

**Special Tools
Require**

- Sleeve with internal thread
- Spanner
- Allen key 3/32"
- Forcing discs

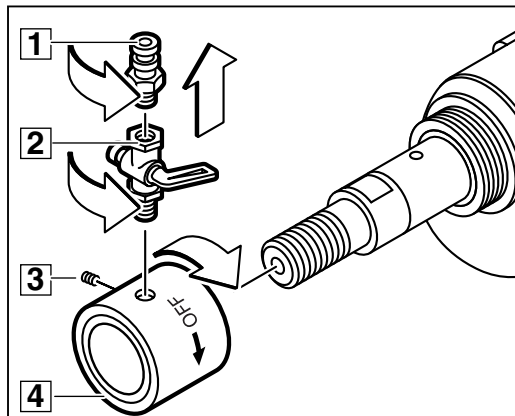
4931 702 227
4931 390 249
49 96 0050
4931 599 018

Important!

- Before beginning the maintenance work, perform an initial check with a high voltage test according to VDE (see chapter Electrical and Mechanical Test Instructions).
- Before all repair work, pull the power plug from the socket!

Disassembly**Removing
the sleeve**

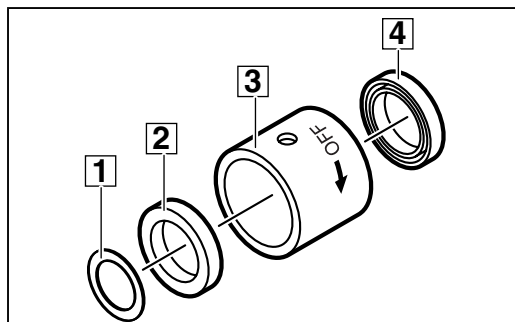
- 1 Remove the fitting (1).
 - 2 Remove the valve (2).
 - 3 Loosen the Allen screw (3) with aid of the Allen key (service tool: 49 96 0050).
 - 4 Unscrew the sleeve (4) clockwise in direction of the marking "← OFF".
- ☞ The sleeve (4) has a left-handed thread.



1

**Dismantling
the sleeve**

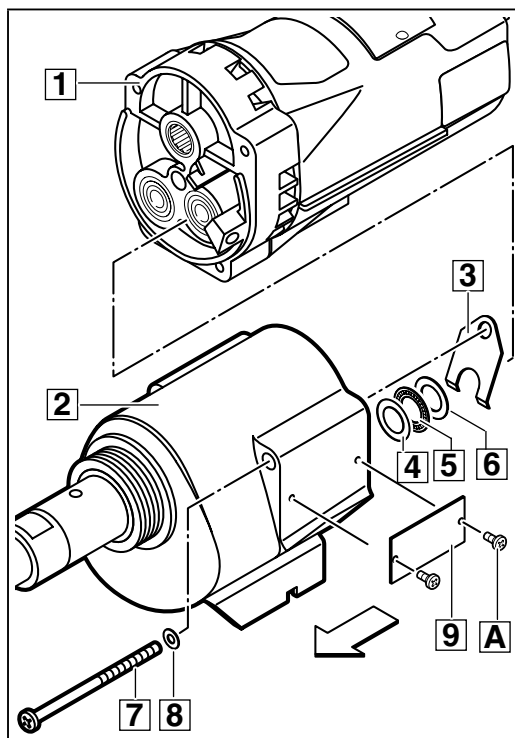
- 1 Press the seal rings (2) and (4) from the sleeve (3).
- 2 Remove the disc (1).



2

**Removing the
front housing**

- 1 Remove four screws (7) with washers (8) from the front part of the housing (2).
 - 2 Pull the front part of the housing (2) from the bearing end plate (1).
- ☞ If necessary, loosen the front part of the housing (2) by tapping it with a plastic hammer.
- 3 Remove the following parts from the front part of the housing (2):
 - yoke (3)
 - washer (6)
 - thrust bearing (5)
 - washer (4).
 - 4 Loosen two screws (A) and remove the rating plate (9).




3

Applicable for machines with separate pinion - DCM2-180C, DCM2-250C:


Disassembling the gear

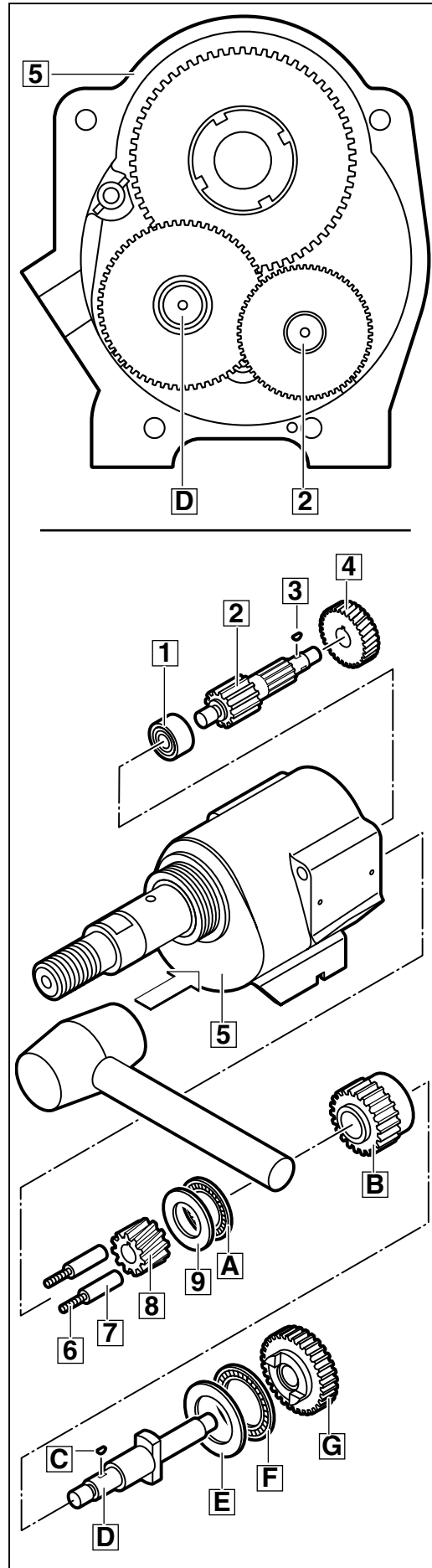
- 1** Tap the front part of the housing (5) lightly with a plastic hammer and remove the complete shaft assemblies (2) and (D). Remove the following parts:
 - shaft (2) with
 - ball bearing (1)
 - key (3)
 - gear (4)
 - gear (G)
 - thrust bearing (F)
 - washer (E)
 - shaft (D) with
 - key (C)
 - spacer (B) with gear
 - thrust bearing (A)
 - washer (9)
 - pinion (8)
 - 2 plungers (7)
 - 2 pressure springs (6).

- 2** Press the gear (4) and the ball bearing (1) from the shaft (2) and remove the key (3).

 To press off the gear and the ball bearing, use the forcing discs (service tool: 4931 599 018)!

- 3** Press the pinion (8) from the shaft (D). Remove the washer (9), the thrust bearing (A), and the spacer (B) with gear and key (C).

