



EWELLIX

EWELLIX Operating Element

User Manual

We pioneer motion

SCHAEFFLER

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1 About the manual

1.1 Information in this user manual

This manual provides important information on using the operating switches safely and efficiently.

The products described in this manual are electrical and pneumatic hand switches, foot switches and desk switches, as well as an electrical locking device and a distributor box.

The manual is part of the equipment and must be kept in close proximity to the device so that it is always accessible to personnel. All personnel working with the device must read and understand this manual before starting any work. Strict compliance with all specified safety notes and instructions is a basic requirement for safety at work.

Moreover, the accident prevention guidelines and general safety regulations applicable at the place of use of the device must also be complied with.





1.2 Symbols

Safety precautions are identified by symbols and signal words as shown. The signal words indicate the severity of the hazard and the chance it could occur. Follow these safety precautions and act cautiously in order to avoid accidents, personal injury and damage to property.

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.

1.1 Warning and hazard symbols

Signs and descriptions






 DANGER	In case of non-compliance, death or serious injury will occur.
 WARNING	In case of non-compliance, death or serious injury may occur.
 CAUTION	In case of non-compliance, minor or moderate injury may occur.
 NOTICE	In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur.

1.3 Signs





The warning, prohibition, and mandatory signs are defined in accordance with DIN EN ISO 7010 or DIN 4844-2.

1.2 Warning, prohibition, and mandatory signs

Signs and descriptions

	General warning
	Electrical voltage warning
	Observe the manual
	Wear protective gloves
	Wear safety shoes

Signs and descriptions

	Wear eye protection
	Wear ear protection
	Wear head protection
	General mandatory sign

1.4 Legal notices

The information in this manual reflects the status at the time of publication. Unauthorized modifications to or improper use of the product are not permitted. Schaeffler accepts no liability in these cases.

1.4.1 Limitation of liability

All information and notes in this manual were compiled with due consideration given to applicable standards and regulations, the present state of technology and our years of knowledge and experience.

The manufacturer is not liable for any damage resulting from:

- disregarding this manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical changes
- manipulation or removal of the screws on the drive
- use of unapproved spare parts.

Where the device has been customized, the actual product delivered may be different from what is described in this manual. In this case, ask Schaeffler for any additional instructions or safety precautions relevant to these devices.

We reserve the right to make technical modifications to the device to improve usability.

1.5 Liability

In any case, the owner or the operator of the device is liable for its proper functioning if the device is improperly installed, maintained or repaired by persons who are not part of the Schaeffler Service department, or if the device is used in a manner that does not correspond to its intended use.

The product is not subject to labeling requirements according to CE Directives or EMC Directives. The required EMC measures must be implemented on the end product by the manufacturer of the end product, taking into account the installation conditions, wiring and control, and must be checked in accordance with the intended use.

Schaeffler shall not be liable for any damage resulting from failure to observe these instructions. These instructions are not to be considered as an extension of the warranty conditions and liability conditions set out in Schaeffler's Terms and Conditions of Sale and Delivery.

Compliance with these regulations is the responsibility of the manufacturer of the machine or system.

1.6 Availability



A current version of these instructions is available at:
<https://www.schaeffler.de/std/2232>

Ensure that this manual is always complete and legible and is available to all persons engaged in transporting, fitting, dismantling, commissioning, operating, or maintaining the product.

Keep the manual in a safe place for immediate reference.

1.7 Images

The images in this manual may be schematic representations and may differ from the delivered device.

2 General safety regulations

The general safety regulations are intended for users who operate and maintain the product.

The general safety regulations contain all relevant information about this product. We reserve the right to make changes in the interest of technical progress. Read the safety regulations carefully and observe the safety instructions.

2.1 Intended use

The product is designed for commercial applications.

It is intended solely for controlling and adjusting beds, chairs, and couches for medical and healthcare applications. The product may only be used in conjunction with approved linear actuators and control units.

The product is designed for indoor use.

It may only be operated under the following ambient conditions:

- Temperature from +10 °C to +40 °C
- Humidity from 0 % to 85 %
- Air pressure from 700 hPa to 1060 hPa
- Altitude up to 3000 m above sea level (MOPP)
- Overvoltage category I
- Pollution degree 2

The operating devices and accessories are designed for a service life of 10 years or 100000 switching cycles.

The electrical operating devices (foot switches, hand switches, and desk switches) and accessories are intended for use only in the following configurations:

EHA1, STF, STA:

- operation of 1 to 5 linear actuators with the control units KOM1, KOM3, KOM3T, and MCU
- operation of the MAX6 and MAX7 linear actuators with integrated controller

EHA2, STG, STC:

- operation of 1 to 5 linear actuators with the KOM2 control unit

EHA3, STJ, STE:

- operation of 1 to 5 linear actuators with the control units BCU, VCU, and SCU
- operation of the TFG lifting column with integrated control unit

EHA4, STL, STK:

- operation of the CPMA and CPMB lifting columns with integrated control unit

EHE1:

- operation of the TXG lifting column with integrated control unit SEM

The pneumatic operating devices are only intended for use in the following configurations:

Hand switch PHC:

- operation of the TGC, THC, and TLC lifting columns
- operation of the MAX linear actuator with integrated pneumatic interface

Foot switch PFP:

- operation as for PHC, but for use with only 1 linear actuator

Desk switch PAM:

- operation as for PHC, but for use with only 1 linear actuator

The electrical accessories are only intended for use in the following configurations:

SPP:

- connection between the EHA1 operating device (STF, STA) and the corresponding control units and linear actuators
- locking and unlocking of the linear actuators, individually or all together

ZVB:

- connection between the operating device and the corresponding control unit
- connection of multiple operating devices to control the linear actuators

Any other application options must be clarified with Schaeffler.

2.2 Improper use

Do not operate the product in the following environments:

- Environments with flammable anesthetics or other flammable substances
- Environments with corrosive or explosive atmospheres
- Environments with strong radiation fields

The electrical foot switches do not meet the IPX6 protection rating requirements according to IEC 60529. Do not use the electrical foot switches in areas where liquids are present, such as emergency rooms and operating theaters.

2.3 Qualified personnel

To ensure safety, we define requirements for the users of the products that must be observed under all circumstances. Only individuals who meet these requirements are authorized to use the products. We define user groups as all persons who operate, use, commission, process, or pass on the products for further processing. Since the requirements for these user groups vary considerably depending on their role, we distinguish between the following user groups:

Owner

- Installs the product in a system
- Finds out about all applicable health and safety regulations
- Uses a risk assessment to identify additional hazards arising from the specific working conditions at the installation site of the device
- Implements the risk assessment in the form of operating instructions for the device
- Ensures that the operating instructions created for the system, including the product, meet current legal requirements
- Ensures that only qualified and authorized personnel perform the activities described in this manual and that instructions are updated accordingly
- Clearly defines responsibilities for installation, operation, maintenance, and cleaning
- Ensures that all employees handling the device have read and understood this manual

- Ensures that personal protective equipment is used
- Ensures that employees receive regular training and information about hazards
- Ensures that the product is used within the specified technical parameters
- Ensures that the product is in proper condition
- Ensures compliance with the maintenance intervals described in this manual
- Has all safety devices regularly checked for functionality and completeness

Qualified person

- Individual who, based on their professional training, expertise, and experience, as well as knowledge of applicable standards and regulations, is able to independently perform the tasks assigned to them and can recognize and avoid potential hazards

Instructed person (operator)

- Has been briefed on the assigned tasks and potential hazards resulting from improper use

Professional electrician

- Individual who, based on their professional training, expertise, and experience, as well as knowledge of applicable standards and regulations, is able to independently perform work on electrical systems and can recognize and avoid potential hazards
- Has been trained for the specific location where they work and is familiar with the relevant standards and regulations

Only individuals who can be expected to reliably perform their tasks are permitted as personnel. Persons with impaired reactions, for example due to drugs, alcohol, or medication, are not permitted.

2.4 Hazards

2 hazard areas have been identified, depending on the operator role.

Personnel:

The hazard area that can lead to injury risks involves the operator and third parties (other personnel, visitors, patients, etc.)

Product:

The hazard area that can lead to product damage involves operators, owners and technicians. It includes the control units KOM1 KOM3, KOM3T, KOM2, TFG, TXG, BCU, VCU, SCU and the lifting columns TFG and TXG, as well as all attached components.

2.5 Protective devices

The operating devices and the connected control units do not have an on/off switch. If they need to be switched off, for example in an emergency, the control unit must be disconnected from the power supply.

This is the only way to de-energize the control units.

Applications in which the control units are integrated must be equipped with an emergency stop switch or an all-pole disconnection from the power supply. When using batteries, additional protective measures may be required.

The owner decides whether one of the following safety systems needs to be installed:

- Emergency shut-off system
- Patient release system
- Anti-pinching protection
- Operating status display

2.6 Safety regulations

The following safety regulations must be observed when working with the product. Further information on hazards and specific instructions can be found in other chapters such as Assembly, Commissioning, Operation, and Maintenance.

The following sections list the residual risks identified through a risk assessment. Schaeffler has minimized the effects of existing hazards through design and protective measures.

The following safety regulations must be observed when working with the product. Further information on hazards and specific instructions can be found in chapters such as Assembly, Commissioning, Operation, and Maintenance.

The operating switches and accessories are not single-fault safe. A defect in a component such as a switch or cable may cause uncontrolled movement of the actuator.

Any overload of the connected control unit will trip a temperature switch in the mains transformer. Disconnect the control unit from the mains and let it cool down to room temperature.

The operating switches and accessories meet EMC requirements when used with the control units and actuators (ME system). EMC compliance must be verified in the final application.

2.6.1 Commissioning

Only qualified, instructed or trained personnel who have read the instructions in this manual may commission the product.

The power supply must comply with the technical specifications.

The connected actuators may only be operated in the final application as specified on the nameplate.

2.6.2 Assembly

Disconnect the power supply for the actuator before installation or maintenance.

