TRANSLATION OF THE
ORIGINAL OPERATING & INSTALLATION INSTRUCTIONS

Peristaltic pump




Retain for future use!

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Product changes

Year	Type	Changes

Revisions to the document

Date	Version	Changes
26.03.2025	1.0	First draft

Permissions

This document requires the following permissions:

Name	Title

Contents

List of figures

1 Introduction

These Original Operating & Installation Instructions provide you with all the information you need for the smooth operation of the Peristaltic pump (hereinafter also referred to simply as the Machine).

The Original Operating & Installation Instructions must be read, understood and applied by all persons who are responsible for the assembly/installation, transport, commissioning, operation, maintenance, cleaning, troubleshooting, decommissioning, disassembly and disposal of the Machine. This applies in particular to the listed safety notices.

After studying the Original Operating & Installation Instructions you will be able to:

- transport the Peristaltic pump safely,
- assemble/install the Peristaltic pump safely,
- commission the Peristaltic pump safely,
- operate and use the Peristaltic pump safely,
- take appropriate action when a malfunction occurs,
- maintain the Peristaltic pump in accordance with the instructions,
- clean the Peristaltic pump in accordance with the instructions,
- decommission the Peristaltic pump safely,
- dismantle the Peristaltic pump safely,
- dispose of the Peristaltic pump in accordance with the regulations.

In addition to the Original Operating & Installation Instructions, generally applicable, statutory and other binding regulations on accident prevention and environmental protection in the country of use must be observed.

The Original Operating & Installation Instructions must be kept at the installation site of the Peristaltic pump at all times.

1.1 Signs and symbols

As an indication and direct warning of dangers, textual statements in these Original Operating & Installation Instructions that require special attention are labelled as follows:

1.1.1 Section-related warnings

Section-related warning notices are not only relevant for a particular action, but apply to all actions within a section.

Structure

⚠ SIGNAL WORD

Symbol more precisely specifying the danger

Type and source of danger!

Potential consequence(s) of non-observance!

► Measure(s) to take to avoid the danger.

Levels of danger

⚠ DANGER

A high-risk threat which, if not avoided, will lead to death or severe injury.

⚠ WARNING

A medium-risk threat which, if not avoided, could lead to death or severe injury.

⚠ CAUTION

A low-risk threat which, if not avoided, could lead to slight to moderate injury.

NOTE

A low-risk threat which, if not avoided, could lead to material damage.

1.1.2 Embedded warnings

Embedded warning notices apply to particular actions and are directly integrated in the action in question.

Structure

⚠SIGNAL WORD Type and source of the danger

Potential consequence of non-observance

► Measures to avoid the danger

Levels of danger

– **⚠ DANGER/WARNING/CAUTION**

– ***NOTE*** (without warning triangle)

1.1.3 Other signs and symbols

The “info” symbol indicates useful information.

– Texts following this label are lists.

► Texts following this label describe measures using warning indications and action steps.

a) Texts following this label describe activities to be carried out in the order given.

“” Texts in quotation marks are references to other chapters or sections.

1.1.4 Symbols used in the Original Operating & Installation Instructions

In warning notices, special hazards are additionally marked as follows:

Symbol	Description
	Warning signs
	**Warning against hand injuries** This symbol warns of hand injuries.
	**Warning against the risk of getting caught** This symbol warns of the danger of getting pulled in by rotating parts.
	**Warning against automatic start-up** This symbol warns of dangers due to automatic start-up.
	**Warning against cuts** This symbol warns of the risk of cutting injuries.
	**Warning against floor-level impediments** This symbol warns of risk of tripping due to obstacles on the ground.
	**Warning against slipping** This symbol warns of the danger of slipping on the ground.

Symbol	Description
	**Warning against suspended loads** This symbol warns of the danger of standing under suspended loads.
	**Warning against electrical voltage** This symbol warns of electrical hazards.
	**Warning against hot surfaces** This symbol warns of a danger of burns from hot surfaces.
	Prohibition sign
	**No access for unauthorised persons** This symbol prohibits unauthorised access to the danger zone. Dangers cannot be detected by unauthorised persons.
	**Machine may only be operated by one person** This symbol prohibits the operation of the Machine by more than one person.
	**No access for people with pacemakers or implanted defibrillators** This symbol prohibits access to persons with pacemakers or implanted defibrillators.
	**Do not reach in** This symbol prohibits reaching in.
	Mandatory sign
	**Observe the Original Operating & Installation Instructions** This symbol indicates that the Original Operating & Installation Instructions must be observed.
	**Power down before maintenance or repair** This symbol indicates that all energy sources must be disconnected from the mains before cleaning, maintenance or repair.
	**Use safety goggles** This symbol indicates that safety goggles must be worn in the area of deployment.
	**Use safety shoes** This symbol indicates that safety shoes must be worn in the area of deployment.

Symbol	Description
	**Use safety gloves** This symbol indicates that hand protection must be worn in the area of deployment.
	**Use protective work clothing** This symbol indicates that protective clothing must be worn in the area of deployment.
	**Use a helmet** This symbol indicates that head protection must be worn in the area of deployment.
Danger sign	
	**Warning against environmentally hazardous substances** This symbol warns of environmentally hazardous substances.
	**Danger – beware of flammable substances** This symbol warns of flammable substances.
	**Danger – caution toxic (harmful)/corrosive or irritant/serious health hazard** This symbol warns of substances that are hazardous to health.
Other symbols	
	**Disposal instructions** This symbol indicates that the marked product must not be disposed of with household waste.
	**Recycling** This symbol represents the reuse of materials (recycling).

1.2 Warranty and liability

The obligations agreed in the delivery contract, the general terms and conditions and delivery conditions of the Peristaltic pump and the statutory regulations valid at the time the contract is concluded shall apply.

All information and instructions in these Original Operating & Installation Instructions have been compiled taking into account the applicable standards and regulations, the state of the art and our many years of knowledge and experience.

These Original Operating & Installation Instructions are not intended as a substitute for the suitability or reliability of the Peristaltic pump when put to any particular user application and must not be used to determine its suitability or reliability.

The Peristaltic pump may only be used for the applications described by the manufacturer. All other applications are improper and are considered dangerous. The manufacturer cannot be held liable for damage caused by errors, unintentional or improper use of the Peristaltic pump.

Warranty and liability claims for personal injury and damage to property are ruled out if they are attributable to one or more of the following causes:

- Non-intended or improper use of the Peristaltic pump,
- improper transport, assembly/installation, commissioning, operation, troubleshooting, maintenance/cleaning, decommissioning, dismantling and disposal of the Peristaltic pump,
- Failure to observe the Original Operating & Installation Instructions and the instructions therein regarding installation, commissioning, operation, maintenance and cleaning of the Peristaltic pump,
- use of unqualified or untrained personnel,
- structural changes to the Peristaltic pump (conversions or other changes to the Machine may not be made without the prior written authorisation of Spetec GmbH. in case of infringements the Peristaltic pump loses its suitability for use),
- improperly performed repairs,
- use of non-approved spare parts or use of spare parts that do not meet technical specifications,
- disasters, extraneous causes, and *force majeure*.

In addition, Spetec GmbH reserves the right to revise this publication at any time due to technical changes carried out in the context of improvements to the usage characteristics of the pump and further development, without incurring the obligation to inform other persons of the revision.

1.3 Copyright

These Original Operating & Installation Instructions are protected by copyright and are intended for internal use only.

The Original Operating & Installation Instructions may not be made available to third parties, reproduced in any form or by any means – in whole or in part – or used and/or communicated without the written permission of Spetec GmbH, except for internal purposes.

Infringement will necessitate the payment of damages. We reserve the right to make further claims.

1.4 Warranty conditions

The warranty provisions are set out in the General Terms and Conditions of Spetec GmbH.

1.5 Customer service

For technical information, please contact our customer service department:

Phone: +49 8122 95909-0

In addition, our employees are always interested in new information and insights derived from practice which can be valuable for the improvement of our products.

2 Safety

⚠ WARNING

Failure to observe the following safety instructions can have serious consequences:

Endangerment of persons through electrical, mechanical or chemical influences, failure of important functions of the Machine and environmental damage!

- ► Read through the safety instructions and the dangers in this section thoroughly before starting up the Peristaltic pump.
- ► In addition to the instructions in this Original Operating & Installation Instructions, observe the generally applicable safety and accident prevention regulations.
- ► In addition to the instructions in this Original Operating & Installation Instructions, observe the existing national occupational, operational and safety regulations. Also comply with any existing internal factory regulations.
- ► In addition to the remarks in this Original Operating & Installation Instructions, also observe the third-party documentation provided.

2.1 Proper use

The operational safety of the Peristaltic pump is only guaranteed if it is used as intended.

These peristaltic pumps are designed for installation in a system and are exclusively intended for dosing and conveying various liquids with high precision and minimal pulsation.

The Peristaltic pump is designed as standard for operation by one person and may only be installed, commissioned and operated by trained and instructed specialist personnel familiar with the safety regulations.

Use the tubing lines and electrical cables properly:

- avoid kinks, sharp edges, loads and impacts.
- Avoid tangling the cables.

The Peristaltic pump is designed for Automatic mode, semi-automatic mode, set-up mode, manual mode and remote mode.

The Peristaltic pump may only be used within the scope of its technical data. Proper use also includes adherence to the specifications in the technical data, upholding the Original Operating & Installation Instructions, complying with the maintenance and servicing regulations and following the nationally applicable safety, occupational health and accident prevention regulations. Any operation beyond this is considered improper.

The customer’s facilities must be able to withstand the mechanical, thermal and service life-related stresses that occur.

The Peristaltic pump is not intended for use by the end user and must be tested and documented by the operator for electromagnetic compatibility.

The specified maximum technical data must not be exceeded. The area of application of the Peristaltic pump is the industrial sector inside buildings (never use outdoors). The Peristaltic pump is not intended for any use other than that listed here; this is considered improper use. It is forbidden, in particular,

- to use defective or unsuitable accessories,
- to operate the Peristaltic pump while untrained persons are in the danger zone,
- to operate the Peristaltic pump in potentially explosive atmospheres, e.g. when flammable liquids, gases or dust are present, as the equipment generates sparks that can ignite the dust or fumes,
- to operate the Peristaltic pump in the vicinity of flammable substances or components,
- to use the Peristaltic pump as a safety component or for performing safety-related functions,
- to operate the Peristaltic pump if it is not ready for operation or has been modified,
- to use the Peristaltic pump for cosmetic, pharmaceutical or food purposes,
- to operate the Peristaltic pump without instruction,
- to place objects inside or on the Peristaltic pump; such objects must be removed,
- to expose the equipment of the Peristaltic pump to rain or wet conditions, as water entering the equipment of the Peristaltic pump increases the risk of electric shock.

Intended use also includes:

- observing all instructions in the Original Operating & Installation Instructions and the external documentation,
- complying with the inspection and maintenance intervals,
- using equipment and auxiliary materials in accordance with applicable safety regulations,
- compliance with national, regional and local safety and accident prevention regulations,
- complying with the operational conditions.

The technical specifications given in the technical data must be adhered to without exception.

► Only use the Peristaltic pump as intended; otherwise, safe operation cannot be guaranteed.

► If you have any specific questions, please contact Spetec for support.

The operator of the Peristaltic pump , not the manufacturer, is responsible for all personal injury and property damage resulting from improper use!

2.1.1 Note on installing the Peristaltic pump

Installation may only be carried out by specialists trained in control, automation and drive technology who are familiar with the applicable national, regional and local safety and accident prevention regulations.

The Peristaltic pump is intended for installation in a machine, system or device; the control and safety devices are therefore specified by or installed in the machine, system or device. The connection is made by the operator’s machinery supplier.

The Peristaltic pump may only be put into operation once it has been established that the machine, system or device into which the Peristaltic pump is to be installed fulfils all the safety requirements of the Machinery Directive 2006/42/EC and other applicable directives and standards.

It is the duty of the manufacturer or distributor to carry out an appropriate and complete risk assessment, evaluation and testing of the Peristaltic pump with regard to the specific application or use in question.

In the event of an emergency, it is recommended that the procedures in the operating and maintenance instructions for the machine, system or device into which the Peristaltic pump is installed are observed and applied.

► During maintenance work, secure the Peristaltic pump against unexpected restarting on the machine, system or device in which the Peristaltic pump is installed.

2.1.2 Structural changes to the Peristaltic pump

Design and manufacturer approval are based on the German Product Safety Act (ProdSG). No modifications, additions or conversions may be made to the Peristaltic pump without the prior written authorisation of Spetec GmbH .

In the event of non-compliance, the Peristaltic pump loses its suitability for use. The manufacturer of the Peristaltic pump is not bound by the warranty in this situation.

Replace any parts that are not in perfect condition immediately.

Only use original replacement/wear parts/accessories. These parts are specially designed for the Peristaltic pump. Using externally sourced parts, there is no guarantee that they have been designed and manufactured to withstand stresses and ensure safety.

Parts and special equipment not supplied by Spetec GmbH are not approved for use on the Peristaltic pump.

2.1.3 Foreseeable misuse

Any use of the Peristaltic pump that goes beyond the intended use and/or any other use may result in serious injury.

- ► Only use the Peristaltic pump as intended.
- ► Only use the Peristaltic pump if maintenance and inspection have been carried out correctly.
- ► Only use media that are compatible with the tubing material of the pump. Pumping unauthorised media can damage the tubing and cause the pump to malfunction.
- ► Only use tubing that is compatible with the pump. The use of unauthorised tubing can lead to damage to or malfunction of the pumps.
- ► Do not operate a peristaltic pump of the Precision Standard or Precision Compact type with the adjustment lever screw excessively tightened. Excessive clamping pressure can damage the tubing and considerably shorten the service life of the tubing and the pump.
- ► Ensure that the pump is not operated without the tubing correctly clamped. Operation without tubing can damage the mechanics of the pump and cause safety risks.
- ► Avoid using the pump in potentially explosive atmospheres unless it is expressly designed for this purpose. Improper use in such environments can lead to dangerous situations.
- ► Do not make any changes to the pump or tamper with it. Unauthorised modifications can impair operational safety.

2.2 Personnel requirements

The Peristaltic pump may only be transported, installed, commissioned, operated, maintained, cleaned, repaired, decommissioned, inspected, dismantled or disposed of by persons who are qualified and/or instructed to do so. If the personnel concerned do not already have the necessary knowledge and skills, appropriate training and instruction must be provided. All local regulations must be observed.

These persons must be familiar with the Original Operating & Installation Instructions and act accordingly. The assignments of all personnel must be clearly defined.

Persons with limited physical, sensory or mental capabilities or a lack of experience and knowledge must be supervised or instructed in the safe use of the Peristaltic pump and understand the hazards involved.

The Original Operating & Installation Instructions specify the following qualifications for various areas of activity:

2.2.1 Personnel to be trained

Trainee personnel such as apprentices or temporary staff are not aware of all the hazards that can occur when operating the Peristaltic pump. Work on the Peristaltic pump may only be carried out under the supervision of qualified or instructed personnel.

2.2.2 Instructed personnel

Instructed personnel have been trained in the tasks assigned to them and the potential dangers of improper behaviour through training provided by the operator or by qualified personnel.

2.2.3 Qualified personnel

Qualified personnel are those who, because of their specialist training, knowledge, experience and understanding of the relevant regulations, are able to properly carry out the tasks assigned to them, recognising and avoiding any potential dangers independently.

2.2.4 Qualified electricians

Due to their technical training, knowledge and experience as well as their knowledge of the relevant standards and regulations, qualified electricians are able to carry out work on electrical equipment and to independently detect and avoid possible dangers.

Qualified electricians are trained for the specific location in which they work and know the relevant standards and regulations.

