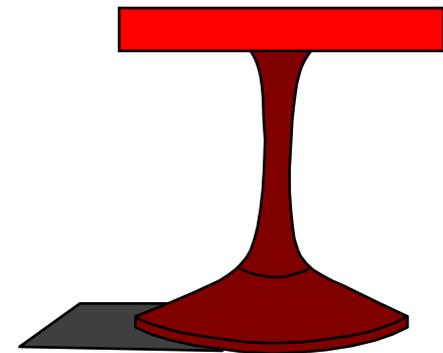




## Starting page



KBM 32 Q





## Contents

1. Technical data
2. Maintenance
3. General inspection
4. Disassembly
5. Assembly
6. Tools
7. Lubricants
8. Modifications

Spare design and parts list available on the Internet ([www.fein.com](http://www.fein.com))



## 1. Technical data

|                                |       |                 |
|--------------------------------|-------|-----------------|
| <u>Order reference</u>         |       | <u>7 270 27</u> |
| Model                          |       | KBM 32 Q        |
| Power consumption              | Watt  | 700             |
| Power output                   | Watt  | 650             |
| Speed at full load             | 1/min | 440             |
| Type of current                |       | 1 ~             |
| Safety class                   |       | 1               |
| Cable length with plug         | m     | 4               |
| Weight                         | kg    | 10              |
| Drill - Ø Steel max.           |       |                 |
| Core drill                     | mm    | 12-32           |
| Twist drill (with drill chuck) | mm    | 13              |
| Tapping drill                  |       | M 12            |
| Chuck                          |       | QuickIN         |
| Magnetic holding force         | N     | 9000            |
| Height (drill jigs)            | mm    | 373             |
| Cam (adjustable)               | mm    | 135-260         |
| Magnetic foot measurement      | mm    | 160 x 80 x 45   |



## 2. Maintenance

- Check power cable for damage
- Vent motor using dry compressed air
- Check carbon brushes
- General functional control

Carbon brush replacement:

The drill motor has carbon brushes with automatic switch-off.

The replacement should be done by an electrician, prior in an authorised FEIN - workshop.

During the insertion of the new carbon brush observe free movement in the carbon brush holder.

New carbon brushes have to run in for 15 min in no load speed.



**Only use original Fein - carbon brushes and Fein - replacement parts**





### **3. General inspection**

- 3.1. General functional test
- 3.2. Test data
- 3.3. Testing devices and aids
- 3.4. Connection plan
- 3.5. Security inspection after completed repair



**For a detailed troubleshooting and inspection possibilities  
see Excel - file at the end of the presentation !**



### 3.1 General functional test

#### **Self-start lock and magnetic foot:**

Switch on the main switch (magnet) and motor switch, then connect the machine to the main power

- The motor may not start
- Magnetic foot attaches
- Check power input (0.30 A)

Switch off motor switch

- Magnetic foot remains on
- Power input has to sink to half the amount (0.15 A)

#### **Motor test:**

Turn on and load motor

- Measure idle speed
- Speed is adjusted when loaded
- at approx. 1100 Watt strong speed reduction

#### **Overload cut-out:**

Heavily load or block motor

- after 10 - 16 sec. automatic cut-out ( overload protection )



### 3.2. Test data

|  |                                  |                          |                        |
|--|----------------------------------|--------------------------|------------------------|
| <b>Nominal voltage</b>                           |                                  | <b>220 - 240 V</b>       | <b>110 V / 120 V</b>   |
| <b>Test voltage /</b>                            | <b>2 %</b>                       |                          | <b>Nominal voltage</b> |
| <b>No-load current /</b>                         | <b>10 %</b>                      | <b>(1,44-1,76A)</b>      | <b>1,6 A</b>           |
| <b>No-load speed /</b>                           | <b>10%</b>                       | <b>(486 - 594 U/min)</b> | <b>540 U/min</b>       |
| Main switch on                                   |                                  |                          |                        |
| <b>Voltage at X7,X8</b>                          | <b>10% (90-110V/DC)</b>          | <b>100 V / DC</b>        | <b>50 V / DC</b>       |
| <b>Current consumption</b>                       |                                  | <b>0,15 A</b>            | <b>0,25 A</b>          |
| Main switch on, motor on                         |                                  |                          |                        |
| <b>Voltage at X7,X8</b>                          | <b>10% (180-220V/DC)</b>         | <b>200 V / DC</b>        | <b>100 V / DC</b>      |
| <b>Current consumption</b>                       |                                  | <b>0,30 A</b>            | <b>0,60 A</b>          |
| <b>Resistance of magnetic base</b>               | <b>5% bei 25°C (627-693 Ohm)</b> | <b>660 Ohm</b>           | <b>160 Ohm</b>         |
| <b>Minimum drilling force</b>                    |                                  |                          | <b>min. 2700 N</b>     |
| <b>Test voltage on motor without electronics</b> |                                  | <b>180 V / AC</b>        | <b>86 V / AC</b>       |