Make sure that the actuator is not under load or energized before installation or maintenance.

Use suitable safety equipment when installing or servicing the actuator.

2.6.3 Operation

The product may only be used by qualified, instructed, or trained personnel who have read the instructions in this manual.

The product may only be operated under the following ambient conditions:

- Do not operate in potentially explosive atmospheres.
- Only operate indoors.

Improper operation may result in personal injury or property damage, or may endanger persons in the hazard area:

- Ensure that the correct button on the operating device is pressed.
- Take appropriate measures to prevent accidental operation.

Do not use the electrical foot switch on wet floors or in areas where liquids may be present (e.g., emergency rooms and operating theaters).

The operating devices do not have indicator lamps showing connection to the power supply.

Prevention of uncontrolled movement:

- Disconnect the mains plug.
- Remove the battery (if present) from the control unit.

2.6.4 Maintenance and repairs

Maintenance work and repairs may only be carried out by qualified personnel.

Check the plastic housing every 6 months for mechanical damage (cracks).

2.6.5 Cleaning and disinfection

NOTICE



Damage due to improper cleaning

Improper cleaning of the device can damage it.

- For disinfecting the product by manual wiping, use only isopropyl alcohol as the cleaning agent.
- Do not use aggressive cleaning agents. Wash water, including chemical additives, must be pH-neutral.
- Never clean the product with a strong water jet.
- Do not use steam cleaners or high-pressure cleaners.
- Never clean the product in a washing machine or any other machine.

The hand switches and accessories are protected against temporary immersion in water according to or IP67 or IPX7.

The EHA, EHE, SPP, ZVB, and PHC operating switches are protected against powerful water jets according to IP66 or IPX7. This complies with current requirements for hygienic preparation of medical beds in accordance with IEC 60601-2-52.

3 Scope of delivery


The scope of delivery includes:

- 1 switch
- 1 operating manual

3.1 Checking for transport damage


The products are delivered as a packaged unit in a plastic bag, a box, or on pallets.

1. Check the product immediately upon delivery for any damage during transit.
2. Check that the product is complete.
3. Do not accept delivery, or only accept it with reservation, if transport damage is found.
4. Record the extent of damage on the transport documents or the carrier's delivery note.
5. Report any damage during transit promptly as a complaint to the carrier.

 If a crack or damage is visible, the product does not comply with IEC 60529. In this case, the IP rating cannot be guaranteed and the product must be returned to the manufacturer.

3.2 Checking for defects

1. Check the product for visible defects immediately upon delivery.
2. Check the product for completeness immediately upon delivery.
3. Do not put damaged products into operation.

 Report any damage as soon as it is discovered. Claims for damages can only be made within the applicable claim period stipulated by the transport company.

4 Product description

The operating devices are accessories for control units and linear actuators. The desk switch is designed for mounting on a table. The foot switch is placed on the floor or mounted on a flat surface near the floor. The hand switch is shaped to prevent accidental actuation.

The operating devices are divided into 3 categories (hand switch, foot switch, and desk switch), and 2 technologies (electrical and pneumatic), along with several accessories.

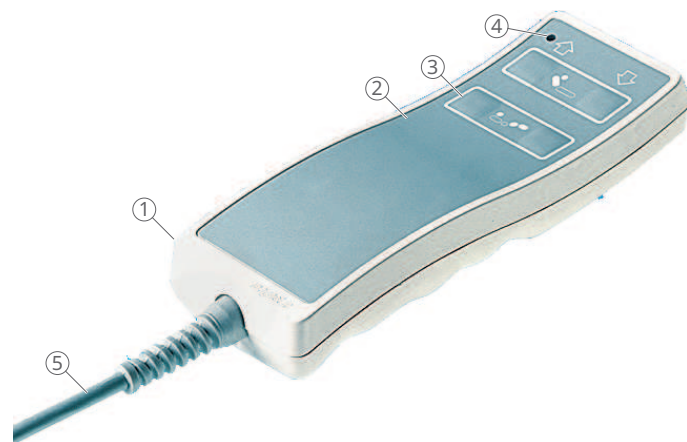
3 Overview of the operating switches

Designation	Switch type	Control units				Actuators					Accessories SPP and ZVB
		KOM1, KOM3, KOM3T	MCU	KOM2	BCU, VCU, SCU	MAX6, MAX7	TXG	TFG	CPMA and CPMB	TGC, THC, TLC	
EHA1	Hand switch	+	+	-	-	+	+	-	-	-	+
STF	Foot switch	+	+	-	-	+	+	-	-	-	+
STA	Desk switch	+	+	-	-	+	+	-	-	-	+
EHE	Hand switch	-	-	-	-	-	+	-	-	-	-
EHA2	Hand switch	-	-	+	-	-	-	-	-	-	-
STG	Foot switch	-	-	+	-	-	-	-	-	-	-
STC	Desk switch	-	-	+	-	-	-	-	-	-	-
EHA3	Hand switch	-	-	-	+	-	-	+	-	-	-
STJ	Foot switch	-	-	-	+	-	-	+	-	-	-
STE	Desk switch	-	-	-	+	-	-	+	-	-	-
EHA4	Hand switch	-	-	-	-	-	-	-	+	-	-
STL	Foot switch	-	-	-	-	-	-	-	+	-	-
STK	Desk switch	-	-	-	-	-	-	-	+	-	-
PHC	Hand switch	-	-	-	-	+	-	-	-	+	-
PFP	Foot switch	-	-	-	-	+	-	-	-	+	-
PAM	Desk switch	-	-	-	-	+	-	-	-	+	-
SPP	Accessories	+	+	-	-	+	+	-	-	-	-
ZVB	Accessories	+	+	-	-	+	+	-	-	-	-

4.1 Electrical operating switches

4.1.1 EHA, EHE hand switch

1 Hand switch EHA



001DC7CD

1	Housing	2	Membrane keyboard
3	Symbols	4	Operating status display (LED)
5	Power cable		

2 Hand switch EHE



001DC7DD

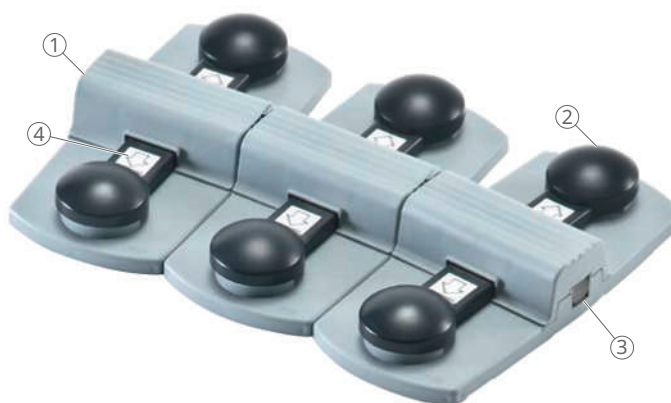
1	Housing	2	Membrane keyboard
3	Symbols	4	Space for customer logo
5	Operating status display (LED)	6	Power cable

The hand switch operates one or more linear actuators.

A keypad is located on the front of the hand switch for each linear actuator. The keypad consists of 2 push-buttons arranged at the same level. Pressing one of these push-buttons activates the linear actuator. The linear actuator moves for as long as the push-button is pressed. The respective function (up/down) is determined and initiated by pressing the button. A green indicator light signals actuation. Function symbols for the movement of the individual units can be printed on the front panel upon request. Up to 5 linear actuators can be actuated separately. A clip for hanging can be retrofitted to the rear of the operating device.

4.1.2 STF, STG, STJ, STL foot switch

3 Foot switches STF, STG, STJ, STL



001DC7ED

1	Housing	2	Operator keys
3	Connection for connection cable	4	Symbols

Foot switches are installed near desks, sofas and chairs for easy and ergonomic actuator control. The modular design of the foot switches enables control of 1 to 3 actuator functions (e.g. with 2 adjustment levels) and up to 3 memory positions. The foot switches are ergonomically positioned for convenient operation when standing or sitting. The arrangement of the buttons simplifies foot control.

4.1.3 STA, STC, ST desk switch

4 Desk switches STA, STC, STE



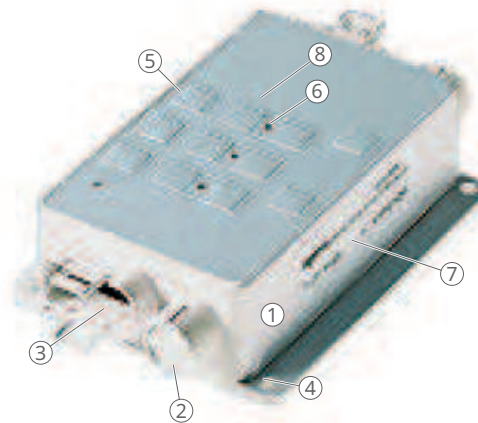
001DC7FD

1	Housing	2	Membrane keyboard
3	Operating status display (LED)	4	Mounting holes

Desk switches are simple, unobtrusive operating devices for operation of linear actuators in tables, chairs, sofas, and other applications. They can be easily mounted on a desk. Desk switches are available in versions for operating 1 to 3 linear actuator functions and with up to 3 memory positions. Depending on the version, they can be visibly mounted on the edge of the desk or concealed underneath.

4.1.4 Locking device SPP

5 Locking and divider device box SPP



001DC80D

1	Housing	2	Plug
3	Connection for operating devices and control units	4	Mounting holes
5	Operating status or lock status display	6	Symbols
7	Product label	8	Membrane keyboard

The operator can use the locking device for the MATRIX KOM1 and KOM3 controller to lock or unlock individual or all linear actuators. Locked actuators cannot be activated with the hand switch. All movement functions that are also possible with the hand switch can be executed using the buttons on the locking unit.

Buttons numbered 1 to 4 are located on the front. A green LED on the left side lights up when a linear actuator is activated. Each motor is assigned a separate push-button with 2 function symbols (up/down). A yellow LED between the buttons indicates that the linear actuator is locked.

