

GSZ 11-320 PRL; GSZ 11-320 PERL; GSZ 11-90 PERL

Repair instructions





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- 4. Tools required**
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**1. Models described**

These repair instructions describe how to repair the following models:

Model	Order number
GSZ 11-320 PRL	7 223 21
GSZ 11-320 PERL	7 223 22
GSZ 11-90 PERL	7 223 23



2. Technical data

Technical data

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

Tests

Up-to-date test data and test instructions after repair can be found on the FEIN Extranet (Customer Service → Repair Guides).

Lubricants / Auxiliary substances

The lubricants or auxiliary substances and their 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

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

Arbor	13 mm diameter
Arbor press	
Punch	5 mm diameter
Flat material	45 mm x 20 mm x 5 mm
Open-ended spanner	17 mm; 30 mm
Slide hammer	
Sleeve	<ul style="list-style-type: none"> • 8 mm inner diameter 12 mm outer diameter • 8 mm inner diameter 19 mm outer diameter • 9 mm inner diameter 21 mm outer diameter • 10 mm inner diameter 25 mm outer diameter • 11 mm inner diameter 16 mm outer diameter • 21 mm inner diameter 26 mm outer diameter • 26 mm inner diameter 40 mm outer diameter

Special tools

Drawing-off socket cap	6 41 04 150 00 8
Pressure piece	6 41 22 003 00 0
Assembly aid	6 41 22 121 01 0
Clamping sleeve 19 mm	6 41 07 019 00 7



4. Tools required

Standard tools

Sleeve	<ul style="list-style-type: none">• 80 mm inner diameter 90 mm outer diameter
Inner puller	
Socket head wrench	3 mm
Cross-tip screwdriver	PH2
Plastic hammer	
Circlip pliers	
Long-nosed pliers	
Torx	T15

Special tools



5. Lubricants and auxiliary substances required

Lubricants

Oil (acid-free)

Felt ring

GSZ 11-90 PERL

Grease

0 40 101 0100 4

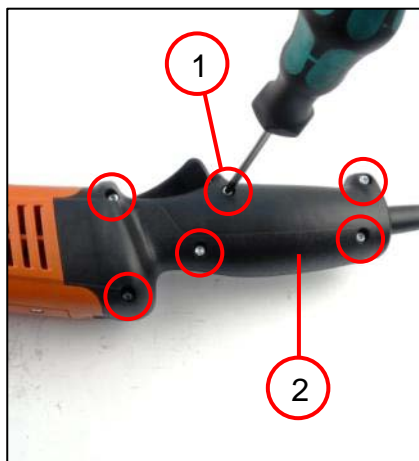
13 g

Housing



6. Removal

Removing the handle



1. Unscrew the six screws (1).
2. Remove the upper section of the handle (2).

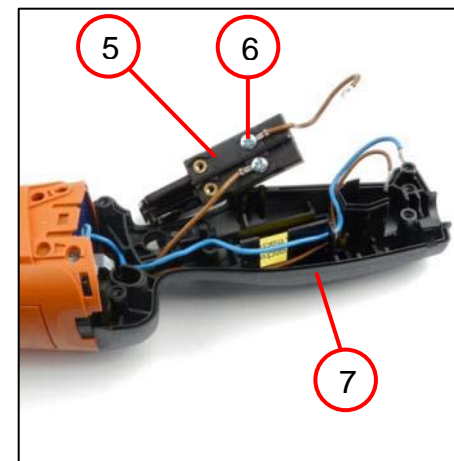
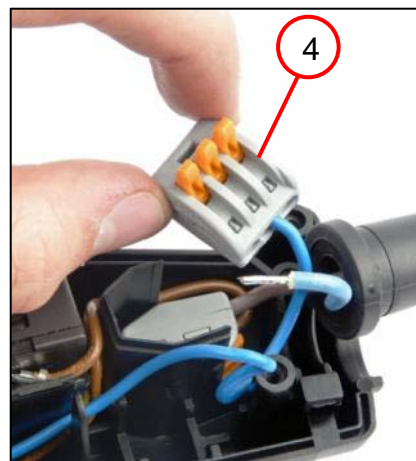
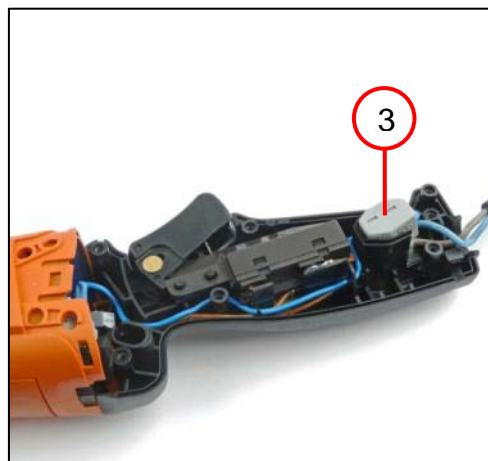
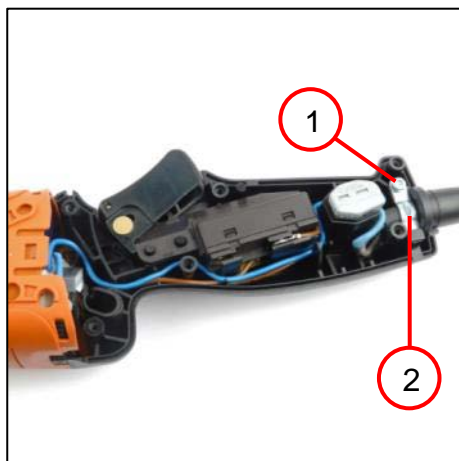
Tools:

- 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 upper section of the handle (7).

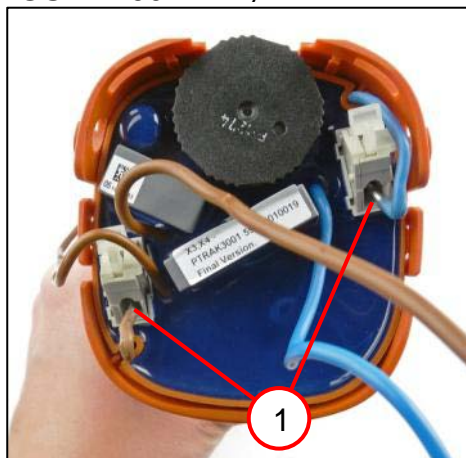
Tools:

- Torx T15
- PH2 cross-tip screwdriver

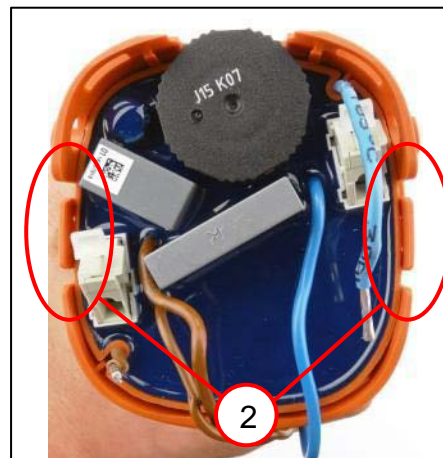
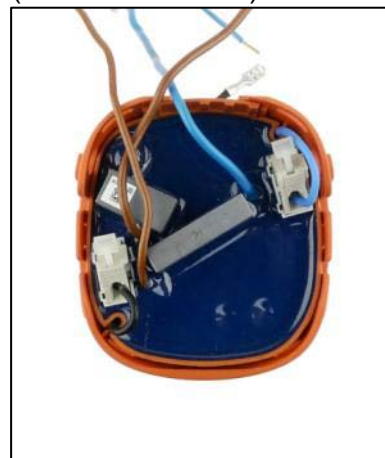
6. Removal

Removing the electronics

Version 1 (GSZ11-320PERL;
GSZ11-90PERL)



Version 2
(GSZ11-320PRL)

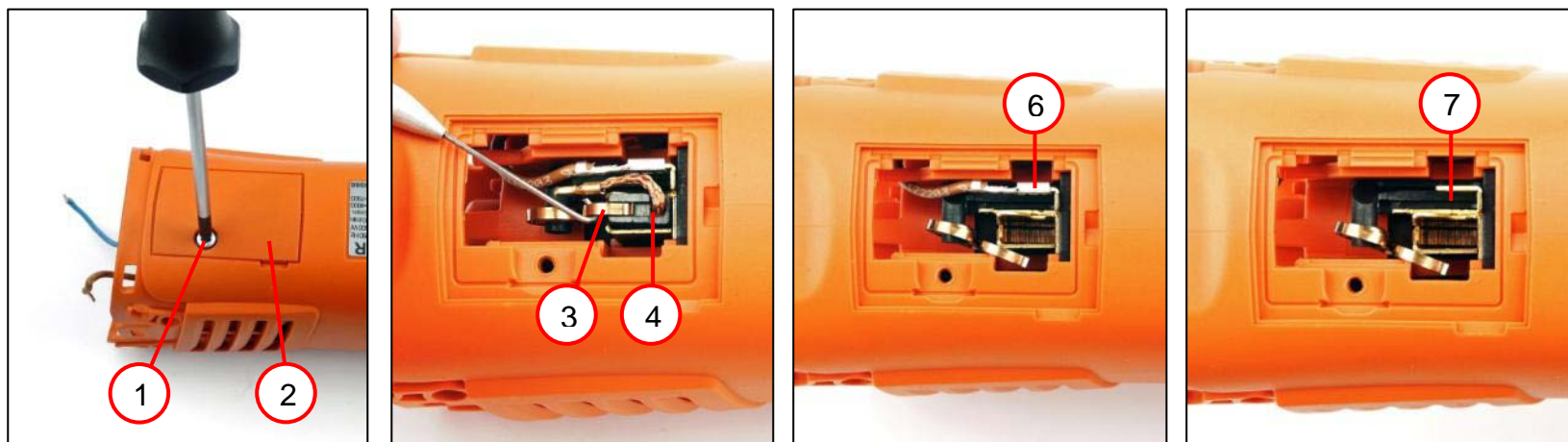


1. Open the terminals (1) and remove the cables.
2. Simultaneously press the lugs (2) outward and remove the electronics.



6. Removal

Removing the carbon brush [on both sides]



1. Unscrew the screw (1).
2. Remove the cover (2).
3. Lift up the tension spring (3) from the carbon brush (4).
4. Pull out the plug (5) of the carbon brush.
5. Pull the cable (6) off the brush holder.
6. Remove the brush holder (7).

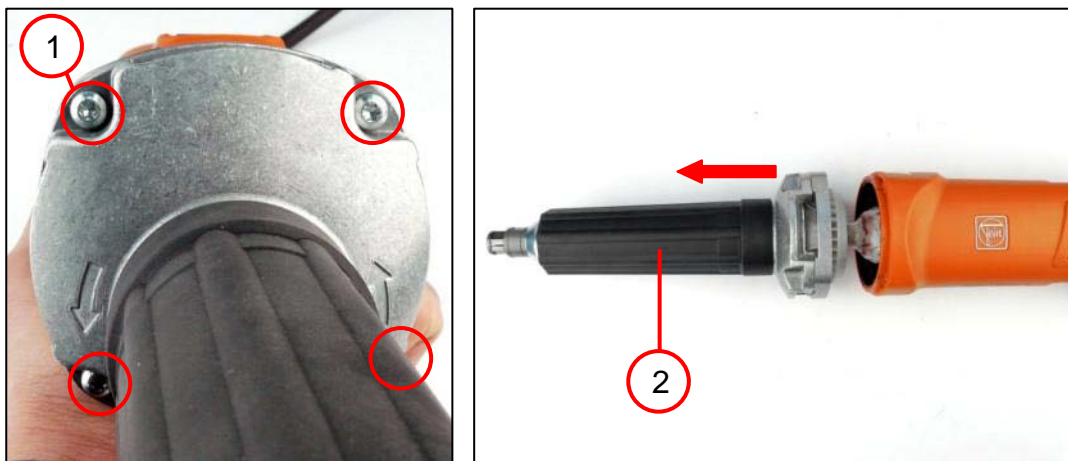
Tools:

