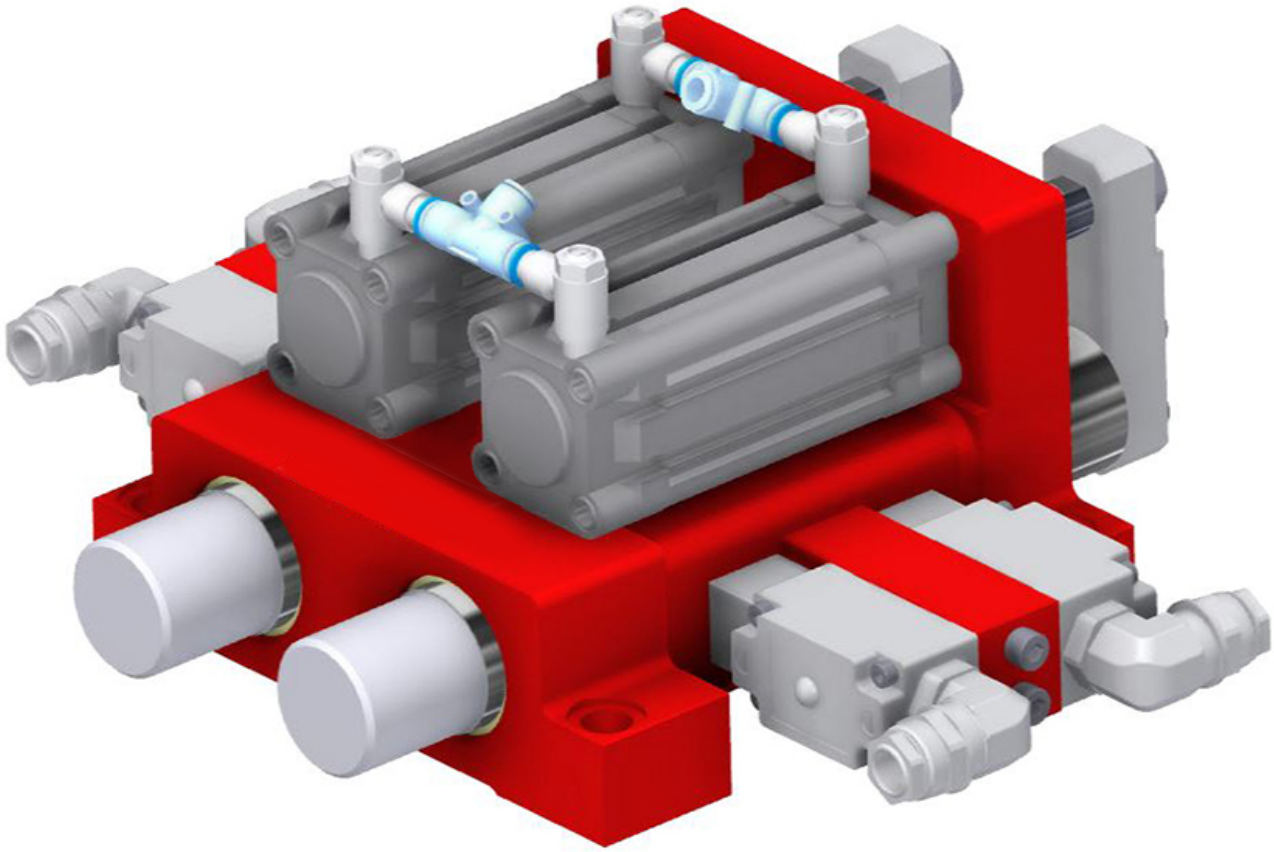
MOTION
INDEX DRIVES



Maintenance locking device

Assembly instructions

Version 1.0
2023-01-25

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1 About these instructions

1.1 Purpose

The aim of these installation instructions is to provide users with all the information required in order to be able to install the maintenance locking device properly and safely.