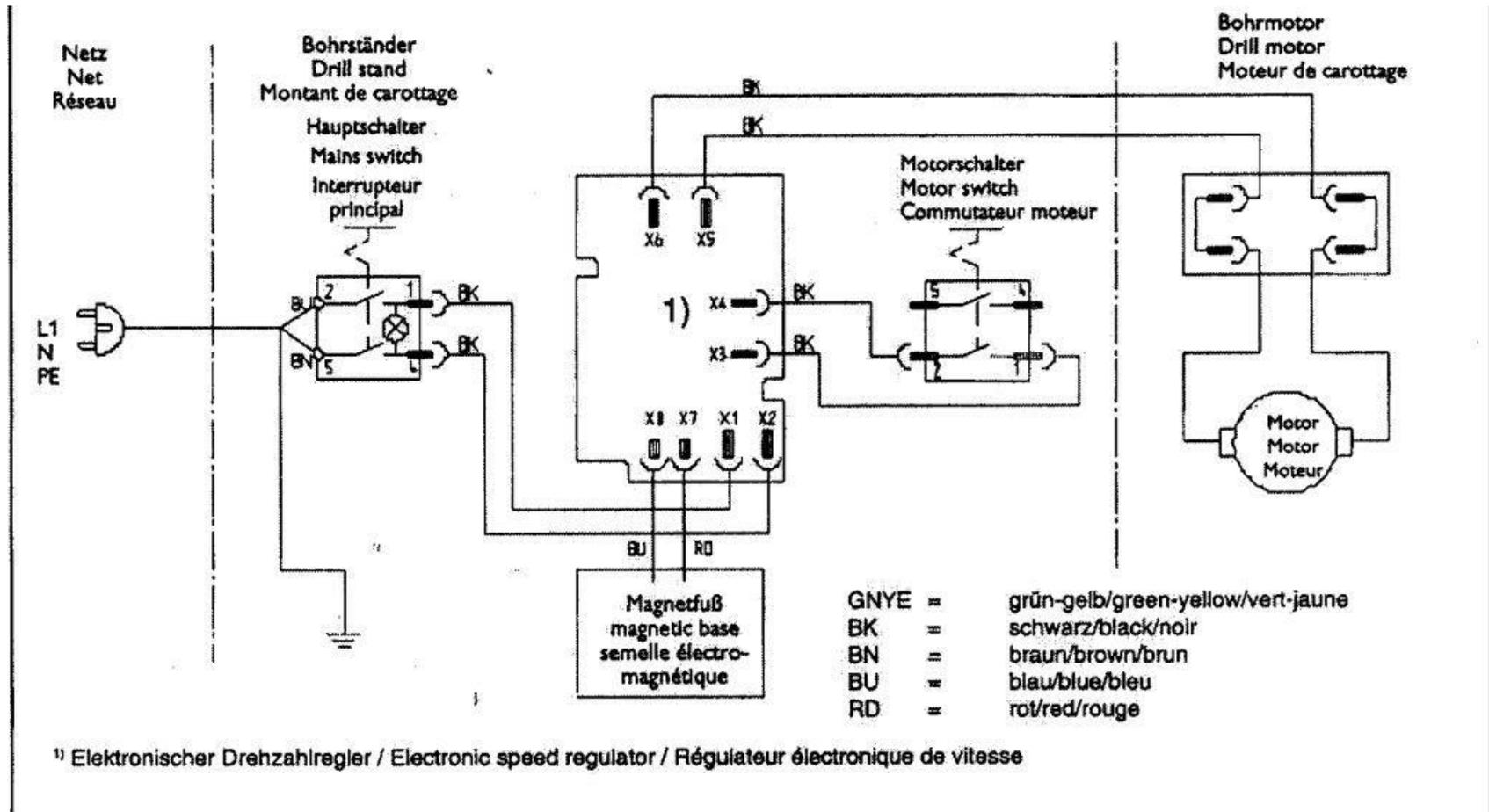
### **3.3. Testing devices and aids**

- Multimetre for effective measuring (voltage, current, resistance)
- Speed gauge
- Force measurement tin for measurement of pressing force up to approx. 5000 N
- Smoothed steel plate ( ST 37 - approx. 500x250x25 mm )
- Adjustable isolating transformer (inspection motor without electronics with 145 V)