The connection cable to the KOM control unit and the hand switch cable are connected to the corresponding sockets.

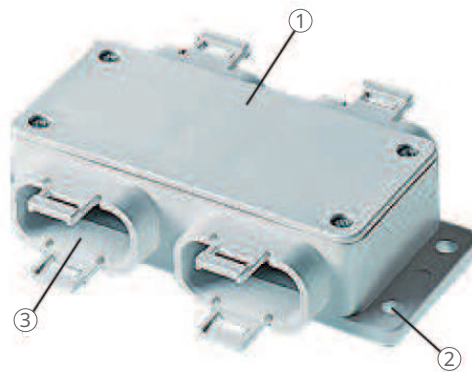
The cables are strain-relieved and sealed when plugged in.

The connector cams engage in two locking clips of the locking mechanism.

The cables are removed using the special key. On control units where the additional round connectors for limit switches are not used, these are factory-fitted with water-tight plugs. These must not be removed. The degree of protection corresponds to IP66.

4.1.5 ZVB distributor box

6 Distributor box ZVB



001DC81D

1	Housing	2	Mounting holes
3	Connection to operating devices and control units		

The linear actuators are usually operated using hand switches, desk switches, or foot switches. If multiple operating devices are required to operate the linear actuators, an intermediate connection must be used.

The distributor box is available in 2 versions: ZVB-140202 for multiple operating devices or ZVB-140206 for multiple outputs. Multiple hand switches or foot switches can be connected in parallel to the ZVB-140202 distributor box.

With the ZVB-140206 distributor box, 3 MATRIX AC units can be controlled using a 3-channel hand switch.

ZVB-140202 is used when more than one operating device is required, e.g., 2 foot switches.

ZVB-140206 is used, for example, when operating 3 MAX64/MAX74 units (low-voltage control) with a 3-channel EHA13 hand switch.

4.2 Pneumatic operating switches

To achieve a high level of operating comfort and safety, linear actuators such as TELEMAG and MATRIX are also available with integrated pneumatic control. Suitable operating devices have been developed for this control unit. Thanks to power-free pneumatic impulse control, the operator never comes into contact with live electrical parts, which enhances safety in hospital environments.

Pressing a button on the operating device generates a pneumatic impulse. This impulse is transmitted via the tube to the pneumatic receiver built into in the linear actuator. The pneumatic impulse actuates the microswitch in the actuator, which triggers the electrical control of the linear actuator. A locking mechanism ensures that if two buttons are pressed at the same time, only one button impulse is acknowledged. The special pressure compensation system provides a high level of safety. Temperature changes have no effect on safe operation.

4.2.1 PHC hand switch

7 Hand switch PHC



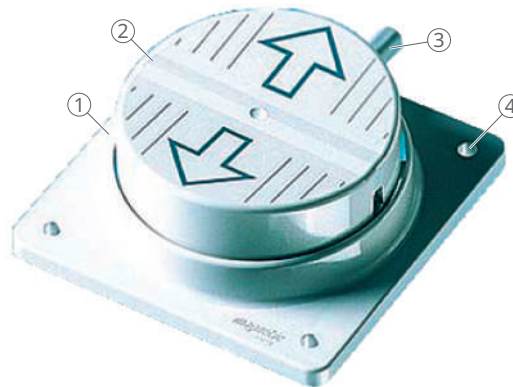
001DC82D

1	Housing	2	Symbols
3	Push-button	4	Tube

Depending on the type of channel, this hand switch can control up to 4 linear actuators individually. The buttons are printed with the corresponding function symbols. Individual functions can be deactivated on the switch. The individual locks for the motor function can be locked or unlocked with a key. For positioning, the hand switch can be supplied with a hook for hanging on a belt or with a mounting bracket.

4.2.2 PFP foot switch

8 Foot switch PFP

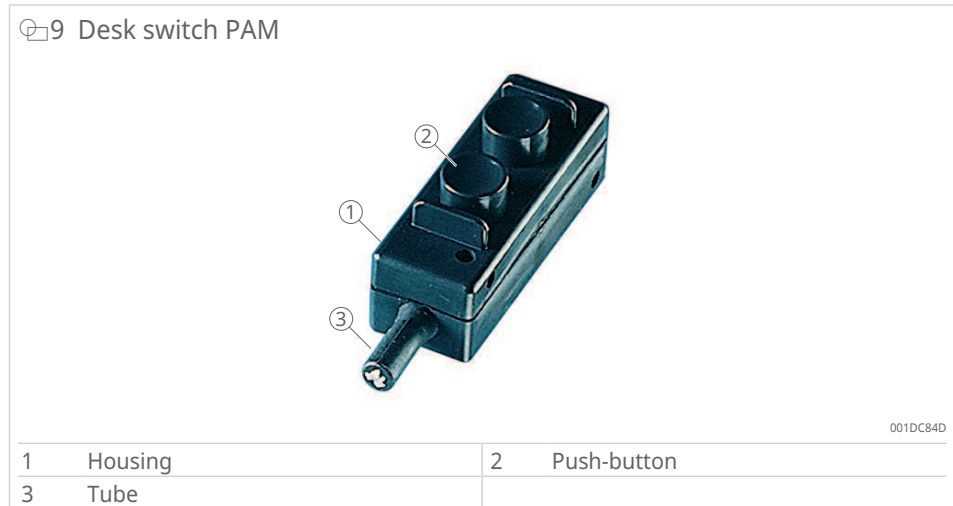


001DC83D

1	Housing	2	Rocker switch
3	Tube	4	Mounting holes

The foot switch has large operating buttons and a robust housing for foot operation. Foot switches PFP are available in 3 different versions. In the standard version, the foot switches are supplied for operation of one motor and with one pressure plate. The standard color is anthracite. The actuators are operated using the rocker switch of the foot switch. The space-saving single-motor switch has a rocker for the motor functions (up/down). The 2-motor switch has 2 double rockers, allowing 2 separate linear actuators to be controlled.

4.2.3 PAM desk switch



The switch controls a single linear actuator. The desk switch can be permanently mounted in various orientations using screws through the mounting holes. The switch is also suitable for installation in control panels.

4.3 Indicator lights

The operating devices and accessories have integrated LED indicator lights that signal movement of the linear actuator when a button is pressed.

Foot switches and pneumatic operating devices are not equipped with indicator lights. For these switches, indicators must be installed in the final ME equipment system. Depending on the application, it is recommended to install a power signal in a third-party control unit.

4.4 Third-party control units and actuators

The operating devices and accessories have been designed for operation with control units and linear actuators from the Schaeffler product range. Connected controllers and linear actuators that are NOT approved by Schaeffler are considered third-party devices.

It is strongly recommended to use the operating devices in combination with Schaeffler control units and actuators. When using devices from other manufacturers, appropriate measures must be taken to ensure compliance with the applicable regulations.

A failure of the connected control unit due to a mains power interruption or an electronic defect must not pose a hazard to patients, operators, or maintenance personnel.

When using third-party control units and linear actuators, observe the following:

- The third-party control unit must provide separation between the primary circuit and secondary circuit in accordance with 2 MOPP and must have an ungrounded secondary circuit.
- If you are using a third-party control unit, make sure that it is equipped with an overcurrent shutdown. This is the only way to protect the linear actuator against overload in the event of a stuck button or excessively long button actuation.
- Switch off the linear actuator immediately if the maximum current is exceeded or unintended movements occur.

4.5 Nameplate

10 Product label for EHA, EHE, STA, STC, STE, STK, PHC, PFP, PAM

EHA13-21E31N-00 11/15	1 2	PAM 1-130256 11.15	1 2
EHE13-1A133B-000 09.97	1 2	PHC 4-130949 11.15	1 2
EHA13-21E31N-00 11/15	1 2	STA01-w6000-x100 11/15	1 2

001D0418

1	Type key	2	Date of manufacture
---	----------	---	---------------------

11 Product label for STF, STG, STJ, STL, SPP, ZVB

001D0418

1	Type key	2	Manufacturer
3	Serial number	4	IP protection class
5	Date of manufacture	6	Manufacturer's address
7	Disposal information	8	Refer to user manual
9	UL quality mark		

4.6 Warning signs and information signs

The owner or operator must affix warning signs to the product that uses the device.

Over time, warning signs can become dirty or illegible. Always keep all safety labels, warning labels, and operating labels in a legible condition. Replace damaged, illegible labels or stickers immediately.

Information signs for electrical operating devices

Adhesive label, folded near connections, yellow background, black graphic.

4

④12 Information signs for electrical operating switches

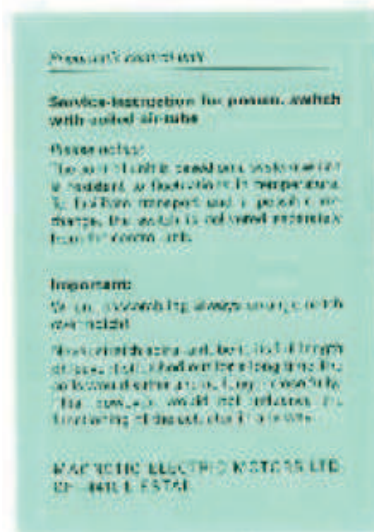


001D040E

Connection cable from the operating device to the control unit and accessories.