1.2 Contact information

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1.3 Symbols

The following symbols are used in these instructions:

Instructions and directions

Requirements for performing an instruction are indicated by a check mark.

The action steps to be executed are numbered.

The results of individual action steps are indicated by a black arrow. The overall result of an instruction is marked by a white arrow in a black circle.

Example

✓ Requirement

1. Instruction (step 1)
2. Instruction (step 2)
   ⇨ Result or response of system to step 2
3. Instruction (step 3)

➲ Overall result of the instruction

Enumerations

Enumerations in no strict order are indicated as follows:

- Property A
  - Detail 1
  - Detail 2
- Property B
  - Detail 1
  - Detail 2

2 Safety

2.1 Safety instructions

General safety instructions

- Read the instructions in full
- Adhere to the information and instructions in this manual
- Keep unauthorised persons away from the working area
- Work on the electrical systems must only be carried out by qualified electricians
- Keep the manual safe in a place where it is accessible by all employees
- Adhere to the documentation for the externally supplied parts
- Wear the stipulated personal protective equipment

2.2 Warnings

2.2.1 Structure of the warnings

All the warnings in these instructions have the following structure:

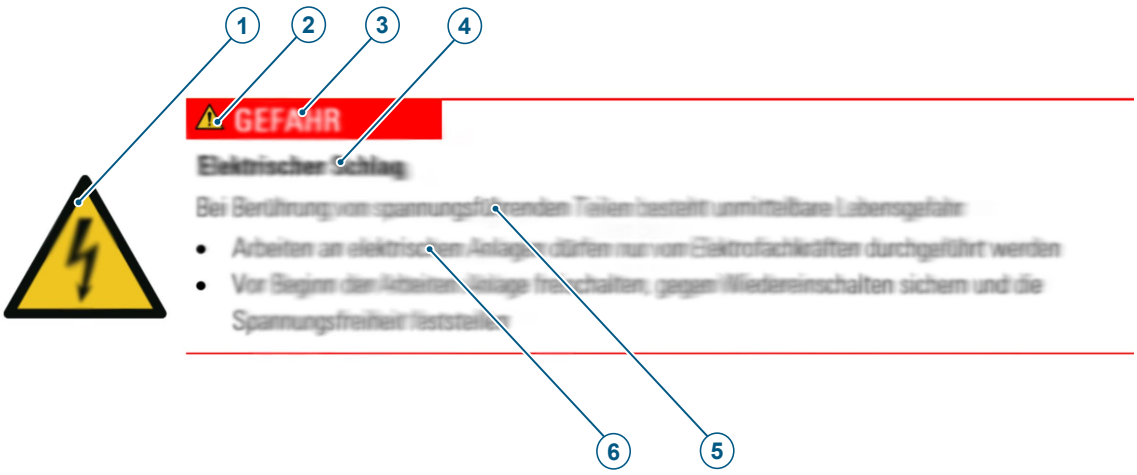

Fig. 1: Structure of the warnings

1	Hazard-specific symbol	2	Hazard symbol
3	Signal word	4	Type and source of danger
5	Possible consequences of non-observance	6	Procedure for hazard prevention

2.2.2 Meanings of the signal words and symbols

The following signal words are used in this document:

Signal word	Meaning
DANGER	Indicates a hazardous situation which will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which may result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which may result in property and environmental damage.

The following symbols for dangers, warnings, mandatory requirements and prohibitions are used in this document:

	General warning sign
	Warning: Electrical voltage
	Wear foot protection

2.3 Requirements for personnel

The activities described in these instructions may only be performed by qualified personnel.

Qualified personnel are persons who are able to carry out the work assigned to them due to their technical training, knowledge and experience. They are familiar with the relevant standards and regulations and are able to recognize potential hazards on their own.

2.4 Requirements for incorporation into a complete machine

The maintenance locking device must only be used in a complete, CE-compliant machine or plant.

The manufacturer of the complete machine or plant is responsible for integrating the maintenance locking device into the plant in such a way that fully safe operation is guaranteed.

