



Cordless drill-driver

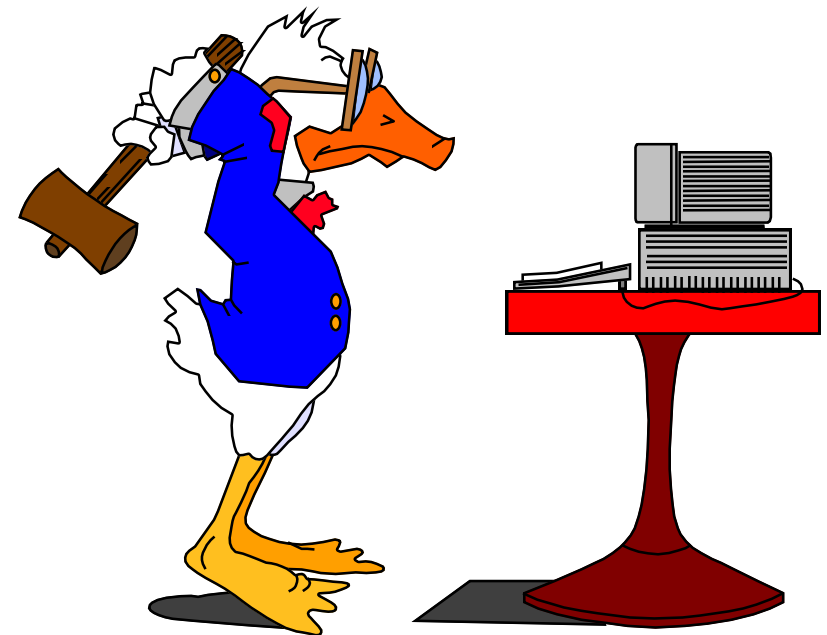
ABS 9

ABS 12

ABS 14

Cordless combi drill

ASB 14





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2. Maintenance
3. Disassembly
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5. Parts, Arrangements, Drawings
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Drawings and Spare part lists please see Internet under

[www.fein.com/Fein Service/Spare part catalogue](http://www.fein.com/Fein%20Service/Spare%20part%20catalogue)



1. Technical Data

Type	ABS 9	ABS 12	ABS 14	ASB 14
Voltage	9.6 V =	12 V =	14.4 V =	14.4 V =
Speed, no load: 1st speed	0-600 R.P.M.	0-400 R.P.M.	0-400 R.P.M.	0-400 R.P.M.
2nd speed	- -	0-1,400 R.P.M.	0-1,400 R.P.M.	0-1,400 R.P.M.
Max. torque:				
Soft screwdriving operation	9 Nm	19 Nm	21 Nm	21 Nm
Hard screwdriving operation	16 Nm	23 Nm	27 Nm	27 Nm
Number of impacts:				5200/18200/min
Capacity in steel Ø	10 mm	13 mm	13 mm	13 mm
Capacity in wood Ø	16 mm	30 mm	32 mm	32 mm
Capacity in stone Ø	- -	--	--	13 mm
Chucking range	1-10 mm	1-13	1-13 mm	1-13 mm
Wood screw Ø	5 mm	7mm	8 mm	8 mm
Steel screw Ø	M5	M8	M8	M8
Weight with battery	1.4 kg	2.0 kg	2.1 kg	2.15 kg
Chuck thread	$\frac{3}{8}$ "/20 UNF-3B	$\frac{3}{8}$ "/20 UNF-3B	$\frac{3}{8}$ "/20 UNF-3B	$\frac{3}{8}$ "/20 UNF-3B
Handy Master Set with corresponding battery:				
Order No. NiCd	7 113 01 50	7 113 02 50	7 113 03 50	7 104 03 50
Order No. NiMH	7 113 01 51	7 113 02 51	7 113 03 51	7 104 03 51



2. Maintenance

Please make sure that electric tools are repaired, serviced and tested by specialists. As repairs carried out in an inexperienced way may cause considerable hazards for the user (BGV A2).

Please observe the legal environmental guidelines for the disposal of batteries!

Use original FEIN spare parts only !



2. Maintenance

Maintenance work is limited to careful handling of the machine, to ensure free cooling slots, and to clean the housing, if and when necessary. Ensure perfect charging condition of the batteries.

The Handy Master is produced in modular construction which means that defective units can be replaced as complete parts.

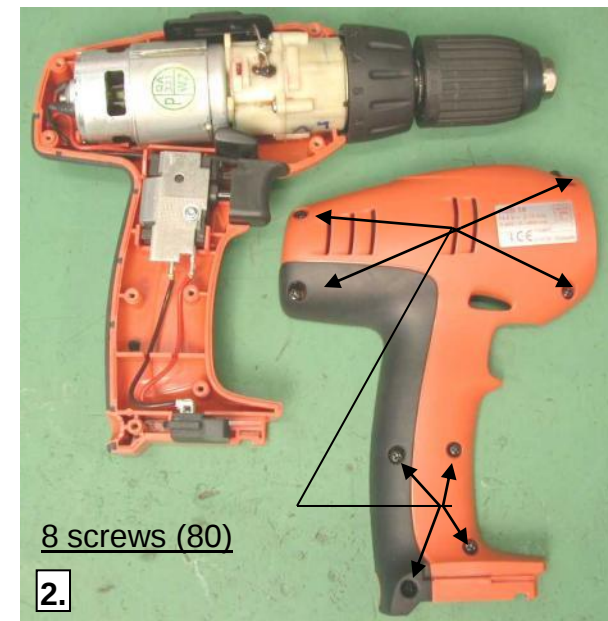
The exception is the replacement of the drill chuck. For this purpose the gear has to be disassembled and a special tool is required to unscrew the drill chuck.



