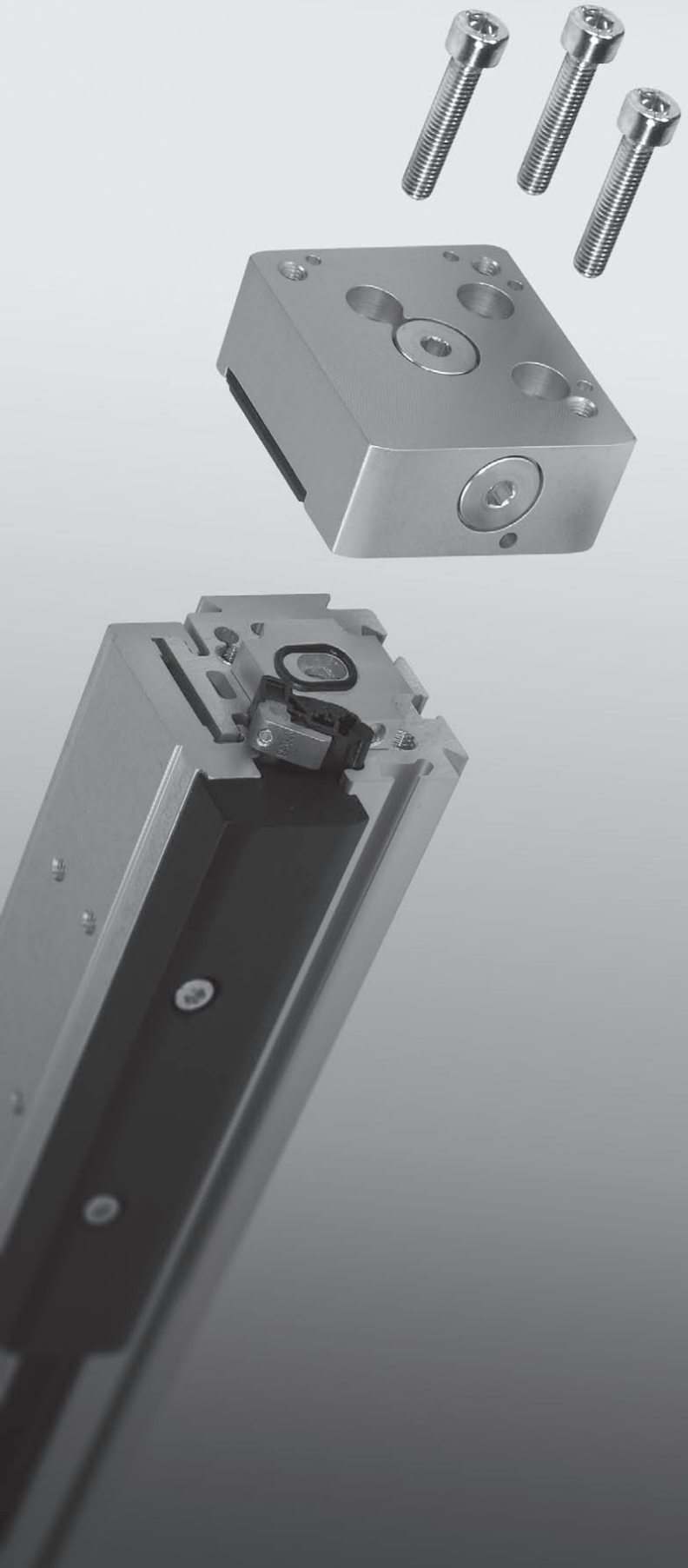
Linear drive

DGC-...-G



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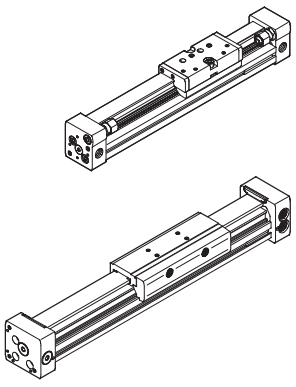
Repair instructions (en)



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Foreword

These repair instructions are valid for the linear drives listed on the title page to the exclusion of any liability claims.

Deviations compared to the descriptions in these repair instructions may arise depending on the design and/or modification status of the specific linear drive. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

Festo AG & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise, no liability is accepted for direct or consequential damage resulting from incorrect use of the products.

You will find further information on this in Chapter 7 “Liability/conditions of use”.

The relevant regulations on occupational safety, safety engineering and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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Table of contents

1 Important information

1.1 About these repair instructions

This document contains important information about the professional repair of the linear drive type DGC-...-G.

The DGC-...-G linear drive is fully repairable. However, in case of larger defects, the costs of carrying out a repair must be considered.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain complete, detailed information. The following documents should therefore also be available while doing repair work on the linear drive:

- **Operating instructions**
  Contains information about the control parts and connections for the linear drive, as well as information about function, construction, application, installation, commissioning, care and maintenance, etc. It can be found on the Festo website (www.Festo.com).
- **Spare parts documentation**
  Contains an overview of the spare and wearing parts as well as information on their installation. The spare parts documentation can be found in the online spare parts catalogue on the Festo website (spareparts.Festo.com).
- **Assembly tools**
  Contains an overview of the available assembly tools such as lubricants, thread locking agents, maintenance tools etc. (aids for assembly and maintenance). They can be found in the online spare parts catalogue on the Festo website (www.Festo.com).

1.2 Pictograms used in these repair instructions

Warning
This sign indicates a dangerous situation for persons and/or the product. Failure to observe this warning can result in injury to persons and/or damage to the device.

Note
This sign indicates important tips and information that can make your work easier.

Environment
This sign indicates information on the steps required for environmentally-friendly use of materials and equipment, as well as the guidelines and regulations that may need to be observed.

Documents
This sign indicates references to other chapters or documents containing additional information.

1.3 General safety instructions

Warning

The linear drive must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts, as well as without the technical documentation required for installation and/or repair, are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions as well as the respective device-specific operating instructions.

Note

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.

Environment

Components and equipment replaced as part of a repair must be disposed of in accordance with the locally valid environmental protection regulations.

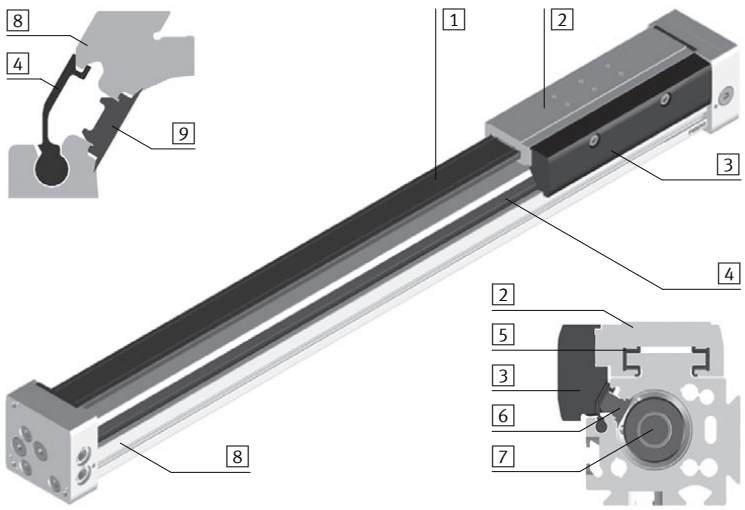
2 General product description

2.1 Functional description

The DGC-...-G is the basic version of the DGC linear drive family. It is a linear drive with the functional principle of a double-acting piston for power transmission. When compressed air is applied to the ports alternately, the piston moves backwards and forwards in the piston chamber. A rigid connection moves the slide with the attached load (e.g. adapter plate with drive) on the guide rail. The slot in the cylinder barrel required for this is covered by a band system. The slide is mounted on slide elements and thus only designed for low-level loads. The operating behaviour in case of torsional loads is in the medium range.

The DGC-...-G, when used properly, is used for transporting loads in a space-saving manner and is approved for the operating modes slide mode and yoke mode (adhere to the load limits).

These graphics provide you with an overview of the construction of the linear drive using the DGC-25-...-G as an example.



1 Guide rail
2 Slide
3 Slide-piston connection
4 Cover band
5 Slide element
6 Coupling
7 Piston
8 Cylinder barrel
9 Sealing band

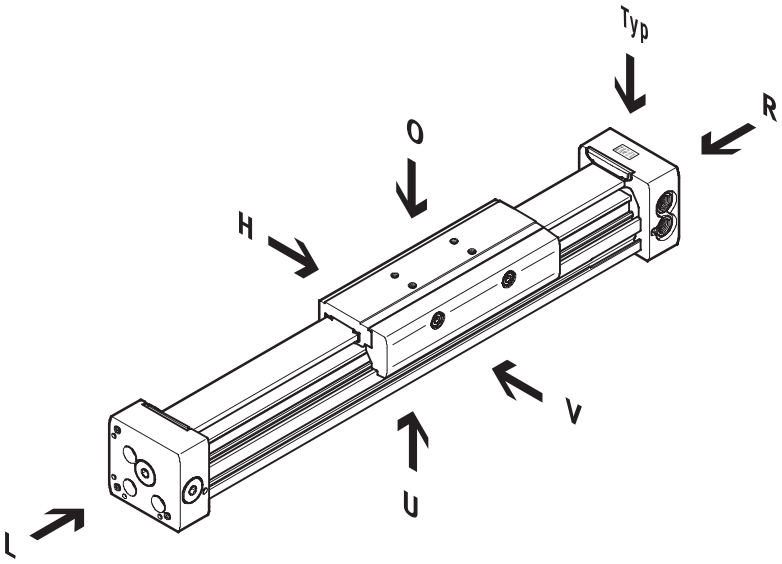
2.2 Types and part numbers

Type	Part number
DGC-8-...-G	530906
DGC-12-...-G	530907
DGC-18-...-G	532446
DGC-25-...-G	532447
DGC-32-...-G	532448
DGC-40-...-G	532449
DGC-50-...-G	532450
DGC-63-...-G	532451

The complete overview of features, accessories, type codes, technical data and dimensions for the DGC-... linear drives can be found in the product catalogue or on the Festo website (www.Festo.com).

2.3 Mounting directions

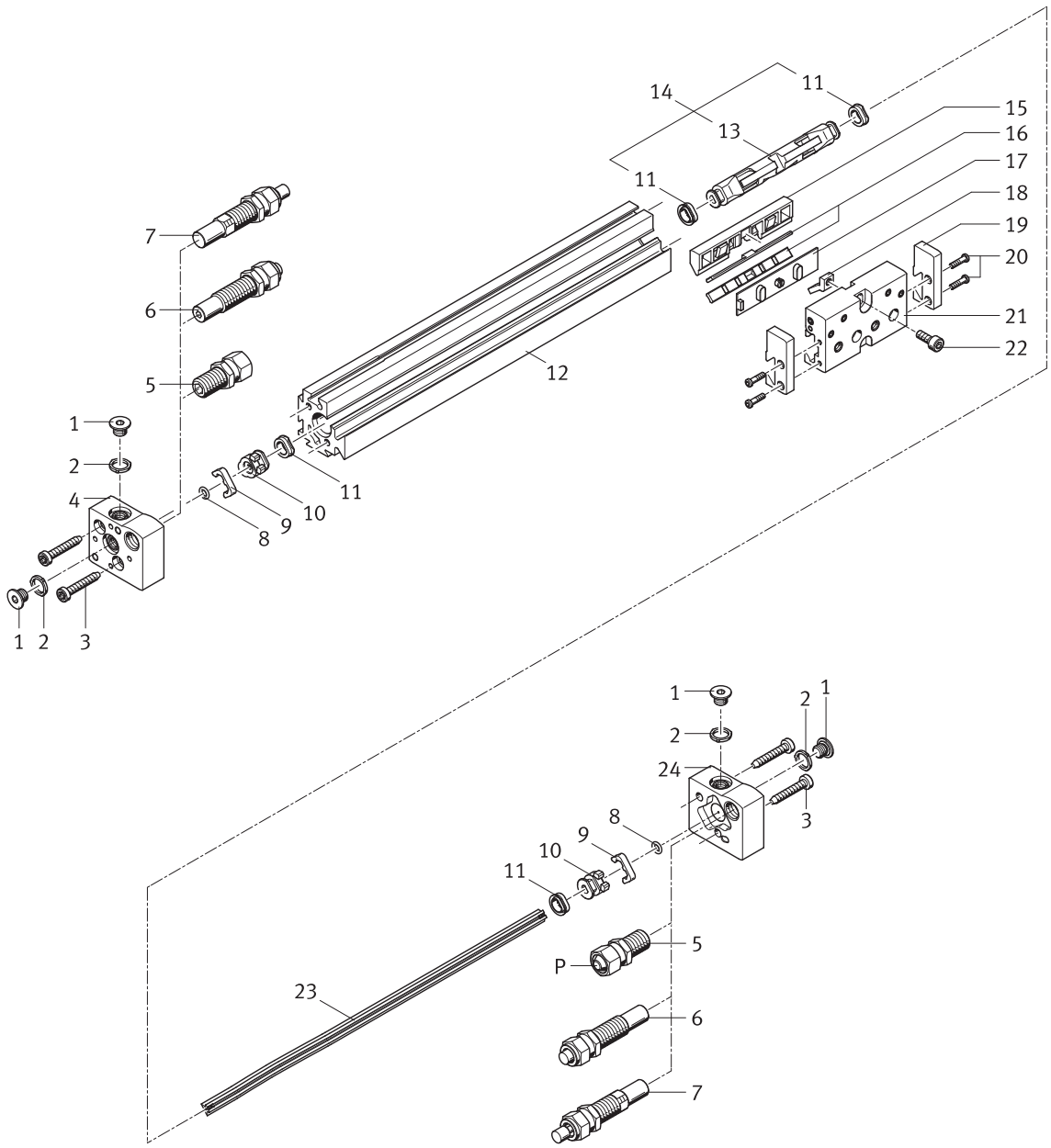
This graphic provides you with an overview of the mounting directions of the linear drive using the DGC-25-...-G as an example.



Type = Product designation (name plate)
O = Top
U = Underneath
R = Right
L = Left
V = Front
H = Rear

3 Component overview

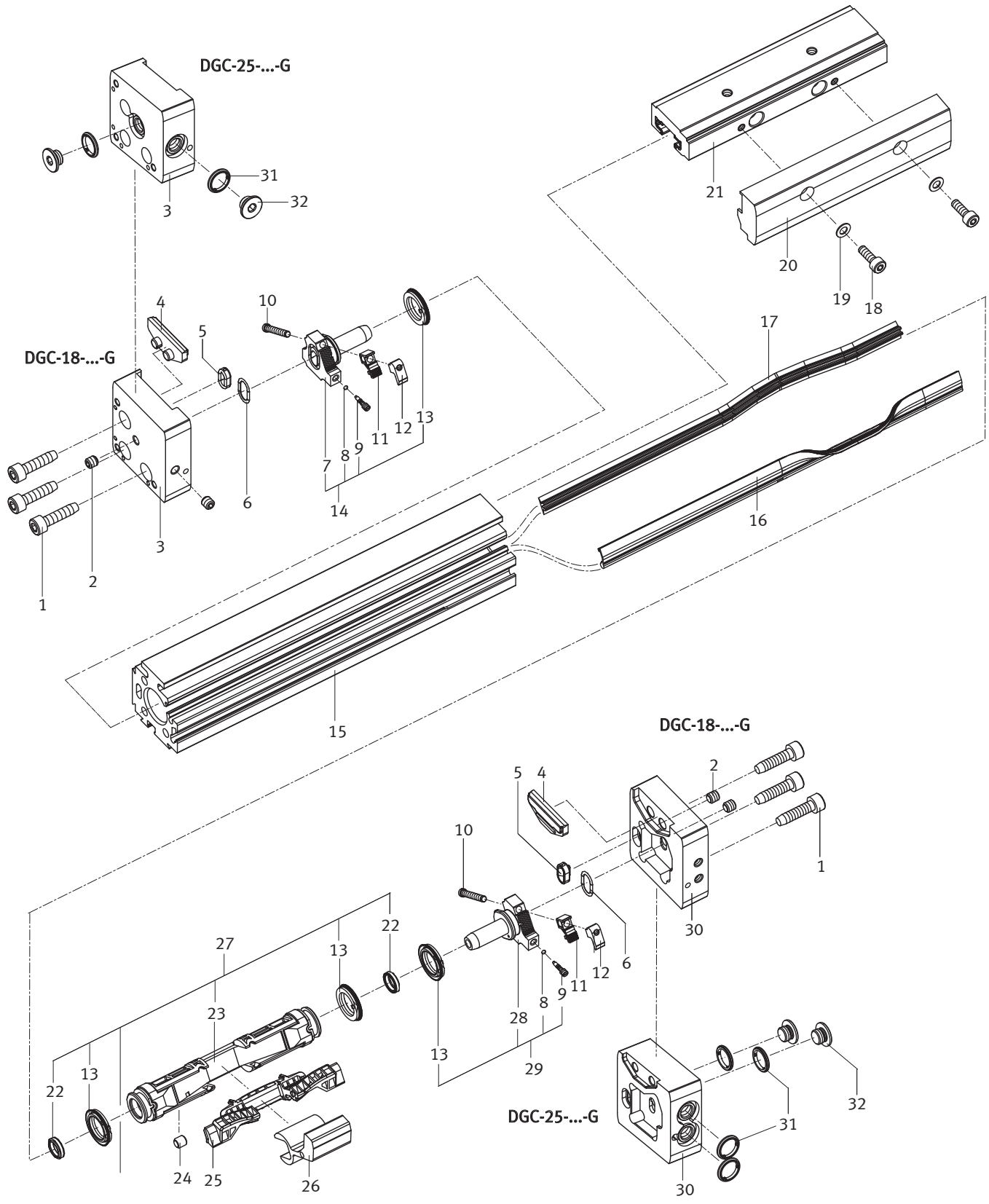
3.1 DGC-8/12-...-G



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type DGC-8-...-G	DGC-12-...-G	Note DGC-8-...-G	DGC-12-...-G
1	Threaded pin or blanking plug, depending on series status			Tightening torque 5.0 Nm, use LOCTITE 222	Tightening torque 5.0 Nm, use LOCTITE 222
2	Sealing ring				
3	Self-tapping screw	TPD-WN122-M3×18-450	M5×20-10.9	Tightening torque 2.0 Nm ± 20%, use LOCTITE 243	Tightening torque 3.0 Nm ± 20%, use LOCTITE 243
4	End cap, left				
5	Elastic cushioning element			Tightening torque 2.0 Nm ± 20%	
6	Shock absorber			Tightening torque 2.0 Nm ± 20%	
7	Shock absorber			Tightening torque 2.0 Nm ± 20%	
8	O-ring	3×1-N-NBR75	3×2-N-NBR70		
9	Clip				
10	Buffer				
11	Buffer/piston seal				
12	Cylinder barrel				
13	Piston				
14	Piston module				
15	Wiper seal				
16	Slide element				
17	Slide element				
18	Coupling				
19	Stop				
20	Screw	M2×7.5-8.8 internal Torx T6		Tightening torque 0.3 Nm, use LOCTITE 243	
21	Slide				
22	Socket head screw	DIN 912-M3×8-8.8	DIN 912-M4×8-8.8	Tightening torque 1.4 Nm, use LOCTITE 243 Sealed with thread locker 397332	
23	Sealing band				
24	End cap, right				

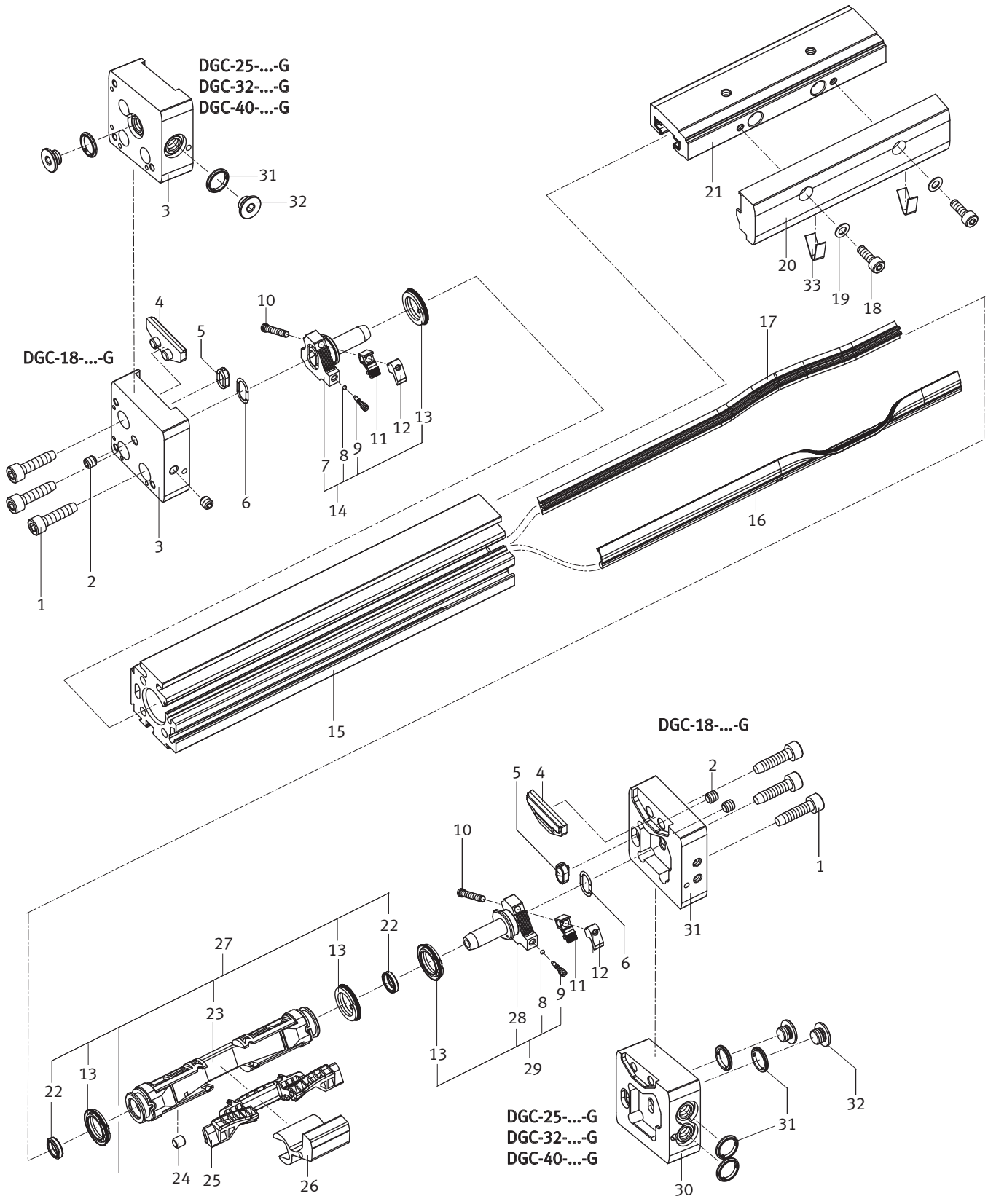
3.2 DGC-18/25-...-G



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-18-...-G	DGC-25-...-G	DGC-18-...-G	DGC-25-...-G
1	Self-tapping screw	M5×20-10.9	DIN 7500-E M6×30-A4-70	Tightening torque 7 Nm ± 10%, use LOCTITE 243	Tightening torque 12 Nm ± 10%, use LOCTITE 243
2	Threaded pin	DIN 913-M5×5-45H	–		
3	End cap, left				
4	Buffer strip				
5	Seal				
6	Sealing ring				
7	Buffer, left				
8	O-ring	1×0.6-N-NBR70	1.8×1.2-N-NBR75		
9	Regulating screw				
10	Flat-head screw	DIN 920-M3×20-4.8	DIN 84-M3×28-4.8	Tightening torque 0.2 Nm, use LOCTITE 243	Tightening torque 0.4 Nm, use LOCTITE 243
11	Clamp, sealing band				
12	Clamp, cover band				
13	Buffer/piston seal				
14	Buffer, left, sub-assembly				
15	Cylinder barrel				
16	Cover band				
17	Sealing band				
18	Socket head screw	DIN 912-M4×12-8.8	DIN 6912-M5×16-8.8	Tightening torque 0.6 Nm, use LOCTITE 243	Tightening torque 0.8 Nm, use LOCTITE 243
19	Washer	DIN 433, 4.3	DIN 433, 5.3		
20	Slide-piston connection				
21	Slide				
22	Cushioning seal	8×11.6 P80	9.5×15 P80		
23	Piston				
24	Magnet				
25	Band reverser				
26	Coupling				
27	Piston module				
28	Buffer, right				
29	Buffer, right, sub-assembly				
30	End cap, right				
31	Sealing ring				
32	Plug screw				Tightening torque 11 Nm

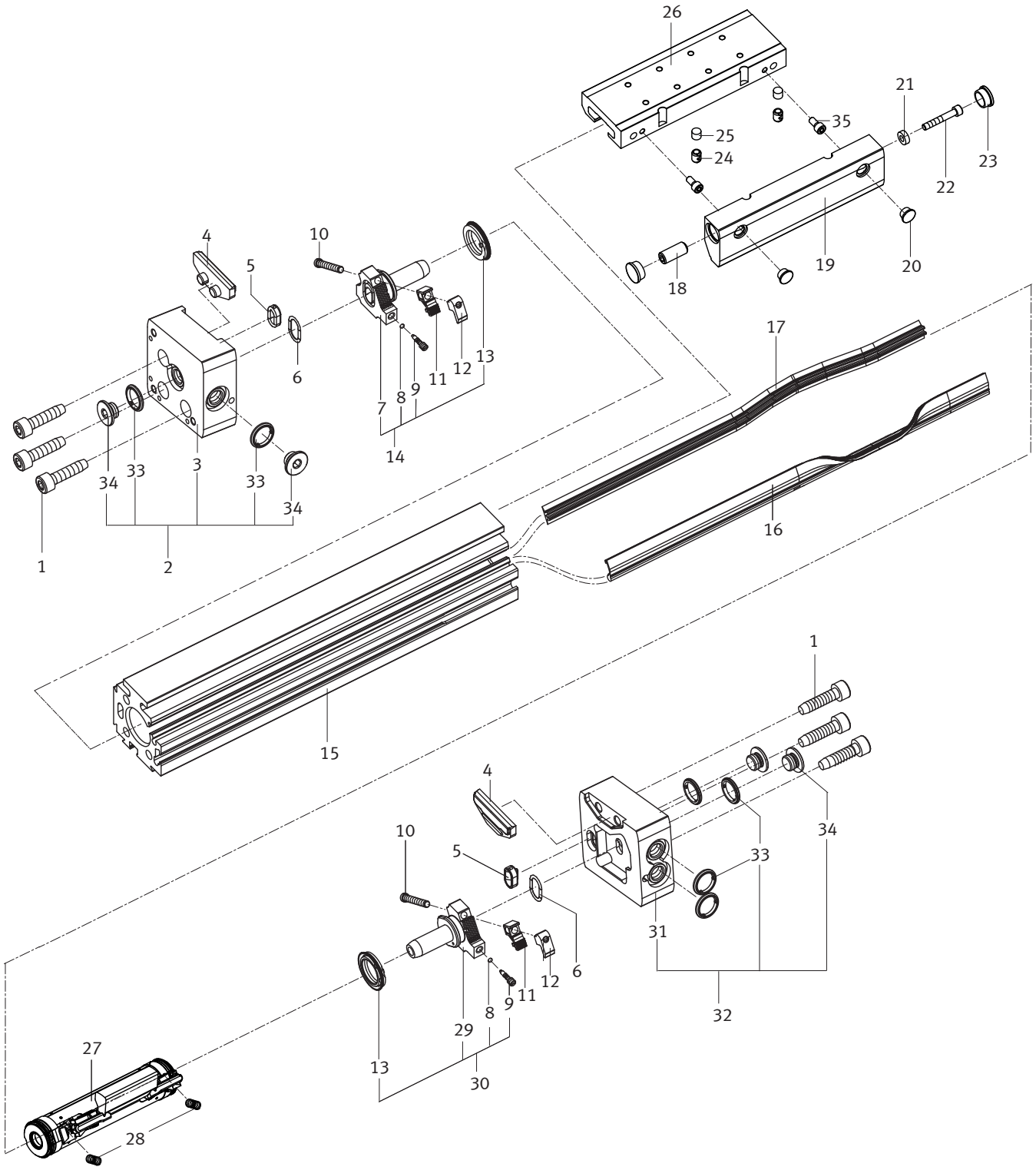
3.3 DGC-32/40-...-G



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-32-...-G	DGC-40-...-G	DGC-32-...-G	DGC-40-...-G
1	Self-tapping screw	M8×45-10.9		Tightening torque 30 Nm ± 10%, use LOCTITE 243	
2	Threaded pin	–	–		
3	End cap, left				
4	Buffer strip				
5	Seal		11.5×1.5-N-NBR75		
6	Sealing ring	16×2.5-N-NBR70	17×2-N-NBR75		
7	Buffer, left				
8	O-ring	1.8×1.2-N-NBR75	3×1.2-N-NBR70		
9	Regulating screw				
10	Flat-head screw	DIN 84-M3×30-5.8	DIN 912-M4×40-10.9	Tightening torque 0.4 Nm, use LOCTITE 243	Tightening torque 1.0 Nm, use LOCTITE 243
11	Clamp, sealing band				
12	Clamp, cover band				
13	Buffer/piston seal				
14	Buffer, left, sub-assembly				
15	Cylinder barrel				
16	Cover band				
17	Sealing band				
18	Socket head screw	DIN 912-M6×20-10.9	DIN 912-M8×25-10.9	Tightening torque 1.3 Nm ± 10%, use LOCTITE 243	Tightening torque 2.5 Nm ± 10%, use LOCTITE 243
19	Washer	DIN 433, 6.4	DIN 433, 8.4		
20	Slide-piston connection				
21	Slide				
22	Cushioning seal	12×18 P80	16×24 P80		
23	Piston				
24	Magnet				
25	Band reverser				
26	Coupling				
27	Piston module				
28	Buffer, right				
29	Buffer, right, sub-assembly				
30	End cap, right				
31	Sealing ring	OL-1/4	OL-1/2		
32	Plug screw			Tightening torque 11 Nm	Tightening torque 50 Nm
33	Compression spring	–			

3.4 DGC-50/63-...-G



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-50-...-G	DGC-63-...-G	DGC-50-...-G	DGC-63-...-G
1	Self-tapping screw	M8×55-10.9		Tightening torque 25 Nm ± 20%, use LOCTITE 243	Tightening torque 30 Nm ± 20%, use LOCTITE 243
2	End cap, left, sub-assembly				
3	End cap, left				
4	Buffer strip				
5	O-ring	11.5×1.5-N-NBR75			
6	O-ring	32×2.5-N-NBR70	42×3-N-NBR70		
7	Buffer, left				
8	O-ring	4×1.5-N-NBR70	6×1.5-N-NBR70		
9	Regulating screw				
10	Socket head screw	DIN 912-M4×40-10.9		Tightening torque 1.0 Nm ± 20%, use LOCTITE 243	
11	Clamp, sealing band				
12	Clamp, cover band				
13	Buffer/piston seal				
14	Buffer, left, sub-assembly				
15	Cylinder barrel				
16	Cover band				
17	Sealing band				
18	Threaded pin			Tightening torque 5.0 Nm ± 20%, use LOCTITE 243	
19	Slide-piston connection				
20	Blanking plug				
21	Washer				
22	Socket head screw	DIN 912-M8×50-10.9		Tightening torque 20 Nm ± 20%, use LOCTITE 243	
23	Blanking plug				
24	Spring pin	SG 12×15			
25	Blanking plug				
26	Slide				
27	Piston				
28	Compression spring	VL-5/2-4.0			
29	Buffer, right				
30	Buffer, right, sub-assembly				
31	End cap, right				
32	End cap, right, sub-assembly				
33	Sealing ring	OL-1/2	OL-M22		
34	Plug screw			Tightening torque 16 Nm	Tightening torque 18 Nm
35	Socket head screw	DIN 912-M8×16-10.9	DIN 912-M8×25-10.9	Tightening torque 20 Nm ± 20%, use LOCTITE 243	

4 Repair steps

This chapter describes how to completely dismantle the linear drives and the individual components or sub-assemblies within self-contained sub-chapters. The linear drive does not need to be completely dismantled for every fault in order to replace faulty components. The complete dismantling process described here is designed to provide a complete overview of the components and how they are accessed in case they need to be replaced. The cause of a defect must therefore always be determined before starting a repair.

Note

The repair should preferably be carried out on a stable and flat work surface with storage for small parts.

Before dismantling the linear drive, it is imperative that the cause of the failure is investigated to prevent, for example, repeated and premature failure. A linear drive which has been used as intended will not normally exhibit any premature signs of failure.

This is not necessary in the case of non-premature failure (fatigue time). However, the condition of the slide (wear on the slide elements, the slide guide setting for sizes DGC-8 and DGC-12, e.g. noticeable bearing clearance, faulty sliding performance and increased sliding noises etc.), the piston with all components in the cylinder barrel (e.g. piston seals, sealing band, cover band, buffer) and all sealing rings should also always be assessed. If in doubt, it is recommended to replace all the components mentioned so as to rule out reciprocal effects during later operation.

If the linear drive suffers premature failure, the operating conditions should be examined more closely.

The following possibilities should be considered, among others:

- **Overloading**

  In case of overloading the application parameters (mass, speed, operating pressure, operation medium) should be adjusted accordingly.
- **Ambient conditions/material resistance**

  Check whether the ambient temperature is within the permissible range.

  Check the chemical and physical ambient conditions for hazardous substances, such as dust, abrasive particles, cooling lubricants, solvents, ozone, radiation, water-soluble greases and oils, etc.

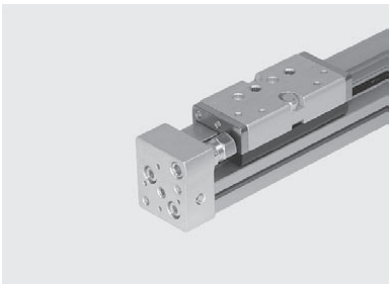
The following chapters describe how to dismantle the different sizes of the linear drives:

- Linear drives DGC-8/12-...-G (see chapter 4.1).
- Linear drives DGC-18/25/32/40-...-G (see chapter 4.2).
- Linear drives DGC-50/63-...-G (see chapter 4.3).

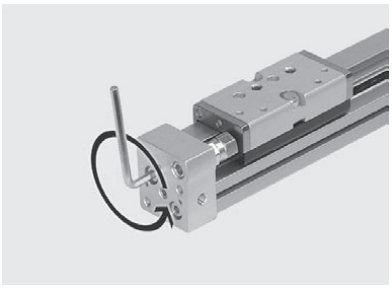
4.1 Linear drives DGC-8/12-...-G

4.1.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



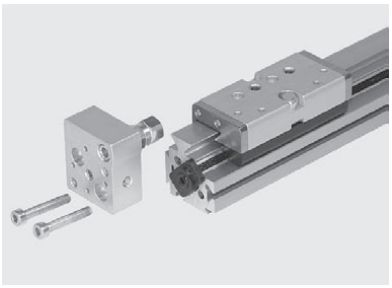
- Unfasten and remove the two self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

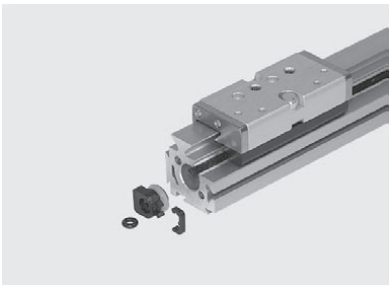
- Remove the end caps from the cylinder barrel at both ends of the drive.



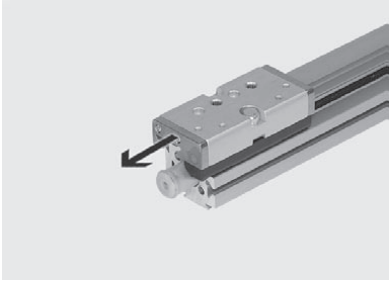
Documents

Chapter 4.1.6 describes how to replace the cushioning components on the end cap.

- Pull the clips from the buffers at both ends of the drive.
- Remove the buffers from the cylinder barrel.
- Removed the sealing ring from the buffer.



- Push the slide off the cylinder barrel.



Note

The slide can only be pushed off the cylinder barrel in conjunction with the piston.

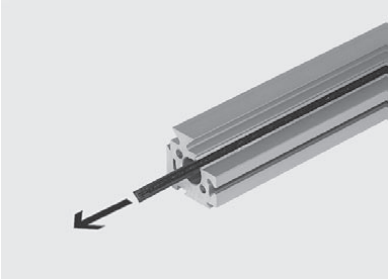
Note

The black wiper seal on the slide is not fastened and may be lost when pulling out the slide.

Documents

Chapters 4.1.3 and 4.1.4 describe how to dismantle and repair the slide.

- Pull the sealing band out of the cylinder barrel on one side.



Note

It may not be possible to pull out the sealing band on long drives. In this case, push it into the cylinder barrel with a blunt object and then remove it.

4.1.2 Assembling the linear drive

When assembling a linear drive wearing parts, such as the sealing band, seals, buffers, clips and the complete piston, can be replaced.

The wearing parts are ordered on the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary sealing band length.

Cutting the new sealing band to length

The exact length of the sealing band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and shorten it to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-8-...-G	140 mm
DGC-12-...-G	160 mm

Example: DGC-12-405-G

0-stroke: 160 mm

Stroke: 405 mm

Length of the sealing band = 0-stroke + stroke = 565 mm

The length of the sealing band calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band.

Warning

Do not bend the sealing band as this may cause damage or tearing and reduce its service life.

Greasing whilst assembling

When assembling the linear drive, various components have to be greased in accordance with the table below.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	Festo LUB-KC1[1)]	Fill the grease pockets in the slide elements with grease. Apply a thin layer of grease over the full surface of the contact area.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

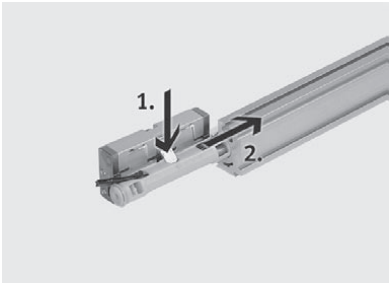
- Grease the sealing band, the piston and the inside of the cylinder barrel. Observe the greasing instructions in the table at the start of this chapter.
- Thread the sealing band into the through-hole in the piston.

- Insert the piston with the threaded sealing band a little way into the cylinder barrel so that the sealing band inserts into the slot in the cylinder barrel.

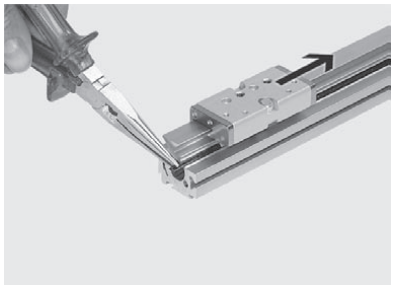
Note

When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches in the cylinder barrel.

- Connect the slide to the piston (1) by plugging in the coupling.
- Grease the cylinder barrel in the area of the plain-bearing guide. Observe the greasing instructions in the table at the start of this chapter.
- Push the slide, together with the piston, onto the cylinder barrel (2).



- In order to fasten the sealing band in place in the sealing band holder, move the slide once to the other end of the cylinder barrel and hold the sealing band in place with pliers as you do so.



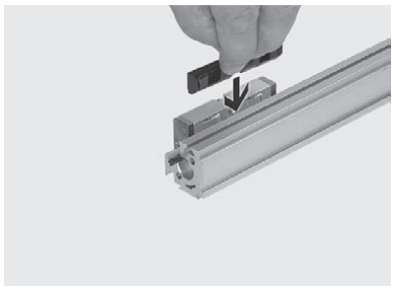
Note

The sealing band is pulled into the cylinder barrel by the draw of the piston. Make sure that the sealing band protrudes 4 mm from the cylinder barrel.

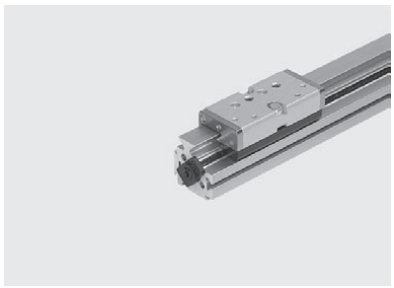
Note

The sealing band must not protrude beyond the buffer, otherwise the end cap cannot form an air-tight seal and may have an adverse effect on the function of the linear drive. The sealing band must be shortened so that it seals off flush with the outer edge of the buffers. However, it is better if it is slightly short of the buffers.

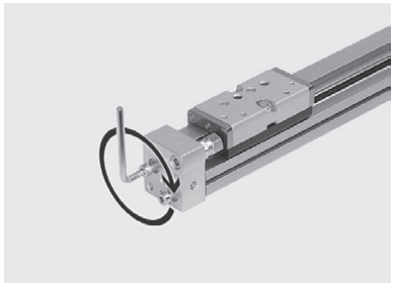
- Clip the wiper seal in on the side of the slide.



- Attach the buffers to both ends of the cylinder barrel.
- Grease one new sealing ring per buffer and insert them in the buffers.
- Attach the clips to the buffers to fasten the sealing band in place.



- Apply Loctite 243 to the self-tapping screws.
- Attach the end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the end cap and attach them loosely so that the end caps can still be shifted.
- Align the rear and bottom edge of both end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



Type	Torque
DGC-8-...-G	3.0 Nm ± 20%
DGC-12-...-G	3.0 Nm ± 20%

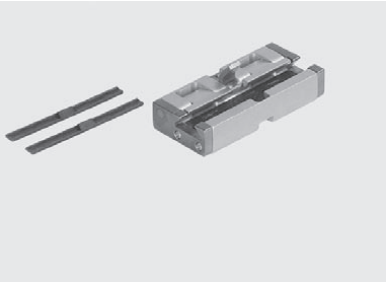
Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

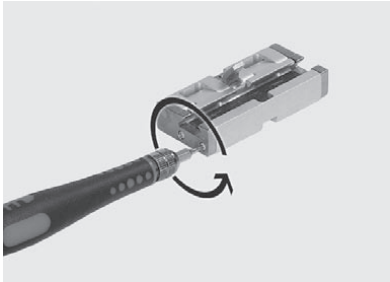
4.1.3 Replacing the slide elements in the slide

If the slide elements in the slide are faulty or worn, they will have to be replaced.

- Remove the slide as described in chapter 4.1.1 and remove the piston.
- Remove both narrow slide elements from the guide groove.



- Unscrew and remove the mounting screws on the stops with a Torx screwdriver T6 on both sides of the slide and remove the stops.

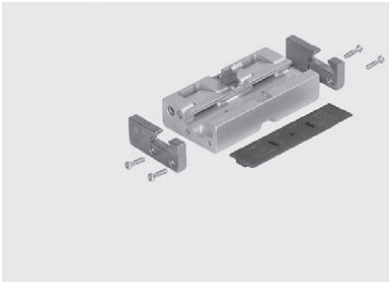


Warning

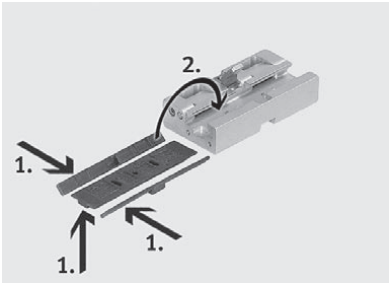
The screws are secured with Loctite 243 and may become damaged if handled carelessly. If the Torx socket on the screw head is damaged, the screw will have to be drilled out.

Tip: Before unfastening the screws, tap the screw heads with a suitable pin punch and a hammer in order to loosen the screws.

- Re-cut the threaded holes for the screws with a tapping drill in order to remove the residue of the locking agent.
- Check the screws for damage and replace them as necessary.
- Remove the wide slide element.



- Grease the slide elements on the contact surfaces (1).
  Observe the greasing instructions in the table in chapter 4.1.2.
- Insert the slide elements in the slide (2).



Note

After replacing the slide elements, the sliding play has to be set as described in chapter 4.1.4.

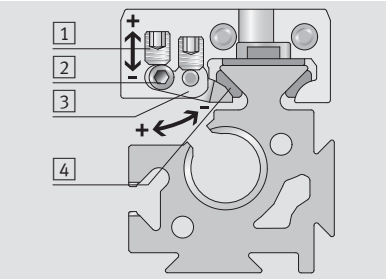
4.1.4 Setting the sliding play on the slide

If new slide elements are inserted in the slide, the sliding play has to be set.

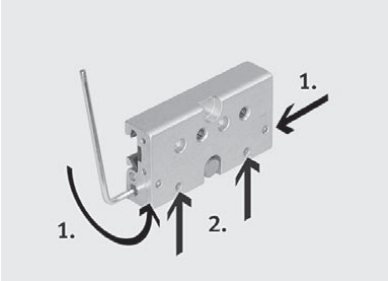
The setting for the sliding play is adjusted by turning the threaded pins marked 1. This causes the respective toggle lever 3 to change the contact pressure of the slide element 4 on the guide rail.

The trapezoidal shape of the guide rails distributes the contact pressure over all three slide elements.

The sliding play setting is secured by tightening the side threaded pins 2. This causes the toggle levers 3 between the threaded pins 2 and the slide to be clamped.



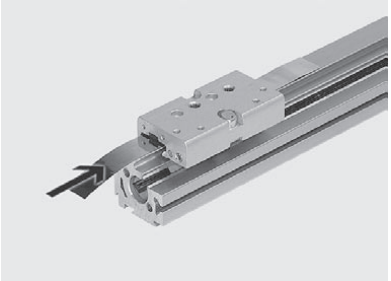
- Remove the slide as described in chapter 4.1.1 and remove the piston.
- Unscrew the side threaded pins to secure the toggle levers (1).
- Unscrew the threaded pins to set the sliding play (2).



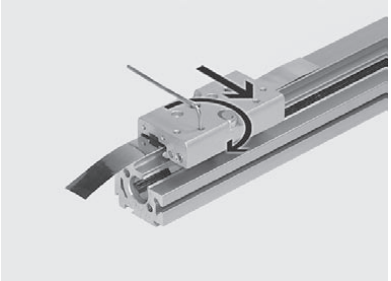
Warning

The threaded pins are secured with Loctite 243 and may become damaged if handled carelessly. If the internal hexagon socket is damaged (rounded), it may still be possible to unscrew the threaded pin by driving in a Torx screwdriver. Otherwise the threaded pin will have to be drilled out.

- Re-cut all four threaded holes for the threaded pins with a suitable tapping drill in order to remove the residue of the locking agent.
- Check the threaded pins for damage and replace them as necessary.
- Place the slide, including the piston, on the cylinder barrel as described in chapter 4.1.2.
- Push a feeler gauge (0.02 mm) between the upper slide element and the guide rail.

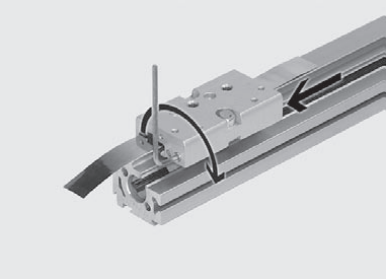


- Apply Loctite 243 to both threaded pins to set the sliding play and screw them in so that the slide rests on the guide rail backlash-free.

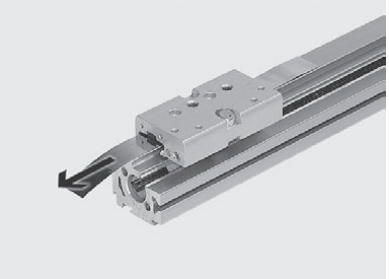


- Apply Loctite 243 to both threaded pins to secure the toggle levers and tighten them using the appropriate torque (see table).

Type	Torque
DGC-8-...-G	1.0 Nm
DGC-12-...-G	1.0 Nm

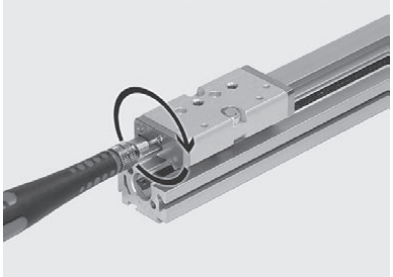


- Remove the feeler gauge.



- Put the side stops on the slide.
- Apply Loctite 243 to both mounting screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-8-...-G	0.3 Nm
DGC-12-...-G	0.3 Nm

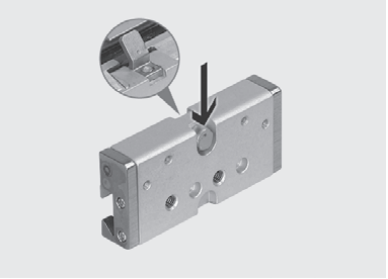


- Fit the buffers and place the end caps on the cylinder barrel as described in chapter 4.1.2.

4.1.5 Replacing the coupling on the slide

If the coupling (magnifying glass) is faulty or has been lost, it can be replaced as follows.

- Remove the slide as described in chapter 4.1.1.



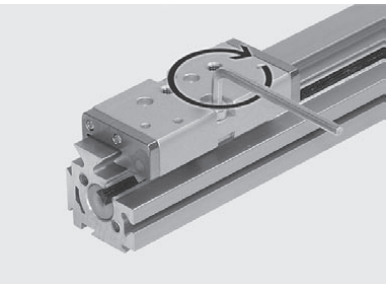
Note

The socket head screw for fastening the coupling is filled with thread locker. To open the screw the thread locker has to be removed using suitable tools.

- Remove the socket head screw completely.

- Remove the coupling.

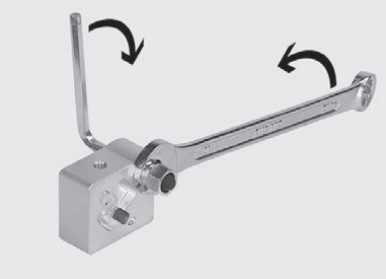
- Insert the new coupling in the slide. Apply Loctite 243 to the socket head screw and screw in the socket head screw. Do **not** tighten the screw yet.
- Place the slide, including the piston, on the cylinder barrel as described in chapter 4.1.2.
- Tighten the socket head screw using the appropriate torque (see table).



Type	Torque
DGC-8-...-G	1.4 Nm
DGC-12-...-G	1.4 Nm

4.1.6 Replacing the cushioning components

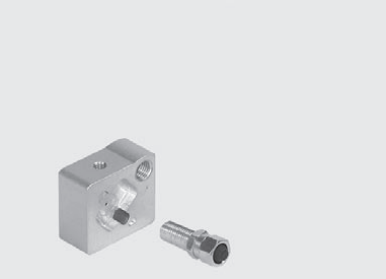
- Unfasten the lock nuts on the cushioning components.



Note

The cushioning components can be replaced even when the end caps are attached.

- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).

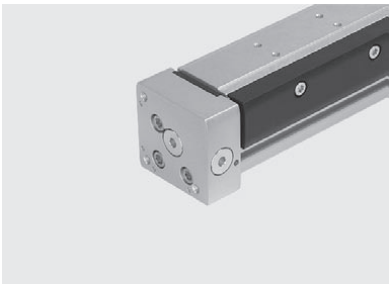


Type	Torque
DGC-8-...-G	2.0 Nm ±20%
DGC-12-...-G	2.0 Nm ±20%

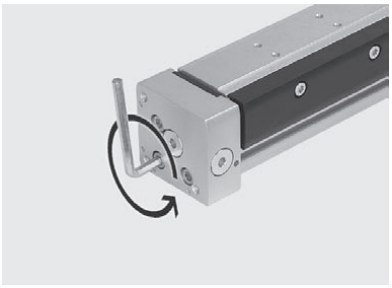
4.2 Linear drives DGC-18/25/32/40-...-G

4.2.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



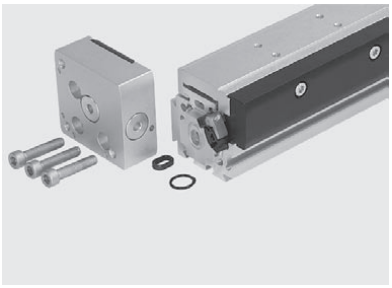
- Unfasten and remove the three self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

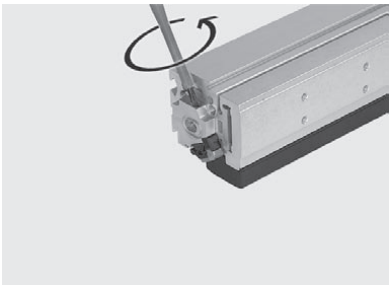
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



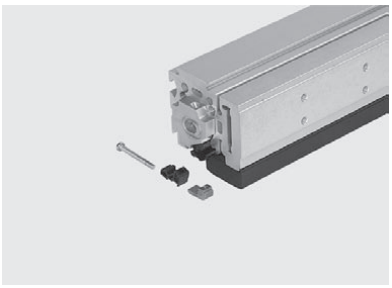
Documents

Chapters 4.2.4 and 4.2.5 describe how to dismantle and repair the end caps.

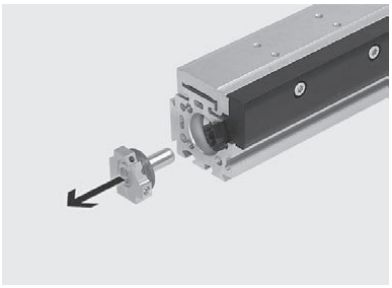
- Unscrew and remove the flat head screw from the band clamping mechanism on both buffers.



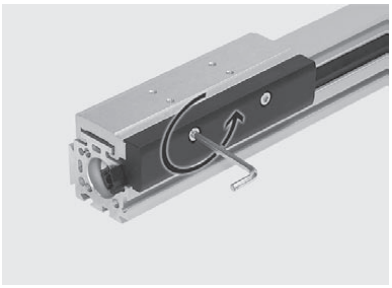
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



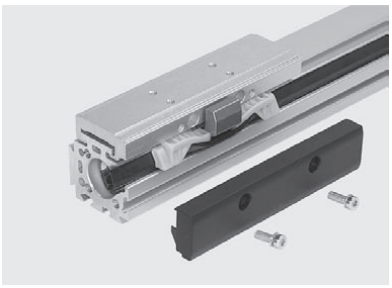
- Remove both the buffers from the cylinder barrel.



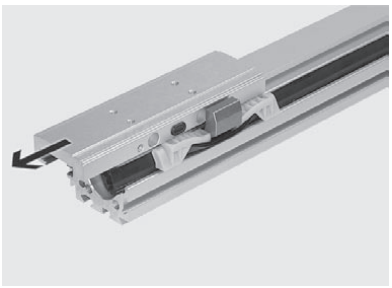
- Unscrew and remove the socket head screws from the slide-piston connection.



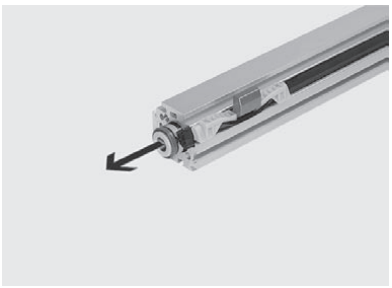
- Remove the slide-piston connection.



- Push the slide off the cylinder barrel.



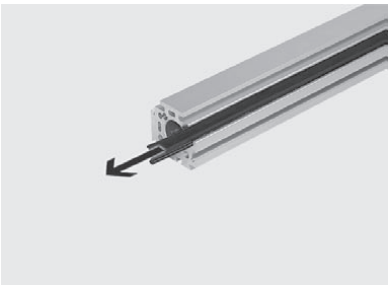
- Push the piston out of the cylinder barrel.



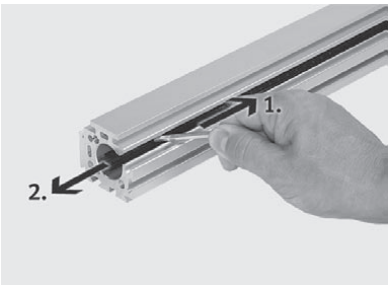
Documents

Chapter 4.2.3 describes how to dismantle and repair the piston module.

- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.2.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered on the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-18-...-G	220 mm
DGC-25-...-G	250 mm
DGC-32-...-G	290 mm
DGC-40-...-G	335 mm

Example: DGC-25-330-G

0-stroke: 250 mm

Stroke: 330 mm

Length of the sealing band/cover band = 0-stroke + stroke = 580 mm

The length of the band calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

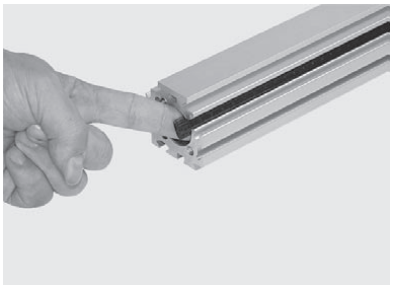
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

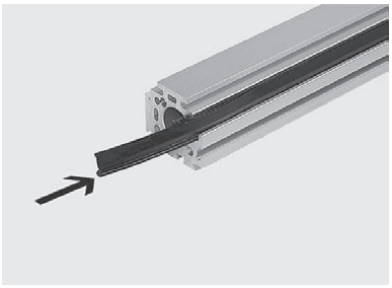
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	–	The plain-bearing guide in these sizes is designed for unlubricated operation.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

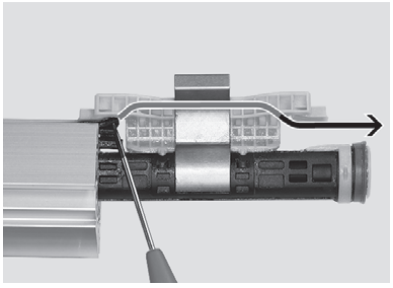
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 10 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Thread the cover band into the fixture so that approximately 10 mm of the cover band still protrude.



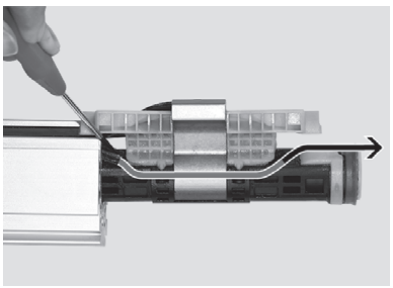
- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.



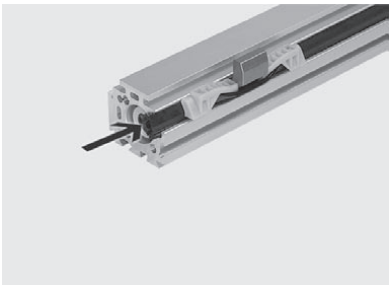
Note

When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

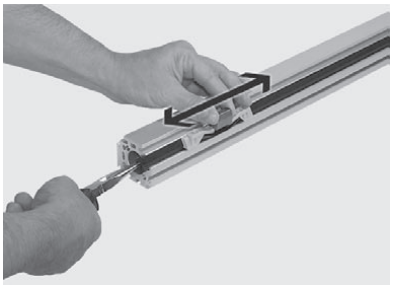
- Push the sealing band under the band reverser with a screwdriver.



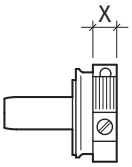
- Insert the piston fully into the cylinder barrel.



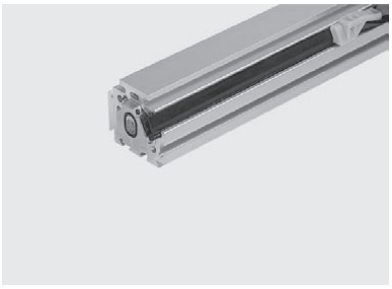
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).



Type	Width of the contact surface X
DGC-18-...-G	6 mm
DGC-25-...-G	7 mm
DGC-32-...-G	9 mm
DGC-40-...-G	9 mm



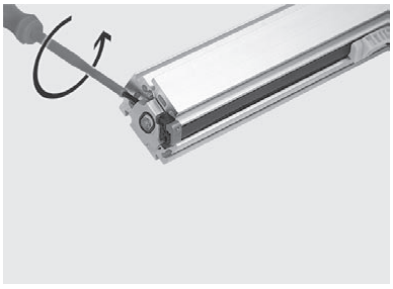
- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



Note

The sealing band and cover band must not protrude beyond the buffers, otherwise the end cap cannot form an air-tight seal and may have an adverse effect on the function of the linear drive. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

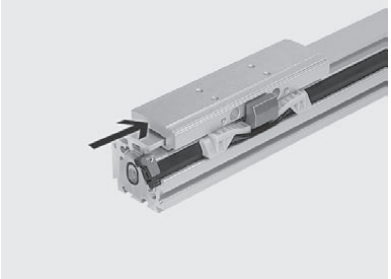
- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).



Type	Torque
DGC-18-...-G	0.2 Nm ±10%
DGC-25-...-G	0.4 Nm ±10%
DGC-32-...-G	0.4 Nm ±10%
DGC-40-...-G	1.0 Nm ±10%

- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

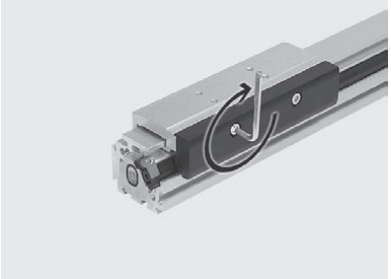
- Push the slide onto the guide rail and align it centrally with the piston's moment compensator.



Note

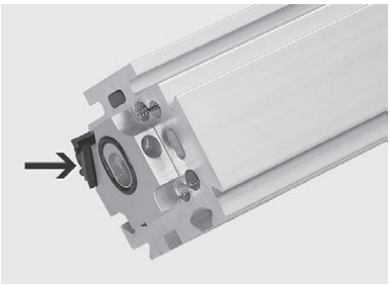
The slide elements cannot be replaced individually. It is therefore necessary to replace the entire slide.

- Place the slide-piston connection on the coupling.
- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).



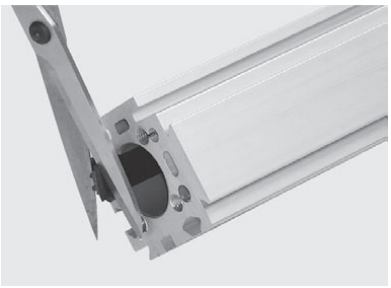
Type	Torque
DGC-18-...-G	0.6 Nm ±10%
DGC-25-...-G	0.8 Nm ±10%
DGC-32-...-G	1.3 Nm ±10%
DGC-40-...-G	2.5 Nm ±10%

- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the piston chamber on the other side of the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the cylinder barrel).

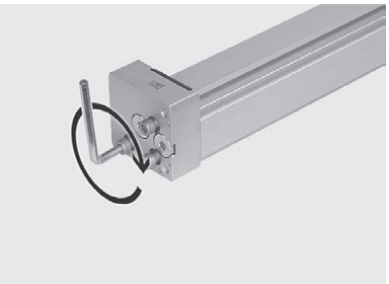


- Applying the band clamping mechanism to the sealing band and cover band
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-G	0.2 Nm ±10%
DGC-25-...-G	0.4 Nm ±10%
DGC-32-...-G	0.4 Nm ±10%
DGC-40-...-G	1.0 Nm ±10%

- Grease the sealing rings and insert them into the end caps.

- Apply Loctite 243 to the self-tapping screws.
- Attach the end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the end cap and attach them loosely so that the end caps can still be shifted.
- Align the rear and bottom edge of both end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



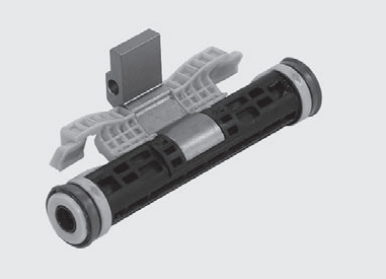
Type	Torque
DGC-18-...-G	7.0 Nm ±10%
DGC-25-...-G	12 Nm ±10%
DGC-32-...-G	30 Nm ±10%
DGC-40-...-G	30 Nm ±10%

Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.2.3 Dismantling and repairing the piston module

- Remove the piston as described in chapter 4.2.1.

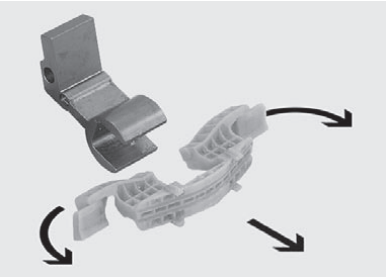


- Remove the coupling, together with the band reverser, from the piston.

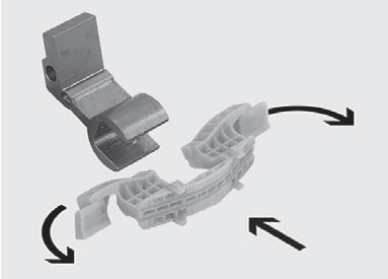
Note

The piston must be replaced completely in case of wear. The spare part comprises the inner and outer sealing rings and the magnets.

- Bend the band reverser slightly apart and pull it off the coupling.
- Check all parts for wear and replace them as necessary.

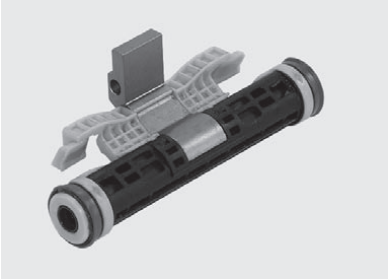


- Clip the band reverser in the coupling.



Note
Make sure that the band reverser is aligned properly with the coupling (see illustration).

- Connect the coupling with the band reverser to the piston.



Note
Make sure that the coupling is properly aligned with the piston. The magnet in the piston must be positioned on the left-hand side of the piston when the coupling points backwards.

- Grease the sealing rings and the band reverser.
  Observe the greasing instructions in the table in chapter 4.2.2.
- Assemble the linear drive as described in chapter 4.2.2.

4.2.4 Replacing the buffer strips

- Remove the buffer strips from the end caps.
- Grease the backs of the new buffer strips and insert them into the end caps.

4.2.5 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end caps and remove the sealing rings.

Note
The sealing rings can be replaced even when the end caps are attached.

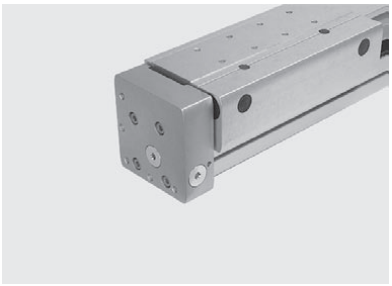
- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-25-...-G	11 Nm ±10%
DGC-32-...-G	11 Nm ±10%
DGC-40-...-G	50 Nm ±10%

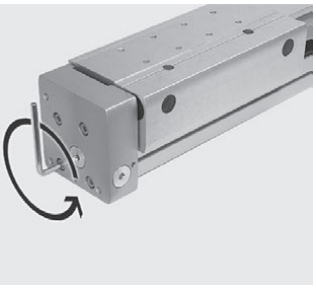
4.3 Linear drives DGC-50/63-...-G

4.3.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



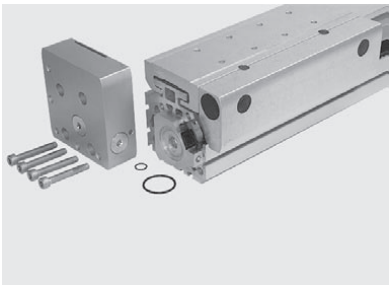
- Unfasten and remove the four self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

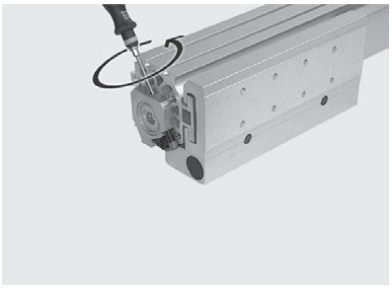
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



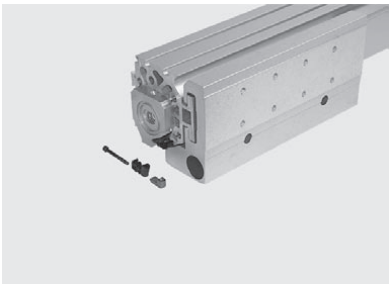
Documents

Chapters 4.3.4 and 4.3.5 describe how to dismantle and repair the end caps.

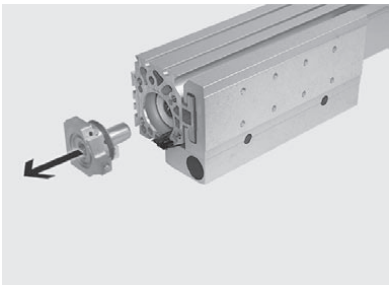
- Unscrew and remove the flat head screw from the band clamping mechanism on both buffers.



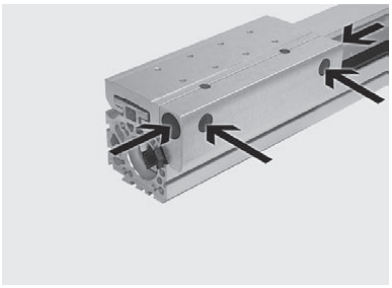
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



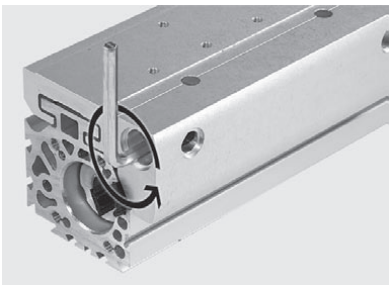
- Remove both the buffers from the cylinder barrel.



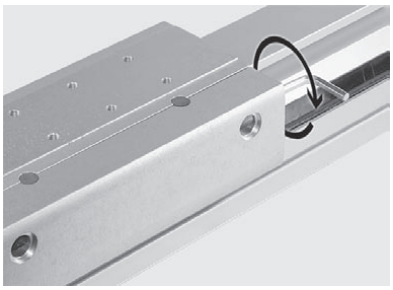
- Remove both the two front and the two side blanking plugs from the slide-piston connection.



- Unfasten the threaded pins on the left-hand side of the slide-piston connection.



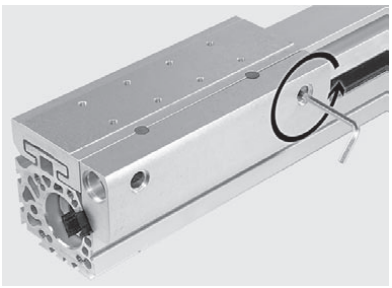
- Unfasten the socket head screw on the right-hand side of the slide-piston connection.



Note

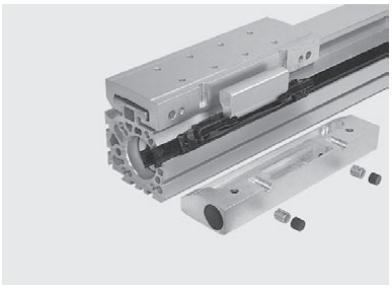
Before this screw can be completely unscrewed, the socket head screws which are accessible from the front have to be unscrewed and removed.

- Unfasten both the socket head screws on the front of the slide-piston connection and remove them.



- Remove the socket head screw on the right-hand side of the slide-piston connection.

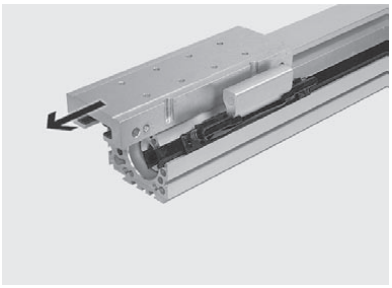
- Remove the slide-piston connection.



Note

Both the spring pins and the blanking plugs between the slide and the slide-piston connection are not fastened and may be lost when removing the slide-piston connection.

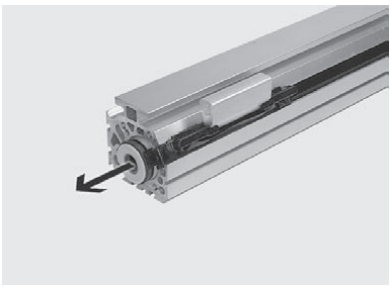
- Push the slide off the cylinder barrel.



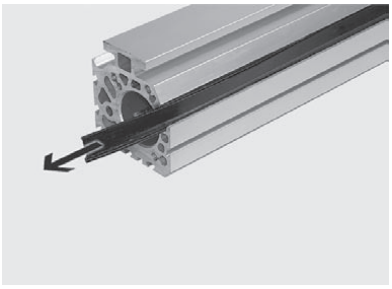
Documents

Chapter 4.3.3 describes how to replace the slide elements in the slide.

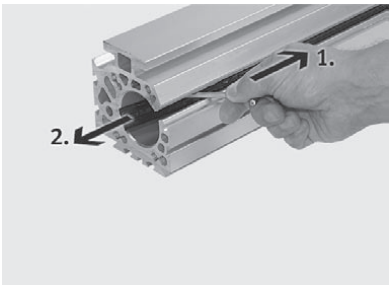
- Push the piston out of the cylinder barrel.
- Check the springs on the band reverser for damage and replace them as necessary.



- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.3.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-50-...-G	370 mm
DGC-63-...-G	415 mm

Example: DGC-50-180-G

0-stroke: 370 mm

Stroke: 180 mm

Length of the sealing band/cover band = 0-stroke + stroke = 550 mm

The length of the band calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

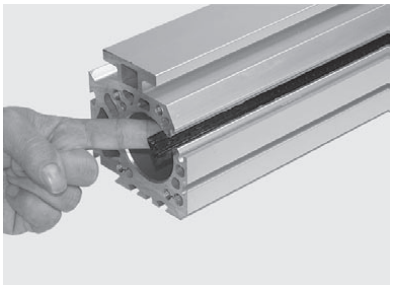
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

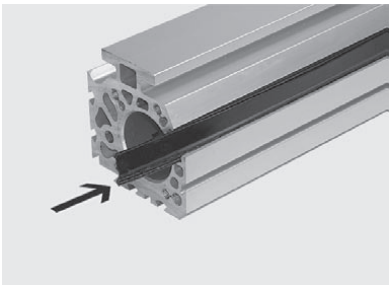
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	–	The plain-bearing guide in these sizes is designed for unlubricated operation.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

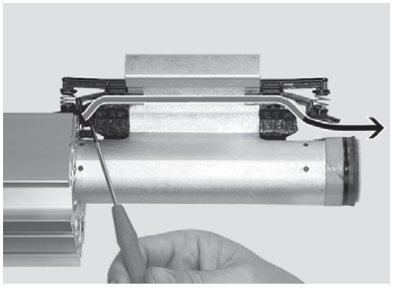
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 14 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Thread the cover band into the fixture so that approximately 14 mm of the cover band still protrude.



- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.

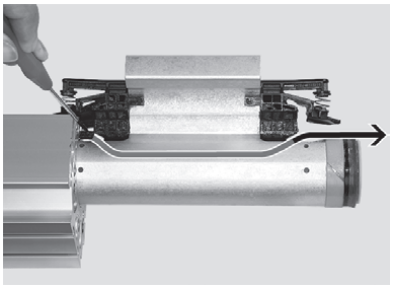


Note

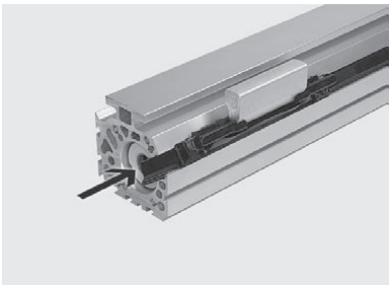
When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

The magnet is moulded-in and is thus not visible. Therefore its position can be determined using a counter magnet (e.g. compass).

- Push the sealing band under the band reverser with a screwdriver.

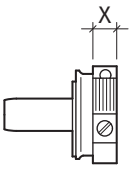


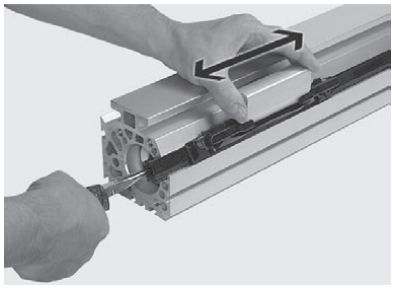
- Insert the piston fully into the cylinder barrel.



