TECHNIFOR

USER MANUAL

T08

INTEGRATED MARKING PROGRAM

M_T08_EN_B - Last updated: 11/2018 - Translation of the French original document

GRAVOTECH

TYPE 3 TECHNIFOR GRAVOGRAPH

Table of contents

A. Foreword

1. Appreciation

Thank you for choosing T08 - Technifor.

Gravotech is pleased to count you among the users of its engraving and traceability solutions.

For help, contact Gravotech.

For more information on products, visit www.technifor.com website.

2. Information

	**To ensure security and productivity, read this manual before starting-up the equipment. It provides details about the installation and use of the equipment.** **Keep this manual in case you need to refer to it.**

	**For the attention of users having an individual cardiac assist device fitted:** **Our equipment is designed and manufactured with the greatest care in order to guarantee their compliance with the EMC Directive currently in force. This means that the levels of electromagnetic emissions produced by this equipment when in operation are limited and do not exceed the thresholds defined by the Directive.** **However, multiple factors make it impossible to guarantee the total absence of risk for users having a cardiac assist device fitted. Consequently, it is recommended that standing for a prolonged period within less than 1 m (3.281 ft) of an operating machine should be avoided.**

B. Legal notices

Last updated: 10/15

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C. Introduction

Some screenshots may be different from those displayed in the program.

1. General characteristics of the program

The T08 standard marking program is integrated in a Control Unit, or in the main board of the machine (viewed on an LCD screen). It is used to:

- Program files for marking:
  - set text
  - variable text:
  - date (using various set or customized formats)
  - counter (incrementation, decrementation)
  - logos...

2. Program functions

■ Customization

- Multilingual: program language selection (communication interface, keyboard)
- Units (mm or inches)

■ Type of blocks

- Marking:
  - linear (choice of the angle)
  - radial
- Logos
- 2D code
- Functions

Introduction

Character styles

- Marking effects:
  - normal
  - inverted
  - mirror
  - reflected
- Alignment
- Compression / expansion
- Inclination
- Spacing between characters

Marking management

- Standard marking:
  - marking N parts
  - infinite marking
- Independent marking

Adjustable settings

- Customized speeds for marking and movement
- Force (depth)
- Date and time (CCU clock)
- Variables:
  - 10 numeric, alphanumeric, alphabetic or hexadecimal counters, which can be reset each time there is a change in year, month, day, hour, day of the week, shift
  - 10 alphanumeric variables
  - shift codes (Q) set according to the day of the week (up to 5 shifts per day)
  - date and time based on CCU system, using the keywords:
    . DD - MM - YYYY - YY - Y - hh - mm - ss - WW - CCC
    . m (mark first digit of the minutes)
    . customized formats DS (day/week), JS (day/month), MS (month) and YS (year)
- Choose a character font

Various functions

- Download logos (LO3-PLT format)
- Transfer marking files between PC and the machine (Backup / Restore)
- Simulate marking file (no marking on part)
- Off-limits management
- Date and time display
- Graphic preview before marking

■ User memory

Several hundred files may be saved, depending on their size (maximum: 2000).

Maximum:

- 100 blocks per file
- 255 characters per block

■ Exchange of files via USB key

It is possible to import and export certain files via USB key (FAT32 file system only):

- marking file
- logos
- character font
- log file
- .csv file
- screenshot(s)

3. Character encoding

■ Introduction

The previous marking programs used "8 bit" fonts, which could only contain 2^8 = 256 characters. The font change was necessary for each language, display and marking were impossible for languages including over 256 characters.

Marking and display fonts used in the T08 program are "16 bit" programs, which may contain up to 2^{16} = 65536 characters (less in practical terms, certain are reserved). These fonts are based on the setup of the characters of the ISO/IEC 10646 standard, in the Basic Multilingual Plan. This standard, which specifies a set of universal characters (Universal Character Set), also defines other characters (over 1.1 million). These are not generated by the T08 program and must therefore not be used.

The 16 bit fonts are used to manage new languages and an increased compatibility with the actual operating systems (Windows, Unix...). However, the numerous materials and applications still use the 8 bit fonts. In order to have the best possible compatibility with these materials, the characters emitted and received by the program (files or character strings) are encoded in UTF-8 (UCS Transformation Format, 8 bits). UTF-8 is used to represent the 16 bit characters by using 8 bit codes. This font does not allow old 8 bit systems to manage 16 bit characters, but it allows to manipulate the acceptable data and to transmit them with no loss of information.

Introduction

■ UTF-8 encoding

UTF-8 was designed to be compatible with certain software initially foreseen for the processing of one-byte characters. Each 16 bit character is encoded on a chain of 1 to 4 bytes.

UTF-8 is normalised in the RFC-3629 (UTF-8, a transformation format of ISO 10646). Encoding is also defined in the 17 technical report of the Unicode standard. It is part of the standard on chapter 3 "Conformance" and is approved by the International Standard Organisation (ISO), the Internet Engineering Task Force (IETF) as well as most of the national standardization organisations.

Encoding

The numbered characters from 0 to 127 are encoded on 1 byte whose most significant bit is always 0.

The characters with a number greater than 127 are encoded over several bytes. In this case, the most significant bits of the first byte form a series of 1 as long as the number of bytes used to encode the character, the following bytes having 10 as the most significant bit.

Definition of the number of bytes used

UTF-8 binary representation	Meaning
0xxxxxxx	1 byte coding 1 to 7 bits (from 0 to 127)
110xxxxx 10xxxxxx	2 bytes coding 8 to 11 bits (from 128 to 2047)
1110xxxx 10xxxxxx 10xxxxxx	3 bytes coding 12 to 16 bits (from 2048 to 65535)
11110xxx 10xxxxxx 10xxxxxx 10xxxxxx	4 bytes coding 17 to 21 bits (from 65536 to 2097151)

This idea could be applied up to 6 bytes but UTF-8 sets the limit to 4. This idea also allows the use of more bytes than needed to code a character but the UTF-8 forbids it.

Note: the UTF-8 representation over 4 bytes corresponds to a character code greater than 65535, which must not be used with the T08 program.

Example

Example of the UTF-8 encoding

Character	Character number	UTF-8 binary encoding
A	65	**0**1000001
é	233	**110**00011 **10**101001
€	8364	**1110**0010 **10**000010 **10**101100

In any UTF-8 character string, any 0 most significant bit byte encodes a US-ASCII character on a byte. The characters whose codes are included between 0 and 127 are therefore represented the same way as in ASCII (non-accentuated, capital and small letters, numbers and some frequent initials).

Introduction

■ Practical consequences

The old systems using the ASCII 8 bit fonts may communicate with the T08 program, which uses 16 bit fonts. To allow this interoperability, 2 methods are possible:

- The ASCII and UCS tables are common for the characters numbered from 0 to 127. For these characters, compatibility is guaranteed.
- For other characters, UTF-8 encoding is used to specify the 16 bit character code by using the sequences of several 8 bit "characters", which can be managed by 8 bit systems.

Using the T08 program

As long as the program doesn't exchange data with the exterior, it uses the 16 native bit fonts. The user can benefit from extended linguistic support.

Manual editing of the marking files

The marking files (.tml files) in TML format (Technifor Marking Language) are saved in UTF-8 format. This format is automatically recognized when a file is opened with Note Pad (notepad.exe) in Windows (2000 or more recent).

For an exact display, select a compatible display font, such as "Arial Unicode MS".

When saving, make sure the UTF-8 format is well selected (especially when creating a new file).

Data reception/emission (RS232, telnet)

The characters received must be encoded in UTF-8. Characters emitted are encoded in UTF-8.

If a device sends to the machine characters in ASCII encoding, they are only recognized if their codes are included between 0 and 127. In this manner, this device may correctly receive the characters whose codes are included between 0 and 127.

To use other characters, these must be encoded in UTF-8.

Example: to send the "é" character, the device cannot use the ASCII encoding of the Latin 1 character page which assigns this character the code 130.

It must use UCS encoding which assigns it the code 133. In UTF-8, the code is written as follows: 11000011 10101001

It must thus send 2 bytes: 195 - 169.

Introduction

DataMatrix

This format only allows the encoding of character strings of 8 bits. The internal strings of the program are thus converted in UTF-8 before being encoded in DataMatrix, which enables encoding of all 16 bit characters to be managed. The size of the DataMatrix needed for this encoding is greater than 8 bit character encoding as several 8 bit characters are needed to carry out UTF-8 encoding of a 16 bit character.

When the encoded characters have ASCII or UCS codes between 0 and 127, DataMatrix encoding is made in the classic way and the size of the DataMatrix generated is the same.

Unicode

Unicode is an international standard which defines a set of universal characters, as in the ISO/IEC 10646 standard. The Unicode character codes correspond to those in the ISO/IEC 10646 standard and the Unicode standard includes the ISO/IEC 10646 completely as a sub-set.

The Unicode standard adds to the ISO/IEC 10646 standard a representation model and complete word processing, by assigning to each character a set of standardized or informative properties and by accurately describing the semantic relations which may exist between several successive characters of a text. It also standardizes the processing algorithms which preserve semantics of transformed texts to a maximum, while spreading interoperability of the representation of these texts on heterogeneous systems.

This allows, for example, to specify the meaning of a text, so that two characters may be associated and form one, etc...

Unicode management is complex and is not currently implemented in the T08 program. In the future, certain Unicode rules will be added to the software, therefore allowing a partial support of Unicode according to needs.

4. Starting-up the program

Switch on the machine.

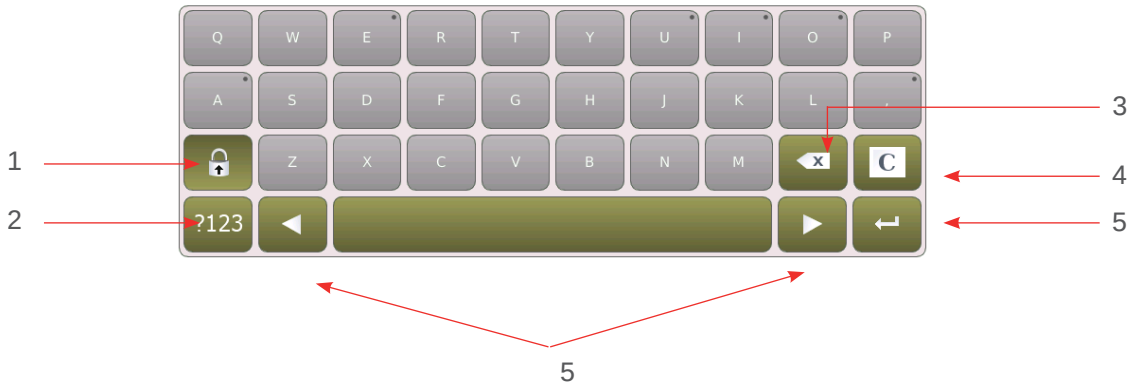
A presentation screen will appear for a few seconds, followed by the main menu screen.

Introduction

5. Using the touch screen

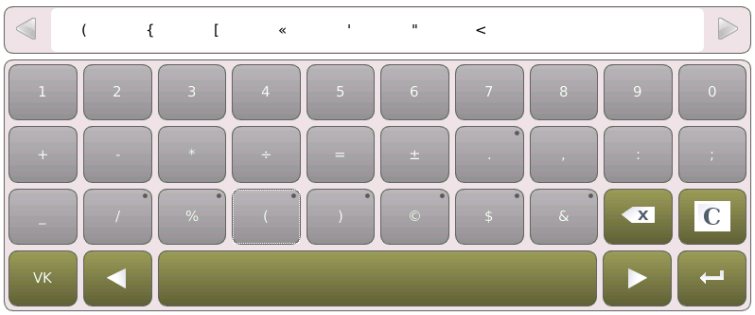
The machine operates via a touch screen. Press directly on the screen to access the various functions. Only use the touch screen with the finger (gloves may be worn) or the screen pen provided by Gravotech.

To enter text, a touch keypad appears on-screen. The touch keyboard contains 2 pages. The program adapts the keys of the keyboard to the keyboard language selected (Menu: Settings - Miscellaneous - Language / Keyboard).



1. *Caps lock*
2. *Next page: entering numeric values*
3. *Corrections*
4. *Cancel*
5. *Validation of the entered data / Exit keypad*

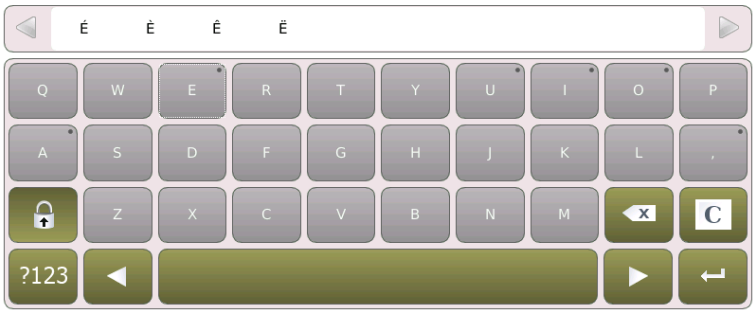
When a key represents more than one character (indicated by a dot on the top right corner of the key): press and hold the required key. The characters appear in the bar at the top of the keypad. Use the arrows on the sides to select the required character.

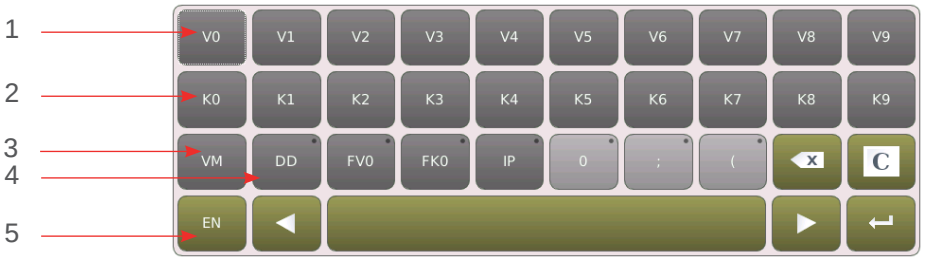


To select an accented character: press and hold the required key. The characters appear in the bar at the top of the keypad. Use the arrows on the sides to select the required character.

Press and release: non-accented character

Press and hold: list of accented characters





1. *10 alphanumeric variables*
2. *10 counters*
3. *Last text marked*
4. *List of key words (DD, IP)*
5. *Return to previous screen*

6. Access to certain shortcuts using the keyboard

The keyboard is used to access the different menus and program functions and to enter information necessary for marking.

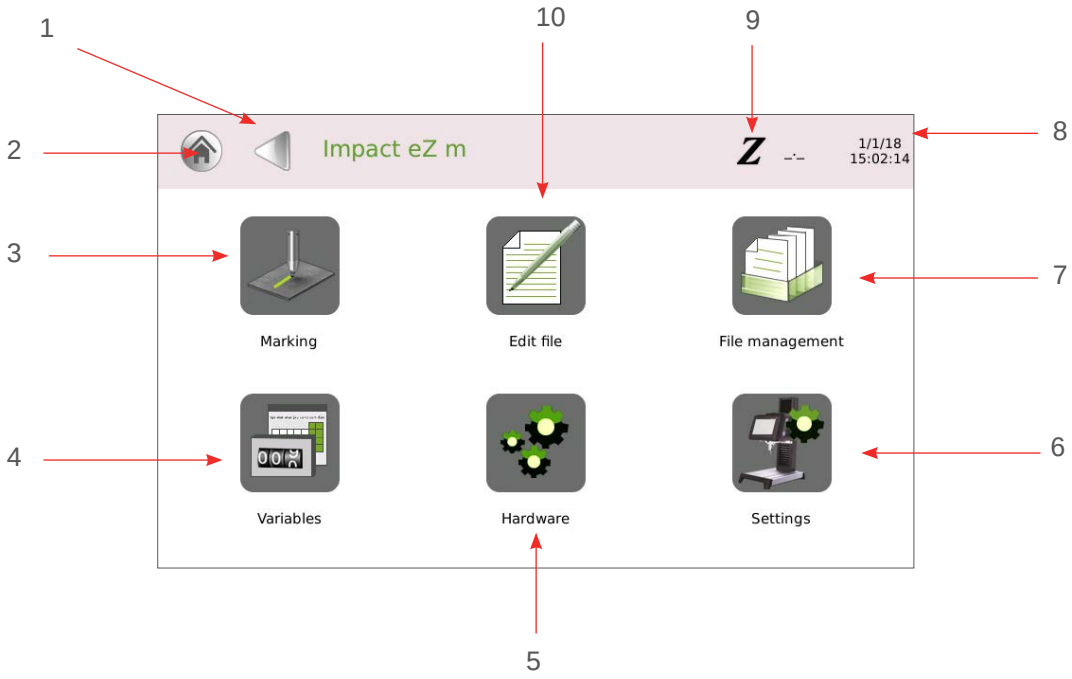
The keys most often used are:

Escape	Return to previous screen
Space	Activation / deactivation of the blocks, activation / deactivation of the radio button, validation of the entered data,
Enter	Validation of the entered data, modifying a data entry zone,
Up - Down - Left - Right arrows	Access to various menus or tabs used to prepare a block

7. The different program menus

■ Main menu

The main menu is composed of 6 menus, each represented by an icon.



1. *Return to previous screen*
2. *Icon used to return to the main menu, followed by the name of the menu. This icon appears several times in the program.*
3. *Menu: Marking*
4. *Menu: Variables*
5. *Menu: Hardware*
6. *Menu: Settings*
7. *Menu: File management*
8. *Date/Time*
9. *Button(s): Z*
10. *Menu: Edit file*

The display at the top of the screen is fixed. To go back to the main menu or to the last screen, press the corresponding icon.

- **Button(s): Z**

Press the button in order to configure the Z axis.

Shortcut: azerty: Ctrl + W / qwerty: Ctrl +Z

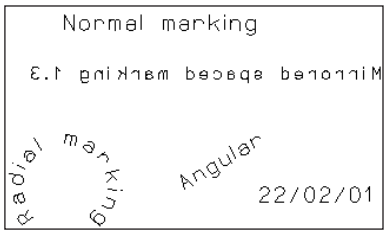
Introduction

8. Definition of a marking file

A marking file contains all the data to be marked on a part. It may be composed of one or several lines.

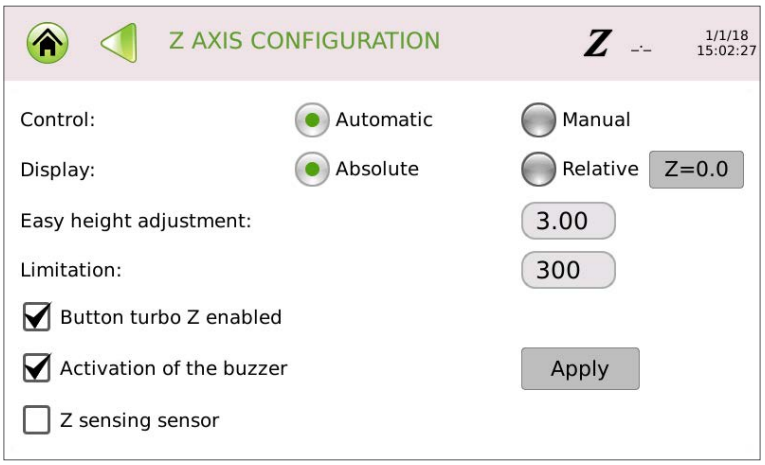
In Technifor jargon, a marking file is composed of marking blocks.
A marking block may contain alphanumeric text, a logo, a line, a square.. .
A marking file can contain anywhere from 1 to 100 marking blocks.

The marking file used to create this plate contains 5 marking blocks.



The following pages describe the preparation of various types of marking blocks.

D. Z axis configuration

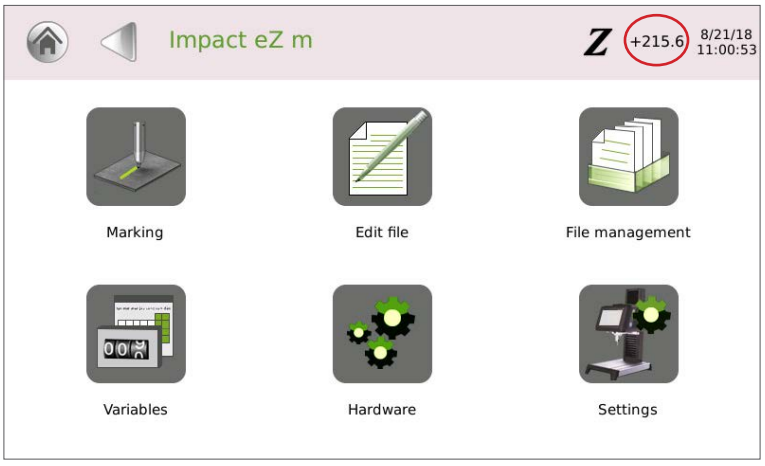


- **Pilots a motorized Z axis**
  - Manual mode: allows the head to be displaced using the buttons located on the sides of the machine.
  - Automatic mode: allows files containing a Z block to be marked. Allows the head to be displaced using the buttons located on the sides of the machine.

- **Display: absolute distance /Relative distance**

Absolute distance: the distance is calculated from the origin of the axes (on top of the Z axis). The values are positive towards the bottom.

Relative distance: the distance is calculated from a setting point defined by the user. Reset button: new adjustment of the zero point.
The relative distance is preceded by the +/- symbol.



- **Easy height adjustment**

The Z height adjustment system is used to adjust the marking head height within a range of 5 mm (0.197 in) (to adjust the distance between the point and the part to be marked)

Set the value of the parameter.

Z axis configuration

- **Limitation**

Maximum path of axis

- **Activation of the Turbo button (manual mode)**

Enable the function in the programme (marking parameters).

Press simultaneously on the 2 side buttons on the head.

- **Activation of the buzzer**

The machine emits an audible signal when the motorized axis is in operation.

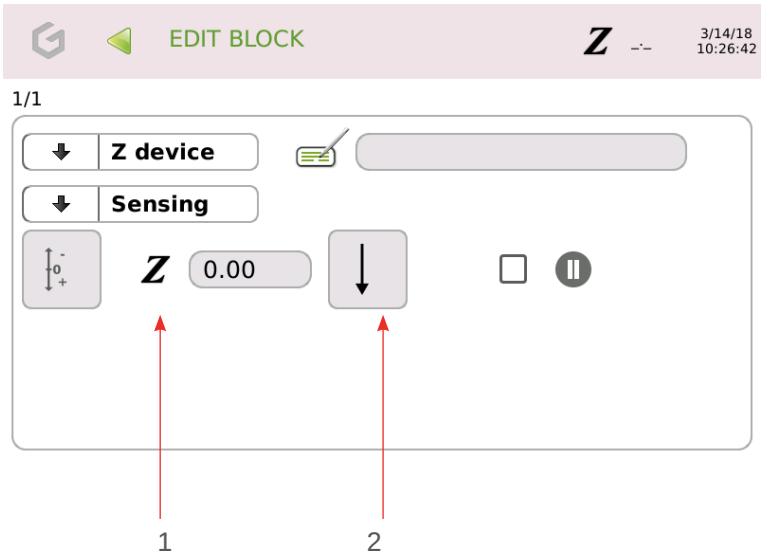
	**Gravotech recommends the use of audible and light warnings, especially when an operator is present. It is possible to deactivate the audible signal associated with movement.** **The deactivation of the audible signal is the sole responsibility of the user and any person under whose authority the user is placed.** **Only trained personnel aware of the risks posed by the machine are authorized to use it. Personnel must be sure to comply strictly with all applicable safety obligations specified by Gravotech or by the legal or regulatory provisions in force.**

- **Sensing (sensing option of the motorized Z-axis) (electromagnetic version only)**

This option is activated by default. Used to detect automatically the surface of the part to be marked. Use this mode when the position of the surface to be marked is not known.

New fields appear on the screen in "Sensing" mode.

Z axis configuration



1. *Distance between the stylus and the part*
2. *Direction of sensing (Top /Bottom)*

When the position is reached, the marking head leaves this position to repeat the sensing operation slowly.

In "Sensing" mode, do not leave the stylus activated (point out of the stylus) for more than 5 mn so as not to damage the electromagnet.

A mid position is pre-set during automatic positioning by sensing.

This function is available in relative mode only.

Example: Datamatrix

This type of marking requires light impacts for greater precision.

The optimum distance (Do) of the stylus in relation to the surface to be marked decreases as the marking force decreases.

Distance between the stylus and the part: used to adjust the Z distance after sensing the part. By default, the distance between the stylus and the surface is 3 mm (0.118 in). This distance can be changed.

Z axis configuration

Examples:

- If: = -1.00 => distance between the stylus and the part = 3 - "-1" = 4 mm (0.157 in)
- If: = 0.00 => distance between the stylus and the part = 3 - "0" = 4 mm (0.157 in)
- If: = 1.00 => distance between the stylus and the part = 3 - "1" = 4 mm (0.157 in)

Note: maximum adjustment distance: 6 mm (0.236 in)

Direction of sensing: allows movement towards or away from the part to be marked.

0 corresponds to the origin when the point has been raised to its basic position.

- **Button(s): Apply**

Modifications saved

E. Menu: Marking

Select this menu from the main menu, represented by the icon: 

The screen below appears:

1. *Open file.*
2. *Marking "N times"*
3. *"Infinite" marking*
4. *"Independent" marking*
5. *"Start marking" icon*
6. *Preview*
7. *Controlled mode*
8. *Name of the file to be opened*

■ Access to certain shortcuts using the keyboard

F2	Marking preview
F10	File marked
Ctrl + R	Activation of controlled mode

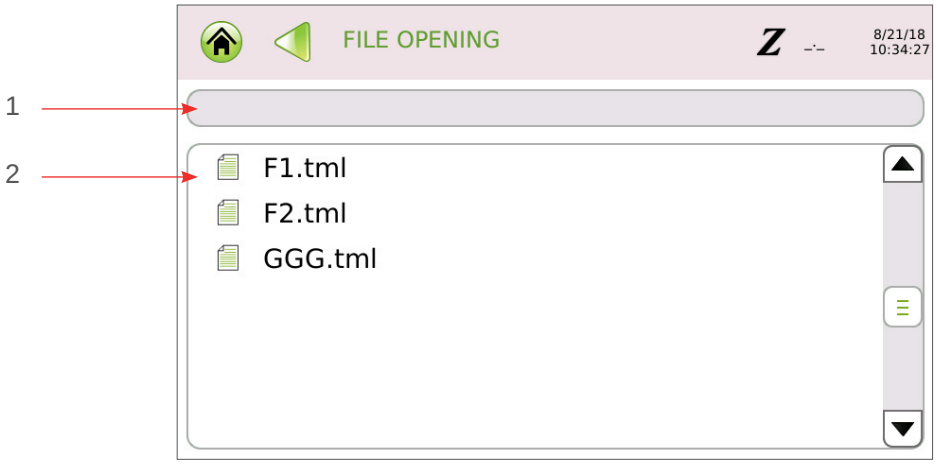
1. Marking "N times"

Used to mark the same marking file a set number of times

Set the number of markings requested. The default value is 1.

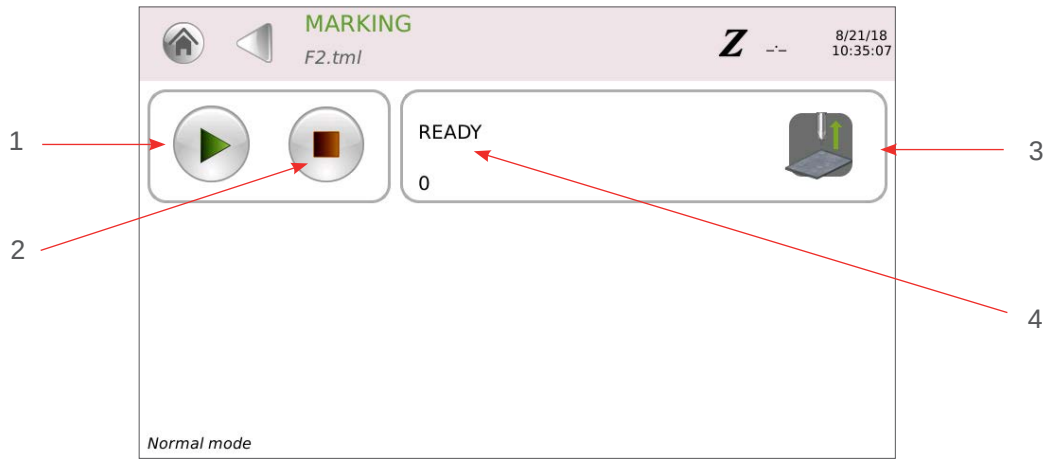
Select the "Open" icon. Choose the file to be marked.

Menu: Marking



1. *Quick search*
2. *Select the files from the file tree structure.*

Press the "Start marking" icon. The screen below appears:



1. *"Start marking" icon*
2. *"Stop marking" icon*
3. *Easy height adjustment (Z adjust)*
4. *Status of marking*

This screen provides information concerning the file to be marked and the status of the marking.

Start marking: press the "Start marking" icon or press the trigger on the machine (if fitted).

If the text to be marked is off-limits, an error message appears on-screen (Menu: Settings - Marking settings - Off-limits control: Activated parameter).

To stop marking, press the "Stop marking" icon. Marking is stopped.

Menu: Marking

2. "Infinite" marking

It is a marking mode similar to "N times" except that the marking is repeated infinitely. Marking continues unless an error is detected.

Choose the file to be marked. Select "Infinite".

Start marking: press the "Start marking" icon.

If the text to be marked is off-limits, an error message appears on-screen (Menu: Settings - Marking settings - Off-limits control: Activated parameter).

To stop marking, press the "Stop marking" icon. Marking is stopped.

3. "Independent" marking

Used to obtain markings identical to those in "Infinite" mode, the only difference being that when the machine is switched back on after an interruption during marking (reset, power outage...) marking is resumed by pressing on "Start marking".

Choose the file to be marked. Select "Independent".

Start marking: press the "Start marking" icon or press the trigger on the machine.

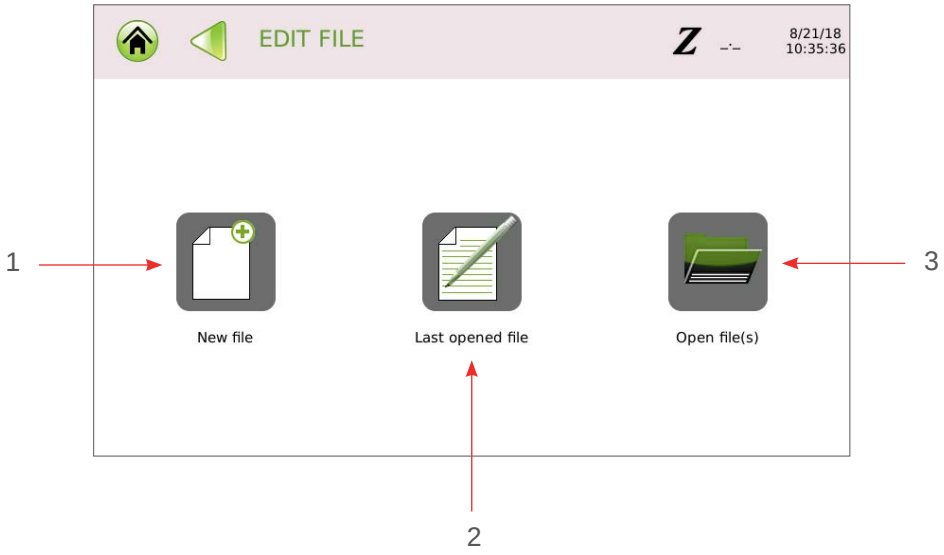
If the text to be marked is off-limits, an error message appears on-screen (Menu: Settings - Marking settings - Off-limits control: Activated parameter).