3. Disassembly

- 3.1. Opening motor housing
- 3.2. Severing modules
- 3.3. Opening gear housing
- 3.4. Disassembly chuck
- 3.5. Disassembly clutch unit

3.1. Opening motor housing

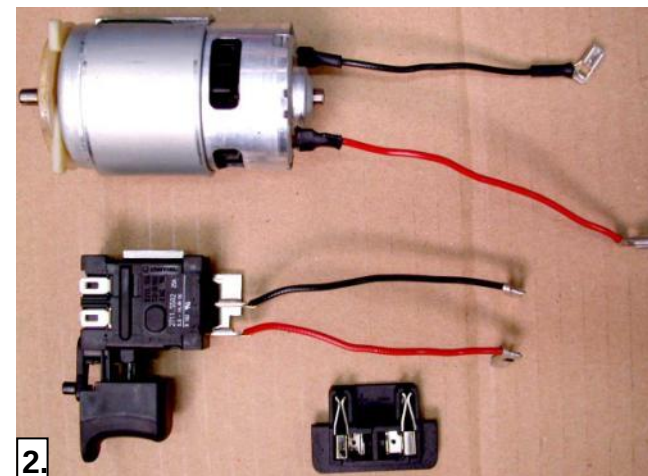
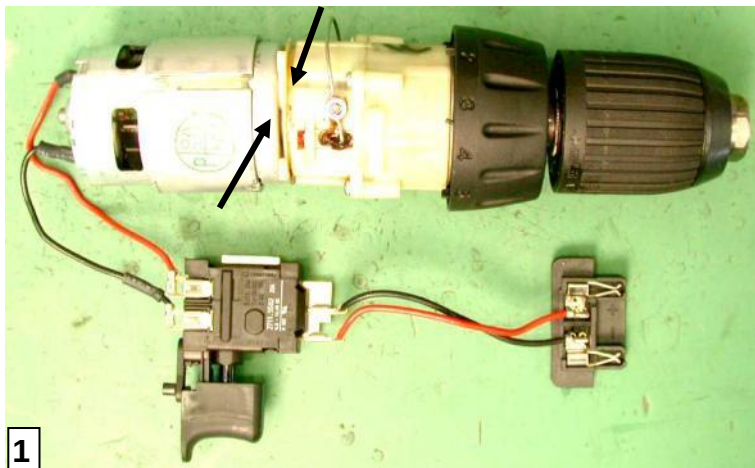


1. Remove battery
2. Unscrew 8 screws
remove housing cover

Tools:

- PH2-cross slotted
- screwdriver

3.2. Severing modules

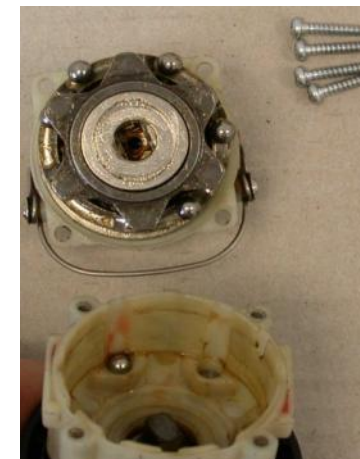
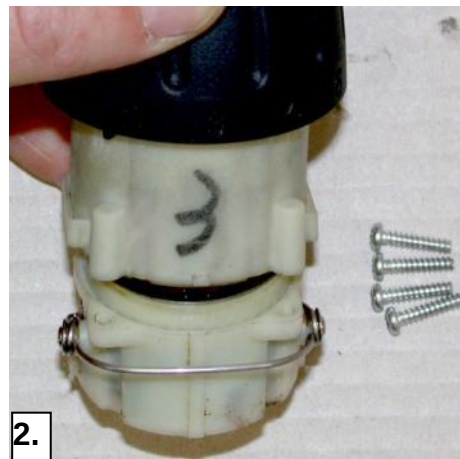
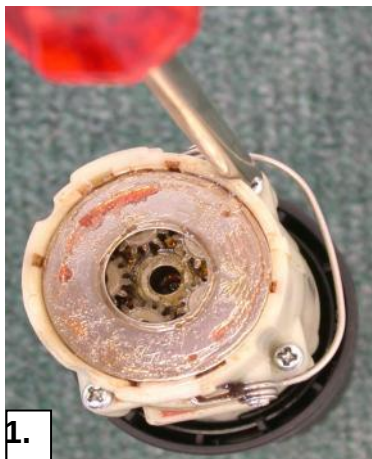


1. Remove motor [\(50\)](#) from the gearbox [\(40\)](#). Turn it anti-clockwise (Bayonet clutch).
2. Disconnect motor [\(50\)](#), elektronick actuator [\(60\)](#) and contact terminal.

