SITELMK3

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STAMPER FOR INTEGRATION IN AUTOMATIC PRODUCTION LINES

SITELMK3–M8

CE

table of contents

PRESENTATION

We thank you for having purchased our product. We are confident that the equipment performances will fully meet your expectations.

The unit complies with the standing general regulations concerning safety and its use therefore does not present risks for the operator, provided it is operated according to the instructions provided by the maker.

This manual will enable you to properly install the unit and use it quickly and efficiently.

MANUAL'S CONTENT

This document provides the instructions for the proper installation and use of the stamper in its base version. The manual is arranged in the following sections:

Section **1** "**INTRODUCTION**"

This provides general information concerning the stamper.

Section **2** "**INSTALLATION**"

It describes the parts that make up the standard stamper and the procedures for its correct installation for a safety use.

Section **3** "**USE OF THE STAMPER**"

Procedures to operate the machine

Section **4** "**ATTACHMENTS**"

This section includes additional technical data

Section **5** "**PROGRAMMING EXAMPLES**"

Programming of a plate

GENERAL AND SAFETY RECOMMANDATIONS

Carefully read the instructions concerning the installation.

The unit must be installed in an environment provided with earth and connected to a three-pin socket provided with ground connection.

Avoid putting any object on the power supply cable. Position the machine so that the power supply, earth and interconnection cables cannot be accidentally stepped upon or damaged.

Do not attempt to repair the unit. The opening and the removal of covers expose the user to high voltages that are dangerous for his/her safety.

Before any maintenance it is necessary to disconnect the power supply cable from the socket. In particular, immediately cut power when:

- The power supply cable or its plug is damaged;
- Liquids were accidentally poured on the **STAMPER**;
- In case the machine was exposed to rain and bad weather;
- When the unit does not respond correctly according to the instructions, only carry out the control operations required for "Maintenance; any other action on the settings could cause damage to the unit, with a consequent need to call Support to restore operation;
- If the machine was subject to damage or falls;
- If the unit shows clear signs of malfunctioning or its performances do not match the features. Follow the maintenance instructions and if necessary call the Support.

 **Warning!**

In case of jams or stops due to an interruption in the electrical or pneumatic power, before working on the machine it is necessary to disconnect it from its power sources.

SITELMK3-M8 STAMPER

1 "INTRODUCTION"

1.1 EQUIPMENT

A high performance stamper system

MK3-M8 is a marking system designed for integration in automated lines, it can work with or without the use of a PC through a built-in simplified interface or the application **SITELMK3-SISM-S** on PC

SITELMK3-M8 is made up in the standard version of:

(see also the SITELMK3-M8 product sheet, in the next pages)

Mechanics, Electronics, Power supply, External pneumatic Kit, Serial port RS 232, port for auxiliary I/O

The mechanic unit for marking is made up of a high precision frame assembling driving systems with **stepper** motors and a **stylus** section protected by shutters that hermetically close all kinematic mechanism further providing safety of operation.

The control unit is separated from the stamper and contains an electronic board to control and drive the mechanics, a display with two lines of 40 characters and an alphanumeric keyboard with 60 keys.

The electronic box left-hand side provides a 8-pin connector to interface an optional remote control or a PLC for the input of the **start** and **stop** commands and the output of **machine cycle**, **marking end**, **machine ok**, and on the right hand side there is 9 pin connector to interface a PC.

The command interface is made up of the inputs carried on the I/O connector, which are:

START input, STOP input, RD output, CYCLE output, end-of-marking FM output

All I/Os operate at 24 Vdc (internal) and are not galvanically insulated from the electronics

Computer The PC provides additional functions but is not required.

By using a PC with the stamper more powerful functions are enabled, such as:

- Development of the JOB always through the stamper and with an internal memory of 100 JOB's
- Storage of the JOB's in a PC file
- Importing of drawing files in .PLT format

- automatic ON-LINE connection from PC
- Graphical display of the JOB's
- Graphical simulation of the marking depth
- Interfacing with the SITEL network software of up to 32 stampers (optional)
- Interfacing with systems that use the SITEL protocol
- Possibility to easily create graphical interfaces using the OCX package
- Positioning a JOB within the working memory of the stamper, from the PC
- Copy, Move, Delete functions for a JOB in memory

The external power supply unit carries out the electrical supply, converting the **90 - 264 Vac** mains input **in 24 Vdc output** . The power supply is galvanically insulated between input and output, ensuring the safety of the system and operating the stamper at low voltage, therefore making possible to supply the unit through battery systems.

The pneumatic filter allows the operation of the stamper's pneumatic circuitry filtering any impurity that could damage the unit.

The marking head integrates an electric valve and a pressure control, that allows to adjust the marking pressure using the air fed through the external filter\.

The pneumatic connections can be carried out with normal or coiled tubes according to the model. The maximum operating pressure is 6 bar with dry and unlubricated air.

1.2 M8 PRODUCT SHEET

SITELMK3-M8	Integrating Marker with PC serial interface

Components

BOX-M8-2	Control Box for Markers in INTEGRATOR version
TES-M8-2	Marking Head model M8 (50 x 80 mm with resolution 0,025 mm per step)
SISM-S	Program with Graphical interface and Complex functions (within DocumentationCD-ROM)
50500025	Kit complete with: Pressure regulator – Filter 20 um - Mechanical manometer
CVRET002	Power supply cable, length 1.5 m
2002-S-003-3	Cable interconnecting BOX / HEAD, standard length 3 m
2006-S-005	Serial Cable to connect Stamper to PC (length 3 m)
STYLUS (not included)	Optional Stylus kit (selection dependent on application – see listing)

Main Features

WORKING AREA	Axis X = 80 mm Axis Y =50 mm (Resolution 0,025 mm per step)
BOX DIMENSIONS	Length = 220 mm Height = 130 mm Depth = 180 mm
HEAD DIMENSIONS	Width = 177 mm Height = 145 mm Depth = 246 mm
WEIGHT	Head = 7 Kg Box = 2 Kg
PROTECTIONS	Sliding shutters closing the mechanicals
POWER SUPPLY	90 - 264 Vac (50/60HZ) 40 W
PNEUMATIC SOURCE	7 Bar max. (typical 20N/L1') clean and dry air
DISPLAY	LCD back-lighted, 2 rows and 40 characters
KEYBOARD	60 alphanumeric and multifunction keys
OPERATION	STAND ALONE with or without PC, preset parameters with friendly user interface
RS 232 SERIAL INTERFACE	Standard RS 232, HARDWARE setting for optional serial connections
STANDARD SERIAL FUNCTIONS	All SISM functions + Protocol for integrators
STANDARD MARKING	Text, date, linear and circular counting + internal drawing, Pause , 18 Fonts , Production Management, Memory Management by PC, PLT Files File
FAST TEXT	Very fast modification of the text to be marked
STANDARD MEASURING UNIT	mm, inch, Bar , PSI, Mpa
MARKING SPEED	4 char/sec (depending on the set parameters)
DOT DENSITY	Programmable in the range 0,1 / 2 mm in step of 0,1 mm (max. 100 dots/cm)
INTERNAL MEMORY	512Kb (100 programmable memories)
MARKING STRENGTH	Max . 2000 Kg per dot
DISPLAY LANGUAGE	5 resident (Italian – English – French – German - Spanish)
FONT	5 resident ISO 3098 - DIN1451 – BLOCK OUTLINE – UNIVERSAL – MATRIX 5X7
I/O INTERFACE	I/O interconnection with remote systems or PLC (Start – Marking End)
I/O Standard 24 Vdc (not insulated)	Remote : Start – Stop – Ready – Cycle – Marking End

OPERATING PRINCIPLES

The stamper is fully managed by the control unit that allows the programming of complex marking cycles through display and keyboard,.

The program is resident on **EPROM**, the data stored in a high capacity RAM memory buffered by a nickel-cadmium battery that provides 90 days of working power; the memory can contain up to 100 marking programs.

The machine is completely autonomous and works with or without a PC.

The control unit manages two stepper motors that drive the stylus within the working area of **50 x 80 mm** with a resolution of **0,025mm** on both axis. The electric valve drives the stylusing frequency also controlling the marking force electrically on a pneumatic circuit.

The system allows the marking of: texts, dates, ordinal and cardinal numbers, internal drawings, pauses, management of production cycles, logos .PLT and 2D Data Matrix, with a maximum of 20 FONTS available.

The marking takes place through a series of **micro-percussions** driven by the built-in controller.

The marking head weighs about 8 Kg while the electronic box weighs about 3 Kg.

1.3 CONFORMITY TO THE EUROPEAN REGULATIONS

The various parts that make up the unit have been carefully designed to meet the safety specifications provided by the standing laws and in particular:

- The manufacturer certifies that the appliance equipped with: head, electronic box, power supply, battery charger and remote command conforms to the prescriptions of directive CEE 89/392 and later modifications.

- In the versions where the marker is integrated within automated lines, it will be the integrator's responsibility to provide all the protections required for the system safety.

2 “INSTALLATION”

2.1 WARNINGS

The unit must be used according to the procedures issued by the manufacturer and never with purposes or modes other than the ones specified.

The user is responsible as concerns the correctness of the installation and the conformity to the standing safety regulations.

If the unit is not operated correctly or without a proper maintenance, the manufacturer cannot be held responsible for any faults, damage to people or things or malfunctioning.

The unit must be stocked at temperatures between –25° and +55°C, and at +70°C for short periods not exceeding 25 hours.

The contact with the pointed tool required for the stamper operation can cause injuries

Should it be necessary to fix the pieces to be marked because of their size, weight, temperature, cutting shapes or anyway dangerous, use customized clamps or jigs that do not allow any accidental shifting during the marking process.

WARNING!
The unit complies with the standing electrical safety regulations.
The electrical safety of this unit is ensured only if the system is connected to a suitable earth installation; it is therefore important to check that this safety provision is installed and efficient.
Check that the range of the breaker the unit is connected to is adequate to the overall power of the machine, according to the plate data. In case of doubts, request the assistance of qualified technical personnel.
The manufacturer is exempt from any liability for damages to people or things deriving from the non correct compliance with the norms detailed in this manual.
The manufacturer is exempt from any liability for damage to things or people deriving from the lack of an earth connection.

The stamper’s **EARTH CONNECTION** is obtained through the mains cable.

2.2 GENERAL RULES FOR INSTALLATION

The unit was set up and tested in factory; no set-up or adjustment is needed before installation

Unpack the unit and choose an installation location taking into accounts of the following warnings:

- Do not position the control unit next to sinks to avoid any contact with water and possible internal short circuits.
- Do not install the control unit next to heating radiators.
- Install the control unit on a surface not subject to shocks or vibrations; if necessary use anti-vibration devices.
- Arrange the installation so that the mains cable is not bent, and it should lay without obstructions up to the socket.
- The air filter must be connected to the unit at the distance required for the cable provided.
- The electrical components work properly with a relative humidity not exceeding 50% at a temperature of +40°C. Higher relative humidity values can be tolerated with lower temperatures (90% at 20°C).
- The electrical components work properly at a temperature between +5° and 40°C (that is the environment temperature, not the one in closed parts such as the cases).
- The operator must keep the power supply plug near him/herself during unit maintenance so as to prevent an unexpected start of the machine by others.
- **The unit must be connected to an electrical installation equipped with a differential and overload switches with trigger current adequate for the protection of the power supply conductors**.
- **Do not introduce your fingers in the slot protecting the marking area during operation or between the punch and the piece to be marked, to avoid injuries.**
- The following notices must be placed in the working area.

- Use tackles or lifters for the download and upload of heavy pieces
- The working area must be properly lightened for a correct use of the unit.
- The actuators of the command devices must be positioned so as to be easily reached by the operators and set at a stepping height not lower than 0,6 m.
- The machine must be positioned so that the operation and all the common tasks concerning the setting, maintenance etc. can be easily carried out by a person remaining at floor level. If this is not possible the machine must be placed on a platforms, ladders or other integrated fixtures that allow the

access within safety conditions to carry out the tasks. If access is not frequent use fixed ladders with handrails. The working floors should be made in non slippery materials in the working conditions.

2.3 UNPACKING

Upon receiving the machine, check the packing integrity.

Open the packing and check that its contents:

- Match the order (see delivery bill)
- Do not show apparent signs of damage

The drawings and any other document provided with the machine remain property of the manufacturer that reserves all rights thereof and cannot be made available to third parties.

2.4 CONNECTIONS

IMPORTANT!

Before switching on the machine it is necessary to carry out the interconnection between the marking head and the control box.
Check the connectors at the cable ends are firmly plugged in.

Never unplug the marker from the power source with the machine turned-on.

We suggest to activate the pneumatic system only after to have carried out the electrical connections and checked the right positioning of the piece to be marked.

WARNING!

All stamper within the SITELMK3-M range are configures for the connection of an external emergency stop push-button or relay: to allow the stamper to run, this contact must be normally closed.
Until you are not connecting any emergency stop push-button or relay, in order to switch on the unit controller, you will have to connect on the controller the circular connector supplied within the packaging of the unit.

2.4.1 Power supply

The power supply connection must be made by qualified personnel. Check the plug connects directly to the power socket.

Use the cable provided with the unit, which features a dual-pole plug plus earth.

The power supply is a designed to work at wide voltage range; minimum voltage required 90 VAC, maximum voltage 260 VAC. It operates in automatic autorange mode (without voltage setting).

Therefore the stamper can operate at standard power supply value of 115 – 220 – 230 VAC , 50-60 Hz.

Maximum power: 50 W.

2.4.2 Pneumatic connections

Connect the machine to an industrial air inlet taking into account the following precautions:

- The air must be **dry and unlubricated**
- The max line pressure must be 7 bar
- Average delivery capacity required by the marker is 30 NL/1' (it can vary according to the machine cycle)
- The joint to the marker must be made with a pipe Ø 8 mm; the pipe must be properly cut and inserted in the quick joint inlet of the air filter
- The length of the air pipe should not longer than 5 meters (so as not to have dynamic delivery problems with the marker)

Should the pneumatic installation in the factory not comply with the above requirements, it will be necessary to add further additional protections to the existing ones to assure the operation of the machine.

To improve the functionality of the machine when the working cycle is very heavy:

- Add a further air filter for better filtering (for example we suggest a filter at 5um with 3000 liters capacity)
- Periodically control the filters are clean
- Periodically control the punch is clean
- In the worst cases we suggest using an air dryer.

2.4.3 Mechanical connections

The BOX must be mounted leaving above and below a space of at least 50 mm for the ventilation.

