2</sup> /s	4			
		kg/m <sup>3</sup>	1200			
		liter	2.4	2.8	3.2	4.7

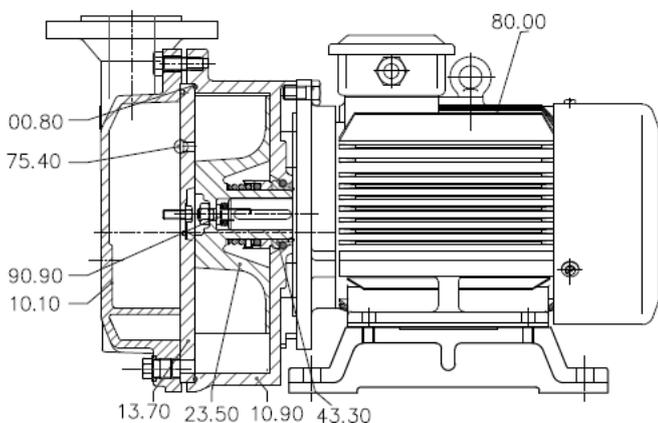
The combination of several limiting Values is not admissible.

不允许将几种极限值同时选择 **Material design 材料设计**

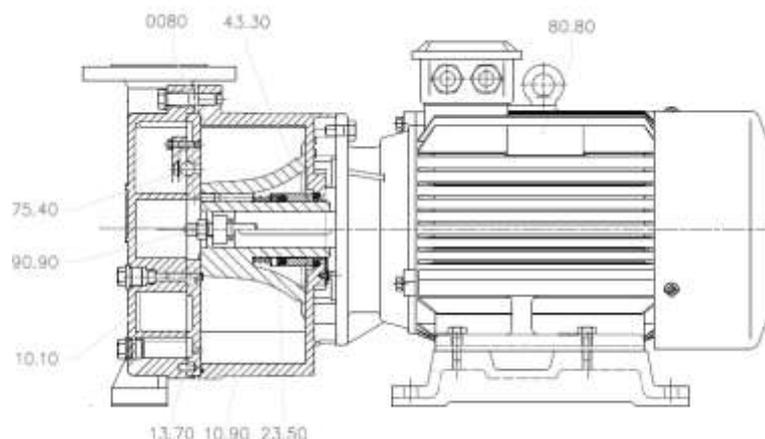
Component 零件	Casing 泵盖	Central body 中间体	Guide disc 导流盘	Vane wheel impeller 叶轮	Mechanical seal 机械密封
Casing 泵盖	HT250	HT250	HT250	304	Q22BVGG

## Sectional drawings 剖视图

VE95, VE130, VE155



VE255



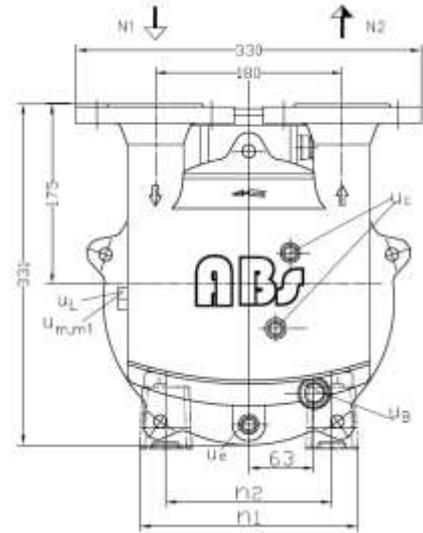
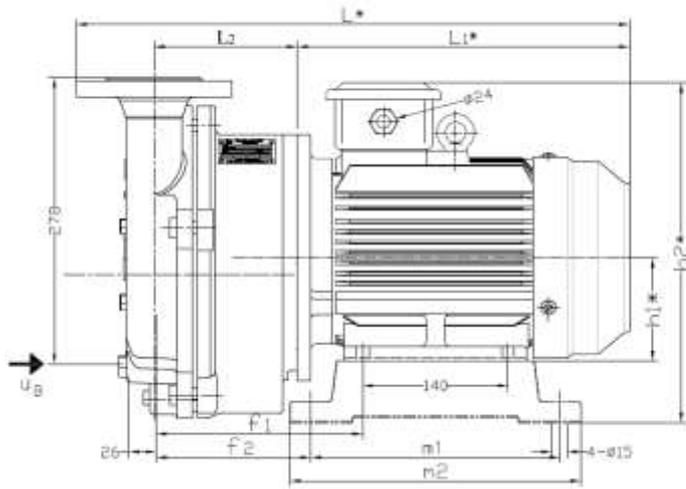
10.10	Casing 泵盖	10.90	Central body 中间体	43.30	Mechanical seal 机械密封	90.90	Adjust screw 调节螺丝
13.70	Guide disc 导流盘	23.50	Vane wheel impeller 叶轮	00.80	Sealing ring 密封圈	75.40	Valve balls 阀球

