EATON Germany GmbH – Werk Lohmar
D-53797 Lohmar

Powering Business Worldwide

Operating
and Maintenance Instructions

WALFORM Machine M-WF385X/BO

Electronically controlled - Conforms to CE

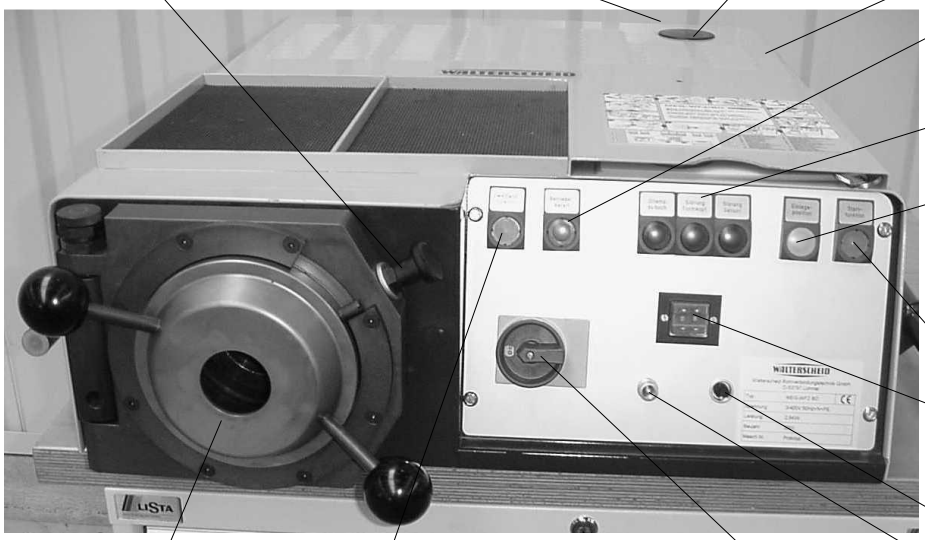
Status: September 2010
MEG-WF385X-BO_E Stand Sept 2011.DOC

This WALTERSCHEID machine is determined for the reshaping of hydraulic tubes with diameters of 6 to 60 mm (FLARING tube fitting system) and diameters of 6 to 42 mm (WALFORM tube fitting system). It is suitable for efficient production of consistent, high quality.

Designation of your WALFORM machine

Type: MEG-WF385X/BO Serial No._____ Delivery date:_____
Reference 623487

Operating and monitoring elements



Technical data

Dimensions / Weight		Electrical connection		Hydraulics
Weight	**appx. 250 kg**	**Voltage**	**400 V/ 50 Hz**	**2-stage pump**
Depth	**99,0 cm**	**Fuse**	**16 A**	**Oil: HLP-D 32**
Width	**85,0 cm**			**Quantity: 5 litres**
w/o handles	67,5 cm	**Noise level**	**< 70 dBA**	**Pressure: max. 650 bar**
Height	**27,5 cm**	**Power consumption**	**2,8 kW**	

CONTENTS

1 Obligatory precautions

These instructions must be accessible to all operators!

Read first - operate later!

You must become familiar with the control and operating elements before using this machine.
If in doubt, consult a specialist or the Customer Service Department at EATON.

This machine from EATON Germany GmbH corresponds to the valid European safety regulations and the latest state of the art. Nevertheless, careless handling of the machine can cause injury or damage.
In order to avoid this, every operator must:

- be authorised, qualified and well trained
- make sure that absolutely nobody is within the safety area
- wear personal protection clothing (safety shoes, glasses, gloves)
- use the machine for the intended purpose only and, above all, observe the performance limits
- make sure and understand that unqualified machine changes and intervention are strictly forbidden !!

Take safety information seriously!

Warning! indicates direct technical risks

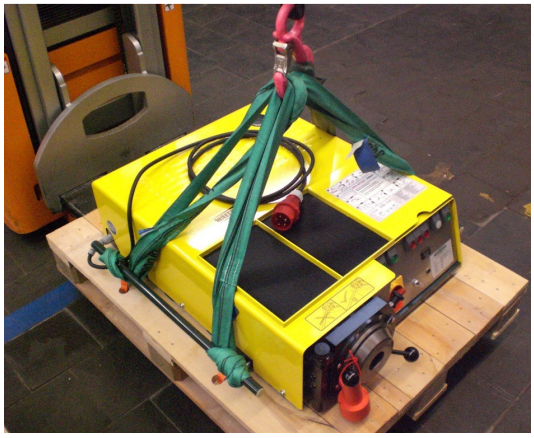
Caution! points out potentially dangerous conditions

Observe **industrial safety and environmental protection** regulations!
Dispose of old hydraulic oil in accordance with the regulations!