Tools:

- Cable hook or flat plier

3.3. Opening gear housing



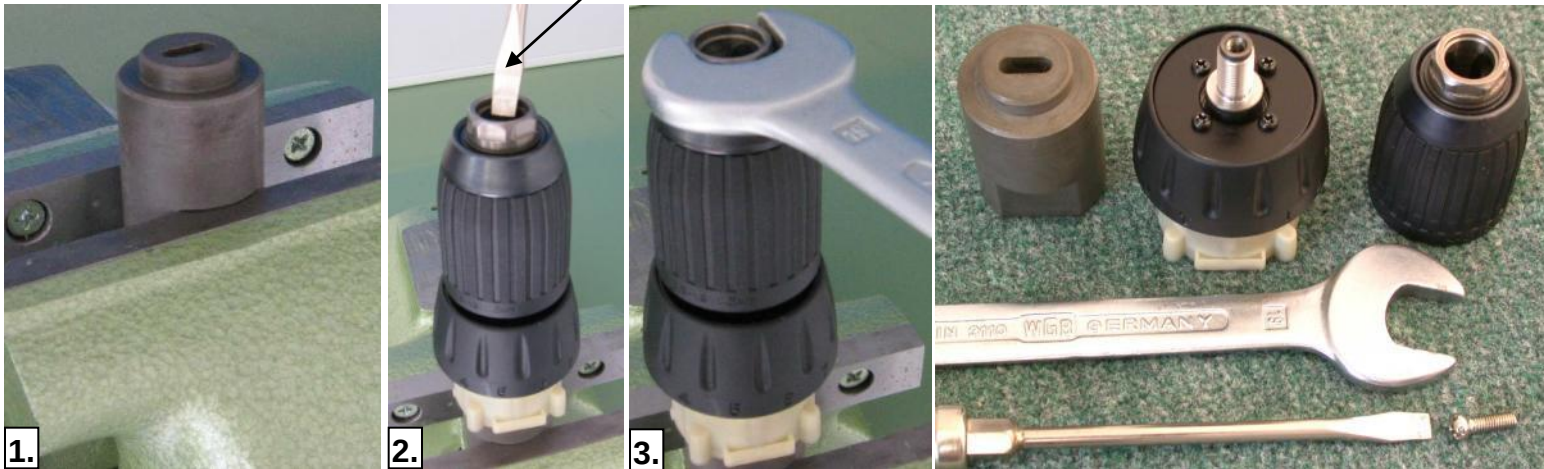
1. Unscrew gear housing screws (4×) .
2. Knock the gear side on to the table top and lift off the chuck side.
! Don't loose any small parts !

Tools:

- PH2-cross slotted
- screwdriver

3.4. Removing drill chuck

! Left-handed thread !



1. Clamp the device in a vice.
2. Fix the gear housing side and unscrew the retaining drill chuck screw (!Left handed thread!).
3. Unscrew the drill chuck.

Tools:

- Slotted screwdriver, 1,2 × 6,5.
- 19 mm fork wrench
- 16 mm fork wrench for ABS 9
- Device (64122024000)
- Vice

3.5. Dismounting clutch unit

1. Unscrew screws (4×).
2. Remove all parts



Tools:

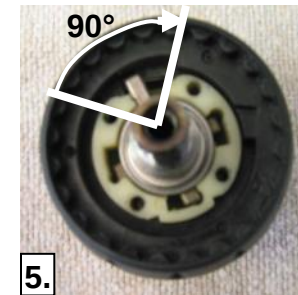
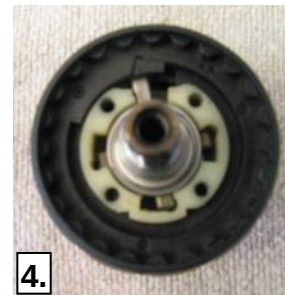
- PH2 cross-slotted screwdriver



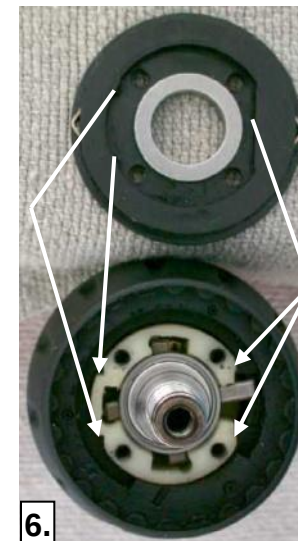
4. Assembly

- 4.1.1. Adjustment ring, ASB 14
- 4.1.2. Adjustment ring, ABS 9, ABS 12, ABS 14
- 4.2. Drill chuck
- 4.3.1 Joining gear housing, ABS 9
- 4.3.2. Joining gear housing, ABS 12, ABS 14, ASB 14
- 4.4.1. Wiring, ABS 12, ABS 14, ASB 14
- 4.4.2. Wiring, ABS 9
- 4.5.1 Joining motor housing, ABS 12, ABS 14, ASB 14
- 4.5.2 Joining motor housing, ABS 9

4.1.1. Adjustment ring, ASB 14



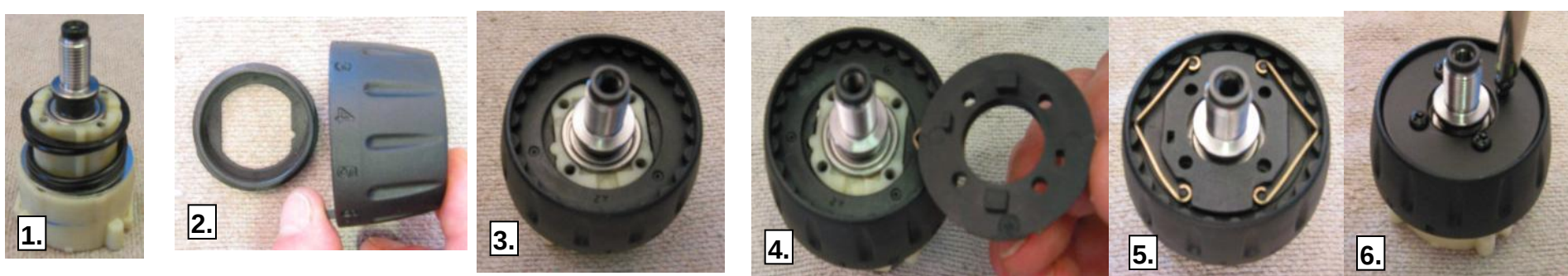
1. Place start-up disk on the gear housing.
2. Place the pre-tension spring on the gear housing.
3. Align the adjustment ring and the two-stage pre-tension nut (large nut on hammer symbol) and turn in (! Left-handed thread).
4. Place the adjustment on the gear housing with the pre-tension nut turned in completely.
5. Turn the adjustment ring open by approx. 90°.
6. Place the cover disk in the correct position and screw down with four screws (0.6-0.8 Nm).
7. Check the adjustment ring and drive shaft for soft running.