- The area of the locking bolts must be covered to that it is impossible to reach into it.
- The maintenance locking device must only be actuated when the machine or plant is at a standstill.
- The specified locking force must not be exceeded. In the process, all dynamic and static forces must be taking into account.
- Maintenance work must be carried out in accordance with the maintenance schedule and operating instructions.
- All tasks on the maintenance locking device must be carried out by qualified personnel only.

3 Product description

3.1 Intended use

The maintenance locking device is designed for installation in a CE-compliant, complete machine or overall plant. The maintenance locking device locks the rotary movements of rotary indexers and rotary drums manufactured by Motion Index Drives . For this purpose, it is installed on the respective Motion Index Drives assembly.

All applications deviating from this intended use are not permitted.

- The maintenance locking device must only be installed on assemblies which have been approved for this purpose by Motion Index Drives .
- Modifications must be approved by Motion Index Drives .
- The maintenance locking device must only be operated within the defined operating parameters.

3.2 Technical data

3.2.1 Operating conditions

Application range	indoors/in enclosed spaces: the installation room must be dry, clean and low-vibration
Temperature range [°C]	+10 to +40
Relative humidity [%]	40 to 70
Media	do not expose to aggressive media

3.2.2 Storage conditions

Area of application	indoors
Temperature range [°C]	-22 to +50
Relative humidity [%]	40 to 70
Media	do not expose to aggressive media
Storage period > 6 months	provide additional corrosion protection

3.2.3 Locking force

Bolt diameter [mm]	**Locking force P [N]**
50	22000

The maintenance locking device is engineered with five-fold resistance to breakage.

