



molex

BENCHTOP ELECTRIC CRIMP MACHINE
Operation Manual
Order No. 63816-1900

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1 Introduction

1.1 Product Specification

The most common terminals on the market can be crimped using the benchtop electric crimping machine and the exchangeable crimp tool system.

Interchangeable crimping dies or tool heads can be selected and installed on the electric crimping machine according to the type of terminal to be crimped.

1.2 Conformity



The machine may only be used for the purpose specified in the operating instruction. The manufacturers and suppliers will not be liable for any damages that may result due to the machine being used for a purpose other than that for which it was intended. This is done entirely at the user's own risk.

The benchtop electric crimp machine is CE compliant. The original of the following declaration of conformity is supplied together with the operating instruction of the machine.

| | | |
|---|--|--|
| Zutreffende EU Richtlinien Applicable EU directives | 2006/42/EG | Maschinenrichtlinie Machinery Directive |
| | 2014/30/EU | Richtlinie Elektromagnetische Verträglichkeit Electromagnetic Compatibility Directive |
| | 2011/65/EU | Richtlinie RoHS |
| Angewandte harmonisierte Normen Applied harmonized norms | DIN EN ISO 12100; DIN EN ISO 13857; DIN EN 349; DIN EN 61000-6-2; DIN EN 60204-1; DIN EN 894 (1-4) | |

Wir erklären, dass die oben genannte Maschine in ihrer Konzipierung und Bauart und in der von uns in Verkehr gebrachten Ausführung allen einschlägigen Bestimmungen der Maschinenrichtlinie sowie den weiteren oben aufgeführten Richtlinien entspricht. Die Schutzziele der Niederspannungsrichtlinie wurden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie eingehalten. Bei Änderungen der Maschine verliert diese Erklärung ihre Gültigkeit.

We declare that the above-mentioned machine, with its design and type of construction, as well as the produced version, meets all relevant regulations of the Machinery Directive as well as the above-mentioned harmonized norms. The protective directions of the Low Voltage Directive have been met in accordance with Annex I, Section 1.5.1 of the Machinery Directive. This declaration will lose its validity in case of any modifications.

1.3 Use of the Operating Instruction

The operating instruction contains all information concerning operating elements, operation, commissioning, and maintenance work as well as technical data.

The operation instruction must be constantly within reach of the benchtop electric crimp machine. Every machine operator must read and understand the operating instruction to ensure safe and efficient production with this piece of equipment.

The manufacturer and the distributor decline to accept any liability for damages that are incurred, due to the fact that the instructions on the machine or in the operation instruction have been disregarded.

The user is responsible for supplementing the operation instruction with any instructions resulting from current national regulations for accident prevention and protection of the environment.

2 Safety

2.1 Warning and Safety Precautions in this Operating Instruction

The following warnings and safety-related cautionary notices in the individual sections and chapters alert you to various levels of danger:



DANGER

- Identifies an imminent, serious, danger, which, if it is not avoided, will lead to serious injuries or even to death.
-



CAUTION

- Identifies a possible danger, which, if it is not avoided, will lead to serious injuries or even to death.
-



ATTENTION

- Identifies a potentially dangerous situation, which, if it is not avoided, can lead to medium or minor injuries or material damages.
-



INFORMATION

- If this information is not followed, it can lead to a deterioration of the operating procedure.
-



DANGER

- Because of the risk of hand or finger injury, never try to reach into the machine before having assured that the machine is disconnected from the electric supply. Disconnect the electric supply before changing the adapter or dies.
-

2.2 Safety Precautions

The benchtop electric crimp machine has been constructed according to state-of-the-art technology and the acknowledged technical safety regulations.

When carrying out jobs such as installation, putting the machine into operation or setting it up, operation, changing the conditions of use and the mode of operation or carrying out maintenance and service jobs, it is important to observe the procedures for switching off the machine described in the operation instruction.

Please observe the national regulations regarding the minimum age of the personnel operating this machine. Allowing younger persons access to the machine is strictly prohibited.

- Do not operate the benchtop electric crimp machine until you have studied and fully understood all instructions described in this operating instruction.
- Unauthorized modifications to the machine exclude any liability on the part of the manufacturer or dealer for any damage resulting therefrom.
- There is a residual risk of fingers being crushed. Never try to reach into the danger area without safely disconnecting the machine from the electrical supply.
- Before each startup, check that all safety devices and manufacturer-approved adapters or tool heads are correctly fitted and functioning.
- Set the voltage changer to the correct voltage.
- This machine may only be operated with Molex mounted adapters, tool heads and dies.
- The benchtop electric crimp machine may only be set up and operated in perfect technical conditions, observing all safety regulations and considering any possible dangers.
- In cases of a machine malfunction, production must be stopped, and the malfunction must be fixed before continuing work with the machine.
- Work with caution.
- Only one person can work on or operate the machine at a time.
- Only trained personnel can work on or operate the machine.
- When working with the benchtop electric crimp machine, do not wear loose clothing, jewelry or long, loose hair that can get caught in the machine.

2.3 Responsibilities

The benchtop electric crimp machine may only be operated by suitably trained and authorized personnel. The user must clearly define and observe the responsibilities for operation, setup, maintenance, and service. It is particularly important to define who is responsible for work on the equipment. Such work should only be carried out by specially trained staff.

Should the user make any changes to the machine without consulting the manufacturers or the suppliers, the latter will not be liable for any damage that may result.

The user of the benchtop electric crimp machine is responsible for making sure that all persons involved in any way, either in the installation or in maintenance of the machine, have been thoroughly trained on the system using this operating instruction.

The user is also responsible for the training of operators, and the instruction must include the following aspects:

- Purpose of the machine
- Hazard zones
- Safety rules and regulations
- Functionality of the various components of the machine
- Proper operation of the machine

To assure full familiarization with the system, the training must be conducted in the native language of the operators involved.

| Staff Qualifications Required in Conjunction with the Use of the Benchtop Electric Crimp Machine | |
|--|--|
| Installation Setup Instruction | Technical personnel with language proficiency in either English or German in addition to the native language of the operator |
| Operation | Through qualified personnel trained as indicated above |
| Maintenance Service | Technical personnel with proficiency in English or German |

The safety instructions, warnings and precautions contained in the individual chapters must be strictly observed by all users and operators.

2.4 Designed Use

- Realization of crimp connections for conductors up to 6mm² (wire end ferrules up to 50mm²) depending on the terminal design

The benchtop electric crimp machine is designed for use with the adapters or tool heads described in section 9. The adapter or tool head should only be used with the tool heads or dies specified by Molex. The benchtop electric crimp machine should only be used together with the adapter, tool head and die sets for the preparation of crimp connections.

