Translation of the original

Operating Manual



Tube end forming machine

SFO-F-A-A

To avoid injuries and damage read this operating manual thoroughly and attentively.
Retain it for further reference.

R01_en

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1 Information about the manual

This manual includes important instructions and information on the intended use. Keep the operating manual where it can be accessed by the operating personnel.

1.1 Target group of the operating manual

The operating personnel tasked with the following work has to read and observe this operating manual:

- installation
- operation
- malfunction
- maintenance

See personnel qualifications ▸ chapter 2.4, p. 9.

1.2 Warnings structure

Coloured signal word boxes emphasise the warnings. Always read the full warning text for effective protection against hazards!

The different colours and signal words of the following boxes designate various hazard levels:

⚠ DANGER

Ignoring this warning results in serious or lethal injuries.

⚠ WARNING

Ignoring this warning can result in serious or lethal injuries.

⚠ CAUTION

Ignoring this warning can result in minor or moderately severe injuries.

IMPORTANT

Ignoring this warning can result in property damage.

Warnings are always structured in the same manner. They include the signal word, hazard type and source, consequences of ignoring them and steps to ward off/avoid hazards.

Example:

⚠ WARNING

Hazard of shearing off and crushing fingers

- ► Ensure before startup that all safety equipment is properly installed and in working order!
- ► Ensure that your fingers are not in the forming area when carrying out the machine functions!

1.3 Instructions structure

Instructions are a direct request to carry out a task. They are structured in line with the operation involved. Always carry out the operating steps in the prescribed sequence.

The instructions are structured as follows and marked with the appropriate symbols:

► Objective of the instruction

1. Operating step
   ✓ Effect of the operating step to check if the step has been executed correctly.
2. Additional operating step

☑ Result of the overall instruction

1.4 Additional information structure

Text marked with an info symbol provide additional information and tips.

1.5 References structure

References are shown in this manual as follows:

Example:

"… only operate the machine as intended ▸chapter 2.2, p. 8."

2 For your safety

To avoid accidents and injuries, …

- observe all general and specific safety instructions and the warnings in this manual
- observe hazard and prohibitory signs
- follow the accident prevention regulations and directives applicable at the place of operation
- observe all inspection and maintenance intervals
- only operate the machine as intended

2.1 General safety instructions

Safety instructions help you in avoiding injuries and damage. Ensure that you have read and understood all the safety instructions in this operating manual.

Safe working entails doing more that just reading the general safety instructions in this chapter. Also read and observe the specific safety instructions in all chapters affecting your work. Also observe information in the referenced product documents.

The following general safety instructions apply to all work undertaken on the machine:

- Observe the valid national and international health and safety regulations.
- Only operate the machine …
  - in a technically satisfactory condition
  - taking into account safety and hazards
  - according to the intended use
  - in compliance with this operating manual and
  - with all protective devices unchanged, complete, correctly installed and functioning
- Wear the appropriate personal protective equipment for all work on the machine ▸chapter 2.5, p. 9.
- Observe all safety markings attached to the machine ▸chapter 2.6, p. 9.
- Work on electrical equipment may only be carried out by Walter Stauffenberg GmbH & Co. KG.
- Immediately rectify faults which affect your safety and the reliable operation of the machine. Take the machine out of service until the fault is rectified.
- Components – except tools – may only be replaced by Walter Stauffenberg GmbH & Co. KG.

- Keep away from moving parts. Wear close fitting clothes. Tie long hair back to prevent it from being drawn into the machine. Remove any rings and necklaces before the work.
- Be aware of the presence of residual energies in mechanical, hydraulic and electrical components.

2.2 Intended use

The tube end forming machine is designed exclusively for machine forming of seamless precision steel tubes according to EN 10305-1 with an outer tube diameter between 6 mm and 42 mm.

The machine is used together with internal tube support, tube shaper and shaping jaws which are specially designed for machine forming of tube ends.

The machine may only be used within the specifications prescribed in the chapter Technical Data ▸chapter 3.2, p. 13 and in compliance with the maintenance instructions and other instructions in this manual and in the referenced documents.

No changes, attachments or conversions may be carried out without consultation with the manufacturer. Such modifications could limit the operating safety of the machine and are considered to be a violation of intended use.

Any use other than the intended use is not permitted.

2.3 Tasks and obligations of the operating company

In addition to the instructions and information in this operating manual, the general, statutory and other mandatory regulations on accident prevention and environmental protection also have to be observed.

To ensure safe machine operation, the operating company has to at least …

- ensure that the machine is only operated as intended, in proper condition, with all safety devices fully installed and without damage
- establish the area of application and prepare the corresponding operating instructions
- always keep the safety markings attached to the machined complete and legible
- make the operating manual available in a complete and legible form at the operating location of the machine at all times
- instruct the personnel working on the machine in the corresponding tasks on the machine
- acquire the regulations applicable to the machine in their most recent version and to familiarise personnel working on the machine with these

- provide the personnel operating the machine with the required personal protective equipment
- carry out a safety briefing on the machine
- ensure sufficient ventilation and lighting of the work area

2.4 Personnel qualification

Any work on the machine may only be carried out by qualified and authorised personnel. Personnel instructed, trained or briefed in the work involved is considered to be qualified. This has to be backed up by appropriate certificates and records.

A distinction is made in this manual between:

- **Operating personnel** - those who have been demonstrably briefed in operation and function of the machine. They input the data required for the operation and carry out the required operating steps to operate the machine. They are also responsible for simple maintenance work and fault rectification as described in ▸chapter 7, p. 45 and ▸chapter 8, p. 53 .
- **Personnel learning on the job** may only work on the machine under the constant supervision of personnel qualified for this work.

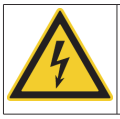
2.5 Personal protective equipment

The following personal protective equipment is mandatory for those working on the machine:

	Wear close fitting work clothes!
	Wear safety boots!

2.6 Safety markings

The following safety markings are attached to the machine in a clearly visible and legible manner:

	Warning – dangerous electrical voltage!
	Warning – hand injuries!

2.7 Safety devices

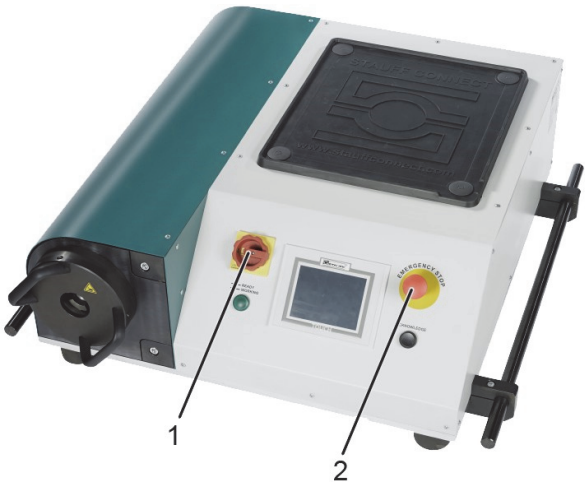
Safety devices protect operating personnel against hazards.

Before each startup of the machine, all safety devices have to be fitted correctly and in working order.

Safety devices may only be removed when the machine has stopped and is protected against being accidentally switched on again by means of a padlock or a similarly suitable measure.

The following safety devices are attached to the machine or have to be fitted by the operating company:

Electrical main switch	The electrical main switch is located at the front of the machine. The electrical main switch de-energizes the entire machine (position: 0). The electrical main switch is secured against being accidentally switched on again ▸chapter 2.8, p. 11.
Emergency stop button	Pressing the emergency stop button triggers an emergency stop resulting in all machine movements being stopped. To start the machine up again, the activated emergency stop has to be released ▸chapter 6.3, p. 26.



1 Electrical main switch
2 Emergency stop button

1: Safety devices

2.8 Securing machine against switching on

▶ Secure the machine against being switched back on:

1. Ensure that …
   ✓ a lock is available for securing the machine against being switched on (not in the scope of delivery).
2. Switch off the machine as described.
3. Protect the electrical main switch with a lock.

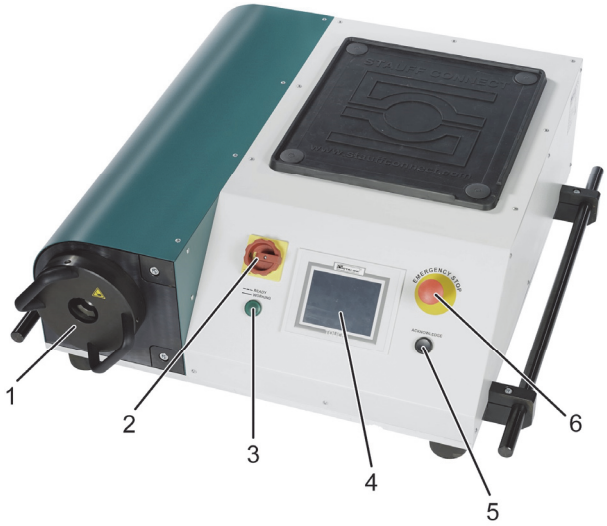


2: Electrical main switch protected with lock

☑ The machine is secured from being inadvertently switched back on.