- Torx T15
- Long-nosed pliers
- Assembly aid



6. Removal

Removing the gearbox housing



1. Unscrew the four screws (1).
2. Pull the collar bearing (2) with intermediate gearbox out of the housing.

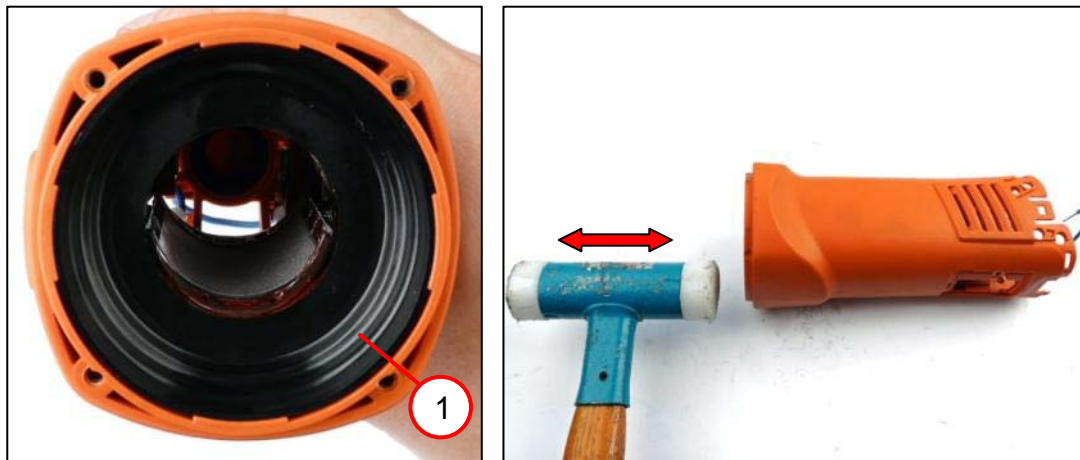
Tools:

- Torx T15



6. Removal

Removing the stator



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

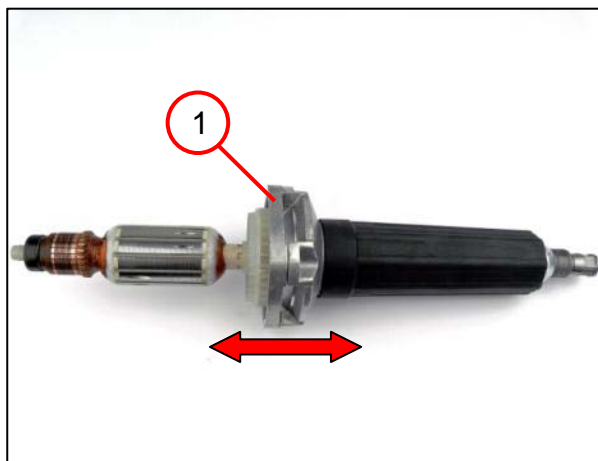
Tools:

- Plastic hammer



6. Removal

Removing the armature (applies to: GSZ 11-320PRL; GSZ 11-320PERL)



1. Pull the intermediate gearbox with armature (1) off the collar bearing.
2. Unscrew the clutch part (2).
3. Press the armature (3) out of the intermediate gearbox.

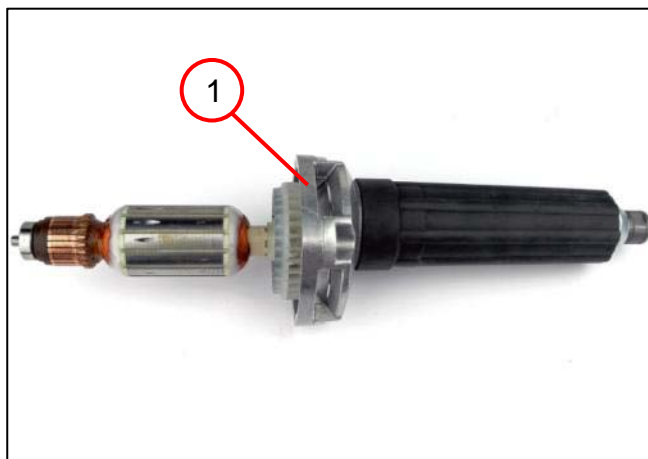
Tools:

- Arbor press
- Punch 5 mm
- Sleeve
80 mm inner diameter
90 mm outer diameter



6. Removal

Removing the armature (applies to: GSZ 11-90PERL)



1. Pull the intermediate gearbox with armature (1) off the collar bearing.
2. Remove the seal (2).
3. Press the armature with the sealing ring (3) out of the intermediate gearbox.

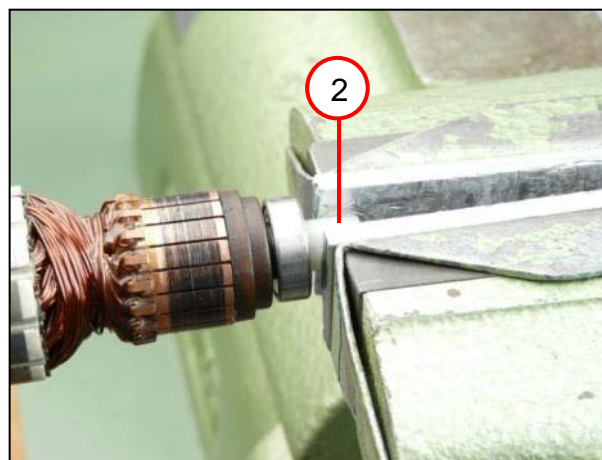
Tools:

- Arbor press
- Sleeve
80 mm inner diameter
90 mm outer diameter



6. Removal

Removing the armature



1. Remove the rubber socket (1).
2. Pull off the magnet (2)
☞ The magnet is destroyed during removal and must be replaced.
3. Pull off the grooved ball bearing (3).

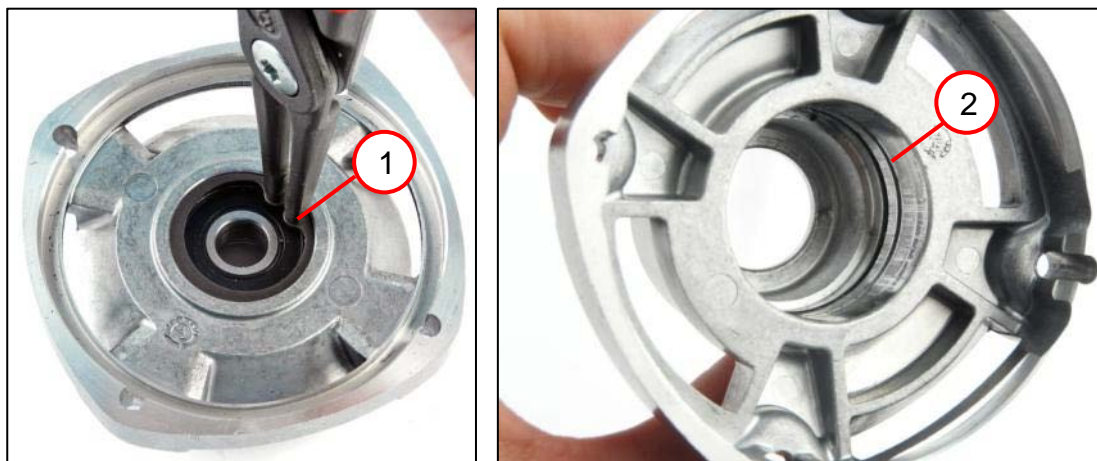
Tools:

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



6. Removal

Removing the intermediate gearbox



1. Remove the circlip (1).
2. Press the grooved ball bearing out of the intermediate gearbox.
3. Remove the sealing ring (2).
 - ☞ The sealing ring is destroyed during removal and must be replaced.

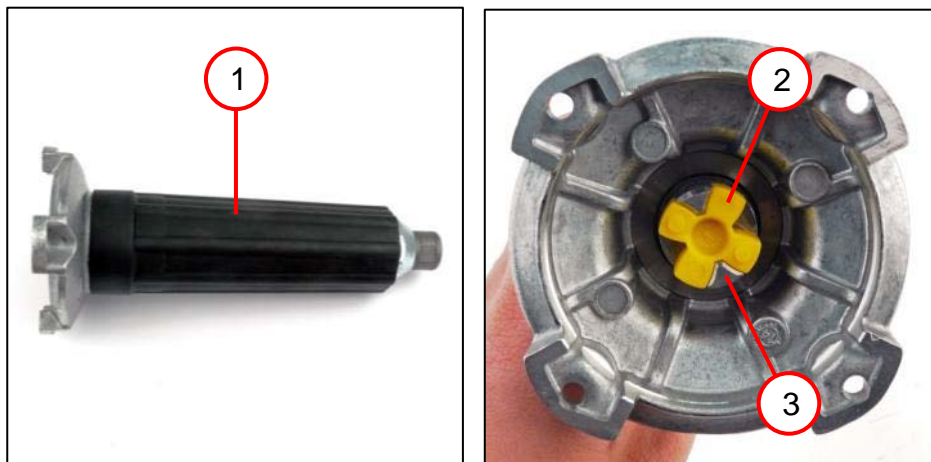
Tools:

- Arbor press
- Circlip pliers
- Arbor with 13 mm diameter



6. Removal

Removing the collar bearing (applies to: GSZ 11-320PERL; GSZ 11-320PRL)

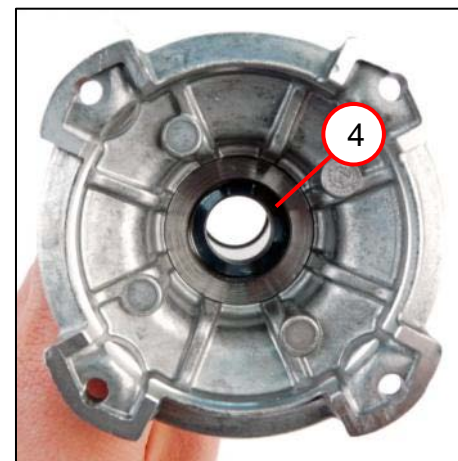
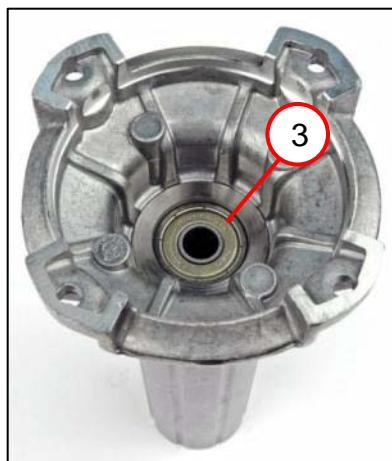
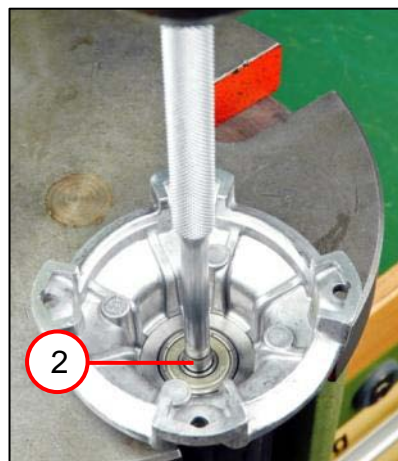
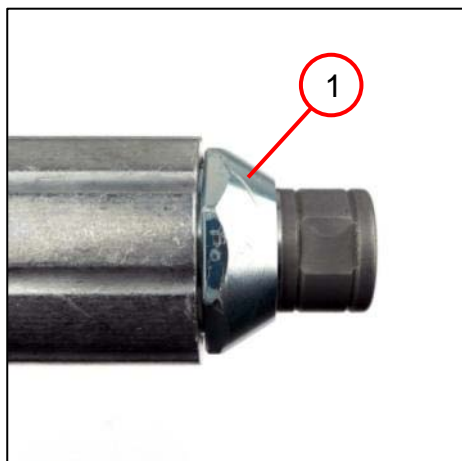


1. Pull off the protective hose (1).
2. Remove the clutch part (2).
3. Unscrew the clutch part (3).



6. Removal

Removing the collar bearing (applies to: GSZ 11-320PERL; GSZ 11-320PRL)



1. Unscrew the sleeve (1) [left-handed thread].
2. Press out the shaft (2).
3. Remove the grooved ball bearing (3).
4. Remove the washer (4).

