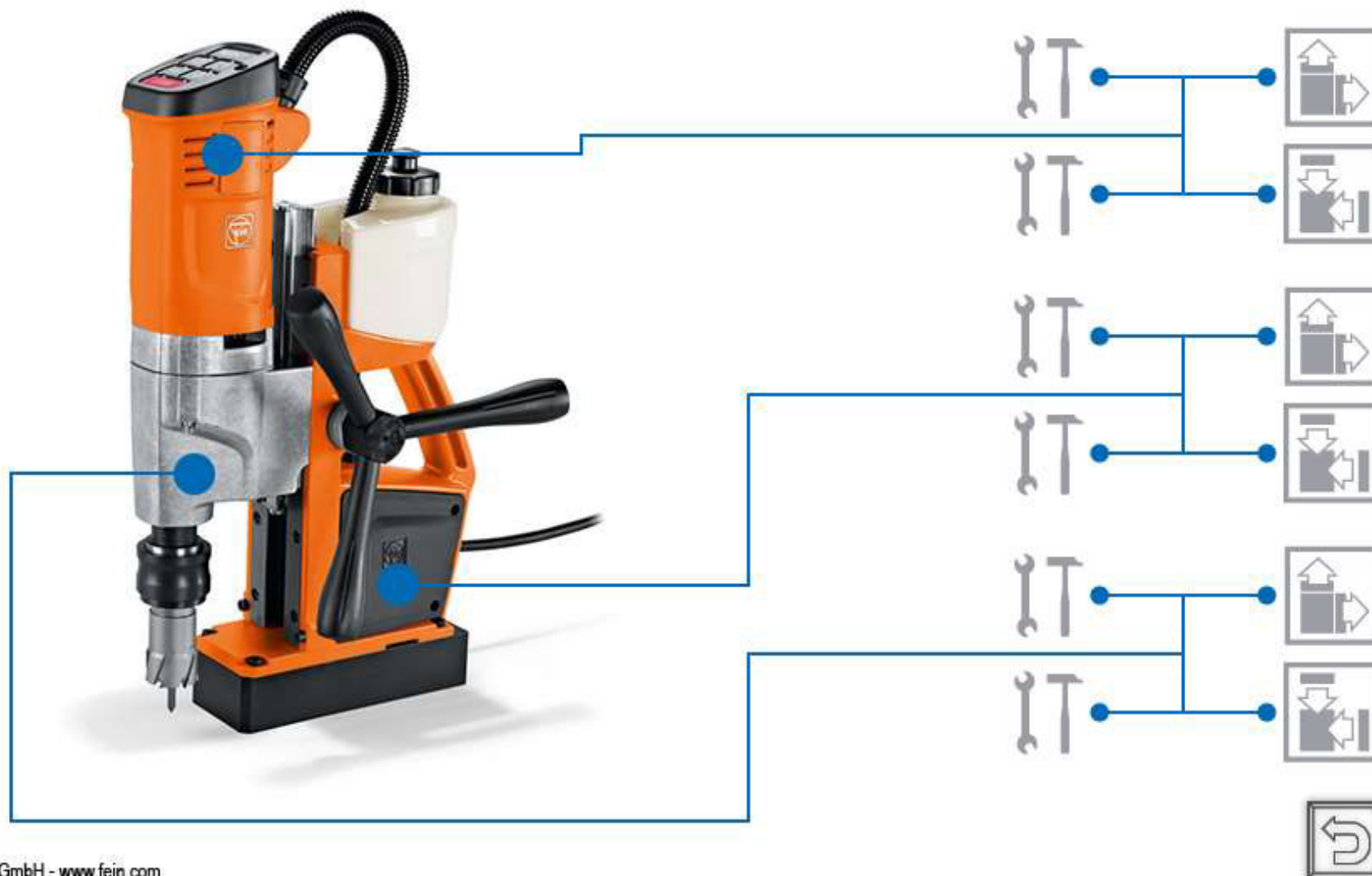




KBU 35-2Q
KBU 35-2QW; JMU137-2QW

(7 270 57)
(7 270 58)





Technical data

Technical data

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

Tests

Up-to-date test data and test instructions after repair can be found on the FEIN Extranet (Customer Service → Repair Guides).

Lubricants / Auxiliary substances

The lubricants or auxiliary substances and their 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



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.

KBU 35 Q; KBU 35 QW; KBU 35 MQ; KBU 35 MQW; KBU 35-2 Q; KBU 35-2 QW



Lubricants and auxiliary substances required

Lubricants

KBU 35 Q; KBU 35 QW

Grease	0 401 18 0300 9	45 g	Gearbox
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KBU 35 MQ; KBU 35 MQW

Grease	0 401 18 0300 9	45 g	Gearbox
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KBU 35-2 Q; KBU 35-2 QW

Grease	0 401 18 0300 9	50 g	Gearbox
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Troubleshooting

Possible fault	Cause	Possible check
Magnetic foot does not attract Check with magnetisable part Indicator flashes/does not light up	There is an interrupt on the following components: <ul style="list-style-type: none"> • Mains cable Check supply line: Drill jig electronics ↔ drill motor electronics foil connector, drill motor electronics ↔ keypad electronics	<ul style="list-style-type: none"> ➤ Measure mains voltage at X2 and X3 on the drill jig electronics ➤ Perform continuity test
	Magnetic foot is defective	<ul style="list-style-type: none"> ➤ Measure resistance 2-coil = 214 Ohm per coil 3-coil (230 V) = 428 Ohm per coil 3-coil (110 V) = 107 Ohm per coil
	Electronics defective	<ul style="list-style-type: none"> ➤ Replace drill jig electronics ➤ Replace keypad electronics ➤ Replace drill motor electronics
Magnetic foot actuates when the magnetic button (drill jig) is pressed but not when the magnetic button on the drill motor is pressed	Safety shutdown mat is defective	<ul style="list-style-type: none"> ➤ Visual check of safety shutdown mat (check for dirt and missing switch contacts (black)) ➤ Replace the safety shutdown mat



Troubleshooting

Possible fault	Cause	Possible check
Magnetic foot actuates when the magnetic button (drill motor) is pressed but not when the magnetic button on the drill jig is pressed	The magnetic button on the drill jig is defective	➤ Replace the magnetic button on the drill jig
Magnetic holding force indicator flashes green when/even though holding force is sufficient	Reed contact is defective	➤ Continuity test on cable to reed contact ➤ Replace magnetic foot
	Drill jig electronics are defective	➤ Visual check of plug/plug connector X9 of drill jig electronics ➤ Replace plug/plug connectors
Magnetic foot attracts briefly and then drops out again Check with magnetisable part Indicator lights up 1 second green and 1 second red	Magnetic foot incorrectly plugged in/electronics incorrectly coded	➤ See connection diagram
	Magnet is defective	➤ Measure resistance 2-coil = 214 Ohm per coil 3-coil (230 V) = 428 Ohm per coil 3-coil (110 V) = 107 Ohm per coil
	Electronics defective (drill jig electronics, keypad electronics)	➤ Replace drill jig electronics ➤ Replace keypad electronics



Troubleshooting

Possible fault	Cause	Possible check
Magnetic holding force is too weak		➤ Measure release force with load cell (see test instructions for magnetic holding force)
	Magnetic foot is defective	➤ Measure resistance 2-coil = 214 Ohm per coil 3-coil (230 V) = 428 Ohm per coil 3-coil (110 V) = 107 Ohm per coil
	Surface supporting magnetic foot is uneven	➤ Perform visual check. ➤ Measure release force with load cell (See test instructions for magnetic holding force)
	Check polarity of magnet connection	➤ See connection diagram
	Supporting surface is thinner than 10mm	➤ Perform visual check
	Surface is contaminated with: <ul style="list-style-type: none"> • Rust • Paint • Dirt • Swarf 	➤ Perform visual check ➤ Clean surface and magnet



Troubleshooting

Possible fault	Cause	Possible check
Motor not starting Note – The causes listed here will trigger the restart protection. Magnet can be switched on	Correct switching sequence was not followed	<ul style="list-style-type: none"> ➤ Prerequisite: Magnet must be switched on ➤ LED must light up (sufficient holding force) or flash (insufficient holding force)
	Carbon brushes are worn	<ul style="list-style-type: none"> ➤ Perform visual check
	There is an interrupt on the following components: Foil connector, drill jig electronics ↔ keypad electronics	<ul style="list-style-type: none"> ➤ Perform visual check ➤ Check contacts see repair instructions)
	Motor/field coil supply cable is defective or interrupted	<ul style="list-style-type: none"> ➤ Perform continuity test on field coil ➤ Visual check of connections, electric carbon brush holder/brush



Troubleshooting

Possible fault	Cause	Possible check
Motor not starting.	Safety shutdown mat is defective	➤ Visual check (check for dirt and missing switch contacts (black))
	Motor is defective	<ul style="list-style-type: none"> ➤ Check motor without electronics ➤ Disconnect plugs W2 and W5 from drill motor electronics (160) and connect both cables ➤ Disconnect plugs W1 and W6 from drill motor electronics (160) and connect test voltage ➤ Test voltage: Approx. 100 V AC for 100-120 V motor Approx. 145 V AC for 220-240 V motor
	Electronics are defective	<ul style="list-style-type: none"> ➤ Replace drill motor electronics ➤ Replace keypad electronics
	Gearbox blocked	➤ Output shaft must rotate when turned manually



Troubleshooting

Possible fault	Cause	Possible check
Motor only starts up briefly (1s)	Magnet is defective	➤ Perform visual check (check for grinding marks)
	Drill motor electronics are defective	➤ Replace drill motor electronics
	Console electronics are defective	➤ Replace keypad electronics
Drill motor shuts off for no apparent reason	There may be a loose contact on the following components: <ul style="list-style-type: none"> • Mains cable • Plug connections 	➤ Measure mains voltage at X1, X2 ➤ Perform continuity tests
		➤ Check that tool/workpiece is standing securely and try again (magnetic button lights up red once)



Troubleshooting

Possible fault	Cause	Possible check
Speed is too high, too low or fluctuating	Motor is defective	➤ Test motor without electronics (with approx. 145V AC, measure idling speed)
	Magnet is defective	➤ Visual inspection
	Drill motor electronics are defective	➤ Replace drill motor electronics
		➤ If motor is defective, connect replacement motor to X2, X3, X10 of the drill jig electronics ➤ Measure idling speed or voltage
	The following components may be defective: <ul style="list-style-type: none"> • Carbon brushes • Collector • Plug contacts of brush holders 	➤ Perform visual check for brush sparking
	Mechanical load (gearbox, bearings, vibrations)	➤ Check without load, measure idling current
Overload cut-out mechanism cuts out too early, too late or not at all	Electronics defective	➤ Replace keypad electronics ➤ Replace the drill jig electronics



Removal

Removing the container



NOTE:

Fluid may be present in the container.

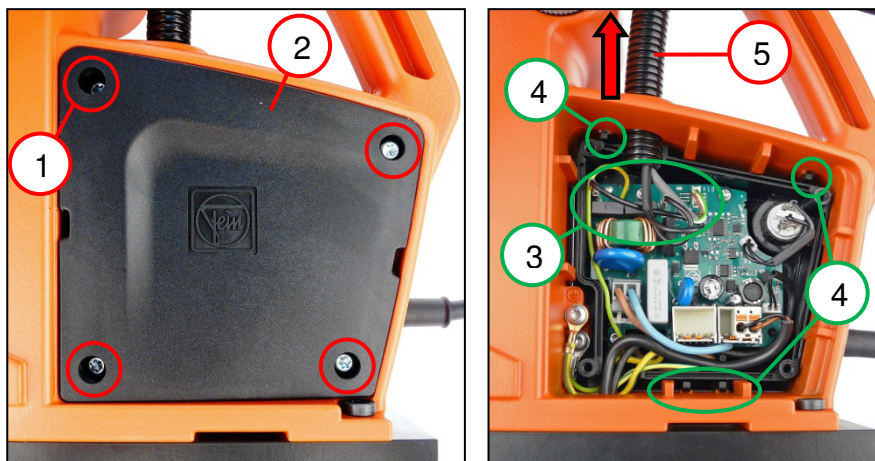
☞ Drain the container (2) before removal.

1. Remove the hose (1) from the hose socket.
2. Remove the container (2).



Removal

Removing the motor housing



1. Unscrew the four screws (1).
2. Remove the cover (2).
3. Pull off the cables (3).
4. Open the four retaining brackets (4).
5. Pull out the protective hose (5).

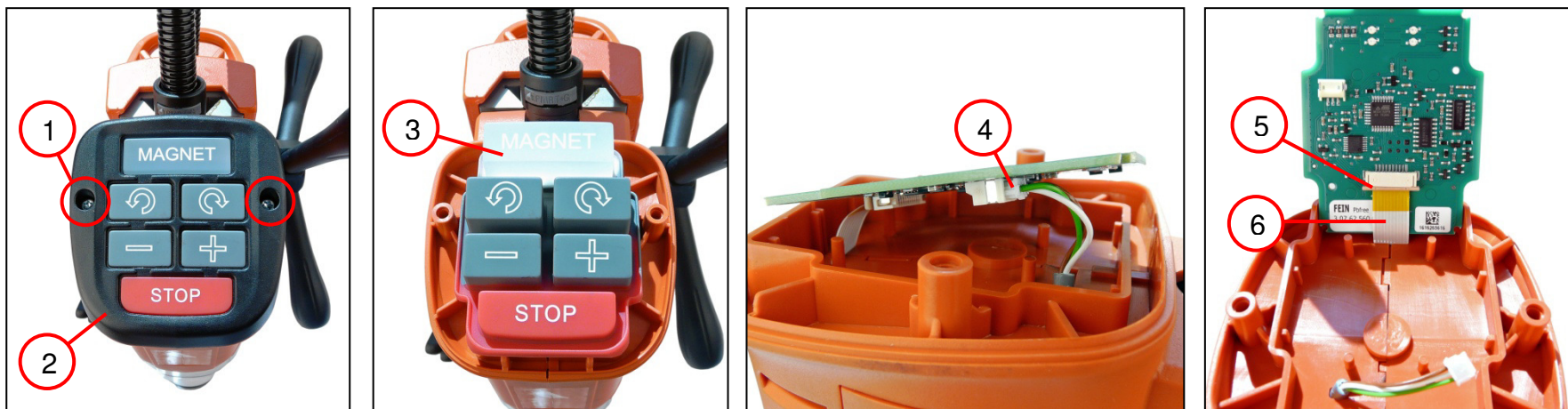
Tools:

- Torx T15



Removal

Removing the control panel



1. Unscrew the two screws (1).
2. Remove the cover (2).
3. Remove switch insert (3).
4. Pull off the plug (4).
5. Open the lock (5).
6. Disconnect the ribbon cable (6).

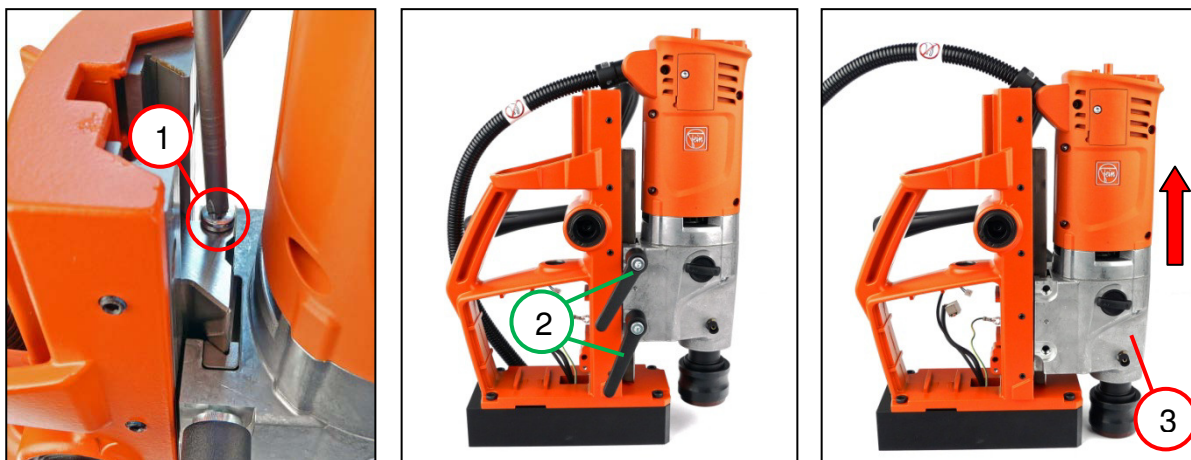
Tools:

- Torx T20



Removal

Removing the motor housing



1. Unscrew the fillister head screw (1).

Crushing hazard around drill motor!

The drill motor will rapidly slide downwards once the two screws (2) have been loosened.