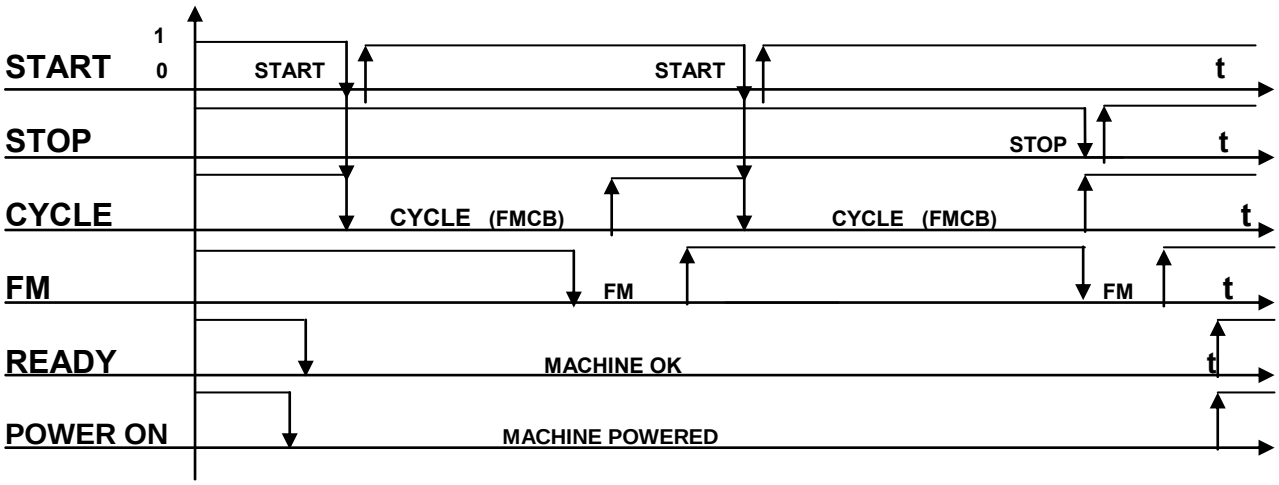
2.4.4 I/O connector

The right side of the control box features a 9 pin Cannon connector . This connector is set to carry out interconnections with external control systems such as PLC or PC .

Pin	signal	I/O type	description
1	+24 Vdc	OUTPUT	Power supply
2	Stop	INPUT	Marking Stop input - GND level (normally open)
3	NC	-	Not connected
4	Ready	OUTPUT	Machine OK output signal, max. 50 mA (0 Vdc at machine OK)
5	GND	OUTPUT	Power supply
6	Start	INPUT	Marking start input – GND level (normally open)
7	FM	OUTPUT	End of marking output, max 50 mA (0 Vdc for 500 msec)
8	NC	-	Not connected
9	Cycle	OUTPUT	End of marking output, max 50 mA (0 Vdc during punch movement)

Attention: do not connect the 24 V to pin 1 and to pin 5 as this is an output and therefore the stamper would be irreparably damaged

I/O diagram



2.5 STYLUS ASSEMBLING

The center group of the stamper (Y axis) is fitted with a threaded hole, into which an adapter is screwed (check that the adapter is screwed correctly).

Before assembling the stylus kit, check that the stylus and the stylus guide run smoothly and are clean.

Screw “by hand” the stylus KIT in the adapter’s threaded hole and check that the tightening is correct.

2.6 SWITCHING ON

Preliminary checks

Before switching on the machine check that:

- **All connections were made correctly**
- **The punch is assembled correctly**
- **The pneumatic circuit is working and the pressure does not exceed 6 bar.**

Insert the plug in a mains socket and switch on the system by means of the switch on the power supply unit and then the switch on the machine. The system immediately starts by switching on the display and performing a zero setting of the axis and bringing the stylus in the Home position (top left seen from above).

The display shows the unit configuration, press **enter**

Type in the password "**MARC**"

From now on the unit is ready to perform the marking of a JOB.

The default passwords are:

- for programming **MARC**
- to call a stored job without modification **JOB**
- to reset forgotten passwords **MP456**

The passwords to add functions to your stamper must be requested to the reseller

WARNING

It is possible to remove the login password, this function allows to access the machine programming and use with the motors activation without explicit authorization. **THIS FUNCTION IS TO BE USED ONLY ON LINE INTEGRATION UNIT VERSIONS.**

NOISE LEVEL

The noise level of the stamper in standby is lower than 67 dBa.

The noise increases during the marking and also depends on the type of material to be marked. Therefore the operator may have to wear protective ear-caps.

2.7 PRELIMINARY TEST

To make sure the unit was not damaged during transport, we advise to carry out a few checks after making the electrical connections:

- Mains socket and power supply unit
- Pneumatic connections between line intake and air filter
- Pneumatic connection between filter ad marker

1. Set the pressure control to zero pressure position (anticlockwise turn).
2. Assemble the stylus guide with its stylus and make sure there are no obstructions within the marking area.
3. Switch on the stamper's switch **(position ON).**
4. Check that the unit switches on the display and moves the stylus in the Home position performing a reset cycle.
5. On start-up the display will show a series of stamper identification messages, press the **ENTER** key.
6. Then the unit requires the login password
   Type "**MARC"** and press **ENTER.**
7. Select the "MEMORY PROGRAMMING" function with the key **FN** and press **ENTER**.
8. Select the mode **"INS DW"** using the up/down arrow keys, then **ENTER**.
9. Select the **"TEXT "** function using the right arrow key.
10. Press **ENTER** , write a text and confirm with **ENTER** twice.
11. Adjust the distance between stylus and piece to be marked at about 5 mm.
12. Make sure that the piece is properly fixed.
13. Send the **START** command by entering CTRL+S or through the remote START.

The machine will carry out the marking using the DEFAULT parameters without performing any percussion, and going back then to the Home position.

Repeat the operation turning the pressure control clockwise, stopping when the marking power is the wished one.

This test allows to perform an immediate check of the correct operation along with the machine connections.

Go on with the required programming operations.

NOTE: for the adjustment of the marking parameters, see the next sections.

3 "USE OF THE STAMPER"

3.1 GENERAL RULES

A few suggestions to help use the stamper correctly

3.1.1 Mechanics

- Position the stamper on marking position near the object to be marked.
- Adjust the stylus/piece distance according to the marking depth to be obtained.

For deep markings the stylus must be as distant as possible
For light markings the stylus must be set as near to the object as possible

- Do not use high pressure values if the marking is to be made on pieces with a marking surface having an inclination higher than 15 degrees against the plane perpendicular to the stylus (to avoid the stylus from receiving a lateral thrust that could break the stylus owing to its flexing).
- Before any job make sure that the stylus is properly screwed.
- Periodically clean the stylus.
- **Do not grease** any part of the stylus.
- **Do not grease** the parts that carry out the shifting of the axis.
- Sharper the stylus with a diamond grinder when it appears worn or if it is required a nose with angle and sphere radius other than the standard.
- Avoid a sharpening with radius lower than 0.2 mm not to have breaking or splintering.

For marking on hard metals we suggest a nose with 120 degrees angle and 0,5mm sphere radius

For marking on metals of average hardness we suggest a nose with angle of 90 degrees and a 0.4mm sphere radius

For marking on soft metals we suggest a nose with angle of 60 degrees and a 0.3mm sphere radius.

The stamper allow to mark metals with hardness up to 80 HRC

To obtain deep markings it is possible to proceed in this way:

increase the stylus - piece distance

increase the pressure

increase the PWM (moderately)

increase the dot density or use the repeat function

To obtain quality marking proceed in this way :

Reduce the stylus - piece distance

Reduce the speed of the stylus movement and zero setting

Increase the dot density

Reduce the marking pressure

To obtain fast marking proceed in this way:

Reduce the stylus - piece distance

Increase the speed of the stylus movement and zero setting

Reduce the dot density

Reduce the stylus lift time delay

3.1.2 Pneumatics

- Make sure the compressed air does not contain humidity
- Treat the compressed air pipes gently
- Periodically clean the air filter

The marking depth is in direct proportion to the pressure

For deep marking set the pressure to the maximum value (6 bar)

For light marking set the pressure to the minimum value (1 bar)

The pressure level can also modified during the marking process

The setting of the marking power is done by adjusting the "PWM"

To increase the power raise the PWM value (ex. 35)

To reduce the power decrease the PWM value (ex. 14)

The PWM cannot be changed during the marking process

NB: When the noise shows a constant vibration frequency, the machine is set correctly.

The **"PWM"** allows to set the marking power by controlling the time the electro valve stays open.

This tool is extremely useful as it allows an adjustment of the power level even during the marking process.

The **"PWM"** value must be set with great care so to avoid errors that could affect the quality of the marking (as well as the unit functionality).

In order not to make errors when setting **"PWM"** please remember that :

The **"PWM"** corresponds to a time, whose value affects the quantity of air that pushes the stylus every time it strikes the object.

The **"PWM"** time will have a minimum value that allows to reach the piece (it depends on air pressured and on the stylus-piece distance). This value can be increased by 25/30 points to have a stronger push maintaining the same pressure and distance.

An excessive value could cause irregular thrusts on the stamper with the risk of stopping the movement of the **X Y** axis and the consequent loss of motor steps, which results in incorrect writing.

The PWM can be programmed so as to be independent for every STEP (**STEP** refers to the execution of each single text, data, drawing etc.).

3.1.3 Electric connections

- Handle cable and connectors with care.
- Before switching on the unit, check that the power voltage is correct.
- Check that the earth connections are properly executed.

3.2 PROGRAMMING

This stamper was designed to be easy to use also for personnel without an experience in marking. The unit allows the performance also of complex marking patterns without the need of **PC**, since the stamper is completely self-sufficient.

The unit uses a back lighted LCD display with **2 lines of 40 characters**, while data input is possible through the customized alphanumeric keyboard.

The user interface is very advanced and allows to program the stamper easily without the need of paper reference for the machine functions, since by simply pressing the **"FN"** key all the machine functions are displayed in sequence.

- **Programming is carried out generating a JOB**
- **The JOB is made up of a sequence of STEPS**
- **The STEP is the execution of a text, data, counter, drawing etc.**

The following is a list of the main keys to use the unit functions:

Key	**Description of the key function**
FN	Machine function selector
ENTER	Confirms the current function
ESC	Cancels the current functions
F> - F<	Right and left arrow key "go to the next" or "go back to the previous"
FS – FG	Down and up arrow key "functions selection "
> <	Skip page
SPACE	Moves the cursor one character forward (SPC)
←	Deletes a character (BCK)
□	Upper lower case

3.2.1 Marking area

The stamper's working area is **80** on **X** axis (horizontal) and **50** on the **Y** axis (vertical) with a step definition on both axis of **0.025 mm**.

In home position (mechanical zero) the stylus is set top left.

The electrical zero (zero CAD) is set bottom left.

3.2.2 Marking position

All markings are positioned with reference point at coordinates **X Y** .

The marking position with reference to the point **XY** can be **RIGHT, CENTER and LEFT.**

The positioning can be executed automatically through the "**AUTO**" function,

The "**AUTO"** function carries out automatic positioning, whose point is defined by the end of the previous writing; **paste next function -** this function is possible with **X** or **Y** or both **XY,** this functional is enabled with both **normal** and **proportional** writing**.**

3.2.3 Programming mode and STEP modification

The available modes are the following:

INSERT	(insert a new STEP)
CHANGE	(modifies the selected STEP)
DELETE	(deletes the selected STEP)
RESET	(deletes all the selected memory)

3.2.4 JOB memorization and modification

The available modes are the following:

SAVE	(saves and stores the Job in a free memory location)
LOAD	(loads the Job)
DELETE	(deletes the Job)
MODIFY	(save and stores the Job in a memory location already occupied = overwrite)

3.2.5 INPUT/OUTPUT definition

The outputs are NPN Open Collector, powered at 24VDC. They are not galvanically insulated from the control logic (for interfacing it is recommended to use insulated systems, as opto-insulators).

Complete list of available outputs:

- **Cycle output.** It is active through the whole cycle execution time, from the Start to the return to home position.
- **End-of-cycle output.** It becomes active at the end of the execution of the last marking vector; it stays active for the programmed time.
- **Machine OK output.** It is always active as long as anomalies are not detected. It is enabled on startup, after zero setting, if the reset is correct. If the following anomalies occur:
  - second Stop in the marking cycle: a not interpolated zero is performed;
  - at the end of a cycle and return to Home position, the position control against zeroes reports an error: a not interpolated zero is performed;

The machine OK output is reset only if zero setting did not succeed, otherwise the occurred anomaly is not considered.

See connections diagram (par 4.2)

3.3 FUNCTIONS

MAIN MENU FUNCTIONS (FN):

- **Job programming**

TEXT (linear and circular)
DATE (linear and circular)
DRAWINGS
COUNTER
PAUSE
MEMORY CALL (and PLT file call)
BAR-CODE (optional)

- **Job management**

JOB Nr. = 1
JOB NAME = [*nome01*]
SELECT TYPE = SAVE-LOAD-DELETE-CHANGE

- **Job display**

JOB Nr. = 1
JOB NAME = [*nome01*]
STEP Nr. 1 = displays the step content
STEP Nr. 2 = displays the step content
STEP Nr. 3 = displays the step content

- **Production cycle (optional)**

CYCLE Nr. = 0
MODE = INSERT
GP ENABLE = Yes

JOB Nr. = 12
JOB NAME = [*nome01*]
GP ENABLE = Yes
REPEAT TIMES = 40

CYCLE Nr. = 1
MODE = INSERT
GP ENABLE = Yes

JOB Nr. = 56
JOB NAME = [*nome02*]
GP ENABLE = Yes
REPEAT TIMES = 22

- **Factory parameters**

CHARACTER HEIGHT = 5mm
CHARACTER LENGTH = 100%
CHARACTER DISTANCE = 100%
CHARACTER SLANT = 90 DEGREES
WRITING DIRECTION = 0 DEGREES(HORIZONTAL)
X AXIS POSITION = 3 mm
Y AXIS POSITION =24mm
DOT DISTANCE = 0,4 mm
STYLUS LIFT TIME = 10msec
PRESSURE COMMENT = 0,0
PWM = 15
DISTANCE COMMEMT = 10 mm
MOVEMENT SPEED. = 40mm/s
FONT = ISO 3098/1
MARKING POSITION = RIGHT
REPEAT TIMES. = 1
DELTA X = 0,0

DELTA Y = 0,0
SPECULAR X = NO
SPECULAR Y = NO
CHARACTER DISTANCE = PROPORTIONAL
LANGUAGE = ITALIAN
KEYS = CONTINUOUS
MEASUREMENT UNIT = mm
PRESSURE UNIT = BAR
END OF MARKING TIME = 500 msec
START = VARIATION
TIME = 11:41:11
DATE = 08/08/1999
DAY = SUNDAY
STAMPER Nr. = 1
BAUD-RATE = 19200

- **Password programming**

PASSWORD ENABLED = YES
PROGRAMMER PASSWORD = MARC
OPERATOR PASSWORD = JOB

- **Diagnostics**

DIAGNOSTICS FUNCTIONS
DISPLAY
KEYBOARD
INPUT/OUTPUT
AREA TEST
DRAWING TEST
SERIAL TEST

3.3.1 Text parameters

To use the “text” function it is necessary to know the parameters that can be changed after entering the text itself:

H SIZE	character height in mm
L SIZE	character length in percent
D	percent distance between characters
I	character inclination
DIR	writing direction in degrees
PosX	start abscissa position
PosY	start ordinate position
JJ	start position, joystick mode
PUNCH DOT DIST.	dot distance
LIFT TIME	punch lift time
PWM	electro valve opening time
PRESS	marking pressure
DIST	punch-piece distance
MOV. SPEED	punch movement speed mm/s
FONT	character font
GIUST	marking position relative to start coordinates PosX and PosY
REPEAT Nr.	number of character marking iterations
DX	movement of iteration on X axis
DY	movement of iteration on Y axis
SPECULA X	specular text relative to X axis
SPECULA Y	specular text relative to Y axis
DIST	distance type between characters

3.3.2 Date format

The following **date** formats are provided, they can be selected via UP and DW arrow keys when the cursor flashes in the Format field:

GGMMAA	two figures for days – month – year;
MMGGAA	two figures each for month – day – year;
AAMMGG	two figures each for year – month – day;
AAGGMM	two figures each for year – day – month;
GGMMAAAA	two figures each for day – month and full year;
MMGGAAAA	two figures each for month– day and full year;
AAAAMMGG	full year and two figures each for month– day;
AAAAGGMM	full year and two figures each for day– month;
A	last figure of year;
AA	last two figures of year;
AAAA	year number;
SS1	week
SS2	week +1
HHMM24	hour and minutes in 24 hr. format;
HHMM12	hour and minutes in 12 hr. format;
HHMM12AP	hours and minutes in the 12 hr. format with AM PM after hours and minutes;
AP12HHMM	hours and minutes in the 12 hr. format with AM PM before hours and minutes;
Y	year in letters
G	day in the month in letters
GG	day in the month in numbers;
GGG	Julian calendar day
MM	month expressed in numbers from 01 to 12 (01=January, 02= February, etc)
M	month expressed in letters (A= January, B= February, C= March, etc.)
SHIFT	expressed in letters (A= first shift B= second shift C= third shift)

The first line displays a date marking example according to the selected format and of the current date and time. It is possible to select the **separator** character to separate the values of day, month, year, hours and minutes.

