

# FEIN – REPAIR - TOOLS



## KBM 80 U / KBM 80 Auto





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






### **6. Tools**

You will find a drawing and list of spare parts online

**[www.fein.de](http://www.fein.de) / FEIN Service / Start ETK**



## 1. Technical data

		KBM80U	KBM80auto
		7 270 34	7 270 32
P <sub>1</sub>	W	2000	2000
P <sub>2</sub>	W	900	900
n <sub>0R</sub>			
●	/min	180	180
● ●	/min	260	260
● ● ●	/min	580	580
n <sub>0L</sub>			
●	/min	180	180
● ●	/min	260	260
● ● ●	/min	580	580
	kg	25.4	26.4
 Fe HM	mm	12 – 80	12 – 80
 Fe HSS	mm	12 – 65	12 – 65
 Fe HSS	mm	32	32
		M6 – M27	M6 – M27
	mm	13	13
	mm	31	31
	mm	50	50
L <sub>WA</sub>	dB	95	95
K <sub>WA</sub>	dB	3	3
L <sub>pA</sub>	dB	84	84
K <sub>pA</sub>	dB	3	3
L <sub>pCpeak</sub>	dB	101	101
K <sub>pCpeak</sub>	dB	3	3
a <sub>h</sub>	m/s <sup>2</sup>	1.2	1.2
K <sub>a</sub>	m/s <sup>2</sup>	1.5	1.5



## 2. Maintenance

### Repair and customer service.



When working metal under extreme operating conditions, it is possible for conductive dust to settle in the interior of the power tool.

The total insulation of the power tool can be impaired. Blow out the interior of the power tool via the ventilation slots frequently with dry and oil-free compressed air, and connect a residual current device (RCD) on the line side.

After several hours of operation, the play in the dove-tail guide can increase. As a consequence, the drill motor can glide alongside the dove-tail guide by itself. In automatic machine operation, this can lead to a malfunction of the automatic reversing feature. In this case, retighten all set screws of the dove-tail guide correspondingly so that the drill motor can easily be moved manually, yet does not glide by itself (see page 13).

Flush the cooling-lubricant system with water, clean and drain it completely when not using the machine for periods longer than two weeks.

For continuous operation, the cooling-lubricant system must be flushed with water and cleaned approx. every 4 weeks.

If the supply cord of this power tool is damaged, it must be replaced by a specially prepared cord available through the FEIN customer service centre.

**If required, you can change the following parts yourself:**

Application tools, cooling-lubricant tank



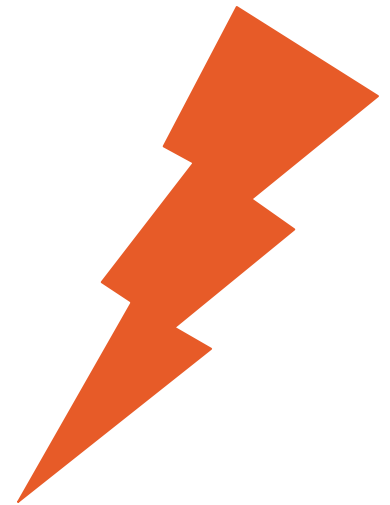
## 3. General checks

<b>Rated voltage</b>	<b>220 - 240 V</b>
<b>Test voltage / 10 %</b>	<b>230 V</b>
<b>Idling current / 10 %</b>	<b>(3.40 – 4.00 A)</b>
<b>Idling speed, first gear / 5%</b>	<b>(162 - 198 rpm)</b>
<b>Main switch on</b>	
<b>Voltage on X5</b>	<b>10% (90-110 VDC)</b>
<b>Release force of magnet</b>	<b>100 VDC</b>
<b>Current consumption of magnetic foot</b>	<b>&gt;= 3,500 N</b>
<b>Main switch on, motor on</b>	<b>Approx. 0.15 A / AC</b>
<b>Voltage on X5</b>	<b>10% (180-220 VDC)</b>
<b>Resistance of magnetic foot per coil</b>	<b>200 VDC</b>
<b>Test voltage - motor without electronics</b>	<b>22 ohms</b>
	<b>145 VAC</b>



## 4. Disassembly

**Before starting to repair or disassemble the tool,  
you must remove the mains plug from the socket  
and remove the drill bit from the tool.**





## 4.1. Disassembly - Tank / Electronics



**Lift coolant tank up with screwdriver and pull upwards by hand until tank is disengaged from lock at top end. (Yellow circle)  
The tank can then be removed from the tool.**

