



**Repair instructions**



**Applies to:**

KBE 52-2 M, JME 202 M



## Contents

## Contents

Contents.....	2
1 Models described .....	5
2 Technical data .....	6
3 Symbols used.....	7
4 Notes and requirements .....	8
5 Safety instructions .....	9
6 Tools, lubricants and auxiliary substances required.....	11
6.1 Standard tools .....	11
6.2 Special tools.....	12
6.3 Lubricants and auxiliary substances required .....	12
7 Test and diagnostics options .....	13
8 Disassembly.....	14
8.1 Removing the container.....	14
8.2 Removing the motor housing.....	15
8.2.1 Removing the carbon brushes.....	15
8.2.2 Removing the drill motor .....	16
8.2.3 Removing the intermediate gear box.....	18
8.2.4 Disassembling the intermediate gear box.....	19
8.2.5 Disassembling the armature.....	20
8.2.6 Removing the motor housing.....	21
8.3 Disassembling the drill chuck .....	23
8.3.1 Removing the mounting shaft.....	23
8.3.2 Disassembling the mounting shaft.....	25
8.4 Removing the gearbox housing .....	27
8.4.1 Removing the gearbox parts .....	27
8.4.2 Removing the shaft .....	30
8.4.3 Disassembling the shaft .....	31
8.4.4 Disassembling the gearbox parts .....	32
8.5 Disassembling the drill jig.....	35
8.5.1 Removing the control panel.....	35
8.5.2 Disassembling the control panel.....	36
8.5.3 Removing the electronics .....	37
8.5.4 Disassembling the mains cable .....	39





## Contents

8.5.5	Removing the magnetic base .....	41
8.5.6	Disassembling the magnetic base .....	42
8.5.7	Removing the protective hose .....	43
8.5.8	Disassembling the protective hose .....	44
8.5.9	Removing the guide .....	45
8.5.10	Removing the spider .....	48
8.5.11	Disassembling the spider .....	49
9	Assembly .....	50
9.1	Assembling the drill jig .....	50
9.1.1	Assembling the spider .....	50
9.1.2	Positioning the spider .....	51
9.1.3	Positioning the guide .....	52
9.1.4	Assembling the protective hose .....	55
9.1.5	Positioning the protective hose .....	56
9.1.6	Assembling the magnetic base .....	57
9.1.7	Positioning the magnetic base .....	58
9.1.8	Assembling the electronics .....	59
9.1.9	Fitting the network cable .....	61
9.1.10	Assembling the control panel .....	63
9.1.11	Positioning the control panel .....	64
9.2	Assembling the drill chuck .....	66
9.2.1	Assembling the mounting shaft .....	66
9.2.2	Positioning the mounting shaft .....	68
9.3	Assembling the gearbox housing .....	69
9.3.1	Assembling the gearbox parts .....	69
9.3.2	Assembling the shaft .....	72
9.3.3	Positioning the shaft .....	73
9.3.4	Positioning the gearbox parts .....	74
9.4	Assembling the motor housing .....	76
9.4.1	Assembling the armature .....	76
9.4.2	Fitting the stator .....	78
9.4.3	Assembling the motor housing .....	81
9.4.4	Assembling the intermediate gear box .....	83
9.4.5	Positioning the intermediate gear box .....	84





## Contents

9.4.6	Positioning the gearbox housing.....	85
9.4.7	Positioning the carbon brushes .....	86
9.4.8	Positioning the drill motor .....	88
9.5	Setting the guide .....	90
9.6	Positioning the container .....	91
10	Inspection following repairs .....	92



**Models described****1 Models described**

These repair instructions describe how to repair the following models:

Model	Material number
KBE 52-2 M	7 270 69 .. ..
JME 202 M	7 270 69 .. ..



**Technical data****2 Technical data****Technical data**

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

**Special tools**

The special tools catalogue can be found in the FEIN electronic information system.

**Lubricants and auxiliary substances**

The lubricants catalogue can be found in the FEIN electronic information system.

**Lists of spare parts**

Lists of spare parts and exploded views are available online in our spare parts catalogue, which can be accessed via the FEIN website.

**Connection diagram**

The connection diagram can be found in the FEIN electronic information system.

**Inspection following repairs**








Further information about the inspection steps required after repairs can be found in the FEIN electronic information system.

**Documents required for further repair work**

- FEIN lubricants catalogue
- FEIN special tools catalogue
- All relevant service communications



**Symbols used****3 Symbols used**

	Refers to measures for avoiding the risk of injuries.
	Caution: Crushing hazard
	ESD warning symbol to identify electrically sensitive components and parts.
	Refers to information or instructions that should be followed. Non-observance can result in damage or malfunctions.
	Read the operating instructions.
	Indicates notes that provide information or instructions that may provide a better understanding and contribute to the more effective use of the product.
	Part of the navigation interface.





## Notes and requirements

### 4 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!**



#### PLEASE NOTE:

Read the operating instructions for the product before carrying out the repair work.

#### 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.

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

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

The relevant accident prevention regulations are to be observed during commissioning.

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

#### Disclaimer

The content of this documentation has been carefully reviewed and produced to the best of our knowledge. C. & E. Fein GmbH assumes no responsibility for the completeness, relevance, quality or correctness of the information provided.

Liability claims against C. & E. Fein GmbH that relate to material or immaterial damage caused by the use or failure to use the information provided or by the use of incorrect or incomplete information are excluded. Claims relating to acts committed intentionally or through gross negligence are categorically excluded.






**Safety instructions**

## 5 Safety instructions


### 5.1 Structure

	<b>SIGNAL WORD FOR THE DANGER CLASSIFICATION.</b>
Type and source of the danger.	
Possible consequences.	
Measure that must be taken in order to avoid this danger.	

### 5.2 Danger classification


**Warning**

This warning refers to a dangerous situation. If the situation is not avoided, this may result in severe injuries or death.

	<b>WARNING!</b>
Type and source of the danger.	
Possible consequences.	
Measure that must be taken in order to avoid this danger.	


**Caution**

This warning refers to a potentially dangerous situation. If the situation is not avoided, this may result in slight or minor injuries. This may also be used as a warning against material damage.

	<b>CAUTION!</b>
Type and source of the danger.	
Possible consequences.	
Measure that must be taken in order to avoid this danger.	

**Please note**

Indicates a potentially harmful situation. If this situation is not avoided, the product or an object in its environment could be damaged.

	<b>PLEASE NOTE:</b>
Type and source of the danger.	
Damage to the product or its environment.	
Measure that must be taken in order to avoid this danger.	



**Safety instructions****5.3 Information**

Indicates notes that provide information or instructions that may provide a better understanding and contribute to the more effective use of the product.

**INFORMATION**

Tip

**5.4 ESD protection**

Damage from electrostatic charge.

Failure to comply with the safety regulations for ESD protection may cause damage to the electronics.

Only perform assembly/disassembly work on electronics at a workstation with ESD protection.

**ESD**

Avoiding the failure of electronics



**Tools, lubricants and auxiliary substances required****6 Tools, lubricants and auxiliary substances required****6.1 Standard tools**

Cross-head screwdriver	PH2
Torx	T15, T20
Slotted screwdriver	125 x 7 mm
Socket head wrench set	
Circlip pliers	
Plastic hammer	
Arbor press	
Drift key	
Long-nosed pliers	
Combination pliers	
Unlocking tool	
Socket wrench	7 mm
Bolt	18 mm
Ball bearing support	19 mm; 26 mm
Sleeve	60 mm inner diameter 85 mm outer diameter 56 mm inner diameter 60 mm outer diameter 36 mm inner diameter 55 mm outer diameter 25 mm inner diameter 35 mm outer diameter 10 mm inner diameter 21 mm outer diameter 15 mm inner diameter 30 mm outer diameter 15 mm inner diameter 25 mm outer diameter 10 mm inner diameter 21 mm outer diameter 21 mm inner diameter 28 mm outer diameter 40 mm inner diameter 54 mm outer diameter 13 mm inner diameter 26 mm outer diameter 26 mm inner diameter 30 mm outer diameter



**Tools, lubricants and auxiliary substances required****6.2 Special tools**

Assembly aid		64122121010
Drawing-off socket cap		64104150000
Chuck cone	19 mm	64107019007
	diameter	64107026000
	26 mm	
	diameter	

**6.3 Lubricants and auxiliary substances required**

Grease	SM 0019	150 g	Gearbox
Grease	SM 0016	n/a	Guide, gear rack



**Test and diagnostics options****7 Test and diagnostics options****Test data**

The permitted parameters for the machine can be found in the FEIN electronic information system.





## 8 Disassembly

### 8.1 Removing the container



#### INFORMATION

The container may contain liquid.

Always drain the container (1) before disassembly.

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





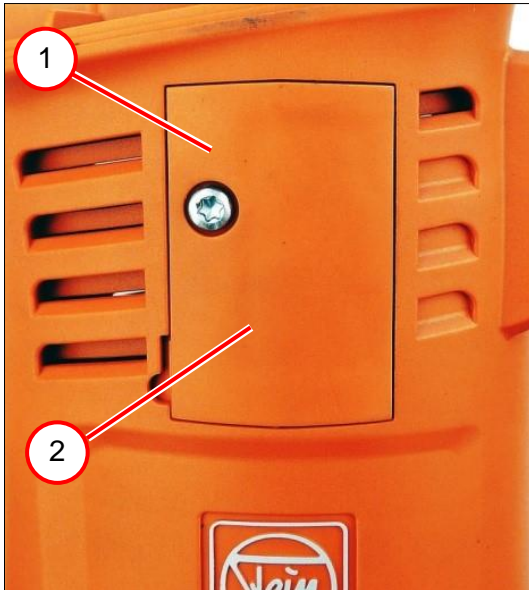
## Disassembly

## 8.2 Removing the motor housing

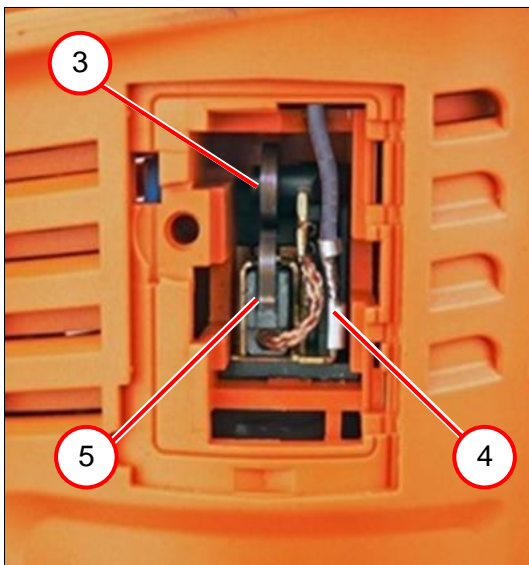
### 8.2.1 Removing the carbon brushes

**Tools:**

- Assembly aid
- Long-nosed pliers



1. Unscrew the screw (1).
2. Remove the cover (2).



3. Lift up the spring (3).
4. Pull off the plug (4).
5. Remove the carbon brush (5).
6. Repeat steps 1 to 5 on the opposite side of the machine.



## Disassembly

### 8.2.2 Removing the drill motor

#### Steps that must be completed:

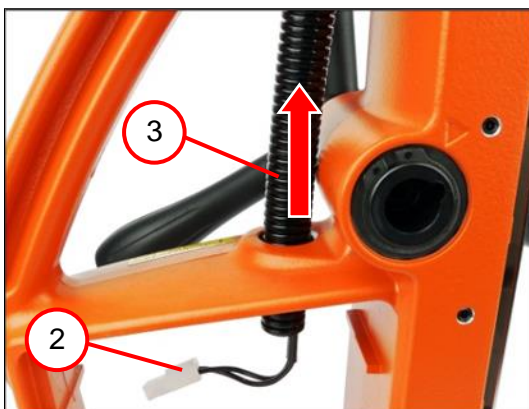
- Removing the container
- Removing the control panel
- Removing the electronics

#### Tools:

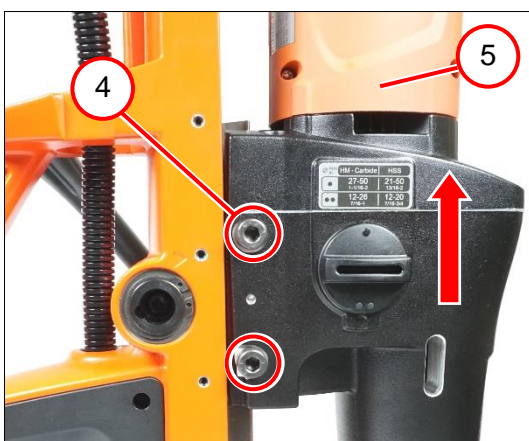
- Slotted screwdriver
- Socket head wrench, 6 mm



1. Unscrew the screw (1).



2. Remove the plug (2).
3. Remove the protective hose (3).



#### CAUTION!

Crushing hazard around the drill motor

Crushing can occur.

Move the drill motor down using the spider before unscrewing the two screws (4).

4. Unscrew the two screws (4).
5. Slide the drill motor (5) out of the guide.





## Disassembly

### 8.2.2 Removing the drill motor



6. Remove the pressure piece (1).





## Disassembly

### 8.2.3 Removing the intermediate gear box

#### Steps that must be completed:

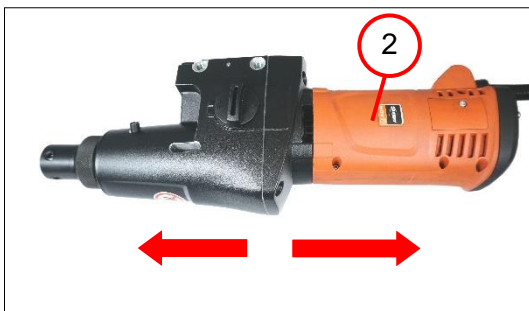
- Removing the carbon brushes
- Removing the drill motor

#### Tool(s):

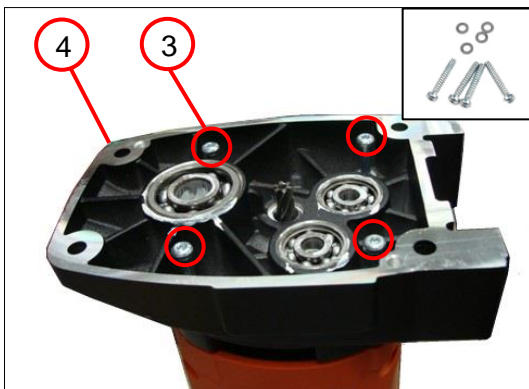
- Torx T20
- Socket head wrench, 5 mm
- Plastic hammer



1. Unscrew the four screws (1).



2. Remove the motor (2).



3. Unscrew the four screws with washers (3).
4. Remove the intermediate gear box (4).





## Disassembly

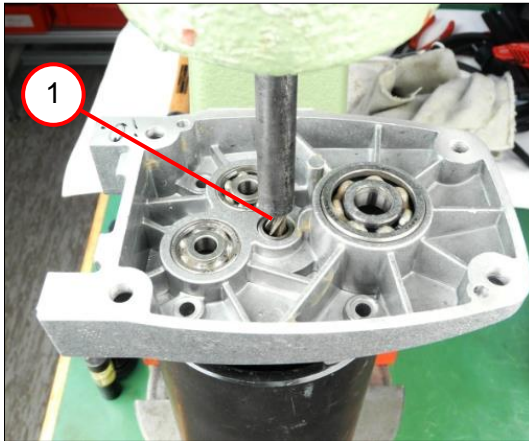
### 8.2.4 Disassembling the intermediate gear box

#### Steps that must be completed:

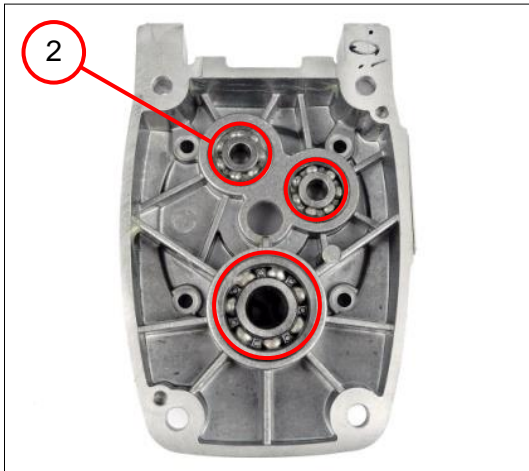
- Removing the intermediate gear box

#### Tool(s):

- Arbor press
- Inner puller
- Sleeve  
60 mm inner diameter, 85 mm outer diameter
- Punch, 7 mm diameter
- Assembly aid



1. Press out the armature (1).



#### **i** INFORMATION

The grooved ball bearings are destroyed during disassembly and must be replaced.