3.3 Product overview

3.3.1 Construction

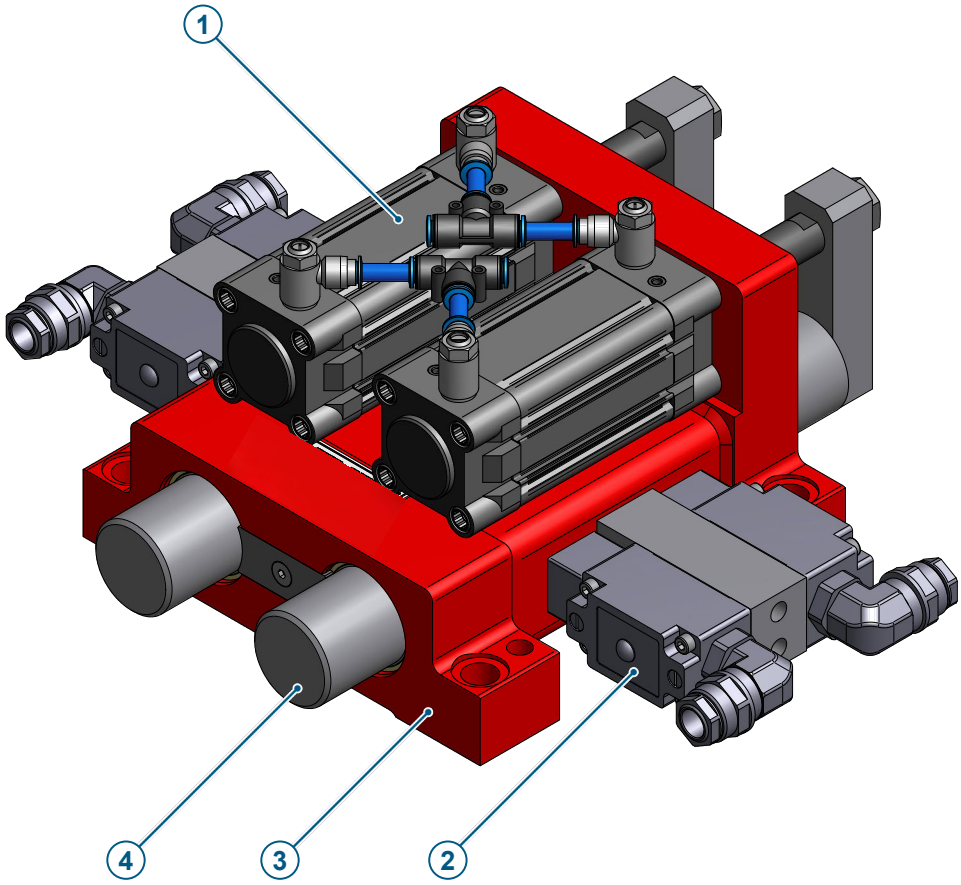

Fig. 2: Construction of the maintenance locking device

1	Actuator (pneumatic cylinder)	2	Sensor
3	Housing	4	Locking bolt

3.3.2 Function

The maintenance locking device has two switching positions:

1. "Locked" position = the pneumatic cylinders are extended.
2. "Unlocked" position = the pneumatic cylinders are extended.

The sensors indicate the switching position.

1. "Locked" position = both sensors are actuated.
2. "Unlocked" position = both sensors are not actuated.