2.5 Predictable Misuse

- Every application, except those mentioned in Section 2.4.
 - Use of the machine for cutting
 - Use of the machine for press-fitting
 - Use of the machine for punching/ punching
 - Use of the machine for embossing

2.6 Hazardous Areas

- Hazardous Area:** Area of interchangeable crimping dies and tool heads
Person at Risk: Operator
Type of Hazard: Hand injuries
- Hazardous Area:** Opened machine person at risk
Person at Risk: Installation engineer
Type of Hazard: Direct or indirect contact with movable parts of the machine
 Hand injuries (cuts from sharp edges)
 Hand injuries (risk of crushing)

3 Shipment

3.1 Packing

Upon receipt, carefully unpack the benchtop electric crimp machine and check that you have received all components against the packing slip, declaration of conformity and operating instructions. Retain the original packaging for further dispatch and for storage, if required.

Dimensions

Length: 560mm (22.5")

Width: 350mm (13.8")

Height: 340mm (13.4")

Gross-Weight: Approximately 22 kg (49 lb.)

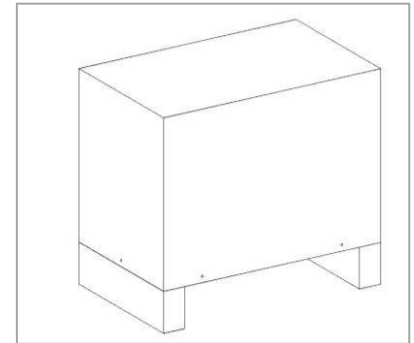


Figure 3.1

3.2 Packing Contents

| Quantity | Description |
|----------------|--|
| 1 pc | Machine (without adapter/tool head/dies) |
| 1 pc | 115 VAC Power cord for USA (with ground contact) |
| 1 pc | Instruction Manual |
| 1 pc | Declaration of Conformity |
| Optional Items | |
| 1 pc | Foot Switch with Protective Cover and Connection Cable |
| 1 pc | 230 VAC Power cord for EU (with ground contact) |

4 Technical Description

4.1 Operator's Guide

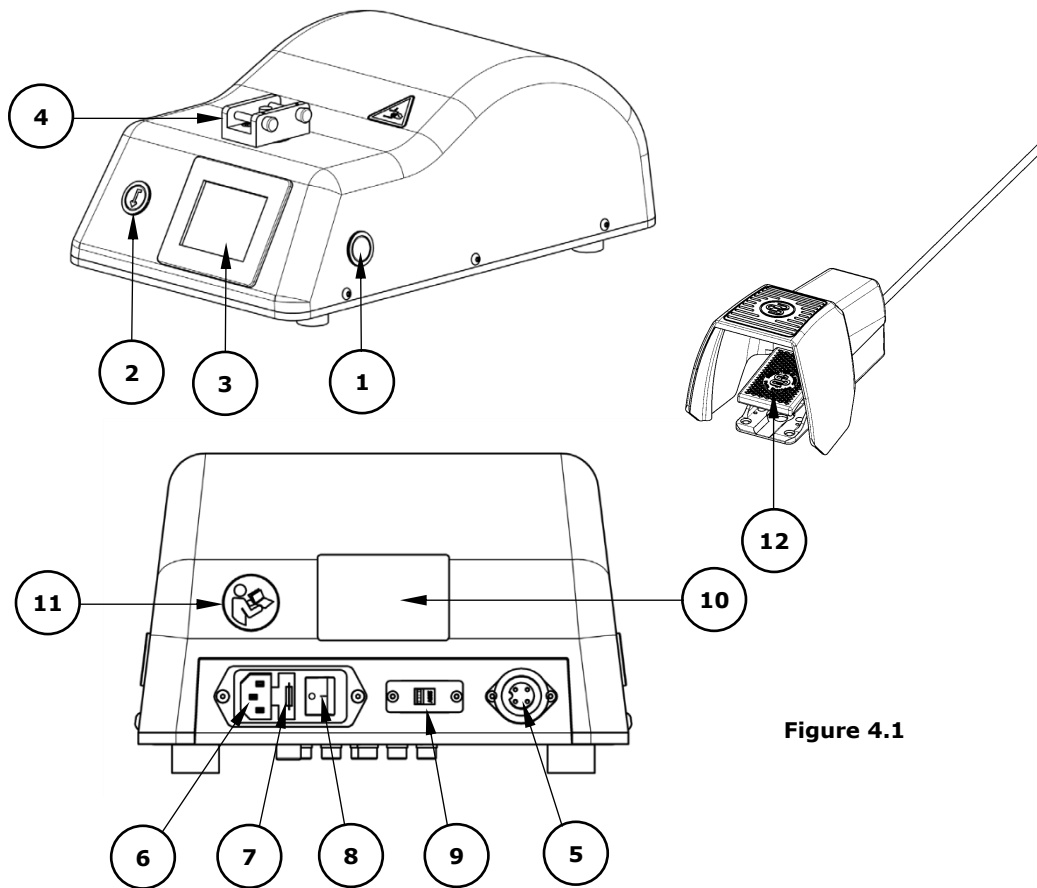


Figure 4.1

| Item | Description |
|------|-------------------------------|
| 1 | Push button (right & left) |
| 2 | Reset button |
| 3 | Touch display |
| 4 | Holding device for tool |
| 5 | Socket for foot switch |
| 6 | Main plug connection |
| 7 | Fuse holder (fuse 2A slow) |
| 8 | Main switch |
| 9 | Changeover switch |
| 10 | Nameplate with serial number |
| 11 | Sticker "follow instructions" |
| 12 | Foot switch (optional) |

4.2 Machine Identification

| Item | Description |
|------|---------------------|
| 1 | Manufacturer |
| 2 | Machine Type |
| 3 | Serial Number |
| 4 | Article Number |
| 5 | Connection Values |
| 6 | Year of Manufacture |



Figure 4.2

4.3 Technical Data

| Description | Specification |
|------------------------|------------------------|
| Length | 437mm (17.2") |
| Width | 261mm (10.3") |
| Height | 170mm (6.7") |
| Weight with Foot Pedal | Approximately 23.2 lb. |
| Operating Voltage | 115 VAC / 230 VAC |
| | 50/60 Hz |
| Power Consumption | 250 VA |
| Cycle Time | < 1.5s |
| Crimp Force | 15 kN Max. |
| Stroke | Approximately 12mm |
| Noise Level | < 69 dB (A) |
| Operating Temperature | 15-45°C |
| Relative Air Humidity | 90% Max. |

4.4 Operating Elements

4.4.1 Touch Display

All operating keys and parameters for the operation of the machine are displayed on the touch screen.

Note: Details of the data displayed on the menu can be found under section 8.

