item

Lineareinheit LRE 8 D14 80x40 ZS
Lineareinheit LRE 8 D10 80x40 ZS K light
Notes on Use and Installation

Content

Symbols, safety

Important information

Note! Failure to observe this safety instruction can result in material damage

Warning! Failure to observe this safety instruction is likely to result in material damage, serious injury or death

Danger! Failure to observe this safety instruction can result in material damage, serious injury or death

Caution! Failure to observe this safety instruction can result in material damage or injury

Observe directions for disposal

Observe packaging instructions

Maintenance

General safety information

The details and information in the installation guide are provided for the purposes of describing the product and its assembly only. This information does not discharge the user from the obligation to carry out his own assessments and checks. It is important to bear in mind that our products are subject to a natural process of wear and ageing.

These notes contain important information that will enable you to use the product safely and appropriately. When sold, rented out or otherwise passed on to another party, this product must be handed over with the installation guide.

When installing, operating and maintaining the Rack Drive Module, it is important to ensure that all moving elements are secured so that they cannot be switched on and moved unintentionally. Rotating and moving parts can cause serious injury! You must therefore read and follow the safety instructions set out below.

- All work on and with the Rack Drive Module must be performed with “safety first” in mind.
- Always switch off the drive unit before you start working on the Rack Drive Module.
- Ensure the drive unit cannot be switched on unintentionally, e.g. by affixing warning notices at the activation point or by removing the fuse from the power supply.
- Do not place your hands in the working area around the moving parts of the Rack Drive Module while it is still switched on.
- Fit guards and covers to the moving parts of the Rack Drive Module to ensure they are not touched unintentionally.
- Observe the regulations pertaining to accident prevention and environmental protection that apply in the country and place of work where the product is being used.
- Use only item products that are in perfect working order.
- Failure to use original spare parts will invalidate the product warranty!
- Check the product for obvious defects.
- Use the product only within the performance range described in the technical data.
- Ensure that all the safety equipment associated with the product is present, properly installed and in full working order.
- Do not alter the position of safety equipment, circumvent it or render it ineffective.

The Rack Drive Module described here corresponds to the state of the art and takes into account the general principles of safety applicable at the time this installation guide was published. Nevertheless, there is a risk of personal injury and damage to property if you do not observe the basic safety instructions and warnings in this manual.

We will assume no liability for any resulting damage or injury. We reserve the right to make technical changes that represent technical advances. Keep these installation notes in a place where they can be easily accessed by all users. Observe the directions contained in the main user guide for the completed machine.

The general safety information applies to the entire lifecycle of the rack and pinion drive component..

1. During transportation

Observe the handling instructions on the packaging. Until it is installed, the product must be stored in its original packaging, protected from moisture and damage. Ensure that moving parts are secured when in transit and cannot cause any damage.

2. During installation

Always deactivate the power to the relevant system part and ensure it is not live before installing the product and/or plugging it in or unplugging it. Ensure the system cannot be switched back on. Lay cables and lines in such a way that they cannot be damaged and do not represent a trip hazard. Avoid areas that pose slip, trip and fall hazards.

3. During commissioning

Allow the product to acclimatise for a few hours before starting to use it. Ensure that the application is firmly and securely integrated into the machine. Only start up a product that has been installed in full.

4. During operation

Ensure that only persons who have been authorised by the operator have access to the immediate operating area of the system. This also applies when the system is not in operation. It must not be possible to actuate moving parts unintentionally. During emergencies, malfunctions or other irregularities, deactivate the system and ensure that it cannot be switched back on. Prevent the possibility of persons becoming trapped in the system’s hazard zone.

5. During cleaning
Close all openings with suitable protective equipment to ensure that cleaning agents cannot penetrate the system. Do not use aggressive cleaning substances. Do not use a high-pressure cleaner when cleaning the system.

6. During maintenance and servicing work
Carry out the prescribed maintenance work at the intervals stipulated in the user guide. Ensure that no line links, connections or components are removed while the system is live and under pressure. Ensure the system cannot be switched back on.

7. During disposal
Dispose of the product in accordance with the national and international regulations that apply in your country.

Correct use

Linear Units LRE 8 D14 80x40 ZS and LRE 8 D10 80x40 ZS K light combined with a motor, gearbox and controller form a partly completed machine as defined in the Machinery Directive (2006/42/EC). The Rack Drive Module must only be used in accordance with the technical data and safety requirements set out in this document. Internal company requirements and the regulations that apply in the country where the product is being used must be observed. You must not make any design modifications to the Rack Drive Module yourself. We will assume no liability for any resulting damage or injury.

You may only install, operate and maintain the Rack Drive Module if:

- The Rack Drive Module has been integrated properly and safely into the completed machine,
- You have carefully read and understood the installation guide,
- You are appropriately qualified,
- You are authorised to do so by your company,
- You are using only original equipment from the manufacturer.

Unsafe or inappropriate use of the Rack Drive Module runs a risk of serious injury through crushing and cuts.

Improper use

Improper use is defined as any use of the product for purposes other than those authorised in the installation guide and under the definition of correct use. We will assume no liability for any resulting damage or injury.

Personnel qualifications

Assembly, commissioning, operation, disassembly and maintenance work (including servicing and care) require an adequate knowledge of electrical and mechanical engineering and an understanding of the relevant technical terminology. To ensure operational safety, these activities must therefore be carried out only by a qualified person or by trained personnel under the direction of a qualified person.

