

KBB 30 X

Repair instructions





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KBB 30 X



1. Models described

These repair instructions describe how to repair the following models:

Model	Order number
KBB 30 X	7 272 11



2. Technical data

Technical data

All the technical data can be found in the operating instructions for the model.

Test data

Up-to-date test data for all models can be found on the FEIN Extranet (Customer Service → Repair Guides).

Lubricants

The lubricants and container sizes available from FEIN can be found on the FEIN Extranet (Customer Service → Repair Guides).

Lists of spare parts

Lists of spare parts and exploded views are available online at www.fein.com



3. Notes and requirements

Please note

These instructions are only intended for persons with suitable technical training. It is assumed that the reader has mechanical and electrical training.

Only use original FEIN spare parts.

Provisions

Please note that power tools may only be repaired, maintained and checked by a trained electrician, as improper repair can result in serious risks to the user.

The provisions set out in **DIN VDE 0701-0702** should be observed after repairs.

The relevant accident prevention regulations of the employer's liability insurance associations are to be observed when commissioning.

The German Equipment and Product Safety Act [ProdSG] applies for correct use.

Outside Germany, the regulations applicable in the relevant country must be observed.



4. Tools required

Standard tools

Outer puller	
Bolt	20 mm in diameter
Arbor press	
Open-ended spanner	Sizes 6, 14, 17, 22, 23, 24 mm
Slide hammer	
Sleeve	~20 mm outer diameter 12 mm inner diameter
	~20 mm outer diameter 14 mm inner diameter
	25 mm outer diameter 15 mm inner diameter
	27 mm outer diameter 17 mm inner diameter
	28 mm outer diameter 23 mm inner diameter
	35 mm outer diameter 30 mm inner diameter
	26 mm outer diameter ~23 mm inner diameter

Special tools

Drawing-off socket cap	6 41 04 150 00 8
Chuck cone 19 mm	6 41 07 019 00 7
Chuck cone 22 mm	6 41 07 022 00 1
Chuck cone 37 mm	6 41 07 037 00 3



4. Tools required

Standard tools

Inner puller

Socket wrenches 2.5 mm; 3 mm; 4 mm; 5 mm; 6 mm

PH2 cross-tip screwdriver

Slotted screwdriver

Plastic hammer

Side-cutting pliers

Circlip pliers

Flat-nose pliers

Ball bearing support 8 mm inner diameter
12 mm inner diameter



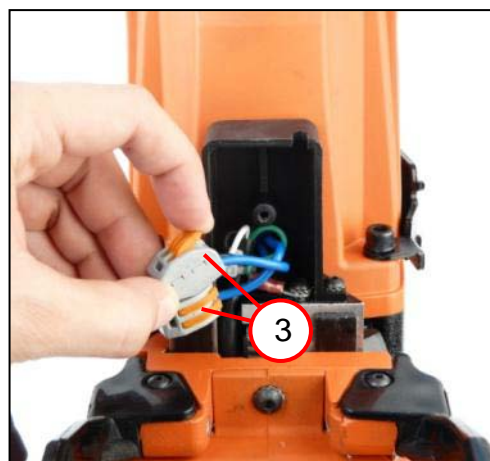
5. Lubricants and auxiliary substances required

Lubricants

Grease	0 40 127 0100 0	80 g	Gearbox
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6. Removal

Removing the cover



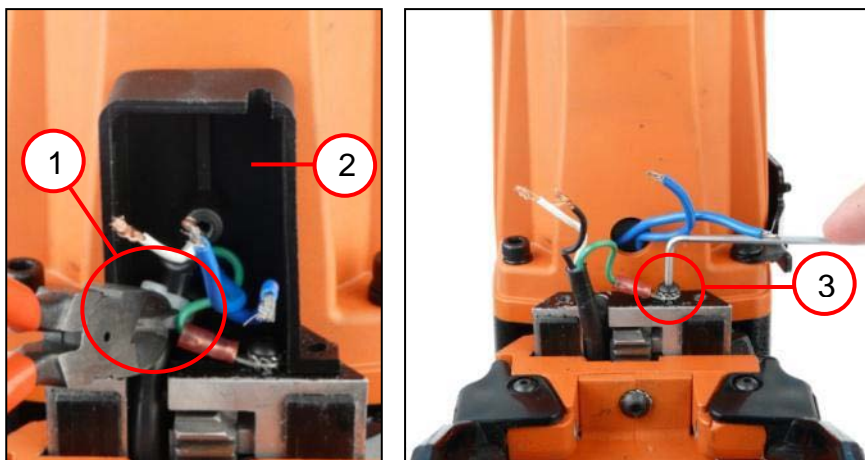
1. Remove the screw (1) and take off the cover (2).
2. Take out the two terminals (3) and remove the stranded wires.
3. Remove the two screws (4).

Tools:

- Cross-tip screwdriver
- Socket wrench 3 mm

6. Removal

Removing the cover



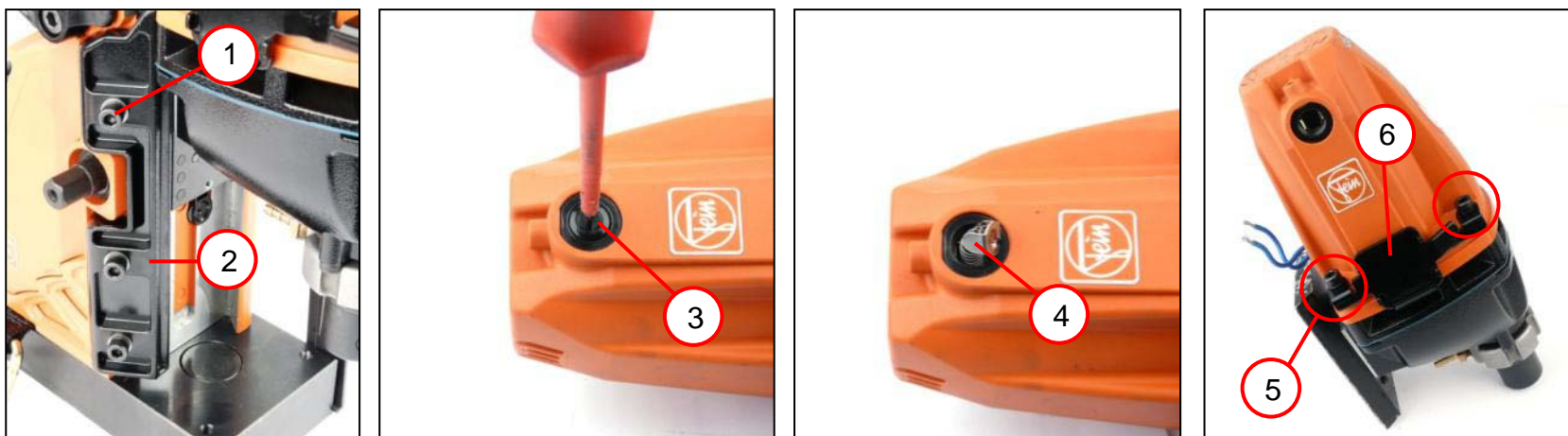
1. Remove the two cable ties (1).
2. Remove the cover (2).
3. Remove the screw (3).

Tools:

- Side-cutting pliers
- Socket wrench 3 mm

6. Removal

Removing the drill motor



1. Open the three screws (1).
2. Remove the guide (2) and take off the drill motor.
3. Unscrew the two caps (3) on both sides.
4. Remove the two carbon brushes (4) on both sides.
5. Remove the four socket head screws (5) together with the adapter (6).

Tools:

- Slotted screwdriver
- Socket wrench 5 mm

6. Removal

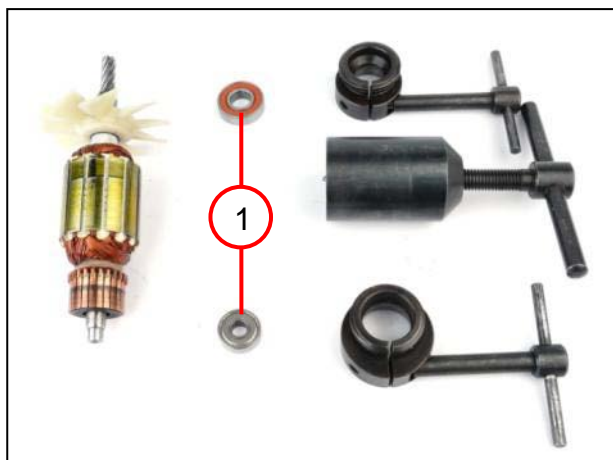
Removing the drill motor



1. Remove the cover (1).
2. Pull out the armature (2).

6. Removal

Removing the armature



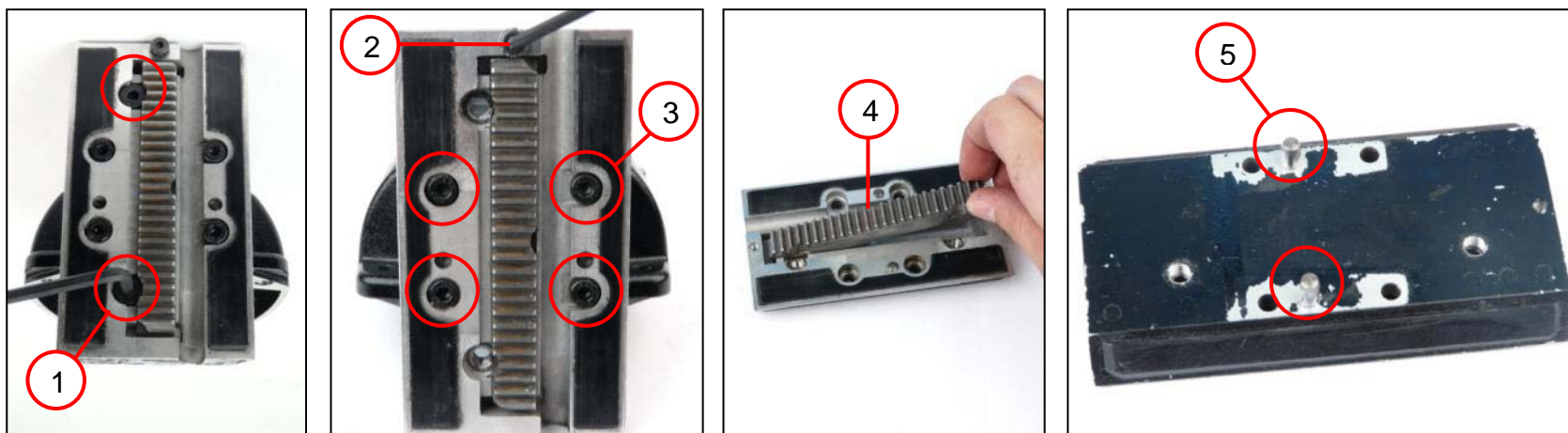
1. Pull off the grooved ball bearings (1) with the chuck cones and the drawing-off socket cap.

