Modular Electric ODS Linear Drives

Assembly and Operating Instructions

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

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Warranty

These operating instructions are subject to changes including changes in technical details with respect to the information and figures contained herein.

Parker Hannifin GmbH grants no quality or durability guarantees nor any guarantees as to the suitability for specific purposes. Such guarantees must be expressly agreed upon in writing.

Public statements, recommendations or advertising do not in any way represent quality specifications.

The operator's warranty rights require that the operator immediately report any defects and precisely describe said defects in the complaint. Parker Hannifin GmbH is not responsible under any circumstances for damage to the product itself or any consequential damage caused by the product resulting from improper handling of the product. If Parker Hannifin GmbH is responsible for a defect, Parker Hannifin GmbH shall be authorized, at its discretion, to undertake improvements or deliver replacements.

In compliance with ISO 9000, all ODS products are equipped with a type plate that is connected to an ODS unit. The type plate must not be removed or damaged under any circumstances.

Parker Hannifin GmbH shall not be held liable, regardless of any legal basis, except for cases of intent or gross negligence; injuries to life, body or health; or defects of malicious nondisclosure or whose absence was expressly guaranteed in writing. Furthermore, if there is compulsory liability under the Product Liability legislation for personal injury and property damage to privately used objects, in the event of negligent breach of significant contractual obligations, Parker Hannifin GmbH shall also be liable for cases of ordinary negligence; however, this is limited to damages that are contractually typical and foreseeable.

Further claims are hereby excluded.

Failure to adhere to these operating instructions or the relevant statutory provisions as well as any other information from the supplier shall invalidate the warranty.

In particular, we are not responsible for failures caused by modifications made by the customer or other parties. In such cases, the normal repair costs will be calculated. These costs will likewise be calculated for a check of the unit if no fault can be determined on the unit.

This regulation also applies during the warranty period.

No claims exist as to the availability of previous versions or to the retrofitting capacity of the units delivered to adapt them to the respectively current model version.

Copyright

Product Monitoring

Our goal is to provide safe, state-of-the-art products. Therefore, we monitor our products on a continuous basis, even after delivery. Please notify us immediately of any recurring malfunctions or problems with the ODS.

Language of the Operating Instructions

For our international customers, these assembly and operating instructions are translated into various languages.

The German version is the original.
Other languages are a translation of the original operating instructions.

Contents

1 Foreword to the Operating Instructions

The operating instructions contain important information and assist in preventing hazards, repair costs and downtimes; they also increase the reliability and service life of the ODS.

Everyone that works with the ODS must read and adhere to the operating instructions, e.g.:

- Operation, including setup, fault elimination in the work sequence, handling and disposal of hazardous substances (operating materials and auxiliary materials)
- Maintenance (cleaning, maintenance, inspection, repair)

The information in these operating instructions, particularly the safety section, must be observed.

2 Safety

In addition to the operating instructions and the regulations regarding accident prevention and environmental protection that are applicable and mandatory in the country of use and at the site of use, the recognized technical regulations for safe and professional working must also be observed.

Explanation of symbols and notes

► This symbol is used as a handling prompt.
The symbol describes assembly steps, for example.

Notes that are identified with the following symbols assist in preventing risks to life and limb. Distribute this information to all users.

Example of Symbols	Explanation
 	**DANGER** **Warns of personal injury that already exists at the moment of the warning**
 	**WARNING** **Warns of personal injury if there is improper handling or failure to comply with instructions**
 	**CAUTION** **Warns of potential personal injury of which workers should be aware**
 	**ATTENTION** **Warns of property damage or malfunctions**
	**NOTE** ► Warns of potential worsening of results and/or provides tips

Operator's obligation

The following are the obligations of the operator:

- Adherence to Machinery Directive 2006/42/EC.
- Adherence to the valid, national regulations on occupational safety
- Proper use of the ODS
- Adherence to the regulations in these operating instructions

Operators

Operators for the overall system must ensure that the ODS is only operated by authorized and qualified personnel.

Authorized personnel include trained specialists from the operator, from the manufacturer (Parker Hannifin GmbH) and from an approved service partner.

Working in a safety-conscious manner

Check at reasonable intervals that personnel are working in a safety-conscious manner and adhering to the operating instructions.

3 Product Information

Designs

Ball screw drive **Belt drive** **Linear motor**

3.1 Scope of Application

The description in these operating instructions relates to the products.

3.1.1 Ball Screw Drive

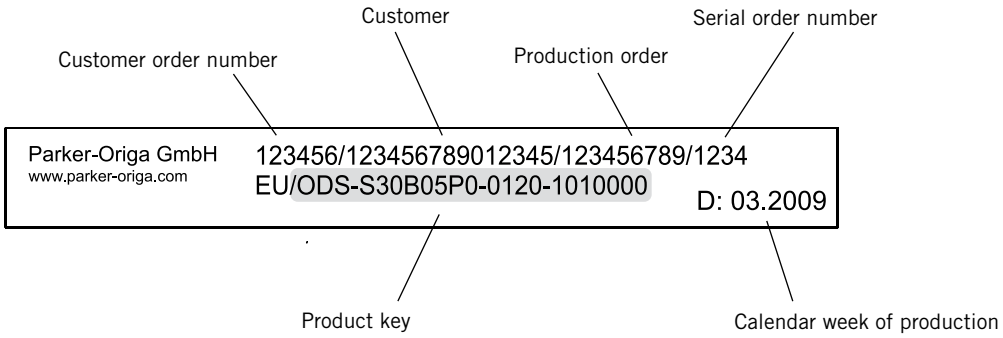
Linear drive with ball screw drive and parallel guide
ODS-145SB
ODS-175SB
ODS-225SB

3.1.2 Belt Drive

Linear drive with toothed belt and parallel guide
ODS-145B
ODS-175B
ODS-225B

3.2 Type Plate

The type plate is located on the ODS end cap drive end. A second plate has been enclosed.



4 Application, Proper Use

The operational safety of the ODS is only ensured with proper use.

Proper use of the ODS only includes the following:

- Moving loads
- Positioning masses
- Exerting force

The ODS is driven with rotating or linear motors.

The catalog data and the conditions specified in the order confirmation must be taken into account. Please note the limits from the technical data and the corresponding characteristic curves as per the catalog information.

The values apply to continuous operation. With intermittent operation, the combination of speed and load may accommodate higher values for short periods. However, the individual maximum values indicated must not be exceeded.

If the ODS is used in any other manner, this does not constitute proper use.

Obvious misuse

Any use to transport persons or applications of any manner in the private sector (consumers) is not authorized. This may result in personal injury and damage to property. We shall accept no liability for any injury or damage resulting herefrom. The user shall bear sole responsibility and risk.

The following are not authorized:

- Unauthorized modifications to the ODS
- Processes that affect the safety of the ODS

Note all of the information attached to the ODS.

Keep this information in a fully legible condition.

In addition, note the manufacturer's information regarding lubricants, solvents and cleaning agents.

4.1 Prerequisite for Product Usage

The installation must always be carried out such that:

- The ODS is installed without delay
- All connections and control components are accessible
- The type plate with the product name remains legible
- The ambient conditions are maintained corresponding to design delivered (IP20 or IP54)

The operator must secure any hazardous sources that may result during installation in machines and systems between Parker Hannifin products and customer equipment, according to CE conformity.

4.2 Conversions and Modifications

ODS linear drives may not be modified with respect to the design or safety-related features without the written approval of **Parker Hannifin GmbH**. Any unauthorized modification in this respect will exclude any liability on the part of **Parker Hannifin GmbH**.

If special attachments are to be used, the assembly regulations of the manufacturer must be observed.

The following also apply:

- Relevant accident prevention regulations
- Generally recognized safety rules
- EU directives
- Country-specific provisions

4.3 Spare Parts and Accessories

Original spare parts and accessories authorized by the manufacturer are intended to protect your safety. The use of other parts could change the properties of the ODS.

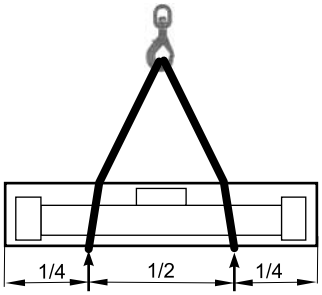
We shall accept no liability for any resulting consequences.

5 Transportation and Storage

5.1 Transportation

The electric ODS linear drives are extremely precise products. Impacts could damage the mechanical system of the drive, resulting in a negative influence on functionality.

To prevent damage during transportation, place the units in appropriate protective packaging.



WARNING

Lifted or suspended loads can tip over or crash down.

This could result in severe injuries or damage to property.

- ► Never walk under suspended loads.
- ► Transport loads as close to the floor as possible.
- ► Securely fasten the load for transportation and note the center of gravity.

CAUTION

Heavy parts can slip during handling!

This could result in severe injuries or damage to property.

- ► Hold parts or units securely.
- ► Wear safety gloves.
- ► Use tools and supports.

Transport packed or unpacked ODS units using a crane or forklift

- Attach ropes as shown/use fork as shown.

NOTE

Notify the shipping company and Parker Hannifin GmbH or the delivery company immediately, in writing, of any transportation damage or missing parts.

5.2 Storage

The storage location must be:

- Dry, free of dust and vibrations
- On a flat surface

Deflection of the ODS must be avoided!

6 Brief Description and Function

6.1 General

The **ODS catalog** contains extensive information on the following:

- Dimensions, space requirements
- Load-carrying capacity, forces and torques
- Weights and further technical data

The electric linear drives from the ODS series may only be operated within the permissible specifications.

We reserve the right to make technical changes.

6.2 Setup and Mode of Action

The electric ODS linear drives are used for the linear moving and positioning of an external payload. A combination of multiple linear drives allows the spatially oriented movements to be achieved. When the linear drive and the payload are in motion, a force is exerted in the direction of movement.

- A payload is fastened at the pre-existing threaded holes on the carriage.
- The carriage is connected to a Drive Type (screw, toothed belt, or linear motor) and is moved by this Drive Type.
- The carriage is mounted on a linear guide system in a movable manner; the linear guide system is fastened to the profile version.
- The profile version is fastened directly onto a substructure.
- A cover can be constructed on the linear drive to reduce the penetration and discharge of dirt or abrasion.
- Lubrication can be carried out during service as needed via external lubricating nipples.
- A position signal can occur through magnetic switches mounted on the inside or outside, which are switched by a magnetic package on the carriage.
- A displacement signal of the linearly moving carriage can be achieved by means of an installed displacement measuring system.

6.3 Drive Type

A carriage is moved and force is exerted through a rotational movement at the drive shaft.

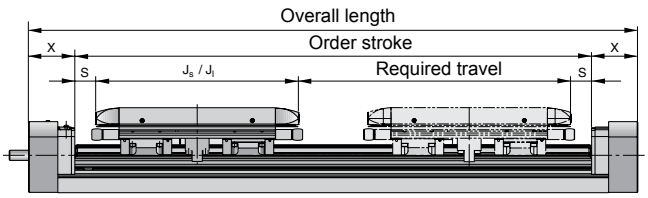
6.3.1 ODS-...SB Ball Screw Drive

A carriage is linearly moved by a rotating ball screw drive driven by the motor; the carriage is mounted on a guide system in a movable manner. The screw turns clockwise.

The load to be moved is fastened onto the carriage.

The permissible thrust force, speed and the linear displacement per rotation of the drive shaft depends on the design of the screw used.

- Temperature range: -20°C to +80°C
- Installation position: Any
- Humidity: Non-condensing



J = Carriage length
S = Safety distance

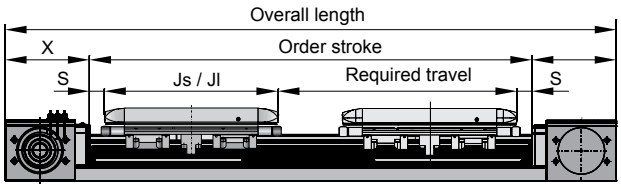
6.3.2 ODS-...B Belt Drive

A carriage is linearly moved by a toothed belt driven by the motor; the carriage is mounted on a guide system in a movable manner.

The load to be moved is fastened onto the carriage.

The permissible thrust force, speed and the lead constant per rotation of the drive shaft depends on the design and on the toothed belt used.

- Temperature range: -20°C to +80°C
- Installation position: Any
- Humidity: Non-condensing



J = Carriage length
S = Safety distance

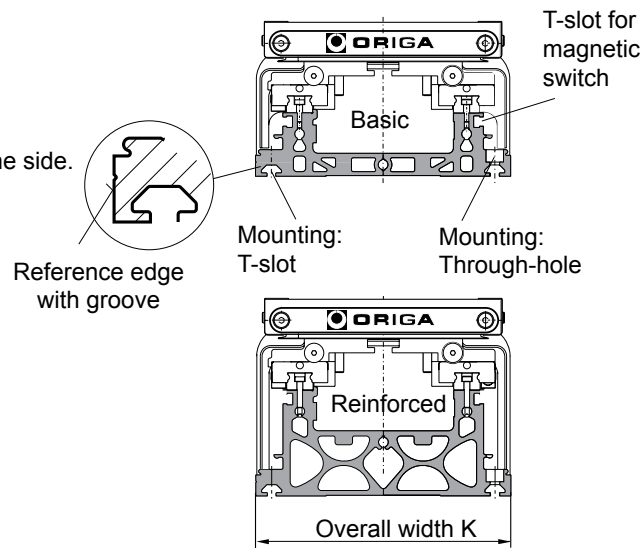
6.4 Noise Emission

Depending on the drive types, guide system, load and speed, noise emissions of varying intensities result, which are constrained by the setup. The operator is responsible for adhering to the applicable provisions and regulations.

6.5 Profile versions

The user must fasten the profile version onto the corresponding substructure.

The linear drive can easily be aligned with the assistance of a reference edge machined on one side.



NOTE
The stop edge is equipped with a groove.

Designs:

"Basic" profile version

For assembly on a continuous substructure.

"Reinforced" profile version

For an extensively self-supporting substructure.
Due to the reinforced profile geometry, and the resulting inherent stiffness, resistance to deflection of twist is increased.

6.6 Guide System

The guide system is mounted onto the profile version. It accommodates the static and dynamic loads from the externally moving load as well as the external forces. The permissible load data must not be exceeded.

Plain bearing guide

The load, speed, temperature, performance and ambient conditions determine the service life of the guide and generally require more intensive maintenance.

Ball bearing guide

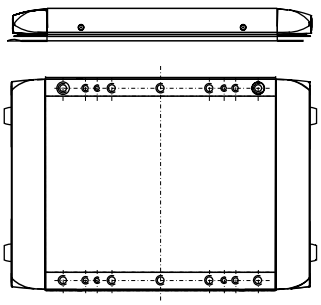
Runner blocks with balls are moved linearly on a precision guide rail made of steel.

The maintenance schedule recommended by Parker Origa in section 9 must be followed.

6.7 Carriage

The carriage moves an externally connected load in a linear fashion. The external load may only be fastened at the pre-existing threaded holes.

Designs:



Standard carriage

A carriage that is connected to the drive type (figure).

Tandem carriage

Includes a second carriage that can be freely moved on the guide system. The external load is distributed onto two carriages that are mounted at a fixed distance, facing one another.

7 Assembly

7.1 Important Information

ODS installation, and all other installations, may only be carried out by trained mechanical technicians or electricians. The information in these instructions must be strictly observed.

	ATTENTION
	Excessive forces or loads
	Overload of the ODS would be possible
	► Adhere to catalog data.

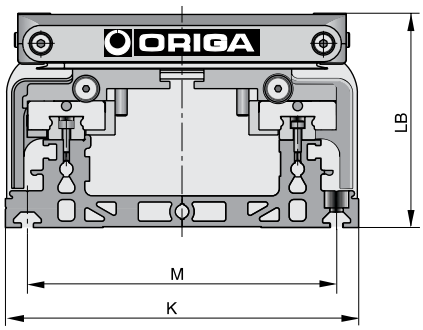
Remarks regarding use and operation:

Mechanical information

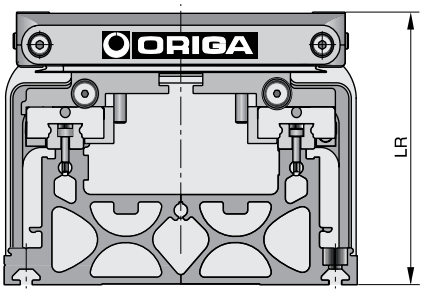
Additional drill holes or other machining may not be implemented on the ODS!

- ► Only attach the payload at the threaded holes on the carriage in section 7.3.
- ► Adhere to the permissible load limits such as weight, speed and acceleration.
- ► Place the payload on the carriage such that the maximum permissible torque values and forces are not exceeded at any time.

"Basic" profile version



"Reinforced" profile version



Overview of dimensions by type:

Series	Overall width K [mm]	T-slot M [mm]	Overall height of profile version	
			Basic LB	Reinforced LR
ODS-145	145.0	127,0	88.0	112.0
ODS-175	175.0	150,0	111.5	134.5
ODS-225	225.0	195,0	125.0	153.0

Tightening torques for screws:

Thread	Tightening torque	Tolerance
M3	1.2 Nm	± 0.2 Nm
M3	3 Nm	± 0.5 Nm
M5	5.5 Nm	± 0.8 Nm
M6	10 Nm	± 1.5 Nm
M8	20 Nm	± 3 Nm
M10	40 Nm	± 6 Nm

Electrical information

- The controller, motor, position detection and all other necessary electrical elements must be connected according to technical rules, within the responsibility of the operator.
- Do not place magnetic switches in the vicinity of ferritic parts or moving loads.
- Only use the seating grooves and/or the mounting holes on the aluminum profile for the assembly and mounting of the profile version, as described in detail in the ODS catalog.

7.2 Installation of Linear Drive

All the installation dimensions are listed in the ODS catalog.

► During assembly, the ODS must be sufficiently supported and securely placed in a machine/system.

	ATTENTION
	Straightness tolerance exceeded
	The screw-on surface is important!
	► Ensure evenness and straightness.

The maximum straightness and evenness in the running direction of the linear system can only be achieved if the corresponding mounting points or surfaces are within the required tolerance.

The mounting surface for the profile version must have evenness of at least 0.2 mm/m at the clamping points.