3 Machine description

3.1 Machine overview



3: Overview of operating elements

Pos.	Designation	Description
1	Grip head	Process workpiece
2	Electrical main switch	Switch machine on/off
3	Light Ready/Processing	Machine ready for operation, machine operating
4	Control panel	Machine set-up
5	Acknowledge button	Confirm message
6	Emergency stop button	Stops machine in an emergency
	RJ45 interface	PC connection; at the back of the machine
	Power supply	At the back of the machine

3.2 Technical data

General data	
Dimensions (W x D x H)	850 mm x 890 mm x 330 mm
Weight incl. oil:	210 kg

Electrical power	
Electrical connection:	400 V / AC3 / 50 Hz 460 V / AC3 / 60 Hz
Current consumption:	2.55 / 2.5 A

Hydraulic energy	
Oil capacity:	6.1 litres
Max. operating pressure:	700 bar

Installation requirements	
Ambient temperature:	Dry between 15 °C and 35 °C
Position	Horizontal

Sound pressure level	
in acc. with EN ISO 11202:2009:	68 dB(A)

3.3 Function

The machine forms tube ends to make them suitable for use with fittings according to ISO 8434-1. Seamless precision steel tubes according to EN 10305-1 with an outer tube diameter between 6 mm and 42 mm can be used.

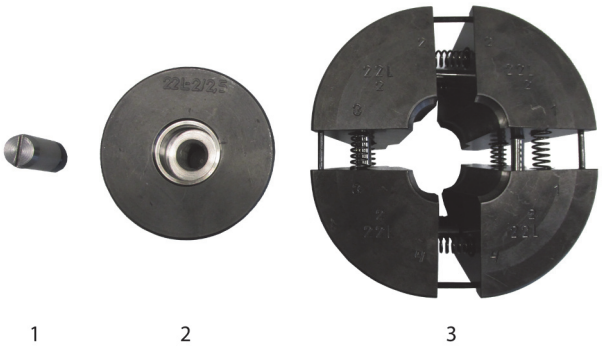
The machine is used together with internal tube support, tube shaper and shaping jaws which are specially designed for machine forming of tube ends.

3.4 Tools and product

The tube end forming machine forms tube ends. These form the basis for threaded fittings, consisting of the standard fitting body according to ISO 8434-1, the standard sleeve nut and the Stauff form ring with integrated soft seal.



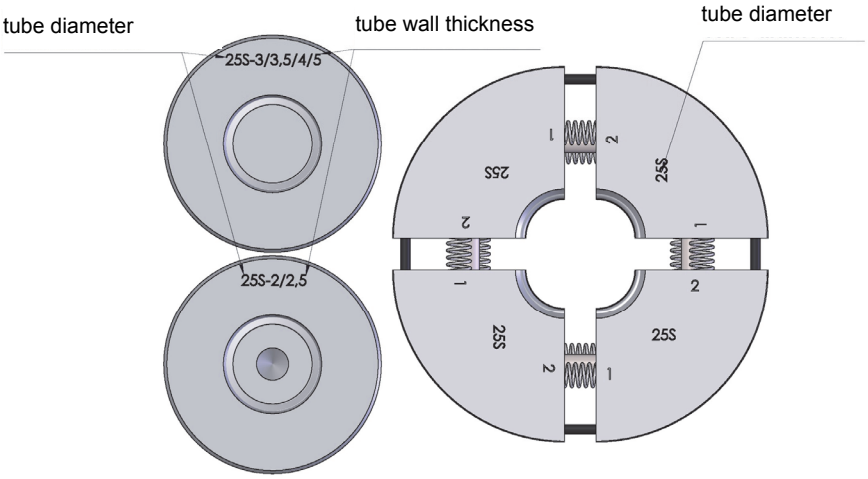
4: Product



1 Internal tube support
2 Tube shaper
3 Shaping jaws

5: Tools

The lettering on tube shaper and shaping jaws provide the following information:



6: Size

IMPORTANT

Damage to the tool from incorrect internal tube support

► Tube shapers with internal hole are designed for forming with internal tube supports. Ensure to always use the correct internal tube support for the wall thickness selected as otherwise the tool can be damaged!

Please refer to the Stauff product catalogue for additional information on selection of the size.

3.5 Type plate

The type plate is located on the side of the machine.



7: Type plate

3.6 Spare and wear parts

IMPORTANT

Replacing components

Machine damage, malfunctions, faults

- ► Any work for which the machine has to be opened may only be performed by Walter Stauffenberg GmbH & Co. KG!
- ► Maintenance work may only be carried out by authorised setup and maintenance personnel!
- ► Only use suitable tools in proper condition!
- ► Only replace components with original parts or parts authorised by the manufacturer!

Lists of authorised spare parts and wear parts can be obtained from Walter Stauffenberg GmbH & Co. KG.

4 Transport and storage

4.1 Safety

⚠ WARNING

Lifting loads

Serious or lethal injuries from falling/swaying loads

- ► Before raising the load, secure all moving components!
- ► Only use undamaged lifting equipment which is permitted for the weight of the load to be lifted!
- ► Only attach load attachment gear to the indicated attachment points!
- ► Never leave loads hanging in the lifting devices without supervision!
- ► Never stand underneath suspended loads!

⚠ WARNING

Transporting the machine

Serious or lethal injuries from tilting or slipping loads

- ► Before transporting the machine, fix all its moving components!
- ► Secure the machine against overturning or slipping out of position during transport!
- ► Only use transport vehicles suitable for the weight of the machine!

4.2 Handling

Information on dimensions and weight can be found in ▸chapter 3.2, p. 13.

Note the following during transport:

- The attachment points are the side bars/grips of the machine.
- Keep the machine horizontal during any transport. Note that the centre of gravity is in the installation area.
- Transport may only be carried out by an authorised specialist company or by qualified personnel.
- Dispose of all packaging material in a proper and environmentally compatible manner after transport.

5 Installation

5.1 Safety

⚠ WARNING

Lifting loads

Serious or lethal injuries from falling/swaying loads

- ► Before raising the load, secure all moving components!
- ► Only use undamaged lifting equipment which is permitted for the weight of the load to be lifted!
- ► Only attach load attachment gear to the indicated attachment points!
- ► Never leave loads hanging in the lifting devices without supervision!
- ► Never stand underneath suspended loads!

⚠ WARNING

Carrying out installation work

Incorrect installation leads to serious/lethal injuries or machine damage

- ► Installation work may only be carried out by authorised specialist personnel!
- ► Only use suitable tools in proper condition!
- ► Wear your personal protective equipment for all work!

⚠ WARNING

Connecting the machine to the power supply

Serious or lethal injuries from dangerous electrical voltage

- ► Work on electrical equipment may only be carried out by qualified electricians!
- ► Work on live parts is only permitted under supervision of a second person!

⚠ WARNING

Hazard of shearing off and crushing fingers

- ► Ensure before startup that all safety equipment is properly installed and in working order!
- ► Ensure that your fingers are not in the forming area when carrying out the machine functions!

5.2 Installing the machine

The machine is assembled ready for operation by the manufacturer and supplied with the control unit set up.

Control unit updates can be requested from the manufacturer.

Note the following before the installation:

- Set up the machine on a sturdy base.
- Set up the machine so there is space to work around it.
- Inspect the machine for any signs of damage.

5.3 Attaching supply connections

Attach the machine to the following supply connections:

- power supply

5.4 Establishing readiness for operation

A visual check and function test has to be carried out on the machine before startup. It has to be ensured that …

- all parts are mounted correctly, show no damage and are in full working order
- all outer connections are installed and fully tightened
- all safety devices are functioning ▸chapter 8.3, p. 53.

6 Operation

The ensure safe operation, the machine may only be used in accordance with the intended use ▸chapter 2.2, p. 8.

6.1 Safety

⚠ WARNING

Hazard of shearing off and crushing fingers

- ► Ensure before startup that all safety equipment is properly installed and in working order!
- ► Ensure that your fingers are not in the forming area when carrying out the machine functions!

⚠ CAUTION

Hazard from incorrect operation and operator errors

- ► Operating personnel have to have read and understood the operating manual!
- ► Operating personnel have to have received training and instruction in the handling of the machine!

⚠ CAUTION

Danger from the operator meddling with the safety equipment

- ► Before startup of the machine, ensure that all safety devices are installed correctly and are functioning!

6.2 Switching on the machine

▶ How to switch on the machine:

1. Turn the electrical main switch to “I / ON”.

   ✓ The message **Release emergency stop and confirm with “acknowledge”** appears after a few seconds.



8: Start screen

   ✓ The English start screen appears at the first startup after machine delivery.
   If you want to keep this language, continue with step 5.

2. Press the **Globe** key to set the language.

   ✓ The **Language settings** menu opens.



