Operation manual

PinMark

UMC box

ÖSTLING
Markiersysteme GmbH

Broßhauser Str. 27
42697 Solingen - Deutschland

Tel.: +49 (0) 212 - 26 96 0
Fax.: +49 (0) 212 - 26 96 199

www.ostling.com

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Chapter 1

Safety

1 For your safety

The UMC box coining unit has been developed as the newest, state-of-the-art marking system concerning safety and reliability.

We confirm that the UMC box marking system meets the fundamental safety and health requirements of the EEC machine guideline 98/37/EG. We provide the "EEC conformity explanation", and the CE-indication on the marking system.

The type plate is together with the CE-indication on the back of the UMC box.

We, as manufacturers of the marking system, want to make you, as operators, completely familiar with the UMC box marking system. An extensive chapter has been devoted to all the safety concepts of the marking system, and refers to possible dangers and measures to take.

Note
Consideration must be taken into account that generally accepted safety rules, and rules for the prevention of accidents goes beyond these references.

2 Definitions

Danger area ... is the range in the periphery of the marking system, in which safety or the health of a person is endangered by the stay in this range.

User ... is the person, in whose working area the marking system is set up and operated.

Operator/ Personnel ... are the persons, who are responsible for transport, list, start-up, enterprise, maintenance including cleaning and repair of the marking system.

3 Operational safety

The marking system is built according to the latest state-of-the-art technology, and reliability in service.

From this marking system, however, dangers can proceed if it is used by untrained personnel inappropriately, or to not intended use. This can result in:

- Dangers for the safety of the operator.
- Impairment of the marking system and further real values of the user.
- Impairment of the efficient work of the marking system.

3.1 Intended use of the marking system

The UMC box coining unit is a marking system for marking products through coining.

Intended use means in addition:

- The setting up conditions prescribed by the manufacturer must be kept and maintenance work must be accomplished.
- The installation of the marking system and its operation must stand in conformity with the valid national regulations of the user country. For their observance the user is responsible.

Impermissible is:

- Arbitrary changing or changes of the marking system by the user or operator.
- Each function, which could impair safety.

We assume no liability from not intended use!
Each use going beyond that is not considered as intended. For material damage and personal injuries resulting from this, the manufacturer is not responsible; the risk for this carries alone to the user.

3.2 Measures taken by the user/operator

Consider warning plates and references

Within operation and handling of the marking system, dangers can arise if not handled with proper care. In this manual, operating instructions are given, including appropriate warning references in the front. In addition, warning plates can be found on the marking system.

Note
Mind the warning references!

Mind the commands and interdictions of the warning references. They serve for your protection.

These warning references include:

- A symbol.
- References to the source and the kind of the danger.
- Instructions, how you can avoid the danger.

Example:

Heavy soiling impairs the marking system!

Marking system does not work efficiently any more.

➢ With heavily soiled ambient air use bellows (option) as cover.

➢ Maintain marking system regularly.

Personnel instruction

The marking system may be served, waited and repaired only by authorized, trained and instructed personnel.

Work on the electrical and pneumatic equipment may be implemented only by specially trained specialists.

In addition, the following measures must be taken before the personnel begins the work of using the marking system:

- Instructs over arising dangers.
- The user must obligate, to the extent necessary, the personnel for carrying protective clothing and gloves.
- Competencies for operation, maintenance and repair must be clearly specified, so that under the aspect of safety no unclear authority arises.
- Read the technical documentation of the marking system. It is recommended to the user to be confirmed in writing in each case that the personnel has read and understood the technical documentation.

Duty to care in handling the marking system

Guarantee perfect condition of the installation:

- The user and/or the circle of acquaintances assigned by him may operate the marking system exclusively in the perfect condition.
- The user must ensure cleanliness and clarity of the work place at the marking system by appropriate instructions and controls.
- The user must provide for sufficient circulation of fresh air in the work spaces.
- The operator must announce occurring changes (including the operational behaviour) of the marking system which impair safety, immediately to the user. In addition, the marking system must be examined at least once per shift for outwardly recognizable lack and damage.

With all work that concern transport, installation, start-up, operation, maintenance and repair, the prescribed switching-off procedures must be kept:

- With any adjustments, maintenance or repairs, the marking system must always be switched off over the MAIN SWITCH. Exceptions to it, with which the marking system must remain switched on with appropriate work, are noted in the manual in each case.
- With work on pneumatics:
  - Turn off and lock the compressed air supply.
  - Wait at least 5 s after turning off the compressed air supply, until the pressure diminishes itself.
  - Examine whether the operating pressure dropped on 0 bar. Read off the current operating pressure from the appropriate manometer.

Use of intended spare parts and operational funds

Original parts and accessories are particularly designed and manufactured for the marking system. Spare parts to use as original parts and accessories, which are not supplied by the manufacturer of the marking system, are not examined and approved by the manufacturer. The installation and/or the use of such products can possibly change the constructionally given characteristics of the marking system and endanger safety.

Note
For damage which results from the use of non-original parts and accessories and/or inadequate installation or exchange of original parts and accessories, the manufacturer assumes absolutely no liability or responsibility.

When using the intended operational funds the instructions for use must be kept. As far as a safety data sheet (European guideline 91/155/EWG) of the manufacturer for operational funds is prescribed, the references made there must be considered obligatorily, like e. g.:

- Chemical characterization.
- Physical and safety-relevant data.
- Transport.
- Regulations.
- Safety measures, Storage and Handling.
- Measures to be taken in case of fire and accidents.
- Toxicological information.
- Ecological information.

This applies in particular to the adequate disposal of operational funds. For this the safety data sheet indicates the prescribed kind of disposal and the waste key. The safety data sheet can be requested with the manufacturer of the operational funds.

3.3 Measures of the manufacturer

All marking systems are series equipped, complete with all necessary safety devices. During operation, all safety rules and rules for the prevention of accidents must be kept.

Movable, sharp-edged parts!

Risk of injury.

- ➢ Do not reach into the marking head during the marking.
- ➢ Do not reach into the traversing range of the marking tool during the marking.

Coining When coining, the carbide point of the marking tool is brought to oscillating by compressed air. Then the carbide point is moved. The stroke of the marking tools is approx. 1 - 5 mm. Therefore reaching into the danger area is only possible with difficulty. Due to the low force, with which the carbide point oscillates, heavy injuries of the operator are to be excluded.

4 Danger overview

The following chart outlines potential hazardous risks and endangerment to one's life from the marking system. Through construction and design, as well as implementation of safety devices as defined by the EEC machine guideline 98/37/EG, will prevent dangers and promote safety to personnel. If the user of the marking system can provide additional measures for the prevention of dangers, the user finds these additional measures in the following chart.

Type of endangerment	Spot of endangerment	Danger	Additional measure
Mechanical endangerment • By squeezing	• Marking tool • Marking head	Risk of injury Risk of injury	Do not reach into the danger area.
• By cutting and chopping off	• Marking tool • Marking head	Risk of injury Risk of injury	Do not reach into the danger area.
Electrical endangerment • By electrical contact	• Directly with parts that are normally under voltage. • Indirectly with parts that are under voltage in failure.	Danger of life Danger of life	- -
Endangerment caused by breakdown or failure • Failure in power supply	• Drives • Control voltage	Risk of injury Risk of injury	- -

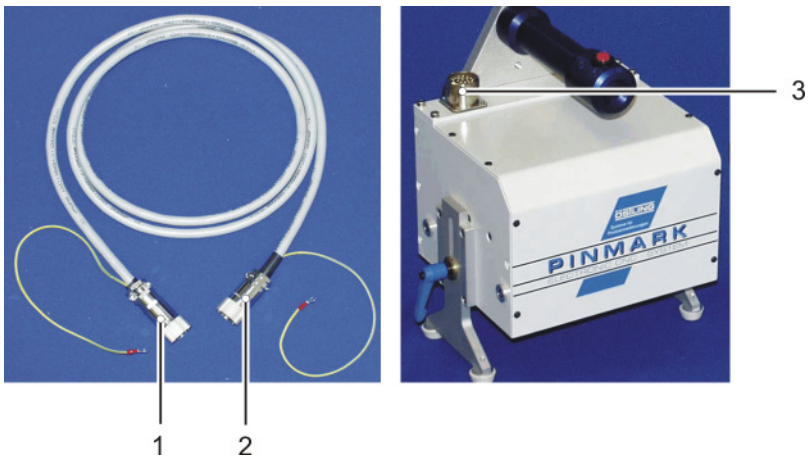
Tab. 1

Chapter 2

Set-up

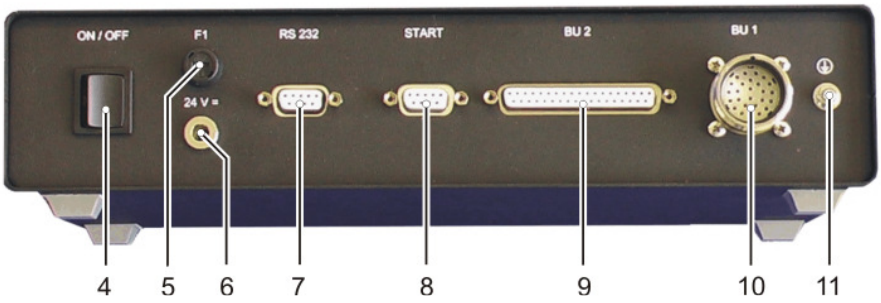
1 Installation and Set-up of the Marking System

1. Install the marking system in compliance with all safety rules.
2. Supply the marking head with oiled and cleaned compressed air via the designated connection.



1	26-pin plug of the connection cable	3	21-pin connection at the marking head
2	21-pin plug of the connection cable		

Connection cable for marking head and marking head Fig. 10372



4	MAIN SWITCH	8	Serial port foot switch
5	Fuse 2 A, T	9	Connection BU2
6	Connection line cord	10	26-pin connection BU1
7	Serial port RS232	11	Grounding screw

Back side of the control UMC box Fig. 10388

3. Tuck the 21-pin plug of the connection cable (2) into the 21-pin connection (3) at the marking head. Ensure the coding pin of the plug is inserted into the flute of the connection.
4. To screw the plug: turn the outer ring of the plug clockwise.
5. Fix the grounding wire of the connection cable under a screw of the housing of the marking head.

6. Tuck the 26-pin plug of the connection cable (1) into the 26-pin connection BU1 (10) on the back side of the control UMC box. Ensure the coding pin of the plug is inserted into the flute of the connection.
7. To screw the plug: turn the outer ring of the plug clockwise.
8. Fix the grounding wire of the connection cable with the grounding screw (11).
9. Tuck the hollow plug of the 24 V power supply into the connection line cord (6).
10. Attach the line cord of the24 V power supply to the supply voltage (115/ 230 V, 50/ 60 Hz).
11. Connect the serial port RS232 (7) with the serial port of the PC via the PC connecting cable.
12. Install software PinWare on the PC (see below).
13. If desired attach foot switch to the serial port foot switch (8).
14. Tuck E-STOP dummy plug into the connection BU2.
15. Switch on the control via MAIN SWITCH (4).

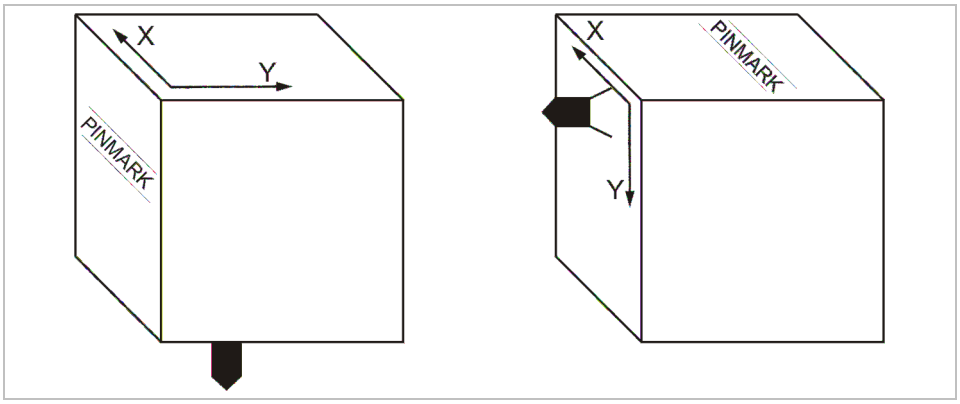
1.1 Installing the software

1. Insert CD with software PinWare into the CD drive.
2. To install the software:
   - If CD auto start is active: wait until the installation menu is displayed.
   - Select *Install [...]*.
   - Follow the instruction on the monitor.

   or

   - To start the installation manually: select *Start > Run...* in Windows.
   - Select *Browse....*
   - Select the file 'Setup.exe' on the CD.
   - Follow the instruction on the monitor.
3. Reboot the PC.

1.2 Built-in units



Horizontal (on the left) and vertical installation of the marking head Fig. 10262

All marking heads are supplied ready for use. The following points must be considered when installing the marking head into a production line:

- Built-in units must be installed adjustable to allow subsequent aligning and/or exact adjusting of the distance tool tip - workpiece.
- Use a bellows (option) as cover if the unit is operated in a heavily soiled working environment. This cover can be used only with horizontal installation of the unit.

Marking head 5 / 9 with coining tool WE2 and bellows (option) Fig. 10276

With vertical/lateral installation of the marking head (front of the marking head shows upward), the following points must be additionally considered:

- Marking tool can move down by itself, since the driving motors are dead after switching off the marking equipment and possess no automatic locking.
- Bellows (option) cannot be used.
- The y
- Y-axis is the axis with the shorter traverse path. The marking head may be inserted only with perpendicular Y-axis (see Fig. 10262, page 2-4).

2 Measures to prevent electronic interference

The following general references secure a trouble-free operation of an electrical system:

- Take the main power supply directly from the switch cabinet feed.
- Signal cables must not be laid together with cables carrying power.
- Signal cables may not be laid with cables from units that would cause interference (e. g. contactors, power motors). Otherwise use shielded mains cable and ground the shielding at one end. The same applies for the auxiliary power supply for controllers and isolating amplifiers.
- Sources of severe interference such as contactors and motors should be suppressed with RC components. Within the switch units only use switching equipment and other devices that have been suppressed by RC combinations, for example. It is necessary to note the standard codes of practice for electrical work (VDE, DIN and the corresponding EN).
- The reference value output must be shielded. The shielding must be grounded at one end.
- Controllers and switchover relays for the manual setting of reference values should be placed as close as possible to the program encoder. If it is not possible to do this, an isolating amplifier is to be installed in the reference value output immediately behind the program encoder.

2.1 Complying with interference suppression as per CE

The marking system UMC box, coining unit, is designed and build according to the regulations of the electromagnetic compatibility guideline. To ensure interference suppression the following points must be considered:

- Use shielded control cables to connect all external components (e. g. marking head, foot switch, signal inputs and outputs) to the connection BU2 (DB37) at the control. At the back of the control the shielding of all the cables must be connected at the controller end to the grounding screw (11, Fig. 10388, page 2-2) via a cable that must be kept as short as possible.
- The grounding screw of the control UMC box must be connected to the system ground (at the power supply feed) via a separate grounding cable. When integrating the control into a more sophisticated production line the grounding screw must be connected with the central ground supply point of the line via a separate grounding cable. The cross-section of the cable should be at least 2.5 mm^2.
- Length connection cable control - marking head max. 2 m.
- Cable foot switch two-core with shielding, a two-pole jack plug made of plastic must be used.
- Length cable foot switch max. 3 m.
- Lay the connection cable control - marking head and the cable foot switch separately from any possible sources of interference (see also paragraph 2).
- The following should be noted when connecting external components to the control UMC box:
  - The components used (e. g. monitor, printer) must likewise comply with the CE standards for industrial use.
  - Length connection cable control - external component max. 2 m. Shielded cables and plugs with metal housings must be used.
  - If connections to or from the serial port (RS232) cause functional errors, change over from this type of connection to one that is not subject to interference (e. g. RS485, fiber optic connection, galvanic separation through an opto-electronic coupler).

Chapter 3

Description

1 Short description

The UMC box, coining unit, is a marking system for marking products through coining.

Coining When coining, the marking takes place via a carbide point, which is brought to oscillating by compressed air. The carbide point is moved in X- and Y-direction by a coordinate unit with two stepping motors. Thus, material in the workpiece is compressed and/or displaced. In continuous operation the marking consists of a dense sequence of individual points which results in a closed line.