	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

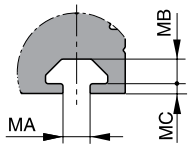
7.2.1 Mounting with T-slots

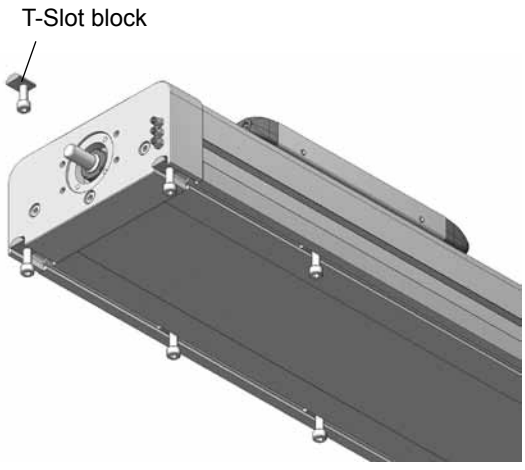
- Use of T-slot profiles. Mounting from below.

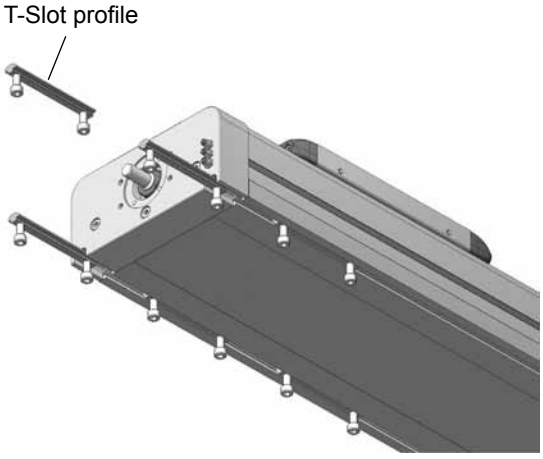
Standard screws and sliding blocks or rails from the common profile systems can be used.

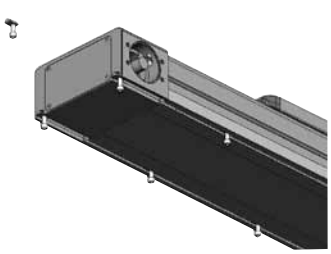
Mounting parts such as sliding blocks are available as accessories.

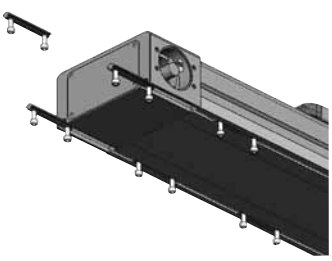
Type	T-slot			Item no. Sliding blocks 10 pcs
	MA	MB	MC	
ODS-145	5.0	4.5	1.8	56351
ODS-175	6.2	6.7	3.0	56352
ODS-225	8.0	8.0	4.5	56353









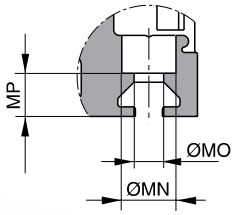


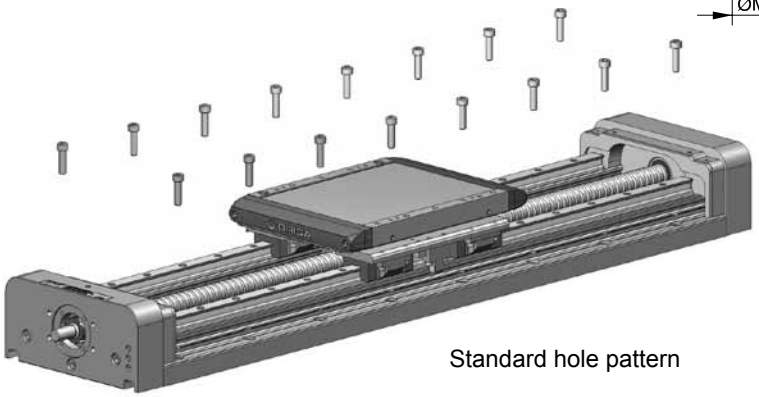
7.2.2 Mounting with the Standard Hole Pattern

Carry out mounting from above with through-bolts;
the IP54 cover must be open, if present.

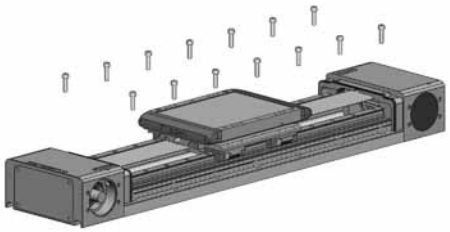
	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

Type	Through-hole		
	MN	MO	MP
ODS-145	10.0	5.5	8.0
ODS-175	11.0	6.6	14.0
ODS-225	15.0	9.0	15.5

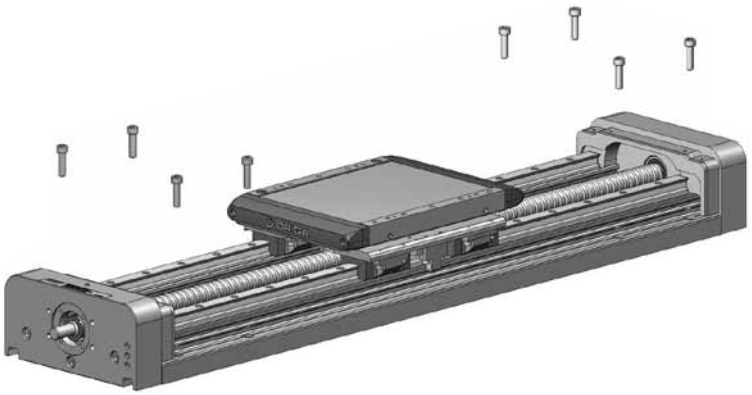




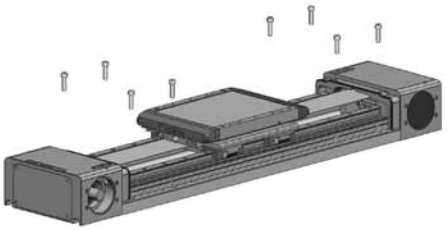
Standard hole pattern



7.2.3 Mounting with Customized Hole Pattern



Customized hole pattern
(as per order instructions)



7.3 Attaching the Payload

The user is responsible for the use of the ODS and makes decisions on the attachment of loads as well as the operating status with speed, acceleration and frequency of movements. The ODS may only be installed according to the catalog's specifications.

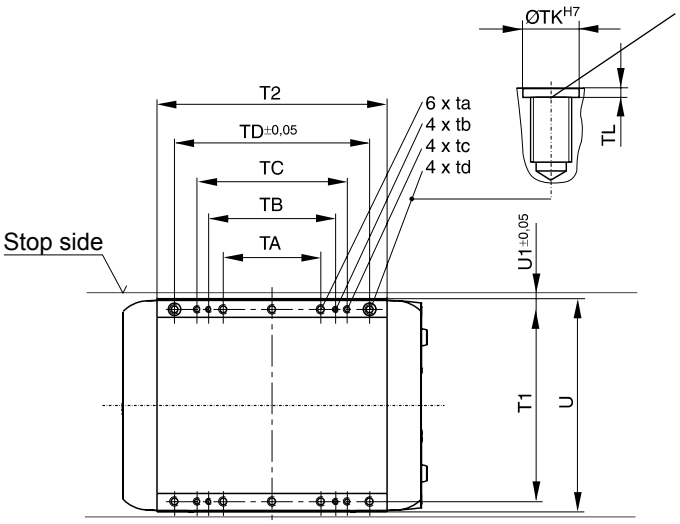
	WARNING
	Danger due to fracture or deformation of components, incorrect arrangement of loads and crashing of loads
	This could result in severe injuries and damage to property.
	► Attach components according to technical rules. ► Move heavy parts with a hoist; wear safety gloves. ► Observe ODS catalog data with respect to arrangement.

There are various threaded holes on the carriage available to the user of the ODS for mounting the payload.

	ATTENTION
	Risk of damage to the carriage
	Additional holes will weaken or damage important components and are not permitted.
	► Do not drill or counterbore. ► Distribute load forces as required.

	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

The carriage has two dowel holes into which dowel sleeves can be inserted. This makes it possible to repeat the disassembly/assembly of the payload without realignment.



Centering/alignment of payload

Suitable **dowel sleeves:**
(packing unit 1)

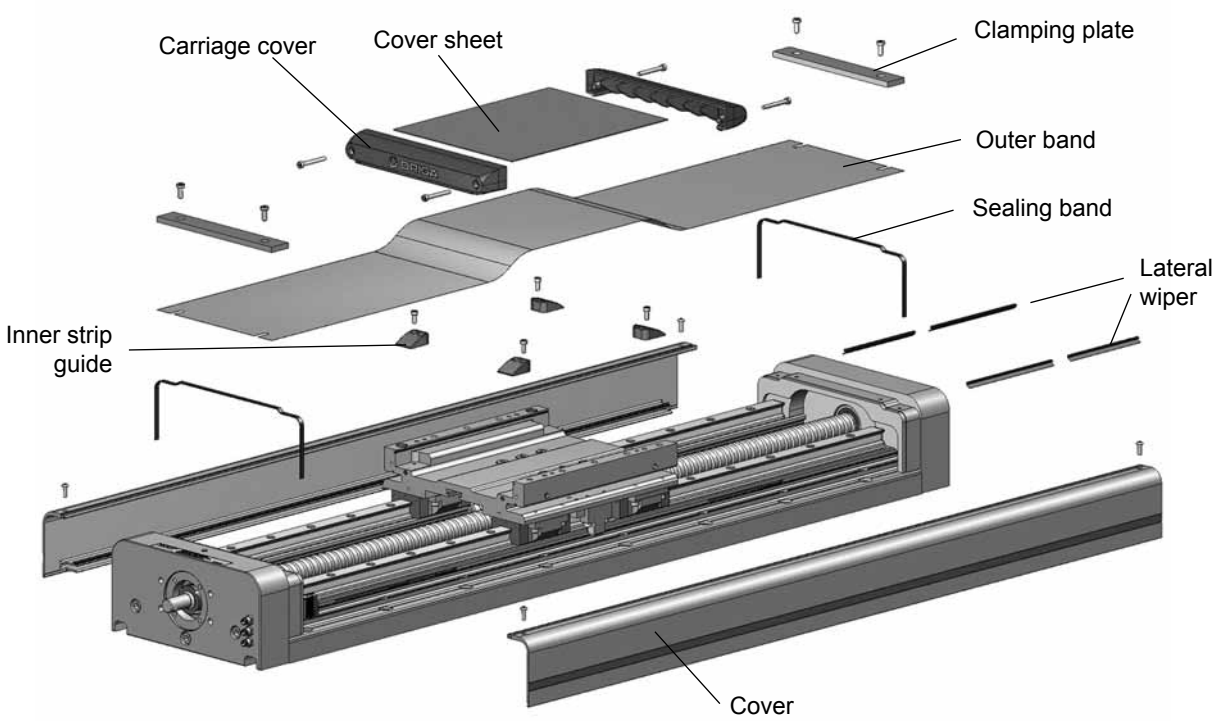
Type	Item no.
ODS-145	56406
ODS-175	56407
ODS-225	56408

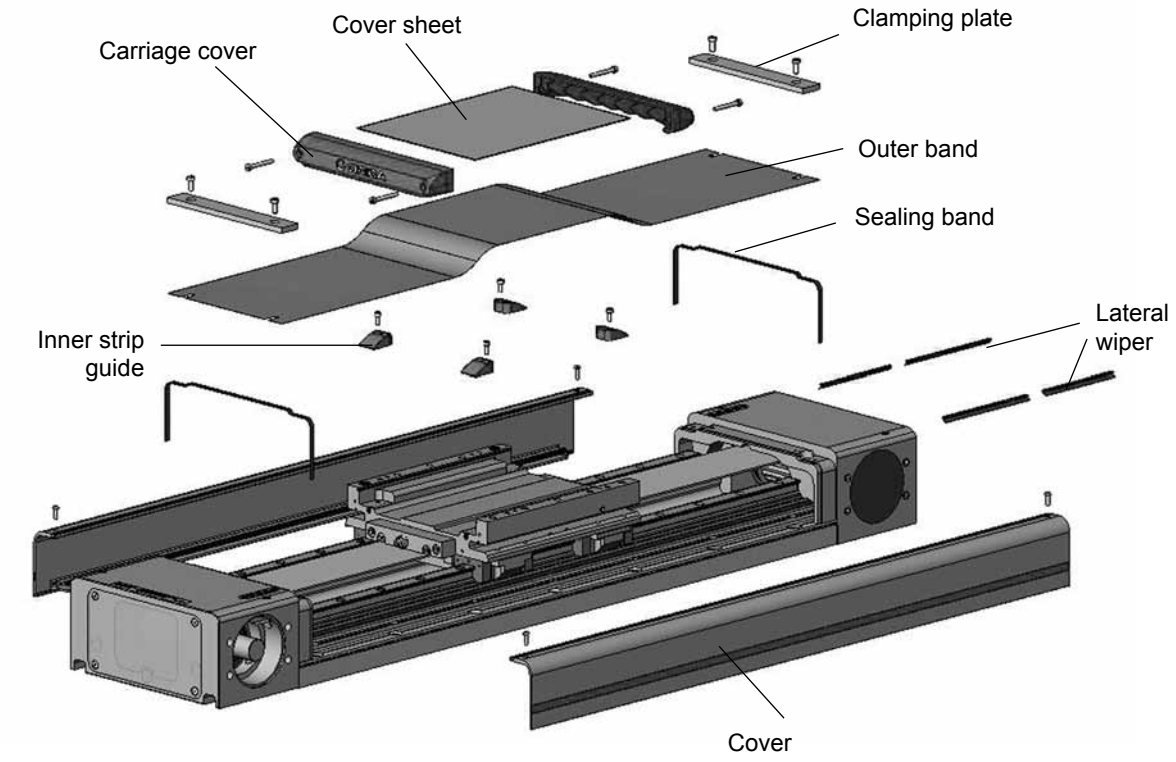
Dimensions Table – Standard Carriage														
Type	**T1**	**T2**	**TA**	**ta**	**TB**	**tb**	**TC**	**tc**	**TD**	**td**	**ØTK**	**TL**	**U**	**U1**
ODS-145	120	155	35	M5x12	–	–	87	M5 x 12	127	M5x12	7	1.5	135	12.5
ODS-175	150	170	70	M6x12	–	–	127	M5 x 10	150	M6x12	9	1.5	165	12.5
ODS-225	192	230	97.5	M8x16	127	M5x10*)	150	M6x12*)	195	M8x16	12	1.5	210	16.5

*) Not suitable for mounting the payload.

7.4 Cover for IP54

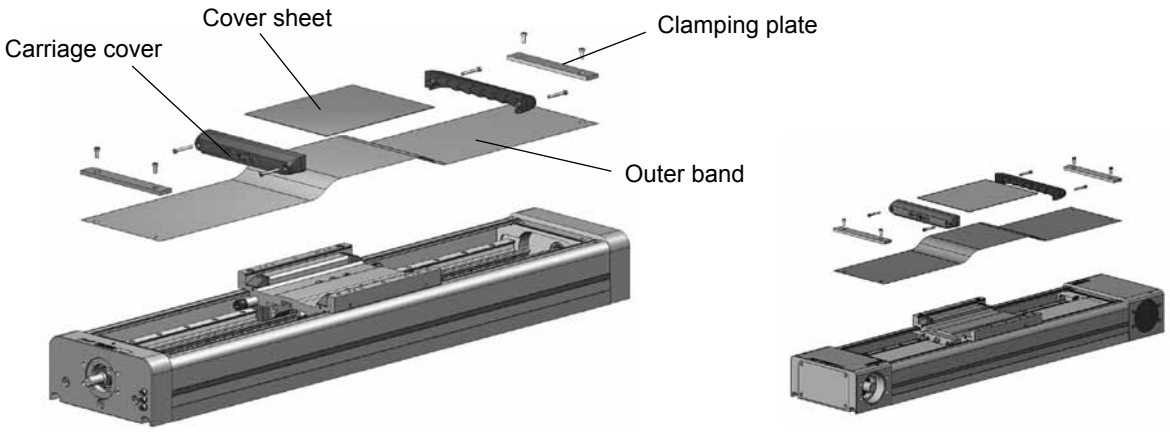
It is also possible to install various assemblies and equipment as a retrofit. When doing so, remove the cover as necessary.



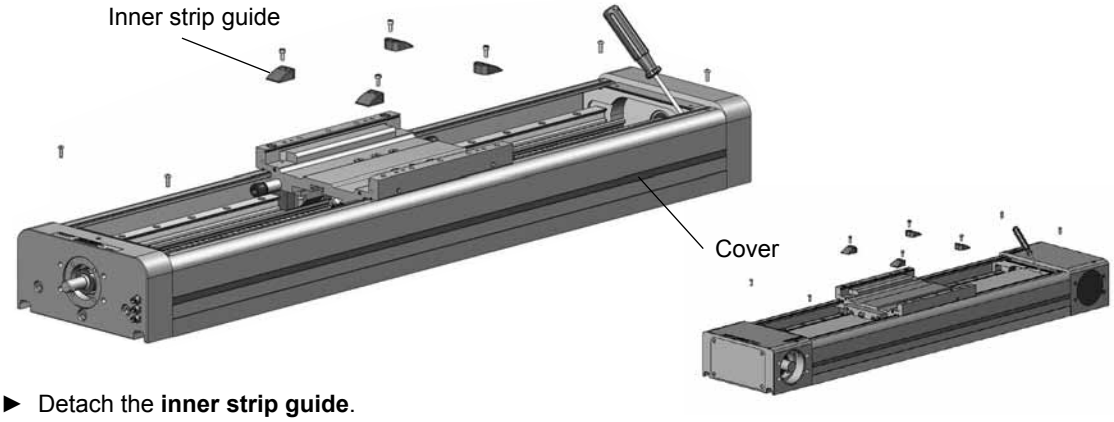


For ODS installation, maintenance purposes or conversion:

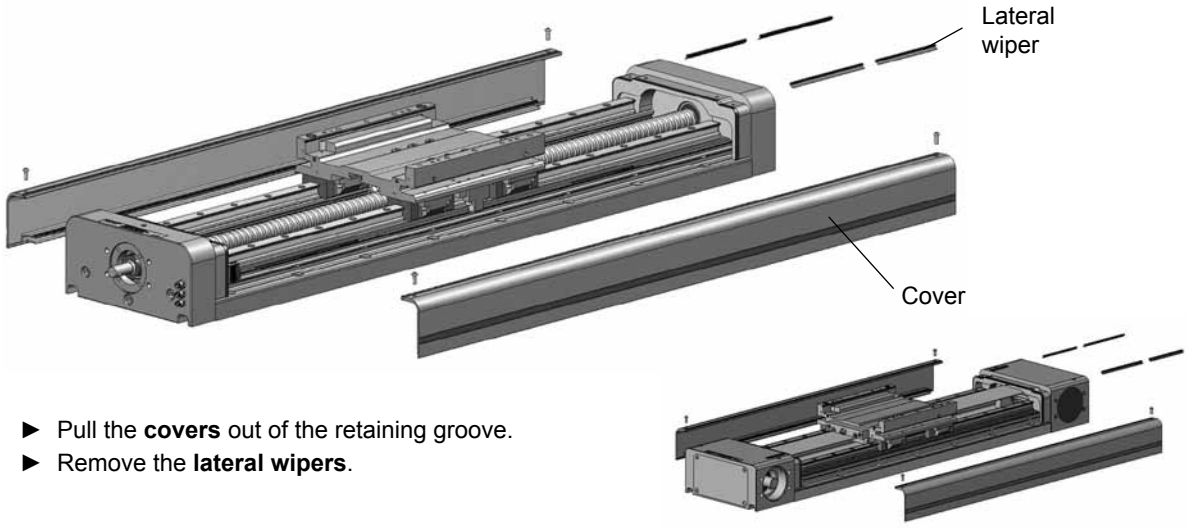
7.4.1 IP54 Cover Disassembly



- ► Remove the **clamping plate** of the **outer band** on the end caps.
- ► Disassemble the **carriage cover**.
- ► Push the **cover sheet** out of the grooves.
- ► Remove the **outer band.**



- ► Detach the **inner strip guide**.
- ► Unscrew the lateral **covers**.
- ► To detach the covers, lever at one end with screwdriver, from the inside out.



