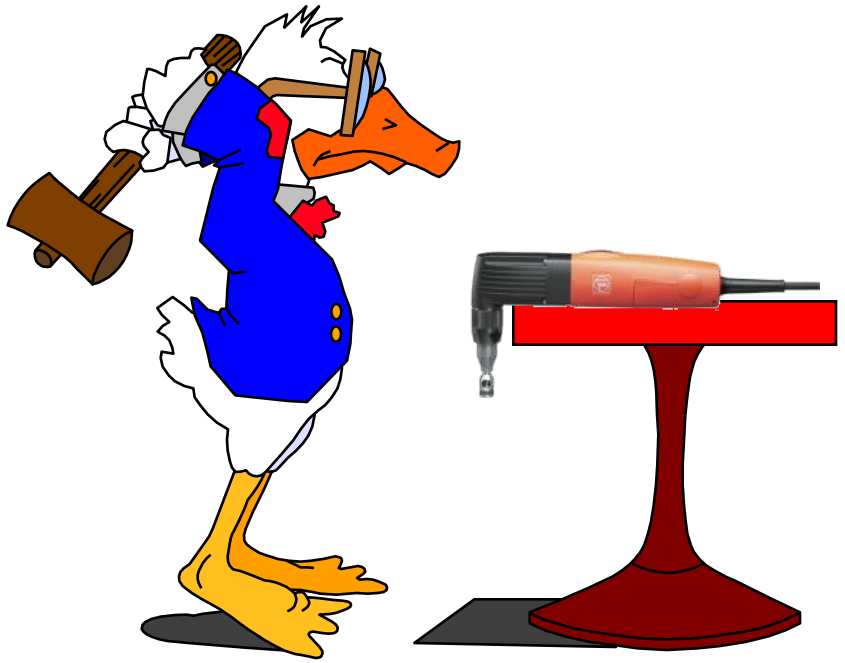
# FRT: BLK 2.0

## Starting page



# FRT: BLK 2.0

## Contents



For drawings and lists of spare parts, see Internet

**www.fein.de**

# FRT: BLK 2.0

## 1. Technical data

| | | | | | |
|---|---|---|---|---|---|
| **Part number** | | **7 232 36** | **7 232 35** | **7 232 37** | **7 232 29** |
| **Model** | | **BLK 1.3 CS** | **BLK 1.3 T** | **BLK 1.6 L** | **BLK 2.0** |
| **Power consumption** | **Watt** | **350** | | **350** | |
| **Power output** | **Watt** | **210** | | **210** | |
| **Power mains connection type** | | **1~** | | **1~** | |
| **Cutting speed** | **m/min** | **approx 2.3** | **approx 2.3** | **approx 2.7** | **approx 1.0** |
| **Stroke rate** | **rpm** | **1800** | **1800** | **1500** | **1000** |
| **Safety class** | | **II** | | **II** | |
| **Cable length with plug** | **m** | **5** | | **5** | |
| **Weight without cable** | **kg** | **1.75** | **1.75** | **1.9** | **1.8** |
| **Maximum material thickness:** | | | | | |
| **Steel up to 400 N/mm²** | **mm** | **1.3** | **1.3** | **1.6** | **2.0** |
| **Steel up to 600 N/mm²** | **mm** | **0.8** | **0.8** | **1.0** | **1.5** |
| **Steel up to 800 N/mm²** | **mm** | | | **0.7** | **1.0** |
| **Al up to 400 N/mm²** | **mm** | **2.0** | **2.0** | **2.5** | **2.5** |
| **Drill to plunge** | **Ø in mm** | **18.5** | **18.5** | **24** | **18** |
| **Cutting width** | **mm** | **5** | **5** | **5** | **8** |
| **Radius of smallest curve (inner)** | **mm** | **15** | **25** | **65** | **0** |
| **Radius of smallest curve (outer)** | **mm** | **20** | **30** | **70** | **4** |

# 2. Maintenance and repair

## 2.1. Regulations

**Regulations:**

Only specially trained electricians are permitted to repair, service and test electrical tools. Faulty or poor maintenance / repair work may expose operators to significant hazards (*BGV A2*).

Perform routine tests in accordance with *DIN VDE 0702-1*.

After repairs, observe the regulations specified in *DIN VDE 0701 Part 1*.