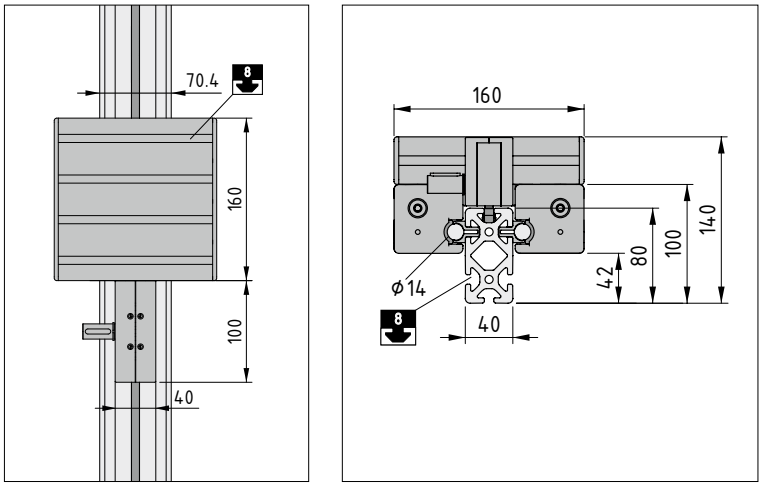
Qualified persons are individuals who – by virtue of their specialist training, know-how, experience and knowledge of pertinent provisions – are able to assess the work that is assigned to them, identify potential hazards and put in place appropriate safety measures. Such qualified persons must comply with the applicable specialist regulations.

Product description

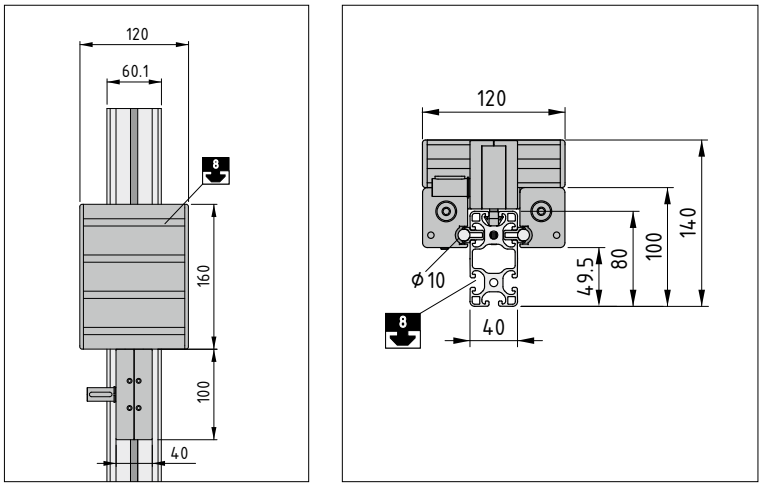
A rack and pinion drive with steel segments is the solution when powerful stroke and precise control are required. The driven gear wheel engages with the rack without slippage, which lies completely in the groove of the supporting profile. This means that conveyor sections of theoretically unlimited length can be created. The rack and pinion drive is particularly suitable for vertical applications due to its compact design and low weight.

The rack segments of the linear unit LRE 8 D10 80x40 ZS K light are made of a high-strength plastic material. They are lighter and very easy to fit without special tools.
The linear unit LRE 8 D10 80x40 ZS K light is combined exclusively with the lightweight profile with 8th groove. This makes the linear unit even lighter.
The LRE 8 D10 80x40 ZS K light is therefore particularly suitable for vertical movements that require medium positioning accuracy with medium loads.

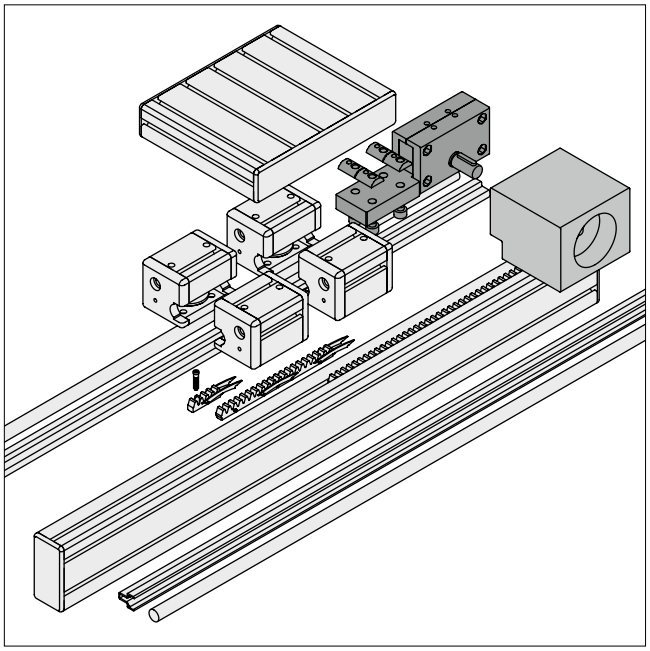
Linear Unit LRE 8 D14 80x40 ZS



Linear Unit LRE 8 D10 80x40 ZS K



Rack 8 Drive Module operating parameters



Steel Rack Segments:

Drive force	max. 1000 N
Radial operating load	F_r = tan 20° x drive force = 0,364 x drive force The radial operating load pla ces an additional load on the castors of the guide. This must be taken into account during the design phase!
Drive torque	max. 23 Nm
Drive power	max. 3 kW
Stroke velocity	max. 3 m/s
Acceleration	max. 5 m/s²
Drive rpm	max. 1250 /min

One revolution of the drive wheel corresponds to a distance of 144.0 mm.

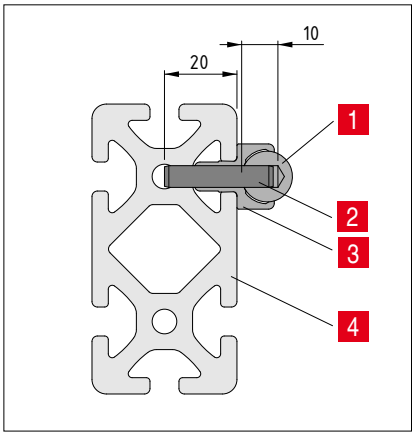
Plastic Rack Segments

Drive force	max. 350 N
Radial operating load	F_r = tan 20°x drive force = 0.364 x drive force The radial operating load places an additional load on the castors of the guide. This must be taken into account during the design phase!
Drive torque	max. 8 Nm
Drive power	max. 1 kW
Stroke velocity	max. 3 m/s
Acceleration	max. 5 m/s²
Drive rpm	max. 1250 /min

One revolution of the drive wheel corresponds to a distance of 144.0 mm.