- ► Pull the **covers** out of the retaining groove.
- ► Remove the **lateral wipers**.

7.4.2 IP54 Cover Assembly

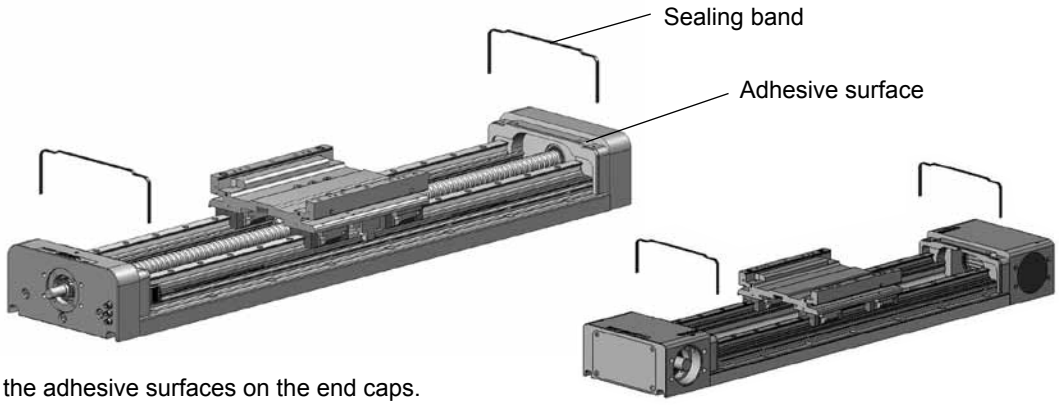
The cover can be retrofitted; refer to section 11.1.

The following instructions also apply to retrofitting, converting or maintaining the ODS.

For information on necessary disassembly, refer to section 7.4.1.

	ATTENTION
	It is possible to implement an incorrect assembly sequence.
	The cover covers the ODS mounting holes and the limit switches on the inside.
	► Pay attention to the sequence! Make sure you differentiate between - ODS installation - Subsequent assembly of the cover and - Maintenance of the ODS

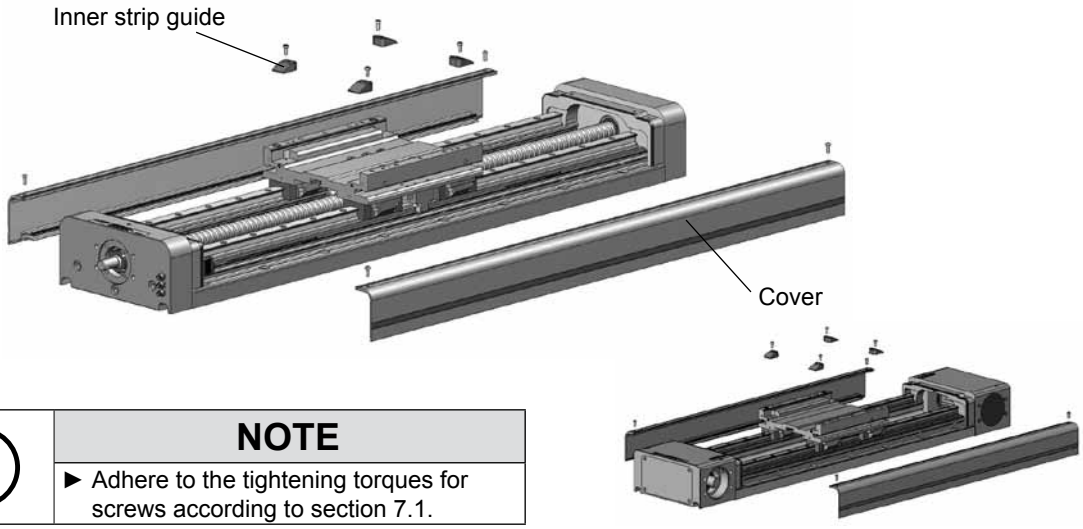
Place the sealing band on the adhesive surfaces



► Clean the adhesive surfaces on the end caps.

► Glue 2x **sealing bands** onto the shoulder of the end caps.
Do not remove the upper protective foil!

Mount the strip guides and covers.



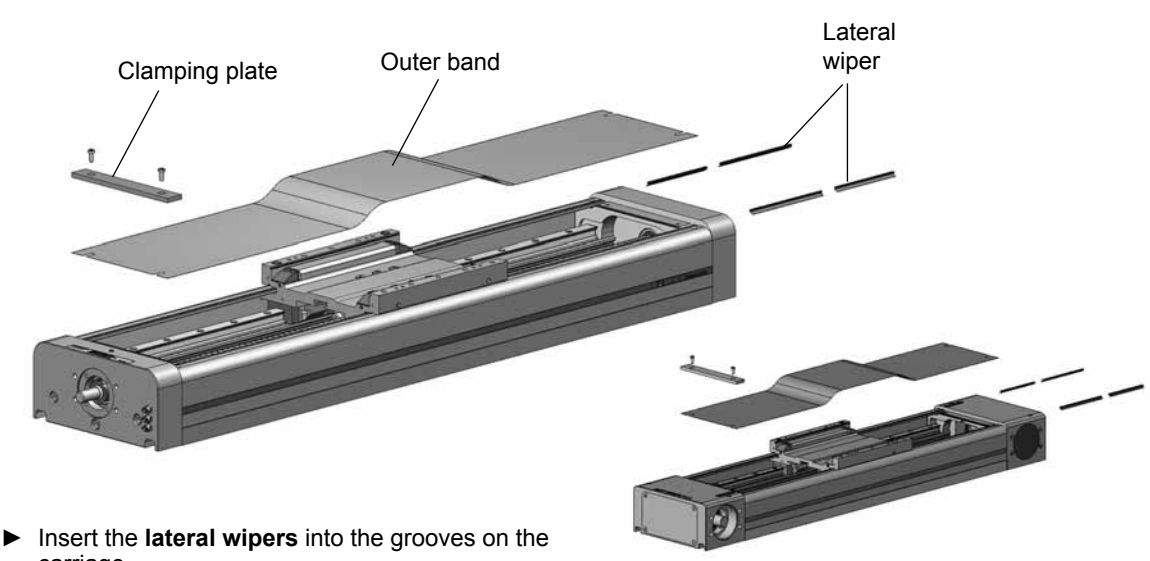
	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

► Screw 4x **inside strip guides** onto the carriage and grease lightly.

► Press the **covers** into the longitudinal grooves on the profile version.

► Tightly screw on 4x **covers**.

Mount the wipers and outer band



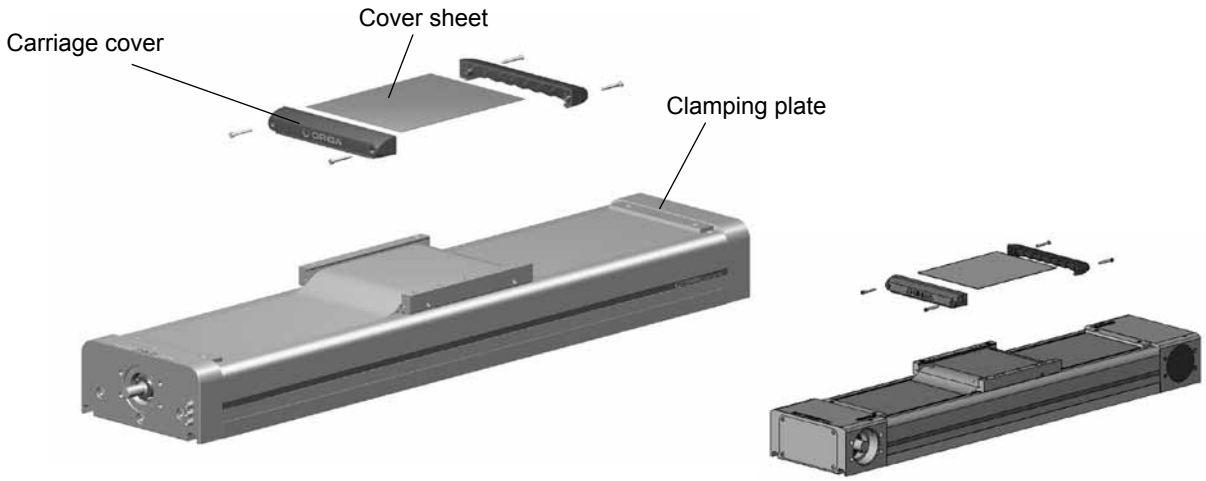
► Insert the **lateral wipers** into the grooves on the carriage.
Pay attention to the alignment (lips should be facing outward).
► Place the **outer band** onto the center of the ODS.

	ATTENTION
	Premature wear of the Outer band
	Twisted/distorted installation of the Outer band
	► Careful tightening of the clamping strip - Outer band not twisted - Install without forming any ripples

	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

► On one side, tightly clamp the **outer band** with the **clamping plate** and screw on.

Mount cover sheet and cover



► Lightly grease the bottom of the carriage **cover sheet**.
► On one side, insert the **cover sheet** into the groove of the carriage.
► Lock the **cover sheet** into position by applying central pressure from above onto the opposite side.
► Align the **carriage cover** on the carriage and screw down tightly.

The outer band must have contact with the entire profile length without any ripples.
► Tightly clamp the **outer band**, without any tension, to the second **clamping plate**.

7.5 Position Detection with Magnetic Switches

	ATTENTION
	Potential damage to equipment!
	Missing or incorrect signals from the end position switches in the controller.
	► **Essentially**, clamp and set up end switches before commissioning!

7.5.1 Definition

End position switch

The use of end position switches is highly recommended for operating electric linear drives to prevent mechanical damage in the end positions. End position switches must be implemented in the NC (normally closed) function so that any cable breaks can be detected by the controller.

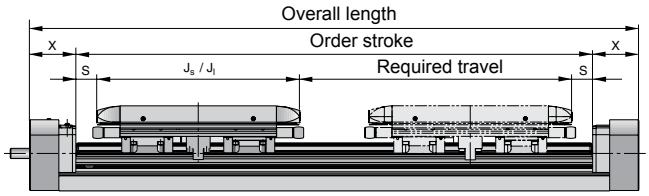
Homing switch

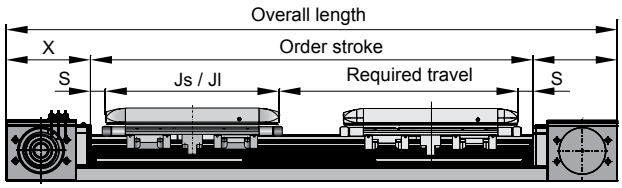
In addition to the end position switches, a homing switch can be used to assign a repeatable zero point to the linear system. Homing switches are normally implemented in the NO (normally open) function. In this process, the homing switch must be between the end position switches.

Switch types

The magnetic switches described in the following can be used as switches. The switch function is triggered by the magnetic package mounted under the carriage. The user can use mechanical switches, proximity sensors etc. in the same manner.

Setting up switch points





J = Carriage length
S = Safety distance

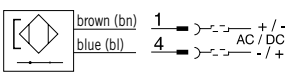
The switch point for the end position switches must be selected on both sides of the linear drive so as to ensure braking of the payload up to a standstill (depending on the motor system used) within the safety distance and at any time during operation. Depending on the application, the homing switch can be set up anywhere between the end position switches. If the switch points are not indicated when ordering, the user must carry out the alignment as well as the connection of the magnetic switches.

	NOTE
	Essentially, the user is responsible for checking each linear drive for proper setup and the function of the magnetic switches.

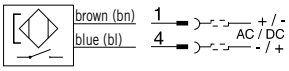
7.5.2 Magnetic Switch Types

Electrical connection type RST-S

Reed, normally closed

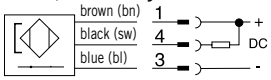


Reed, normally open



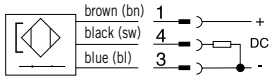
Electrical connection type EST-S

NPN, normally closed

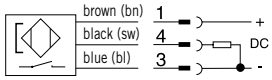


NPN, normally open

PNP, normally closed



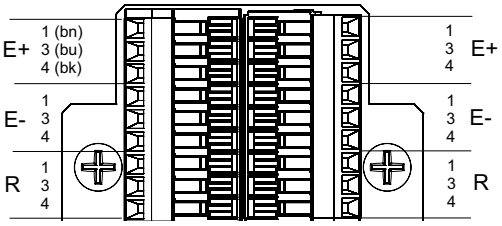
PNP, normally open



7.5.3 Connection Assignment of PCB Connector

The PCB with terminal connector corresponds to DIN EN 50044.

(Connector side)

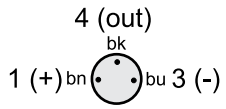


(Magnetic switch side)

7.5.4 Connection Assignment for M8 Connector

3-pin connector assignment

bn = brown
bk = black
bu = blue

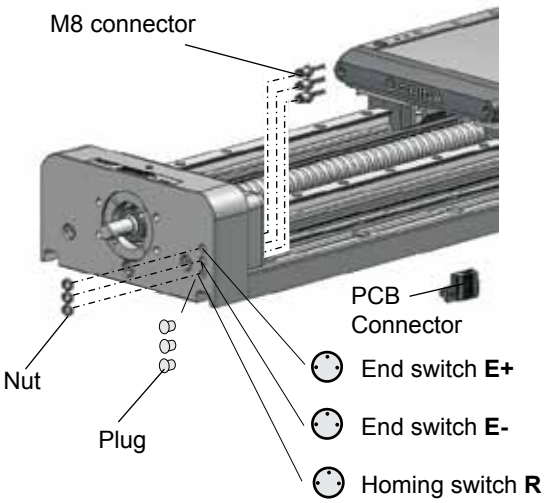


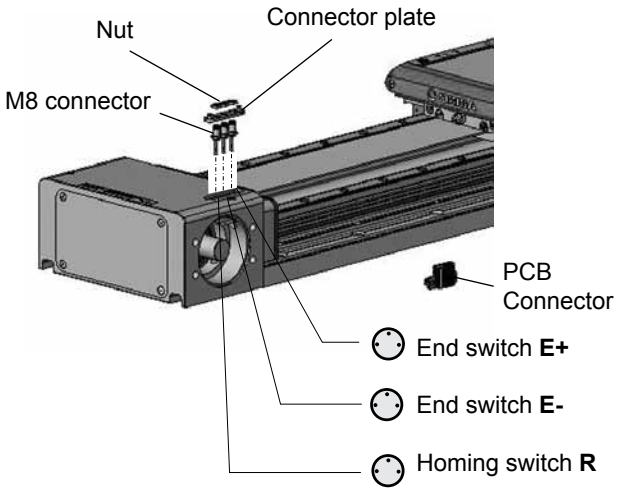
PIN assignment (top view)

7.5.5 Installation of PCB and M8 Connectors

The IP54 cover must be opened as per section 7.4.1.

Mounting the M8 connectors in the end cap

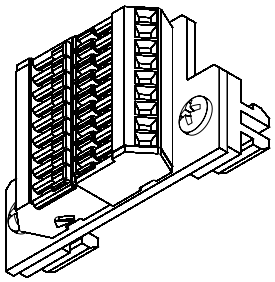




- ► Remove the plugs from the end cap.
- ► Insert the M8 connectors through the hole, starting from the back of the end cap drive end side, and secure with nuts.

- ► Remove the **connector plate** and corresponding **plug**.
- ► Insert **M8 connector** in **plate** and secure with **nuts**.
- ► Pass the cable thru clearance.
- ► Fasten **connector plate**.

Mounting the PCB connector in the T-slot

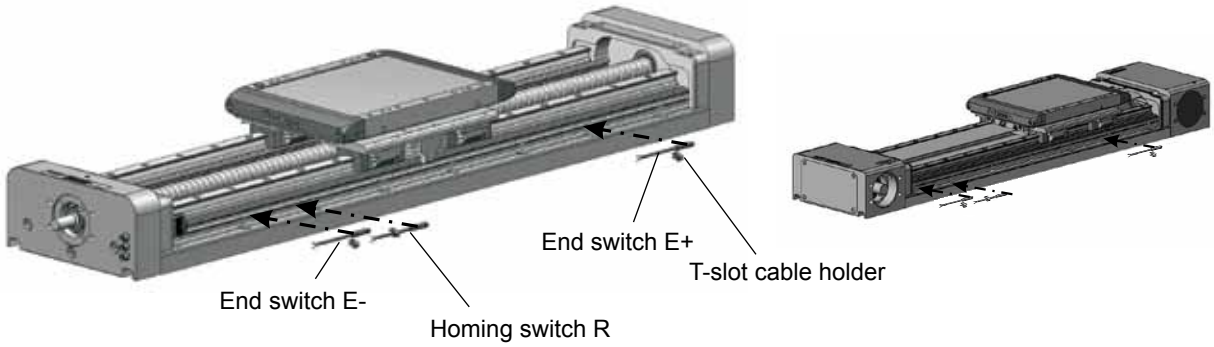


- ► Insert the PCB connector into the T-slot with the sockets.
- ► Align the PCB connector and tightly screw in the screws.
- ► Cut the cable for the mounted connector to the desired length and strip it.
- ► Route the cable on the PCB connector according to the terminal assignment, section 7.5.3.