# FRT: KBM 32 Q



## 3.4. Connection plan





## 3.5. Security inspection after completed repair (directly after approx. 15 min. of breaking in)

|    | Test steps                        | Test type  |
|----|-----------------------------------|--|
| 1. | Pressing off force                | <ol style="list-style-type: none"> <li>1. Place KBM on smoothed steel plate (St 37).</li> <li>2. Attach mains power cable to mains socket</li> <li>3. Motor switch on, only then main switch on</li> <li>4. Pressing off force, min 4500N (new) or min 4050N (used), measure with force measurement tin</li> </ol>               |
| 2. | Self-start lock                   | <ol style="list-style-type: none"> <li>1. Connect KBM 50Q to 230 V/50 Hz</li> <li>2. Main switch and then motor switch "on"</li> <li>3. If machine runs, then pull mains plug</li> <li>4. Connect mains plug into the mains socket again<br/>= Machine must not start again</li> </ol>   |
| 3. | protective earth conductor test   | <ol style="list-style-type: none"> <li>1. Activate<br/>Measuring points: Gear head against PE on the plug<br/>Open circuit voltage on the measuring device: 4 V - 24 V, AC or DC<br/>Measurment current: min. 0.2 A<br/>Testing time: 3 sec<br/>PE resistance: max. 0.3 Ohm with 4 m long mains power cable</li> </ol>           |
| 4. | Insulation resistance measurement | <ol style="list-style-type: none"> <li>1. Activate</li> <li>2. Connect L1 and N to plug</li> <li>3. Main switch and motor switch "ON"<br/>Measuring points: Gear head and screws (270) against L1/N<br/>Testing time: 3 sec<br/>Testing voltage: 500 V DC<br/>Insulation resistance: min 2.0 M Ohm</li> </ol>                    |
| 5. | High voltage test                 | <ol style="list-style-type: none"> <li>1. Activate</li> <li>2. Connect L1 and N to plug</li> <li>3. Main switch and motor switch "ON"<br/>Measuring points: Gear head and screws (270) against L1/N<br/>Testing time: 3 sec<br/>Testing voltage: 1000 V AC<br/>Trip circuit: 5mA &gt; overload relay must not respond</li> </ol> |

### Attention!

Basis for the security inspection are the specifications of the current DIN VDE 0701 Part 1 (Appendix "E" for electr. tools).



## 4. Disassembly

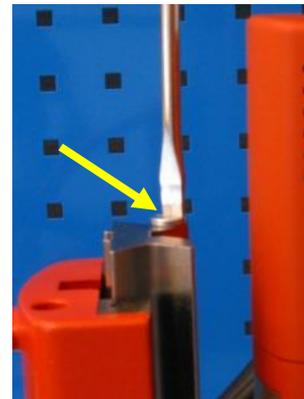
- 4.1. Preparation
- 4.2. Drill motor - remove drill rig
- 4.3. Drill motor - remove gear
- 4.4. Dismantling chuck
- 4.5. Dismantling gear
- 4.6. Dismantling motor
- 4.7. Dismantling drill rig

