

**WSG 11 R/RT; WSG 15 PR/PRT; WSG 15-70InoxR/RT; WSG 17 PR/PRT; WSG 17-70InoxR/RT**

## **Repair instructions**



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## 1. Models described

These repair instructions describe how to repair the following models:

Model	Order number
<b>WSG 11-125R</b>	7 221 86 .. . .
<b>WSG 11-125RT</b>	7 221 87 .. . .
<b>WSG 11-150R</b>	7 221 88 .. . .
<b>WSG 11-150RT</b>	7 221 89 .. . .
<b>WSG 15-125PR</b>	7 221 90 .. . .
<b>WSG 15-125PRT</b>	7 221 91 .. . .
<b>WSG 15-150PR</b>	7 221 92 .. . .
<b>WSG 15-150PRT</b>	7 221 93 .. . .
<b>WSG 15-70InoxR</b>	7 221 94 .. . .
<b>WSG 15-70InoxRT</b>	7 221 95 .. . .
<b>WSG 17-125R</b>	7 222 14 .. . .
<b>WSG 17-125RT</b>	7 222 15 .. . .
<b>WSG 17-150R</b>	7 222 16 .. . .
<b>WSG 17-150RT</b>	7 222 17 .. . .
<b>WSG 17-125PR</b>	7 222 18 .. . .



## **1. Models described**

<b>Model</b>	<b>Order number</b>
<b>WSG 17-125PRT</b>	7 222 19 .. . .
<b>WSG 17-150PR</b>	7 222 20 .. . .
<b>WSG 17-150PRT</b>	7 222 21 .. . .
<b>WSG 17-70InoxR</b>	7 222 22 .. . .
<b>WSG 17-70InoxRT</b>	7 222 30 .. . .



## 2. Technical data

### Technical data

All the 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](http://www.fein.com)



### 3. 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.**

#### 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 employer's liability insurance associations are to be observed when commissioning.

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

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



## 4. Tools required

### Standard tools

Plastic hammer	
Cross-tip screwdriver	PH2
Torx screwdriver	T15; T20
Punch	
Arbor press	
Ball bearing support	19 mm; 26 mm
Sleeves	<ul style="list-style-type: none"> <li>• 35 mm inner diameter</li> <li>• 14 mm inner diameter 19 mm outer diameter</li> <li>• 30 mm inner diameter 42 mm outer diameter</li> <li>• 15 mm inner diameter 20 mm outer diameter</li> <li>• 15 mm inner diameter 27 mm outer diameter</li> <li>• 26 mm inner diameter 40 mm outer diameter</li> </ul>
4x round material	Diameter 20 mm; length = 60 mm
Long-nosed pliers	

### Special tools

Drawing-off socket cap	6 41 04 150 00 8
Chuck cone 19 mm	6 41 07 019 00 7
Chuck cone 26 mm	6 41 07 026 00 0
Drawing-off plate	6 41 02 069 00 7
Pipe	6 41 01 002 00 4
Assembly aid	6 41 22 121 01 0
Pressure piece	6 41 22 003 00 0

## Lubricants

Grease	0 40 101 01 00 4	21 g	Gearbox
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Grease	0 40 101 01 00 4	29 g	Gearbox
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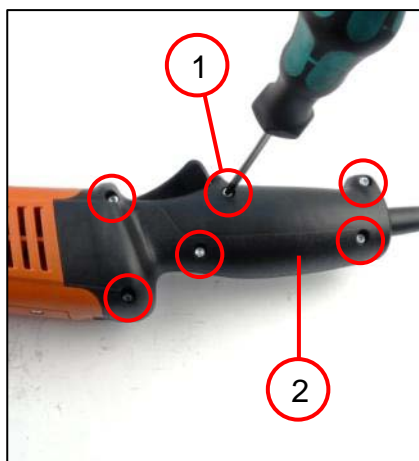
Loctite 573 Washer





## 6. Removal

### Removing the handle



1. Unscrew the six screws (1) and remove the handle half shell (2).

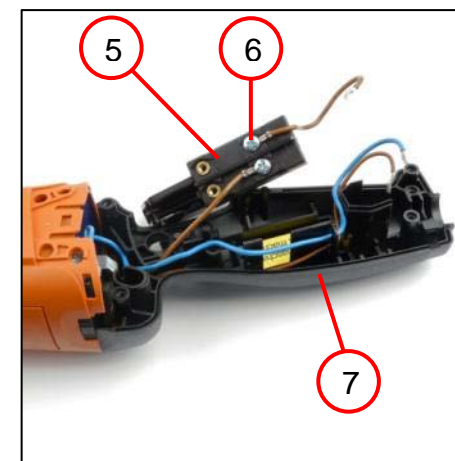
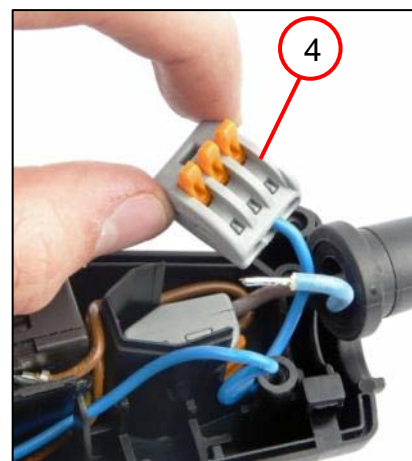
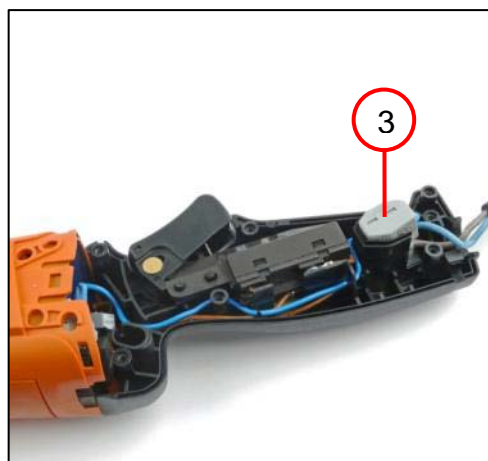
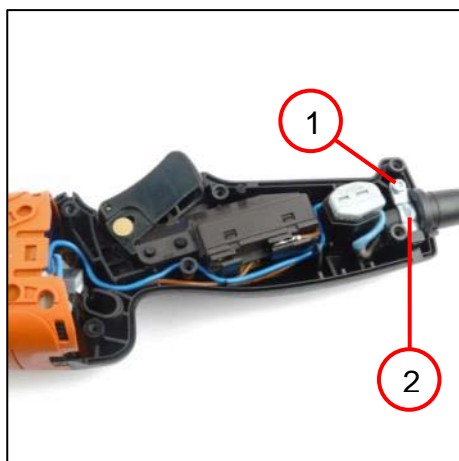
#### Tools:

- Torx T15



## 6. Removal

### Removing the handle



1. Unscrew the screw (1).
2. Remove the cable clamping piece (2).
3. Remove the terminals (3).
4. Open the terminals (4) and remove the cables.
5. Remove the switch (5).
6. Loosen the screws (6) on the switch and remove the cables.
7. Remove the handle half shell (7).

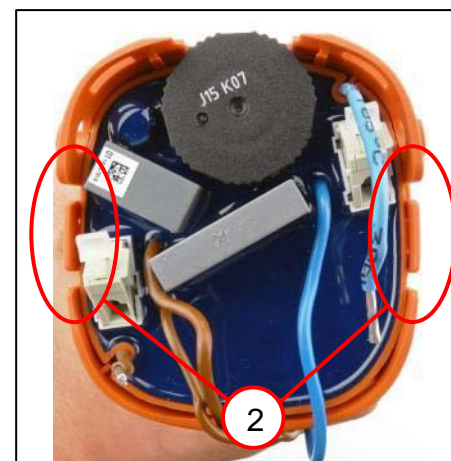
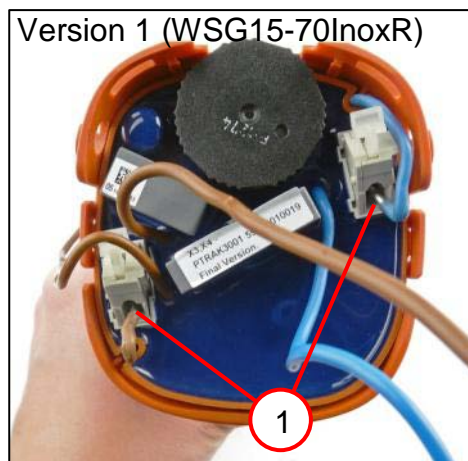
#### Tools:

- Torx T15
- PH2 cross-tip screwdriver



## 6. Removal

### Removing the electronics

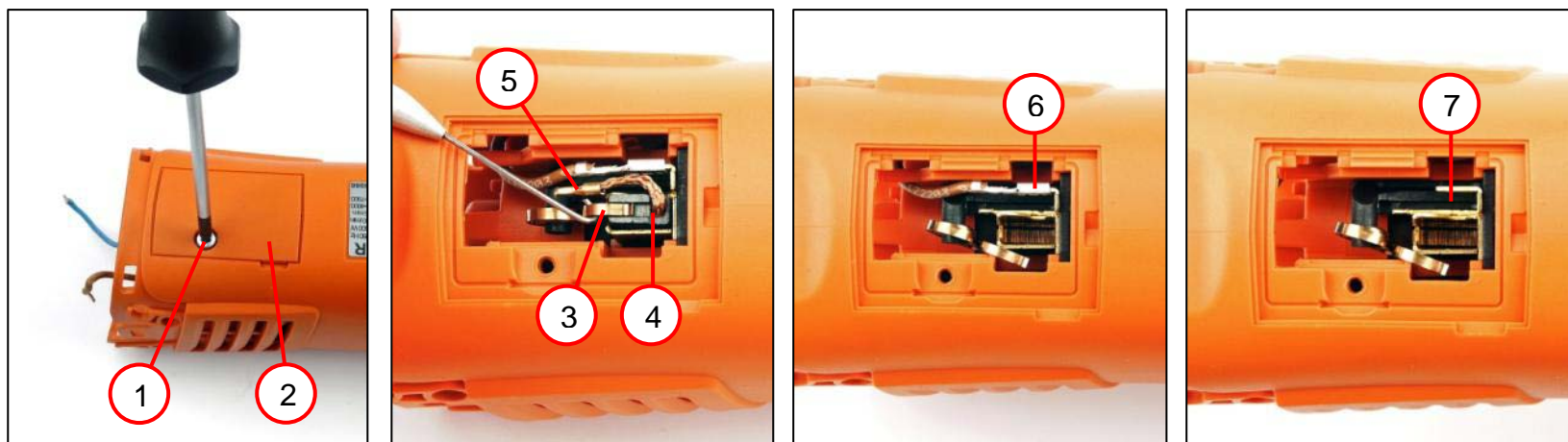


1. Open the terminals (1) and pull out the cables.
2. Simultaneously press the lugs (2) outward and remove the electronics.



## 6. Removal

### Removing the carbon brushes (on both sides)



1. Unscrew the screw (1).
2. Remove the cover (2).
3. Lift the spring (3) to one side.
4. Pull the carbon brush (4) off the brush holder (5) and remove it.
5. Pull the cable (6) off the carbon brush holder.
6. Remove the brush holder (7).