☞ First move the drill motor downwards and then unscrew the two screws (2).

2. Unscrew the two levers (2).

3. Slide the drill motor (3) out of the guide.

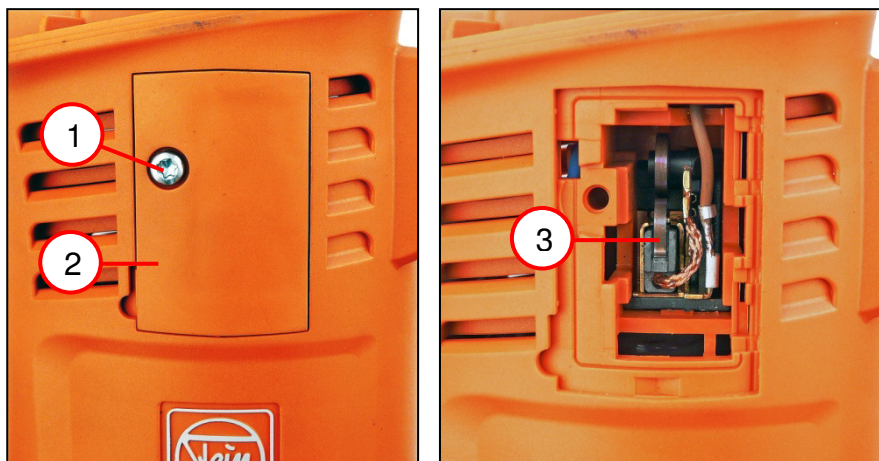
Tools:

- Cross-tip screwdriver



Removal

Removing the motor housing



1. Unscrew the screw (1) [both sides].
2. Remove the cover (2) [both sides].
3. Lift up the spring (3) [both sides].
4. Remove the carbon brush on both sides.

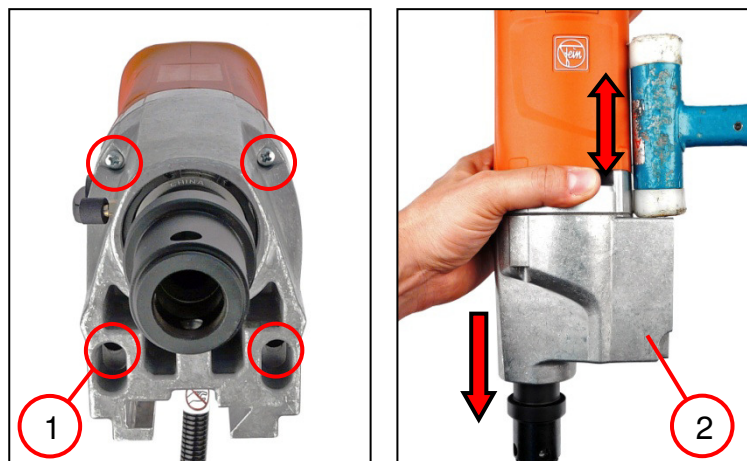
Tools:

- Torx T15
- Assembly aid



Removal

Removing the motor housing



1. Unscrew the four screws (1).
2. Remove the gearbox housing (2).

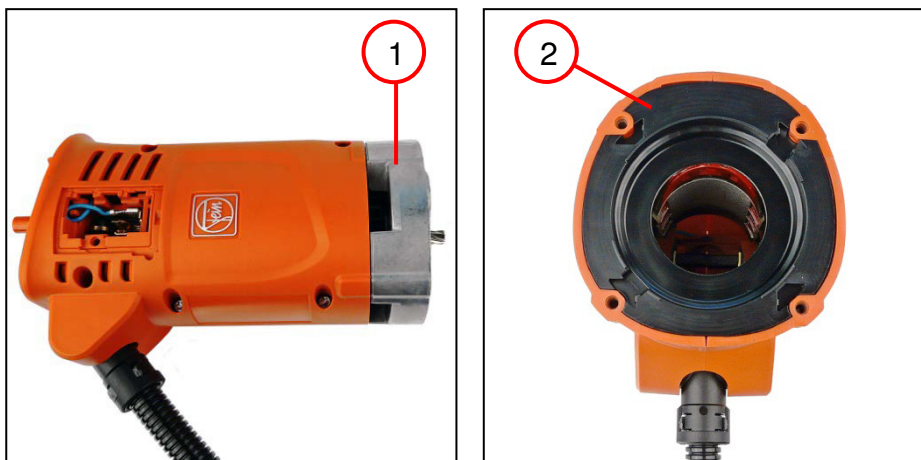
Tools:

- Torx T20
- Plastic hammer



Removal

Removing the motor housing



1. Remove the intermediate gearbox (1).
2. Remove the air guide ring (2).

Tools:

- Torx T15
- Assembly aid



Removal

Removing the motor housing



1. Disconnect the cable (1).
2. Disconnect the cable (2).
3. Unscrew the five screws (3).
4. Remove the motor housing (4).

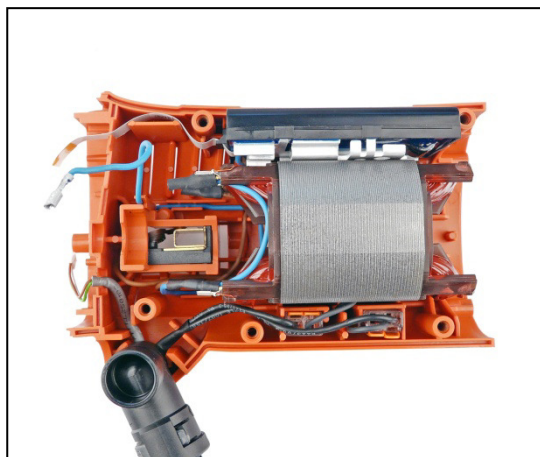
Tools:

- Long-nosed pliers
- Torx T15



Removal

Removing the motor housing



1. Remove all components from the motor housing.
2. Remove the connecting piece (1).

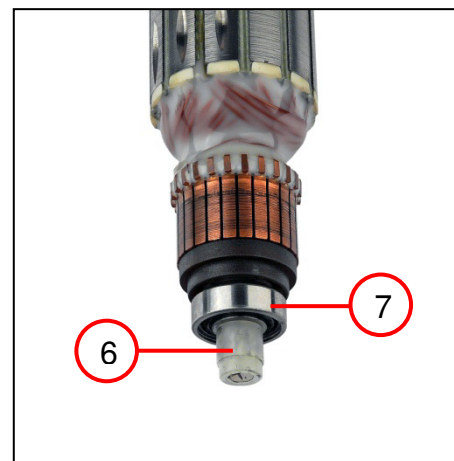
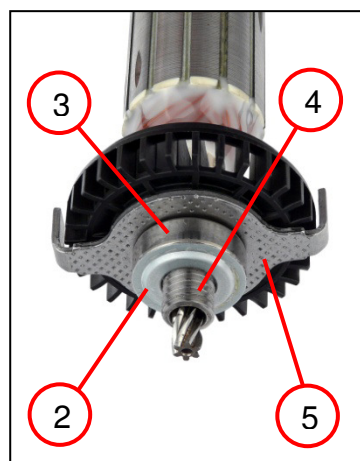
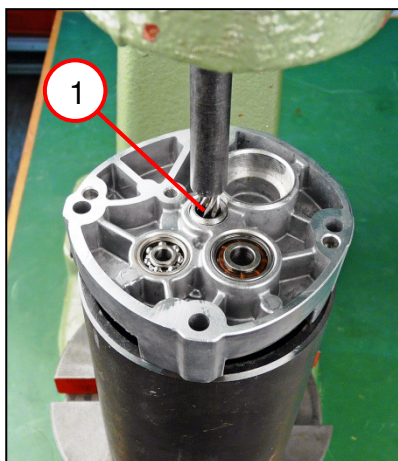
Tools:

- Slotted screwdriver



Removal

Removing the armature



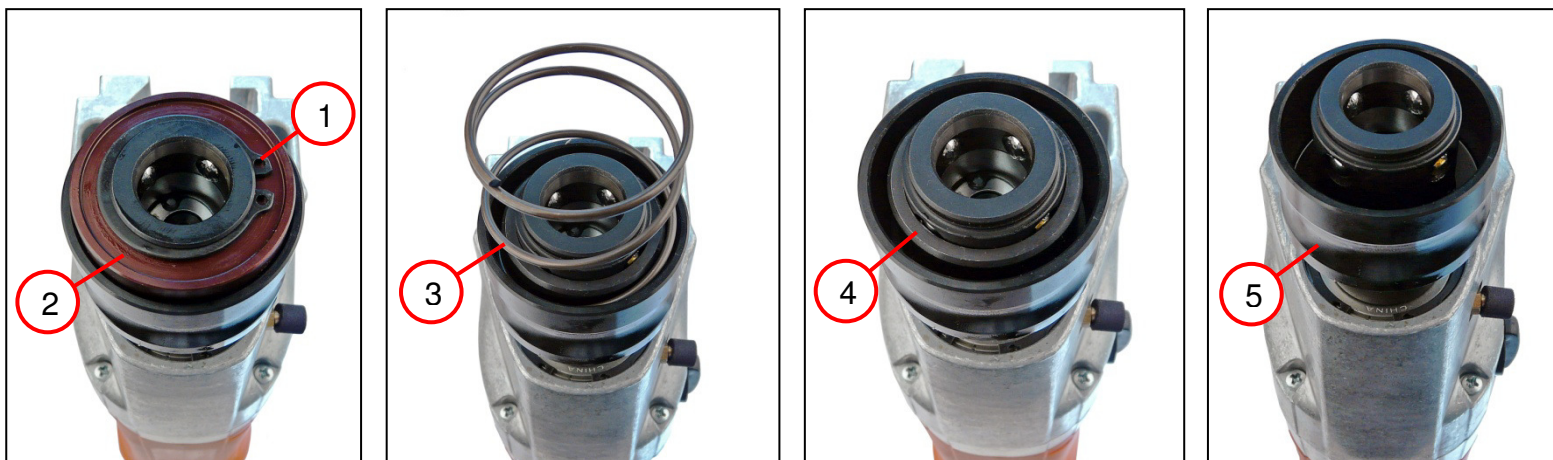
1. Press out the armature (1).
2. Remove the sealing ring (2).
3. Remove the grooved ball bearing (3) together with the sealing ring (4).
4. Remove the plate (5).
5. Remove the magnet (6).
6. Pull off the grooved ball bearing (7).

Tools:

- Arbor press
- Punch, 10 mm
- Drawing-off socket cap
- Chuck cone, 26 mm
- Chuck cone, 19 mm

Removal

Removing the holder



NOTE

Risk of injury due to tensioned spiral spring.

☞ When opening the circlip (1), hold the cover with your hand.

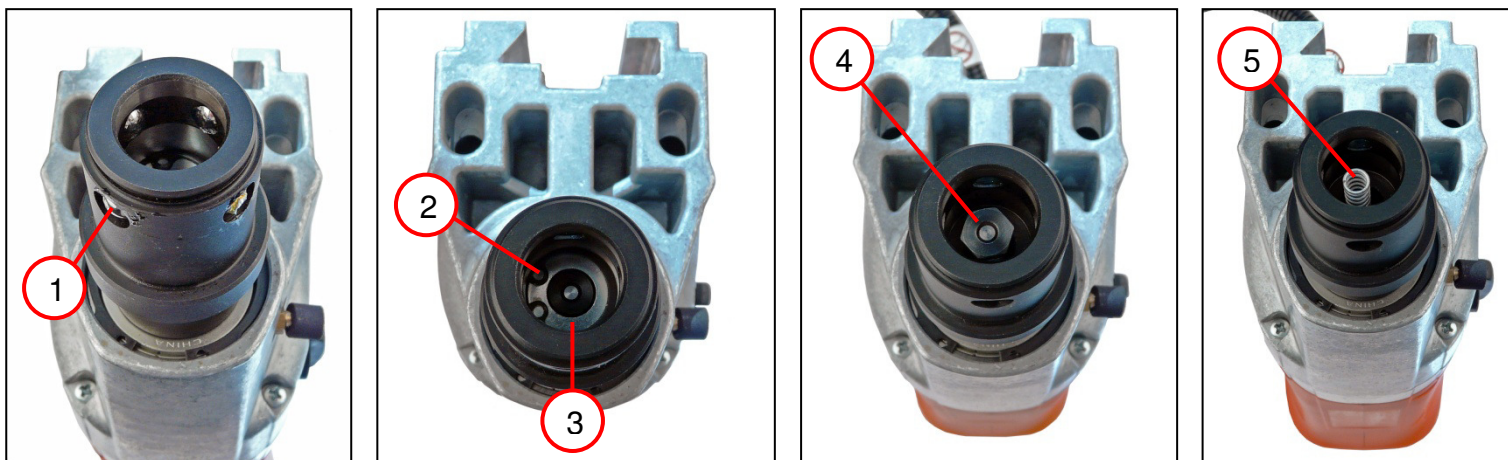
1. Remove the circlip (1).
2. Remove the sleeve (2).
3. Remove the spring (3).
4. Remove the sleeve (4).
5. Remove the bush (5).

Tools:

- Circlip pliers

Removal

Removing the holder



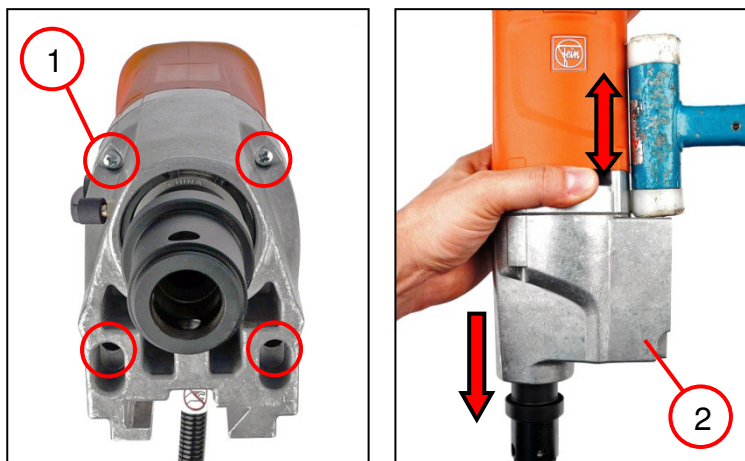
1. Remove four balls (1).
2. Remove the circlip (2).
3. Remove the disc (3).
4. Remove the plunger (4).
5. Remove the spiral spring (5).

Tools:

- Magnet
- Circlip pliers



Removing the gearbox housing



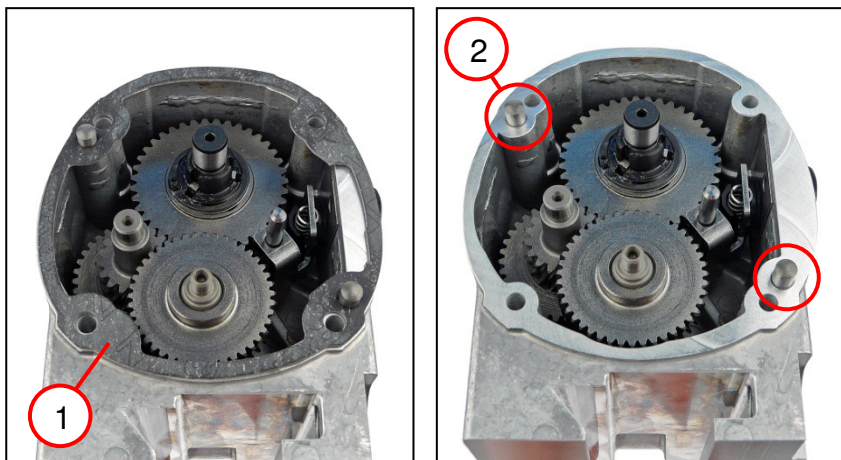
1. Unscrew the four screws (1).
2. Remove the gearbox housing (2).

Tools:

- Torx T20
- Plastic hammer



Removing the gearbox housing



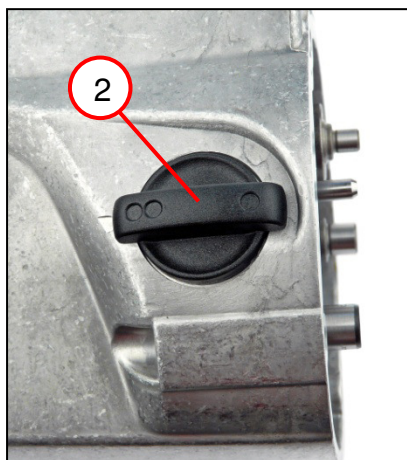
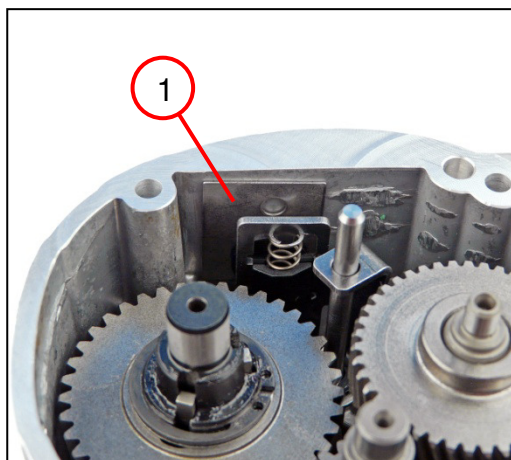
1. Remove the seal (1).
2. Remove the two straight pins (2).

