

## BSS 2.0E

### Repair instructions





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# BSS 2.0E



## 1. Models described

These instructions describe how to repair the following models:

Model	Order number
BSS 2.0E	7 230 33 00 23 0



## 2. Technical data

### Technical data

The complete technical data can be found in the operating instructions for the specific 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](http://www.fein.com)



### 3. Notes and requirements

#### 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 employers' liability insurance associations are to be observed when commissioning.

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

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



## 4. Tools required

### Standard tools

Hex key	2mm; 2.5mm; 3mm; 4mm
Plastic mallet	
Torx screwdriver	T10; T15; T20
Slotted screwdriver	
Phillips head screwdriver	
Circlip pliers	
Punch	2.8mm; 4.5mm; 5.7mm; 5.9mm
Arbor press	
Cable hooks	
Sleeves	4.5mm internal Ø 7mm internal Ø 12mm internal Ø 55mm internal Ø
Ball bearing support	19mm; 26mm
Internal puller	8-12mm
Puller	60x50mm
Feeler gauge	0.1-0.15mm
Pressure piece	Ø 6.8mm; Ø 11mm

### Special tool

Assembly aid	6 41 22 108 00 0
Drawing-off socket cap	6 41 04 150 00 8
19mm chuck cone	6 41 07 019 00 7
26mm chuck cone	6 41 07 026 00 0



**5. Lubricants and auxiliary substances required**

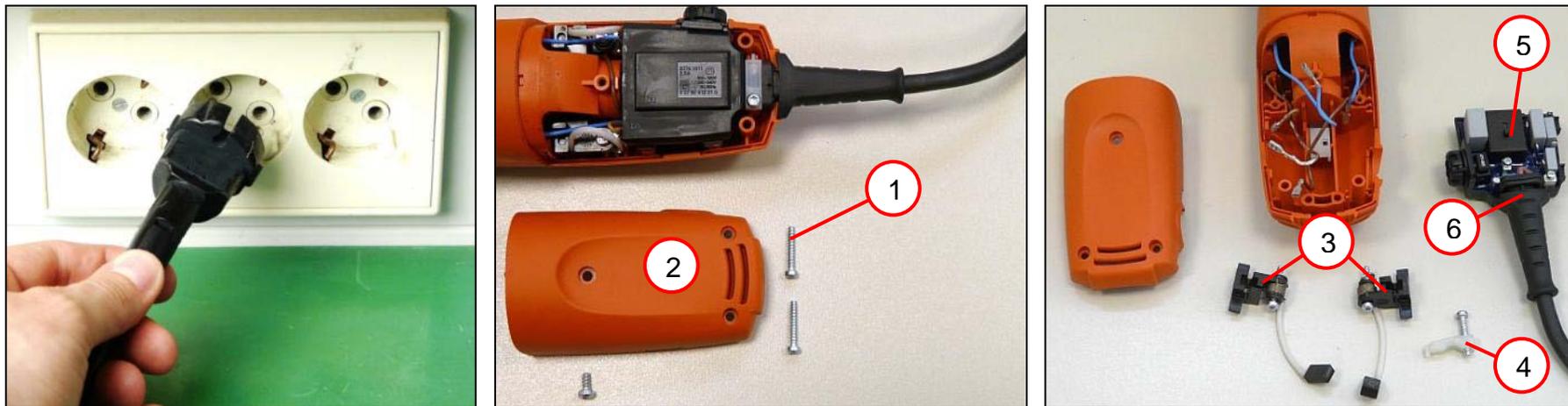
**Lubricants**

Grease	0 40 101 0100 4	8 g	Gearbox
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## 6. Disassembly

### Disassembling the motor



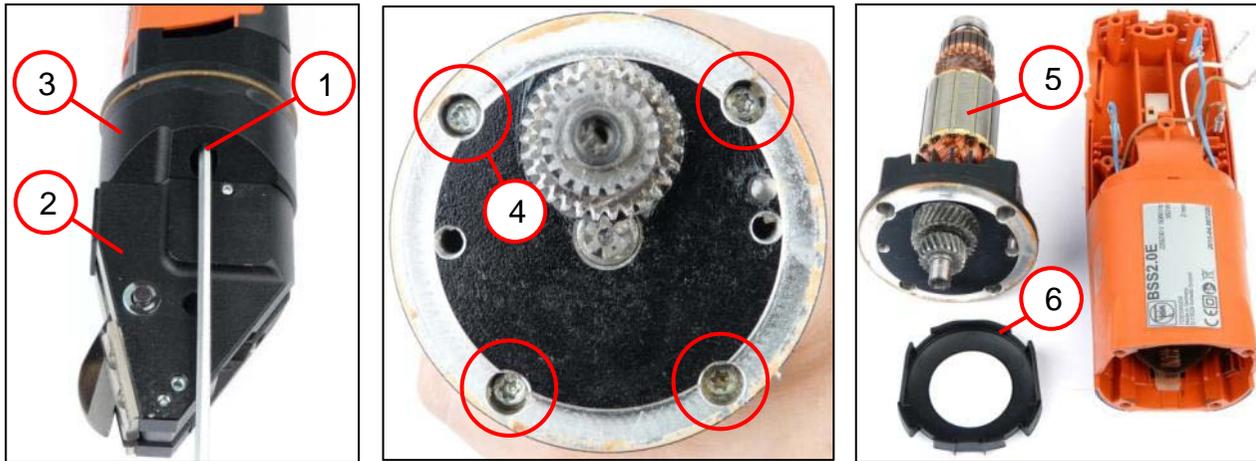
1. Pull the plug.
2. Remove the three screws (1) and take off the cover (2).
3. Unscrew the brush holder (3).
4. Unscrew the cable clamping piece (4).
5. Unplug the screw connections between motor and electronics.
6. Remove electronics (5).
7. Disconnect the supply cable (6).

**Tool:**

- Phillips head screwdriver
- Torx T15

## 6. Disassembly

### Separating motor and gearbox



1. Remove the two cylinder head screws (1).
2. Remove the housing (2) together with the adapter (3).
3. Remove the four screws (4) on the intermediate flange.
4. Remove the armature with intermediate flange (5).
5. Remove the air guide ring (6).