## Table of Dimensions and weights 外形尺寸和重量列表

\* Dimensions and weights are Valid for standard motors used by ABs Pumps (Shanghai)

\* 尺寸和重量对昂伯（上海）使用的标准电机有效

### VE95, VE130, VE155



N 1 = gas inlet DN 40  
吸气口 DN 40

N 2 = gas outlet DN 40  
排气口 DN 40

u<sub>B</sub> = connection for service liquid G 1/2  
工作液连接口 G 1/2

u<sub>C</sub> = connection for protection against cavitation G 1/4  
气蚀保护管接口 G 1/4

u<sub>e</sub> = drain connection G 1/4  
排液接口/排污接口 G 1/4

u<sub>m</sub> = connection for pressure gauge G 3/8  
压力表接口 G 3/8

u<sub>m1</sub> = connection for drain Valve G 3/8  
排水阀接口 G 3/8

u<sub>i</sub> = Connection for relief Valve G 3/8  
单向阀接口 G 3/8

Pump 泵型号	motor 电机 IP 55,50Hz,4P		h <sub>1</sub>	h <sub>2</sub>	f <sub>1</sub>	f <sub>2</sub>	n <sub>1</sub>	n <sub>2</sub>	L*	L <sub>1</sub> *	L <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	Approx weight 重量(kg)	
	Size	kW												Motor	Pump+ motor
VE 95	100L1	2.2	100	328	195	145	160	210	527	320	132	240	280	33	73
	100L2	3.0	100	328	195	145	160	210	572	365	132	240	280	42	82
VE 130	100L2	3.0	100	328	201	151	160	210	578	365	138	240	280	42	84
	112M	4.0	112	353	208	158	185	235	613	400	138	240	280	52	96
VE 155	112M	4.0	112	353	227	177	185	235	632	400	157	240	280	52	100
	112M	4.8	112	353	227	177	185	235	632	400	157	280	320	54	102

Pump 泵型号	motor 电机 IP 55,60Hz,4P		h <sub>1</sub>	h <sub>2</sub> *	f <sub>1</sub>	f <sub>2</sub>	n <sub>1</sub>	n <sub>2</sub>	L*	L <sub>1</sub> *	L <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	Approx weight 重量(kg)	
	Size	kW												Motor	Pump+ motor
VE 95	100L2	3.3	100	330	195	145	160	210	572	365	132	240	280	37	77
VE 130	112M	4.8	112	360	209	158	185	250	613	400	138	280	320	54	95
VE 155	112M	6	112	360	227	177	185	250	632	400	157	280	320	58	106