Failure to observe these instructions makes you liable for any loss or damage suffered by third parties and releases EATON Germany GmbH from any and all compensation obligations.

2 Transport and Installation

Transport



- **For the transport use only and exclusively suitable transport packaging and sling-gear (see illustration). Handles are supposed to be used as fixing points.**

The workroom

- must be free of chips; attention: a risk of rejects
- may not have an explosive atmosphere (ignition risk due to sparking)
- has to secure a save and even standing position for the machine (appx. 250kg)
- has to provide a user-friendly work-heights

Neatness and cleanliness

- protect you against injury, malfunctions and damage

Keep the inside of the housing dry

- Cleaning agents, oil or rain can cause faults and damage the electrical components.

Ambient temperature

- At least +10 °C; lower oil temperatures lead to malfunctions.

WALTERSCHEID

Use **only ORIGINAL parts and accessories**; otherwise, we cannot guarantee the perfect, coordinated operation of the components.

3 Operation Flaring

3.1 Tubes

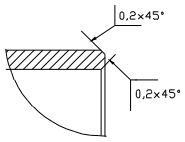
A tube grade suitable for cold-bending and flaring is to be used, pursuant to DIN 1630, Type NBK-3.1 B, material St37.4. Tolerances to DIN 2391, part C.

Tolerances to DIN 2462, Part 1, result in problems with clamping and fitting.

Tubes made of stainless steel (e.g. 1.4571) must be cold-drawn seamless and scale-free heat-treated, Form m to DIN 17458 and tolerances to DIN 2391, Sheet 1.

3.1.1 Tube preparation

1. Saw off at right angles!
   Do not use cutters or cutting-off wheels.



2. Deburr the tube ends inside and out! **Max. 0,2 mm!**
   Remove paint in the clamping and reshaping area.

3. Clean the bare metal of the tube end!
   Use an environment-friendly solvent to remove grease or oil.

4. !Caution! Make sure that the tube is in perfect condition, i.e.
   - no spalling,
   - no damage.

5. Most faults can be avoided simply by paying attention to
   - the tube diameter marked on the clamping jaw and the reshaper,
   - an oil-free clamping surface (avoids the tube slipping) and
   - a chip-free clamping surface (to ensure correct clamping of the tube).

Never switch the machine on
- **without clamping jaws!**
- **without a tube!**

3.2 Start-up

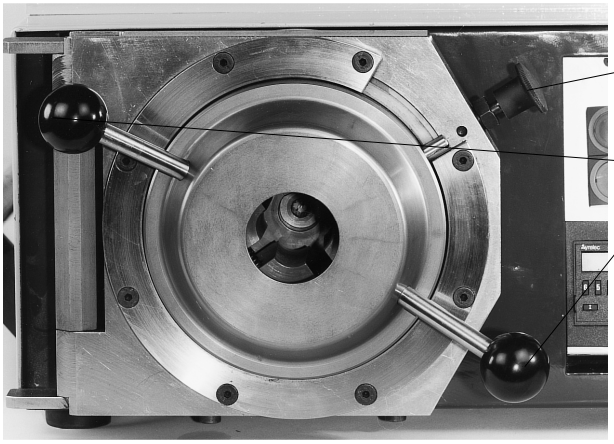
3.2.1 First commissioning

Before commissioning the maschine, the screw plug of the oil reservoir must be replaced by the vent screw included in the consignment.

If existing or requested:

- Insert the plug of the foot switch

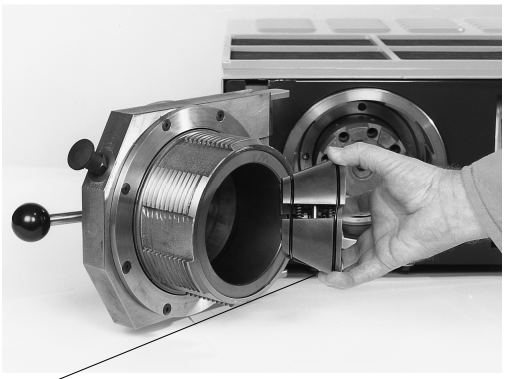
3.2.2 Disposition



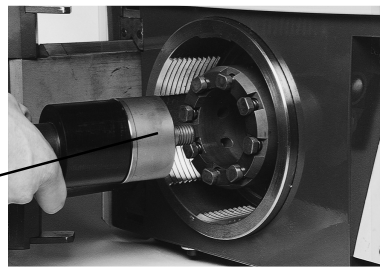
1. To open the tool holder remove the unlocking pin. Turn both tool holder handles anti clock-wise. Pull tool holder handles and move aside (attention: risk of clamping). Insert clamping jaw with minor pressure into the tool holder up to a noticeable catch. Fix reshaping stud hand tide using the assembly stud.