Tools:  
- slotted screw driver





## 4.1. Disassembly - Tank / Electronics



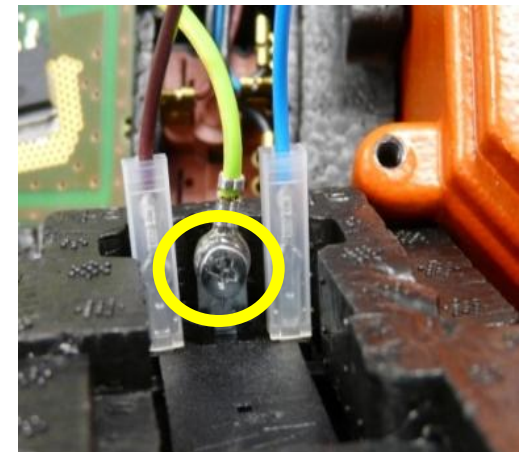
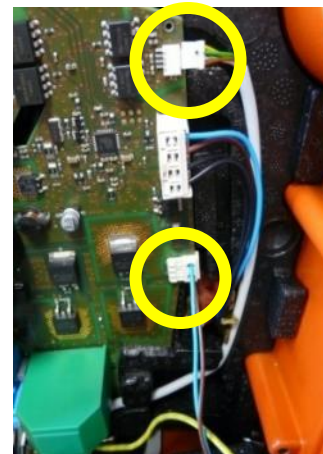
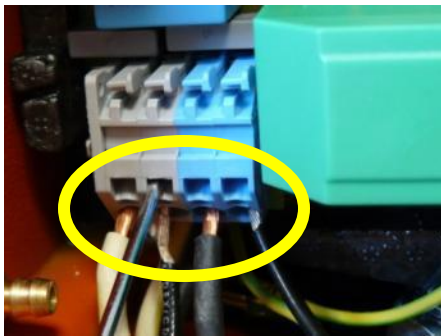
**Remove screws from cover of drill jig.  
Pull out coolant hose.  
Fold metal cover and foam cover forwards and down.**

Tools:  
- torx screw driver TX 20





## 4.1. Disassembly - Tank / Electronics



**Remove cable from terminal**

**Pull out coolant hose**

**Remove plug for coolant pump and speed cable from circuit board**

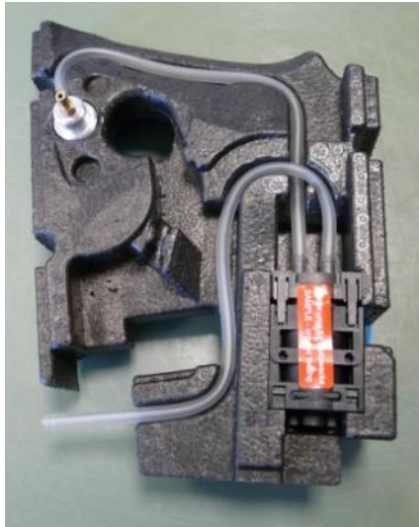
**Disconnect earthing conductor from coolant pump**

**Tools:**

- slotted screw driver small
- cross slotted screw driver PH 1



## 4.1. Disassembly - Tank / Electronics



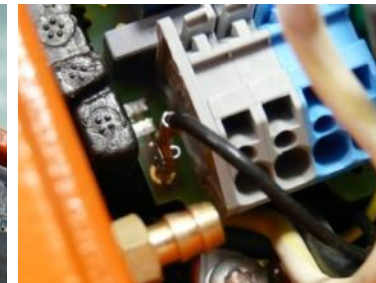
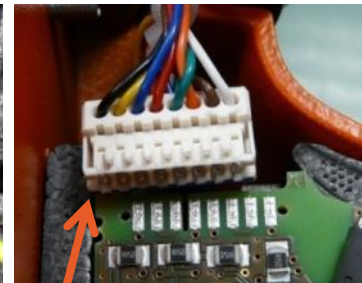
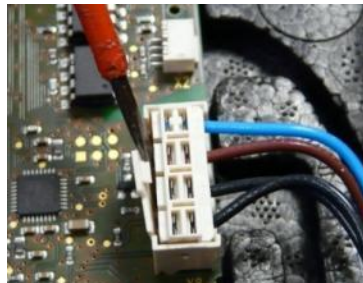
**Remove electronics cover with coolant pump and hoses**  
**Loosen and remove screws for fall protection on dove-tail guide**  
**Remove cover of drill jig and drill motor from drill jig**