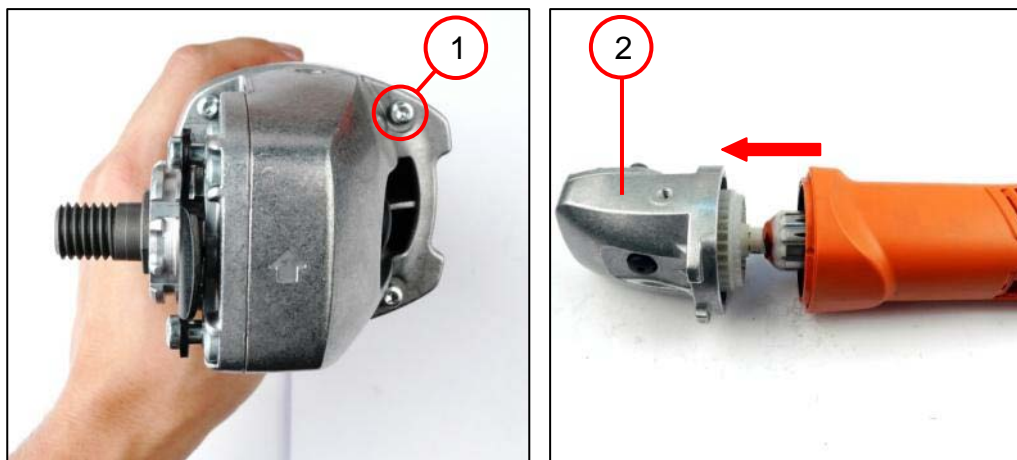
#### Tools:

- Torx T15
- Long-nosed pliers
- Assembly aid



## 6. Removal

### Removing the gearbox housing



1. Unscrew the four screws (1).
2. Pull the gearbox housing (2) with armature out of the housing.

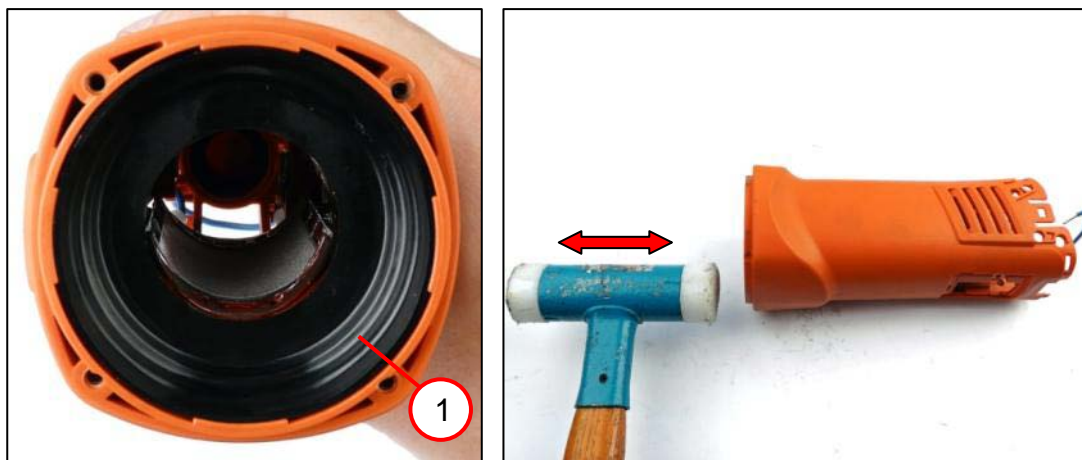
#### Tools:

- Torx T15



## 6. Removal

### Removing the stator



1. Remove the air guide ring (1).
2. Remove the stator.

#### Tools:

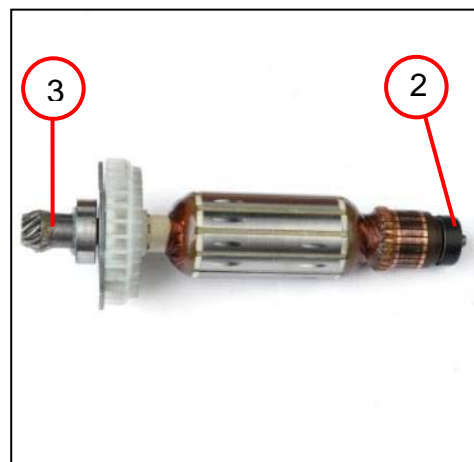
- Plastic hammer





## 6. Removal

### Removing the armature



1. Remove the armature (1).
2. Remove the bearing bush (2).
3. Remove the bevel pinion (3).

#### Tools:

- Plastic hammer
- Arbor press
- Punch
- Drawing-off plate
- Pipe



## 6. Removal

### Removing the armature



1. Remove the grooved ball bearing (1).
2. Remove the plate (2).
3. Pull off the magnet (3) if one is present.  
 ⚠ The magnet is destroyed during removal and must be replaced.
4. Remove the grooved ball bearing (4).

#### Tools:

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





## 6. Removal

### Removing the gearbox housing



1. Remove the air guide ring (1).
2. Unscrew the four screws (2).
3. Remove the clamps (3).
4. Take off the bearing plate (4).
5. Remove the washer(s) (5).

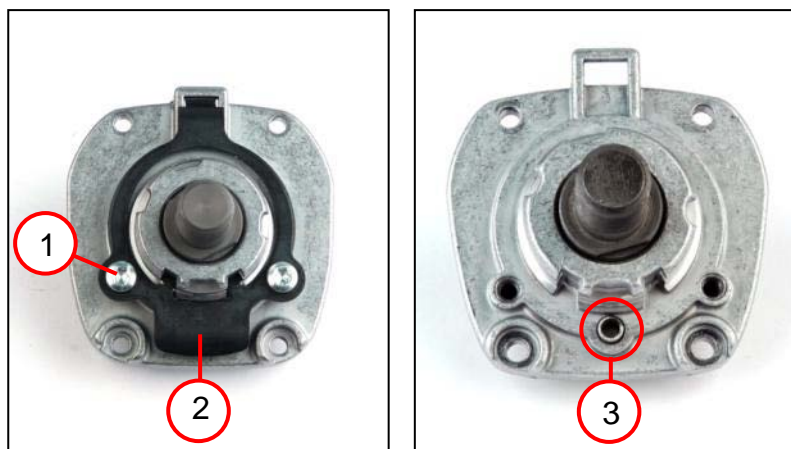
#### Tools:

- Torx T20



## 6. Removal

### Removing the gearbox housing



1. Unscrew the two screws (1).
2. Remove the lever (2).
3. Remove the spiral spring (3).

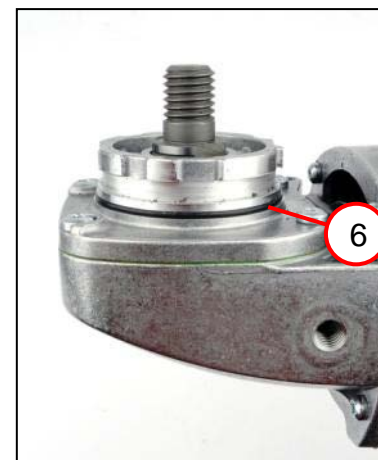
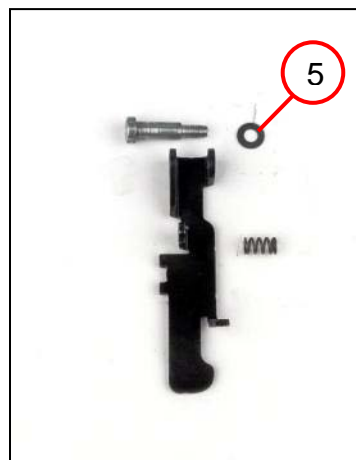
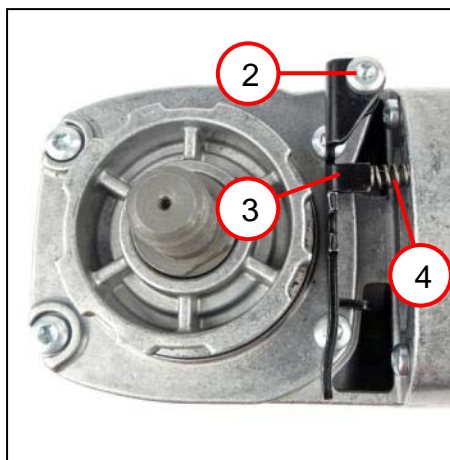
#### Tools:

- Torx T20



## 6. Removal

Removing the gearbox housing (applies to: WSG 17)



1. Remove the air guide ring (1).
2. Unscrew the screw (2).
3. Remove the lever (3).
4. Remove the disc (5).
5. Remove the spring (4).
6. Remove the sealing ring (6).

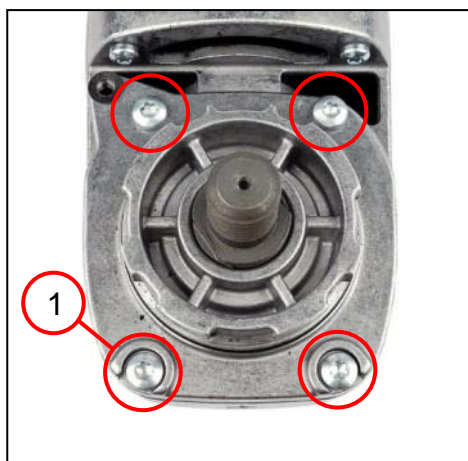
### Tools:

- Torx T20



## 6. Removal

Removing the gearbox housing (applies to: WSG 17)



1. Unscrew the four screws (1).
2. Take off the bearing plate (2).
3. Remove the washer(s) (3).

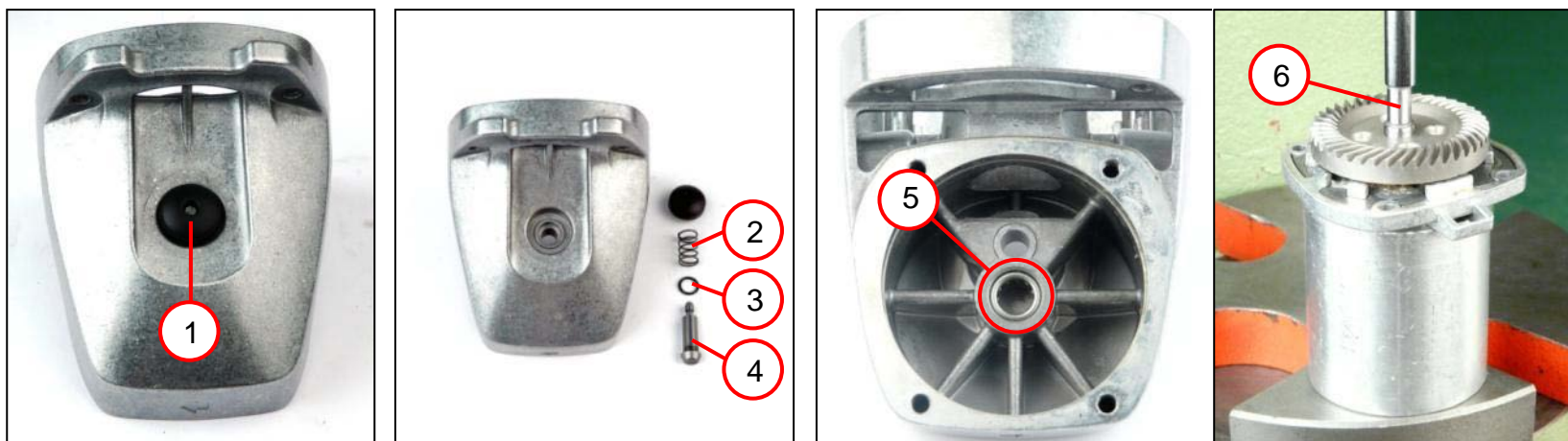
### Tools:

- Torx T20



## 6. Removal

### Removing the gearbox housing



1. Remove the pushbutton (1).
2. Remove the spiral spring (2) and the bolt (3) with sealing ring (4).
3. Remove the needle sleeve (5).
4. Press out the shaft (6).