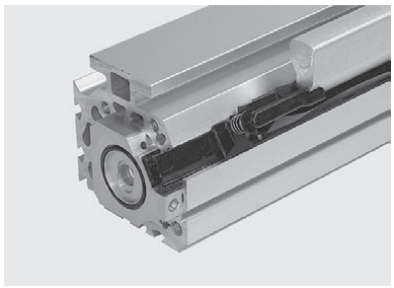
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-50-...-G	14 mm
DGC-63-...-G	16 mm



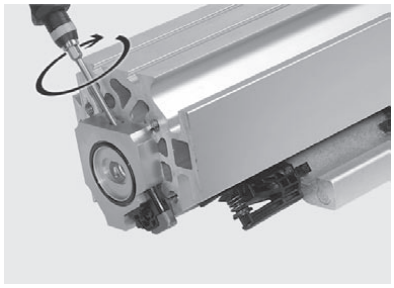


- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



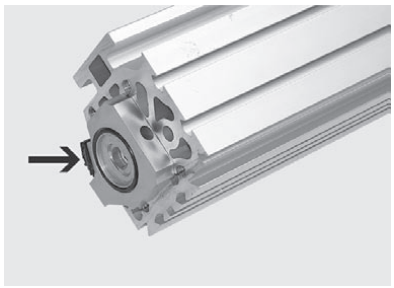
- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-50-...-G	1.0 Nm ±20%
DGC-63-...-G	1.0 Nm ±20%



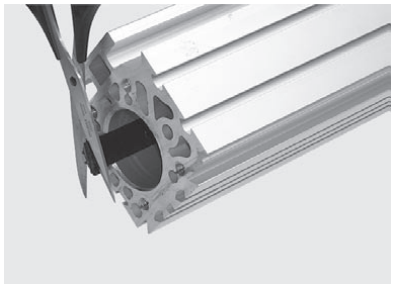
- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the piston chamber on the other side of the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



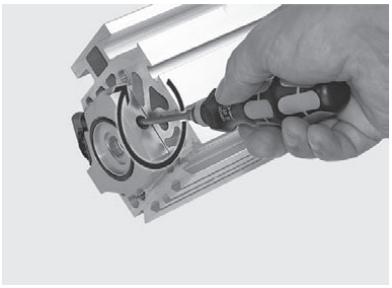
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the cylinder barrel).

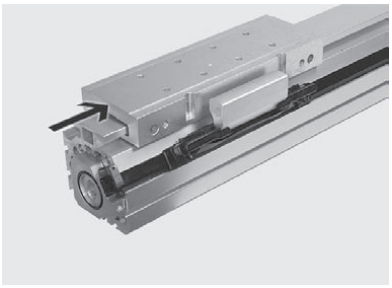


- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

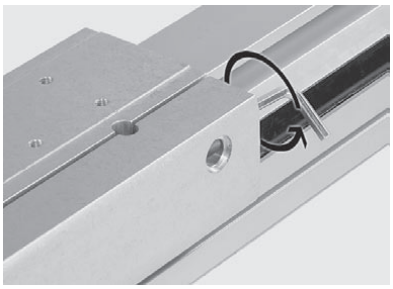
Type	Torque
DGC-50-...-G	1.0 Nm ±20%
DGC-63-...-G	1.0 Nm ±20%



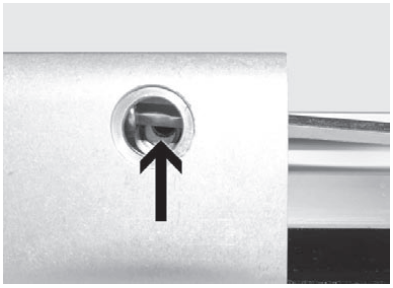
- Push the slide onto the guide rail and align it centrally with the coupling.



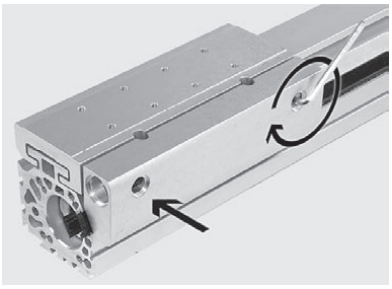
- Place the slide-piston connection on the coupling.
- Place the washer on the socket head screw on the right-hand end of the slide-piston connection and apply Loctite 243 to the socket head screw.



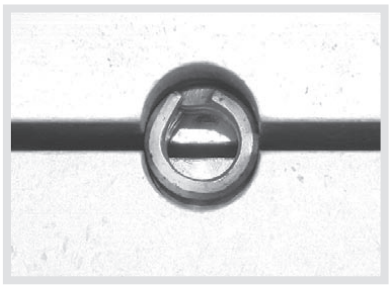
- Only screw the socket head screw in far enough so that the thread of the socket head screw being inserted from the front is accessible.



- Apply Loctite 243 to the socket head screws for the slide-piston connection and tighten them slightly so that the slide-piston connection is positioned at 1-2 mm from the slide.



- Insert the spring pins between the slide and the slide-piston connection as far as they will go.

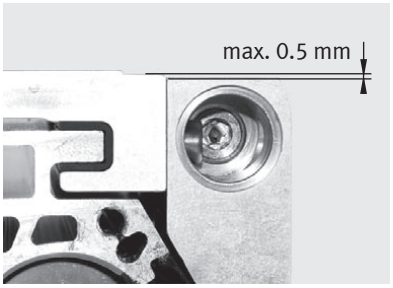


Note

When inserting the spring pins, make sure that they rest properly in the fixture.

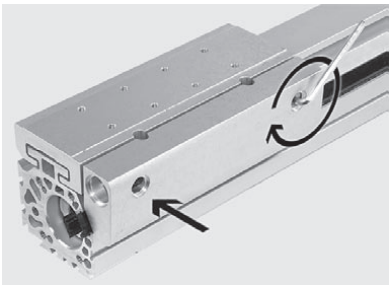
The openings of the spring pins must be off-set by 90° to the join between the slide and the slide-connection.

- Align the upper edge of the slide-piston connection so that it is flush with the outer edge of the slide using a stop. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide must not exceed **0.5 mm**.



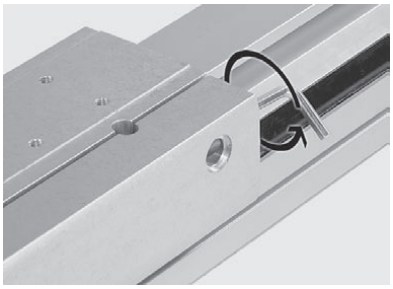
- Tighten the socket head screws for the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-G	20 Nm ±20%
DGC-63-...-G	20 Nm ±20%



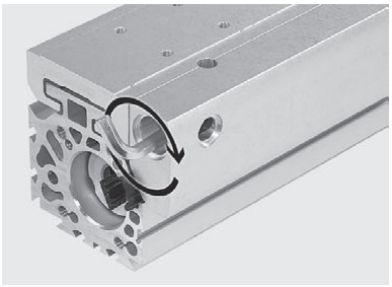
- Tighten the socket head screw on the right-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-G	20 Nm ±20%
DGC-63-...-G	20 Nm ±20%



- Tighten the threaded pins on the left-hand end of the slide-piston connection using the appropriate torque (see table).

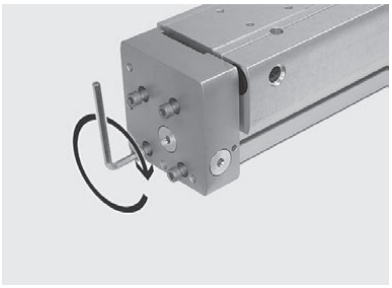
Type	Torque
DGC-50-...-G	5 Nm ±20%
DGC-63-...-G	5 Nm ±20%



- Grease the sealing ring and insert it into the respective fixture in the end cap.
- Attach the respective end caps to the cylinder barrel on both sides and align each rear and lower edge flush with the cylinder barrel.

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-G	25 Nm ±20%
DGC-63-...-G	30 Nm ±20%



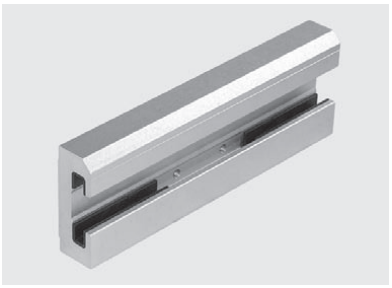
- Insert the blanking plugs for the drill holes for the socket head screws, threaded pins and spring pins into the slide-piston connection.

Note

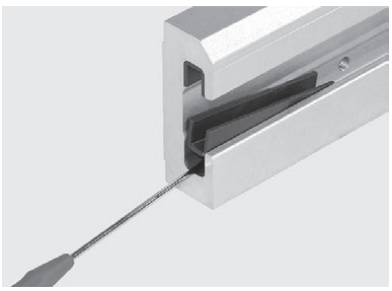
Once the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.3.3 Replacing the slide elements in the slide

- Remove the slide as described in chapter 4.3.1.

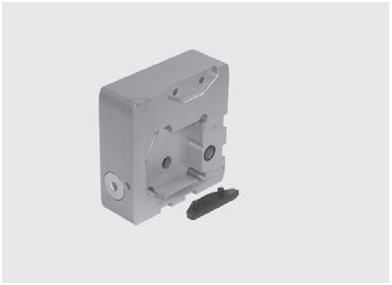


- Lever the slide elements inwards and out of the slide with a suitable tool.
- Insert the new slide elements in the slide.



4.3.4 Replacing the buffer strips

- Remove the cushioning components from the end caps.

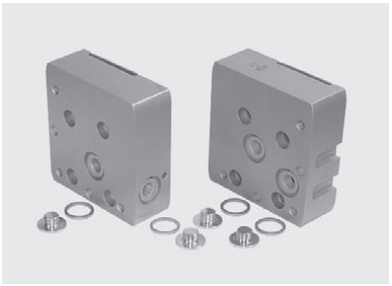


Note
The cushioning components can be replaced even when the end caps are attached.

- Grease the backs of the new cushioning components and insert them into the end caps.

4.3.5 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end cap and remove the sealing rings.



Note
The sealing rings can be replaced even when the end cap is inserted.

- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-50-...-G	16 Nm
DGC-63-...-G	18 Nm

5 Maintenance

This chapter contains key technical information about how to carry out maintenance work on the linear drive. A detailed description of the steps for care and maintenance can be found in the operating instructions. Further information on the assembly aids and lubricants can be found on the Festo website (www.Festo.com).

5.1 Greasing the linear drive

The linear drive has to be greased when repair work is carried out and at set intervals.

Greasing intervals for the guide rails by size and lubricant

Type	Greasing interval	Lubricant
DGC-8-...-G	3000 km	LUB-KC1
DGC-12-...-G	Life-time lubrication	LUB-KC1
DGC-18-/-25-/-32-/-40-/ -50-/-63-...G	The guides for these drives are designed for unlubricated operation. Relubrication is permitted.	LUB-KC1

Warning

The lubrication intervals are shortened by the following operating conditions:

- Extremely short strokes ‹ 50 mm.
- Large strokes › 2000 mm.
- Speeds › 2 m/s.
- Increased accumulation of dirt in the environment (e.g. sanding dust etc.).
- High ambient temperature › 40 °C.

The guide rail must be relubricated at least every 3 years.

Maintenance of the band system

- Clean the band system if required with a soft cloth.
- Avoid cleaning agents which will damage the band system which is made of PU. Excessive friction or the use of grease-solvent cleaning agents (e.g. soapsuds) will damage the grease layer.
- Grease the band system superficially with LUB-KC1 type grease if it no longer has a layer of grease.

6 Tools

This chapter provides an overview of the tools and aids required to repair and maintain the linear drive DGC-...-G in its various sizes.

6.1 Required tools by size

Designation	DGC-8-/-12-...-G	DGC-18-/-25-/-32-/-40-...-G	DGC-50-/-63-...-G
Allen key	1.5 - 4 mm	4 - 5 mm	3 - 6 mm
Torx screwdriver	T10		
Screwdriver		5 mm	
Torque wrench	1.4 - 3 Nm	0.6 - 50 Nm	1 - 25 Nm
Torque screwdriver		0.2 – 1 Nm	
Flat pliers	Required		
Feeler gauge	0.02 mm		
Sturdy general purpose scissors or metal shears	For cutting the cover band to length	For cutting the sealing band and the cover band to length	

7 Liability/Conditions of use

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The latter applies particularly to extracts of the documents for the user’s own documentation. The guarantee and liability for separately available/supplied data storage media, i. e. except for the electronic documentation available/supplied via the Internet/Intranet, is limited exclusively to proper duplication of the software, whereby Festo guarantees that in each case the data storage medium or software contains the latest update of the documentation. Concerning electronic documentation available on the Internet/Intranet, there is no guarantee that it will have the same version status as the last printed edition.

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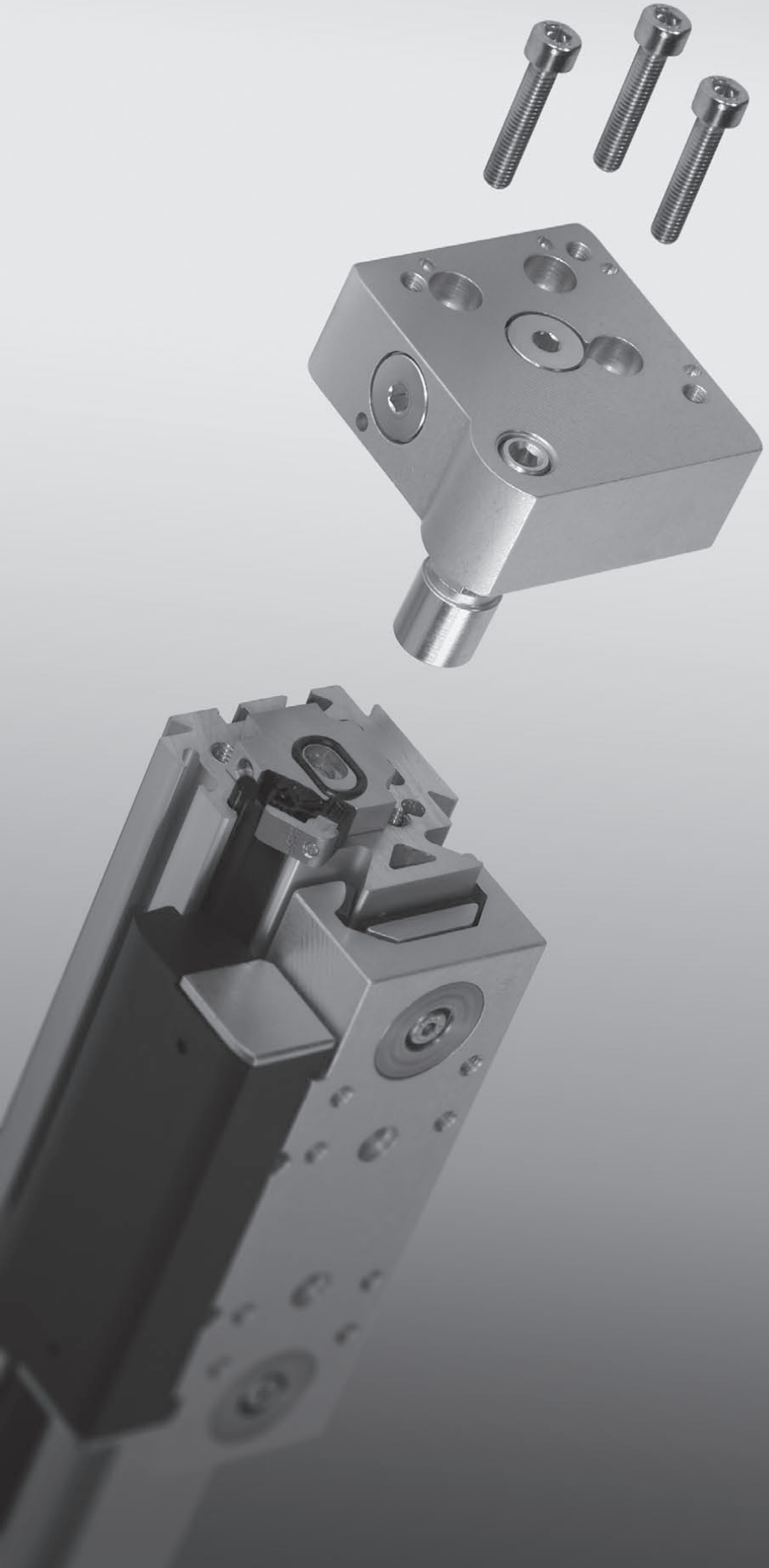
Warranty and liability claims in conformity with the aforementioned regulations (items III. and IV.) may be raised only if the user has observed the safety guidelines of the documentation in conjunction with the use of the machine and its safety guidelines. The user himself is responsible for ensuring that the electronic documentation, when not supplied with the product, matches the product actually used by the user.

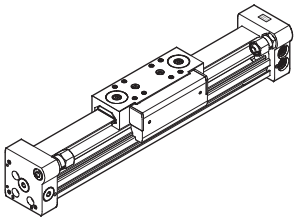
Linear drive

DGC-...-GF



FESTO

Repair instructions (en)



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Foreword

These repair instructions are valid for the linear drives listed on the title page to the exclusion of any liability claims.

Deviations compared to the descriptions in these repair instructions may arise depending on the design and/or modification status of the specific linear drive. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

Festo AG & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise, no liability is accepted for direct or consequential damage resulting from incorrect use of the products.

You will find further information on this in Chapter 7 “Liability/conditions of use”.

The relevant regulations on occupational safety, safety engineering and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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Table of contents

1 Important information

1.1 About these repair instructions

This document contains all important information about the professional repair of the linear drive type DGC-...-GF.

The DGC-...-GF linear drive is fully repairable. However, in case of larger defects, the costs of carrying out a repair must be considered.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain complete, detailed information. The following documents should therefore also be available while doing repair work on the linear drive:

- **Operating instructions**
  Contains information about the control parts and connections for the linear drive, as well as information about function, construction, application, installation, commissioning, care and maintenance, etc. It can be found on the Festo website (www.Festo.com).
- **Spare parts documentation**
  Contains an overview of the spare and wearing parts as well as information on their installation. The spare parts documentation can be found in the online spare parts catalogue on the Festo website (spareparts.Festo.com).
- **Assembly tools**
  Contains an overview of the available assembly tools such as lubricants, thread locking agents, maintenance tools etc. (aids for assembly and maintenance). They can be found in the online spare parts catalogue on the Festo website (www.Festo.com).

1.2 Pictograms used in these repair instructions

Warning
This sign indicates a dangerous situation for persons and/or the product. Failure to observe this warning can result in injury to persons and/or damage to the device.

Note
This sign indicates important tips and information that can make your work easier.

Environment
This sign indicates information on the steps required for environmentally-friendly use of materials and equipment, as well as the guidelines and regulations that may need to be observed.

Documents
This sign indicates references to other chapters or documents containing additional information.

1.3 General safety instructions

Warning

The linear drive must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts, as well as without the technical documentation required for installation and/or repair, are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions as well as the respective device-specific operating instructions.

Note

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.

Environment

Components and equipment replaced as part of a repair must be disposed of in accordance with the locally valid environmental protection regulations.

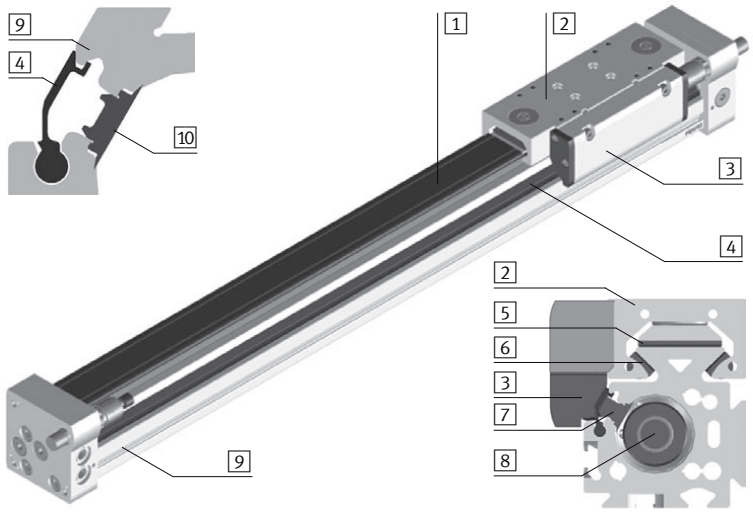
2 General product description

2.1 Functional description

The DGC-...-GF is a linear drive with a plain-bearing guide and the functional principle of a double-acting piston for power transmission. When compressed air is applied to the ports alternately, the piston moves backwards and forwards in the piston chamber. A rigid connection moves the slide with the attached load (e.g. adapter plate with drive) on the guide rail. The slot in the basic profile required for this is covered by a band system. The slide is mounted on slide elements and thus designed for low and medium-level loads. The operating behaviour in case of torsional loads is in the medium range.

The DGC-...-GF, when used properly, is used for transporting loads in a space-saving manner and is approved for the operating modes slide mode and yoke mode (adhere to the load limits).

These graphics provide you with an overview of the construction of the linear drive using the DGC-25-...-GF as an example.



1 Guide rail
2 Slide
3 Slide-piston connection
4 Cover band
5 Upper slide element
6 Side slide element
7 Coupling
8 Piston
9 Cylinder barrel
10 Sealing band

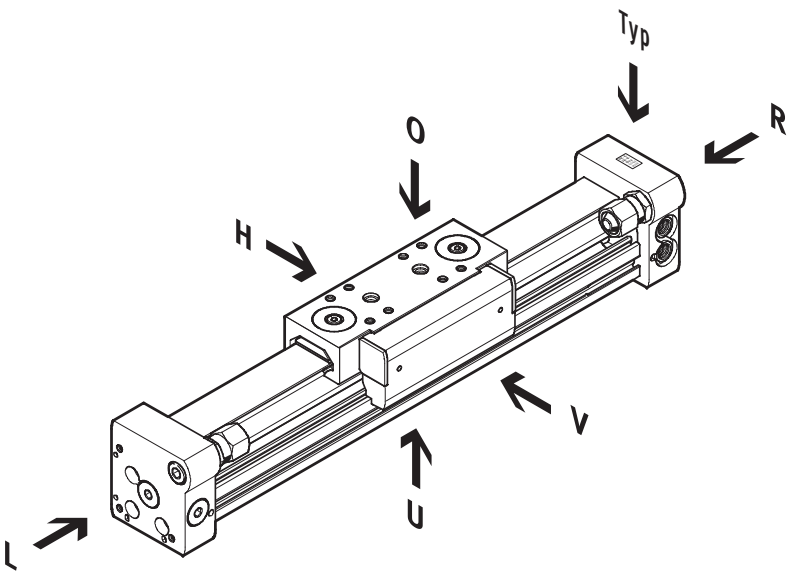
2.2 Types and part numbers

Type	Part number
DGC-18-...-GF	532479
DGC-25-...-GF	532483
DGC-32-...-GF	532487
DGC-40-...-GF	532491
DGC-50-...-GF	532495
DGC-63-...-GF	532499

The complete overview of features, accessories, type codes, technical data and dimensions for the DGC-... linear drives can be found in the product catalogue or on the Festo website (www.Festo.com).

2.3 Mounting directions

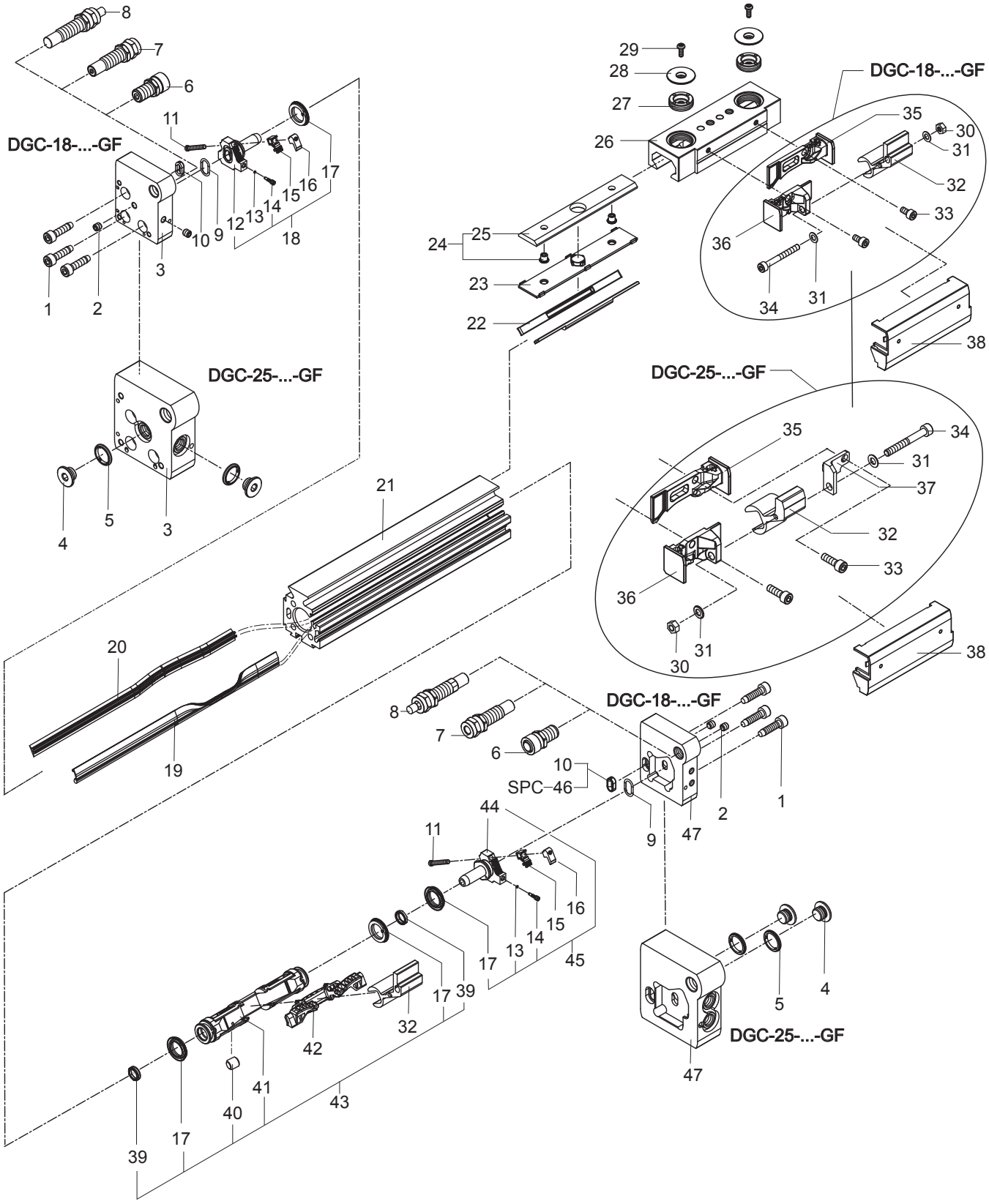
This graphic provides you with an overview of the mounting directions on the linear drive using the DGC-25-...-GF as an example.



Type = Product designation (name plate)
O = Top
U = Underneath
R = Right
L = Left
V = Front
H = Rear

3 Component overview

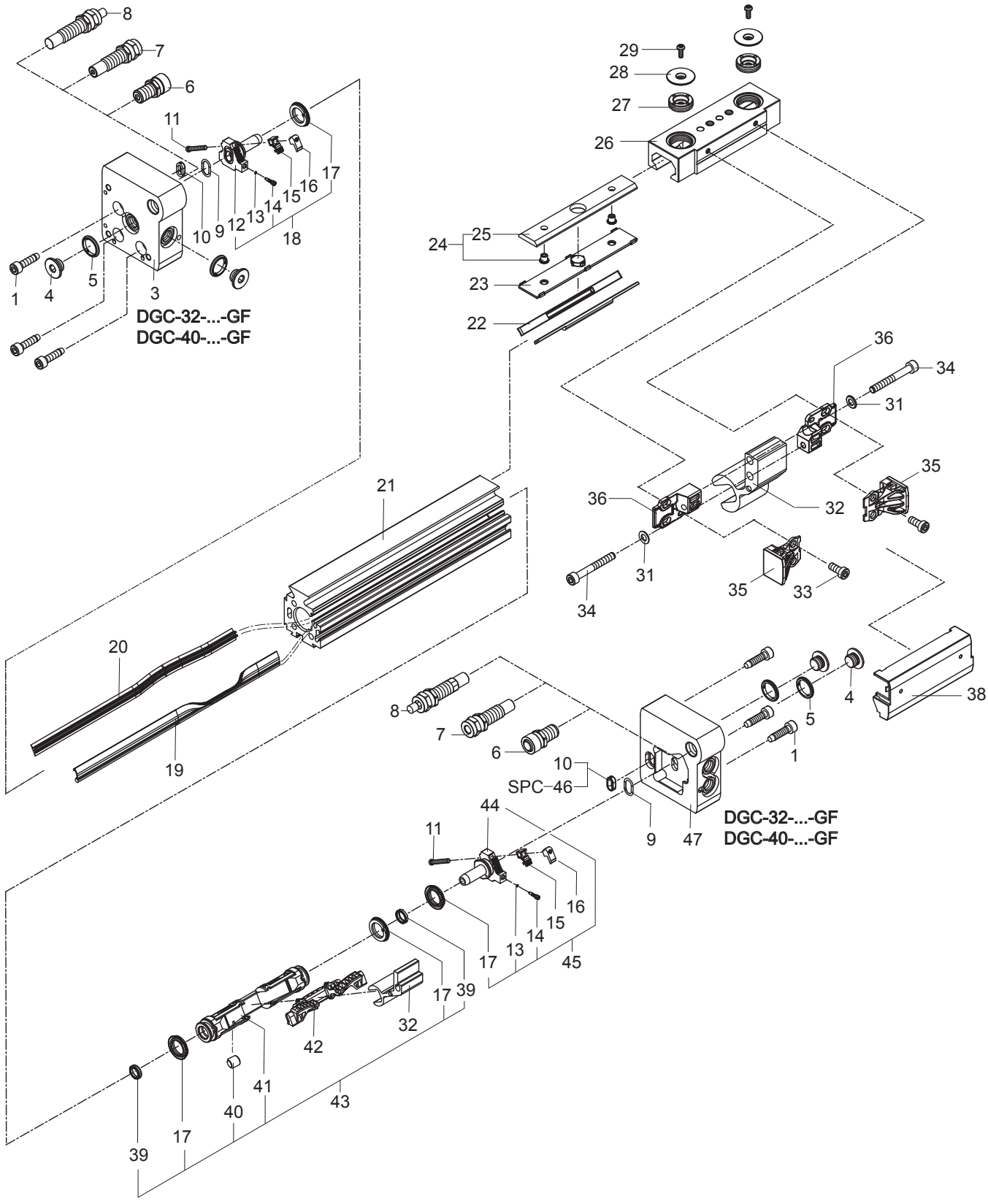
3.1 DGC-18/25-...-GF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-18-...-GF	DGC-25-...-GF	DGC-18-...-GF	DGC-25-...-GF
1	Self-tapping screw	M5×20-10.9	DIN 7500-E M630-A4-70	Tightening torque 7 Nm ± 10%, use LOCTITE 243	Tightening torque 12 Nm ± 10%, use LOCTITE 243
2	Threaded pin	DIN 913-M5×5-45H	DSR-32-180-P		
3	End cap, left				
4	Plug screw				Tightening torque 11 Nm ± 10%
5	Sealing ring				
6	Silencer			Tightening torque 3 Nm ± 20%	Tightening torque 5 Nm ± 20%
7	Shock absorber				
8	Shock absorber				
9	Seal				
10	Sealing ring				
11	Flat-head screw	DIN 920-M3×20-4.8	DIN 84-M3×28-4.8	Tightening torque 0,2 Nm ± 10%, use LOCTITE 243	Tightening torque 0.4 Nm ± 10%, use LOCTITE 243
12	Buffer, left				
13	O-ring	1×0.6-N-NBR70	1.8×1.2-N-NBR75		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer/piston seal				
18	Buffer, left, sub-assembly				
19	Cover band				
20	Sealing band				
21	Cylinder barrel				
22	Slide element				
23	Slide element				
24	Pressure piece, sub-assembly				
25	Pressure piece				
26	Slide				
27	Regulating screw				
28	Washer				
29	Socket head screw	ISO 14580-M3×8-8.8	DIN 7984-M5×10-8.8	Tightening torque 0.7 Nm ± 10%	Tightening torque 2 Nm ± 10%
30	Hex nut	DIN 934-M4-6AU	DIN 934-M5-5		
31	Washer	DIN 433-4.3	DIN 125-B 5.3		
32	Coupling				
33	Socket head screw	DIN 912-M4×8-8.8	DIN 912-M5×16-10.9	Tightening torque 2.5 Nm ± 10%, use LOCTITE 243	Tightening torque 5.7 Nm ± 10%, use LOCTITE 243
34	Socket head screw	DIN 912-M4×35-10.9	DIN 912-M5×40-10.9	Tightening torque 1.2 Nm ± 10%, use LOCTITE 243	Tightening torque 4.5 Nm ± 10%, use LOCTITE 243
35	Stop				
36	Stop				
37	Connection				
38	Cover				
39	Buffer/piston seal	8×11.6 P80	9.5×15 P80		
40	Magnet				
41	Piston				
42	Band reverser				
43	Piston module				
44	Buffer, right				
45	Buffer, right, sub-assembly				
46	Blanking plug				
47	End cap, right				

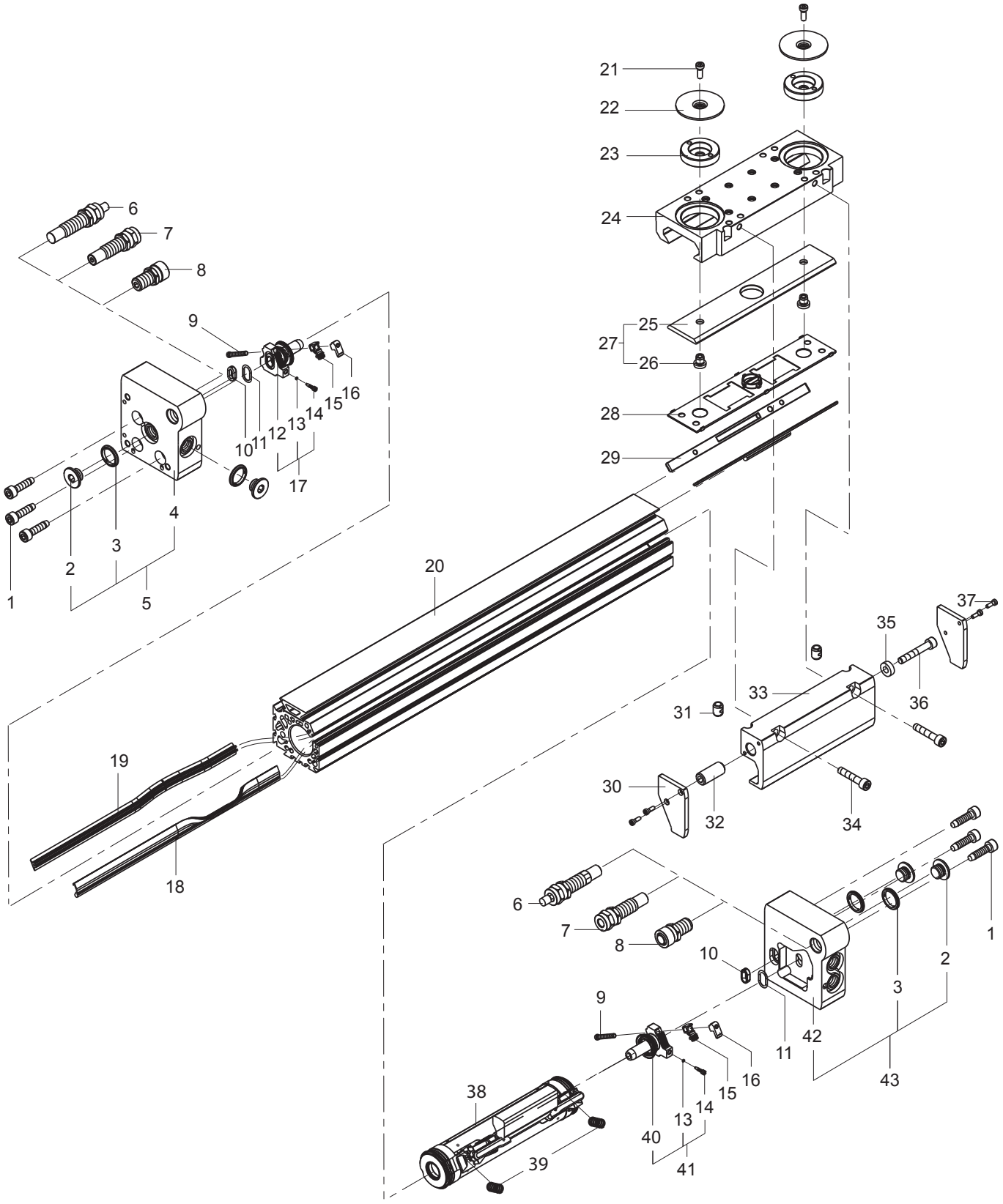
3.2 DGC-32/40-...-GF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-32-...-GF	DGC-40-...-GF	DGC-32-...-GF	DGC-40-...-GF
1	Self-tapping screw	M8×45-10.9	M8×45-10.9	Tightening torque 30 Nm ± 10%, use LOCTITE 243	
3	End cap, left				
4	Plug screw			Tightening torque 11 Nm ± 10%	Tightening torque 50 Nm ± 10%
5	Sealing ring	OL-1/4	OL-1/2		
6	Silencer			Tightening torque 8.0 Nm ± 20%	Tightening torque 20 Nm ± 20%
7	Shock absorber				
8	Shock absorber				
9	O-ring	16×2.5-N-NBR70	17×2-N-NBR75		
10	Sealing ring		11.5×1.5-N-NBR75		
11	Socket head screw	DIN 84-M3×30-5.8	DIN 912-M4×40-10.9	Tightening torque 0.4 Nm ± 10%	Tightening torque 1.0 Nm ± 10%
12	Buffer, left				
13	O-ring	1.8×1.2-N-NBR75	3×1.2-N-NBR70		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer/piston seal				
18	Buffer, left, sub-assembly				
19	Cover band				
20	Sealing band				
21	Cylinder barrel				
22	Slide element				
23	Slide element				
24	Pressure piece, sub-assembly				
25	Pressure piece				
26	Slide				
27	Regulating screw				
28	Washer				
29	Socket head screw	DIN 7984-M5×10-8.8	DIN 7984-M6×16-8.8	Tightening torque 2.0 Nm ± 10%	Tightening torque 3.0 Nm ± 10%
31	Washer	DIN 125-B 5.3			
32	Coupling			Tightening torque 3.6 Nm ± 10%	Tightening torque 5.7 Nm ± 10%
33	Socket head screw	DIN 6912-M5×12-8.8	DIN 912-M5×16-10.9	Tightening torque 5.7 Nm ± 10%, use LOCTITE 243	
34	Socket head screw	DIN 912-M5×40-10.9		Tightening torque 4.5 Nm ± 10%, use LOCTITE 243	
35	Stop				
36	Connection				
38	Cover				
39	Buffer/piston seal	12×18 P80	16×24 P80		
40	Magnet				
41	Piston				
42	Band reverser				
43	Piston module				
44	Buffer, right				
45	Buffer, right, sub-assembly				
46	Blanking plug				
47	End cap, right				

3.3 DGC-50/63-...-GF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-50-...-GF	DGC-63-...-GF	DGC-50-...-GF	DGC-63-...-GF
1	Self-tapping screw	M8×55-10.9	M8×55-10.9	Tightening torque 25 Nm ± 20%, use LOCTITE 243	Tightening torque 30 Nm ± 20%, use LOCTITE 243
2	Plug screw			Tightening torque 16 Nm ± 10%	Tightening torque 18 Nm ± 10%
3	Sealing ring	OL-1/2	OL-M22		
4	End cap, left				
5	End cap, left, sub-assembly				
6	Shock absorber			Tightening torque 35 Nm ± 20%	Tightening torque 60 Nm ± 20%
7	Shock absorber				
8	Silencer				
9	Socket head screw	DIN 912-M4×40-10.9	DIN 912-M4×40-10.9	Tightening torque 1.0 Nm ± 20%, use LOCTITE 243	
10	O-ring	11.5×1.5-N-NBR75	11.5×1.5-N-NBR75		
11	O-ring	32×2.5-N-NBR70	42×3-N-NBR70		
12	Buffer, left				
13	O-ring	4×1.5-N-NBR70	6×1.5-N-NBR70		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer, left, sub-assembly				
18	Cover band				
19	Sealing band				
20	Cylinder barrel				
21	Socket head screw	DIN 7984-M6×16-8.8	DIN 7984-M6×16-8.8	Tightening torque 6.0 Nm ± 10%, use LOCTITE 243	
22	Washer				
23	Regulating screw				
24	Slide				
25	Pressure piece				
26	Press nut				
27	Pressure piece, sub-assembly				
28	Slide element				
29	Slide element				
30	Stop				
31	Spring pin	SG 12×15	SG 12×15		
32	Threaded pin	SLT-25-P-A	SLT-25-P-A	Tightening torque 5.0 Nm ± 20%, use LOCTITE 243	
33	Slide-piston connection				
34	Socket head screw	DIN 912-M8×40-10.9	DIN 912-M8×45-10.9	Tightening torque 20 Nm ± 20%, use LOCTITE 243	
35	Washer				
36	Socket head screw	DIN 912-M8×50-10.9	DIN 912-M8×50-10.9	Tightening torque 20 Nm ± 20%, use LOCTITE 243	
37	Socket head screw	DIN 6912-M4×12-8.8	DIN 912-M4×10-8.8	Tightening torque 2.0 Nm ± 20%, use LOCTITE 243	
38	Piston module				
39	Compression spring	VL-5/2-4.0	VL-5/2-4.0		
40	Buffer, right				
41	Buffer, right, sub-assembly				
42	End cap, right				
43	End cap, right, sub-assembly				

4 Repair steps

This chapter describes how to completely dismantle the linear drives and the individual components or sub-assemblies within self-contained sub-chapters. The linear drive does not need to be completely dismantled for every fault in order to replace faulty components. The complete dismantling process described here is designed to provide a complete overview of the components and how they are accessed in case they need to be replaced. The cause of a defect must therefore always be determined before starting a repair.

Note

The repair should preferably be carried out on a stable and flat work surface with storage for small parts.

Before dismantling the linear drive, it is imperative that the cause of the failure is investigated to prevent, for example, repeated and premature failure. A linear drive which has been used as intended will not normally exhibit any premature signs of failure.

This is not necessary in the case of non-premature failure (fatigue time). However, the condition of the slide (wear on the slide elements, the slide guide setting, e.g. noticeable bearing clearance, faulty sliding performance and increased sliding noises etc.), the piston with all components in the cylinder barrel (e.g. piston seals, sealing band, cover band, buffer) and all sealing rings should also always be assessed. If in doubt, it is recommended to replace all the components mentioned so as to rule out reciprocal effects during later operation.

If the linear drive suffers premature failure, the operating conditions should be examined more closely.

The following possibilities should be considered, among others:

- **Overloading**

  In case of overloading the application parameters (mass, speed, operating pressure, operation medium) should be adjusted accordingly.
- **Ambient conditions/material resistance**

  Check whether the ambient temperature is within the permissible range.

  Check the chemical and physical ambient conditions for hazardous substances, such as dust, abrasive particles, cooling lubricants, solvents, ozone, radiation, water-soluble greases and oils, etc.

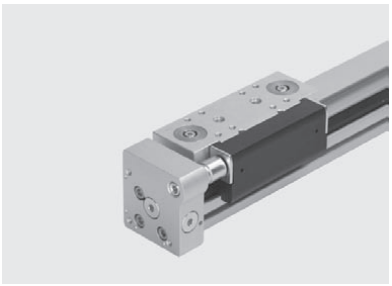
The following chapters describe how to dismantle the different sizes of the linear drives:

- Linear drives DGC-18/25/32/40-...-GF (see chapter 4.1).
- Linear drives DGC-50/63-...-GF (see chapter 4.2).

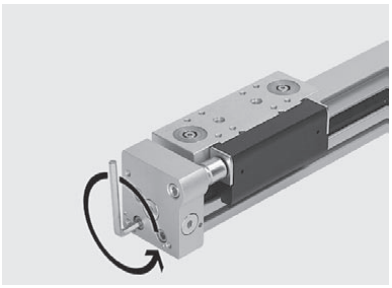
4.1 Linear drives DGC-18/25/32/40-...-GF

4.1.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



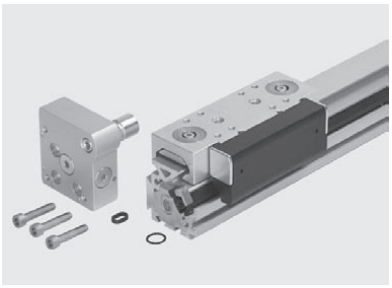
- Unfasten and remove the three self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

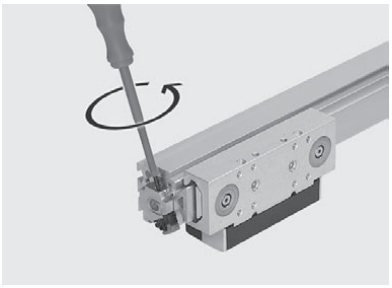
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



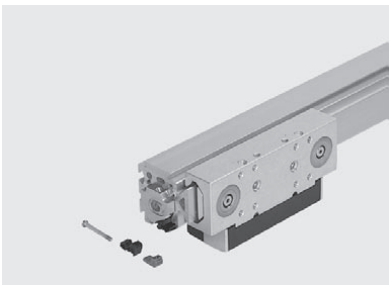
Documents

Chapters 4.1.6 and 4.1.7 describe how to dismantle and repair the end caps.

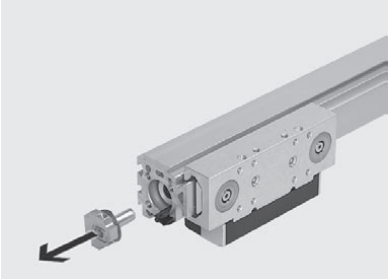
- Unscrew and remove the flat head screw/socket head screw from the band clamping mechanism on both buffers.



- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.

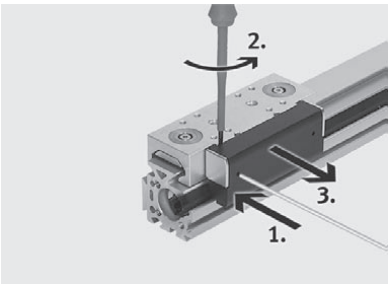


- Remove both the buffers from the cylinder barrel.

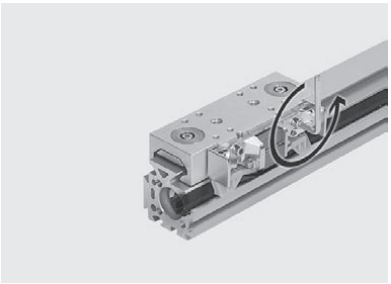


- Push a suitable pin into one of the holes on the front of the cover in order to release the holding lug behind it (1).
- Insert a screwdriver in the respective recesses on the cover and unfasten it by turning (2).

  Repeat this step on the other side.
- Remove the cover from the slide (3).



- Unscrew and remove both socket head screws from the slide-piston connection.



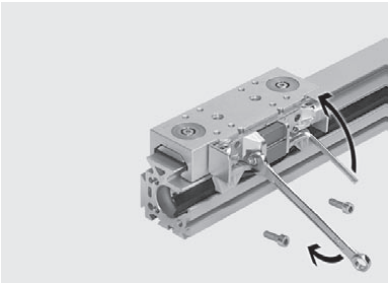
Note

The method for dismantling the drives DGC-18/25-...-GF and DGC-...-32/40-...-GF differs in the way in which the slide-piston connection and piston coupling are fastened.

The DGC-25-...-GF has an additional component on the slide-piston connection (see chapter 3.1, entry 37).

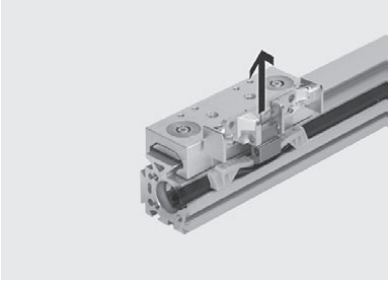
DGC-18-...-GF and DGC-25-...-GF:

- Unscrew and remove the nut from the screw. Remove the socket head screw and both washers.
- Lift the slide-piston connection upwards and out.



DGC-32-...-GF and DGC-40-...-GF (not shown in the illustration):

- Remove both socket head screws completely.
- Lift both the modules of the slide-piston connection upwards and out.



Note

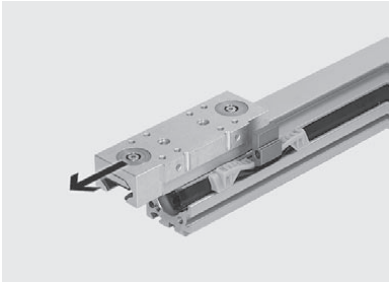
The parts of the slide-piston connection are paired with the slide. In order to ensure the slide and the slide-piston connection fit backlash-free, the individual parts of the slide-piston connection must be glued in a very precise manner.

If the glued parts break apart, they can be placed on top of each other again and re-installed.

You must not apply any additional glue as this will change the fit.

If a part of the slide-piston connection is faulty, the slide itself has to be replaced because of the pairing.

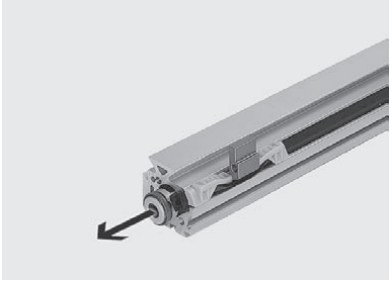
- Push the slide off the cylinder barrel.



Documents

Chapters 4.1.3 and 4.1.4 describe how to dismantle and repair the slide.

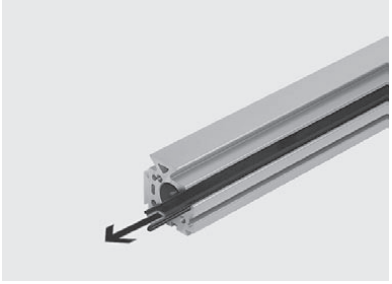
- Push the piston out of the cylinder barrel.



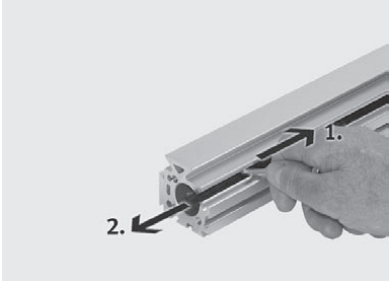
Documents

Chapter 4.1.5 describes how to dismantle and repair the piston module.

- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.1.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-18-...-GF	220 mm
DGC-25-...-GF	250 mm
DGC-32-...-GF	290 mm
DGC-40-...-GF	335 mm

Example: DGC-25-330-GF

0-stroke: 250 mm

Stroke: 330 mm

Length of the sealing band/cover band = 0-stroke + stroke = 580 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

Greasing whilst assembling

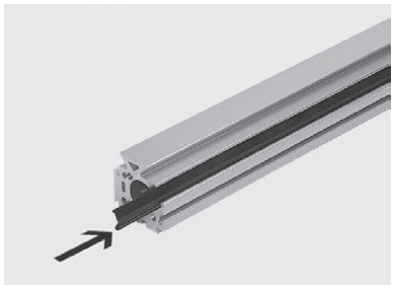
When assembling the linear drives, various components have to be greased in accordance with the table below.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	–	The plain-bearing guide in these sizes is designed for unlubricated operation.

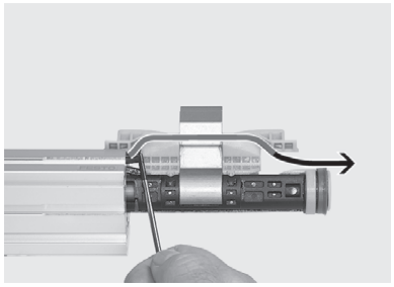
[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 10 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.

- Thread the cover band into the fixture so that approximately 10 mm of the cover band still protrude.



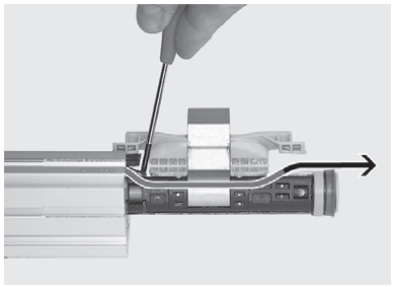
- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.



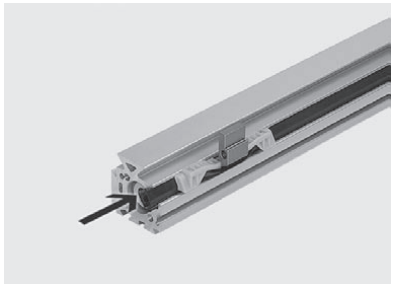
Note

When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

- Push the sealing band under the band reverser with a screwdriver.

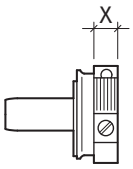


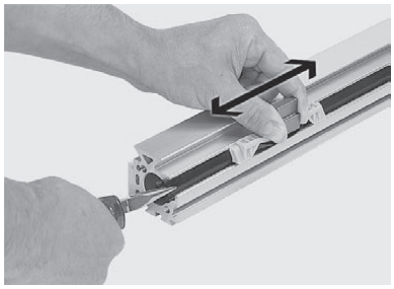
- Insert the piston fully into the cylinder barrel.



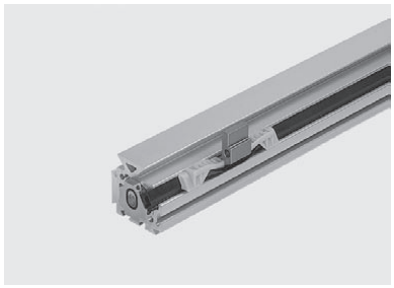
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-18-...-GF	6 mm
DGC-25-...-GF	7 mm
DGC-32-...-GF	9 mm
DGC-40-...-GF	9 mm





- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.



Note

When using shock absorbers on the end caps the regulating screw for the end position cushioning (see chapter 3.1 and 3.2, entry 14) must be "open". Unscrew it far enough so that it is positioned flush with the buffer.

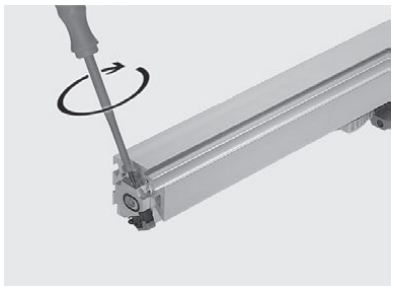
- Grease the sealing ring and insert it into the buffer.

Note

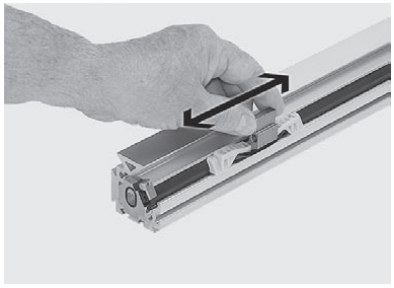
The sealing band and cover band must not protrude beyond the buffers, otherwise the end cap cannot form an air-tight seal and may have an adverse effect on the function of the linear drive. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

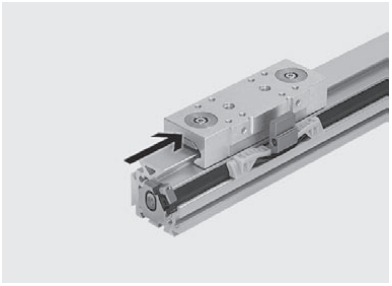
Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



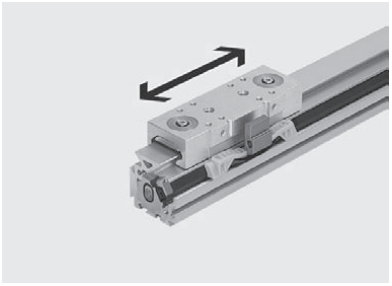
- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.



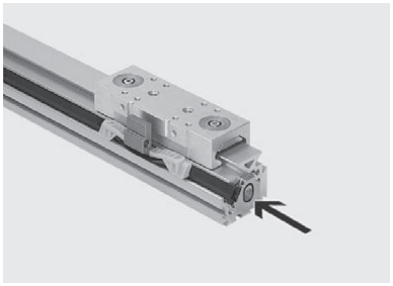
- Align the slide so that the shoulder with the drill holes points towards the piston coupling.
- Push the slide onto the cylinder barrel.



- Use a spring scale to check the displacement force of the slide (refer to the table in chapter 4.1.4 for the values) and if necessary, adjust the setting for the sliding play as described in chapter 4.1.4.

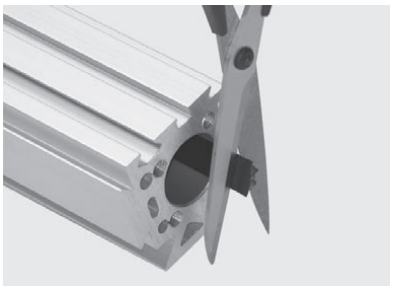


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter and the note on using shock absorbers on the end caps.
- Insert the buffer into the cylinder barrel at the other end.
- Grease the sealing ring and insert it into the buffer.



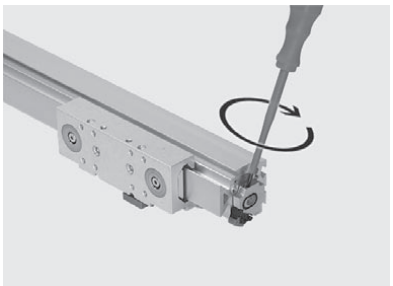
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

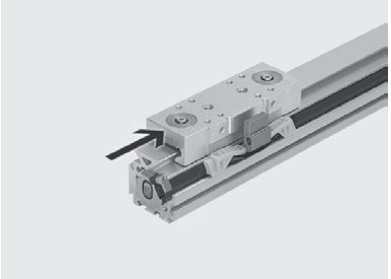


- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

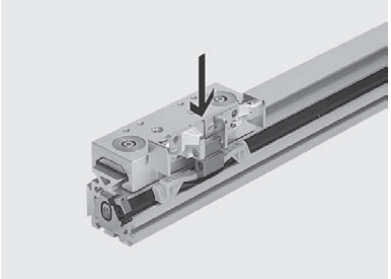
Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



- Align the slide centrally with the piston.



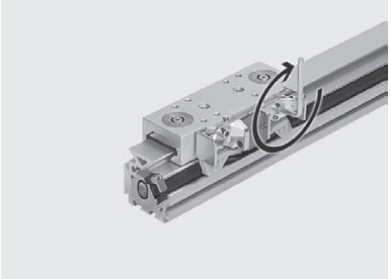
- Insert the parts of the slide-piston connection between the slide and the piston from above.



Note

The parts of the slide-piston connection are paired with the slide. Observe the instructions in chapter 4.1.1.

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).



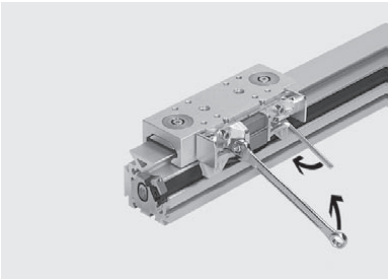
Type	Torque
DGC-18-...-GF	2.5 Nm ±10%
DGC-25-...-GF	5.7 Nm ±10%
DGC-32-...-GF	5.7 Nm ±10%
DGC-40-...-GF	5.7 Nm ±10%

Note

The method for assembling the drives DGC-18/25-...-GF and DGC-...-32/40-...-GF differs in the way in which the slide-piston connection and piston coupling are fastened.

The DGC-25-...-GF has an additional component on the slide-piston connection (see chapter 3.1, entry 37).

DGC-18-...-GF and DGC-25-...-GF:



- Insert the socket head screw with a washer through the piston coupling and into the drill holes on the slide-piston connection.
- Put on the second washer. Apply Loctite 243 to the thread, screw on the nut and tighten it using the appropriate torque (see table).

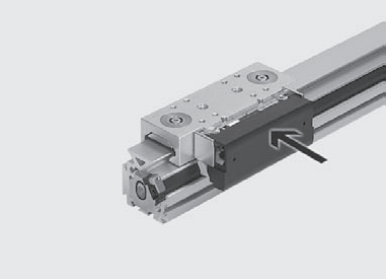
Type	Torque
DGC-18-...-GF	1.2 Nm ±10%
DGC-25-...-GF	4.5 Nm ±10%

DGC-32-...-GF and DGC-40-...-GF (not shown in the illustration):

- Place the washers on the socket head screws, apply Loctite 243 to them and tighten them using the appropriate torque (see table).

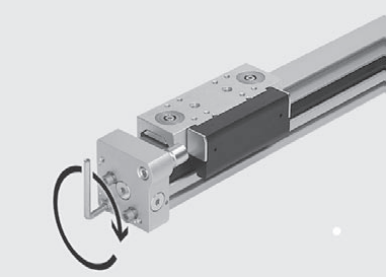
Type	Torque
DGC-32-...-GF	4.5 Nm ±10%
DGC-40-...-GF	4.5 Nm ±10%

- Place the cover on the slide-piston connection and press it lightly so that it latches into place.



- Grease the sealing rings and insert them into the end caps.

- Apply Loctite 243 to the self-tapping screws.
- Attach the end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the end cap and attach them loosely so that the end caps can still be shifted.
- Align the rear and bottom edge of both end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	7 Nm
DGC-25-...-GF	12 Nm
DGC-32-...-GF	30 Nm
DGC-40-...-GF	30 Nm

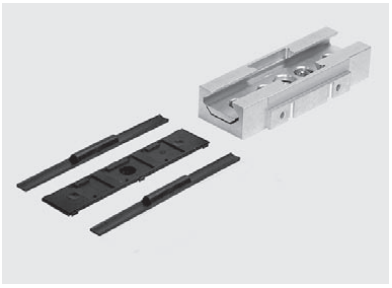
Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

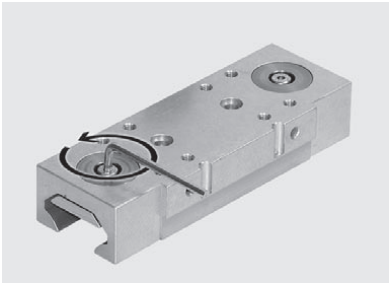
4.1.3 Replacing the slide elements in the slide

If the slide elements in the slide are faulty or worn, they will have to be replaced.

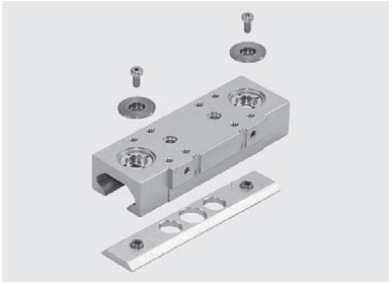
- Remove the slide as described in chapter 4.1.1.
- Remove the slide elements from the slide.



- Unfasten the socket head screws on the top of the slide and remove them.



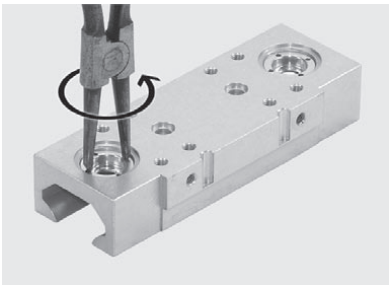
- Remove both washers from the top of the slide.



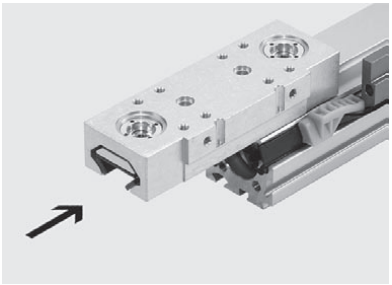
Note
The washers can be removed easily with the help of a small magnet.

- Remove the pressure piece from the slide.

- Unscrew both regulating screws a few turns.



- Insert the pressure piece and the new slide elements in the slide and push the slide onto the guide rail.



Note
After replacing the slide elements, the sliding play has to be set as described in chapter 4.1.4.

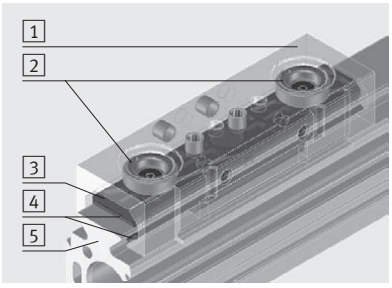
4.1.4 Setting the sliding play on the slide

If new slide elements are inserted in the slide, the sliding play has to be set.

The setting for the sliding play is adjusted by turning the regulating screws [2] in the slide [1]. The pressure piece [3] is thus used to change the contact pressure of the [4] slide elements on the guide rail [5].

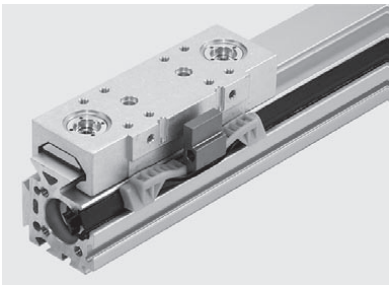
The trapezoidal shape of the guide rail [5] distributes the contact pressure over all three [4] slide elements.

The sliding play setting is secured by attaching the washers and tightening the socket head screws (see below). The regulating screws [2] are thus clamped between the pressure piece [3] and the slide [1].

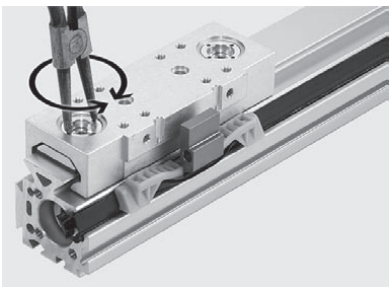


If not yet carried out:

- Remove the socket head screws and washers from the top of the slide as described in chapter 4.1.3.

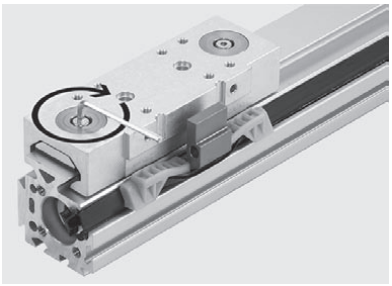


- Set the sliding play by feel by turning the regulating screws so that the slide rests on the guide rail backlash-free but can still be shifted without exerting much force.
- Check the force required to shift the slide with a spring scale (see table for values).
- Change the setting of the regulating screws as necessary.
- Repeat this procedure until the measured displacement force matches the values specified in the table.



Type	Displacement force without connection
DGC-18-...-GF	12 N
DGC-25-...-GF	15 N
DGC-32-...-GF	15 N
DGC-40-...-GF	15 N

- Place the washers on the regulating screws.
- Secure the regulating screw setting by inserting and tightening the socket head screws using the appropriate torque (see table).

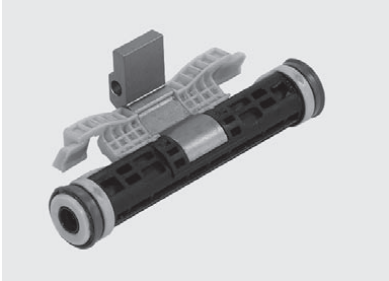


Type	Torque
DGC-18-...-GF	0.7 Nm
DGC-25-...-GF	2.0 Nm
DGC-32-...-GF	2.0 Nm
DGC-40-...-GF	3.0 Nm

- Fit the remaining parts as described in chapter 4.1.2.

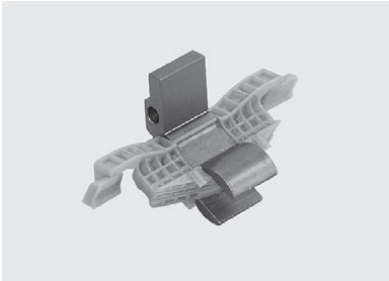
4.1.5 Dismantling and repairing the piston module

- Remove the piston as described in chapter 4.1.1.

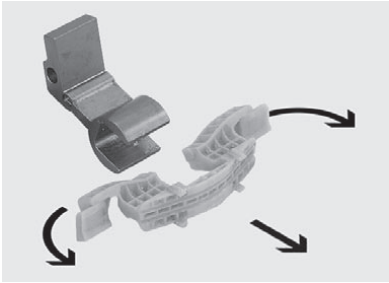


- Remove the coupling, together with the band reverser, from the piston.

Note
The piston must be replaced completely in case of wear. The spare part comprises the inner and outer sealing rings and the magnets.

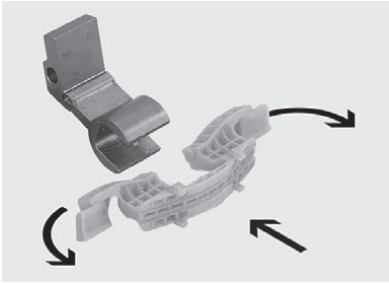


- Bend the band reverser slightly apart and pull it off the coupling.
- Check all parts for wear and replace them as necessary.



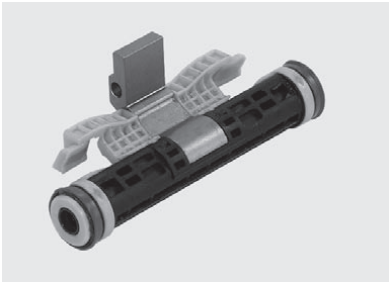
- Clip the band reverser in the coupling.

Note
Make sure that the band reverser is aligned properly with the coupling (see illustration).



- Connect the coupling with the band reverser to the piston.

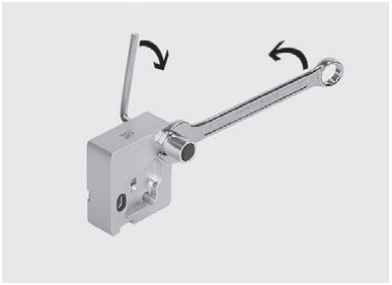
Note
Make sure that the coupling is properly aligned with the piston. The magnet in the piston must be positioned on the left-hand side of the piston when the coupling points backwards.



- Grease the sealing rings and the band reverser.
  Observe the greasing instructions in the table in chapter 4.1.2.
- Assemble the linear drive as described in chapter 4.1.2.

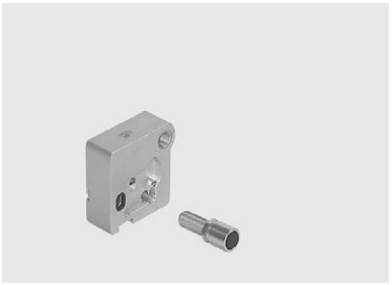
4.1.6 Replacing the cushioning components

- Unfasten the lock nut on the cushioning components.



Note
The cushioning components can be replaced even when the end caps are attached.

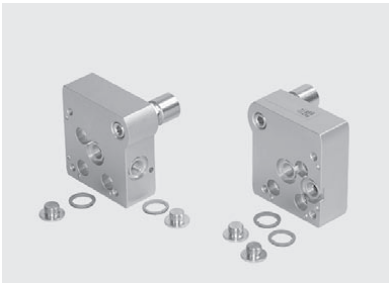
- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	3.0 Nm ±20%
DGC-25-...-GF	5.0 Nm ±20%
DGC-32-...-GF	8.0 Nm ±20%
DGC-40-...-GF	20 Nm ±20%

4.1.7 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end caps and remove the sealing rings.



Note
The sealing rings can be replaced even when the end caps are attached.

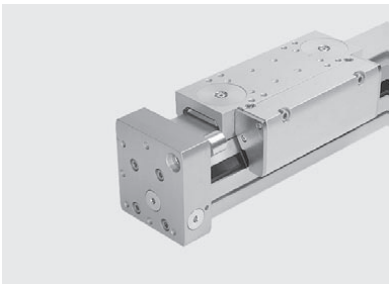
- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-25-...-GF	11 Nm ±10%
DGC-32-...-GF	11 Nm ±10%
DGC-40-...-GF	50 Nm ±10%

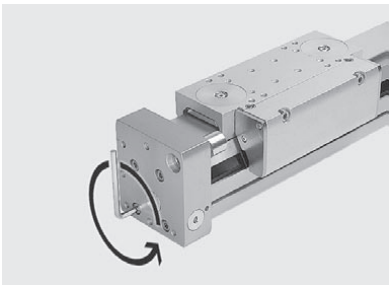
4.2 Linear drives DGC-50/63-...-GF

4.2.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



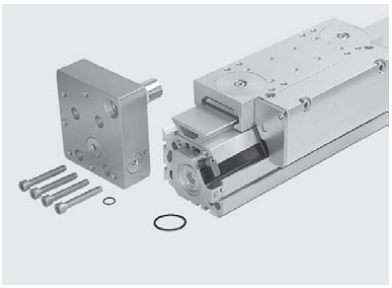
- Unfasten and remove the four self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

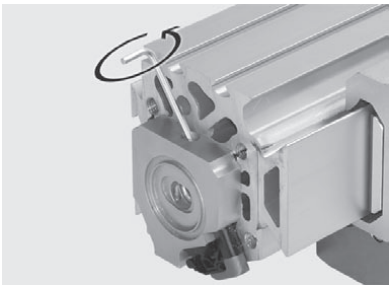
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



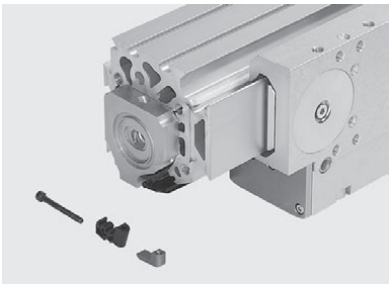
Documents

Chapters 4.2.5 and 4.2.6 describe how to dismantle and repair the end caps.

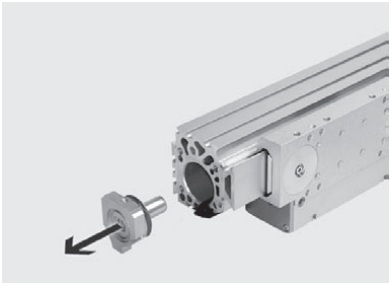
- Unscrew the socket head screw for the band clamping mechanism on both puffers with an Allen key, size 3.



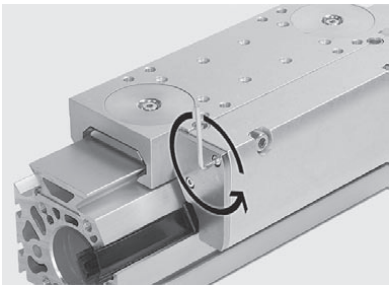
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



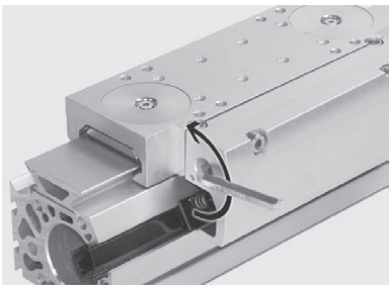
- Remove both the buffers from the cylinder barrel.



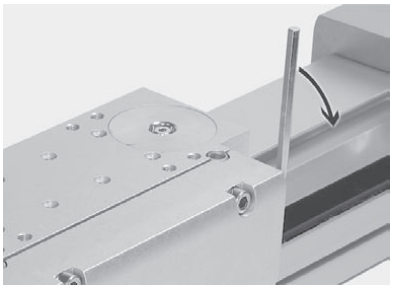
- Unscrew the socket head screws on the faces of the slide-piston connection and remove the stop plates.



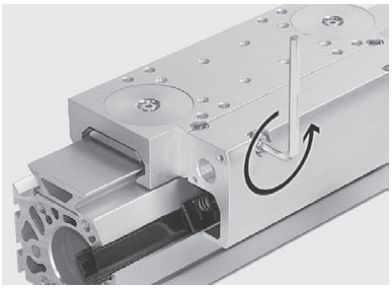
- Unfasten the threaded pins on the left-hand side of the slide-piston connection.



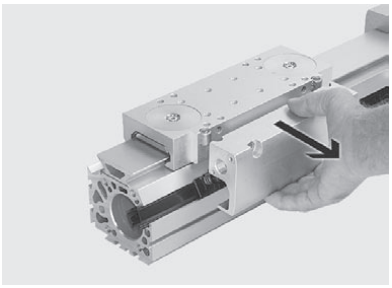
- Unfasten and remove the socket head screw on the right-hand side the slide-piston connection.



- Unfasten both the socket head screws on the front of the slide-piston connection and remove them.



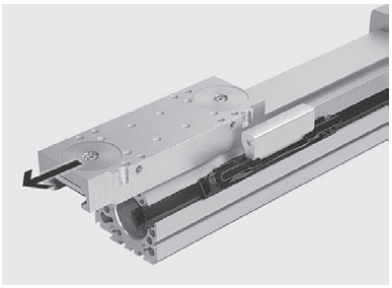
- Remove the slide-piston connection.



Note

Both the spring pins and the blanking plugs between the slide and the slide-piston connection are not fastened and may be lost when removing the slide-piston connection.

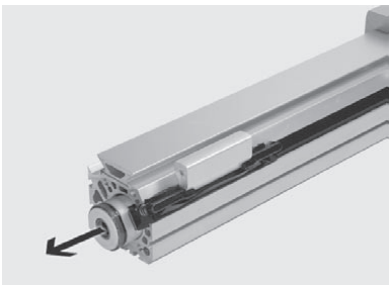
- Push the slide off the cylinder barrel.



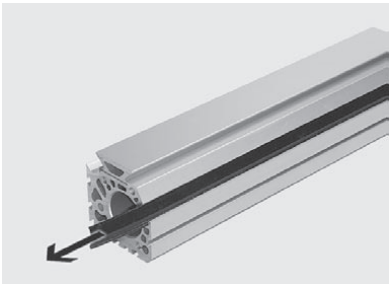
Documents

Chapters 4.2.3 and 4.2.4 describe how to dismantle and repair the slide.