Installation

1. Installing the support profile for variant LRE 8 D14 80x40 ZS

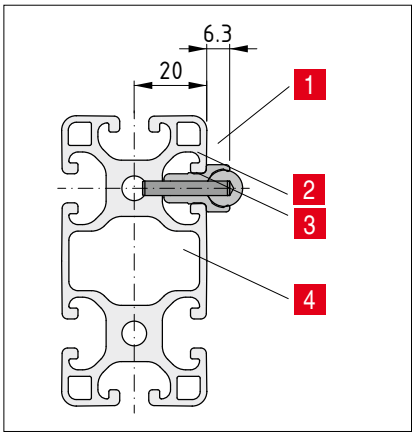


1. Shaft D14 (Art-No. 0.0.294.01 / 0.0.294.55 / 0.0.472.30)
2. Dowel pin DIN 6325-4x24
3. Shaft-Clamp Profile (Art.-No. 0.0.294.34)
4. Series 8 profile as support profile

The shafts are pinned at one end. To do this, a blind hole is drilled approx. 40 mm from the end face. As the shaft is hardened, we recommend using a carbide twist drill ∅ 6 mm and the combination drill jig for shaft D10 (Art.-No. 0.0.373.55).

WARNING! Do not use Line 8 profiles in the “light” or “E” designs.
Shafts D14 must be installed before the Rack Segments.

2. Installing the support profile for variant LRE 8 D10 80x40 ZS K light



1. Shaft D10 (Art.-No. 0.0.401.09)
2. Dowel pin DIN 6325-4x24
3. Shaft-Clamp Profile (Art.-No. 0.0.442.03)
4. Series 8 light profile as support profile

The shafts are pinned at one end. To do this, a blind hole is drilled approx. 40 mm from the end face. As the shaft is hardened, we recommend using a carbide twist drill ∅ 4 mm and the combination drill jig for shaft D10 (Art.-No. 0.0.444.68).

WARNING! This linear variant is to be used only with a light profile from Line 8.
Shafts D10 must be installed after the Rack Segments.

Shaft-Clamp Profile and Shaft D10/D14:

There are various methods for assembling support profile, Shaft-Clamp Profile and Shaft.

To make installation easier, apply a film of oil or grease to the outer surfaces of the Shaft-Clamp Profile that come into contact with the support profile before pressing it into the groove. Do the same to the contact points between the Shaft and Shaft-Clamp Profile and to the guiding Shaft itself. When working with short support profiles that have not yet been connected to a fixture, it is advantageous to undertake installation in the following steps:

- Press the Shaft-Clamp Profile into the relevant groove of the support profile
- Use a vice (fitted with protective jaw plates) to press in the Shaft
- Follow the same sequence for the other side

When higher loads are involved, it is advisable to secure the Shaft. Ideally, a Combination Drilling Jig should be used to machine the Shaft, Shaft-Clamp Profile and Support Profile as detailed in the following steps:

- Using a carbide drill, cut a blind hole in the Shaft, 40 mm from the end face (as shown in the drawing)
- At the same distance from the end face, cut a through hole through the Shaft-Clamp Profile and Support Profile together, up to the centre bore of the Support Profile
- Press suitable dowel pin DIN 6325 into the Shaft
- Install the Shaft into the Shaft-Clamp Profile as described above

3. Installing the steel Rack Segments

Create a threaded bore M5 for the Rack End Section at the desired point in the centre of the profile groove and screw the Rack End Section into place with the dowel screw (Figure 1 – photo A and Figure 2a).

NOTE! Only an external groove in the support profile may be used in order that the Coupling Module and the profile do not come into contact with each other.

Once the Rack End Section has been positioned and secured in place, insert first a spring clip and then a Rack Segment into the groove and slide them up to the Rack End Section until the spring clip is in contact with both the Rack End Section and Rack Segment (Figure 1 – photo B to D).

To connect Rack Segments using the spring clip, use the assembly tool and a hammer to tap the Rack Segment into the spring clip and against the Rack End Section until the spring clip locks into place and the end surfaces of the Rack Segments meet (Figure 1 photo E F and Figure 3).

Repeat this process as many times as required to achieve the desired overall rack length.

CAUTION! Ensure the rack is long enough that the Rack End Sections will never be engaged during operation. Their only purpose is to act as an axial fixing for the Rack Segments.

Slot in the last spring clip and the second part of the Rack End Section and connect the two by tapping them together with a hammer.

CAUTION! Carry out a visual inspection to ensure that the end surfaces of all of the Rack Segments meet.

Create the final threaded bore M5 in the installed Rack End Section. Finally, screw this Rack End Section to the profile, too.

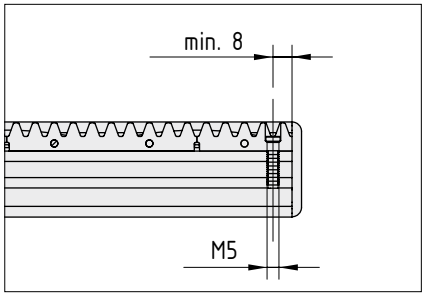
TIP! To centre core bore M5, drill into the support profile through the Rack End Section with a 5 mm drill. Drilling depth: approx. the height of the drill bit, 1.5 mm.