To stop marking, press the "Stop marking" icon. Marking is stopped.

F. Menu: Edit file

Select this menu from the main menu, represented by the icon: 

The screen below appears:



1. *Create a new marking file.*
2. *Open the last file used.*
3. *Open an existing file.*

■ Access to certain shortcuts using the keyboard

Ctrl + C	Copy the selected block
Ctrl + V	Paste the stored block
Ctrl + S	Save the file in progress.
Ctrl + Z	Z axis configuration (azerty: Ctrl + W)
F5	Add block(s)
F9	Simulate marking file (no marking on part)
F10	File marked
F11	Save selected file
F12	File parameters
Delete	Deletion of a block from a marking file
Insert	Insertion of an empty block in a marking file before the selected block
Ctrl + P	Pause after a block
Space	Activation / deactivation of the blocks
Enter	Edit block

Menu: Edit file

- Create a new marking file.

Gives access to an "empty" marking file to prepare marking blocks. See: Preparing a marking block

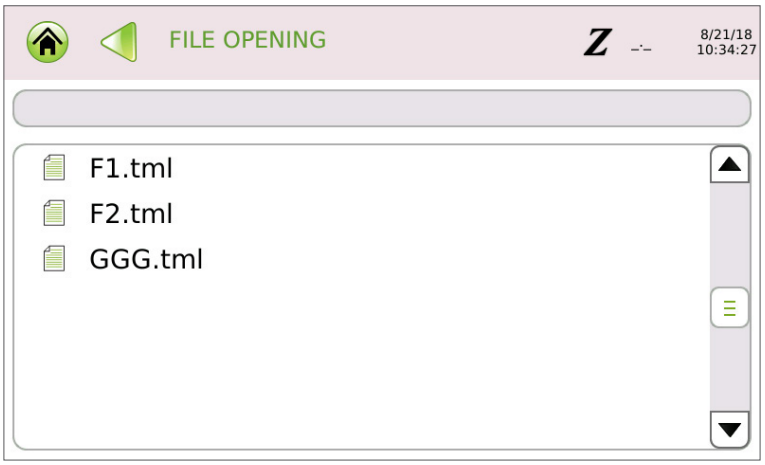
- Open the last file used.

Used to directly open the last file used. The button is disabled if no file is stored.

Go to "Create a new file" to prepare blocks for a new file.

- Open an existing file.

Used to open a specific file. The screen below appears:



Choose the file to be opened.

1. Preparing a marking block

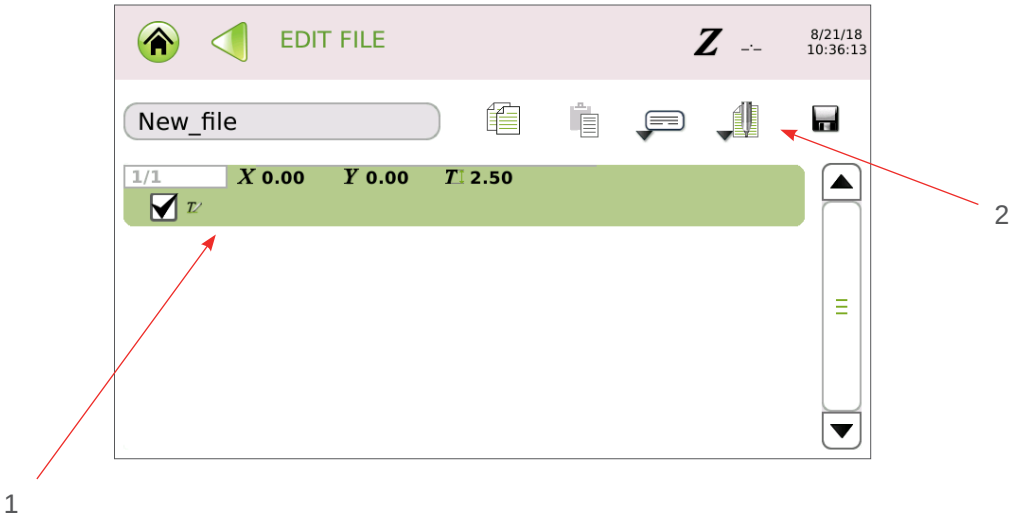
To create a new marking file, select the "Edit file" menu.

Select the "Create a new file" icon.

An empty block will appear. Double-click on a block to enter data.

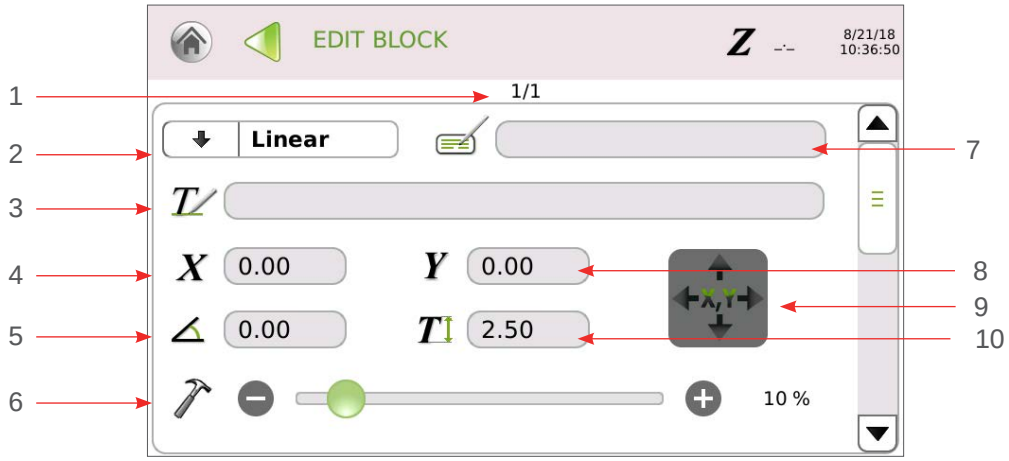
When a file is created, an empty block appears on the screen.

Menu: Edit file



1. *Used to access the details of a block.*
2. *Marking parameters*

Double-click on a block to enter data. The screen below appears:



1. *Block number*
2. *Type of marking*
3. *Text to be marked*
4. *X coordinate*
5. *Inclination angle*
6. *Marking force (depending on version)*
7. *Block name (label)*
8. *Y coordinate*
9. *Positioning aid arrow*
10. *Character size*

Menu: Edit file

Access to certain shortcuts using the keyboard

F3	Stylus movement
Ctrl + Page Down	Next block
Ctrl +Page Up	Previous block
Button(s) +/-	Incrementation / decrementation of numeric values with the +/- keys (Cursor)

Block number

Each block is identified by a number. This number evolves automatically when blocks are added or deleted.

The first number indicates the number of the selected block. The second number corresponds to the total number of blocks in the file.

Block name (label)

Used to name each marking block. This optional, free access data entry field can be used to add information about the block or instructions for the operator which will be diplayed during the marking of the block in question.

Type of marking

This field defines the type of marking to be carried out in the block being prepared.

Certain types of marking involve new data entry fields.

To drop down the menu, press the arrow. Select the option required. Linear marking is selected by default.

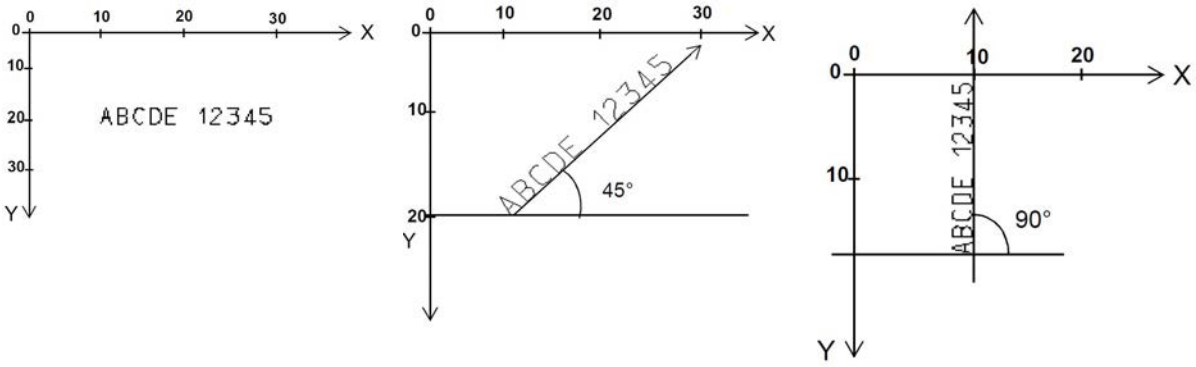
Menu: Edit file

■ Linear marking

Used to mark straight lines of text at an angle.

To obtain a marking parallel to the X axis, set the angle at 0° in the corresponding field.

To obtain a marking parallel to the Y axis, set the angle at 90°.



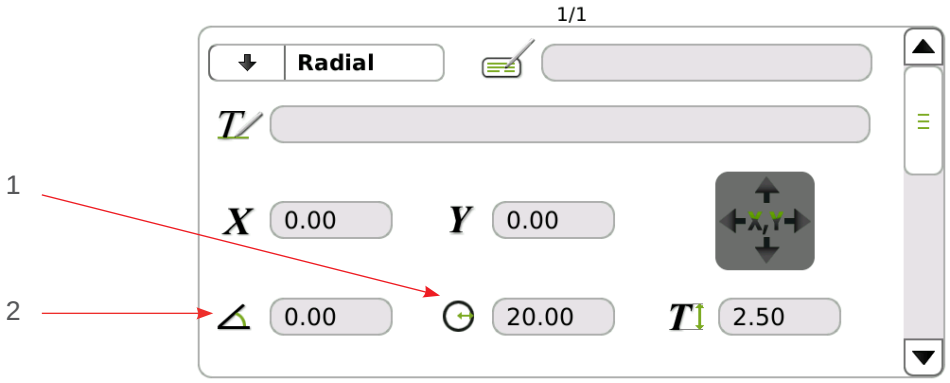
■ Radial marking

Used to obtain texts along the circumference of a circle. When this type of marking is selected, a new field for entering the circle radius value appears on the screen.

The angle value in degrees corresponds to the positioning angle of the marking on the circle.

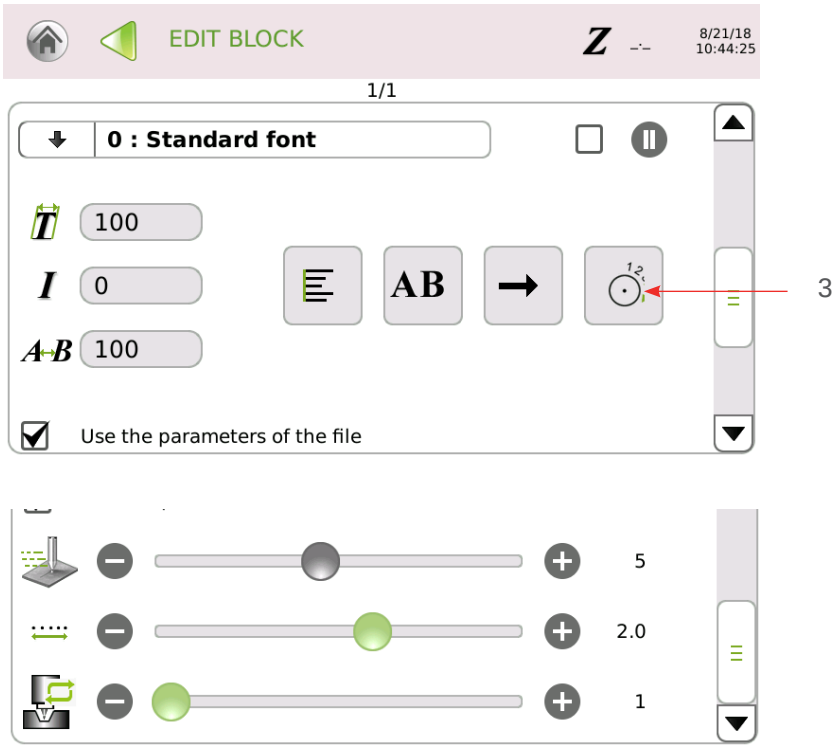
The X-Y coordinates correspond to the center of the base circle for the marking.

A new icon, used to choose the marking direction, appears at the bottom right side of the screen.



1. *"Radius" field*
2. *Initial angle*

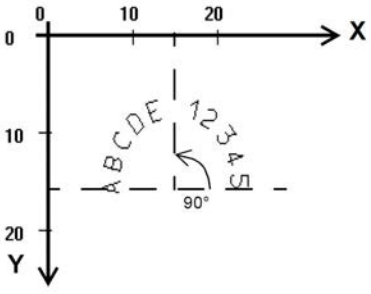
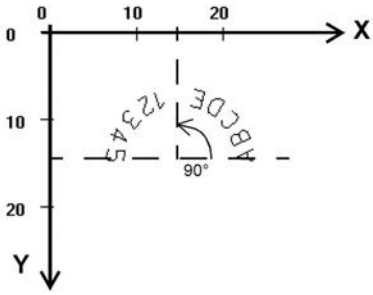
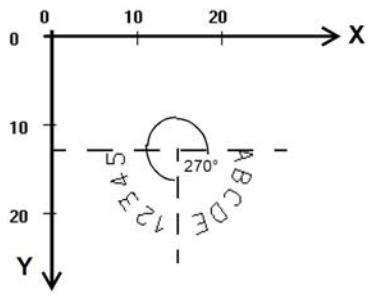
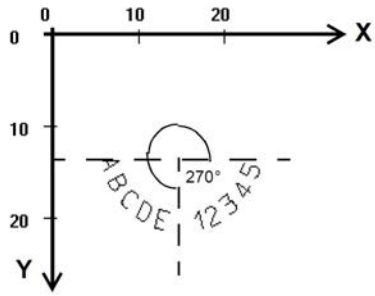
Menu: Edit file



3. *Marking direction icon*

Clockwise marking / Counter-clockwise marking

Marking direction icon: to drop down the menu, press the arrow. Select the option required. Clockwise marking is selected by default.

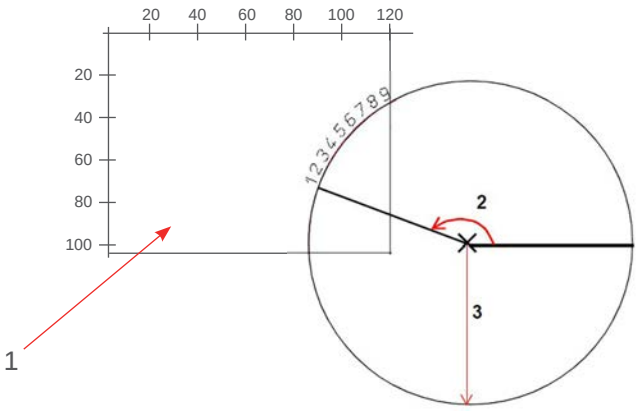
Initial angle	Clockwise marking	Counter-clockwise marking
Angle: 90° Centering		
Angle: 270° Centering		

Menu: Edit file

Special situation

It is possible that the center of the circle is located outside the marking zone. In this case, the X and Y coordinates are superior or inferior to the marking area. Check that the text to be marked is within the marking area.

Example of a circle outside the marking area (Impact):



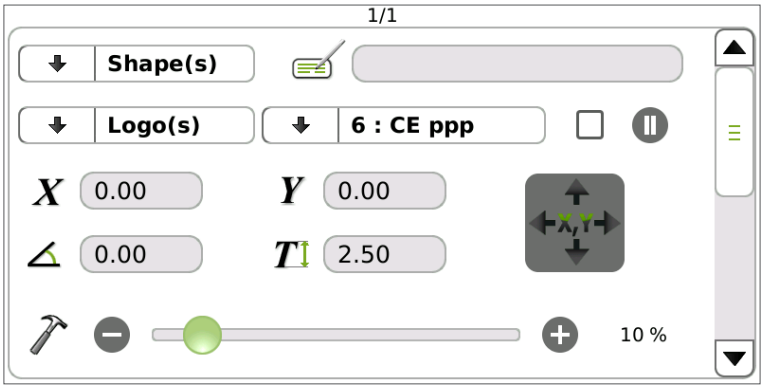
1. *Marking area: 120 mm (4.724 in) x 100 mm (3.937 in)*
2. *Angle: 160°*
3. *Radius: 50 mm (1.969 in)*

■ Shapes

- **Logos**

Used to mark the logos saved in the CCU.

The screen below appears:

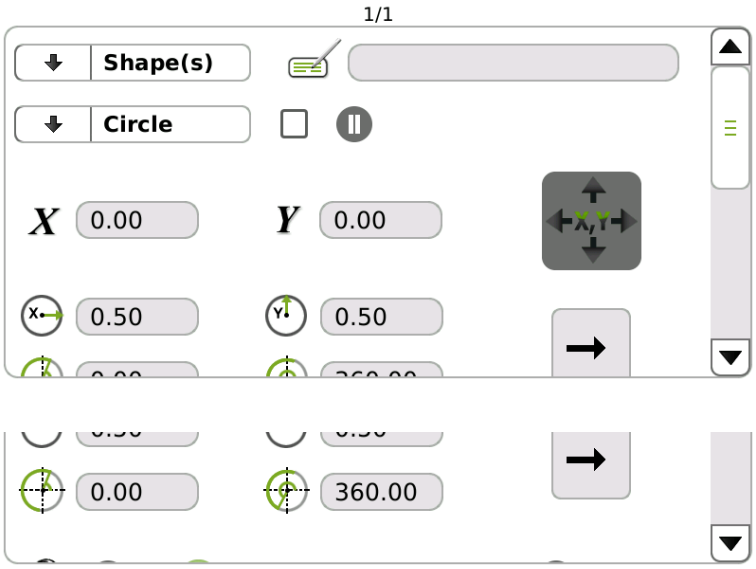


List of available logos: to drop down the menu, press the arrow. Select the option required.

Menu: Edit file

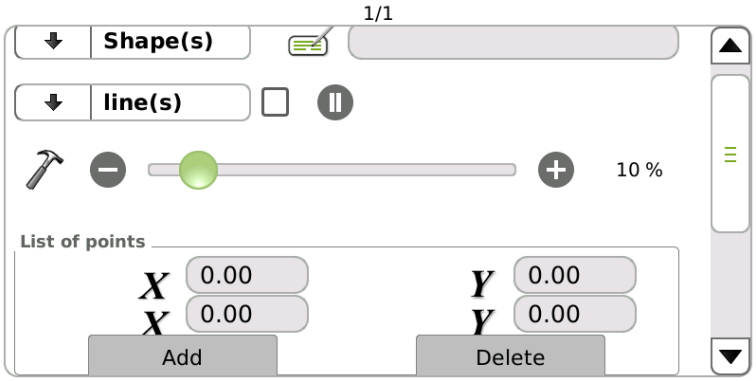
- **Circle**

Used to mark circles, ellipses, circle arcs.



- **Lines**

Used to mark one or several lines.

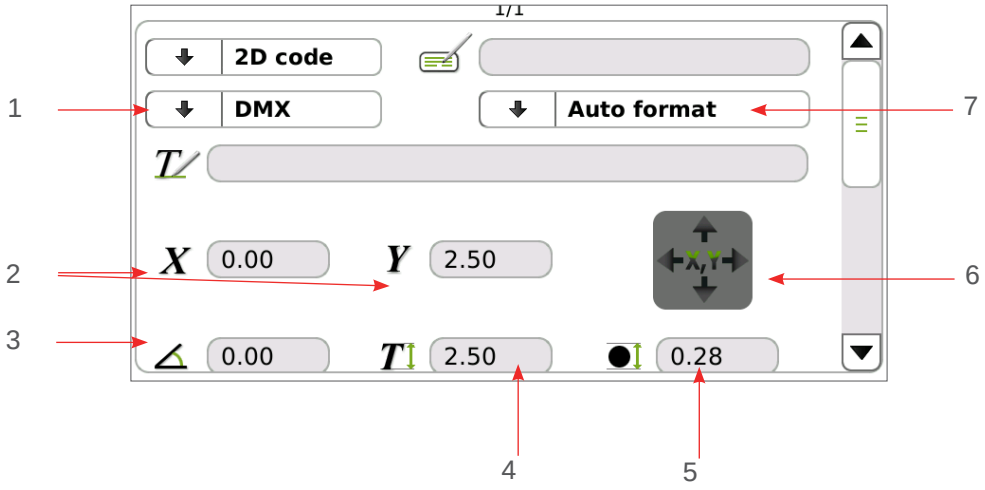


Menu: Edit file

■ 2D code

- **DataMatrix/QRCODE / MQRCODE**

Used to mark DataMatrix codes. The screen below appears:

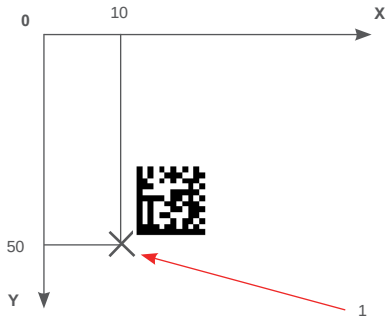


1. *Code type*
2. *X-Y coordinates*
3. *Angle in degrees*
4. *Code size (height)*
5. *Cell size*
6. *Positioning aid arrow*
7. *Matrix format (by default: automatic mode)*

Code position and size:

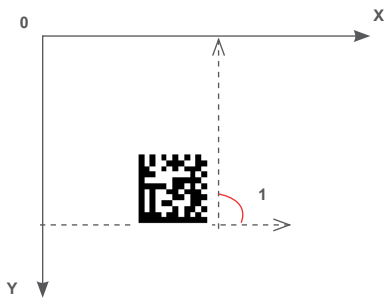
X-Y coordinates: the values entered in the X and Y fields determine the start position of the marking.

1. *The X represents the start marking point (X-Y coordinates).*



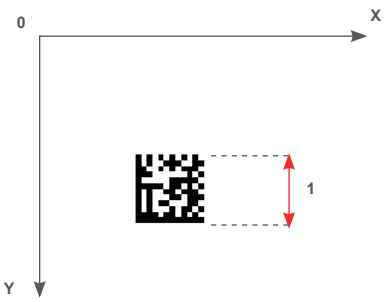
Angle: the value entered in this field determines the angle in degrees along which the code is marked.

1. *Angle in degrees*



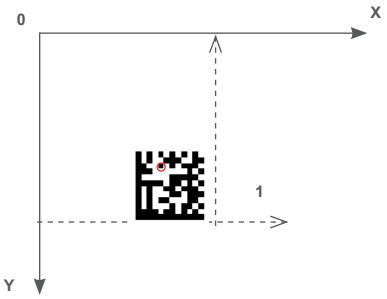
Menu: Edit file

Code size (height): the value entered in this field determines the height of the code.



1. *Code size*

Cell size: the size of the cells automatically adapts itself according to the size of the code and the matrix format.



Cell size

Note

To maintain a high marking quality, the angle value must be a multiple of 90° (0°, 90°, 180°, 270°).

Matrix format:

Choose the "Auto" format to have the program calculate automatically the number of lines and columns necessary to encode the text to be marked.

One way marking / Return marking / Spiral marking:

To drop down the menu, press the arrow. Select the option required.

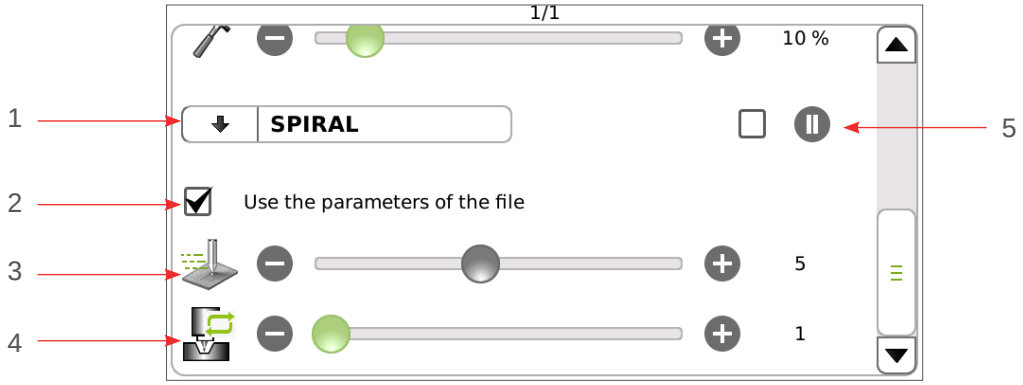
One way marking: the stylus always restarts from the left at the beginning of each line. It favors mark quality over speed.

Return marking: the stylus marks the first line of the code from left to right, then the second from right to left, etc... It favors the marking speed.

Spiral marking: marking starts with the "L" of the code then the data zone is marked in a spiral. This marking mode can reach a high speed without the marking quality deteriorating.

To enter other information, use the scroll bar.

Menu: Edit file



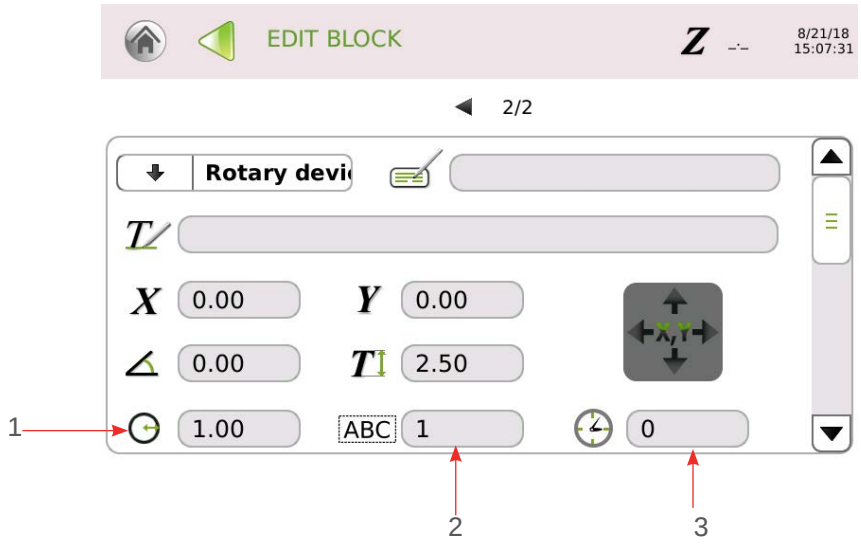
1. *One way marking / Return marking / Spiral marking*
2. *Default parameters*
3. *Marking speed*
4. *Multiple passes option*
5. *Pause*

Text to be marked:

Insert the text to be encoded in DataMatrix. See: Text to be marked

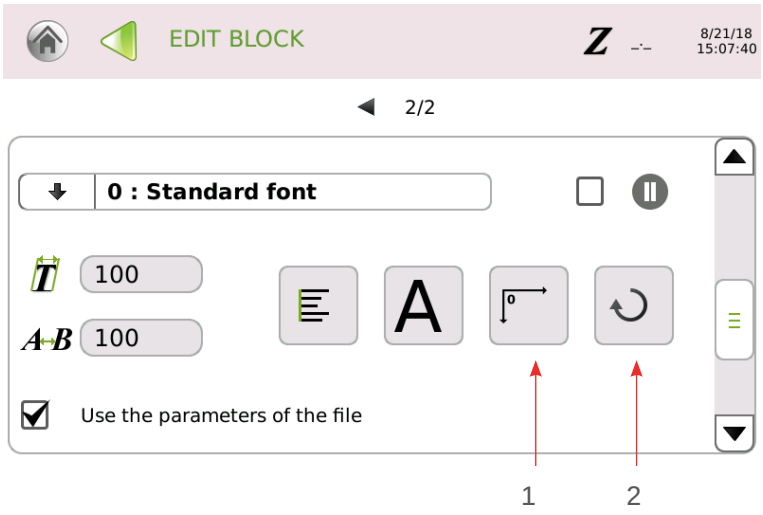
See: Movement speed- Marking speed- Marking quality (depending on version)

■ Rotary device



1. *Part radius (mm)*
2. *Indicate the number of characters to be marked before rotation of the axis.*
3. *Time delay between the end of rotation and the start of marking (ms)*

Menu: Edit file



1. *Relative movement: displacement of x° from the current position / Absolute movement: displacement of x° from the origin*
2. *Rotary device rotation direction*

■ Z axis (standard or optional, depending on the machine type)

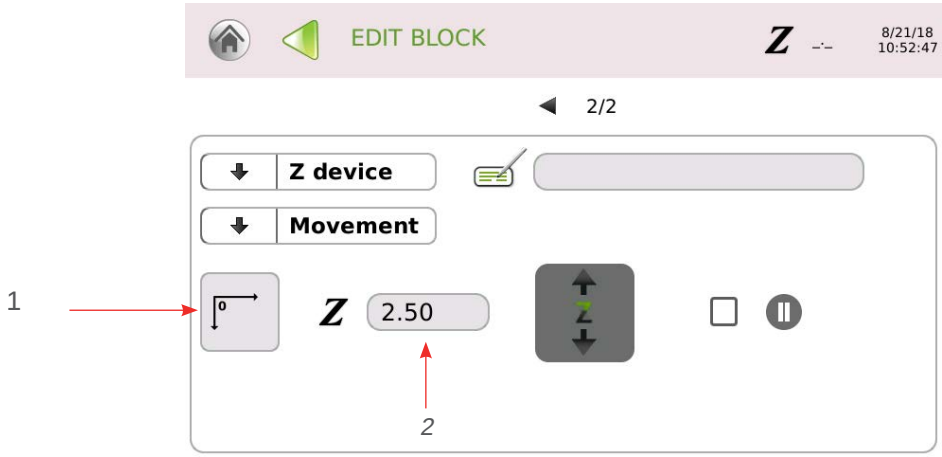
Machines with Z axis function: the Z position is displayed in the top banner. This position can be expressed as an absolute or relative value.

This function is not enabled by default.