Motor feet are part of the standard supply of VE95-155  
电机底脚为标准配置

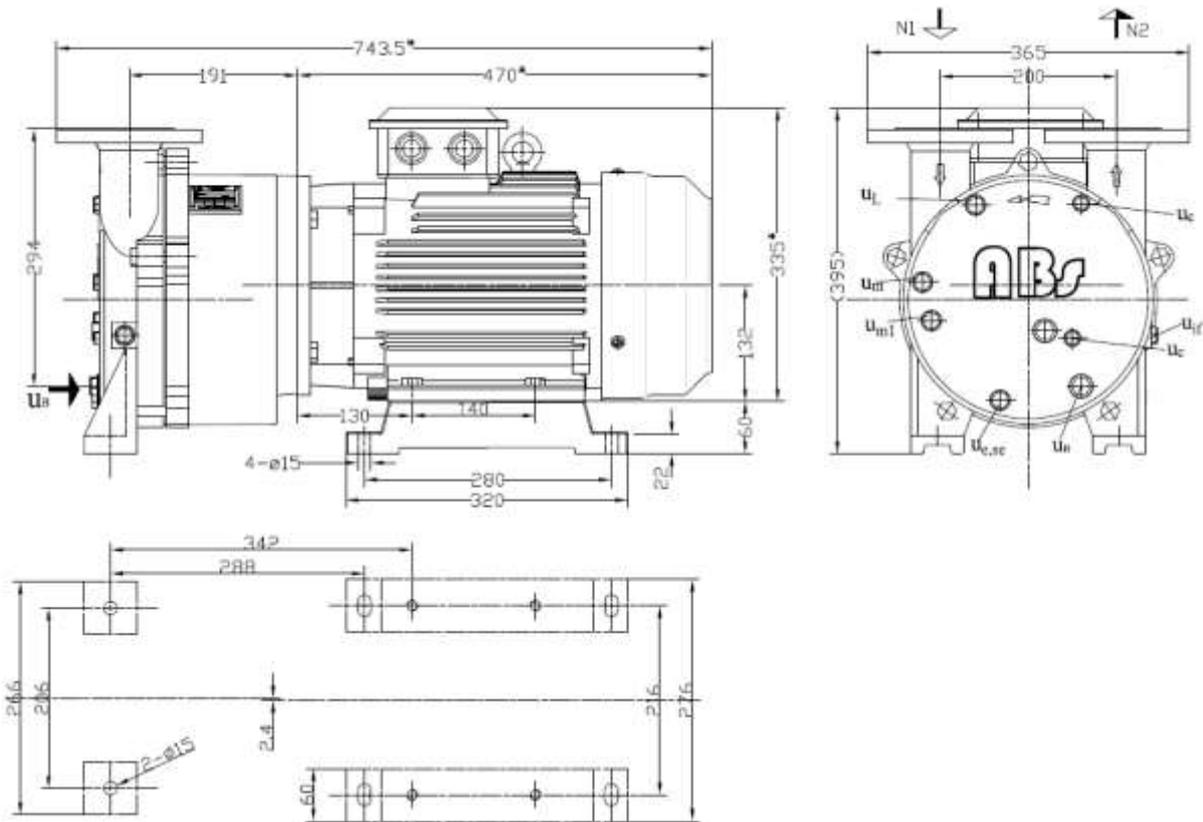
Flange connections see page 13 法兰连接请见第13页

