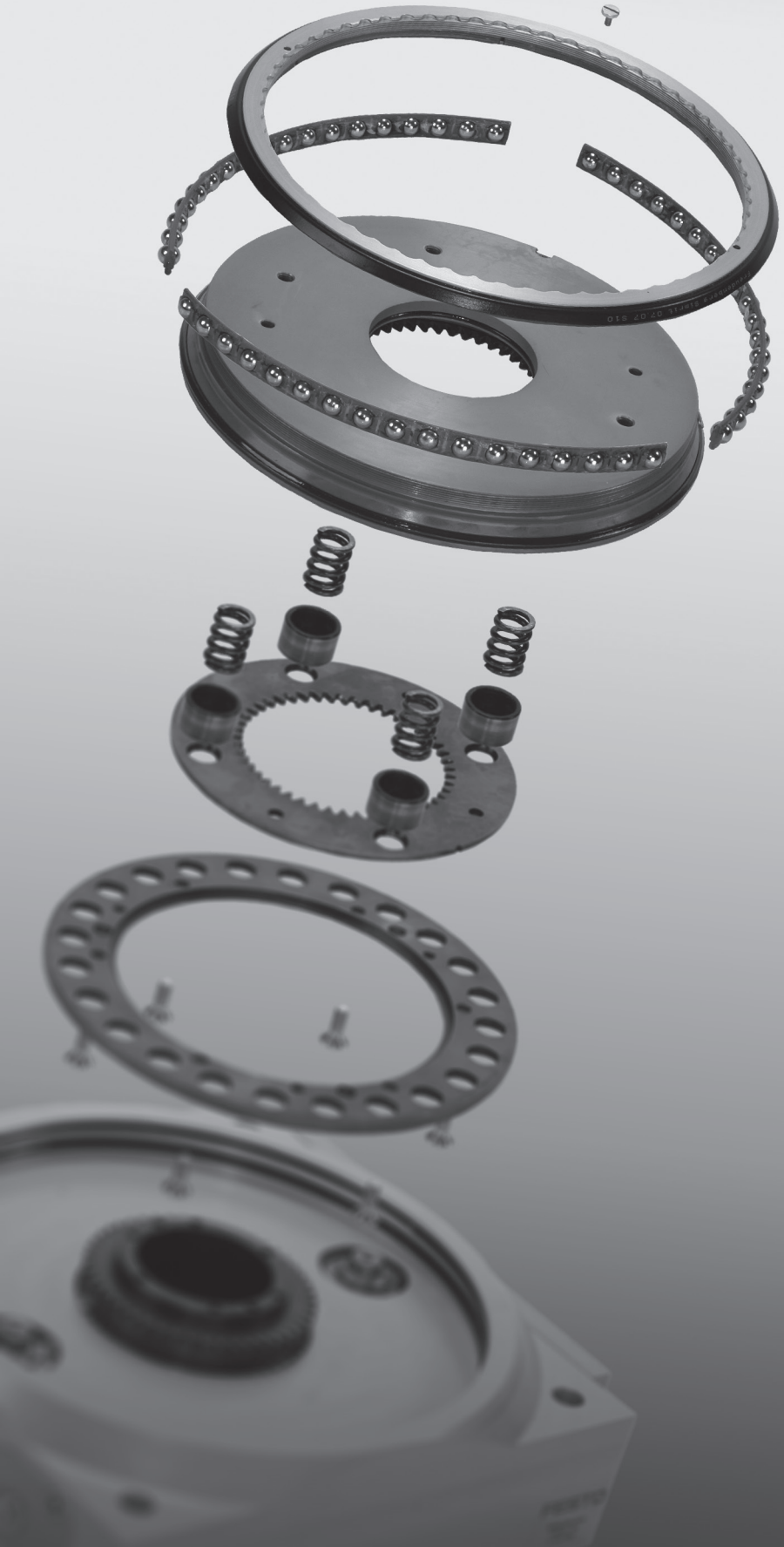
# Rotary indexing table

## DHTG-...-A

## DHTG-...-A-P4 / P4E4 / P4L12



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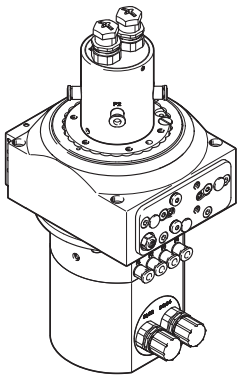
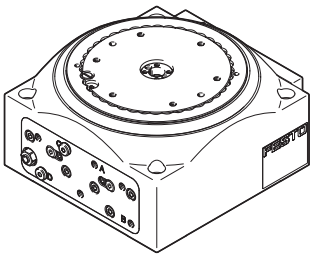
**Repair instructions (en)**





7DHTGe_en

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## Foreword

These repair instructions are valid for the rotary indexing tables 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 version and/or modification status of the rotary indexing tables. 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 SE & 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 91.

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 proper repair of the rotary indexing table type DHTG-...-A and DHTG-...-A-P4 / -P4E4 / -P4L12.

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 when repairing the rotary indexing table:

- **Operating instructions: Rotary indexing table DHTG and energy throughfeed DHTG-...-P4 / -P4E4 / -P4L12**
  Contain information on the peripherals of the respective product as well as about the function, structure, application, installation, commissioning, maintenance and care, etc. They are available on the Festo website (➔ www.festo.com).
- **Assembly instructions: Energy throughfeed DHTG-P4 and rotary throughfeed DHAS-SCR12-H6**
  Contain information on the assembly / dismantling of the respective product, they are available 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).
- **“Tools and repair accessories” information brochure**
  Contains an overview of available assembly aids (e.g. lubricants, locking agent), special tools, schematic diagrams, fixtures, measuring devices, etc. The information can be found in the online spare parts catalogue on the Festo website (➔ Tools and repair accessories.pdf).

## 1.2 Symbols used in these repair instructions

### Danger categories

The following symbols identify text passages which draw attention to specific hazards.

**Warning**

**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 list

➔ Result of an activity / references 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

**Warning**

The rotary indexing table must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using genuine 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 device-specific operating instructions.

**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.

**Caution**

Lifting large loads can lead to permanent injury.

- Depending on their size and weight, the products must be lifted by several persons or using suitable lifting gear.

**Note**

Carrying out repair work without the respective necessary technical documentation is dangerous, and therefore not permissible. Repairs must only be carried out in conjunction with these repair instructions and the respective operating instructions for the device, as well as the documents listed in Chapter 1.1 on page 6.

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.

**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!

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 compliance with the relevant safety guidelines if you comply with the limit values and load limits (see enclosed documentation).
- The rotary indexing table must be in perfect technical condition.
- The rotary indexing table may only be operated in its original condition and without unauthorised modifications.
- The rotary indexing table 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.

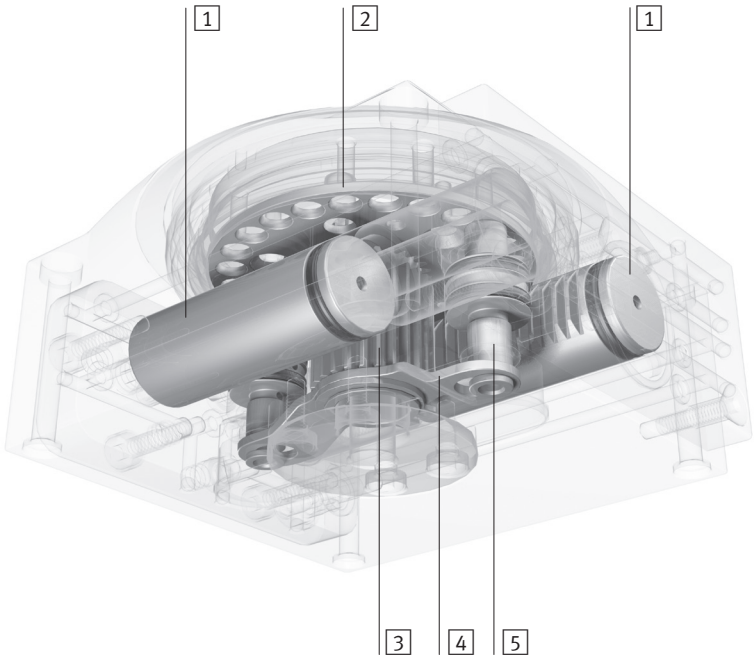
# 2 General product description

## 2.1 Functional description

The DHTG-...-A is a rotary indexing table based on the rack and pinion principle for power transmission and forced locking. The linear motion of two pneumatically actuated rack pistons is converted into swivel motion by a pinion. A second pair of pistons controls meshing of the pinion in the table gearing and locking of the holding position.

The DHTG rotary indexing table's intended use is to turn the mass of the workpiece through a defined rotation angle into a holding position.

As an additional function, an energy throughfeed can be selected in the versions P4 (purely pneumatic) and P4E4, P4L12 (pneumatic / electrical).



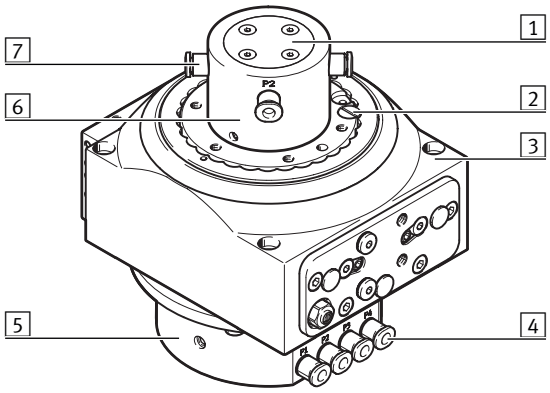

1 Gear rack
2 Index plate
3 Pinion
4 Metal sheet
5 Bolt for locking the index plate

## 2.2 Energy throughfeed

Electrical signals or compressed air can be transferred through the hollow shaft using the energy throughfeed.

### 2.2.1 DHTG-...-P4

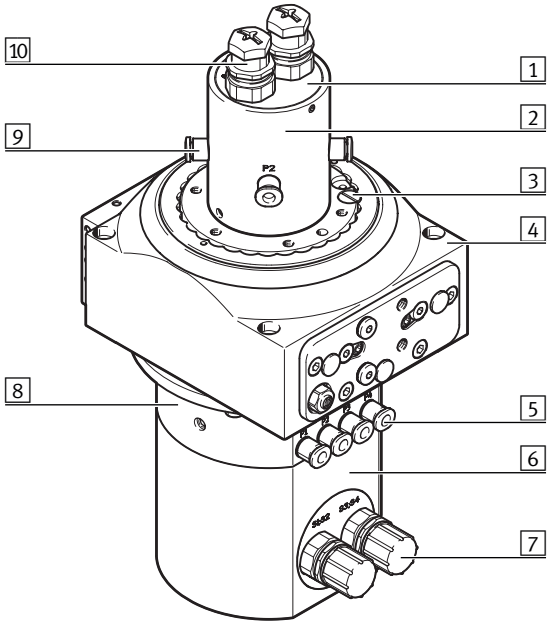
Energy throughfeed: pneumatic, 4 channels




1 End cap
2 Flat head screw
3 Rotary indexing table (DHTG)
4 Push-in fitting, input
5 Energy throughfeed, pneumatic module
6 Rotary distributor
7 Push-in fitting, output

### 2.2.2 DHTG-...-P4E4

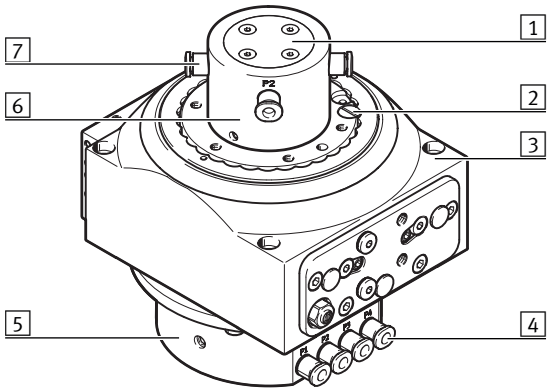
Energy throughfeed: pneumatic, 4 channels and electrical, 4 signals




1 End cap assembly
2 Rotary distributor
3 Flat head screw
4 Rotary indexing table (DHTG)
5 Push-in fitting, input
6 Energy throughfeed, electrical module
7 Flanged plug, input
8 Energy throughfeed, pneumatic module
9 Push-in fitting, output
10 Flanged plug, output

## 2.2.3 DHTG-...-P4L12

Energy throughfeed: pneumatic, 4 channels and electrical, 12 cables




1 End cap assembly
2 Rotary distributor
3 Flat head screw
4 Rotary indexing table (DHTG)
5 Push-in fitting, input
6 Energy throughfeed, electrical module
7 Flanged plug, input
8 Energy throughfeed, pneumatic module
9 Push-in fitting, output
10 Flanged plug, output

## 2.3 Types and part or module numbers

The complete overview of features, accessories, type codes, technical data and dimensions of the rotary indexing tables can be found in the product catalogue and on the Festo website (➔ www.festo.com).

### 2.3.1 Rotary indexing tables without energy throughfeed

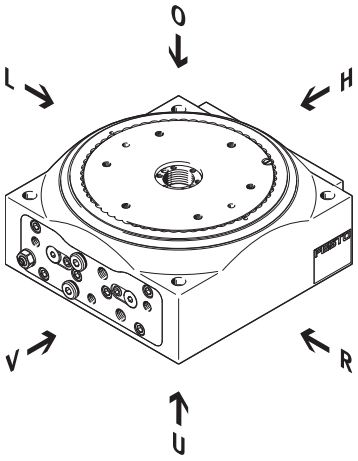
| Type | Part number |
|---|---|
| DHTG-65-2-A | 548076 |
| DHTG-65-3-A | 555448 |
| DHTG-65-4-A | 548077 |
| DHTG-65-6-A | 548078 |
| DHTG-65-8-A | 548079 |
| DHTG-65-12-A | 548080 |
| DHTG-65-24-A | 548081 |
| DHTG-90-2-A | 548082 |
| DHTG-90-3-A | 555449 |
| DHTG-90-4-A | 548083 |
| DHTG-90-6-A | 548084 |
| DHTG-90-8-A | 548085 |
| DHTG-90-12-A | 548086 |
| DHTG-90-24-A | 548087 |
| DHTG-140-3-A | 555450 |
| DHTG-140-4-A | 548088 |
| DHTG-140-6-A | 548089 |
| DHTG-140-8-A | 548090 |
| DHTG-140-12-A | 548091 |
| DHTG-140-24-A | 548092 |
| DHTG-220-3-A | 555451 |
| DHTG-220-4-A | 548093 |
| DHTG-220-6-A | 548094 |
| DHTG-220-8-A | 548095 |
| DHTG-220-12-A | 548096 |
| DHTG-220-24-A | 548097 |

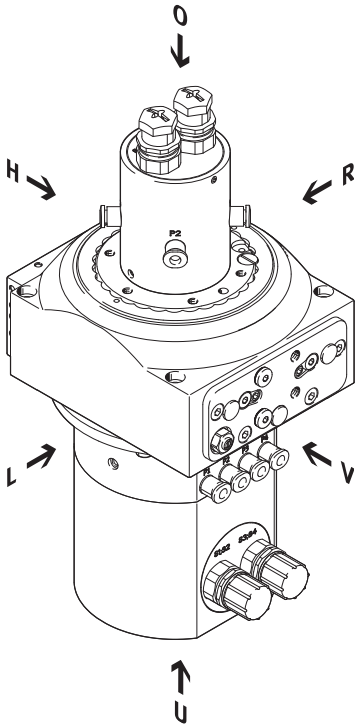
### 2.3.2 Rotary index tables with energy throughfeed

| Type | Module number |
|---|---|
| DHTG-65-...-A-P4 / P4E4 / P4L12 | 575738 |
| DHTG-90-...-A-P4 / P4E4 / P4L12 | 575739 |
| DHTG-140-...-A-P4 / P4E4 / P4L12 | 575740 |
| DHTG-220-...-A-P4 / P4E4 / P4L12 | 575741 |

## 2.4 Orientation designations

These illustrations give an overview of the direction designations of the rotary indexing tables.




**Orientation:**

O = top
U = bottom
R = right
L = left
V = front
H = rear

## 2.5 Type code

The precise features of a rotary indexing table can be determined with the help of the two sets of product labelling on the rotary indexing table. The order code describes the features of the rotary indexing table, separated by a dash "-".

**Rotary indexing table product labelling:**

**Example:**

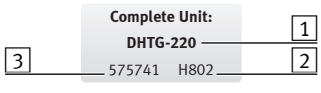

[1] Order code
[2] Serial number
[3] Part number

**The order code on the product labelling provides the following information:**

| | |
|---|---|
| **DHTG** | Rotary indexing table |
| **220** | Size |
| **4** | Pitch |
| **A** | For proximity sensor |

**Additional product labelling only with energy throughfeed:**

**Example:**




[1] Designation
[2] Serial number
[3] Part number

# 3 Component overviews and bill of materials

The data sheet contains a list and description of all possible equipment features of the product (➔ www.festo.com).

The component overviews with corresponding bills of materials for the following rotary indexing tables are listed on the following pages:

**Rotary indexing tables without energy throughfeed**

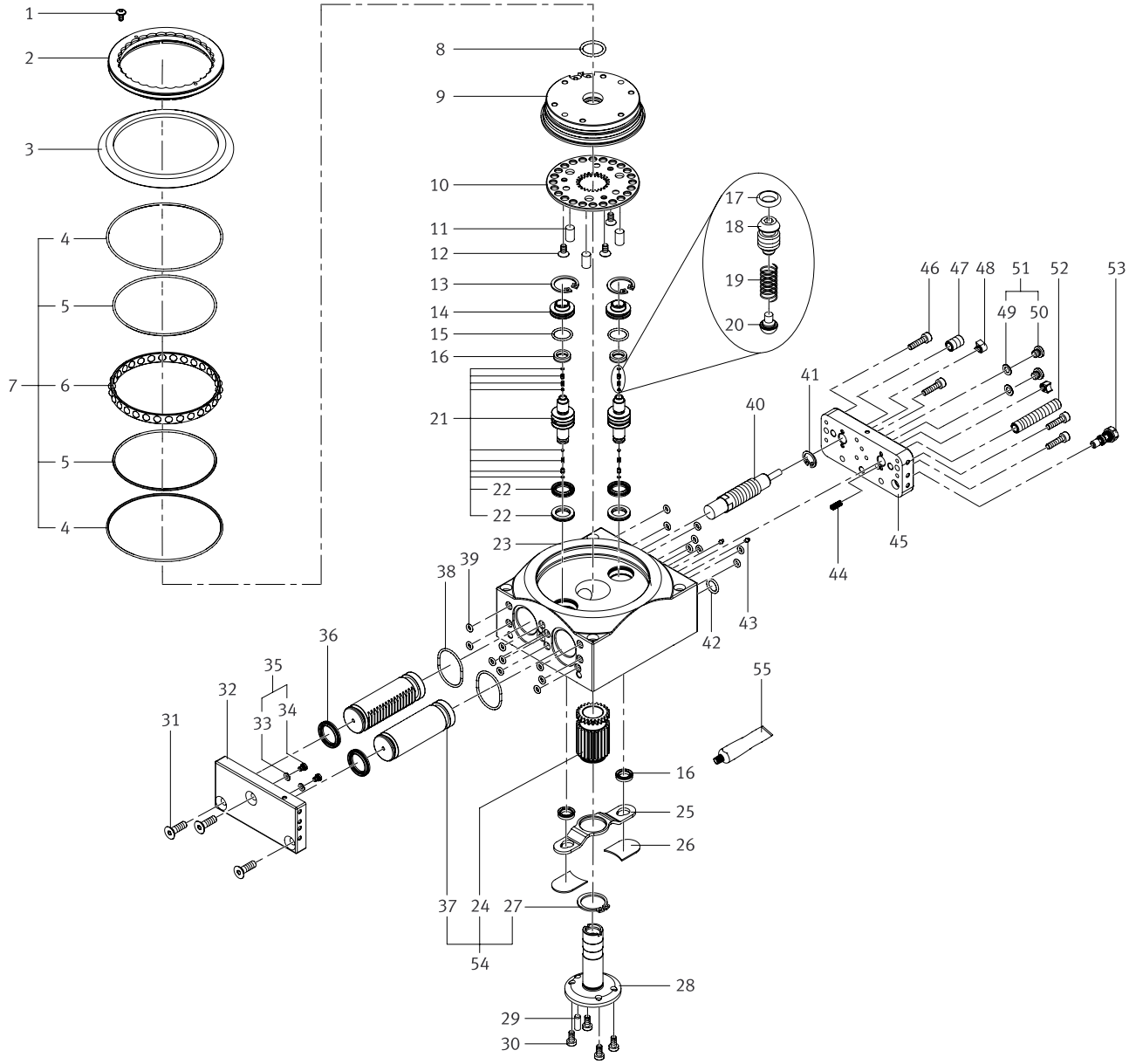
| Size | Part number | Components list | Bill of materials |
|---|---|---|---|
| DHTG-65-...-A | 548076 | **Series up to F7 (up to July 2015)** | **Series up to F7 (up to July 2015)** |
| | 555448 | ➔ Chapter 3.1 on page 14 | ➔ Chapter 3.1.1 on page 15 |
| | 548077 | | |
| | 548078 | **Series from F8 (from August 2015)** | **Series from F8 (from August 2015)** |
| | 548079 | ➔ Chapter 3.2 on page 16 | ➔ Chapter 3.2.1 on page 17 |
| | 548080 | | |
| | 548081 | | |
| DHTG-90-...-A | 548082 | **Series up to F7 (up to July 2015)** | **Series up to F7 (up to July 2015)** |
| | 555449 | ➔ Chapter 3.3 on page 18 | ➔ Chapter 3.3.1 on page 19 |
| | 548083 | | |
| | 548084 | **Series from F8 (from August 2015)** | **Series from F8 (from August 2015)** |
| | 548085 | ➔ Chapter 3.4 on page 20 | ➔ Chapter 3.4.1 on page 21 |
| | 548086 | | |
| | 548087 | | |
| DHTG-140-...-A | 555450 | **Series up to F7 (up to July 2015)** | **Series up to F7 (up to July 2015)** |
| | 548088 | ➔ Chapter 3.5 on page 22 | ➔ Chapter 3.5.1 on page 23 |
| | 548089 | | |
| | 548090 | **Series from F8 (from August 2015)** | **Series from F8 (from August 2015)** |
| | 548091 | ➔ Chapter 3.6 on page 24 | ➔ Chapter 3.6.1 on page 25 |
| | 548092 | | |
| DHTG-220-...-A | 555451 | **Series up to F7 (up to July 2015)** | **Series up to F7 (up to July 2015)** |
| | 548093 | ➔ Chapter 3.7 on page 26 | ➔ Chapter 3.7.1 on page 27 |
| | 548094 | | |
| | 548095 | **Series from F8 (from August 2015)** | **Series from F8 (from August 2015)** |
| | 548096 | ➔ Chapter 3.8 on page 28 | ➔ Chapter 3.8.1 on page 29 |
| | 548097 | | |

**Rotary index tables with energy throughfeed**

| Size | Module number | Components list | Bill of materials |
|---|---|---|---|
| DHTG-65-...-A-P4 | 575738 | ➔ Chapter 3.9 on page 30 | ➔ Chapter 3.9.1 on page 31 |
| DHTG-65-...-A-P4E4 | | ➔ Chapter 3.10 on page 32 | ➔ Chapter 3.10.1 on page 33 |
| DHTG-65-...-A-P4L12 | | ➔ Chapter 3.11 on page 34 | ➔ Chapter 3.11.1 on page 35 |
| DHTG-90-...-A-P4 | 575739 | ➔ Chapter 3.12 on page 36 | ➔ Chapter 3.12.1 on page 37 |
| DHTG-90-...-A-P4E4 | | ➔ Chapter 3.13 on page 38 | ➔ Chapter 3.13.1 on page 39 |
| DHTG-90-...-A-P4L12 | | ➔ Chapter 3.14 on page 40 | ➔ Chapter 3.14.1 on page 41 |
| DHTG-140-...-A-P4 | 575740 | ➔ Chapter 3.15 on page 42 | ➔ Chapter 3.15.1 on page 43 |
| DHTG-140-...-A-P4E4 | | ➔ Chapter 3.16 on page 44 | ➔ Chapter 3.16.1 on page 45 |
| DHTG-140-...-A-P4L12 | | ➔ Chapter 3.17 on page 46 | ➔ Chapter 3.17.1 on page 47 |
| DHTG-220-...-A-P4 | 575741 | ➔ Chapter 3.18 on page 48 | ➔ Chapter 3.18.1 on page 49 |
| DHTG-220-...-A-P4E4 | | ➔ Chapter 3.19 on page 50 | ➔ Chapter 3.19.1 on page 51 |
| DHTG-220-...-A-P4L12 | | ➔ Chapter 3.20 on page 52 | ➔ Chapter 3.20.1 on page 53 |

The following diagrams are 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).

## 3.1 Components overview DHTG-65-...-A, series up to F7 (up to July 2015)

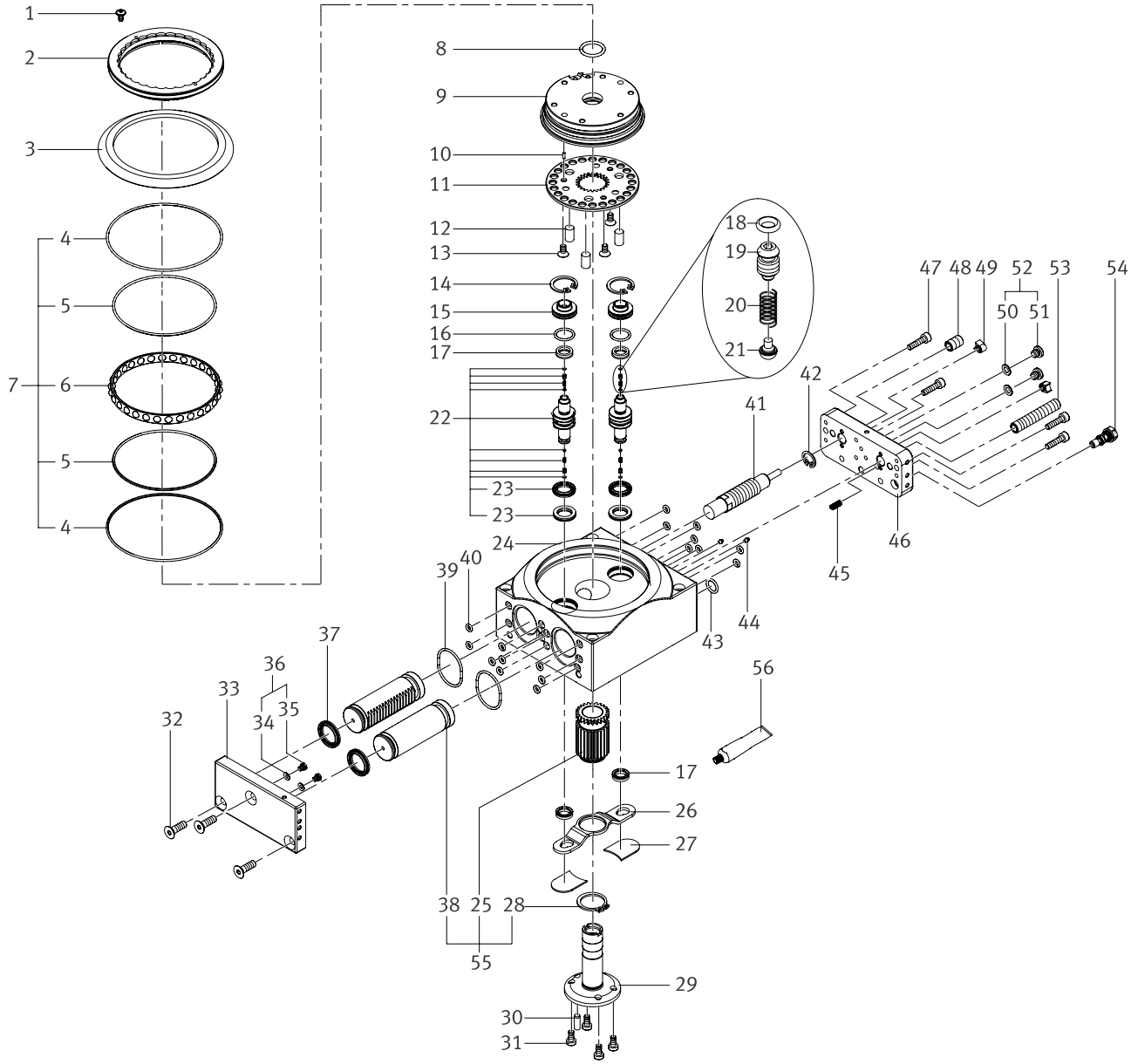


### 3.1.1 Bill of materials DHTG-65-...-A, Series up to F7 (up to July 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 14×2 |
| 9 | Plate |
| 10 | Index plate |
| 11 | Cylindrical dowel pin, DIN 6325-6M6×10 |
| 12 | Countersunk screw, DIN 7991-M4×8-8.8 |
| 13 | Retaining ring, DIN 472-18×1 |
| 14 | End cap |
| 15 | O-ring, 11.5×1.5 |
| 16 | Wiper seal |
| 17 | O-ring, 2.2×1 |
| 18 | Stop pin |
| 19 | Compression spring, D-001 |
| 20 | Lock bolt |
| 21 | Bolt |
| 22 | Piston seal |
| 23 | Housing |
| 24 | Pinion |
| 25 | Metal sheet |
| 26 | Cover |
| 27 | Retaining ring, DIN 471-18×1.2 |
| 28 | Flange |
| 29 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 30 | Socket head screw, DIN 7984-M4×8-8.8 |
| 31 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 32 | Plate module |
| 33 | Sealing ring, OK-M3 |
| 34 | Plug screw, B-M3-S9 |
| 35 | Blanking plug, B-M3-S9 |
| 36 | Piston seal |
| 37 | Gear rack |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 24.8×1.5 |
| 39 | O-ring, 3×1.5 |
| 40 | Shock absorber, YSRD- 8- 8-C |
| 41 | Retaining ring, DIN 472-12×1 |
| 42 | O-ring, 8×1.6 |
| 43 | Buffer, SLT-6 |
| 44 | Compression spring, D-055 |
| 45 | Plate module |
| 46 | Socket head screw, DIN 912-M4×16-8.8 |
| 47 | Stop screw, M8×1×12 |
| 48 | Clamping component, DGSL-10 |
| 49 | Sealing ring, OK-M5 |
| 50 | Plug screw, B-M5-B |
| 51 | Blanking plug, B-M5-B |
| 52 | Stop screw, M8×1×... |
| 53 | Hollow bolt module, GRLA-M5-B |
| 54 | Pinion module |
| 55 | Lubricating grease LUB-E1, silicone-free |

