

 <p>Schwarzer Precision</p>	<h1>Instructions for Use</h1>	<p>Rev. 03</p> <p>Date: <u>02.08.2013</u></p>
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1. Product Safety

1.1 Fundamental safety information

Familiarity with the fundamental safety information is an essential pre-requisite for the safe use and fault-free operation of these pumps.

The input lines must be designed for the pressure itemised in the technical specifications. The hose lines must be checked for damage. The pumps must be depressurised before disassembly.

The materials for the pump head, membrane and valves must be checked for compatibility with the medium.

The amount of gas should only be restricted or regulated in the line on the suction side to ensure that the maximum approved pump operational pressure is not exceeded.

When using aggressive media, eye protection (protective glasses) must be used.

Care must be taken with the rotating fan propeller. There is a risk of loose parts located on your person being squashed or drawn in. If necessary a protective cover must be arranged.

Pumps without housing are only suitable for being built in. There is a risk of direct contact with high-voltage parts.

The coil contacts may only be connected by electro-technical qualified staff. Power-plugs that provide the necessary safeguard against direct contact must be used.

For pumps without housing, the pump is to be taken out of operation if the coils are damaged.

Pumps that convey fluid must be mounted at the highest possible point in order to prevent water entering in the event of a leak.

Warning regarding hot surfaces:

If hot media is being conveyed or for motors under heavy load, the temperature of touchable surfaces can exceed 60°C, giving rise to a risk of burns. If necessary a protective cover must be arranged.

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1.2 Product safety for the actual application

The assessment of the suitability and product safety of the pumps for the actual application and the media and materials thereby used must be tested in accordance with the then current technology and thus determined before using the pumps.

The consequences of further use of the pumps and particularly their integration in terminals must be analysed and evaluated in order to ascertain the suitability and product safety of the pumps for the actual application.

1.3 Product safety with regard to parts subject to wear

The pumps contain parts subject to wear, and, just like damage, wear and tear can limit their performance or render them completely inoperative. Thus, in such a case in an actual application it must be ensured that no limitation of the terminal and no other further damage can arise due to the pumps being limited in performance or completely inoperative.

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2. Product Description

2.1 Intended use

The pumps are designed to generate a volumetric flow rate of media in liquid or gas form. Use in an explosive atmosphere and the conveyance of explosive media are prohibited.

2.2 Construction and components

Standard series:

Information regarding the construction and components of the pumps can be found in the data sheet for the pump series at www.schwarzer.com.

Customer-specific pumps:

Information regarding the construction and components of the pumps can be found in the specification sheet.

2.3 Technical specifications

Standard series:

Information regarding the technical specifications for the pumps can be found in the data sheet for the pump series at www.schwarzer.com.

Customer-specific pumps:

Information regarding the technical specifications for the pumps can be found in the specification sheet.

Please note that elastomers and lubricants in the motor and bearings are particularly subject to natural aging and it therefore might be possible that the performance/characteristics of the pump can change over the course of time.

Assessing the pumps' suitability for your application, the medium you use and the materials that you employ is your responsibility and must be based on your corresponding tests

We do not know the details regarding the use of the pumps by yourself or third parties. Therefore, we would like to point out, in particular, that you are responsible for analyzing and evaluating the consequences of further use of the pumps and especially of their integration into terminals in order to determine the suitability and safety of the pumps for the specific use.

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3. Instructions for Assembly and Operation

3.1 General information and preparatory activities

When assembling the pumps, the operating parameters and conditions that are described in the further technical documents for the pumps/series are to be observed. The safety instructions detailed in the above chapters are likewise to be observed.

The pumps must be installed in a dry location. The pumps must be protected from rain, spray, surging and dripping water. The pumps are to be stored at the assembly location before assembly in order to bring them to the room temperature at that location.

The pumps must not be exposed to dust. Appropriate filters must be used. The working life of the pumps may be reduced by the pneumatic resistance of the filter.

Protection from vibration and impact must be ensured.

In order to avoid performance loss and prevent any forces which might adversely affect the pump components, the pump must be installed with a flexible mounting so as to allow free oscillation.

The pumps may not be damaged due to assembly or handling errors or faulty storage.

The pumps are not to be stored in environmental conditions with high temperatures or extreme humidity.

Recommended environmental conditions are: temperatures from +10°C to 30°C and relative humidity of 30 to 95%. Care should be taken in particular with pumps that are stored for 6 months or more (3 months for motors with lubricant), as the starting output can be limited.

The pumps may not be located in an atmosphere with corrosive gases, as this can lead to malfunction.

Aggressive gases may damage parts of the motor and the elastomer of the pumps. Gas emitting glues, gas emitting silicon, halogen gases, silicon and assembly oils may not come into contact with the motor, otherwise the motor can become inoperative.

Never open the body mount cover of the pumps. Contact with the connecting rod and ball bearing must be prevented. The pump head may not be opened either and the torque of the four pump head screws may not be changed.

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3.2 Connection to electricity supply

The pumps may only be connected by an authorised, qualified member of staff.

The pumps may only be connected if the electricity supply is switched off.

A device to separate the pump motor from the electricity supply is to be built in to the electrical installation (in accordance with EN 60335-1).

The supply voltage data must agree with the specifications on the motor identification plate. **Here, the supply voltage may deviate from the specifications on the identification plate by up to 10% at most!**

When connecting pumps that are powered by direct current voltage, attention must be paid to the correct polarity (red wire: positive polarity, black or blue wire: negative polarity).

If the pumps are to be controlled with pulse width modulation, it must be ensured that the motor is suitable for this or which frequency the motor is suited to.

The soldering process must be done quickly so that no deformation / melting of the motor can occur. At the same time care must be taken that the soldering connections are not mechanically strained. Care must be taken in particular that neither solder nor fluxing agent go into the motor. Appropriate measures are to be taken e.g. by covering the holes in the motor.

In addition, please note the engine manufacturers General Technical Data. Corresponding information can also be found on the manufacturers Web page.

3.3 Connection to the pump ports

Only those components may be connected to the pumps that are designed for the pumps' pneumatic specifications.

The direction of flow is shown on the pump head with a corresponding label.

Protective plugs must be removed from the hose nipples.

So that no condensate can run into the pumps, suction and pressure lines must be laid sloping downwards.

Only those connections that are designed for the performance specifications of the pumps may be used.

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The pump output at the pumps' pneumatic outlet must be safely channelled off if the pump is used in vacuum operation.

3.4 Affixing

When affixing the pumps, care is to be taken not to use force that would damage the pumps. This applies in particular to radial forces on the motor. The motor's electrical connections may not be put under strain by pressing or bending. Fat and oil must be prevented from entering the motor and the pumps in order to prevent the motor becoming inoperative. No ultra-sound-waves may be used during the assembly process.

In order to prevent condensate collecting in the pump head, the pump must be affixed to the highest point in the system.

3.5 Operation

The intended use of the pumps and the safety information are to be observed.

Any unintended use is to be excluded.

Should there be a pump stoppage during operations, normal atmospheric pressure must be established in the lines.

When the pumps are switched on or start-up again following a short-term electricity outage, they may not start-up against pressure or a vacuum.

There must be normal atmospheric pressure in the lines for every start-up.

The pumps must be checked for external damage and leakage at regular intervals.

4. Fault Identification and Rectification

No independent measures may be carried out to repair the pumps. This applies in particular to opening the pumps.