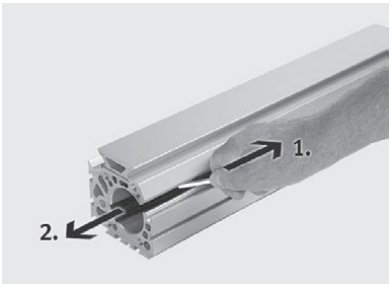
- Push the piston out of the cylinder barrel.
- Check the springs on the band reverser for damage and replace them as necessary.



- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.2.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-50-...-GF	370 mm
DGC-63-...-GF	415 mm

Example: DGC-50-180-GF

0-stroke: 370 mm

Stroke: 180 mm

Length of the sealing band/cover band = 0-stroke + stroke = 550 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

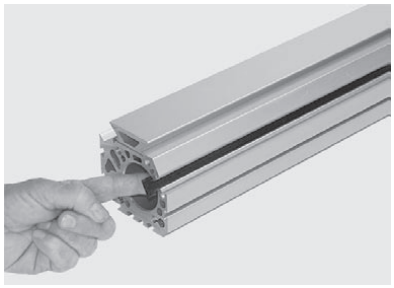
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

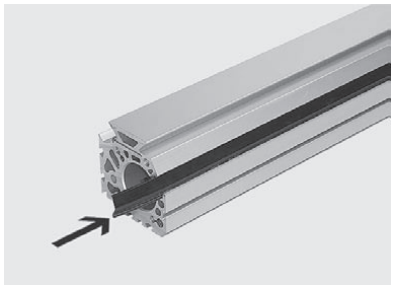
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	–	The plain-bearing guide in these sizes is designed for unlubricated operation.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

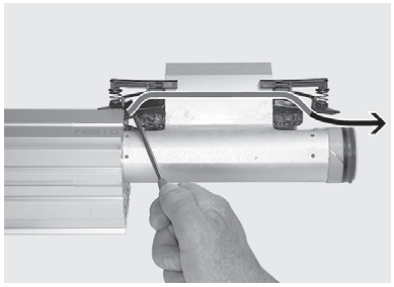
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 14 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Thread the cover band into the fixture so that approximately 14 mm of the cover band still protrude.



- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.

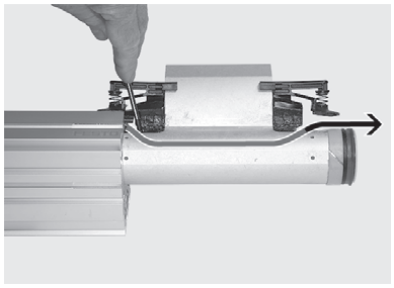


Note

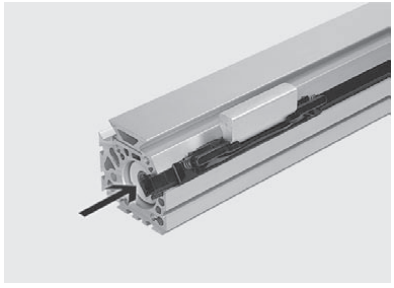
When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

The magnet is moulded-in and is thus not visible. Therefore its position can be determined using a counter magnet (e.g. compass).

- Push the sealing band under the band reverser with a screwdriver.

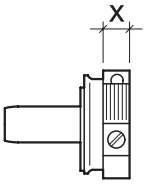


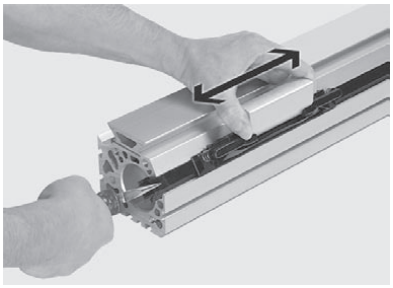
- Insert the piston fully into the cylinder barrel.



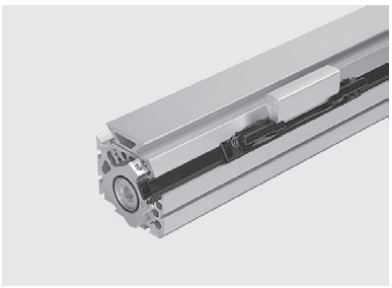
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-50-...-GF	14 mm
DGC-63-...-GF	16 mm



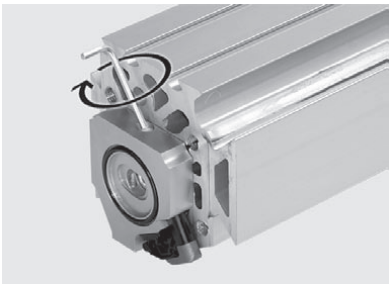


- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



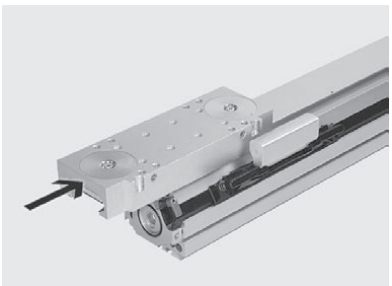
- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	1.0 Nm ±20%
DGC-63-...-GF	1.0 Nm ±20%

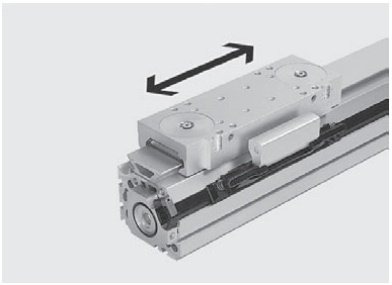


- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

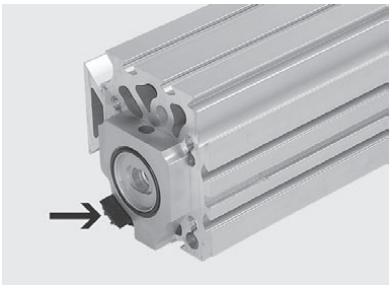
- Align the slide so that the drill holes for the centring sleeves point towards the piston.
- Push the slide onto the cylinder barrel.



- Use a spring scale to check the displacement force of the slide (refer to the table in chapter 4.2.4 for the values) and if necessary, adjust the setting for the sliding play as described in chapter 4.2.4.

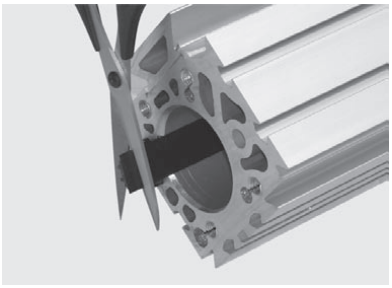


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the piston chamber on the other side of the base profile.
- Grease the sealing ring and insert it into the buffer.



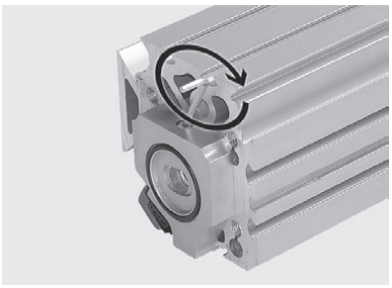
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

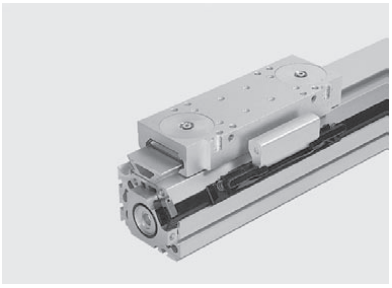


- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

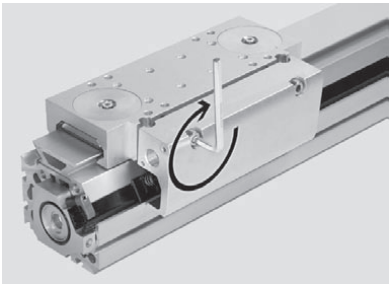
Type	Torque
DGC-50-...-GF	1.0 Nm ±20%
DGC-63-...-GF	1.0 Nm ±20%



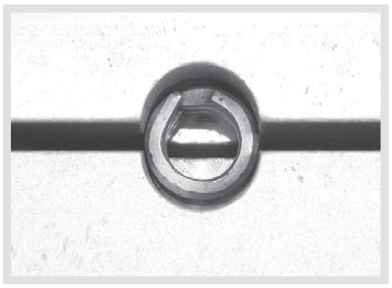
- Align the slide centrally with the piston.



- Place the slide-piston connection on the coupling.
- Apply Loctite 243 to the socket head screws for the slide-piston connection and tighten them slightly so that the slide-piston connection is positioned at 1-2 mm from the slide.



- Insert the spring pins between the slide and the slide-piston connection as far as they will go.

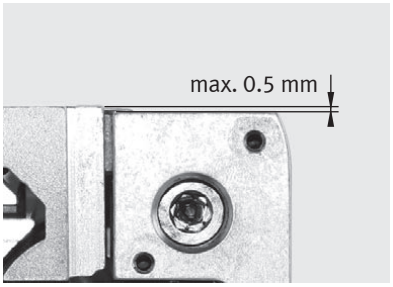


Note

When inserting the spring pins, make sure that they sit properly in the fixture.

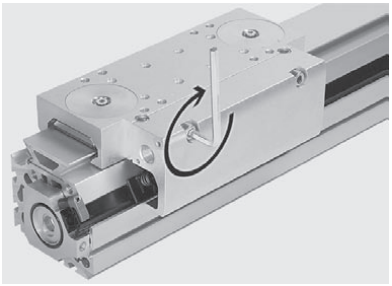
The openings of the spring pins must be off-set by 90° to the joint between the slide and the slide-connection.

- Align the upper edge of the slide-piston connection so that it is flush with the outer edge of the slide using a stop. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide must not exceed **0.5 mm**.



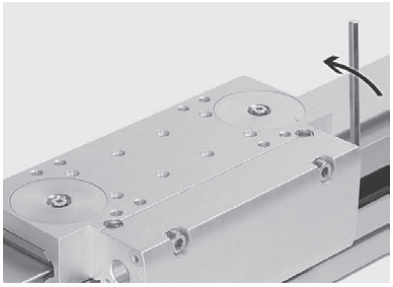
- Tighten the socket head screws for the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	20 Nm ±20%
DGC-63-...-GF	20 Nm ±20%



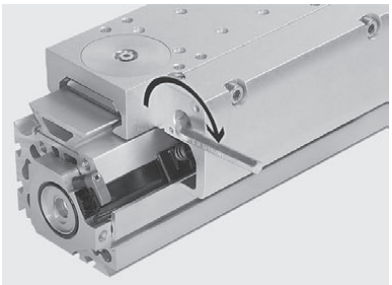
- Tighten the socket head screw on the right-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	20 Nm ±20%
DGC-63-...-GF	20 Nm ±20%



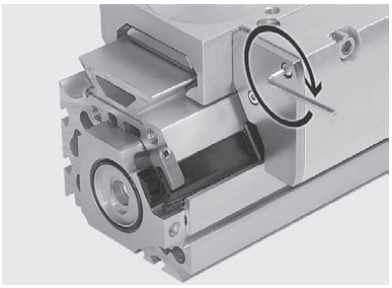
- Tighten the threaded pins on the left-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	5 Nm ±20%
DGC-63-...-GF	5 Nm ±20%



- Place the stop plates on the slide-piston connection from the side.
- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

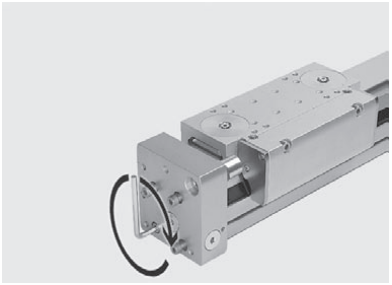
Type	Torque
DGC-50-...-GF	2.0 Nm ±20%
DGC-63-...-GF	2.0 Nm ±20%



- Grease the sealing rings and insert them into the respective fixture in both end caps.
- Attach the respective end caps to the cylinder barrel on both sides and align each rear and lower edge of both end caps flush with the cylinder barrel.

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	25 Nm ±20%
DGC-63-...-GF	30 Nm ±20%



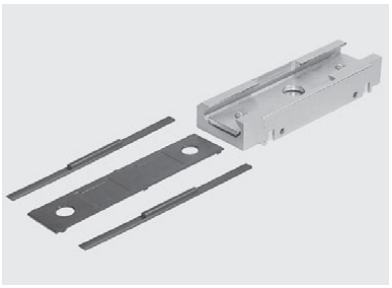
Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

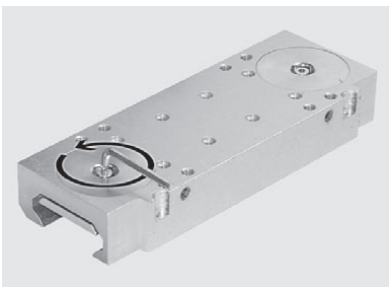
4.2.3 Replacing the slide elements in the slide

If the slide elements in the slide are faulty or worn, they will have to be replaced.

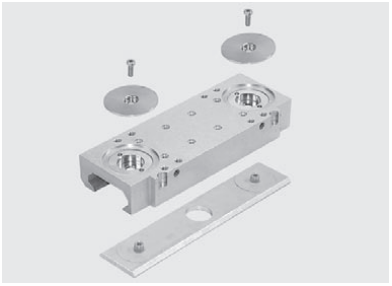
- Remove the slide as described in chapter 4.2.1.
- Remove the slide elements from the slide.



- Unfasten the socket head screws on the top of the slide and remove them.



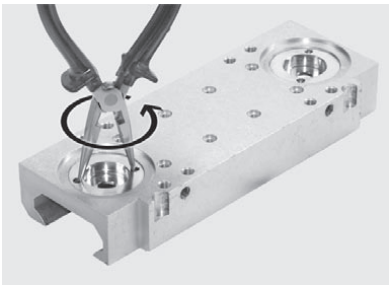
- Remove both washers from the top of the slide.



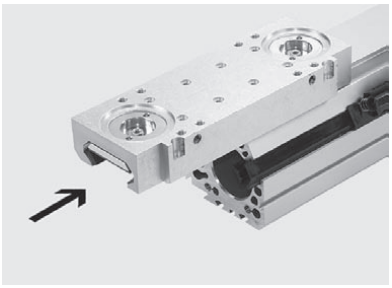
Note
The washers can be removed easily with the help of a small magnet.

- Remove the pressure piece from the slide.

- Unscrew both regulating screws a few turns.



- Insert the pressure piece and the new slide elements in the slide and push the slide onto the guide rail.



Note
After replacing the slide elements, the sliding play has to be set as described in chapter 4.2.4.

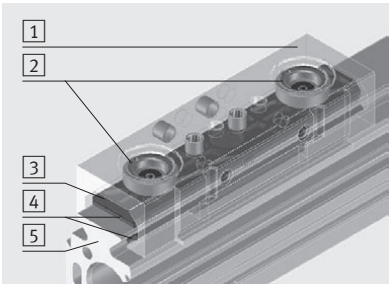
4.2.4 Setting the sliding play on the slide

If new slide elements are inserted in the slide, the sliding play has to be set.

The setting for the sliding play is adjusted by turning the regulating screws [2] in the slide [1]. The pressure piece [3] is thus used to change the contact pressure of the [4] slide elements on the guide rail [5].

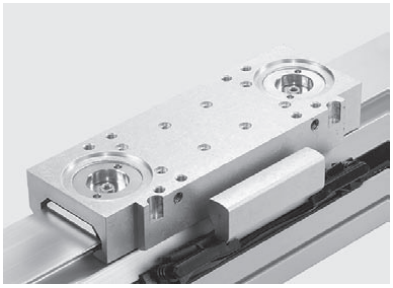
The trapezoidal shape of the guide rail [5] distributes the contact pressure over all three [4] slide elements.

The sliding play setting is secured by attaching the washers and tightening the socket head screws (see below). The regulating screws [2] are thus clamped between the pressure piece [3] and the slide [1].

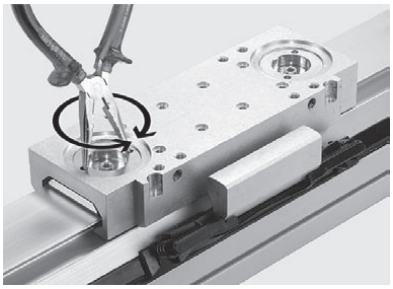


If not yet carried out:

- Remove the slide-piston connection as described in chapter 4.2.1.
- Remove the socket head screws and washers from the top of the slide as described in chapter 4.2.3.

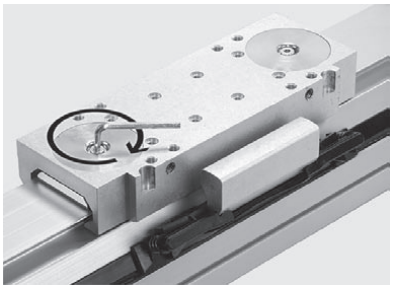


- Set the sliding play by feel by turning the regulating screws so that the slide rests on the guide rail backlash-free but can still be shifted without exerting much force.
- Check the force required to shift the slide with a spring scale (see table for values).
- Change the setting of the regulating screws as necessary.
- Repeat this procedure until the measured displacement force matches the values specified in the table.



Type	Displacement force without connection
DGC-50-...-GF	30 N
DGC-63-...-GF	35 N

- Place the washers on the regulating screws.
- Secure the regulating screw setting by inserting and tightening the socket head screws using the appropriate torque (see table).

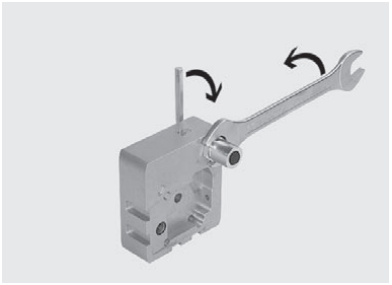


Type	Torque
DGC-50-...-GF	6.0 Nm ±10%
DGC-63-...-GF	6.0 Nm ±10%

- Fit the slide-piston connection as described in chapter 4.2.2.

4.2.5 Replacing the cushioning components

- Unfasten the lock nut on the cushioning components.



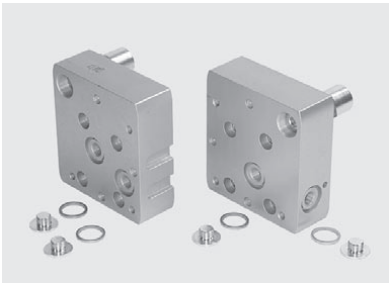
Note
The cushioning components can be replaced even when the end caps are attached.

- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	35 Nm ±20%
DGC-63-...-GF	60 Nm ±20%

4.2.6 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end caps and remove the sealing rings.



Note
The sealing rings can be replaced even when the end caps are attached.

- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	16 Nm ± 10%
DGC-63-...-GF	18 Nm ± 10%

5 Maintenance

This chapter contains key technical information about how to carry out maintenance work on the linear drive. A detailed description of the steps for care and maintenance can be found in the operating instructions. Further information on the assembly aids and lubricants can be found on the Festo website (www.Festo.com).

5.1 Greasing the linear drive

The linear drive has to be greased when repair work is carried out and at set intervals.

Greasing intervals for the guide rails by size and lubricant

Type	Greasing interval	Lubricant
DGC-18-/-63-...GF	The guides for these drives are designed for unlubricated operation. Relubrication is permitted.	LUB-KC1

Warning

The lubrication intervals are shortened by the following operating conditions:

- Extremely short strokes ‹ 50 mm.
- Large strokes › 2000 mm.
- Speeds › 2 m/s.
- Increased accumulation of dirt in the environment (e.g. sanding dust etc.).
- High ambient temperature › 40 °C.

The guide rail must be relubricated at least every 3 years.

Maintenance of the band system

- Clean the band system if required with a soft cloth.
- Avoid cleaning agents which will damage the band system which is made of PU. Excessive friction or the use of grease-solvent cleaning agents (e.g. soapsuds) will damage the grease layer.
- Grease the band system superficially with LUB-KC1 type grease if it no longer has a layer of grease.

6 Tools

This chapter provides an overview of the tools and aids required to repair and maintain the linear drive DGC-...-GF in its various sizes.

6.1 Required tools by size

Designation	DGC-18-/-25-/-32-/-40-...-GF	DGC-50-/-63-...-GF
Allen key	2.5 – 5 mm	3 – 6 mm
Slotted head screwdriver		–
Torque wrench	1.0 – 60 Nm	
Torque screwdriver	0.2 – 10 Nm	
Open-ended spanner	8 mm, 15 mm	27 mm
Face pin spanner/retaining ring pliers	For turning regulating screws	
Flat pliers	For positioning the sealing band	
Spring scale	0 – 15 N	0 – 35 N
Sturdy general purpose scissors or metal shears	For cutting the sealing band and the cover band to length	

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1. Festo products are being further developed with regard to hardware and software. The hardware status and, where applicable, the software status of the product can be found on the type plate of the product. If the electronic documentation, no matter in what form, does not directly accompany the product, i. e. if the product is not supplied together with a portable data storage medium (floppy disk, CD-Rom, removable disk), Festo does not guarantee that the electronic documentation corresponds to every hardware and software status of the product. In this case, the printed documentation from Festo accompanying the product alone is decisive for ensuring that the hardware and software status of the product matches that of the electronic documentation.

2. The information contained in this electronic documentation can be amended by Festo without prior notice and does not commit Festo in any way.

IV. Liability/Limitations of liability

1. Festo supplies this electronic documentation in order to assist the user in creating his machine and system documentation. In the case that electronic documentation in the form of portable data storage media (floppy disk, CD-Rom, removable disk), does not accompany a product i. e. is not supplied together with that product, Festo does not guarantee that the electronic documentation available/supplied separately matches the product actually used by the user.

The latter applies particularly to extracts of the documents for the user’s own documentation. The guarantee and liability for separately available/supplied data storage media, i. e. except for the electronic documentation available/supplied via the Internet/Intranet, is limited exclusively to proper duplication of the software, whereby Festo guarantees that in each case the data storage medium or software contains the latest update of the documentation. Concerning electronic documentation available on the Internet/Intranet, there is no guarantee that it will have the same version status as the last printed edition.

2. Furthermore, Festo cannot be held liable for the lack of economic success or for damage or claims by third parties resulting from the use of the documentation by the user, with the exception of claims arising from infringement of the protection rights of third parties concerning the use of the electronic documentation.

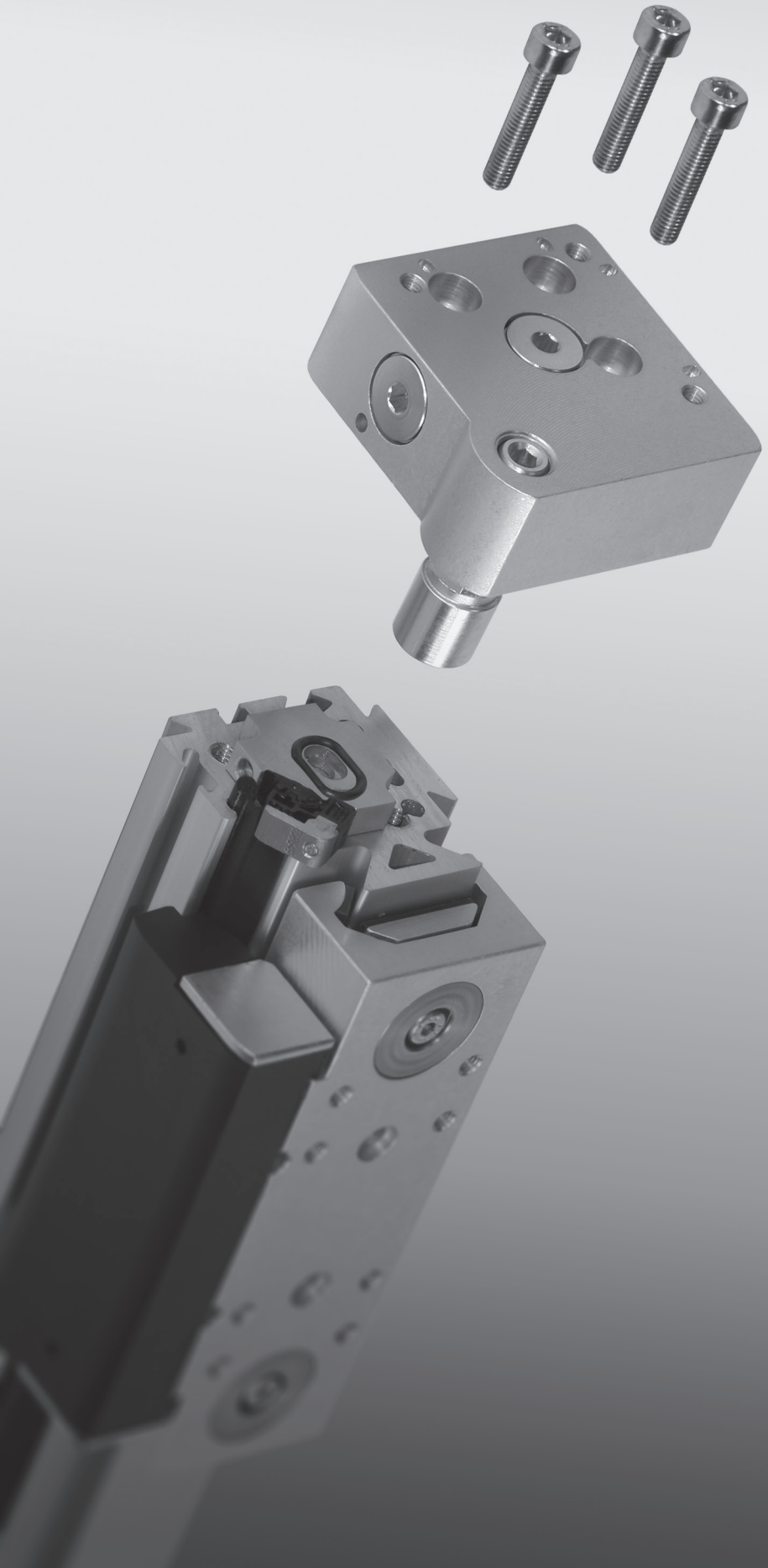
3. The limitations of liability as per paragraphs 1 and 2 do not apply if, in cases of intent or gross negligence or the lack of warranted quality, liability is absolutely necessary. In such a case, Festo’s liability is limited to the damage discernable by Festo when the definitive circumstances are made known.

V. Safety guidelines/documentation

Warranty and liability claims in conformity with the aforementioned regulations (items III. and IV.) may be raised only if the user has observed the safety guidelines of the documentation in conjunction with the use of the machine and its safety guidelines. The user himself is responsible for ensuring that the electronic documentation, when not supplied with the product, matches the product actually used by the user.

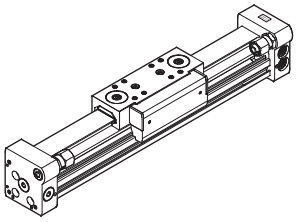
Linear drive

DGC-...-GF



FESTO

Repair instructions (en)



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Foreword

These repair instructions are valid for the linear drives listed on the title page to the exclusion of any liability claims.

Deviations with respect to the descriptions in these repair instructions may arise depending on the design and/or modification status of the specific linear drive. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

However, Festo AG & Co. KG does not accept liability for any errors in these repair instructions or their consequences. Likewise no liability is accepted for direct or consequential damage resulting from incorrect use of the products.

More detailed information on this can be found in Chapter 8 "Liability".

The relevant regulations on occupational safety, safety engineering and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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Table of contents

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Table of contents

1 Important information

1.1 About these repair instructions

This document contains important information about the professional repair of the linear drive type DGC-...-GF.

The linear drive DGC-...-GF is fully repairable. The costs of carrying out a repair must, however, be considered in the case of larger defects.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain complete detailed information. The following documents should therefore also be available while doing repair work on the linear drive:

- **Operating instructions**
  Contain information about the operating elements and connections for the linear drive, as well as information about function, construction, application, installation, commissioning, care and maintenance, etc. These can be found on the Festo website (www.Festo.com).
- **Spare parts documentation**
  Contains an overview of the spare and wearing parts as well as information on their installation. Can be found in the online spare parts catalogue on the Festo website (spareparts.Festo.com).
- **Assembly aids**
  Contain an overview of available assembly aids such as lubricating greases, locking agents, maintenance tools etc. (aids for assembly and maintenance). Can be found in the online spare parts catalogue on the Festo website (www.Festo.com).

1.2 Pictograms used in these repair instructions

Warning
This sign indicates a dangerous situation for persons and/or the product. Failure to observe this warning can result in injury to persons and/or damage to the device.

Note
This sign provides important tips and information that can make your work easier.

Environment
This sign provides information on the steps required for environmentally-friendly use of materials and equipment, as well as the guidelines and regulations that may need to be observed.

Documents
This sign contains references to other chapters or documents containing additional information.

1.3 General safety instructions

Warning

The linear drive must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts or without the technical documentation required for installation and/or repair are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions and the device-specific operating instructions.

Note

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.

Environment

Components and equipment replaced as part of a repair must be disposed of in accordance with the locally valid environmental protection regulations.

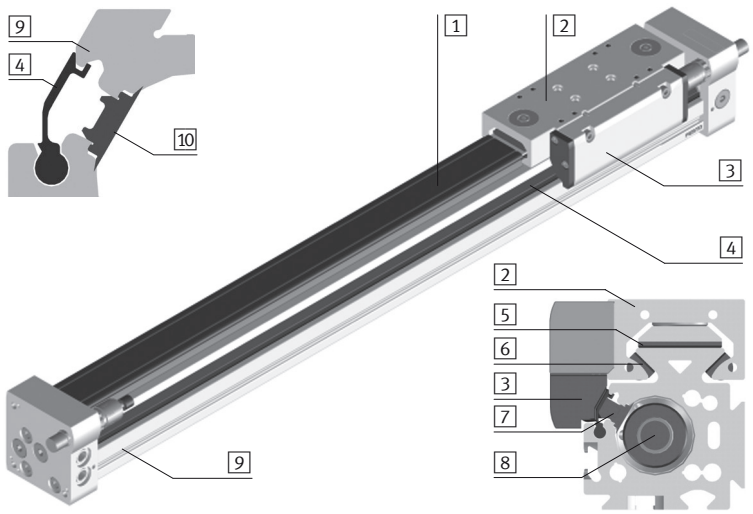
2 General product description

2.1 Functional description

The DGC-...-GF is a linear drive with a plain-bearing guide and the functional principle of a double-acting piston for power transmission. When compressed air is applied to the supply ports alternately, the piston moves backwards and forwards in the piston chamber. A rigid connection moves the slide with the attached load (e.g. adapter plate with drive) on the guide rail. The slot in the basic profile required for this is covered by a band system. The slide is mounted on slide elements and thus designed for low and medium loads. The operating behaviour in case of torsional loads is in the medium range.

The DGC-...-GF is intended to be used for transporting loads in a space-saving manner and is approved for the operating modes slide mode and yoke mode (adhere to the load limits).

This diagram gives an overview of the construction of the linear drive using the DGC-25-...-GF as an example.



1 Guide rail
2 Slide
3 Slide-piston connection
4 Cover band
5 Upper slide element
6 Lateral slide element
7 Coupling
8 Piston
9 Cylinder barrel
10 Sealing band

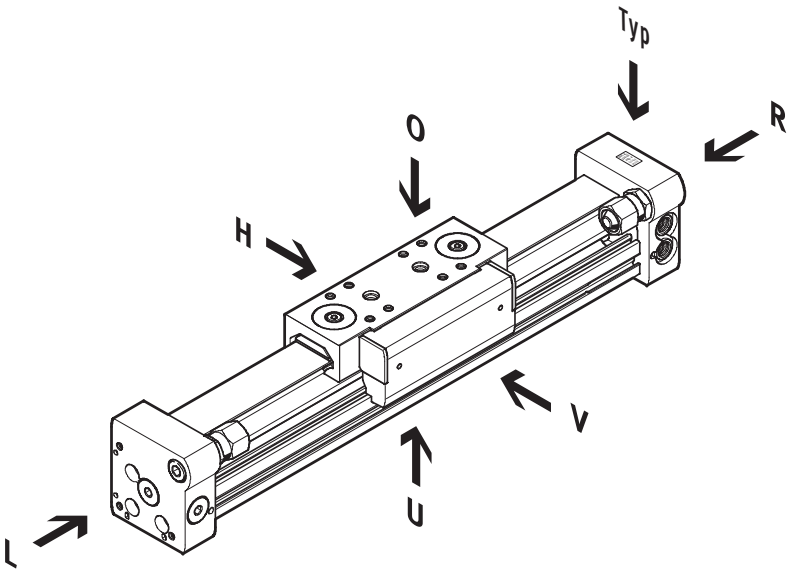
2.2 Types and part numbers

Type	Part number
DGC-18-...-GF	532446
DGC-25-...-GF	532447
DGC-32-...-GF	532448
DGC-40-...-GF	532449
DGC-50-...-GF	532450
DGC-63-...-GF	532451

The complete overview of features, accessories, type codes, technical data and dimensions for the DGC-... linear drives can be found in the product catalogue or on the Festo website (www.Festo.com).

2.3 Orientation designation

This illustration gives an overview of the orientation designation of the linear drive using the DGC-25-...-GF as an example.



Type = Product designation (rating plate)
O = Top
U = Underneath
R = Right
L = Left
V = Front
H = Rear

3 Components list

Linear drives type DGC-18/25/32/40-GF have been supplied in various different product series. The table below gives an overview of the production periods for the respective product series.

Type	From series	To series	Spare parts and parts lists
DGC-18-...-GF		November 2009	See Chapter 3.1.1 "DGC-18-...-GF"
DGC-18-...-GF (-DL)	December 2009	November 2010	See Chapter 3.1.2 "DGC-18-...-GF (-DL)"
DGC-18-...-GF (-DL)	December 2010		See Chapter 3.1.3 "DGC-18-...-GF (-DL)"
DGC-25-...-GF		July 2009	See Chapter 3.2.1 "DGC-25-...-GF"
DGC-25-...-GF (-DL)	August 2009		See Chapter 3.2.2 "DGC-25-...-GF (-DL)"
DGC-32-...-GF		December 2008	See Chapter 3.3.1 "DGC-32-...-GF"
DGC-32-...-GF (-DL)	January 2009	September 2010	See Chapter 3.3.2 "DGC-32-...-GF (-DL)"
DGC-32-...-GF (-DL)	October 2010		See Chapter 3.3.3 "DGC-32-...-GF (-DL)"
DGC-40-...-GF		September 2009	See Chapter 3.4.1 "DGC-40-...-GF"
DGC-40-...-GF (-DL)	October 2009	May 2010	See Chapter 3.4.2 "DGC-40-...-GF (-DL)"
DGC-40-...-GF (-DL)	June 2010		See Chapter 3.4.3 "DGC-40-...-GF (-DL)"

The year and month of manufacture are stated on the rating plate of the linear drive. These data can be used to find the appropriate parts list in the online spare parts catalogue on the Festo website (spareparts.Festo.com).

The parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) provide a list of spare parts that are no longer available and indicate precisely which spare parts from the current series should be used to replace them.

This ensures that linear drives from earlier series can still be repaired.

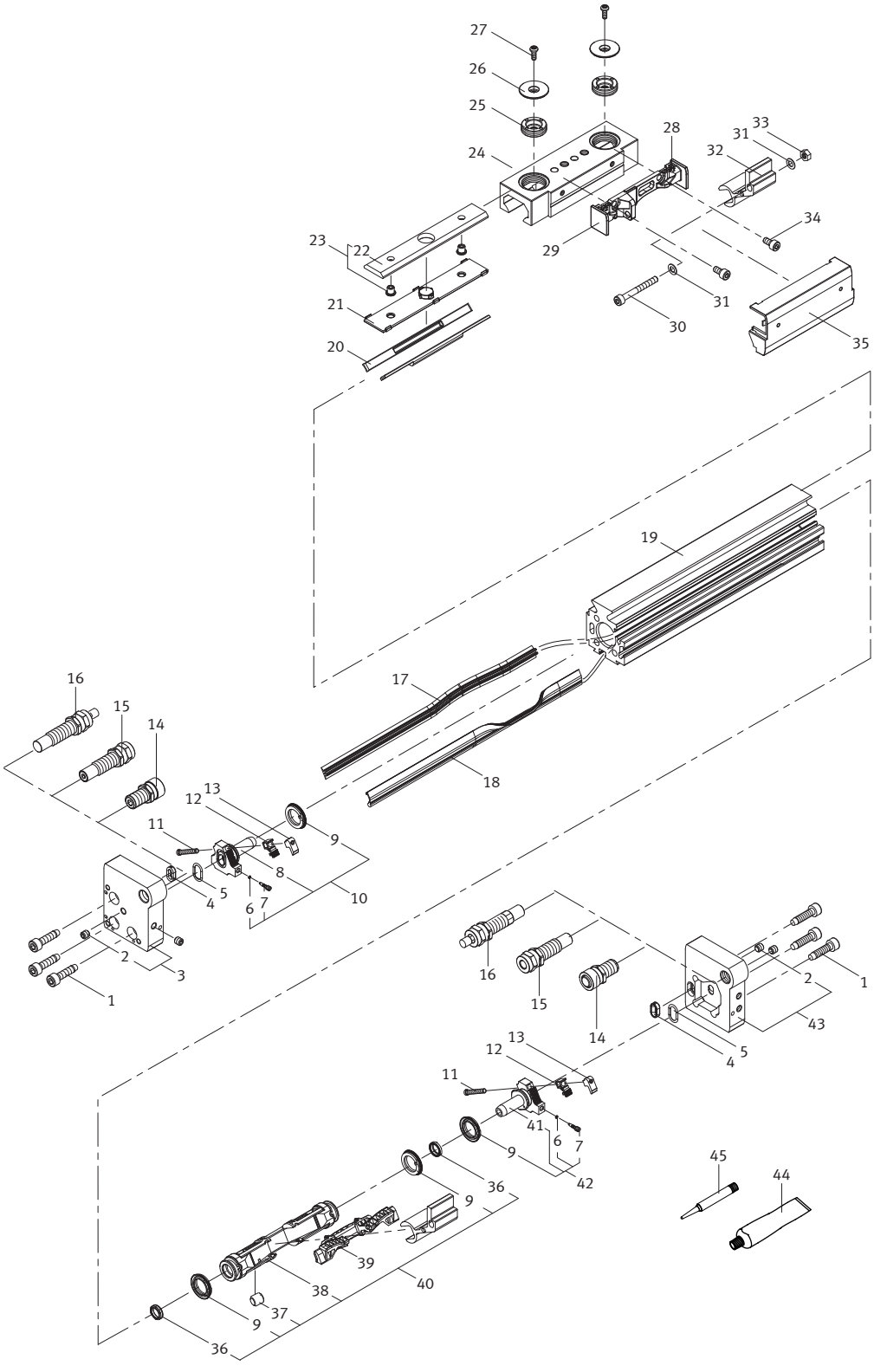
Note

These series may also be mixed. Before each repair, the parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) must be used to determine the exact spare part allocated to replace the spare parts that are no longer available.

3.1 DGC-18-...-GF

3.1.1 DGC-18-...-GF

Product series to XN/November 2009

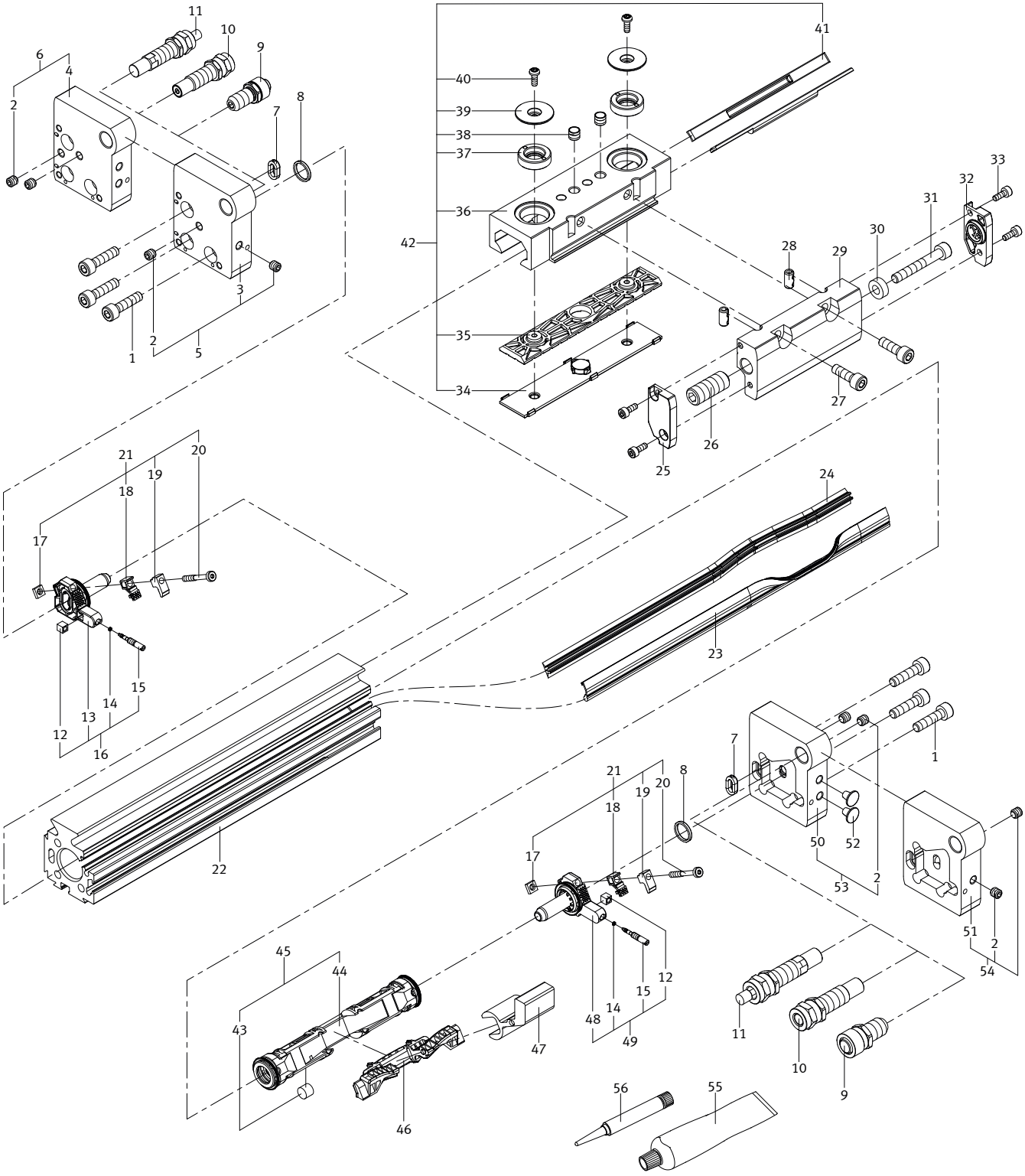


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M5×20-10.9	Tightening torque 7 ±10% Nm, use LOCTITE 243
2	Threaded pin	DIN 913, M5×5-45H	Use LOCTITE 243
3	End cap assembly, left		
4	Sealing ring		When mounting, grease with LUB-KC1 (silicone free).
5	O-ring	D3771, 9.5x1.5-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
6	O-ring	D3771, 1x0.6-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
7	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
8	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
9	Piston stop		
10	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free). This assembly must not be removed.
11	Flat-head screw	DIN 920-M3×20-4.8	Tightening torque 0.2 Nm, use LOCTITE 243
12	Clamp, sealing band		
13	Clamp, cover band		
14	Damper assembly	PPV	Tightening torque 3 Nm ±20%
15	Shock absorber assembly	YSRT	Tightening torque 3 Nm ±20%
16	Shock absorber assembly	YSRW	Tightening torque 3 Nm ±20%
17	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
18	Cover band		When mounting, grease with LUB-KC1 (silicone free).
19	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
20	Slide element		
21	Slide element		
22	Thrust piece		
23	Thrust piece		
24	Slide assembly		
25	Regulating screw		
26	Washer, lock		
27	Socket head screw	ISO 14580, M3x8-8.8	Tightening torque 0.7 Nm
28	Stop, right		Use LOCTITE 243
29	Stop, left		Use LOCTITE 243
30	Socket head screw	DIN 912, M4x35-10.9	
31	Washer	DIN 433-4.3	
32	Coupling		
33	Hex nut	DIN 934-M4-6AU	
34	Socket head screw	DIN 912, M4x8-8.8	
35	Cover		
36	Cushioning seal	8 PU	
37	Magnet	6.5x5.5	
38	Piston module		When mounting, grease with LUB-KC1 (silicone free).
39	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
40	Piston module		
41	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
42	Buffer assembly, right		
43	End cap assembly, right		
45	Lubricating grease	LUB-KC1, silicone free 20 ml	
46	Adhesive locking agent	LOCTITE 243, 1 ml	

3.1.2 DGC-18-...-GF (-DL)

Product series from XD/December 2009 to AN/November 2010

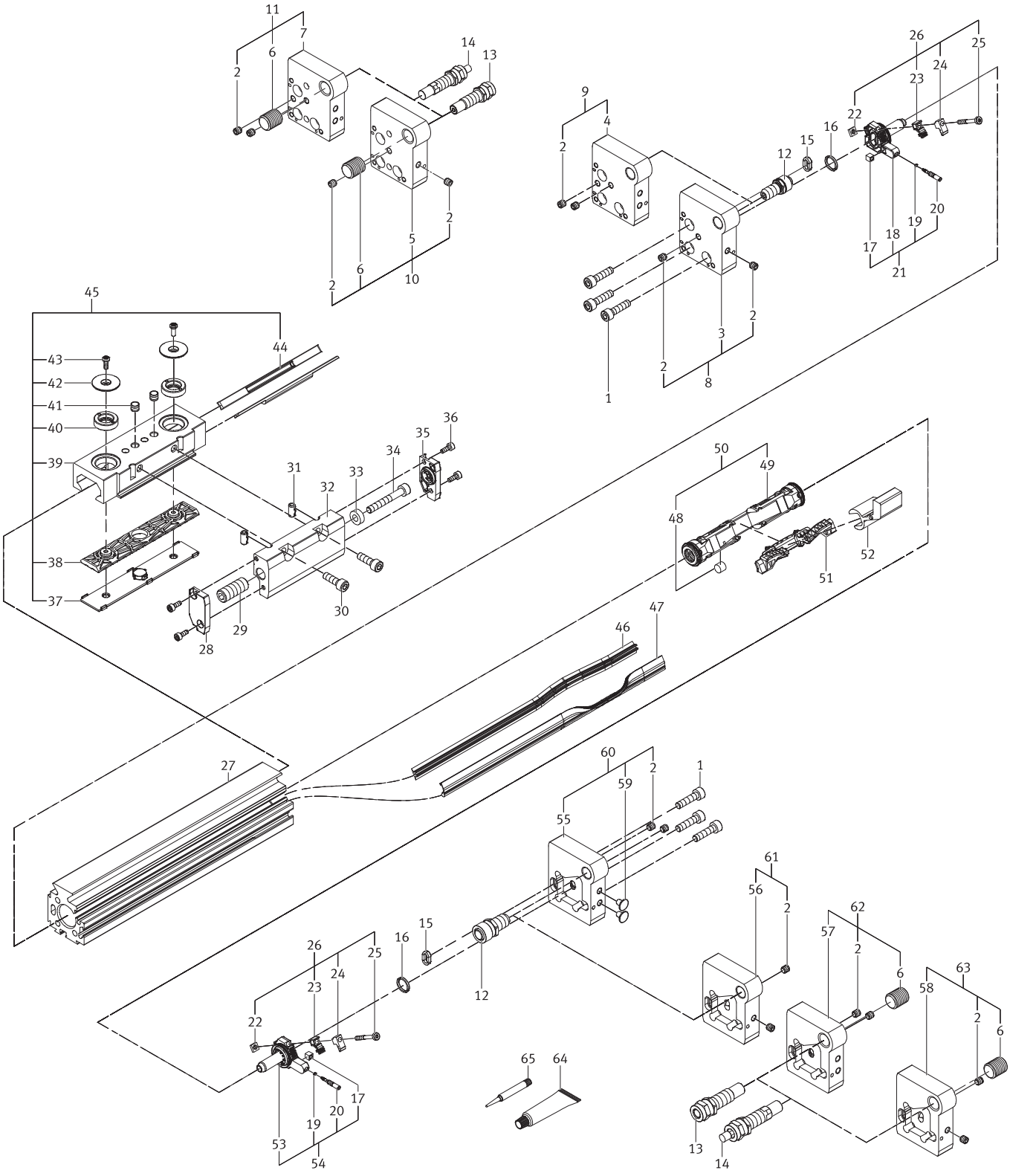


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M5×20-10.9	Tightening torque 7 Nm ±10%, use LOCTITE 243
2	Threaded pin	DIN 913, M5×5-45H	Use LOCTITE 243
3	End cap, left		
4	Connection cap, left DL		
5	End cap assembly, left		
6	End cap assembly, left DL		
7	Sealing ring		When mounting, grease with LUB-KC1 (silicone free).
8	O-ring	D3771, 9.5x1.5-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
9	Damper assembly	PPV	Tightening torque 3 Nm ±20%
10	Shock absorber assembly	YSRT	Tightening torque 3 Nm ±20%
11	Shock absorber assembly	YSRW	Tightening torque 3 Nm ±20%
12	Buffer sleeve		
13	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
14	O-ring	D3771, 1x0.6-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
15	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
16	Buffer assembly, left		
17	Square nut	DIN 562, M3	
18	Clamp, sealing band		
19	Clamp, cover band		
20	Socket head screw	DIN 7984, M3x23-8.8	Tightening torque 0.2 Nm ±10%, use LOCTITE 243
21	Clamping component ET		
22	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
23	Cover band		When mounting, grease with LUB-KC1 (silicone free).
24	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
25	Stop, left		
26	Pin	M10x1x25	Tightening torque 3 Nm ±10%, use LOCTITE 243
27	Socket head screw	DIN 912, M5x16-10.9	Tightening torque 5 Nm ±10%, use LOCTITE 243
28	Spring pin	SG 5x10	
29	Connection		
30	Washer		When mounting, grease with LUB-KC1 (silicone free).
31	Socket head screw	DIN 912, M5x35-10.9	Tightening torque 5 Nm ±10%
32	Stop, right		
33	Socket head screw	DIN 912, M3x8-12.9	Tightening torque 1 Nm ±10%, use LOCTITE 243
34	Slide element		
35	Thrust piece		
36	Slide assembly		
37	Regulating screw		
38	Threaded insert	DIN 8140-A, M5x5-A2	
39	Washer, lock		
40	Socket head screw	ISO 14580, M3x8-8.8	Tightening torque 0.7 Nm ±10%
41	Slide element		
42	Guide		
43	Magnet	6.5x5.5	
44	Piston module		When mounting, grease with LUB-KC1 (silicone free).
45	Piston module		
46	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
47	Coupling		
48	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
49	Buffer assembly, right		
50	Connection cap, right		
51	End cap, right DL		
52	Blanking plug	M5, LLM5	
53	End cap assembly, right		
54	End cap assembly, right DL		
55	Lubricating grease	LUB-KC1, silicone free 20 ml	
56	Adhesive locking agent	LOCTITE 243, 1 ml	

3.1.3 DGC-18-...-GF (-DL)

Product series from AD/December 2010



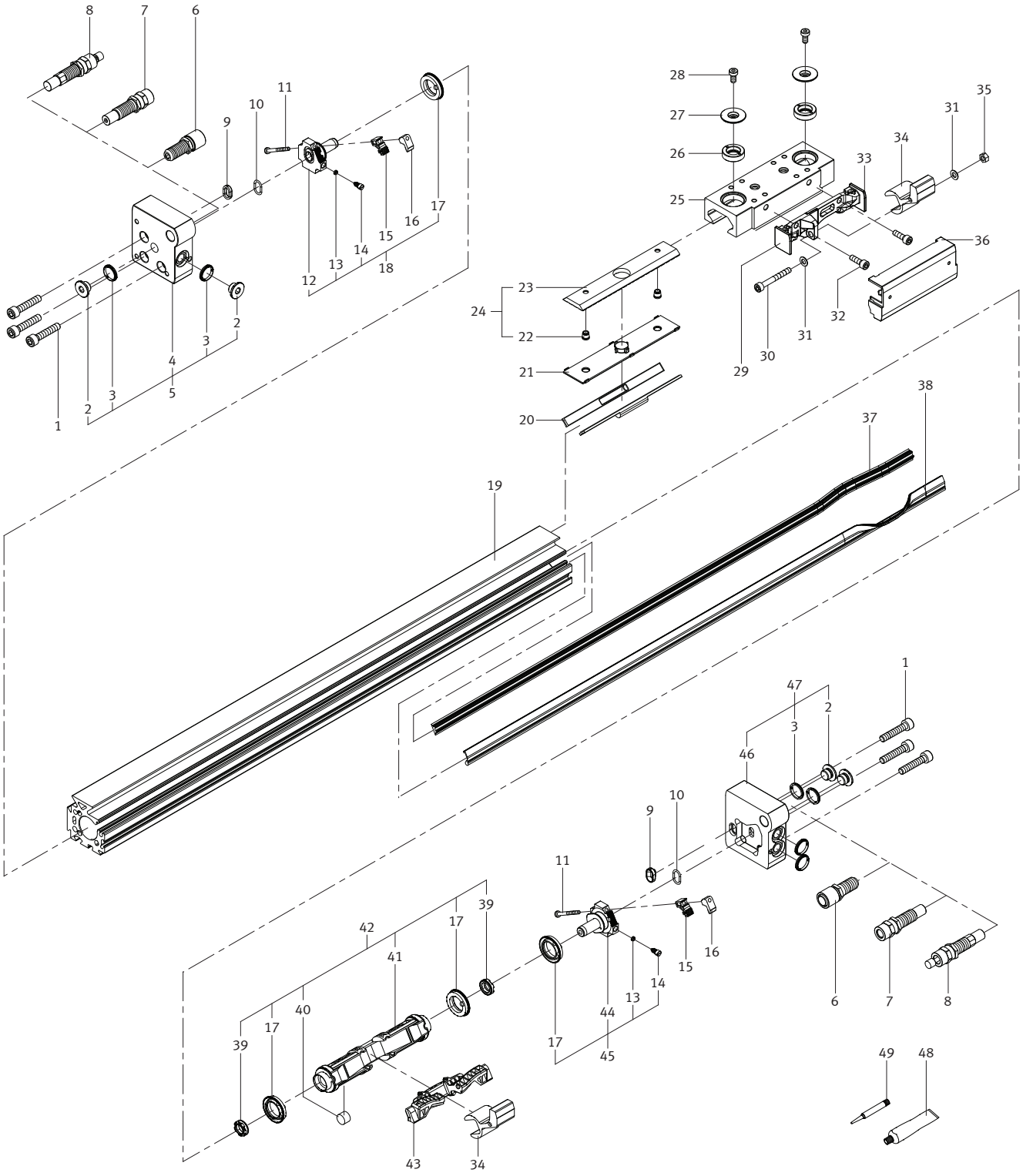
This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M5×20-10.9	Tightening torque 7 Nm ±10%, use LOCTITE 243
2	Threaded pin	DIN 913, M5×5-45H	Use LOCTITE 243
3	End cap, left		
4	End cap, left DL		
5	End cap, left		
6	Reducing sleeve		
7	Connection cap, left DL		
8	End cap assembly, left		
9	End cap assembly, left DL		
10	End cap assembly, left		
11	End cap assembly, left DL		
12	Damper assembly	P	Tightening torque 3 Nm ±20%
13	Shock absorber assembly	YSRT	Tightening torque 3 Nm ±20%
14	Shock absorber assembly	YSRW	Tightening torque 3 Nm ±20%
15	Sealing ring		When mounting, grease with LUB-KC1 (silicone free).
16	O-ring	B-9.5x1.5-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
17	Buffer sleeve		
18	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
19	O-ring	B-1x0.6-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
20	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
21	Buffer assembly, left		
22	Square nut	DIN 562, M3	
23	Clamp, sealing band		
24	Clamp, cover band		
25	Socket head screw	DIN 7984, M3x23-8.8	Tightening torque 0.2 Nm ±10%, use LOCTITE 243
26	Clamping component ET		
27	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
28	Stop, left		
29	Pin	M10x1x25	Tightening torque 3 Nm ±10%, use LOCTITE 243
30	Socket head screw	DIN 912, M5x16-10.9	Tightening torque 5 Nm ±10%, use LOCTITE 243
31	Spring pin	SG 5x10	
32	Connection		
33	Washer		When mounting, grease with LUB-KC1 (silicone free).
34	Socket head screw	DIN 912, M5x35-10.9	Tightening torque 5 Nm ±10%
35	Stop, right		
36	Socket head screw	DIN 912, M3x8-12.9	Tightening torque 1 Nm ±10%
37	Slide element		
38	Thrust piece		
39	Slide assembly		
40	Regulating screw		
41	Threaded insert	DIN 8140-A, M5x5-A2	
42	Washer, lock		
43	Socket head screw	ISO 14580, M3x8-8.8	Tightening torque 0.7 Nm ±10%
44	Slide element		
45	Slide assembly		
46	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
47	Cover band		When mounting, grease with LUB-KC1 (silicone free).
48	Magnet	6.5x5.5	
49	Piston module		When mounting, grease with LUB-KC1 (silicone free).
50	Piston module		
51	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
52	Coupling		
53	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
54	Buffer assembly, right		
55	Connection cap, right		
56	End cap, right DL		
57	Connection cap, right		
58	End cap, right DL		
59	Blanking plug	M5	
60	End cap assembly, right		
61	End cap assembly, right DL		
62	End cap assembly, right		
63	End cap assembly, right DL		
64	Lubricating grease	LUB-KC1, silicone free 20 ml	
65	Adhesive locking agent	LOCTITE 243, 1 ml	

3.2 DGC-25-...-GF

3.2.1 DGC-25-...-GF

Product series to X7/July 2009

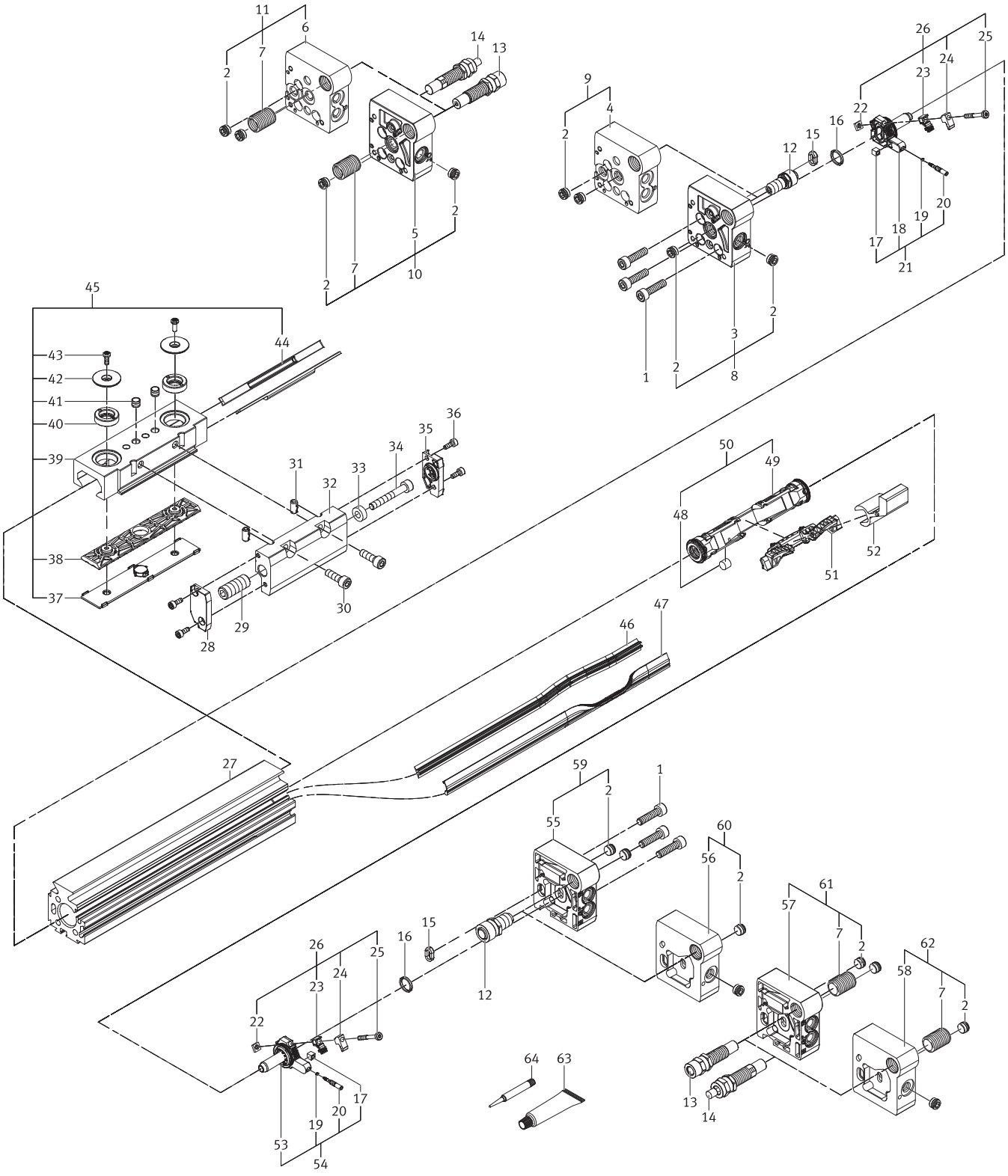


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	DIN 7500-E, M6x30-A4-70	Tightening torque 12 Nm ±10%, use LOCTITE 243
2	Blanking screw		
3	Sealing ring	OL-1 / 4	When mounting, grease with LUB-KC1 (silicone free).
4	End cap		
5	End cap assembly, left		
6	Damper assembly	PPV	Tightening torque 5 Nm ±20%
7	Shock absorber assembly	YSRT	Tightening torque 5 Nm ±20%
8	Shock absorber	YSRW	Tightening torque 5 Nm ±20%
9	Sealing ring		
10	O-ring	D3771, 12x1.5-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
11	Socket head screw	DIN 7984, M3x28-4.8	Tightening torque 0.4 Nm ±10%, use LOCTITE 243
12	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
13	O-ring	D3771, 2.2x1-T-NBR75	
14	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
15	Clamp, sealing band		
16	Clamp, cover band		
17	Buffer sleeve		
18	Buffer assembly, left		
19	Cylinder barrel		
20	Slide element		
21	Slide element		
22	Threaded bush	M5x7	
23	Thrust piece		
24	Thrust piece		
25	Slide assembly		
26	Regulating screw		
27	Washer, lock		
28	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
29	Stop, left		Use LOCTITE 243
30	Socket head screw	DIN 912, M5x40-10.9	Tightening torque 4.5 Nm ±10%
31	Washer	DIN 125-B, 5.3	
32	Socket head screw	DIN 912, M5x16-10.9	Tightening torque 5.7 Nm ±10%
33	Stop, right		Use LOCTITE 243
34	Coupling		
35	Hex nut	DIN 934, M5-6	
36	Cover		
37	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
38	Cover band		When mounting, grease with LUB-KC1 (silicone free).
39	Cushioning seal	9.5 PU	
40	Magnet	10.0x7.0	
41	Piston module		When mounting, grease with LUB-KC1 (silicone free).
42	Piston module		
43	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
44	Buffer assembly, right		
45	Buffer assembly, right		
46	End cap assembly		
47	End cap assembly, right		
48	Lubricating grease	LUB-KC1, silicone free 20 ml	
49	Adhesive locking agent	LOCTITE 243	

3.2.2 DGC-25-...-GF (-DL)

Product series from X8 / August 2009



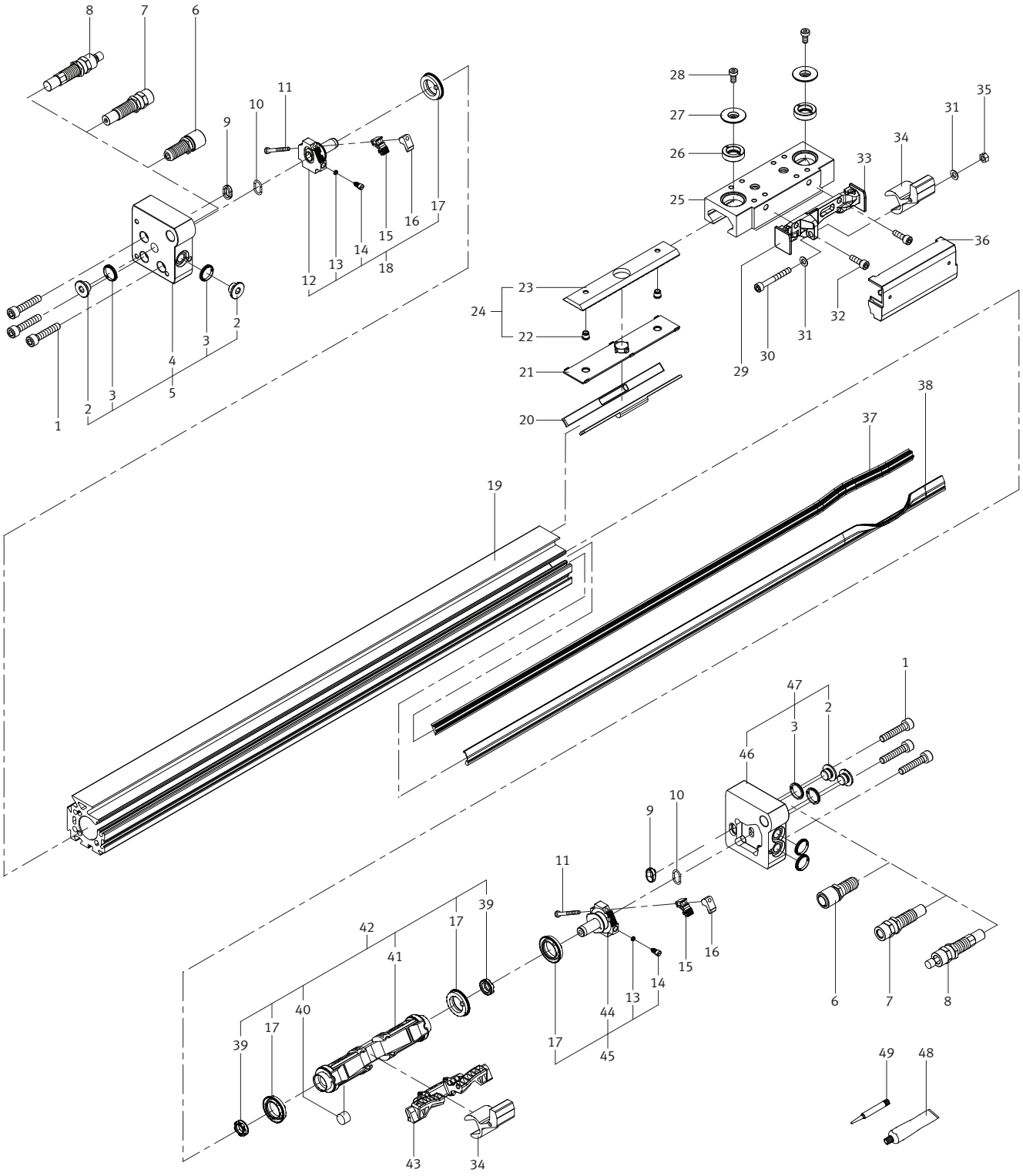
This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M6×30-10.9	Tightening torque 12 Nm ±10%, use LOCTITE 243
2	Blanking screw		Tightening torque 11 Nm ±10%
3	End cap, left		
4	Connection cap, left DL		
5	End cap, left		
6	Connection cap, left DL		
7	Reducing sleeve		
8	End cap assembly, left		
9	End cap assembly, left DL		
10	End cap assembly, left		
11	End cap assembly, left DL		
12	Damper assembly	P	Tightening torque 5 Nm ±20%
13	Shock absorber assembly	YSRT	Tightening torque 5 Nm ±20%
14	Shock absorber assembly	YSRW	Tightening torque 5 Nm ±20%
15	Sealing ring		When mounting, grease with LUB-KC1 (silicone free).
16	O-ring	B-12x1.5-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
17	Buffer sleeve		
18	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
19	O-ring	2.2x1-T-NBR75	When mounting, grease with LUB-KC1 (silicone free).
20	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
21	Buffer assembly, left		
22	Square nut	DIN 562, M3	
23	Clamp, sealing band		
24	Clamp, cover band		
25	Socket head screw	DIN 7984, M3x30-8.8	Tightening torque 0.4 Nm ±10%, use LOCTITE 243
26	Clamping component ET		
27	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
28	Stop, left		
29	Pin	M10x1x25	Tightening torque 3 Nm ±10%, use LOCTITE 243
30	Socket head screw	DIN 912, M5x20-10.9	Tightening torque 5 Nm ±10%, use LOCTITE 243
31	Spring pin	SG 6x12	
32	Connection		
33	Washer		When mounting, grease with LUB-KC1 (silicone free).
34	Socket head screw	DIN 912, M5x40-10.9	Tightening torque 6 Nm ±10%
35	Stop, right		
36	Socket head screw	DIN 6912, M4x10-8.8	Tightening torque 2 Nm ±10%, use LOCTITE 243
37	Slide element		
38	Thrust piece		
39	Slide assembly		
40	Regulating screw		
41	Threaded insert	DIN 8140-A, M5x7.5-A2	
42	Washer, lock		
43	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
44	Slide element		
45	Slide assembly		
46	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
47	Cover band		When mounting, grease with LUB-KC1 (silicone free).
48	Magnet	10.0x7.0	
49	Piston module		When mounting, grease with LUB-KC1 (silicone free).
50	Piston module		
51	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
52	Coupling		
53	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
54	Buffer assembly, right		
55	Connection cap, right		
56	End cap, right DL		
57	Connection cap, right		
58	End cap, right DL		
59	End cap assembly, right		
60	End cap assembly, right DL		
61	End cap assembly, right		
62	End cap assembly, right DL		
63	Lubricating grease	LUB-KC1, silicone free 20 ml	
64	Adhesive locking agent	LOCTITE 243	

3.3 DGC-32-...-GF

3.3.1 DGC-32-...-GF

Product series to WD / December 2008

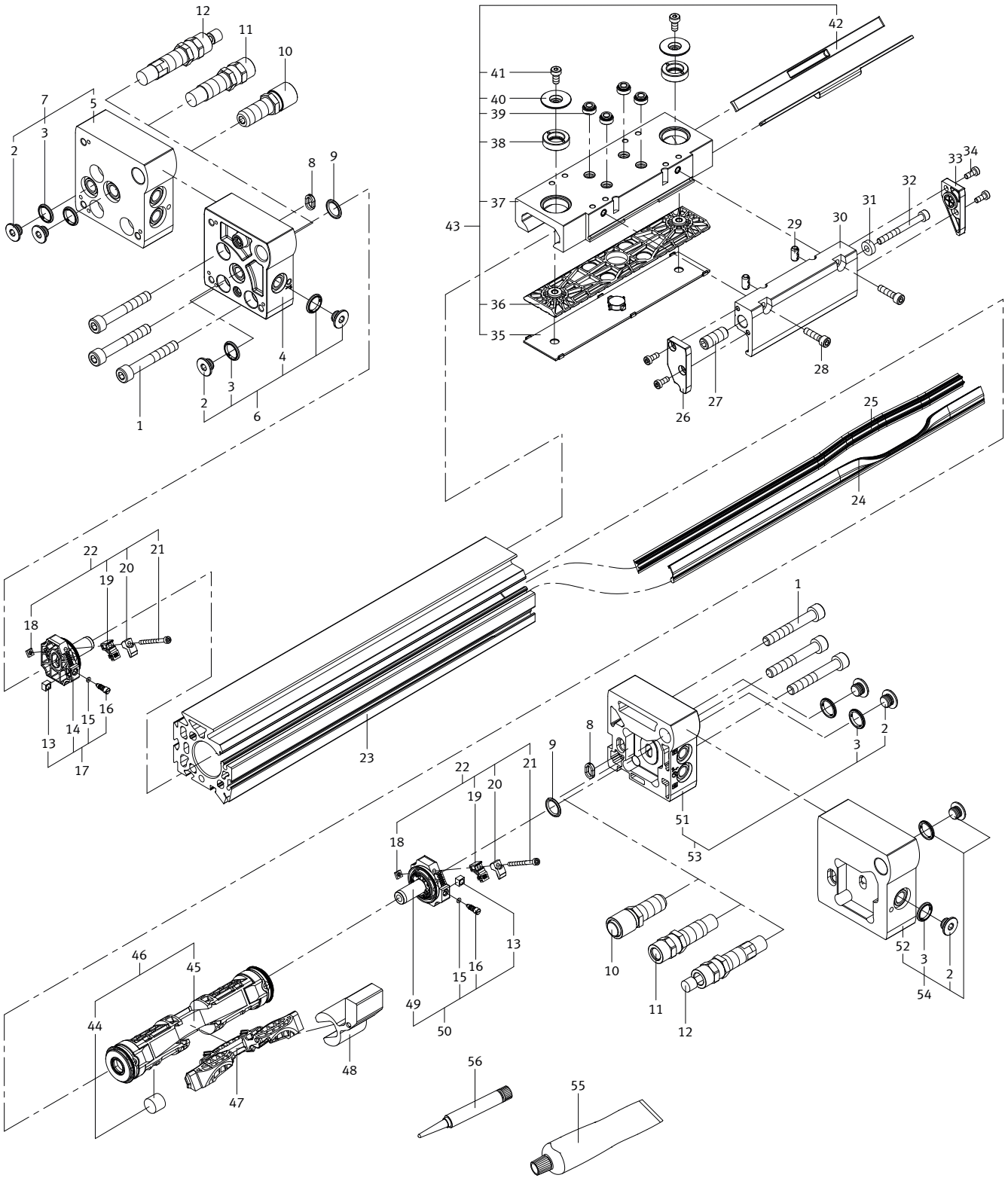


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8x45-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		
3	Sealing ring	OL-1 / 4	When mounting, grease with LUB-KC1 (silicone free).
4	End cap		
5	End cap assembly, left		
6	Damper assembly	PPV	
7	Shock absorber assembly	YSR	
8	Shock absorber	YSRW	
9	Sealing ring		When mounting, grease with LUB-KC1 (silicone free).
10	O-ring	D3771, 12x2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
11	Socket head screw	DIN 7984, M3x30-5.8	Tightening torque 0.4 Nm ±10%, use LOCTITE 243
12	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
13	O-ring	D3771, 2.2x1-T-NBR75	When mounting, grease with LUB-KC1 (silicone free).
14	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
15	Clamp, sealing band		
16	Clamp, cover band		
17	Buffer sleeve		
18	Buffer assembly, left		
19	Cylinder barrel		
20	Slide element		
21	Slide element		
22	Threaded bush	M5x7	
23	Thrust piece		
24	Thrust piece		
25	Slide assembly		
26	Regulating screw		
27	Washer, lock		
28	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
29	Stop, left		Use LOCTITE 243
30	Socket head screw	DIN 912, M5x40-10.9	Tightening torque 4.5 Nm ±10%
31	Washer	DIN 125-B, 5.3	
32	Socket head screw	DIN 6912, M5x12-8.8	Tightening torque 5.7 Nm ±10%
33	Stop, right		Use LOCTITE 243
34	Coupling		
35	Hex nut	DIN 934, M5-6	
36	Cover		
37	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
38	Cover band		When mounting, grease with LUB-KC1 (silicone free).
39	Cushioning seal	12 PU	
40	Magnet	10.0x7.0	
41	Piston module		When mounting, grease with LUB-KC1 (silicone free).
42	Piston module		
43	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
44	Buffer assembly, right		
45	Buffer assembly, right		
46	End cap assembly		
47	End cap assembly, right		
48	Lubricating grease	LUB-KC1, silicone free 20 ml	
49	Adhesive locking agent	LOCTITE 243	