2. Remove the three deep groove ball bearings (2).





## Disassembly

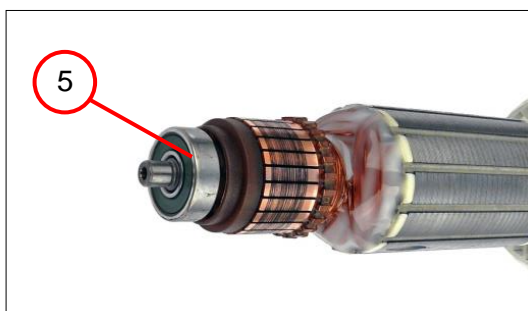
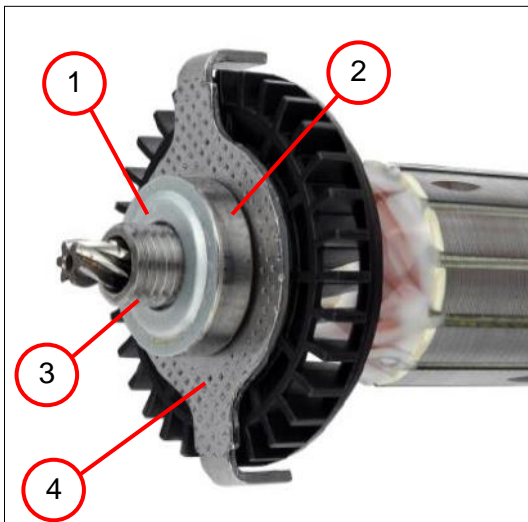
### 8.2.5 Disassembling the armature

#### Steps that must be completed:

- Disassembling the intermediate gear box

#### Tool(s):

- Drawing-off socket cap
- Chuck cone, 26 mm, 19 mm



#### INFORMATION

The grooved ball bearings (2; 5) are destroyed during disassembly and must be replaced.

1. Remove the sealing ring (1).
2. Remove the grooved ball bearing (2) together with the sealing ring (3).
3. Remove the plate (4).
4. Remove the grooved ball bearing (5).





## Disassembly

### 8.2.6 Removing the motor housing

#### Steps that must be completed:

- Removing the intermediate gear box

#### Tools:

- Torx T15



1. Unscrew the two screws (1).
2. Remove the cover (2).



3. Remove the air guide ring (3).

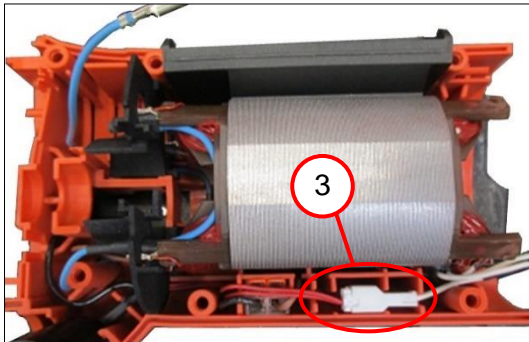


## Disassembly

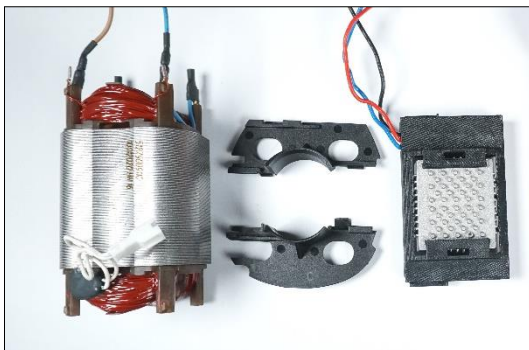
### 8.2.6 Removing the motor housing



4. Unscrew the six screws (1).
5. Remove the housing half (2).



6. Pull off the plug (3).
7. Remove all components from the motor housing.

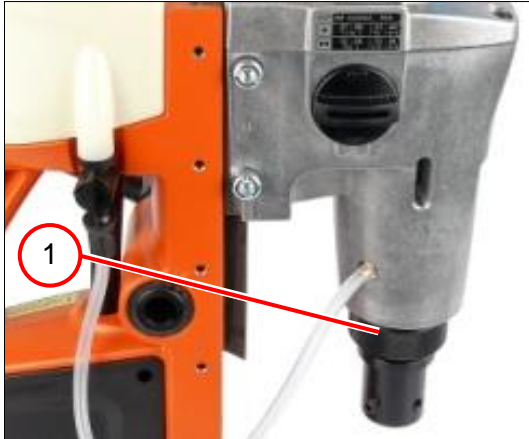


## 8.3 Disassembling the drill chuck

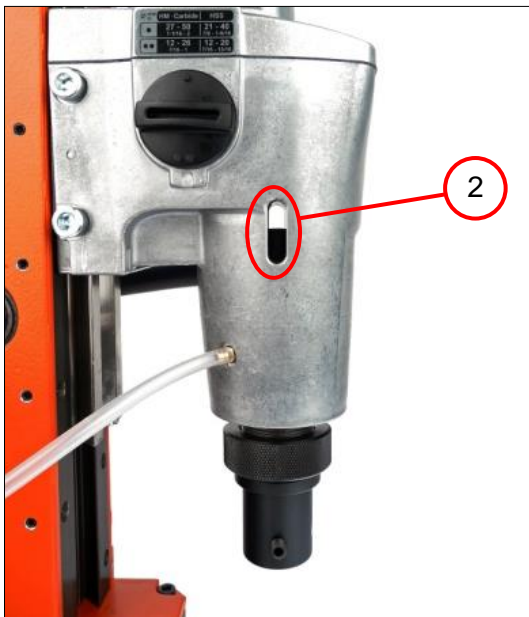
### 8.3.1 Removing the mounting shaft

**Tools:**

- Plastic hammer
- Drift key



1. Unscrew the nut (1) [left-hand thread].



2. Turn the shaft into position (2).





## Disassembly

### 8.3.1 Removing the mounting shaft



3. Remove the shaft (1).





## Disassembly

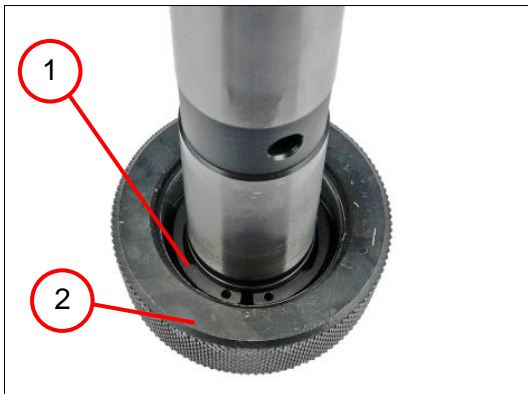
### 8.3.2 Disassembling the mounting shaft

#### Steps that must be completed:

- Removing the mounting shaft

#### Tools:

- Circlip pliers
- Slotted screwdriver



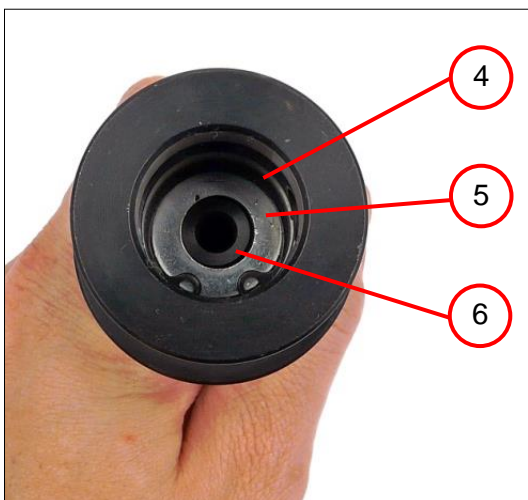
1. Remove the circlip (1).
2. Remove the nut (2).



#### INFORMATION

During disassembly, the sealing ring (3) is destroyed and needs to be replaced.

3. Remove the sealing ring (3).



#### CAUTION!

Energised spring

Injuries can occur.

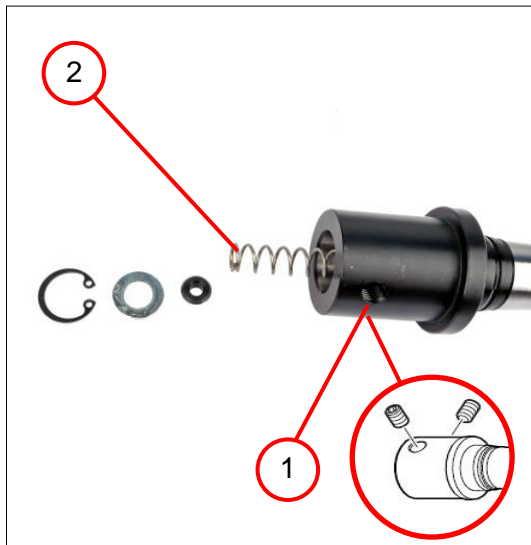
When loosening the circlip (4), hold the disc (5) with one hand.

4. Remove the circlip (4).
5. Remove the disc (5).
6. Remove the spiral spring with sleeve (6).



## Disassembly

## 8.3.2 Disassembling the mounting shaft



7. Remove the two pins (1).
8. Remove the spiral spring (2).



## 8.4 Removing the gearbox housing

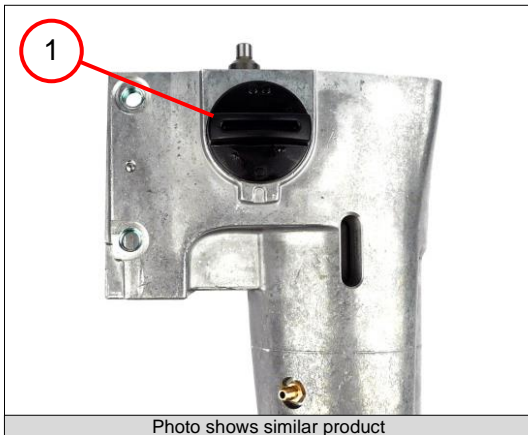
### 8.4.1 Removing the gearbox parts

**Steps that must be completed:**

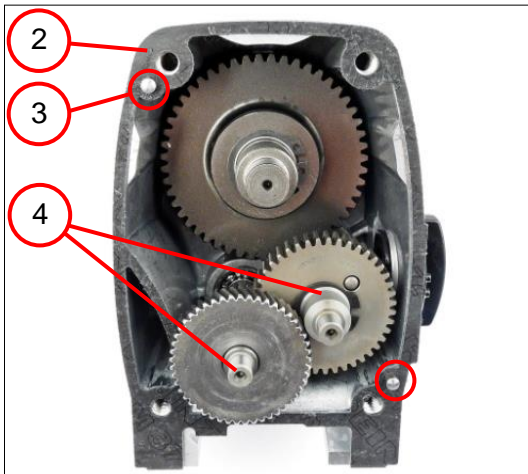
- Removing the mounting shaft
- Removing the intermediate gear box

**Tools:**

- Combination pliers
- Circlip pliers



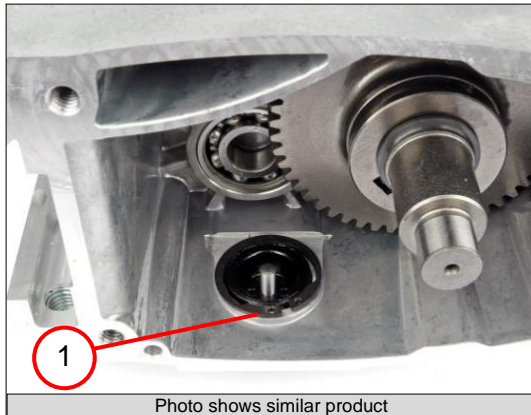
1. Turn the rotary knob (1) to the '•' position.



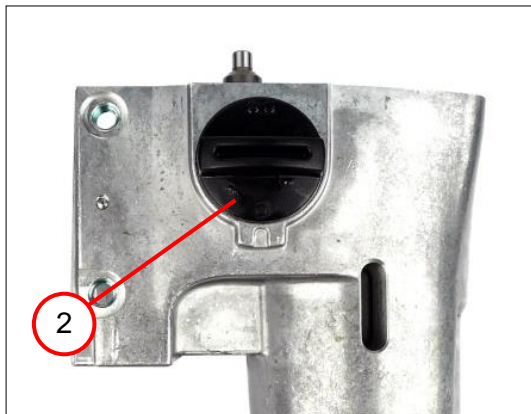
2. Remove the seal (2).
3. Remove the two straight pins (3).
4. Remove the two gearwheels (4).

## Disassembly

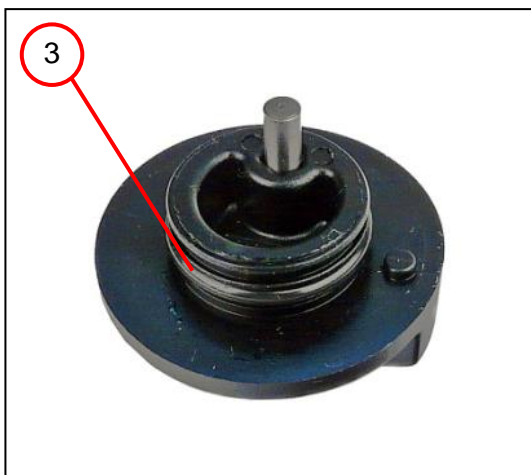
### 8.4.1 Removing the gearbox parts



5. Remove the circlip (1).



6. Remove the rotary knob (2).

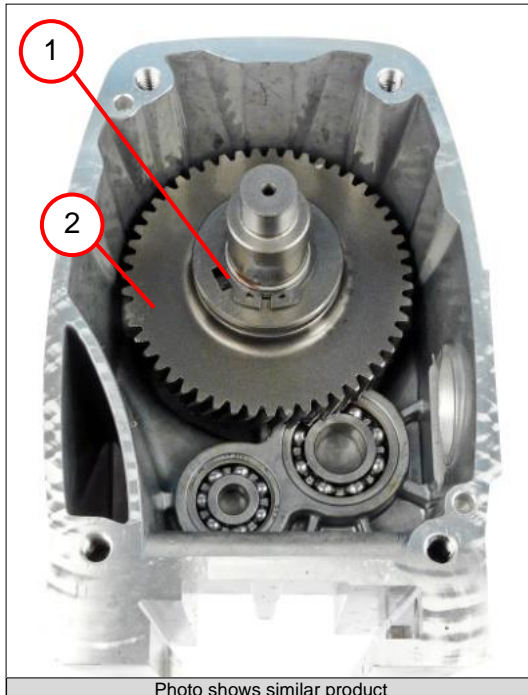


7. Remove the sealing ring (3).

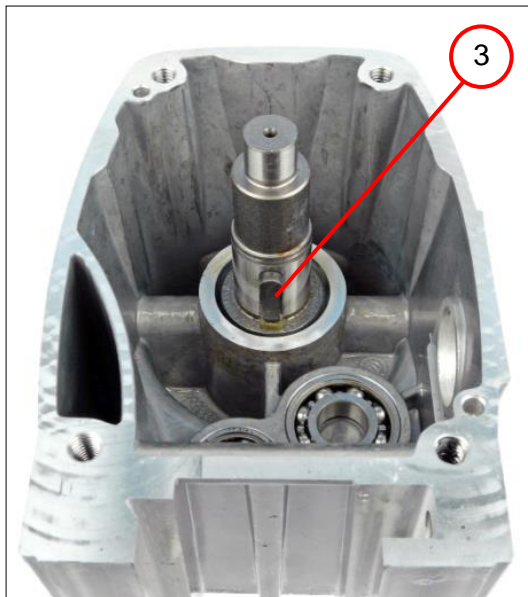


## Disassembly

### 8.4.1 Removing the gearbox parts



8. Remove the circlip (1).
9. Remove the gearwheel (2).



10. Remove the feather key (3).





## Disassembly

### 8.4.2 Removing the shaft

#### Steps that must be completed:

- Removing the gearbox parts

#### Tool(s):

- Circlip pliers
- Combination pliers
- Arbor press
- Sleeve  
56 mm inner diameter, 60 mm outer diameter



1. Remove the circlip (1).



2. Press out the shaft (2).

Photo shows similar product







## Disassembly

## 8.4.3 Disassembling the shaft

## Steps that must be completed:

- Removing the shaft

## Tool(s):

- Circlip pliers
- Arbor press
- Sleeve  
36 mm inner diameter, 55 mm outer diameter



1. Remove the circlip (1).



2. Press the grooved ball bearing (2) off the shaft.

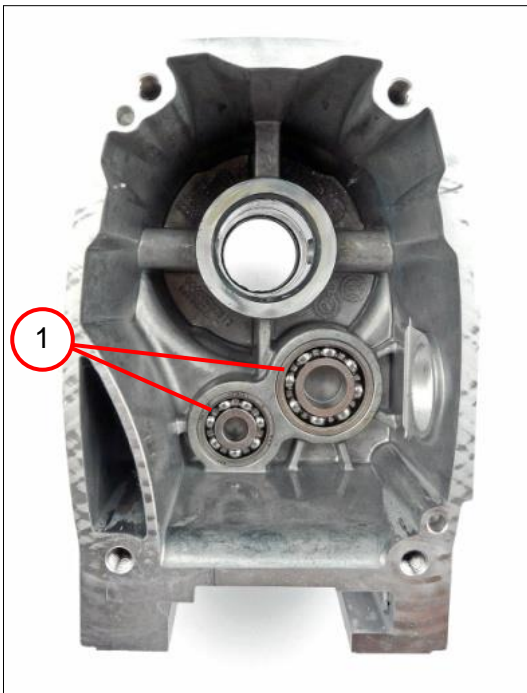


**Disassembly****8.4.4 Disassembling the gearbox parts****Steps that must be completed:**

- Removing the shaft

**Tool(s):**

- Circlip pliers
- Combination pliers
- Arbor press
- Sleeve  
25 mm inner diameter, 35 mm outer diameter
- Socket wrench
- Socket wrench insert, 7 mm
- Slide hammer
- Inner puller
- Slotted screwdriver
- Punch, 7 mm



1. Remove the two deep groove ball bearings (1).







## Disassembly

## 8.4.4 Disassembling the gearbox parts

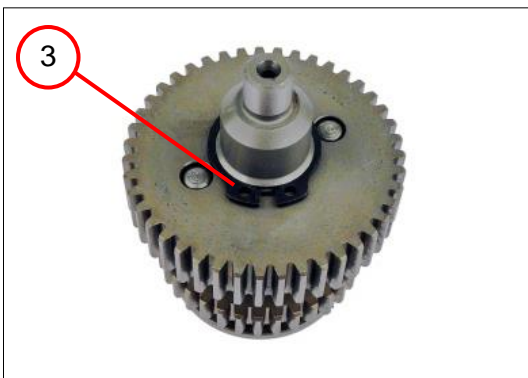


2. Remove the hose socket (1).

**i INFORMATION**

During disassembly, the sealing rings (2) are destroyed and must be replaced.