Engraving units cannot be operated with the UMC box.

2 Technical data

2.1 Marking units

Resolution	[mm]	standard 0.1
Coining frequency	[Hz]	oscillating freely approx. 200 or controlled 20 - 150
Marking speed	[characters/s]	1 - 5
Compressed air	[bar]	max. 6
Electricity, voltage	[V]	115 or 230
net frequency	[Hz]	60 or 50

Tab. 1

2.2 Control UMC box

Computer	external PC	
System requirements computer	Intel Pentium or equivalent with Microsoft Windows 2000 or XP	
	clock frequency [GHz]	1
	RAM [MB]	512
	hard disc space [MB]	20
	colour monitor [Pixel]	min. 1024 x 768, 65K colours
	CD drive	
Ports	COM (RS232, RS485)	
Memory	on external PC	
Motor drive	ÖSTLING 2 axis motor electronics, max. phase current 2 A	
Outputs	24 V, max. 0.5 A, ready for operation, ready to mark, marking	
Inputs	17 - 30 V DC, start with foot switch, E-STOP	
Display	4 status LED	
Keyboard	compact integrated keypad with 2 keys	
Dimensions	width [mm]	310
	depth [mm]	176
	height [mm]	75
Weight	[kg]	approx. 2.5
Electricity	24 V DC via external power supply, 90 - 250 V 50/60 Hz, max. 50 W	
Temperature range	0 °C - 45 °C, non condensing	

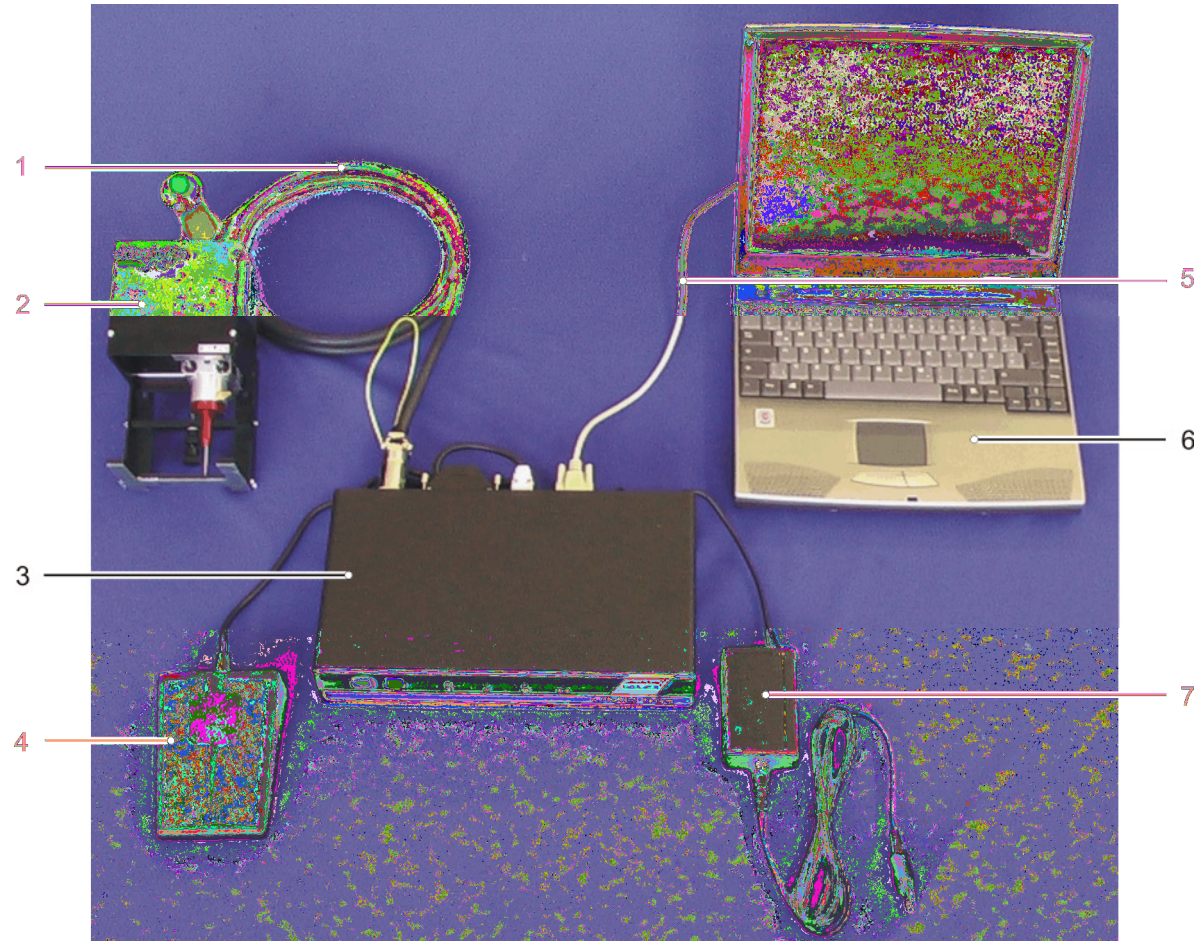
Tab. 2

2.3 Software

Mask	max. 31 text fields with up to 50 characters each or one graphic	
Font	15 fonts (see chapter 4)	
Character height	[mm]	0.5 - 99.9
Character width	width factor	0.1 - 10
Character spacing	[mm]	0 - 10
Character direction	horizontal, vertical, at any angle on any arc, clockwise or anti-clockwise	
Special characters	import of HPGL plotting files (*.plt)	
Additional functions	counter, date and time, query of text (also with bar code reader) before each marking, shift index	

Tab. 3

3 Description of the components



1 Connection cable control - marking head
2 Marking head (here: MagicPin)
3 Control UMC box
4 Foot switch
5 PC connecting cable
6 External PC for Software PinWare (not included in delivery)
7 24 V power supply with line cord

Components of the marking system Fig. 10389

3.1 Marking unit

Unit design

4 different unit designs are available:

- Table unit.
- Hand-held unit.
- Built-in unit.
- Combination unit (combination of table unit and hand-held unit).

Customized special designs are also possible.

Table unit With the table unit, the marking head is attached to a stand. The marking head can be manually moved up and down (Z-axis).

Table unit Fig. 10633

Hand-held unit With the hand-held unit, the marking head is put on the workpiece manually with a handle or a double handle. At the handle there is a releasing pushbutton for the start of the marking.

Built-in unit The built-in unit corresponds to the table device without stand. It is intended for the installation into production and assembly lines.

Combination unit The combination unit is a combination of table unit and hand-held unit. Depending upon intended purpose, the marking head can be fastened to the stand or be removed and used as hand-held unit, e. g. for the marking of larger workpieces.

Marking heads

The different marking heads differ in the size of the marking field: from 30 x 50 mm up to 80 x 140 mm.

All marking head compatible with the UMC box are equipped with a toothed belt drive. All marking heads have 2 linear axes.

Marking speed The marking speed of 1 - 100 mm/s is entered via the software. The marking speed has a substantial influence on the quality of the marking result: the lower the marking speed, the more evenly the marking.

During high marking speed the quality of the marking result does not only diminish, but also step error arises by the mass inertia of the marking head. The maximum marking speed depends therefore on the assigned marking head and its maintenance. Bad maintenance decreases the maximum marking speed (for maintenance see chapter 5).

Marking speeds over 80 mm/s produce nearly always insufficient marking results. In addition it can occur in very rare cases that the resonant frequency of the stepping motors is reached. In the case of resonance a strong decrease of torsional moment takes place. In this case a slightly (1 - 2 mm/s) higher or lower marking speed must be selected.

Marking speeds that are inherently dangerous to the marking head or other parts of the marking systems will generate an error.

Combination unit with marking head

Not every marking head is available in every unit design:

Designation marking head	Size of the marking field [mm]	Table unit	Hand-held unit	Built-in unit	Combination unit
MagicPin	30 x 50	-	+	-	-
3 / 5	30 x 50	+	+	+	+
4 / 6	40 x 60	-	-	+	-
5 / 9	50 x 90	+	+	+	+
8 / 14	80 x 140	+	+	+	+

+: available

-: not available

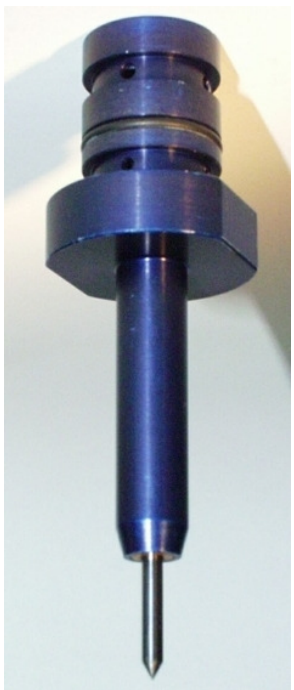
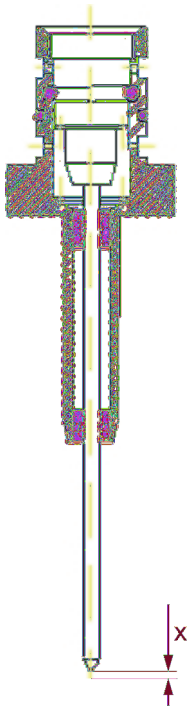
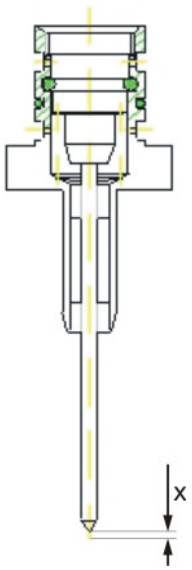
Tab. 4

3.2 Marking tools

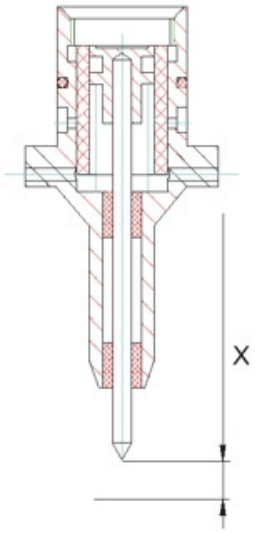
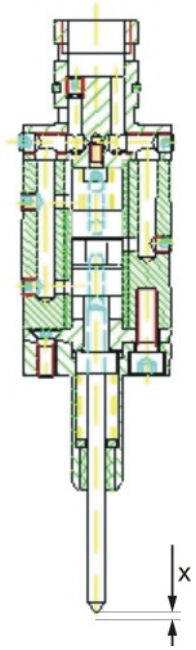
The carbide point of the marking tool is brought to oscillating by compressed air. The marking image (text, graphic) is coined into the workpiece as a dense sequence of individual points. Thus material in the workpiece is displaced.

Examples for marking tools

Note
Not all marking tools can be used in each marking head. There are different sizes of tool fittings.

Coining tool WE 2 Art.-Nr. 45.22.0000		**Coining tool WE 3 Art.-Nr. 45.30.0000**	
	• blue housing The needle tip is brought to independent swinging by compressed air. The frequency amounts to approx. 200 Hz (depending on the pressure and work distance x). Thus material in the workpiece is compressed and/or displaced. This coining tool is characterised by a high needle frequency and is therefore suitable for nearly all applications. Even the smallest markings are producible trouble-free.		• red housing The needle tip is brought to independent swinging by compressed air. The frequency amounts to approx. 200 Hz (depending on the pressure and work distance x). Thus material in the workpiece is compressed and/or displaced. This coining tool is characterised by a high needle frequency and is therefore suitable for nearly all applications. Even the smallest markings are producible trouble-free.
	Application: • applicable in the coining heads 4 / 6, 5 / 9 and 8 / 14. • work distance x = 1 - 3 mm. • working pressure: 3 - 6 bar.		Application: • applicable in the coining heads 3 / 5 and MagicPin. • work distance x = 1 - 3 mm. • working pressure: 3 - 6 bar.

Tab. 5

Coining tool WP 3 **Art.-Nr. 45.70.0000**		**Deep coining tool WE 1** **Art.-Nr. 45.10.0000**	
	This needle does **not** begin to swing independently when it is subjected with compressed air. It does not possess a natural frequency, but is brought to swinging within the range of 20 - 150 Hz by a high-speed switching valve. By the free adjustment of the needle parameters the operating point, stroke and point density of the needle can be affected. With WP needles substantially larger needle strokes can be obtained than with WE needles.		• black housing The needle tip is brought to independent swinging by compressed air. The frequency amounts to approx. 150 Hz (depending on the pressure and work distance x). Thus material in the workpiece is compressed and/or displaced. This coining tool is characterised by a large stroke and diameter. It is suitable in particular for deep markings.
	Application: • applicable in the coining heads 3 / 5 and MagicPin. • work distance x = 2 - 8 mm. • working pressure: 4 - 6 bar.		Application: • applicable in the coining heads 5 / 9. • work distance x = 3 - 5 mm. • working pressure: 4 - 6 bar.

Tab. 6

3.3 Control UMC box

All coining heads of the PinMark family can be controlled by the control UMC box.

The external PC (not included in delivery) communicates with the control over the RS232 interface. In addition the control and thus the entire marking system can be controlled from external. For this purpose digital inputs and outputs are present.

Software The software PinWare offers true WYSIWYG ("what you see is what you get"): it shows an exact preview of the marking result on the workpiece.

Both writings and graphics (format * plt) can be imported by the software and marked thereby. The software contains by default several character sets including their special characters and umlauts. All characters can be aligned and arranged freely, the arrangement on a circular arc is likewise possible.

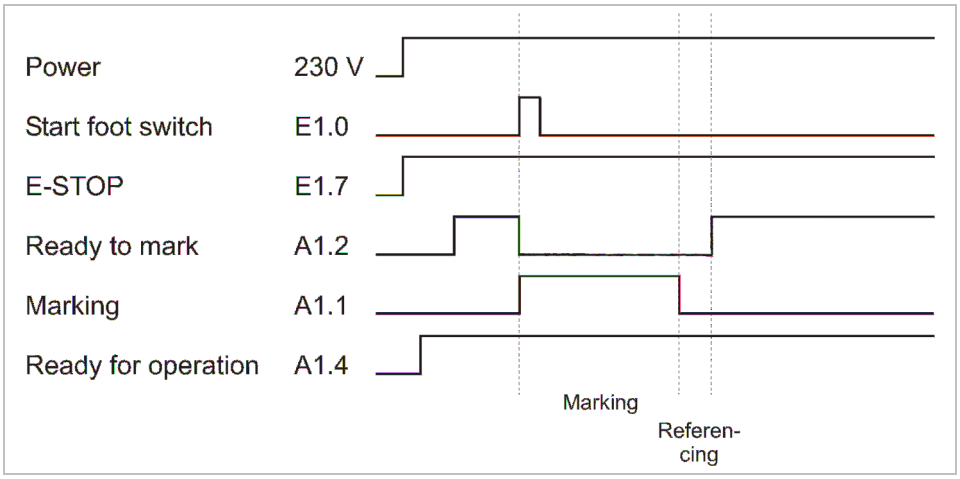
Wildcards or objects can be used in marking. E. g. the current date, time or serial number all of which increases automatically after each marking. Also variable data, which will be entered directly before the marking by the user, can be used. And all this without changing the marking sample each time.

For more information about the software see chapter 4.

4 External communication

The marking system can communicate with external controls via the connection BU2. Digital I/O signals are sent via this connection, e. g. start with foot switch, ready for operation, ready to mark, marking and E-STOP.

The high level of the input signals is defined between 17 -30 V DC, the high level for output signals will be 24 V DC. The maximum current you can take from all output signal together is 0.5 A (see chapter 6).



Timing diagram signals on BU2 Fig. 10401en

Chapter 4

Operation

1 Operating devices and indicators

The following operating devices are available at the UMC box:

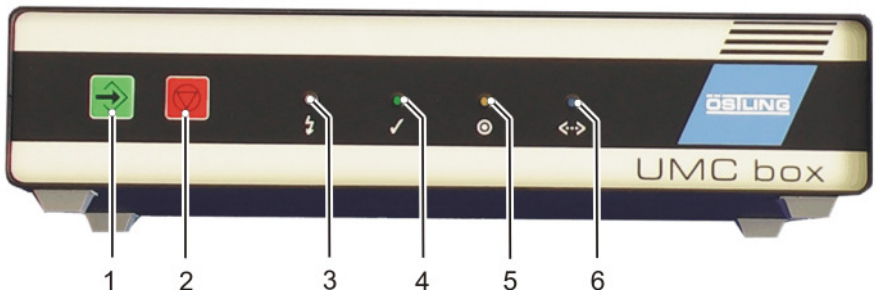
- Pushbutton ENTER for acknowledgment and start of the marking.
- Pushbutton ESC for program abort.