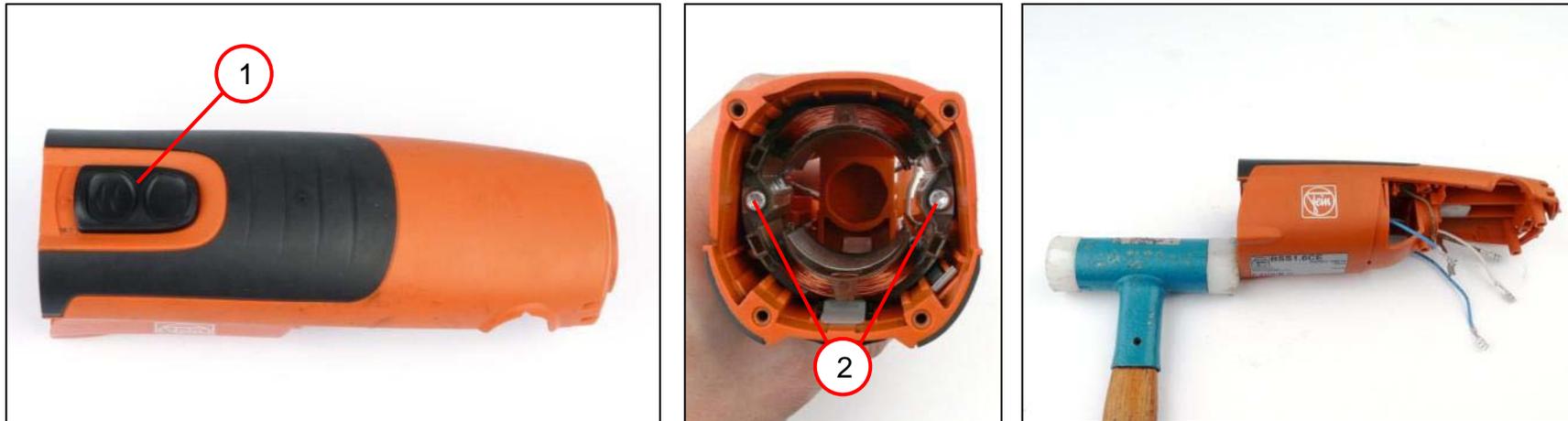
**Tool:**

- 4mm hex key
- Torx T15



## 6. Disassembly

### Disassembling the stator



1. Lift up slide switch (1) with a slotted screwdriver.
2. Unscrew the two screws (2).
3. Drive field coil out of the motor housing by tapping it gently with the mallet.

#### Tool:

- Slotted screwdriver
- Torx T15
- Plastic mallet

## 6. Disassembly

### Disassembling the stator

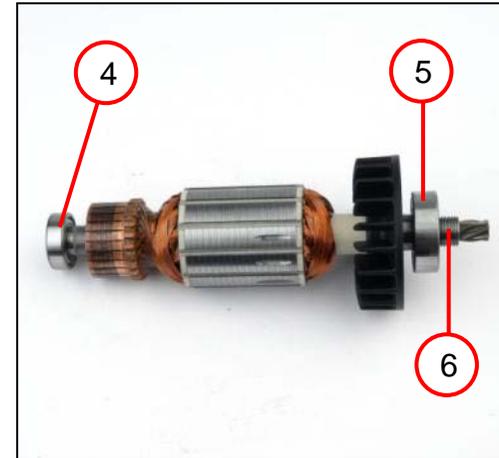
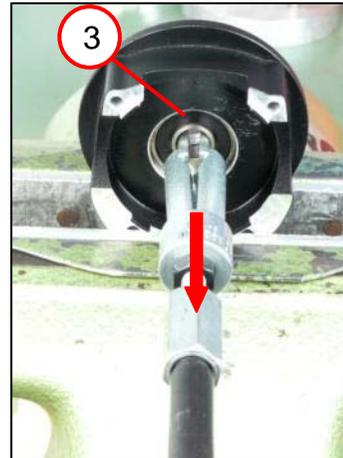


1. Remove the contact spring (1).
2. Remove the control rod (2).
3. Disconnect the four cables (3) from the stator.



## 6. Disassembly

### Disassembling the armature and Intermediate bearing



1. Push the armature (1) out of the intermediate bearing.
2. Remove the gearbox shaft (2) from the intermediate bearing using a mallet.
3. Remove the grooved ball bearing (3) from the intermediate bearing.
4. Pull off grooved ball bearing (4).
5. Remove the grooved ball bearing (5) with the sealing ring (6).

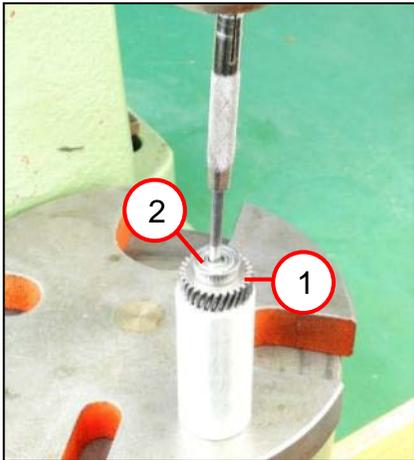
#### Tool:

- Arbor press
- ø 5.9mm punch
- Sleeve with ø 55mm interior
- Plastic mallet
- Slide hammer
- 8-12mm internal puller
- 26mm, 19mm chuck cone
- Drawing-off socket cap



## 6. Disassembly

### Disassembling the gear-wheel



1. Press the gear-wheel (1) and the grooved ball bearing (2) together from the shaft.

**Tool:**

- $\varnothing$  4.5mm punch
- Sleeve with  $\varnothing$ 18mm interior



## 6. Disassembly

### Disassembling the gearbox



1. Unscrew the three screws (1) and remove the adapter (2).
2. Press out the needle bearing (3).

#### **CAUTION!**

Risk of injury due to tensioned spiral spring.

☞ Hold the plate (5) when loosening the screws (4).

3. Remove the four screws (3).
4. Remove the plate (5) and the spiral spring.
5. Remove the set screws (6) on both sides.