## 3.2 Components overview DHTG-65-...-A, series from F8 (from August 2015)



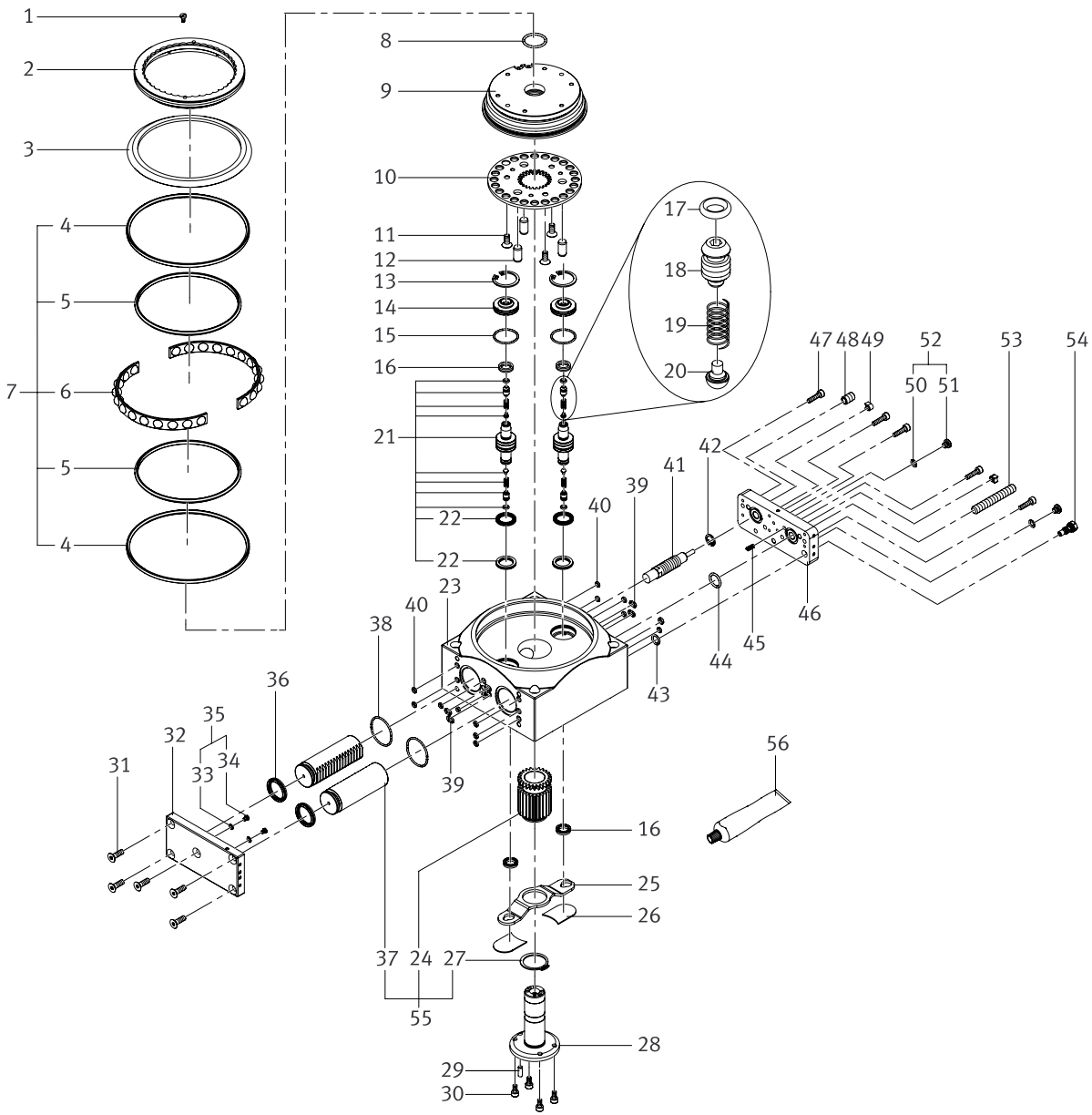
## 3.2.1 Bill of materials DHTG-65-...-A, series from F8 (from August 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 14×2 |
| 9 | Plate |
| 10 | Index plate |
| 11 | Spring pin, 3×12 |
| 12 | Cylindrical dowel pin, DIN 6325-6M6×10 |
| 13 | Countersunk screw, DIN 7991-M4×8-8.8 |
| 14 | Retaining ring, DIN 472-18×1 |
| 15 | End cap |
| 16 | O-ring, 11.5×1.5 |
| 17 | Wiper seal |
| 18 | O-ring, 2.2×1 |
| 19 | Stop pin |
| 20 | Compression spring, D-001 |
| 21 | Lock bolt |
| 22 | Bolt |
| 23 | Piston seal |
| 24 | Housing |
| 25 | Pinion |
| 26 | Metal sheet |
| 27 | Cover |
| 28 | Retaining ring, DIN 471-18×1.2 |
| 29 | Flange |
| 30 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 31 | Socket head screw, DIN 7984-M4×8-8.8 |
| 32 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 33 | Plate module |
| 34 | Sealing ring, OK-M3 |
| 35 | Plug screw, B-M3-S9 |
| 36 | Blanking plug, B-M3-S9 |
| 37 | Piston seal |

| No. | Designation, type |
|---|---|
| 38 | Gear rack |
| 39 | O-ring, 24.8×1.5 |
| 40 | O-ring, 3×1.5 |
| 41 | Shock absorber, YSRD- 8- 8-C |
| 42 | Retaining ring, DIN 472-12×1 |
| 43 | O-ring, 8×1.6 |
| 44 | Buffer, SLT-6 |
| 45 | Compression spring, D-055 |
| 46 | Plate module |
| 47 | Socket head screw, DIN 912-M4×16-8.8 |
| 48 | Stop screw, M8×1×12 |
| 49 | Clamping component, DGSL-10 |
| 50 | Sealing ring, OK-M5 |
| 51 | Plug screw, B-M5 B |
| 52 | Blanking plug, B-M5-B |
| 53 | Stop screw, M8×1×... |
| 54 | Hollow bolt module, GRLA-M5-B |
| 55 | Pinion module |
| 56 | Lubricating grease LUB-E1, silicone-free |

The new F8 series (from August 2015) differs from the previous series only due to an additional heavy-duty spring pin in the plate (➔ www.festo.com/spareparts).

## 3.3 Components overview DHTG-90-...-A, series up to F7 (up to July 2015)

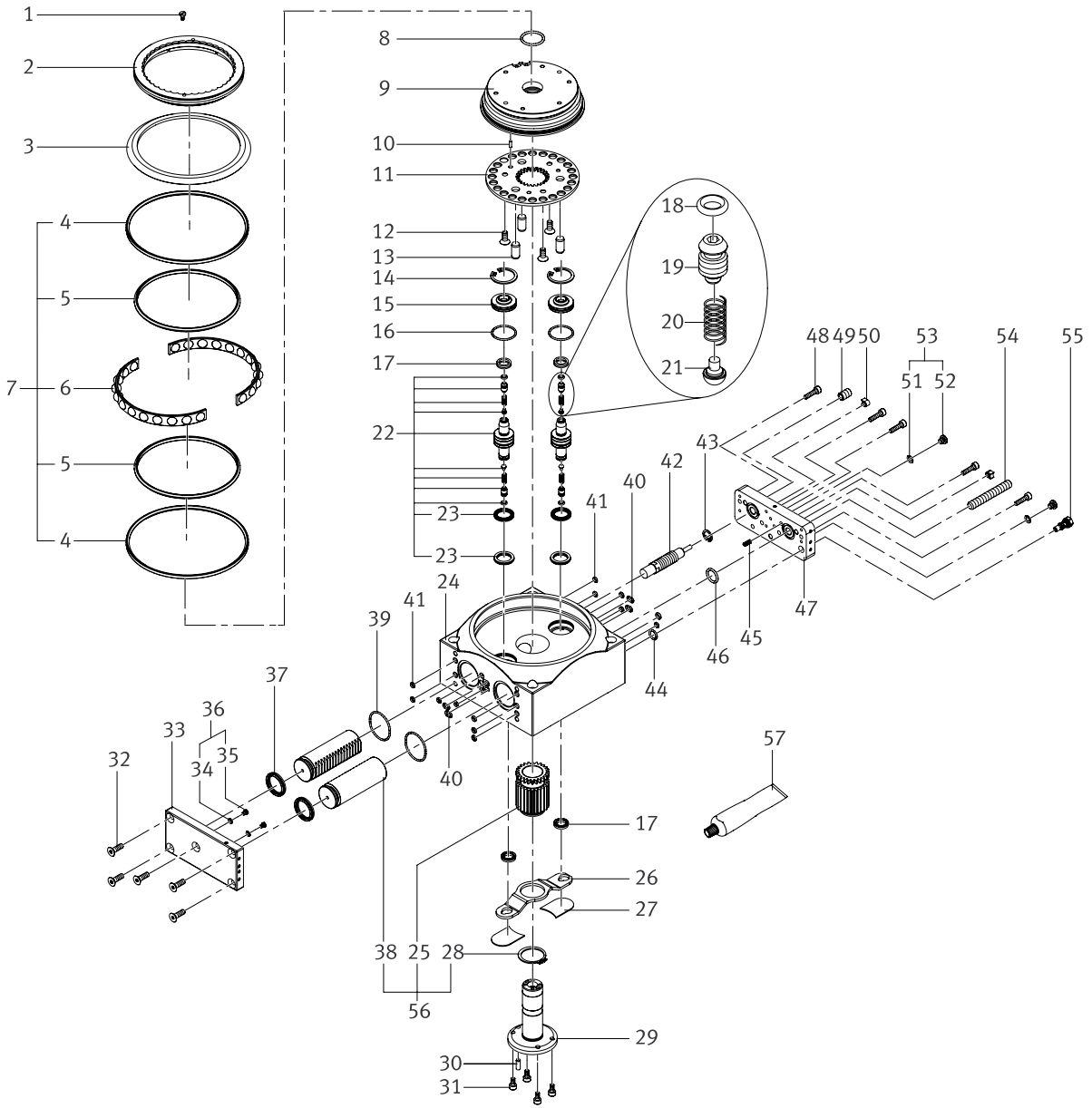


### 3.3.1 Bill of materials DHTG-90-...-A, Series up to F7 (up to July 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 20×2 |
| 9 | Plate |
| 10 | Index plate |
| 11 | Countersunk screw, DIN 7991-M5×12-8.8 |
| 12 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 13 | Retaining ring, DIN 472-25×1.2 |
| 14 | End cap |
| 15 | O-ring, 20×1.5 |
| 16 | Wiper seal |
| 17 | O-ring, 2.2×1 |
| 18 | Stop pin |
| 19 | Compression spring, D-001 |
| 20 | Lock bolt |
| 21 | Bolt |
| 22 | Piston seal |
| 23 | Housing |
| 24 | Pinion |
| 25 | Metal sheet |
| 26 | Cover |
| 27 | Retaining ring, DIN 471-24×1.2 |
| 28 | Flange |
| 29 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 30 | Socket head screw, DIN 912-M4×8-8.8 |
| 31 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 32 | Plate module |
| 33 | Sealing ring, OK-M3 |
| 34 | Plug screw, B-M3-S9 |
| 35 | Blanking plug, B-M3-S9-OK |
| 36 | Piston seal |
| 37 | Gear rack |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 28×1.5 |
| 39 | O-ring, 5×1.5 |
| 40 | O-ring, 3×1.5 |
| 41 | Shock absorber, YSRD- 8- 8-C |
| 42 | Retaining ring, DIN 472-12×1 |
| 43 | O-ring, 8×1.6 |
| 44 | O-ring, 12×2 |
| 45 | Compression spring, D-055 |
| 46 | Plate module |
| 47 | Socket head screw, DIN 912-M4×16-8.8 |
| 48 | Stop screw, M8×1×12 |
| 49 | Clamping component, DGSL-10 |
| 50 | Sealing ring, OK-M5 |
| 51 | Plug screw, B-M5 B |
| 52 | Blanking plug, B-M5-B-OK |
| 53 | Stop screw, M8×1×... |
| 54 | Hollow bolt module, GRLA-M5-B |
| 55 | Pinion module |
| 56 | Lubricating grease LUB-E1, silicone-free |

## 3.4 Components overview DHTG-90-...-A, series from F8 (from August 2015)



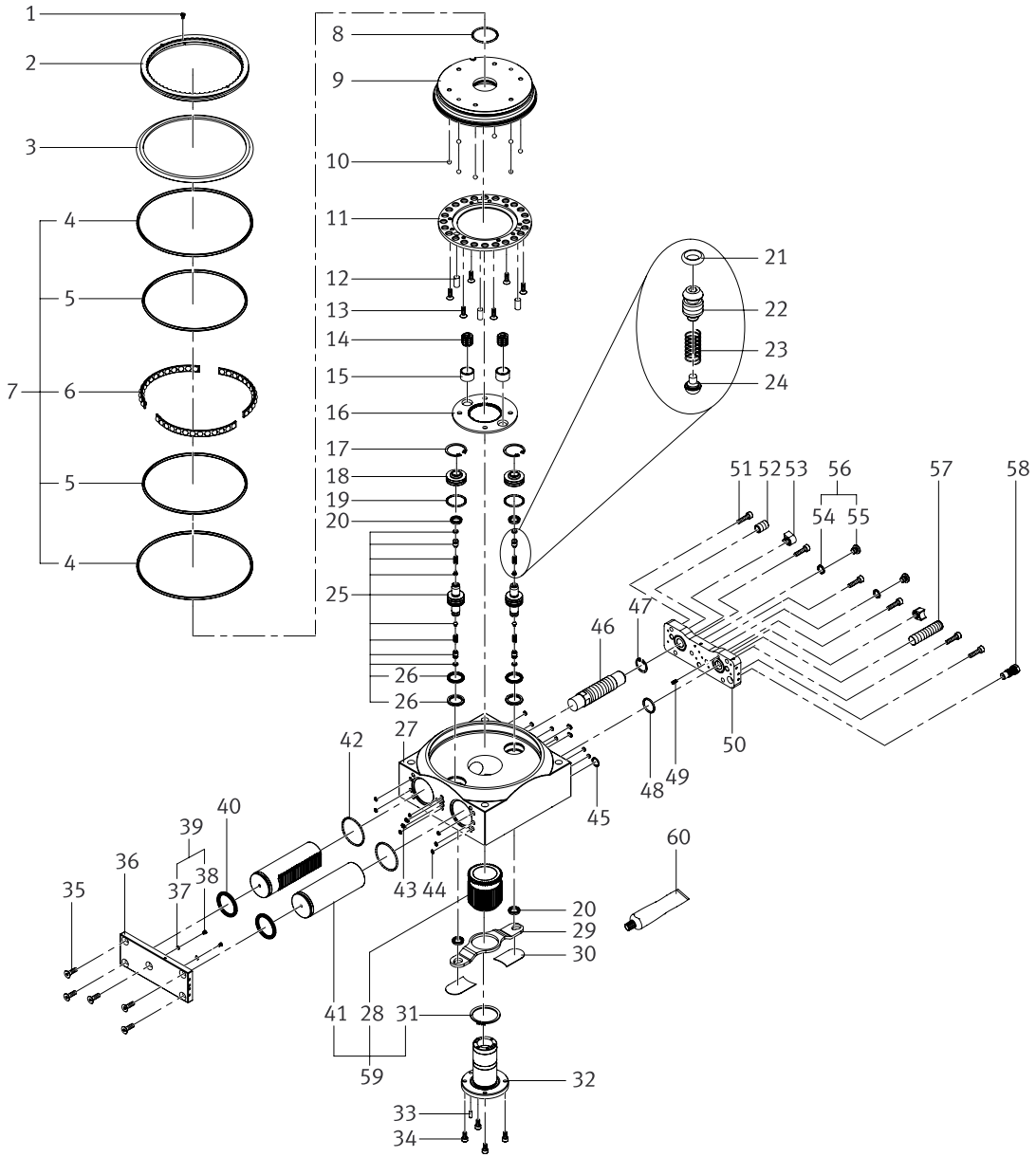
## 3.4.1 Bill of materials DHTG-90-...-A, series from F8 (from August 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 20×2 |
| 9 | Plate |
| 10 | Spring pin, 3×12 |
| 11 | Index plate |
| 12 | Countersunk screw, DIN 7991-M5×12-8.8 |
| 13 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 14 | Retaining ring, DIN 472-25×1.2 |
| 15 | End cap |
| 16 | O-ring, 20×1.5 |
| 17 | Wiper seal |
| 18 | O-ring, 2.2×1 |
| 19 | Stop pin |
| 20 | Compression spring, D-001 |
| 21 | Lock bolt |
| 22 | Bolt |
| 23 | Piston seal |
| 24 | Housing |
| 25 | Pinion |
| 26 | Metal sheet |
| 27 | Cover |
| 28 | Retaining ring, DIN 471-24×1.2 |
| 29 | Flange |
| 30 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 31 | Socket head screw, DIN 912-M4×8-8.8 |
| 32 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 33 | Plate module |
| 34 | Sealing ring, OK-M3 |
| 35 | Plug screw, B-M3-S9 |
| 36 | Blanking plug, B-M3-S9-OK |
| 37 | Piston seal |

| No. | Designation, type |
|---|---|
| 38 | Gear rack |
| 39 | O-ring, 28×1.5 |
| 40 | O-ring, 5×1.5 |
| 41 | O-ring, 3×1.5 |
| 42 | Shock absorber, YSRD- 8- 8-C |
| 43 | Retaining ring, DIN 472-12×1 |
| 44 | O-ring, 8×1.6 |
| 45 | O-ring, 12×2 |
| 46 | Compression spring, D-055 |
| 47 | Plate module |
| 48 | Socket head screw, DIN 912-M4×16-8.8 |
| 49 | Stop screw m8×1×12 |
| 50 | Clamping component, DGSL-10 |
| 51 | Sealing ring, OK-M5 |
| 52 | Shock absorber, B-M5 B |
| 53 | Blanking plug, B-M5-B-OK |
| 54 | Stop screw, M8×1×... |
| 55 | Hollow bolt module, GRLA-M5-B |
| 56 | Pinion module |
| 57 | Lubricating grease LUB-E1, silicone-free |

The new F8 series (from August 2015) differs from the previous series only due to an additional heavy-duty spring pin in the plate (➔ www.festo.com/spareparts).

## 3.5 Components overview DHTG-140-...-A, series up to F7 (up to July 2015)

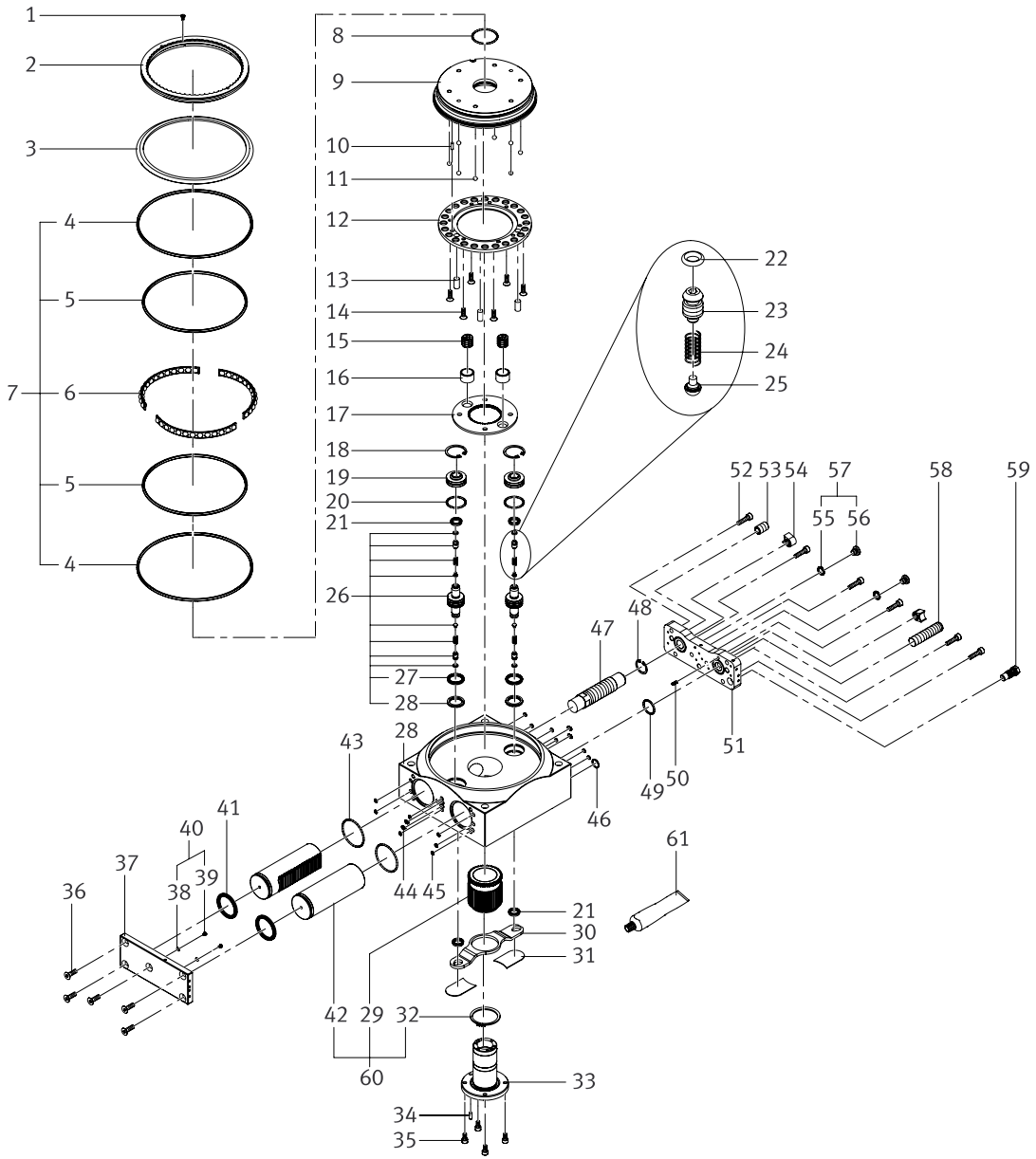


## 3.5.1 Bill of materials DHTG-140-...-A, Series up to F7 (up to July 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 35×2 |
| 9 | Plate |
| 10 | Rubber balls |
| 11 | Index plate |
| 12 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 13 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 14 | Compression spring |
| 15 | Sleeve |
| 16 | Ring gear |
| 17 | Retaining ring, DIN 472-30×1.2 |
| 18 | End cap |
| 19 | O-ring, 26×2 |
| 20 | Wiper seal |
| 21 | O-ring, 2.2×1 |
| 22 | Stop pin |
| 23 | Compression spring, D-001 |
| 24 | Lock bolt |
| 25 | Bolt |
| 26 | Piston seal |
| 27 | Housing |
| 28 | Pinion |
| 29 | Metal sheet |
| 30 | Cover |
| 31 | Retaining ring, DIN 471-40×1.75 |
| 32 | Flange |
| 33 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 34 | Socket head screw, DIN 912-M5×10-10.9 |
| 35 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 36 | Plate module |
| 37 | Sealing ring, OK-M3 |

| No. | Designation, type |
|---|---|
| 38 | Plug screw, B-M3-S9 |
| 39 | Blanking plug, B-M3-S9-OK |
| 40 | Piston seal |
| 41 | Gear rack |
| 42 | O-ring, 45×2 |
| 43 | O-ring, 5×1.5 |
| 44 | O-ring, 3×1.5 |
| 45 | O-ring, 11×1.5 |
| 46 | Shock absorber, YSRD-16-20-C |
| 47 | Retaining ring, DIN 472-22×1 |
| 48 | O-ring, 22×2 |
| 49 | Compression spring, D-055 |
| 50 | Plate module |
| 51 | Socket head screw, DIN 912-M6×16-8.8 |
| 52 | Stop screw, M14×1×14 |
| 53 | Clamping component, DGSL-20 |
| 54 | Sealing ring, OK-1/8 |
| 55 | Plug screw, DIN 908-G1/8-ST |
| 56 | Blanking plug, B-1/8-OK |
| 57 | Stop screw, M14×1×... |
| 58 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 59 | Pinion module |
| 60 | Lubricating grease LUB-E1, silicone-free |

## 3.6 Components overview DHTG-140-...-A, series from F8 (from August 2015)



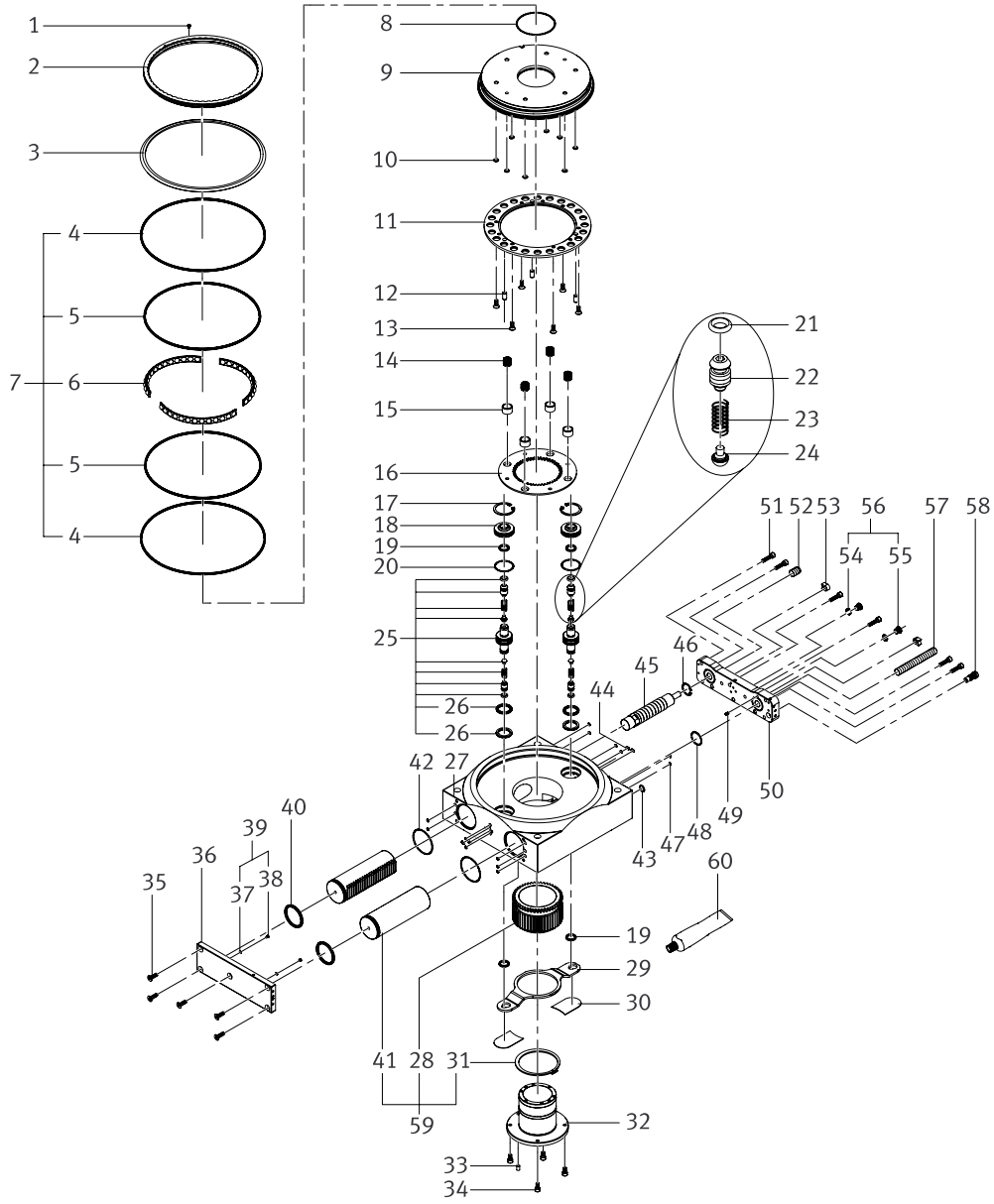
## 3.6.1 Bill of materials DHTG-140-...-A, series from F8 (from August 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 35×2 |
| 9 | Plate |
| 10 | Spring pin, 3×12 |
| 11 | Rubber balls |
| 12 | Index plate |
| 13 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 14 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 15 | Compression spring |
| 16 | Sleeve |
| 17 | Ring gear |
| 18 | Retaining ring, DIN 472-30×1.2 |
| 19 | End cap |
| 20 | O-ring, 26×2 |
| 21 | Wiper seal |
| 22 | O-ring, 2.2×1 |
| 23 | Stop pin |
| 24 | Compression spring D-001 |
| 25 | Lock bolt |
| 26 | Bolt |
| 27 | Piston seal |
| 28 | Housing |
| 29 | Pinion |
| 30 | Metal sheet |
| 31 | Cover |
| 32 | Retaining ring, DIN 471-40×1.75 |
| 33 | Flange |
| 34 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 35 | Socket head screw, DIN 912-M5×10-10.9 |
| 36 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 37 | Plate module |

| No. | Designation, type |
|---|---|
| 38 | Sealing ring, OK-M3 |
| 39 | Plug screw, B-M3-S9 |
| 40 | Blanking plug, B-M3-S9-OK |
| 41 | Piston seal |
| 42 | Gear rack |
| 43 | O-ring, 45×2 |
| 44 | O-ring, 5×1.5 |
| 45 | O-ring, 3×1.5 |
| 46 | O-ring, 11×1.5 |
| 47 | Shock absorber, YSRD-16-20-C |
| 48 | Retaining ring, DIN 472-22×1 |
| 49 | O-ring, 22×2 |
| 50 | Compression spring, D-055 |
| 51 | Plate module |
| 52 | Socket head screw, DIN 912-M6×16-8.8 |
| 53 | Stop screw, M14×1×14 |
| 54 | Clamping component, DGSL-20 |
| 55 | Sealing ring, OK-1/8 |
| 56 | Plug screw, DIN 908-G1/8-ST |
| 57 | Blanking plug, B-1/8-OK |
| 58 | Stop screw, M14×1×... |
| 59 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 60 | Pinion module |
| 61 | Lubricating grease LUB-E1, silicone-free |

The new F8 series (from August 2015) differs from the previous series only due to an additional heavy-duty spring pin in the plate (➔ www.festo.com/spareparts).