Tools:

- PH2 cross-slotted screw-driver
- tweezers

4.1.2. Adjustment ring, ABS 9, ABS 12, ABS 14



1. Place the start-up disk and the pre-tension spring on the gear housing.
2. Align the adjustment ring and the two-stage pre-tension nut (notch on „4“) and turn in (! left-handed thread).
3. Place the adjustment on the gear housing with the pre-tension nut turned in completely.
Turn the adjustment ring open by approx. 90°.
4. Place the cover with the locking springs in the correct position in the grooves of the gear housing.
5. Place the cover disk flush with the holes and screw down with the four screws (0.6-0.8 Nm).
Check the adjustment ring and drive shaft for soft running.

Tools:

- PH2 cross-slotted screwdriver

4.2. Drill chuck

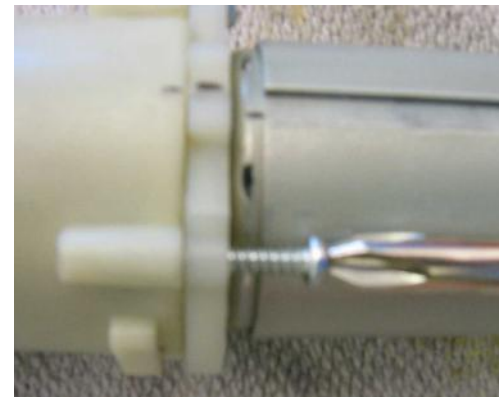
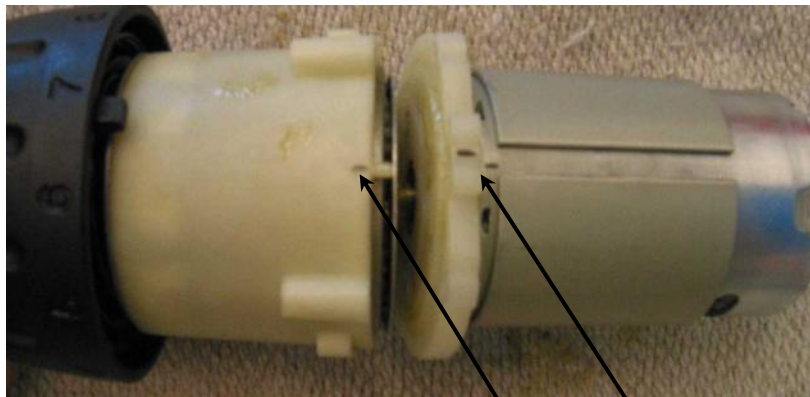


1. Check component for soft running.
2. Clamp mounting device in vice, secure the open gear housing and tighten the drill chuck with 15-20 Nm.
3. Secure the drill chuck with screw [\(21\)](#) by applying Loctite 222 and tightening with 2 Nm (left-handed thread).

Tools:

- 19 mm fork wrench
- Slotted screwdriver, 1,2 x 6,5.
- 16 mm fork wrench for ABS 9
- Device (64122024000)

4.3.1. Joining gear housing, ABS 9



1. Join the gear parts (observe markings, tapped and eye).
2. Tighten 4 screws (mit 0,6-0,8 Nm).

Tools:

- PH2 cross-slotted screwdriver

4.3.2. Joining gear housing, ABS 12, ABS 14, ASB 14



Markings

1. Assemble the gear elements (observe marking).
2. Tighten the four screws with 0.6-0.8 Nm.
3. Join the mounted gear housing (40) with the DC motor (50) by turning clockwise (bayonet catch (observe marking)).

Tools:

- PH2 cross-slotted screwdriver

4.4.1 Wiring, ABS 12, ABS 14, ASB 14

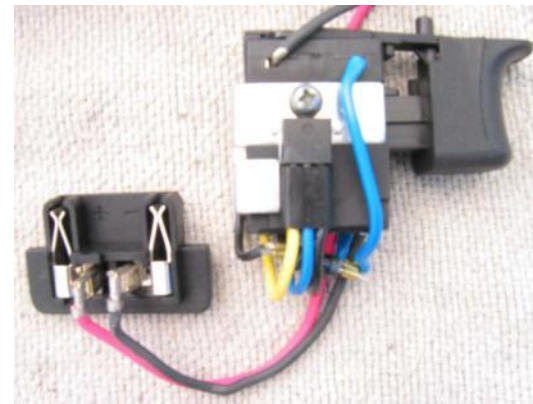
1. Place the cable lug on the switch unit (60) as shown in the picture, otherwise there is a danger of short circuit.

2.	Motor		Switch unit	Terminal strip	
	+	red	M-		
	-	black	M+		
			1+	red	+
			1-	black	-



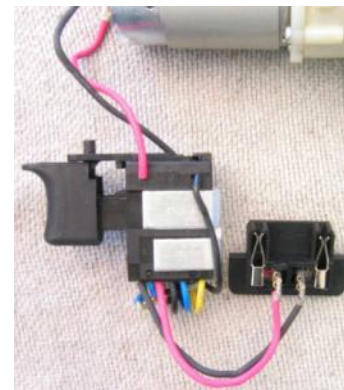
4.4.2. Wiring, ABS 9

1. The cord is only plugged into the switching unit (60).
The cores can be removed by turning and pulling.



2.