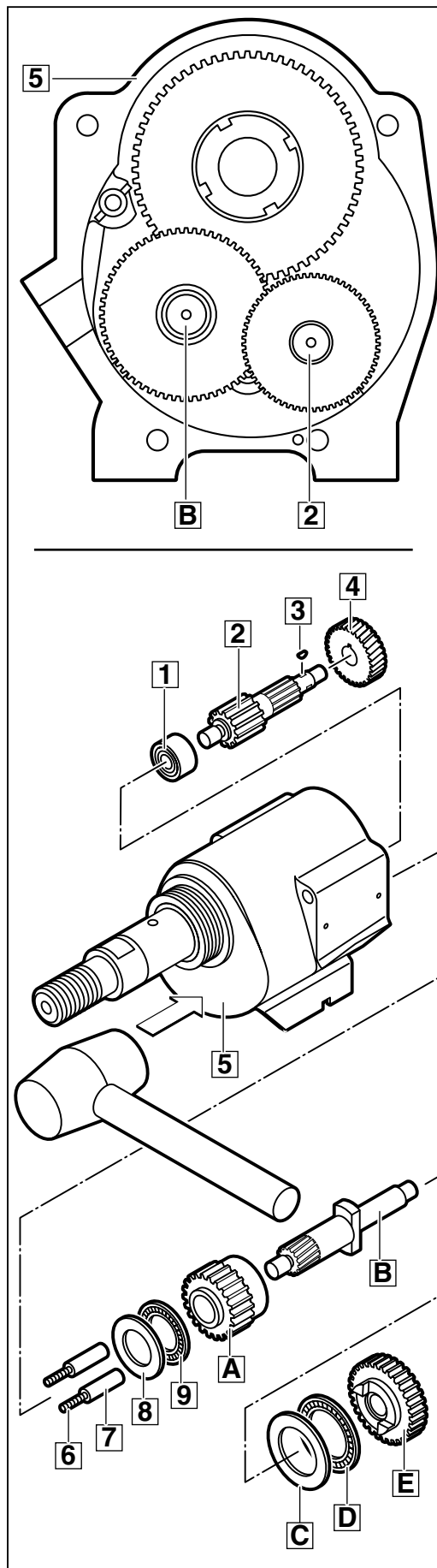
 To press off the gear and the ball bearing, use the forcing discs (service tool: 4931 599 018)!



Applicable for machines with pinion on the shaft - DCM2-350C:

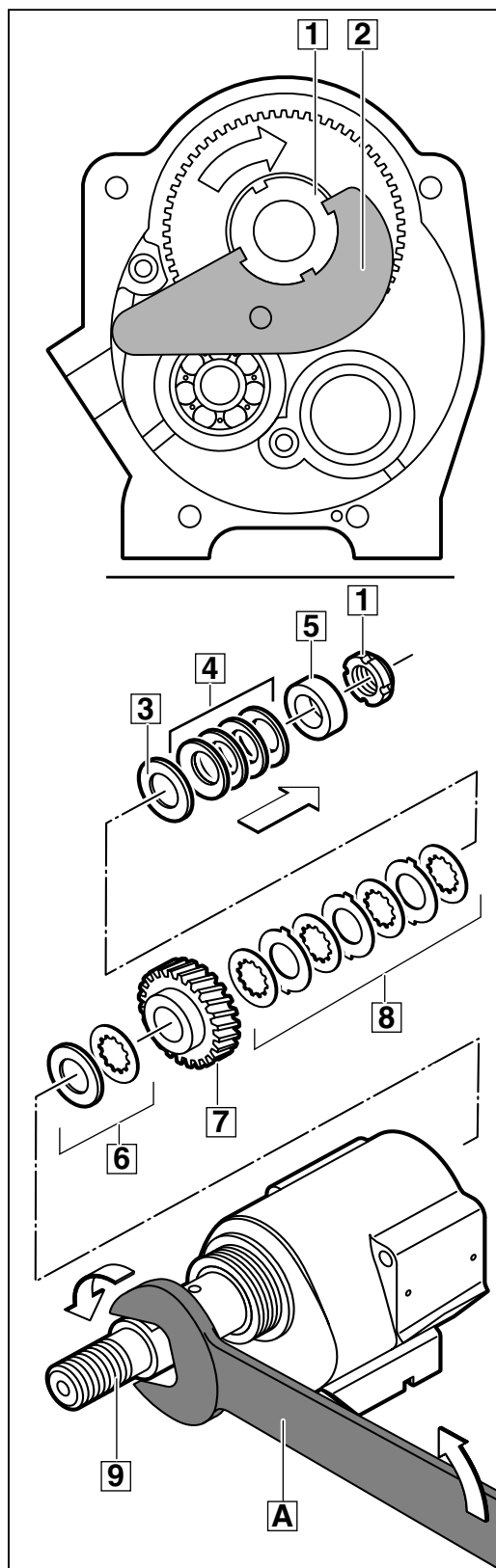
Disassembling the gear

- 1** Tap the front part of the housing (5) lightly with a plastic hammer and remove the two shaft assemblies (2) and (B):
Remove the following parts
 - shaft (2) with
 - ball bearing (1)
 - key (3)
 - gear (4)
 - gear (E)
 - thrust bearing (D)
 - washer (C)
 - shaft (B) with
 - spacer (A) and gear
 - thrust bearing (9)
 - washer (8)
 - 2 plungers (7)
 - 2 pressure springs (6).
- 2** Press the gear (4) and the ball bearing (1) from the shaft (2) and remove the key (3).



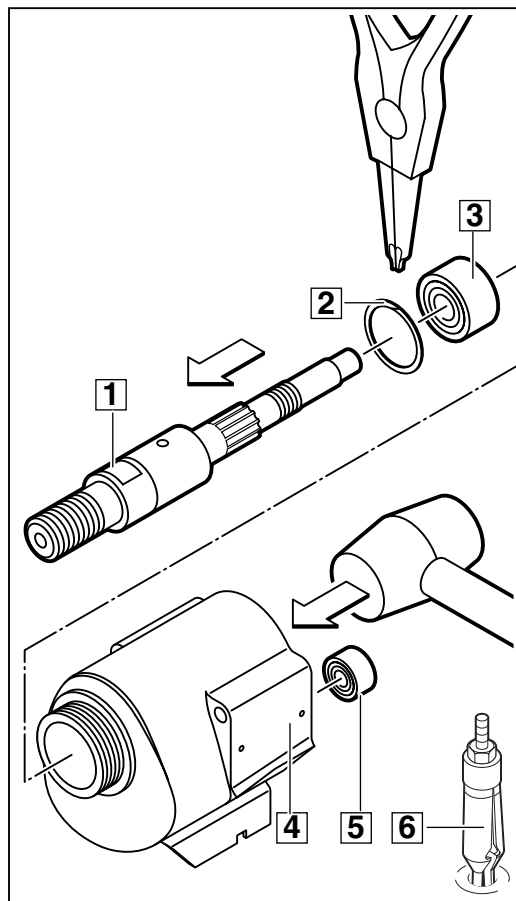
Disassembling the spindle

- 1** Put the spanner (2) (service tool: 4931 390 249) on the nut (1) as shown in the upper illustration (view into the front housing).
- 2** With inserted spanner (2), unscrew the spindle (9) in direction of arrow with aid of the fork wrench (A) (see lower illustration).
 - ☞ The spanner (2) prevents the nut (1) from rotating.
- 3** Remove the spanner (2) and the following parts from the spindle:
 - nut (1)
 - spacer (5)
 - 4 pressure springs (4)
 - washer (3)
 - 7 discs (8)
 - spindle wheel (7)
 - disc and washer (6).



Removing the spindle

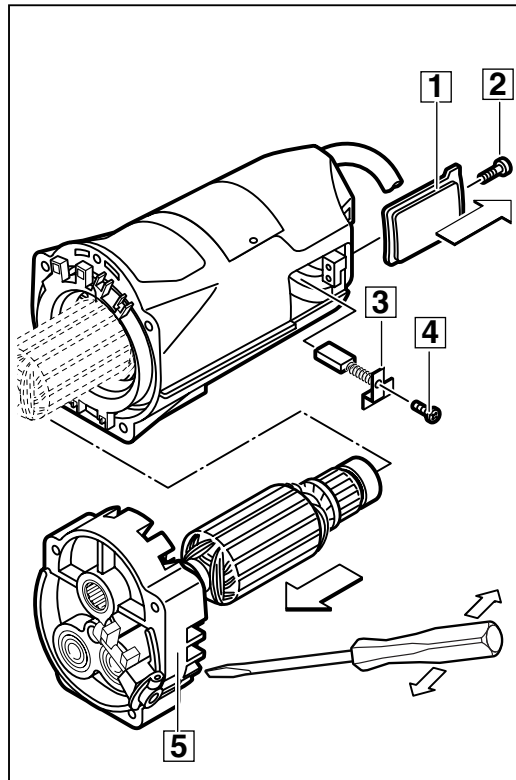
- 1** Press out the spindle (1) through the housing (4) by tapping the rear end of the spindle lightly with a plastic hammer.
- 2** Loosen the locking ring (2) with Seeger circlip ring special pliers.
- 3** Press out the ball bearing (3) with a suitable mandril.
- 4** Extract the ball bearing (5) with an interior extractor (6).