Tools:

- Combination pliers



Removing the gearbox housing



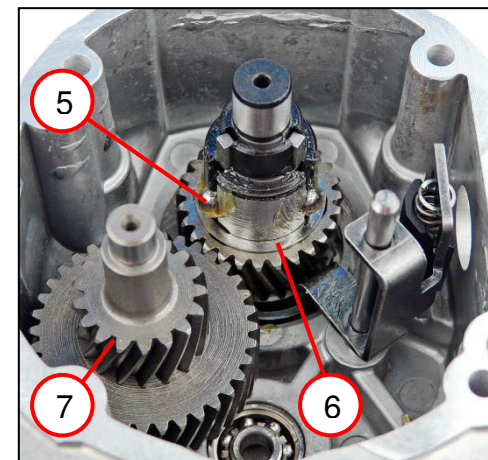
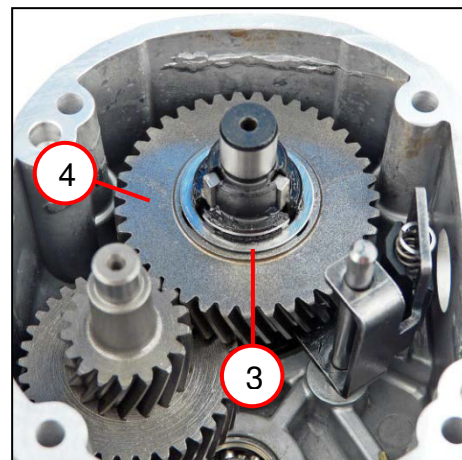
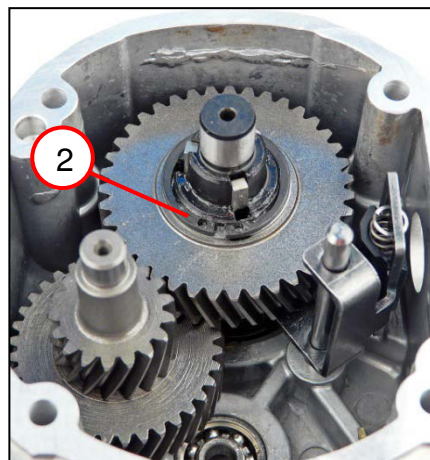
1. Remove the plate (1).
2. Remove the switch pushbutton (2).
3. Remove the sealing ring (3).

Tools:

- Slotted screwdriver
- Combination pliers

Removal

Removing the gearbox housing



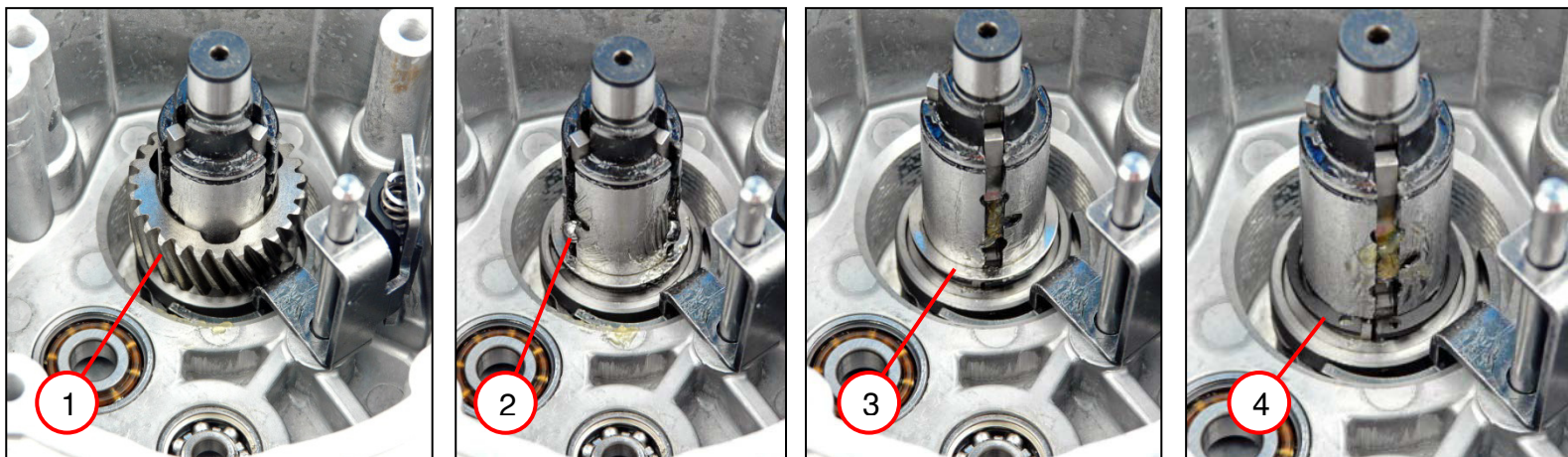
1. Remove the gear-wheel (1).
2. Remove the circlip (2).
3. Remove the disc (3).
4. Remove the gear-wheel (4).
5. Remove the three balls (5).
6. Remove the disc (6).
7. Remove the gear-wheel (7).

Tools:

- Circlip pliers
- Bar magnet

Removal

Removing the gearbox housing



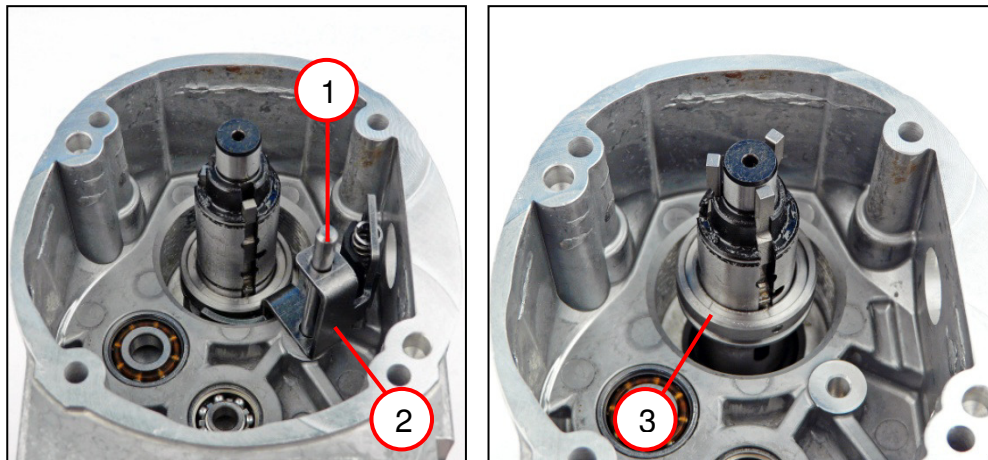
1. Remove the gear-wheel (1).
2. Remove the three balls (2).
3. Remove the disc (3).
4. Remove the circlip (4).

Tools:

- Bar magnet
- Circlip pliers

Removal

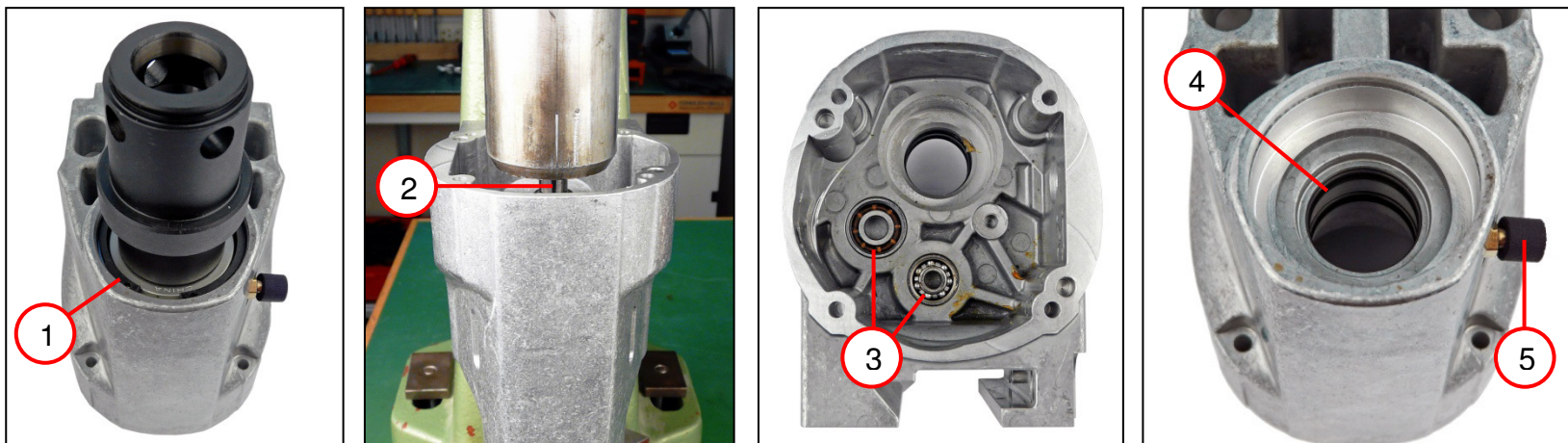
Removing the gearbox housing



1. Remove the pin (1).
2. Remove the switch module (2).
3. Remove the sleeve (3) with the three draw keys.

Removal

Removing the gearbox housing



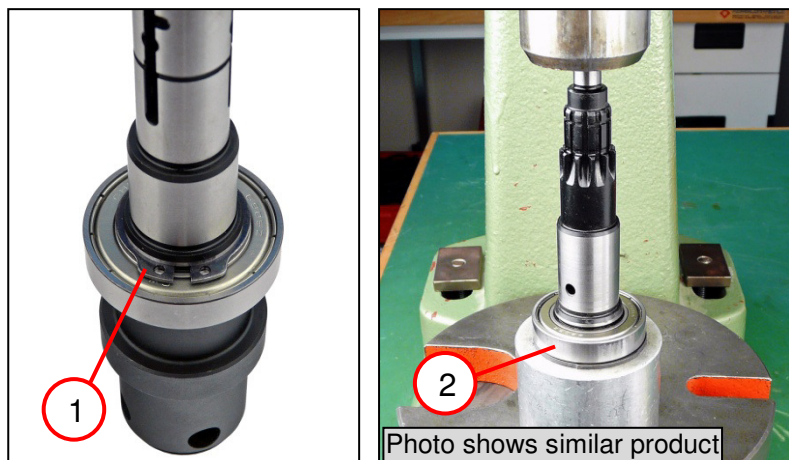
1. Remove the circlip (1).
2. Press out the shaft (2).
3. Pull out the grooved ball bearings (3).
4. Remove the two sealing rings (4).
5. Remove sleeve (5).
6. Turn down the hose socket.

Tools:

- Circlip pliers
- Arbor press
- Sleeve 44 mm inner diameter
55 mm outer diameter
- Inner puller
- Slide hammer
- 7 mm socket wrench



Removing the gearbox housing



1. Remove the circlip (1).
2. Press down on the grooved ball bearing (2).

Tools:

- Circlip pliers
- Arbor press
- Sleeve 39 mm inner diameter
46 mm outer diameter



Removing the gear-wheels



1. Press the gear-wheel [z=36] off the toothed shaft [z=17] (1).

Tools:

- Arbor press
- Sleeve
22 mm inner diameter
37 mm outer diameter



Removing the gear-wheels



2. Press the gear-wheel [z=43] off the toothed shaft [z=11] (1).

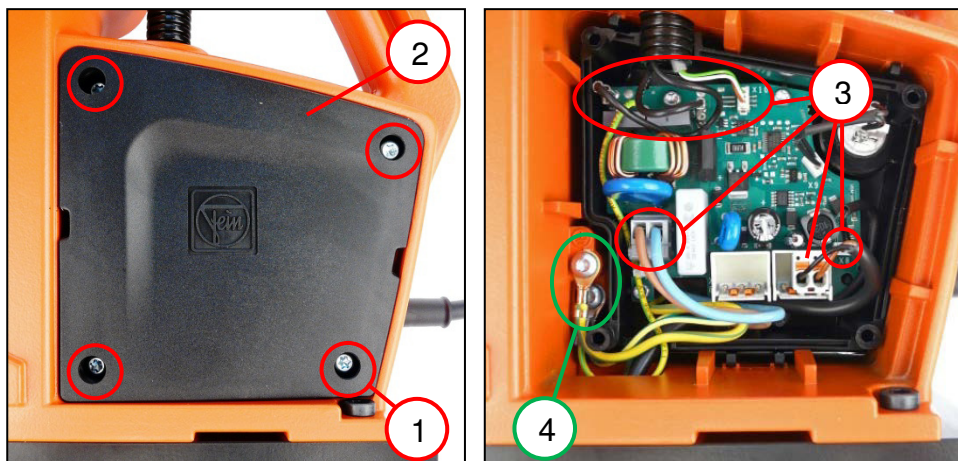
Tools:

- Arbor press
- Sleeve
27 mm inner diameter
36 mm outer diameter



Removal

Removing the electronics



1. Unscrew the four screws (1).
2. Remove the cover (2).
3. Remove the cables (3).
4. Unscrew the two screws (4).

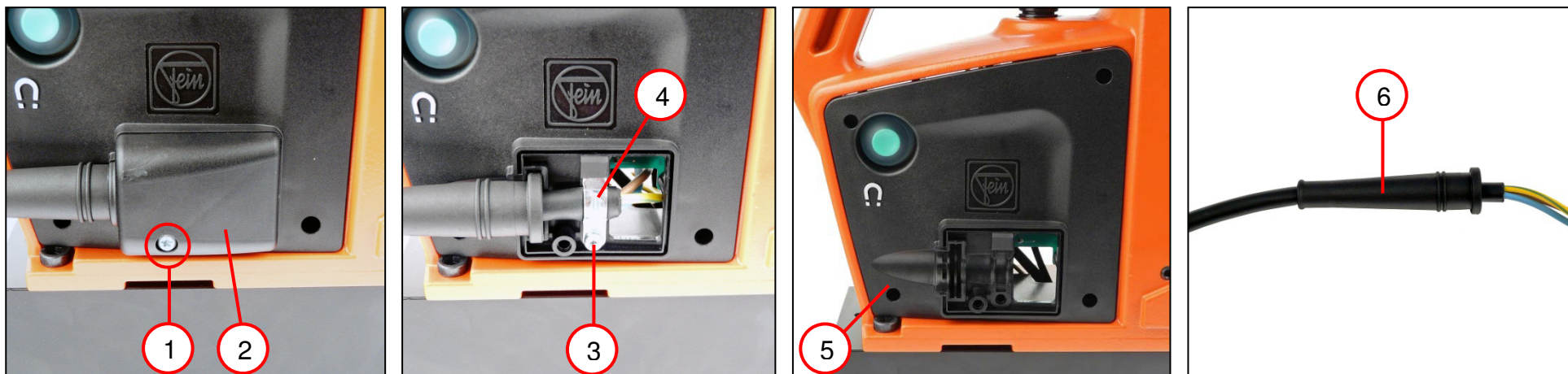
Tools:

- Torx T20



Removal

Removing the electronics



1. Unscrew the screw (1).
2. Remove the cover (2).
3. Unscrew the screw (3).
4. Remove the cable clamping piece (4).
5. Remove the cover (5).
6. Remove the protective hose (6).

