



Repair instructions



Applies to:

KBE 52-2 M, JME 202 M



Contents

Contents

Contents.....2

1 Models described5

2 Technical data6

3 Symbols used.....7

4 Notes and requirements8

5 Safety instructions9

6 Tools, lubricants and auxiliary substances required.....11

 6.1 Standard tools11

 6.2 Special tools.....12

 6.3 Lubricants and auxiliary substances required12

7 Test and diagnostics options13

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 motor16

 8.2.3 Removing the intermediate gear box.....18

 8.2.4 Disassembling the intermediate gear box.....19

 8.2.5 Disassembling the armature20

 8.2.6 Removing the motor housing.....21

 8.3 Disassembling the drill chuck23

 8.3.1 Removing the mounting shaft.....23

 8.3.2 Disassembling the mounting shaft.....25

 8.4 Removing the gearbox housing27

 8.4.1 Removing the gearbox parts27

 8.4.2 Removing the shaft30

 8.4.3 Disassembling the shaft31

 8.4.4 Disassembling the gearbox parts32

 8.5 Disassembling the drill jig35

 8.5.1 Removing the control panel.....35

 8.5.2 Disassembling the control panel.....36

 8.5.3 Removing the electronics37

 8.5.4 Disassembling the mains cable39





Contents

8.5.5 Removing the magnetic base41

8.5.6 Disassembling the magnetic base42

8.5.7 Removing the protective hose43

8.5.8 Disassembling the protective hose44

8.5.9 Removing the guide45

8.5.10 Removing the spider48

8.5.11 Disassembling the spider49

9 Assembly.....50

9.1 Assembling the drill jig.....50

9.1.1 Assembling the spider50

9.1.2 Positioning the spider51

9.1.3 Positioning the guide52

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 cable61

9.1.10 Assembling the control panel63

9.1.11 Positioning the control panel64

9.2 Assembling the drill chuck.....66

9.2.1 Assembling the mounting shaft.....66

9.2.2 Positioning the mounting shaft68

9.3 Assembling the gearbox housing.....69

9.3.1 Assembling the gearbox parts69

9.3.2 Assembling the shaft.....72

9.3.3 Positioning the shaft73

9.3.4 Positioning the gearbox parts74

9.4 Assembling the motor housing76

9.4.1 Assembling the armature.....76

9.4.2 Fitting the stator78

9.4.3 Assembling the motor housing81

9.4.4 Assembling the intermediate gear box.....83

9.4.5 Positioning the intermediate gear box84





Contents

9.4.6 Positioning the gearbox housing.....85

9.4.7 Positioning the carbon brushes86

9.4.8 Positioning the drill motor88

9.5 Setting the guide90

9.6 Positioning the container91

10 Inspection following repairs92





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

 SIGNAL WORD FOR THE DANGER CLASSIFICATION.
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.

 WARNING!
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.

 CAUTION!
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.

 PLEASE NOTE:
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 diameter	64107019007
	26 mm diameter	64107026000

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



i 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.





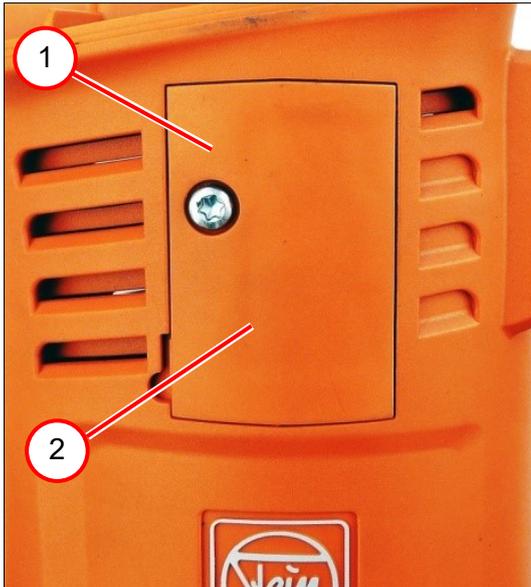
Disassembly

8.2 Removing the motor housing

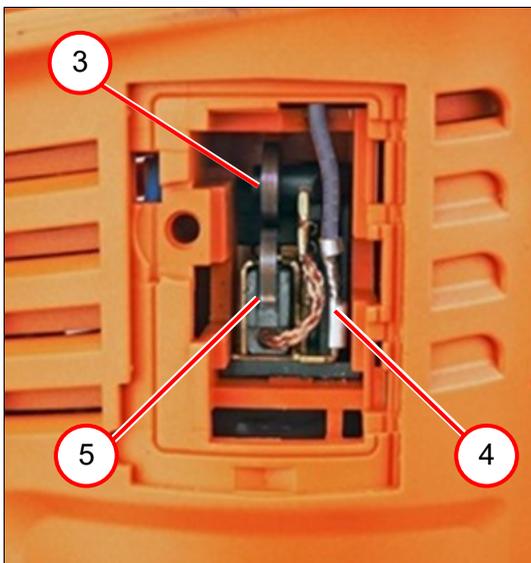
8.2.1 Removing the carbon brushes

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

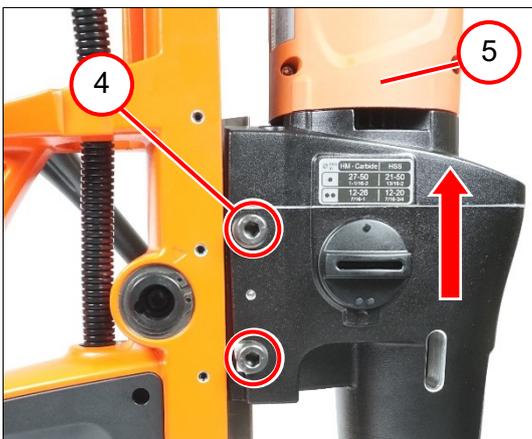


1. Unscrew the screw (1).



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:

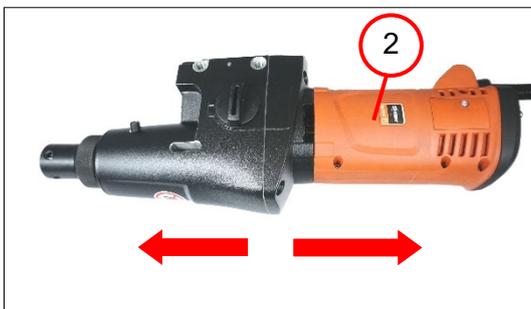
- Removing the carbon brushes
- Removing the drill motor

Tool(s):

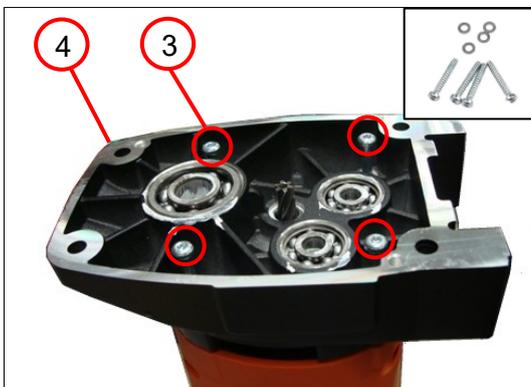
- Torx T20
- Socket head wrench, 5 mm
- Plastic hammer



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

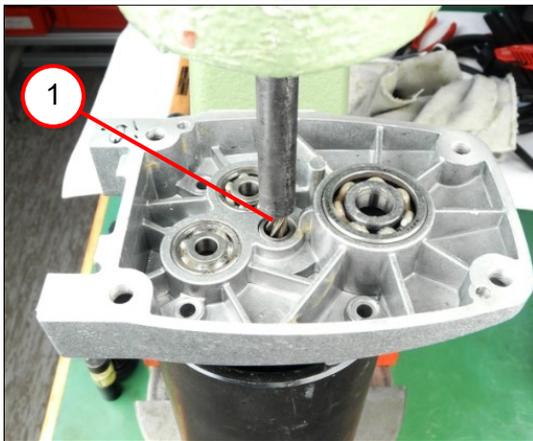
8.2.4 Disassembling the intermediate gear box

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

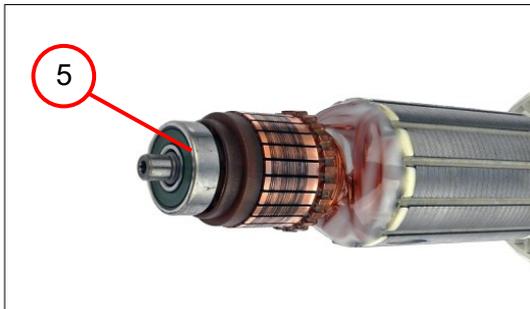
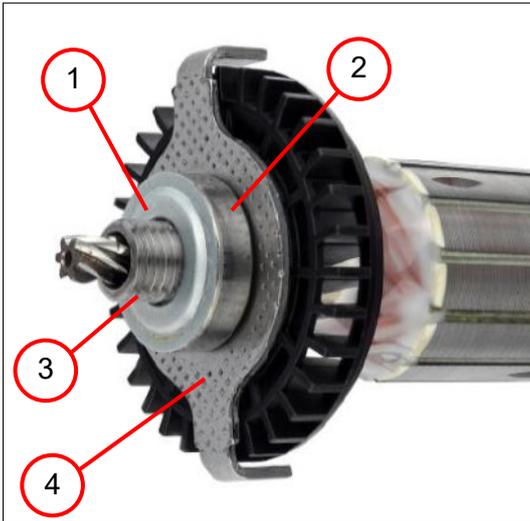
8.2.5 Disassembling the armature

Steps that must be completed:

- Disassembling the intermediate gear box

Tool(s):

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



i 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).



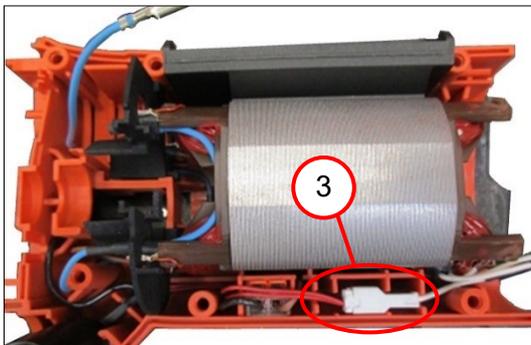


Disassembly

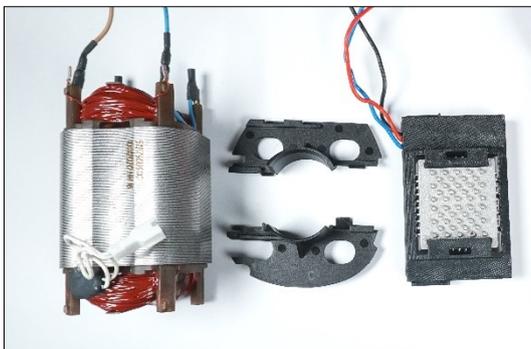
8.2.6 Removing the motor housing



- 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.



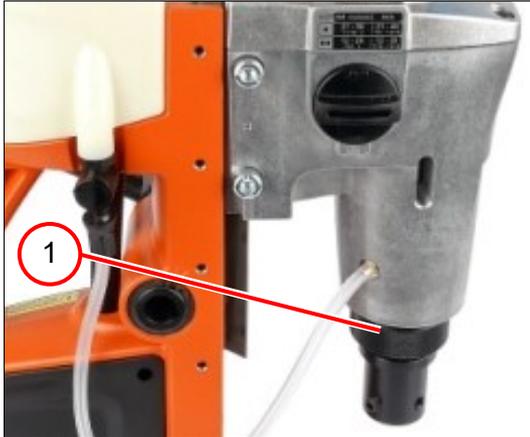


8.3 Disassembling the drill chuck

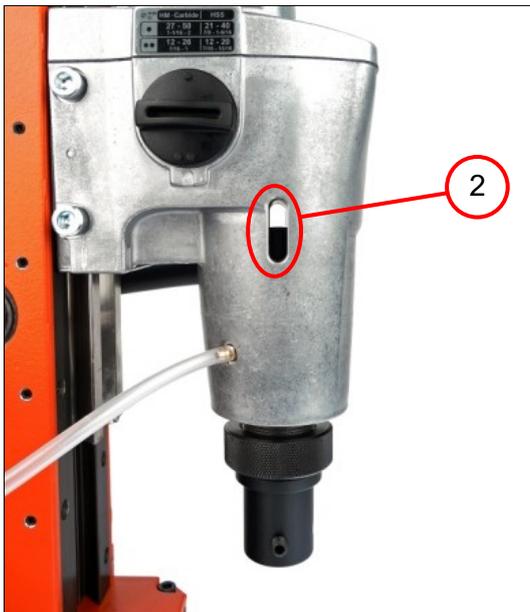
8.3.1 Removing the mounting shaft

Tools:

- Plastic hammer
- Drift key



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



2. Turn the shaft into position (2).





8.3.1 Removing the mounting shaft



3. Remove the shaft (1).





Disassembly

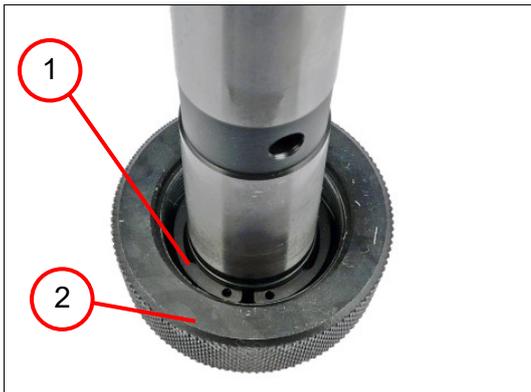
8.3.2 Disassembling the mounting shaft

Steps that must be completed:

- Removing the mounting shaft

Tools:

- Circlip pliers
- Slotted screwdriver



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



i 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.