**Only use original FEIN replacement parts!**

Whenever operating the tool, be sure to comply with the pertinent accident prevention regulations as stipulated by your local liability insurance association.

This tool is intended to be operated in full compliance with the pertinent equipment and product safety laws.

When outside of Germany, comply with the locally valid product safety regulations!

## 2.2. Cleaning and care

**Injury hazards**

**through unintentional switch-on.**

**Always unplug the mains cable before cleaning the tool.**

**Do the following once per week, but more often if the tool is used frequently:**

- **Clean the cooling vents.**
- **Use compressed air the clean the motor area from the outside.**
- **Apply grease between the punch and the die holder:**
  **85 g tube (3 21 60 003 19 8)**

## 2.3. Carbon brush replacement:

**The machine is equipped with carbon brushes that switch off automatically.**

**When checking the carbon brushes, make sure that they are reinstalled in the same position and move easily in the carbon brush holder.**

**Once the carbon brushes wear down to a length of just 7 mm, replace them with new carbon brushes.**

**Only use original FEIN carbon brushes, otherwise EMC requirements may not be fulfilled!**

**Begin by ‘wearing in’ the carbon brushes for 20 minutes without load at the lowest possible speed.**

## 2.4. Maintenance and service intervals

**After approx. 300 operating hours:**

- **Disassemble the machine and clean it; use compressed air or a brush to clean the insulating components**

**Depending on type and duration of usage, but every 6 months at the latest:**

- **Disassemble machine**
- **Thoroughly clean machine**
- **Wash out the gears using detergent and regrease them**
- **Replace the bearings**
- **Check cables and inner strands for abrasions**
- **Check for good fit of plugs and sockets**

