

原厂操作指南 / Operating Instructions

**GEA Hilge**

离心泵 TPS 系列，自吸式 带 IEC-电机

**Centrifugal Pump TPS, selfpriming with IEC motor**

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### **简图提示**

本操作指南中的简图对离心泵做了部分展示。离心泵的实际情况可能会与图示有所不同。

### **Notes on the Illustrations**

The illustrations in these operating instructions show the pump in a simplified form. The actual design of the pump can differ from the illustration.

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# 重要缩写 及术语

1/min	计量单位表示转速，即每分钟的圈数
bar	压力的计量单位 所有的压力数据 [bar] 表示过压 [barg]，另有说明， 在此不赘述。
C	碳 (Carbon)
ca.	约
°C	温度计量单位 摄氏度
dB(A)	声平值
DN	DIN 标称口径
DIN	德国工业标准 <i>DIN Deutscher Institut für Normung e.V.</i> (德国标准化学会)
DW	双机械密封 DW
EN	欧洲标准
EPDM	材料参数 缩写按照 DIN/ISO 1629 执行 乙烯丙烯橡胶
EW	单机械密封
FKM	材料参数 缩写按照 DIN/ISO 1629 执行 氟橡胶
h	时间计量单位 小时
HNBR	材料参数 缩写按照 DIN/ISO 1629 执行 氢化腈丁二烯橡胶
IEC	Internationale Elektrotechnische Kommission (国际电工委员会) (在世界范围内适用)
IP	防护等级
ISO	Internationaler Standard der Standardization (国际标准化组织)

# Important Abbreviations and terms

rpm	Unit of measure for speed Revolutions per minute
bar	Unit of measure for pressure All pressure ratings [bar] stand for over pressure [barg] if this is not explicitly described differently.
C	Carbon
approx.	approximately
°C	Unit of measure for temperature degrees centigrade
dB(A)	Noise level
DN	DIN nominal width
DIN	Deutsche Norm (German standard) <i>DIN Deutsches Institut für Normung e.V.</i> (German institut for Standardization)
DW	Dismantling the double-acting mechanical seal (DW)
EN	European standard
EPDM	Material designation <i>Abbreviation acc. to DIN/ISO 1629</i> <i>Ethylene propylene diene (monomer) rubber</i>
EW	Single-acting mechanical seal
FKM	Material designation <i>Short designation acc. to DIN/ISO 1629</i> <i>Fluorine rubber</i>
h	Unit of measure for time hour
HNBR	Material designation <i>Short designation acc. to DIN/ISO 1629</i> <i>Hydrated acrylonitrile butadiene rubber</i>
IEC	International Electrotechnical Commission (globally valid)
IP	Protection class
ISO	International standard of the <i>International Organization for</i> <i>Standardization</i>

kg	重量计量单位 千克	kg	Unit of measure for weight kilogram
kN	力的计量单位 千牛顿	kN	Unit of measure for force kilo Newton
l	容积计量单位 升	l	Unit of measure for volume litre
max.	最大	max.	maximum
mm	长度计量单位 毫米	mm	Unit of measure for length millimetre
μm	长度计量单位 微米	μm	Unit of measure for length micrometre
M <sub>最小</sub>	拧紧扭矩 (Nm)	M <sub>min</sub>	Torque (Nm)
M <sub>最大</sub>	拧紧扭矩 (Nm)	M <sub>max</sub>	Torque (Nm)
m <sup>3</sup> /h	流量 1 m <sup>3</sup> /h = 4.409 gpm	m <sup>3</sup> /h	Flow 1 m <sup>3</sup> /h = 4.409 gpm
Nm	功的计量单位 牛顿米 扭矩数据 1 Nm = 0.737 lbft 磅-力/ (lb) + 英尺 (ft)	Nm	Unit of measure for work Newton metre <i>Unit for torque</i> 1 Nm = 0,737 lbft Pound-Force (lb) + Feet (ft)
NPSH	汽蚀余量 (m)	NPSH	<b>Net Positive Suction Head</b> (m)
QU	冲洗式单机械密封 (Quench)	QU	Flushed single-acting mechanical seal (Quench)
SIC	碳化硅	SIC	Silicon carbid
SS	钼钢	SS	Molybdenum steel
SW	螺栓套筒扳手尺寸数据 <u>Schlü sselweite</u> (扳手开口宽度)	Size	Size of spanners
see Chapt.	见章节	see Chapt.	see Chapter
s. ill.	见图	s. ill.	see illustration
V DC	直流电	V DC	<u>V</u> olt <u>d</u> irect <u>c</u> urrent
V AC	交流电	V AC	<u>V</u> olt <u>a</u> lternating <u>c</u> urrent
kW	功率计量单位 瓦特	kW	Unit of measure for power Watt
Zoll OD	按照英国标准执行的管材尺寸 (BS),	Inch OD	Pipe dimension acc. to British standard (BS), <u>O</u> utside <u>D</u> iameter
Zoll IPS	美国的管材尺寸	Inch IPS	US pipe dimension <u>I</u> ron <u>P</u> ipe <u>S</u> ize

# 安全提示

## 按规定使用

离心泵专用于所述用途。任何其它用途都被视为违规使用。GEA 公司对由此造成的损失恕不承担 任何责任，此风险则由营运方自负。  
按专业技术规定运输和存放以及正确地安置和安装是安全正常运行离心泵的前提条件。  
按规定使用还包括遵守运行、保养和维修条件。

## 人员

操作和维护保养人员必须具备符合从事这些工作的资质。必须接受过如何处置出现的危险的专门指导，必须了解并注意遵守文件资料中所提及的安全提示。  
仅允许由按照相关的 VDE 规范经过培训和授权的电气专业人员执行在电气设备上的作业。

## 改装、备件、附件

禁止擅自进行影响离心泵安全性的改装和改动。不允许绕开、擅自移除或使防护设施失效。  
只能使用原装备件和经制造商许可的配件。

## 一般性规范

用户有责任确保仅在完好状态下运行离心泵。  
除本文献中上述提示外，以下规定和规范也当然适用

- 相关的事故预防规范
- 公认的安全技术规定
- 用户所在国的规范
- 企业内部工作及安全规范。

# Safety Instructions

## Designated use

The pump is designed exclusively for the purposes described below. Using the pump for purposes other than those mentioned is considered contrary to its designated use. GEA cannot be held liable for any damage resulting from such use; the risk of such misuse lies entirely with the user.  
The prerequisite for the reliable and safe operation of the pump is proper transportation and storage as well as competent installation and assembly.  
Operating the pump within the limits of its designated use also involves observing the operating, inspection and maintenance instructions.

## Personnel

Personnel entrusted with the operation and maintenance of the pump must have the suitable qualification to carry out their tasks. They must be informed about possible dangers and must understand and observe the safety instructions given in the relevant manual. Only allow skilled electricians who are properly qualified and have been trained in accordance with pertinent VDE regulations to carry out any work on the electrical equipment.

## Modifications, spare parts, accessories

Unauthorized modifications, additions or conversions which affect the safety of the pump are not permitted. Safety devices must not be bypassed, removed or made inactive.  
Only use original spare parts and accessories recommended by the manufacturer.

## General instructions



The user is obliged to operate the pump only when it is in good working order.  
In addition to the instructions given in the operating manual, please observe the following:

- relevant accident prevention regulations
- generally accepted safety regulations
- regulations effective in the country of installation
- working and safety instructions effective in the user's plant.

# 操作说明书所用的安全提示标识

特别安全提示直接处于操作说明之前。它们通过危险标志和警示语加以突出。

务必阅读并且注意遵守这些标志旁边的文字，然后才能继续继续进行下面的文字说明和操作离心泵。

标志	警示语	含义
	危险	表示可能会造成严重的身体伤害或死亡的濒临危险。
	当心	表示可能造成人员身体的轻微伤害或财产损失的危险情况。



## 其他提示标志

标志	含义
•	工作或操作步骤，必须按所列出的顺序执行。
提示	关于最佳使用离心泵的信息
—	一般列举

# Marking of safety instructions in the operating manual

Special safety instructions are given directly before the specific operating instruction. They are marked by the following symbols and associated signal words.

It is essential that you read and observe the texts belonging to these symbols before you continue reading the instructions and handling the pump.

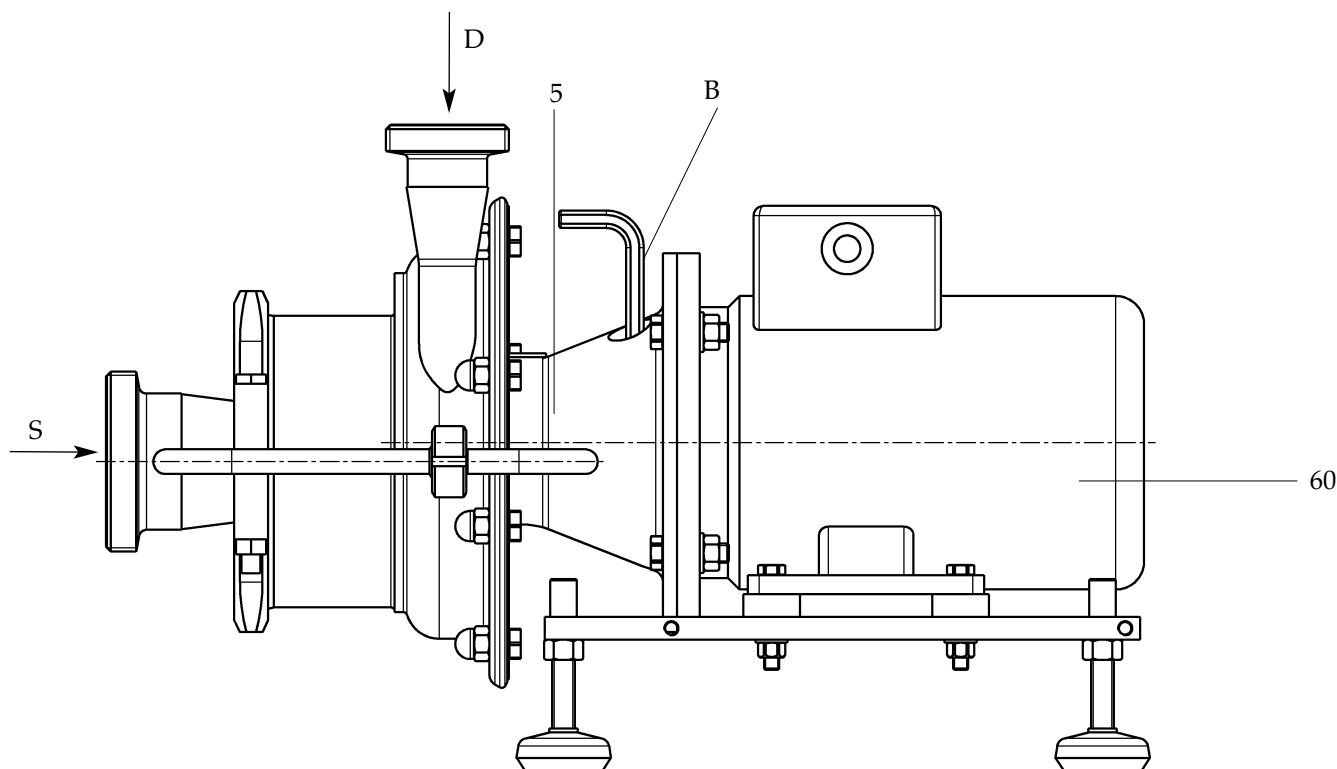
Symbol	Signal word	Meaning
	DANGER	Imminent danger, which may cause severe bodily injury or death.
	CAUTION	Dangerous situation, which may cause slight injury or damage to material.

## Further symbols

Symbol	Meaning
•	Process / operating steps which must be performed in the specified order.
NOTE	Information as to the optimum use of the pump.
—	General enumeration

## 特殊的 危险部位

## Special hazard areas



### 危险

发生功能故障时停止运行离心泵（切断供电），锁住以防止重新接通。  
立刻排除故障。

离心泵运转时，不要将手伸入到联接架（5）、电机风扇外壳（60）、抽吸（S）或压力套管（D）中。



### DANGER

In the event of malfunctions, set the pump out of operation (disconnect the power supply) and secure it against inadvertent reactivation.  
Immediately remedy the malfunction.

Never put your hand into the lantern (5), into the fan housing of the motor (60), the suction (S) or pressure port (D) while the pump is running.



### 小心

保养后，不要忘记将 L 形内六角扳手（B）从轴上的圆柱头螺栓中取出。



### CAUTION

After maintenance, never forget to take the hex. offset screwdriver (B) out of the cheese head screw on the shaft.



# 用途

带 IEC 标准电机的 GEA Hilge TPS 系列离心泵（B35 和 B34 型）适用于需达到卫生要求后输送生物要求高且宝贵的液体。

因此，它们可作为物料泵应用于食品业、制药业，也可作为清洁剂离心泵应用于 CIP 清洁回路。

TPS 系列离心泵不允许在有爆炸危险的区域内使用。

GEA 公司所应用的电机的轴向间隙受到限制。如果使用外购电机，它们必须装备了一个 A 侧固定轴承或遵守规定的轴向间隙（见“检查轴向间隙”一章）。

# 运输和存放

## 检查供货范围

接收离心泵时，应检查

- 铭牌上的型号及序列号与订购及交货资料中的数据是否一致；
- 装备是否完全，所有部件是否处于完好状态下。

如果发现设备外观有运输造成的损伤和 / 或遗漏托运件，就要立即在货物托运单上写明，交给货物承运商。收货人必须立即向运输公司以书面形式追索赔偿，同时将此过程通知 GEA 公司。未能立即发现的运输损坏可在 6 日内向货物承运商提出索赔。

以后要求的损坏赔偿则用由收货人承担。

# Designated Use

GEA Hilge centrifugal pumps TPS with IEC motor (type B35 and B34) are designed for the hygienically safe delivery of biologically demanding and precious fluids.

They are suitable for the use as product pumps in the food and pharmaceutical industry and as detergent pumps in CIP circuits.

The TPS pumps are not approved for use in potentially explosive atmospheres.

The motors GEA uses have a restricted axial clearance. If other motors are used, they must be equipped with fixed bearings on the A-side and / or the axial clearance must be met (see chapter „Checking the axial gap“).

# Transport and Storage

## Checking the consignment

On receipt of the pump check whether the

- type and serial number on the type plate correspond to the data in the order and delivery documents
- equipment is complete and all components are in good order.

The forwarding agent must immediately be notified of any transport damage detectable from the outside and / or missing packages (confirmation on the consignment note). The consignee shall take recourse against the forwarding agent immediately in writing and inform GEA accordingly.

Transport damages which cannot be recognized immediately shall be brought to the forwarder's notice within 6 days. Later claims on damages shall be born by the consignee.

## 搬运



危险

包装单元/离心泵只允许用合适的起重工具和吊具进行搬运。注意遵守贴在包装上的图形符号。

离心泵按图所示进行搬运。

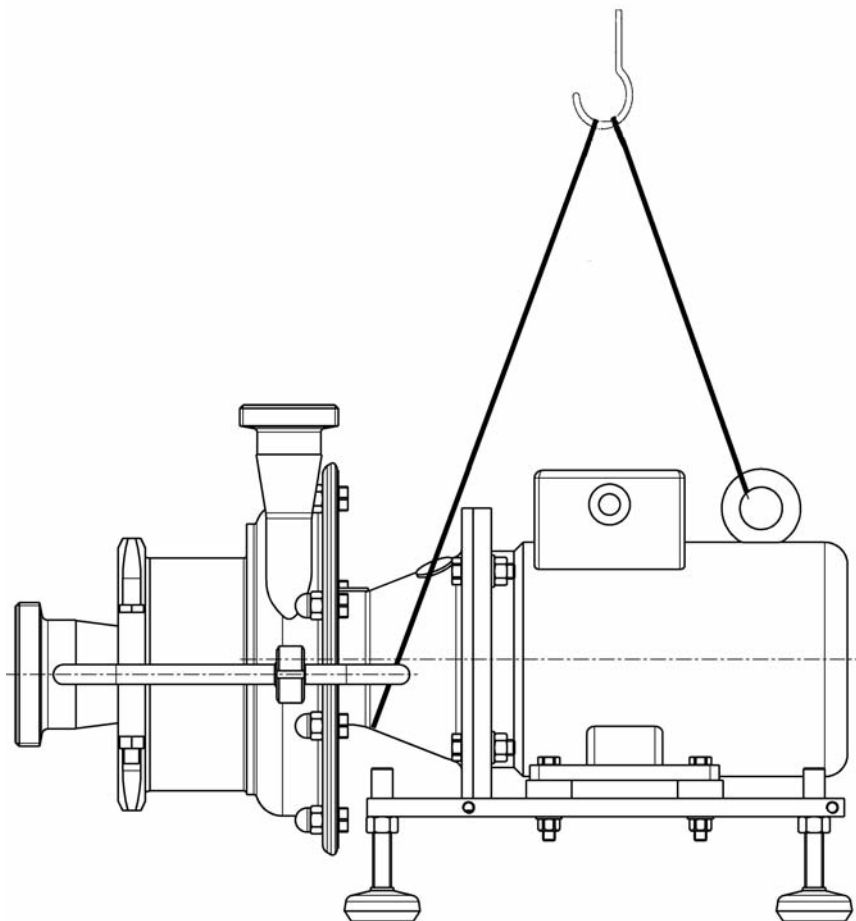
## Transport



**DANGER**

For transport of the package units/pumps only use suitable lifting gears and slings. Observe the instruction symbols on the package.

The pump must be transported as shown in the picture.



## 储存

存放地点必须有顶棚并且通风良好。必须防止空气湿度过高。

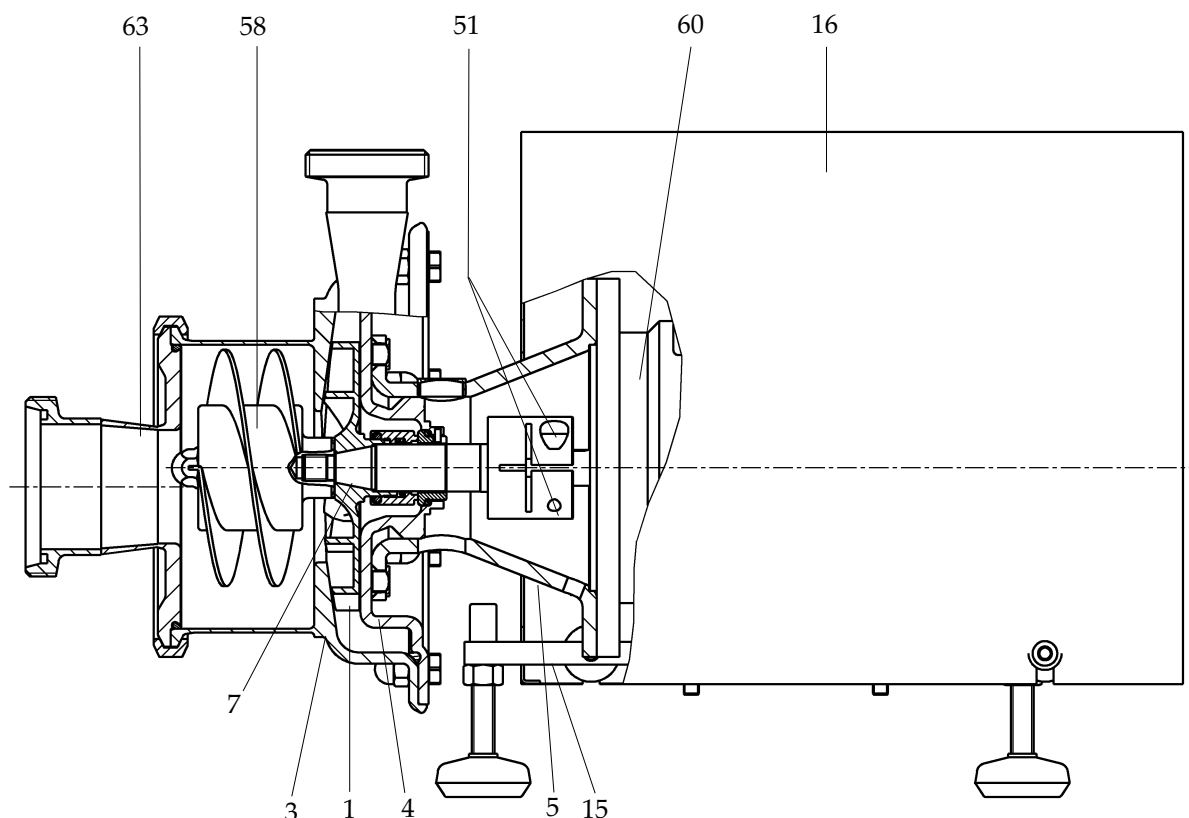
如果温度低于冰点，必须将离心泵排空。

## Storage

The storage area must be roofed and adequately ventilated. High atmospheric humidity must be avoided. Temperatures below zero require draining of the pump.

# 结构和功能

# Design and Function



## 结构

离心泵由下列部件组成：

- 泵壳 (4)、泵盖 (3)、联接架 (5)
- 工作轮 (1)、轴 (7)、叶轮 (58)、法兰 (63)
- 三相交流异步电机 (60)
- 半球帽支脚架 (15)
- 防护罩 (16)

泵轴 (7) 被插到三相交流异步电机的轴端部。

泵轴已被 2 根圆柱头螺栓 (51) 轴向固定。

联接架 (5) 可使不同规格的电机与离心泵连接。

联接架 (5) 将电机与泵壳 (4) 连接。泵壳上有 2 个孔，以显示泄漏情况。

离心泵根据结构设计分为单机 (EW)、冲洗式单机 (QU) 或双机械密封 (DW)。

## Design

The pump consists of the following components:

- Pump housing (4) pump cover (3), lantern (5)
- Impeller (1), shaft (7), inducer (58), flange (63)
- Three-phase asynchronous motor (60)
- Frame with height adjustable calotte type feet (15)
- Protection hood (16)

The pump shaft (7) is fitted onto the shaft end of the three-phase asynchronous motor.

The pump shaft is axially fixed using 2 set screws (51).

The lantern (5) allows the connection of different motor sizes with the pump.

The lantern (5) connects the motor with the pump housing (4). The lantern has 2 bores for indicating leaks.

Depending on its design, the pump is equipped with a single-acting mechanical seal (EW), a flushed single-acting mechanical seal (QU) or a double-acting mechanical seal (DW).

机械密封动环通过销钉随着叶轮一起随动。  
在泵壳与泵盖之间装有叶轮。  
叶轮处于叶轮壳体内，同时用于固定工作轮。  
离心泵的高度和水平校准通过 4 个可调节高度的半球帽支脚来调整。  
必要时，离心泵可配备一个保护电机的不锈钢罩。

## 功能

TPS 系列离心泵为自吸式，也就是说，即使液位为 负值，也能够抽空抽吸侧管路。叶轮在叶轮壳体中产生一个液体环。该液体环用于相互密封叶轮和叶轮壳体。在叶轮与液体环之间离心泵输送出现的气体。

带反向弯曲叶片的叶轮在离心泵中以电机转速旋转。叶轮旋转可将能量以离心力和速度升高的形式传递到输送介质，然后从压力管接头中送出。

吸入管接头在离心泵体上轴向偏心对中。

出口管接头在离心泵体上沿相切方向向上对准。

The slide ring of the mechanical seal is entrained by the impeller using a pin.  
The impeller is installed between pump housing and pump cover.  
The inducer is positioned in the inducer housing and is also used to fasten the impeller.  
The height and the horizontal alignment of the pump are adjustable using 4 calotte-type feet.  
If necessary, the pump may be equipped with a stainless steel hood for protecting the motor.

## Function

The TPS centrifugal pump is self-priming, i.e. it is able to evacuate pipe lines on the suction side even if the liquid level is below the pump inlet. The inducer produces a ring of liquid in the inducer housing. This liquid ring seals the space between the inducer and the inducer housing. Any gases that enter the pump are conveyed through the pump via the clearance between the inducer hub and the liquid ring.

The impeller with its vanes curved backwards rotates in the pump at the speed of the motor. The rotation of the impeller imparts energy to the liquid to be conveyed in the form of centrifugal forces and velocity that forces the liquid out of the discharge port.

The suction port is arranged axially off-centre on the pump body.

The discharge port is usually tangentially directed upward in relation to the pump body.

# 安装和试运行



小心

残留物、污物以及空转都会造成机械密封、泵叶轮、叶轮和整个离心泵的损坏。因此，在运行离心泵之前必须彻底清洁整个系统。

## 安置离心泵

- 安置离心泵时，要确保电机有足够的空气循环，留有足够的保养作业地方。
- 水平校准离心泵。  
通过可调节高度的半球帽支脚平衡地面的不平坦。

## 安装管路

- 在已切断电源的状态下将离心泵装入管路系统。
- 将输入管路以离心泵吸入管接头的较小斜度敷设，以避免形成气泡。

### 提示

抽吸管路应设计得尽可能地短，管道阻力小，以防止液体在离心泵入口处蒸发（造成气蚀现象）。

### 对 Quench 和双机械密封而言

- 铺设阻封水管。  
阻封水必须保持清洁。  
阻封水入口必须连接在下部，出口必须连接在上部，以确保冲洗腔内没有空气。
- 注意阻封水压力：  
单机冲洗式（Quench）0.2...0.35 bar  
双机冲洗式最小 2 bar，最大 3 bar，高于物料压力
- 只有在冲洗运行时，才能运行离心泵。

# Installation and Commissioning



CAUTION

Residues, dirt particles and dry running can damage the mechanical seal, the impeller, the inducer and the pump itself. Therefore, the entire system must be thoroughly cleaned before setting the pump into operation.

## Installing the pump

- Install the pump to provide sufficient air circulation for the motor and enough space for maintenance work.
- Align the pump horizontally.  
Balance out any unevenness on the floor surface by adjusting the calotte-type feet.

## Installing the pipes

- Install the pump in the pipe system free of stress.
- The supply pipe must be installed with a slight incline towards the pump inlet to ensure that no air pockets can form.

### NOTE

The length of the supply pipe should be kept to a minimum and produce little friction loss, so that the liquid in the pump inlet cannot vapourize (cavitation).

### For Quench and double-acting mechanical seal

- Install the sealing water pipe.  
The sealing water must be clean.  
The connection for sealing water supply must be at the bottom and for sealing water drain at the top of the pump. This type of connection ensures that no air remains in the flush chamber.
- Observe the sealing water pressure:  
single flushed (Quench) 0.2 ... 0.35 bar  
double flushed min. 2 bar, max. 3 bar above product pressure
- Only operate the pump when the flushing system is running..