## 3.7 Components overview DHTG-220-...-A, series up to F7 (up to July 2015)

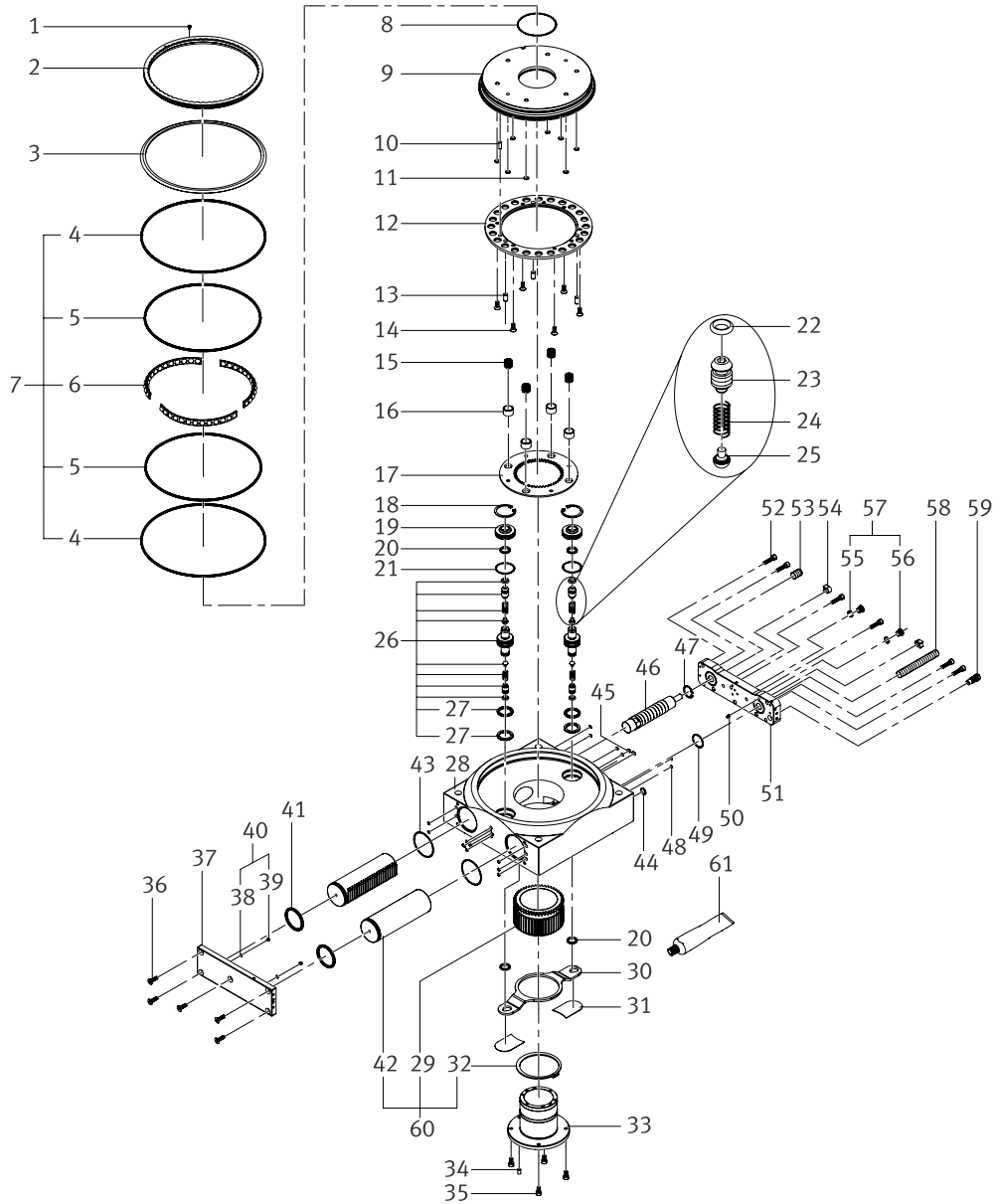


## 3.7.1 Bill of materials DHTG-220-...-A, Series up to F7 (up to July 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 75×2 |
| 9 | Plate |
| 10 | O-ring, 6.5×1.6 |
| 11 | Index plate |
| 12 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 13 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 14 | Compression spring |
| 15 | Sleeve |
| 16 | Ring gear |
| 17 | Retaining ring, F-40×1.75 |
| 18 | End cap |
| 19 | Wiper seal |
| 20 | O-ring, 35×2 |
| 21 | O-ring, 2.2×1 |
| 22 | Stop pin |
| 23 | Compression spring, D-001 |
| 24 | Lock bolt |
| 25 | Bolt |
| 26 | Piston seal |
| 27 | Housing |
| 28 | Pinion |
| 29 | Metal sheet |
| 30 | Cover |
| 31 | Retaining ring, DIN 471-82×2.5 |
| 32 | Flange |
| 33 | Cylindrical dowel pin, DIN 6325-6M6×12 |
| 34 | Socket head screw, DIN 912-M6×12-10.9 |
| 35 | Countersunk screw, DIN 7991-M6×20-8.8 |
| 36 | Plate module |
| 37 | Sealing ring, OK-M3 |

| No. | Designation, type |
|---|---|
| 38 | Plug screw, B-M3-S9 |
| 39 | Blanking plug, B-M3-S9-OK |
| 40 | Piston seal |
| 41 | Gear rack |
| 42 | O-ring, 52×2 |
| 43 | O-ring, 11×1.5 |
| 44 | O-ring, 5×1.5 |
| 45 | Shock absorber module, YSRD-20-20-C |
| 46 | Retaining ring, J-26 |
| 47 | O-ring, 3×1.5 |
| 48 | O-ring, 26×2 |
| 49 | Compression spring, D-055 |
| 50 | Plate module |
| 51 | Socket head screw, DIN 912-M6×25-10.9 |
| 52 | Stop screw, M14×1×19 |
| 53 | Clamping component, DGSL-20 |
| 54 | Sealing ring, OK-1/8 |
| 55 | Plug screw, DIN 908-G1/8-ST |
| 56 | Blanking plug, B-1/8-OK |
| 57 | Stop screw, M14×1×... |
| 58 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 59 | Pinion module |
| 60 | Lubricating grease LUB-E1, silicone-free |

## 3.8 Components overview DHTG-220-...-A, series from F8 (from August 2015)



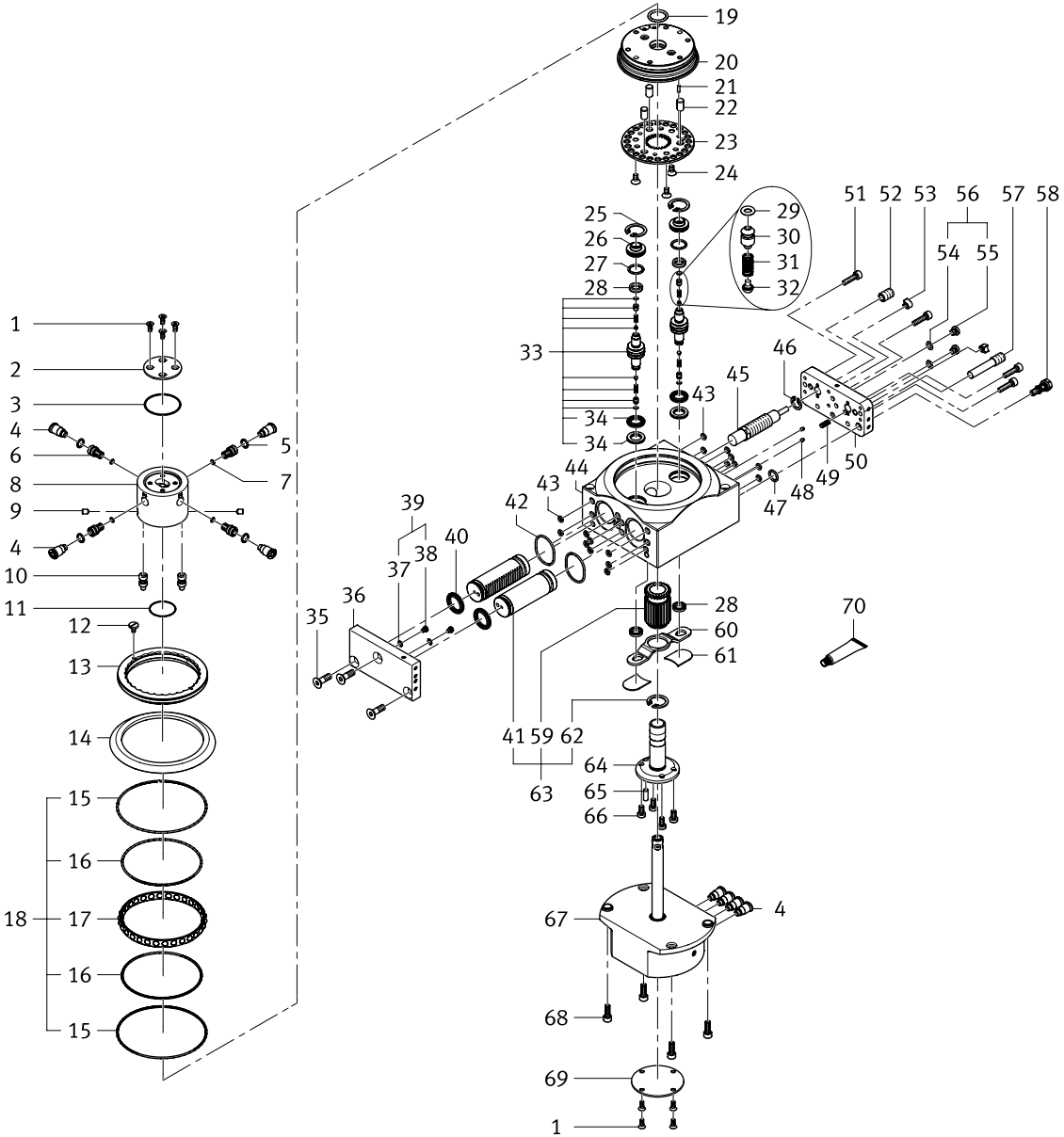
## 3.8.1 Bill of materials DHTG-220-...-A, series from F8 (from August 2015)

| No. | Designation, type |
|---|---|
| 1 | Flat head screw, DIN 921-M3×6-5.8 |
| 2 | Clamping ring |
| 3 | Plate seal |
| 4 | Rail |
| 5 | Rail |
| 6 | Ball bearing |
| 7 | Bearing module |
| 8 | O-ring, 75×2 |
| 9 | Plate |
| 10 | Spring pin, 3×12 |
| 11 | O-ring, 6.5×1.6 |
| 12 | Index plate |
| 13 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 14 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 15 | Compression spring |
| 16 | Sleeve |
| 17 | Ring gear |
| 18 | Retaining ring, F-40×1.75 |
| 19 | End cap |
| 20 | Wiper seal |
| 21 | O-ring, 35×2 |
| 22 | O-ring, 2.2×1 |
| 23 | Stop pin |
| 24 | Compression spring, D-001 |
| 25 | Lock bolt |
| 26 | Bolt |
| 27 | Piston seal |
| 28 | Housing |
| 29 | Pinion |
| 30 | Metal sheet |
| 31 | Cover |
| 32 | Retaining ring, DIN 471-82×2.5 |
| 33 | Flange |
| 34 | Cylindrical dowel pin, DIN 6325-6M6×12 |
| 35 | Socket head screw, DIN 912-M6×12-10.9 |
| 36 | Countersunk screw, DIN 7991-M6×20-8.8 |
| 37 | Plate module |

| No. | Designation, type |
|---|---|
| 38 | Sealing ring, OK-M3 |
| 39 | Plug screw, B-M3-S9 |
| 40 | Blanking plug, B-M3-S9-OK |
| 41 | Piston seal |
| 42 | Gear rack |
| 43 | O-ring, 52×2 |
| 44 | O-ring, 11×1.5 |
| 45 | O-ring, 5×1.5 |
| 46 | Shock absorber module, YSRD-20-20-C |
| 47 | Retaining ring, J-26 |
| 48 | O-ring, 3×1.5 |
| 49 | O-ring, 26×2 |
| 50 | Compression spring, D-055 |
| 51 | Plate module |
| 52 | Socket head screw, DIN 912-M6×25-10.9 |
| 53 | Stop screw, M14×1×19 |
| 54 | Clamping component, DGSL-20 |
| 55 | Sealing ring, OK-1/8 |
| 56 | Plug screw, DIN 908-G1/8-ST |
| 57 | Blanking plug, B-1/8-OK |
| 58 | Stop screw, M14×1×... |
| 59 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 60 | Pinion module |
| 61 | Lubricating grease LUB-E1, silicone-free |

The new F8 series (from August 2015) differs from the previous series only due to an additional heavy-duty spring pin in the plate (➔ www.festo.com/spareparts).

## 3.9 Components overview DHTG-65-...-A-P4

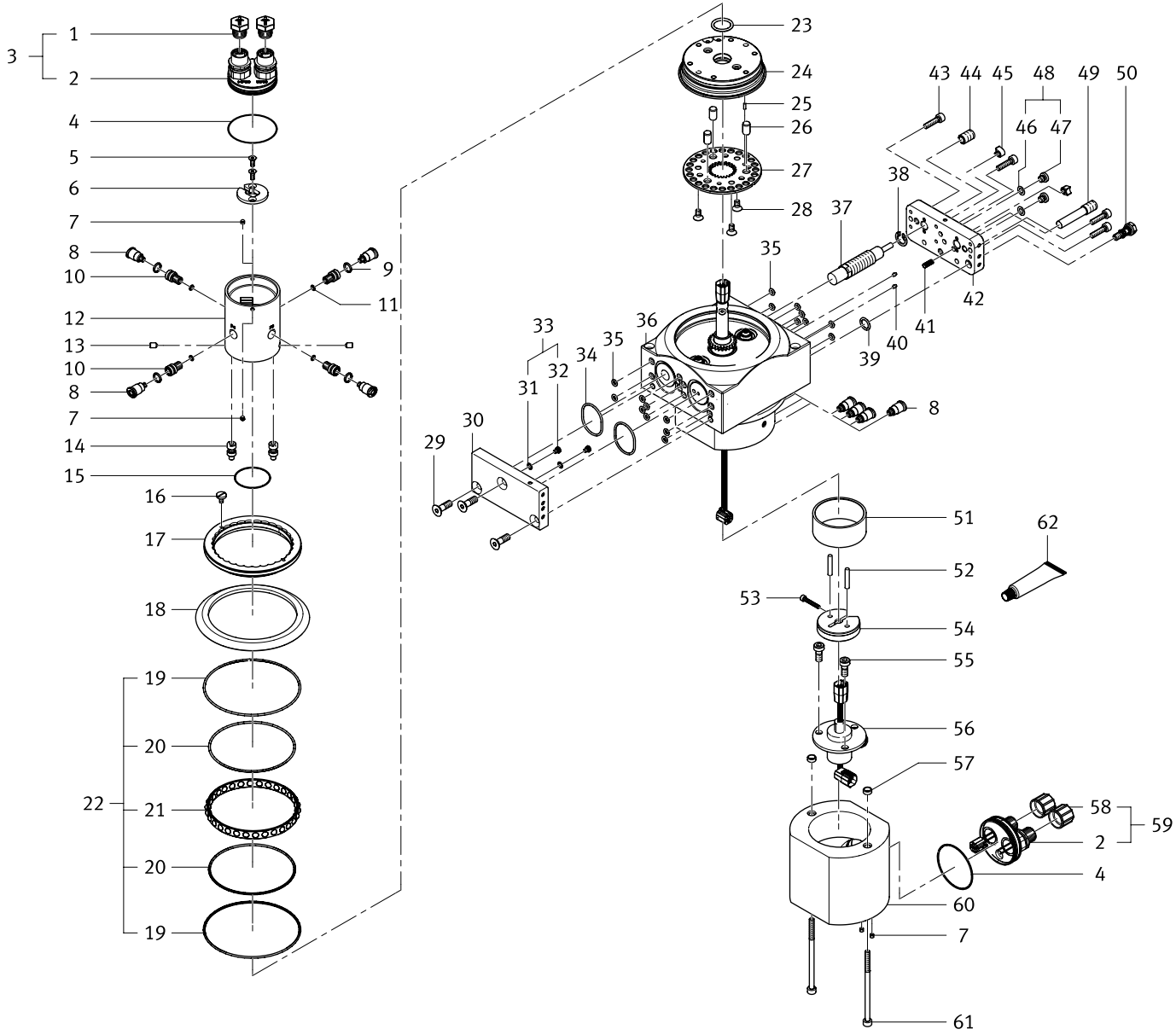


## 3.9.1 Bill of materials DHTG-65-...-A-P4

| No. | Designation, type |
|---|---|
| 1 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 2 | End cap |
| 3 | O-ring, I3601 B-30×1-N-NBR70 |
| 4 | Push-in fitting, QSM-M5-4-I |
| 5 | O-ring, I3601 B-6×1-N-NBR75 |
| 6 | Bolt |
| 7 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 8 | Holder |
| 9 | Grub screw, ISO 4027-M4×6-45H |
| 10 | Grub screw, HAPG-ZB-7 |
| 11 | O-ring, I3601 B-22×1-N-NBR70 |
| 12 | Flat head screw, DIN 921-M3×6-5.8 |
| 13 | Clamping ring |
| 14 | Plate seal |
| 15 | Rail |
| 16 | Rail |
| 17 | Ball bearing |
| 18 | Bearing module |
| 19 | O-ring, 14×2 |
| 20 | Plate |
| 21 | Spring pin, 3×12 |
| 22 | Cylindrical dowel pin, DIN 6325-6M6×10 |
| 23 | Index plate |
| 24 | Countersunk screw, DIN 7991-M4×8-8.8 |
| 25 | Retaining ring, DIN 472-18×1 |
| 26 | End cap |
| 27 | O-ring, 11.5×1.5 |
| 28 | Wiper seal |
| 29 | O-ring, 2.2×1 |
| 30 | Stop pin |
| 31 | Compression spring, D-001 |
| 32 | Lock bolt |
| 33 | Bolt |
| 34 | Piston seal |
| 35 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 36 | Plate module |
| 37 | Sealing ring, OK-M3 |

| No. | Designation, type |
|---|---|
| 38 | Plug screw, B-M-S9 |
| 39 | Blanking plug, B-M3-S9-OK |
| 40 | Piston seal |
| 41 | Gear rack |
| 42 | O-ring, 24.8×1.5 |
| 43 | O-ring, 3×1.5 |
| 44 | Housing |
| 45 | Shock absorber, YSRD- 8- 8-C |
| 46 | Retaining ring, DIN 472-12×1 |
| 47 | O-ring, 8×1.6 |
| 48 | Buffer, SLT-6 |
| 49 | Compression spring, D-055 |
| 50 | Plate module |
| 51 | Socket head screw, DIN 912-M4×16-8.8 |
| 52 | Stop screw, M8×1×12 |
| 53 | Clamping component |
| 54 | Sealing ring |
| 55 | Plug screw, B-M5 B |
| 56 | Blanking plug, B-M5-B-OK |
| 57 | Stop screw, M8×1×... |
| 58 | Hollow bolt module |
| 59 | Pinion |
| 60 | Metal sheet |
| 61 | Cover |
| 62 | Retaining ring, DIN 471-18×1.2 |
| 63 | Pinion module |
| 64 | Flange |
| 65 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 66 | Socket head screw, DIN 7984-M4×8-8.8 |
| 67 | Housing |
| 68 | Socket head screw, ISO 4762-M4×12-10.9 |
| 69 | End cap |
| 70 | Lubricating grease LUB-E1, silicone-free |

## 3.10 Components overview DHTG-65-...-A-P4E4

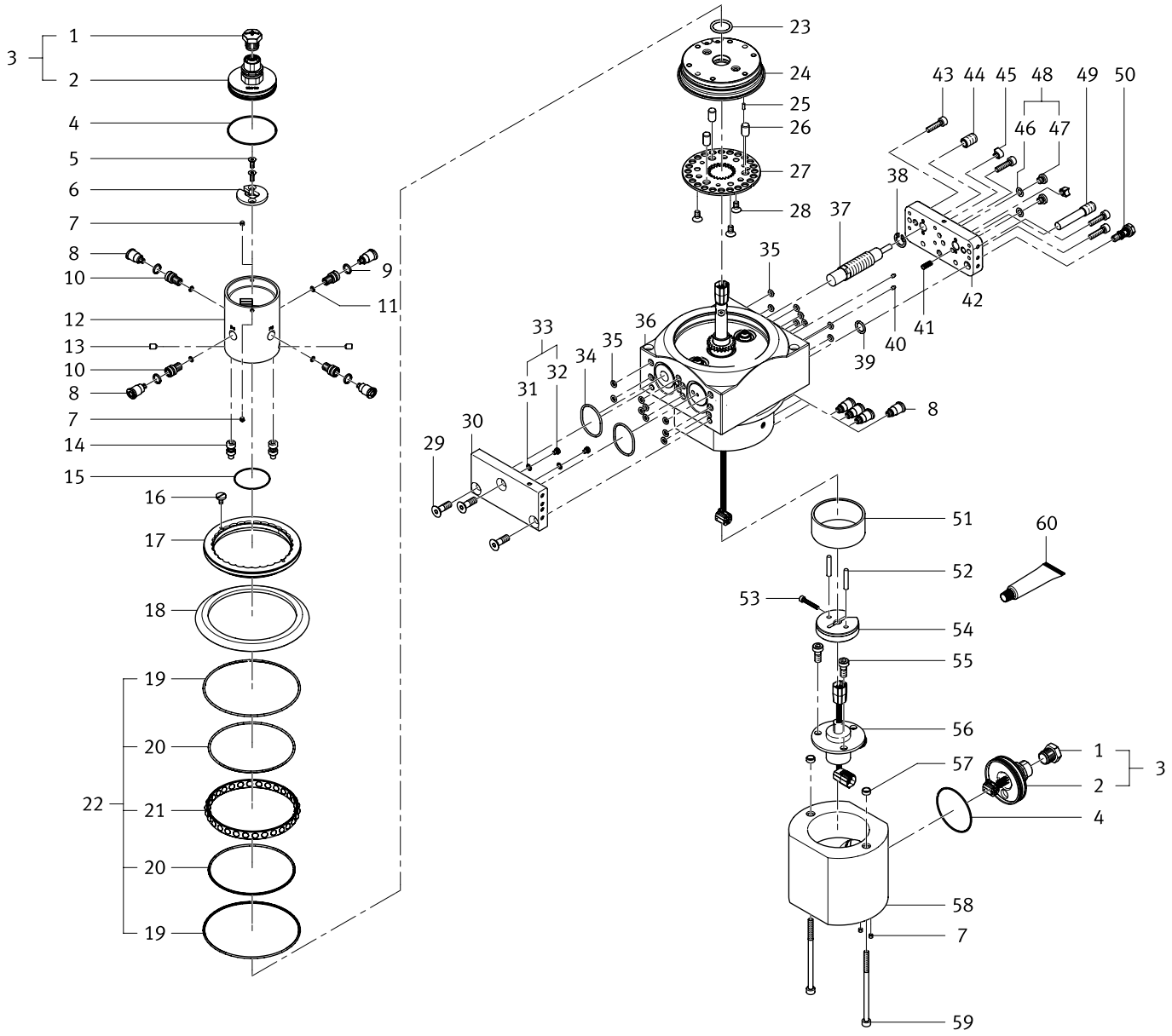


## 3.10.1 Bill of materials DHTG-65-...-A-P4E4

| No. | Designation, type |
|---|---|
| 1 | Cover cap |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Flat head screw, DIN 921-m3×6-5.8 |
| 17 | Clamping ring |
| 18 | Plate seal |
| 19 | Rail |
| 20 | Rail |
| 21 | Ball bearing |
| 22 | Bearing module |
| 23 | O-ring, 14×2 |
| 24 | Plate |
| 25 | Spring pin, 3×12 |
| 26 | Cylindrical dowel pin, DIN 6325-6M6×10 |
| 27 | Index plate |
| 28 | Countersunk screw, DIN 7991-M4×8-8.8 |
| 29 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 30 | Plate module |
| 31 | Sealing ring, OK-M3 |
| 32 | Plug screw, B-M3-S9 |
| 33 | Blanking plug, B-M3-S9-OK |
| 34 | O-ring, 24.8×1.5 |
| 35 | O-ring, 3×1.5 |
| 36 | Housing |
| 37 | Shock absorber, YSRD-8-8-C |

| No. | Designation, type |
|---|---|
| 38 | Retaining ring, DIN 472-12×1 |
| 39 | O-ring, 8×1.6 |
| 40 | Buffer, SLT- |
| 41 | Compression spring, D-055 |
| 42 | Plate module |
| 43 | Socket head screw, DIN 912-M4×16-8.8 |
| 44 | Stop screw, M8×1×12 |
| 45 | Clamping component, DGSL-10 |
| 46 | Sealing ring, OK-M5 |
| 47 | Plug screw, B-M5 B |
| 48 | Blanking plug, B-M5-B-OK |
| 49 | Stop screw, M8×1×... |
| 50 | Hollow bolt module, GRLA-M5-B |
| 51 | Plain bearing, LSM-4044-20 |
| 52 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 53 | Socket head screw, ISO 4762-M3×20-8.8 |
| 54 | Couplings |
| 55 | Socket head screw, DIN 6912-M5×12-8.8 |
| 56 | Rotary throughfeed, DHAS-SCR12-H6 |
| 57 | Centring ring, ZBH-7 ID5,3 |
| 58 | Cap, M12×1 |
| 59 | End cap module |
| 60 | Housing |
| 61 | Socket head screw, DIN 912-M4×70-8.8 |
| 62 | Lubricating grease LUB-E1, silicone-free |