Tools:

- Drawing-off socket cap
- Chuck cone 22 mm
- Chuck cone 37 mm

6. Removal

Removing the gearbox



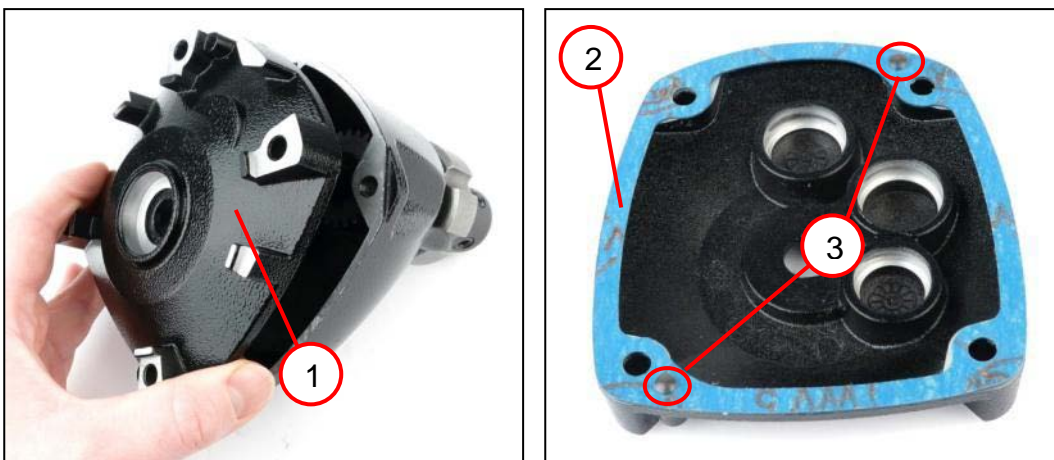
1. Unscrew the two screws (1).
2. Unscrew the screw (2).
3. Unscrew the four screws (3) and take off the guide.
4. Remove the gear rack (4).
5. Remove the two pins (5).

Tools:

- Socket wrenches
3 mm;
4 mm

6. Removal

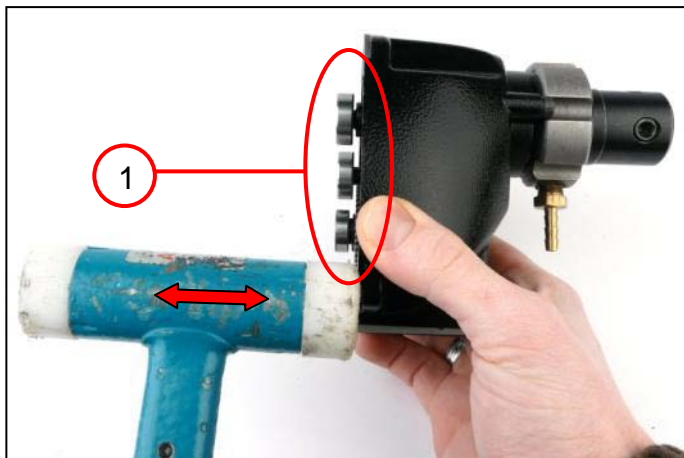
Removing the gearbox



1. Remove the cover (1).
2. Remove the seal (2).
3. Remove the two pins (3).

6. Removal

Removing the gearbox



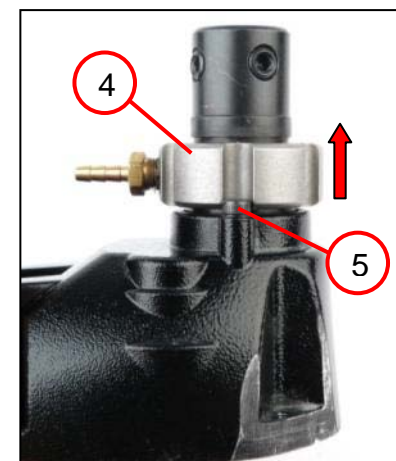
1. Remove the grease.
2. Remove the gearbox (1).

Tools:

- Plastic hammer

6. Removal

Removing the gearbox



1. Remove the grooved ball bearing (1).
2. Remove the circlip (2).
3. Turn over the housing and pull off the circlip (3).
4. Pull off the ring (4).
5. Remove the two screws (5).

Tools:

- Drawing-off socket cap
- Chuck cone 22 mm
- Circlip pliers
- Socket wrench 5 mm

6. Removal

Removing the gearbox



1. Press the shaft (1) 10 mm downwards.
2. Turn around the gearbox housing and press the shaft into the gearbox housing.
3. Pull the gear-wheel (2) off the shaft.

Tools:

- Arbor press
- Outer puller

6. Removal

Removing the gearbox



1. Remove the feather key (1).
2. Press the shaft (2) out of the housing.

Tools:

- Arbor press

6. Removal

Removing the gearbox



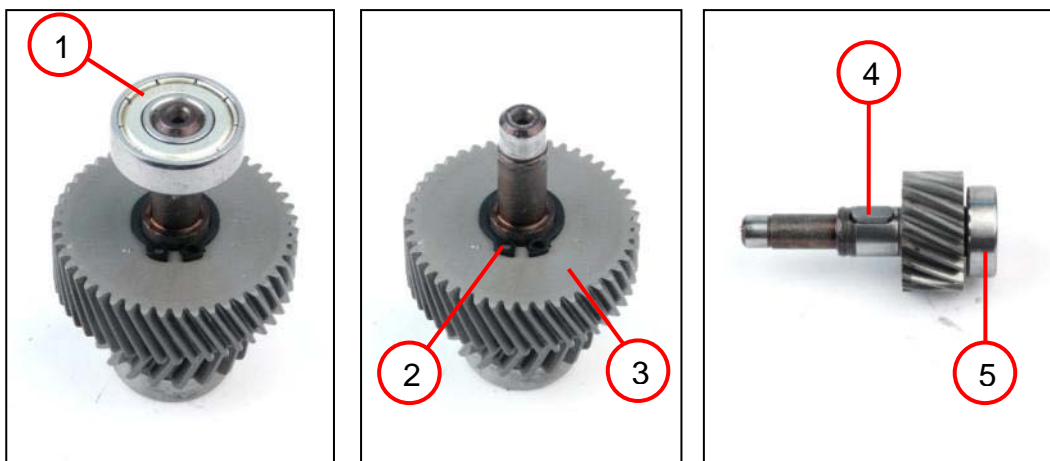
1. Remove the circlip (1).
2. Press the sealing ring (2) and the grooved ball bearing out of the gearbox housing.

Tools:

- Circlip pliers
- Arbor press
- Sleeve
25 mm outer diameter
15 mm inner diameter

6. Removal

Removing the gear-wheel



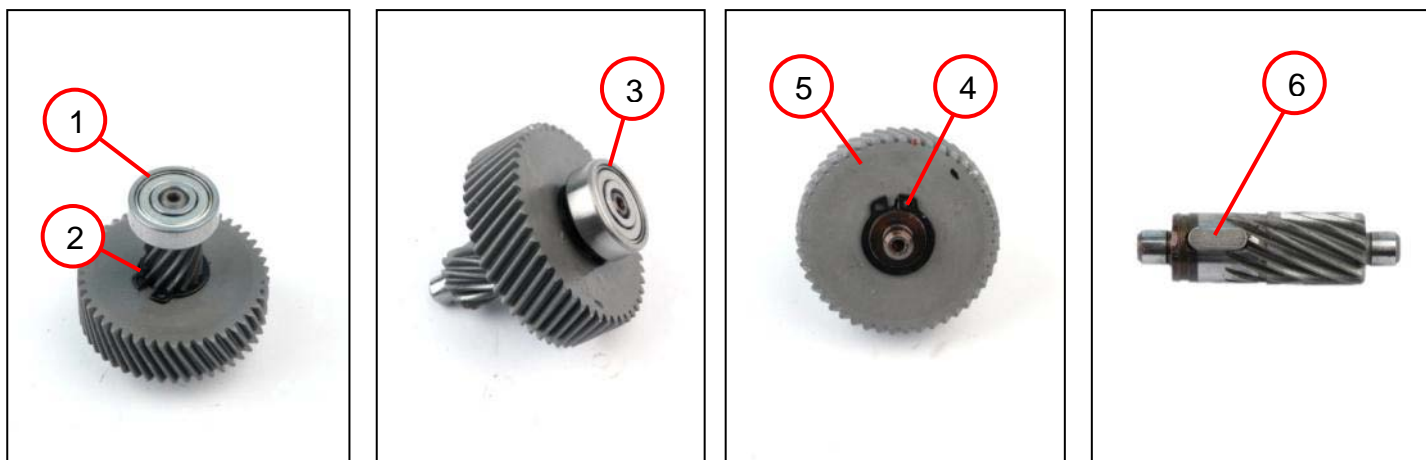
1. Pull off the grooved ball bearing (1).
2. Remove the circlip (2).
3. Pull off the gear-wheel (3).
4. Remove the feather key (4).
5. Pull off the grooved ball bearing (5).

Tools:

- Drawing-off socket cap
- Chuck cone 22 mm
- Circlip pliers

6. Removal

Removing the gearbox



1. Pull off the grooved ball bearing (1).
2. Remove the circlip (2).
3. Pull off the grooved ball bearing (3).
4. Remove the circlip (4).
5. Pull off the gear-wheel (5).
6. Remove the feather key (6).

Tools:

- Drawing-off socket cap
- Chuck cone 19 mm
- Circlip pliers

6. Removal

Removing the shaft



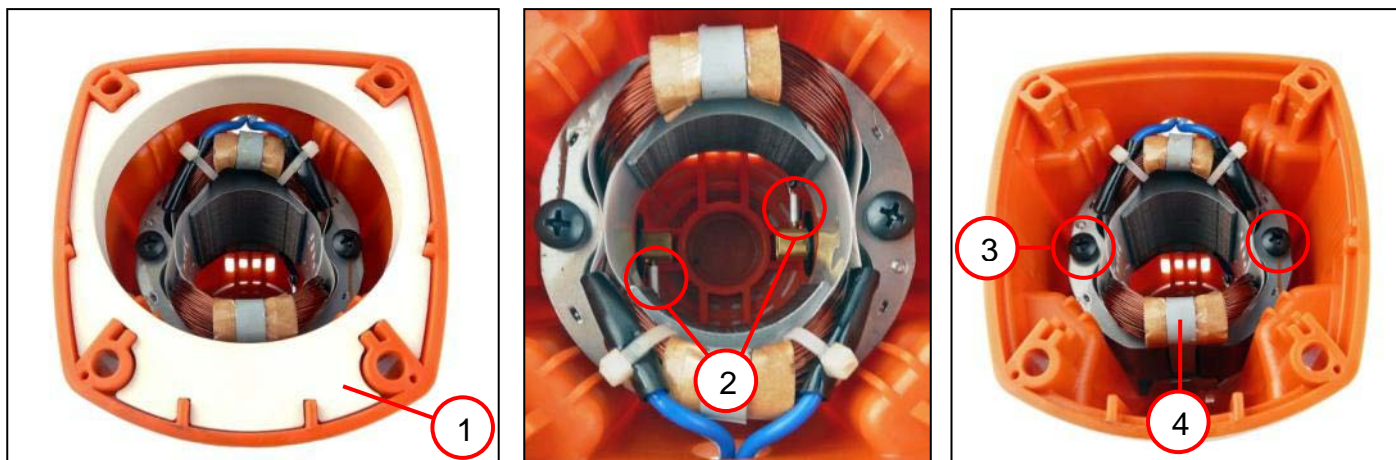
1. Unscrew the two screws (1).
 2. Remove the circlip (2).
 3. Take out the spring, pin, the two discs and the ring (3).
 4. Remove the two rings (4).
- ☞ The rings are destroyed during removal and must be replaced.