负值吸入高度情况下  
运行时的安装

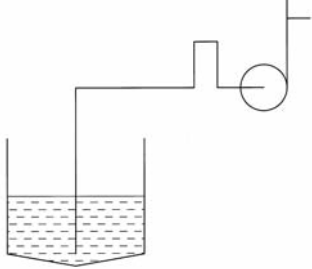
提示  
同所有的自吸式离心泵一样，TPS 系列离心泵在泵中也需要某一剩余液体。该液体必须在首次调试之前加注到离心泵。

TPS 系列结构尺寸 / Size	液体 / Liquid (l)	转速 (1/min) / Speed (rpm)
2030	2, 9	2900
3050	3, 5	2900
--	--	--
8080	6, 4	2900

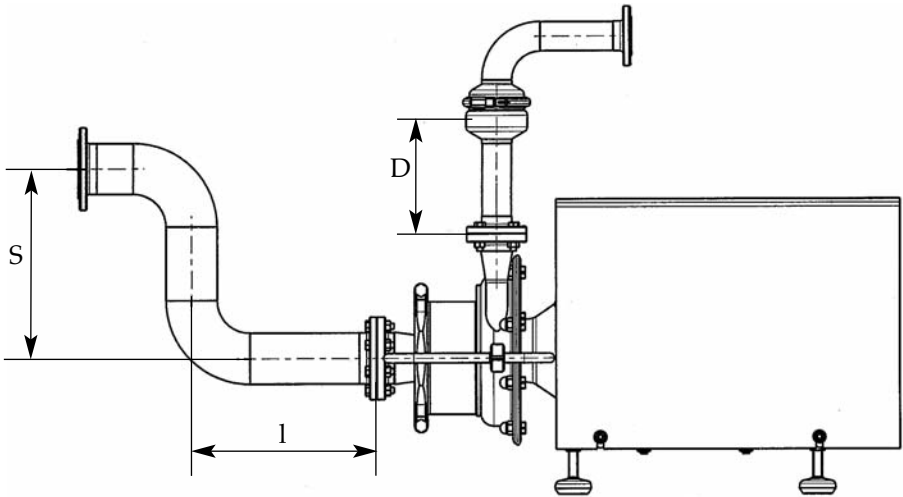
输送比例 > 10 % 的气体时，必须以至少 2900 1/min 的转速运行离心泵。为使液体停留在离心泵中并防止其从已连接的管路流出，抽吸侧和压力侧管路必须按图敷设。

Fitting when operated at  
negative suction heads

NOTE  
As all self-priming centrifugal pumps, the TPS pump also needs a certain residual liquid level in the housing. Make sure to fill the pump with liquid before setting it into operation for the first time.



To enable gas contents > 10% to be conveyed, the pump must be operated at a speed of min. 2900 rpm.  
To ensure that the liquid stays in the pump and is not drained via the connected pipes, the pipes on the suction and on the pressure side must be fitted as shown.



TPS 系列结构尺寸 / Size	抽吸侧 / Suction side (S)	抽吸侧 / Suction side (L)	压力侧 / Pressure side (D)
2030	0.2 ... 0.5 m	0.5 ... 1.0 m	1.5 m
3050	0.2 ... 0.5 m	0.5 ... 1.0 m	1.5 m
--	--	--	--
8080	0.2 ... 0.5 m	0.5 ... 1.0 m	1.5 m

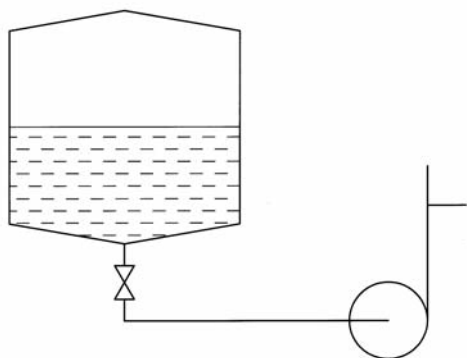


小心  
对于带单机械密封的离心泵，当心存在机械密封损坏的危险  
如果抽吸时间超过 t= 30 s，就会造成空转和机械密封损坏。在这种情况下，必须使用单机械密封 (QU) 或双机械密封 (DW)。



CAUTION  
Danger of damage to the mechanical seal on pumps with single-acting mechanical seal  
If the suction time is longer than t = 30 s, the pump may run dry, causing damage to the mechanical seal. In this case we recommend that you use a flushed (QU) or a double-acting mechanical seal (DW).

## 正值吸入高度情况下运行时的安装



为使离心泵能够进行抽吸，在水箱和管路彻底清空之后，必须要有少许液体在重新加注时从水箱经由管路流入离心泵。  
出口管接头必须始终垂直朝上。

## 连接电机



**危险**

电机必须根据有关的 IEC/VDE 规范由经过授权的人员连接并且对其加以足够的保护。  
电气连接离心泵时，必须注意叶轮旋转方向与标记（见压力管接头上的方向指示箭头）一致。

- 连接电缆，见接线盒盖上的接线图。



**小心**

电源电压必须与电机铭牌上的参数一致。必须注意不得超过指定的功率值，以防驱动电机过载。

### 提示

在防护罩使用过程中，有可能出现罩盖与接线盒侧面的电缆接口之间的空间过小。在这种情况下，必须旋转接线盒 90°，使连接电缆向后经由电机风扇护罩敷设。

## Fitting when operated at positive suction head

To enable the pump to draw in liquid after the tank and the pipe have been completely drained, allow a certain amount of liquid to flow from the tank through the pipe into the pump when starting to refill.  
The pressure port must always face vertically upwards.

## Connecting the motor



**DANGER**

The motor must be installed in accordance with the relevant IEC/VDE regulations by qualified personnel and must be adequately fused.  
When connecting the pump to the power supply, make sure that the sense of rotation of the impeller corresponds to the marking (see direction arrow on the pressure socket).

- Connect the cable (see the wiring diagram inside the lid of the terminal box).



**CAUTION**

The supply voltage must be identical to the information printed on the type-plate. Make sure that the specified ratings are not exceeded to avoid overloading of the driving motor.

### NOTE

If you use a protection hood, it may leave you with not enough space between hood and lateral cable entry into the terminal box. If so, turn the terminal box by 90° to allow the connection cable to exit to the rear across the fan cover of the motor.

接地

电机

电机必须接地。与此同时，电机接线盒中装有一个接地端子。

半球帽支脚的横梁

建议要给半球帽支脚的横梁接地。为此，必须将锁紧垫片放到螺栓（B）下面。

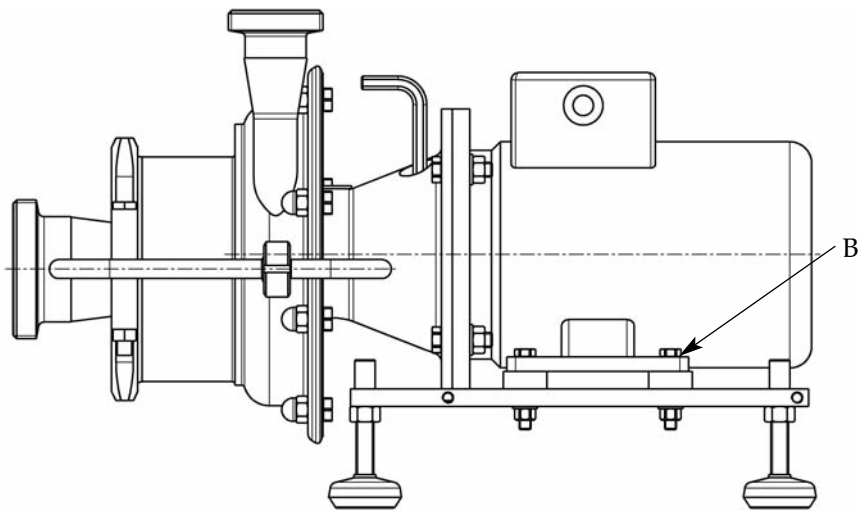
Grounding

Motor

The motor must be electrically grounded. A grounding terminal is provided in the terminal box for the motor for this purpose.

Calotte-type frame

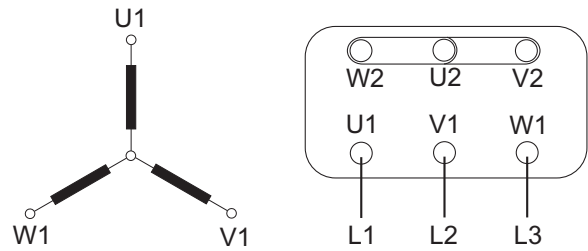
It is recommended to ground the calotte-type frame. For this purpose, under the screw (B) put a lock washer.



星形连接

- 按照订购内容和铭牌 上的数据连接电机。

星形连接 / Star Connection



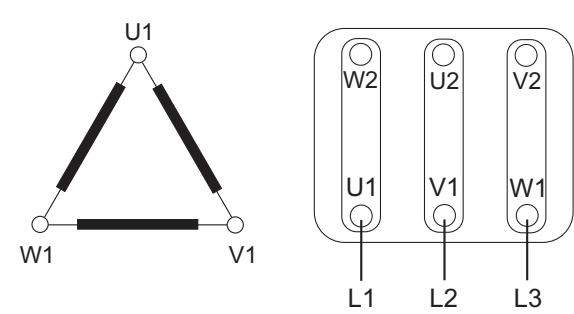
Star connection

- Connect the motor in accordance with the order data and the data on the type plate.

三角形连接

- 按照订购内容和铭牌 上的数据连接电机。

三角形连接 / Delta connection



Delta connection

- Connect the motor in accordance with the order data and the data on the type plate.



GEA 电机标准包括用于热敏监控的 PTC 热敏电阻器（热敏电阻）。必要时，例如变频器运行时，可相应地将其连接。为此在接线盒中有 2 个接口，在结构设计上根据电机制造商，其外观有所不同。

关于 PTC 热敏电阻（热敏电阻温度计）电气连接的详情，请仔细阅读随附的电机制造商操作说明书。

The GEA motor standard includes a PTC thermistor for thermal monitoring. If required, e.g. frequency converter operation, these are connected accordingly. 2 connections (design may vary depending on the motor manufacturer) are provided in the terminal box for this purpose.

To connect the PTC thermistor please refer to the enclosed motor manufacturer's operating instructions.

## 检查旋转方向



小心

机械密封空转会造成密封件受损。只有在离心泵完全安装好并且装满液体后，才能检查其旋转方向。

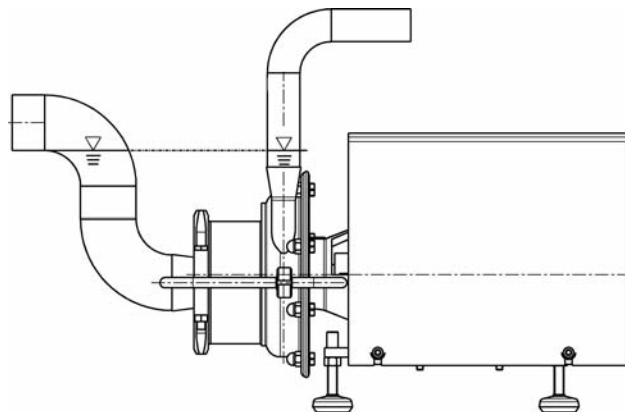
- 检查接口。
- 给离心泵加注。



CAUTION

The mechanical seal must not run dry, otherwise it will be damaged. Check the sense of rotation only after installing the pump completely and filling it with medium.

- Check the connections.
- Fill the pump.



小心

如果旋转方向错误，可能存在叶轮松脱的危险。在检查旋转方向期间，必须将叶轮更换为随附的螺母 M14，以防止损伤。检查完成后，必须将该叶轮以正确的拧紧扭矩重新安装。

如果沿错误转动方向启动离心泵，务必检查工作轮上的叶轮拧紧力矩。如果不遵守，就会造成叶轮松脱和损坏。

- 接通电机。



CAUTION

If the sense of rotation is wrong, there is a risk of the inducer coming off. While the direction of rotation is being checked, the M14 nuts supplied must be fitted in place of the inducer to prevent damage. After the check, the inducer must be refitted and tightened to the correct torque.

If the pump was started in the wrong direction of rotation it is essential that you check the tightening torque of the cap nut on the impeller. If this is not observed, the impeller may work loose and cause damage.

- Start the motor.

- 注意观察旋转方向。  
从电机向离心泵看，其旋转方向为顺时针。  
拆卸盖罩时，可通过风扇轮检查旋转方向。



小心

如果沿错误转动方向启动离心泵，务必检查工作轮上的盖形螺母拧紧扭矩。如果不遵守，就会造成叶轮松脱和损坏。

## 检查阻封液

（仅限带冲洗式或双机械密封的离心泵）



小心

在没有连接阻封液的情况下运行会造成密封件受损。

- 阻封液必须保持清洁，其中不得含有磨蚀性成分。
- 阻封液温度最高 60 °C（短时间 70 °C）。

## 检查抽吸侧阀门



小心

运行时，抽吸侧不得被关断。自行增加的负压会导致损坏。

- 在投入运行之前应检查抽吸侧。
- 在运行期间防止关闭抽吸侧阀门。

- Watch the rotation.  
The sense of rotation is clockwise, when looking from the motor to the pump.  
Check the sense of rotation with the hood dismounted by watching the impeller.



CAUTION

If the pump with mounted inducer was started in the wrong direction of rotation it is essential that the tightening torque of the cap nut on the impeller is checked again. If this is not observed, the impeller may work loose and cause damage.

## Sealing liquid check

(only for pumps with flushed or double-acting mechanical seal)



CAUTION

Running the pump without sealing liquid will cause damage to the seal.

- The sealing liquid must be clean and free of abrasive particles.
- Temperature of the sealing liquid 60 °C max. (short-time 70 °C).

## Suction side valve check



CAUTION

During running the pump the suction side valves must not be closed. The evolving low pressure can cause damages.

- check suction side before running the pump
- Avoid closing the suction side valves during running the pump

# 故障、原因、补救措施



小心

发生功能故障时，立即关断离心泵并且采取措施，以防止意外接通。只允许由具备资质的人员按照安全提示排除故障。

故障	原因	补救措施
电机无法启动	未向电机供电	关断离心泵，检查电缆接头和保险丝
	电机保护开关已触发	检查电机的耗电情况
	电机保护开关或漏电断路器已触发，或者保险丝已被熔断，因为电缆、电机或控制装置受损。	检测部件并修理或更换损坏的部件
	开开关装置的触点损坏	检查、拆下清洁开关装置、必要时更换损坏的部件
电机的耗电量过大	输送物料的黏度过高	检查离心泵设备、必要时调小开关、拧下叶轮、更换离心泵或电机
	外壳与叶轮之间的间隙设置不正确	设置间隙
	压力管路的阻力过小（输送流量过大）	检查离心泵设备，必要时调小开关，拧下叶轮，更换离心泵或电机
	叶轮直径过大	安装较小的叶轮 拧下叶轮
噪声排放过大 (气蚀现象也是如此)	抽吸管路中的阻力过大	检查抽吸管路，必要时缩短或加长
	抽吸容器中的液位过低	给抽吸容器加注
	叶轮发生摩擦	检测轴向间隙，按照“检查轴向间隙”一章中的说明重新调整
	电机轴承损坏	更换轴承
	机械密封空转	立即关断离心泵，检查机械密封，必要时更换 查找空转原因并排除故障
扬程或输送流量过小	电机的旋转方向错误	相位颠倒
	电机转速过小（电压、频率错误）；极数错误	施加正确的电压 更换电机
	叶轮直径过小	安装较大的叶轮
	叶轮磨损	更换叶轮
	抽吸和 / 或压力管路中的阻力过大	检查管路
	输送物料的黏度过高	检查离心泵设备，安装较大的叶轮
离心泵密封不严	机械密封损坏	更换动环密封圈
	O 形环损坏	更换 O 形环
离心泵没有抽吸	离心泵中无剩余液体	给离心泵最小量加注液体
	设备未按规定敷设	按规定从抽吸侧和压力侧敷设设备

# Malfunction, Cause, Remedy



## CAUTION

In the event of malfunctions, immediately deactivate the pump and secure it against inadvertent reactivation. Defects may only be rectified by qualified personnel observing the safety instructions.

Malfunction	Cause	Remedy
Motor does not start	No power supply to the motor	Switch off the pump, check cable connections and fuse
	Motor circuit breaker has tripped	Check the motor's power consumption
	Motor circuit breaker or r.c.c.b. has tripped or the fuses have blown, because cable, motor or control devices are damaged	Measure the parts and repair or replace any faulty parts
	Switching device contacts faulty	Check the switching devices, dismantle, clean and replace any faulty parts
Motor power consumption too high	Viscosity of the pumped medium too high	Check the pump system, throttle as required, turn off impeller, change pump or motor
	Gap between housing and impeller not set correctly	Set gap
	Resistance in the pressure pipe too low (flow rate too high)	Check the pump system, throttle as required, turn off impeller, change pump or motor
	Impeller diameter too big	Fit a smaller impeller Turn off the impeller
Too much noise emission (also cavitation)	Resistance in the suction pipe too high	Check the suction pipe, shorten or extend as required
	Liquid level in the suction tank too low	Fill the suction tank
	Impeller scraping	Measure the axial gap and reset in accordance with the chapter "Checking the axial gap"
	Motor bearing damage	Replace the bearing
	Mechanical seal running dry	Immediately switch off the pump, check the mechanical seal, replace if required Determine the cause of dry running and eliminate the fault
Flow head or flow rate too low	Motor rotates in the wrong direction	Reverse the phases
	Motor speed too low (voltage, frequency not correct); number of poles not correct	Apply the correct voltage Replace the motor
	Impeller diameter too small	Fit a larger impeller
	Impeller worn	Replace the impeller
	Too much resistance in suction and / or pressure pipe	Check the pipes
	Viscosity of the pumped medium too high	Check the pump system, fit a larger impeller
Pump leaking	Mechanical seal defective	Replace the mechanical seal
	O-ring defective	Replace the O-ring
Pump not drawing in liquid	No residual liquid in the pump	Fill the pump with a minimum of liquid
	System not executed to specifications	Execute the system in accordance with specifications on suction and pressure sides

# 维护

## 检查

离心泵在很大程度上无需保养。

如要预防可能存在的故障，GEA 公司建议定期 进行目检（检查）。目视检查时要特别注意离心泵是否密封、工作是否正常。

为了确保离心泵达到极高的运行安全性，最迟在 2000 个运行小时后，应检查诸如机械密封、O 形环等磨损件情况，必要时更换。在任何情况下，必须在拆卸离心泵时检查所有的密封件，必要时更换。

## 拆卸和保养

### 拆卸叶轮和泵盖



小心

在拆卸之前，必须将离心泵彻底清空。对有危险的液体而言，要按照数据安全页遵守预防措施，并按专业技术规定处理泄漏液体，然后将其按规定废弃处理。



危险

每次拆卸前，必须断开离心泵的电源，以防止离心泵启动。泵壳必须处于无压状态并且已清空，已经适应了室内温度。抽吸管和压力管中的止回阀必须已关闭。

- 断开离心泵电机电源。
- 将离心泵从管路上取出、清空，然后将其冷却至室内温度。

# Maintenance

## Inspections

No regular maintenance work is required on the pump.

As a precaution against malfunctions GEA recommends that you carry out visual inspections at regular intervals, paying particular attention to tightness and the correct function of the pump.

To ensure the highest operational reliability of the pump, all wearing parts, e.g. mechanical seal and O-rings, should be checked, and if necessary, replaced after 2000 operating hours at the latest. In any case, when dismantling the pump, all seals must be checked, and if necessary, replaced.

## Dismantling and Maintenance

### Dismantle inducer and pump cover



CAUTION

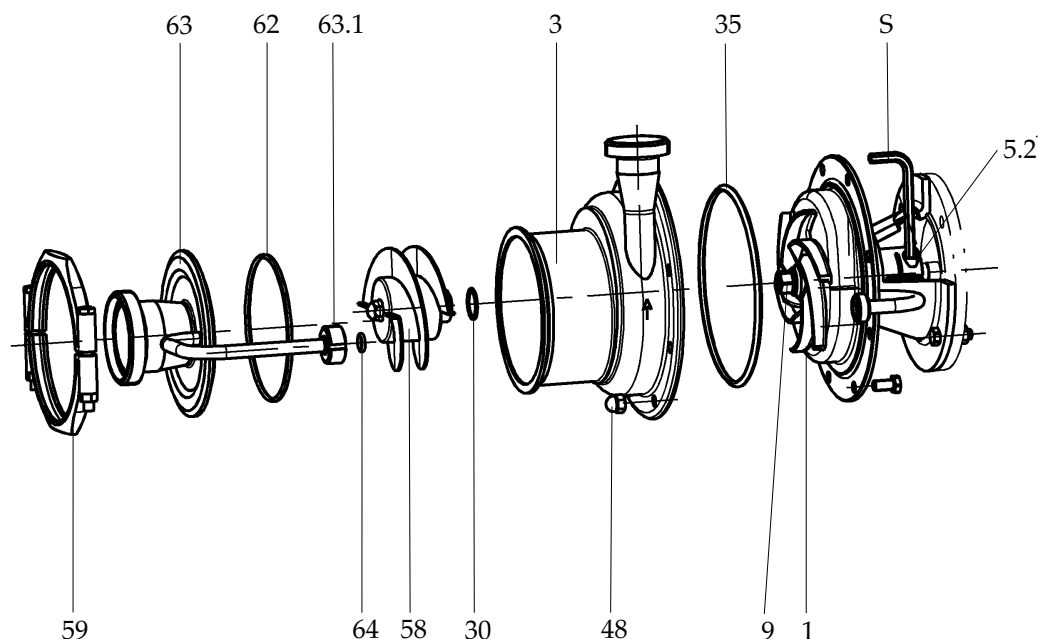
Prior to dismantling, the pump must be completely drained. If the pump contains dangerous liquids, adhere to the safety measures specified in the data sheet and take care that these liquids are properly drained, handled and disposed of.



DANGER

Prior to dismantling, the pump must be disconnected from the mains supply, in order to secure the pump against inadvertent starting. The pump housing must be depressurized, emptied and cooled down to room temperature. The shut-off devices in the suction and pressure pipes must be closed.

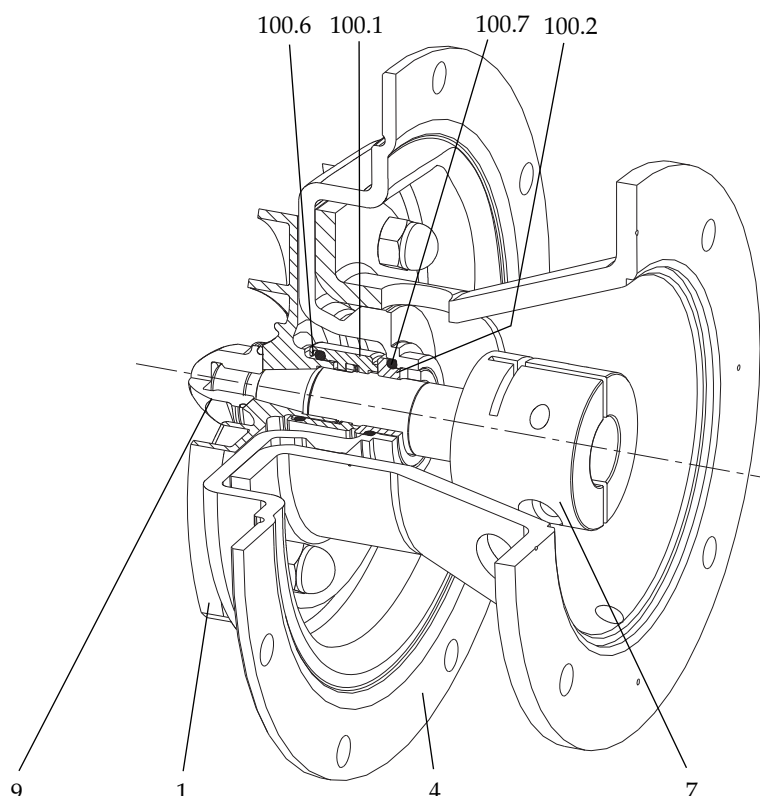
- Disconnect the pump motor.
- Dismount the pump from the pipe system, drain and let it cool down to room temperature.



- 检查密封环（入口和出口管接头），必要时更换。
- 松开锁紧螺母（63.1）。
- 拆下半圆环（59）。
- 从泵盖（3）拔出法兰（63）。
- 检查 O 形环（62、64），必要时更换。
- 将 L 形内六角扳手（S）插入联接架的孔（5.2）内。
- 叶轮（58），直至 L 形内六角扳手（S）卡入内六角头中。  
由此防止轴（7）意外转动。
- 拧下（58）叶轮。
- 检查叶轮上的 O 形圈（30），必要时更换。
- 将随附的螺母 M 14 拧到轴（7）上，以取代叶轮（58）。
- 将盖形螺母（48）交叉地拧松，然后将泵盖（3）取下。
- 检查外壳 O 形环（35），必要时更换。
- Check the gaskets of the ports (on suction and pressure side) and replace them, if required.
- Release the cap nut (63.1).
- Remove the semi-annular clamps (59).
- Pull out the flange (63) from the pump cover (3).
- Check the O-rings (62, 64) and replace if required.
- Insert hex. offset screwdriver (S) into the bore (5.2) in the lantern.
- Turn the inducer (58) until the hex. offset screwdriver (S) engages in the hex. socket head.  
This prevents the shaft (7) from turning out of position.
- Unscrew the inducer (58).
- Check the O-ring for the inducer (30) and replace if required.
- Screw the M 14 nut supplied on the shaft (7) in place of the inducer (58).
- Loosen the cap nuts (48) crosswise and draw off the pump cover (3).
- Check O-ring (35) of the housing and replace it, if necessary.

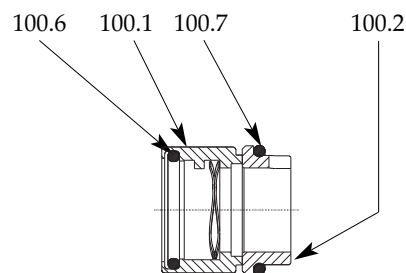
## 拆卸单机械密封 EW

## Dismantling the single-acting mechanical seal EW



机械密封/  
single-acting mechanical seal  
EW (A)

详图：单机械密封  
Detail: Single-acting mechanical seal



如果机械密封密封不严或磨损，就必须将其拆下并更换。



小心

拆卸机械密封时，不要损伤泵轴（7）！

- 检查 L 形内六角扳手是否将轴锁定。
- 拧下（9）盖形螺母。
- 检查盖形螺母 O 形环（30），必要时更换。
- 将叶轮（1）连同内置的随动件、动环（100.1）、O 形环（100.6）一起从轴（7）上取出。
- 将静环（100.2）和 O 形环（100.7）从泵壳（4）后部压出。

### 提示

只有在特定情况下，例如电机损坏时，才需要继续拆卸离心泵。详情参见“拆下电机上的离心泵”一章。安装见“安装”一章。

If the mechanical seal leaks or is worn, it must be dismantled and replaced.



CAUTION

Take care not to damage the pump shaft (7) when dismantling the mechanical seal !

- Check whether the hex. offset screwdriver is locking the shaft.
- Unscrew the cap nut (9).
- Check the cap nut O-ring (30) and replace it, if necessary
- Draw the impeller (1) together with integrated driver, slide ring (100.1) and O-ring (100.6) off the shaft (7).
- Press counter ring (100.2) and O-ring (100.7) out of the pump housing (4) from the rear side.

### NOTE

Further dismantling of the pump is required only in special cases, if for instance the motor is defective. Refer to the chapter "Removing the pump from the motor". For assembly refer to the "Assembly" chapter.

