

# FEIN REPAIR TOOLS



## KBH 25



# FEIN REPAIR TOOLS



## 1. Models described

These instructions describe how to repair the following models:

Model	Order no.
KBH 25	727101



## 1. Provisions

### Provisions

Please note that power tools may only be repaired, maintained and checked by a trained electrician, as improper repair can result in serious risks to the user.

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

**Only use original FEIN spare parts!**

The relevant accident prevention regulations of the employers' liability insurance associations are to be observed when commissioning.

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

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



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## 1. Technical data

### **Technical data**

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

### **Test data**

Up-to-date test data for all models can be found on the FEIN Extranet.

### **Lubricants**

Lubricants and container sizes available from FEIN can be found on the FEIN Extranet.

### **Lists of spare parts**

Lists of spare parts and exploded views are available online at [www.fein.com](http://www.fein.com)



## 3. General checks

<b>Rated voltage</b>		<b>220 - 240 V</b>
<b>Test voltage</b>		<b>230 V</b>
<b>Load current</b>		<b>5.5 A</b>
<b>Idling current approx. 10 %</b>	<b>(1.62 – 2.07 A)</b>	<b>1.8 A</b>
<b>Idling speed for level 6 approx. +/- 3% tolerance</b>	<b>(504 - 536 rpm)</b>	<b>520 rpm</b>



## 4. Tools required

### Standard tools

Steel hammer

Plastic hammer

Torx 15 screwdriver

Torx 20 screwdriver

Internal, external circlip pliers

PZ 1 cross-tip screwdriver

Flat nose pliers

Arbor press

Punch

Slotted screwdriver

Sleeves

Longsleeve Circlip, angled



## 5. Lubricants and auxiliary substances required

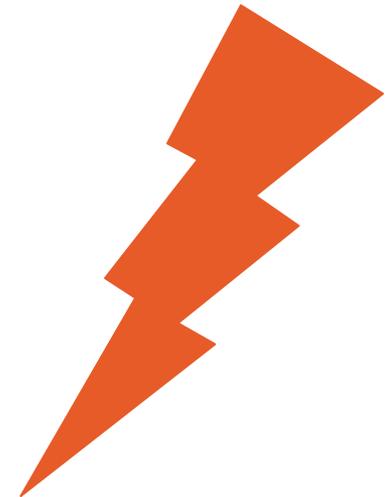
### Lubricants

Grease	0 40 101 0100 4	90 g
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## 4. Dismantling

**Before starting to repair or disassemble the tool, you must remove the mains plug from the socket and remove the drill bit from the tool.**



# FEIN REPAIR TOOLS



## 4.1. Removing the motor



**Unscrew both carbon holder covers.**

**Pull up carbon brush and clamp firmly with spring or pull all the way out of the carbon holder.**

**Unscrew screws from gearbox housing.**

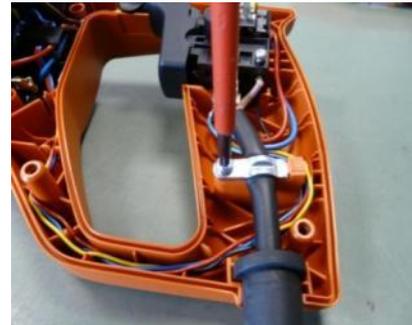
**Pull gearbox housing out of motor housing with armature.**