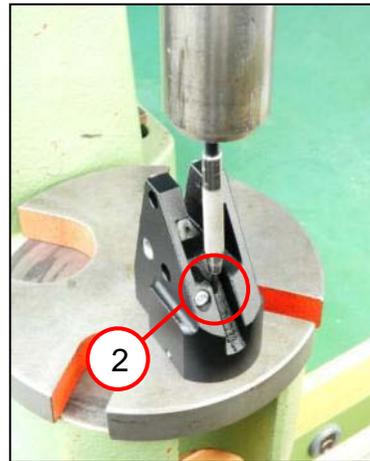
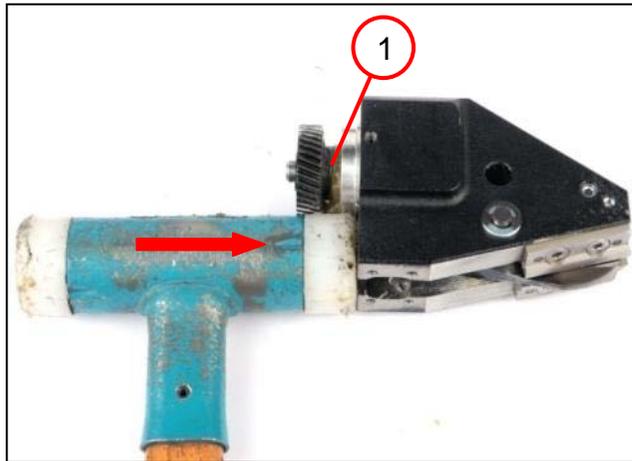
#### **Tool:**

- 2mm; 3mm hex key
- Pressure piece  $\varnothing$  11mm
- Torx T10
- Plastic mallet



## 6. Disassembly

### Disassembling the gearbox



1. Remove the eccentric shaft (1).
2. Press the needle bearing (2) out of the housing.

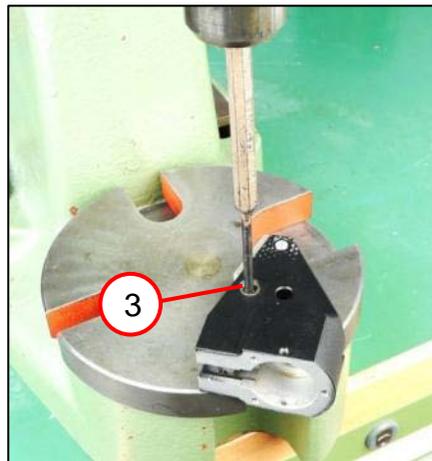
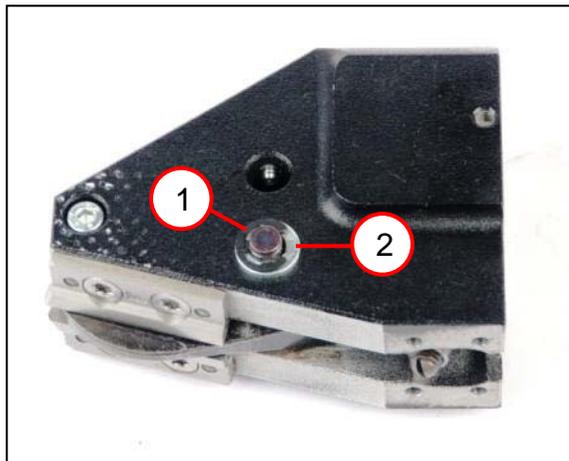
**Tool:**

- Plastic mallet
- Punch  $\varnothing$  2.8mm



## 6. Disassembly

### Disassembling the tool head



1. Remove the circlips (1) on both sides.
2. Remove the washers (2) on both sides.
3. Remove the bolt (3).
4. Remove the cutter blades (4) with the compensating discs.

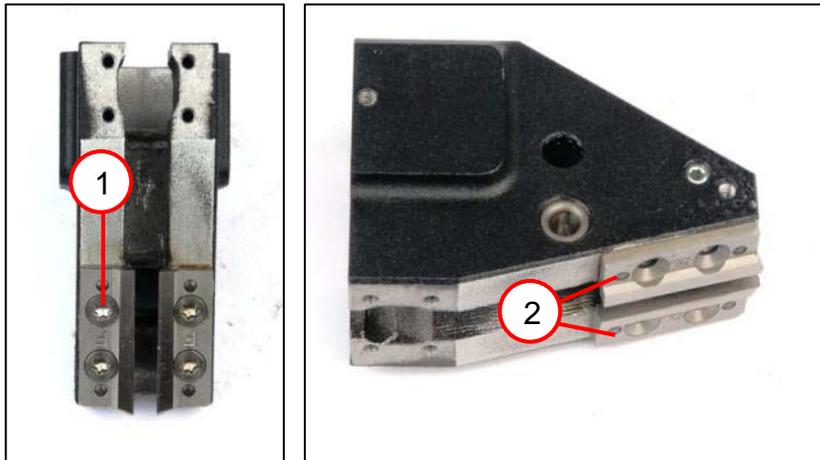
**Tool:**

- Circlip pliers
- Arbor press
- Punch  $\varnothing$  5.7mm



## 6. Disassembly

### Disassembling the tool head



1. Remove the four screws (1).
2. Remove two cutting jaws (2).

**Tool:**  
- Torx T20



## 6. Disassembly

### Disassembling the tool head



1. Unscrew the cylinder head screws (1).
2. Unscrew the set screw (2).
3. Remove the hand guard (3).

**Tool:**  
- 3mm; 2.5mm hex key



## 6. Disassembly

### Disassembling the eccentric shaft



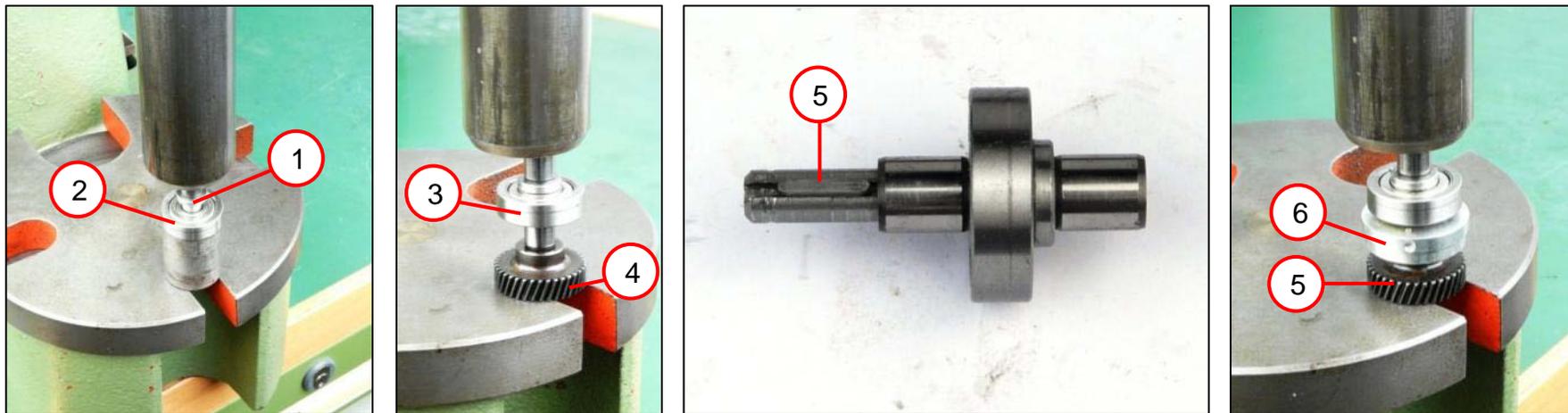
1. Remove the circlip (1).
2. Using a pull-off tool, remove the gear-wheel (2).
3. Remove the cover (3).
4. Remove the feather key (4).
5. Remove the grooved ball bearings (5) from the eccentric shaft together with the sleeve (6).