7.5.6 Setting up the Internal Magnetic Switches

The IP54 cover must be opened as per section 7.4.1.

Tip: Adjust the carriage to the desired position (end position/homing) and then move the magnetic switch in the T-slot until the switch point is reached.



- ► Insert the magnetic switch into the T-slot, if not preassembled (or loosen it with a size 2.5 Allen key).
- ► Set up the switch point by moving the magnetic switch until the switch point is reached.
- ► Tightly clamp the magnetic switch with a size 2.5 Allen key.

Connecting the magnetic switches

	ATTENTION
	Risk of damage to cable!
	Cable shearing and scuffing will cause failures and damage.
	Route cable securely and tightly.

- ► Cut the magnetic switch cable on the PCB to the desired length and strip it.
- ► Route the cable on the PCB according to the terminal assignment, see section 7.5.3.
- ► Secure the loose cable in the T-slot with the cable holders.
- ► Connect the respective connection cable with the M8 mounted connectors on the cover.
- ► Insert the connection cable in the controller (refer to section 11.3 for information on ordering connection cables).

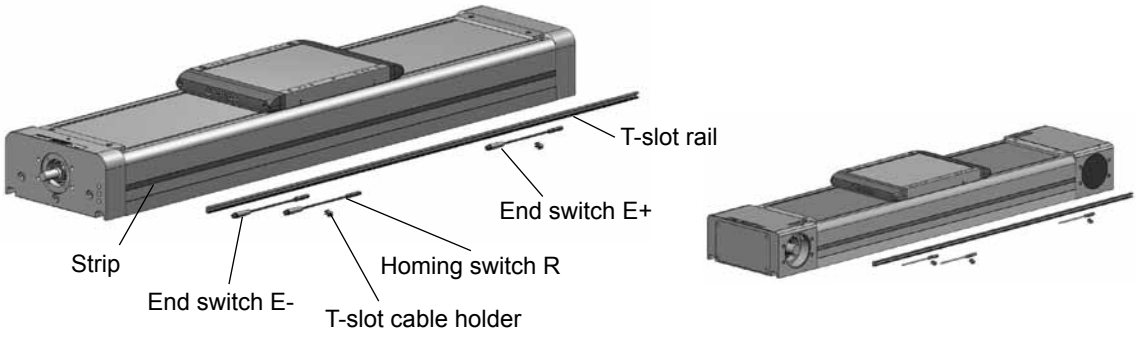
7.5.7 Setting up the External Magnetic Switches

Only possible with the IP54 cover!

	ATTENTION
	Potential damage to equipment!
	Magnetic switches not switching. **T-slot strip is not in the predetermined position.**
	► Follow the instructions for attaching the strip exactly.

Retrofitting:

All magnetic switches are mounted via a switch rail to be affixed onto the IP54 cover.



► Remove the **strip** from the IP54 cover.
► Clean this adhesive area with grease-dissolving agent.
► Pull the protective foil off the self-adhesive band for the **T-Slot rail** and press the rail into the marked groove in a position that is well aligned.

Setting up the magnetic switches

► Insert the previously aligned magnetic switches into the switch rail (size 2.5 Allen key).

	NOTE
	Adjust the carriage to the desired position (end position / homing) and then move the magnetic switch in the T-slot until the switch point is reached.

Adjusting the switch points (setup)

► Move the magnetic switches until the switch point is reached.
► Tightly clamp the magnetic switch with a size 2.5 Allen key.

Connecting the magnetic switches

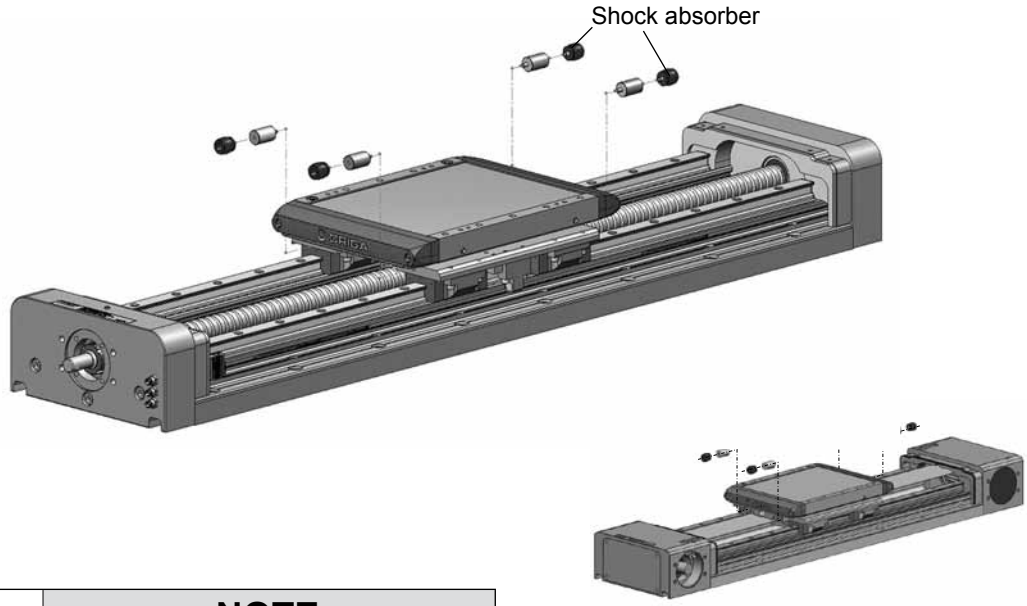
► Connect the respective connection cable with the M8 connector for the magnetic switch.
► Secure the loose cable in the T-slot with the cable holders.
► Insert the connection cable in the controller (refer to section 11.3 for information on ordering connection cables).

7.6 Impact Protection

Impact protection reduces the risk of mechanical damage from an unbraked, unforeseeable impact in the end position. If the safety distance of the end positions is crossed by the carriage and payload, the shock absorbers compensate, in full or in part, for the residual energy. The shock absorbers are only intended to protect a foreseeable impact of the carriage in the mechanical end position and not for continuous operation. The permissible energy absorption is listed in the ODS catalog. If there is an overload, the impact protection must be replaced.

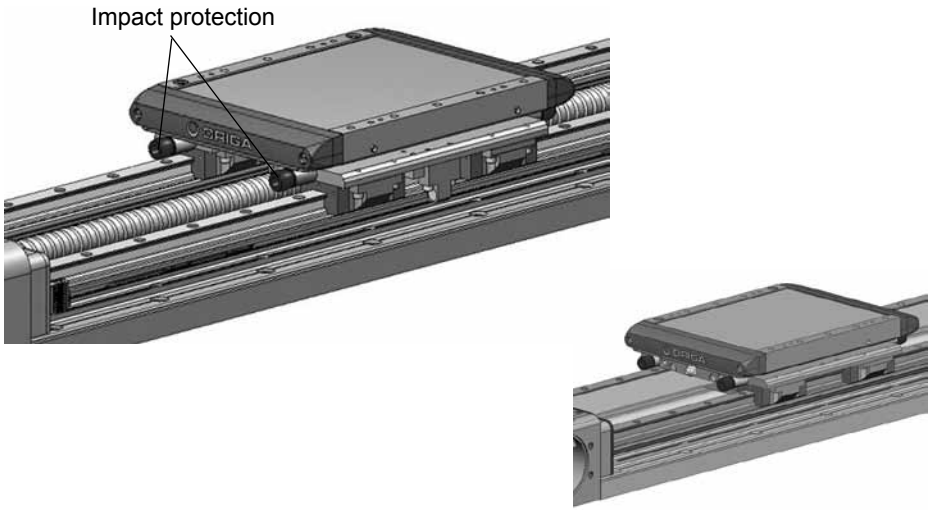
The use of end position switches with the safety distance required for the application, as described in section 7.5.1, is not affected by this.

The IP54 cover must be opened as per section 7.4.1 when retrofitting or replacing the impact protection.



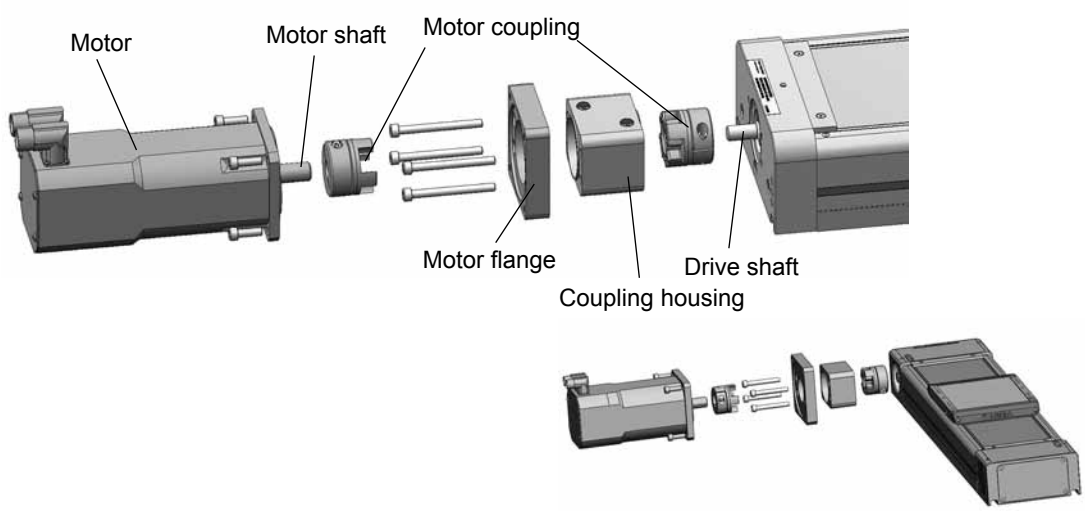
	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

► Screw the impact protection into the front-facing thread using Loctite 243.

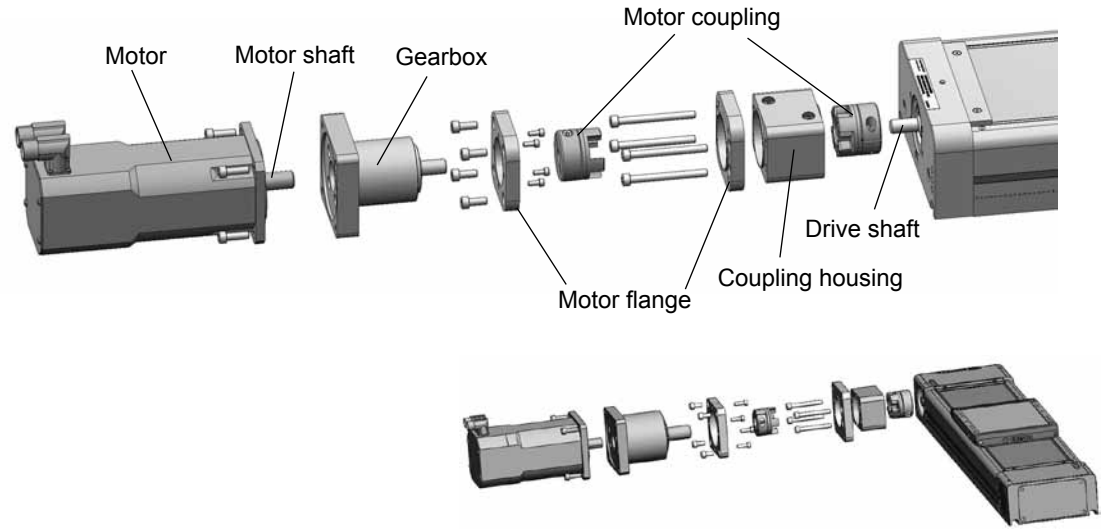


7.7 Motor and Gearbox Mounting

Overview / exploded view of motor installation with a flange plate



Overview / exploded view of gearbox installation with two flange plates



	NOTE
	The motor flange usually consists of one flange plate. If the geometric requirements are unfavorable in the assembly, the motor flange can consist of two flange plates. The motor flange designation always remains the same and does not depend on whether a motor or a gearbox with motor is to be installed on the linear drive.

7.7.1 Using the Correct Drive System

The drive system consists of a motor and/or gearbox and is connected to the linear drive in order to move the carriage linearly along with the mounted payload.

	WARNING
	Hazard due to over-dimensioned drive system
	Severe injuries and damage to property that could even occur after longer periods of operation.
	► Corrected dimensioning of the drive system and matching to linear drive.

To ensure that the linear drive is operated within the permissible load limits, the proper arrangement and selection of the motor system must be carried out by Parker Hannifin or the operator.

EL-sizing, the software-based design program from Parker Hannifin, also provides reliable combinations of linear drive and drive system. The maximum torque on the drive shaft of the linear drive must not be exceeded at any time.

7.7.2 Coupling Housing, Motor Coupling and Flange

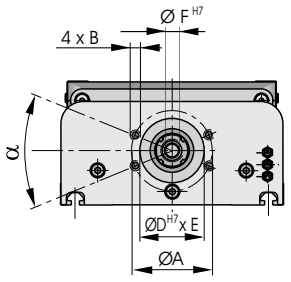
	WARNING
	Shaft breakage due to NON-alignment
	Severe injuries and damage to property caused by unbraked payload.
	► Centering of drive shaft and motor shaft/gearbox shaft via coupling housing and flange.

The drive system, which consists of the motor and/or gearbox, must be properly connected to the drive shaft of the linear drive. To ensure the shafts are aligned with one another, a tailored combination of a coupling housing, motor coupling and motor flange (for externally supplied motors/gearboxes as well) must be fitted.

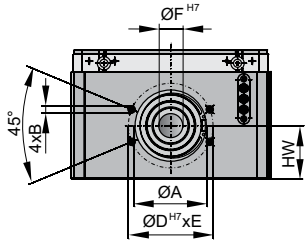
Therefore, it is best if you only use suitable products offered by the manufacturer.

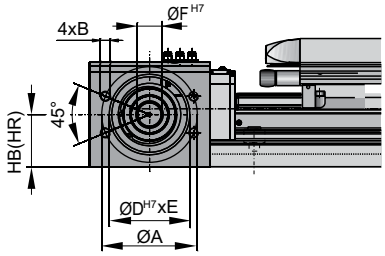
Connection dimensions for linear drive

Connection dimensions for ball screw drive					
[mm]	**ØA**	**B**	**D^{H7} x E**	**$ØF^{H7}$**	**α**
ODS-145SB	51	M6	39 x 4.5	10	30°
ODS-175SB	72	M8	54 x 2.5	12	45°
ODS-225SB	80	M8	64 x 2.5	15	45°

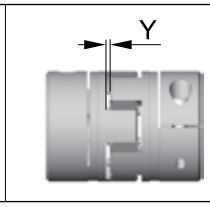


Connection dimensions for belt drive				
[mm]	**ØA**	**B**	**D^{H7} x E**	**$ØF^{H7}$**
ODS-145B	72	M8	54 x 2.5	15
ODS-175B	80	M8	64 x 2.5	18
ODS-225B	95	M10	2,580 x	24





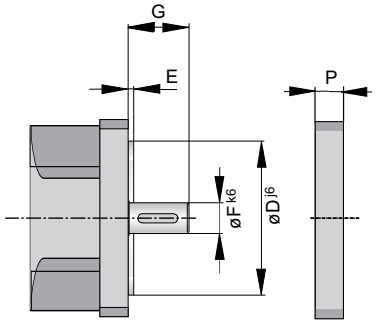
7.7.3 Drive System Installation



NOTE

When installed, both parts of the motor coupling must have a defined gap dimension "**Y**". Also note the clearance dimensions in the following table in relation to the shaft of the motor or gearbox used.

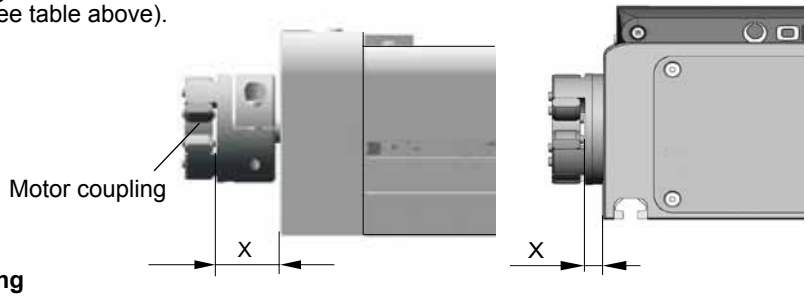
Motor dimensions [mm]										
	D_{min}	E_{max}	F	G_{min}	$G_{max.}$	P	X	$X_{090-270}$	Y	Z
ODS-145SB	35	3	5-16	15	20	15	21		1.5	8
		8		21	25	20				13
		13		26	30	25				18
ODS-175SB, ODS-145B	50	5	8-24	20	30	20	28	4	2.0	5
		15		31	40	30				15
		25		41	50	40				25
ODS-225SB, ODS-175B	60	5	10-28	30	40	20	32	4	2.0	10
		15		41	50	30				20
		25		51	60	40				30
ODS-225B	77	4	14-38	40	50	20	35	10	2.5	15
		14		51	60	30				25
		24		61	70	40				35



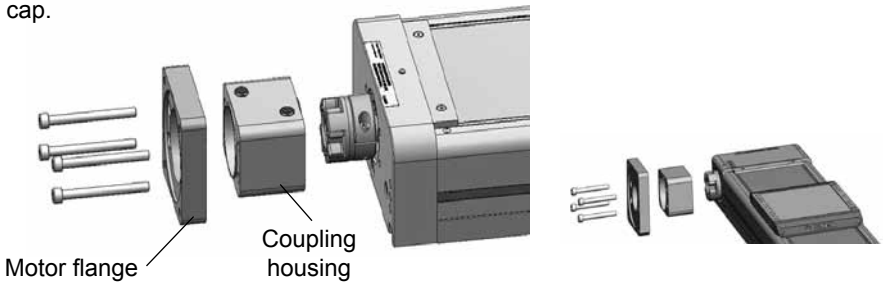
NOTE

► Adhere to the tightening torques for screws according to section 7.1.

