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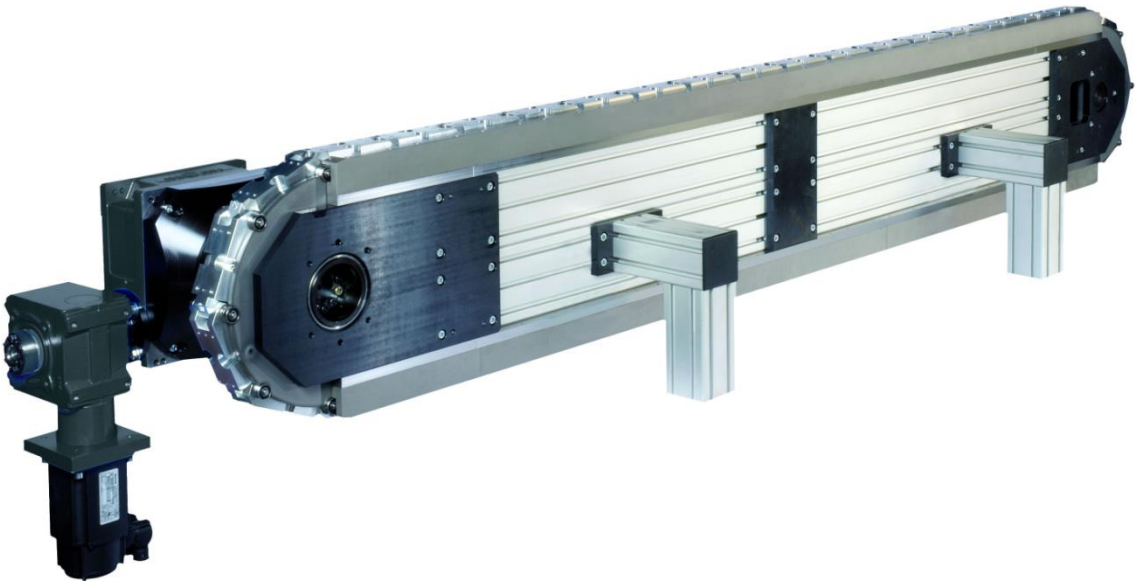

Linear Indexing System

Type LF

Original Operating Instructions

Contents

1 Overview, brief description

General description

The LF Type linear indexing system is used wherever components mounted on a workpiece carrier need to be transported from one processing station to another.

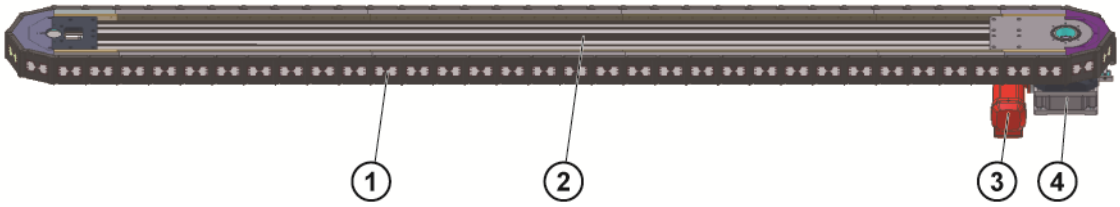

Figure: 1 Linear indexing system

(1) Endless chain
(2) Base frame aluminum profile
(3) Drive motor
(4) Rotary indexing table

The linear indexing system works as follows:

The linear indexing system has a base frame aluminum profile (2).

The workpiece carriers are connected to the individual links of the endless chain (1) at intervals corresponding to the distance between the processing stations.

The drive motor (3) drives the linear indexing system.

The rotary indexing table (4) converts the rotary motion of the drive motor to an indexed movement of the linear indexing chain.

2 About these Operating Instructions

Designation

These Operating Instructions describe the LF Type linear indexing system. The LF Type linear indexing system is referred to below simply as the linear indexing system.

2.1 Aim of the Operating Instructions

The Operating Instructions are intended to help you to:

- work efficiently
- ensure quality
- find information quickly
- avoid danger

Tables of contents

The Operating Instructions have a table of contents at the front. This gives you an overview of all the sections in the document.

Headings and page numbers

The chapters are numbered sequentially. The sections within each chapter are numbered sequentially.

Safety information

Any safety information is placed before the descriptions of actions that may pose a risk. You will find a detailed description of the safety information in the chapter entitled Safety.

Text, symbols, figures

Instructions for performing various activities and other information is presented in small, discrete sections.

The information is presented using a combination of text, symbols and figures.

Instructions for performing activities are described in the appropriate sequence and numbered accordingly.

Instructions for performing activities

Instructions for performing activities have been broken down into individual steps for the sake of clarity:

▸ Introductory text ...

⇨ Result of the instruction

Lists

Any lists which do not include individual operating steps are indicated as follows:

- Lists...
- Sub-items in lists

Figures

Figures, dimensions and technical data presented in these Operating Instructions may be subject to change.

Third-party components

Refer to the Operating Instructions of the relevant manufacturers for information on operation and maintenance of third-party components fitted in the system.

Additional documentation

To complement the information in these Operating Instructions, please read the following regulations and directives:

- safety regulations and accident prevention regulations
- instruction sheets, instruction booklets
- work instructions provided by the statutory accident insurance provider
- generally accepted occupational health regulations

Warranty

Within the context of the contract and delivery conditions, TAKTOMAT guarantees that every TAKTOMAT product supplied has been manufactured in accordance with appropriate regulations.

The warranty does not extend to damage resulting from normal wear and tear, improper operation, negligence, the use of non-original replacement parts, inadequate maintenance and/or a failure to observe these Operating Instructions.

The linear indexing system may only be used by properly qualified persons and within the specified operating limits. If this is not the case, the warranty will be null and void as laid down in the delivery conditions.

Manufacturer

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Technical information

The technical information, figures and data contained in these Operating Instructions are correct at the time of printing.

Our products are constantly being developed.

We therefore reserve the right to make any changes and improvements that we deem appropriate.

This does not, however, imply any obligation to apply such changes retrospectively to equipment already supplied.

2.1.1 Published by

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3 Safety

3.1 General information

This document contains important information on the safe use of the linear indexing system. This information is intended to ensure the safety of persons and to prevent damage to the linear indexing system. The information is intended for the operator and for properly trained, qualified and instructed staff responsible for operating and servicing the linear indexing system.

Additional task-specific safety information is included in the relevant sections on the different phases during the service life of the system.

3.2 Explanation of the symbols used

DANGER

Type / source of the danger!

Consequences if instructions are not observed

- Measures to avoid the danger

WARNING

Type / source of the danger!

Consequences if instructions are not observed

- Measures to avoid the danger

CAUTION

Type / source of the danger!

Consequences if instructions are not observed

- Measures to avoid the danger

NOTE

Type / source of the situation that can lead to damage to property or the environment!

Consequences if instructions are not observed

- Measures to avoid the danger

3.3 Intended use

The linear indexing system is always part of an overall system. The linear indexing system is controlled by the overall system. The controller of the overall system is also responsible for all the requisite safety functions. The linear indexing system may only be operated as part of a CE-compliant system.