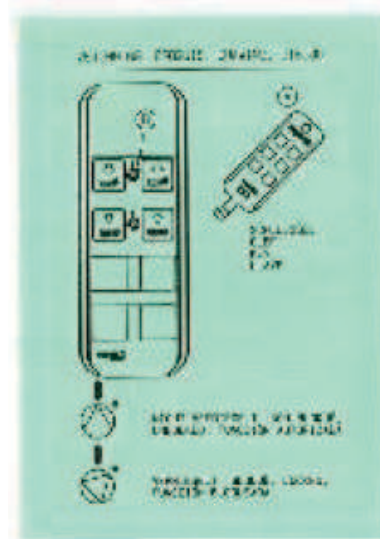
Information signs for pneumatic operating devices

④13 General information for PHC, PFP, and PAM



001D0411

14 Information signs for pneumatic operating devices



001D0413

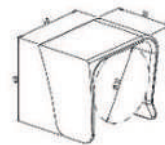
4.7 Accessories

Electrical operating devices

4 Electrical operating devices

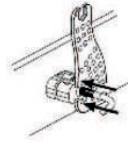
Hook for EHA, EHE	ZBG-145300-0001 0125767 gray ZBG-145361-0001 0125538 gray, complete ZBG-145377-0001 0125282 gray, small
Tool for plug (mains, D-sub connector, jack socket)	ZGB-140375 (0125322)
Protective cap for jack socket	ZBE-140305-0001 (0125398)
Expansion thread inserts (foot switch)	ZBE-521122 (0129440)
Rubber feet (foot switch)	ZBE-135310 (0102879)
Connection cable	ZKA-145318-1850 0121733 gray, D-sub connector ZKA-145318-2500 0121734 gray, D-sub connector
Adapter cable	ZKA-145446-0060 0132201 D-sub connector, not wired 1:1 ZKA-147319-0100 0121736 EHE - KOM ZKA-149203-1500 0125302 desk switch ZKA-149203-2500 0125303 desk switch

15 Hook for EHA, EHE



001D0420

④16 Tool for plug (mains, D-sub connector, jack socket)



001D0431

④17 Protective cap for jack socket



001D0439

④18 Expansion thread inserts (foot switch)



001D043A

④19 Rubber feet (foot switch)



001D043E

④20 Cable



001D0440

The D-sub connection cable is used for the KOM control unit, the locking device, and the switch distributor. This accessory cable can be used to make the appropriate connections between the linear actuators and control units. For more details, refer to the information on control units.

Pneumatic operating devices

④5 Pneumatic operating devices

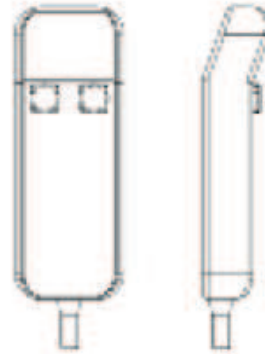
Mounting brackets for hand switches	With holes for wall mounting or thread for flexible hose mounting
Locking key for function lock on hand switches	-
Suspension clip for hand switches	Retrofittable Spacing 26 mm or 32 mm diameter
Safety key for PHC	ZWS-130394 (0125395)

21 Bracket



001D0442

22 Hand switch for 1 to 4 linear actuators



001D0443

23 Bracket for PHC



001D0445

24 Suspension clip for PHC



001D0449



Schaeffler accepts no liability for any damage resulting from control units not being used with a suitable operating device.

5 Transport and storage

NOTICE



Damage due to improper transport

Improper transport can cause significant material damage.

- Proceed with caution when unloading the packaged goods, during delivery and during transport to the destination.
- Observe the symbols and instructions on the packaging.
- Do not remove operating switches and accessories from the packaging until immediately before assembly
- Observe the storage conditions for return transport to the manufacturer; see the *Safety regulations, transport, and storage* section.

5.1 Transport

Observe the safety regulations for transport.

Observe the safety regulations for storage.

Requirements for packaging

Each individual packaged part must be packed appropriately for the anticipated transport conditions. Only environmentally friendly materials may be used for the packaging.

The packaging is intended to protect the individual components from transport damage, corrosion, and other types of damage until assembly.

1. Do not destroy the packaging and only remove it shortly before assembly.
2. Keep the packaging in case the product needs to be returned to the manufacturer ►27 | 5.3.

Packaging material consists of valuable raw materials, most of which can be effectively recycled and reused.

If the packaging is to be disposed of following intact delivery, the following instructions must be observed and complied with:

3. Dispose of packaging material in an environmentally responsible manner.
4. Observe the locally applicable disposal regulations.

5.2 Storage

The packaging may include information on additional storage requirements that are not listed here. In such cases, follow these instructions:

- Do not store outside
- Store in a dry, dust-free environment
- Keep away from any aggressive substances
- Protect from UV radiation
- Avoid mechanical vibrations

Observe the following values when selecting the storage location:

- Storage temperature from +5 °C to +40 °C
- Humidity from 5 % to 85 %, non-condensing
- Air pressure from 700 hPa to 1060 hPa
- If stored for longer than three months, regularly check the general condition of all packaging components

The products can be stored in an interim storage area during transport from the manufacturer to the customer, and/or at the customer's warehouse. Pack the device in its original packaging for storage.

For specific storage conditions, please contact Schaeffler.

5.3 Return to the manufacturer

Proceed as follows for return transport:

1. Dismantle the device if necessary.
2. Pack the device in its original packaging.
3. Observe the safety instructions for transport and storage.
4. Send to the manufacturer. The address is provided on the back of this operating manual.

6 Assembly

DANGER

Live components

Risk of fatal electric shock when touching live control units

- Disconnect from the power supply before commissioning and assembly.



DANGER

Moving parts

Severe injury or death due to unexpected actuator movements

- Disconnect from the power supply before commissioning and assembly.



WARNING

Improper installation of optional devices

Risk of injury from incorrect installation of additional operating switches, locking device or distribution box

- Always install optional devices, especially components that are part of a retrofit, in accordance with the respective instructions (circuit diagram). Avoid any skin contact with the membrane material.



NOTICE

Impaired electromagnetic emission and immunity

Property damage

- Only use suitable operating switches and accessories from Schaeffler.



This chapter is intended for technicians and those involved with further processing.



Assembly and initial commissioning may only be carried out by qualified personnel.



Work on the electrical system may only be carried out by professional electricians.

6.1 Connection

WARNING

Exceeding rated values

Risk of injury due to damaged actuators, control units and operating switches

- Check the rated values for the actuators and control unit at the time of installation.



The operating devices and accessories are equipped with clearly marked plugs for the following:

- control units
- linear actuators

The plugs must be inserted in the correct position to prevent possible slipping and irreparable damage to the sockets in the control unit.

Pay attention to the shape of the plug and the positioning arrows.

6.1.1 Connecting electrical operating devices

The electrical operating devices and accessories should always be connected to a control unit with a secondary circuit that is isolated from the main power supply by double insulation (2MOPP in accordance with the requirements of IEC 60601-1).

Connecting to a KOM control unit and MAX linear actuator

WARNING

Short circuit, malfunctions and unintended movements

Risk of injury due to damaged, stripped, bent or pinched cables or defective plugs

- Secure all cables so that no forces are exerted on the product's plug connection.



NOTICE

Incorrect cable connection



Damage to the socket and control unit caused by connection to the wrong position.

- Observe the plug configuration.
- Insert the plug for the hand switch cable in the correct position.

NOTICE



Excessive force or incorrect insertion

Damage to the lubrication port and contamination from lubricant leakage caused by incorrect assembly.

- Breakage of retaining clips and loss of strain relief and sealing.
- Proceed carefully when connecting.

Depending on the required configuration, the hand switch cable can be connected to the control unit, the locking device, or the distributor box (D-sub connector).

After plugging into the mains socket, the two cables are relieved and sealed by the integrated cams. The cams engage in the two Integra retaining clips on the control unit socket.

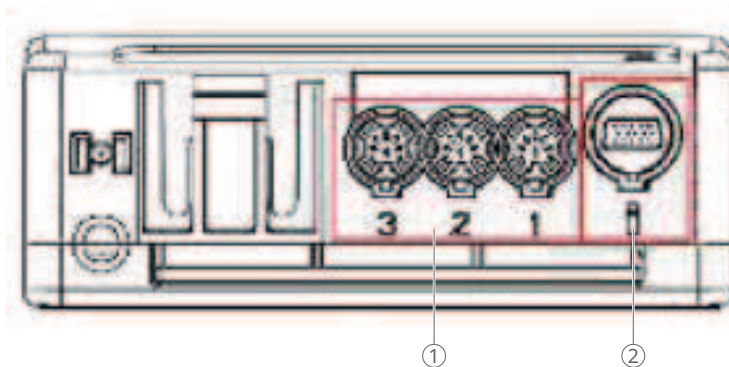
The cables may only be disconnected from the KOM control box, the MAX6 or MAX7 linear actuator, and the ZVB and SPP accessories by spreading the retaining clip using the special plug removal tool, part number ZBG-140375, and then pulling out the plug.

Insert the cable correctly into the socket. The three arrows on the top must be aligned.

When connecting the foot switch to the corresponding product, observe the technical instructions for that product.

Connecting to a BCU control unit

🔗 25 Connection to BCU control unit; 8-pin DIN connector and 15-pin D-sub connector



001DE40A

1	Actuators 1 to 3	2	Operating elements
1	Actuators 1, 2, 3	2	Operating switch

26 Operating device plug (D-sub connector, 15-pin)



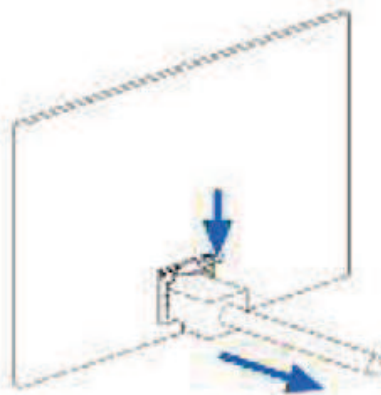
2:1



2:1

001D042A

27 Connection to TXG or SEM



001D042B

6.1.2 Connecting pneumatic operating switches


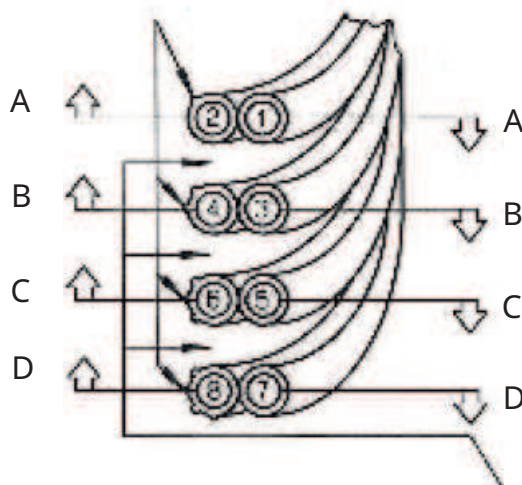
The tubes can be disconnected from each other individually at the pneumatic connections on the linear actuator and on the operating devices. Individual tubes can also be disconnected from each other for connection to different actuators:

- When connecting the tubes to the pneumatic connection of the linear actuator, ensure that the alignment notches engage correctly.
- Notch the tubes with a knife and pull them apart by hand to the desired length.