## 保养

- 检查机械密封的静环（100.2）、动环（100.1）及 O 形环（100.6, 100.7）是否磨损，损坏时更换 整个机械密封。

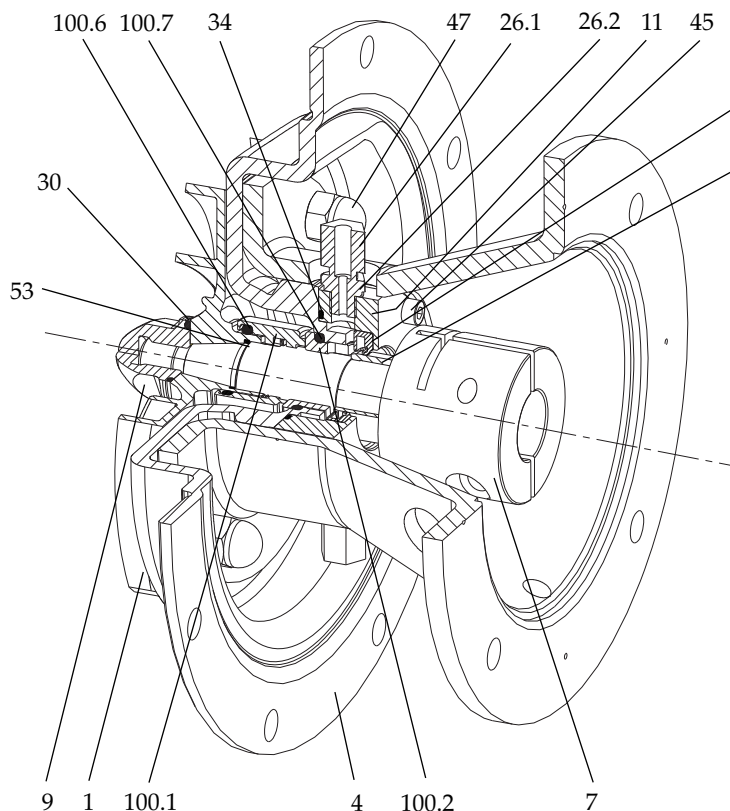
## Maintenance

- Check counter ring (100.2), slide ring (100.1) and O-rings (100.6, 100.7) of the mechanical seal for wear and tear, and in the case of damage change the complete mechanical seal.



## 拆卸冲洗式单机械密封 QU (A)

## Dismantling the flushed single-acting mechanical QU (A)



如果机械密封密封不严或磨损，就必须将其拆下并更换。



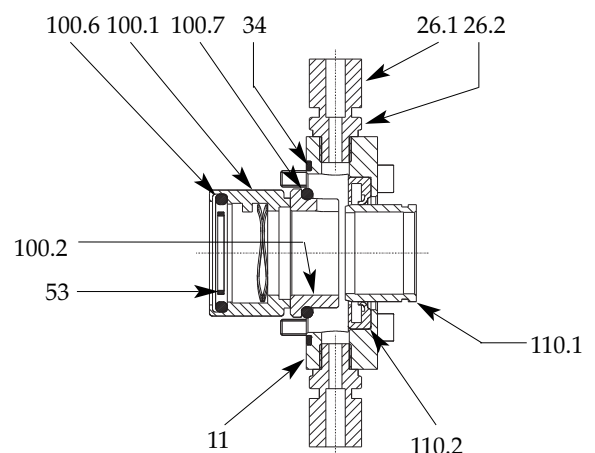
小心

拆卸机械密封时，不要损伤泵轴！

- 检查 L 形内六角扳手是否将轴锁定。
- 拧下螺母 (9)。
- 检查盖形螺母 O 形环 (30)，必要时更换。
- 将叶轮 (1) 连同内置的随动件、O 形环 (53)、动环 (100.1)、O 形环 (100.6) 一起从轴 (7) 上取出。
- 将锁紧螺母 (26.1) 从螺纹管接头 (26.2) 上拧下。
- 将螺纹管接头 (26.2) 从随动环支架 (11) 上拧下。
- 松开盖形螺母 (47)，然后将泵壳 (4) 向前推出。
- 松开内六角头螺栓 (45)，然后将其泵壳连同动环支架 (11) 一起拆卸。

详图：单机冲洗式机械密封

Detail: Single-acting mechanical seal, flushed



If the mechanical seal leaks or is worn, it must be dismantled and replaced.



CAUTION

Take care not to damage the pump shaft when dismantling the mechanical seal!

- Check whether the hex. offset screwdriver is locking the shaft.
- Unscrew the cap nut (9).
- Check the O-ring (30) of the cap nut and replace it, if necessary.
- Draw the impeller (1) together with integrated driver, O-ring (53), slide ring (100.1) and O-ring (100.6) off the shaft (7).
- Unscrew cap nut (26.1) from the screwed connection (26.2)
- Unscrew screwed connection (26.2) from slide ring carrier (11).
- Remove cap nut (47) and push the pump housing (4) out to the front.
- Loosen hex. socket screw (45) and remove pump housing together with slide ring carrier (11).

- 将径向轴密封环（110.2）随动环支架（11）上取下。
- 检查轴保护套（110.1）表面，损坏时更换。
- 将 O 形环（34）随动环支架（11）上取下。
- 将静环（100.2）和 O 形环（100.7）从泵壳（4）上取下。

#### 提示

只有在特定情况下，例如电机损坏时，才需要继续拆卸离心泵。详情参见“拆下电机上的离心泵”一章。安装见“安装”一章。

- Take radial shaft seal ring (110.2) out of the slide ring carrier (11).
- Check the surface of the shaft protection sleeve (110.1) for damages and replace, if necessary.
- Remove O-ring (34) from the slide ring carrier (11)
- Take counter ring (100.2) and O-ring (100.7) out of the pump housing (4).

#### NOTE

Further dismantling of the pump is required only in special cases, if for instance the motor is defective. Refer to the chapter "Removing the pump from the motor". For assembly refer to the "Assembly" chapter.

## 保养

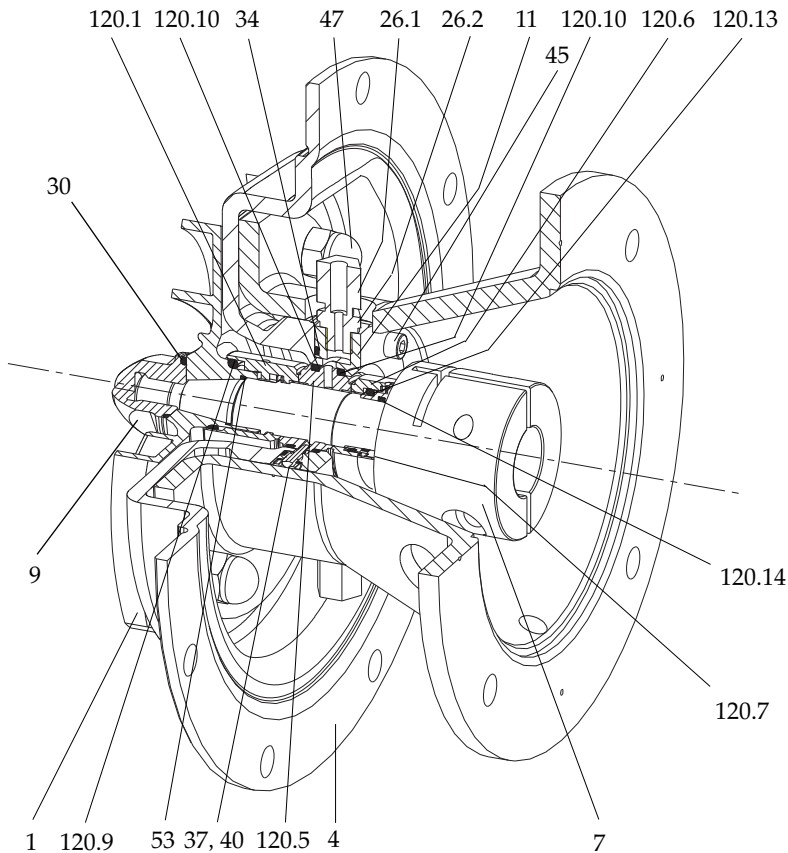
- 检查机械密封的静环（100.2）、动环（100.1）及 O 形环（100.6、100.7、53）是否磨损，损坏时更换整个机械密封。
- 检查动环支架（34）密封件，必要时更换。
- 更换径向轴密封环（110.2）。
- 检查轴保护套（110.1）是否损坏，必要时更换。  
轴保护套出厂时热装到泵轴上。如果轴保护套无法拔出，建议在这种情况下联系 GEA 公司 维修服务部。
- 将用过的机械密封件按专业技术规定废弃处理或寄回给 GEA 公司。

## Maintenance

- Check counter ring (100.2), slide ring (100.1) and O-rings (100.6, 100.7, 53) of the mechanical seal for wear and tear, and in the case of damage change the complete mechanical seal.
- Check the seals of the slide ring carrier (34) and replace if necessary.
- Replace the radial shaft ring (110.2).
- Check the shaft protection sleeve (110.1) for damage and replace, if necessary.  
The shaft protection sleeve is shrinked on to the pump shaft at the factory and can be removed with a special pulling-off tool only. In such a case we recommend you should contact the GEA Service Department.
- Properly dispose of the used parts of the mechanical seal or send them back to GEA.

## 拆卸双机械密封 DW (A)

## Dismantling the double-acting mechanical seal DW (A)



如果机械密封密封不严或磨损，就必须将其拆下并更换。



小心

拆卸机械密封时，不要损伤泵轴（7）！

- 检查 L 形内六角扳手是否将轴锁定。
- 拧下螺母（9）。
- 将叶轮（1）连同内置的随动件及 O 形环（53）一起并将动环（120.1）连同 O 形环（120.9）一起从轴（7）上取出。



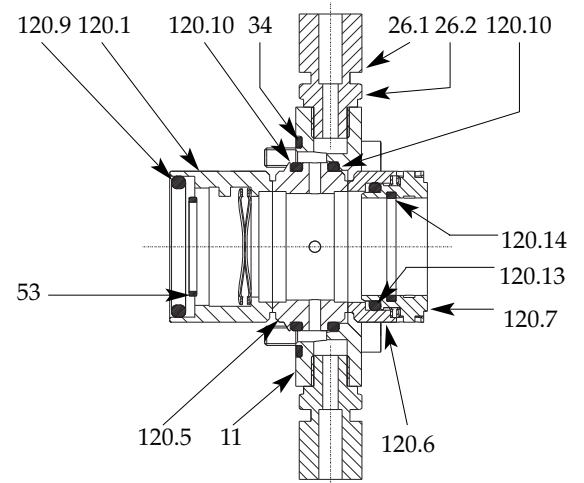
小心

使用工具时，注意防止大气侧机械密封的动环（120.6）和静环（120.5）受损。

- 将锁紧螺母（26.1）从螺纹管接头（26.2）上拧下。
- 将螺纹管接头（26.2）随动环支架（11）上拧下。

详图：双机械密封

Detail: Double-acting mechanical seal



If the mechanical seal leaks or is worn, it must be dismantled and replaced.



CAUTION

Take care not to damage the pump shaft (7) when dismantling the mechanical seal !

- Check whether the hex. offset screwdriver is locking the shaft.
- Unscrew the cap nut (9).
- Draw impeller (1) together with integrated driver and O-ring (53) as well as slide ring (120.1) together with O-ring (120.9) off the shaft (7).



CAUTION

If tools are used, take care not to damage the slide ring (120.6) and the counter ring (120.5) of the mechanical seal against the atmosphere

- Unscrew cap nut (26.1) from the screwed connection (26.2)
- Unscrew screwed connection (26.2) from the slide ring carrier (11).

- 松开盖形螺母（47）并且将泵壳（4）连同动环支架（11）和静环（120.5）一起向前推出。
- 将锁定螺栓（40）连同扁平密封圈（37）一起松开并且将静环（120.5）和 O 形环（120.10）随动环支架（11）上向前压出。
- 松开六角螺栓（45）并且将动环支架（11）从泵壳（4）上取下。
- 将 O 形环（34）随动环支架（11）上取下。
- 将大气侧动环（120.6）和 O 形环（120.13）从轴（7）上拔下。
- 检查随动件（120.7）和 O 形环（120.14），损坏时更换。

#### 提示

只有在特定情况下，例如电机损坏时，才需要继续拆卸离心泵。详情参见“拆下电机上的离心泵”一章。安装见“安装”一章。

- Loosen cap nut (47) and push out pump housing (4) together with slide ring carrier (11) and counter ring (120.5) to the front.
- Loosen locking screws (40) with flat seal ring (37) and push counter ring (120.5) and O-rings (120.10) out of the slide ring carrier (11) to the front.
- Loosen hex. socket screws (45) and remove slide ring carrier (11) from the pump housing (4).
- Remove O-rings (34) from the slide ring carrier (11).
- Draw slide ring (120.6) against the atmosphere and O-ring (120.13) off the pump shaft (7).
- Check driver (120.7) and O-ring (120.14) and replace, if damaged.

#### NOTE

Further dismantling of the pump is required only in special cases, if for instance the motor is defective. Refer to the chapter "Removing the pump from the motor". For assembly refer to the "Assembly" chapter.

## 保养

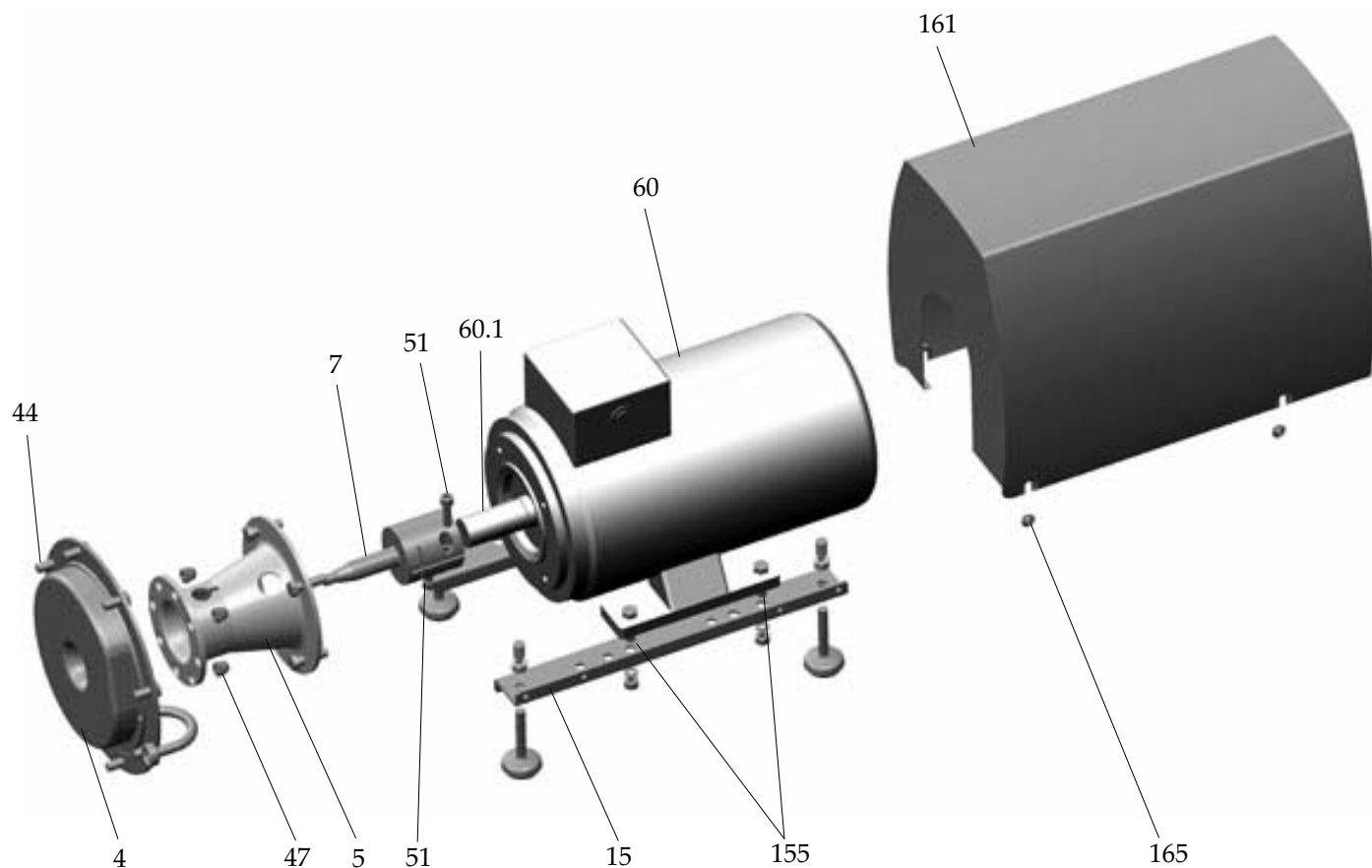
- 检查物料侧机械密封的静环（120.5）、动环（120.1）及 O 形环（120.9、120.10、53）是否磨损，必要时整个更换。
- 检查大气侧机械密封的静环（120.5）、动环（120.6）及 O 形环（120.13）是否磨损，必要时更换。
- 检查动环支架（11）密封件（34），必要时更换。
- 将用过的机械密封件按专业技术规定废弃处理或寄回给 GEA 公司。

## Maintenance

- Check counter ring (120.5), slide ring (120.1) and O-rings (120.9, 120.10, 53) of the mechanical seal against the product for wear and tear and replace them completely, if necessary.
- Check counter ring (120.5), slide ring (120.6) and O-rings (120.13) of the mechanical seal against the atmosphere for wear and tear and replace them, if necessary.
- Check the seal (34) of the slide ring carrier (11) and replace if necessary.
- Properly dispose of the used parts of the mechanical seal or send them back to GEA.

## 将离心泵从电机上拆下

## Separating the pump from the motor



- 松开螺栓 (165)，取下防护罩 (161)。
- 将 4 个盖形螺母 (47) 从联接架 (5) 上拧下。
- 将泵壳 (4) 从联接架 (5) 上拔下。
- 松开六角螺栓 (44)。
- 将联接架 (5) 从电机 (60) 上均匀地拉下来。



小心

在将轴从电机 (7) 上取下之前务必松开圆柱头螺栓 (51)，否则会造成轴受损。

- 将圆柱头螺栓 (51) 从轴 (7) 上松开。
- 拔下轴 (7)。
- 松开螺栓 (155)，并将半球帽支脚架 (15) 与电机 (60) 上分离。

- Loosen screws (165) and remove the hood (161) .
- Unscrew the 4 cap nuts (47) from the lantern (5).
- Draw-off pump body (4) from the lantern (5).
- Undo the hex. screws (44).
- Evenly draw off the lantern (5) from the motor (60).



CAUTION

Before drawing-off the shaft (7) from the motor, it is imperative to loosen the cheese head screws (51), or else the shaft gets destroyed.

- Remove the cheese head screws (51) from the shaft (7).
- Draw off the shaft (7).
- Undo screws (155) and separate the calotte feet frame (15) from the motor (60).

# 安装

## 清洁

在安装之前，必须仔细清洁所有部件，特别是接触物料的部件。不允许有任何脏物、油脂或其他颗粒物粘在部件上。

## 安装电机

在安装之前，必须注意应用 IM B35 结构型式的电机（包括支脚和法兰 FF）或 IM B34 结构型式的电机（包括支脚和法兰 FT），遵守允许的电机轴向力。还需要注意电机配备了 A 侧固定轴承。

在安装离心泵法兰之前，注意电机法兰适合离心泵法兰的自由旋转。

安装按照与拆卸相反的顺序进行。

- 用螺栓（155）将半球帽支脚的横梁（15）安装在电机（60）上。
- 检查轴端部和轴表面是否受损，必要时排除损坏。



小心

在安装泵轴（7）前，要清除电机轴（60.1）上的油脂。

- 将轴（7）推至电机的轴（60.1）上。
- 将圆柱头螺栓（51）在规定的轴孔处用手初步拧紧。  
**注意：**在稍后的步骤中设定轴向间隙。然后必须将圆柱头螺栓以给出的扭矩拧紧。

# Assembly

## Cleaning

Before assembly, all parts, especially parts in contact with product, must be thoroughly cleaned. No dirt, grease residues or other particles may be present on the parts.

## Mounting the motor

Prior to assembly, make sure that a motor type IM B35 (with foot and flange FF) or IM B34 (with foot and flange FT) will be used and that the required axial clearance is met and the permitted axial forces of the motor are observed. Also make sure that the motor is equipped with a fixed bearing on the A-side (output side).

In addition, attention must be paid before mounting the pump flange that the motor flange fits into the inside turning-out of the pump flange.

Assembly takes place in the same way as described for disassembly, but in reverse order.

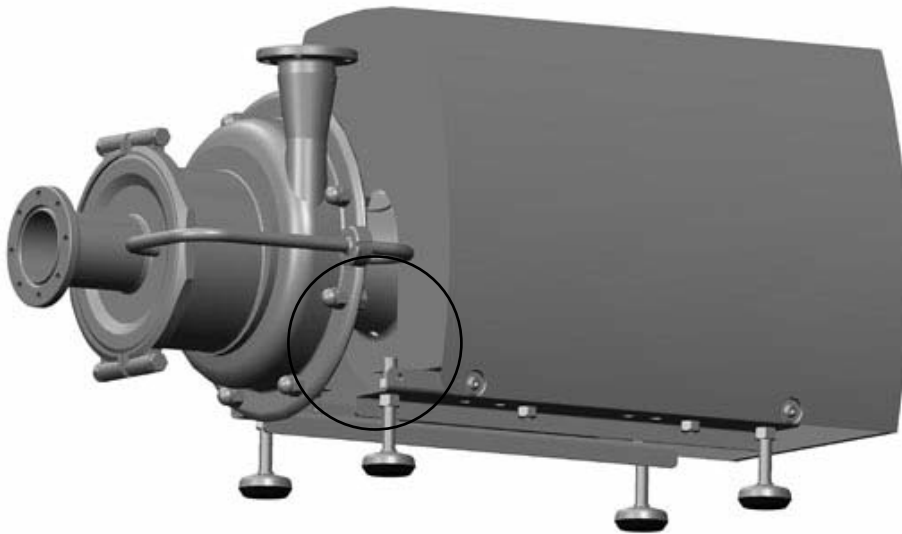
- Fix the calotte frame (15) to the motor (60) using the screws (155).
- Check the shaft end and the shaft surface for damage and remedy, if necessary.



**CAUTION**

Degrease the motor (60.1) shaft prior to mounting the pump shaft (7).

- Push the shaft of the pump (7) onto the shaft of the motor (60.1)
- Screw the cheese head screws (51) into the specified shaft bores and temporarily hand-tighten them.  
**Important note:** At a later stage, the axial gaps will be set. Afterwards remember to finally tighten the cheese head screws to the specified torque.



5.2



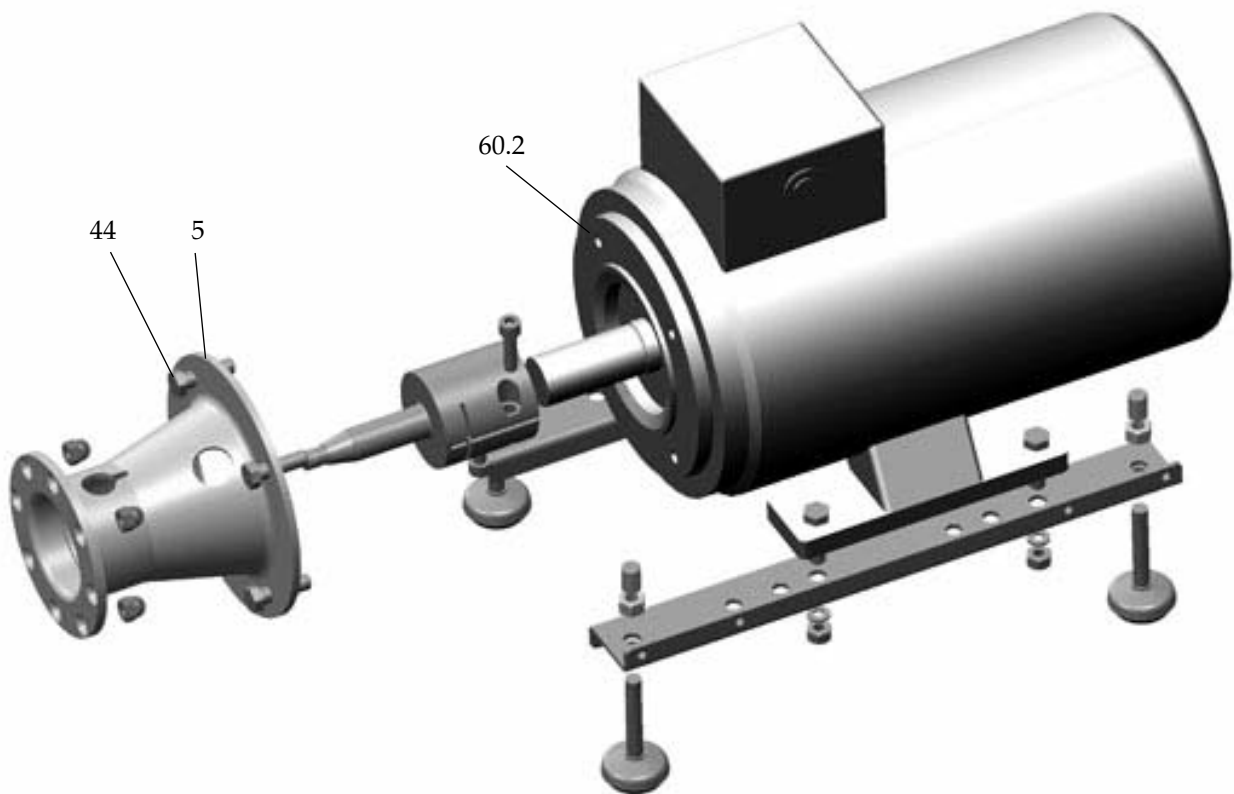
小心

安装联接架 (5) 时, 注意排水孔 (5.2) 一直朝下。



**CAUTION**

When mounting the lantern (5) take care that the drain bore (5.2) always points downwards.



- 用 4 根螺栓 (44) 将联接架 (5) 安装在电机的法兰 (60.2) 上, 对 B35 型电机而言, 还要装上垫片和螺母。

- Fix lantern (5) to the flange (60.2) of the motor using 4 screws (44), in case of B35 motors including washers and nuts.



## 安装机械密封 (A)

将机械密封 (A) 按照与拆卸时相反的顺序进行安装。同时必须注意下列提示：



小心

在干净的条件下非常仔细地执行安装。切勿用力过猛！否则存在残留变形及陶瓷部件破碎的危险。

- 为了减小在安装过程中产生的摩擦，给 O 形环的所有滑动表面涂上硅脂润滑。

GEA 公司建议使用 Rivolta F.L.G. MD-2 和 PARALIQ GTE 703。这些润滑剂为食品级并且耐啤酒泡沫，注册为 NSF-H1 (USDA H1)。

PARALIQ GTE 703 (零部件编号 413-064) 和 Rivolta F.L.G. MD-2 (零部件编号 413-071) 可向 GEA 公司订购。



小心

在安装前要清除动环密封圈表面上的油脂。

- 在 O 形环上涂抹少量的硅脂润滑。
- 注意正确放入 O 形环。
- 用酒精清除动环密封圈表面上的油脂。
- 将螺母 (9) 以规定的扭矩 M: 20 Nm 拧紧。



小心

用 4 个盖形螺母 (47) 将联接架 (5) 装到泵壳 (4) 上时，必须注意盖形螺母要以  $M_{\text{最小}} 35 \text{ Nm}$  /  $M_{\text{最大}} 39 \text{ Nm}$  拧紧扭矩拧紧。

## Mounting the mechanical seal (A)

Mount the mechanical seal (A) in reverse order to the dismantling procedure, observing the following instructions :



CAUTION

Mount the O-rings under clean conditions and very carefully! Never use force! There is a risk of permanent deformation and break of ceramic parts.

- When mounting the O-rings, wetten the sliding faces with silicone grease for reducing the friction.

