



**Applies to:**

KBC 36 MAGFORCE, JMC MAGFORCE 90



## Models described

### Contents

1	Models described .....	4
2	Technical data .....	5
3	Symbols used .....	6
4	Notes and requirements .....	7
5	Safety instructions .....	8
6	Tools, lubricants and auxiliary substances required .....	10
6.1	Standard tools .....	10
6.2	Special tools .....	10
6.3	Lubricants and auxiliary substances required .....	10
7	Test and diagnostics options .....	11
8	Disassembly .....	12
8.1	Removing the mains cable .....	12
8.2	Disassembling the housing .....	13
8.2.1	Removing the protective grille .....	13
8.2.2	Removing the handle .....	14
8.2.3	Removing the control panel .....	15
8.2.4	Removing the housing halves .....	16
8.3	Removing the electronics .....	18
8.4	Removing the magnetic base .....	20
8.5	Removing the motor .....	22
8.6	Removing the gearbox .....	23
8.6.1	Removing the hose socket .....	23
8.6.2	Disassembling the upper gearbox cover .....	24
8.6.3	Removing the lower gearbox cover .....	26
8.6.4	Removing the gearbox .....	27
8.7	Disassembling the drilling shaft .....	28
8.8	Disassembling the feed shaft .....	30
9	Assembly .....	32
9.1	Assembling the feed shaft .....	32
9.2	Fitting the drill shaft .....	33
9.3	Fitting the gearbox .....	36
9.3.1	Positioning the gearbox .....	36



**Models described**

9.3.2	Positioning the lower gearbox cover .....	37
9.3.3	Assembling the upper gearbox cover .....	38
9.3.4	Positioning the hose socket .....	41
9.4	Positioning the motor .....	42
9.5	Positioning the magnetic base .....	44
9.6	Positioning the electronics .....	45
9.7	Assembling the housing .....	47
9.7.1	Positioning the housing halves .....	47
9.7.2	Positioning the control panel .....	49
9.7.3	Positioning the handle .....	50
9.7.4	Assembling the protective grille .....	51
9.8	Positioning the mains cables .....	52
10	Inspection following repairs .....	53
11	Labelling requirement .....	54





Models described

# 1 Models described

These repair instructions describe how to repair the following models:

Model	Material number
KBC 36 MAGFORCE	7 273 23 . . . .
JMC MAGFORCE 90	7 273 23 . . . .





## 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.

### 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: danger of crushing.
	Caution: danger of cutting.
	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.
	This spare part must always be replaced after disassembly.
	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!**



Read the operating instructions for the product before carrying out any 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 respective individual 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.





## 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





## Safety instructions

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.

## 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

Torx	T15
Torx	T20
Circlip pliers	
Slotted screwdriver	
Socket head wrench	3 mm, 4 mm, 5 mm, 8 mm
Internal puller	
Ratchet screwdriver	
Socket wrench	½ inch square
Sleeve	15 mm inner diameter, 29 mm outer diameter
Sleeve	16 mm inner diameter, 22 mm outer diameter
Sleeve	22.3 mm inner diameter, 33.7 mm outer diameter
Sleeve	38 mm inner diameter, 42 mm outer diameter
Hot air gun	

#### 6.2 Special tools

Assembly aid	SW0045
Assembly aid* (*to remove the hose socket)	SW0068

#### 6.3 Lubricants and auxiliary substances required

Grease	SM0020	45 g	Gearbox, top
Grease	SM0020	12 g	Gearbox, bottom
Grease	SM0016	n/a	Feed shaft, gearing, drilling shaft, guide shaft
Thread locking compound	Loctite 270	n/a	Screws, set screws





**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.

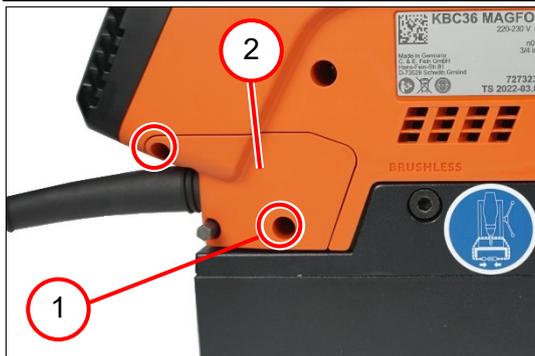


## 8 Disassembly

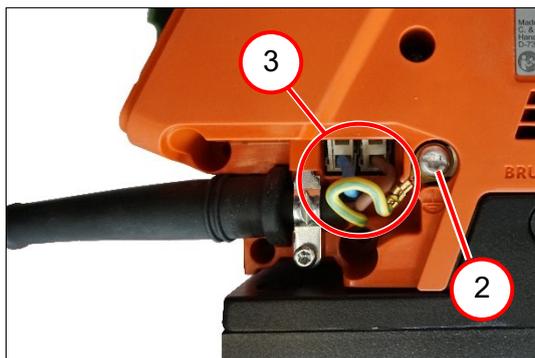
### 8.1 Removing the mains cable

**Tools:**

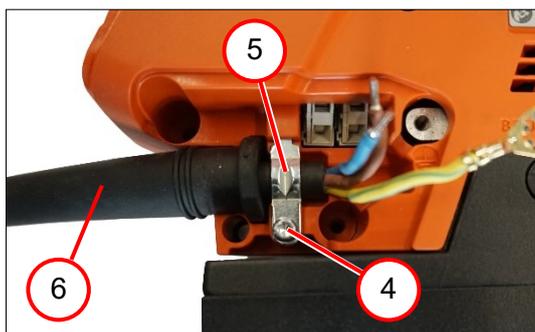
- Torx T15
- Torx T20



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



3. Unscrew the screw (2).
4. Remove the cables (3).



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

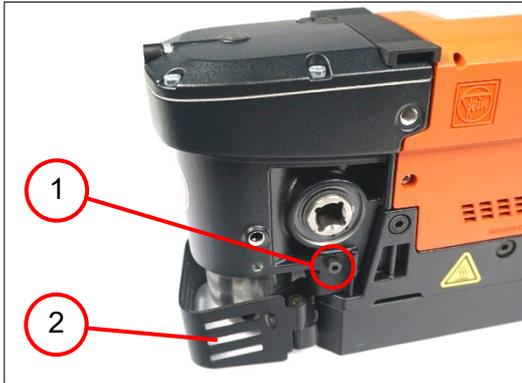


## 8.2 Disassembling the housing

### 8.2.1 Removing the protective grille

**Tools:**

- Socket head wrench, 3 mm



1. Unscrew the screw (1).
2. Remove the protective grille (2).



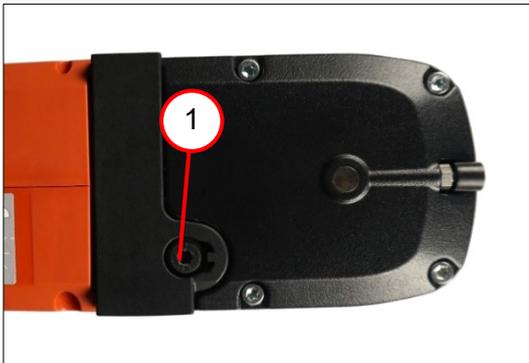


## Disassembly

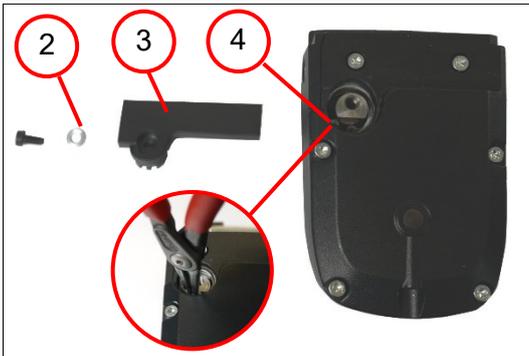
## 8.2.2 Removing the handle

## Tools:

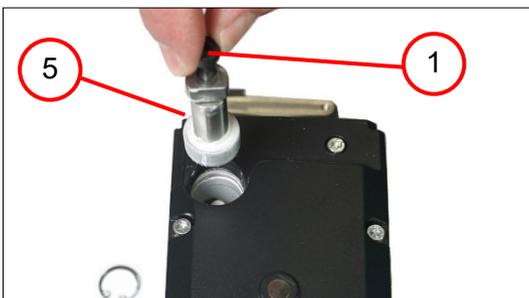
- Socket head wrench, 5 mm
- Circlip pliers