Tools:  
- allen key 3 mm

# FEIN – REPAIR - TOOLS



## 4.1. Disassembly - Tank / Electronics

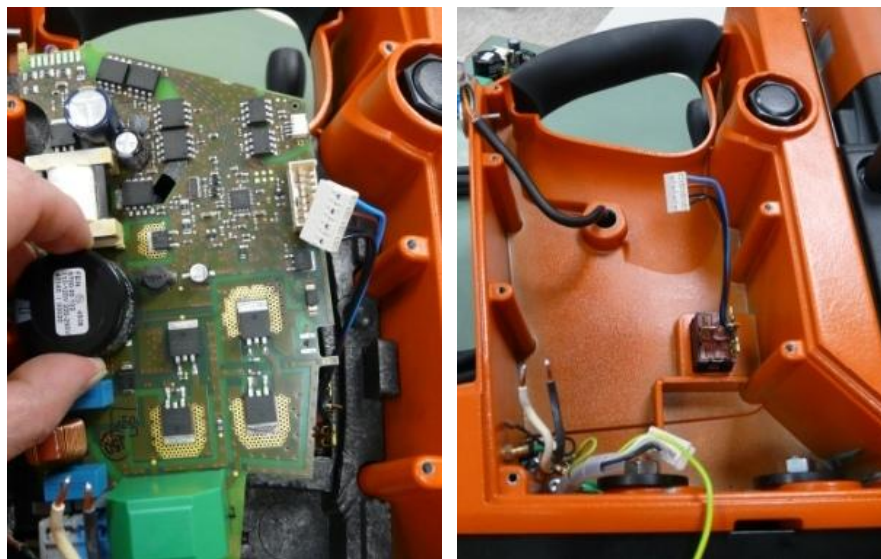


**Disconnect mains cable**  
**Remove plug for magnetic field monitoring**  
**Remove plug from magnetic foot**  
**Remove gearbox motor plug (KBM 80 auto only)**  
**Remove circuit board's earth contact**

**Tools:**  
- slotted screw driver small



## 4.1. Disassembly - Tank / Electronics



**After all the connections from the circuit board to the switches and other components have been disconnected, the circuit board can now be removed from the foam and the drill jig.**





## 4.2. Disassembly - Feed unit



**Remove plastic cover**

**Loosen nut with ring wrench (tightening torque during assembly: 1 Nm – must be complied with, otherwise the automatic feed will not work correctly. Remove Loctite residue on threaded bar and nut and clean parts. During assembly, moisten threaded bar with Loctite 242, then tighten nut to 1 Nm).**

**Remove spider with feed motor**

**Warning - when removing the spider, carefully slide the feed motor connection cable through the jig housing – the plug is relatively big, be careful not to bend the cable**

Tools:

- slotted screw driver
- ring wrench 13 mm



## 4.2. Disassembly - Feed unit

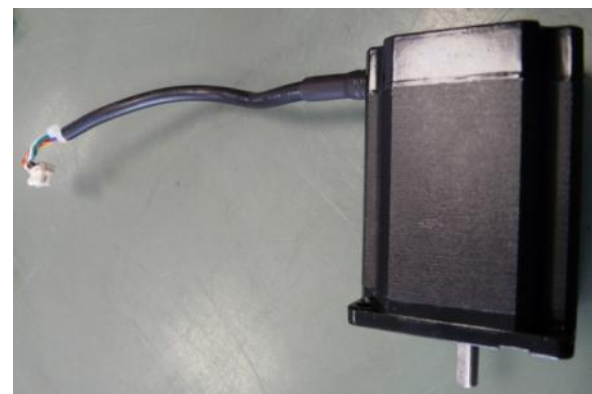


**Remove screws from motor fastening**  
**Prise motor out of housing with screwdriver**

Tools:  
- allen key 3 mm  
- slotted screw driver



## 4.2. Disassembly - Feed unit



**Loosen set screw**

**Remove worm with ball bearing and spacer from motor shaft**

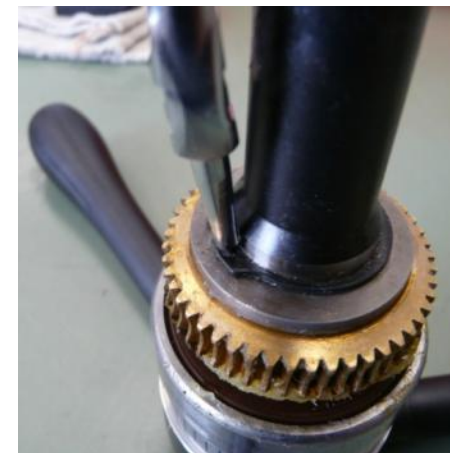
**Feed motor is only available as a spare part in complete form (see photo on right)**