Go to the following menu: Marking parameters - "Machine configuration" menu - Z-Axis control: automatic

Create a Z block: "Edit file" menu - New file - Z device

Version eZ m:

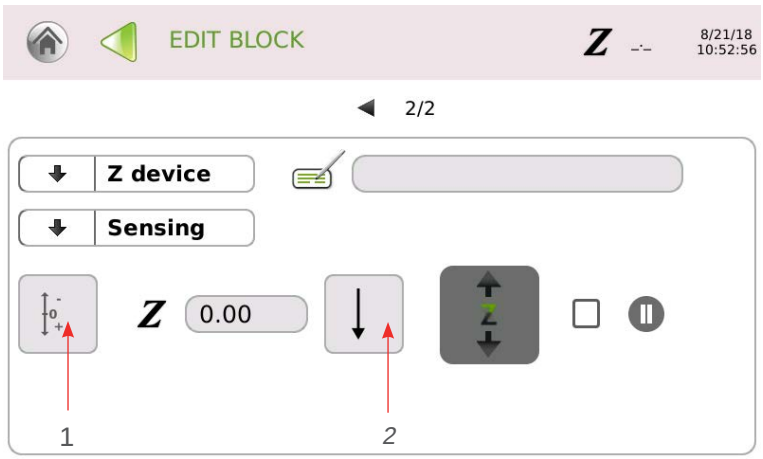


1. *Absolute distance / Relative distance*
2. *Travel distance (mm)*

Menu: Edit file

Version eZ m:

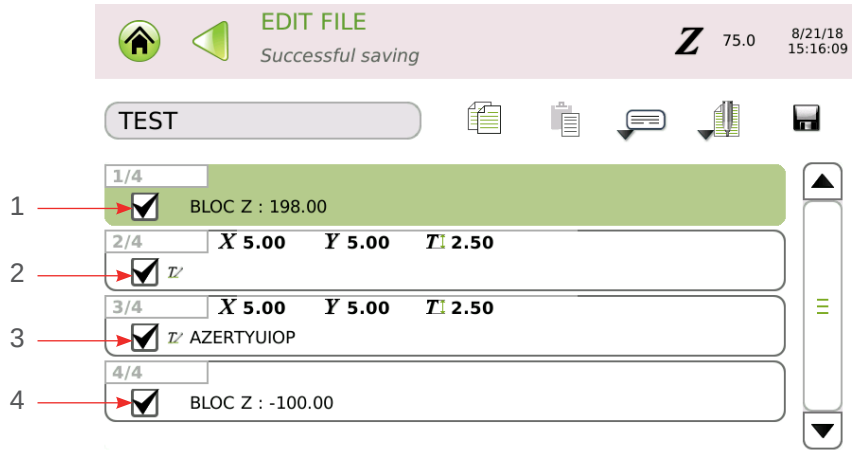
Sensing option of the motorized Z-axis (electromagnetic version only):



1. *Relative distance / Absolute distance*
2. *Direction of movement after sensing*

Example: "Linear" marking

1. Create file ("Edit file" menu - New marking file - Linear text block)



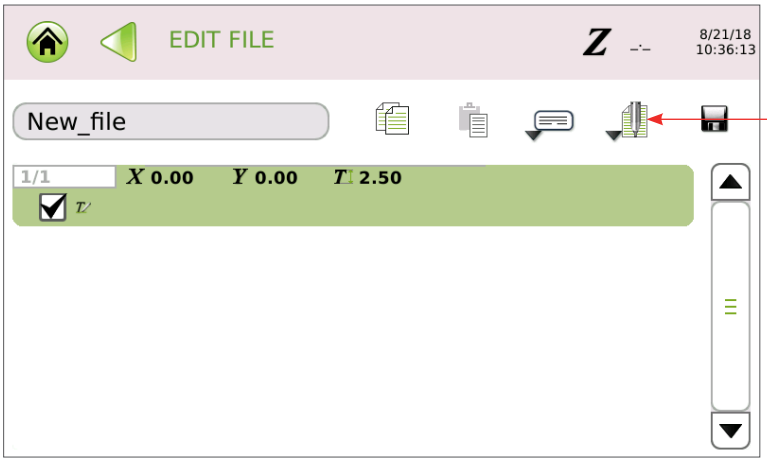
1. *Z block: head positioning:*
2. *Linear text block (no load): coordinates of the point where the stylus will be positioned*
3. *Linear text block: specifies the text to be marked.*
4. *Z block: it is possible to effect a Z axis clearance at the end of marking using a Z block.*

2. Create block(s).

Menu: Edit file

■ Return to origin / Z axis speed

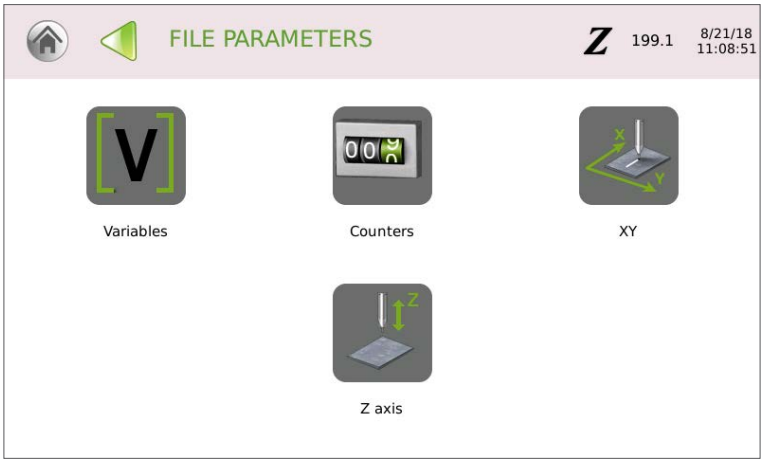
To adjust the parameters for this function, click on: Marking parameters



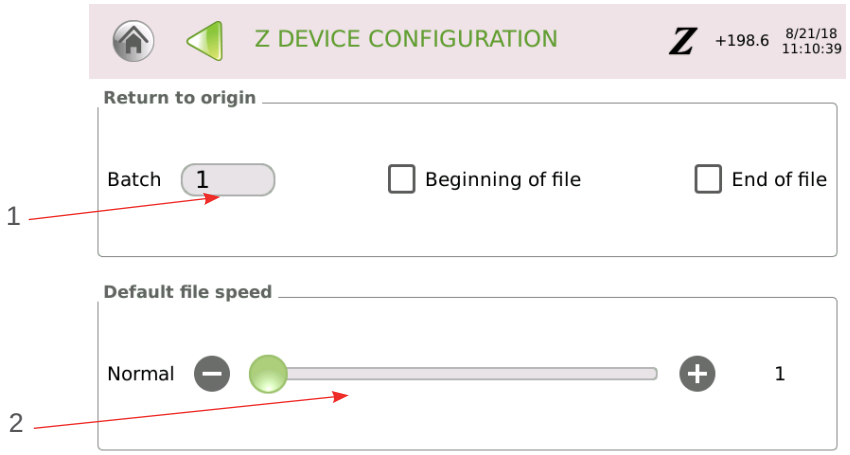
1. *Marking parameters*

Click on the arrow to view the drop down menu: File parameters

Click on the icon: Z axis:



Menu: Edit file



1. *Enter batch size*
2. *Z axis speed*

Used to specify the parameters of the Z axis for the current file. Example: speed

Speed	1	2	3	4	5	6	7	8	9	10
Distance covered: mm/s	5	6,9	8,8	10,7	12,6	14,4	16,3	18,2	20,1	22,0

Used to determine the movement and sensing speed for the Z axis.

Batch: number of markings to be carried out with this variable before proposing to re-program the variable

Return to origin at the beginning/end of the file: activate/deactivate check boxes

Used to define the number of markings the stylus returns to origin. Used to define at which moment the stylus returns to origin in relation to the marking of a file.

■ Functions

Used to access to certain automation functions, operations on the variables, etc.

Some functions are optional.

For a detailed description of the marking functions: See: Functions

Menu: Edit file

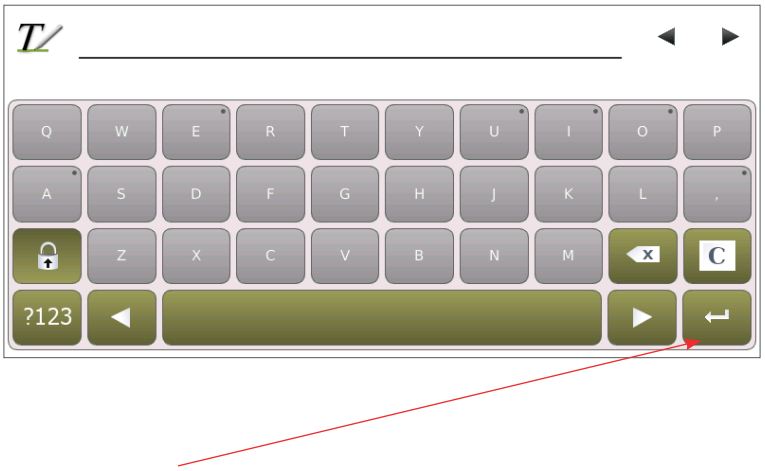
■ Text to be marked

Enter the text to be marked in the appropriate block. The text may be composed of:

- capital / lower case letters
- numbers
- key words

The maximum number of characters per block is 255. The characters that can be marked depend on the font.

To enter text, a touch keypad appears on-screen. See: Using the touch screen



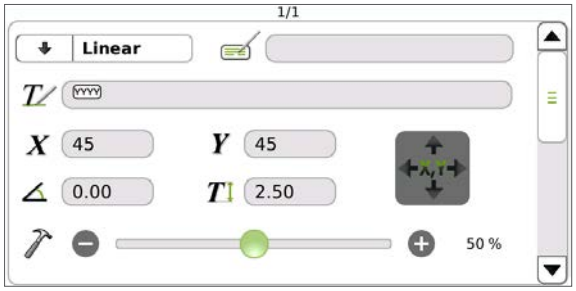
Validation of the entered data

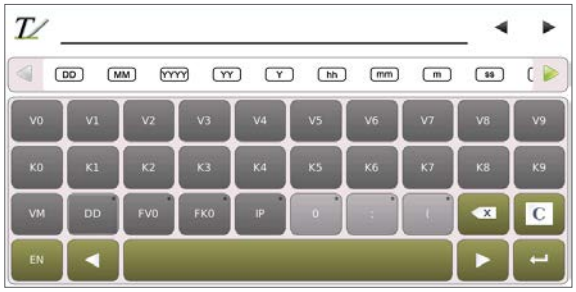
Key words

Key words are codes interpreted by the program. They are not actually marked but rather "recorded" before marking.

It is possible to define several keywords in the same text area.

Insertion of a key word in the "Text" field: touch the "Text" field. To enter text, a touch keypad appears on-screen. The keywords are listed on page 2 of the keypad (See: Using the touch screen). Select the option required. The selected keyword appears in the "Text" field.





Menu: Edit file

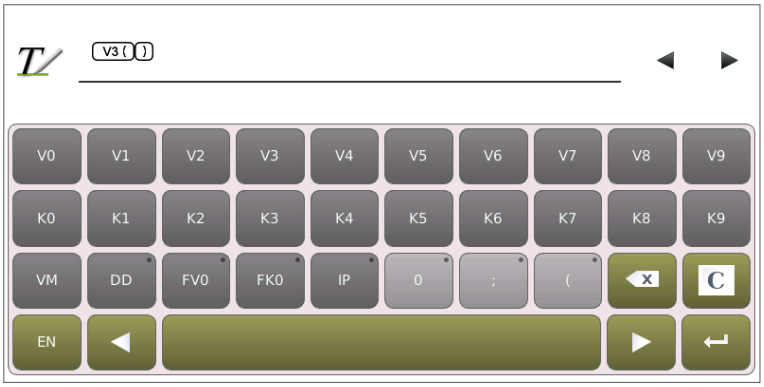
The keywords are indivisible units. When a keyword is inserted, it appears in a frame, it is impossible to delete part of a keyword. Each keyword is considered a single character.

For Kn - Vn keywords, select the number of the variable (K0 - K9, V0 - V9).

Splitting a variable

A portion of the contents of a variable may be selected and marked.

When a variable is inserted in text, the screen below appears:



To mark all the content of the variable, leave the brackets empty.

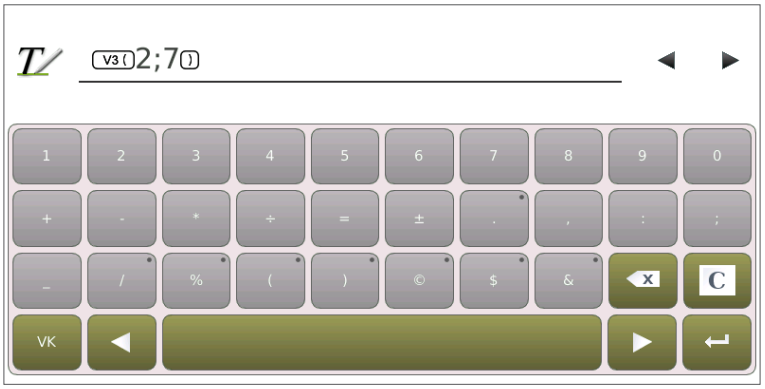
To mark part of the content of the variable, indicate between brackets the first and last character to take into account, separated by a semi-colon (;).

Menu: Edit file

Characters: (Syntax: Vn[a;b])

Possible values	Meaning	Note
N	N character	0 < N < 256
0	last character	
0!	last character (not included)	
&u	first character for which the Unicode is u	
&u!	first character for which the Unicode is u (not included)	
#u	last character for which the Unicode is u	
#u!	last character for which the Unicode is u (not included)	
%u	first character for which the Unicode is not u	0 < u < 65536
%u!	first character for which the Unicode is not u (not included)	
*u	last character for which the Unicode is not u	
*u!	last character for which the Unicode is not u (not included)	

Examples:



Contents of variable V3: "7 02$ 4b00z"

Marking obtained: " 02$ "

It is possible to mark the content of a variable from right to left.

Menu: Edit file

The 0 number represents the end of the variable.

Characters	7	Space	0	€	2	$	Space	4	b	0	0	z
Code: Unicode	55	32	48	8364	50	36	32	52	98	48	48	122

Examples	**Result**
V0[ ]	7 0€2$ 4b00z
V0[1;0]	7 0€2$ 4b00z
V0[0!;1]	00b4 $20€ 7
V0[4;10]	€2$ 4b0
V0[8;3]	4 $2€0
V0[&50;10]	2$ 4b0
V0[&50;&98!]	2$ 4
V0[&48;0]	0€2$ 4b00z
V0[4;&98]	€2$ 4b
V0[µ32!;0]	4b00z
V0[%55!;*122]	0€2$ 4b00
V0[&8364!;*122!]	2$ 4b0

Note: if it is not possible to determine the result (string too short, character sought absent, etc.), the result is an empty string.

Menu: Edit file

List of key words

Key words	Definition	Marking
DD	number of the day in the month (from 01 to 31)	09 - for the 9th day in the month
MM	month number (01 to 12)	05 - for the month of May
YYYY	year in 4 digits	2007
YY	year in 2 digits	07
Y	year in 1 digit	7
hh	hours (00 to 23)	12 - for 12 h 28 min 35 sec
mm	minutes (00 to 59)	28 - for 12 h 28 min 35 sec
m	first number for block of ten minutes (0 to 5)	2 - for 12 h 28 min 35 sec
ss	seconds (00 to 59)	35 - for 12 h 28 min 35 sec
WW	week number (01 to 53)	01 - for January 3 2001
CCC	number of the day in the year (001 to 366)	028 - for January 28 2001
HS	time interpretation code	
DS	interpretation code for the day of the week	
JS	interpretation code for the day of the month	
MS	interpretation code for the month	
YS	interpretation code for the year	See: Menu: Variables
Kn	interpretation code for the counters	
Q	interpretation code for shifts according to time block	
Vn	interpretation code for variables	
Vm	last text marked	
MAC	MAC address	
IP	IP address	
SN	serial number	
CM	number of markings already carried out	
NM	number of markings to execute	

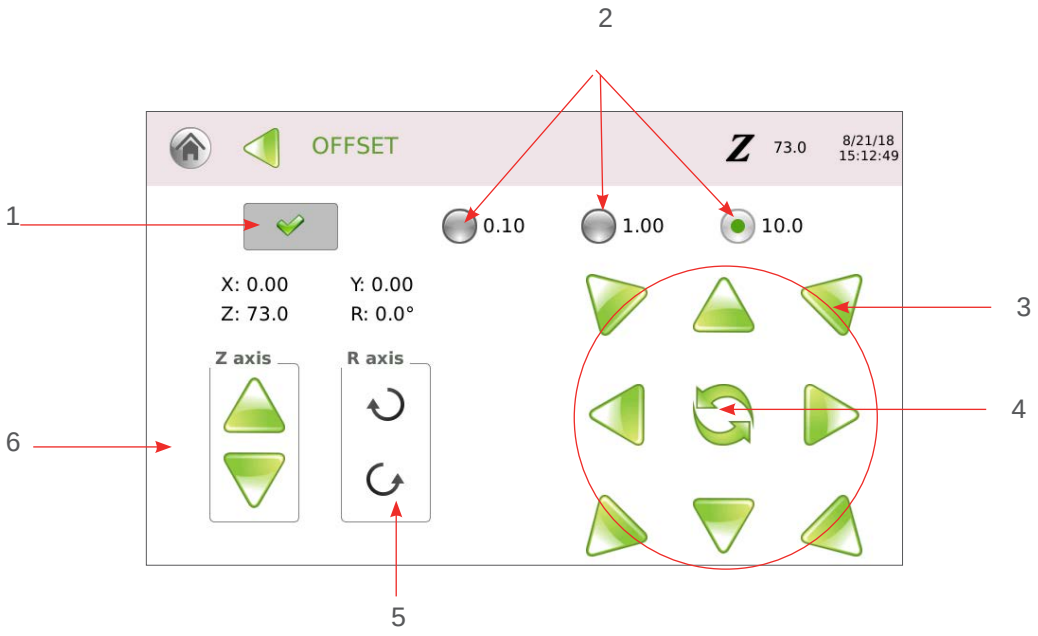
■ X-Y coordinates

The X-Y coordinates determine the position of the text in the marking area. They are given:

- in millimeters or in inches, depending on the unit chosen
- with an accuracy of 0.01 mm (0.01 in)
- in absolute value with relation to the origin

Menu: Edit file

■ Stylus positioning



1. *Validation of the entered data*
2. *Incrementation step*
3. *Stylus movement*
4. *Revert to the previously saved value*
5. *Head positioning: Rotary Device*
6. *Head movement*

- **Access to certain shortcuts using the keyboard**

Numeric keypad	Entering numeric values, setting the stylus position in the "Stylus movement" function (F3)
5	Return to origin
Up - Down arrows	Shifting of the Z axis
Left arrow - Right arrow	Movement: Rotary device
Enter	When the correct position is reached, validate by pressing Enter.
Escape	Press Escape to exit this screen.
F5-F6-F7	Selection of the movement value (0.10 mm (0.004 in), 1.00 mm (0.039 in), 10.0 mm (0.394 in)).

Menu: Edit file

■ Character size

The "Size" field defines the actual height, in either millimeters or inches, of characters marked in capital letters.

The size can range from 0.5 mm (0.020 in) to 45 mm (1.772 in) (with an accuracy of 0.01 mm (0.01 in)).

The default value is 2.5 mm (0.10 in).

■ Text angle

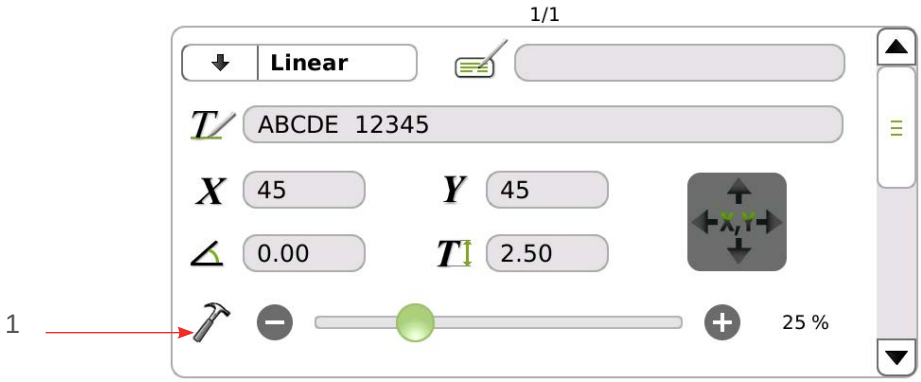
Used to define the angle at which the text is marked. See: Linear marking

The default value is 0°.

■ Marking force

The width and depth of the marked line varies with the defined value.

The higher the force, the deeper the mark. This value is expressed as a percent. The default value of the "Force" area varies according to the machine's configuration.



1. *Marking force*

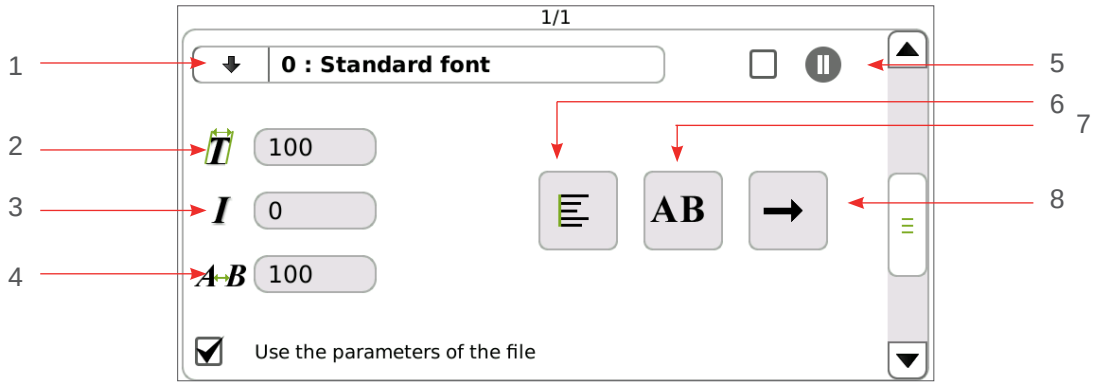
Menu: Edit file

■ pause after a block

To enter other information, use the scroll bar.

To activate the pause after a block, press the corresponding symbol.

When this function is activated, the machine pauses after the block concerned.



1. *Character font*
2. *Compression*
3. *Inclination*
4. *Spacing*
5. *Pause after a block*
6. *Alignment*
7. *Marking effects*
8. *Marking direction*

■ Character font

The various fonts saved are identified by a number followed by their name. Go to the font area to select the character font to be used in the marking block being prepared.

■ List of available fonts:

- 0: Standard font
- 1: Standard EM font
- 2: Simplified font
- 3: 5x7 font
- 4: OCR-A font
- 5: OCR-B font
- 6: Scribing font
- 7: Double stroke font
- 8: Low density EM font
- 9: Medium density EM font
- 10: High density EM font

Note: for the list of characters available, contact Gravotech.

Menu: Edit file

■ Compression 

Used to modify character width without modifying their height. The compression factor modifies the space between the characters. This value is expressed as a percent. It must be between 25% and 500%, with increments of 1%. The default value is 100%.

Compression 50%: → ABCDE

Compression 100%: → ABCDE

Compression 150%: → ABCDE

■ Inclination 

Used to determine the value, in degrees, of the inclination angle of the characters in relation to the vertical. It must be between 0° and +75°, with increments of 1°. The default value is 0°.

Inclination 0°: → ABCDE

Inclination +30°: → ABCDE

■ Spacing 

Used to modify the inter-character spacing, without changing their width or height. This value is expressed as a percent. It must be between 25% and 500%, with increments of 1%. The default value is 100%.

Spacing 50%: → ABCDE

Spacing 100%: → ABCDE

Spacing 150%: → ABCDE

Menu: Edit file

■ Alignment

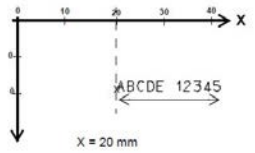
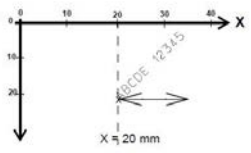
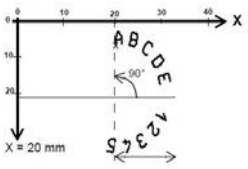
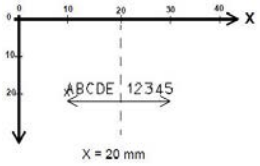
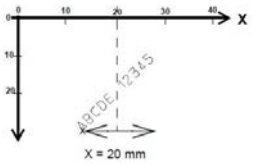
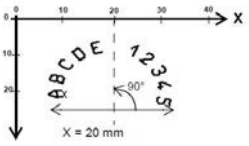
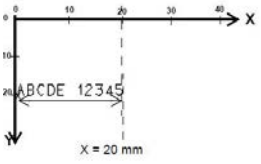
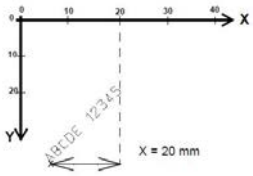
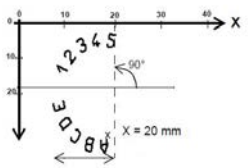
Used to align the text to the left, right or center.

In case of left alignment, the value of X corresponds to the beginning of the text to be marked. In case the text is centered, the value of X corresponds to the center of the text to be marked. In case of right alignment, the value of X corresponds to the end of the text to be marked.

In radial mode, text justification is done in relation to the start angle.

By default, the text is aligned to the left.

Examples

Alignment	Result		
	Linear marking Angle: 0°	Linear marking Angle: 45°	Radial marking Clockwise marking
Left alignment			
Centering			
Right alignment			

The X represents the start marking point (X-Y coordinates).

	The text to be marked may become off-limits if the X or Y value, or the character size, is too large. To correct this anomaly, reduce or increrase one or the other of these values.

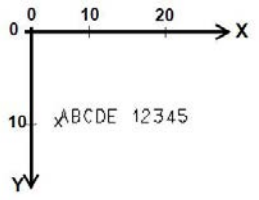
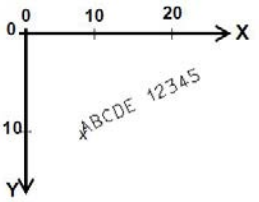
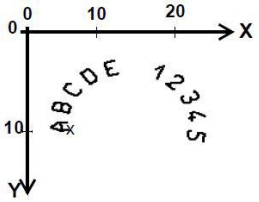
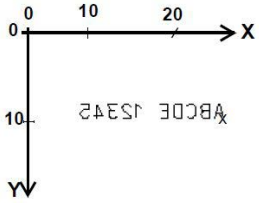
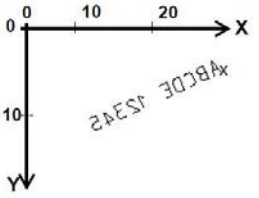
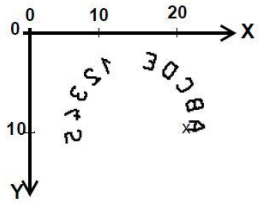
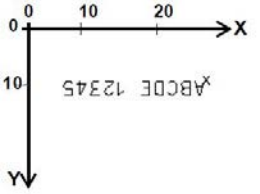
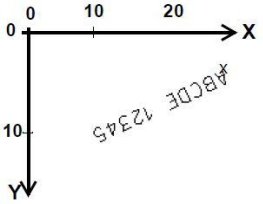
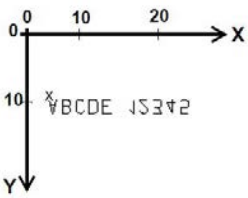
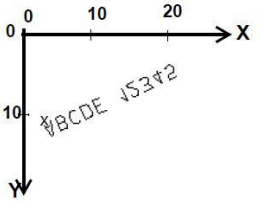
Menu: Edit file

- **Marking effects** 

Several marking directions are proposed in order to adapt marking to the specificities of certain parts.

In radial mode, only the normal and mirror effects are available.

Marking obtained:

Marking effects	Result		
	Linear marking Angle: 0°	**Linear marking Angle: 35°**	**Radial marking Centering Angle: 90°**
Normal			
Mirror: symmetry along Y			
Inverted: symmetry along X-Y			
Reflected: symmetry along X			

The X represents the start marking point (X-Y coordinates).

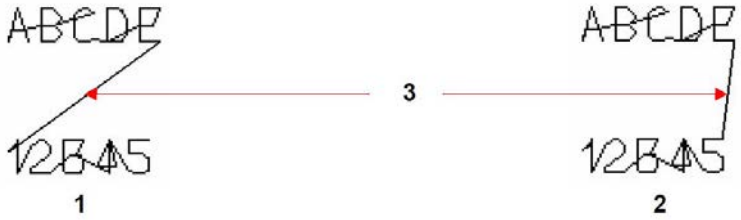
Menu: Edit file

■ Marking direction

Used to choose the movement direction of the stylus during marking, from left to right or from right to left. This function is used to optimize marking time and must not be confused with the direction of writing (marking effects).

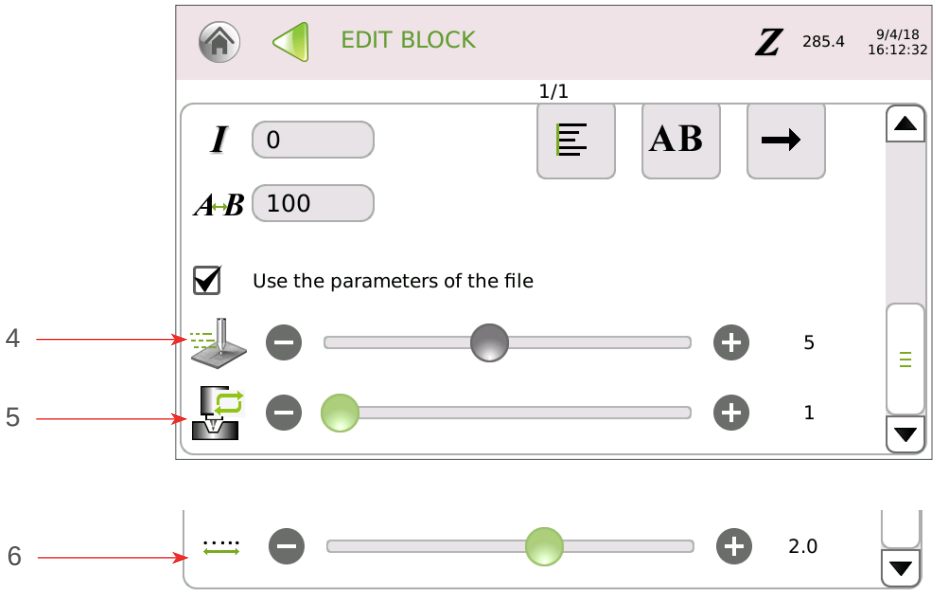
The default marking direction is from left to right.

In the following example, the marking direction from right to left reduces the movements of the stylus between the first block and the second one.



1. *Marking direction from left to right for the 2 blocks*
2. *Marking direction from right to left for the second block*
3. *Segments of movement of the stylus*

To enter other information, use the scroll bar. The screen below appears:



4. *Marking speed*
5. *Multiple passes option (fonts: dot by dot)*
6. *Dot density per millimeter (fonts: continuous action)*

Menu: Edit file

■ Movement speed

Used to determine the speed of the stylus when moving without marking.

This value is expressed as a percent. It must be between 1% and 100%, with increments of 1%. The default value is 20%.

The displacement speed and the marking speed are set using the same cursor (depending on version: Impact). This value must be between 1 and 10.

■ Marking speed

Used to determine the speed of the stylus during the marking.

This value is expressed as a percent. It must be between 1% and 100%, with increments of 1%. The default value is 20%.

The faster the marking, the lower the quality. A very high quality marking requires a slow marking speed.

The displacement speed and the marking speed are set using the same cursor (depending on version: Impact). This value must be between 1 and 10.

■ Marking quality (depending on version)

This value is expressed as a percent. It must be between 0% and 100%, with increments of 1%. The default value is 100%.

This value guarantees the best quality for a given speed. For faster marking, when quality is not the priority, this value can be reduced. In all other cases, it is recommended to use the default value. This is especially important for automated reading applications.

■ Dot density per millimeter

This value is expressed in points per mm. It must be between 0.5 and 3, with increments of 0.1. The default value is 2.0.