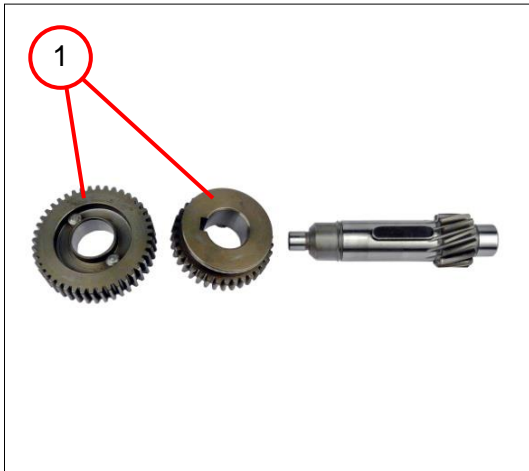
3. Remove the three sealing rings (2).



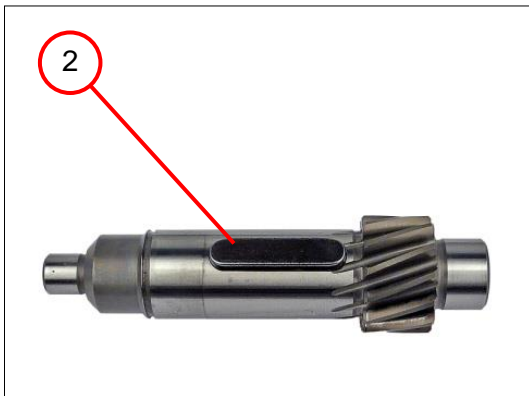
4. Remove the circlip (3).



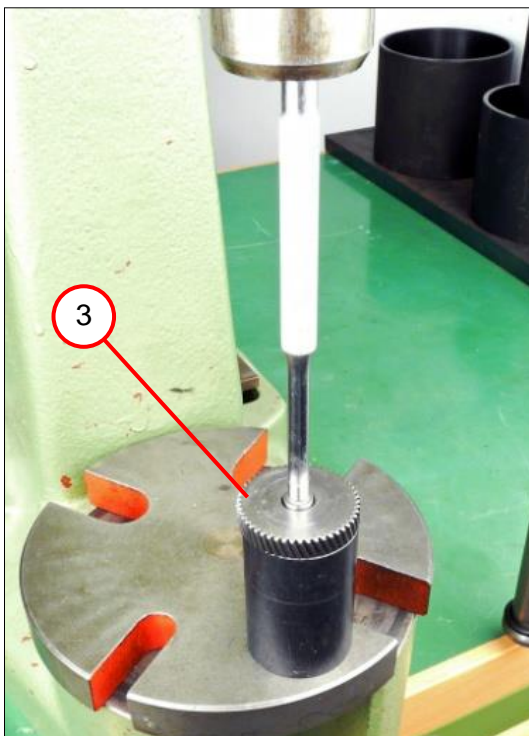
### 8.4.4 Disassembling the gearbox parts



5. Remove the two gearwheels (1).



6. Remove the feather key (2).



7. Press the gearwheel (3) off the shaft.

## 8.5 Disassembling the drill jig

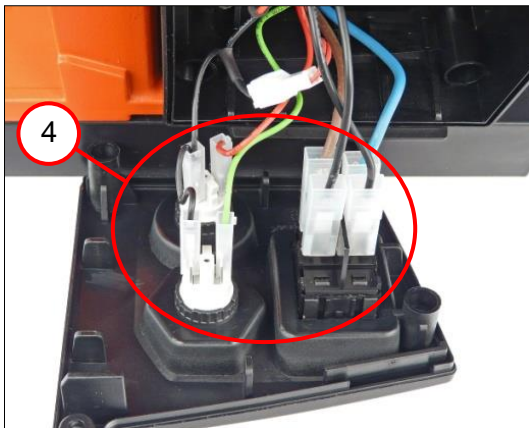
### 8.5.1 Removing the control panel

**Tool(s):**

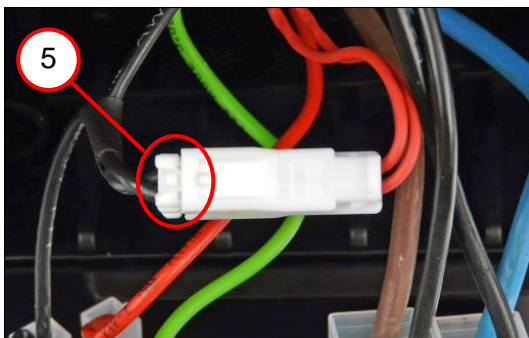
- Torx T20



1. Unscrew the six screws (1).
2. Remove the holder (2).
3. Remove the cover (3).



4. Disconnect all the plug connections (4).



5. Press and hold the lock (5) on the plug.
6. Pull off the plug.



## Disassembly

## 8.5.2 Disassembling the control panel

## Steps that must be completed:

- Removing the control panel



1. Remove the two buttons (1).
2. Remove the switch (2).





## Disassembly

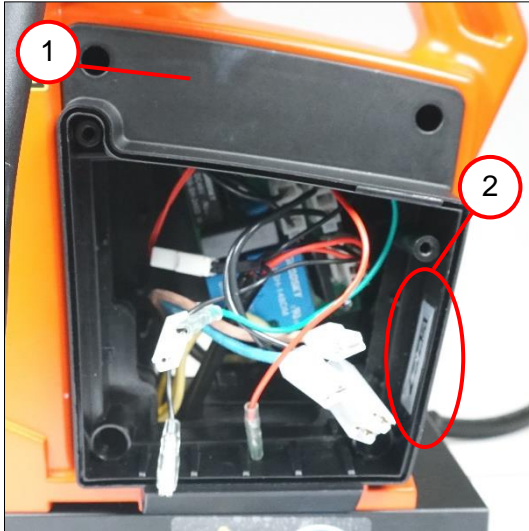
## 8.5.3 Removing the electronics

## Steps that must be completed:

- Removing the control panel

## Tool(s):

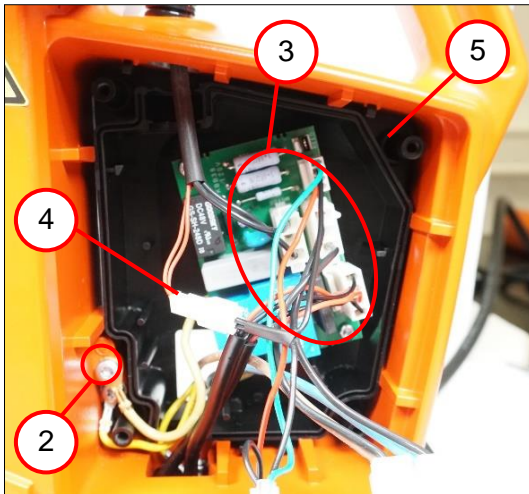
- Torx T20



1. Remove the cover (1).

**i INFORMATION**

When the cover is replaced, the RFID chip (2) also has to be changed and registered.



2. Unscrew the screw (2).
3. Remove the cables (3).
4. Disconnect the cable (4).
5. Remove the cover (5) with the electronics.





## Disassembly

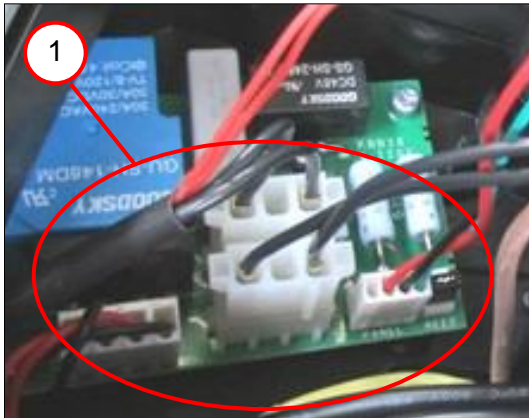
## 8.5.3 Removing the electronics

## Steps that must be completed:

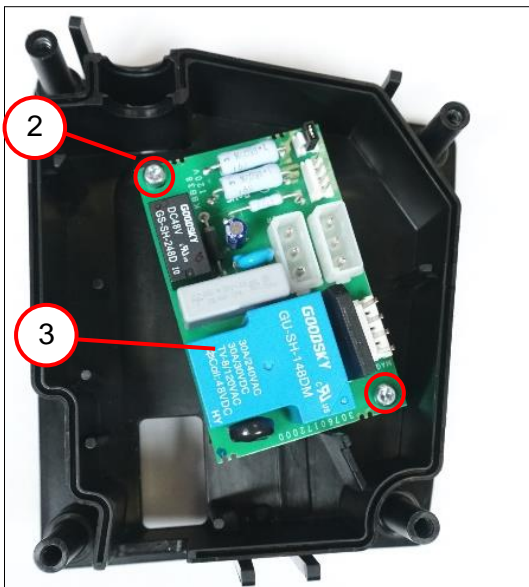
- Removing the control panel

## Tool(s):

- Torx T20



1. Remove the cables (1).



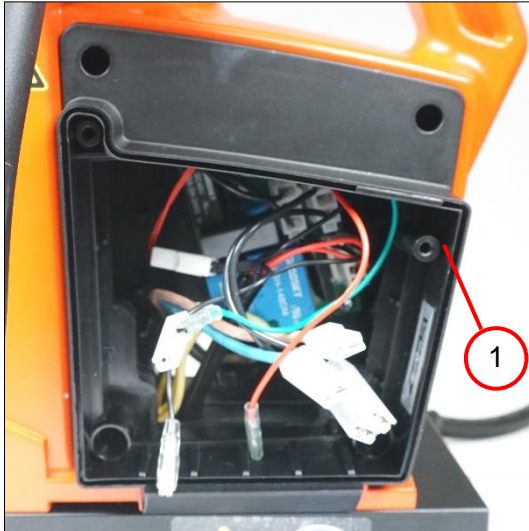
2. Unscrew the two screws (2).
3. Remove the electronics (3).