Tools:  
- allen key 2 mm





## 4.2. Disassembly - Feed unit



**Remove housing from bearing by gently striking with plastic hammer**  
**Remove circlip**

Tools:  
- plastic hammer  
- outer circlip plier



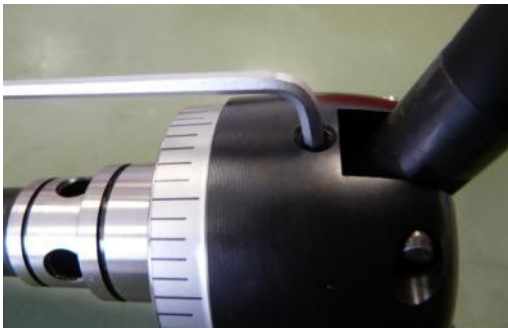
## 4.2. Disassembly - Feed unit



- Remove worm wheel from drive shaft**
- Remove balls**
- Remove circlip**
- Prise ball bearing out of bearing seat with screwdriver**



## 4.2. Disassembly - Feed unit



**Remove set screw**  
**Remove spring and ball**

Tools:  
- allen key 4 mm



## 4.2. Disassembly - Feed unit



**Unscrew handles**  
**Drive out dowel pins with punch**  
**Remove switch bar**  
**Remove control rod from drive shaft**

Tools:  
- steel hammer  
- drive pin

# FEIN – REPAIR - TOOLS



## 4.3. Disassembly - Drill motor



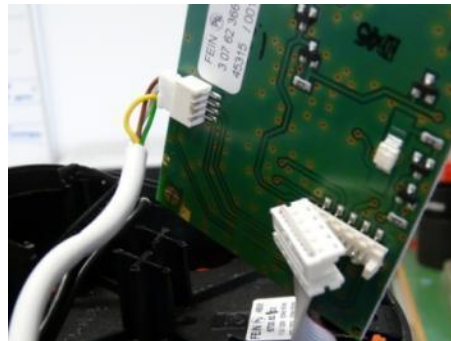
- Remove 2 screws from cover cap**
- Remove cover**
- Loosen and remove screw for securing housing**
- Remove safety shutdown mat**

Tools:  
- cross slotted screw driver PH 2





## 4.3. Disassembly - Drill motor



- Lift up and turn console electronics**
- Remove speed cable plug contact and motor electronics**
- Slide up protective hose and remove lock**
- Pull protective hose down and out and remove housing**



## 4.3. Disassembly - Drill motor



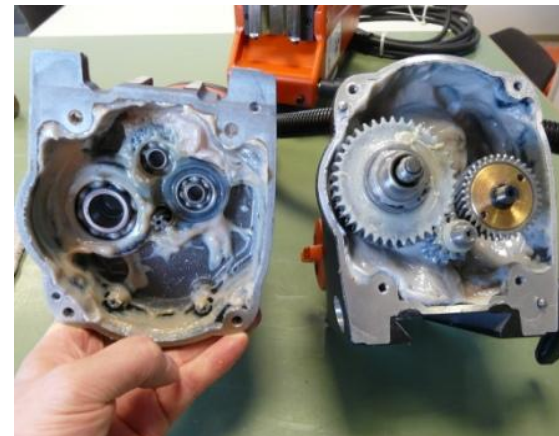
**Remove motor electronics from motor housing**  
**Remove both plug contacts from motor electronics**  
**Loosen screw on carbon holder cover and remove carbon holder cover**  
**Pull plug contact out of carbon brush and remove carbon brush**

**Tools:**  
- cross slotted screw driver PH 2  
- flat plier





## 4.3. Disassembly - Drill motor



**Loosen 4 screws on gearbox housing**

**Remove gearbox housing (careful, it is bonded with Loctite 5188 surface seal)**

**Remove and replace grease**

Tools:  
- allen key 4mm



## 4.3. Disassembly - Drill motor



**Loosen 4 screws on intermediate bearing**  
**Remove intermediate bearing with armature from motor housing**  
**Clamp armature in vice with aluminium jaws**  
**Disconnect intermediate bearing from armature by striking with hammer**