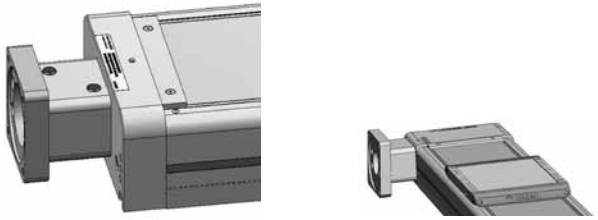
► Mount the **motor coupling** on the drive shaft with clearance "**X**" (see table above).



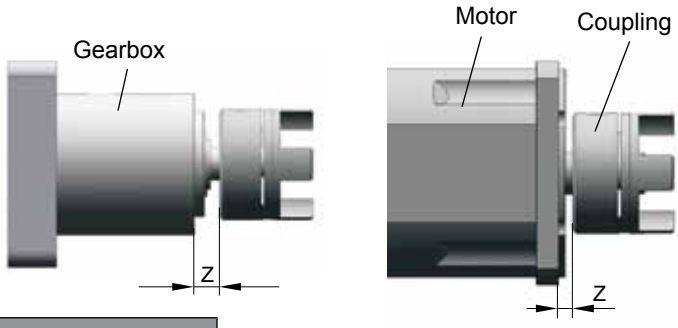
► Insert the **coupling housing** centered into the end cap.



► Center the **motor flange** on the **coupling housing** and tighten the screws.



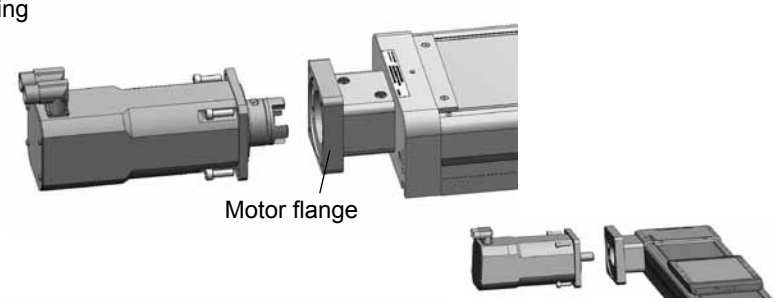
► Mount the motor coupling with clearance “**Z**” to the motor shaft or gearbox shaft. (see table page 26).



	WARNING
	Shaft breakage due to NON-alignment
	Severe injuries and damage to property caused by unbraked payload.
	► Centering of drive shaft and motor shaft/gearbox shaft via coupling housing and flange.

Assembly motor flange with one flange plate

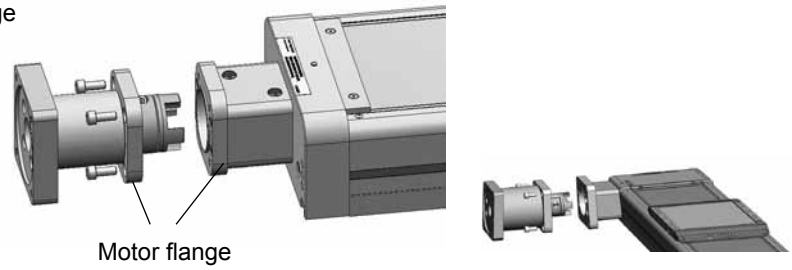
► Insert both parts of the motor coupling together in the coupling housing.



► Center the motor and secure with screws.

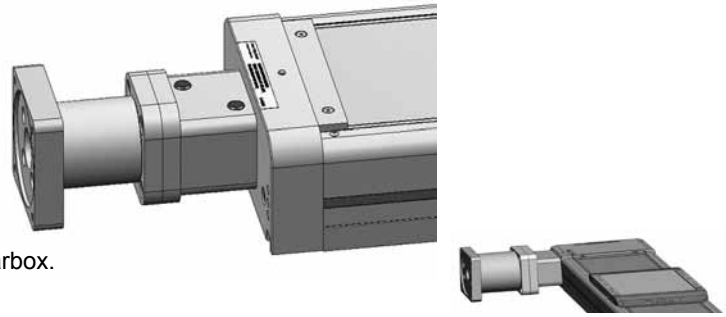
Assembly motor flange with two flange plates

► Center and secure the second flange plate on the motor/gearbox side.



► Insert both parts of the motor coupling together in the coupling housing.

► Center and secure the flange plates to one another.



► Completion: Installation of motor on gearbox.

8 Commissioning

The ODS linear drive can generate quick linear movements with great force. This can result in injuries due to crushing of body parts or damage caused by collision with other system parts if the safety regulations are not observed.

An EMERGENCY STOP device must be available. The run-out path (distance after an EMERGENCY STOP) must be secured.

8.1 First Commissioning

	WARNING
	**Crushing hazard when moving** **Crushing hazard caused by incorrect direction of travel**
	This could result in severe injuries and damage to property.
	► Keep hands out of the operating area of the linear drive. ► Conduct a start-up check in the collision-free stroke area with slow, short movements. ► Check the direction of movement of the motor and carriage with a brief start-up.

Before the first and each additional commissioning, check the following:

- Are the connection conditions correct?
- Can anyone enter the area of action?
- Are there any obstacles or tools in the movement area of the load?

In the first commissioning, the function of the proximity switches/end switches must be checked.

	ATTENTION
	**Overload hazard due to excessive load, excessive mass or excessive speed.**
	Immediate damage to components or fatigue failure can occur.
	► Review and adhere to the catalog specifications on configuration of the ODS. ► The linear drive must first run through the entire movement area **at slow speed** to determine any potential collision areas. Remove immediately!

8.2 Operation

After ODS installation, the entire system may only be operated under operating conditions in compliance with the valid machinery directive.

A risk analysis with the CE conformity granted as a result is a prerequisite for safe operation according to proper use.

Installation of the EMERGENCY STOP device must be checked for proper function.

Observe the operating instructions for the entire system.

9 Maintenance and Repair

9.1 Customer Service

To obtain the address for spare parts and customer service, see the back of these operating instructions.

9.2 General Cleaning

Maintenance and repair work may only be carried out by trained personnel.

	CAUTION
	Crushing hazard due to unexpected movements
	This could result in severe injuries or damage to property.
	► Bring system to a standstill and secure.

Only use lint-free cloths and mild substances that will not harm the material for cleaning.

Potential designs:

IP20 (without cover)

The linear drive must always be kept free of contamination in the area of the guides and the drive unit. Clean regularly according to the environmental conditions.

IP54 (with cover)

Routine cleaning on the outside, particularly the surface between the Outer band and the support on the aluminum profile.

The sealing lips on the red covers of the carriage and on the lateral wipers can become clogged. Clean as required.

9.3 Lubrication Intervals

The ODS drive unit is lubricated when delivered. The lubrication channels within the carriage that run to the runner blocks (and the ball screw nut for the ball screw drive) are filled and sealed off.

The amount of relubrication required depends on the operating mode, the requirements and, lastly, the type of guide.

We recommend a check of the linear drive **after a service time of no more than 3000 km** or an **operating period of 12 months**, depending on the application.

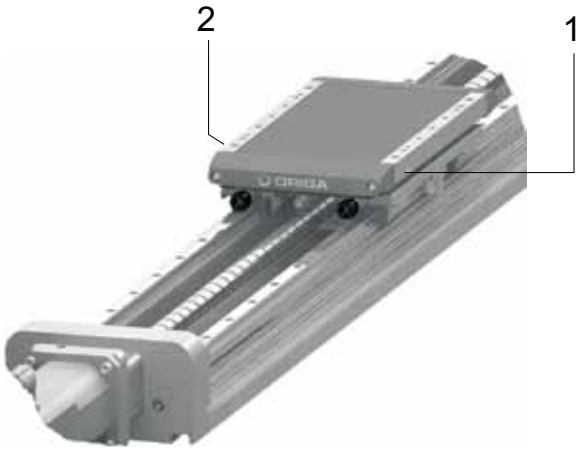
The following must also be considered:

- Load
- Speed
- Temperature
- Ambient conditions.

Use:

Roller bearing grease, specification DIN 51825-KP2K, DIN 51825-K2K

► Lubricate the runner blocks (and the ball screw nuts for linear drives with screw) via the lateral lubricating nipples on the carriage.



Visual inspection for lubrication:

► For the design with **IP54 cover**: Ensure that the Outer band has thin layer of lubrication on both sides.

► Ensure that the guide rail and, if necessary, the ball screw drive are covered with a clean, thin layer of lubrication.

9.4 Checking the Play of the Guide System

Horizontal and vertical play can occur after a certain number of operating hours and service time. Checks for play should only be evaluated and conducted by trained mechanical technicians.

	NOTE
	With the ball bearing guide, no play must be discernible when the carriage is rotated by hand.

9.5 Checking the Bearing Play

If increased noise development occurs when operating the ODS, check the bearings for wear. The shaft bearings have lifelong lubrication.

A check should be done every 3000 km or every 12 months.

9.6 Checking the Play in the Ball Screw Drive and Nut

A check should be done every 3000 km or every 12 months.

► Loosen and remove the motor / gearbox / drive unit.

Check the ease of movement of the screw with nut.

► Move the carriage by hand by rotating the drive shaft over the entire stroke in both directions of rotation.

	NOTE
	Movement should be without jerks, smooth and without any noticeable running noises within the permissible no load torque (refer to catalog).

Check the axial play between the screw and the nut

► Fix the ball screw drive in position radially and axially by blocking.

► Move the carriage by hand axially in both directions.

	NOTE
	When the drive shaft or screw is blocked, it should not be possible to move the carriage by hand.

9.7 Check and adjust belt tensioning

Retensioning of the belt within performance is not necessary. With a nominal loading by 75% of the permitted thrust force a replacement of the belt after 10,000 km is advised.

A check of the right belt tensioning should be done every 3,000 km or every 12 months.

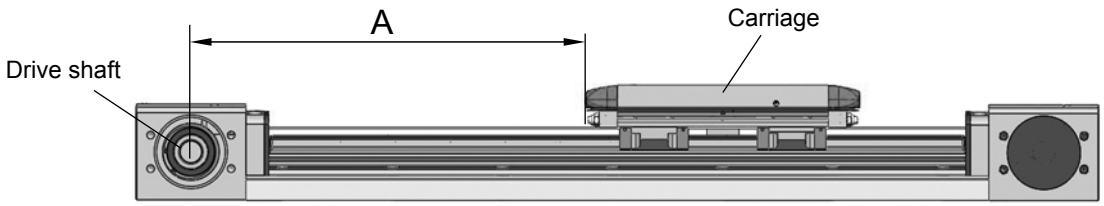
9.7.1 Check belt tensioning

The most certain results measuring belt tensioning can be achieved with a frequency meter. The manufacturer can answer how to buy or rent a frequency meter (Article No. xxx).

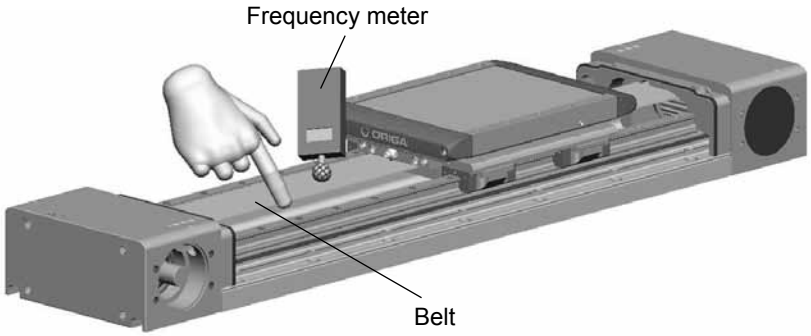
If present the IP54 cover must be removed described in section 7.5.1.

► The payload must be removed from vertical oriented positioners

► Move the carriage unloaded in both directions so the belt will subside.



► Adjust **distance A** from the centre of the **drive shaft** to the **carriage** with 500 mm or 250 mm on short positioners



► Pluck the **belt** in the middle so that it oscillates .

► Measure three times the frequency with the **frequency meter** .

► Check the frequency with values from following table.

Belt frequency f

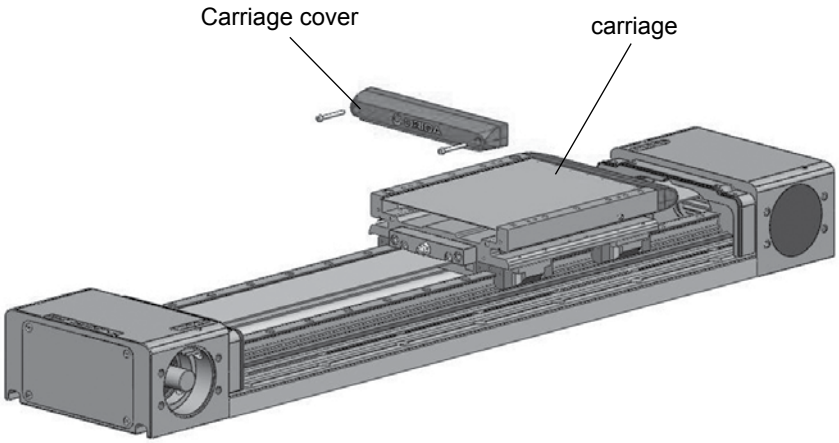
Size		ODS-145		ODS-175		ODS-225	
Motor mounting position		090°/270°	000°/180°	090°/270°	000°/180°	090°/270°	000°/180°
Distance A	250 mm	170 [Hz]	166 [Hz]	171 [Hz]	194 [Hz]	177 [Hz]	216 [Hz]
	500 mm	85 [Hz]	83 [Hz]	86 [Hz]	97 [Hz]	88 [Hz]	108 [Hz]

► Follow the instructions depending of the measured variance:

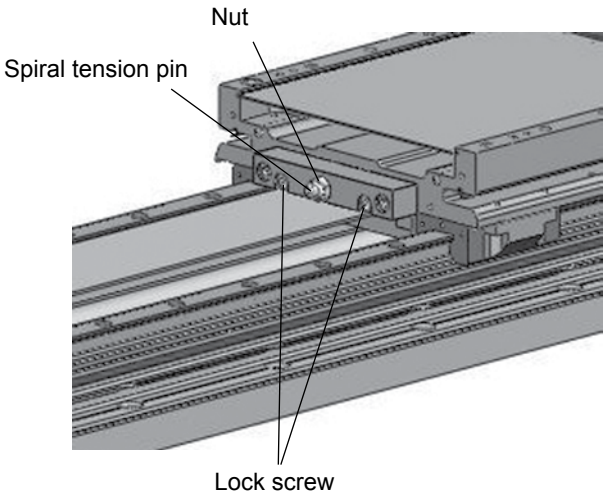
f < 70%	Replacement of the belt
70% < f < 90%	Retension the belt as per section 9.7.2
90% < f < 110%	No action necessary

Note
After retensioning the belt twice a replacement is necessary.

9.7.2 Tensioning of the belt



► Remove the **carriage cover** in order to reach the parts underneath.



► Loosen the **nut** from **spiral tension pin** and **lock screw**
► Check the belt tensioning while screwing the **spiral tension pin** as per section 9.7.1.
► If the belt tensioning is adjusted the **nut** of the **spiral tension pin** can be tightened and the **lock screws** equally fixed by 10% of the shown value as per section 7.1

9.8 Checking the Cover Function

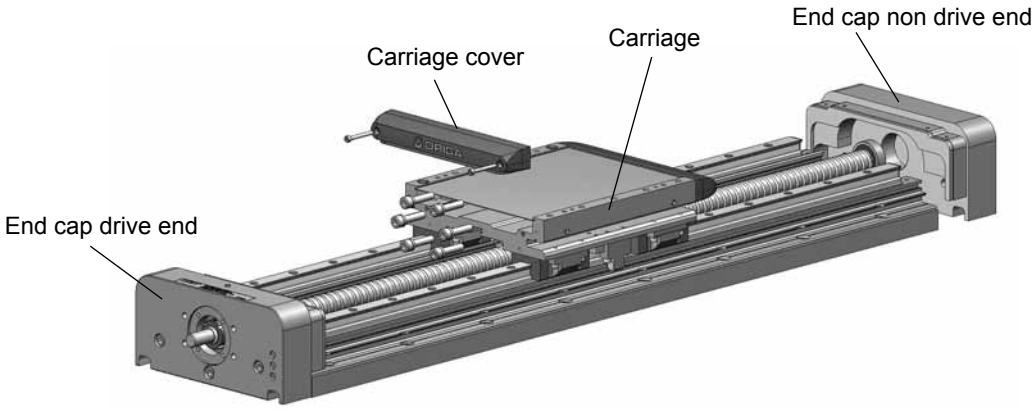
With the IP54 cover, the proper wiper function only occurs when a slight tread can be detected on the Outer band.

Scores or streaks of residue indicate defective or dirty wipers around the carriage. Replacement is required.

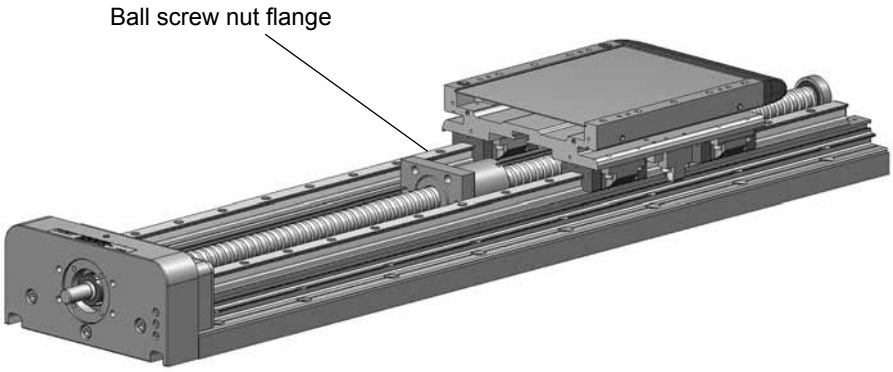
9.9 Replacing the Carriage

9.9.1 Disassembly of Carriage Ball Screw Drive

If present, the IP54 cover must be removed (refer to section 7.5.1).