CAUTION! Remove all shavings and processing debris. The contact surfaces of the Rack Drive Module must be clean.

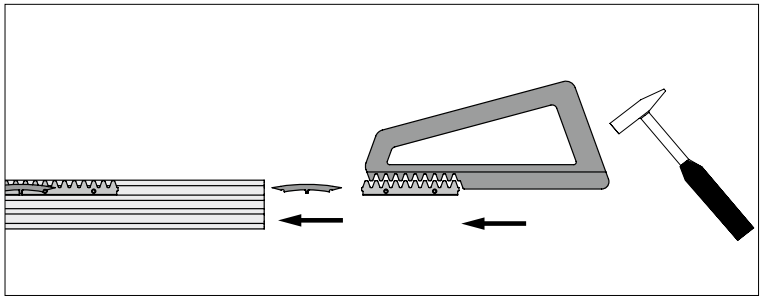
NOTE! Tightening torque for dowel screw M5: T = 5 Nm

CAUTION! The travel range of the Rack Drive Module should also be restricted by Limit Stops in order to prevent travel outside the travel range. This is particularly important for vertical axes.

(Figure 1)



(Figure 2a)



(Figure 3)

4. Installing the plastic rack segments

Create a threaded bore M5 for the Rack End Section at the desired point in the centre of the profile groove and screw the Rack End Section into place with the dowel screw (Figure 2b).

WARNING! Only an external groove in the support profile may be used in order that the coupling module and the profile do not come into contact with each other.

Once the Rack End Section has been positioned and secured in place, insert the first Rack Segment as shown in the image. Figure 2c. Always push new Segments under the Segment in front. The assembly tool makes the installation process easy, and does not require the use of a hammer.
Repeat this process as many times as required to achieve the desired overall rack length.

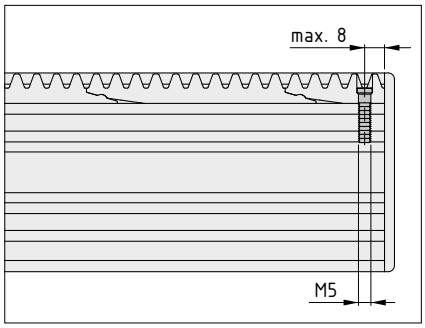
WARNING!

- Ensure the rack is long enough that the Rack End Sections will never be engaged during operation. Their only purpose is to act as an axial fixing for the Rack Segments. Slot in the second part of the Rack End Section and lock it in place.
- Carry out a visual inspection to ensure that the end surfaces of all of the Rack Segments meet. Create the final threaded bore M5 in the installed Rack End Section. Finally, screw this Rack End Section to the profile, too.

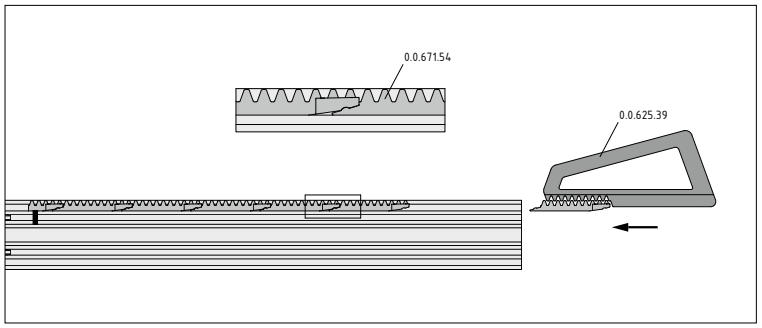
TIP! To centre core bore M5, drill into the support profile through the Rack End Section with a 5 mm drill. Drilling depth: approx. the height of the drill bit, 1.5 mm.

WARNING!

- Remove all shavings and processing debris. The contact surfaces of the Rack Drive Module must be clean.
- Tightening torque for dowel screw M5: T = 5 Nm
- The travel range of the Rack Drive Module should also be restricted by Limit Stops in order to prevent travel outside the travel range. This is particularly important for vertical axes.



(Figure 2b)

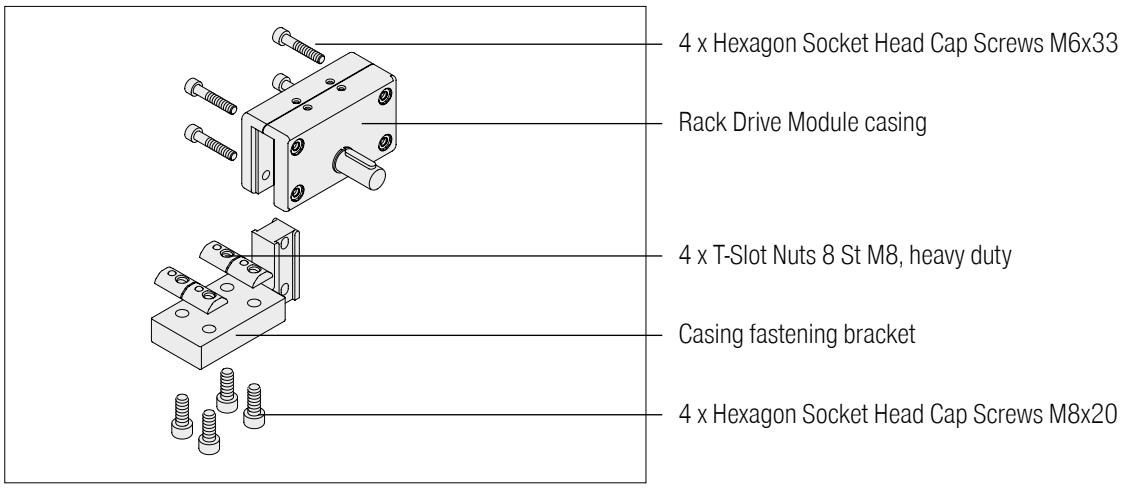


(Figure 2c)