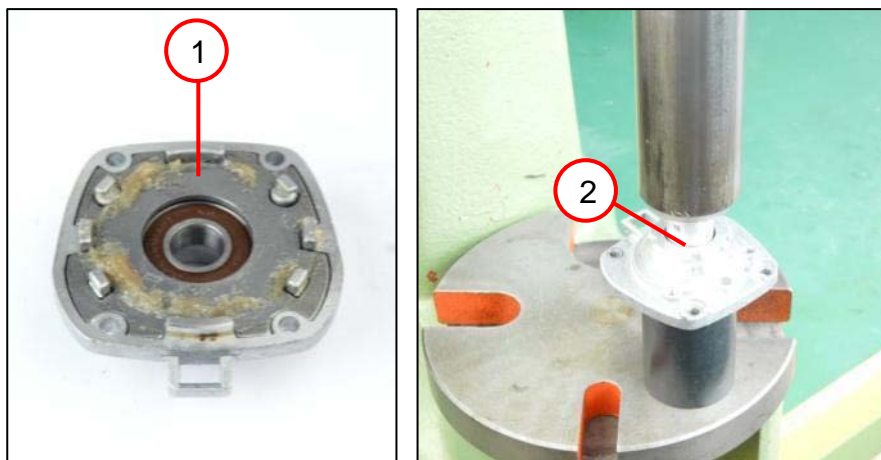
#### Tools:

- Slotted screwdriver
- Arbor press
- Punch
- Sleeve with 35 mm inner diameter



## 6. Removal

### Removing the gearbox housing



1. Remove the plate (1).
2. Press out the grooved ball bearing (2).

#### Tools:

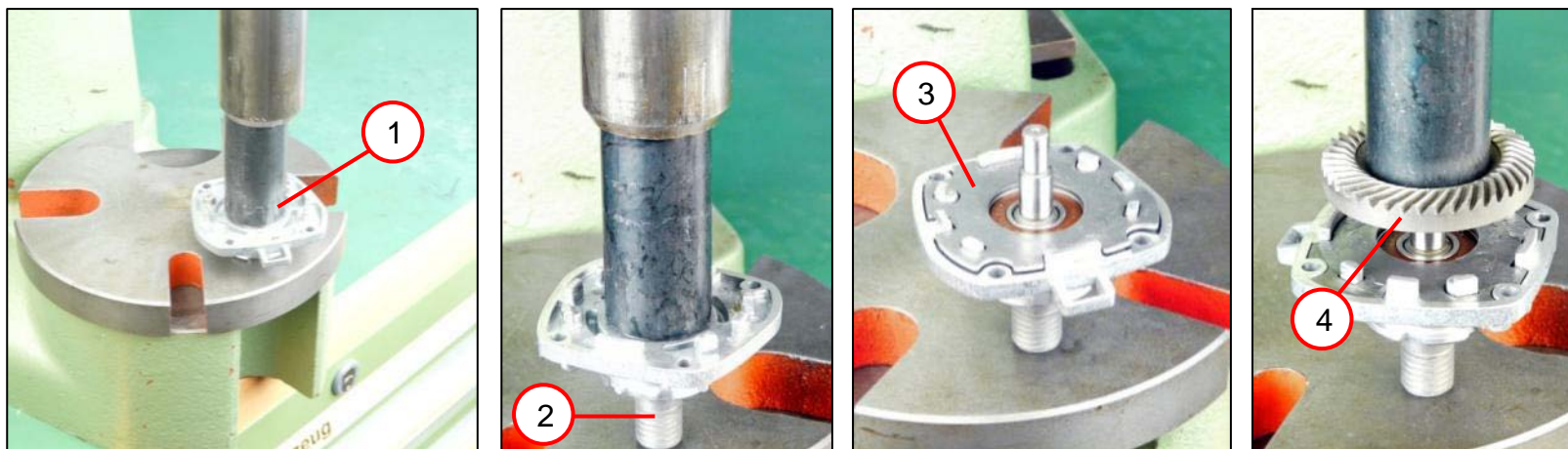
- Arbor press
- Sleeve  
14 mm inner diameter  
19 mm outer diameter
- Sleeve  
30 mm inner diameter  
42 mm outer diameter





## 7. Fitting

### Fitting the gearbox housing



1. Press the grooved ball bearing (1) into the bearing plate.
2. Press in the shaft (2).
3. Insert the plate (3).
4. Press the gear-wheel (4) onto the shaft.

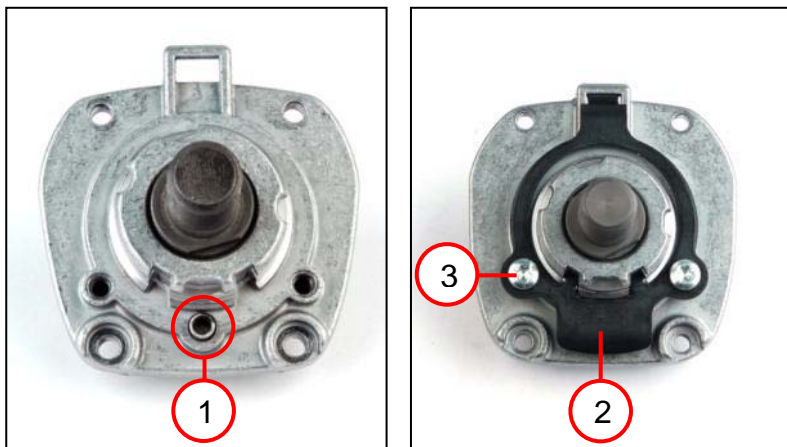
#### Tools:

- Arbor press
- Sleeve  
15 mm inner diameter  
27 mm outer diameter
- Sleeve  
15 mm inner diameter  
20 mm outer diameter



## 7. Fitting

### Fitting the gearbox housing



1. Insert the spiral spring (1).
2. Place the lever (2) on the bearing plate.
3. Screw in the two screws (3) [2.4 Nm].

#### Tools:

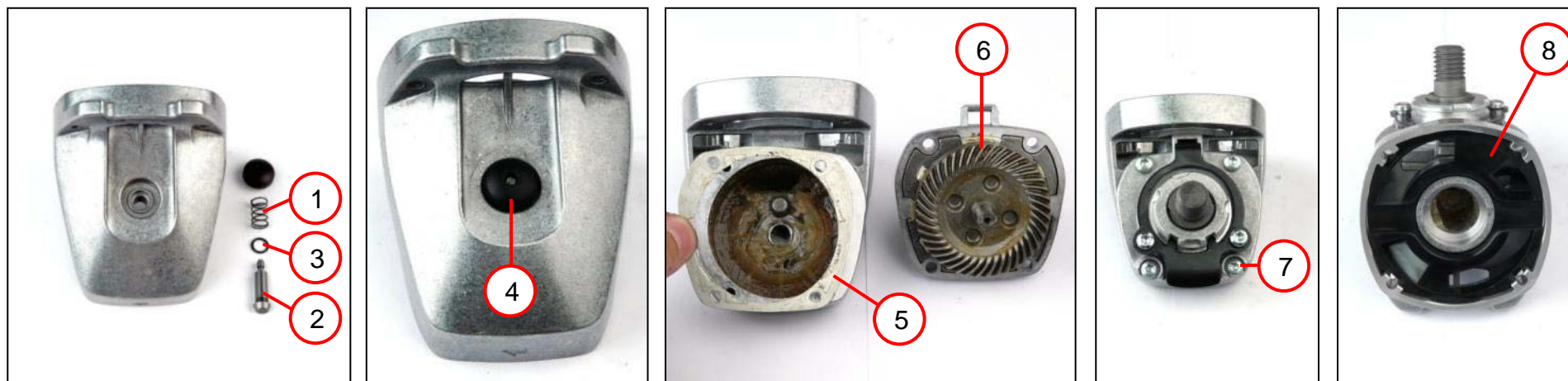
- Torx T20





## 7. Fitting

### Fitting the gearbox housing



1. Insert the spiral spring (1) and the bolt (2) with sealing ring (3).
2. Fit the pushbutton (4).
3. Coat both sides of the washer(s) (5) with Loctite 573 and position the washer(s) on the gearbox housing.  
 ☞ Replace the washer(s) during fitting.
4. Place the bearing plate (6) on the gearbox housing.
5. Screw in the four screws (7) [2.4 Nm].
6. Insert the air guide ring (8) into the gearbox housing.

#### Tools:

- Torx T20



## 7. Fitting

### Fitting the gearbox housing (applies to: WSG 17)



1. Coat both sides of the washer(s) (1) with Loctite 573 and position the washer(s) on the gearbox housing.  
☞ Replace the washer(s) during fitting.
2. Place the bearing plate (2) on the gearbox housing.
3. Screw in the four screws (3) [2.4 Nm].

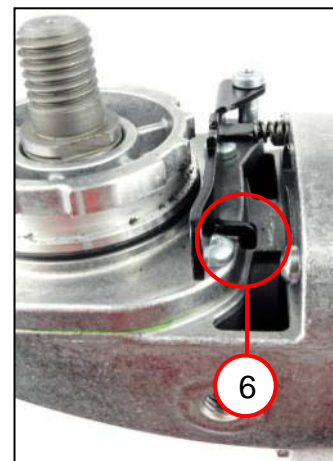
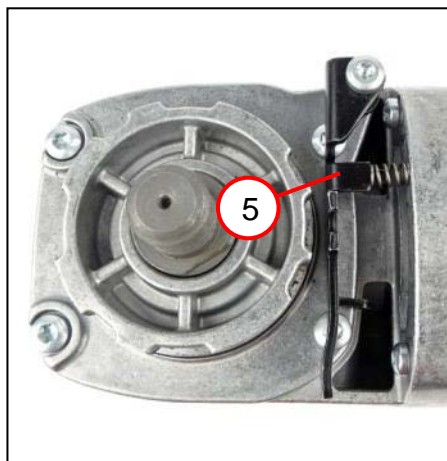
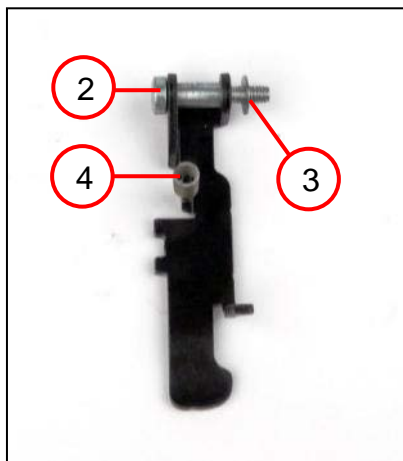
#### Tools:

- Torx T20



## 7. Fitting

### Fitting the gearbox housing (applies to: WSG 17)



1. Place the sealing ring (1) in the groove.
2. Position the screw (2).
3. Position the disc (3).
4. Position the spring (4).
5. Screw the lever (5) onto the bearing plate [2.4 Nm].
  - ☞ The screw (2) is a self-tapping screw.
  - ☞ Ensure that the screw is inserted perpendicular to the bearing plate.
  - ☞ Position the stop (6) as shown.
6. Insert the air guide ring (7) into the gearbox housing.

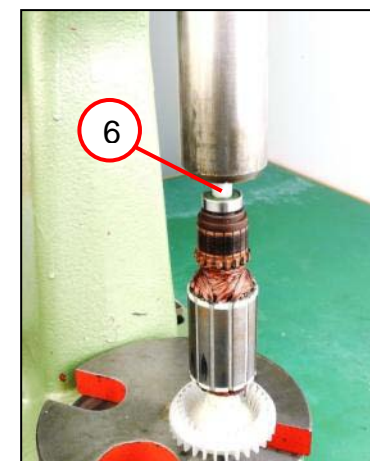
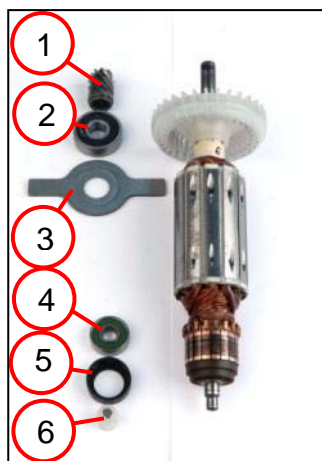
#### Tools:

- Torx T20



## 7. Fitting

### Fitting the armature



1. Slide the plate (3) onto the armature.
2. Press the grooved ball bearing (2) onto the armature.
3. Press the grooved ball bearing (4) onto the armature.
4. Press the bevel pinion (1) onto the armature.
5. Carefully press the magnet (6) onto the armature [WSG15/WSG17].  
 ☞ The magnet must be replaced each time the armature is fitted.
6. Slide the bearing bush (5) over the grooved ball bearing.

#### Tools:

- Arbor press
- Ball bearing support  
19 mm; 26 mm



## 7. Fitting

### Fitting the armature



1. Press the armature into the gearbox housing.
  - ☞ Ensure that plate lies in air guide ring's recess.
  - ☞ When fitted, it must no longer be possible for the armature to be pulled out in an axial direction by hand. If the armature can be pulled out by hand, the gearbox housing must be replaced.