6

Detaching the carbon brushes and removing the bearing end plate

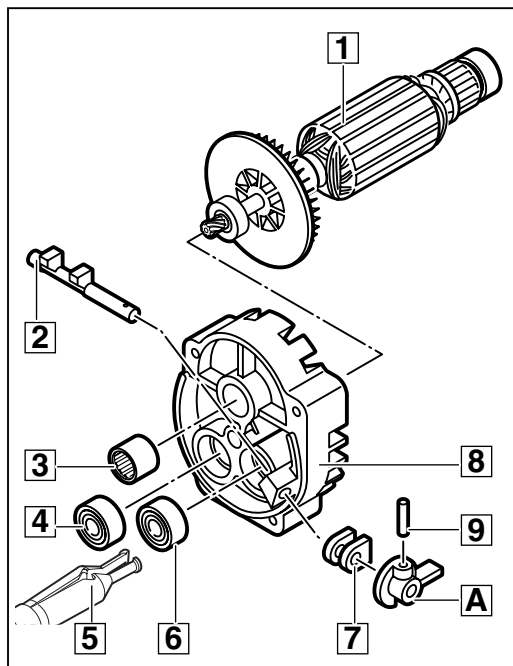
- 1** Remove the screw (2) from both brush covers (1). Pull off both brush covers (1) backwards.
- 2** Remove the screw (4) from both carbon brushes (3). Pull both carbon brushes (3) from the machine sideways.
- 3** Loosen the bearing end plate (5) from the gear box with aid of a screwdriver. Pull out the bearing end plate (5) with the armature.



7

Disassembling the bearing end plate

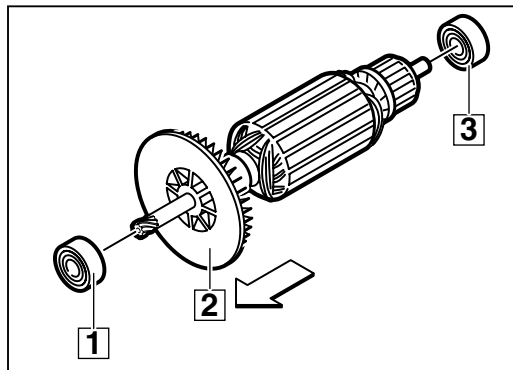
- 1 Expel the armature (1) from the bearing end plate (8) by tapping the pinion on the armature shaft lightly with a plastic hammer.
- 2 Expel or press the pin (9) from the trigger (A). Pull the sliding switch (2) from the bearing end plate (8) and remove the two gaskets (7).
- 3 Extract the needle bearing (3) as well as the needle bearings (4) and (6) with the interior extractor (5).



8

Disassembling the armature

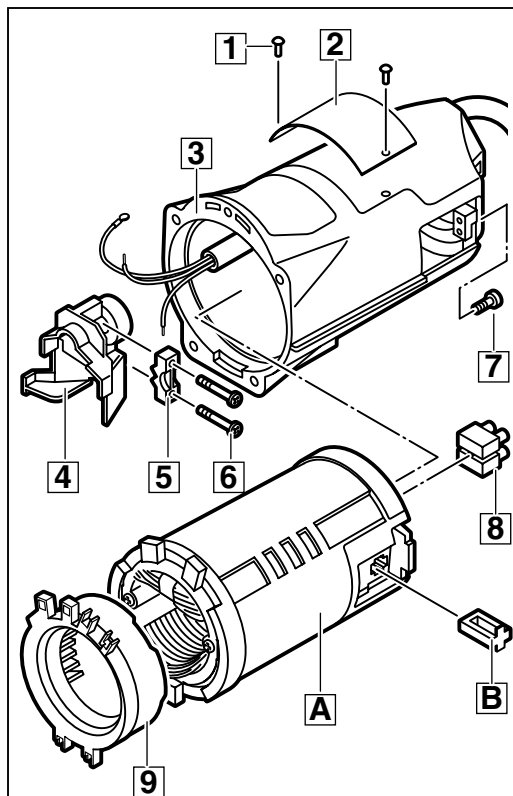
- 1 Press off the ball bearings (1) and (3) from the armature shaft ends.
- 2 Press off the fan (2).



9

Dismantling the insulation housing

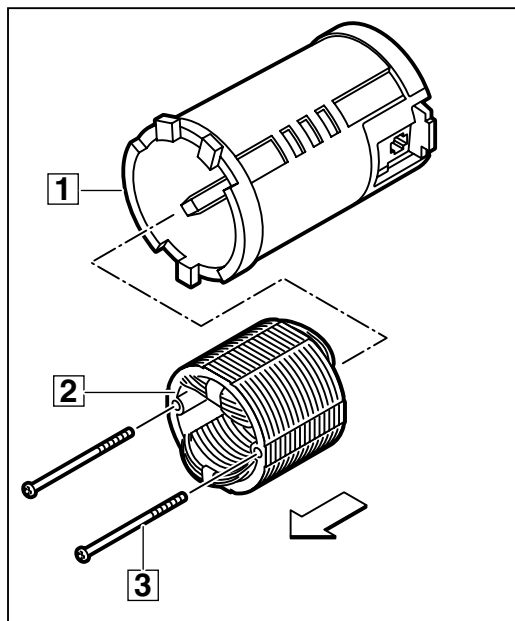
- 1 Remove the air deflector ring (9).
- 2 Remove the screw (7) to loosen the earthing wire.
- 3 Expel the insulation housing (A) with the field by tapping the housing (3) lightly with a plastic hammer.
- 4 Unhook the cable cover (4) and remove it.
- 5 Branch off four wires from the luster terminal (8).
- 6 Loosen two screws (6) from the clamping piece (5) and remove it.
- 7 Loosen two screws (1) and remove the name plate (2).
- 8 Pull out the carbon brushes (B) on both sides.



10

Detaching the field

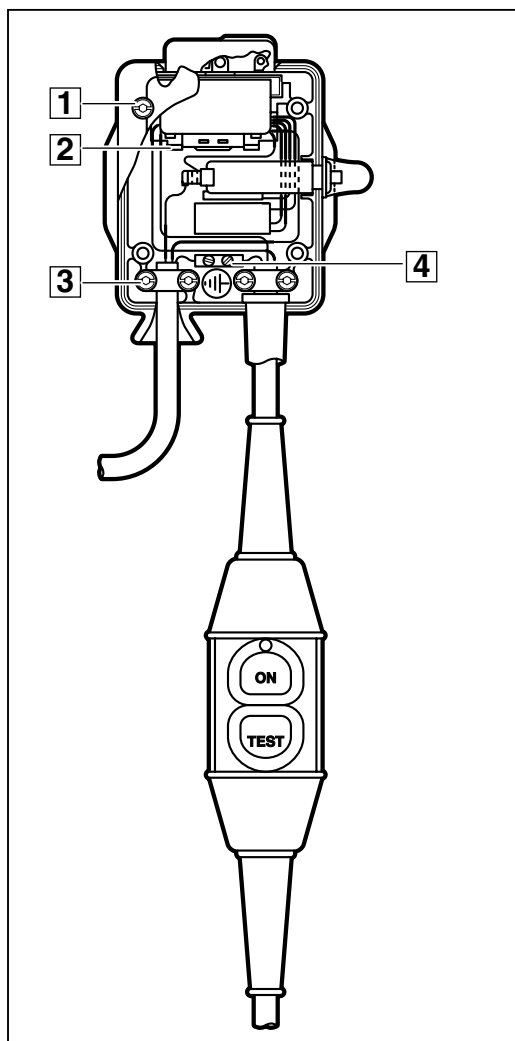
- 1** Remove the two screws (3).
- 2** Expel the field (2) by tapping the insulation housing (1) lightly with a plastic hammer.