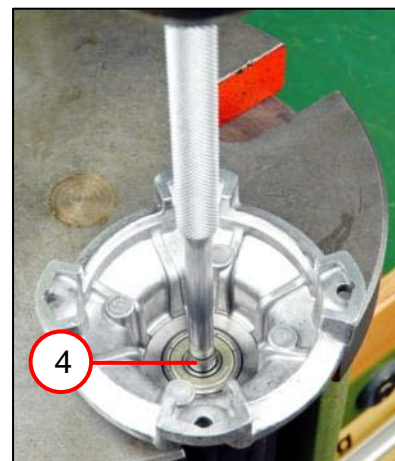
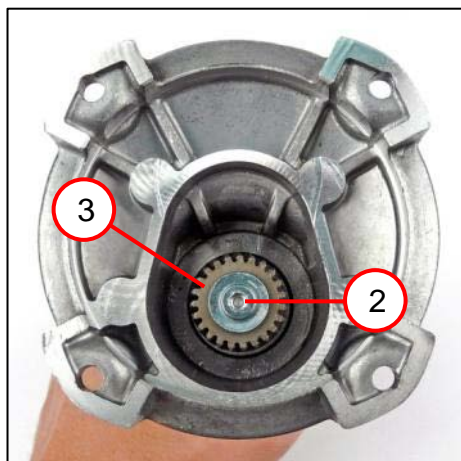
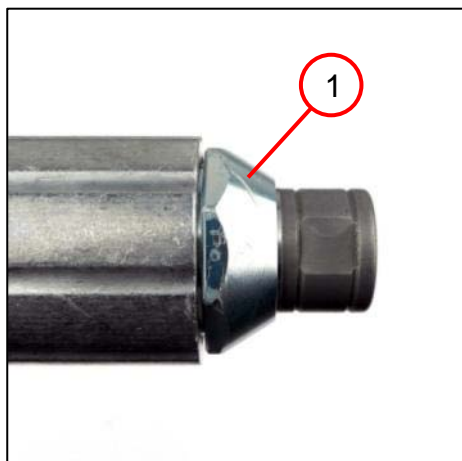
Tools:

- Spanner 30 mm
- Arbor press
- Punch 5 mm
- Inner puller
- Slide hammer



6. Removal

Removing the collar bearing (applies to: GSZ 11-90PERL)



1. Unscrew the sleeve (1) [left-handed thread].
2. Unscrew the screw (2) and remove it together with the disc.
3. Remove the gear-wheel (3).
4. Press out the shaft (4).

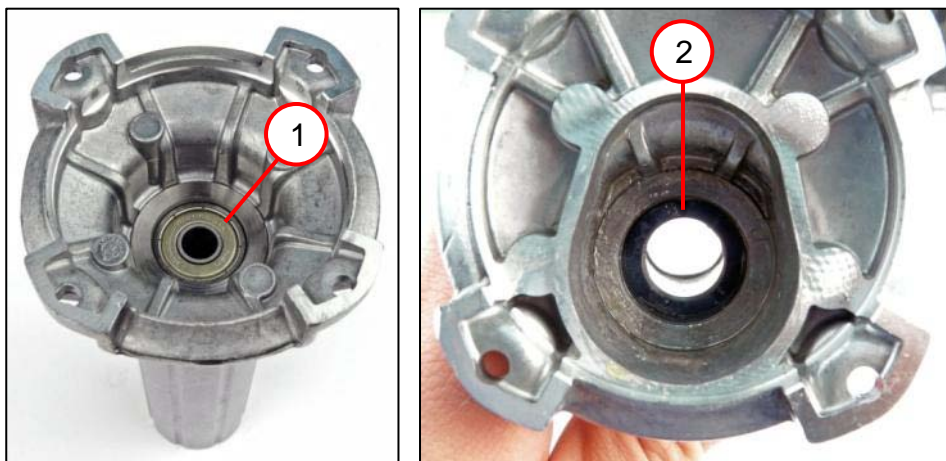
Tools:

- Socket head wrench 3 mm
- Spanner 17 mm
- Spanner 30 mm
- Arbor press
- Punch 5 mm



6. Removal

Removing the collar bearing (applies to: GSZ 11-90PERL)



1. Remove the grooved ball bearing (1).
2. Remove the washer (2).

Tools:

- Inner puller
- Slide hammer



6. Removal

Removing the shaft



1. Remove the circlip (1).
2. Press off the grooved ball bearing (2).
3. Remove the disc (3).
4. Remove the felt ring (4).
5. Remove the disc (5).

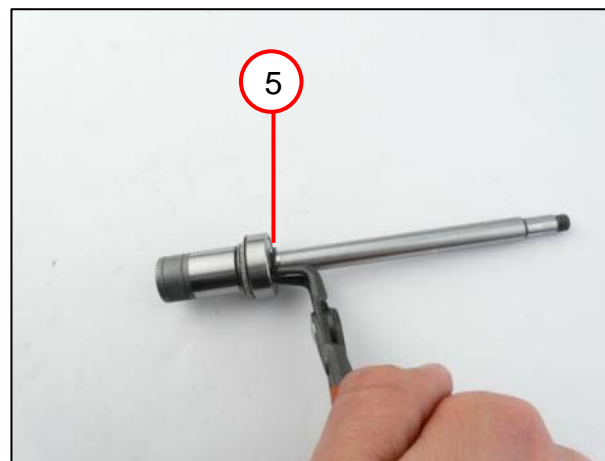
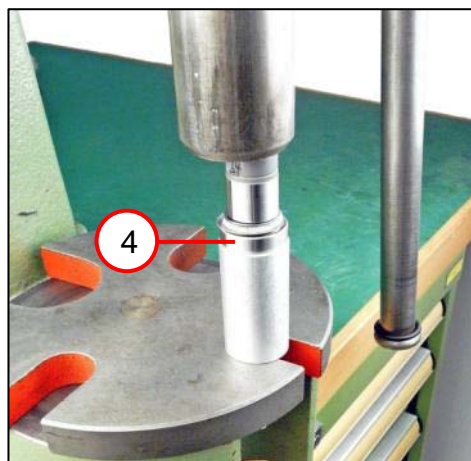
Tools:

- Arbor press
- Sleeve
21 mm inner diameter
26 mm outer diameter
- Circlip pliers



7. Fitting

Fitting the shaft



1. Insert the disc (1).
2. Soak the felt ring (2) in oil.
3. Insert the felt ring (2).
4. Insert the disc (3).
5. Press in the grooved ball bearing (4).
6. Insert the circlip (5).

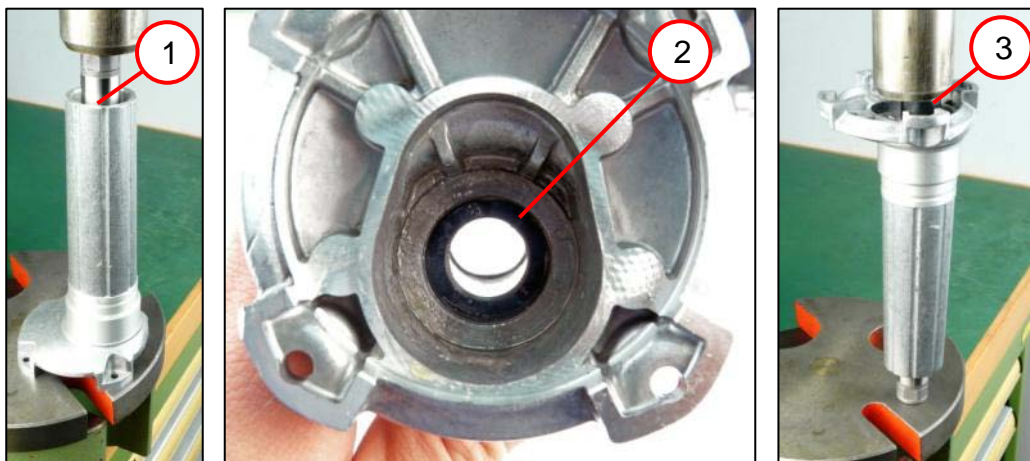
Tools:

- Arbor press
- Sleeve
11 mm inner diameter
16 mm outer diameter
- Circlip pliers



7. Fitting

Fitting the collar bearing (applies to: GSZ 11-320PERL; GSZ 11-320PRL)



1. Press the shaft (1) into the collar bearing.
2. Insert the disc (2).
3. Press in the grooved ball bearing (3).

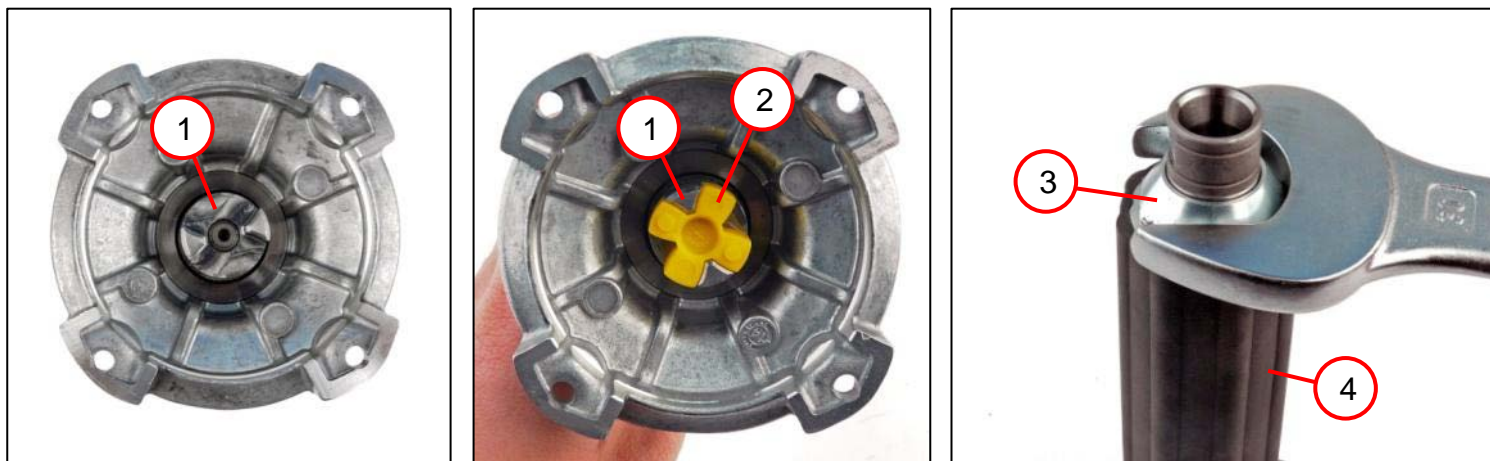
Tools:

- Arbor press
- Sleeve
9 mm inner diameter
21 mm outer diameter



7. Fitting

Fitting the collar bearing (applies to: GSZ 11-320PERL; GSZ 11-320PRL)



1. Screw the clutch part (1) hand-tight onto the shaft.
2. Insert the clutch part (2).
3. Screw down the protective sleeve (3) [left-handed thread] [$12^{+1.0}$ Nm].
4. Slide the protective hose (4) onto the collar bearing.

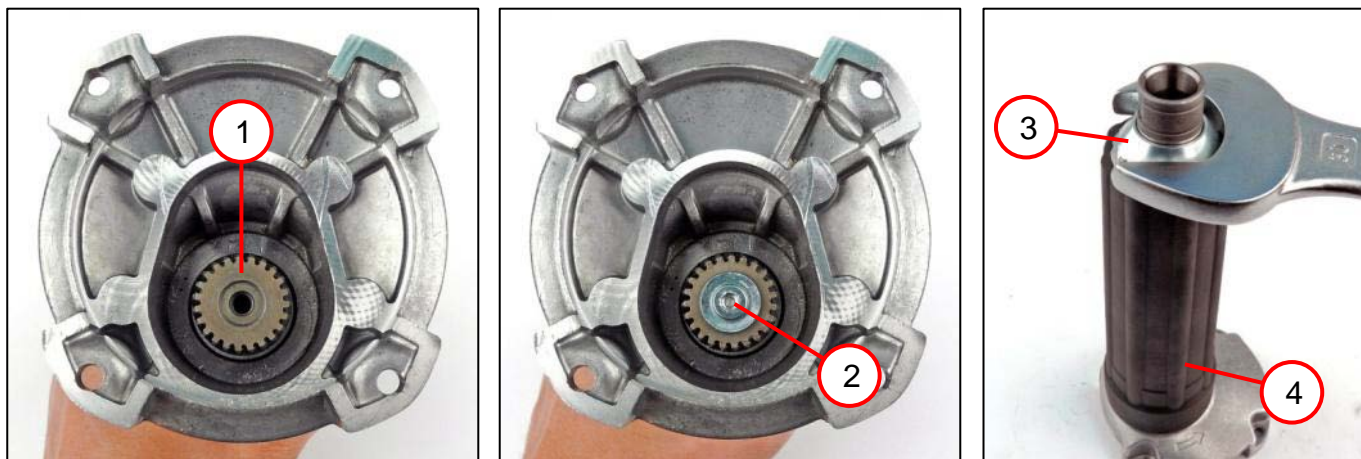
Tools:

- Spanner
17 mm; 30 mm



7. Fitting

Fitting the collar bearing (applies to: GSZ 11-90PERL)



1. Attach the gear-wheel (1).
2. Fit the disc and screw in the cylinder head screw (2) [1.2 Nm].
3. Screw in the sleeve (3) [left-handed thread] [$12^{+1.0}$ Nm].
4. Slide the protective hose (4) onto the collar bearing.
5. Fill the gearbox with 13 g of grease.