For the programming of shift start and end time it not possible to enter overlapping times between different shifts. In case a day time range is not covered by the shift programming, a marking request within the said time range will have no effect (no character is marked because no character is associated to the given time range).

3.3.3 Drawings – graphical functions

The stamper is able to mark a few simple geometrical shapes already internally programmed; through the UP and DW arrow keys it is possible to scroll the available shapes:

- absolute segment;
- absolute line;
- relative line;
- square;
- rectangle;
- isosceles triangle;
- rectangular triangle;
- circle;
- circular section;
- circular arc;
- anticlockwise arc;
- center arc;
- ellipsis;
- oval;
- parallelogram;

3.3.4 Drawings – PLT

The stampers of the MK3 series are able to import drawings in the PLT format only.

Incorrect files can cause problems to the acquisition program

The MK3 stampers use the driver: **HPGL 7585B**

This driver supports HP-GL, a pen plotter language that only accepts vector instructions. The raster objects are not supported by the periphery driver HP-GL. Autocad does not support the system printer driver HP-GL for Microsoft Windows, but it is possible to use this drive not included in the system.

The HP-GL devices officially supported are connected via the RS232 serial ports.

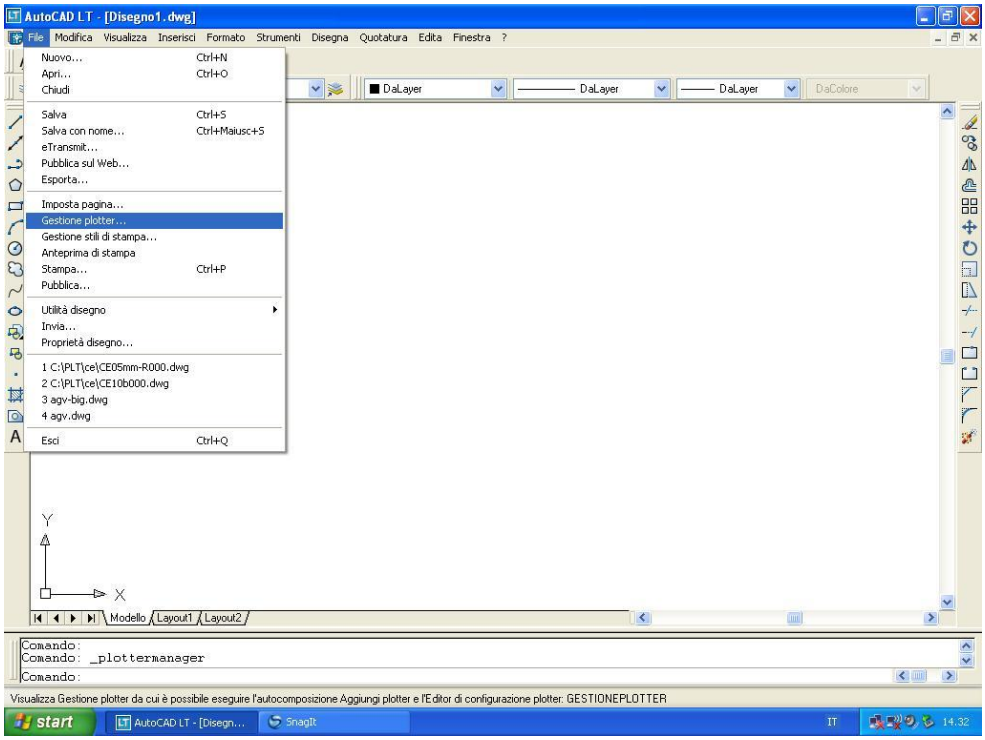
To configure the plotters 7585B, and all draftpro models with the default settings, set the RS-232C speed selector to 9600, parity ON, even and disable communication interception. Set the emulation and expansion values to normal.

If the stamper does not answer it may be possible that the wires 2, 3 or 7 are not correctly configured or that the stamper is not correctly configured.

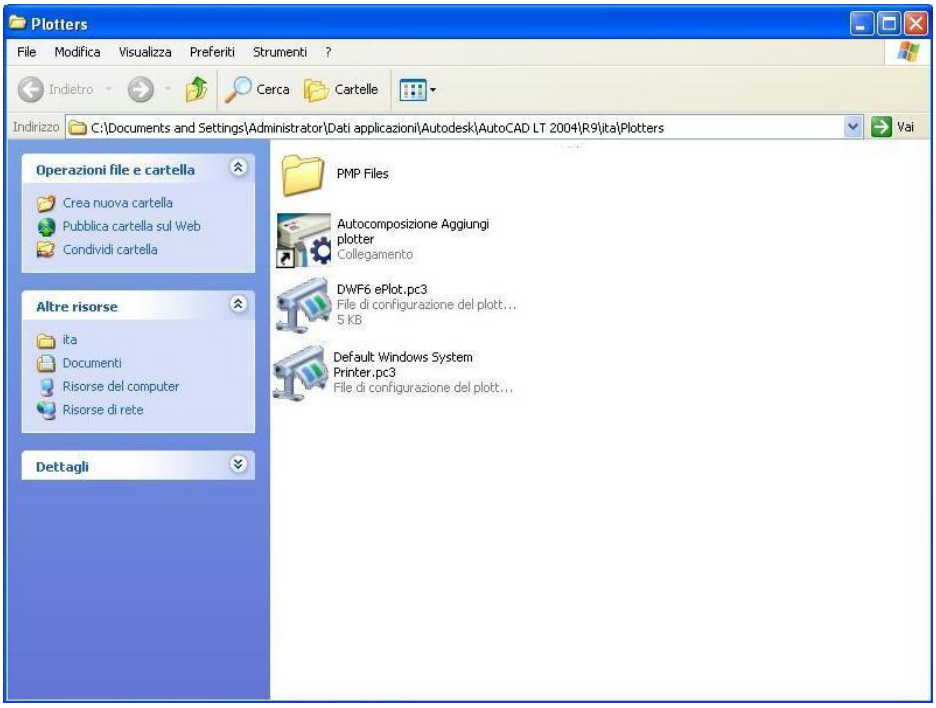
CREATION OF A.PLT FILE FROM CAD

Print driver configuration to create a .plt file from AutoCAD drawing

Start Autocad LT, select “plotter management” from File menu

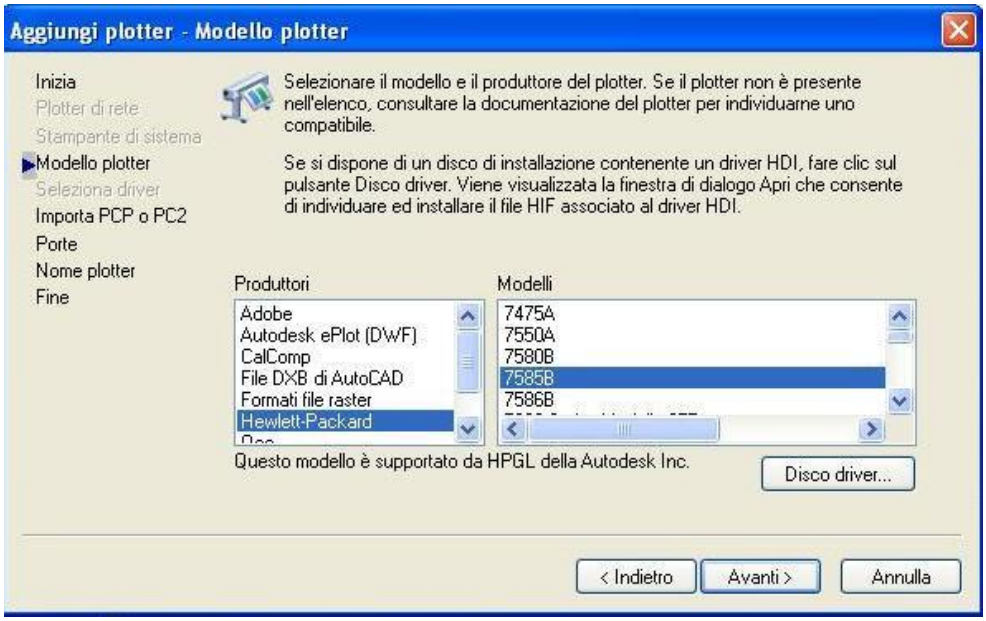


Configuration of a new plotter procedure “Add New Plotter”

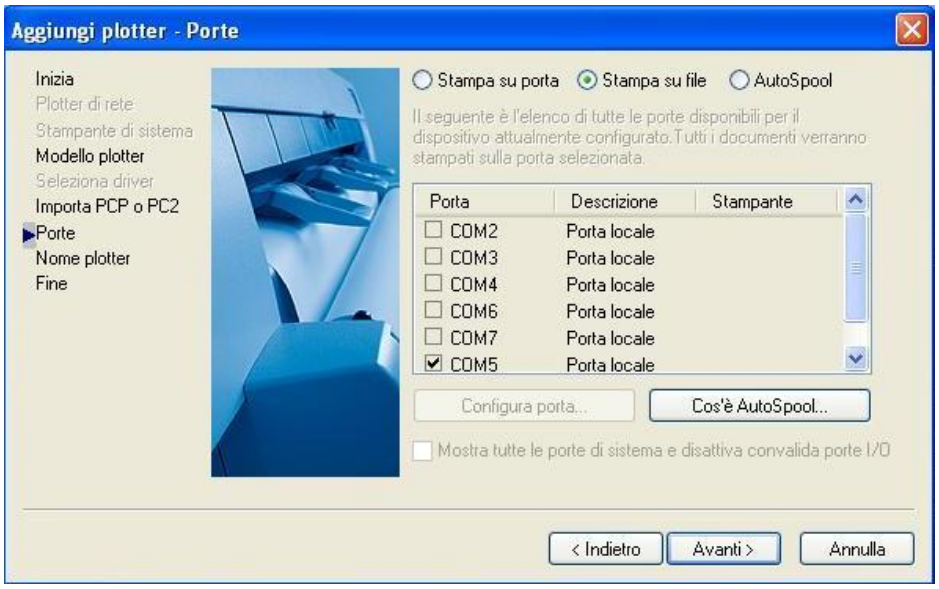


Select “This PC”

Select from the list a HP Print driver for plotter, if available the driver Hewlett-Packard 7585B

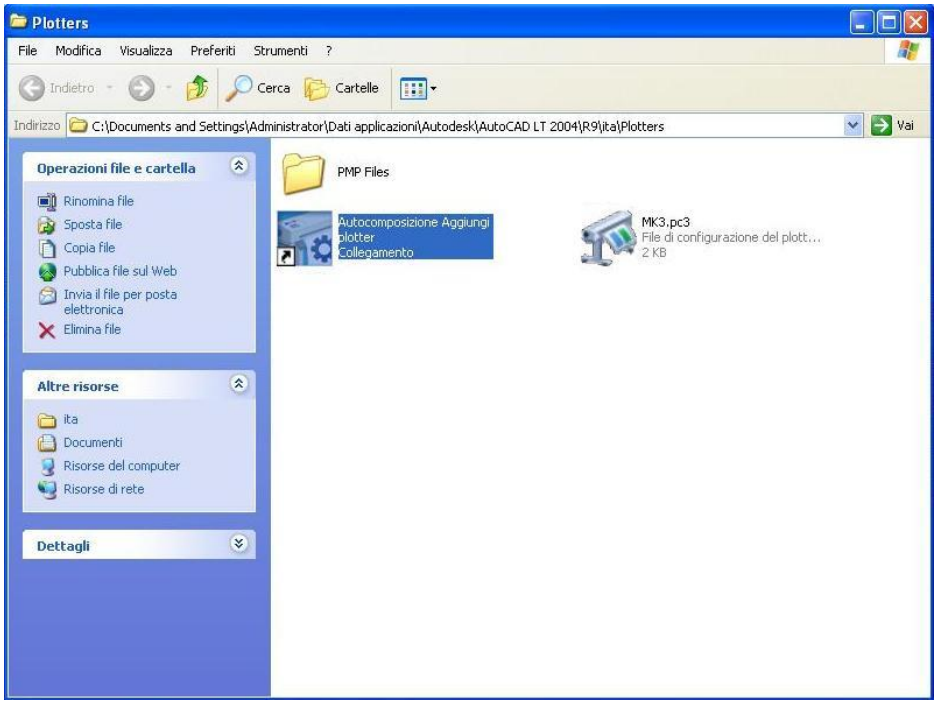


Select “Print on file”



