



FMT 250



FMT 250Q / FMT 250QSL





Contents

- 1. Models described**
- 2. Technical data**
- 3. Notes and requirements**
- 4. Tools required**
- 5. Lubricants and auxiliary substances required**
- 6. Disassembly**
- 7. Assembly**
- 8. Troubleshooting**
- 9. Connection diagram**



1. Models described

These instructions describe how to repair the following models:

Model	Order number
FMT 250	7 229 44
FMT 250Q	7 229 43
FMT 250QSL	7 229 53



2. 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 (Customer Service → Repair Guides).

Lubricants

The lubricants and container sizes available from FEIN can be found on the FEIN Extranet (Customer Service → Repair Guides).

Lists of spare parts

Lists of spare parts and exploded views are available online at www.fein.com



3. Notes and requirements

Note

These instructions are only intended for persons with suitable technical training. It is assumed that the reader has mechanical and electrical training.

Only use original FEIN spare parts!

Provisions

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

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

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

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

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



4. Tools required

Standard tools

Vice
 Arbor press
 Plastic hammer
 Circlip pliers
 Screwdrivers: Torx 15, Torx 20
 Flat-nose pliers
 Ball bearing support, 16mm
 Ball bearing support, 19mm
 Ball bearing support, 26mm
 Hot air gun
 Punch 5mm, 6mm
 Cross-tip screwdriver (small)

Special tools

Drawing-off socket cap	6 41 04 150 00 8
Chuck cone, 16mm	6 41 07 016 00 1
Chuck cone, 19mm	6 41 07 019 00 7
Chuck cone, 26mm	6 41 07 026 00 0
Extractor tool	
• Thread ring	6 41 14 031 03 0
• Chuck cone	6 41 14 031 01 0
• Screw	6 41 07 013 02 1
• Bolt	6 41 07 013 03 7
Clamping screw	6 41 07 013 02 1
Press-in fixture	6 41 22 108 00 0
Assembly aid	6 41 22 121 01 0



5. Lubricants and auxiliary substances required

Lubricant

Grease	0 40 101 01 00 0	12g	Gearbox
--------	------------------	-----	---------



6. Disassembly

Disconnecting from mains

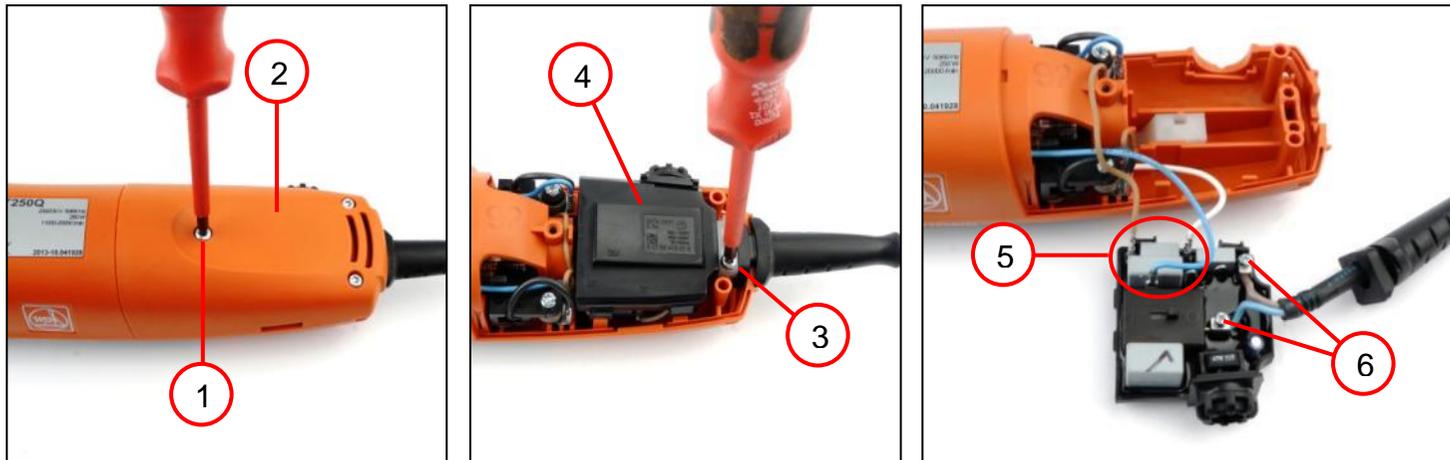


1. Disconnect tool from mains.



6. Disassembly

Disassembling electronics



1. Remove the three screws (1) and take off cover (2).
2. Unscrew screw (3) and remove cable clamping piece.
3. Remove electronics (4) from motor housing.
4. Disconnect screw connections (5) between motor and electronics.
5. Open the two screws (6) and remove cable with plug.