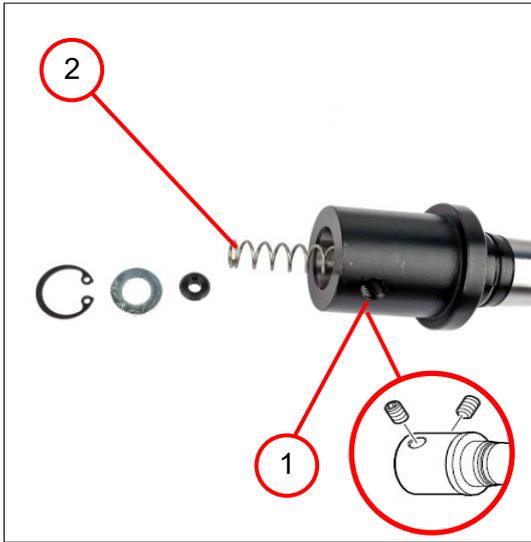
4. Remove the circlip (4).
5. Remove the disc (5).
6. Remove the spiral spring with sleeve (6).





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

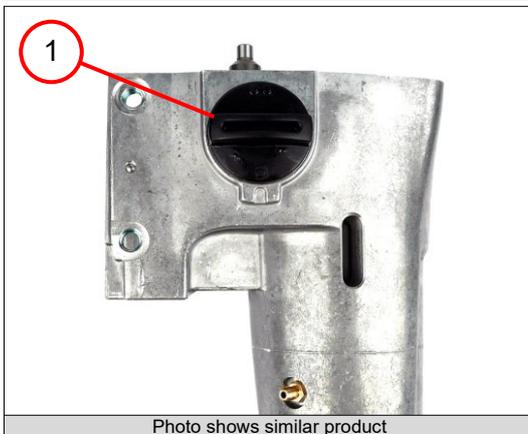
8.4.1 Removing the gearbox parts

Steps that must be completed:

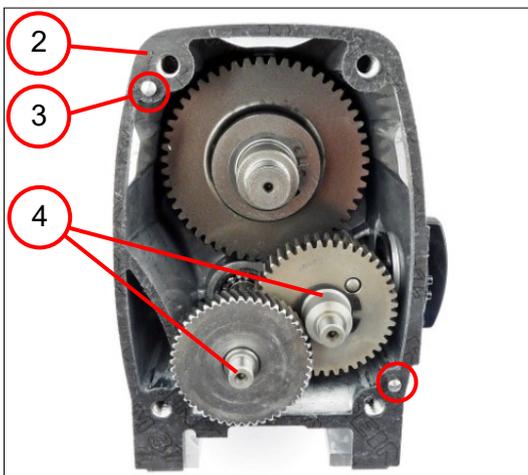
- Removing the mounting shaft
- Removing the intermediate gear box

Tools:

- Combination pliers
- Circlip pliers



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



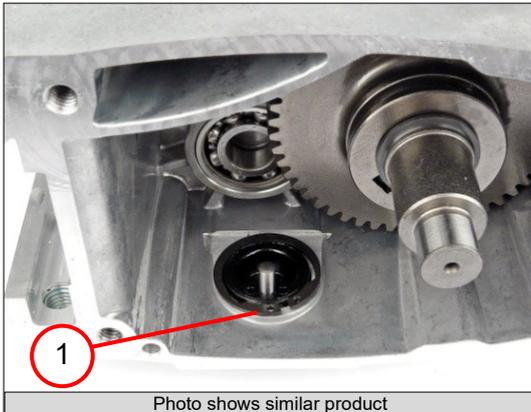
2. Remove the seal (2).
3. Remove the two straight pins (3).
4. Remove the two gearwheels (4).



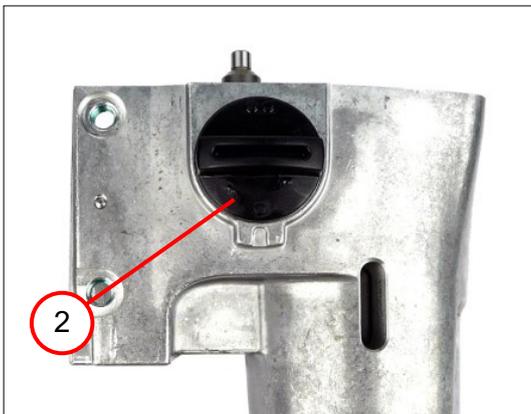


Disassembly

8.4.1 Removing the gearbox parts



5. Remove the circlip (1).



6. Remove the rotary knob (2).



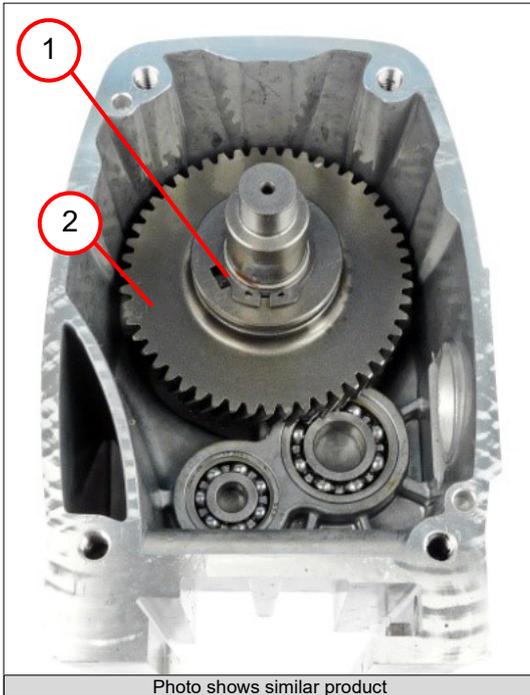
7. Remove the sealing ring (3).



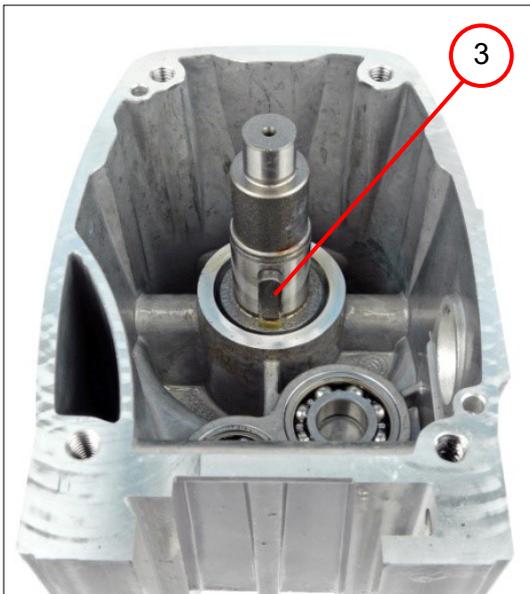


Disassembly

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



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

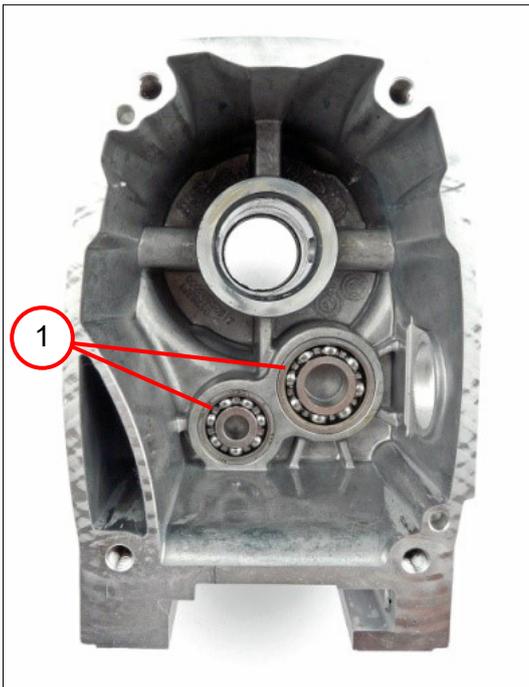
8.4.4 Disassembling the gearbox parts

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).





8.4.4 Disassembling the gearbox parts

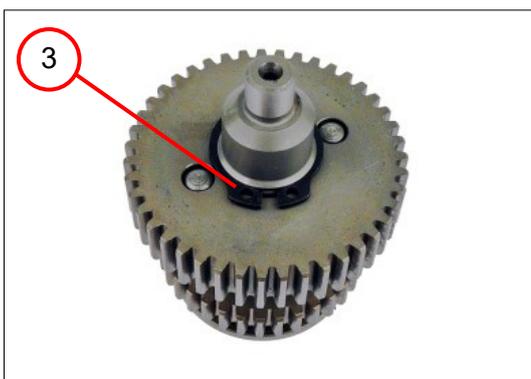


2. Remove the hose socket (1).



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

3. Remove the three sealing rings (2).



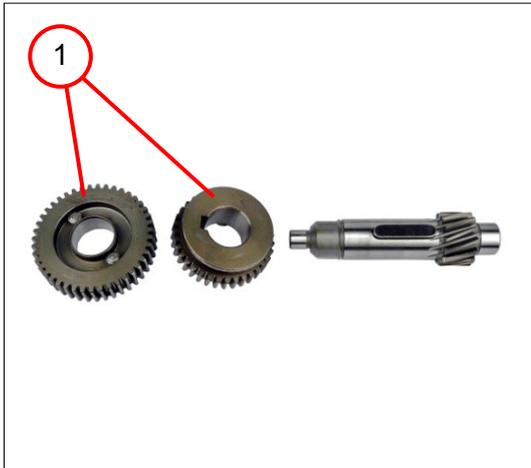
4. Remove the circlip (3).



