# Rotary indexing table

# DHTG-...-A





Repair instructions (en)



### Imprint

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All technical data are subject to change according to technical updates.

### 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 AG & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise, no liability is accepted for direct or consequential damage resulting from incorrect use of the products. Further information is given in Chapter <u>7</u> "Liability".

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

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### **1** Important information

### **1.1** About these repair instructions

This document contains important information about professional repair of the rotary indexing table of the type DHTG-...-A.

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

Contain information about the function, application, installation, commissioning, care and maintenance, etc. They can be found on the Festo website (www.festo.com).

#### - Spare parts documentation

Contains an overview of the spare and wearing parts as well as information on their installation. It can be found in the online spare parts catalogue on the Festo website (http://spareparts.festo.com).

#### Information brochure – accessories, equipment and tools

Contains an overview of the available installation resources, e.g. lubricating greases, threadlocking agents, maintenance tools, etc. (resources for installation and maintenance). The brochure can be found in the online spare parts catalogue on the Festo website (http://spareparts.festo.com/xdki/data/SPC/0/PDF\_SAFE/Fitting%20aids.pdf).

### 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

- Indicates activities that can be carried out in any sequence.
- 1. Indicates activities that should be carried out in the specified sequence.
- Indicates a general list.

<u>Underlined, blue text</u> indicates a cross-reference or hyperlink that you can click on in the PDF.

### **1.4 General safety information**



#### 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 plant is protected against restarting before any modification or maintenance work or inspections are carried out. Loosened parts can make unexpected movements or fall off.
- Secure parts against accidental movements or move them into a safe end position.



### Note

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 <u>1.1 "About these repair instructions</u>".



In the event of damage caused by unauthorised manipulation, improper use or use of non-original spare parts, all warranty and liability claims against the manufacturer expire.



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

Components and equipment replaced during repair must be disposed of in accordance with the relevant local environmental protection regulations.

### **1.5** Technical requirements



### Note

The following instructions for safe and proper use must be observed:

- Observe the connection and ambient conditions specified in the technical data of the products and all the connected components. The product can only be operated in 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.





# 2.2 Types and part numbers

Туре	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

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

### 2.3 Orientation designations

This illustration provides an overview of the orientation designations of the rotary indexing table.



O = top

- U = bottom
- R = right
- L = left

V = front

H = rear



# 2.4 Type code

### Example:



The type designation on this name plate provides the following information:

DHTG	Rotary indexing table
DIIIO	Rotary macking table

- 90 Size
- 8 Stations
- A For proximity switch

# 3 Components list

# 3.1 DHTG-65-...-A



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

Rotary	Rotary indexing table			
ltem	Designation	DHTG-65A		
1	Flat head screw	DIN 921-M3×6-5.8		
2	Clamping ring			
3	Plate seal			
4	Rail			
5	Rail			
6	Guide segment			
7	Bearing assembly			
8	0-ring	14×2 NBR		
9	Plate			
10	Index plate			
11	Cylindrical dowel pin	DIN 6325-6M×10		
12	Countersunk screw	DIN 7991-M4×8		
13	Retaining ring	DIN 472-18×1		
14	End cap			
15	0-ring	11.5×1.5 NBR 1		
16	Wiper seal			
17	0-ring	2.2×1		
18	Stop pin			
19	Compression spring			
20	Lock bolt			
21	Bolt assembly			
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	DIN6325-4M6×12		
30	Socket head screw	DIN 7984-M4×8		
31	Countersunk screw	DIN 7991-M5×16		
32	Stop plate			
33	Sealing ring			
34	Blanking plug			
35	Blanking plug assembly			
36	Indexing pin			
37	Piston seal			
38	Gear rack			
49	O-ring	24.8×1.5		
40	O-ring	31.5		
41	Shock absorber			
42	Retaining ring	DIN 472-12×1		
43	O-ring	8×1.6		
44	Buffer			
45	Compression spring D-055			
46	Impact plate			
47	Socket head screw	DIN 912-M4×16		
48	Stop screw	M8×12		
49	Clamping component			
50	Sealing ring			
51	Blanking plug			
52	Blanking plug assembly			
53	Stop screw	M8×1×		
54	Hollow bolt			

# 3.2 DHTG-90-...-A



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

Rotary	otary indexing table			
ltem	Designation	DHTG-90A		
1	Flat head screw	DIN 921-M3×6-5.8		
2	Clamping ring			
3	Plate seal			
4	Rail			
5	Rail			
6	Guide segment			
7	Bearing assembly			
8	O-ring	20×2 NBR		
9	Plate			
10	Index plate			
11	Countersunk screw	DIN 7991-M5×12-8.8		
12	Cylindrical dowel pin	DIN6325 8M6×16		
13	Retaining ring	DIN 4/2-25×1.2		
14	End cap			
15	U-ring Winer cool	20×1.5 NBR_1		
10				
1/	U-IIIIg Ston nin	2.2×1		
18	Stop pill			
20				
20	Bolt assembly			
21	Dictor seal			
22	Housing			
20	Pinion			
24	Metal sheet			
25	Cover			
20	Retaining ring	DIN 471-M24×1.2		
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	Stop plate			
33	Sealing ring			
34	Blanking plug			
35	Blanking plug assembly			
36	Indexing pin			
37	Piston seal			
38	Gear rack			
39	O-ring	28×1.5		
40	O-ring	5×1.5		
41	O-ring	3×1.5		
42	Shock absorber			
43	Retaining ring	DIN 472-M12×1		
44	O-ring	8×1.6		
45	Compression spring D-055			
46	O-ring	12×2 NBR		
47	Impact plate			
48	Socket head screw	DIN 912-M4×16-8.8		
49	Stop screw	M8×12		
50	Clamping component			
51	Sealing ring	DIN 913-M5×5		
52	Blanking plug			
53	Blanking plug assembly			
54	Stop screw	M8×1×		
55	Hollow bolt			