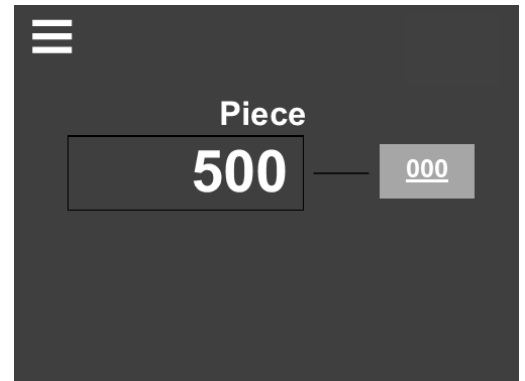


Figure 4.4.1

4.4.2 Reset Button

If the crimp dies are blocked because of an operating or handling error or incorrect insertion of a crimp contact, the machine can be released as follows:

- Press the reset button. See Figure 4.4.2.
- The force is released from the tooling.
- Push the tooling open, remove the damaged contact and dispose of it.

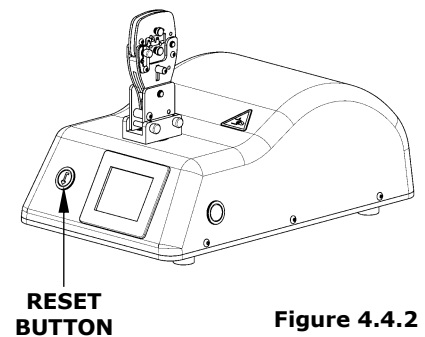
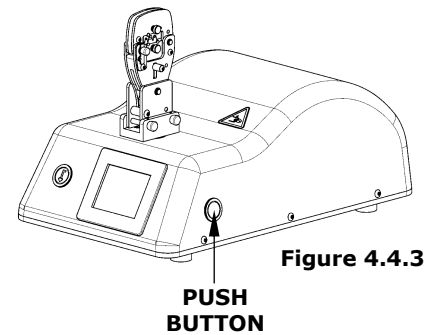


Figure 4.4.2

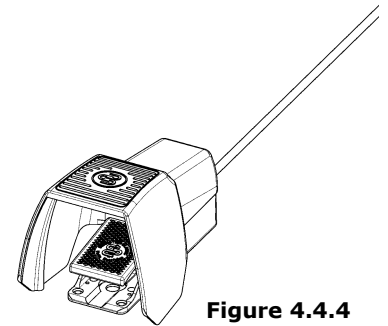
4.4.3 Push Button

There is a button to trigger the crimping cycle on the right and left sides of the machine. See Figure 4.4.3.



4.4.4 Foot Switch

Optionally, a foot switch can be connected to the machine. Pressing the foot switch triggers the crimp cycle. See Figure 4.4.4.



5 Transport and Storage

5.1 Transport



CAUTION

- Wear suitable safety shoes when transporting the machine.

The machine can be carried by hand. The benchtop electric crimp machine weighs approximately 12 kg (26.4 lb.)

To transport the machine over longer distances, use the original packaging.

5.2 Storage

Store the machine in its original packaging at 5-50°C and a maximum of 90% relative humidity.

6 Installation and Commissioning



WARNING

In the event of defects or damage to the machine, it must be stopped immediately and secured against unintentional or unauthorized commissioning.

- The machine may only be assembled and connected by a person who fulfils the requirements of section 2.3.
- The machine may only be put into operation if it is in perfect technical condition.
- If defects or damages are found on the machine, the machine may no longer be operated.

6.1 Installation



CAUTION

- Wear suitable safety shoes when assembling the machine.

Adhere to the following when installing the benchtop electric crimp machine:

- Place the machine on a level surface and ensure that it is stable.
- Ensure that the surface is strong enough to support the weight of the machine. Ensure a suitable table height.
- Access to the machine control unit must be kept free.
- Lay the foot switch and connecting cable in such a way that they do not present a risk of tripping.
- Ensure that the workplace is adequately lit.

6.1.1 Installation Plan

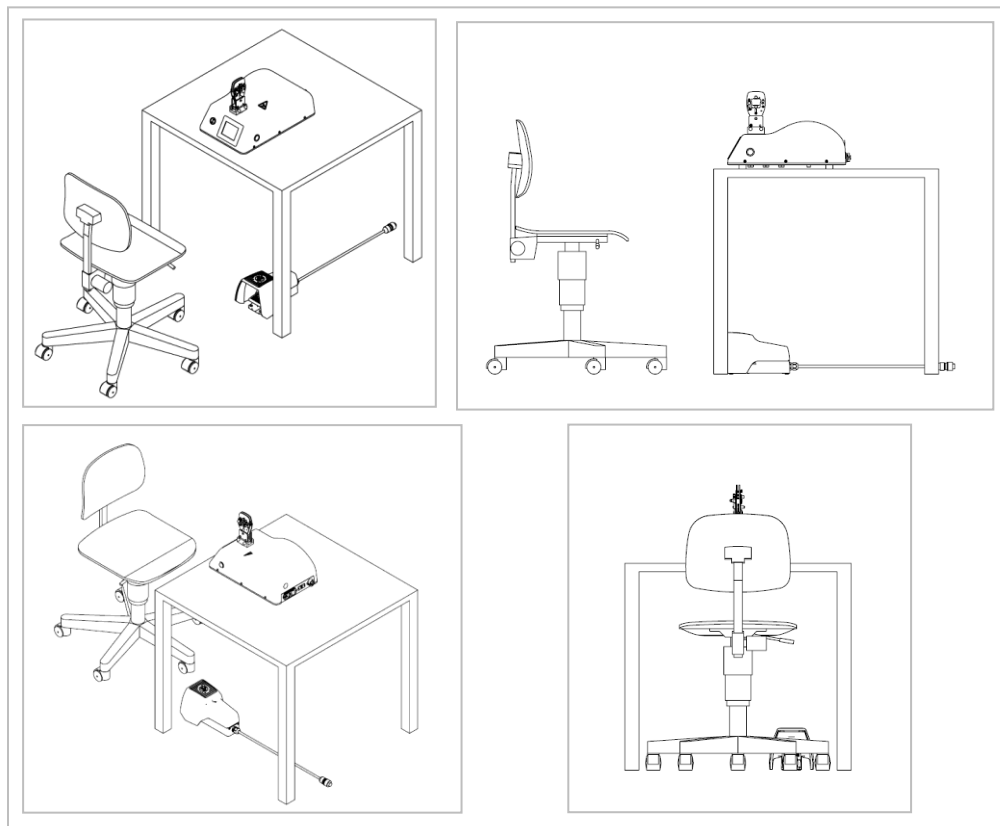


Figure 6.1.1

Connecting to the Power Supply



CAUTION

- Pay attention to the setting of the voltage selector switch. Incorrect setting may damage the machine.

1. Set the voltage selector switch (1) to the correct voltage (115 V or 230 V). See Figure 6.1.2.
2. Connect the external power supply (2) with the applicable power cord.

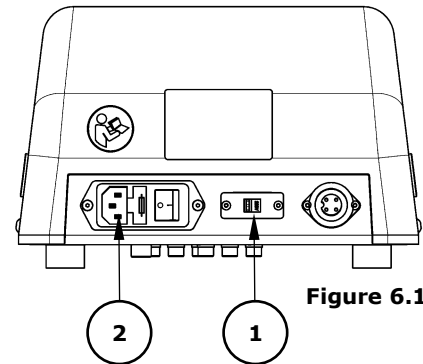


Figure 6.1.2

6.2 Foot Switch Connection



INFORMATION

- The foot switch can be ordered optionally and is not included in the scope of delivery.