2.2.5 Responsibilities

Improper handling can lead to severe personal injury and material damage.

- Only persons who can be expected to reliably carry out their work are authorised as personnel. No persons whose ability to react is impaired by drugs, alcohol, medication or similar are permitted to work on the Peristaltic pump.
- All persons working on the Peristaltic pump must read the Original Operating & Installation Instructions and confirm by signature that they have understood them.

– Personnel to be trained may initially only work on the Peristaltic pump under the supervision of qualified personnel. Complete and successful instruction must be confirmed in writing.

► Note the personnel requirements for the different life phases/operating modes.

Personnel requirements	Life phase/operating mode
Qualified specialist personnel, qualified electrician	Transport, installation, commissioning, malfunction, maintenance, decommissioning, disassembly, disposal
Trainees, instructed personnel	Normal operation and cleaning

The operator is responsible for the instruction of the personnel.

2.2.6 Obligations of the personnel

All persons who are authorised to work on the Peristaltic pump must undertake, before starting work:

– to observe the basic regulations on occupational safety and accident prevention,

– to read the safety instructions and warnings in these Original Operating & Installation Instructions and to confirm that they have understood them by signing them.

2.2.7 Unauthorised persons

Unauthorised persons who do not meet the qualification requirements for the personnel are not aware of the dangers in the area of deployment.

► Keep unauthorised persons away from the area of deployment.

► If in doubt, speak to such persons and instruct them to leave the area.

► Interrupt work as long as unauthorised persons are in the area of deployment.

2.3 Basic safety instructions

► The Peristaltic pump may only be put into operation and maintained after these Original Operating & Installation Instructions have been taken to heart.

► Only use the Peristaltic pump as intended.

► Only operate the Peristaltic pump if there are no other persons in the danger zone.

► When operating the Peristaltic pump , refrain from any work that could jeopardise the safety of persons or of the Peristaltic pump.

► Always keep the area of use of the Peristaltic pump clean and tidy to avoid hazards caused by dirt and parts lying around.

► Only operate the Peristaltic pump within the scope of its technical performance data.

► Keep all safety and danger notices on the Peristaltic pump in a legible condition and renew them if necessary.

- ► Operation and work on the Peristaltic pump may only be carried out by qualified or instructed personnel.
- ► In the event of malfunctions, switch off the Peristaltic pump immediately. Have faults rectified by appropriately trained specialists or by Spetec GmbH .
- ► Keep the Original Operating & Installation Instructions at the installation site of the Peristaltic pump at all times. It must be ensured that all persons carrying out work on the Peristaltic pump can view the Original Operating & Installation Instructions at all times.
- ► Re-evaluate the safety risks posed by the Peristaltic pump after installation in the end device.

2.4 Environmental protection measures

- ► When working, comply with all requirements related to waste avoidance and proper recycling or disposal of materials.

Particular care must be taken during installation and maintenance work as well as during decommissioning to ensure that substances hazardous to groundwater such as Lubricants, cleaning fluids and other chemical substances or emissions do not pollute the ground or enter the sewage system. These substances must be collected in suitable containers and stored, transported and disposed of according to local regulations.

2.5 Special hazard statements/residual hazards

2.5.1 Symbols used on the Machine

Symbol	Description	Place attached
	Warning signs	
	**Warning against the risk of getting caught** This symbol warns of the danger of getting pulled in by rotating parts.	On the nameplate
	**Warning against electrical voltage** This symbol warns of electrical hazards.	All housings containing electrical equipment
	**Warning against hot surfaces** This symbol warns of a danger of burns from hot surfaces.	At surface temperatures greater than +45 °C
	Mandatory sign	

Symbol	Description	Place attached
	**Observe the Original Operating & Installation Instructions** This symbol indicates that the Original Operating & Installation Instructions must be observed.	On the nameplate
	Other symbols	
	**Disposal instructions** This symbol indicates that the marked product must not be disposed of with household waste.	On the nameplate

► Keep all safety and danger notices on the Peristaltic pump in a legible condition. Replace the notices as necessary.

2.5.2 Danger from electrical energy

DANGER

There is a risk of electric shock when touching live parts!

A failure to observe this will result in serious injuries!

► Always keep electrical components closed.

► Only allow work on the electrical equipment to be carried out by a qualified electrician who is specially trained for work on such equipment and who can recognise and avoid dangers.

► Apply the five safety rules:

1. Disconnect from power.
2. Secure against switching on.
3. Check for zero voltage.
4. Earth and short-circuit.
5. Cover or cordon off live parts.

DANGER

In the event of electric shock, there is a risk of secondary accidents due to spasm (e.g. falling)!

A failure to observe this will result in serious injuries!

► Follow the five safety rules when working on the electrical equipment.

► Have work on the electrical equipment carried out by qualified electricians only.

- ► Before working on the electrical equipment, power down the Peristaltic pump and secure it against being switched on again.
- ► Only allow work on the electrical equipment to be carried out by a competent and qualified electrician – e.g. an industrial electrician.
- ► Regularly check the electrical systems for defects such as loose connections or scorched cables. Have defects rectified immediately.
- ► Have electrical equipment and stationary electrical facilities checked by a qualified electrician at least every 4 years.
  Stationary electrical facilities are permanently installed equipment or facilities which have no elements designed to aid portability and whose weight is such that they cannot easily be moved. This includes electrical equipment that is temporarily fixed in place and can be operated via mobile connection lines.
- ► Have portable electrical equipment, connecting cables, extension cables and cables connecting to the Machine, with their plugs and sockets, checked by a qualified electrician at least every 6 months if they are used.
- ► Equipment is considered portable if it can be moved during normal operation while connected to a source of electricity.
- ► Modifications to electrical equipment carried out after the test must comply with the currently applicable standards and directives.
- ► Check all safety devices on the Peristaltic pump regularly to ensure that they are working properly.
- ► Always keep all enclosures containing electrical equipment closed.
- ► Only have repairs carried out by Spetec GmbH.
- ► For leakage currents above 10 mA, additional measures must be taken (earthing).
- ► Regularly check the electrical equipment of the Peristaltic pump.
- ► Remove loose connections and defective cables immediately.
- ► When working on the Peristaltic pump, switch off the mains voltage and secure it against being switched on again.
- ► Please note that interference from electromagnetic radiation is possible, e.g. in connection with the use of control devices. If inadmissible radiation levels occur where the device is installed, implement suitable shielding measures before bringing it into circulation.
- ► Ensure the EMC of the entire installation.

2.5.3 Hazards due to media escaping under pressure

⚠ CAUTION

Pressurised fluids can penetrate the skin!

A failure to observe this can result in injuries!

- ► Only allow work on the components to be carried out by qualified personnel with specialised knowledge and experience.
- ► Before working on the components, switch off the Machine and secure it against being switched on again.
- ► Depressurise the system sections and tubing to be opened before starting repair work.
- ► Check all tubing and screw connections regularly for leaks and recognisable damage. Have any damage repaired immediately.
- ► Replace tubing at appropriate intervals, even if no safety-relevant defects are recognisable.
- ► Always wear the protective equipment required for the work in question (protective clothing, protective gloves).

2.5.4 Risks from supplier components

⚠ CAUTION

The supplier components of the Peristaltic pump present danger!

Failure to observe the manufacturers' operating or assembly instructions provided by suppliers can result in injury!

- ► Observe the design, function and mode of operation of the purchased components, which are described in detail in the external manufacturers' operating and assembly instructions. These are essential elements of the technical documentation and are enclosed with it. Observe the sections on safety, maintenance and servicing in particular. The operating and assembly instructions for the supplier parts can be found in the documentation folder enclosed with this Peristaltic pump . Observe the manufacturers' operating and assembly instructions. Failure to do so may result in personal injury or material damage.

2.5.5 Danger due to hot surfaces

⚠ WARNING

Contact with hot components can cause burns!

A failure to observe this can lead to severe injury!

- ► During all work near hot components, wear protective clothing and gloves. Components that can become hot are marked with the graphic symbol “Warning: hot surface”.
- ► Allow such components to cool down to ambient temperature before carrying out maintenance or repair work.
- ► Ensure adequate protection against accidental contact.

2.5.6 Risk of tripping

⚠ CAUTION

Risk of tripping due to improperly laid power supply cables and tubing!

A failure to observe this can result in injuries!

- ► Always lay tubing and cables in the supply duct so that they present no trip hazards or impediments.
- ► Indicate unavoidable trip hazards with bright colours.

2.5.7 Dangers due to crushing

⚠ CAUTION

Risk of injury due to crushing in the area of the roller head!

Slight crushing may occur!

- ► Keep a sufficient distance from the area where the moving components are to deploy.
- ► Do not touch moving parts.
- ► Keep your hands out of the area of the roller head, especially during operation.
- ► Please note that the theoretical maximum possible force of the stepper motor is less than the permitted 75 N and that it is not necessary to intervene in hazardous areas in automatic mode.
- ► Make sure that you correctly assess the movements of the roller head and keep a safe distance so that you can react in good time.

2.5.8 Hazards due to suspended loads

⚠ WARNING

While lifting the Peristaltic pump or its components, the following special hazards are to be expected:

Suspended loads can fall, posing a danger to life!

Unsecured loads can tip over!

Protruding edges can cause crushing or cutting injuries!

- ► Only use approved lifting attachment points/couplings.
- ► Always wear the personal protective equipment necessary for the work in question (protective clothing, safety gloves, helmet and shoes).
- ► Ensure that neither you nor other people loiter under suspended loads.
- ► Observe the marked stop points (if present).

2.5.9 Dangers due to slipping

⚠ CAUTION

Risk of slipping due to spilt lubricant or leaked liquids!

A failure to observe this can result in injuries!

- ► Clean the floor immediately if it becomes contaminated.
- ► Dispose of the cleaning cloths in the collection containers/waste bins provided.

2.5.10 Dangers due to improper storage

⚠ CAUTION

Danger due to improper storage of objects!

Inappropriate storage of objects inside or on the Peristaltic pump can lead to damage, malfunctions or total failure, impairing safety!

- ► Please note that it is prohibited to place objects inside or on the Peristaltic pump. Remove all objects that are inside or on the Peristaltic pump.

2.5.11 Danger due to use of incorrect replacement parts

⚠ WARNING

Danger from use of the wrong spare parts!

Faulty or incorrect replacement parts can lead to damage, faults or total failure and can compromise safety!

- ► Only use original replacement parts.
- ► Procure spare parts from Spetec GmbH. The necessary information on the spare parts can be found in the enclosed parts lists or in “1.5 Customer service”.

2.5.12 Danger due to inadequate safety precautions

⚠ WARNING

Dangers due to inadequate safety precautions!

A failure to observe this can lead to severe injury!

- ► Please note that the Peristaltic pump is a built-in component without independent function; the operator is responsible for adequately safeguarding it.

2.5.13 Dangers due to automatic start-up

⚠ WARNING

Dangers due to automatic start-up!

A failure to observe this can lead to severe injury!

- ► Maintain a sufficiently safe distance.
- ► Before carrying out any work on the Machine, make sure that it has been switched off and disconnected from the power supply.

2.5.14 Danger of getting caught in rotating components

⚠ CAUTION

The Machine presents a risk of getting caught and pulled in!

Non-compliance may result in minor injuries!

- ► Keep a safe distance.
- ► Be wary of all moving parts during equipping, maintenance and repair work.
- ► Wear close-fitting clothing in the danger zone (no chains, rings, ties, etc.).
- ► In areas where there is a risk of being pulled in, never work with safety gloves (risk of being caught or pulled in).
- ► If you have long hair, wear a hairnet to protect it from being pulled into rotating components.
- ► Do not touch moving parts.
- ► Secure the Peristaltic pump against accidental contact. Wait until all parts have come to a standstill before working on the system/machine.
- ► Only carry out adjustment and inspection work when the peristaltic pump is at a standstill.
- ► Always keep your hands away from rotating components during operation.

2.5.15 Dangers of insufficient qualification

⚠ WARNING

Risk of injury due to insufficient qualification!

Improper handling of the Peristaltic pump can lead to considerable personal injury and damage to property!

- ► Only allow qualified personnel to carry out all activities.

2.5.16 Dangers due to Lubricants, cleaning fluids and other chemical substances or emissions

⚠ WARNING

The Peristaltic pump presents dangers from Lubricants, cleaning fluids and other chemical substances or emissions!

A failure to observe this can lead to severe injury!

- ► When handling them, observe the safety regulations applicable to the product for Lubricants, cleaning fluids and other chemical substances or emissions.
- ► When working, always wear the personal protective equipment necessary for the work procedure in question (respiratory protection, protective clothing, safety goggles and gloves).

2.6 Personal protective equipment

When operating the Peristaltic pump , personal protective equipment must be worn to minimise health hazards, regardless of the risk assessment in place for the area of deployment. The personal protective equipment must be designed in particular with regard to the corresponding risk.

- ► When working, always wear the personal protective equipment necessary for the respective work procedure.
- ► Do not wear any rings, chains or other jewellery.
- ► Follow all the instructions on personal protective equipment.

The symbols have the following meaning:

Symbol	Description
	**Safety shoes** Wear non-slip safety shoes to protect against heavy falling objects or slipping on smooth surfaces.
	**Protective work clothing** Protective clothing is tight-fitting work clothing that has low tear-resistance, close-fitting sleeves and no protruding parts. It is primarily used to protect against being caught by moving Machine parts.
	**Safety gloves** Wear protective gloves to protect the hands against abrasion, scraping, piercing or deeper injuries and against coming in contact with hot surfaces or chemical substances.
	**Safety helmet** To protect against falling or flying objects, wear a helmet.

Symbol	Description
	**Safety goggles** Wear protective goggles to protect against media escaping at high pressure or flying objects.
	**Hearing protection** Wear hearing protection.
	**Hairnet** If you have long hair, wear a hairnet to protect it from being pulled into rotating components.

The personal protective equipment is to be provided by the operator and must satisfy the applicable requirements.

In addition, national regulations and specifications from the risk assessment in place for the area of deployment and, if applicable, the operator's internal instructions must be observed.

2.7 Emergency instructions

Preventive measures:

- ► Always be prepared for accidents or fire.
- ► Keep first-aid equipment (first-aid kit, blankets, etc.) and fire extinguishers close to hand.
- ► Instruct personnel about accident reporting, first aid, fire extinguishing and rescue equipment.
- ► Keep access routes for the emergency services free.

Measures in the event of accidents:

- ► Disconnect the power supply to the Peristaltic pump.
- ► Rescue people from the danger zone.
- ► In case of cardiac and/or respiratory arrest, initiate resuscitation immediately.
- ► In case of injury to persons, notify the first aid officer and an emergency doctor or the ambulance services.
- ► Clear access routes for emergency services. If necessary, delegate someone to instruct the emergency services.
- ► Extinguish burning oil/grease with a CO2 extinguisher or powder extinguisher and a fire in the electrical control unit with a CO2 extinguisher.

2.8 Responsibilities of the operator

The Peristaltic pump is used in the industrial sector. The operator of the Peristaltic pump is therefore subject to statutory occupational health and safety obligations.

In addition to the safety information in these Original Operating & Installation Instructions, the safety, accident prevention and environmental protection regulations applicable to the area of use of the Peristaltic pump must be observed. In particular:

- The operator must ensure that the Peristaltic pump is only used as intended.
- The operator must always ensure the Original Operating & Installation Instructions are available at the installation site of the Peristaltic pump in a legible and complete condition.
- The operator must clearly assign and specify responsibilities for installation, commissioning, operation, maintenance and cleaning.
- The operator may only allow persons to work on the Peristaltic pump who have reached the legally permitted minimum age.
- The operator may only allow sufficiently qualified and instructed personnel to work on the Peristaltic pump.
- The operator must ensure that all persons who handle the Peristaltic pump have read and understood the Original Operating & Installation Instructions.
  In addition, the operator must verifiably train the personnel at regular intervals and inform them about dangers.
- The operator must provide the personnel with personal protective equipment and make sure that it is used.
- The operator must ensure that only persons whose ability to react is not impaired by drugs, alcohol, medication or similar are allowed to work with the Peristaltic pump .
- The operator must ensure sufficient lighting in the area of use of the Peristaltic pump.