# 3. Electrical function test

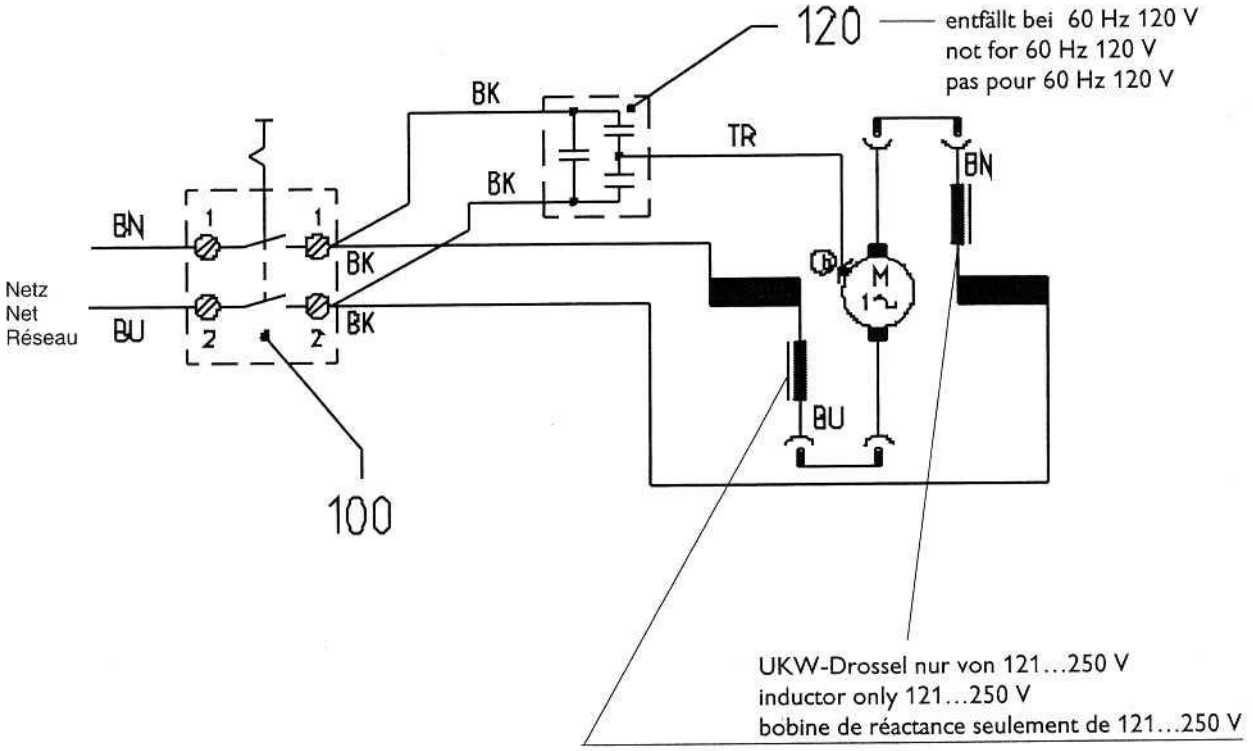
## 3.1. Test data for BLK 2.0

| | | |
|---|---|---|
| Part number | | 7 232 29 |
| Model | | BLK 2.0 |
| Power consumption | Watt | 350 |
| Power output | Watt | 210 |
| Power mains connection type | | 1~ |
| Cutting speed | m/min | approx. 1 |
| Stroke rate | rpm | 1000 (900 - 1100) |
| Safety class | | II |
| Cable length with plug | m | 5 |
| Weight without cable | kg | 1.8 |
| No-load current | A | 0.65 (0.58 - 0.75) |
| Idle speed | rpm | 1700 (1538 - 1870) |

## 3.2. Testing devices and aids

- Multimeter for measuring RMS values (voltage, current, resistance)
- Speed gauge, impulse counter (suitable for pendulum movement)

## 3.3. Connection plan

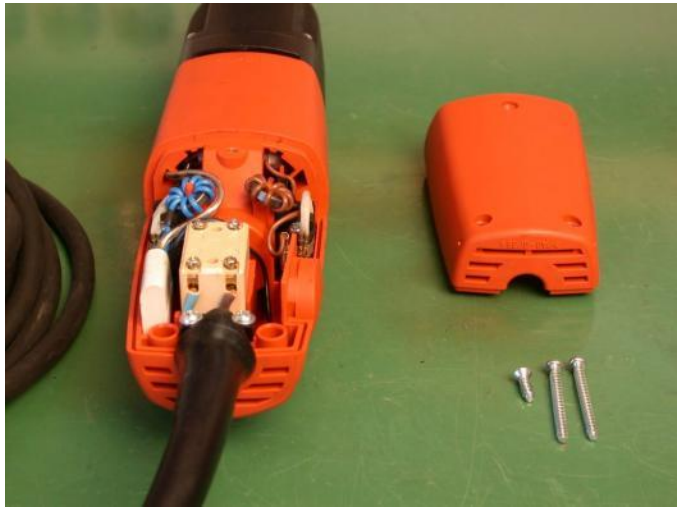


# 4. Disassembly

## 4.1. Disassembly - Preparation

Before beginning to disassemble the tool (motor and gearbox), always disconnect the machine from the mains.

## 4.2. Disassembly - Motor



1. Remove the bolts and detach the cover
2. Remove the carbon holder
3. Disassemble the switch and cable

Tools:

- Screwdriver Phillips PH 2
- Flat pliers

## 4.3. Disassembly - Disconnecting motor and gearbox

1. Remove the bolts
2. Disconnect the gearbox casing and armature from the motor case

Tools:

- Screwdriver Phillips PH 2
- Plastic hammer

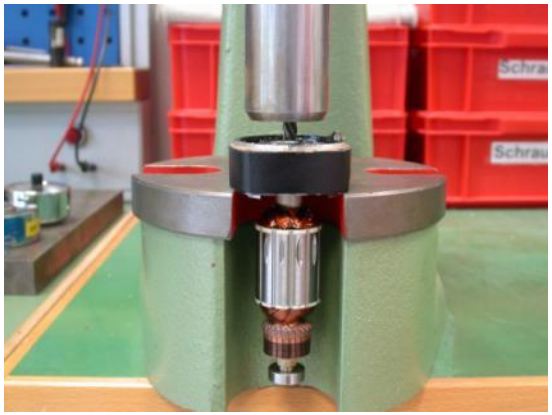
## 4.4. Disassembly - Field magnet

1. Remove the air conducting ring
2. Loosen the bolts on the field magnet and remove them
3. Use a hammer to lightly tap the field magnet out of the motor case

Tools:

- Screwdriver Phillips PH 2
- Plastic hammer

## 4.5. Disassembly - Armature and intermediate bearing



1. Remove speed reducer shaft from intermediate bearing
2. Use a press to force the armature out of the intermediate bearing
3. Extract the ball bearing from the armature shaft and replace it if necessary