#### Tools:

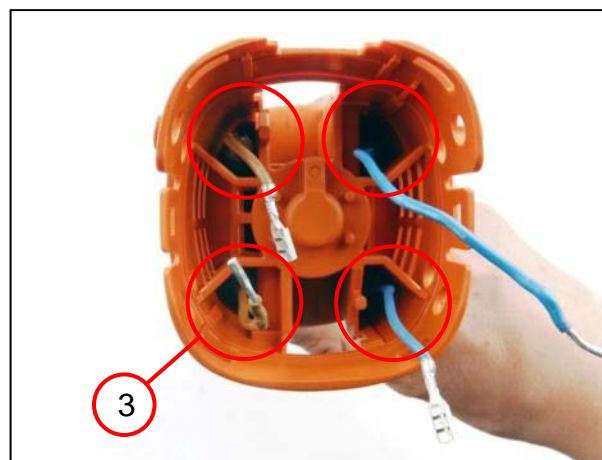
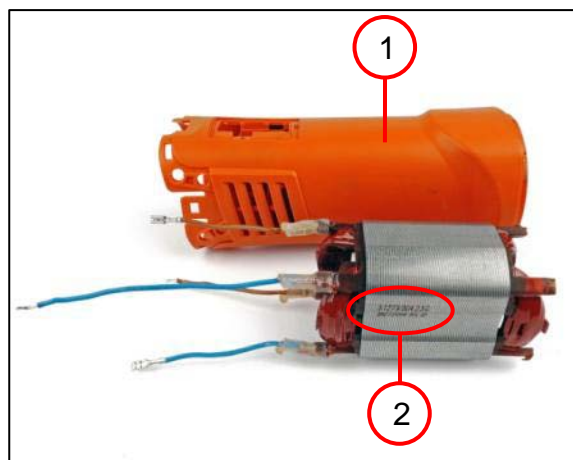
- Arbor press





## 7. Fitting

### Fitting the stator



1. Slide the stator (1) into the housing in the correct position.  
 ☞ Use the ID number (2) to align the stator.
2. Carefully guide the cables through the openings (3).
3. Centre the sleeve on the motor housing.  
 ☞ Ensure that the sleeve lies between the pins (4).

#### Tools:

- Sleeve  
 26 mm inner diameter  
 40 mm outer diameter



## 7. Fitting

### Fitting the stator



1. Insert the pressure piece (1) and press in the stator.
2. Insert the air guide ring (2) into the housing in the correct position.

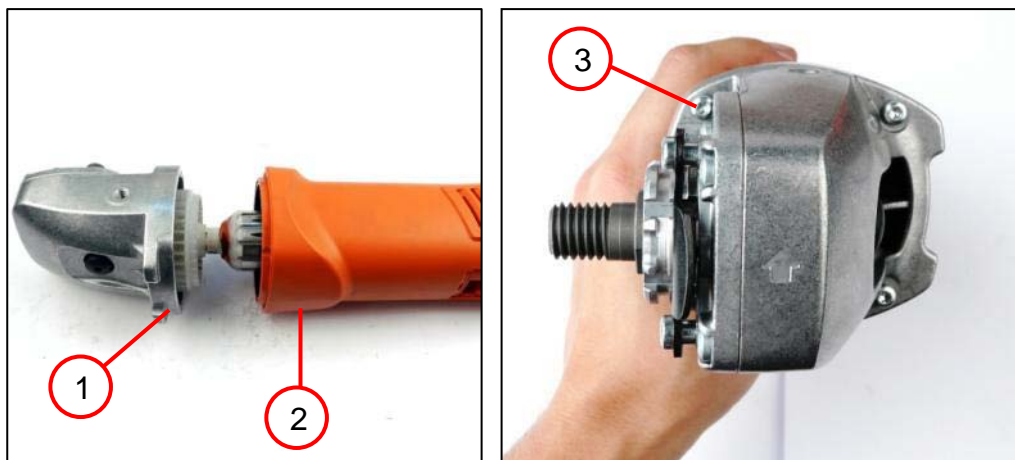
#### Tools:

- Arbor press
- Pressure piece



## 7. Fitting

### Fitting the gearbox head



1. Slide the gearbox housing (1) with armature into the motor housing (2).
2. Screw in the four screws (3) [2.2 Nm].

#### Tools:

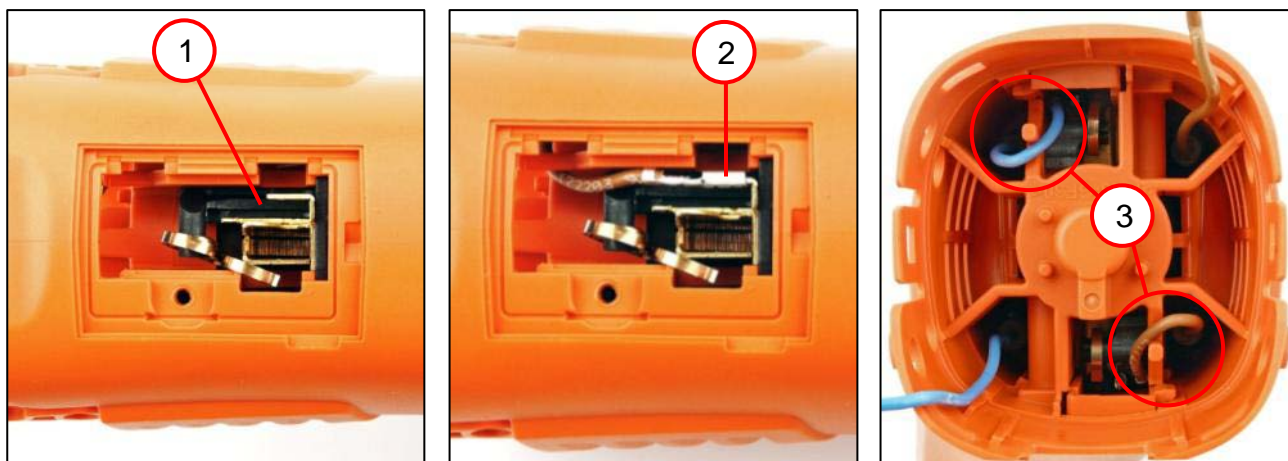
- Torx T15





## 7. Fitting

### Fitting the carbon brushes (WSG 11 230 V; WSG 15 230 V)

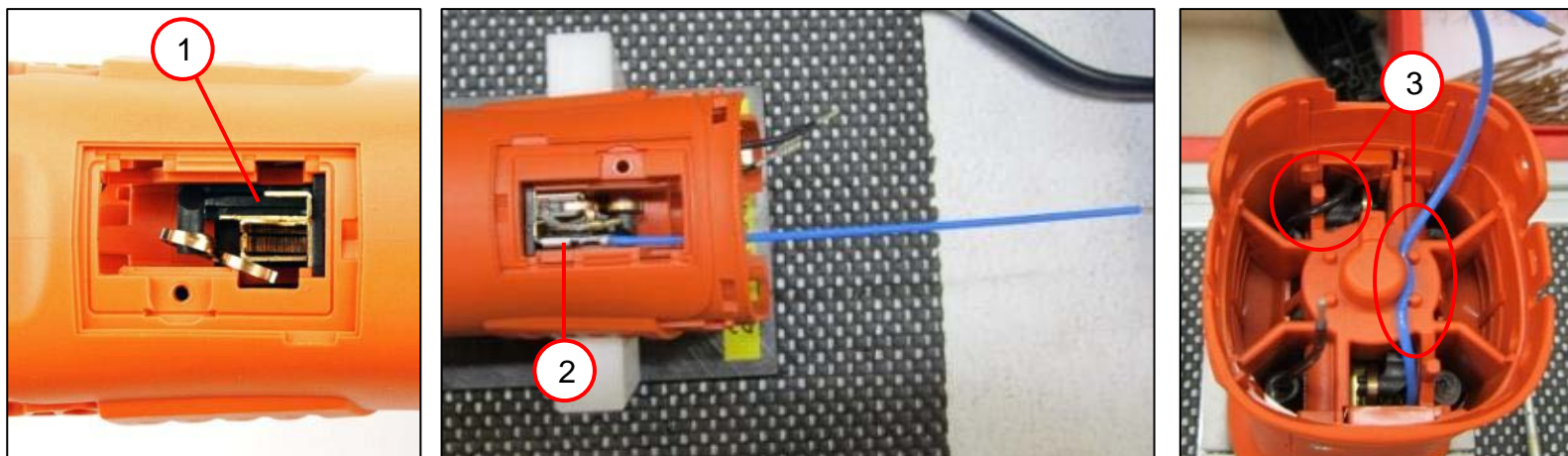


1. Insert the brush holder (1).
2. Connect the respective cable (2) to the carbon brush holder as shown in connection diagram.
3. Lay the cables around the pins (3).



## 7. Fitting

### Fitting the carbon brushes (WSG 11 120 V; WSG 15 120 V)

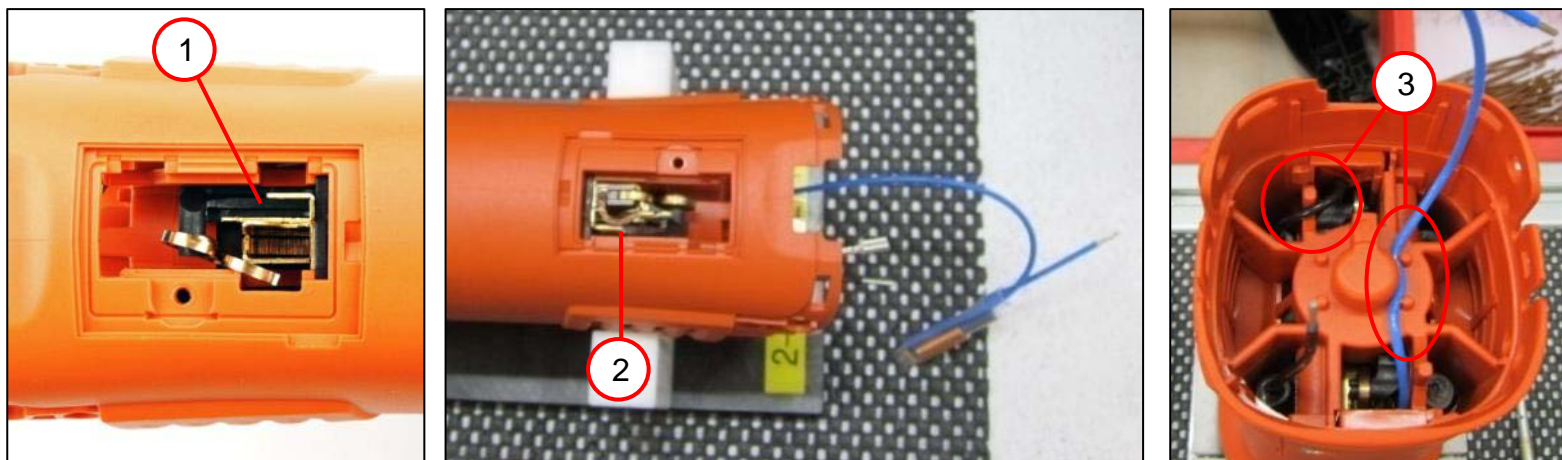


1. Insert the brush holder (1).
2. Connect the respective cable (2) to the carbon brush holder as shown in connection diagram.
3. Lay the cables around the pins (3).



## 7. Fitting

### Fitting the carbon brushes (WSG 11 110 V with choke)

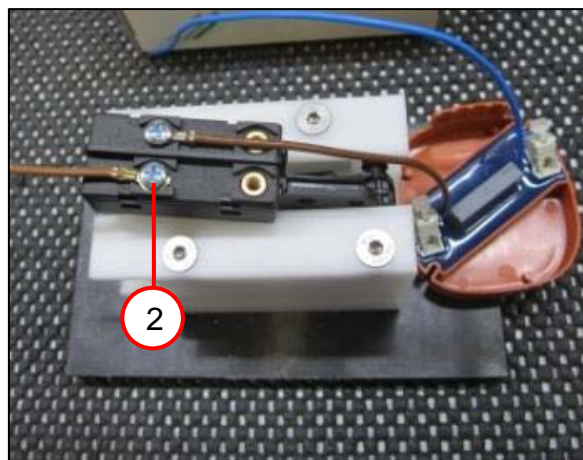
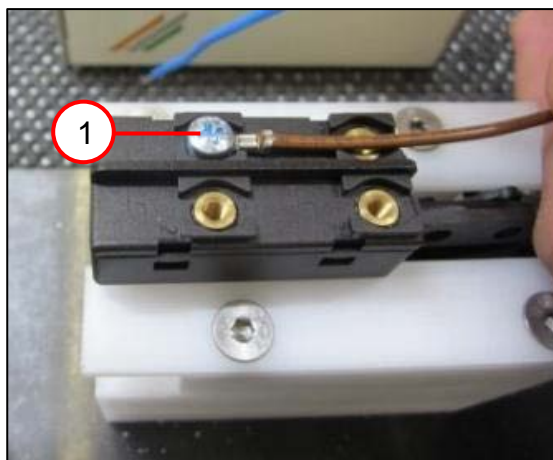


1. Insert the brush holder (1).
2. Connect the choke (2) and the cables to the carbon brush on the opposite side as shown in the connection diagram.
3. Lay the cables around the pins (3).