#### Tool:

- Circlip pliers
- 60x50mm puller
- Arbor press
- $\varnothing 6.8\text{mm}$  pressure piece

## 7. Assembly

## Assembling the eccentric shaft



1. Press the ball bearing (2) onto the eccentric shaft (1).
2. Press the bush (3) onto the eccentric shaft using the gear-wheel (4).
3. Remove the gear-wheel (4) by hand.
4. Place the feather key (5) onto the eccentric shaft.
5. Slide the cover (6) onto the eccentric shaft, as shown in the image.
6. Press the gear-wheel (5) onto the eccentric shaft.

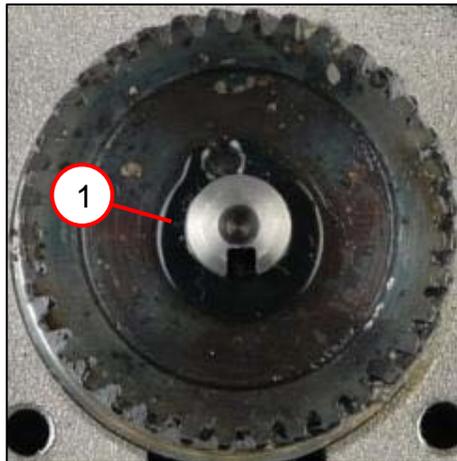
**Tool:**

- Arbor press
- Sleeve with  $\varnothing 12\text{mm}$  interior



## 7. Assembly

### Assembling the eccentric shaft

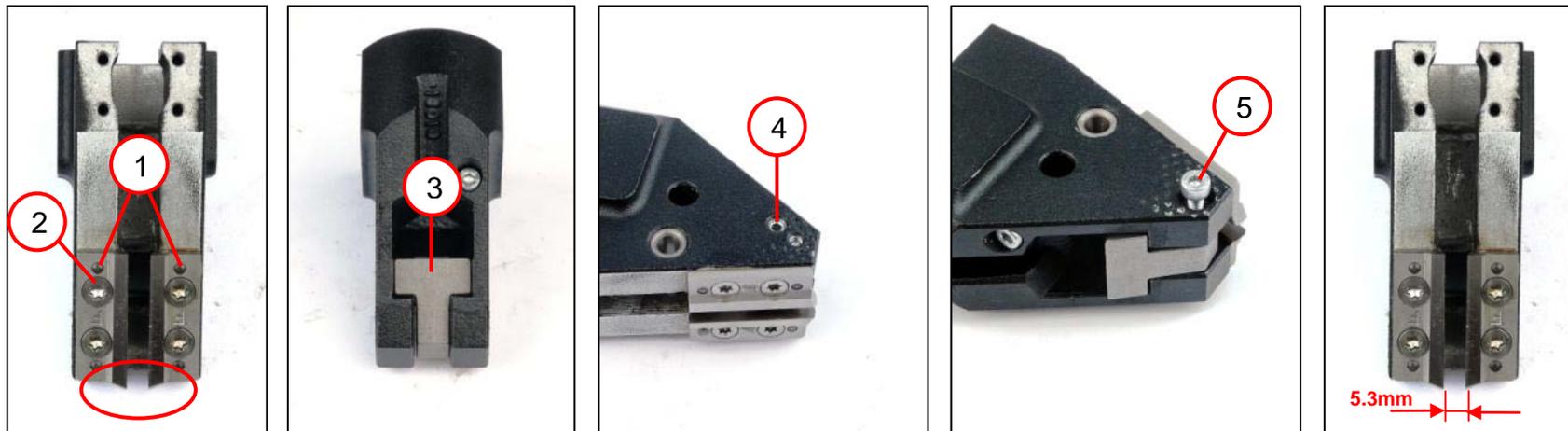


1. Secure the gear-wheel with the circlip (1).

**Tool:**  
- Circlip pliers

## 7. Assembly

## Assembling the tool head



1. Secure the two cutting jaws (1) with the four screws (2).  
 ☞ The tip of the respective cutting jaw should be pointing in the working direction.
2. Insert the hand guard (3).
3. Install the set screw (4) and the cylinder head screw (5).
4. Set the cutting jaw distance (1) to 5.3 mm using the set screw (4).
5. Tighten the cylinder head screw (5).