1. Insert the coded connector plug of the foot switch into socket 1. See Figure 6.2.1.
2. Turn the plug protection to the right (clockwise) to lock it. Turn it to the left (counterclockwise) to release it.

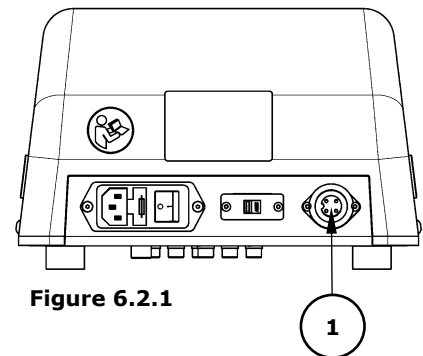


Figure 6.2.1

7 Setup and Modifications

7.1 Switching the Machine On and Off

Switch it On

1. Set the main switch to position **I**. See Figure 7.1.
2. The user interface starts automatically.

Switch it Off

1. Set the main switch to position **0**. See Figure 7.1.
2. The user interface shuts down.

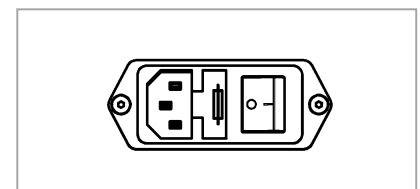


Figure 7.1

7.2 Mounting the Tool Head or Adapter on the Machine

DANGER



Switch off the machine at the main switch before mounting the tool head or adapter.

Use the following instructions to mount the tool head or adapter:

1. Switch off the machine.
2. Pull out the indexing pins (1) of the tool holder until they stop.
3. Mount the tool head or adapter from above.
4. Re-lock the locking pins (1) of the tool holder.

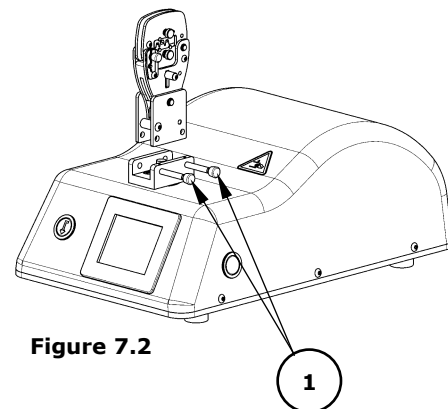


Figure 7.2

7.3 Rotate the Tool Holder

WARNING



Switch off the machine at the main switch before rotating the tool holder.

It is possible to rotate the tool holder by 90 degrees. Use the following instructions:

1. Loosen the screws (1). See Figure 7.3.
2. Pull the tool holder upward, rotate by 90 degrees and reattach.
3. Tighten the screws (1).

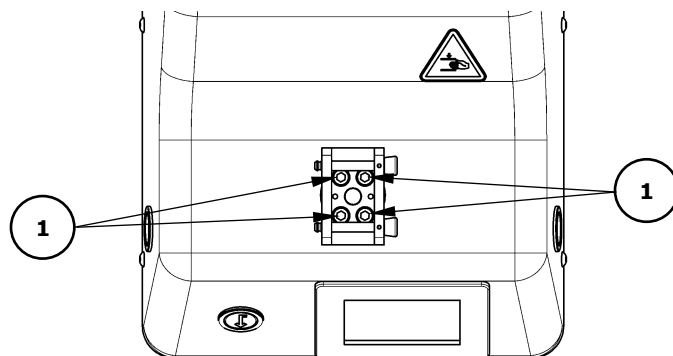


Figure 7.3

8 Machine Operation

The production screen is displayed when the machine is switched on. All other menus and functions can be called up from the production screen.

| Item | Description |
|------|---|
| 1 | Submenu |
| 2 | Software version (example) |
| 3 | Input field for entering the number of pieces |
| 4 | Reset (quantity/ lot size) |

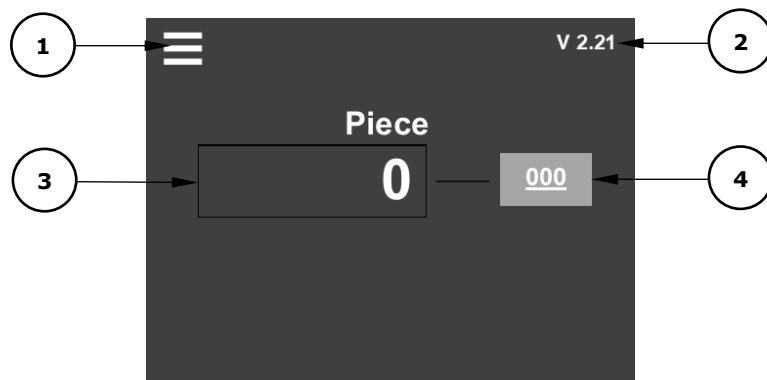


Figure 8.0

8.1 Submenu

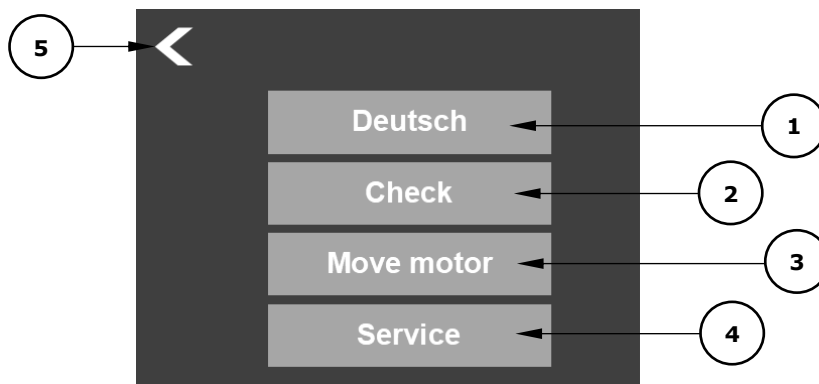


Figure 8.1

1. Click to change language between German and English
2. The check is only used to check or display individual elements.
3. In this menu item, the motor can be turned slowly forward or backward.
4. The service menu item is only accessible to the manufacturer of the machine and can be activated by a protected PIN.
5. Return to the production screen by clicking the arrow.

8.2 Check

The Check can be used to check the function and status of the machine.