9: Menu - Language settings

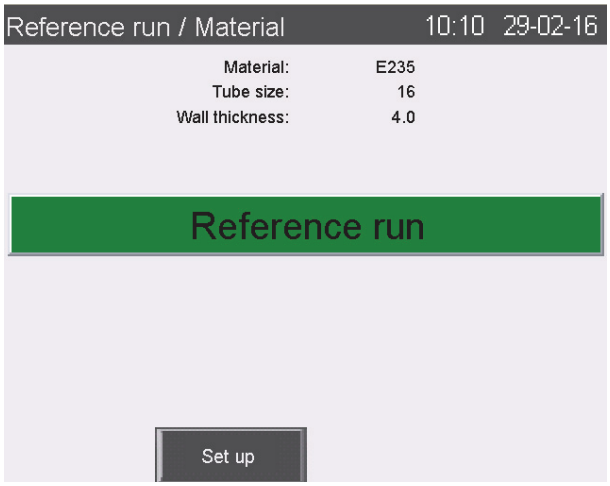
3. Press the button for the language to be set.

   ✓ The flag in the upper area of the menu indicates the selected language.

4. Press the **Arrow** key to exit the menu.

5. Pull out the **emergency stop** button if necessary.

6. Press the **Acknowledge** button.
   ✓ The **Reference run/Material** menu opens.



10: Menu - Reference run/Material

   ✓ The **Ready/Process running** lamp flashes.

☑ The machine is ready for operation.

Check whether a tool is installed. If not, set up a new job ▸chapter 6.5, p. 32.

If a tool is already installed, you can continue with the existing job.
Start the reference run as described on the following pages.

► How to carry out the reference run without tool change:

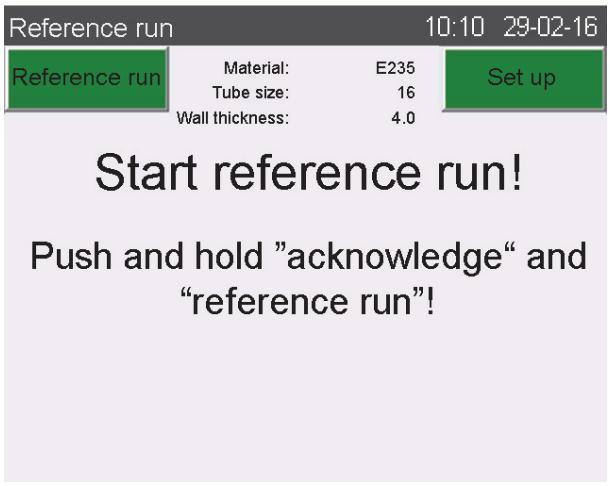
Press the **Reference run** button.

   ✓ The message **Start reference run** opens.

IMPORTANT

Damage to the machine from incorrectly executed reference run

► Only carry out the reference run without a tube! Do not place a tube into the tool until the reference run is completed.



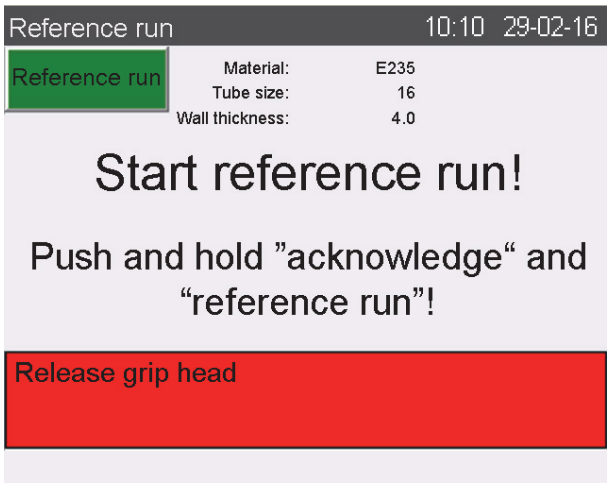
11: Start reference run

1. Simultaneously press and hold the **Reference run** and **Acknowledge** buttons.

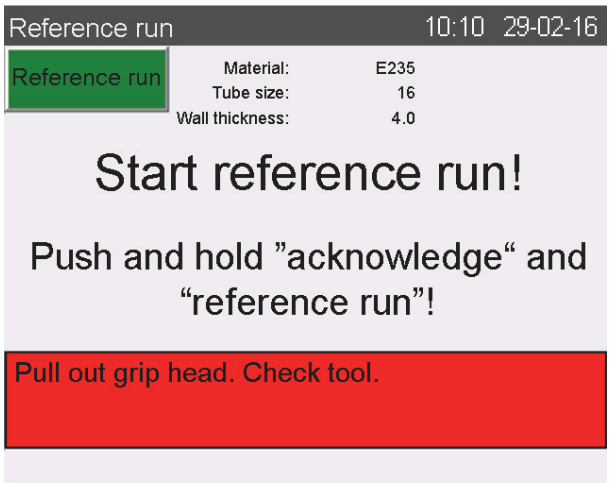
   ✓ The reference run is started.

   ✓ The **Ready/Process runs** lamp lights up continuously.

   ✓ The message **Release grip head** opens.



12: Releasing the grip head



13: Pulling out the grip head

2. Rotate the grip head to the left on the provided handles and pull it out using both hands



14: Releasing and pulling out the grip head

✓ The grip head is released and opened.

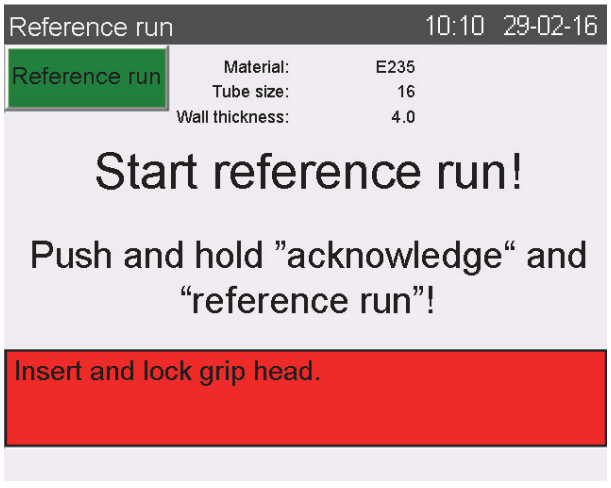
3. Check tool and remove any contaminations.

IMPORTANT

Damage to the machine from objects in the forming area

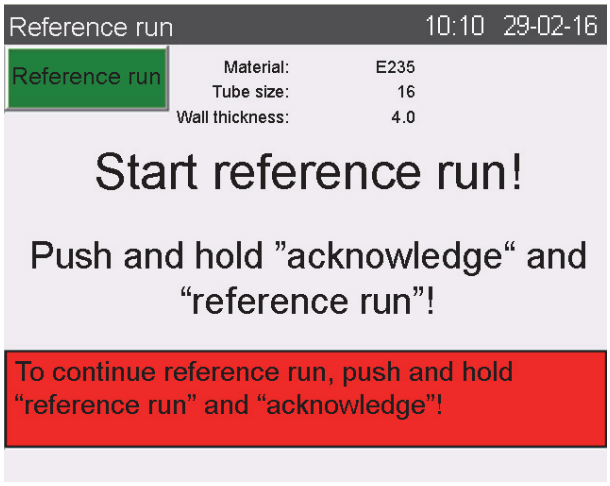
► Before starting the reference run, remove tools and other objects which are not required for the reference run!

✓ The message **Insert and lock grip head** opens.



15: Inserting and locking grip head

4. Insert the grip head with both hands and turn to the right.
   ✓ The grip head is locked.
   ✓ The message **To continue reference run, push and hold “reference run” and “acknowledge”!** is displayed.



16: Start reference run

5. Simultaneously press and hold the **Reference run** and **Acknowledge** buttons.
   ✓ The reference run is started.
   ✓ The **Start reshaping process** menu opens after the reference run is complete.



17: Start reshaping process

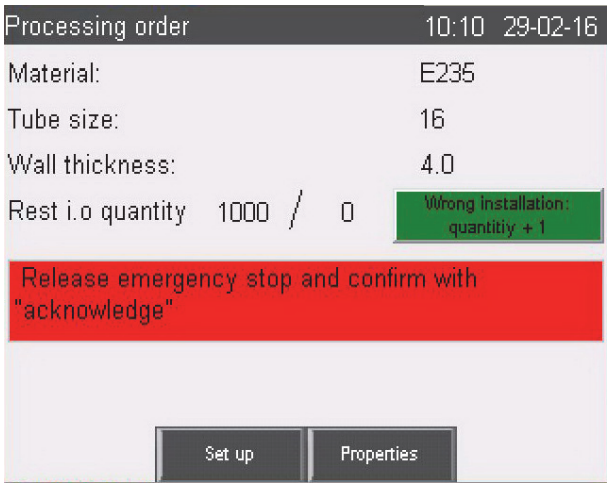
   ✓ The **Ready/Process running** lamp flashes.

☑ The machine is ready for operation.