The tubes can be shortened by the customer.

- Ensure that the connection pins are correctly seated again.
- When routing the tubes, make sure that they cannot be kinked or pinched.

High functional safety can only be achieved through correct tube routing and proper handling. The operating devices are easy to maintain and require no servicing. Defective operating devices may only be repaired by Schaeffler.

 28 Correct tube routing


001D042C

The operating device is based on a system that is resistant to temperature fluctuations. To simplify transport and possible replacement, the pneumatic operating device is supplied separately from the control unit.

6.2 Assembly

1. Attach the operating devices and accessories using the designated mounting holes ▶47 | 14.
2. Install the operating devices and accessories in the designated positions.

Observe the following points when setting up and aligning the system:

- Ensure that cables cannot be kinked or pinched.
- Ensure that the connection cables between the operating devices and accessories cannot be pinched or kinked.
- Never stretch tubes to their full length.
- Never leave tubes stretched out for long periods.
- To prevent damage to the products caused by angled plugs or damaged cables, ensure that the plugs remain freely accessible and that all cables are securely routed and concealed. Angled plugs may lose their protection code (IP), causing irreparable damage to the connected control unit.
- The operating devices are connected to a control unit or a linear actuator and can therefore be replaced if necessary.

 Install the air hose notch to notch.

6.3 Connecting to the actuator

The specified IP protection is only guaranteed if all unused connecting sockets are sealed with a stopper.

The following operating switches can be connected directly to the specified actuators and lifting columns:

6 Operating switches and corresponding actuators

Operating switches	Actuators
EHA1, STF, STA	MAX6, MAX7, TXG
EHA3, STJ, STE	TFG5, TFG9
EHE1	TXG4, TXG5, TXG8, MAX6
PAM, PHC, PFP	TGC, THC, TLC

Before making any connection, check the sealing rings of the control element connector for damage and replace if necessary.

6.4 Connecting to the control unit

The following operating switches can be connected to the following control units:

7 Operating elements and corresponding control units

Operating switches	Control units
EHA1, STF, STA	KOM1, KOM3, KOM3T
EHA2, STG, STC	KOM2
EHA3, STJ, STE	BCU, VCU, SCU
EHE1	SEM

7 Initial commissioning and functional check

DANGER



Live components

Risk of fatal electric shock when touching live control units

- Disconnect from the power supply before commissioning and assembly.

WARNING



Risk of injury

Moving parts (rotary and/or linear motion) can cause serious injuries.

- Work may not be carried out in the vicinity of moving parts and hands, arms or other parts of the body must be kept away from moving parts.

Before initial commissioning and functional testing, check that the following points have been observed:

- All instructions in the chapters on general safety and installation have been followed.
- All cables are secured against pinching and are properly connected.
- The operating switch is connected to the control unit.

Functional testing

Carry out a functional test before putting the system into operation with the operating switches for the first time. Have the functional test performed by a professional electrician.

Before initial commissioning, a professional electrician must perform and document the following tests and measurements:

- Visual inspection of condition
- Functional check of operating and safety functions
- Measurement of leakage currents
- Measurement of insulation resistance

Once the functional test has been completed, you can put the control unit into operation.

Commissioning the control unit

1. When the operating indicator LED lights up green, press the corresponding control button on the operating switch.
2. Make sure that all functions operate correctly.

8 Operation

DANGER



Unintentional restart

Risk of serious injury or death due to unauthorized persons reconnecting the power supply in the hazard area

- Before beginning any work, disconnect the product from the power supply.
- Secure the product against unintentional activation.

DANGER



Pinched cables

Severe injury or death from electric shock

- Route the wiring correctly in the cable duct.
- Ensure that cables cannot be pinched or damaged.

WARNING



Unintended movements

Risk of injury from crushing

- Keep people away from the lifting area during operation.
- Observe the maximum permissible performance specifications.
- Never manipulate elements connected to the product during operation.
- Make sure that the operating switches are not unintentionally activated.
- Switch the product to the standby position during idle periods.

WARNING



Rotating and/or linearly moving parts

Risk of injury from moving parts while using the operating switch and when the control unit is activated

- Do not work on moving parts during operation.
- Keep hands, arms, and other parts of the body away from moving parts.
- Ensure that the operator always has direct visual contact with the actuator movement when pressing a button on the operating switch.

WARNING



Damage from impact, breakage, or severe wear

Risk of injury from cracks and resulting openings in the housing

- Discontinue use of the product.
- Follow the disassembly instructions.

NOTICE



Wet floors

Damage to the electrical foot switch

- Do not use foot switches in areas where liquids are present (e.g. emergency rooms and operating rooms).

Observe the operating conditions in accordance with the technical data ►47 | 14.

This chapter is intended for user groups, operating authorities, and owners. It contains all information required for the safe and proper operation of the operating devices and accessories under normal operating conditions.



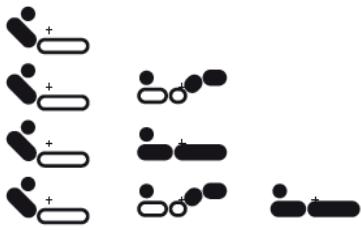
Prerequisites:

- Operating devices and accessories must be correctly installed and connected to the control unit or to the linear actuator with internal control unit.
- A comprehensive function test must have been performed and documented after assembly and initial commissioning prior to operation by activating the corresponding functions via the connected hand switch, foot switch, or desk switch.
- Check the functionality of the operating devices to verify the correct direction of the linear actuator by pressing the up and down buttons.

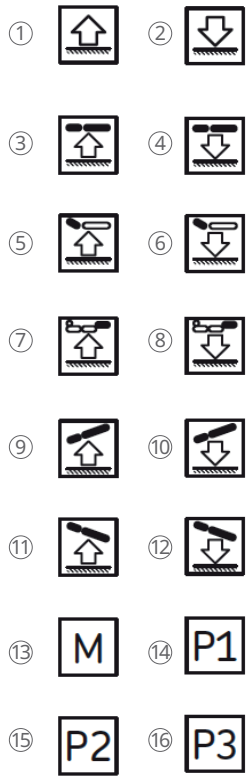


If the force required to press a button changes significantly, this may be an early indication of unintended movement. Replace the operating switch immediately.

8 Symbols for electrical hand switches

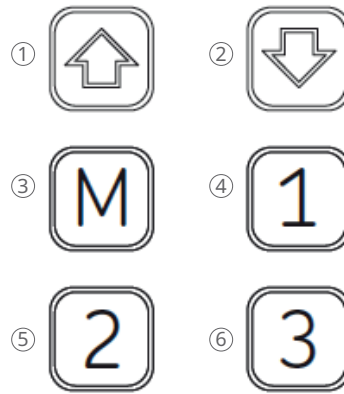
1		Up
2		Down
3		Head
4		Head/foot
5		Head level
6		Head/foot level

29 Symbols for electrical foot switches



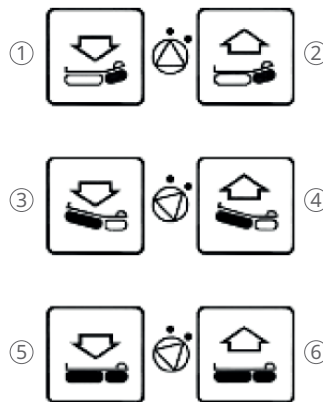
001DC88D

1	Up	2	Down
3	Head/foot up	4	Head/foot down
5	Head up	6	Head down
7	Foot up	8	Foot down
9	Trendelenburg position	10	Trendelenburg position
11	Anti-Trendelenburg	12	Anti-Trendelenburg
13	Memory	14	Memory slot 1
15	Memory slot 2	16	Memory slot 3

 30 Symbols for electrical desk switches


001DC8AD

1	Up	2	Down
3	Memory	4	Memory 1
5	Memory 2	6	Memory 3

 31 Symbols for pneumatic hand switches


001DC8BD

1	Head section down	2	Head section up
3	Foot section down	4	Foot section up
5	Couch down	6	Couch up

8.1 Switching on and off

The operating switches do not have an on/off switch. To de-energize the connected control unit or actuator, it must be disconnected from the main power supply.

8.2 Using operating switches

NOTICE



No actuator movement after pressing a button

Risk of damage due to thermal issue or blown fuse

- Switch off the operating switch.
- Check the operating switch and the actuator.