The following indicators are available at the UMC box:

- 4 status LEDs.

1.1 Pushbuttons

At the front of the control are the pushbuttons and the status LEDs:



1	ENTER: acknowledgment	4	LED "Ready for operation"
2	ESC: abort	5	LED "Ready for marking"
3	LED "Power on"	6	LED "Marking"

Front of the control UMC box Fig. 10392

The software is designed in such a way that from switching on the control up to the start of marking you can always press ENTER on the front of the control in order to confirm the next step.

1.2 Status-LEDs

4 coloured LEDs are situated at the front of the UMC box. They indicate the current status of the marking system.

After switching on the UMC box the LEDs are tested: all 4 LEDs are switched on and off again for 3 s one after the other. The white LED "Power on" remains switched on.

LED "Power on" The white LED (3, Fig. 10392, page 4-3) shines when the MAIN SWITCH of the control is switched on and 24 V DC are impressed to the control.

LED "Ready for operation" The green LED (4) indicates that the motor electronics is ready to move the axes of the marking head. The LED shines when the motor electronics is initialised.

If no marking head is connected to the UMC box or the stepping motors of the marking head are defective, the green LED flashes.

LED "Ready for marking" If the yellow LED (5) shines, the marking system is ready for marking. When a mask is loaded in the software and *Marking > Start* is selected, it can be marked. The marking is started with ENTER, with the foot switch or over the input E1.0 of the connection BU2.

LED "Marking" The blue LED (6) shines during the marking and during communication between CPU card and motor electronics.

2 Basics of operation

2.1 Text fields, Masks and Projects

The software is based on the use of text fields and masks. Several text fields which belong to one workpiece are combined in a mask. A mask can contain max. 31 text fields. A text field can contain max. 50 characters or one graphic.

If more than 31 text fields are needed for the marking of a workpiece, several masks must be created. If a text field shall contain more than 50 characters, its content must be divided on 2 text fields. However, only one mask can be loaded and marked.

A mask can be stored also in a project. Beside the mask with all text fields a project contains also all other current adjustments on the control e. g. used marking head.

Example A mask e. g. corresponds to a type plate, the text fields correspond to the individual fields of the type plate like year of manufacture, serial number, etc.

The arrangement of a text field within the mask is determined by the X- and Y-coordinates of the text field. The origin of the coordinate system lies in the lower left corner of the marking area.

2.2 Switching on and off the control

Switching on the control

Electronics damage to control possible!

➢ Control must be switched off for at least 20 s before switching on.

➢ Switch on MAIN SWITCH.

Control boots, axes of the marking head reference: the slide of the marking head moves in X-direction until the X-initiator actuates. Then it continues to move in X-direction by the value of "Overtravel" (see page 4-29). The slide moves likewise in Y-direction. The reached position is defined as basing point of the marking head. This basing point is the origin of the marking field.

After successful homing the main menu appears:

Main menu Fig. 10393en

Switching off the control

1. Save all changes of the current mask or project (see pages 4-19 and 4-20).
2. After no keys is pressed for a short time: switch off MAIN SWITCH.

2.3 Brief instruction: marking a workpiece

1. Switch on control via MAIN SWITCH.
2. Select  *Load file*.
3. Select the desired file.
4. Select  .
5. Enter the number of workpieces to be marked behind "Number".
6. Select  to start the marking. To mark another workpiece: select  again.

3 Working with masks

3.1 Creating a text field

Several text fields which belong to one workpiece are combined in a mask. A mask can contain max. 31 text fields. If more than 31 text fields are needed for the marking of a workpiece, several masks must be created.

Type text field

5 different types of text field are available:

- Text: text is aligned on a straight line.
- Circular text: text is aligned on the inside or outside of a circle.
- HPGL file: graphic file in the format *.plt is inserted.
- DataMatrix Symbol: insert data matrix.
- Position: insert empty text field at a defined position.

Alignment

Depending on the type of the text field different alignments are available. For the types "Text", "HPGL file" and "DataMatrix Symbol":

- Bottom left: The reference point of the text field lies in the lower left corner of the text field.
- Bottom center: The reference point of the text field lies in the lower center of the text field.
- Bottom right: The reference point of the text field is in the lower right corner of the text field.

The following alignments are available for the type "Circular text":

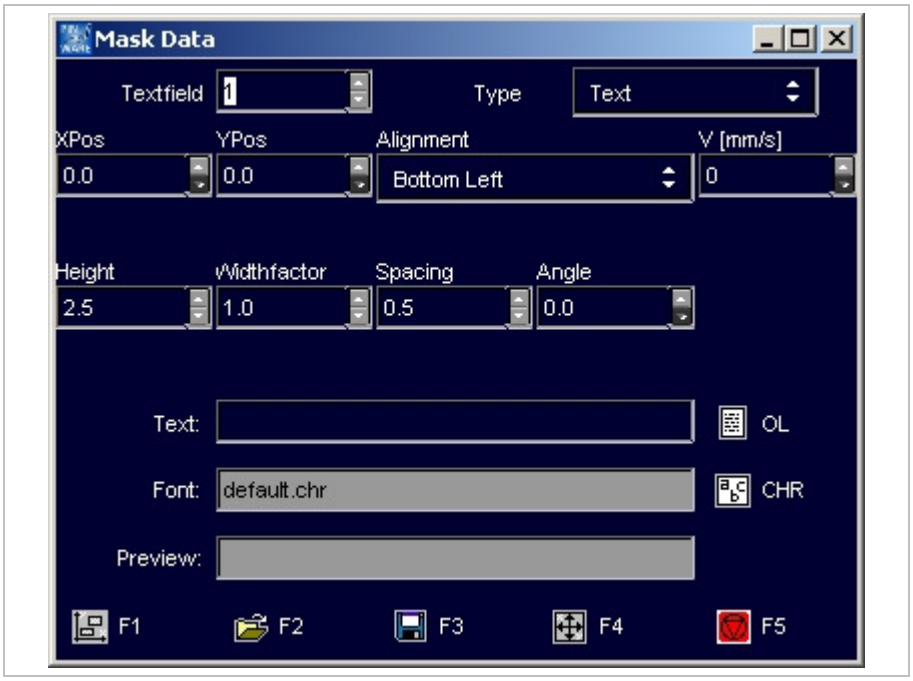
- Circle I left: the lower edge of the text is put on the circular arc; the text is aligned in the clockwise direction on the circular arc. The beginning of the text lies on the reference point.
- Circle I center: the lower edge of the text is put on the circular arc; the text is aligned in the clockwise direction on the circular arc. The center of the text lies on the reference point.
- Circle I right: the lower edge of the text is put on the circular arc; the text is aligned in the clockwise direction on the circular arc. The end of the text lies on the reference point.
- Circle O left: the lower edge of the text is put on the circular arc; the text is aligned in the anti-clockwise direction on the circular arc. The beginning of the text lies on the reference point.
- Circle O center: the lower edge of the text is put on the circular arc; the text is aligned in the anti-clockwise direction on the circular arc. The center of the text lies on the reference point.
- Circle O right: the lower edge of the text is put on the circular arc; the text is aligned in the anti-clockwise direction on the circular arc. The end of the text lies on the reference point.

Note

The origin of the coordinate system (0,0) always lies in the lower left corner of the marking area.

Creating a new text field

1. Select *File* > *New mask*.
   "Mask Data" appears.



Mask "Mask Data" Fig. 10221en

2. Enter the number of the text field behind "Textfield".
3. Select the desired type of text field (see page 4-8) behind "Type".
   Depending on the selected "Type" a different number of further input fields are displayed.
4. Select the desired alignment of the text field (see page 4-8) under "Alignment".
5. Enter the X- and Y-position of the reference point (see Alignment on page 4-8) under "XPos" and "YPos".
6. Enter the marking speed under "V [mm/s]".

   Note
   Text field with V = 0 mm/s are not marked and are displayed in the preview in blue colour.

7. Enter the character height of the capital letters in [mm] under "Height". Heights from 0.5 to 99.9 mm can be entered. When marking a data matrix enter the "Dot size" in [mm].
8. If the characters of the text shall be marked wider or smaller than standard: enter a value unequal to 1.0 under "Widthfactor". Character widths from 0.1 to 10 can be entered.
   0.5 causes half character width, 2.0 double character width.
9. If the spacing between 2 adjacent characters shall be larger than standard: enter a value between 0 and 10 in [mm] under "Spacing".

10. If the text shall not be marked on a horizontal line: enter the desired angle of rotation of the text in [°] under "Angle". A vertical text corresponds to an angle of 90°.
11. Enter the diameter of the circular arc in [mm] under "Diameter", if circular text is marked.
12. Enter the desired text to be marked behind "Text".

    or

    - Select  *OL* to access the object list.
    - Look for the number of the desired object.
    - Select  to return to "Mask Data".
    - E. g. to mark the object No. 003: enter `%003`.

    or

    - Enter a wildcard, e. g. `@TT.MM.JJ@` (see page 4-12).
13. To select the "Font":
    - Select  *CHR*.
    - Select the desired font from the list (overview fonts see page 4-35).
    - Select  .
14. To see a preview of the text to be marked: select  .

Editing a text field

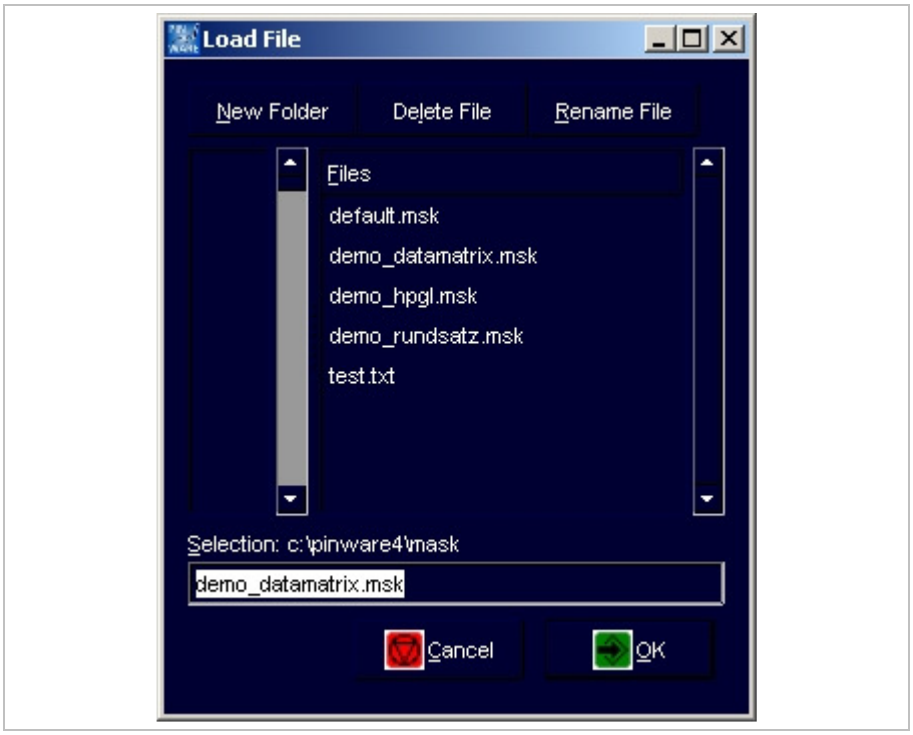
A text field that is already created can be edited in the edit or service mode at any time.

1. If the mask in which the text field shall be edited is not the current mask: select *File > Open mask* in the main menu.

   or

   - Select *Load file*.

   "Load File" appears.



Mask "Load File" Fig. 10222en

2. Select the desired file (mask).
3. Select  .
4. Select *Edit > Mask* in the main menu.

   or

   - Select *Edit File*.

5. Enter the number of the text field to be edited behind "Textfield".

   or

   - Select the desired text field with the arrow keys.

6. Edit the text field (see page 4-9).

3.2 Working with wildcards

Instead of text also a wildcard can be entered in a text field. With wildcards variable information (e. g. current date or time) can be marked. The information isn't queried by the system until the marking takes place.

Wildcards are included by 2 "@" characters. Several wildcards can be combined. The characters . - , : / and the blank can be used together with wildcards, in order to obtain e. g. usual formatting of dates.

The following wildcards are available:

Type of wildcard	Entry	Result	Example
Day	T	Day in the week	1, 2, 3, ..., 7
Day	TT	Day in the month (two-digits)	01, 02, 03, ..., 31
Day	ttt	Day in the year	1, 2, 3, ..., 366
Week	KW	Week (two-digits)	01, 02, 03, ..., 53
Month	MM	Number of the month (two-digit)	01, 02, 03, ..., 12
Year	J	Date (last digit)	0, 1, 2, ..., 9
Year	JJ	Date (last 2 digits)	98, 99, 00
Year	JJJJ	Date (four-digit)	2005
Time	hh	Hour (two-digit)	00, 01, 02, ..., 23
Time	mm	Minute (two-digit)	00, 01, 02, ..., 59
Time	ss	Second (two-digit)	00, 01, 02, ..., 59
Counter	arbitrary number	Number which is increased automatically.	100, 101, 102, ...

Tab. 1

Example:
A text field with the content: Date: @TT.MM.JJ@ Time: @hh:mm@
e. g. generates: Date: 19.01.05 Time: 09:26

3.3 Creating objects

In addition to wildcards, objects can also be entered in text fields. The following objects are available:

- Counter.
- Date and time.
- User input: text field is reserved for data that are entered by the user just before the marking. The query of the data occurs automatically.
- Shift index.

Objects are saved in an object list and can be inserted in as many masks as desired. E. g. if a four-digit counter is needed on several different workpieces, which begins with 0 and ends with 250, this counter must be created only once.

Note
If "Autosave" is selected under *System > Options*, the current counter value is saved in the object list, too.

Objects are activated with a "%" character. Several objects can be combined.

Creating a counter

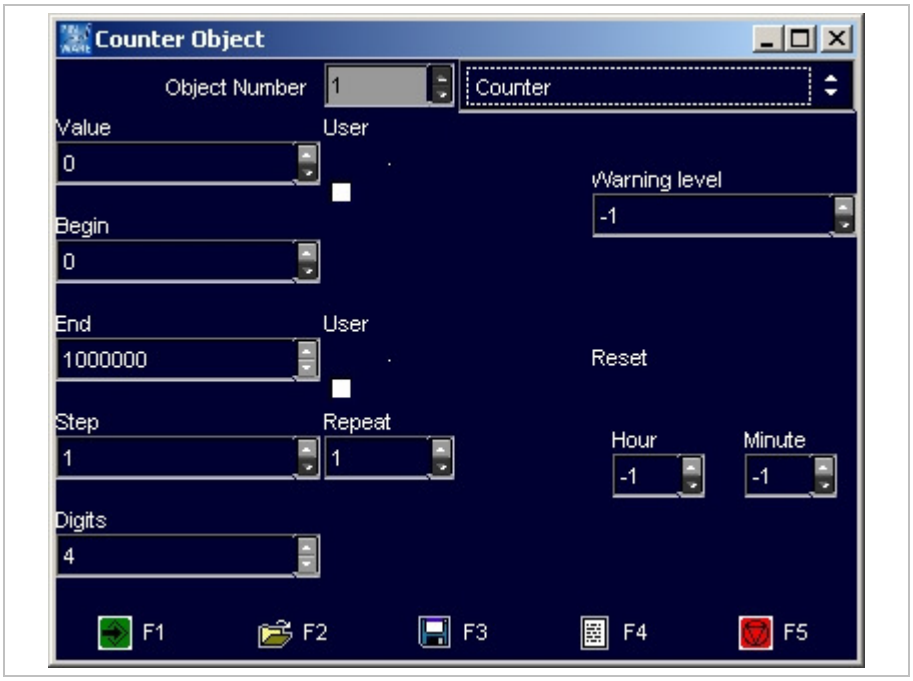
1. Select *Edit > Object List*.

   or

   - Select *OL* in "Mask Data".

