

# 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<br>泵型号                                                                                                                                                                                                                                                                          |                      | Unit<br>单位          | VE 95        | VE 130 | VE 155 | VE 255 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|--------------|--------|--------|--------|
| Synchronous speed<br>同步转速                                                                                                                                                                                                                                                                 | 50 Hz<br>60 HZ       | rpm                 | 1500<br>1750 |        |        |        |
| Max. compression over atmospheric pressure<br>最大背压                                                                                                                                                                                                                                        |                      | bar                 | 0.3          |        |        |        |
| Max. admissible pressure difference<br>允许最大压差                                                                                                                                                                                                                                             |                      | bar                 | 1.1          |        |        |        |
| Test pressure above atmospheric pressure<br>水压试验 (表压)                                                                                                                                                                                                                                     |                      | bar                 | 3            |        |        |        |
| Moment of inertia of the rotating pump parts and water filling<br>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<br>在80mbar 入口压力下的噪音                                                                                                                                                                                                                          |                      | dB (A)              | 72           |        |        |        |
| Max. gas temperature<br>最大吸气温度                                                                                                                                                                                                                                                            | Dry gas<br>干气        | °C                  | 200          |        |        |        |
|                                                                                                                                                                                                                                                                                           | Saturated gas<br>饱和气 | °C                  | 100          |        |        |        |
| Service liquid 工作液<br>max. recommended temperature for water as working liquid<br>工作液为水的最大推荐温度<br>max. admissible temperature for other suitable working liquids<br>对其他适合的工作液最大允许温度<br>max. kinematic viscosity<br>最大运动粘度<br>max. density<br>最大密度<br>volume up to shaft level<br>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    |

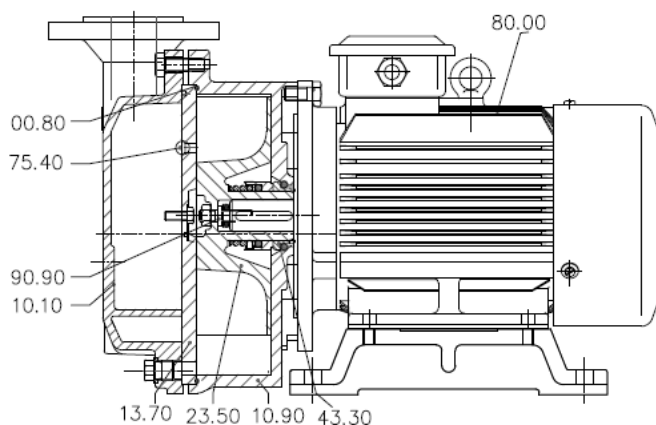
The combination of several limiting Values is not admissible.

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

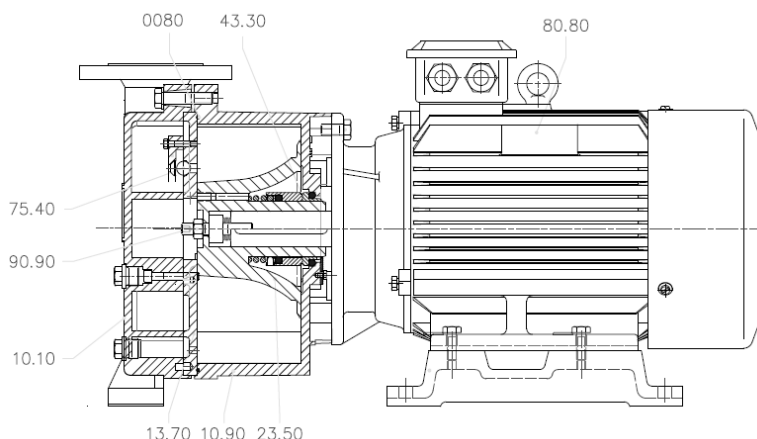
| Component<br>零件 | Casing<br>泵盖 | Central body<br>中间体 | Guide disc<br>导流盘 | Vane wheel impeller<br>叶轮 | Mechanical seal<br>机械密封 |
|-----------------|--------------|---------------------|-------------------|---------------------------|-------------------------|
| Casing 泵盖       | HT250        | HT250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