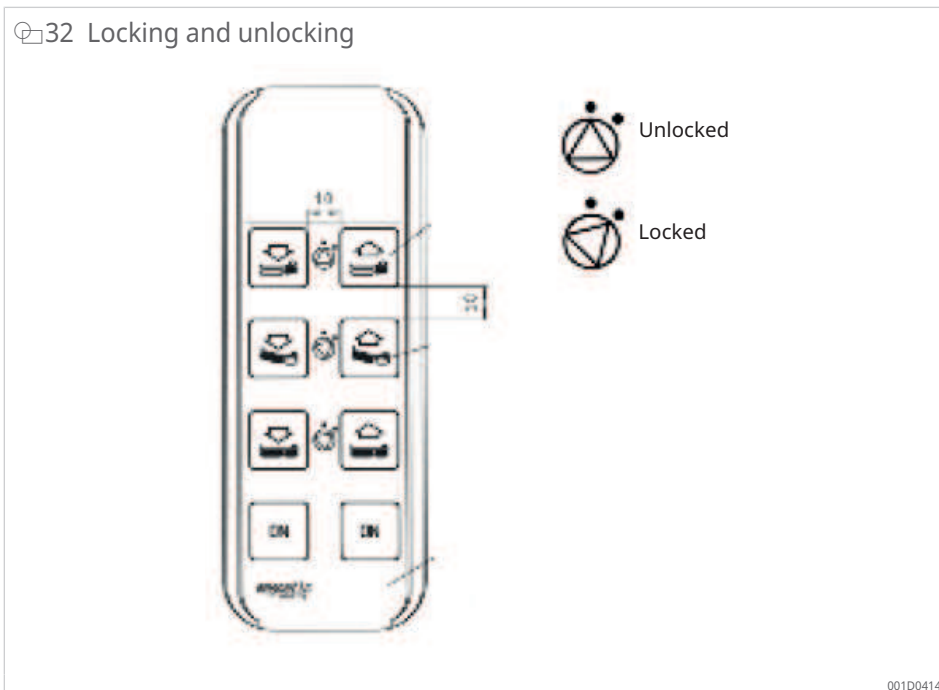
A green LED on the operating device indicates normal operation.

1. Use the up arrow button or down arrow button on the operating device to operate the linear actuators:
 - › up button: the linear actuator extends
 - › down button: the linear actuator retracts
2. Stop the linear actuator by pressing both buttons simultaneously.
3. In the event of unintended activation, press the opposite button on the electrical operating device to stop the movement of the linear actuator.
4. After use, place the operating devices in such a way that unintentional activation of the push-buttons is prevented.

8.3 Locking and unlocking (with PHC)

The PHC hand switch (locking system) allows you to lock certain functions of a motorized bed:

1. To lock (dot position), turn the triangle with the key to lock the two buttons and fix the corresponding section of the bed.
2. To unlock (line position), turn the key in the opposite direction.



8.4 Locking and unlocking the actuator (with SPP)

You can use the SPP locking device to lock and unlock an actuator:

1. To lock, press and hold the symbol button (lock CLOSED), e.g. press motor button 1 for motor 1.
 - › The yellow LED on the keypad lights up. The actuator can no longer be operated with the hand switch.
2. To unlock, press and hold the symbol button (lock OPEN), e.g. press motor button 1 for motor 1.
 - › The yellow LED on the keypad goes out. The actuator can be operated again.

8.5 Triggering an emergency stop

The operating switches and accessories do not have an on/off switch and must be disconnected from the control unit or the actuator. This is the only way to de-energize the operating units.

The application in which the operating switches and accessories are installed may need to be equipped with an emergency stop switch or a full disconnection from the mains supply at all poles.

In hazardous situations, all movements of the application must be stopped as quickly as possible and the power supply disconnected:

- ▶ Unplug the mains cable from the socket on the control unit.

8.6 What to do in hazardous situations

1. Activate the emergency stop function (if available) or disconnect the control unit from the power supply.
2. Remove all persons from the danger zone.
3. Initiate first aid measures if necessary.
4. Notify a doctor and the fire department if necessary.
5. Inform the person responsible on site.
6. Keep access routes clear for emergency vehicles and personnel.
7. Depending on the severity of the emergency, notify the authorities if necessary.
8. Assign qualified personnel to resolve the fault.
9. Before resuming operation, check the operating switch and the application that uses it.
10. Ensure that all safety devices are installed and fully functional.

9 Troubleshooting

DANGER



Unauthorized activation of the power supply

Severe injury or death due to unintended restart

- Switch off the system.
- Secure the system by locking it.
- Keep unauthorized persons away from the danger zone.

WARNING



Persons in the operating area

Risk of injury from crushing

- Keep people away from the lifting area.
- Observe the maximum permissible performance specifications.
- Do not manipulate connected products during operation.

This chapter describes possible causes of malfunctions and the measures required to restore operation.

If malfunctions occur frequently, shorten the maintenance intervals. For malfunctions that cannot be resolved with the information listed here, contact the manufacturer.

Personnel:

- Unless otherwise indicated, troubleshooting tasks may be performed by the operator.
- Some tasks may only be carried out by qualified personnel, as indicated in the description of the specific malfunction.
- Work on the electrical system may only be carried out by a professional electrician.

Actions in the event of malfunctions:

1. For malfunctions that pose an immediate risk to persons or property, switch off the actuator or control unit immediately and secure it against being switched on again.
2. Determine the cause of the malfunction.
3. Depending on the type of malfunction, have repairs carried out by qualified personnel.
4. Inform the responsible person on site about the malfunction.

The troubleshooting table provides information on which personnel are authorized to perform the repair.

9 Troubleshooting

Error	Possible cause	Remedy	Qualification
The actuator does not move	No power supply to the control unit or actuator	Check power supply	Trained personnel
	Control cable not connected or poorly connected	Check connection of control cable	Qualified person
	LED on operating switch does not light up	Check connection and read instructions for control unit or actuator	Qualified person
	Defective switch on operating switch	Replace operating switch	Qualified person
	Defective cable on operating switch	Replace operating switch	Qualified person
	Control unit defective	Check or replace control unit	Qualified person
	Actuator faulty	Check or replace actuator	Qualified person
The actuator moves unexpectedly.	Short circuit on operating switch (switch or cable)	Press emergency stop switch	Operator
		Press opposite button to stop movement	Operator

If the above measures do not remedy a fault, contact the Schaeffler Service department.

Resuming operation after troubleshooting

To put the product back into service after troubleshooting, follow the steps described in ►33|7.

10 Maintenance

DANGER



Electric shock

Risk of serious injury or death due to improper maintenance

- Work on electrical systems may only be carried out by professional electricians.

DANGER



Unintentional restart

Risk of serious injury or death due to unauthorized persons reconnecting the power supply in the hazard area

- Before beginning any work, disconnect the product from the power supply.
- Secure the product against unintentional activation.

WARNING



Unintended movements

Malfunctions due to incorrect assembly of pneumatic operating switches

- When assembling the pneumatic tubes after maintenance work, make sure that the notches align correctly.

Personnel:

- Unless otherwise specified, maintenance work and repairs can be carried out by the operator.
- Some maintenance tasks may only be performed by specially trained, qualified personnel, or exclusively by the manufacturer. This is indicated in the description of the specific maintenance task.
- Work on electrical equipment may only be carried out by a professional electrician.
- Only professionally trained personnel may replace operating switches, accessories, and cables.

It is advisable to follow the IEC 62353 standard for maintenance.

10.1 Performing maintenance

The maintenance tasks required for optimal and trouble-free operation are described in the following sections.

- If increased wear is detected during regular inspections, shorten the maintenance intervals according to the actual signs of wear.
- If the operating devices and accessories are used outside the specified ambient conditions, inspect the product once a month for changes such as oxidation, deposits, or cracks.
- Check the functionality of the operating devices (press the up and down push-buttons) to verify the correct direction of movement of the linear actuator. If the force required to actuate a push-button changes significantly, this may be a warning sign of unintended movement. In this case, replace the operating device immediately.

The products are maintenance-free throughout their service life. Damaged housings no longer provide the specified IP protection. Damaged cables can lead to short circuits or unintended movements. In accordance with applicable regulations, safety inspections must be carried out on site at regular intervals:

- Regularly check power cables and housings for wear.
- Measure and verify grounding and leakage currents annually.
- Inspect the housing, membranes, keyboards, and connected cables for signs of mechanical damage at regular intervals (every 6 months).
- In the event of damage, disconnect the operating devices from the control unit or linear actuator and replace all defective parts.
- Every six months, check the operating devices by monitoring the linear actuators during inwards movement and outwards movement.
- Regularly check the following:
 - plugs
 - housings
 - cables
 - protective foil/keyboards (with symbols)
 - leakage currents
 - function
 - coiled tubes (pneumatic elements)

This regular inspection includes checking all functions and safety measures, as well as verifying that the buttons and membrane are still undamaged.

Replace the hand switch, foot switch, or desk switch immediately if you notice any of the following:

- slow response of the linear actuator
- no tactile noise (no clicking)
- loose switch

10.2 Performing inspection and measurement

- To be carried out by a professional electrician.
- To be conducted according to the applicable standards and regulations.
- Complete documentation is required.

Complete the following entries in the maintenance log:

- Name of the executing entity (company, department)
- Names of the responsible personnel
- Identification of the operating switch/system (type, serial number, inventory number) and the respective accessories
- Completed inspections and readings
- scope and results of the inspections
- Measurement method, measuring device, measured values
- Overall assessment/review of all functions compared to specifications
- Date and signature of the inspector: for IT applications, personal coding is an acceptable alternative.

10.3 Actions to carry out after maintenance

After completing maintenance work, carry out the following steps before returning the product to service:

1. Check that all previously loosened screw connections are securely tightened.
2. Ensure that all tools, materials, and other equipment used have been removed from the work area.
3. Clean the work area and remove any contamination such as liquids, processing materials, or similar substances.
4. Ensure that all safety features of the system are functioning satisfactorily.
5. Check all functions against the product specifications.
6. Document the inspections in the maintenance log.

11 Cleaning

NOTICE



Ingress of liquids

Irreparable damage

- Never machine wash or use a cleaning system.
- Do not use high-pressure steam cleaning devices.
- To disinfect, wipe only with isopropyl alcohol.
- Inspect the plastic housing every 6 months for mechanical damage (cracks).

NOTICE



Excessively acidic or alkaline wash water

Damage to metal and plastic parts of the operating switches

- Only use pH-neutral water, including chemical additives.

The operating switches and accessories are manufactured according to the specified protection class. Operating elements with IP67, IPX7 and IP66 are suitable for use with machine washing devices. They meet the current requirements for hygienic preparation of medical beds in accordance with IEC 60601-2-52.