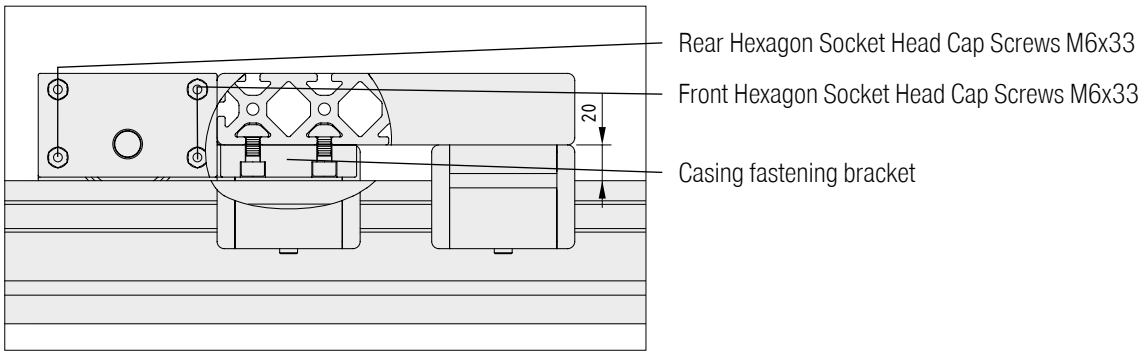
5. Installing the carriage

To build a linear guide, you need two centric (fixed) Bearing Units opposite two eccentric (adjustable) Bearing Units. The roller profiles offer a range of fastening options via Line 8 grooves, which makes it far easier to mount and align them on profiles.

Align and screw-attach the non-adjustable Bearing Unit (Double-Bearing Unit 8 D14 c or Double-Bearing Unit 8 D10 c) parallel to the end of the carriage plate, i.e. the Cap on the Profile 8 160x40. Next, fasten the adjustable Bearing Units (Double-Bearing Unit 8 D14 e or Double-Bearing Unit 8 D10 e) to the other side of the carriage plate. To do this, use Screws M8x20 and T-Slot Nuts 8 St M8, heavy duty to screw the Bearing Units to the carriage plate from the underside.



(Figure 4)



(Figure 5)

NOTE!

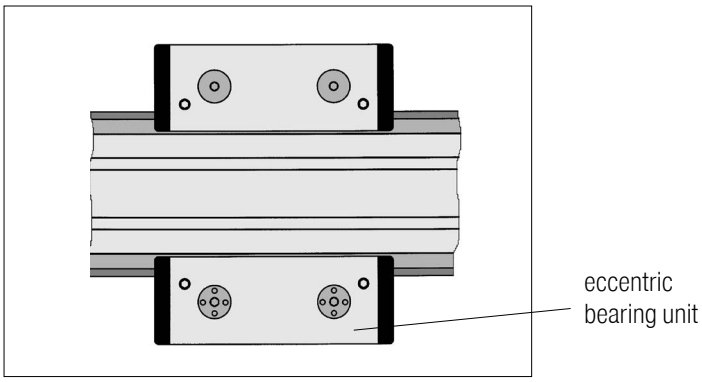
- Tightening torque for Hexagon Socket Head Cap Screws: T = 34 Nm).
- Fix non-adjustable Bearing Unit 8 D14 c or 8 D10 c to the side where the drive will be installed later on.

Attach the casing fastening bracket for the Rack Drive Module to the non-adjustable Bearing Unit (parallel alignment) and screw to the carriage plate from underneath with screws M8x20 and T-Slot Nuts 8 St M8, heavy duty.

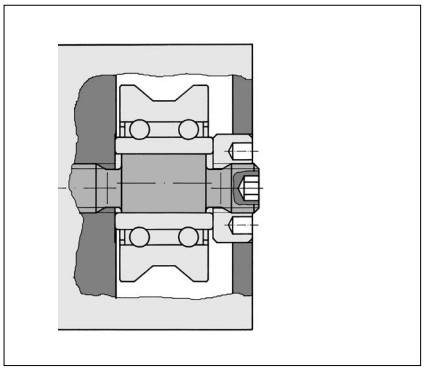
NOTE! Insert the four T-Slot Nuts 8 St M8 so that they are aligned as shown in Figure 4. The “short” side of the T-Slot Nut (distance from the thread to the outside edge) must face the drive shaft.

CAUTION! (Tightening torque for Hexagon Socket Head Cap Screws: T = 34 Nm). Next, attach the adjustable Bearing Unit (e.g. Double-Bearing Unit 8 D14 c or Double-Bearing Unit 8 D10 c) to the free side of the casing fastening bracket (parallel alignment) and screw it to the carriage plate.

TIP! The casing fastening bracket can only be used as a direct limit stop if the support profile is 40 mm wide. When using wider support profiles, use corresponding spacers or use the side of the carriage plate for alignment purposes.



(Figure 6a)



(Figure 6b)

You must prepare the eccentric orientation of the eccentric Bearing Units before using the guide carriage. (Figure 6a)

Use an Allen key to turn the eccentric bolt of the rollers:(Figure 6b):

- Drive the bolt as far as it will go
- Turn back ½ a turn
- Continue turning back until the rearmost eccentric position is reached.

When Bearing Units have been prepared and installed in this way, the maximum play between the rollers and Shafts can be used to adjust preload.

Next, fit the guide unit with the casing fastening bracket to the guiding shafts and turn the eccentric bolts to adjust and secure the pre-tensioning / play of the castors. When adjusting the Bearing Units to eliminate backlash, ensure that no excess strain is generated!

To do this, keep moving the carriage over its entire travel distance until it runs on the support profile without any backlash and without being subjected to excessive strain.