11

Detaching the fault current safety switch

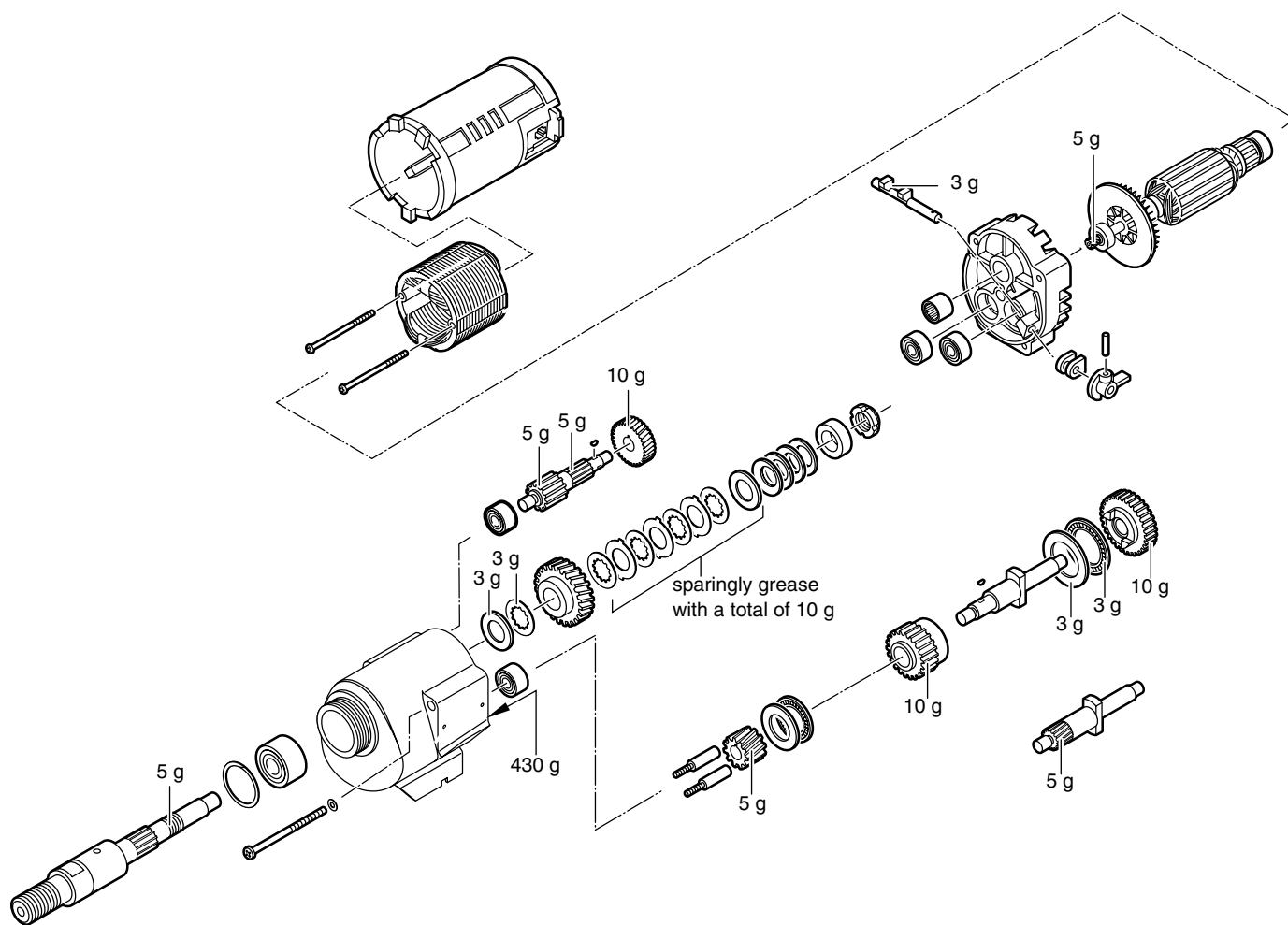
- 1** Remove four screws (1).
- 2** Remove four screws (3).
- 3** Remove two screws (4).
- 4** Remove five screws (2).
- 5** Remove all components and wires.



12

General	It is recommended, to regularly submit the tool to maintenance.
Cleaning	Clean all parts – with the exception of the electrical parts – with cold cleaning agent. Caution! No cleaning agent should penetrate into the bearing. Clean the electrical parts with a dry brush.
Check for wear	Check the disassembled parts for wear (visual inspection) and replace worn parts.
Electrical tests	Before reassembling, perform an electrical test on all relevant parts (see chapter Electrical and Mechanical Test Instructions).
Lubrication	Each time maintenance is performed, the machine is to be lubricates as stated in the lubrication plan. After the machine is fully disassembled, completely remove the old grease and replace with new grease. The grease must be applied to the machine as indicated in the lubrication plan.


Fill res. daub with a total of 510 g grease Typ J according to the illustration (order No. 49-08-4220).

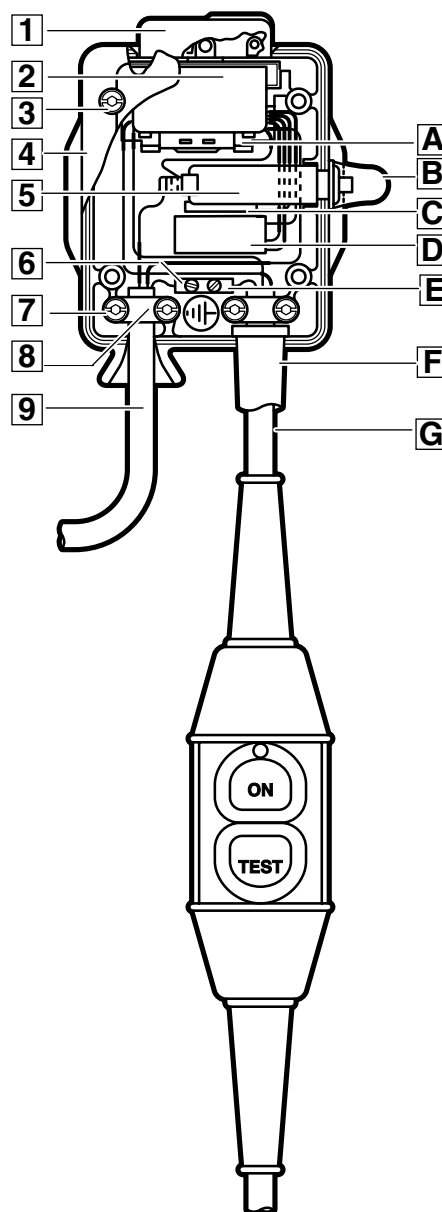


Torques	Screws in plastic	2 Nm
	Screws in metal	10 Nm
	Spindle	34 - 68 Nm (depending on the type, see page 15)
Response moment	Safety clutch	183 - 339 Nm (depending on the type, see page 19)