**Disassembly****8.5.4 Disassembling the mains cable****Steps that must be completed:**

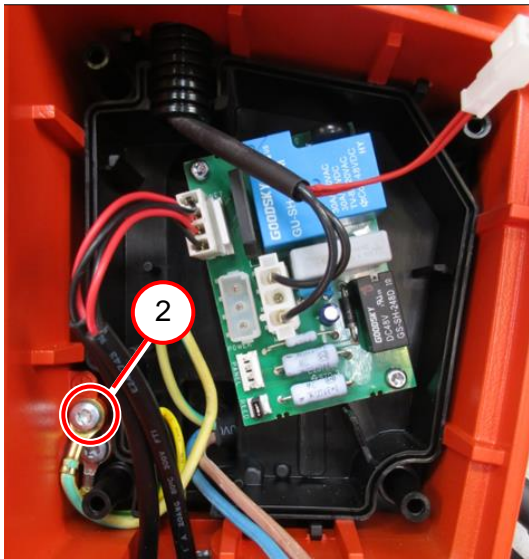
- Removing the control panel

**Tools:**

- Torx T15



1. Remove the cover (1).

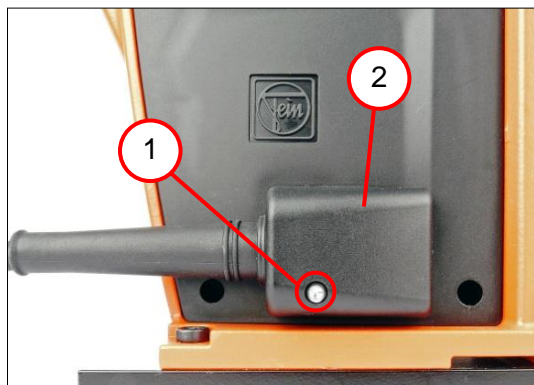


2. Unscrew the screw (2).

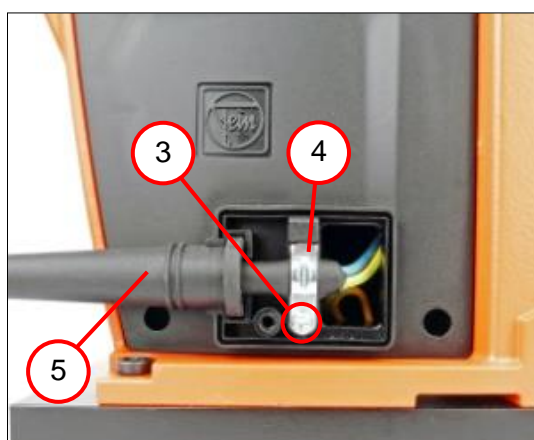


## Disassembly

## 8.5.4 Disassembling the mains cable



3. Unscrew the screw (1).
4. Remove the cover (2).



5. Unscrew the screw (3).
6. Remove the cable clamp (4).
7. Remove the mains cable (5).







## Disassembly

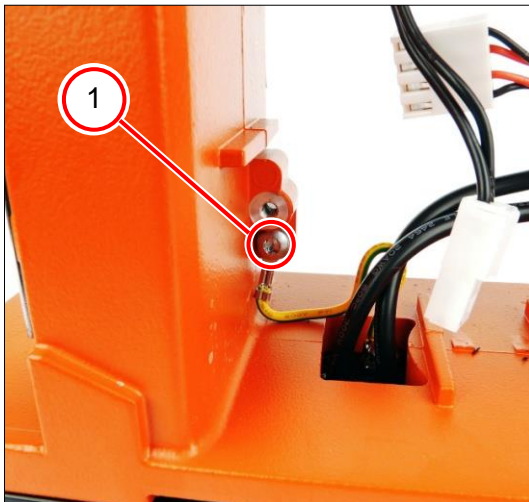
## 8.5.5 Removing the magnetic base

## Steps that must be completed:

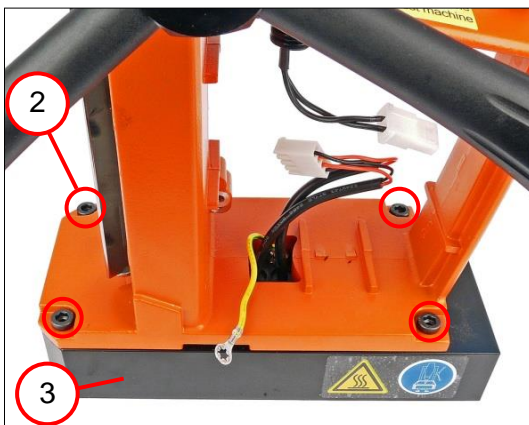
- Removing the electronics

## Tools:

- Torx T20
- Socket head wrench, 5 mm
- PH2 cross-head screwdriver



1. Unscrew the screw (1).



2. Unscrew the four screws (2).
3. Remove the magnetic base (3).

Photo shows similar product

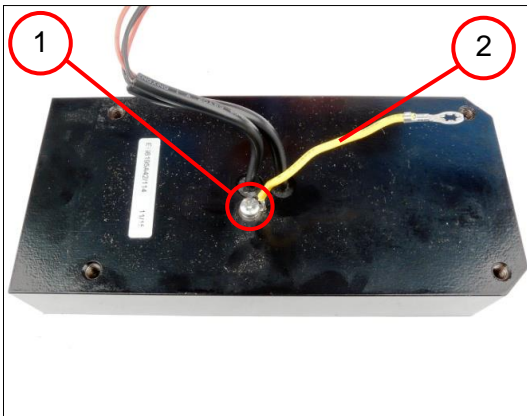


**Disassembly****8.5.6 Disassembling the magnetic base****Steps that must be completed:**

- Removing the control panel
- Removing the magnetic base

**Tool(s):**

- PH2 cross-head screwdriver



1. Unscrew the screw (1).
2. Remove the cable (2).



## Disassembly

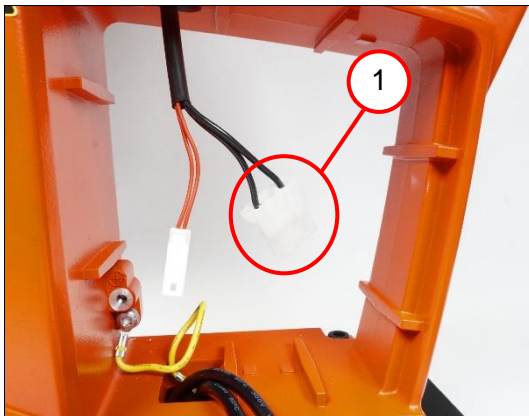
### 8.5.7 Removing the protective hose

#### Steps that must be completed:

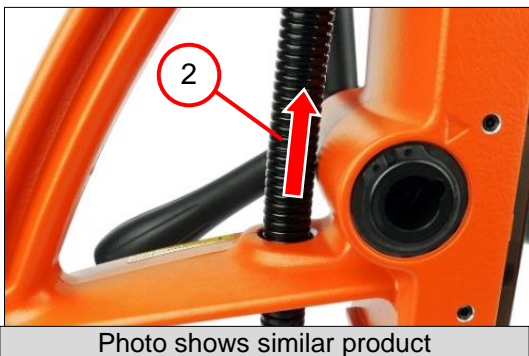
- Remove the electronics

#### Tools:

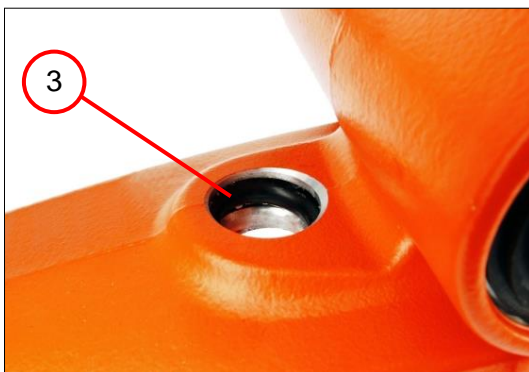
- Unlocking tool
- Assembly aid



1. Remove the plug (1).



2. Remove the protective hose (2).



3. Remove the sealing ring (3).



## Disassembly

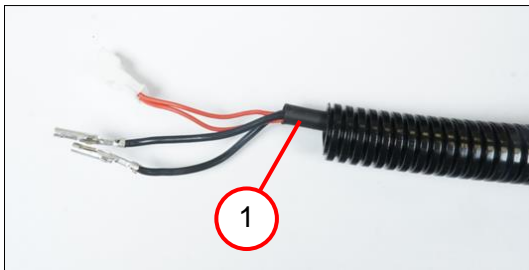
### 8.5.8 Disassembling the protective hose

**Steps that must be completed:**

- Removing the motor housing
- Removing the protective hose

**Tools:**

- Slotted screwdriver



1. Remove the connecting cable (1).



2. Remove the connecting piece (2).





## Disassembly

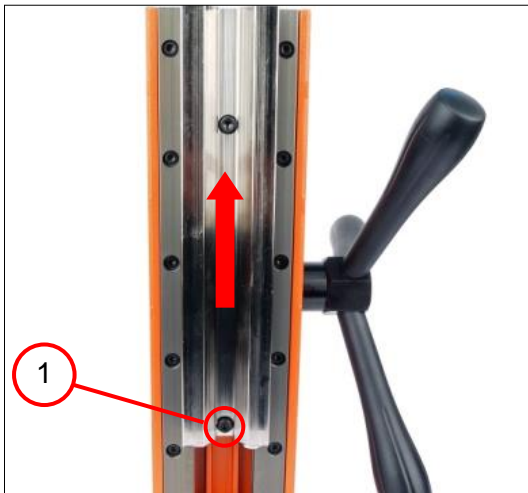
### 8.5.9 Removing the guide

#### Steps that must be completed:

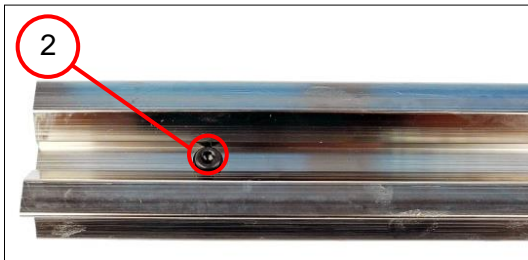
- Removing the drill motor

#### Tool(s):

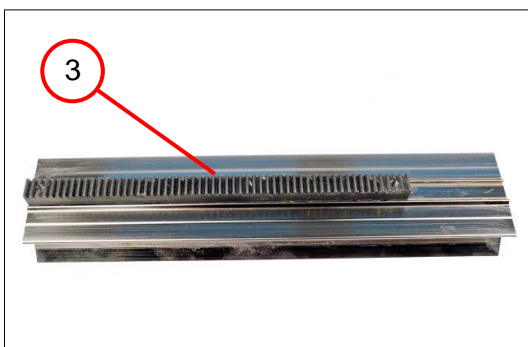
- Socket head wrench, 2.5 mm, 3 mm, 4 mm
- Slotted screwdriver
- PH2 cross-head screwdriver



1. Unscrew the screw (1).
2. Move the guide upwards using the spider.
3. Remove the guide.



4. Unscrew the screw (2).



5. Remove the gear rack (3).

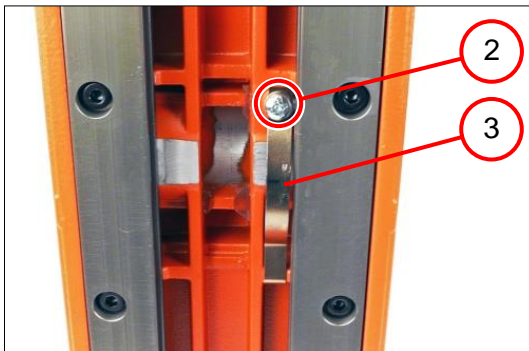


## Disassembly

### 8.5.9 Removing the guide



6. Unscrew the screw (1).



7. Unscrew the screw (2).

8. Remove the leaf spring (3).

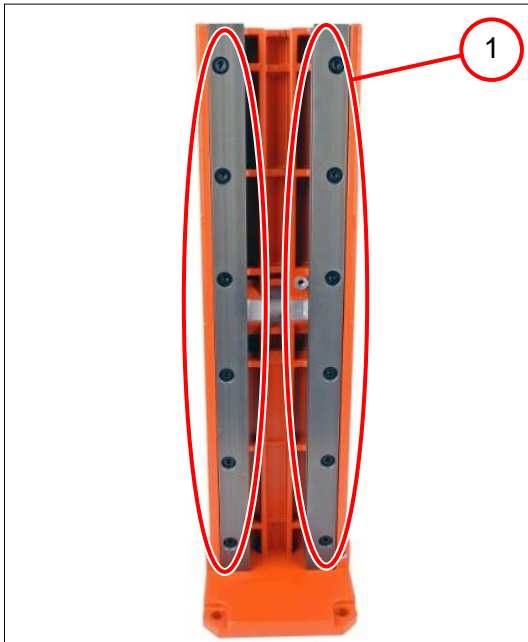


9. Unscrew the six set screws (4).

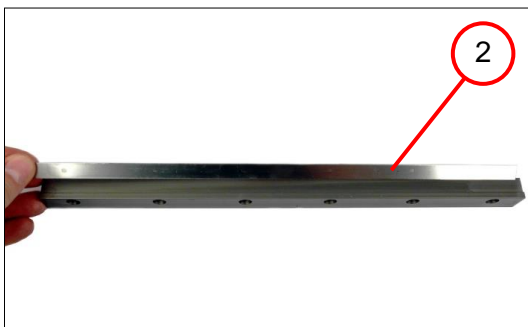


## Disassembly

### 8.5.9 Removing the guide



10. Unscrew the twelve screws (1).
11. Remove the two guide rails.



12. Remove the pressure piece (2).







## Disassembly

### 8.5.10 Removing the spider

#### Steps that must be completed:

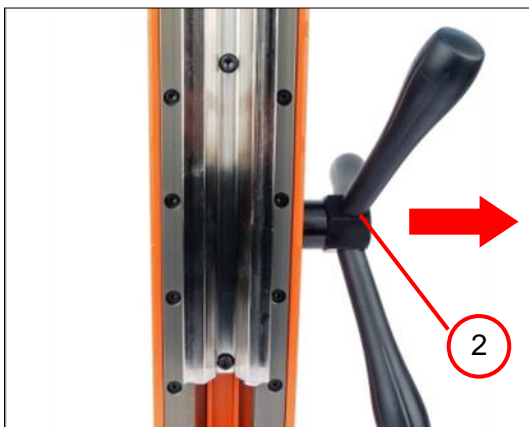
- Removing the guide

#### Tools:

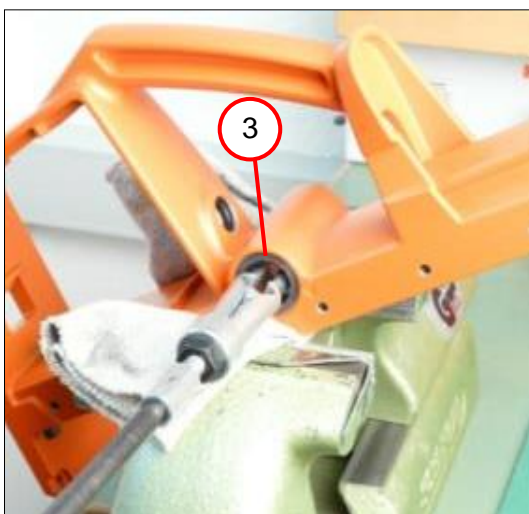
- Circlip pliers
- Inner bearing puller, 18–22 mm
- Slide hammer



1. Remove the circlip (1).



2. Pull out the spider (2).



3. Remove the bushing (3).
4. Repeat step 3 on the opposite side of the machine.







## Disassembly

### 8.5.11 Disassembling the spider

#### Steps that must be completed:

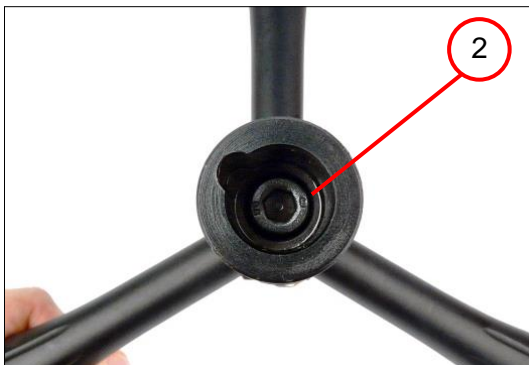
- Removing the spider

#### Tool(s):

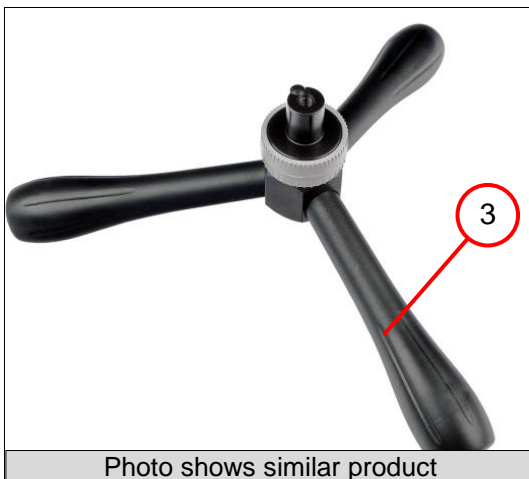
- Socket head wrench, 5 mm



1. Remove the disc (1).



2. Unscrew the screw (2).
3. Remove the shaft.



4. Unscrew the three handles (3).

Photo shows similar product





## Assembly

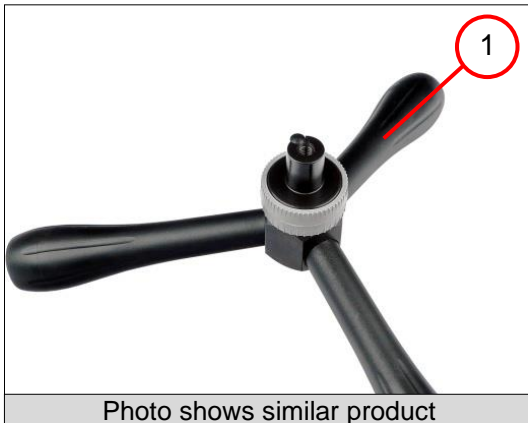
### 9 Assembly

#### 9.1 Assembling the drill jig

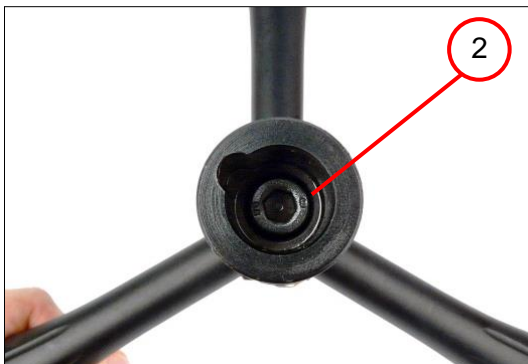
##### 9.1.1 Assembling the spider

###### Tool(s):

- Socket head wrench, 5 mm



1. Screw in the three handles (1).



2. Position the shaft.
3. Screw in the screw (2) [8.0 Nm  $\pm 0.5$  Nm].



4. Position the washer (3).
5. Coat the shaft with grease.





## Assembly

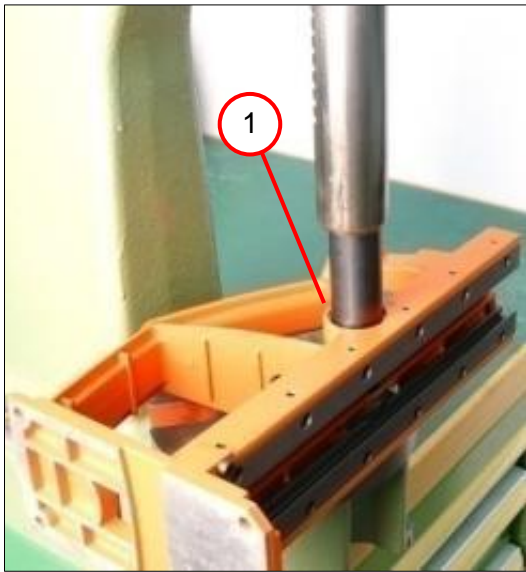
### 9.1.2 Positioning the spider

#### Steps that must be completed:

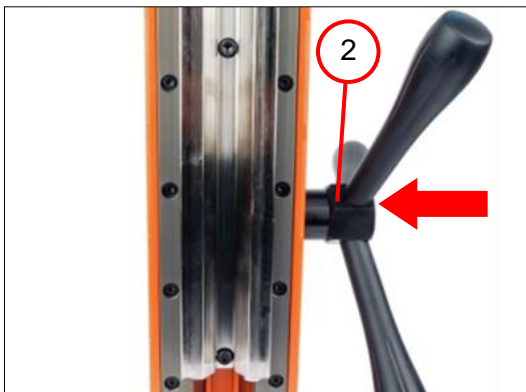
- Assembling the spider

#### Tool(s):

- Arbor press
- Sleeve  
26 mm inner diameter, 30 mm outer diameter
- Circlip pliers



1. Press in the bushing (1).
2. Repeat step 1 on the opposite side of the machine.



3. Position the spider (2).



4. Position the circlip (3).





## Assembly

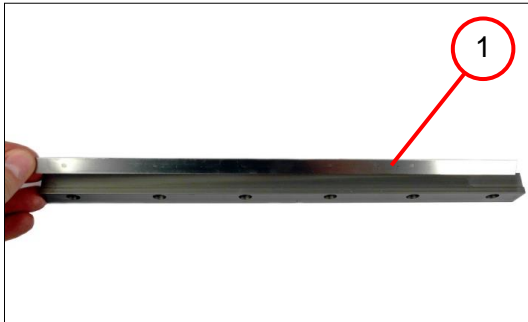
### 9.1.3 Positioning the guide

#### Steps that must be completed:

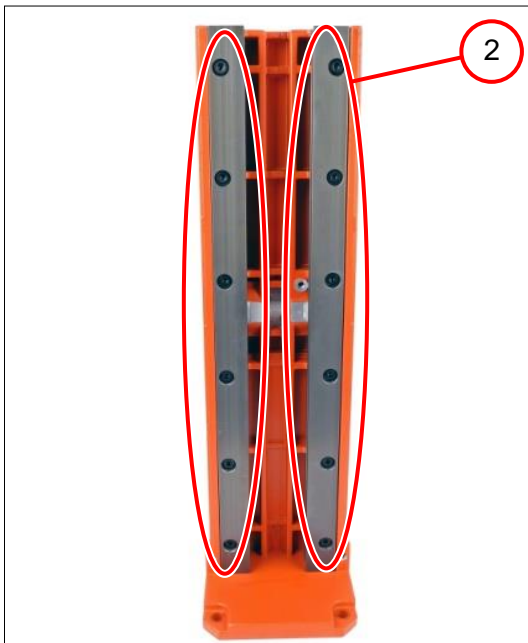
- Positioning the spider

#### Tool(s):

- PH2 cross-head screwdriver
- Slotted screwdriver
- Socket head wrench, 2.5 mm, 3 mm, 4 mm



1. Position the pressure piece (1).



2. Position the two guide rails.
3. Unscrew the twelve screws (2).





## Assembly

### 9.1.3 Positioning the guide

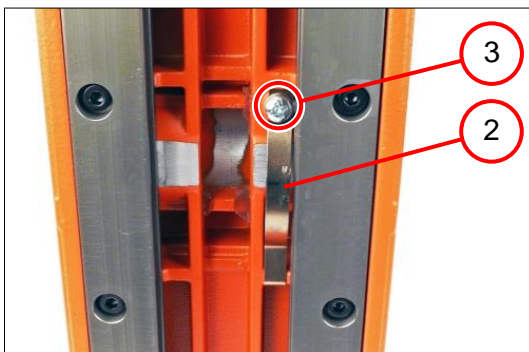


4. Screw in the six set screws (1).



#### INFORMATION

The thread backlash is adjusted after installation of the drill motor.