## 4.1. Preparation

1. Disconnect device from mains
2. Switch in "OFF" - position
3. Remove mounted tools



## 4.2. Drill motor - remove drill rig

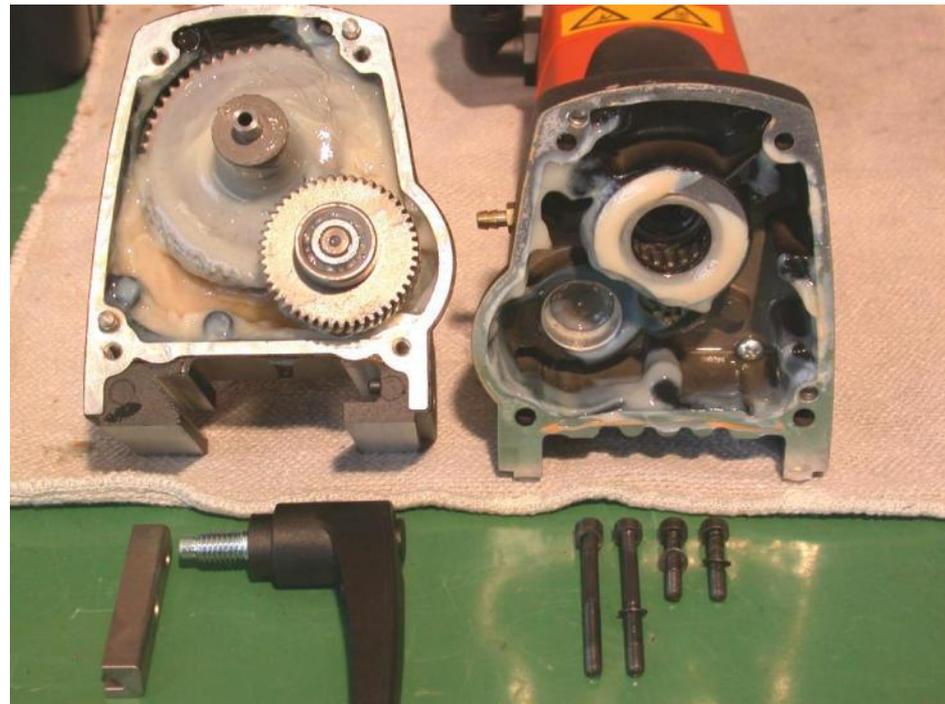


1. Remove screws and detach cover.
2. Remove cable (circle) from the circuit board.
3. Unscrew top flat-headed screw.
4. Release clamp lever and remove drill motor with cover and motor lead.

Tools:

- Screwdriver  
Torx 20
- Screwdriver  
Slotted

### 4.3. Drill motor - remove gear



1. Remove cylinder head screw and detach outside bearing.
2. Clean gear free of grease

Tools:

- Allen key SW4
- Plastic hammer

## 4.4. Dismantling chuck



1. Remove clamping lever, circlip insert part, gear wheel and spur gear
2. Dismantle circlip, locking sleeve, spring and ball
3. Dismantle spring bearing for centering pin

**Tools:**

- Circlip pliers  
outside, straight  
inside, straight
- Plastic hammer
- Flat pliers

## 4.5. Dismantling gear

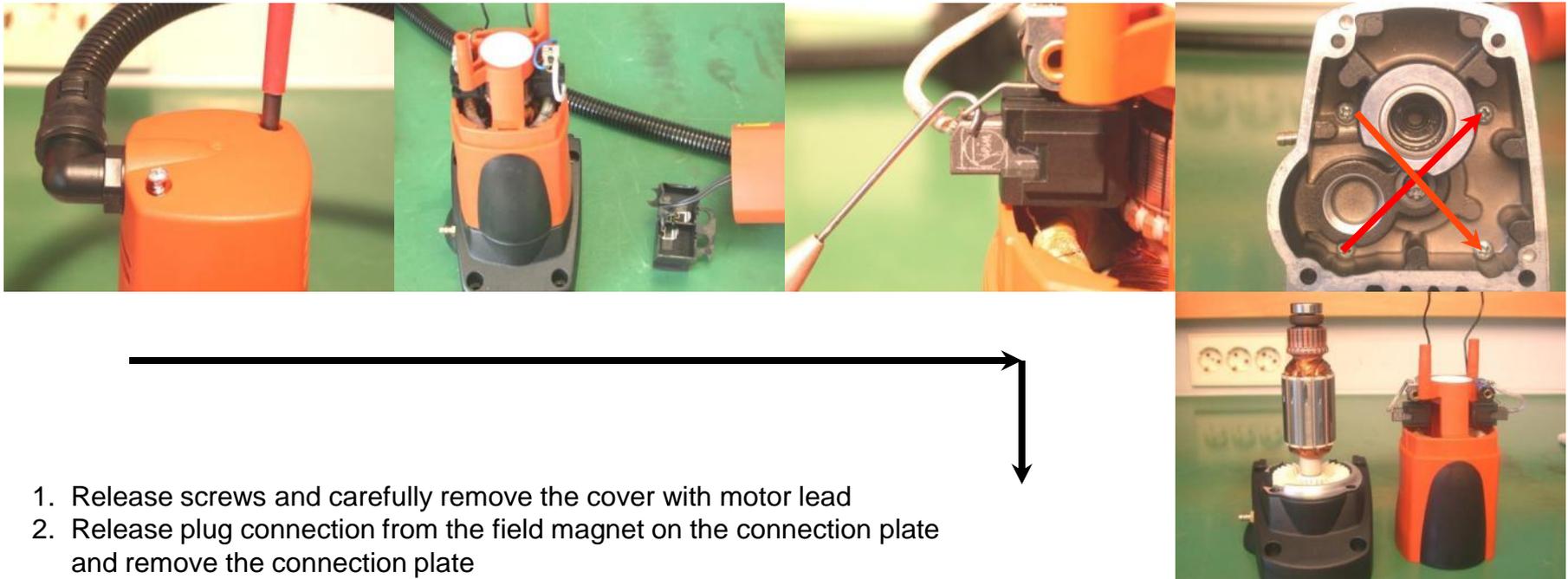


1. Remove circlip, drive out gear wheel and composite spur gear with light strokes from the hammer
2. Remove the ball bearing from the spur gear with the pull-off device, remove the circlip on the drill shaft
3. Press out the drill shaft from the outer bearing
4. Remove circlip and press out ball bearing