☰ 10 Protection level of operating devices

Protection code (IP)	Product	Product type
IP67	EHA	Electrical hand switch
IPX7	EHE	Electrical hand switch
IP66	PHC	Pneumatic hand switch
	SPP, ZVB	Accessories
IPX2	STF, STG, STJ, STL	Electrical foot switch
IP21	PFP	Pneumatic foot switch
IPX0	STA, STC, STE	Electrical desk switch
	PAM	Pneumatic desk switch
IP32	STK	Electrical desk switch

Clean operating switches and accessories as soon as possible after use to prevent deposits of unwanted materials.

Observe the following points when cleaning:

1. Disconnect the product from the control unit or actuator.
2. Disconnect the cable from the power supply.
3. Clean the product with a damp cloth and water mixed with isopropyl alcohol.

12 Disassembly

DANGER

Live components

Serious injury or death from touching live electrical components

- Switch off the power supply before carrying out any work.



DANGER

Unexpected movement of parts

Severe injury or death due to unexpected movement of connected actuators

- Secure the actuators before starting any work.



WARNING

Stored residual energy, sharp-edged components, pins, and corners on parts and tools

Danger of injury due to improper dismantling

- Exercise caution when working with exposed, sharp-edged components.
- Carefully secure components to prevent them from falling or tipping over.
- Dismantle the components properly in accordance with applicable local regulations.



WARNING

Loose stacked parts or components and tools lying on the ground

Risk of tripping and injury

- Make sure the work area is clean and tidy.



This chapter is intended for technicians and personnel performing downstream processing tasks. It contains all information required for the decommissioning of operating devices and accessories.

Personnel:

- Disassembly may only be carried out by specially qualified personnel.
 - Work on the electrical system may only be performed by professional electricians.
- ✓ Before starting work, ensure that sufficient space is available for disassembly.
1. Disconnect the product from the power supply.
 2. Secure the elements so that no loads can act on the actuator and control unit.
 3. Loosen and remove the fastening screws used to install the operating devices and accessories.
 4. Disconnect the product from the actuators and control units.
 5. Unplug the operating device from the corresponding terminal.
 6. Clean the product.
 7. Carefully package the product for shipping to the manufacturer.
 8. Dismantle the product for disposal in accordance with applicable local occupational safety and environmental regulations.

13 Disposal

This chapter is intended for technicians and personnel performing downstream processing tasks. It contains all the information required for the disposal of operating switches and accessories.

Incorrect disposal can harm the environment. Electronic waste, electronic components, lubricants, and other additives are subject to special waste disposal regulations and may only be disposed of by authorized specialist companies.

Disposing of packaging material

- Dispose of the packaging material in an environmentally responsible manner.
- Observe the local disposal regulations.

Disposing of operating switches and accessories

Observe the local regulations for disposal.

The actuators and control unit components can be returned to Schaeffler for disposal.

If no return or disposal agreement has been made, the disassembled components should be recycled.

1. Dispose of metal and plastic components at an appropriate recycling center.
2. Sort the remaining components by material and dispose of them in accordance with local occupational safety and environmental regulations.

For information on environmentally responsible disposal, contact local authorities or specialized waste disposal companies.

14 Technical information

The equipment data and operating data can be found in the current data sheet.

Data sheets for hand switches:

- EHA1 PUB MT/P8 10433 EN
- EHA2
- EHA3 PUB MT/P8 10434 EN
- EHA4
- EHE PUB MT/P8 10435 EN
- PHC

Data sheets for foot switches:

- STF PUB MT/P8 10440 EN
- STG
- STJ
- STL (for CPMA/B)
- PFP

Data sheets for desk switches:

- STA PUB MT/P8 10441 EN
- STC
- STE
- STK (for CPMA/B)
- PAM

Current data sheets are available.

Further information



LA 1 | EWELLIX Lifting and Actuating Systems |
<https://www.schaeffler.de/std/222A>

For further information, contact Schaeffler.

11 Technical data for hand switches

Feature	Unit	EHA1	EHA2	EHA3	EHA4	EHE	PHC
Element type	-	Low voltage	Low voltage	Low voltage	Low voltage	Low voltage	Pneumatic
Max. operating channels	-	5	5	5	1	4	4
Connection to control unit	-	1	1	1	1	1	1
Voltage	V DC	12	5	12	5	38	-
Current (switch)	mA	50	50	50		50	-
Ambient temperature	°C	+10 ... +40	+10 ... +40	+10 ... +40	+10 ... +40 +10 ... +40	+10 ... +40	+10 ... +40
Protection code (IP)	-	IP67	IP67	IP67	IP67	IPX7	IP66
Color	-	Gray	Gray	Gray	Gray	Gray	Gray
Weight	kg	0.25	0.25	0.25	0.25	0.25	0.25

12 Technical data for foot switch

Feature	Unit	STF	STG	STJ	STL	PFP
Element type	-	Low voltage	Low voltage	Low voltage	Low voltage	Pneumatic
Max. operating channels	-	3	5	5	1	1
Connection to control unit	-	1	1	1	1	1
Voltage	V DC	12	5	12	5	-
Current (switch)	mA	50	50	50	20	-
Ambient temperature	°C	+10 ... +40	+10 ... +40	+10 ... +40	+10 ... +40	+10 ... +40
Protection code (IP)	-	IPX2	IPX2	IPX2	IPX2	IP21
Color	-	Gray, blue	Gray, blue	Gray	Gray	Gray
Fastening screws (thread)	-	M5	M5	M5	M5	-
Weight	kg	0.4	0.4	0.4	0.4	0.15

13 Technical data for desk switch

Feature	Unit	STA	STC	STE	STK	PAM
Element type	-	Low voltage	Low voltage	Low voltage	Low voltage	Pneumatic
Max. operating channels	-	5	5	5	1	1
Connection to control unit	-	1	1	1	1	1
Voltage	DC V	12	5	12	5	-
Current (switch)	mA	50	50	50	20	-
Ambient temperature	°C	+10 ... +40	+10 ... +40	+10 ... +40	+10 ... +40	+10 ... +40
Degree of protection	-	IPX0	IPX0	IPX0	IPX0	IPX0
Color	-	Gray	Gray	Gray	Gray	Gray
Weight	kg	0.15	0.15	0.15	0.15	0.1

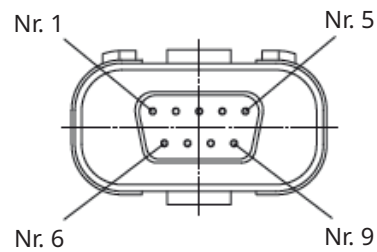
14 Technical data for accessories

Characteristic	Unit	SPP	ZVB
Element type	-	Low voltage	Low voltage
Max. operating channels	-	4	2 or 3
Connection to control unit	-	1	1
Voltage	DC V	12	12
Current (switch)	mA	50	50
Ambient temperature	°C	+10 ... +40	+10 ... +40
Degree of protection	-	IP66	IP66
Color	-	gray	gray
Weight	kg	0.25	0.15

14.1 Plans and diagrams

Connection diagrams

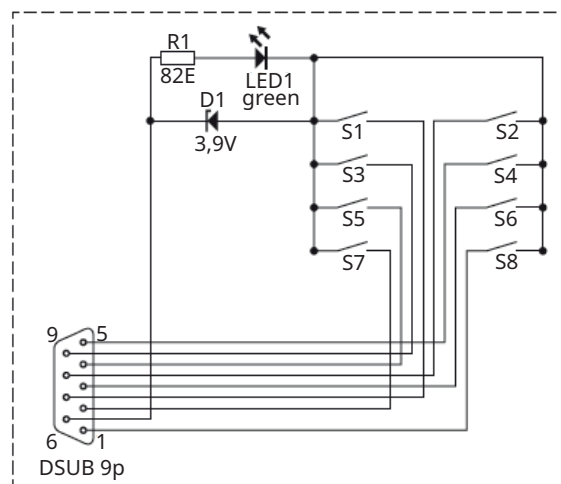
33 D-sub connectors, colors



001D044D

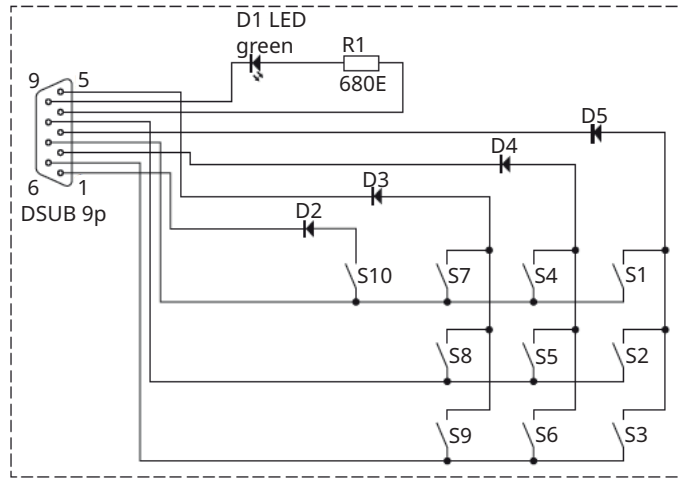
1	Black	2	Brown
3	Red	4	Orange
5	Yellow	6	Green
7	Blue	8	Violet
9	Gray		