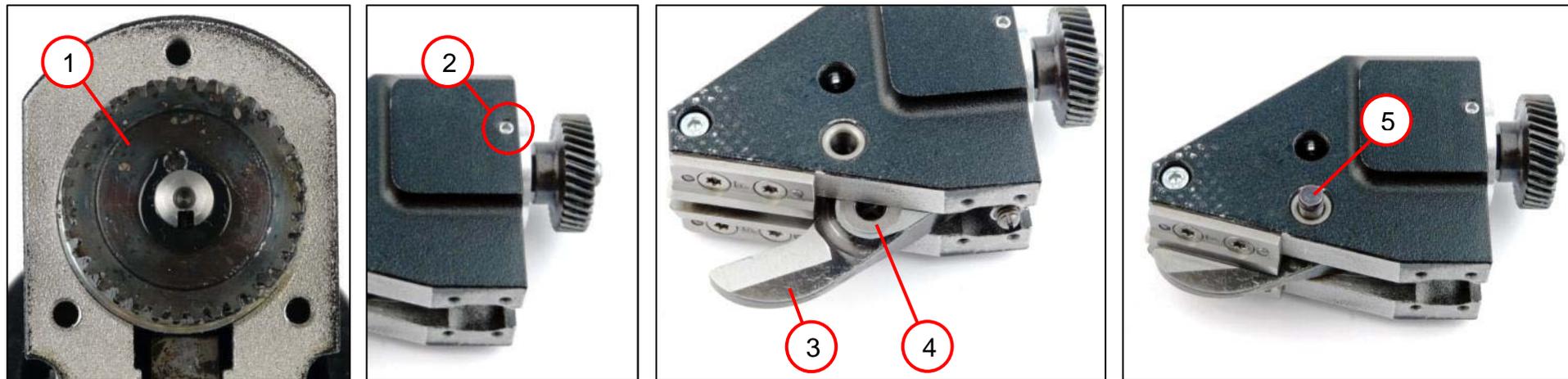
**Tool:**

- Torx T15
- 2.5mm; 3mm hex key



## 7. Assembly

### Assembling the tool head



1. Insert the eccentric shaft (1).
2. Tighten the straight pin (2) on each side.
3. Insert the cutter blade (3) with discs (4).
4. Use the compensating discs to adjust the cutter blade so that it does not move.  
 ☞ Replace the discs if necessary.
5. Insert the blade bolt (5).

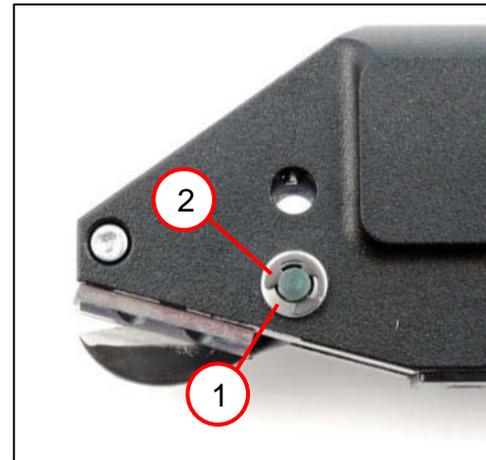
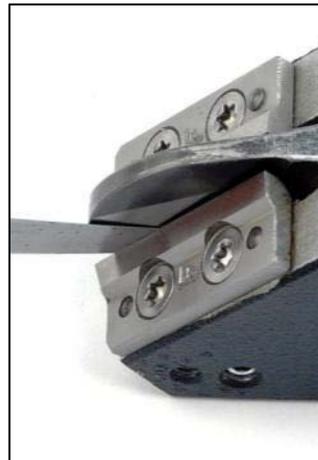
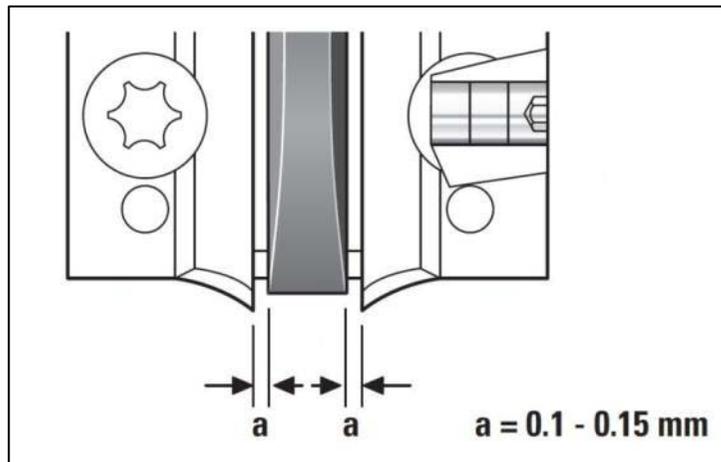
**Tool:**

- 2mm hex key
- Arbor press



## 7. Assembly

### Assembling the tool head



1. Check the distance between the cutting jaws and the cutter blade.  
☞ If necessary, repeat work steps four and five on page 22.
2. Position the discs (1) on both sides.
3. Secure the blade bolts with the two circlips (2) on both sides.

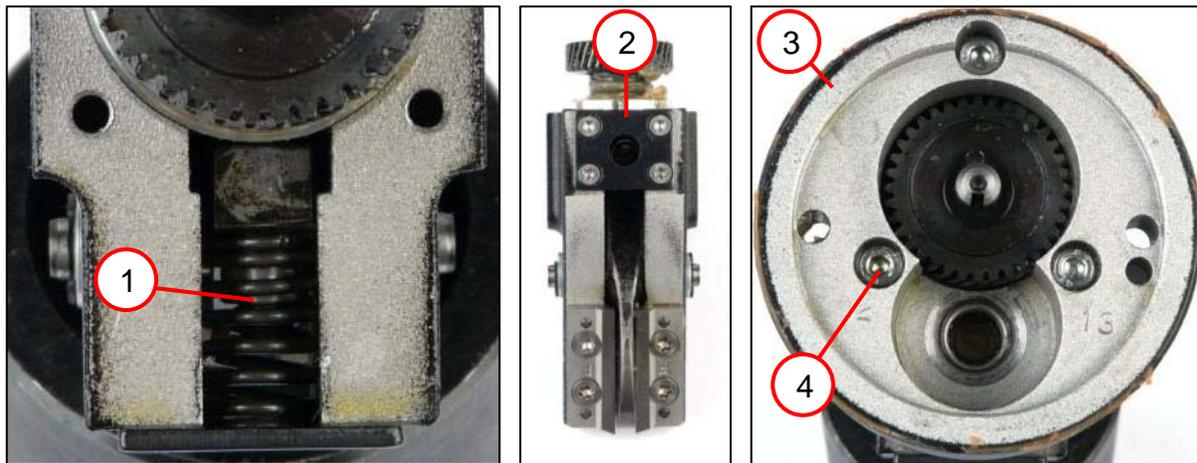
#### Tool:

- Feeler gauge
- Circlip pliers



## 7. Assembly

### Assembling the tool head



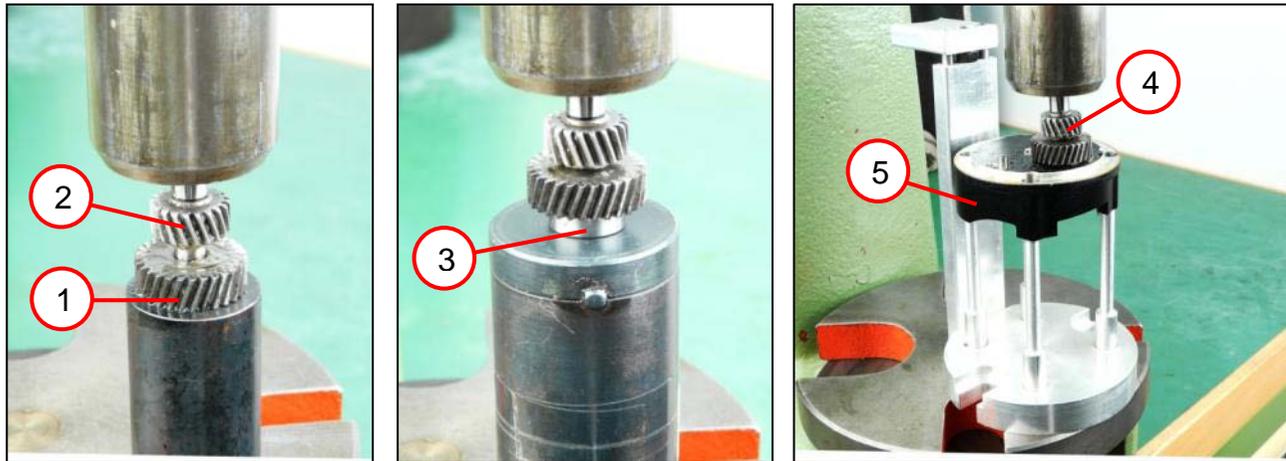
1. Insert the spiral spring (1).
2. Position the plate (2) on the spiral spring and secure it with the four screws.
3. Fill the adapter (3) with 8g of grease.
4. Attach the adapter (3) to the housing and secure it with the three cylinder head screws (4).

**Tool:**

- Torx T10
- 2mm; 3mm hex key
- Grease 0 40 101 0100 4

## 7. Assembly

### Assembling the gearbox



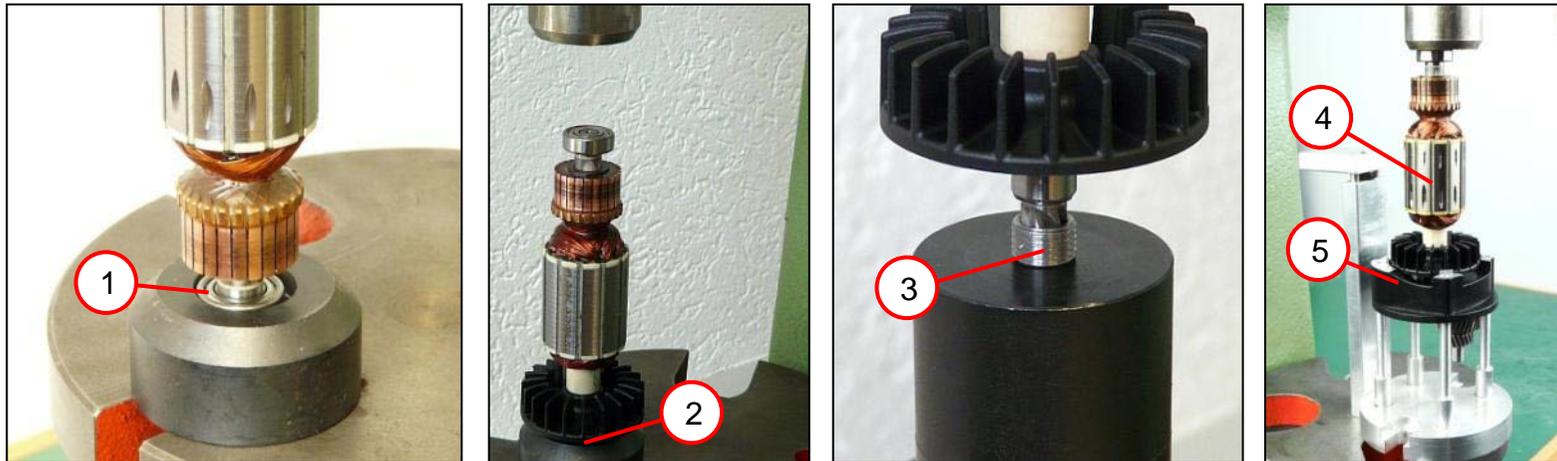
1. Press the gear-wheel (1) onto shaft (2).
2. Press the grooved ball bearing (3) onto the shaft.
3. Press the shaft (4) onto the intermediate bearing (5).

**Tool:**

- Arbor press
- Assembly aid  
6 41 22 108 00 0

## 7. Assembly

### Assembling the armature



1. Press the ball bearing (1) onto the collector side of armature.
2. Press the ball bearing (2) onto the side of the fan wheel.
3. Press the sealing ring (3) onto the side of the fan wheel.
4. Press the complete armature (4) into intermediate bearing (5).

#### Tools:

- Arbor press
- Sleeve:  $\varnothing$  Inside 7 mm
- Ball bearing support:  
19 mm; 26 mm
- Assembly aid  
6 41 22 108 00 0