## Sectional drawings 剖视图

VE95, VE130, VE155



VE255



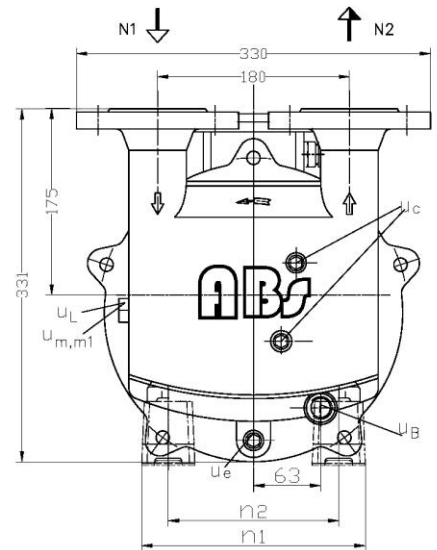
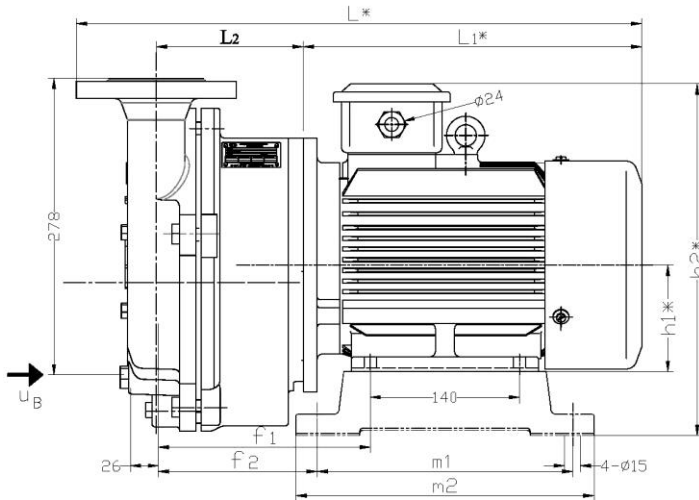
|       |                   |       |                           |       |                         |       |                      |
|-------|-------------------|-------|---------------------------|-------|-------------------------|-------|----------------------|
| 10.10 | Casing<br>泵盖      | 10.90 | Central body<br>中间体       | 43.30 | Mechanical seal<br>机械密封 | 90.90 | Adjust screw<br>调节螺丝 |
| 13.70 | Guide disc<br>导流盘 | 23.50 | Vane wheel impeller<br>叶轮 | 00.80 | Sealing ring 密封圈        | 75.40 | Valve balls<br>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 ½  
工作液连接口 G ½

u<sub>c</sub> = connection for protection against cavitation G ¼  
气蚀保护管接口 G ¼

u<sub>e</sub> = drain connection G ¼  
排液接口/排污接口 G ¼

u<sub>m</sub> = connection for pressure gauge G ¾  
压力表接口 G ¾

u<sub>m1</sub> = connection for drain Valve G ¾  
排水阀接口 G ¾

u<sub>i</sub> = Connection for relief Valve G ¾  
单向阀接口 G ¾

| Pump<br>泵型号 | motor 电机<br>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*  | L1* | L2  | m1  | m2  | Approx weight<br>重量(kg) |                |
|-------------|---------------------------|-----|----------------|----------------|----------------|----------------|----------------|----------------|-----|-----|-----|-----|-----|-------------------------|----------------|
|             | Size                      | kW  |                |                |                |                |                |                |     |     |     |     |     | Motor                   | Pump+<br>motor |
| VE 95       | 100L1                     | 2.2 | 100            | 330            | 195            | 145            | 160            | 210            | 525 | 318 | 132 | 240 | 280 | 31                      | 71             |
|             | 100L2                     | 3.0 | 100            | 330            | 195            | 145            | 160            | 210            | 525 | 318 | 132 | 240 | 280 | 36                      | 76             |
| VE 130      | 100L2                     | 3.0 | 100            | 330            | 201            | 151            | 160            | 210            | 531 | 318 | 138 | 240 | 280 | 36                      | 78             |
|             | 112M                      | 4.0 | 112            | 355            | 208            | 158            | 190            | 235            | 553 | 340 | 138 | 240 | 280 | 41                      | 85             |
| VE 155      | 112M                      | 4.0 | 112            | 355            | 227            | 177            | 190            | 235            | 572 | 340 | 157 | 240 | 280 | 41                      | 89             |
|             | 112M                      | 4.8 | 112            | 355            | 227            | 177            | 190            | 235            | 632 | 400 | 157 | 280 | 320 | 45                      | 93             |