## 7. Fitting

### Fitting the switch



1. Screw the cable (1) of the electronics onto the switch as shown in the connection diagram [0.8 +0.2 Nm].
2. Screw the cable (2) onto the switch as shown in the connection diagram [0.8 +0.2 Nm].

#### Tools:

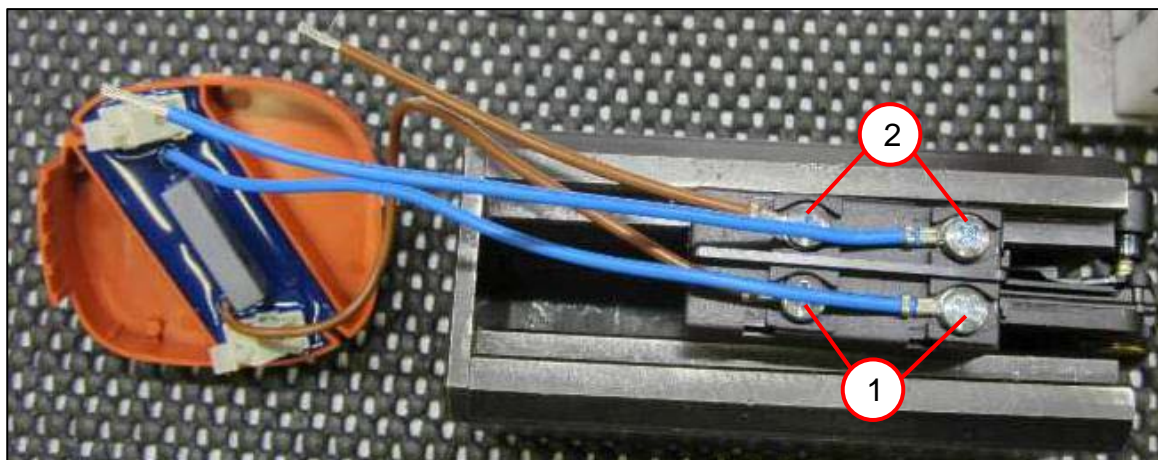
- PH2 cross-tip screwdriver





## 7. Fitting

### Fitting the switch (WSG 11-120 V)



1. Screw the two cables (1) of the electronics onto the switch as shown in the connection diagram [0.8 +0.2 Nm].
2. Screw the two cables (2) onto the switch as shown in the connection diagram [0.8 +0.2 Nm].

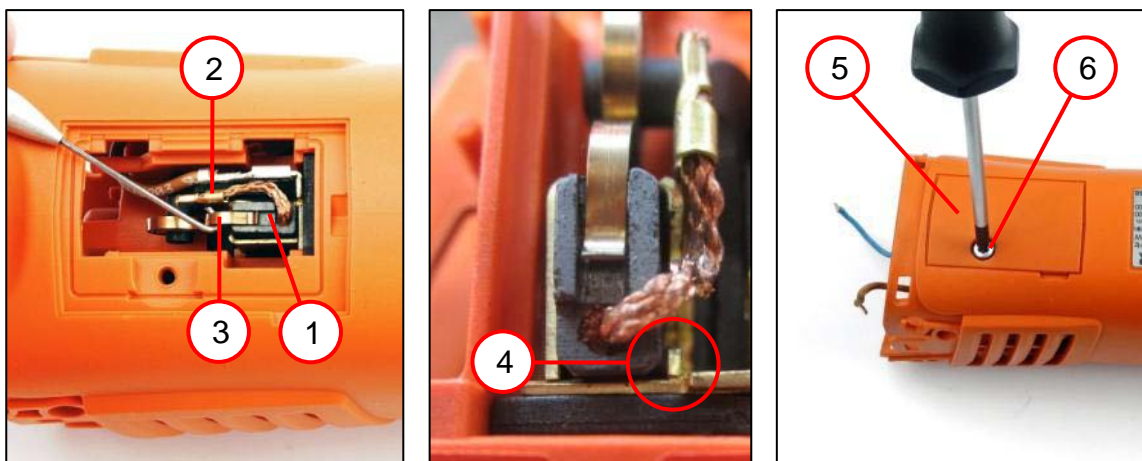
#### Tools:

- PH2 cross-tip screwdriver



## 7. Fitting

### Fitting the carbon brushes (on both sides)



1. Insert the carbon brush (1) in the correct position.

#### PLEASE NOTE:

The machine can be damaged by brush fire if the cable is laid incorrectly.

☞ Do not lay the cable over the pin (4) so that the cable does not get caught.

2. Connect the cable (2).
3. Fit the cover (5).
4. Screw in the screw (6) [1.5 Nm].

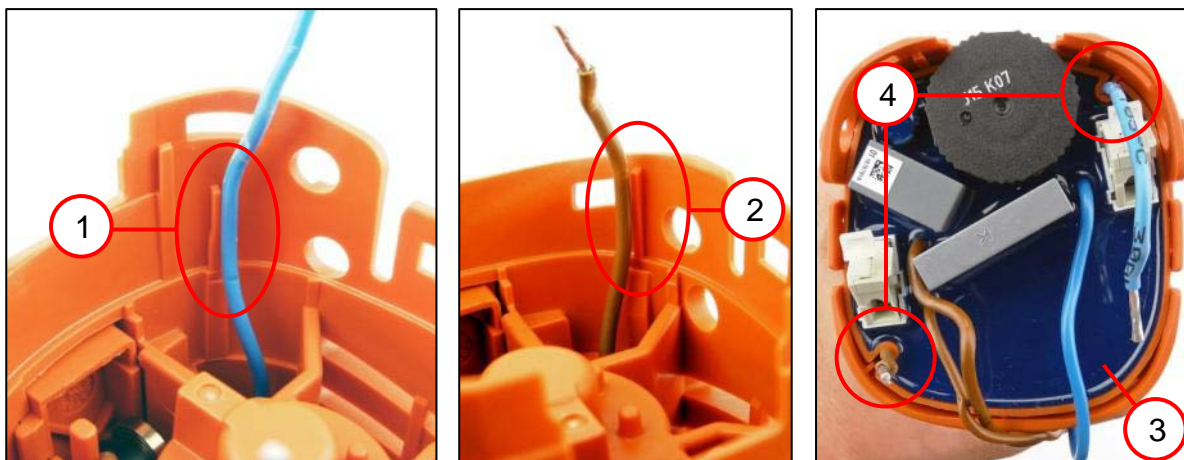
#### Tools:

- Assembly aid
- Torx T15



## 7. Fitting

### Fitting the electronics

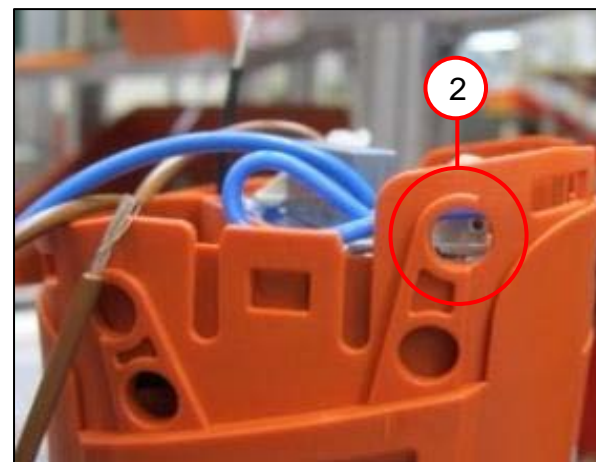
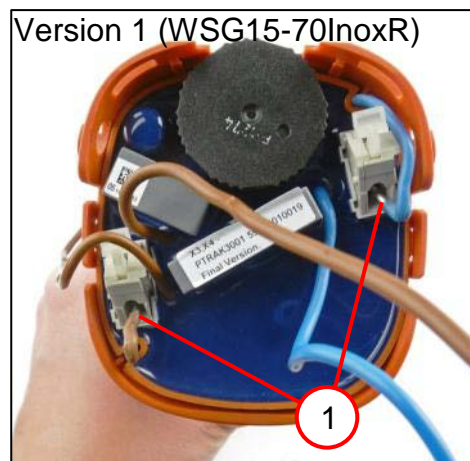


1. Lay the respective cable (1 and 2).
2. Insert the electronics (3).
  - ☞ Ensure that the cables lie in the recesses (4).
  - ☞ Pull the cables simultaneously with the electronics.



## 7. Fitting

### Fitting the electronics



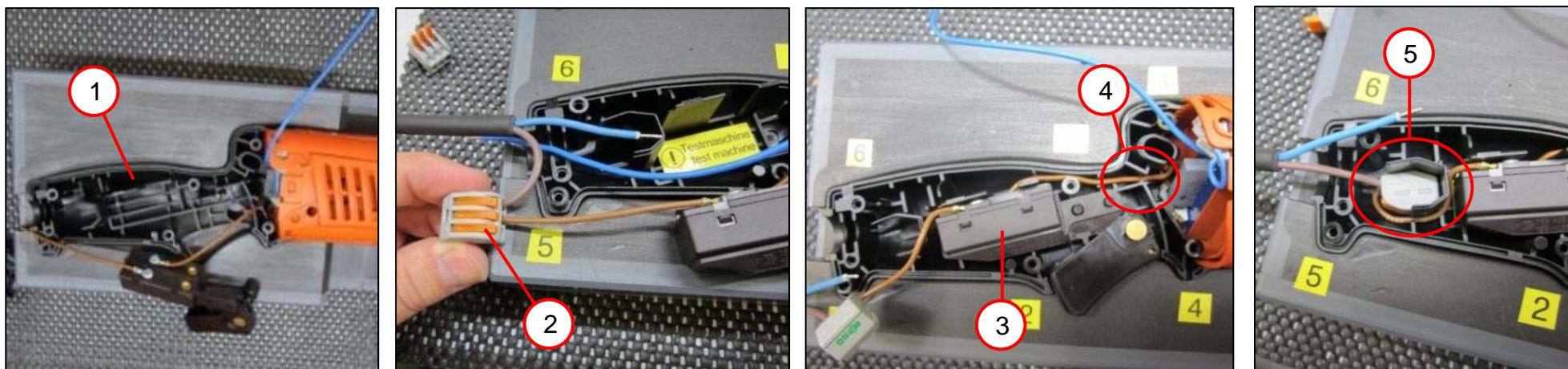
1. Open the respective terminal (1) and connect the cables.
  - ☞ The cables must not be damaged.
  - ☞ Lay the cables so that they do not cover the opening (2).





## 7. Fitting

### Fitting the handle (WSG 11 110 V/230 V; WSG 15 120 V/230 V)

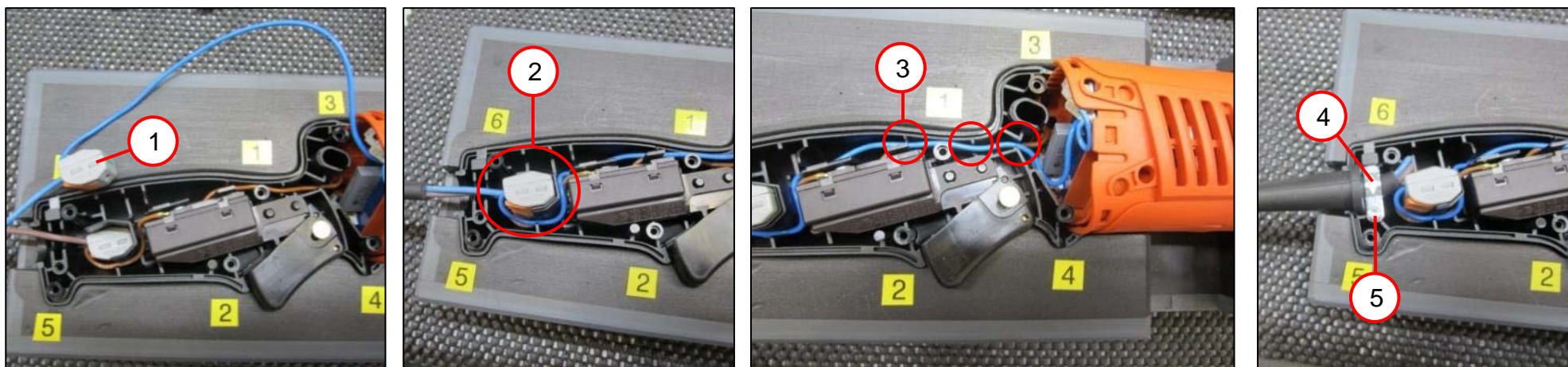


1. Fit the handle half shell (1).
2. Connect the switch and the cable with plug to the terminal (2) as shown in the connection diagram.
3. Insert the switch (3) into the handle half shell.
4. Place the cables in the recess (4).  
 ☞ Press the cables as deep as possible into the recess.
5. Place the terminal in the recess (5).