1. Unscrew the screw (1).



2. Remove the washer (2).  
3. Remove the handle (3).  
4. Remove the circlip (4).



5. Remove the guide shaft (5) using the screw (1).



## 8.2.3 Removing the control panel

## Tools:

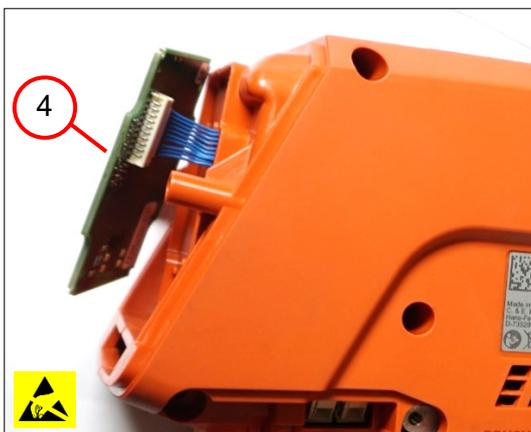
- Torx T 20



1. Unscrew the two screws (1).



2. Remove the cover (2).
3. Remove switch insert (3).



4. Remove the electronics (4).



Disassembly

8.2.4 Removing the housing halves

Steps that must be completed:

- Removing the protective grille
- Removing the handle
- Removing the control panel
- Removing the mains cable

Tools:

- Torx T 20
- Slotted screwdriver



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



**i** Information

When replacing the housing half, the new RFID chip must be registered.

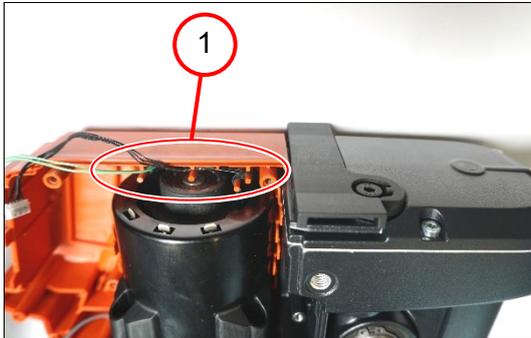


3. Remove the sealing ring (3).





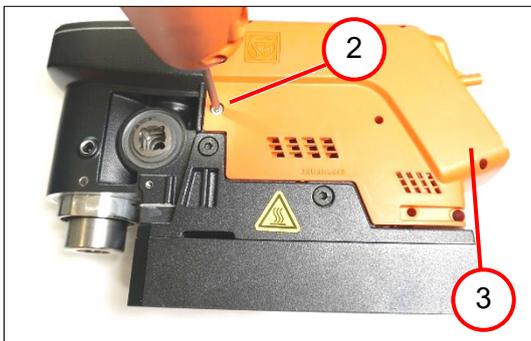
## 8.2.4 Removing the housing halves



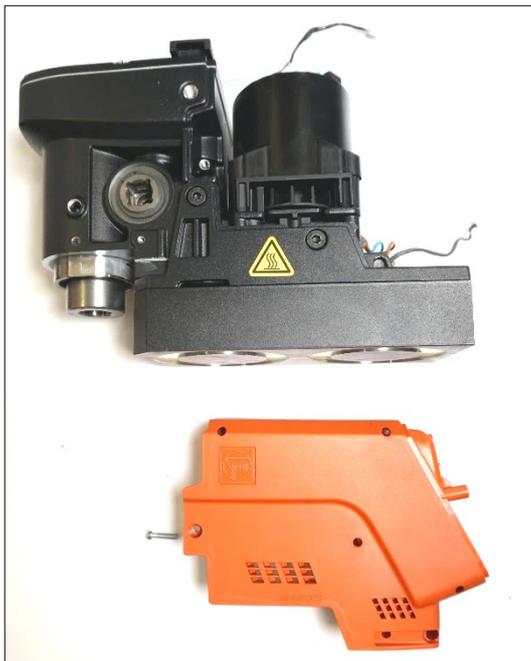
### **i** Information

Remove the electronics before removing the housing half.

1. Remove the cable (1) from the guide.



2. Unscrew the screw (2).
3. Remove the housing half (3).





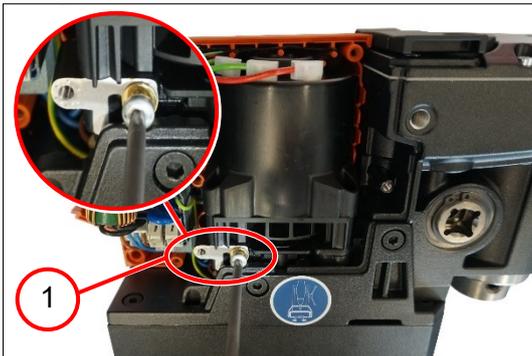
### 8.3 Removing the electronics

**Steps that must be completed:**

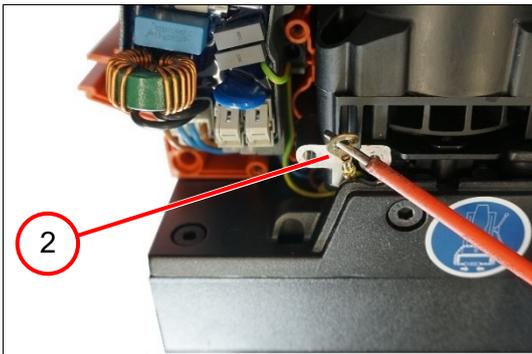
- Removing the housing half

**Tools:**

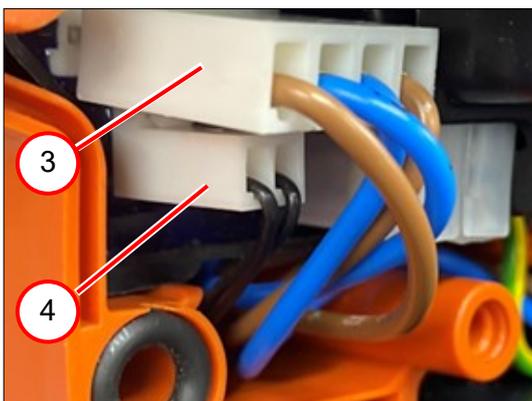
- Torx T20
- Assembly aid SW0045



1. Unscrew the screw (1).



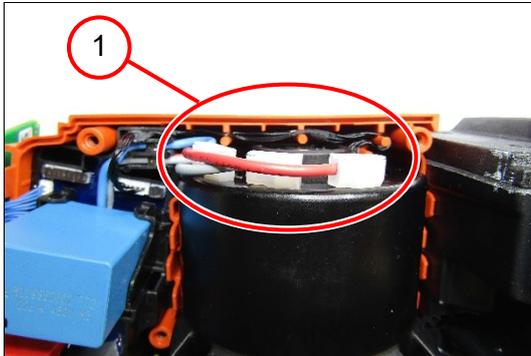
2. Remove the cable (2).



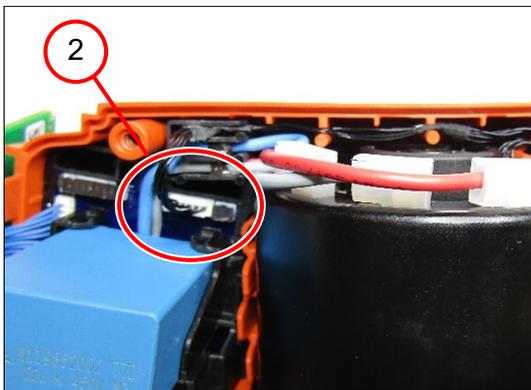
3. Pull off the plug (3).
4. Pull off the plug (4).



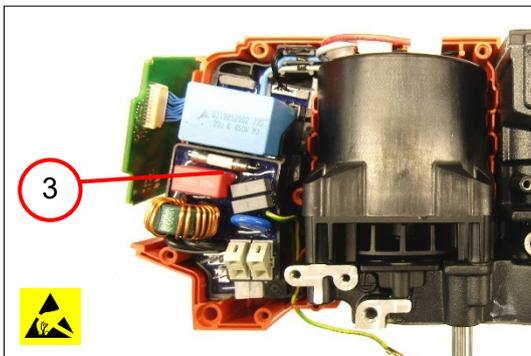
### 8.3 Removing the electronics



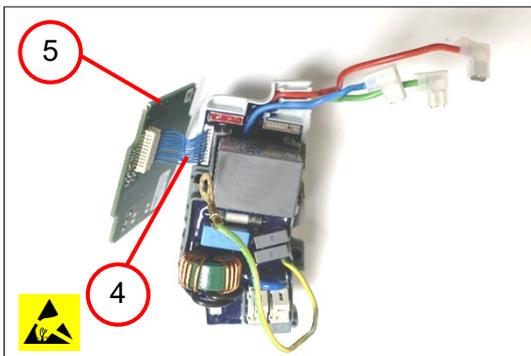
5. Pull off the plug (1).