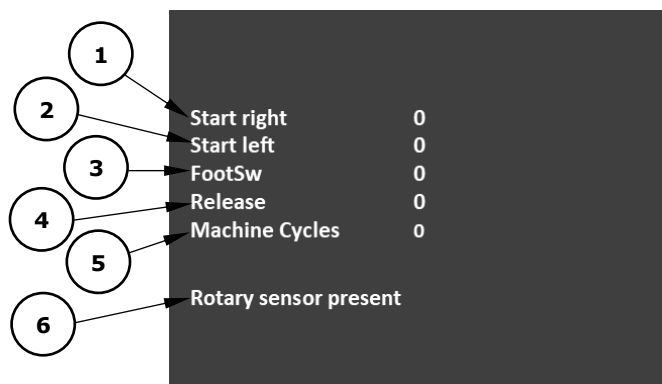


Figure 8.2

1. By pressing the left button, "0" becomes "1" on the display.
2. By pressing the right-hand button, "0" becomes "1" on the display.
3. By pressing the footswitch, "0" becomes "1" on the display.
4. By pressing the reset button "0" becomes "1" on the display.
5. This shows the amount of machine cycles.
6. This shows whether the angle sensor is connected.

8.3 Touch Control



DANGER

- Due to the risk of hand or finger injury, do not reach into the tool area while the machine is moving. There is a danger of crushing.

To move the machine slowly forward or backward, proceed as follows. See Figure 8.3:

1. By pressing the clockwise arrow (1), the machine moves forward.
2. By pressing the counterclockwise arrow (2), the machine moves backward.
3. If the button is no longer pressed, the machine stops at this position.

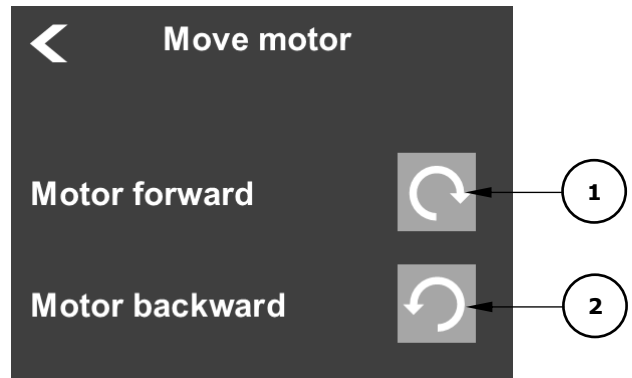


Figure 8.3

8.4 Counter

This machine has a piece counter and a batch counter.

8.4.1 Piece Count Input

1. Select field **1** by touching it. The quantity screen appears. See Figure 8.4.1.

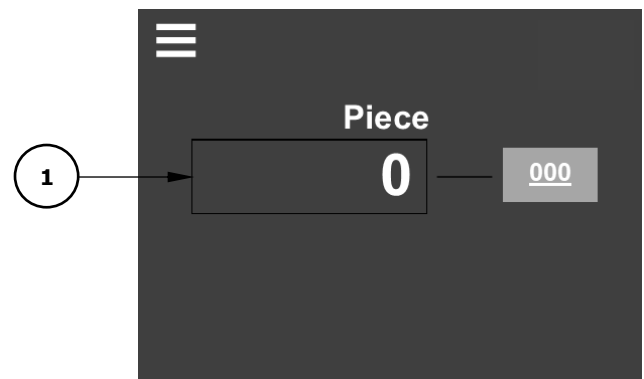


Figure 8.4.1

2. Enter the quantity and confirm with the OK button. See Figure 8.4.2.
3. Use the arrow in the upper left corner to return to the production screen.
4. If "0" is entered, the machine counts up without limit.

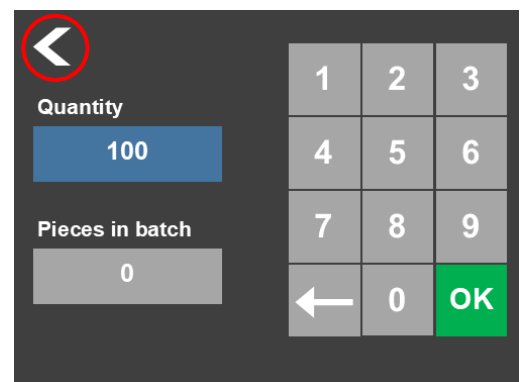


Figure 8.4.2

5. The entered quantity is displayed on the production screen. See Figure 8.4.3.

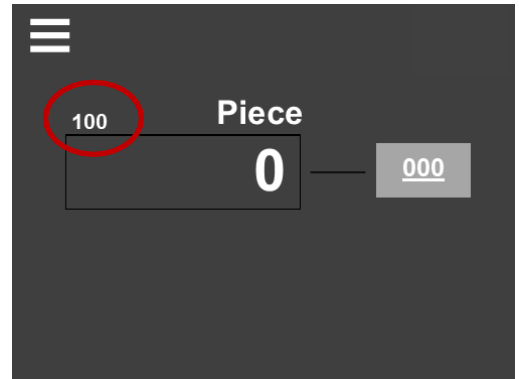


Figure 8.4.3

6. When the required quantity is reached, an information message appears on the display. See Figure 8.4.4.
7. The crimping process can only be continued when this is confirmed by clicking on the checkmark and zeroing out the counter.

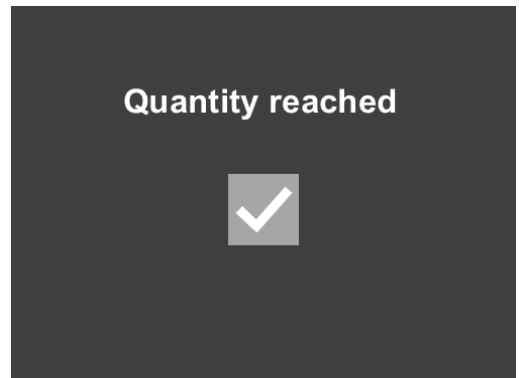


Figure 8.4.3

8.4.2 Batch Size Entry

1. Select field 1 by touching it. The piece count input screen appears. See Figure 8.4.4.

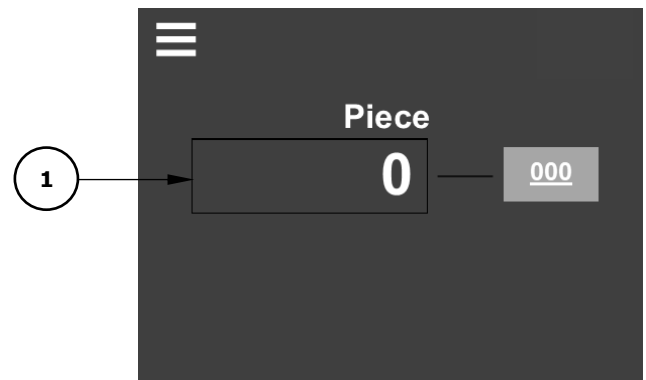


Figure 8.4.4

2. Tap on the batch size field and enter the desired quantity. Confirm the entry with the OK button. See Figure 8.4. 5.
3. Use the arrow in the upper left corner to return to the production screen.