### Tools:

- Circlip pliers (outside, straight)
- Plastic hammer
- Mandrel press
- Pull-off device  
Ø 19 mm, 22 mm
- Pull-off cap

## 4.6. Dismantling motor



1. Release screws and carefully remove the cover with motor lead
2. Release plug connection from the field magnet on the connection plate and remove the connection plate
3. Remove carbon brushes from the collector
4. Release screws in the intermediate bearing sign
5. Disconnect field magnet and armature with light strokes from the hammer

Tools:

- Screwdriver (phillips) PH2
- Cable hook
- Plastic hammer
- Flat pliers

## 4.6. Dismantling motor - armature



1. Drive out armature from the intermediate bearing with light strokes from the hammer
2. Pull off ball bearing and sealing ring with device

Tools:

- Plastic hammer
- Pull-off device  
Ø 19 and 26 mm
- Pull-off cap

## 4.6. Dismantling motor - field magnet



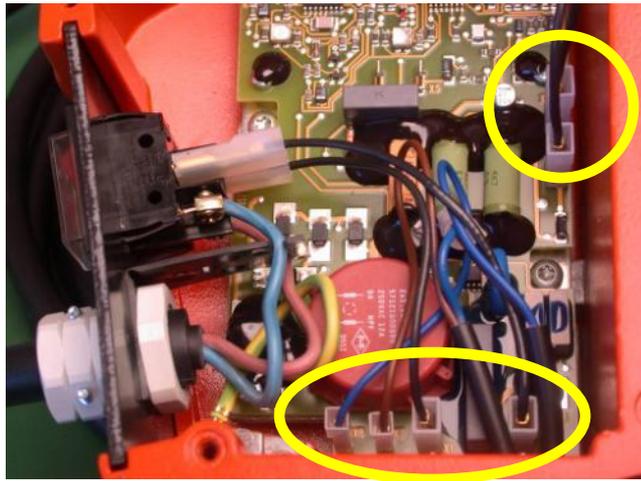
1. Remove carbon holder with carbon brush out of the motor case
2. Remove air management ring and release the screws from the field magnet
3. Drive out field magnet from the motor case with light strokes from the plastic hammer

**The cables may not get caught anywhere - danger of tearing !!!!!**

Tools:

- Screwdriver  
phillips PH 2
- Plastic hammer

## 4.7. Dismantling drill rig



1. Remove all plugs and sockets from the circuit board, unscrew ground contact
2. Unscrew the magnetic foot from the case stand
3. Dismantle the closing plate with the magnetic switch and mains power cable, dismantle the motor switch and circuit board

### Tools:

- Screwdriver  
Torx 20
- Plastic hammer
- Flat pliers
- Hexagon socket  
4 mm

## 4.7. Dismantling drill rig



1. Unscrew the self-securing nut from the drive shaft
2. Remove the drive shaft and motor guide
3. Unscrew the gear rod from the motor guide
4. Dismantle the slide bar and pressure plate

Tools:

- Screwdriver  
phillips PH 2
- Hexagon nut 13 mm
- Hexagon socket 4 mm
- Hexagon socket 3 mm



## 5. Assembly

- 5.1. Assembling motor
- 5.2. Assembling chuck
- 5.3. Assembling gear
- 5.4. Assembling drill rig
- 5.5. Assembling drill rig - gear
- 5.6. Assembling motor - gear
- 5.7. Connecting motor



## 5.1. Assembling motor - armature



1. Press the bearing ring, ball bearing and sealing ring onto the armature
2. Press pre-mounted armature into intermediate bearing

### Tools:

- Press-on support (pipe)
- Mandrel press

## 5.1. Assembling motor - field magnet



1. Drive field magnet into the motor case with light strokes from the hammer
2. Fasten screws, assemble carbon holder with carbon brush