6. Pull off the plug (2).



7. Remove the electronics (3) from the housing.



8. Remove the cable (4).

9. Remove the circuit board (5).

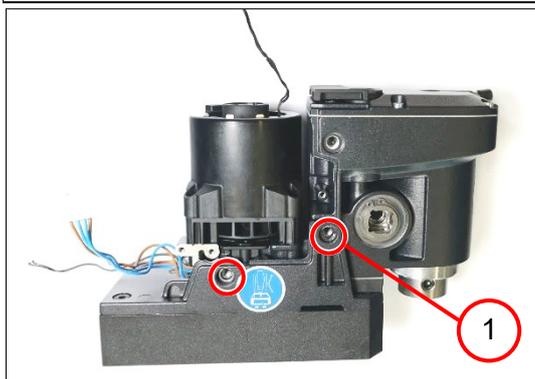
## 8.4 Removing the magnetic base

**Steps that must be completed:**

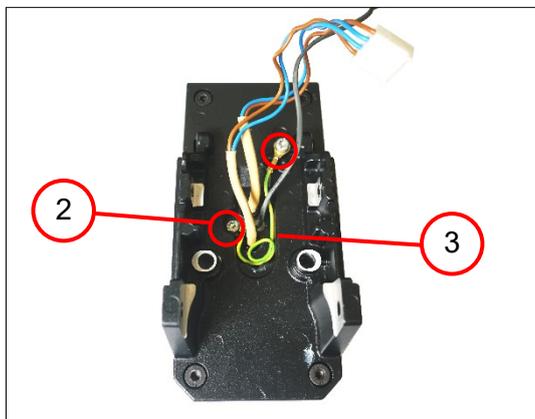
- Removing the electronics

**Tool(s):**

- Torx T20
- Socket head wrench, 4 mm



1. Unscrew the two screws (1).
2. Repeat step 1 on the opposite side.

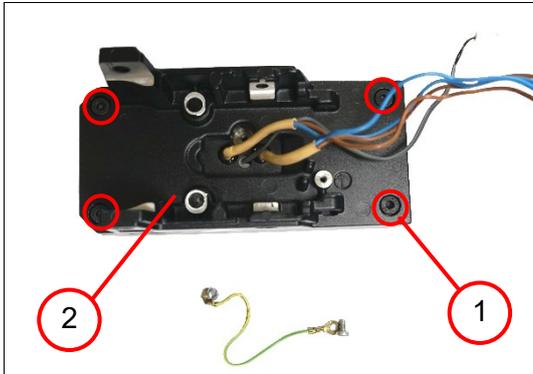


3. Unscrew the two screws (2).
4. Remove the cable (3).

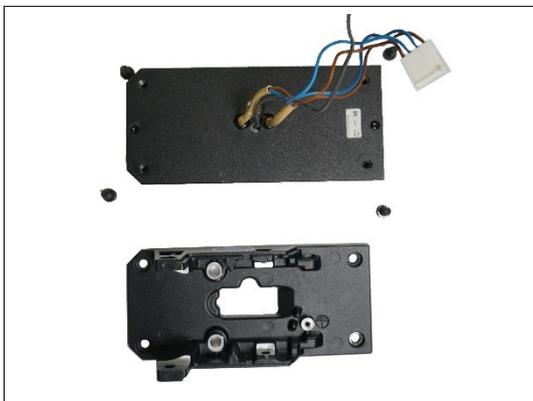


Disassembly

8.4 Removing the magnetic base



- 5. Unscrew the four screws (1).
- 6. Remove the frame (2).



## 8.5 Removing the motor

**Steps that must be completed:**

- Removing the magnetic base

**Tools:**

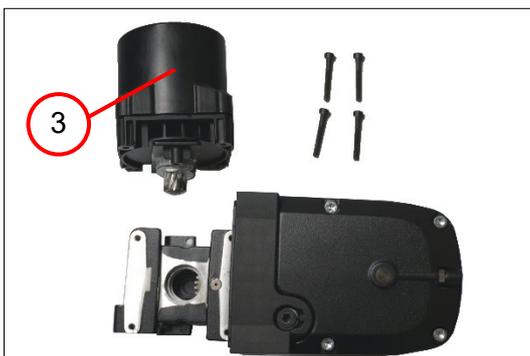
- Socket head wrench, 3 mm
- Torx T20



1. Unscrew the two screws (1).



2. Unscrew the four screws (2).



3. Remove the motor (3).



## 8.6 Removing the gearbox

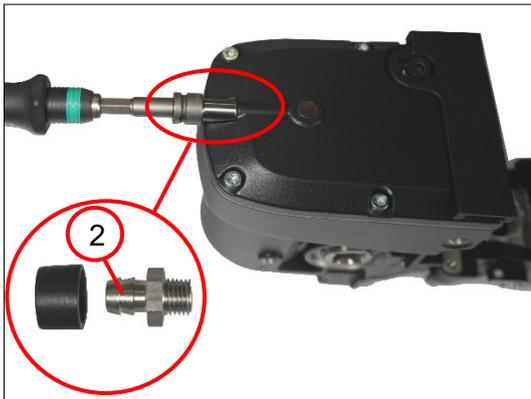
### 8.6.1 Removing the hose socket

**Tools:**

- Slotted screwdriver
- Ratchet screwdriver
- SW0068



1. Remove the sleeve (1).



2. Remove the hose socket (2).





Disassembly

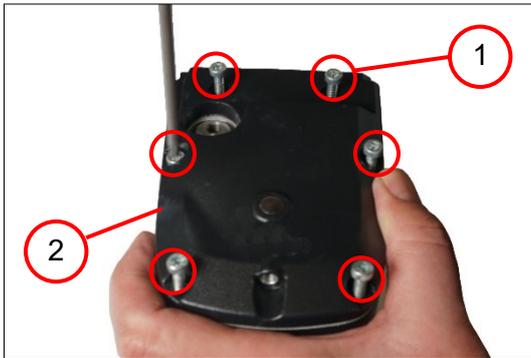
8.6.2 Disassembling the upper gearbox cover

Steps that must be completed:

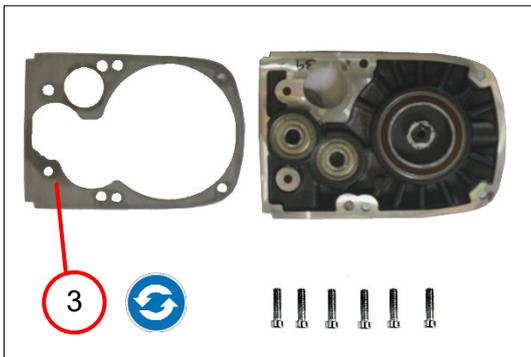
- Removing the housing halves

Tools:

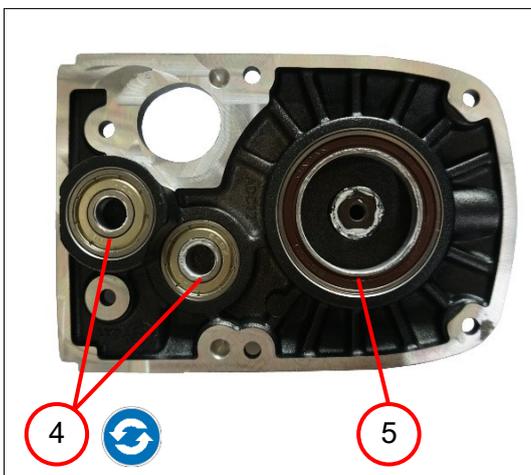
- Torx T20
- Internal puller
- Sleeve, 15 mm inner diameter, 29 mm outer diameter
- Punch 6 mm diameter