Motor	Switching unit	Terminal strip
+	pink 4	
-	black 3	
		B+ pink +
		B- black -



4.5.1. Joining motor housing, ABS 12, ABS 14, ASB 14



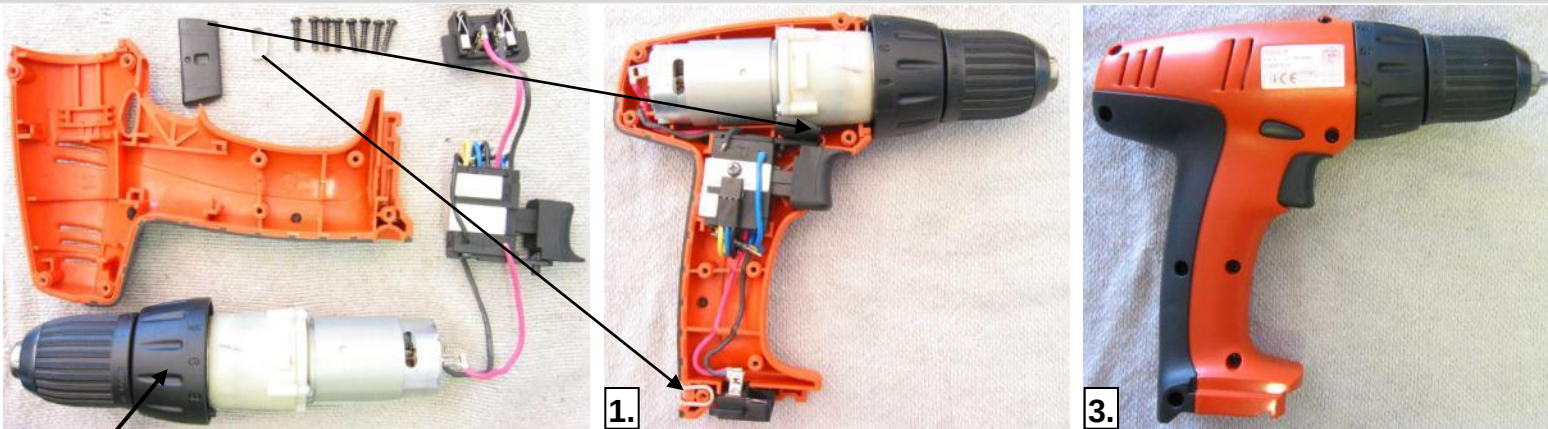
Set the adjustment ring to the middle position before installing !

1. Place the wired drive unit (20,30,40,50) with the switching unit(60) and the terminal strip (11) in the housing (10) , observe attachments and squeezing points).
2. Place the gear push-button (41), right / left switching slide (61) and the eye for the wrist strap (80).
3. Place the housing cover (10) and screw down with 0.6 - 0.8 Nm.

Tools:

- PH2 cross-slotted screwdriver
- Cable hook

4.5.2. Joining motor housing, ABS 9



! Set the adjustment ring to the middle position before installing !

1. Place the wired drive unit [\(20,30,40,50\)](#) with the switching unit (60) and the terminal strip [\(11\)](#) in the housing (10) (observe attachments and squeezing points).
2. Place the right / left switching slide [\(61\)](#) and the eye for the wrist strap [\(80\)](#).
3. Place the housing cover [\(10\)](#) and screw down with 0.6-0.8 Nm.

Tool:

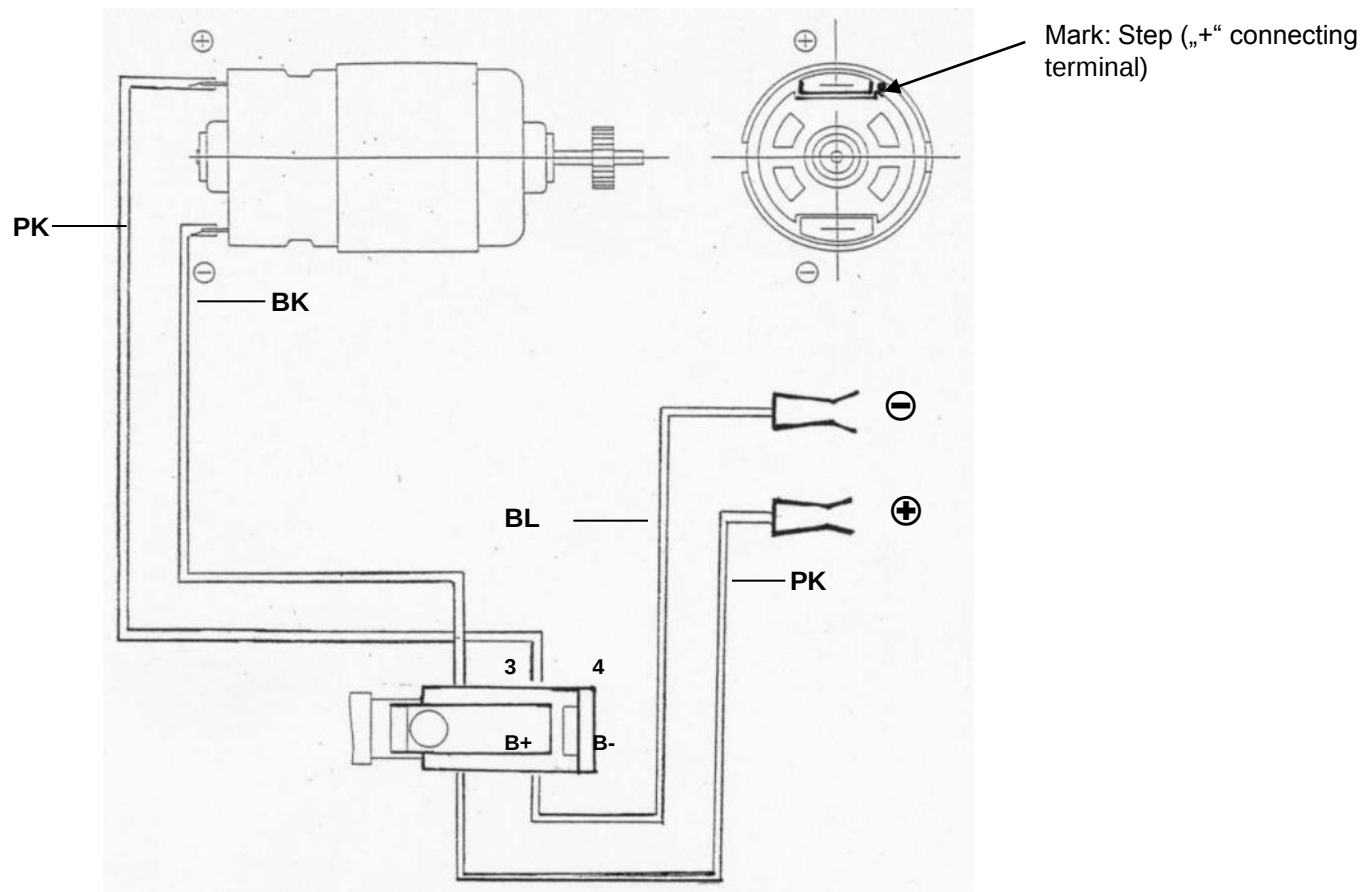
- PH2 cross-slotted screwdriver
- Cable hook



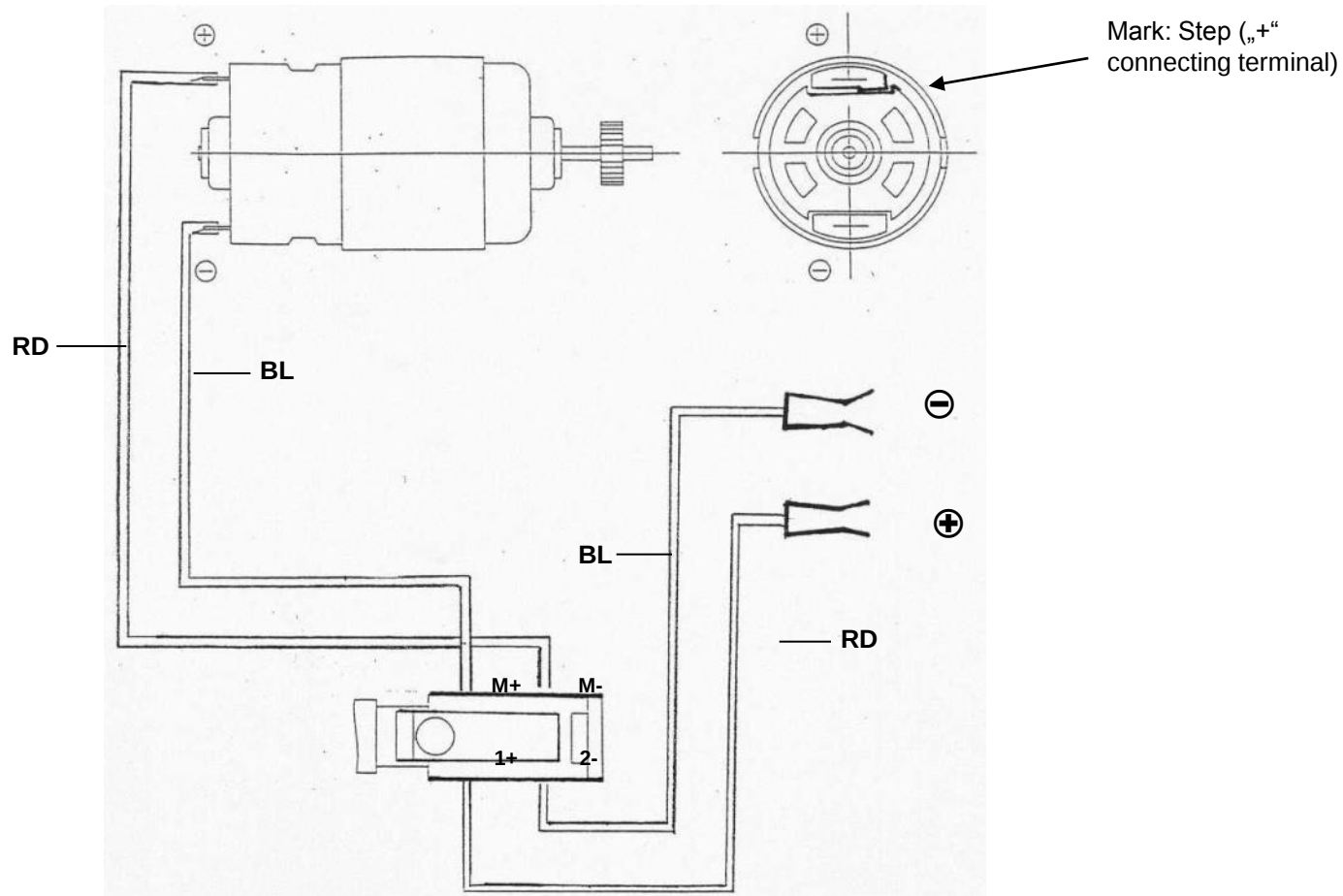
5. Wiring diagrams

- 5.1. Wiring diagram, ABS 9
- 5.2. Wiring diagram, ABS 12, ABS 14, ASB 14

5.1. Wiring diagram, ABS 9



5.2. Wiring diagram, ABS 12, ABS 14, ASB 14





6. Tools

- 6.1. All mechanical tools
- 6.2. Special tools, technical drawings
- 6.3. Type of grease, quantities of grease