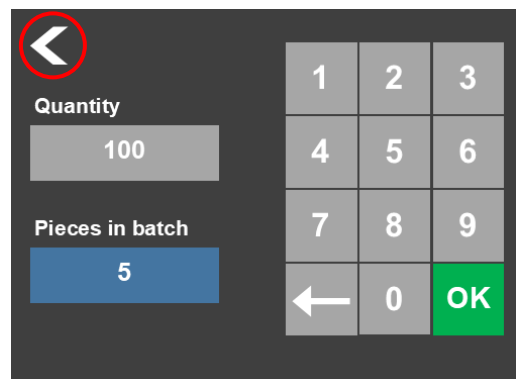


Figure 8.4.5

- The production screen displays both the calculated batch size (1) and the automatically calculated quantity (2). See Figure 8.4.6.

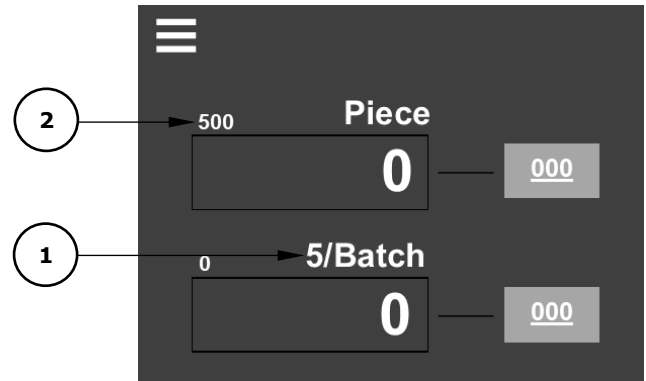


Figure 8.4.6

- When the batch size is reached, an information message appears on the display, which must be confirmed by touching it. Only then can the crimping process be continued. See Figure 8.4.7.

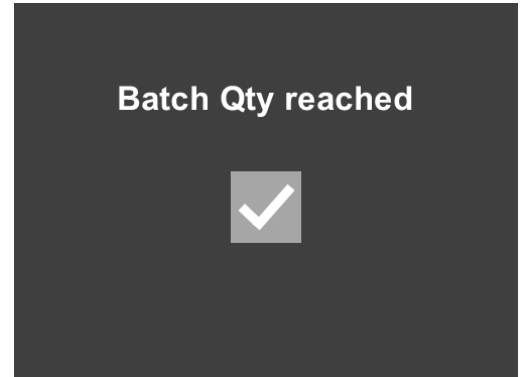


Figure 8.4.7

- When the defined quantity is reached, an information message appears on the display, which must be confirmed by touching. See Figure 8.4.8.

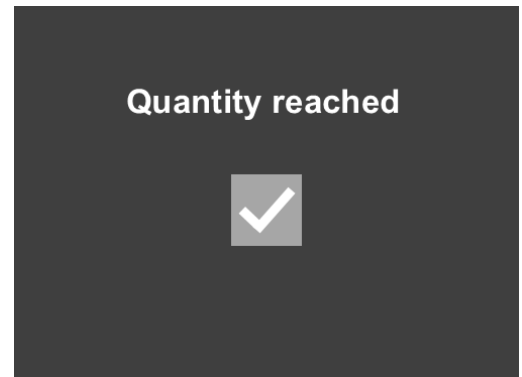


Figure 8.4.8

- The crimping process can only be continued after the piece count has been subsequently zeroed out. See Figure 4.8.9.

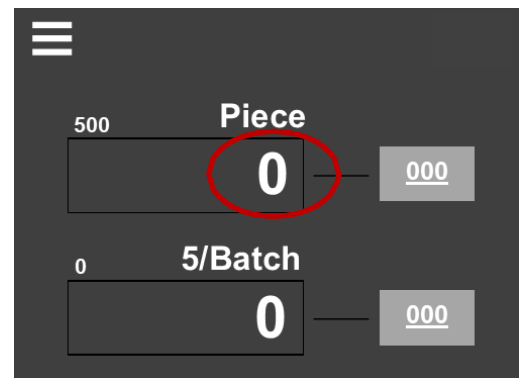


Figure 8.4.9

8.4.3 Reset Counter

1. Tap on the areas indicated in Figure 8.4.10 to reset the counters. The display will jump back to the last lot.

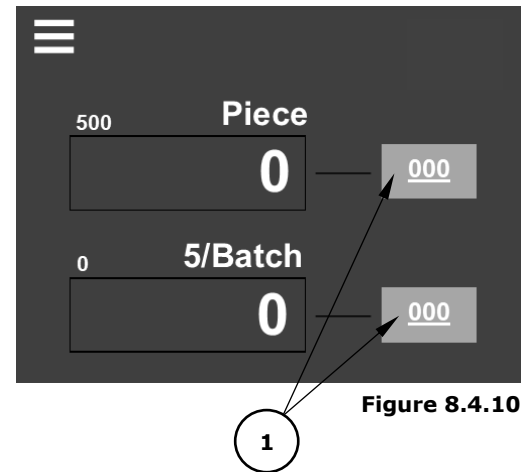


Figure 8.4.10

8.4.4 Change Quantity or Batch Size

1. To change the quantity or batch size, the respective selection highlighted in blue must be confirmed by pressing the OK button. See Figure 8.4.11.



Figure 8.4.11

9 Normal Operation or Production Operation



DANGER

- There is a residual risk of hand or finger injury. Do not reach into the crimp area.

9.1 Crimping Process with Tool Head (63816-1915)

1. Open the dies by pushing down the lever (1) and holding it.
2. Insert the crimp contact into the open die, and slowly release the lever. The contact is held.
3. Insert the wire into the terminal, and hold it firmly.
4. Press the left or right button or the foot pedal to initiate crimping.
5. Push the lever (1) down again, and remove the crimped contact.

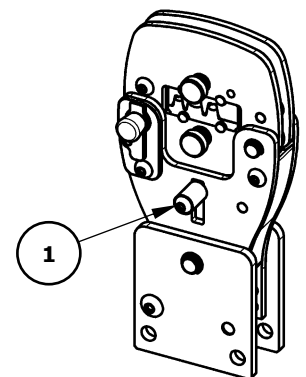


Figure 9.1

9.2 Crimping Process with Adapter and Tool Head

1. Insert the wire into the contact and hold it.
2. Insert the crimp contact and wire into the die.
3. Press the left or right button or the foot pedal to initiate crimping.
4. Remove the crimped contact.