Tool:  
- Torx 15 and 20 screwdriver

# FEIN REPAIR TOOLS



## 4.1. Removing the motor



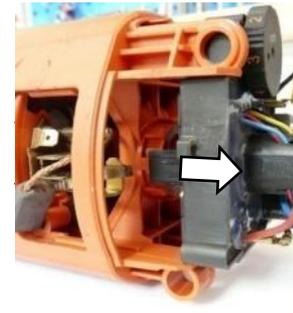
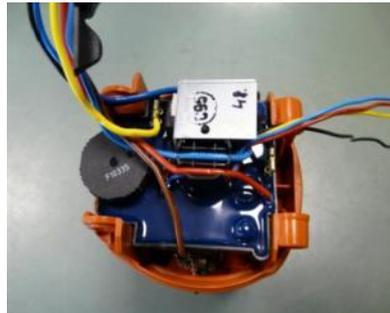
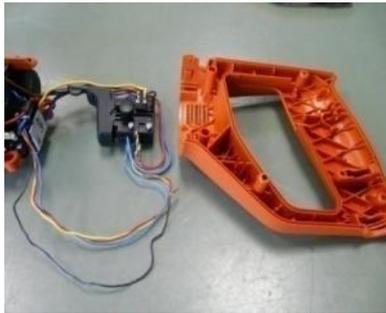
**Loosen screws and take off handle half shell.  
Unscrew cable clamping bridge for cable.  
Loosen screw connection from cable on switch and  
take out cable.**

Tool:  
- Torx 20 screwdriver  
- PZ 1 cross-tip screwdriver

# FEIN REPAIR TOOLS



## 4.1. Motor



**Take off bottom handle half shell.**

**Move motor housing into upright position.**

**Use screwdriver to gently unlock electronics at locking tabs and remove from above.**

### **NOTE**

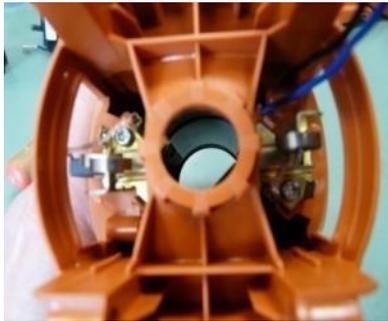
**The two locking tabs snap in to the motor housing near the ball bearing seat.  
The locking tabs can be easily broken off so only lever up slightly.**

Tool:  
- Slotted screwdriver

# FEIN REPAIR TOOLS



## 4.1. Removing the motor



### NOTE

**Carbon holders can only be replaced once the electronics have been removed**

**Loosen screws on air guide ring and take ring out.**

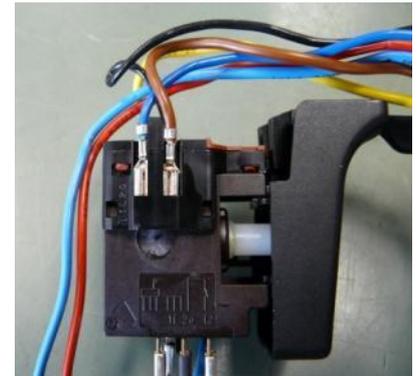
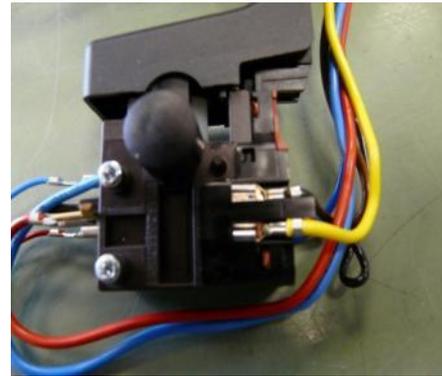
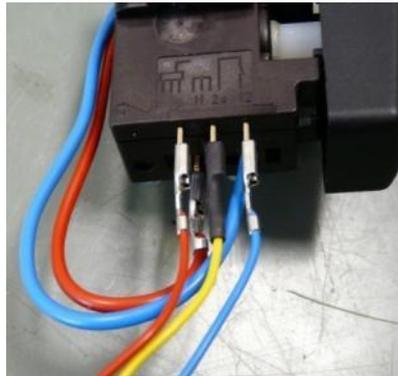
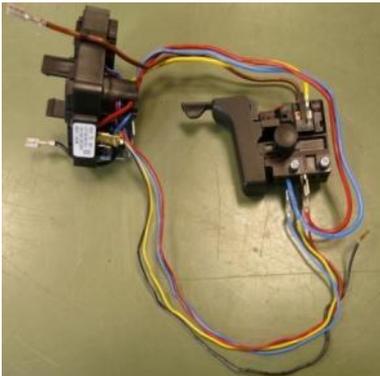
**Drive out field coil by gently tapping the edge of the motor housing with a plastic hammer.**

Tool:

- Torx 20 screwdriver
- Plastic hammer



## 4.2. Removing the electronics / switch



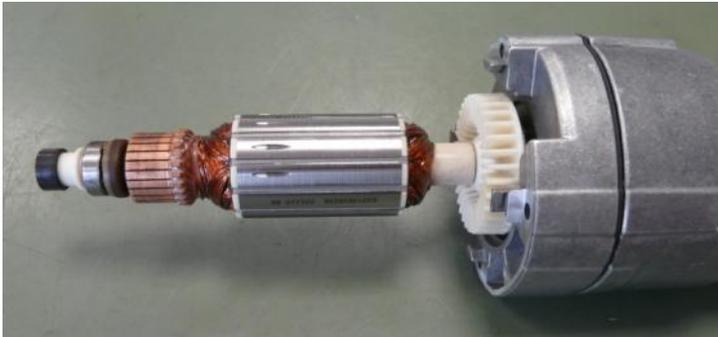
**Disconnect plug-in/clamping contacts on switch.**

**Attention – do not mix up coloured connections, otherwise tool will have limited functionality or incorrect direction of rotation.**

Tool:  
- Flat nose pliers



## 4.3. Removing the gearbox / armature



Drive armature out of intermediate bearing by tapping gently with a plastic hammer.  
Prise off plastic bush along with magnet ring.  
Pull out ball bearing.

### NOTE

The plastic bush is damaged when removed and always has to be replaced.

Tool:  
- Plastic hammer  
- Slotted screwdriver

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## 4.4. Removing the gearbox



**Place gearbox housing on intermediate bearing.**

**Remove upper circlip.**

**Remove all components, including the two balls.**

**Rotate drill shaft until the wrench flat provides good access for removing the circlip.**

**Remove circlip in gearbox housing.**

**Tool:**

- Longsleeve Circlip, angled
- External circlip pliers

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## 4.4. Removing the gearbox



**Disconnect gearbox housing and intermediate bearing.  
Remove grease. If the slipping clutch remains in the  
gearbox housing when the two housings are separated, take it out at this point.  
Remove circlip from gear-wheel.  
Take out gear-wheel.**

Tool:  
- Slotted screwdriver  
- External circlip pliers

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## 4.4. Removing the gearbox

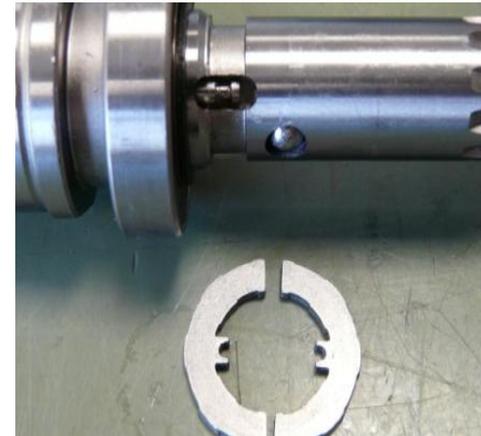
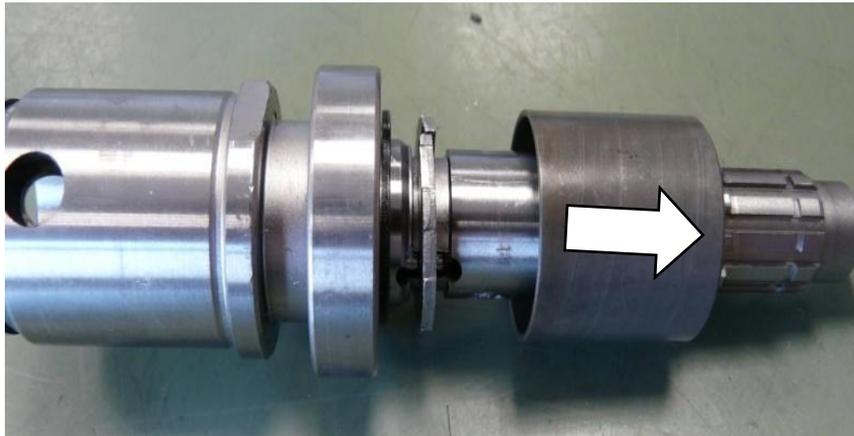