## 3.11 Components overview DHTG-65-...-A-P4L12

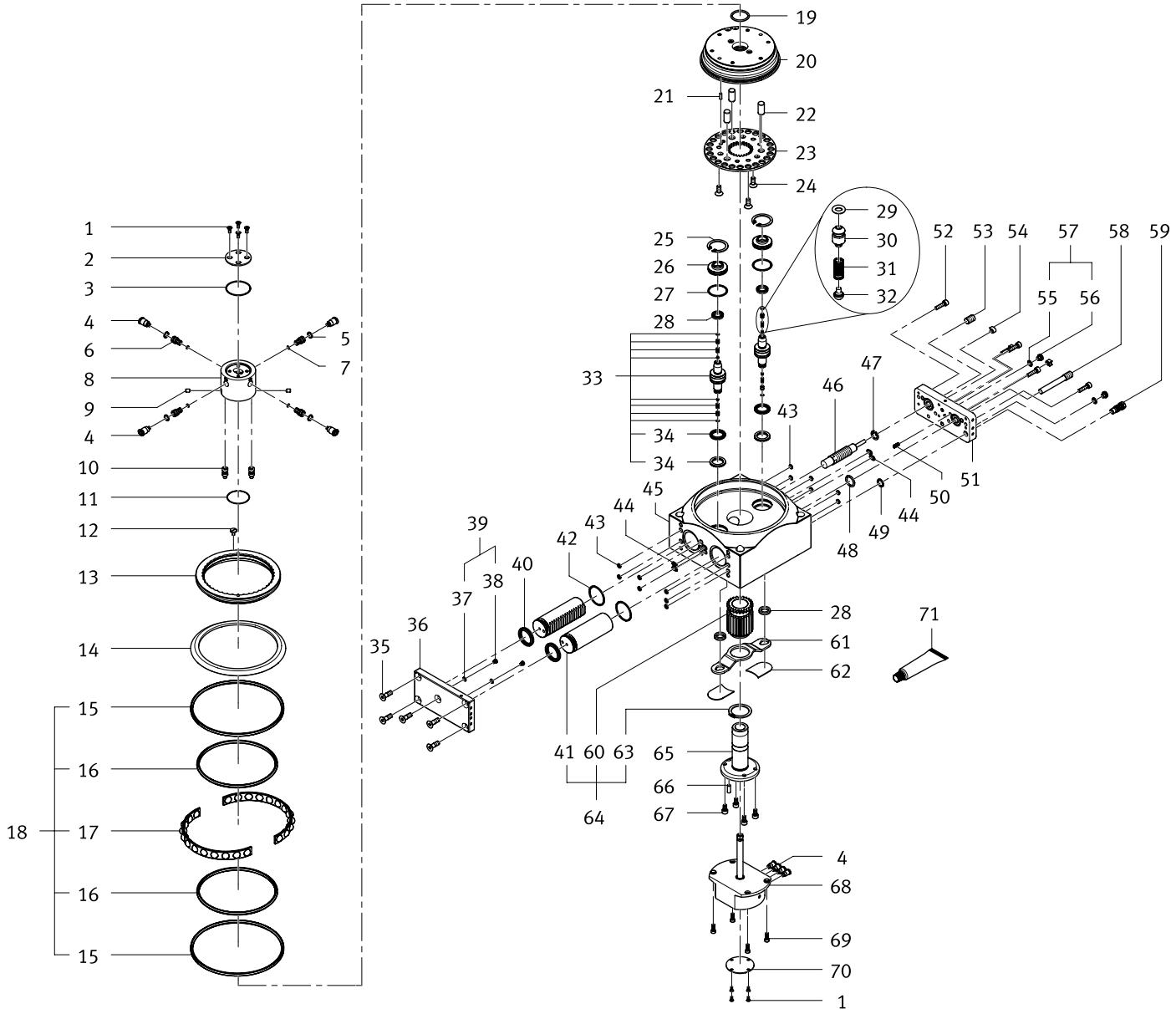


## 3.11.1 Bill of materials DHTG-65-...-A-P4L12

| No. | Designation, type |
|---|---|
| 1 | Cover cap, ISK-M12 |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Flat head screw DIN 921-m3×6-5.8 |
| 17 | Clamping ring |
| 18 | Plate seal |
| 19 | Rail |
| 20 | Rail |
| 21 | Ball bearing |
| 22 | Bearing module |
| 23 | O-ring, 14×2 |
| 24 | Plate |
| 25 | Spring pin, 3×12 |
| 26 | Cylindrical dowel pin, DIN 6325-6M6×10 |
| 27 | Index plate |
| 28 | Countersunk screw, DIN 7991-M4×8-8.8 |
| 29 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 30 | Plate module |
| 31 | Sealing ring, OK-M3 |
| 32 | Plug screw, B-M3-S9 |
| 33 | Blanking plug, B-M3-S9-OK |
| 34 | O-ring, 24.8×1.5 |
| 35 | O-ring, 3×1.5 |
| 36 | Housing |
| 37 | Shock absorber, YSRD- 8- 8-C |

| No. | Designation, type |
|---|---|
| 38 | Retaining ring, DIN 472-12×1 |
| 39 | O-ring, 8×1.6 |
| 40 | Buffer, SLT-6 |
| 41 | Compression spring, D-055 |
| 42 | Plate module |
| 43 | Socket head screw, DIN 912-M4×16-8.8 |
| 44 | Stop screw, M8×1×12 |
| 45 | Clamping component, DGSL-10 |
| 46 | Sealing ring, OK-M5 |
| 47 | Plug screw, B-M5 B |
| 48 | Blanking plug, B-M5-B-OK |
| 49 | Stop screw, M8×1×... |
| 50 | Hollow bolt module, GRLA-M5-B |
| 51 | Plain bearing, LSM-4044-20 |
| 52 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 53 | Socket head screw, ISO 4762-M3×20-8.8 |
| 54 | Couplings |
| 55 | Socket head screw, DIN 6912-M5×12-8.8 |
| 56 | Rotary throughfeed, DHAS-SCR12-H6 |
| 57 | Centring ring, ZBH-7 ID5,3 |
| 58 | Housing |
| 59 | Socket head screw, DIN 912-M4×70-8.8 |
| 60 | Lubricating grease LUB-E1, silicone-free |

## 3.12 Components overview DHTG-90-...-A-P4

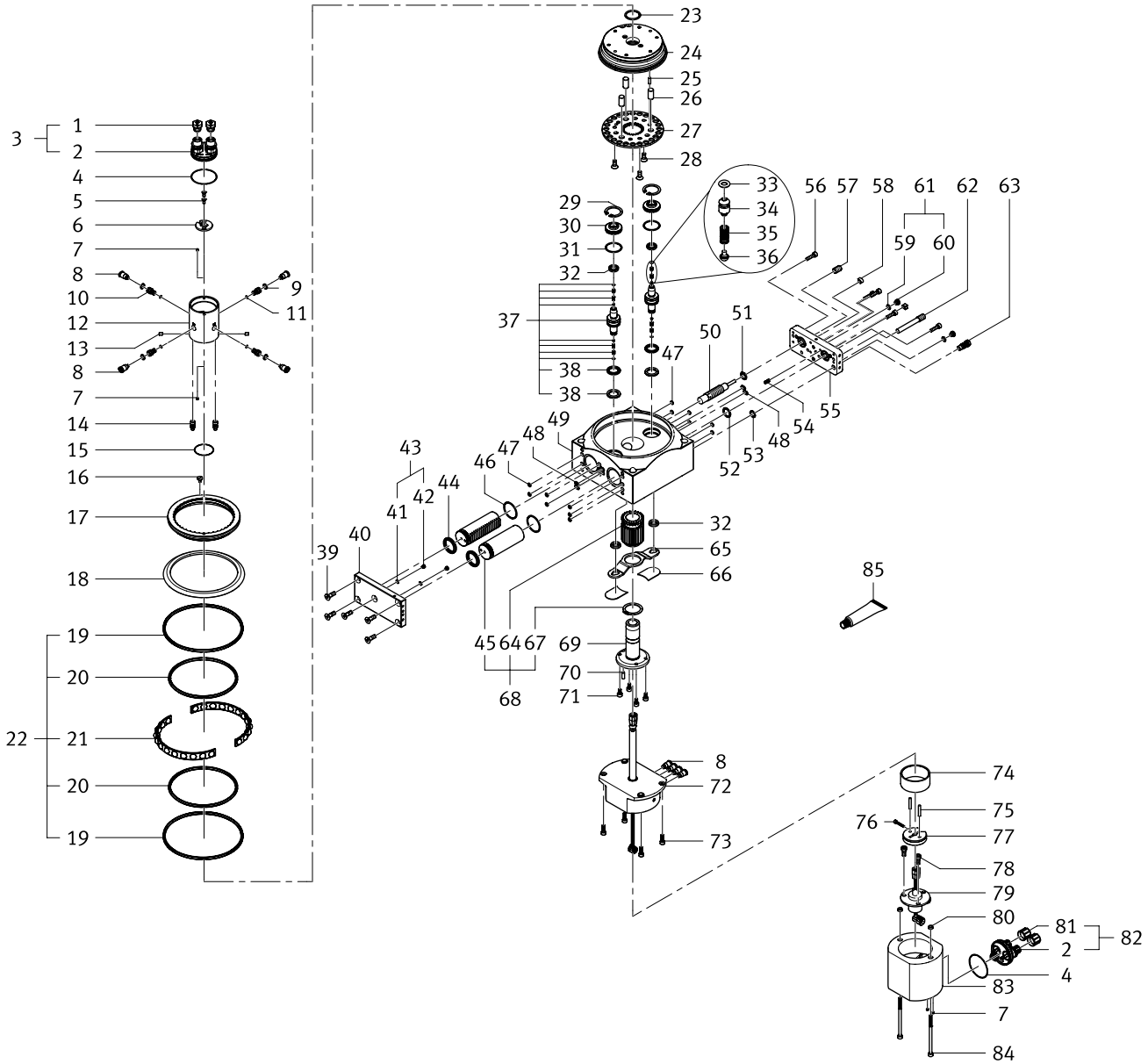


## 3.12.1 Bill of materials DHTG-90-...-A-P4

| No. | Designation, type |
|---|---|
| 1 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 2 | End cap |
| 3 | O-ring, I3601 B-30×1-N-NBR70 |
| 4 | Push-in fitting, QSM-M5-4-I |
| 5 | O-ring, I3601 B-6×1-N-NBR75 |
| 6 | Bolt |
| 7 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 8 | Holder |
| 9 | Grub screw, ISO 4027-M4×6-45H |
| 10 | Grub screw, HAPG-ZB-7 |
| 11 | O-ring, I3601 B-22×1-N-NBR70 |
| 12 | Flat head screw, DIN 921-M3×6-5.8 |
| 13 | Clamping ring |
| 14 | Plate seal |
| 15 | Rail |
| 16 | Rail |
| 17 | Ball bearing |
| 18 | Bearing module |
| 19 | O-ring, 20×2 |
| 20 | Plate |
| 21 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 22 | Spring pin, 3×12 |
| 23 | Index plate |
| 24 | Countersunk screw, DIN 7991-M5×12-8.8 |
| 25 | Retaining ring, DIN 472-25×1.2 |
| 26 | End cap |
| 27 | O-ring, 20×1.5 |
| 28 | Wiper seal |
| 29 | O-ring, 2.2×1 |
| 30 | Stop pin |
| 31 | Compression spring, D-001 |
| 32 | Lock bolt |
| 33 | Bolt |
| 34 | Piston seal |
| 35 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 36 | Plate module |
| 37 | Sealing ring, OK-M3 |

| No. | Designation, type |
|---|---|
| 38 | Plug screw, B-M3-S9 |
| 39 | Blanking plug, B-M3-S9-OK |
| 40 | Piston seal |
| 41 | Gear rack |
| 42 | O-ring, 28×1.5 |
| 43 | O-ring, 3×1.5 |
| 44 | O-ring, 5×1.5 |
| 45 | Housing |
| 46 | Shock absorber, YSRD- 8- 8-C |
| 47 | Retaining ring, DIN 472-12×1 |
| 48 | O-ring, 12×2 |
| 49 | O-ring, 8×1.6 |
| 50 | Compression spring, D-055 |
| 51 | Plate module |
| 52 | Plug screw, DIN 912-M4×16-8.8 |
| 53 | Stop screw, M8×1×12 |
| 54 | Clamping component, DGSL-10 |
| 55 | Sealing ring, OK-M5 |
| 56 | Plug screw, B-M5 B |
| 57 | Blanking plug, B-M5-B-OK |
| 58 | Stop screw, M8×1×... |
| 59 | Hollow bolt module, GRLA-M5-B |
| 60 | Pinion |
| 61 | Metal sheet |
| 62 | Cover |
| 63 | Retaining ring, DIN 471-24×1.2 |
| 64 | Pinion module |
| 65 | Flange |
| 66 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 67 | Plug screw, DIN 912-M4×8-8.8 |
| 68 | Housing |
| 69 | Plug screw, ISO 4762-M4×12-10.9 |
| 70 | End cap, DRRD-25/-32/-35-P/E |
| 71 | Lubricating grease, LUB-E, silicone-free |

## 3.13 Components overview DHTG-90-...-A-P4E4



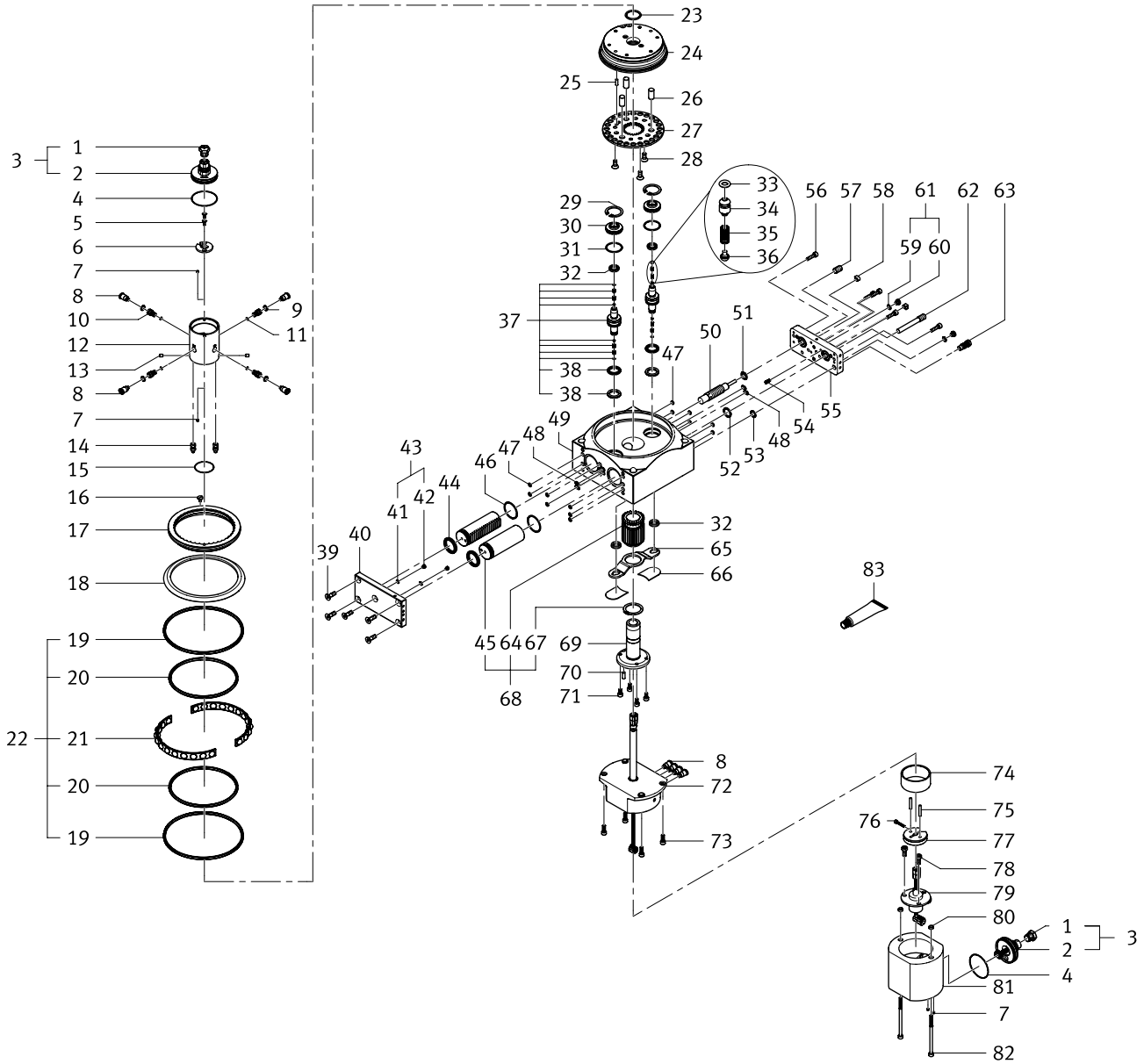
## 3.13.1 Bill of materials DHTG-90-...-A-P4E4

| No. | Designation, type |
|---|---|
| 1 | Cover cap |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Flat head screw, DIN 921-M3×6-5.8 |
| 17 | Clamping ring |
| 18 | Plate seal |
| 19 | Rail |
| 20 | Rail |
| 21 | Ball bearing |
| 22 | Bearing module |
| 23 | O-ring, 20×2 |
| 24 | Plate |
| 25 | Spring pin, 3×12 |
| 26 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 27 | Index plate |
| 28 | Countersunk screw, DIN 7991-M5×12-8.8 |
| 29 | Retaining ring, DIN 472-25×1.2 |
| 30 | End cap |
| 31 | O-ring, 20×2 |
| 32 | Wiper seal |
| 33 | O-ring, 2.2×1 |
| 34 | Stop pin |
| 35 | Compression spring, D-001 |
| 36 | Lock bolt |
| 37 | Bolt |

| No. | Designation, type |
|---|---|
| 38 | Piston seal |
| 39 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 40 | Plate module |
| 41 | Sealing ring, OK-M3 |
| 42 | Plug screw, B-M3-S9 |
| 43 | Blanking plug, B-M3-S9-OK |
| 44 | Piston seal |
| 45 | Gear rack |
| 46 | O-ring, 28×1.5 |
| 47 | O-ring, 3×1.5 |
| 48 | O-ring, 5×1.5 |
| 49 | Housing |
| 50 | Shock absorber, YSRD- 8- 8-C |
| 51 | Retaining ring, DIN 472-12×1 |
| 52 | O-ring, 12×2 |
| 53 | O-ring, 8×1.6 |
| 54 | Compression spring, D-055 |
| 55 | Plate module |
| 56 | Socket head screw, DIN 912-M4×16-8.8 |
| 57 | Stop screw, M8×1×12 |
| 58 | Clamping component, DGSL-10 |
| 59 | Sealing ring, OK-M5 |
| 60 | Plug screw, B-M5 B |
| 61 | Blanking plug, B-M5-B-OK |
| 62 | Stop screw, M8×1×... |
| 63 | Hollow bolt module, GRLA-M5-B |
| 64 | Pinion |
| 65 | Metal sheet |
| 66 | Cover |
| 67 | Retaining ring, DIN 471-24×1.2 |
| 68 | Pinion module |
| 69 | Flange |
| 70 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 71 | Socket head screw, DIN 912-M4×8-8.8 |
| 72 | Housing |
| 73 | Socket head screw, ISO 4762-M4×12-10.9 |
| 74 | Plain bearing, LSM-4044-20 |

| No. | Designation, type |
|---|---|
| 75 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 76 | Socket head screw, ISO 4762-M3×20-8.8 |
| 77 | Couplings |
| 78 | Socket head screw, DIN 6912-M5×12-8.8 |
| 79 | Rotary throughfeed |
| 80 | Centring ring, ZBH-7 ID5,3 |
| 81 | Cap, M12×1 |
| 82 | End cap module |
| 83 | Housing |
| 84 | Socket head screw, DIN 912-M4×70-8.8 |
| 85 | Lubricating grease LUB-E1, silicone-free |

## 3.14 Components overview DHTG-90-...-A-P4L12



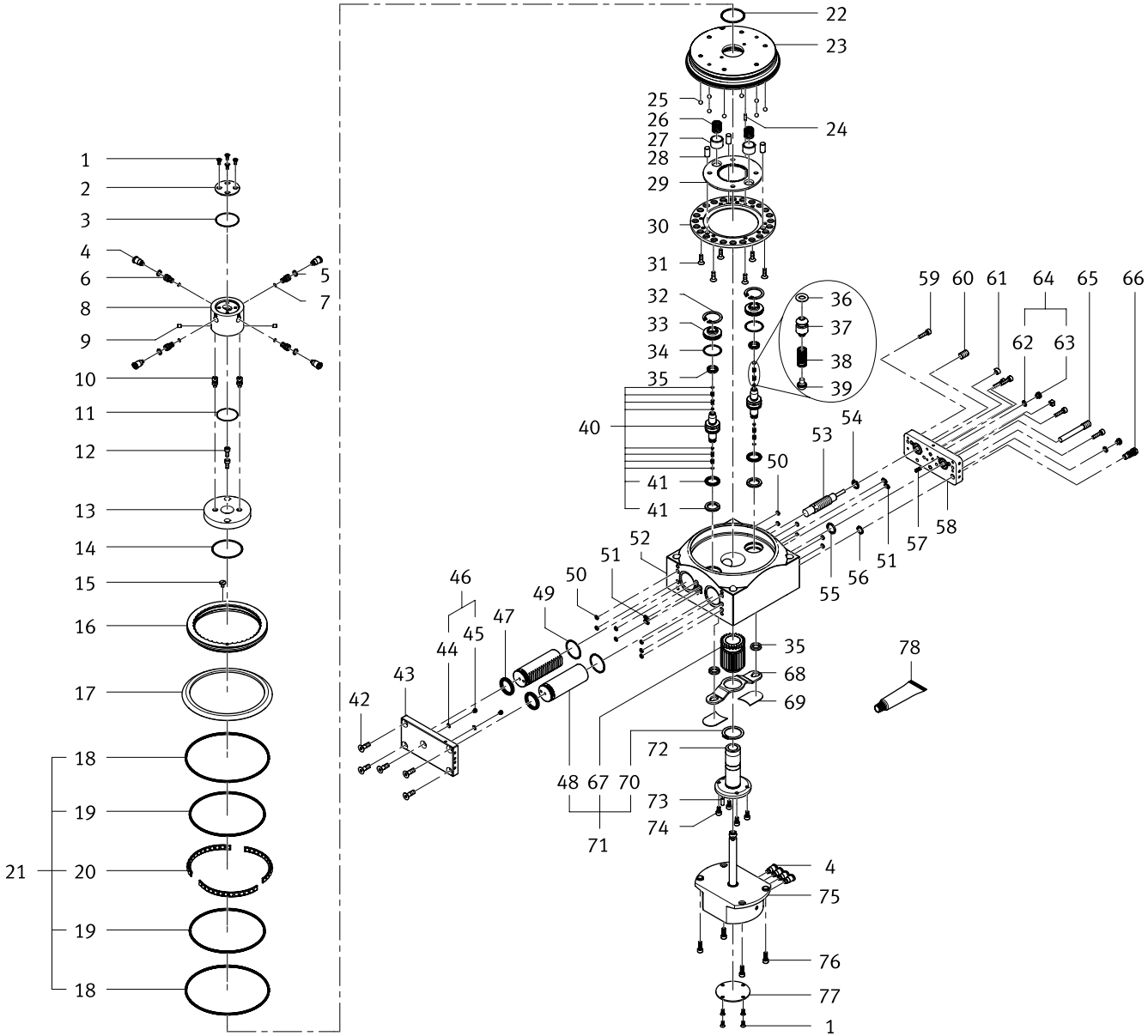
## 3.14.1 Bill of materials DHTG-90-...-A-P4L12

| No. | Designation, type |
|---|---|
| 1 | Cover cap |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Flat head screw, DIN 921-M3×6-5.8 |
| 17 | Clamping ring |
| 18 | Plate seal |
| 19 | Rail |
| 20 | Rail |
| 21 | Ball bearing |
| 22 | Bearing module |
| 23 | O-ring, 20×2 |
| 24 | Plate |
| 25 | Spring pin, 3×12 |
| 26 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 27 | Index plate |
| 28 | Countersunk screw, DIN 7991-M5×12-8.8 |
| 29 | Retaining ring, DIN 472-25×1.2 |
| 30 | End cap |
| 31 | O-ring, 20×2 |
| 32 | Wiper seal |
| 33 | O-ring, 2.2×1 |
| 34 | Stop pin |
| 35 | Compression spring, D-001 |
| 36 | Lock bolt |
| 37 | Bolt |

| No. | Designation, type |
|---|---|
| 38 | Piston seal |
| 39 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 40 | Plate module |
| 41 | Sealing ring, OK-M3 |
| 42 | Plug screw, B-M3-S9 |
| 43 | Blanking plug, B-M3-S9-OK |
| 44 | Piston seal |
| 45 | Gear rack |
| 46 | O-ring, 28×1.5 |
| 47 | O-ring, 3×1.5 |
| 48 | O-ring, 5×1.5 |
| 49 | Housing |
| 50 | Shock absorber, YSRD- 8- 8-C |
| 51 | Retaining ring, DIN 472-12×1 |
| 52 | O-ring, 12×2 |
| 53 | O-ring, 8×1.6 |
| 54 | Compression spring, D-055 |
| 55 | Plate module |
| 56 | Socket head screw, DIN 912-M4×16-8.8 |
| 57 | Stop screw, M8×1×12 |
| 58 | Clamping component, DGSL-10 |
| 59 | Sealing ring, OK-M5 |
| 60 | Plug screw, B-M5 B |
| 61 | Blanking plug, B-M5-B-OK |
| 62 | Stop screw, M8×1×... |
| 63 | Hollow bolt module, GRLA-M5-B |
| 64 | Pinion |
| 65 | Metal sheet |
| 66 | Cover |
| 67 | Retaining ring, DIN 471-24×1.2 |
| 68 | Pinion module |
| 69 | Flange |
| 70 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 71 | Socket head screw, DIN 912-M4×8-8.8 |
| 72 | Housing |
| 73 | Socket head screw, ISO 4762-M4×12-10.9 |
| 74 | Plain bearing, LSM-4044-20 |

| No. | Designation, type |
|---|---|
| 75 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 76 | Socket head screw, ISO 4762-M3×20-8.8 |
| 77 | Couplings |
| 78 | Socket head screw, DIN 6912-M5×12-8.8 |
| 79 | Rotary throughfeed |
| 80 | Centring ring, ZBH-7 ID5,3 |
| 82 | Housing |
| 82 | Socket head screw, DIN 912-M4×70-8.8 |
| 83 | Lubricating grease LUB-E1, silicone-free |

## 3.15 Components overview DHTG-140-...-A-P4



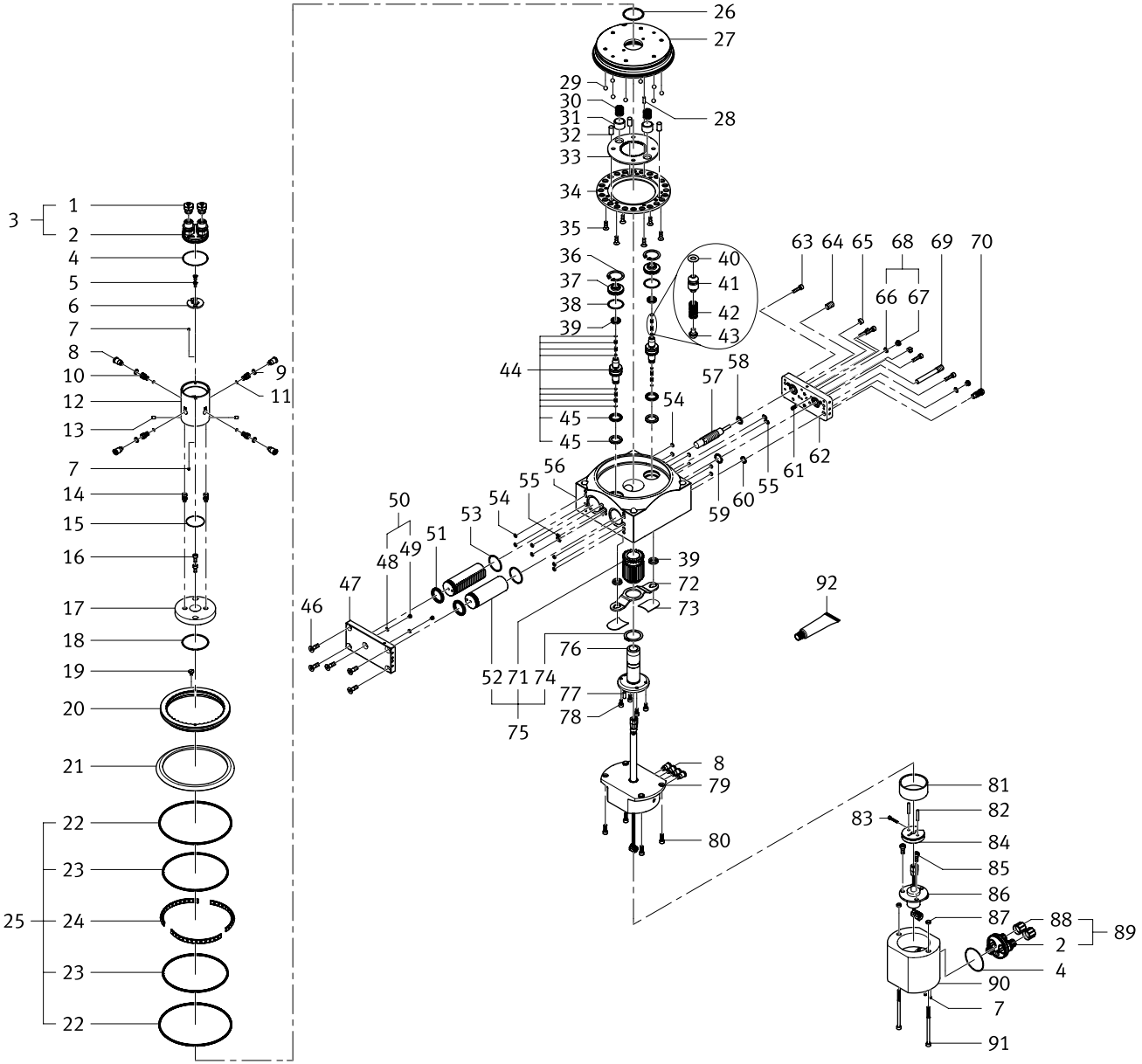
## 3.15.1 Bill of materials DHTG-140-...-A-P4

| No. | Designation, type |
|---|---|
| 1 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 2 | End cap |
| 3 | O-ring, I3601 B-30×1-N-NBR70 |
| 4 | Push-in fitting, QSM-M5-4-I |
| 5 | O-ring, I3601 B-6×1-N-NBR75 |
| 6 | Bolt |
| 7 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 8 | Holder |
| 9 | Grub screw, ISO 4027-M4×6-45H |
| 10 | Grub screw, HAPG-ZB-7 |
| 11 | O-ring, I3601 B-22×1-N-NBR70 |
| 12 | Socket head screw, ISO 4762-M4×10-10.9 |
| 13 | Adapter |
| 14 | O-ring, I3601 B-40×1.5-N-NBR70 |
| 15 | Flat head screw, DIN 921-M3×6-5.8 |
| 16 | Clamping ring |
| 17 | Plate seal |
| 18 | Rail |
| 19 | Rail |
| 20 | Ball bearing |
| 21 | Bearing module |
| 22 | O-ring, 35×2 |
| 23 | Plate |
| 24 | Spring pin, 3×12 |
| 25 | Rubber balls |
| 26 | Compression spring |
| 27 | Sleeve |
| 28 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 29 | Ring gear |
| 30 | Index plate |
| 31 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 32 | Retaining ring, DIN 472-30×1.2 |
| 33 | End cap |
| 34 | O-ring, 26×2 |
| 35 | Wiper seal |
| 36 | O-ring, 2.2×1 |
| 37 | Stop pin |

| No. | Designation, type |
|---|---|
| 38 | Compression spring, D-001 |
| 39 | Lock bolt |
| 40 | Bolt |
| 41 | Piston seal |
| 42 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 43 | Plate module |
| 44 | Sealing ring, OK-M3 |
| 45 | Plug screw, B-M3-S9 |
| 46 | Blanking plug, B-M3-S9-OK |
| 47 | Piston seal |
| 48 | Gear rack |
| 49 | O-ring, 45×2 |
| 50 | O-ring, 3×1.5 |
| 51 | O-ring, 5×1.5 |
| 52 | Housing |
| 53 | Shock absorber, YSRD-16-20-C |
| 54 | Retaining ring, DIN 472-22×1 |
| 55 | O-ring, 22×2 |
| 56 | O-ring, 11×1.5 |
| 57 | Compression spring, D-055 |
| 58 | Plate module |
| 59 | Socket head screw, DIN 912-M6×16-8.8 |
| 60 | Stop screw, M14×1×14 |
| 61 | Clamping component, DGSL-20 |
| 62 | Sealing ring, OK-1/8 |
| 63 | Plug screw, DIN 908-G1/8-ST |
| 64 | Blanking plug, B-1/8-OK |
| 65 | Stop screw, M14×1×... |
| 66 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 67 | Pinion |
| 68 | Metal sheet |
| 69 | Cover |
| 70 | Retaining ring, DIN 471-40×1.75 |
| 71 | Pinion module |
| 72 | Flange |
| 73 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 74 | Socket head screw, DIN 912-M5×10-10.9 |

| No. | Designation, type |
|---|---|
| 75 | Housing |
| 76 | Socket head screw, ISO 4762-M4×12-10.9 |
| 77 | End cap |
| 78 | Lubricating grease LUB-E1, silicone-free |