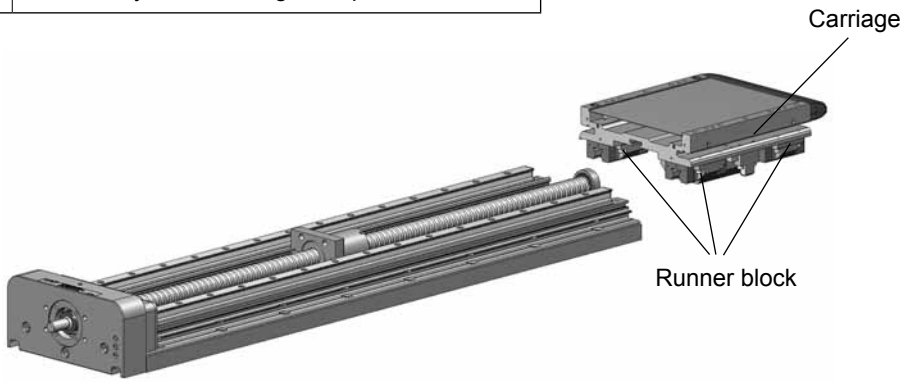


► Loosen the **carriage cover** in the direction of the **end cap drive end** side in order to reach the screws underneath.



► Loosen the screws on the **flange for the ball screw nut**.
► Place something such as wood underneath the screw.
► Loosen the screws from the **end cap non drive end** side and remove the cover.

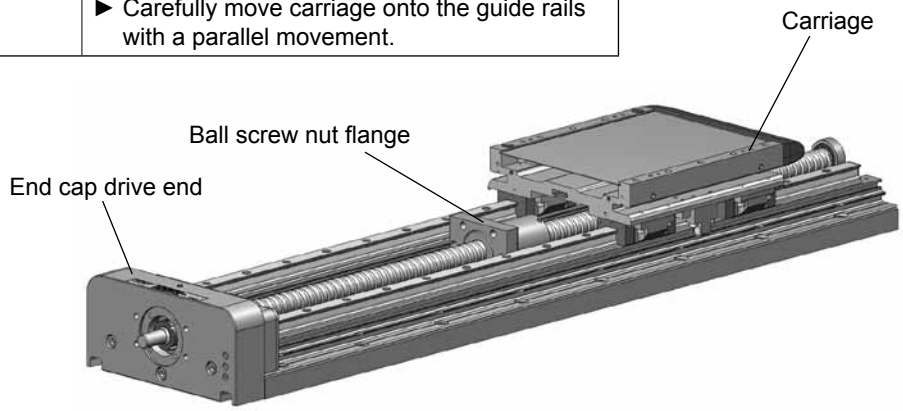
	ATTENTION
	Risk of damage to runner block!
	Tilting will damage the ball runner block.
	► Carefully move carriage in a parallel direction.



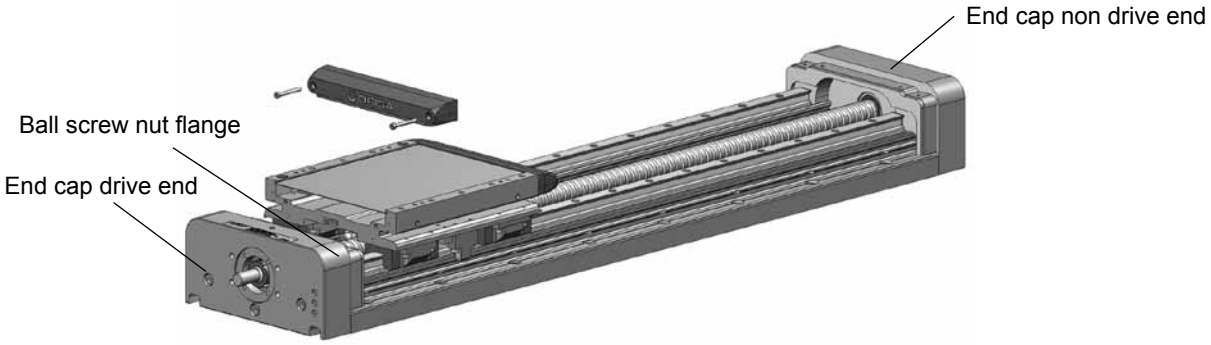
► Carefully move the **carriage** from the guide, without tilting, and insert the transport safety device such that no balls fall out of the **runner block**.

9.9.2 Installing the carriage ball screw drive

	ATTENTION
	Risk of damage to runner blocks
	Tilting will damage the recirculating ball runner block.
	► Carefully move carriage onto the guide rails with a parallel movement.

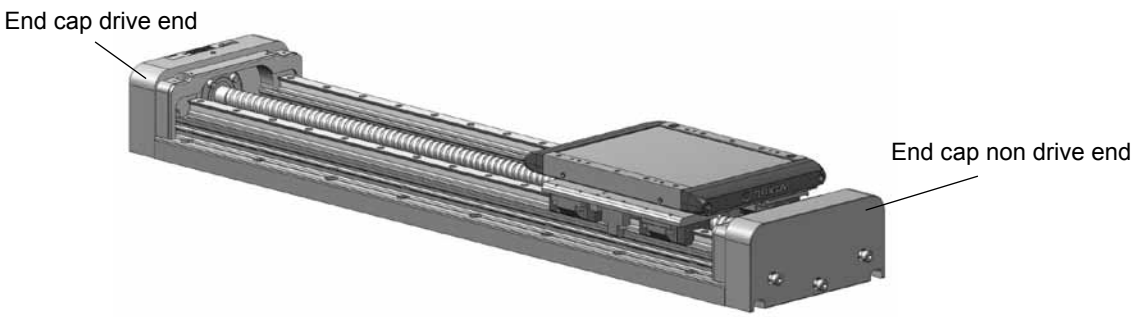


► Very carefully place the **carriage** onto the guide rails without tilting.
► When placing the **carriage** onto the guide rails, remove the transport safety device.



	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

► Place the **end cap non drive end** in position and screw in the screws by hand (do not tighten) so that the movable bearing is supported.
► Move the **carriage** and the ball screw nut close enough to the **end cap drive end** such that you are still able to work with the Allen key (the ball screw nut aligns itself radially).
► Fasten the **ball screw nut flange** to the carriage.

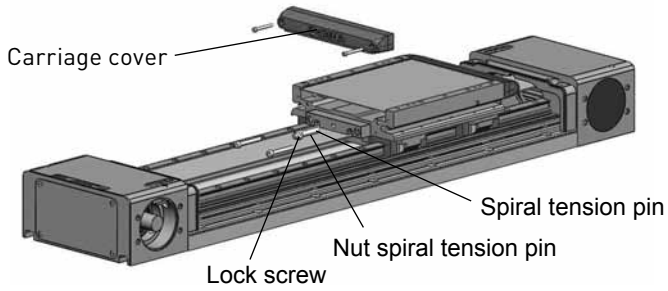


► Push the **carriage** onto the side of the **end cap non drive end** (the cover aligns itself in this process).
► Tightly screw in the **end cap non drive end**.

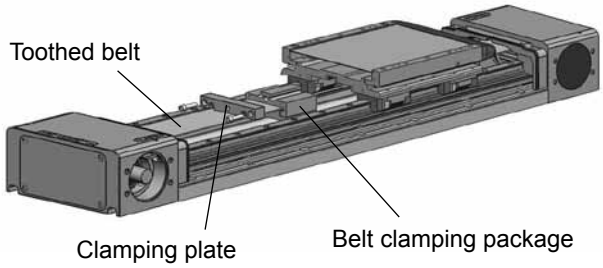
9.9.3 Disassembly of carriage belt drive

If present, the IP54 cover must be removed as per section 7.5.1.

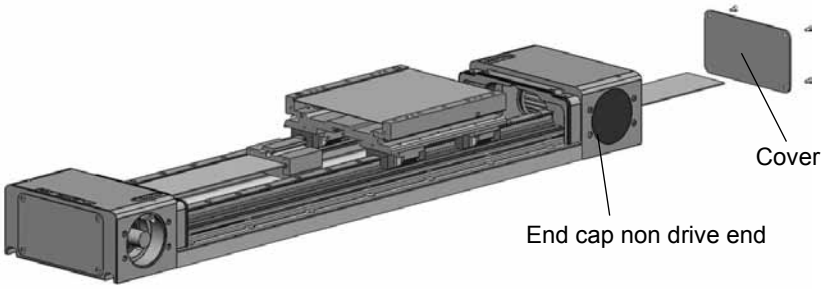
The belt tensioning block needs to be removed on both sides. Following the procedure is described for one side.



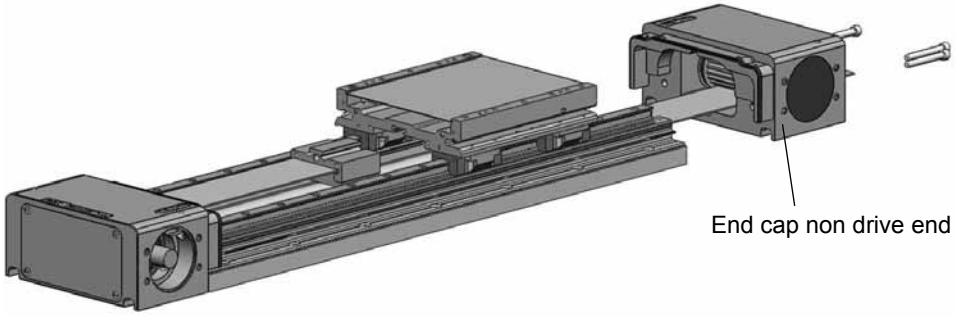
- ► Loosen the **carriage cover** in order to reach the parts underneath.
- ► Remove the **lock screw**.
- ► Loose the nut of the spiral tension pin a bit and release the pin.



- ► Loosen the screw of the **clamping plate** and remove it.
- ► Pull out the **belt clamping package**.
- ► Repeat this with the other belt tensioning block.
- ► This time remove the **belt** of the **belt clamping package**.

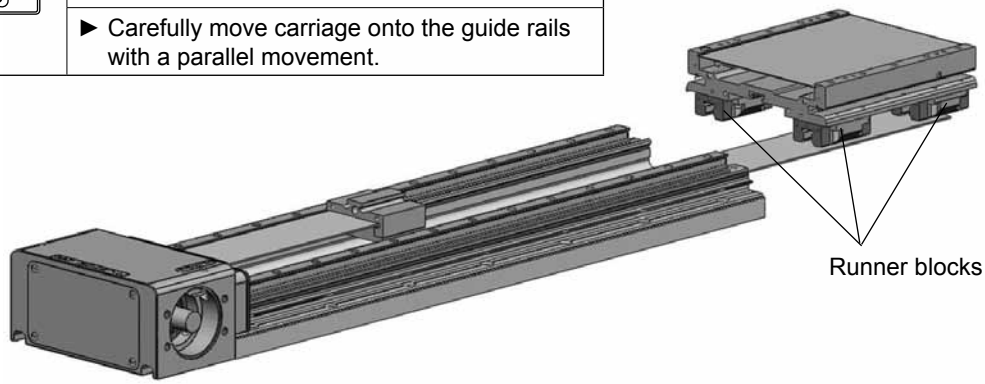


- ► Remove **cover** from the end cap non drive end side.
- ► Lay out the **belt**.



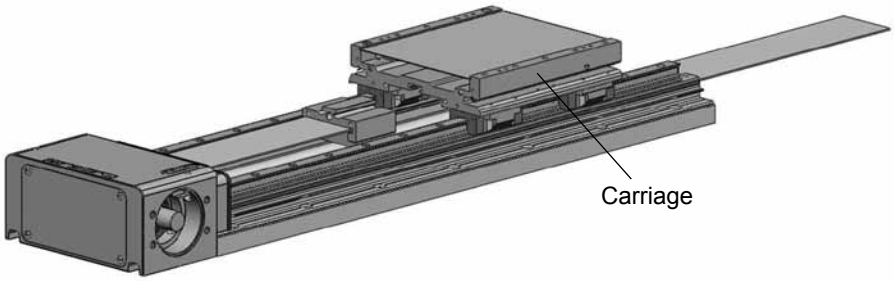
- ► Loosen the screws from end cap non drive end side and remove it.

	ATTENTION
	Risk of damage to runner blocks
	Tilting will damage the recirculating ball runner block.
	► Carefully move carriage onto the guide rails with a parallel movement.

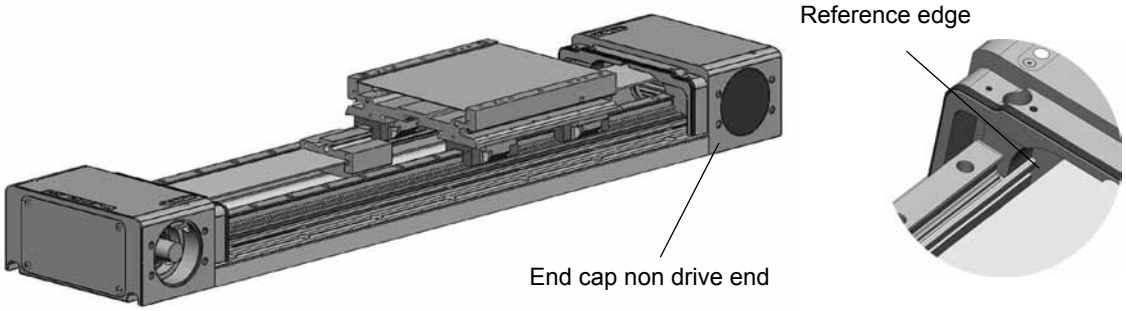


► Carefully move the **carriage** from the guide, without tilting and insert the transport safety device such that no balls fall out of the **runner block**.

9.9.4 Installing the carriage belt drive



► Very carefully place the **carriage** onto the guide rails without tilting.
► When placing the **carriage** onto the guide rails, remove the transport safety device.



	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

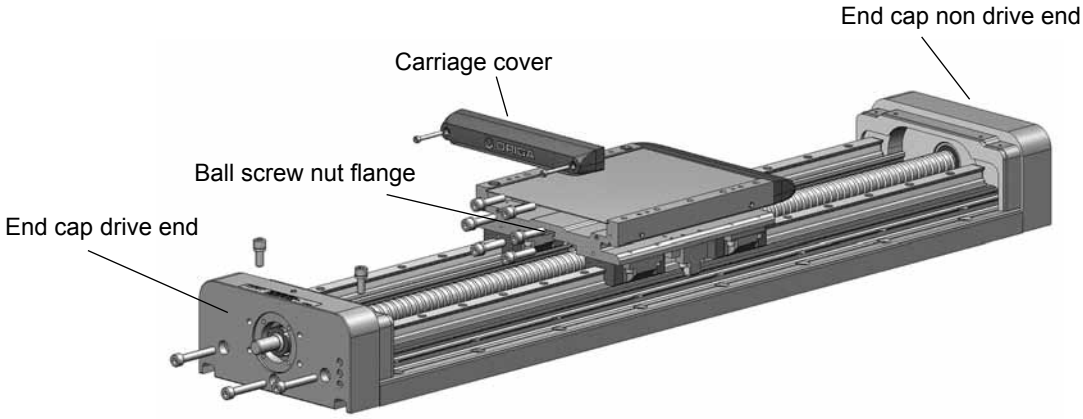
► Very carefully place the carriage onto the guide rails without tilting.
► When placing the carriage onto the guide rails, remove the transport safety device.
► Place the end cap non drive end side aligned to the stop edge and fasten it with the screws.
► Carry back the belt on the upper side of the non drive end pulley.
► Fasten the cover to the end cap non drive end.

Subsequential steps can be done in opposite sequence then disassembly.

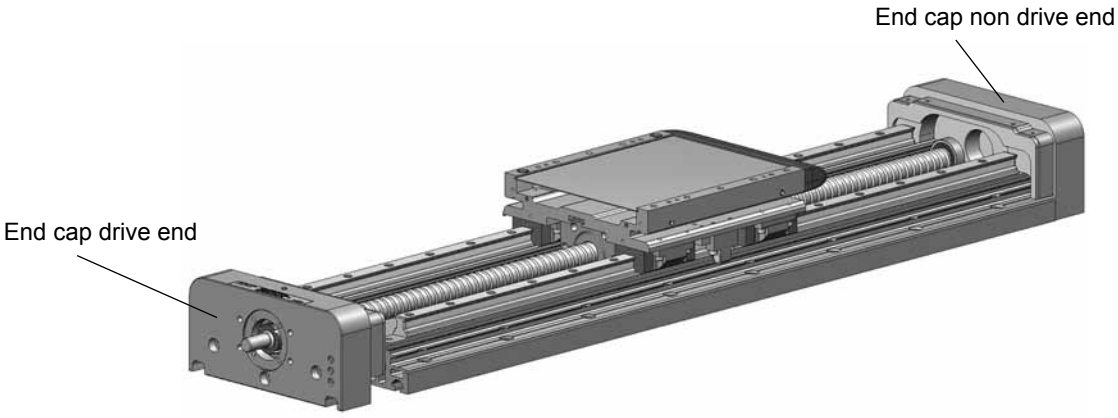
Finally tension the belt as per section 9.7.2.

9.10 Replacing the Drive Type

9.10.1 Disassembly of drive type ball screw

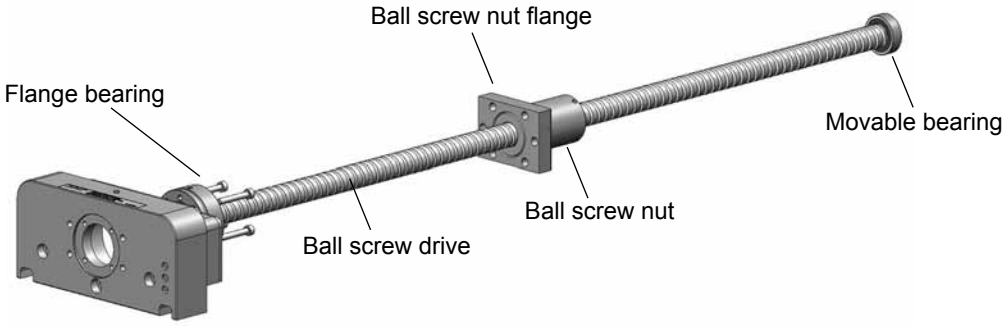


- ► Remove the **carriage cover** in the direction of the **end cap drive end** in order to reach the screws underneath.
- ► Remove the screws on the **flange for the ball screw nut**.
- ► Remove the screws in the **end cap drive end**.
- ► Loosen the screws in the **end cap non drive end** (do not remove).