   "Object List" appears.
2. Select unimplemented object or object "Counter" to be changed and select ENTER.

   "Counter Object" appears.



Mask "Counter object" Fig. 10223en

3. Enter the following values:
   - "Value": current value of the counter. Select "User" if the current value of the counter shall be queried from the user by a message (see also Fig. 10235, page 4-16).
   - "Begin": minimal value of the counter.
   - "End": maximal value of the counter. Select "User" if the maximal value of the counter shall be queried from the user by a message (see also Fig. 10235, page 4-16).
   - "Step": increment to increase the counter.
   - "Repeat": number of markings before the counter is increased one "Step".
   - "Digits": number of digits marked.
   - "Warning level": number of markings before "End" when the software displays a message that only x markings can be done before the maximal value of the counter is reached. When inserting `-1` no message is displayed.
   - "Reset, Hour", "Reset, Minute": number of operating hours and minutes after that the counter is reset to "Begin".
4. To assume the object in the object list: select  .

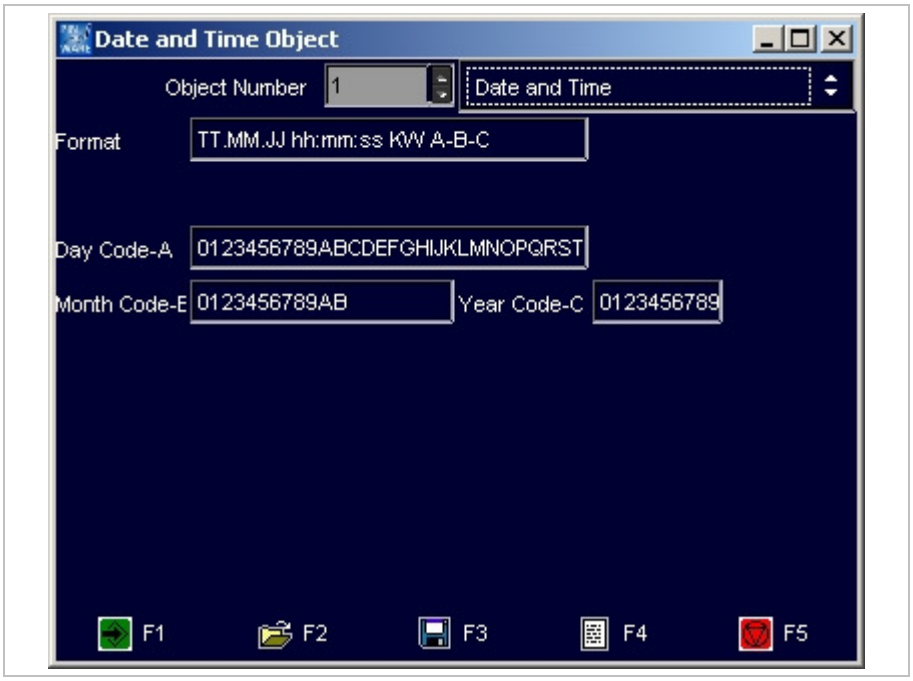
Creating the object "Date and Time"

1. Select *Edit* > *Object List*.

   or

   - Select *OL* in "Mask Data".

   "Object List" appears.
2. Select unimplemented object or object "Counter" to be changed and select ENTER.
3. Select "Date and Time" in the field on the right.



Mask "Date and Time Object" Fig. 10224en

4. Enter the value "Format": format of the date/time (see "Working with wildcards" page 4-12).
5. If desired, also special formats of the date can be marked: Enter the letters A B C (if desired with separators) and the values of A, B and C in the lower rows:
   - "Day Code-A": 31 digits or letters from which the digit and/or the letter is marked which corresponds to the current day.
   - "Month Code-B": 12 digits or letters from which the digit and/or the letter is marked which corresponds to the current month.
   - "Year Code-C": 10 digits or letters from which the digit and/or the letter is marked which corresponds to the current year.
6. To assume the object in the object list: select  .

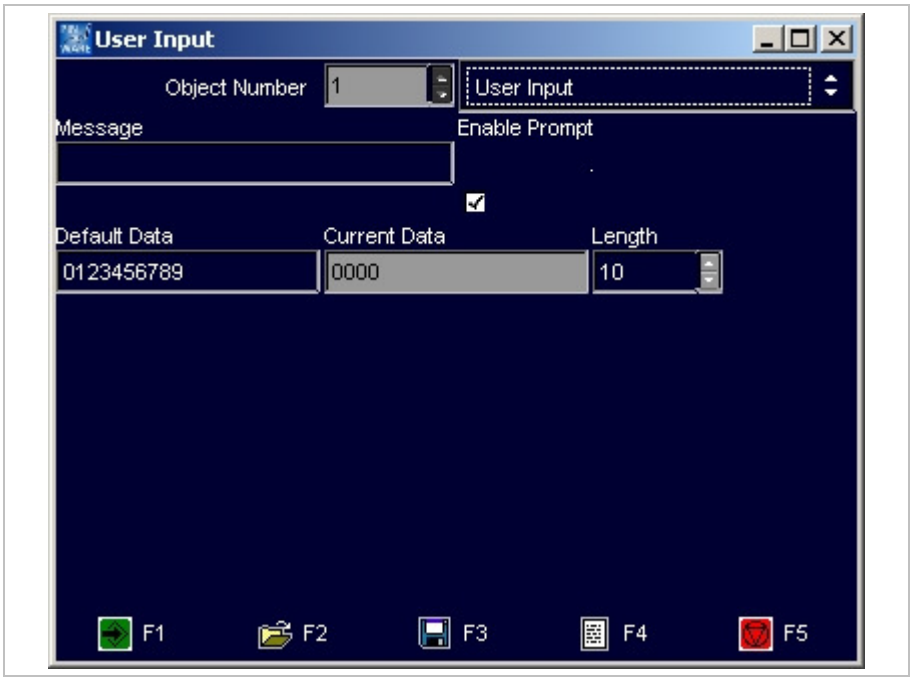
Creating the object "User Input"

1. Select *Edit* > *Object List*.

   or

   - Select *OL* in "Mask Data".

   "Object List" appears.
2. Select unimplemented object or object "Counter" to be changed and select ENTER.
3. Select "User Input" in the field on the right.



Mask "User Input" Fig. 10225en

4. Enter the following values:
   - "Message": message that is displayed if the system waits for an input from the user, e. g. Fig. 10235. The message is only displayed if "Enable Prompt" is selected.

Fig. 10235en

- "Default Data": data that is displayed in the message behind "Please enter data" (see Fig. 10235).
- "Current Data": enter nothing. These are the data that are entered by the user just before the marking.
- "Length": max. number of digits of the text to be marked.

5. To assume the object in the object list: select  .

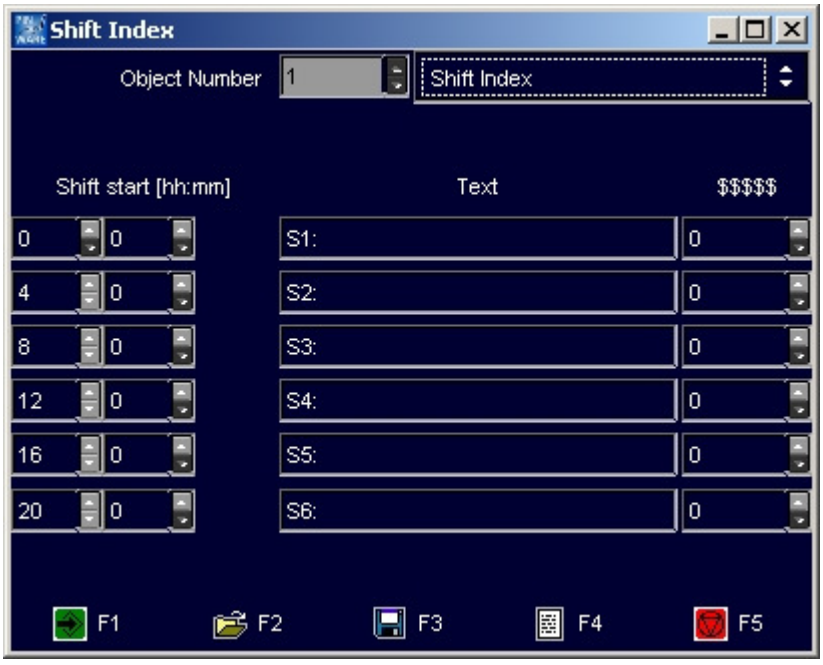
Creating a shift index

1. Select *Edit* > *Object List*.

   or

   - Select *OL* in "Mask Data".

   "Object List" appears.
2. Select unimplemented object or object "Counter" to be changed and select ENTER.
3. Select "Shift Index" in the field on the right.



Mask "Shift index" Fig. 10226en

4. Enter the following values:
   - "Shift start": enter the hour of the shift start in the first column. Enter the minute of the shift start in the second column.
   - "Text": displayed text, when the current time corresponds to the relative shift.
   - "$$$$$": enter nothing. This is a counter counting the parts that are marked in each shift. The counter is reset to "0" at change of shift.
5. To assume the object in the object list: select  .

3.4 Saving masks

1. Create the mask with all desired text fields (see paragraph 3.1, page 4-8).
2. Select *File > Save Mask*.

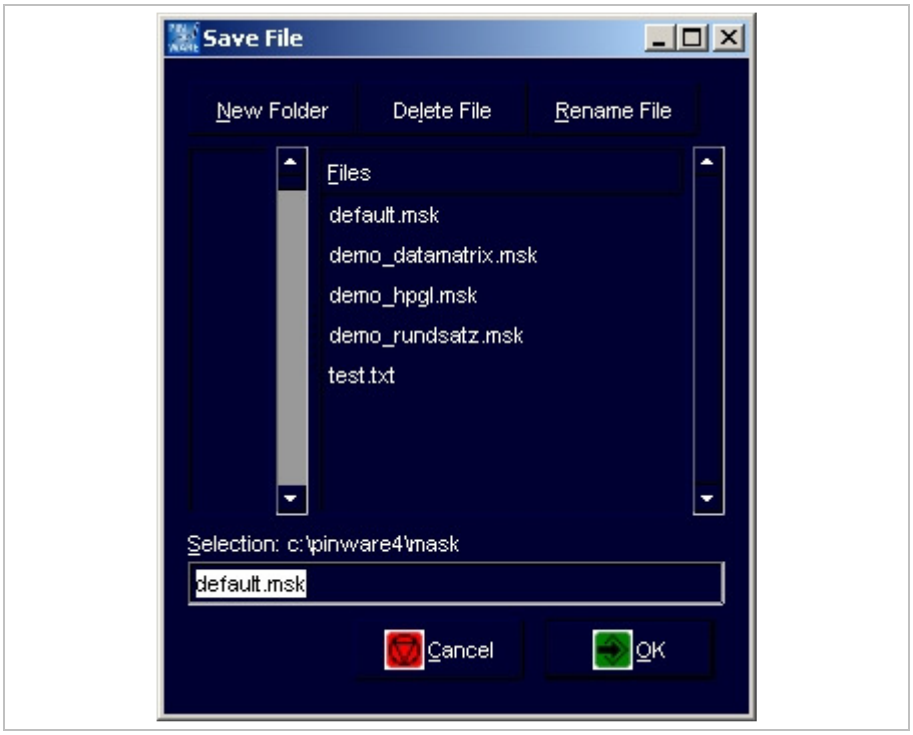
   If a new mask is saved (mask doesn't have a file name yet) "Save File" appears.

   If the mask has been saved once and therefore has a file name, the mask will be saved. The following steps are inapplicable.

   or

   - Select *File > Save Mask As*.

   "Save File" appears.



Mask "Save File" Fig. 10266en

3. Enter file name you wish to give to the mask.

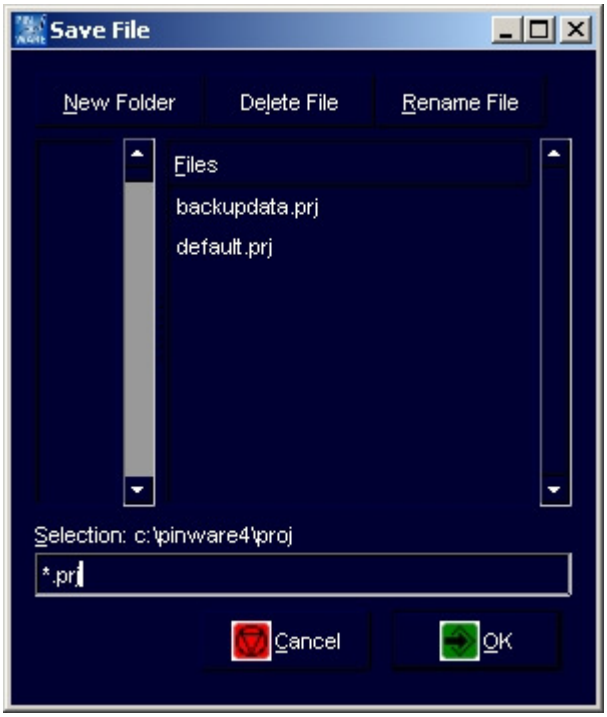
   The ending '.msk' is automatically added by the software.
4. Select  .

4 Working with projects

If the same masks are used on different marking units with different marking heads, the masks can be stored as projects. Beside the mask with all text fields a project contains also all current adjustments e. g. used marking head. If the mask is stored as project, these adjustments must be entered only once for each marking head. If the mask is to be marked again with one of these marking heads, just open the corresponding project.

4.1 Saving a mask and adjustments as project

1. Create the mask with all desired text fields (see paragraph 3.1, page 4-8).
2. Enter all other adjustments, e. g. used marking tool (see paragraph 7.5, page 4-31).
3. Select *File > Save Project As*.
   "Save File" appears.

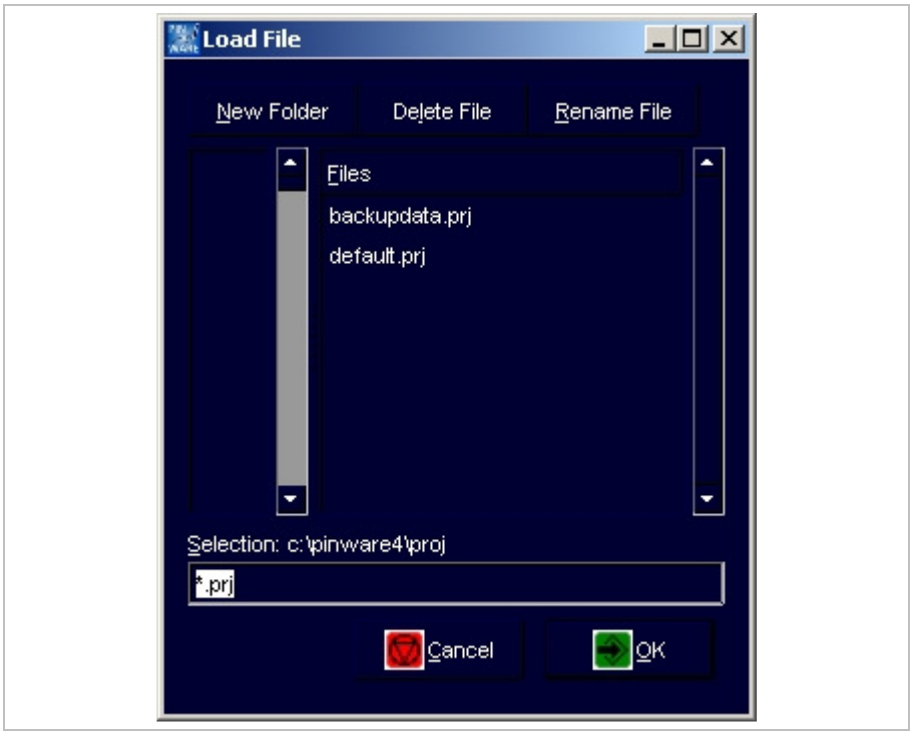


Mask "Save File" Fig. 10267en

4. Enter file name you wish to give to the project.
   The ending '.prj' is automatically added by the software.
5. Select  .