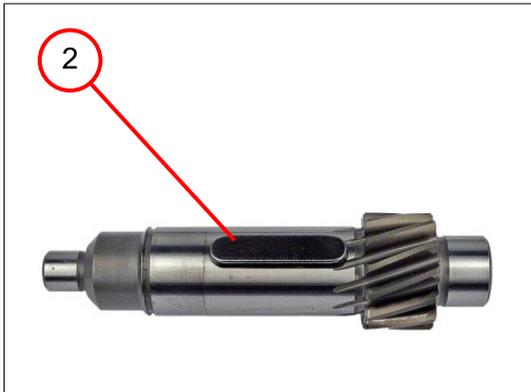


Disassembly

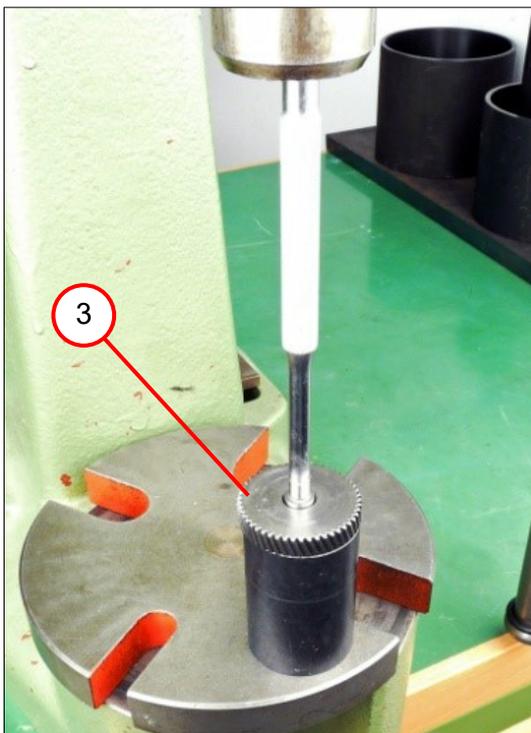
8.4.4 Disassembling the gearbox parts



5. Remove the two gearwheels (1).



6. Remove the feather key (2).



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





Disassembly

8.5 Disassembling the drill jig

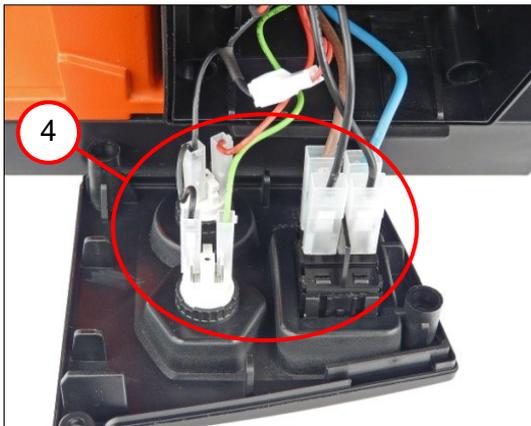
8.5.1 Removing the control panel

Tool(s):

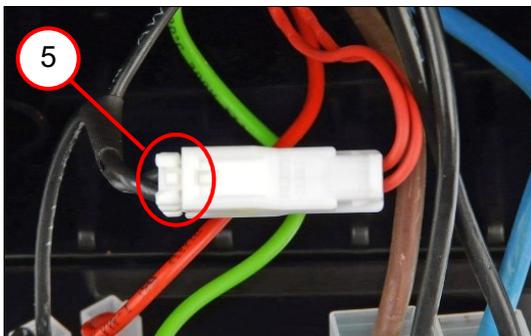
- Torx T20



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.





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

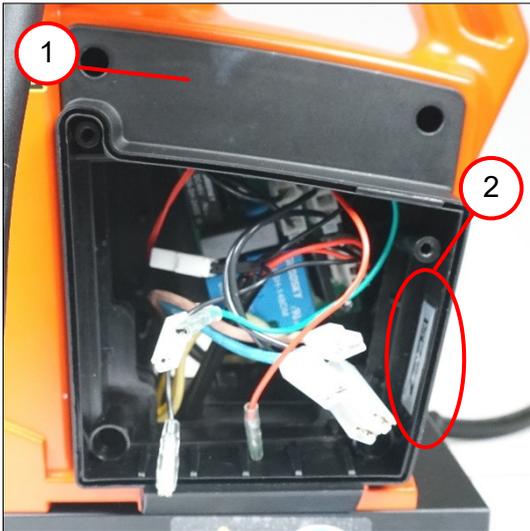
8.5.3 Removing the electronics

Steps that must be completed:

- Removing the control panel

Tool(s):

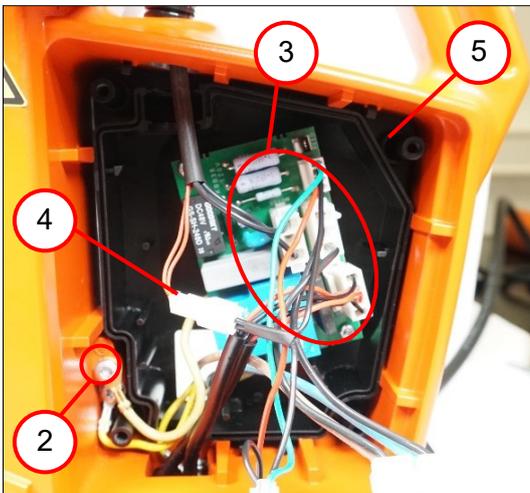
- Torx T20



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

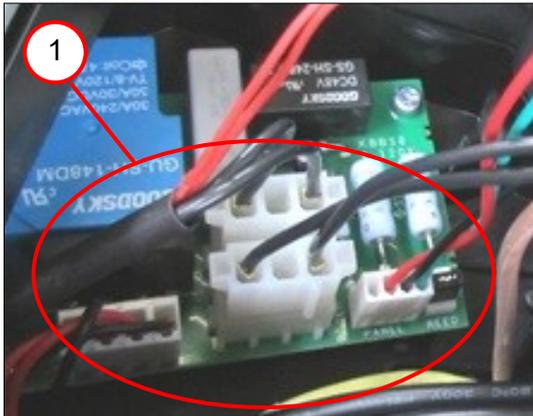
8.5.3 Removing the electronics

Steps that must be completed:

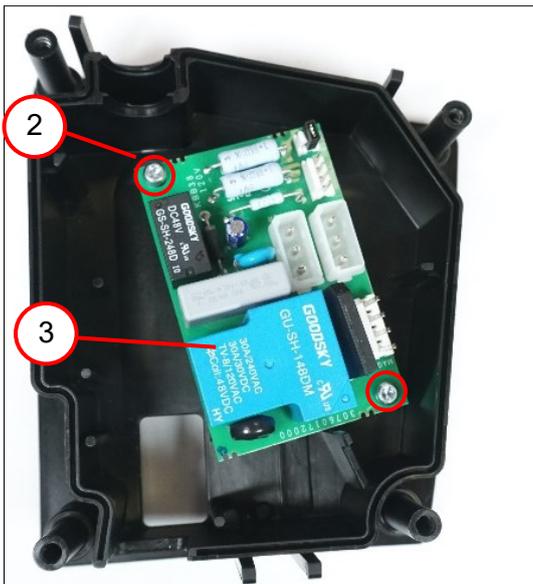
- Removing the control panel

Tool(s):

- Torx T20



1. Remove the cables (1).



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





Disassembly

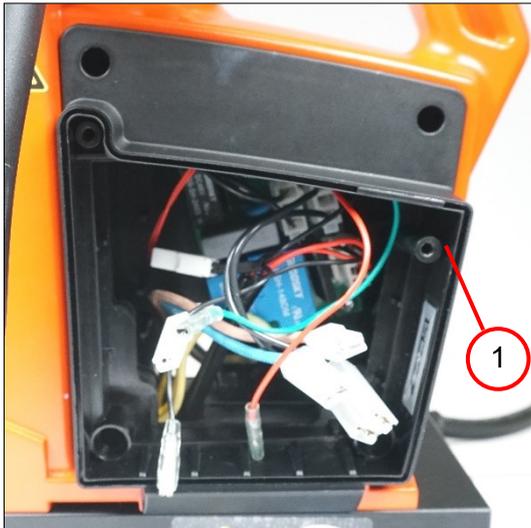
8.5.4 Disassembling the mains cable

Steps that must be completed:

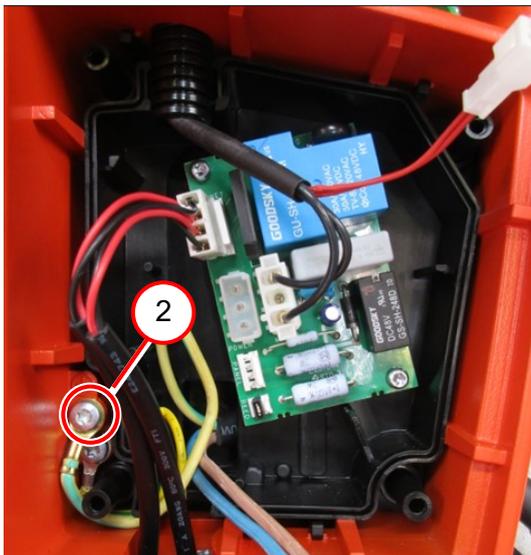
- Removing the control panel

Tools:

- Torx T15



1. Remove the cover (1).



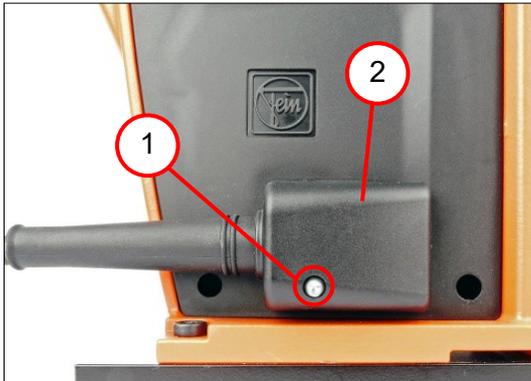
2. Unscrew the screw (2).



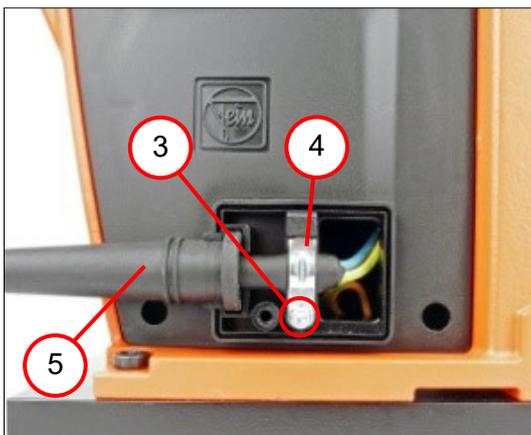


Disassembly

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

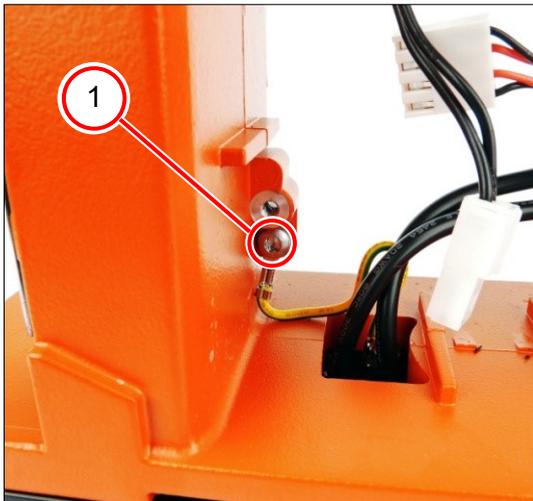
8.5.5 Removing the magnetic base

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

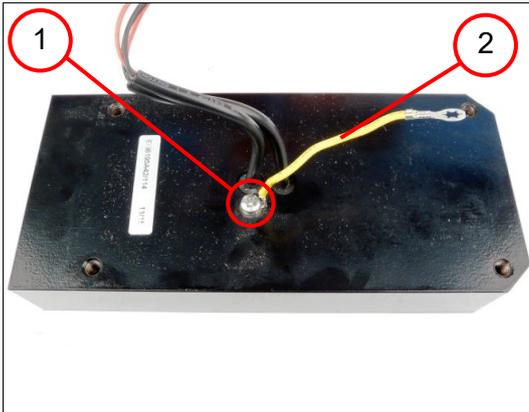
8.5.6 Disassembling the magnetic base

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

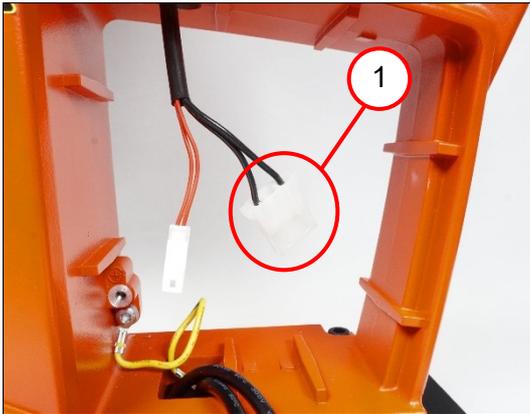
8.5.7 Removing the protective hose

Steps that must be completed:

- Remove the electronics

Tools:

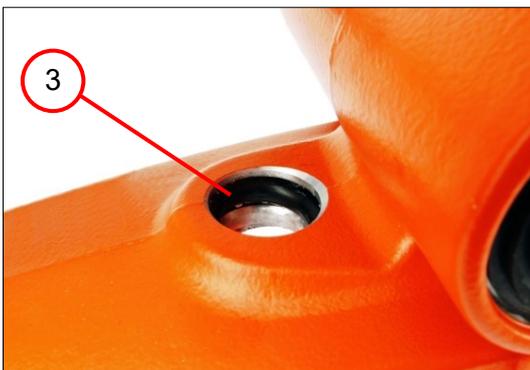
- Unlocking tool
- Assembly aid



1. Remove the plug (1).



2. Remove the protective hose (2).



3. Remove the sealing ring (3).





Disassembly

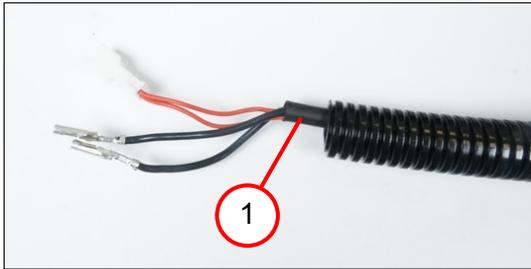
8.5.8 Disassembling the protective hose

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:

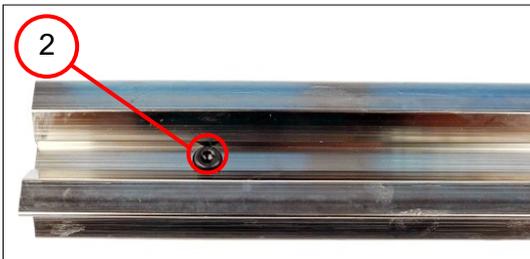
- Removing the drill motor

Tool(s):

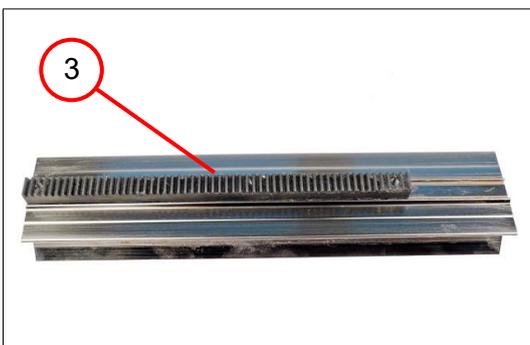
- Socket head wrench, 2.5 mm, 3 mm, 4 mm
- Slotted screwdriver
- PH2 cross-head screwdriver



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).