| Pump<br>泵型号 | motor 电机<br>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*  | L1* | L2  | m1  | m2  | Approx weight<br>重量(kg) |                |
|-------------|---------------------------|-----|----------------|------------------|----------------|----------------|----------------|----------------|-----|-----|-----|-----|-----|-------------------------|----------------|
|             | Size                      | kW  |                |                  |                |                |                |                |     |     |     |     |     | Motor                   | Pump+<br>motor |
| VE 95       | 100L2                     | 3.3 | 100            | 330              | 195            | 145            | 160            | 210            | 567 | 360 | 132 | 240 | 280 | 36                      | 76             |
| VE 130      | 112M                      | 4.8 | 112            | 360              | 209            | 158            | 190            | 250            | 613 | 400 | 138 | 280 | 320 | 41                      | 85             |
| VE 155      | 112M                      | 6   | 112            | 360              | 227            | 177            | 190            | 250            | 632 | 400 | 157 | 280 | 320 | 45                      | 93             |

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

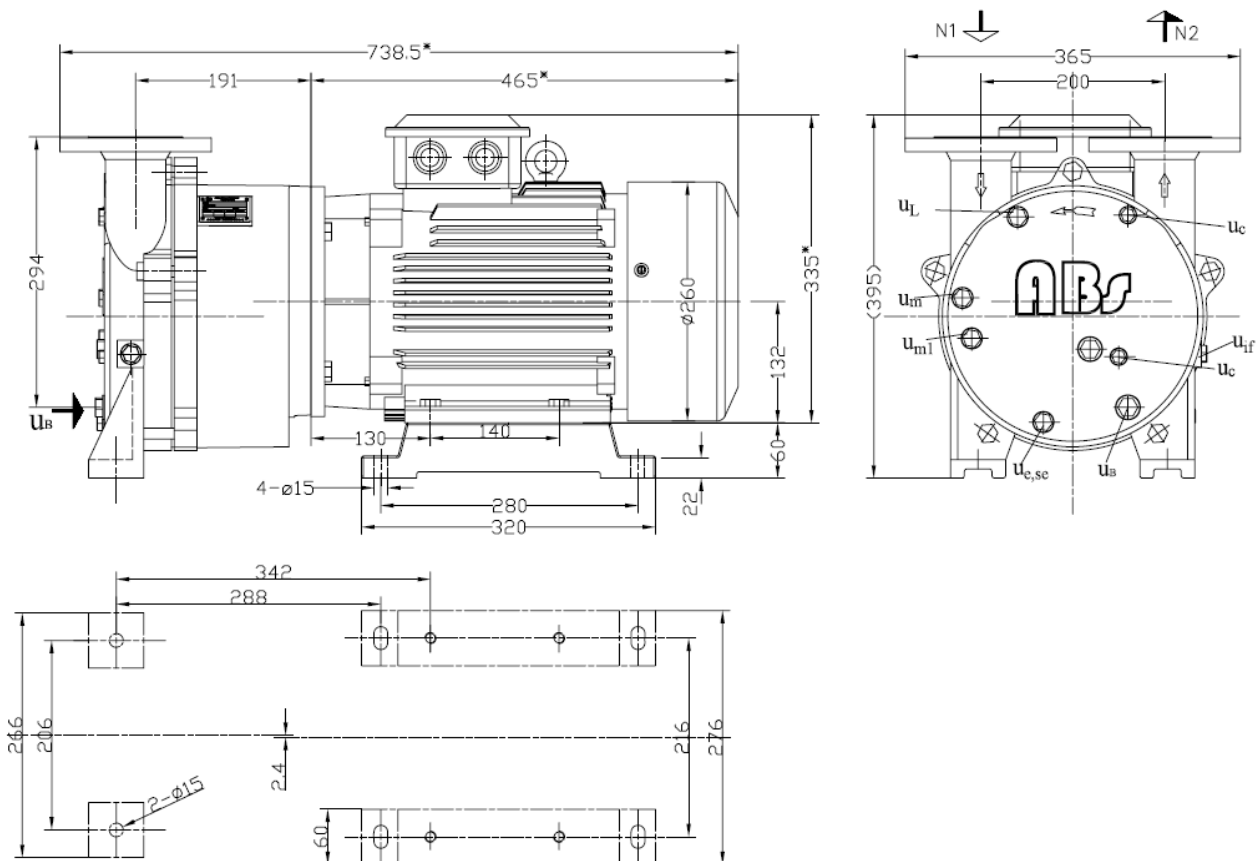
Flange connections see page 13 法兰连接请见第13页