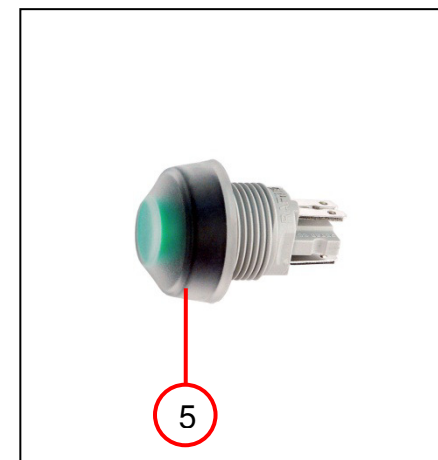
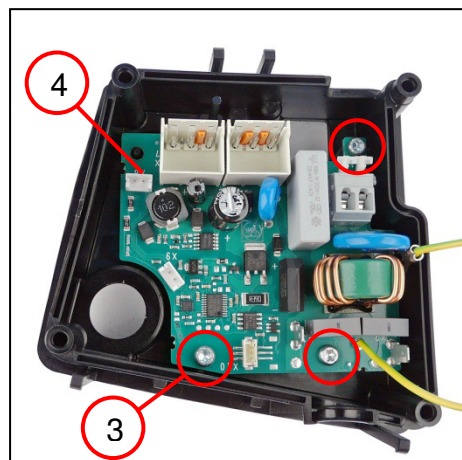
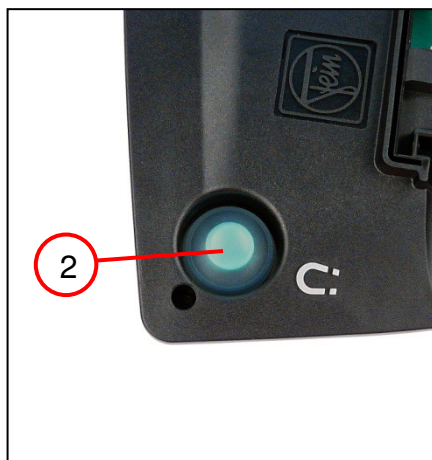
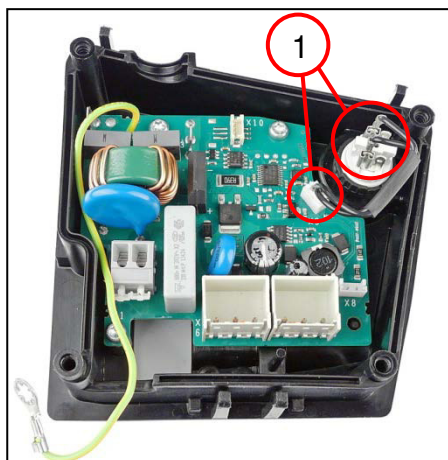
Tools:

- Torx T15



Removal

Removing the electronics



1. Disconnect the cable (1).
2. Pull out the button (2).
3. Unscrew the three screws (3).
4. Remove the electronics (4).
5. Remove the cap (5).

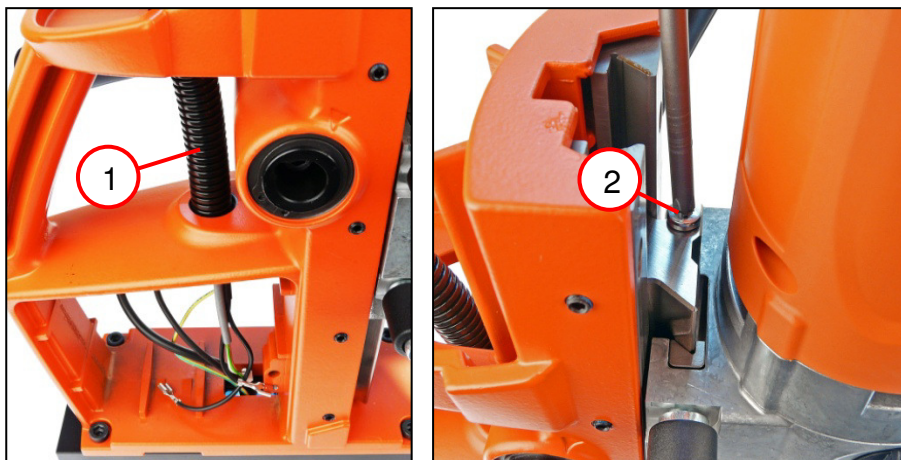
Tools:

- Torx T15



Removal

Removing the drill motor



1. Remove the protective hose (1).
2. Unscrew the flat headed screw (2).

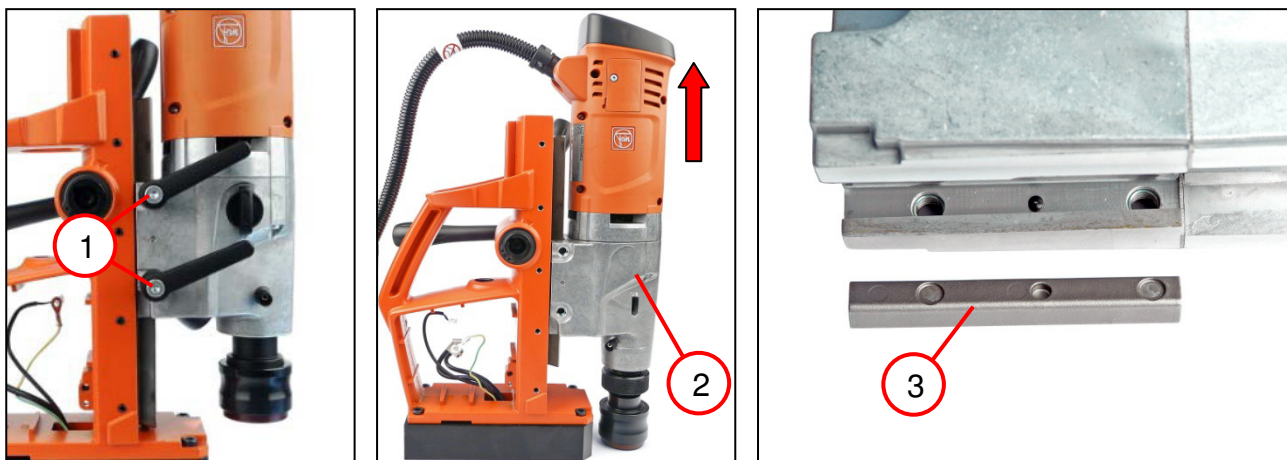
Tools:

- PH2 cross-tip screwdriver



Removal

Removing the drill motor



Crushing hazard around drill motor!

☞ The drill motor will rapidly slide downwards once the two screws (1) have been loosened.

1. Unscrew the two screws (1).
2. Remove the drill motor (2).
3. Remove the pressure piece (3).

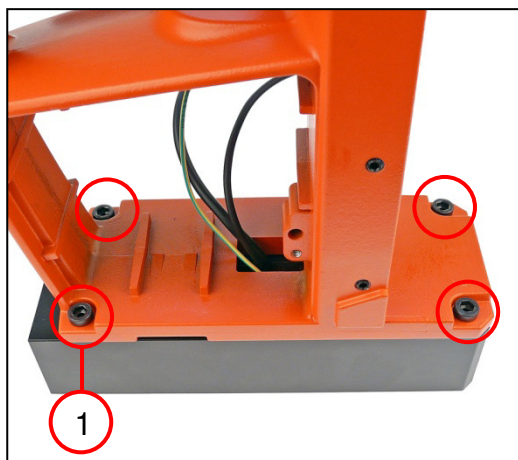
Tools:

- Socket head wrench, 6 mm



Removal

Removing the magnetic foot



1. Unscrew the four screws (1) and remove the magnetic foot.

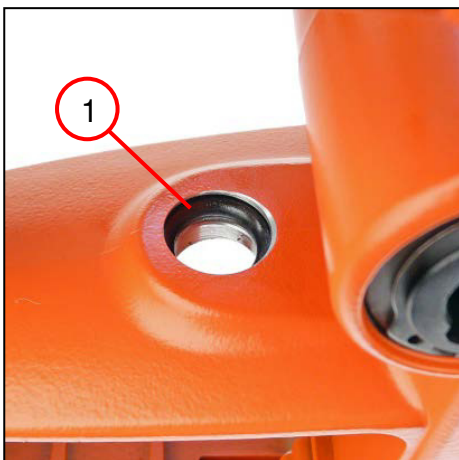
Tools:

- Socket head wrench, 5 mm



Removal

Removing the connecting cable



1. Remove the sealing ring (1).

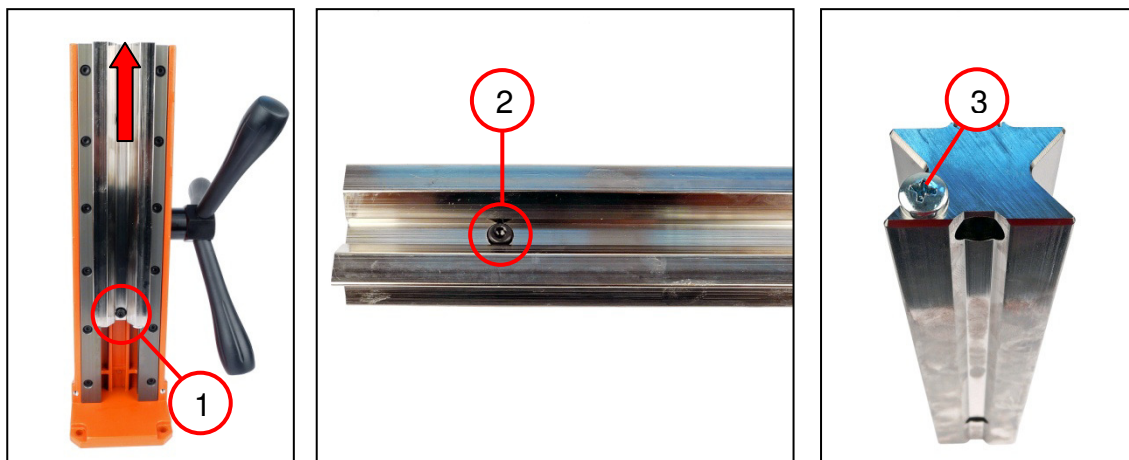
Tools:

- Slotted screwdriver



Removal

Removing the guide



1. Unscrew the screw (1).
2. Move the guide upwards using the spider.
3. Remove the guide.
4. Unscrew the screw (2).
5. Unscrew the flat headed screw (3).

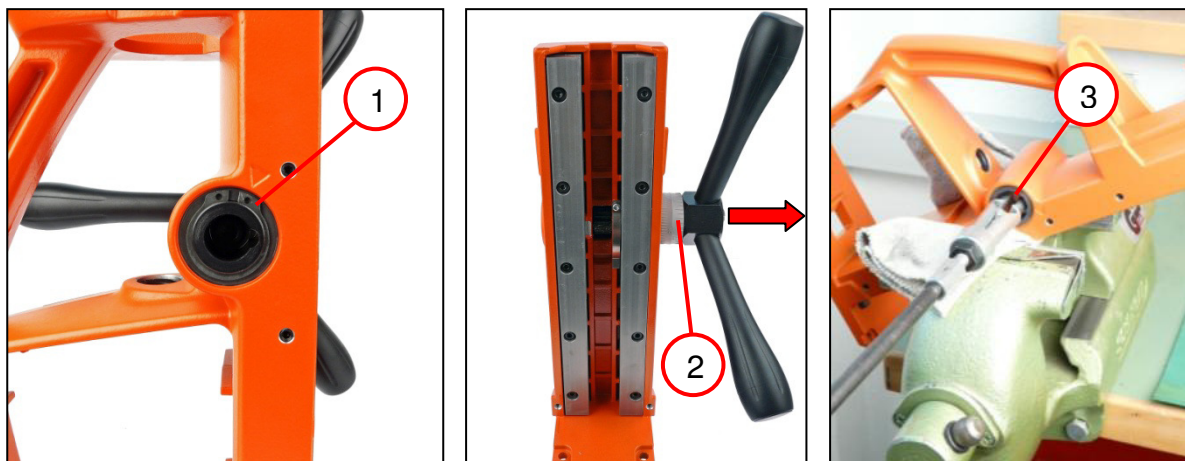
Tools:

- Socket head wrench, 4 mm
- Cross-tip screwdriver



Removal

Removing the guide



1. Remove the circlip (1).
2. Pull out the spider (2).
3. Remove the bush (3) on both sides.

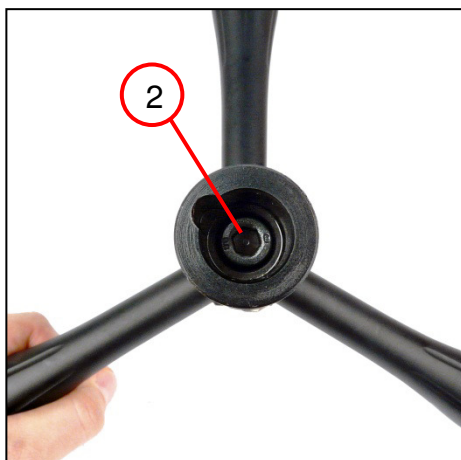
Tools:

- Circlip pliers
- Inner bearing puller, 18-22 mm
- Slide hammer



Removal

Removing the guide



1. Remove the disc (1).
2. Unscrew the screw (2) and remove the shaft.
3. Remove scale (3).
4. Unscrew the three handles (4).

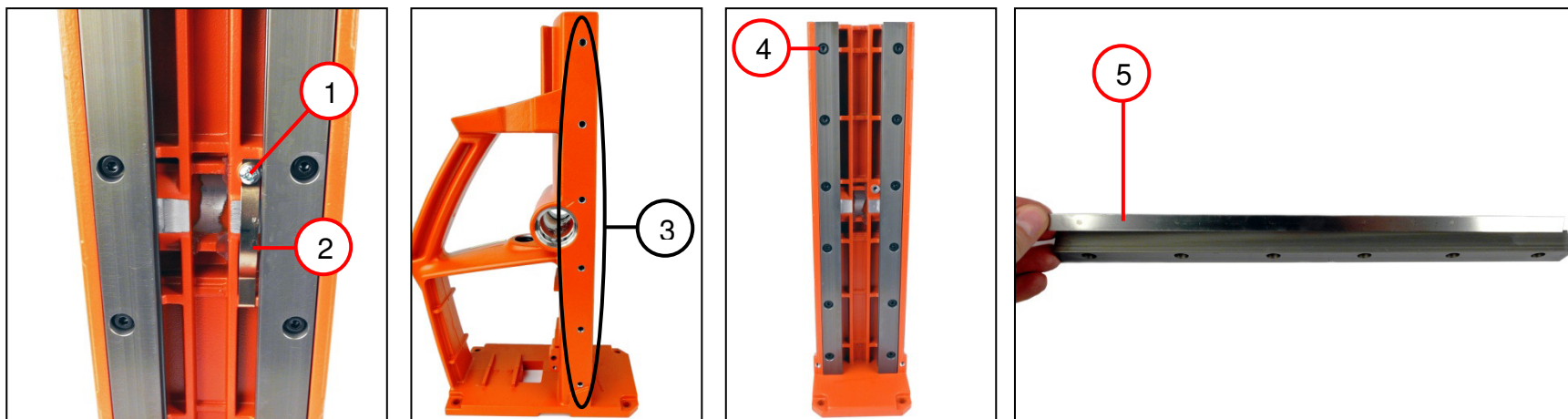
Tools:

- Socket head wrench, 5 mm



Removal

Removing the guide



1. Unscrew the fillister head screw (1).
2. Remove the leaf spring (2).
3. Unscrew the six set screws (3).
4. Unscrew the six screws (4) and remove the guide strip.
5. Remove the pressure piece (5).

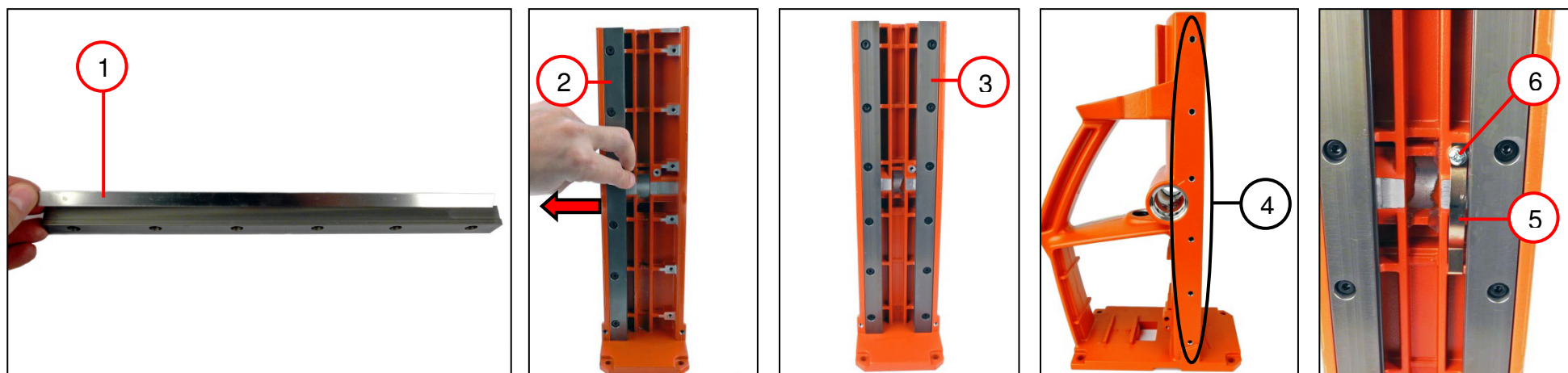
Tools:

- Torx T10
- Socket head wrenches, 2.5 mm; 3 mm



Fitting

Fitting the guide



1. Place the pressure piece (1) in the correct position.
2. Position the guide strip (2) and press onto the housing.
3. Insert the six cylinder head screws.
4. Position the guide strip (3) and press onto the housing.
5. Insert the six cylinder head screws.
6. Position the six set screws (4).
 ☞ The guide clearance is adjusted after installation of the drill motor.
7. Position the leaf spring (5).
8. Screw in the screw (6) [$1.1 \text{ Nm} \pm 0.15 \text{ Nm}$].