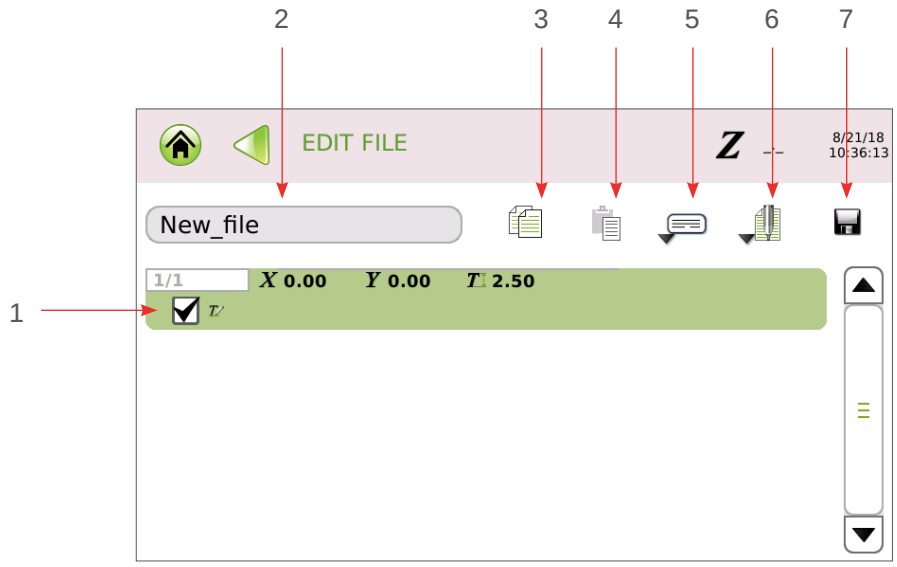
Allows a continuous stroke font or a logo to be marked (electromagnetic version only).

Menu: Edit file

2. "Edit" menu sub-menus

When block preparation is complete, press the arrow at the top of the screen to validate the block and go back to the previous screen.

The program goes back to the marking file and the sub-menus are then accessible. They are used to edit the file in progress.



1. *Activation / deactivation of the blocks*
2. *File name*
3. *"Copy" symbol*
4. *"Paste" symbol*
5. *"Edit" sub-menu*
6. *"Marking" sub-menu*
7. *Save the file in progress.*

■ Copy/paste a block

Used to copy a block with its characteristics.

Select the block to be copied. Press the "Copy" symbol. Select the block after which the copied block is to be pasted. Press the "Paste" symbol. The stored block is pasted after the selected block.

Menu: Edit file

■ "Edit" sub-menu

- **Add a block at the end of the file**

Used to add "empty" marking blocks at the end of a file.

"Edit" sub-menu: select "Add". The program then automatically updates the numbering.

- **Insertion of a block before the selected block**

Used to insert an "empty" block before the seleted block.

"Edit" sub-menu: select "Insert". The program then automatically updates the numbering.

- **Deleting the selected block**

Deletes a marking block

"Edit" sub-menu: select "Delete". The program then automatically updates the numbering.

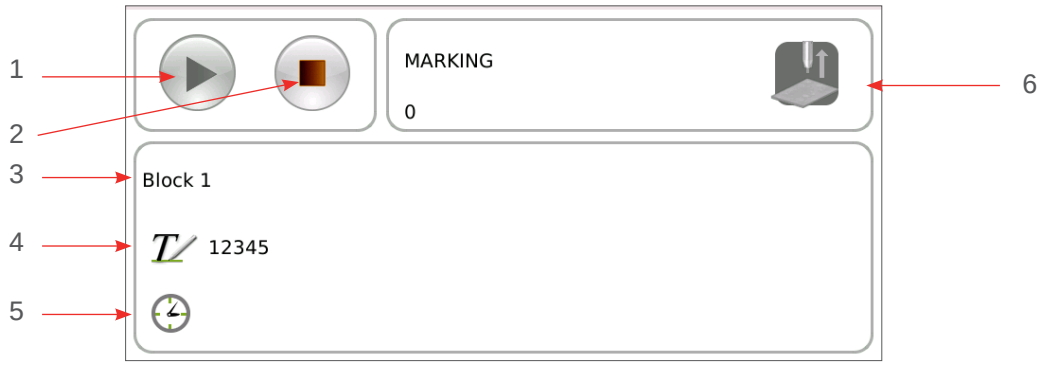
■ "Marking" sub-menu

Used to access certain functions of the "Marking" menu directly from the file.

- **Marking a file**

Used to mark the file in progress "one time".

The screen below appears:



1. *"Start marking" icon*
2. *"Stop marking" icon*
3. *Block number*
4. *Text to be marked*
5. *Marking time. Appears once the markings are completed.*
6. *Status of marking*

Menu: Edit file

This screen provides information concerning the file to be marked and the status of the marking. Press the "Start marking" icon.

At the end of the marking, the screen indicates the marking time.

Normal mode

1. *Marking time. Appears once the markings are completed.*

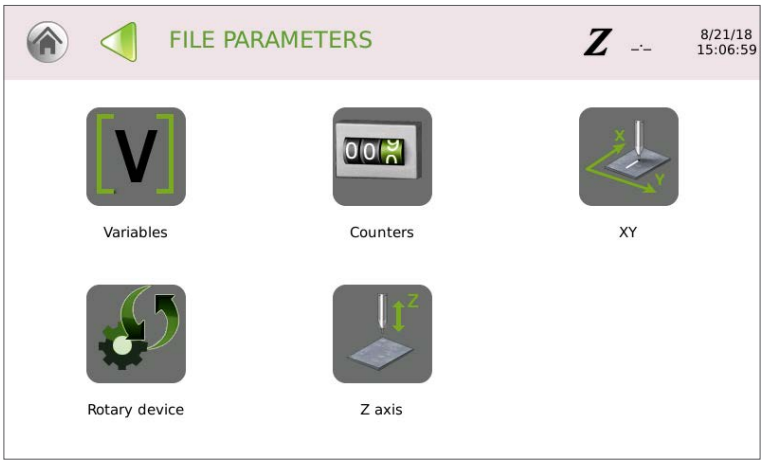
See: Marking "N times"

- **Simulation**

Used to simulate the marking file. Simulation consists in performing the marking without activating the stylus.

Simulation is carried out as a "one time" marking. See: Marking a file

- **File parameters**

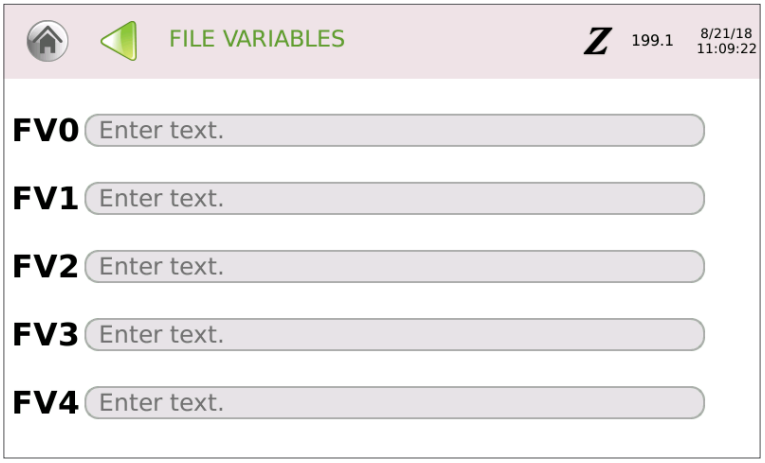


Enables the configuration of advanced settings:

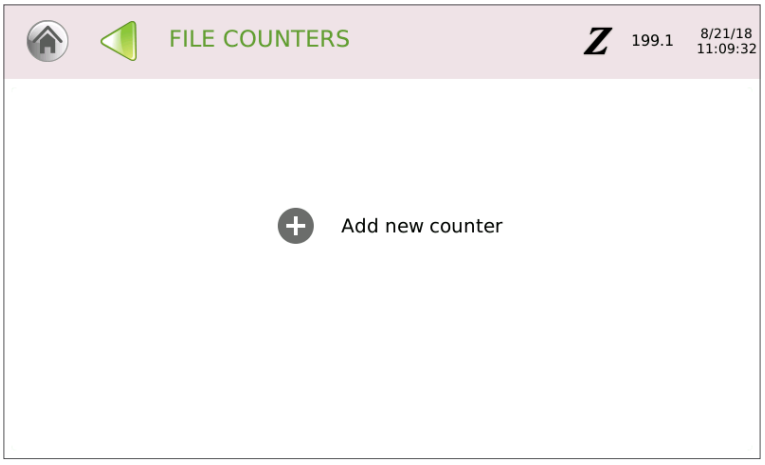
- file variable(s)
- file counter(s)
- return to origin: X-Y, Z, Rotary device
- movement speed
- position Rotary device

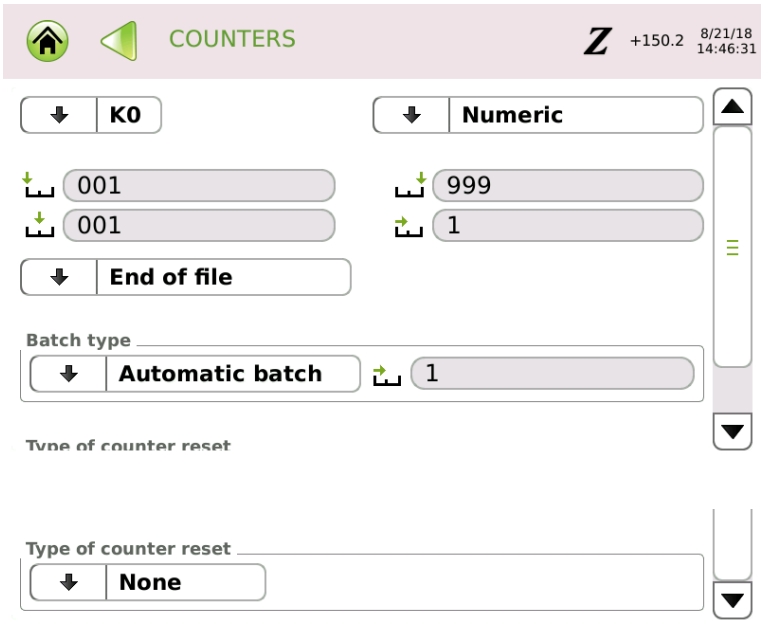
Menu: Edit file

- File variable(s) (See: Menu: Variables)



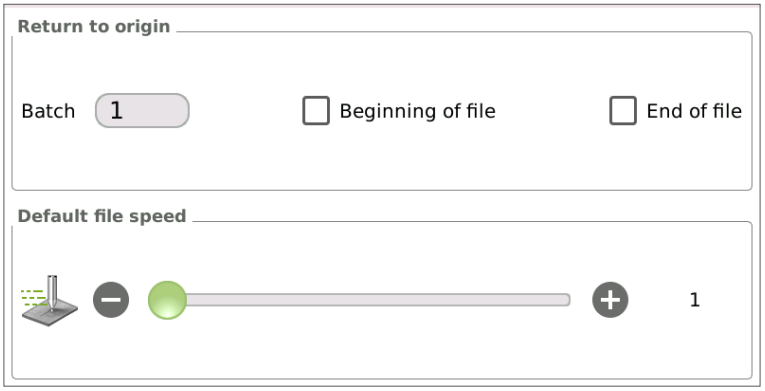
- File counter(s) (See: Menu: Counters)





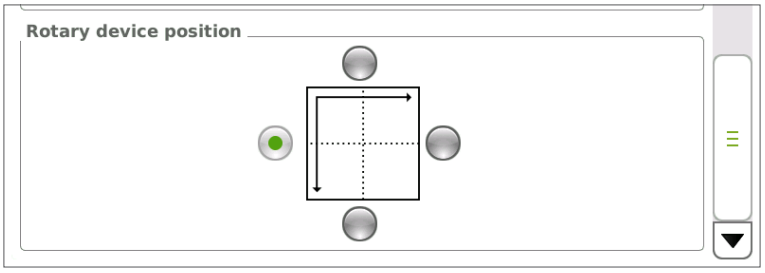
Menu: Edit file

- Menu X-Y



Used to configure the return to origin of the stylus - Choosing the marking speed

- Menu Rotary device (refer to the manual)



Menu: Edit file

■ Save the file in progress / Save as the file in progress.

The name of the file is displayed in the top left corner of the screen. By default, the current file is named "New_File". Enter the filename. Press the "Save" symbol.

If a file is not saved or has been modified, the program prompts the user to save before exiting:

Yes: save selected file

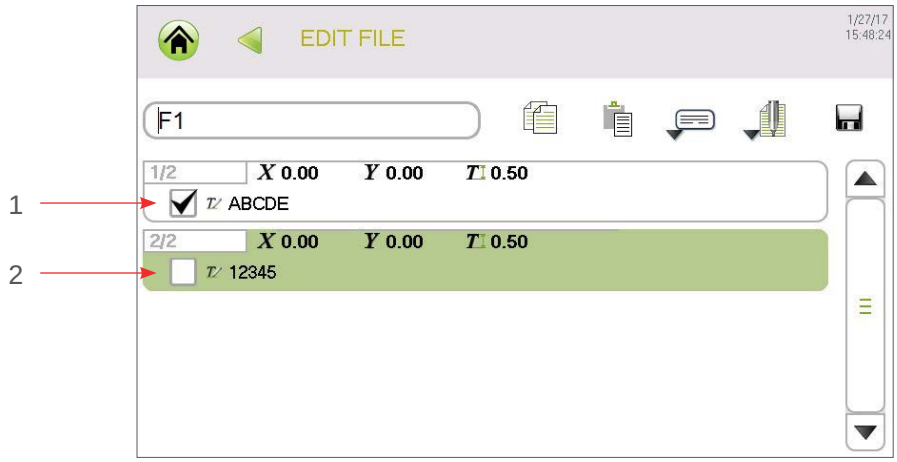
No: exit the file without saving

Cancel: return to the marking file without validating modifications

■ Activation / deactivation of the blocks

Used to deactivate a block from a marking file. A deactivated block is not marked.

To deactivate a block, uncheck the block box. A deactivated block is not checked off, an activated block is checked off.



1. *Activated block*
2. *Deactivated block*

G. Functions

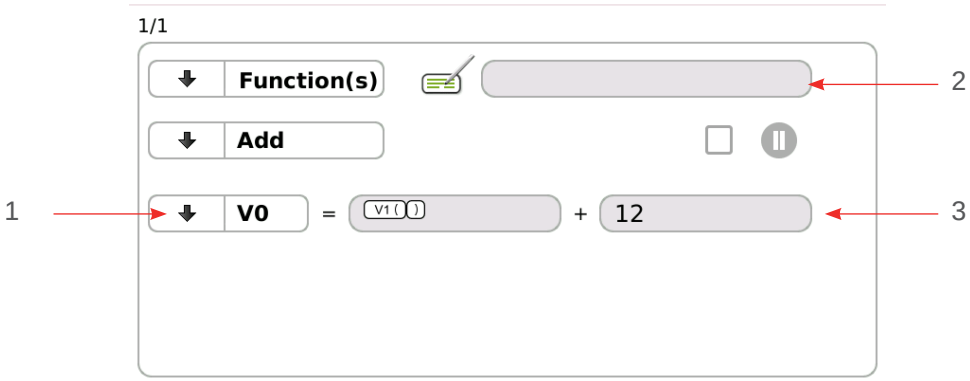
Used to access to certain automation functions, operations on the variables, etc.

Some functions are optional.

1. Add

Used to add numerical values together.

The screen below appears:



1. *Number of the variable*
2. *Block name*
3. *Entering numeric values*

Number of the variable: number of the variable in which is memorized the character string (result of the operation)

Entering numeric values: enter the data to be added together.

This field may contain set text, key words (date, hour...), the content of a counter, etc. The values must be numerical. If they are not, an error is generated. Marking is stopped.

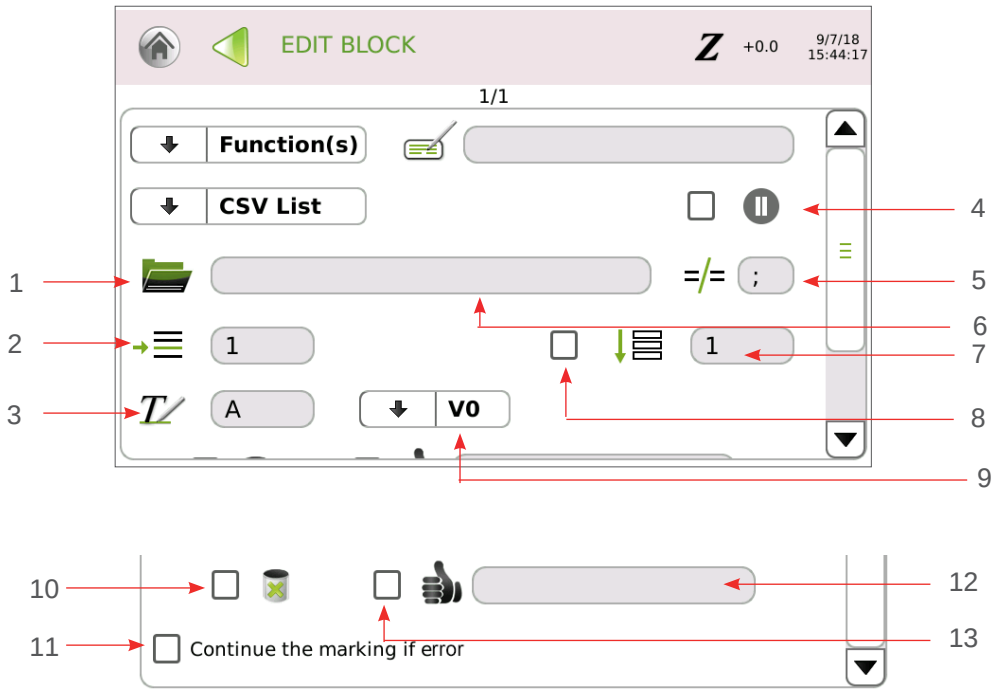
In order to subtract, enter the character "-" before the value.

Functions

2. CSV List

Used to extract data from CSV files (processing the file line by line).

The screen below appears:



1. *Open a file*
2. *Number of row to start*
3. *Reading column*
4. *Pause*
5. *Selecting the field separator*
6. *File name*
7. *Enter batch size*
8. *Activate batch*
9. *Number of the variable*
10. *Delete the line used*
11. *Continue the marking if errors found*
12. *Marker of the line used*
13. *Add a marker*

Import the file into the machine. See: USB Key: Data importation

Select the file using the icon "Open file" or enter its name in the "File name" field. This field may contain set text, key words (date, hour...), the content of a counter, etc.

Note: add ".csv" format at end of file name.

Functions

Number of row to start: select the start line where the search starts. A CSV file editor appears allowing selection of the row or column.

Delete the line used: box ticked - the line is deleted from the file after use.

Reading column: select the column containing the data to use. A CSV file editor appears allowing selection of the row or column.

Enter batch size: activate batch. Set the number of markings requested.

Selecting the field separator: set the field separator.

Add a marker: box ticked - A marker is added to the end of the line after use.

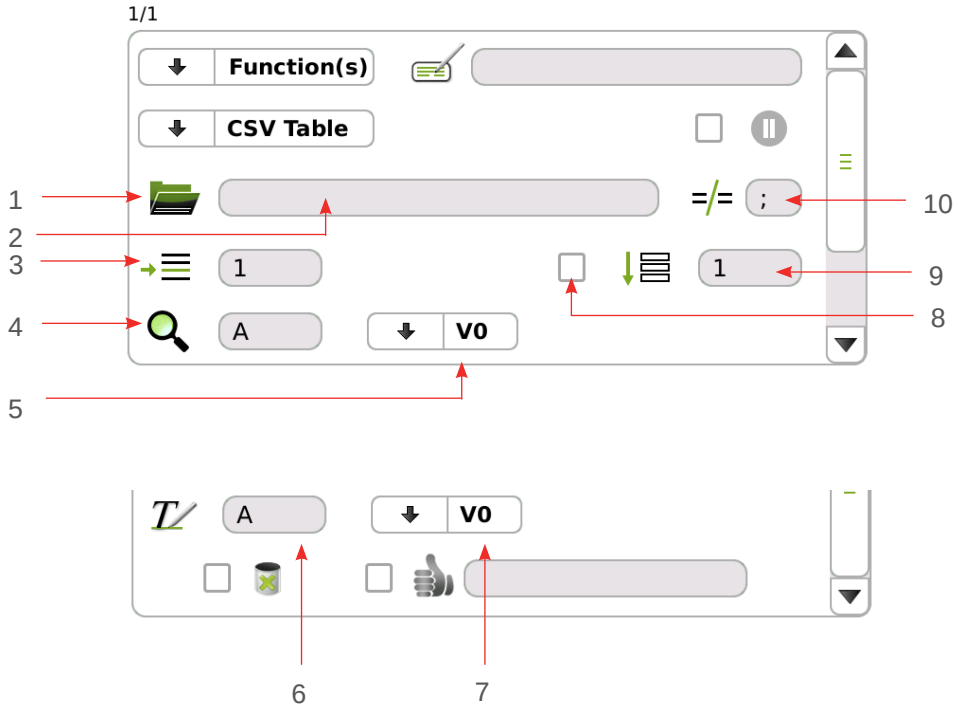
Marker of the line used: set the end-of-line marker to use.

Number of the variable: number of the variable in which is memorized the character string

Functions

3. CSV Table

Used to extract data from CSV files (by searching for text in a column).



1. *Open a file*
2. *File name*
3. *Number of row to start*
4. *Searching column*
5. *Number of the variable (search)*
6. *Reading column*
7. *Number of the variable (storage)*
8. *Activate batch.*
9. *Enter batch size*
10. *Selecting the field separator*

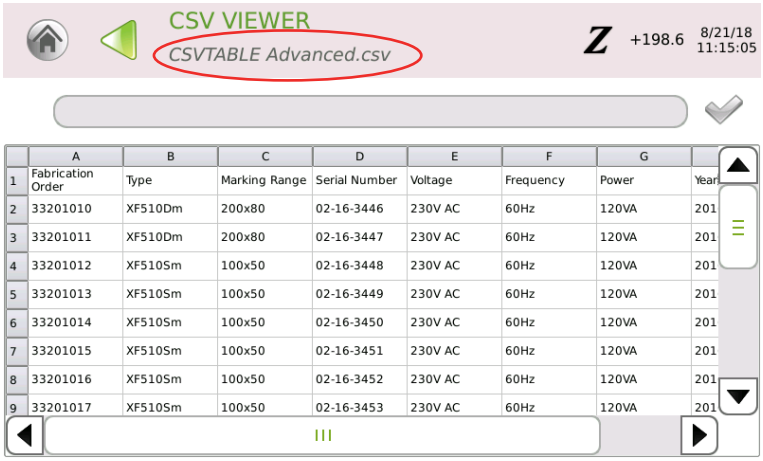
Searching column: select the column in which to search for the content of the associated variable.

Number of the variable (search): select the variable the content of which appears in the search column.

Number of the variable (storage): number of the variable in which is memorized the character string

Functions

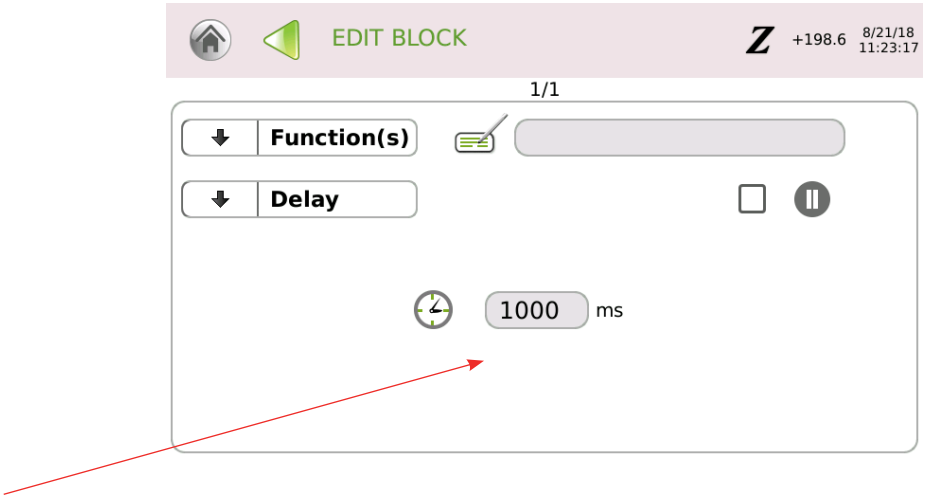
Click on the icon in the search column in order to preview the table.



4. Delay

This instruction is used to program a pause between the marking of two consecutive marking blocks. The time is expressed in milliseconds.

The screen below appears:



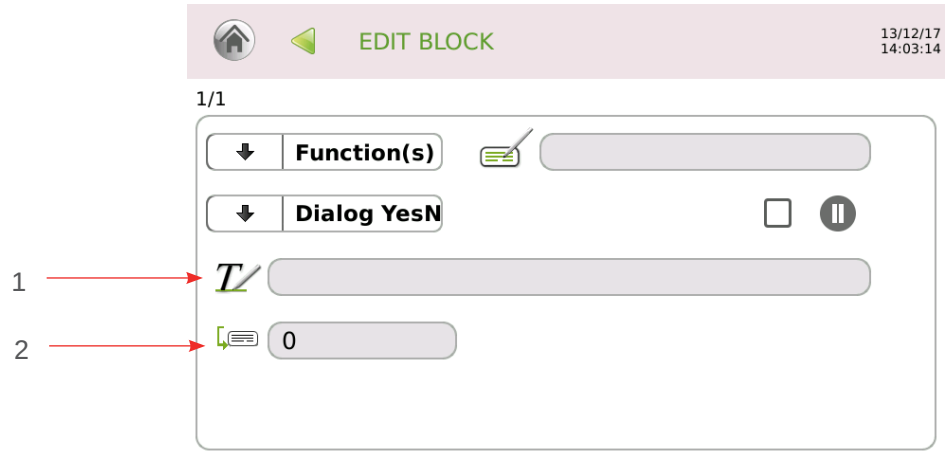
Pause time in milliseconds

The machine waits the time shown before going on to the following block.

5. Dialog Yes/No

Used to display a question on the screen requiring a yes or no answer.

The screen below appears:



1. *Question to be displayed*
2. *Number of block to reach*

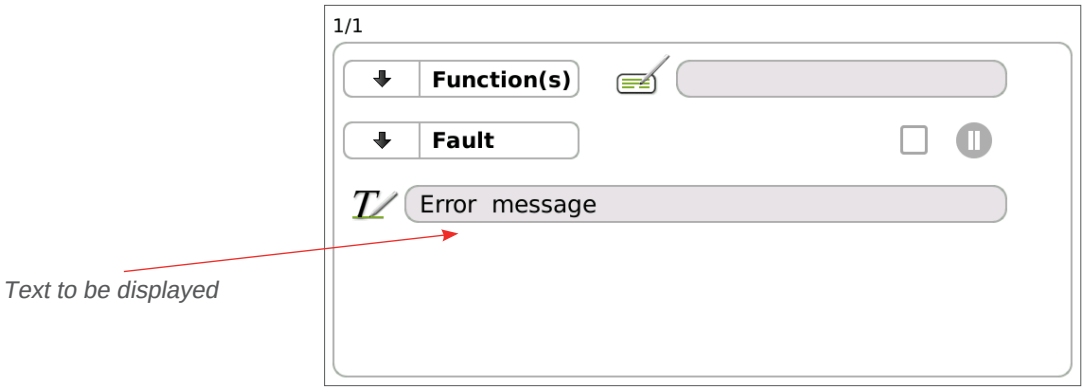
When the question appears, answer:

- yes: the file marking continues normally.
- no: the program immediately starts marking the block indicated. You cannot indicate an earlier block number in the file (no going backwards). To reach the end of the file, enter the value 0.

On a portable machine, it is possible to answer "Yes" by pressing the trigger.

6. Fault

Used to display an on-screen information message explaining why marking has been interrupted, for example because of a non-fulfilled condition (IF function). The screen below appears:



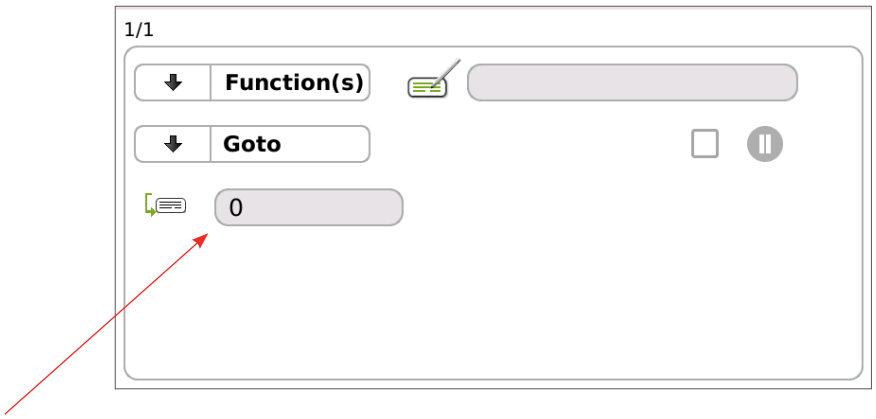
Enter the text to be displayed when marking reaches a Fault block. This field may contain set text, key words (date, hour...), the content of a counter, etc.

A window opens to acknowledge this fault. Marking is interrupted.

7. Goto

Used to go directly to the required block in the same marking file.

The screen below appears:



Number of block to reach

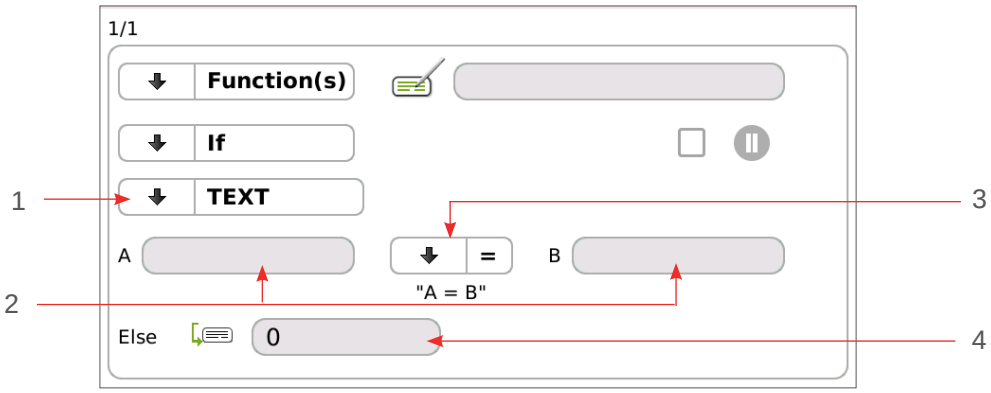
The program immediately starts marking the block indicated.

You cannot indicate an earlier block number in the file (no going backwards).

To reach the end of the file, enter the value 0.

8. IF

Used to add a condition for marking the file. The screen below appears:



1. *Type of condition*
2. *Values to compare*
3. *Type of comparator*
4. *Number of block to reach (if the condition is not fulfilled)*

Functions

Type of condition: select the condition type.