5. Position the leaf spring (2).
6. Screw in the screw (3) [1.1 Nm  $\pm$ 0.15 Nm].

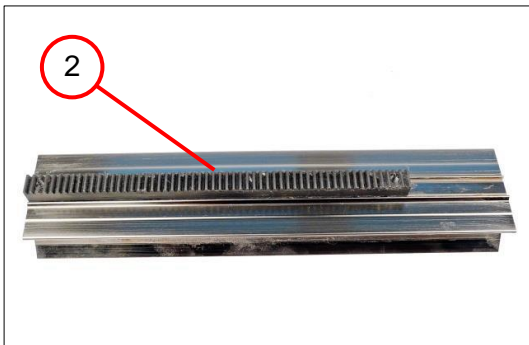


## Assembly

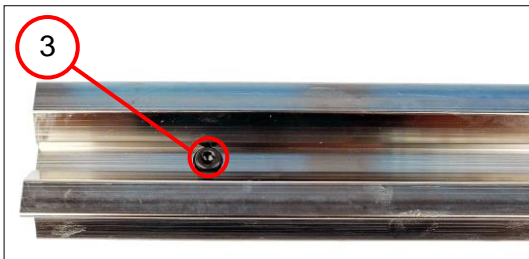
### 9.1.3 Positioning the guide



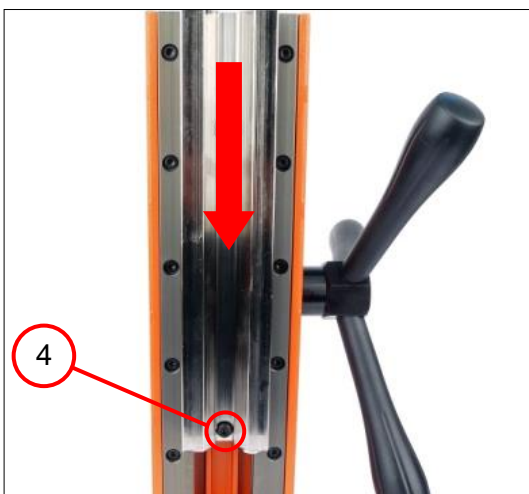
7. Screw in the flat-head screw (1) [1.2 Nm  $\pm$ 0.15 Nm].



8. Position the gear rack (2).  
9. Coat the gear rack (2) and guide with grease.



10. Screw in the screw (3) [3.0 Nm  $\pm$ 0.3 Nm].



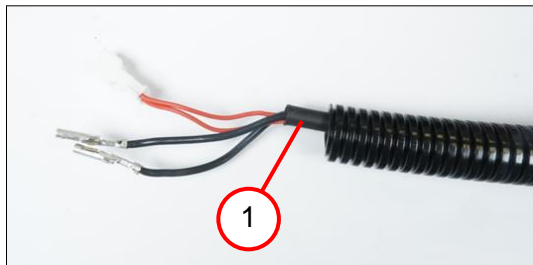
11. Position the guide.  
12. Move the guide downwards using the spider.  
13. Screw in the screw (4) [3.0 Nm  $\pm$ 0.3 Nm].

## Assembly

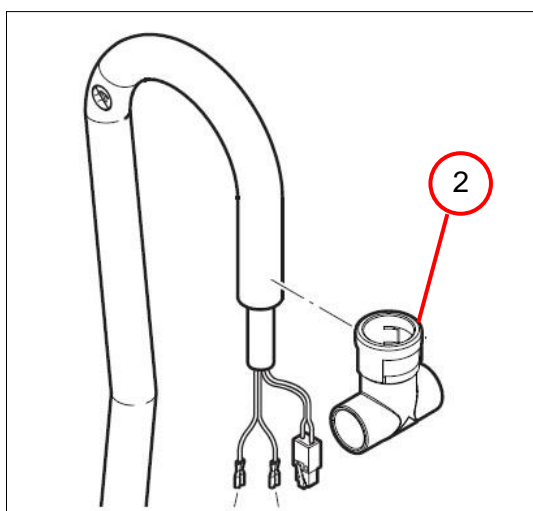
## 9.1.4 Assembling the protective hose

## Tools:

- None



1. Position the connecting cable (1).



2. Position the connecting piece (2).



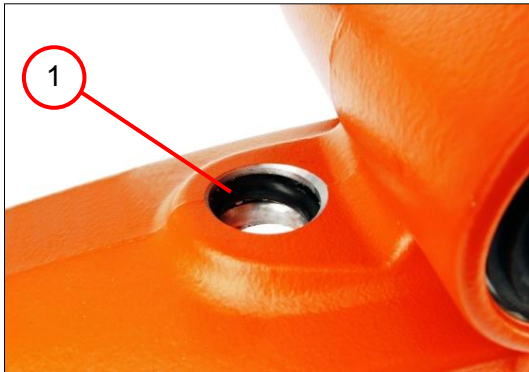


## Assembly

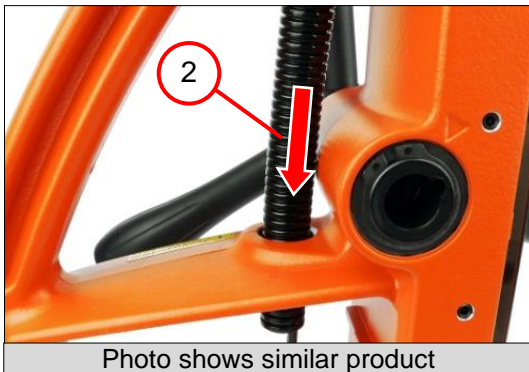
### 9.1.5 Positioning the protective hose

#### Steps that must be completed:

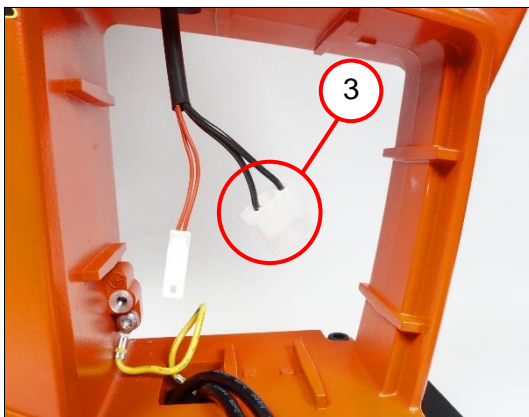
- Assembling the protective hose



1. Apply grease to the sealing ring (1).
2. Position the sealing ring (1).



3. Position the protective hose (2).



4. Connect the cable to the plug (3).



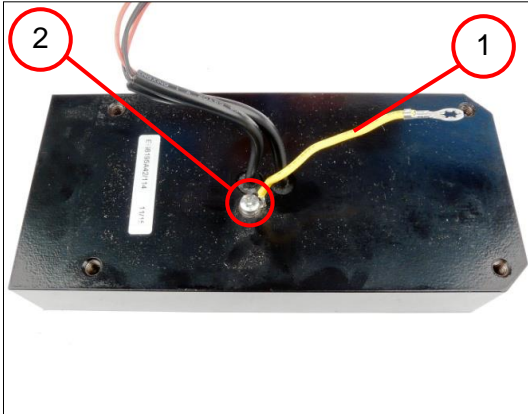


## Assembly

## 9.1.6 Assembling the magnetic base

## Tool(s):

- PH2 cross-head screwdriver



1. Position the cable (1).
2. Screw in the screw (2) [1.5 Nm  $\pm 0.2$  Nm].



## Assembly

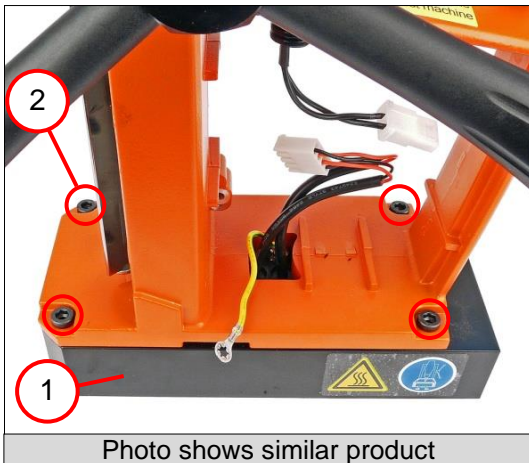
### 9.1.7 Positioning the magnetic base

#### Steps that must be completed:

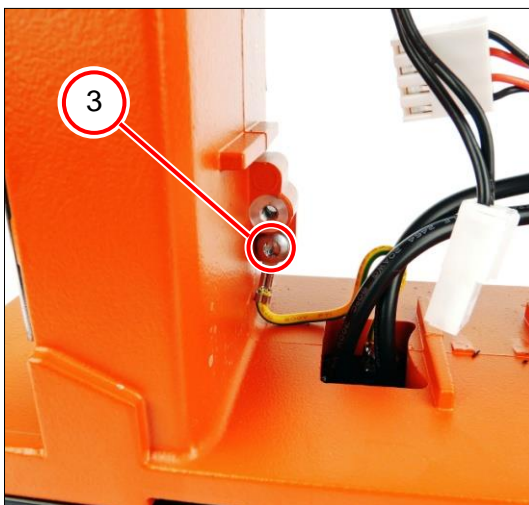
- Assembling the magnetic base

#### Tool(s):

- Socket head wrench, 5 mm
- Torx T20



1. Position the magnetic base (1).
2. Screw in the four screws (2) [8.0 Nm  $\pm$ 0.5 Nm].



3. Position the connecting cable.
4. Screw in the screw (3) [1.5 Nm  $\pm$ 0.2 Nm].



## Assembly

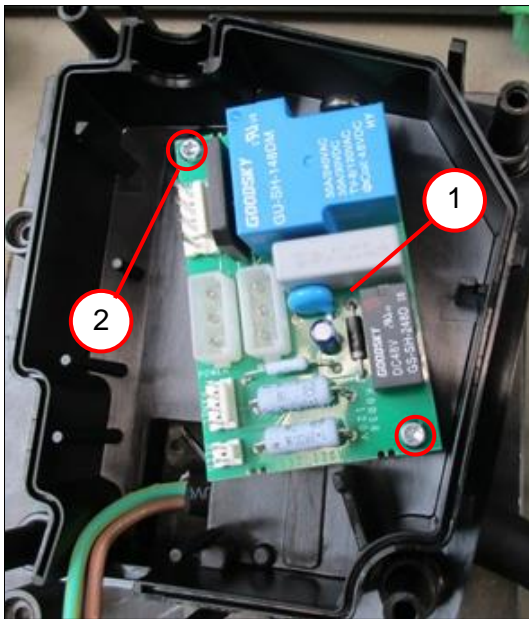
### 9.1.8 Assembling the electronics

#### Steps that must be completed:

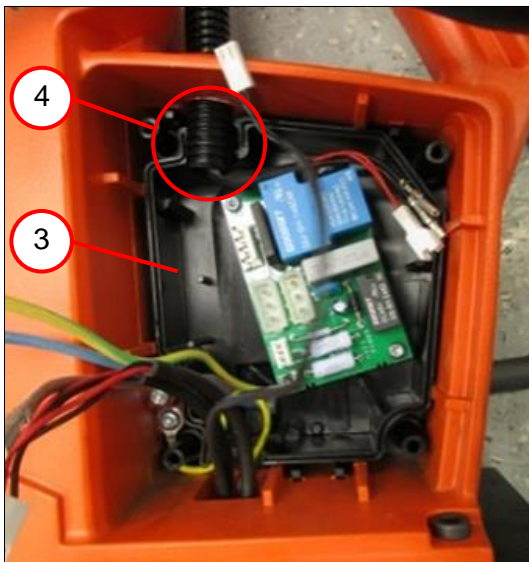
- Positioning the protective hose
- Positioning the magnetic foot

#### Tool(s):

- Torx T20



1. Position the electronics (1).
2. Screw in the two screws (2).

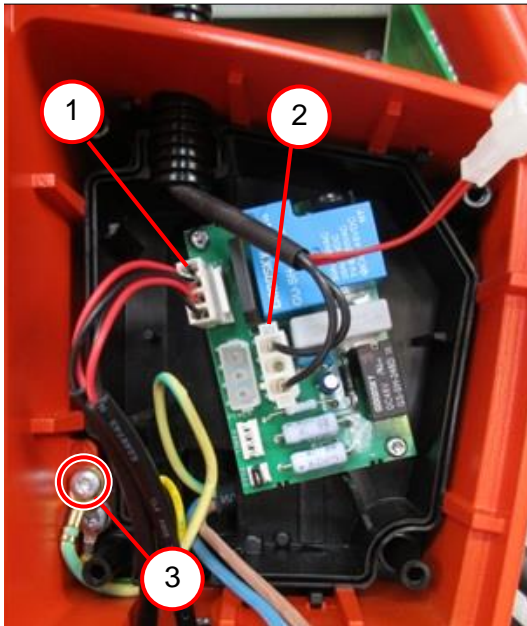


3. Position the cover (3) with the electronics.
4. Place the protective hose (4) in the recess.





### 9.1.8 Assembling the electronics



5. Connect the cable (1) as shown in the connection diagram.
6. Connect the cable (2) as shown in the connection diagram.
7. Screw in the screw (3) [1.5 Nm  $\pm 0.2$  Nm].