Tools:

- Socket wrench 5 mm
- Circlip pliers

6. Removal

Removing the motor housing



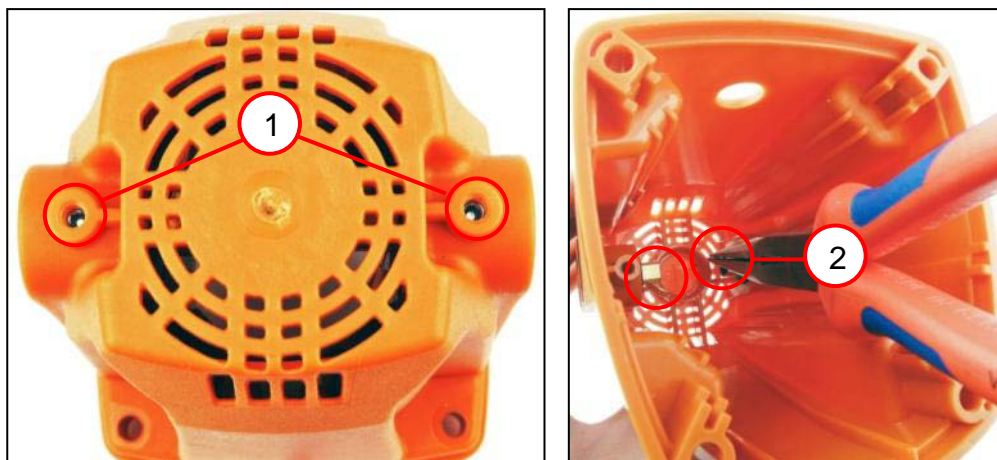
1. Remove the air guide ring (1).
2. Pull the two cables (2) off the carbon brush holders.
3. Unscrew the two screws (3).
4. Remove the stator (4).
5. Straighten the connections of the carbon brush holders (3).

Tools:

- PH2 cross-tip screwdriver
- Flat-nose pliers

6. Removal

Removing the motor housing



1. Unscrew the two set screws (1).
2. Press the carbon brush holder out of the housing.

Tools:

- Socket head wrench 2.5 mm
- Flat-nose pliers

6. Removal

Removing the electronics



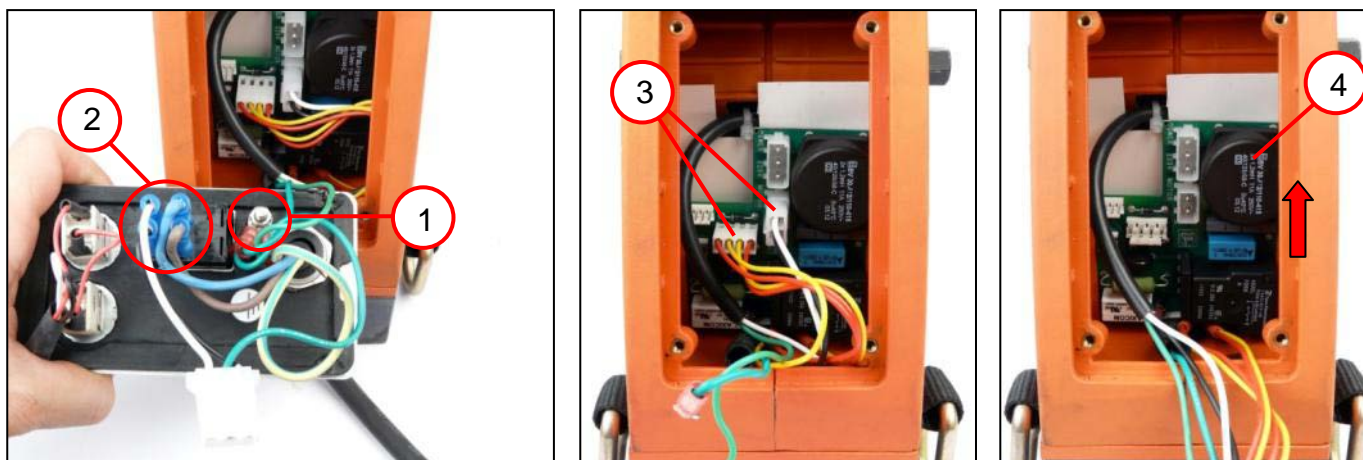
1. Loosen the screw (1) and take off the spider.
2. Unscrew the two screws (2).
3. Unscrew the two screws (3) and remove the handle (4).
4. Unscrew the four screws (5) and take off the plate.
5. Remove the two plugs (6).

Tools:

- Socket wrenches
2.5 mm; 6 mm
- Cross-tip screwdriver

6. Removal

Removing the electronics



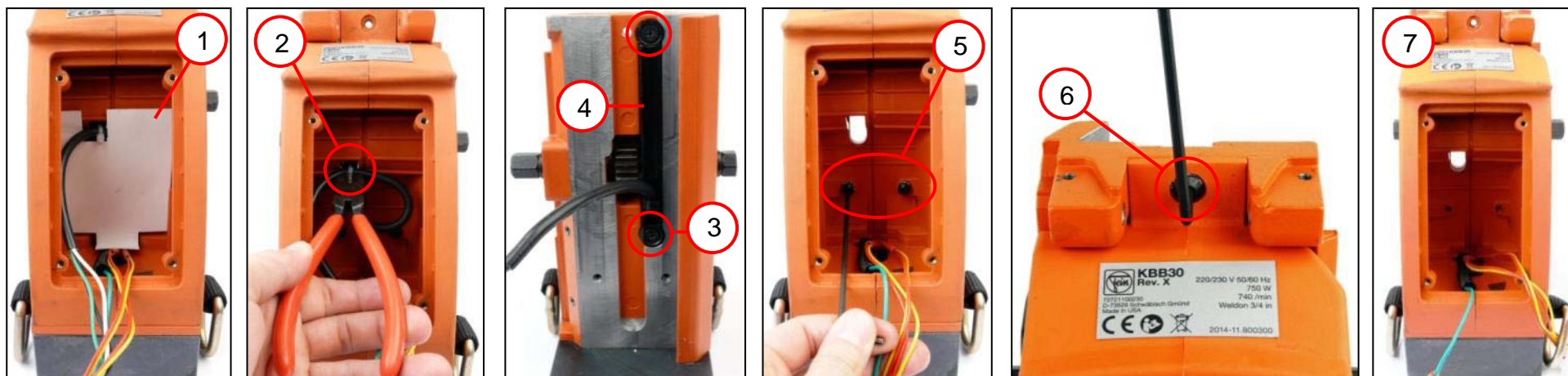
1. Loosen the nut (1) and remove the earthing conductors.
2. Pull off the cable shoes (2).
3. Pull off the two plugs (3).
4. Remove the electronics (4).

Tools:

- Open-ended spanner
6 mm

6. Removal

Removing the electronics



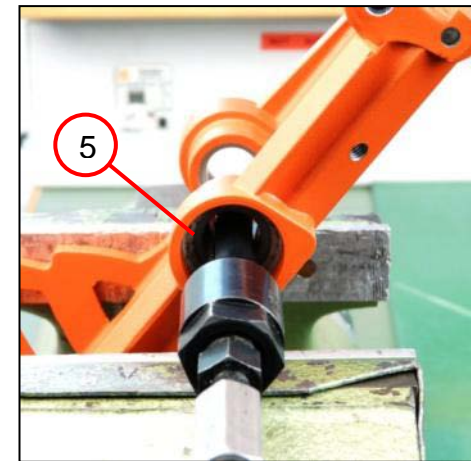
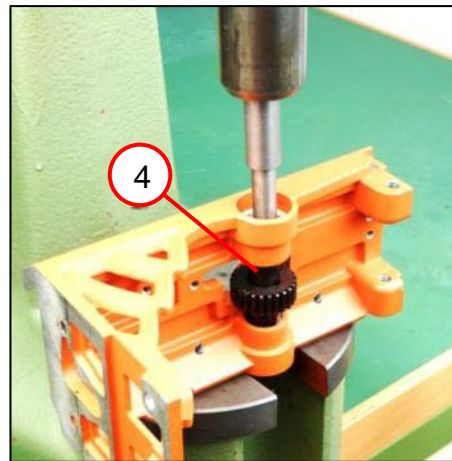
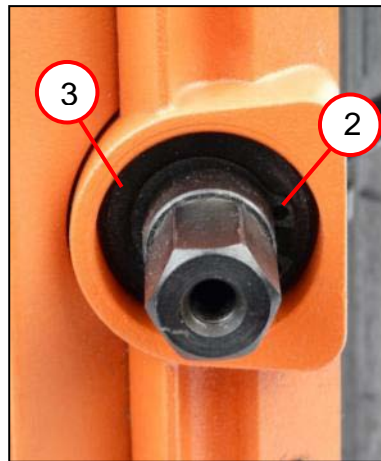
1. Remove the cover (1).
2. Remove the cable tie (2).
3. Loosen the two screws (3) and remove the guide (4).
4. Remove the two screws (5).
5. Remove the screw (6).
6. Remove the housing (7).

Tools:

- Side-cutting pliers
- PH2 cross-tip screwdriver
- Socket wrench 3 mm

6. Removal

Removing the housing



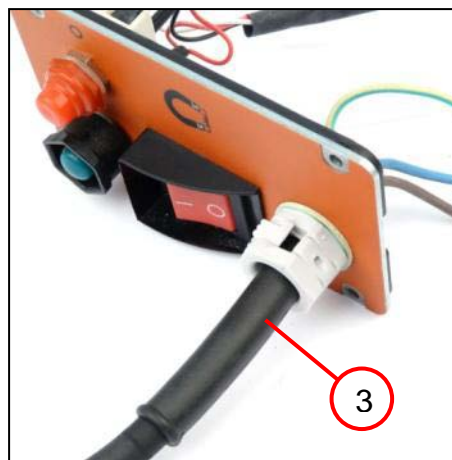
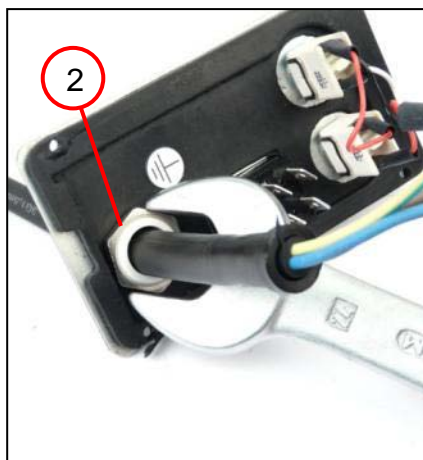
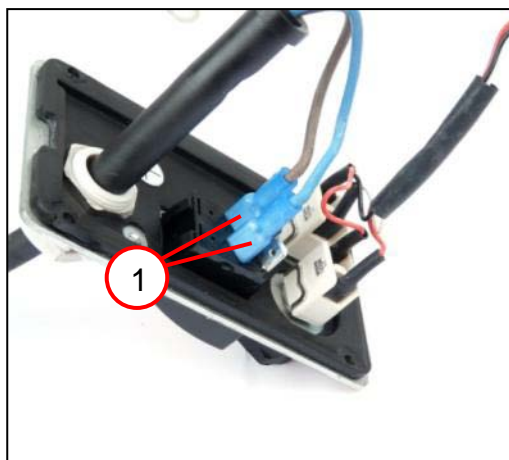
1. Unscrew the four screws (1) and remove the magnet.
2. Remove the two circlips (2) on both sides.
3. Remove the discs (3) on both sides.
4. Press the shaft (4) out of the housing.
 - ☞ There is a feather key in the shaft. Press it out of the housing with the shaft.
 - ☞ There are two bushes in the housing. One of the two bushes is pressed out by the feather key.
5. Pull the second bush (5) out of the housing.
 - ☞ Bush is destroyed during removal.