Any use that deviates from the intended use is regarded as inappropriate use. This includes:

- any use outside the permitted operating limits
- any use in conjunction with foodstuff products
- any use in conjunction with aggressive materials (such as acids)
- Only transport the system using the designated lifting points or eye bolts.

The manufacturer shall not be liable for any damage resulting from such use.

Intended use also includes observance of all the information in these instructions.

3.3.1 Foreseeable misuse

Any use beyond or other than the intended use is regarded as misuse.

3.3.2 Guarantee conditions

Changes to the structure of the materials used in the linear indexing system, e.g. the drilling of additional holes, can result in damage to the components. This is not regarded as intended use and consequently no warranty claims or liability will be accepted.

3.3.3 Directives, statutory provisions and standards

The following statutory provisions and standards were applied:

Machine Directive 2006/42/EC, Annex I, Articles 1.1.2, 1.1.3, 1.1.5, 1.3.2 and 1.3.4

3.4 Technical condition of the fast linear indexing system

Only use the linear indexing system if it is in a sound condition technically. If the linear indexing system is used when it is not in a sound condition technically, there is a risk of death or injury to staff and a risk of damage to property.

3.4.1 Make no changes to the safety provisions

The manufacturer has made safety provisions. No liability will be accepted if the operator of the machine makes any changes to the safety provisions without express permission.

3.5 General hazards

This section lists risks associated with the linear indexing system that remain even when it is operated according to its intended use.

In order to reduce the risk of personal injury or damage to property, and to avoid potentially dangerous situations, the safety information provided here and in the other sections of these Operating Instructions must be observed.

3.5.1 Danger arising from mechanical components

WARNING

WARNING!

Risk of injury from moving parts!

Moving parts can cause serious injury.

- Do not reach into moving parts or carry out work on moving parts while the system is in operation.
- Never open any covers while the system is in operation.

3.6 Responsibility of the operator

3.6.1 Obligations of the operator

The linear indexing system is used commercially according to its intended use. The operator of the linear indexing system is therefore subject to statutory occupational health and safety provisions.

In addition to the general safety information contained in this document, any further safety, accident prevention and environmental regulations applicable to the field of application of the linear indexing system must also be observed.

In particular, operators have the following obligations:

- They must always be fully informed of the most recent occupational safety regulations and perform a risk assessment to identify any additional hazardous locations and places resulting from the specific working conditions in the place of use. They must document any such findings in the form of operating instructions (work instructions, work descriptions, etc.) for use during operation.
- During the entire service life of the machine, they must check whether the operating instructions they have written are compliant with current regulations and make any necessary adjustments.
- Unambiguously regulate and define who is responsible for carrying out installation, operation, maintenance and cleaning.
- Ensure that the staff deployed have the necessary qualifications for the work they are instructed to perform.
- Ensure that all staff who work on the machine have read and understood all the documents relevant for its operation (Operating Instructions, maintenance regulations, safety guidelines).
- Provide training for the staff at regular intervals and inform them of potential dangers.
- Bear the responsibility for personal injury and damage to property arising from manipulation of the machine. For this reason, the machine and its safety equipment must be inspected at regular intervals to ensure that they are in sound condition and functioning properly, and the results of this inspection must be suitably documented.
- Ensure that the machine is always in a sound condition technically.

3.6.2 Preventive measures

It is recommended that the operator takes the following preventive measures:

- Only allow qualified, trained and properly instructed staff to work on the machine.
- Unambiguously define the responsibilities of the staff responsible for operation and service.
- Supplement these Operating Instructions with
  - ⇨ stipulations deriving from national and regional work and environmental regulations
  - ⇨ information covering specific operational aspects (workflow, supervisory obligations, reporting obligations, fire alarm equipment, etc.)
- Occasionally check that the Operating Instructions are being used and that such use is correct, and when necessary repeat the instruction process.
- Ensure that all documentation is permanently available in a readable form and easily accessible at the point of use.
- Observe any periodic checks and inspections that are required (by law) or specified in this document.
- Replace in good time any components indicated in these documents as being crucial for safety.
- Regularly inspect the machine to ensure that the safety equipment operates correctly.
- Make sure that safety information and hazard warnings on the machine and in the working area are always legible.
- Take steps to ensure that the machine is regularly inspected for visible damage and faults.

3.7 Staff qualification

The various activities described in these Operating Instructions require different qualifications of the staff tasked with these activities.

WARNING

WARNING!

Danger if staff are insufficiently qualified!

Persons who are inadequately qualified are unable to assess the risks associated with working on the machine and expose themselves and others to the risk of serious or fatal injury.

- Ensure that any work is only performed by suitably qualified persons.
- Keep insufficiently qualified persons at a safe distance from the working area.

3.7.1 Qualified staff

For the purposes of these Operating Instructions, qualified staff are understood to be

- operators who have been specially trained and instructed in working with the machine,
- installation and service staff who have appropriate expertise in setting up and maintaining the linear indexing system and who are familiar with the safety information,
- The qualified staff must have read and understood the contents of the Operating Instructions before the linear indexing system is taken into service and must have been informed of the risks associated with working with the linear indexing system by the machine operator.
- A knowledge of first aid is required.

3.7.2 Competent specialists

Competent specialists are persons whose specialist training and experience have given them sufficient knowledge with respect to using this machine and who are sufficiently familiar with the relevant statutory occupational health regulations, accident prevention regulations, directives, and generally approved technical practice that they are able to assess whether the condition of the machine allows it to be used safely.

3.7.3 Auxiliary staff

Work on or in the vicinity of this machine which is not associated with the actual operation of the machine (e.g. cleaning, transport, material provisioning, etc.) can be performed by other persons. Before the machine is taken into service, the qualified staff of the machine operator must instruct such persons with regard to the nature of the work to be performed and the risks associated with working on the machine. Take special care when instructing persons who cannot read or write, and instruct them separately!

3.7.4 Servicing, repairing and maintaining the machine

Service, repair and maintenance work on the machine may only be carried out by service engineers of the manufacturer or by qualified staff authorized by Taktomat GmbH. When carrying out such work, always cordon off the working area carefully!

3.8 Personal protective equipment

Personal protective equipment is intended to protect individuals from safety and health risks at work.

When performing certain tasks on and with the machine, staff must wear personal protective equipment. This is explicitly indicated in the relevant sections of these Operating Instructions.

WARNING

WARNING!

Risk of injury from moving parts!

Exposed jewelry and long hair can be trapped by moving parts and lead to serious injury.

- Always remove exposed jewelry such as chains, rings and watches before starting work.
- Protect long hair with a hair net.