After making this adjustment, fix the position of the eccentric bolt by securing the lock nut with a Pin Spanner. While securing the lock nut with a Pin Spanner, use an Allen key to hold the bolt in its selected position. Accessories: Pin Spanner 8 D10 (Art.-No. 0.0.390.13) und 8D14 (Art.-No. 0.0.294.41)

Tightening torque 8 D14: T = 20 Nm

Tightening torque 8 D10: T = 6 Nm

TIP! Only install the End Cap and Lubricating Systems once the adjustments have been completed, as the friction of the wipers significantly reduces the sensitivity required when adjusting the eccentric bolts.

The next step involves fitting the Rack Drive Module casing to the casing fastening bracket. To do this, carefully move the drive casing in the direction of the Rack Segments until the flanks of the teeth make contact without pressure and/or until the level of backlash is barely noticeable. In order to move the drive casing onto the casing fastening bracket, the Hexagon Socket Head Cap Screws M6x33 used to fix the casing fastening bracket will need to be removed and the rear Hexagon Socket Head Cap Screws M6x33 loosened.
Next, tighten the Hexagon Socket Head Cap Screws M6x33 so that the casing can be moved on the fastening with no noticeable backlash.

CAUTION!

- Low backlash is beneficial as it results in lower operating noise, however it also reduces the positioning accuracy of the drive.
- Perform a visual inspection to check whether the sprocket is centred in the profile groove of the support profile. If it is not, correct the position by placing a shim between the non-adjustable Bearing Unit and the casing fastening bracket. The shim must be removed once the appropriate adjustments have been made.
- Next, remove the Rack Drive Module casing again so that you can pin the Bearing Units to the sliding carriage, which is still screwed to the casing fastening bracket.

6. Installing the drive

This section describes the installation of the Coupling Housing and the drive components (motor, gearbox).

Rack 8 Coupling Module (Art.-No. 0.0.621.73, Figure 7) can be used to connect any drive units to the rack system. The motor side of the Coupling Housing must be processed to suit the adapter flange of the gearbox or motor.

The coupling half facing the motor has an ∅ 8 mm through hole that should be processed to suit the motor shaft. The motor shaft should reach between 43 mm and 51 mm into the drive casing to ensure the clamping action of the coupling and the perfect interplay of connected elements (Figure 6).

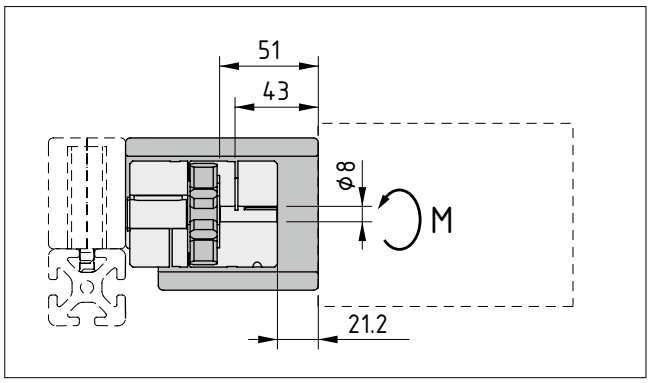
DANGER! The torque reaction on the casing fastening caused by the weight of the motor and gearbox and the mass moments of inertia must not exceed 30 Nm. In the case of significant torque reactions, it is advisable to incorporate additional, supporting elements for fastening the components to the carriage. However, such elements may only be incorporated once all backlash adjustments have been completed.

To do this, replace the fastening screws and nuts of the drive casing with the longer DIN 912 M6x55 screws supplied with the Rack 8 Coupling Module, then drive these screws directly through the drive casing and into the casing of the Coupling Module. The two centring sleeves help to ensure the components are centrally aligned. These centring sleeves are located between the drive unit and the Coupling Module (Figure 7).

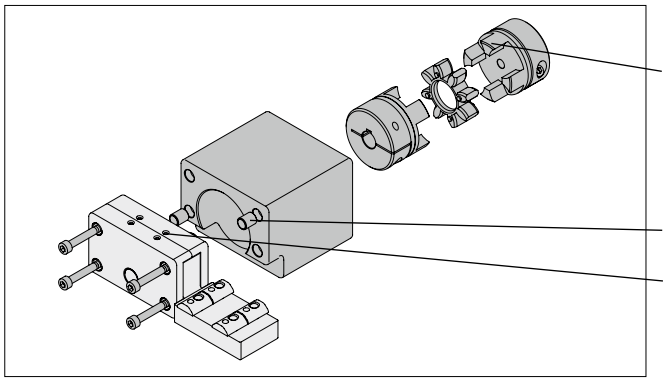
Fit the Rack Drive Module casing back onto the casing fastening bracket and secure the M6x55 screws to the casing as described earlier and then check backlash along the entire guide rail. If necessary, repeat the steps for adjusting backlash.

TIP! To help adjust backlash, a strip of PE film approx. 200 mm long and 8 mm wide can be placed between the sprocket and rack. Films made from poly bags are 0.05 mm thick. This results in backlash of approx. 0.1 mm. Spring-tempered shims are not recommended for making adjustments as they can break and damage the drive.

NOTE! Tightening torque for Hexagon Socket Head Cap Screws M6: T = 13 Nm.