## 3.16 Components overview DHTG-140-...-A-P4E4



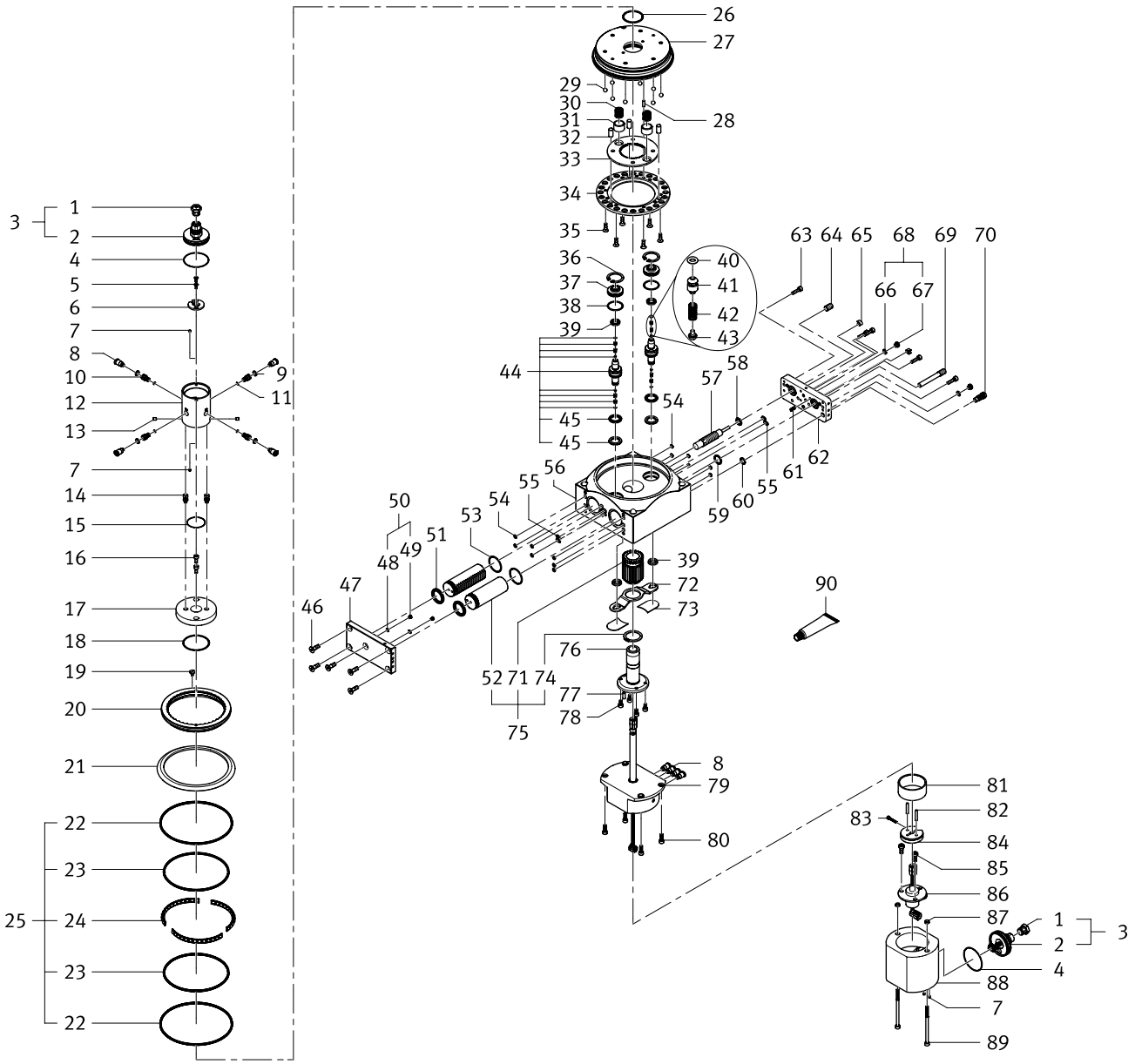
## 3.16.1 Bill of materials DHTG-140-...-A-P4E4

| No. | Designation, type |
|---|---|
| 1 | Cover cap |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Socket head screw, ISO 4762-M4×10-10.9 |
| 17 | Adapter |
| 18 | O-ring, I3601 B-40×1.5-N-NBR70 |
| 19 | Flat head screw, DIN 921-M3×6-5.8 |
| 20 | Clamping ring |
| 21 | Plate seal |
| 22 | Rail |
| 23 | Rail |
| 24 | Ball bearing |
| 25 | Bearing module |
| 26 | O-ring, 35×2 |
| 27 | Plate |
| 28 | Spring pin, 3×12 |
| 29 | Rubber balls |
| 30 | Compression spring |
| 31 | Sleeve |
| 32 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 33 | Ring gear |
| 34 | Index plate |
| 35 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 36 | Retaining ring, DIN 472-30×1.2 |
| 37 | End cap |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 26×2 |
| 39 | Wiper seal |
| 40 | O-ring, 2.2×1 |
| 41 | Stop pin |
| 42 | Compression spring, D-001 |
| 43 | Lock bolt |
| 44 | Bolt |
| 45 | Piston seal |
| 46 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 47 | Plate module |
| 48 | Sealing ring, OK-M3 |
| 49 | Plug screw, B-M3-S9 |
| 50 | Blanking plug, B-M3-S9-OK |
| 51 | Piston seal |
| 52 | Gear rack |
| 53 | O-ring, 45×2 |
| 54 | O-ring, 3×1.5 |
| 55 | O-ring, 5×1.5 |
| 56 | Housing |
| 57 | Shock absorber, YSRD-16-20-C |
| 58 | Retaining ring, DIN 472-22×1 |
| 59 | O-ring, 22×2 |
| 60 | O-ring, 11×1.5 |
| 61 | Compression spring, D-055 |
| 62 | Plate module |
| 63 | Socket head screw, DIN 912-M6×16-8.8 |
| 64 | Stop screw, M14×1×14 |
| 65 | Clamping component, DGSL-20 |
| 66 | Sealing ring, OK-1/8 |
| 67 | Plug screw, DIN 908-G1/8-ST |
| 68 | Blanking plug, B-1/8-OK |
| 69 | Stop screw, M14×1×... |
| 70 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 71 | Pinion |
| 72 | Metal sheet |
| 73 | Cover |
| 74 | Retaining ring, DIN 471-40×1.75 |

| No. | Designation, type |
|---|---|
| 75 | Pinion module |
| 76 | Flange |
| 77 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 78 | Socket head screw, DIN 912-M5×10-10.9 |
| 79 | Housing |
| 80 | Socket head screw, ISO 4762-M4×12-10.9 |
| 81 | Plain bearing, LSM-4044-20 |
| 82 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 83 | Socket head screw, ISO 4762-M3×20-8.8 |
| 84 | Couplings |
| 85 | Socket head screw, DIN 6912-M5×12-8.8 |
| 86 | Rotary throughfeed |
| 87 | Centring ring, ZBH-7 ID5,3 |
| 88 | Cap, M12×1 |
| 89 | End cap module |
| 90 | Housing |
| 91 | Socket head screw, DIN 912-M4×70-8.8 |
| 92 | Lubricating grease LUB-E1, silicone-free |

## 3.17 Components overview DHTG-140-...-A-P4L12



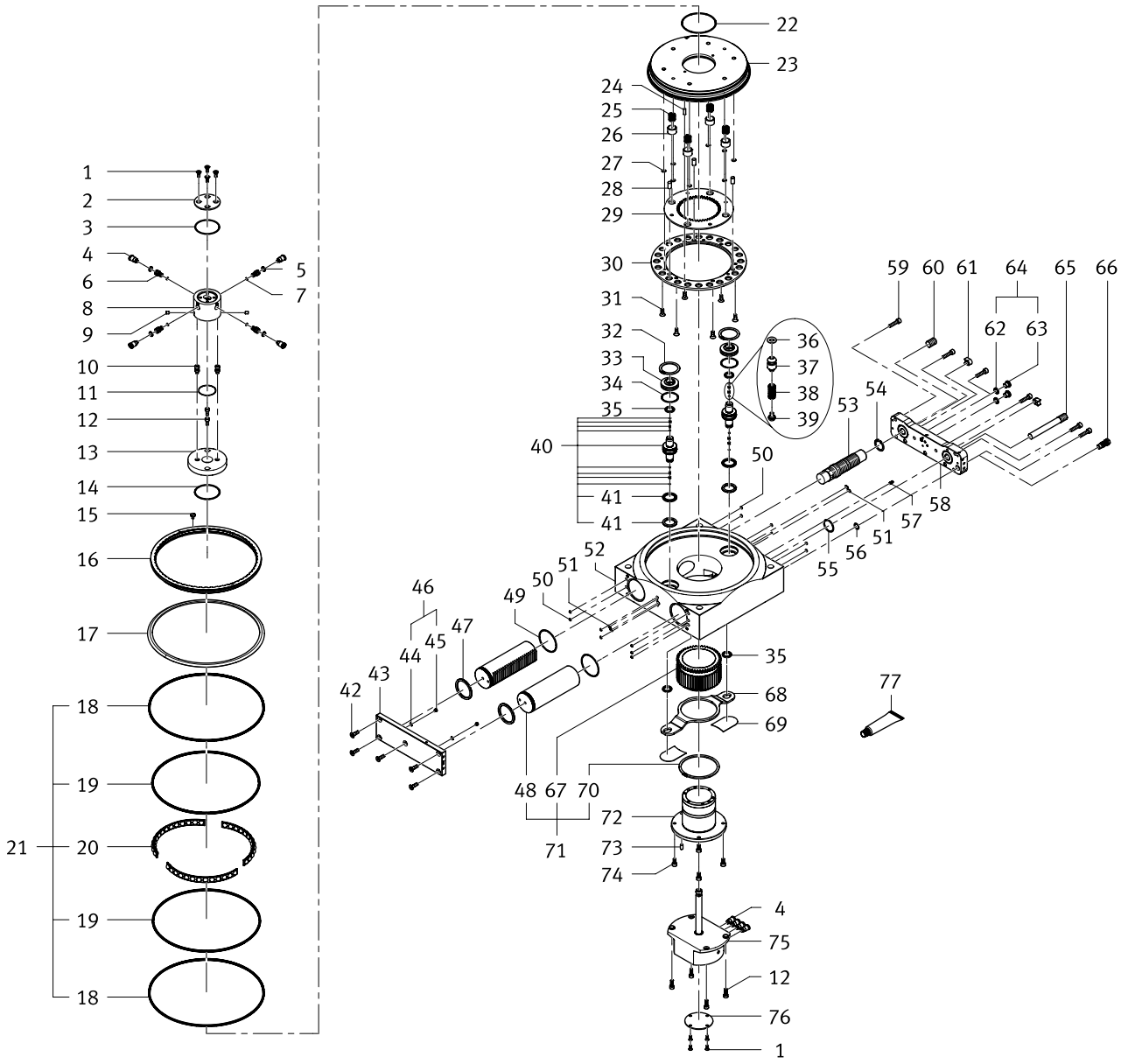
## 3.17.1 Bill of materials DHTG-140-...-A-P4L12

| No. | Designation, type |
|---|---|
| 1 | Cover cap |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Socket head screw, ISO 4762-M4×10-10.9 |
| 17 | Adapter |
| 18 | O-ring, I3601 B-40×1.5-N-NBR70 |
| 19 | Flat head screw, DIN 921-M3×6-5.8 |
| 20 | Clamping ring |
| 21 | Plate seal |
| 22 | Rail |
| 23 | Rail |
| 24 | Ball bearing |
| 25 | Bearing module |
| 26 | O-ring, 35×2 |
| 27 | Plate |
| 28 | Spring pin, 3×12 |
| 29 | Rubber balls |
| 30 | Compression spring |
| 31 | Sleeve |
| 32 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 33 | Ring gear |
| 34 | Index plate |
| 35 | Countersunk screw, DIN 7991-M5×16-8.8 |
| 36 | Retaining ring, DIN 472-30×1.2 |
| 37 | End cap |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 26×2 |
| 39 | Wiper seal |
| 40 | O-ring, 2.2×1 |
| 41 | Stop pin |
| 42 | Compression spring, D-001 |
| 43 | Lock bolt |
| 44 | Bolt |
| 45 | Piston seal |
| 46 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 47 | Plate module |
| 48 | Sealing ring, OK-M3 |
| 49 | Plug screw, B-M3-S9 |
| 50 | Blanking plug, B-M3-S9-OK |
| 51 | Piston seal |
| 52 | Gear rack |
| 53 | O-ring, 45×2 |
| 54 | O-ring, 3×1.5 |
| 55 | O-ring, 5×1.5 |
| 56 | Housing |
| 57 | Shock absorber, YSRD-16-20-C |
| 58 | Retaining ring, DIN 472-22×1 |
| 59 | O-ring, 22×2 |
| 60 | O-ring, 11×1.5 |
| 61 | Compression spring, D-055 |
| 62 | Plate module |
| 63 | Socket head screw, DIN 912-M6×16-8.8 |
| 64 | Stop screw, M14×1×14 |
| 65 | Clamping component, DGSL-20 |
| 66 | Sealing ring, OK-1/8 |
| 67 | Plug screw, DIN 908-G1/8-ST |
| 68 | Blanking plug, B-1/8-OK |
| 69 | Stop screw, M14×1×... |
| 70 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 71 | Pinion |
| 72 | Metal sheet |
| 73 | Cover |
| 74 | Retaining ring, DIN 471-40×1.75 |

| No. | Designation, type |
|---|---|
| 75 | Pinion module |
| 76 | Flange |
| 77 | Cylindrical dowel pin, DIN 6325-4M6×12 |
| 78 | Socket head screw, DIN 912-M5×10-10.9 |
| 79 | Housing |
| 80 | Socket head screw, ISO 4762-M4×12-10.9 |
| 81 | Plain bearing, LSM-4044-20 |
| 82 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 83 | Socket head screw, ISO 4762-M3×20-8.8 |
| 84 | Couplings |
| 85 | Socket head screw, DIN 6912-M5×12-8.8 |
| 86 | Rotary throughfeed |
| 87 | Centring ring, ZBH-7 ID5,3 |
| 88 | Housing |
| 89 | Socket head screw, DIN 912-M4×70-8.8 |
| 90 | Lubricating grease LUB-E1, silicone-free |

## 3.18 Components overview DHTG-220-...-A-P4



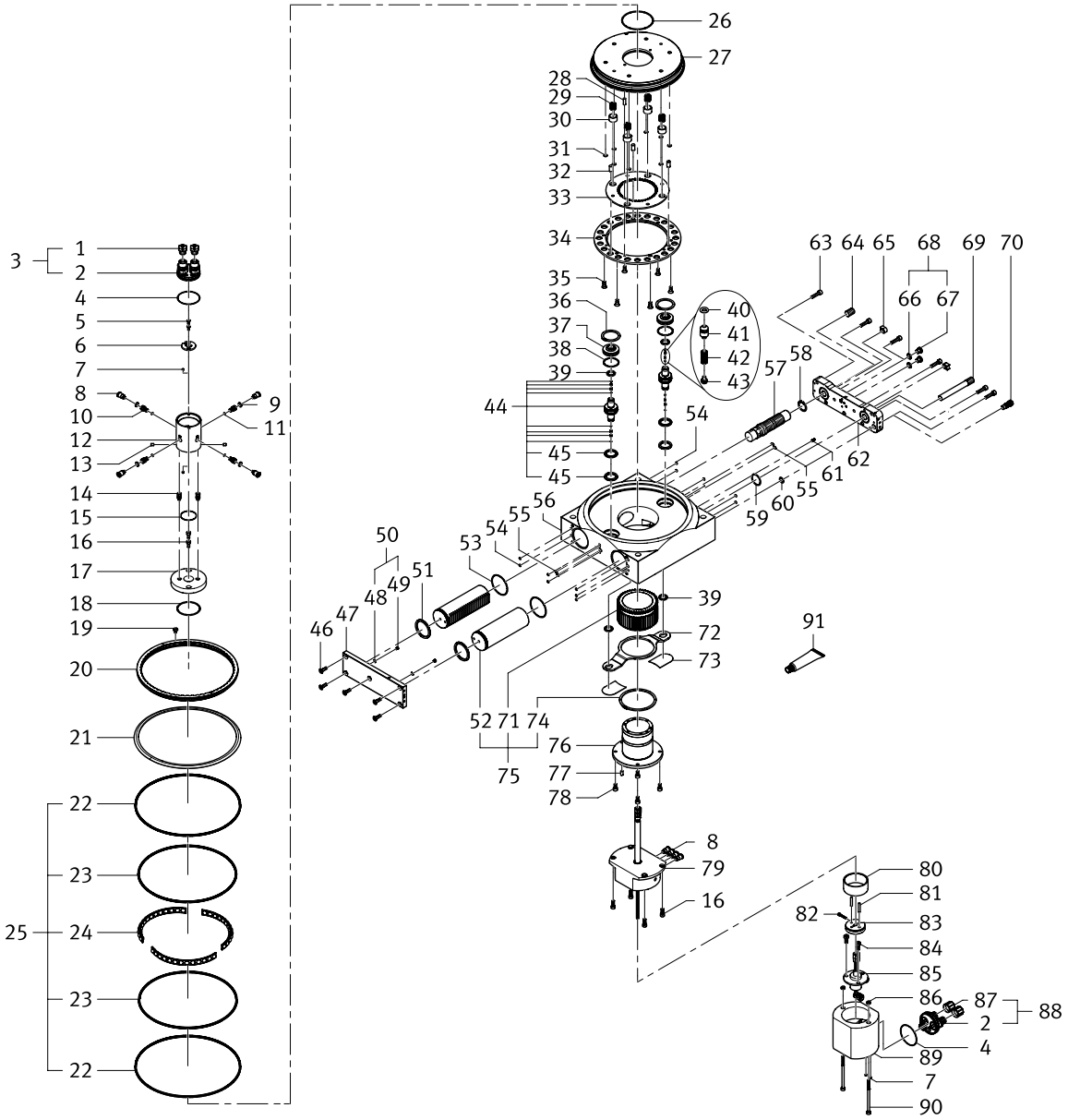
## 3.18.1 Bill of materials DHTG-220-...-A-P4

| No. | Designation, type |
|---|---|
| 1 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 2 | End cap |
| 3 | O-ring, I3601 B-30×1-N-NBR70 |
| 4 | Push-in fitting, QSM-M5-4-I |
| 5 | O-ring, I3601 B-6×1-N-NBR75 |
| 6 | Bolt |
| 7 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 8 | Holder |
| 9 | Grub screw, ISO 4027-M4×6-45H |
| 10 | Grub screw, HAPG-ZB-7 |
| 11 | O-ring, I3601 B-22×1-N-NBR70 |
| 12 | Socket head screw, ISO 4762-M4×10-10.9 |
| 13 | Adapter |
| 14 | O-ring, I3601 B-78×2-N-NBR70 |
| 15 | Flat head screw, DIN 921-M3×6-5.8 |
| 16 | Clamping ring |
| 17 | Plate seal |
| 18 | Rail |
| 19 | Rail |
| 20 | Ball bearing |
| 21 | Bearing module |
| 22 | O-ring, 75×2 |
| 23 | Plate |
| 24 | Spring pin, 3×12 |
| 25 | Compression spring |
| 26 | Sleeve |
| 27 | O-ring, 6.5×1.6 |
| 28 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 29 | Ring gear |
| 30 | Index plate |
| 31 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 32 | Retaining ring, F-40×1.75 |
| 33 | End cap |
| 34 | O-ring, 35×2 |
| 35 | Wiper seal |
| 36 | O-ring, 2.2×1 |
| 37 | Stop pin |

| No. | Designation, type |
|---|---|
| 38 | Compression spring, D-001 |
| 39 | Lock bolt |
| 40 | Bolt |
| 41 | Piston seal |
| 42 | Countersunk screw, DIN 7991-M6×20-8.8 |
| 43 | Plate module |
| 44 | Sealing ring, OK-M3 |
| 45 | Plug screw, B-M3-S9 |
| 46 | Blanking plug, B-M3-S9-OK |
| 47 | Piston seal |
| 48 | Gear rack |
| 49 | O-ring, 52×2 |
| 50 | O-ring, 3×1.5 |
| 51 | O-ring, 5×1.5 |
| 52 | Housing |
| 53 | Shock absorber module, YSRD-20-20-C |
| 54 | Retaining ring, J-26 |
| 55 | O-ring, 26×2 |
| 56 | O-ring, 11×1.5 |
| 57 | Compression spring, D-055 |
| 58 | Plate module |
| 59 | Socket head screw, DIN 912-M6×25-10.9 |
| 60 | Stop screw, M14×1×19 |
| 61 | Clamping component, DGSL-20 |
| 62 | Sealing ring, OK-1/8 |
| 63 | Plug screw, DIN 908-G1/8-ST |
| 64 | Blanking plug, B-1/8-OK |
| 65 | Stop screw, M14×1×... |
| 66 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 67 | Pinion |
| 68 | Metal sheet |
| 69 | Cover |
| 70 | Retaining ring, DIN 471-82×2.5 |
| 71 | Pinion module |
| 72 | Flange |
| 73 | Cylindrical dowel pin, DIN 6325-6M6×12 |
| 74 | Socket head screw, DIN 912-M6×12-10.9 |

| No. | Designation, type |
|---|---|
| 75 | Housing |
| 76 | End cap |
| 77 | Lubricating grease LUB-E1, silicone-free |

## 3.19 Components overview DHTG-220-...-A-P4E4



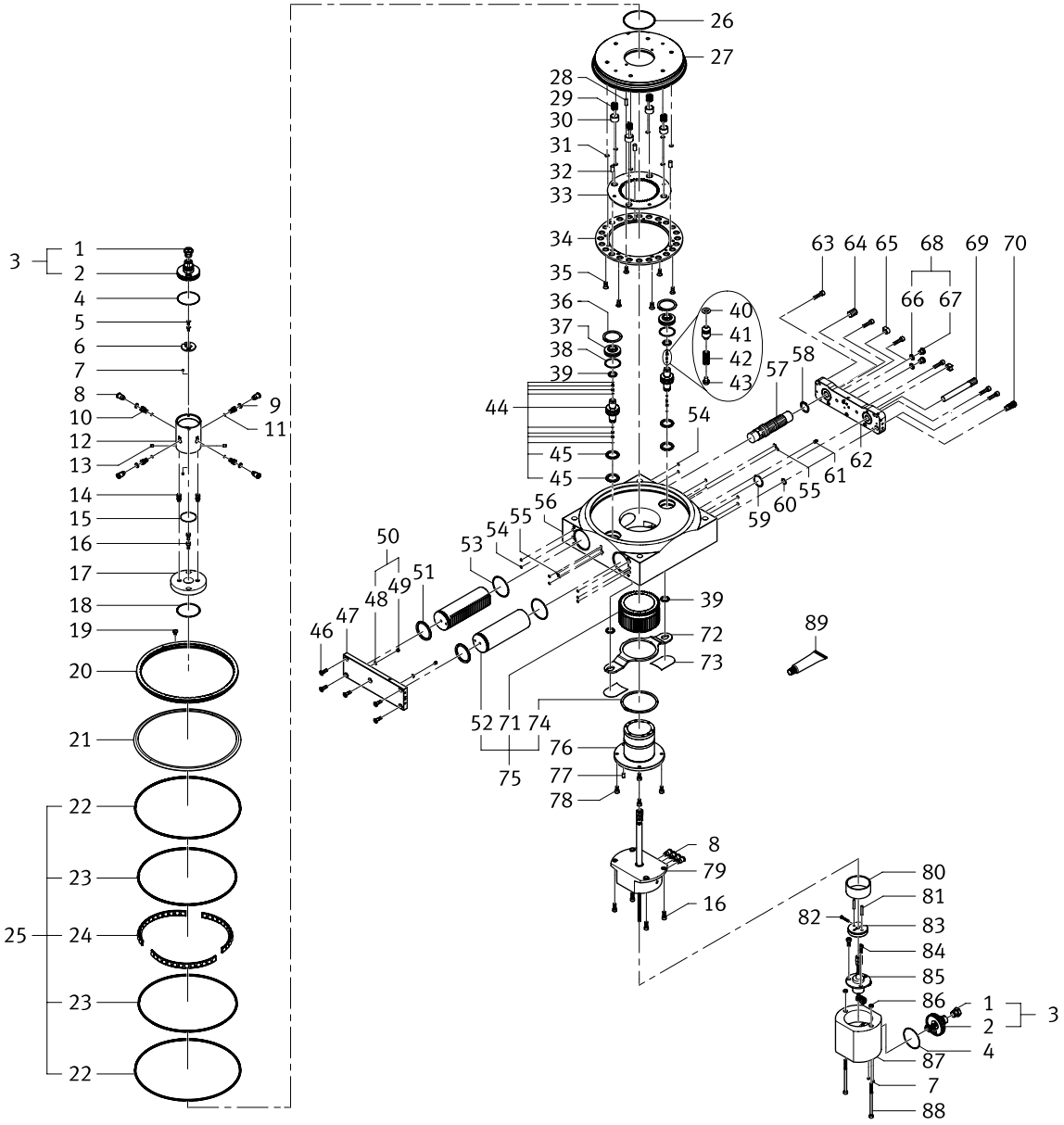
## 3.19.1 Bill of materials DHTG-220-...-A-P4E4

| No. | Designation, type |
|---|---|
| 1 | Cover cap, ISK-M12 |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Socket head screw, ISO 4762-M4×10-10.9 |
| 17 | Adapter |
| 18 | O-ring, I3601 B-78×2-N-NBR70 |
| 19 | Flat head screw, DIN 921-M3×6-5.8 |
| 20 | Clamping ring |
| 21 | Plate seal |
| 22 | Rail |
| 23 | Rail |
| 24 | Ball bearing |
| 25 | Bearing module |
| 26 | O-ring, 75×2 |
| 27 | Plate |
| 28 | Spring pin, 3×12 |
| 29 | Compression spring |
| 30 | Sleeve |
| 31 | O-ring, 6.5×1.6 |
| 32 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 33 | Ring gear |
| 34 | Index plate |
| 35 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 36 | Retaining ring, F-40×1.75 |
| 37 | End cap |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 35×2 |
| 39 | Wiper seal |
| 40 | O-ring, 2.2×1 |
| 41 | Stop pin |
| 42 | Compression spring, D-001 |
| 43 | Lock bolt |
| 44 | Bolt |
| 45 | Piston seal |
| 46 | Countersunk screw, DIN 7991-M6×20-8.8 |
| 47 | Plate module |
| 48 | Sealing ring, OK-M3 |
| 49 | Plug screw, B-M3-S9 |
| 50 | Blanking plug, B-M3-S9-OK |
| 51 | Piston seal |
| 52 | Gear rack |
| 53 | O-ring, 52×2 |
| 54 | O-ring, 3×1.5 |
| 55 | O-ring, 5×1.5 |
| 56 | Housing |
| 57 | Shock absorber module, YSRD-20-20-C |
| 58 | Retaining ring, J-26 |
| 59 | O-ring, 26×2 |
| 60 | O-ring, 11×1.5 |
| 61 | Compression spring, D-055 |
| 62 | Plate module |
| 63 | Socket head screw, DIN 912-M6×25-10.9 |
| 64 | Stop screw, M14×1×19 |
| 65 | Clamping component, DGSL-20 |
| 66 | Sealing ring, OK-1/8 |
| 67 | Plug screw, DIN 908-G1/8-ST |
| 68 | Blanking plug, B-1/8-OK |
| 69 | Stop screw, M14×1×... |
| 70 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 71 | Pinion |
| 72 | Metal sheet |
| 73 | Cover |
| 74 | Retaining ring, DIN 471-82×2.5 |

| No. | Designation, type |
|---|---|
| 75 | Pinion module |
| 76 | Flange |
| 77 | Cylindrical dowel pin, DIN 6325-6M6×12 |
| 78 | Socket head screw, DIN 912-M6×12-10.9 |
| 79 | Housing |
| 80 | Plain bearing, LSM-4044-20 |
| 81 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 82 | Socket head screw, ISO 4762-M3×20-8.8 |
| 83 | Couplings |
| 84 | Socket head screw, DIN 6912-M5×12-8.8 |
| 85 | Rotary throughfeed, DHAS-SCR12-H6 |
| 86 | Centring ring, ZBH-7 ID5,3 |
| 87 | Cap, M12×1 |
| 88 | End cap module |
| 89 | Housing |
| 90 | Socket head screw, DIN 912-M4×70-8.8 |
| 91 | Lubricating grease LUB-E1, silicone-free |