3.9 Labeling

3.9.1 Rating plate

There is a rating plate attached to the linear indexing system:

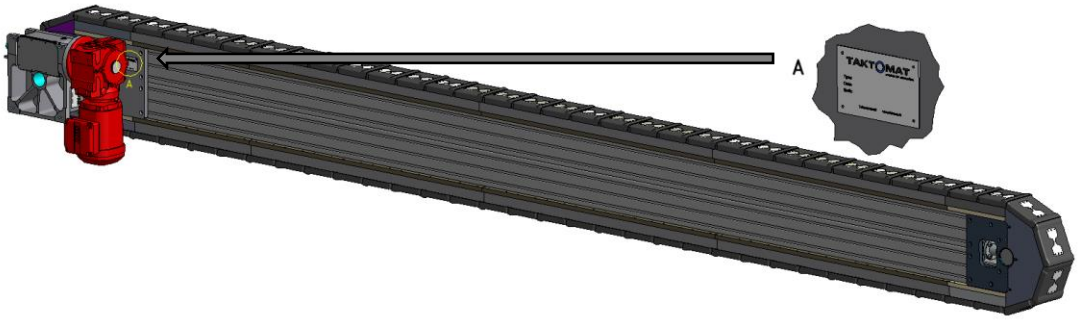

Figure: 2 General view of rating plate

NOTE

The rating plate must not be removed.

Detailed view of rating plate

Figure: 3 Detailed view of rating plate

The specifications on the rating plate are taken from the machine card or the drawing.

4 Construction and function

4.1 Construction

The linear indexing system is constructed as follows:

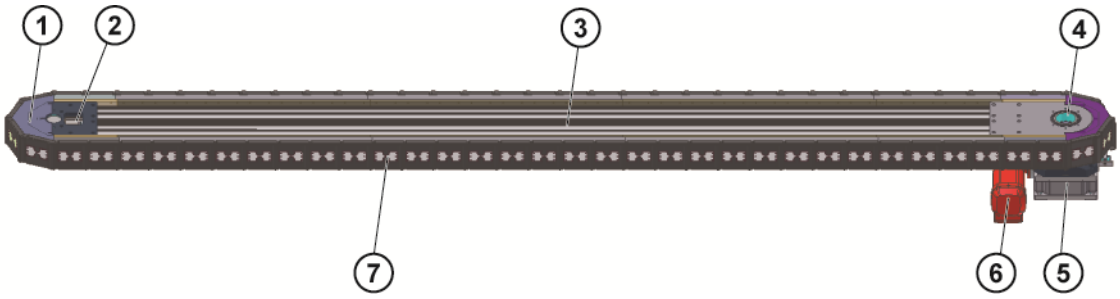

Figure: 4 Construction of the linear indexing system

(1) Idler pulley with polygon effect compensation
(2) Chain tensioner
(3) Base frame aluminum profile
(4) Drive step wheel
(5) Rotary indexing table
(6) Drive motor
(7) Endless chain, made up of chain links

4.2 Mode of operation

The linear indexing system works as follows:

The linear indexing system has an base frame aluminum profile (2). The linear indexing system is attached to the overall system using the aluminum section elements. Ancillary equipment can be secured to the aluminum sections.

The workpiece carriers are connected to the individual links of the endless chain (7).

The drive step wheel transmits the motion of the rotary indexing table (5) to the endless chain (7).

The idler pulley with polygon effect compensation (1) deflects the endless chain and ensures that the chain runs smoothly.

The tension of the endless chain is set using the chain tensioner (2).

The drive motor (6) drives the linear indexing system.

4.3 Operating modes

CAUTION

The manufacturer of the overall system is responsible for the operating modes of the linear indexing system.

All operating modes are implemented using only the controller of the overall system. The linear indexing system is designed for the following operating modes:

- Normal operation
  - ⇨ Intermittent operation
  - ⇨ Continuous operation
- Inching mode using a suitable controller, e.g. TIC (Taktomat Indexing Controller)

4.3.1 Normal operation

During normal operation, the chain links are stepped from one stop position to the next.

Intermittent operation

Operation is divided into different phases:

- The drive is stopped during the dwell phase. The dwell time is variable. External assembly processes can be performed during this period.
- During the indexing phase, the chain is stepped to the next stop position.

Continuous operation

The drive shaft rotates continuously and the chain is stepped on smoothly in one direction.

4.3.2 Inching operation

NOTE

<Inching operation> is only permitted if a suitable controller is used, otherwise there is a risk of damage to property.

In inching mode, the drive shaft is moved between two dwell phases in small steps. The indexing cam is unable to accelerate and decelerate the load gently. This places stress on the hardware, because the acceleration forces that arise during inching are far higher than those that arise during normal operation. Inching mode must not be used without a suitable controller that makes it possible to accelerate and decelerate the load gently so as to protect the gearing.