**Remove pressure spring and intermediate gear.  
Press drill shaft out of gearbox housing.**

Tool:  
- Arbor press



## 4.5. Removing the drill shaft



**Slide sleeve off drill shaft**  
**Remove circlips**

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## 4.5. Removing the drill shaft



**Pull both bolts out of drill shaft from the front.  
Remove the two balls.  
Remove circlip on ball bearing.  
Press ball bearing down and off drill shaft.**

### **NOTE**

**The ball bearing is damaged when pressed down and must be replaced.**

Tool:  
- Arbor press  
- External circlip pliers

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## 4.5. Removing the drill shaft



**Use a punch to drive in fastening bolt.  
Remove spring.**

Tool:  
- Punch  
- Steel hammer

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## Check slipping clutch



**Clamp slipping clutch in vice with aluminium jaws.**

**Adjust torque wrench.**

**The release torque for the slipping clutch must be between 5 – 6.5 Nm.**

**Use torque wrench to check release torque.**

**If release torque is higher or lower, replace slipping clutch.**

Tool:  
-2-20 Nm torque wrench  
-Open-ended spanner 13 mm  
-Vice with aluminium  
jaws



## Electrical tests

### Check motor (without switches or electronics)

#### Test voltage:

100 - 120 V tools:	U = 60 V / 50 Hz
220 - 240 V tools:	U = 120 V / 50 Hz

1. Remove brown cable (6) and blue cable (7) on switch and connect the two.
2. Remove black cable (8) on switch and remove black cable on electronics.  
Apply test voltage between the two black cables.  
The motor must now run.

Tool:  
- Isolating transformer  
- Measurement terminals



## Electrical tests

### Check switch

1. Measure resistance between screw-type terminal (2) and mounting tab (2a) on switch.

Nominal values:

Switch pressed:  $R < 1 \Omega$

Switch not pressed:  $R = \infty \Omega$

Tool:  
Multimeter

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## 5. Assembly



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## 5.1. Fitting the drill shaft



**Insert spring with bolt.**

**Use a punch to gently pre-tension spring from the front and use a pin to fix through the spherical holes.**

**Fit fastening bolts.**

**Use a hammer to drive fastening bolts into drill shaft until flush.**

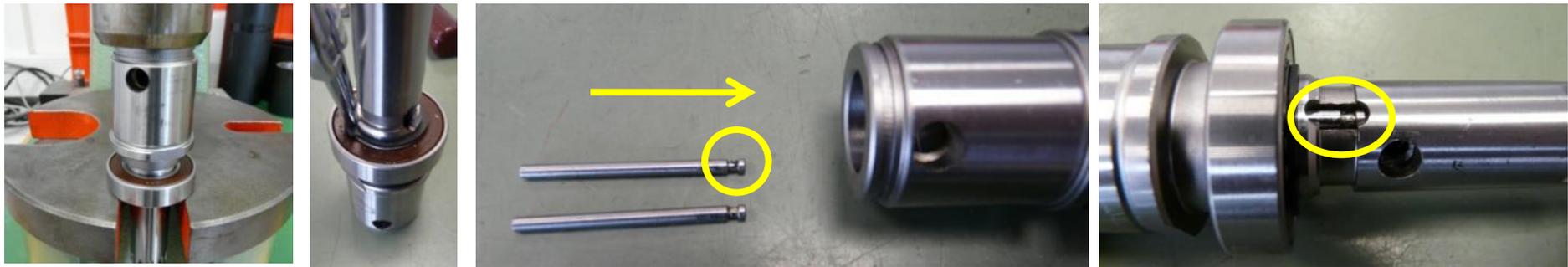
Tool:

- Punch
- Steel hammer

# FEIN REPAIR TOOLS



## 5.1. Fitting the drill shaft



**Press on bearing and insert circlip.**

**Insert bolt in drill shaft – Attention: note installation position!!!! (Yellow circles)**

Tool:  
- Arbor press  
- External circlip pliers

# FEIN REPAIR TOOLS



## 5.1. Fitting the drill shaft



**Insert circlips.**  
**Insert the two balls with a little grease.**  
**Fit sliding sleeve.**  
**Press drill shaft into outer bearing.**