- TEXT: comparing 2 text fields - This field may contain set text, key words (date, hour...), the content of a counter, etc.
- LENGTH: comparison of 2 string lengths - This field may contain set text, key words (date, hour...), the content of a counter, etc.
- NUMERICAL: comparison of 2 numeric fields - The values must be numerical.

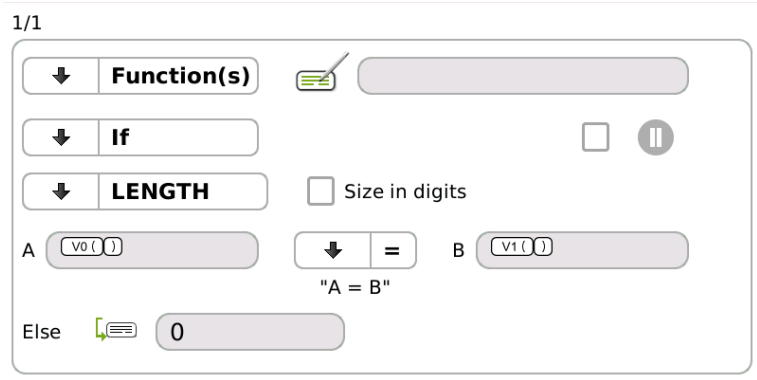
Note

LENGTH: the screen displays 1 new field(s): Length in digits.

Box ticked: the program compares the number of characters in the first value with the number indicated in the second value.

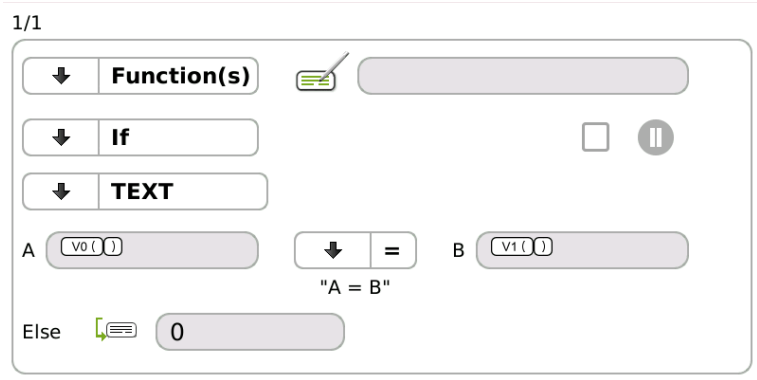
Box not ticked: the program compares the number of characters in the first value with the number of characters in the second value.

Example 1:



When the content of the counter K1 is greater than 3 characters: The file marking continues normally.

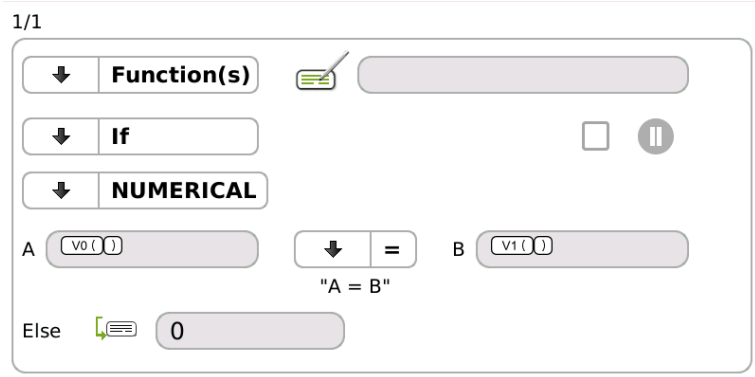
Example 2:



Contents of variable V1: 123

When the content of the counter K1 is greater than 3 characters (length of V1): the file marking continues normally.

Example 3:



When the content of counter K1 is not greater than 99: the program immediately starts marking the block indicated (3 block).

Values to compare: input the values to compare.

Type of comparator: select the type of comparator for the 2 values.

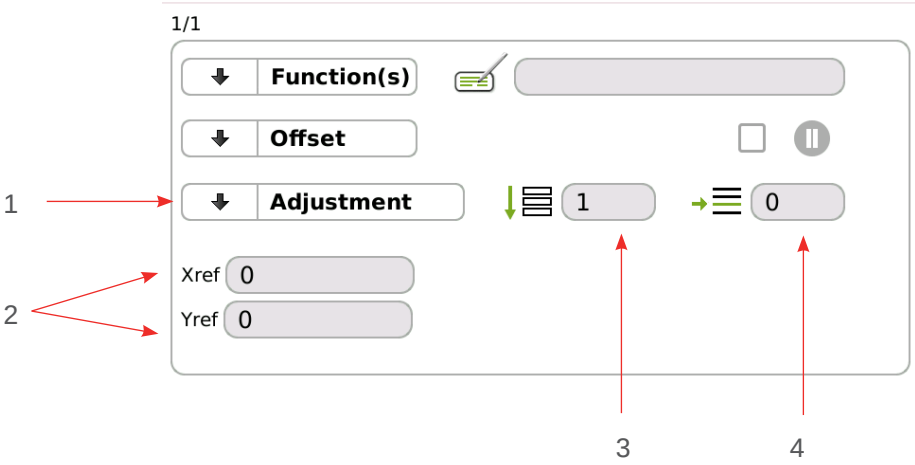
Number of block to reach (if the condition is not fulfilled):

- if the condition is not fulfilled: the program immediately starts marking the block indicated. You cannot indicate an earlier block number in the file (no going backwards).
- if the condition is fulfilled: the file marking continues normally.

9. Offset

Used to shift the coordinates of one or more blocks.

The screen below appears:



1. *Offset type*
2. *X-Y reference coordinate(s)*
3. *Number of blocks involved*
4. *Number of markings to execute*

Offset type: select the required input mode.

- adjustment: define the new X-Y coordinates using the arrow keys on the numeric keypad.
- entry: enter the new X-Y coordinates via the keyboard at the time of marking.
- fixed: two new data entry fields appear on the screen.

Enter the new X-Y coordinates in these fields.

Used to specify the offset based on variable(s) by using the "Var XY" function in the preceding block.

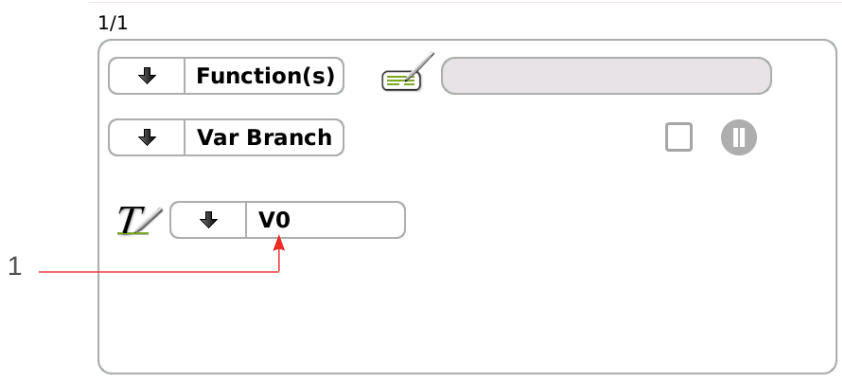
X-Y reference coordinate(s): Xr - Yr = coordinates of the point where the stylus will be positioned - The offset is calculated based on these coordinates.

Number of blocks involved: used to define the number of blocks involved in this function.

Number of markings to execute: used to define to how many markings this function applies.

10.Var Branch

Used to select a file based on the content of a variable. The screen below appears:



1. *Number of the variable*

Selection by name / Selection by ID: you can select the files by ID (number) or by name. Choose the type of selection.

If you select by ID, index the files to be used. See: Re-index file numbers

File variable(s): box ticked - held in memory in the file variables / box not ticked - held in memory in the machine variables

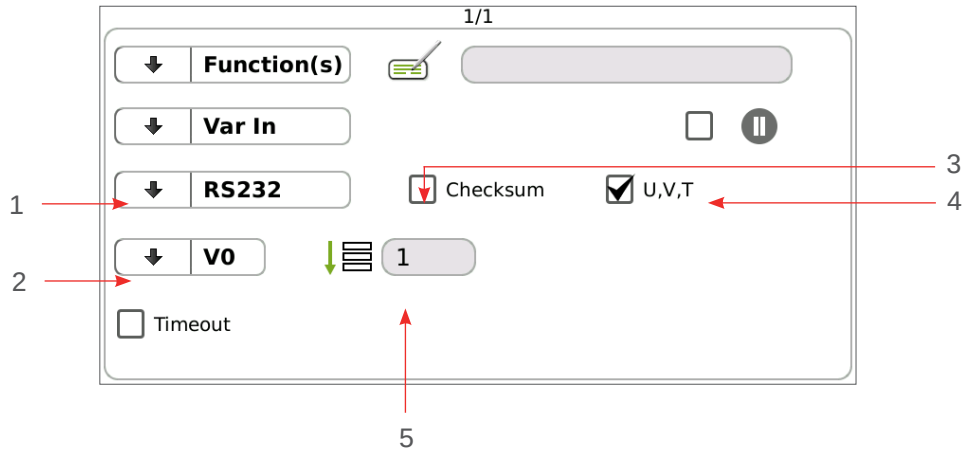
Number of the variable: variable from which to retrieve the file name or number

Functions

11.Var In

Allows reception in a variable of a character string via RS232 link or USB keyboard.

The screen below appears:



1. *Input device*
2. *Number of the variable in which is memorized the character string*
3. *Checksum*
4. *CCU response: activation/deactivation*
5. *Batch: number of markings to be carried out with this variable before proposing to re-program the variable*

Note: the "Raw data" box must be ticked in the "Communication" menu - "Serial management". See: Menu: Communication

Select the data input method (RS232, keyboard).

Select the number of the variable in which is memorized the character string received.

Choose the number of markings that have to be made before the reception of the following data:

- 1: data reception required at each marking.
- 0: data reception required once at the first marking (even if the file is to be marked several times).

During the marking of a "Var in" block, the machine emits an data acquisition request (U) on the RS232 communication and expects an answer from the connected peripheral.

The peripheral must answer by a series of bytes ending by <CR>.

The machine answers V<CR> if successful or T<CR> if failed.

If successful, the character string is stocked in the specified variable.

If failed, the machine waits for a new data transmission.

The data acquisition has succeeded when the checksum received is equal to the checksum calculated or when the checksum is not used.

The checksum is added at the end of the message. It is represented by 2 consecutive characters (0 to F, in hexadecimal mode).

The emitter calculates the checksum based on the useful data in the transmitted message.

The receiver also calculates the checksum based on the useful data transmitted, and compares this new checksum to the one received.

The checksum is calculated using an "exclusive Or" (XOR) between all the characters contained in the useful part of the message.

- Emission checksum = "character 1 emitted" XOR "character 2 emitted" XOR... "character n emitted"
- Receiving checksum = "character 1 received" XOR "character 2 received" XOR..."character n received"

Example

Given the message "ABCD":

Checksum calculation: 65 XOR 66 XOR 67 XOR 68

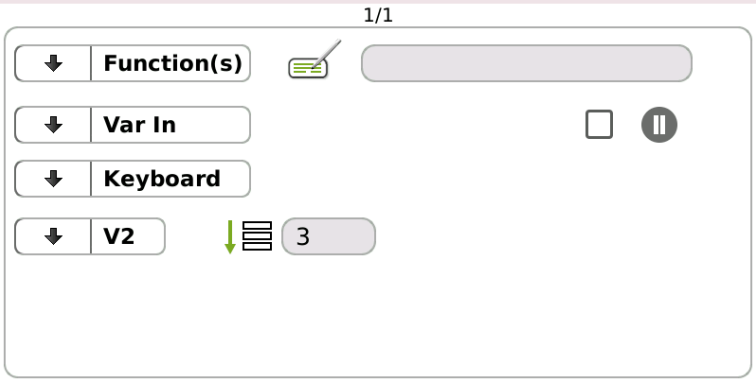
Calculation	Characters	Decimal	Binary	Result
	A	65	01000001	
XOR	B	66	01000010	
				00000011
XOR	C	67	01000011	
				01000000
XOR	D	68	01000100	
				00000100

The result of the message ABCD is: 00000100 in binary, or 04 in hexadecimal mode. The emitter sends the message ABCD04.

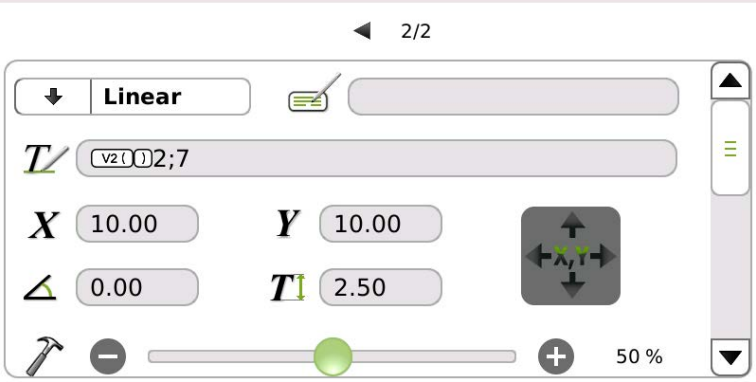
Functions

Var in: use in a marking file

Example: *1 block:*



2 block:



The text is saved in variable V2.

To mark the memorized content in the V2 variable, create a linear marking block containing the keyword V2. See: key words

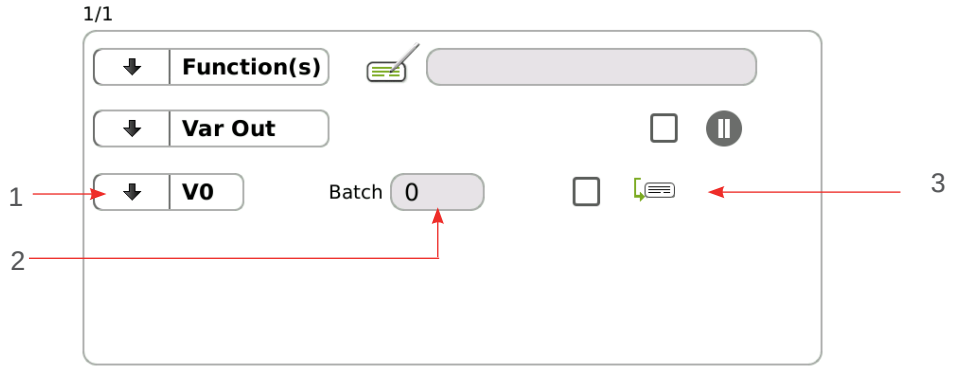
Only the character string included between characters 2 and 7 is marked. See: Splitting a variable

A request for data acquisition is necessary each time the file is marked because the batch is set at 1.

Functions

12.Var Out

Used to send a character string contained in a variable using a RS232 connection. The screen below appears:



1. *Number of the variable*
2. *Enter batch size*
3. *Activate / deactivate the carriage return (code 13) at the end of the string.*

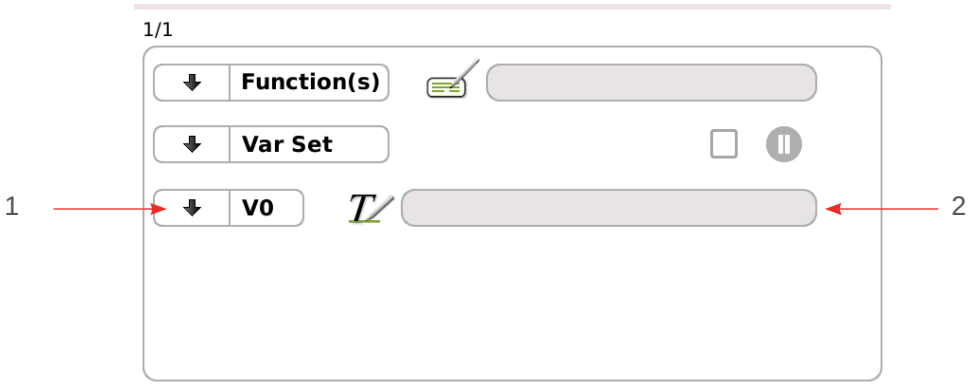
Select the number of the variable containing the character string to be sent.

Select the type of variable (file variable(s) / machine variable(s)).

Activate / deactivate the carriage return (code 13) at the end of the string: box ticked - This character is appended to the end of the character string.

13.Var Set

Used to memorize a character string in a variable. The screen below appears:

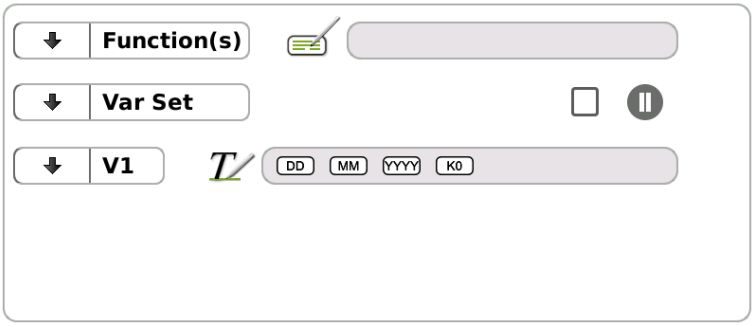


1. *V: number of the variable in which the "Text" field is saved, from V0 to V9*
2. *Entering text in a selected variable*

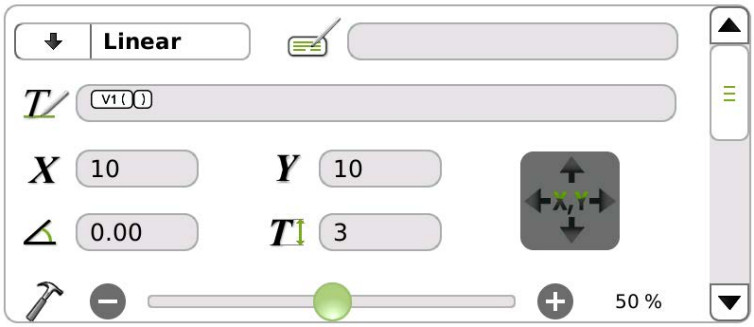
This field may contain set text, key words (date, hour...), the content of a counter, etc.

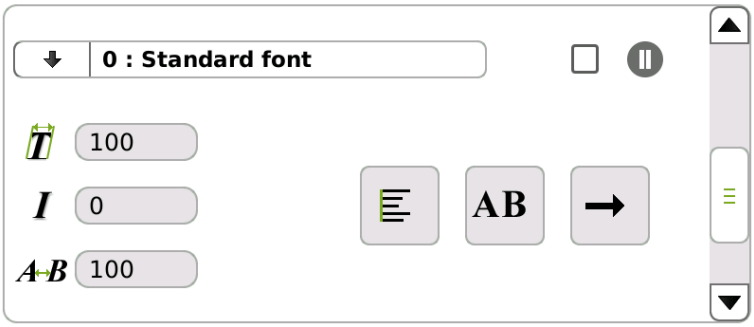
Functions

Example: *1 block:*



2 block:





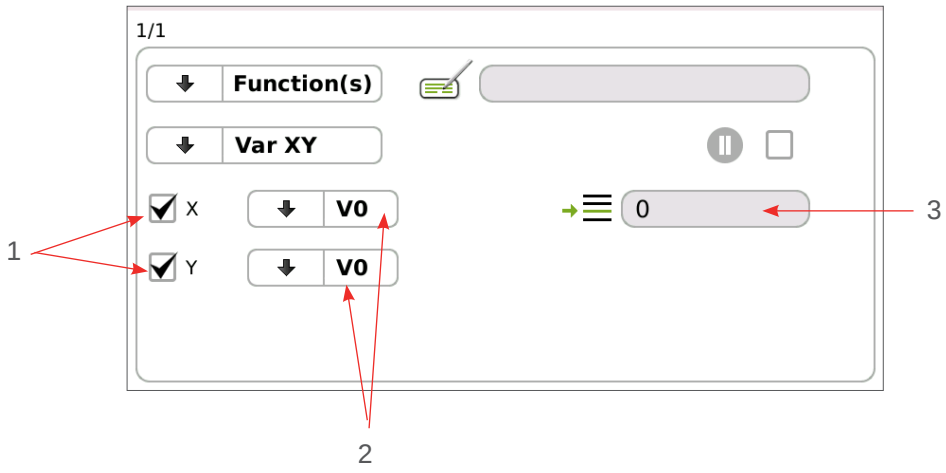
To mark the memorized content in the V1 variable, create a linear marking block containing the keyword V1.
See: key words - Marking obtained: Date 15 12 2013 001

Functions

14.Var XY

Used to assign the content of a variable to a coordinate for the subsequent block(s).

The screen below appears:



1. *Activate / deactivate the coordinates*
2. *Number of the variable*
3. *Number of blocks involved*

Activate / deactivate the coordinates: select the coordinate(s) to which to assign the content of a variable.

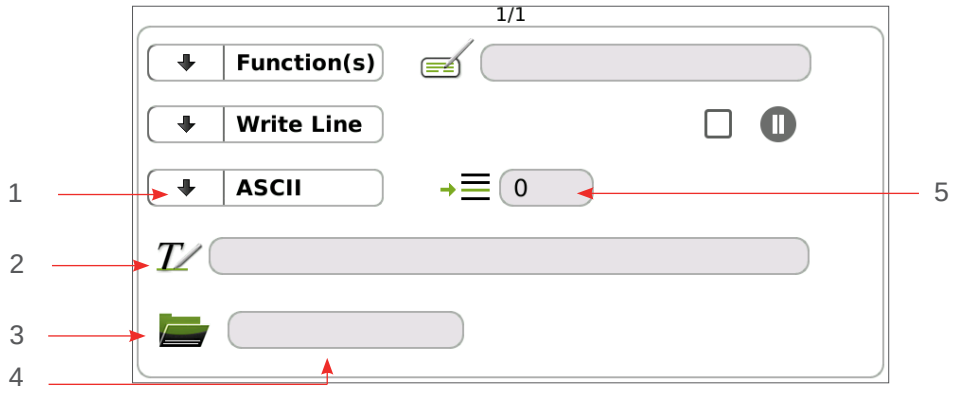
Number of the variable: number of the variable the content of which is assigned to a coordinate

Number of blocks involved: used to define the number of blocks involved in this function.

15.Write Line

Used to write a line of text to a log file.

The screen below appears:



1. *File format*
2. *Text to write to the file*
3. *Open a file.*
4. *File name*
5. *Maximum number of lines in the file*

Text:

Select an existing file or name the file. This field may contain set text, key words (date, hour...), the content of a counter, etc.

Select the file format:

- ASCII: characters between 32 and 127
- UTF-8
- HEADER + UTF-8: with UTF-8 header in 3 characters

Select the maximum number of lines in the file. When 0 is selected, the new line is added at the end without restriction.

When the indicated number of lines is reached, the oldest line is deleted.

Content of the log file:

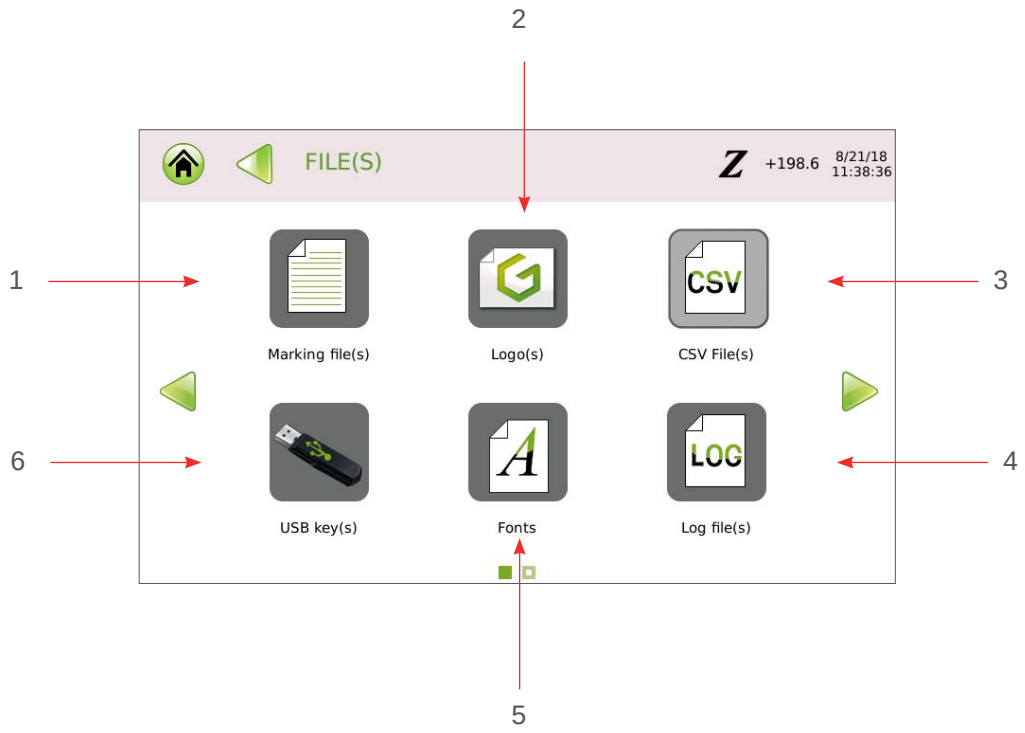
- date
- variable contents

File name: in this example, a file is created each week (key words: YY WW).

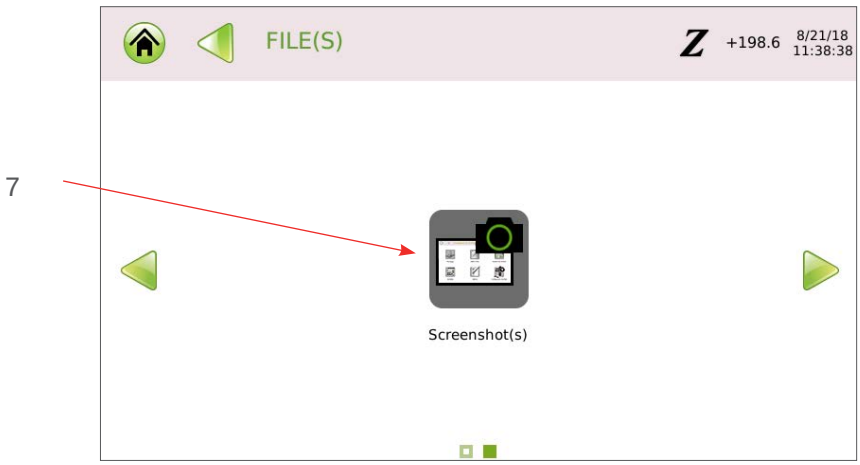
H. Menu: File management

Select this menu from the main menu, represented by the icon: 

Used to manage the machine's various file types. The screen below appears:



1. *Menu: Marking file(s)*
2. *Menu: Logo(s)*
3. *Menu:.csv File(s) / Log file(s)*
4. *Menu: Log file*
5. *Menu: Fonts*
6. *Menu: USB key(s)*



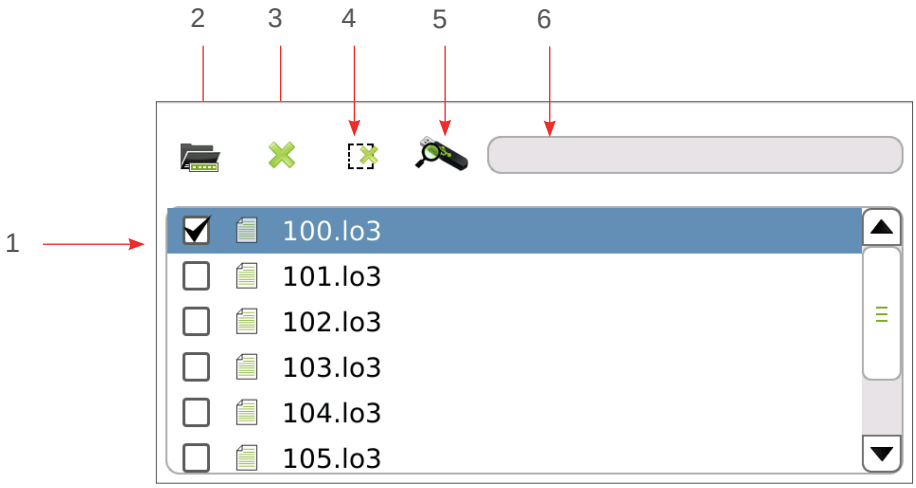
7. *Menu: Screenshot(s)*

Menu: File management

1. File management (marking file(s), logo(s), csv, fonts, screenshot(s))

Select the desired file type.

Example: logos - The screen below appears:



1. *List of files stored on the machine*
2. *Rename file(s)*
3. *Delete file(s)*
4. *Select all / Unselect all*
5. *Export file(s)*
6. *Quick search*

	**The following explanations are valid for all file types.**

To select a file or a folder, press its name.

Quick search: to find a file or a folder more quickly, enter its name or the first few letters in the "Search" field.

When a file is selected, it is checked.

Once the required file or folder has been selected, various options are available via the icons at the top of the screen.

■ Rename file(s)

Select a file or folder. Press the "Rename" symbol.

Rename the file as required (touch keypad).

Menu: File management

■ Delete file(s)

Select a file or folder. Press the "Delete" symbol.

■ Select all / Unselect all

Press the "Select all" or "Unselect all" symbol.

■ Export file(s) (USB Key)

It is possible to import and export certain files via USB key (tml - lo3 - po3 - csv - txt - png file system only):

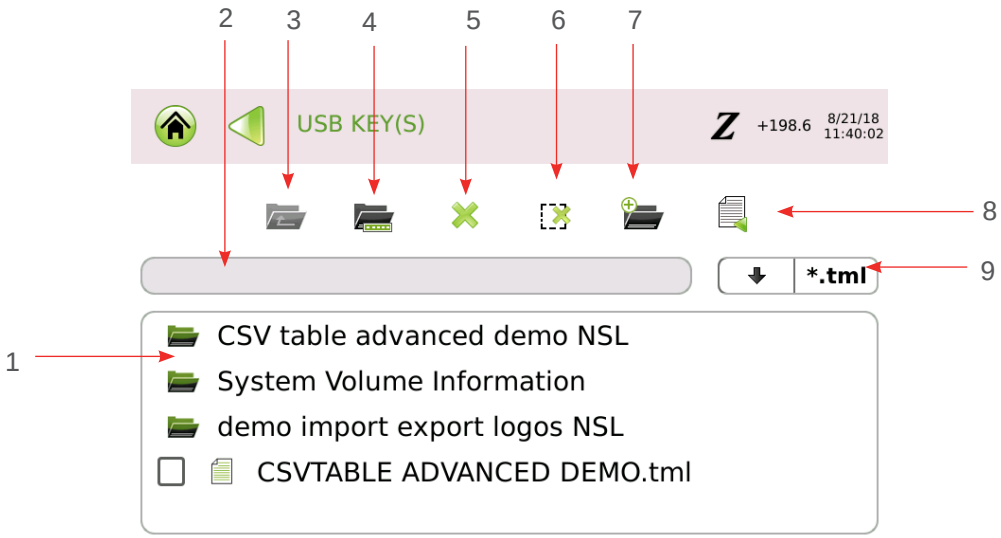
Insert a USB key into the USB port for download.

Select a file or folder. Press the "Export" symbol.

Import file(s): See below.