Tools:

- Plastic hammer
- Mandrel press
- Ball bearing extractor 19mm Extracting bell w. and w/o tip

## 4.6. Disassembly - Gear / eccentric shaft

1. Extract the circlip, remove the gear and feather key
2. Extract the circlip, use a hammer to lightly tap the eccentric shaft and driver out of the gearbox case

Tools:

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

## 4.7. Disassembly - Gear box / plunger

1. Remove nut using open-ended spanner (size 30)
2. Carefully pull the plunger out of the gearbox case

Tools:

- Open-ended spanner (size 30)

## 4.8. Disassembly - plunger

1. Remove bearing sleeve with die and plunger
2. Remove plunger and punch from bearing sleeve
3. Disassemble snap ring, straight pin and die from supporting pin

Tools:

- Screwdriver
- Punch

## 5. Assembly

5.1. Bearing sleeve / die
5.2. Entire plunger
5.3. Plunger / gearbox case
5.4. Eccentric shaft
5.5. Gear / speed reducer
5.6. Armature / intermediate bearing
5.7. Motor / field magnet
5.8. Motor / armature with intermediate bearing
5.9. Carbon brush holder
5.10. Switch / mains power cable
5.11. Motor / gearbox case

## 5.1. Assembly - Bearing sleeve / die

1. Insert die onto supporting pin
2. Insert straight pin
3. Fasten snap ring

Tools:

- Flat pliers

- Screwdriver

## 5.2. Assembly - Entire plunger



1. Bearing sleeve with die, punch, plunger - lower part
2. Connect punch with upper and lower parts of plunger
3. Insert assembled plunger into bearing sleeve

**Apply Molykote lubricant between the punch and the die holder!!!!**

Grease:

- Tube 85 g
  3 21 60 003 19 8

## 5.3. Assembly - Plunger / gearbox case

1. Insert assembled plunger into gearbox case
2. Fasten inserted plunger using the nut

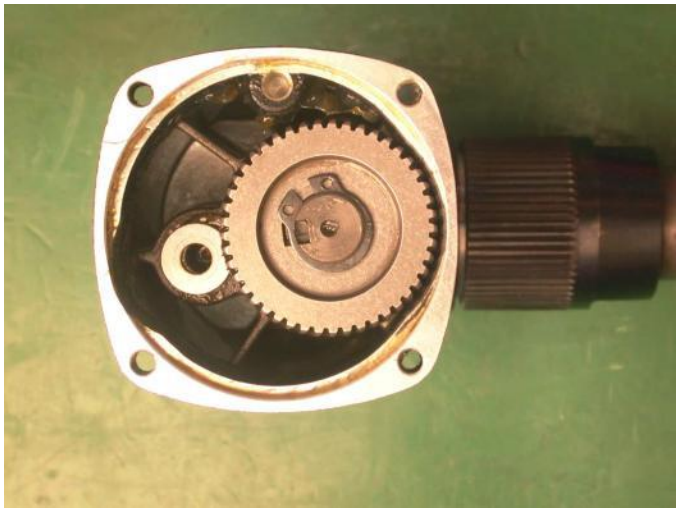
## 5.4. Assembly - Eccentric shaft

1. Insert driver with needle sleeve into plunger
2. Insert eccentric shaft into gearbox case (eccentric shaft must mesh with driver)
3. Fasten circlip

Tools:

- Needle-nosed pliers, straight
- Circlip pliers inside, straight

## 5.5. Assembly - Gear / speed reducer



1. Fasten feather key and gear to eccentric shaft and fasten circlip
2. Insert the speed reducer

Tools:

- Flat pliers
- Circlip pliers outside, straight

## 5.6. Assembly - Armature and intermediate bearing

1. Press on ball bearing and sealing ring
2. Press armature into intermediate bearing sign

Tools:

- Mandrel press

## 5.7. Assembly - Motor / field magnet

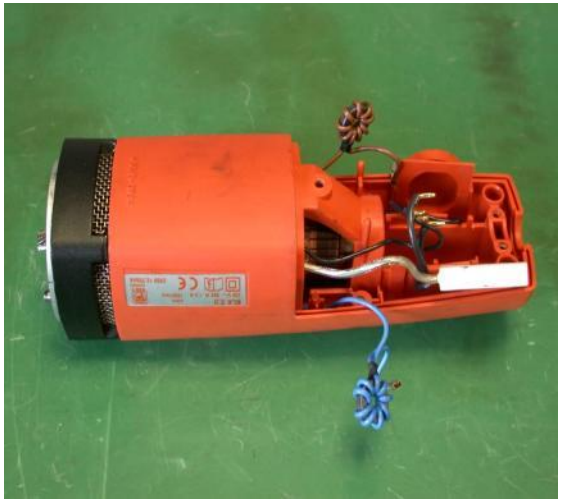


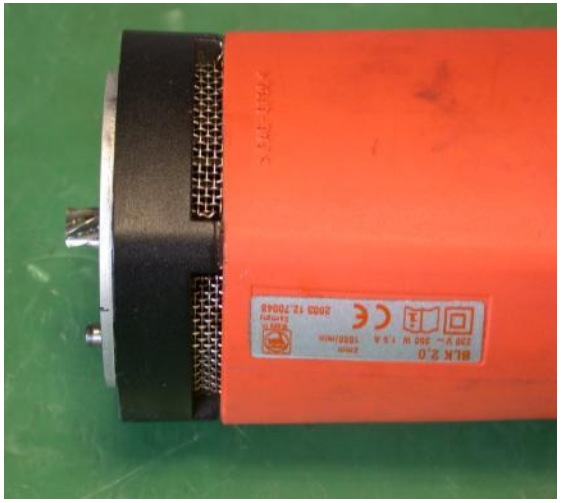

1. Insert cable into field magnet and install field magnet
   ID number on slider switch - at side
2. Tighten bolts
3. Insert cable into the intended cable guides

Tools:

- Screwdriver
  Phillips PH 2

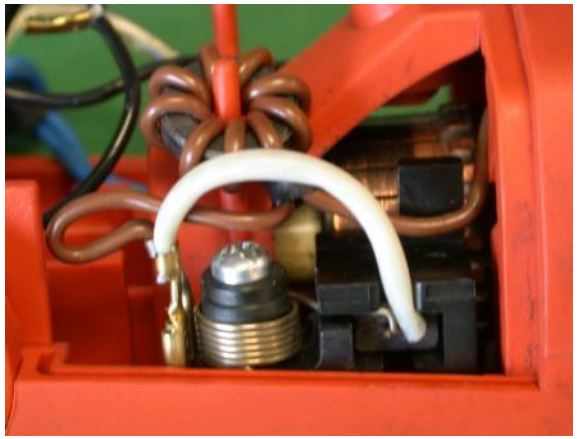
## 5.8. Assembly - Motor / armature with intermediate bearing

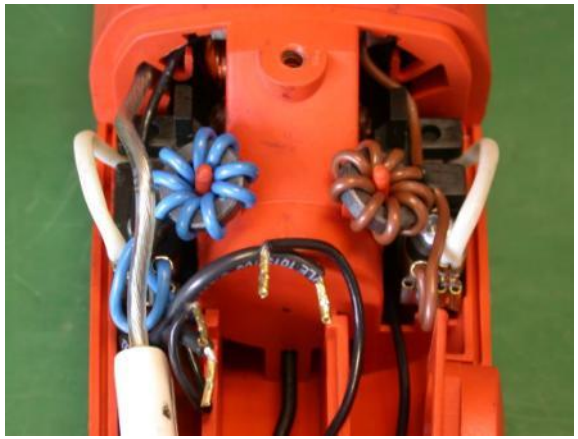




1. Insert armature with intermediate bearing into motor case
2. Check position of protective grating - at lower side of case and on side of type plate

## 5.9. Assembly - Carbon brush holder





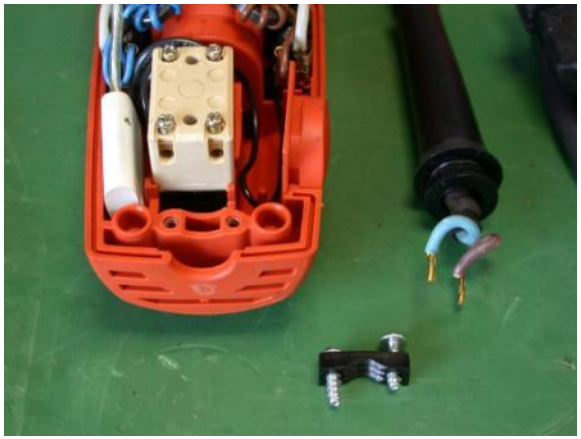
1. Check that cables are properly guided
2. Fasten carbon brush holder, insert carbon brushes and connect them
3. Make sure that cables are properly installed, fasten chokes to intended press