- ► Pull out the **end cap drive end** along with the entire drive type.

The carriage remains on the guide. The **end cap non drive end** houses a movable bearing.



- ► Loosen the **flange bearing** of the **ball screw** drive in the **end cap drive end**.

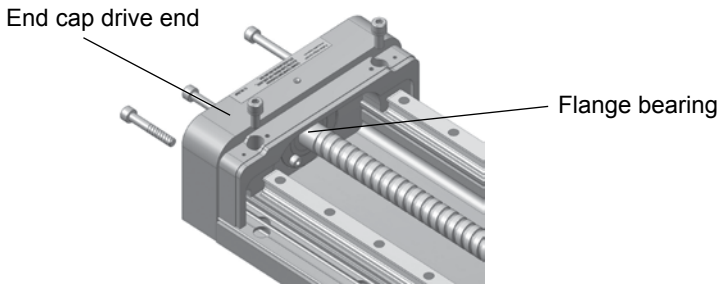
9.10.2 Installing the Drive Type Ball Screw

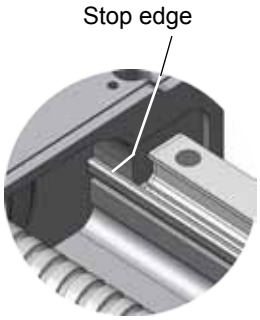
The installation of the drive type starts the same as the removal.

	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

► Screw the flange bearing with the ball screw drive in the **end cap drive end**.

► Move this unit into the carriage and the end cap drive end onto the profile version.

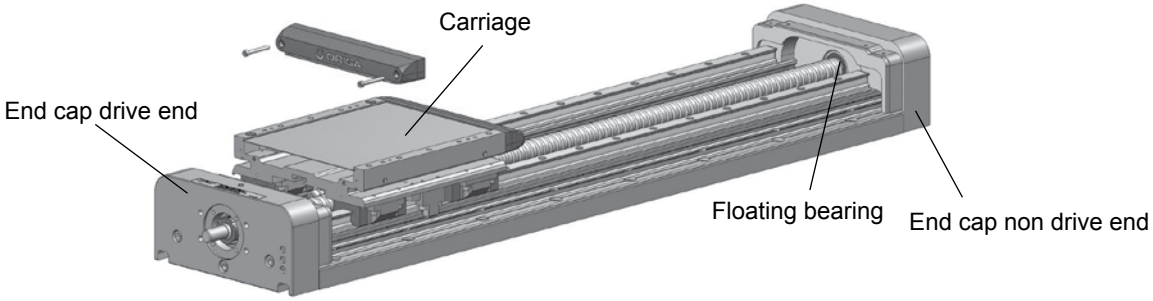




► Insert the **movable bearing** from the ball screw drive into the **end cap non drive end**.

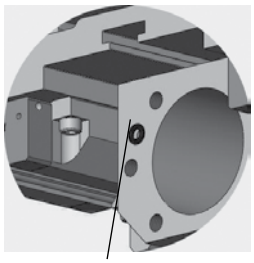
► Align the **end cap drive end** at the **stop edge**.

► First tightly fasten the cover with the front side screws and then the vertical screws.



► Push the **carriage** onto the drive side far enough that you still have enough space to work with the Allen key.

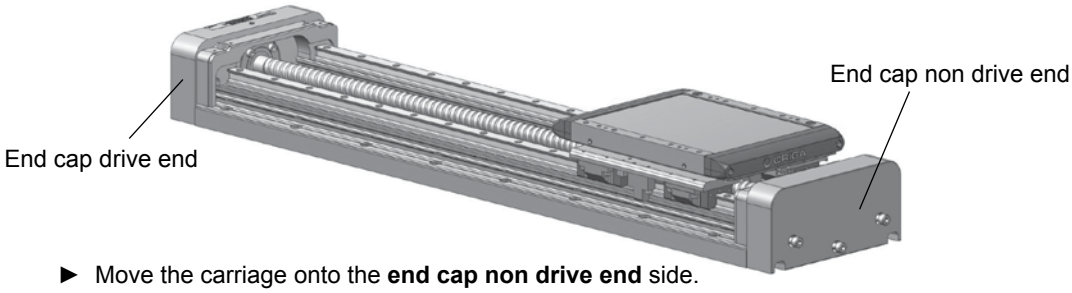
	ATTENTION
	It is not possible to lubricate the ball screw nut!
	O-ring for sealing off the lubrication channel is missing or seated incorrectly.
	► Check that the O-ring is seated correctly while pushing in the ball screw nut flange underneath the carriage.



The ball screw nut aligns itself radially with respect to the flange bearing in the end cap drive end.

► Fasten the **ball screw nut flange** to the **carriage**.

The ball screw nut is aligned in the carriage.



► Move the carriage onto the **end cap non drive end** side.

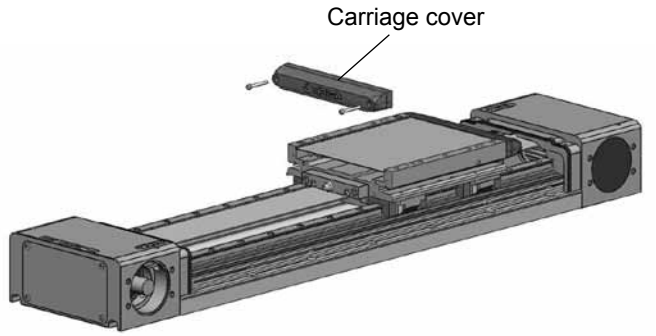
The end cap non drive end aligns itself.

► Tightly fasten the **end cap non drive end**.

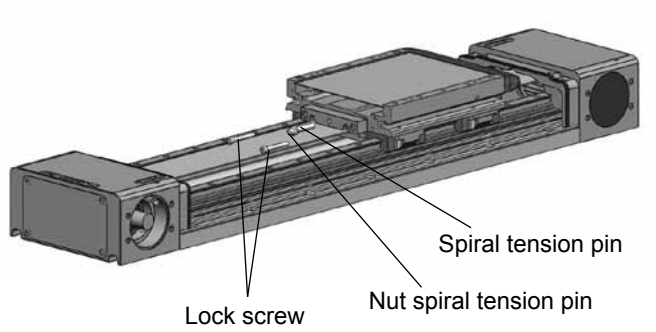
9.10.3 Disassembly of Drive Type Belt

If present, the IP54 cover must be removed as per section 7.5.1.

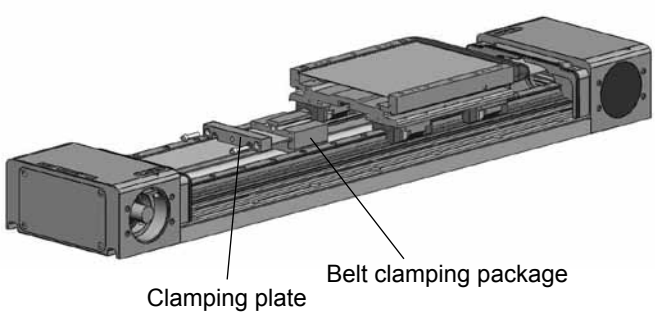
The belt tensioning block needs to be removed on both sides. Following the procedure is described for one side.



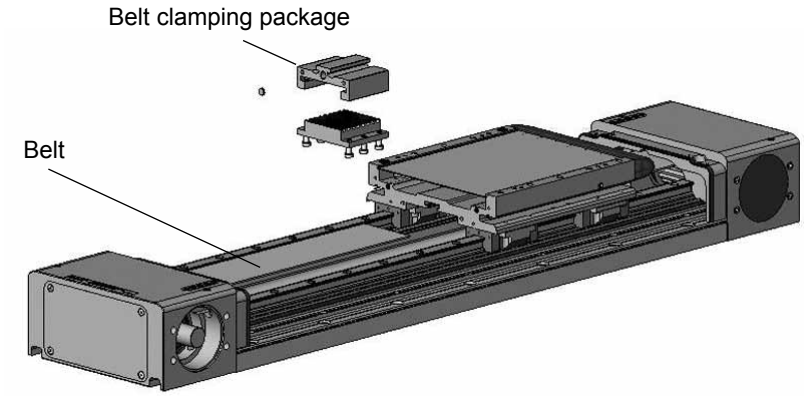
► Loosen the **carriage cover** in order to reach the parts underneath.



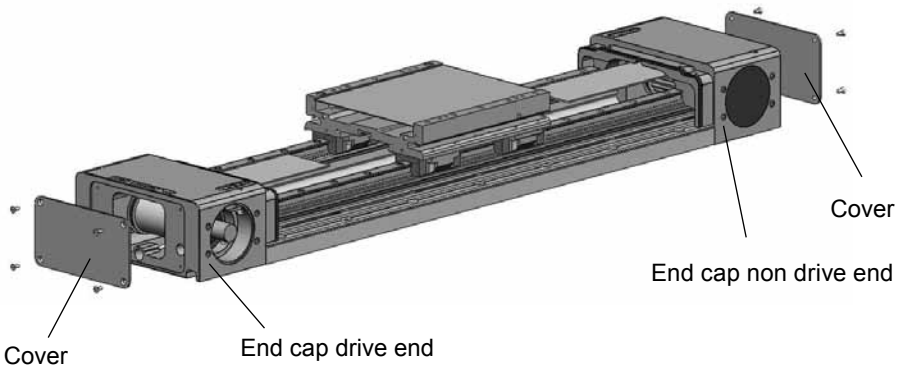
► Remove the **lock screw**.
► Loose the **nut** of the **spiral tension pin** a bit and release the **pin**.



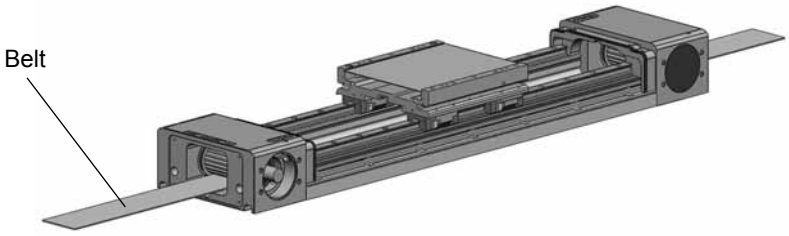
► Loosen the screw of the **clamping plate** and remove it.
► Pull out the **belt clamping package**.



► Loosen the screws of the **belt clamping package** and remove the **belt**.
► Repeat this with the other belt tensioning block.



► Remove **cover** from the **end cap drive end** and **end cap non drive end side**.



► Lay out the **belt** and take it out.

9.10.4 Installing Drive Type belt

Installation can be done in opposite sequence then Disassembly.
Tension the belt as per section 9.7.2.

	NOTE
	► Adhere to the tightening torques for screws according to section 7.1.

10 Decommissioning

10.1 Disassembly of a Machine or System

Disassembly and the final shutdown of the ODS must be carried out by trained mechanical or electrical specialists.

No stored energy (springs, fluid, pressure).

	**CAUTION**
	**Crushing hazard due to unexpected movements**
	This could result in severe injuries or damage to property.
	► Bring system to a standstill and secure.

- Pay attention to the weight of any loads being lifted during vertical installation.
- Screws and toothed belts are not self-locking, which means that the Drive Type, carriage and load could crash down.

10.2 Disposal

The ODS does not contain any hazardous substances that require special attention during disposal. Lubricant residue is possible and should be expected.

In addition to the main aluminum component, there are also installed steel parts and plastics such as PU and NBR. Non-ferrous metal is present in small quantities only.

Electrical components (if used during operation) such as the motor and electronic switches must be disposed of according to the local regulations in force.

11 Retrofit Kits

11.1 IP54 Cover

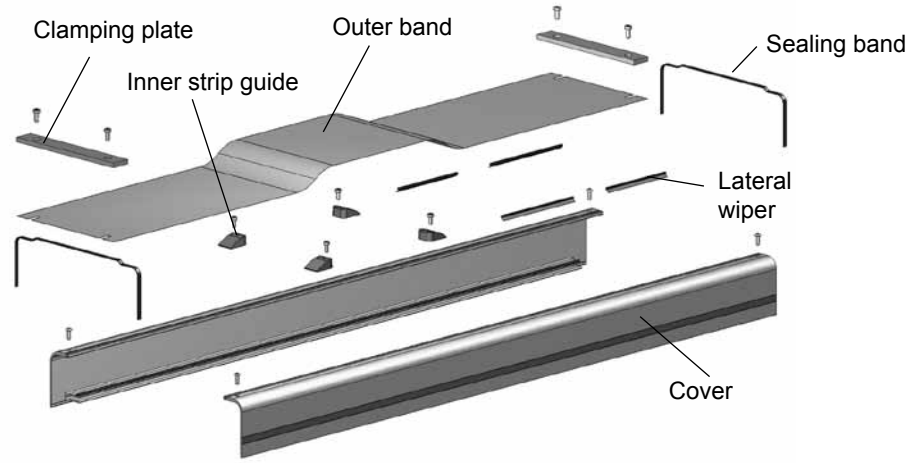
If the cover is to be completely retrofitted, the product key must be indicated.

Example: ODS**S30**B05P0-**01200**-1010000

Example: ODS**B30**B00D0-**01200**-1010000

To ensure that the cover and the Outer band are delivered in the correct design and length, the following must be made known at the very least:

- Drive type (**S** = ball screw drive / **B** = belt)
- Size (**3** = size 145)
- Profile version / fastening system (**0** = basic / T-slot) and
- Order stroke (**01200** = 1200 mm)



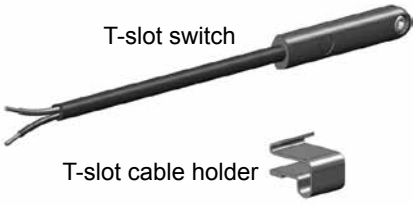
Order numbers for the IP54 cover	
Type of drive	Order number
ODS**S30**..., ODS**S31**..., ODS**S32**... ODS**B30**..., ODS**B31**..., ODS**B32**...	56068-.....
ODS**S35**..., ODS**S36**..., ODS**S37**... ODS**B35**..., ODS**B36**..., ODS**B37**...	56069-.....
ODS**S50**..., ODS**S51**..., ODS**S52**... ODS**B50**..., ODS**B51**..., ODS**B52**...	56070-.....
ODS**S55**..., ODS**S5**6..., ODS**S57**... ODS**B55**..., ODS**B56**..., ODS**B57**...	56071-.....
ODS**S70**..., ODS**S71**..., ODS**S72**... ODS**B70**..., ODS**B71**..., ODS**B72**...	56072-.....
ODS**S75**..., ODS**S76**..., ODS**S77**... ODS**B75**..., ODS**B76**..., ODS**B77**...	56073-.....

11.2 Internal Position Detection

For connecting up to a maximum of three magnetic switches, you will require the corresponding number of M8 mounted connectors and a PCB. Use, installation and connection are described in section 7.5 cont.

M8 mounted connector

PCB connector



Order numbers for parts for internal position detection		
Designation	Comments	Order number
M8 mounted connector		54519
PCB connector		55413
RST-K 2NC 5m	Reed switch, 5-m cable, normally closed*)	KL3305
RST-K 2NO 5m	Reed switch, 5-m cable, normally open*)	KL3300
EST-K 3NO 5m	Electronic switch, PNP, 5-m cable*)	KL3309
KS050-EK	Connection cable, 3-pin, M8 socket, 5 m, suitable for the energy chain*)	KL3186
KS100-EK	Connection cable, 3-pin, M8 socket, 10 m, suitable for the energy chain*)	KL3217
KS150-EK	Connection cable, 3-pin, M8 socket, 15 m, suitable for the energy chain*)	KL3216
T-slot cable holder	packing unit 5	56350

*) Open end

11.3 External Position Detection

If the external position detection is to be retrofitted, the product key must be indicated.

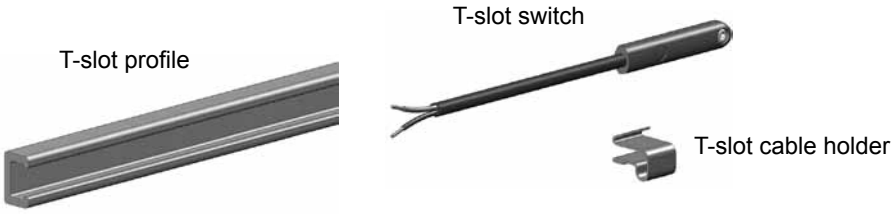
Example: ODSS**3**0B05P0-**01200**-**1**010000

Example: ODSB**3**0B00D0-**01200**-**1**010000

To set up magnetic switches, the ODS linear drive requires the IP54 cover, to which a T-slot profile is attached and the magnetic switches can be fastened.

To ensure that the T-slot profile is delivered in the correct design and length, the following must be made known at the very least:

- Size (**3** = size 145)
- Order stroke (**01200** = 1200 mm) and
- Protection class (**1** = IP54 with cover)



Order numbers for parts for external position detection		
Designation	Comments	Order number
RST-S 2NC 0.24m M8	Reed switch with M8 connector, 0.24 m, normally closed	KL3472
RST-S 2NO 0.24m M8	Reed switch with M8 connector, 0.24 m, normally open	KL3302
EST-S 3NO 0.24m M8	Electronic PNP switch with M8 connector, 0.24 m	KL3312
KS050-EK	Connection cable, 3-pin, M8 socket, 5 m, suitable for the energy chain*)	KL3186
KS100-EK	Connection cable, 3-pin, M8 socket, 5 m, suitable for the energy chain*)	KL3217
KS150-EK	Connection cable, 3-pin, M8 socket, 5 m, suitable for the energy chain*)	KL3216
T-slot cable holder	5 pcs per unit	56350
T-slot profile 145/175	For size ODS-145 and ODS-175	56083-.....
T-slot profile 225	For size ODS-225	56084-.....

*) Open end

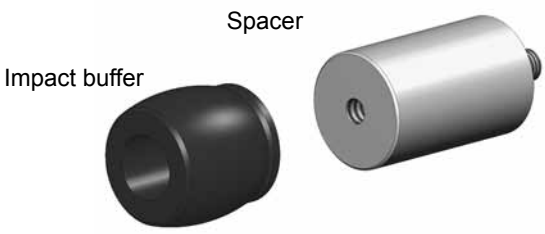
11.4 Impact Protection

In order to deliver suitable impact protection, the size of the linear drive from the product key must be known at the very least.