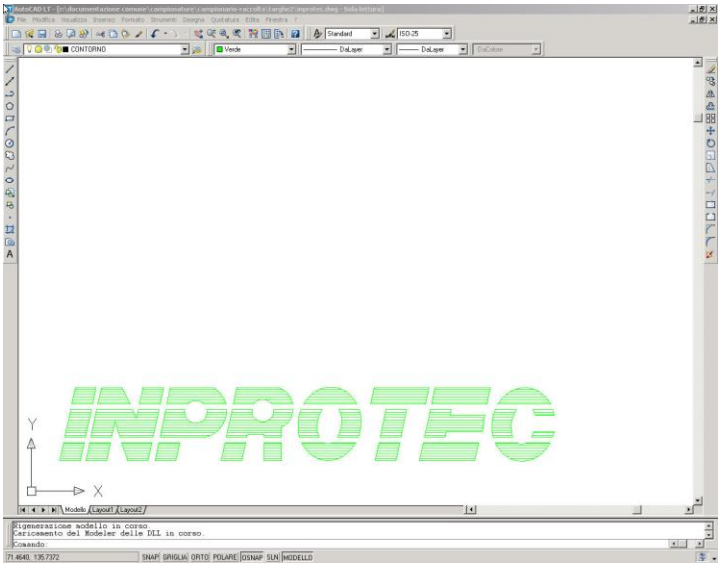
Assign a name to the virtual printer (ex. MK3)

The new installed plotter will be displayed in plotter list as MK3.pc3

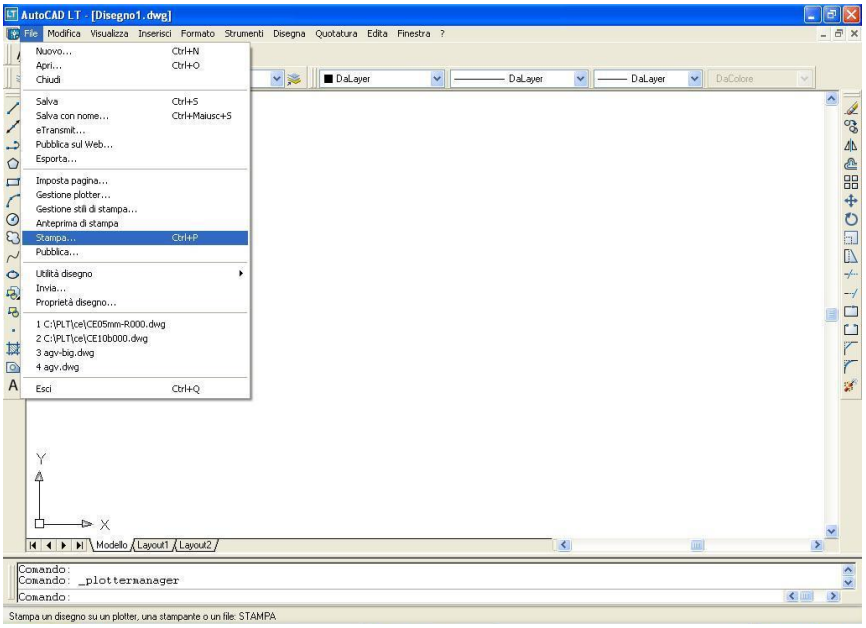


Print-on-file configuration for the generation of a .plt file

Generate or import desired logo

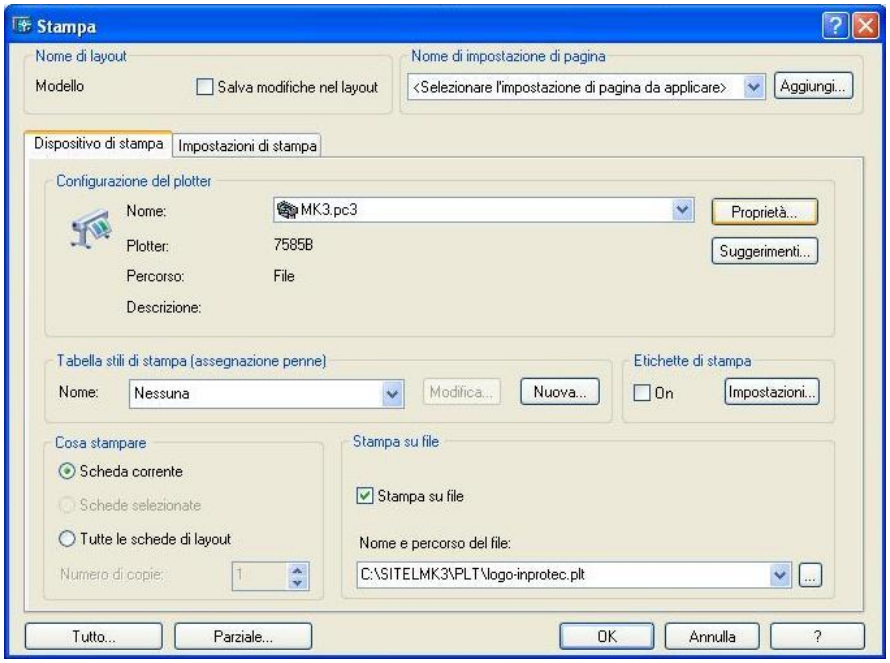


Select “Print…” from “File” menu



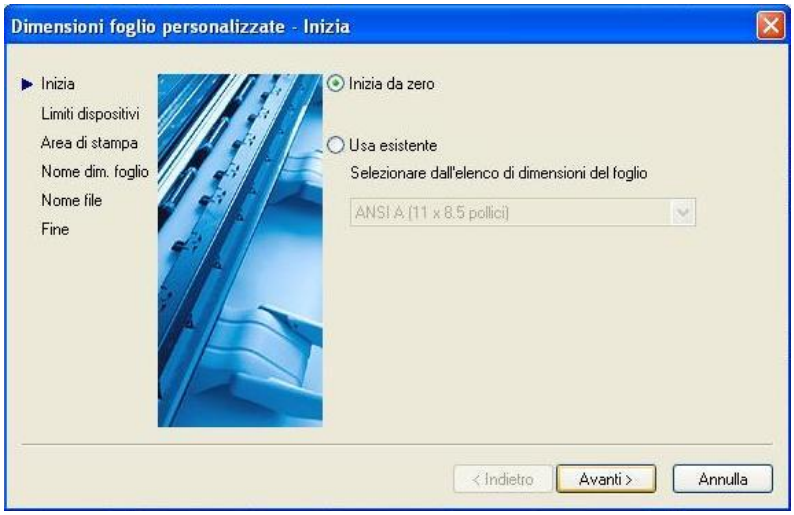
Select the plotter just installed (MK3.pc3), select “Stampa su file” and assign the name and patch of the .plt file

Then click on “Properties…”



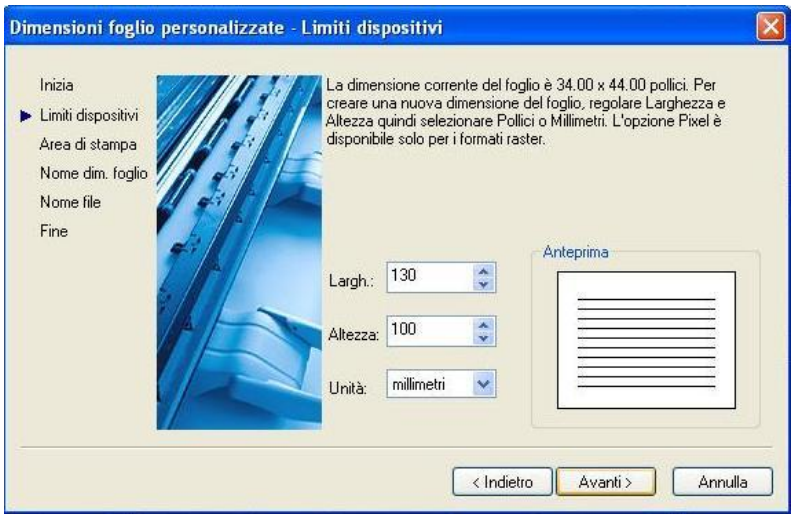
Select “Personalized paper dimensions” , then click on “Add…”

Start from zero



Type the marking area of the MK3 stamper

Es. *SITEL*MK3-M8 = 80 x 50 mm

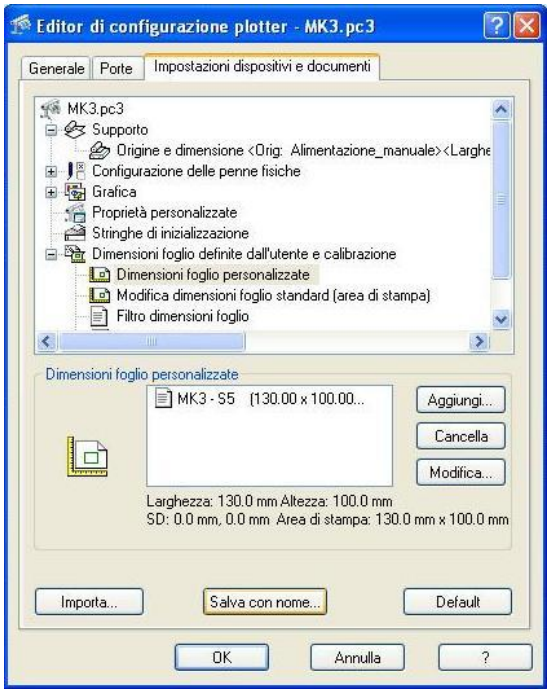


No margins on print area

Assign a name to personalized paper

Assign a name to referring file

Save the print driver settings.



Modify “Print settings”

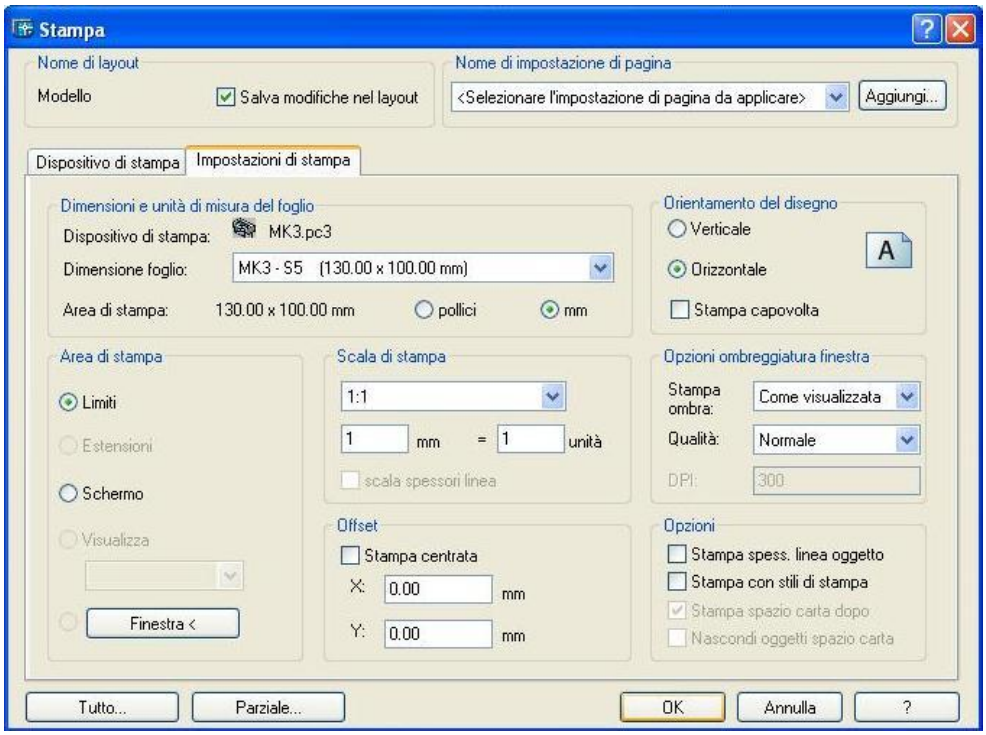
Select “save layout changes”

Paper dimensions: select personalized paper just generated (es. MK3-M8 80x50mm)

Print scale 1:1

Options: no selections

Print area: limits



Remember to set a printing area not larger than the marking area of the stamper

The generated file can be imported by any SITELMK3 stamper and saved within the resident memory.

To transfer the file connect the PC to the STAMPER via the special RS-232 serial cable, then use the Software SISM-S for communication.

For details concerning the use of the SISM-S software refer to the related manual.

3.3.5 Counters

This function allows to mark numbers in an increasing or decreasing order. There are three types of counters:

- NORMAL
- CONT
- RESET

1. NORMAL

In this mode it is possible to mark counters reporting:

- initial and final number

- the counting order (increasing or decreasing)

- repetition (how many times it will be marked)

- field length (the number of figures in the counter)

- the filling character (when the number of figures in the number to be marked is shorter than the field length)

- all parameters relating to the character to be used (see “text parameters”)

2. CONT

This type of counter has no effect on the marking. It increases of one unit every time a step of this type is executed, “counting” in fact the number of jobs executed in which a step “cont” is present. The counter always start from 1 and ends with a value defined by the user. When this value is reached the display shows the following message: “PIECE COUNTER TERMINATED!”.

3. RESET

This counter behaves as a “normal” counter but includes an extra parameter: it is possible to set a time (hours : minutes) after which the counter resets displaying a warning message.

3.3.6 Pause

It is possible to insert a step type "pause" inside a job, which allows to automate a few marking processes. Two modes characterize this step:

- TIME: at the end of the preceding step the marker stops for a predefined time, requested on programming the pause step. After the set timer the marker will go on with the marking of the next step.

- CONSENSUS: at the end of the preceding step marking, the marker sops waiting for a new external input that allows to proceed with the marking of the next step.

3.3.7 Memory Recall (M.R.)

Among the many functions in the menu MEMORY PROGRAMMING there is the "memory recall". It allows to save from 1 to 100 different steps, to which it is assigned a NAME. These steps can be included in any job, indicating the name assigned to the step to be inserted when programming the job. This allows, for example, the marking of several jobs that only differ in one step by programming one job only and inserting the desired step from a position in memory.

3.3.8 BAR-CODE function

By selecting the bar-code function from the function menu the text "BAR-CODE TPE = " is displayed. Three modes are possible:

- **NORMAL**
- **MEMORY**
- **SECURITY**

1. NORMAL

To use this function it is necessary that at least one step type "bar-code" is programmed. Every bar-code reading is stored in a test step variable, in order of acquisition. If a step remain empty it is not executed.

For each step of type bar-code it is possible to select from which character to start its reading and how many characters will be taken into consideration, so that it is possible to work also on a section of the code.

2. MEMORY

In this mode it is not required the presence of a bar-code step in memory. When the bar-code reads the code the stamper selects a memory among the one hundred available and copies its content to memory 0 to execute the job. An error message informs the user in case the selected memory is empty. The acquired bar-code must match the name of the memory to be selected. The maximum length of the name is 12

characters, therefore only the first 12 characters in the code will be considered. An error message informs the user in case the selected memory does not exist.

3. SECURITY

This is a new bar-code function, very similar to the "normal" one but with an advanced management of security. In particular, in this mode, it is impossible to mark if the related bar-code step is empty or if the following step is the same as the one previously marked. In both cases the display will show an error message. In this way the sequence and uniqueness of the marking is assured (very useful when it is required the marking of pieces in a series, for example serial numbers).

After each step marked its content is deleted.

This function can only be used if there already is one bar-code step in memory.

3.3.9 Start to selection

This functions allows to quickly start the stamper in mode TEXT or BAR-CODE.