## Table of Dimensions and weights 外形尺寸和重量列表

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\* 尺寸和重量对昂伯（上海）使用的标准电机有效

### VE 255



- |                |   |   |                 |   |  |
|----------------|---|---|-----------------|---|--|
| N 1            | = | gas inlet DN 50<br>吸气口 DN 50  | U <sub>e</sub>  | = | drain connection G <sup>3/8</sup><br>排液接口 G <sup>3/8</sup>               |
| N 2            | = | gas outlet DN 50<br>排气口 DN 50   | U <sub>se</sub> | = | connection for dirt drain G <sup>3/8</sup><br>排污接口 G <sup>3/8</sup>      |
| u <sub>B</sub> | = | connection for service liquid G <sup>1/2</sup><br>工作液连接口 G <sup>1/2</sup>                 | U <sub>m</sub>  | = | connection for pressure gauge G <sup>3/8</sup><br>压力表接口 G <sup>3/8</sup> |
| u <sub>c</sub> | = | connection for protection against cavitation G <sup>1/4</sup><br>气蚀保护管接口 G <sup>1/4</sup> | U <sub>m1</sub> | = | connection for drain Valve G <sup>3/8</sup><br>排水阀接口 G <sup>3/8</sup>    |
| Uif            | = | adjusting screw for internal liquid return G <sup>3/8</sup><br>内循环液体调校螺丝 G <sup>3/8</sup> | U <sub>i</sub>  | = | Connection for relief Valve G <sup>3/8</sup><br>单向阀接口 G <sup>3/8</sup>   |

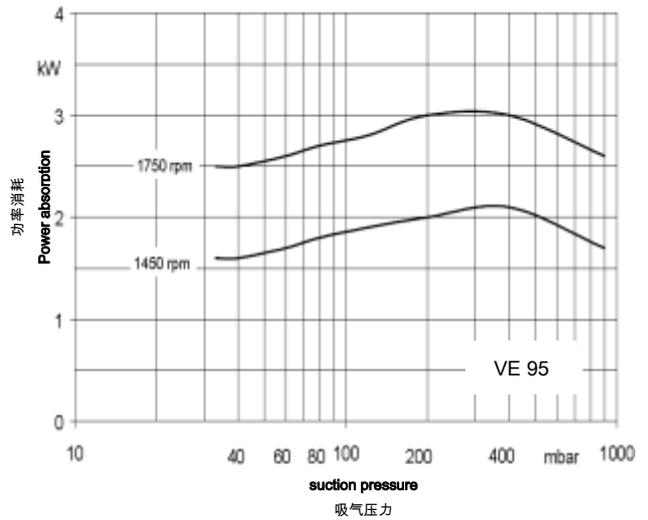
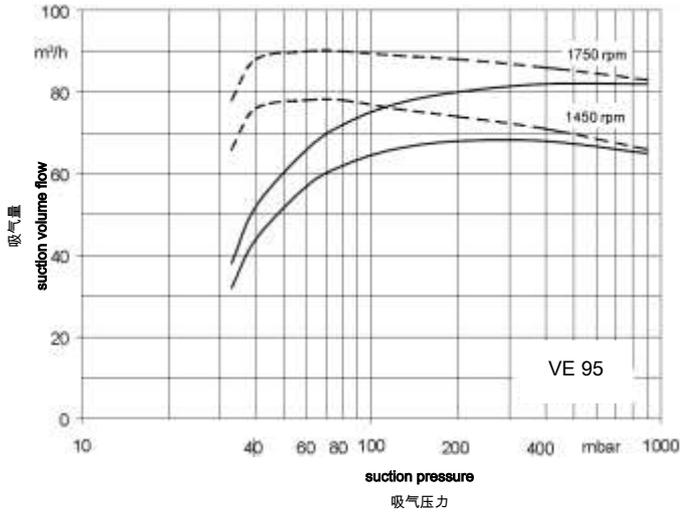
Pump 泵型号	Electric motor 电机 IP55,50Hz,4P		Approx. weight 重量 Kg		
	size 机座号	kW 功率		Motor 电机	Pump+ Motor 泵+电机
		50Hz	60Hz		
VE 255	132 S	5.5		66	125
			8	77	135