1. Unscrew the six screws (1).
2. Remove the gearbox cover (2).



3. Remove the seal (3).

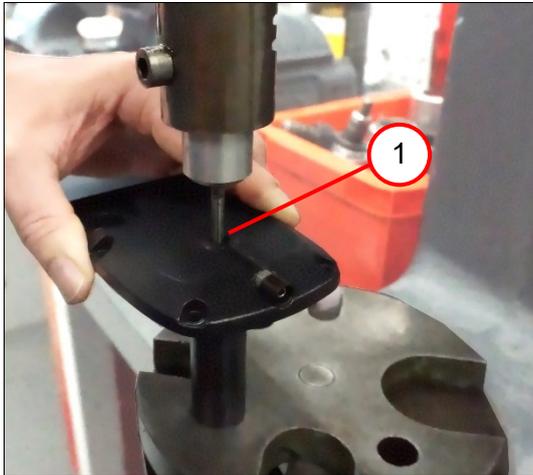


4. Remove the two grooved ball bearings (4).
5. Remove the grooved ball bearing (5).

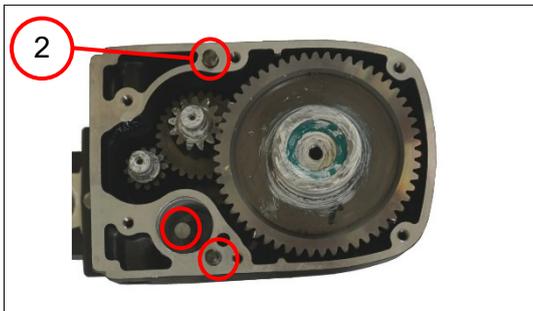




### 8.6.2 Disassembling the upper gearbox cover



6. Press out the connecting piece (1).



7. Remove the three straight pins (2).





## Disassembly

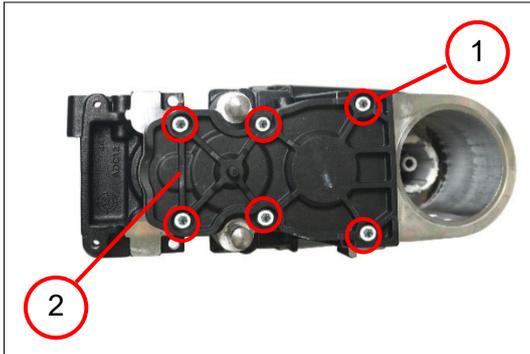
## 8.6.3 Removing the lower gearbox cover

## Steps that must be completed:

Removing the motor

## Tools:

- Torx T20



1. Unscrew the six screws (1).
2. Remove the gearbox cover (2).



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





## 8.6.4 Removing the gearbox

### Steps that must be completed:

- Removing the mains cable
- Disassembling the housing
- Removing the electronics
- Removing the magnetic base
- Removing the motor
- Removing the drilling shaft
- Removing the feed shaft

### Tools:

- See steps that must be completed.



### **i** Information

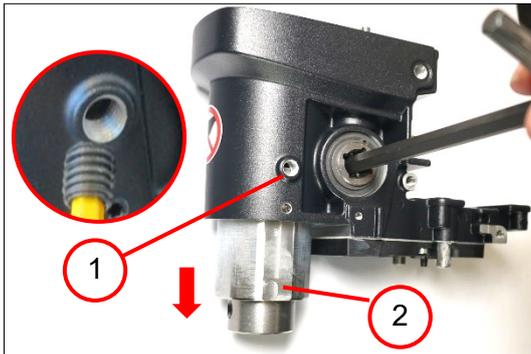
The gearbox is replaced as a pre-assembled module.



## 8.7 Disassembling the drilling shaft

### Tools:

- Socket head wrench, 8 mm; 4 mm; 5 mm
- Rubber hammer
- SW0045



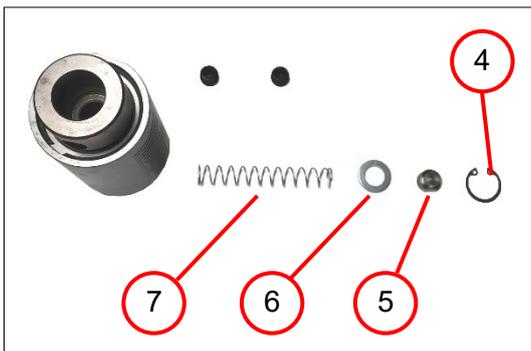
### **i** Information

Warm up the screws using a hot air gun because they have been glued in with a thread locking compound.

1. Unscrew the threaded screw (1).
2. Fully extend the drilling shaft.
3. Remove the drilling shaft (2).
4. Unscrew the two threaded screws (3).



5. Remove the circlip (4).
6. Remove the piston (5).
7. Remove the washer (6).
8. Remove the spring (7).





### 8.7 Disassembling the drilling shaft



9. Remove the seal (1).





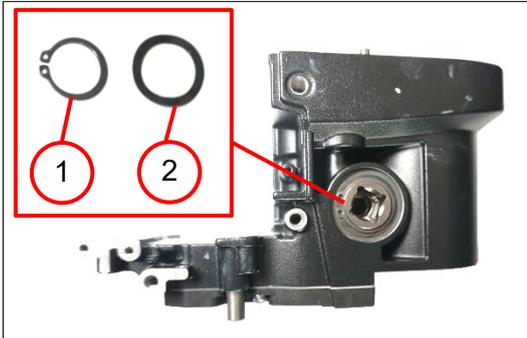
## 8.8 Disassembling the feed shaft

### Steps that must be completed:

- Removing the drilling shaft

### Tools:

- Circlip pliers
- Socket wrench ½ inch square
- Rubber hammer



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



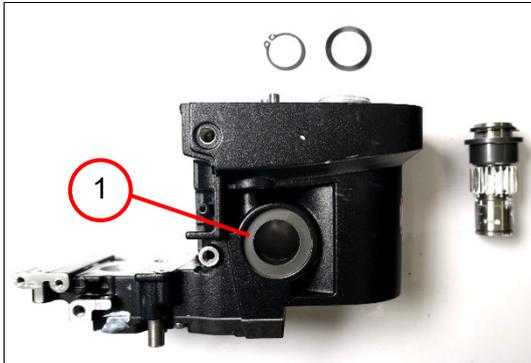
3. Remove the feed shaft (3).





## Disassembly

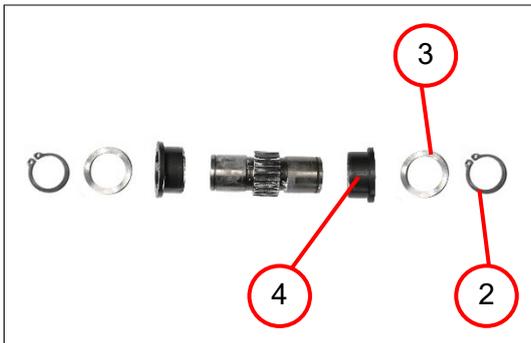
## 8.8 Disassembling the feed shaft



4. Remove the bearing bush (1).



5. Remove the circlip (2).
6. Remove the washer (3).
7. Remove the bearing bush (4).

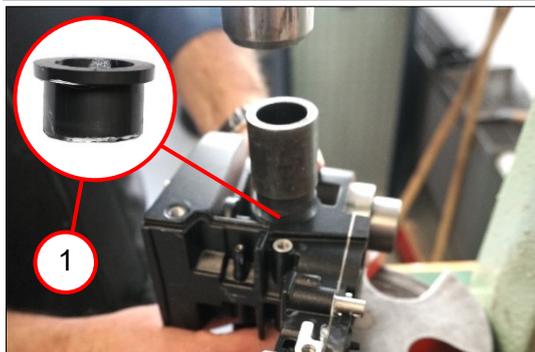


## 9 Assembly

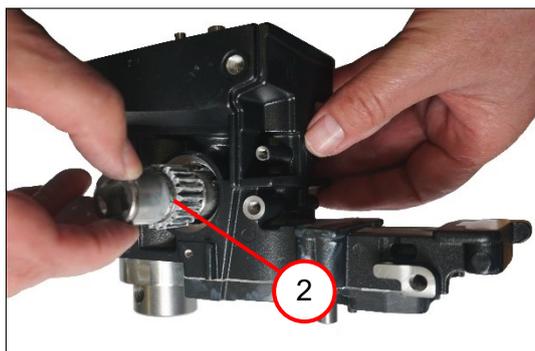
### 9.1 Assembling the feed shaft

**Tools:**

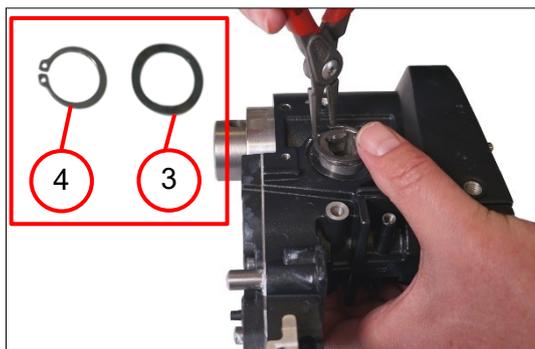
- Arbor press
- Circlip pliers
- Sleeve, 22.3 mm inner diameter, 33.7 mm outer diameter



1. Press in the bushing (1).



2. Grease the feed shaft.
3. Position the feed shaft (2).



4. Position the washer (3).
5. Press in the circlip (4).
6. Repeat steps 1, 4 and 5 on the opposite side.

#### Information

Press in the circlip until you hear it click into place.