To enable the start to selection function

Select from menu **FN** the function **PASSWORD PROGRAMMING** (Ctrl+Y)

The following items are displayed:

ENABLE (YES, NO, QUICK START, START TO SELECTION)

PASSWORD (PROGRAMMER, OPERATOR)

BARCODE (YES, NO)

CODE (marc, job, etc.)

Attention! For the "start to selection" to be possible it is necessary that the BAR-CODE function is enabled (BARCODE: **YES**). This function is OPTIONAL. (N.B. If the bar-code function is not enabled the quick start is anyway possible in TEXT mode by selecting in ENABLE: QUICK START).

ENABLE:

YES: normal start

NO: start without password

QUICK START: quick text function

START TO SELECTION: start at selection

Once **"START TO SELECTION"** is selected it is necessary to restart the stamper.

When the stamper is switched on instead of the request " PASSWORD: " the display shows:

START TO SELECTION

PRESS: **0**=NORMAL **1**=BAR-CODE **2=**TEXT

NORMAL: normal start, password is requested

BAR-CODE: quick start in bar-code mode

TEXT: quick text start

Attention: when the functions BAR-CODE or TEXT are selected the stamper will only carry out these specific functions. To enable again all functions restart the stamper and go back to NORMAL mode.

3.4 KEYS

3.4.1 Keys definition

DX Cursor:

confirms the parameter currently being programmed (where the cursor is flashing) + proceeds to next parameter with a forward page shift if needed; in the case of the last parameter of the last page it goes back to the first page (?!);

SX Cursor:

confirms the parameter currently being programmed (where the cursor is flashing) + moves to the previous parameter with a back page shift if required; in the case the first parameter of the first page it does not go back and stays on the same parameter;

UP Cursor:

in the programming of special parameters, scrolls the list of possible parameters forward or increases of one unit the parameter itself;

DW Cursor:

in the programming of special parameters, scrolls back the list of possible parameters or decreases of one unit the parameter itself;

Key >:

skip to the next page in the programming menu positioning the cursor on the first parameter of the new page; the scrolling of pages is cyclical, with return from the last to the first page;

BCK key:

cancels the parameter currently being programmed (where the cursor is flashing) and suggest the initial parameter (before the modification); the cursor keeps flashing on the same parameter waiting for a new programming or confirmation of the parameter;

ENTER key:

in any position in the programming menu it confirms the parameter currently being programmed (where the cursor is flashing) and quits the programming menu going back to the initial message confirming all the menu parameters; on programming a Step in a Job, the Enter key conforms the insertion of the Step into the Job will all related parameters (included the ones that were not modified and therefore maintained the default value);

ESC key:

in any position in the programming menu it cancels the parameter currently being programmed (as the Bck key) and quits the programming menu canceling all the programming carried out; in the case of programming of a Step in a Job, the Step is cancelled and not stored;

Numeric keys (0-9):

for programming of numeric parameters and in the programming of a text for marking;

Point key (.):

for programming of decimal numeric parameters and to program text for marking;

SPACE key:

for programming alphabetic parameters (for example separator or filling character) and to program text for marking;

Alphabetic keys (A-Z):

for programming alphabetic parameters (for example separator or filling characters) and to program the content of a marking text

Keys with dieresis (U e A):

to program the content of a marking text;

SHIFT key:

toggles lower and upper case; on startup it is set to lowercase;

Fn key;

Scrolls, each time is pressed, the initial pages of all available menus. ESC goes back to the start page;

CTRL key:

CTRL + S START

CTRL + Z RESET

together with the **" FN "** key carries out the following commands:

CTRL + Q MEMORY PROGRAMMING

CTRL + W MEMORY POSITIONS MANAGEMENT

CTRL + E MEMORY DISPLAY

CTRL + R PRODUCTION CYCLE (OPTIONAL)

CTRL + T FACTORY PARAMETERS

CTRL + Y PASSWORD PROGRAMMING

CTRL + U DIAGNOSTICS

ALT key:

only in the start screen, it allows to enable and disable the pneumatic circuit. The active or passive status can be identified by the letter "P" displayed top right in the initial screen. Le lowercase letter indicates that the pneumatic circuit is active or not.

If a START command is given with the air circuit closed, the stylus moves without percussion, simulating the marking.

ALT + C CLEAR TEXT

in the programming of the a marking text content, it deletes all the content of the text.

3.4.2 Operation of START and STOP local and remote commands

MODE	Local Start	Remote Start	Remote Stop
LEVEL	The cycle starts on pressing and stops immediately on releasing the button. Keep it pressed until the JOB is completed to perform the cycle At the end of the cycle if it is kept pressed it restarts automatically after 3 seconds, if on the contrary the marker is released it waits for the next start	The cycle starts at the closure and ends at the end of the JOB With a remote stop the cycle is immediately stopped	Immediately stops the cycle
VARIATION	The cycle starts on closure and finishes only at the end of the job A remote stop resets the cycle	The cycle starts on closure and finishes only at the end of the job A remote stop immediately resets the cycle	Immediately stops the cycle
MEMORY	The cycle starts at closure and finishes at the end of the JOB, with button pressed. If the button is released during the execution of a JOB, the cycle halts at the end of the last vector being executed, and with the pressing again of the button it restarts from the next vector after the halt A remote stop resets the cycle	The cycle starts at the closure and finishes at the end of a JOB. If a stop is received it halts at the end of the vector being executed. Another stop resets the cycle. A start after the first stop performs the restart function in memory, restarting from the next vector after the last completed one.	A stop during the execution halts the cycle at the end of the vector being executed, another stop resets the cycle.

3.5 DEFINITION OF THE DEFAULT PARAMETERS

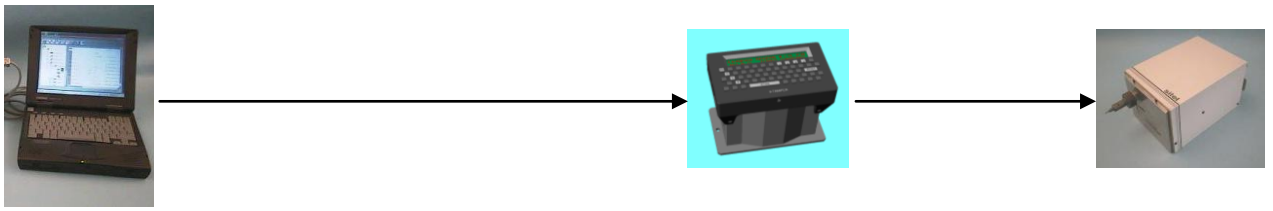
Description	Range	Default values
CHARACTER HEIGHT	0.15 – 130 mm	(5)
CHARACTER LENGTH	20 – 400 %	(100)
CHARACTER DISTANCE	20 – 400 %	(100)
CHARACTER SLANT	45 – 135 °	(90)
DIRECTION	0 – 359 °	(0)
X POSITION	0 – 130 mm	(3)
Y POSITION	0 – 100 mm	(24)
MOVEM. SPEED	33-190 mm/sec	(50)
FONT	ISO 3098/1, DIN 1451, MATRIX 5x7, BLOCK OUTLINE, UNIVERSAL	MATRIX 7X5
MARKING POSITION	Right, Center, Left (relative to coordinates X Y)	Right
REPEAT: NUMBER	1 – 10	(1)
REPEAT: deltaX	0 – 1 mm	(0)
REPEAT: deltaY	0 – 1 mm	(0)
SPECULAR X	Yes, No	No
SPECULAR Y	Yes, No	No
CHAARCTER DISTANCE TYPE	Normal (fixed distance) Proportional (equidistant characters)	Proportional
FILLING DISTANCE.	0.1 – 2 mm	(0.5)
POINTS DISTANCE	0.1 – 5 mm	(0.2)
LIFT DELAY	1 – 30 ms	(10)
PRESSURE (note)	0 – 6 BAR	(0- BAR)
PWM	00 – 99% (1-11msec)	(15) time corresponding to 2.5msec
PUNCH DISTANCE (note)	ee	Manual position 10mm
LANGUAGE	Italian, English, French, German, Spanish	Italian
PRESSURE UNIT	BAR, PSI. MPA	BAR
MEASUREMENT UNIT	mm, inch.	mm
BUZZER	Si, No	(SI)
END OF MARKING TIME	20 – 5000 msec	(500)
REMOTE START MODE.	Level, Variation, memory	Variation
Max numb. of counter figures	7	(4)

4 “ATTACHMENTS”

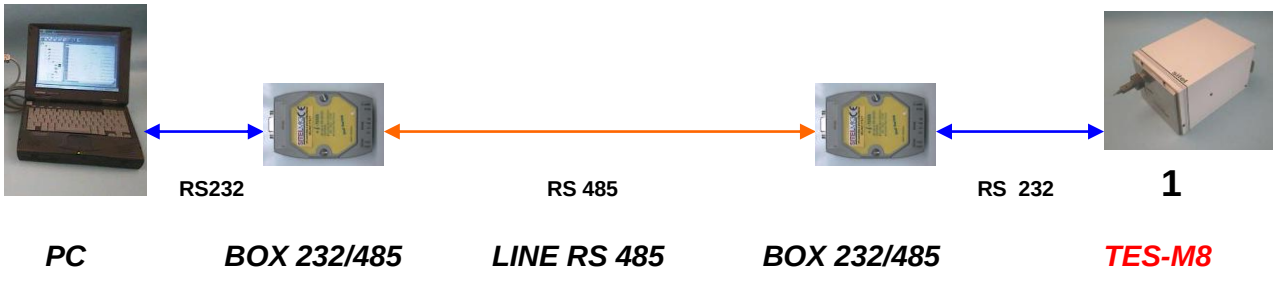
4.1 INTERCONNECTIONS

The stamper of the **M8** series is fitted with a 9 pins connector for serial connection to PC. The interface is a **RS 232** with HP-GL compatible protocol to import PLT drawing files and ASCII commands for the other functions.