4.4 Technical data

4.4.1 Layout

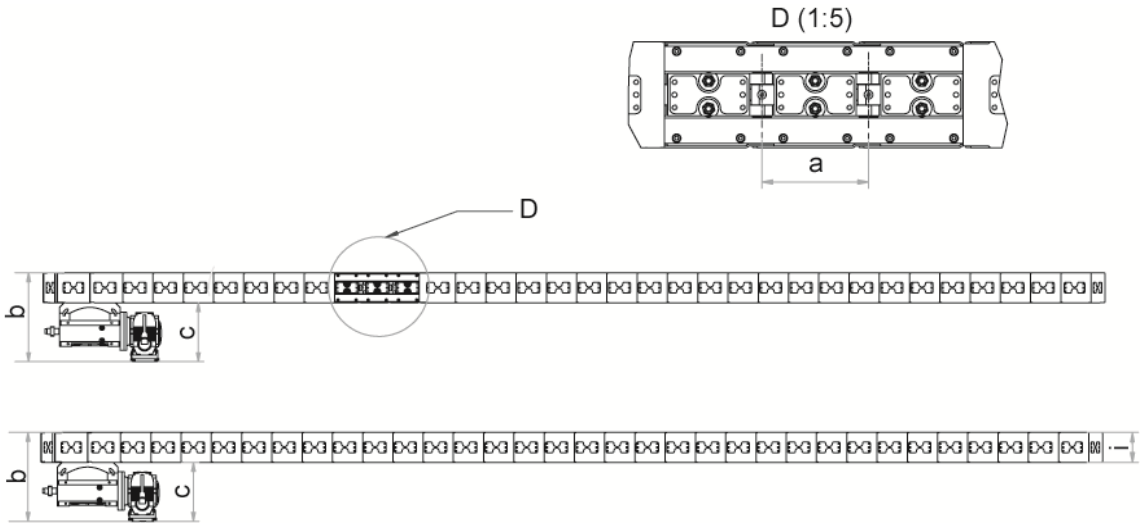

Figure: 5 View from the front and detail

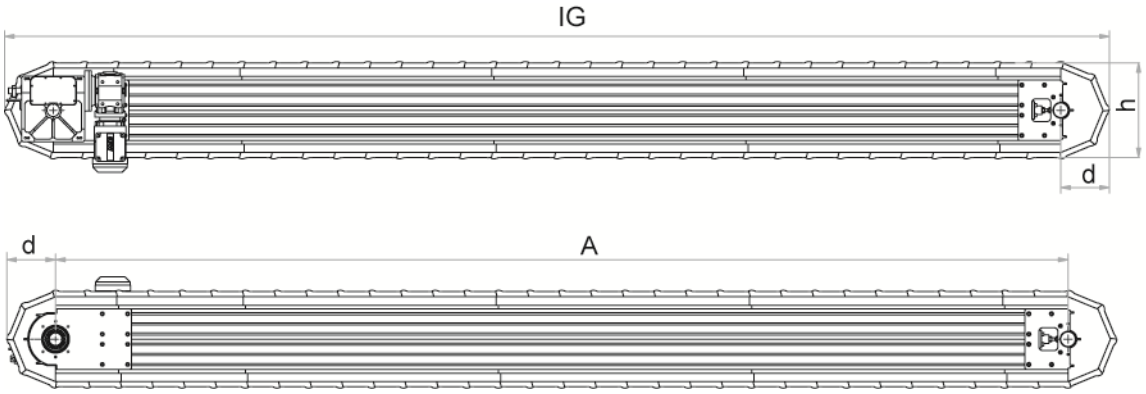

Figure: 6 View from the top

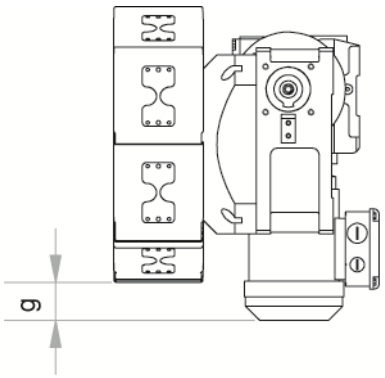

Figure: 7 View from the side

The dimensions are indicated on the machine card or drawing.

5 Commissioning

5.1 Safety information

NOTE

Damage arising from improper transport!

Improper transport can cause significant damage to property.

- Take care and take note of the symbols on the packaging when unloading the linear indexing system on delivery and when transporting it on the premises.

5.2 Transport inspection

Immediately on receipt, check that the delivery is complete and has not been damaged during transport:

Proceed as follows if there are visible signs of damage during transport:

- Do not accept the delivery or only do so conditionally.
- Record the extent of the damage on the transport documentation or on the associated delivery note.
- Immediately report any damage to the manufacturer of the linear indexing system.

5.3 Transport

Safety information

⚠ DANGER

Risk of fatal injury from suspended loads and falling parts!

Parts can fall during transport and cause serious or fatal injury.

- Do not walk under suspended loads.
- Keep people clear of the danger zone.
- Always use lifting gear with a sufficient load capacity.
- Always use forklift trucks or pallet trucks with a sufficient load capacity and fork length.
- Do not leave the load suspended if you leave the working area.

5.3.1 Upright transportation

The linear indexing system is transported in an upright position using transport cradles. The transport cradles are on loan from Taktomat and must be returned when transportation is complete.

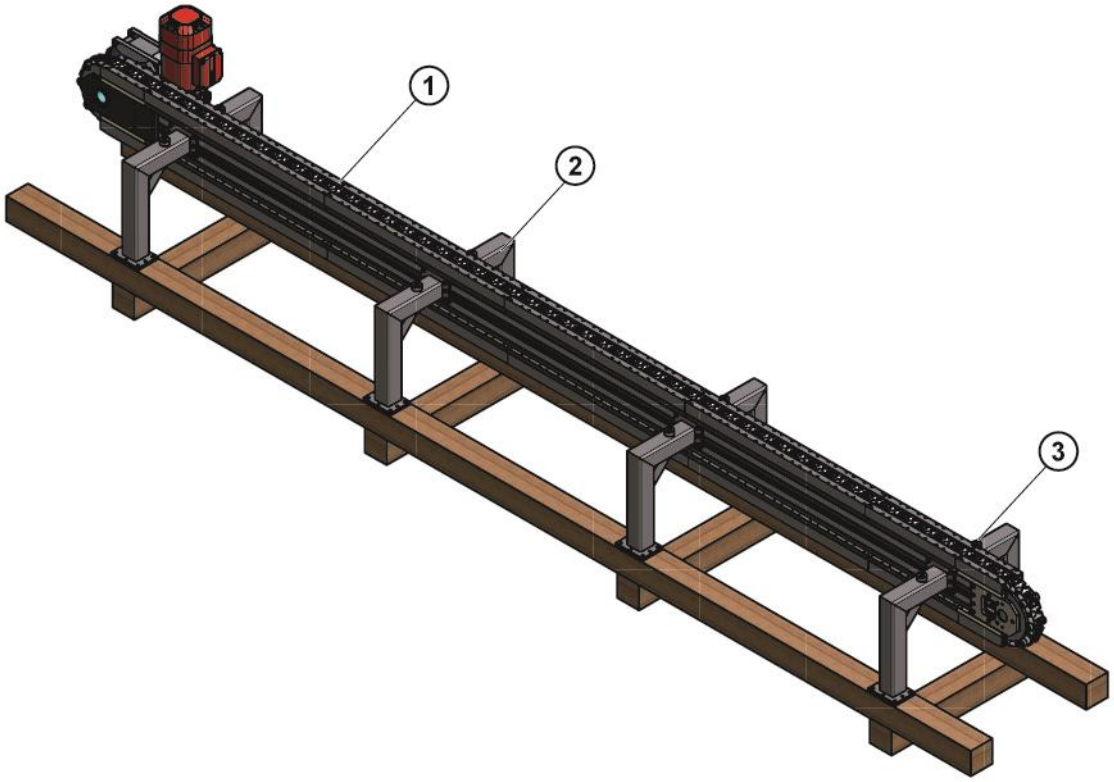

Figure: 8 Linear indexing system with transport cradles

(1) Linear indexing system
(2) Transport cradles
(3) Use transport eye bolts with a sufficient load capacity.

NOTE

Use transport eye bolts and lifting gear with a sufficient load capacity during transportation.

Align the transport eye bolts with the direction of the load.

5.3.2 Using lifting gear for transport

Staff: **Qualified staff**

Protective equipment: **Protective gloves, protective footwear and hard hat**

Lifting instructions

NOTE

Damage arising from improper transport!

The angle between the vertical and the lifting chain or belts must be between 0° and 60°, otherwise the maximum load capacity of the lifting equipment will be exceeded.
Observe the operating instructions for the lifting gear.

The number of lifting points depends on the distance between the shafts (1) of the linear indexing system.