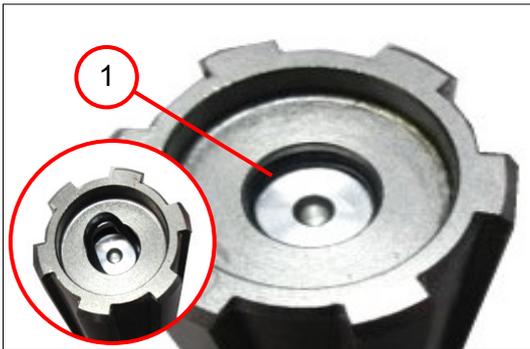
## 9.2 Fitting the drill shaft

### Steps that must be completed:

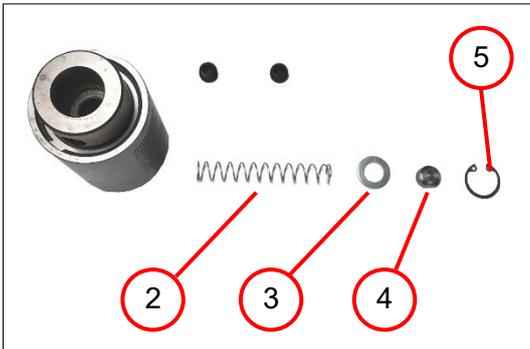
- Assembling the feed shaft

### Tools:

- SW0045
- Socket head wrench, 4 mm
- Circlip pliers



1. Position the seal (1).

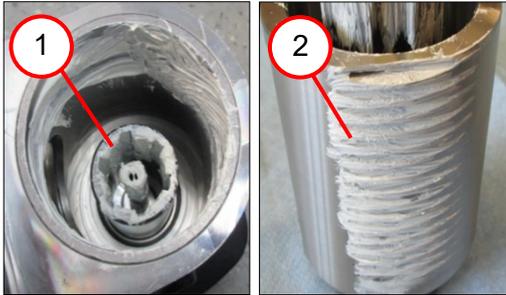


2. Position the spring (2).
3. Position the washer (3).
4. Position the piston (4).
5. Position the circlip (5).



6. Screw in the threaded screws (6).

## 9.2 Fitting the drill shaft



7. Coat the guide bush with tube (1) and the gearing (2) with grease.



### Information

Note the position of the drilling shaft.

8. Position the drilling shaft (3).



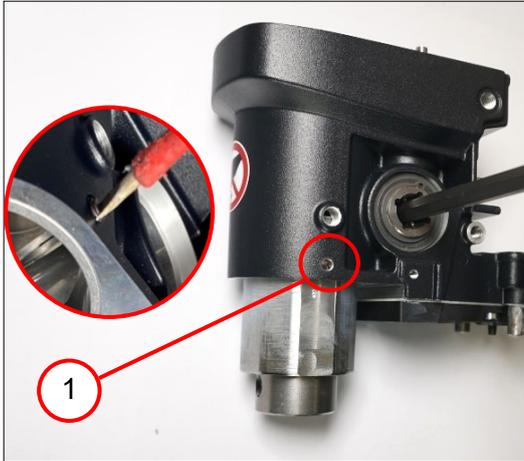
### Information

Apply Loctite 270 to the set screw (4).

Tighten the set screw to [2.0 Nm] and loosen again by 15°.



## 9.2 Fitting the drill shaft



### Information

Apply Loctite 270 to the set screw.

9. Screw the set screw (1) in flush with the surface.





## 9.3 Fitting the gearbox

### 9.3.1 Positioning the gearbox



#### **i** Information

The gearbox is replaced as a pre-assembled module.



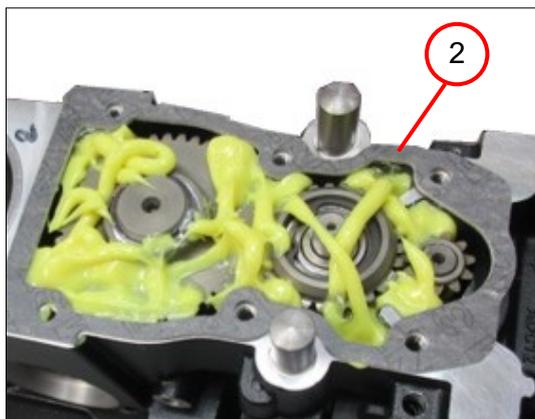
### 9.3.2 Positioning the lower gearbox cover

**Tools:**

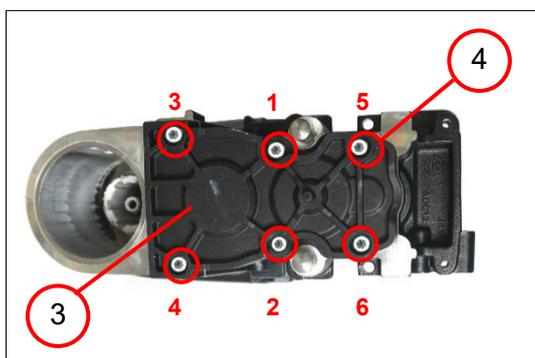
- Torx T20



1. Position the two straight pins (1).



2. Fill the gearbox with grease.
3. Position the seal (2).



4. Position the gearbox cover (3).
5. Screw in the six screws (4) [2.4 Nm].

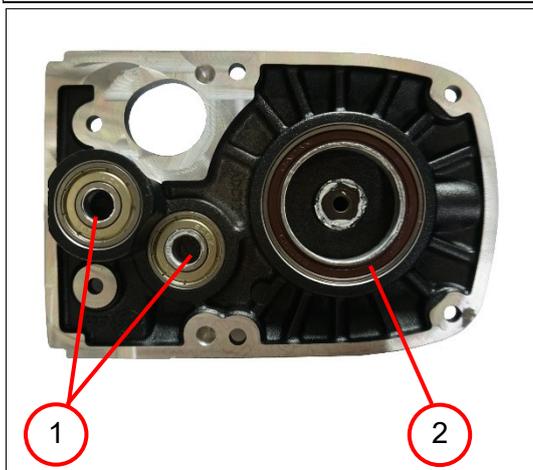
**i Information**

Observe the screwdriving sequence.

### 9.3.3 Assembling the upper gearbox cover

**Tools:**

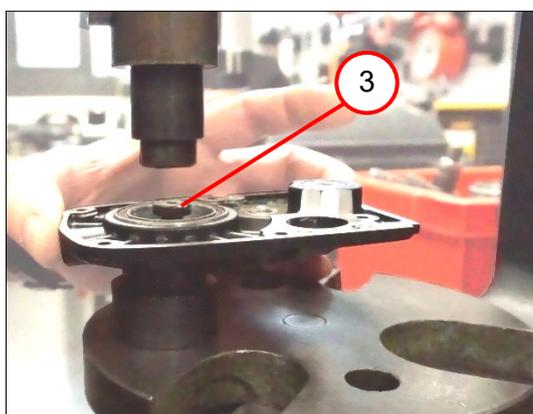
- Arbor press
- Support, outer diameter 29
- Sleeve, 16 mm inner diameter, 22 mm outer diameter
- Sleeve, 38 mm inner diameter, 42 mm outer diameter
- Sleeve, 15 mm inner diameter, 29 mm outer diameter



1. Press in the two grooved ball bearings (1).
2. Press in the grooved ball bearing (2).

**i Information**

When pressing in the grooved ball bearings, the gearbox cover must be aligned parallel to the support.