4.2 Opening a project

1. Select *File > Open Project*.
   "Load File" appears.



Mask "Load File" Fig. 10268en

2. Select the desired file (project).
3. Select  .
   Project is opened: mask which is stored in this project is opened, all stored adjustments are assumed by the control.

Note
The marking unit does **not** give a feedback to the control which marking head or which marking tool is attached to the marking unit. When working with projects the stored adjustments must be controlled by the user.

5 Marking a workpiece

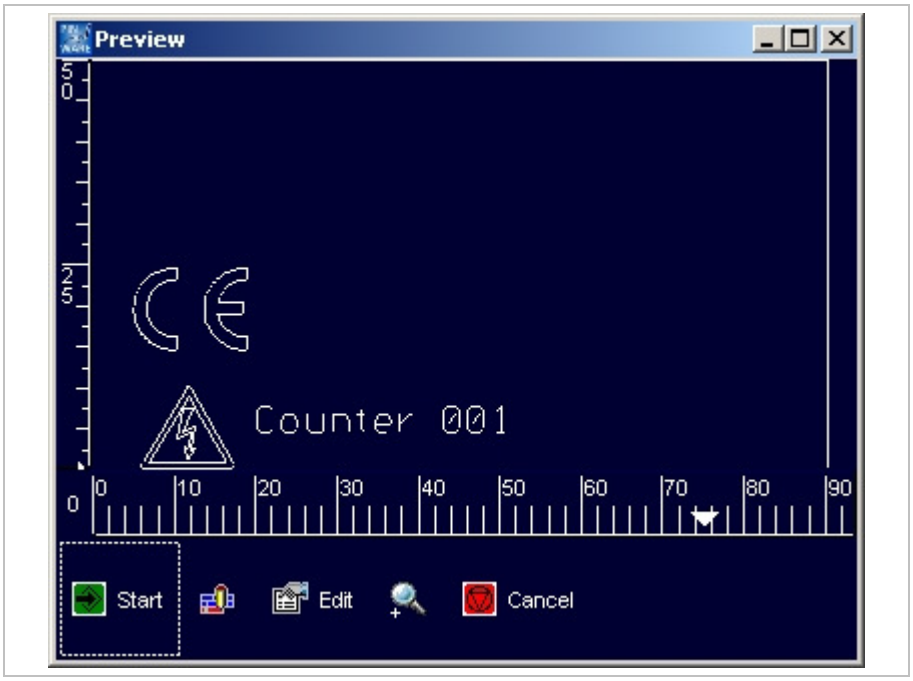
5.1 Preview on marking

1. To see a preview of the mask to be marked: select *Marking > Preview*.

   or

   - Select  in "Mask Data".

   "Preview" appears.



Mask "Preview" Fig. 10269en

2. To scale up the view: select  .
3. To reset the view to normal view: select  .
4. To make still some changes in the mask: select  *Edit*.
5. To control the marking movements of the marking tool without marking the workpiece: select  .

   Marking head retraces the marking without movement of the marking tool.

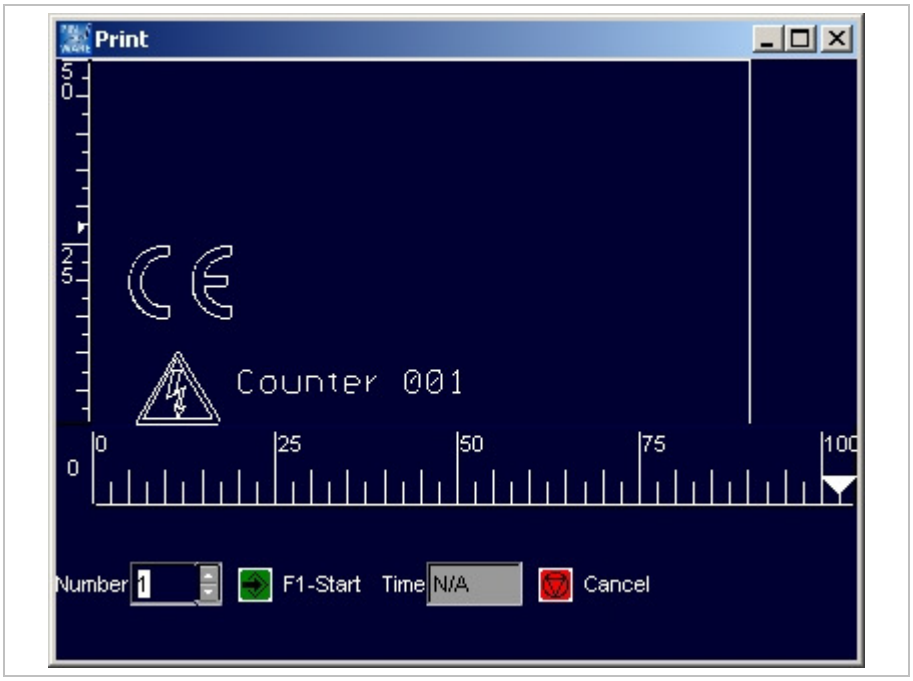
5.2 Starting the marking

1. Select *Marking* > *Start*.

   or

   - Select  *Start* in "Preview".

   "Print" appears.



Mask "Print" Fig. 10270en

2. Enter the number of workpieces to be marked behind "Number".
3. Select  , to start the marking.

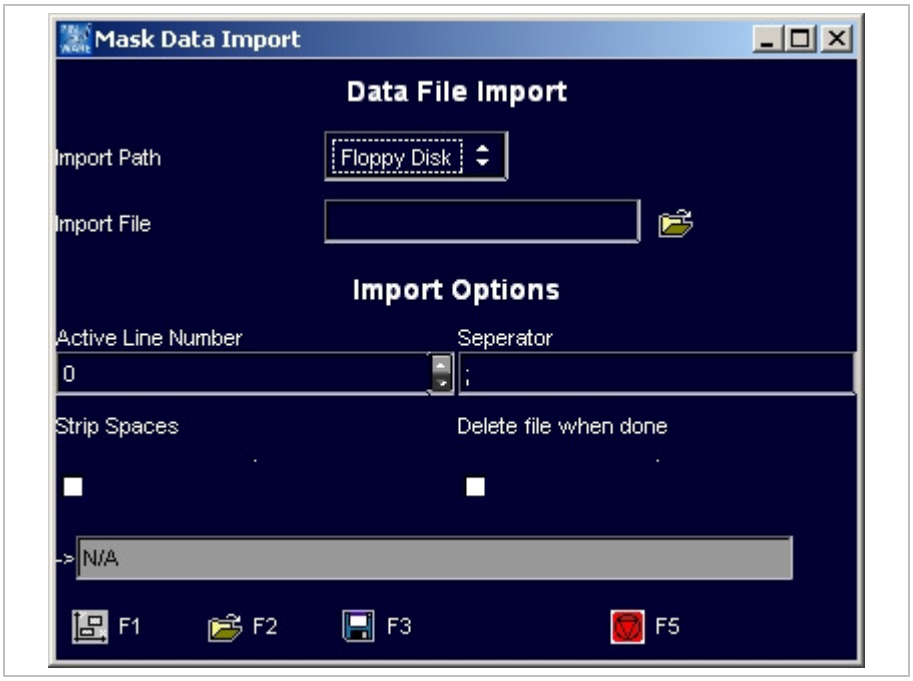
   After the marking, the system indicates behind "Time" how long the marking has lasted in [s].
4. To mark another workpiece: select  again.

6 Further functions

6.1 Importing data

Texts from files which are on an external storage medium (disk, net drive assembly) can be imported. The software assumes all characters from the file. These characters are inserted in one or more text fields of one or several masks.

1. Select *Edit > Data import*.
   "Mask Data Import" appears.



Mask "Mask Data Import" Fig. 10272en

2. Select the desired "Import Path".
3. To open the directory in which the file with the data to be imported is saved: select  behind "Import File".
   "File Selection" appears.
4. Select the desired file.
5. Select  .
   "File Selection" is closed.

6. Enter the import options (see also Fig. 10272):
   - "Active line number": enter the line number of the file with the data to be imported, from which the import is started. Each line of the file is used as a mask.
   - "Separator": enter the character that separates the individual texts in one line, e. g. ;. The entire text between separators is inserted into a text field of the mask.
   - "Strip spaces": select if you don't want to mark leading space characters.
   - "Delete file when done": select if the file is to be deleted after the import.
7. Select  .

   "Preview" appears. Since the marking speed is by default set to 0 mm/s in new text fields, the text in the preview is displayed in blue colour.
8. Select  *Edit* and enter a marking speed "V [mm/s]" > 0.

6.2 Changing the mode

3 different modes are available at the control:

- Work mode: files (projects and masks) can be loaded and marked.
- Edit mode: files (projects and masks) can be loaded, changed and marked. It is also possible to create new masks and projects.
- Service mode: all operating functions are possible. E. g. also system parameters can be changed.

The mode of the control can be changed at any time. If the edit and/or service mode is protected with a password, (see page 4-34), the password must be entered.

1. Select *Edit* > *Mode*.

   "Password Dialog" appears.
2. Select the desired mode.
3. If the desired mode is protected with a password, you have to enter the password: enter password.
4. Select  .

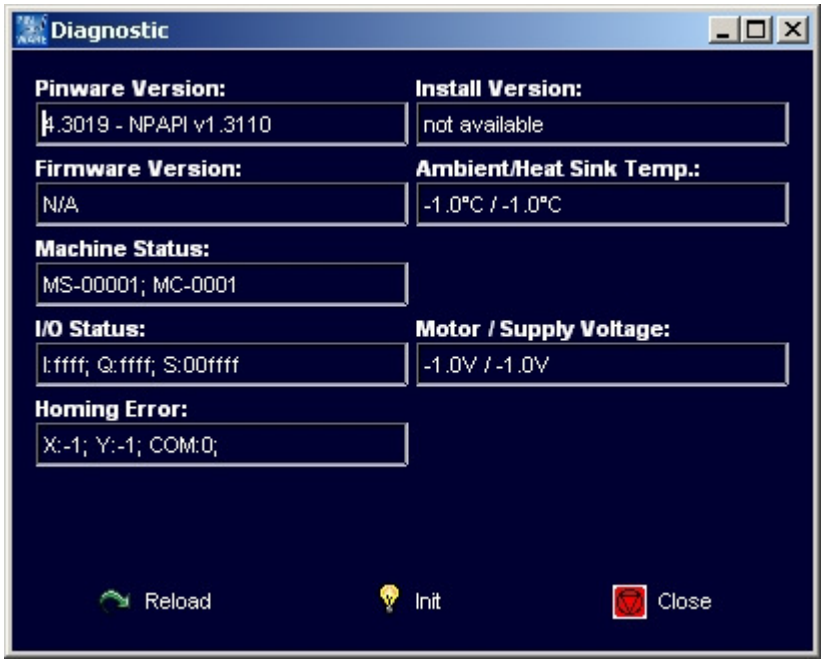
Control is changed to the selected mode.

7 System control

7.1 Reading out diagnostic data

➢ Select *System > Diagnostic*.

"Diagnostic" appears.



Mask "Diagnostic" Fig. 10247en

- Pinware Version: software version that is installed on the control.
- Install Version: version of the compact flash card.
- Firmware Version: software version of the motor card.
- Ambient/Heat sink temperature: temperature of the ambient air in [°C] and temperature of the heat sink of the motor card in [°C].
- Machine status:
  - MS: system status, 5-digit. Contains information about temperatures, voltage ranges and output drivers.

Digit	Description	Status	Description of the status
left-most	Output driver	0	Error.
		1	OK.
2. from left	Supply voltage: voltage in [V] that impressed to the motor card.	0	No voltage.
		1	Voltage OK.
		2	High voltage.
		3	To high voltage, error.
		4	Low voltage.
		5	Too low voltage, error.

middle	Motor voltage: voltage in [V] that is impressed to the motor.	0	No voltage.
		1	Voltage OK.
		2	High voltage.
		3	To high voltage, error.
		4	Low voltage.
		5	Too low voltage, error.
2. from right	Heat sink temperature	0	Sensor not attached.
		1	Temperature OK.
		2	High temperature.
		3	Too high temperature, error.
right-most	Ambient temperature	0	Sensor not attached.
		1	Temperature OK.
		2	High temperature.
		3	Too high temperature, error.

Tab. 2

- MC: motor status, 4-digit. Each digit symbolises a coil of a motor (2 motors with 2 coils each). The two left digits contain information about motor 1, the two right digits contain information about motor 0.

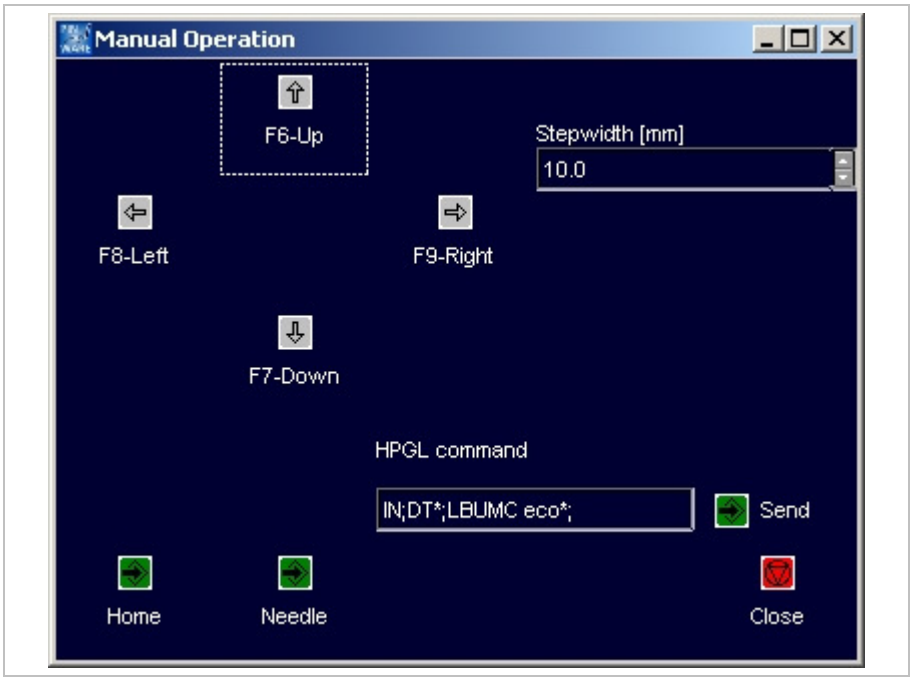
Status	Description of the status
0	Motor coil not attached. Cable or coil can be defective. Depending on the software version the motor driver is switched off and displays the status "0" for both coils of a motor.
1	Motor coil OK.
2	Error during measuring of the motor current. The difference between set and measured current is too high.
3	Although the motor coil is switched off a motor current is measured. The circuit board, stepper driver or microcontroller can be defective.
4	Motor current too high. Output is switched off.
9	General error, e. g. motor voltage switched off.

Tab. 3

- I/O Status: status of the inputs and outputs in hexadecimal notation.
- Motor/Supply voltage: voltages in [V] that are impressed to the motor and the motor card.
- Homing error: status (0 = error, 1 = OK) of the homing of the X- and Y-axis. Number of the output to which the axes are connected.