2. USB Key: Data importation

Used to import a file, from a PC or another marking machine for example, by downloading it from a USB key. The screen below appears:



1. *List of files on USB key*
2. *Quick search*
3. *Back to parent folder*
4. *Rename file(s)*
5. *Delete file(s)*
6. *Select all / Unselect all*
7. *Add folder*
8. *Import file(s)*
9. *File type*

Menu: File management

To select a file or a folder, press its name.

When a file is selected, it is checked. 

Quick search: to find a file or a folder more quickly, enter its name or the first few letters in the "Search" field.

To find a specific file format: select the file format:

- *.*: all formats
- *.tml: Marking file
- *.lo3, *.plt: logos
- *.po3: Character font
- *.csv:.csv file
- *.txt: Log file
-

To go back to parent folder if required: select the corresponding icon.

Once the required file or folder has been selected, various options are available via the icons at the top of the screen.

■ Rename file(s)

Select a file or folder. Press the "Rename" symbol. Rename the file as required (touch keypad).

■ Delete file(s)

Select a file or folder. Press the "Delete" symbol.

■ Select all / Unselect all

Press the "Select all" or "Unselect all" symbol.

■ Add folder

Select a directory. Press the "Add folder" symbol. An empty folder is created. Rename the file as required (touch keypad).

■ Import file(s)

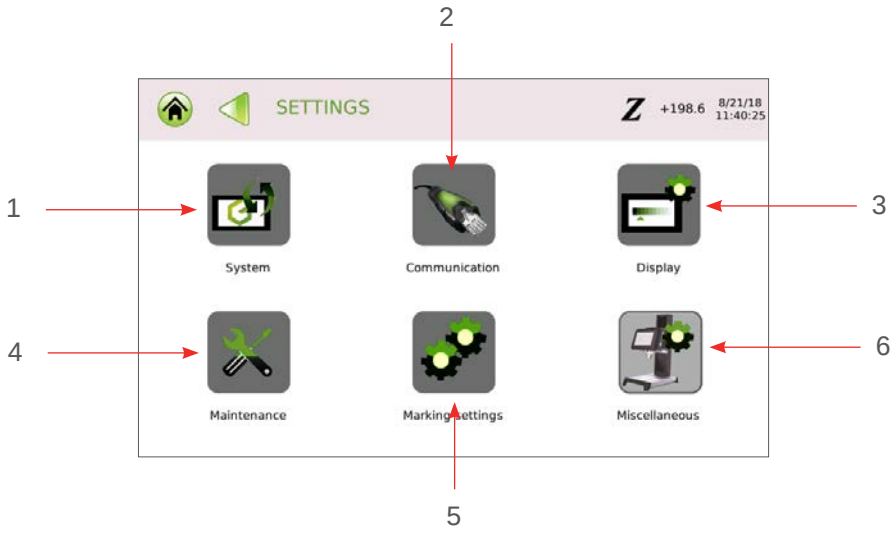
It is possible to import and export certain files via USB key (tml - lo3 - po3 - csv - txt - png file system only): select a file or folder. Press the "Import" symbol.

Export file(s): See: file management

I. Menu: Settings

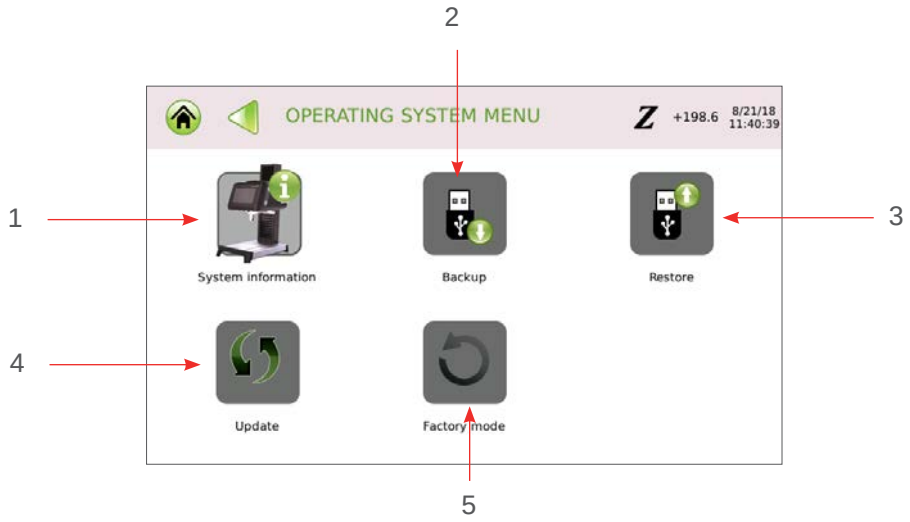
Select this menu from the main menu, represented by the icon: 

The screen below appears:



1. *Menu: System*
2. *Menu: Communication*
3. *Menu: Display*
4. *Menu: Maintenance*
5. *Menu: Marking settings*
6. *Menu: Miscellaneous*

1. Menu: System

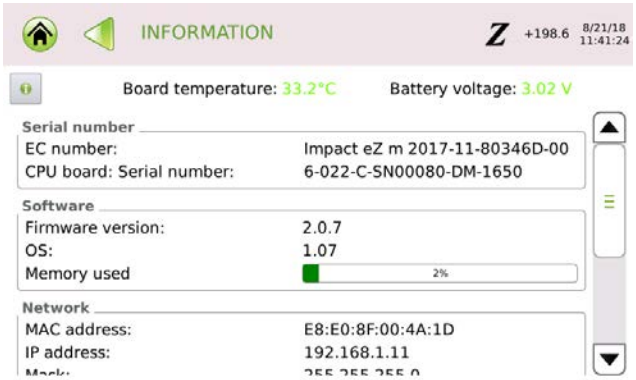


1. *Menu: System information*
2. *Menu: Backup*
3. *Menu: Restore*
4. *Menu: Update*
5. *Menu: Factory mode*

Menu: Settings

Menu: System information

This menu contains technical information that can be communicated to the distributor or the technical support in case of problem.



Menu: Backup

Menu: Restore

Backup restoration

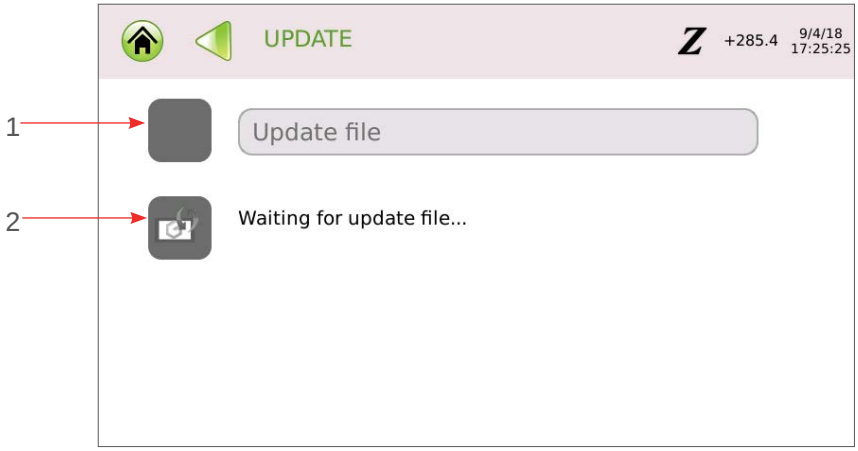
Menu: Settings

■ Menu: Update

Used to update the program of the machine.

	**Before updating, make a backup copy of the files memorized in the machine (files, logos, fonts...).**

Select the corresponding icon. The screen below appears:

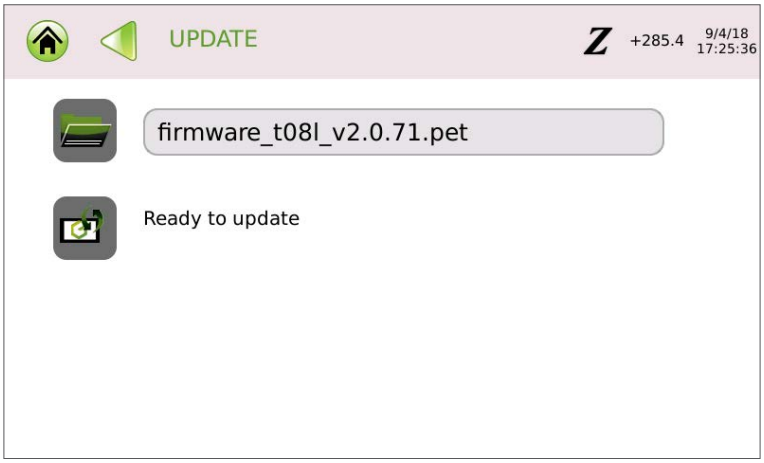


1. *Selecting the update file*
2. *Launching the update*

Insert a USB key into the USB port for download.

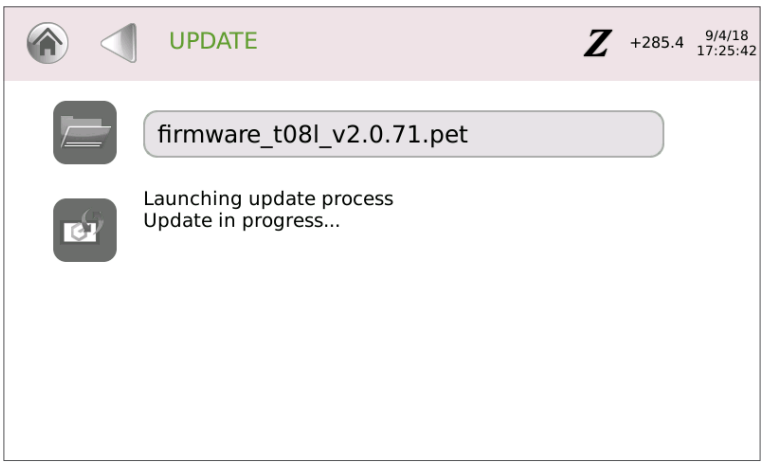
Press the update file selection icon. Select the file (.pet format).

The screen below appears:



Menu: Settings

Press the update launch icon.

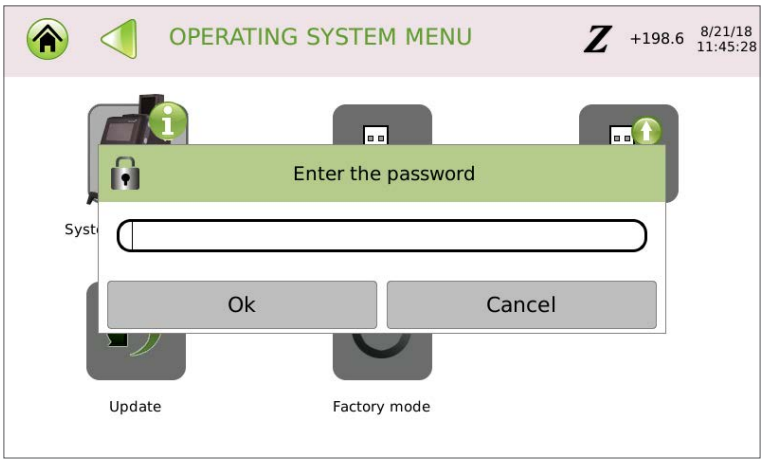


End of the update: switch off the machine. Remove the key. Switch on the machine.

■ Menu: Factory mode

Used to delete the saved files all at once: marking files, fonts, logos...

Select the corresponding icon. The screen below appears:



Yes: deleting all the files (reset)

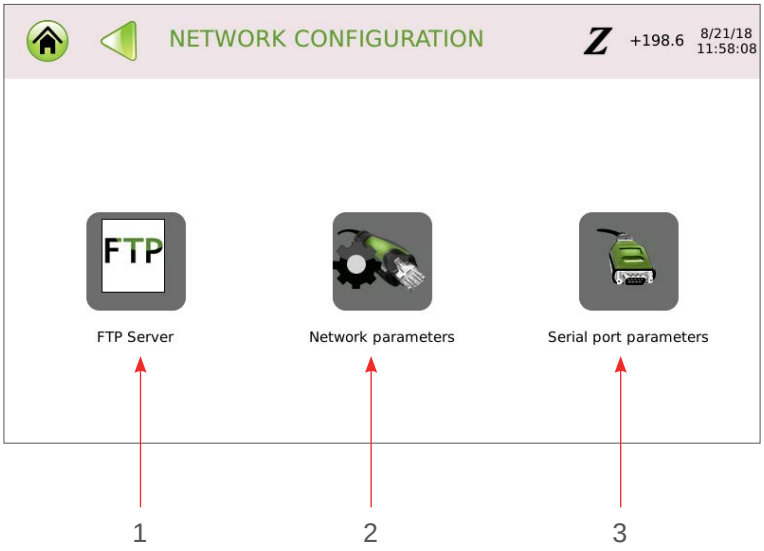
No: return to previous screen

Menu: Settings

2. Menu: Communication

Select this menu from the main menu, represented by the icon: 

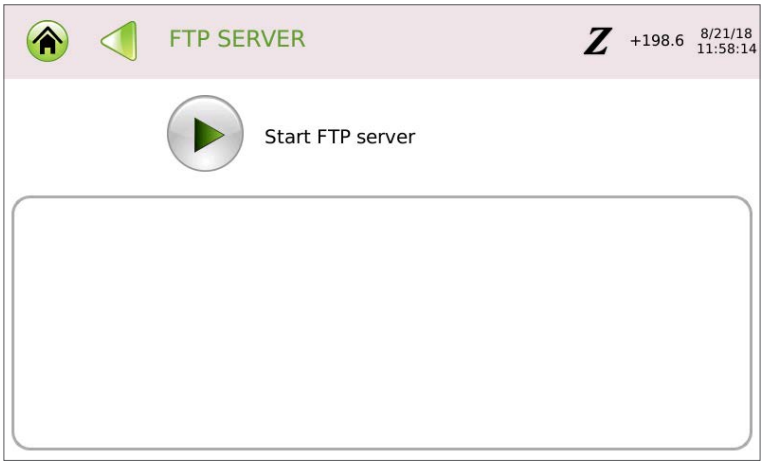
The screen below appears:



1. *Menu: FTP Server*
2. *Menu: Network parameters*
3. *Menu: Serial port parameters*

■ Menu: FTP Server

When the FTP server has been enabled, it is possible to import and export files directly on the machine using an FTP client on PC. The screen below appears:

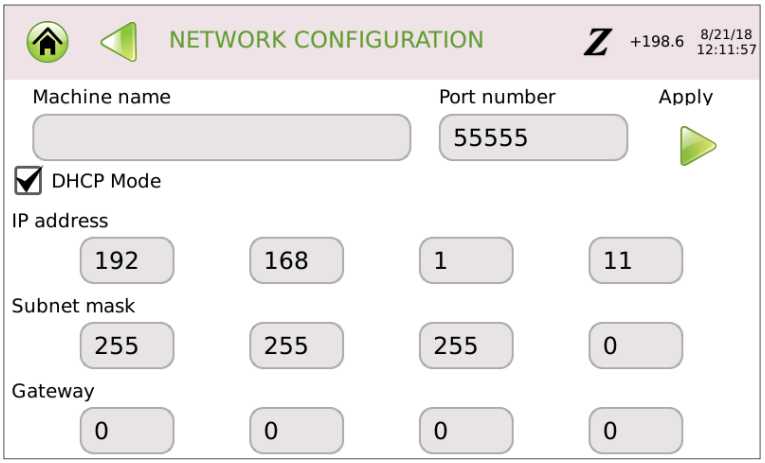


Set the FTP server parameters (See: Menu: Network parameters). To communicate with FTP server, start the server. To stop communication with the server: select the corresponding icon.

Menu: Settings

■ Menu: Network parameters

Allows the machine's network connection to be set up. The screen below appears:

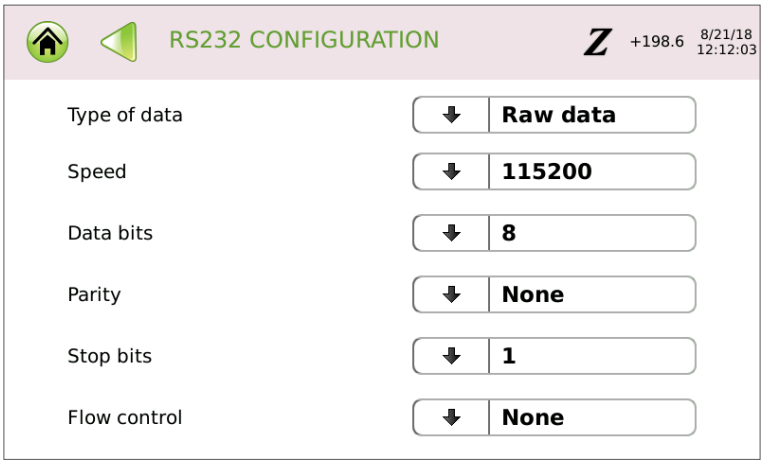


When DHCP mode is selected, an IP address and a subnet mask are automatically assigned.

To confirm, click on "Apply".

■ Menu: Serial port parameters

The screen below appears:



This tab is used for port configuration.

Select the required configuration. Start over for each area if necessary.

- **Deactivate**

Used for port deactivation.

- **Raw data**

Used to send/receive unprocessed text without the protocol in order to communicate with basic equipment (i.e: bar code reader).

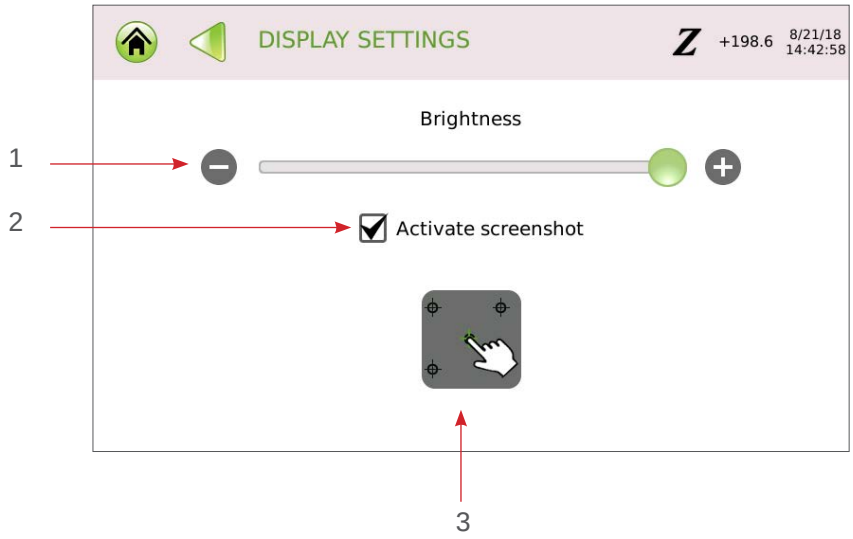
- **Command instructions**

Allows the serial port to be used to control the machine via command instructions.

Consult the UC500 command instructions manual.

3. Menu: Display

The screen below appears:



1. *Brightness*
2. *Activate screenshot*
3. *Calibration*

Brightness: use the cursor to select the required value.

Activate screenshot

Box ticked: it is possible to take screenshots for export to USB key. See: file management

To take a screenshot, press on the date at right top of screen. A red background appears briefly.

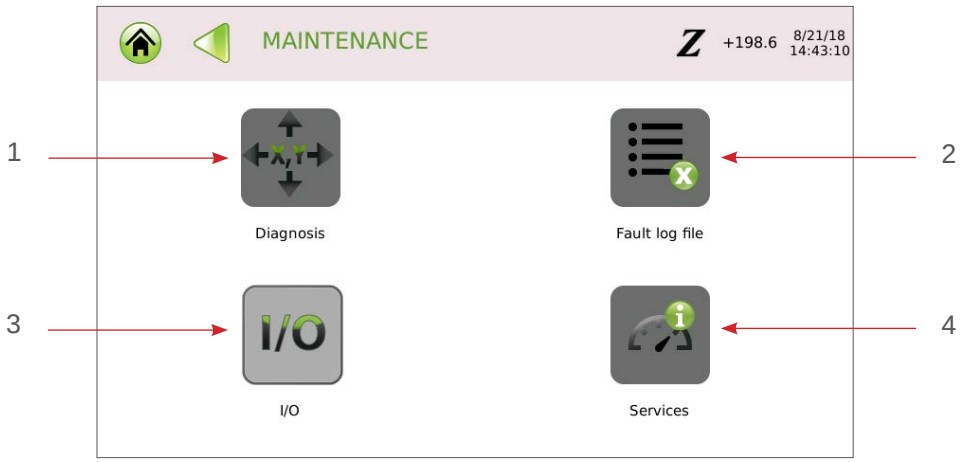
Calibration: allows adjustment of the colorimetry of the screen.

3. **Activate screen calibration.**
4. **Restart the machine using the start-up instructions. The programme launches automatically.**
5. **Press on the crosses which appear on-screen as precisely as possible.**

6. **The programme launches automatically.**
7. **The machine is ready for operation.**

It is recommended that open applications are closed first.

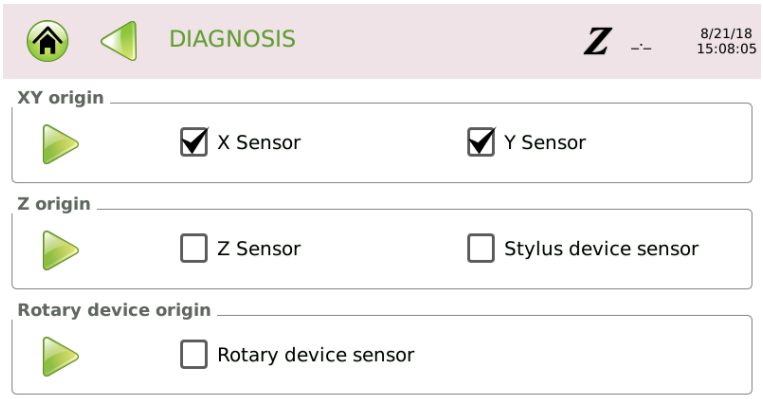
4. Menu: Maintenance



1. *Menu: Diagnosis*
2. *Menu: Fault log file*
3. *Menu: Inputs / Outputs (I/O) (depending on version)*
4. *Menu: Services*

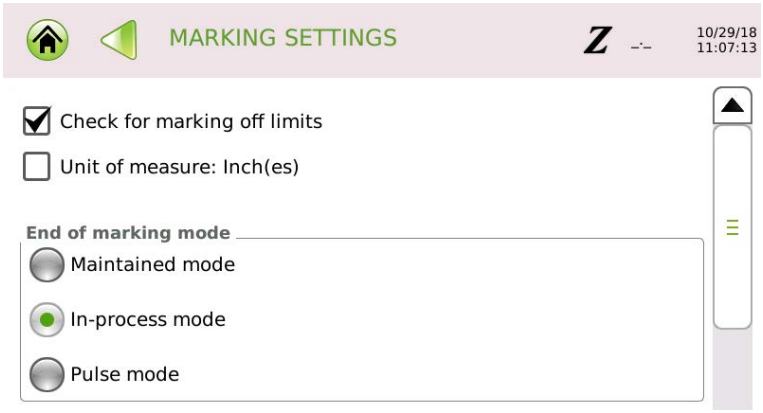
■ Menu: Diagnosis

Allows the axis sensors to be tested.



Menu: Settings

5. Menu: Marking settings



Used to:

- select the "Off-limits control" option.
- convert the units into inches.

- **Off-limits control**

This option is activated by default (Impact eZ)

If the marking is off-limits, the program sends an error message.

The calculation time is extended and the total cycle time is longer.

When the off-limits control is deactivated, the stylus may run into the mechanical stop if the text is too long or if the coordinates are incorrect. However, calculation of the marking coordinates is faster, therefore the total cycle time is shorter.

	**Use the off-limits control when preparing or updating a marking file, then deactivate this option.**

- **Conversion of the units into inches**

The marking program works in both millimeters and inches. All values pertaining to length are expressed in the chosen unit. To change from millimeters to inches, tick the corresponding box.

Changing from mm to inches automatically converts all values contained in the marking files.

Menu: Settings

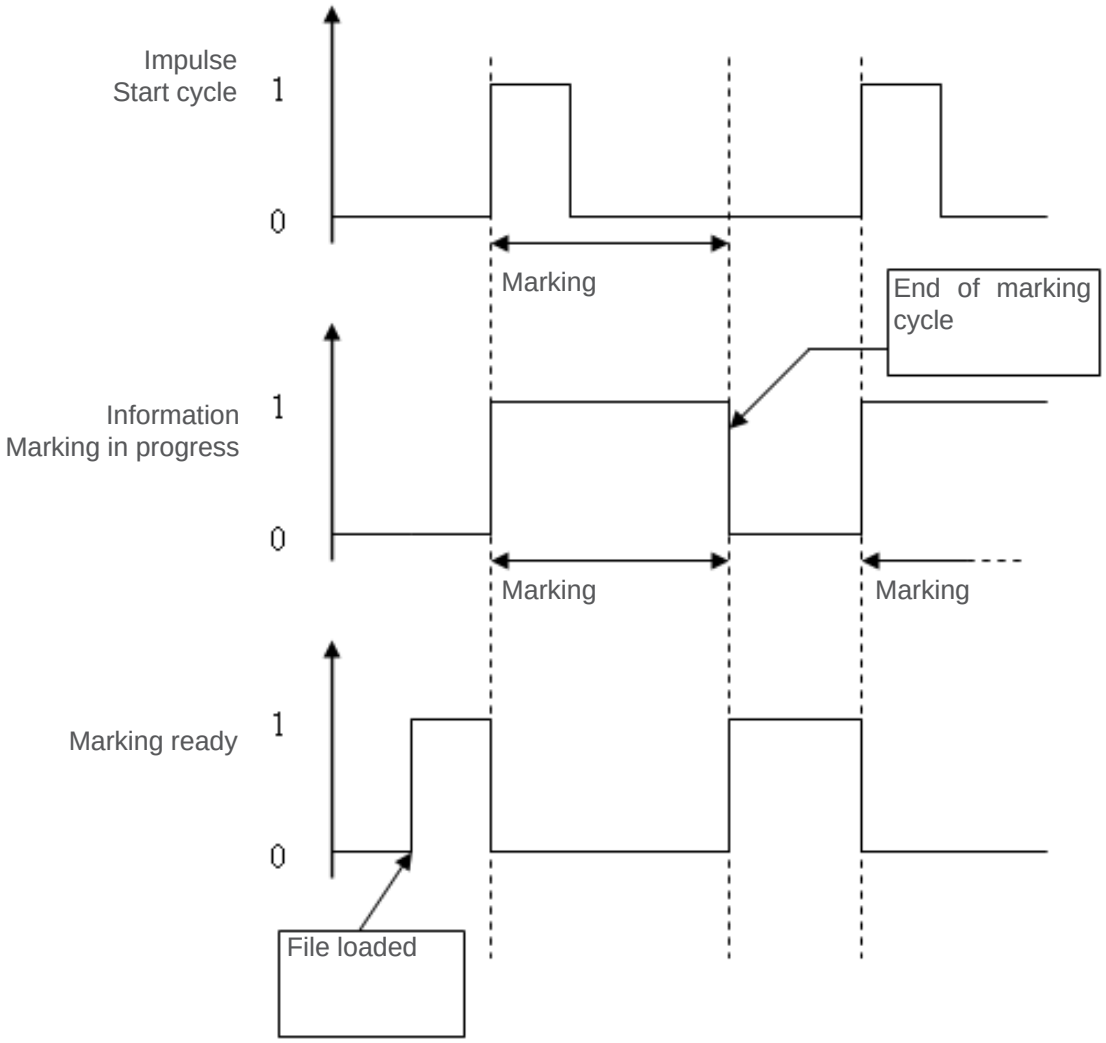
- **End marking type**

Used to select the communication signals during marking.