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

\* 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

### VE 255



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

| Pump<br>泵型号 | Electric motor<br>电机 IP55,50Hz,4P |       |      | Approx. weight<br>重量 Kg |                     |
|-------------|-----------------------------------|-------|------|-------------------------|---------------------|
|             | size<br>机座号                       | kW 功率 |      | Motor<br>电机             | Pump+ Motor<br>泵+电机 |
|             |                                   | 50Hz  | 60Hz |                         |                     |
| VE 255      | 132 S                             | 5.5   |      | 60                      | 117.65              |
|             |                                   |       | 8    | 70                      | 127.65              |

Motor feet are part of the standard supply of VE255

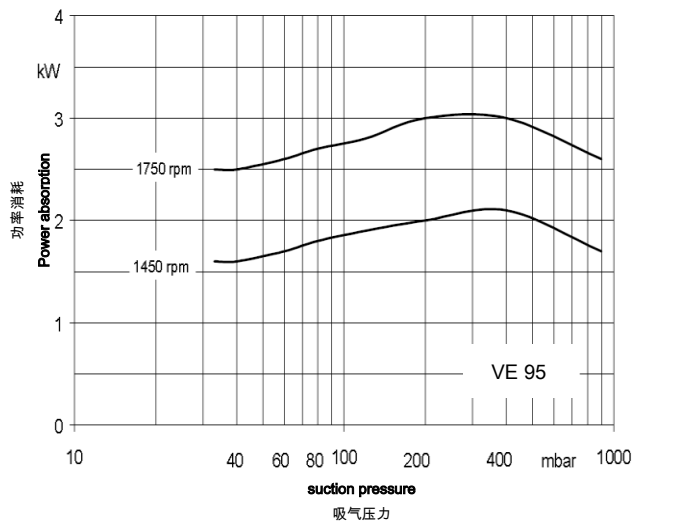
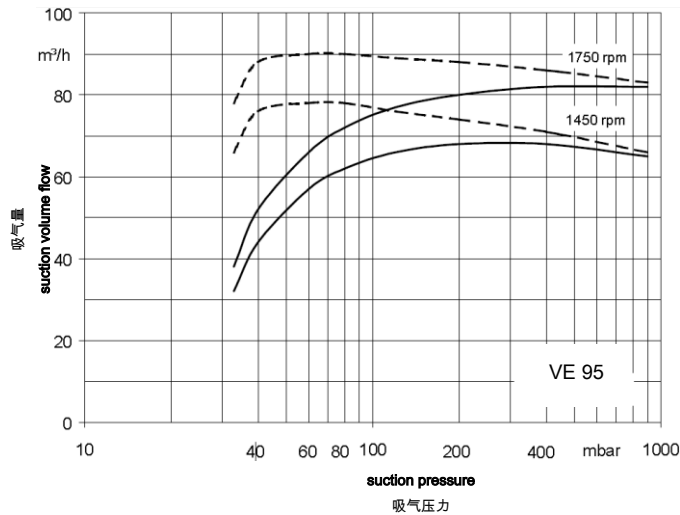
电机底脚为标准配置