## 3.3 DHTG-140-...-A



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

Rotary	otary indexing table			
ltem	Designation	DHTG-140A		
1	Flat head screw	DIN 921-M3×6-5.8		
2	Clamping ring			
3	Plate seal			
4	Rail			
5	Rail			
6	Guide segment			
7	Bearing assembly			
8	O-ring	35×2		
9	Plate			
10	Rubber ball			
11	Index plate			
12		DIN 5325 8/06×16		
15		DIN 7991-W5×16		
14				
15	Ding goor			
10	Rills Seal	DIN 472-25-1 2		
18	Fnd can			
19	O-ring	26x2		
20	Winer seal			
20	O-ring	2.2x1		
22	Stop pin			
23	Compression spring			
24	Lock bolt			
25	Bolt assembly			
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 6325-4×12		
34	Socket head screw	DIN 912-M5×10		
35	Countersunk screw	DIN 7991-M6×16		
36	Stop plate			
37	Sealing ring			
38	Blanking plug			
39	Blanking plug assembly			
40	Indexing pin			
41	Piston seal			
42	Gear rack	LE 2NDD 70 Chara		
43	0-ring	45×2 NDK-/U Shore		
44	0-ring	5×1.5		
45		2×1.2		
40	Comprossion spring D OFF	11×1.5 NBR		
4/	Compression spring D-055			
40	Detaining ring	DIN 471-22×1		
47 50		22v2 NRP		
50	Impact plate			
52	Socket head screw	DIN 912-M6x16		
52	Ston screw			
54	Clamping component			
55	Sealing ring	DIN 913-M8×8		
56	Blanking nlug			
57	Blanking plug assembly			
58	Stop screw			
59	Hollow bolt			
-				

## 3.4 DHTG-220-...-A



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

Rotary	otary indexing table			
ltem	Designation	DHTG-220A		
1	Flat head screw	DIN 921-M3×6-5.8		
2	Clamping ring			
3	Plate seal			
4	Rail			
5	Rail			
6	Guide segment			
/	Bearing assembly			
8	Dete	/ 5×2 NDR		
9	Γlate Ω-ring	6 5×1 6 NBP		
10	Index plate	0.5×1.0 NDK		
12	Countersunk screw	DIN 7991-M6x16-8.8		
13	Cylindrical dowel pin	DIN 6325-8M6×16		
14	Compression spring			
15	Sleeve			
16	Ring gear			
17	Retaining ring	DIN 472-40×1.75		
18	End cap			
19	Wiper seal			
20	O-ring	35×2		
21	O-ring	2.2×1		
22	Stop pin			
23	Compression spring			
24	LOCK DOIL			
25	Boll assembly			
20	Housing			
27	Pinion			
20	Metal sheet			
30	Cover			
31	Retaining ring	DIN 471-82×2.5		
32	Flange			
33	Cylindrical dowel pin	DIN6325-6M6×12		
34	Socket head screw	DIN 912-M6×12-10.9		
35	Countersunk screw	DIN 7991-M6×20-8.8		
36	Stop plate			
37	Sealing ring			
38	Blanking plug			
39	Blanking plug assembly			
40	Indexing pin			
41 //2	Gear rack			
42	Ο-rinσ	52×2 NBR		
44	0-ring	3x1.5		
45	O-ring	5×1.5		
46	Shock absorber			
47	Retaining ring	DIN 472-26×1.2		
48	0-ring	11×1.5 NBR		
49	Compression spring			
50	0-ring	26×2 NBR		
51	Impact plate			
52	Socket head screw	DIN 912-M6×25-10.9		
53	Stop screw			
54	Clamping component			
55	Sealing ring			
50	Didliking plug			
5/ 50	Bidlikilig plug assembly			
50	Hollow holt			
J7				



### 4 Repair steps

This chapter describes how to dismantle, repair, and assemble the DHTG-...-A rotary indexing table. 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.) must always be checked.

In case of uncertainty, we recommend replacing all the components mentioned to rule out reciprocal effects during later operation.

In case of premature failure of the rotary indexing table, the operating conditions should be considered 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 down and the ball bearing released.

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

### 4.2 Visual inspection

Check the rotary indexing table for visible damage that can impair its function, such as severe dents. The entire rotary indexing table must be replaced if there are signs of significant damage.