4.1.1 Standard interconnection

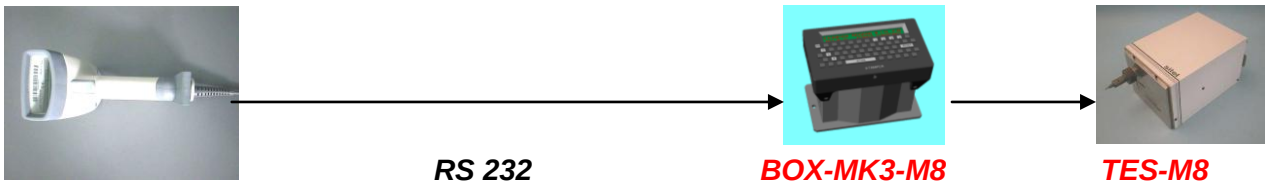


4.1.2 Interconnection with remote PC

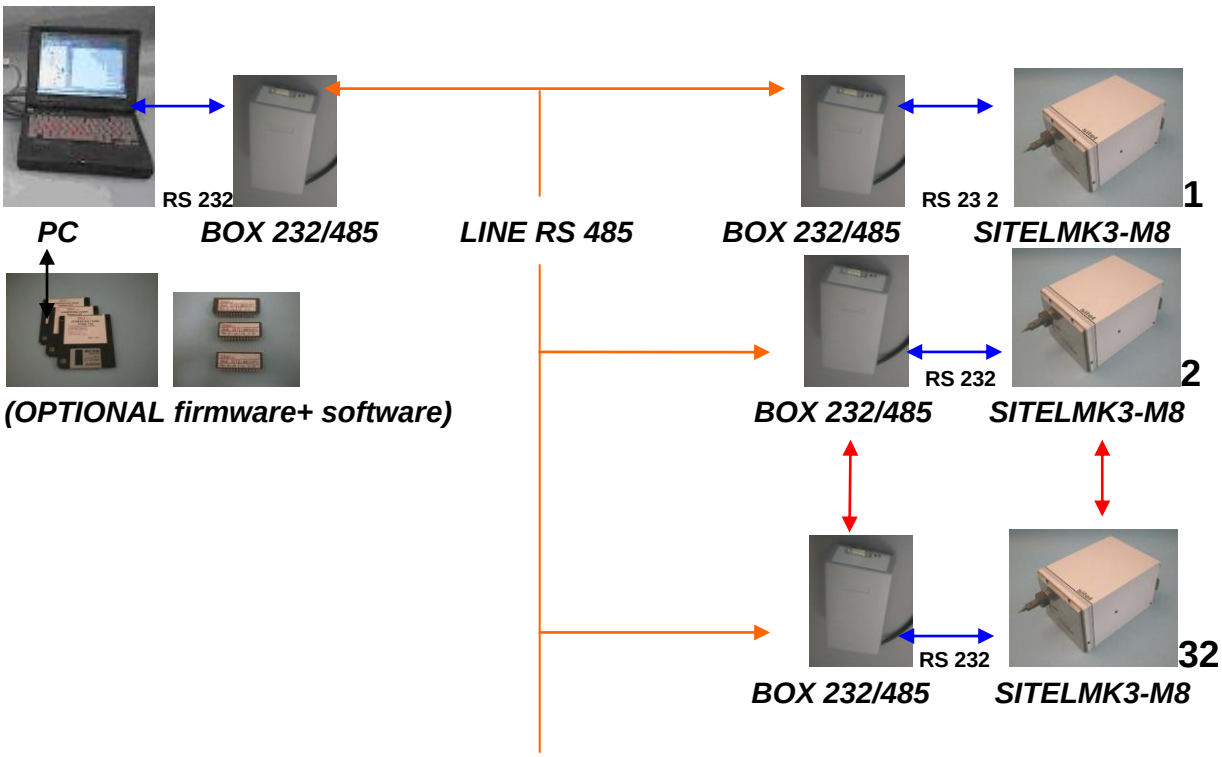


Maximum distance 1,2Km

4.1.3 Direct interconnection with BAR-CODE

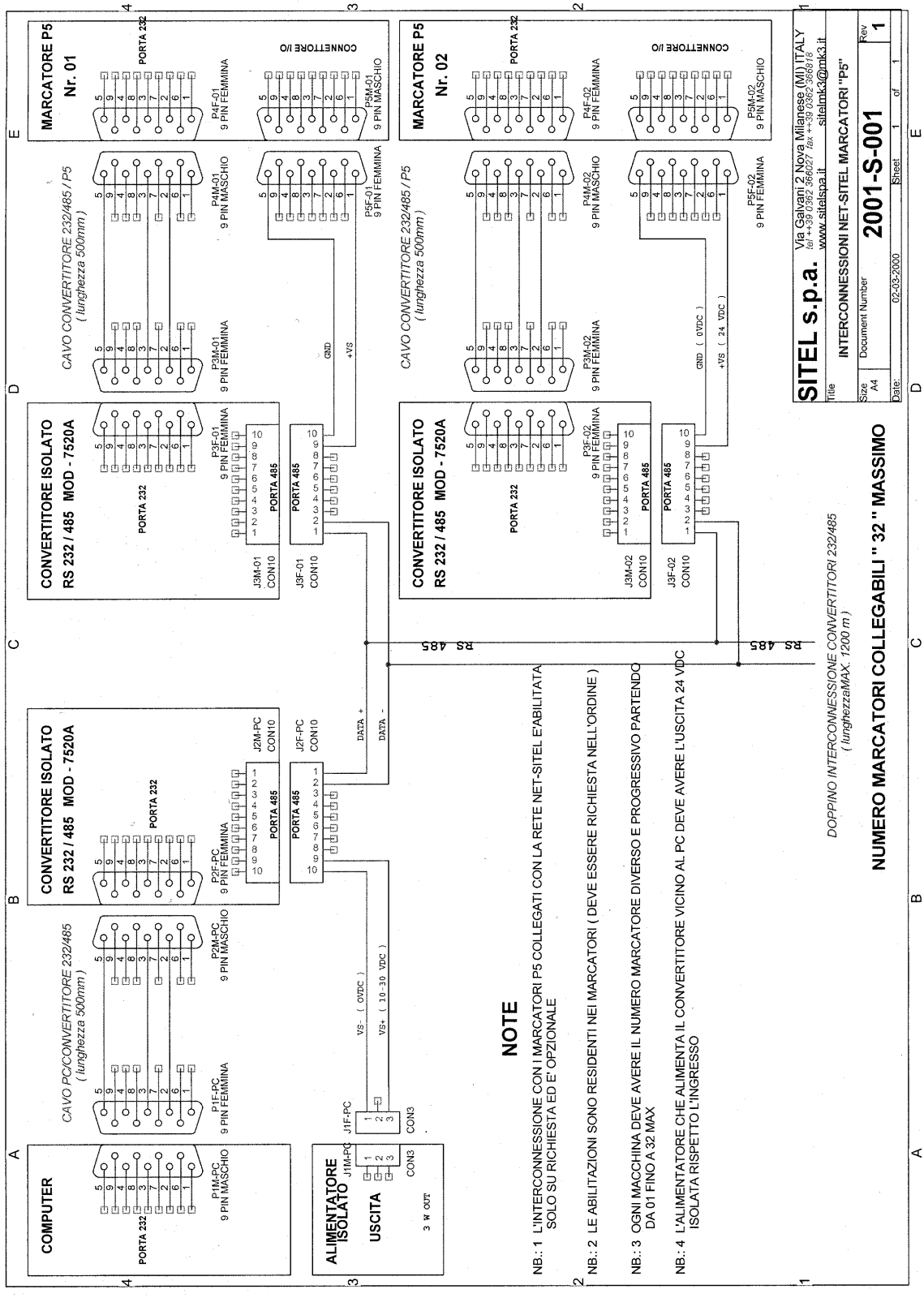


4.1.4 Interconnection with SITELMK3 NETWORK (max 32)

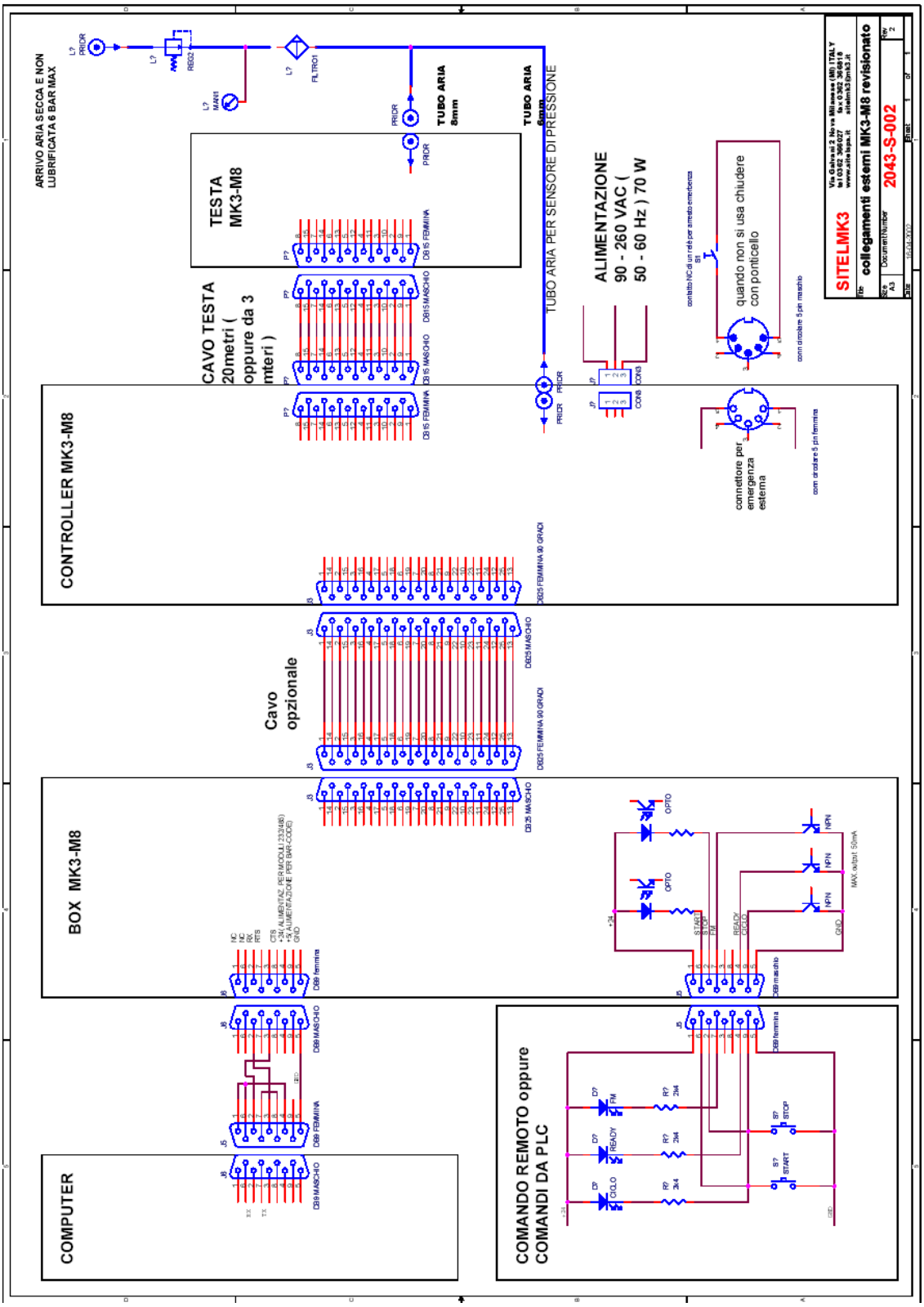


see connections diagram in the next page

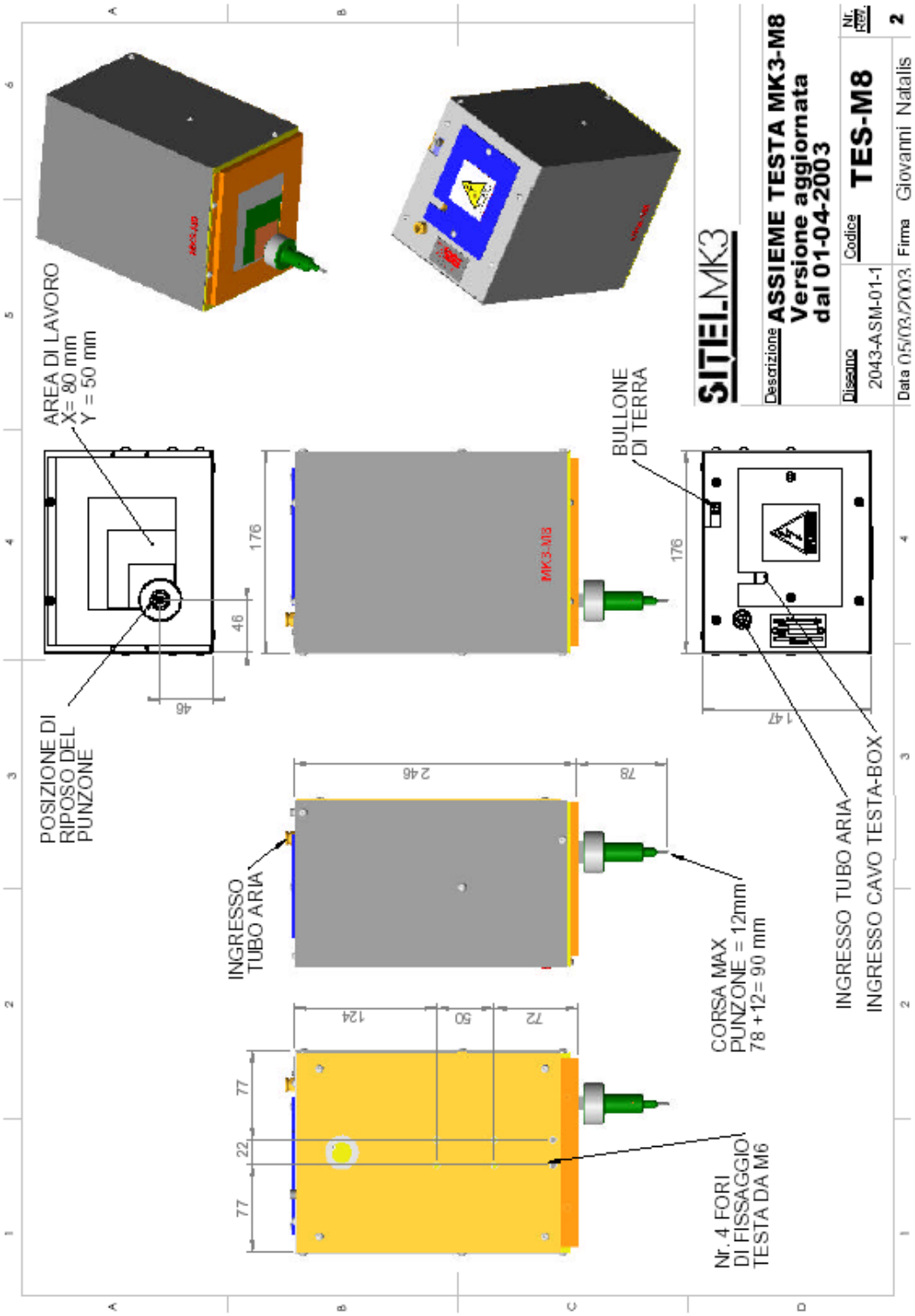
SITELMK3 NETWORK



4.2 EXTERNAL CONNECTIONS DIAGRAM



4.3 HEAD OVERALL SIZE



4.4 CONVERSION TABLE FOR PRESSURE MEASUREMENT UNITS

MPa	BAR	PSI	kPa	millibar
0,1	1	15	100	1.000
0,2	2	30	200	2.000
0,3	3	45	300	3.000
0,4	4	60	400	4.000
0,5	5	75	500	5.000
0,6	6	90	600	6.000
0,7	7	105	700	7.000
0,8	8	120	800	8.000
0,9	9	135	900	9.000
1	10	150	1.000	10.000

4.5 STANDARD AND OPTIONAL AVAILABLE FONTS - LIST OF PRINTABLE CHARACTERS

ISO 3098/I

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

Tasto	1	2	3	4	5	6	7	8	9	0	'	Ü	,	.	+	Ä	-
	1	2	3	4	5	6	7	8	9	0	'	°	,	.	+	//	-
↑	!	''	←	$	%	&	/	(	)	=	?		;	:	×	¨	\

DIN 1451

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

Tasto	1	2	3	4	5	6	7	8	9	0	'	Ü	,	.	+	Ä	-
	1	2	3	4	5	6	7	8	9	0	'	°	,	.	+	//	-
↑	!	''	←	$	%	&	/	(	)	=	?		;	:	×	¨	\

DIN 17-265

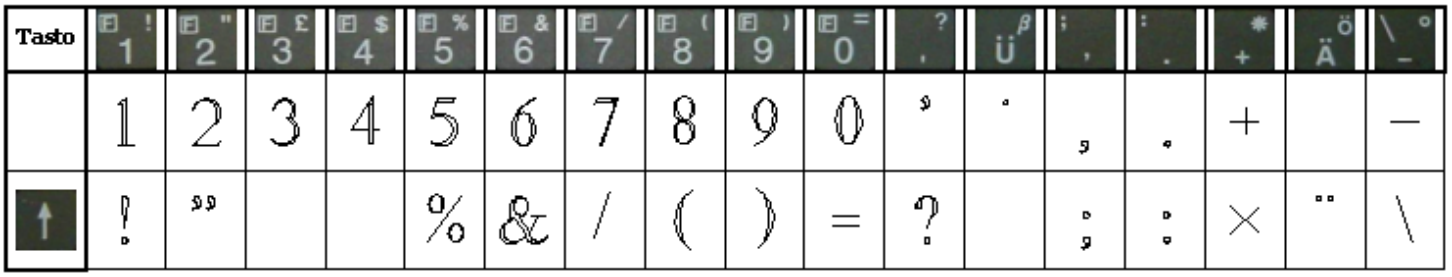
ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

Tasto	1	2	3	4	5	6	7	8	9	0	'	Ü	,	.	+	Ä	-
	1	2	3	4	5	6	7	8	9	0	'	°	,	.	+	//	-
↑	!	''	←	$	%	&	/	(	)	=	?		;	:	×	¨	\

UNIVERSAL
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z

TIMES
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z



TECTONA
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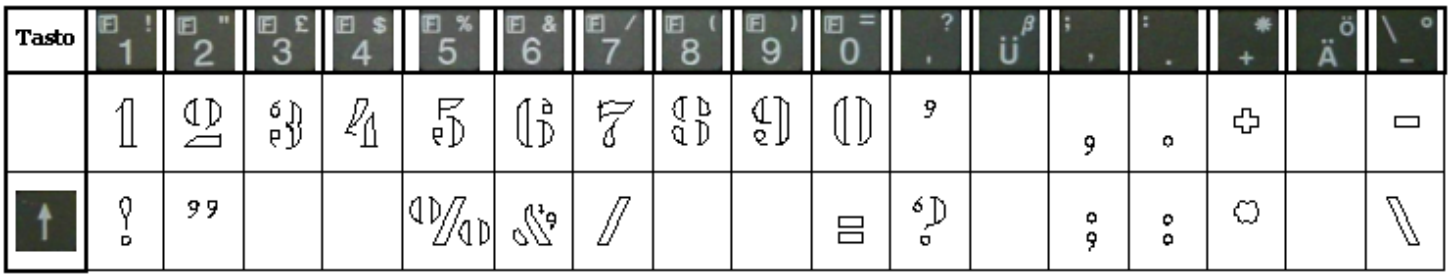
a b c d e f g h i j k l m n o p q r s t u v w x y z