6.3 Establishing readiness for operation after emergency stop

▶ How to achieve readiness for operation after emergency stop:

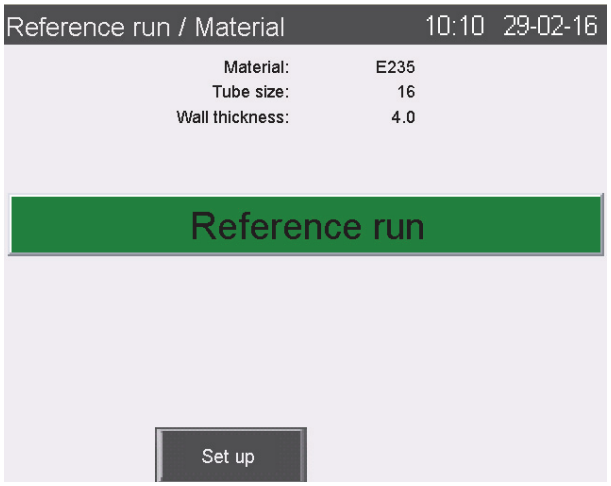
1. Rectify the fault as described in chapter 7, p. 45.



18: Emergency stop message

2. Release the **Emergency stop** button.
3. Press the **Acknowledge** button.

✓ The **Reference run/Material** menu opens.



19: Menu - Reference run/Material

☑ The machine is ready for operation.

IMPORTANT

Damage to the machine from incorrectly executed reference run

▶ Only carry out the reference run without a tube! Do not place a tube into the tool until the reference run is completed.

6.4 Machine set-up

6.4.1 Setting the language

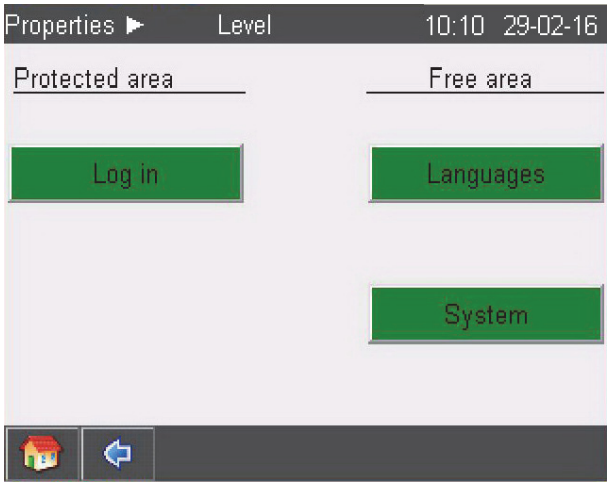
▶ How to set the language:

1. In the menu **Processing order**, press the **Properties** button.



20: Menu - Processing order

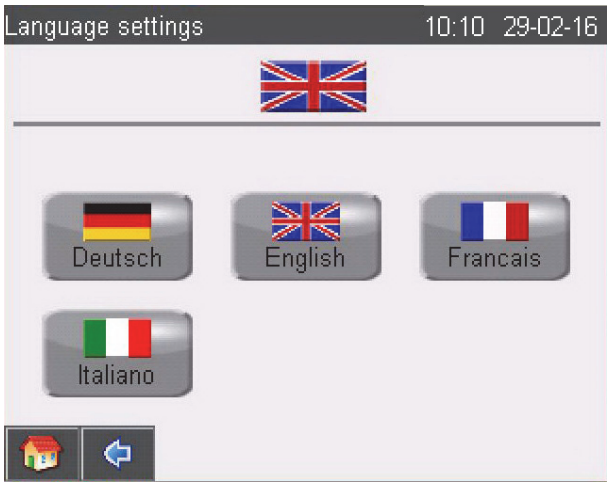
✓ The **Properties Level** menu opens.



21: Menu - Properties Level

2. In the menu **Properties Level**, press the **Languages** button.

✓ The **Language settings** menu opens.



22: Menu - Languages settings

3. Press the button for the language to be set.

   ✓ The flag in the upper area of the menu indicates the selected language. Press the **Arrow** key to exit the menu.

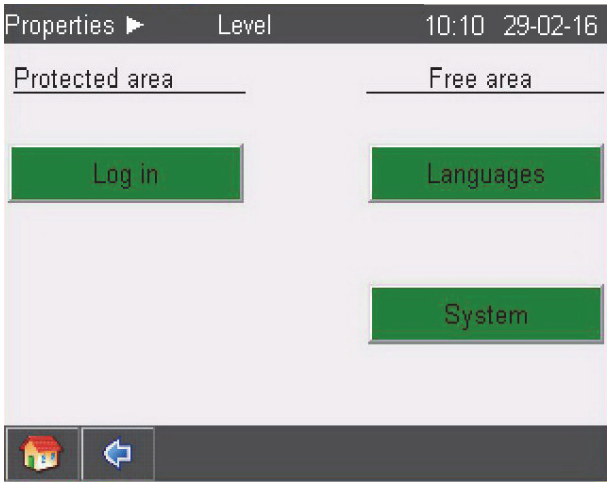
☑ The language is now set.

6.4.2 Setting the system properties

▶ How to open the system properties:

1. In the **Main menu**, press the **Properties** button.

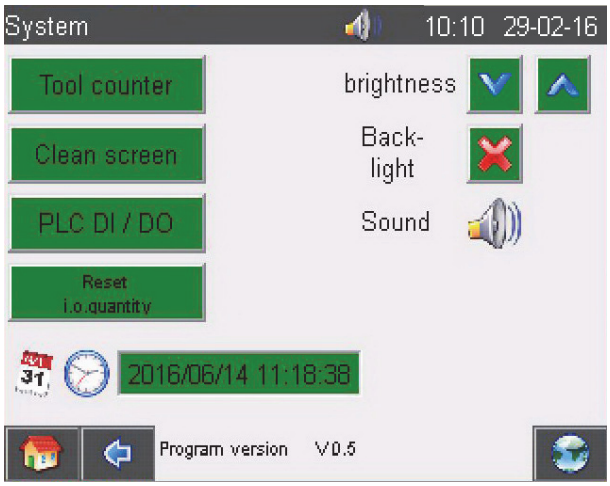
   ✓ The **Properties Level** menu opens.



23: Menu - Properties Level

2. In the menu **Properties Level**, press the **System** button.

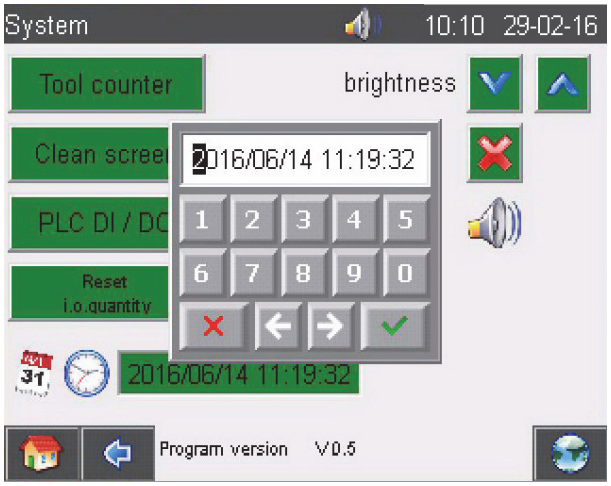
☑ The **System** menu opens.



24: Menu - System

▶ How to set date and time:

1. Press the date/time display and enter the desired data.



25: Menu - Input pad for date and time

2. Confirm entry by pressing the green tick.

✓ The input pad for date/time opens.

☑ The set data are displayed.

▶ How to obtain information on the quantity for each tool size:

Press the **Tool counter** button.



26: Tool counter

☑ The quantities for each tool size are displayed. Use the **arrow** buttons to scroll.

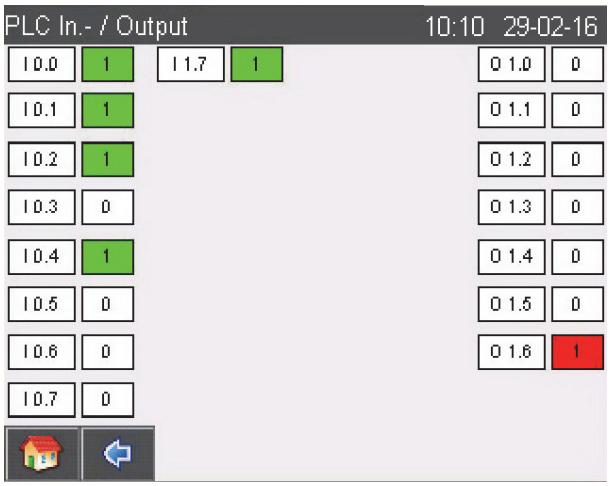
▶ How to switch off the control panel for cleaning:

Press the **Clean screen** button.

☑ The control panel switches itself off for 10 seconds.

▶ How to obtain information on the function of the inputs and outputs:

Press the **SPS DE / DA** button.



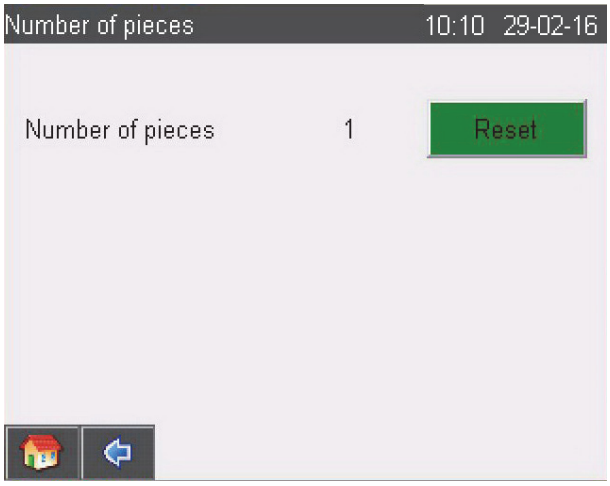
27: Overview - Function of the inputs and outputs

☑ The function of the inputs and outputs is displayed.