Furthermore, the operator is responsible for ensuring that the Peristaltic pump is always in perfect technical condition. For this reason, the following applies:

- The operator must ensure that the maintenance intervals described in these Original Operating & Installation Instructions are observed.
- The operator must regularly check that all safety and warning notices attached to the Peristaltic pump are clearly legible and remain permanently attached to the Peristaltic pump.

3 Description of the Peristaltic pump

All figures in this document are meant to provide a basic understanding and may differ from the actual design.

3.1 Name

The name of each pump is made up of two parts:

Example: **MP-12-SM-4-XU** **Precision Standard**
Short description Pump type

Legend for abbreviated designations:

Example: MP-12-SM-4-DU

Plate	Number of rollers	Drive	Number of channels	Control unit
MP	**12**	**SM**	**4**	**DU**
MP = Mounting plate		SM = Stepper motor		DU = with drive unit
GP = Ground plate		XM = Without motor		XU = Without drive unit
XP = Without plate				

3.2 Functional description

The peristaltic pumps in OEM design are specially designed for installation in systems and are used for precise dosing and conveying of liquid media with minimal pulsation. The actual purpose of the pumps is to transport liquids between different points. In addition, they offer a wide range of benefits that go beyond a pure conveying function to meet the specific requirements of appliance manufacturers.

Main functions and areas of application:

Fluid transport:

- Transport and dosing of liquids with high precision and stability.
- Minimisation of pulsation for a constant delivery rate.

Individualisation:

- The pumps are manufactured as customised OEM versions that can be optimally integrated into the design of the end device.
- The visual design of the pump components, such as the colour and shape of the base plate and other individual parts, is tailored to customer requirements.

Simple integration:

- The pumps are designed for easy installation during final assembly, enabling efficient integration into analytical equipment and other systems.

Economic efficiency:

- The use of modular basic components, which are manufactured in large quantities, ensures low costs while at the same time allowing customisation to individual requirements.

Special features:

- The pumps are characterised by their high precision in liquid dosing, which makes them ideal for applications in analytical technology and other areas where exact flow rates are required.
- Thanks to the variable design options, the pumps bear the “signature” of the device manufacturer and fit seamlessly into the design of the target system.

3.2.1 Precision pumps

3.2.1.1 Precision Standard

Thanks to their large roller head with 12 rollers, these pumps can fulfil the highest requirements in terms of low pulsation and constant liquid delivery.

Figure 1: Precision Standard

Precision Standard functional elements:

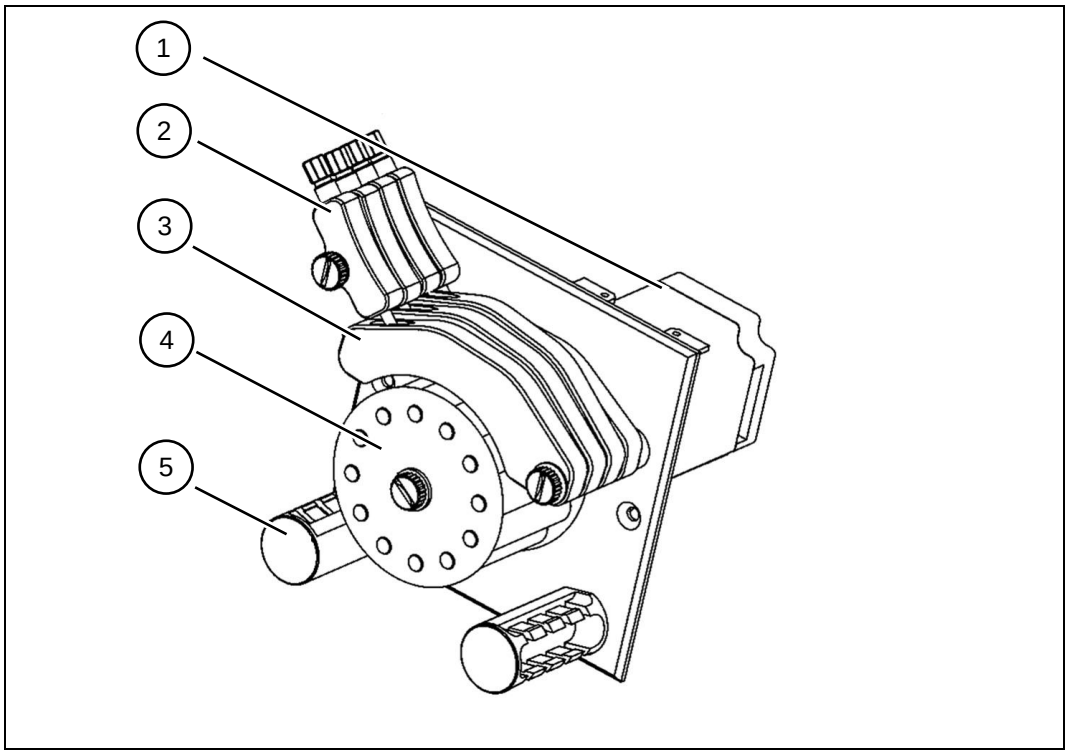


Figure 2: Precision Standard functional elements

1 Stepper motor
2 Adjustment lever
3 Pressure bracket
4 Roller head
5 Tubing holder

3.2.1.2 Precision Compact

This is a scaled-down version of the standard pump on a scale of 2:1, which is characterised by very similar properties in terms of delivery accuracy.

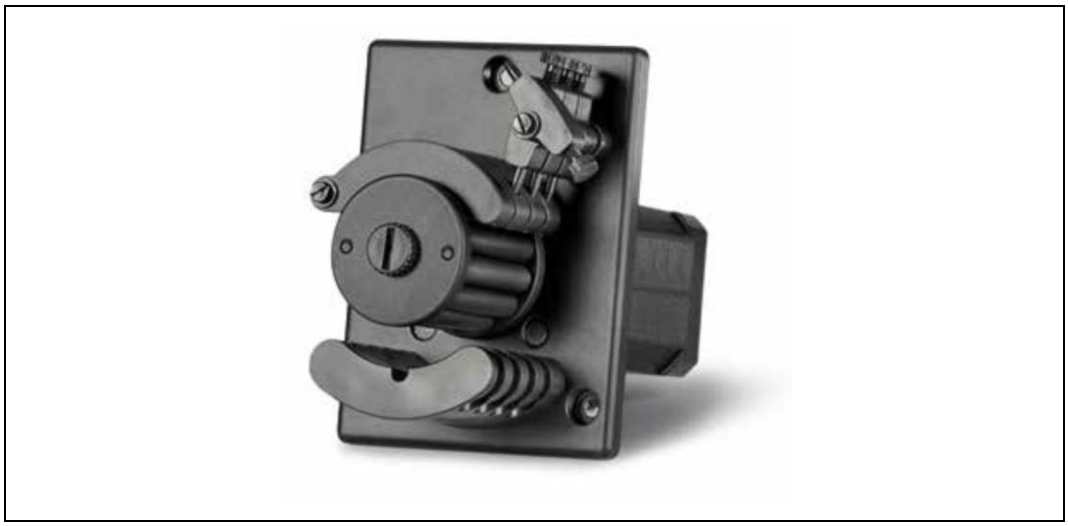


Figure 3: Precision Compact

Precision Compact functional elements:

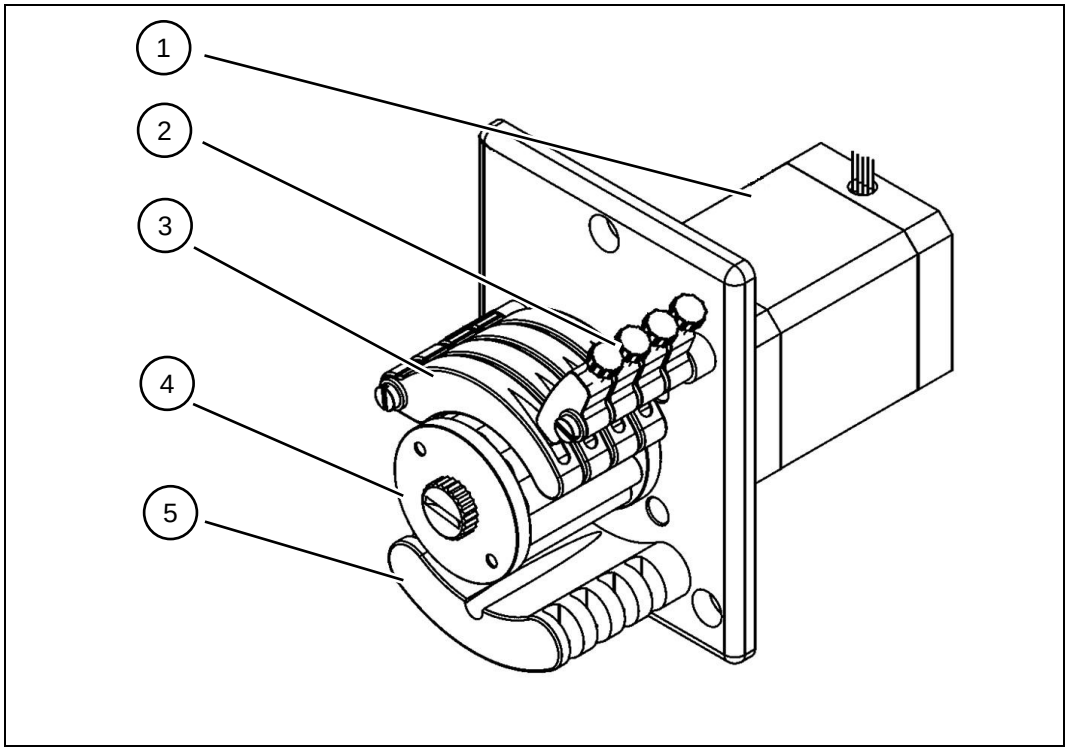


Figure 4: Precision Compact functional elements

1 Stepper motor
2 Adjustment lever
3 Pressure bracket
4 Roller head
5 Tubing holder

3.2.2 EasyClick pumps

3.2.2.1 EasyClick Standard

The EasyClick Standard is comparable to the Precision Standard in terms of its dimensions. However, the way they work is very different. With the EasyClick version, the tubing is clamped into a type of cassette and automatically tensioned via a click-in mechanism. No adjustment of the adjustment levers is necessary.

Figure 5: EasyClick Standard

EasyClick Standard functional elements:

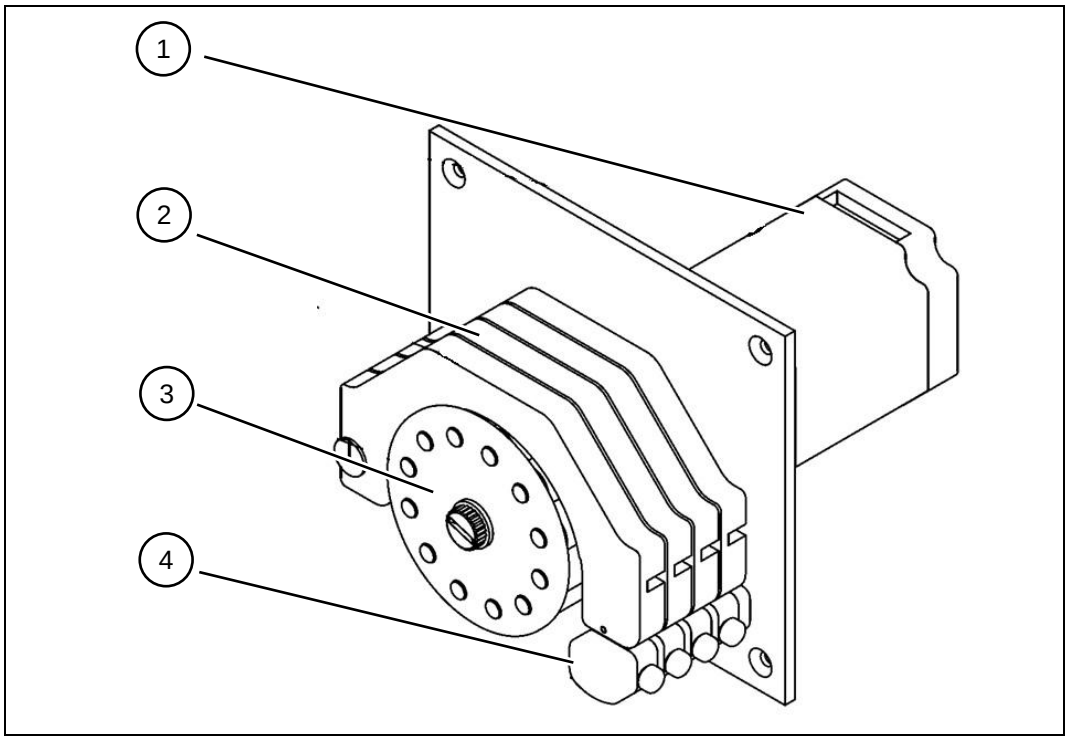


Figure 6: EasyClick Standard functional elements

1	Stepper motor	3	Roller head
2	Tubing cassette	4	Locking system

3.2.2.2 EasyClick Compact

The EasyClick Compact is comparable to the Precision Compact in terms of its dimensions. However, the way they work is very different. With the EasyClick version, the tubing is clamped into a type of cassette and automatically tensioned via a click-in mechanism. No adjustment of the adjustment levers is necessary.