BLOCK MEDIUM
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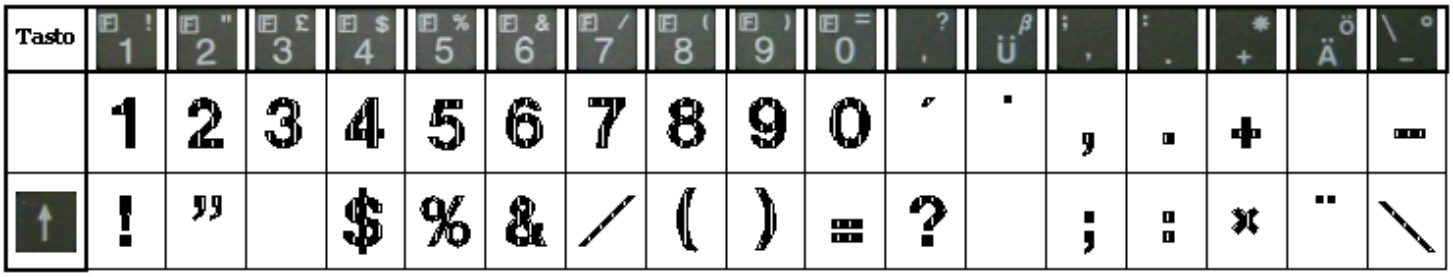
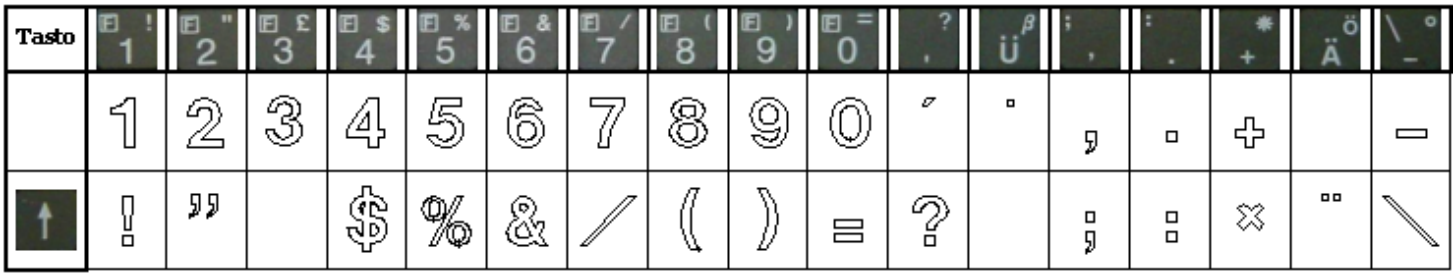
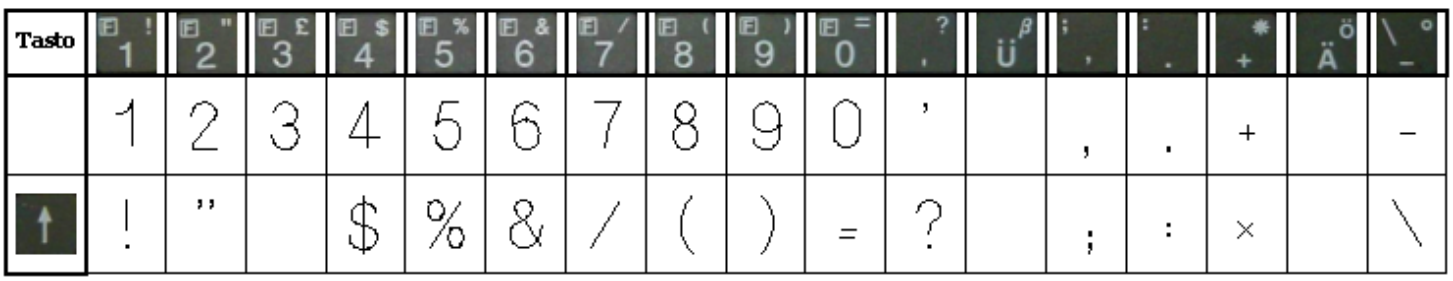
abcdefghijklmnopqrstuvwxyz



BLOCK OUTLINE
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz



BLOCK LIGHT
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz



GOTHIC LIGHT

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

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MASCOT OUTLINE

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ROMANIC OUTLINE

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

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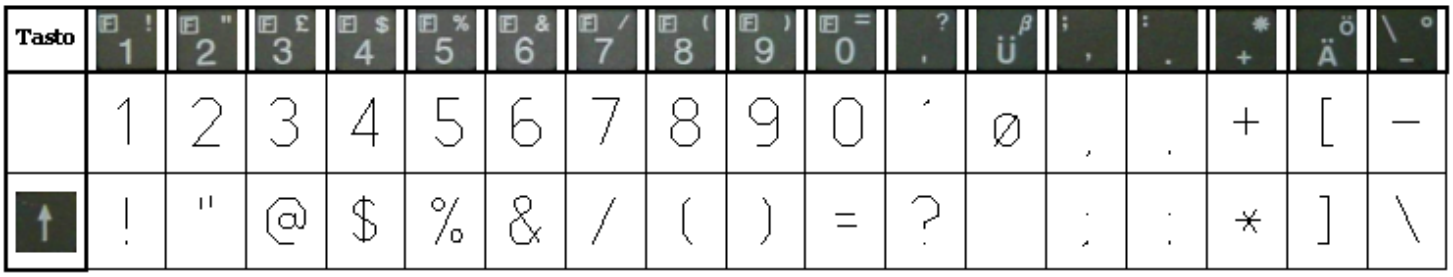
PLOTTER

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz



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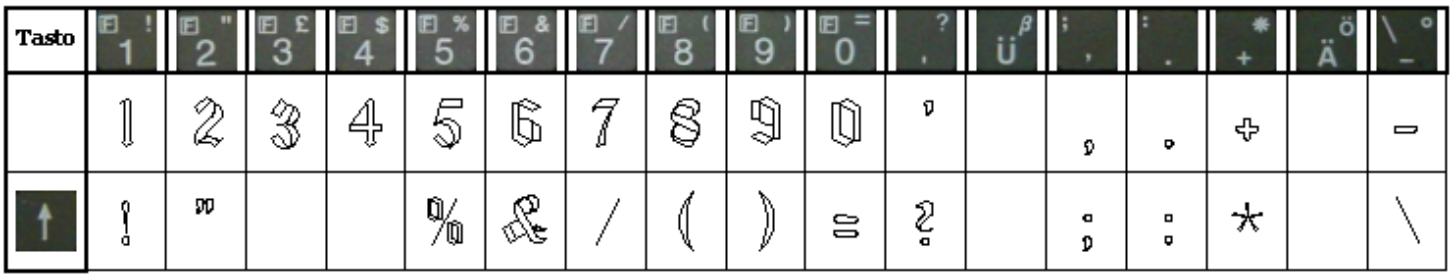
ENGLISH OLD STYLE

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz



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FUTURA PEN

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

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UNIVERSAL B

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abcdefghijklmnopqrstuvwxyz

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MATRIX 7x5

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

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MATRIX 9x7
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abcdefghijklmnopqrstuvwxyz

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MATRIX 7X5 OCR
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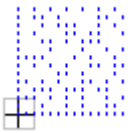


2D DATA MATRIX

(1X1 2X2 3X3 CELLS)

4.6 TECHNICAL OUTLINE

SITELMK3

The SITELMK3 s.r.l. company, a leader in the field of microdots marking for over 10 years, introduces an overview of its products listing the technological innovations it FIRST IN THE WORLD introduced in this field:

- Digital programming of marking power (PWM), Interfacing to PC with extended HP-GL protocol, Hardware Firmware I/O Software integration for functions of integrated automation with the marker, Total protection of marking head with shutters, operation without the need of a PC, WINDOWS operator interface, creation of Portable marker with innovative performances (patented).

- Digital display of marking pressure and PWM value, digital selection of 255 JOB's memorized in the controller, graphical display of the marking JOB, ready for integration within automated lines.

- Completely modular and expandable system, marking power programming via Software, marking with rotating axis performed with Interpolation.

The **microdot** stampers of the **SITELMK3** series are flexible machines that allow indelible marking on metals and plastics, even for hardness up to **HRC63,** with a high printing definition .

The system operation is the same as a **PEN PLOTTER** interfaced to a **PC** for **configuration** only or for the **graphical programming of the marking .**

The marking is carried out through a series of **microdots** obtained **pneumatically** by programming the dot density and the marking **power** up to **4000 Kg per dot**

The high precision mechanic makes possible the movement on **2 axis (X Y)** with a resolution of **0.025mm** per step (**40 steps = 1 mm)** on both axis.

The stroke frequency can be programmed from **10 to 100 strokes a second**.

The power is given by **stepper** motors with high angular resolution.

The dot density can be programmed up to **100 dots per mm**.

The marking **microdot** technology carries out the distortion of the material leaving an **" INDELIBLE PRINT "** on the piece, ensuring it remains readable even after abrasion or painting (without generating strain on the product).

The stamper is controlled by a **Personal Computer** with **Windows** software or it can work without a **PC**

The stamper's programming is carried out through the **Software SISM** that provides an **easy, simple, fast** interface.

The stamper can also be connected to **Host** systems using a **PC** as interface between the **stamper** and the **Host** (the available protocol to interface with the stamper is **HP-GL 7585B** extended compatible and customized for the stamper).

The stamper allows the marking of: **Alphanumeric texts, Dates, Progressive numbers, Drawings** imported from standard **CAD** in **PLT** format**;** the writings can be **linear and circular** on **flat** pieces or **round** ones.

All **SITELMK3** marking systems allow marking on uneven surfaces with difference of level up to **12 mm;** it is also possible to vary the parameters and obtain markings with different setting by acting on the programming of **3 variables**, **speed** of stylus movement, stroke **frequency**, marking **power**, so as to automatically compensate great differences of level between stylus and piece.

The marking speed is about **3-5 characters a second** according to the programming of variables, and the desired final quality .

Five families of stampers are available : **T series**, **P series, S series, M series, G series**.

The programming is carried out directly from **keyboard** with an assisted interface, using the back-lighted **LCD display**, or using the **PC** for more complex functions (in the version with more functions).

Optional units are available that allow the power supply with autonomous systems.

Pneumatic consumptions vary from **5 NL/1' to 30NL/1'**.

The product is designed and produced in **ITALY** by the company **SitelMK3 S.r.l.** at the factory of **Nova Milanese** .

Were you interested, we would be happy to provide you with any further information or carry out marking with **samples provided by you**.

5 “PROGRAMMING EXAMPLES”

THE PURPOSE OF THIS PARAGRAPH IS TO DESCRIBE IN A CLEAR WAY HOW IT IS POSSIBLE TO PROGRAM THE MARKING MEMORIES USING THE SITELMK3 STAMPERS.

SWITCH ON THE STAMPER WITH THE POWER ON TOP SWITCH

THE DISPLAY WILL SHOW THE FOLLOWING PARAMETERS:

S.N. 00A1234 RELEASE D.1.17 P.09 NET Nr. 01 CONFIG. 12345678901

THESE PARAMETERS IDENTIFY THE STAMPER

S.N. 00A1234	**Marker’s serial number (generated in factory)**
RELEASE D 1.17	**D = Marker type (model SITELMK3-S5)** **1.17=Identifies the marker firmware revision (installed EPROM)**
P.09	**Identifies the hardware key number of the machine**
NET Nr. 01	**Identifies the marker number within a NET SITEL connection**
CONFIG.	**Identifies the marker configuration (which functions are enabled)**

These data are required when you want to add new functions to the stamper, and must be reported clearly and in full (the lack of only one item makes it impossible to install optional add-ons).

After about 30 seconds the display will show the following screen (it is possible to anticipate it by pressing “ENTER”)

```
PASSWORD =
```

INSERT THE PASSWORD CONFIRM WITH “ ENTER “	**“ MARC ” to start normal operation of the marker “ JOB ” to call up the jobs and carry them out without possibility of modifications or programming**
PASSWORD TO ADD NEW OPTIONAL FUNCTIONS	**The name of the password for the new function to be added will be communicated to the reseller only after written order sent by FAX reporting all required parameters (startup initial screen)**

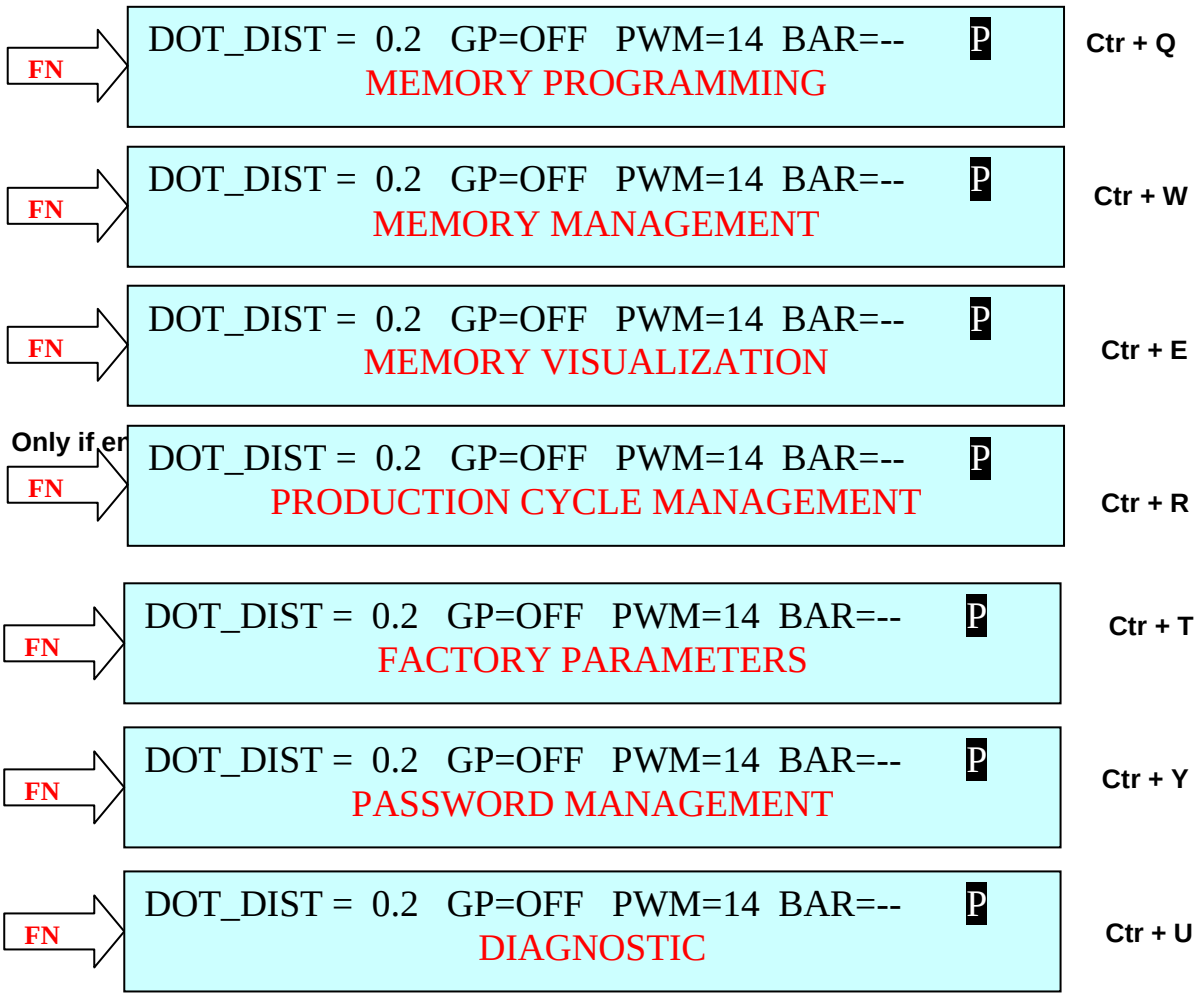
THE DISPLAY IDENTIES THE STANDARD SCREEN

```
DOT_DIST =  0.2   GP=OFF   PWM=14  BAR=--      P
MEM. N. = 0                    TIME=
```