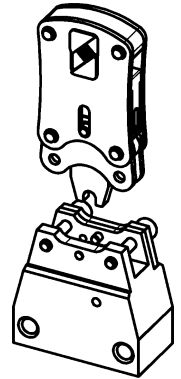


Figure 9.2

9.3 Crimp Head and Adapter Compatibility

Modular crimp heads, power crimp heads, adapters and dies are easily and quickly interchanged between hand crimp tools and the electric crimping machine. Refer to the following compatibility chart:

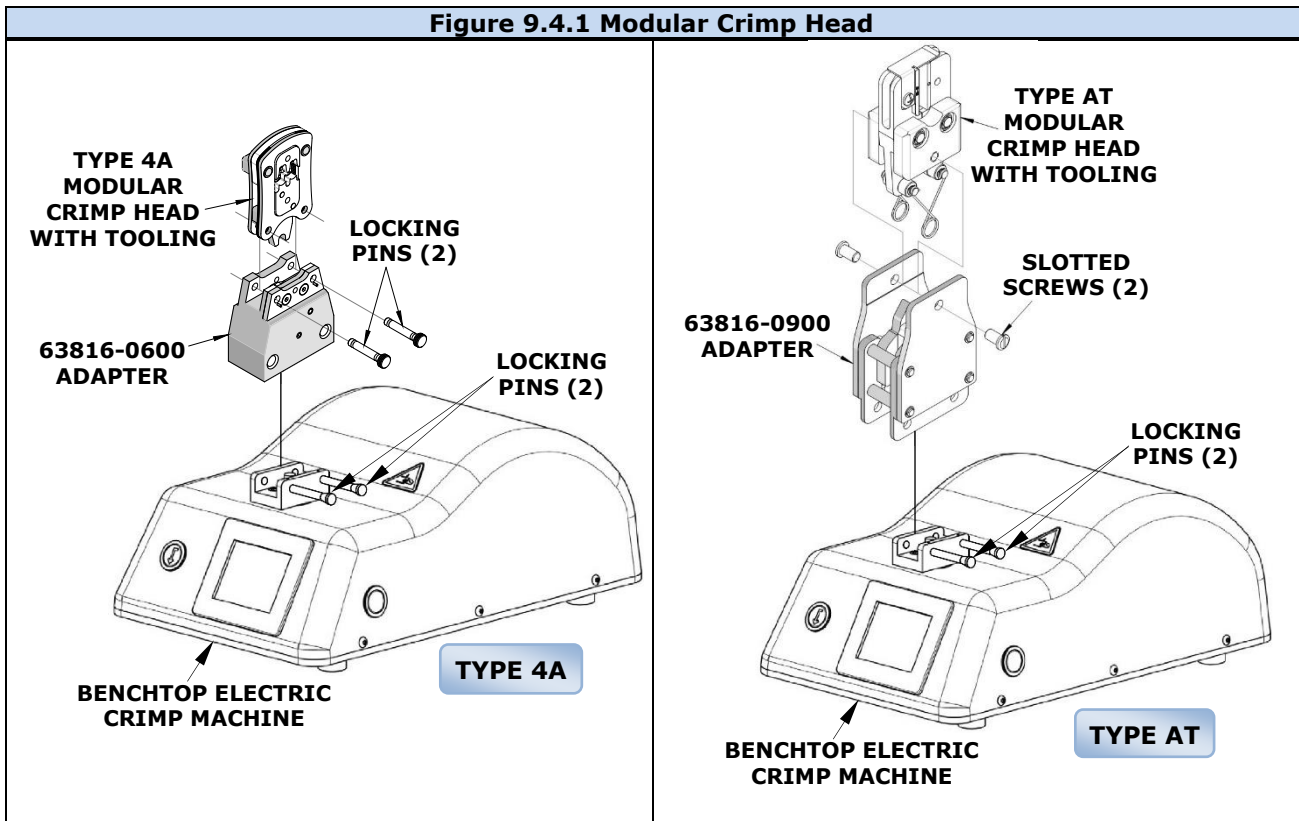
| Crimp Heads and Adapters for Hand Crimp Tools | | | | | | |
|---|------------|------------|------------|------------|------------|---------------------------|
| Type 4A | Type 2C | Type 4C | Type 4D | Type 4E | Type AT | Type RHT *See Note |
| | | | | | | |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 63816-1950 | 63816-1915 | 63816-1915 | 63816-1920 | 63816-1940 | 63816-1930 | 64005-xx00+ 63816-1930 |
| Adapter | Head | Head | Head | Head | Adapter | AT Head + Adapter |
| | | | | | | |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 63816-1900 Benchtop Electric Crimp Machine | | | | | | |
| | | | | | | |

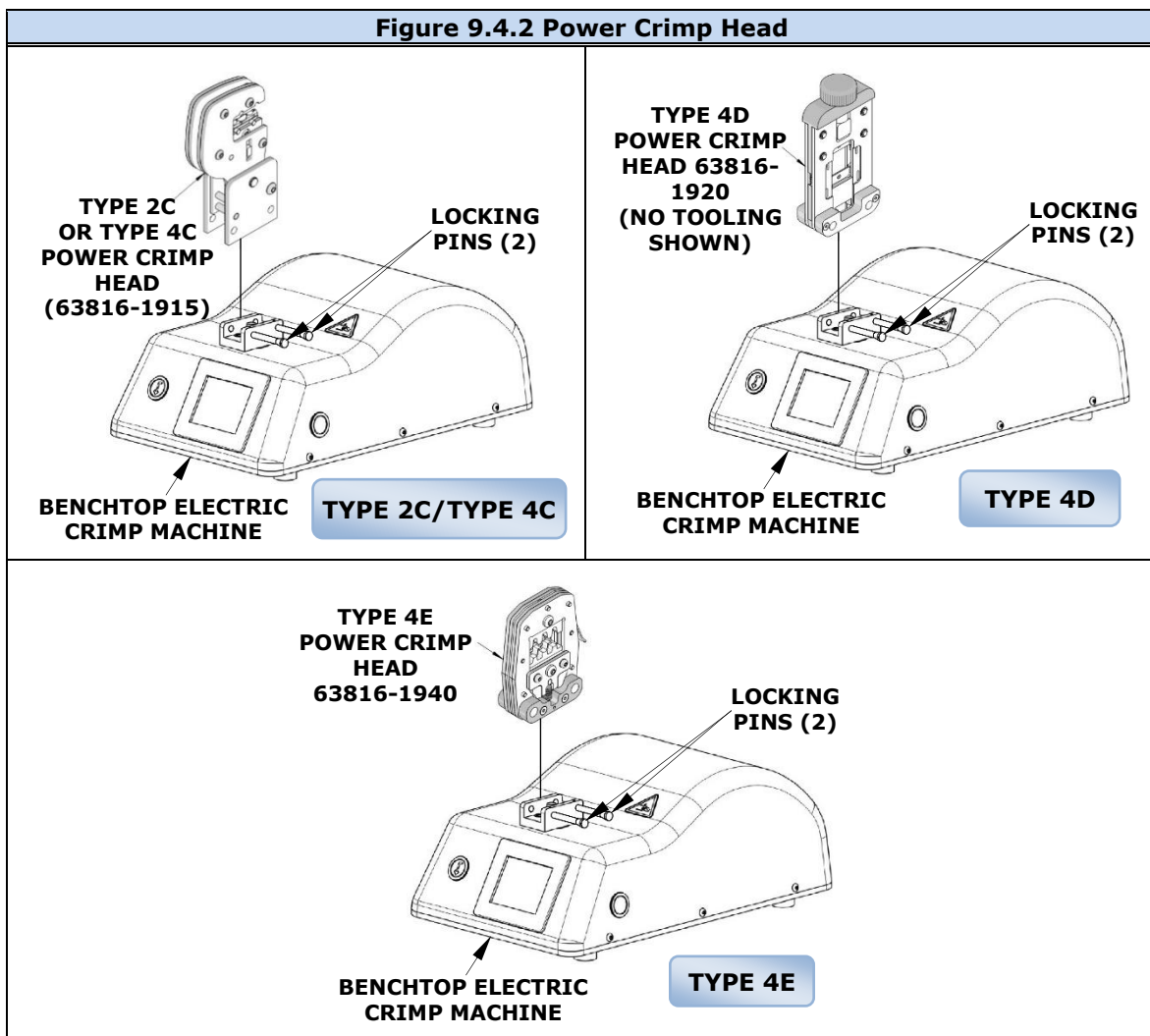
***NOTE:** Un-tooled AT heads are not available separately. Customers can install RHT tooling into one of their existing AT heads.