Example: ODSS**3**0B05P0-01200-1010000

Example: ODSB**3**0B00D0-01200-1010000

To ensure that the impact protection is delivered in the correct design, the following must be made known at the very least:



- Size (**3** = size 145)

Order numbers for impact protection	
Designation	Order number
ODSS**3**..., ODSB**3**...	56085
ODSS5..., ODSS**7**..., ODSB**5**..., ODSB**7**...	56086

12 Spare Part / Wearing Part Kits

12.1 Outer Band Package

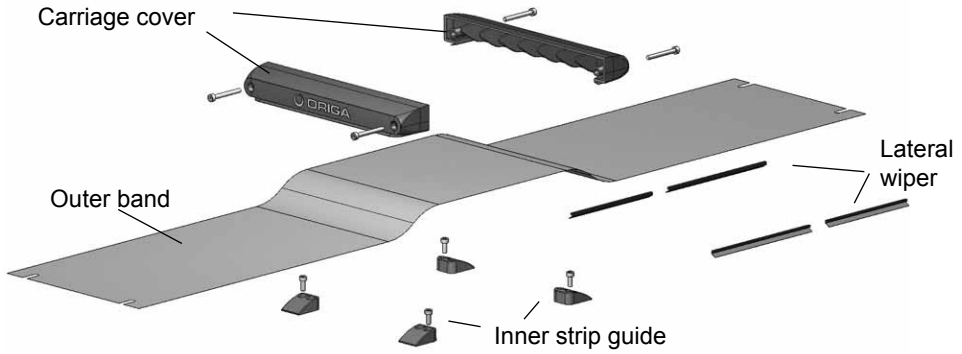
If the outer band package needs to be replaced, the product key must be indicated.

Example: ODSS**3**0B05P0-**01200**-1010000

Example: ODSB**3**0B00D0-**01200**-1010000

To ensure that the outer cover is delivered in the correct design and length, the following must be made known at the very least:

- Size (**3** = size 145) and
- Order stroke (**01200** = 1200 mm)



Order numbers for the outer band package	
Type of drive	Order number
ODSS**3**..., ODSB**3**...	56074-.....
ODSS**5**..., ODSB**5**...	56075-.....
ODSS**7**..., ODSB**7**...	56076-.....

12.2 Outer Band

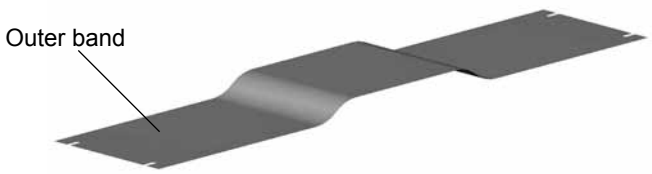
If the outer band needs to be replaced, the product key must be indicated.

Example: ODSS**3**0B05P0-**01200**-1010000

Example: ODSB**3**0B00D0-**01200**-1010000

To ensure that the outer band is delivered in the correct design and length, the following must be made known at the very least:

- Size (**3** = size 145) and
- Order stroke (**01200** = 1200 mm)



Order numbers for outer band	
Type of drive	Order number
ODSS**3**..., ODSB**3**...	50008-.....
ODSS**5**..., ODSB**5**...	50306-.....
ODSS**7**..., ODSB**7**...	50610-.....

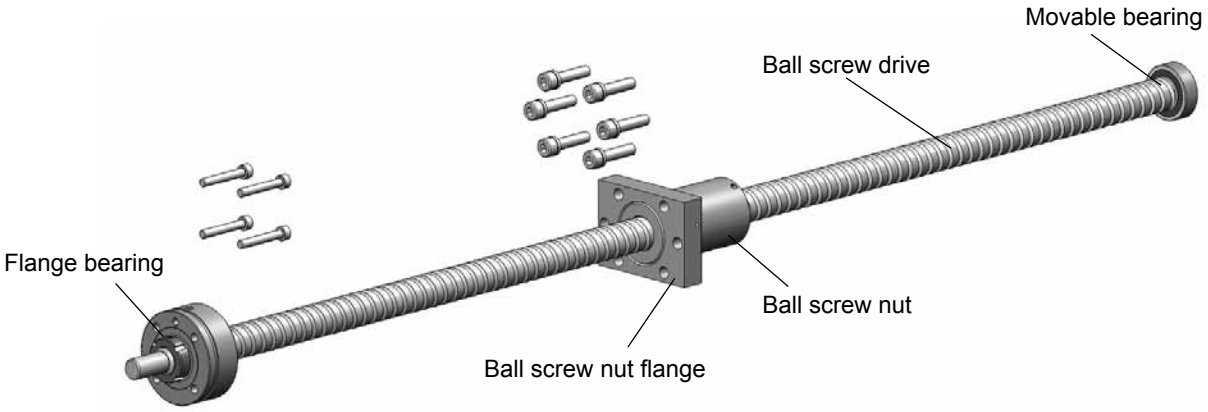
12.3 Drive Type Ball Screw

If the drive type is to be replaced, the product key must be indicated.

Example: ODS**S3**0B**05P**0-**01200**-1010000

To ensure that a suitable drive type can be delivered, the following must be known at the very least:

- Drive type (**S** = ball screw drive)
- Size (**3** = size 145)
- Pitch (**05** = 5 mm)
- Drive shaft (**P** = smooth shaft) and
- Order stroke (**01200** = 1200 mm)



Order numbers for the ball screw		
Type of drive	Comments	Order number
ODS**S3**xx**05P**...	KGS 16x05-P	56050-.....
ODS**S3**xx**10P**...	KGS 16x10-P	56051-.....
ODS**S3**xx**16P**...	KGS 16x16-P	56052-.....
ODS**S3**xx**05K**	KGS 16x05-K	56053-.....
ODS**S3**xx**10K**...	KGS 16x10-K	56054-.....
ODS**S3**xx**16K**...	KGS 16x16-K	56055-.....
ODS**S5**xx**05P**...	KGS 20x05-P	56056-.....
ODS**S5**xx**10P**...	KGS 20x10-P	56057-.....
ODS**S5**xx**20P**...	KGS 20x20-P	56058-.....
ODS**S5**xx**05K**...	KGS 20x05-K	56059-.....
ODS**S5**xx**10K**...	KGS 20x10-K	56060-.....
ODS**S5**xx**20K**...	KGS 20x20-K	56061-.....
ODS**S7**xx**05P**...	KGS 25x05-P	56062-.....
ODS**S7**xx**10P**...	KGS 25x10-P	56063-.....
ODS**S7**xx**25P**...	KGS 25x25-P	56064-.....
ODS**S7**xx**05K**...	KGS 25x05-K	56065-.....
ODS**S7**xx**10K**...	KGS 25x10-K	56066-.....
ODS**S7**xx**25K**...	KGS 25x25-K	56067-.....

12.4 Drive Type Belt

If the belt is to be replaced, the product key must be indicated.

Example.: ODS**B3**0B**0**0D0-**01200**-1010000

To ensure that a suitable belt can be delivered, the following must be known at the very least:

- Drive type (**B** = belt)
- Size (**3** = size 145)
- Motor mounting position (**0** = 90° front) and
- Order stroke (**01200** = 1200 mm)

Order numbers belt		
Type of drive	Comments	Order number
ODS**B3**xx**0**..., ODS**B3**xx**1**...	Motor mounting position 090° / 270°, 40RPP5	51515-.....
ODS**B5**xx**0**..., ODS**B5**xx**1**	Motor mounting position 090° / 270°, 50RPP5	51816-.....
ODS**B7**xx**0**..., ODS**B7**xx**1**	Motor mounting position 090° / 270°, 75RPP8	52116-.....
ODS**B3**xx**2**..., ODS**B3**xx**3**	Motor mounting position 000° / 180°, 25RPP5	51518-.....
ODS**B5**xx**2**..., ODS**B5**xx**3**	Motor mounting position 000° / 180°, 40RPP5	51818-.....
ODS**B7**xx**2**..., ODS**B7**xx**3**	Motor mounting position 000° / 180°, 50RPP8	52118-.....

12.5 Carriage Ball Screw Drive

If one or more carriages are to be replaced, the product key must be indicated.

Example: ODS**S3**0**B**05P**0**-01200-1010000

To ensure that a suitable carriage can be delivered, the following must be known at the very least:

- Drive type (**S** = Ball screw drive)
- Size (**3** = size 145)
- Guide system (**B** = ball bearing guide) and
- Carriage (**0** = standard)

Runner block

Ball screw nut mount *)

Magnetic package *)

Order Numbers Carriage Ball Screw Drive		
Type of drive	Comments	Order number
ODS**S3**x**B**xxx**0**...	Carriage standard	56077
ODS**S5**x**B**xxx**0**...	Carriage standard	56078
ODS**S7**x**B**xxx**0**...	Carriage standard	56079
ODS**S3**x**B**xxx**1**...	Carriage tandem	56080
ODS**S5**x**B**xxx**1**...	Carriage tandem	56081
ODS**S7**x**B**xxx**1**...	Carriage tandem	56082

* Not with version carriage tandem

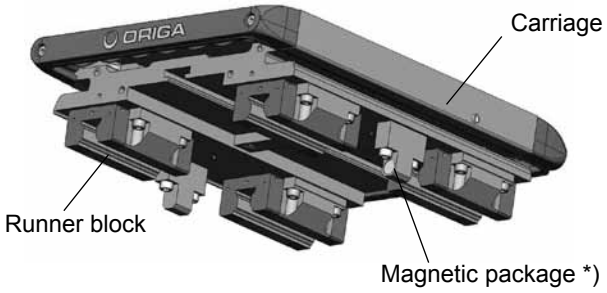
12.6 Carriage Belt Drive

If the carriage belt is to be replaced, the product key must be indicated.

Bsp.: ODS**B3**0**B**00D**0**-01200-1010000

To ensure that a suitable carriage can be delivered, the following must be known at the very least:

- Drive type (**B** = belt)
- Size (**3** = size 145)
- Guide system (**B** = ball bearing guide) and
- Carriage (**0** = standard)



Order numbers carriage belt drive		
Type of drive	Comments	Order number
ODS**B3**x**B**xxx**0**..., ODS**B3**x**B**xxx**2**...	Carriage standard / Bi-parting	56168
ODS**B5**x**B**xxx**0**..., ODS**B5**x**B**xxx**2**...	Carriage standard / Bi-parting	56081
ODS**B7**x**B**xxx**0**..., ODS**B7**x**B**xxx**2**...	Carriage standard / Bi-parting	56082
ODS**B3**x**B**xxx**1**...	Carriage tandem	56080
ODS**B5**x**B**xxx**1**...	Carriage tandem	56081
ODS**B7**x**B**xxx**1**...	Carriage tandem	56082

* Not with version carriage tandem

12.7 Drive Shafts Belt

If one of the drive shafts have to be replaced, the product key must be indicated.

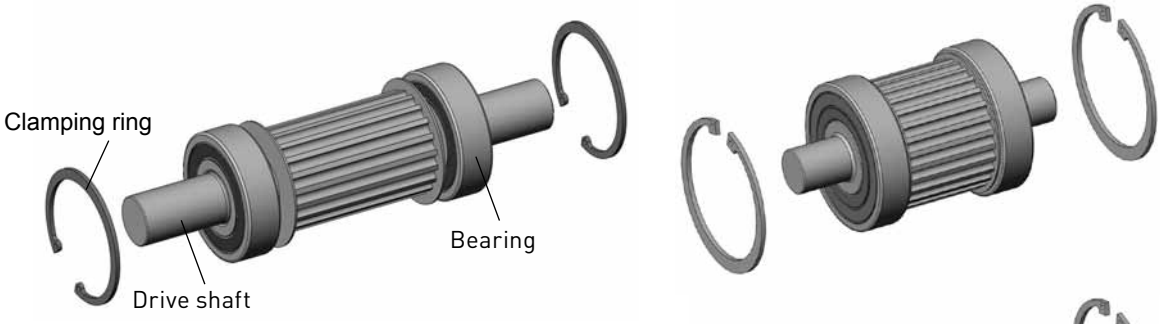
Example: ODS**B3**0B**0**0**D**0-01200-1010000

To ensure that a suitable drive shaft can be delivered, the following must be known at the very least:

- Drive type (**B** = belt)
- Size (**3** = size 145)
- Motor mounting position (**0** = 090° front) and
- Drive shaft (**D** = double drive shaft)

Plain shaft „P“

Double drive shaft „D“



Non drive end shaft

Order numbers drive shaft belt drive		
Type of drive	Comments	Order number
ODS**B3**xx**0**x**D**..., ODS**B3**xx**1**x**D**...,	Motor mounting position 090° / 270°, double plain shaft „D“	56150
ODS**B5**xx**0**x**D**..., ODS**B5**xx**1**x**D**...		56154
ODS**B7**xx**0**x**D**..., ODS**B7**xx**1**x**D**...		56158
ODS**B3**xx**2**x**P**..., ODS**B3**xx**3**x**P**...	Motor mounting position 000° / 180°, plain shaft „P“	56151
ODS**B5**xx**2**x**P**..., ODS**B5**xx**3**x**P**...		56155
ODS**B7**xx**2**x**P**..., ODS**B7**xx**3**x**P**...		56159
ODS**B3**xx**2**x**D**..., ODS**B3**xx**3**x**D**...	Motor mounting position 000° / 180°, double plain shaft „D“	56152
ODS**B5**xx**2**x**D**..., ODS**B5**xx**3**x**D**...		56156
ODS**B7**xx**2**x**D**..., ODS**B7**xx**3**x**D**...		56160
ODS**B3**xx**2**xx..., ODS**B3**xx**3**xx...	Motor mounting position 000° / 180°, rotating shaft	56153
ODS**B5**xx**2**xx..., ODS**B5**xx**3**xx...		56157
ODS**B7**xx**2**xx..., ODS**B7**xx**3**xx...		56161

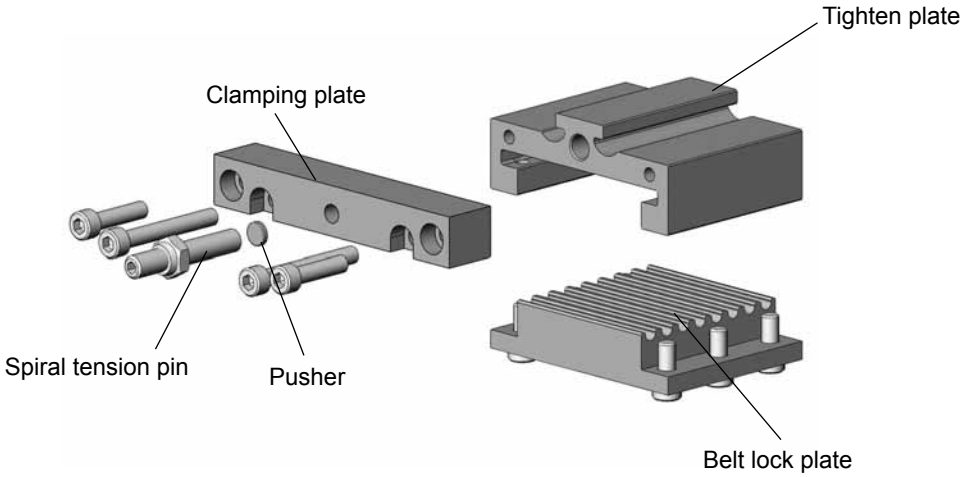
12.8 Belt Tensioning Block

If the tensioning block is to be replaced, the product key must be indicated.

Example: ODS**B3**0B**0**0**D0**-01200-1010000

To ensure that a suitable tension block can be delivered, the following must be known at the very least:

- Drive type (**B** = belt)
- Size (**3** = size 145)
- Motor mounting position (**0** = 090° vorne)
- Drive shaft (**D** = double plain shaft) and
- Carriage (**0** = standard)



Order number tension block		
Type of drive	Comments	Order number
ODS**B3**xx**0**xx**0**..., ODS**B3**xx**1**xx**0**...	Motor mounting position 090° / 270°, standard	56162
ODS**B5**xx**0**xx**0**..., ODS**B5**xx**1**xx**0**...	Motor mounting position 090° / 270°, standard	56164
ODS**B7**xx**0**xx**0**..., ODS**B7**xx**1**xx**0**...	Motor mounting position 090° / 270°, standard	56166
ODS**B3**xx**2**xx**0**..., ODS**B3**xx**3**xx**0**..., ODS**B3**xx**2**xx**2**..., ODS**B3**xx**3**xx**2**...	Motor mounting position 000° / 180°, standard / Bi-parting	56163
ODS**B5**xx**2**xx**0**..., ODS**B5**xx**3**xx**0**..., ODS**B5**xx**2**xx**2**..., ODS**B5**xx**3**xx**2**...	Motor mounting position 000° / 180°, standard / Bi-parting	56165
ODS**B7**xx**2**xx**0**..., ODS**B7**xx**3**xx**0**..., ODS**B7**xx**2**xx**2**..., ODS**B7**xx**3**xx**2**...	Motor mounting position 000° / 180°, standard / Bi-parting	56167

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Declaration of Incorporation

in accordance with EU-Directives Machinery

The ODS Origa Drive System part machine, in the form of power-operated linear drives,

Products:	**Screw Drive**	**Toothed Belt Drive**
	ODS-145SB	**ODS-145B**
	ODS-175SB	**ODS-175B**
	ODS-225SB	**ODS-225B**

is developed, designed and manufactured in compliance with Guidelines 2006/42/EC and is the sole responsibility of

Company: **Parker Hannifin GmbH**
Origa Division Europe
Industriestrasse 8
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The following related standards apply:

- DIN EN ISO 12100-1 and -2, Safety of Applications Plant and Machinery
- DIN EN 60204.1, Equipment for Industrial Machines

Complete technical documentation exists in accordance with appendix VII B of Directive 2006/42/EC and is the responsibility of Denis Eckstein/Parker Hannifin GmbH. This documentation includes the assembly instructions in accordance with appendix VI along with all details relating to protecting health and safety. Corresponding documents are available on request in paper format from the relevant authorities.

A risk analysis and is subsequent evaluation must be carried out by the user/operator after installing this ODS part machine and before the complete machine is commissioned. Commissioning is not permitted until it has been established that the complete machine/system corresponds to the provisions of the EC Machinery Directive.

Filderstadt, February 2011

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