Assembly

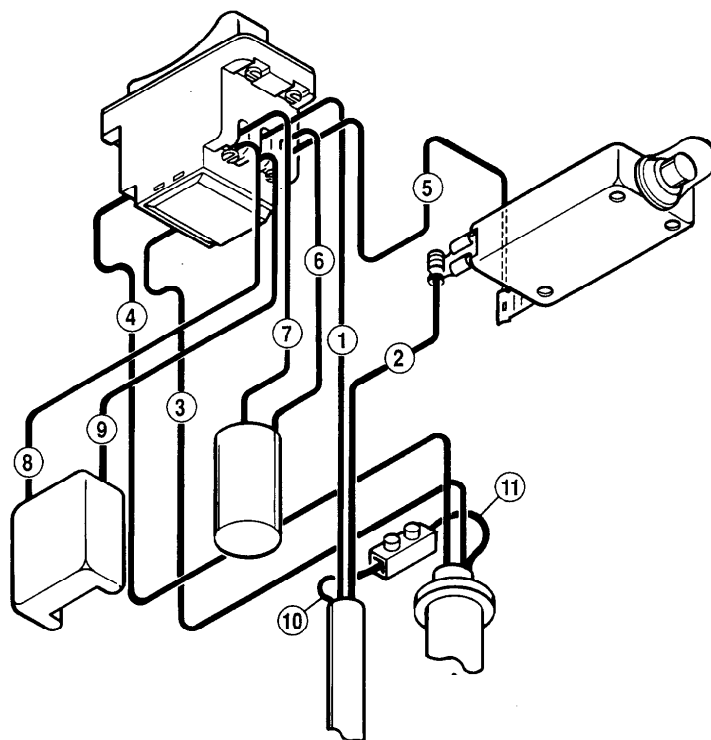
Mounting the fault current safety switch

- 1** Insert the following components into the fault current safety switch:
 - switch (2)
 - switch cup (1)
 - switching circuit CLD (C)
 - interrupter (5)
 - interrupter cover (B)
 - anti-interference capacitor (D)
 - luster terminal (E)
 - wire (G) with rubber sleeve (F)
 - wire (9)
 - 2 clamping pieces (8).
 - 2** Wire the components as shown in the wiring diagram (see page 10).
 - 3** Mount the five screws (A) on the switch (2).
 - 4** Mount the two screws (6) on the luster terminal (E).
 - 5** Mount the four screws (7) on the clamping pieces (8).
 - 6** Put on the cover (4) and fix it with four screws (3).
-  Take care that cables are not squeezed or jammed!



1


**Wiring diagram
of the fault
current safety
switch**

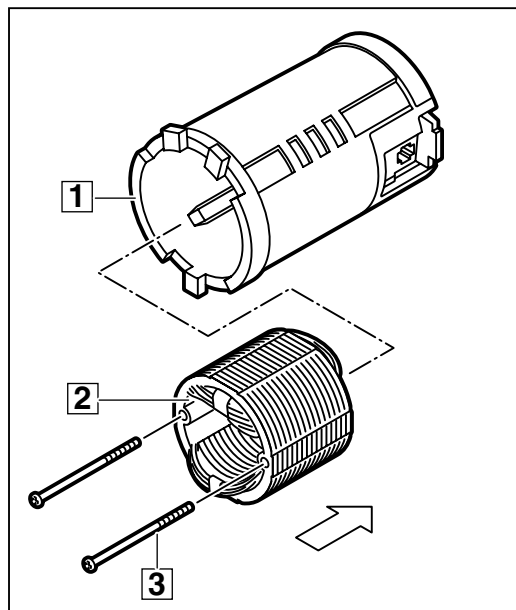


Cable-No.	Colour	Function
1	brown	mains cable
2	blue	mains cable
3	blue	mains cable
4	brown	mains cable
5	red	connection
6	black	connection
7	black	connection
8	blue	connection
9	black	connection
10	yellow-green	mains cable/earthing
11	yellow-green	mains cable/earthing

Mounting the field

- 1 Insert the field (2) into the insulation housing (1) and fix it with two screws (3).

 In case of stiffness, lightly tap the field with a plastic hammer for support!




2

Assembling the insulation housing


- 1 Insert the carbon brush holders (B) on both sides.
- 2 Fix the name plate (2) with two screws (1).
- 3 Insert the mains cable into the clamping piece (5) and fix the clamping piece (5) with two screws (6) on the cable cover (4).


- 4 Connect the wires to the luster terminal (8) as shown in the illustration. Put the luster terminal on the insulation housing (A).

 For detailed information on wiring please refer to the wiring diagram on page 12.

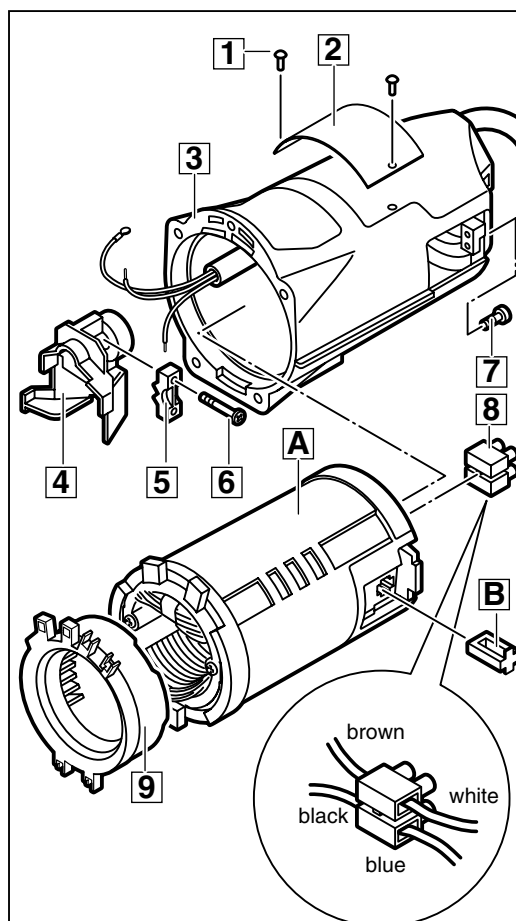
- 5 Push the cable cover (4) over the luster terminal (8) and fix it.

- 6 Insert the air deflector ring (9) into the insulation housing (A) and insert them together into the housing (3).

 The air deflector ring (9) and the insulation housing (A) must fit exactly into the upper relieves as well as the lower relief in the housing (3) and must be mounted flush with the housing (3).