▶ How to reset the actual quantity of the production quantity:

1. Press the **Reset i.O. quantity** button.

✓ The **Number of pieces** menu opens.



28: Menu - Number of pieces

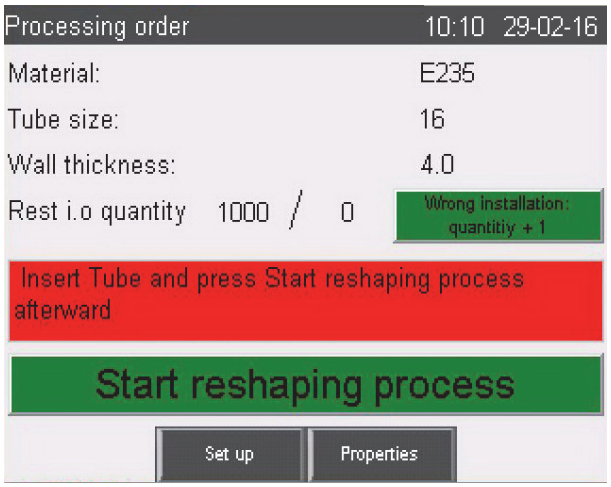
2. Press the **Reset** button.

☑ The actual production quantity number is reset.

6.5 Setting up a job

▶ How to set up the job:

1. In the **Processing order** menu, press the **Set up** button.



29: Menu - Processing order

✓ The **Set up order** menu opens.



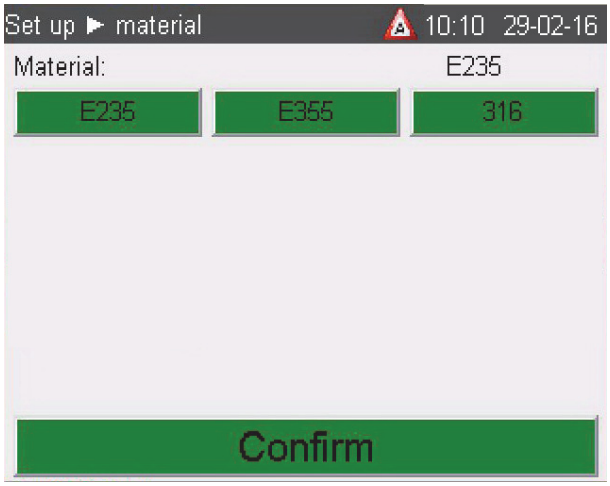
30: Menu - Set up order

2. Carry out the following steps in the order indicated:
3. Set material ▸chapter 6.5.1, p. 33.
4. Set tube size ▸chapter 6.5.2, p. 34.
5. Set wall thickness ▸chapter 6.5.3, p. 35.
6. Set production quantity ▸chapter 6.5.4, p. 36.
7. Insert/change tool ▸chapter 6.5.5, p. 36.

6.5.1 Setting the material

▶ How to set the material:

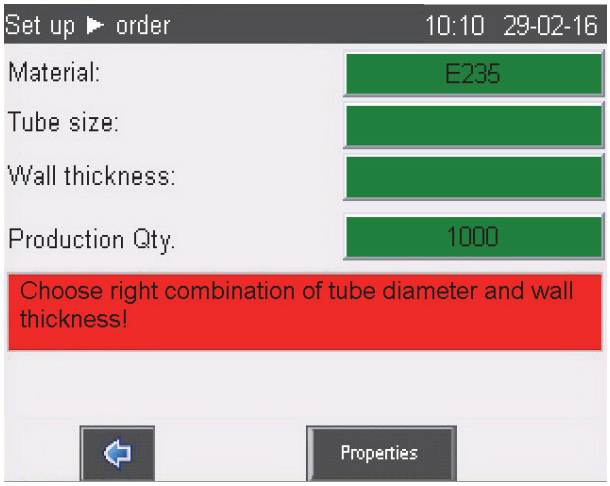
1. In the **Set up order** menu, press the **Material** button.
   ✓ The **Set up material** menu opens.



31: Menu - Set up material

2. Select the material and press the corresponding button.
3. Confirm the selection with the **Confirm** button.
   ✓ The **Set up order** menu opens.

☑ The selected material is displayed.



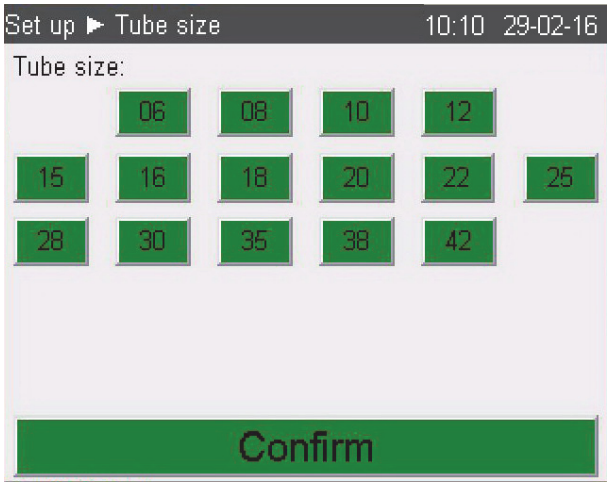
32: Menu - Set up order

6.5.2 Setting up the tube size

▶ How to set up the tube size:

1. In **Set up order** menu, press the **Tube size** button.

   ✓ The **Set up tube size** menu opens.



33: Menu - Set up tube size

2. Press the button for the desired tube size.

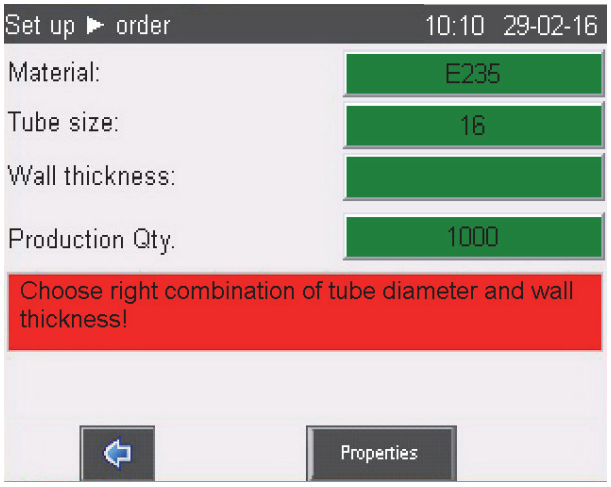
The menu only displays the tube sizes which can be combined with the selected material. If the required tube size is not displayed, change the set parameters or contact Walter Stauffenberg GmbH & Co. KG.

---

3. Confirm the selection with the **Confirm** button.

   ✓ The **Set up order** menu opens.

☑ The selected tube size is displayed.



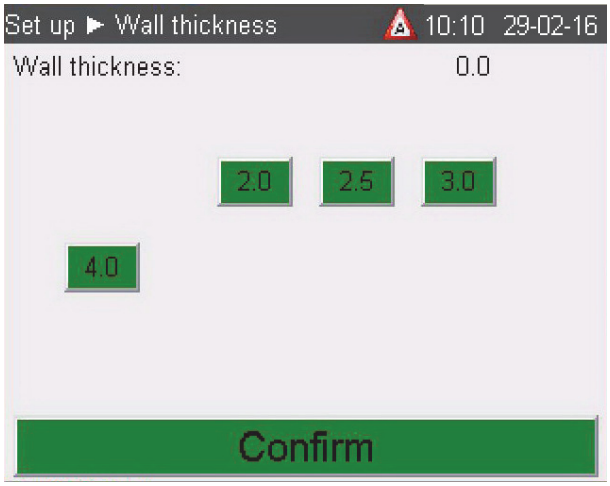
34: Menu - Set up order

6.5.3 Setting up the wall thickness

▶ How to set up the wall thickness:

1. In **Set up wall thickness** menu, press the **Wall thickness** button.

   ✓ The **Set up wall thickness** menu opens.



35: Menu - Set up wall thickness

2. Press the button for the desired wall thickness.

The menu only displays the wall thicknesses which can be combined with the selected tube size. If the required wall thickness is not displayed, change the set parameters or contact Walter Stauffenberg GmbH & Co. KG.

---

3. Confirm the selection with the **Confirm** button.

   ✓ The **Set up order** menu opens.

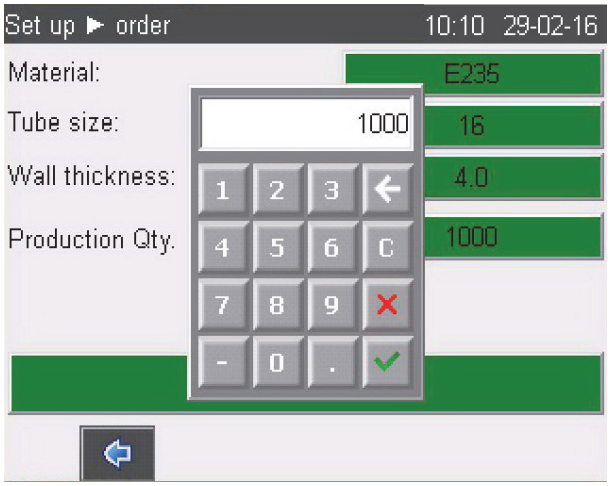
☑ The selected wall thickness is displayed.