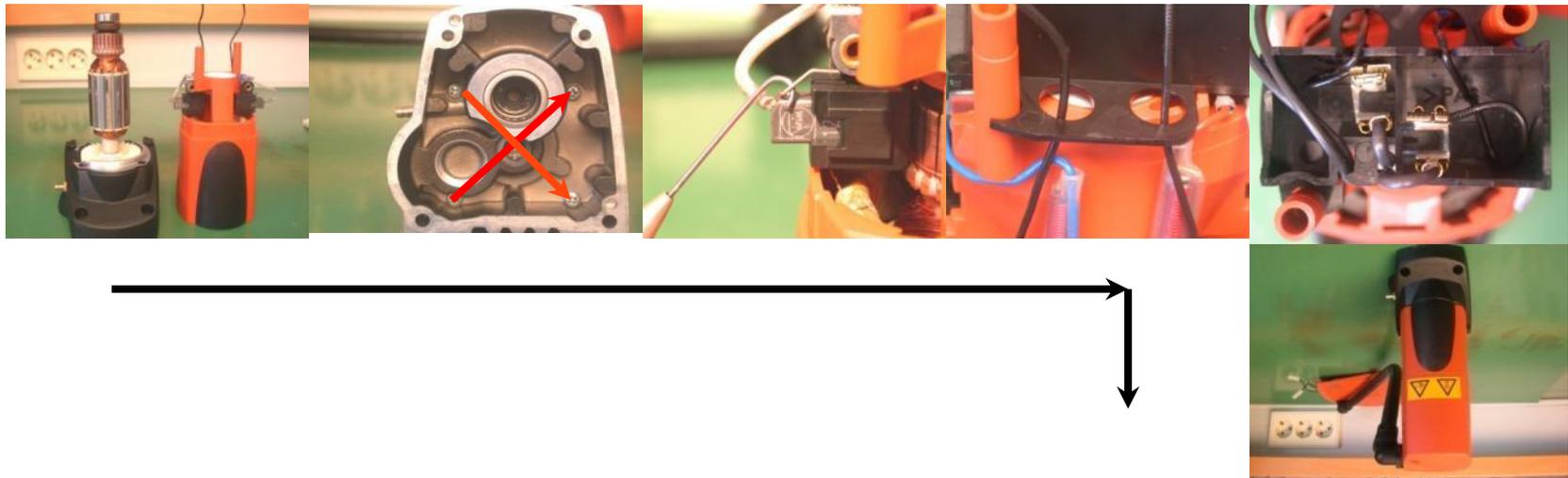
**Do not clamp cable, observe cable route -  
Cable exit always on the side of the type identification label**

Tools:

- Screwdriver  
phillips PH 2
- Plastic hammer



## 5.1. Assembling motor



1. Place composite motor casing on the armature with intermediate bearing
2. Fix screws diagonally as seen in the picture
3. Insert carbon brushes into the carbon holder
4. Connect cable - observe cable route
5. Assemble case cover with motor lead

### Tools:

- Screwdriver (phillips) PH2
- Cable hook
- Plastic hammer
- Flat pliers



## 5.2. Assembling chuck



1. Assemble spring bearing for the centring pin into the drill shaft
2. Slightly grease the balls for the chuck and insert them into the boreholes of the drill shaft
3. Assemble spring clip (observe fitting position), connect the stub of the spring into the designated grooves
4. Twist the sleeve 90° counter-clockwise until the sleeve snaps into place
5. Assemble circlip and test function



### Tools:

- Circlip pliers inside, straight
- Circlip pliers outside, straight
- Pressing-in bolt

### 5.3. Assembling gear

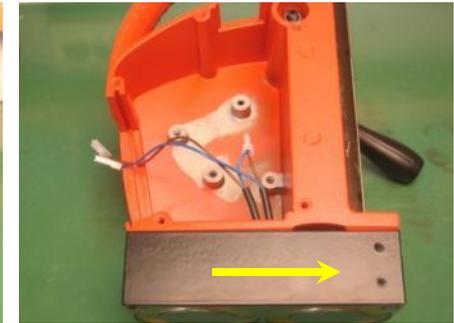
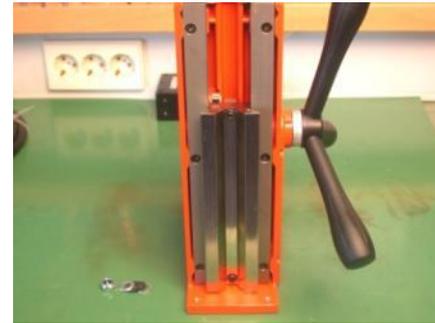
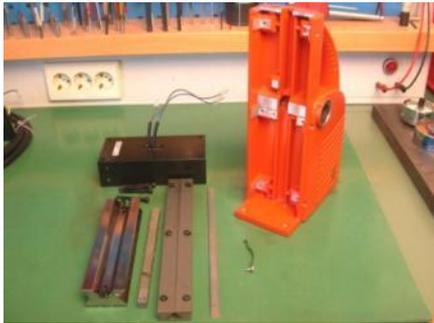


1. Press in ball bearing, insert circlip
2. Press in mounted boreholes
3. Assemble circlip (Picture 3)
4. Assemble counter shaft and gear wheel, assemble circlip (Picture 3)
5. Assemble insert part (arrow) and clamping lever

Tools:

- Circlip pliers inside, straight
- Circlip pliers outside, straight
- Pressing-in bolt
- Mandrel press
- Plastic hammer