Tools:

- Socket wrench 4 mm
- Inner puller
- Slide hammer

6. Removal

Removing the plate



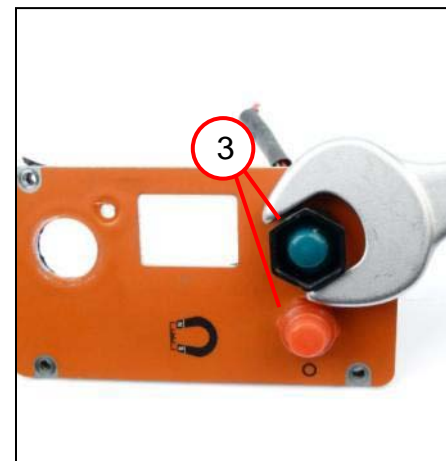
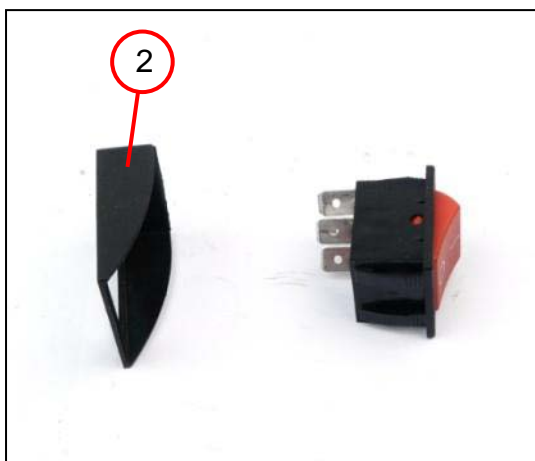
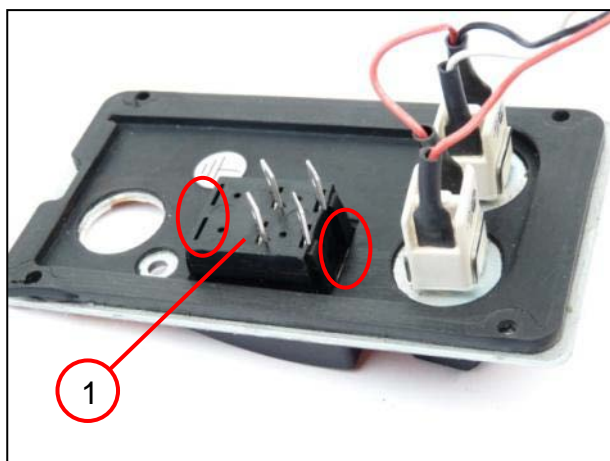
1. Pull off the two plugs (1).
2. Loosen the nut (2) and remove it.
3. Pull out the cable (3) with cable screw connection.

Tools:

- Open-ended spanner
24 mm

6. Removal

Removing the plate



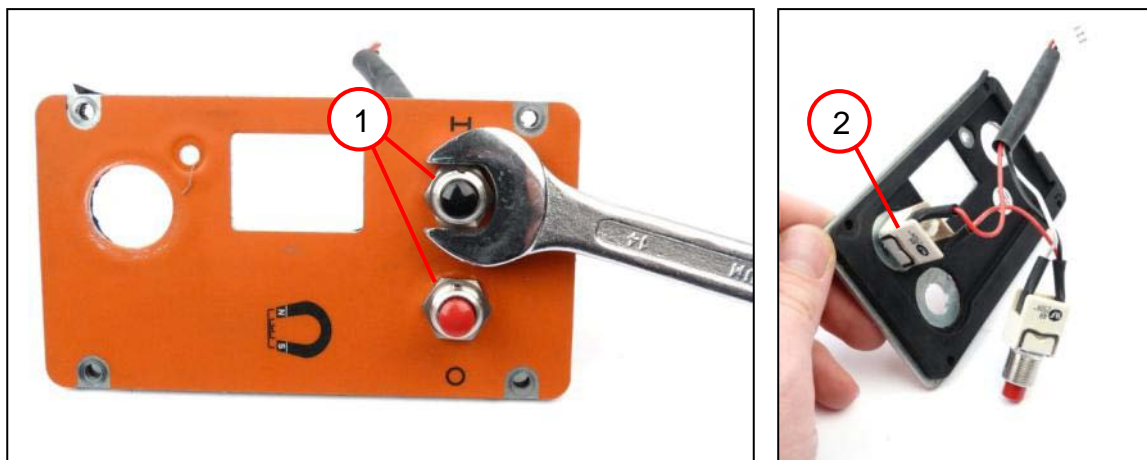
1. Press the spring terminals on the switch (1) and take it out of the plate.
2. Remove the cover (2) from the switch.
3. Loosen the covers on both buttons (3) of the switch module and remove them.

Tools:

- Open-ended spanners
17 mm, 22 mm

6. Removal

Removing the plate



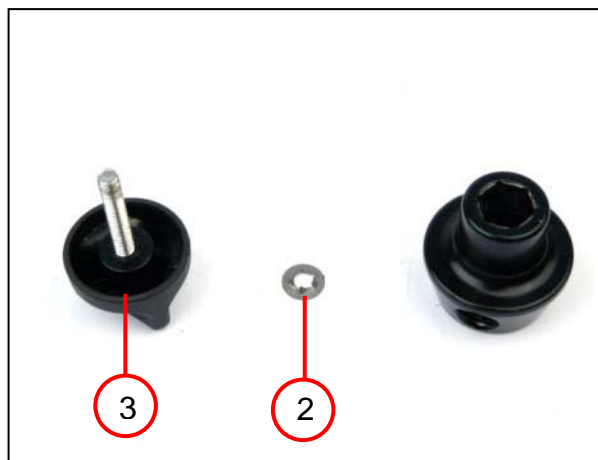
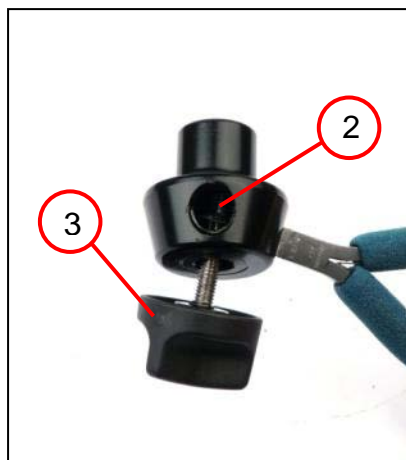
1. Loosen the nuts on both buttons (1) of the switch module and remove them.
2. Remove the buttons (2) of the switch module.

Tools:

- Open-ended spanner
14 mm

6. Removal

Removing the spider



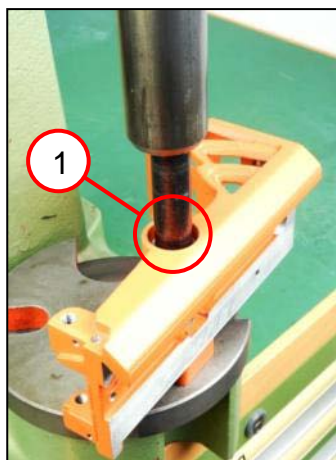
1. Unscrew the three handles (1).
2. Use flat-nose pliers to hold the nut (2) in position.
3. Unscrew the screw connection (3).

Tools:

- Flat-nose pliers

7. Fitting

Fitting the housing



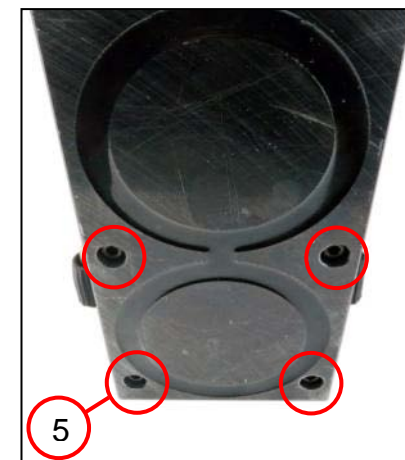
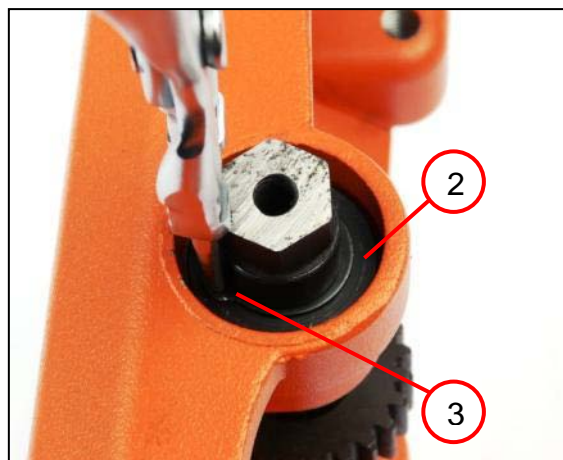
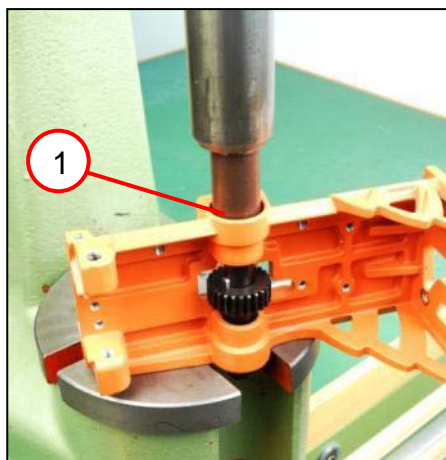
1. Press in the bush (1) on one side.
☞ Always use a new bush.
2. Insert the feather key (2) into the shaft.
3. Insert the shaft on the side without bush, and attach the gear-wheel.
4. Press the shaft into the side with the bush.

Tools:

- Sleeve
26 mm outer diameter

7. Fitting

Fitting the housing



1. Press in the second bush (1).
🔧 Always use a new bush.
2. Insert the discs (2) on both sides and insert the two circlips (3) on both sides.
3. Position the lashing strap (4) on the magnet.
4. Screw the magnet onto the housing with the four screws (5).

Tools:

- Sleeve
27 mm outer diameter
17 mm inner diameter
- Circlip pliers
- Socket head wrench
4 mm

7. Fitting

Fitting the housing



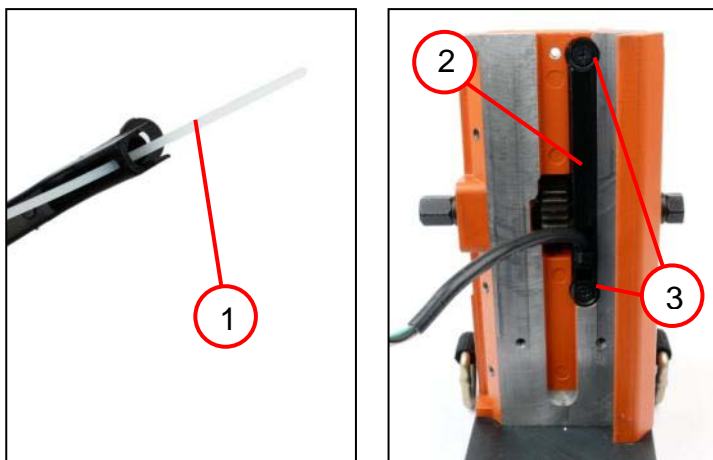
1. Attach the housing (1) and secure it with the screw (2), lock washer and disc.
2. Screw in the two screws (3) with lock washer and disc.