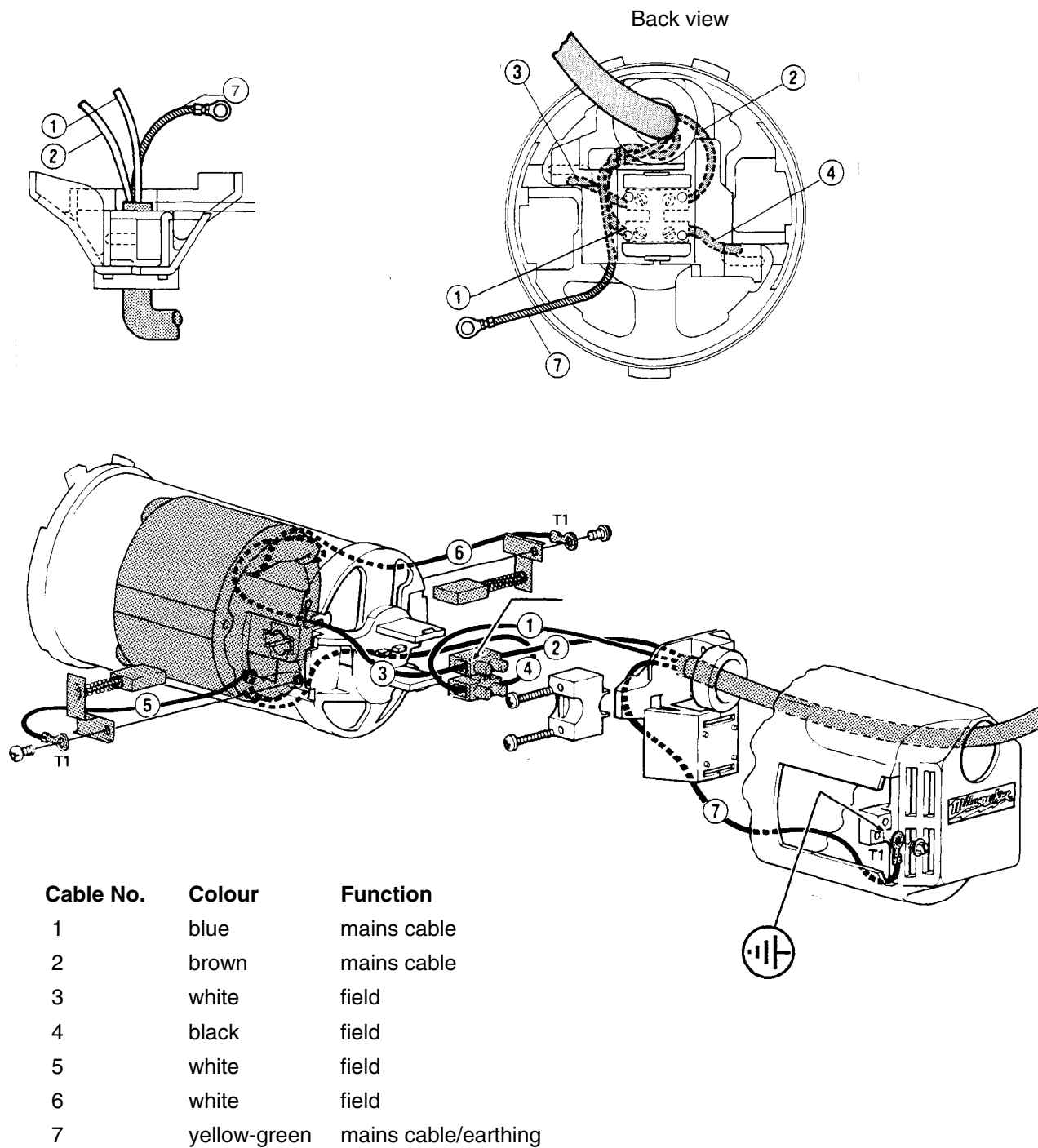
 In case of stiffness, use a plastic hammer for support!

- 7 Fasten the green-yellow earthing wire (7) with a screw.



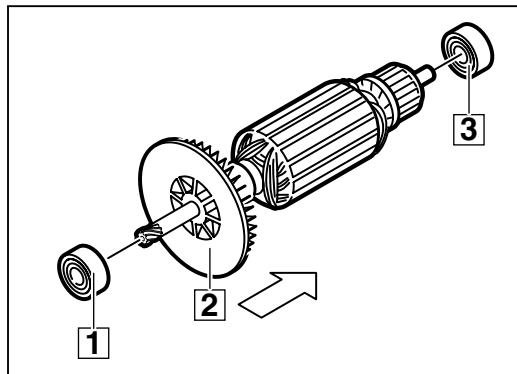
3

Wiring chart of the tool




Mounting the armature

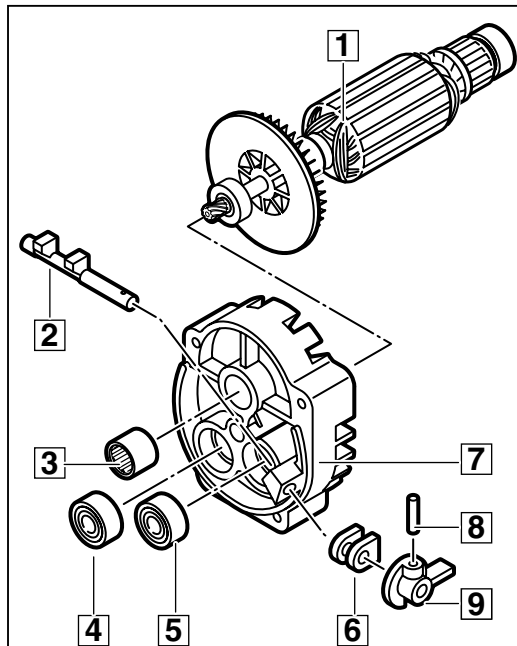
- 1 Press on the fan (2).
- 2 Press the ball bearings (1) and (3) onto the respective ends of the armature shaft.



4

Assembling the bearing end plate

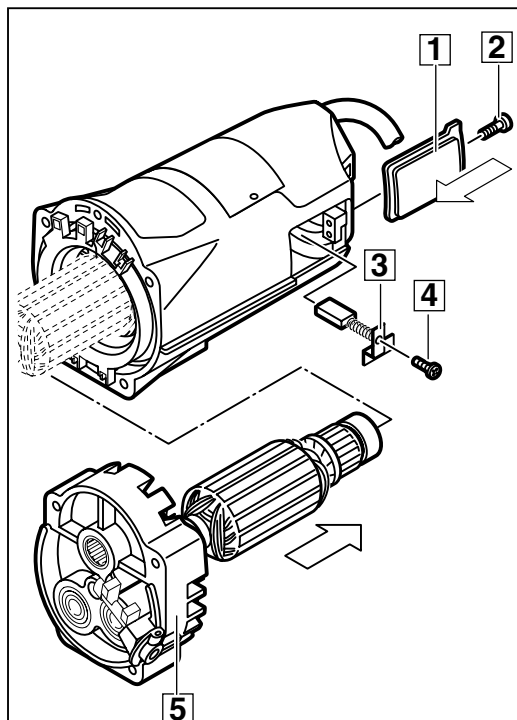
- 1 Press the ball bearing (3) and the ball bearings (4) and (5) into the bearing end plate (7).
 - 2 Insert the sliding switch (2) into the bearing end plate (7). Mind the right position! Put two gaskets (6) on the sliding switch (2).
 - 3 Put on the trigger (9) and press res. hammer in the key (8).
 - 4 Insert the armature (1) into the bearing end plate (7) by turning it slightly.
-  In case of stiffness, lightly tap the armature with a plastic hammer for support!



5

Mounting the carbon brushes and the bearing end plate

- 1 Insert the bearing end plate assembly (5) with the armature flush into the gear box.
- 2 Insert both carbon brushes (3) sideways into the machine and fix them with one screw (4) each.
- 3 Put on both brush covers (1) and fix them with one screw (2) each.




6

**Inserting
the spindle**

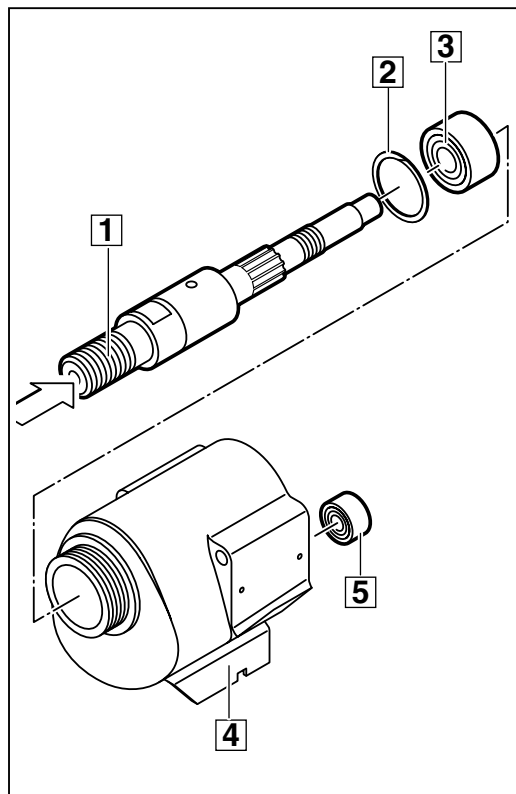
1 Press the ball bearings (3) and (5) into the housing (4).