2. Insert the clamping jaw into the tool holder under slight pressure.

Attention: sharp-edged tools!



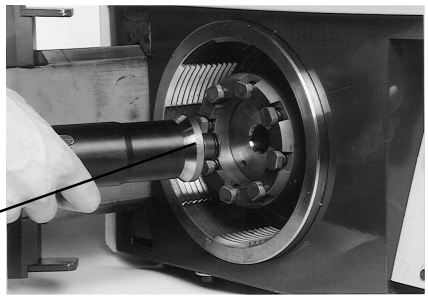
3. Using the unscrewing unit, screw in the adapter hand-tight.



Caution!

The clamping jaw and adapter for each size always form a single unit. Mixing the tools leads to faulty flaring results!

4. Insert the flaring mandrel into the insertion end of the assembly tool and apply slight pressure to slide it into the adapter.



Assembly tools

Assembly tools (for flaring mandrel)

Unscrewing unit (for adapter)

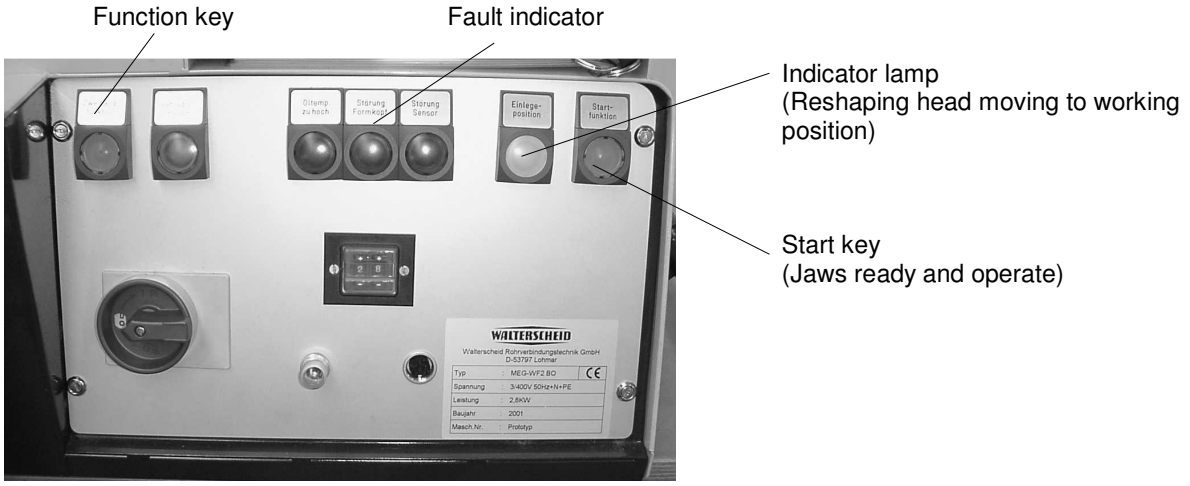
5. Close the tool holder. Swing the tool holder back into position and slide the tool holder back into its mount. Pull out the unlocking pin and turn both tool holder handles clockwise until the unlocking pin engages again.

6. Plug in the mains cable.

7. Set the master switch to I. I ON
   The "Machine ready indicator" (Mains on) light up.

3.3 Flaring procedure

1. Insert the tools (see 3.2.2) and close the tool holder. The red indicator lamp expires.



2. Press the **start key**. The machine is in its basic position.
   This procedure must be repeated after every tool change.

3. Press the **start key and function key** simultaneously and hold them down for approx. 2 sec. The ready indicator (white indicator lamp) lights up.
   The clamping jaws move to the insertion position.

4. Slide the flange onto the tube.

5. Slide the tube in horizontal direction firmly up against the flaring mandrel and hold it tight (Tube axis and tool axis must coincide)!

CAUTION!

6. **Set the flaring pressure according to the tube size.**

1. Press the **start key.** The procedure now runs automatically and cannot be interrupted.

8. Remove the flared tube.

9. Examine the flared tube for detectable quality defects,
   e. g. surface damage, spalling, cracks, etc.
   Check the control diameter
   Deviating flare diameters impair the function of the fitting.
   See Tables in the Appendix for the dimensions.

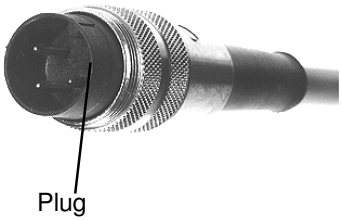
CAUTION!