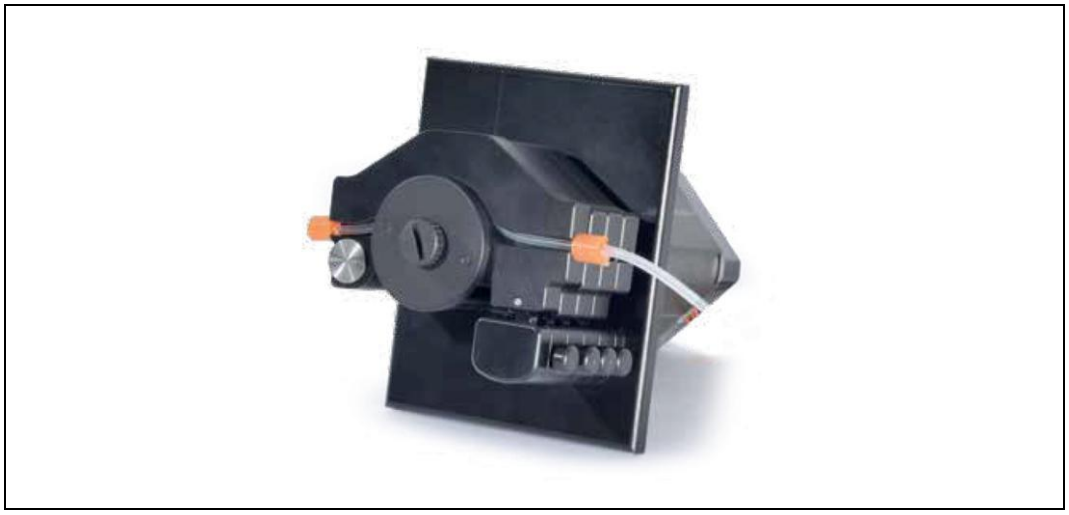


Figure 7: EasyClick Compact

EasyClick Compact functional elements:

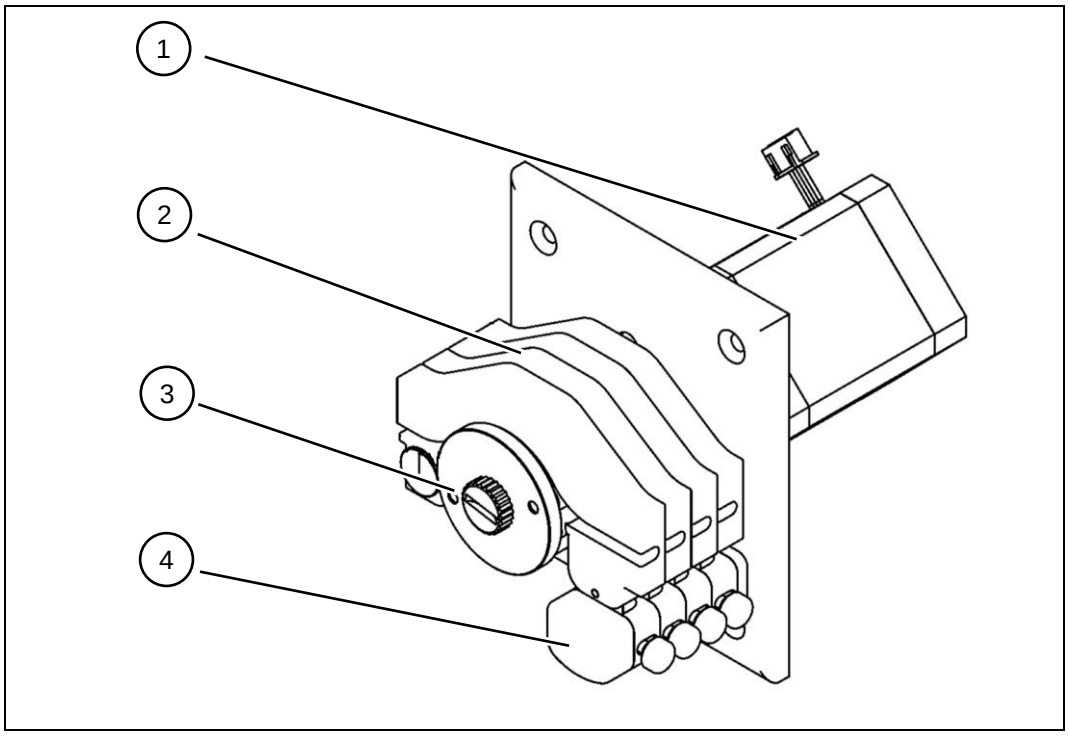


Figure 8: EasyClick Compact functional elements

1	Stepper motor	3	Roller head
2	Tubing cassette	4	Locking system

3.2.3 Stepper motor control

3.2.3.1 SM04

The optional Spetec SM04 stepper motor controller has been specially developed for Spetec pumps and is usually attached directly to the pump. It is designed for the operation of 2-phase stepper motors with 1.8° and 0.9° step angles. The Spetec SM04 divides a full step into 64 microsteps. This corresponds to 12,800 steps per revolution. This results in very smooth running. Control is via an analogue voltage signal for the speed setting and one digital signal each for on/off and switching the direction of rotation. Operation takes place with a voltage of 24V. The SM04 is mainly used in conjunction with our peristaltic pumps.

Figure 9: Stepper motor controller SM04

3.2.3.2 SMC01

The optionally installed Spetec SMC01 stepper motor controller is a versatile control board for 2-phase stepper motors with a step angle of 1.8°. It can be operated in two different modes.

- The signal control mode is intended for use in simple systems. Various analogue and digital signals are used to control on/off, direction of rotation and speed.
- Interface mode is suitable for operation on a PC or in a more complex system with its own interface.

SMC01-Control operating software is supplied with the SMC01. This software makes it possible to query, set, configure and ultimately control certain parameters of the SMC01.

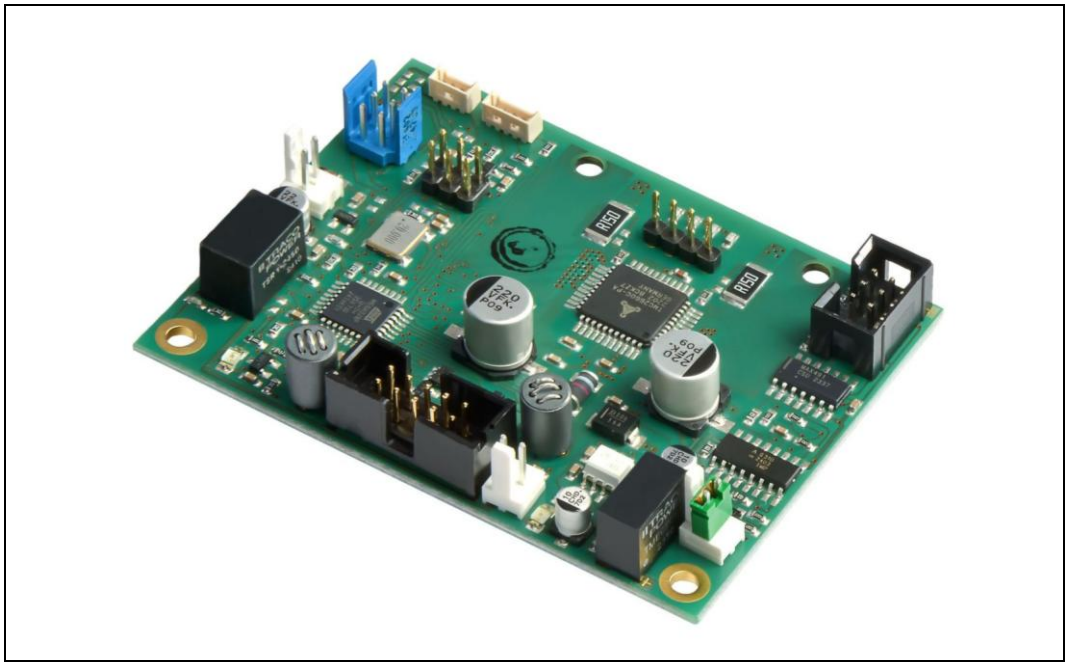


Figure 10: Stepper motor controller SMC01

3.2.4 Tubing

To use peristaltic pumps from Spetec GmbH, we also recommend using tubing from Spetec GmbH. Depending on the pump type and pumped liquid, a wide range of tubing can be selected.

Spetec GmbH offers an extensive range of tubing in various materials, lengths, diameters and fitted with various sliders. You can also purchase the tubing unfitted by the metre.

Special lengths with slider spacings outside the standard are also available.

Materials:

- PVC Standard
- Solvent Flex
- PU Longlife
- Fluororubber (comparable to Viton®)
- Santoprene® (comparable to Pharmed®, Mediprene®)
- Silicone

If you are unsure about the selection procedure, we strongly recommend that you enquire of Spetec GmbH.

3.2.5 Tables of standard pump rates

The flow rates are to be understood as a guide value and depend on the following factors, among others:

- Pump type
- Customised pump design
- Tubing material
- Back pressure
- Conveyed medium
- Component and material wear
- Component and material tolerances

3.2.5.1 Standard pumps

Delivery rate in ml/min – roller head diameter 72 mm:

Colour coding	ID		rpm									
	mm	inch	1	10	19	27	36	45	54	62	71	80
	0.19	0.008	0.01	0.04	0.07	0.10	0.13	0.17	0.20	0.23	0.27	0.30
	0.25	0.010	0.01	0.07	0.14	0.19	0.26	0.32	0.38	0.45	0.51	0.57
	0.38	0.015	0.02	0.16	0.33	0.46	0.61	0.77	0.92	1.07	1.22	1.37
	0.51	0.020	0.03	0.27	0.55	0.77	1.02	1.28	1.53	1.78	2.03	2.29
	0.64	0.025	0.05	0.37	0.76	1.07	1.42	1.77	2.12	2.47	2.81	3.16
	0.76	0.030	0.07	0.54	1.10	1.54	2.05	2.55	3.06	3.56	4.07	4.57
	0.89	0.035	0.10	0.71	1.45	2.04	2.70	3.37	4.03	4.70	5.36	6.03
	1.02	0.040	0.13	1.03	2.13	2.99	3.97	4.95	5.92	6.90	7.88	8.86
	1.14	0.045	0.15	1.11	2.29	3.21	4.26	5.31	6.36	7.41	8.47	9.52
	1.30	0.051	0.18	1.44	2.75	3.89	5.19	6.49	7.79	8.94	10.24	11.54
	1.42	0.056	0.21	1.71	3.30	4.62	6.16	7.70	9.24	10.60	12.14	13.68
	1.52	0.060	0.22	1.82	3.50	4.91	6.55	8.18	9.82	11.27	12.91	14.55
	1.65	0.065	0.28	1.99	3.85	5.38	7.17	8.96	10.75	12.34	14.13	15.93
	1.75	0.069	0.31	2.34	4.53	6.33	8.44	10.55	12.66	14.53	16.64	18.75
	1.85	0.073	0.34	2.70	5.20	7.28	9.71	12.14	14.57	16.72	19.15	21.58
	2.06	0.081	0.40	3.17	6.11	8.56	11.41	14.26	17.11	19.65	22.50	25.35
	2.29	0.090	0.45	3.74	7.20	10.09	13.45	16.81	20.17	23.16	26.53	29.89
	2.54	0.100	0.53	4.26	8.22	11.51	15.35	19.19	23.03	26.44	30.28	34.11
	2.79	0.110	0.60	4.90	9.44	13.23	17.63	22.04	26.45	30.37	34.78	39.19
	3.18	0.125	0.72	5.71	11.02	15.43	20.57	25.71	30.86	35.43	40.57	45.71

3.2.5.2 Compact pumps

Delivery rate in ml/min – roller head diameter 36 mm:

Colour coding	ID		rpm										
	mm	inch	1	15	26	36	45	52	61	71	80	90	100
	0.19	0.008	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15
	0.25	0.010	0.00	0.03	0.06	0.08	0.11	0.14	0.17	0.19	0.22	0.25	0.28
	0.38	0.015	0.00	0.06	0.12	0.19	0.25	0.31	0.37	0.43	0.50	0.56	0.62
	0.51	0.020	0.01	0.13	0.25	0.38	0.51	0.64	0.76	0.89	1.02	1.15	1.27
	0.64	0.025	0.02	0.17	0.34	0.52	0.69	0.86	1.03	1.20	1.37	1.55	1.72
	0.76	0.030	0.02	0.21	0.42	0.63	0.84	1.05	1.26	1.47	1.68	1.89	2.10
	0.89	0.035	0.03	0.30	0.59	0.89	1.18	1.48	1.77	2.07	2.36	2.66	2.95
	1.02	0.040	0.03	0.36	0.71	1.07	1.43	1.78	2.14	2.50	2.85	3.21	3.56
	1.14	0.045	0.04	0.42	0.84	1.25	1.67	2.09	2.51	2.93	3.35	3.76	4.18
	1.30	0.051	0.05	0.53	1.07	1.60	2.13	2.67	3.20	3.73	4.27	4.80	5.33
	1.42	0.056	0.06	0.59	1.17	1.75	2.34	2.92	3.50	4.09	4.67	5.26	5.83
	1.52	0.060	0.06	0.66	1.31	1.97	2.62	3.28	3.94	4.60	5.25	5.90	6.55
	1.65	0.065	0.06	0.70	1.39	2.08	2.78	3.47	4.17	4.86	5.56	6.25	6.94
	1.75	0.069	0.07	0.77	1.54	2.30	3.07	3.84	4.61	5.38	6.14	6.91	7.67
	1.85	0.073	0.08	0.84	1.68	2.52	3.37	4.21	5.05	5.89	6.73	7.57	8.41

3.2.6 Service life

3.2.6.1 Roller head

The roller head is regarded as a spare part and must be checked in accordance with the maintenance interval and replaced if necessary.

Standard roller head:

Valid for all pump types.

- Stainless steel dowel pins
  (High corrosion resistance)
- Rollers made of PVC
  (High chemical resistance)
- Special grease, disposable lubrication
  (High wear resistance)

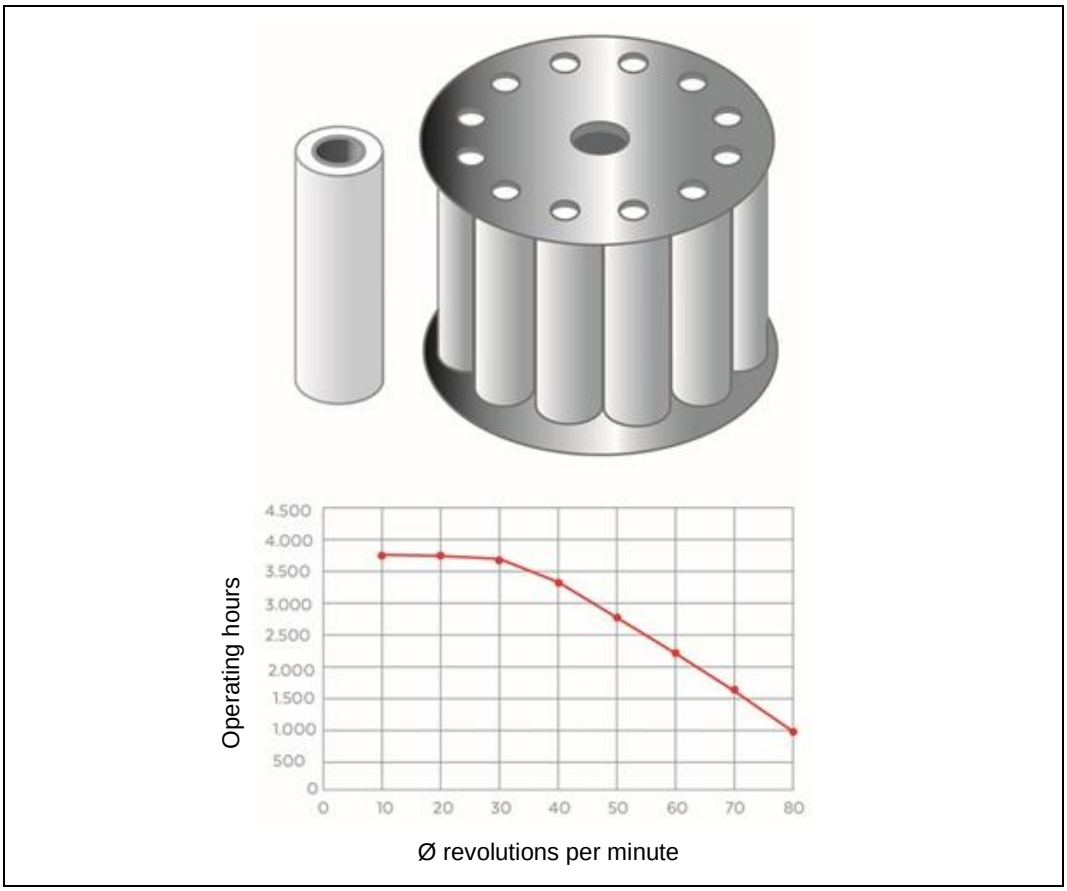


Figure 11: Standard roller head service life

The characteristic curve shown in red indicates the expected service life of a standard roller head. Changes to the rotational speed, the tubing or the usage interval can lead to deviations in this. The end of its service life is signalled by increased noise development. At a speed of 30 rpm, a service life of 2 years can be expected. This requires a 5-day week with 8 operating hours per day.