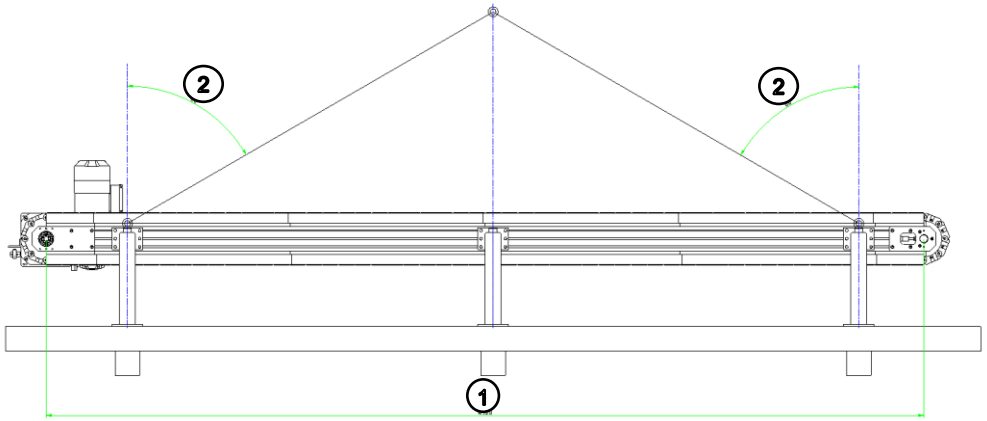

Figure: 9 Transport instructions if the distance between the shafts < 4500 mm

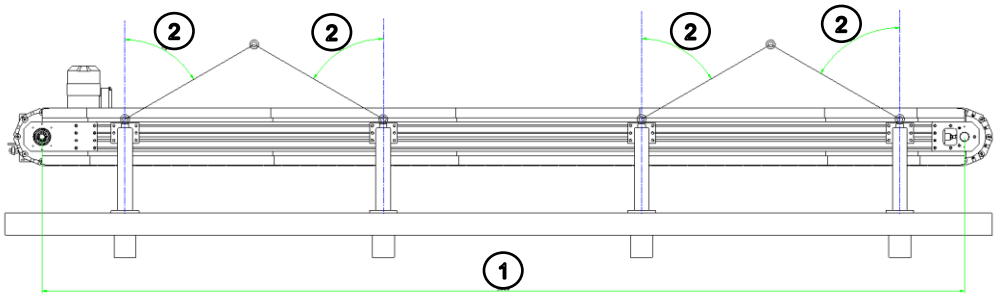

Figure: 10 Transport instructions if the distance between the shafts > 4500 mm

(1) Distance between shafts
(2) Angle between lifting chain and the vertical

5.3.3 Transport with the machine on its side

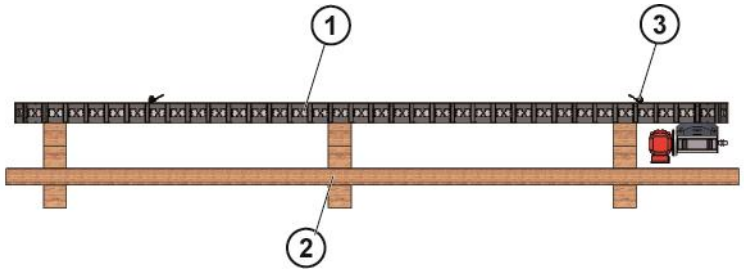

Figure: 11 Transporting the linear indexing system on its side

(1) Linear indexing system
(2) Wooden support frame
(3) Transport eye bolts with attachment points

5.3.4 Using lifting gear for transport

Staff: **Qualified staff**
Protective equipment: **Protective gloves, protective footwear and hard hat**

Lifting instructions

NOTE

Damage arising from improper transport!

The angle between the vertical and the lifting chain or belts must be between 0° and 60°, otherwise the maximum load capacity of the lifting equipment will be exceeded.
Observe the operating instructions for the lifting gear.

The number of lifting points depends on the distance between the shafts (1) of the linear indexing system.

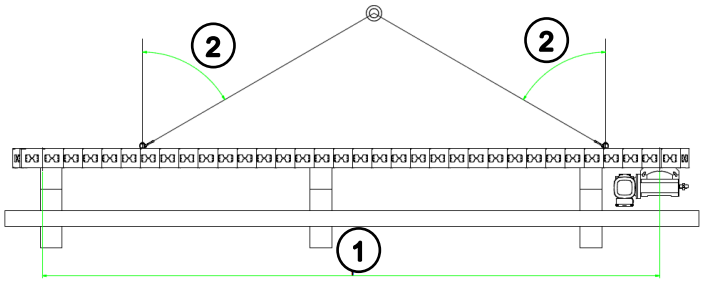

Figure: 12 Transport instructions if the distance between the shafts < 4500 mm

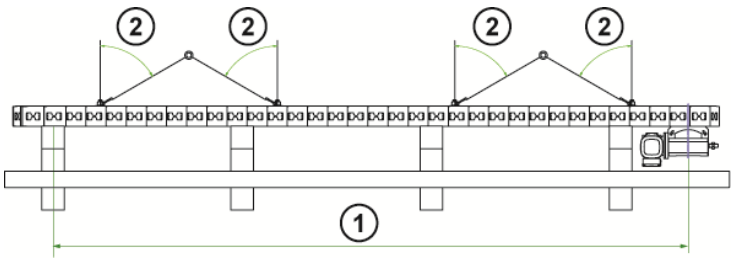

Figure: 13 Transport instructions if the distance between the shafts > 4500 mm

(1) Distance between shafts
(2) Angle between lifting chain and the vertical

5.3.5 Transport using forklift truck or pallet truck

Staff: **Qualified staff**
Protective equipment: **Protective gloves, protective footwear and hard hat**

Two forklift trucks or two pallet trucks are required to transport the machine in this manner.

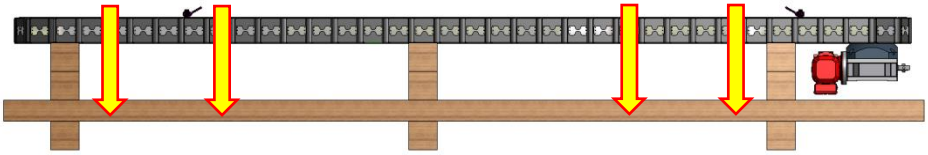

Figure: 14 Transport using forklift truck or pallet truck

(1) Lifting position for forklift truck or pallet truck

Transport the linear indexing system as follows using forklift trucks or pallet trucks:

- Move both forklift trucks or pallet trucks into position under the linear indexing system.
- Put down anti-slip mats to prevent slipping.
- Lift the linear indexing system carefully and evenly.
- Transport the linear indexing system carefully.
- Set down the linear indexing system carefully.
- Withdraw the forklift trucks or pallet trucks.

5.4 Packaging, handling, unpacking

The linear indexing system is packaged in plastic sheeting for transport.

NOTE

The linear indexing system must not be allowed to become wet while it is being transported.

Figure: 15 Example: Packaged linear indexing system

- Carefully remove the packaging.
- Dispose of the packaging with due regard for environmental considerations.

5.5 Installation location, place of use

Storage

The linear indexing system should be stored under the following conditions:

- Do not store the system in the open.
- Store the linear indexing system in a dry room at a temperature above 8 °C.
- Do not expose the system to any aggressive agents.
- Protect from direct sunlight.
- Avoid mechanical shocks and jolts.

5.6 Setting up the machine

Ambient conditions:

- Do not install in the open.
- Store the linear indexing system in a dry room at a temperature above 8°C.
- The surface on which the system is to be installed must be level, flat and capable of supporting the load.

5.7 Installation and assembly

The linear indexing system can be installed on its side or upright.