## 7. Assembly

### Assembling the stator

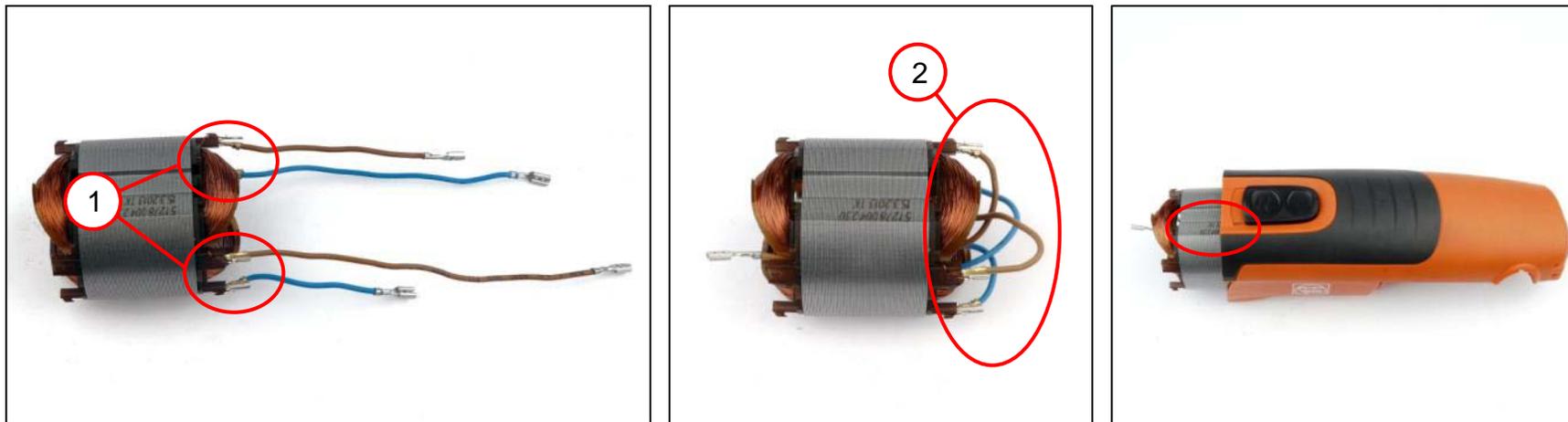


1. Slide the control rod (1) into the motor housing from behind.
2. Install the slide switch (2).
3. Position the contact spring (3) in the motor housing.



## 7. Assembly

### Assembling the stator



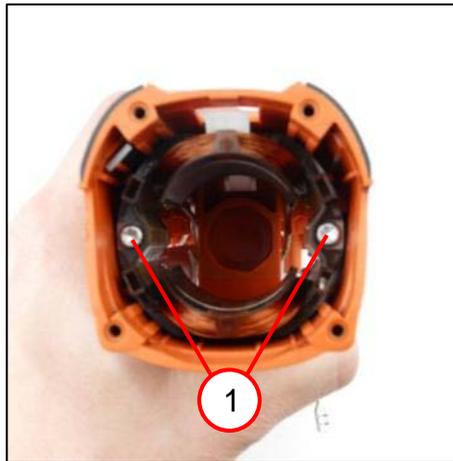
1. Connect the four cables (1) to the stator, as shown in the first image.
  - ☞ Mind the cable length when connecting.
2. Insert the cables into the inside of the stator (2).
3. Install the stator, as shown in the third image.
  - ☞ Assemble the stator so that the identification number is located on the side of the slide switch.

**Tool:**  
- Hook



## 7. Assembly

### Assembling the stator

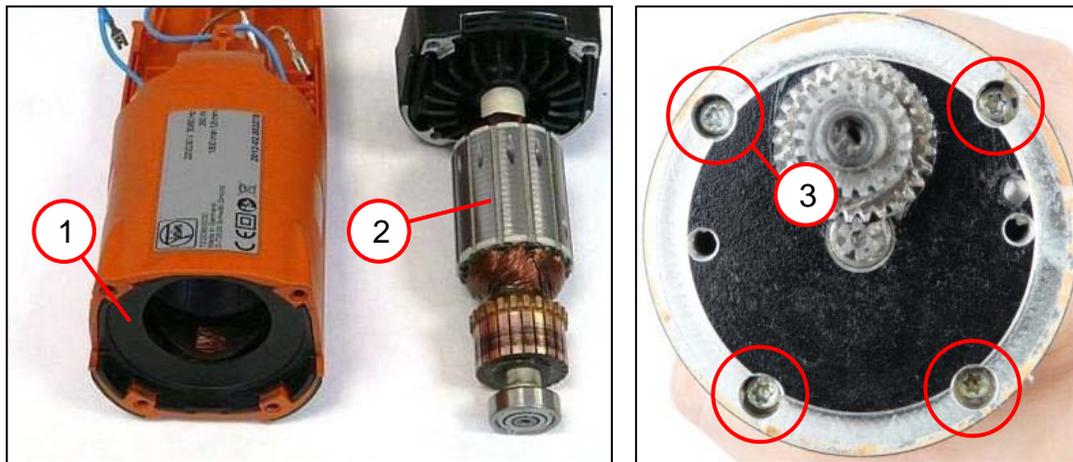


4. Screw down the stator with the two screws (1) [ $1.8 \pm 0.1\text{Nm}$ ].

**Tool:**  
- Torx T15

## 7. Assembly

### Installing the motor/field coil



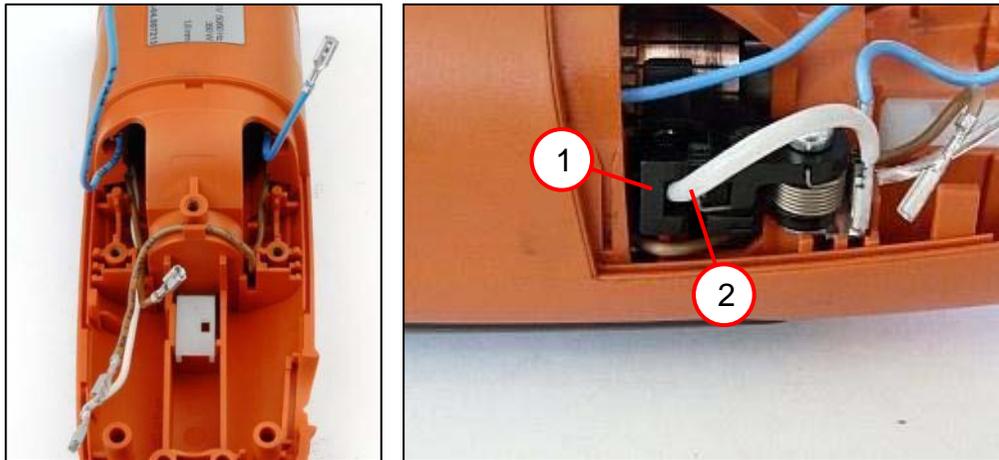
1. Insert the air guide ring (1) into the housing.
2. Insert the armature with intermediate bearing (2) into the motor housing.
3. Fasten the intermediate bearing with the four screws (3).