GEA recommends Rivolta F.L.G. MD-2 and PARALIQ GTE 703. These lubricants are approved for foodstuff and are resistant to beer froth and have NSF-H1 (USDA H1) registration.

PARALIQ GTE 703 can be ordered from GEA under part no. 413-064 and Rivolta F.L.G. MD-2 under part no. 413-071.



CAUTION

Degrease the sliding surfaces of the mechanical seal prior to installation.

- Grease O-rings lightly with silicone fat.
- Make sure that O-rings fit properly.
- Degrease the sliding surfaces of the mechanical seal using alcohol.
- Tighten nut (9) to specified torque M: 20 Nm.



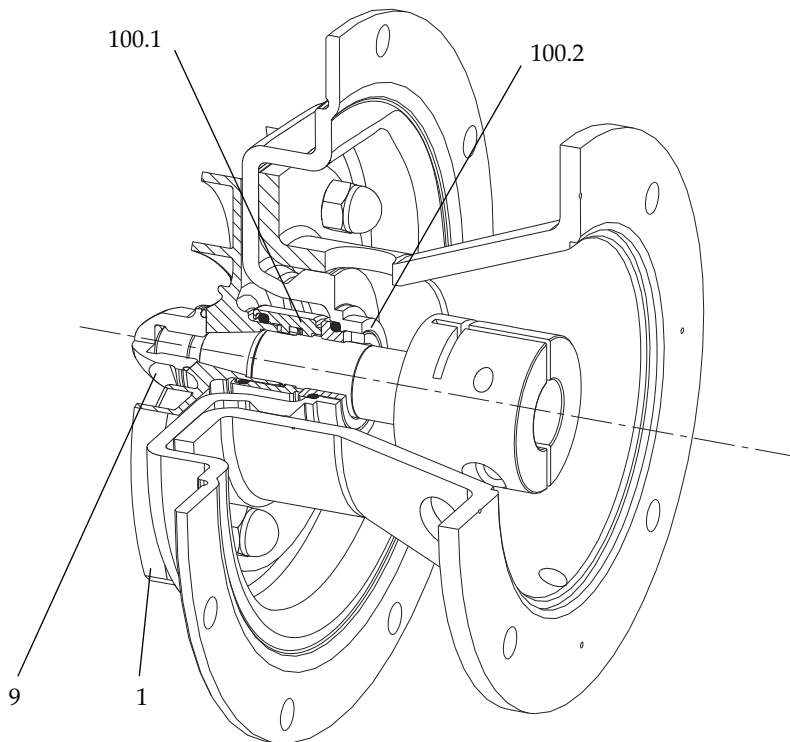
CAUTION

When fixing the lantern (5) to the pump housing (4) using the 4 cap nuts (47), make sure that the cap nuts are tightened to a torque of  $M_{\text{min}} 35 \text{ Nm}$  /  $M_{\text{max}} 39 \text{ Nm}$ .



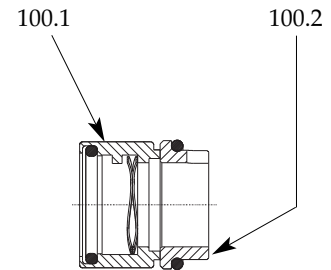
## 单机械密封 EW (A)

## Single-acting mechanical seal EW (A)



机械密封  
single-acting mechanical seal  
EW (A)

详图：单机械密封  
*Detail: Single-acting mechanical seal*



小心

注意 2 个动环（100.1）上的随动销与内置随动件一起伸入预设的叶轮（1）的槽中。

动环（100.1）和静环（100.2）的滑动面必须没有油脂。



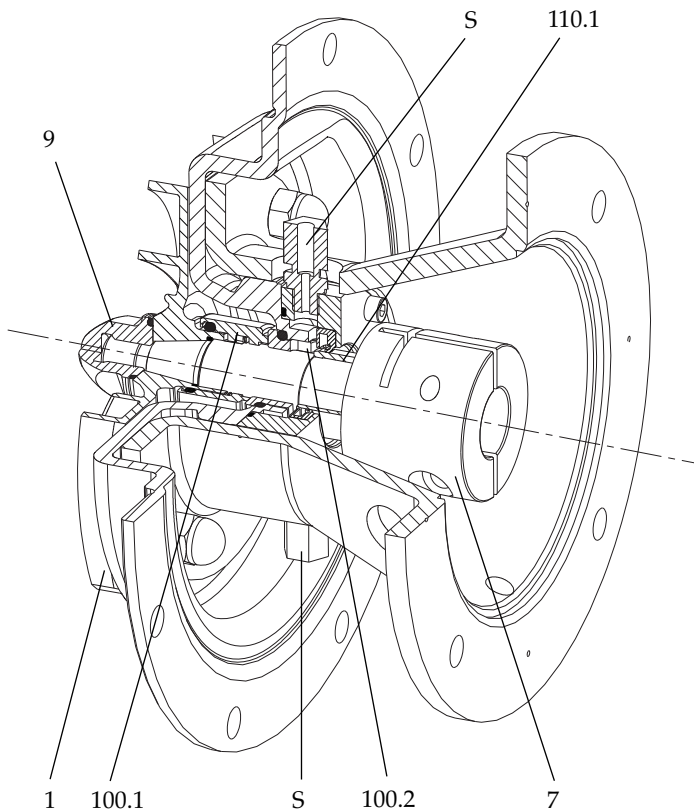
CAUTION

Make sure that the 2 drive pins in the slide ring (100.1) catch into the relevant grooves of the impeller (1) with integrated driver.

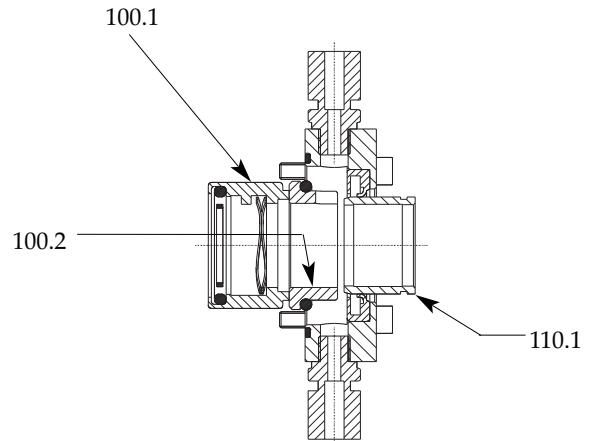
The sliding surfaces of the slide ring (100.1) and the counter ring (100.2) must be free from grease.

## 冲洗式单机械密封 QU (A)

## Single-acting mechanical seal, flushed QU (A)



详图：单机冲洗式械密封  
Detail: Single-acting mechanical seal, flushed



**小心**

2 个冲洗孔 (S) 必须处于垂直方向，以防气体从冲洗腔中泄漏。



**CAUTION**

The 2 flush bores (S) must point in vertical direction so that air can escape from the flush chamber.



**小心**

注意已将轴保护套 (110.1) 挤压至轴 (7) 的轴肩极限位置。



**CAUTION**

Make sure that the shaft protection sleeve (110.1) is pressed up to the limit stop of the shafts shoulder (7)



**小心**

注意 2 个动环 (100.1) 上的随动销与内置随动件一起伸入预设的叶轮 (1) 的槽中。  
动环 (100.1) 和静环 (100.2) 的滑动面必须没有油脂。

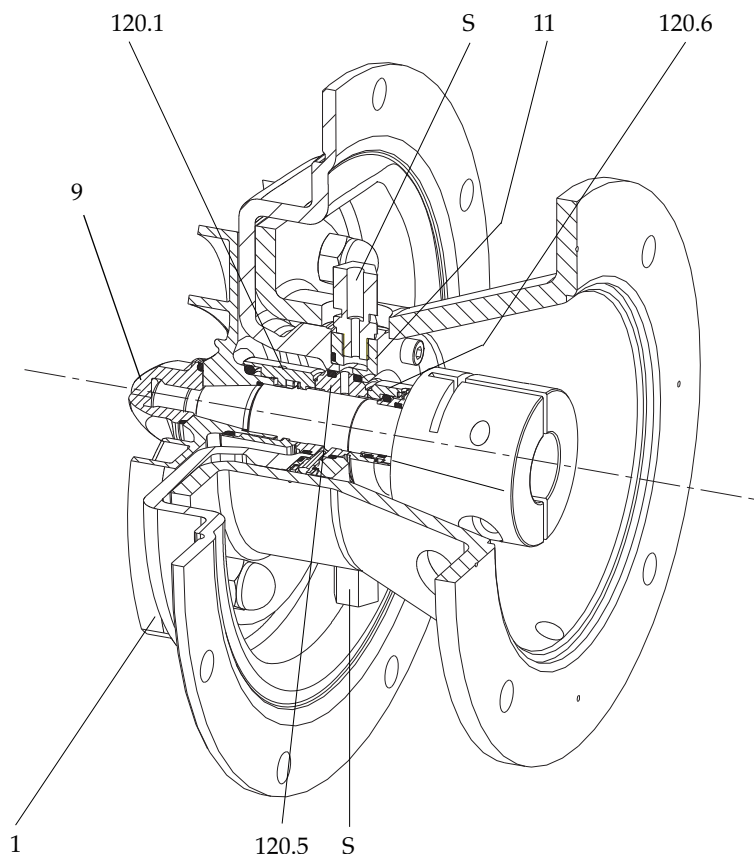


**CAUTION**

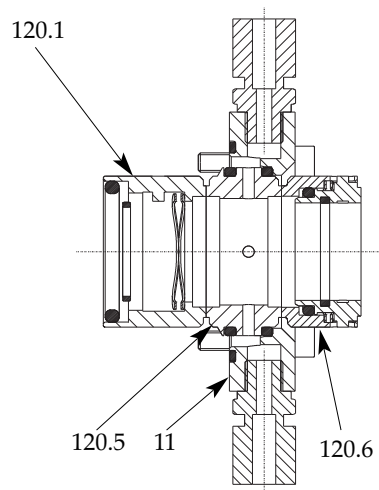
Make sure that the 2 drive pins in the slide ring (100.1) catch into the relevant grooves of the impeller (1) with integrated driver.  
The sliding surfaces of the slide ring (100.1) and the counter ring (100.2) must be free from grease.

## 双机械密封 DW (A)

## Double-acting mechanical seal DW (A)



详图：双机械密封  
Detail: Double-acting mechanical seal



小心

2 个冲洗孔 (S) 必须处于垂直方向，以防气体从冲洗腔中泄漏。



CAUTION

The 2 flush bores (S) must be in vertical direction so that air can escape from the flush chamber.



小心

大气侧动环 (120.6) 必须经由泵壳 (4) 被压入动环支架 (11)，使动环支架 (11) 的锁定孔与大气侧动环 (120.6) 的孔一致。



CAUTION

The slide ring (120.6) against the atmosphere must be pressed through the pump housing (4) into the slide ring carrier (11) and adjusted so that the locking bore of the slide ring carrier (11) complies with the bore of the slide ring (120.6).



小心

注意 2 个动环 (120.1) 上的随动销与内置随动件一起伸入预设的工作轮 (1) 的槽中。  
动环 (120.1、120.6) 和静环 (120.5) 的滑动面必须没有油脂。



CAUTION

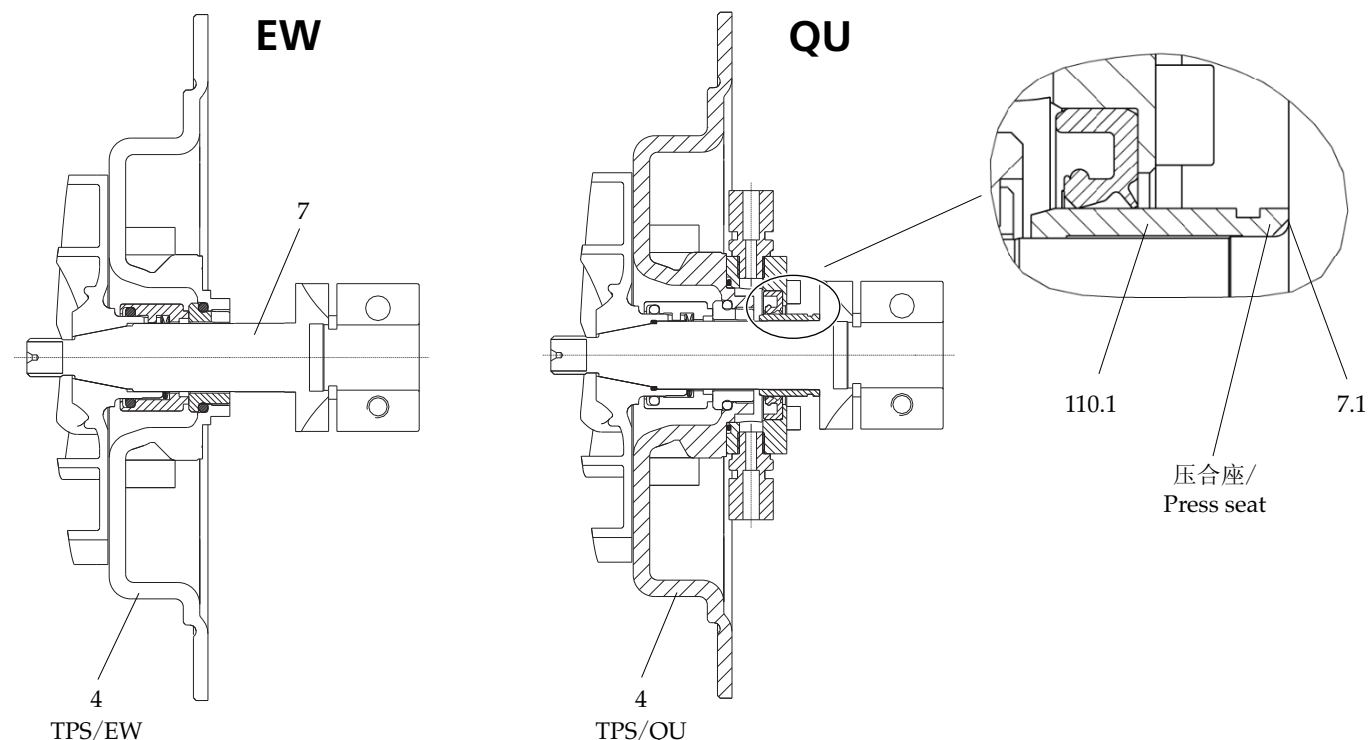
Make sure that the 2 drive pins in the slide ring (120.1) catch into the relevant grooves of the impeller (1) with integrated driver.  
The sliding surfaces of the slide rings (120.1, 120.6) and the counter ring ((120.5) must be free from grease.

## 改装机械密封

将单机械密封 EW 改装成冲洗式机械密封 QU

## Modifying the mechanical seal

Converting a single-acting mechanical seal EW to a mechanical seal, flushed QU



TPS 系列离心泵的机械密封可由 EW 版改装到 QU 版。

同时必须注意以下几点：

- 将泵壳 TPS/EW (4) 更换成泵壳 TPS/QU 版型或改装现有的壳体，预先规定见下页“EW 改装成 QU”

- 泵轴 (7) 必须配有轴保护套 (110.1)。与此同时，轴保护套必须被压装至轴肩 (7.1) 的极限位置。最简单的压装方法是加热轴保护套和用合适的软空芯轴（例如黄铜制）均匀地套装。如果上述方法行不通，我们建议请 GEA 的工作人员来完成此项工作。

- 如果现有的机械密封 EW 完好无损，可完全使用。

拆卸和安装机械密封按照上一页说明进行。

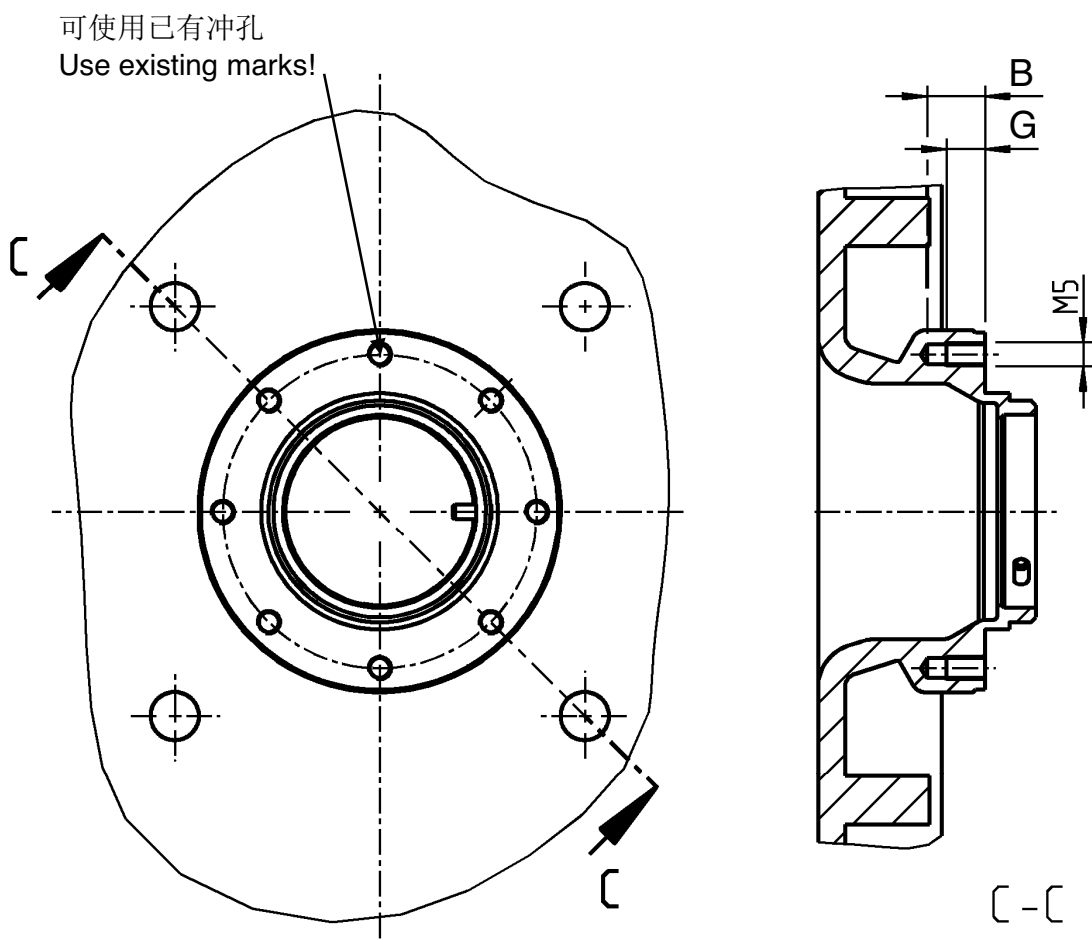
The mechanical seal of the centrifugal pump TPS may be converted from Version EW to Version QU.

For this purpose proceed as follows:

- Change the pump housing TPS/EW (4) against the version TPS/QU or rework the existing housing, for specifications see Rework EW – QU” on the following page.
- Provide the pump shaft (7) with the shaft protection sleeve (110.1). This is done by pressing the shaft protection sleeve up to the limit of the shaft's shoulder (7.1). Forcing on by pressure is simplified by heating the shaft protection sleeve and driving it evenly onto the shaft using a suitable soft hollow mandrel made of brass. If any such tools are not available, we recommend that the conversion should be carried out at GEA.
- The removed mechanical seal EW can be reused, provided it is undamaged.

Dismounting and mounting of the mechanical seal is carried out as described on the previous pages.

用于安装机械密封冲洗单元的钻孔（单机冲洗式）  
Drilling to install a flushing unit for mechanical seals (single acting flushed)

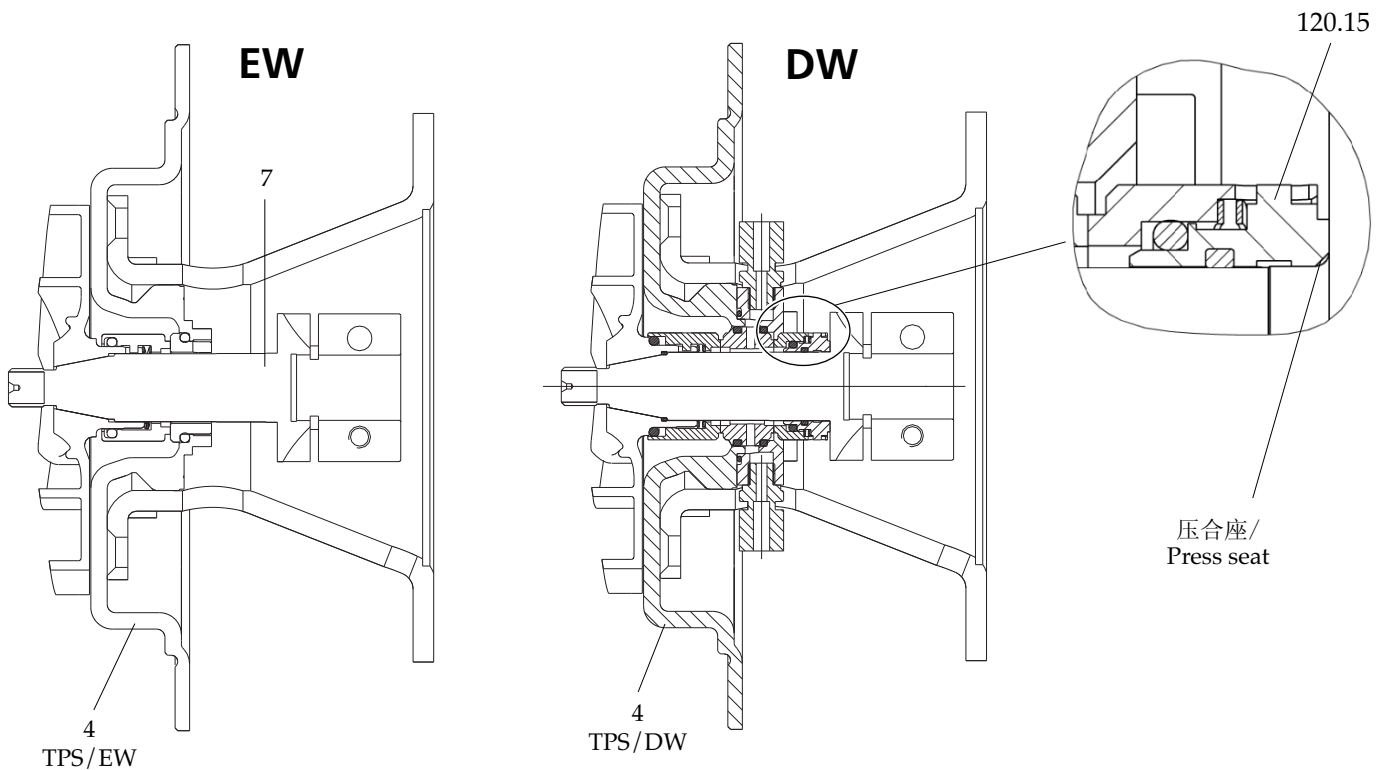


固定冲洗单元螺纹的安装示意图  
Sketch for setting of threads for the adaption of the flushing unit

TP 系列离心泵 / Centrifugal pump TP			1020	2030	1540	2050	3050	5060	2575	7060	8080	16040
TPS 系列离心泵 / Centrifugal pump TPS				2030			3050				8080	
孔深 / borehole	B	mm	12	12	10.5	12	12	12	12	12	12	12
有效螺纹深度 / Usable thread	G	mm	8	8	8	8	8	8	8	8	8	8

将单机械密封 EW 改装成双机械密封 DW

Converting a single-acting mechanical seal EW to a double-acting mechanical seal DW



TPS 系列离心泵的机械密封可由 EW 版改装到 DW 版。

同时必须注意以下几点：

- 泵壳 TPS/EW (4) 版必须更换成泵壳 TPS/DW 版。
- 泵轴 (7) 必须配有随动件 (120.15)。与此同时，随动件必须被压装至轴肩 (7.1) 的极限位置。最简单的压装方法是加热随动件 (120.15) 和用合适的软空芯轴（例如黄铜制）均匀地套装。如果上述方法行不通，我们建议请 GEA 来完成此项工作。
- 不能使用现有的机械密封 EW。可换上机械密封 DW。

拆卸和安装机械密封按照上一页说明进行。

The mechanical seal of the centrifugal pump TPS may be changed from Version EW to Version DW

For this purpose proceed as follows:

- Change the pump housing TPS/EW (4) against the version TPS/DW.
- Provide the pump shaft (7) with a driver (120.15). This is done by pressing the driver up to the limit of the shaft's shoulder (7.1). Forcing on by pressure is simplified by heating the driver (120.15) and driving it evenly onto the shaft using a suitable soft hollow mandrel made of brass. If any such tools are not available, we recommend that the conversion should be carried out at GEA.
- The removed mechanical seal EW cannot be used. It is replaced by the mechanical seal DW.

Dismounting and mounting of the mechanical seal is carried out as described on the previous pages.

# 检查轴向间隙



小心

每次安装离心泵时，必须按照数据表调整叶轮（1）与泵盖（3）之间的轴向间隙（S1）。如果轴向间隙设定不正确，叶轮就有可能碰到泵壳，致使两个部件受损。

离心泵型号	轴向间隙 S1 介于 泵盖 (3) 与叶轮 (1) 之间
TPS 2030	0.3 mm
TPS 3050	0.5 mm
--	--
TPS 8080	0.5 mm

# Checking the axial gap

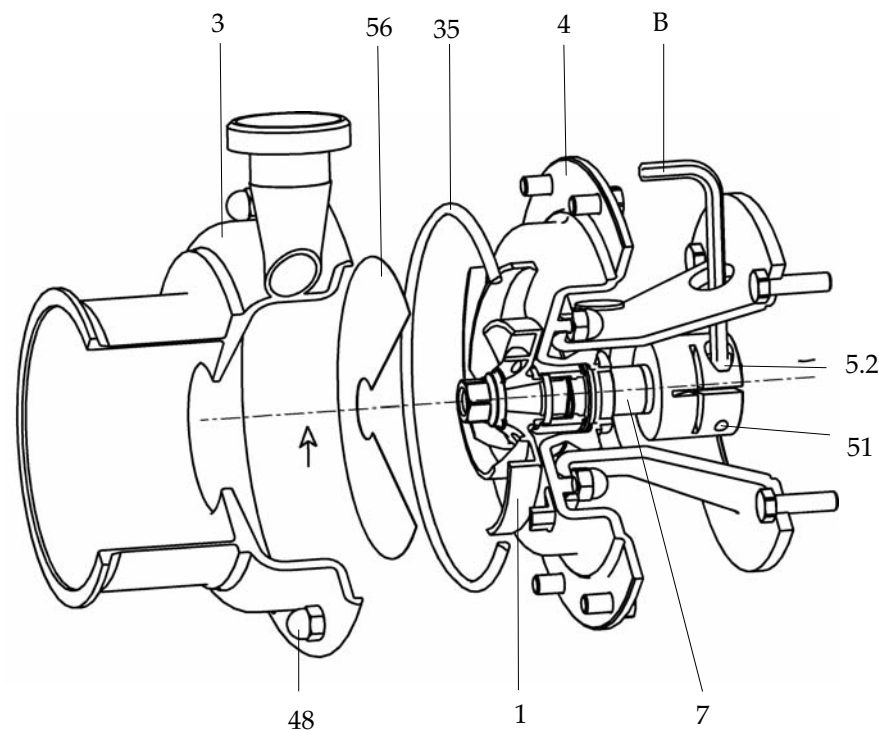


CAUTION

For pump assembly, the axial gap (S1) between impeller (1) and pump cover (3) needs to be adjusted according to the table.