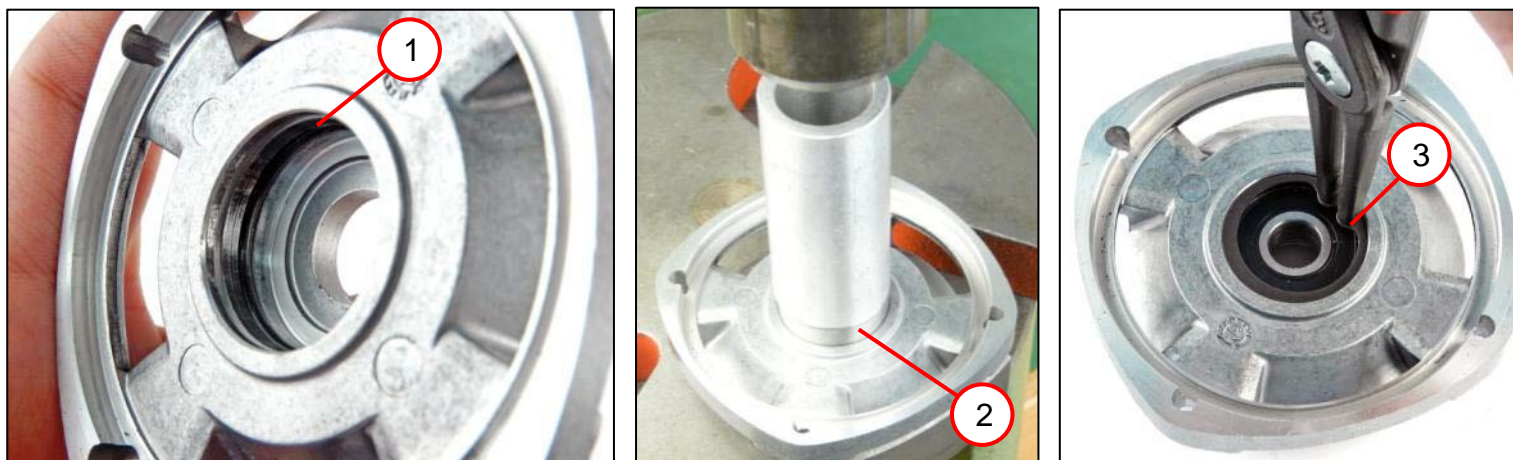
Tools:

- Socket head wrench
3 mm
- Spanner
17 mm; 30 mm



7. Fitting

Fitting the intermediate gearbox



1. Coat the sealing ring (1) with oil.
2. Insert sealing ring (1).
3. Press in the grooved ball bearing (2).
4. Insert the circlip (3).

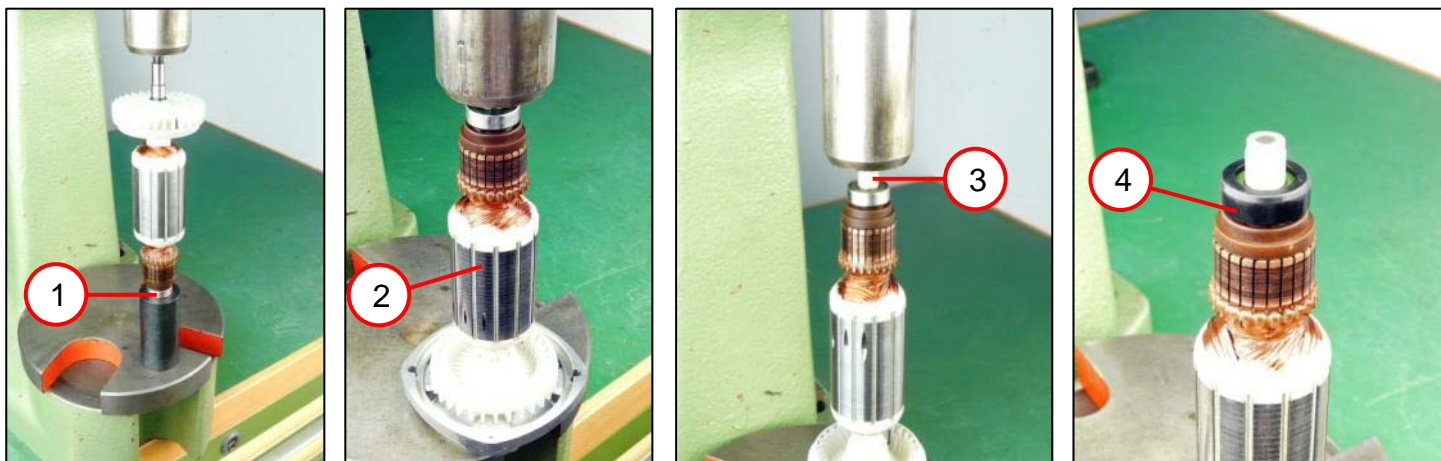
Tools:

- Arbor press
- Sleeve
10 mm inner diameter
25 mm outer diameter



7. Fitting

Fitting the armature (applies to: GSZ 11-320PERL; GSZ 11-320PRL)



1. Press the grooved ball bearing (1) onto the armature.
2. Press the armature into the intermediate gearbox (2).
3. Carefully press the magnet (3) onto the armature.
☞ Replace the magnet during each fitting.
4. Slide the bearing bush (4) onto the grooved ball bearing.

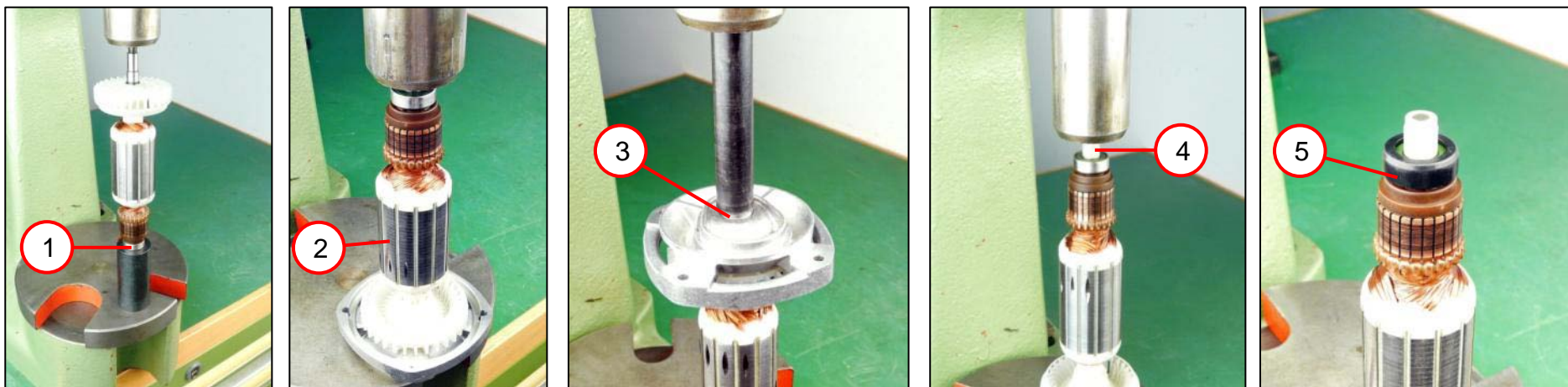
Tools:

- Arbor press
- Sleeve
8 mm inner diameter
19 mm outer diameter



7. Fitting

Fitting the armature (GSZ 11-90PERL)



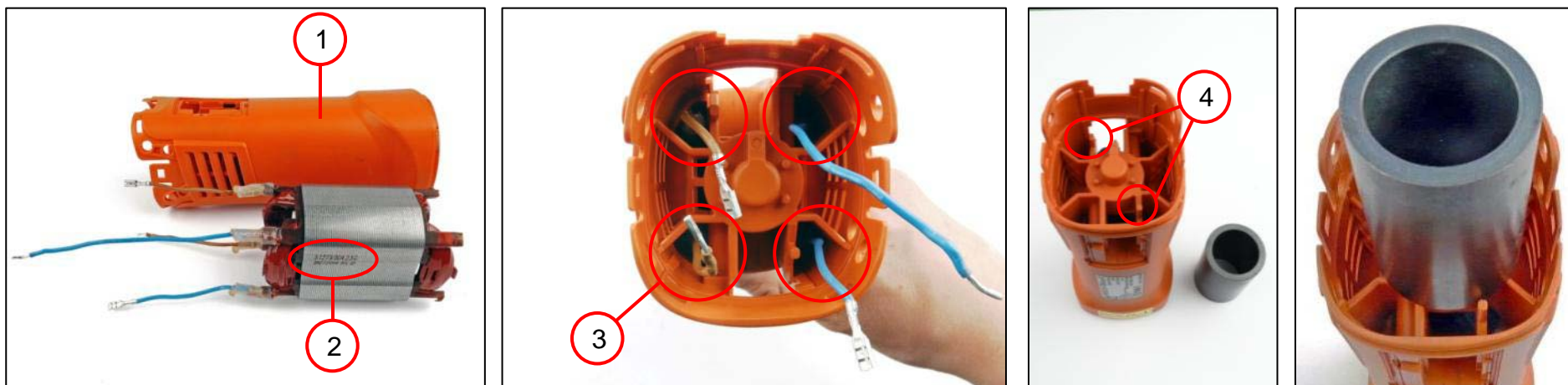
1. Press the grooved ball bearing (1) onto the armature.
2. Press the armature into the intermediate gearbox (2).
3. Press the sealing ring (3) onto the armature.
4. Carefully press the magnet (4) onto the armature.
☞ Replace the magnet during each fitting.
5. Slide the bearing bush (5) onto the grooved ball bearing.

Tools:

- Arbor press
- Sleeve
8 mm inner diameter
19 mm outer diameter
- Sleeve
8 mm inner diameter
12 mm outer diameter

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. To press in the stator, centre the sleeve on the motor housing.
 - ☞ Ensure that the sleeve lies between the studs (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.