Flange connections see page 13

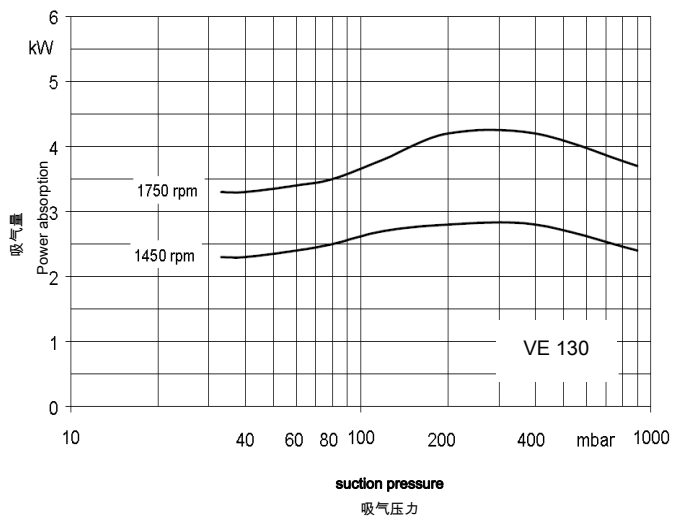
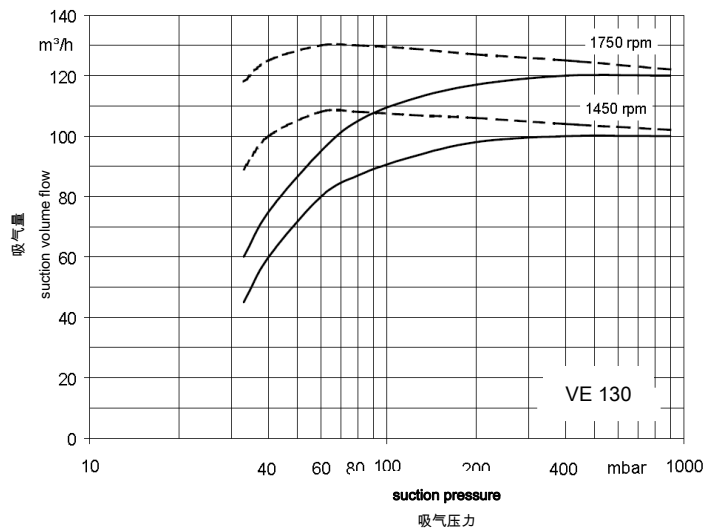
法兰连接请见第13页

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)

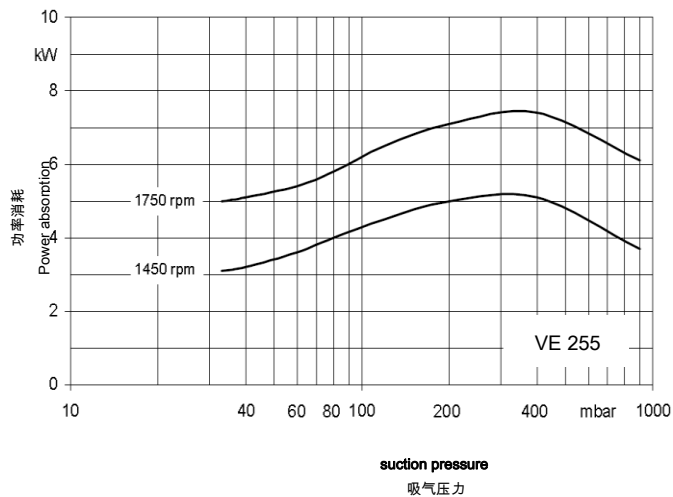
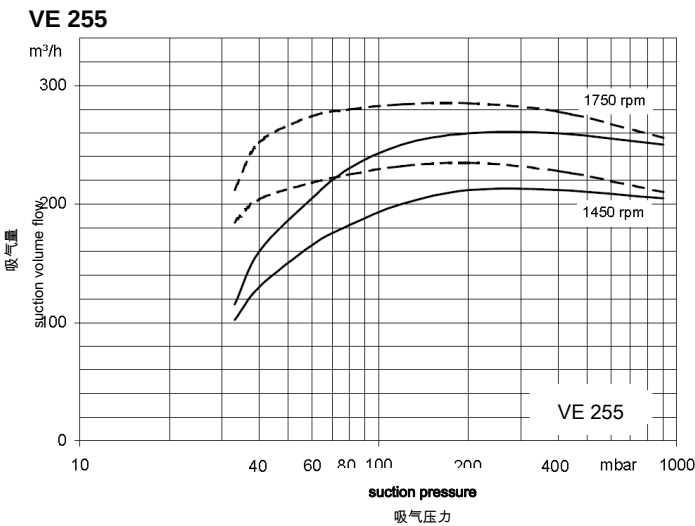
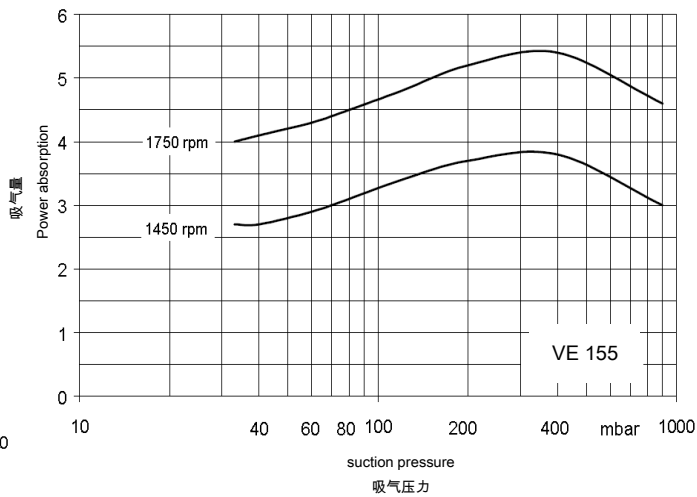
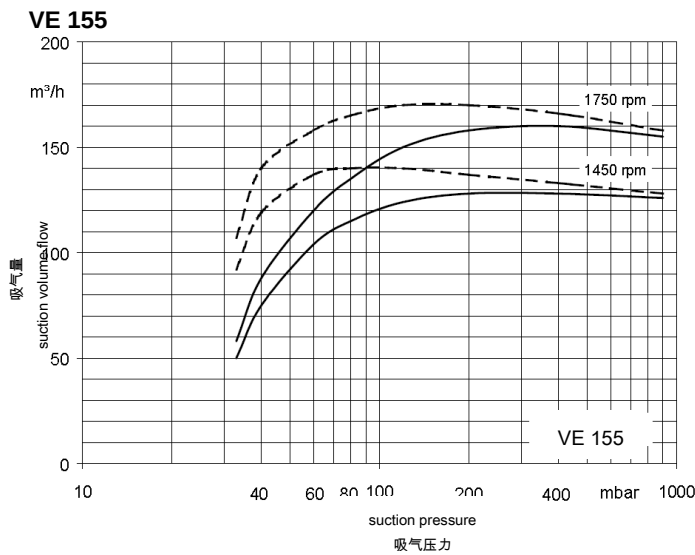
标准大气压