3 modes are available:

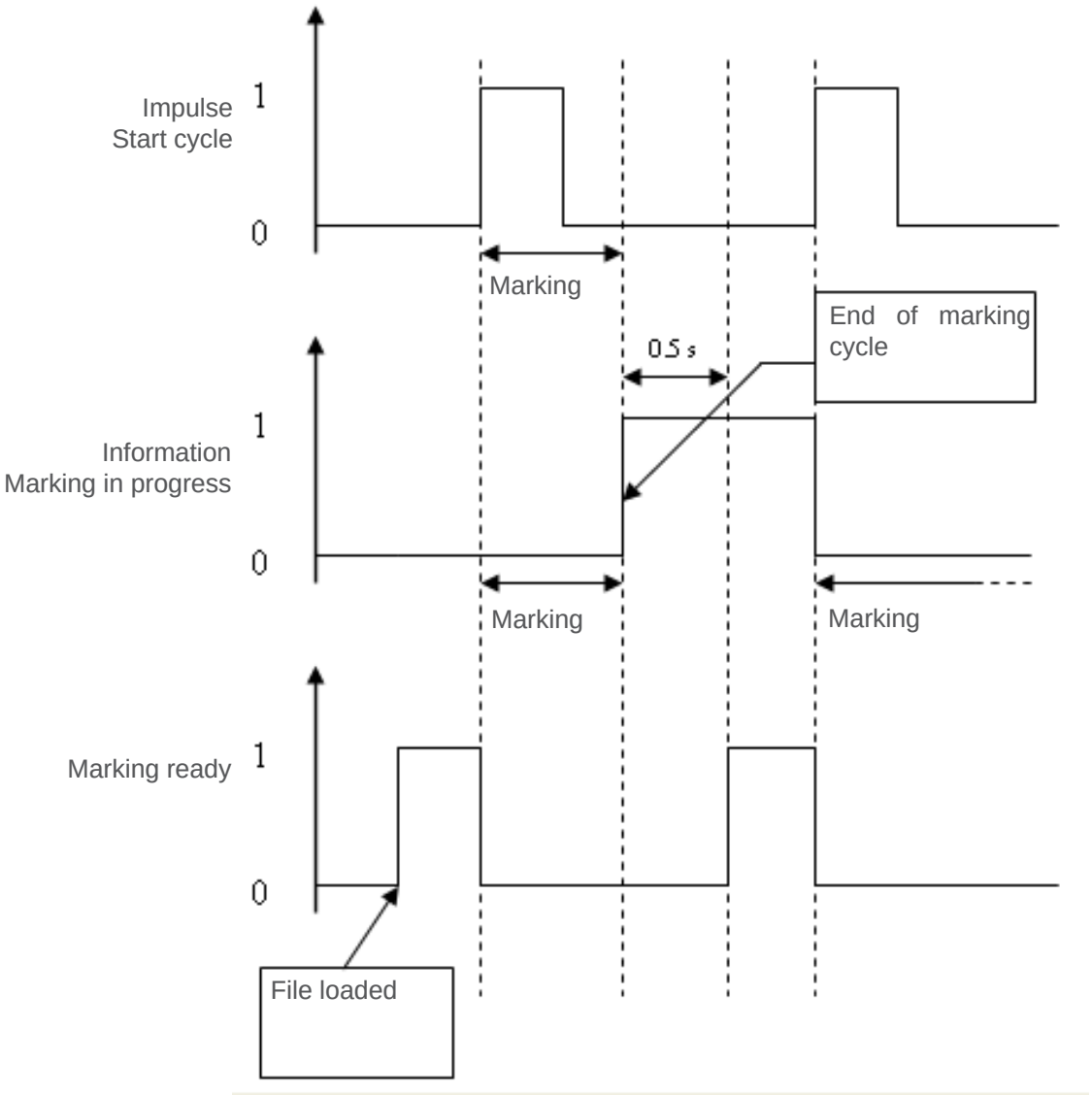
- In-process mode
- Maintained mode
- Pulse mode

In-process mode:



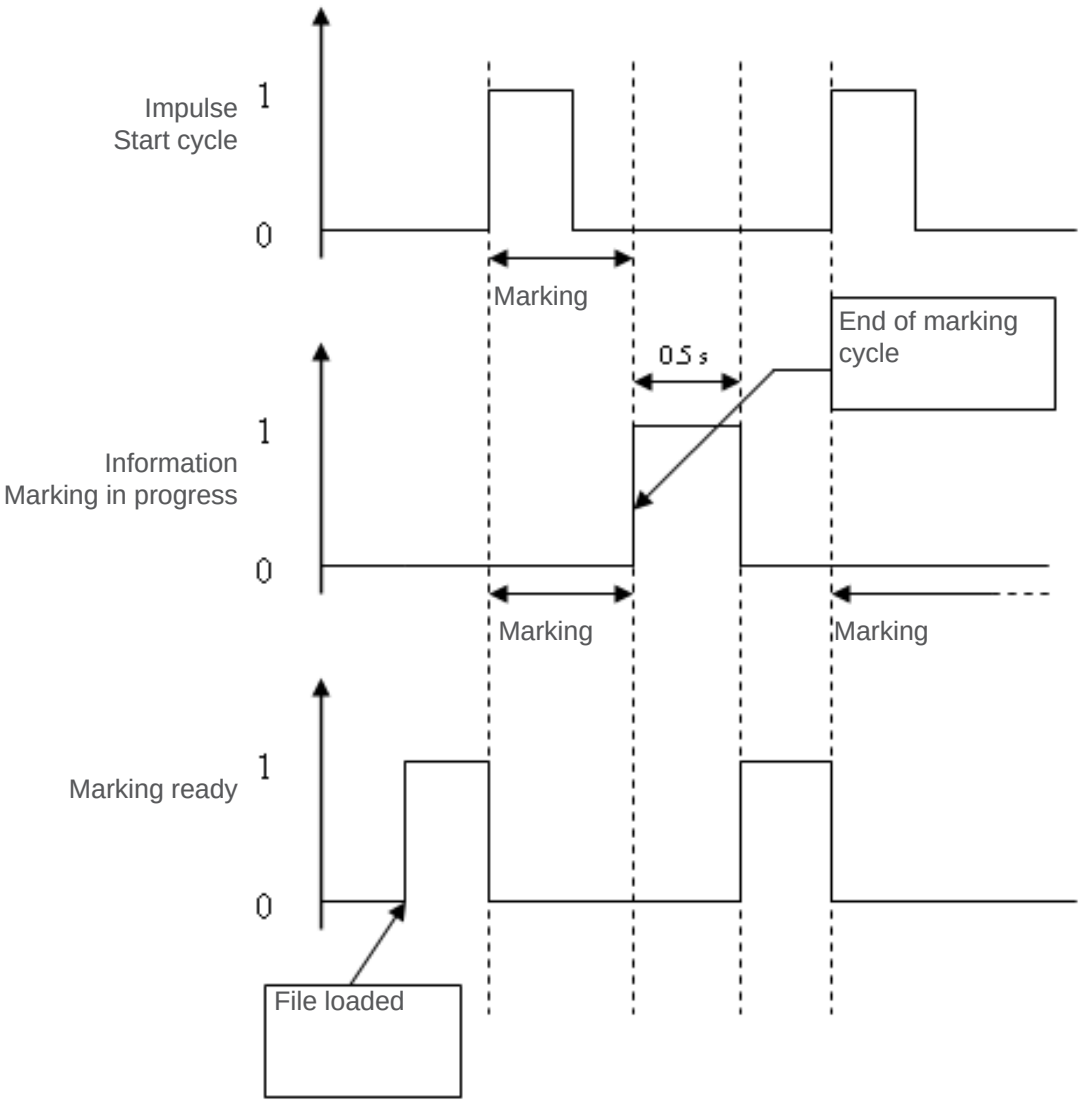
Menu: Settings

Maintained mode



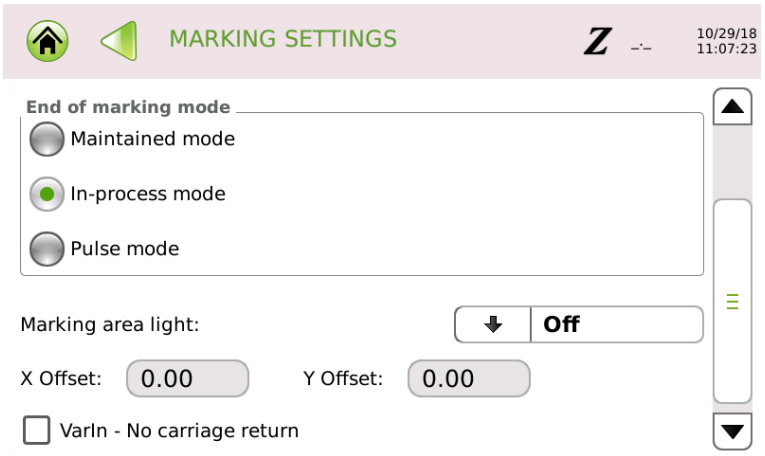
Menu: Settings

Pulse mode



Menu: Settings

To enter other information, use the scroll bar.



- **Marking area lighting**

Switches the marking field lighting on or off.

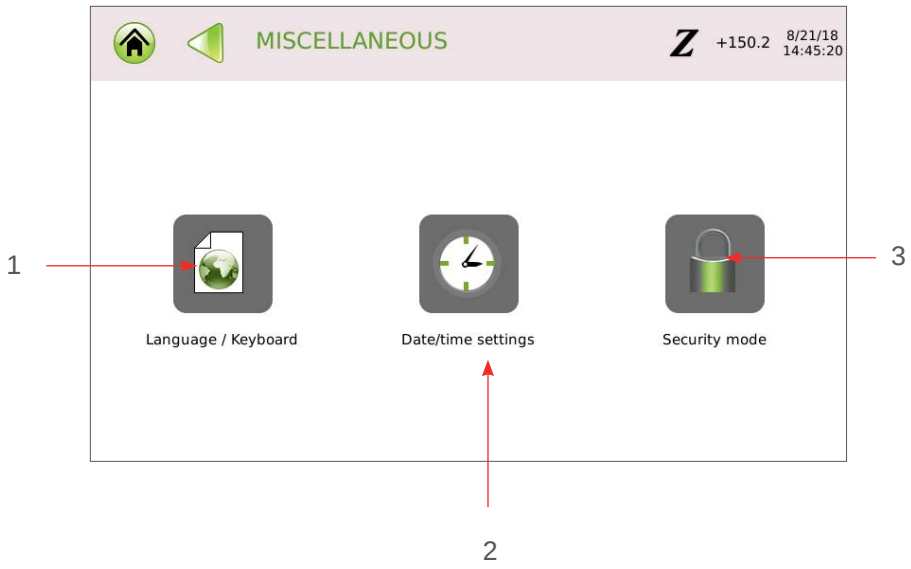
- **Offset value (X-Y)**

Allows a value to be input in order to compensate for an offset (example: Laser pointer / Stylus)

- **VarIn carriage return**

Activate / deactivate the carriage return (code 13) at the end of the string.

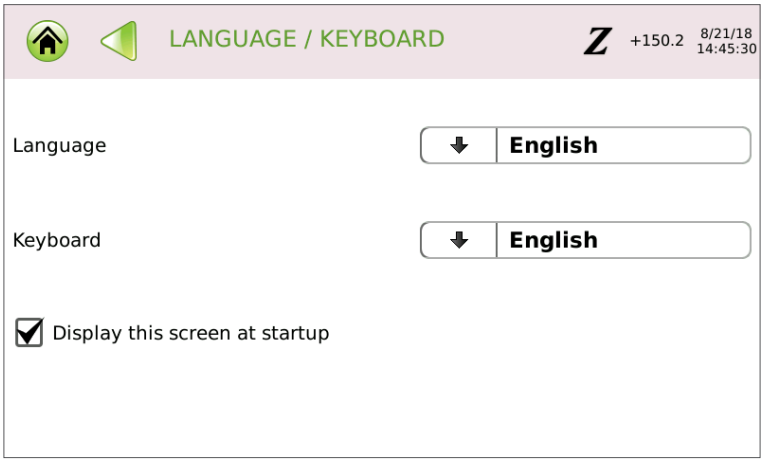
6. Menu: Miscellaneous



1. *Menu: Language / keyboard*
2. *Menu: Date/time settings*
3. *Menu: Security mode*

Menu: Settings

■ Menu: Language / keyboard



Used to translate the program in different languages.

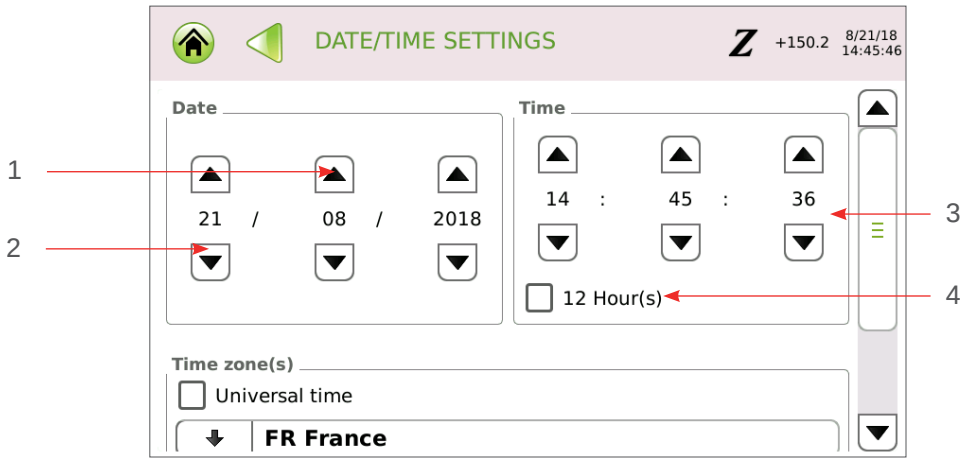
The language of the program and the language of the keyboard are chosen separately.

Select the option required.

The program adapts the keys of the keyboard to the keyboard language selected (touch keypad).

■ Menu: Date/time settings

Used to set the machine's internal clock. The screen below appears:



1. *Modifying the current month*
2. *Number of the day in the month (from 01 to 31)*
3. *Time modification field*
4. *Viewing time in 12h format*

Menu: Settings

To adjust the values, use the Up-Down arrows.

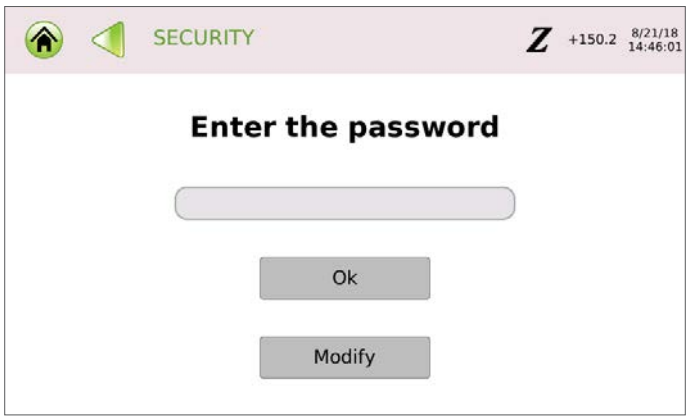
Viewing time in 12h format: box ticked: the time displayed at the top of the screen is in 12-hour format (am-pm).

■ Menu: Security mode

Used to limit acces to certain functions in the program.

Switching from "Operator" mode to "Supervisor" mode is protected by a password.

This password can only be changed under the "Supervisor" operating mode.



J. Menu: Variables

Select this menu from the main menu, represented by the icon: 

The screen below appears:

1. *Menu: Counters*
2. *Menu: Day code(s)*
3. *Menu: Variables*
4. *Menu: Shift(s)*

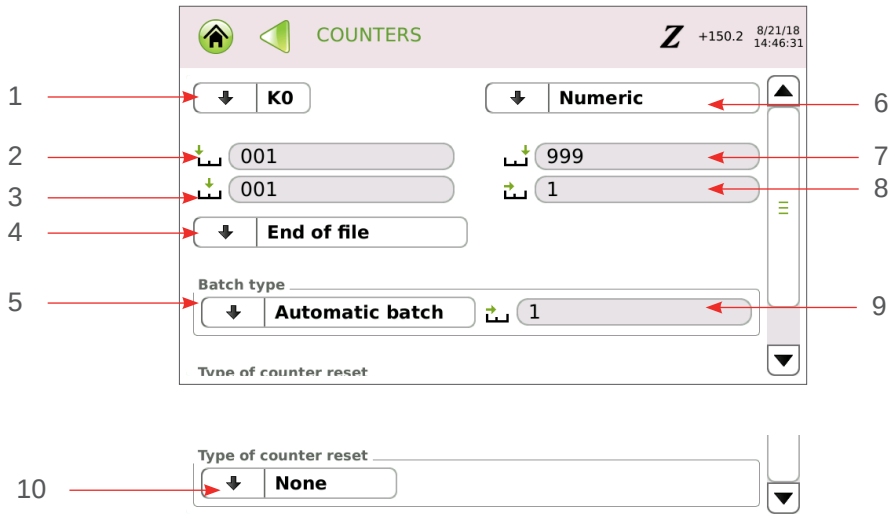
System variables are common to all marking files.

Menu: Variables

1. Menu: Counters

Used to define increments/decrements for a serial number. The data is in numeric, alphabetic, alphanumeric or hexadecimal mode. 10 independent counters are available. Each counter has an 8 digit code.

Identification key words go from K0 to K9. The screen below appears:



1. *Counter number*
2. *Indicates start value of counter*
3. *Indicates the counter value during marking*
4. *Incrementation of the counter's value at the end of the file (drop down text menu)*
5. *Batch type*
6. *Counter type*
7. *Indicates end value of counter*
8. *Indicates the incrementation value*
9. *Indicates the batch number*
10. *Type of counter reset*

Select the desired counter (K0-K9).

Select the type of counter required.

Select the start, current and end values, and the increment (touch keypad).

The number of characters used for the start value also determines the minimum number of characters that will be marked.

Example:

- Start value: 1 => Increment / decrement: 1, 2, 3,...999
- Start value: 001 => Increment / decrement: 001, 002, 003,...999

Note

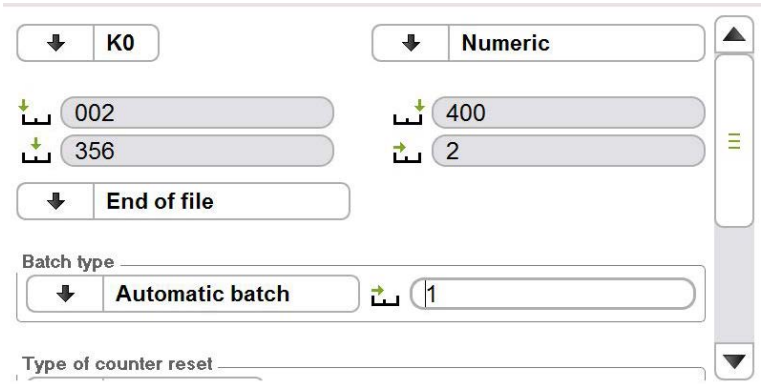
Decrement function: the decrement function is activated when an end value lower than the start value is entered. In this case, the increment value is negative.

Menu: Variables

Incrementation of the counter's value at the end of the block / Incrementation of the counter's value at the end of the file: select one box or the other.

Setting the batch number: used to determine the number of parts marked with the same number. Select the number of parts to be marked with the same number.

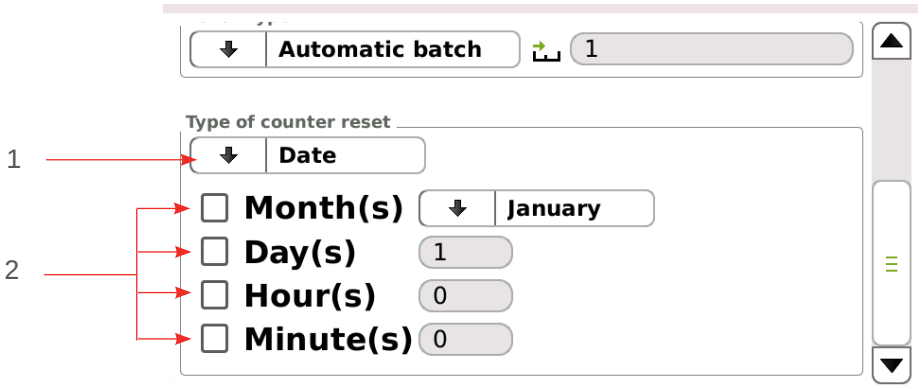
Example:



In this situation:

- Counter type: numeric
- Start value: 002
- Next number to be marked: 356
- End value: 400
- Increment / decrement: 2
- Incrementation of the counter's value at the end of the file
- Number of parts to be marked with the same counter value: 1

To enter other information, use the scroll bar. The screen below appears: *Setting of the counter's reset*



1. *Select the reset type.*
2. *Choice of reset date*

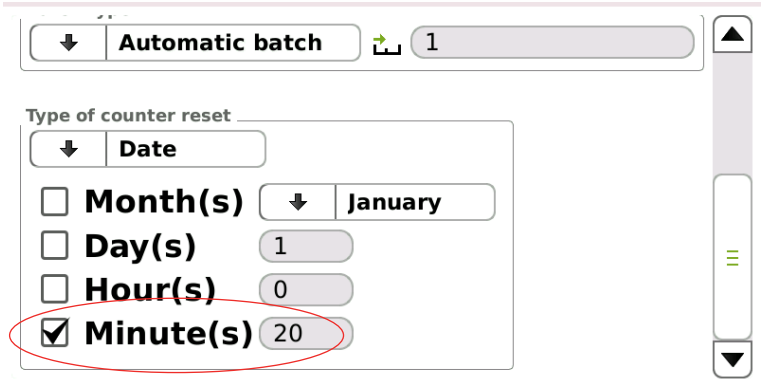
Menu: Variables

Reset on a certain date

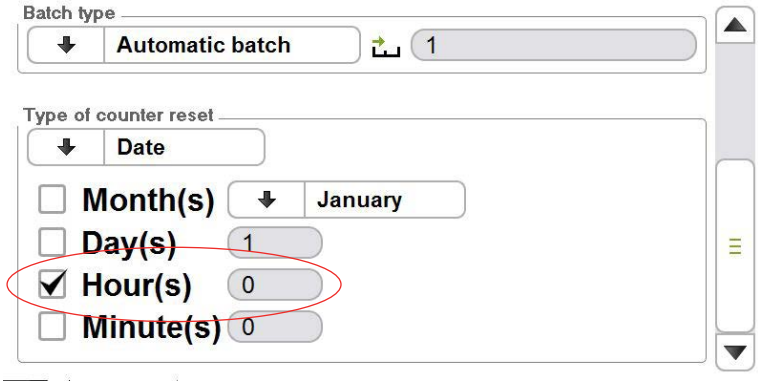
Used to define a time or a date at which the counters must return to their initial value. Resetting a counter to zero will impact all marking files.

Select the desired boxes. Go to the corresponding areas to choose the reset date. Only the ticked boxes are taken into account.

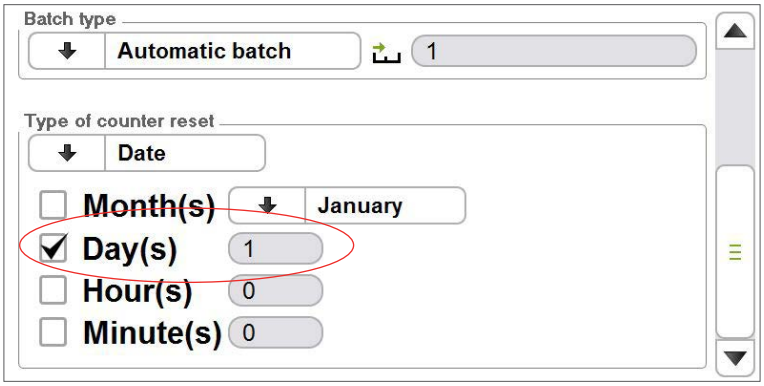
Example 1: Reset every hour at 20 (00h20, 01h20, 2h20, etc...)



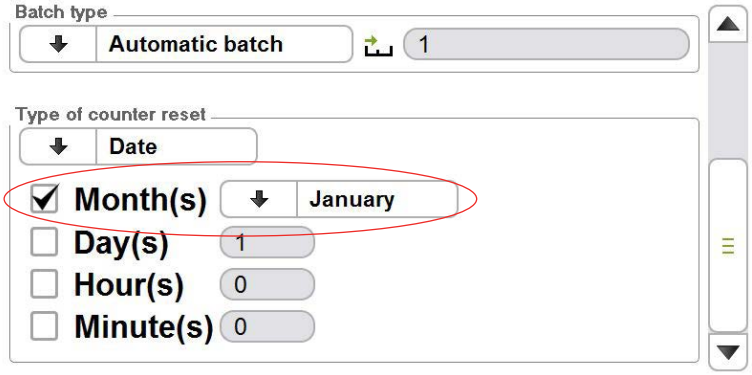
Example 2: Reset every day at 00:00



Example 3: Reset on the 1st of each month



Example 4: Reset at 00:00 on January 1st (once a year)

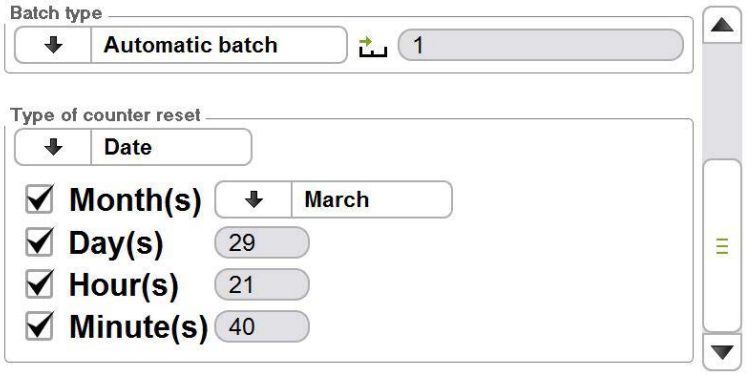


Note

If the hours and minutes fields are not filled in, the default value is 0. The value of the seconds is always 0.

To obtain a reset once a year at a predefined date and time, fill in all the fields.

Example: Reset every year on March 29th at 21h40:



Reset with each change of shift

If this type of reset is selected, the counter returns to its initial value with each change of shift.

See: Configuring shifts

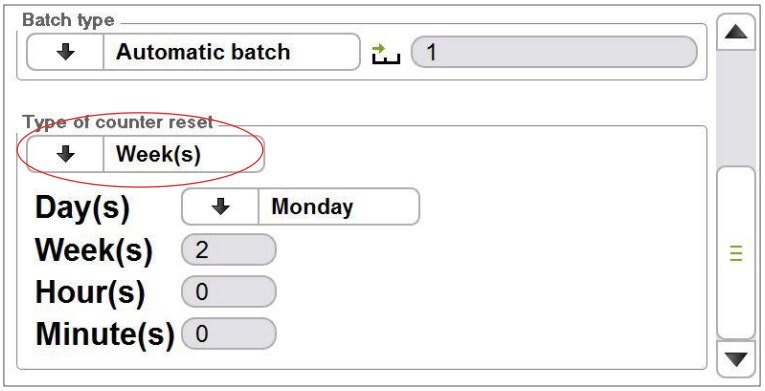
Reset each time the week changes

You can reset all the counters to zero every x weeks, on a specified day and at a specified time. Resetting a counter to zero will impact all marking files.

Select a day of the week. Go to the corresponding areas to choose the reset date.

Example: Reset every 2 weeks, on Monday at 00:00

Menu: Variables

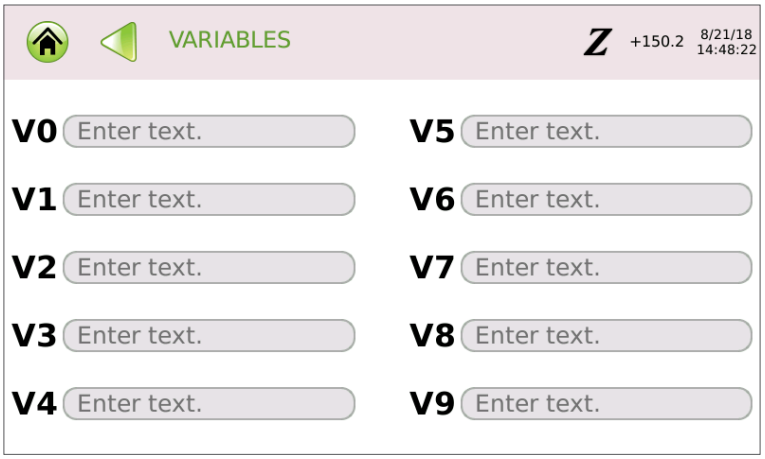


2. Menu: Variables

Used to mark repetitive texts common to several marking files by indicating the variable number in which the text is contained.

Variables are memory blocks (10 in all) of text containing up to 255 characters. They are common to all marking files and are saved in the CCU memory. They are identified by the key words V0 to V9.

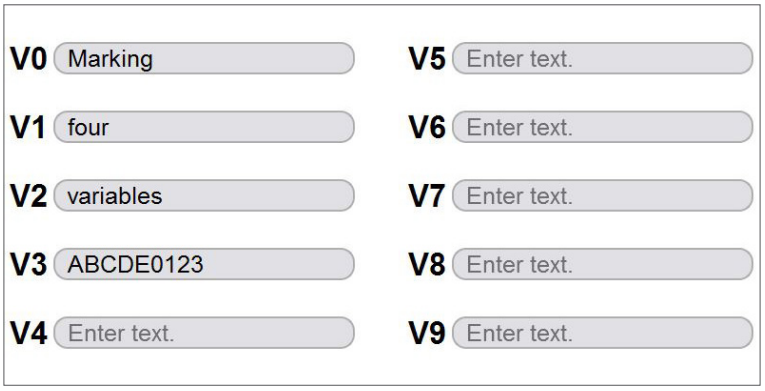
The screen below appears:



The first 10 fields are displayed. Select the desired variable. To enter other information, use the scroll bar.

Menu: Variables

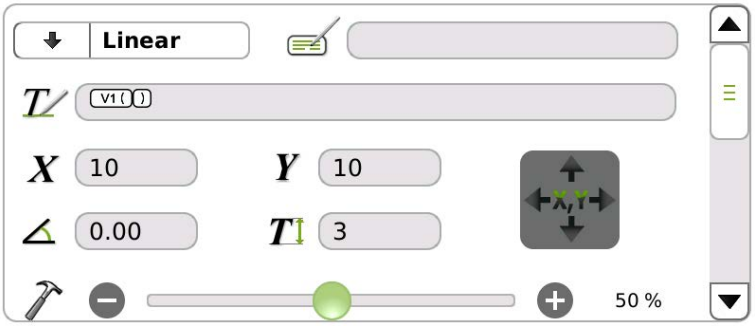
Example:



Code entry fields (maximum: 255 characters)

■ Programming within a marking file

To insert a key word and its number: See: Text to be marked

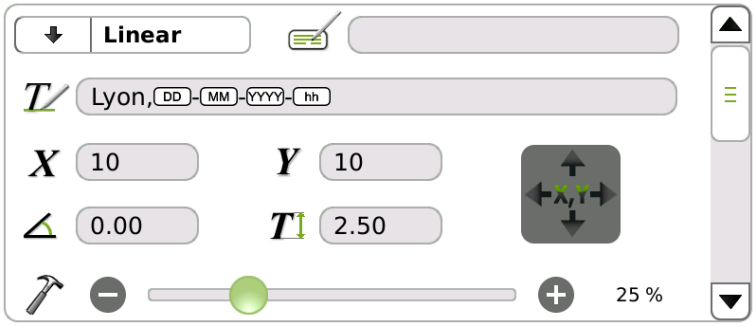


The marking obtained at coordinates X = 10 mm and Y = 10 mm is the contents of variable V1: ABCDE0123.

Menu: Variables

■ Compiling a series of variables

Several variables can be programmed in a single text field.



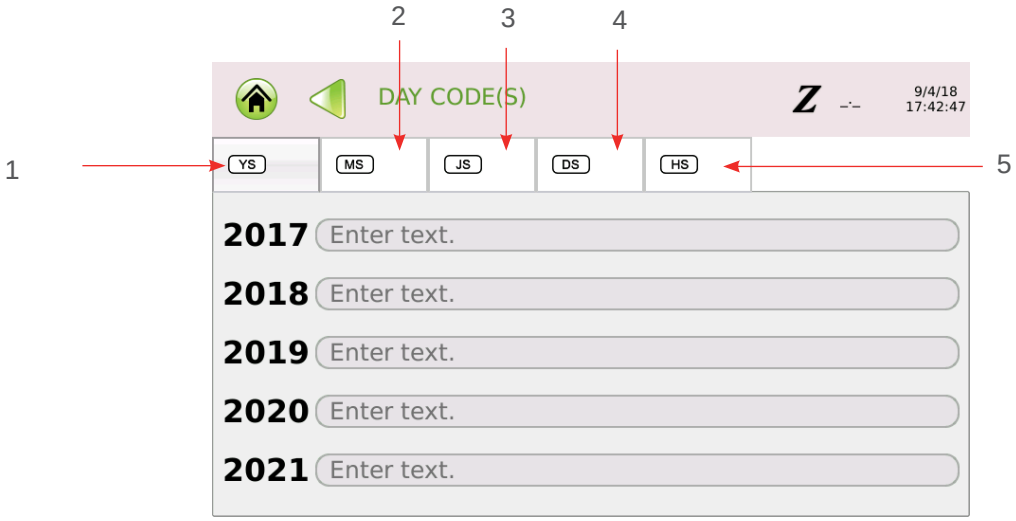
- Contents of V0: Marking
- Contents of V1: of
- Contents of V2: four
- Contents of V3: variables

The marking obtained at coordinates X = 10 mm and Y = 10 mm is "Marking of four variables".

3. Menu: Day code(s)

Used to define customized formats for marking months, years, days of the week and days of the month.

The screen below appears:



1. *Year variable (YS)*
2. *Month variable (MS)*
3. *Day in the month variable (JS)*
4. *Day of the week variable (DS)*
5. *Hour variable (HS)*

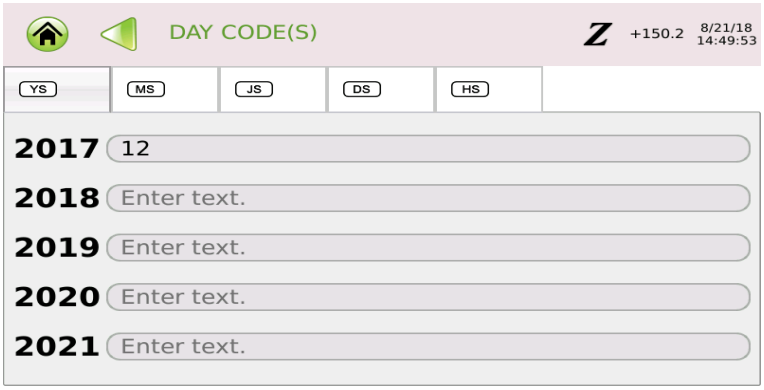
Menu: Variables

■ Year variable (YS)

The first year that is shown is the current year. 5 years can be programmed. The program then automatically updates the numbering.