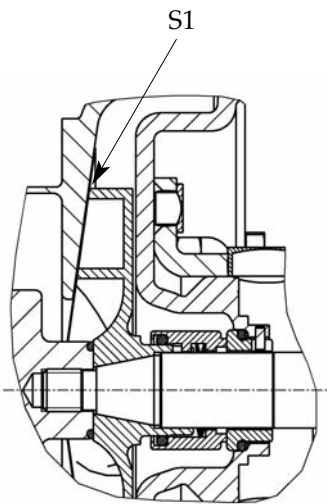
If the axial gap is not correctly adjusted, the impeller may hit the pump housing and both parts may get damaged.

Pump type	Axial gap S1 between cover (3) and impeller (1)
TPS 2030	0.3 mm
TPS 3050	0.5 mm
--	--
TPS 8080	0.5 mm



用间隔垫圈调整轴向间隙（S1）！

- 将 L 形内六角扳手（B）插入联接架的孔（5.2），将叶轮（1）旋转至 L 形内六角扳手（B）卡入内六角头（51）。
- 松开圆柱头螺栓（51），以便将轴（7）与电机轴分离。
- 将叶轮（1）连同轴（7）一起向前拉几毫米。
- 将间隔垫圈（56）放到工作轮前，用 4 根螺栓（48）（无需 O 形环（35））将泵盖（3）均匀地分布到孔圈上后紧固。这样，叶轮连同轴一起推入正确的设定位置。



The axial gap (S1) is adjusted by means of a distance plate!

- Insert hex. offset screwdriver (B) into the bore (5.2) in the lantern and turn impeller (1) until the hex. offset screwdriver (B) locks into place in the hex. socket of the cheese head screw (51).
- Loosen the cheese head screws (51) in order to separate the shaft (7) from the motor shaft.
- Pull forward the impeller (1) together with the shaft (7) by some millimetres.
- Place distance plate (56) in front of the impeller and fix pump cover (3) – without O-ring (35) – with 4 screws (48) that are evenly distributed over the screw hole circle. This pushes the impeller together with the shaft into the correct adjustment position.



- 将泵轴（7）上的圆柱头螺栓（51）以规定的拧紧扭矩拧紧（见表格）。

圆柱头螺栓 (51)	拧紧扭矩 (Nm)
M8	35
M10	60
M12	95

- 拧下螺栓（48）并且取下泵盖（3）。



在进行下一步组装之前，务必将间隔垫圈（56）取下。

- 取下间隔垫圈（56）。叶轮必须运转自如。

### 安装泵盖

- Tighten the cheese head screws (51) on the pump shaft (7) to the specified torque (see table below).

Cheese head screw (51)	Torque (Nm)
M8	35
M10	60
M12	95

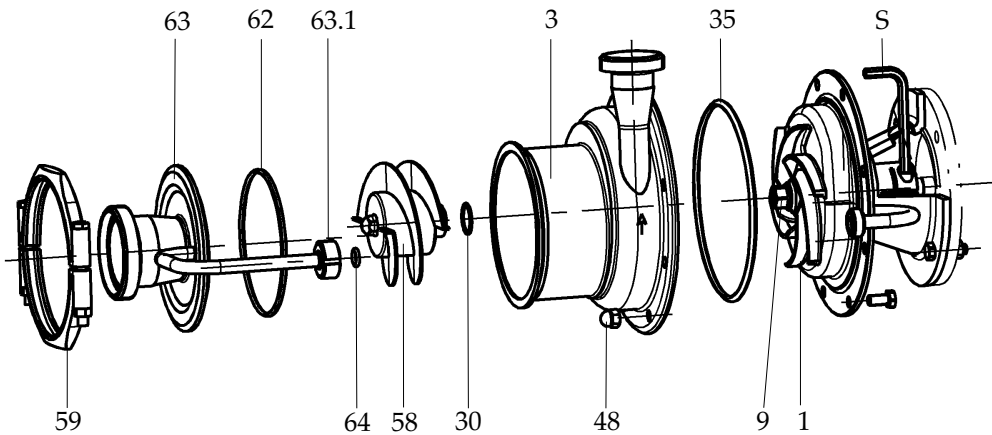
- Remove screws (48) and pump cover (3).



It is imperative to remove the distance plate (56) prior to assembly.

- Remove the distance plate (56). Free-running off the impeller must be ensured.

### Mounting the pump cover



- 在 O 形环（35）上涂抹润滑脂，然后将其放在泵壳上。
- 安装泵盖（3）。同时将所有盖形螺母（48）均匀且交叉地拧紧并且注意下列拧紧扭矩：

结构尺寸	盖形螺母的拧紧扭矩 (Nm)	
	泵盖（48）	
	M <sub>最小</sub>	M <sub>最大</sub>
TPS 2030	35	39
TPS 3050	60	74
--	--	--
TPS 8080	95	100

- Grease O-ring (35) and insert into the pump housing.
- Mount the pump cover (3) and evenly tighten all cap nuts (48) cross-wise, observing the following torques:

Pump size	Torques (Nm) for cap nut	
	Pump cover (48)	
	M <sub>min</sub>	M <sub>max</sub>
TPS 2030	35	39
TPS 3050	60	74
--	--	--
TPS 8080	95	100



- 将 L 形内六角扳手 (S) 插入联接架的孔 (5.2) 内。
- 旋转工作轮 (1)，直至 L 形内六角扳手 (S) 卡入内六角头中。  
由此防止轴 (7) 意外转动。
- 将螺母 (9) 从轴 (7) 上拧下。
- 给 O 形圈 (30) 涂上润滑脂，然后将其放入叶轮 (58) 上指定的槽内。
- 将叶轮 (58) 拧到轴 (7) 上，并将其以以下拧紧扭矩拧紧：

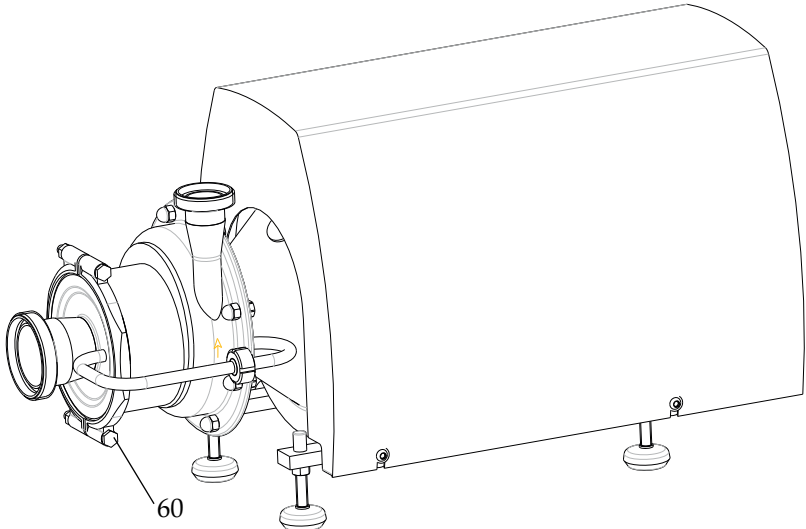
结构尺寸	盖形螺母 (58) 的拧紧扭矩 (Nm)	
	叶轮 (58) / 螺母 (9) M <sub>最小</sub>	M <sub>最大</sub>
TPS 2030	45	50
TPS 3050	55	60
--	--	--
TPS 8080	90	95

- 将 L 形内六角扳手 (S) 从联接架的孔 (5.2) 中取出。
- 给 O 形圈 (30) 涂上润滑脂，并将其放入法兰 (63) 的螺纹管接头 DN 10 中。
- 给 O 形圈 (62) 涂上润滑脂，然后将其放入法兰 (63) 上指定的槽内。
- 将法兰 (63) 插入泵盖 (3) 上。同时注意管路连接件 DN 10 安装正确。手动旋紧锁紧螺母 (63.1)。
- 安装半圆环时，要确保螺栓 (60) 保持水平状态。

- Insert a hex offset screwdriver (S) into the bore in the lantern (5.2).
- Turn the impeller (1) until the hex offset screwdriver (S) engages in the hex socket head.  
This prevents the shaft (7) from turning out of position.
- Screw off the (9) nut from the shaft (7).
- Grease the O-ring (30) and place it in the groove provided on the inducer (58).
- Screw the inducer (58) onto the shaft (7) and tighten it to the following torque:

Pump size	Torques (Nm) Cap nut (58)	
	Inducer (58) / nut (9) M <sub>min</sub>	M <sub>max</sub>
TPS 2030	45	50
TPS 3050	55	60
--	--	--
TPS 8080	90	95

- Remove the hex. offset screwdriver (S) from the lantern bore.
- Grease the O-ring (30) and insert it into the DN 10 pipe union on the flange (63).
- Grease the O-ring (62) and place it in the groove provided on the flange (63).
- Fit the flange (63) in the pump cover (3). Pay attention that the DN 10 pipe union is fitted correctly. Hand-tighten the cap nut (63.1).
- Mount the semi-annular clamps (59) so that the screws are horizontal.



- 以 45 Nm (33 lbft) 扭矩拧紧半圆环 (59) 上的螺母。
- 拧紧锁紧螺母 (63.1)。
- Tighten the nuts of the semi-annular clamps (59) with a torque of 45 Nm (33 lbft).
- Mount nut (63.1).

# 排放阀 VTP

## 用途

排放阀 VTP/LM 将用于清空 GEA Hilge TP 系列离心泵中的余料（彻底清空）。  
排放阀可用手操作或以气动方式运行。

## 加装



小心

将排放阀加装到 GEA Hilge TP 系列离心泵时，必须将该离心泵清空、清洁和冲洗。  
必须防止管路中的介质重新流入离心泵内。  
如果离心泵中留有危险液体，则在清空时必须注意确保按专业技术规定搬运和废弃处理这些液体。

- 必须用为安装排放阀而设计的泵盖更换原来的泵盖，见备件明细表。
- 排放阀安装在相应泵盖的最低处。

# Drain Valve VTP

## Designated Use

The drain valve VTP/LM will be used on GEA Hilge centrifugal pumps TPS for complete drainage of the pump housing.  
The drain valve can be actuated manually or operated pneumatically.

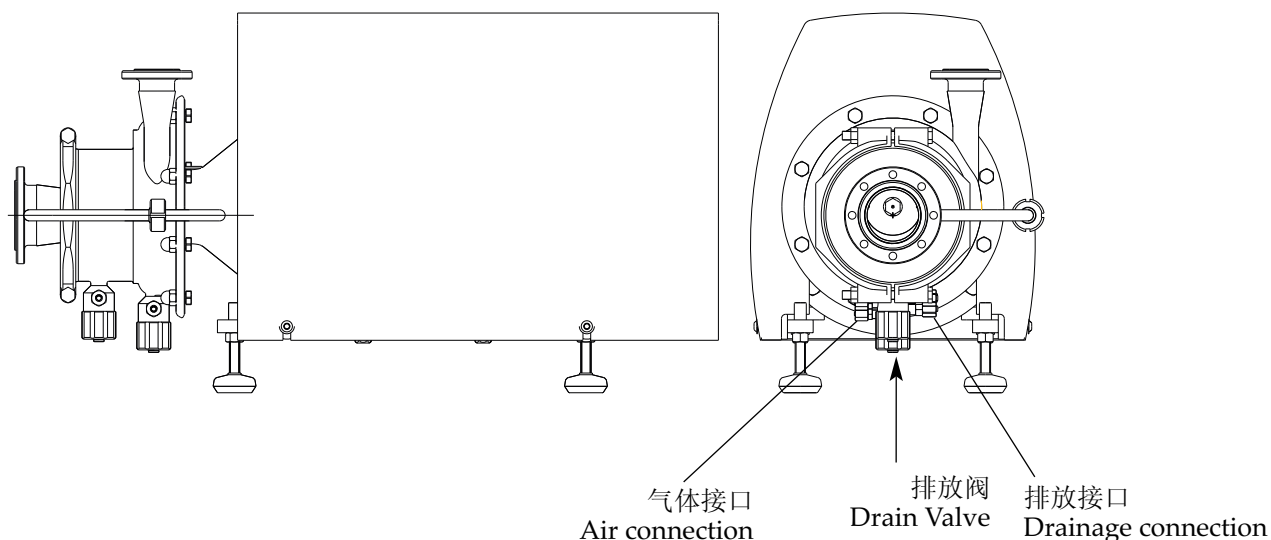
## Additional Assembly



CAUTION

When retrofitting the drain valve into the GEA Hilge centrifugal pump TP the pump must completely be drained, rinsed or cleaned.  
Entry of medium from the pipe must be prevented.  
If the pump contains dangerous liquids, take care that these liquids are properly drained, handled and disposed of.

- The pump cover is to replace by a cover designed for the installation of the drainage valve (see spare parts list).
- The drain valve must be installed at the bottom of the pump cover.



# 故障、原因、 补救措施



小心

发生功能故障时，立即关断排水阀并且采取措施，以防止意外接通。只允许由具备资质的人员按照安全提示排除故障。

故障	原因	补救措施
排放阀不工作	控制系统故障	检查设备配置
	无压缩空气 压缩空气过小	检查压缩空气供给系统 检查空气软管是否通畅、是否密封
	电气设备故障	检查控制系统/外部调节器和电缆布线
排放阀密封不严	驱动装置中的 O 形环损坏	更换 O 形环
	污物/异物在 阀座、阀盘与 O 形环之间	清洁阀座、阀盘 O 形环
排放阀关闭过慢	驱动装置 (8) 和阀体 (9) 中的 O 形环干燥 (摩擦损耗)	给 O 形环涂=上润滑脂
出口处泄漏	阀座上的 O 形环 (10) 损坏	更换阀座上的 O 形环 (10)

## 维护

### 检查

在维护间隔期间，必须对排放阀的密封性和性能进行监控。

# Malfunction, Cause, Remedy



CAUTION

In the event of malfunctions immediately deactivate the valve and secure it against inadvertent reactivation. Defects may only be rectified by qualified personnel observing the safety instructions.

Malfunction	Cause	Remedy
Drain valve does not work	Error in the control system	Check the plant configuration
	No compressed air Air pressure too low	Check the air supply Check the air hoses for free passage and leaks
	Error in the electric system	Check actuation / external controller and routing of electric lines
Drain valve does not close	O-rings in the actuator defective	Replace the O-rings
	Dirt/foreign materials between valve seat, valve disk and O ring	Clean the valve seat valve disk and O-ring
Drain valve closes too slowly	O-rings dry in the actuator (8) and in the valve housing (9) (friction losses)	Grease the O-rings
Leakage at the outlet	O-ring (10) at valve seat defective	Replace O-ring (10) at valve seat

## Maintenance

### Inspections

Between the maintenance periods, the drain valves must be checked for leakage and proper function.

## 维护周期

为了确保排放阀达到最高运行安全性，应在较长间隔期内更换所有的易损件。

只能由用户来确定，因为实际的维护周期取决于如下使用条件，例如：

- 每天使用时间
- 开关频度
- 物料类型和温度
- 清洁剂类型和温度
- 使用环境。

应用	维护周期 (参考值)
介质温度 60 °C 至 130 °C 140 °F 至 266 °F	约每 3 个月一次
介质温度 < 60 °C (< 140 °F)	约每 12 个月一次

## Maintenance intervals

To ensure the highest operational reliability of the drain valves, all wearing parts should be replaced at longer intervals.

The actual maintenance intervals can only be determined by the plant user, since they depend on the operating conditions, for instance

- daily period of operation
- switching frequency
- type and temperature of the product
- type and temperature of the cleaning solution
- ambient conditions

Application	Maintenance interval (recommendations)
Media at temperatures of 60 °C to 130 °C 140 °F to 266 °F	every 3 months
Media at temperatures < 60 °C (< 140 °F)	every 12 months

## 拆卸

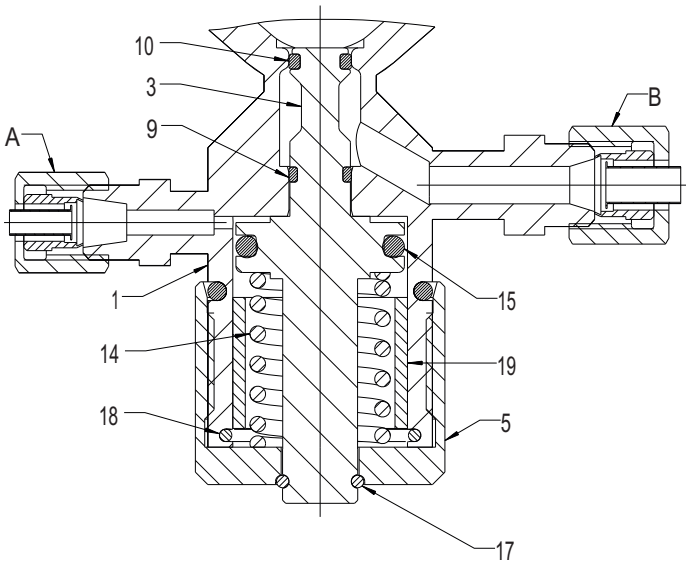
- 以气动方式打开阀门。
- 取出卡紧环 (17)。
- 关闭阀门。
- 将气动软管从气动连接 (A) 处松开。
- 将排放软管 (如果有的话) 从排放连接 (B) 处松开。



**小心**  
压缩弹簧 (14) 处于预张紧状态。在拧松驱动器罩盖时，必须小心地将其同时松开。

- 将驱动器罩盖 (5) 用手逆时针旋转拧下。
- 取出压缩弹簧 (14)。
- 将卡紧环 (18) 从壳体 的拆卸孔中压出。
- 将阀盘 (3) 和套筒 (19) 从壳体 (1) 中取下。
- 取下 O 形环 (9、10、15)。

TPS 系列离心泵上  
at the Centrifugal pump TPS



## Dismantling

- Open valve pneumatically.
- Remove snap ring (17).
- Close valve.
- Loose air hose at pneumatic connection (A).
- Loose drain hose – if exists – at drain connection (B).



**CAUTION**  
The pressure spring (14) is pretensioned and needs to be cautiously relieved when turning off the actuator cover.

- Unscrew actuator cover (5) manually by turning it counterclockwise.
- Remove the pressure spring (14).
- Remove the snap ring (18) out of the housing through the dismantling hole.
- Pull the valve disk (3) with sleeve (19) out of the housing (1).
- Withdraw O-rings (9, 10, 15).

## 安装

• 给部件涂上润滑脂！  
GEA 公司 建议使用  
Rivolta F.L.G. MD-2 和  
PARALIQ  
GTE 703。这些润滑剂为食  
品级并且耐啤酒泡沫，注册  
为 NSF-H1 (USDA H1)。  
PARALIQ GTE 703  
零部件编号 413-064)  
和 Rivolta F.L.G.  
MD-2 (零部件编号  
413-071) 可向  
GEA 公司订购。

- 将 O 形环 (9、10、15)  
装入阀盘 (3)。



**小心**

阀盘杆、阀盘 (3) 和阀座  
均属精密范畴。不得受损  
！

- 将阀盘 (3) 小心地推入阀箱 (1) 内。
- 装入套管 (19)。
- 将卡紧环 (18) 装入阀箱 (1) 中的预设凹槽中。
- 将弹簧 (14) 装入阀箱 (1) 中。

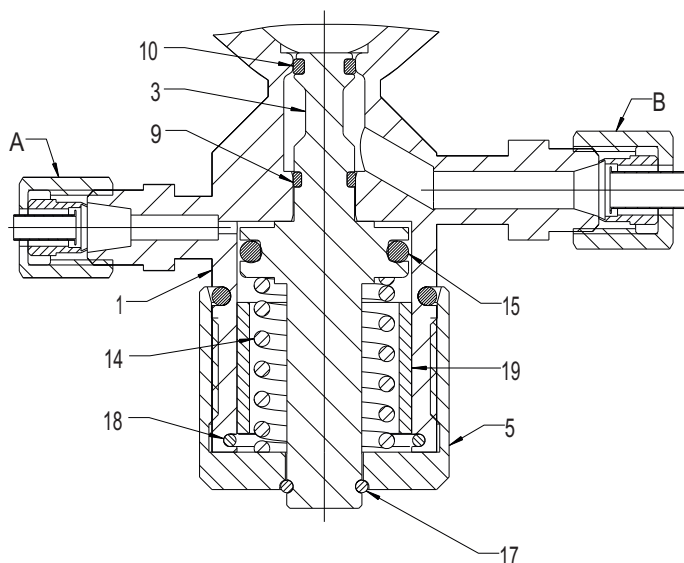


**小心**

压缩弹簧 (14) 已松开。必须将其缓慢地预张紧。

- 将压缩弹簧 (14) 连同罩盖 (5) 一起预张紧，直至螺  
纹咬合为止。将罩盖拧到底。
- 将气动软管与气动连接 (A) 相连。
- 将排放软管 (如果有的话) 与排放连接 (B) 连接。
- 以气动方式打开阀门。
- 装入卡紧环 (17)。
- 关闭阀门。

## TPS 系列离心泵上 at the Centrifugal pump TPS



## Assembly

• Lubricate the parts!  
GEA recommends Rivol-  
ta F.L.G. MD-2 and PAR-  
ALIQ GTE 703. These  
lubricants are approved  
for foodstuff and are  
resistant to beer froth and  
have the NSF-H1 (USDA  
H1) registration.  
PARALIQ GTE 703 can  
be ordered from GEA  
under part no. 413-064  
and Rivolta F.L.G. MD-2  
under part no. 413-071.

- Fit O-rings (9, 10, 15)  
in valve disk (3).



**CAUTION**

The valve shaft, the valve  
disk (3) and the valve  
seat are precision parts  
which must not be dam-  
aged!

- Place cautiously valve disk (3) into the housing (1).
- Install the sleeve (19).
- Insert snap ring (18) into the groove of the housing (1).
- Insert spring (14) into the housing (1).



**CAUTION**

The pressure spring (14) is detensioned. It must be pre-  
tensioned slowly.

- Pre-stress pressure spring (14) using the cover (5) until  
the thread catches. Screw on cover up to limit stop.
- Connect air hose with pneumatic connection (A).
- Connect drain hose – if exists – with drain  
connection (B).
- Open valve pneumatically.
- Install the snap ring (17).
- Close valve.

## 技术数据 – 排放阀

结构尺寸	DN 10
重量	0.3 kg
接触物料部件的材料	不锈钢 1.4404
安装位置	在顶部以上，以便阀门能够排空。
环境温度	0 至 60 °C，标准 < 0 °C 露点低的控制空气， 防止阀杆结冰
物料温度和工作温度	取决于密封材料
物料压力	密封时最大 16 bar 打开时最大 6 bar
控制空气压力	最小 6 bar 最大 8 bar
控制空气 – 固体物质含量：	符合 ISO 8573-1： 质量等级 6 微粒尺寸 最大 5 μm 微粒密度 最大 5 mg/m³
– 水分：	质量等级 4 最大露点 +3 °C 如果使用地点处于海拔较高 的地方或环境温度低， 需要相应的其他露点。
– 含油量：	质量等级 3， 最好不含油， 1m³ 空气的最大含油量 1 mg
气动软管 公制	材料 PE-LD 外径 6 mm 内径 4 mm
英制	材料 PA 外径 6.35 mm 内径 4.3 mm

## Technical Data - Drain Valve

Size	DN 10
Weight	0.3 kg
Material of product contact parts	stainless steel 1.4404
Installation position	head down, for completely draining the valve.
Ambient temperature	0 up to 60 °C, standard < 0 °C: use control air with low dew point. Protect valve stems against freezing
Product temperature and operating temperature	depending on the sealing material
Product pressure	max. 16 bar closed position max. 6 bar opened position
Control air pressure	min. 6 bar max. 8 bar
Control air – Solid particle content:	acc. to ISO 8573-1 quality class 6 particle size max. 5 μm part. density max. 5 mg/m³
– Water content:	quality class 4 max. dew point +3 °C If the valve is used at higher altitudes or at low ambient temperatures, the dew point must be adapted accordingly.
– Oil content:	quality class 3, preferably oil free max. 1 mg oil in 1m³ air
Air hose metric	material PE-LD outside dia. 6 mm inside dia. 4 mm
Inch	material PA outside dia. 6,35 mm inside dia. 4,3 mm

## 工具列表 / 润滑剂 / Lubricant / List of Tools

工具 / Tool	零部件编号 / Part no
开口扳手 扳手开口宽度 (SW) 14, 17 / Open end wrench size 14, 17	408-045
<b>润滑剂 / Lubricant</b>	
Rivolta F.L.G. MD-2	413-071
PARALIQ GTE 703	413-064

# 技术数据 - 离心泵 / Technical Data – Pump

## 一般运行数据 - 标称值 /

## General operational data – nominal values

阻封液压力 (DW 机型, 双机械密封) / Sealing liquid pressure (version DW, double-acting mechanical seal)	最小 2 bar / 最大 3 bar 在工作压力范围内 min. 2 bar (29 psi) / max. 3 bar (43,5 psi) above working pressure
阻封液温度 (DW 机型, 双机械密封) / Sealing liquid temperature (version DW, double-acting mechanical seal)	至 60 °C (最高 70 °C 短时间) up to 60 °C (max. 70 °C short-time)
阻封液压力 (QU 机型, 冲洗式单机械密封, 带用于阻封液的轴密封圈) Sealing liquid pressure (version QU, single-acting mechanical seal, flushed, with shaft sealing ring for sealing liquid)	最小 2000 转/分钟: 最大 0.35 bar / up to 2000 rpm: max. 0.35 bar (5 psi) 最小 3500 转/分钟: 最大 0.2 bar / up to 3500 rpm: max. 0.2 bar (2,9 psi) (按照 DIN 3760 acc. to DIN 3760)。
阻封液温度 (QU 机型, 单机械密封, 带用于阻封液的轴密封圈) Sealing liquid temperature (version QU, single-acting mechanical seal, with shaft sealing ring for sealing liquid)	至 60 °C (最高 70 °C 短时间) up to 60 °C (max. 70 °C / 158°F short-time)
阻封液的耗水量 / Water consumption for sealing liquid	0.25 ... 0.5 l/min / 0.066 ... 0.132 gpm (US)

## 材料 - 接触物料 /

## Material – product-contacted

泵壳 / Pump housing	1.4404 / 316L
泵轴 / Pump shaft	1.4404 / 316L
叶轮 / Impeller	1.4404 / 316L
联接架 / Lantern	1.4301 / 304
轴封 / Shaft-sealing (Rotating mechanical seal)	<div>标准 standard</div> 碳 - 碳化硅 (C/SiC) / carbon – silicon carbide <div>可选 alternatively</div> 碳化硅 - 碳化硅 (SiC/SiC) / silicon carbide – silicon carbide 碳 - 不锈钢 / carbon – stainless steel (C/SS) <div>备注 remarks</div> 所有的机械密封为冲洗式单机械密封或冲洗式双机械密封 版型。 All mechanical sealings available in single-acting, flushed and/or double-acting flushed version.
密封件 / Seals	EPDM / FKM

电机 / Motor

	TPS 2030	TPS 3050	—	TPS 8080
电机 / Motor	IEC 三相交流电动机（结构形式为 IM B35） 品牌和机型可任意选择，见电机选择表格。 IEC-three-phase motor, model IM B35, make and type at user's choice, see table "motor selection"			
功率范围 / Power ratings (kW)	0,75 … 7,5	1.1 … 18,5	—	11 … 45
工作电压（标准） Supply voltage (standard)	至 / up to 3.0 kW: Δ 220 … 240 V / Y 380 … 420 V（欧洲电压 400 V） 起 / from 4.0 kW: Δ 380 … 420 V / Y 660 … 725 V (Eurovoltage 690 V)			

选择电机

电机的总体要求不得超过所列出的轴向力。

Motor selection

The specified axial forces shall not be exceeded by the motor data.