## Assembly

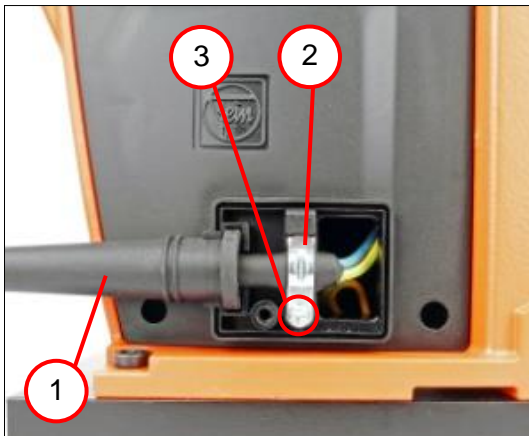
### 9.1.9 Fitting the network cable

#### Steps that must be completed:

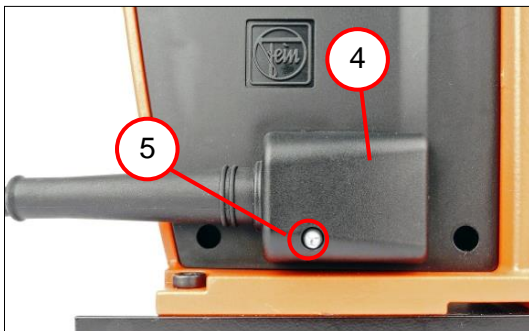
- Fit the electronics
- Assembling the control panel

#### Tools:

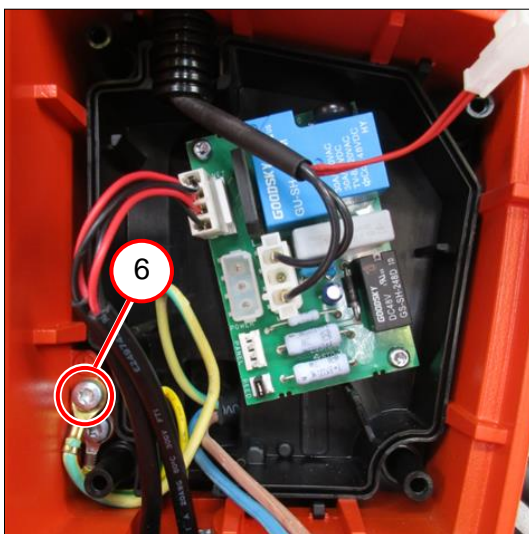
- Torx T15, T20



1. Position the mains cable (1).
2. Position the cable clamp (2).
3. Screw in the screw (3) [0.9 Nm  $\pm 0.1$  Nm].



4. Position the cover (4).
5. Screw in the screw (5) [1.8 Nm  $\pm 0.1$  Nm].

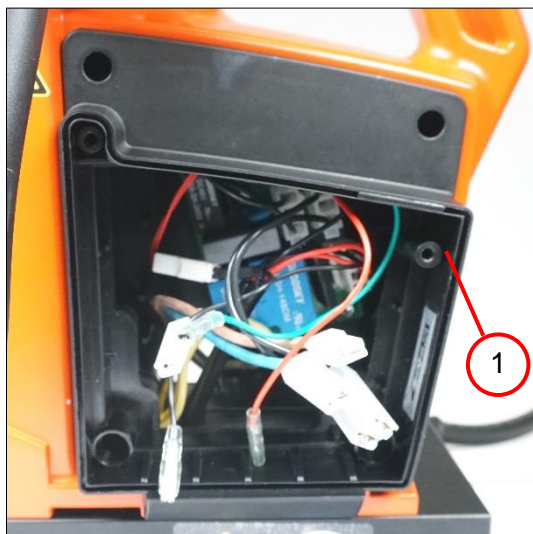


6. Screw in the screw (6).

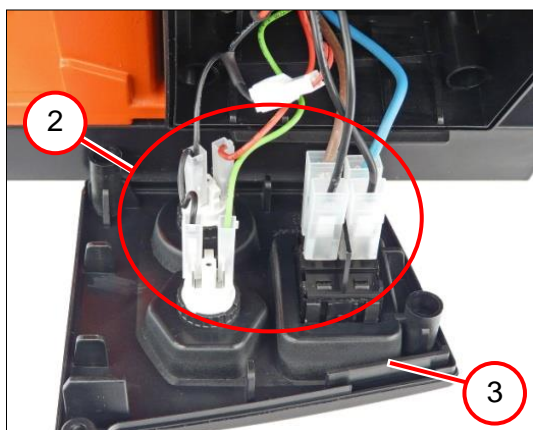


## Assembly

## 9.1.9 Fitting the network cable



7. Position the cover (1).



8. Connect all plug connections (2) as shown in the connection diagram.
9. Position the control panel (3).



**Assembly****9.1.10 Assembling the control panel**

1. Position the two buttons (1).
2. Position the switch (2).

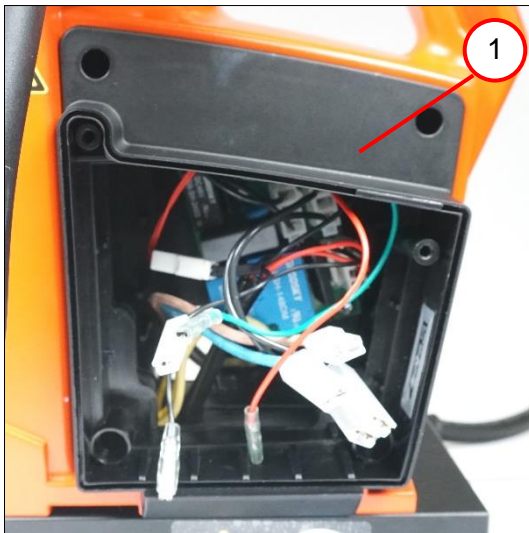


**Assembly****9.1.11 Positioning the control panel****Steps that must be completed:**

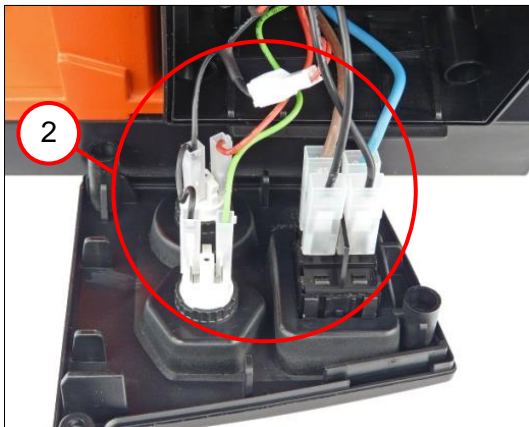
- Assembling the control panel
- Fit the mains cable

**Tools:**

- Torx T20



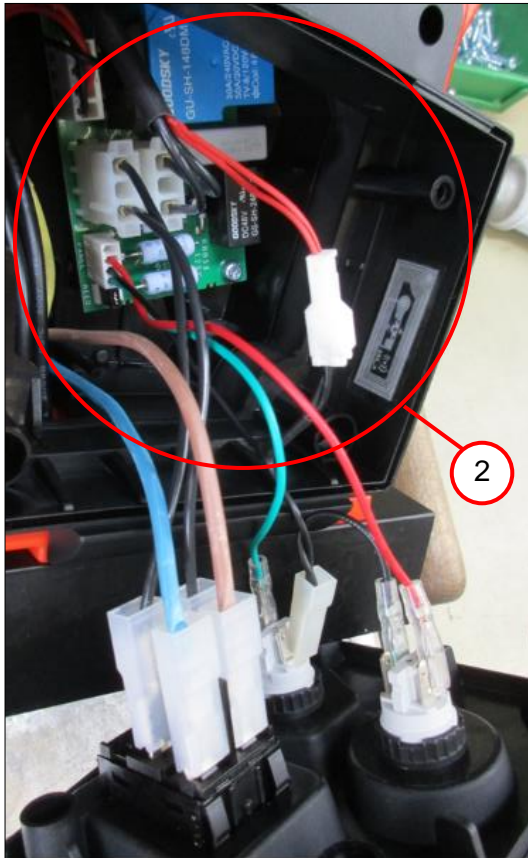
1. Position the cover (1).



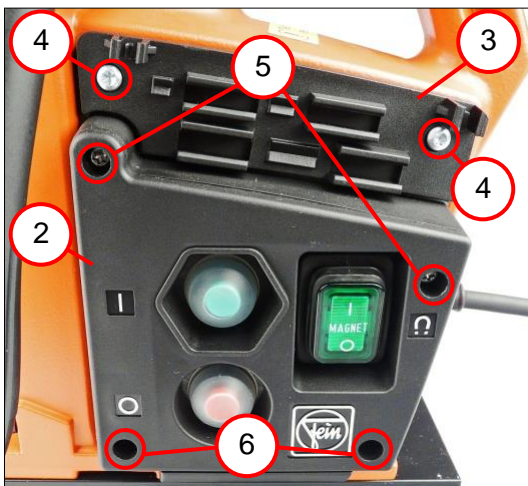
2. Connect all plug connections (2) as shown in the connection diagram.

## Assembly

### 9.1.11 Positioning the control panel



3. Connect all cables (1) as shown in the connection diagram.



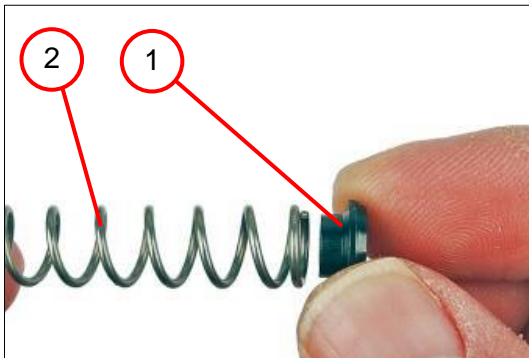
4. Position the cover (2).
5. Position the holder (3).
6. Screw in the two screws [4x48] (4) [2.0 ±0.3 Nm].
7. Screw in the two screws [4x18] (5) [2.0 ±0.3 Nm].
8. Screw in the two screws [4x48] (6) [2.0 ±0.3 Nm].

## 9.2 Assembling the drill chuck

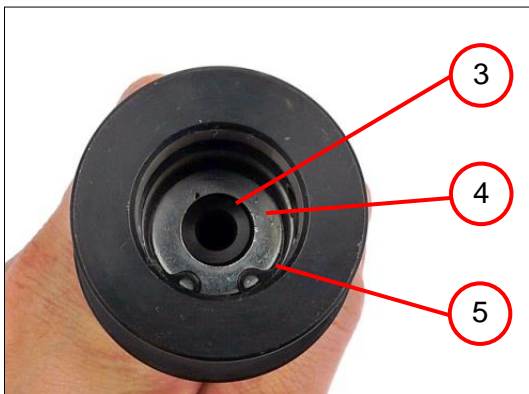
### 9.2.1 Assembling the mounting shaft

**Tools:**

- Circlip pliers
- Arbor press
- Bolt, 18 mm



1. Position the sleeve (1) in the spiral spring (2).



2. Position the spiral spring with sleeve (3).
3. Position the disc (4).
4. Position the circlip (5).



5. Press in the circlip (5).

**INFORMATION**

The circlip (5) clicks audibly into place.

## Assembly

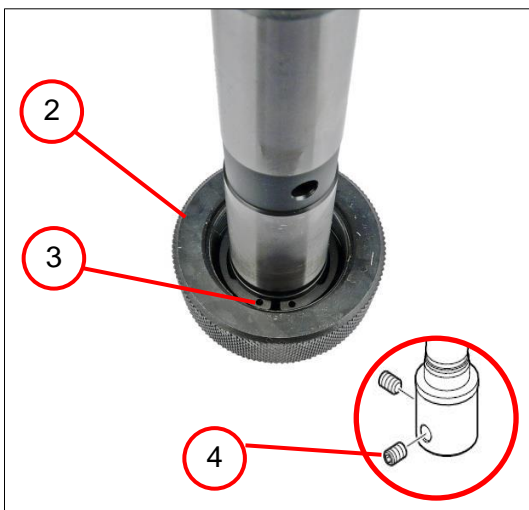
### 9.2.1 Assembling the mounting shaft



#### **i** INFORMATION

Use a new sealing ring during each fitting.

1. Coat the sealing ring (1) with grease.
2. Position the sealing ring (1).
3. Position the nut (2) on the shaft.
4. Position the circlip (3).
5. Screw in the two pins (4).



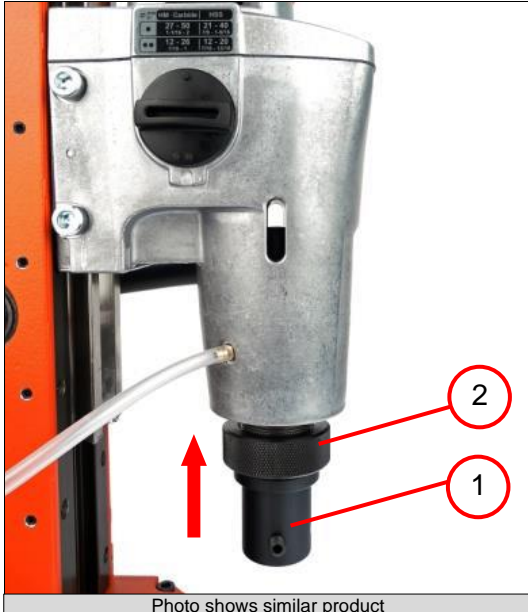


## Assembly

## 9.2.2 Positioning the mounting shaft

## Steps that must be completed:

- Fitting the mounting shaft
- Positioning the drill motor



1. Position the shaft (1).
2. Screw in the nut (2) [left-hand thread].





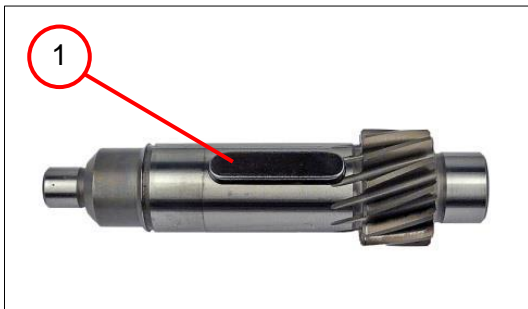
## Assembly

### 9.3 Assembling the gearbox housing

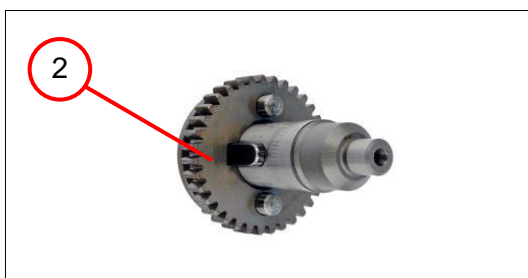
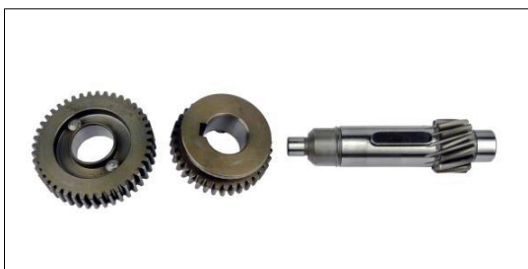
#### 9.3.1 Assembling the gearbox parts

##### Tool(s):

- Circlip pliers
- Combination pliers
- Arbor press
- Sleeve
  - 15 mm inner diameter, 25 mm outer diameter
  - 10 mm inner diameter, 21 mm outer diameter
  - 21 mm inner diameter, 28 mm outer diameter
- Socket wrench
- Socket wrench insert, 7 mm
- Slide hammer
- Inner puller
- Slotted screwdriver
- Punch, 7 mm



1. Position the feather key (1).



2. Position the gearwheel (2).

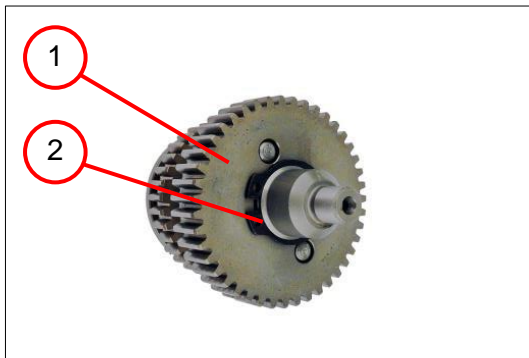




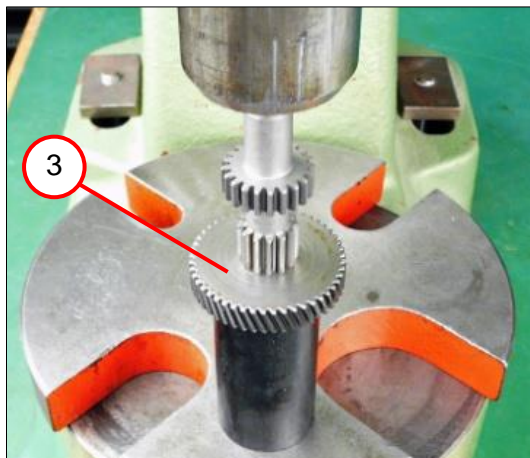


## Assembly

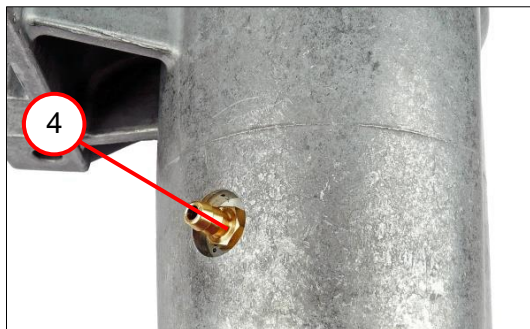
### 9.3.1 Assembling the gearbox parts



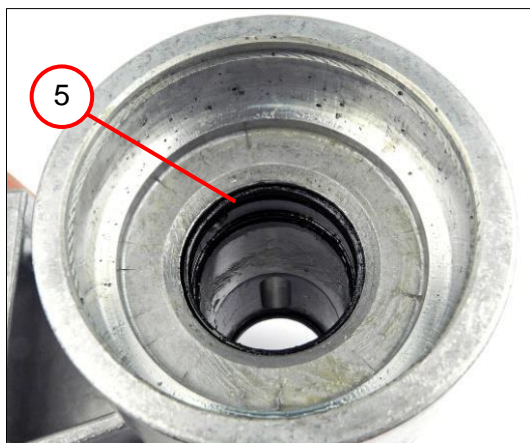
3. Position the gearwheel (1).
4. Position the circlip (2).