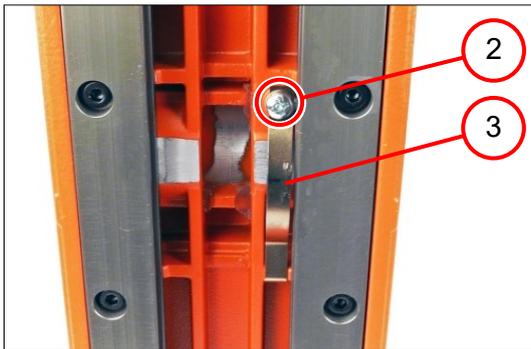


Disassembly

8.5.9 Removing the guide



6. Unscrew the screw (1).



7. Unscrew the screw (2).

8. Remove the leaf spring (3).



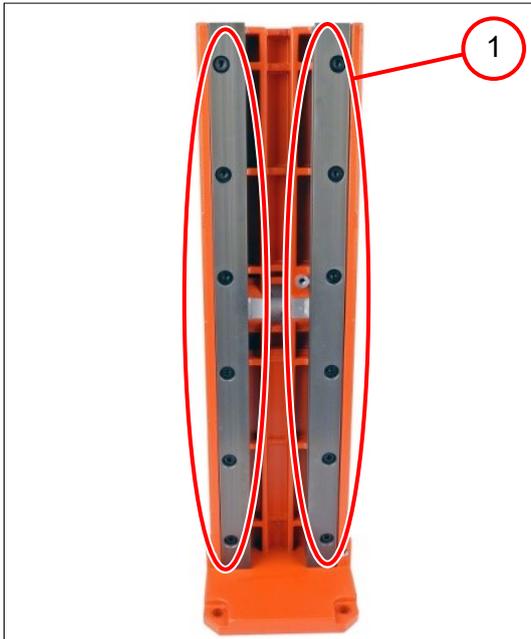
9. Unscrew the six set screws (4).





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).





8.5.10 Removing the spider

Steps that must be completed:

- Removing the guide

Tools:

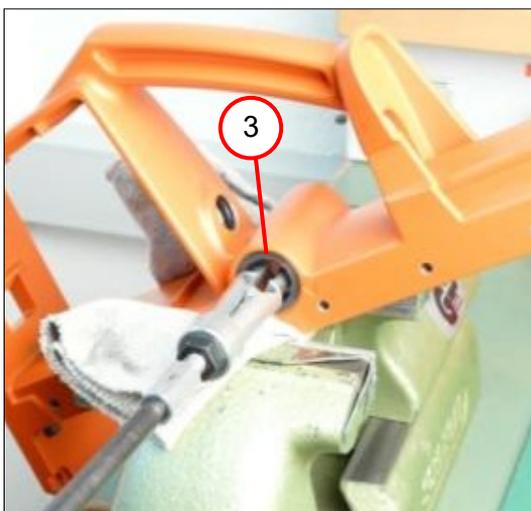
- Circlip pliers
- Inner bearing puller, 18–22 mm
- Slide hammer



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:

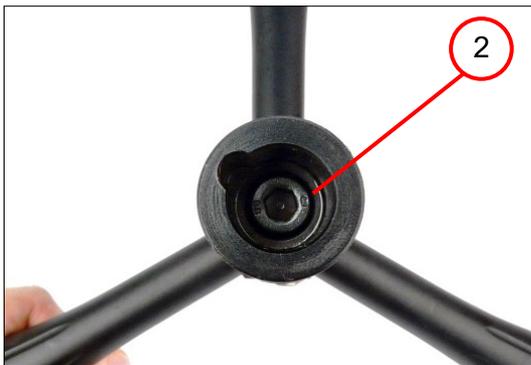
- Removing the spider

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

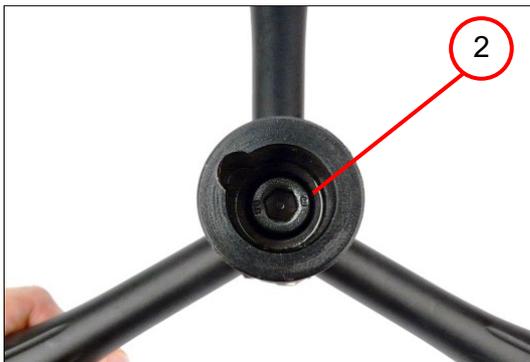
9.1.1 Assembling the spider

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 ± 0.5 Nm].



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





Assembly

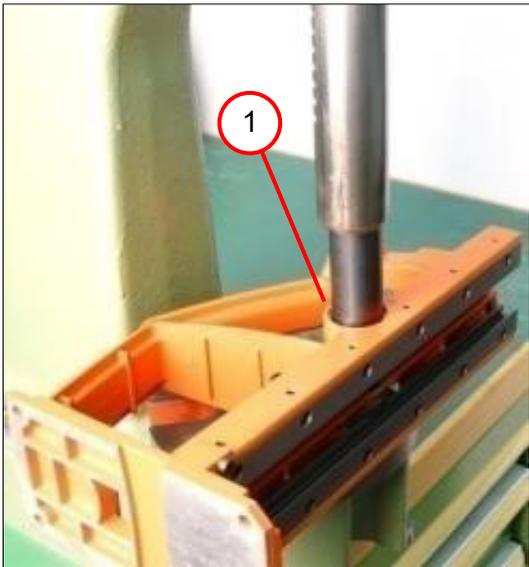
9.1.2 Positioning the spider

Steps that must be completed:

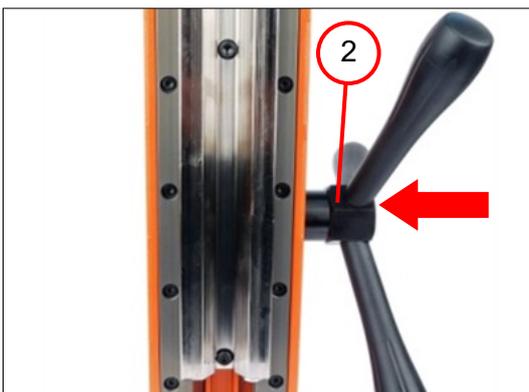
- Assembling the spider

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

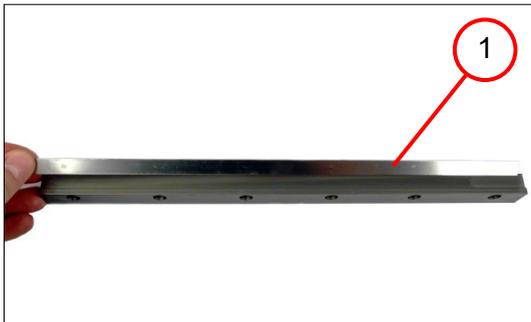
9.1.3 Positioning the guide

Steps that must be completed:

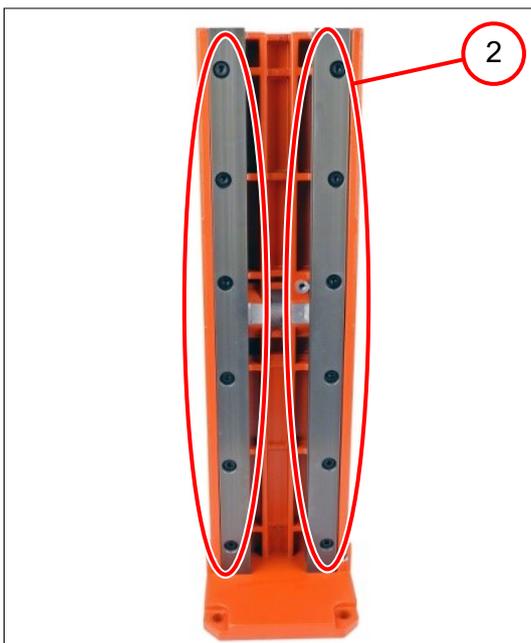
- Positioning the spider

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).



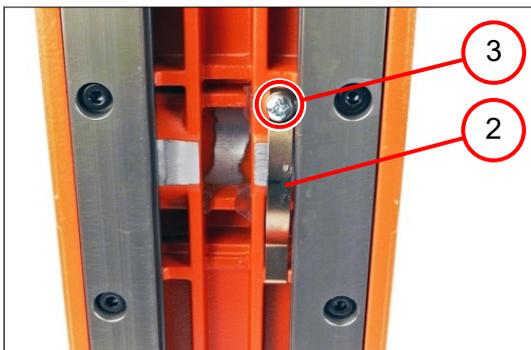


9.1.3 Positioning the guide



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

i	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 ±0.15 Nm].



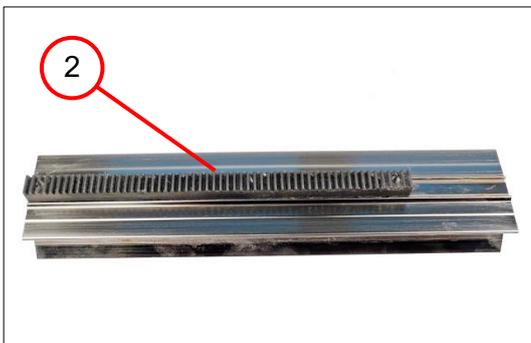


Assembly

9.1.3 Positioning the guide

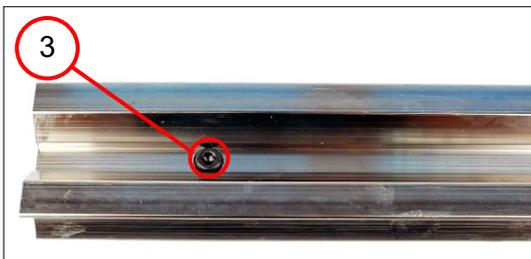


7. Screw in the flat-head screw (1) [1.2 Nm ±0.15 Nm].

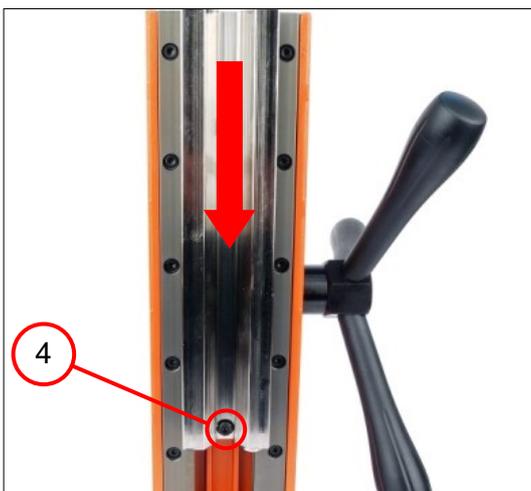


8. Position the gear rack (2).

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



10. Screw in the screw (3) [3.0 Nm ±0.3 Nm].



11. Position the guide.

12. Move the guide downwards using the spider.

13. Screw in the screw (4) [3.0 Nm ±0.3 Nm].



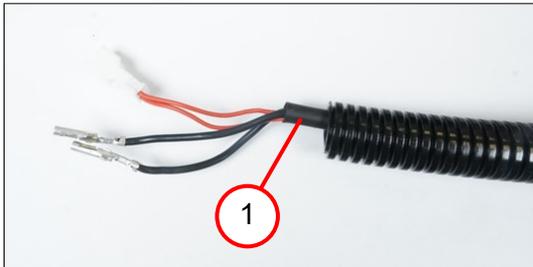


Assembly

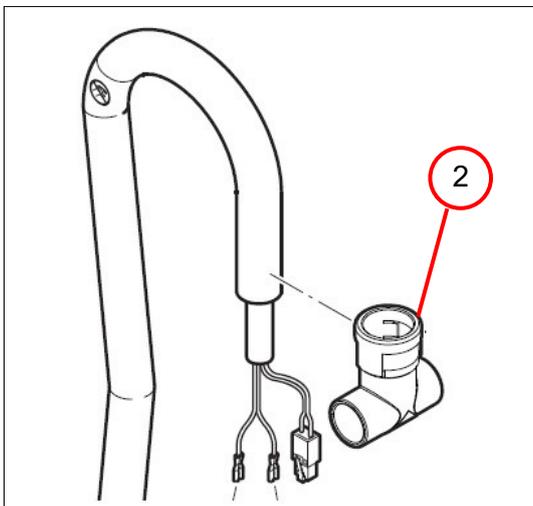
9.1.4 Assembling the protective hose

Tools:

- None



1. Position the connecting cable (1).



2. Position the connecting piece (2).



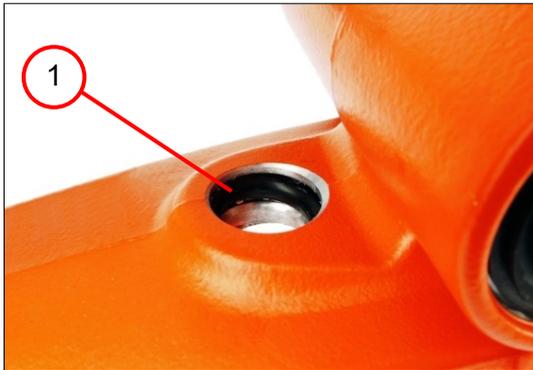


Assembly

9.1.5 Positioning the protective hose

Steps that must be completed:

- Assembling the protective hose

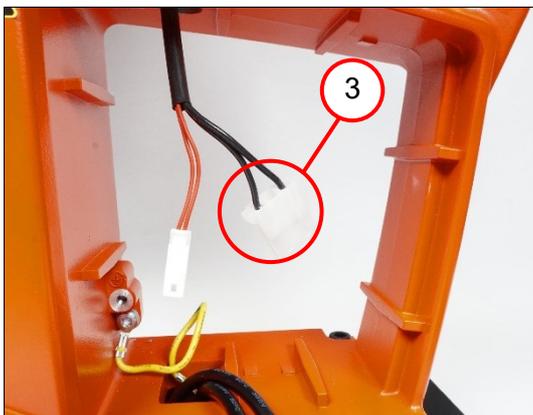


1. Apply grease to the sealing ring (1).
2. Position the sealing ring (1).



3. Position the protective hose (2).

Photo shows similar product



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



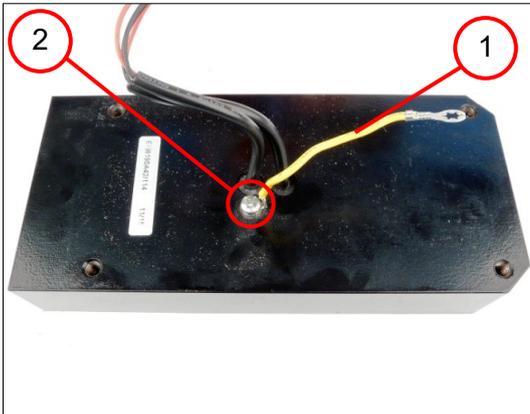


Assembly

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 ± 0.2 Nm].





Assembly

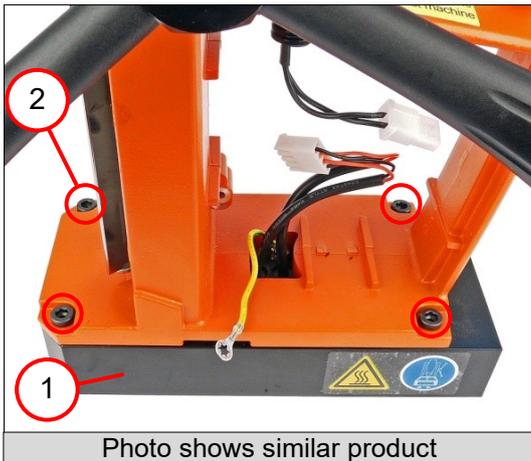
9.1.7 Positioning the magnetic base

Steps that must be completed:

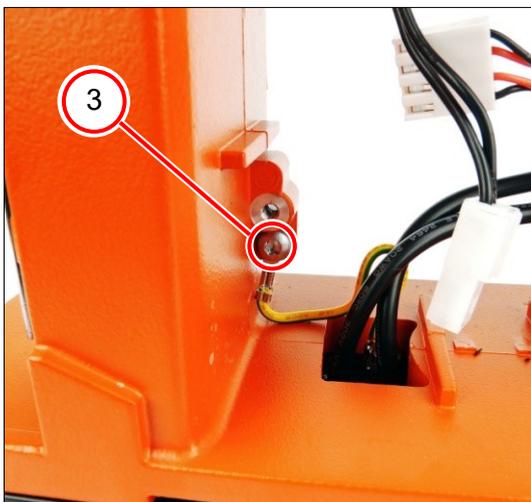
- Assembling the magnetic base

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

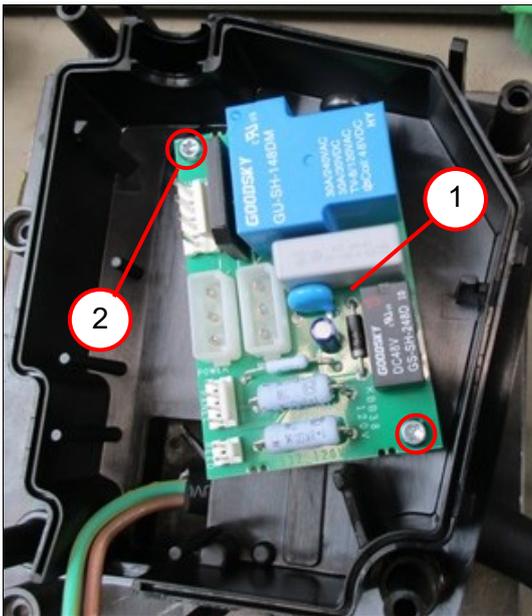
9.1.8 Assembling the electronics

Steps that must be completed:

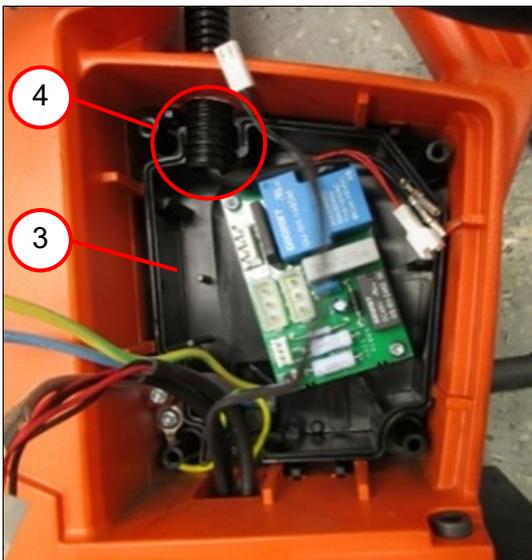
- Positioning the protective hose
- Positioning the magnetic foot

Tool(s):

- Torx T20



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



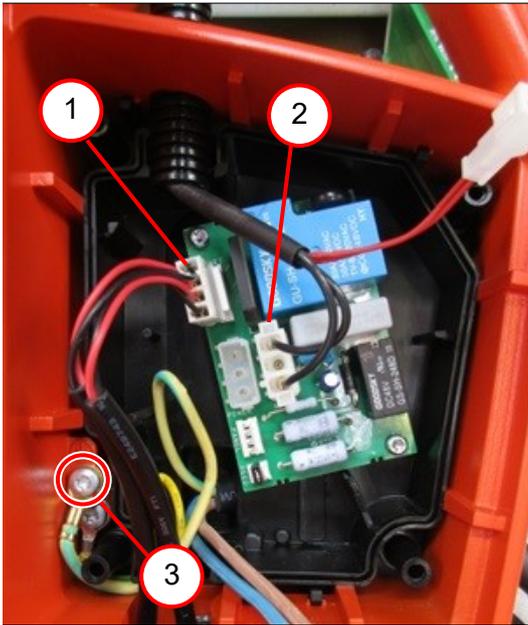
3. Position the cover (3) with the electronics.
4. Place the protective hose (4) in the recess.





Assembly

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 ± 0.2 Nm].





Assembly

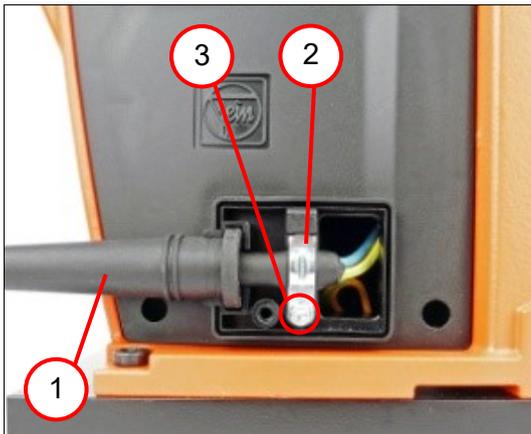
9.1.9 Fitting the network cable

Steps that must be completed:

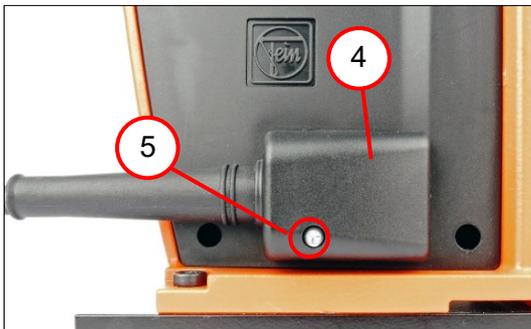
- Fit the electronics
- Assembling the control panel

Tools:

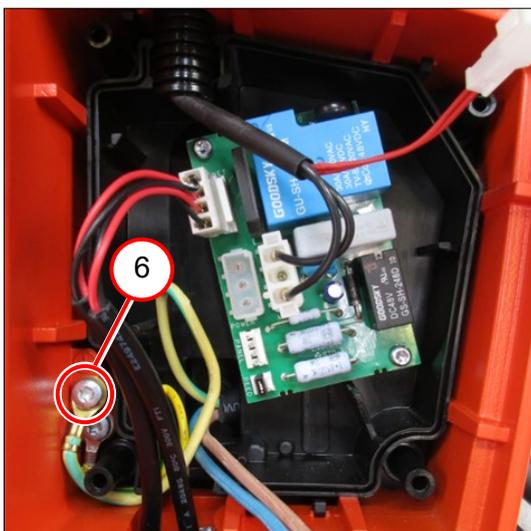
- Torx T15, T20



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) [0.9 Nm \pm 0.1 Nm].



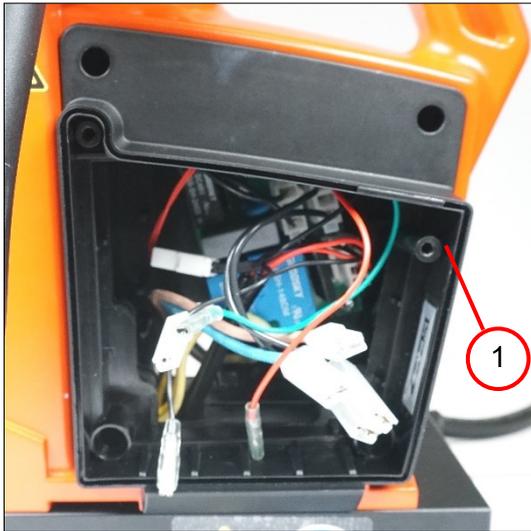
6. Screw in the screw (6).