7.2 Operating the marking head in manual operation

1. Select *System* > *Manual Control*.
   "Manual Operation" appears.



Mask "Manual Operation" Fig. 10240en

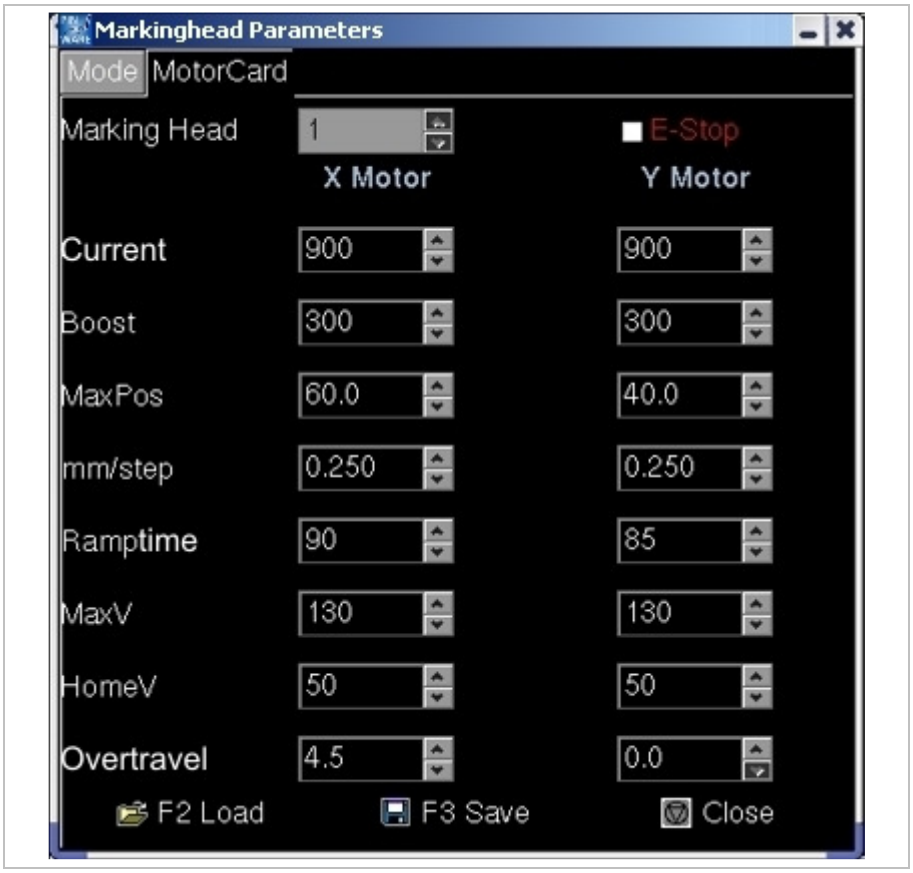
2. To move the marking tool manually: enter step width in [mm].
3. Select F6 to F9 to move the marking tool in the desired direction.
4. To operate the marking tool with HPGL commands: enter HPGL command and select *Send*.

   Note
   The motor card uses HPGL commands to control the marking head. The plotter language was created by Hewlett Packard to process vector data for plotters.

5. To move home the marking tool: select *Home*.
6. To move the marking tool up and down once: select *Needle*.

7.3 Displaying marking head parameters

1. Select *System > Marking Head Parameters*.
   "Markinghead Parameters" appears.
2. Select "MotorCard".



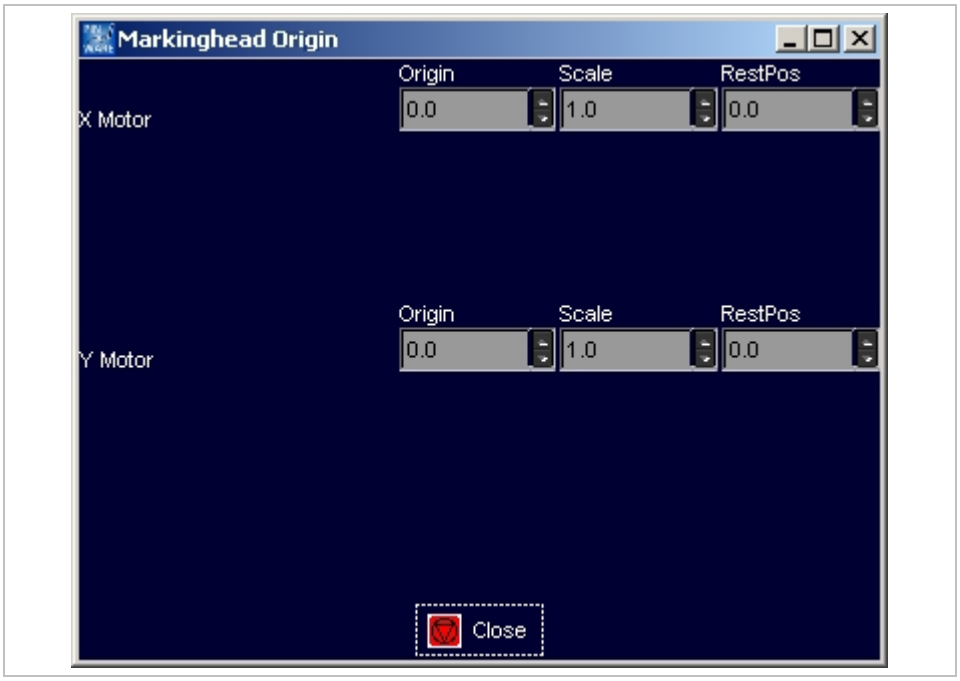
Mask "Markinghead Parameter", tab "MotorCard" Fig. 10248en

- Current: motor current in [mA].
- Boost: increase of the motor current in [mA] during ramping.
- MaxPos: maximum position in [mm] the marking head can reach. Accords to the marking field.
  Example: 90 mm in X-direction, 50 mm in Y-direction for marking head 5/9.
- mm/step: with coining heads: feed in [mm] after each drop of the coining tool.
- Ramptime: time in [ms] during which the motor current is increased.
- MaxV: travel speed of the marking head in X- or Y-direction in [mm/s] during deadhead.
- HomeV: speed of the marking head in X- or Y-direction in [mm/s] during homing.
- Overtravel: position of the initiator. An initiator is an inductive proximity switch. Distance of the initiator from home in [mm] in X- or Y-direction.

7.4 Displaying marking head origin

➢ Select *System* > *Marking Head Origin*.

"Markinghead Origin" appears.

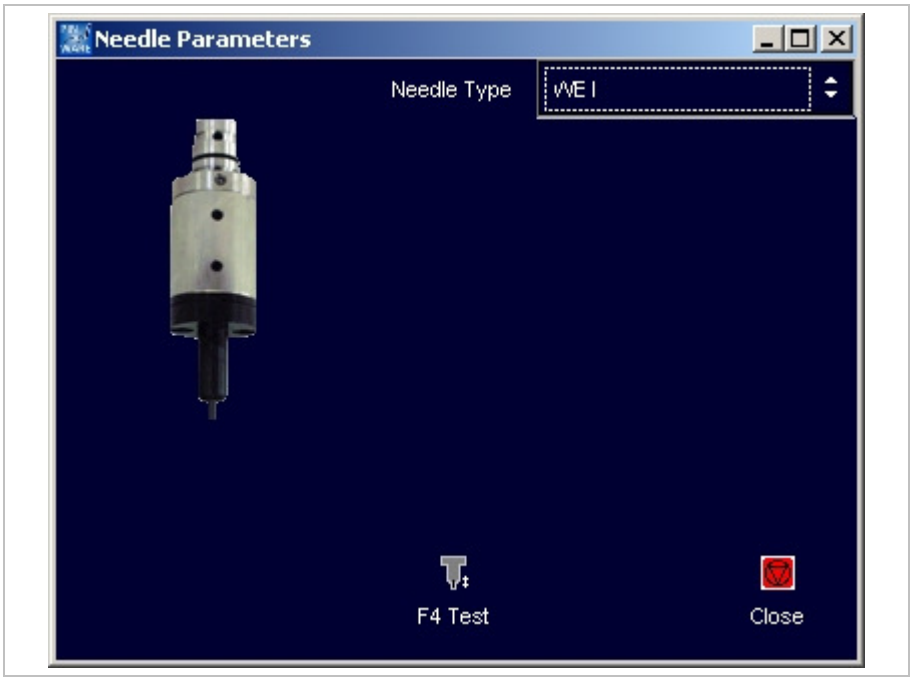


Mask "Markinghead Origin" Fig. 10249en

- Origin: origin of the X- and Y-axis in [mm]. For hand-held units it is useful to displace the origin in order that the marking isn't "turned upside down".
- Scale: the value "-1" causes a mirroring of the axes. Useful for hand-held units, see "Origin".
- RestPos: standby position of the marking head in [mm] in relation to the "Origin".

7.5 Selecting the marking tool

1. Select *System* > *Needle Parameters*.
   "Needle Parameters" appears.



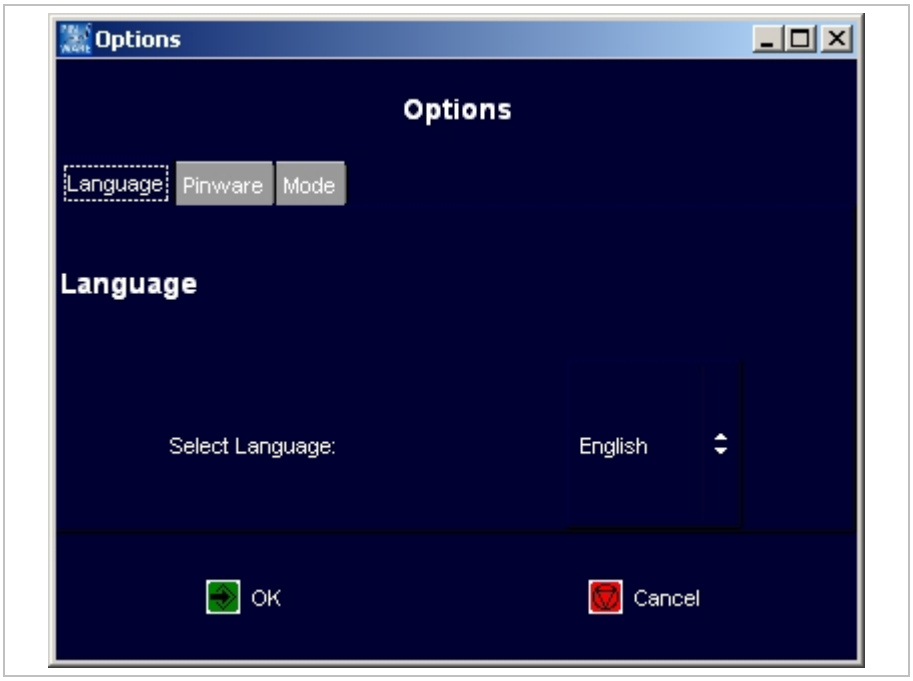
Mask "Needle Parameters" Fig. 10250en

2. Select the desired marking tool behind "Needle Type".
   Image of the selected marking tool is displayed.
3. If desired, change the parameters of the marking tool:
   - Turn-on delay: The needle of the marking tool is brought to oscillating by compressed air. Due to the mass inertia of the needle the oscillation achieves the entire amplitude only after short time. Then the marking tool is moved. This time in [ms] is the turn-on delay.
   - Turn-off delay: After switching off the compressed air the needle continues to swing still a short time due to the mass inertia. Only after this time (= turn-off delay) in [ms] the marking tool may be proceeded to the starting point of the next marking.
   - Frequency (only with WP needles): frequency in [Hz] with which the needle is brought to oscillating.
   - Needle on time (only with WP needles): time in [ms] during which the needle is brought to oscillating.
4. To test the marking tool: select  **and** hold the button.

7.6 Setting options

Selecting the language

1. Select *System > Options*.
   "Options" appears.

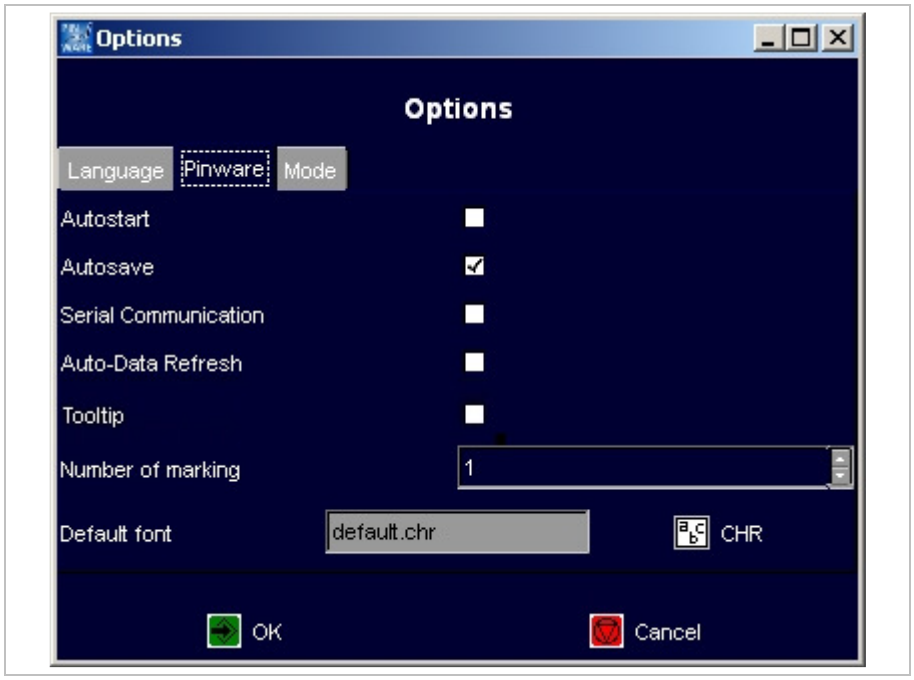


Mask "Options", Tab "Language" Fig. 10394en

2. Select the desired language.
3. To convert the software into the selected language: select  .

Selecting software adjustments

1. Select *System* > *Options*.
   "Options" appears.
2. Select "Pinware".

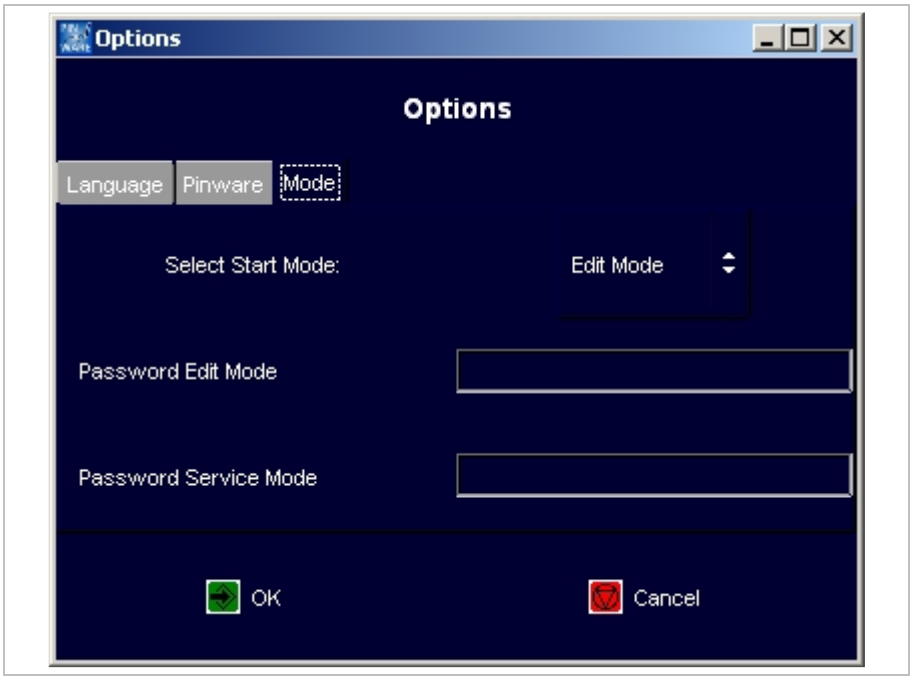


Mask "Options", Tab "Pinware" Fig. 10395en

- Autostart: If selected the page "Print" appears directly when booting the control.
- Autosave: If selected the current mask is saved after each marking. Use this function if e. g. the current value of a counter is to be saved.
- Auto-Data Refresh: If selected changeable data (e. g. time, date) refreshed at once.
- Tooltip: If selected tooltips are displayed (short explanations to the field on which the mouse is).
- Number of marking: default how often a mask is marked. This value is displayed on "Print" behind "Number" (see Fig. 10270, page 4-23). The value "-1" corresponds to endless markings, the field "Number" will not be displayed.
  E. g. if generally at least 10 markings are needed of all masks, "10" can be entered here, so that before each start of a marking the number doesn't have to be set manually to 10.
- Default font: font used by default when creating a mask. Select  to change the font.

Changing the start mode of the control

1. Select *System* > *Options*.
   "Options" appears.
2. Select "Mode".



Mask "Options", Tab "Mode" Fig. 10396en

3. Select the desired start mode:
   - Work mode: files (projects and masks) can be loaded and marked.
   - Edit mode: files (projects and masks) can be loaded, changed and marked. It is also possible to create new masks and projects.
   - Service mode: all operating functions are possible. E. g. also system parameters can be changed.
4. If the edit mode is to be made accessible only for a certain person subgroup and therefore is to be protected with a password: enter password.
5. If the service mode is to be made accessible only for a certain person subgroup and therefore is to be protected with a password: enter password.