5. Press on the gearwheel (3).



6. Screw in the hose socket (4) [ $1.8 \pm 0.1$  Nm].



#### **i** INFORMATION

Use new sealing rings for assembly each time.

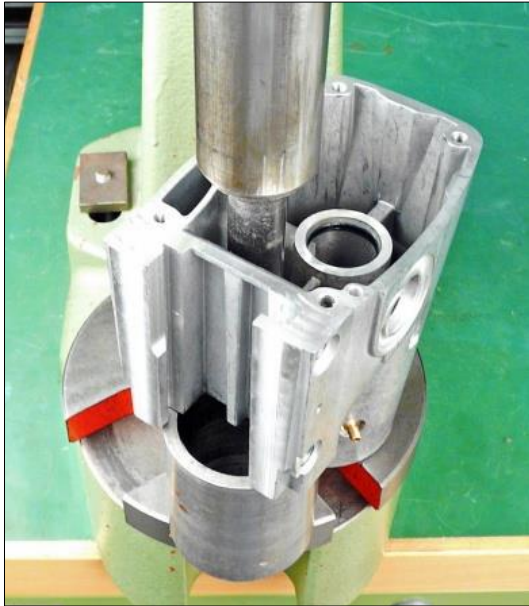
7. Apply grease to the three sealing rings (5).
8. Position the three sealing rings (5).



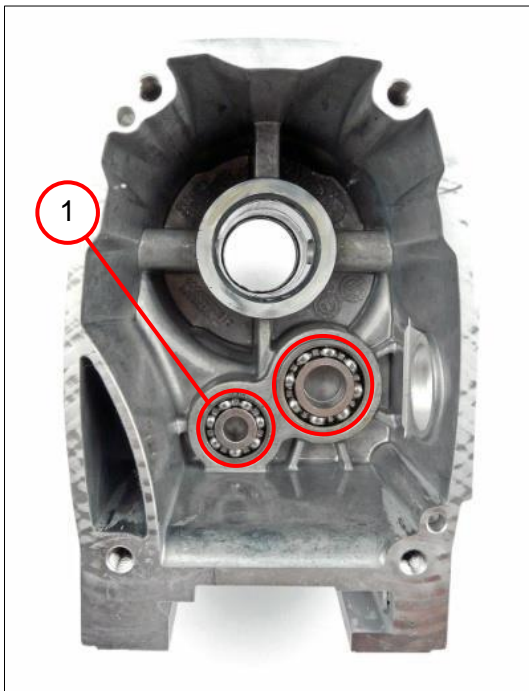


## Assembly

## 9.3.1 Assembling the gearbox parts



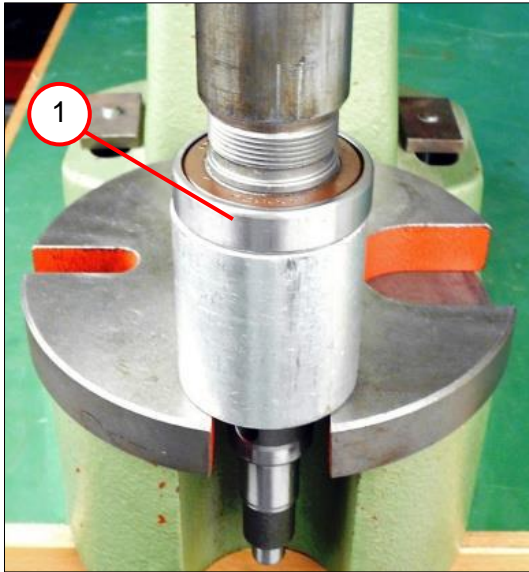
1. Press in the two deep groove ball bearings (1).



### 9.3.2 Assembling the shaft

#### Tool(s):

- Arbor press
- Sleeve  
36 mm inner diameter, 55 mm outer diameter
- Circlip pliers



1. Press on the deep groove ball bearing (1).



2. Position the circlip (2).

## Assembly

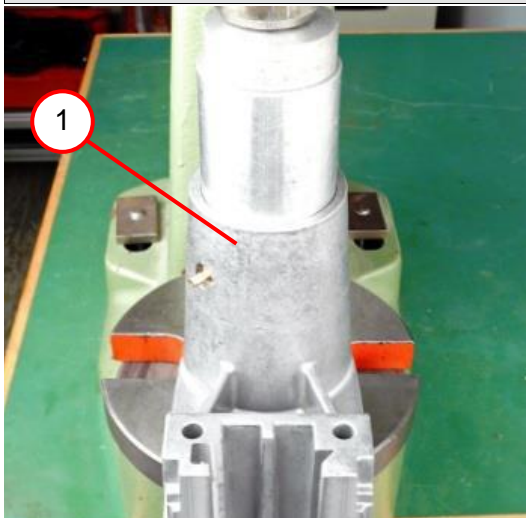
### 9.3.3 Positioning the shaft

#### Steps that must be completed:

- Assembling the shaft
- Assembling the gearbox parts

#### Tools:

- Arbor press
- Sleeve  
40 mm inner diameter, 54 mm outer diameter
- Circlip pliers
- Combination pliers



1. Coat the shaft (1) with grease.
2. Press on the shaft (1).



3. Position the circlip (2).



4. Position the feather key (3).

## Assembly

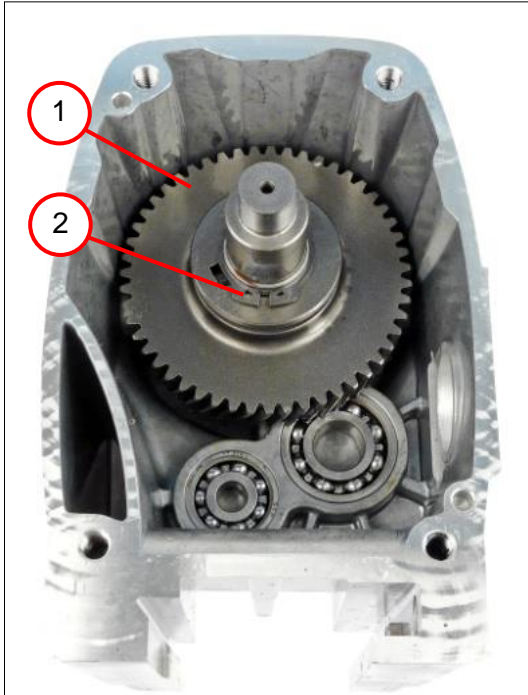
### 9.3.4 Positioning the gearbox parts

#### Steps that must be completed:

- Positioning the shaft

#### Tool(s):

- Circlip pliers



1. Position the gearwheel (1).
2. Position the circlip (2).



3. Apply grease to the sealing ring (3).
4. Position the sealing ring (3).

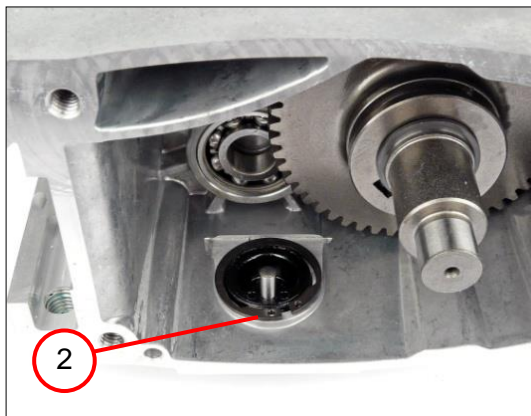


## Assembly

### 9.3.4 Positioning the gearbox parts



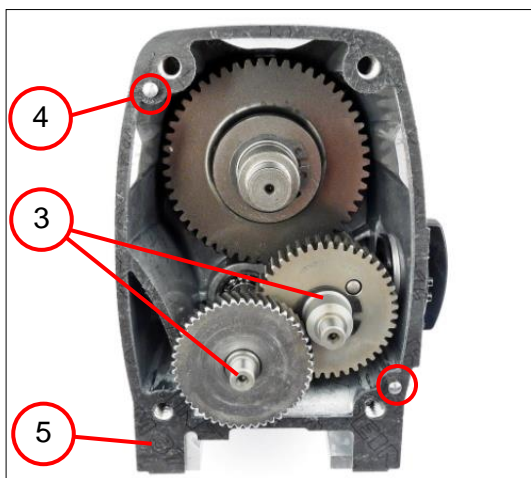
5. Position the rotary knob (1).



6. Position the circlip (2).



7. Turn the rotary knob to the '•' position.



8. Position the two gearwheels (3).

9. Position the two straight pins (4).

#### **i** INFORMATION

Use a new seal for each new fitting.

10. Position the seal (5).

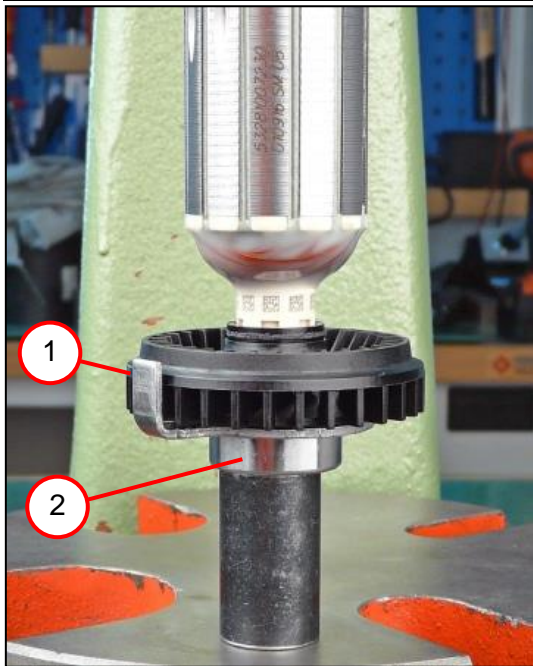
11. Fill the gearbox with 150 g of grease.

### 9.4 Assembling the motor housing

#### 9.4.1 Assembling the armature

##### Tools:

- Arbor press
- Ball bearing support 19 mm; 26 mm
- Sleeve  
13 mm inner diameter, 26 mm outer diameter



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

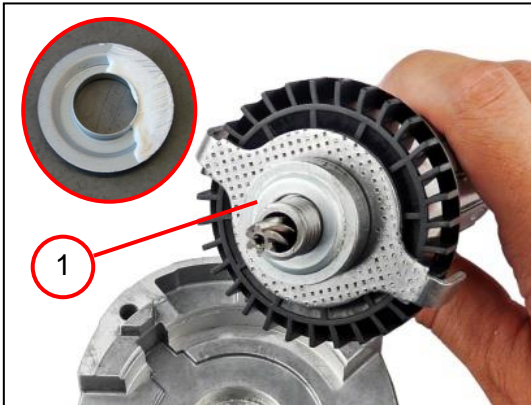


3. Press on the sealing ring (3).

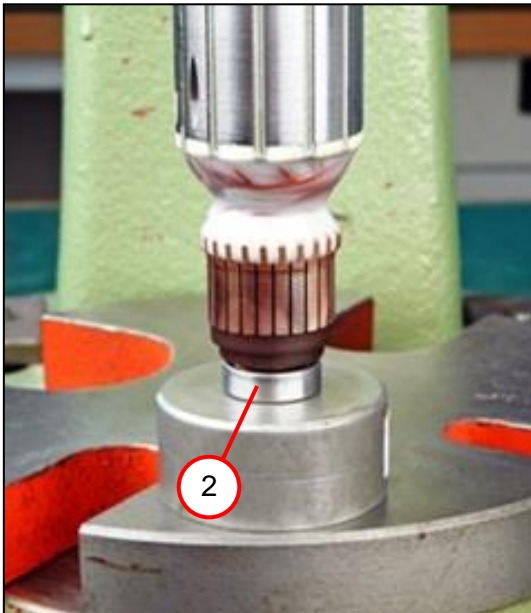


## Assembly

### 9.4.1 Assembling the armature



4. Apply grease to the sealing ring (1).
5. Correctly position the sealing ring (1).



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

## Assembly

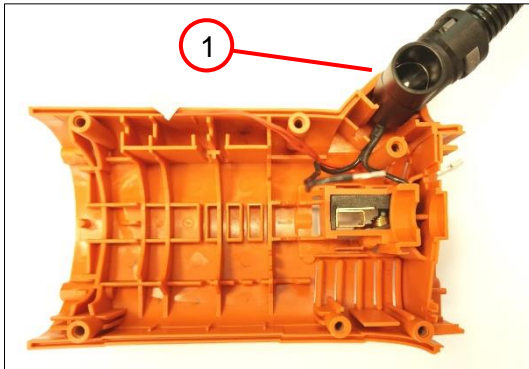
### 9.4.2 Fitting the stator

#### Steps that must be completed:

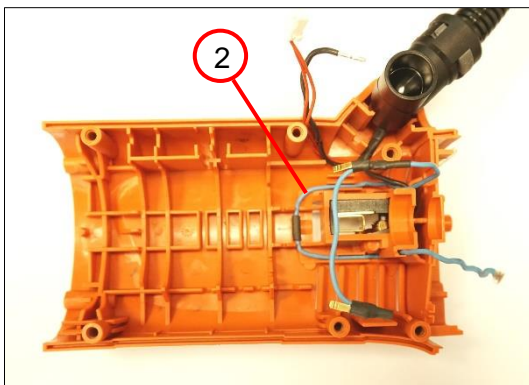
- Assembling the protective hose

#### Tools:

- Assembly aid



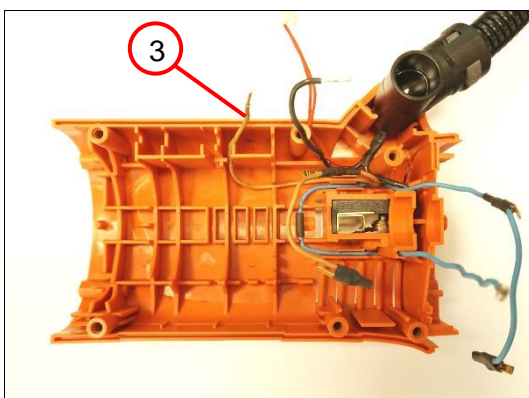
1. Position the protective hose (1).



#### **i** INFORMATION

Note the recesses when laying the cables.

2. Position the cable (2).



3. Position the cable (3).

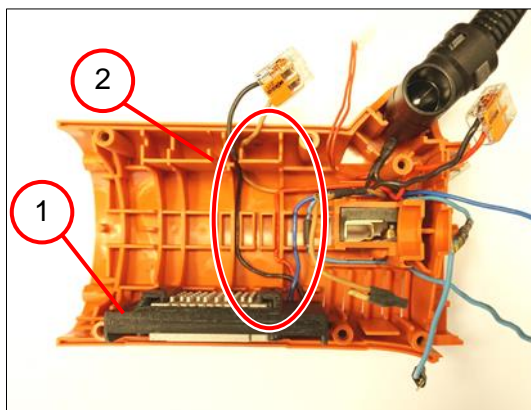
## Assembly

### 9.4.2 Fitting the stator

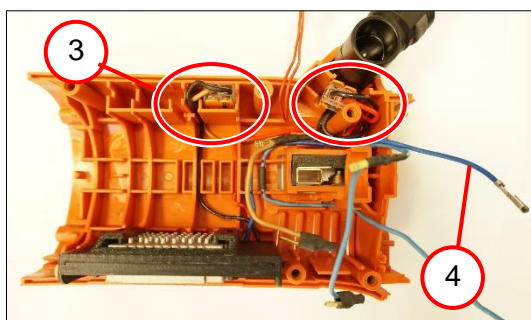


#### **i** INFORMATION

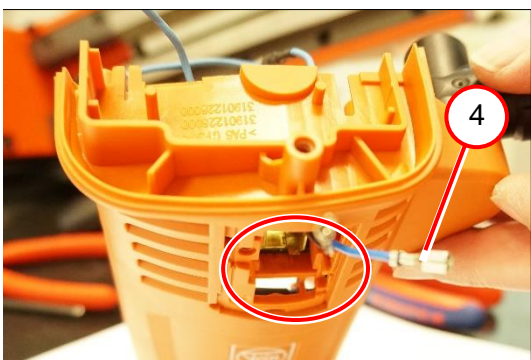
Note the recesses when laying the cables.



4. Position the start-up current limiter (1).
5. Position the three cables (2).



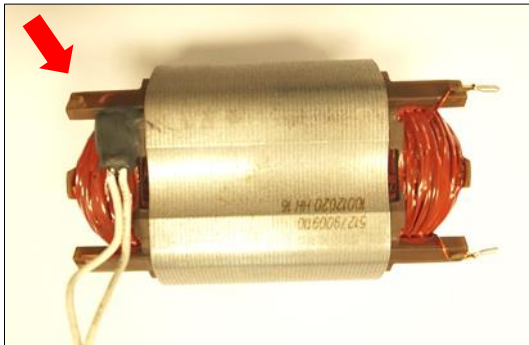
6. Connect the cables (3) as shown in the connection diagram.
7. Position the clamps.