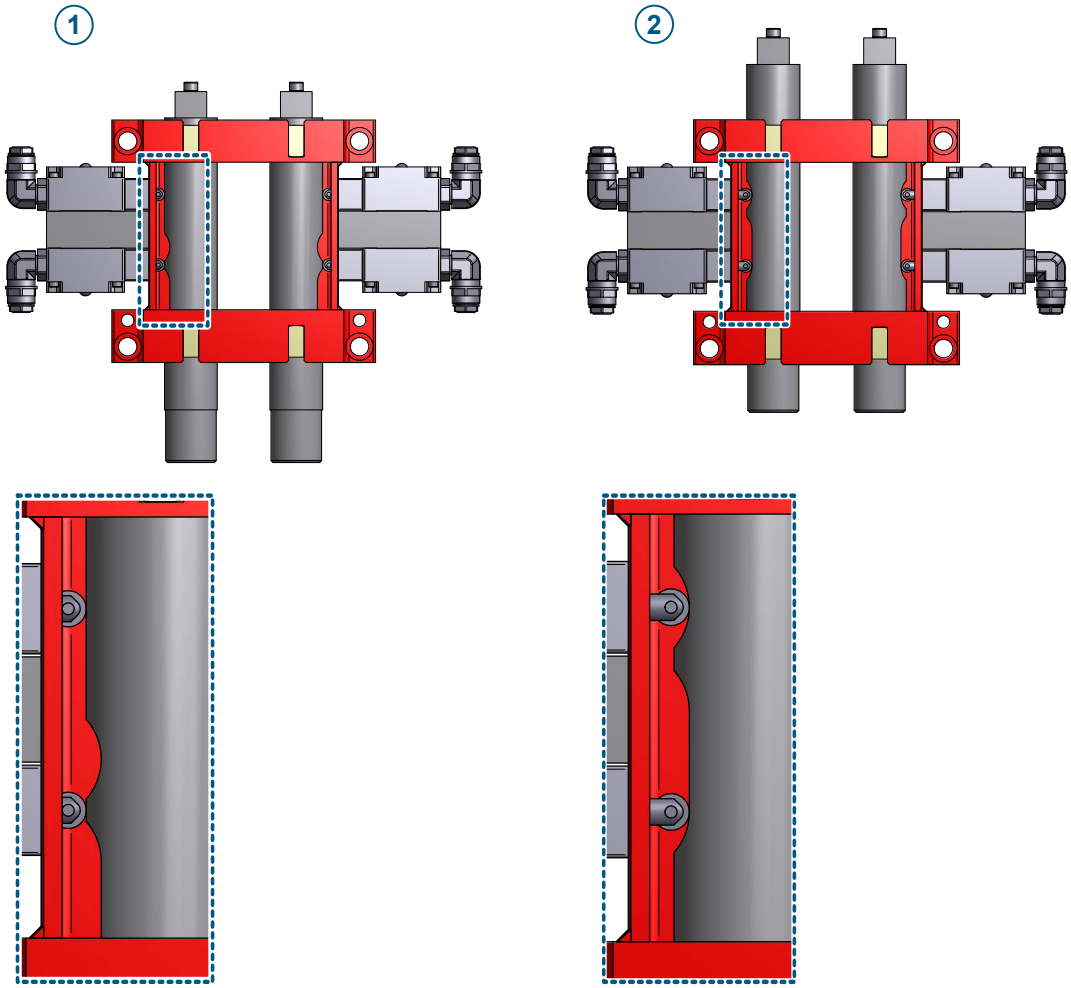

Fig. 3: Switching positions of the maintenance locking device

1	Locked position	2	Unlocked position

4 Assembly

Required personal protective equipment

⚠DANGER

Electric shock

Touching live parts poses an immediate danger to life

- Work on electrical systems may only be carried out by qualified electricians
- Before starting work, disconnect the system, secure it against being switched on again and make sure that no voltage is present

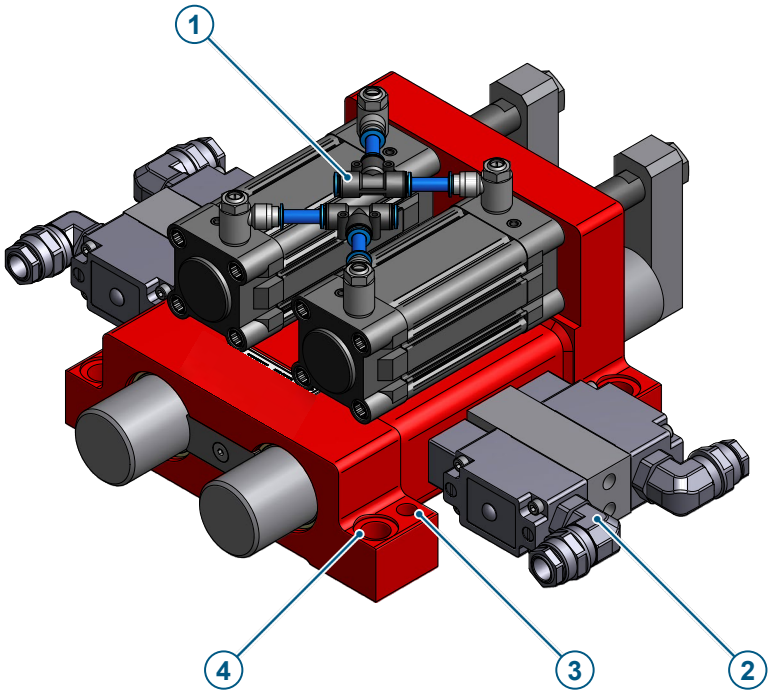

Fig. 4: Installation of the maintenance locking device

1	Plug connection (2x)	2	Connection for sensor (4x)
3	Dowel hole (2x)	4	Installation hole (4)

To install the maintenance locking device, proceed as follows:

1. Align the maintenance locking device to the respective assembly with the dowel pins. Use the dowel holes (3) for this purpose.
2. Screw on the maintenance locking device using the mounting holes (4).
3. Connect the pneumatic lines to the plug connections (1).
4. Connect the sensors to the control unit in accordance with the specifications of the manufacturer.

5 Operation

⚠ WARNING

Moving components

Moving components can cause serious injuries

- During operation, do not reach into moving components or work on moving components
- Do not dismantle or bypass protective covers

General requirements for operation

The maintenance locking device must only be used in a complete, CE-compliant machine or plant.

The maintenance locking device must not be operated with faulty or deactivated safety devices.

5.1.1 Setting the end of stroke damping

The end of stroke damping on the pneumatic cylinders is preset. If necessary, set the end of stroke damping in accordance with the specifications of the manufacturer.