## 7. Fitting

### Fitting the handle (WSG 11 110 V/230 V; WSG 15 120 V/230 V)



1. Connect the cables of the electronics and the cable with plug to the terminal (1) as shown in the connection diagram.
2. Place the terminal in the recess (2).
3. Place the cables in the recesses (3).
4. Position the cable clamping piece (4) and secure it with the screw (5) [1.5 Nm].

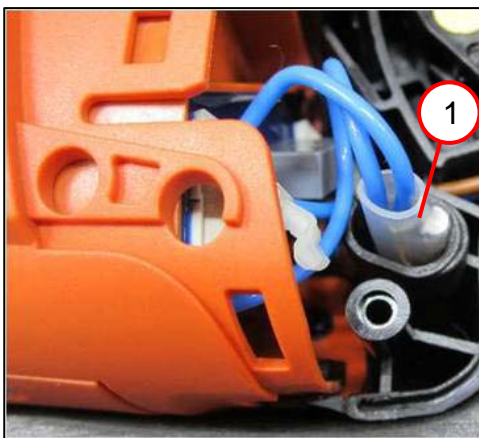
#### Tools:

- Torx T15
- Assembly aid



## 7. Fitting

### Fitting the choke (WSG 11 110 V with choke)



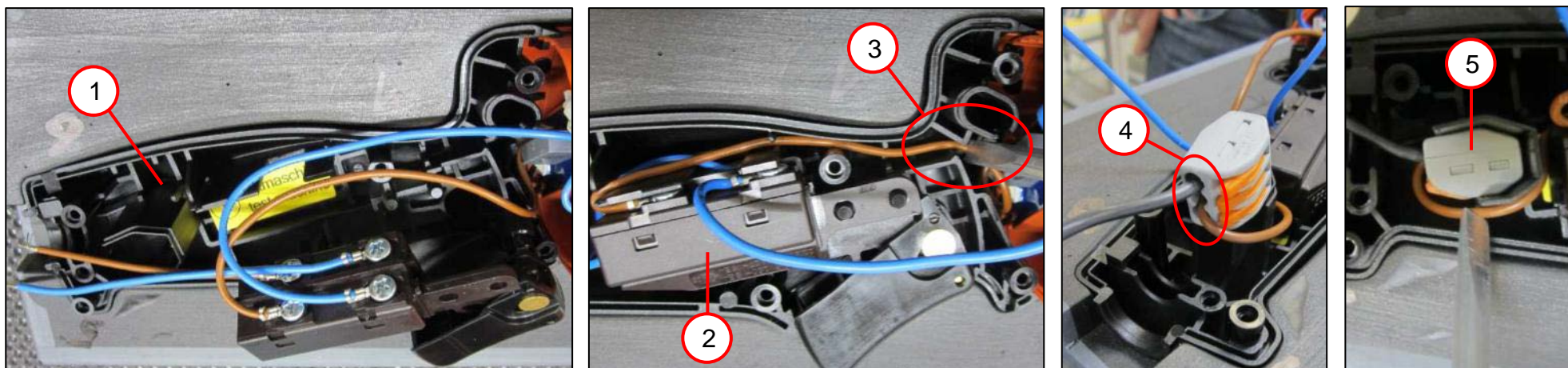
1. Place the choke (1) in the recess.





## 7. Fitting

### Fitting the handle (WSG 11 120 V)



1. Fit the handle half shell (1).
2. Insert the switch (2) into the handle half shell.
3. Place the cables in the recess (3).  
 ☞ Press the cables as deep as possible into the recess.
4. Connect the cables of the electronics to the terminal (4) as shown in the connection diagram.
5. Connect the cables from the cable with plug to the terminal (4) as shown in the connection diagram.
6. Place the terminal (5) in the recess.

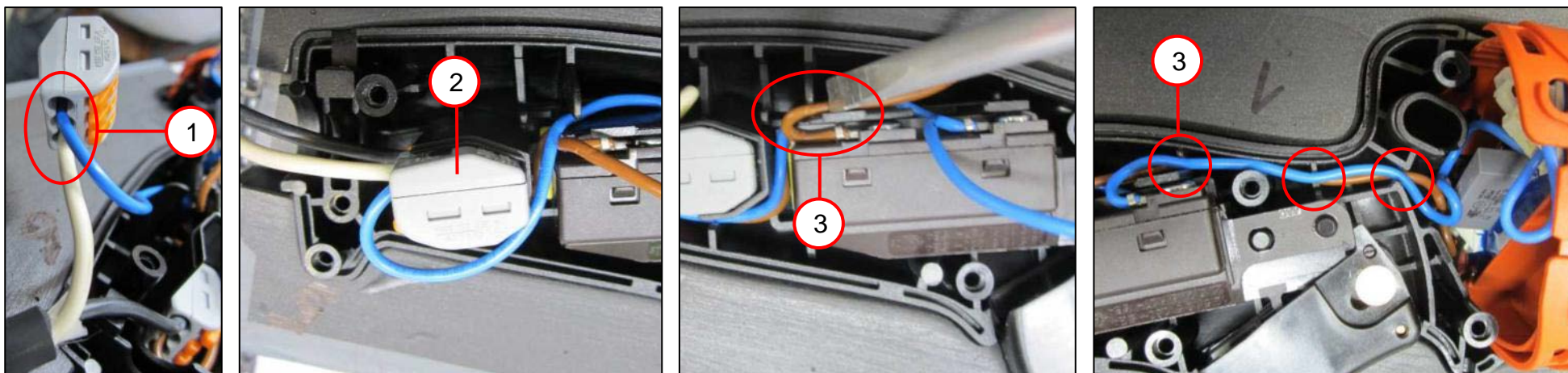
#### Tools:

- Assembly aid



## 7. Fitting

### Fitting the handle (WSG 11 120 V)



1. Connect the cables of the electronics and the cable with plug to the terminal (1) as shown in the connection diagram.
2. Place the terminal in the recess (2).
3. Place the cables in the recesses (3).

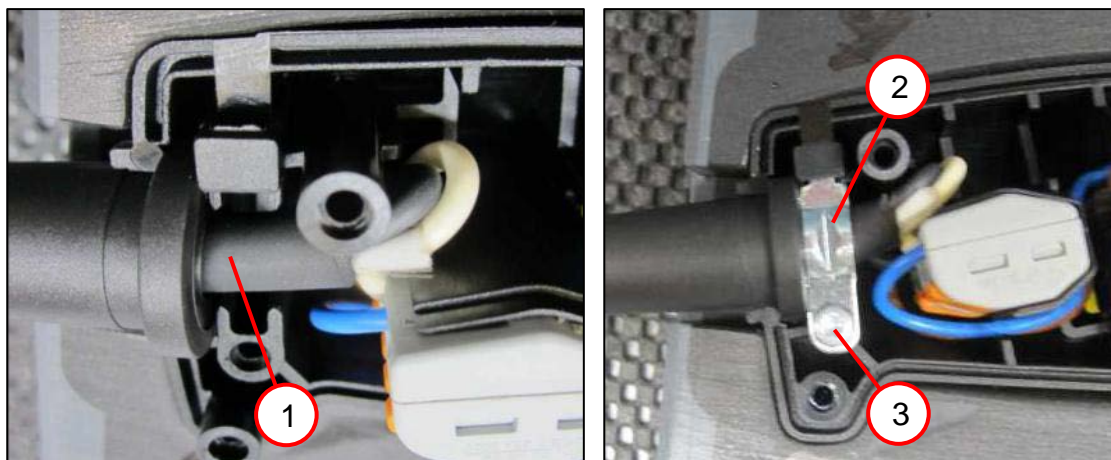
#### Tools:

- Assembly aid



## 7. Fitting

### Fitting the handle (WSG 11 120 V)



1. Place the cable with plug (1) in the recess.
2. Position the cable clamping piece (2).
3. Screw in the screw (3) [1.5 Nm].

#### Tools:

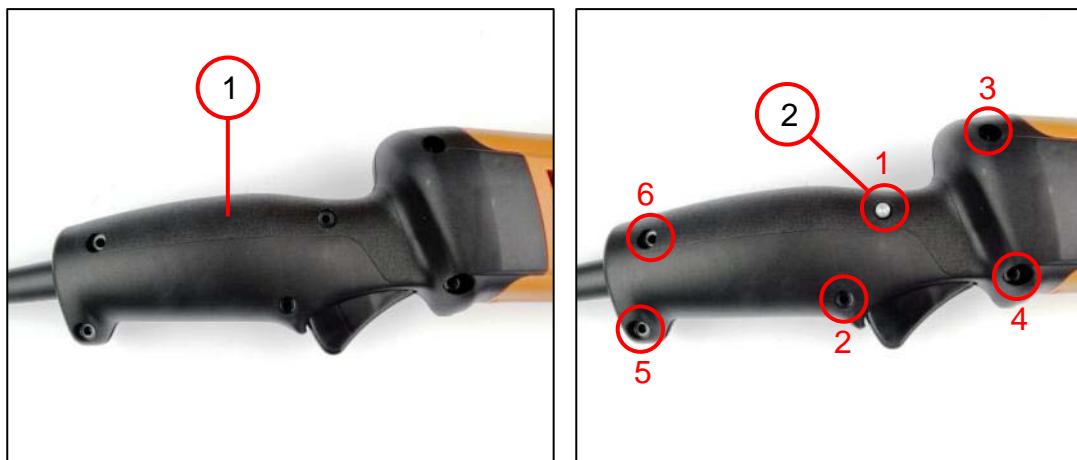
- Torx T15





## 7. Fitting

### Fitting the handle



#### NOTE

Ensure that no cables are crushed when closing the handle half shell.

1. Position the handle half shell (1).
2. Screw in the screws (2) [1.5 Nm].
  - ☞ Observe the screwdriving sequence.

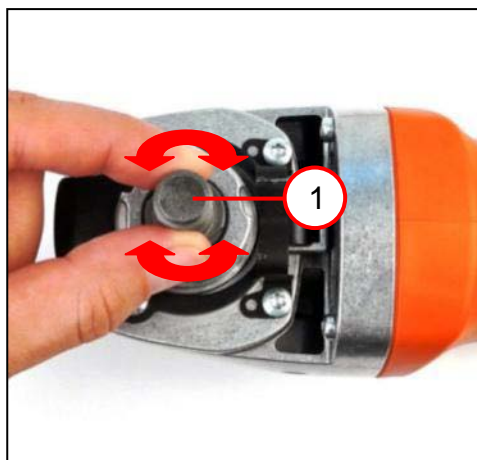
#### Tools:

- Torx T15



## 7. Fitting

### Setting gearbox clearance



1. Perform a test run.
2. Check gearbox clearance by turning shaft (1).
3. If there is no gearbox clearance, a second disc must be placed between bearing plate and gearbox housing [see page 25 "Fitting the gearbox housing"].