Tools:

- Socket head wrench
3 mm

7. Fitting

Fitting the housing



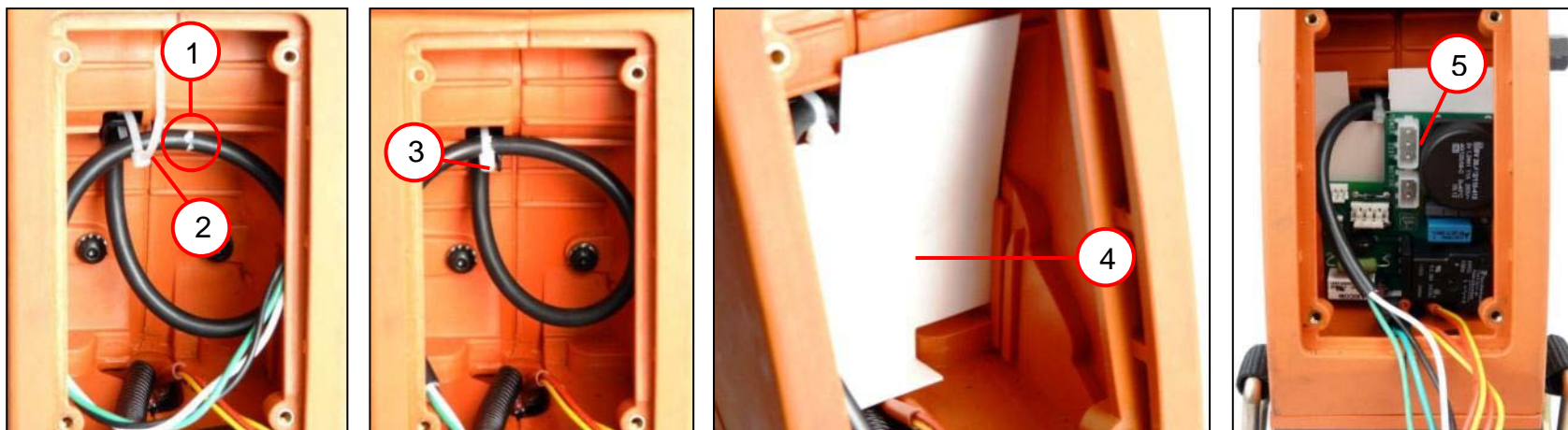
1. Thread the cable tie (1) into the guide (2).
2. Insert the guide (2) with the cable and secure it with the two screws (3).

Tools:

- PH2 cross-tip screwdriver

7. Fitting

Fitting the electronics



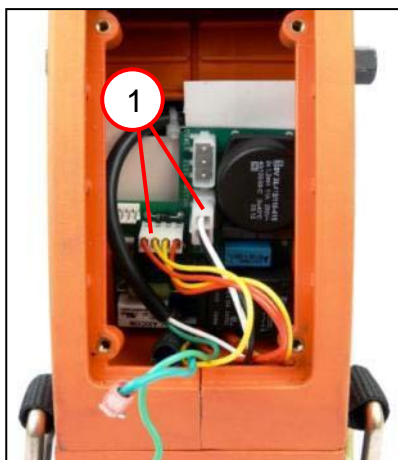
1. Secure the cable at the white mark (1), with the cable tie (2), to the guide.
2. Cut off the protruding remainder of the cable tie (3).
3. Insert the cover (4).
4. Insert the electronics (5) into the guide provided.

Tools:

- Side-cutting pliers

7. Fitting

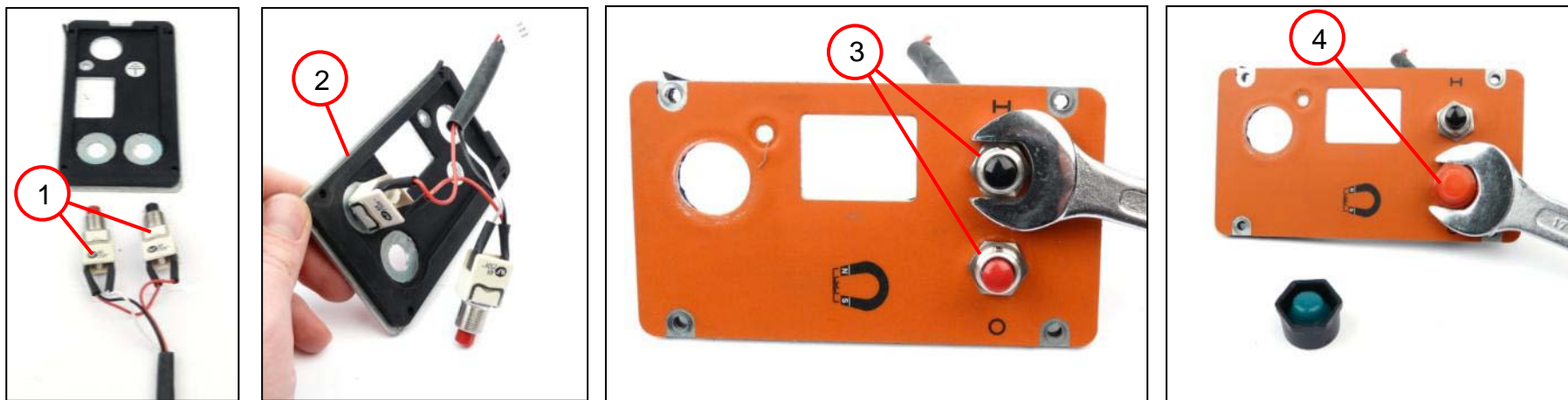
Fitting the electronics



1. Insert the two plugs (1).

7. Fitting

Fitting the plate



1. Insert the two buttons (1) into the switch module (2).
2. Screw down the nuts on both buttons (3) of the switch module.
3. Fit the pushbutton (4) of the button.

Tools:

- Open-ended spanners
14 mm, 17 mm

7. Fitting

Fitting the plate



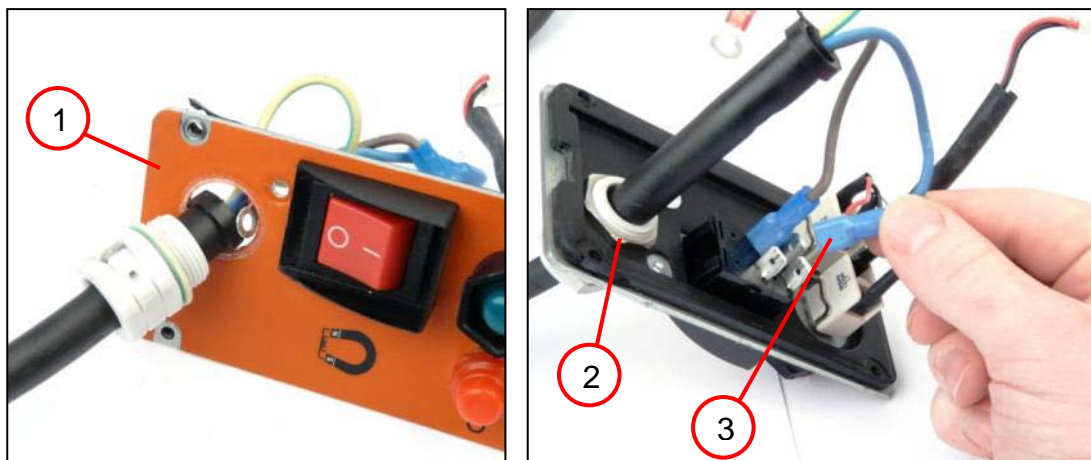
1. Fit the pushbutton (1) of the button.
2. Slide the cover (2) onto the switch.
3. Press the switch (3) into the switch module until you hear it engage.

Tools:

- Open-ended spanner
22 mm

7. Fitting

Fitting the plate



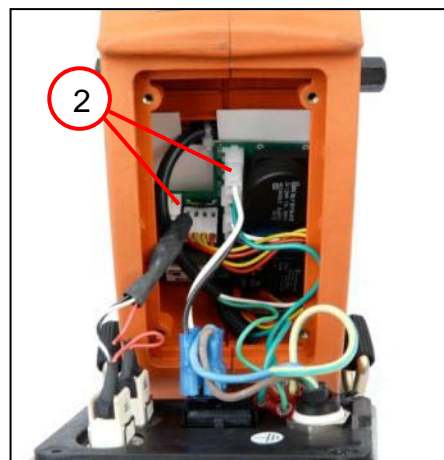
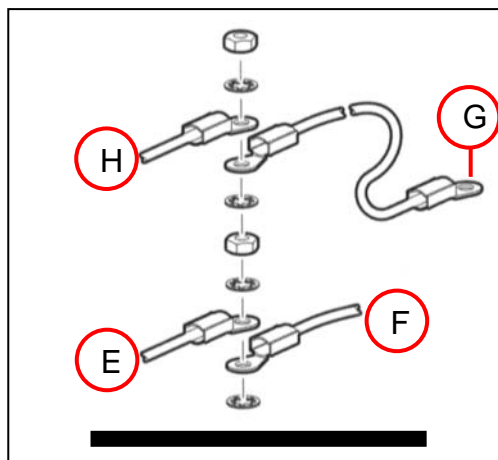
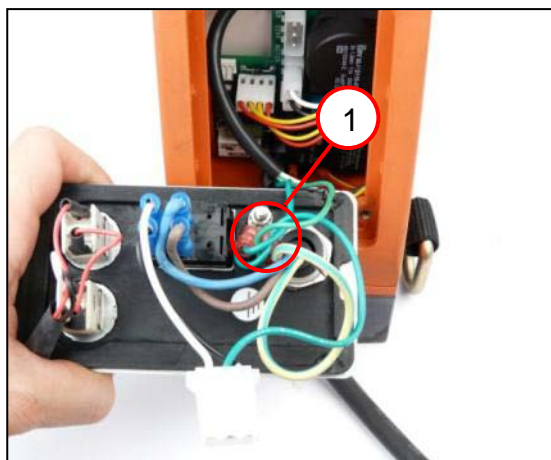
1. Insert the cable into the plate (1).
2. Screw the nut (2) onto the screw connection.
3. Connect the connections of the cable (3) to the switch as shown in the connection diagram.

Tools:

- Open-ended spanner
24 mm

7. Fitting

Fitting the plate



1. Screw down the earthing screw with the earthing cables (H, G, E, F) (1).
2. Connect the plugs (2) of the plate to the electronics.
3. Fit the plate on the housing and screw it down with the four screws (3).