Longlife roller head:

Valid for all pump types.

- Stainless steel dowel pins
  (High corrosion resistance)
- Rollers made of PVC
  (High chemical resistance)
- Sliding bushes made of PTFE-containing material
  (Excellent low-friction properties)
  (No lubrication necessary)

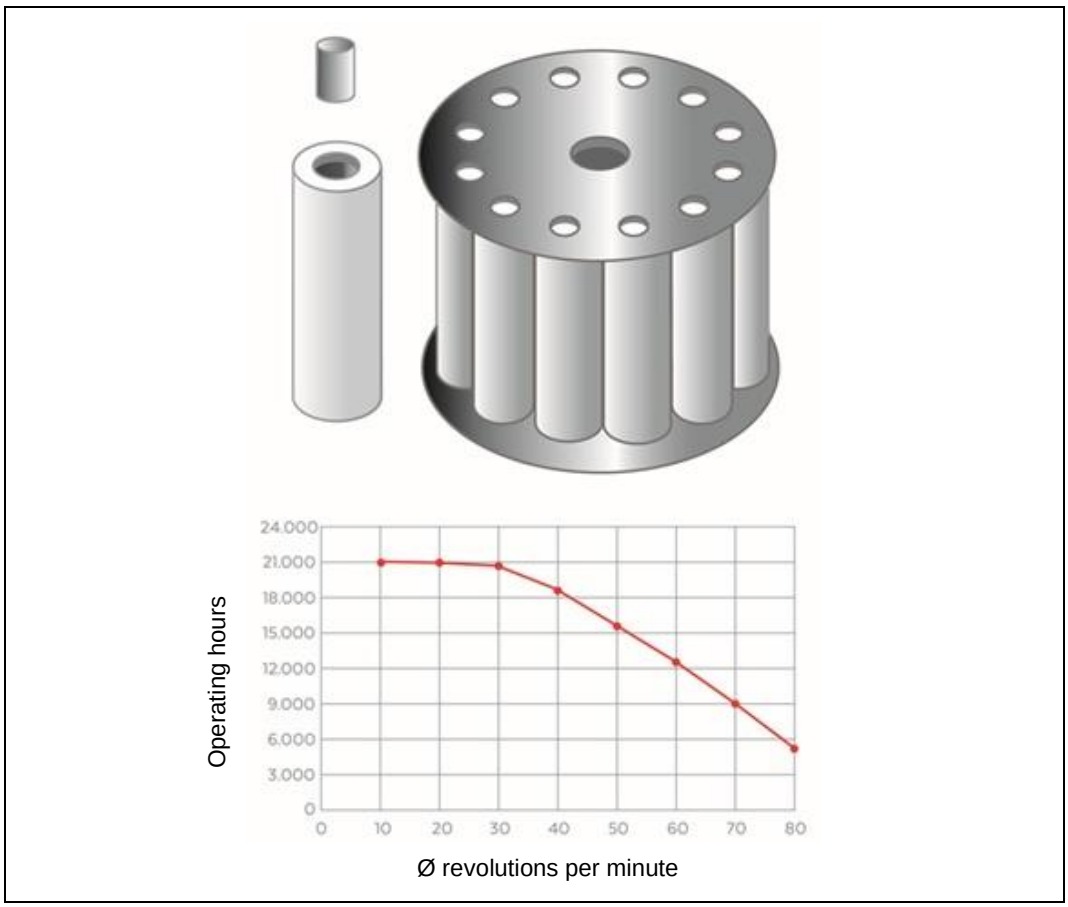


Figure 12: Long-life roller head service life

The characteristic curve shown in red indicates the expected service life of a long-life roller head. Changes to the rotational speed, the tubing or the usage interval can lead to deviations in this. The end of its service life is signalled by increased noise development.

At a speed of 30 rpm, a service life of 10 years can be expected. This requires a 5-day week with 8 operating hours per day.

The service life is therefore five times longer than with Standard roller heads.

3.2.6.2 Storage

All pumps use two ball bearings to support the roller head. The service life of the ball bearings is 20,000 operating hours at maximum load. In pump mode, the load is a maximum of 10%.

3.2.6.3 Coupling

The coupling varies depending on the pump type.

All pumps of the Standard type use a fluororubber coupling, which is expected to have the same service life as the roller head.

All other types do not use couplings, which is significant in terms of service life.

3.2.6.4 Stepper motor

The stepper motor varies depending on the pump type.

The service life of 20,000 operating hours at maximum load applies to all stepper motors. In pump mode, the load is a maximum of 10%.

3.2.7 Nameplate

A nameplate is attached to each Peristaltic pump to record the key data in accordance with the Machinery Directive 2006/42/EC.

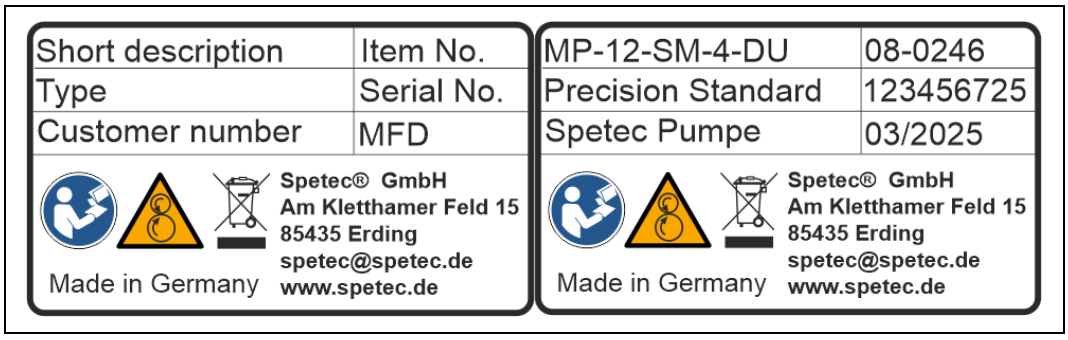


Figure 13: Left: structure of type plate, right: example of type plate

3.3 Operating modes

The operating modes of the Peristaltic pump are specified by the machine/system in which it is installed and are described in detail in the supplier’s or external manufacturer’s operating and assembly instructions.

3.4 Technical data

► Please note that the technical data refer to the standard versions of the pump types. The technical data of customised pumps are attached to these Original Operating & Installation Instructions.

3.4.1 Pumps

3.4.1.1 Precision Standard

Technical data – Precision Standard	
Number of channels	1 – 6
Roller head diameter	72 mm
Total weight	2.3 kg (4-channel version)
rpm	0 – 80 rpm (optionally up to 120 rpm)
Drive	Stepper motor 1.8°
Central shaft	Mounted on 2x ball bearings
Main materials	PVC, PP, stainless steel, powder-coated aluminium
Bridge distance	152 mm
Flow range	0 – 45 ml/min (per channel)
Inner tubing diameter	0.13 – 3.18 mm
Clamping pressure setting	via adjustment lever
Temperature range	+10 to +50 °C
Humidity	20 to 80 % (non-condensing)

3.4.1.2 Precision Compact

Technical data – Precision Compact	
Number of channels	1 – 4
Roller head diameter	36 mm
Total weight	1.0 kg (4-channel version)
rpm	0 – 100 rpm (optionally up to 120 rpm)
Drive	Stepper motor 1.8°
Central shaft	Mounted on 2x ball bearings
Main materials	PVC, PP, stainless steel, powder-coated aluminium
Bridge distance	95 mm
Flow range	0 – 8.5 ml/min (per channel)
Inner tubing diameter	0.13 – 1.85 mm
Clamping pressure setting	via adjustment lever
Temperature range	+10 to +50 °C
Humidity	20 to 80 % (non-condensing)

3.4.1.3 EasyClick Standard

Technical data – EasyClick Standard	
Number of channels	1 – 4
Roller head diameter	72 mm
Total weight	2.3 kg (4-channel version)
rpm	0 – 80 rpm (optionally up to 120 rpm)
Drive	Stepper motor 1.8°
Central shaft	Mounted on 2x ball bearings
Main materials	PVC, PP, stainless steel, powder-coated aluminium
Bridge distance	95 mm
Flow range	0 – 21 ml/min (per channel)
Inner tubing diameter	0.13 – 1.85 mm
Clamping pressure setting	automatic
Temperature range	+10 to +50 °C
Humidity	20 to 80 % (non-condensing)

3.4.1.4 EasyClick Compact

Technical data – EasyClick Compact	
Number of channels	1 – 4
Roller head diameter	36 mm
Total weight	1.0 kg (4-channel version)
rpm	0 – 100 rpm (optionally up to 120 rpm)
Drive	Stepper motor 1.8°
Central shaft	Mounted on 2x ball bearings
Main materials	PVC, PP, stainless steel, powder-coated aluminium
Bridge distance	72 mm
Flow range	0 – 5,8 ml/min (per channel)
Inner tubing diameter	0.13 – 1.42 mm
Clamping pressure setting	automatic
Temperature range	+10 to +50 °C
Humidity	20 to 80 % (non-condensing)

3.4.2 Stepper motor control

► Please note that the technical data refers to the standard versions of the stepper motor controller. The technical data of customised controls are attached to these Original Operating & Installation Instructions.

3.4.2.1 SM04

Technical data – Stepper motor controller SM04	
Electrical supply	24 V
Power supply	1.65 A max.
Speed input	0 – 5 V, analogue
rpm	0 – 100 rpm
Max. speed	250 rpm
Speed range	Optionally selectable via DIP switch
Enable input	TTL signal
Anti-clockwise rotation input	TTL signal
High-speed operation input	TTL signal

3.4.2.2 SMC01

Technical data – stepper motor controller SMC01	
Electrical supply	24 V
Power supply	1.65 A max.
Motor emergency stop switch	Yes, via NC contact

Signal control operating mode	
Speed input	0 – 5 V
rpm	0 – 100 rpm
Max. speed	250 rpm
Enable input	TTL signal
Anti-clockwise rotation input	TTL signal
High-speed operation input	TTL signal

Command control operating mode (with separate USB adapter or RS485 interface)	
Setting and control	Via commands from the PC
Data communication	RS485 / USB
Digital inputs/outputs	4, TTL level
Switching loads	1 (24 V, max. 100 mA)
Analog inputs	2 channels
Script control	Via SMC01-control software

3.4.3 Stepper motor

► Please note that the technical data refer to the standard versions of the stepper motors. The technical data of customised stepper motors are attached to these Original Operating & Installation Instructions.

3.4.3.1 Standard pumps

Technical data – Standard pumps	
Voltage	3.8 V DC
Current/phase	2.3 A
rpm	0 – 250 rpm
Stepper angle	1.8°
Torque	1.5 Nm

3.4.3.2 Compact pumps

Technical data – Compact pumps	
Voltage	5.4 V DC
Current/phase	1.8 A
rpm	0 – 150 rpm
Stepper angle	1.8°
Torque	0.8 Nm

3.4.4 Dimensions

► Please note that the dimensions refer to the Spetec standard versions of the peristaltic pumps. The technical data for customised peristaltic pumps are attached to these Original Operating & Installation Instructions.