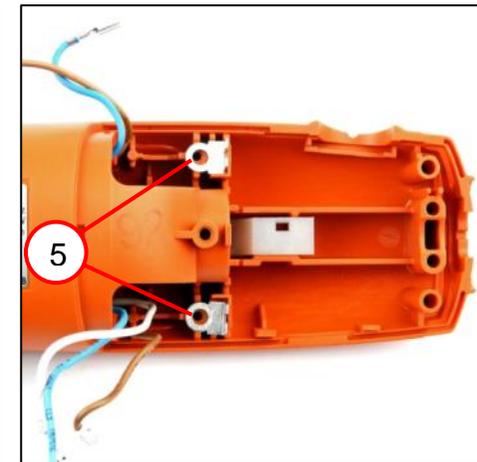
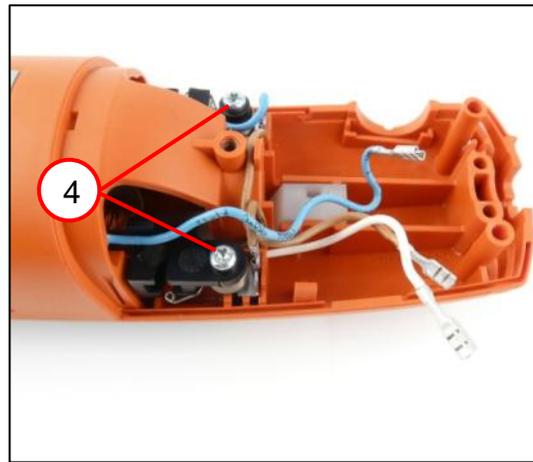
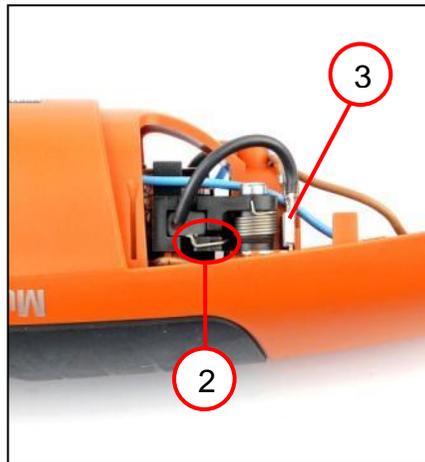
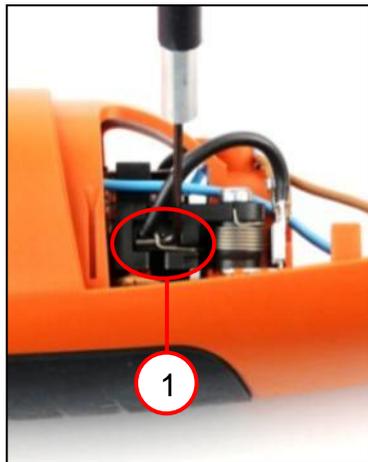
Tools:

- Torx T15
- Cross-tip screwdriver (small)
- Flat-nose pliers



6. Disassembly

Disassembling carbon brushes



1. Raise spring (1) and lift into cut-out (2).
2. Disconnect carbon brushes (3) on both sides and remove.
3. Unscrew the two screws (4) and remove carbon holder.
4. Pull off cables and remove the two connectors (5).

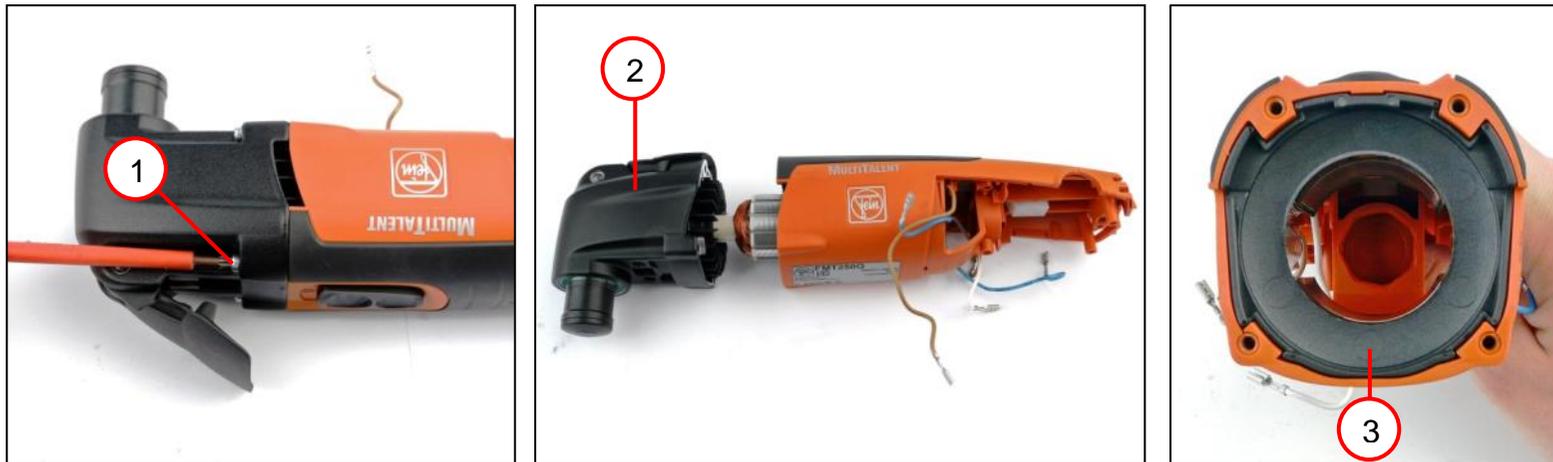
Tools:

- Torx T15
- Assembly aid



6. Disassembly

Disassembling armature



1. Unscrew the four screws (1).
2. Pull gearbox housing with armature (2) out of motor housing.
3. Remove air guide ring (3).

Tools:

- Torx T15



6. Disassembly

Disassembling housing



1. Unscrew two screws (1).
2. Remove stator (2) from housing.
3. Remove the control rod (3).

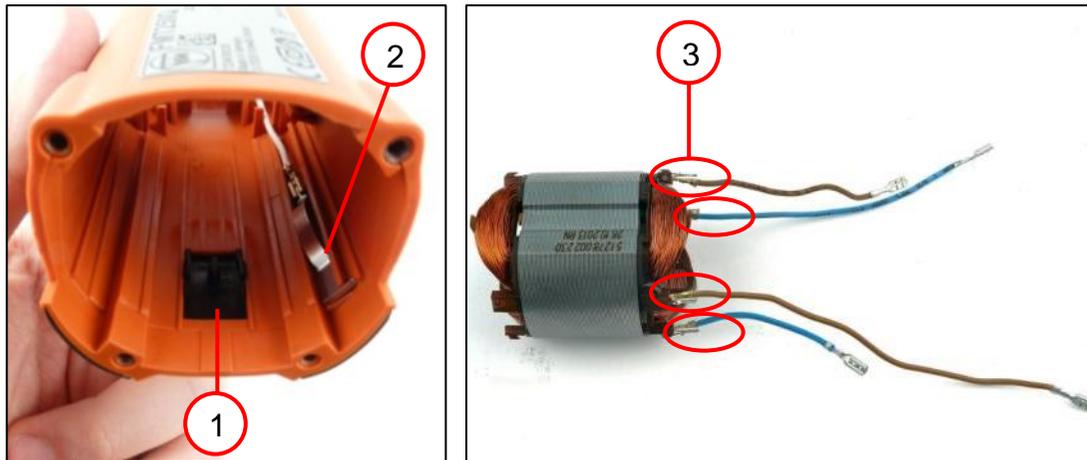
Tools:

- Plastic hammer
- Torx T15



6. Disassembly

Disassembling housing

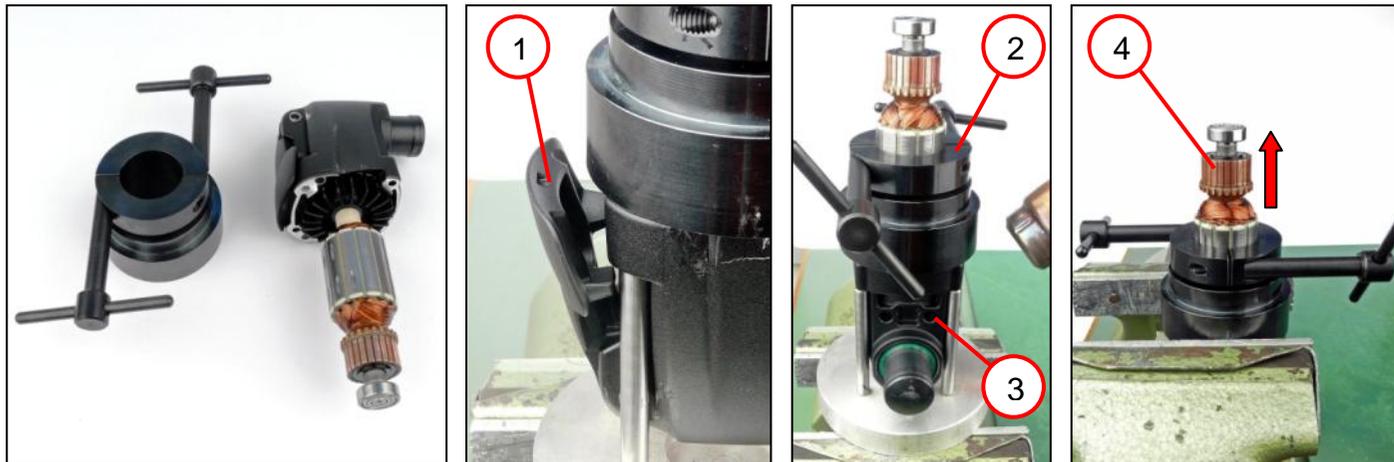


1. Remove slide switch (1).
2. Remove contact spring (2).
3. Pull connecting cables (3) off stator.



6. Disassembly

Disassembling armature



1. Open lever (1).
2. Place extractor tool (2) on armature.
3. Heat tool head (3) with hot air gun [temperature: 600 °C] on right and left sides at an angle of 45 degrees for 15 seconds on each side.
 - ☞ **Warning!** Too much heat will cause deformation of the fan blades on the armature.
4. Using extractor tool, pull armature (4) out of tool head.