6.5.4 Setting the production quantity

Changing the production quantity automatically resets the i.o. quantity to 0!

► How to set up the production quantity:

1. In the **Set up order** menu, press the **Production quantity** button.
   ✓ The input pad for entering the quantity opens.



36: Menu - Input pad for quantity

2. Enter the quantity.
3. Confirm the quantity by pressing the **green tick**.
   ✓ The input pad for entering the quantity closes.

☑ The selected production quantity is displayed.

6.5.5 Inserting/changing tool

⚠ WARNING

Hazard of shearing off and crushing fingers

► Ensure before startup that all safety equipment is properly installed and in working order!

► Ensure that your fingers are not in the forming area when carrying out the machine functions!

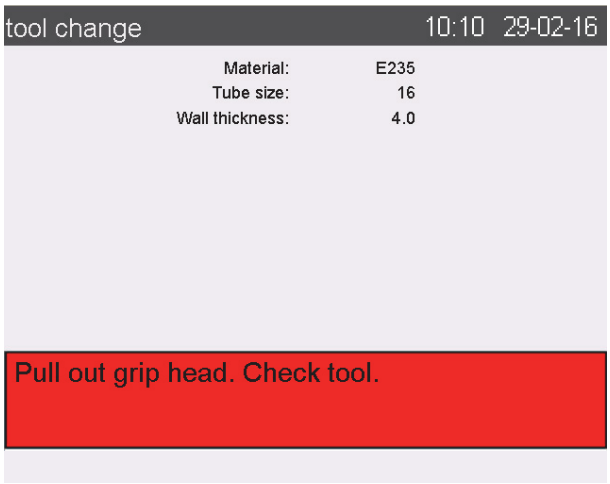
► How to set up the tool:

1. In the **Set up order** menu, check the material and set if necessary ▸chapter 6.5.1, p. 33.



37: Menu - Set up order

2. Confirm the selection with the **Confirm** button.
   ✓ The **Tool change** menu opens.



38: Checking the tool

3. Rotate the grip head to the left on the provided handles, pull it out and swivel it out.



39: Releasing and pulling out the grip head

✓ The grip head is released and opened.

✓ The forming cylinder moves out.

IMPORTANT

Damage to the machine from objects in the forming area

► Before starting the forming process, remove tools and other objects which are not required for forming!

4. Check the forming area and remove any contaminations.

IMPORTANT

Damage to the machine from different tool sizes.

► Ensure to use the same sizes for the tube shapers, the shaping jaws and the internal tube support. The use of different tool sizes can result in damage to tools and machine!

5. Select the tube shaper, the shaping jaws and possibly the internal tube support according to the set size.

IMPORTANT

Damage to the machine from worn tools

► Ensure that the tools are in perfect technical condition. The use of worn tools can result in damage to the machine!

6. Check the tools for technically perfect condition.

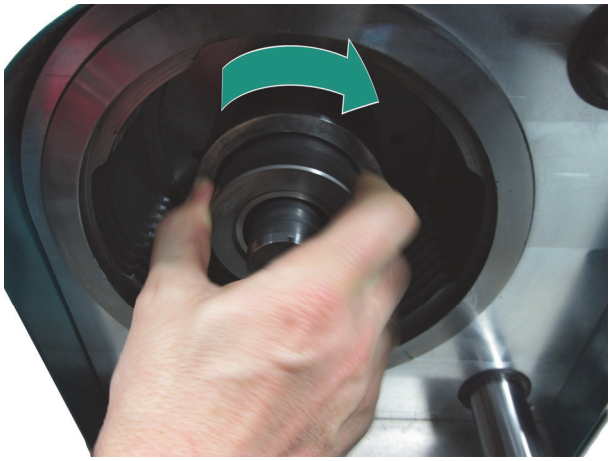
IMPORTANT

Damage to the tool from incorrect internal tube support

► Tube shapers with internal hole are designed for forming with internal tube supports. Ensure to always use the correct internal tube support for the wall thickness selected as otherwise the tool can be damaged!

7. If an internal tube support is required, screw it firmly into the tube shaper.

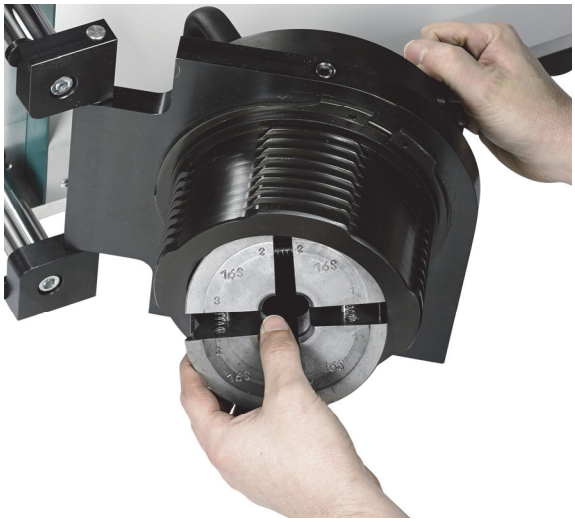
8. Insert the tube shaper into the bayonet lock of the machine.



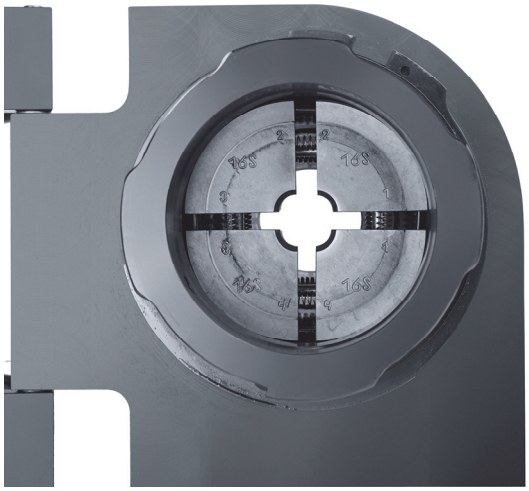
40: Inserting the tube shaper

> To remove the tube shaper, rotate it back to the left by approx. 90°.

9. Insert the shaping jaws into the grip head of the machine at a slight angle and slide back to the stop.

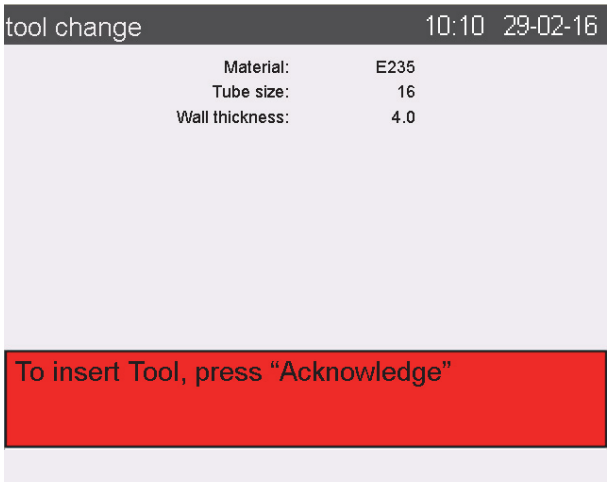


41: Installing the shaping jaws



42: Shaping jaws installed

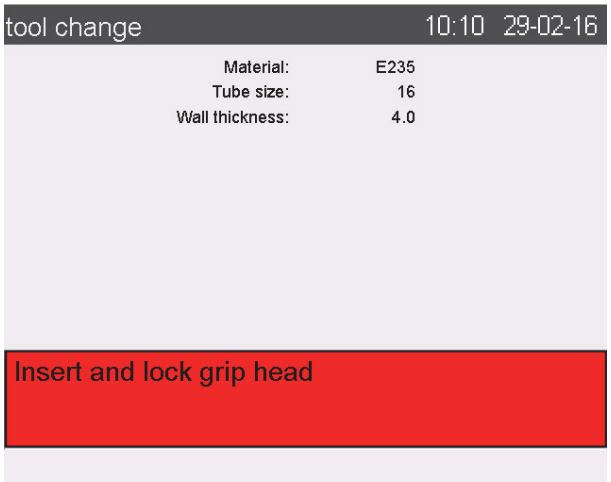
✓ The message **To insert tool, press “Acknowledge”** opens.



43: Inserting tool

10. To insert the tool, press the **Acknowledge** button.

✓ The message **Insert and lock grip head** opens.