Tools:  
- plastic hammer



## 4.3. Disassembly - Drill motor

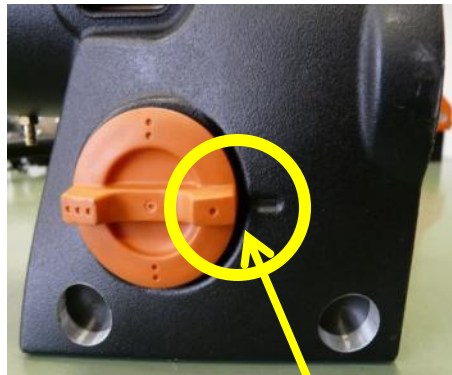


**Remove spacer (if necessary) from ball bearing with circlip pliers**  
**Carefully press out magnet ring (risk of breakage)**  
**Remove bearing and replace if necessary**  
**Remove 2 screws from field coil**  
**Remove plug connection (brown cable) from carbon holder**  
**Remove contact plug (white) from holder and slowly pull out of motor housing with field coil (to do this, all cables must be routed between the ribs of the housing)**

Tools:  
- outer circlip plier



## 4.4. Disassembly - Gearbox



**Remove grease from gearbox**

**Remove intermediate gear from gearbox housing**

**Warning** – it is best to remove the large intermediate gear when the gear converter is in first gear

**Warning** – the intermediate gear with slipping clutch is only available as a complete spare part, because the slipping clutch is pre-set





## 4.4. Disassembly - Gearbox



**Dismantle small intermediate gear – the two large gear-wheels are slid up and are guided through the feather key, the small gear-wheel is press-fitted. The press fitting is damaged when the small gear-wheel is disassembled. The gear-wheel and the shaft cannot be used again as a result. The specified torque can no longer be transferred.**



**Dismantle large intermediate gear – the three gear-wheels that switch the gears are slid up and are fixed or released by the balls depending on the gear selected  
Remove gear-wheels and balls  
Remove control rod**



## 4.4. Disassembly - Gearbox



**Remove circlip from drill shaft gear-wheel**  
**Press drill shaft out of gearbox housing using a press-out sleeve, remove gear-wheel with feather key**

Tools:  
- outer circlip plier  
- inner circlip plier



## 4.4. Disassembly - Gearbox



**Loosen screw for securing shifting claw and remove shifting claw  
– best done in first gear switch position  
Remove circlip for securing switching handle and remove  
switching handle. Replace if necessary**

Tools:  
- outer circlip plier  
- slotted screw driver

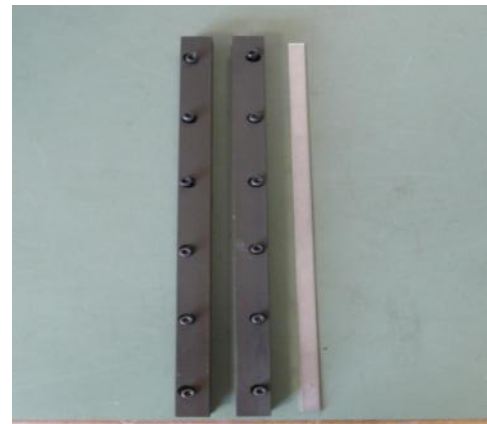
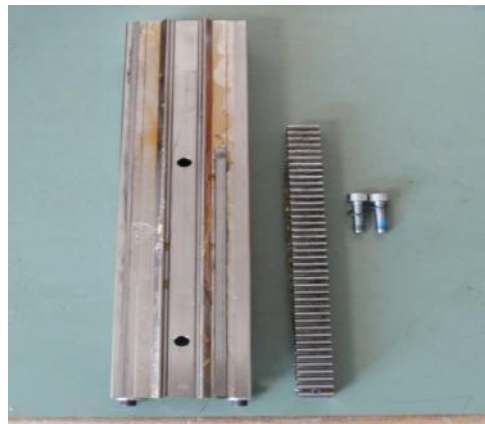




## 4.5. Disassembly – Drill jig / Guide

The disassembling of the gear box on a KBM 80 is very complex, therefore the guide can be replaced without disassembling of the gear box too.

The way to do it you will see on the following pages.