## 5.4. Assembling drill rig



1. Screw the gear rod onto the motor guide
2. Assemble bearing and pressure plate onto the case stand
3. Assemble motor guide and drive shaft
4. Attach magnetic foot to the case stand - threaded bores (arrow) for the swarf guard always on the motor side

### Tools:

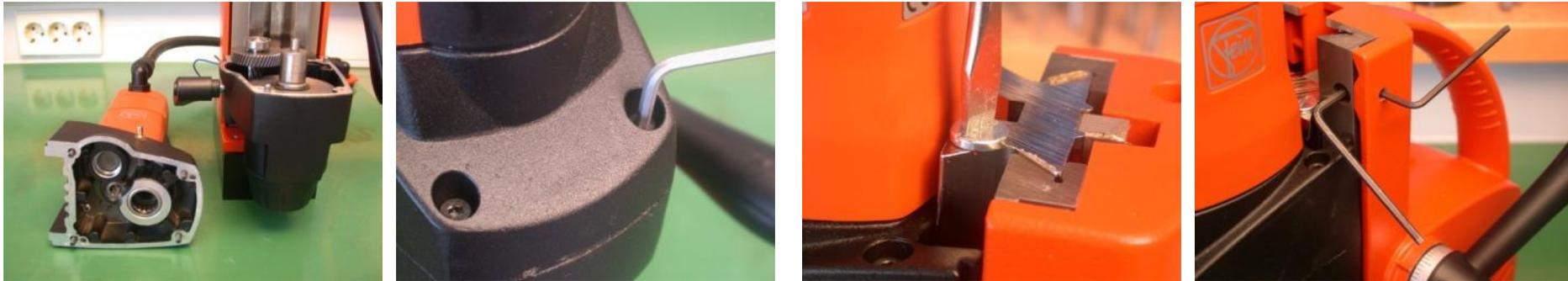
- Screwdriver  
phillips PH 2, slotted
- Hexagon socket wrench  
Ø 3 and 4 mm
- box nut 13 mm

## 5.5. Assembling drill rig - gear



1. Insert pre-assembled gear into the motor guide and fix with clamp
2. Grease gear - 70 g ( 0 40 118 0300 9 )

## 5.6. Assembling motor - gear



1. Place pre-assembled motor with drill rig onto the (greased) gear and fasten it
2. Screw flat-headed screw into the motor guide as catch
3. Adjust the feed speed of the motor with the hexagon socket wrench  
( machine may not move up and down by itself)

Tools:

- Screwdriver slotted
- Hexagon socket wrench  
Ø 3 and 2,5 mm
- Plastic hammer

## 5.7. Connecting motor



1. Assemble circuit board and attach magnetic foot (circle)
2. Assemble the closing plate and magnetic switch, connect the ground contact and plug contacts (circle), assemble and connect motor switch (arrow)
3. Attach motor lead to X5 and X6 (circle)
4. Connect the machine to the mains and test functions

Tools:

- Screwdriver Torx 20
- Flat pliers

## Disassembling tool – Protecting sleeve



The disassembling tool is used for pulling off the protecting sleeve from the SEM – angle. For pulling off, the disassembling tool should be layed around the protecting sleeve and moved in to the SEM – angle. By moving in, the snap device will be pushed away and the protecting sleeve can be moved out together with the disassembling tool.



## 6. Tools and special tools

|                                       |                         |
|---------------------------------------|-------------------------|
| • Mandrel press up to 3t              | Retail                  |
| • Vice                                | Retail                  |
| • Soft clamping jaws                  | Retail                  |
| • Plastic hammer                      | Retail                  |
| • Screwdriver PH 2, Torx 20           | Retail                  |
| • Slotted screwdriver                 | Retail                  |
| • Circlip pliers (inside / straight)  | Retail                  |
| • Circlip pliers (outside / straight) | Retail                  |
| • Flat pliers                         | Retail                  |
| • Nut SW 13 + Extension + ratchet     | Retail                  |
| • Hexagon socket wrench 2.5, 3, 4 mm  | Retail                  |
| • Sleeve                              | Ø A 60 / L 60 / 5 thick |
| • Bolts                               | Ø 17.5 / 60             |
|                                       |                         |
| ▪ Pull-off cap                        | 6 41 04 150 008         |
| ▪ Clamping chuck                      | 6 41 07 019 001         |
| ▪ Clamping chuck                      | 6 41 07 026 000         |
| ▪ Cable hook                          | 0 72 00 310 066         |
| ▪ Ball bearing support D = 19 mm      |                         |
| ▪ Ball bearing support D = 26 mm      |                         |