   Note
   Passwords cannot be read out anywhere! Therefore if possible select a password which cannot be forgotten.

6. Select  .

8 Fonts

15 different fonts are available in the software. By default the software uses the font 'litt.chr'. To select another font: select *CHR* in "Mask Data" and select the desired font from the list (see page 4-10).

For every individual of the 31 text fields of a mask you can select another font. As a result of the different layouts of the individual fonts however differences can arise in the character width, height and size.

8.1 Default font

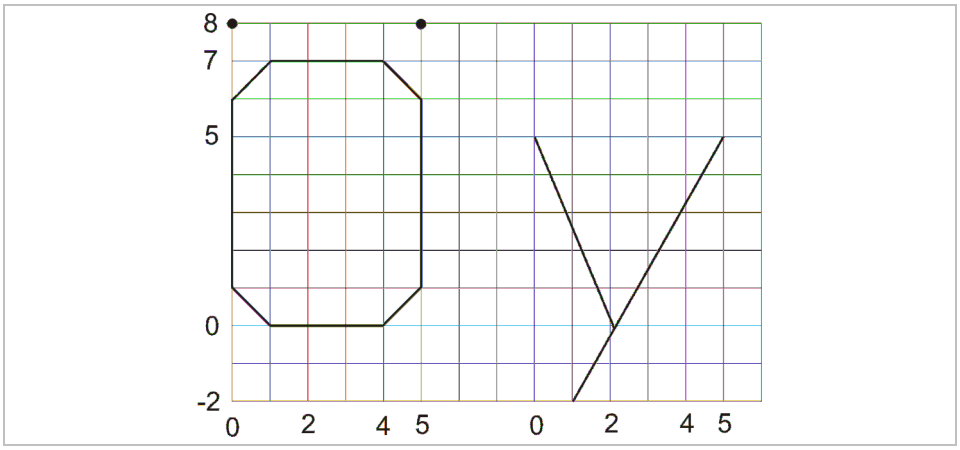
By default the software uses the font 'litt.chr' if no other font was selected.

Default font 'litt.chr' Fig. 10283

The 'litt.chr' consists of 96 characters. It contains the moving lines with the corresponding positions of the marking tools for all 96 characters. In addition each character contains the character height and broad of the grid. This is not the actually marked character height and broad, but the vertical and horizontal resolution of the character.

The default font has a vertical resolution of 7 steps. That is a letter is defined by a resolution of 7 steps, based on capital letters. Umlaut in capitalisation and special characters exceed the normal character height, lower case with descender such as g, p, q, y and special characters fall below the character height of 0.

This font is a proportionally font, i. e. the individual letters possess different character widths (e. g. a W is wider than an i). The following illustration clarifies the structure of the characters by the example of the Ö and y:



Structure of font 'litt.chr' Fig. 10293

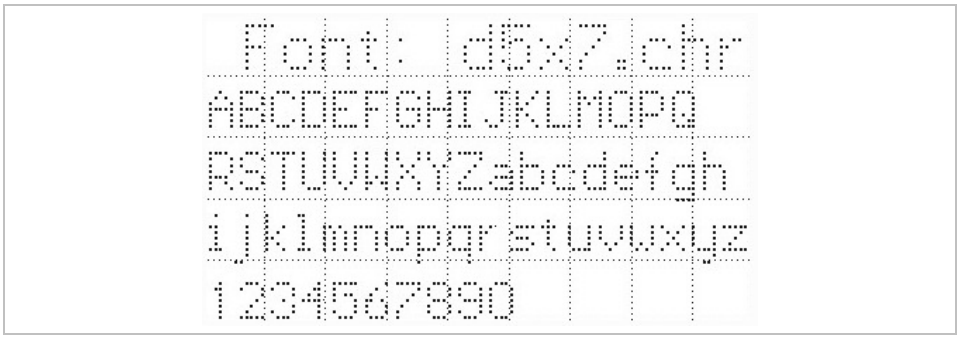
The default font results in a sufficiently good typeface despite the sharp-edged curves. The actual resolution of the marking depends on the resolution of the used marking head.

8.2 Further fonts

In addition to the default font 'litt.chr' 14 further fonts are available:

- bold.chr
- d5x7.chr: dot font.
- euro.chr
- goth.chr
- lcom.chr
- ocra.chr
- rlit.chr: cyrillic font.
- rtri.chr: cyrillic font.
- sans.chr
- scri.chr
- sima.chr
- simp.chr
- trip.chr
- tscr.chr

Font 'bold.chr' Fig. 10277



Font 'd5x7.chr' Fig. 10278

Font 'euro.chr' Fig. 10280

Font 'goth.chr' Fig. 10281

Font 'lcom.chr' Fig. 10282

Font 'ocra.chr' Fig. 10284

Font 'rlit.chr' Fig. 10285

Font 'rtri.chr' Fig. 10286

Font 'sans.chr' Fig. 10287

Font 'scri.chr' Fig. 10288

Font 'sima.chr' Fig. 10289

Font 'simp.chr' Fig. 10290

Font 'trip.chr' Fig. 10291

Font 'tscr.chr' Fig. 10292

Chapter 5

Maintenance

1 General Guidelines for maintenance

Note
Unprofessional usage of controls or marking head voids the warranty.

General guidelines for maintenance:

- With all adjustments, maintenance and repair works, the control must always be switched off and the marking unit must be separated from the power supply. For that purpose, pull the power supply plug before opening the unit. Exceptions of it, with which the unit must remain switched on during appropriate work, are noted in the maintenance instructions in each case.
- With work on pneumatics:
  - Turn off and lock the compressed air supply.
  - Wait at least 5 s after turning off the compressed air supply, until the pressure diminishes itself.
  - Examine whether the operating pressure dropped on 0 bar. Read off the current operating pressure from the appropriate manometer.

1.1 Maintenance overview

Operating hours	Maintenance place	Maintenance work	Page
40	Slides of the axes	Check the slides on smooth running	5-8
2000	Exhaust air silencer	Clean the silencer, change it if necessary	5-5
If necessary	Toothed belts of the axes	Check the toothed belts on wear Check the tension of the toothed belts	5-6
If necessary	Toothed belts of the axes	Change the toothed belts	5-7
If necessary	Pneumatic maintenance unit	Adjust the oiler	5-10

Tab. 1

For single-shift operation:

Operating hours	Maintenance interval
40	Weekly
500	Every 3 month
2000	Annually

Tab. 2

1.2 Lubricants

Note
You can use also another lubricant, if this has verifiably the same characteristics. For example, the lubricant recommended here.

Maintenance place	Lubricant	ÖSTLING Art. number	Viscosity	Classification according to DIN 51825
Slides of the axes	SF06	-	Class 0	KOG-20
Pneumatic maintenance unit with oiler	Drawlub 28	45100111	k. A.	k. A.

Tab. 3

2 Mechanical parts

2.1 Maintenance overview

1 Toothed belts of the axes 2 Slides of the axes 3 Exhaust air silencer

Fig. 10641

2.2 Maintenance instructions

Exhaust air silencer

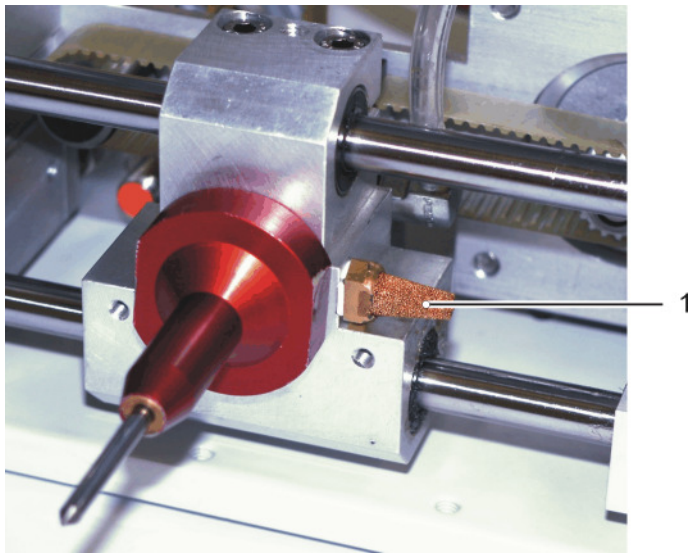
(see page 5-4)

Clean the silencer Every 2000 operating hours.

1. With table or built-in unit: move the marking head completely upward.

   or

   - With hand-held units: turn the marking head upside down.
2. Switch off the control and pull the power supply plug.



1 Silencer

Marking head from the bottom Fig. 10192

3. Unscrew the silencer, wash it with warm water (max. 40 °C) and reassemble it.
4. If the silencer is very dirty: assemble a new silencer.

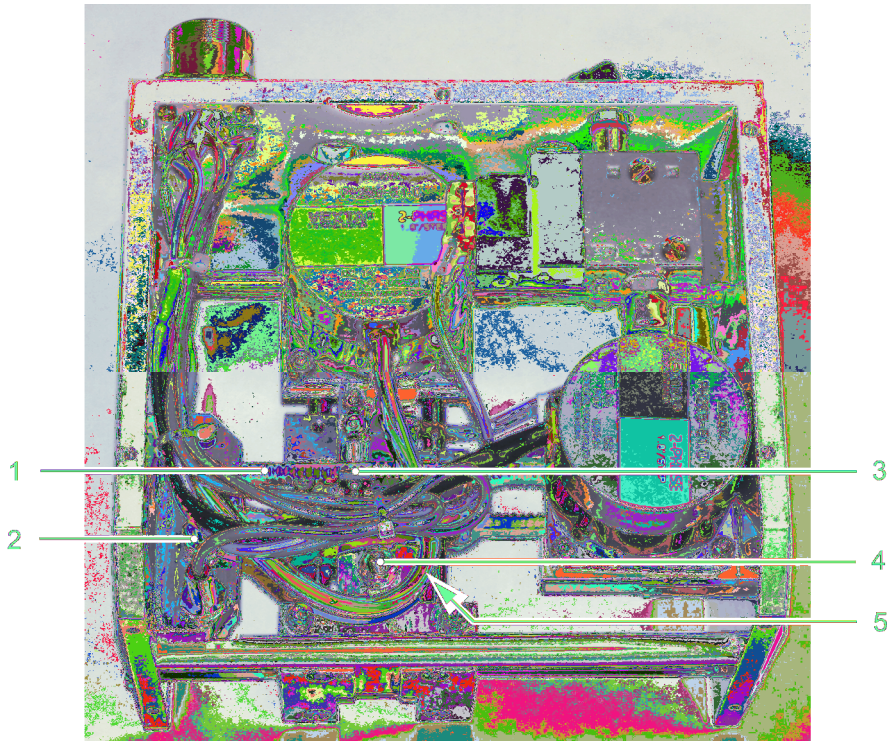
Toothed belts of the axes

(see page 5-4)

Check the toothed belts

If necessary, i. e. if the slides (see page 5-8) are tight or with loss of quality of the marking.

1. Switch off the control and pull the power supply plug.
2. Unscrew the covering cap of the marking head.



1	Toothed belt of the X-axis	4	Eccentric screw for toothed belt of the Y-axis
2	Eccentric screw for toothed belt of the X-axis	5	Toothed belt of the Y-axis
3	Fastening toothed belt of the X-axis		

Marking head without covering cap Fig. 10195

3. Check the tension of the toothed belt.
   Toothed belt must sit tensely.

   Note
   Sometimes the toothed belt of the Y-axis is better accessible from down than from above. For that purpose turn the marking head upside down.

4. Check the toothed belt of the X- and Y-axis on wear.
   If the tension of the toothed belt is too low or a toothed belt is worn out, this toothed belt must be changed (see page 5-7).
5. Reassemble the covering cap of the marking head.

Change a toothed belt

If necessary, i. e. if the tension of the toothed belt is too low or a toothed belt is worn out.

1. Switch off the control and pull the power supply plug.
2. Unscrew the covering cap of the marking head.
3. Loosen the eccentric screw for toothed belt (2 or 4).
4. Loosen the fastening toothed belt (for X-axis: 3).
5. Remove old toothed belt.
6. Mount new toothed belt.
7. Fix the toothed belt with fastening toothed belt (for X-axis: 3).
8. Tighten the eccentric screw (2 or 4).
   Toothed belt must sit tensely.
9. Reassemble the covering cap of the marking head.

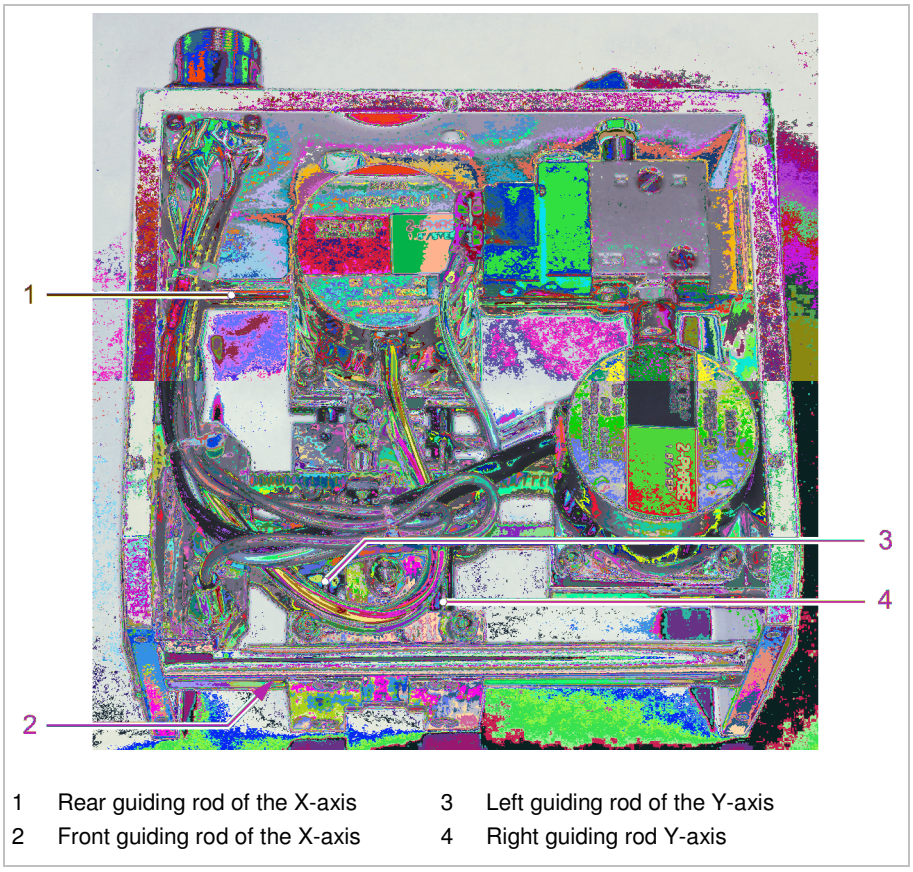
Slides of the axes

(see page 5-4)

Check on smooth running

Every 40 operating hours.

1. Switch off the control.
2. Move the slides manually in X- and Y-direction.
   Slides must be movable easily by hand.
3. If the slides can be moved only with difficulty: lubricate the guiding rods of the axes:



1	Rear guiding rod of the X-axis	3	Left guiding rod of the Y-axis
2	Front guiding rod of the X-axis	4	Right guiding rod Y-axis

Marking head without covering cap Fig. 10191

3 Pneumatic parts

3.1 Maintenance overview

1 Pneumatic maintenance unit

Fig. 10640

3.2 Maintenance instruction

Pneumatic maintenance unit

Note
2 different maintenance units are used at the PinMark marking units.

Use	Type of maintenance unit	FESTO type
All marking tools	Filter control valve with pressure reducer	Festo LFR 1/8 D-Mini
Marking tools WE 1 and/or WE 4 with hardened steel piston housing	Filter control valve with pressure reducer and oiler	Festo FRC 1/8 D-Mini, consisting of: • LFR 1/8 D-Mini. • LOE 1/8 D-Mini.

Tab. 4

For maintenance of the pneumatic parts please observe the operation manual of FESTO.

Set the oiler If necessary.

1. Do not switch off the control!
2. To switch on the marking tool in manual operation: select *System > Manual Control*.