**Loosen the two screws on the guide and take it off.**

**Move the guide up and take it out of the drill jig.**

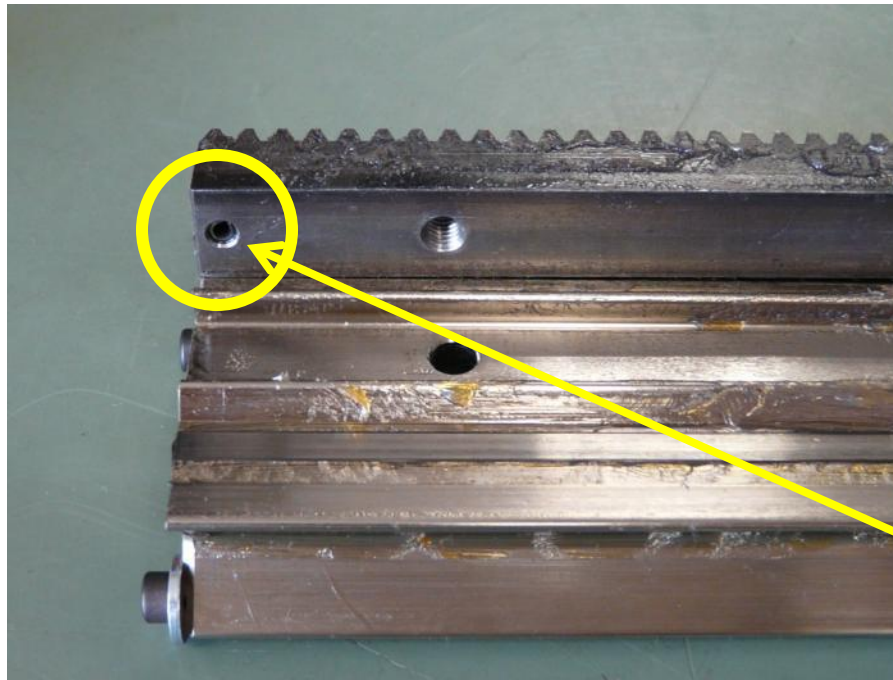
**Take off the gear rod.**

**Loosen the screws on the gliding bars and take it out together with the pressure bar.**

Tools:  
- allen key 5mm



## 5. Assembly – Drill jig / Guide



**When mounting the gear rod on to the guide, please watch that the locking pin is sitting on the lower end of the guide (yellow circle). The locking pin is a mechanical stop for the motor, if you are working overhead to the ceiling. When the guide has to be replaced, please change the locking pin too every time. Generally the condition of the locking pin has to be checked on every case of repair.(Safety issue)**

# FEIN – REPAIR - TOOLS



## 5.1. Assembly – Drill jig / Guide



**Put in the gliding bars to the drill jig and feed the screws (not tighten)  
Lay in the gear rod to the gear teeth of the gear box (locking pin down – yellow circle)  
Move down the guide from the upper side**

Tools:  
- allen key 4 mm

# FEIN – REPAIR - TOOLS



## 5.1. Assembly – Drill jig / Guide



**Move up the gear rod with the gear teeth of the gear box until the screw holes match together**  
**Tighten the screws on the guide**  
**Put in the pressure bar and adjust the feed rate**

Tools:  
- allen key 5 mm  
- allen key 3 mm



## Settings

From our experience, the guides have to be readjusted after >500 large-diameter holes at the earliest.

A tool with play in the guides runs smoothly for even longer.

This is not, therefore, a problem in the short-term.

If the customer readjusts the guides, he runs the risk of tightening the set screw too much.

This causes breakthrough detection to not respond and automatic withdrawal does not work as a result.

If a customer complains about the withdrawal function not working:

- Loosen set screw slightly
- Knock dove-tail guide out (you can also knock the outer bearing)
- Re-tighten set screw from the middle out in small twists of 30° – 45°  
(repeat process if necessary until drill motor is without play and spider can be turned with ease  
Test withdrawal with test hole (with as large a diameter as possible)

**After repairing the guide, you must make a test hole with as large a drill diameter as possible. The hole allows you to ensure that all functions such as automatic feed, breakthrough detection and automatic detection are working perfectly.**





## 5.2. Assembly - Drill motor



**Insert field coil into motor housing. To do this, insert cables through motor housing**  
**Secure field coil with two screws**  
**Insert and screw down carbon holder**