Tool:  
- Arbor press

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## 5.2. Fitting the gearbox



- Once the drill shaft has been pressed in, fit pressure spring**
- Insert intermediate gear**
- Fit gear-wheel on drill shaft and fix with circlip**
- Insert intermediate gear with slipping clutch**
- Add seal**
- Attach intermediate bearing**

Tool:  
- External circlip pliers

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## 5.2. Fitting the gearbox



**Fix drill shaft in gearbox housing with circlip**

**Rotate drill shaft until the wrench flat provides good access for inserting the circlip**

**Attach ring, insert balls, fit pressure spring**

**Attach sleeve and press down**

**Attach disc and insert circlip**

Tool:

- External circlip pliers
- Longsleeve Circlip, angled



## 5.3. Fitting the gearbox / armature



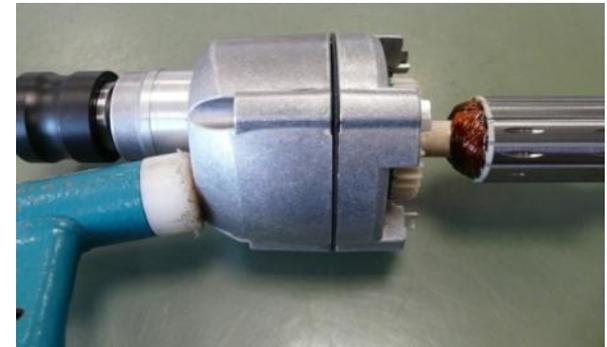
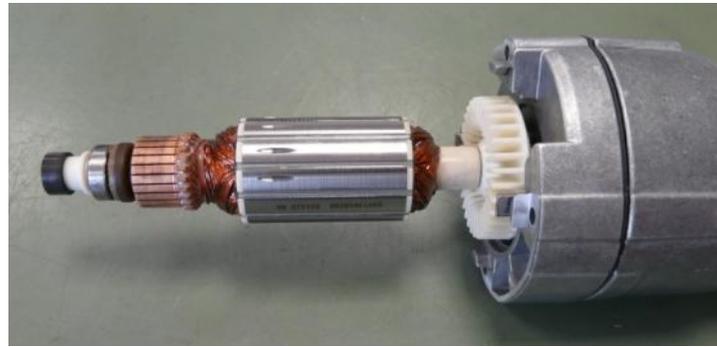
**Slide plate on to armature shaft**  
**Press on ball bearing.**  
**Press on sealing ring.**  
**Press ball bearing onto collector side.**  
**Attach plastic bush along with magnet ring.**  
**Drive in gearbox housing.**

Tool:  
- Plastic hammer  
- Arbor press  
- Sleeves

# FEIN REPAIR TOOLS



## 5.3. Fitting the gearbox / armature

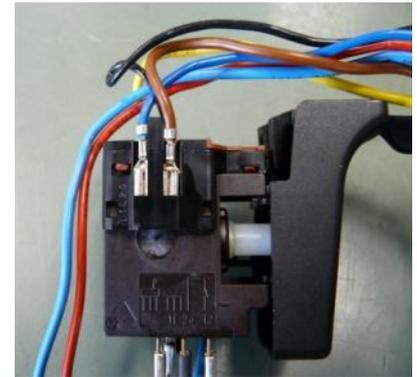
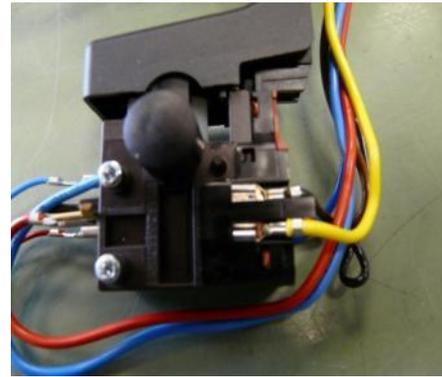
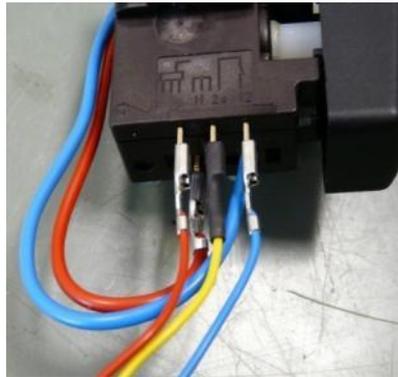
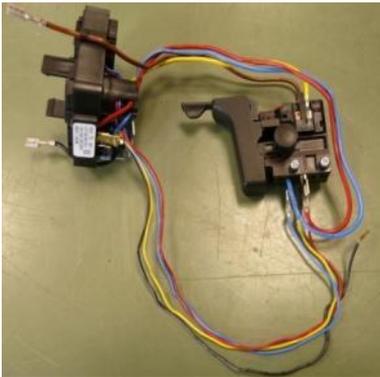