Tools:

- Open-ended spanner 6 mm
- PH2 cross-tip screwdriver

7. Fitting

Fitting the handle



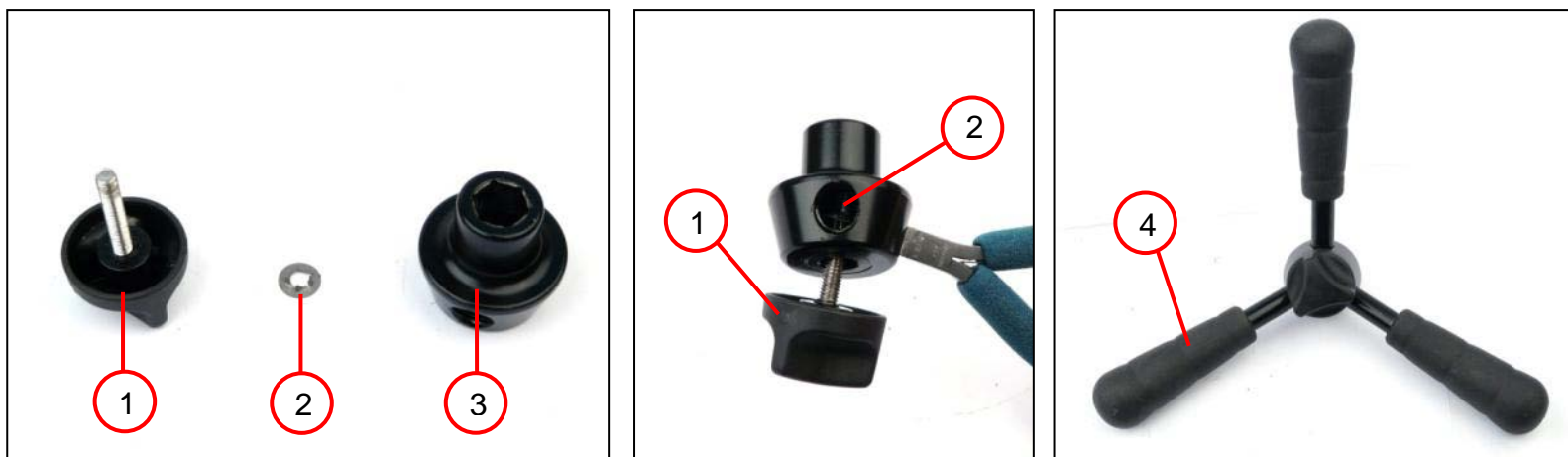
1. Fit the handle (1).
2. Screw in the two screws (2).
3. Screw in the two screws (3).

Tools:

- Socket head wrenches
6 mm, 2.5 mm

7. Fitting

Fitting the spider



1. Slide the nut (2) into the connecting piece (3) and hold it in position with the flat-nose pliers.
2. Insert the screw connection (1) into the connecting piece (3) and turn it all the way through the nut (2).
3. Screw the three handles (4) into the connecting piece (3).

Tools:

- Flat-nose pliers

7. Fitting

Fitting the spider



1. Screw the connecting piece onto the shaft.

7. Fitting

Fitting the shaft



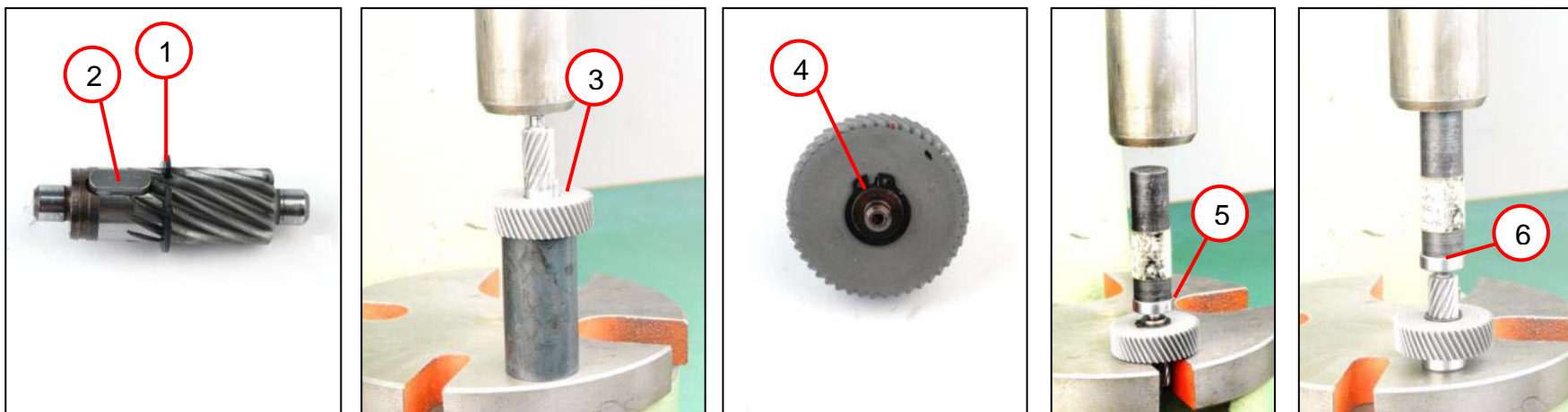
1. Grease the two rings (1) and insert them into the respective groove.
🔧 Always use new rings during fitting.
2. Insert the parts (2) into the shaft in the correct sequence.
3. Insert the circlip (3).
4. Fit the two screws (4).

Tools:

- Socket wrench 5 mm
- Circlip pliers
- Grease

7. Fitting

Fitting the gearbox



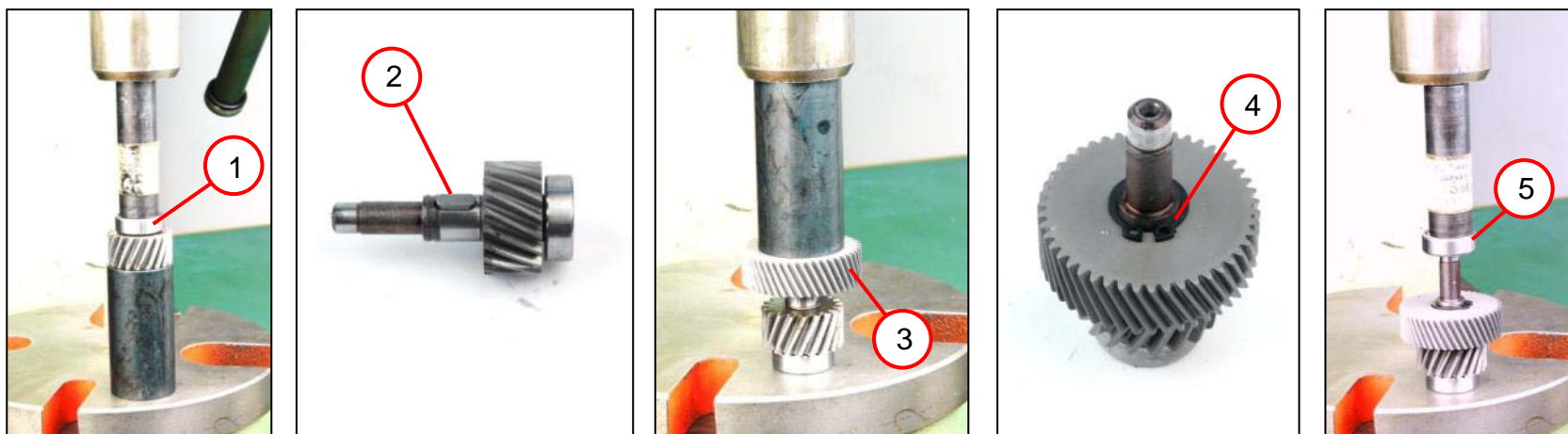
1. Fit the circlip (1).
2. Insert the feather key (2).
3. Press on the gear-wheel (3).
4. Fit the circlip (4).
5. Press on the grooved ball bearing (5).
6. Press on the grooved ball bearing (6).

Tools:

- Arbor press
- Circlip pliers
- Sleeve
~20 mm outer diameter
14 mm inner diameter
- Sleeve
~20 mm outer diameter
12 mm inner diameter

7. Fitting

Fitting the gear-wheel



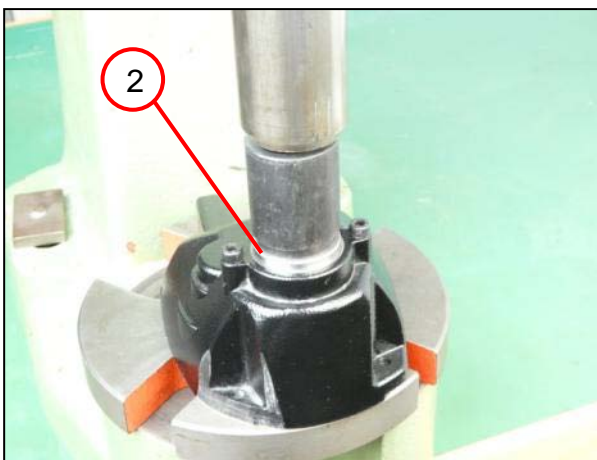
1. Press on the grooved ball bearing (1).
2. Insert the feather key (2).
3. Press on the gear-wheel (3).
4. Fit the circlip (4).
5. Press on the grooved ball bearing (5).

Tools:

- Arbor press
- Circlip pliers
- Sleeve
~20 mm outer diameter
14 mm inner diameter
- Sleeve
~20 mm outer diameter
12 mm inner diameter
- Bolt with 20 mm diameter

7. Fitting

Fitting the gearbox



1. Press in the seal (1).
☞ The open side of the seal faces inward into the gearbox.
2. Press in the grooved ball bearing (2).
3. Fit the circlip (3).

Tools:

- Arbor press
- Sleeve
28 mm outer diameter
23 mm inner diameter
- Sleeve
35 mm outer diameter
30 mm inner diameter
- Circlip pliers

7. Fitting

Fitting the gearbox



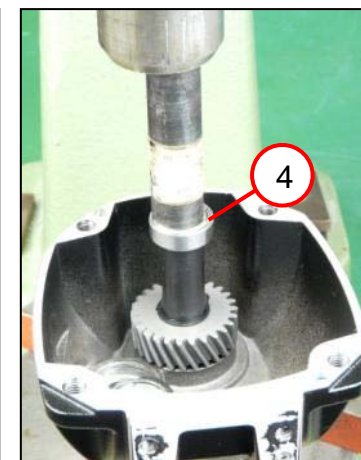
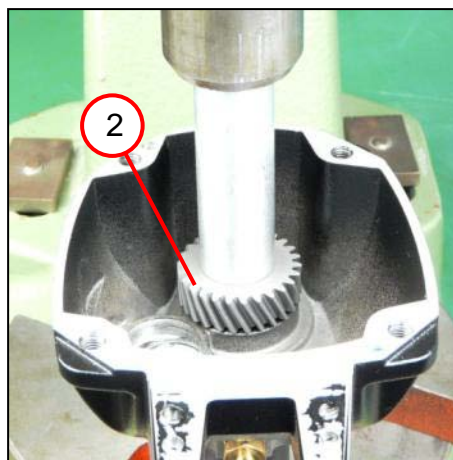
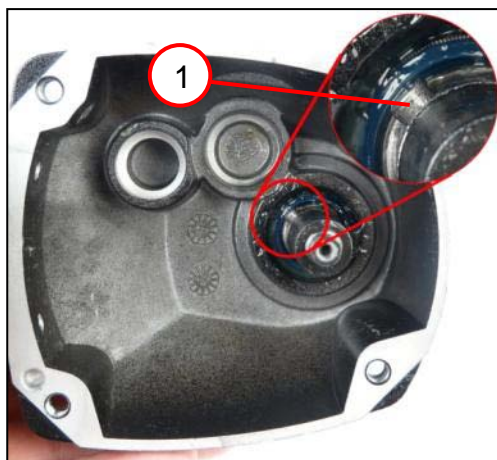
1. Press in the shaft (1).
2. Screw in the two screws (2)
3. Fit the ring (3) in the correct position.
4. Fit the circlip (4).