Tool:  
- PH 2 cross-tip screwdriver



## 5.2. Assembly - Drill motor



**Press-fit ball bearing and magnet ring**  
**Attach spacer to bearing**  
**Attach armature to intermediate bearing and press in**  
**Insert assembled intermediate bearing in motor housing and secure with 4 screws**  
**Fill gearbox with grease (350 g – 3 21 320 07 18 9)**  
**Stick the Gearbox with Loctite 5188**  
**Close the Gearbox with the 4 screws**



### Tool:

- Grease (3 21 320 07 18 9)
- PH 2 cross-tip screwdriver
- External circlip pliers





## 5.2. Assembly - Drill motor

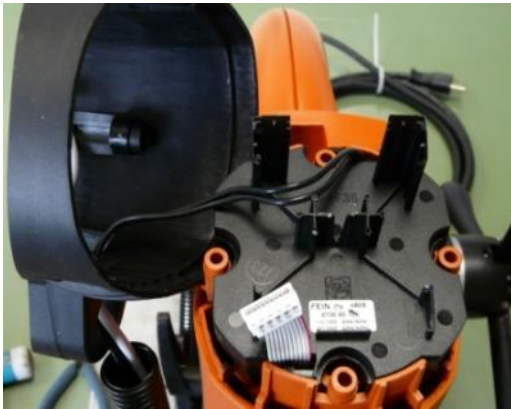


**Insert and connect carbon brushes**  
**Fit both carbon brush covers**  
**Connect motor electronics and place in motor housing**

**Tool:**  
- PH 2 cross-tip screwdriver  
- Flat nose pliers



## 5.2. Assembly - Drill motor



**Attach plastic housing**

**Insert protective hose with connection cables and lock**

**Connect white speed cable and ribbon cable to console electronics**



## 5.2. Assembly - Drill motor



**Insert console electronics into holder and attach rubber safety shutdown mat**  
**Secure plastic housing with 2 screws**  
**Attach and screw down cover – warning, check that pushbutton is secure, it must not jam !!!**

Tool:  
- PH 2 cross-tip screwdriver



## 5.3. Assembly - Gearbox



**Insert switching handle and secure with circlip  
Place shifting claw in housing and move switching handle pin  
into guide  
Insert and tighten thread bolt (best to do this in first gear switch  
position)**



**Tool:**

- Slotted screwdriver
- External circlip pliers





## 5.4. Assembly - Feed unit



**Insert selector shaft into shaft  
Insert switch bar and fix with dowel pin  
Screw handles into switch bolts**

**!!! Warning – replace cylinder pins and switch bar after every disassembly process,  
because the press-fitting is damaged during disassembly !!!**

Tool:  
- Punch  
- Steel hammer





## 5.4. Assembly - Feed unit



**Insert ball, spring and set screw**

**Fix set screw manually – must not compress solid, otherwise automatic function will not work**

Tool:  
- Socket head wrench, size 3



## 5.4. Assembly - Feed unit



**Slide ball bearing on to shaft and press-fit, secure with circlip  
Insert balls, slide on gear-wheel, spacer and secure with circlip**

Tool:  
- External circlip pliers



## 5.4. Assembly - Feed unit



**Slide housing over bearing as far as stop by gently striking with the hammer**

Tool:  
- Plastic hammer



## 5.4. Assembly - Feed unit



**Complete feed motor with spacer, ball bearing and worm wheel**

**The worm wheel is secured to the feed motor shaft with a set screw. The shaft has a milled groove on one side with which the set screw must come into contact.**

Tool:  
- Socket head wrench, size 3



## 5.4. Assembly - Feed unit



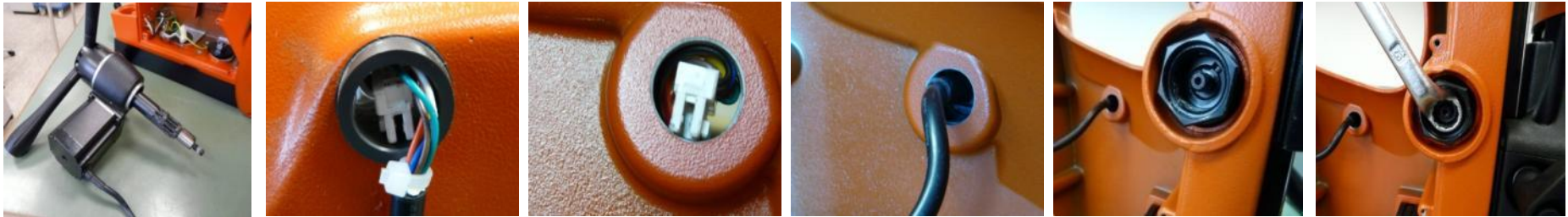
**Assemble feed motor and feed gearbox –**  
**Warning, the spacer is not fixed. It must be in the recess and can easily slip out of place during assembly. (See arrow)**  
**Screw motor down to gearbox with four screws**