Start the next flaring operation at Step 3

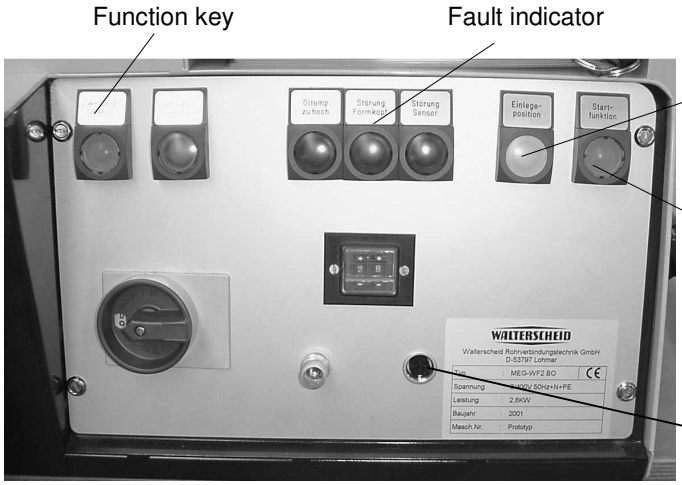
When changing tools, switch off the machine and start with Step 1 (Section 3.2.2)

3.4 Flaring procedure with foot switch

1. Insert the plug of the foot switch into the socket provided at the machine (underneath the master switch) and screw it tight. This can also be done while the machine is running.



2. Insert the tools (see 3.2.2) and close the tool holder. The red fault indicator lamp expires.



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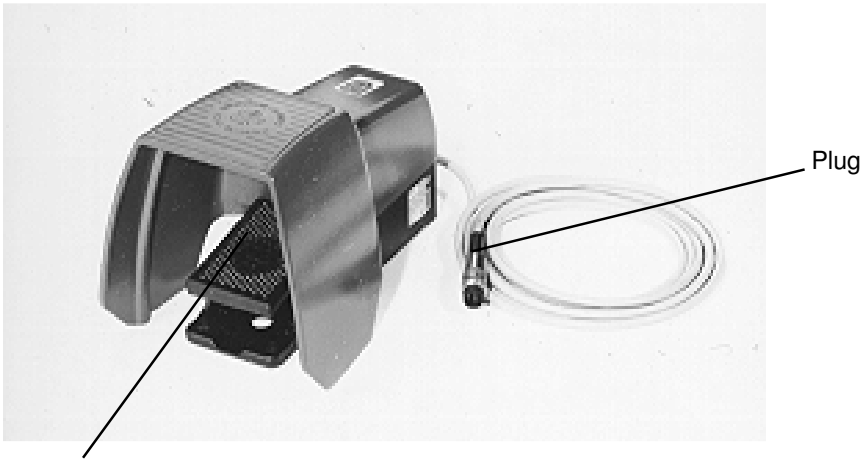
5. Slide the flange onto the tube.

6. Slide the tube in horizontal direction firmly up against the flaring mandrel and hold it tight (tube axis and tool axis must coincide)!

CAUTION !

7. **Set the flaring pressure according to the tube size.**

8. **Operate the foot switch**
   The procedure now runs automatically and cannot be interrupted.



9. Remove the flared tube.

10. Examine the flared tube for detectable quality defects, e.g. surface demage, spalling, cracks, etc.

Check the control diameter

Deviating flare diameters impair the function of the fitting.
See Tables in the Appendix for the dimensions.

Start the next flaring operation at Step 3.

When changing tools, switch off the machine and start with Step 1 (Section 3.2.2).

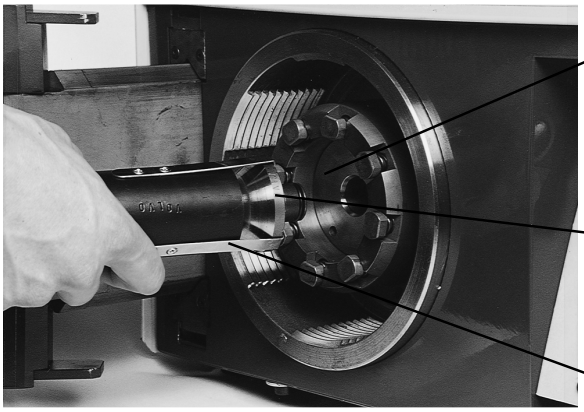
3.5 Switching off the machine

Set the master switch to OFF.