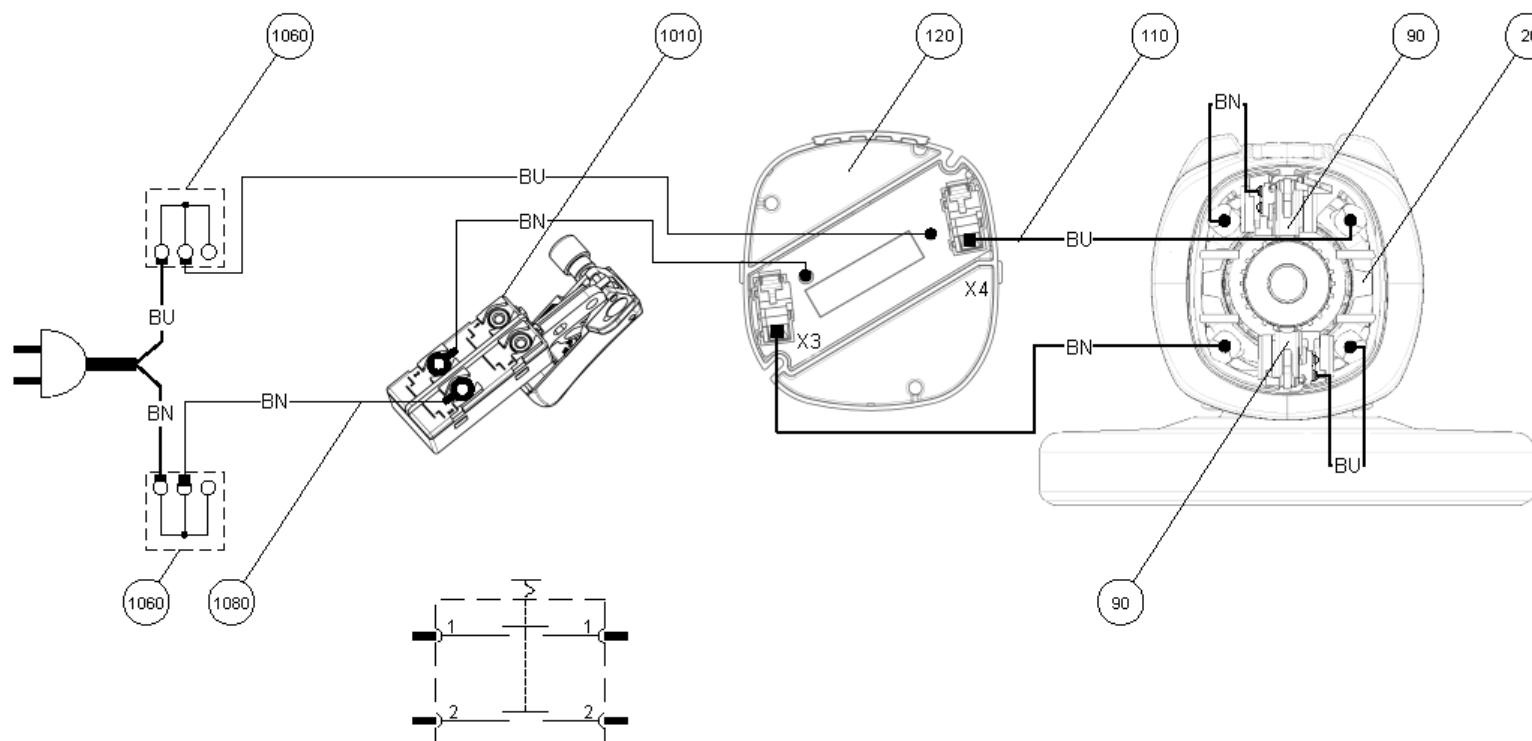


## 8. Connection diagram

### Anschlussplan

Connection diagram  
Esquema de conexiones  
Schéma connexion  
Схема соединений  
接线图

7 221 86 – WSG11-125R / 220V – 230V 50/60Hz  
7 221 87 – WSG11-125RT / 220V – 230V 50/60Hz  
7 221 88 – WSG11-150R / 220V – 230V 50/60Hz  
7 221 89 – WSG11-150RT / 220V – 230V 50/60Hz





## 8. Connection diagram

### Anschlussplan

Connection diagram

Esquema conexiones

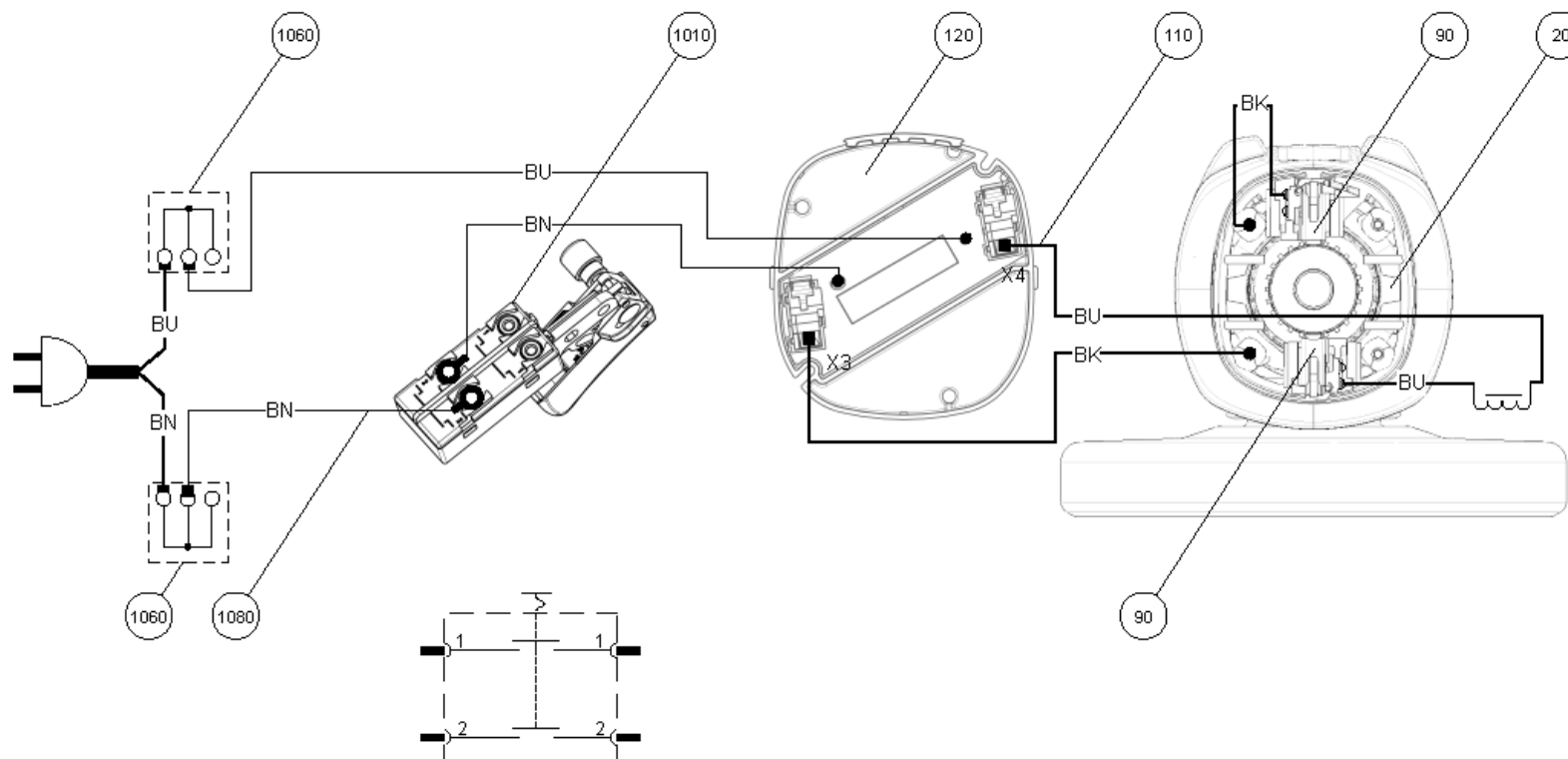
Schéma connexion

Схема соединений

接线图

7 221 86 – WSG11-125R / 110V 50/60Hz

7 221 87 – WSG11-125RT / 110V 50/60Hz





## 8. Connection diagram

### Anschlussplan

Connection diagram

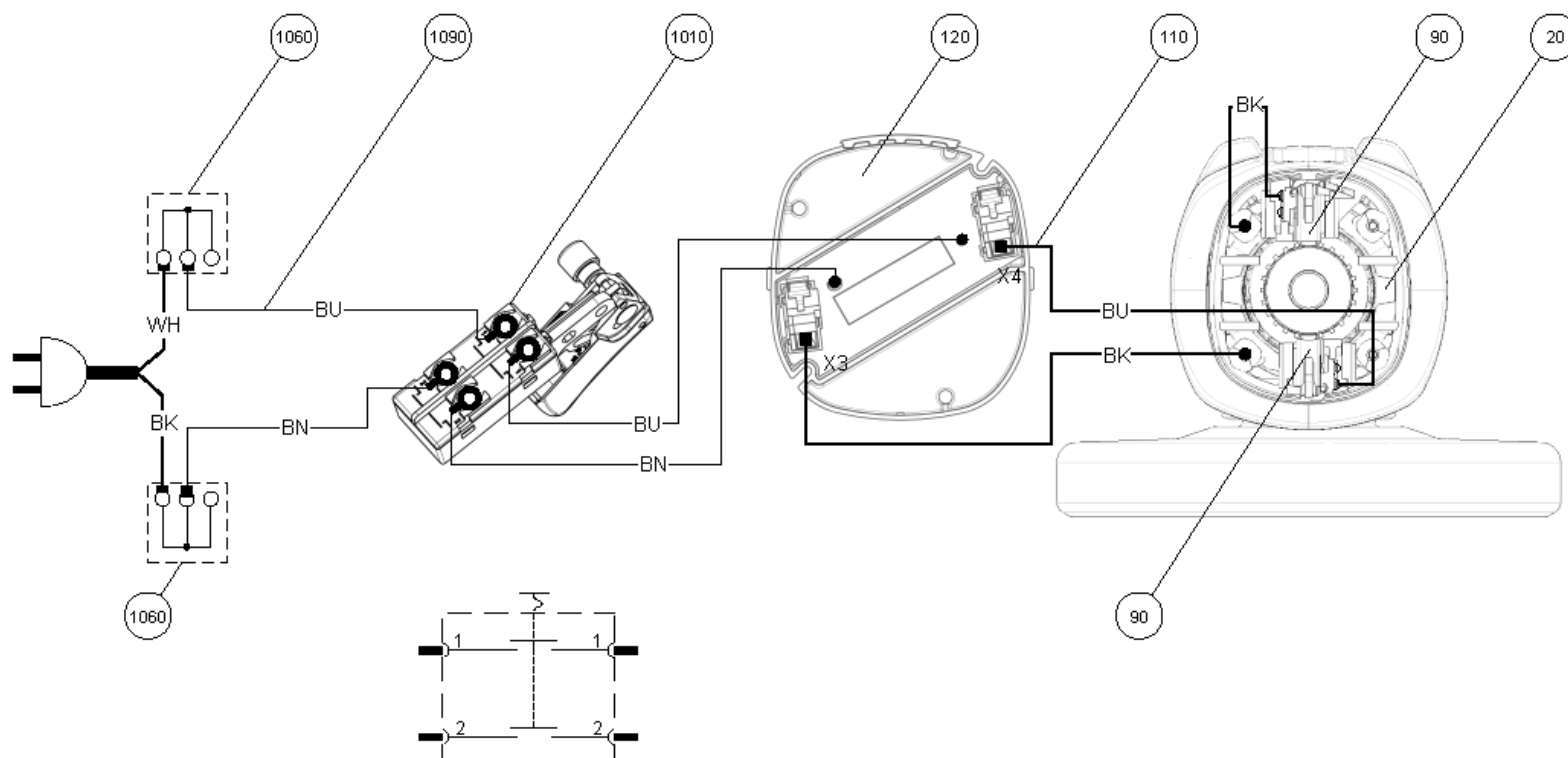
Esquemade conexiones

Schéma de connexion

Схема соединений

接线图

7 221 86 – WSG11-125R / 120V 60Hz / dc  
 7 221 87 – WSG11-125RT / 120V 60Hz / dc  
 7 221 88 – WSG11-150R / 120V 60Hz / dc  
 7 221 89 – WSG11-150RT / 120V 60Hz / dc