34 Connection diagram for EHA1



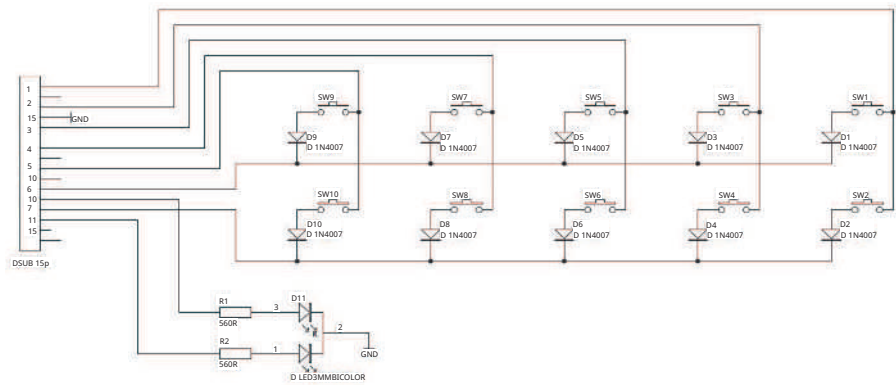
001D044E

35 Connection diagram for EHA2



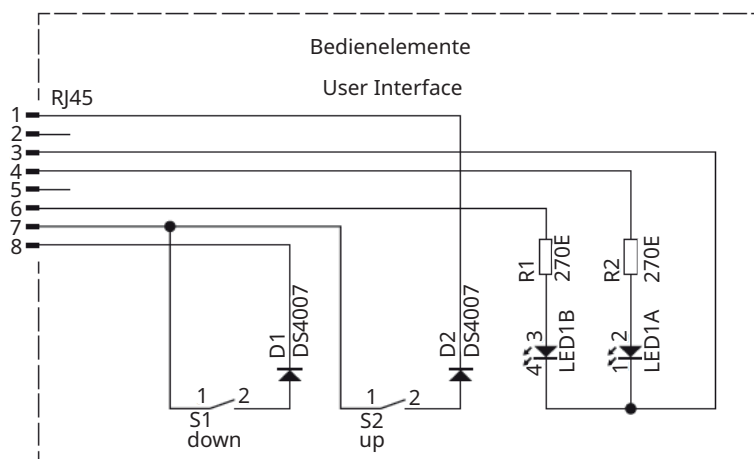
001D0450

36 Connection diagram for EHA3



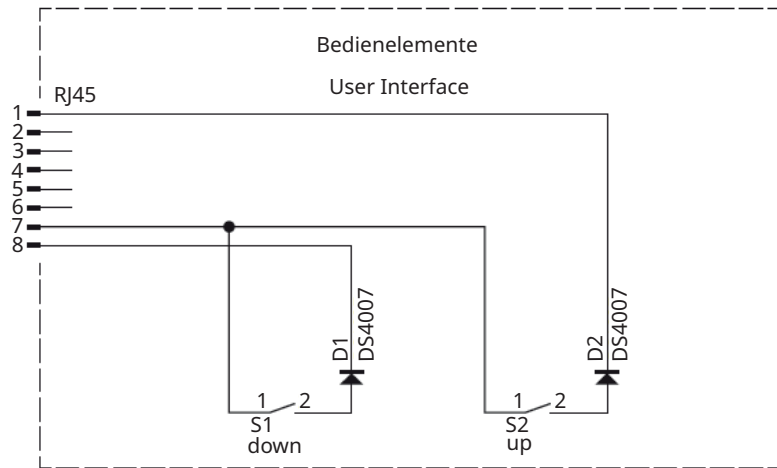
001D0409

37 Connection diagram for EHA4 and STK



001D0452

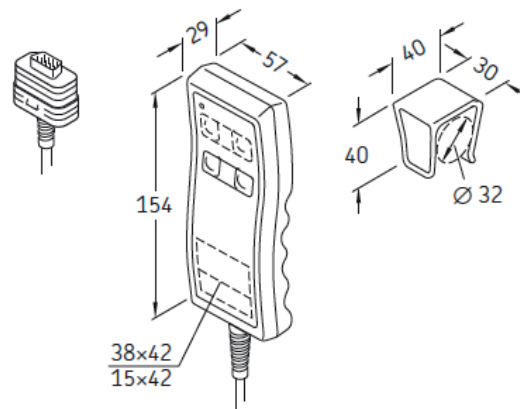
38 Connection diagram for STL



001D0455

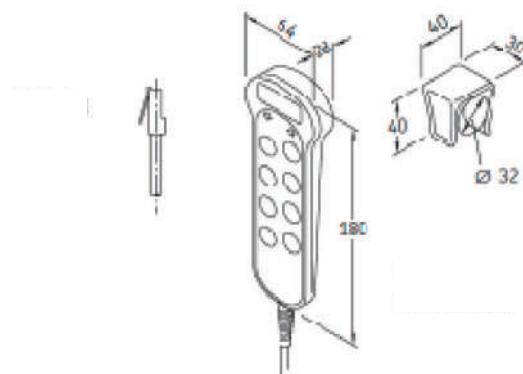
Dimensional drawings

39 Dimensions for EHA



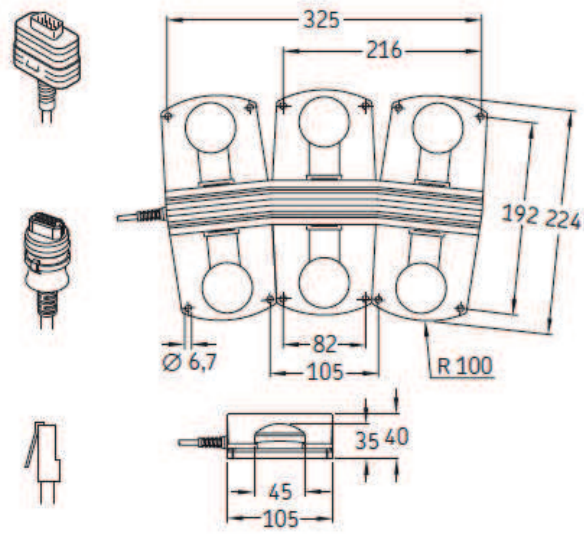
001D0458

40 Dimensions for EHE



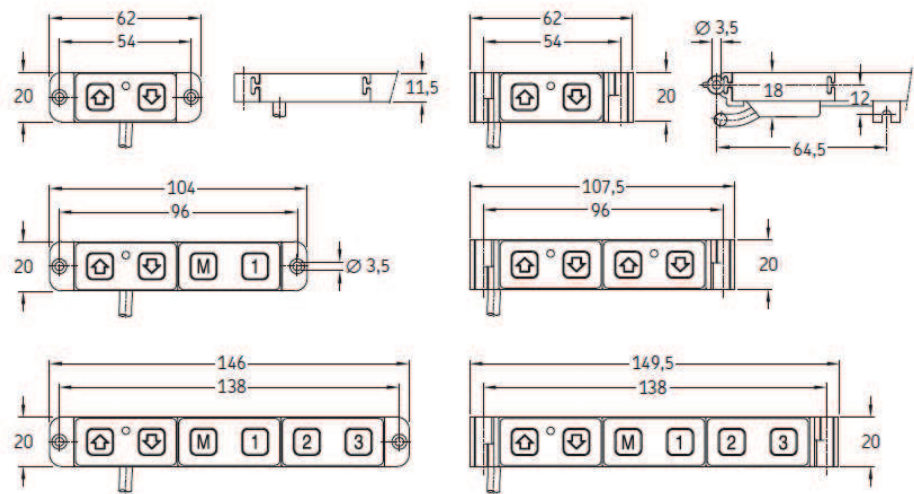
001DDB24

☐41 Dimensions for STF, STG



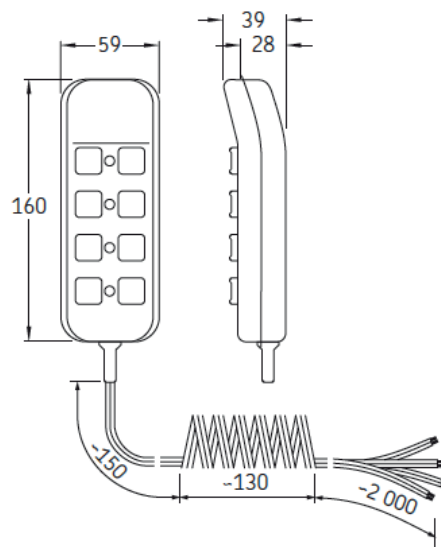
001D045C

☐42 Dimensions for desk switches



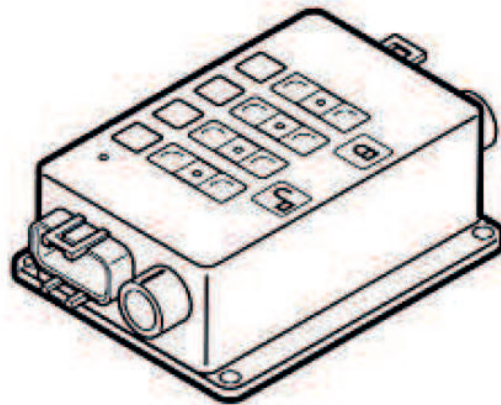
001D045E

43 Dimensions for pneumatic hand switch



001D0466

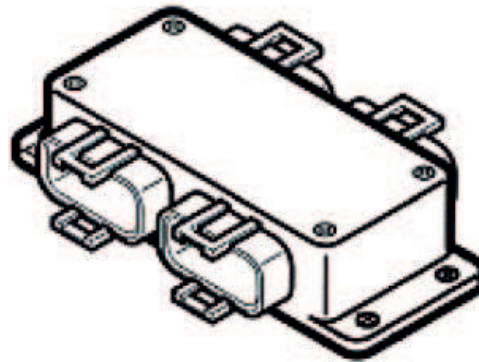
44 Dimensions for SPP



001D0461

Dimensions:	138 x 109 x 45 mm
Mounting holes:	125 x 97 mm d _m = 5.5 mm

45 Dimensions for ZVB



001D0464

Dimensions:	132 x 50 x 30 mm
Mounting holes:	120 x 30 mm $d_m = 5.5$ mm

14.2 Standards compliance

- IEC 60601-1
- IEC 60601-1-2

Declaration of conformity

A certificate of conformity can only be issued in conjunction with Schaeffler control units and linear actuators.

15 Replacement parts

If you require additional information or replacement parts, please contact Schaeffler.

The operating switches and accessories may only be repaired by authorized, trained personnel (personnel requirements).

All warranty and service claims will be void without notice if any of the screws or product housings have been tampered with, indicating unauthorized repair.

No spare parts are available.

If the operating switch cannot be repaired on site by authorized personnel, it must be dismantled and sent to the manufacturer.

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