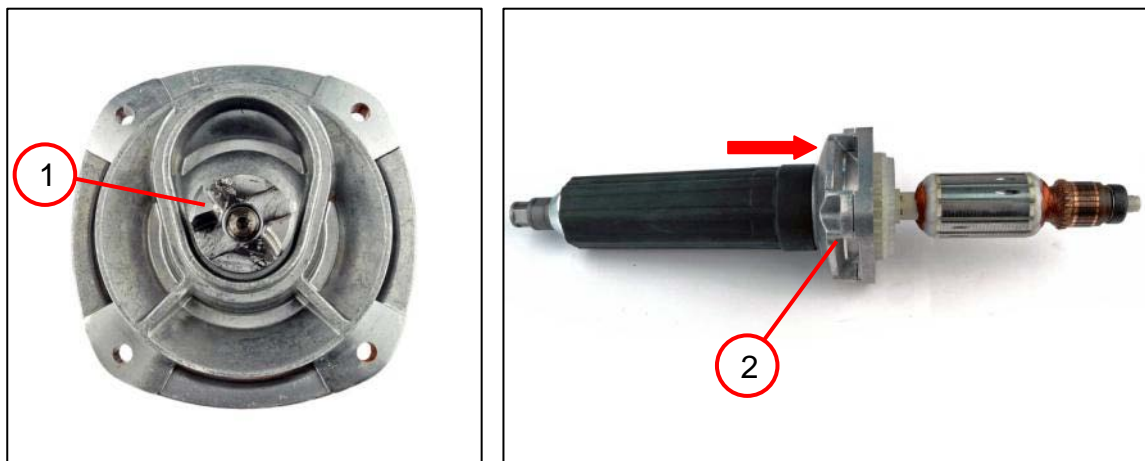
Tools:

- Arbor press
- Pressure piece



7. Fitting

Fitting the collar bearing (applies to: GSZ 11-320 PRL; GSZ 11-320 PERL)

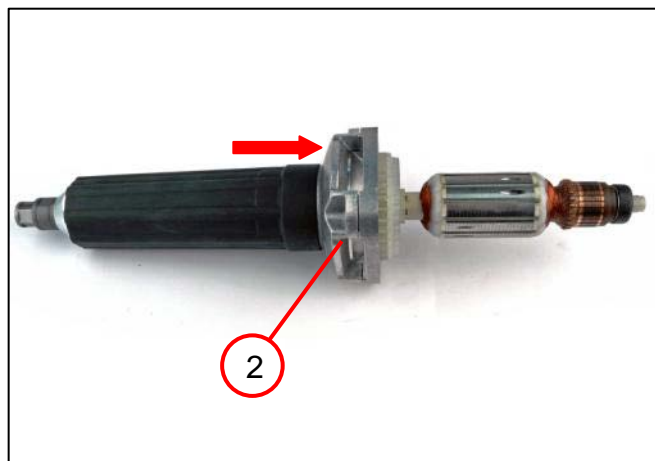


1. Screw the clutch part (1) onto the armature.
2. Put the collar bearing (2) with clutch part onto the intermediate gearbox.



7. Fitting

Fitting the collar bearing (applies to: GSZ 11-90 PERL)

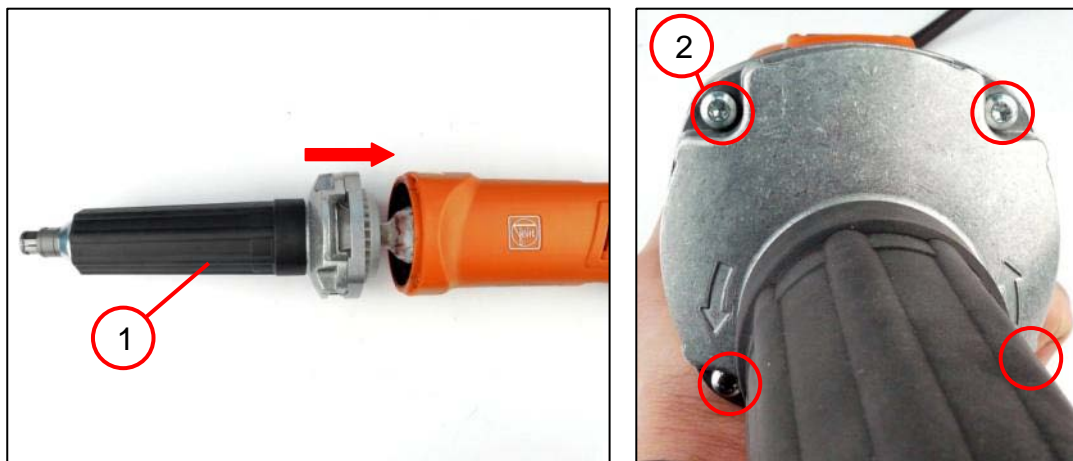


1. Coat the seal (1) with oil.
2. Position the seal (1).
3. Attach the collar bearing (2) to the intermediate gearbox.



7. Fitting

Fitting the collar bearing



1. Slide the collar bearing (1) with intermediate gearbox and armature into the motor housing.
2. Screw in the four screws (2) [2.7 Nm].

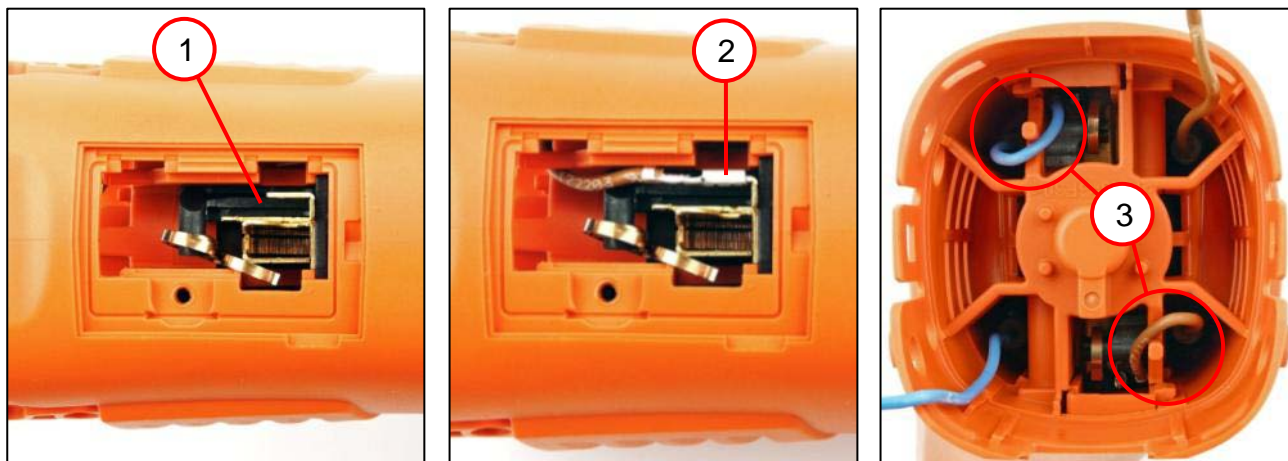
Tools:

- Torx T15



7. Fitting

Fitting the carbon brushes (applies to: GSZ 11-230 V) [on both sides]

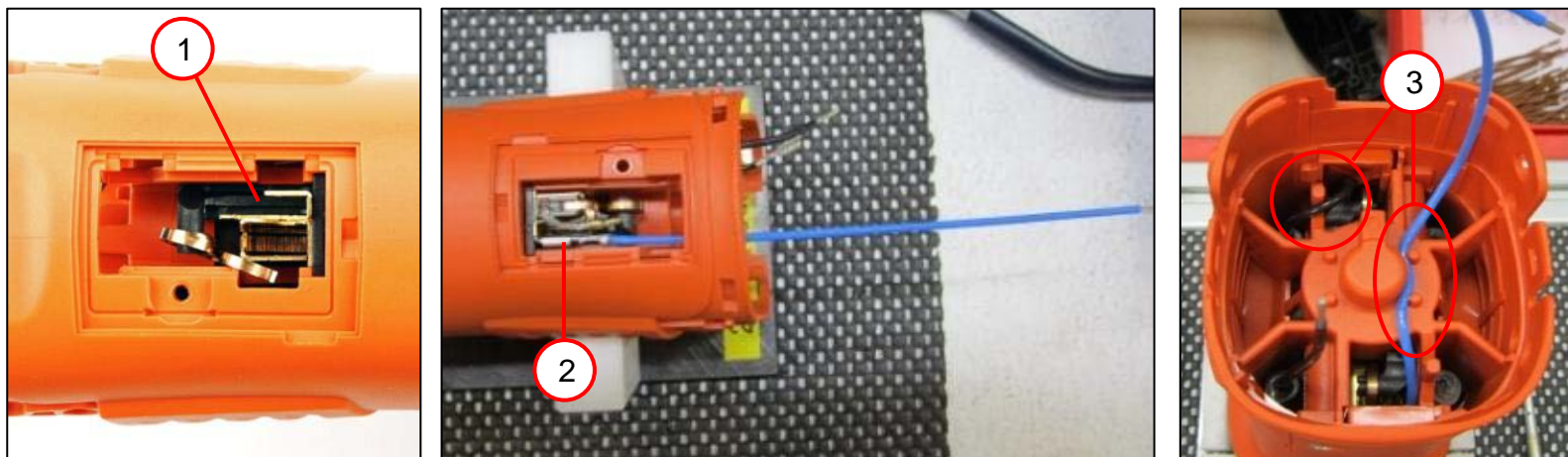


1. Insert the brush holder (1).
2. Connect the cable (2) to the brush holder as shown in connection diagram.
3. Lay the cables around the studs (3).



7. Fitting

Fitting the carbon brushes (applies to: GSZ 11-120 V) [on both sides]

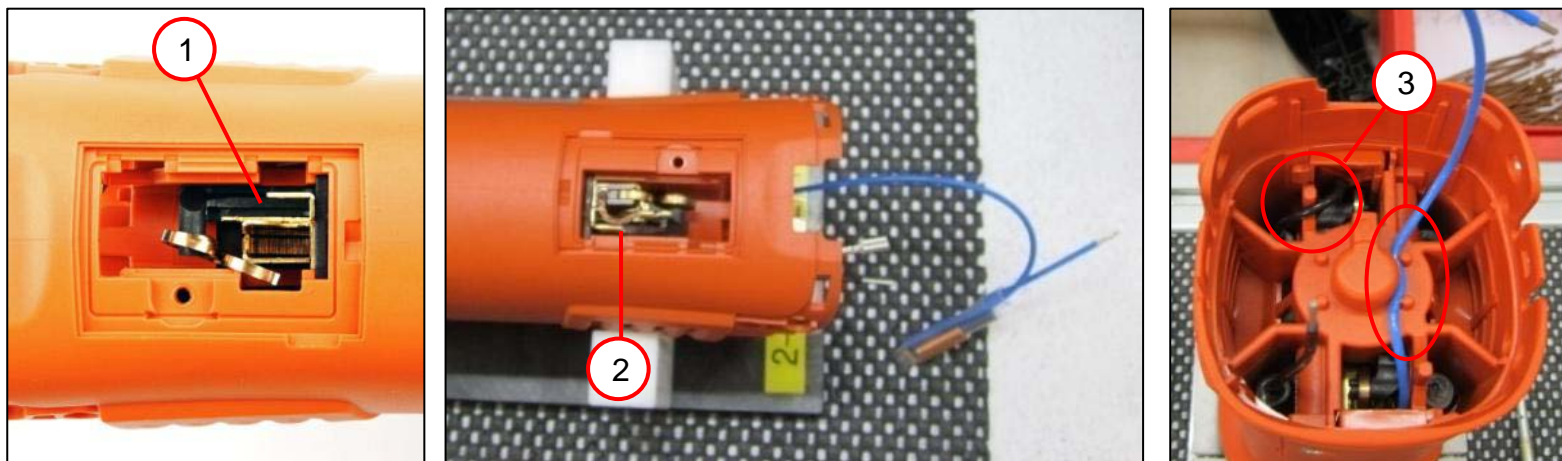


1. Insert the brush holder (1).
2. Connect the cable (2) to the brush holder as shown in connection diagram.
3. Lay the cables around the studs (3).



7. Fitting

Fitting the carbon brushes (GSZ 11 110 V) [on both sides]

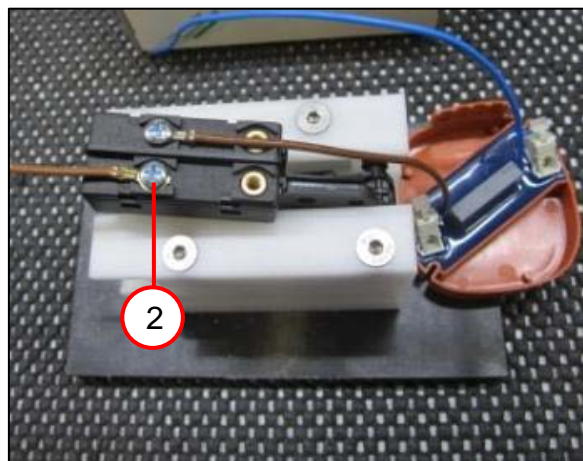
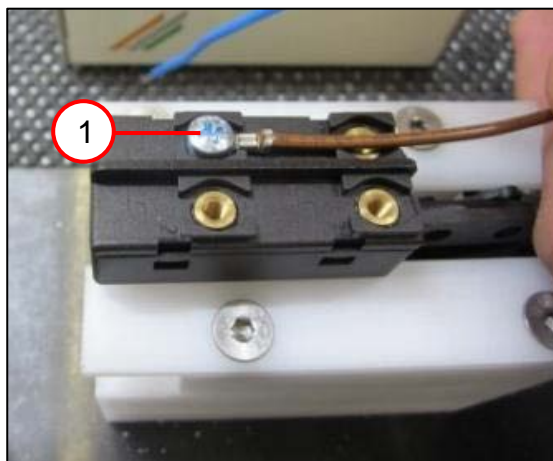


1. Insert the brush holder (1).
2. Connect the choke (2) and the cable to the carbon brush on the opposite side as shown in the connection diagram.
3. Lay the cables around the studs (3).