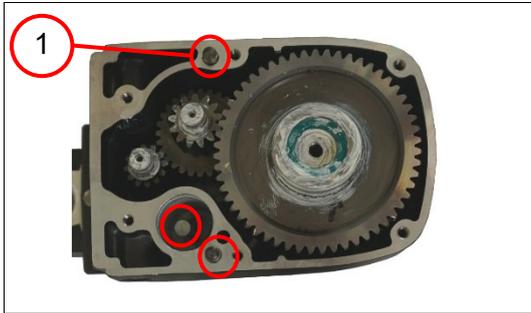


3. Press in the connecting piece (3).

**i Information**

When pressing in the grooved ball bearings, the gearbox cover must be aligned parallel to the support.

### 9.3.3 Assembling the upper gearbox cover



4. Position the three straight pins (1).



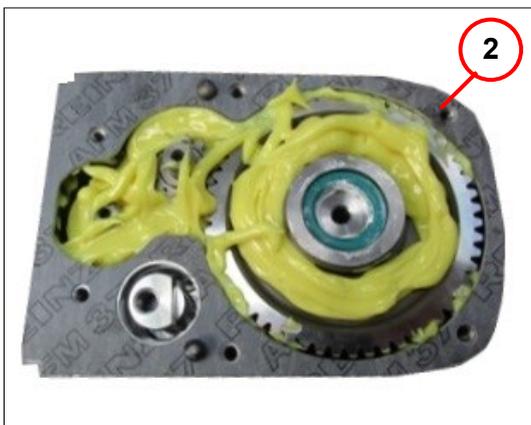
5. Grease the guide shaft.
6. Position the guide shaft.
7. Position the circlip.

**i** **Information**

Note the position of the circlip.



8. Fill the gearbox with grease.

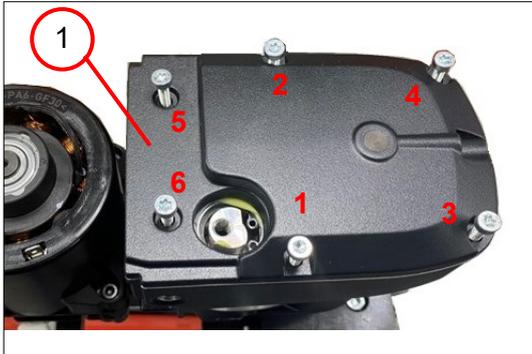


9. Position the seal (2).



Assembly

9.3.3 Assembling the upper gearbox cover



- 10. Position the gearbox cover (1).
- 11. Screw in the six screws [3.4 Nm].

**i** Information

Observe the screwdriving sequence.





## Assembly

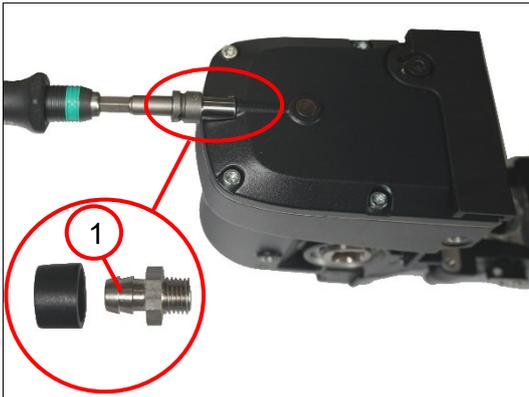
## 9.3.4 Positioning the hose socket

## Tools:

- Ratchet screwdriver
- SW0068



1. Attach the hose socket (1) and screw it in.



2. Position the sleeve (2).





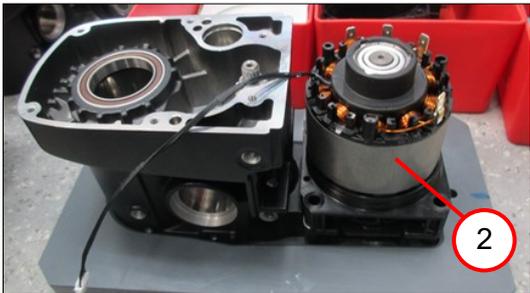
## 9.4 Positioning the motor

**Tools:**

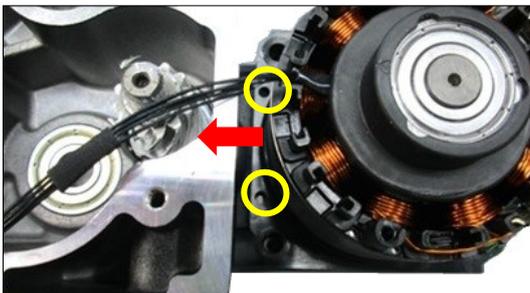
- Torx T20



1. Grease the sealing ring (1) on the bearing side.

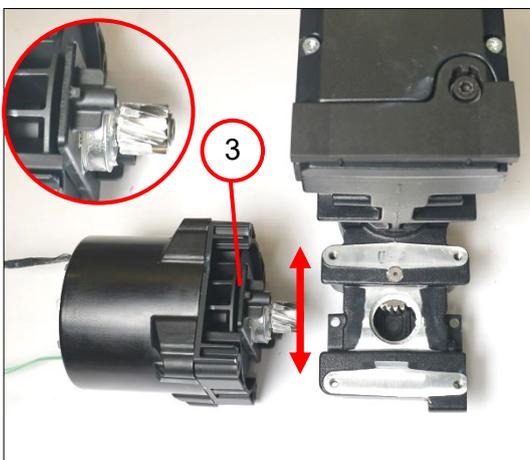


2. Position the motor (2).



**i Information**

The bore holes point towards the gearbox housing



**i Information**

The bearing plate (3) must be aligned longitudinally to the gearbox housing.





## Assembly

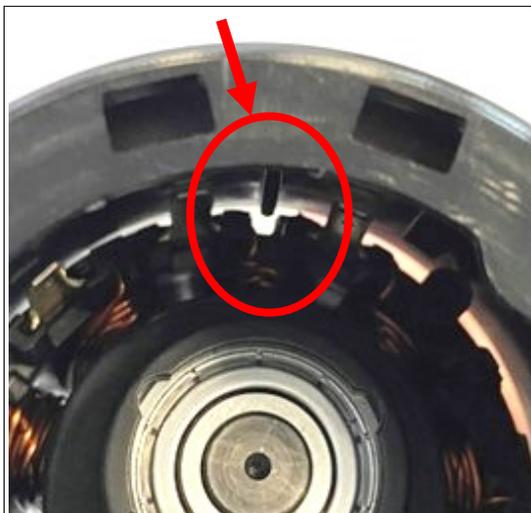
## 9.4 Positioning the motor



3. Position the motor housing (1).
4. Screw in the four screws (2) [2.4 Nm].

**i** Information

Do not pinch the motor cable.

**i** Information

Align the motor housing with the motor slot.



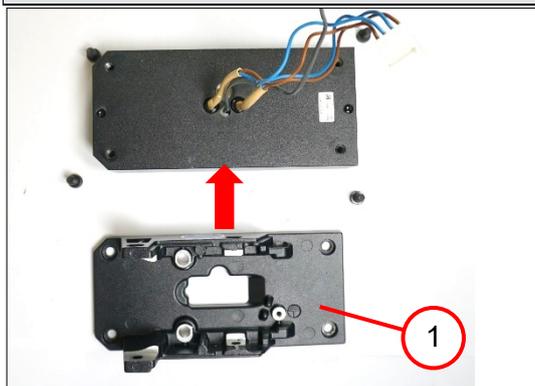
5. Screw in the two screws (3) [2.4 Nm].