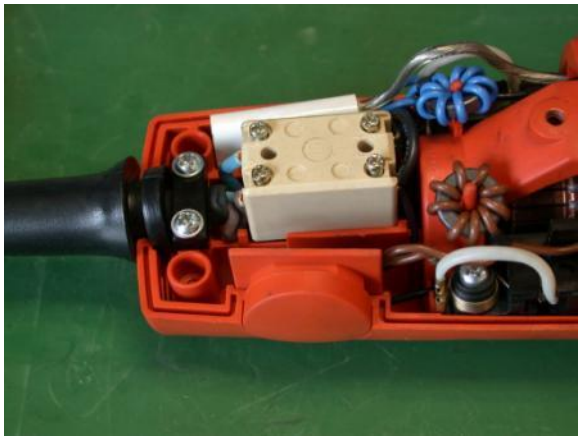
Tools:

- Screwdriver Phillips PH 2

- Cable hook

## 5.10. Assembly - Switch / mains cable





1. Insert switch
2. Connect motor cable, condensator and mains cable
3. Fasten strain relief
4. Install cover and fasten - **Do not pinch cable!**

Tools:

- Screwdriver
  Slotted,
  Phillips PH 2

## 5.11. Assembly - Motor / gearbox case


1. Place gearbox case onto motor and fasten it
2. Check for proper functioning

Tools:

- Screwdriver
  Phillips PH 2

# 6. Tools

## 6.1. All tools

| | |
|---|---|
| Open-ended spanner, size 30 | Retail |
| Plastic hammer | Retail |
| Screwdriver, slotted, PH2 | Retail |
| Cable hook | |
| Flat pliers | Retail |
| Needle-nosed pliers | Retail |
| Circlip pliers (outside, straight) | Retail |
| (inside, straight) | Retail |
| Punch | Retail |
| Mandrel press | Retail |

## 6.2. Special tools

| | | |
|---|---|---|
| **Ball bearing extractor**: | Extracting bell | 6 41 04 150 00 8 |
| | Clamping chuck | 6 41 07 019 00 7 |

## 6.3. Lubricants

| Fettart<br>Type of grease<br>Type de graisse | Tuben-Inhalt<br>Contents of tube<br>Contenu de tube | Bestellnummer<br>Order Reference<br>Référence | Fettmenge<br>Quantity<br>Quantité |
|---|---|---|---|
| 0 40 108 0400 8 | 85 g | 3 21 60 003 08 3 | **Für Getriebe:/for gears:/pour engrenages:** 15 g<br>Nadellager (450, 650) und Kugellager (420)<br>Needle bearing (450, 650) and ball bearing (420)<br>Roulement à aiguilles (450, 650) et roulement à billes (420)<br>ungefähr 1/3 des Raumes zwischen Innen- und Außenring<br>approx. 1/3 of the space between inner and outer ring<br>environ 1/3 du volume entre bague intérieure et extérieure |
| 0 40 119 0500 7 | 85 g | 3 21 60 003 19 8 | Gleitflächen von Stößel (610,620) und Pleuel (640) sowie Stempel (660) einstreichen<br>Lubricate the sliding surfaces of the plunger (610, 620), connecting rod (640) and also the punch (660)<br>Enduire les surfaces de glissage du coulisseau (610, 620) et de la bielle (640) ainsi que le poinçon (660) |

## 6.4. Adhesive, sealing and other agents

| Order no. | Designation | Colour | Con-tents | Description | Machine types |
|---|---|---|---|---|---|
| | | | | | |
| 0480050003<br><br>0480050033 | Loctite 574 | Orange | 250 ml<br><br>100 ml | Surface sealant, fast hardening, max. gaps of up to 0.5 mm<br><for Al joints> | Between external bearing (590) and intermediate bearing (390) |
| | | | | | |

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## Last and most important page

**Thank you for your attention and good luck for the trouble shooting !!!!!!!!!!!!!!!**