3.3.2 DGC-32-...-GF (-DL)

Product series from X1/January 2009 to A9/September 2010

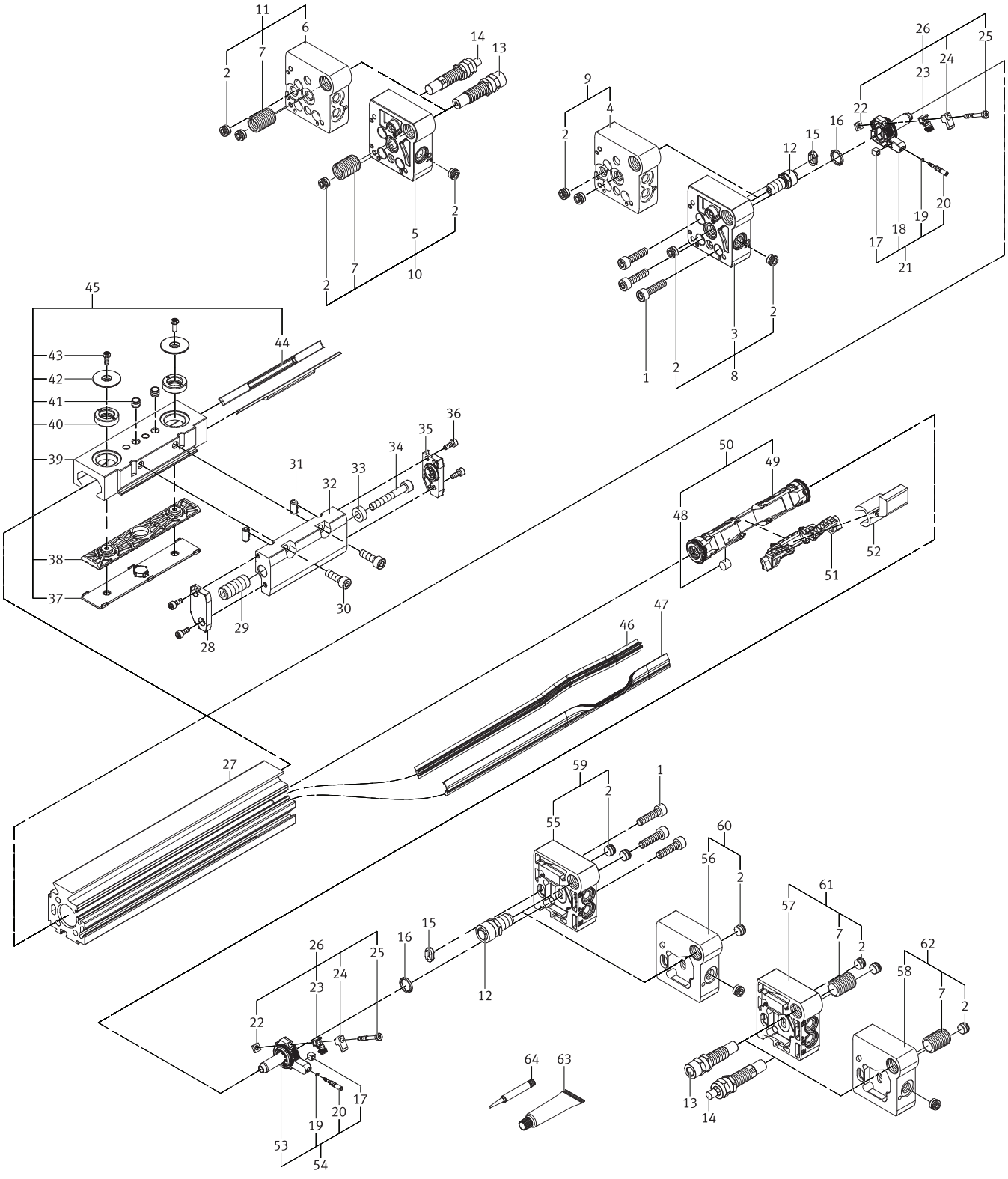


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8×55-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		Tightening torque 11 Nm ±10%
3	Sealing ring	OL-1 / 4	
4	End cap, left		
5	Connection cap, left DL		
6	End cap assembly, left		
7	End cap assembly, left DL		
8	O-ring	D3771, 1.8x1.2-N-NBR75	When mounting, grease with LUB-KC1 (silicone free).
9	O-ring	D3771, 12x2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
10	Damper assembly	PPV	Tightening torque 8 Nm ±20%
11	Shock absorber assembly	YSR	Tightening torque 8 Nm ±20%
12	Shock absorber assembly	YSRW	Tightening torque 8 Nm ±20%
13	Buffer sleeve		
14	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
15	O-ring	D3771, 2.2x1-T-NBR75	When mounting, grease with LUB-KC1 (silicone free).
16	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
17	Buffer assembly, left		
18	Square nut	DIN 562, M3	
19	Clamp, sealing band		
20	Clamp, cover band		
21	Socket head screw	DIN 912, M3x35-8.8	Tightening torque 0.4 Nm ±10%, use LOCTITE 243
22	Clamping component ET		
23	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
24	Cover band		When mounting, grease with LUB-KC1 (silicone free).
25	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
26	Stop, left		
27	Pin	M10x1x25	Tightening torque 2 Nm ±10%, use LOCTITE 243
28	Socket head screw	DIN 912, M5x20-10.9	Tightening torque 5 Nm ±10%, use LOCTITE 243
29	Spring pin	SG 6x12	
30	Connection		
31	Washer		When mounting, grease with LUB-KC1 (silicone free).
32	Socket head screw	DIN 912, M5x50-12.9	Tightening torque 6 Nm ±10%
33	Stop, right		
34	Socket head screw	DIN 6912, M4x10-8.8	Tightening torque 2 Nm ±10%, use LOCTITE 243
35	Slide element		
36	Thrust piece		
37	Slide assembly		
38	Regulating screw		
39	Press-in nut	S-M6-2	
40	Washer, lock		
41	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
42	Slide element		
43	Guide		
44	Magnet	10.0x7.0	
45	Piston module		When mounting, grease with LUB-KC1 (silicone free).
46	Piston module		
47	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
48	Coupling		
49	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
50	Buffer assembly, right		
51	Connection cap, right		
52	End cap, right DL		
53	End cap assembly, right		
54	End cap assembly, right DL		
55	Lubricating grease	LUB-KC1, silicone free 20 ml	
56	Adhesive locking agent	LOCTITE 243	

3.3.3 DGC-32-...-GF (-DL)

Product series from A0/October 2010



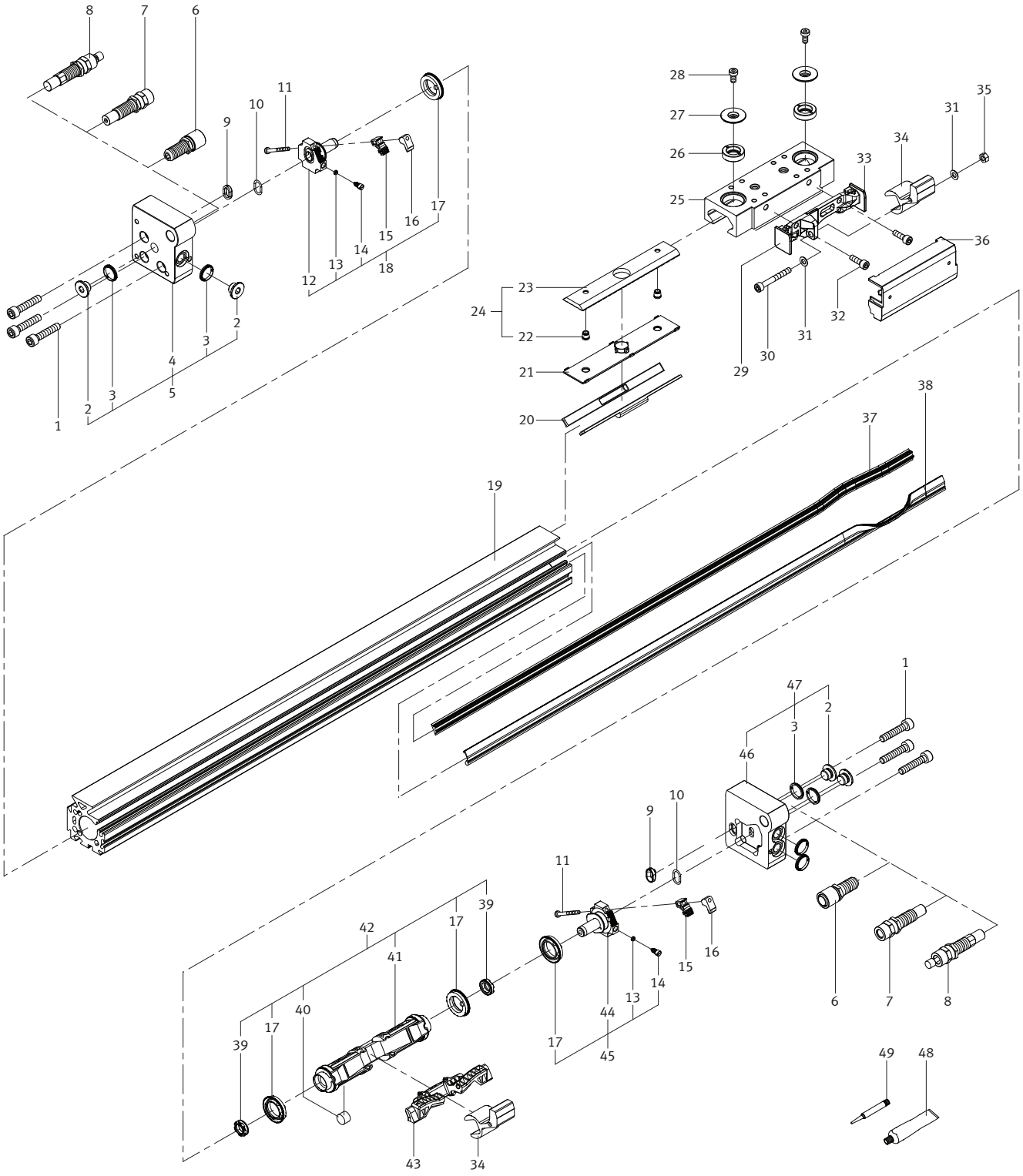
This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8×55-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		Tightening torque 11 Nm ±10%
3	End cap, left		
4	Connection cap, left DL		
5	End cap, left		
6	Connection cap, left DL		
7	Reducing sleeve		
8	End cap assembly, left		
9	End cap assembly, left DL		
10	End cap assembly, left		
11	End cap assembly, left DL		
12	Damper assembly	P	Tightening torque 8 Nm ±20%
13	Shock absorber assembly	YSR	Tightening torque 8 Nm ±20%
14	Shock absorber assembly	YSRW	Tightening torque 8 Nm ±20%
15	O-ring	B-1.8x1.2-N-NBR75	When mounting, grease with LUB-KC1 (silicone free).
16	O-ring	B-12x2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
17	Buffer sleeve		
18	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
19	O-ring	2.2x1-T-NBR75	When mounting, grease with LUB-KC1 (silicone free).
20	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
21	Buffer assembly, left		
22	Square nut	DIN 562, M3	
23	Clamp, sealing band		
24	Clamp, cover band		
25	Socket head screw	DIN 912, M3x35-8.8	Tightening torque 0.4 Nm ±10%, use LOCTITE 243
26	Clamping component ET		
27	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
28	Stop, left		
29	Pin	M10x1x25	Tightening torque 2 Nm ±10%, use LOCTITE 243
30	Socket head screw	DIN 912, M5x20-10.9	Tightening torque 5 Nm ±10%, use LOCTITE 243
31	Spring pin	SG 6x12	
32	Connection		
33	Washer		When mounting, grease with LUB-KC1 (silicone free).
34	Socket head screw	DIN 912, M5x50-12.9	Tightening torque 6 Nm ±10%
35	Stop, right		
36	Socket head screw	DIN 6912, M4x10-8.8	Tightening torque 2 Nm ±10%, use LOCTITE 243
37	Slide element		
38	Thrust piece		
39	Slide assembly		
40	Regulating screw		
41	Press-in nut	S-M6-2	
42	Washer, lock		
43	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
44	Slide element		
45	Slide assembly		
46	Cover band		When mounting, grease with LUB-KC1 (silicone free).
47	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
48	Magnet	10.0x7.0	
49	Piston module		When mounting, grease with LUB-KC1 (silicone free).
50	Piston module		
51	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
52	Coupling		
53	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
54	Buffer assembly, right		
55	Connection cap, right		
56	End cap, right DL		
57	Connection cap, right		
58	End cap, right DL		
59	End cap assembly, right		
60	End cap assembly, right DL		
61	End cap assembly, right		
62	End cap assembly, right DL		
63	Lubricating grease	LUB-KC1, silicone free 20 ml	
64	Adhesive locking agent	LOCTITE 243	

3.4 DGC-40-...-GF

3.4.1 DGC-40-...-GF

Product series to X9/September 2009

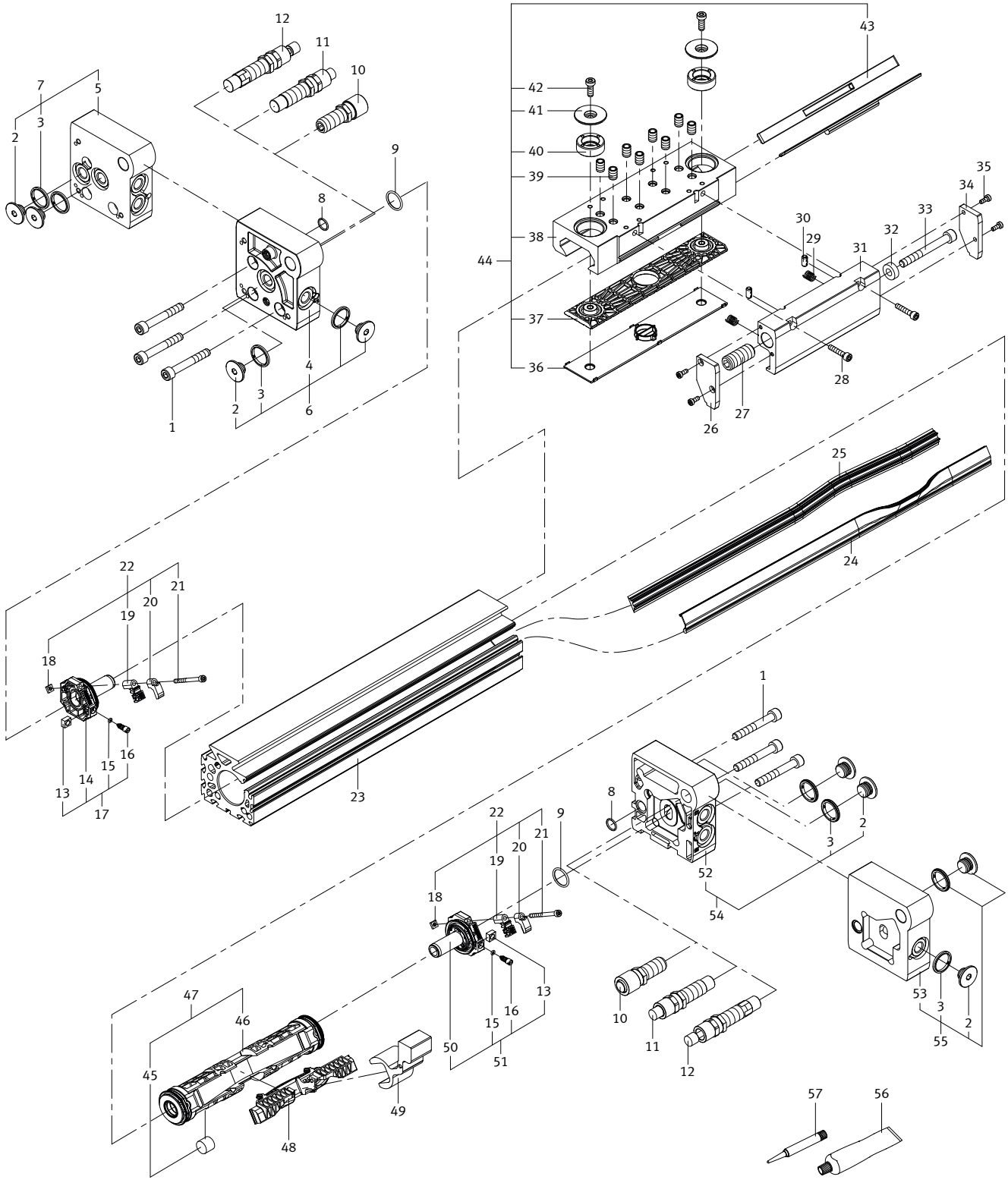


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8x45-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		
3	Sealing ring	OL-1 / 2	When mounting, grease with LUB-KC1 (silicone free).
4	End cap		
5	End cap assembly, left		
6	Damper assembly	PPV	
7	Shock absorber assembly	YSR	
8	Shock absorber	YSRW	
9	O-ring	D3771, 11.5x1.5-N-NBR75	When mounting, grease with LUB-KC1 (silicone free).
10	O-ring	D3771, 3x1.2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
11	Cylindrical dowel pin	DIN 7-12, M6x45	Tightening torque 1.0 Nm ±10%, use LOCTITE 243
12	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
13	O-ring	D3771, 3x1.2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
14	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
15	Clamp, sealing band		
16	Clamp, cover band		
17	Buffer sleeve		
18	Buffer assembly, left		
19	Cylinder barrel		
20	Slide element		
21	Slide element		
22	Threaded bush	M6x9	
23	Thrust piece		
24	Thrust piece		
25	Slide assembly		
26	Regulating screw		
27	Washer, lock		
28	Socket head screw	DIN 7984, M5x10-8.8	Tightening torque 2.0 Nm ±10%
29	Stop, left		Use LOCTITE 243
30	Socket head screw	DIN 912, M5x40-10.9	Tightening torque 4.5 Nm ±10%
31	Washer	DIN 125-B, 5.3	
32	Socket head screw	DIN 912, M5x16-10.9	Tightening torque 5.7 Nm ±10%
33	Stop, right		Use LOCTITE 243
34	Coupling		
35	Hex nut	DIN 934, M5-6	
36	Cover		
37	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
38	Cover band		When mounting, grease with LUB-KC1 (silicone free).
39	Cushioning seal	16 PU	
40	Magnet	15.0x10.0	
41	Piston module		When mounting, grease with LUB-KC1 (silicone free).
42	Piston module		
43	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
44	Buffer assembly, right		
45	Buffer assembly, right		
46	End cap assembly		
47	End cap assembly, right		
48	Lubricating grease	LUB-KC1, silicone free 20 ml	
49	Adhesive locking agent	LOCTITE 243	

3.4.2 DGC-40-...-GF (-DL)

Product series from XO/October 2009 to A5/May 2010

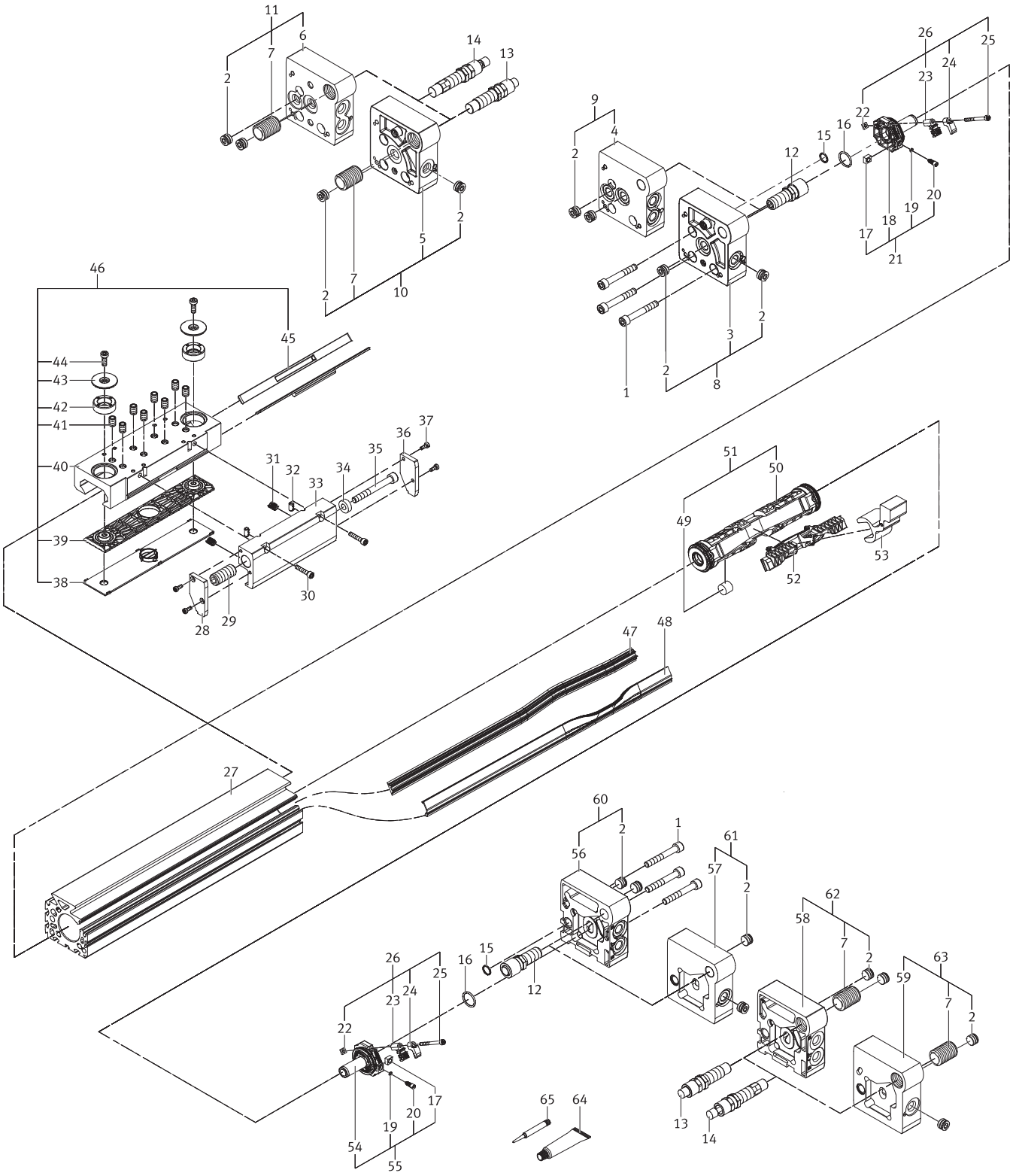


This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8×55-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		Tightening torque 16 Nm ±10%
3	Sealing ring	OL-1 / 2	
4	End cap, left		
5	Connection cap, left DL		
6	End cap assembly, left		
7	End cap assembly, left DL		
8	O-ring	D3771, 17x2-N-NBR75	When mounting, grease with LUB-KC1 (silicone free).
9	O-ring	D3771, 19x2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
10	Damper assembly	PPV	Tightening torque 20 Nm ±20%
11	Shock absorber assembly	YSR	Tightening torque 20 Nm ±20%
12	Shock absorber assembly	YSRW	Tightening torque 20 Nm ±20%
13	Buffer sleeve		
14	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
15	O-ring	D3771, 3x1.2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
16	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
17	Buffer assembly, left		
18	Square nut	DIN 562, M4	
19	Clamp, sealing band		
20	Clamp, cover band		
21	Socket head screw	DIN 912, M4x45-8.8	Tightening torque 1.0 Nm ±10%, use LOCTITE 243
22	Clamping component ET		
23	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
24	Cover band		When mounting, grease with LUB-KC1 (silicone free).
25	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
26	Stop, left		
27	Pin	SLT-25-...-P-A	Tightening torque 5 Nm ±20%, use LOCTITE 243
28	Socket head screw	DIN 912, M5x25-10.9	Tightening torque 5 Nm ±20%, use LOCTITE 243
29	Compression spring	RW-5 / 3E-4.0	
30	Spring pin	SG 6x12	
31	Connection		
32	Washer		When mounting, grease with LUB-KC1 (silicone free).
33	Socket head screw	DIN 912, M8x70-10.9	Tightening torque 20 Nm ±20%
34	Stop, right		
35	Socket head screw	DIN 6912, M4x10-8.8	Tightening torque 2 Nm ±20%, use LOCTITE 243
36	Slide element		
37	Thrust piece		
38	Slide assembly		
39	Threaded insert	M6x10	
40	Regulating screw		
41	Washer, lock		
42	Socket head screw	DIN 7984, M6x16-8.8	Tightening torque 3.0 Nm ±10%
43	Slide element		
44	Guide		
45	Magnet	15.0x10.0	
46	Piston module		When mounting, grease with LUB-KC1 (silicone free).
47	Piston module		
48	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
49	Coupling		
50	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
51	Buffer assembly, right		
52	Connection cap, right		
53	End cap, right DL		
54	End cap assembly, right		
55	End cap assembly, right DL		
56	Lubricating grease	LUB-KC1, silicone free 20 ml	
57	Adhesive locking agent	LOCTITE 243, 1 ml	

3.4.3 DGC-40-...-GF (-DL)

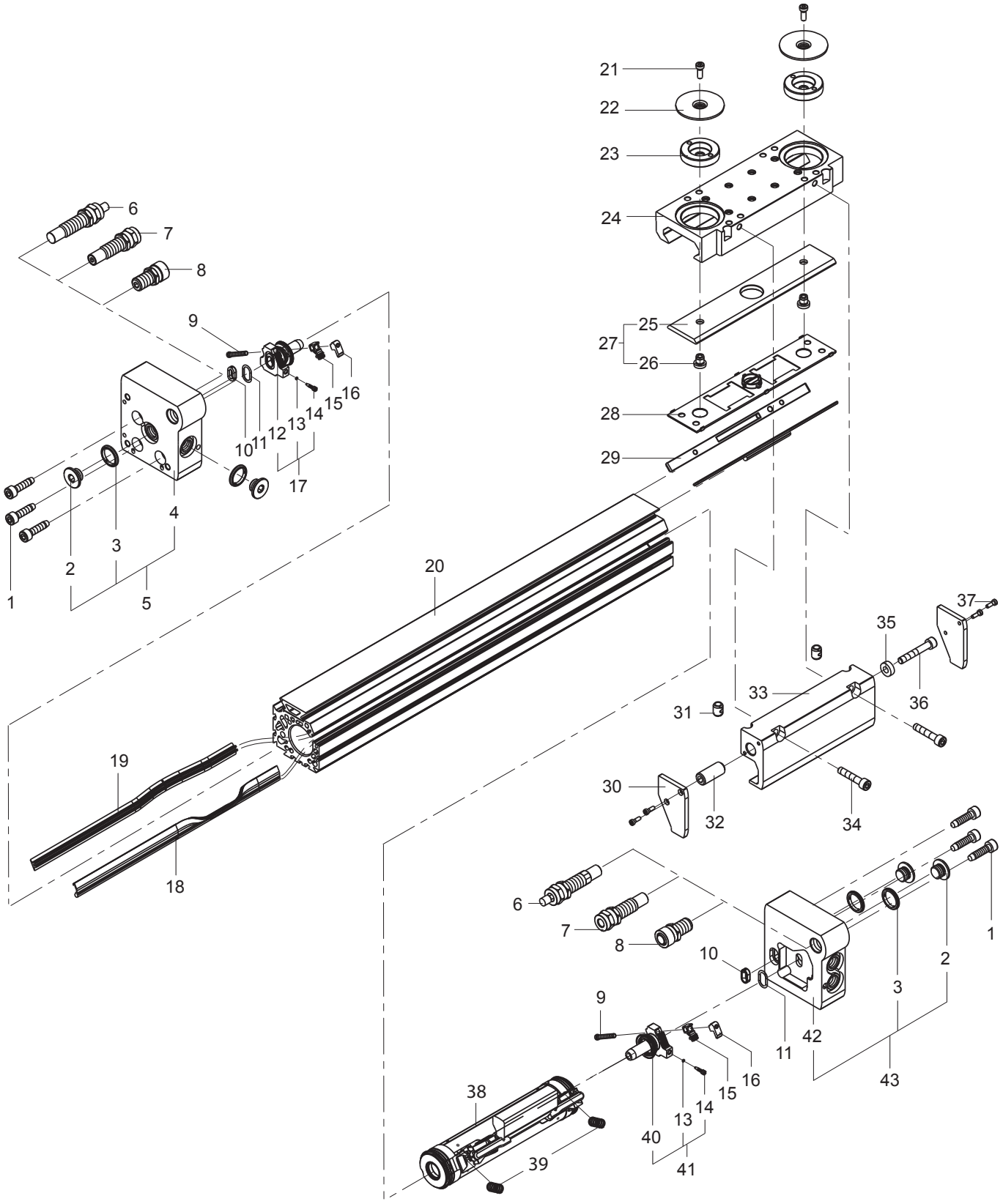
Product series from A6/June 2010



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type	Note
1	Self-tapping screw	M8×55-10.9	Tightening torque 30 Nm ±10%, use LOCTITE 243
2	Blanking screw		Tightening torque 16 Nm ±10%
3	End cap, left		
4	Connection cap, left DL		
5	End cap, left		
6	Connection cap, left DL		
7	Reducing sleeve		
8	End cap assembly, left		
9	End cap assembly, left DL		
10	End cap assembly, left		
11	End cap assembly, left DL		
12	Damper assembly	P	Tightening torque 20 Nm ±20%
13	Shock absorber assembly	YSR	Tightening torque 20 Nm ±20%
14	Shock absorber assembly	YSRW	Tightening torque 20 Nm ±20%
15	O-ring	B-17x2-N-NBR75	When mounting, grease with LUB-KC1 (silicone free).
16	O-ring	B-19x2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
17	Buffer sleeve		
18	Buffer assembly, left		When mounting, grease with LUB-KC1 (silicone free).
19	O-ring	B-3x1.2-N-NBR70	When mounting, grease with LUB-KC1 (silicone free).
20	Regulating screw		When mounting, grease with LUB-KC1 (silicone free).
21	Buffer assembly, left		
22	Square nut	DIN 562, M4	
23	Clamp, sealing band		
24	Clamp, cover band		
25	Socket head screw	DIN 912, M4x45-8.8	Tightening torque 1.0 Nm ±10%, use LOCTITE 243
26	Clamping component ET		
27	Cylinder barrel		When mounting, grease with LUB-KC1 (silicone free).
28	Stop, left		
29	Pin	SLT-25-...-P-A	Tightening torque 5 Nm ±20%, use LOCTITE 243
30	Socket head screw	DIN 912, M5x25-10.9	Tightening torque 5 Nm ±20%, use LOCTITE 243
31	Compression spring	RW-5 / 3E-4.0	
32	Spring pin	SG 6x12	
33	Connection		
34	Washer		When mounting, grease with LUB-KC1 (silicone free).
35	Socket head screw	DIN 912, M8x70-10.9	Tightening torque 20 Nm ±20%
36	Stop, right		
37	Socket head screw	DIN 6912, M4x10-8.8	Tightening torque 2 Nm ±20%, use LOCTITE 243
38	Slide element		
39	Thrust piece		
40	Slide assembly		
41	Threaded insert	M6x10	
42	Regulating screw		
43	Washer, lock		
44	Socket head screw	DIN 7984, M6x16-8.8	Tightening torque 3.0 Nm ±10%
45	Slide element		
46	Slide assembly		
47	Sealing band		When mounting, grease with LUB-KC1 (silicone free).
48	Cover band		When mounting, grease with LUB-KC1 (silicone free).
49	Magnet	15.0x10.0	
50	Piston module		When mounting, grease with LUB-KC1 (silicone free).
51	Piston module		
52	Belt reverser		When mounting, grease with LUB-KC1 (silicone free).
53	Coupling		
54	Buffer assembly, right		When mounting, grease with LUB-KC1 (silicone free).
55	Buffer assembly, right		
56	Connection cap, right		
57	End cap, right DL		
58	Connection cap, right		
59	End cap, right DL		
60	End cap assembly, right		
61	End cap assembly, right DL		
62	End cap assembly, right		
63	End cap assembly, right DL		
64	Lubricating grease	LUB-KC1, silicone free 20 ml	
65	Adhesive locking agent	LOCTITE 243, 1 ml	

3.5 DGC-50 / 63-...-GF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Position	Designation	Type		Note	
		DGC-50-...-GF	DGC-63-...-GF	DGC-50-...-GF	DGC-63-...-GF
1	Self-tapping screw	M8×55-10.9	M8×55-10.9	Tightening torque 25 Nm ±20%, use LOCTITE 243	Tightening torque 30 Nm ±20%, use LOCTITE 243
2	Blanking screw			Tightening torque 16 Nm ±10%	Tightening torque 18 Nm ±10%
3	Sealing ring	OL-1/2	OL-M22		
4	End cap, left				
5	End cap, left, assembly				
6	Shock absorber			Tightening torque 35 Nm ±20%	Tightening torque 60 Nm ±20%
7	Shock absorber				
8	Damper				
9	Socket head screw	DIN 912-M4×40-10.9	DIN 912-M4×40-10.9	Tightening torque 1.0 Nm ±20%, use LOCTITE 243	
10	O-ring	11.5×1.5-N-NBR75	11.5×1.5-N-NBR75		
11	O-ring	32×2.5-N-NBR70	42×3-N-NBR70		
12	Buffer, left				
13	O-ring	4×1.5-N-NBR70	6×1.5-N-NBR70		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer, left, assembly				
18	Cover band				
19	Sealing band				
20	Cylinder barrel				
21	Socket head screw	DIN 7984-M6×16-8.8	DIN 7984-M6×16-8.8	Tightening torque 6.0 Nm ±10%, use LOCTITE 243	
22	Washer				
23	Regulating screw				
24	Slide				
25	Thrust piece				
26	Press-in nut				
27	Thrust piece assembly				
28	Slide element				
29	Slide element				
30	Stop				
31	Spring pin	SG 12×15	SG 12×15		
32	Threaded pin	SLT-25-P-A	SLT-25-P-A	Tightening torque 5.0 Nm ±20%, use LOCTITE 243	
33	Slide-piston connection				
34	Socket head screw	DIN 912-M8×40-10.9	DIN 912-M8×45-10.9	Tightening torque 20 Nm ±20%, use LOCTITE 243	
35	Washer				
36	Socket head screw	DIN 912-M8×50-10.9	DIN 912-M8×50-10.9	Tightening torque 20 Nm ±20%, use LOCTITE 243	
37	Socket head screw	DIN 6912-M4×12-8.8	DIN 912-M4×10-8.8	Tightening torque 2.0 Nm ±20%, use LOCTITE 243	
38	Piston module				
39	Compression spring	VL-5/2-4.0	VL-5/2-4.0		
40	Buffer, right				
41	Buffer, right, assembly				
42	End cap, right				
43	End cap, right, assembly				

4 Repair steps

This chapter describes how to completely dismantle the linear drives and the individual components or assemblies within self-contained sub-chapters. The linear drive does not need to be completely dismantled for every fault in order to replace faulty components. The complete dismantling process described here is designed to provide a comprehensive overview of the components and how they are accessed in case they need to be replaced. The cause of a defect must therefore always be determined before starting a repair.

Note

The repair should preferably be carried out on a stable and flat work surface with storage for small parts.

Before dismantling the linear drive, it is imperative that the cause of the failure is investigated to prevent, for example, repeated and premature failure. A linear drive which has been used as intended will not normally exhibit any premature signs of failure.

This investigation is not necessary in the case of non-premature failure (fatigue time). However, the condition of the slide (wear on the slide elements, the slide guide setting, e.g. noticeable bearing clearance, faulty sliding performance and increased sliding noise etc.), of the piston including all components in the cylinder barrel (e.g. piston seals, sealing band, cover band, buffer) and of all sealing rings should also always be assessed. In case of uncertainty, it is recommended to replace all the components mentioned so as to rule out reciprocal effects during later operation.

If the linear drive suffers premature failure, the operating conditions should be examined more closely.

The following possibilities should be considered among others:

- **Overloading**

  In case of overloading the application parameters (load, speed, operating pressure, operating medium) should be adjusted accordingly.
- **Ambient conditions/material resistance**

  Check whether the ambient temperature is within the permissible range.

  Check the chemical and physical ambient conditions for contaminants such as dust, abrasive particles, cooling lubricants, solvents, ozone, radiation, water-soluble greases and oils, etc.

The following chapters describe how to dismantle the different sizes of the linear drives:

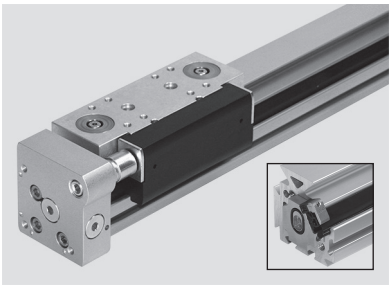
- Linear drive DGC-18 / 25 / 32 / 40-...-GF (see Chapter 4.1 "Linear drives DGC-18 / 25 / 32 / 40-...-GF").
- Linear drive DGC-50/63-...-GF (see Chapter 4.2 "Linear drives DGC-50 / 63-...-GF").

4.1 Linear drives DGC-18 / 25 / 32 / 40-...-GF

Linear drives DGC-18/25/32/40-...-GF are sold in various different series; the key differences between these series in terms of repair are listed below:

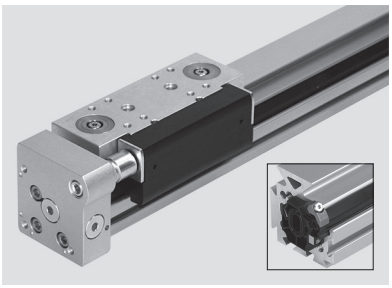
Series 1

Linear drives with milled connection/end caps, aluminium buffer and a slide-piston connection with large polymer cover.



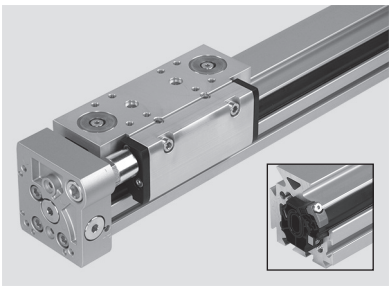
Series 2

Linear drives with milled connection/end caps, polymer buffer and a slide-piston connection with large polymer cover.



Series 3

Linear drives with cast-iron connection/end caps, polymer buffer and a modified slide-piston connection.



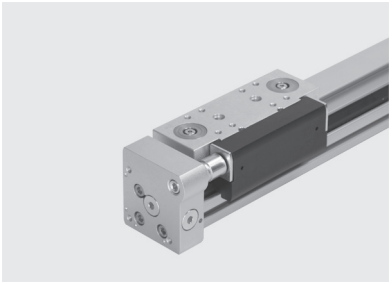
Note

These series may also be mixed. Before each repair, the parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) must be used to determine the exact spare part allocated to replace the spare parts that are no longer available.

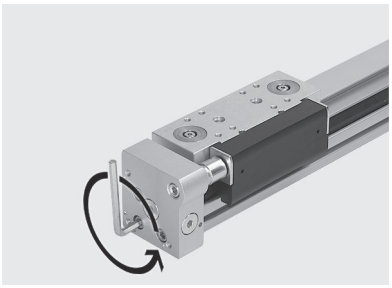
4.1.1 Dismantling the linear drive

4.1.1.1 Assembly steps for dismantling linear drives of series 1 and 2

- Place the linear drive on the work surface with the slide facing upwards.



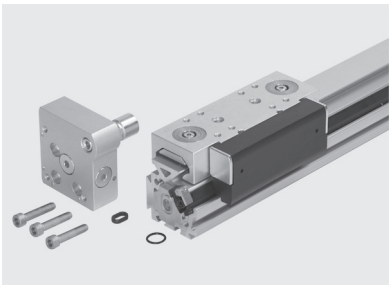
- Loosen the three self-tapping screws on the two connection/end caps and remove these.



Note

The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

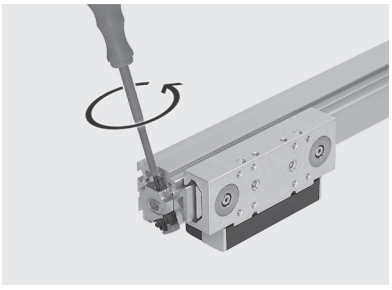
- Remove the connection/end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the connection/end caps and the buffer.



Documents

Dismantling and repair of the connection/end caps is described in Chapter 4.1.6 "Replacing the cushioning components" and Chapter 4.1.7 "Replacing the sealing rings for the supply ports in the connection/end caps".

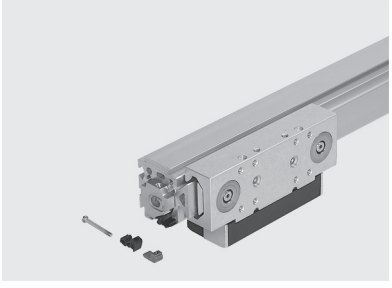
- Unscrew and remove the flat head screw/socket head screw from the band clamping mechanism on both buffers.



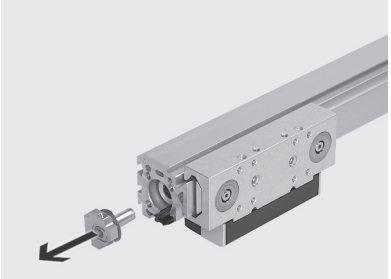
Documents

Removal of the polymer buffers is described in Chapter 4.1.1.2 "Assembly steps for dismantling linear drives of series 3".

- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.

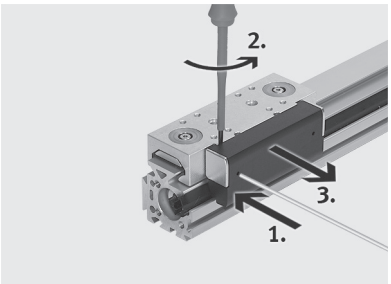


- Remove both the buffers from the cylinder barrel.



- Push a suitable pin into one of the holes on the front of the cover in order to release the holding lug behind it (1).
- Insert a screwdriver in the respective recesses on the cover and loosen it by turning (2).

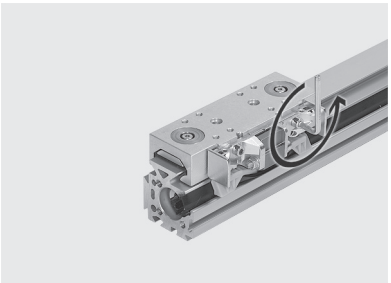
  Repeat this step on the other side.
- Remove the cover from the slide (3).



Note

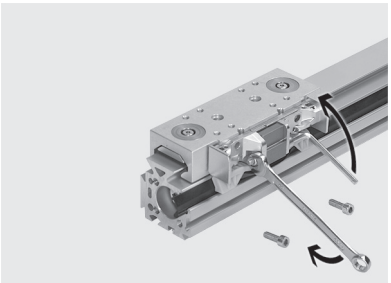
In **series 1 and 2**, the dismantling process for drives DGC-18/25-...-GF differs from that for drives DGC-...-32/40-...-GF in that the slide-piston connection is fastened to the piston coupling in a different way.

- Unscrew and remove both socket head screws from the slide-piston connection.



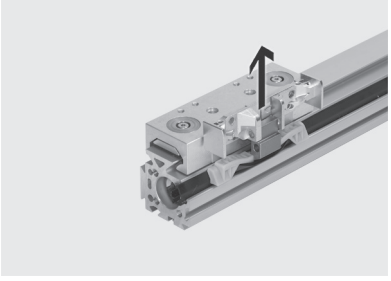
DGC-18-...-GF and DGC-25-...-GF:

- Unscrew and remove the nut from the screw. Remove the socket head screw and both washers.
- Lift the slide-piston connection upwards and out.



DGC-32-...-GF and DGC-40-...-GF (not shown in the illustration):

- Unscrew and remove both socket head screws.
- Lift both the modules of the slide-piston connection upwards and out.



Note

The parts of the slide-piston connection are paired with the slide. In order to ensure the slide and the slide-piston connection fit backlash-free, the individual components of the slide-piston connection must be glued in a precisely fitting manner.

If the glued parts break apart, they can be placed on top of each other again and re-installed.

You must not apply any additional glue as this will change the fit.

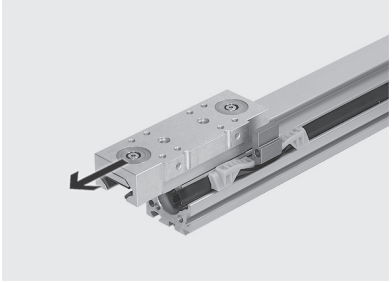
Note

If a part of the slide-piston connection is faulty, a **new slide-piston connection** must be used because of the pairing; this also applies in the case of a faulty slide.

Note

The slide need only be removed from the cylinder barrel if the slide or slide elements are faulty.

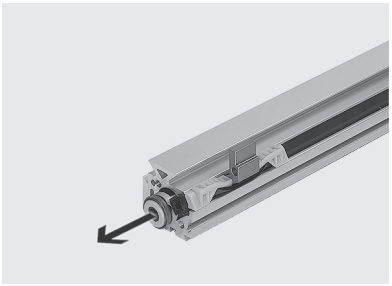
- Push the slide off the cylinder barrel.



Documents

Dismantling and repair of the slide is described in Chapter 4.1.3 "Replacing the slide elements in the slide" and Chapter 4.1.4 "Setting the sliding play on the slide".

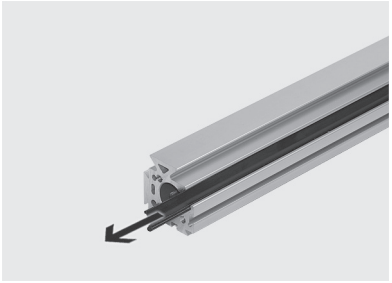
- Push the piston out of the cylinder barrel.



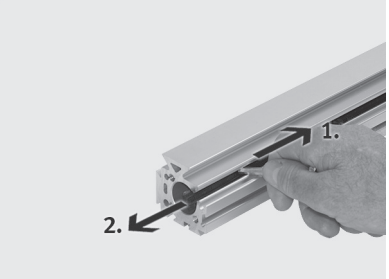
Documents

Dismantling and repair of the piston module is described in Chapter 4.1.5 "Dismantling and repairing the piston module".

- Pull the cover band out of the cylinder barrel.

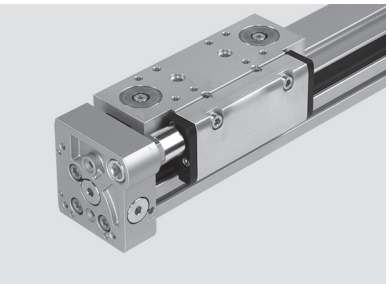


- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).

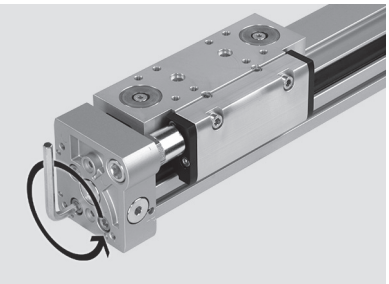


4.1.1.2 Assembly steps for dismantling linear drives of series 3

- Place the linear drive on the work surface with the slide facing upwards.



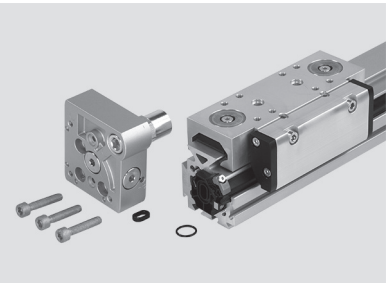
- Loosen the three self-tapping screws on the two connection/end caps and remove these.



Note

The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

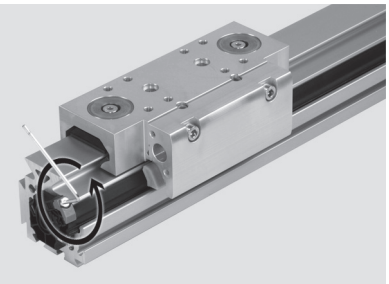
- Remove the connection/end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the connection/end caps and the buffers.



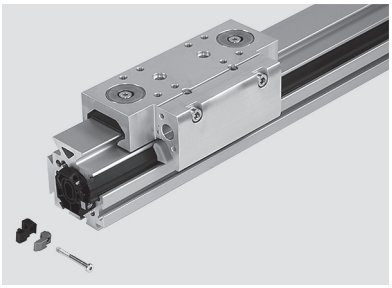
Documents

Dismantling and repair of the connection/end caps is described in Chapter 4.1.6 "Replacing the cushioning components" and Chapter 4.1.7 "Replacing the sealing rings for the supply ports in the connection/end caps".

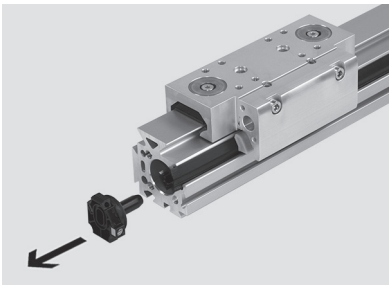
- Unscrew and remove the socket head screw from the band clamping mechanism on both buffers.



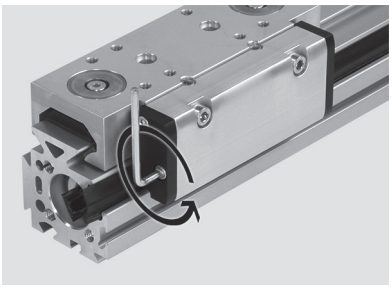
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



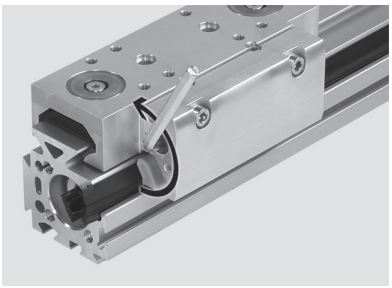
- Remove both the buffers from the cylinder barrel.



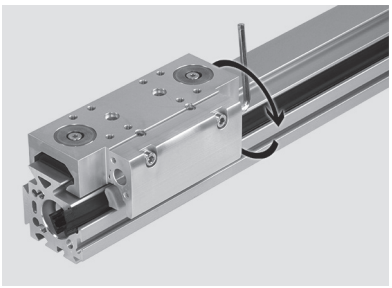
- Unscrew the socket head screws on the front sides of the slide-piston connection and remove the stops.



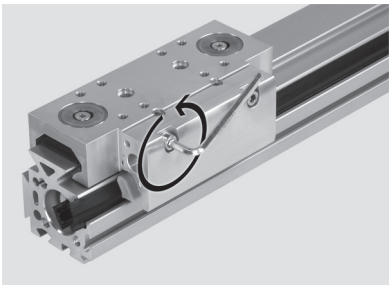
- Loosen the threaded bolts on the left-hand side of the slide-piston connection.



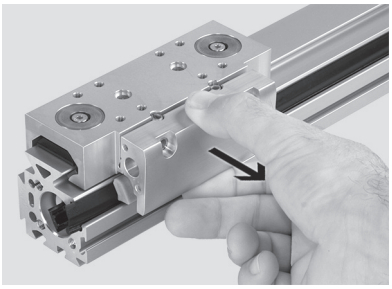
- Unfasten and remove the socket head screw on the right-hand side of the slide-piston connection.



- Unfasten both the socket head screws on the front of the slide-piston connection and remove them.



- Remove the slide-piston connection.

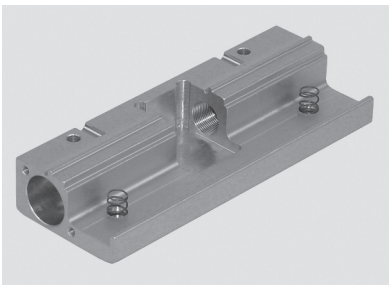


Note

Neither the spring pins nor the blanking plugs between the slide and the slide-piston connection are fastened and may be lost when removing the slide-piston connection.

Note

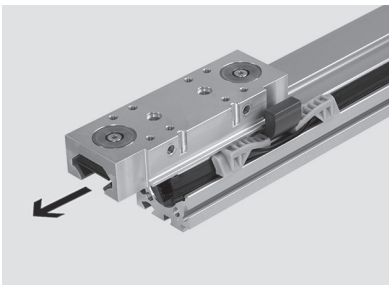
For **drives DGC-...-40-...-GF**, two compression springs should be inserted in blind holes in the slide-piston connection.



Note

The slide need only be removed from the cylinder barrel if the slide or slide elements are faulty.

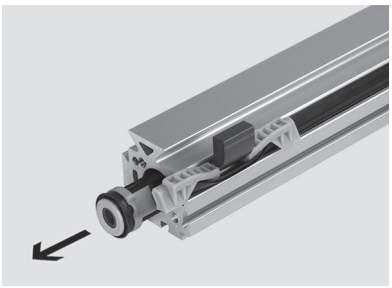
- Push the slide off the cylinder barrel.



Documents

Dismantling and repair of the slide is described in Chapter 4.1.3 "Replacing the slide elements in the slide" and Chapter 4.1.4 "Setting the sliding play on the slide".

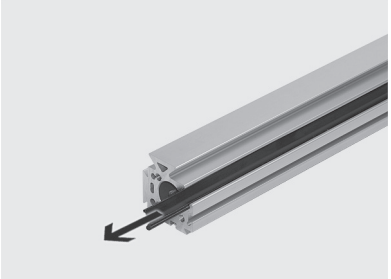
- Push the piston out of the cylinder barrel.



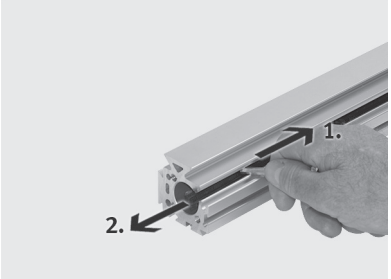
Documents

Dismantling and repair of the piston module is described in Chapter 4.1.5 "Dismantling and repairing the piston module".

- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.1.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

Note

The parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) provide a list of spare parts that are no longer available and indicate precisely which spare parts from the current series should be used to replace them.

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the rating plate of the linear drive (see order example on the next page). This information ensures you receive a sealing band/cover band of the necessary length.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke can be determined from the type code on the rating plate. Check the length of the new sealing band and cover band and shorten them to length (0-stroke + stroke) as necessary. See order example.

Type	Length L_0
DGC-18-...-GF	220 mm
DGC-25-...-GF	250 mm
DGC-32-...-GF	290 mm
DGC-40-...-GF	335 mm

Example: DGC-25-330-GF

0-stroke: 250 mm

Stroke: 330 mm

Length of sealing band/cover band =
0-stroke + stroke = 580 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may damage or tear them and reduce their service life.

Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston, outside	Festo LUB-KC1[1)]	Grease all around.
Seal, piston interior	Festo LUB-KC1[1)]	Grease all around.
Cushioning boss	Festo LUB-KC1[1)]	Grease all around.
Seal, buffer	Festo LUB-KC1[1)]	Grease all around.
Belt reverser	Festo LUB-KC1[1)]	Grease in the diverting area.
Plain-bearing guide		The plain-bearing guide in these sizes is designed for unlubricated operation.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

4.1.2.1 Assembly steps for assembling linear drives of all three series

Note

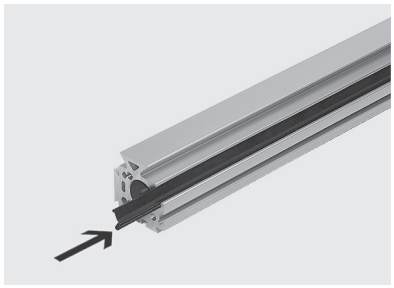
Please note that when using a **new slide-piston connection**, a **new coupling** must also always be clipped into the piston.

Documents

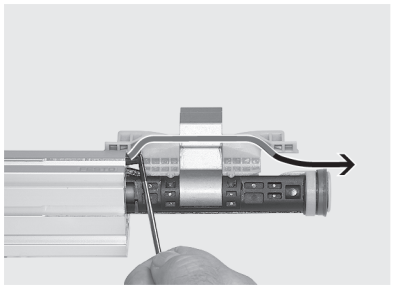
Dismantling and inserting the new coupling into the piston module is described in Chapter 4.1.5 "Dismantling and repairing the piston module".

- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 10 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.

- Insert the cover band into the mounting so that approximately 10 mm of the cover band still protrudes.



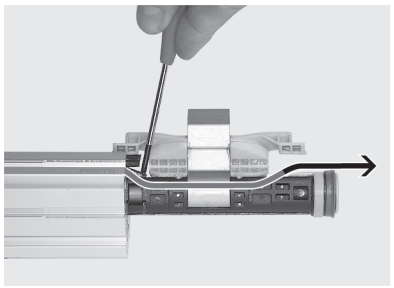
- Grease the piston and the belt reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the belt reverser with a screwdriver.



Note

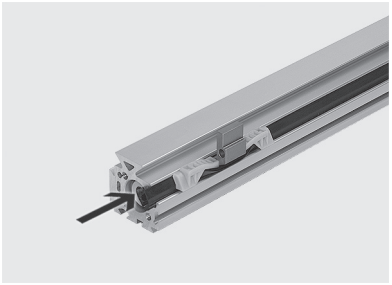
When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

- Push the sealing band under the belt reverser with a screwdriver.



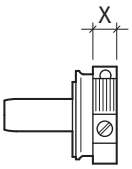
4.1.2.2 Assembly steps for assembling linear drives of series 1 and 2

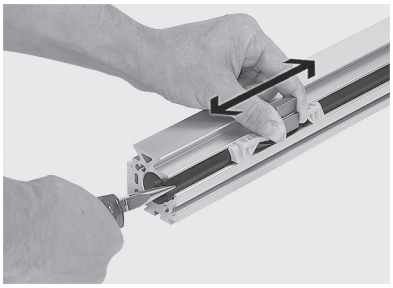
- Insert the piston fully into the cylinder barrel.



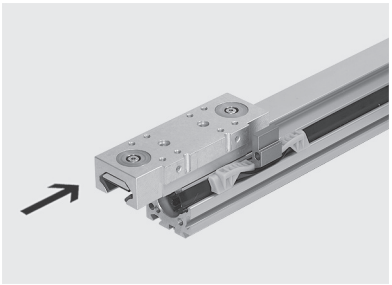
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-18-...-GF	6 mm
DGC-25-...-GF	7 mm
DGC-32-...-GF	9 mm
DGC-40-...-GF	9 mm

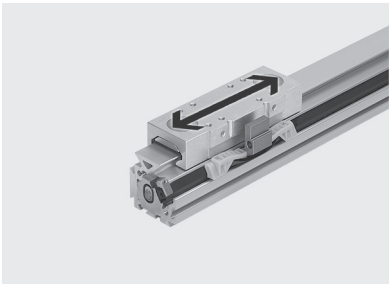




- Align the slide so that the shoulder with the drill holes points towards the piston coupling.
- Push the slide onto the cylinder barrel.



- Use a spring scale to check the displacement force of the slide (values are in the table in Chapter 4.1.4 "Setting the sliding play on the slide") and if necessary adjust the settings for the sliding play as described in Chapter 4.1.4 "Setting the sliding play on the slide".



Note

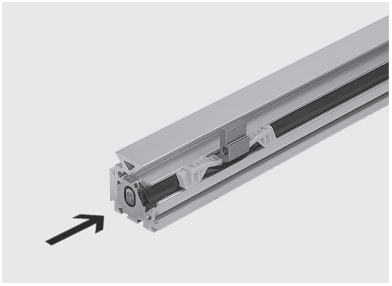
If the aluminium buffers that have been removed are faulty, these must be replaced with polymer buffers.

The parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) provide a list of spare parts that are no longer available and indicate precisely which spare parts from the current series should be used to replace them.

Documents

Mounting polymer buffers is described in Chapter 4.1.2.3 "Assembly steps for assembling linear drives of series 3".

- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.



Note

When using shock absorbers at the connection/end caps, the regulating screw for the end-position cushioning (see Chapter 3 "Components list") must be “open”. Unscrew it far enough so that it is positioned flush with the buffer.

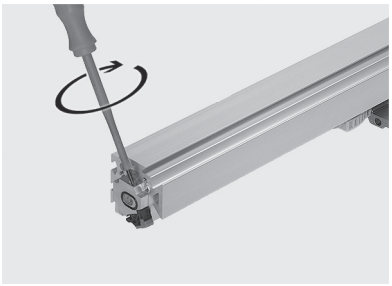
- Grease the sealing ring and insert it into the buffer.

Note

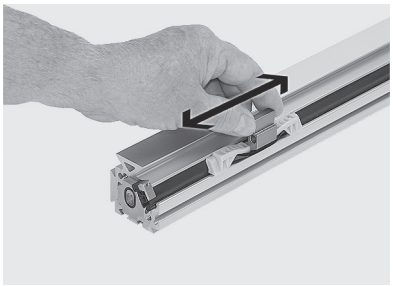
The sealing band and cover band must not protrude beyond the buffers. If this occurs, the connection/end cap cannot form an air-tight seal, which has an adverse effect on the function of the linear drive. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

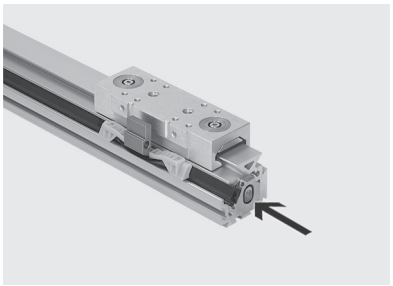
Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

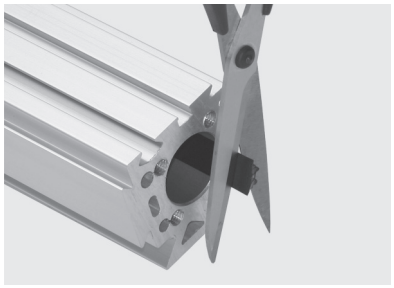


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter and the note on using shock absorbers on the connection/end caps.
- Insert the buffer into the cylinder barrel at the other end.
- Grease the sealing ring and insert it into the buffer.



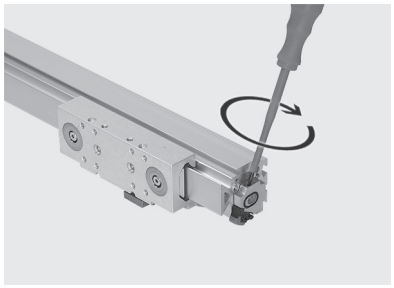
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).



- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



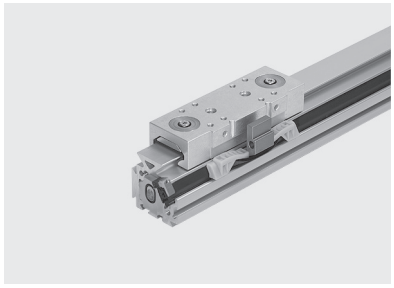
Note

If the slide was faulty, a **new slide-piston connection** must also be fitted.

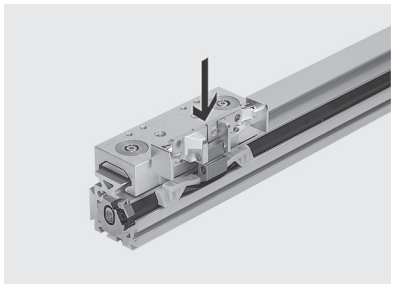
Documents

Mounting the new slide-piston connection is described in Chapter 4.1.2.3 "Assembly steps for assembling linear drives of series 3".

- Align the slide centrally with the piston.



- Insert the parts of the slide-piston connection between the slide and the piston from above.

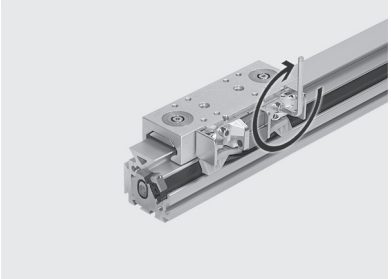


Note

The parts of the slide-piston connection are paired with the slide.
Observe the notes in Chapter 4.1.1 "Dismantling the linear drive".

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	2.5 Nm ±10%
DGC-25-...-GF	5.7 Nm ±10%
DGC-32-...-GF	5.7 Nm ±10%
DGC-40-...-GF	5.7 Nm ±10%



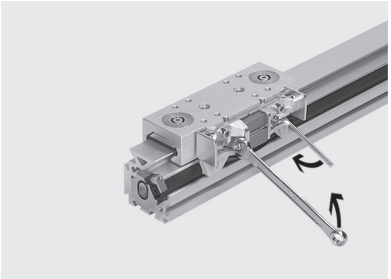
Note

In **series 1 and 2**, the assembly process for drives DGC-18/25-...-GF differs from that for drives DGC-...-32/40-...-GF in that the slide-piston connection is fastened to the piston coupling in a different way.

DGC-18-...-GF and DGC-25-...-GF:

- Insert the socket head screw with a washer through the piston coupling and into the drill holes on the slide-piston connection.
- Put on the second washer. Apply Loctite 243 to the thread, screw on the nut and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	1.2 Nm ±10%
DGC-25-...-GF	4.5 Nm ±10%

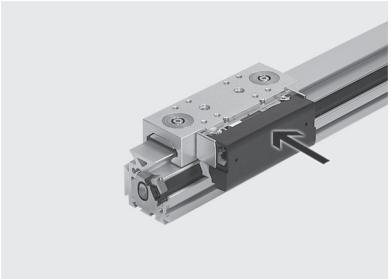


DGC-32-...-GF and DGC-40-...-GF (not shown in the illustration):

- Place the washers on the socket head screws, apply Loctite 243 to them and tighten them using the appropriate torque (see table).

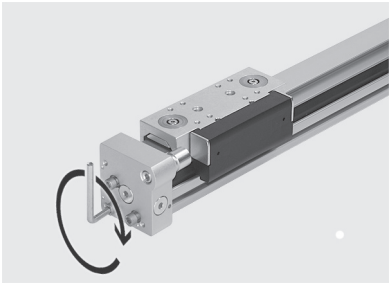
Type	Torque
DGC-32-...-GF	4.5 Nm ±10%
DGC-40-...-GF	4.5 Nm ±10%

- Place the cover on the slide-piston connection and press it lightly so that it latches into place.



- Grease the sealing rings and insert them into the connection/end caps.

- Apply Loctite 243 to the self-tapping screws.
- Attach the connection/end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the connection/end caps and tighten them only lightly so that the connection/end caps can still be adjusted.
- Align the rear and bottom edge of both connection/end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



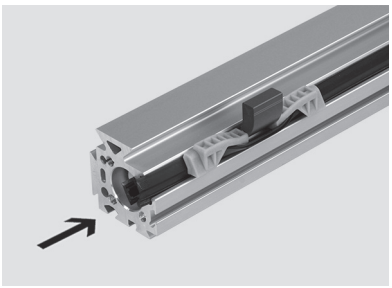
Type	Torque
DGC-18-...-GF	7 Nm
DGC-25-...-GF	12 Nm
DGC-32-...-GF	30 Nm
DGC-40-...-GF	30 Nm

Note

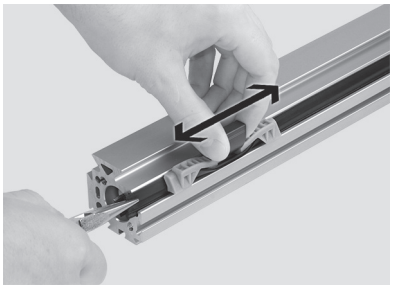
After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.1.2.3 Assembly steps for assembling linear drives of series 3

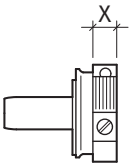
- Insert the piston fully into the cylinder barrel.



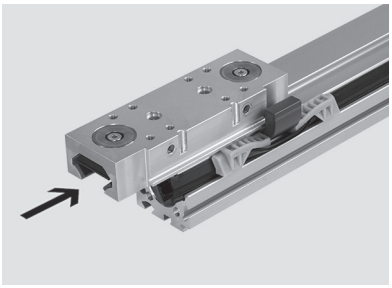
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).



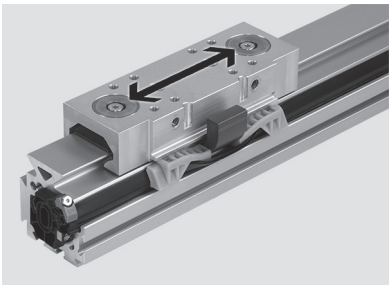
Type	Width of the contact surface X
DGC-18-...-GF	6 mm
DGC-25-...-GF	7 mm
DGC-32-...-GF	9 mm
DGC-40-...-GF	9 mm



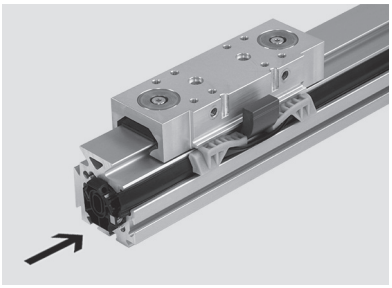
- Align the slide so that the shoulder with the drill holes points towards the piston coupling.
- Push the slide onto the cylinder barrel.



- Use a spring scale to check the displacement force of the slide (values are in the table in Chapter 4.1.4 "Setting the sliding play on the slide") and if necessary adjust the settings for the sliding play as described in Chapter 4.1.4 "Setting the sliding play on the slide".



- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.



Note

When using shock absorbers at the connection/end caps, the regulating screw for the end-position cushioning (see Chapter 3 "Components list") must be “open”. Unscrew it far enough so that it is positioned flush with the buffer.

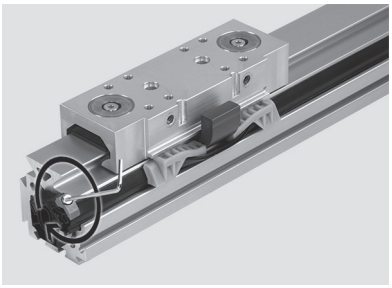
- Grease the sealing ring and insert it into the buffer.

Note

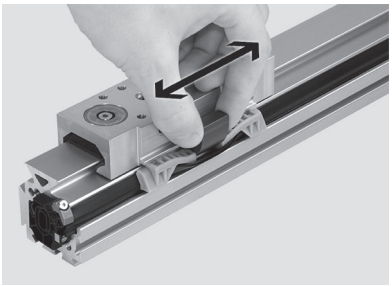
The sealing band and cover band must not protrude beyond the buffers. If this occurs, the connection/end cap cannot form an air-tight seal, which has an adverse effect on the function of the linear drive. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

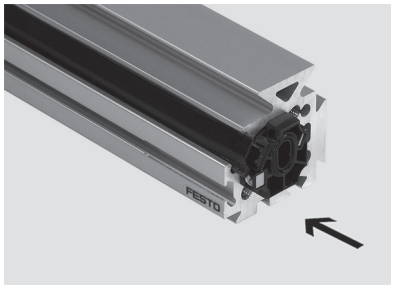
Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

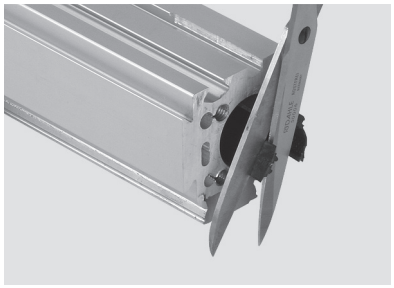


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter and the note on using shock absorbers on the connection/end caps.
- Insert the buffer into the cylinder barrel at the other end.
- Grease the sealing ring and insert it into the buffer.



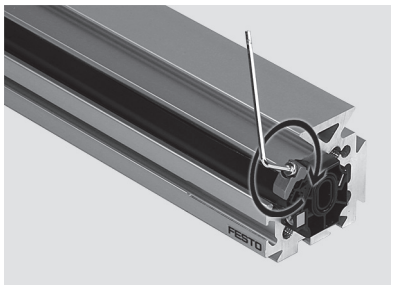
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

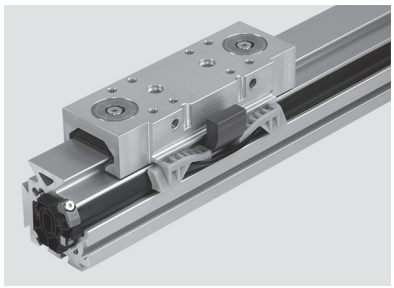


- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	0.2 Nm ±10%
DGC-25-...-GF	0.4 Nm ±10%
DGC-32-...-GF	0.4 Nm ±10%
DGC-40-...-GF	1.0 Nm ±10%



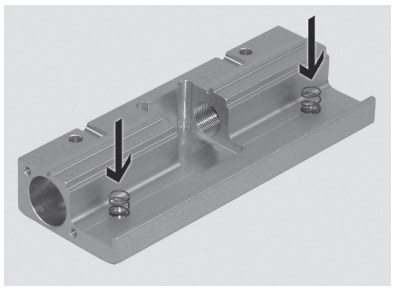
- Align the slide centrally with the coupling.



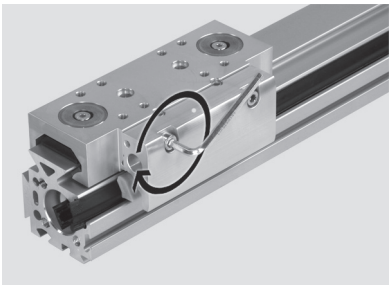
Note

This assembly step need only be carried out for **drives DGC-...-40-...-GF**.

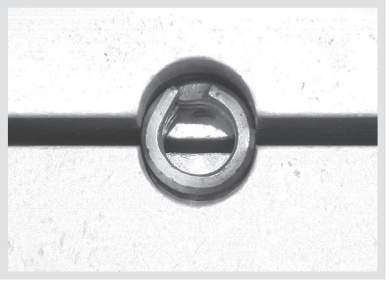
- Insert the two compression springs in the blind holes in the slide-piston connection.



- Place the slide-piston connection on the coupling.
- Apply Loctite 243 to the socket head screws for the slide-piston connection and tighten them slightly so that the slide-piston connection is positioned at a distance of 1-2 mm from the slide.



- Insert the spring pins between the slide and the slide-piston connection as far as they will go.

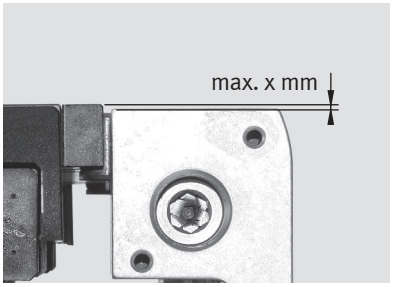


Note

When inserting the spring pins, make sure that they sit properly in the mounting.

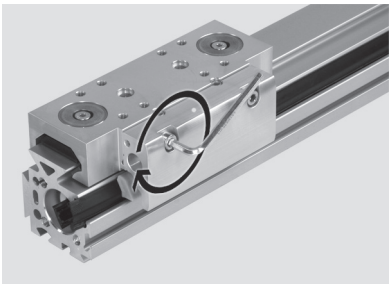
The openings of the spring pins must be offset by 90° to the joint between the slide and the slide-piston connection.

- Align the upper edge of the slide-piston connection so that it is flush with the outer edge of the slide using a stop. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide **must not exceed x mm** (see table).



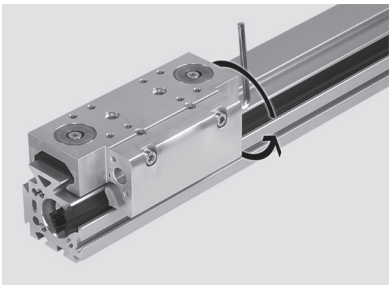
Type	Max.
DGC-18-...-GF	1 mm
DGC-25-...-GF	0.75 mm
DGC-32-...-GF	1 mm
DGC-40-...-GF	0.5 mm

- Tighten the socket head screws for the slide-piston connection using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	5 Nm ±10%
DGC-25-...-GF	5 Nm ±10%
DGC-32-...-GF	5 Nm ±10%
DGC-40-...-GF	5 Nm ±20%

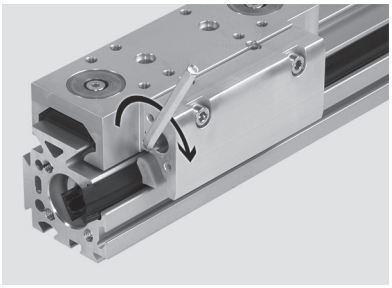
- Tighten the socket head screw on the right-hand end of the slide-piston connection using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	5 Nm ±10%
DGC-25-...-GF	6 Nm ±10%
DGC-32-...-GF	6 Nm ±10%
DGC-40-...-GF	20 Nm ±20%

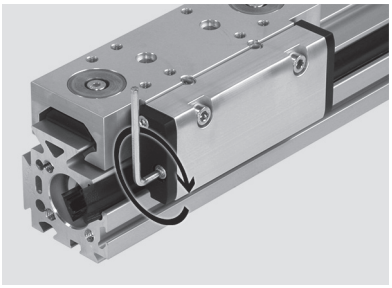
- Tighten the threaded pins on the left-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	3 Nm ±10%
DGC-25-...-GF	3 Nm ±10%
DGC-32-...-GF	3 Nm ±10%
DGC-40-...-GF	5 Nm ±20%

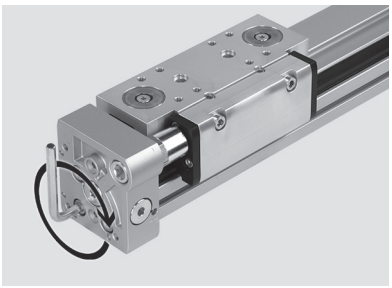


- Place the stops on the slide-piston connection from the side.
- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-18-...-GF	1 Nm ±10%
DGC-25-...-GF	2 Nm ±10%
DGC-32-...-GF	2 Nm ±10%
DGC-40-...-GF	2 Nm ±20%



- Grease the sealing rings and insert them into the connection/end caps.
- Apply Loctite 243 to the self-tapping screws.
- Attach the connection/end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the connection/end caps and tighten them only lightly so that the connection/end caps can still be adjusted.
- Align the rear and bottom edge of both connection/end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	7 Nm ±10%
DGC-25-...-GF	12 Nm ±10%
DGC-32-...-GF	30 Nm ±10%
DGC-40-...-GF	30 Nm ±10%

Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.1.3 Replacing the slide elements in the slide

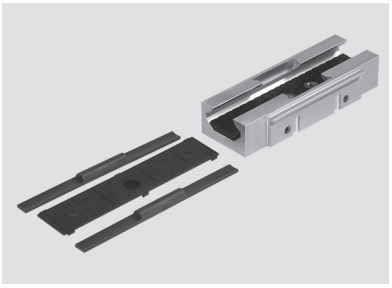
Note

The illustrations in this chapter show the slide with the polymer thrust piece from series 3.