Caution: frame markings on the AT head may not match the tooling nests from an RHT tool for a different terminal.

9.4 Available Adapters, Tool Heads and Die Sets

The following charts show all applications for the benchtop electric crimp machine. See Figures 9.4.1 and 9.4.2:





10 Maintenance



WARNING

- Switch off the machine at the main switch before carrying out any maintenance or service work.

10.1 Maintenance Schedule

To ensure a long service life and optimum application, the following maintenance and lubrication instructions should be observed. The manufacturer accepts no liability for damage caused by neglect of the specified maintenance and lubrication instructions.

The machine connection cable and the cable to the foot switch must be checked regularly. A defective cable must be replaced immediately.

Regular cleaning and maintenance of the externally accessible parts ensures that the machine is ready for operation.

The machine or machine parts must not be cleaned with compressed air. The crimping machine or machine parts must not be cleaned with hard objects such as a spatula, steel wool or something similar. Vacuum off coarse dirt and abrasions.

10.1.1 Daily Maintenance

- Visually inspect the machine.
- Clean and check dies and tool heads for damage before each use.
- Lightly oil the profiles.

10.1.2 Monthly Maintenance

Lubricate the crimp plunger with one of the following greases:

- Blaser Swiss Lube Art.-No. 00492-01 EP-Universal Grease
- Molykote DX Paste
- Dininol Fett LGM2, Art.-No. 27620 (Zellner+Gmelin GmbH & Co. KG)

Alternatively, lithium soap greases can be used for the following application areas:

- Sliding surfaces or friction contacts
- High-load applications
- Non-soiling lubrication
- Low and medium speeds
- Base oil viscosity at 40°C (-4°F) (DIN 51562): 110mm²/s

10.1.3 After 200,000 Cycles or Every 2 Years

For inspections at the recommended intervals, please contact the manufacturer or dealer. The service address can be found in Section 11.1.

11 Troubleshooting and Fault Analysis

11.1 Mechanical Errors and Disorders

| Fault | Remedy and Explanation | |
|---|--|--|
| Device does not operate | Is the machine connected to the mains, and is the ON/OFF switch set to I? | |
| Tool head cannot be connected to the machine holder | The machine is not in the end position. | Press the reset button. |
| | The tool head is not in the end position. | Bring the crimping anvil to its lowest position. |
| Tool head does not open | Remove the tool head. Clean and oil the tool head in the profile area, and check for damage. Never use damaged tool heads. | |
| Tool head cannot be removed | Is the tool head closed? Press the reset button. | |
| Symbols in the display react at a different point than intended | The display must be calibrated. Contact the manufacturer. | |

In the event of a problem, Molex service department personnel will be able to help you. Therefore, please send the tool to the following address:

Molex Application Tooling
3 Sammons Court
Bolingbrook, IL 60440

Telephone: (402) 458-TOOL (8665)

Please have the following information ready when you contact service:

- Machine type
- Machine serial number

11.2 List of Error Codes



DANGER

- Do not open the machine if the fault cannot be rectified.

As soon as an error occurs, an error code appears in the display. See Figure 11.2.

After the error has been corrected, the messages can be reset by pressing the Reset button.

A list of the error codes with corresponding explanations is as follows:

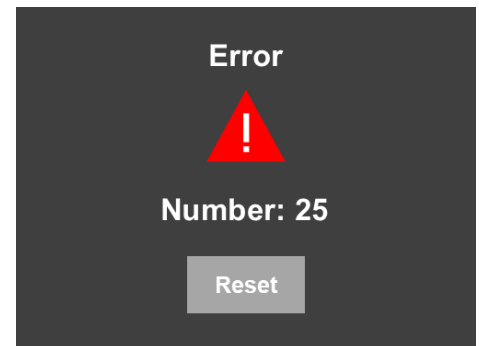


Figure 11.2

| Error Code | Declaration |
|------------|---|
| 2 | Supply voltage too low |
| 5 | Fuse 1 on control board has tripped |
| 6 | Fuse 2 on control board has tripped |
| 7 | Mains frequency cannot be determined |
| 9 | Motor control error number 1 |
| 10 | Motor control error number 2 |
| 11 | Braking error (electric brake failure) |
| 12 | Display problems (if the display fails, this error cannot be displayed) |
| 13 | Memory error |
| 14 | Motor is missing or defective |
| 15 | Direction of rotation of the motor is wrong (wrong wiring) |
| 18 | Maximum torque exceeded (crimping failed) |
| 20 | Machine temperature too high |
| 22 | Unknown error |
| 23 | Weak sensor signal (too far away) |
| 24 | Sensor board missing or not responding |
| 25 | Sensor not calibrated |

In the event of a problem, Molex service department personnel will be able to help you. Therefore, please send the tool to the following address:

Molex Application Tooling
 3 Sammons Court
 Bolingbrook, IL 60440

Telephone: (402) 458-TOOL (8665)

Please have the following information ready when you contact service:

- Machine type
- Machine serial number

12 Decommissioning, Dismantling and Disassembly

1. Switch off the machine at the main switch.
2. Disconnect the power cord.
3. Store the machine in its original packaging at 5-55°C and a maximum 90% relative humidity.

13 Disposal

To properly dispose of the benchtop electric crimp machine, send it back to Molex Application Tooling.

13.1 Accessories for Follow-Up Orders

| Description | Order No. |
|---|------------|
| Electric foot switch with protective cover and connection cable | 63816-1905 |
| 230 VAC power cord for EU (with ground contact) | 63816-1909 |
| 115 VAC power cord for USA (with ground contact) | 63816-1910 |

14 Manufacturing

This product is made for Molex by WEZAG GmbH.

Application Tooling Support

Phone: (402) 458-TOOL (8665)

E-Mail: applicationtooling@molex.com

Website: www.molex.com/applicationtooling

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