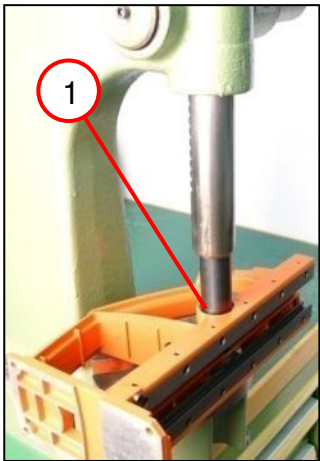
Tools:

- Socket head wrenches,
3 mm; 2.5 mm
- Torx T10



Fitting

Fitting bushes



1. Press in the bushes (1) on both sides.

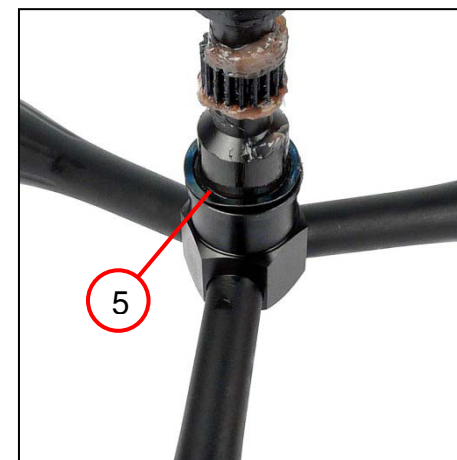
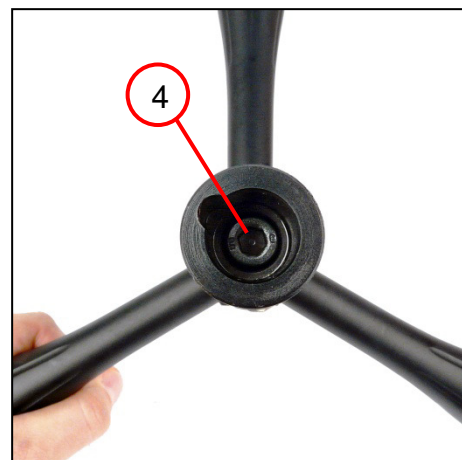
Tools:

- Arbor press
- Sleeve
26 mm inner diameter
30 mm outer diameter



Fitting

Fitting the spider



1. Screw in the three handles (1).
2. Position the scale (2).
☞ Note the unit of measurement of the scale.
3. Position the shaft (3).
4. Screw in the cylinder head screw (4) [$8.0 \text{ Nm} \pm 0.5 \text{ Nm}$].
5. Position the disc (5).
6. Coat the shaft with grease.

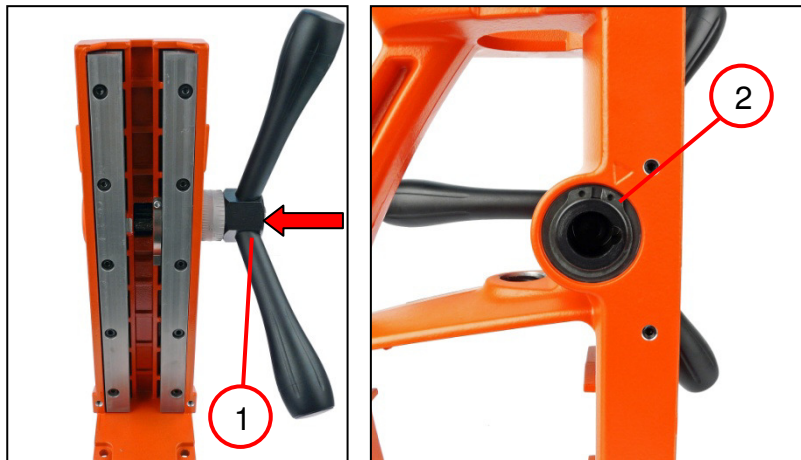
Tools:

- Socket head wrench, 5 mm



Fitting

Fitting the spider



1. Position the spider (1).
2. Fit the circlip (2).

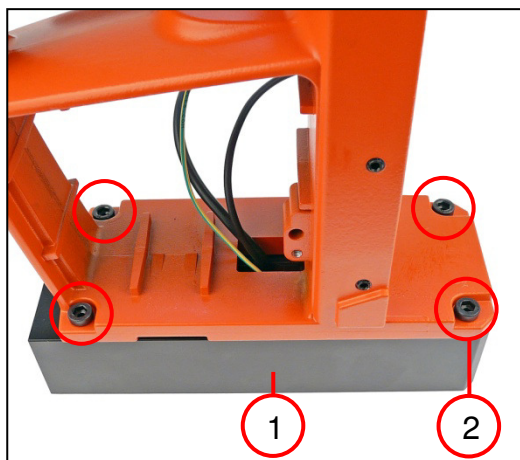
Tools:

- Circlip pliers



Fitting

Fitting the magnetic foot



1. Position the magnet (1).
2. Screw in the four screws (2) [8.0 Nm ± 0.5 Nm].

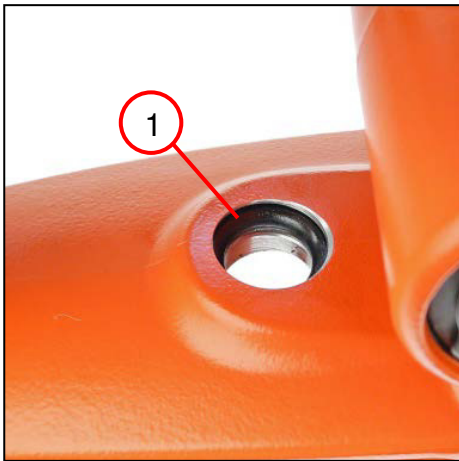
Tools:

- Socket head wrench, 5 mm



Fitting

Fitting the sealing ring

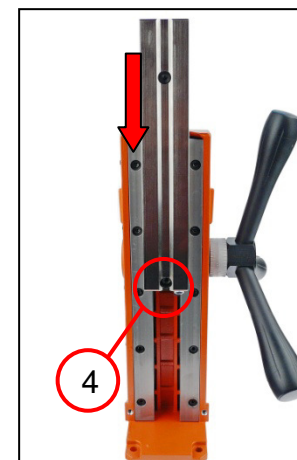
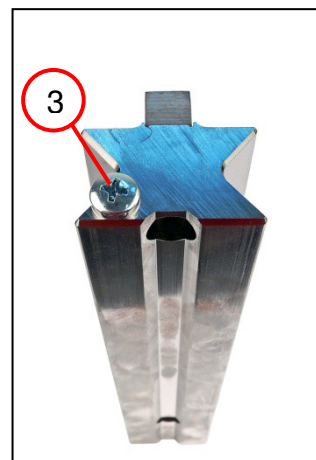
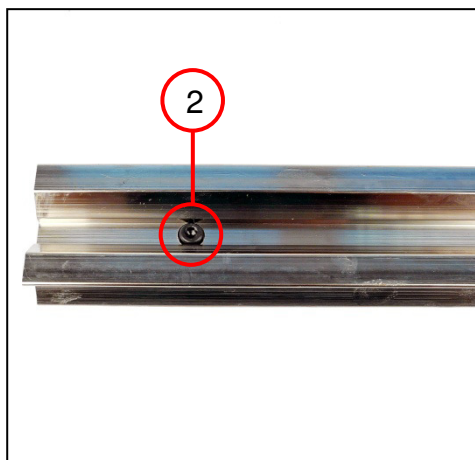
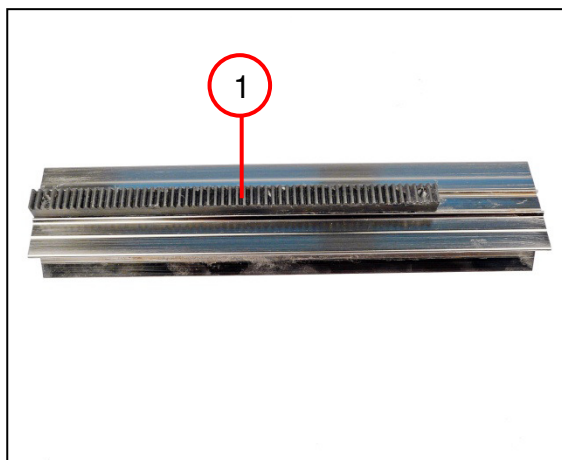


1. Grease the sealing ring (1).
2. Position the sealing ring (1).



Fitting

Fitting the guide



1. Position the gear rack (1).
2. Screw in the screw (2) [3.0 Nm ± 0.3 Nm].
3. Screw in the flat headed screw (3) [1.2 Nm ± 0.15 Nm].
 ☞ Check the position.
4. Apply a layer of grease to the gear rack.
5. Coat the guide with grease.
6. Slide the guide into the guide strip.
7. Use the spider to move the guide downwards.
8. Screw in the screw (4) [3.0 Nm ± 0.3 Nm].

Tools:

- PH2 cross-tip screwdriver
- Socket head wrench, 3 mm



Fitting

Fitting the drill motor



1. Insert the pressure piece (1) in the correct position.
2. Slide the drill motor (2) onto the guide.
3. Screw in the two screws (3).

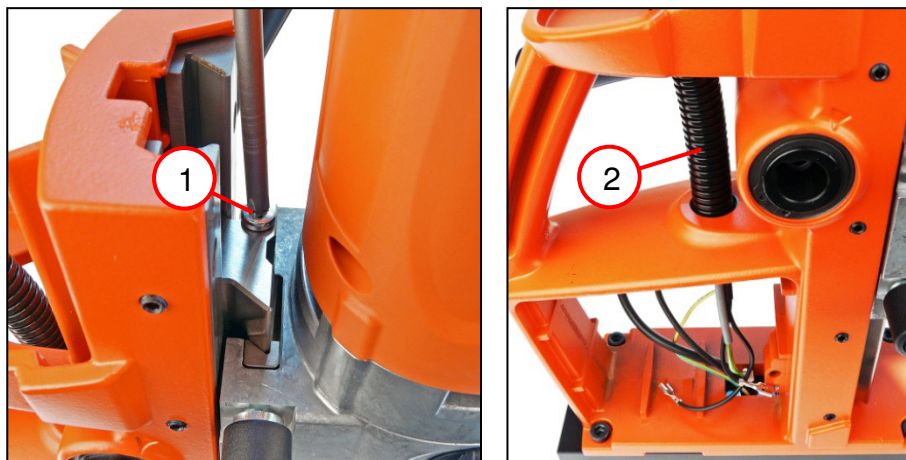
Tools:

- Socket head wrench,
6 mm



Fitting

Fitting the drill motor



1. Screw in the flat headed screw (1).
2. Fit the protective hose (2).

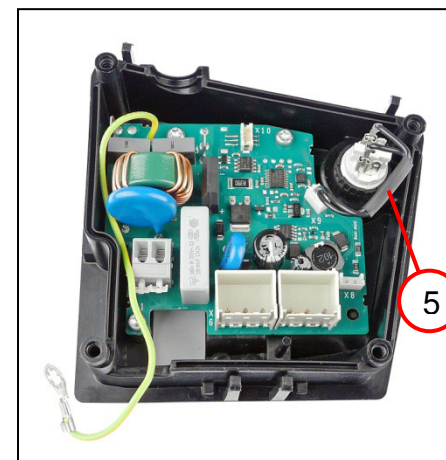
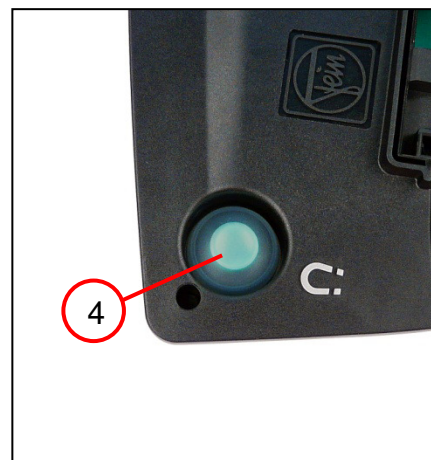
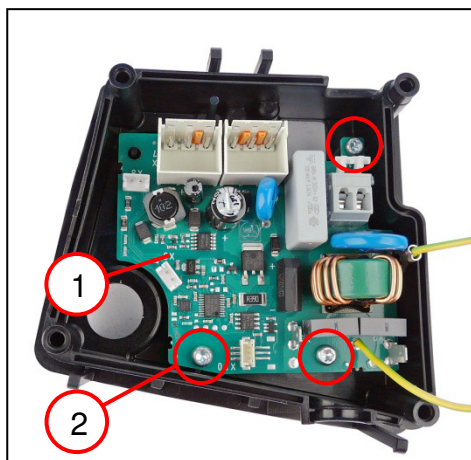
Tools:

- Cross-tip screwdriver



Fitting

Fitting the electronics



1. Place the electronics (1) in the correct position.
2. Screw in the three screws (2) [2.0 Nm ± 0.3 Nm].
3. Fit the protective cap (3).
4. Fit the button (4).
5. Connect the cable (5) as shown in the connection diagram.

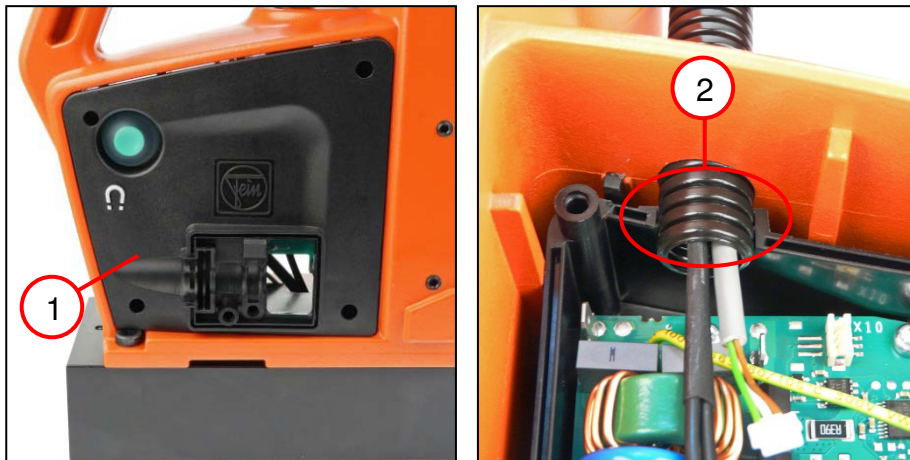
Tools:

- Torx T15



Fitting

Fitting the electronics

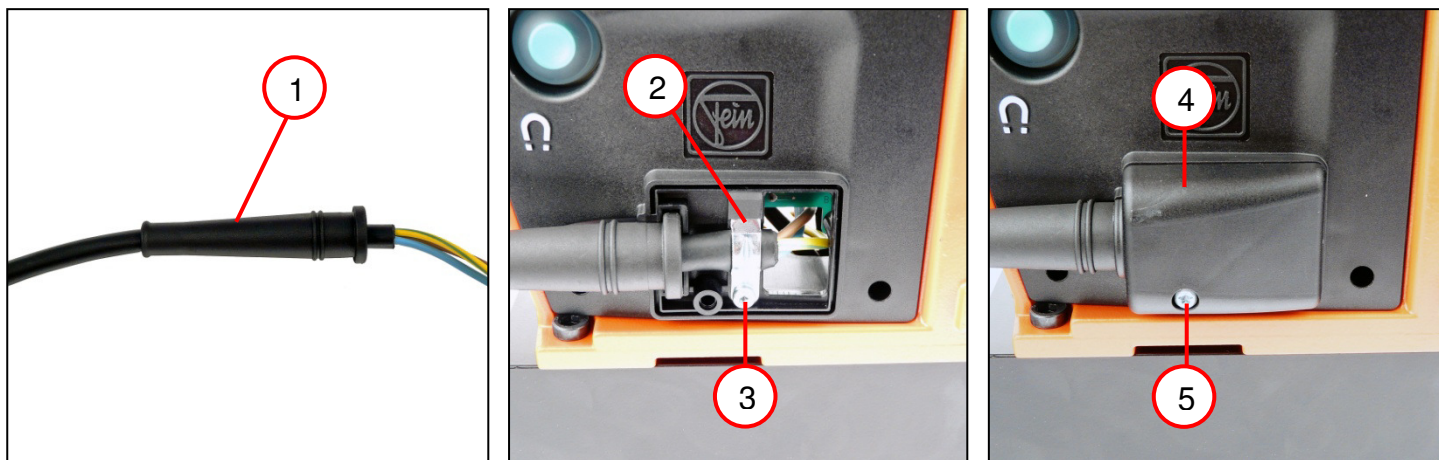


1. Fit the cover (1) in the correct position.
2. Place the protective hose in the recess (2).



Fitting

Fitting the cable with plug



1. Slide the protective hose (1) over the cable.
2. Position the cable with the protective hose.
3. Position the cable clamping piece (2).
4. Screw in the screw (3) [$0.9 \text{ Nm} \pm 0.1 \text{ Nm}$].
5. Position the cover (4).
6. Screw in the screw (5) [$1.8 \text{ Nm} \pm 0.1 \text{ Nm}$].