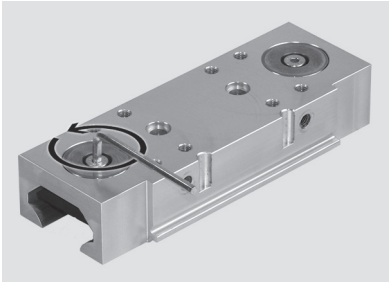
The assembly of older slides is carried out in exactly the same way.

If the slide elements in the slide are faulty or worn, they will have to be replaced.

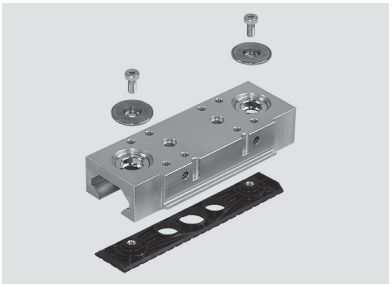
- Remove the slide as described in Chapter 4.1.1 "Dismantling the linear drive".
- Remove the slide elements from the slide.



- Unfasten the socket head screws on the top of the slide and remove them.



- Remove both washers from the top of the slide.

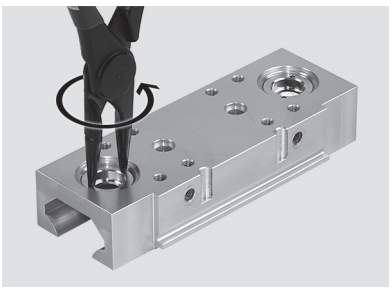


Note

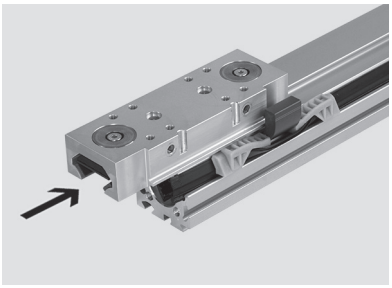
The washers can be removed easily with the help of a small magnet.

- Remove the thrust piece from the slide.

- Unscrew both regulating screws a few turns.



- Insert the thrust piece and the new slide elements into the slide and push the slide onto the guide rail.



Note

After replacing the slide elements, the sliding play must be set as described in Chapter 4.1.4 "Setting the sliding play on the slide".

4.1.4 Setting the sliding play on the slide

Note

The illustrations in this chapter show the slide with the polymer thrust piece from series 3.

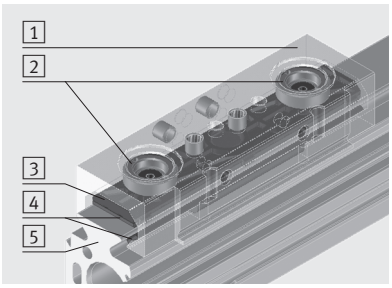
Setting the sliding play on older slide designs is carried out in exactly the same way.

If new slide elements are inserted in the slide, the sliding play has to be set.

The sliding play is set by turning the regulating screws [2] in the slide [1]. The contact pressure of the slide element [4] on the guide rail [5] is then changed by means of the thrust piece [3].

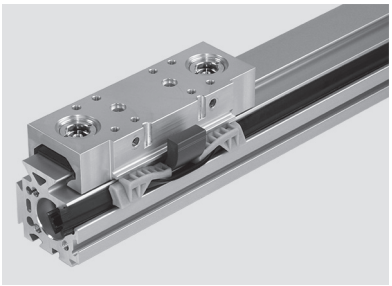
The trapezoidal shape of the guide rail [5] distributes the contact pressure over all three slide elements [4].

The sliding play setting is secured by attaching the washers and tightening the socket head screws (see below). The regulating screws [2] are thus clamped between the thrust piece [3] and the slide [1].

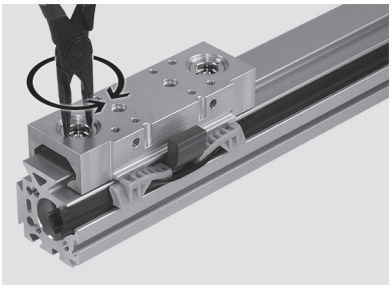


If not yet carried out:

- As described in Chapter 4.1.3 "Replacing the slide elements in the slide", remove the socket head screws and washers on the upper side of the slide.



- Set the sliding play by feel by turning the regulating screws so that the slide rests on the guide rail backlash-free but can still be shifted without exerting much force.



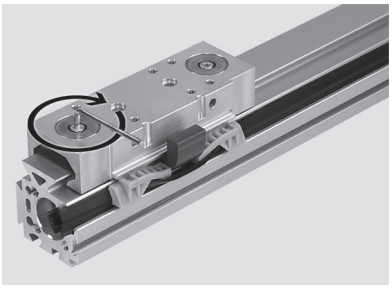
Note

In order to be able to set the sliding play properly, it is recommended to tap the preset slide lightly with a rubber hammer to loosen any distortion in the slide assembly.

- Use a spring scale to check the force required to shift the slide (see table for values).
- Change the setting of the regulating screws as necessary.
- Repeat this procedure until the measured displacement force matches the values specified in the table.

Type	Displacement force without connection
DGC-18-...-GF	12 N
DGC-25-...-GF	15 N
DGC-32-...-GF	15 N
DGC-40-...-GF	15 N

- Place the washers on the regulating screws.
- Secure the regulating screw setting by inserting and tightening the socket head screws using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	0.7 Nm ±10%
DGC-25-...-GF	2.0 Nm ±10%
DGC-32-...-GF	2.0 Nm ±10%
DGC-40-...-GF	3.0 Nm ±10%

- Assemble the remaining parts as described in Chapter 4.1.2 "Assembling the linear drive".

4.1.5 Dismantling and repairing the piston module

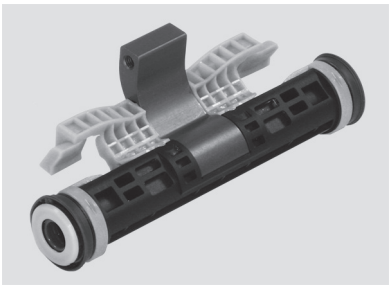
Note

Please note that when using a **new slide-piston connection**, a **new coupling** must also always be clipped into the piston.

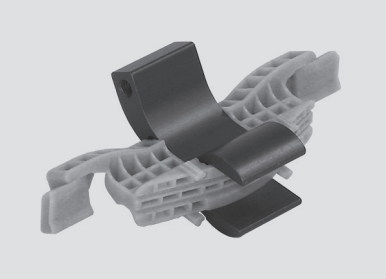
The illustrations in this chapter show the **new coupling** as it is to be clipped in for a **new slide-piston connection**.

Assembly and disassembly of the piston module with older couplings is carried out in exactly the same way.

- Remove the piston as described in Chapter 4.2.1 "Dismantling the linear drive".



- Remove the coupling, together with the belt reverser, from the piston.



Note

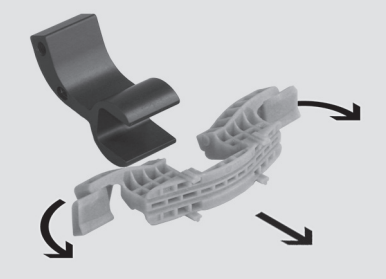
The piston must be replaced by a new piston module in the event of wear.

If the coupling is damaged, a **new slide-piston connection** must be ordered as well as a piston module.

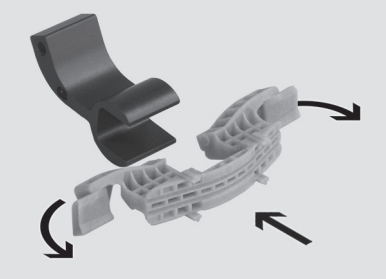
Documents

Mounting the **new slide-piston connection** is described in Chapter 4.1.2.3 "Assembly steps for assembling linear drives of series 3".

- Bend the belt reverser slightly apart and pull it off the coupling.
- Check all parts for wear and replace them as necessary.



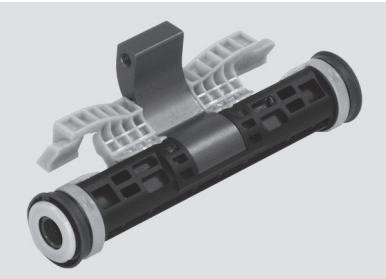
- Clip the belt reverser in the coupling.



Note

Make sure that the belt reverser is aligned properly with the coupling (see illustration).

- Connect the coupling with the belt reverser to the piston.



Note

Make sure that the coupling is properly aligned with the piston. The magnet in the piston must be positioned on the left-hand side of the piston when the coupling points backwards.

- Grease the sealing rings and the belt reverser.
  Observe the greasing instructions in the table in Chapter 4.2.2 "Assembling the linear drive".
- Assemble the linear drive as described in Chapter 4.2.2 "Assembling the linear drive".

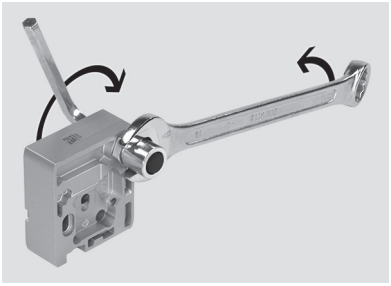
4.1.6 Replacing the cushioning components

Note

The illustrations in this chapter show the cast-iron connection/end caps.

Mounting the cushioning components on the milled connection/end caps and removing them is carried out in exactly the same way.

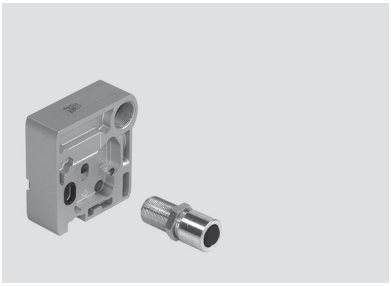
- Unfasten the lock nut on the cushioning components.



Note

The cushioning components can be replaced even when the connection/end caps are integrated.

- Unscrew the cushioning components from the connection/end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).



Type	Torque
DGC-18-...-GF	3.0 Nm ±20%
DGC-25-...-GF	5.0 Nm ±20%
DGC-32-...-GF	8.0 Nm ±20%
DGC-40-...-GF	20 Nm ±20%

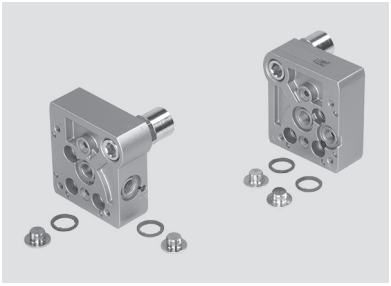
4.1.7 Replacing the sealing rings for the supply ports in the connection/end caps

Note

The illustrations in this chapter show the cast-iron connection/end caps.

Mounting the sealing rings on the milled connection/end caps and removing them is carried out in exactly the same way.

- Unscrew and remove the blanking screws for the supply ports from the connection/end caps and remove the sealing rings.



Note

The sealing rings can be replaced even when the connection/end caps are integrated.

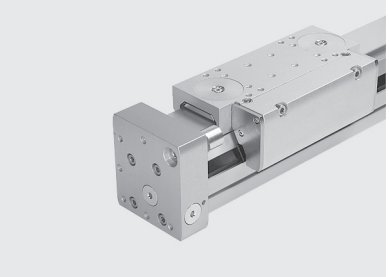
- Insert the new sealing rings in the supply ports and tighten the blanking screws using the appropriate torque (see table).

Type	Torque
DGC-25-...-GF	11 Nm ±10%
DGC-32-...-GF	11 Nm ±10%
DGC-40-...-GF	16 Nm ±10%

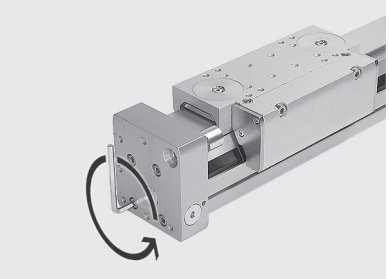
4.2 Linear drives DGC-50 / 63-...-GF

4.2.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



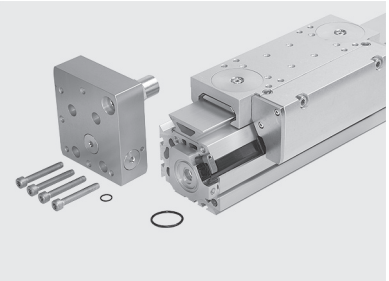
- Unfasten and remove the four self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

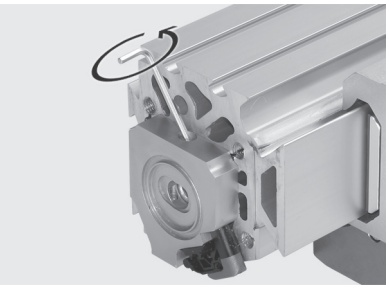
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



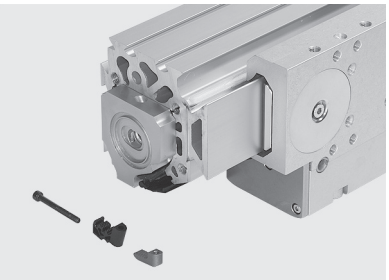
Documents

Dismantling and repair of the end caps is described in Chapter 4.2.5 "Replacing the cushioning components" and Chapter 4.2.6 "Replacing the sealing rings for the supply ports in the end caps".

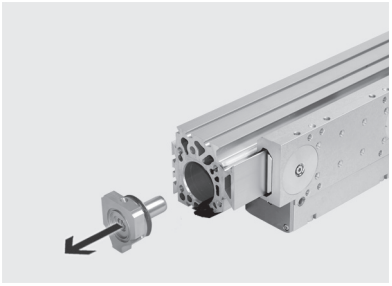
- Unscrew the socket head screw for the band clamping mechanism on both buffers with an Allen key, size 3.



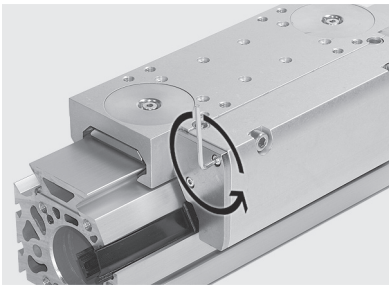
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



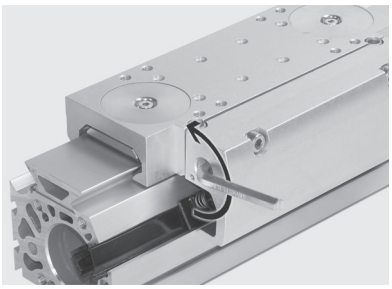
- Remove both the buffers from the cylinder barrel.



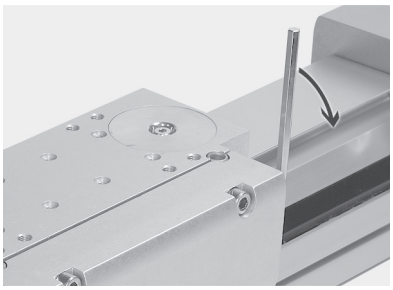
- Unscrew the socket head screws on the front of the slide-piston connection and remove the stop plates.



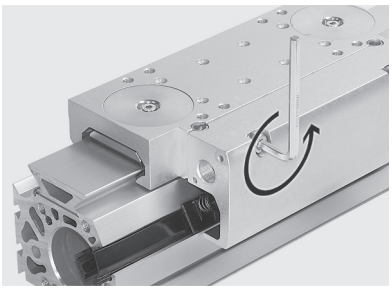
- Unfasten the threaded pins on the left-hand side of the slide-piston connection.



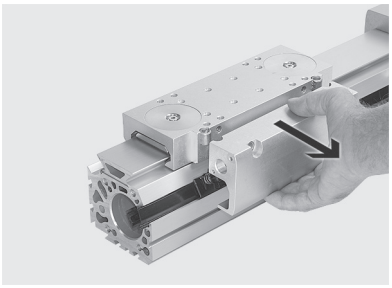
- Unfasten and remove the socket head screw on the right-hand side of the slide-piston connection.



- Unfasten both the socket head screws on the front of the slide-piston connection and remove them.



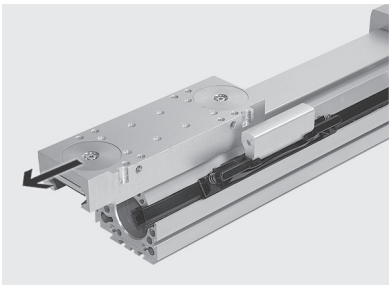
- Remove the slide-piston connection.



Note

Neither the spring pins nor the blanking plugs between the slide and the slide-piston connection are fastened and may be lost when removing the slide-piston connection.

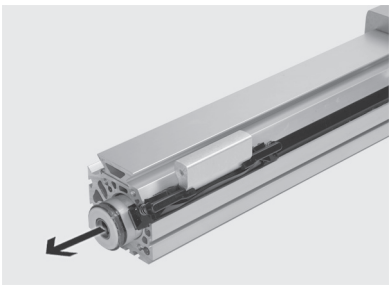
- Push the slide off the cylinder barrel.



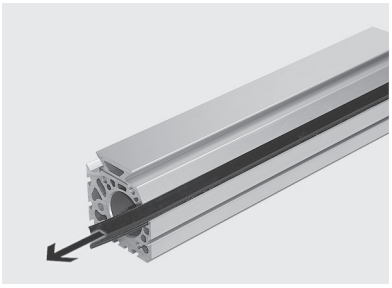
Documents

Dismantling and repair of the slide is described in Chapter 4.2.3 "Replacing the slide elements in the slide" and Chapter 4.2.4 "Setting the sliding play on the slide".

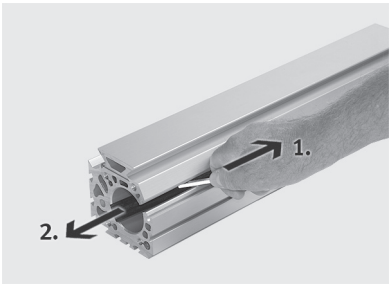
- Push the piston out of the cylinder barrel.
- Check the springs on the belt reverser for damage and replace them as necessary.



- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.2.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the rating plate of the linear drive (see order example on the next page). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke can be determined from the type code on the rating plate. Check the length of the new sealing band and cover band and shorten them to length (0-stroke + stroke) as necessary. See order example.

Type	Length L_0
DGC-50-...-GF	370 mm
DGC-63-...-GF	415 mm

Example: DGC-50-180-GF

0-stroke: 370 mm

Stroke: 180 mm

Length of sealing band/cover band =
0-stroke + stroke = 550 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may damage or tear them and reduce their service life.

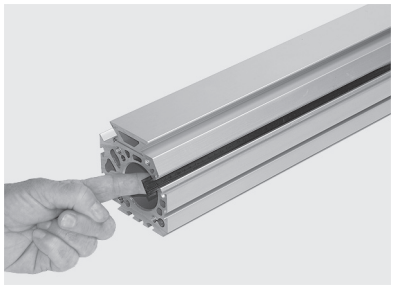
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

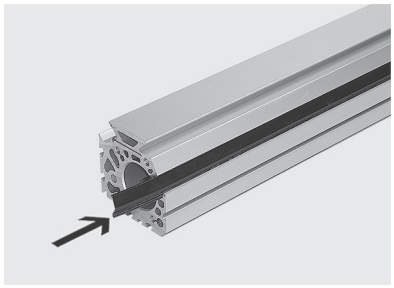
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston exterior	Festo LUB-KC1[1)]	Grease all around.
Seal, piston interior	Festo LUB-KC1[1)]	Grease all around.
Cushioning boss	Festo LUB-KC1[1)]	Grease all around.
Seal, buffer	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.
Plain-bearing guide	–	The plain-bearing guide in these sizes is designed for unlubricated operation.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

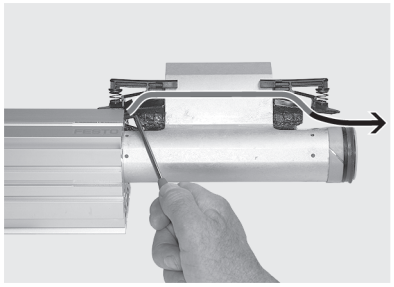
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 14 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Insert the cover band into the mounting so that approximately 14 mm of the cover band still protrudes.



- Grease the piston and the belt reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the belt reverser with a screwdriver.

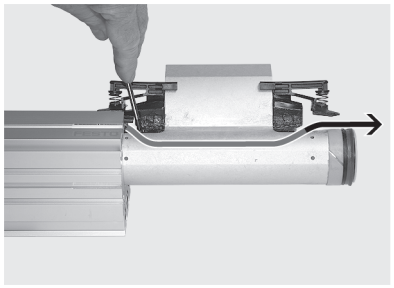


Note

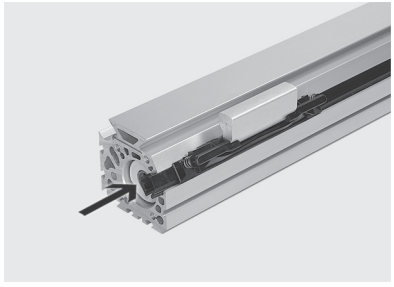
When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

The magnet is moulded-in and is thus not visible. Therefore its position can be determined using a counter magnet (e.g. compass).

- Push the sealing band under the belt reverser with a screwdriver.

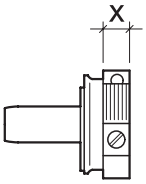


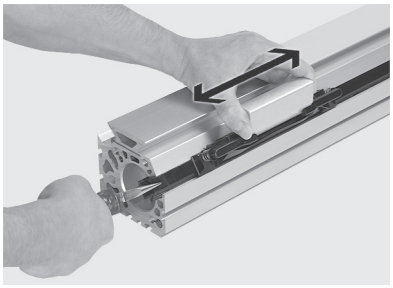
- Insert the piston fully into the cylinder barrel.



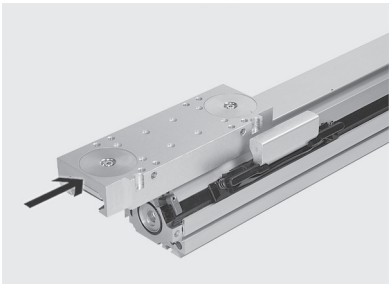
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-50-...-GF	14 mm
DGC-63-...-GF	16 mm

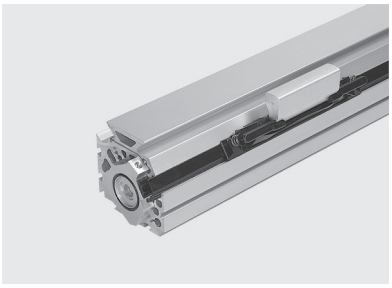




- Align the slide so that the drill holes for the centring sleeves point towards the piston.
- Push the slide onto the cylinder barrel.

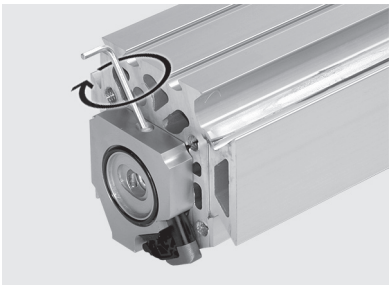


- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



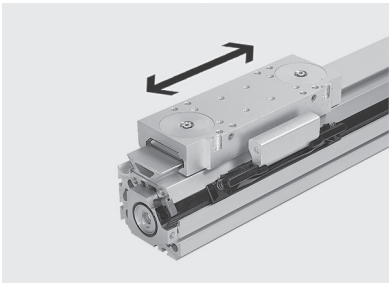
- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	1.0 Nm ±20%
DGC-63-...-GF	1.0 Nm ±20%

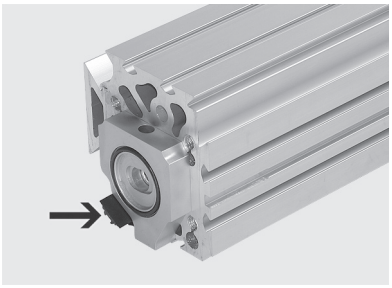


- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

- Use a spring scale to check the displacement force of the slide (values are in the table in Chapter 4.2.4 "Setting the sliding play on the slide") and if necessary adjust the settings for the sliding play as described in Chapter 4.2.4 "Setting the sliding play on the slide".

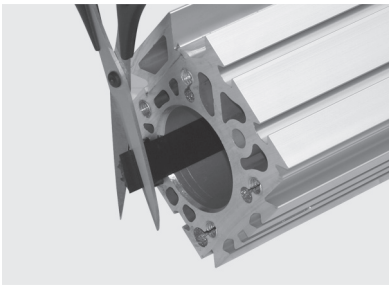


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the piston chamber on the other side of the base profile.
- Grease the sealing ring and insert it into the buffer.



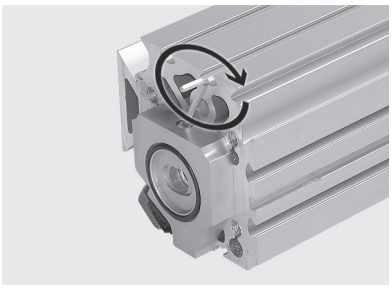
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

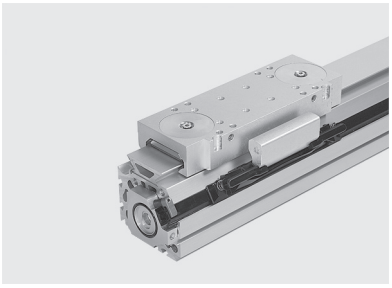


- Place the band clamping mechanism on the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

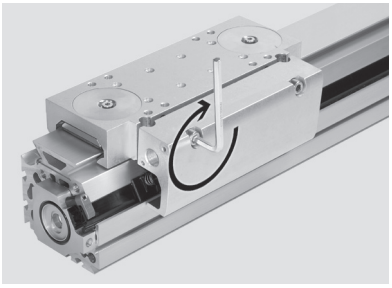
Type	Torque
DGC-50-...-GF	1.0 Nm ±20%
DGC-63-...-GF	1.0 Nm ±20%



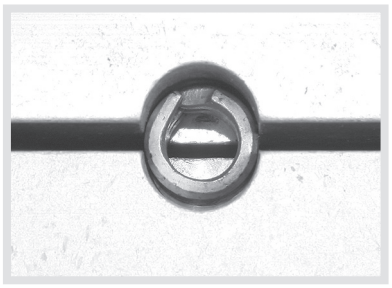
- Align the slide centrally with the piston.



- Place the slide-piston connection on the coupling.
- Apply Loctite 243 to the socket head screws for the slide-piston connection and tighten them slightly so that the slide-piston connection is positioned at a distance of 1-2 mm from the slide.



- Insert the spring pins between the slide and the slide-piston connection as far as they will go.

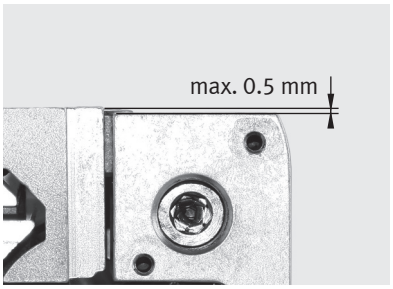


Note

When inserting the spring pins, make sure that they sit properly in the mounting.

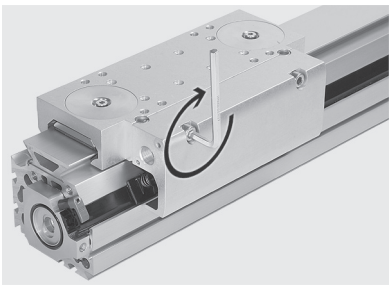
The openings of the spring pins must be offset by 90° to the joint between the slide and the slide-piston connection.

- Align the upper edge of the slide-piston connection so that it is flush with the outer edge of the slide using a stop. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide **must not exceed 0.5 mm**.



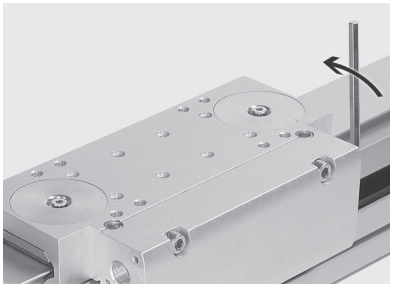
- Tighten the socket head screws for the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	20 Nm ±20%
DGC-63-...-GF	20 Nm ±20%



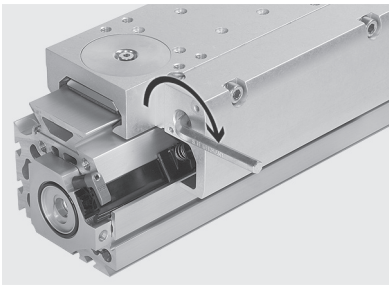
- Tighten the socket head screw on the right-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	20 Nm ±20%
DGC-63-...-GF	20 Nm ±20%



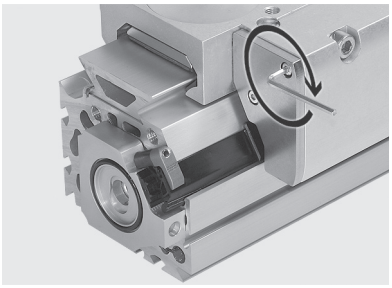
- Tighten the threaded pins on the left-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	5 Nm ±20%
DGC-63-...-GF	5 Nm ±20%



- Place the stop plates on the slide-piston connection from the side.
- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

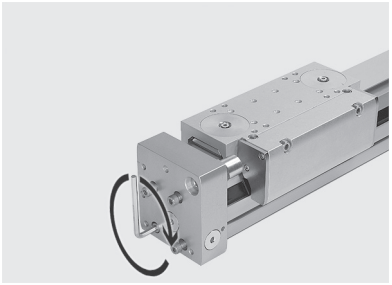
Type	Torque
DGC-50-...-GF	2.0 Nm ±20%
DGC-63-...-GF	2.0 Nm ±20%



- Grease the sealing rings and insert them into the respective mounting in both end caps.
- Attach the respective end caps to the cylinder barrel on both sides and align each rear and lower edge of both end caps flush with the cylinder barrel.

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	25 Nm ±20%
DGC-63-...-GF	30 Nm ±20%



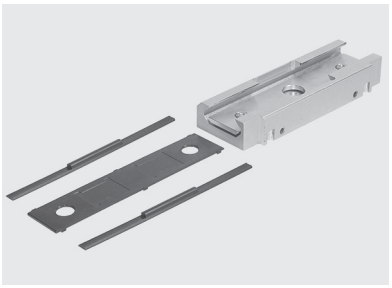
Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

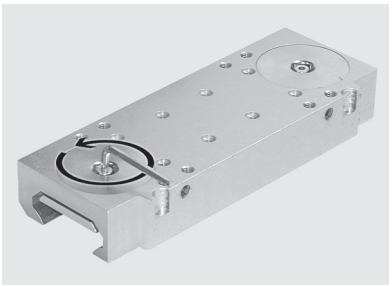
4.2.3 Replacing the slide elements in the slide

If the slide elements in the slide are faulty or worn, they will have to be replaced.

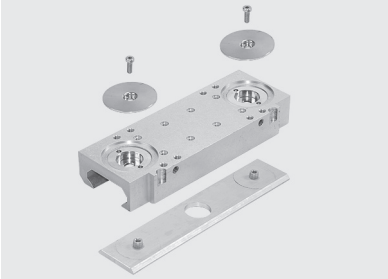
- Remove the slide as described in Chapter 4.2.1 "Dismantling the linear drive".
- Remove the slide elements from the slide.



- Unfasten the socket head screws on the top of the slide and remove them.



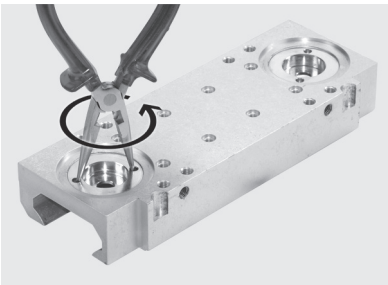
- Remove both washers from the top of the slide.



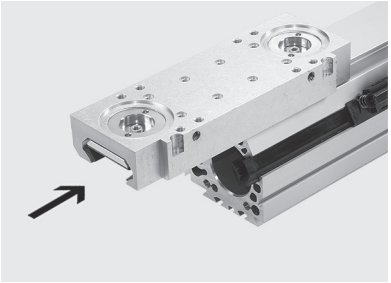
Note
The washers can be removed easily with the help of a small magnet.

- Remove the thrust piece from the slide.

- Unscrew both regulating screws a few turns.



- Insert the thrust piece and the new slide elements in the slide and push the slide onto the guide rail.



Note
After replacing the slide elements, the sliding play must be set as described in Chapter 4.2.4 "Setting the sliding play on the slide".

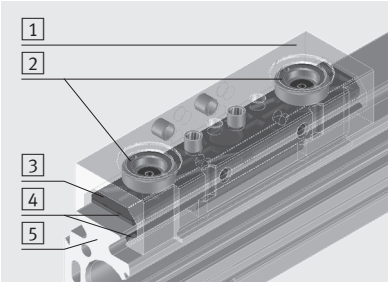
4.2.4 Setting the sliding play on the slide

If new slide elements are inserted in the slide, the sliding play has to be set.

The sliding play is set by turning the regulating screws [2] in the slide [1]. The contact pressure of the slide element [4] on the guide rail [5] is then changed by means of the thrust piece [3].

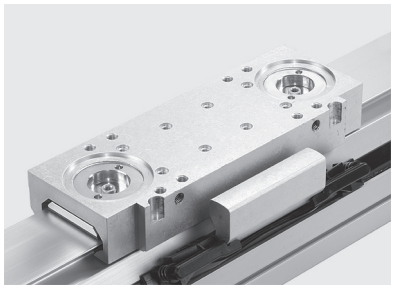
The trapezoidal shape of the guide rail [5] distributes the contact pressure over all three slide elements [4].

The sliding play setting is secured by attaching the washers and tightening the socket head screws (see below). The regulating screws [2] are thus clamped between the thrust piece [3] and the slide [1].

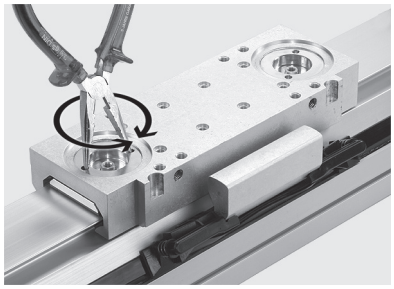


If not yet carried out:

- Remove the slide-piston connection as described in Chapter 4.2.1 "Dismantling the linear drive".
- As described in Chapter 4.2.3 "Replacing the slide elements in the slide", remove the socket head screws and washers on the upper side of the slide.



- Set the sliding play by feel by turning the regulating screws so that the slide rests on the guide rail backlash-free but can still be shifted without exerting much force.



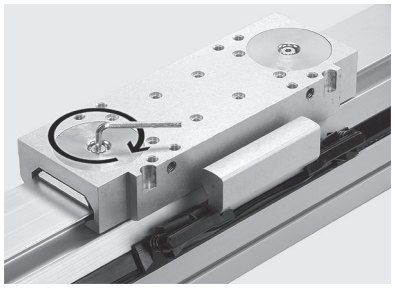
Note

In order to be able to set the sliding play properly, it is recommended to tap the preset slide lightly with a rubber hammer to loosen any distortion in the slide assembly.

- Use a spring scale to check the force required to shift the slide (see table for values).
- Change the setting of the regulating screws as necessary.
- Repeat this procedure until the measured displacement force matches the values specified in the table.

Type	Displacement force without connection
DGC-50-...-GF	30 N
DGC-63-...-GF	35 N

- Place the washers on the regulating screws.
- Secure the regulating screw setting by inserting and tightening the socket head screws using the appropriate torque (see table).

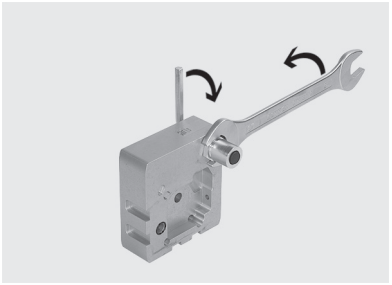


Type	Torque
DGC-50-...-GF	6.0 Nm ±10%
DGC-63-...-GF	6.0 Nm ±10%

- Mount the slide-piston connection as described in Chapter 4.2.2 "Assembling the linear drive".

4.2.5 Replacing the cushioning components

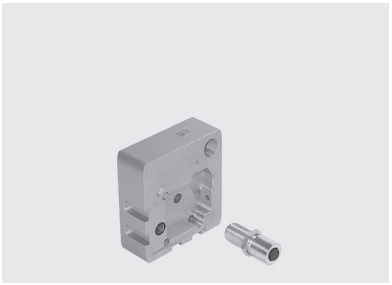
- Unfasten the lock nut on the cushioning components.



Note

The cushioning components can be replaced even when the end caps are attached.

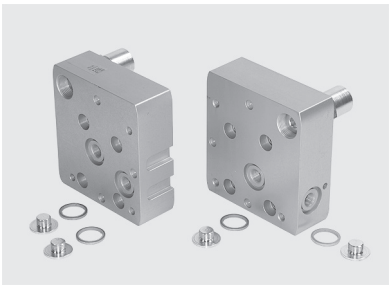
- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).



Type	Torque
DGC-50-...-GF	35 Nm ±20%
DGC-63-...-GF	60 Nm ±20%

4.2.6 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the blanking screws for the supply ports from the end caps and remove the sealing rings.



Note

The sealing rings can be replaced even when the end caps are attached.

- Insert the new sealing rings in the supply ports and tighten the blanking screws using the appropriate torque (see table).

Type	Torque
DGC-50-...-GF	16 Nm ±10%
DGC-63-...-GF	18 Nm ±20%

5 Mounting a reducing sleeve on DGC-18/25/32/40-...-GF-P for use with shock absorbers type YSRW or YSRT

This chapter describes retrofitting the connection and end caps of DGC-18/25/32/40-...-GF-P with flexible buffer dampers at both sides for use with shock absorbers type YSRW or YSRT.

The reducing sleeve must be ordered separately from Festo (spareparts.Festo.com).

Retrofitting is only possible for connection and end caps of the following series:

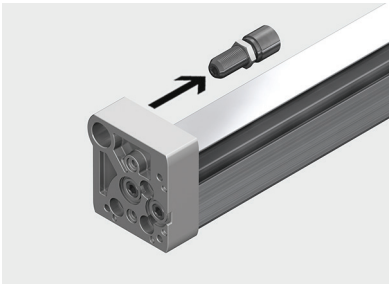
Type	From series		Spare parts and parts list
DGC-18-...-GF-P (-DL)	AD	December 2010	See Chapter 3.1.3 "DGC-18-...-GF (-DL)"
DGC-25-...-GF-P (-DL)	X8	August 2009	See Chapter 3.2.2 "DGC-25-...-GF (-DL)"
DGC-32-...-GF-P (-DL)	AO	October 2010	See Chapter 3.3.3 "DGC-32-...-GF (-DL)"
DGC-40-...-GF-P (-DL)	A6	June 2010	See Chapter 3.4.3 "DGC-40-...-GF (-DL)"

The year and month of manufacture are stated on the rating plate of the linear drive. These data can be used to find the appropriate parts list in the online spare parts catalogue on the Festo website (spareparts.Festo.com).

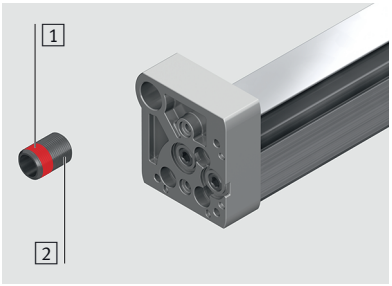
The parts lists in the online spare parts catalogue on the Festo website (spareparts.Festo.com) provide a list of spare parts that are no longer available and indicate precisely which spare parts from the current series should be used to replace them.

5.1 Mounting the reducing sleeve

- Unscrew the flexible buffer dampers from the connection and end caps.
- Clean the female thread of the caps.



- Clean the male thread of the reducing sleeve.
- Apply adhesive (LOCTITE® 2701™) to the male thread of the reducing sleeve [2] in a ring at the zone marked [1] (= approx. 1/3 of the length of the male thread).
- Remove excess adhesive immediately.

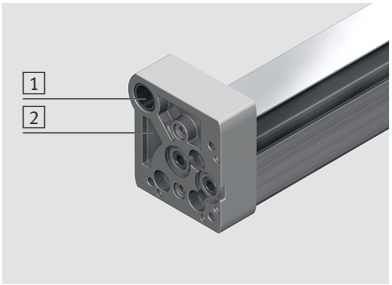


Note

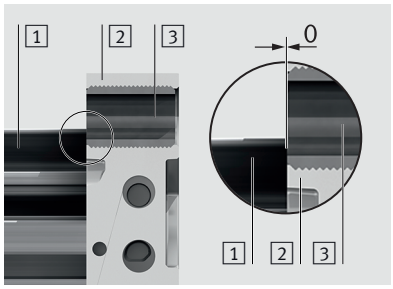
LOCTITE® 2701™ can be ordered from Festo (order no.: 701774).

See also the information brochure **"Accessories, equipment and tools"**. This can be found online (http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Hilfsmittel.pdf).

- Screw the reducing sleeve [1] into the connection and end cap [2] by hand.



- The reducing sleeve [3] must be screwed into the connection and end cap [2] **flush** with the cylinder barrel [1].
- The curing time of LOCTITE® 2701™ is approx. 24 hours at 22°C.



Documents

Precise information on the curing time can be found in the “LOCTITE® 2701™ data sheet” (http://www.loctite.de).

5.2 Mounting the shock absorbers

Note

Installation and commissioning of shock absorbers type YSRW and YSRT are to be carried out only by qualified personnel in accordance with the respective operating instructions.

The specifications/notes in the relevant documentation supplied with the product must be observed.

6 Maintenance

This chapter contains key technical information about how to carry out maintenance work on the linear drive. A detailed description of the steps for care and maintenance can be found in the operating instructions. Additional information on assembly aids and lubricants can be found on the Festo website **“Accessories, equipment and tools”**. This can be found in the online spare parts catalogue (http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Hilfsmittel.pdf).

6.1 Greasing the linear drive

The linear drive has to be greased when repair work is carried out and at set intervals.

Greasing intervals for the guide rails by size and lubricant

Type	Greasing interval	Lubricant
DGC-18- / -63-...GF	The guides for these drives are designed for unlubricated operation. Relubrication is permitted.	LUB-KC1

Warning

The lubrication intervals are reduced under the following operating conditions:

- Extremely short strokes ‹ 50 mm
- Large strokes › 2000 mm
- Speeds › 2 m/s
- Increased dirt in the environment (e.g. grinding dust, etc.)
- High ambient temperature ›40°C

The guide rail must be relubricated at least every 3 years.

Maintenance of the band system

- Clean the band system if required with a soft cloth.
- Avoid cleaning agents which will damage the band system, which is made of PU. Excessive friction or the use of grease-solvent cleaning agents (e.g. soapsuds) will damage the grease layer.
- Grease the band system superficially with LUB-KC1 type grease if it no longer has a layer of grease.

7 Tools

This chapter provides an overview of the tools and aids required to repair and maintain linear drives DGC-...-GF.

7.1 Standard tools

- Internal hex screwdriver (Allen key)
- Slotted head screwdriver
- Torque spanner
- Torque screwdriver
- Open-ended spanner
- Face pin spanner/circlip pliers
- Flat pliers
- Spring scale
- Sturdy general purpose scissors or metal shears

8 Liability

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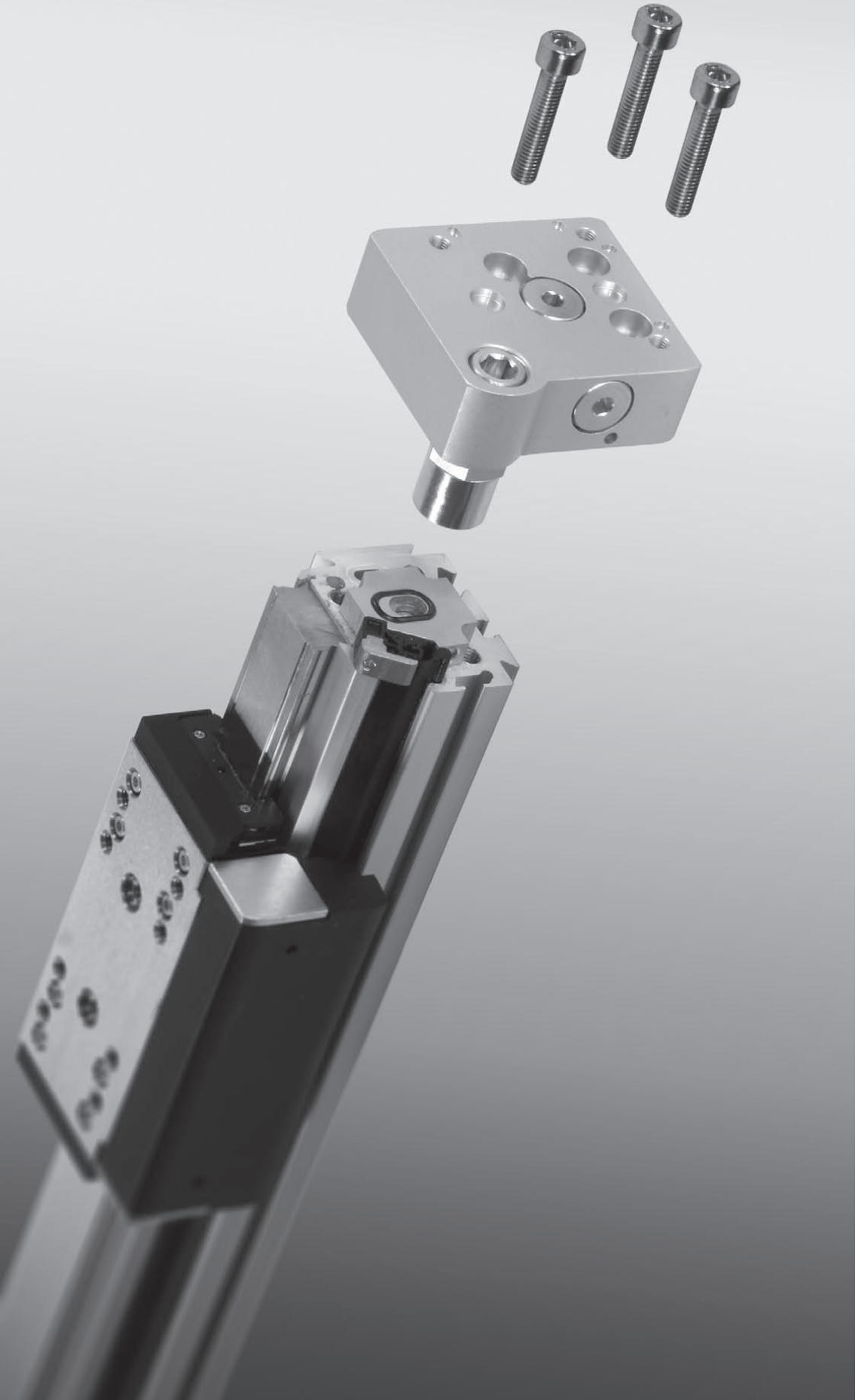
V. Safety guidelines/documentation

Warranty and liability claims in conformity with the aforementioned regulations (points III. and IV) may be raised only if the user has observed the safety guidelines of the documentation in conjunction with the use of the machine and its safety guidelines. The user himself is responsible for ensuring that the electronic documentation, when not supplied with the product, matches the product actually used by the user.

Linear drive

DGC-...-KF



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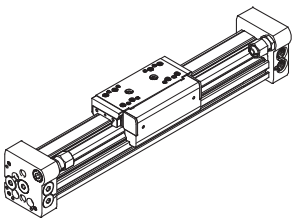
Repair instructions (en)



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Foreword

These repair instructions are valid for the linear drives listed on the title page to the exclusion of any liability claims.

Deviations compared to the descriptions in these repair instructions may arise depending on the design and/or modification status of the specific linear drive. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

Festo AG & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise, no liability is accepted for direct or consequential damage resulting from improper use of the products.

You will find further information on this in Chapter 7 “Liability/conditions of use”.

The relevant regulations on occupational safety, safety engineering and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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Table of contents

1 Important information

1.1 About these repair instructions

This document contains all important information about the professional repair of the linear drive type DGC-... -KF.

For the most part, the linear drive DGC-...-KF can be repaired. The cylinder barrel and slide form a technical unit, which can only be replaced as a whole.

However, in case of larger defects, the costs of a repair must be considered.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain complete, detailed information. The following documents should therefore also be available while doing repair work on the linear drive:

- **Operating instructions**
  Contains information about the control parts and connections for the linear drive, as well as information about function, construction, application, installation, commissioning, care and maintenance, etc. It can be found on the Festo website (www.Festo.com).
- **Spare parts documentation**
  Contains an overview of the spare and wearing parts as well as information on their installation. The spare parts documentation can be found in the online spare parts catalogue on the Festo website (spareparts.Festo.com).
- **Assembly tools**
  Contains an overview of the available assembly tools such as lubricants, thread locking agents, maintenance tools etc. (aids for assembly and maintenance). They can be found in the online spare parts catalogue on the Festo website (www.Festo.com).

1.2 Pictograms used in these repair instructions

Warning
This sign indicates a dangerous situation for persons and/or the product. Failure to observe this warning can result in injury to persons and/or damage to the device.

Note
This sign indicates important tips and information that can make your work easier.

Environment
This sign indicates information on the steps required for environmentally-friendly use of materials and equipment, as well as the guidelines and regulations that may need to be observed.

Documents
This sign indicates references to other chapters or documents containing additional information.

1.3 General safety instructions

Warning

The linear drive must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts, as well as without the technical documentation required for installation and/or repair, are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions as well as the respective device-specific operating instructions.

Note

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.

Environment

Components and equipment replaced as part of a repair must be disposed of in accordance with the locally valid environmental protection regulations.

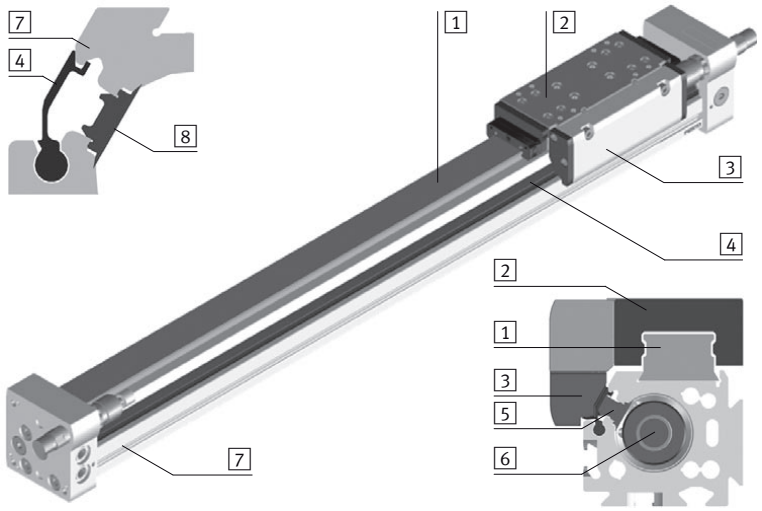
2 General product description

2.1 Functional description

The DGC-...-KF is a linear drive with a recirculating ball bearing guide and the functional principle of a double-acting piston for power transmission. When compressed air is applied to the ports alternately, the piston moves backwards and forwards in the piston chamber. A rigid connection moves the slide with the attached load (e.g. adapter plate with drive) on the guide rail. The slot in the basic profile required for this is covered by a band system. The one made of stainless steel provides a precise installation interface. It is mounted on roller bearing elements and thus designed for low and medium-level loads. The operating behaviour in case of torsional loads is in the very good range.

The DGC-...-KF, when used properly, is used for transporting loads in a space-saving manner and is approved for the operating modes slide mode and yoke mode (adhere to the load limits).

These graphics provide you with an overview of the construction of the linear drive using the DGC-25-...-KF as an example.



1 Guide rail
2 Slide
3 Slide-piston connection
4 Cover band
5 Moment compensator
6 Piston
7 Basic profile
8 Sealing band

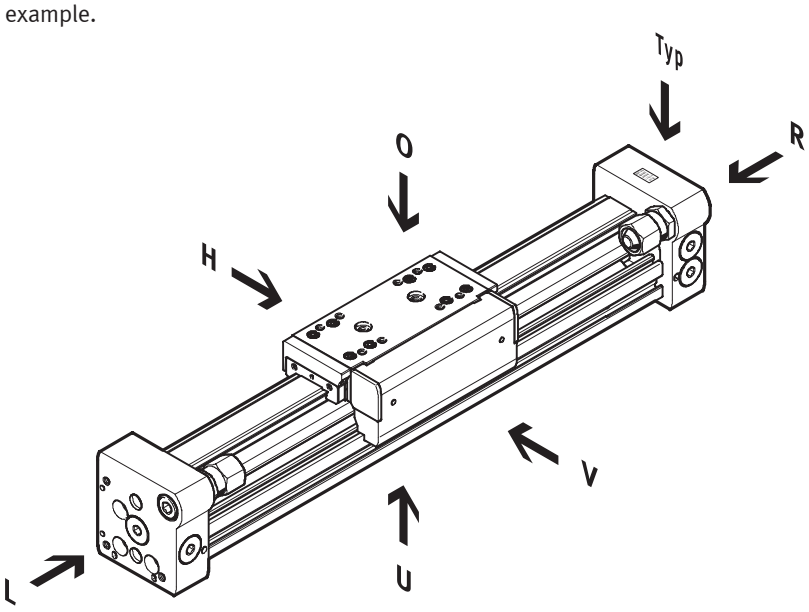
2.2 Types and part numbers

Type	Part number
DGC-8-...-KF	530906
DGC-12-...-KF	530907
DGC-18-...-KF	532446
DGC-25-...-KF	532447
DGC-32-...-KF	532448
DGC-40-...-KF	532449
DGC-50-...-KF	532450
DGC-63-...-KF	532451

The complete overview of features, accessories, type codes, technical data and dimensions for the DGC-... linear drives can be found in the product catalogue or on the Festo website (www.Festo.com).

2.3 Mounting directions

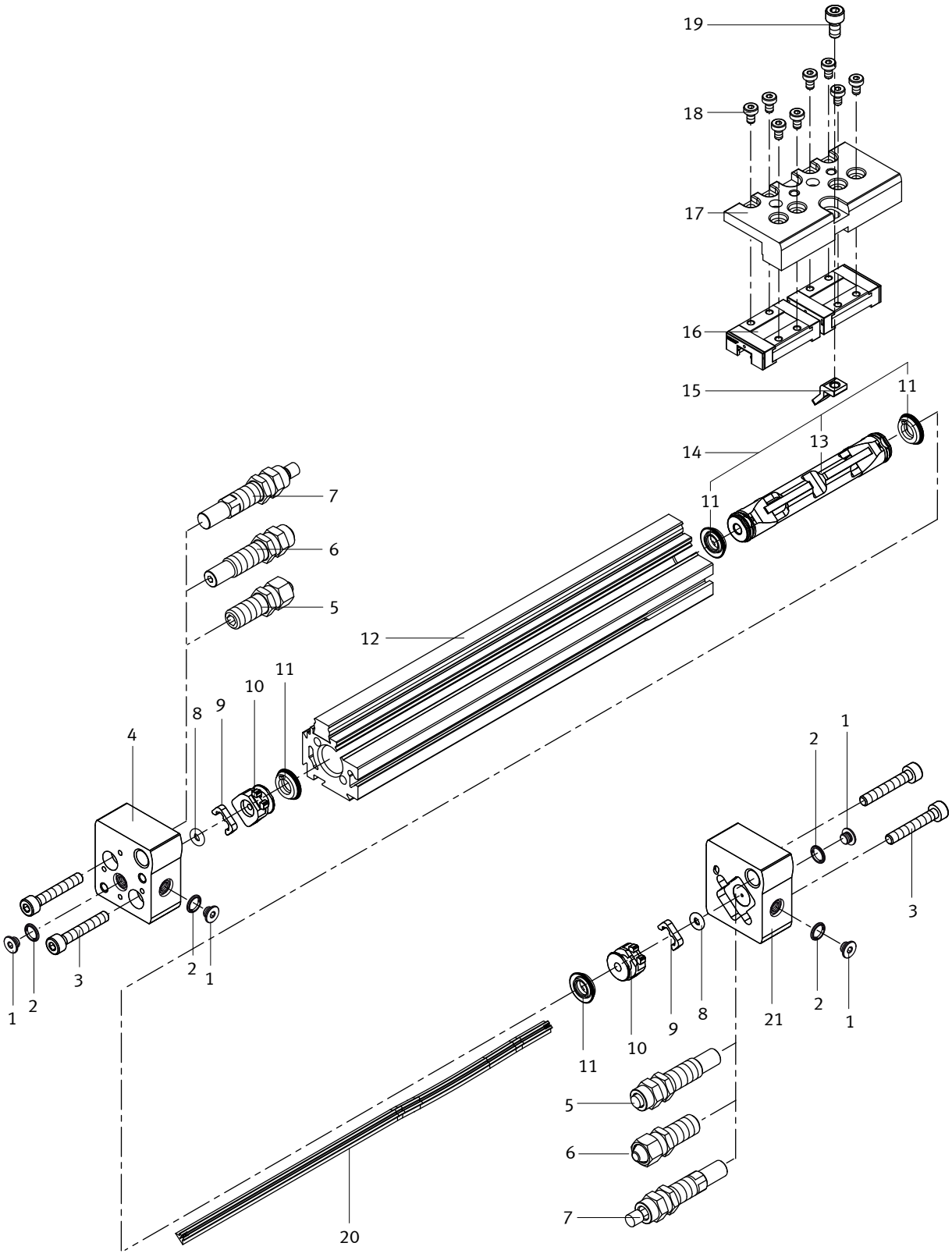
This graphic provides you with an overview of the mounting directions on the linear drive using theDGC-25-...-KF as an example.



Type = Product designation (name plate)
O = Top
U = Underneath
R = Right
L = Left
V = Front
H = Rear

3 Component overview

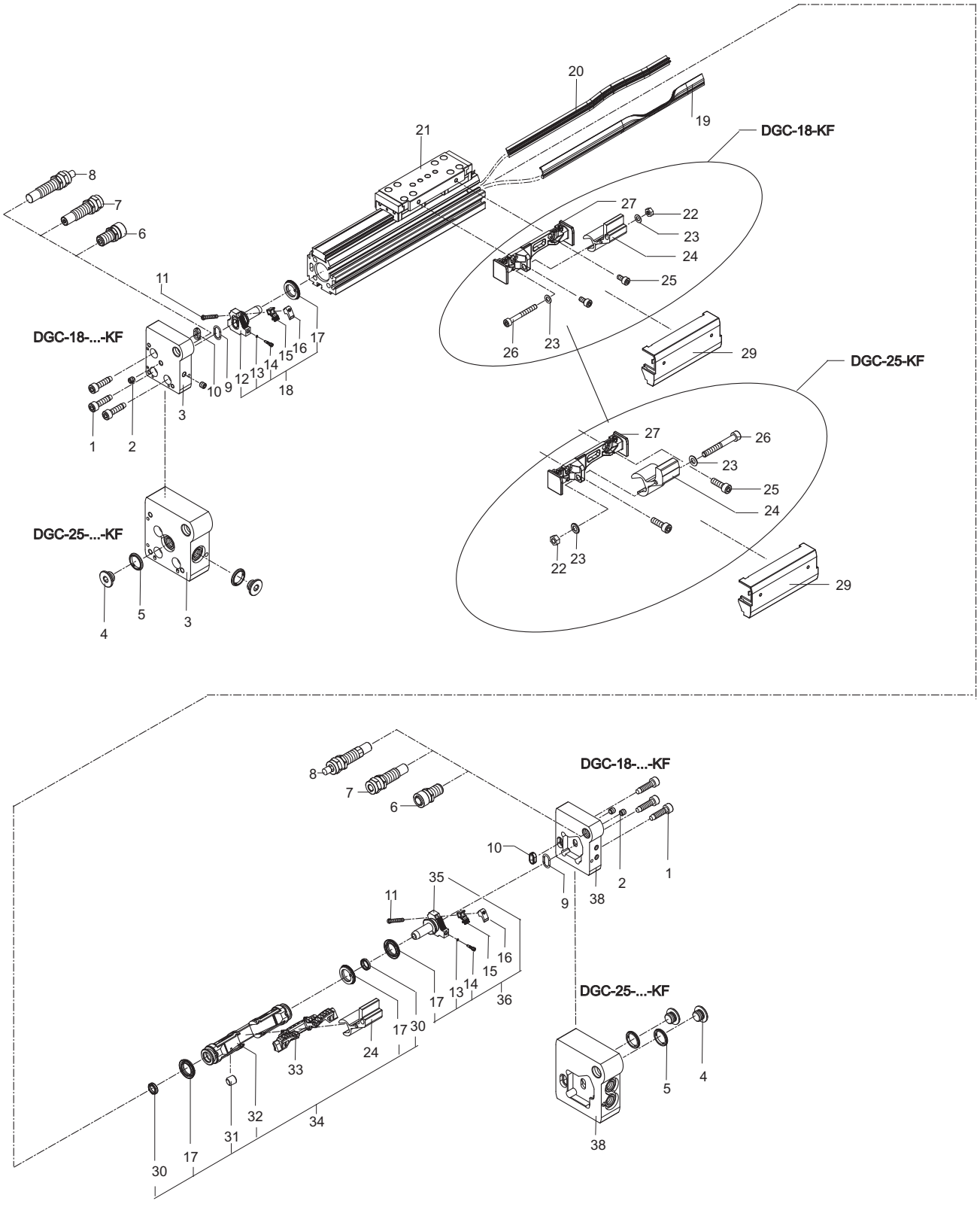
3.1 DGC-8/12-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type DGC-8-...KF	DGC-12-...-KF	Note DGC-8-...-KF	DGC-12-...-KF
1	Threaded pin or blanking plug, depending on series			Tightening torque 5.0 Nm, use LOCTITE 222	
2	Sealing ring				
3	Self-tapping screw	TPD-WN122-M3×18-450	M5×20-10.9	Tightening torque 3.0 Nm ± 20%, use LOCTITE 243	
4	End cap, left				
5	Elastic cushioning element			Tightening torque 3.0 Nm ± 20%	
6	Shock absorber			Tightening torque 3.0 Nm ± 20%	
7	Shock absorber			Tightening torque 3.0 Nm ± 20%	
8	O-ring	3×1-N-NBR75	3×2-N-NBR70		
9	Clip				
10	Buffer				
11	Buffer/piston seal				
12	Cylinder barrel				
13	Piston				
14	Piston module				
15	Coupling				
16	Roller bearing carriage				
17	Slide				
18	Socket head screws	DIN 4762 M2×4-10.9	DIN 7984 M3×5-10.9	Tightening torque 0.4 Nm, use LOCTITE 243	Tightening torque 1.1 Nm, use LOCTITE 243
19	Socket head screw	DIN 912-M38-8.8	DIN 912-M4×8-8.8	Tightening torque 1.4 Nm, use LOCTITE 243 Sealed with thread locker 397332	
20	Sealing band				
21	End cap, right				

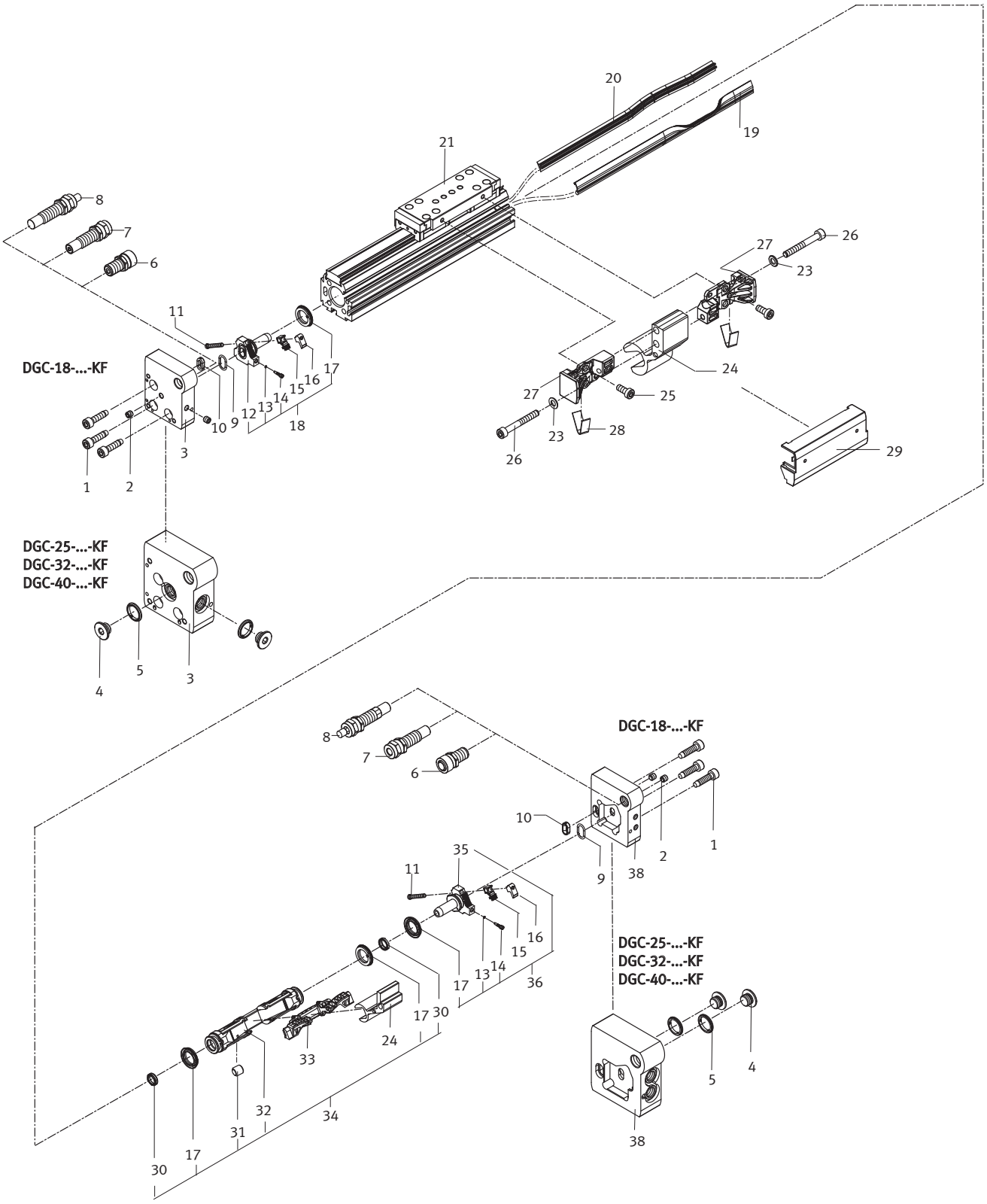
3.2 DGC-18/25-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-18-...-KF	DGC-25-...-KF	DGC-18-...-KF	DGC-25-...-KF
1	Self-tapping screw	M5×20-10.9	DIN 7500-E M6x30-A4-70	Tightening torque 7.0 Nm ± 10%, use LOCTITE 243	Tightening torque 12 Nm ± 10%, use LOCTITE 243
2	Threaded pin	DIN 913 M5×5-45H	–	Tightening torque 8.0 Nm	–
3	End cap, left				
4	Plug screw	–		–	Tightening torque 11 Nm
5	Sealing ring	–		–	
6	Silencer			Tightening torque 5 Nm ± 20%	Tightening torque 20 Nm ± 20%
7	Shock absorber				
8	Shock absorber				
9	Seal				
10	Sealing ring				
11	Flat-head screw	DIN 920-M3×20-4.8	DIN 84-M3×28-4.8	Tightening torque 0.2 Nm ± 10%, use LOCTITE 243	Tightening torque 0.4 Nm ± 10%, use LOCTITE 243
12	Buffer, left				
13	O-ring	1×0.6-N-NBR70	1.8×1.2-N-NBR75		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer/piston seal				
18	Buffer, left, sub-assembly				
19	Cover band				
20	Sealing band				
21	Cylinder barrel with slide				
22	Hex nut	DIN 934 M4-6AU	DIN 934 M5-6		
23	Washer				
24	Coupling				
25	Socket head screw	DIN 912 M4×8-8.8	DIN 912 M5×12-10.9		
26	Socket head screw	DIN 912 M4×35-10.9	DIN 912 M5×40-10.9		
27	Slide-piston connection				
29	Cover				
30	Buffer/piston seal				
31	Magnet				
32	Piston				
33	Band reverser				
34	Piston module				
35	Buffer, right				
36	Buffer, right, sub-assembly				
38	End cap, right				

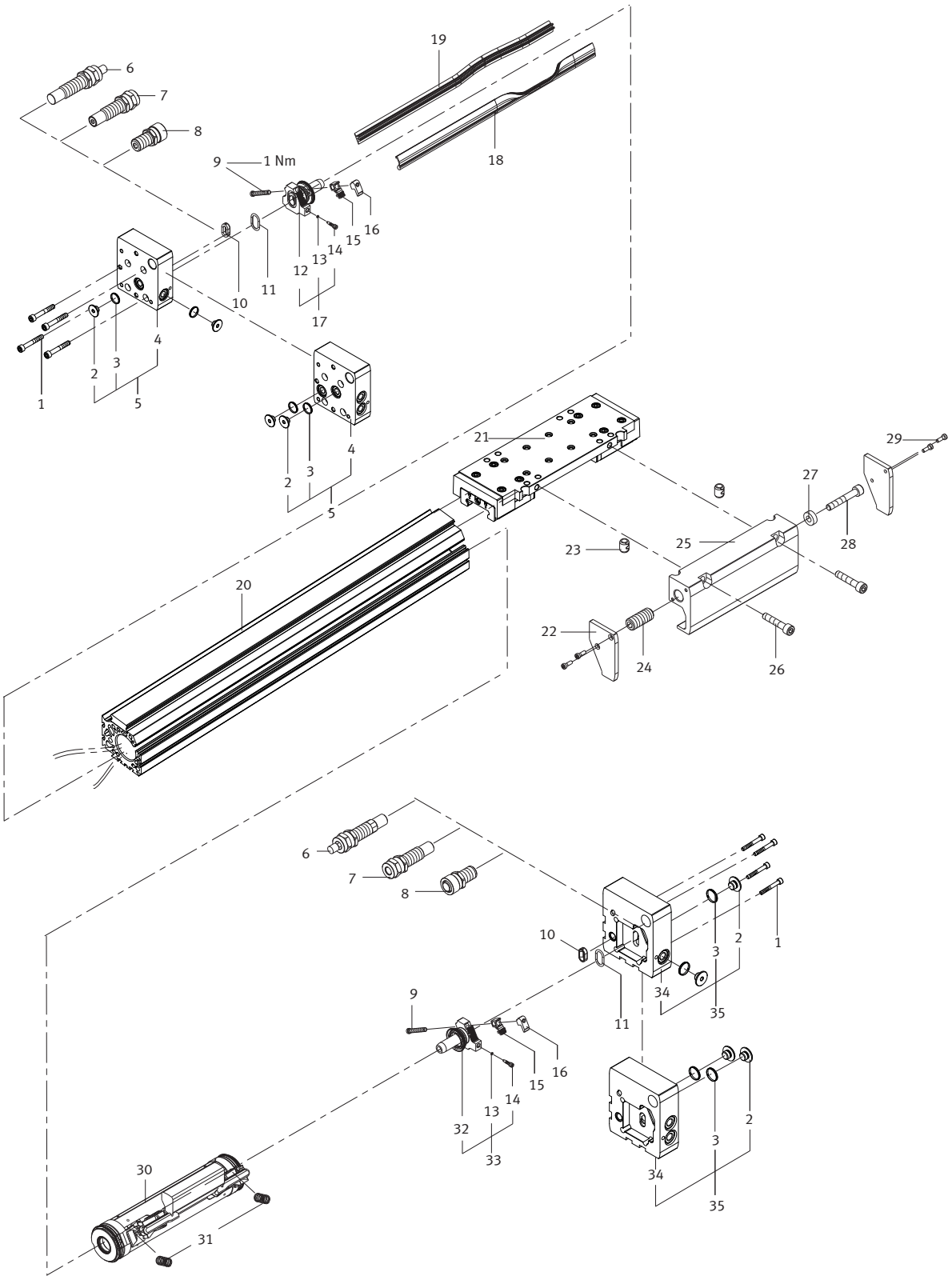
3.3 DGC-32/40-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-32-...-KF	DGC-40-...-KF	DGC-32-...-KF	DGC-40-...-KF
1	Self-tapping screw	M8×45-10.9		Tightening torque 30 Nm ± 10%, use LOCTITE 243	
2	Threaded pin	–	–	–	–
3	End cap, left				
4	Plug screw	–		Tightening torque 11 Nm	Tightening torque 16 Nm ± 10%
5	Sealing ring	–		–	
6	Silencer			Tightening torque 20 Nm ± 20%	Tightening torque 35 Nm ± 20%
7	Shock absorber				
8	Shock absorber				
9	Seal				
10	Sealing ring				
11	Flat-head screw	DIN 84-M3×30-5.8	DIN 912-M4×40-10.9	Tightening torque 0.4 Nm ± 10%, use LOCTITE 243	Tightening torque 1.0 Nm ± 10%, use LOCTITE 243
12	Buffer, left				
13	O-ring	1.8×1.2-N-NBR70	3×1.2-N-NBR75		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer/piston seal				
18	Buffer, left, sub-assembly				
19	Cover band				
20	Sealing band				
21	Cylinder barrel with slide				
23	Washer				
24	Coupling				
25	Socket head screw	DIN 6912 M5×12-8.8	DIN 912 M5×16-10.9		
26	Socket head screw	DIN 912 M5×40-10.9			
27	Slide-piston connection				
28	Spring				
29	Cover				
30	Buffer/piston seal				
31	Magnet				
32	Piston				
33	Band reverser				
34	Piston module				
35	Buffer, right				
36	Buffer, right, sub-assembly				
38	End cap, right				

3.4 DGC-50/63-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (spareparts.Festo.com).

Entry	Designation	Type		Note	
		DGC-50-...-KF	DGC-63-...-KF	DGC-50-...-KF	DGC-63-...-KF
1	Self-tapping screw	M8×55-10.9	M8×55-10.9	Tightening torque 25 Nm ± 20%, use LOCTITE 243	Tightening torque 30 Nm ± 20%, use LOCTITE 243
2	Plug screw			Tightening torque 16 Nm ± 10%	Tightening torque 18 Nm ± 10%
3	Sealing ring				
4	End cap, left				
5	End cap, left, sub-assembly				
6	Shock absorber			Tightening torque 35 Nm ± 20%	Tightening torque 60 Nm ± 20%
7	Shock absorber				
8	Silencer				
9	Socket head screw	DIN 912-M4×40-10.9		Tightening torque 1.0 Nm ± 20%, use LOCTITE 243	
10	O-ring	11.5×1.5-N-NBR75			
11	O-ring	32×2.5-N-NBR70	42×3-N-NBR70		
12	Buffer, left				
13	O-ring	4×1.5-N-NBR70	6×1.5-N-NBR70		
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Buffer, left, sub-assembly				
18	Cover band				
19	Sealing band				
20	Cylinder barrel				
21	Slide				
22	Stop				
23	Spring pin	SG 12×15			
24	Threaded pin	SLT-25-P-A		Tightening torque 5.0 Nm ± 20%, use LOCTITE 243	
25	Slide-piston connection				
26	Socket head screw	DIN 912-M8×40-10.9	DIN 912-M8×45-10.9	Tightening torque 20 Nm ± 20%, use LOCTITE 243	
27	Washer				
28	Socket head screw	DIN 912-M8×50-10.9		Tightening torque 20 Nm ± 20%, use LOCTITE 243	
29	Socket head screw	DIN 6912-M4×12-8.8	DIN 912-M4×10-8.8	Tightening torque 2.0 Nm ± 20%, use LOCTITE 243	
30	Piston module				
31	Compression spring	VL-5/2-4.0			
32	Buffer, right				
33	Buffer, right, sub-assembly				
34	End cap, right				
35	End cap, right, sub-assembly				

4 Repair steps

This chapter describes how to completely dismantle the linear drives and the individual components or sub-assemblies within self-contained sub-chapters. The linear drive does not need to be completely dismantled for every fault in order to replace faulty components. The complete dismantling process described here is designed to provide a complete overview of the components and how they are accessed in case they need to be replaced. The cause of a defect must therefore always be determined before starting a repair.

Note

The repair should preferably be carried out on a stable and flat work surface with storage for small parts.

Before dismantling the linear drive, it is imperative that the cause of the failure is investigated to prevent, for example, repeated and premature failure. A linear drive which has been used as intended will not normally exhibit any premature signs of failure.

This is not necessary in the case of non-premature failure (fatigue time). However, the condition of the slide (e.g. noticeable bearing clearance, faulty sliding performance and increased sliding noises etc.), the piston with all components in the piston chamber (e.g. piston seals, sealing band, cover band, covers) and all sealing rings should also always be assessed. If in doubt, it is recommended to replace all the components mentioned so as to rule out reciprocal effects during later operation.