功率 Power (kW)	电机尺寸 Motor size	法兰 Flange	重量 Weight (kg)	电极 Poles	转速 Rotational Speed (1/min)/(rpm)	最大轴向力 * Max. axial forces* (N)	允许的轴向 轴移动 Max. axiale shaft movement (mm)
1.5 kW	90S	B34A	17	2	2900	570	0, 1
2.2 kW	90L	B34A	20	2	2900	600	0, 1
3.0 kW	90L	B34A	23,2	2	2900	700	0, 1
4.0 kW	100L	B34A	27	2	2900	800	0, 1
5.5 kW	112M	B34A	47	2	2900	800	0, 1
7.5 kW	132S	B34A	48	2	2900	1100	0, 1
11 kW	132M	B34A	63	2	2900	1100	0, 1
15 kW	160M	B34A	94	2	2900	1100	0, 1
18.5 kW	160L	B34A	142	2	2900	1100	0, 2
22 kW	160L	B34A	152	2	2900	1400	0, 2
30 kW	200L	B35	246	2	2900	1400	0, 3
37 kW	200L	B35	265	2	2900	1400	0, 3
45 kW	225M	B35	363	2	2900	2000	0, 3

\* 从电机出去 / Off Motor



## 特定运行数据 – 标称值 / Specific operational data – nominal values

运行数据 – 标称值 / Operational data – nominal values		TPS 2030	TPS 3050	--	TPS 8080
标称流量 / Nominal flow rate	标称 / nom.	20 m <sup>3</sup> /h	30 m <sup>3</sup> /h	--	80 m <sup>3</sup> /h
最大流量 / Maximum flow rate	最大 / max.	35 m <sup>3</sup> /h	68 m <sup>3</sup> /h	--	112 m <sup>3</sup> /h
标称扬程 / Nominal flow head	标称 / nom.	28 m	50 m	--	80 m
最大扬程 / Maximum flow head	最大 / max.	35 m	64 m	--	93,5 m
允许的最大工作压力 (MAWP)= 入口压力 + 最大 输送压力 (离心泵) Maximum allowable working pressure (MAWP) = inlet pressure + max. outlet pressure (pump)	最大 / max.	16 bar	16 bar	--	16 bar
允许的最大入口压力 / Max. allowable inlet pressure	最大 / max.	16 bar	16 bar	--	16 bar
声压级 / Noise level	标称 / nom.	80 dB(A)	83 dB(A)	--	88 dB(A)
工作转速 / Operating speed	最大 / max.	3500 1/min			
转速 / Speed	50 Hz	2900 1/min			
转速 / Speed	60 Hz	3500 1/min			
允许的工作温度 / Allowable media temperature		- 5 ... +100 °C, +140 °C 短时间 (在相应的密封质量状态下) - 5 ... +100 °C, + 140 °C short-time (depending on sealing material)			
容许的环境温度 / Allowable ambient temperature		- 16 ... + 40 °C			
开关频度 / Switching frequency	最大 / max.	15 次开关 / 小时 15 switchings / h			

重量 / Weights

结构尺寸 Size	电机尺寸 Motor size	转速 (1/min) Speed (rpm)	功率 (kW) Power (kW)	重量 (kg) Weight (kg)
TPS 2030	90S	2900	1.5	38.2
TPS 2030	90L	2900	2.2	40.2
TPS 2030	90L	2900	3.0	52.3
TPS 2030	100L	2900	4.0	55.3
TPS 2030	112M	2900	5.5	80.2
TPS 2030	132S	2900	7.5	87.2
TPS 2030	132M	2900	11.0	92.2
TPS 3050	100L	2900	4.0	63.5
TPS 3050	112M	2900	5.5	86.9
TPS 3050	132S	2900	7.5	93.9
TPS 3050	132M	2900	11.0	98.9
TPS 3050	160M	2900	15.0	101.9
TPS 3050	160L	2900	18.5	146.6
TPS 3050	160L	2900	22.0	155.4
TPS 8080	160M	2900	15.0	141.1
TPS 8080	160L	2900	18.5	156.2
TPS 8080	160L	2900	22.0	156.2
TPS 8080	200L	2900	30.0	286.2
TPS 8080	200L	2900	37.0	302.2
TPS 8080	225M	2900	45.0	374.2

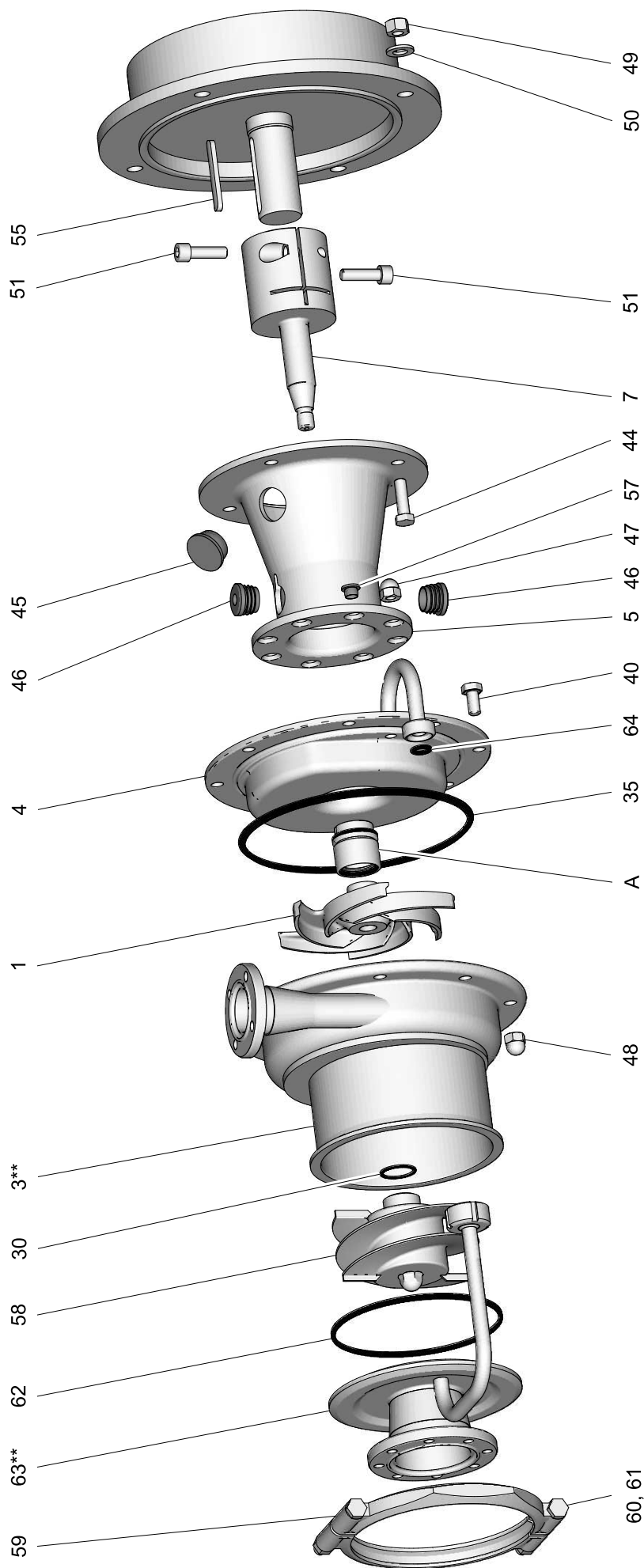
拧紧扭矩 / Torques

盖形螺母的拧紧扭矩 (Nm) / Torques (Nm) of the Cap nut

结构尺寸 Size	泵盖 (48) / Pump cover (48)		联接架 (47) / Lantern (47)		叶轮 (58) / Inducer (58)	
	M <sub>min</sub>	M <sub>max</sub>	M <sub>min</sub>	M <sub>max</sub>	M <sub>min</sub>	M <sub>max</sub>
TPS 2030	35	39	35	39	45	50
TPS 3050	60	74	35	39	55	60
--	--	--	--	--	--	--
TPS 8080	95	100	35	39	90	95

泵轴 / Pump shaft

圆柱头螺栓 (51) / Cheese head screw (51)	拧紧扭矩 (Nm) Torque (Nm)
M8	35
M10	60
M12	95



备件明细表 / Spare parts list

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)

GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B

日期 / date: 2016-11-23

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编号 Item	名称 / Designation 电机尺寸 / motor size	材料 Material	离心泵型号 / pump type TPS 2030			离心泵型号 / pump type TPS 3050		
			90S / 90L	100L / 112M	132S / 132M	100L / 112M	132S / 132M	160M / 160L
1	叶轮 TPHD 110 / impeller TPHD 110	1.4409		244-000148			--	
	工作轮 TPHD 120 / impeller TPHD 120	1.4409		244-000147			--	
	工作轮 TPHD 130 / impeller TPHD 130	1.4409		244-000146			--	
	叶轮 TPHD 140 / impeller TPHD 140	1.4409		244-000145			244-000325	
	工作轮 TPHD 145 / impeller TPHD 145	1.4409		244-001102			--	
	工作轮 TPHD 150 / impeller TPHD 150	1.4409		244-000144			244-000324	
	叶轮 TPHD 155 / impeller TPHD 155	1.4409		244-001103			--	
	工作轮 TPHD 160 / impeller TPHD 160	1.4409		244-000160			244-000212	
	工作轮 TPHD 170 / impeller TPHD 170	1.4409		--			244-000213	
	工作轮 TPHD 175 / impeller TPHD 175	1.4409		--			244-001097	
	工作轮 TPHD 180 / impeller TPHD 180	1.4409		--			244-000214	
	工作轮 TPHD 185 / impeller TPHD 185	1.4409		--			244-001071	
	工作轮 TPHD 190 / impeller TPHD 190	1.4409		--			244-000215	
	工作轮 TPHD 195 / impeller TPHD 195	1.4409		--			244-001098	
	工作轮 TPHD 200 / impeller TPHD 200	1.4409		--			244-000258	
	工作轮 TPHD 205 / impeller TPHD 205	1.4409		--			244-001099	
**3	工作轮 TPHD 210 / impeller TPHD 210	1.4409		--			244-000259	
	泵盖 TPS / pump cover TPS	1.4404		**			**	
4	带排放的泵盖 VTPS / pump cover VTPS with drain valve	1.4404		**			**	
	泵壳 TPS / EW / pump housing TPS / EW	1.4404		244-000865			244-000877	
	泵壳 TPS / DW / pump housing TPS / DW	1.4404		244-000867			244-000878	
	泵壳 TPS / QU / pump housing TPS / QU	1.4404		244-000866			244-000879	
5	联接架 / lantern TP 90	1.4301	244-001276	--	--	--	--	--
	联接架 / lantern TP 100/112	1.4301	--	244-001277	--	244-001277	--	--
	联接架 / lantern TP 132	1.4301	--	--	244-001278	--	244-001278	--
	联接架 / lantern TP 160	1.4301	--	--	--	--	--	244-001279
7	轴 TP / shaft TP	1.4301	244-000048	244-000025	244-000023	244-000025	244-000023	244-000190
30	O 形环 / O-ring	EPDM / 乙烯丙烯橡胶 FKM / 氟橡胶		930-756 930-759			930-756 930-759	
35	O 形环 / O-ring	EPDM / 乙烯丙烯橡胶 FKM / 氟橡胶		930-840 930-841			930-868 930-869	



备件明细表 / Spare parts list

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)

GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B

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编号 Item	名称 / Designation	电机尺寸 / motor size	材料 Material	离心泵型号 / pump type TPS 2030			离心泵型号 / pump type TPS 3050		
				90S / 90L	100L / 112M	132S / 132M	100L / 112M	132S / 132M	160M / 160L
40	六角头螺栓 / hex. screw		A2-70		901-092			901-140	
44	六角头螺栓 / hex. screw		A2-70	901-043	901-046	901-095	901-046	901-095	901-143
45	圆形堵头 / round plug		PE-LD	922-335	922-334	922-334	922-334	922-334	922-334
46	圆形堵头 / finned plug		PE-LD	922-355	922-355	922-355	922-355	922-355	922-355
47	盖形螺母 / cap nut		A2		912-005			912-005	
48	盖形螺母 / cap nut		A2		912-005			912-133	
49	六角螺母 / hex nut		A2						
50	垫圈 / washer		1.4301						
51	内六角圆柱头螺栓 / hexagon socket head screw		A2-70	902-101	902-033	902-118	902-033	902-118	902-118
55	平键 / feather key		1.0503	244-000053	244-000051	244-000670	244-000051	244-000670	244-000671
*56	间隔垫圈 / distance plate		PVC		244-000185			244-000306	
57	片式堵头 / plug		PE-LD		922-272			922-272	
58	叶轮 / inducer		1.4404		244-000864			244-000868	
59	半圆环 / cast clamp		1.4408		701-011			701-010	
60	六角头螺栓 / hex. screw		A2-70		901-296			901-296	
61	六角螺母 / hex. nut		A2		910-025			910-025	
62	O 形环 / O-ring		EPDM / 乙炔丙烯橡胶 FKM / 氟橡胶		930-372 930-409			930-614 930-668	
**63	法兰 TPS / flange TPS		1.4404		**			**	
64	O 形环 / O-ring		EPDM / 乙炔丙烯橡胶 FKM / 氟橡胶		930-609 930-661			930-609 930-661	
A	机械密封 / mechanical seal		见用于 TP 和 TPS 系列离心泵的机械密封 EW、DW 和 QU 备件明细表 / see spare parts list mechanical shaft seal EW, DW and QU for centrifugal pump TP and TPS						

\* 编号 56 不配插图。间隔垫圈是用于调整轴向间隙的辅助工具。 /

Item 56 (without illustration). The distance plate is a means for adjusting the axial gap.

\*\* 编号 3 和编号 63 - 泵盖和法兰只能根据需要提供连接配件一起供货。 /

Item 3 and item 63 - Pump cover and TPS flange are only available with connection fittings on request.

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备件明细表 / Spare parts list

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)  
GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B



编号 Item	名称 / Designation	材料 Material	电机尺寸 / motor size				离心泵型号 / pump type TPS 8080			
							160M / 160L	200L		225M
1	工作轮 TPHD 160 / impeller TPHD 160	1.4409						--		
	工作轮 TPHD 165 / impeller TPHD 165	1.4409						--		
	工作轮 TPHD 170 / impeller TPHD 170	1.4409						244-000411		
	工作轮 TPHD 175 / impeller TPHD 175	1.4409						--		
	工作轮 TPHD 180 / impeller TPHD 180	1.4409						244-000412		
	工作轮 TPHD 185 / impeller TPHD 185	1.4409						--		
	工作轮 TPHD 190 / impeller TPHD 190	1.4409						244-000403		
	工作轮 TPHD 195 / impeller TPHD 195	1.4409						--		
	工作轮 TPHD 200 / impeller TPHD 200	1.4409						244-000404		
	工作轮 TPHD 205 / impeller TPHD 205	1.4409						244-001121		
	工作轮 TPHD 210 / impeller TPHD 210	1.4409						244-000405		
	工作轮 TPHD 215 / impeller TPHD 215	1.4409						244-001122		
	工作轮 TPHD 220 / impeller TPHD 220	1.4409						244-000406		
	工作轮 TPHD 225 / impeller TPHD 225	1.4409						244-001123		
	工作轮 TPHD 230 / impeller TPHD 230	1.4409						244-000407		
	叶轮 TPHD 235 / impeller TPHD 235	1.4409						244-001124		
	叶轮 TPHD 240 / impeller TPHD 240	1.4409						244-000408		
	工作轮 TPHD 245 / impeller TPHD 245	1.4409						244-001125		
	工作轮 TPHD 250 / impeller TPHD 250	1.4409						244-000409		
**3	泵盖 TPS / pump cover TPS	1.4404						**		
	带排放的泵盖 VTPS / pump cover VTPS with drain valve	1.4404						**		
4	泵壳 TPS / EW / pump housing TPS / EW	1.4404						244-001594		
	泵壳 TPS / DW / pump housing TPS / DW	1.4404						244-001815		
	泵壳 TPS / QU / pump housing TPS / QU	1.4404						244-001814		
	联接架 / lantern TP 160	1.4301					244-001279	--		--
5	联接架 / lantern TP 200	1.4301					--	244-001280		--
	联接架 / lantern TP 225	1.4301					--	--		244-000334
7	轴 TP / shaft TP	1.4301					244-000351	244-000329		244-000329
30	O 形环 / O-ring	EPDM / 乙 烯 丙 烯 橡 胶 FKM / 氟 氧 化 橡 胶						930-757 930-761		
35	O 形环 / O-ring	EPDM / 乙 烯 丙 烯 橡 胶 FKM / 氟 氧 化 橡 胶						930-891 930-890		

备件明细表 / Spare parts list

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)

GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B

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编号 Item	名称 / Designation	电机尺寸 / motor size	材料 Material	离心泵型号 / pump type TPS 8080			
					160M / 160L	200L	225M
40	六角头螺栓 / hex. screw		A2-70		901-379	901-379	901-379
44	六角头螺栓 / hex. screw		A2-70		901-143	901-245	901-243
45	圆形堵头 / round plug		PE-LD		922-334	922-334	922-334
46	圆形堵头 / finned plug		PE-LD		922-355	922-355	922-355
47	盖形螺母 / cap nut		A2			912-005	
48	盖形螺母 / cap nut		A2			912-134	
49	六角螺母 / hex nut		A2			910-043	910-043
50	垫圈 / washer		1.4301			921-104	921-104
51	内六角圆柱头螺栓 / hexagon socket head screw		A2-70		902-118	902-088	902-088
55	平键 / feather key		1.0503		244-000264	244-000340	244-0000340
*56	间隔垫圈 / distance plate		PVC			244-000365	
57	片式堵头 / plug		PE-LD			922-727	
58	叶轮 / inducer		1.4404			244-001592	
59	半圆环 / cast clamp		1.4408			701-009	
60	六角头螺栓 / hex. screw		A2-70			901-296	
61	六角螺母 / hex. nut		A2			910-025	
62	O 形环 / O-ring		EPDM / 乙稀丙烯橡胶 FKM / 氟橡胶			930-844 930-843	
**63	法兰 TPS / flange TPS		1.4404			**	
64	O 形环 / O-ring		EPDM / 乙稀丙烯橡胶 FKM / 氟橡胶			930-609 930-661	
A	机械密封 / mechanical seal		见用于 TP 和 TPS 系列离心泵的机械密封 EW、DW 和 QU 备件明细表 / see spare parts list mechanical shaft seal EW, DW and QU for centrifugal pump TP and TPS				

\* 编号 56 不配插图。间隔垫圈是用于调整轴向间隙的辅助工具。 /

Item 56 (without illustration). The distance plate is a means for adjusting the axial gap.

\*\* 编号 3 和编号 63 - 泵盖和法兰只能根据连接配件一起供货。 /

Item 3 and item 63 - Pump cover and TPS flange are only available with connection fittings on request.

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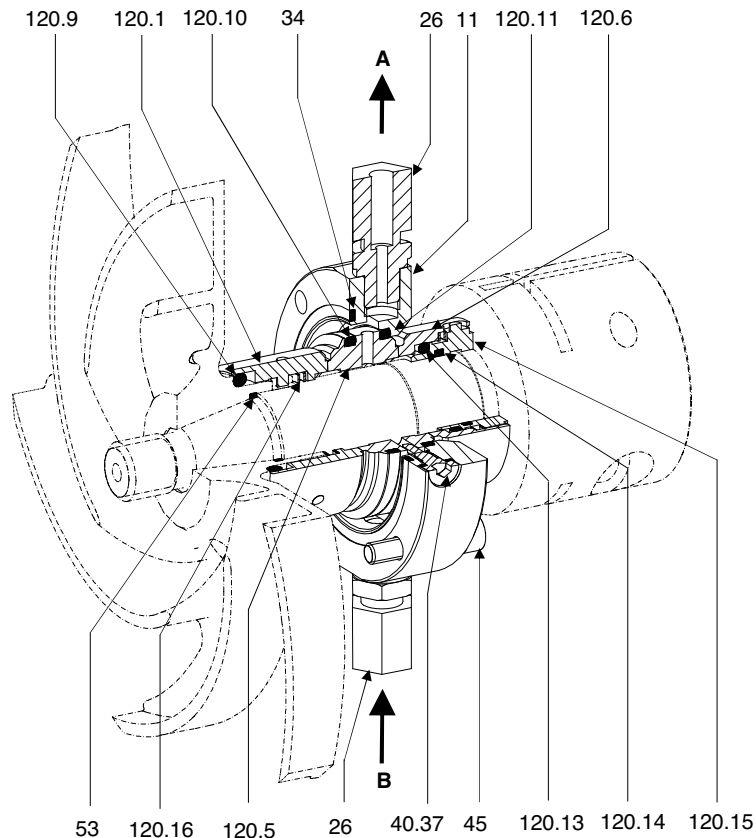
备件明细表 / Spare parts list

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)

GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B




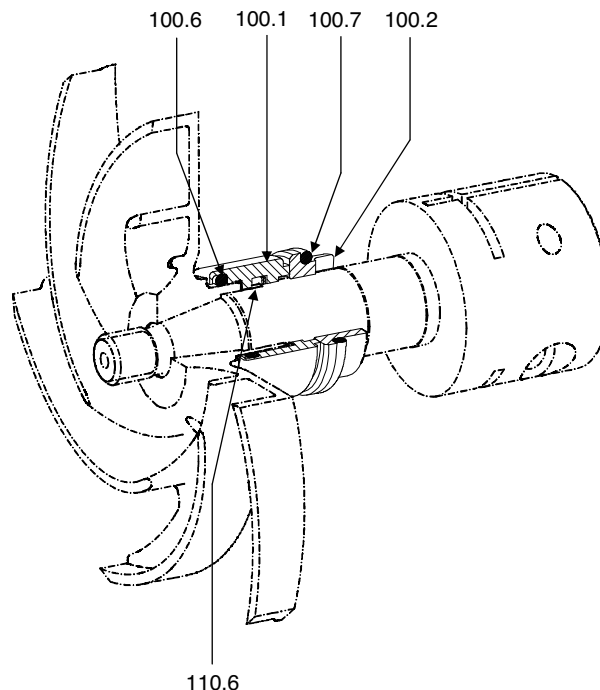
日期 / date: 2016-11-23 第 页 / Page 1 共 页 / of 1 244ELI001023ZH_1.DOC	备件明细表 / Spare parts list <b>双机械密封 (DW)</b> <b>Double-acting mechanical seal (DW)</b> 用于 GEA Hilge TP / TPS 系列离心泵 for GEA Hilge TP / TPS centrifugal pump	
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编号 Item	名称 /Designation	材料 Material	零部件编号 / part no.			
机械密封的结构尺寸 / Mechanical shaft seal size			25		30	
			TP 1020;TP 2030;TP 1540;TP 2050;TP 3050 TPS 2030; TPS 3050		TP 5060;TP 7060;TP 2575;TP 8080;TP 16040 TPS 8080	
机械密封易损套件 Mechanical shaft seal kit of wearing parts		SIC/SIC/EPDM	244-000135		244-000378	
		SIC/SIC/FKM	244-000136		244-000379	
11	动环支架 / slide ring holder	1.4301	244-000131		244-000461	
26	螺纹管接头 / union bush	镀镍黄铜/Ms/vern	110-000005		110-000005	
34	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	100-000005	(*)	100-000005	(*)
37	扁平密封圈 /flat seal	钢 / Steel FKM	100-000015	(**)	100-000015	(**)
40	锁定螺栓 / stop screw	A4-70	244-000134	(**)	244-000134	(**)
45	圆柱头螺栓 / cheese head screw	A4-70	902-117		902-117	
53	O 形环 / O-ring	FKM (碳氟橡胶)	100-000004	(*)	930-898	(*)
120.1	动环 (主) / face seal ring, primary	1.4462	--	(*) (**)	--	(*) (**)
120.5	静环 / stationary seal ring	SIC (碳化硅)	--	(*) (**)	--	(*) (**)
120.6	动环 (次) / face seal, secondary	1.4571	--	(*) (**)	--	(*) (**)
120.9	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	100-000007	(*) (**)	930-808	(*)
		FKM (碳氟橡胶)	100-000013	(*) (**)	930-482	(*)
120.10	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	100-000009	(*) (**)	930-861	(*)
		FKM (碳氟橡胶)	100-000010	(*) (**)	930-899	(*)
120.11	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	100-000009	(*) (**)	930-897	(*)
		FKM (碳氟橡胶)	100-000010	(*) (**)	--	(*)
120.13	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	100-000008	(*) (**)	930-862	(*)
120.14	O 形环 / O-ring	EPDM (乙 烯 丙 烯 橡 胶)	930-495		930-896	
120.15	随动件 / striker	1.4571	--	(*) (**)	--	(*) (**)
120.16	弹簧 / spring	1.4571	--	(*) (**)	--	(*) (**)
A	用于直径为 6/4 mm 的软管或管道的出口 / outlet for hose or pipe Ø 6/4 mm					
B	用于直径为 6/4 mm 的软管或管道的入口 / inlet for hose or pipe Ø 6/4 mm					
(*) 机械密封易损套件包括所有带 * 的部件。 / The mechanical shaft seal kit of wearing parts contained all parts with *.						
(**) 带 ** 的部件不能作为备件单独提供。 / The parts with ** are not individually exchangeable spare parts.						