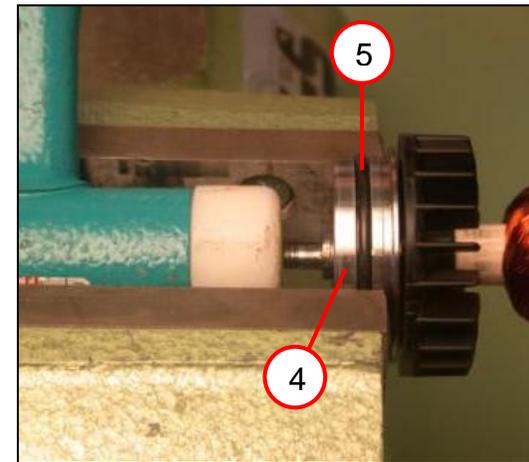
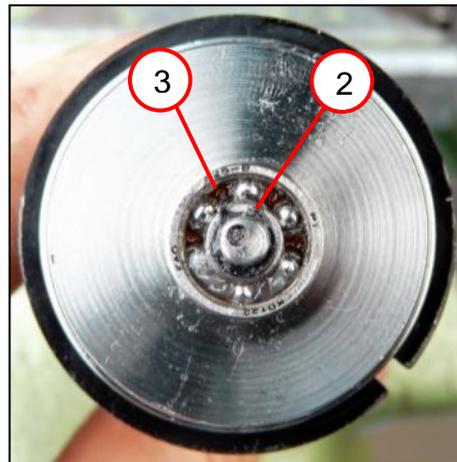
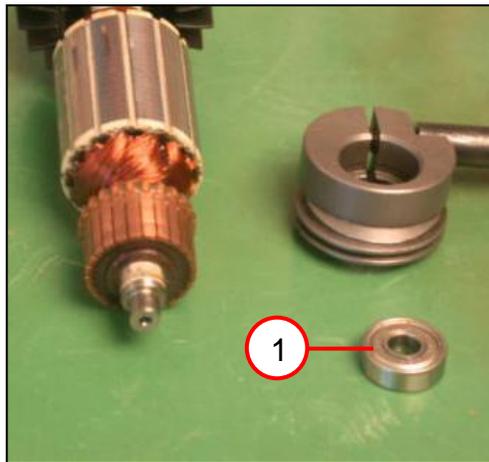
Tools:

- Extractor tool
- Press-in fixture
- Hot air gun
- Vice



6. Disassembly

Disassembling armature



1. Pull off grooved ball bearing (1) on collector side.
2. Remove circlip (2).
3. Pull off grooved ball bearing (3).
4. Pull off bush (4).
5. Remove sealing ring (5).

Tools:

- Circlip pliers
- Chuck cone, 16mm, 19mm
- Plastic hammer



6. Disassembly

Disassembling armature



1. Pull ball bearing (1) off armature.

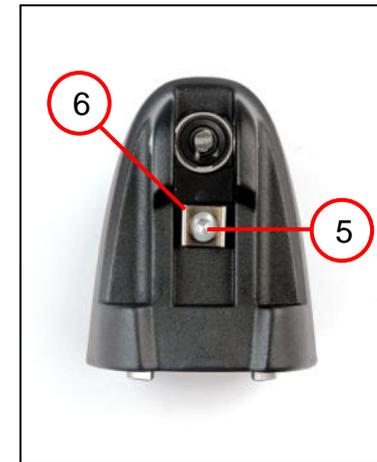
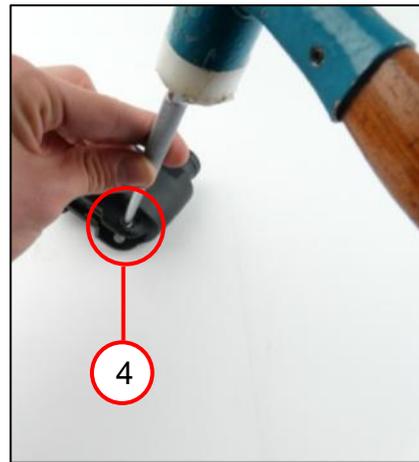
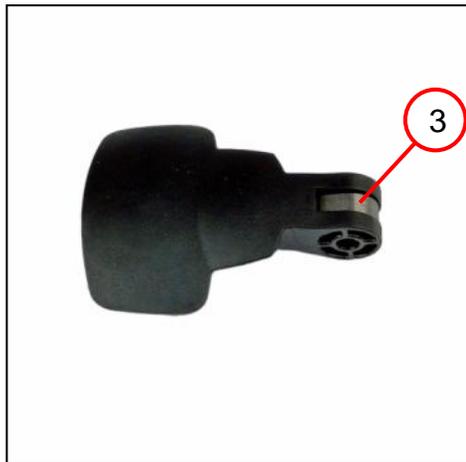
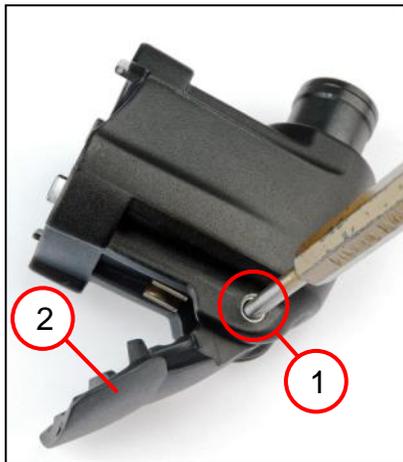
Tools:

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



6. Disassembly

Disassembling tool head (applies to: FMT 250Q)



1. Drive out straight pin (1) and remove lever (2).
2. Remove eccentric ring (3).
3. Press out the two bushes (4).
4. Unscrew fillister head screw (5).
5. Remove locking spring (6).

Tools:

- Plastic hammer
- Torx T20
- Punch, diameter 5mm
- Punch, diameter 6mm



7. Assembly

Assembling armature



1. Press on grooved ball bearing (1).
2. Press on bush (2).
3. Press on grooved ball bearing (3).
4. Press on grooved ball bearing (4).
5. Insert circlip (5).

Tools:

- Arbor press
- Ball bearing support, 16mm
- Ball bearing support, 19mm
- Ball bearing support, 26mm
- Circlip pliers



7. Assembly

Assembling tool head (applies to FMT 250Q)



1. Secure locking spring (1) with fillister head screw (2) [2.0 ±0.1Nm].
2. Press in the two bushes (3).
 ☞ Make sure the bushes are flush with the inside.
3. Insert eccentric ring (4) in correct position into lever.
4. Place lever (5) on tool head.
5. Press in straight pin (6).

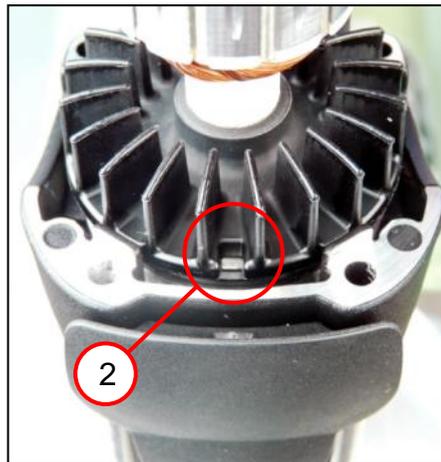
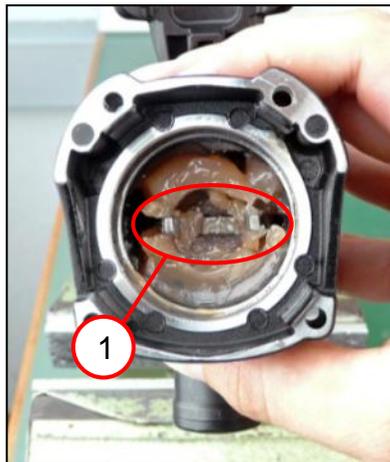
Tools:

- Torx T20
- Punch, diameter 5mm
- Punch, diameter 6mm
- Arbor press



7. Assembly

Assembling housing cover



1. Fill tool head with 12g of grease.
2. Align fork centrally in tool head (1).
3. Position armature and align cut-out (2).
4. Press armature into tool head.
5. Test function by turning armature.

Tools:

- Grease 12g
- Hot air gun
- Press-in fixture
- Arbor press



7. Assembly

Assembling switch

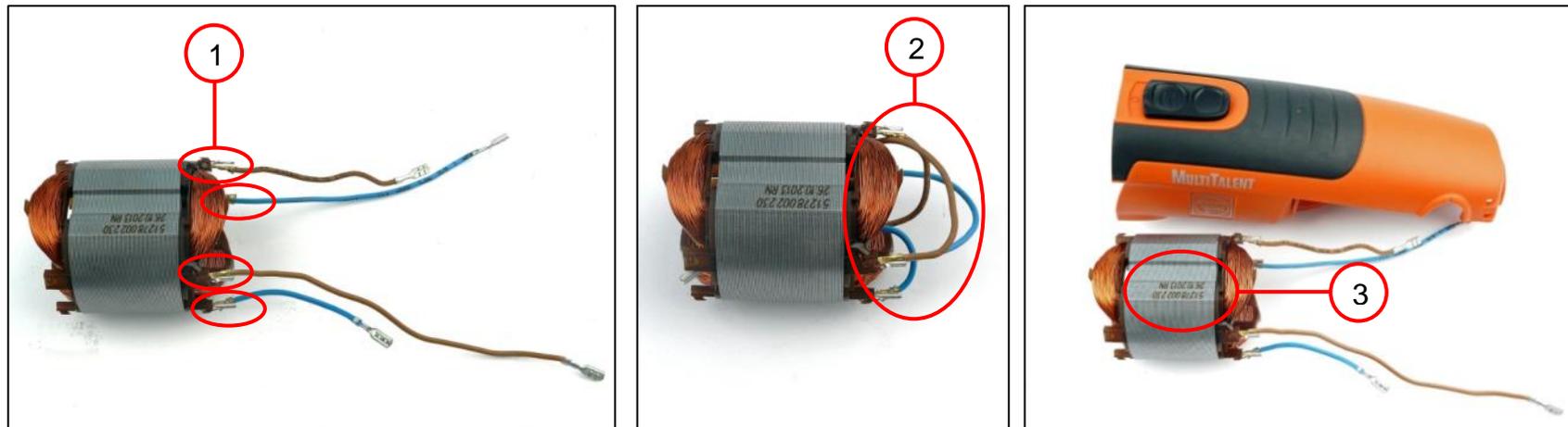


1. Clip slide switch (1) into motor housing.
2. Insert control rod (2) into motor housing.
3. Fit control rod in slide switch.
4. Position contact spring (3).



7. Assembly

Assembling stator



1. Connect connecting cables (1) to stator as shown in illustration.
2. Insert cables into field coil (2).
3. Insert field coil in motor housing.
 - ☞ Ensure that the ID number (3) of the stator is on the same side as the switch.



7. Assembly

Assembling stator



1. Using hook, pull cables out of stator.
2. Screw in the two screws (1) [$1.8 \pm 0.1\text{Nm}$].
3. Insert air guide ring (2).

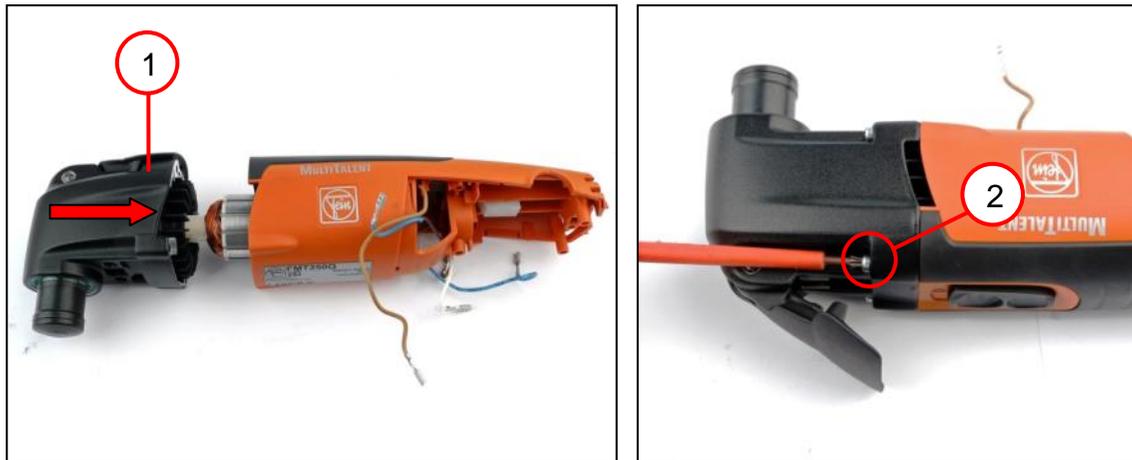
Tools:

- Torx T15
- Assembly aid



7. Assembly

Assembling gearbox head

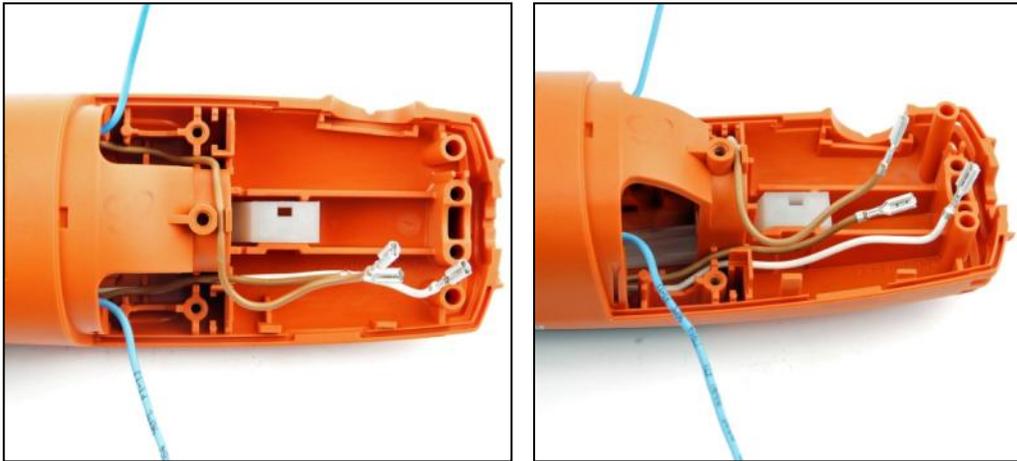


1. Slide gearbox head (1) into motor housing.
2. Screw down gearbox head with the four screws (2) [$1.9 \pm 0.1\text{Nm}$].