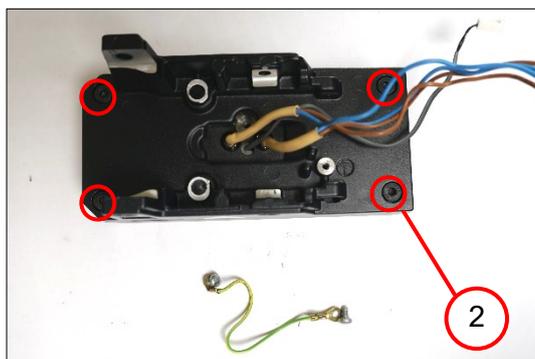
## 9.5 Positioning the magnetic base

**Tools:**

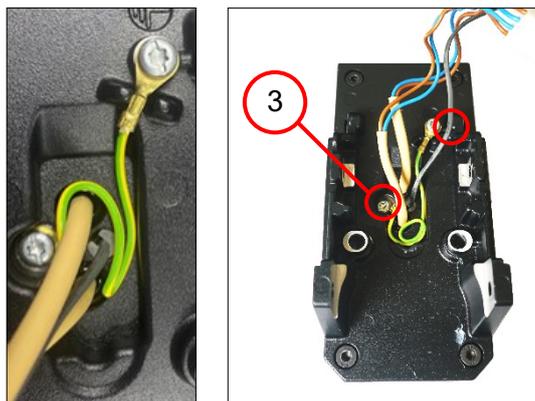
- Torx T20
- Socket head wrench, 4 mm



1. Position the frame (1)

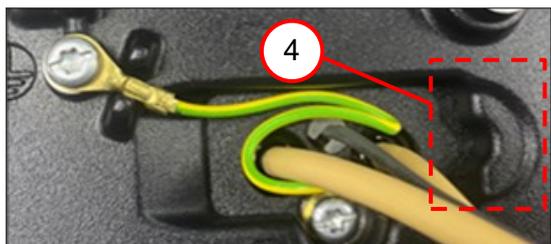


2. Screw in the four screws (2) [8.0 Nm].



3. Position the cable.

4. Screw in the two screws (3) [1.5 Nm].



### Information

This area (4) has to remain clear.



Assembly

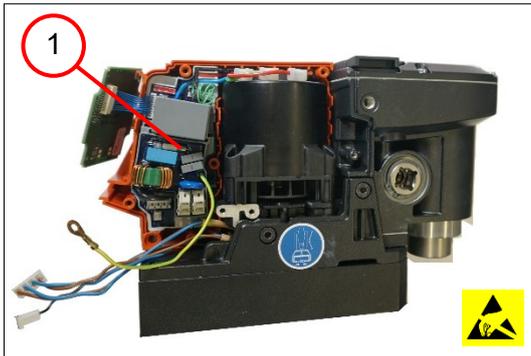
9.6 Positioning the electronics

Steps that must be completed:

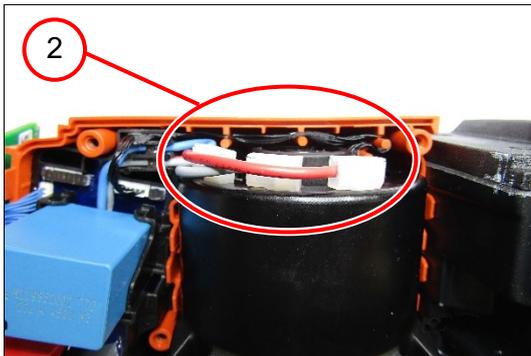
- Positioning one housing half

Tools:

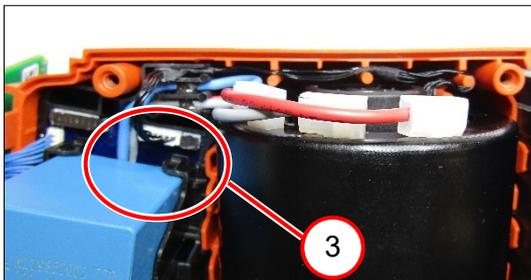
- Torx T20
- Assembly aid SW0045



1. Position one housing half.
2. Position the electronics (1).



3. Connect the cables (2) as shown in the connection diagram.



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

**i** Information

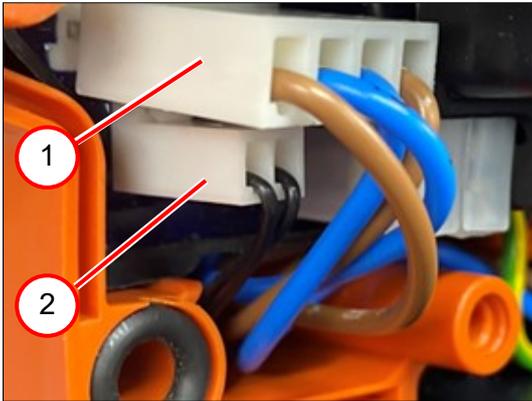
Lay the cable (4) in the guides.





## Assembly

## 9.6 Positioning the electronics

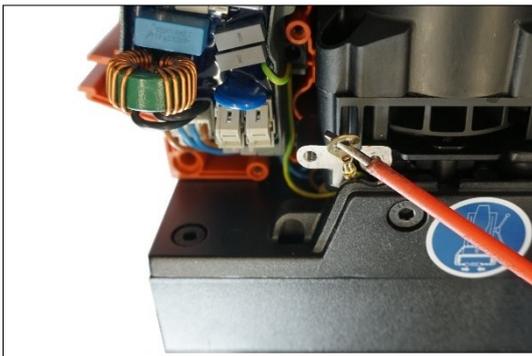


5. Connect the cables (1) as shown in the connection diagram.

6. Connect the cable (2) as shown in the connection diagram.

**i** Information

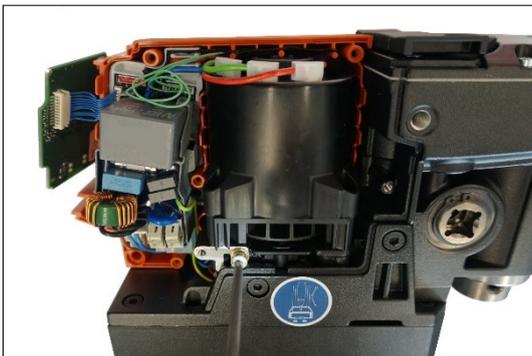
Lay the cables in the guides.



7. Position the cable (3).

**i** Information

Lay the cables in the guides.



8. Screw in the screw (4).





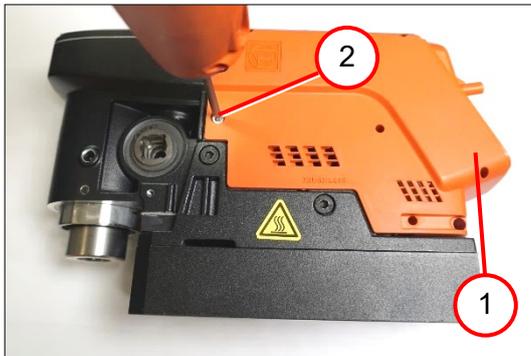
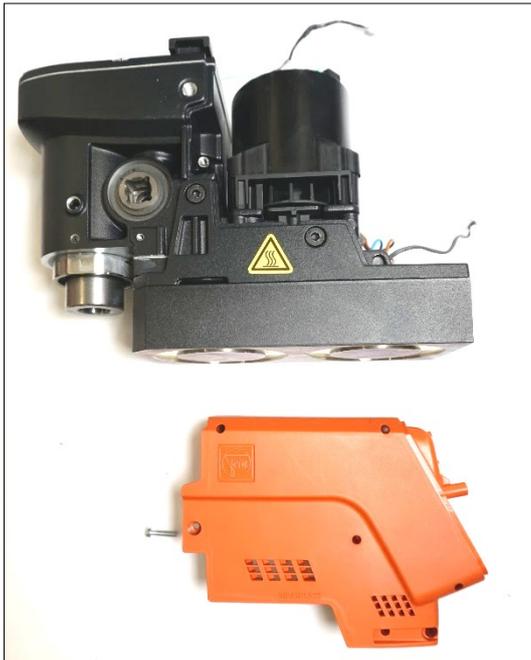
## Assembly