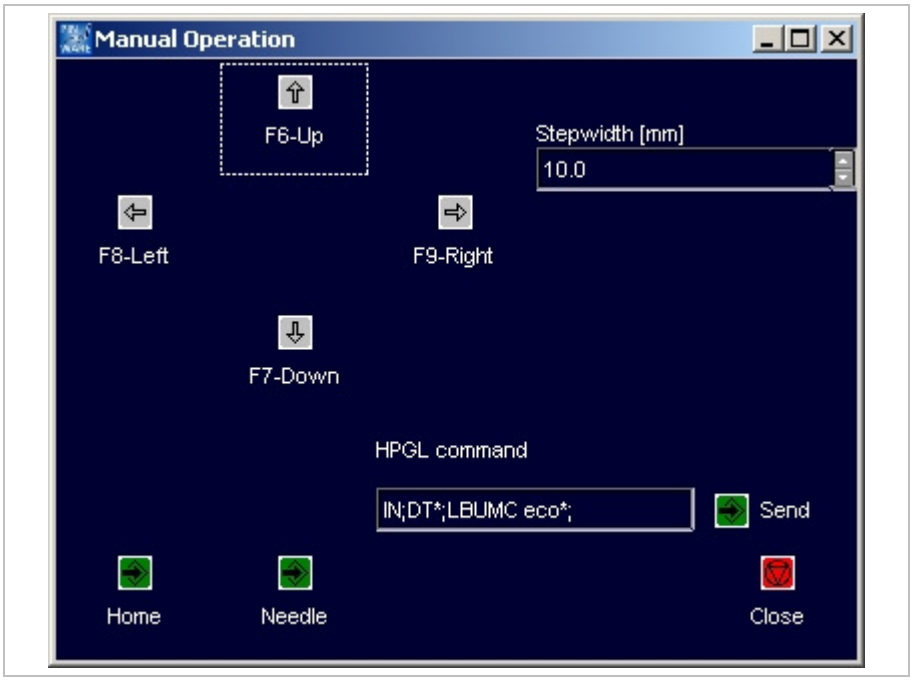


Fig. 10240en

3. Select *Needle* to move the marking tool up and down once.
4. Adjust the oiler to approx. 1 drop per minute, see operation manual of FESTO.

Chapter 6

Connector pin lists

1 Marking head

1.1 Plug to UMC box

The plug for the connection of the marking head to the control UMC 112 has 21 pins.

Pin		Axis	Colour of the cable	Name	Remark
1	A	X	pink	motor X-axis: phase 2A	
2	B	X	black	motor X-axis: phase 1A	
3	C	X	blue	motor X-axis: phase 2B	
4	D	X	green	motor X-axis: phase 1B	
5	E	Y	pink	motor Y-axis: phase 2A	
6	F	Y	black	motor Y-axis: phase 1A	
7	G	Y	blue	motor Y-axis: phase 2B	
8	H	Y	green	motor Y-axis: phase 1B	
9	I			reserved	
10	K			reserved	
11	L			reserved	
12	M		black	foot switch - E1.0	option
13	N	X	black	initiator output X - E1.1	
14	P	Y	black	initiator output Y - E1.2	
15	R		black	output needle valve - A1.0	
16	S	X	brown	+24 V - initiator X	
17	T	Y	brown	+24 V - initiator Y	
18	U		brown	+24 V - foot switch	option
19	V	X	blue	0 V - initiator X	
20	W	Y	blue	0 V - initiator Y	
21	X		black	0 V - needle valve	

Tab. 1

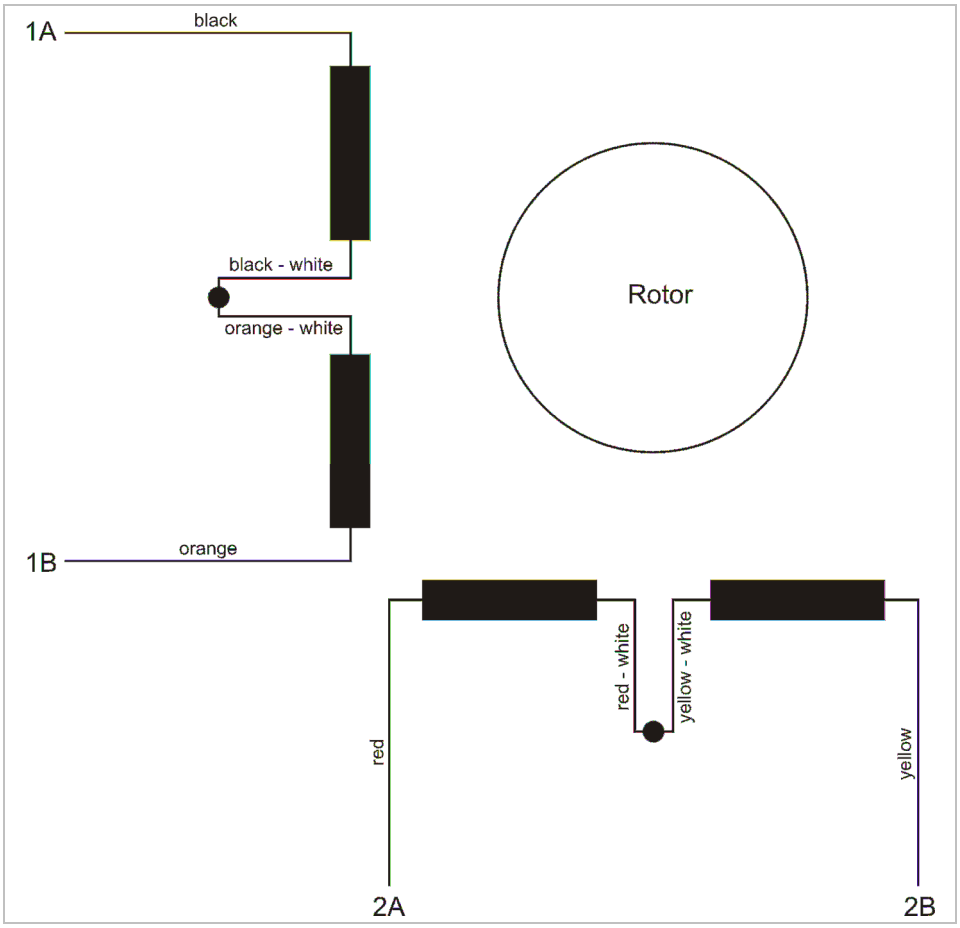
1.2 Stepping motors

Colour coding

Phase	Colour of the cable	Phase	Colour of the cable
Phase 1A	black	Phase 2A	red
Phase 1B	orange	Phase 2B	yellow
Jumper 1	black - white/ orange -white	Jumper 2	red - white/ yellow - white

Tab. 2

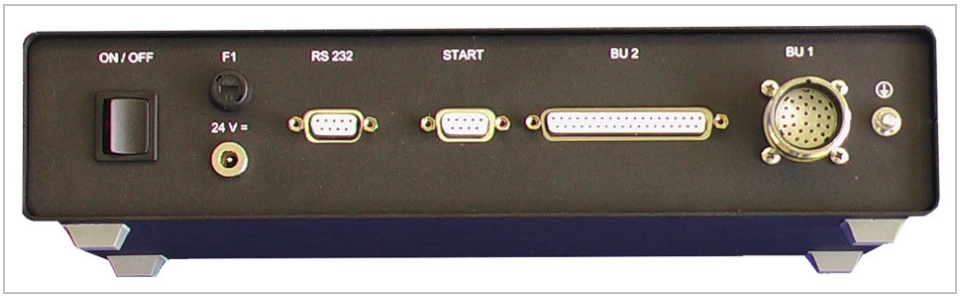
Circuit



Circuit of the stepping motors

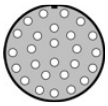
Fig. 10377en

2 Control UMC box



Back side of the control UMC box Fig. 10388

2.1 Socket BU1 to marking head



The plug BU1 for the connection of the marking head to the control has 26 pins.

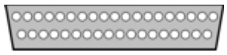
Pin	Name	Remark
1	motor X-axis: phase 2A	
2	motor X-axis: phase 1A	
3	motor X-axis: phase 2B	
4	motor X-axis: phase 1B	
5	motor Y-axis: phase 2A	
6	motor Y-axis: phase 1A	
7	motor Y-axis: phase 2B	
8	motor Y-axis: phase 1B	
9	reserved	
10	reserved	
11	reserved	
12	foot switch start E1.0	digital input
13	initiator X	digital input
14	initiator Y	digital input
15	output needle valve - A1.0	output (is wired with +24 V DC internally)
16	+24 V DC intern	output (internal voltage)
17	+24 V DC intern	output (internal voltage)
18	+24 V DC intern	output (internal voltage)
19	GND	0V DC
20	GND	0V DC
21	GND	0V DC
22	reserved	
23	reserved	
24	reserved	
25	reserved	
26	reserved	

Tab. 3

Phase	Colour of the cable	Phase	Colour of the cable
Phase 1A	black	Phase 2A	red
Phase 1B	orange	Phase 2B	yellow
Jumper 1	black - white/ orange -white	Jumper 2	red - white/ yellow - white

Tab. 4

2.2 Socket BU2



The socket BU2 for standard digital I/O communication has 37 pins. With this connection the current status of the marking head can be queried or releases can be sent.

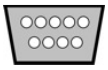
The high level of the input signals is defined between 17 -30 V DC, the high level for output signals will be 24 V DC. The maximum current you can take from all output signal together is 0.5 A.

Pin	Signal	Name	Remark
1	A1.0	needle valve	is used internally
2	A1.1	PinMark is marking	
3	A1.2	PinMark ready to mark	
4	A1.3	reserved	
5	A1.4	ready for operation	output closed = ready for operation
6	A1.5	reserved	
7	A1.6	reserved	
8	A1.7	reserved	
9	GND	GND 24 V DC	
10	GND	GND 24 V DC	
11	GND	GND 24 V DC	
12	+24 V DC	+24 V DC	internal voltage
13	+24 V DC	+24 V DC	internal voltage
14	+24 V DC	+24 V DC	internal voltage
15		not used	
16		not used	
17	E1.3	reserved	
18	E1.5	reserved	
19	E1.7	E-STOP	E-STOP active, if E1.7 = 0 V
20	RS485	RS485 A	is used internally
21	RS485	RS485 B	is used internally
22		not used	
23		not used	
24		not used	
25		not used	
26		not used	
27		not used	

28	GND	GND 24 V DC	
29	GND	GND 24 V DC	
30	GND	GND 24 V DC	
31	+24 V DC	+24 V DC	internal voltage
32	+24 V DC	+24 V DC	internal voltage
33		not used	
34	E1.0	foot switch start	max. +25 V DC
35		not used	
36	E1.4	reserved	
37	E1.6	reserved	

Tab. 5

2.3 Serial port START



The serial port for a foot switch has 9 pins. The marking can be started by foot switch.

Pin	Signal	Name	Remark
1	GND	GND 24 V DC	
2		reserved	do not use
3		reserved	do not use
4		reserved	do not use
5		reserved	do not use
6	+24 V DC	+24 V DC	internal voltage
7	E1.0	foot switch start	max. +25 V DC
8		reserved	do not use
9		reserved	do not use

Tab. 6

3 Connection cable for marking head

Pin		Colour of the cable	Name	Remark
1	A	white	motor X-axis: phase 2A	
2	B	brown	motor X-axis: phase 1A	
3	C	green	motor X-axis: phase 2B	
4	D	yellow	motor X-axis: phase 1B	
5	E	pink	motor Y-axis: phase 2A	
6	F	grey	motor Y-axis: phase 1A	
7	G	blue	motor Y-axis: phase 2B	
8	H	red	motor Y-axis: phase 1B	
9	I	black	reserved	
10	K	purple	reserved	
11	L	pink - grey	reserved	
12	M	red - blue	foot switch - E1.0	option
13	N	green - white	initiator output X - E1.1	
14	P	green - brown	initiator output Y - E1.2	
15	R	yellow - white	output needle valve - A1.0	
16	S	yellow - brown	+24 V	
17	T	white - grey	+24 V	
18	U	brown - grey	+24 V	
19	V	pink - white	0 V	
20	W	pink - brown	0 V	
21	X	red - white	0 V	
22	Y	-	motor Z-axis: phase 2A	option
23	Z	-	motor Z-axis: phase 1A	option
24	-	-	motor Z-axis: phase 2B	option
25	-	-	motor Z-axis: phase 1B	option
26	-	-	reserved	

Tab. 7

Chapter 7

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Drawings, parts lists

Chapter 9

EC declaration of conformity

EC conformity declaration

in terms of EC directives

- Machines 98/37/EG
- Electromagnetic compatibility 89/336/EWG
- Low voltage 73/23/EWG

Hereby we declare that the below designated machine corresponds to the fundamental safety and health requirements of the mentioned EC directives machines in its conceiving and design as well as in the execution brought in circulation by us. In the case of a change of the machine not co-ordinated with us this declaration loses its validity.

Plant/Machine

Make:	PinMark needle marking system
Type:	3/5 - 4/6 - 5/9 - 8/14 - 15/20 - 15/30
Machine nr:	
Year:	as of 2006

Manufacturer

ÖSTLING Markiersysteme GmbH
Broßhauser Str. 27
42697 Solingen
Deutschland

The following harmonized standards were us:

- DIN EN 60204-1
- DIN EN 50081-1
- DIN EN 50082-1
- DIN EN 60947
- DIN EN 60439
- DIN EN ISO 12100-1
- DIN EN ISO 12100-2
- DIN EN 62061
- DIN EN 61508
- DIN EN 983

Following national standards, guidelines and specifications were used:

- VDE 0100
- VDE 0105 part 1 + 2
- VDE 0113 part 2 + 3

A technical documentation is completely present.
The manual belonging to the plant/machine is present.

☐ in original version and
☒ in the national language of the user: english

Solingen,	12.04.2006	Rolf Östling, Geschäftsführer	
Ort	Datum	Unterzeichner und Angaben zum Unterzeichner	Unterschrift

Chapter 10

Service request

Request for service

of company

Markiersysteme für
Produkt und Verpackung
Östling Markiersysteme GmbH
Broßhauser Straße 27
42697 Solingen
Tel: 0212 / 2696 - 0
Fax: 0212 / 2696 - 199

Billing address:

Location of machine (if different to above):

Gewährleistung	☐
Kulanz	☐
Rechnung	☐
Termin:	_____
Monteur:	_____
Erledigt:	_____

(is completed by ÖSTLING !)

Contact:		**Department:**		**Date:**	
Phone no.:		**Fax no.:**		**Order no.:**	

Request for

☐**Installation** ☐**Maintenance** ☐**Repair** ☐**Training** ☐_____

of

machine:

Pinmarker	☐	Type:	_____
Scraper	☐	Machine no.:	_____
Pad printer	☐	Controller no.:	_____
Electrolytic	☐	Year of manufacture:	_____
Ink Mark	☐		
Laser	☐		

Short description of problem

_____

_____

_____

_____

Please enclose the completed and signed maintenance protocols!

Other

_____

_____

Signature and company stamp: _____

Please enclose a map with directions to the location of the equipment. This will help us to solve the problem quickly.

ÖSTLING - worldwide

ÖSTLING
Markiersysteme GmbH
Broßhauser Str. 27
D-42697 Solingen
Tel.: +49 - 212 - 26 96 0
Fax.: +49 - 212 - 26 96 199
Internet: http://www.ostling.com
E-mail: info@ostling.com

Switzerland

ÖSTLING
Markiersysteme AG
Eichenweg 16
CH-4900 Langenthal
Tel.: +41 - 62 - 922 80 20
Fax.: +41 - 62 - 922 66 17

France

ÖSTLING
Système de Marquage
Technopôle Metz 2000
9 rue Claude Chappe
F-57070 Metz
Tel.: +33 - 387 - 768 339
Fax.: +33 - 387 - 768 329

Sweden

ÖSTLING
Märksystem AB
Prästkragens väg 40
S-13245 Saltsjö-Boo
Tel.: +46 - 8 - 514 90 510
Fax.: +46 - 8 - 514 90 529

USA

ÖSTLING
Technologies
931 East Water Street
Chillicothe
Ohio 45601 USA
Tel.: +1 - 740 - 779 99 18
Fax.: +1 - 740 - 779 99 10