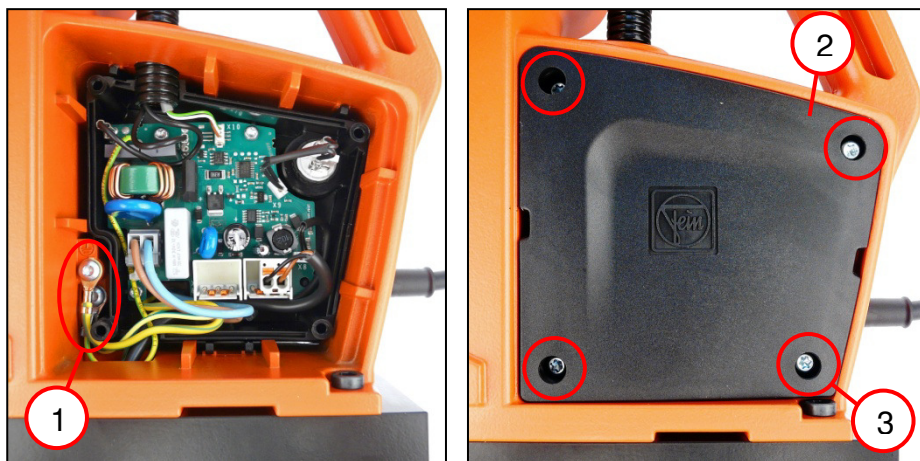
Tools:

- Torx T15



Fitting

Fitting the electronics



1. Connect all connecting cables as shown in the connection diagram.
2. Position the earthing conductor (1) of the cable with plug.
3. Screw in the screw [$1.5 \text{ Nm} \pm 0.2 \text{ Nm}$].
4. Fit the cover (2).
5. Screw in the four screws (3).

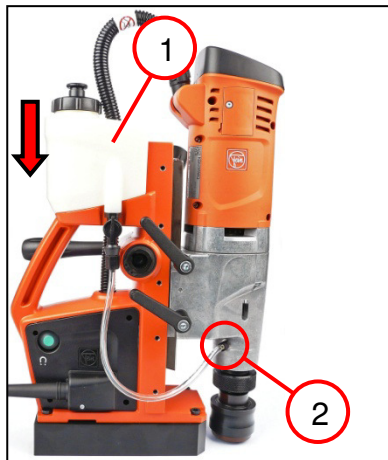
Tools:

- Torx T20



Fitting

Removing the container



1. Position the container (1).
2. Connect the hose (2) to the hose socket.



Fitting

Setting the guide



1. Move drill motor (1) into upper position.
2. Tighten the top three set screws (2) [sequence: Top to bottom] to 1.4 Nm each.

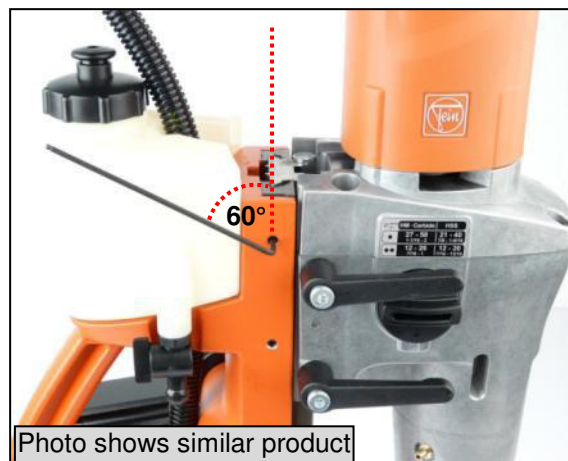
Tools:

- Torque wrench with hexagon socket fixture, 2.5 mm



Fitting

Setting the guide



1. Turn tightened set screws 60° anticlockwise.

Tools:

- Socket head wrench,
2.5 mm



Fitting

Setting the guide



1. Move drill motor (1) into lower position.
2. Tighten bottom two set screws (2) to 1.4 Nm each [sequence: Top to bottom].

Tools:

- Torque wrench with hexagon socket fixture, 2.5 mm



Fitting

Setting the guide



1. Turn tightened set screws 60° anticlockwise.

Tools:

- Socket head wrench,
2.5 mm



Fitting

Setting the guide



Photo shows similar product



Photo shows similar product

1. Striking the guide hard (1), hammer play out of guide strip.

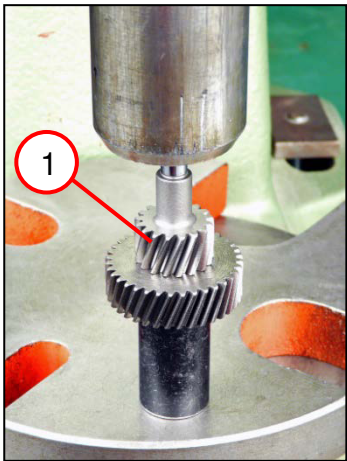
- ☞ Tap on side opposite set screws.
- ☞ Position the plastic hammer such that it is always at the same height as one of the five set screws.
- ☞ If the guide does not run smoothly, turn the set screws anticlockwise in steps of 10°.
- ☞ If the guide moves too readily, turn the set screws clockwise in steps of 10°.
- ☞ After loosening or tightening the set screw, the play must be hammered out of the guide.

Tools:

- 2x plastic hammer



Fitting the gear-wheels



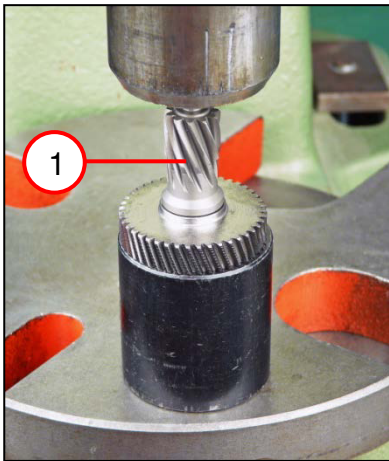
1. Press the gear-wheel [z=36] onto the toothed shaft [z=17] (1).

Tools:

- Arbor press
- Sleeve 17 mm inner diameter
25 mm outer diameter



Fitting the gear-wheels



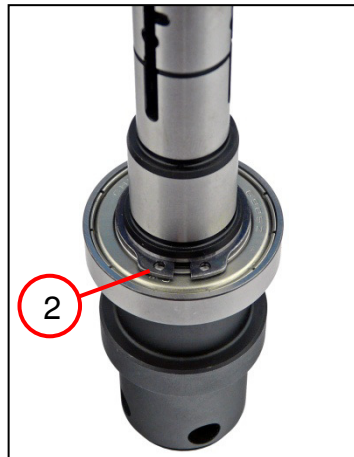
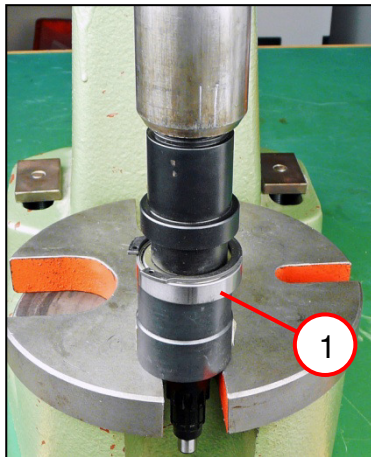
1. Press the gear-wheel [z=43] onto the toothed shaft [z=11] (1).

Tools:

- Arbor press
- Sleeve 16 mm inner diameter
25 mm outer diameter



Fitting the drill shaft



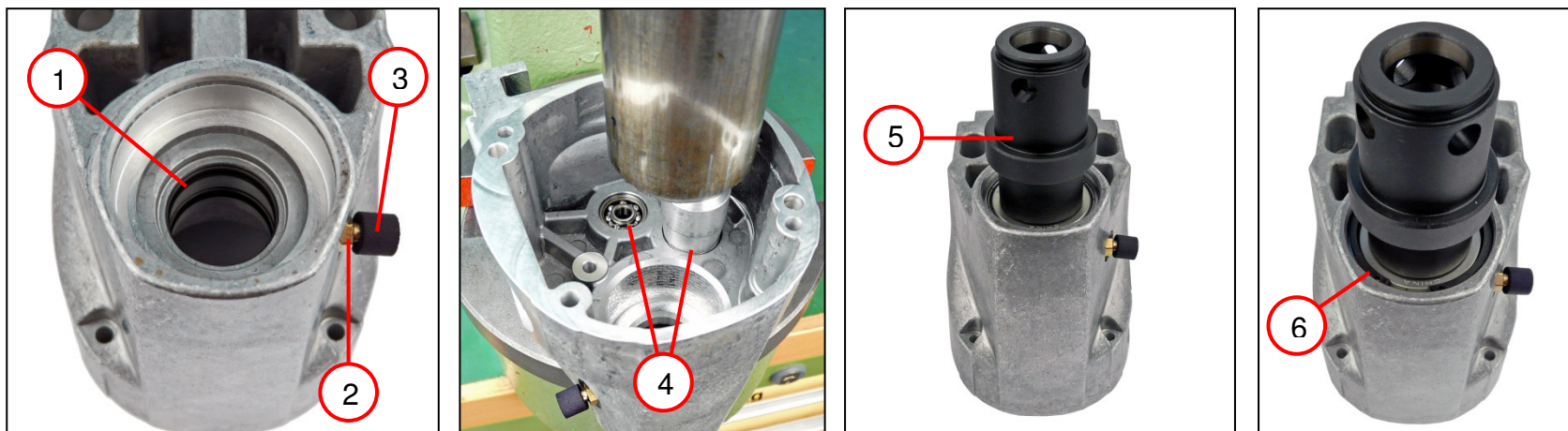
1. Press on the grooved ball bearing (1).
2. Fit the circlip (2).

Tools:

- Arbor press
- Sleeve 26 mm inner diameter
42 mm outer diameter
- Circlip pliers

Fitting

Fitting the gearbox housing



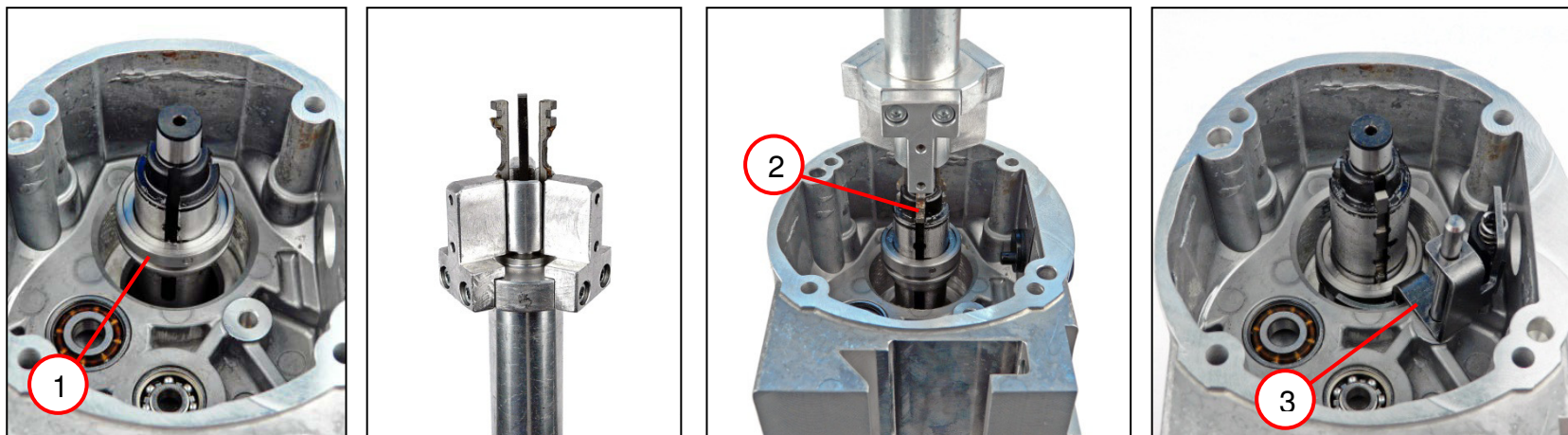
1. Fit the two sealing rings (1).
2. Apply a layer of grease to the two sealing rings (1).
3. Screw in the hose socket (2).
4. Fit the sleeve (3).
5. Press in the grooved ball bearings (4).
6. Press in the shaft (5).
7. Fit the circlip (6).

Tools:

- 7 mm socket wrench
- Arbor press
- Sleeve 7 mm inner diameter
18 mm outer diameter
- Sleeve Inner dia. 5 mm
Outer dia. 15 mm
- Circlip pliers

Fitting

Fitting the gearbox housing



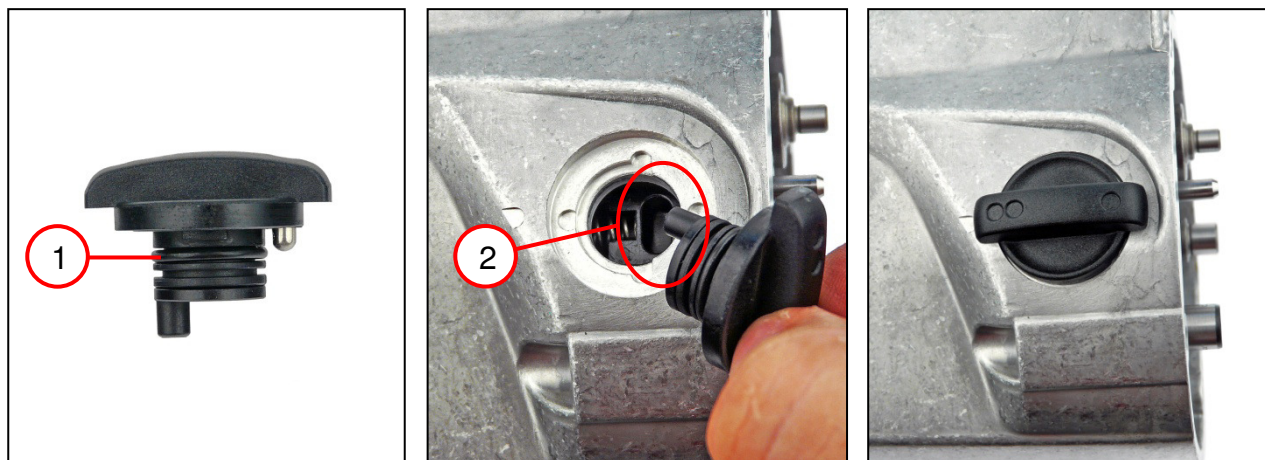
1. Slide the sleeve (1) onto the shaft in the correct position and turn into the opening.
2. Insert the three draw keys into the assembly aid.
3. Slide the three draw keys (2) onto the shaft.
 - ☞ The groove of the draw key and the opening of the shaft must be parallel under the sleeve.
4. Turn the sleeve onto the draw keys.
5. Insert the switch module (3).