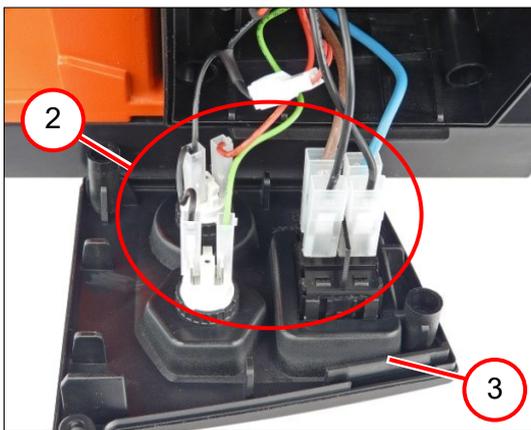


Assembly

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

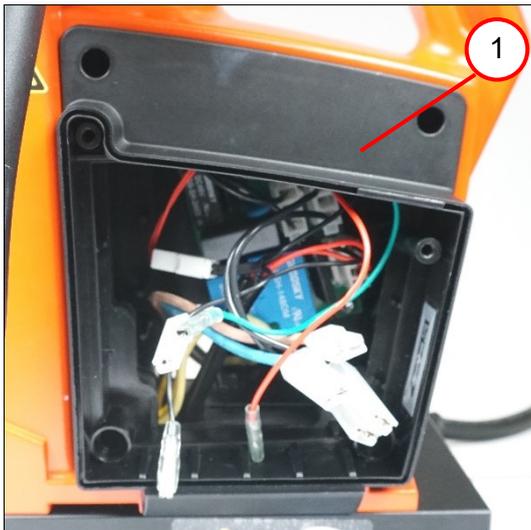
9.1.11 Positioning the control panel

Steps that must be completed:

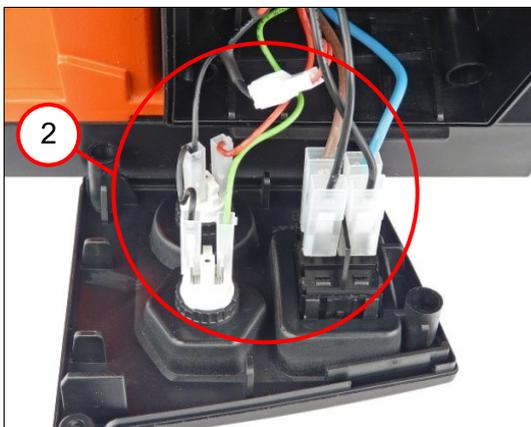
- Assembling the control panel
- Fit the mains cable

Tools:

- Torx T20



1. Position the cover (1).

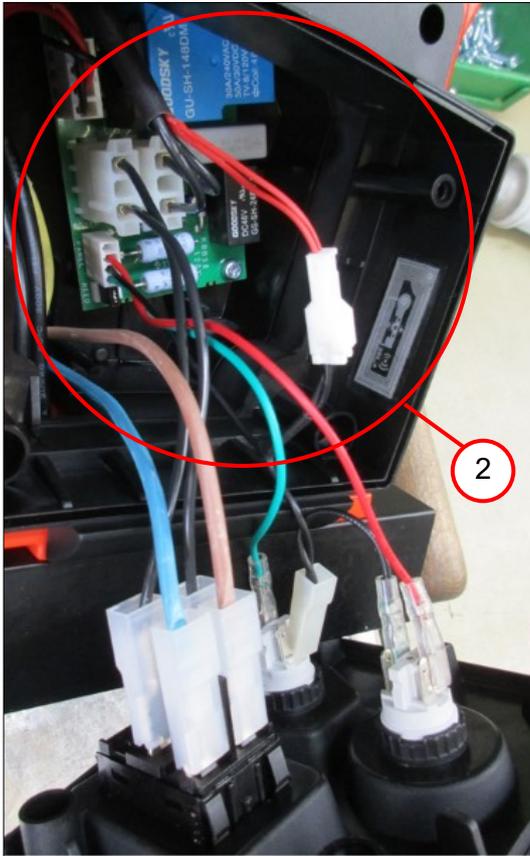


2. Connect all plug connections (2) as shown in the connection diagram.

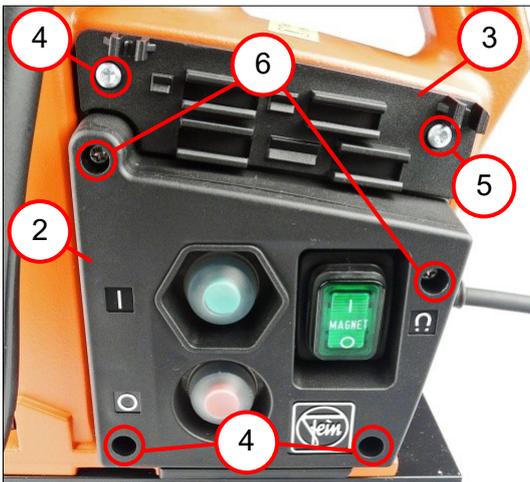


Assembly

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 three screws [4x48] (4) [1.7 ±0.3 Nm].
7. Screw in the screw [4x35] (5) [1.7 ±0.3 Nm].
8. Screw in the two screws [4x18] (6) [1.7 ±0.3 Nm].

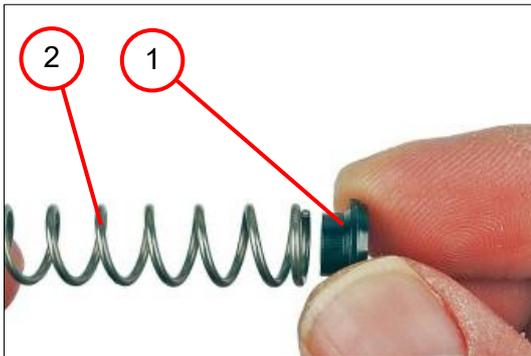


9.2 Assembling the drill chuck

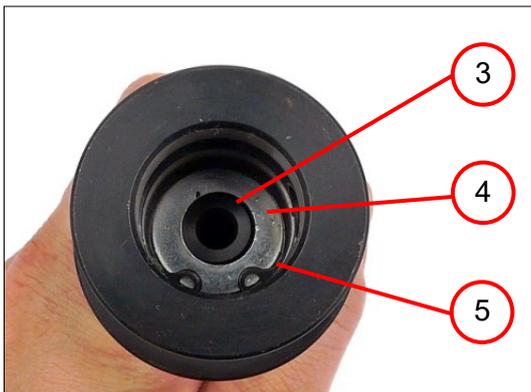
9.2.1 Assembling the mounting shaft

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).

***i* 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

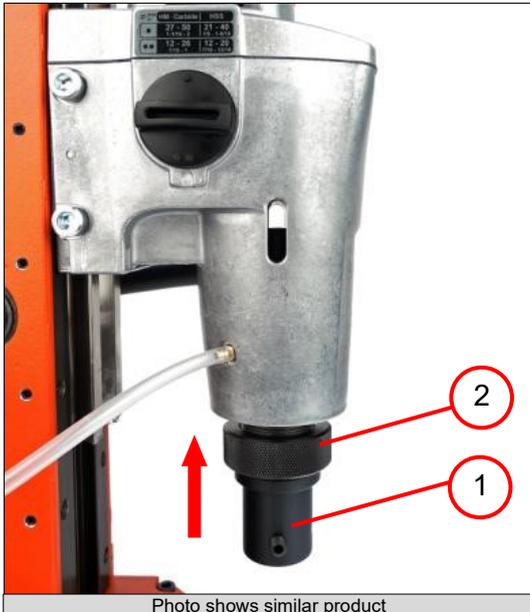


Photo shows similar product

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





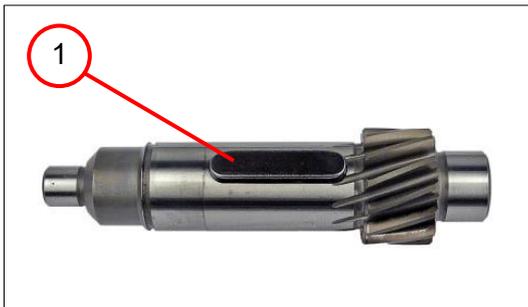
Assembly

9.3 Assembling the gearbox housing

9.3.1 Assembling the gearbox parts

Tool(s):

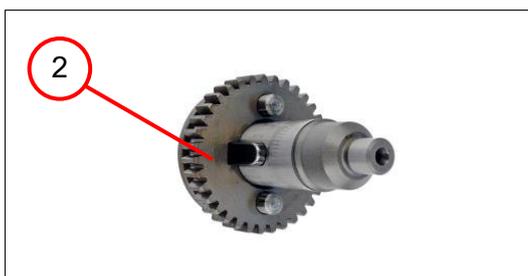
- Circlip pliers
- Combination pliers
- Arbor press
- Sleeve
15 mm inner diameter, 25 mm outer diameter
10 mm inner diameter, 21 mm outer diameter
21 mm inner diameter, 28 mm outer diameter
- Socket wrench
- Socket wrench insert, 7 mm
- Slide hammer
- Inner puller
- Slotted screwdriver
- Punch, 7 mm



1. Position the feather key (1).

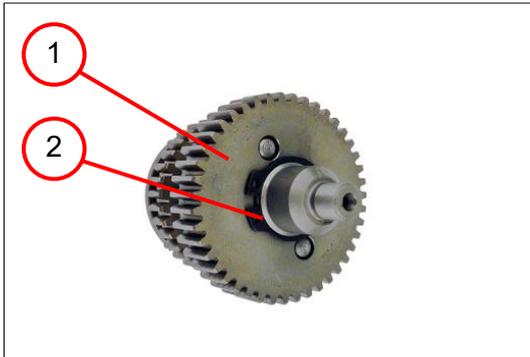


2. Position the gearwheel (2).

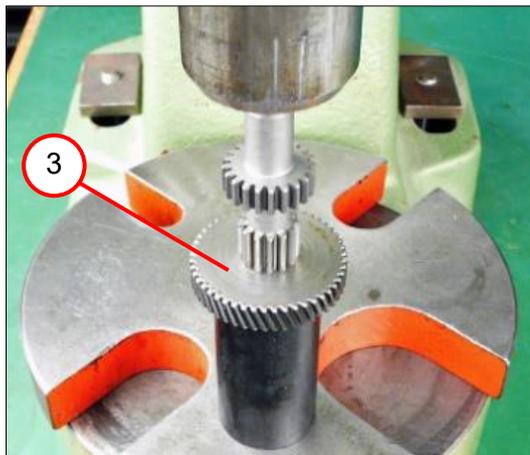


Assembly

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 ± 0.1 Nm].

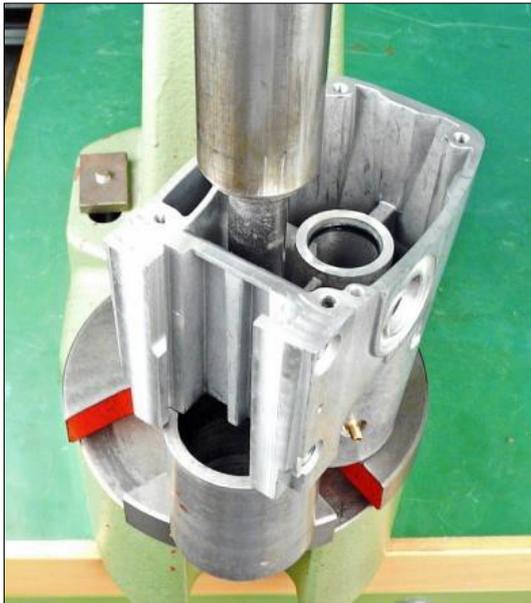


- | |
|-----------------------------------------------|
| i INFORMATION |
| Use new sealing rings for assembly each time. |
7. Apply grease to the three sealing rings (5).
 8. Position the three sealing rings (5).