Select the required field. Enter the data (touch keypad).

Example:

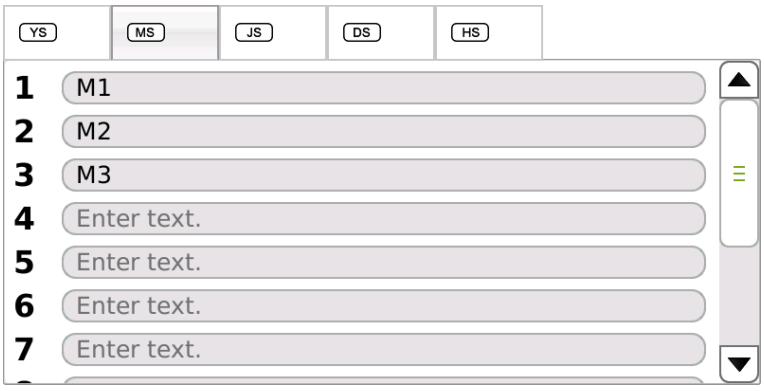


Code entry fields (maximum: 255 characters)

■ Month variable (MS)

The first 7 fields are displayed. Select the required field. Enter the data (touch keypad). To enter other information, use the scroll bar.

Example:



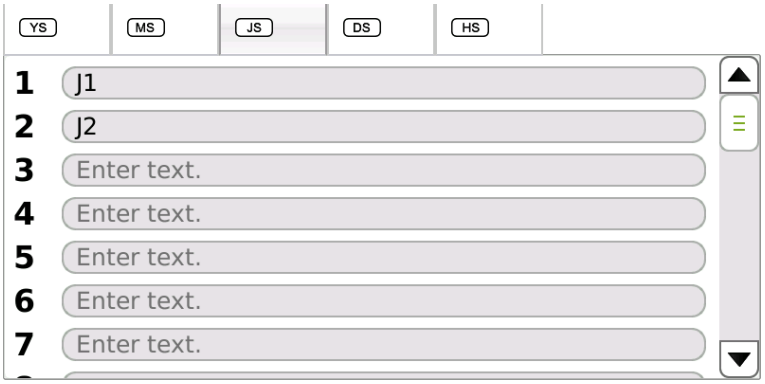
Code entry fields (maximum: 255 characters)

Menu: Variables

■ Day in the month variable (JS)

The first 7 fields are displayed. Select the required field. Enter the data (touch keypad). To enter other information, use the scroll bar.

Example:

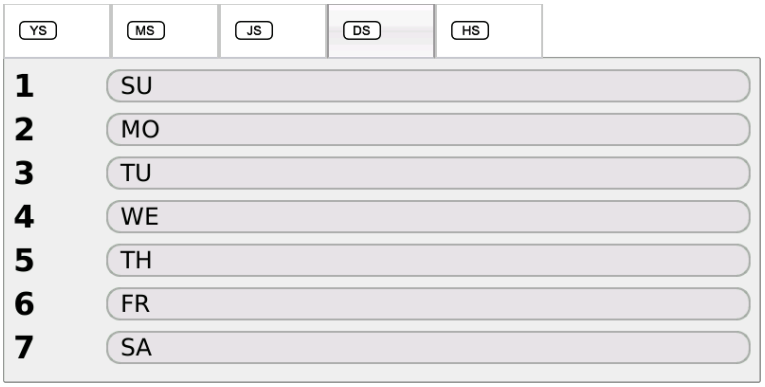


Code entry fields (maximum: 255 characters)

■ Day of the week variable (DS)

Select the required field. Enter the data (touch keypad).

Example:



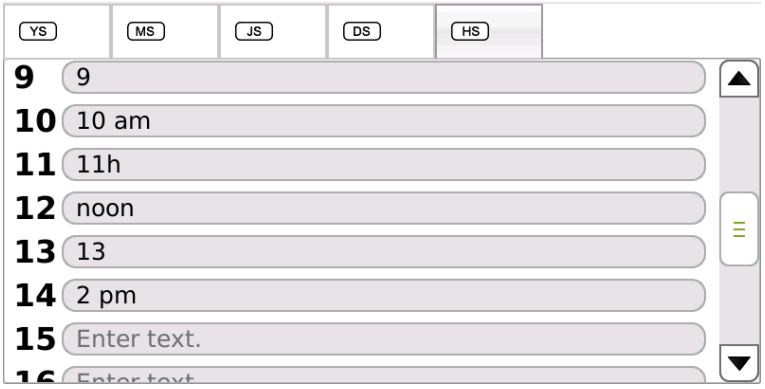
Code entry fields (maximum: 255 characters)

Menu: Variables

■ Hour variable (HS)

The first 7 fields are displayed. Select the required field. Enter the data (touch keypad). To enter other information, use the scroll bar.

Example:

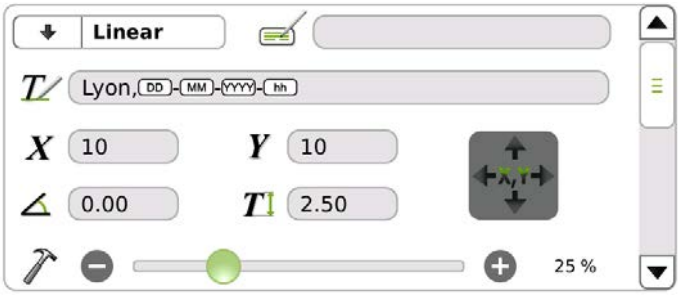


Code entry fields (maximum: 255 characters)

Key words:

- YS for years
- MS for months
- JS for days of the month
- DS for days of the week
- HS for hours

Example based on the previous codes: *marking file: for a marking executed a Wednesday in February 2013*

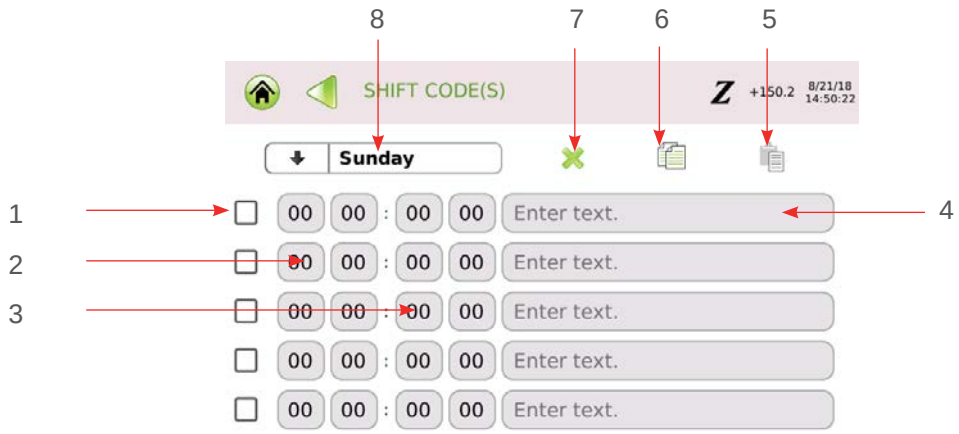


Menu: Variables

4. Menu: Shift(s)

Used to define texts to be marked depending on the day of the week and the time. Shift configuration is possible for each day of the week with 5 available time slots per day. The identification keyword is Q. The days and time used correspond to those in the CCU.

The screen below appears:



1. *Activation / deactivation of the shift*
2. *Starting time of the shift*
3. *End time of the shift*
4. *Text to be marked during the shift: code entry fields (maximum: 20 characters)*
5. *"Paste" symbol*
6. *"Copy" symbol*
7. *Delete*
8. *Day of the week*

Select a day of the week.

Activation / deactivation of the shift: box ticked /box not ticked

Only the ticked boxes are taken into account.

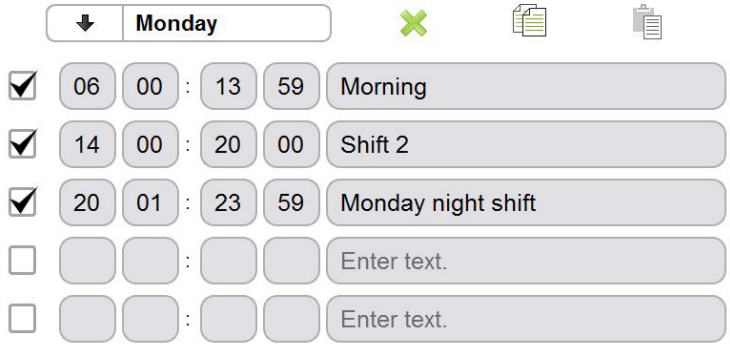
Select the time period start and end times (touch keypad).

Enter the text to be marked (touch keypad).

Repeat the operation for each shift and for each day if necessary.

Menu: Variables

Example:



Marking carried out on Monday:

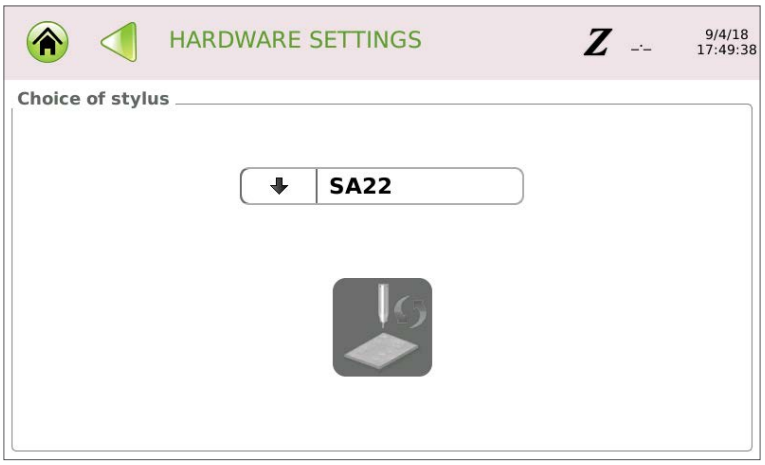
- from 06h00 mn 00 s to 13h59 mn 59 s: "Morning"
- from 14h00 mn 00 s to 20h00 mn 59 s: "Shift 2"
- from 20h01 mn 00 s to 23h59 mn 59 s: "Monday evening shift"

	**When defining time slots for shifts, be careful that the shifts do not overlap. The end of one shift must not be the same as or later than the beginning of the next shift.**

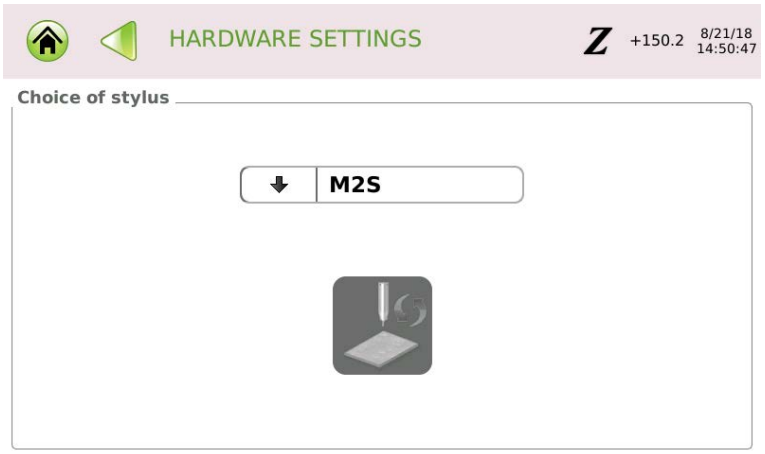
K. Menu: Hardware

1. Hardware

Select the stylus.

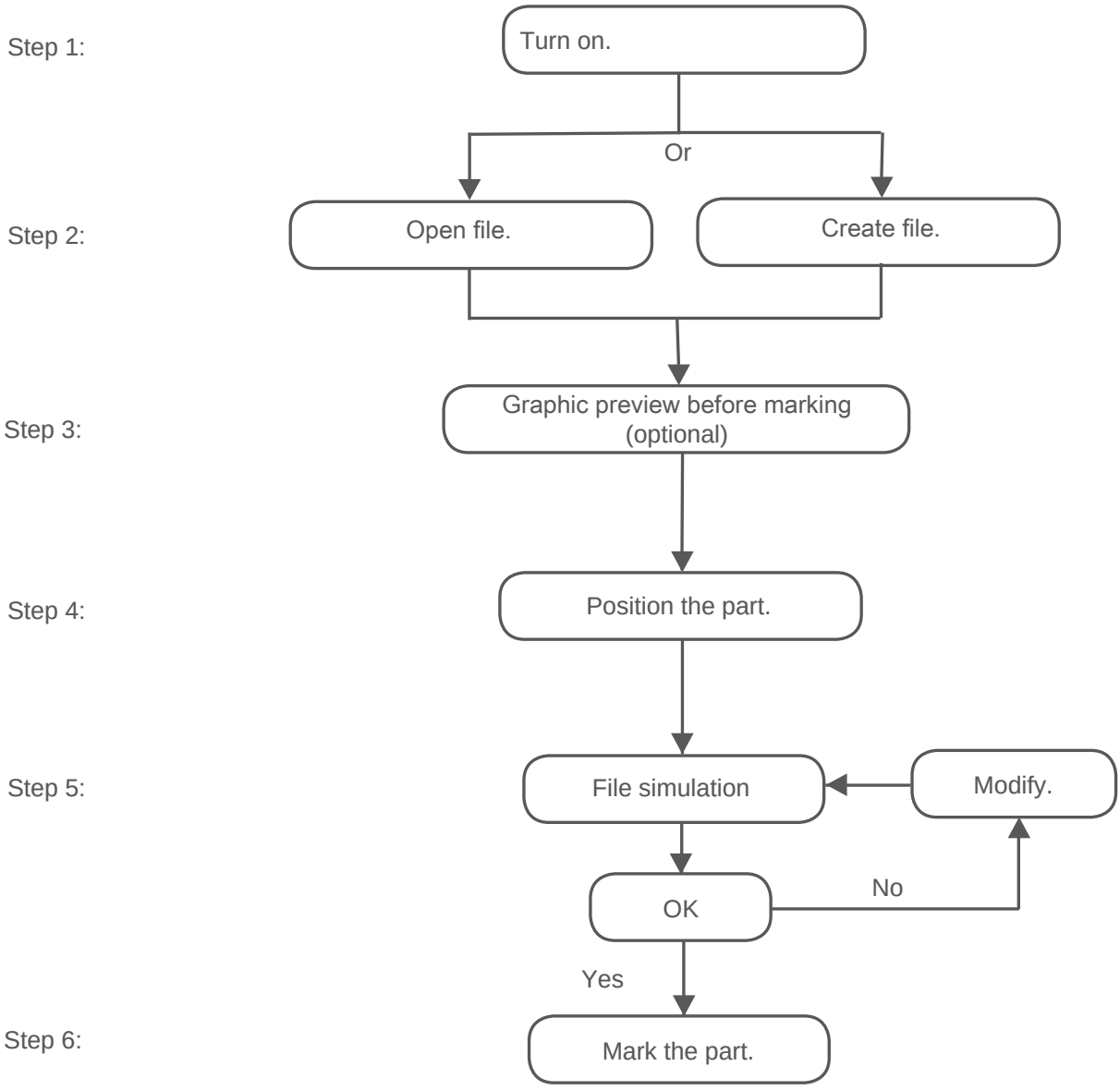


Electromagnetic version:



L. Use

1. Marking process flowchart

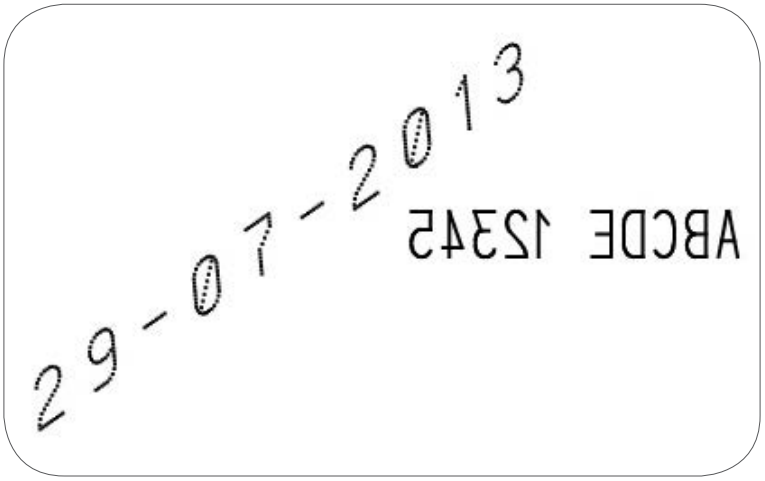


	When marking or doing test marking, the stylus must always hit a part. **If it strikes only air, these are the risks:** • **mechanical deterioration of moving parts** • **void of the manufacturer's guarantee**

2. Initiation to marking

This chapter gives an introduction to the machine and the marking program. Follow the instructions to complete a sample marking before creating other marking files.

For this example, create a file composed of 2 marking blocks. The resulting marking is shown below. A test plate is provided with the machine for carrying out this test marking.

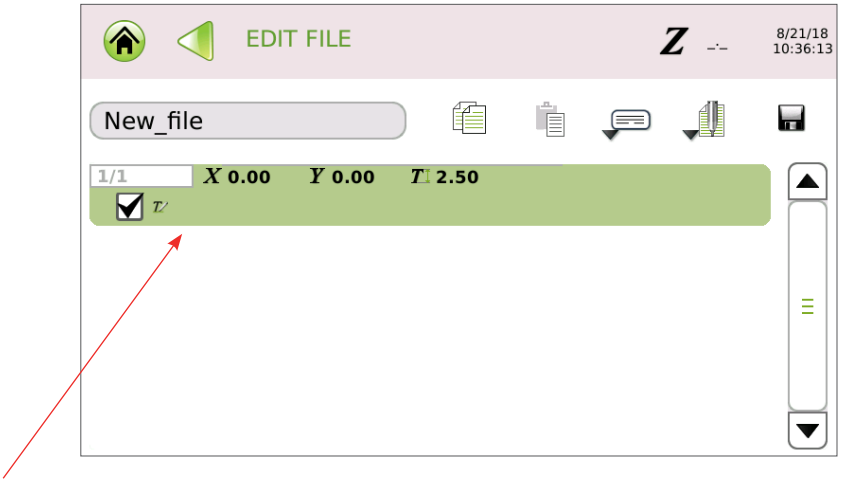


■ Step 2: Creating a marking file

To create a new marking file, select the "Edit file" menu (See: Menu: Edit file)

Creating marking block # 1

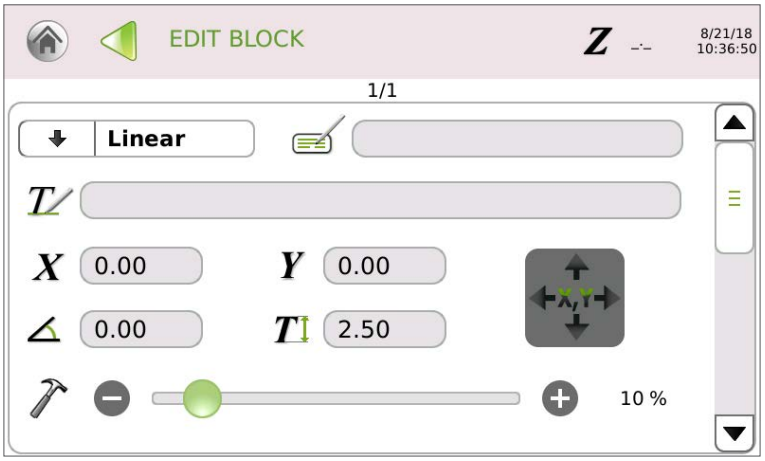
When a file is created, an empty block appears on the screen.



Used to access the details of a block.

Use

Double-click on a block to enter data.



Linear marking is selected by default. Keep this marking mode: no change.

Insertion of a key word in the "Text" field: touch the "Text" field.

To enter text, a touch keypad appears on-screen. The keywords are listed on page 2 of the keypad (See: Using the touch screen). Select the option required: DD. The selected keyword appears in the "Text" field. Touch the "Text" field. Insert a dash after the key word. Start again with the keyword MM. Insert a dash after the key word. Start again with the keyword YYYY. To validate the entry, press the key at the bottom right (touch keypad).

X coordinate: for this example, enter the value 25.

Y coordinate: for this example, enter the value 15.

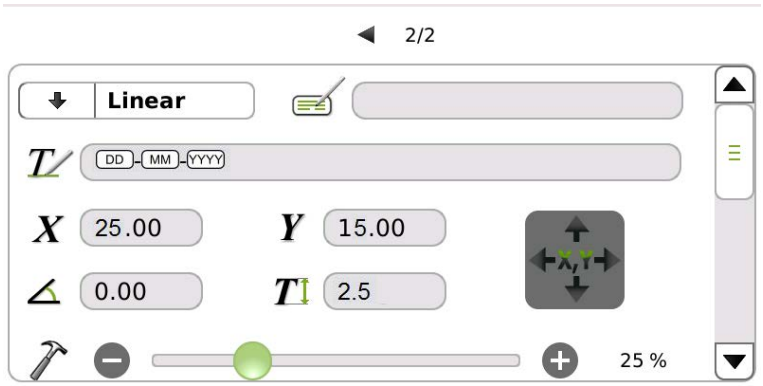
The size of the text 2.5 is selected by default. Keep this value: no action required.

Text angle: for this example, enter the value 35.

The default value of the "Force" area varies according to the machine's configuration. Keep this value: no action required.

Use

After the entry is complete, the following screen should be displayed:



To enter other information, use the scroll bar.

The font 0 is selected by default. Keep this parameter: no action required.

The compression rate 100 is selected by default. Keep this value: no action required.

Inclination: enter the value 30 / Spacing: enter the value 150 / Alignment: select "Centered".

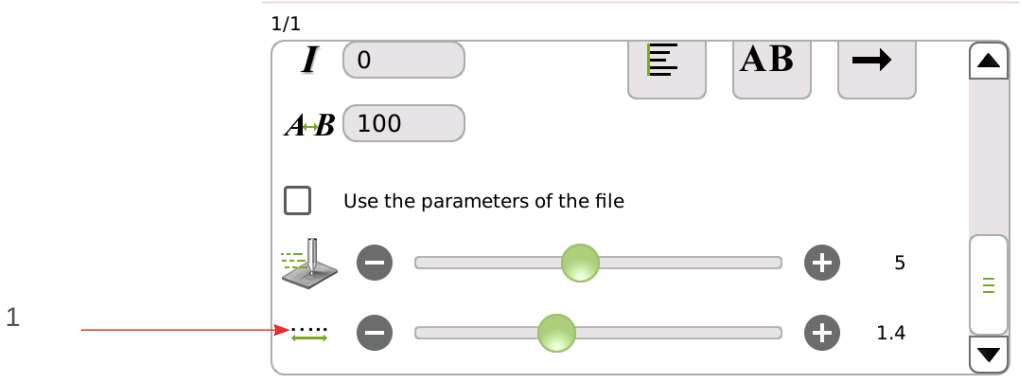
The marking effect "Normal" is selected by default. Keep this parameter: no action required.

The default marking direction is from left to right. Keep this parameter: no action required.

To enter other information, use the scroll bar.

Movement speed - Marking speed - Marking quality: keep this value: no action required.

Dot density per millimeter (electromagnetic version only): keep this value: no action required.



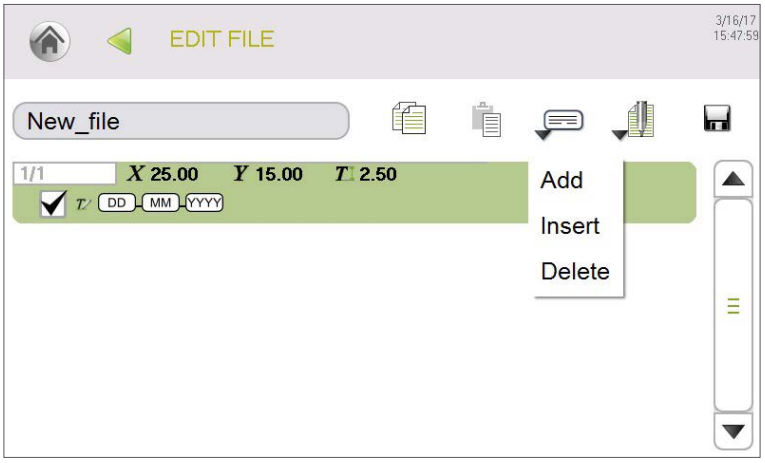
1. *Dot density per millimeter*

Creation of block # 1 is finished.

Creating marking block # 2

When block preparation is complete, press the arrow at the top of the screen to validate the block and go back to the previous screen.

The program goes back to the marking file. The screen below appears:



"Edit" sub-menu: Select "Add".

A second block appears. Position the cursor on this block. Double-click on a block to enter data.

Linear marking is selected by default. Keep this marking mode: no change.

Text to be marked: Enter "ABCDE 12345".

X coordinate: for this example, enter the value 50.

Y coordinate: for this example, enter the value 15.

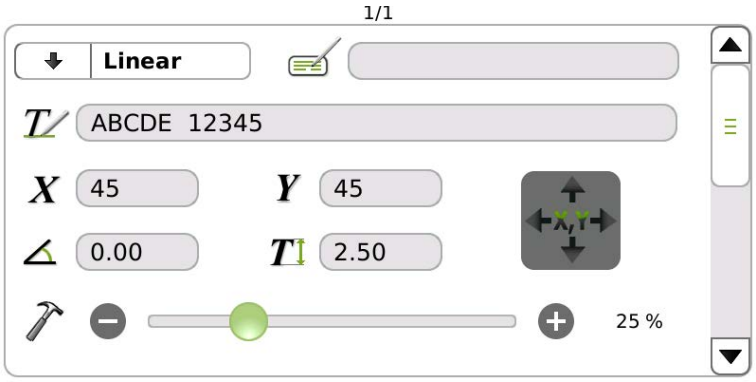
The size of the text 2.5 is selected by default. Keep this value: no action required.

The angle 0 is selected by default. Keep this value: no action required.

The default value of the "Force" area varies according to the machine's configuration. Keep this value: no action required.

After the entry is complete, the following screen should be displayed:

Use



To enter other information, use the scroll bar.

The font 0 is selected by default. Keep this parameter: no action required.

Compression: enter the value 70.

The 0 inclination is selected by default. Keep this value: no action required.

The spacing 100 is selected by default. Keep this value: no action required.

By default, the text is aligned to the left. Keep this parameter: no action required.

Marking effects: select the "Mirror" effect. 

The default marking direction is from left to right. Keep this parameter: no action required.

To enter other information, use the scroll bar.

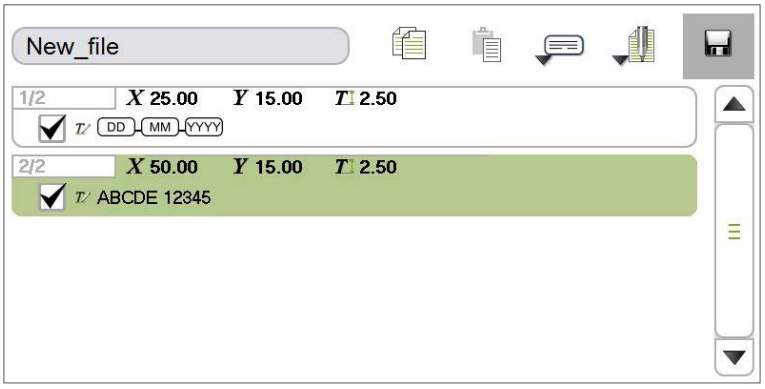
Movement speed - Marking speed - Marking quality - Dot density per millimeter: keep this value: no action required.

Creation of block # 2 is finished.

When block preparation is complete, press the arrow at the top of the screen to validate the block and go back to the previous screen.

The program goes back to the marking file. The name of the file is displayed in the top left corner of the screen. By default, the current file is named "New_File".

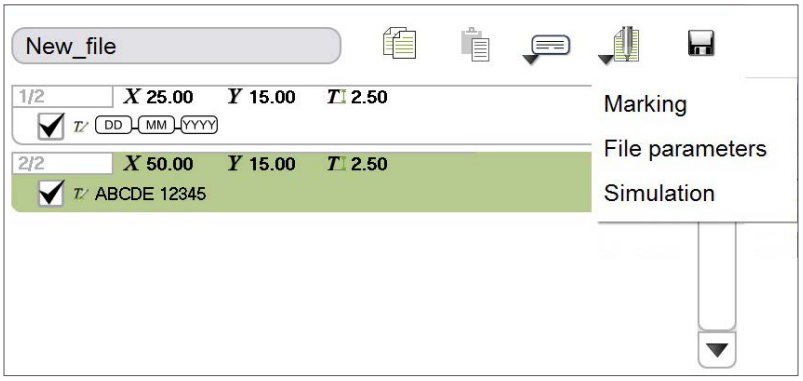
Save the marking file created under the name "Test". Press the "Save" symbol.



■ Step 3: Preview

"Marking" sub-menu - Select: stylus movement.

The screen below appears:



■ Step 4: Position the part.

Position the machine over the part to be marked.

■ Step 5: Marking simulation

"Marking" sub-menu: select "Simulation".

Simulation consists in performing the marking without activating the stylus.

Press the "Start marking" icon.

It is not possible to pause or to stop a marking simulation.

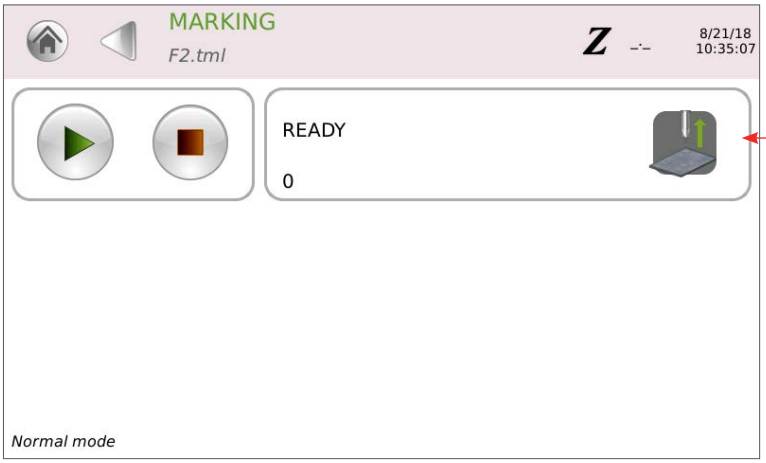
■ Step 6: Marking the part

End of simulation: press the back arrow at the top of the screen.

Proceed to marking the texts on a plate.

"Marking" sub-menu: select "Marking".

The screen below appears:



Easy height adjustment (Z adjust)

Press the "Start marking" icon.

After marking, the stylus returns to the X-Y origins.

Press the back arrow at the top of the screen.