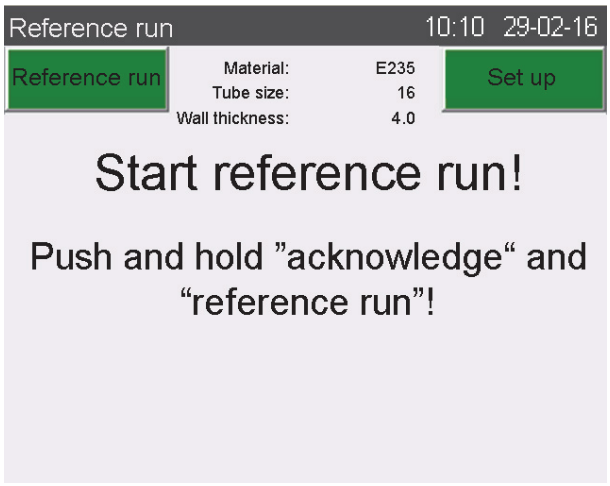
44: Inserting grip head

11. Swivel the grip head to a straight position, push in with both hands and turn to the right.
    ✓ The grip head is locked.
    ✓ The **Reference run** menu opens.

IMPORTANT

Damage to the machine from incorrectly executed reference run

► Only carry out the reference run without a tube! Do not place a tube into the tool until the reference run is completed.



45: Start reference run

Simultaneously press and hold the **Reference run** and **Acknowledge** buttons.

✓ The reference run is started.
✓ The **Ready/Process runs** lamp lights up continuously.
✓ The **Processing order** menu opens after the reference run is complete.
✓ The **Ready/Process running** lamp flashes.



46: Menu - Processing order

☑ The machine is ready for operation.

6.6 Forming tube ends

⚠ WARNING

Hazard of shearing off and crushing fingers

- ► Ensure before startup that all safety equipment is properly installed and in working order!
- ► Ensure that your fingers are not in the forming area when carrying out the machine functions!

► How to form tube ends:

1. Ensure that …
   - ✓ the tube has been prepared according to the requirements in the Stauff product catalogue
   - ✓ the job is set up as described in ▸chapter 6.5, p. 32.
   - ✓ the **Startup reshaping process** button is displayed on the operating panel



47: Start reshaping process

2. Slide a suitable sleeve nut onto the tube end.
3. Note the correct alignment:
   - ✓ The sleeve nut thread has to point towards the tube end which is to be formed.



48: Product with union nut

4. Slide the tube into the tool to the stop, ensuring not to twist it.



49: Pushing in the tube

5. Press the **Startup Start reshaping process** button.
   ✓ The forming process starts.
   ✓ The **Ready/Process runs** lamp lights up continuously.
6. When the light flashes, remove the tube and then press the **Startup start position** button.



50: Removing the tube

Information on checking the tube can be found in the Stauff product catalogue.

7. Continue the forming process until **Rest i.o. quantity** is 0.
   ✓ The message **Stop job. Continue with set up** is displayed.



51: Job stopped

☑ The job is processed.

You can now set up a new job ▸chapter 6.5, p. 32 or switch off the machine ▸chapter 6.8, p. 44.

6.7 Cleaning the machine

The machine and its components have to be cleaned after each use.

▶ How to clean the machine:

1. Use a cotton cloth to clean the surfaces.
2. Switch off the control panel before cleaning ▸chapter 6.4.2, p. 29.
3. Use water with a degreasing, non-caustic cleaning agent. Do not allow any moisture to get into the cylinders.
4. Remove stubborn dirt with a suitable cleaning agent and apply corrosion protection.

Corrosion protection

After removing any stubborn dirt or after a longer downtime, apply a light oil film to the moving machine parts for corrosion protection.

6.8 Switching off the machine

▶ How to switch off the machine:

Turn the main switch to "0 / OFF".

☑ The machine is switched off and de-energized

7 Troubleshooting

7.1 Safety

⚠ WARNING

Correcting faults

Serious injuries or machine damage

- ► Any work for which the machine has to be opened may only be performed by Walter Stauffenberg GmbH & Co. KG!
- ► The faults described in ▸chapter 7, p. 45 may only be removed by authorised and qualified personnel!
- ► Wear the appropriate personal protective equipment for all work undertaken on the machine.

⚠ WARNING

Work on electrical equipment

Serious or lethal injuries from dangerous electrical voltage

- ► Any work for which the machine has to be opened may only be performed by Walter Stauffenberg GmbH & Co. KG!
- ► Work on electrical equipment may only be carried out by qualified electricians!
- ► Switch off the machine and secure it against being inadvertently switched back on!
- ► Work on live parts is only permitted under supervision of a second person!
- ► Check electrical components for any residual charges!

⚠ CAUTION

Work on the hydraulic system

Eye injuries from ejected hydraulic oil

- ► Depressurise the machine!
- ► Any work for which the machine has to be opened may only be performed by Walter Stauffenberg GmbH & Co. KG!
- ► Wear your personal protective equipment including safety goggles for all work on the hydraulic system!

► How to proceed in case of a fault:

1. Determine the reason for the fault.
2. Trace the cause of the fault on the corresponding display element.

3. Eliminate the cause of the fault and replace the defective components, if necessary.
4. If you cannot identify the reason for the fault, contact the manufacturer.

7.2 Troubleshooting

For troubleshooting please note that …

- fault may only be corrected by the setup and maintenance personnel ▸chapter 2.4, p. 9.
- appropriate personal protective equipment has to be worn for all troubleshooting work ▸chapter 2.5, p. 9.

Faults which can be corrected by operating personnel are listed in the following section.

7.3 Faults/error messages

7.3.1 Reshaping path



52: Reshaping path not reached

Error message on the machine display:	Possible cause:
Reshaping path not reached! Acknowledge message with “Acknowledge”.	**The machine does not reach the defined end position** • incorrect tube material • Incorrect wall thickness • incorrect tube diameter • incorrect parameters • Tool dirty **Hydraulic system** • Lack of oil • Pump no longer has the required power – Contact the manufacturer

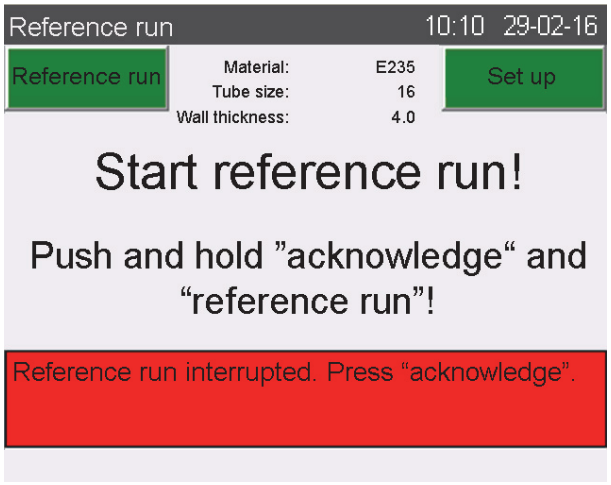
7.3.2 Target position



53: Target position not reached

Error message on the machine display:	Possible cause:
Target position has not been reached! Confirm with “Acknowledge”, restart if necessary.	**Control** • Control fault – Contact the manufacturer

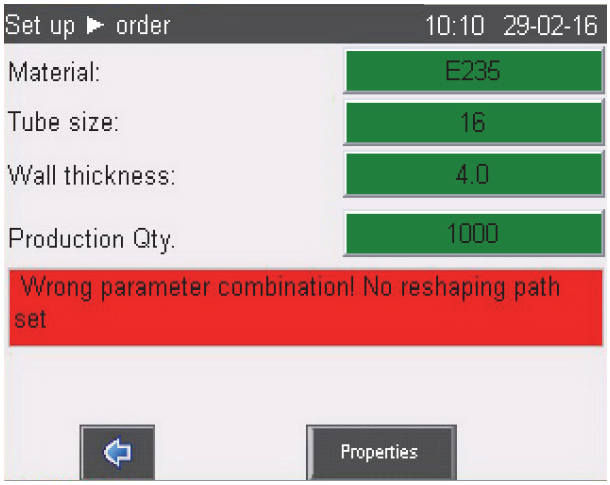
7.3.3 Reference run



54: Reference run interrupted

Error message on the machine display:	Possible cause:
Reference run interrupted. Lock the bell for new run, then press “Acknowledge”	**Handling** • Buttons were not pressed until the end of the reference run. Carry out reference run again.

7.3.4 Parameters



55: Wrong parameters

Error message on the machine display:	Possible cause:
Wrong parameter combination! No shaping path stored.	**Handling** • No parameter set is stored for the selected parameter combination material/tube diameter/wall thickness. Check the parameter combination and change it if necessary. Contact the manufacturer if the desired combination is not available.

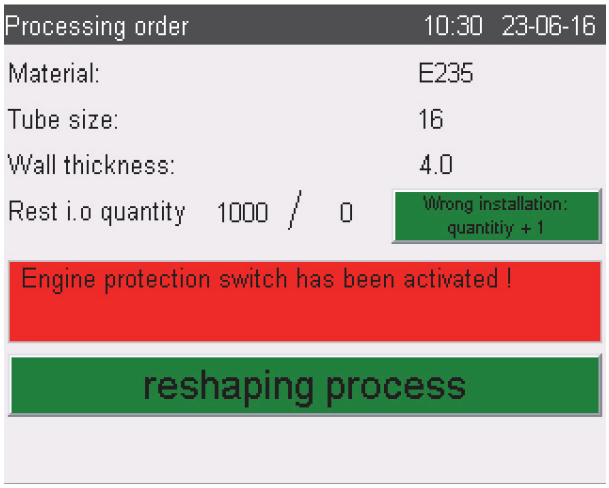
7.3.5 Direction of rotation



56: Wrong turning direction

Error message on the machine display:	Possible cause:
Wrong turning direction	• Phase reverser of the connector set incorrectly. Phase reversers rotating.