Staff: **Qualified staff**

Protective equipment: **Protective gloves, protective footwear and hard hat**

DANGER

Risk of fatal injury from electric current!

There is an immediate risk of fatal injury due to electric shock if live components are touched.

- Only allow work on the electrical system to be carried out by qualified electrical engineers.
- Before starting work on active parts of the electrical system, ensure that it is completely powered down and cannot be switched on again.

5.7.1 Installation of the system on its side

Figure: 16 Installation of the linear indexing system on its side

(1) Linear indexing system
(2) Drive motor
(3) Rotary indexing table

5.7.2 Upright installation of the system

Figure: 17 Upright installation of the linear indexing system, view from the rear

(1) Linear indexing system
(2) Drive motor
(3) Rotary indexing table

- Install the linear indexing system in the appropriate orientation.
- Secure and connect the drive motor (3).
  ⇨ Caution: Follow the operating instructions for the motor.

5.8 Commissioning

Staff: **Qualified staff**

Protective equipment: **Protective gloves, protective footwear and hard hat**

- Remove any obstacles from the vicinity of the moving chain.
- Make sure that the chain moves freely.

6 Change of Product (Option)

Staff: **Qualified staff**

Change of Product means there are alternate two workpiece carriers assembled at the chain links of the endless chain.

A change of product would be possible at all linear systems, which are equipped with an electromagnetic brake in combination with a safety coupling.
A bigger stroke than one chain link is precondition.

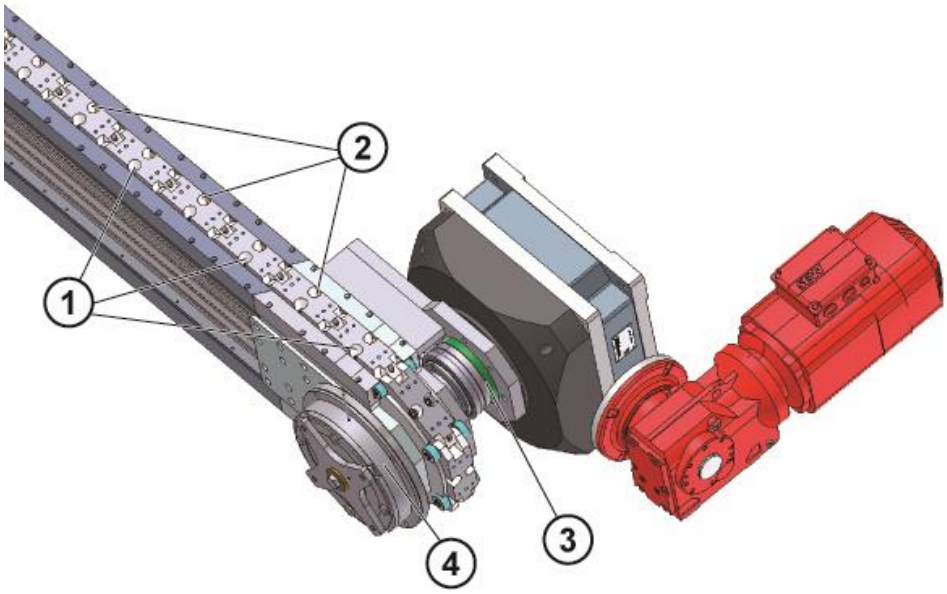

Abb.: 18 Overview change of Product

(1) Product A
(2) Product B
(3) Mayr-Torque limiting clutch
(4) Mayr-Electromagnetic brake

The following steps are necessary to change the equipment for another product:

1. The system is in dwell position.
2. Activate the Mayr-Electromagnetic brake (4). (Power connection)
3. Move the drive one step according to the position of the new product.
4. The Mayr-Torque limiting clutch (3) releases and needs to lock in place before starting the system again.
   - Caution: Follow the operating instructions for the Mayr-Torque limiting clutch !
5. Switch off the Mayr-Electromagnetic brake (4) (powerless).
6. Operate the system in normal operation.

7 Maintenance

The linear indexing system is designed to be largely maintenance-free. Necessary maintenance is intended to keep the machine fit for service. The intervals will depend on the operating conditions.

Note:

The maintenance intervals given are minimum recommendations based on use across three shifts. Failure to observe the maintenance stipulations and any changes will make the guarantee null and void and release the manufacturer from any liability.

Make sure that you observe any statutory requirements, stipulations and national regulations in respect of occupational health and environmental protection.

The maintenance stipulations only apply in conjunction with the operating instructions of the manufacturer concerned. The contents are subject to change without notice.

7.1 Safety information in respect of maintenance

WARNING

WARNING!

Risk of injury as a result of improper maintenance!

Improperly performed maintenance can lead to serious personal injury or damage to property.

- Ensure that there is sufficient space for assembly activities before starting work.
- Make sure that the working area is clean and tidy! Components or tools that are lying around or simply placed on top of each other represent hazards.
- If components are removed, ensure that they are mounted again correctly. Make sure that all securing elements are fitted again.

7.1.1 Qualified staff required

The operator must unambiguously specify who is responsible for cleaning, maintenance and servicing and how such work is to be performed.

Only allow qualified, trained and properly instructed staff to work on the machine.

7.1.2 Maintenance tasks

If servicing work is to be performed in-house, the appropriate tools and equipment for such work must be provided.

Follow the procedures laid down in the Operating Instructions for switching the system on and off when performing any maintenance and cleaning work.

Observe the stipulations laid down in the Operating and Maintenance Instructions with respect to adjustment, maintenance and servicing activities, including details on replacing components and equipment.

Where necessary, cordon off the area in which maintenance is being carried out at a safe distance.

7.1.3 Cleaning

Make sure that all handles, steps, handrails, platforms, ladders are clean.

Compressed air must not be used for cleaning.

Before starting maintenance work, clean any oil, fuel or cleaning agents from the machine, and particularly from connections and screwed joints. Do not use aggressive cleaning agents. Use lint-free cloths.

After cleaning, check all supply lines to ensure that they do not leak, that no connections have come loose, and that they show no signs of abrasion or damage. Immediately rectify any faults.

Concluding work

Always tighten any screw connections that have been released during maintenance and service work.

If safety equipment has to be removed during setup, maintenance or repairs, the safety equipment must be replaced and tested immediately work has been completed.

Dispose of service fluids, process materials, cleaning agents and used parts safely and in an environmentally friendly manner. Follow the manufacturer's instructions when dealing with hazardous substances.

Replacement parts

Replacement parts must comply with the technical requirements laid down by the manufacturer. This is guaranteed with original replacement parts.