7. Assembly

Routing the cables

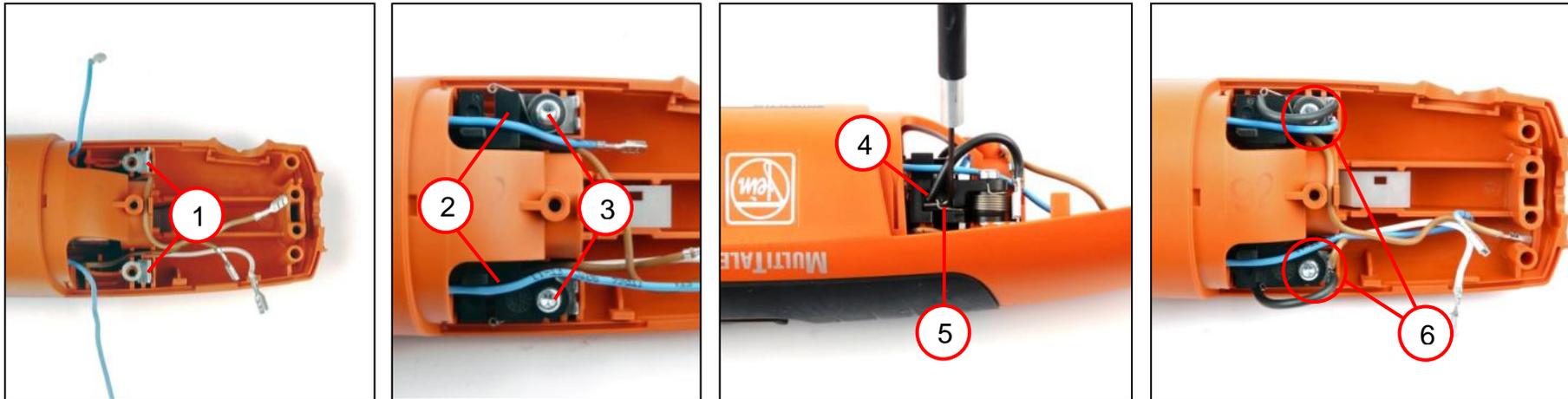


1. Route the cables.



7. Assembly

Assembling carbon brush holders and carbon brushes



1. Position the two connectors (1).
2. Position brush holders (2).
3. Secure brush holders with the two screws (3) [1.5 +0.2Nm].
4. Slide the two carbon brushes into brush holders and connect to appropriate connector (4).
5. Place spring (5) on carbon brush.
6. Connect cables (6) to distributors.

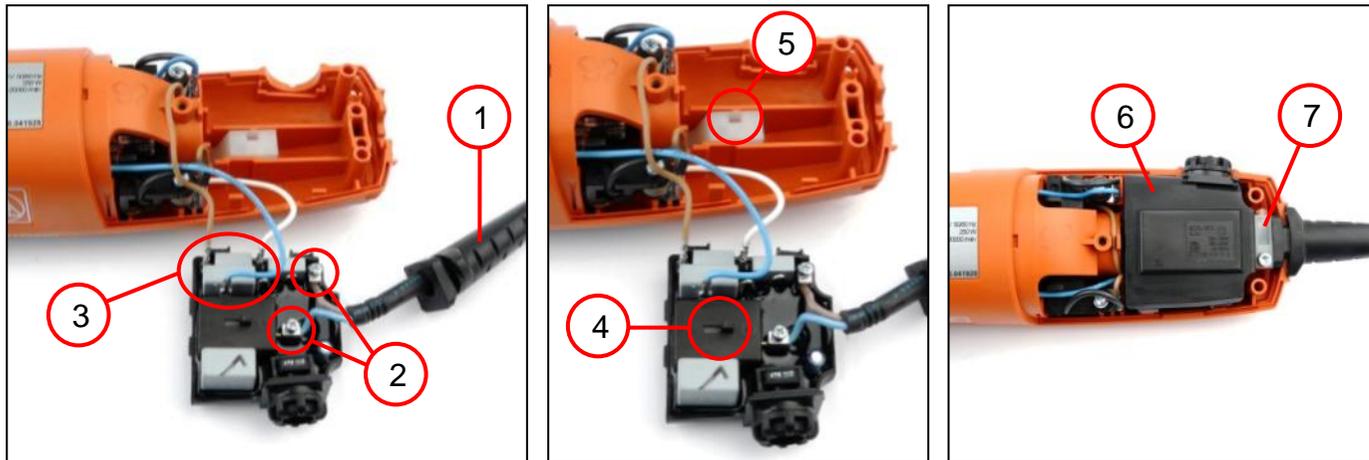
Tools:

- Torx T15
- Assembly aid



7. Assembly

Assembling electronics



1. Slide cable grommet (1) on to cable with plug.
2. Connect cable with plug to electronics (2).
3. Connect cables of stator to electronics (3).
 - ☞ When inserting the electronics, make sure the switch (4) is sitting in the control rod's cut-out (5).
4. Insert electronics (6) into motor housing.
5. Using cable clamping piece (7) and screw, secure cable with plug [1.5 +0.2Nm].

Tools:

- Cross-tip screwdriver (small)
- Torx T15



7. Assembly

Assembling electronics



1. Place cover (1) on motor housing.
2. Screw the "4x8" screw (2) into the motor housing [1.5 +0.2Nm].
3. Screw the "3.5x20" screw (3) into the motor housing [1.5 +0.2Nm].
4. Perform safety test and then check function of tool.

Tools:

- Torx T15

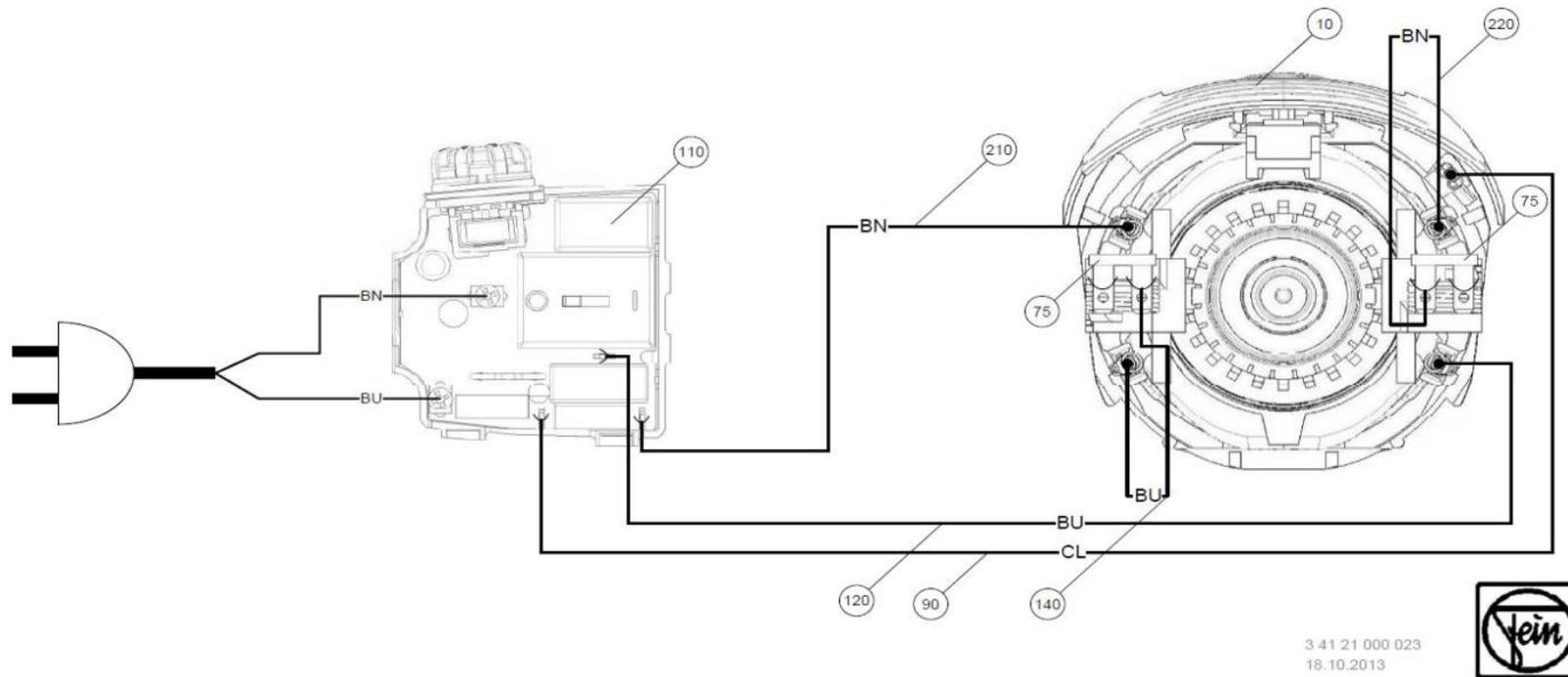
8. Troubleshooting





9. Connection diagram

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



3 41 21 000 023
18.10.2013