3.4.4.1 Precision Standard dimensions

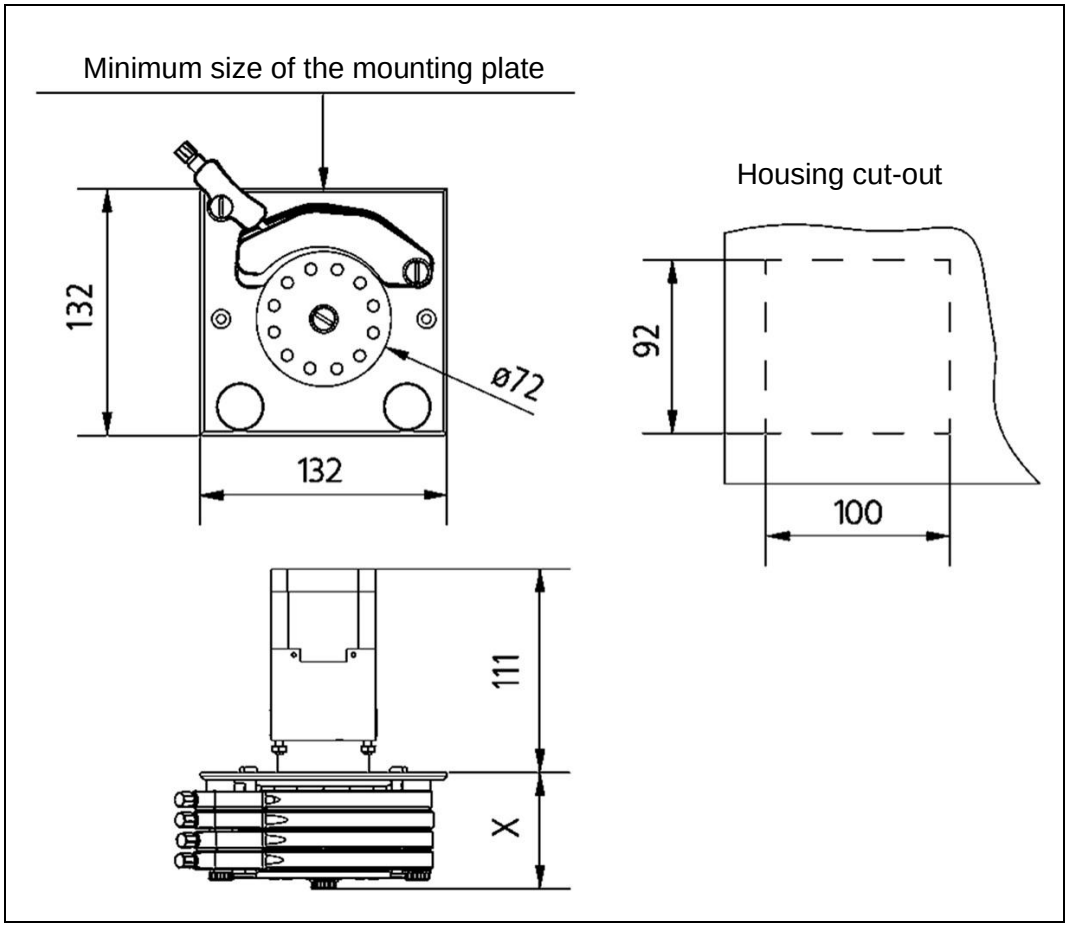


Figure 14: Precision Standard dimensions

Channel	X in mm
1	30
2	40
3	50
4	60
5	70
6	80

3.4.4.2 Precision Compact dimensions

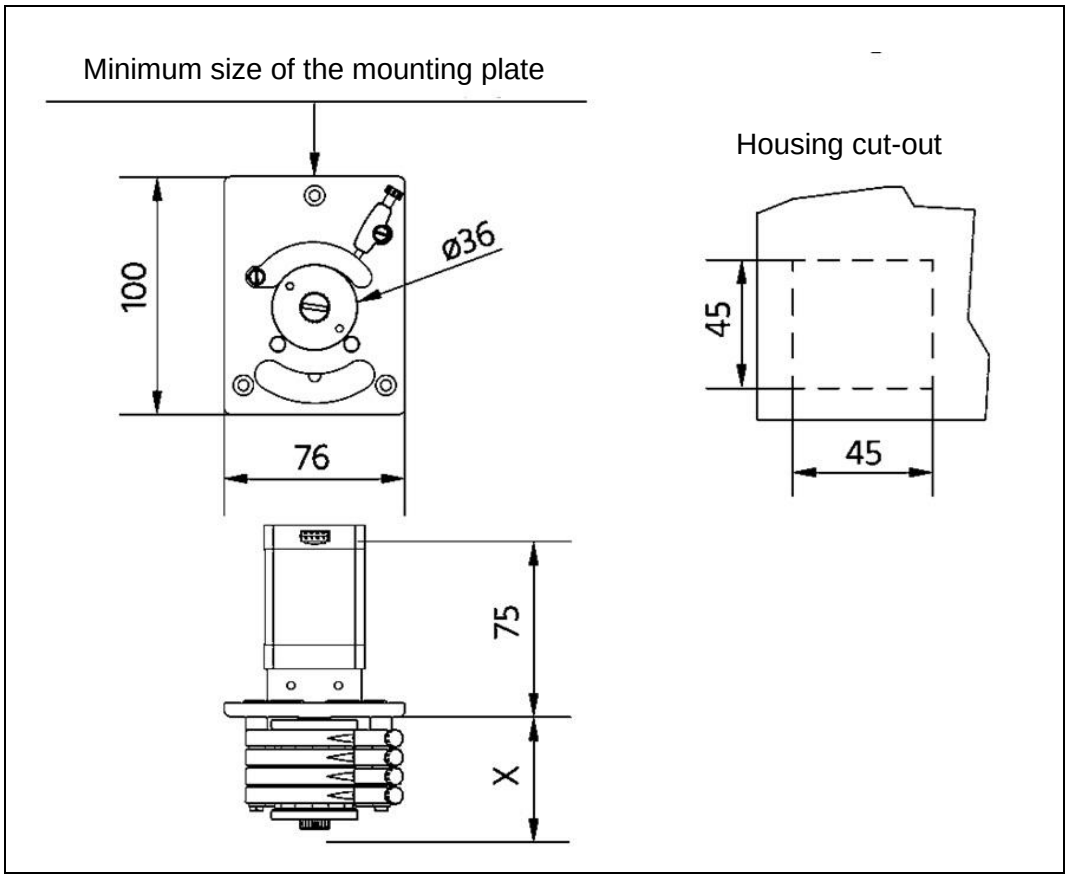


Figure 15: Precision Compact dimensions

Channel	X in mm
1	30
2	38
3	46
4	54

3.4.4.3 EasyClick Standard dimensions

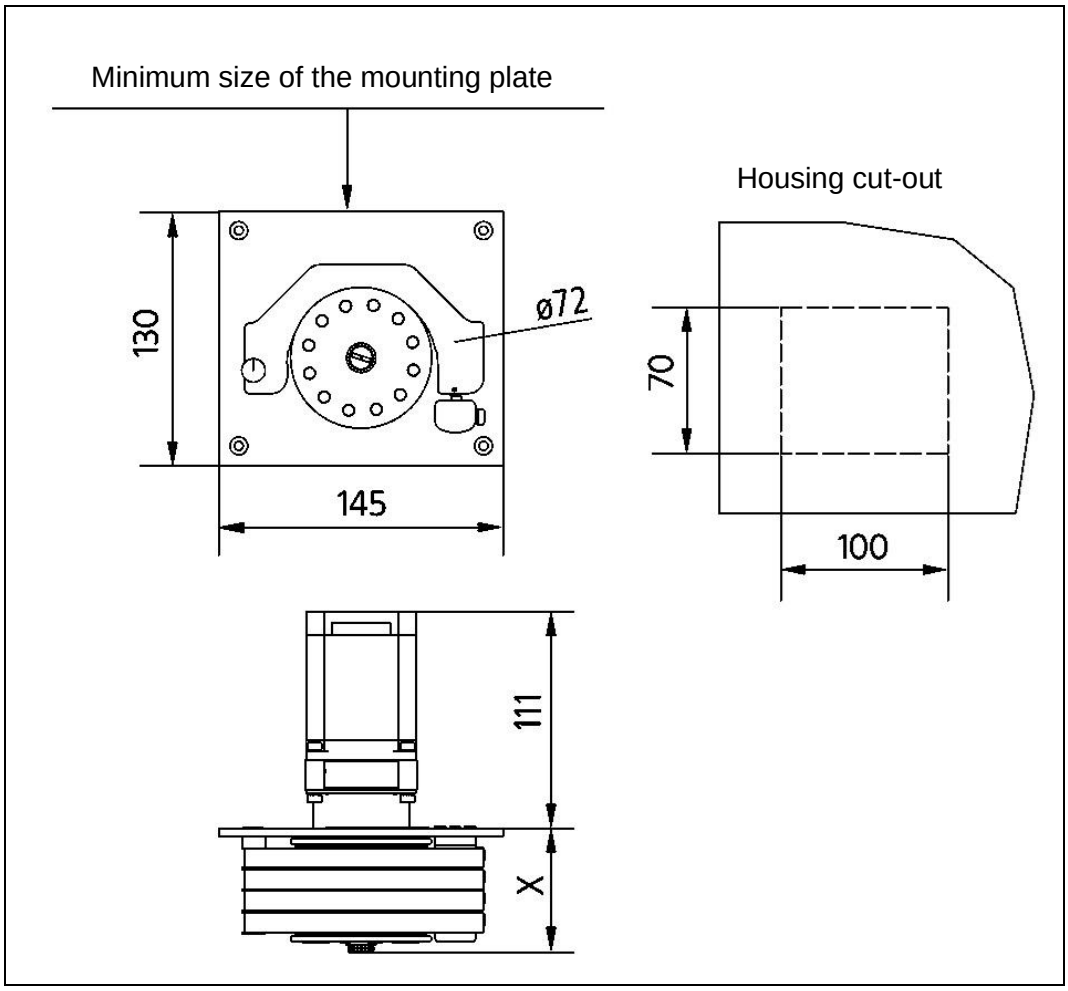


Figure 16: EasyClick Standard dimensions

Channel	X in mm
1	30
2	40
3	50
4	60

3.4.4.4 EasyClick Compact dimensions

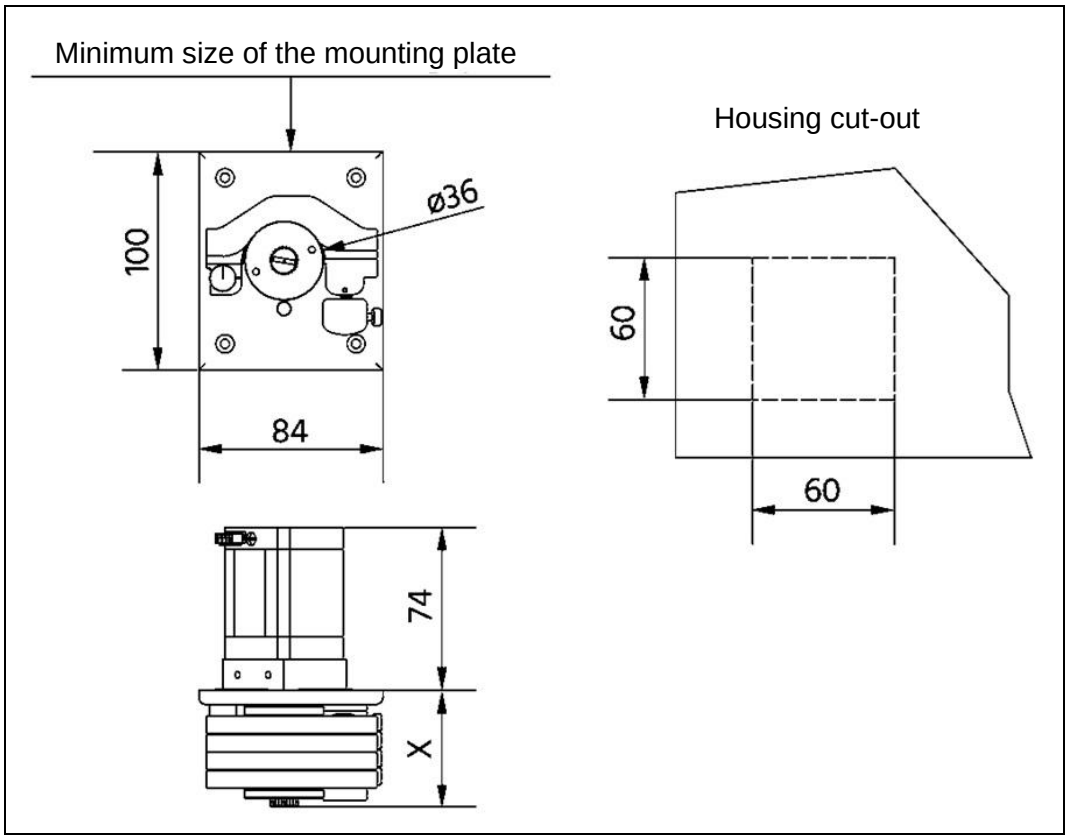


Figure 17: EasyClick Compact dimensions

Channel	X in mm
1	30
2	38
3	46
4	54

3.4.5 Airborne noise emissions below 70 dB(A)

A-weighted airborne acoustic emissions	< 70 dB(A)
Information on the measurement method:	as per EN ISO 11204, EN ISO 3746

3.4.6 Intended service life

The intended service life of the Peristaltic pump, taking into account the intended use and maintenance intervals, is 10 years.

4 Transport and storage

4.1 Delivery by an authorised transport company

The Machine is delivered to the customer by a transport company authorised by Spetec GmbH.

► If the location of the Machine is changed, please ask Spetec GmbH for information regarding transport.

4.2 Checks on handover to the recipient

When the Peristaltic pump arrives at the customer's premises, it must be inspected for visible transport damage.

► Report transport damage immediately to the deliverer.

4.3 Packaging

A crucial factor in deciding the type of packaging is the transport route. Unless otherwise agreed in a separate contract, the packaging shall comply with the HPE packaging guidelines laid down by the Bundesverband Holzmittel, Paletten, Exportverpackung e. V. and the Verein Deutscher Maschinenbauanstalten.

► Observe the symbols applied to the packaging:

Examples of symbols on packaging:

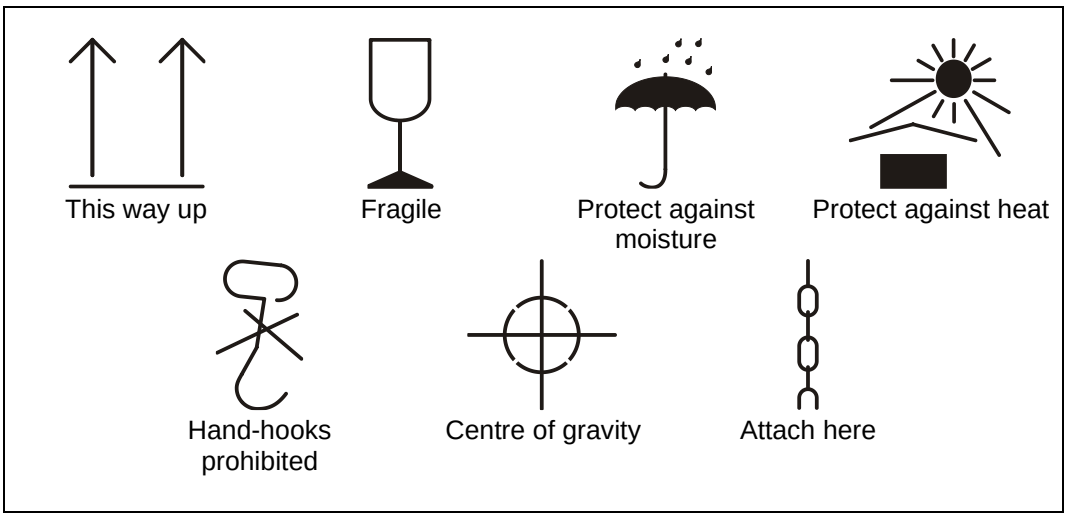


Figure 18: examples of symbols on packaging

4.3.1 Unpacking

Proceed as follows when unpacking the Peristaltic pump:

- ► Ensure that antistatic measures have been taken.
- ► Remove the packaging. Remove packaging materials such as film and adhesive tape and dispose of them properly.
- ► Carefully lift the appliance out of the packaging and avoid knocks.
- ► Wear safety shoes.
- ► Always remove all packaging before installing the Peristaltic pump.
- ► Keep the original packaging for further transport or storage.
- ► Check the completeness of the delivery against your order.
- ► Be sure to keep the documents supplied with the Peristaltic pump as they contain important information on handling it.
- ► Check the contents of the package for visible transport damage.
- ► If you notice any transport damage or discrepancies between the contents of the packaging and your order, please inform Spetec GmbH.

4.3.2 Repackaging

See chapter “4.3.1 Unpacking”.

4.4 Information on transport dangers

⚠ WARNING

When transporting the Peristaltic pump or its components, the following special hazards must be expected:

Suspended loads can fall, posing a danger to life!

Unsecured loads can tip over!

Protruding edges can cause crushing or cutting injuries!

- ► Only use approved lifting attachment points/couplings.
- ► Always wear the personal protective equipment necessary for the work in question (protective clothing, safety gloves, helmet and shoes).
- ► Ensure nobody loiters under suspended loads.
- ► Observe the marked stop points (if present).

- ► Also read chapter “2 Safety”.
- ► The Peristaltic pump or its components may only be transported by suitably qualified and instructed personnel (forklift/crane driver with a licence of competence) and in compliance with all safety instructions.
- ► When selecting suitable lifting devices and lifting accessories, always consider the weight of the heaviest components.
- ► When working, wear protective clothing, safety shoes, gloves, and a helmet.
- ► Always have an additional person secure the transport route.
- ► Ensure nobody loiters in transport routes or under suspended loads.
- ► Do not use tubing and cables or mounted parts as attachment points. Lifting lugs on components (if present) are intended only for lifting the individual components, not for lifting the entire assembly. Only lift the Peristaltic pump or its components at the points intended for this.
- ► Always lift components of the Peristaltic pump slowly and carefully, to ensure stability and safety.
- ► Do not remove transport safeguards until the component has been finally fixed in place at the installation site.
- ► Only transport the peristaltic pump in its original antistatic packaging.

4.5 Permissible transport aids

Aids such as shackles, hooks or similar must be selected according to the transport weight of the Peristaltic pump or its components and should only be attached to the designated attachment points.

- ► Avoid contact between the support chains or ropes and the Peristaltic pump or its components. If this is not possible, take appropriate precautions to prevent damage to the Peristaltic pump or its components.
- ► Adjust the length of the transport equipment so that the Peristaltic pump or its components can be transported horizontally.

4.6 Scope of delivery Peristaltic pump

The scope of delivery of the Peristaltic pump consists of the following components:

- Peristaltic pump
- Accessories (optional, according to customer requirements)

4.6.1 Scope of delivery Original Operating & Installation Instructions

The scope of delivery of the Original Operating & Installation Instructions consists of the following documents:

- Original Operating & Installation Instructions
- Manufacturer documentation of the supplier parts

4.7 Intermediate storage

If the Peristaltic pump is not set up immediately after delivery, it must be stored carefully in a protected location. The Peristaltic pump must be stored temporarily in such a way that it is protected from cold, moisture, dirt, chemical and mechanical influences.

► Store the device dry and protected from the weather in its original packaging in a clean environment.

► Protect the device from environmental influences and dirt until final installation.

► Please note that the Peristaltic pump should only be stored for a maximum of one year.

► Please find the recommended storage conditions for the Peristaltic pump in the chapter “Ambient conditions”.

In case of improper storage, no liability will be accepted for any resulting damages!

► Observe also the storage conditions specified in the external manufacturers’ or suppliers’ operating or assembly instructions.

5 Installation

Check the Peristaltic pump for damage before installation. If there is visible damage, the Peristaltic pump must not be installed and the manufacturer must be contacted.

5.1 Pre-assembly by Spetec GmbH

The Peristaltic pump is completely pre-assembled by Spetec GmbH.