## 3.20 Components overview DHTG-220-...-A-P4L12



## 3.20.1 Bill of materials DHTG-220-...-A-P4L12

| No. | Designation, type |
|---|---|
| 1 | Cover cap, ISK-M12 |
| 2 | Washer |
| 3 | End cap module |
| 4 | O-ring, I3601 B-38×1-N-NBR75 |
| 5 | Countersunk screw, DIN 7991-M3×8-8.8 |
| 6 | Adapter |
| 7 | Grub screw, ISO 4026-M3×3-45H |
| 8 | Push-in fitting, QSM-M5-4-I |
| 9 | O-ring, I3601 B-6×1-N-NBR75 |
| 10 | Bolt |
| 11 | O-ring, I3601 B-2.5×1-N-NBR70 |
| 12 | Holder |
| 13 | Grub screw, ISO 4027-M4×6-45H |
| 14 | Grub screw, HAPG-ZB-7 |
| 15 | O-ring, I3601 B-22×1-N-NBR70 |
| 16 | Socket head screw, ISO 4762-M4×10-10.9 |
| 17 | Adapter |
| 18 | O-ring, I3601 B-78×2-N-NBR70 |
| 19 | Flat head screw, DIN 921-M3×6-5.8 |
| 20 | Clamping ring |
| 21 | Plate seal |
| 22 | Rail |
| 23 | Rail |
| 24 | Ball bearing |
| 25 | Bearing module |
| 26 | O-ring, 75×2 |
| 27 | Plate |
| 28 | Spring pin, 3×12 |
| 29 | Compression spring |
| 30 | Sleeve |
| 31 | O-ring, 6.5×1.6 |
| 32 | Cylindrical dowel pin, DIN 6325-8M6×16 |
| 33 | Ring gear |
| 34 | Index plate |
| 35 | Countersunk screw, DIN 7991-M6×16-8.8 |
| 36 | Retaining ring, F-40×1.75 |
| 37 | End cap |

| No. | Designation, type |
|---|---|
| 38 | O-ring, 35×2 |
| 39 | Wiper seal |
| 40 | O-ring, 2.2×1 |
| 41 | Stop pin |
| 42 | Compression spring, D-001 |
| 43 | Lock bolt |
| 44 | Bolt |
| 45 | Piston seal |
| 46 | Countersunk screw, DIN 7991-M6×20-8.8 |
| 47 | Plate module |
| 48 | Sealing ring, OK-M3 |
| 49 | Plug screw, B-M3-S9 |
| 50 | Blanking plug, B-M3-S9-OK |
| 51 | Piston seal |
| 52 | Gear rack |
| 53 | O-ring, 52×2 |
| 54 | O-ring, 3×1.5 |
| 55 | O-ring, 5×1.5 |
| 56 | Housing |
| 57 | Shock absorber module, YSRD-20-20-C |
| 58 | Retaining ring, J-26 |
| 59 | O-ring, 26×2 |
| 60 | O-ring, 11×1.5 |
| 61 | Compression spring, D-055 |
| 62 | Plate module |
| 63 | Socket head screw, DIN 912-M6×25-10.9 |
| 64 | Stop screw, M14×1×19 |
| 65 | Clamping component, DGSL-20 |
| 66 | Sealing ring, OK-1/8 |
| 67 | Plug screw, DIN 908-G1/8-ST |
| 68 | Blanking plug, B-1/8-OK |
| 69 | Stop screw, M14×1×... |
| 70 | Hollow bolt module, GRLA-1/8-QS-8-D |
| 71 | Pinion |
| 72 | Metal sheet |
| 73 | Cover |
| 74 | Retaining ring, DIN 471-82×2.5 |

| No. | Designation, type |
|---|---|
| 75 | Pinion module |
| 76 | Flange |
| 77 | Cylindrical dowel pin, DIN 6325-6M6×12 |
| 78 | Socket head screw, DIN 912-M6×12-10.9 |
| 79 | Housing |
| 80 | Plain bearing, LSM-4044-20 |
| 81 | Cylindrical dowel pin, DIN 6325-4M6×28 |
| 82 | Socket head screw, ISO 4762-M3×20-8.8 |
| 83 | Couplings |
| 84 | Socket head screw, DIN 6912-M5×12-8.8 |
| 85 | Rotary throughfeed, DHAS-SCR12-H6 |
| 86 | Centring ring, ZBH-7 ID5,3 |
| 87 | Housing |
| 88 | Socket head screw, DIN 912-M4×70-8.8 |
| 89 | Lubricating grease LUB-E1, silicone-free |

# 4 Repair steps

This chapter describes the dismantling, repair and assembling of the rotary indexing table DHTG-...-A and DHTG-...-A-P4 / P4E4 / P4L12. Depending on the cause of the defect to be eliminated, it may be necessary to replace several components.

Where possible, it is advisable to dismantle the rotary indexing table from the system entirely before carrying out the repair.

Before starting the repair, dismantle any attachments in accordance with the instructions in the accompanying operating instructions.

Keep your working environment clean and tidy.

Before dismantling the rotary indexing table, the cause of the failure must be investigated to prevent repeated and premature failure. A rotary indexing table which is 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 rotary indexing table (general condition, etc.) should always be checked.

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 rotary indexing table, the conditions of use should be examined more closely.

The following possibilities should be considered, among other things:

- **Overloading**
  - In case of overloading, the application parameters (load, speed) 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.

**Note**

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

To prevent damage to the O-rings and other components, do not use pointed or sharp-edged assembly tools.

## 4.1 Preparatory steps

Before dismantling the rotary indexing table, the locking cylinders must be moved downwards and the ball bearing released.

1. Ensure that no supply line is connected at connection B.
2. Vent connection A, to move the locking cylinder downwards.

## 4.2 Visual inspection

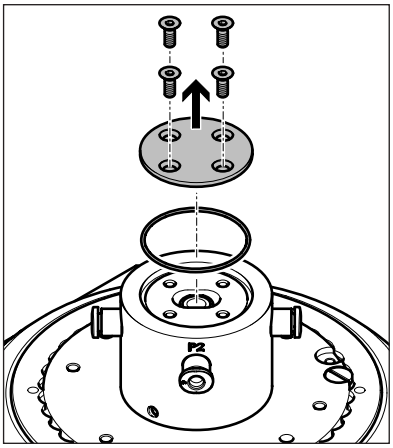
Check the rotary indexing table for visible damage, which could impair the function, e.g. severe dents. The entire rotary indexing table must be replaced if there are signs of significant damage.

## 4.3 Dismantling the energy throughfeed

### 4.3.1 Dismantling the rotary distributor, only DHTG-...-A-P4 / P4E4 / P4L12

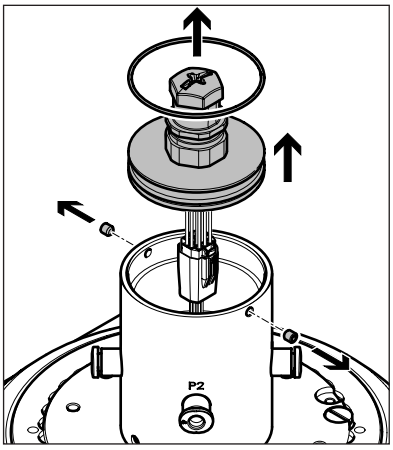
**DHTG-...-A-P4**

1. Unscrew countersunk screws (4×).
2. Pull off end cap.
3. Remove O-ring from holder.

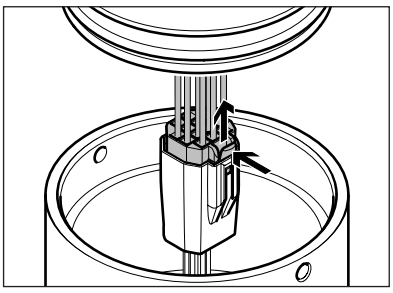



**DHTG-...-A-P4E4 and DHTG-...-A-P4L12**

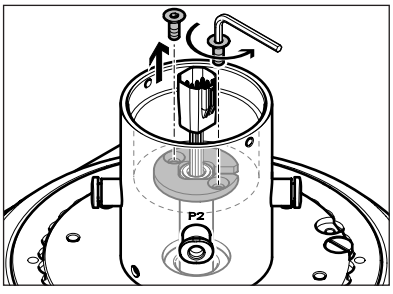
1. Undo grub screws (2×).
2. Pull off end cap module.
3. Remove O-ring from plate.



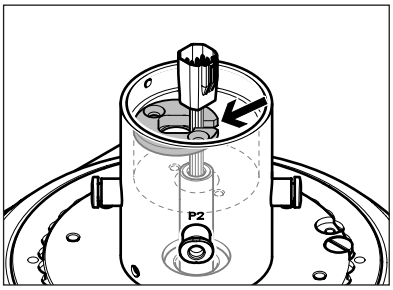

4. Unlock the latching of the plug-in connectors.
5. Disconnect plug-in connectors.



6. Unscrew countersunk screws (2×) from the adapter.



7. Remove adapter, at the same time unthreading the cables through the recess.



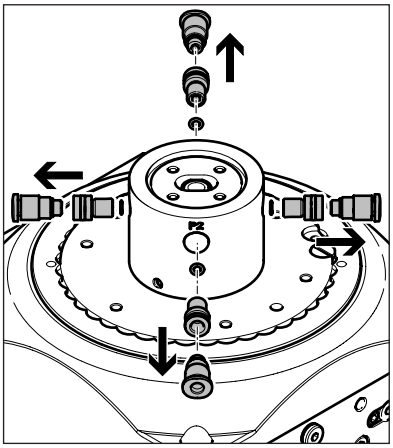

**All energy throughfeeds**

1. Unscrew push-in fittings (4×).

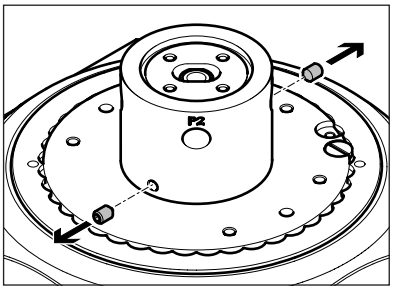
**Note**

The small O-ring that sits on the bolt in the end face must not become lost on unscrewing the bolts.

2. Unscrew bolts (4×).



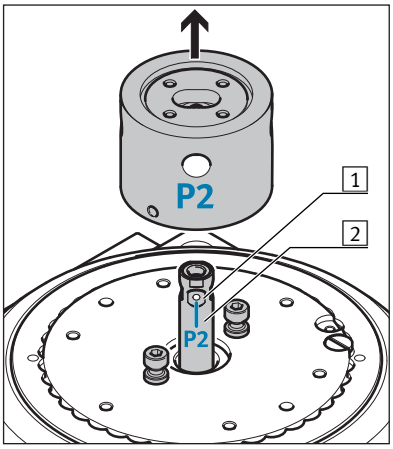

3. Unscrew grub screws (2×) in holder.




**Note**

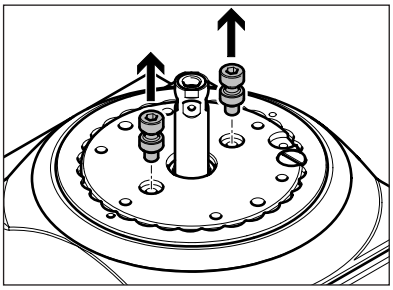
For correct assignment of the air connections (P1–P4) when reinstalling, mark air passage for air connection **P2** [1] on air pipe [2].

4. Remove holder above air pipe and plug-in connector.
5. Mark air passage for air connection **P2** [1] on the air pipe [2].



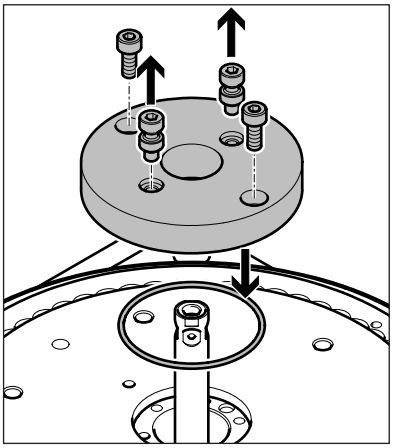
**DHTG-65 / 90-A-P4 / P4E4 / P4L12**

6. Unscrew grub screw from plate only if damaged.



**DHTG-140 / 220-A-P4 / P4E4 / P4L12**

7. Unscrew grub screw from adapter only if damaged.
8. Unscrew the socket head screws (2×) from the adapter.
9. Remove adapter.
10. Remove O-ring from the adapter.



**All energy throughfeeds**

11. Mounting the rotary distributor ➔ Chapter 4.6.2 on page 86.

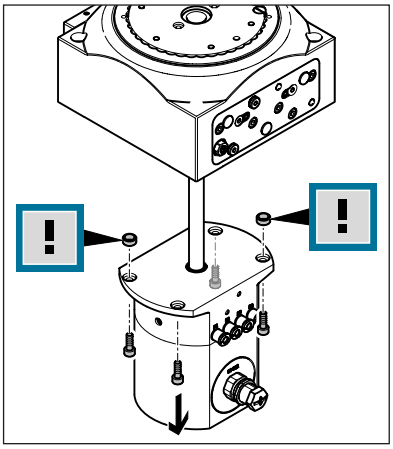
## 4.3.2 Dismantling of the pneumatic and electrical module

An electrical module is additionally mounted on the pneumatic module of the P4E4 / P4L12 versions.

The pneumatic module with the air pipe module cannot be dismantled from the DHTG-65-...-A-P4E4 and DHTG-65-...-A-P4L12.

In the event of a pneumatic module defect, contact the regional Festo contact (➔ www.festo.com).

When removing from the housing of the pneumatic module, the centring sleeves (2×) can become lost.



1. Unscrew socket head screws (4×) from the housing of the pneumatic module.
2. Carefully remove the housing of the pneumatic module together with the electrical module (if included) and the air pipe module from the rotary indexing table.
3. Mounting of the pneumatic module together with the electrical module ➔ Chapter 4.6.1 on page 86.

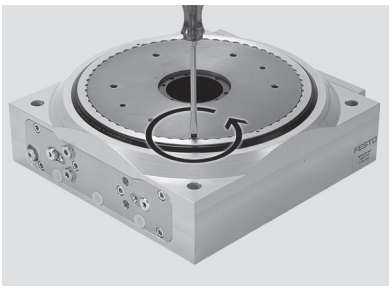
## 4.4 Dismantling the rotary indexing table

The DHTG-...-A rotary indexing table is made up of the following function groups:

- Plate with index plate.
- Pinion and gear racks with shock absorber for rotation.
- Bolts for locking.

### 4.4.1 Removing the plate

1. Place the rotary indexing table on the work surface with the plate facing upwards.
2. Loosen flat head screw in the plate and unscrew it.



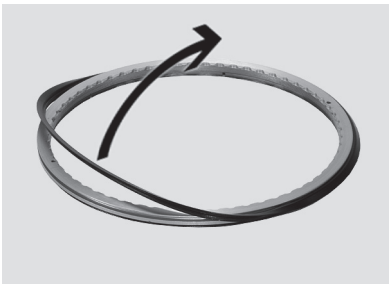
**DHTG-65 and DHTG-90 only**

Mark the position of the clamping ring in relation to the screw hole of the flat head screw on the plate.

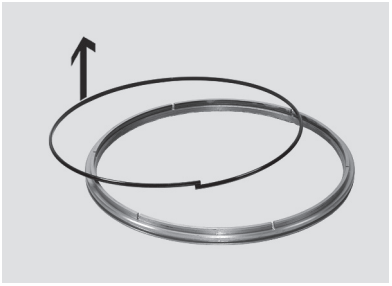
3. Remove the clamping ring using two pin punches and a hole profile (or another suitable lever tool).

To loosen the clamping ring, the rotary indexing table must be held in place (if necessary, with the help of a second person or by fixing the rotary indexing table).

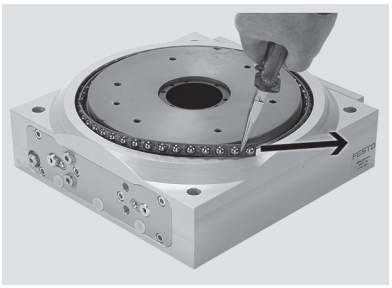
4. Check the plate seal on the clamping ring for wear and replace it as follows if necessary:
5. Pull the plate seal off the clamping ring.



6. Pull the guide rail of the guide segments off the clamping ring.



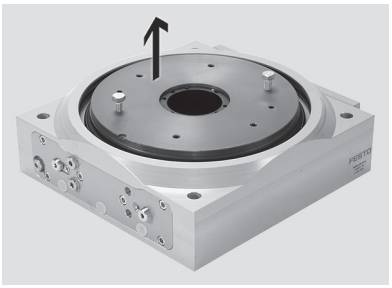
7. Remove the ball bearing from the housing.



The number of ball bearings depends on the size of the rotary indexing table (see Table).

| Type | Number of ball bearings |
|---|---|
| DHTG-65-...-A | 1 |
| DHTG-90-...-A | 2 |
| DHTG-140-...-A | 2 or 3 |
| DHTG-220-...-A | 2 or 3 |

8. Lift the plate up and out of the housing.

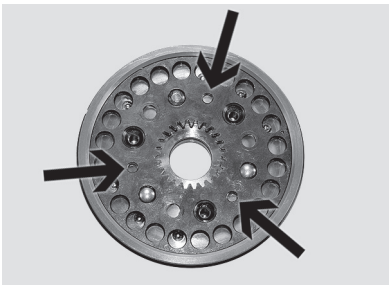


For easier removal of the plate, two M8 screws (not included) can be screwed into the thread of the plate as gripping aids.

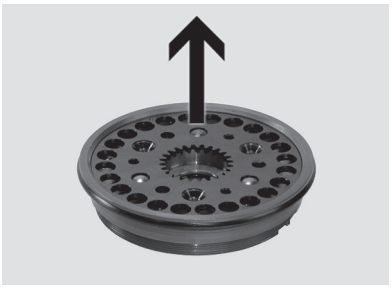
### 4.4.2 Dismantling the plate (DHTG-65 and DHTG-90)

1. Release the pretension of the screw. To do this, use a pin punch and a hammer to tap the screw head.
2. Undo the countersunk screws in the index plate and unscrew them uniformly.

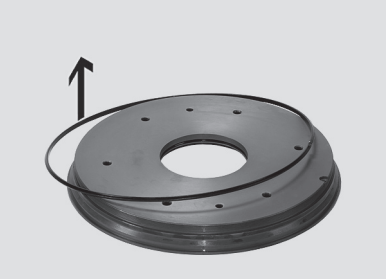
3. To undo the index plate, screw the countersunk screws uniformly into the threaded holes of the index plate.



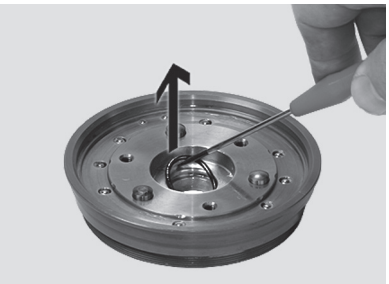
4. Lift up the index plate and remove it from the plate.



5. Pull the rail of the guide segments from the plate.



6. Lever the O-ring out of the inside of the hole in the plate.



7. Lever the two rails of the guide segments out of the housing.

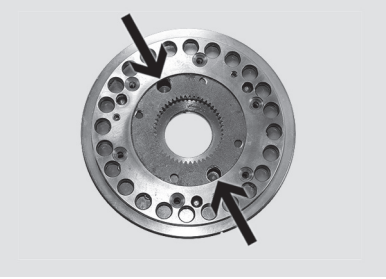
If only plate components have to be repaired, you can continue with the assembly in Chapter 4.5.4 on page 80.

### 4.4.3 Dismantling the plate (DHTG-140)

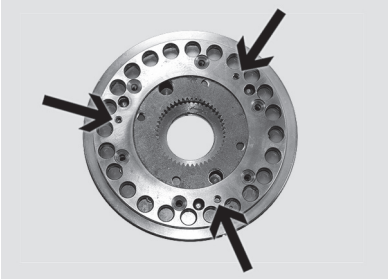
1. Release the pretension of the screw. To do this, use a pin punch and a hammer to tap the screw head.
2. Undo the countersunk screws in the index plate and unscrew uniformly.

**Note**

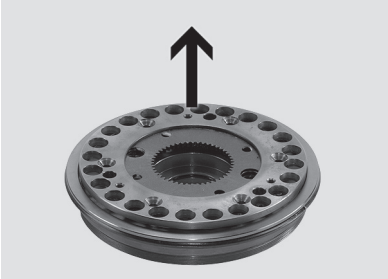
The ring gear is equipped with overload protection. This is subjected to spring tension and can tilt and become damaged if the countersunk screws are unscrewed on one side.



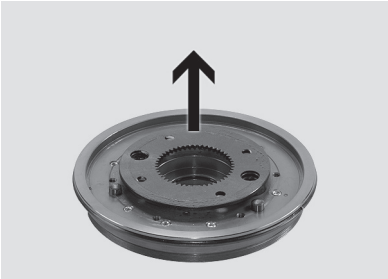
3. To undo the index plate, screw three countersunk screws uniformly into the threaded holes of the index plate.



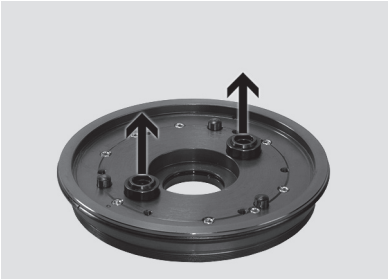
4. Lift up the index plate without tilting it and remove it from the plate.



5. Remove the ring gear from the plate.



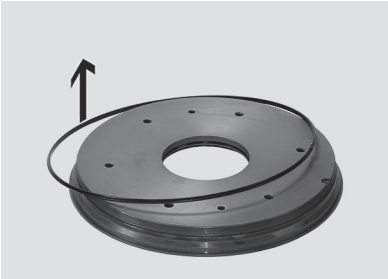
6. Remove the sleeves and compression springs from the plate.



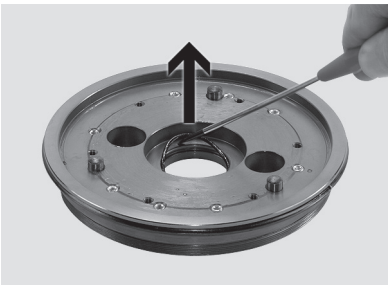
**Note**

When pulling out the sleeves, ensure that you do not lose the compression springs.

7. Remove the rail of the guide segments from the plate.



8. Lever the O-ring out of the inside of the hole in the plate.

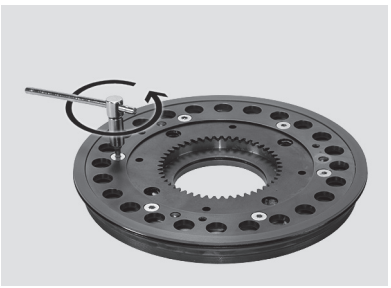


9. Lever the two rails of the guide segments out of the housing.

If only plate components have to be repaired, you can continue with the assembly in Chapter 4.5.5 on page 81.

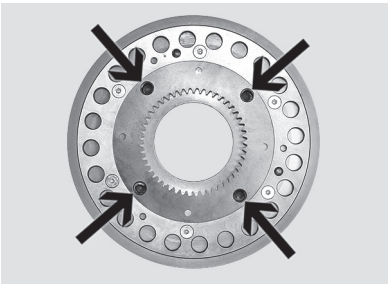
### 4.4.4 Dismantling the plate (DHTG-220)

1. Release the pretension of the screw. To do this, use a pin punch and a hammer to tap the screw head.
2. Undo the countersunk screws in the index plate and unscrew uniformly.

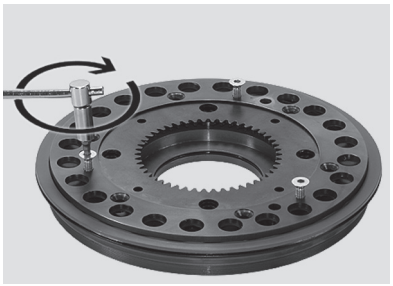


**Note**

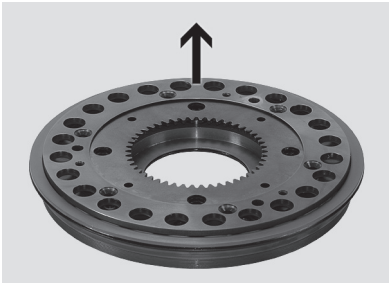
The ring gear is equipped with overload protection. It is subjected to spring tension and can tilt when the countersunk screws are unscrewed on one side.



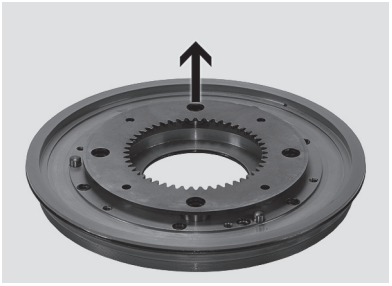
3. To undo the index plate, screw three countersunk screws uniformly into the threaded holes of the index plate.



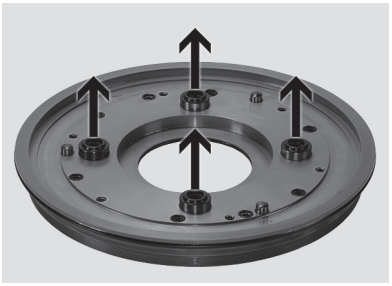
4. Lift up the index plate and remove it from the plate.



5. Remove the ring gear from the plate.

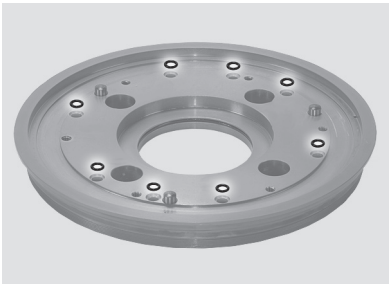


6. Remove the sleeves and compression springs from the plate.

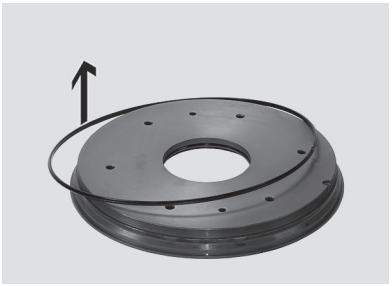


When pulling out the sleeves, ensure that you do not lose the compression springs.

7. Remove the O-rings from the plate.



8. Pull the rail of the guide segments from the plate.



9. Lever the O-ring out of the inside of the hole in the plate.

10. Lever the two rails of the guide segments out of the housing.

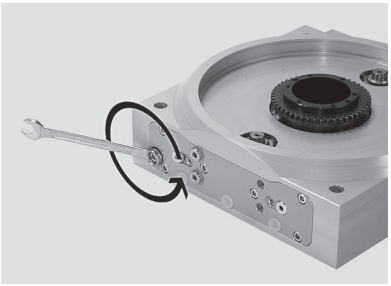
If only plate components have to be repaired, you can continue with the assembly in Chapter 4.5.6 on page 82.

### 4.4.5 Removing the gear racks

The installation position of several components depends on the configuration of the rotary indexing table and can differ from the images shown here.

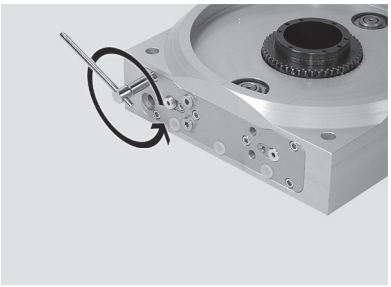
The position of the gear racks, indexing pins, blanking plugs and shock absorber must always be marked for subsequent assembly.

1. Loosen the socket head screws in the impact plate on the front of the housing (do not unscrew and remove).
2. Unscrew hollow screw in the impact plate.



**Note**

The impact plate is subjected to spring tensioning on one side and can tilt when the socket head screws are unscrewed.

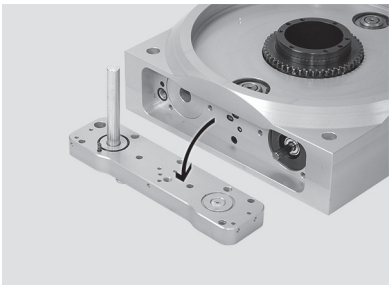


3. Unscrew the socket head screws in the impact plate.

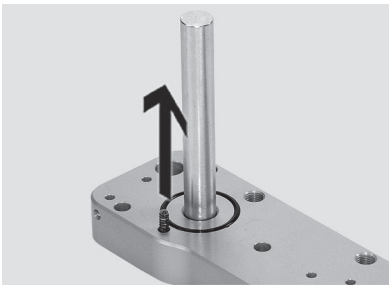
| Type | Number of socket head screws |
|---|---|
| DHTG-65-...-A | 3 |
| DHTG-90-...-A | 4 |
| DHTG-140-...-A | 5 |
| DHTG-220-...-A | 5 |

When removing the impact plate ensure that the compression spring in the rear is not lost.