5.1.2 Setting the extension and retraction speeds

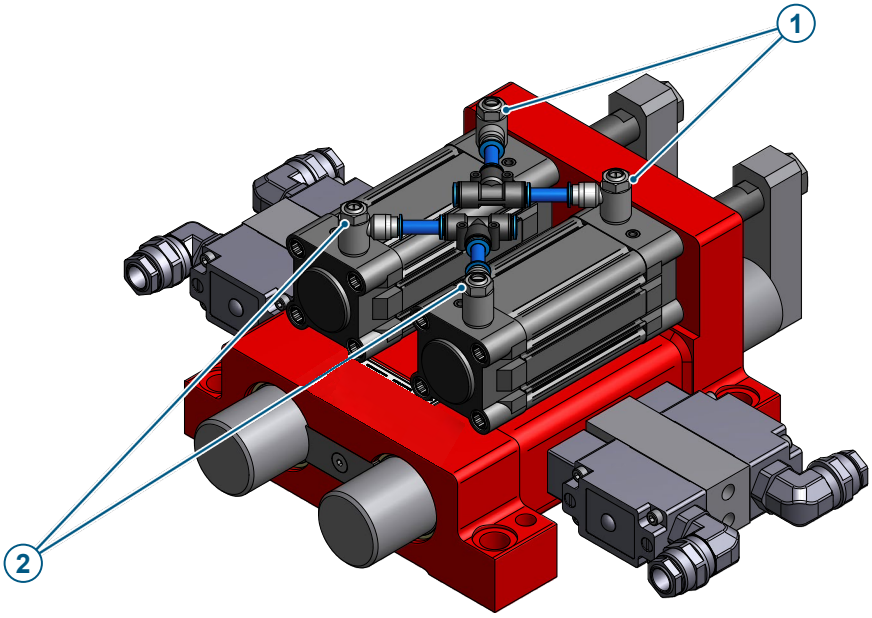

Fig. 5: Setting the extension and retraction speeds

1	Throttle screws for retraction speed	2	Throttle screws for extension speed

The retraction and extension speeds can be set on the throttle check valves. To do so, proceed as follows:

1. Screw in the respective throttle screws all the way.
2. Screw out the throttle screws to set the desired speed.

6 Maintenance

Required personal protective equipment

6.1 Maintenance schedule

Interval	Activity	Personnel
Daily	General visual inspection and check for noises	Operator
Monthly	Check the freedom of movement of the cylinders	Qualified personnel
Half-yearly	Check the electrical contacts	Qualified personnel
Annually	Check the switches	Qualified personnel

7 Troubleshooting

Fault	Possible cause	Remedy
Locking bolt does not retract/extend	• The locking bolt is blocked • No compressed air • Throttle check valve not set correctly	• Remove blockage • Check hoses for damage • Check the pressure gauge on the maintenance unit to make sure the pressure is correct (6 bar)

8 Disposal

Required personal protective equipment

NOTE

Environmental damage

Improper disposal may result in environmental damage

- Dispose of components and operating materials in accordance with local regulations
- Observe the safety data sheets of the operating materials

Materials used

The components are mainly made of the following materials:

- Copper (complete drive units, electrical cables)
- Steel and grey cast iron (housings, attachments, shafts, bearings)
- Plastic (toothed belt, insulation, bearing)

Preparation for disposal

1. Disconnect the system from all power supplies and secure it against being switched on again.
2. Wait 15 minutes until all live components are completely discharged.
3. Disassemble and dispose of assemblies and components in accordance with local environmental regulations.

9 Spare and wear parts

NOTICE

The use of unsuitable spare parts may result in material damage

Spare parts must comply with the technical requirements specified by the manufacturer

- Only use original spare parts
- Check spare parts for faults or defects prior to installation

Spare and wear parts are always order-specific. You can request the respective list of spare parts and wear parts from Motion Index Drives. When ordering spare parts, always state the serial number. The serial number is located on the nameplate.