3.6 Changing the tools

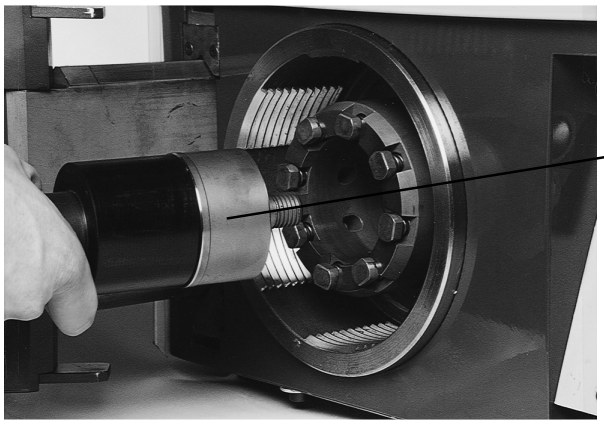
Flaring mandrel

Position the metal claws of the mounting tool (extraction end) over the flaring mandrel and extract the mandrel from the adapter with a sharp pull. Ensure that you are standing firmly at the time!



Adapter

Screw the adapter anticlockwise out of the holder using the unscrewing unit.



Clamping jaw

Force out the clamping jaws by applying slight pressure and tilting at the same time.

The clamping jaw and adapter for each size always form a single unit (see section 3.2.2).

4 Operation WALFORM

4.1 Tubes

A tube grade suitable for cold-bending and flaring is to be used, pursuant to DIN 1630, Type NBK-3.1 B, material St37.4. Tolerances to DIN 2391, Part C.

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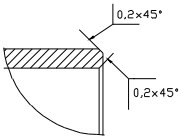
Tubes made of stainless steel (e.g. 1.4571) must be cold-drawn seamless and scale-free heat-treated, Form m to DIN 17458 and tolerances to DIN 2391, Sheet 1.

4.1.1 Tube preparation

1. Saw off at right angles!
   Do not use cutters or cutting-off wheels.



2. Deburr the tube ends inside and out! **Max. 0,2 mm !**
   Remove paint in the clamping and reshaping area.

3. Clean the bare metal of the tube end!
   Use an environment-friendly solvent to remove grease or oil.

4. !Caution! Make sure that the tube is in perfect condition, i.e.
   - no spalling,
   - no damage.

5. Most faults can be avoided simply by paying attention to
   - the tube diameter marked on the clamping jaw and the reshaper,
   - an oil-free clamping surface (avoids the tube slipping) and
   - a chip-free clamping surface (to ensure correct clamping of the tube).

Never switch the machine on
- **without clamping jaws!**
- **without a tube!**

4.2 Start-up

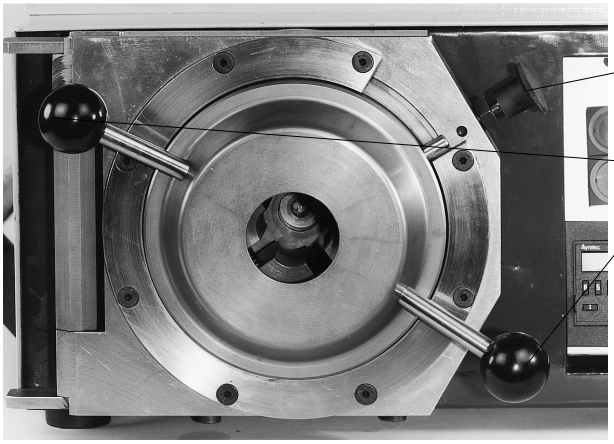
4.2.1 First commissioning

Before commissioning the machine, the screw plug of the oil reservoir must be replaced by the vent screw included in the consignment.

If existing or requested:

- Insert the plug of the foot switch

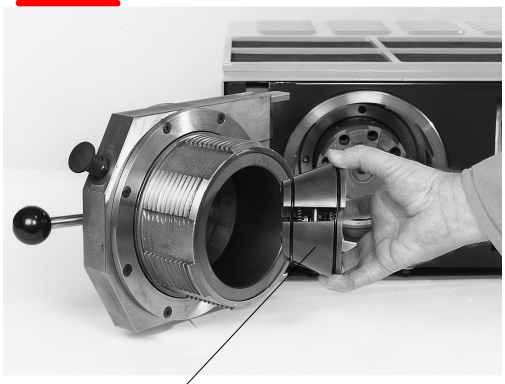
4.2.2 Disposition

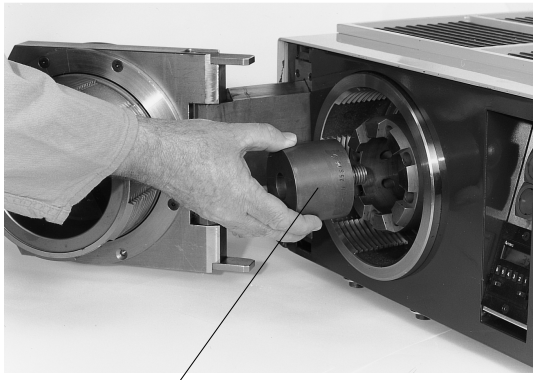


1. To open the tool holder remove the unlocking pin. Turn both tool holder handles anti clock-wise. Pull tool holder handles and move aside (attention: risk of clamping). Insert clamping jaw with minor pressure into the tool holder up to a noticeable catch. Fix reshaping stud hand tide using the assembly stud.

2. Insert the clamping jaw into the tool holder under slight pressure.

Attention: sharp-edged tools!


Clamping jaw

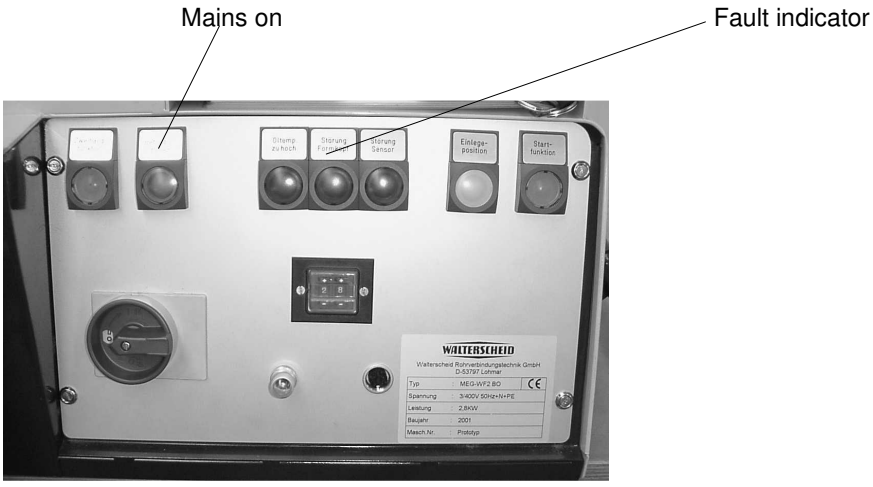

Reshaper

!Caution! The clamping jaw and reshaper for each size always form a single unit.

1. Close the tool holder. Swing the tool holder back into position and slide the tool holder back into its mount. Pull out the unlocking pin and turn both tool holder handles clockwise until the unlocking pin engages again.

2. Plug in the mains cable.

3. Set the master switch to I. I ON
   The "Machine ready indicator" (Mains on) light up.



4.3 WALFORM procedure

1. Insert the tools (see 4.2.2) and close the tool holder. The red indicator lamp expires.

2. Press the **start key**. The machine is in its basic position.
   This procedure must be repeated after every tool change.

3. Press the **start key and function key** simultaneously and hold them down for approx. 2 sec. The ready indicator (white indicator lamp) lights up.
   The clamping jaws move to the insertion position.

4. Slide the nut onto the tube.

5. **Insert the tube horizontally up to the stop and hold it tight !** (Tube axis and tool axis must coincide)

6. **Set WALFORM pressure on 99 %!**

CAUTION!

2. Press the **start key.** The procedure now runs automatically and cannot be interrupted.

8. Remove the reshaped tube.

9. Examine the reshaped tube for detectable quality defects,
   e. g. surface damage, spalling, cracks, etc.
   Check the control diameter
   Excessively small reshaping diameters impair the funktion of the fitting.
   See Tables in the Appendix for the dimensions.

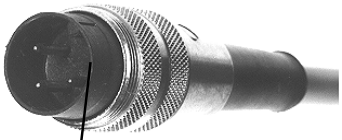
CAUTION!

Start the next WALFORM operation at Step 3

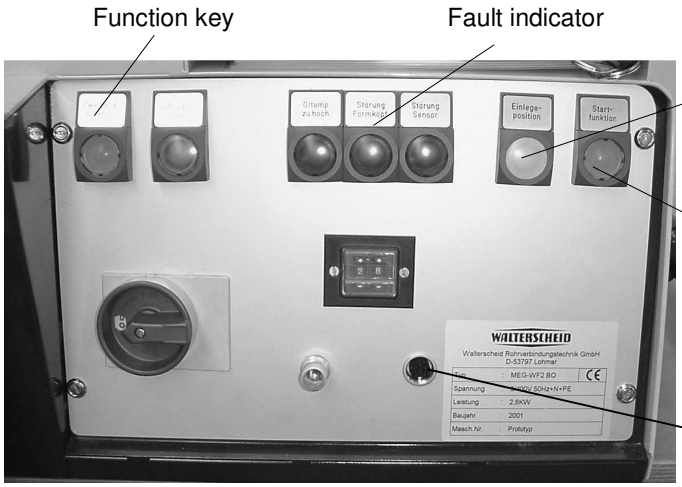
When changing tools, switch off the machine and start with Step 1 (Section 4.2.2)

4.4 WALFORM procedure with foot switch

1. Insert the plug of the foot switch into the socket provided at the machine (underneath the master switch) and screw it tight. This can also be done while the machine is running.