2 Insert the locking ring (2) into the housing (4).



3

 Lightly grease the spindle (1).


Press the spindle (1) into the housing (4) from the front.

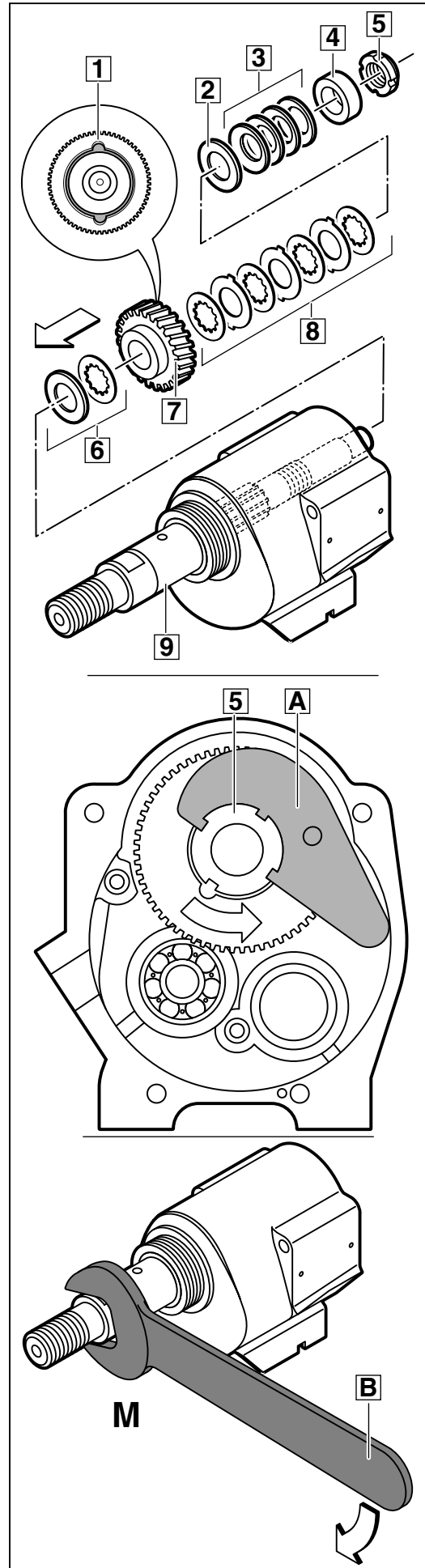


Assembling the spindle

- 1 Put the following parts on the spindle (9) as shown in illustration:
 - disc and washer (6)
 - spindle wheel (7)
 - 7 discs (8)
-  In turns, insert a disc with internal tothing and a coupling disc with a “lug”!
-  The “lugs” (1) of the three coupling discs (in (8)) must fit into the relieves in the spindle wheel (7)!
 - washer (2)
 - 4 pressure springs (3)
 - spacer (4).
- 2 Screw down the nut (5) and put the spanner (A) (service tool: 4931 390 249) on the nut (5) as shown in the middle illustration (view into the front housing).
- 3 Put the fork wrench (B) on the spindle as shown in the illustration and fasten the spindle (torque according to type – see table).

Type	Torque M
DCM2-180C	34 - 41 Nm
DCM2-250C	54 - 61 Nm
DCM2-350C	61 - 68 Nm

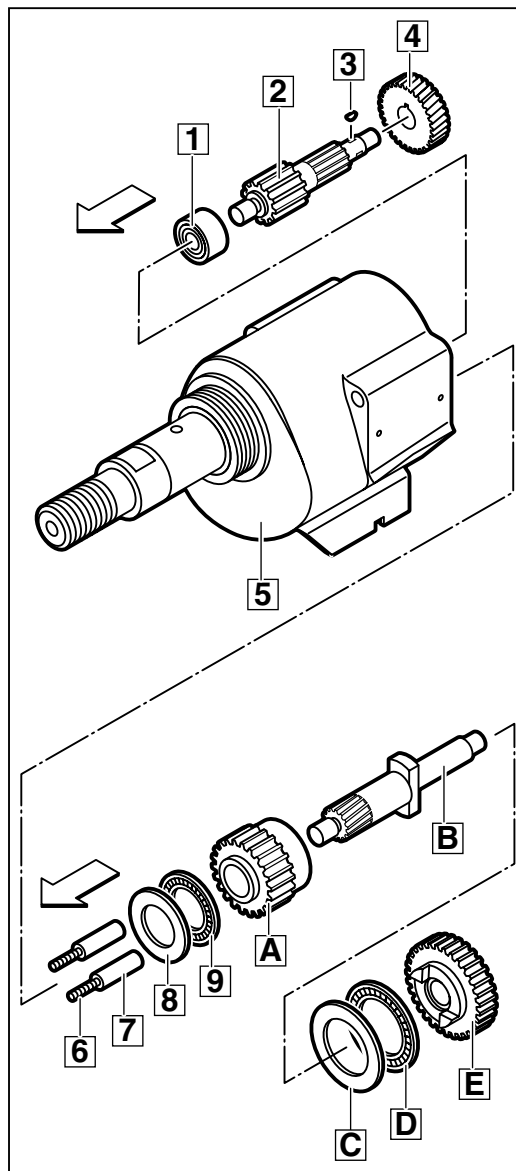
-  The spanner (A) prevents the nut (5) from rotating.



**Applicable for
machines with
pinion on the
shaft -
DCM2-350C:**

**Mounting
the gear**

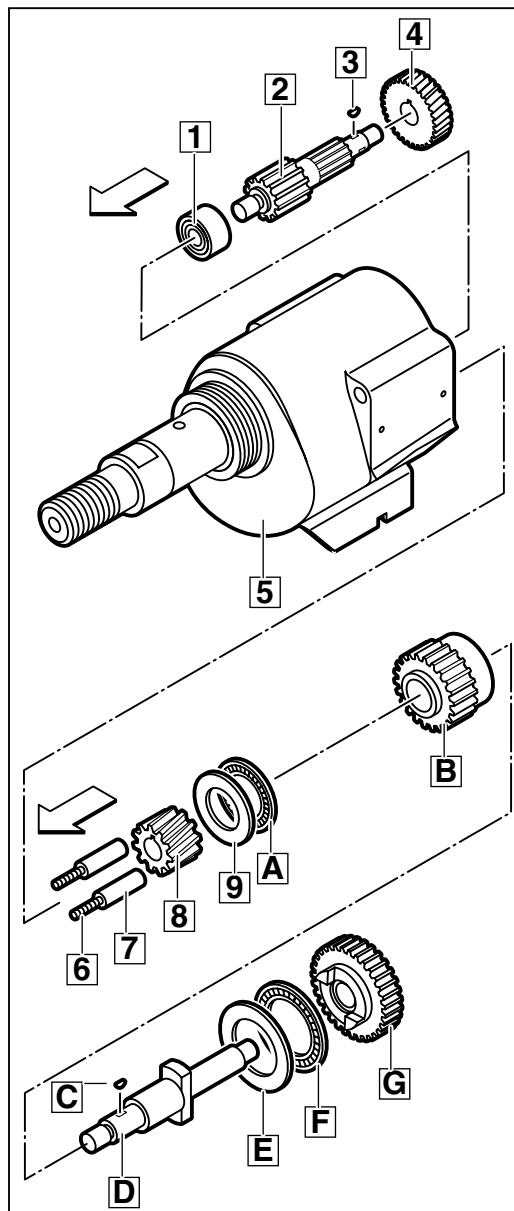
- 1** Insert the key (3) into the shaft (2) and press on the gear (4) as well as the ball bearing (1).
- 2** Insert both pressure springs (6) into the plungers (7) and insert them together into the borings in the front part of the housing (5).
- 3** Push the following parts over the shaft (B):
 - spacer (A) with gear
 - thrust bearing (9)
 - washer (8)
 - washer (C)
 - thrust bearing (D)
 - gear (E).
- 4** Insert both assembled shafts (2) and (B) into the front part of the housing (5).