Environmental protection

Take note of the following environmental protection information when carrying out maintenance work:

- Remove excess grease from the lubrication points and dispose of it in accordance with local regulations

7.2 Maintenance tasks

7.2.1 Maintenance plan

Interval	Maintenance activity	Staff
Daily	General visual and acoustic inspection	Operator
Monthly	Clean the chain links and guide rails where accessible Remove dust and deposits	Operator
Yearly	Check indexing mechanism for play in dwell position	Qualified staff
Yearly	Check chain tension and re-tension if necessary. See page 36.	Qualified staff

7.2.2 Checking the chain tension

Annual maintenance activities

Staff: **Qualified staff**

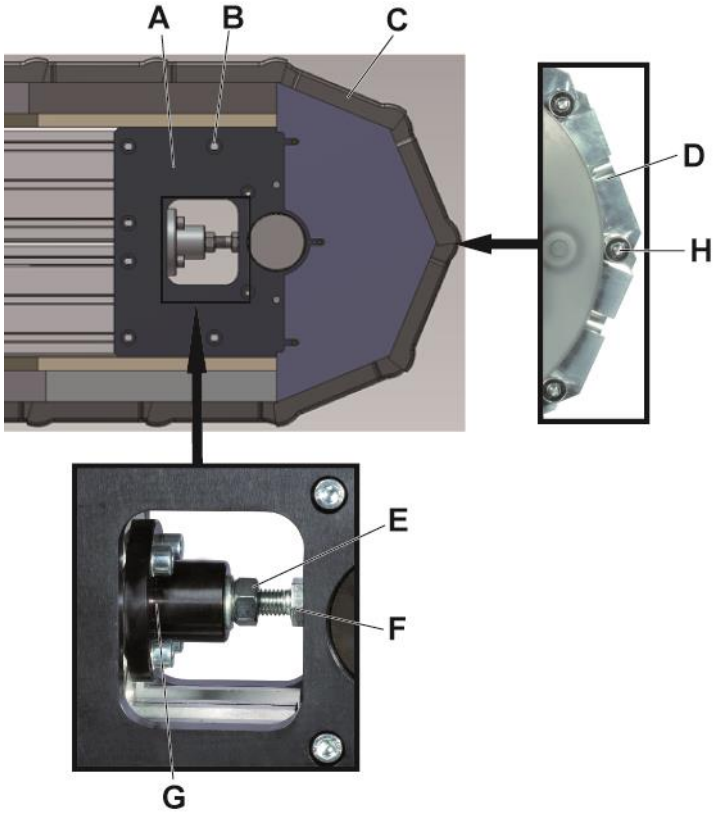

Figure: 19 Detailed view of chain tensioner

A Mounting plate for idler pulley
B 6x Allen screws
C Chain links under protective cover
D Chain links
E Lock nut
F Hexagonal head screw
G Chain tensioner
H Roller

- If the tension is set correctly, the rollers (2) on the idler pulley (1) can be turned by hand with gentle force.

7.2.3 Re-tensioning the chain

- Slacken the 6 Allen screws **B** of the idler pulley mounting plate **A** on both sides. Do not remove them.
- Release the chain tensioner **G** by releasing the lock nut **E** and unscrewing the Allen screw **F**.
- **Caution!** After the chain has been tensioned, tighten the idler pulley mounting plate **A** by tightening the 6 Allen screws on both sides **B**, making sure that the tension is the same on the left and right sides

7.3 Lubrication

7.3.1 Requirements for lubricants

General

To ensure safe operation and a long service life, it is necessary to lubricate the machine carefully. The specified oil and grease must be applied to all lubrication points.

Carefully clean dirty lubrication points using kerosene or an equivalent agent and then lubricate them with new lubricant. After lubrication, any excess lubricant must be removed and properly disposed of.

Lubricating oil

Use only lubricating oil compliant with DIN 51 517

Recommended gear oil: Mobil – Mobilgear600XP460 (ISOVG460)

Lubricating grease

Use only lubricating grease compliant with DIN 51 825-KP 2K

Recommended lubricating grease: Mobil – Mobilux EP2

Note:

Only use lithium soap based grease for lubrication. The use of greases based on different materials causes gummy deposits, decomposes the grease and destroys its lubricating properties.

7.4 Repair

It may be necessary to replace individual chain links after a crash or in the event of wear. We recommend that you have such replacement work done by TAKTOMAT service engineers.

NOTE

The guarantee becomes null and void if work on the linear indexing system is performed by persons other than TAKTOMAT service engineers.

7.5 Replacing chain links

Proceed as follows if you wish to replace chain links yourself:

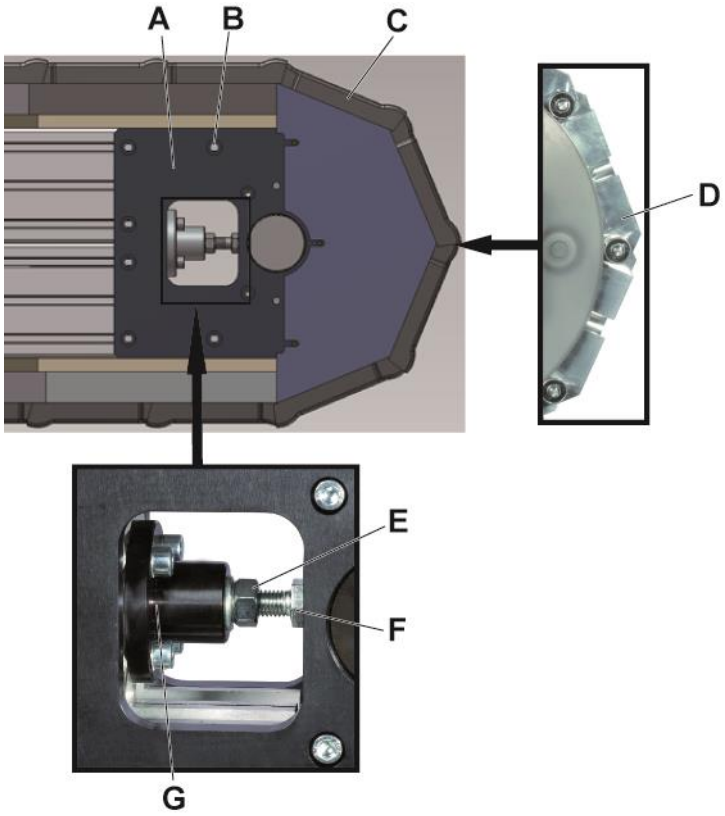

Figure: 20 Replacing chain links, detailed view

A Mounting plate for idler pulley
B 6x Allen screws
C Chain links under protective cover
D Chain links
E Lock nut
F Hexagonal head screw
G Chain tensioner