6.1. All mechanical tools

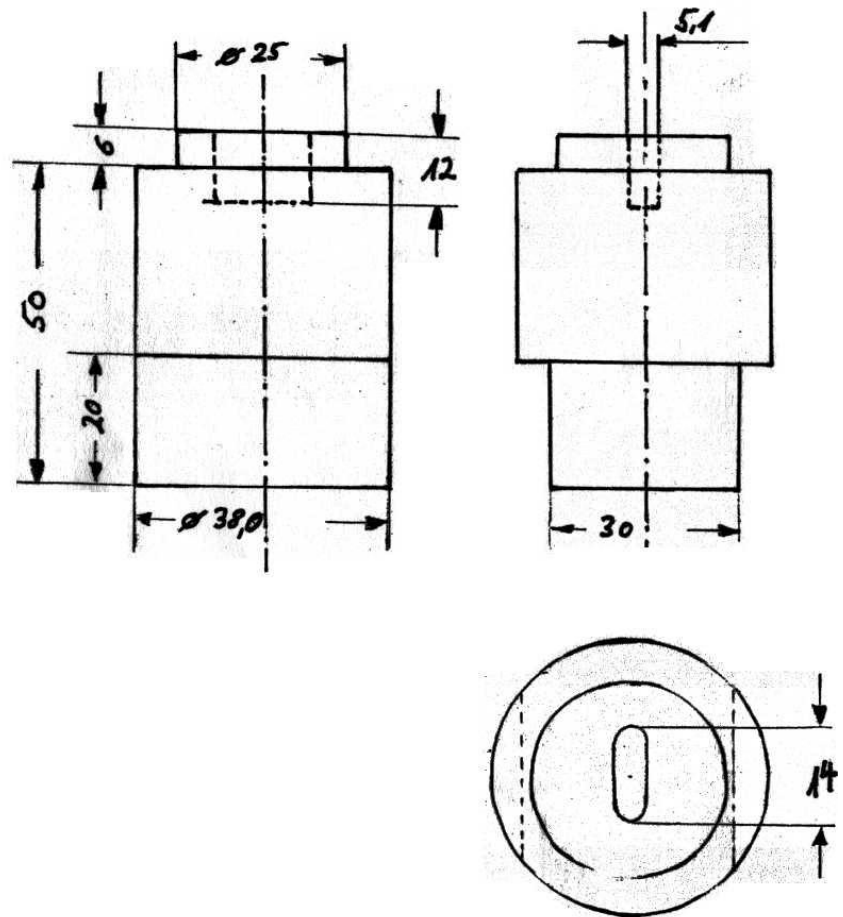
- | | | |
|--------------------------------|--------------|------------------------|
| • Vice | | commercially available |
| • Cable hook | | commercially available |
| • Seeger ring tongs (external) | | commercially available |
| • Tweezers | | commercially available |
| • Screwdriver PH 2 | | commercially available |
| • 19 mm fork wrench | | commercially available |
| • 16 mm fork wrench | - only ABS 9 | commercially available |
| • Dynamometric key | 15-20Nm | commercially available |
| • Dynamometric key | 0.6-0.8Nm | commercially available |

6.2. Special tools, technical drawings

Device:

Article No.: 64122024000

Undo the drill chuck [\(20\)](#) .





6.3. Type of grease, quantities

Type of grease Company Designation	Appearance	Technical data	Application	Article No. of the complete package and type of package	Grease quantity and position
0 40 <u>205</u> 0000 2	Orange, transparent, medium viscous	Flash point: 255°C Setting point / pour point: -21° Celsius ISO-VG: 220	Oil used to lubricate guide rails (also vertical), hydrostatic drives, bearings and gears; prevents "stick-and-slip effect".	Bottle 10ml 32132032026 Tin 250ml 32132017032	1-2 drops on plain bearing in motor (50)
0 40 <u>120</u> 0500 7	Beige, paste-like NLGI: 2	Drop point: none Operative range: -30° to +260° Celsius	With PTFE additives. FEIN: e.g.: Screw coupling	Tube 85g 32160003208	Slightly grease the adjustment ring / 2- pitch thread (30)



7. Modifications, Extras, Infos for Repair

- 7.1. Trouble shooting
- 7.2. Motor check
- 7.3. Switch check



7.1. Trouble shooting

Failure

1. Machine does not start
2. No speed of the actuator (acceleration).
3. Drive shaft continues to turn when the actuator is released (no brake).
4. Machine runs, drive shaft can be held (no torque)
5. Strong gear noise, sized.
6. When using the coupling for screw action, the adjustment ring turns.
7. Drill chuck does not run round.
8. Striking impact too weak despite strong contact pressure.
9. Defective spindle lock.
Drill chuck cannot be opened and closed with one hand.