**7. Lubricants**

**Fettmengen und Fettarten  
Types and quantities of grease  
Types et quantités de graisse**

| Fettart<br>Type of grease<br>Type de graisse | Tuben-Inhalt<br>Contents of tube<br>Contenu du tube | Bestellnummer<br>Order Reference<br>Référence | Fettmenge<br>Quantity<br>Quantité   |
|--|---|---|---|
| 0 40 118 0300 9                              | 80 g<br>850 g                                       | 3 21 60 003 18 2<br>3 21 32 007 18 9          | <b>Für Getriebe:/for gears:/pour réducteur:</b><br>70 g<br><br><b>Für Rillenkugellager:/for grooved ball bearings:/<br/>pour roulements rainurés à billes:</b><br>Pos. Nr. 104, 250 |

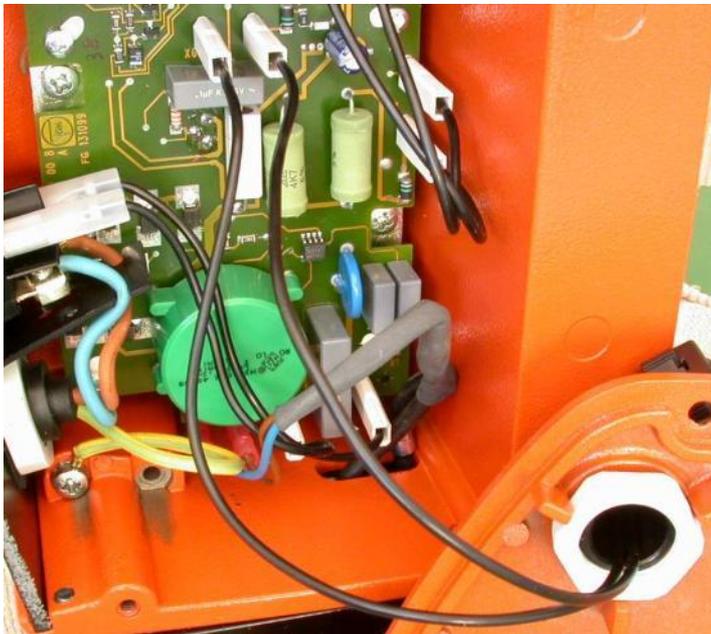
## 8. Modifications

Genkingen, 29.10.02

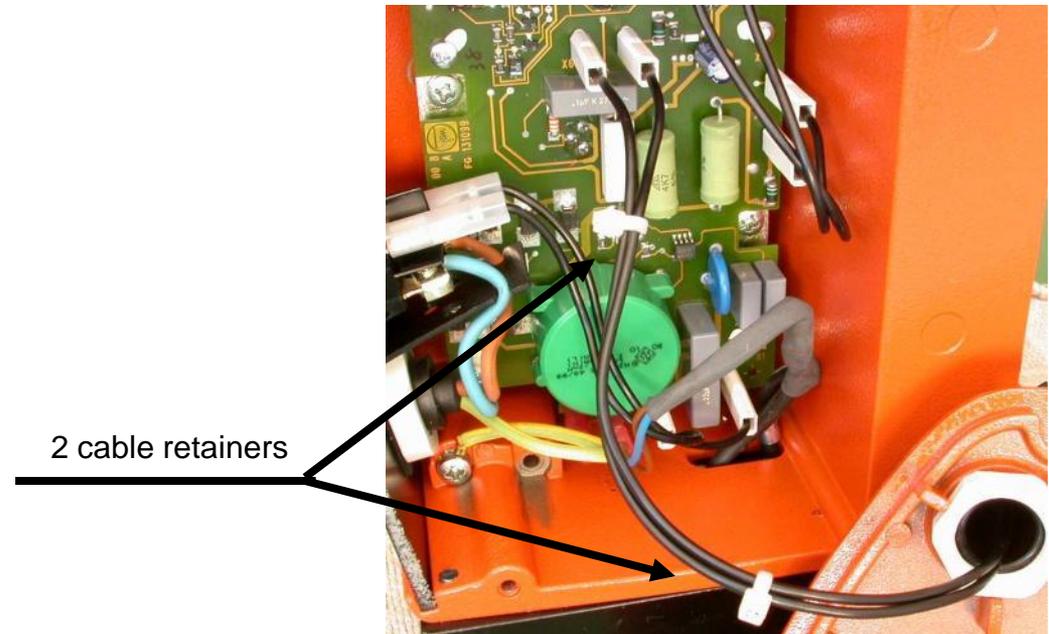
Concerning: Amendments to repair instructions KBM 32 Q

To avoid hot cables getting caught, the cable routing between the cover (950) and the electronics (890) has to be changed. The power supply cables are to be connected with two plastic cable retainers from now on (see picture).

**Wrong!**



**Right!**



## Troubleshooting and inspection possibilities



Please left-click the picture to open a excel file  
with various error causes and inspection possibilities