#### 4.3 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.

### 4.3.1 Removing the plate

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



#### DHTG-65 and DHTG-90 only

Note the position of the clamping ring in relation to the screw hole of the flat fillister 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 clamping 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.



The number of guide segments depends on the size of the rotary indexing table (see table).

Туре	Number of guide segments
DHTG-65A	1
DHTG-90A	2
DHTG-140A	3
DHTG-220A	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.

### 4.3.2 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 the components of the plate have to be repaired, you can continue with the assembly in Chapter <u>4.4.4 "Assembling the plate (DHTG-65 and DHTG-90)"</u>.

### 4.3.3 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.



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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.

#### 4.3.4 **Dismantling the plate (DHTG-220)**

bling 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. 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 the components of the plate have to be repaired, you can continue with the assembly in Chapter <u>4.4.6 "Assembling the plate (DHTG-220)"</u>.

### 4.3.5 Removing the gear racks

The mounting position of some components depends on the configuration of the rotary indexing table and may 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. Unscrew the hollow bolt in the impact plate on the front of the housing.





#### Note

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

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

Туре	Number of socket head screws
DHTG-65A	3
DHTG-90A	4
DHTG-140A	5
DHTG-220A	5



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

3. Remove the impact plate from the housing.





4. Pull the compression spring out of the impact plate.

5. Undo both grub screws in the impact plate.

6. Unscrew both stop screws from the impact plate.

7. Remove the clamping components from the impact plate.

8. Dismantle the retaining ring of the shock absorber.

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

Туре	Number of countersunk screws
DHTG-65A	3
DHTG-90A	5
DHTG-140A	5
DHTG-220A	5

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

10. Pull the indexing pin out of the housing.

11. Remove the O-rings from the housing.

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

DHTG-65











14. Remove the stop plate.

15. Unscrew the blanking plugs in the stop plate.

16. Remove the O-rings from the housing.

17. Pull the indexing pin out of the housing.

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

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

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

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

21. Push both covers out of their guides.

22. Dismantle the retaining ring of the pinion.

23. Pull the pinion out of the housing.

















1. Remove the metal sheet from the bolts.

24. Pull both gear racks out of the housing.

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

2. Dismantle the retaining rings of both covers.



A wooden rod can be used as a dismantling tool.

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







### 4.3.7 Dismantling the bolts

1. Pull the cover 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 covers.













# 4.4 Mounting the rotary indexing table

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

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



### Note

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

### 4.4.1 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.

### 4.4.2 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.

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

### 4.4.3 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.











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 that lies next to the stop plate must be pushed inwards by one tooth, as otherwise correct functioning of the rotary indexing table cannot be guaranteed.

- 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).

Туре	Torque
DHTG-65A	1.2 Nm
DHTG-90A	2.9 Nm
DHTG-140A	5.9 Nm
DHTG-220A	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).

Туре	Torque
DHTG-65A	0.5 Nm
DHTG-90A	0.5 Nm
DHTG-140A	0.5 Nm
DHTG-220A	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.

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

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

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

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









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

Туре	Torque
DHTG-65A	1.5 Nm
DHTG-90A	1.5 Nm
DHTG-140A	5.5 Nm
DHTG-220A	5.5 Nm

# 4.4.4 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.

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).

Туре	Torque
DHTG-65A	2 Nm
DHTG-90A	4 Nm











#### Assembling the plate (DHTG-140) 4.4.5

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

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).

Туре	Torque
DHTG-140A	4 Nm

### 4.4.6 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

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	s and tighten with tightening torque 7 Nn

Туре	Torque
DHTG-220A	7 Nm

### 4.4.7 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.

Туре	Length of plate seal
DHTG-65A	230 <sup>+-1</sup> mm
DHTG-90A	320 <sup>+-1</sup> mm
DHTG-140A	478 <sup>+-1</sup> mm
DHTG-220A	729 <sup>1</sup> 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. Insert the plate on the pinion in the housing.
- 5. Turn the plate slowly, until it engages in the pinion gearing.





6. Insert the guide segments in the housing.

#### Note

The number of guide segments depends on the size of the rotary indexing table (see table).

Туре	Number of guide segments
DHTG-65A	1
DHTG-90A	2
DHTG-140A	3
DHTG-220A	3

Make sure that the upper rail of the guide segments is not pressed down in the housing. The balls of the guide segments must run between the rails, as otherwise the plate may not be able to move and the balls of the guide segments 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.

7. 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 clamping the rotary indexing table).

The correct pretension of the guide segments is achieved 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.

8. Screw the flat fillister head screw into the plate and tighten with the appropriate tightening torque (see table).

Туре	Torque
DHTG-65A	0.6 Nm
DHTG-90A	0.6 Nm
DHTG-140A	0.6 Nm
DHTG-220A	0.6 Nm













### 5 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).

### 5.1 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 20 ml) is included in the conversion kits and sets of wearing parts.

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

### 5.2 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 stop in the retracted end position). Tool

### 6 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)
- Torque wrench
- Torque screwdriver
- Screwdriver set
- Flat pliers
- Ring wrench
- Hole profile or other suitable lever tool

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