Tools:

- Arbor press
- Circlip pliers
- Socket head wrench
4 mm

7. Fitting

Fitting the gearbox



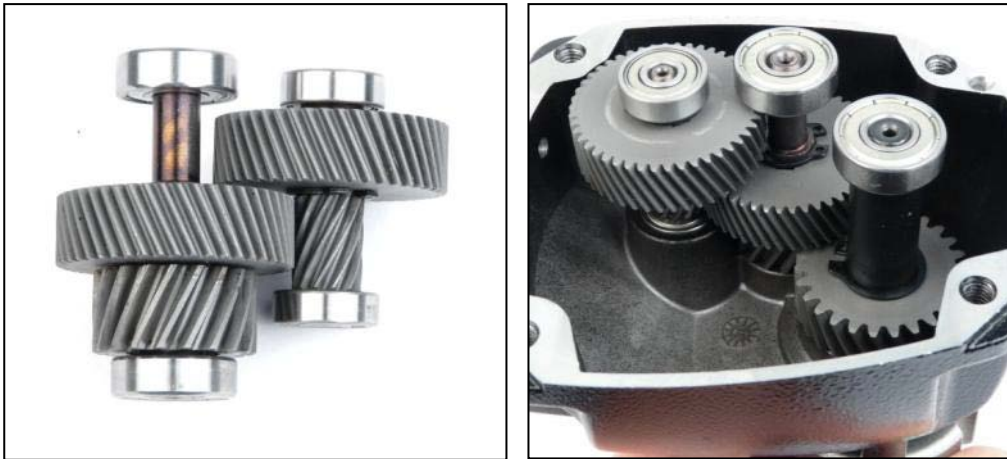
1. Insert the feather key (1).
2. Press the gear-wheel (2) onto the shaft.
3. Fit the circlip (3).
4. Press on the grooved ball bearing (4).

Tools:

- Arbor press
- Circlip pliers
- Sleeve
25 mm outer diameter
15 mm inner diameter
- Bolt with 20 mm diameter

7. Fitting

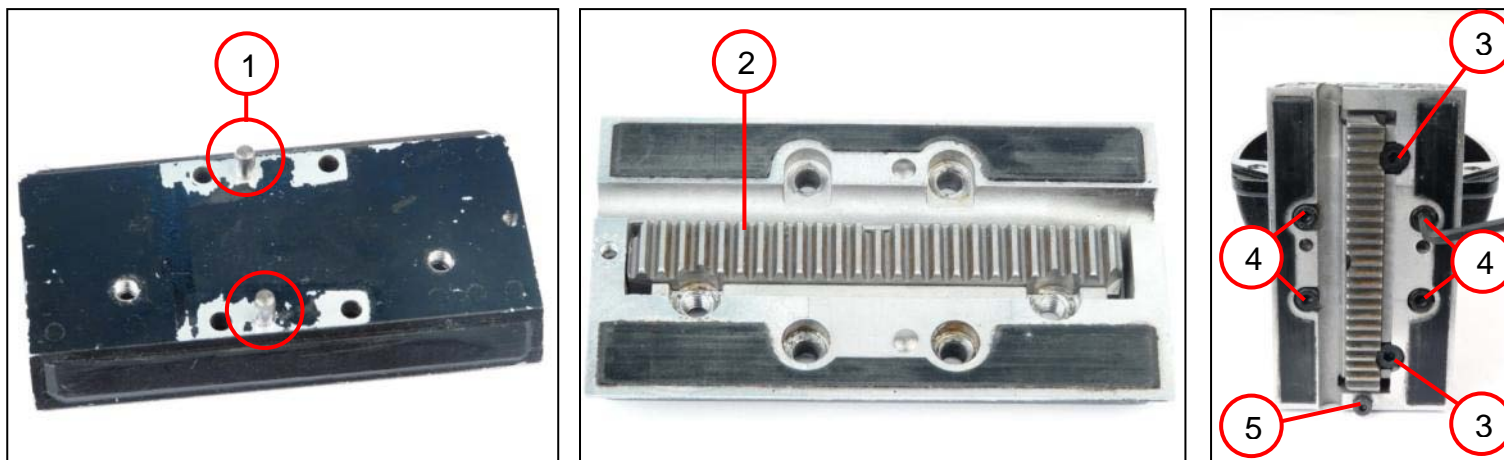
Fitting the gearbox



1. Insert the two shafts into the gearbox housing together.

7. Fitting

Fitting the gearbox



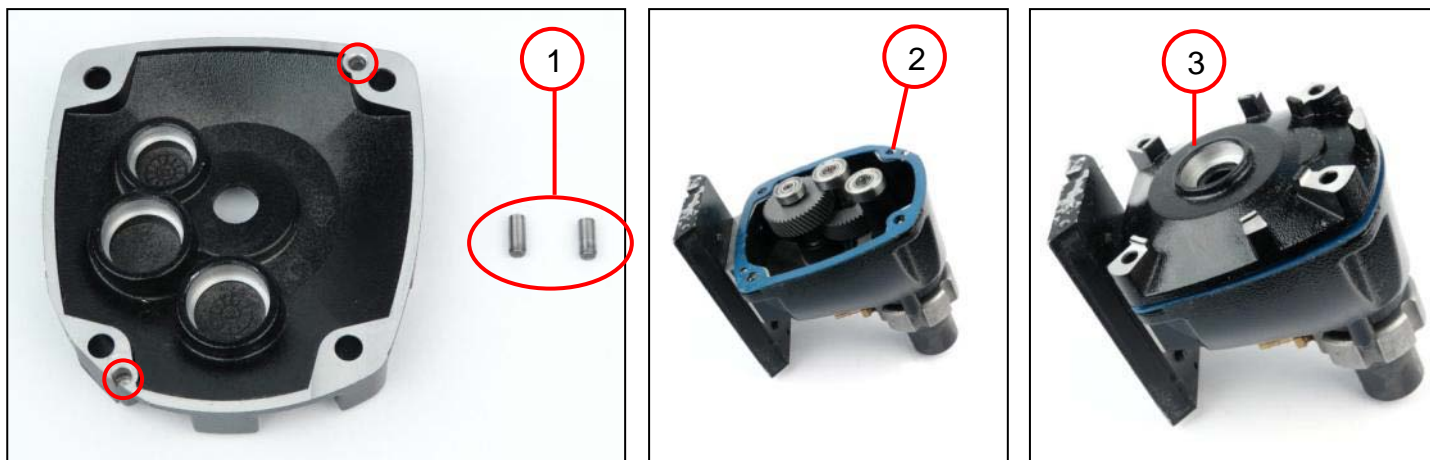
1. Insert the two pins (1) into the guide.
2. Insert the gear rack (2) and secure it with the two screws (3).
3. Secure the guide to the gearbox housing with the four screws (4).
4. Screw in the screw (5).

Tools:

- Socket head wrenches
3 mm; 4 mm

7. Fitting

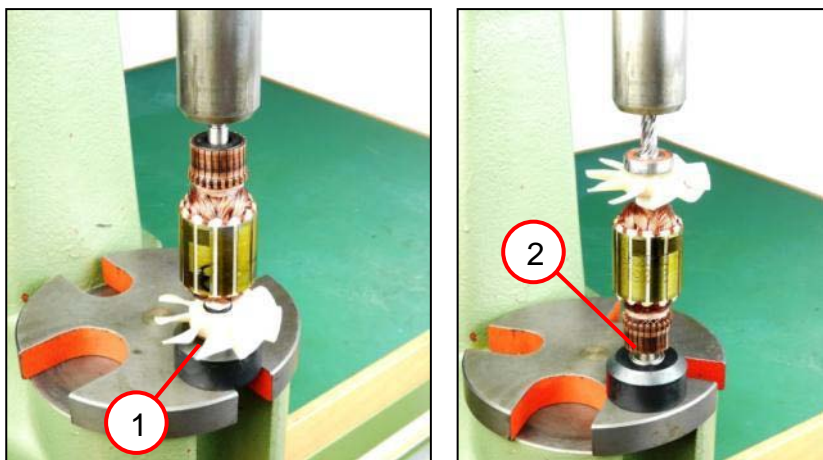
Fitting the gearbox



1. Insert the two pins (1).
2. Fit the seal (2).
3. Fill the gearbox with 80 g of grease.
4. Fit the cover (3).

7. Fitting

Fitting the armature



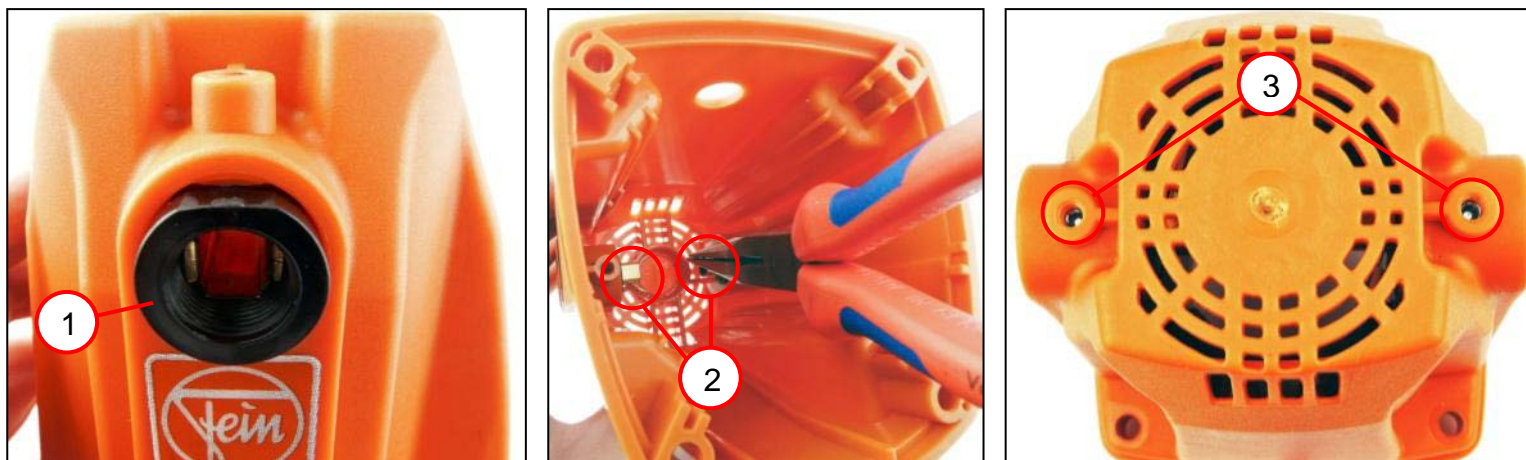
1. Press on the grooved ball bearing (1).
2. Press on the grooved ball bearing (2).