5.2 Information on dangers during installation

⚠ WARNING

Danger of injury when lifting components at points that are not intended for attachment.

A failure to observe this can lead to severe injury!

- ► Only lift the components of the Peristaltic pump at the marked attachment points (if available).
- ► Ensure nobody loiters under suspended loads.

⚠ CAUTION

Risk of tripping due to improperly laid power supply cables and tubing!

A failure to observe this can result in injuries!

- ► Always lay tubing and cables in the supply duct so that they present no trip hazards or impediments.
- ► Indicate unavoidable trip hazards with bright colours.

⚠ CAUTION

Risk of injury due to unsuitable installation materials!

Unsuitable installation materials can lead to serious injuries during operation!

- ► Only use the supplied installation materials.

⚠ CAUTION

There is a risk of overexertion due to lifting heavy components!

A failure to observe this can result in injuries!

► Always have heavy components lifted by several people or with the aid of lifting gear.

► Observe the regional health and safety regulations.

5.3 Preparatory measures

5.3.1 General

Before installing the Peristaltic pump, it must be ensured that:

– additional lighting equipment (e.g. hand lamps) is in readiness for assembly (if necessary),

– the floor of the installation site is clean and free from dust,

– the tools required for assembly are at hand,

5.3.2 Preparatory electrical measures

Before installing the Peristaltic pump, it must be ensured that:

– connections for the power supply have been prepared.

5.3.3 Preparatory measures for further energy supply systems

Before installing the Peristaltic pump, it must be ensured that:

– connections for the other energy supplies (liquids) have been prepared.

5.4 Choice of installation site

5.4.1 Required operating and maintenance areas

- ► When selecting the installation site, take into account the ambient conditions.
- ► When selecting the installation site, take into account the need for operational and maintenance areas.

The operator must ensure sufficient lighting in the area of use of the Peristaltic pump.

5.4.2 Requirements for the area of deployment

⚠ WARNING

Danger of injury due to instability!

When installing the Peristaltic pump , there is a risk of serious injury caused by the instability of individual assemblies when incorrectly installed!

- ► Note that the area where the appliance is deployed must be:
  - flat,
  - temperature-resistant, non-flammable and
  - vibration-free.
- ► Only have assembly work carried out by authorised and instructed personnel.
- ► Install the Peristaltic pump on a surface that is suitably dimensioned for the weights and the loads that will occur, and fix it in place.
- ► Observe the tightening torques for all screw connections during installation.
- ► When working, always wear the personal protective equipment necessary for the procedure in question (e.g. protective clothing and safety shoes).

⚠ WARNING

Risk of injury due to loss of load-bearing capacity!

A loss of load-bearing capacity can lead to considerable risk of injury!

- ► Check that the floor where the appliance is deployed has the necessary load-bearing capacity. The operator is responsible for the statics of the floor where the appliance is used. Observe the manufacturer’s requirements regarding the area where the appliance is used.

⚠ WARNING

Danger of injury due to lack of space!

There is a serious risk of injury such as scratches, punctures or broken bones as a result of components and/or parts being arranged too close together!

- ► Select the installation site of the Peristaltic pump in such a way that the personnel has the necessary room to move around without hindrance or restriction in the operation area.
- ► Ensure enough space for movement in accordance with ergonomic guidelines and standards.
- ► Cordon off the danger zone.
- ► Keep unauthorized persons away.
- ► Specify a person in charge.
- ► Always lay tubing and energy supply lines so that they present no trip hazards or impediments (e.g. under covers).
- ► Mark places where there are trip risks.

- ► When selecting the installation site, take into account the need for operational and maintenance areas.

5.5 Assembling the Machine

5.5.1 Requirements of the installation site

The following requirements must be met at the installation site:

- Ensure that the installation site has sufficient load-bearing capacity.
- Use the Peristaltic pump in well ventilated rooms.
- Use the Peristaltic pump in sufficiently illuminated rooms.
- Protect the Peristaltic pump from direct sunlight and avoid installation sites containing heat-sensitive surfaces or in the vicinity of heaters, air conditioning systems or flammable materials.
- Avoid locations for the Peristaltic pump that are close to impermissible electromagnetic fields.
- Do not install the Peristaltic pump in locations where a corrosive or explosive atmosphere is present.
- Note that the Peristaltic pump is intended for indoor use only.
- Do not use the Peristaltic pump in areas with a potentially explosive atmosphere.
- Observe the ambient conditions.
- Note that the Peristaltic pump must be protected against the risk of accidental impact. Do not use vehicles (manual or electric pallet trucks, forklift trucks) in the vicinity of the Peristaltic pump.
- Note that the Peristaltic pump is intended for use in an industrial environment that is well lit, adequately ventilated, clean and dry.
- Allow sufficient space for repairs and escape routes.
- Please note that only trained persons familiar with the safety regulations may work on or with the Peristaltic pump.
- Please note that, regarding tidiness and cleanliness, care must be taken to ensure that:
  - all tubing and cables are properly routed and covered if necessary,
  - tools kept around the Peristaltic pump are tidied up,
  - peripheral devices (if any) are positioned in such a way that they do not restrict operation or use,
  - parts lying around and incidental waste (if any) are removed regularly.

5.5.2 Installation procedure for the Peristaltic pump

Perform installation as follows:

- ► Remove any transport aids.
- ► Align the Peristaltic pump.
- ► Fix the Peristaltic pump to the installation surface using suitable bolts.
- ► Establish electrical connection via the plug.
- ► Give consideration to the reduction of noise and vibrations.
- ► Remove packaging materials such as plastic foil and adhesive tape and dispose of them properly.

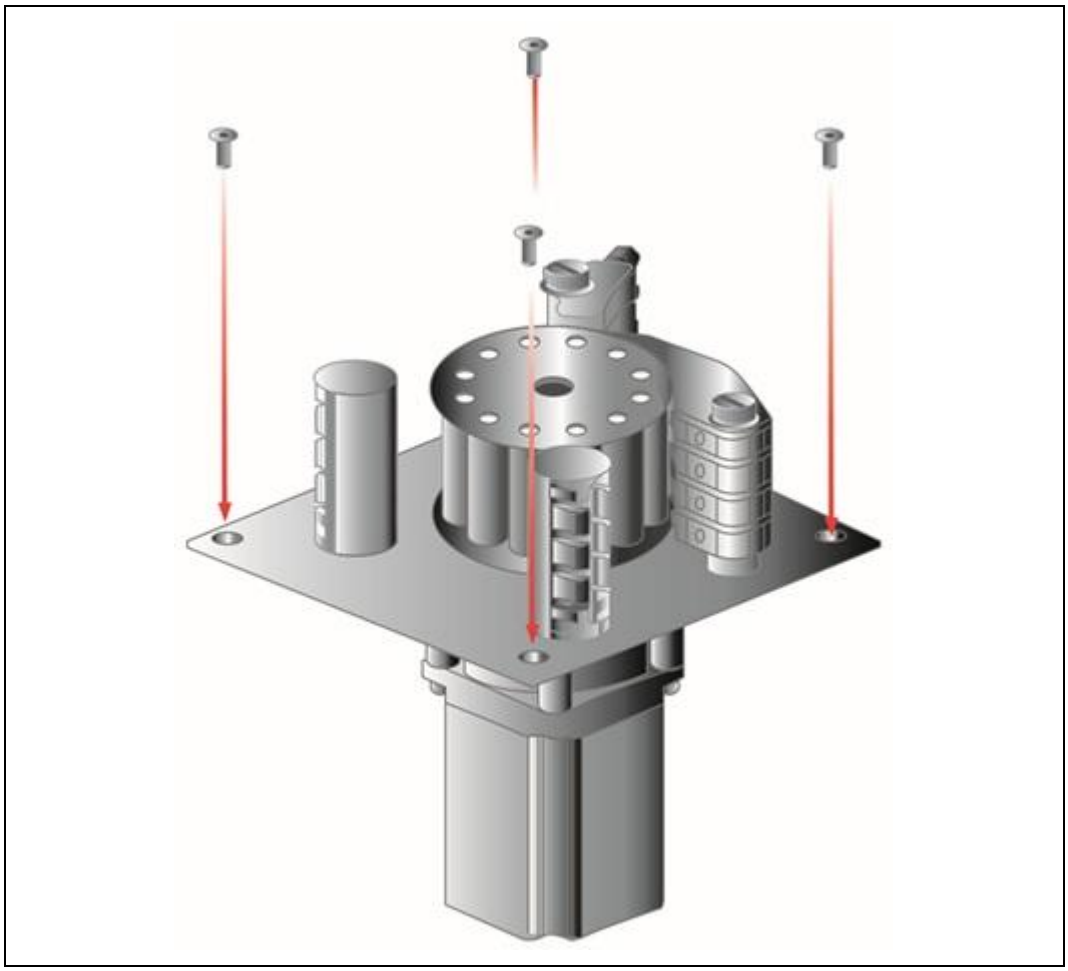


Figure 19: Example assembly diagram of the Peristaltic pump

5.6 Connection to the energy supply

5.6.1 Connecting the electricity supply

⚠ WARNING

Risk of injury due to unexpected start-up of the Peristaltic pump!

Unexpected starting of the Peristaltic pump when the electricity supply is connected can result in serious injury!

► Before connecting the electricity supply, ensure that the main switch of the machine/system in which the Peristaltic pump is installed is in the 0 position.

⚠ CAUTION

Risk of tripping due to improperly laid power supply lines!

A failure to observe this can result in injuries!

► Always lay cables in the supply duct so that they present no trip hazards or impediments.

► Indicate unavoidable trip hazards with bright colours.

► Be attentive and careful when making connections. Only connect the Peristaltic pump if you are able to concentrate properly or if you are not at risk of fainting.

► Contact the manufacturer before using an adapter or extension cable.

► Only use damage-free cables, accessories or other peripheral devices. Contact the manufacturer or an electrician if parts are damaged.

► To avoid interference only use shielded cables to connect the components. Failure to comply will invalidate authorisation to operate the Peristaltic pump.

► Before performing the electrical installation, check the Peristaltic pump and the cable for damage. In case of visible damage, development of strong odor or excessive heating of components, the power supply must be interrupted immediately and the Peristaltic pump must not be used.

► Protect cables from overloading, crushing or kinking and lay them in such a way that people cannot trip over them.

► Never touch the cables with wet hands.

► Protect unconnected cables from rain and keep them away from moisture.

► Only use the Peristaltic pump if it is correctly and completely installed. Be aware that the manufacturer cannot be held responsible for any property damage and / or personal injury resulting from incorrect installation of the Peristaltic pump.

► Before connecting the Peristaltic pump, make sure that the control voltage conforms to the motor data.

► Only use cables that are designed for the current according to the specifications.

For connection to the grid, the relevant VDE provisions and technical connection specifications (in German: “technische Anschlussbestimmungen” or TAB) of local electricity supply companies must be taken account of (applies in Germany).

5.6.2 Connecting tubing

⚠ WARNING

Risk of injury when connecting tubing!

The operator can be seriously injured when tubing are connected!

- ► Only have tubing connected by qualified personnel.
- ► Take appropriate measures if damage to a tubing line raises the risk that whipping/beating of the tubing may cause injury and damage; the tubing must be restrained or screened. Dangerous beating in the event of a tubing line rupture can be countered by design (e.g. installing a catch mechanism for pressurised tubing).

⚠ CAUTION

Risk of tripping due to improperly laid tubing!

A failure to observe this can result in injuries!

- ► Always lay tubing in the supply duct so that they present no trip hazards or impediments.
- ► Indicate unavoidable trip hazards with bright colours.

6 Commissioning

6.1 Safety measures before commissioning

⚠ WARNING

Danger of injury due to lack of space!

There is a risk of injuries such as scratches, punctures or broken bones as a result of components and/or parts being arranged too close together!

- ► Select the installation site of the Peristaltic pump in such a way that the personnel has the necessary room to move around without hindrance or restriction in the operation area.
- ► Only have commissioning carried out by specialist personnel.
- ► Cordon off the danger zone.
- ► Keep unauthorized persons away.
- ► Specify a person in charge.
- ► Always lay tubing and energy supply lines so that they present no trip hazards or impediments (e.g. under covers).
- ► Mark places where there are trip risks.

► Familiarise yourself sufficiently with:

- the equipment of the Peristaltic pump,
- the mode of operation of the Peristaltic pump,
- the immediate vicinity of the Peristaltic pump,
- the measures to be taken in case of emergency.

► Carry out the following activities before initial commissioning or subsequent repeat commissioning:

  ► Check the Peristaltic pump for visible damage; rectify any defects immediately or report them to the supervisor – the Peristaltic pump may only be operated if it is in perfect condition.

  ► Check and ensure that only authorised persons are present in the area of use of the Peristaltic pump and that no other persons are endangered by the starting up processes of the Peristaltic pump.

  ► Remove all objects and other materials from the area of use that are not required for the operation of the Peristaltic pump.

  ► Keep a commissioning log.

6.2 Installing safety systems

⚠ WARNING

Risk of injury due to crushing and getting caught!

Failure to install safety systems can result in serious and fatal injuries!

► The Peristaltic pumpmust be enclosed by the operator or operated in an enclosed area so that nobody can reach into it. Observe the safety distances and minimum clearances in accordance with the applicable standards and guidelines.

7 Operation

7.1 Safety measures in normal operation

- ► Observe the safety instructions in chapter “2 Safety”.
- ► Only start the Peristaltic pump from the specified area of deployment.
- ► Ensure that only authorised persons are in the area of deployment of the Peristaltic pump .

7.1.1 General inspection activities

- ► Carry out the following inspections once a day:
  - ► Check the Peristaltic pump for externally detectable damage.

7.1.2 Inspection activities for electrical lines

- ► Carry out the following inspections once a day:
  - ► Check that all electrical cables are connected correctly.

7.1.3 Inspection activities for tubing

- ► Carry out the following inspections once a day:
  - ► Check all tubing for leaks and correct connection.

7.2 Peristaltic pump set up

7.2.1 Set-up with pressure bracket and tubing holder

Valid for pump types: Precision Standard and Precision Compact.

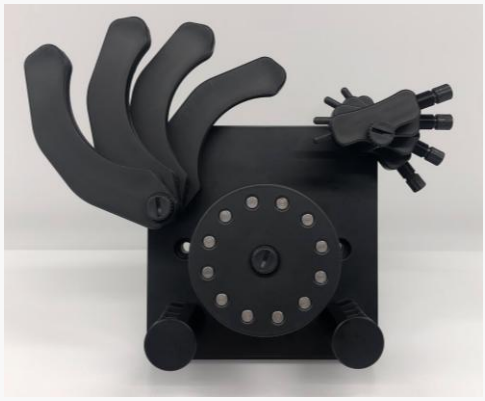
Figure	Activity
	a) Turn the knurled screw on the adjustment lever anti-clockwise. b) Open the adjustment levers. c) Open the pressure brackets.
	d) Place the tubing around the roller head.
	e) Insert the bridges into the tubing holders on both sides.

Figure	Activity
	f) Close the pressure bracket. g) Close the adjustment lever. h) Connect the suction side of the tubing to the liquid to be pumped.

Figure 20: Clamping the tubing with the pressure bracket & tubing holder

7.2.2 Equipping with tubing cassette

Valid for pump types: EasyClick Standard and EasyClick Compact.

Figure	Activity
	a) Unlock the tubing cassette by pressing the button on the locking system.
	b) Remove the cassette.

Figure	Activity
	c) Clamp the tubing into the cassette by inserting the two bridges into the recesses provided on both sides.
	d) Reinsert the cassette.
	e) Press the cassette down until it snaps back into place. f) Connect the suction side of the tubing to the liquid to be pumped.