日期 / date: 2016-11-23 第 页 / Page 1 共 页 / of 1 244ELI001024ZH_1.DOC	备件明细表 / Spare parts list <b>单机机械密封 (EW)</b> <b>Single-acting mechanical seal (EW)</b> 用于 GEA Hilge TP / TPS 系列离心泵 for GEA Hilge TP / TPS centrifugal pump	
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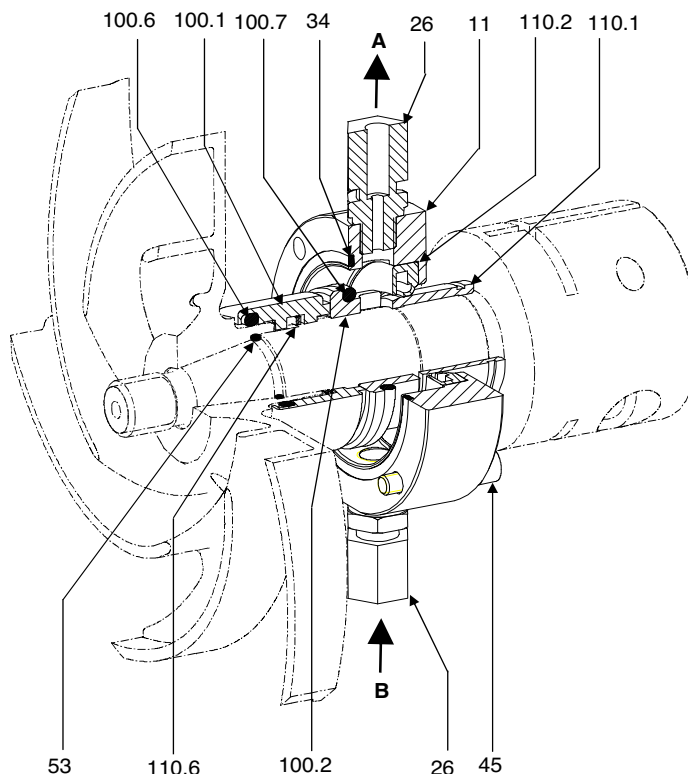


编号 Item	名称 / Designation	材料 Material	零部件编号 / part no.			
机械密封的结构尺寸 / Mechanical shaft seal size			25		30	
			TP 1020;TP 2030;TP 1540;TP 2050;TP 3050 TPS 2030; TPS 3050		TP 5060;TP 7060;TP 2575;TP 8080;TP 16040 TPS 8080	
机械密封易损套件 Mechanical shaft seal kit of wearing parts		C/SS/EPDM	244-000531		244-000533	
		C/SIC/EPDM	244-000045		244-000345	
		SIC/SIC/EPDM	244-000043		244-000382	
		C/SS/FKM	244-000532		244-000534	
		C/SIC/FKM	244-000044		244-000381	
		SIC/SIC/FKM	244-000042		244-000383	
100.1	动环 / face seal ring	1.4462	--	(*) (**)	--	(*) (**)
100.2	静环 / stationary seal ring	SIC (碳化硅)	--	(*) (**)	--	(*) (**)
100.6	O 形环 / O-ring	EPDM (乙烯丙烯橡胶)	100-000007	(*) (**)	930-808	(*)
		FKM (碳氟橡胶)	100-000013	(*) (**)	930-482	(*)
100.7	O 形环 / O-ring	EPDM (乙烯丙烯橡胶)	100-000006	(*) (**)	930-806	(*)
		FKM (碳氟橡胶)	100-000012	(*) (**)	930-807	(*)
110.6	弹簧 / spring	1.4571	--	(*) (**)	--	(*) (**)

(\*) 机械密封易损套件包括所有带 \* 的部件。/  
The mechanical shaft seal kit of wearing parts includes all parts with \*.

带 \*\* 的部件不能作为备件单独更换。/  
The parts with \*\* are not individually exchangeable spare parts

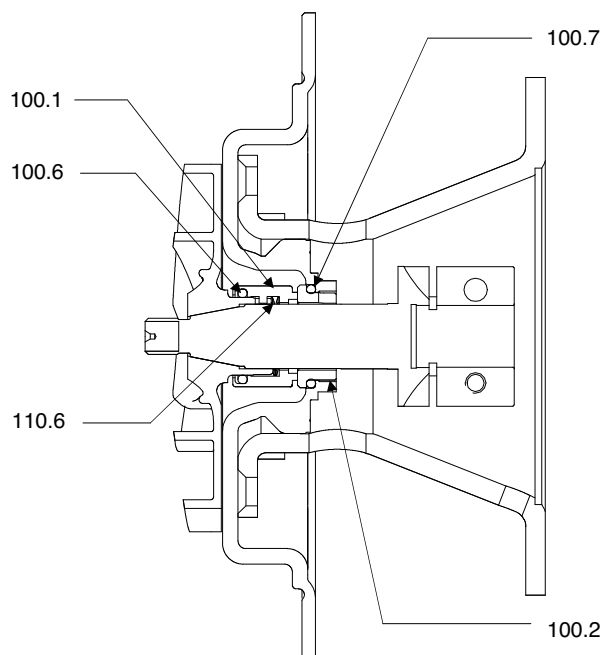
日期 / date 2016-11-23 第 页 / Page 1 共 页 / of 1 244ELI001025ZH_1.doc	备件明细表 / Spare parts list <b>冲洗式单机械密封 (QU)</b> <b>Single-acting mechanical seal, flushed (QU)</b> 用于 GEA Hilge TP / TPS 系列离心泵 for GEA Hilge TP / TPS centrifugal pump	
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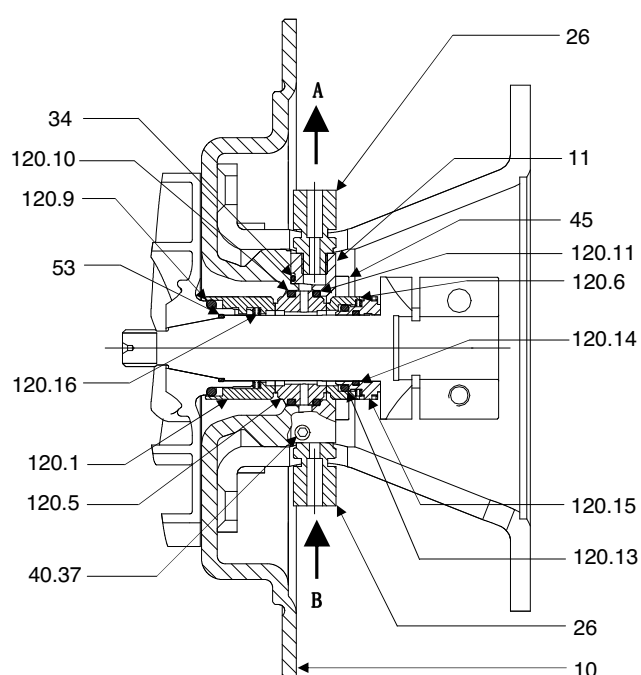
编号 Item	名称 / Designation	材料 Material	零部件编号 / part no.			
机械密封的结构尺寸 / Mechanical shaft seal size			25		30	
			TP 1020;TP 2030;TP 1540;TP 2050;TP 3050 TPS 2030; TPS 3050		TP 5060;TP7060;TP 2575;TP 8080;TP 16040 TPS 8080	
机械密封易损套件 Mechanical shaft seal kit of wearing parts		C/SS/EPDM	244-000531		244-000533	
		C/SIC/EPDM	244-000045		244-000345	
		SIC/SIC/EPDM	244-000043		244-000382	
		C/SS/FKM	244-000532		244-000534	
		C/SIC/FKM	244-000044		244-000381	
		SIC/SIC/FKM	244-000042		244-000383	
11	动环支架 / slide ring holder	1.4301	244-000132	(**)	244-000462	(**)
26	螺纹管接头 / union bush	镀镍黄铜/ Ms/vern	110-000005		110-000005	
34	O 形环 / O-ring	EPDM (乙烯丙烯橡胶)	100-000005		100-000005	
45	圆柱头螺栓 / cheese head screw	A4-70	100-000016	(**)	100-000016	(**)
53	O 形环 / O-ring	FKM (碳氟橡胶)	100-000004		930-898	
100.1	动环 / face seal ring	1.4462	--		--	(*) (**)
100.2	静环 / stationary seal ring	SIC (碳化硅)	--	(*) (**)	--	(*) (**)
100.6	O 形环 / O-ring	EPDM (乙烯丙烯橡胶)	100-000007	(*) (**)	930-808	(*)
		FKM (碳氟橡胶)	100-000013	(*) (**)	930-482	(*)
100.7	O 形环 / O-ring	EPDM (乙烯丙烯橡胶)	100-000006	(*) (**)	930-806	(*)
		FKM (碳氟橡胶)	100-000012	(*) (**)	930-807	(*)
110	轴保护 / shaft protection	1.4462/FKM	244-000133	(***)	244-000344	(***)
110.1	轴保护套 / Shaft protection sleeve	1.4462	--	(**)	--	(**)
110.2	轴密封圈 / shaft seal	FKM (碳氟橡胶)	100-000014		924-342	
110.6	弹簧 / spring	1.4571	--	(*) (**)	--	(*) (**)
A	用于直径为 6/4 mm 的软管或管道的出口 / outlet for hose or pipe Ø 6/4 mm					
B	用于直径为 6/4 mm 的软管或管道的入口 / inlet for hose or pipe Ø 6/4 mm					
(*) 机械密封易损套件包括所有带 * 的部件。/ The mechanical shaft seal kit of wearing parts includes all parts with *.						
(**) 带 ** 的部件不能作为备件单独更换。/ The parts with ** are not individually exchangeable spare parts.						
(***) 轴保护 (编号 110) 包括轴密封圈编号 110.2) 和轴保护套 (编号 110.1) / The shaft protection Item 110 consists of the shaft seal ring Item 110.2 and the shaft protection sleeve Pos. 110.1.						

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单机械密封 EW 改装成  
机械密封 DW 的改装套件  
**Conversion kit for single-acting mechanical seal EW  
to mechanical seal DW**  
用于 GEA Hilge TP / TPS 系列离心泵  
for GEA Hilge TP / TPS centrifugal pump




机械密封 EW /  
Mechanical seal EW



机械密封 DW /  
Mechanical seal DW

编号 Item	名称 / Designation		材料 Material	零部件编号 / part no.	
机械密封的结构尺寸 / Mechanical shaft seal size			25		30
			TP 1020;TP 2030;TP 1540;TP 2050;TP 3050 TPS 2030; TPS 3050		TP 5060;TP 7060;TP 2575;TP 8080;TP 16040 TPS 8080
机械密封套件 / Mechanical shaft seal kit			1.4571/EPDM 1.4571/FKM	244-000041 244-000040	244-000377 244-000380
10	泵壳 / Pump housing	TP 1020	1.4404	244-000082	--
		TP 2030	1.4404	244-000055	--
		TP 1540	1.4404	244-000080	--
		TP 2050	1.4404	244-001011	--
		TP 3050	1.4404	244-000804	--
		TP 5060	1.4404	--	244-000810
		TP 7060	1.4404	--	244-000810
		TP 2575	1.4404	--	244-000807
		TP 8080	1.4404	--	244-000801
		TP 16040	1.4404	--	244-000555
		TPS 2030	1.4404	244-000703	--
		TPS 3050	1.4404	244-000771	--
	TPS 8080	1.4404	--	244-001815	
11	动环支架 / slide ring holder		1.4301	(*)	(*)
26	螺纹管接头 / union bush		镀镍黄铜 / Ms/vern.	(*)	(*)
34	O 形环 / O-ring		EPDM (乙烯丙烯橡胶)	(*)	(*)
37	扁平密封圈 / flat seal		钢 / Steel FKM	(*)	(*)
40	锁定螺栓 / stop screw		A4-70	(*)	(*)
45	圆柱头螺栓 / cheese head screw		A4-70	(*)	(*)
53	O 形环 / O-ring		FKM (碳氟橡胶)	(*)	(*)
100.1	动环 / seal face		1.4462	(**)	(**)
100.2	静环/ seat		SIC (碳化硅)	(**)	(**)
100.6	O 形环 /O-ring		EPDM / FKM	(**)	(**)
100.7	O 形环 /O-ring		EPDM / FKM	(**)	(**)
110.6	弹簧 /spring		1.4571	(**)	(**)

日期 / date 2016-11-23 第 页 / Page 2 共 页 / of 2 244BAL003866ZH_1.DOC	单机械密封 EW 改装成 机械密封 DW 的改装套件 <b>Conversion kit for single-acting mechanical seal EW          to mechanical seal DW</b> 用于 GEA Hilge TP / TPS 系列离心泵 for GEA Hilge TP / TPS centrifugal pump	
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120.1	动环（主） / seal face, primary	1.4462	(*)	(*)
120.5	静环 / seat	SIC（碳化硅）	(*)	(*)
120.6	动环（次） / seal face, secondary	1.4571	(*)	(*)
120.9	O 形环 / O-ring	EPDM / FKM	(*)	(*)
120.10	O 形环 / O-ring	EPDM / FKM	(*)	(*)
120.11	O 形环 / O-ring	EPDM / FKM	(*)	(*)
120.13	O 形环 / O-ring	EPDM （乙烯丙烯橡胶）	(*)	(*)
120.14	O 形环 / O-ring	EPDM （乙烯丙烯橡胶）	(*)	(*)
120.15	随动件 / striker	1.4571	(*)	(*)
120.16	弹簧 / spring	1.4571	(*)	(*)

A	用于直径为 6/4 mm 的软管或管道的出口 / outlet for hose or pipe Ø 6/4 mm
B	用于直径为 6/4 mm 的软管或管道的入口 / inlet for hose or pipe Ø 6/4 mm

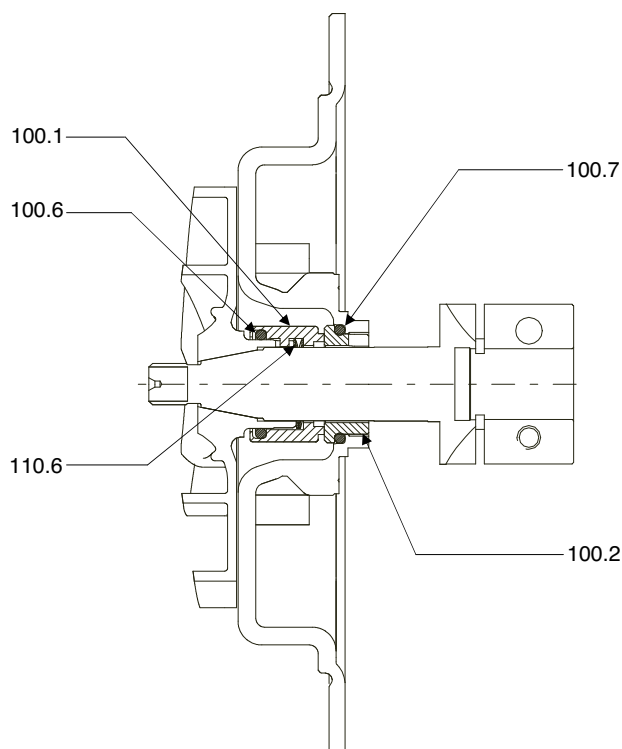
(\*) 机械密封套件包括所有带 \* 的部件。 / The mechanical shaft seal kit includes all parts with \*.

(\*\*) 所有列出的机械密封 EW 部件均带有 \*\*（编号 100.1、100.2、100.6、100.7 及 110.6），都不得再次使用。 /

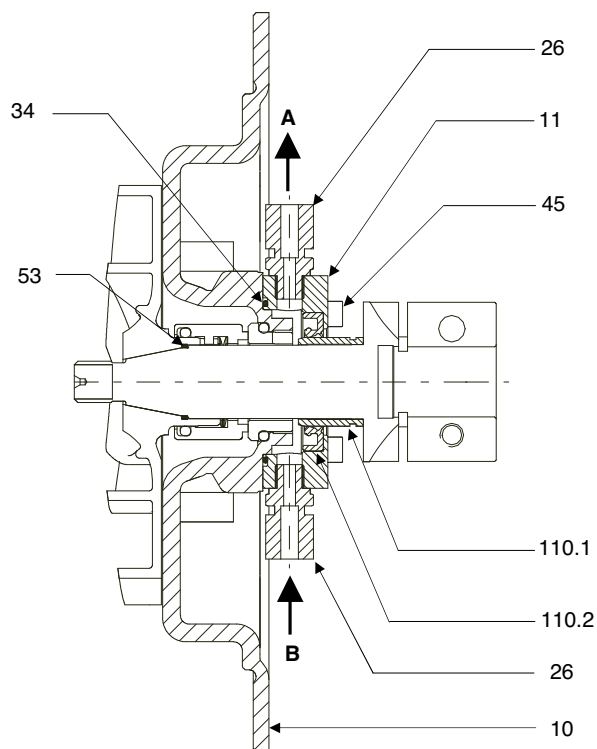
All Parts of the single-acting mechanical seal EW with \*\* (items 100.1, 100.2, 100.6, 100.7 and 110.6) are no longer usable.

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单机械密封 EW 改装成冲洗式机械密封 QU 的改装套件  
Conversion kit for single-acting mechanical seal EW to  
mechanical seal QU, flushed  
用于 GEA Hilge TP / TPS 系列离心泵  
for GEA Hilge TP / TPS pump



机械密封 EW /  
Mechanical seal EW



冲洗式机械密封 QU /  
Mechanical seal QU, flushed

编号 Item	名称 / Designation	材料 Material	零部件编号 / part no.	
机械密封的结构尺寸 / Mechanical shaft seal size			25	30
Quench 套件 / Quench-Kit			TP 1020;TP 2030;TP 1540;TP 2050;TP 3050 TPS 2030; TPS 3050	TP 5060;TP 7060;TP 2575;TP 8080;TP 16040 TPS 8080
10	泵壳 / Pump housing	1.4571/FKM	244-000046	244-000376
		TP 1020	1.4404	244-000083
		TP 2030	1.4404	244-000056
		TP 1540	1.4404	244-000081
		TP 2050	1.4404	244-001012
		TP 3050	1.4404	244-000803
		TP 5060	1.4404	--
		TP 7060	1.4404	--
		TP 2575	1.4404	--
		TP 8080	1.4404	--
		TP 16040	1.4404	--
		TPS 2030	1.4404	244-000809
		TPS 3050	1.4404	244-000809
		TPS 8080	1.4404	244-000806
		TPS 8080	1.4404	244-000800
		TPS 8080	1.4404	244-000556
		TPS 8080	1.4404	244-001814
11	动环支架 / slide ring holder	1.4301	(*)	(*)
26	螺纹管接头 / union bush	镀镍黄铜 / Ms/vern.	(*)	(*)
34	O 环 / O-ring	EPDM (乙烯丙烯橡胶)	(*)	(*)
45	圆柱头螺栓 / cheese head screw	A4-70	(*)	(*)
53	O 环 / O-ring	FKM (碳氟橡胶)	(*)	(*)

日期 / date: 2016-11-23 第 页 / Page 2 共 页 / of 2 244BAL003863ZH_1.DOC	单机械密封 <b>EW</b> 改装成冲洗式机械密封 <b>QU</b> 的改装套件 <b>Conversion kit for single-acting mechanical seal EW to mechanical seal QU, flushed</b> 用于 GEA Hilge TP / TPS 系列离心泵 for GEA Hilge TP / TPS pump	
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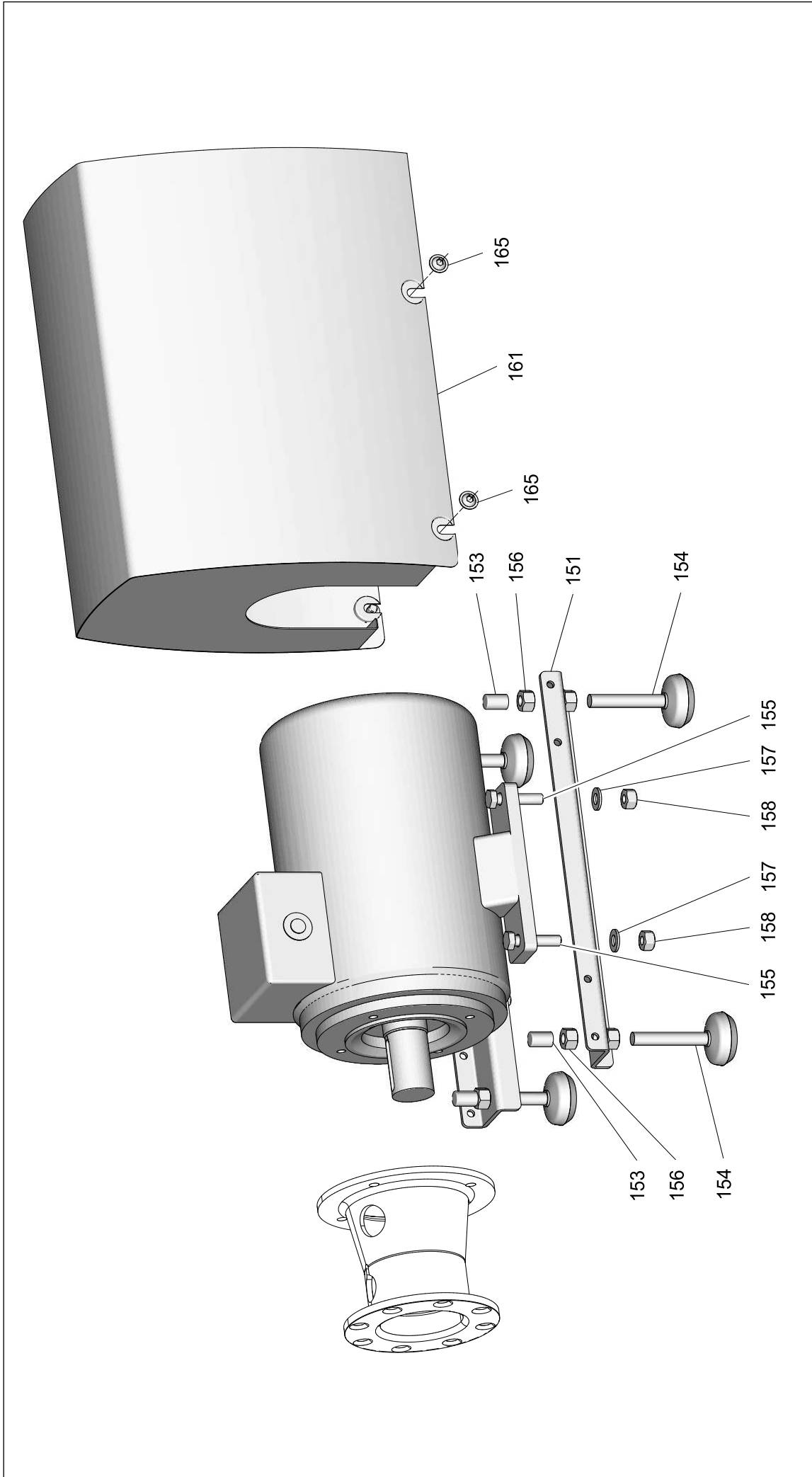
100.1	动环 / face seal ring	1.4462	(**)	(**)
100.2	静环 / stationary seal ring	SIC (碳化硅)	(**)	(**)
100.6	O 形环 / O-ring	EPDM (乙烯丙烯橡胶) FKM (碳氟橡胶)	(**)	(**)
100.7	O 形环 / O-ring	EPDM (乙烯丙烯橡胶) FKM (碳氟橡胶)	(**)	(**)
110.1	轴保护套 / shaft protection sleeve	1.4462	(*)	(*)
110.2	轴密封圈 / shaft seal	FKM (碳氟橡胶)	(*)	(*)
110.6	弹簧 / spring	1.4571	(**)	(**)

A 用于直径为 6/4 mm 的软管或管道的出口 / outlet for hose or pipe Ø 6/4 mm

B 用于直径为 6/4 mm 的软管或管道的入口 / inlet for hose or pipe Ø 6/4 mm

(\*) Quench 套件包括所有带 \* 的部件。 / Quench kit includes all parts marked with \*.

(\*\*) 单机械密封 EW 包括所有带 \*\* 的部件。 /  
The single-acting mechanical seal EW includes all Parts with \*\*.



备件明细表 / Spare parts list

IEC 电机 / 50 Hz 带有防护罩和半球帽支脚的横梁，用于 GEA Hilge TPS 系列离心泵（B 版）  
 IEC Motor / 50 Hz with hood and adjustable feet for GEA Hilge TPS centrifugal pump, version B



编号 Item	名称 / Designation	材料 Material	零部件编号 / Part no.							
			80	90S	90L	100L	112M	132S	132M	
电机功率 (50 Hz 时) / Motor rating at 50 Hz										
*TP 系列半球帽支脚架总成 / calotte rack TP cpl.			304	244-001870	244-001871	244-001872	244-001873	244-001874	244-001875	244-001876
底座 TP / chassis TP			304	244-000844	244-000843		244-000842	244-000841	244-000835	
151	半球帽支脚的横梁 / adjustable feet		244-001864							
153	帽 / cap	HD-PE	922-290	922-290			922-290	922-290	922-290	
154	机器支脚 / engine feet	1.4401	754-035	754-035			754-035	754-035	754-035	
155	六角头螺栓 / hex. screw	A2-70	901-054	901-054			901-101	901-101	901-104	
156	六角螺母 / hex. nut	A2-80	910-029	910-029			910-029	910-029	910-029	
157	垫圈 / washer	A2	921-014	921-014			921-018	921-018	921-018	
158	平压自锁六角螺母 hex. nut, flat, self-locking	A2	910-020	910-020			910-025	910-025	910-025	
161	防护罩 / hood	304	244-001327	244-001306			244-001305	244-001304	244-001302	
165	螺栓 / ULF / screw ULF	304	919-011	919-011			919-011	919-011	919-011	

\* TP 系列半球帽支脚架总成包括编号 151、153、154、155、156、157 及 158。 / In the adjustable feet TP cpl. are completely contained the items 151, 152, 153, 154, 155, 156, 157 and 158.

<sup>1)</sup> 将排放阀 VTP/LM 装到 GEA Hilge TP/TPS 系列离心泵上时，需要经过改造的蜗壳和机器支脚（半球帽支脚的横梁总成）。见排放阀 VTP/LM 尺寸数据表或备件明细表。  
Using the drain valve VTP/LM on the GEA Hilge TP/TPS centrifugal pump, a modified spiral housing and engine feet (adjustable feet cpl.) will be required. See dimension sheet or spare part lists drain valve VTP/LM

\* TP 系列半球帽支脚架总成包括编号 151、153、154、155、156、157 及 158。 / In the adjustable feet TP cpl. are completely contained the items 151, 152, 153, 154, 155, 156, 157 and 158.

1) 将排放阀 VTP/LM 装到 GEA Hilge TP/TPS 系列离心泵上时，需要经过改造的蜗壳和机器支脚（半球帽支脚的横梁总成）。见排放阀 VTP/LM 尺寸数据表或备件明细表。

Using the drain valve VTP/LM on the GEA Hilge TP/TPS centrifugal pump, a modified spiral housing and engine feet (adjustable feet cpl.) will be required. See dimension sheet or spare part lists drain valve VTP/LM

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备件明细表 / Spare parts list  
 IEC 电机 / 50 Hz 带有防护罩和半球帽支脚的横梁，用于 GEA Hilge TPS 系列离心泵（B 版）  
 IEC Motor / 50 Hz with hood and adjustable feet for GEA Hilge TPS centrifugal pump, version B





名称 / Designation		材料 Material	零部件编号 / Part no.			
编号 Item	电机尺寸 / Motor Size 电机功率 (50 Hz 时) / Motor rating at 50 Hz		160M	160L	200L	225M
*TP 系列半球帽支脚架总成 calotte rack TP cpl.		304	244-001878	244-001879	244-001880	244-000433
底座 TP / chassis TP		304	--	--	--	--
151	半球帽支脚的横梁 adjustable feet	304	244-001867		244-001868	244-001188
153	帽 / cap	HD-PE	922-288		922-303	922-303
154	机器支脚 / engine feet	1.4401	754-030		754-029	754-029
155	六角头螺栓 / hex. screw	A2-70	901-158		901-355	901-355
156	六角螺母 / hex. nut	A2-80	910-043		910-053	910-053
157	垫圈 / washer	A2	921-021		921-104	921-104
158	平压自锁六角螺母 hex. nut, flat, self-locking	A2	910-028		910-044	910-044
161	防护罩 / hood	304	244-001303		244-001338	244-000177
165	螺栓 ULF / screw ULF	304	919-011		919-011	919-011

★ TP 系列半球帽支脚架总成包括编号 151、153、154、155、156、157 及 158。 / In the adjustable feet TP cpl. are completely contained the items 151, 152, 153, 154, 155, 156, 157 and 158.