(Figure 6)



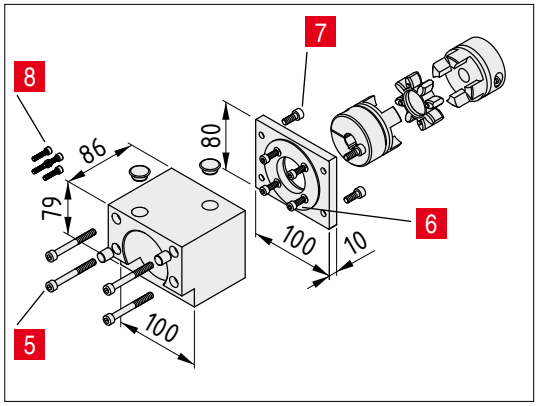
(Figure 7)

Prepared Drive Set

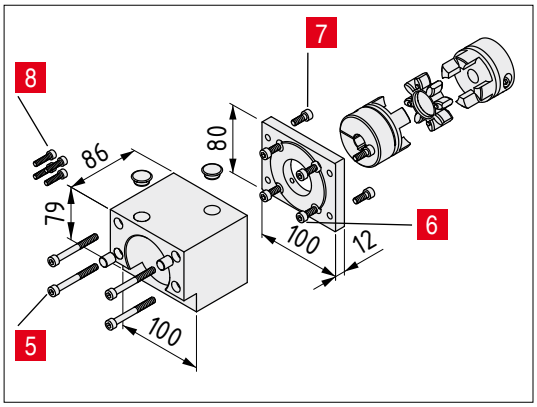
6.1 Installing Drive Set, Rack 8 AP/WP 60 – 0.0.673.33
Installing Drive Set, Rack 8 AP/WP 80 – 0.0.673.34

This section describes the installation of Drive Set, Rack 8 AP/WP 60 and Drive Set, Rack 8 AP/WP 80, which are prepared for use with item drive components, Gearboxes and Motors.

Drive Set, Rack 8 AP/WP 60 – 0.0.673.33



Drive Set, Rack 8 AP/WP 80 – 0.0.673.34



5 Hexagon Socket Head Cap Screw M6x55, T_T = 13 Nm

6 Hexagon Socket Head Cap Screw M5x14, T_T = 10 Nm

7 Hexagon Socket Head Cap Screw M6x16, T_T = 13 Nm

8 Hexagon Socket Head Cap Screw M4x18, T_T = 6 Nm

First, screw the Coupling Half that faces the Reverse Unit onto the drive Reverse Unit. Next, fit the second Coupling Half and Coupling Insert to the Coupling Half you have screwed into place. Replace the fastening screws and nuts of the drive casing with the longer DIN 912 M6x55 screws 5 supplied with the Rack 8 Coupling Module, then drive these screws directly through the drive casing and into the casing of the Coupling Housing. The two centring sleeves help to ensure the components are centrally aligned. These centring sleeves are located between the drive unit and the Coupling Module.

DANGER! The torque reaction on the casing fastening caused by the weight of the motor and gearbox and the mass moments of inertia must not exceed 30 Nm.

In the case of significant torque reactions, it is advisable to incorporate additional, supporting elements for fastening the components to the carriage. However, such elements may only be incorporated once all backlash adjustments have been completed.

Now, fit the Rack Drive Module casing back onto the casing fastening bracket and secure the M6x55 screws to the casing as described earlier and then check backlash along the entire guide rail. If necessary, repeat the steps for adjusting backlash.

The coupling half facing the motor has a through hole that matches the diameter of the corresponding item drive shafts. After screwing the gearbox to the Adapter Plate with Hexagon Socket Head Cap Screws M5x14 6 , use Hexagon Socket Head Cap Screws M5x14 7 to screw the Adapter Plate to the Coupling Housing.

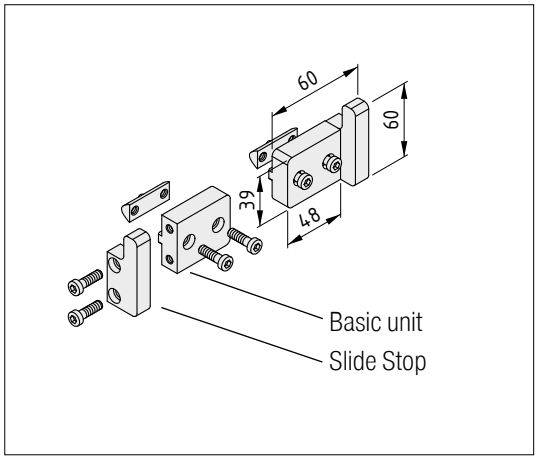
Use an Allen key inserted through the hole in the Coupling Housing of the Drive Set to set the necessary clamping force between the Coupling and drive shaft. Hexagon Socket Head Cap Screws M4x18 8 are included with the Drive Set for the purpose of connecting the item Motor to the Gearbox.

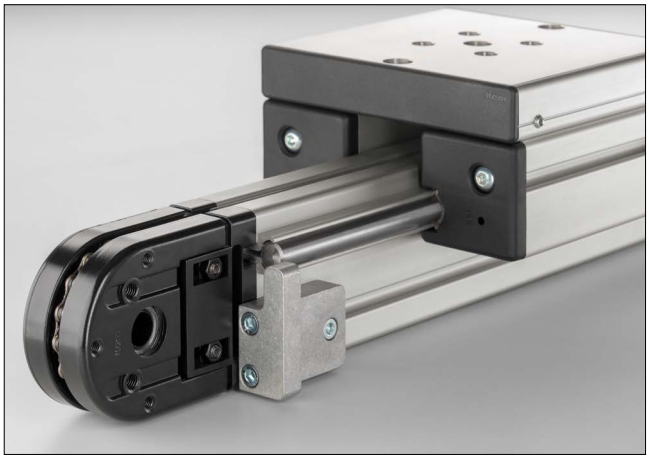
TIP! To help adjust backlash, a strip of PE film approx. 200 mm long and 8 mm wide can be placed between the sprocket and rack. Films made from poly bags are 0.05 mm thick. This results in backlash of approx. 0.1 mm. Spring-tempered shims are not recommended for making adjustments as they can break and damage the drive.

Slide Stop LRE 8

The robust aluminium Slide Stop LRE 8 stops the carriage on a Linear Unit travelling past the calculated or desired point, and also acts as a homing point for the system. Thanks to its special shape, the Slide Stop can be used with shafts in various diameters and fitted at any position.