If the linear drive suffers premature failure, the operating conditions should be examined more closely.

The following possibilities should be considered, among others:

- **Overloading**

  In case of overloading the application parameters (mass, speed, operating pressure, operation medium) should be adjusted accordingly.
- **Ambient conditions/material resistance**

  Check whether the ambient temperature is within the permissible range.

  Check the chemical and physical ambient conditions for hazardous substances, such as dust, abrasive particles, cooling lubricants, solvents, ozone, radiation, water-soluble greases and oils, etc.

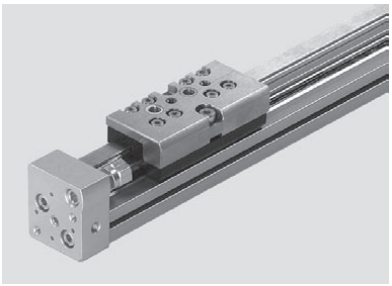
The following chapters describe how to dismantle the different sizes of the linear drives:

- Linear drives DGC-8/12-...-KF (see chapter 4.1).
- Linear drives DGC-18/25/32/40-...-KF (see chapter 4.2).
- Linear drives DGC-50/63-...-KF (see chapter 4.3).

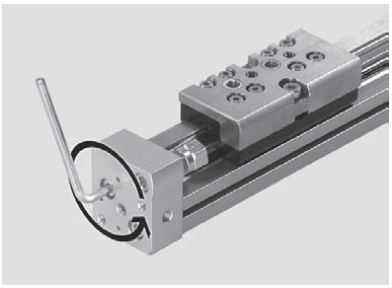
4.1 Linear drives DGC-8/12-...-KF

4.1.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



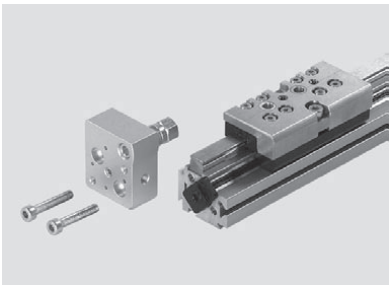
- Unfasten and remove the two self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

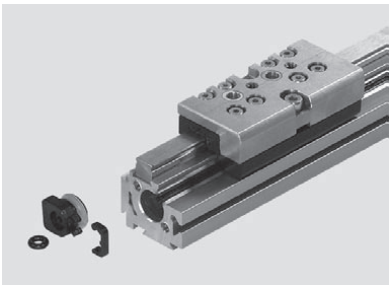
- Remove the end caps from the cylinder barrel at both ends of the drive.



Documents

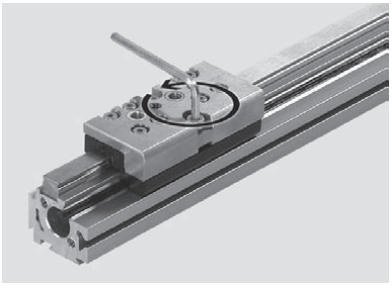
Chapter 4.1.3 describes how to replace the cushioning components on the end cap.

- Pull the clips from the buffers at both ends of the drive.
- Remove the buffers from the cylinder barrel.
- Removed the sealing ring from the buffer.



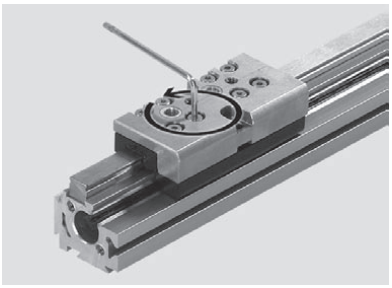
Note

The socket head screw for fastening the coupling is filled with locking agent. To open the screw the locking agent has to be removed using appropriate tools.

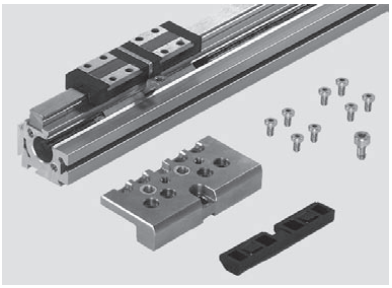


- Unscrew and remove the socket head screw.

- Unfasten and remove the eight mounting screws in the slide.



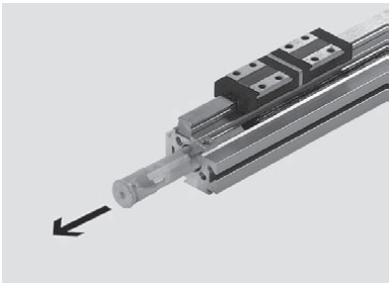
- Remove the slide upwards from the roller bearing carriage and the coupling.
- Remove the black wiper seal.



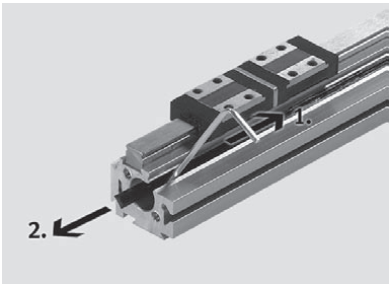
Note

Make sure that the roller bearing carriages do not slide off the guide rail as the roller bearing balls are not secured and will fall out of the guides.

- Push the piston with the coupling out of the cylinder barrel.



- Pull the sealing band out of the cylinder barrel on one side.



Note

It may not be possible to pull out the sealing band on long drives. In this case, push it into the cylinder barrel with a blunt object and then remove it.

4.1.2 Assembling the linear drive

When assembling a linear drive wearing parts, such as the sealing band, seals, buffers, covers, clips and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary sealing band length.

Cutting the new sealing band to length

The exact length of the sealing band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and shorten it to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-8-...-KF	140 mm
DGC-12-...-KF	160 mm

Example: DGC-12-405-KF

0-stroke: 160 mm

Stroke: 405 mm

Length of the sealing band = 0-stroke + stroke = 565 mm

The length of the sealing band calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band.

Warning

Do not bend the sealing band as this may cause damage or tearing and reduce its service life.

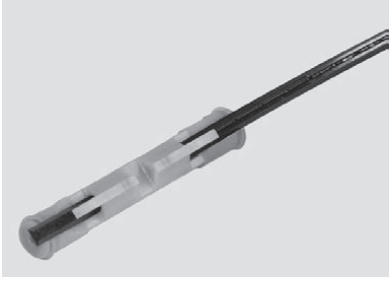
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

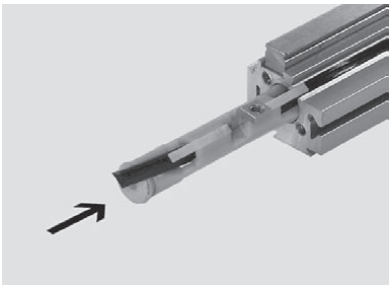
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston	Festo LUB-KC1[1)]	Grease all around.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

- Grease the sealing band, the piston and the inside of the cylinder barrel. Observe the greasing instructions in the table at the start of this chapter.
- Thread the sealing band into the through-hole in the piston.



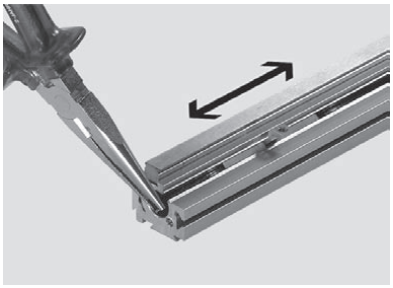
- Insert the piston with the coupling attached and the threaded sealing band all the way into the cylinder barrel so that the sealing band inserts into the slot in the cylinder barrel.



Note

When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches in the cylinder barrel.

- In order to fasten the sealing band in place in the sealing band holder, move the piston once to the other end of the cylinder barrel and hold the sealing band in place with pliers as you do so.



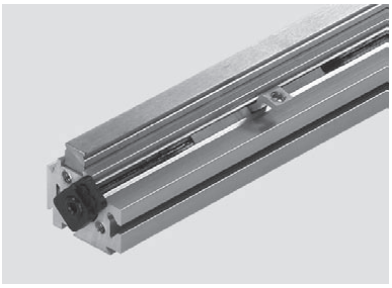
Note

The sealing band is pulled into the cylinder barrel by the draw of the piston. Make sure that the sealing band protrudes 4 mm from the cylinder barrel.

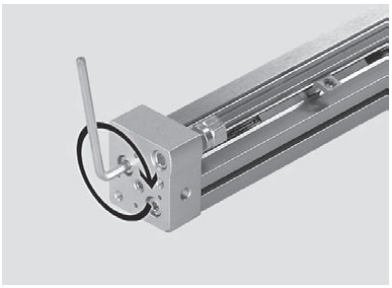
Note

The sealing band must not protrude beyond the buffer, otherwise the end cap cannot form an air-tight seal and may have an adverse effect on the function of the linear drive. The sealing band must be shortened so that it seals off flush with the outer edge of the buffers. However, it is better if it is slightly short of the buffers.

- Attach the buffers to both ends of the cylinder barrel.
- Grease one new sealing ring per buffer and insert them in the buffers.
- Attach the clips to the buffers to fasten the sealing band in place.

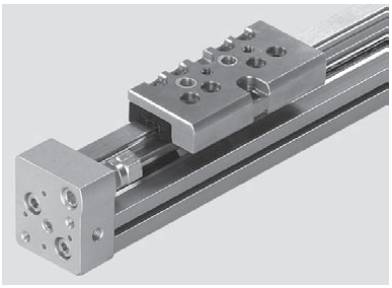


- Apply Loctite 243 to the self-tapping screws.
- Attach the end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the end cap and attach them loosely so that the end caps can still be shifted.
- Align the rear and bottom edge of both end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



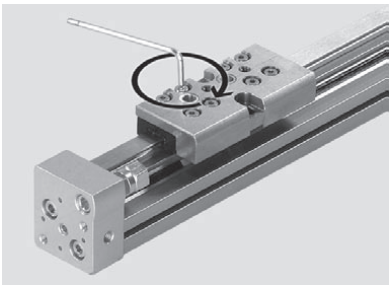
Type	Torque
DGC-8-...-KF	3.0 Nm ± 20%
DGC-12-...-KF	3.0 Nm ± 20%

- Push the roller bearing carriages as close together as possible.
- Place the upper section of the slide on the roller bearing carriages.



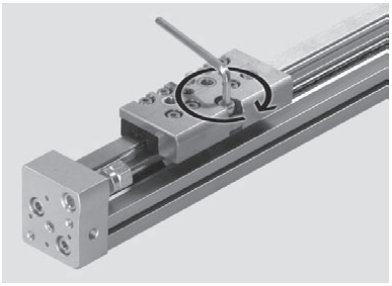
- Apply Loctite 243 to the mounting screws and screw them into the roller bearing carriages through the upper section of the slide.
- Tighten the mounting screws to the corresponding torque (see table).

Type	Torque
DGC-8-...-KF	0.4 Nm
DGC-12-...-KF	1.1 Nm

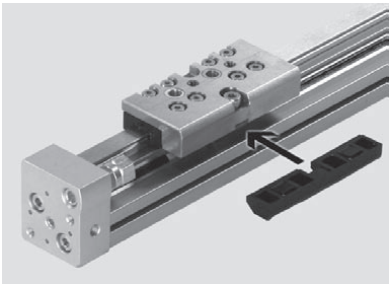


- Apply Loctite 243 to the socket head screw on the coupling and screw it into the coupling through the upper section of the slide.
- Tighten the socket head screw using the appropriate torque (see table).

Type	Torque
DGC-8-...-KF	1.4 Nm
DGC-12-...-KF	1.4 Nm



- Clip the wiper seal into the slide from the side.

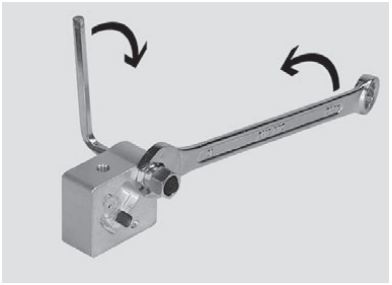


Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

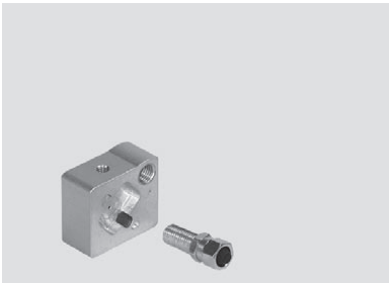
4.1.3 Replacing the cushioning components

- Unfasten the lock nuts on the cushioning components.



Note
The cushioning components can be replaced even when the end caps are attached.

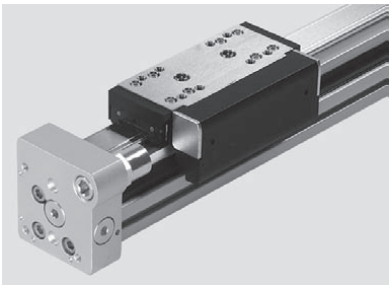
- Unscrew the cushioning components from the end caps.
- Insert the new cushioning component by performing the steps in reverse order.



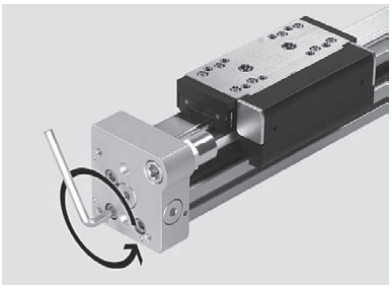
4.2 Linear drives DGC-18/25/32/40-...-KF

4.2.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.

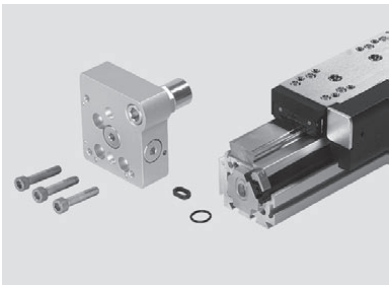


- Unfasten and remove the three self-tapping screws on both end caps.



Note
The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

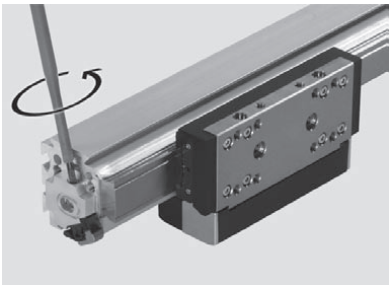
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



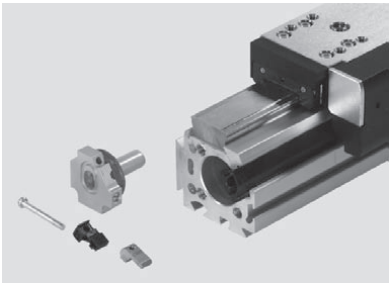
Documents

Chapters 4.2.4 and 4.2.5 describe how to dismantle and repair the end caps.

- Unscrew and remove the flat head screw from the band clamping mechanism on both buffers.

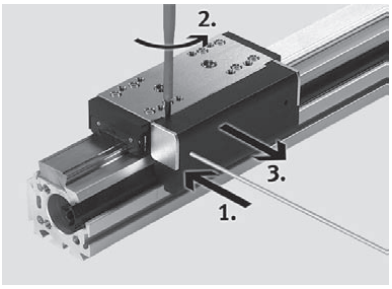


- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.
- Remove both the buffers from the cylinder barrel.



- Push a suitable pin into one of the holes on the front of the cover in order to release the holding lug behind it (1).
- Insert a screwdriver in the respective recesses on the cover and unfasten it by turning (2).

  Repeat this step on the other side.
- Remove the cover from the slide (3).



Note

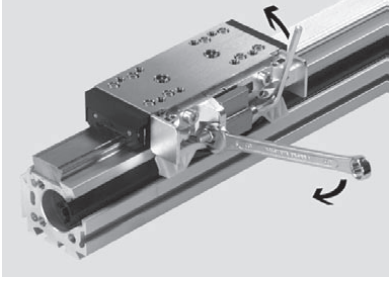
The method for dismantling the drives DGC-18/25-...-KF and DGC-...-32/40-...-KF differs in the way in which the slide-piston connection and piston coupling are fastened (see chapter 3).

DGC-18-...-KF and DGC-25-...-KF:

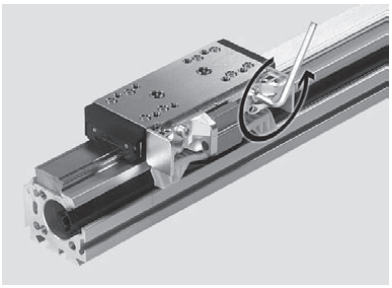
- Unscrew and remove the nut from the screw. Remove the socket head screw and both washers.

DGC-32-...-KF and DGC-40-...-KF (not shown in the illustration):

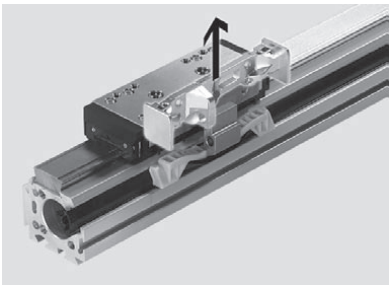
- Unscrew and remove both socket head screws.



- Unscrew and remove both socket head screws from the slide-piston connection.



- Lift the slide-piston connection upwards and out.



Note

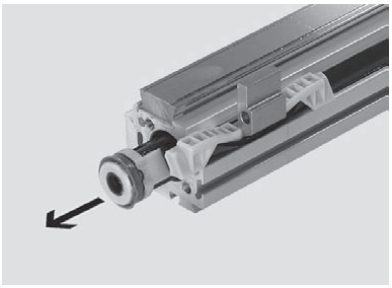
The parts of the slide-piston connection are paired with the slide. In order to ensure the slide and the slide-piston connection fit backlash-free, the individual parts of the slide-piston connection must be glued in a very precise manner.

If the glued parts break apart, they can be placed on top of each other again and re-installed.

You must not apply any additional glue as this will change the fit.

If a part of the slide-piston connection is faulty, the slide itself has to be replaced because of the pairing.

- Push the piston out of the cylinder barrel.



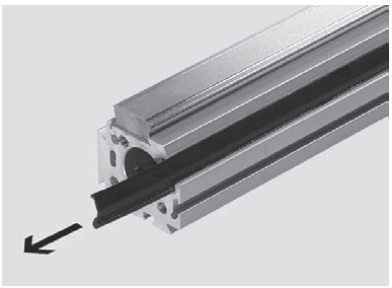
Note

The slide remains on the guide rail.

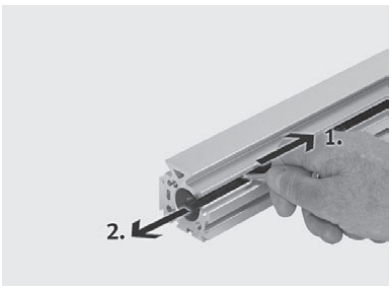
Documents

Chapter 4.2.3 describes how to dismantle and repair the piston module.

- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.2.2 Assembling the linear drives

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-18-...-KF	220 mm
DGC-25-...-KF	250 mm
DGC-32-...-KF	290 mm
DGC-40-...-KF	335 mm

Example: DGC-25-330-KF

0-stroke: 250 mm

Stroke: 330 mm

Length of the sealing band / cover band = 0-stroke + stroke = 580 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

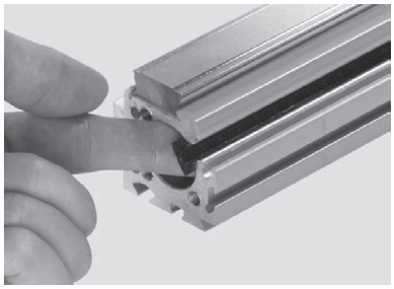
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

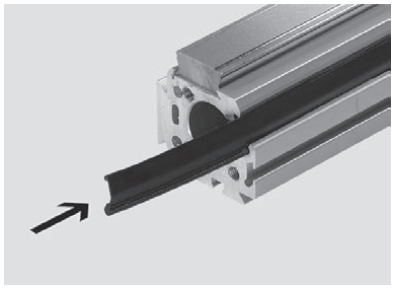
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston, outside	Festo LUB-KC1[1)]	Grease all around.
Seal, piston, inside	Festo LUB-KC1[1)]	Grease all around.
Cushion piston	Festo LUB-KC1[1)]	Grease all around.
Seal, buffer	Festo LUB-KC1[1)]	Grease all around.
Band reverser	Festo LUB-KC1[1)]	Grease in the deflection area.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

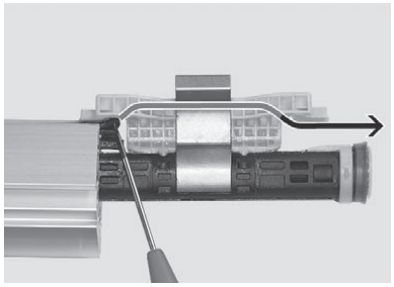
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 10 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Thread the cover band into the fixture so that approximately 10 mm of the cover band still protrude.



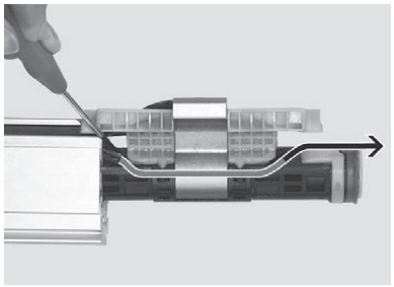
- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.



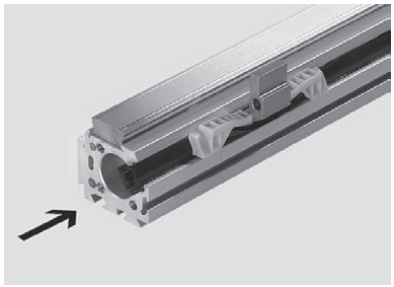
Note

When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

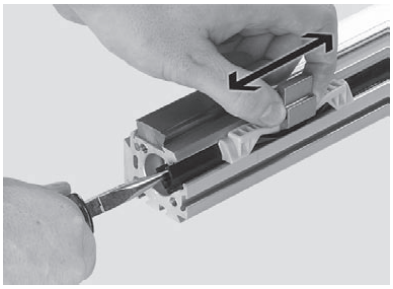
- Push the sealing band under the band reverser with a screwdriver.



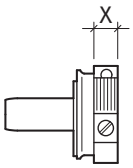
- Insert the piston fully into the cylinder barrel.



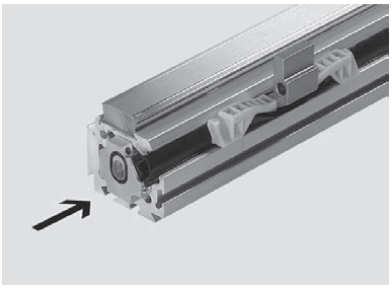
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).



Type	Width of the contact surface X
DGC-18-...-KF	6 mm
DGC-25-...-KF	7 mm
DGC-32-...-KF	9 mm
DGC-40-...-KF	9 mm



- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.



Note

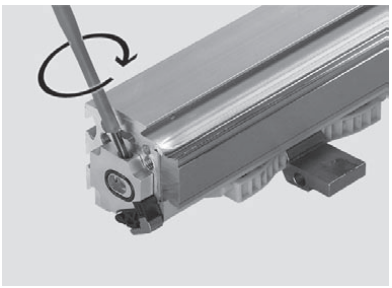
When using shock absorbers on the end caps the regulating screw for the end position cushioning (see chapter 3.2 and 3.3, entry 11) must be “open”. Unscrew it far enough so that it is positioned flush with the buffer.

- Grease the sealing ring and insert it into the buffer.

Note

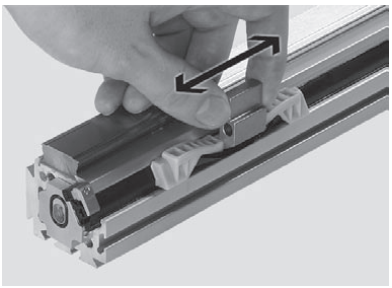
The sealing band and cover band must not protrude beyond the buffers, otherwise the end cap cannot form an air-tight seal and may have an adverse effect on the function of the linear drive. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

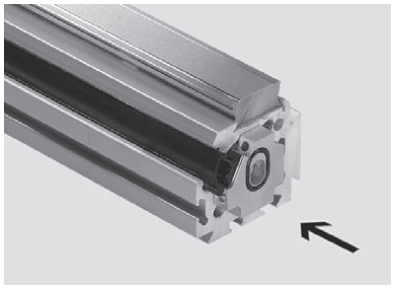


Type	Torque
DGC-18-...-KF	0.2 Nm ±10%
DGC-25-...-KF	0.4 Nm ±10%
DGC-32-...-KF	0.4 Nm ±10%
DGC-40-...-KF	1.0 Nm ±10%

- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

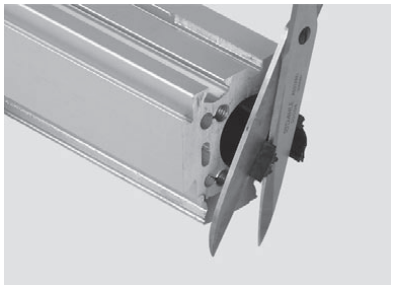


- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter and the note on using shock absorbers on the end caps.
- Insert the buffer into the cylinder barrel at the other end.
- Grease the sealing ring and insert it into the buffer.



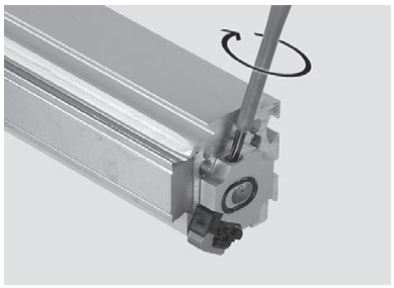
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

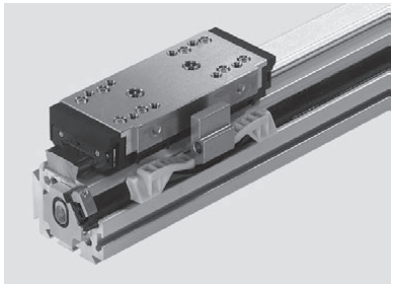


- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-KF	0.2 Nm ±10%
DGC-25-...-KF	0.4 Nm ±10%
DGC-32-...-KF	0.4 Nm ±10%
DGC-40-...-KF	1.0 Nm ±10%



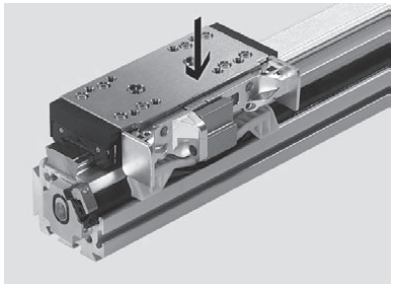
- Align the slide centrally with the piston.



- Insert the parts of the slide-piston connection between the slide and the piston from above.

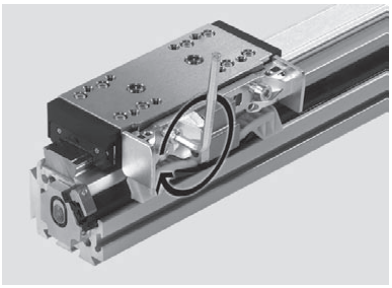
Note

The parts of the slide-piston connection are paired with the slide.
Observe the instructions in chapter 4.2.1.



- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

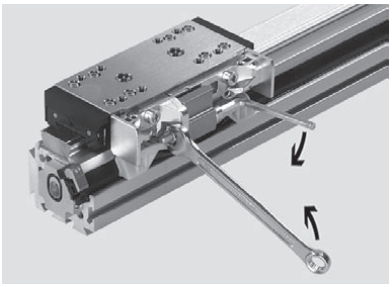
Type	Torque
DGC-18-...-KF	2.5 Nm ±10%
DGC-25-...-KF	5.7 Nm ±10%
DGC-32-...-KF	5.7 Nm ±10%
DGC-40-...-KF	5.7 Nm ±10%



Note

The method for assembling the drives DGC-18/25-...-KF and DGC-...-32/40-...-KF differs in the way in which the slide-piston connection and piston coupling are fastened.

DGC-18-...-KF and DGC-25-...-KF:



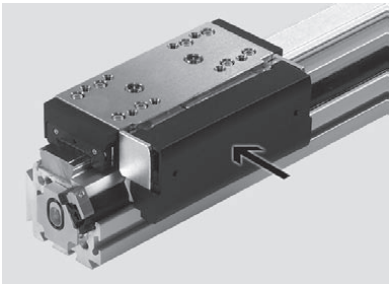
- Insert the socket head screw with a washer through the piston coupling and into the drill holes on the slide-piston connection.
- Put on the second washer. Apply Loctite 243 to the thread, screw on the nut and tighten it using the appropriate torque (see table).

Type	Torque
DGC-18-...-KF	1.2 Nm ±10%
DGC-25-...-KF	4.5 Nm ±10%

DGC-32-...-KF and DGC-40-...-KF (not shown in the illustration):

- Place the washers on the socket head screws, apply Loctite 243 to them and tighten them using the appropriate torque (see table).

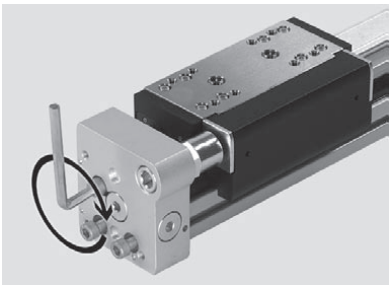
Type	Torque
DGC-32-...-KF	4.5 Nm ±10%
DGC-40-...-KF	4.5 Nm ±10%



- Place the cover on the slide-piston connection and press it lightly so that it latches into place.

- Grease the sealing rings and insert them into the end caps.

- Apply Loctite 243 to the self-tapping screws.
- Attach the end caps to both ends of the cylinder barrel.
- Screw the self-tapping screws into the cylinder barrel through the end cap and attach them loosely so that the end caps can still be shifted.
- Align the rear and bottom edge of both end caps flush with the cylinder barrel.
- Tighten the self-tapping screws on both ends using the appropriate torque (see table).



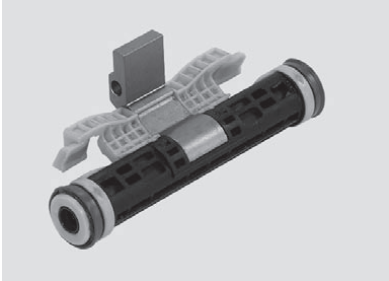
Type	Torque
DGC-18-...-KF	7 Nm
DGC-25-...-KF	12 Nm
DGC-32-...-KF	30 Nm
DGC-40-...-KF	30 Nm

Note

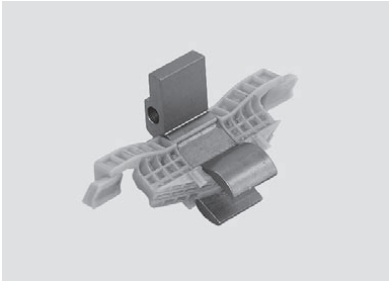
After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.2.3 Dismantling and repairing the piston module

- Remove the piston as described in chapter 4.2.1.



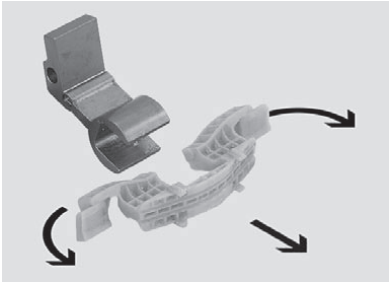
- Remove the coupling, together with the band reverser, from the piston.



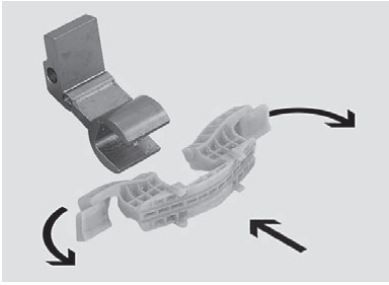
Note

The piston must be replaced completely in case of wear. The spare part comprises the inner and outer sealing rings and the magnets.

- Bend the band reverser slightly apart and pull it off the coupling.
- Check all parts for wear and replace them as necessary.



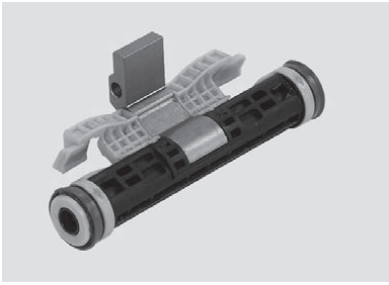
- Clip the band reverser in the coupling.



Note

Make sure that the band reverser is aligned properly with the coupling (see illustration).

- Connect the coupling with the band reverser to the piston.



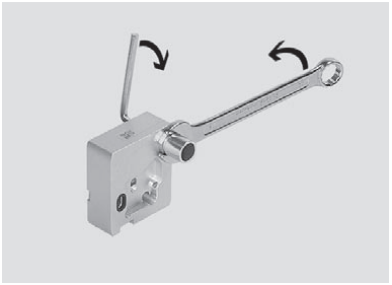
Note

Make sure that the coupling is properly aligned with the piston. The magnet in the piston must be positioned on the left-hand side of the piston when the coupling points backwards.

- Grease the sealing rings and the band reverser.
  Observe the greasing instructions int the table in chapter 4.2.2.
- Assemble the linear drive as described in chapter 4.2.2.

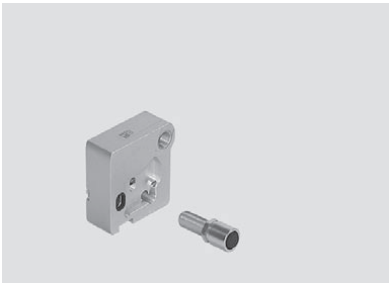
4.2.4 Replacing the cushioning components

- Unfasten the lock nut on the cushioning components.



Note
The cushioning components can be replaced even when the end caps are attached.

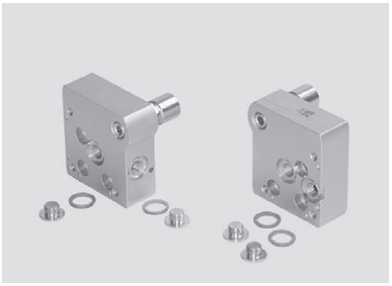
- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).



Type	Torque
DGC-18-...-KF	3.0 Nm ±20%
DGC-25-...-KF	5.0 Nm ±20%
DGC-32-...-KF	8.0 Nm ±20%
DGC-40-...-KF	20 Nm ±20%

4.2.5 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end caps and remove the sealing rings.



Note
The sealing rings can be replaced even when the end caps are attached.

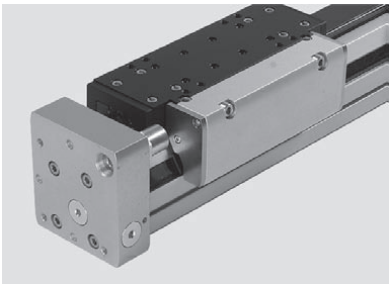
- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-25-...-KF	11 Nm ±10%
DGC-32-...-KF	11 Nm ±10%
DGC-40-...-KF	16 Nm ±10%

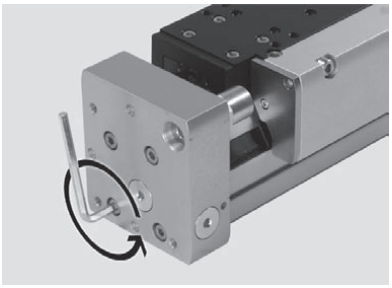
4.3 Linear drives DGC-50/63-...-KF

4.3.1 Dismantling the linear drive

- Place the linear drive on the work surface with the slide facing upwards.



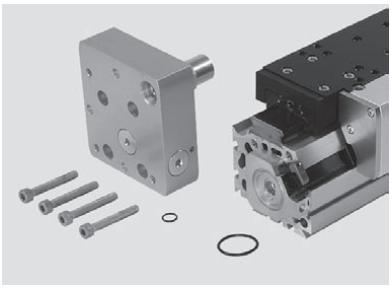
- Unfasten and remove the four self-tapping screws on both end caps.



Note

The basic principle of self-tapping screws means they have a high level of holding force in the thread and require greater force when unfastening them.

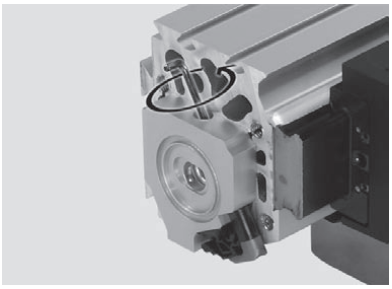
- Remove the end caps from the cylinder barrel at both ends of the drive.
- Remove the sealing rings from the inside of the end caps and the buffers.



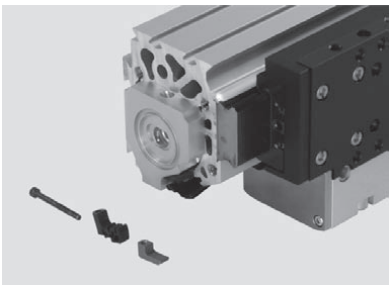
Documents

Chapters 4.3.3 and 4.3.4 describe how to dismantle and repair the end caps.

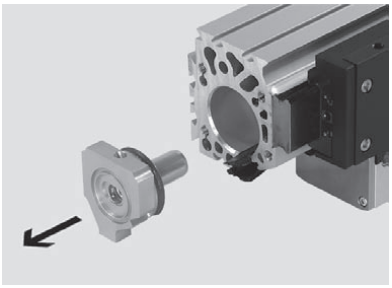
- Unscrew the socket head screw for the band clamping mechanism on both buffers with an Allen key, size 3.



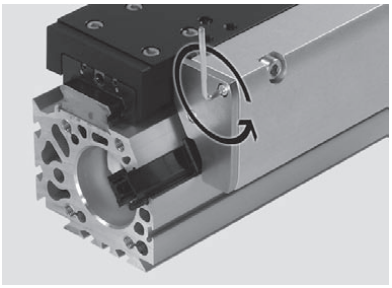
- Remove the clamping mechanism for the cover band from both ends of the drive and remove the clamping mechanism from the sealing band between the cover band and sealing band.



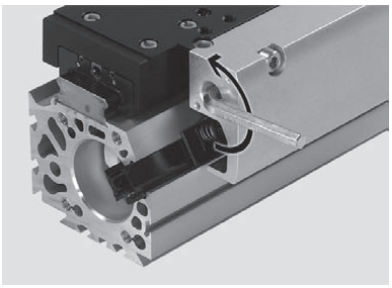
- Remove both the buffers from the cylinder barrel.



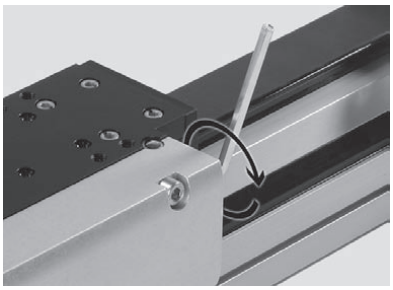
- Unscrew the socket head screws on the front of the slide-piston connection and remove the stop plates.



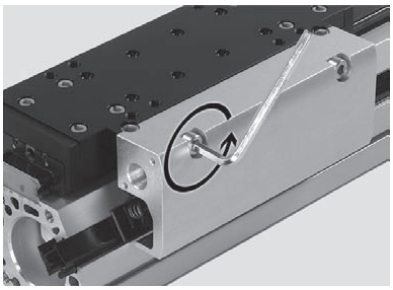
- Unfasten the threaded pins on the left-hand side of the slide-piston connection.



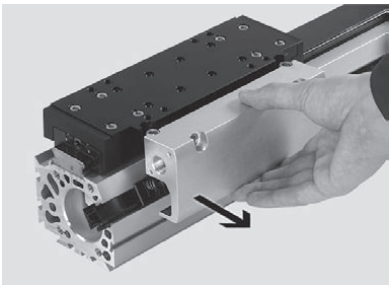
- Unfasten and remove the socket head screw on the right-hand side of the slide-piston connection.



- Unfasten both the socket head screws on the front of the slide-piston connection and remove them.



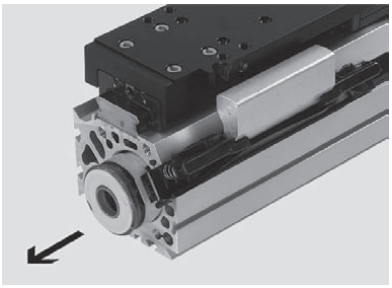
- Remove the slide-piston connection.



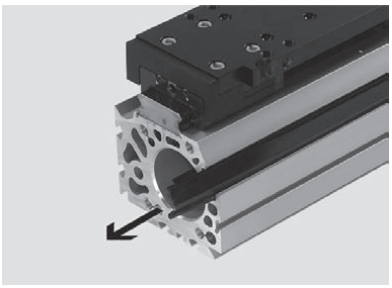
Note

Both the spring pins and the blanking plugs between the slide and the slide-piston connection are not fastened and may be lost when removing the slide-piston connection.

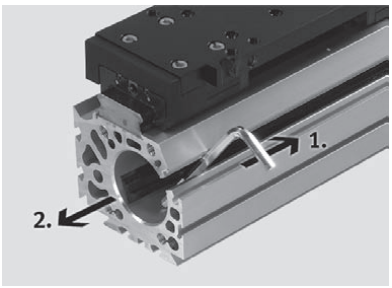
- Push the piston out of the cylinder barrel.
- Check the springs on the band reverser for damage and replace them as necessary.



- Pull the cover band out of the cylinder barrel.



- Push the sealing band inwards and out of the guide slot (1) with a blunt object and pull it out of the cylinder barrel (2).



4.3.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue (spareparts.Festo.com) quoting the appropriate part number (dependent on the size of the linear drive).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined from the type code on the name plate of the linear drive (see order example below). Using this information you can calculate the necessary length or sealing band/cover band.

Cutting the new sealing band/cover band to length

The exact length of the sealing band and cover band is determined by the 0-stroke of the respective type and the stroke of the linear drive. The stroke is specified by the type code on the name plate. Check the length of the new sealing band and cover band and shorten them to length (0-hub + hub) as necessary. See order example.

Type	Length L_0
DGC-50-...-KF	370 mm
DGC-63-...-KF	415 mm

Example: DGC-50-180-KF

0-stroke: 370 mm

Stroke: 180 mm

Length of the sealing band/cover band = 0-stroke + stroke = 550 mm

The length of the bands calculated in this way is a theoretical value. Component tolerances may make it necessary to adjust the length of the sealing band/cover band after installation.

Note

Sturdy general purpose scissors or metal shears are best for cutting the sealing band and cover band.

Warning

Do not bend the sealing band and the cover band as this may cause damage or tearing and reduce the service life of the sealing band/cover band.

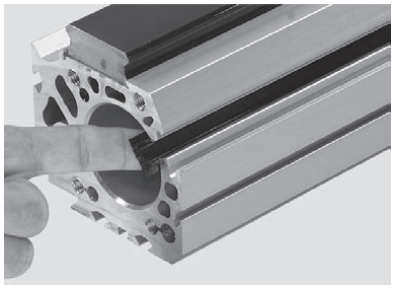
Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

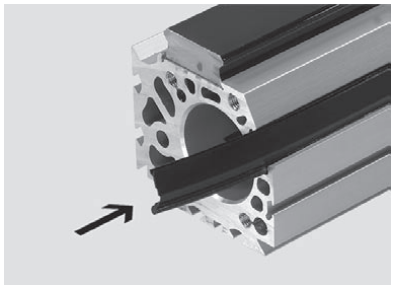
Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all around.
Seal, piston, outside	Festo LUB-KC1[1)]	Grease all around.
Seal, piston, inside	Festo LUB-KC1[1)]	Grease all around.
Cushion piston	Festo LUB-KC1[1)]	Grease all around.
Seal, buffer	Festo LUB-KC1[1)]	Grease all around.
Band reverser	Festo LUB-KC1[1)]	Grease in the deflection area.

[1)] See “Assembly aids” in the online spare parts catalogue on the Festo website (www.Festo.com).

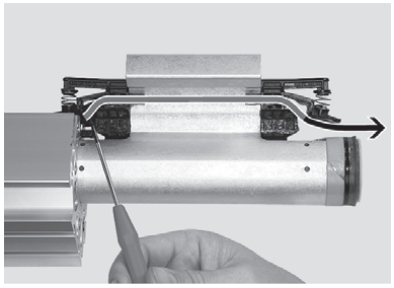
- Grease the cylinder barrel and the sealing band and cover band.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the sealing band in the cylinder barrel so that approximately 14 mm of the sealing band protrudes from one end of the cylinder barrel.
- Use your finger or a blunt object to press as much of the sealing band as possible into the guide slot from inside.



- Thread the cover band into the fixture so that approximately 14 mm of the cover band still protrude.



- Grease the piston and the band reverser.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the piston into the cylinder barrel. Push the cover band into the sliding notch on the band reverser with a screwdriver.

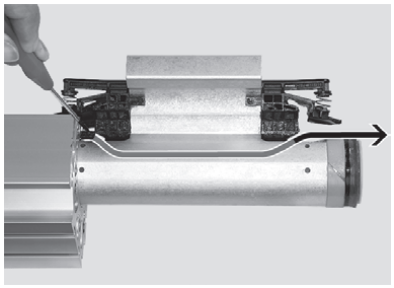


Note

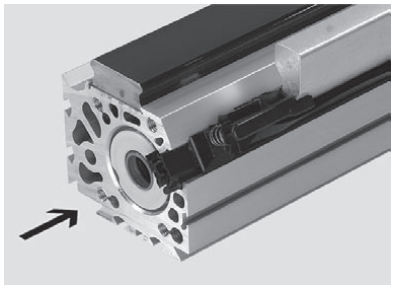
When inserting the piston, make sure that the magnetic side of the piston is opposite the cut-outs on the groove for the proximity switches.

The magnet is moulded-in and is thus not visible. Therefore its position can be determined using a counter magnet (e.g. compass).

- Push the sealing band under the band reverser with a screwdriver.

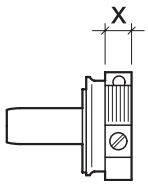


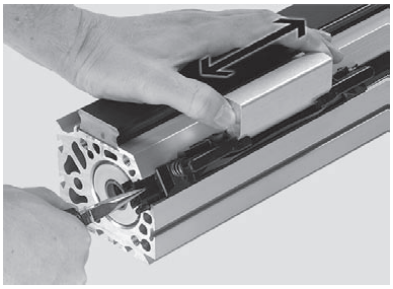
- Insert the piston fully into the cylinder barrel.



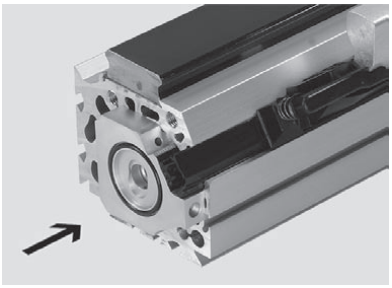
- Adjust the excess sealing band and cover band by moving the piston back and forth and pulling or pushing the respective bands at the same time so that the excess band is no greater than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-50-...-KF	14 mm
DGC-63-...-KF	16 mm



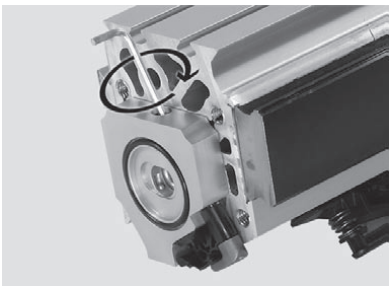


- Grease the buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the cylinder barrel.
- Grease the sealing ring and insert it into the buffer.



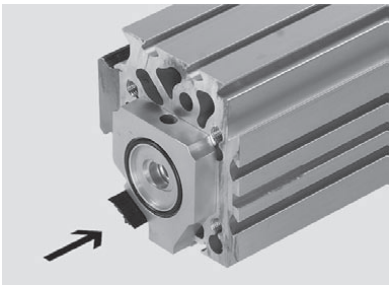
- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	1.0 Nm ±20%
DGC-63-...-KF	1.0 Nm ±20%



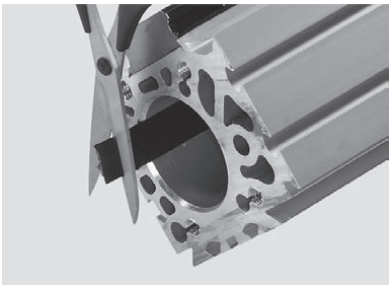
- Move the piston to the other end of the cylinder barrel once in order to secure the sealing band back in the slot.

- Grease the second buffer.
  Observe the greasing instructions in the table at the start of this chapter.
- Insert the buffer into the piston chamber on the other side of the base profile.
- Grease the sealing ring and insert it into the buffer.



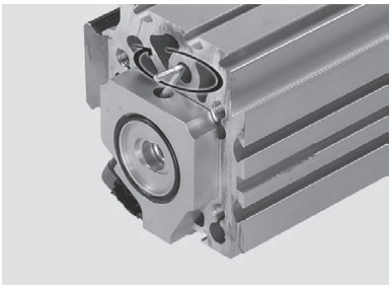
Note

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. Shorten the bands as necessary so that they do not protrude beyond the contact surface of the buffer (see band fastening on the other side of the base profile).

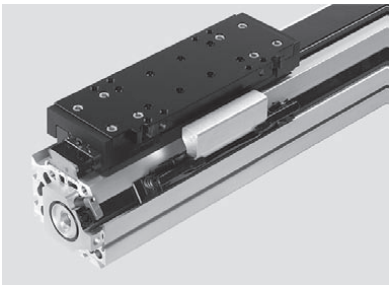


- Apply the band clamping mechanism to the sealing band and cover band.
- Apply Loctite 243 to the socket head screw and tighten it using the appropriate torque (see table).

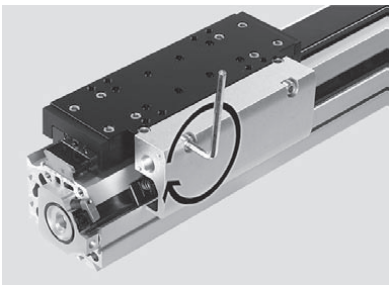
Type	Torque
DGC-50-...-KF	1.0 Nm ±20%
DGC-63-...-KF	1.0 Nm ±20%



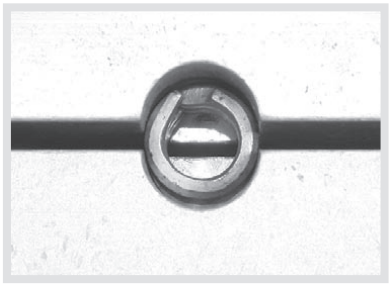
- Align the slide centrally with the piston.



- Place the slide-piston connection on the coupling.
- Apply Loctite 243 to the socket head screws for the slide-piston connection and tighten them slightly so that the slide-piston connection is positioned at 1-2 mm from the slide.



- Insert the spring pins between the slide and the slide-piston connection as far as they will go.

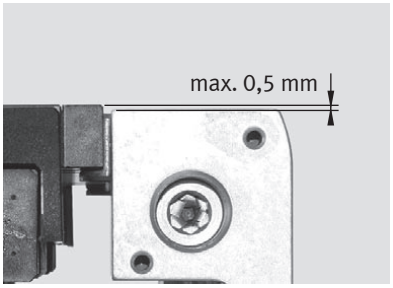


Note

When inserting the spring pins, make sure that they sit properly in the fixture.

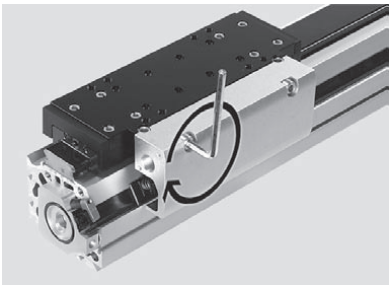
The openings of the spring pins must be off-set by 90° to the joint between the slide and the slide-connection.

- Align the upper edge of the slide-piston connection so that it is flush with the outer edge of the slide using a stop. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide must not exceed **0.5 mm**.



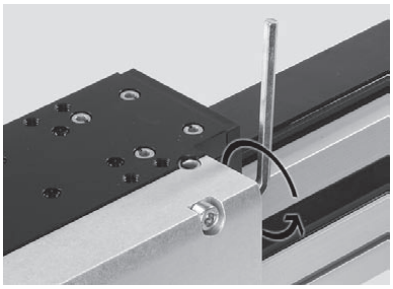
- Tighten the socket head screws for the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	20 Nm ±20%
DGC-63-...-KF	20 Nm ±20%



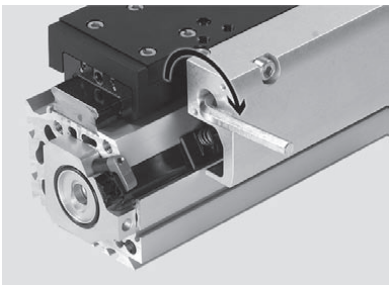
- Tighten the socket head screw on the right-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	20 Nm ±20%
DGC-63-...-KF	20 Nm ±20%



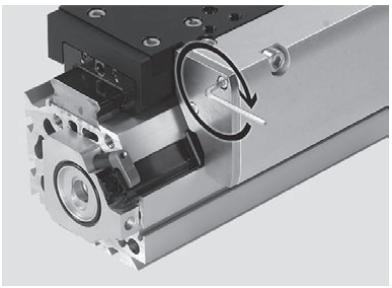
- Tighten the threaded pins on the left-hand end of the slide-piston connection using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	5 Nm ±20%
DGC-63-...-KF	5 Nm ±20%



- Place the stop plates on the slide-piston connection from the side.
- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

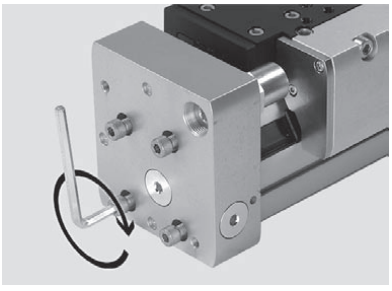
Type	Torque
DGC-50-...-KF	2.0 Nm ±20%
DGC-63-...-KF	2.0 Nm ±20%



- Grease the sealing rings and insert them into the respective fixture in both end caps.
- Attach the respective end caps to the cylinder barrel on both sides and align each rear and lower edge of both end caps flush with the cylinder barrel.

- Apply Loctite 243 to the socket head screws and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	25 Nm ±20%
DGC-63-...-KF	30 Nm ±20%

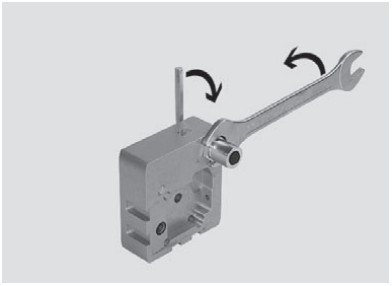


Note

After the linear drive has been assembled, it needs to be commissioned as described in chapter 7 of the operating instructions.

4.3.3 Replacing the cushioning components

- Unfasten the lock nut on the cushioning components.



Note

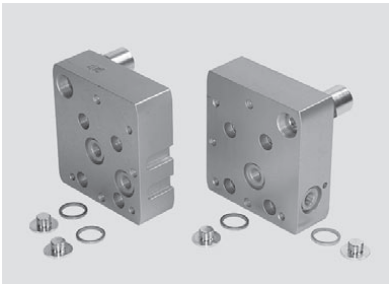
The cushioning components can be replaced even when the end caps are attached.

- Unscrew the cushioning components from the end caps.
- Insert the new cushioning components by repeating the steps in reverse order and tighten them using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	35 Nm ±20%
DGC-63-...-KF	60 Nm ±20%

4.3.4 Replacing the sealing rings for the supply ports in the end caps

- Unscrew and remove the plug screws for the supply ports from the end caps and remove the sealing rings.



Note

The sealing rings can be replaced even when the end caps are attached.

- Insert the new sealing rings in the supply ports by repeating the steps in reverse order and tighten the plug screws using the appropriate torque (see table).

Type	Torque
DGC-50-...-KF	16 Nm ± 10%
DGC-63-...-KF	18 Nm ± 10%

5 Maintenance

This chapter contains key technical information about how to carry out maintenance work on the linear drive. A detailed description of the steps for care and maintenance can be found in the operating instructions. Further information on the assembly aids and lubricants can be found on the Festo website (www.Festo.com).

5.1 Recirculating ball bearing guide

The linear drive's recirculating ball bearing guide is provided with life-time lubrication and does not need to be relubricated.

5.2 Maintenance of the band system

- Clean the band system if required with a soft cloth.
- Avoid cleaning agents which will damage the band system which is made of PU. Excessive friction or the use of grease-solvent cleaning agents (e.g. soapsuds) will damage the grease layer.
- Grease the band system superficially with LUB-KC1 type grease if it no longer has a layer of grease.

6 Tools

This chapter provides an overview of the tools and aids required to repair and maintain the linear drive DGC-...-KF in its various sizes.

6.1 Required tools by size

Designation	DGC-8-/-12-...-KF	DGC-18-/-25-/-32-/-40-...-KF	DGC-50-/-63-...-KF
Allen key	1.5 – 4 mm	4 – 5 mm	3 – 6 mm
Torx screwdriver	T10		
Screwdriver		5 mm	
Torque wrench	1.4 – 3 Nm	0.6 – 50 Nm	1 – 60 Nm
Torque screwdriver		0.2 – 1 Nm	
Flat pliers	Required		
Feeler gauge	0.02 mm		
Sturdy general purpose scissors or metal shears	For cutting the cover band to length	For cutting the sealing band and the cover band to length	

7 Liability/Conditions of use

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3. The limitations of liability as per paragraphs 1 and 2 do not apply if, in cases of intent or gross negligence or the lack of warranted quality, liability is absolutely necessary. In such a case, Festo’s liability is limited to the damage discernable by Festo when the definitive circumstances are made known.

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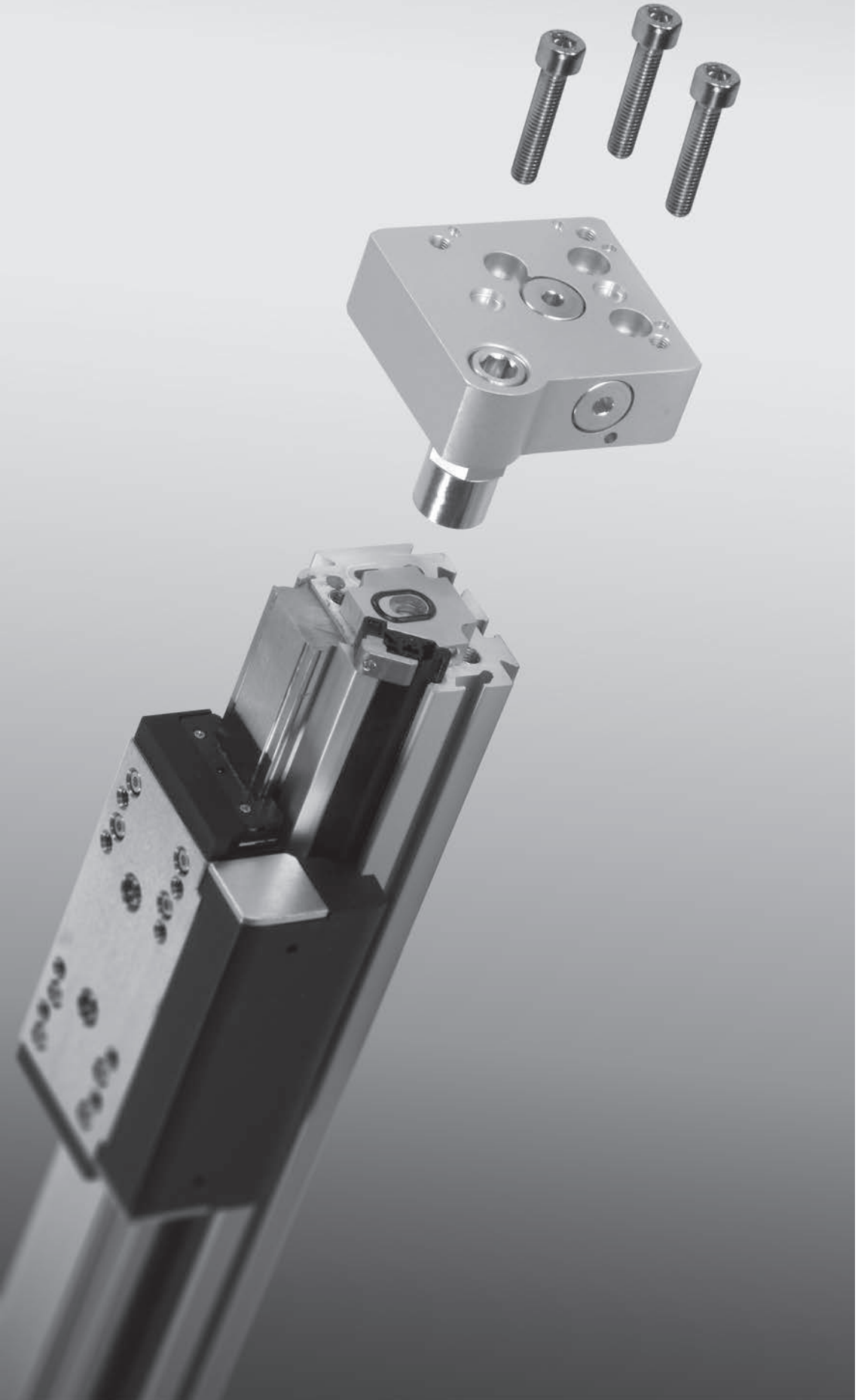
Warranty and liability claims in conformity with the aforementioned regulations (items III. and IV.) may be raised only if the user has observed the safety guidelines of the documentation in conjunction with the use of the machine and its safety guidelines. The user himself is responsible for ensuring that the electronic documentation, when not supplied with the product, matches the product actually used by the user.

Linear drive

DGC-...-KF



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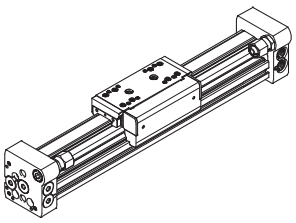
Repair instructions (en)



7DGC-KFb_en

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Foreword

These repair instructions are valid for the linear drives listed on the title page to the exclusion of any liability claims.

Deviations with respect to the descriptions in these repair instructions may arise depending on the design and / or modification status of the specific linear drive. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

Festo AG & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise, no liability is accepted for direct or consequential damage resulting from incorrect use of the products.

Further information is given in Chapter 8 on page 70.

The relevant regulations on occupational safety, safety engineering, and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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Table of Contents

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Table of Contents

1 Important information

1.1 About these repair instructions

This document contains important information about professional repair of the linear drive type DGC-...-KF.

However, the costs of carrying out a repair must be considered in the case of larger defects.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain all detailed information. The following documents should therefore also be available while performing repair work on the linear drive:

- **Operating instructions**
  Contain information about the operating elements and connections of the linear drive, as well as information about its function, structure, application, installation, commissioning, care and maintenance, etc. They can be found on the Festo website (➔ www.festo.com).
- **Spare parts documentation**
  Contains an overview of the spare and wearing parts as well as information on their installation. This can be found in the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
- **Information brochure – accessories, equipment and tools**
  Contains an overview of the available installation resources, e.g. lubricating greases, threadlocking agents, maintenance tools, etc. (resources for installation and maintenance). It can be found in the online spare parts catalogue on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

1.2 Pictograms used in these repair instructions

Danger categories

The following symbols identify text passages which draw attention to specific hazards.

Danger

Caution

Marking special information

The following symbols identify text passages which contain special information.

Note

Information

Environment

1.3 Text designations used in these repair instructions

- Activities that can be carried out in any order.

1. Activities which should be carried out in the specified order.

– General lists.

➔ Reference to further information.

Underlined, blue text indicates a cross-reference or hyperlink that you can click on in the PDF.

1.4 General safety instructions

Danger

Risk of fatal injury due to electric shock and uncontrolled movement of components.

– The linear drive must be de-energised, depressurised and reliably secured against unauthorised switching on again before the maintenance and repair work begins.

Caution

The linear drive may only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts or without the technical documentation required for installation and / or repair are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions and the respective operating instructions for the device, and the documents named in Chapter 1.1 on page 6.

Caution

Lifting large loads can lead to permanent injury.

– Depending on its size and weight, 2 to 3 persons must lift and turn the linear drive. An additional person is required for the attachment to the mounting frame.

Caution

Unintended switching on can trigger unexpected movements and cause bruises.

– Ensure that the unit is protected against restarting before any modification or maintenance work or inspections are carried out. Loosened parts can make unexpected movements or fall off.

– Secure parts against accidental movements or move them into a safe end position.

Note

Observe the given tightening torques. If no special information is given the tightening torques given in the relevant standard apply to the screws, bolts and nuts used.

Note the strength class of the screws, bolts and nuts!

Festo recommends use of the screw locking agent LOCTITE 243, unless stated otherwise.

In the event of damage caused by unauthorised manipulation, improper use or use of non-original spare parts, all warranty and liability claims against the manufacturer expire.

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.

Components and equipment replaced during repair must be disposed of in accordance with the relevant local environmental protection regulations.

1.5 Technical requirements

Note

The following instructions for safe and proper use must be observed:

- Observe the connection and ambient conditions specified in the technical data of the products and all the connected components. The product can only be operated in accordance with the relevant safety guidelines if the limit values and load limits are complied with (➔ see enclosed documentation).
- The linear actuator must be in faultless technical condition.
- The linear actuator must be operated in its original status, without unauthorised modifications.
- The linear actuator is designed for industrial use.

1.6 Standards and test values

Standards and test values which products comply with and fulfil can be found in the “Technical data” sections of the enclosed documentation.

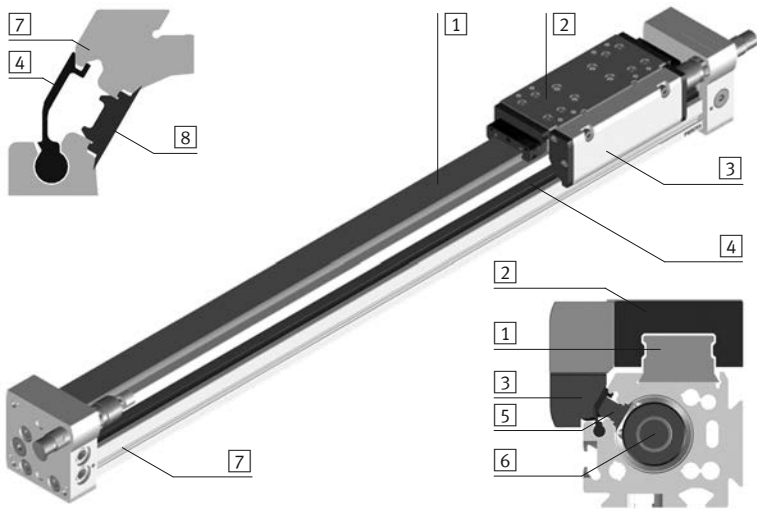
2 General product description

2.1 Functional description

The DGC-...-KF is a linear drive with a recirculating ball bearing guide and the functional principle of a double-acting piston for power transmission. When compressed air is applied to the supply ports alternately, the piston moves backwards and forwards in the piston chamber. A rigid connection moves the slide module with the attached load (e.g. adapter plate with drive) on the roller track. The slot in the basic profile required for this is covered by a band system. The slide made of stainless steel provides a precise mounting interface. It is mounted on roller bearing elements and is thus designed for medium and large loads. The operating behaviour under moment loads is within the very good range.

The DGC-...-KF, when used as intended, is designed to transport loads in a space-saving manner and is approved for slide and yoke modes (adhere to the load limits).

This illustration provides you with an overview of the structure of the linear drive using the example of the DGC-25-...-KF.



1 Roller track
2 Slide module
3 Slide-piston connection
4 Cover band
5 Moment compensator
6 Piston
7 Cylinder barrel
8 Sealing band

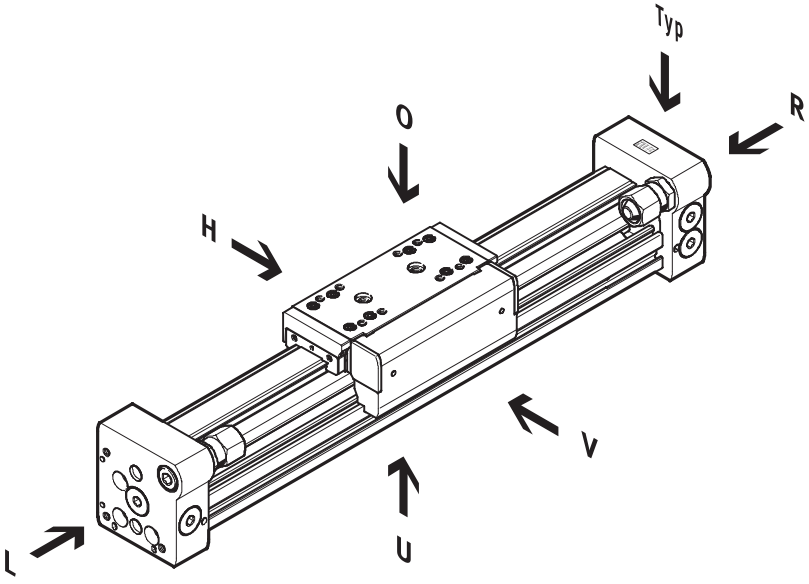
2.2 Types and part numbers

Type	Part number
DGC-8-...-KF	530906
DGC-12-...-KF	530907
DGC-18-...-KF	532446
DGC-25-...-KF	532447
DGC-32-...-KF	532448
DGC-40-...-KF	532449
DGC-50-...-KF	532450
DGC-63-...-KF	532451

The complete overview of features, accessories, type codes, technical data and dimensions of the DGC linear drives can be found in the product catalogue or on the Festo website (➔www.festo.com).

2.3 Orientation designations

This illustration gives you an overview of the orientation designations of the linear drive using the example of a DGC-25-...-KF.



Type = product labelling)
O = top
U = bottom
R = right
L = left
V = front
H = rear

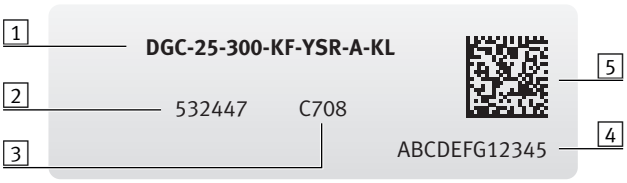
2.4 Type code

The precise features of the linear drive can be determined with the help of the product labelling on the linear drive. The order code describes the features of the linear drive, separated by a hyphen “-”.

Example 1:

1 Type designation
2 Serial number
3 Part number

Example 2:



1 Order code
2 Part number
3 Serial number
4 Product Key
5 Product Key Code
Data Matrix Barcode
(http://pk.festo.com/ + Product Key)

The order code on the product labelling provides the following information:

DGC	Linear drive type DGC
25	Piston diameter 25 mm
300	Stroke 300 mm
KF	Recirculating ball bearing guide of the slide module
YSR	Linear, self-adjusting shock absorber
A	Position sensing by magnetic piston
KL	Additional slide on left

A list and description of all possible equipment features of the linear drive can be found on the data sheet. It is available on the Festo website (➔ www.festo.com).

3 Components list

Linear drives type DGC-18 / 25 / 32 / 40 / 50 / 63-KF have been supplied in various different product series. The table below gives an overview of the production periods of the individual product series.

Type	from series	to series	Spare parts and parts list
DGC-8-...-KF	all series		➔ Chapter 3.1 on page 12
DGC-12-...-KF	all series		➔ Chapter 3.1 on page 12
DGC-18-...-KF		XN November 2009	➔ Chapter 3.2 on page 14
DGC-18-...-KF (-DL) / (-H1)	XD December 2009	AN November 2010	➔ Chapter 3.3 on page 16
DGC-18-...-KF (-DL) / (-H1)	AD December 2010		➔ Chapter 3.3 on page 16
DGC-18-...-KF-GP		XN November 2009	➔ Chapter 3.4 on page 18
DGC-18-...-KF-GP (-DL)	XD December 2009	AN November 2010	➔ Chapter 3.5 on page 20
DGC-18-...-KF-GP (-DL)	AD December 2010		➔ Chapter 3.5 on page 20
DGC-25-...-KF		X7 July 2009	➔ Chapter 3.2 on page 14
DGC-25-...-KF (-DL) / (-H1)	X8 August 2009		➔ Chapter 3.3 on page 16
DGC-25-...-KF-C (-DL) / (-H1)	X8 August 2009 + all series		➔ Chapter 3.3 on page 16
DGC-25-...-KF-GP		X7 July 2009	➔ Chapter 3.4 on page 18
DGC-25-...-KF-GP (-DL)	X8 August 2009		➔ Chapter 3.5 on page 20
DGC-32-...-KF		WD December 2008	➔ Chapter 3.2 on page 14
DGC-32-...-KF (-DL)	X1 January 2009	A9 September 2010	➔ Chapter 3.3 on page 16
DGC-32-...-KF (-DL) / (-H1)	AO October 2010		➔ Chapter 3.3 on page 16
DGC-32-...-KF-C (-DL) / (-H1)	AO October 2010		➔ Chapter 3.3 on page 16
DGC-32-...-KF-GP		WD December 2008	➔ Chapter 3.4 on page 18
DGC-32-...-KF-GP (-DL)	X1 January 2009	A9 September 2010	➔ Chapter 3.5 on page 20
DGC-32-...-KF-GP (-DL)	AO October 2010		➔ Chapter 3.5 on page 20
DGC-40-...-KF		X9 September 2009	➔ Chapter 3.2 on page 14
DGC-40-...-KF (-DL)	XO October 09	A5 May 2010	➔ Chapter 3.3 on page 16
DGC-40-...-KF (-DL) / (-H1)	A6 June 2010		➔ Chapter 3.3 on page 16
DGC-40-...-KF-C (-DL) / (-H1)	A6 June 2010		➔ Chapter 3.3 on page 16
DGC-40-...-KF-GP		X9 September 09	➔ Chapter 3.4 on page 18
DGC-40-...-KF-GP (-DL)	XO October 2009	A5 May 2010	➔ Chapter 3.5 on page 20
DGC-40-...-KF-GP (-DL)	A6 June 2010		➔ Chapter 3.5 on page 20
DGC-50-...-KF (-DL)		B4 April 2011	➔ Chapter 3.6 on page 22
DGC-50-...-KF (-DL) / (-H1)	B5 May 2011 + all series		➔ Chapter 3.7 on page 24
DGC-63-...-KF (-DL)		B8 August 2011	➔ Chapter 3.6 on page 22
DGC-63-...-KF (-DL) / (-H1)	B9 September 2011 + all series		➔ Chapter 3.7 on page 24
DGC-63-...-KF-C (-DL) / (-H1)	B9 September 2011 + all series		➔ Chapter 3.7 on page 24

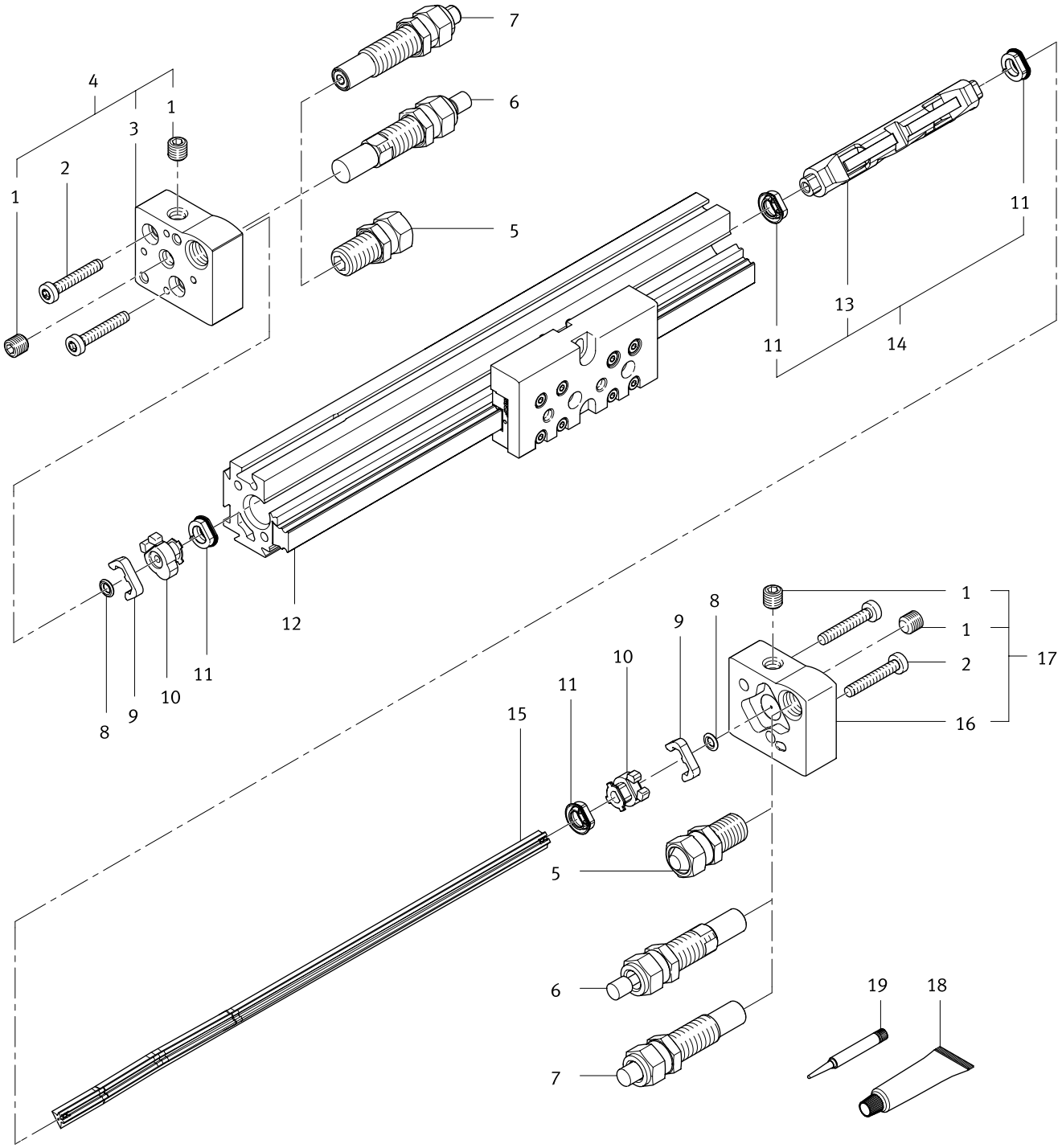
The year and month of manufacture are noted in the product labelling of the linear drive. These data can be used to find the appropriate parts list in the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).