Relief

- Check charge condition of battery, if necessary recharge battery.
Clean the contacts on the machine and battery.
Check electronic actuator.
- Replace the entire electronic actuator (60).
- Replace the electronic actuator (60).
- Permit speed 1 or 2 to snap in and/or replace the drive motor (50) and/or gear (40).
- Replace the entire gear (40).
- Replace the retaining ring (30).
- 0.4 mm beat is permissible measured at a distance of 25 mm in front of drill chuck end. In case of excess, replace the striking train (40).
- Replace entire gear (40).
- Change entire gear (40).



7.2. Motor check

1. Connect the motors **(50)** without gear to the corresponding source of voltage to measure the current without load.

Maximum values:

9.6 V = 3.0 A

12 V = 6.0 A

14.4 V = 5.0 A

18 V = 3,8 A

Caution: The short-time make current peaks are higher than 10A !

2. When the upper value is exceeded, the motor has to be cleaned, the plain bearings have to be lubricated with special oil (10 ml bottle, order ref.: 3 21 32 023 02 6), if this does not help, replace the motor.



7.3. Switch check

Switch test:

- Disconnect the motor [\(50\)](#) from the gear unit [\(40\)](#).
- Disconnect the motor [\(50\)](#) from the switch [\(60\)](#).
- Connect approx. 15 cm of cable to the switch [\(60\)](#) on the motor side and pass it out again on the drill chuck side.
- Connect cable passed out to a lamp bulb (e.g. 12V car lamp).
- Place upper part of housing.
- Push on the battery.
- Check functions.

Observe: Middle position of the change-over switch blocks the switch pusher.

8. ALG 20 - Battery Charger (! Excerpt from the Battery charger ALG 20 operating instructions!)

- 8.1. Intended use / Safety instructions
- 8.2. Operation
- 8.3. Notes
- 8.4. Significance of the LED
- 8.5. Cleaning, maintenance and repair
- 8.6. Technical data / accessories





8.1. ALG 20 - Battery charger (! Excerpt from the Battery charger ALG 20 operating instructions!)

Intended use:

- For use in industry and trade, to charge and re-charge FEIN batteries with an battery voltage of 9.6 - 18 V

Safety notes:

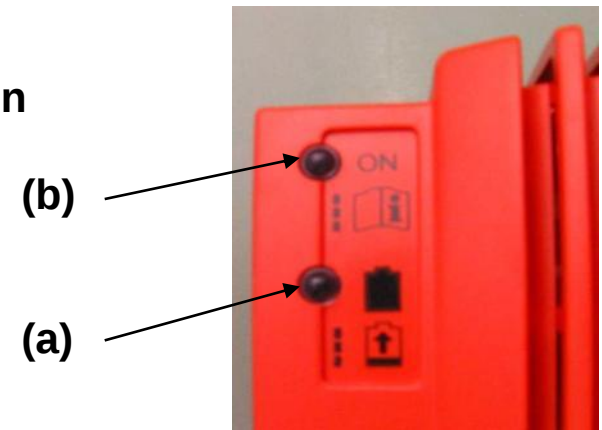
- Storage and operation in locations where temperatures of +40° C are exceeded may lead to failures in charging and have to be prevented by all means.
- In case of longer storage remove the battery from the battery charger and pull the mains plug.
- The contacts of the battery have to be covered when stored outside of the battery charger.

In case of a short circuit caused by bridging, there is a danger of fire and explosion !

8.2. ALG 20 - Battery charger (! Excerpt from the Battery charger ALG 20 operating instructions!)

Operation:

- Connect the battery charger to the mains without the battery. The red LED (b) will light up, which indicates the readiness for operation.
- Push on the battery. Batteries with industrial interface (d) can be connected by means of an adapter (3) only (see operating instructions).
- The monitoring of the charging process is indicated by a green flashing light (a) and red continuous light (b).
- The end of the charging process is indicated by a green continuous light (a).
- In case of a red flashing light (b) please observe the following notes.





8.3. ALG 20 - Battery charger (! Excerpt from the Battery charger ALG 20 operating instructions!)

Notes

Among other things the charging process is controlled by a temperature sensor in the battery. The charging process has been harmonized to the respective cell type of the battery (NiCd/NiMH) by special coding.

The temperature sensor in the battery ensures that no quick charge is carried out at temperatures of the battery of below 5 Celsius and over +40 Celsius.

If the battery reached an overtemperature during the previous discharging process or if it has been stored too cold (red flashing LED), the quick charge system starts up automatically as soon as the battery temperature is within the charging temperature range.

Given an extreme total discharge, the charging process may be delayed by several minutes after pushing on the battery (red flashing LED).

If the battery is not charged despite normal temperature, it has to be considered safe that the battery is defective.

When the battery is fully charged, the charger will switch from quick charge to float charge automatically, and the green LED is lit. Repeated placement of the charged battery will lead to overcharging, has a negative effect on the service life, and thus has to be avoided.

New unformatted batteries and/or totally discharged batteries which have to be formatted reach their full capacity after 3 to 5 charging / discharging cycles.

Depending on the battery capacity the charging time of the FEIN battery charger ALG 20 is between 20 and 60 minutes.

If the battery decreases in capacity within a short period of time despite correct charging, the end of its service life is reached.



8.4. ALG 20 - Battery charger (! Excerpt from the Battery charger ALG 20 operating instructions!)

Significance of the LED

LED	Significance
Red	Without battery attached: ready for operation
Red	With battery attached: Battery defective Contact interruption
Red flashing	Limit temperature of the battery is exceeded or not made, temperature sensor defective or the battery is totally discharged No quick charge possible, only float charge active.
Red – green flashing	Active quick charge
Green	Quick charge completed (battery charged). Float charge active.

Red
Green