Tools:

- Assembly aid



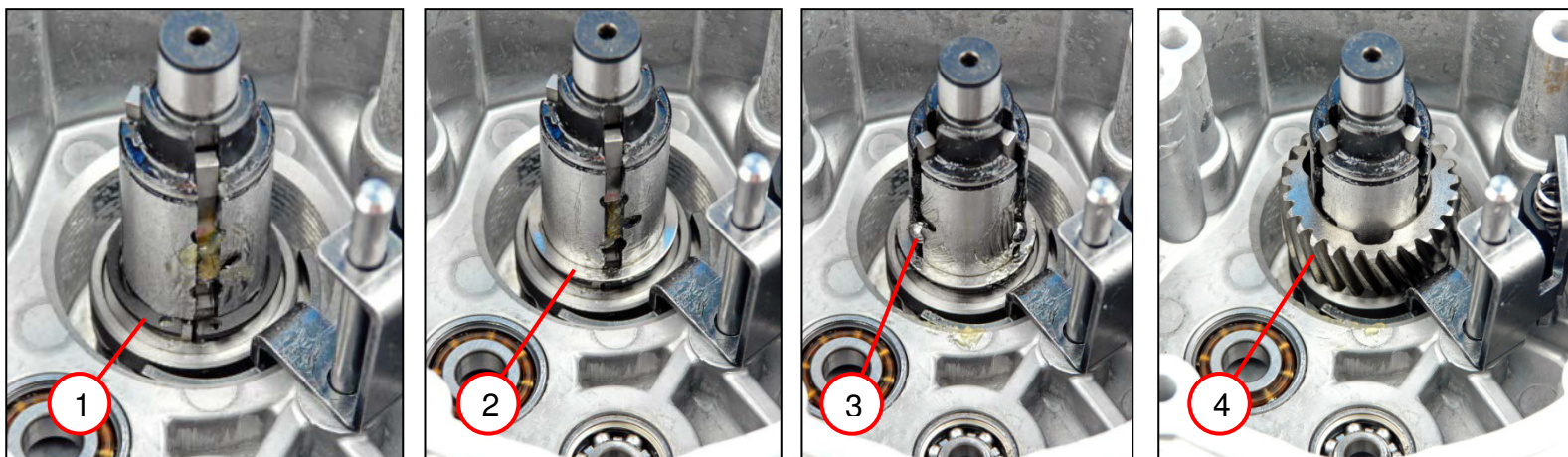
Fitting the gearbox housing



1. Position the sealing ring (1).
2. Fit the switch pushbutton (2).
3. Turn the switch pushbutton to “••”.



Fitting the gearbox housing



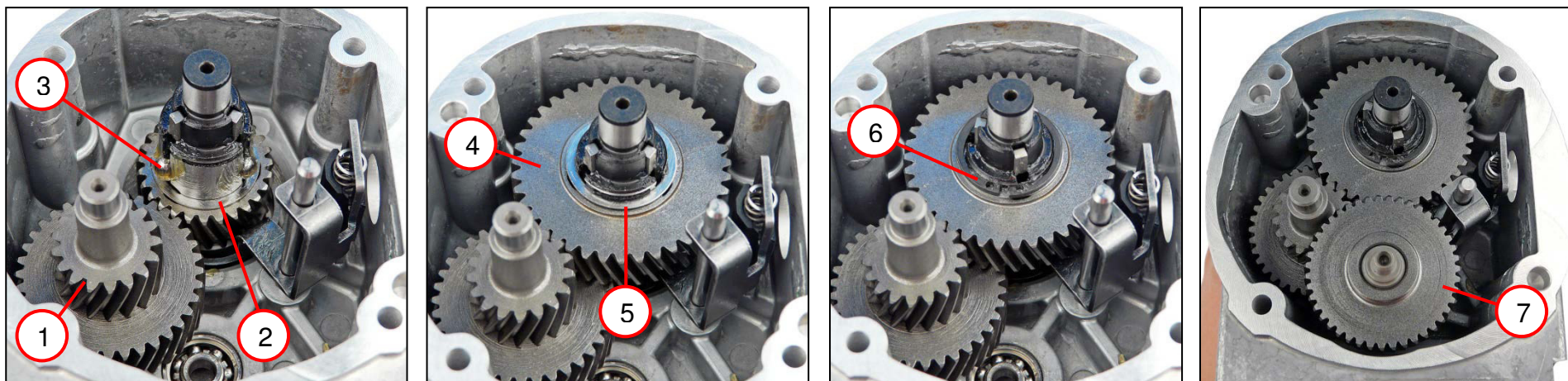
1. Fit the circlip (1).
2. Insert the disc (2).
3. Apply a layer of grease to the three balls (3).
4. Insert the three balls (3).
5. Insert the gear-wheel (4).

Tools:

- Circlip pliers

Fitting

Fitting the gearbox housing



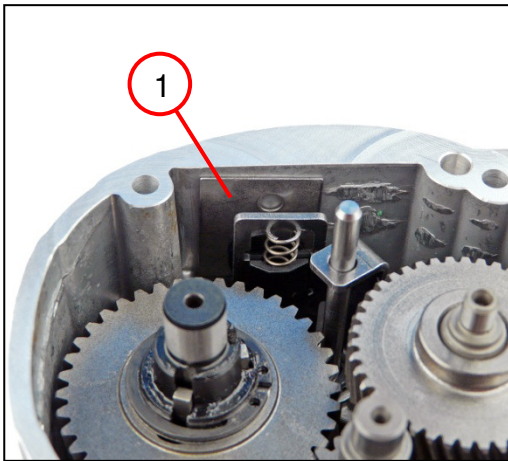
1. Insert the gear-wheel (1).
2. Turn the switch pushbutton to “•”.
3. Insert the disc (2).
4. Apply a layer of grease to the three balls (3).
5. Insert the three balls (3).
6. Insert the gear-wheel (4).
7. Insert the disc (5).
8. Fit the circlip (6).
9. Insert the gear-wheel (7).

Tools:

- Circlip pliers



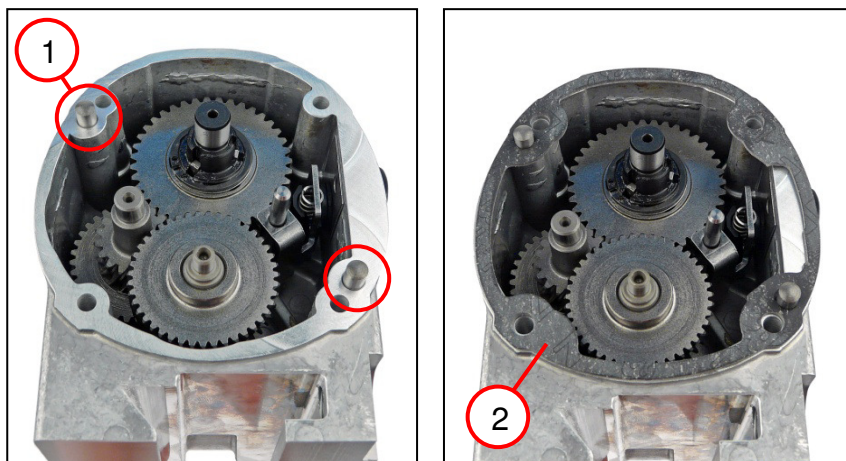
Fitting the gearbox housing



1. Fit the plate (1) in the correct position.



Fitting the gearbox housing



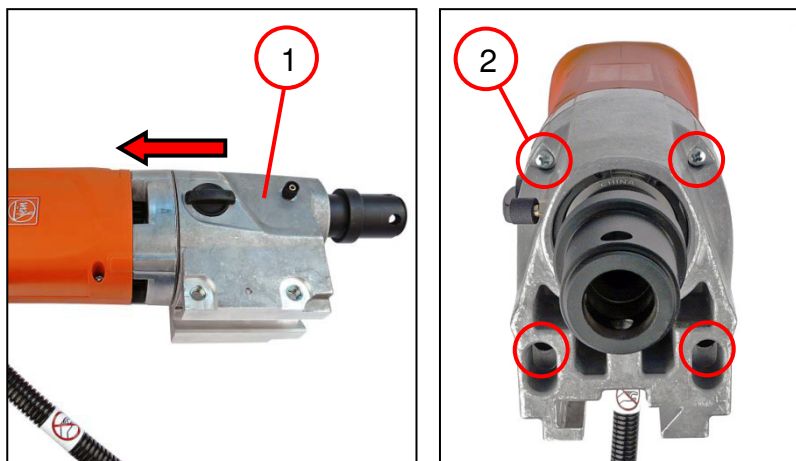
1. Fit the two pins (1).
2. Position the seal (2).
3. Fill the gearbox housing with 50 g of grease.

Tools:

- Combination pliers
- Grease



Fitting the gearbox housing



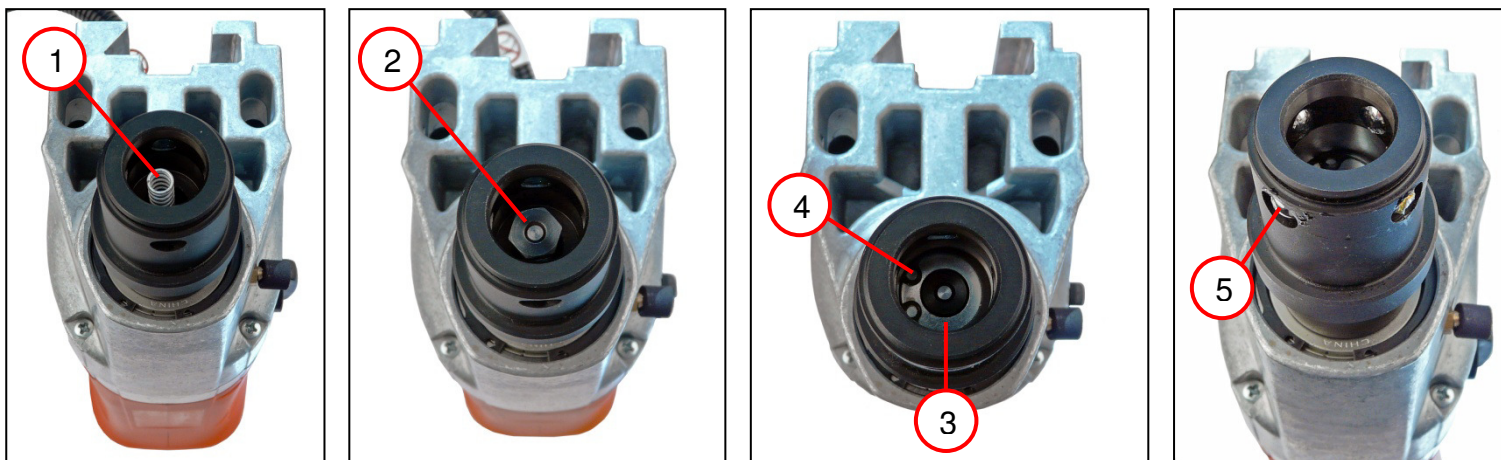
4. Place the gearbox housing (1) on the drill motor.
5. Screw in the four screws (2).

Tools:

- Torx T20



Fitting the holder



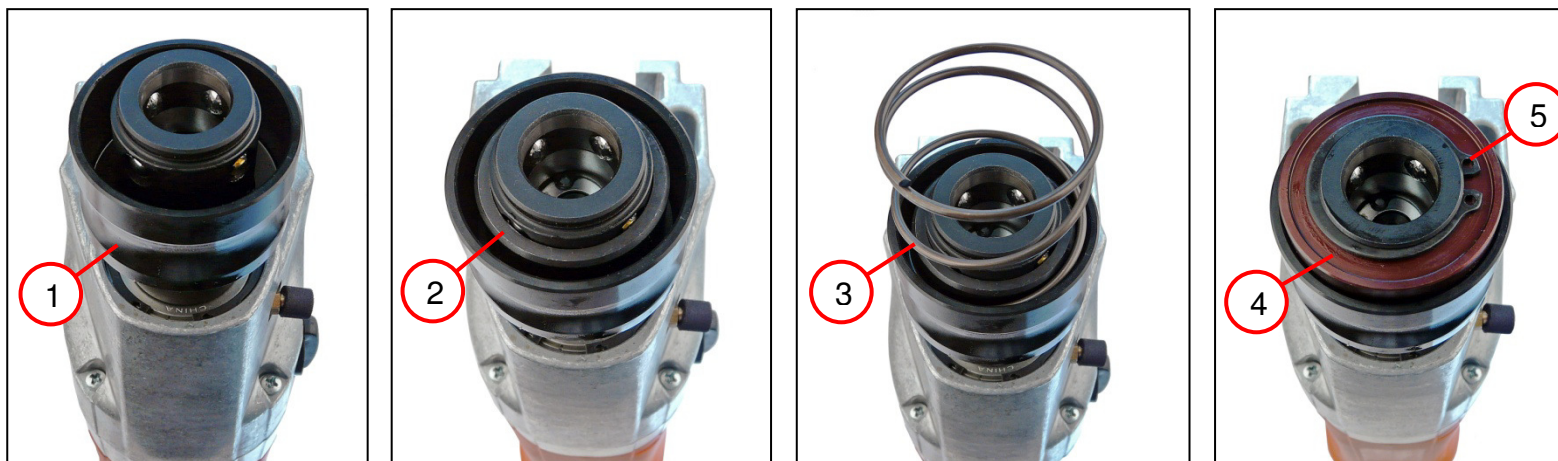
1. Position the spiral spring (1).
2. Position the plunger (2).
3. Position the disc (3).
4. Fit the circlip (4).
5. Apply a layer of grease to the four balls (5).
6. Position the four balls (5).

Tools:

- Circlip pliers



Fitting the holder



1. Position the sleeve (1).
2. Place the bush (2) in the correct position.
3. Position the spring (3).
4. Place the sleeve (4) in the correct position.
5. Fit the circlip (5).

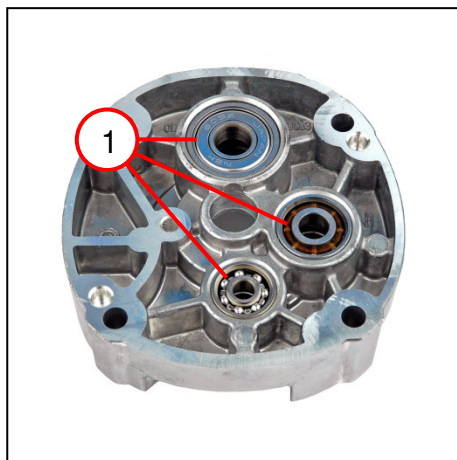
Tools:

- Circlip pliers



Fitting

Fitting the intermediate gearbox



1. Press in the three grooved ball bearings (1).

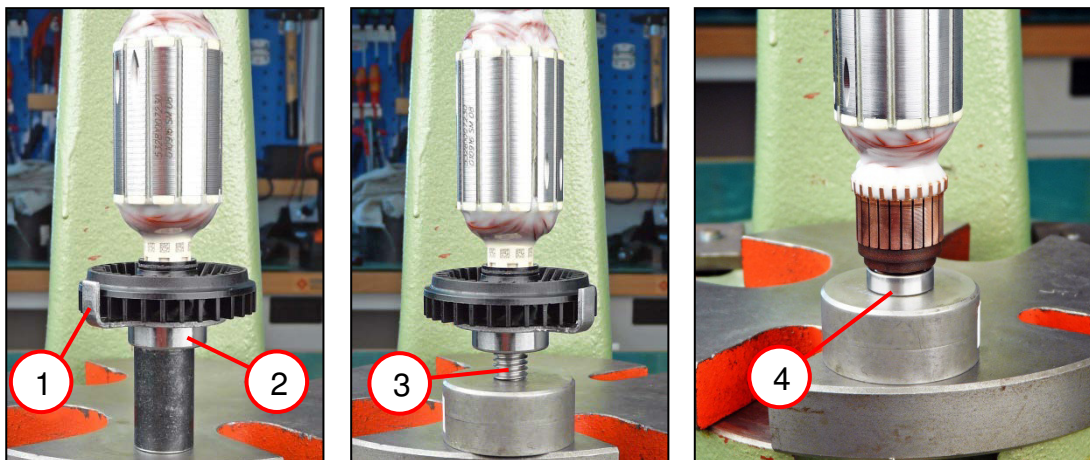
Tools:

- Sleeve 5 mm inner diameter
16 mm outer diameter
- Sleeve 7 mm inner diameter
18 mm outer diameter
- Sleeve 10 mm inner diameter
23 mm outer diameter



Fitting

Fitting the armature



1. Position the plate (1).
2. Press on the grooved ball bearing (2).
3. Position the sealing ring (3).
4. Press on the grooved ball bearing (3).
5. Position the sealing ring (4).

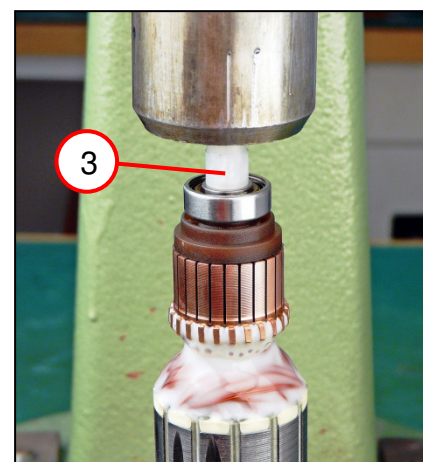
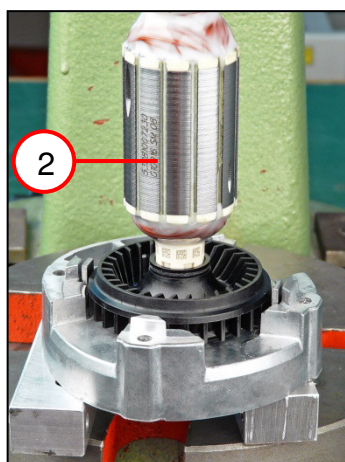
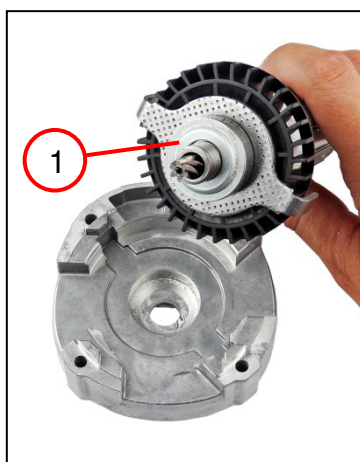
Tools:

- Arbor press
- Sleeve 13 mm inner diameter
26 mm outer diameter
- Sleeve 7 mm inner diameter
13 mm outer diameter



Fitting

Fitting the armature



1. Apply a layer of grease to the sealing ring.
2. Position the sealing ring (1).
3. Press in the armature (5).
4. Press on the magnet (3).