Motor feet are part of the standard supply of VE255  
电机底脚为标准配置

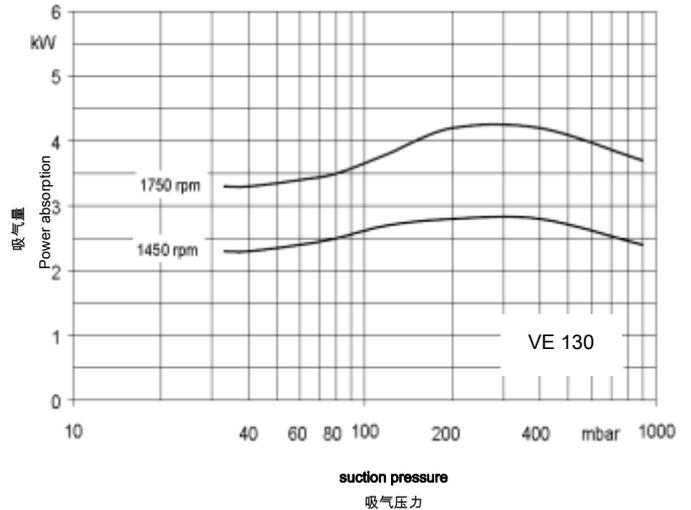
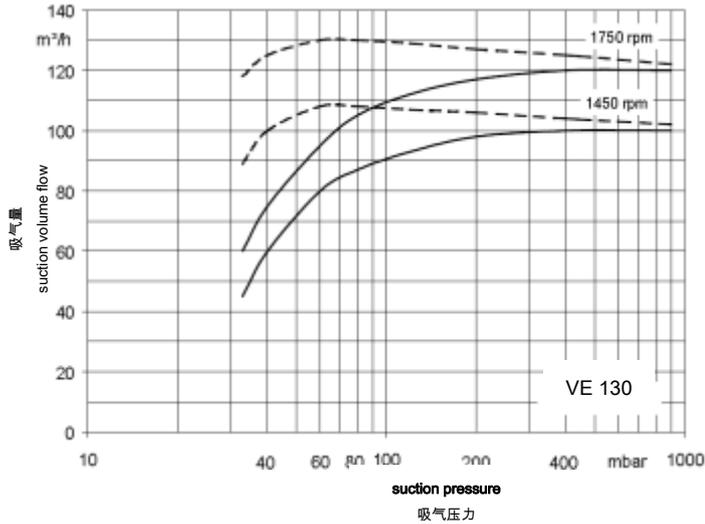
Flange connections see page 13  
法兰连接请见第13页

## Performance Curves 泵的性能曲线

### VE 95



### VE 130



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

service liquid:

工作液

Compression pressure

排气压力

The suction volume flow is applied to the suction pressure

Tolerance of the operating data 10%

Max. fresh water need with lowest suction pressure

- dry air 干空气: 20°C \_\_\_\_\_

- water VEpour saturated air 饱和空气: 20°C .....

- water 水: 15°C

1013 mbar (atmospheric pressure)