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].

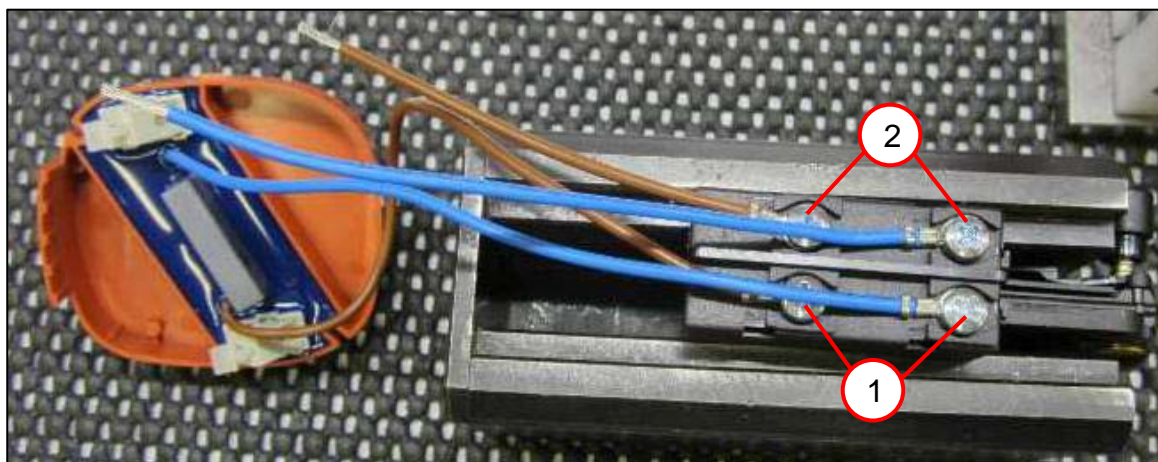
Tools:

- 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].

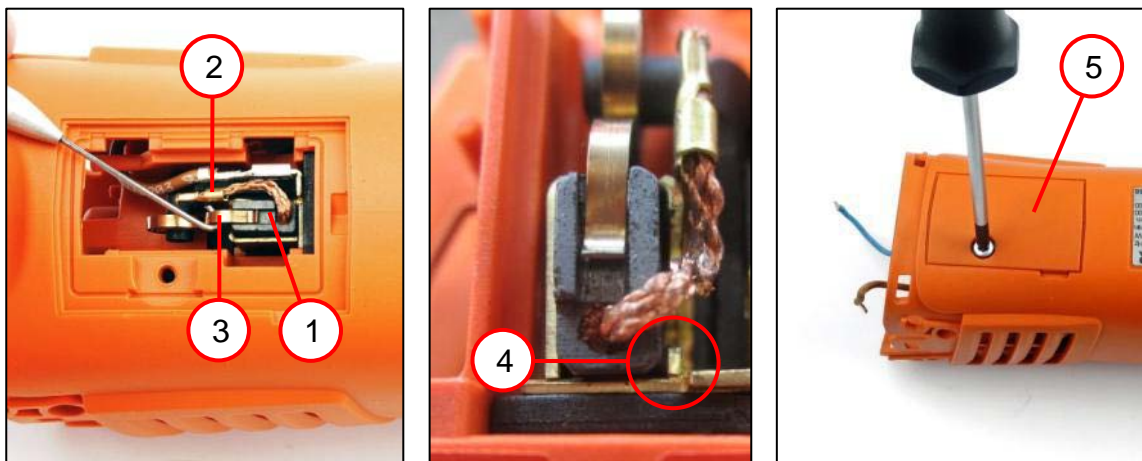
Tools:

- 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.

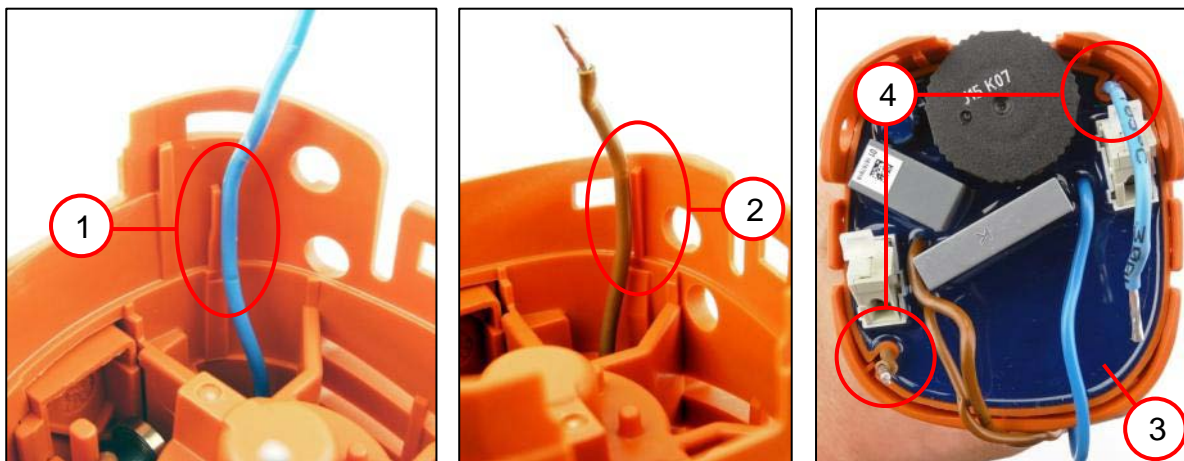
2. Connect the cable (2).
3. Place the tension spring (3) on the carbon brush.
4. Insert the cover (5) and secure it with the screw [1.5 Nm].

Tools:

- Assembly aid
- Torx T15

7. Fitting

Fitting the electronics



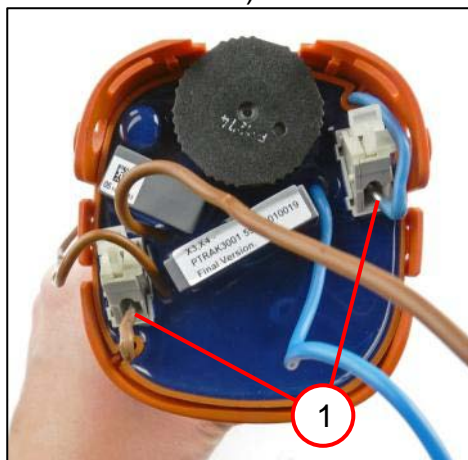
1. Lay the cable (1 and 2).
2. Insert the electronics (3).
 - ☞ Ensure that the cables lie in the recesses (4).
 - ☞ Pull the cables simultaneously with the electronics.



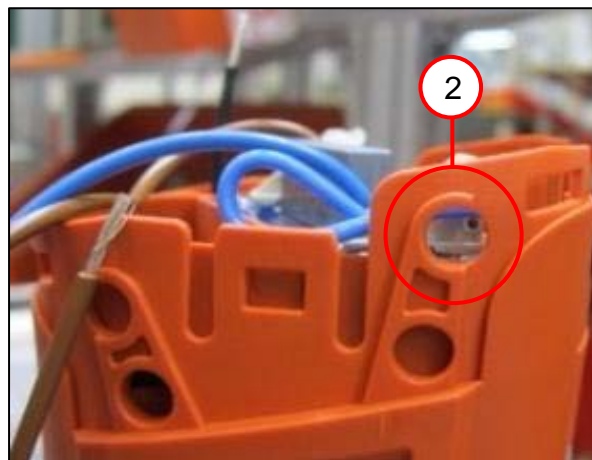
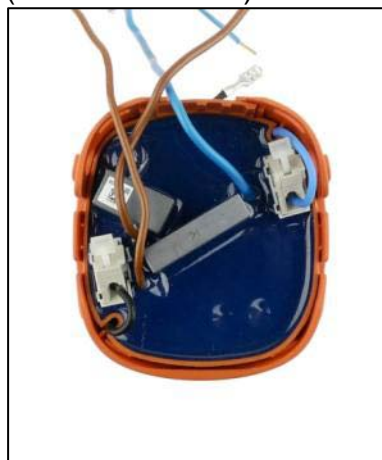
7. Fitting

Fitting the electronics

Version 1 (GSZ11-320PERL;
GSZ11-90PERL)



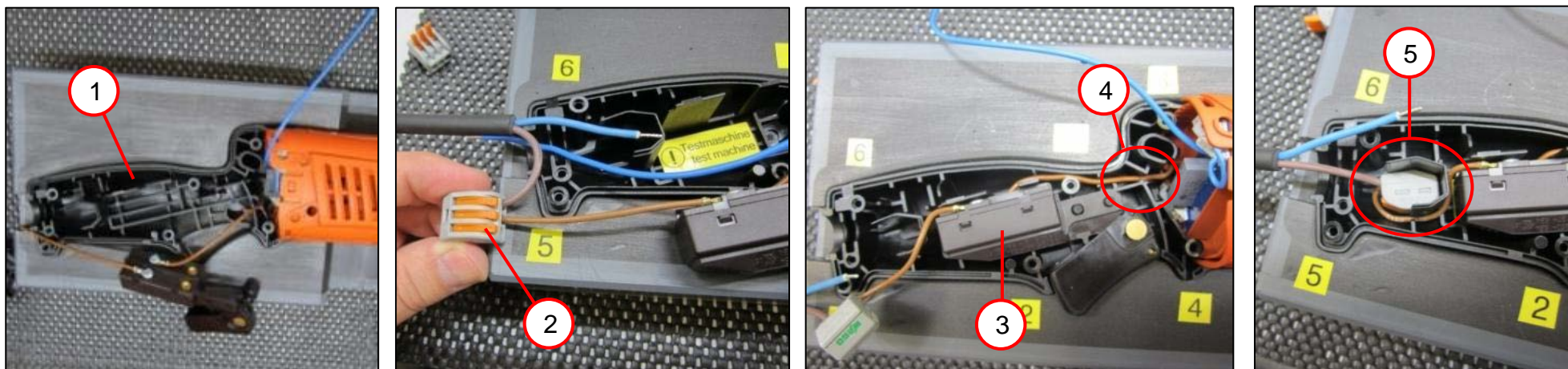
Version 2
(GSZ11-320PRL)



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 (applies to: GSZ 11-110 V/120 V/230 V)

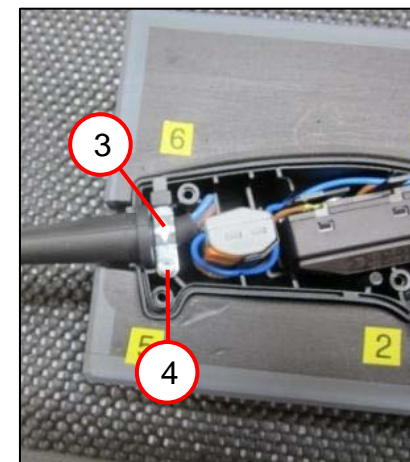
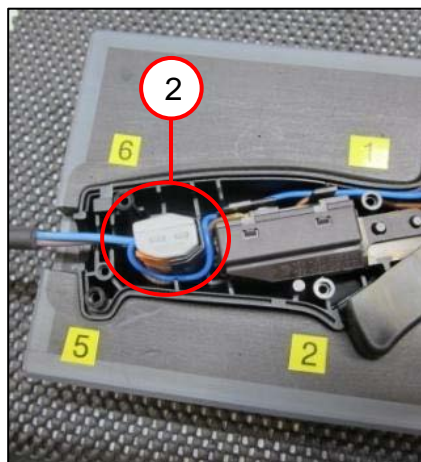
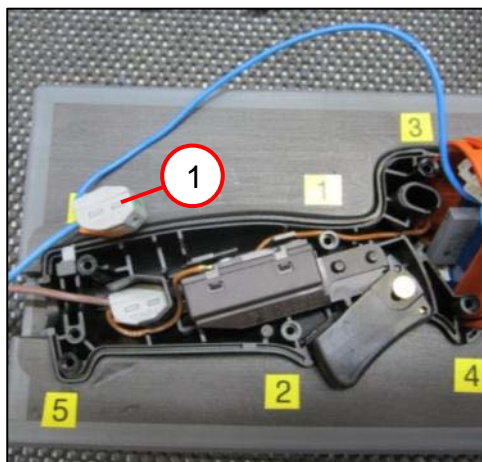


1. Fit the lower section of the handle (1).
2. Connect the switch and the cable with plug to the terminal (2) as shown in the connection diagram.
3. Insert the switch (3) into the lower section of the handle.
4. Place the cable in the recess (4).
 - ☞ Press the cable as deep as possible into the recess.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



7. Fitting

Fitting the handle (applies to: GSZ 11-110 V/120 V/230 V)



1. Connect the cable 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. Lay the cables in the lower section of the handle.
4. Position the cable clamping piece (3).
5. Screw in the screw (4) [1.5 Nm].