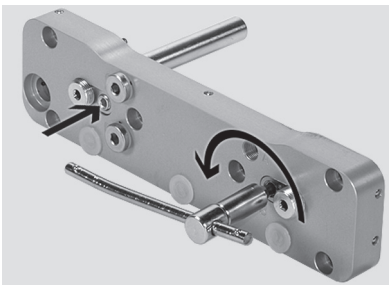
4. Remove the impact plate from the housing.



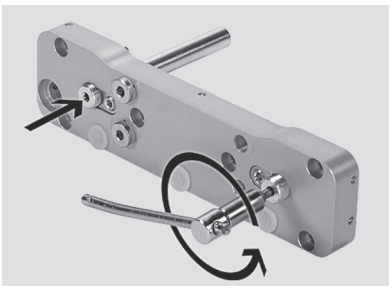
5. Pull compression spring out of the impact plate.



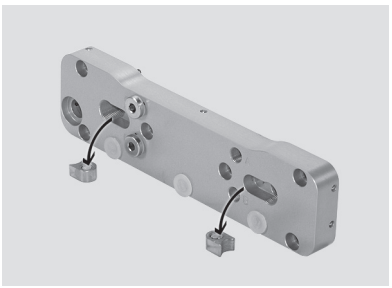
6. Undo both grub screws in the impact plate.



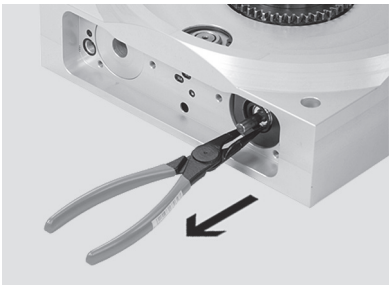
7. Unscrew both stop screws from the impact plate.



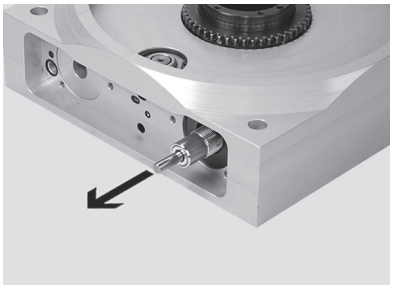
8. Remove the clamping components from the impact plate.



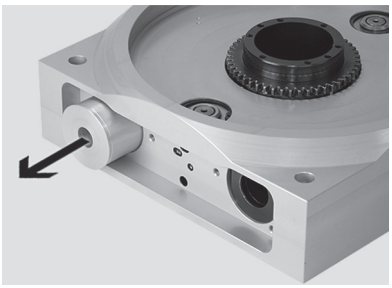
9. Dismantle the retaining ring of the shock absorber.



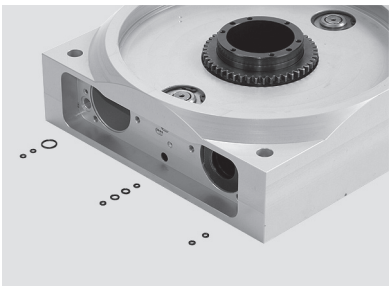
10. Pull the shock absorber out of the gear rack.



11. Pull the indexing pin out of the housing.

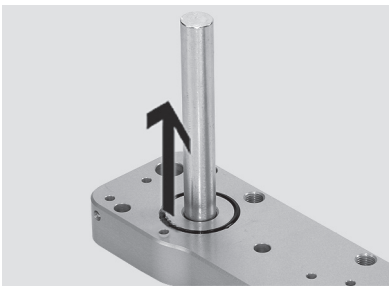


12. Remove the O-rings from the housing.



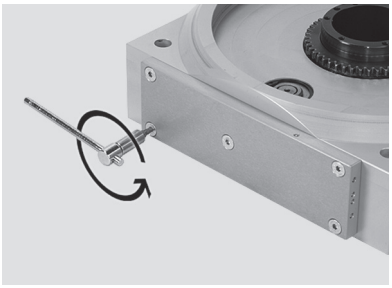
13. Remove the O-ring from the impact plate.

**DHTG-65**
The O-ring is not present in the impact plate of the DHTG-65.

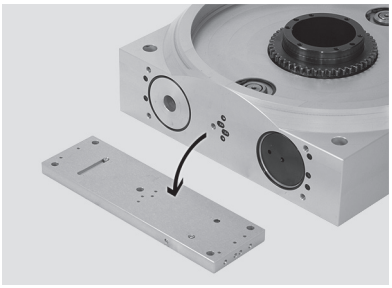


14. Unscrew the countersunk screws in the stop plate at the rear of the housing.

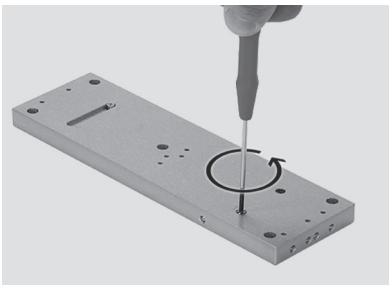
| Type | Number of countersunk screws |
|---|---|
| DHTG-65-...-A | 3 |
| DHTG-90-...-A | 5 |
| DHTG-140-...-A | 5 |
| DHTG-220-...-A | 5 |



15. Remove the stop plate.

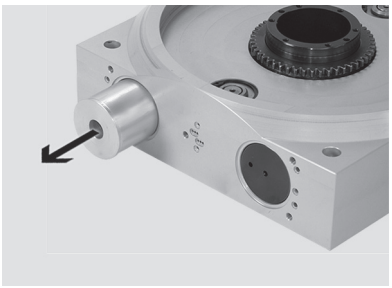


16. Unscrew the blanking plugs in the stop plate.



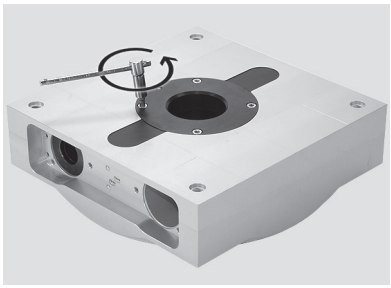
17. Remove the O-rings from the housing.

18. Pull the indexing pin out of the housing.

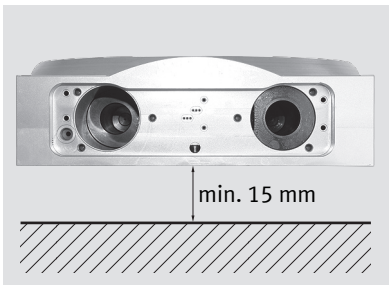


If the energy throughfeed is mounted, it must be dismantled first
➔ Chapter 4.3 on page 55.

19. Unscrew all four socket head screws in the flange on the underside of the housing.



20. Place the housing on two supports so that there is a clearance of at least 15 mm underneath for driving out the flange.

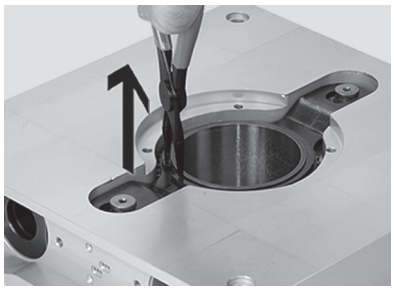



21. Carefully drive the flange downwards using a plastic hammer.

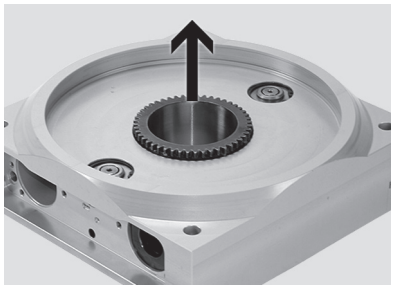
The flange can also be pressed out using a hydraulic press if necessary.

22. Push both covers out of their guides.

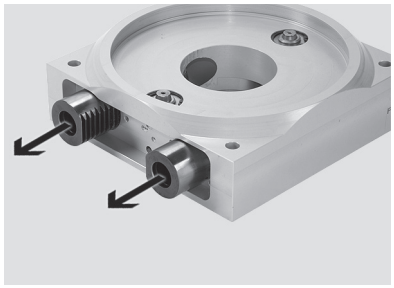
23. Dismantle the retaining ring of the pinion.



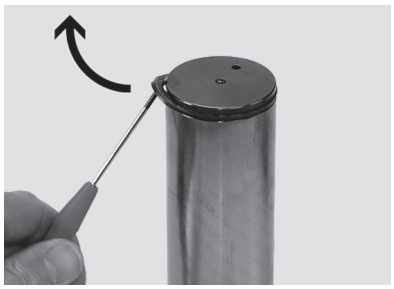
24. Pull the pinion out of the housing.



25. Pull both gear racks out of the housing.



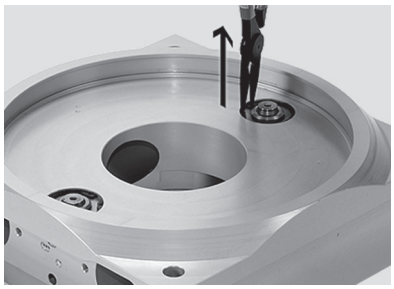
26. Lever the piston seal out of both gear racks.



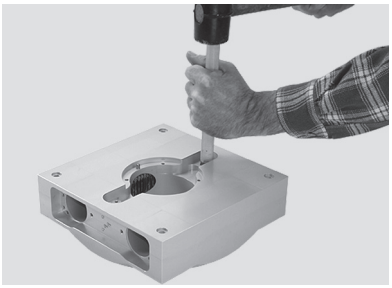
### 4.4.6 Removing the bolts

1. Remove metal sheet from the bolt.

2. Dismantle the retaining rings of both end caps.



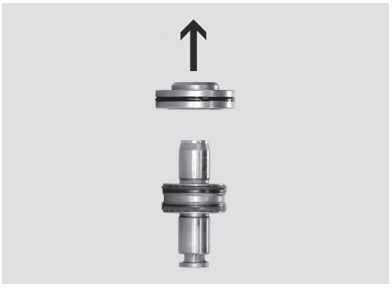
3. Drive the bolt carefully out of the bolt guide.



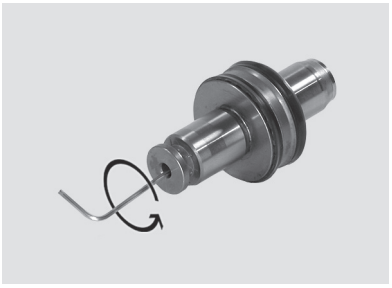
A wooden rod can be used as a dismantling tool.

### 4.4.7 Dismantling the bolts

1. Pull the end cap off both bolts.

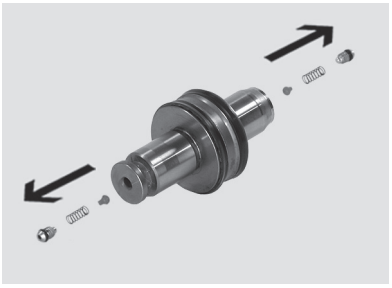


2. Unscrew the stop pins on both sides of the bolts.



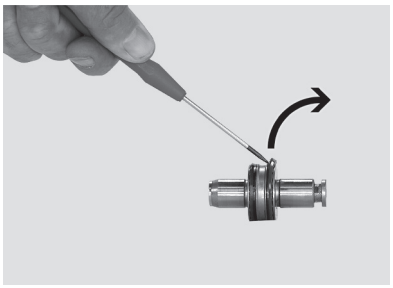
**Note**

Maintain clean and tidy surroundings so that small parts are not lost or damaged.

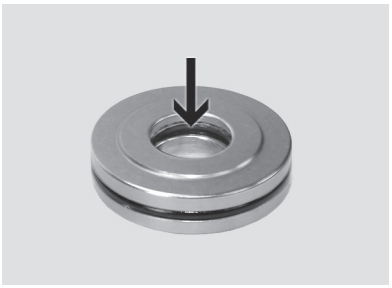


3. Carefully pull the springs out of the bolts using a thin wire.
4. Carefully tap both sides of the bolts on a soft surface to get the lock bolts out of the bolt.

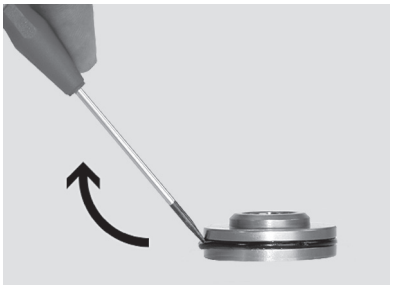
5. Lever off the piston seals of both bolts.



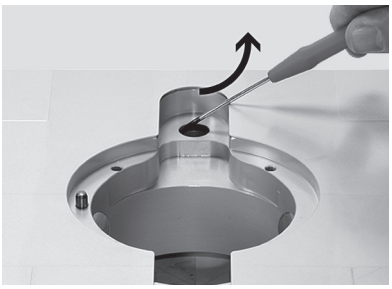
6. Lever out the wiper seal (arrow) from both end caps.



7. Lever off the O-ring from both covers.



8. Lever out the wiper seal from both bolt guides.

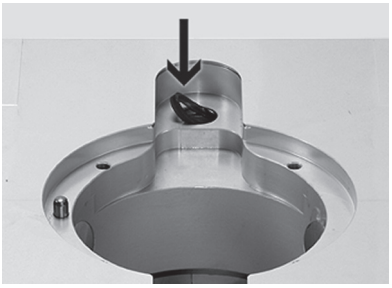


## 4.5 Mounting the rotary indexing table

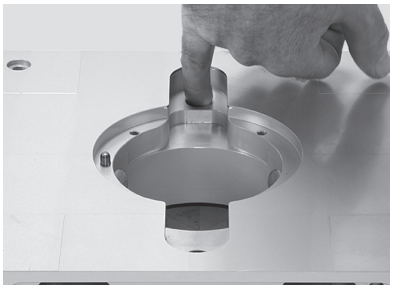
**Note**
Removed sealing rings and retaining rings must be renewed during assembly.

### 4.5.1 Assembling the bolts

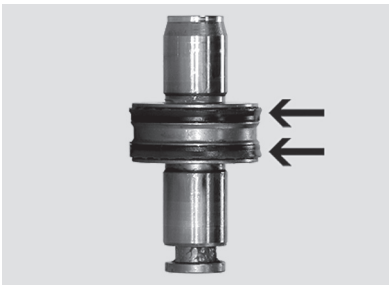
1. Position the new wiper seal in the bolt guides so that the open side is facing the top of the housing.



2. Press the new wiper seals into their holder using your finger or a suitable blunt object.



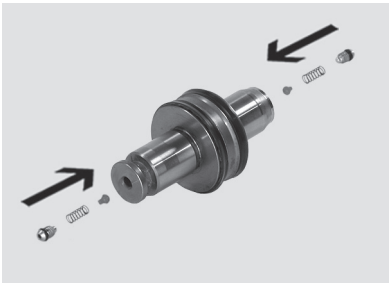
3. Insert the new piston seals (arrow) in their seat on both bolts, so that the open side is facing the outside of the bolts.



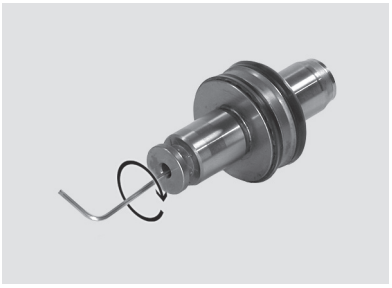
**Note**

Maintain clean and tidy surroundings so that small parts are not lost or damaged.

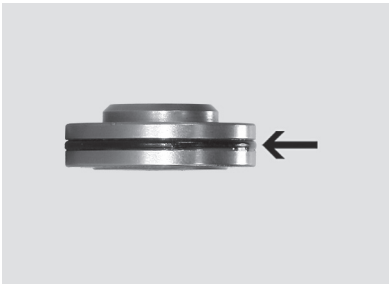
4. Carefully push the new lock bolts and the new compression springs into the bolts.



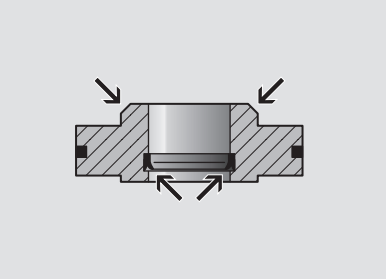
5. Screw new stop pins into both sides of the bolts and tighten.



6. Insert the new O-rings (arrow) into their seat on both covers.



**Note**
The open side of the wiper seal must face away from the taper.



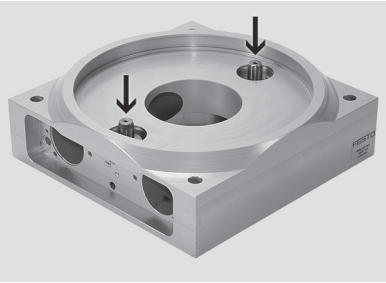
7. Insert a new wiper seal in the covers.

8. Press the new wiper seals into their holder using your finger or a suitable blunt object.

### 4.5.2 Installing the bolts

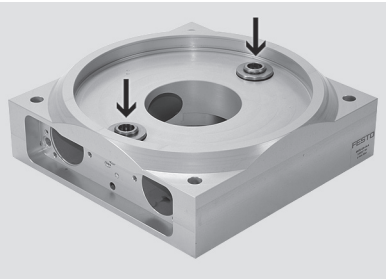
**Note**
When inserting the bolt into the guide, the wiper seal can be damaged due to excessive pressure.

1. Carefully push the bolts into the guides by rotating them slightly with the slot facing downwards.

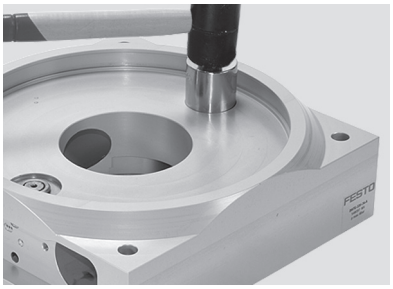


**Note**
When inserting the cover into the guide, the wiper seal may be damaged due to excessive pressure.

2. Carefully push the covers into the guides by rotating them slightly with the taper pointing upwards.



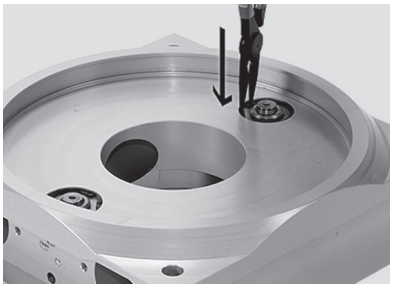
3. Drive the cover into the guide.



A plastic hammer and a sleeve with the following dimensions can be used as assembly aids to drive the cover into the guide.

| Type | Max. outside diameter of the feed sleeve | Min. inside diameter of the feed sleeve |
|---|---|---|
| DHTG-45-...-A | 17 mm | 10 mm |
| DHTG-90-...-A | 24 mm | 15 mm |
| DHTG-140-...-A | 29 mm | 18 mm |
| DHTG-220-...-A | 39 mm | 24 mm |

4. Insert the new retaining rings in the guides and check for correct fit.



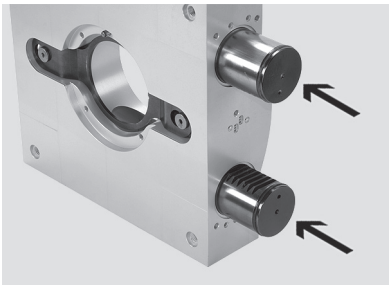
5. Insert the metal sheet into the slot of the bolts.

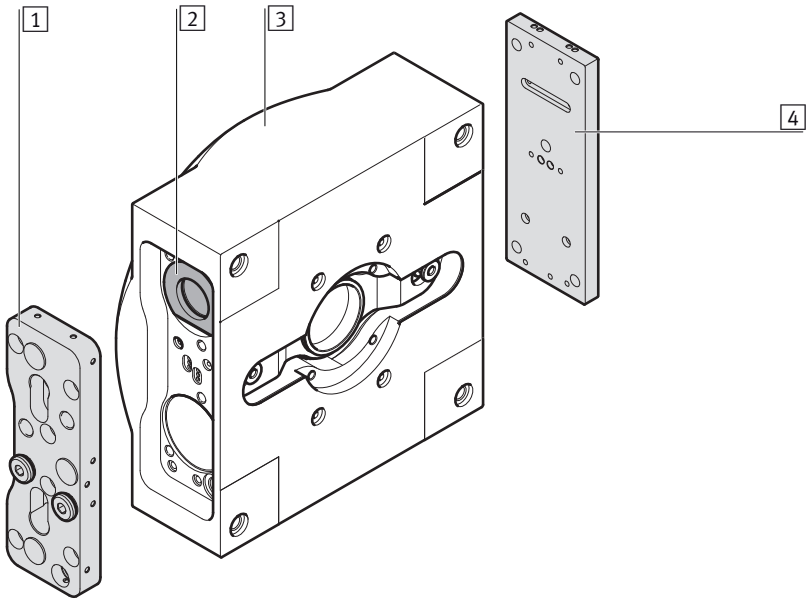
### 4.5.3 Installing the gear racks

1. Insert new piston seals on both gear racks so that the open side of the piston ring faces the closed side of the gear rack.

2. Place the housing on its left side to identify the position of the gear racks.
3. Grease the gear racks with LUB-E1 before inserting them.

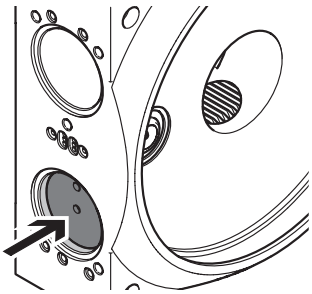
4. Push the gear racks from the rear of the housing into the piston chamber so that the open side of the gear racks points towards the front of the housing, and the gearing faces the middle of the housing.






1 Impact plate
2 Gear rack
3 Housing
4 Stop plate

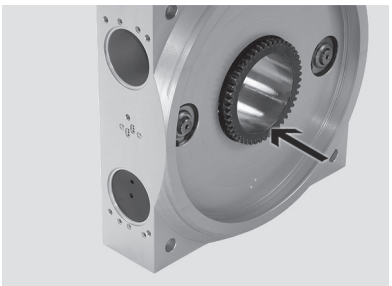
5. Position the gear racks based on the notes you made during removal, making sure that the surface of the gear rack does not protrude beyond the respective side of the housing.



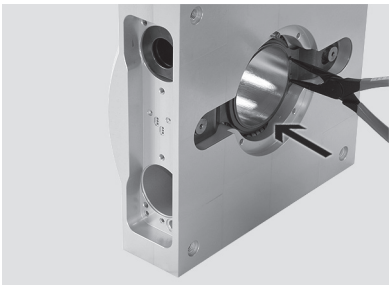
**DHTG-140**

The gear rack, which is positioned next to the stop plate, must be pushed inwards by one tooth, as otherwise correct functioning of the rotary indexing table is not ensured.

6. Push the pinion into the housing.
7. Check the position of the gear racks again and correct if necessary.
8. Check whether the pinion can rotate by 180° without protrusion of the piston.

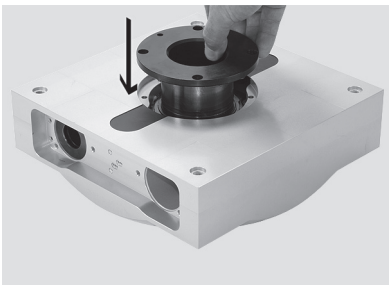


9. Insert a new retaining ring in the pinion and check the retaining ring for correct fit.



10. Push the covers into the guides.

Check the position of the cylindrical dowel pin in the housing when pushing in the flange.

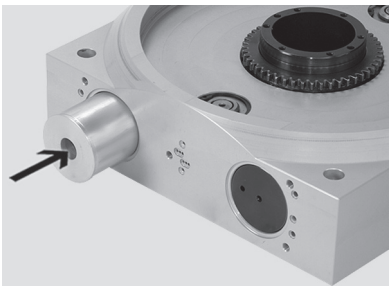


11. Push the flange into the pinion.

12. Screw the socket head screws through the flange and into the housing and tighten them using the appropriate tightening torque (see table).

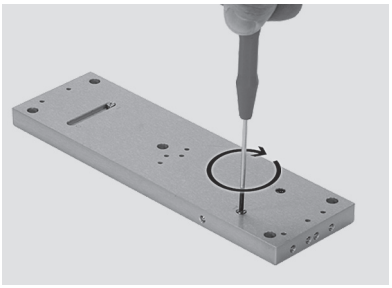
| Type | Torque |
|---|---|
| DHTG-65-...-A | 1.2 Nm |
| DHTG-90-...-A | 2.9 Nm |
| DHTG-140-...-A | 5.9 Nm |
| DHTG-220-...-A | 9.9 Nm |

13. Push the indexing pin into the piston chamber at the rear of the housing based on the notes you made during removal.



14. Screw the blanking plugs into the stop plate based on the notes you made during removal and tighten them using the appropriate tightening torque (see table).

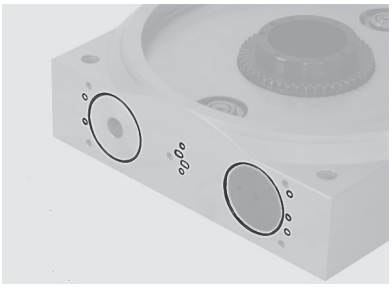
| Type | Torque |
|---|---|
| DHTG-65-...-A | 0.5 Nm |
| DHTG-90-...-A | 0.5 Nm |
| DHTG-140-...-A | 0.5 Nm |
| DHTG-220-...-A | 0.5 Nm |



**Note**

The O-rings must be positioned correctly to ensure that there is no leakage.

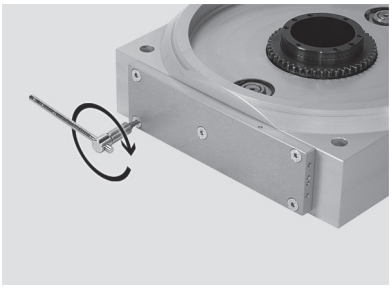
You can apply a light coat of grease to the O-rings to prevent them from popping out of the seats.



15. Press the new O-rings into their seat in the rear of the housing.

16. Screw in the countersunk screws of the stop plate and tighten with the appropriate tightening torque.

| Type | Torque | Number of countersunk screws |
|---|---|---|
| DHTG-65-...-A | 1.5 Nm | 3 |
| DHTG-90-...-A | 2.9 Nm | 5 |
| DHTG-140-...-A | 5.9 Nm | 5 |
| DHTG-220-...-A | 5.9 Nm | 5 |



**Note**

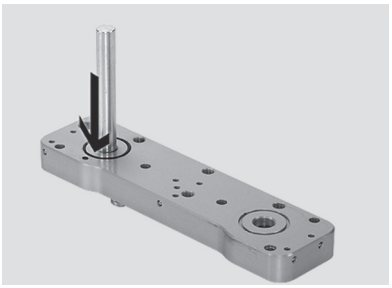
The O-rings must be positioned correctly to ensure that there is no leakage.

You can apply a light coat of grease to the O-rings to prevent them from popping out of the seats.

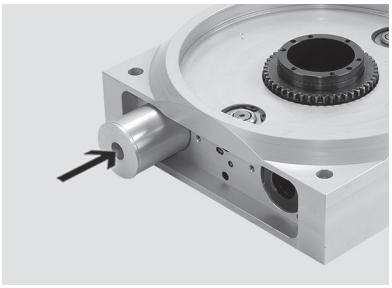
17. Insert the new O-rings into their seat in the front of the housing.

18. Insert a new O-ring in the seat of the impact plate.

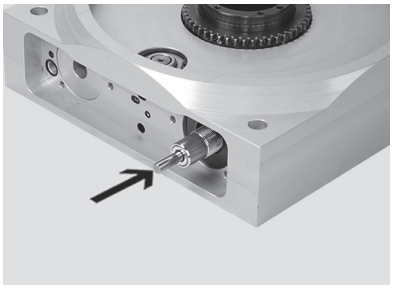
This O-ring is not available in the impact plate of the DHTG-65.



19. Push the indexing pin into the piston chamber at the front of the housing based on the notes you made during removal.

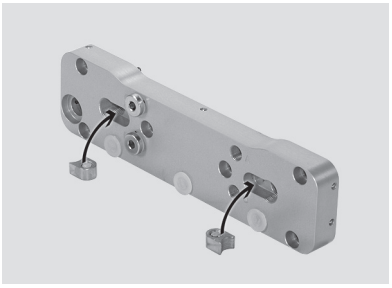


20. Push the shock absorber into the gear rack based on the notes you made during removal.

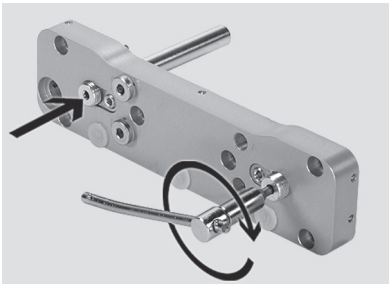


21. Insert the retaining ring in the gear rack and check for correct fit.

22. Insert the clamping components in the impact plate.



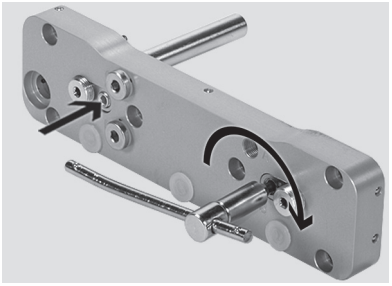
23. Screw the stop screws into the impact plate.



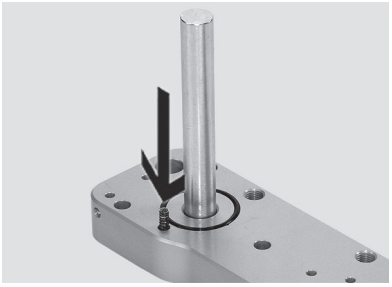
The stop screws are adjusted during the test run.