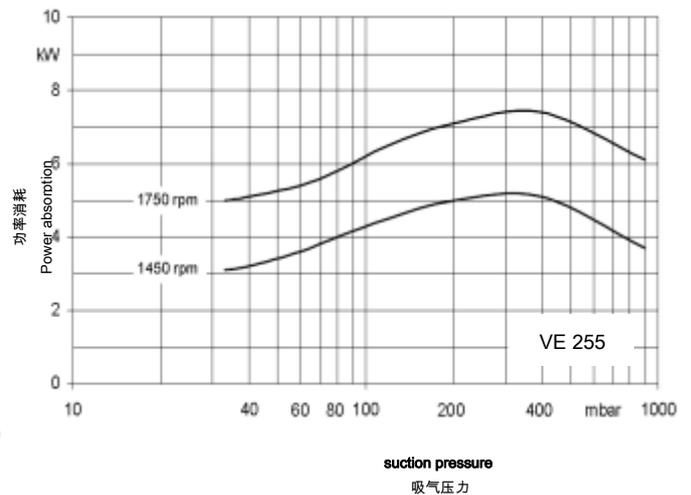
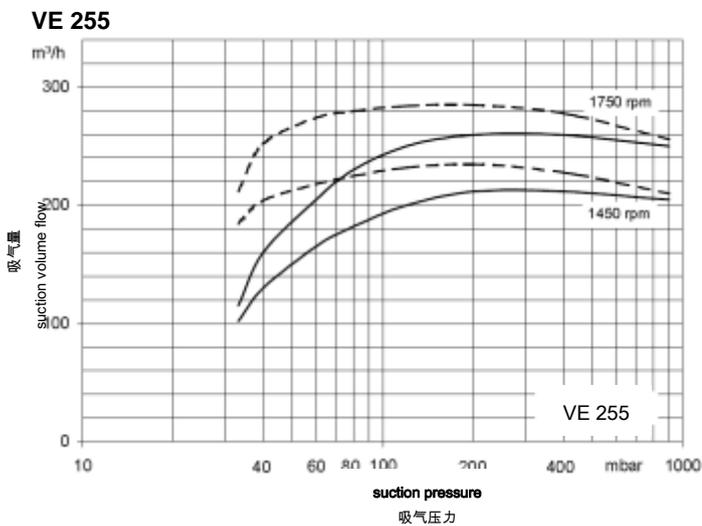
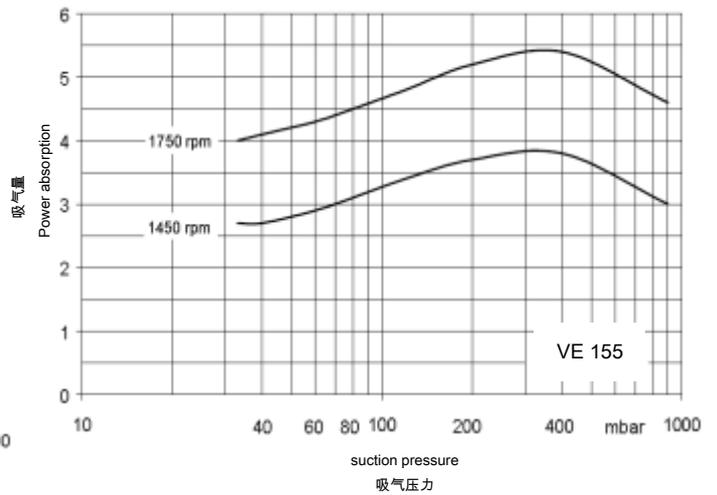
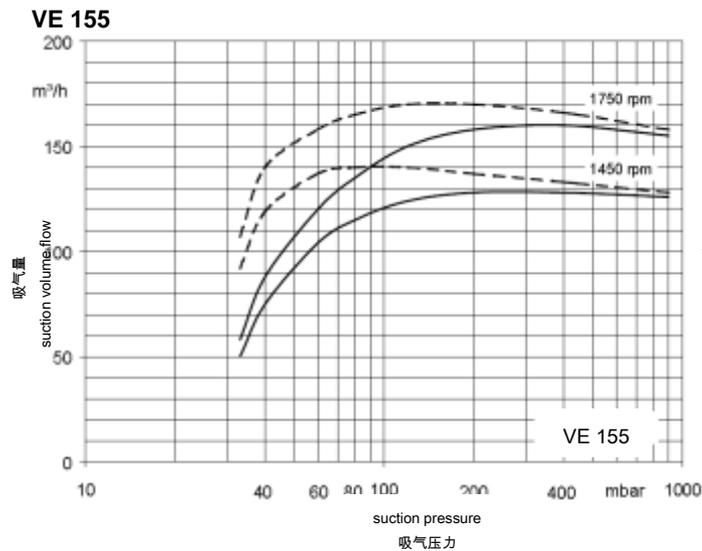
标准大气压

吸气量是入口压力下的流量

性能允许误差10%

最大新鲜水用量是最低入口压力下的流量

## Performance Curves 泵的性能曲线



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:

20°C

- water VEpour saturated air 饱和空气:

.....20°C.....