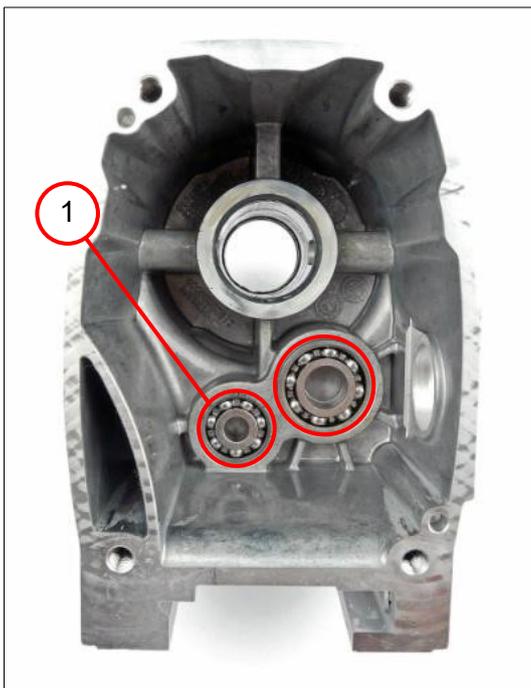


Assembly

9.3.1 Assembling the gearbox parts



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



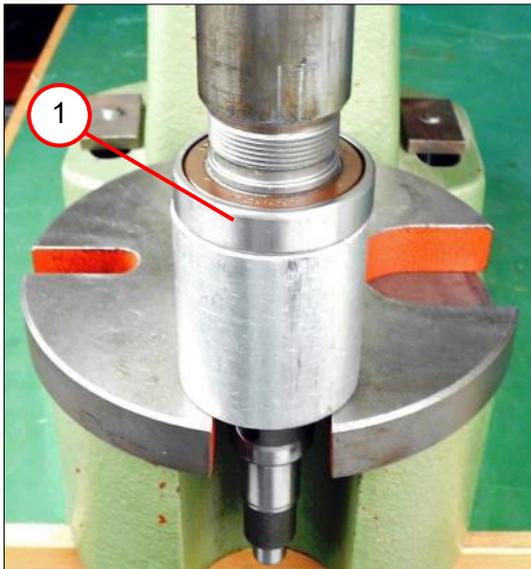


Assembly

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

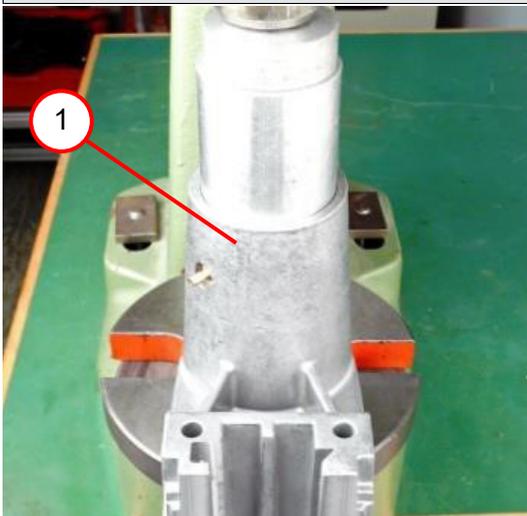
9.3.3 Positioning the shaft

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).





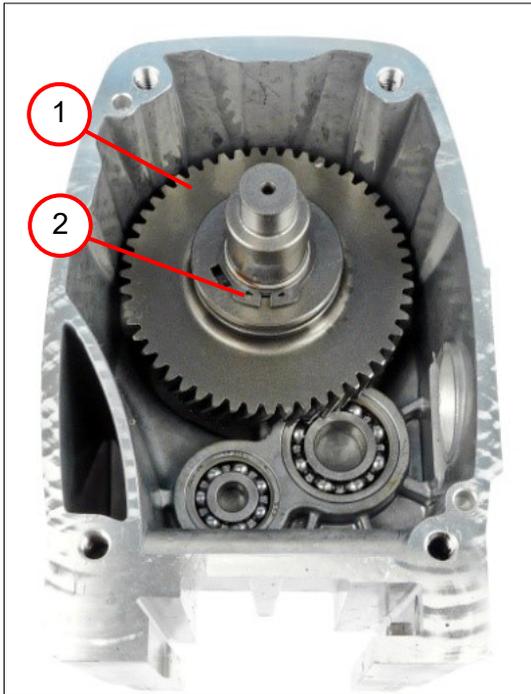
9.3.4 Positioning the gearbox parts

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).



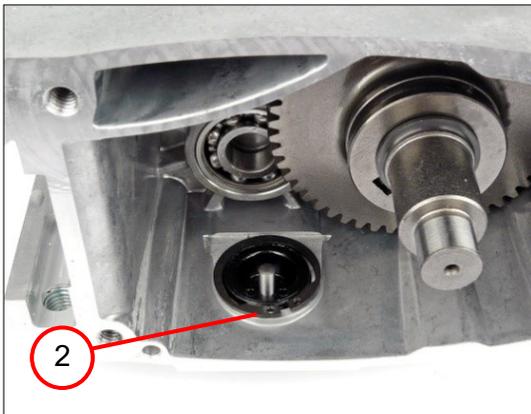


Assembly

9.3.4 Positioning the gearbox parts



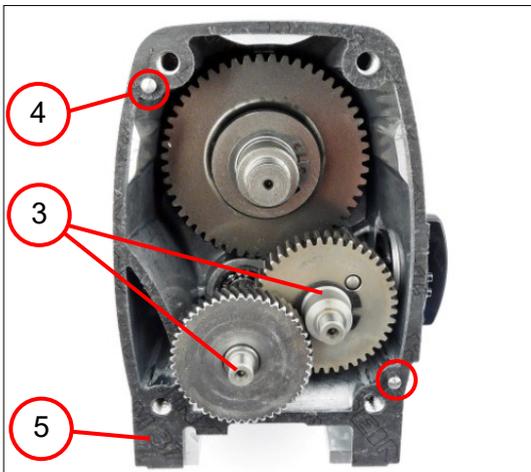
5. Position the rotary knob (1).



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.

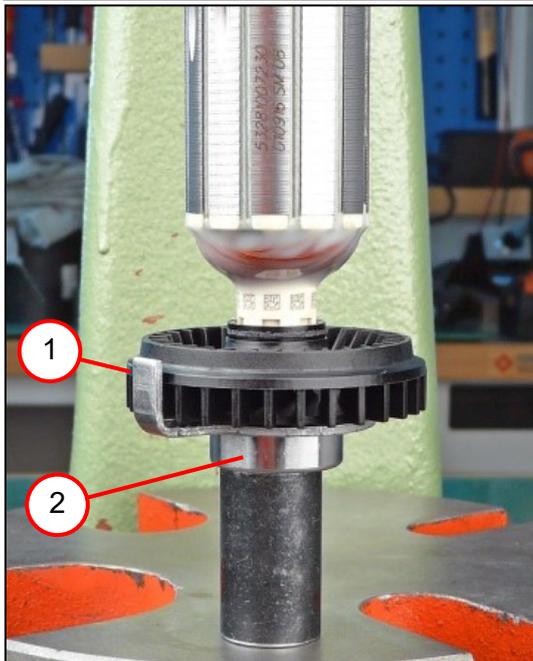


9.4 Assembling the motor housing

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).

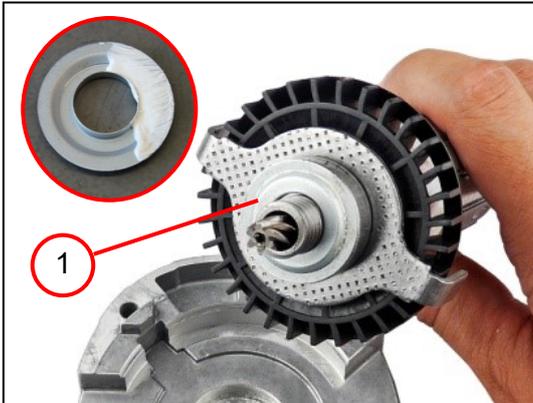


3. Press on the sealing ring (3).

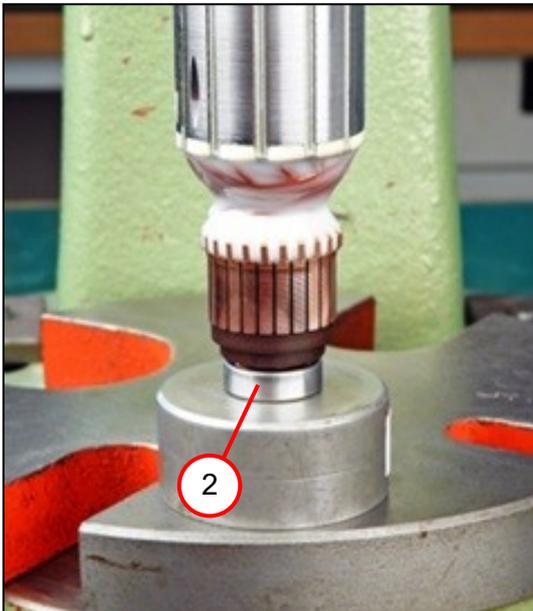


Assembly

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

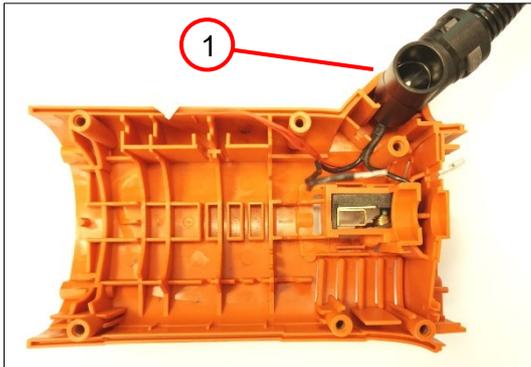
9.4.2 Fitting the stator

Steps that must be completed:

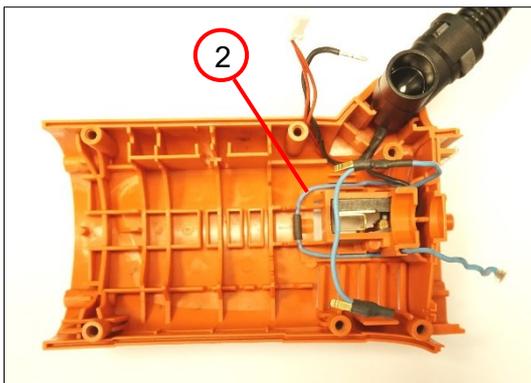
- Assembling the protective hose

Tools:

- Assembly aid



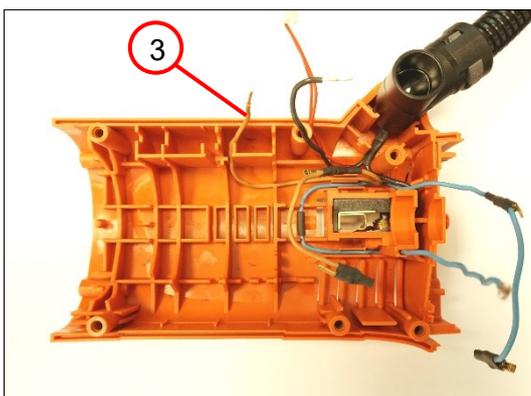
1. Position the protective hose (1).



i INFORMATION

Note the recesses when laying the cables.

2. Position the cable (2).



3. Position the cable (3).



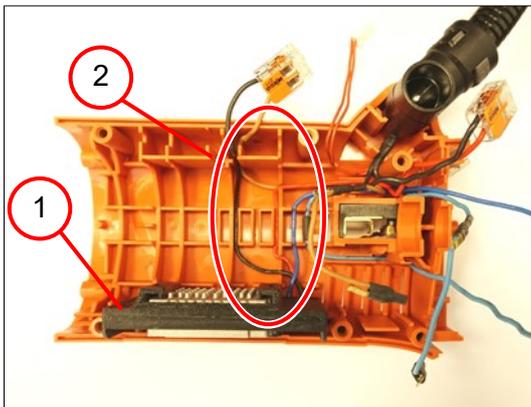


Assembly

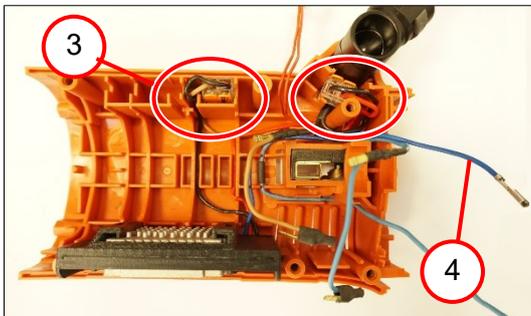
9.4.2 Fitting the stator



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.



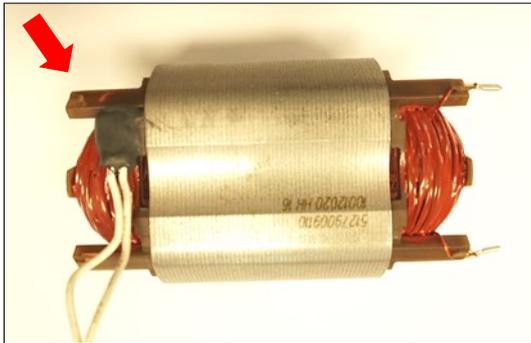
- 8. Guide the cable (4) through the opening for the carbon brushes.