Tools:

- Arbor press
- Ball bearing support 8 mm inner diameter
- Ball bearing support 12 mm inner diameter

7. Fitting

Fitting the motor housing



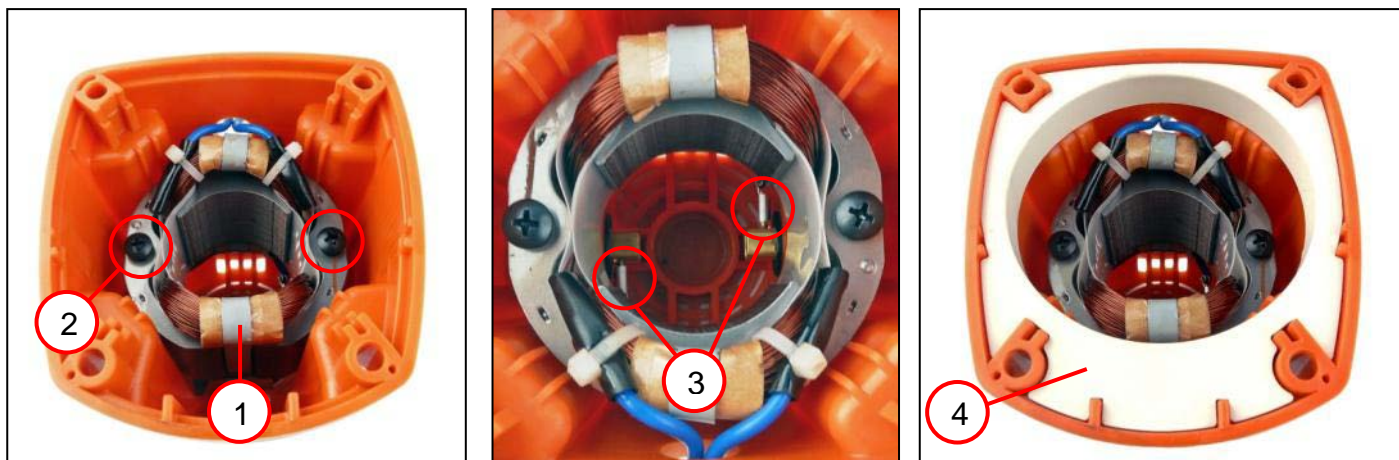
1. Press a carbon brush holder (1) all the way in on each side.
2. Bend the connections of the carbon brush holders (2) outward by 45°.
3. Screw the two set screws (3) into the motor housing.

Tools:

- Flat-nose pliers

7. Fitting

Fitting the motor housing



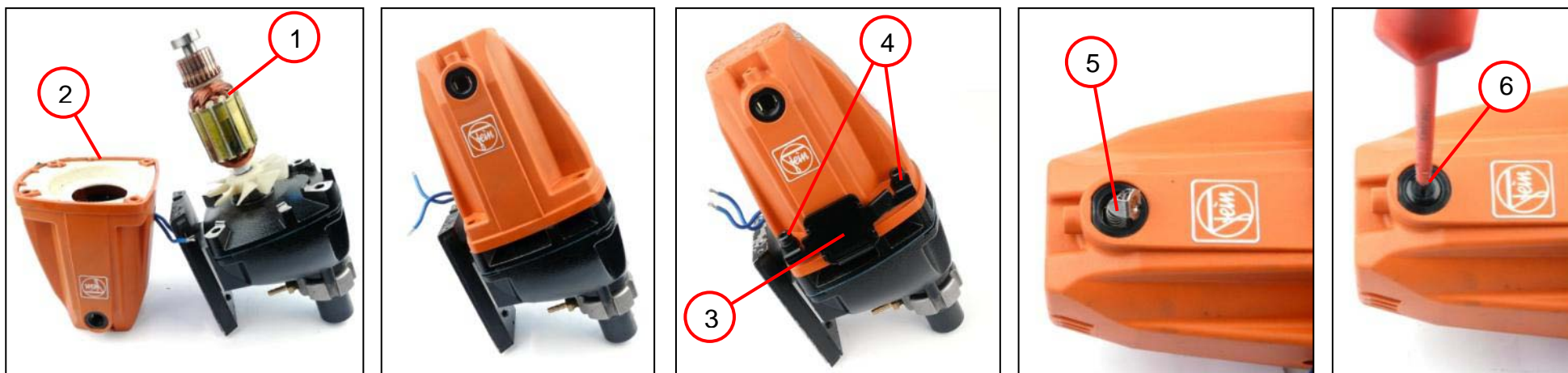
1. Insert the stator (1) into the motor housing.
2. Secure the stator with the two screws (2).
3. Connect the two cable shoes (3) to the carbon brush holders.
4. Insert the air guide ring.

Tools:

- Arbor press
- Ball bearing support 8 mm inner diameter
- Ball bearing support 12 mm inner diameter

7. Fitting

Fitting the motor



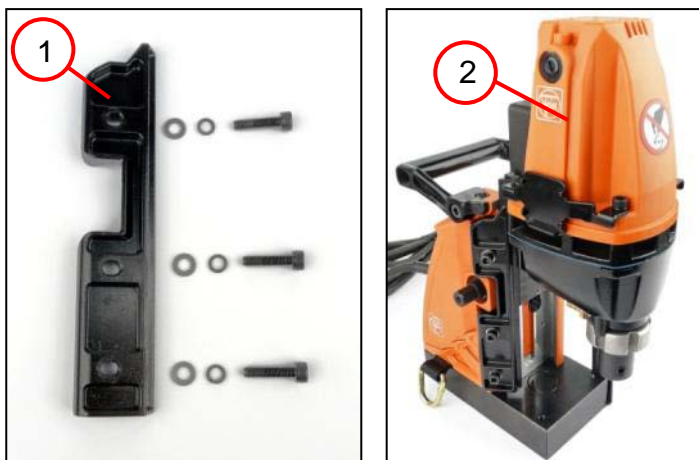
1. Attach the armature (1) to the gearbox.
2. Attach the housing (2).
3. Fit the two adapters (3) in the correct position on both sides and secure them with the screws (4).
4. Insert the carbon brushes (5) on both sides.
5. Screw in the caps (6) on both sides.

Tools:

- Socket head wrench 5 mm
- Slotted screwdriver

7. Fitting

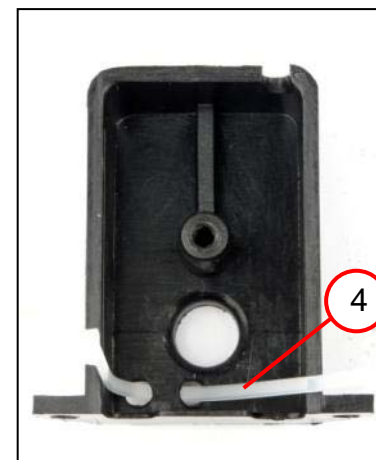
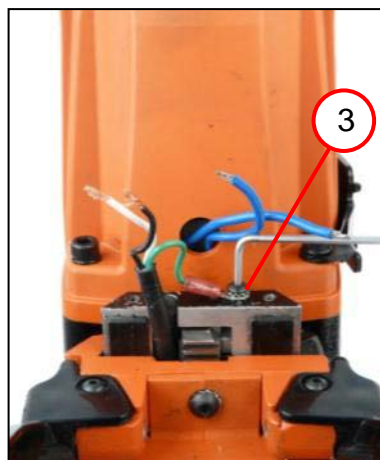
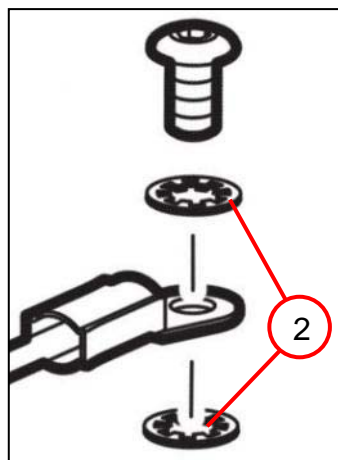
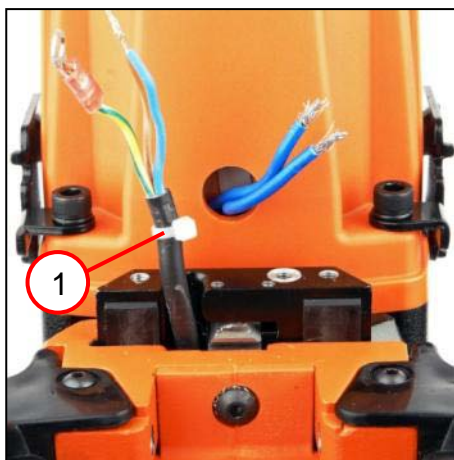
Fitting the motor



1. Secure the guide (1) with the three screws and two discs per screw.
2. Slide the motor (2) into the guide and tighten the screws.

7. Fitting

Fitting the motor



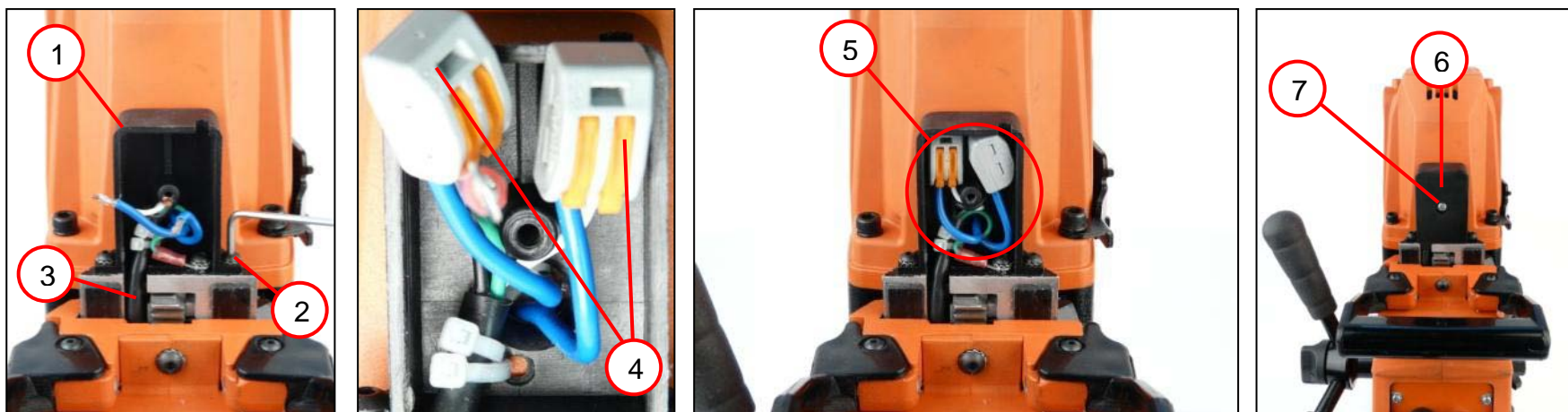
1. Position the cable tie (1) on the cable.
2. Screw in the screw (3) with the earthing cable and the two discs (2).
3. Thread the cable tie (4) into the cover (5).

Tools:

- Socket head wrench
2.5 mm

7. Fitting

Fitting the motor



1. Position the cover (1) and secure it with the screws (2).
2. Secure the black cable (3) to the cover (1) with two cable ties.
3. Connect the cables to the terminals (4) as shown in the connection diagram.
4. Position the terminals with the cables (5) in the cover.
5. Attach the cover (6) and secure it with the screw (7).

Tools:

- Socket head wrench 2.5 mm
- PH2 cross-tip screwdriver



8. Connection diagram

7 272 01 KBB 30
7 272 11 KBB 30 Rev. X