- water 水 :

15°C

service liquid:

工作液

Compression pressure

排气压力

1013 mbar (atmospheric pressure)

标准大气压

The suction volume flow is applied to the suction pressure

吸气量是入口压力下的流量

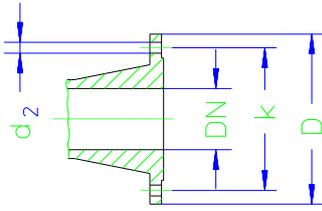
Tolerance of the operating data 10%

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

## 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 <sub>2</sub>	4 x 18	4 x 18	4 x 18	8 x 18

## Water flow requirements 水流量需求

不同转速和进出口工作液温差下的新鲜补充水流量 (m<sup>3</sup>/h)

KB : 新鲜补充水流量 [m<sup>3</sup>/h]

FB: 工作液流量 (m<sup>3</sup>/h)

入口压力 (mbar)	真空泵 型号	转速 [rpm]	33			FB	120			FB	200			FB	400			FB
			KB				KB				KB				KB			
			Temperature difference [° C]				Temperature difference [° C]				Temperature difference [° C]				Temperature difference [° C]			
10	5	2	10	5	2	10	5	2	10	5	2	10	5	2				
VE /VLE 95	1450	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	
	1750	0.18	0.30	0.52		0.19	0.32	0.53		0.20	0.33	0.53		0.19	0.31	0.47		
VE /VLE 130	1450	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	
	1750	0.22	0.36	0.59		0.24	0.39	0.60		0.26	0.40	0.60		0.24	0.37	0.53		
VE /VLE 155	1450	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	
	1750	0.26	0.41	0.63		0.29	0.44	0.65		0.30	0.45	0.64		0.29	0.41	0.57		
VE /VLE 255	1450	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	
	1750	0.32	0.50	0.77		0.37	0.55	0.79		0.38	0.55	0.75		0.35	0.49	0.64		

FB [m<sup>3</sup>/h] = fresh water service 新鲜工作水

KB [m<sup>3</sup>/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

## Motor data 电机数据

Series+size 系列+规格	Motor enclosure 电机防护等级 IP 55 50 Hz					Motor enclosure 电机防护等级 IP 55 60 Hz			
	Y-Δ voltage Y-Δ -电压 V +/- 5%	Power 功率 kW	Size 规格	Motor-code 电机代码		Y-Δ voltage Y-Δ -电压 V +/-10%	Power 功率 kW	Size 规格	Motor- code 电机代码
				IE3	IE4				
VE 95	380/220	2.2	100 L1- 4	B33	B43	440/220	3.3	100 L2- 4	S03
		3	100 L2- 4	B34	B44				
VE 130	380/220	3	100 L2- 4	B34	B44	440/220	4.8	112 M- 4	S04
		4	112 M- 4	B35	B45				
VE 155	660/380	4	112 M- 4	B35	B45	720/440	6	112 M- 4	S06
		4.8	112 M- 4	S35	S45				
VE 255	660/380	5.5	132 S- 4	B36	B46	720/440	8	132 S- 4	S05

## Example for ordering 定单范例

The pump size VE 255 in cast iron with impeller in stainless steel with standard mechanical seal and 5.5kW motor has the order code: VE255-0K-QV-B06

配不锈钢叶轮, 标准机械密封和5.5kW电机的VE 255铸铁泵的订单代码为: VE255-0K-QV-B36。



**ABs (Shanghai) Flow Equipment Co., Ltd**  
昂卜（上海）流体设备有限公司

**Manufactory Plant 工厂**

地址：No.739, XinGe R0Kd, SongJiang,

Shanghai, 200108, P.R.China

中国上海市松江区新格路739号

电 话：400 886 8302

电子邮件：Sales@ABsys.cn

网 址：www.ABsys.cn

**ABsys.CH**

**Headquarter 瑞士总部**

Add：Grueneburg 52, CH 3213 Kleinboesingen

Switzerland

Tel. +41 26 424 51 74

Fax: +41 26 424 51 94

E-mail: Admin@absys.ch

Website: www.ABsys.ch