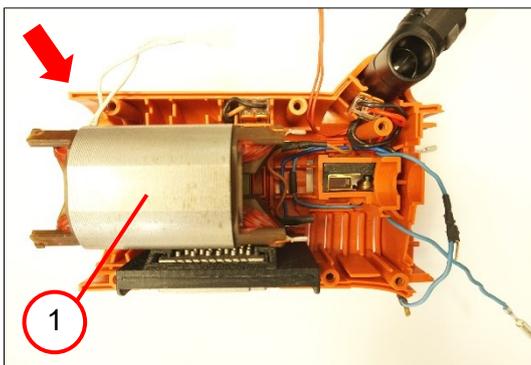
Assembly

9.4.2 Fitting the stator

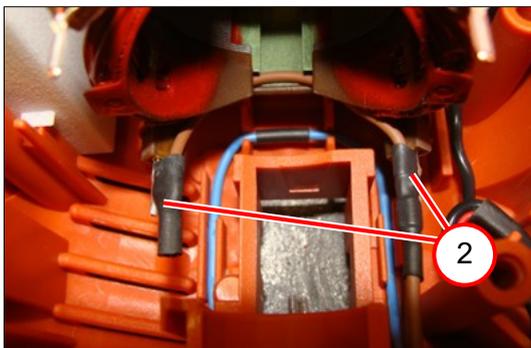


i INFORMATION

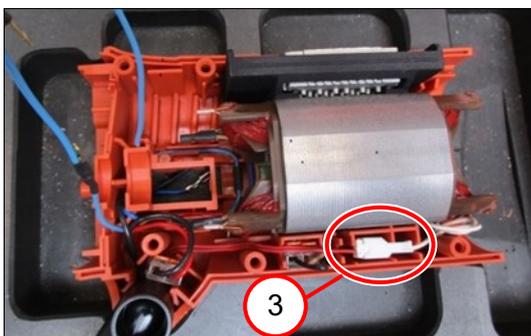
Note the position of the temperature sensor when positioning the stator.



9. Position the stator (1).



10. Connect the cable (2).



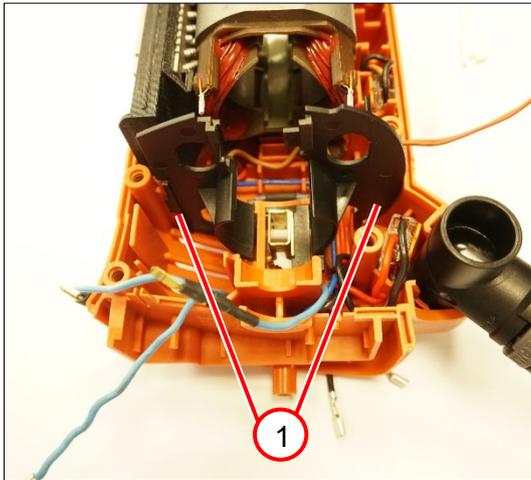
11. Connect the cable (3).





Assembly

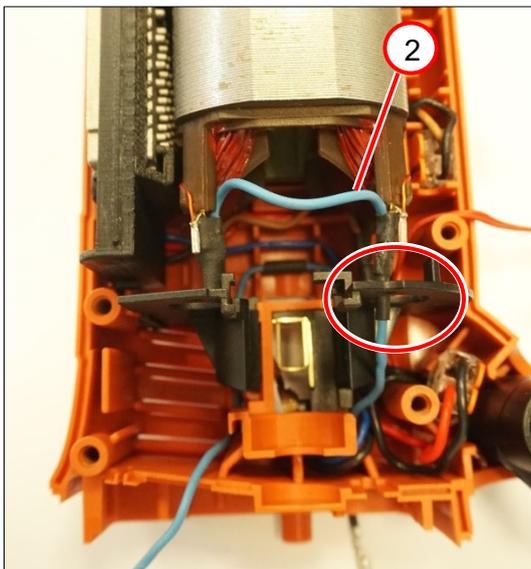
9.4.2 Fitting the stator



i INFORMATION

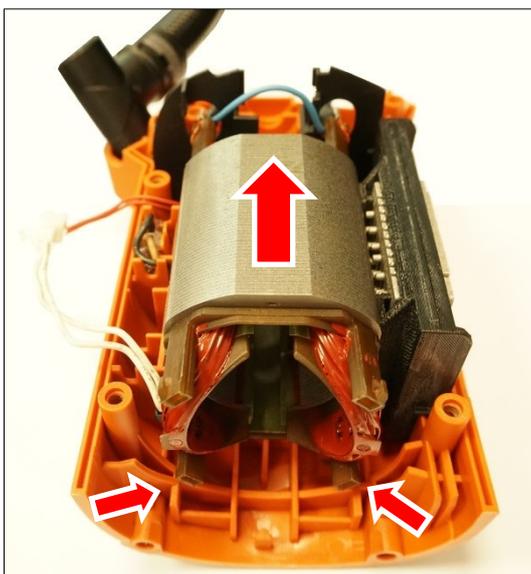
Note the position of the covers (1).

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].



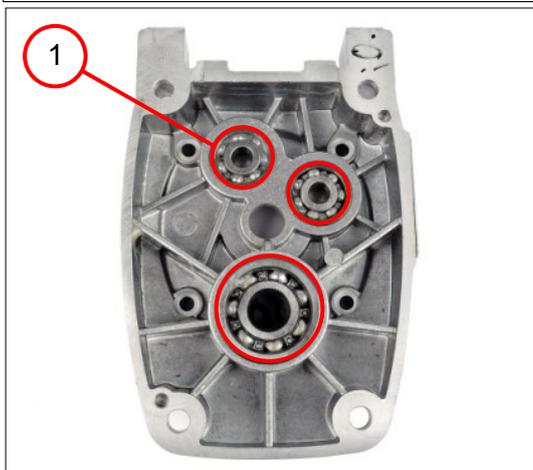
9.4.4 Assembling the intermediate gear box

Steps that must be completed:

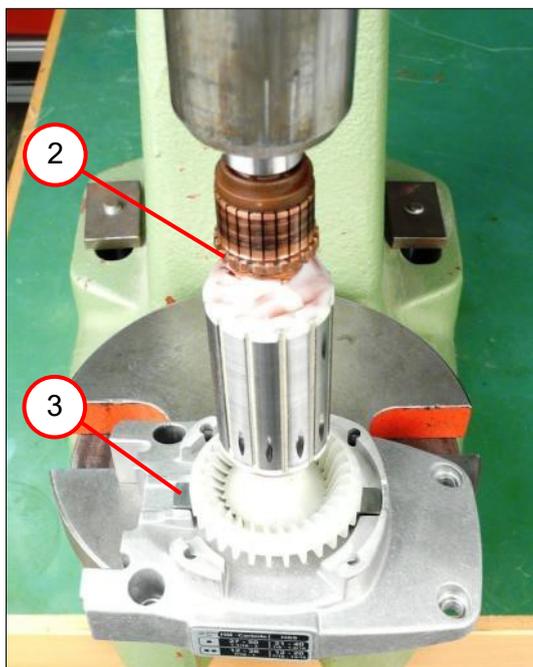
- Assembling the armature

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:

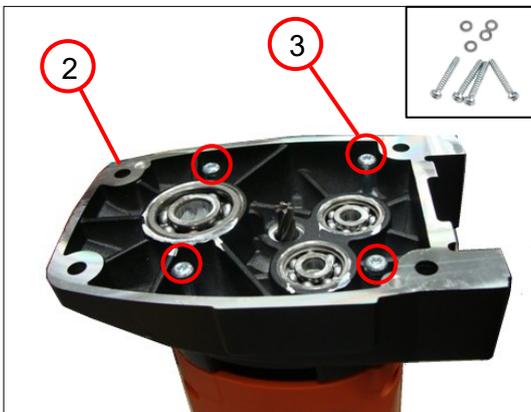
- Assembling the intermediate gear box
- Assembling the motor housing

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 ± 0.3 Nm].

 INFORMATION

Screw in the four screws crosswise.





Assembly

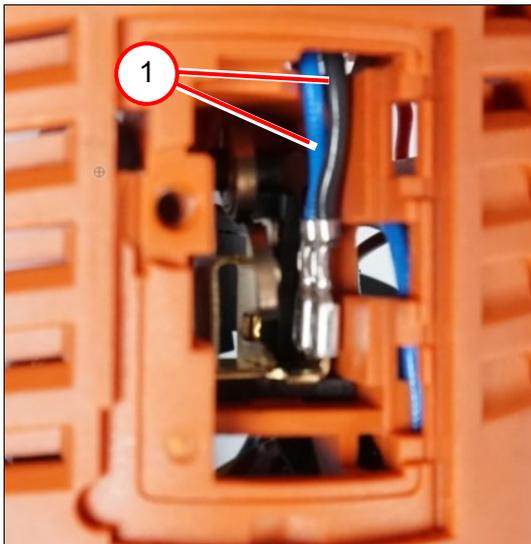
9.4.7 Positioning the carbon brushes

Steps that must be completed:

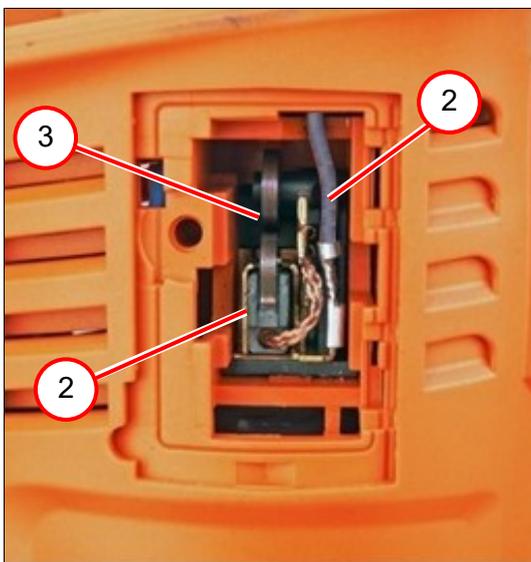
- Assembling the motor housing

Tools:

- Assembly aid
- Long-nosed pliers



1. Connect the cables (1).



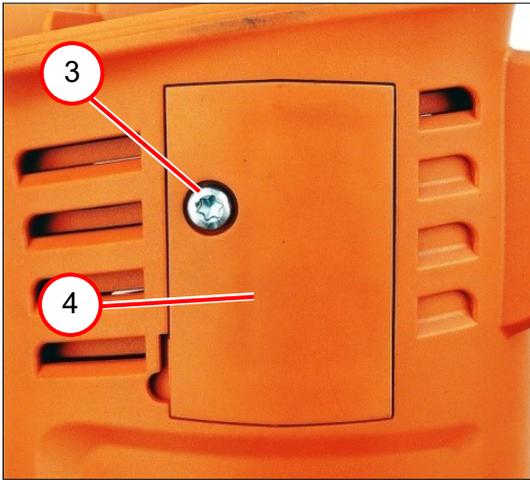
2. Connect the cable (2).
3. Position the carbon brush (2).
4. Position the spring (3).





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:

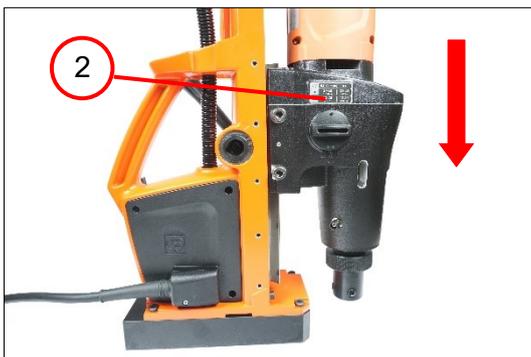
- Positioning the gearbox housing

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).

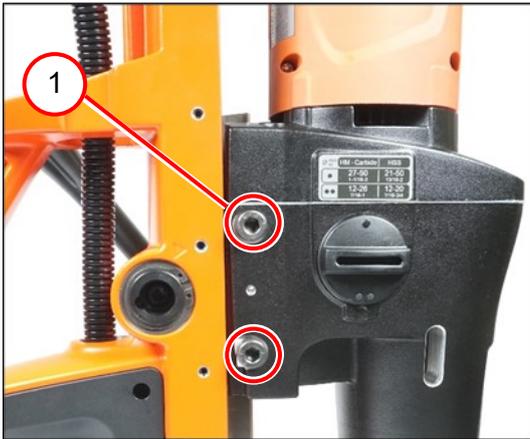
2. Slide the drill motor (2) into the guide.





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.

***i* 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 |