## 9.7 Assembling the housing

### 9.7.1 Positioning the housing halves

**Tools:**

- Torx T20



1. Position the housing half (1).
2. Screw in the screw (2) [2.4 Nm].



## Assembly

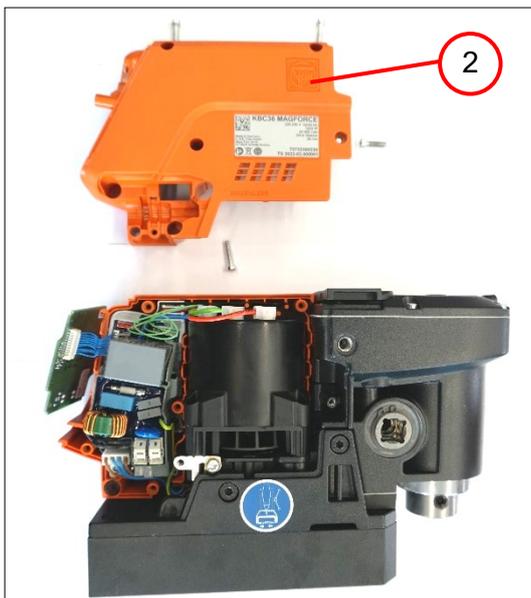
## 9.7.1 Positioning the housing halves

## Tools:

- Torx T20
- Assembly aid SW0045



3. Position the sealing ring (1).



4. Position the housing half (2).



5. Screw in the three screws (3) [2.4 N].
6. Screw in the screw (4) [2.4 Nm].

## Assembly

## 9.7.2 Positioning the control panel

## Tools:

- Torx T20



1. Position the electronics (1).



2. Position the switch insert (2).
3. Position the cover (3).

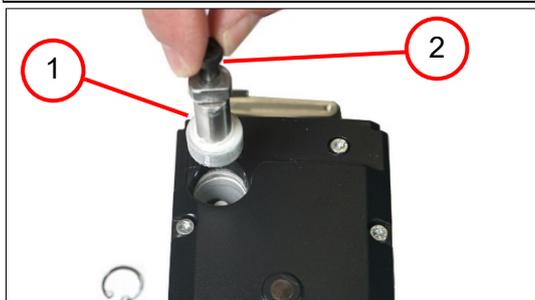


4. Screw in the two screws (4) [2.4 Nm].

## 9.7.3 Positioning the handle

## Tools:

- Torx T 20



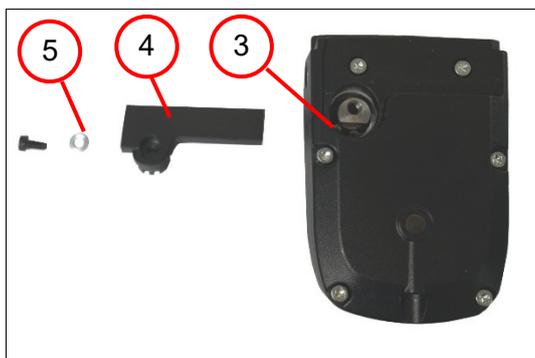
1. Grease the guide shaft.
2. Position the guide shaft (1) using the screw (2).



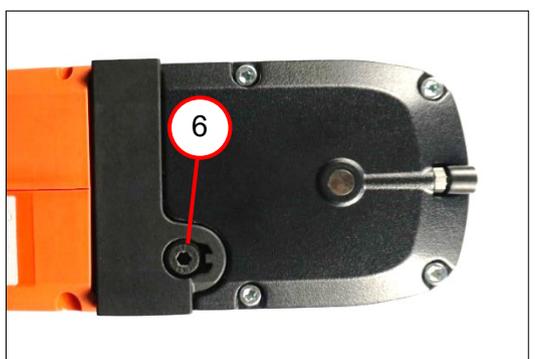
3. Position the circlip (3).

**i** Information

Note the position of the circlip.



4. Position the handle (4).
5. Position the washer (5).



6. Screw in the screw (6) [8.0 Nm].

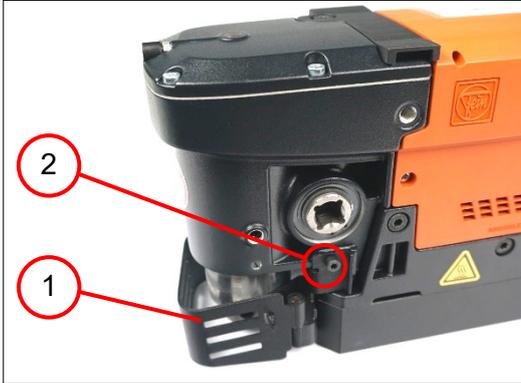


## Assembly

## 9.7.4 Assembling the protective grille

## Tools:

- Socket head wrench, 3 mm



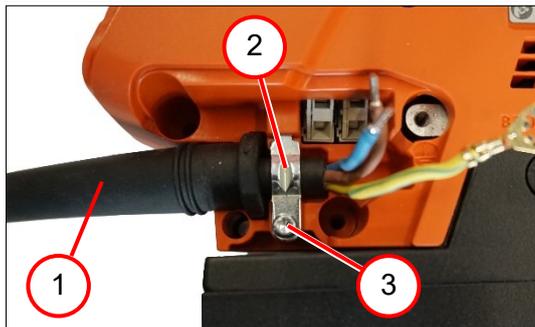
1. Position the protective grille (1).
2. Screw in the screw (2).



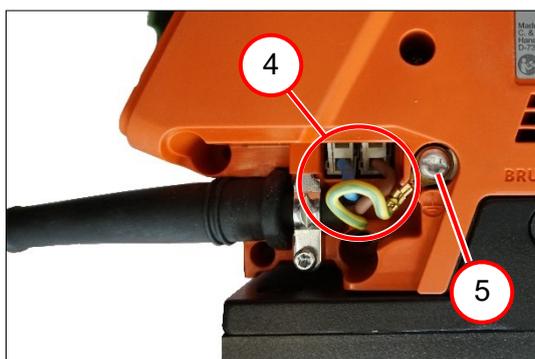
## 9.8 Positioning the mains cables

**Tools:**

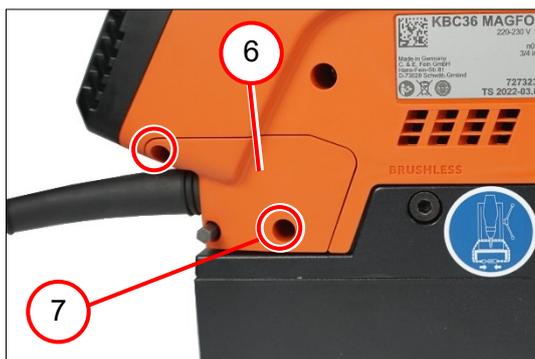
- Torx T15
- Torx T20
- Slotted screwdriver



1. Position the mains cable (1).
2. Position the cable clamping bridge (2).
3. Screw in the screw (3) [1.5 Nm].



4. Connect the cables (4) as shown in the connection diagram.
5. Screw in the screw (5) [2.0 Nm].



6. Position the cover (6).
7. Screw in the two screws (7) [2.6 Nm].



## 10 Inspection following repairs

A visual and functional check as well as a professional electrical safety test must always be performed after carrying out repair and maintenance work. The regulations and legal requirements applicable in the respective country apply.

Minimum tests recommended for this type of machine:

	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





Labelling requirement

11 Labelling requirement



KBC 36, JMC MAGFORCE 90

	Type plate (1)
	Hot surface; safety belt (2)



KBC 36, JMC MAGFORCE 90

	Rotating parts (3)
--	--------------------



KBC 36, JMC MAGFORCE 90

	Magnet holding force (4)
--	--------------------------





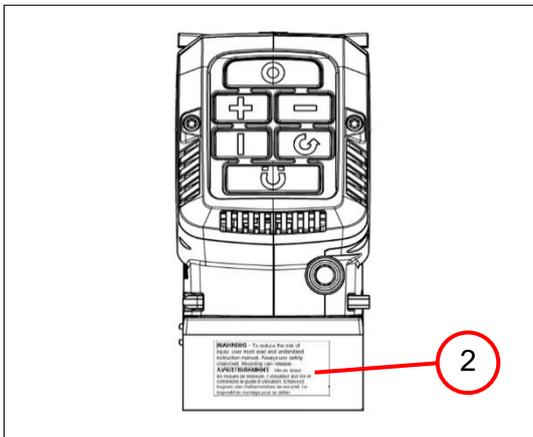
Labelling requirement

11 Labelling requirement



KBC 36, JMC MAGFORCE 90

	<p>RFID chip (1)</p>
--	----------------------



JMC MAGFORCE 90

<p><b>WARNING</b> - To reduce the risk of injury, user must read and understand instruction manual. Always use safety chain/belt. Mounting can release.</p> <p><b>AVERTISSEMENT</b> Afin de réduire les risques de blessure, l'utilisateur doit lire et comprendre le guide d'utilisation. Employez toujours une chaîne/cinture de sécurité. Le dispositif de montage peut se défaire.</p>	<p>Information sign (2)</p>
--	-----------------------------