The parts lists in the online spare parts catalogue on the Festo website show precise assignment of no longer available spare parts to the spare parts in the current series that replace them (➔ www.festo.com/spareparts).

This ensures that linear drives from earlier series can still be repaired.

These series may also be mixed. Before each repair, the parts lists in the online spare parts catalogue on the Festo website must be used to determine the precise assignment of spare parts that are no longer available to the spare parts in the current series that replace them (➔ www.festo.com/spareparts).

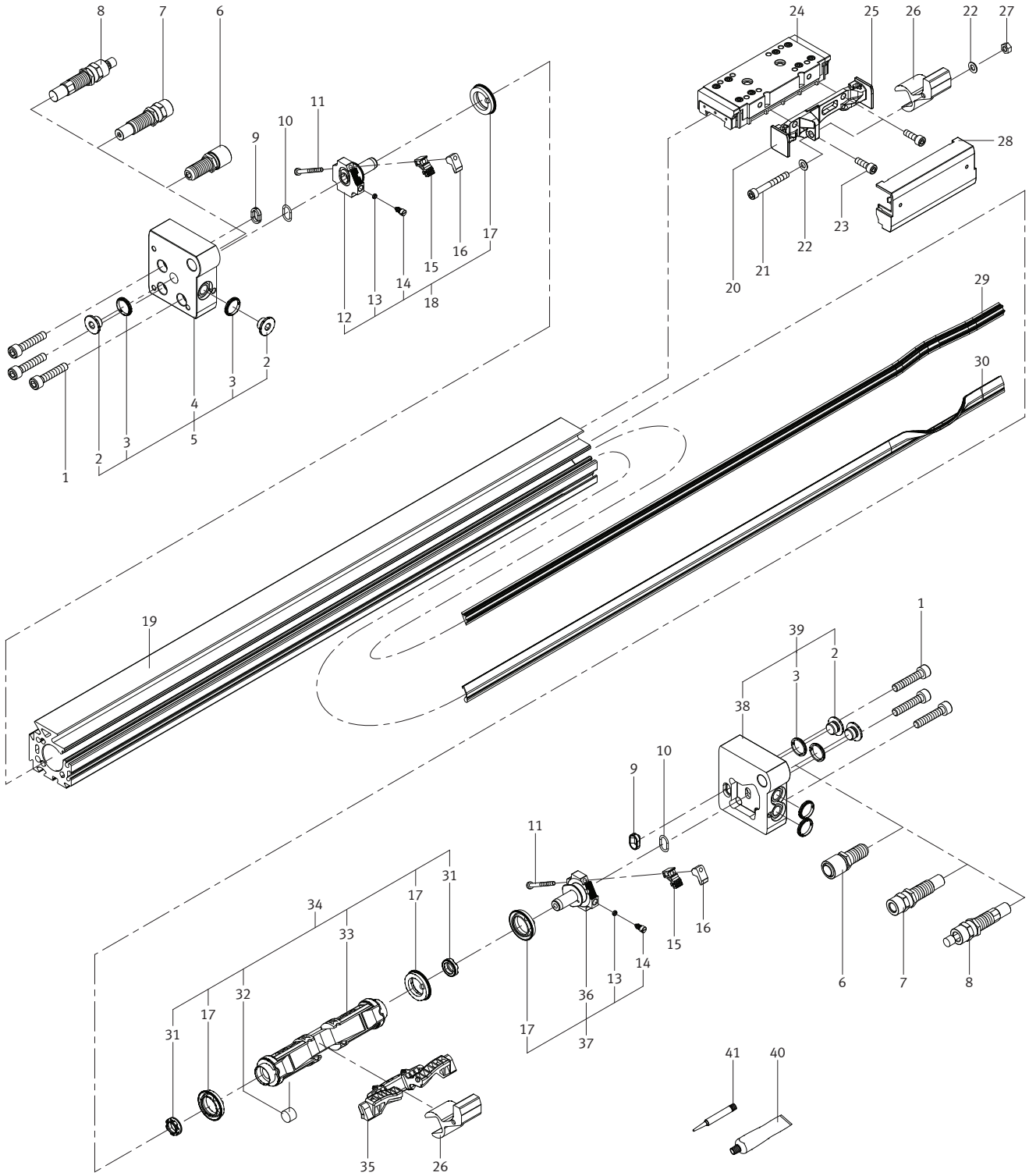
3.1 DGC-8 / 12-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-8-...-KF	DGC-12-...-KF
Product series		all series	all series
Item	Designation	Type	Type
1	Grub screw	DIN 913-M5×5-45H	DIN 913-M5×5-45H
2	Self-tapping screw	TP2-WN180-M3×18-10.9	M5×20-10.9
3	End cap		
4	End cap module		
5	Buffer cushioning element		
6	Shock absorber	YSRW	YSRW
7	Shock absorber module	YSRT	YSRT
8	O-ring	B-3×1-N-NBR75	B-3×2-N-NBR70
9	Clip		
10	Buffer		
11	Piston seal		
12	Cylinder barrel		
13	Piston		
14	Piston module		
15	Sealing band		
16	End cap		
17	End cap module		
18	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free
19	Screw locking agent	LOCTITE 222	LOCTITE 222

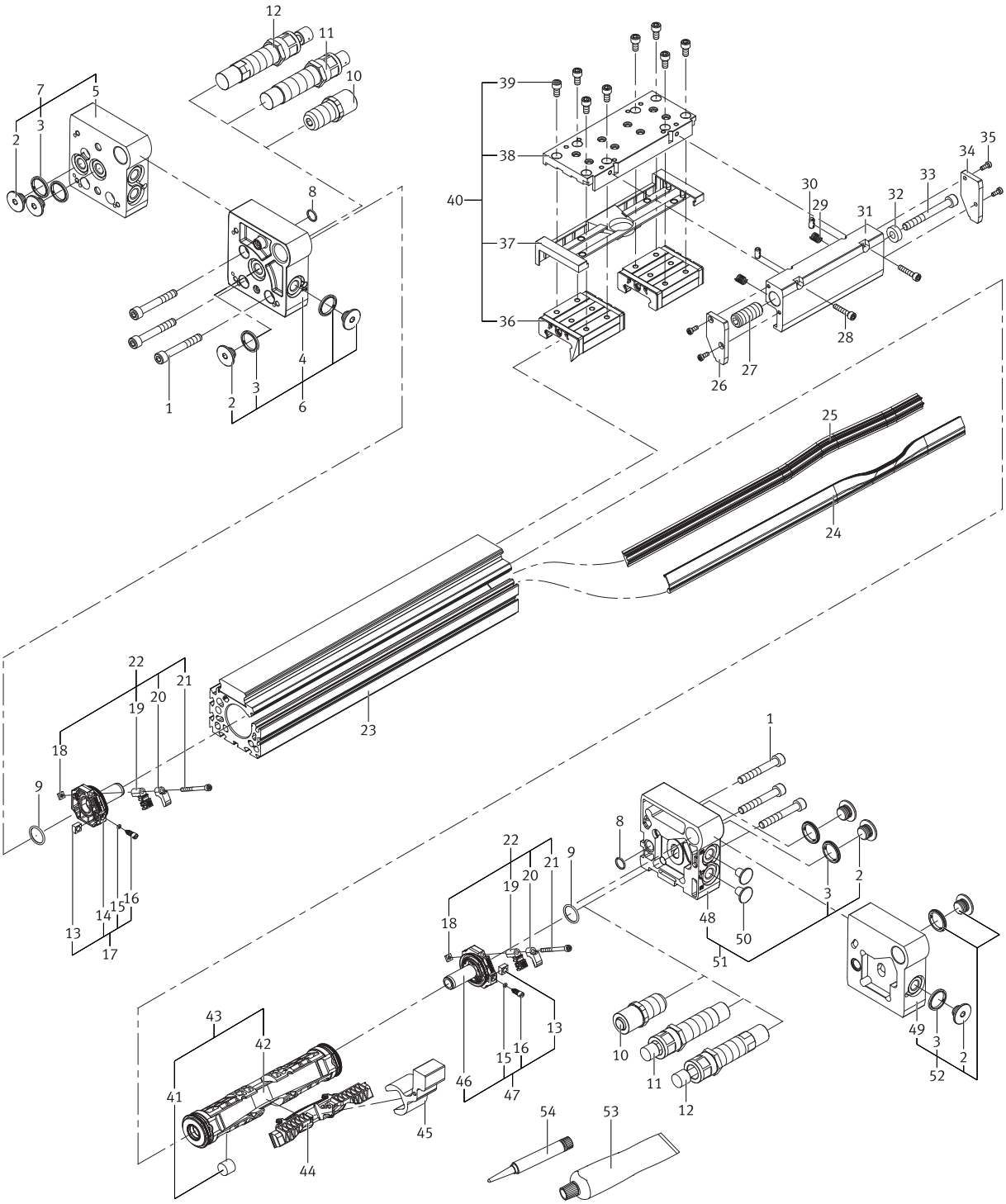
3.2 DGC-18 / 25 / 32 / 40-...-KF



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-18-...-KF	DGC-25-...-KF	DGC-32-...-KF	DGC-40-...-KF
Product series		to XN	to X7	to LFX	to X9
Item	Designation	Type	Type	Type	Type
1	Self-tapping screw	M5×20-10.9	DIN 7500-E-M6×30-A4-70	M8×45-10.9	M8×45-10.9
2	Grub screw or plug screw	Grub screw DIN 913-M5×5-45H	Plug screw	Plug screw	Plug screw
3	Sealing ring	**Component not present**	OL-1/4	OL-1/4	OL-1/2
4	End cap, left				
5	End cap module, left				
6	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)
7	Shock absorber module	YSRT	YSRT	YSR	YSR
8	Shock absorber module	YSRW	YSRW	YSRW	YSRW
9	Sealing ring				B-11.5×1.5-N-NBR75
10	O-ring	DGPI-32-PPVA-B	B-11×1.3-N-NBR75	B-16×2.5-N-NBR70	B-17×2-N-NBR75
11	Flat head screw or socket head screw	DIN 920-M3×20-4.8	DIN 84-M3×28-4.8	DIN 84-M3×30-5.8	DIN 912-M4×40-10.9
12	Buffer sleeve				
13	O-ring	B-1×0.6-N-NBR70	2.2×1-S-NBR75	2.2×1-S-NBR75	B-3×1.2-N-NBR70
14	Regulating screw				
15	Clamp, sealing band				
16	Clamp, cover band				
17	Piston seal	PPVA	PPVA	PPVA	PPVA
18	Buffer module, left				
19	Cylinder barrel				
20	Stop, right				
21	Socket head screw	DIN 912-M4×35-10.9	DIN 912-M5×40-10.9	DIN 912-M5×40-10.9	DIN 912-M5×40-10.9
22	Washer	DIN 433-4.3	DIN 125-B-5.3	DIN 125-B-5.3	DIN 125-B-5.3
23	Socket head screw	DIN 912-M4×8-8.8	DIN 912-M5×12-10.9	DIN 6912-M5×12-8.8	DIN 912-M5×16-10.9
24	Guide				
25	Stop, left				
26	Couplings				
27	Hex nut	DIN 934-M4-6AU	DIN 934-M5-6	DIN 934-M5-6	DIN 934-M5-6
28	Cover				
29	Sealing band				
30	Cover band				
31	Cushioning seal				
32	Magnet	6.5×5.5	10.0×7.0	10.0×7.0	15.0×10.0
33	Piston module				
34	Piston module				
35	Belt reversal				
36	Buffer module, right				
37	Buffer module, right				
38	Connection cap, right				
39	End cap module, right				
40	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free
41	Screw locking agent	LOCTITE 243	LOCTITE 243	LOCTITE 243	LOCTITE 243

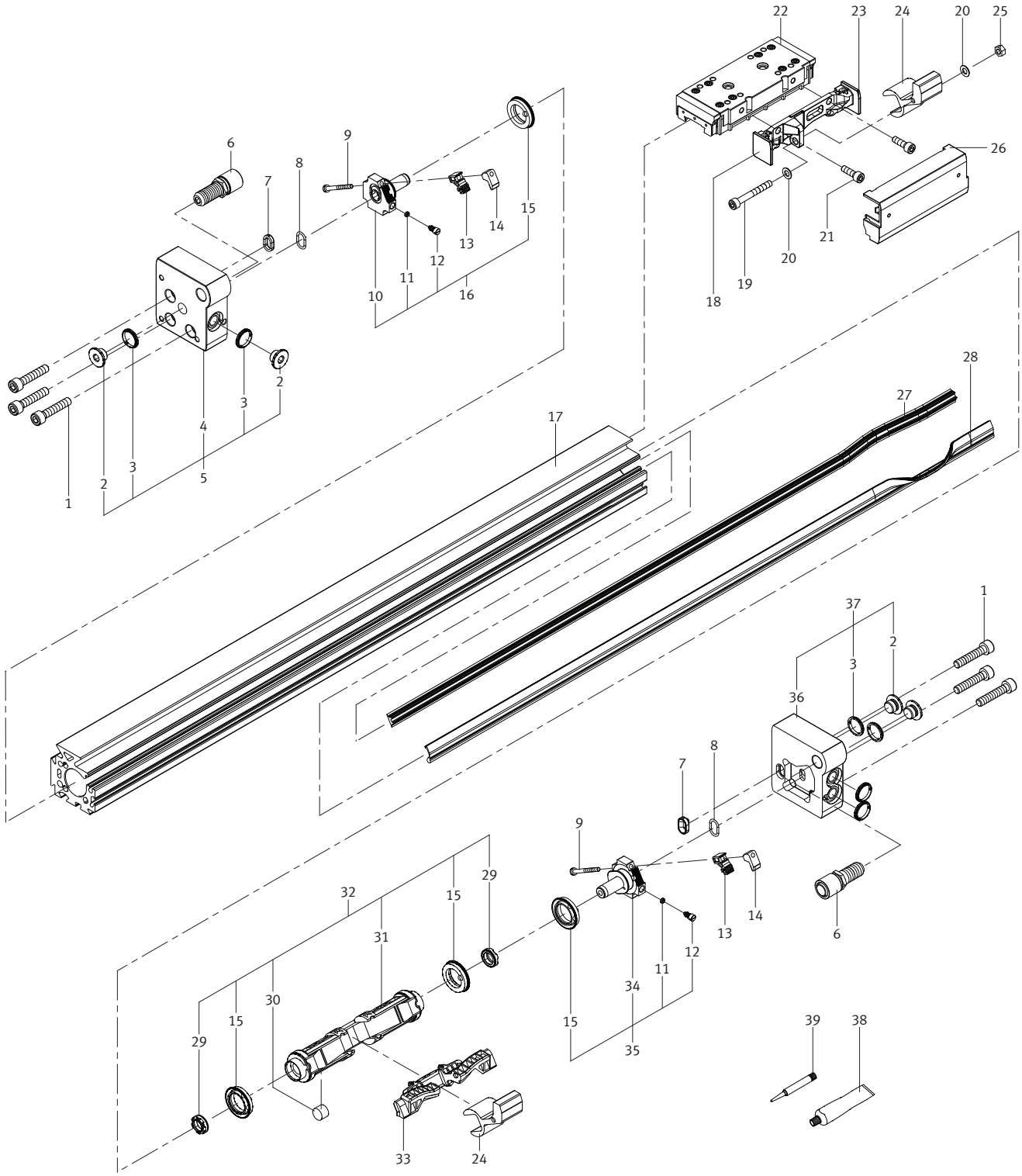
3.3 DGC-18 / 25 / 32 / 40-...-KF (-DL) / (-H1) and DGC-25 / 32 / 40-...-KF-C (-DL) / (-H1)



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-18-...-KF (-DL) / (-H1)	DGC-25-...-KF (-DL) / (-H1)	DGC-32-...-KF (-DL) / (-H1)	DGC-40-...-KF (-DL) / (-H1)
			DGC-25-...-KF-C (-DL) / (-H1)	DGC-32-...-KF-C (-DL) / (-H1)	DGC-40-...-KF-C (-DL) / (-H1)
Product series		from XD to AN and from AD	X8 or higher	from X1 to A9 and from AO	from XO to A5 and from A6
Item	Designation	Type	Type	Type	Type
1	Self-tapping screw	M5×20-10.9	M6×30-10.9	M8×55-10.9	M8×55-10.9
2	Grub screw or plug screw	Grub screw DIN 913-M5×5-45H	Plug screw	Plug screw	Plug screw
3	Sealing ring	**Component not present**	OL-1/4	OL-1/4	OL-1/2
4	End cap, left				
5	Connection cap, left DL				
6	End cap module, left				
7	End cap module, left DL				
8	Sealing ring / O-ring		B-11×1.3-N-NBR75	B-16×2.5-N-NBR70	B-11.5×1.5-N-NBR75
9	O-ring	B-9.5×1.5-N-NBR70	B-12×1.5-N-NBR70	B-12×2-N-NBR70	B-19×2-N-NBR70
10	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)
11	Shock absorber module	YSRW	YSR	YSR	YSR
12	Shock absorber module	YSRT	YSRW	YSRW	YSRW
13	Buffer sleeve				
14	Buffer module, left				
15	O-ring	B-1×0.6-N-NBR70	2.2×1-S-NBR75	2.2×1-S-NBR75	B-3×1.2-N-NBR70
16	Regulating screw				
17	Buffer module, left				
18	Square nut	DIN 562-M3	DIN 562-M3	DIN 562-M3	DIN 562-M4
19	Clamp, sealing band				
20	Clamp, cover band				
21	Socket head screw	DIN 7984-M3×23-8.8	DIN 7984-M3×30-8.8	DIN 912-M3×35-8.8	DIN 912-M4×45-8.8
22	Clamping component ET				
23	Cylinder barrel				
24	Cover band				
25	Sealing band				
26	Stop, left				
27	Bolt	M10×1×25	M10×1×25	M10×1×25	SLT-25-...-P-A
28	Socket head screw	DIN 912-M5×16-10.9	DIN 912-M5×20-10.9	DIN 912-M5×20-10.9	DIN 912-M5×25-10.9
29	Compression spring	**Component not present**	**Component not present**	**Component not present**	RW-5 / 3E-4.0
30	Spring pin	SG 5×10	SG 6×12	SG 6×12	SG 6×12
31	Connection				
32	Washer				
33	Socket head screw	DIN 912-M5×35-10.9	DIN 912-M5×40-10.9	DIN 912-M5×50-12.9	DIN 912-M8×70-10.9
34	Stop, right				
35	Socket head screw	DIN 912-M3×8-12.9	DIN 6912-M4×10-8.8	DIN 6912-M4×10-8.8	DIN 7991-M4×12-8.8
36	Roller carriage				
37	Cover				
38	Slide				
39	Socket head screw	DIN 912-M3×8-12.9	DIN 912-M3×10-12.9	DIN 912-M4×8-12.9	DIN 912-M6×12-12.9
40	Slide module				
41	Magnet	6.5×5.5	10.0×7.0	10.0×7.0	15.0×10.0
42	Piston module				
43	Piston module				
44	Belt reversal				
45	Couplings				
46	Buffer module, right				
47	Buffer module, right				
48	Connection cap				
49	End cap, right DL				
50	Sealing plug	LLM5, M5	**Component not present**	**Component not present**	**Component not present**
51	End cap module, right				
52	End cap module, right DL				
53	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free
	Lubricating grease H1	LUB-E1, silicone-free	LUB-E1, silicone-free	LUB-E1, silicone-free	LUB-E1, silicone-free
54	Screw locking agent	LOCTITE 243	LOCTITE 243	LOCTITE 243	LOCTITE 243

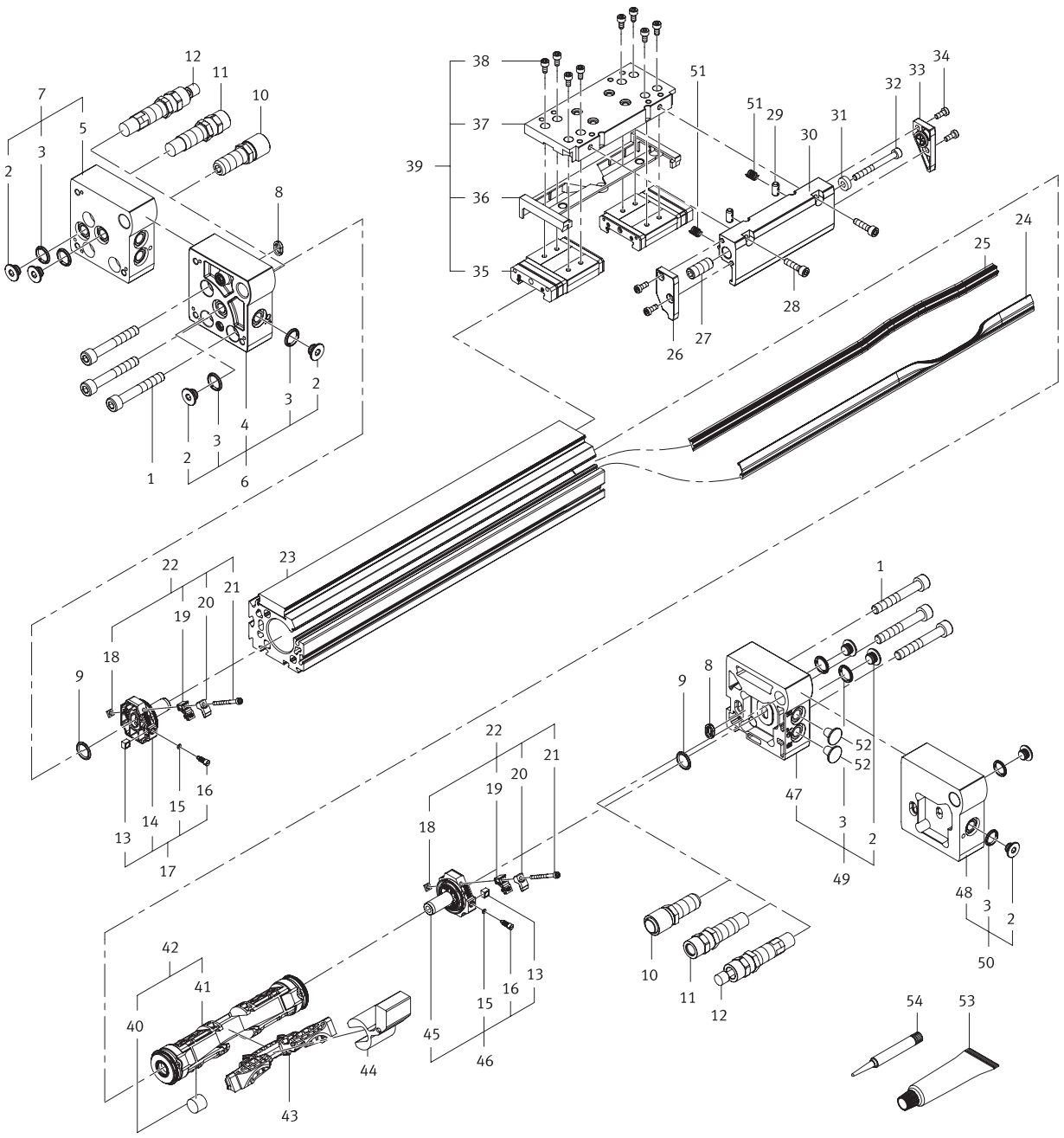
3.4 DGC-18 / 25 / 32 / 40-...-KF-GP



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-18-...-KF-GP	DGC-25-...-KF-GP	DGC-32-...-KF-GP	DGC-40-...-KF-GP
Product series		to XN	to X7	to LFX	to X9
Item	Designation	Type	Type	Type	Type
1	Self-tapping screw	M5×20-10.9	DIN 7500-E-M6×30-A4-70	M8×45-10.9	M8×45-10.9
2	Grub screw or plug screw	Grub screw DIN 913-M5×5-45H	Plug screw	Plug screw	Plug screw
3	Sealing ring	**Component not present**	OL-1/4	OL-1/4	OL-1/2
4	End cap, left				
5	End cap module, left				
6	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)
7	Sealing ring				B-11.5×1.5-N-NBR75
8	Sealing ring or O-ring	PPVA-B	B-11×1.3-N-NBR75	B-16×2.5-N-NBR70	B-17×2-N-NBR75
9	Flat head screw or socket head screw	DIN 920-M3×20-4.8	DIN 84-M3×28-4.8	DIN 84-M3×30-5.8	DIN 912-M4×40-10.9
10	Buffer sleeve				
11	O-ring	B-1×0.6-N-NBR70	2.2×1-S-NBR75	2.2×1-S-NBR75	B-3×1.2-N-NBR70
12	Regulating screw				
13	Clamp, sealing band				
14	Clamp, cover band				
15	Piston seal	PPVA	PPVA	PPVA	PPVA
16	Buffer module, left				
17	Cylinder barrel				
18	Stop, left				
19	Socket head screw	DIN 912-M4×35-10.9	DIN 912-M5×40-10.9	DIN 912-M5×40-10.9	DIN 912-M5×40-10.9
20	Washer	DIN 433-4.3	DIN 125-B-5.3	DIN 125-B-5.3	DIN 125-B-5.3
21	Socket head screw	DIN 912-M4×8-8.8	DIN 912-M5×12-10.9	DIN 6912-M5×12-8.8	DIN 912-M5×16-10.9
22	Guide				
23	Stop, right				
24	Couplings				
25	Hex nut	DIN 934-M4-6AU	DIN 934-M5-6	DIN 934-M5-6	DIN 934-M5-6
26	Cover				
27	Sealing band				
28	Cover band				
29	Cushioning seal				
30	Magnet	6.5×5.5	10.0×7.0	10.0×7.0	15.0×10.0
31	Piston module				
32	Piston module				
33	Belt reversal				
34	Buffer module, right				
35	Buffer module, right				
36	Connection cap, right				
37	End cap module, right				
38	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free
39	Screw locking agent	LOCTITE 243	LOCTITE 243	LOCTITE 243	LOCTITE 243

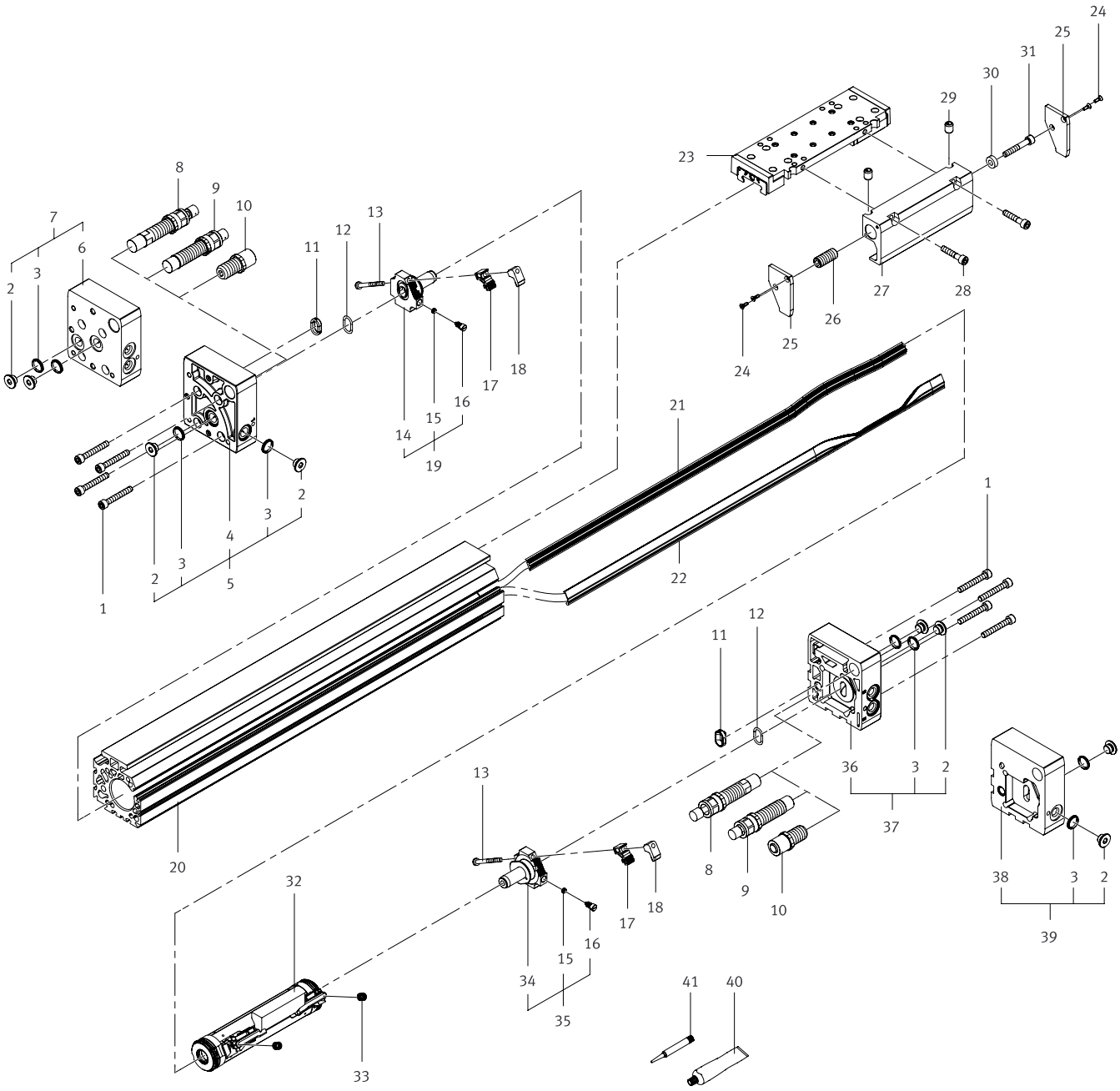
3.5 DGC-18 / 25 / 32 / 40-...-KF-GP (-DL)



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-18-...-KF-GP(-DL)	DGC-25-...-KF-GP (-DL)	DGC-32-...-KF-GP (-DL)	DGC-40-...-KF-GP (-DL)
Product series		from XD to AN and from AD	X8 or higher	from X1 to A9 and from AO	from XO to A5 and from A6
Item	Designation	Type	Type	Type	Type
1	Self-tapping screw	M5×20-10.9	M6×30-10.9	M8×55-10.9	M8×55-10.9
2	Grub screw or plug screw	Grub screw DIN 913-M5×5-45H	Plug screw	Plug screw	Plug screw
3	Sealing ring	**Component not present**	OL-1/4	OL-1/4	OL-1/2
4	End cap, left				
5	Connection cap, left DL				
6	End cap module, left				
7	End cap module, left DL				
8	Sealing ring / O-ring or sealing plug	Sealing plug	O-ring B-11×1.3-N-NBR75	Sealing plug	O-ring B-11.5×1.5-N-NBR75
9	O-ring	B-9.5×1.5-N-NBR70	B-12×1.5-N-NBR70	B-12×2-N-NBR70	B-19×2-N-NBR70
10	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)	PPV (P cushioning installed)
11	Shock absorber module	**Component not present**	**Component not present**	YSR	**Component not present**
12	Shock absorber module	**Component not present**	**Component not present**	YSRW	**Component not present**
13	Buffer sleeve				
14	Buffer module, left				
15	O-ring	B-1×0.6-N-NBR70	2.2×1-S-NBR75	2.2×1-S-NBR75	B-3×1.2-N-NBR70
16	Regulating screw				
17	Buffer module				
18	Square nut	DIN 562-M3	DIN 562-M3	DIN 562-M3	DIN 562-M4
19	Clamp, sealing band				
20	Clamp, cover band				
21	Socket head screw	DIN 7984-M3×23-8.8	DIN 7984-M3×30-8.8	DIN 912-M3×35-8.8	DIN 912-M4×45-8.8
22	Clamping component ET				
23	Cylinder barrel				
24	Cover band				
25	Sealing band				
26	Stop, left				
27	Bolt	M10x1x25	M10×1×25	M10×1×25	SLT-25-...-P-A
28	Socket head screw	DIN 912-M5×16-10.9	DIN 912-M5×20-10.9	DIN 912-M5×20-10.9	DIN 912-M5×25-10.9
29	Spring pin	SG 5x10	SG 6×12	SG 6×12	SG 6×12
30	Connection				
31	Washer				
32	Socket head screw	DIN 912-M5×35-10.9	DIN 912-M5×40-10.9	DIN 912-M5×50-12.9	DIN 912-M8×70-10.9
33	Stop, right				
34	Socket head screw	DIN 912-M3×8-12.9	DIN 6912-M4×10-8.8	DIN 6912-M4×10-8.8	DIN 7991-M4×12-8.8
35	Roller carriage				
36	Cover				
37	Slide				
38	Socket head screw	DIN 912-M3×8-12.9	DIN 912-M3×10-12.9	DIN 912-M4×8-12.9	DIN 912-M6×12-12.9
39	Slide module				
40	Magnet	6.5×5.5	10.0×7.0	10.0×7.0	15.0×10.0
41	Piston module				
42	Piston module				
43	Belt reversal				
44	Couplings				
45	Buffer module, right				
46	Buffer module, right				
47	Connection cap				
48	End cap, right DL				
49	End cap module, right				
50	End cap module, right DL				
51	Compression spring	**Component not present**	**Component not present**	**Component not present**	RW-5 / 3E-4.0
52	Sealing plug	LLM5, M5	**Component not present**	**Component not present**	**Component not present**
53	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free	LUB-KC1, silicone-free
54	Screw locking agent	LOCTITE 243	LOCTITE 243	LOCTITE 243	LOCTITE 243

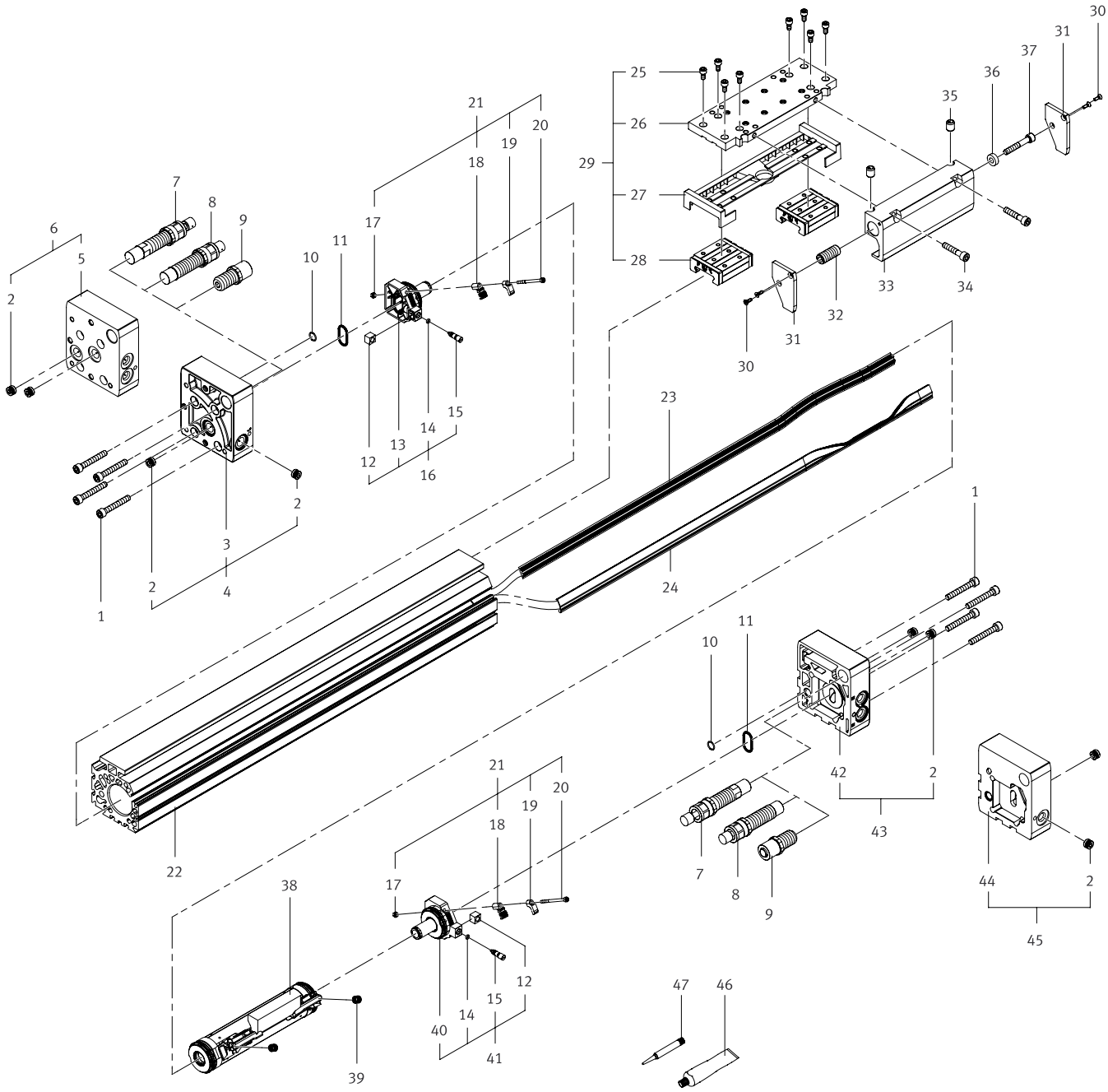
3.6 DGC-50 / 63-...-KF (-DL) and DGC-63-...-KF-C (-DL)



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-50-...-KF (-DL)	DGC-63-...-KF (-DL)
Product series		to B4	to B8
Item	Designation	Type	Type
1	Self-tapping screw	M8×55-10.9	M8×55-10.9
2	Plug screw	Plug screws with separate sealing ring are no longer available for this size and are replaced by plug screws with integrated sealing ring.	G 3/8
3	Sealing ring	OL-1/2	OL-M22
4	End cap		
5	End cap module		
6	Connection cap		
7	End cap module		
8	Shock absorber	YSRW	YSRW
9	Shock absorber module	YSR	YSR
10	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)
11	O-ring	B-11.5×1.5-N-NBR75, ISO3601	B-11.5×1.5-N-NBR75
12	O-ring	B-32×2.5-N-NBR70, ISO3601	B-42×3-N-NBR70, ISO3601
13	Socket head screw	DIN 912-M4×40-10.9	DIN 912-M4×40-10.9
14	Buffer module		
15	O-ring	4×1.5-N-NBR70	B-6×1.5-N-NBR70
16	Regulating screw		
17	Sealing band clamp		
18	Cover band clamp		DIN 934-M4-10
19	Buffer module		
20	Cylinder barrel		
21	Sealing band		
22	Cover band		
23	Slide module		
24	Socket head screw	DIN 6912-M4×12-8.8	**Component not present**
	Countersunk screw	**Component not present**	DIN 7991-M4×12-8.8
25	Stop		
26	Bolt	SLT- 25-...-P-A	SLT- 25-...-P-A8
27	Connection		
28	Socket head screw	DIN 912-M8×40-10.9	DIN 912-M8×45-10.9
29	Spring pin	SG 12×15	SG 12×15
30	Washer		
31	Socket head screw	DIN 912-M8×50-10.9	DIN 912-M8×50-10.9
32	Piston module		
33	Compression spring		
34	Buffer module		
35	Buffer module		
36	Connection cap		
37	End cap module		
38	End cap		
39	End cap module		
40	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free
41	Screw locking agent	LOCTITE 243	LOCTITE 243

3.7 DGC-50 / 63-...-KF (-DL) / (-H1) and DGC-63-...-KF-C (-DL) / (-H1)



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts).
Components not present are marked in the individual sizes of the linear drives.

Linear drive		DGC-50-...-KF (-DL) / (-H1)	DGC-63-...-KF (-DL) / (-H1)
			DGC-63-...-KF-C (-DL) / (-H1)
Product series		B5 or higher	B9 or higher
Item	Designation	Type	Type
1	Self-tapping screw	M8×55-10.9	M8×55-10.9
2	Plug screw	G 1/4	G 3/8
3	End cap		
4	End cap module		
5	Connection cap		
6	End cap module		
7	Shock absorber	YSRW	YSRW
8	Shock absorber module	YSR	YSR
9	Cushioning module	PPV (P cushioning installed)	PPV (P cushioning installed)
10	O-ring	B-11.5×1.5-N-NBR75, ISO 3601	B-11.5×1.5-N-NBR75, ISO 3601
11	Seal		
12	Buffer sleeve		
13	Buffer module		
14	O-ring	4×1.5-N-NBR70	B-6×1.5-N-NBR70, ISO 3601
15	Regulating screw		
16	Buffer module		
17	Hex nut	DIN 934-M4-10	DIN 934-M4-10
18	Clamping		
19	Clamping		
20	Socket head screw	DIN 912, M4×60-8.8	DIN 912, M4×65-8.8
21	Clamping component		
22	Cylinder barrel		
23	Sealing band		
24	Cover band		
25	Socket head screw	DIN 912-M6×12-10.9	DIN 912-M8×14-8.8
26	Slide		
27	Cover		
28	Roller carriage		
29	Slide module		
30	Countersunk screw	DIN 7991, M4×12-8.8	DIN 7991-M4×12-8.8
31	Stop		
32	Bolt	SLT-25-...-P-A	SLT-25-...-P-A
33	Connection		
34	Socket head screw	DIN 912-M8×40-10.9	DIN 912-M8×45-10.9
35	Spring pin	SG 12×15	SG 12×15
36	Washer		
37	Socket head screw	DIN 912-M8×50-10.9	DIN 912-M8×50-10.9
38	Piston module		
39	Compression spring	VL-5/2-4.0	VL-5/2-4.0
40	Buffer module		
41	Buffer module		
42	Connection cap		
43	End cap module		
44	End cap		
45	End cap module		
46	Lubricating grease	LUB-KC1, silicone-free	LUB-KC1, silicone-free
	Lubricating grease H1	LUB-E1, silicone-free	LUB-E1, silicone-free
47	Screw locking agent	LOCTITE 243	LOCTITE 243

4 Repair steps

This chapter describes how to completely dismantle the linear drives and the individual components or assemblies within self-contained sub-chapters. The linear drive does not need to be completely dismantled for every fault in order to replace faulty components. The complete dismantling process described here is designed to provide a comprehensive overview of the components and how they are accessed in case they need to be replaced. The cause of a defect must therefore always be determined before starting a repair.

The repair should preferably be carried out on a stable and flat work surface with storage for small parts.

Before dismantling the linear drive, it is imperative that the cause of the failure is investigated to prevent, for example, repeated and premature failure. A linear drive which has been used as intended will not normally exhibit any premature signs of failure.

This investigation is not necessary in the case of non-premature failure (fatigue time). However, the condition of the slide module (e.g. noticeable bearing clearance, faulty sliding performance and increased sliding noises, etc.), of the piston with all components in the piston chamber (e.g. piston seals, sealing band, cover band, covers) and all sealing rings should also always be assessed. In case of uncertainty, we recommend replacing all the components mentioned to rule out reciprocal effects during later operation.

In the event of premature failure of the linear drive, the operating conditions should be examined precisely.

The following possibilities should be considered, among other things:

– **Overloading**

  In case of overloading, the application parameters (mass, speed, operating pressure, operating medium) should be adjusted accordingly.

– **Ambient conditions / material resistance**
  - Check whether the ambient temperature is within the permissible range.
  - Check the chemical and physical ambient conditions for harmful substances, such as dust, abrasive particles, cooling lubricants, solvents, ozone, radiation, water-soluble substances, greases and oils, etc.

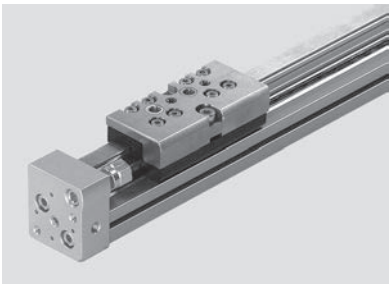
The following chapters describe how to dismantle and assemble the linear drives, arranged by size:

– Linear drives DGC-8 / 12-...-KF (➔ Chapter 4.1 on page 27).
– Linear drives DGC-18 / 25 / 32 / 40-...-KF (➔ Chapter 4.2 on page 32).
– Linear drives DGC-50 / 63-...-KF (➔ Chapter 4.3 on page 55).

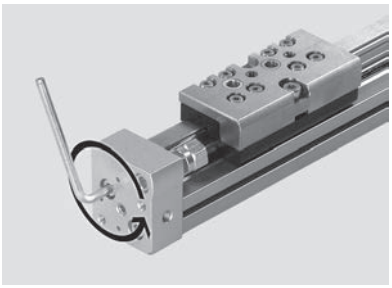
4.1 Linear drives DGC-8 / 12-...-KF

4.1.1 Dismantling the linear drive

1. Place the linear drive on the work surface with the slide module facing upwards.

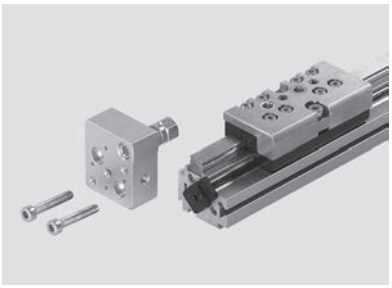


2. Unscrew the two self-tapping screws from the connection / end cap.



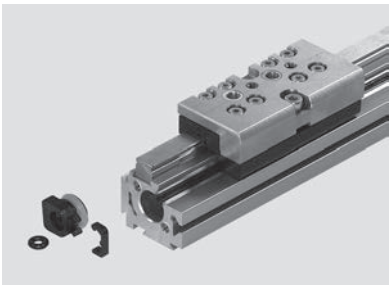
The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

3. Remove the connection cap and end cap from the cylinder barrel.



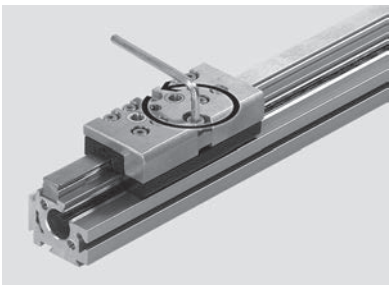
Dismantling and repair of the connection / end caps is described in Chapter 4.1.3 on page 31 and Chapter 4.1.4 on page 31.

4. Pull the clips off the buffer.
5. Pull the buffer out of the cylinder barrel.
6. Remove the sealing ring from the buffer.
7. Repeat steps 4 to 6 for the 2nd buffer.

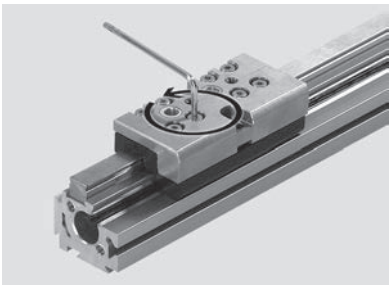


The socket head screw for fastening the coupling is filled with threadlocker. To open the screw the threadlocker has to be removed using appropriate tools.

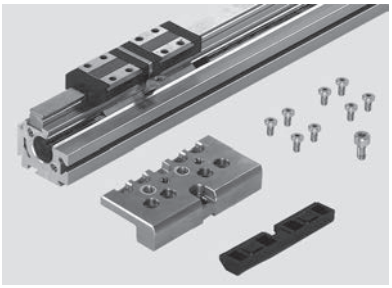
8. Unscrew the socket head screw.



9. Unscrew the eight mounting screws in the slide.



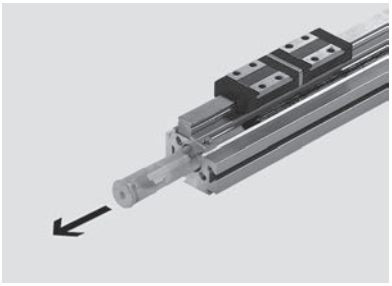
10. Remove the slide from the roller bearing carriage and the coupling from above.
11. Remove the wiper ring.



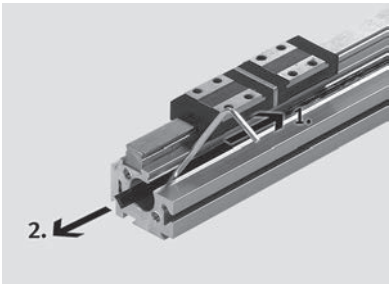
Note

Make sure that the roller bearing carriages do not slide off the roller track, as the roller bearing carriage balls are not secured and will fall out of the guides.

12. Push the piston with the coupling out of the cylinder barrel.



13. Pull the sealing band out of the cylinder barrel.



It may not be possible to pull out the sealing band on long drives. In this case, use a blunt object to push the sealing band into the cylinder barrel and remove it.

4.1.2 Assembling the linear drive

When assembling a linear drive wearing parts, such as the sealing band, seals, buffers, covers, clips and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue using the appropriate part number (dependent on the size of the linear drive) (➔ www.festo.com/spareparts).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined using the type code on the product labelling of the linear drive. With this information you can calculate the necessary length for the sealing band.

Note

Do not bend the sealing band as this may cause damage or tearing and reduce its service life.

Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1[1)]	Grease all round.
Seal, piston	Festo LUB-KC1[1)]	Grease all round.

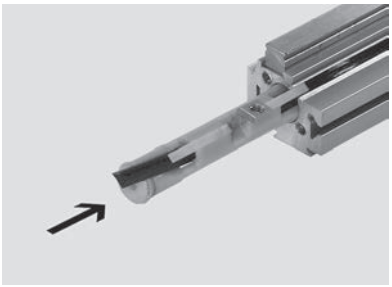
[1)] See the **"Accessories, equipment and tools"** information brochure. It can be found in the online spare parts catalogue on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

1. Grease the sealing band.
2. Grease the piston.
3. Grease the inside of the cylinder barrel.

Note Table "Greasing whilst assembling" with the greasing instructions on page 29.

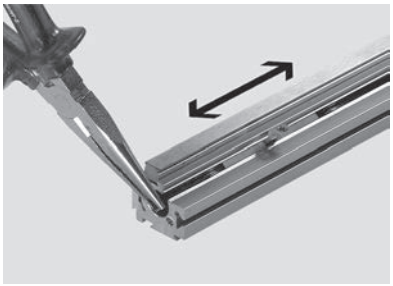
4. Thread the sealing band into the through-hole of the piston.

5. Insert the piston with pushed in coupling and threaded in sealing band completely into the cylinder barrel.
6. The sealing band must lie in the slot of the cylinder barrel.



When inserting the piston, make sure that the magnetic side of the piston sits in the cylinder barrel opposite the cut-outs in the slot for the proximity switches.

7. Use pliers to hold the sealing band tightly.
8. Move the piston up to the other end of the cylinder barrel once to fix the sealing band in the sealing band holder.

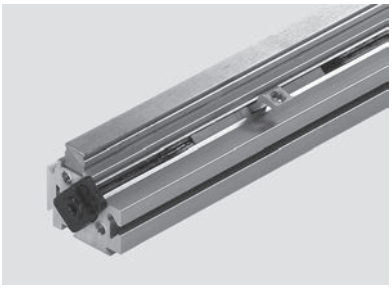


The sealing band is pulled into the cylinder barrel by the draw of the piston. The sealing band must protrude 4 mm beyond the cylinder barrel.

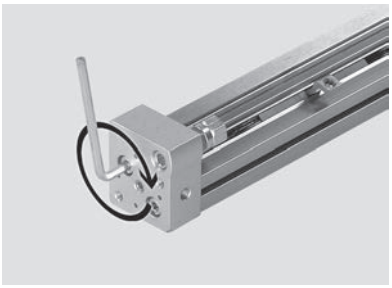
Note

The sealing band must not protrude beyond the buffer. In this case, the connection / end cap cannot close airtight and the function of the linear drive is impaired. The sealing band must be shortened so that it seals off flush with the outer edge of the buffers. However, it is better if it is slightly short of the buffers.

9. Place the buffer on the cylinder barrel.
10. Grease the new sealing ring.
11. Insert the sealing ring into the buffer.
12. Push clips onto the buffer to fix the sealing band.
13. Repeat steps 9 to 12 for the 2nd buffer.

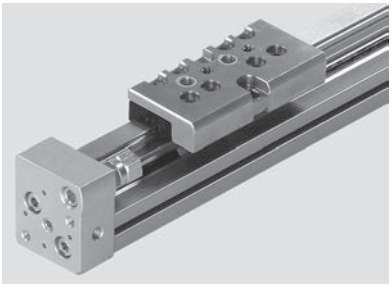


14. Clean the self-tapping screws to remove the screw locking agent.
15. Wet the self-tapping screws with screw locking agent.
16. Place the connection / end cap on the cylinder barrel.
17. Screw the self-tapping screws through the connection / end cap and into the cylinder barrel, so that the connection / end cap can still be moved.
18. Align the rear and bottom edge of the connection / end cap so that it is flush with the cylinder barrel.
19. Tighten the self-tapping screws with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-8-...-KF	2.0 Nm ±20 %
DGC-12-...-KF	3.0 Nm ±20 %

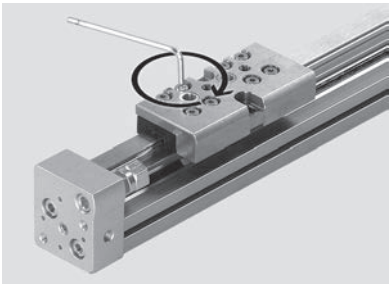
20. Push both roller bearing carriages so that they are as close together as possible.
21. Place the top part of the slide onto the roller bearing carriage.



Note

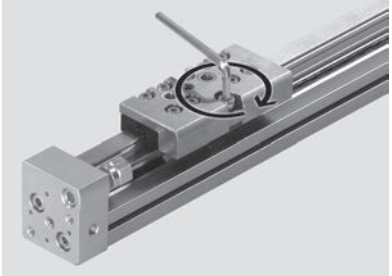
The roller bearing carriage must not be stressed when mounted, as this leads to malfunctions and premature wear of the roller bearing carriage.

22. Clean the mounting screws to remove screw locking fluid.
23. Wet the mounting screws with locking agent.
24. Screw the mounting screws through the top part of the slide in the roller bearing carriage.
25. Tighten the mounting screws with the appropriate tightening torque (see table).



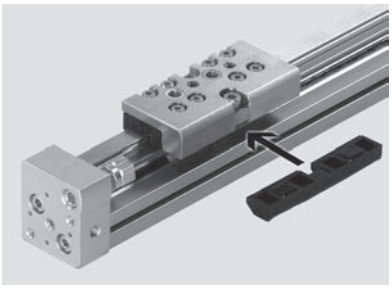
Type	Tightening torque
DGC-8-...-KF	0.4 Nm
DGC-12-...-KF	1.1 Nm

26. Align the coupling with the middle of the slide module.
27. Clean the socket head screw to remove the locking agent.
28. Wet the socket head screw of the coupling with screw locking agent.
29. Screw the socket head screw through the top part of the slide and into the coupling.
30. Tighten the socket head screw with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-8-...-KF	1.4 Nm
DGC-12-...-KF	1.4 Nm

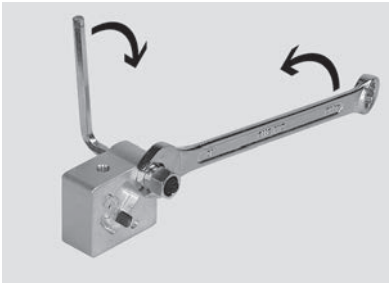
31. Clip in the wiper ring on the side of the slide module.



After the linear drive has been assembled, it must be commissioned as described in the operating instructions. They can be found on the Festo website (➔ www.festo.com).

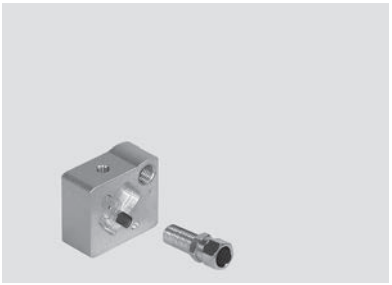
4.1.3 Replacing the cushioning components

1. Undo the lock nuts on the cushioning components.



The cushioning components can be replaced with the connection / end cap installed.

2. Screw the cushioning components out of the connection / end cap.
3. Install the new cushioning components in the reverse order.
4. Tighten the cushioning components with the appropriate tightening torque (see table).



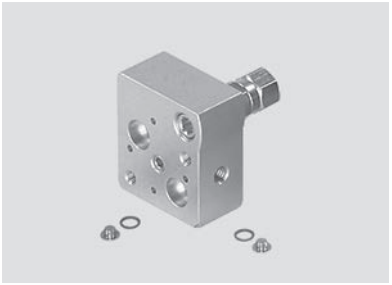
Type	Tightening torque
DGC-8-...-KF	2.0 Nm ±20 %
DGC-12-...-KF	3.0 Nm ±20 %

4.1.4 Mounting or replacing the plugs of the supply ports in the connection / end cap

Plug screws and separate sealing rings are no longer available for these sizes (➔ Chapter 3.1 on page 12) and are replaced by grub screws (➔ Chapter 4.1.4.2 on page 32).

4.1.4.1 Mounting the sealing rings of the supply ports in the connection / end cap

The grub screws can be replaced with the connection / end cap installed.

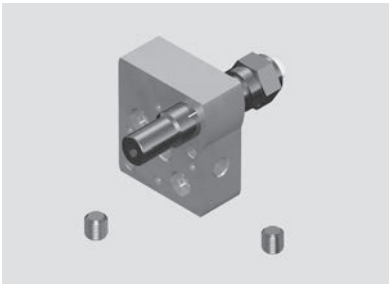


1. Unscrew the plug screws.
2. Remove the sealing rings.
3. Push the new sealing rings onto the plug screws.
4. Tighten the plug screws with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-8-...-KF	5 Nm ±10 %
DGC-12-...-KF	5 Nm ±10 %

4.1.4.2 Replacing the grub screws in the connection / end cap

The grub screws can be replaced with the connection / end cap installed.



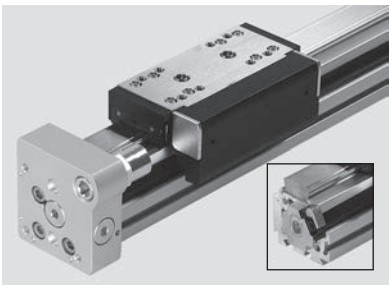
1. Unscrew the grub screws.
2. Clean the grub screws to remove thread locking agent.
3. To shorten the curing time, pretreat the bonding surfaces with LOCTITE 7649 activator.
4. Wet the grub screws with Loctite 222.
5. Screw the grub screws **flush** into the connection / end cap.

4.2 Linear drives DGC-18 / 25 / 32 / 40-...-KF

Different designs of the linear drives DGC-18 / 25 / 32 / 40-...-KF are available on the market; the main differences between the individual designs most important for the repair are listed below:

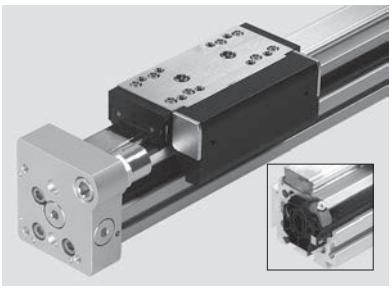
Design 1

Linear drives with milled connection / end cap, aluminium buffer and a slide-piston connection with large polymer cover.



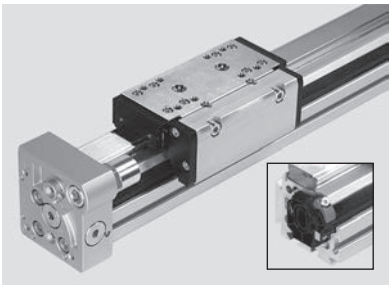
Design 2

Linear drives with milled connection / end cap, polymer buffer and a slide-piston connection with large polymer cover.



Design 3

Linear drives with cast iron connection / end cap, polymer buffer and a modified slide-piston connection.

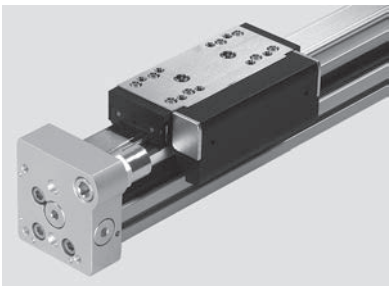


Mixed forms of these designs can also exist. Before each repair, the parts lists of the online spare parts catalogue on the Festo website (➔ www.festo.com/spareparts) must be used to determine the assignment of spare parts that are no longer available to the spare parts of current series that replace them.

4.2.1 Dismantling the linear drive

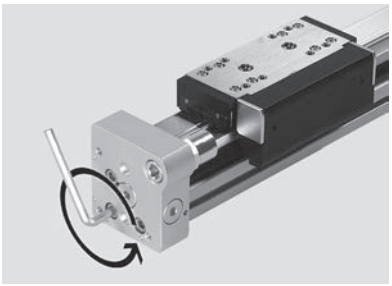
4.2.1.1 Assembling the linear drives of designs 1 and 2

1. Place the linear drive on the work surface with the slide module facing upwards.



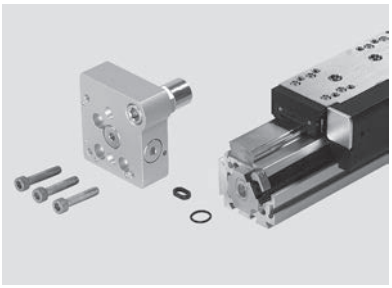
2. Unscrew the three self-tapping screws from the connection / end cap.

The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

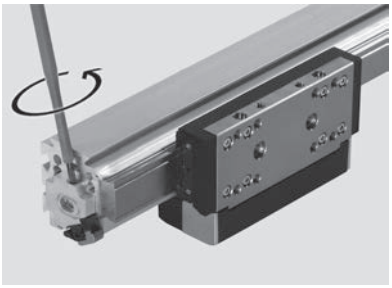


3. Remove the connection cap and end cap from the cylinder barrel.
4. Remove the sealing rings on the inside of the connection / end cap.
5. Remove the sealing rings from the buffers.

Dismantling and repair of the connection / end caps is described in Chapter 4.2.4 on page 52 and Chapter 4.2.5 on page 53.

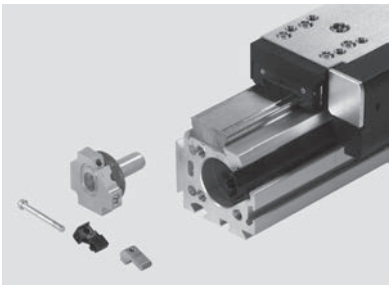


6. Unscrew the flat head screw of the band clamping mechanism.

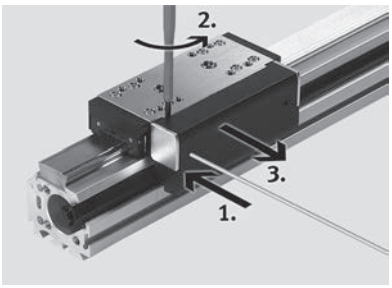


Removal of the polymer buffers is described in Chapter 4.2.1.2 on page 36.

7. Remove the clamping of the cover band.
8. Remove the clamping of the sealing band between the cover band and the sealing band.
9. Pull the buffer out of the cylinder barrel.
10. Remove the sealing ring from the buffer.
11. Repeat steps 6 to 10 for the 2nd buffer.



12. Push a suitable pin into one of the holes in the front of the cover to release the holding lug behind it (1).
13. Insert a screwdriver in the corresponding recesses in the cover and loosen it by turning (2).
14. Repeat this step on the other side.
15. Remove the cover from the slide-piston connection (3).



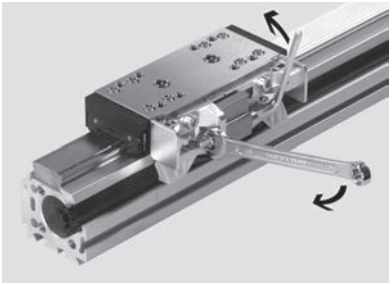
In **designs 1 and 2,** the dismantling of drives DGC-18 / 25-...-KF differs from that of drives DGC-...-32 / 40-...-KF due to the different type of attachment of the slide-piston connection and piston coupling.

DGC-18-...-KF and DGC-25-...-KF:

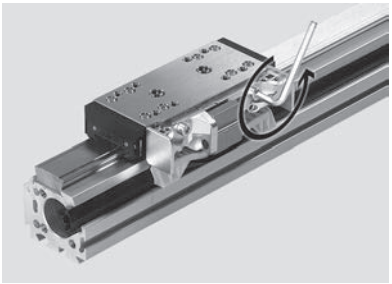
1. Unscrew the nut from the screw.
2. Remove the socket head screw and the two washers.

DGC-32-...-KF and DGC-40-...-KF (not shown in the illustration):

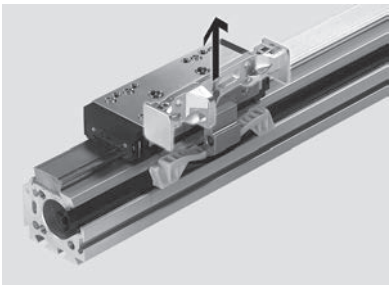
- Unscrew both socket head screws.



16. Unscrew both socket head screws in the slide-piston connection.



17. Lift off the slide-piston connection from above.



Note

The parts of the slide-piston connection are paired with the slide module. To achieve a backlash-free between the slide module and the slide-piston connection, the individual components of the slide-piston connection must be glued so that they fit precisely.

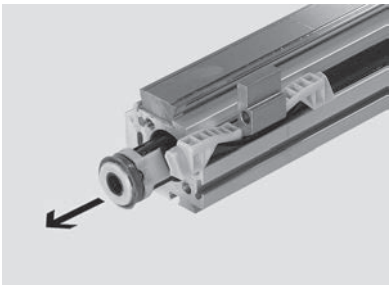
If the glued parts break apart, they can be placed on top of each other again and re-installed.

You must not apply any additional glue as this will change the fit.

If a part of the slide-piston connection is defective, a **new slide-piston connection** must be used because of the pairing; this also applies in case of a defective slide module.

Removal of the slide module is described in Chapter 4.2.1.3 on page 38.

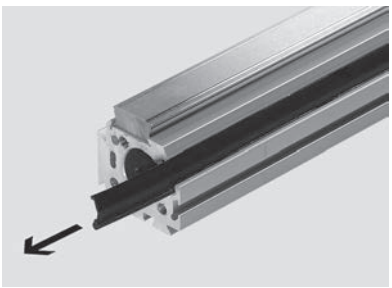
18. Push the piston out of the cylinder barrel.



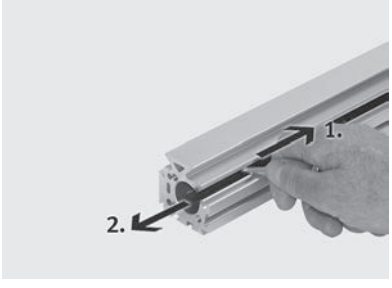
Dismantling and repair of the piston module is described in Chapter 4.2.3 on page 51.

The slide module remains on the roller track.

19. Remove the cover strip from the cylinder barrel.



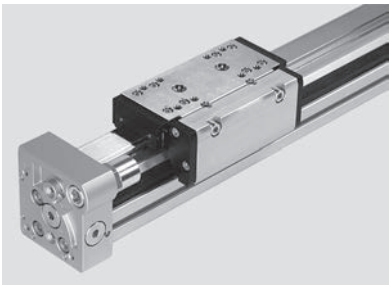
20. Use a blunt object to push the sealing band out of the guide slot in the cylinder barrel (1).
21. Pull the cover band out of the cylinder barrel (2).



Assembly of the linear drives of design 1 and 2 is described in Chapter 4.2.2 on page 39.

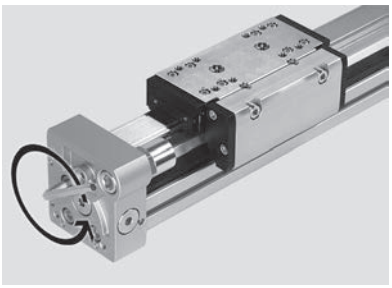
4.2.1.2 Dismantling the linear drive design 3

1. Place the linear drive on the work surface with the slide module facing upwards.



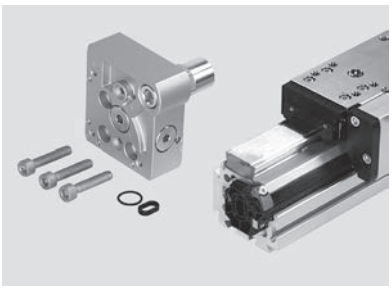
2. Unscrew the three self-tapping screws from the connection / end cap.

The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

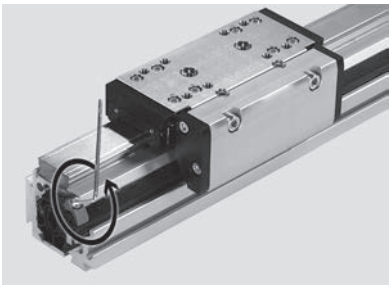


3. Remove the connection cap and end cap from the cylinder barrel.
4. Remove the sealing rings on the inside of the connection / end cap.
5. Remove the sealing rings from the buffers.

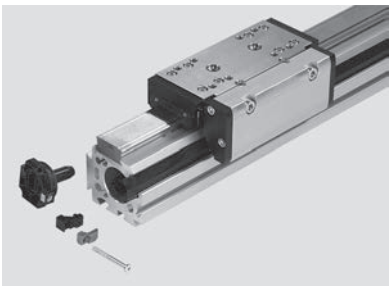
Dismantling and repair of the connection / end caps is described in Chapter 4.2.4 on page 52 and Chapter 4.2.5 on page 53.



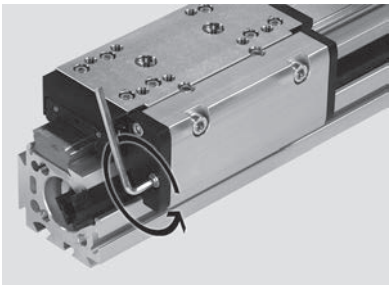
6. Unscrew the socket head screw of the band clamping.



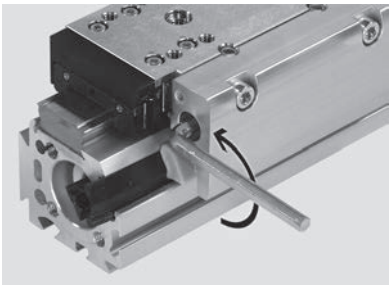
7. Remove the clamping of the cover band.
8. Remove the clamping of the sealing band between the cover band and the sealing band.
9. Repeat steps 6 to 8 for the 2nd buffer.



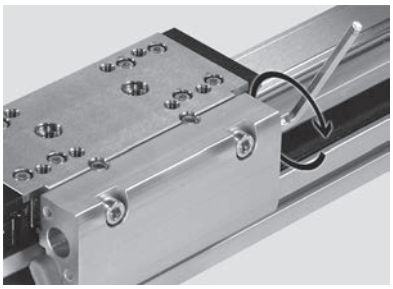
10. Unscrew the socket head screws in the front sides of the slide-piston connection.
11. Remove the stops.



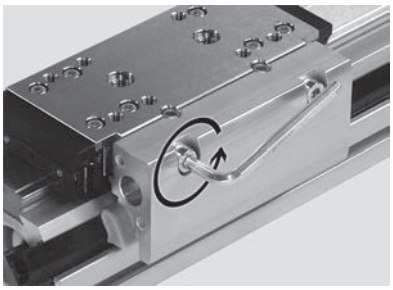
12. Undo the threaded pins on the left-hand side of the slide-piston connection.



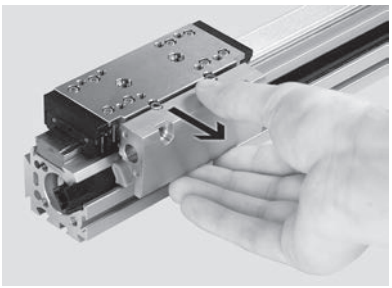
13. Unscrew the socket head screw on the right-hand side of the slide-piston connection.



14. Unscrew the two socket head screws on the front of the slide-piston connection.



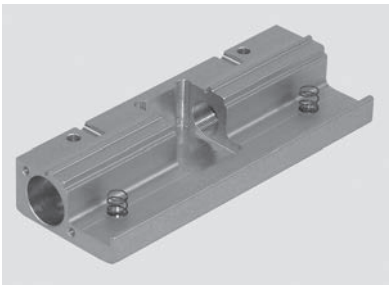
15. Remove the slide-piston connection.



Note

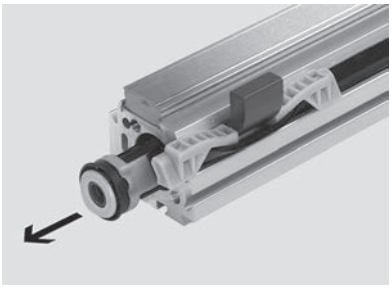
The two spring pins and the blanking plugs between the slide module and the slide-piston connection are not fastened and may be lost when removing the slide-piston connection.

For **drive DGC-...-40-...-KF,** insert two compression springs into the blind holes of the slide-piston connection.

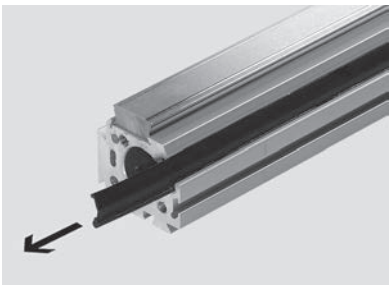


16. Push the piston out of the cylinder barrel.

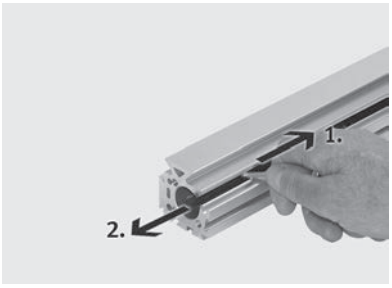
Dismantling and repair of the piston module is described in Chapter 4.2.3 on page 51.



17. Remove the cover strip from the cylinder barrel.



18. Use a blunt object to push the sealing band out of the guide slot in the cylinder barrel (1).
19. Pull the cover band out of the cylinder barrel (2).



4.2.1.3 Removing the slide module of all three designs

These assembly steps are only necessary if the slide module is defective.

DGC-18 / 25 / 32 / 40-...-KF:

If a new slide module is mounted, when using the **new slide-piston connection** a **new coupling** must be clipped into the piston.

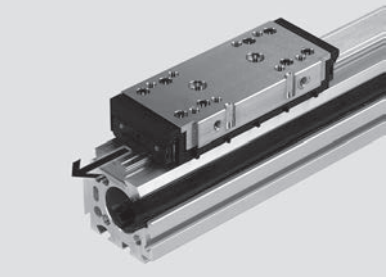
The figure in this chapter shows the dismantling of the slide module for design 3.

The slide module for design 1 and 2 is dismantled in exactly the same way.

Note

The recirculating ball bearing guide system is pretensioned. Therefore, on pushing the roller carriage off the roller track, individual balls can easily fall out.

- Push the slide module off the roller track.



4.2.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue using the appropriate part number (dependent on the size of the linear drive) (➔ www.festo.com/spareparts).

The parts lists in the online spare parts catalogue on the Festo website show precise assignment of no longer available spare parts to the current designs of the spare parts that replace them (➔ www.festo.com/spareparts).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined using the type code on the product labelling of the linear drive. With this information you can calculate the necessary length for the sealing band or cover band.

Note

Do not bend the sealing band as this may cause damage or tearing and reduce its service life.

Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

Note

Festo LUB- E1 lubricant must be used on all H1 variants of the linear drive.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, outside of piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, inside piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Cushioning boss	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, buffer	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Belt reversal	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease in the deflection area.