Continued on next page

7.5.1 Replacing chain links, continued

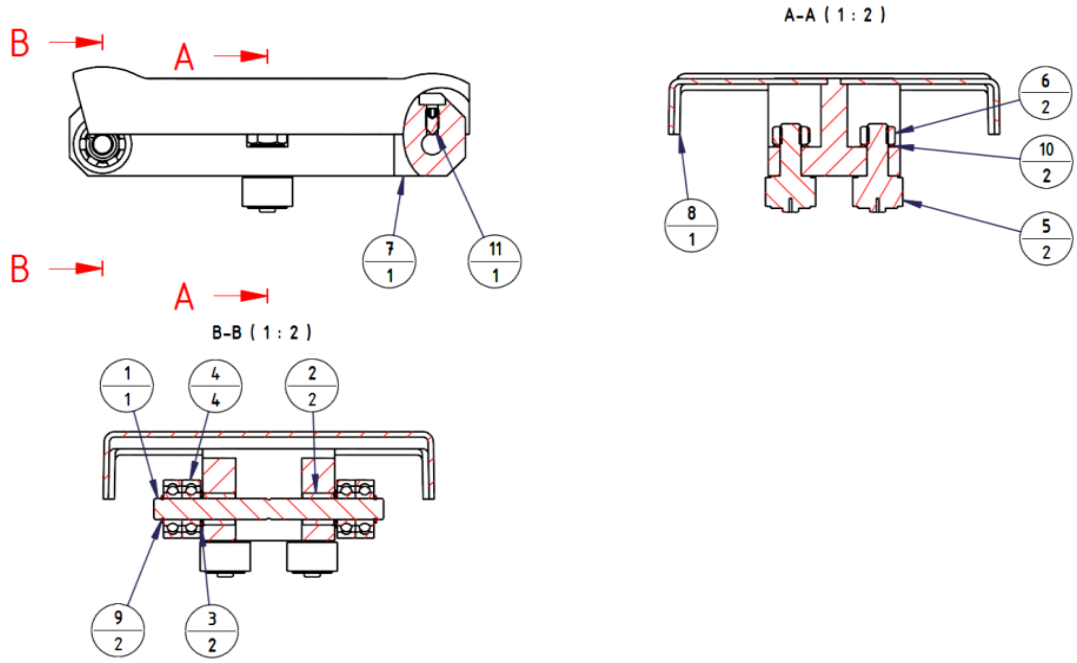

Figure: 21 Detailed view of chain links

(1) Shaft
(2) Needle bush
(3) Shim ring
(4) Deep-groove ball bearing
(5) Roller with greasing nipple
(6) Hexagonal nut
(7) Chain link for protective cover
(8) Protective cover for chain link
(9) Retaining ring for shafts
(10) Schnorr locking washer
(11) Threaded stud

- Slacken the 6 Allen screws **B** of the idler pulley mounting plate **A** on both sides. Do not remove them.
- Release the chain tensioner **G** by releasing the lock nut **E** and unscrewing the Allen screw **F**.
- Release tension from the chain by pushing back the idler pulley mounting plate **A**.
- Remove protective covers (8).
- Remove threaded studs (11).
- Remove retaining rings (9) on one side.
- Remove shim ring (3) on the same side.
- Prevent chain links (7) **D** from twisting.

Continued on next page

7.5.2 Replacing chain links, continued

- Press shafts (1) out using a brass pin
  Caution! The needles can escape from the needle bushes.
- Repeat this process for all chain links that need to be replaced.
- Replace the chain links.
- Press in shafts (1) using brass pin.
  Caution! Be careful not to damage the sealing rings and needle bushes (2).
- Fit shim ring (3).
- Use feeler gages to distribute the axial play evenly between the chain links.
- Apply medium strength screw locking varnish to the threaded studs (11) and secure the shafts (2).
- Re-fit the protective covers (8).
- Tighten the chain tensioner **G** by unscrewing the Allen screw **F**.
- Prevent the hexagonal screw **F** from turning and tighten the lock nut **E**.
- **Caution!** After the chain has been tensioned, tighten the idler pulley mounting plate **A** by tightening the 6 Allen screws on both sides **B**, making sure that the tension is the same on the left and right sides
- Tension the chain, run the system for a few minutes to test it, check the tension again and adjust it if necessary.

8 Disassembly and disposal

At the end of its service life, the linear indexing system must be disassembled and disposed of in accordance with environmental protection requirements.

8.1 Disassembly

Before starting disassembly:

- Disconnect all power supply to the linear indexing system and ensure that it cannot be reconnected.
- Disassemble assemblies and components, observing any local environmental protection regulations.

8.2 Disposal

- If no return or disposal agreement has been reached, dispose of the components in a recycling facility after they have been properly disassembled.
- Scrap metal parts.

9 Replacement parts and consumables

9.1.1 Replacement – and wear parts for LF linear indexing system

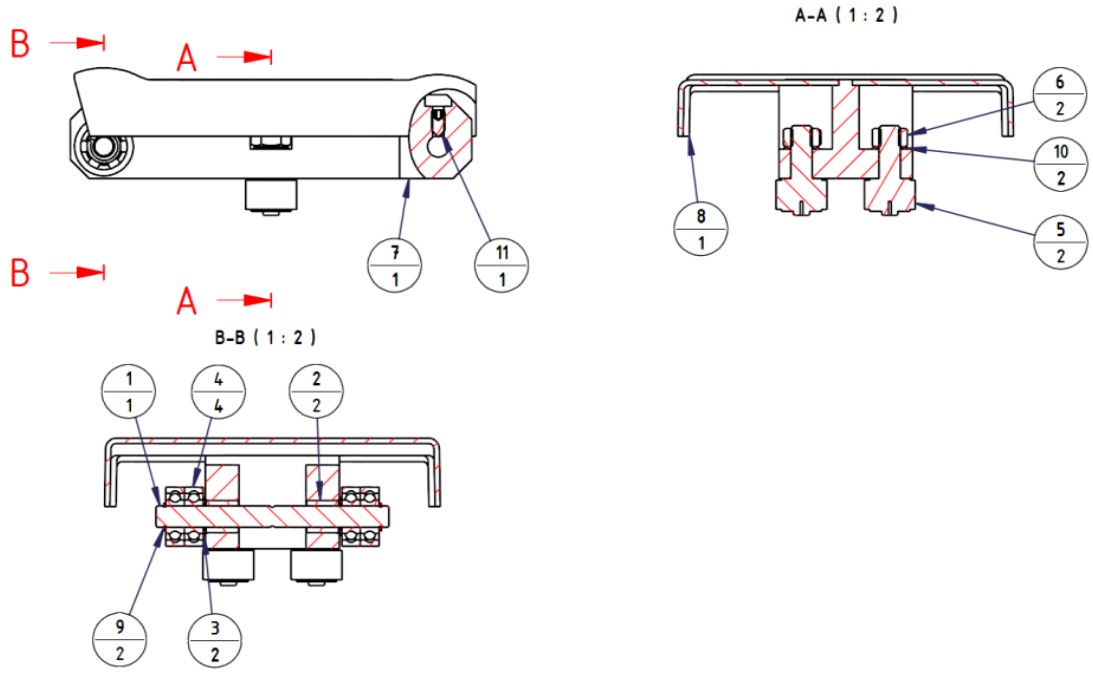

Figure: 22 Overview of replacement parts and wear parts

Number	Quantity per link	Designation	Spare part (SP)	Wear part (WP)
1	1	Shaft		WP
2	2	Needle bush		WP
3	2	Shim ring	SP	
4	4	Deep-groove ball bearing		WP
5	2	Roller with greasing nipple		WP
6	2	Hexagonal nut	SP	
7	1	Chain link for protective cover	SP	
8	1	Protective cover for chain link		WP
9	9	Retaining ring for shafts	SP	
10	2	Schnorr locking washer	SP	
11	1	Threaded stud	SP	