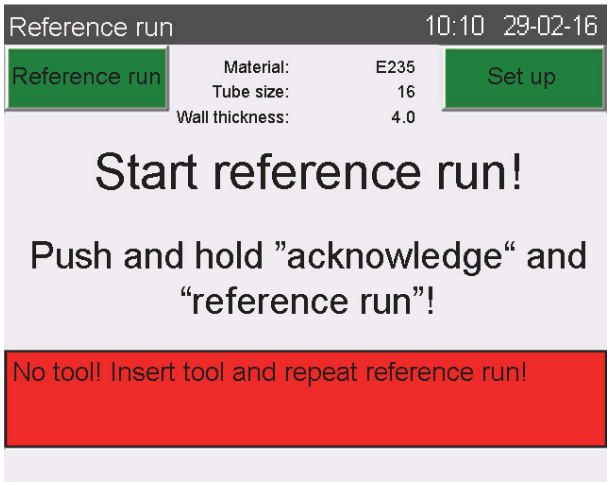
7.3.6 Motor protection switch activated



57: Engine protection switch has been activated

Error message on the machine display:	Possible cause:
Engine protection switch has been activated	**Hydraulic system** • Overload of hydraulic system. Leave machine to cool down, reset motor protection switch, contact manufacturer.

7.3.7 Tool



58: No tool

Error message on the machine display:	Possible cause:
No tool! Insert tool and repeat reference run!	**Tool** • Open grip head, then tool change ▸chapter 6.5.5, p. 36.

7.3.8 Other faults

Other faults (cannot be integrated into the machine):	Possible cause:
Contour not processed correctly Fault: visual check shows insufficient diameter	**Tool** • Tool wear • Wrong shaping jaws • Wrong tube shaper • Wrong internal tube support **Tube** • Incorrect wall thickness • Tolerance exceeded • Material too hard or too soft • Wrong preparation **Handling** • Tube not pressed correctly against the tool bottom • Tube bend too close to the forming end
Tube is stuck in the shaper after assembly Fault: tube is not pulled out far enough	**Tool** • Tool wear **Tube** • Tube slips in the shaping jaws
Pressing does not start Fault: no reaction from the machine	**Machine** • Defective **Control** • Defective **Operation** • Machine not at the right menu item • Production quantity reached
Oil loss Fault: oil leaking	**Hydraulic system** • Seals defective • Machine tipped too far from horizontal position • Hose/tubing leaking. Contact the manufacturer

Other faults (cannot be integrated into the machine):	Possible cause:
Machine does not start	**Power supply** • Appliance not connected to the power supply • Power supply not switched on • Cable or connector damage • Screen defective
Tube slips	**Tool** • Shaping jaws dirty • Dirt between the tool segments • Shaping jaws worn
Shaping jaws do not open	**Tool** • Shaping jaws dirty • Dirt between the tool segments • Springs broken
Tube cannot be inserted	**Tool** • Tool dirty • Wrong shaping jaws • Wrong tube shaper • Wrong internal tube support **Tube** • Poor deburring • Wrong tube • Tube bend too close to the forming end

8 Maintenance

8.1 Safety

⚠ WARNING

Carrying out maintenance work

Serious or lethal injuries or machine damage

► Maintenance work may only be carried out by Walter Stauffenberg GmbH & Co. KG!

8.2 Inspection and maintenance

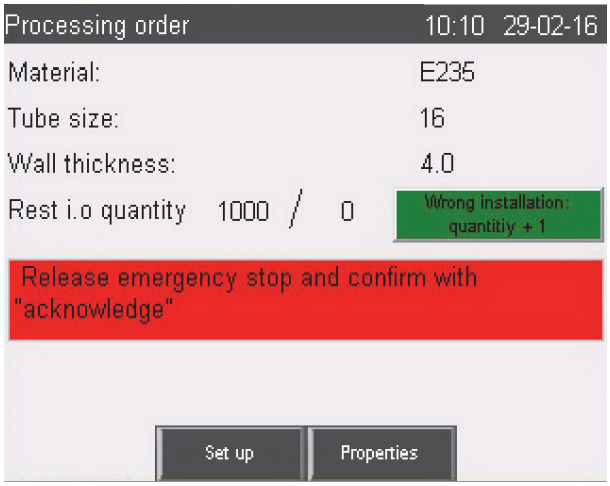
The machine has to be sent to Walter Stauffenberg GmbH & Co. KG for maintenance and an oil change every two years or after 200,000 forming processes.

8.3 Checking the emergency stop

All emergency stop buttons have to be regularly checked for proper functioning.

► How to check the emergency stop:

1. Switch on and start the machine.
2. Actuate the emergency stop and check whether the machine stops.



59: Emergency stop message

3. Release the **Emergency stop** button.
4. Press the **Acknowledge** button.
   ✓ The **Reference run** menu opens.
   ✓ The **Ready/Process running** lamp flashes.

☑ The machine is ready for operation.

9 Decommissioning

9.1 Safety

⚠ WARNING

Carrying out dismantling work

Serious or lethal injuries

- ► Dismantling work may only be carried out by authorised qualified personnel!
- ► Only use suitable tools in proper condition!
- ► Wear your personal protective equipment for all work!

⚠ WARNING

Lifting loads

Serious or lethal injuries from falling/swaying loads

- ► Before raising the load, secure all moving components!
- ► Only use undamaged lifting equipment which is permitted for the weight of the load to be lifted!
- ► Only attach load attachment gear to the indicated attachment points!
- ► Never leave loads hanging in the lifting devices without supervision!
- ► Never stand underneath suspended loads!

⚠ CAUTION

Work on the hydraulic system

Eye injuries from ejected hydraulic oil

- ► Depressurise the machine!
- ► Any work for which the machine has to be opened may only be performed by Walter Stauffenberg GmbH & Co. KG!
- ► Wear your personal protective equipment including safety goggles for all work on the hydraulic system!

9.2 Dismantling

► Dismantle the machine as follows:

1. Take the machine out of service and disconnect from the power supply.
2. Dismantle protective panels and housing.
3. Remove all operating media.
4. Dismantle cables and leads.
5. Remove seals from the bearings.
6. Remove any lubricant from machine parts.
7. Sort plastic, electrical and metal parts.

IMPORTANT

Solvents and lubricants

Environmental contamination of water and soil

► During dismantling, collect lubricants and cleaning fluids containing solvents in suitable containers!

► For disposal, note the safety data sheets for the emulsions, cleaning agents and lubricants used.

Collect operating media and cleaning fluids containing solvents in appropriate containers to prevent substances hazardous to water from entering the ground or the sewage system!

9.3 Disposal

Following final dismantling of the machine, the operating company has to dispose of all used materials and components in keeping with the provisions in force in the country where machine is operated.

Particular care is required for disposing of materials which are hazardous to the environment, e.g.:

- plastic parts
- rubber parts
- electrical parts
- metal parts
- operating fluids and additives

► How to handle substances hazardous to water:

1. Use appropriate containers to collect, store, transport and dispose of substances hazardous to water.
2. Dispose of all parts according to material.
3. Always sort by materials for recycling.

10 EC Declaration of Conformity

EC Declaration of Conformity

according to the EC Machinery Directive 20061421EC, appendix II 1. A

Manufacturer

Walter Stauffenberg GmbH & Co.KG
Im Ehrenfeld 4
58791 Werdohl
Germany

Person established in the Community who is authorised to compile the technical documents

Walter Stauffenberg GmbH & Co. KG
Im Ehrenfeld 4
58791 Werdohl
Germany

Machine description and identification

Product	Tube end forming machine SFO
Type	SFO StauffForm
Serial number	001
Project number	20150701-303-30428-1891239452-421532-002
Commercial designation	StauffForm
Order	1891239452
Function	Tube end forming for use with fittings according to ISO 8434-1

We expressly declare that the machine complies with all relevant provisions of the following EC Directives

2006/42/EC	Directive 2006/42/EC of the European Parliament and Council dated 17 May 2006 on machinery and for modification of Directive 95/16/EC (revised version) (1)

Reference of the harmonised standards applied according to section 7 sub-section 2

EN ISO 12100:2010-11	Safety of machinery. General principles for design. Risk assessment and risk reduction (ISO 12100:2010)
EN 953:1997+A1:2009	Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards
EN 60204-1:20061AC:2010	Safety of machinery. Electrical equipment of machines. Part 1: General requirements
EN ISO 13849-1:2008	Safety of machinery. Safety-related parts of control systems. Part 1: General principles for design (ISO 13849-1:2006)

Werdohl, 10/12/2015

Place, Date

Signature
Carsten Krenz
Managing Director

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Feedback

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