Tool:  
- Socket head wrench, size 3





## 5.4. Assembly - Feed unit



**Fit pre-assembled spider with feed motor on drill jig**

**Insert feed motor cable through hole in drill jig – do not bend cable too much, otherwise it might break**

**Insert guide bush**

**Remove Loctite residue on threaded bar and nut and clean parts.**

**During assembly, moisten threaded bar with Loctite 242, then tighten nut to 1 Nm). Torque of 1 Nm must be complied with, otherwise the automatic feed will not work correctly.**



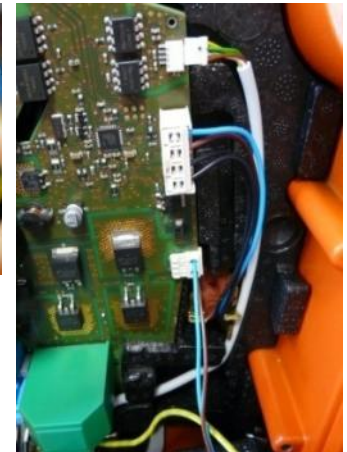
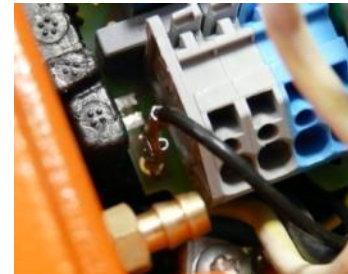
## 5.5. Assembly - Electronics / Tank



**Place bottom part of foam in drill jig  
Insert electronics in foam**



## 5.5. Assembly - Electronics / Tank

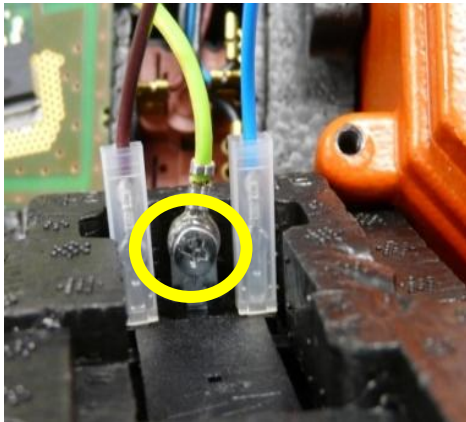


- Connect mains cable and motor cable
- Insert plug of magnetic foot
- Insert gearbox motor plug (KBM 80 auto only)
- Insert plug for magnetic field monitoring
- Remove circuit board's earth contact

**Warning - to connect the mains cable and motor cable, you must open the springs in the cable clamp with a small screwdriver in advance, so you can then slide the cables in.**



## 5.5. Assembly - Electronics / Tank



**Insert coolant pump, hoses and distributor in foam cover  
Connect earthing conductor contact to coolant pump  
Insert motor cable through opening  
Attach foam cover and metal cover and screw down**

**Warning - do not jam any cables when attaching the two covers !!!!!!!!!!!**

Tool:  
- Torx 20 screwdriver  
- PH2 cross-tip screwdriver





## 5.5. Assembly - Electronics / Tank



**Place coolant tank on top guide (yellow circle) and then press down**







## Tools

**Plastic hammer**  
**Steel hammer**  
**Drive pin**  
**Slotted screw driver big, small**  
**Allen key 2, 3, 4, 5 mm**  
**Cross slotted screw driver PH 1, PH 2**  
**Torx screw driver TX 20**  
**Circlip plier inner, outer**  
**Flat plier**  
**Ring wrench 13 mm**  
**Fork wrench 17 mm**

**All tools are available in normal retail**

**FEIN – Spezial tools : various pulling off devices for ball bearings**



## Magnet switch flashing code

Flashing code	Frequency	Possible fault
regular: slow	100ms ON 100ms OFF	Magnet power too low
regular: fast	48ms ON 48ms OFF	Magnet current too high Drill stand temperature too high
long-short	400ms ON 100ms OFF	<b>Magnet holding force reduced to 50%</b> Electronic drill stand defective Magnet current too low, magnet possibly defective communication error between drill stand and drill motor