8. Guide the cable (4) through the opening for the carbon brushes.

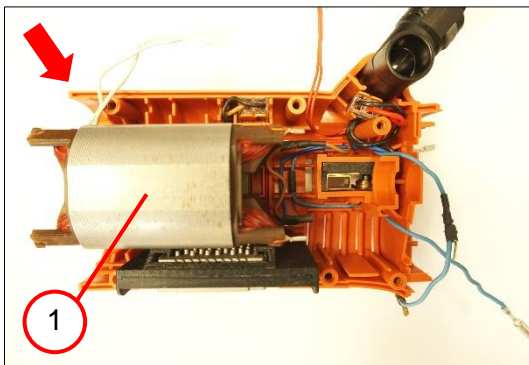
## Assembly

### 9.4.2 Fitting the stator

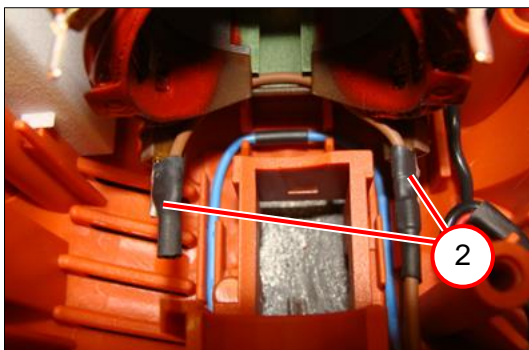


#### **i** INFORMATION

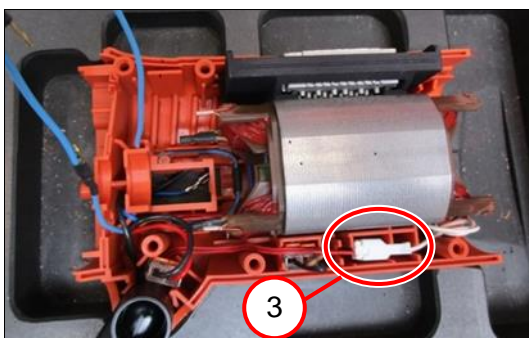
Note the position of the temperature sensor when positioning the stator.



9. Position the stator (1).



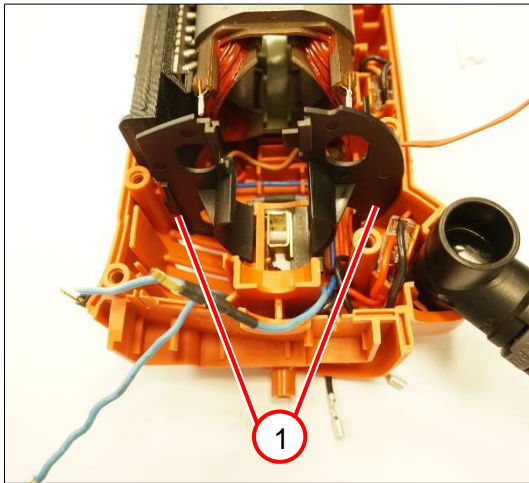
10. Connect the cable (2).



11. Connect the cable (3).



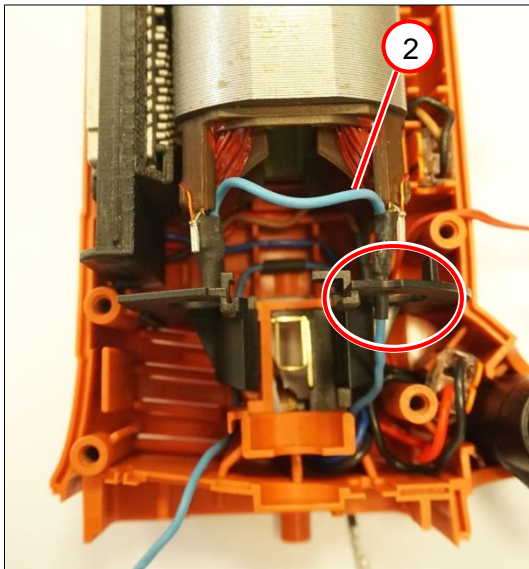
### 9.4.2 Fitting the stator



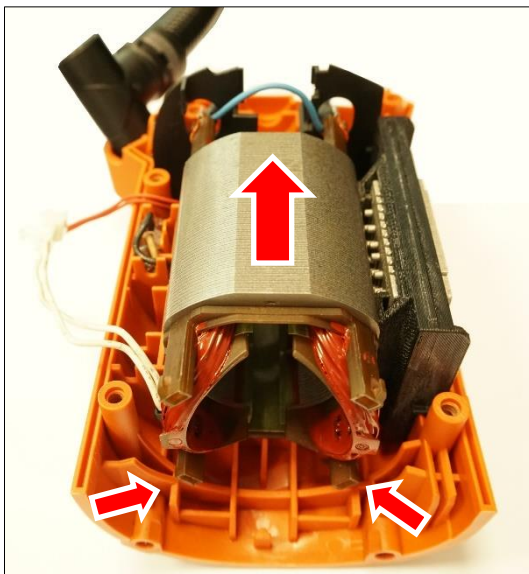
#### **i** INFORMATION

Note the position of the covers (1).

12. Position the covers (1) in the recesses.



13. Guide the cable (2) through the opening in the cover.
14. Connect the cable (2) to the stator.



#### **i** INFORMATION

Note the position of the stator.



## Assembly

## 9.4.3 Assembling the motor housing

## Steps that must be completed:

- Fitting the stator

## Tools:

- Torx T15



1. Position the housing half (1).
2. Guide the cable (2) through the opening.
3. Screw in the six screws (3) [2.7 Nm].



4. Position the cover (3).
5. Screw in the two screws (4) [2.0 Nm].





## Assembly

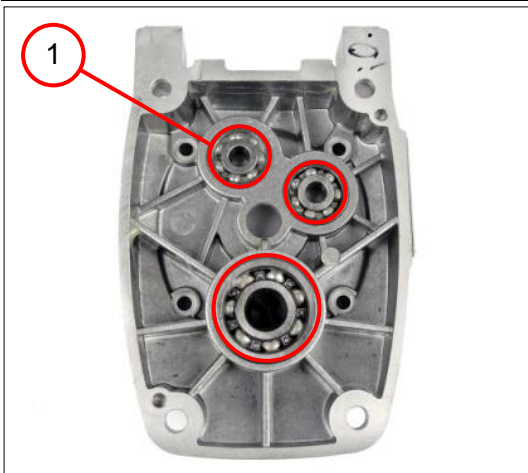
### 9.4.4 Assembling the intermediate gear box

#### Steps that must be completed:

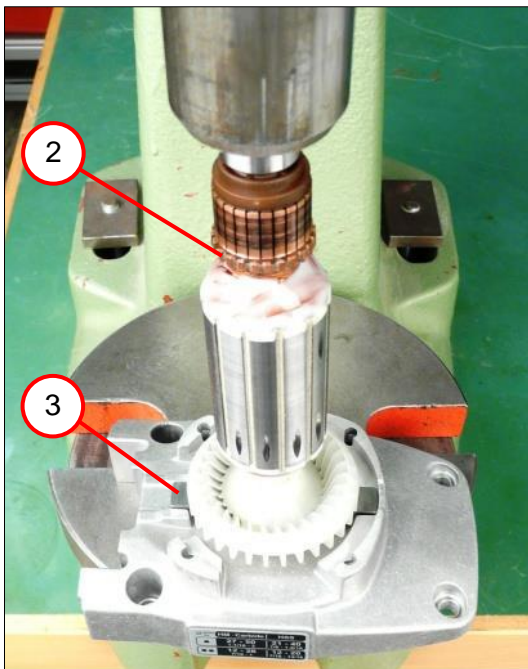
- Assembling the armature

#### Tool(s):

- Arbor press
- Sleeve  
10 mm inner diameter, 21 mm outer diameter  
15 mm inner diameter, 30 mm outer diameter



1. Press in the deep groove ball bearings (1).



#### PLEASE NOTE:

Damage to the armature.

The armature (2) can be damaged by the plate (3) being positioned incorrectly.

Note the position of the plate (3).

2. Press in the armature (2).







## Assembly

## 9.4.5 Positioning the intermediate gear box

## Steps that must be completed:

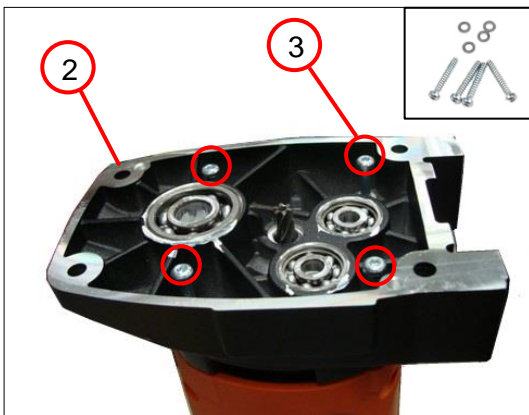
- Assembling the intermediate gear box
- Assembling the motor housing

## Tools:

- Torx T20



1. Position the air guide ring (1).



2. Position the intermediate gear box (2).
3. Screw in the four screws with washers (3) [3.0 Nm].





## Assembly

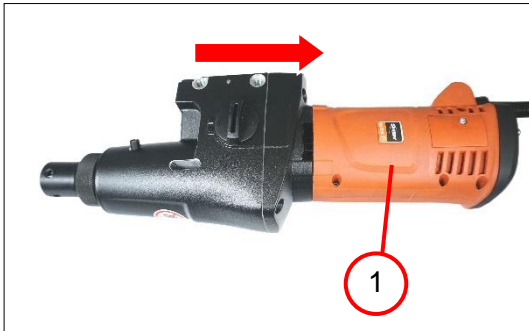
## 9.4.6 Positioning the gearbox housing

## Steps that must be completed:

- Positioning the intermediate gear box
- Positioning the gearbox parts

## Tools:

- Socket head wrench, 5 mm



1. Position the motor (1).



2. Screw in the four screws (2) [8.0 Nm  $\pm$ 0.3 Nm].

**INFORMATION**

Screw in the four screws crosswise.





## Assembly

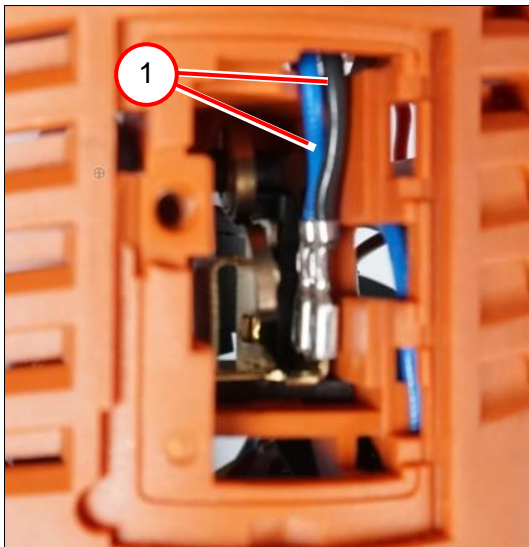
### 9.4.7 Positioning the carbon brushes

#### Steps that must be completed:

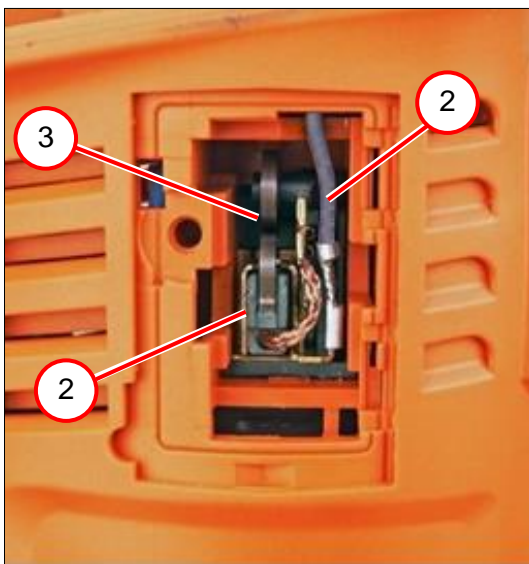
- Assembling the motor housing

#### Tools:

- Assembly aid
- Long-nosed pliers



1. Connect the cables (1).



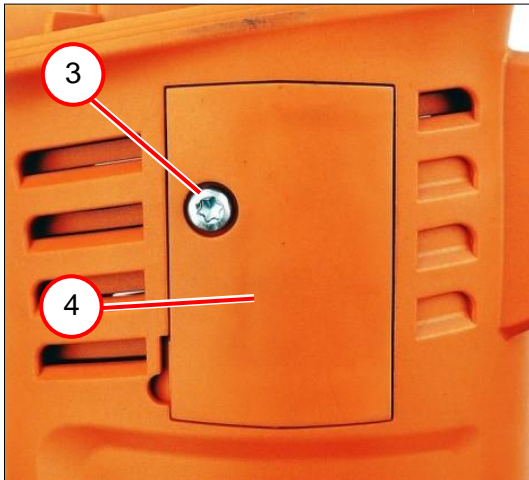
2. Connect the cable (2).
3. Position the carbon brush (2).
4. Position the spring (3).





## Assembly

### 9.4.7 Positioning the carbon brushes



5. Position the cover (3).
6. Screw in the screw (4).
7. Repeat steps 3 to 5 on the opposite side of the machine.





## Assembly

## 9.4.8 Positioning the drill motor

## Steps that must be completed:

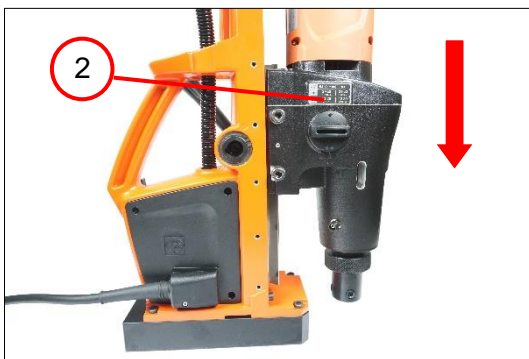
- Positioning the gearbox housing

## Tools:

- Socket head wrench, 6 mm
- Slotted screwdriver



1. Position the pressure piece (1).

**CAUTION!**

Crushing hazard around the drill motor

Crushing can occur.

Do not place hands under the drill motor (2).

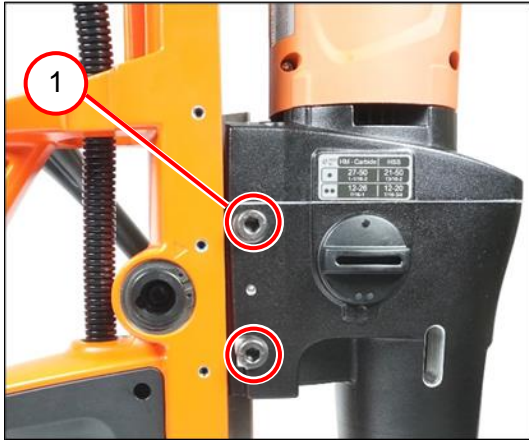
2. Slide the drill motor (2) into the guide.





## Assembly

### 9.4.8 Positioning the drill motor



3. Screw in the two screws (1) [5.0 Nm  $\pm$ 0.5 Nm].



4. Screw in the screw (2) [2.7 Nm  $\pm$ 0.3 Nm].

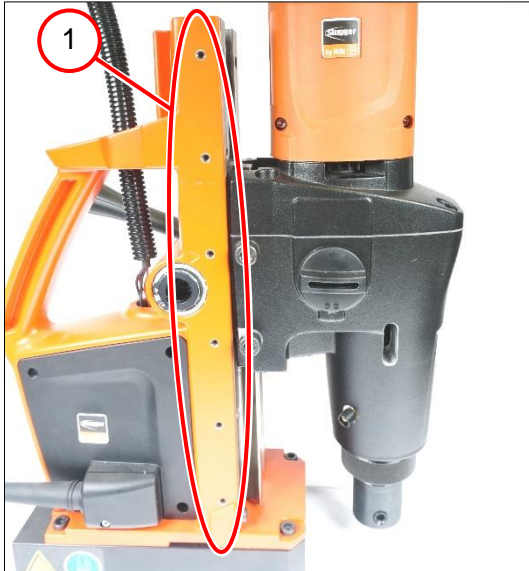




## 9.5 Setting the guide

**Tool(s):**

- Socket head wrench, 2.5 mm



1. Use the six set screws (1) to set zero backlash on the guide.

**INFORMATION**

To check the setting, move the drill motor up and down using the spider.

At the places where the drill unit moves too stiffly or too easily, screw the stud bolts in or out a little further.







## 9.6 Positioning the container



1. Position the container (1).
2. Place the hose on the hose socket (2).



**Inspection following repairs****10 Inspection following repairs**

Always:	Visual inspection
	Speed check
	Check coolant function
	Perform drilling test in metal
Mains operated machines:	Electrical safety test
Machine with magnet:	Check magnetic holding force
If restart lock present:	Check restart lock