**Tool:**

- Torx T15

## 7. Assembly

### Assembling the stator



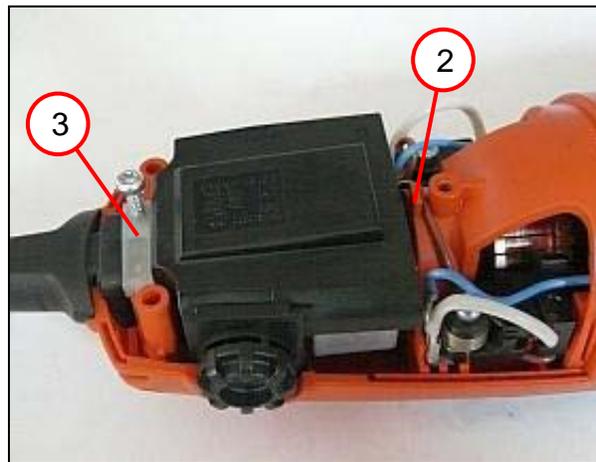
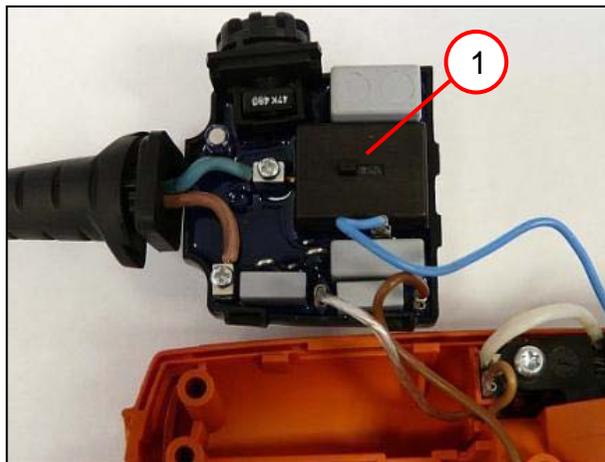
1. Route the cables as shown in the image.
2. Install the brush holder (1) on both sides and insert the carbon brush (2).
  - ☞ Connect the carbon brush and stator according to the connection diagram.

**Tool:**  
- Torx T15



## 7. Assembly

### Assembling the electronics



1. Connect the motor cables and the cable with the plug to the electronics (1).
2. Insert the electronics into the housing (2).
  - ☞ Ensure that the switch engages in the control rod.
3. Screw down the fit strain relief (3) [ $0.6 \pm 0.05\text{Nm}$ ].

**Tool:**

- Phillips head screwdriver
- Torx T15



## 7. Assembly

### Assembling the electronics



1. Attach the cover (1) and screw down [ $1.5 \pm +0.1\text{Nm}$ ].
2. Make sure the cable is not pinched!

**Tool:**  
- Torx T15



## 7. Assembly

### Assembling the housing with the tool head



1. Attach the housing with the tool head (1) to the intermediate bearing.
2. Fasten the housing with tool head using the two screws (2) [ $5 \pm 0.2\text{Nm}$ ].

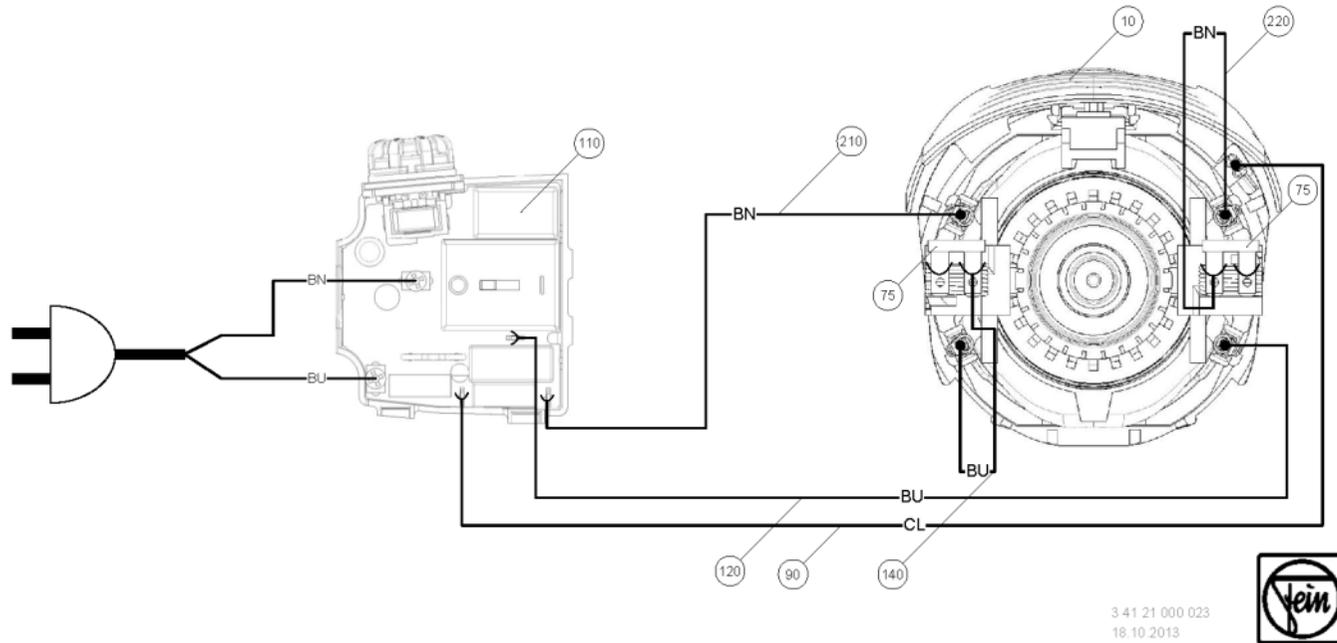
**Tool:**

- 4mm hex key
- Torx T15



## 8. Connection diagram

<b>Anschlussplan</b>	<b>7 229 36 – FMM250Q</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>	<b>7 230 31 – BSS1.6E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
<b>Connection diagram</b>	<b>7 229 37 – FMM250Q</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>	<b>7 230 32 – BSS1.6CE</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
<b>Esquemade conexiones</b>	<b>7 229 40 – FMM250</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50Hz</b>	<b>7 230 33 – BSS2.0E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
<b>Schémade connexion</b>	<b>7 229 43 – FMT250Q</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>	<b>7 230 34 – BLS1.6E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
<b>Схема соединёний</b>	<b>7 229 44 – FMT250</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>	<b>7 230 35 – BLS2.5E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
<b>接线图</b>				<b>7 232 38 – BLK1.6E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
				<b>7 232 39 – BLK1.6LE</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
				<b>7 232 40 – BLK2.0E</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
				<b>7 232 41 – BLK1.3TE</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>
				<b>7 232 42 – BLK1.3CSE</b>	<b>100V - 110V/ 220V - 230V</b>	<b>50/60Hz</b>



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