2. Insert the tools (see 4.2.2) and close the tool holder. The red fault indicator lamp expires.



3. Press the **start key.** The machine is in its basic position.
   This procedure must be repeated after every tool change.

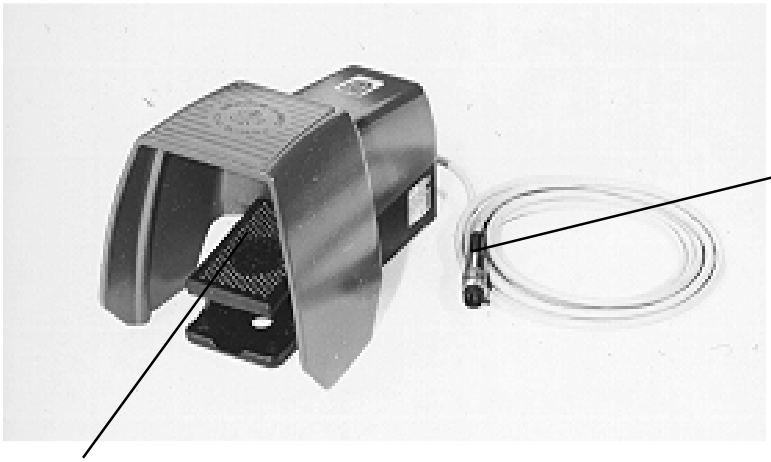
4. Press the **start key and function key** simultaneously and hold them down for approx 2 sec. The ready indicator (white indicator lamp) lights up. The clamping jaws move to the insertion position.

5. Slide the nut onto the tube.

6. **Insert the tube horizontally up to the stop and hold it tight!** (Tube axis and tool axis must coincide)

7. **Set WALFORM pressure on 99 %!**

8. **Operate the foot switch**
   The procedure now runs automatically and cannot be interrupted.



9. Remove the reshaped tube.

10. Examine the reshaped tube for detectable quality defects, e.g. surface demage, spalling, cracks, etc.

Check the control diameter

WARNING!

Excessively small reshaping diameters impair the function of the fitting. See Tables in the Appendix for the dimensions.

Start the next reshaping operation at Step 3.

When changing tools, switch off the machine and start with Step 1 (Section 4.2.2).

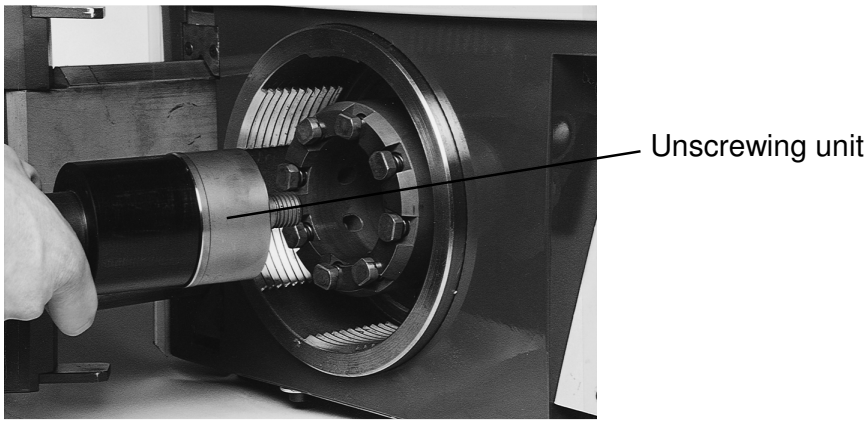
4.5 Switching off the machine

Set the master switch to OFF.

4.6 Changing the tools

Reshaper

Screw the reshaper anticlockwise out of the holder using the unscrewing unit.



Clamping jaw

Force out the clamping jaws by applying slight pressure and tilting at the same time.

The clamping jaw and reshaper for each size always form a single unit (see section 4.2.2).