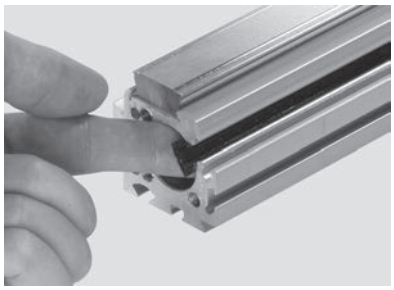
[1)] See the **“Accessories, equipment and tools”** information brochure. It can be found in the online spare parts catalogue on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

4.2.2.1 Assembling the linear drives of all three designs

When using the **new slide-piston connection** a **new coupling** must be clipped into the piston.

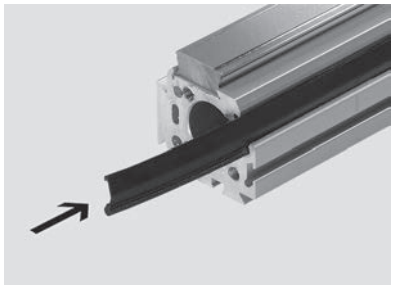
Dismantling and inserting the new coupling into the piston module is described in Chapter 4.2.3 on page 51.

1. Grease the sealing band.
2. Grease the piston.
3. Grease the inside of the cylinder barrel.

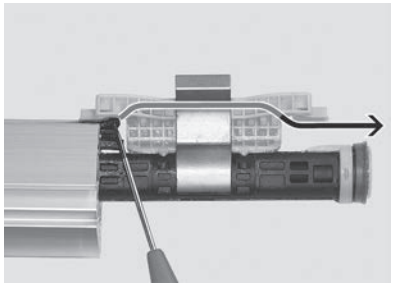


Note Table “Greasing whilst assembling” with the greasing instructions on page 39.

4. Insert the sealing band into the cylinder barrel so that it protrudes from one end of the cylinder barrel by approximately 10 mm.
5. Use a finger or another blunt object to push as much of the sealing band as possible into the guide slot from the inside.
6. Insert the cover band into the holder so that approximate 10 mm of the cover band protrudes.



7. Grease the piston.
8. Grease the belt reverser.

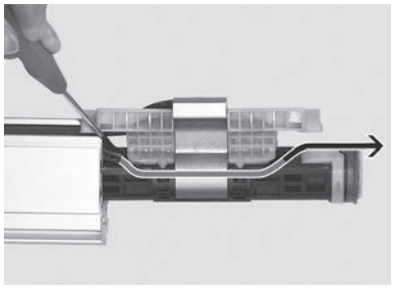


Note Table “Greasing whilst assembling” with the greasing instructions on page 39.

9. Insert the piston into the cylinder barrel.
10. Use a screwdriver to push the cover band into the sliding notches of the belt reverser.

When inserting the piston, make sure that the magnetic side of the piston sits in the cylinder barrel opposite the cut-outs in the slot for the proximity switches.

11. Use a screwdriver to push the sealing band under the belt reverser.



Installing a new slide module

These assembly steps are only necessary if a new slide module is mounted.

DGC-18 / 25 / 32 / 40-...-KF:

If a new slide module is mounted, when using the **new slide-piston connection** a **new coupling** must be clipped into the piston.

The figure in this chapter shows the mounting of the slide module for design 3.

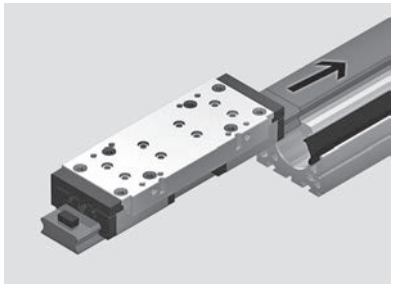
The slide module for design 1 and 2 is mounted in exactly the same way.

The new slide module is delivered fully assembled on a parking rail.

Note

The recirculating ball bearing guide system is pretensioned. Individual ball bearings can therefore easily fall out of the roller carriage and become lost when pushing the slide module off the parking rail.

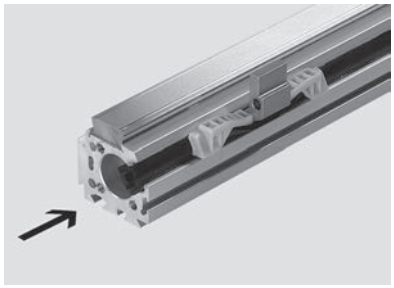
Balls that have fallen out of the roller carriage must be re-inserted into the relevant roller carriage.



12. Note the alignment of the slide module for the assembly! The two slots for the spring pins face the front.
13. Remove the stopper from the parking rail.
14. Position the parking rail with the slide module on the roller track.
15. Slowly push the slide module onto the roller track, ensuring that no balls fall out of the roller carriages.

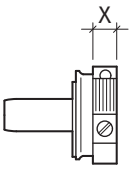
4.2.2.2 Assembling the linear drives of designs 1 and 2

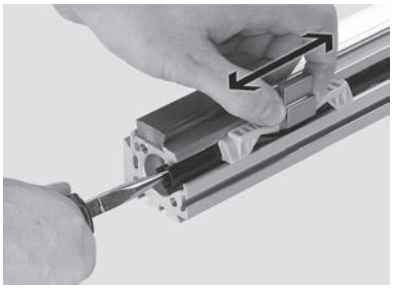
1. Insert the piston fully into the cylinder barrel.



2. Adjust the protrusion of the sealing band and cover strip by moving the piston back and forth and pulling or pushing the corresponding bands at the same time, so that the protrusion of the bands is not larger than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-18-...-KF	6 mm
DGC-25-...-KF	7 mm
DGC-32-...-KF	9 mm
DGC-40-...-KF	9 mm





If the aluminium buffers that have been removed are faulty, these must be replaced with polymer buffers.

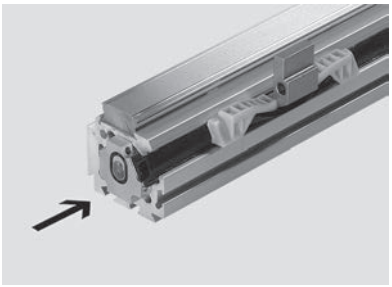
The parts lists in the online spare parts catalogue on the Festo website show precise assignment of no longer available spare parts to the current designs of the spare parts that replace them (➔ www.festo.com/spareparts).

Mounting polymer buffers is described in Chapter 4.2.2.3 on page 46.

3. Grease the first buffer.

Note Table “Greasing whilst assembling” with the greasing instructions on page 39.

4. Push the buffer onto the cylinder barrel.

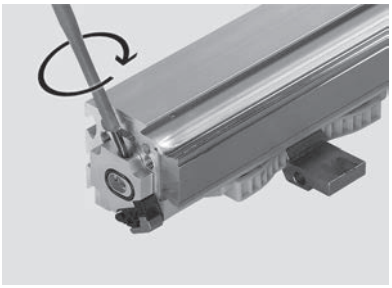


If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.2 on page 14 Item 14, Chapter 3.3 on page 16 Item 16, Chapter 3.4 on page 18 Item 12 and Chapter 3.5 on page 20 Item 16) must be “open”. Unscrew the regulating screw so that it is positioned flush with the buffer.

5. Grease the sealing ring.
6. Insert the sealing ring into the buffer.

Note

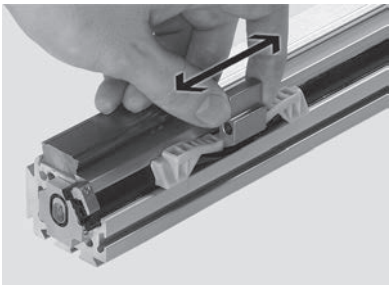
The sealing band and cover band must not protrude beyond the buffers. In this case, the connection / end cap cannot close airtight and the function of the linear drive is impaired. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.



7. Position the band clamping mechanism on the sealing band and cover band.
8. Clean the socket head screw to remove the locking agent.
9. Wet the socket head screw with threadlocker.
10. Tighten the socket head screw with the appropriate tightening torque (see table).

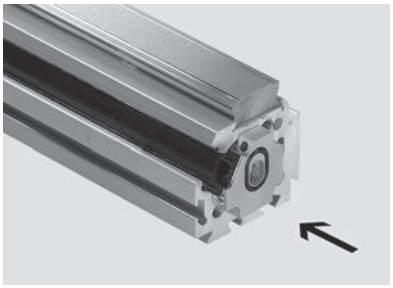
Type	Tightening torque
DGC-18-...-KF	0.2 Nm ±10 %
DGC-25-...-KF	0.4 Nm ±10 %
DGC-32-...-KF	0.4 Nm ±10 %
DGC-40-...-KF	1.0 Nm ±10 %

11. Move the piston up to the other end of the cylinder barrel once to fix the sealing band in the sealing band holder.



12. Grease the second buffer.

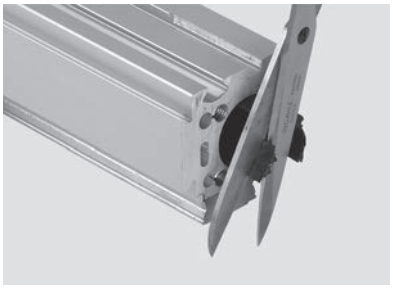
Note Table "Greasing whilst assembling" with the greasing instructions on page 39.



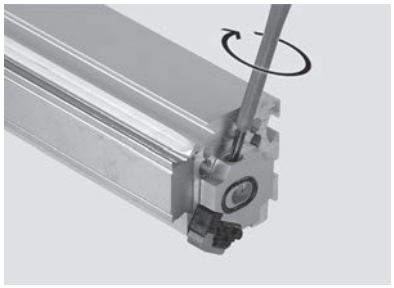
If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.2 on page 14 Item 14, Chapter 3.3 on page 16 Item 16, Chapter 3.4 on page 18 Item 12 and Chapter 3.5 on page 20 Item 16) must be "open". Unscrew the regulating screw so that it is positioned flush with the buffer.

13. Push the buffer onto the other end of the cylinder barrel.
14. Grease the sealing ring.
15. Insert the sealing ring into the buffer.

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. In this case, shorten both bands so that they do not protrude beyond the contact surface of the buffer (➔ Chapter 4.2.2.2 on page 41 step 2).



16. Position the band clamping mechanism on the sealing band and cover band.
17. Clean the socket head screw to remove the locking agent.
18. Wet the socket head screw with threadlocker.
19. Tighten the socket head screw with the appropriate tightening torque (see table).

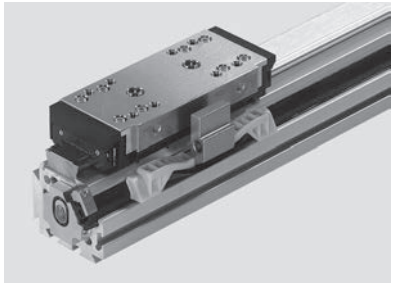


Type	Tightening torque
DGC-18-...-KF	0.2 Nm ±10 %
DGC-25-...-KF	0.4 Nm ±10 %
DGC-32-...-KF	0.4 Nm ±10 %
DGC-40-...-KF	1.0 Nm ±10 %

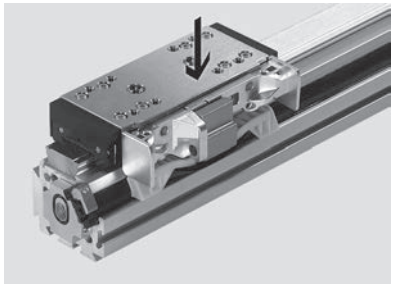
If a new slide module is mounted, a **new slide-piston connection** must also be mounted.

The mounting of the slide module and of the new slide-piston connection is described in Chapter 4.2.2.1 on page 40 and in Chapter 4.2.2.3 on page 46.

20. Align the slide module with the middle of the coupling.



21. Insert the parts of the slide-piston connection between the slide module and the piston from above.



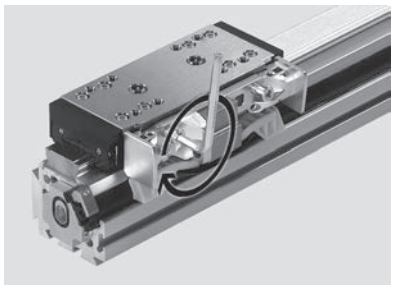
Note

The parts of the slide-piston connection are paired with the slide module. To achieve a backlash-free between the slide module and the slide-piston connection, the individual components of the slide-piston connection must be glued so that they fit precisely.

If the glued parts break apart, they can be placed on top of each other again and re-installed.

You must not apply any additional glue as this will change the fit.

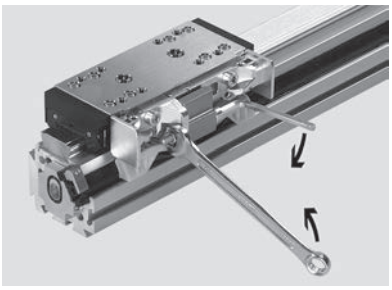
22. Clean the socket head screws to remove the locking agent.
23. Wet the socket head screws with thread locking agent.
24. Tighten the socket head screws with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-18-...-KF	2.5 Nm ±10 %
DGC-25-...-KF	5.7 Nm ±10 %
DGC-32-...-KF	5.7 Nm ±10 %
DGC-40-...-KF	5.7 Nm ±10 %

In **designs 1 and 2**, the assembly of drives DGC-18 / 25-...-KF differs from that of drives DGC-...-32 / 40-...-KF due to the different type of attachment of the slide-piston connection and piston coupling.

DGC-18-...-KF and DGC-25-...-KF:



1. Push the socket head screw with a washer through the holes in the slide-piston connection and through the piston coupling.
2. Put on a second washer.
3. Clean the thread of the nut to remove screw locking agent.
4. Wet the thread of the nut with screw locking agent.
5. Screw on the nut.
6. Tighten the nut with the appropriate tightening torque (see table).

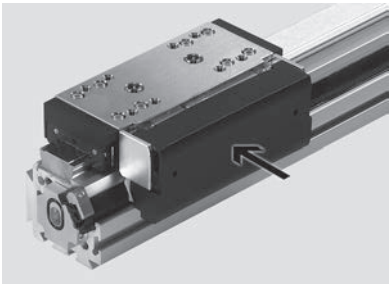
Type	Tightening torque
DGC-18-...-KF	1.2 Nm ±10 %
DGC-25-...-KF	4.5 Nm ±10 %

DGC-32-...-KF and DGC-40-...-KF (not shown in the illustration):

1. Push the washers onto the socket head screws.
2. Clean the socket head screws to remove the locking agent.
3. Wet the socket head screws with thread locking agent.
4. Tighten the socket head screws with the appropriate tightening torque (see table).

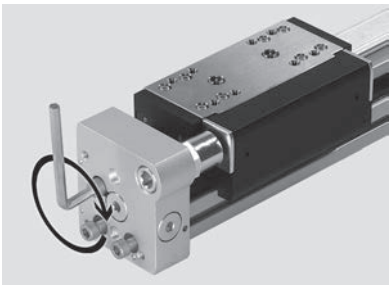
Type	Tightening torque
DGC-32-...-KF	4.5 Nm ±10 %
DGC-40-...-KF	4.5 Nm ±10 %

25. Place the cover on the slide-piston connection.
26. Press the cover lightly to latch it into position.



27. Grease the sealing rings for the connection / end caps.
28. Insert one sealing ring each into the connection / end cap.

29. Clean the self-tapping screws to remove the screw locking agent.
30. Wet the self-tapping screws with screw locking agent.
31. Place the connection / end cap on the cylinder barrel.
32. Screw the self-tapping screws through the connection / end cap and into the cylinder barrel, so that the connection / end cap can still be moved.
33. Align the rear and bottom edge of the connection / end cap so that it is flush with the cylinder barrel.
34. Tighten the self-tapping screws with the appropriate tightening torque (see table).

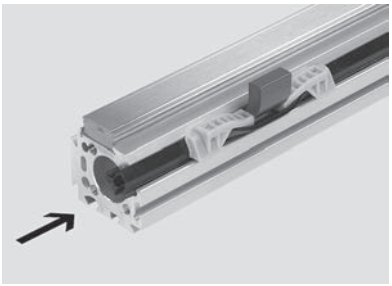


Type	Tightening torque
DGC-18-...-KF	7 Nm ±10 %
DGC-25-...-KF	12 Nm ±10 %
DGC-32-...-KF	30 Nm ±10 %
DGC-40-...-KF	30 Nm ±10 %

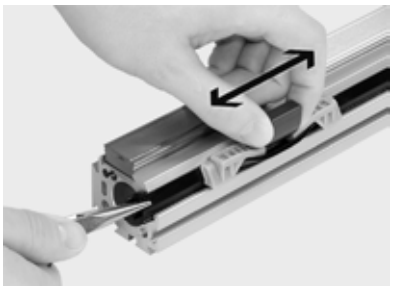
After the linear drive has been assembled, it must be commissioned as described in the operating instructions. They can be found on the Festo website (➔ www.festo.com).

4.2.2.3 Assembling the linear drive design 3

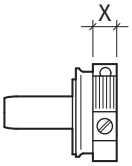
1. Insert the piston fully into the cylinder barrel.



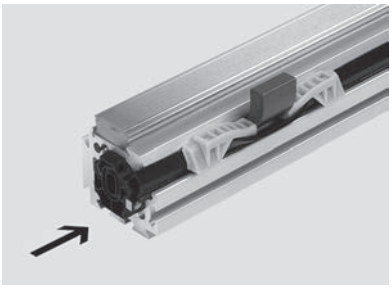
2. Adjust the protrusion of the sealing band and cover strip by moving the piston back and forth and pulling or pushing the corresponding bands at the same time, so that the protrusion of the bands is not larger than the width of the contact surface (X) on the buffer (see table).



Type	Width of the contact surface X
DGC-18-...-KF	6 mm
DGC-25-...-KF	7 mm
DGC-32-...-KF	9 mm
DGC-40-...-KF	9 mm



Note Table “Greasing whilst assembling” with the greasing instructions on page 39.



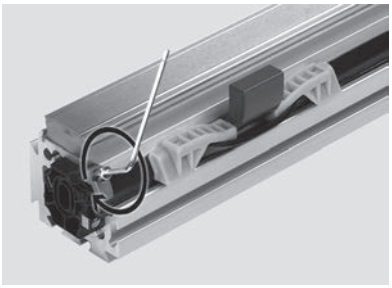
3. Grease the first buffer.
4. Push the buffer onto the cylinder barrel.

If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.2 on page 14 Item 14, Chapter 3.3 on page 16 Item 16, Chapter 3.4 on page 18 Item 12 and Chapter 3.5 on page 20 Item 16) must be “open”. Unscrew the regulating screw so that it is positioned flush with the buffer.

5. Grease the sealing ring.
6. Insert the sealing ring into the buffer.

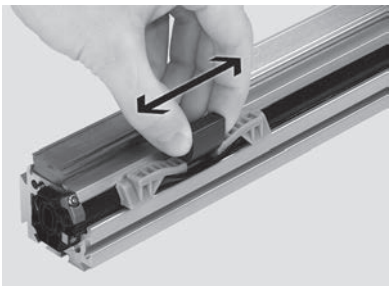
Note

The sealing band and cover band must not protrude beyond the buffers. In this case, the connection / end cap cannot close airtight and the function of the linear drive is impaired. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.



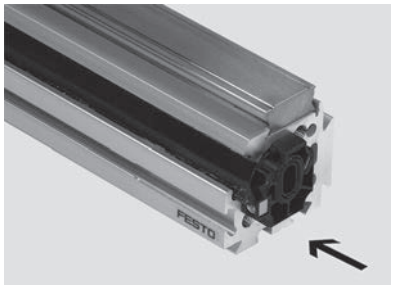
7. Position the band clamping mechanism on the sealing band and cover band.
8. Clean the socket head screw to remove the locking agent.
9. Wet the socket head screw with threadlocker.
10. Tighten the socket head screw with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-18-...-KF	0.2 Nm ±10 %
DGC-25-...-KF	0.4 Nm ±10 %
DGC-32-...-KF	0.4 Nm ±10 %
DGC-40-...-KF	1.0 Nm ±10 %



11. Move the piston up to the other end of the cylinder barrel once to fix the sealing band in the sealing band holder.

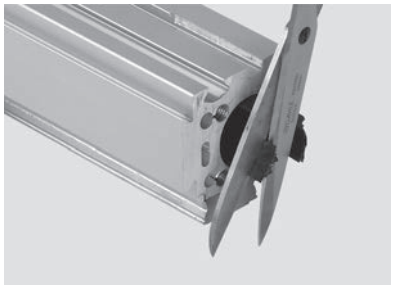
12. Grease the second buffer.



Note Table “Greasing whilst assembling” with the greasing instructions on page 39.

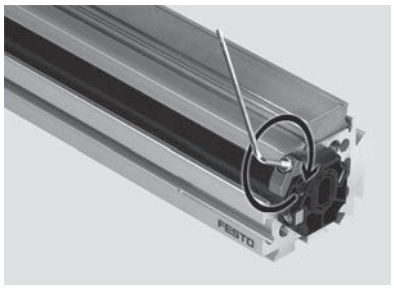
If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.2 on page 14 Item 14, Chapter 3.3 on page 16 Item 16, Chapter 3.4 on page 18 Item 12 and Chapter 3.5 on page 20 Item 16) must be “open”. Unscrew the regulating screw so that it is positioned flush with the buffer.

13. Push the buffer onto the other end of the cylinder barrel.
14. Grease the sealing ring.
15. Insert the sealing ring into the buffer.



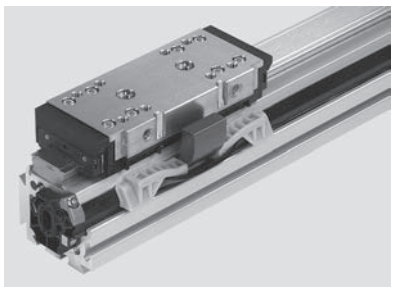
Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. In this case, shorten both bands so that they do not protrude beyond the contact surface of the buffer (➔ Chapter 4.2.2.3 on page 46 step 2).

16. Position the band clamping mechanism on the sealing band and cover band.
17. Clean the socket head screw to remove the locking agent.
18. Wet the socket head screw with threadlocker.
19. Tighten the socket head screw with the appropriate tightening torque (see table).



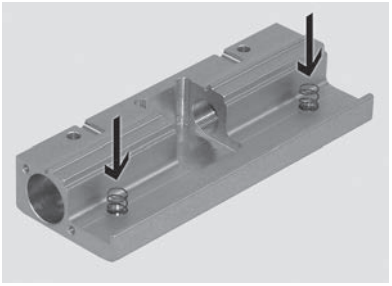
Type	Tightening torque
DGC-18-...-KF	0.2 Nm ±10 %
DGC-25-...-KF	0.4 Nm ±10 %
DGC-32-...-KF	0.4 Nm ±10 %
DGC-40-...-KF	1.0 Nm ±10 %

20. Align the slide module with the middle of the coupling.

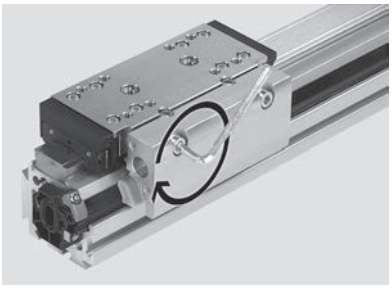


This assembly step must only be carried out for drive DGC-...-40-...-KF.

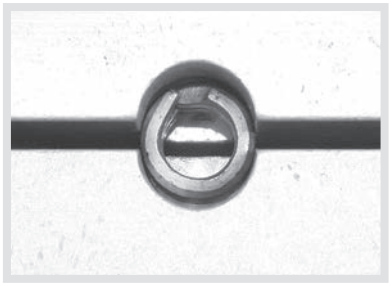
21. Place both compression springs in the blind holes of the slide-piston connection.



22. Place the slide-piston connection on the coupling.
23. Clean the socket head screws for connecting the slide-piston connection to remove screw locking agent.
24. Wet the socket head screws for connecting the slide-piston connection with screw locking agent.
25. Tighten the socket head screws slightly so that the slide-piston connection is a distance of 1–2 mm from the slide module.



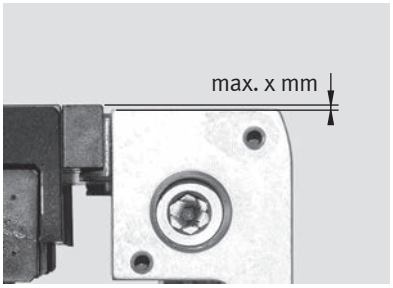
26. Insert both spring pins between the slide module and the slide-piston connection until they stop. The openings of the spring pins must be offset by 90° from the separating joint between the slide module and the slide-piston connection.



The openings of the spring pins must be offset by 90° from the separating joint between the slide module and the slide-piston connection.

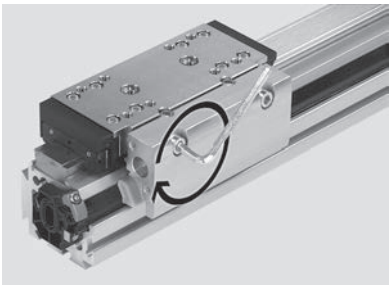
27. Use a stop to align the top edge of the slide-piston connection so that it is flush with the outer edge of the slide. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide **must not exceed x mm** (see table).

Type	max. x
DGC-18-...-KF	1 mm
DGC-25-...-KF	0.75 mm
DGC-32-...-KF	1 mm
DGC-40-...-KF	0.5 mm



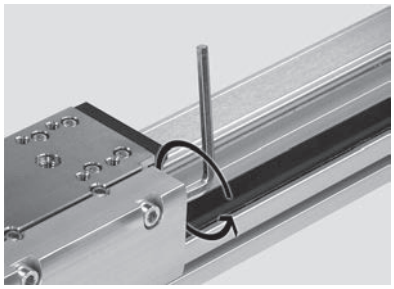
28. Tighten the socket head screws for connecting the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-18-...-KF	5 Nm ±10 %
DGC-25-...-KF	5 Nm ±10 %
DGC-32-...-KF	5 Nm ±10 %
DGC-40-...-KF	5 Nm ±20 %



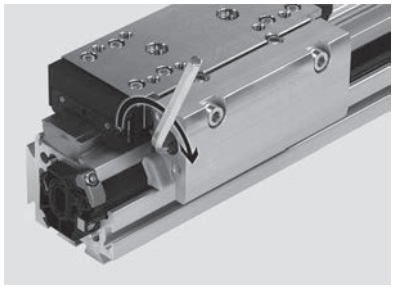
29. Tighten the socket head screw on the right-hand end of the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-18-...-KF	5 Nm ±10 %
DGC-25-...-KF	6 Nm ±10 %
DGC-32-...-KF	6 Nm ±10 %
DGC-40-...-KF	20 Nm ±20 %



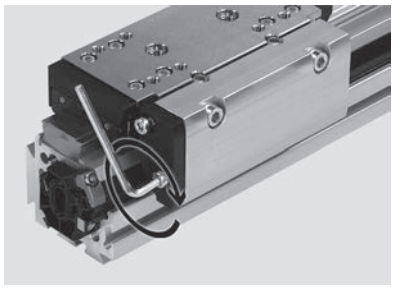
30. Tighten the threaded pins on the left-hand end of the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-18-...-KF	3 Nm ±10 %
DGC-25-...-KF	3 Nm ±10 %
DGC-32-...-KF	3 Nm ±10 %
DGC-40-...-KF	5 Nm ±20 %



31. Position the stops on the sides of the slide-piston connection.
32. Clean the socket head screws to remove the locking agent.
33. Wet the socket head screws with thread locking agent.
34. Tighten the socket head screws with the appropriate tightening torque (see table).

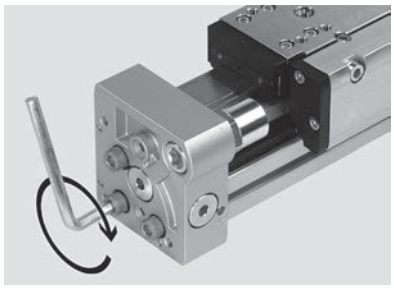
Type	Tightening torque
DGC-18-...-KF	1 Nm ±10 %
DGC-25-...-KF	2 Nm ±10 %
DGC-32-...-KF	2 Nm ±10 %
DGC-40-...-KF	2 Nm ±20 %



35. Grease the sealing rings for the connection / end caps.
36. Insert one sealing ring each into the connection / end cap.

37. Clean the self-tapping screws to remove the screw locking agent.
38. Wet the self-tapping screws with screw locking agent.
39. Place the connection / end cap on the cylinder barrel.
40. Screw the self-tapping screws through the connection / end cap and into the cylinder barrel, so that the connection / end cap can still be moved.
41. Align the rear and bottom edge of the connection / end cap so that it is flush with the cylinder barrel.
42. Tighten the self-tapping screws with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-18-...-KF	7 Nm ±10 %
DGC-25-...-KF	12 Nm ±10 %
DGC-32-...-KF	30 Nm ±10 %
DGC-40-...-KF	30 Nm ±10 %



After the linear drive has been assembled, it must be commissioned as described in the operating instructions. They can be found on the Festo website (➔ www.festo.com).

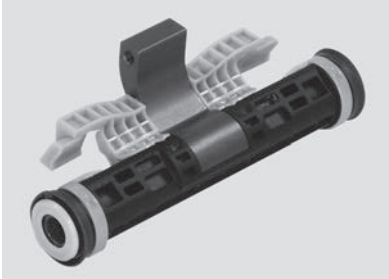
4.2.3 Dismantling and repairing the piston module

When using the **new slide-piston connection** a **new coupling** must be clipped into the piston.

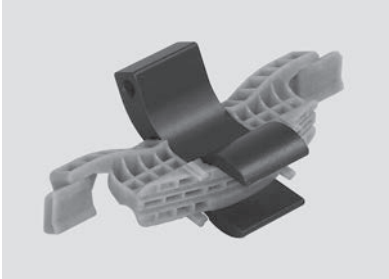
The illustrations in this chapter show how the **new coupling** is to be clipped in for a **new slide-piston connection**.

The piston module with older couplings is mounted and dismantled in exactly the same way.

1. Remove the piston, ➔ Chapter 4.2.1 on page 33.



2. Pull the coupling with the band reverser out of the piston.

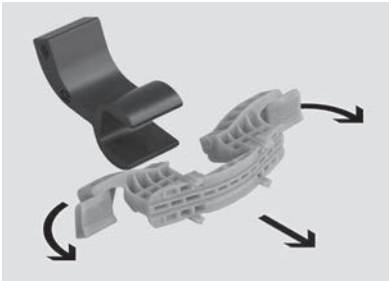


The piston must be replaced with a new piston module if it is worn.

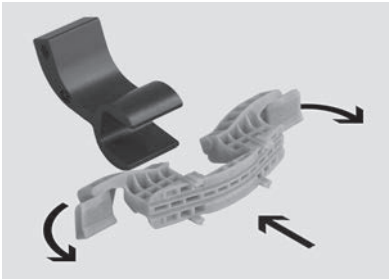
If the coupling is damaged, a **new slide-piston connection** must be ordered in addition to the piston module.

Mounting the **new slide-piston connection** is described in Chapter 4.2.2.3 on page 46.

3. Bend the band reverser slightly apart and pull it off the coupling.
4. Check all parts for wear and replace if necessary.

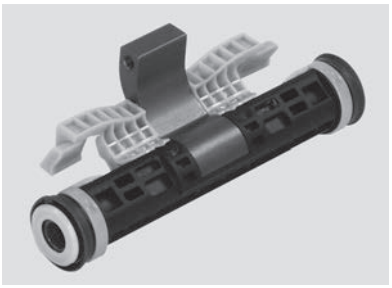


5. Clip the band reverser into the coupling.



Ensure that the band reverser is aligned with the coupling (see figure).

6. Insert the coupling with the band reverser into the piston.



Note the alignment of the coupling with the piston. The magnet in the piston must be positioned on the left-hand side of the piston if the coupling faces the rear.

7. Grease the sealing rings.
8. Grease the belt reverser.

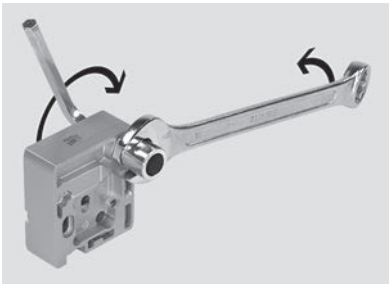
Note Table "Greasing whilst assembling" with the greasing instructions on page 39.

9. Assemble the linear drive, ➔ Chapter 4.2.2 on page 39.

4.2.4 Replacing the cushioning components

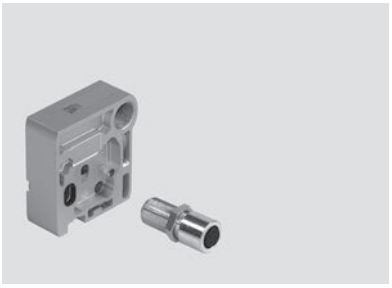
The illustrations in this chapter show the cast-iron connection / end caps.
The cushioning components on the milled connection / end caps are mounted and dismantled in exactly the same way.

1. Undo the lock nuts on the cushioning components.



The cushioning components can be replaced with the connection / end cap installed.

2. Screw the cushioning components out of the connection / end cap.
3. Install the new cushioning components in the reverse order.
4. Tighten the cushioning components with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-18-...-KF	5.0 Nm ±20 %
DGC-25-...-KF	20 Nm ±20 %
DGC-32-...-KF	20 Nm ±20 %
DGC-40-...-KF	35 Nm ±20 %

4.2.5 Replacing the plugs of the supply ports in the connection / end cap

Plug screws with separate sealing ring are installed in

- DGC-25-...-KF up to series X7(➔ Chapter 3.2 on page 14).
- DGC-25-...-KF (-DL) / (-H1) from series X8 (➔ Chapter 3.3 on page 16).
- DGC-25-...-KF-C (-DL) / (-H1) from series X8 (➔ Chapter 3.3 on page 16).
- DGC-25-...-KF-GP up to series X7 (➔ Chapter 3.4 on page 18).
- DGC-25-...-KF-GP (-DL) from series X8 (➔ Chapter 3.4 on page 18).
- DGC-32-...-KF up to series WD (➔ Chapter 3.2 on page 14).
- DGC-32-...-KF (-DL) from series X1 up to series A9 (➔ Chapter 3.3 on page 16).
- DGC-32-...-KF (-DL) from series AO (➔ Chapter 3.3 on page 16).
- DGC-32-...-KF-C (-DL) from series AO (➔ Chapter 3.3 on page 16).
- DGC-32-...-KF-GP up to series WD (➔ Chapter 3.4 on page 18).
- DGC-32-...-KF-GP (-DL) from series X1 up to series A9 (➔ Chapter 3.5 on page 20).
- DGC-32-...-KF-GP (-DL) from series AO (➔ Chapter 3.5 on page 20).
- DGC-40-...-KF up to series X9 (➔ Chapter 3.2 on page 14).
- DGC-40-...-KF (-DL) from series XO up to series A5 (➔ Chapter 3.3 on page 16).
- DGC-40-...-KF (-DL) from series A6 (➔ Chapter 3.3 on page 16).
- DGC-40-...-KF-C (-DL) from series A6 (➔ Chapter 3.3 on page 16).
- DGC-40-...-KF-GP up to series X9 (➔ Chapter 3.4 on page 18).
- DGC-40-...-KF-GP (-DL) from series XO up to series A5 (➔ Chapter 3.5 on page 20).
- DGC-40-...-KF-GP (-DL) from series A6 (➔ Chapter 3.5 on page 20).

Grub screws are installed in

- DGC-18-...-KF up to series A9 XN (➔ Chapter 3.2 on page 14).
- DGC-18-...-KF (-DL) / (-H1) from series XD up to series AN (➔ Chapter 3.3 on page 16).
- DGC-18-...-KF (-DL) / (-H1) from series AD (➔ Chapter 3.3 on page 16).
- DGC-18-...-KF-GP up to series XN (➔ Chapter 3.4 on page 18).
- DGC-18-...-KF-GP (-DL) from series XD up to series AN (➔ Chapter 3.5 on page 20).
- DGC-18-...-KF-GP (-DL) from series AD (➔ Chapter 3.5 on page 20).

Plug screws with integrated sealing ring are installed in

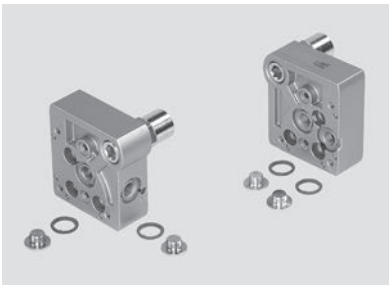
- DGC-32-...-KF-H1 all series (➔ Chapter 3.3 on page 16).
- DGC-32-...-KF-C-H1 all series (➔ Chapter 3.3 on page 16).
- DGC-40-...-KF -H1 all series (➔ Chapter 3.3 on page 16).
- DGC-40-...-KF-C-H1 all series (➔ Chapter 3.3 on page 16).

4.2.5.1 Replacing the plug screws with separate sealing ring of the supply ports in the connection / end cap (➔ Chapter 4.2.5 on page 53)

The illustrations in this chapter show the cast-iron connection / end caps.

The sealing rings on the milled connection / end cap are mounted and dismantled in exactly the same way.

The plug screws with sealing ring can be replaced with the connection / end cap installed.

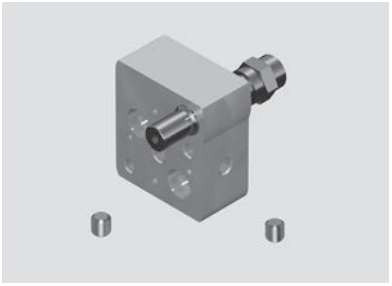


1. Unscrew the plug screws.
2. Remove the sealing rings.
3. Push the new sealing rings onto the plug screws.
4. Tighten the plug screws with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-25-...-KF	11 Nm ±10 %
DGC-32-...-KF	11 Nm ±10 %
DGC-40-...-KF	16 Nm ±10 %

4.2.5.2 Replacing the grub screws of the supply ports in the connection / end cap (DGC-18 only) (➔ Chapter 4.2.5 on page 53)

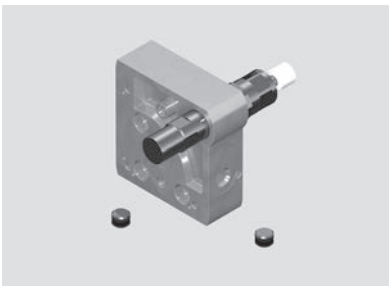
In the DGC-18-...-KF, the supply ports in the connection / end cap that are not required are closed off using grub screws.
The grub screws can be replaced with the connection / end cap installed.



1. Unscrew the grub screws.
2. Clean the grub screws to remove thread locking agent.
3. Wet the grub screws with thread locking agent.
4. Screw the grub screws **flush** into the connection / end cap.

4.2.5.3 Replacing plug screws with integrated sealing ring of the supply ports in the connection / end cap (➔ Chapter 4.2.5 on page 53)

The plug screws with integrated sealing ring can be replaced with the connection / end cap installed.



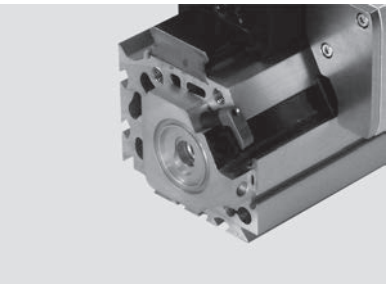
1. Unscrew the plug screws.
2. Insert new plug screws into the supply ports.
3. Screw the grub screws **flush** into the connection / end cap.

4.3 Linear drives DGC-50 / 63-...-KF

Different designs of the linear drives DGC-50 / 63-...-GF are available on the market (➔ table in Chapter 3 on page 11), the most main differences between the individual designs most important for the repair are listed below:

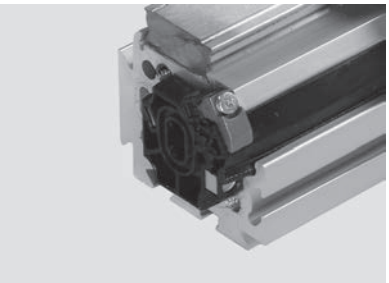
Design 1

Linear drives with buffer made of aluminium.



Design 2

Linear drives with buffer made of plastic and a modified slide module.

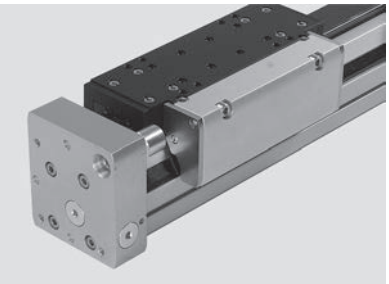


The polymer buffer for design 2 of the DGC-50 / 63-...-KF is described using illustrations of the DGC-25-...-KF.

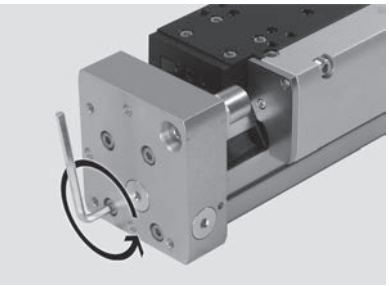
Mixed forms of these designs can also exist. Before each repair, the parts lists in the online spare parts catalogue on the Festo website must be used to determine the precise assignment of spare parts that are no longer available to the spare parts in the current series that replace them (➔ www.festo.com/spareparts).

4.3.1 Dismantling the linear drive

1. Place the linear drive on the work surface with the slide module facing upwards.

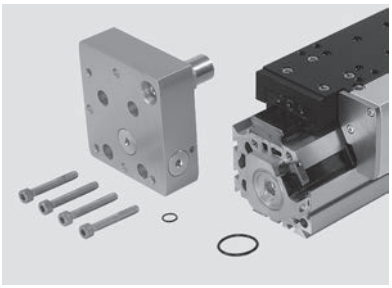


2. Unscrew the four self-tapping screws from the connection / end cap.



The basic principle of self-tapping screws means they have a high holding force in the thread and require greater force when unfastening them.

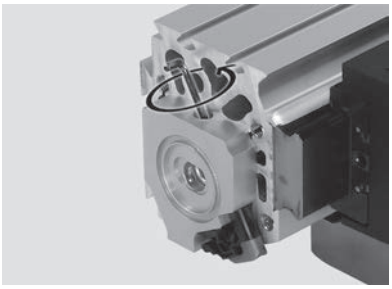
3. Remove the connection cap and end cap from the cylinder barrel.
4. Remove the sealing rings on the inside of the connection / end cap.
5. Remove the sealing rings from the buffers.



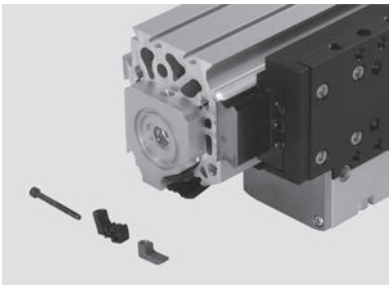
Dismantling and repair of the connection / end caps is described in Chapter 4.3.3 on page 66 and Chapter 4.3.4 on page 67.

4.3.1.1 Dismantling the aluminium buffer of design 1

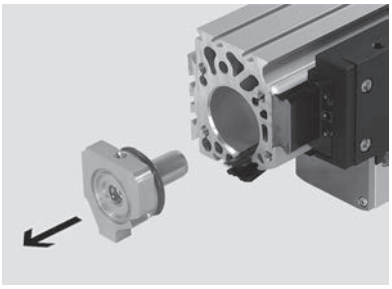
1. Unscrew the socket head screw of the band clamping mechanism.



2. Remove the clamping of the cover band.
3. Remove the clamping of the sealing band between the cover band and the sealing band.



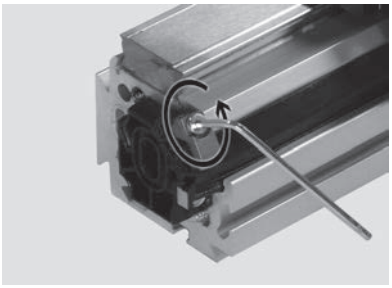
4. Pull the buffer out of the cylinder barrel.
5. Repeat steps 1 to 4 for the 2nd buffer.



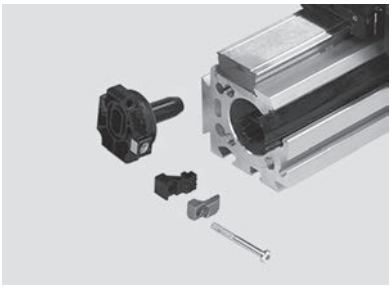
4.3.1.2 Dismantling the polymer buffer of design 2

Dismantling of the polymer buffer for design 2 of the DGC-50 / 63-...-KF is described using illustrations of the DGC-25-...-KF.

1. Unscrew the socket head screw of the band clamping.

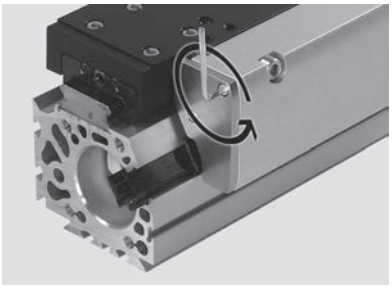


2. Remove the clamping of the cover band.
3. Remove the clamping of the sealing band between the cover band and the sealing band.
4. Pull the buffer out of the cylinder barrel.
5. Repeat steps 1 to 4 for the 2nd buffer.

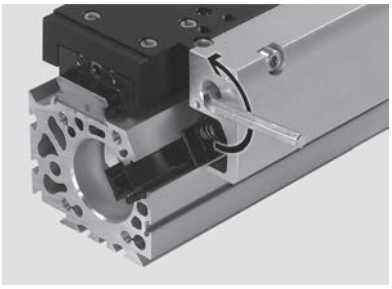


4.3.1.3 Further dismantling of the linear drive in design 1 and 2

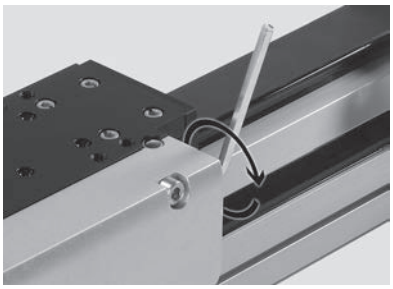
1. Unscrew the socket head screws in the front sides of the slide-piston connection.
2. Remove the stops.



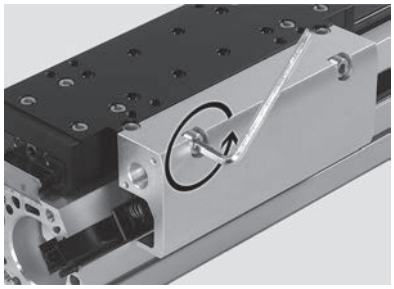
3. Undo the threaded pins on the left-hand side of the slide-piston connection.



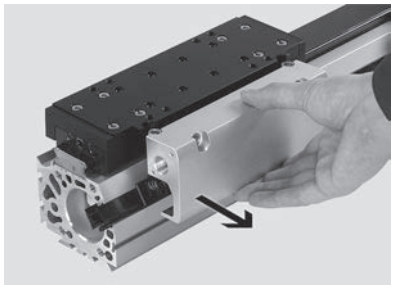
4. Unscrew the socket head screw on the right-hand side of the slide-piston connection.



5. Unscrew the two socket head screws on the front of the slide-piston connection.



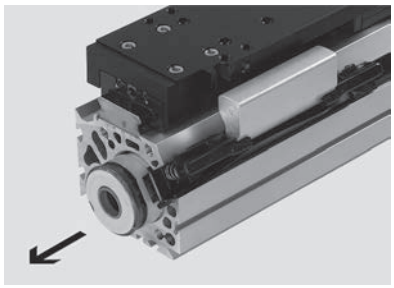
6. Remove the slide-piston connection.



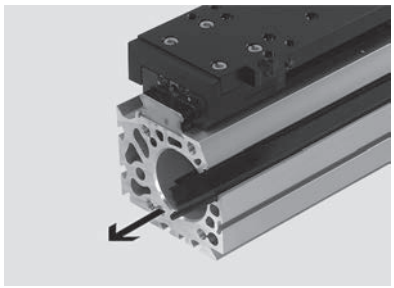
Note

The two spring pins and the blanking plugs between the slide module and the slide-piston connection are not fastened and may be lost when removing the slide-piston connection.

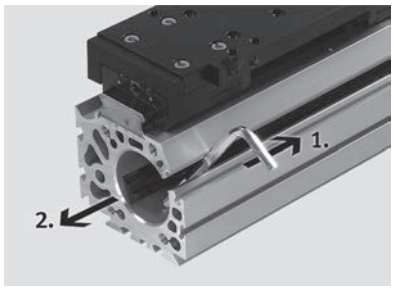
7. Push the piston out of the cylinder barrel.
8. Check the springs of the belt reverser for damage and replace if necessary.



9. Remove the cover strip from the cylinder barrel.



10. Use a blunt object to push the sealing band out of the guide slot in the cylinder barrel (1).
11. Pull the cover band out of the cylinder barrel (2).



4.3.1.4 Removing the slide module of design 1 and 2

These assembly steps are only necessary if the slide module is defective.

- Removal of the slide module is described in Chapter 4.2.1.3 on page 38.

4.3.2 Assembling the linear drive

When assembling a linear drive, wearing parts, such as the sealing band, cover band, seals and the complete piston, can be replaced.

The wearing parts are ordered from the online spare parts catalogue using the appropriate part number (dependent on the size of the linear drive) (➔ www.festo.com/spareparts).

The part number is an x-stroke part number. In addition to the part number, you must also specify the stroke of your linear drive when ordering. The stroke can be determined using the type code on the product labelling of the linear drive. With this information you can calculate the necessary length for the sealing band or cover band.

Note

Do not bend the sealing band as this may cause damage or tearing and reduce its service life.

Greasing whilst assembling

When assembling the linear drives, various components have to be greased in accordance with the table below.

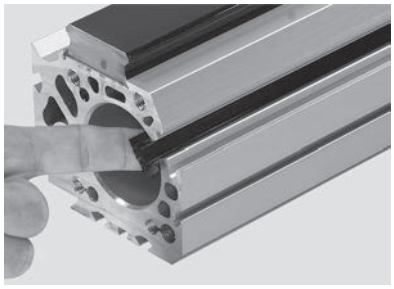
Note

Festo LUB-E1 lubricant must be used on all H1 variants of the linear drive.

Component	Lubricant	Greasing instructions
Cylinder barrel	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease to the slot and all around and along the entire length of the cylinder bore.
Sealing band	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease all around and along the entire length.
Cover band	Festo LUB-KC1 or Festo LUB-E1[1)]	Apply a layer of grease all around and along the entire length.
Piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, outside of piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, inside piston	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Cushioning boss	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Seal, buffer	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease all round.
Belt reversal	Festo LUB-KC1 or Festo LUB-E1[1)]	Grease in the deflection area.

[1)] See the **“Accessories, equipment and tools”** information brochure. It can be found in the online spare parts catalogue on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

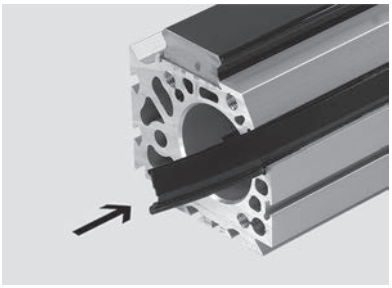
1. Grease the sealing band.
2. Grease the cover band.
3. Grease the inside of the cylinder barrel.



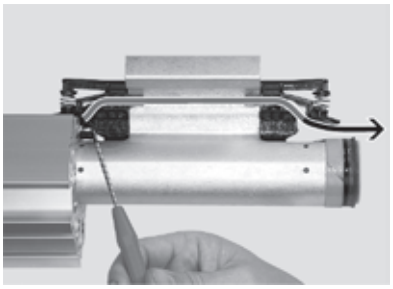
Note Table “Greasing whilst assembling” with the greasing instructions on page 59.

4. Insert the sealing band into the cylinder barrel so that it protrudes from one end of the cylinder barrel by approximately 14 mm.
5. Use a finger or another blunt object to push as much of the sealing band as possible into the guide slot from the inside.

6. Insert the cover band into the holder so that approximate 14 mm of the cover band protrudes.



7. Grease the piston.
8. Grease the belt reverser.



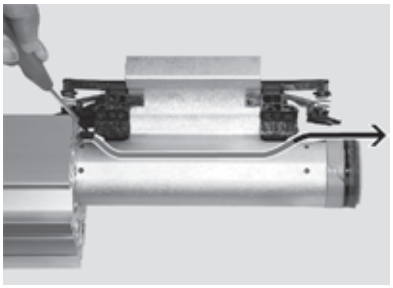
Note Table "Greasing whilst assembling" with the greasing instructions on page 59.

9. Insert the piston into the cylinder barrel.
10. Use a screwdriver to push the cover band into the sliding notches of the belt reverser.

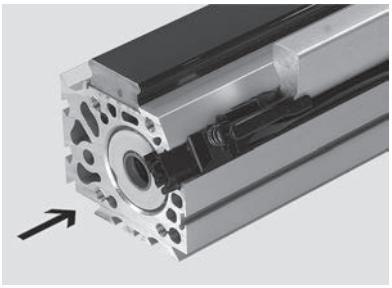
When inserting the piston, make sure that the magnetic side of the piston sits in the cylinder barrel opposite the cut-outs in the slot for the proximity switches.

The magnet is moulded-in and is thus not visible. Therefore its position can be determined using a counter magnet (e.g. compass).

11. Use a screwdriver to push the sealing band under the belt reverser.

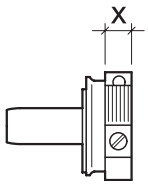


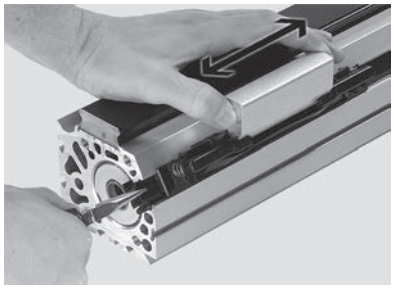
12. Insert the piston fully into the cylinder barrel.



13. Adjust the protrusion of the sealing band and cover strip by moving the piston back and forth and pulling or pushing the corresponding bands at the same time, so that the protrusion of the bands is not larger than the width of the contact surface (X) on the buffer (see table).

Type	Width of the contact surface X
DGC-50-...-KF	14 mm
DGC-63-...-KF	16 mm



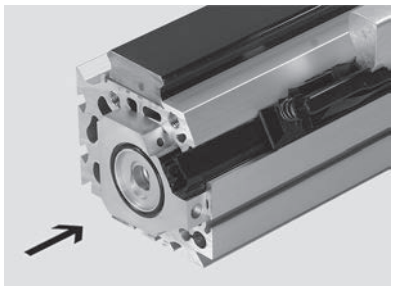


4.3.2.1 Mounting the aluminium buffer of design 1

If the aluminium buffers that have been removed are faulty, these must be replaced with polymer buffers.

The parts lists in the online spare parts catalogue on the Festo website show precise assignment of no longer available spare parts to the current designs of the spare parts that replace them (➔ www.festo.com/spareparts).

1. Grease the first buffer.



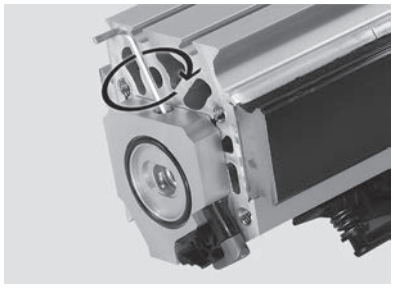
Note Table "Greasing whilst assembling" with the greasing instructions on page 59.

2. Push the buffer onto the cylinder barrel.
3. Grease the sealing ring.
4. Insert the sealing ring into the buffer.

Note

The sealing band and cover band must not protrude beyond the buffers. In this case, the connection / end cap cannot close airtight and the function of the linear drive is impaired. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

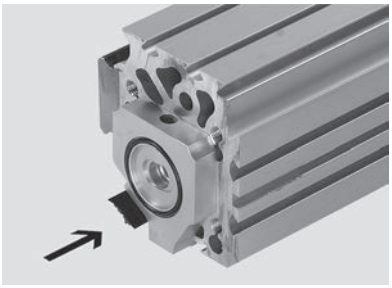
5. Position the band clamping mechanism on the sealing band and cover band.
6. Clean the socket head screw to remove the locking agent.
7. Wet the socket head screw with threadlocker.
8. Tighten the socket head screw with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-50-...-KF	1.0 Nm ±20 %
DGC-63-...-KF	1.0 Nm ±20 %

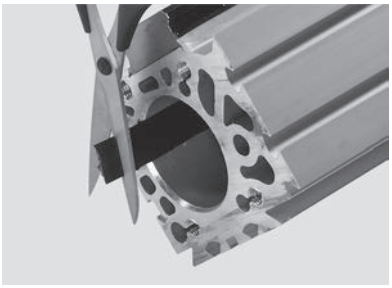
9. Move the piston up to the other end of the cylinder barrel once to fix the sealing band in the sealing band holder.

10. Grease the second buffer.



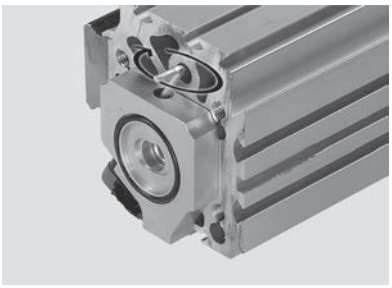
Note Table “Greasing during assembly” with the greasing instructions on page 59.

11. Push the buffer onto the other end of the cylinder barrel.
12. Grease the sealing ring.
13. Insert the sealing ring into the buffer.



Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. In this case, shorten both bands so that they do not protrude beyond the contact surface of the buffer (see step 13 on page 61).

14. Position the band clamping mechanism on the sealing band and cover band.
15. Clean the socket head screw to remove the locking agent.
16. Wet the socket head screw with threadlocker.
17. Tighten the socket head screw with the appropriate tightening torque (see table).

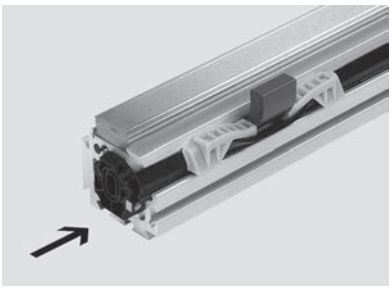


Type	Tightening torque
DGC-50-...-KF	1.0 Nm ±20 %
DGC-63-...-KF	1.0 Nm ±20 %

4.3.2.2 Mounting the polymer buffer of design 2

Mounting of the polymer buffer for design 2 of the DGC-50 / 63-...-KF is described using illustrations of the DGC-25-...-KF.

1. Grease the first buffer.



Note Table “Greasing during assembly” with the greasing instructions on page 59.

2. Push the buffer onto the cylinder barrel.

If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.6 on page 22 Item 16 and Chapter 3.7 on page 24 Item 15) must be “open”. Unscrew the regulating screw so that it is positioned flush with the buffer.

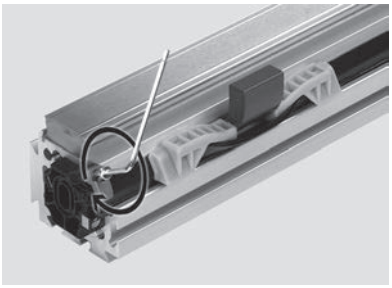
3. Grease the sealing ring.
4. Insert the sealing ring into the buffer.

Note

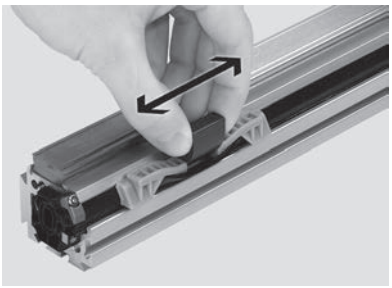
The sealing band and cover band must not protrude beyond the buffers. In this case, the connection / end cap cannot close airtight and the function of the linear drive is impaired. The sealing band and cover band have to be shortened so that they seal off flush with the outer edge of the buffers. However, it is better if they are slightly short of the buffers.

5. Position the band clamping mechanism on the sealing band and cover band.
6. Clean the socket head screw to remove the locking agent.
7. Wet the socket head screw with threadlocker.
8. Tighten the socket head screw with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	1.0 Nm ±20 %
DGC-63-...-KF	1.0 Nm ±20 %

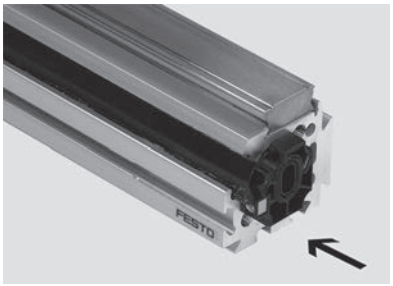


9. Move the piston up to the other end of the cylinder barrel once to fix the sealing band in the sealing band holder.



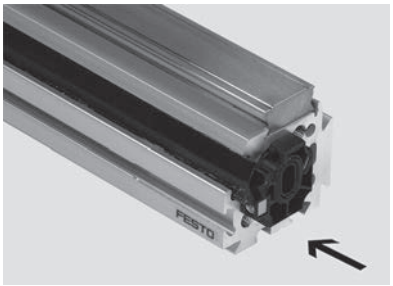
10. Grease the second buffer.

Note Table “Greasing during assembly” with the greasing instructions on page 59.



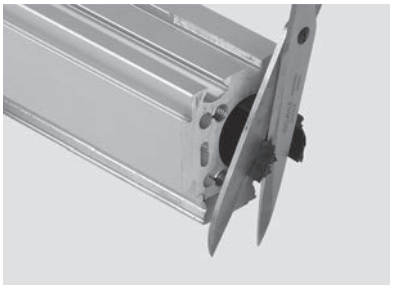
11. Push the buffer onto the other end of the cylinder barrel.

If shock absorbers are used on the connection / end cap the regulating screw for the end position cushioning (➔ Chapter 3.6 on page 22 Item 16 and Chapter 3.7 on page 24 Item 15) must be “open”. Unscrew the regulating screw so that it is positioned flush with the buffer.

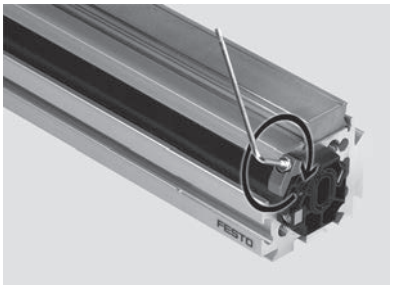


12. Grease the sealing ring.
13. Insert the sealing ring into the buffer.

Newly inserted sealing bands and cover bands are generally too long and protrude beyond the buffer. In this case, shorten both bands so that they do not protrude beyond the contact surface of the buffer (see step 13 on page 61).



14. Position the band clamping mechanism on the sealing band and cover band.
15. Clean the socket head screw to remove the locking agent.
16. Wet the socket head screw with threadlocker.
17. Tighten the socket head screw with the appropriate tightening torque (see table).



Type	Tightening torque
DGC-50-...-KF	1.0 Nm ±20 %
DGC-63-...-KF	1.0 Nm ±20 %

4.3.2.3 Installing a new slide module for design 1 and 2

These assembly steps are only necessary if a new slide module is mounted.

The new slide module is delivered fully assembled on a parking rail.

Note

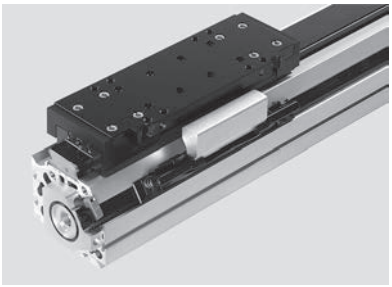
The recirculating ball bearing guide system is pretensioned. Individual ball bearings can therefore easily fall out of the roller carriage and become lost when pushing the slide module off the parking rail.

Balls that have fallen out of the roller carriage must be re-inserted into the relevant roller carriage.

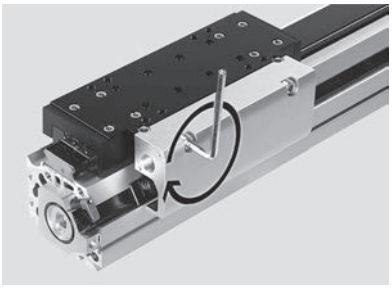
- The slide module is installed as described in steps 12 to 15 in Chapter 4.2.2.1 on page 40.

4.3.2.4 Further mounting of the linear drive in design 1 and 2

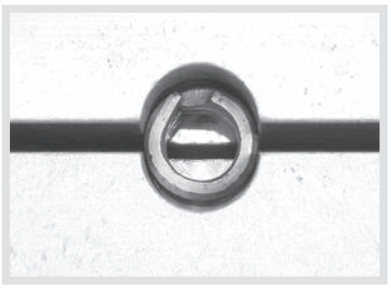
1. Align the slide module with the middle of the coupling.



2. Place the slide-piston connection on the coupling.
3. Clean the socket head screws for connecting the slide-piston connection to remove screw locking agent.
4. Wet the socket head screws for connecting the slide-piston connection with screw locking agent.
5. Tighten the socket head screws slightly so that the slide-piston connection is a distance of 1–2 mm from the slide module.

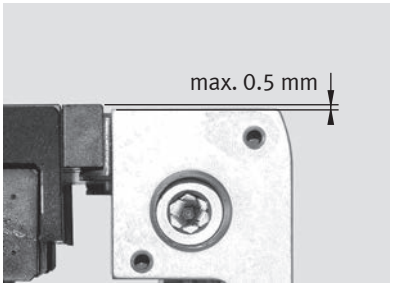


6. Insert both spring pins between the slide module and the slide-piston connection until they stop.



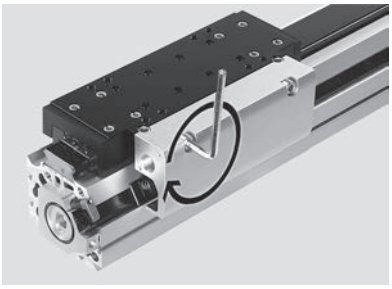
The openings of the spring pins must be offset by 90° from the separating joint between the slide module and the slide-piston connection.

7. Use a stop to align the top edge of the slide-piston connection so that it is flush with the outer edge of the slide. The parallel offset between the upper edge of the slide-piston connection and the outer edge of the slide must not exceed **0.5 mm**.



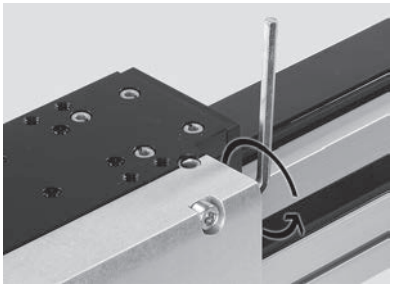
8. Tighten the socket head screws for connecting the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	20 Nm ±20 %
DGC-63-...-KF	20 Nm ±20 %



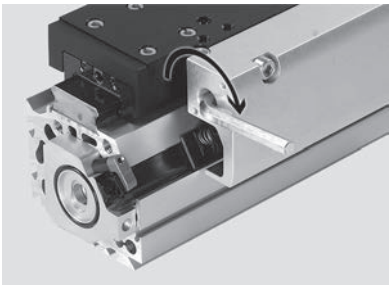
9. Tighten the socket head screw on the right-hand end of the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	20 Nm ±20 %
DGC-63-...-KF	20 Nm ±20 %



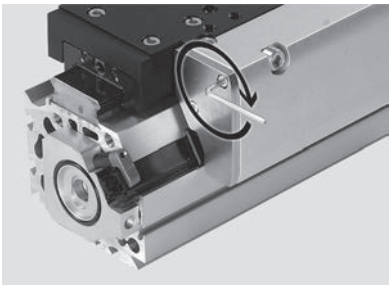
10. Tighten the threaded pins on the left-hand end of the slide-piston connection with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	5 Nm ±20 %
DGC-63-...-KF	5 Nm ±20 %



11. Position the stops on the sides of the slide-piston connection.
12. Clean the socket head screws to remove the locking agent.
13. Wet the socket head screws with thread locking agent.
14. Tighten the socket head screws with the appropriate tightening torque (see table).

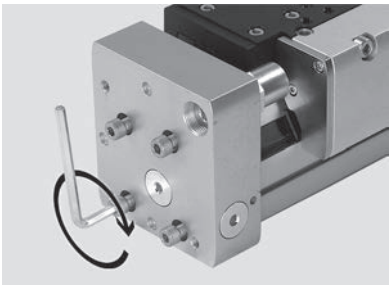
Type	Tightening torque
DGC-50-...-KF	2.0 Nm ±20 %
DGC-63-...-KF	2.0 Nm ±20 %



15. Grease the sealing rings for the connection / end caps.
16. Insert one sealing ring each into the connection / end cap.
17. Place the connection / end cap on the cylinder barrel.
18. Align the rear and bottom edge of the connection / end cap so that it is flush with the cylinder barrel.

19. Clean the self-tapping screws to remove the screw locking agent.
20. Wet the self-tapping screws with screw locking agent.
21. Tighten the self-tapping screws with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	25 Nm ±20 %
DGC-63-...-KF	30 Nm ±20 %

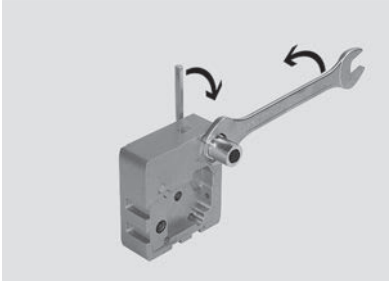


After the linear drive has been assembled, it must be commissioned as described in the operating instructions. They can be found on the Festo website (➔ www.festo.com).

4.3.3 Replacing the cushioning components

1. Undo the lock nuts on the cushioning components.

The cushioning components can be replaced with the connection / end cap installed.



2. Screw the cushioning components out of the connection / end cap.
3. Install the new cushioning components in the reverse order.
4. Tighten the cushioning components with the appropriate tightening torque (see table).

Type	Tightening torque
DGC-50-...-KF	35 Nm ±20 %
DGC-63-...-KF	60 Nm ±20 %

4.3.4 Replacing the plugs of the supply ports in the connection / end cap

Plug screws with separate sealing ring are installed in

- DGC-50-...-KF up to series B4 (➔ Chapter 3.6 on page 22), plug screws with separate sealing ring are no longer available for this size and are replaced by plug screws with integrated sealing ring (➔ Chapter 4.3.4.2 on page 67).
- DGC-63-...-KF up to series B8 (➔ Chapter 3.6 on page 22).

Plug screws with integrated sealing ring are installed in

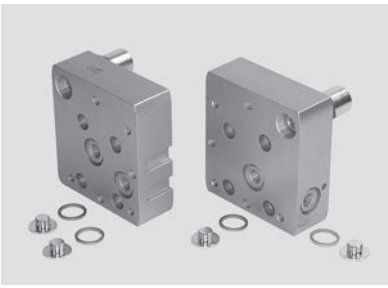
- DGC-50-...-KF from Series B5 (➔ Chapter 3.7 on page 24).
- DGC-63-...-KF from Series B9 (➔ Chapter 3.7 on page 24).

4.3.4.1 Replacing the plug screws with separate sealing ring of the supply ports in the connection / end cap (➔ Chapter 4.3.4 on page 67)

The plug screws with separate sealing ring can be replaced with the connection / end cap installed.

1. Unscrew the plug screws.
2. Remove the sealing rings.
3. Push the new sealing rings onto the plug screws.
4. Tighten the plug screws with the appropriate tightening torque (see table).

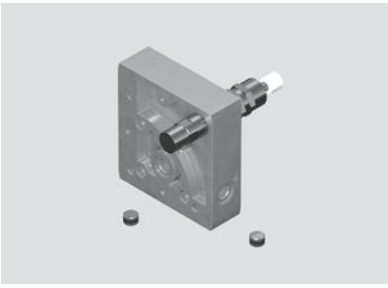
Type	Tightening torque
DGC-63-...-KF	18 Nm ±10 %



4.3.4.2 Replacing plug screws with integrated sealing ring of the supply ports in the connection / end cap (➔ Chapter 4.3.4 on page 67)

The plug screws with integrated sealing ring can be replaced with the connection / end cap installed.

1. Unscrew the plug screws.
2. Insert new plug screws into the supply ports.
3. Screw the grub screws **flush** into the connection / end cap.



5 Cleaning

The linear drive and all components must be thoroughly cleaned to remove all foreign particles, machining residues and old lubricants before they are greased.

Note

Festo recommends LOCTITE 7061 or an alternative suitable cleaning product for cleaning.

When using other cleaning products, ensure that they do not corrode the non-metal parts of the linear drive. If in doubt, check the resistance of the non-metal parts with the help of the information on the Festo website (➔ www.festo.com).

6 Maintenance

This chapter contains key technical information about how to carry out maintenance work on the linear drive. A detailed description of the steps for care and maintenance can be found in the operating instructions. Further information on the assembly aids and lubricants is given on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

Alternatively, Festo offers a service inspection which includes lubrication. Otherwise, the DGC-KF is maintenance-free.

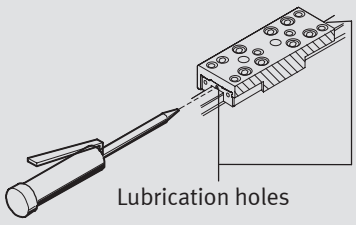
6.1 Relubricating the recirculating ball bearing guide

The recirculating ball bearing guide must be relubricated at certain intervals using a grease gun.

There are two different designs of roller carriage.

The standard slide variant has lubrication holes on both end faces of the slide. The lubricant must be inserted in both holes, as the two roller carriages do not have a lubricant connection.

The GP slide variant has an integrated lubricating system that ensures a continuous supply of lubricating oil for the raceways. These designs cannot be regreased.



Festo offers a one-hand, high-pressure grease gun with a suitable pointed nozzle for greasing the lubrication holes (➔ Chapter 7.2 on page 70).

Lubrication intervals

The roller carriages should be relubricated after a load-dependent lubrication interval S_{int}. To determine the lubrication interval, the load comparison factor f_v must be calculated using the formula for combined loads, see operating instructions DGC-8... 63-... (➔ www.festo.com).

The roller carriages must be relubricated every 3 years at the latest (every 2 years for DGC-...-KF-...-H1).

The lubrication intervals are reduced under the following operating conditions:

- Increased levels of dirt in the environment (e.g. grinding dust, etc.)
- Working strokes ‹ 50 mm or › 2000 mm.
- Speeds › 2 m/s
- Ambient temperatures › 40 °C

Note

The slide must be moved forwards and backwards on the roller track during lubrication so that the grease can fill all the spaces in the roller carriages.

For notes and information on the greasing process, see operating instructions for DGC-8 ... 63-... (➔ www.festo.com).

Approved grease grades for relubricating the recirculating ball bearing guide:

- DGC-8 / 12-...-KF: LUB-LG0
- DGC-18 / 25 / 32 / 40 / 50 / 63-...-KF: LUB-KC1
- DGC-...-KF-H1: EKALUB VP 874

	DGC-18-KF	DGC-25-KF	DGC-32-KF	DGC-40-KF	DGC-50-KF	DGC-63-KF
Roller carriage grease quantity each lubrication nipple	0.3 g	0.6 g	0.7 g	1.2 g	1.2 g	3.6 g

6.2 Maintenance of the band system

- Use a soft cloth to clean the band system as and when required.
- Avoid cleaning products that attach the band system made of PU. Excessive friction or the use of grease-cutting cleaning products (e.g. soapsuds) damages the grease layer.
- Grease the surface of the band system if it no longer has a layer of grease on it.
  Approved grease grades:
  - DGC-...-KF: LUB-KC1
  - DGC-...-KF-H1: LUB-E1

7 Tools

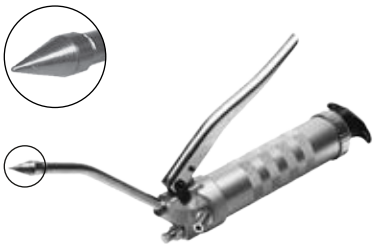
7.1 Standard tools

This chapter provides an overview of the tools and aids required to repair and maintain different sizes of the linear drive DGC-...-KF.

- Internal hexagon socket screwdriver (Allen key)
- TORX® hex socket screwdriver
- Screwdriver
- Torque wrench
- Torque screwdriver
- Flat pliers
- Sturdy general purpose scissors or metal shears

7.2 Special tools

The following special tools are required for repair and maintenance of the spindle axis:

Designation	Additional information	Festo order no.	Figure
One-hand grease gun LUB-1	Pinpoint nozzle for miniature, funnel-shaped lubrication nipples and lubricating holes	647958	
Lubrication adapter LUB-1-TR-I	Lubrication adapter (nozzle pipe Ø 6x200 axial)	647959	
Lubrication adapter LUB-1-TR-L	Lubrication adapter (nozzle pipe Ø 6x200 lateral)	647960	
Lubrication adapter LUB-1-TR-W	Lubrication adapter (nozzle pipe Ø 6×200 lateral, 45° angled)	8073388	

Further information on the special tools is included in the information brochure “Accessories, equipment and tools”. The brochure can be found in the online spare parts catalogue on the Festo website (➔ http://spareparts.festo.com/xdki/data/SPC/0/PDF_SAFE/Fitting%20aids.pdf).

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