## 8. Connection diagram

### Anschlussplan

Connection diagram

Esquema de conexiones

Schéma de connexion

Схема соединений

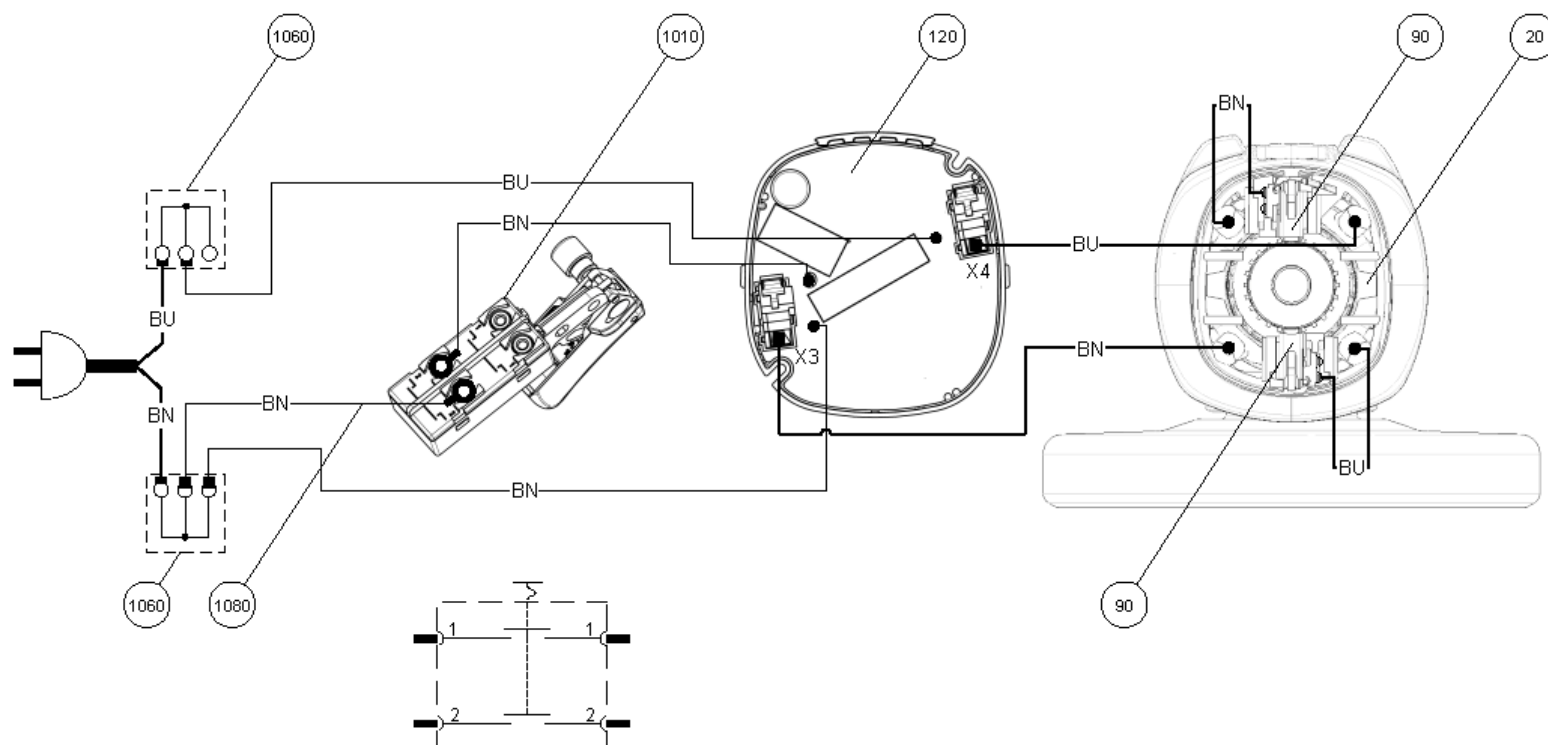
接线图

7 221 90 – WSG15-125PR / 220V – 230V 50/60Hz

7 221 91 – WSG15-125PRT / 220V – 230V 50/60Hz

7 221 92 – WSG15-150PR / 220V – 230V 50/60Hz

7 221 93 – WSG15-150PRT / 220V – 230V 50/60Hz





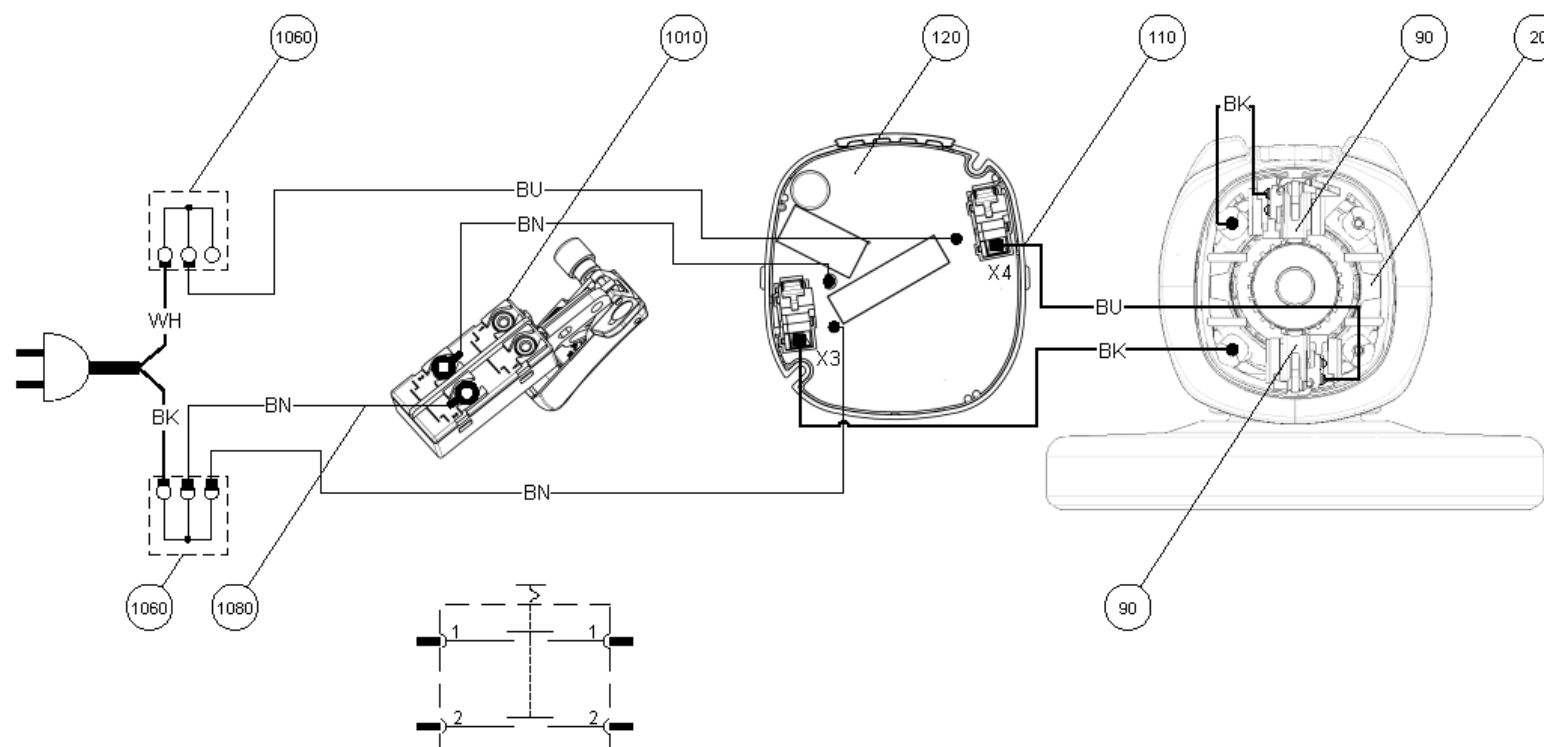


## 8. Connection diagram

### Anschlussplan

Connection diagram  
Esquema de conexiones  
Schéma de connexion  
Схема соединений  
接线图

7 221 90 – WSG15-125PR / 120V 60Hz  
7 221 91 – WSG15-125PRT / 120V 60Hz  
7 221 92 – WSG15-150PR / 120V 60Hz  
7 221 93 – WSG15-150PRT / 120V 60Hz





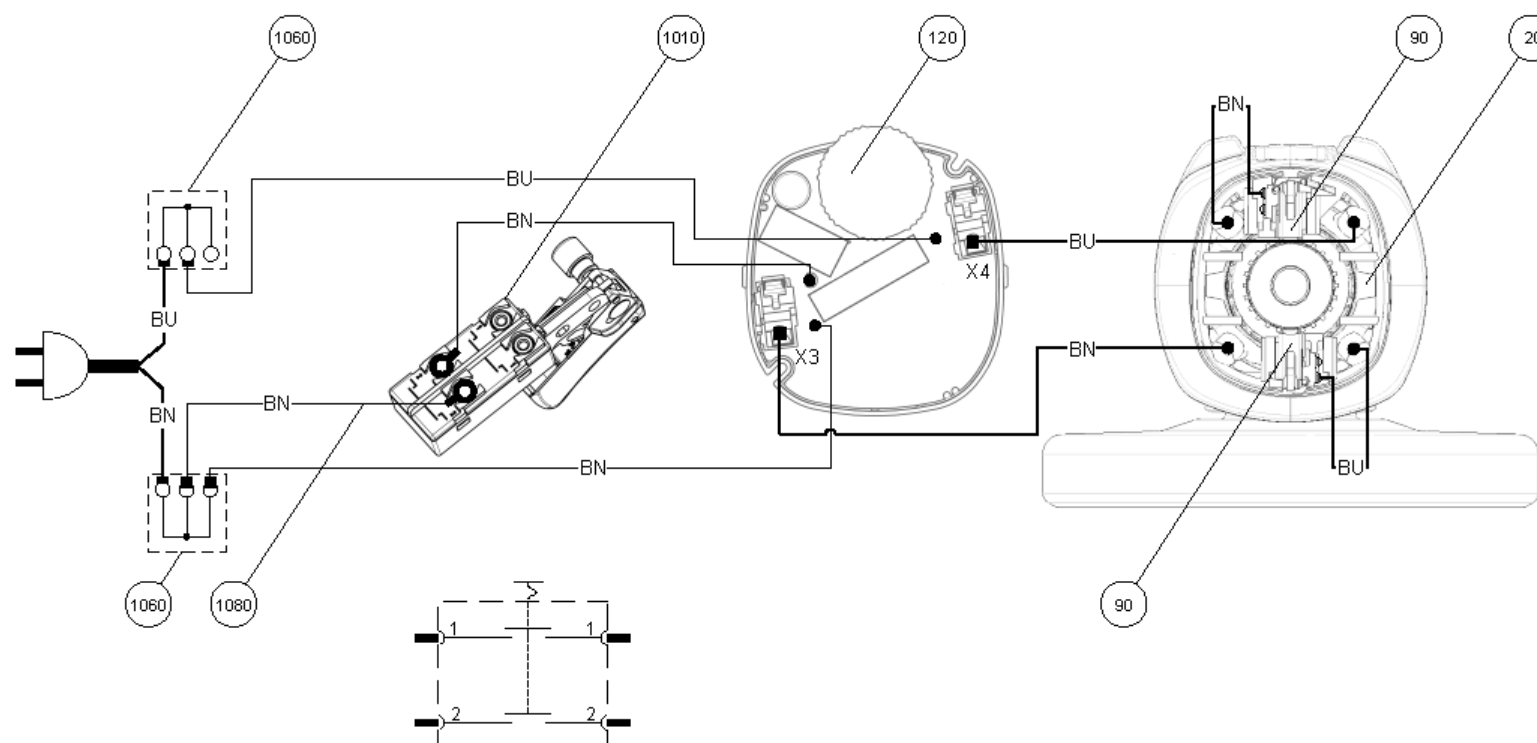
## 8. Connection diagram

### Anschlussplan

Connection diagram  
Esquema de conexiones  
Schéma de connexion  
Схема соединений  
接线图

7 221 94 – WSG15-70INOXR / 220V – 230V 50/60Hz

7 221 95 – WSG15-70INOXRT / 220V – 230V 50/60Hz





## 8. Connection diagram

### Anschlussplan

Connection diagram  
Esquema de conexiones  
Schéma de connexion  
Схема соединений  
接线图

7 221 94 – WSG15-70INOXR / 120V 60Hz

7 221 95 – WSG15-70INOXRT / 120V 60Hz