5 Help in the event of faults

5.1 Self-correctable faults

Observation	Possible cause
Tube slips	• Clamping jaw dirty or worn • Tube tolerances no to DIN 2391
Reshaped end not fully shaped or too small	• Tube not pressed against stop • Reshaping tools defective
Surfaces not clean	Tools worn or material build-up
Machine fails to start	Tool holder poorly positioned or function key not pressed after start or tool change
Tool mount does not close	Remove clamping jaw, close tool mounts, activate start key
Machine operates too slowly	• Oil too cold. Temperature not below 10 °C
In the event of any other problems, call the Walterscheid Customer Service! **! CAUTION !** Unauthorised opening of the housing invalidates our guarantee and liability.	

If the Emergency STOP switch has been pressed during a fault, the tube can be removed by switching the machine back on and pressing the start key. The tool is then retracted and releases the tube.

Please make sure beforehand that no danger to man and machine can result from switching the machine back on.

5.2 Complaints

Call the Customer Service Department immediately to discuss complaints.

5.3 Customer and repair service

You can reach the EATON Germany GmbH Application Technology Service under the number:

Tel (+49) 2246 / 12 – 3834 o. -3800
FAX (+49) 2246 / 12 – 3689

Off the regular office hours:

(+49) 172 / 20 85 47 1

We will do our best to help you immediately.

When shipping your machine to us, please use the following address:

Eaton Germany GmbH
Werk Lohmar
Wareneingang
Hauptstrasse 150
D-53797 Lohmar

If possible, please use the original packaging or a euro pallet (80 x 120 cm) in order to avoid damage during transport.

You can avoid time-consuming complications in handling the problem by providing us with the following information at the outset:

- Brief description of the **fault symptoms**, preferably a processed sample with the fault marked.
- A copy of the **purchase contract.**
- Information on what steps you have already taken to eliminate the fault.
- Name and telephone number of a contact at your company.

6 Maintenance

6.1 Cleaning the machine

Disconnect the plug!

Cleaning work is restricted to external care of the machine and cleaning of the loading area for the clamping jaws.

! WARNING ! Do not allow any fluids to get inside the housing.

6.2 Care of the clamping jaws and reshaper

- Switch the machine "**OFF**" - **Disconnect the plug!**

- Unlock the tool holder, pull it forwards, then swing it to the side and secure it.
- Before inserting the clamping jaws, makes sure that they, and the mounting area, are free of dirt, grease and chips. Check retaining rings and springs.
- Lightly oil the sliding surfaces of the tool holder from time to time.
- Check the reshaper and clamping jaws for wear.

6.3 Removing the tools

- Switch the machine "**OFF**" - **Disconnect the plug!**

- Unlock the tool holder, pull it forwards, then swing it to the side and secure it.
- Force out the clamping jaws by applying slight pressure and tilting at the same time.
- Twist out the reshaper.

6.4 Changing the hydraulic oil

- At least **once per year** - **after 2,000 hours of operation** at the latest.

- Use **grade HLP - D 32** to DIN 51 524, Part 2.
  e. g. ESSO Nuto H32 or Aral Vitam DE 32.

Ensure that the old oil is disposed of in accordance with the regulations. The statutory provisions apply.

- In order to open the oil drain on the bottom, support the machine (appx. 250 kg!) in such a way that it cannot tip over.

CAUTION! Use a lifting aid.

- In order to refill, remove the plastic stopper (prise off with a screwdriver) and the screw cap on the top of the machine. After draining off the old oil, pour in the new oil (approx. 5 litres) through a funnel with a fine-mesh filter (mesh width less than 0.4 mm) up to the middle of the oil level window (right-hand side) with the machine in a horizontal position.

Date of last oil change:

7 Accessories

Please check that the delivery is complete immediately upon receipt.

7.1 Standard accessories

- Extractor for the reshaper
- Conformity declaration
- Operating instructions

7.2 Optional accessories

- Foot switch

8 Changing the tool holder

Disconnect the main plug!

The MEG-WF385X/BO machine can be used for flaring as well as for WALFORM. In this context, it must be ensured that the appropriate tool holder is installed for the respective system (WALFORM or flare fitting).

1. Switch off the machine and disconnect the main plug.

2. Open the tool holder. Pull out the unlocking pin and turn both tool holder handles anti-clockwise. Pull the tool holder out by the handles and swing it to the side.

3. Pull out the carriage up to the stop and secure it using the Clamping device supplied.

4. Remove the locking bolts.

5. The tool holder can now be removed from the carriage.

6. Clean the surfaces of the new reshaping head and grease them lightly if necessary.

7. Slide the reshaping head onto the carriage so that the bores are aligned above one another.

8. Secure with locking bolts.

Fit the machine with the appropriate tools.