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

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)

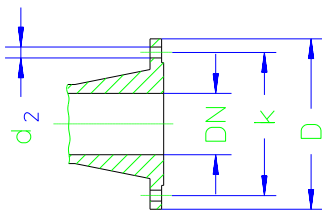
标准大气压

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

## 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 )  |                 | 33                              |      |      |     | 120                             |      |      |      | 200                             |      |      |     | 400                             |      |      |      |
|----------------|-----------------|---------------------------------|------|------|-----|---------------------------------|------|------|------|---------------------------------|------|------|-----|---------------------------------|------|------|------|
| 真空泵<br>型号      | 转速<br><br>[rpm] | KB                              |      |      | FB  | KB                              |      |      | FB   | KB                              |      |      | FB  | KB                              |      |      | FB   |
|                |                 | Temperature<br>difference [° C] |      |      |     | Temperature<br>difference [° C] |      |      |      | Temperature<br>difference [° C] |      |      |     | Temperature<br>difference [° C] |      |      |      |
|                |                 | 10                              | 5    | 2    |     | 10                              | 5    | 2    |      | 10                              | 5    | 2    |     | 10                              | 5    | 2    |      |
| VE /VLE<br>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<br>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<br>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<br>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<br>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<br>Y-Δ -电压 V<br>+/- 5% | Power<br>功率 kW | Size<br>规格 | Motor-code<br>电机代码 | Y-Δ voltage<br>Y-Δ -电压 V<br>+/-10% | Power<br>功率 kW | Size<br>规格 | Motor-code<br>电机代码 |
| VE 95                | 380/220                            | 2.2            | 100 L1- 4  | B33                | 440/220                            | 3.3            | 100 L2- 4  | S03                |
|                      |                                    | 3              | 100 L2- 4  | B34                |                                    |                |            |                    |
| VE 130               | 380/220                            | 3              | 100 L2- 4  | B34                | 440/220                            | 4.8            | 112 M -4   | S04                |
|                      |                                    | 4              | 112 M- 4   | B35                |                                    |                |            |                    |
| VE 155               | 660/380                            | 4              | 112 M- 4   | B35                | 720/440                            | 6              | 112 M -4   | S06                |
|                      |                                    | 4.8            | 112 M- 4   | S35                |                                    |                |            |                    |
| VE 255               | 660/380                            | 5.5            | 132 S- 4   | B36                | 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**

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