24. Tighten both grub screws in the impact plate with the appropriate tightening torque (see table).

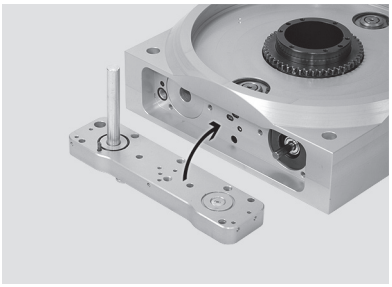
| Type | Torque |
|---|---|
| DHTG-65-...-A | 0.8 Nm |
| DHTG-90-...-A | 0.8 Nm |
| DHTG-140-...-A | 2.5 Nm |
| DHTG-220-...-A | 2.5 Nm |



25. Insert the compression spring in its seat in the impact plate.

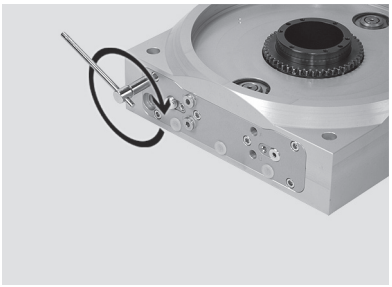


26. Insert the impact plate in the housing.



**Note**

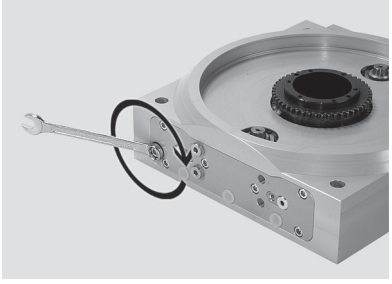
Tightening the socket head screws on one side can result in tilting of the impact plate. It could be damaged.



27. Screw the socket head screws into the impact plate uniformly, but do not tighten them yet.

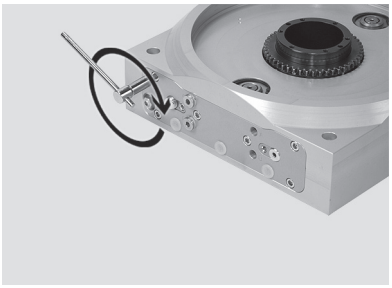
| Type | Number of socket head screws |
|---|---|
| DHTG-65-...-A | 3 |
| DHTG-90-...-A | 4 |
| DHTG-140-...-A | 5 |
| DHTG-220-...-A | 5 |

28. Screw the hollow bolt into the impact plate, but do not tighten it yet.



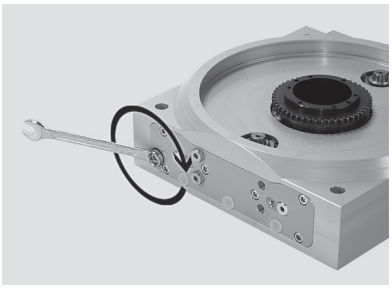
29. Tighten the socket head screws in the impact plate with the appropriate tightening torque (see table).

| Type | Torque | Number of socket head screws |
|---|---|---|
| DHTG-65-...-A | 2.9 Nm | 4 |
| DHTG-90-...-A | 2.9 Nm | 5 |
| DHTG-140-...-A | 9.9 Nm | 6 |
| DHTG-220-...-A | 9.9 Nm | 6 |



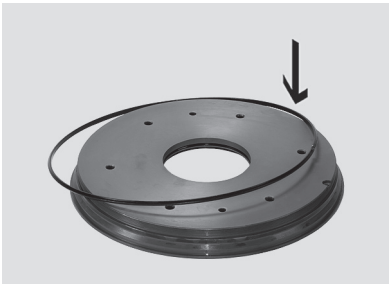
30. Tighten the hollow bolt in the impact plate with the appropriate tightening torque (see table).

| Type | Torque |
|---|---|
| DHTG-65-...-A | 1.5 Nm |
| DHTG-90-...-A | 1.5 Nm |
| DHTG-140-...-A | 5.5 Nm |
| DHTG-220-...-A | 5.5 Nm |



### 4.5.4 Assembling the plate (DHTG-65 and DHTG-90)

1. Push the rail of the guide segments onto the plate.



2. Press the new O-ring into position on the inside of the hole in the plate.

**Note**

If there is a heavy-duty spring pin in the plate (from series F8), it is not possible to mount index plates without an additional hole.

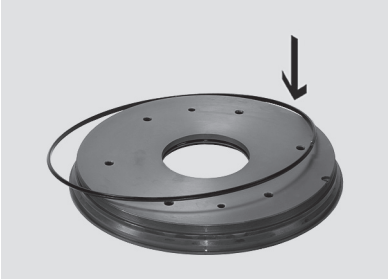
3. Place the index plate on the centring bolts in the plate with the countersinks for the countersunk screws facing upwards.

4. Use the countersunk screws to fix the index plate on the plate and tighten the screws with the appropriate torque (see table).

| Type | Torque |
|---|---|
| DHTG-65-...-A | 2 Nm |
| DHTG-90-...-A | 4 Nm |

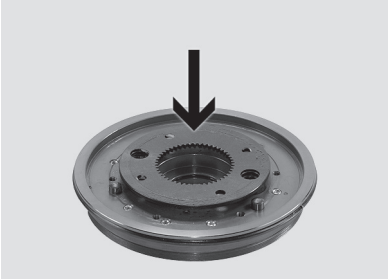
### 4.5.5 Assembling the plate (DHTG-140)

1. Push the rail of the guide segments onto the plate.



2. Place the compression springs and the sleeves in the guides in the plate.

3. Place the ring gear on the sleeves with the countersinks facing downwards.



**Note**

If there is a heavy-duty spring pin in the plate (from series F8), it is not possible to mount index plates without an additional hole.

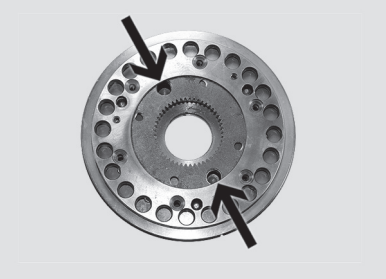
**Note**

Note the position of the centring bolts in the plate when placing the index plate.

4. Place the index plate on the ring gear with the countersinks for the countersunk screws facing upwards.

**Note**

The ring gear is equipped with overload protection. This is subjected to spring tension and can tilt and become damaged if the countersunk screws are tightened on one side.

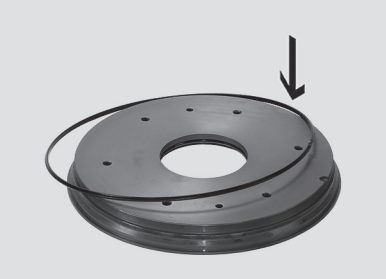


5. Use the countersunk screws to fix the index plate on the plate and tighten the screws with the appropriate torque (see table).

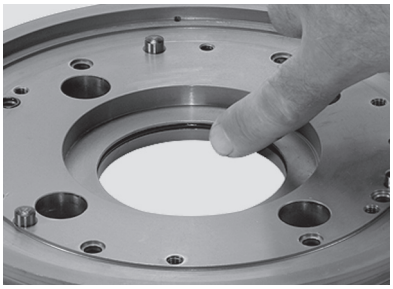
| Type | Torque |
|---|---|
| DHTG-140-...-A | 4 Nm |

### 4.5.6 Assembling the plate (DHTG-220)

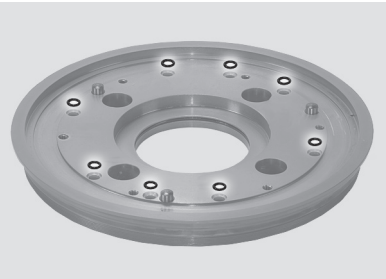
1. Push the rail of the guide segments onto the plate.



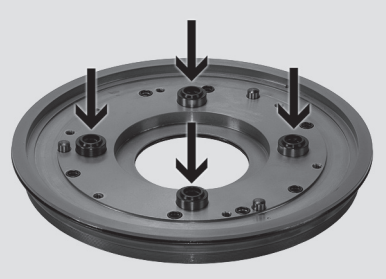
2. Press the new O-ring into its seat in the inside of the hole in the plate.



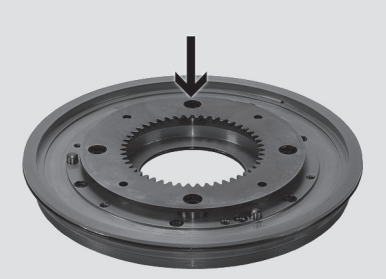
3. Insert the new O-rings into the plate.



4. Insert the compression springs and sleeves in the guides in the plate.



5. Place the ring gear on the sleeves with the countersinks facing downwards.

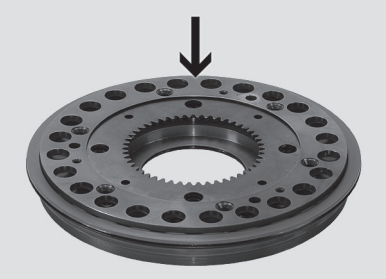


**Note**

If there is a heavy-duty spring pin in the plate (from series F8), it is not possible to mount index plates without an additional hole.

**Note**

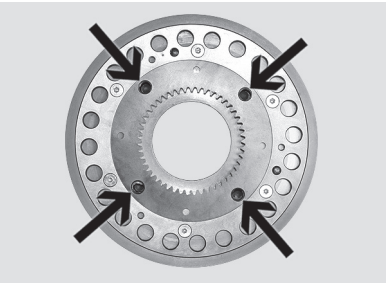
Note the position of the centring bolts in the plate when placing the index plate.



6. Place the index plate on the ring gear with the countersinks for the countersunk screws facing upwards.

**Note**

The ring gear is equipped with overload protection. This is subjected to spring tension and can tilt and become damaged if the countersunk screws are tightened on one side.

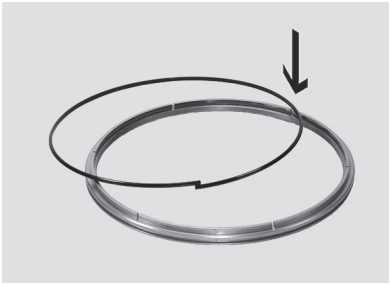


7. Screw in the countersunk screws and tighten with tightening torque 7 Nm.

| Type | Torque |
|---|---|
| DHTG-220-...-A | 7 Nm |

### 4.5.7 Installing the plate

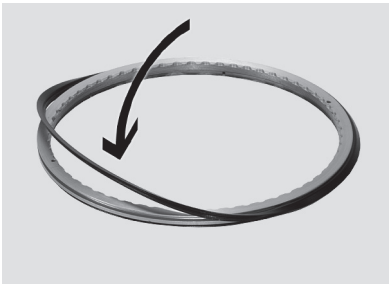
1. Push the rail of the guide segments from underneath onto the clamping ring.



The plate seal is supplied in different lengths depending on the size. Before being installed it must be shortened to the correct length (see table) and the cut surfaces must be glued together using superglue.

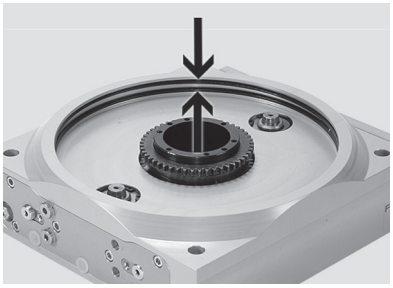
| Type | Length of plate seal |
|---|---|
| DHTG-65-...-A | $230^{+1}$ mm |
| DHTG-90-...-A | $320^{+1}$ mm |
| DHTG-140-...-A | $478^{+1}$ mm |
| DHTG-220-...-A | $729^{+1}$ mm |

**Note**
The sealing lip of the plate seal must face the underside of the clamping ring.

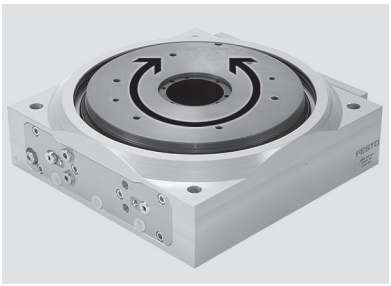


2. Press the new plate seal into the slot in the edge of the clamping ring.

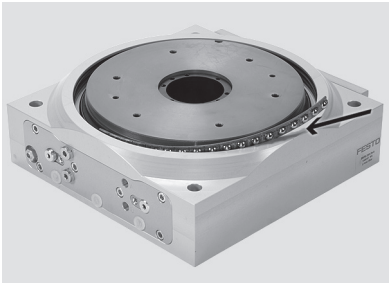
3. Insert both rails of the guide segments in the housing.



4. Check the hole pattern on the plate.
5. Insert the plate on the pinion in the housing.
6. Turn the plate slowly, until it engages in the pinion gearing.



7. Insert ball bearings into the housing.



**Note**

The number of ball bearings depends on the size of the rotary indexing table (see Table).

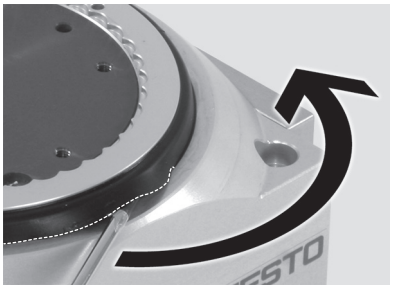
| Type | Number of ball bearings |
|---|---|
| DHTG-65-...-A | 1 |
| DHTG-90-...-A | 2 |
| DHTG-140-...-A | 2 or 3 |
| DHTG-220-...-A | 2 or 3 |

Ensure that the top rail of the ball bearings is not pressed down into the housing. The balls of the ball bearings must run between the rails, otherwise the plate may not be able to move and the balls of the ball bearings and the rails could be irreparably damaged.

**Note**

When screwing in the clamping ring the plate seal can be pulled into the joint between the plate and housing.

In this case, pull the plate seal out of the joint before screwing in the clamping ring any further. To this end, guide a flat, blunt object next to the pulled in area under the seal and use it to move along the seal until the sealing lip completely lies on the housing.

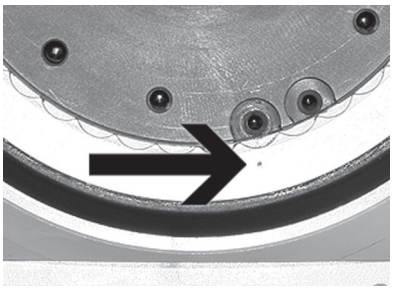


8. Tighten the clamping ring using two pin punches and a hole profile (or another suitable lever tool).

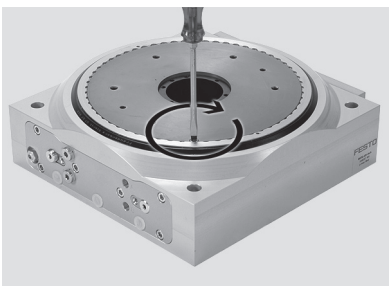
To tighten the clamping ring, the rotary indexing table must be held in place (if necessary, with the help of a second person or by fixing the rotary indexing table).

The correct preload of the guide segments is reached when the index hole (arrow) is level with the screw hole and the clamping ring is flush with the plate surface.

For design reasons, there are two screw holes in sizes DHTG-65 and DHTG-90. The correct pretension is achieved with the hole marked during removal.



9. Screw the flat head screw into the plate and tighten to the appropriate tightening torque (see table).



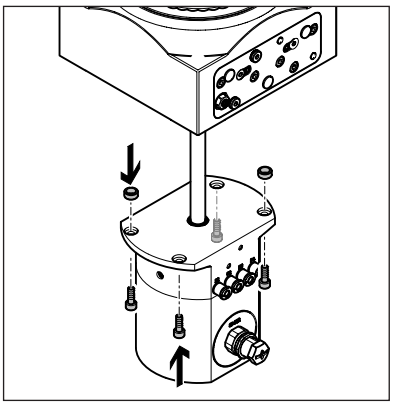
| Type | Torque |
|---|---|
| DHTG-65-...-A | 0.6 Nm |
| DHTG-90-...-A | 0.6 Nm |
| DHTG-140-...-A | 0.6 Nm |
| DHTG-220-...-A | 0.6 Nm |

## 4.6 Mounting the energy throughfeed

### 4.6.1 Mounting of the pneumatic and electrical module

An electrical module is additionally mounted on the pneumatic module of the P4E4 / P4L12 versions.
In the event of a pneumatic module defect, contact the regional Festo contact (➔ www.festo.com).

1. Insert the centring sleeves into the holes in the housing of the pneumatic module.
2. Push the air pipe assembly through the rotary indexing table.



The air connections of the pneumatic module are on the same side as the air connections of the rotary indexing table.

3. Carefully position the housing of the pneumatic module on the rotary indexing table, at the same time, feed the centring sleeves into the holes in the rotary indexing table.
4. Screw in socket head screws (4×) and tighten to appropriate tightening torque.

| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 2.9 Nm ±20 % |
| DHTG-...-A-P4E4 | 2.9 Nm ±20 % |
| DHTG-...-A-P4L12 | 2.9 Nm ±20 % |

5. Mount rotary distributor ➔ Chapter 4.6.2 on page 86.

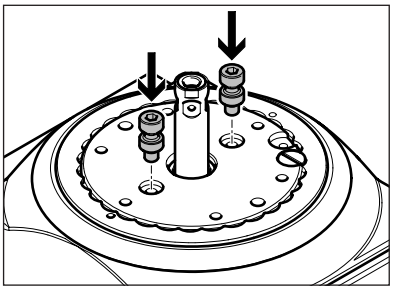
### 4.6.2 Mounting the rotary distributor, only DHTG-...-A-P4 / P4E4 / P4L12

**Requirement**

The pneumatic and the electrical module are mounted ➔ Chapter 4.6.1 on page 86.

**DHTG-65 / 90-A-P4 / P4E4 / P4L12**

1. If dismantled, screw grub screw into the plate until it stops.

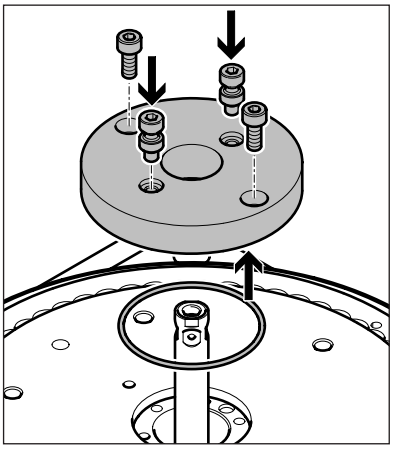


**DHTG-140 / 220-A-P4 / P4E4 / P4L12**

2. Check O-ring for adapter and replace if necessary.
3. Grease O-ring with LUB-E1.
4. Insert O-ring into adapter.
5. Position adapter on plate.
6. Screw in socket head screws (2×) and tighten to appropriate tightening torque.

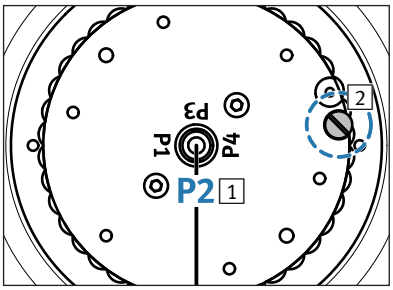
| Size | Tightening torque |
|---|---|
| DHTG-140-P4 / P4E4 / P4L12 | 2.9 Nm |
| DHTG-220-A-P4 / P4E4 / P4L12 | 2.9 Nm |

7. If dismantled, screw grub screw into the adapter until it stops.

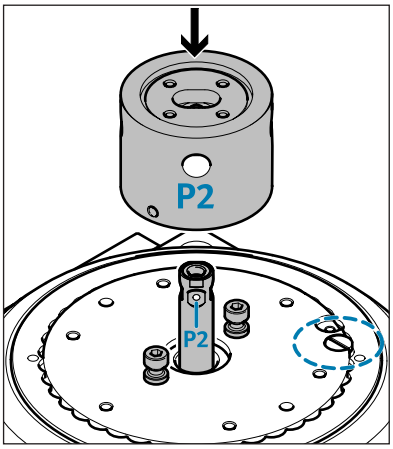


**All energy throughfeeds**

8. Align marked air passage on air pipe for air connection **P2** [1] as shown in the diagram. The reference point is the flat head screw [2] in the plate.

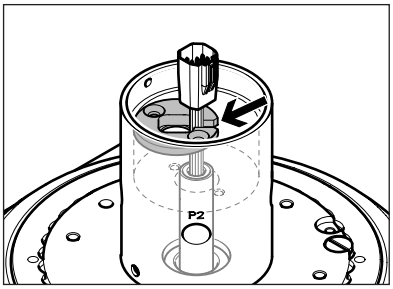



9. Push the holder into the correct position over the air pipe and plug-in connector (if included) onto the grub screw, i.e. align **“P2”** marking as shown in diagram in previous step.



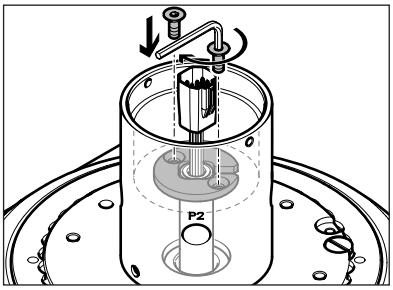

**DHTG-...-P4E4 / P4L12**

10. Thread the cables through the recess of the adapter.



11. Insert the adapter into the holder.
12. Screw countersunk screws (2×) through the adapter and tighten to appropriate tightening torque.

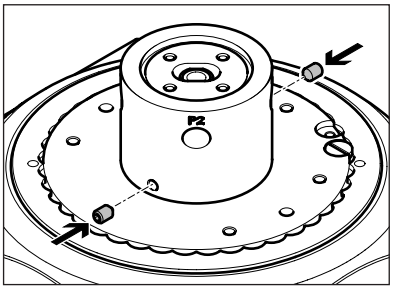
| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4E4 | 1.2 Nm |
| DHTG-...-A-P4L12 | 1.2 Nm |




**All energy throughfeeds**

13. Align air passage P2 of the air pipe with air connection P2 of the rotary distributor.
14. Screw bottom grub screws (2×) into the holder and tighten to appropriate tightening torque.

| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 0.5 Nm |
| DHTG-...-A-P4E4 | 0.5 Nm |
| DHTG-...-A-P4L12 | 0.5 Nm |

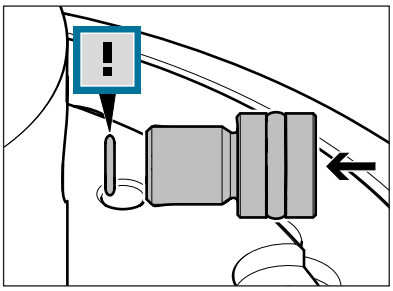



**Note**

The marked air passage P2 of the air pipe must be aligned with the air connection P2 of the rotary distributor.

The O-ring on the bolt in the end face must not fall out of the holder:

- Use shortened hexagon key.

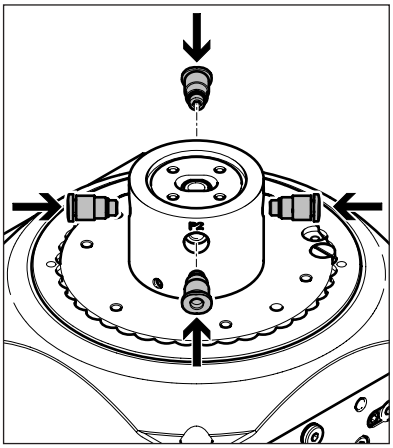


15. Check the end-face O-rings of the bolts (4×) and replace if necessary.
16. Grease O-rings (4×) with LUB-E1.
17. Insert O-rings (4×) into the bolts (4×).
18. Grease the side O-ring in the bolt (4×) with LUB-E1.
19. Carefully screw in bolt with O-ring (4×) and tighten to the appropriate tightening torque.

| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 1.5 Nm |
| DHTG-...-A-P4E4 | 1.5 Nm |
| DHTG-...-A-P4L12 | 1.5 Nm |

20. Screw in push-in fittings (4×) and tighten to appropriate tightening torque.

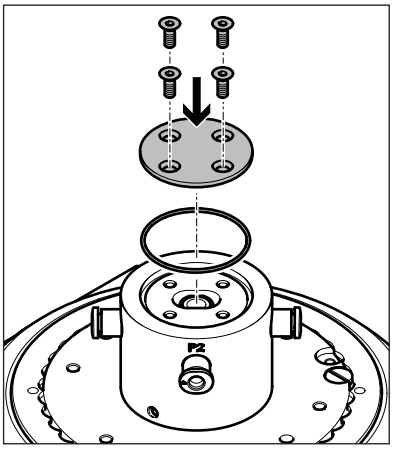
| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 1.5 Nm |
| DHTG-...-A-P4E4 | 1.5 Nm |
| DHTG-...-A-P4L12 | 1.5 Nm |



**DHTG-...-A-P4**

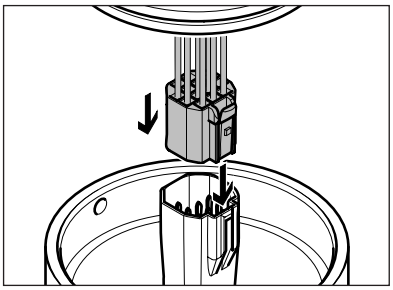
21. Check the O-ring of the end cap and replace if necessary.
22. Grease O-ring with LUB-E1.
23. Insert O-ring into holder.
24. Insert end cap into holder.
25. Screw in countersunk screws (4×) and tighten to the appropriate tightening torque.

| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 1.2 Nm ±20 % |
| DHTG-...-A-P4E4 | 1.2 Nm ±20 % |
| DHTG-...-A-P4L12 | 1.2 Nm ±20 % |




**DHTG-...-A-P4E4 and DHTG-...-A-P4L12**

26. Push together the plug-in connectors until the latching latches into position.

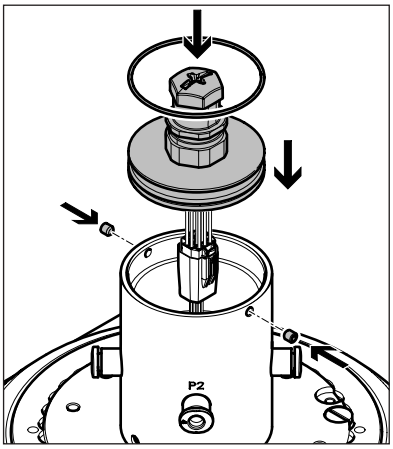


**Note**

The cables must not become clamped when laying in the holder.

27. Check the O-ring of the end cap module and replace if necessary.
28. Grease O-ring with LUB-E1.
29. Insert O-ring into plate.
30. Insert end cap module into holder.
31. Screw in the grub screws (2×) and tighten to the appropriate tightening torque.

| Size | Tightening torque |
|---|---|
| DHTG-...-A-P4 | 0.5 Nm |
| DHTG-...-A-P4E4 | 0.5 Nm |
| DHTG-...-A-P4L12 | 0.5 Nm |



# 5 Cleaning

**Note**
Regular removal of the lubricating grease on the surfaces reduces the life.

**Note**
- Clean with a soft, lint-free cloth and non-abrasive cleaning agents.
- Check the compatibility of the cleaning agent with the materials to be cleaned.

# 6 Maintenance

This chapter contains important technical information about the maintenance work to be carried out on the rotary indexing table. 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).

## 6.1 Cleaning and lubricating the rotary indexing table

Clean the rotary indexing table using a soft cloth and a gentle cleaning product if necessary.

The rotary indexing table is otherwise maintenance free due to its lifetime lubrication. Regular removal of the lubricant on the surfaces reduces the service life.

Lubricate the following components after a conversion (e.g. to reciprocating motion):

- Piston chamber, seals, locking clip, gear racks, pinion and index plate.

The required grease (LUB-E1 silicone-free) is included in the conversion kits and sets of wearing parts.

General relubrication of the mechanical components every 5 million switching cycles is recommended.

Further information on the assembly aids and lubricants is included in the **“Tools and repair accessories”** information brochure. The information brochure can be found in the online spare parts catalogue on the Festo website (➔ Tools and repair accessories.pdf).

## 6.2 Inspection interval for the shock absorber

Check the shock absorbers every 2 million strokes for the following points:

– Oil leakage
– Hard knocking
– Function (shock absorber head must not remain in the retracted end position).

# 7 Tools

The following standard tools are required for repair and maintenance of the rotary indexing table:

- Engineer's hammer
- Plastic hammer
- Two pin punches
- Pliers for retaining rings (exterior and interior retention)
- Internal hexagon socket screwdriver (Allen key)
- Shortened internal hexagon socket screwdriver (Allen key)
- Torx screwdriver
- Torque wrench
- Torque screwdriver
- Screwdriver set
- Flat pliers
- Ring wrench
- Hole profile or other suitable lever tool

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## IV. Liability/limitations on liability

1. Festo provides 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 data storage devices (diskettes, CD ROM, removable disk) does not accompany a product, i.e. is not automatically supplied together with that product, Festo does not guarantee that the electronic documentation separately available/supplied 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 portable data storage devices, i.e. with the exception of electronic documentation provided on the Internet/intranet, are limited exclusively to proper duplication of the software, whereby Festo guarantees that in each case the relevant portable data storage device or software contains the latest status of the documentation. In respect of the 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 on liability as per paragraphs 1 and 2 do not apply if, in cases of intent or gross negligence or lack of warranted quality, a compulsory liability exists. In such a case, Festo’s liability is limited to the damage discernable by Festo when the concrete circumstances are made known.

## 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.