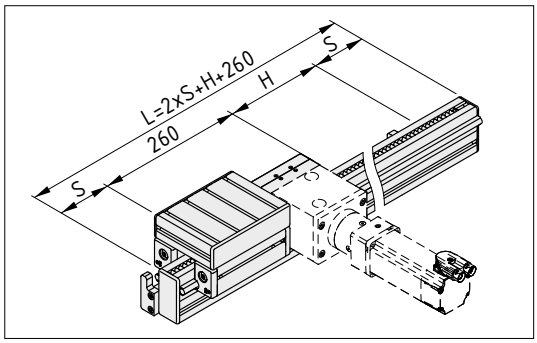
NOTE! When configured using item MotionDesigner®, most LRE-type Linear Units from item are automatically fitted with a Slide Stop that can be moved to a different position or removed entirely, as required. Some models, such as Linear Units KLE, are designed in such a way that an additional Slide Stop is unnecessary.

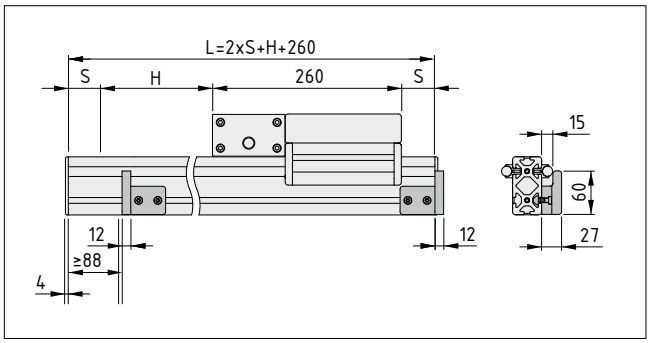




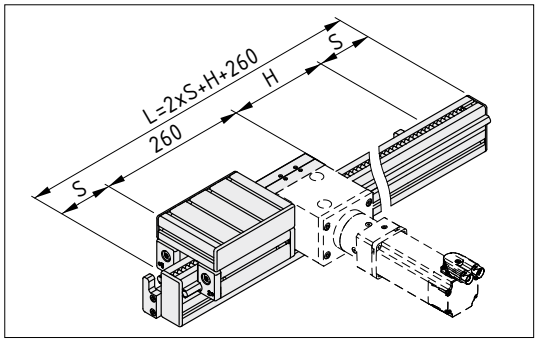
To fit Slide Stop LRE 8, first mark the desired end position on the support profile of the linear axis. This position does not need to match the maximum travel, but rather can be adapted to the transport task at hand.

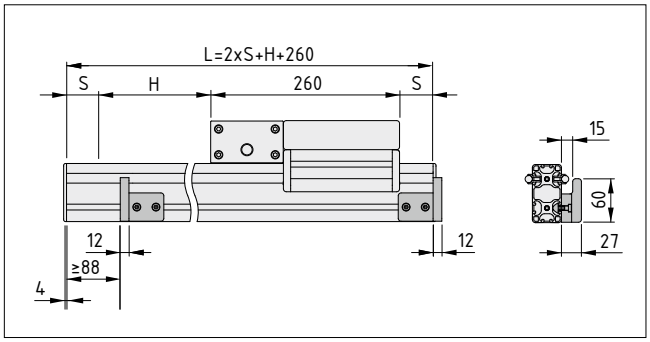
Linear Unit LRE 8 D14 80x40 ZS





Linear Unit LRE 8 D10 80x40 ZS K light



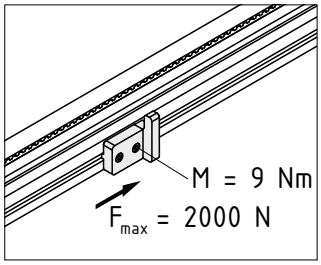


with: L = Total length as a function of stroke H
H = Hub
S = Safety distance = 31 mm

The drawings and formulae can be used to help calculate the relevant end positions when installing the Slide Stops in relation to travel. You can use both sides of the support profile to install Slide Stop LRE 8.

In the case of Linear Units LRE with a rack drive, Slide Stop LRE 8 can only be installed on the side opposite the Motor.
Roll the T-Slot Nuts into the groove under the shaft on the side where you are going to install the Stop.
Use two screws (M6) to attach the basic unit, but do not tighten them at this stage. When installing the basic unit, make sure the threads are facing toward the Reverse Unit.
Next, slide the basic unit along the groove until the outside edge facing the Reverse Unit is in line with the mark you made earlier and then tighten with the appropriate torque.
Finally, use two M6 screws to attach the Slide Stop to the basic unit and tighten with the appropriate torque – M = 9 Nm.

Max. load



Maintenance

Lubrication interval	500 km, or 1/week at maximum drive parameters. (Continuous operation at 3 m/s results in distance travelled of 432 km / 40 hr-week) Lubrication intervals are determined by environmental conditions and distance travelled and can be adapted accordingly if necessary. It is advisable to perform a weekly visual inspection.
Lubricant	ISO VG460, e.g. Track Oil for Linear Guides (recommendation: Klüber Oil 4 UH1-460)
Lubricating point	Drive unit: Add one drop of oil (~ 1 ml) to each of the four lubrication holes in the upper part of the drive casing or apply lubricant directly to the rack (Figure 9).

Disposal

Recyclability is ensured by the appropriate choice of materials and the ability to dismantle. Careless disposal of the appliance can lead to environmental pollution. Therefore, dispose of the product in accordance with the national regulations of your country.

Transport packaging:
The packaging must be returned to the available return and collection systems.

Environmental hazard:
At the end of its service life, the appliance must be returned to the available return and collection systems. Incorrect disposal jeopardises our environment.

You should therefore dispose of them in accordance with the national regulations that apply in your country.

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