**Applicable for
machines with
separate
pinion -
DCM2-180C,
DCM2-250C:**

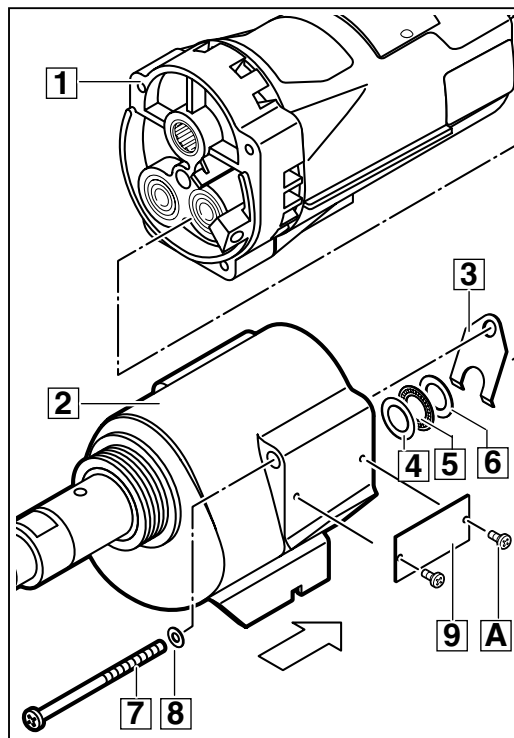
**Mounting
the gear**

- 1** Insert the key (3) into the shaft (2) and press on the gear (4) as well as the ball bearing (1).
- 2** Insert both pressure springs (6) into the plungers (7) and insert them together into the borings in the front part of the housing (5).
- 3** Mount the following parts on the shaft (D):
 - key (C)
 - spacer (B) with gear
 - thrust bearing (A)
 - washer (9)
 - press on the pinion (8)
 - washer (E)
 - thrust bearing (F)
 - gear (G).
- 4** Insert the two shaft assemblies (2) and (D) into the front part of the housing (5).



Assembling the front part of the housing

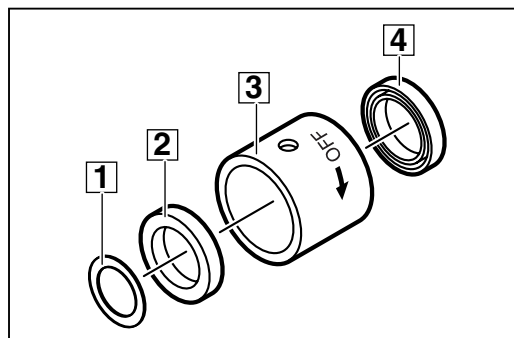
- 1 Mount the rating plate (9) with two screws (A) on the housing (2).
- 2 Put the following parts on the shaft in the front part of the housing (2):
 - washer (4)
 - thrust bearing (5)
 - washer (6)
 - yoke (3).
- 3 Put the front part of the housing (2) on the bearing end plate (1) and fix it with four screws (7) and washers (8).



10

Assembling the sleeve

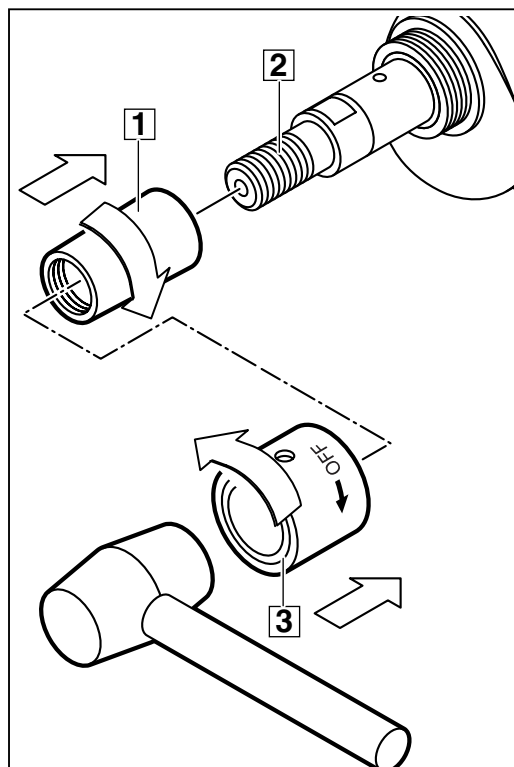
- 1 Insert the disc (1).
- 2 Press both seal rings (2) and (4) flush into the sleeve (3).



11

Mounting the sleeve

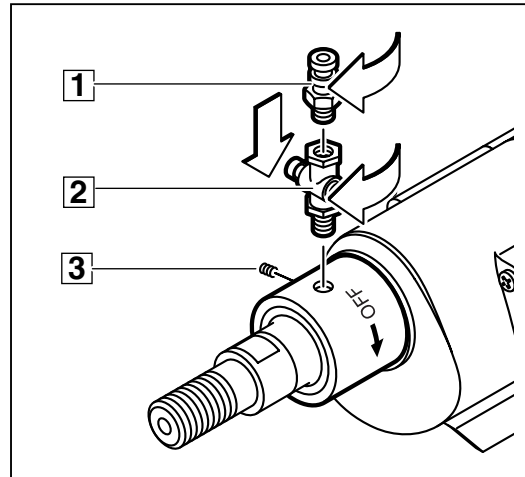
- 1 Put the sleeve (1) (service tool: 4931 702 227) on the spindle (2) and screw it down.
 - ☞ By using the service tool (1) when mounting the sleeve (3), damage to the seals is prevented!
- 2 Mount the sleeve (3) over the service tool (1) on the spindle and screw it down counter-clockwise.
 - ☞ In case of stiffness, tap the sleeve (3) lightly with a plastic hammer for support!



12

**Mounting
the sleeve**

- 1** Mount the Allen screw (3) with aid of the Allen key (service tool: 49 96 0050).
- 2** Mount the valve (2).
- 3** Mount the fitting (1).




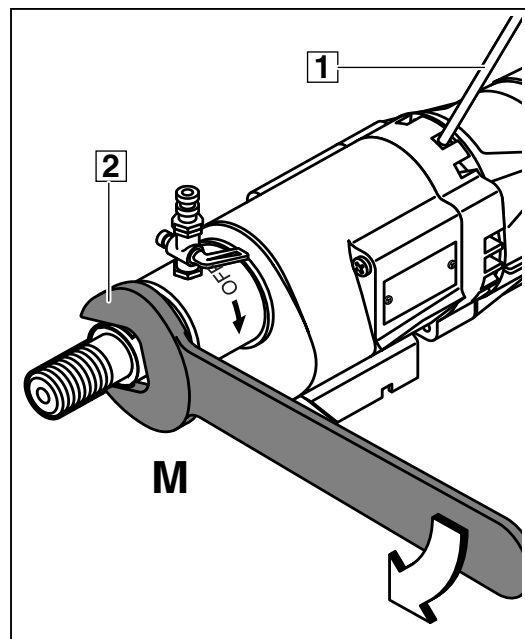
13

**Final check of
the safety clutch**

- 1** To check the safety clutch, block the armature (e.g. insert a wooden stick (1) into the armature space).
- 2** Use a fork wrench (2) (see illustration) to check whether the safety clutch is triggered within the following torques:

Type	Torque M
DCM2-180C	183 - 217 Nm
DCM2-250C	217 - 312 Nm
DCM2-350C	244 - 339 Nm

 The spindle shaft must slip within the stated range of torques.



14

Test Run

Test run the machine and pay attention to noises.
Let the machine run-in.

Electrical Test

Perform an electrical test on the machine (see chapter Electrical and Mechanical Test Instructions).