1) 将排放阀 VTP/LM 装到 GEA Hlge TP/TPS 系列离心泵上时，需要经过改造的蜗壳和机器支脚（半球帽支脚的横梁总成）。见排放阀 VTP/LM 尺寸数据表或备件明细表。  
Using the drain valve VTP/LM on the GEA Hlge TP/TPS centrifugal pump, a modified spiral housing and engine feet (adjustable feet cpl.) will be required. See dimension sheet or spare part lists drain valve VTP/LM

\* TP 系列半球帽支脚架总成包括编号 151、153、154、155、156、157 及 158。 / In the adjustable feet TP cpl. are completely contained the items 151, 152, 153, 154, 155, 156, 157 and 158.  
 1) 将排放阀 VTP/LM 装到 GEA Hilge TP/TPS 系列离心泵上时，需要经过改造的蜗壳和机器支脚（半球帽支脚的横梁总成）。见排放阀 VTP/LM 尺寸数据表或备件明细表。  
 Using the drain valve VTP/LM on the GEA Hilge TP/TPS centrifugal pump, a modified spiral housing and engine feet (adjustable feet cpl.) will be required. See dimension sheet or spare part lists drain valve VTP/LM

日期 / date : 2016-11-23

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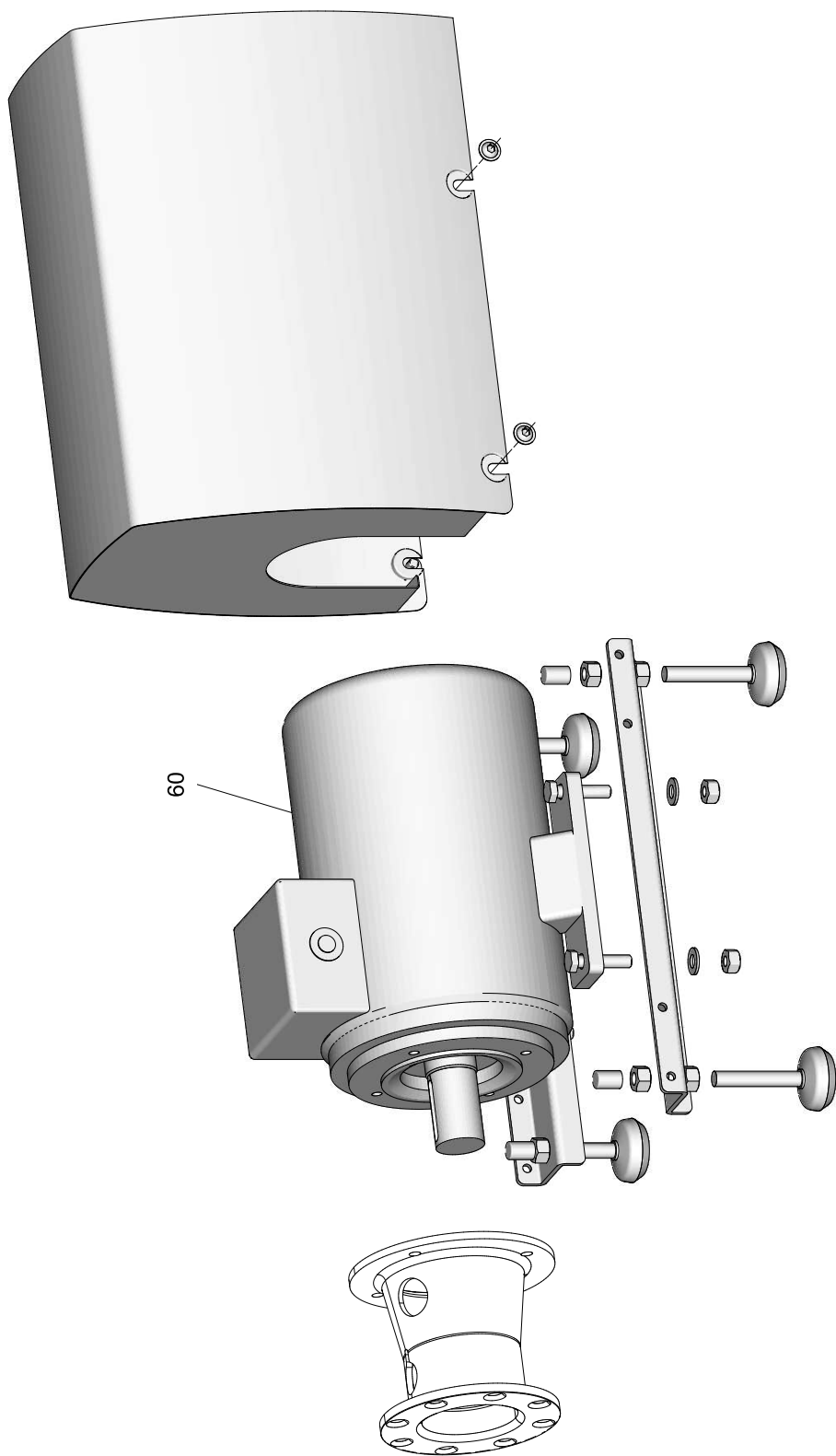
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备件明细表 / Spare parts list  
 IEC 电机 / 50 Hz 带有防护罩和半球帽支脚的横梁，用于 GEA Hilge TPS 系列离心泵（B 版）  
 IEC Motor / 50 Hz with hood and adjustable feet for GEA Hilge TPS centrifugal pump, version B



2016-12 · GEA Hilge 系列离心泵，自吸式 / Centrifugal Pump TPS, selfpriming · B 版 / Version B

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备件明细表 / Spare parts list

IEC 电机 / 50 Hz 用于 GEA Hilge TPS 系列离心泵 (B 版)

IEC Motor / 50 Hz for GEA Hilge TPS centrifugal pump, version B

日期 / date : 2016-11-23

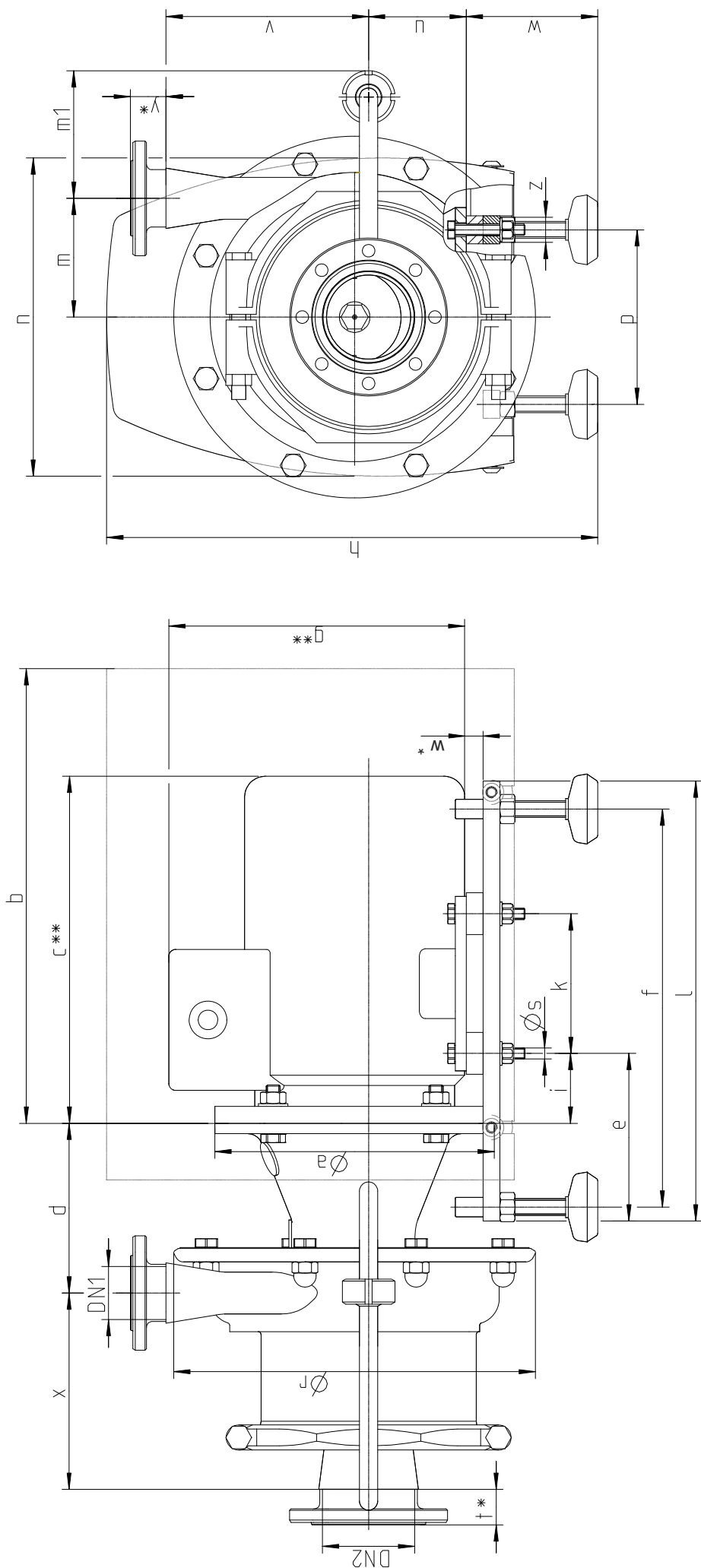
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编号 60 / Item 60		IEC 电机 / 50Hz IEC-motor / 50Hz		
			标准电机 / Standard motor	特种电机 / Special motor
电机 / pole	kW	电机尺寸 / Motor Size	JLEM	ABB - ATEX
2	1.1	80	527-362.01	526-664
2	1.5	90S	527-362.02	526-666
2	2.2	90L	527-362.03	526-668
2	3	90L	527-362.04	
2	3	100L		526-670
2	4	100L	527-362.05	
2	4	112M		526-672
2	5.5	112M	527-362.06	
2	5.5	132S		526-675
2	7.5	132S	527-362.07	526-677
2	11	132M	527-362.08	
2	11	160M		526-678
2	15	160M	527-362.09	526-679
2	18.5	160L	527-362.10	526-680
2	22	160L	527-362.11	
2	22	180M		526-681
2	30	200L	526-362.01	526-682
2	37	200L	526-362.02	526-683
2	45	225M	526-362.03	526-684
4	0.75	80	527-364.02	526-663
4	1.1	90S	527-364.03	526-665
4	1.5	90L	527-364.04	526-667
4	2.2	100L	527-364.05	526-669
4	3	100L		526-671
4	3	112M	527-364.06	
4	4	112M	527-364.07	526-673
4	5.5	132S	527-364.08	526-676
4	7.5	132M	527-364.09	526-674





尺寸数据表 / Dimension Sheet

GEA Hilge TPS 系列离心泵，配有 IEC 电机 / 50 Hz (B 版)

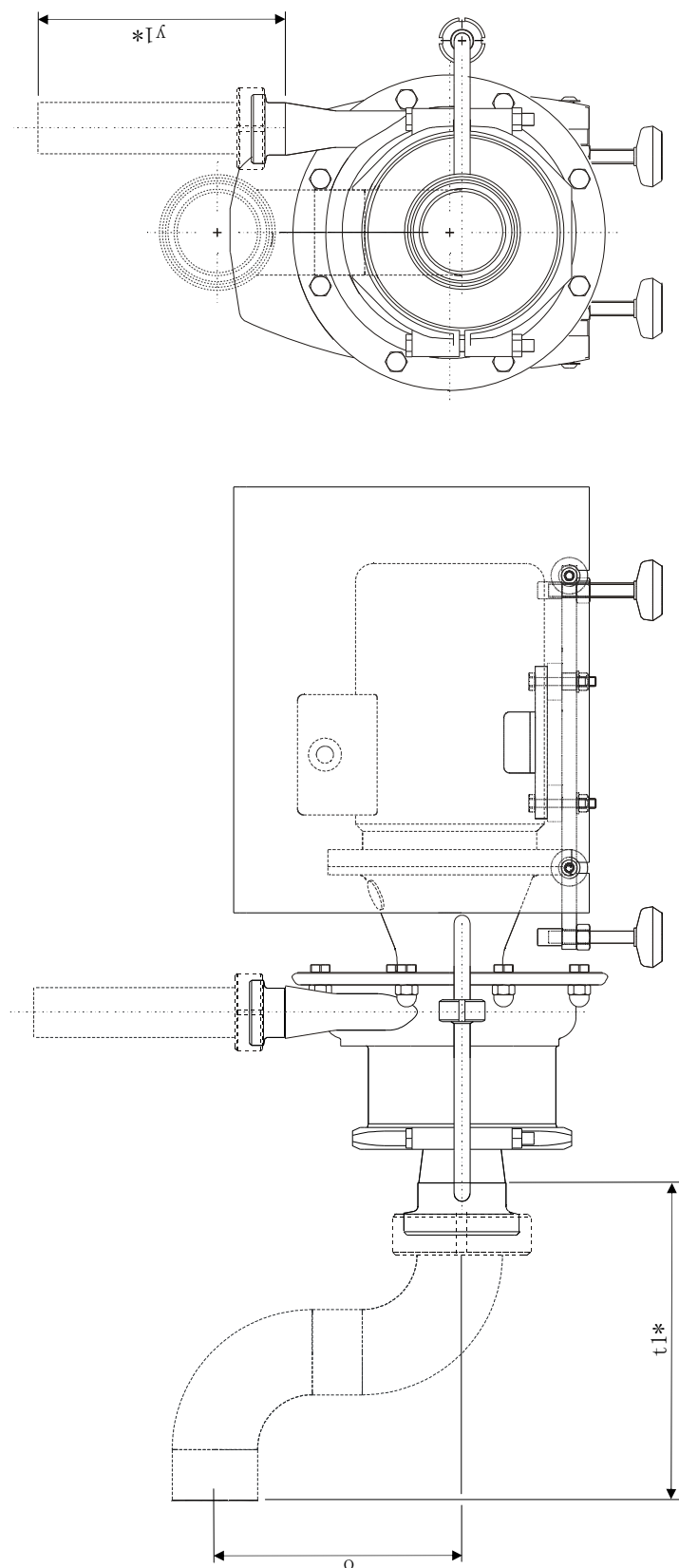
GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B

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尺寸为 o、t1\* 和 y1\* 的管路末端不在供货范围内。  
The pipe couplings with dimension o, t1\* and y1\* are not included in the scope of supply.

尺寸 / dimension mm		离心泵型号 TPS 2030 / pump type TPS 2030					离心泵型号 TPS 3050 / pump type TPS 3050				
电机尺寸 Motor size	90S / 90L	100L	112M	132S / 132M	100L	112M	132S / 132M	100L	112M	132S / 132M	160L
Ø a	140	160	160	200	160	160	200	160	160	200	250
Ø r	259	259	259	259	259	259	259	307	307	307	307
Ø s	8	10	10	10	10	10	10	10	10	10	12
dn 1	DN40	DN40	DN40	DN40	DN40	DN40	DN40	DN50	DN50	DN50	DN50
dn 2	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN65
b	348	388	388	473	388	388	473	388	388	473	596
c **	295	340	340	423	340	340	423	340	340	423	535
d	121.5	131.5	131.5	152	131.5	131.5	152	134	134	154	192
e	120	117	117	170	117	117	170	117	117	170	220
f	275	334	334	410	334	334	410	334	334	410	610
g **	238	264	295	329	264	295	329	264	295	329	410
h	386	386	426	446	386	426	446	386	426	446	573
i	56	64	64	90	64	64	90	64	70	90	108
k	125	140	140	178	140	140	178	140	140	178	210
l	315	374	374	450	374	374	450	374	374	450	650
m	85	85	85	85	103	103	103	103	103	103	103
m1	92	92	92	92	97	97	97	97	97	97	97
n	216	242	276	308	242	242	308	242	242	308	374
p	140	160	190	216	160 / 190	160 / 190	216	160 / 190	160 / 190	216	254
o	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500
t *	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
t1*	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200
u	90	100	112	132	100	100	132	100	100	132	160
v	135	135	135	135	155	155	155	155	155	155	230
w	78	78	78	78	78	78	78	78	78	78	105
w *	--	--	--	--	--	--	--	--	--	--	--
x	140.5	140.5	140.5	140.5	161.5	161.5	161.5	161.5	161.5	161.5	161.5
y *	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
y1*	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500
z	20	20	20	30	30	30	30	30	30	30	40
sw	24	24	24	24	24	24	24	24	24	24	24

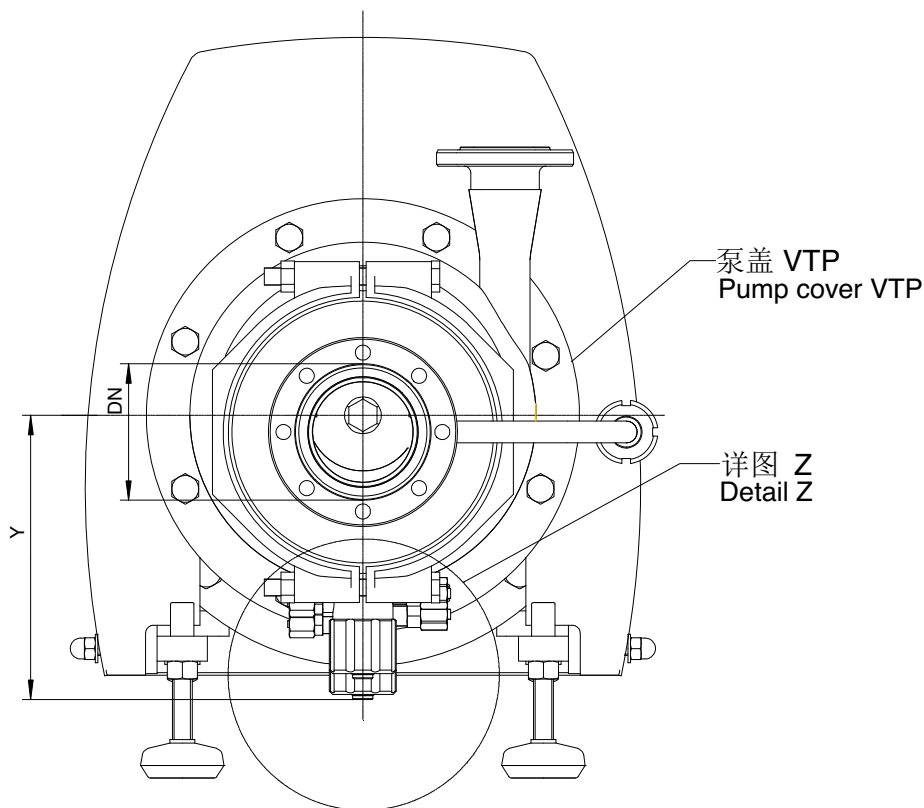
(\*) 按照 DIN 11853-2, 尺寸 t 和 y 仅适用于离心泵结构尺寸的相应标准直径为 dn 1 和 dn 2 时的法兰。  
The dimensions of t and y are only valid for flanges according to DIN 11853-2 at standard diameter dn 1 and dn 2 of the pump sizes.

尺寸 / dimension mm		离心泵型号 TPS 8080 / pump type TPS 8080	
日期/date : 2016-11-23 第 页 / Page 3 共 页 / of 4 244MBL011614ZH_1.DOC		尺寸数据表 / Dimension Sheet <b>GEA Hilge TPS 系列离心泵, 配有 IEC 电机 / 50 Hz (B 版)</b> <b>GEA Hilge TPS Centrifugal Pump with IEC-Motor / 50 Hz, version B</b>	
			

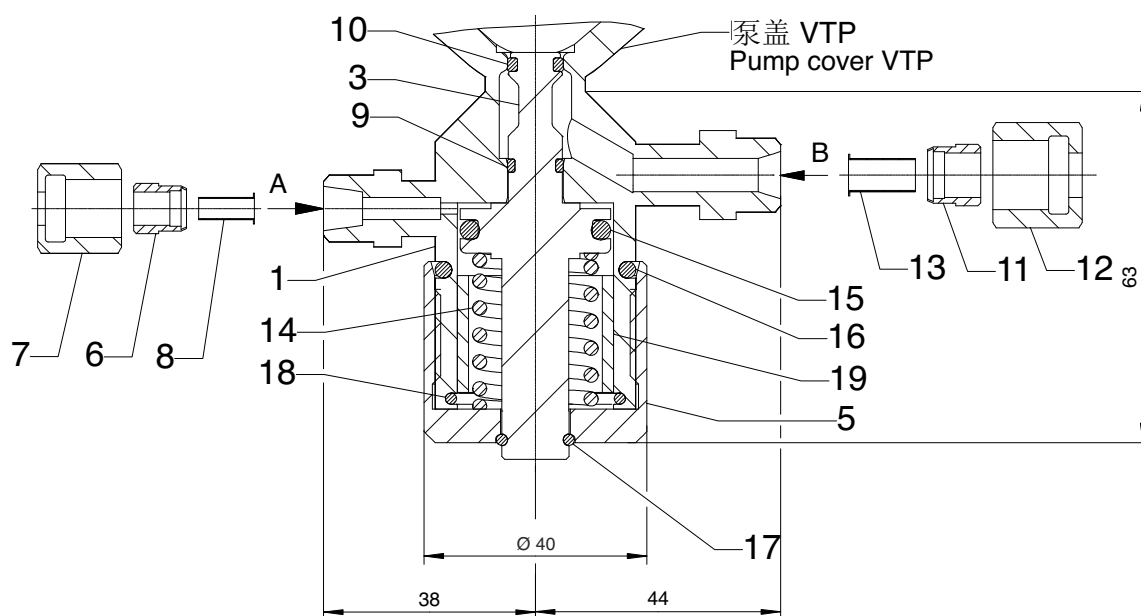
电机尺寸 Motor size						160M	160L	200L	225M
Ø a						250	250	400	450
Ø r						359	359	359	359
Ø s						M12	M12	M16	M16
dn 1						DN65	DN65	DN65	DN65
dn 2						DN80	DN80	DN80	DN80
b						596	596	773	810
c **						535	535	635	670
d						191	191	195	195
e						220	220	230	230
f						610	610	770	810
g **						410	410	500	551
h						573	573	689	720
i						108	108	133	149
k						210	210	305	311
l						650	650	810	850
m						124	124	124	124
m1						98	98	98	98
n						374	374	462	521
p						210	254	318	356
o						200 至 / to 500	200 至 / to 500	200 至 / to 500	200 至 / to 500
t *						27.5	27.5	27.5	27.5
t1*						约 200 / about 200	约 200 / about 200	约 200 / about 200	约 200 / about 200
u						160	160	200	225
v						250	250	250	250
w						105	105	111	115
w *						--	--	--	--
x						221	221	221	221
y *						25.5	25.5	25.5	25.5
y1*						最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500	最小 1500 / min. 1500
z						30	30	50	50
sw						30	30	30	30

(\*) 按照 DIN 11853-2, 尺寸 t 和 y 仅适用于离心泵结构尺寸的相应标准直径为 dn 1 和 dn 2 时的法兰。  
The dimensions of t and y are only valid for flanges according to DIN 11853-2 at standard diameter dn 1 and dn 2 of the pump sizes.





详图 Z/Detail Z





日期 / date 2016-11-23 第 页 / Page 2 共 页 / of 1 244ELI011506ZH_1.DOC	备件明细表 / Spare parts list <b>排放阀 VTP/LM / Drain Valve VTP/LM</b> 适用于 GEA Hilge TPS 系列离心泵 / for GEA Hilge TPS Centrifugal pump	
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编号 Item	名称 / Designation	材料 Material	零部件编号 / part no.
	阀芯 VTP/LM DN 10 / valve insert VTP/LM DN 10	乙烯丙烯橡胶 / 1.4404/EPDM 碳氟橡胶 / 1.4404/FKM	221-002586 221-002588
3	阀盘 VTP/LM DN 10 / valve disk VTP/LM DN 10	1.4404	221-002582
5	驱动器罩盖 VTP/LM DN 10 / actuator cover VTP/LM DN 10	1.4301	221-002580
6	卡套 / cutting ring	1.4571	933-458
7	锁紧螺母 / cap nut	1.4571	933-459
8	支撑套筒 / support sleeve	1.4571	933-380
9	O 形环 / O-ring	E7502	930-870
10	O 形环 / O-ring	乙烯丙烯橡胶 / EPDM 碳氟橡胶 / FKM	930-578 930-746
11	卡套 / cutting ring	1.4571	933-455
12	锁紧螺母 / cap nut	1.4571	933-456
13	支撑套筒 / support sleeve	1.4571	933-382
14	压缩弹簧 / pressure spring	1.4310	931-286
15	O 形环 / O-ring	乙烯丙烯橡胶 / EPDM	930-524
16	O 形环 / O-ring	腈丁二烯橡胶 / NBR	930-041
17	卡紧环 / snap ring	1.4310	917-190
18	卡紧环 / snap ring	1.4310	917-058
19	套筒 / sleeve	1.4404	221-003958

DN (mm)	泵盖 VTP 的零部件编号，留有安装排放阀 VTP 0° 的接管位置 / Part no. for pump cover VTP designed for position of the socket towards drainage valve VTP 0°									
	TP 1020	TP 2030	TP 1540	TP 2050	TP 3050	TP 5060	TP 7060	TP 2575	TP 8080	TP 16040
Ø 50	只有在提供泵盖的序列号、订单号或详尽的技术要求后，才能订购备件。 Delivery of spare parts only with serial number, order number or detailed specification of pump cover.									
Ø 65										
Ø 80										
Ø 100										
Ø 150										
A	气动连接 / pneumatic connection (用于连接直径为 Ø 6/4 mm 的气动软管 / for pneumatic hose Ø 6/4 mm)									
B	排放连接 / drain connection (用于连接直径为 Ø 8/6 mm 的软管或管道 / for hose or pipe Ø 8/6 mm)									
	尺寸 / Dimension									
Y (mm)	144	150	155	172	172	181	181	193	192	208

**EC - Declaration of conformity for machines  
in accordance with EC Machinery Directive 2006/42 /EC, Annex II 1. A**

Manufacturer: **GEA Tuchenhausen GmbH  
Am Industriepark 2-10  
21514 Büchen, Germany**

We, as manufacturer, declare in sole responsibility that the machinery

Name: GEA Hilge TP  
GEA Hilge TPS

Type: Centrifugal Pump

complies to all relevant provisions of this and the following directives:

Relevant EC Regulations:	2006/42/EC	EC Machinery Directive
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Applied harmonized standards, in particular:	DIN EN ISO 12100, Teil 1 + 2 DIN EN 809 DIN EN 60204 Teil 1
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Other applied standards and technical specifications:

Remarks: We also declare that the special technical documentation for this incomplete machine has been created in accordance with Annex VII, Part B and we obligate to provide these upon reasoned request from the individual national authorities by data transfer.

Authorized person for compiling and handing over technical documentation:	<b>GEA Tuchenhausen GmbH CE-Documentation-Commissioner Am Industriepark 2-10 21514 Büchen, Germany</b>
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Büchen, 28 November 2016



Michael Wulle  
Managing Director



i.V. Matthias Südel  
Senior Director  
Product Development Flow Components

## Declaration of the FDA conformity

Manufacturer: **GEA Tuchenhausen GmbH**  
**Am Industriepark 2-10**  
**21514 Büchen, Germany**

We, as manufacturer, declare in sole responsibility that the machinery

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Name: GEA Hilge TP  
GEA Hilge TPS


Type: Centrifugal Pump

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We exclusively use FDA compliant EPDM, HNBR and FKM materials for all seals in contact with product in our GEA Hilge centrifugal pump ranges TP and TPS.

We herewith certify that the ingredients of the materials are in accordance with the FDA "White List" as well as "FOOD and DRUG-ADMINISTRATION" 21 CFR Part 177.2600.

Büchen, 06 December 2016



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i.V. Marian Watzlaw  
Head of Quality & HSE



---

i.V. Matthias Südel  
Senior Director  
Product Development Flow Components



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GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 index.

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