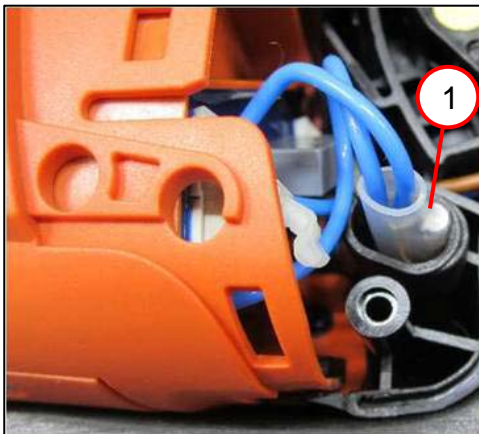
Tools:

- Torx T15
- Assembly aid



7. Fitting

Fitting the choke (GSZ 11 110 V)

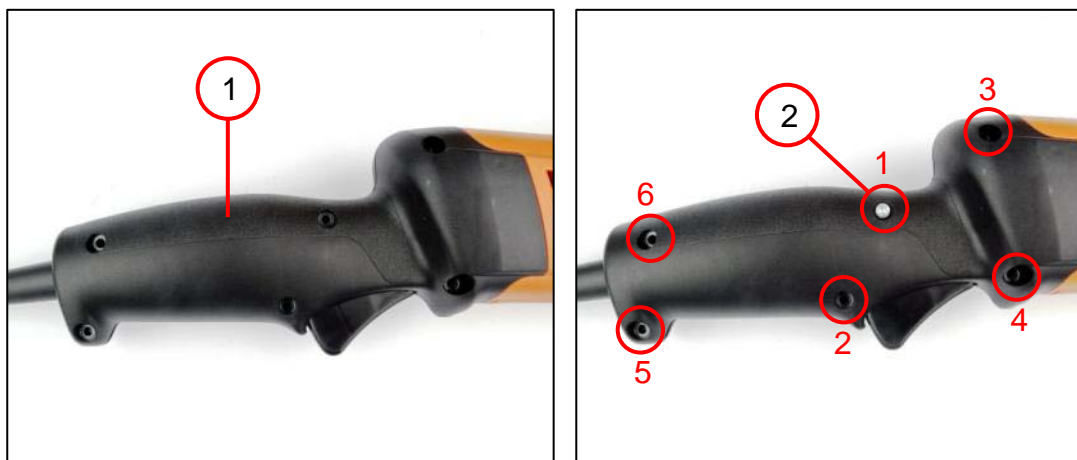


1. Place the choke (1) in the recess.



7. Fitting

Fitting the handle



PLEASE NOTE:

Ensure that none of the stranded wires are crushed when closing the cover.

1. Fit the upper section of the handle (1).
2. Tighten the screws (2) [1.5 Nm].
☞ Observe the screwdriving sequence.

PLEASE NOTE:

Up-to-date test data and test instructions after repair can be found on the FEIN Extranet (Customer Service → Repair Guides).

Tools:

- Torx T15



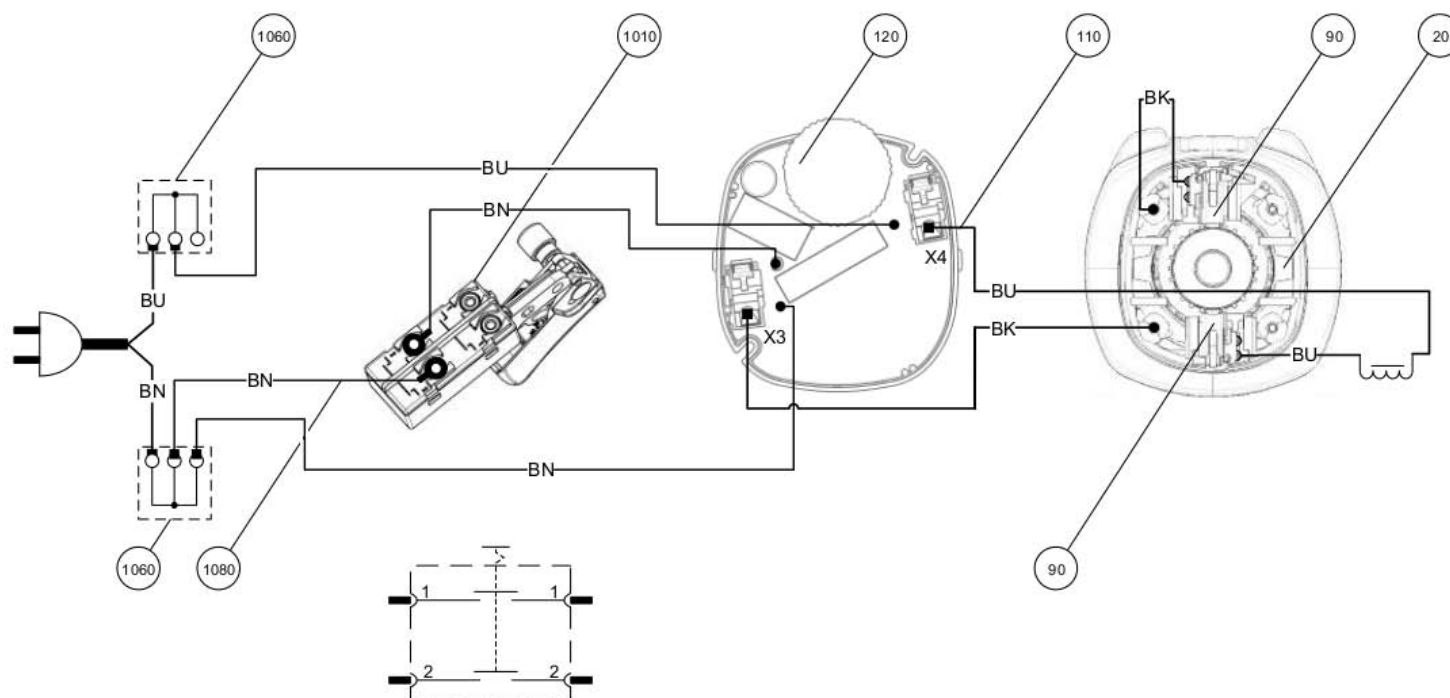
8. Connection diagram

Anschlussplan

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

7 223 22 - GSZ11-320PERL / 110V 50/60Hz

7 223 23 – GSZ11-90PERL / 110V 50/60Hz



3 41 21 000 046
23.10.2014

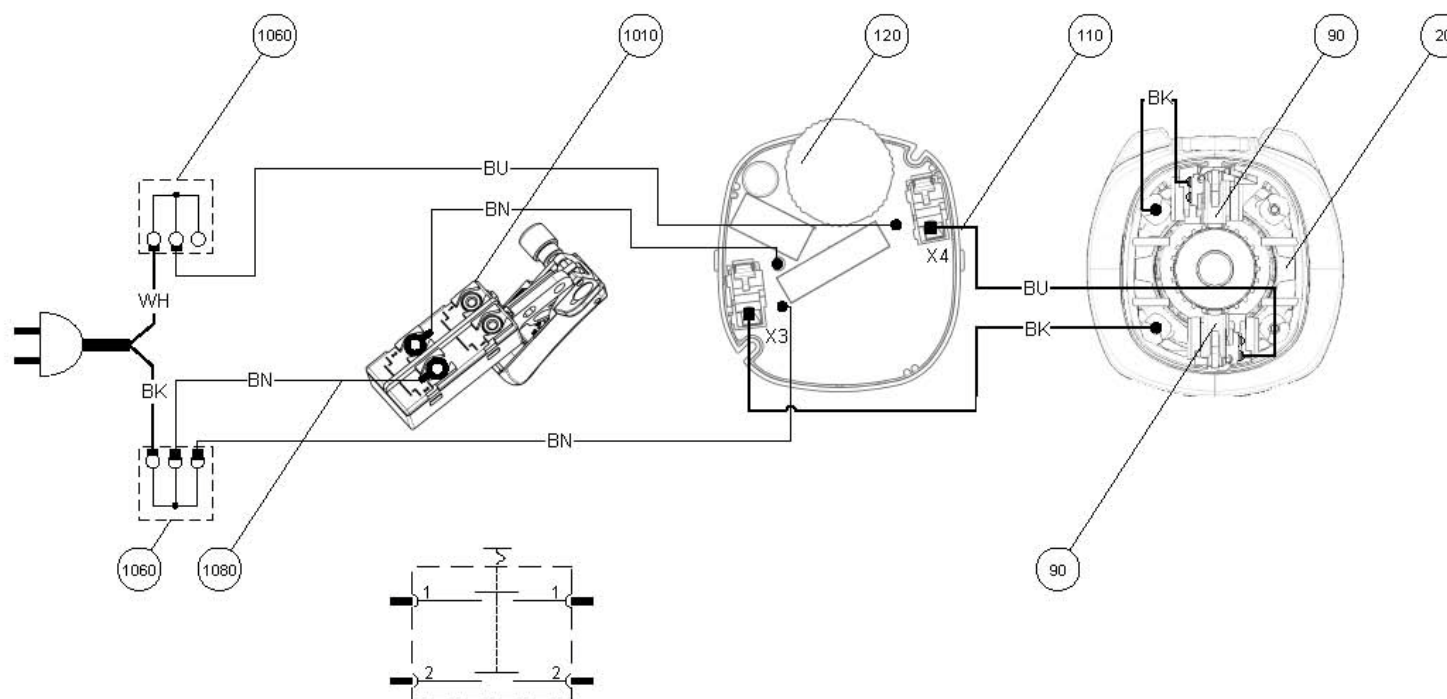


8. Connection diagram

Anschlussplan

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

7 223 22 – GSZ11-320PERL / 120V 60Hz
7 223 23 – GSZ11-90PERL / 120V 60Hz



3 41 21 000 047
03.07.2014



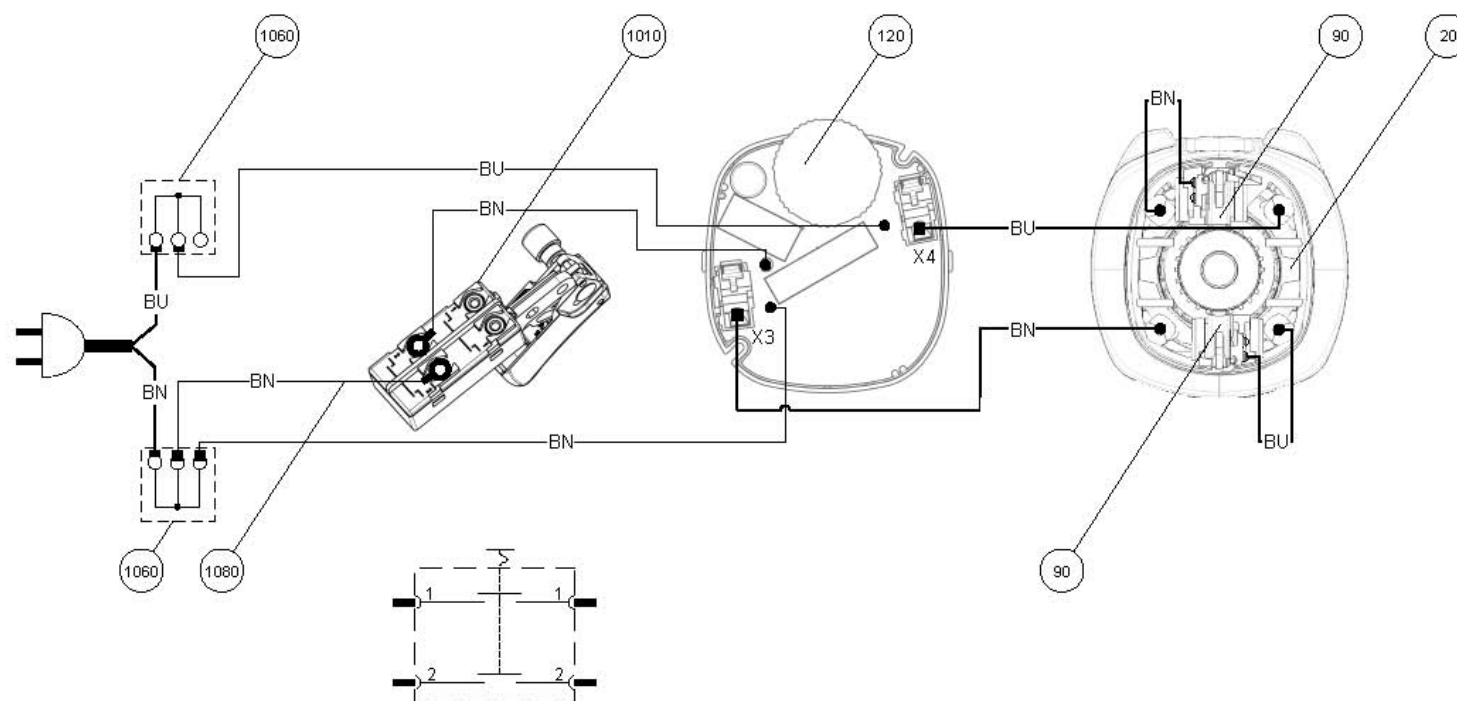


8. Connection diagram

Anschlussplan

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

7 223 22 – GSZ11-320PERL / 220V – 230V 50/60Hz
7 223 23 – GSZ11-90PERL / 220V – 230V 50/60Hz



3 41 21 000 045
03.07.2014



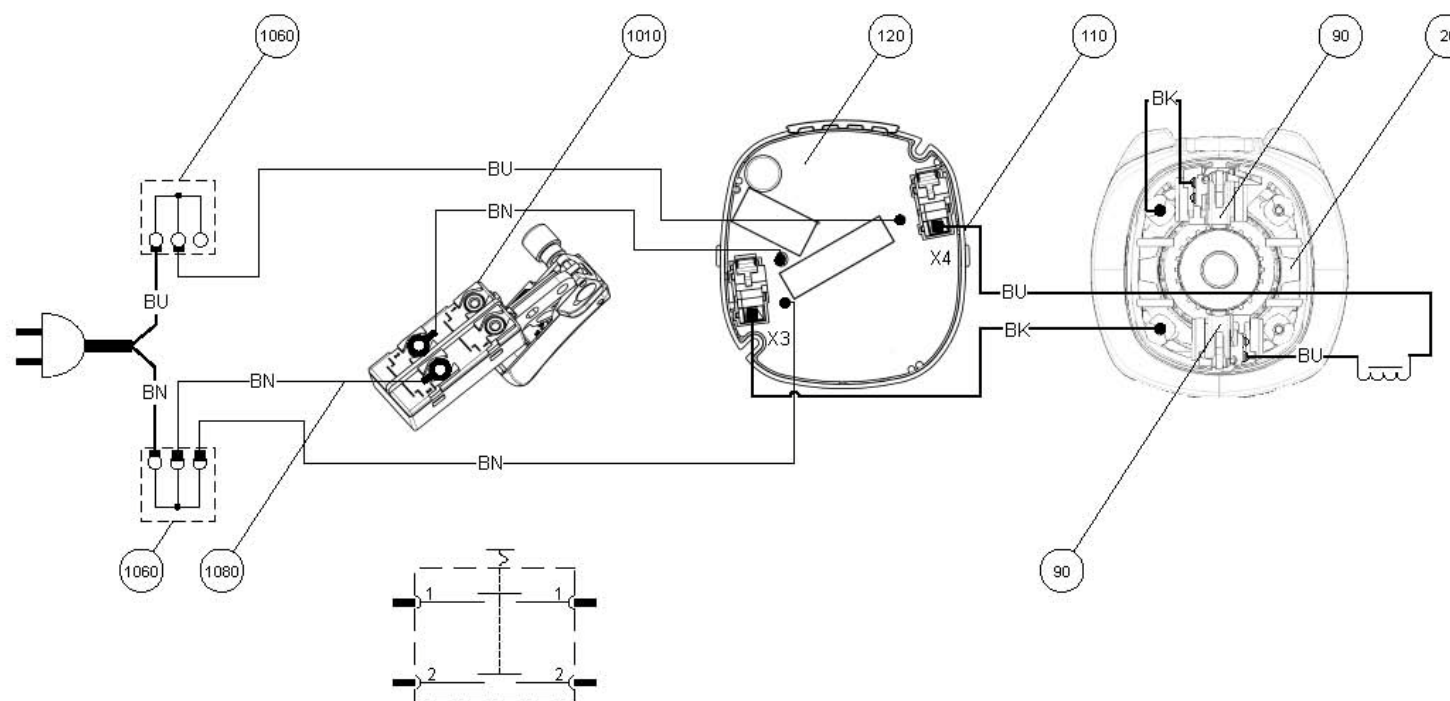


8. Connection diagram

Anschlussplan

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

7 223 21 – GSZ11-320PRL / 110V 50/60Hz



3 41 21 000 049
03.07.2014





8. Connection diagram

Anschlussplan

Connection diagram

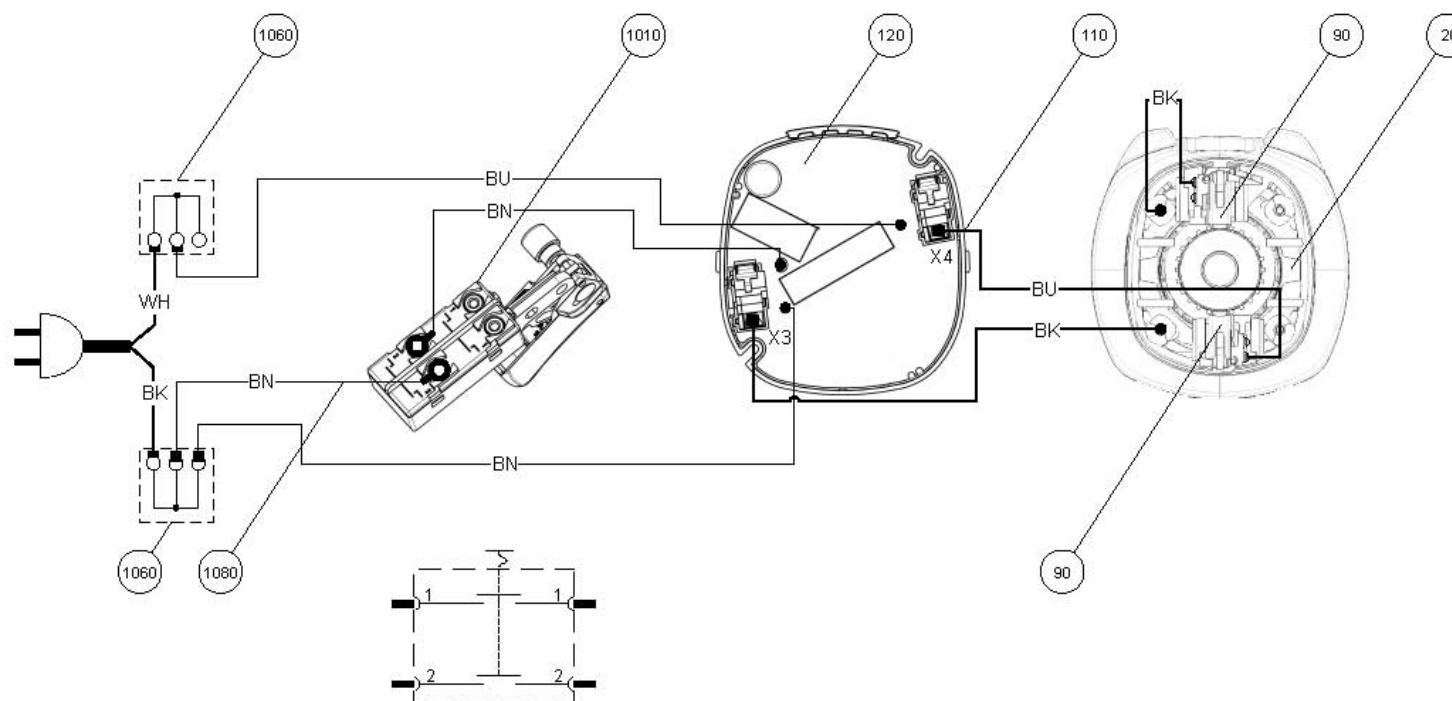
Esquema de conexiones

Schéma de connexion

Схема соединений

接线图

7 223 21 – GSZ11-320PRL / 120V 60Hz



3 41 21 000 050
03.07.2014





8. Connection diagram

Anschlussplan

Connection diagram

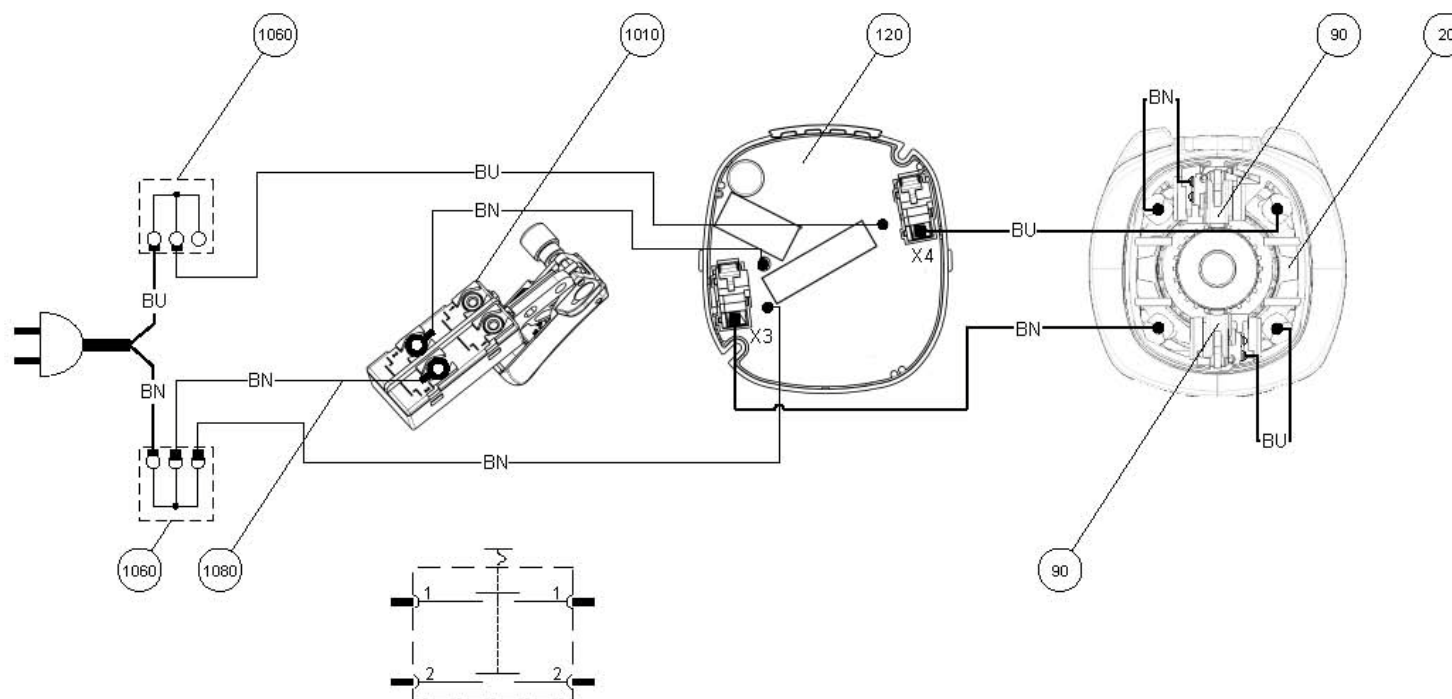
Esquema de conexiones

Schéma de connexion

Схема соединений

接线图

7 223 21 – GSZ11-320PRL / 220V – 230V 50/60Hz



3 41 21 000 048
03.07.2014