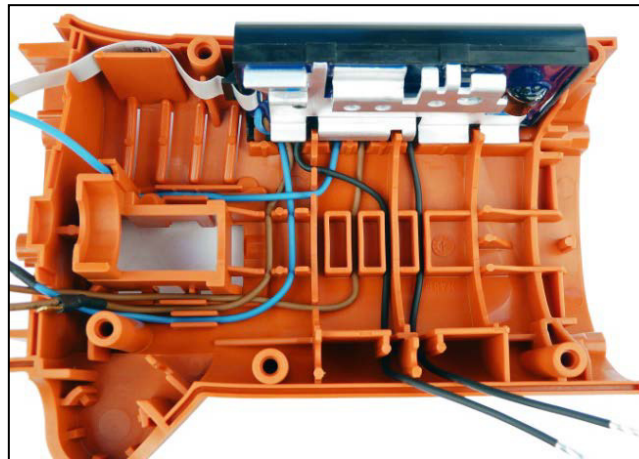
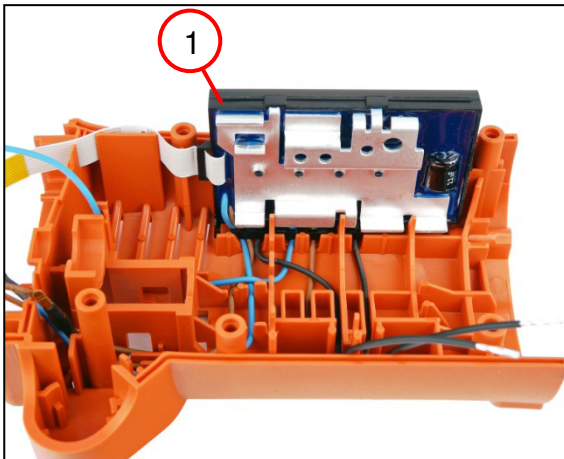
Tools:

- Arbor press



Fitting

Fitting the electronics

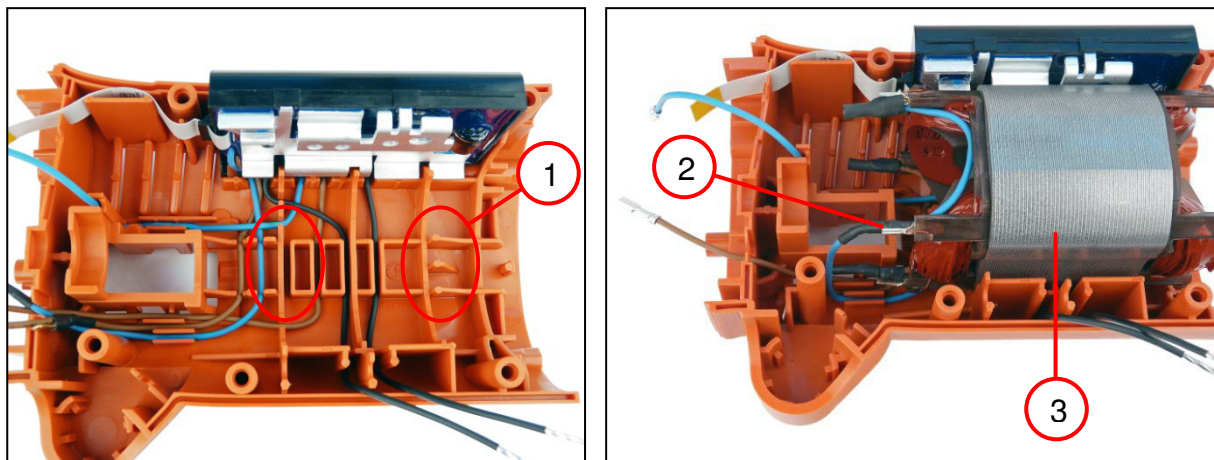


1. Position the electronics (1).
2. Route the cables as shown in the connection diagram.



Fitting

Fitting the stator

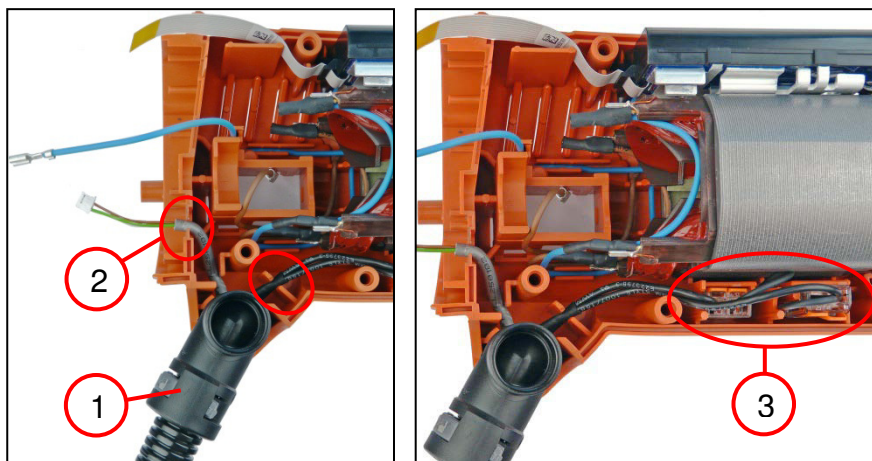


1. Connect the cables (2) to the stator as shown in the connection diagram.
2. Position the stator (3) in the opening (1) in the correct position.



Fitting

Fitting the electronics

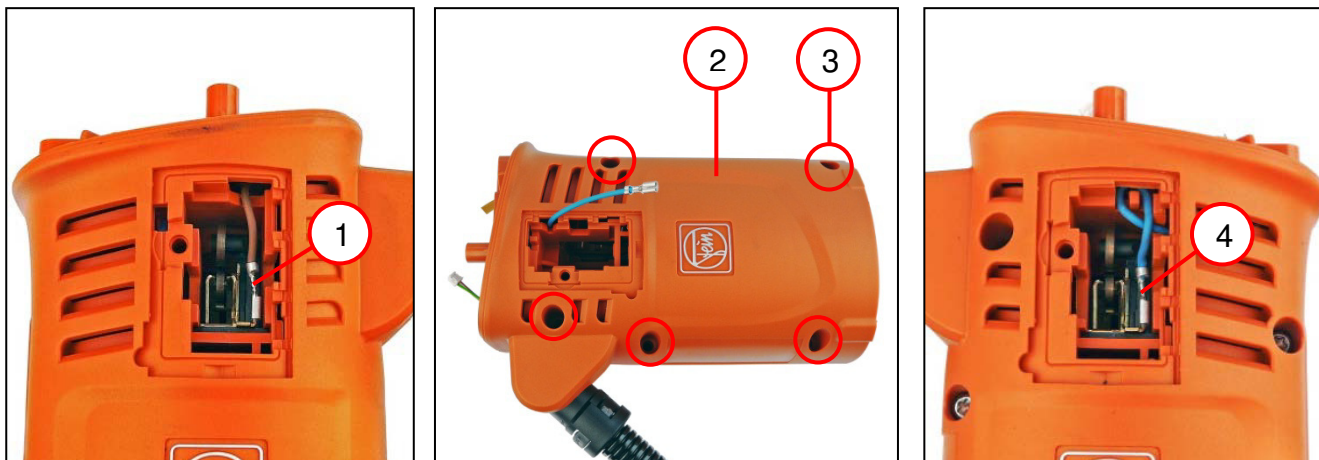


1. Position the connecting piece (1).
2. Lay the two connecting cables (2).
3. Connect the cables (3) to the connectors as shown in the connection diagram.
4. Position the connectors in the respective opening.



Fitting

Fitting the carbon brush holders



1. Connect the brown cable (1).
2. Position the housing half (2).
3. Screw in the five screws (3).
4. Connect the blue cable (4).

Tools:

- Long-nosed pliers



Fitting

Fitting the intermediate gearbox

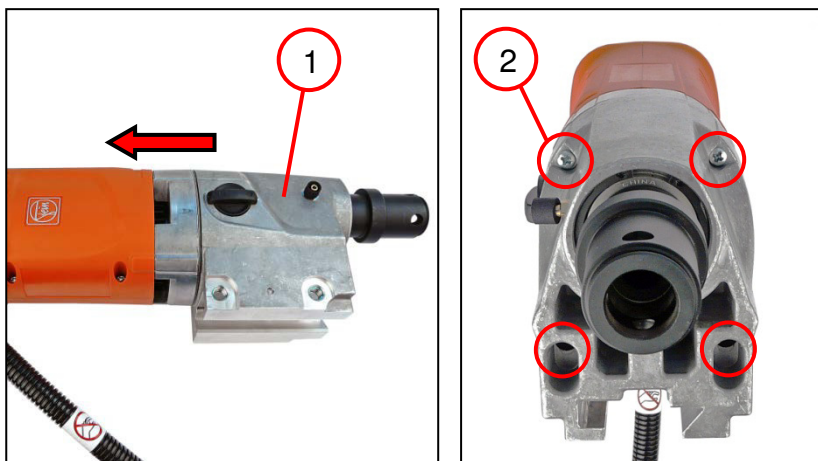


1. Position the air guide ring (1).
2. Fit the intermediate gear box (2) with armature.



Fitting

Fitting the gearbox housing



1. Place the gearbox housing on the drill motor.
2. Screw in the four screws (2).

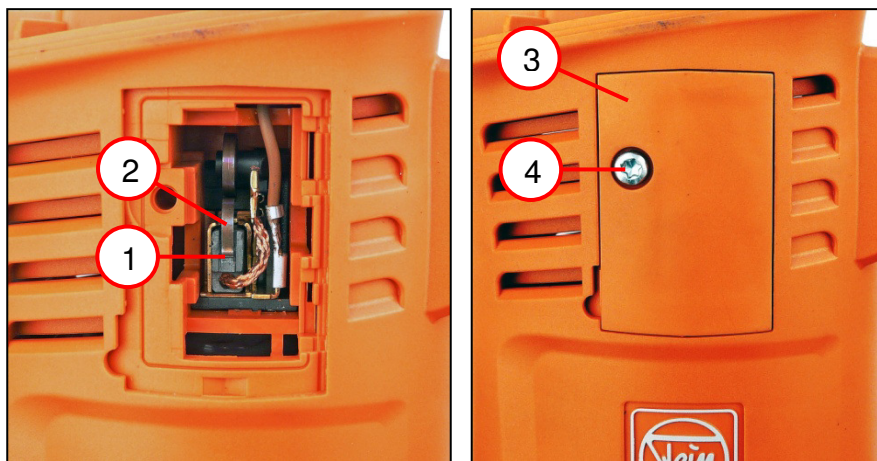
Tools:

- Torx T20



Fitting

Assembling carbon brushes



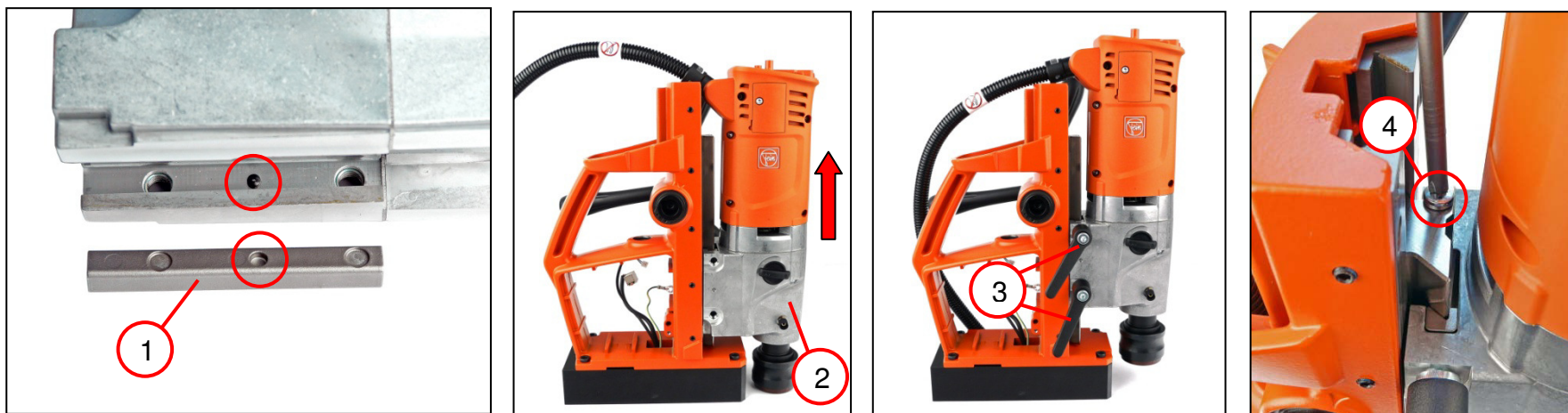
1. Insert the carbon brush (1) in the correct position [on both sides].
2. Place the spring (2) on the carbon brush [on both sides].
3. Connect the carbon brush [on both sides].
4. Fit the cover (3) [on both sides].
5. Screw in the screw (4) [on both sides].

Tools:

- Long-nosed pliers
- Assembly aid
- Torx T15

Fitting

Fitting the gearbox housing



1. Insert the pressure piece (1).
2. Slide the drill motor (2) into the guide.
3. Screw in the two levers (3).
4. Screw in the fillister head screw (4).

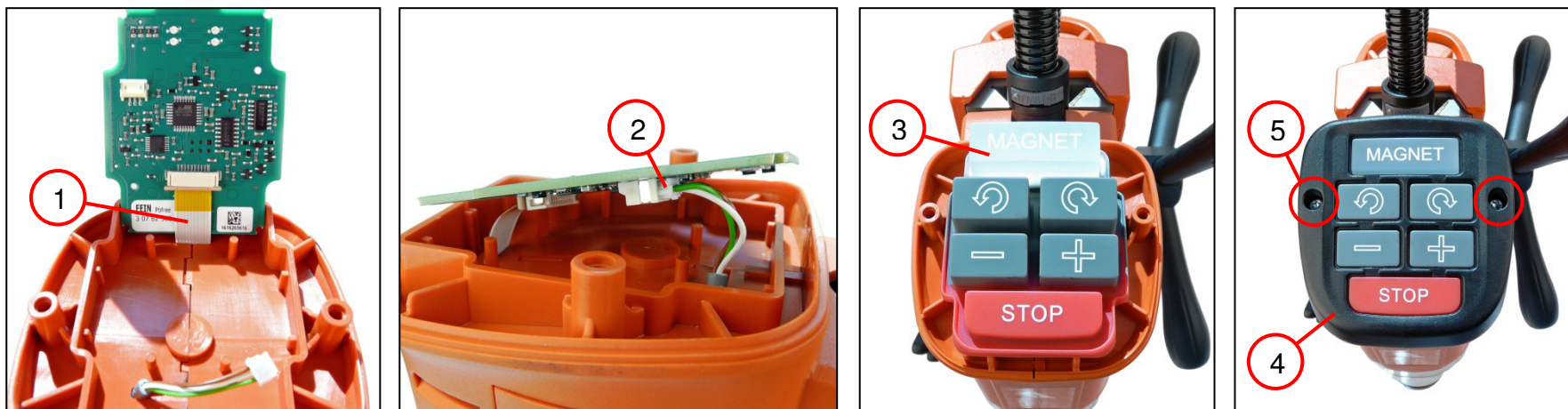
Tools:

- Cross-tip screwdriver



Fitting

Removing the control panel



1. Insert the ribbon cable (1) and connect the plug.
2. Connect the plug (2).
3. Add the switch insert (3).
4. Position the cover (4).
5. Screw in the two screws (5).

Tools:

- Torx T20

Connection diagram
Esquemade conexiones
Schémade connexion
Схема соединений
接线图

Esquema de conexiones
Schémade connexion
Схема соединений
接线图