Figure 21: Clamping in a tubing with a tubing cassette

7.3 Switching the Peristaltic pump on and off

The description and mode of operation of the switch-on/switch-off process is specified by the machine/system/equipment in which the pump is installed and must be described in detail in the operator’s operating or assembly instructions. Information on the electrical connection and pin assignment is included in the supplier’s assembly instructions.

7.3.1 Adjusting the pressure bracket

Valid for pump types: Precision Standard and Precision Compact.

Figure	Activity
	a) Make sure that the knurled screw on the adjustment lever is open or, if necessary, turn it anti-clockwise until no delivery takes place. b) Turn the knurled screw on the adjustment lever clockwise until the liquid is sucked in. c) When the tubing slowly initiates suction, turn a further half turn clockwise. d) Use the control unit to which the Peristaltic pump is connected to regulate the speed of rotation of the stepper motor and thus the flow rate of the liquid.

Figure 22: Adjusting the Peristaltic pump with pressure bracket & tubing holder

7.3.2 Adjusting the tubing cassette

Valid for pump types: EasyClick Standard and EasyClick Compact.

Figure	Activity
	No adjustment is necessary as this is done automatically by a spring mechanism. The liquid starts to flow when the pump is switched on. a) Use the control unit to which the Peristaltic pump is connected to regulate the speed of rotation of the stepper motor and thus the flow rate of the liquid.

Figure 23: Peristaltic pump with tubing cassette

8 Troubleshooting

⚠ WARNING

The Machine presents hazards during troubleshooting!

Failure to observe the instructions may result in damage, malfunctions or total failure of the Peristaltic pump, impairing its safety!

- ► Before troubleshooting, switch off the Peristaltic pump upstream of any power source.
- ► Have troubleshooting carried out only by qualified personnel.

8.1 Errors and corrective measures

- ► Contact customer service if the electronics malfunction. Send the peristaltic pump to Spetec for repair or replacement.
- ► In the event of faults in purchased supplier parts, refer to the manufacturer's documentation.

Fault	Cause	Corrective measure
Unable to pump	The tubing is not clamped correctly or is damaged.	Check and ensure correct clamping of the tubing
	The motor of the Peristaltic pump isn't running.	Check motor and power supply.
	A foreign object is blocking the Peristaltic pump.	Check the Peristaltic pump for foreign objects and remove any blockages.
Irregular flow rates or pulsation	Tubing is worn or deformed.	Replace the tubing.
	Roller head is dirty or damaged.	Check roller head for wear, replace if necessary.
	Conveying medium is not suitable for the system.	Check the pumped medium and use a suitable tubing material.

Fault	Cause	Corrective measure
Leakage or escape of the pumped liquid	Tubing is damaged or worn.	Check the tubing for damage and wear and replace if necessary.
	Tubing cassette not properly engaged.	Ensure that the tubing cassette engages correctly.
Overheating of the Peristaltic pump	The Peristaltic pump is run without interruption over a longer period of time.	Check the operating duration and schedule breaks.
	Mechanical overload due to blocked rollers.	Check the mechanisms of the Peristaltic pump and remove any blockages.
	Insufficient ventilation or high ambient temperature.	Improve ventilation and reduce ambient temperature.
Noise development or vibrations	Tubing is not correctly clamped or is worn.	Clamp or replace the tubing correctly.
	Roller head or coupling are damaged.	Check the roller head and coupling and replace if necessary.
	Imbalance due to incorrect installation of the pump.	Check the installation of the pump and correct if necessary.
No or faulty function of the EasyClick mechanism	The latching mechanism is blocked or damaged.	Clean the mechanism and check for proper functioning.
	Tubing cassette is not compatible or is inserted incorrectly.	Use a compatible tubing cassette and insert it correctly.

9 Maintenance and cleaning

9.1 Safety measures during maintenance

9.1.1 General safety measures for maintenance work

Carry out the prescribed maintenance work such as cleaning, maintenance and inspections in good time. Irregular maintenance shortens operational and service life.

- ► Read chapter “2 Safety”.
- ► Block off access to the area of use of the Peristaltic pump. Ensure that only authorised persons are present in the area of use of the Peristaltic pump.
- ► Only work on low-lying parts in a squatting position, not bent over. Carry out work on high-up parts with an upright, straight posture.
- ► Replace all faulty Machine parts immediately.
- ► Only use original accessories and spare parts. The use of other parts will void the warranty and suitability for use and may lead to injury.
- ► Ensure that suitable collection containers are available for all substances hazardous to groundwater (Lubricants, cleaning fluids and other chemical substances or emissions).
- ► Keep a maintenance log.

After completing the maintenance work and before using the Peristaltic pump, carry out the following activities:

- ► Check again that all previously loosened screw connections are tight.
- ► Make sure that all tools, materials and other equipment used have been removed from the area of deployment.
- ► Clean the area of deployment. Remove any liquids and similar substances that may have leaked.

9.2 Inspection and maintenance works

9.2.1 Maintenance intervals

Maintenance location	Maintenance work	See section
Daily		
Entire Peristaltic pump	Visual inspection	9.2.4.1
Weekly		
Entire Peristaltic pump	Visual inspection of warning and information signs	9.2.5.1
Monthly		
Entire Peristaltic pump	Visual inspection of cable connections	9.2.6.1
Entire Peristaltic pump	Visual inspection of screw connections	9.2.6.2
Annually		
Entire Peristaltic pump	Check screw connections	9.2.7.1
Special maintenance intervals		
Electrical equipment	Safety check	9.2.8.1
Roller head	Check, replace if necessary	9.2.8.2
Entire Peristaltic pump	Cleaning	9.2.8.3

9.2.2 Preparatory measures for electrics

DANGER

Risk of fatal injury due to electrocution!

Contact with live components can lead to electrocution or serious injury!

- ► Only allow work on the electrical equipment to be carried out by a qualified electrician who is specially trained for work on such equipment and who can recognise and avoid dangers.
- ► Before carrying out maintenance and inspection work on the Peristaltic pump, switch off its electricity supply.
- ► Please note that electrical and electronic components must not be cleaned.

9.2.3 Preparatory measures for other energy sources

⚠ WARNING

Risk of injury from working with energy sources!

The operator can be seriously injured when working with other energy sources!

► Only allow work on other energy sources to be carried out by qualified personnel who have been specially trained for this work and can recognise and avoid hazards.

9.2.4 Maintenance – daily

9.2.4.1 Visual inspection

a) Check the Peristaltic pump for:
   - mechanical damage,
   - damaged seals,
   - dirt deposits and
   - unusual sounds.

b) Report damage immediately to a superior.

9.2.5 Maintenance – weekly

9.2.5.1 Visual inspection of warning and information signs

a) Check that all warning and information signs on the Peristaltic pump are complete and legible.

b) Report damage immediately to a superior.

9.2.6 Maintenance – monthly

9.2.6.1 Visual inspection of cable connections

a) Check all cable connections are tight.

9.2.6.2 Visual inspection of screw connections

a) Check that all screw connections on the Peristaltic pump are tight.

b) Tighten loose screw connections (bolt-tightening torque according to the bolt size and strength class).

9.2.7 Maintenance – annually

9.2.7.1 Check screw connections

a) Check all screw connections on the Peristaltic pump for tightness.
b) Tighten loose screw connections (bolt-tightening torque according to the bolt size and strength class).

9.2.8 Special maintenance intervals

9.2.8.1 Electrical equipment

DANGER

Risk of fatal injury due to electrocution!

Contact with live components can lead to electrocution or serious injury!

► Only have work on the electrical equipment carried out by a qualified electrician.

► Power down the Peristaltic pump before carrying out any maintenance and inspection work.

a) Carry out the preparatory measures.
b) Carry out the safety inspection as per specific local rules and guidelines.

9.2.8.2 Changing the roller head

If the roller head starts to squeak or the rollers are stuck, it is at the end of its service life. Proceed as follows:

a) Check whether the service life has been observed.
b) Check whether liquid has leaked.
c) Replace the roller head.
d) For Precision Standard and EasyClick Standard pumps, always replace the fluoro-rubber coupling together with the roller head.

9.2.8.3 Cleaning

Proceed as follows to clean the Peristaltic pump:

a) Clean all Machine components fundamentally and remove soiling, dust and foreign bodies from the entire area of the Machine. Cleaning agents containing 99% ethanol (13-0017) should be used for this purpose. Never clean the Peristaltic pump with high-pressure cleaners or degreasing media.
b) Clean the Peristaltic pump with a dry or slightly damp, lint-free cloth.
c) Only clean the roller head with a dry, lint-free cloth and without cleaning agents. Please note that cleaning agents will wash out the lubricant on the roller head.
d) Do not use abrasive cleaning cloths or chemicals to clean the Peristaltic pump, as they may damage the surface.

9.2.9 Servicing third-party components

Further information on servicing work for third-party components can be found in the supplier documentation.

10 Decommissioning and dismantling

⚠ WARNING

Risk of serious injury due to improper decommissioning/disposal!

A failure to observe this can lead to severe injury!

- ► Only have disassembly work carried out by qualified or instructed personnel. Please note that the personnel must have practical experience in dismantling the Machine.
- ► Switch off the Peristaltic pump before dismantling.
- ► Always wear the protective equipment required for the work in question (e.g. protective clothing, safety shoes, gloves and helmet).
- ► If in doubt, consult Spetec GmbH.

10.1 Decommissioning

10.1.1 Taking the electrical system out of operation

a) Switch off the Peristaltic pump.

b) Prevent or restrict access to the Peristaltic pump.

c) Have the energy supply lines disconnected by suitably specialised personnel.

⚠ DANGER

Risk of fatal injury due to electrocution!

When working on the electrical equipment, non-qualified personnel may be at risk of death!

- ► Only have work on the electrical system carried out by qualified electricians. Qualified electricians are specially trained for work on electrical equipment, know the dangers of electricity and can independently avoid possible hazards by acting correctly.
- ► Power down the Machine before decommissioning and dismantling.

DANGER

Risk of fatal injury due to unintentional restart and electric shock!

Uncontrolled switching on or electric shock can lead to serious personal injury!

- ► Only have the decommissioning work carried out by authorised and qualified specialist personnel.
- ► Apply the 5 safety rules:
  1. Disconnect from power.
  2. Secure against switching on.
  3. Check for zero voltage.
  4. Earth and short-circuit.
  5. Cover or cordon off neighbouring live parts.

10.1.2 Taking the tubing out of operation

a) Switch off the Peristaltic pump.
b) Prevent or restrict access to the Peristaltic pump.
c) Have tubing disconnected by specialised personnel.

WARNING

Risk of injury when working with tubing!

The operator can be seriously injured when working with tubing!

- ► Only have work with tubing carried out by qualified personnel.

10.2 Disassembly

⚠ CAUTION

Danger due to dismantling work!

During disassembly there is a risk of injuries such as scratches, cuts or crushing!

- ► Only have disassembly work carried out by instructed and authorised personnel.
- ► Always wear the protective equipment required for the work in question (e.g. protective clothing, safety goggles, shoes and helmet).

⚠ WARNING

Risk of injury due to components being arranged too close together!

A failure to observe this can lead to severe injury!

- ► Cordon off the danger zone.
- ► Keep unauthorised persons out of the danger zone.
- ► Specify a person to be in charge of dismantling work.
- ► Always wear the protective equipment required for the work in question (e.g. protective clothing, safety goggles, shoes and helmet).

10.3 Disposal

⚠ WARNING

Risk of environmental pollution/waste of resources!

A failure to observe this can lead to harm to the environment!

- ► Only have disposal work carried out by instructed and authorized personnel.

- ► Separate the materials and packaging waste according to type and have them recycled. Recycle the materials labelled with a recycling symbol. The packaging is made from various materials that can be disposed of at your local recycling centre. By disposing of the packaging correctly, you help to avoid potential risks to the environment and public health.
- ► Observe local recycling regulations.
- ► Observe all relevant, nationally applicable requirements and regulations when disposing of the product.
- ► Do not dispose of the Peristaltic pump with household waste.

10.3.1 Disposing of electrics

⚠ WARNING

Risk of environmental pollution/waste of resources!

A failure to observe this can lead to harm to the environment!

- ► Only have disposal work carried out by instructed and authorized personnel.
- ► Disconnect electrical and electronic components in accordance with Directive 2012/19/EU.

10.3.2 Disposing of auxiliary and operating materials

⚠ WARNING

Risk of environmental pollution/waste of resources!

A failure to observe this can lead to harm to the environment!

- ► Only have disposal work carried out by instructed and authorized personnel.

- ► Dispose of cleaning agents and aids used to clean the Machine in accordance with local regulations and in compliance with the instructions in the manufacturer's safety data sheets.
- ► Collect and separate liquids (if applicable).
- ► Ensure that auxiliary and operating materials do not get into the groundwater, bodies of water or the sewage system.
- ► Dispose of auxiliary and operating materials in accordance with the applicable regulations or, if necessary, contact Spetec GmbH.

11 Appendix

11.1 Declaration of incorporation

On the following pages you will find the declaration of incorporation for this incomplete Machine and the attendant documentation.

Declaration of incorporation

(original declaration of incorporation)

Manufacturer/authorised representative:	Spetec GmbH, Am Kletthamer Feld 15, D-85435 Erding
Authorised person for compiling the technical documentation:	Spetec GmbH, Am Kletthamer Feld 15, D-85435 Erding
Product:	Peristaltic pump
Machine number:	see nameplate
Function:	These peristaltic pumps are designed for installation in a system and are exclusively intended for dosing and conveying various liquids with high precision and minimal pulsation.

We herewith declare that the aforementioned partially completed machine is in accordance with the following provisions of the Machinery Directive 2006/42/EC.

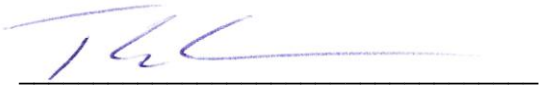
- 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.3.2, 1.3.4, 1.3.7, 1.5.2, 1.5.4, 1.5.5, 1.5.6, 1.5.8, 1.5.10, 1.5.11, 1.6.1, 1.6.2, 1.6.4, 1.6.5, 1.7.1, 1.7.2, 1.7.3, 1.7.4

Further applied directives and harmonized standards (or parts thereof):

- 2011/65/EU + (EU) 2015/863 – RoHs EU Directive
- EN ISO 12100
- EN 61010-1

The special technical documentation has been prepared in accordance with Annex VII Part B of the Machinery Directive 2006/42/EC. We undertake to transmit this to the market surveillance authorities in electronic form within a reasonable time upon justified request. The partially completed machinery must not be put into service until it has been established that the machine into which the partly completed machinery is to be incorporated complies with all the safety requirements of the Machinery Directive.

D-85435 Erding, 08.01.2025



Stephan Thalhammer, Product Management

11.2 Spare parts list

11.2.1 Precision Standard and EasyClick Standard

Name	Item no.
Roller head channel 1	08-0024
Roller head channel 2	08-0025
Roller head channel 3	08-0026
Roller head channel 4	08-0027
Roller head channel 5	08-0020
Roller head channel 6	08-0028
Fluoro-rubber coupling	32-0328

11.2.2 Precision Compact and EasyClick Compact

Name	Item no.
Roller head channel 1	08-0034
Roller head channel 2	08-0033
Roller head channel 4	08-0022

11.3 Appended documents

The following documents are attached to these Original Operating & Installation Instructions:

11.3.1 Manufacturer documentation for purchased components

The appendices to the Original Operating & Installation Instructions consist of the following documents:

- Manufacturer documentation of the supplier parts

11.3.2 Documents for customised pumps

The appendix of the documents for a customised pump consists of the following documents:

- Specification
- Assembly drawing
- Stepper motor
- Circuit board