**Insert armature in gearbox housing and drive in by tapping the housing gently.**

Tool:  
- Plastic hammer  
- Arbor press



## 5.4. Fitting the electronics / switch



**Connect plug-in/clamping contacts on switch**

**Attention – do not mix up coloured connections, otherwise tool will have limited functionality or incorrect direction of rotation.**

Tool:  
- Flat nose pliers

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## 5.5. Fitting the motor



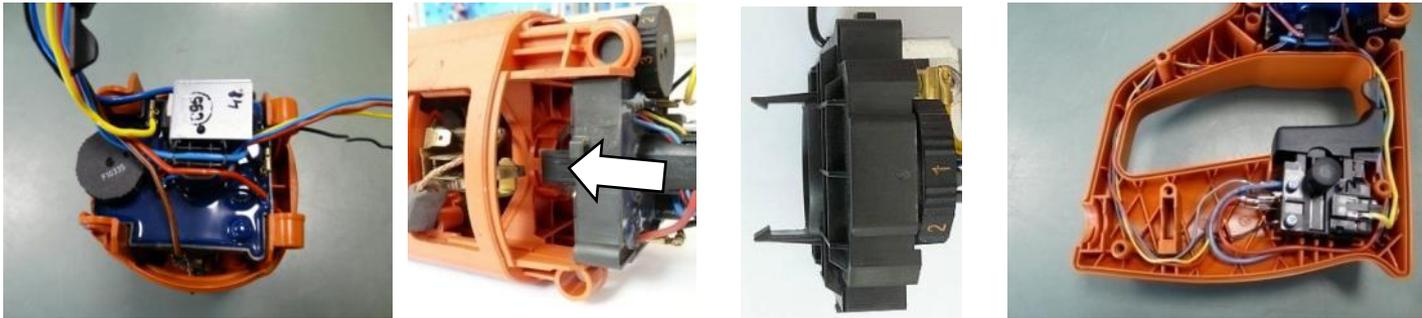
← Insert field coil up to stop in motor housing –  
← the engraved serial number must be on the top of the motor housing (speed level for electronics)  
Attach air guide ring and screw down in motor housing along with field coil

Tool:  
- Torx 20 screwdriver  
- Plastic hammer

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## 5.5. Fitting the motor



**Attach pre-fitted electronics onto motor housing with switch and snap in**  
**Attach bottom handle half shell to motor housing, insert switch and lay cable**  
**in handle**

**WARNING: Do not break off the two locking tabs. The two locking tabs snap in to motor housing near the ball bearing seat.**

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## 5.5. Fitting the motor



**Fit mains cable with stranded wire for restart protection (thin black cable)**  
**Fit traction relief for mains cable**  
**Attach top handle half shell and screw down**

Tool:  
- Torx 20 screwdriver  
- PZ 1 cross-tip screwdriver

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## 5.5. Fitting the motor



**Pull back spring and slide down carbon brush (attach on collector)**

**Place spring on carbon brush**

**Attach both carbon holder covers and screw down**

**Perform general function check**

**Check restart protection.**

**Perform electrical safety check.**

Tool:  
- Torx 15 screwdriver



## 7. Connection diagram