DOT_DIST = 0.2	**Identifies the DEFAULT dot distance**
GP=OFF	**OFF indicates that the program “PRODUCTION MANAGEMENT “ is disabled ON if it is enabled**
PWM=14	**Identifies the value of PWM (electro valve opening time) set by DEFAULT**
BAR =00	**Shows the pressure value set on the pressure controller**
P	**An uppercase “ P “indicates electro valve enabled for marking, a lowercase “ p ” means that the valve is disabled**
MEM. N. =0	**Identifies the number of the memory resident in memory location “ZERO” (memory enabled for marking)**
TIME=	**Identifies the execution time for the memory resident in memory location “ZERO” (the time is displayed only after the first execution)**

THE AVAILABLE FUNCTIONS OF THE STAMPER ARE SELECTED VIA THE KEY " FN "

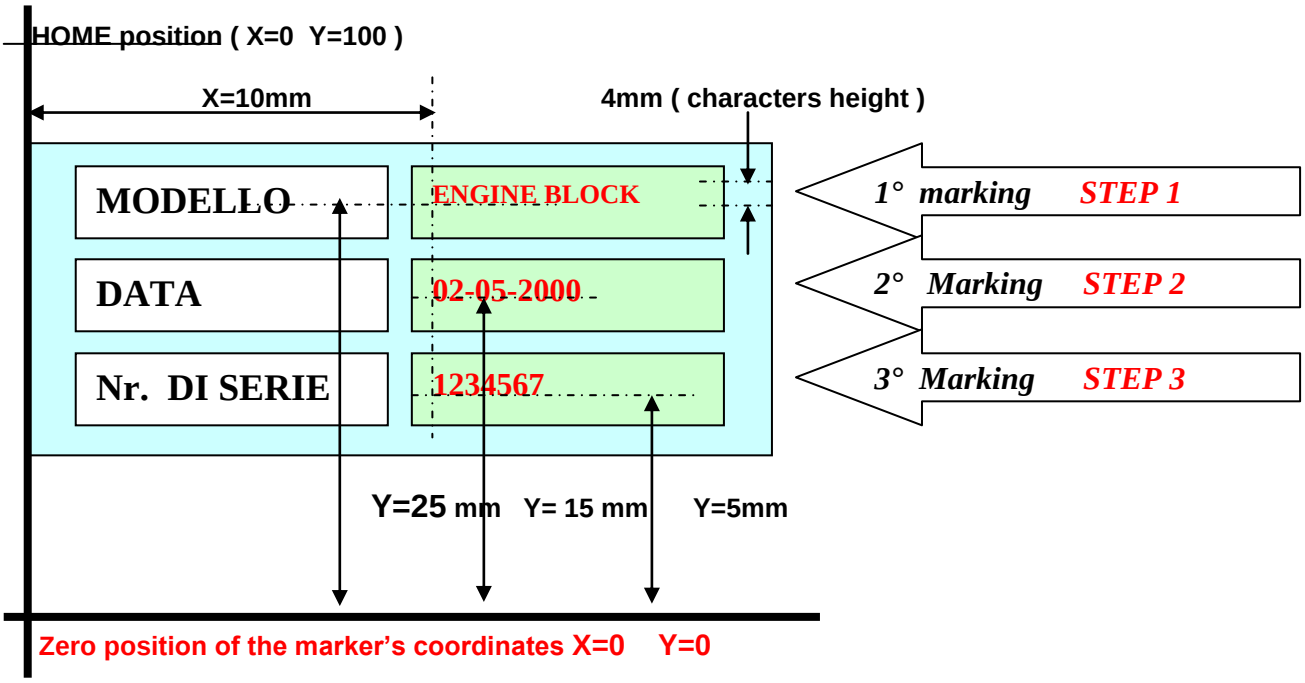
AT EACH PRESSING OF THE " FN " KEY THE DISPLAY WILL SHOW THE AVAILABLE FUNCTIONS



EXAMPLE : IT IS REQUIRED TO MARK THE FOLLOWING PLATE

The required markings are: text + date + serial number, to be executed on the following plate, the X and Y coordinates identify the marking positions,

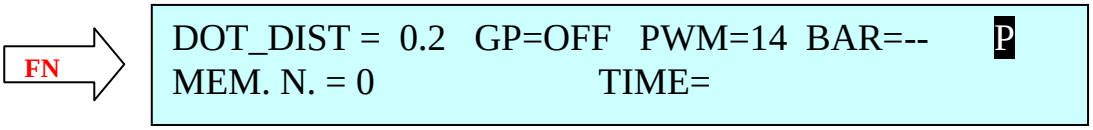
The required font is " ISO 3089/1 ".



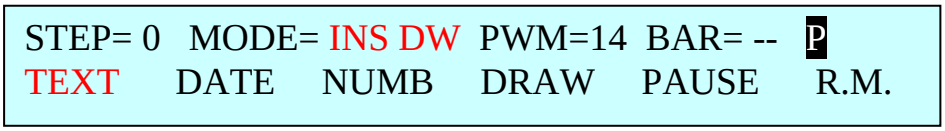
NOW WE GO ON WITH THE MEMORY PROGRAMMING

DESCRIPTION OF THE OPERATIONS TO BE PERFORMED IN SEQUENCE

THE DISPLAY SHOWS THE INITIAL SCREEN



TO CARRY OUT THE PROGRAMMING OF A MEMORY, PRESS THE KEY "FN"



STEP = 0	**Identifies the current step before programming (after programming the content will be written in STEP 1**
MODE=INS DW	**Shows the enabled function (insert step) when the cursor FLASHES on " INS DW "press ENTER to go on**
PWM =14	**Shows the value of the DEFAULT PWM**
BAR = --	**NOT USED**
P	**Shows the electro valve enabled for marking**
TEXT	**When the cursor flashes on "TEXT" press "ENTER" Select if the text is linear or circular**

TEXT	**It indicates that we are in the screen where we can insert the desired text Write " ENGINE BLOCK "**
M	**The character "M" on top right identifies the character selected as "UPPERCASE", to change to lowercase press the key ↑**
After writing the text	**Press the key " ENTER "**

SIZE = 4 W=100 D=100 S=90 DIR= 0
Pos.X= 10 Pos.Y= 25 JJ

Jump between fields are performed with the arrow keys ← ↑ ↓ →

SIZE= 4	**Enter the desired character height (millimeters or inches measures can be settled on main parameters)**
W= 100	**Defines the percent width of the character according to the font rules (200 indicates a character twice as wide as the standard) range from 20 to 400 %**
D= 100	**Defines the percent distance between characters Range from 20 to 400 %**
S= 90	**Defines the character slant (range =35 to 135 degrees)**
DIR= 0	**Defines the writing direction where 0 = horizontal, 90 corresponds to a 90 degree rotation anticlockwise (range from 0 to 359 degrees)**
Pos.X = 10	**X axis coordinate to be programmed**
Pos.Y = 25	**Y axis coordinate to be programmed**
JJ	**JOYSTICK function for punch positioning with autolearning If you want to use this function position the cursor on "JJ" and press "ENTER"**

ENTER

S1= 0,1 S2= 0,2 S3= 1 S4= 5
Pos.X = 10 Pos.Y= 25

S1= 0,1 S2= 0,2 S3= 1 S4= 5	**The flashing cursor defines which shift measurement in mm the punch performs the direction is defined by pressing the arrow keys ← ↑ ↓ → keeping the arrow key pressed the punch continues its shift, on release of the key the punch halts**
Pos.X=10 Pos.Y=25	**Displays the instant position of the punch, it updates in real time at each shift driven through the arrows**
"ENTER"	**To store the coordinates and go back to the previous screen**

SIZE= 4 W=100 D=100 S=90 DIR= 0
Pos.X= 10 Pos.Y= 25 JJ

" right arrow" Key " ⟶	**Allows to proceed to the next function and the next screen** **Go on to the next screen**

NEEDLE: DOT.DIST= 0.2 UPSTROKE TIME= 10
PRESS.= 00 PWM=14 DIST=5

NEEDLE: DOT.DIST=0,2	**Allows to program the desired dot distance**
UPSTROKE TIME=10	**To program the time required by the punch to rise after the stroke and before moving .**
PRESS.= 00	**To store, JUST AS A COMMENT, the value used for the marking pressure**
PWM = 14	**To program the PWM value for each step (it is possible to program a different PWM for each step)** **To change the value press the down key to decrease and the up key to increase.** **The set value is stored for the next step.**
DIST.=10	**To store, JUST AS A COMMENT, the distance set between the punch and the piece to be marked**

" right arrow" key Key " ⟶	**To proceed to the next function and the next screen** **To go on to the next screen**

SPEED =	MOVING 50
FONT = ISO 3098/1	JUST. = RIGHT

SPEED = MOVING 50	**To set the punch motion speed in mm/sec Range from 33 to 190 mm/sec. (Default = 50)**
FONT = ISO 3098/1	**To select the desired fonts by pressing the up and down keys**
JUST.= RIGHT	**To select the marking position in relation to coordinates X and Y The available modes are : RIGHT, CENTER, LEFT**

" right arrow" key Key " →	**To proceed to the next function and the next screen To go on to the next screen**

REPEAT Nr.= 1	DX= 0.0	DY= 0.0
MIRROR : X= NO	Y= NO	DIST.=NORM

REPEAT =1	**To program the number of repetitions for the desired character (max=10)**
DX=0,0	**Programming of the shift on the X axis during repetition (range from 0 to 2 mm in steps of 0.1 mm)**
DY=0,0	**Programming of the shift on the Y axis during the repetition (range from 0 to 2 mm in steps of 0.1 mm)**
MIRROR	**Enables the marking with mirrored writing in relation to the X and Y axis or both**
DIST.=NORM.	**Allows the marking with characters at distance Normal (marking with monospaced characters) or with characters at distance Proportional (equal distance between characters)**

" right arrow" key Key " →	**To proceed to the next function and the next screen To go on to the next screen**

WE HAVE NOW FINISHED TO PROGRAM STEP 1

THE DISPLAY STILL SHOWS THE FIRST SCREEN, BUT THE NEXT STEP IS BEING HANDLED

```
STEP= 1   MODE= INS DW   PWM=14   BAR= 2   P
TEXT      DATE      NUMB      DRAW□      PAUSE
```

NOW YOU CAN START TO PROGRAM THE NEXT STEP

THE PROGRAMMING IS IDENTICAL TO THE PREVIOUS ONE, WITH THE ADVANTAGE THAT ALL BASIC PARAMETERS ARE ALREADY ENTERED, THEREFORE YOU ONLY HAVE TO ADD THE CONTENTS VARIABLE, IN THIS CASE YOU MUST ENTER A STEP TYPE " DATE "

MODE = INS DW	**Press "ENTER"** **The cursor moves to the function "TEXT"** **Press the right arrow and position the cursor on the function "DATE"** **Press "ENTER"**

```
DATE                          25:08:2007
FORMAT:    DDMMYY      SEPARATOR= :
```

DATE	**Representation of the date to be marked**
FORMAT	**To select among the standard date formats** **Select by using the up and down arrows**
SEPARATOR	**To select the character to be used as separator between the variables day, month, year** **It is possible to use any character available on the keyboard**

" right arrow" key **Key "** →	**To proceed to the next function and the next screen** **To go on to the next screen**

SIZE= 4 W=100 D=100 S=90 DIR= 0 Pos.X= 10 Pos.Y= 15 JJ

Considering that the set parameters (TYPE, HEIGHT, WIDTH, SLANT, WRITING DIRECTION) DO NOT CHANGE, the programming can be performed more easily and quickly.

THE ONLY VARIABLE TO BE CHANGED IN THIS CASE IS THE Y COORDINATE

Pos.Y= 45	**Y axis position coordinate**

" right arrow" key **ey "** ⟶	**To proceed to the next function and the next screen** **To go on to the next screen**
" ENTER"	**If the marking variables are not to be changed (dot distance, PWM, speed etc.) it is possible to complete the programming by pressing the key "ENTER"**

AT THIS POINT YOU HAVE FINISHED TO PROGRAM THE STEP 2

THE DISPLAY STILL SHOWS THE FIRST SCREEN BUT THE NEXT STEP IS BEING HANDLED

```
STEP= 2   MODE= INS DW  PWM=14  BAR= 2  P
TEXT      DATE      NUMB      DRAW□     PAUSE
```

NOW YOU CAN START TO PROGRAM THE NEXT STEP

THE PROGRAMMING IS THE SAME AS THE PREVIOUS ONE, WITH THE ADVANTAGE THAT ALL BASIC PARAMETERS HAVE ALREADY BEEN ENTERED, THEREFORE YOU ONLY HAVE TO ADD THE CONTENTS VAIABLES, IN THIS CASE A STEP TYPE " NUMB "

MODE = INS DW	**Press "ENTER"** **The cursor will move to the function "DATE"** **Press the right arrow key and position the cursor on the function "NUMB"** **Press "ENTER"**

```
COUNTER   0000000  TYPE=NORM   DIR.=→  REP=1
S=0000000  E=9999999   CHAR=0     FIELD LEN.=7
```

COUNTER	**Displays the number the marker will mark during the next START**
DIR.= →	**Allows to program the counter increase → FRW / ← BACKW** **Selection with the up and down arrows**
TYPE=NORM	**Allows selection of a counter type, pls. refer to paragraph 3.3.5**
REP=1	**Counting rate, REP=1 incrementing counter every single cycle, REP=n incrementing counter every 'n' cycles**
S=0000000	**It allows to program the STARTING NUMBER** **To change select the field and overwrite**
E=9999999	**It allows to program the ENDING NUMBER** **To change select the field and overwrite**
CHAR=0	**It allows to select the character to be inserted in the empty fields** **Ex 1: CHAR=0 0000001 Ex 2: CHAR=- ------2 Ex 3: CHAR=A AAAAAA3**
LENG. FIELD=7	**It allows to program the max number of characters making up the counter to be marked**

" right arrow" key **Key " →**	**To proceed to the next function and the next screen** **To go on to the next screen**

SIZE= 4 W=100 D=100 S=90 DIR= 0 Pos.X= 10 Pos.Y= 5 JJ

Considering that the set parameters (TYPE, HEIGHT, WIDTH, SLANT, WRITING DIRECTION) DO NOT CHANGE, the programming can be performed more easily and quickly

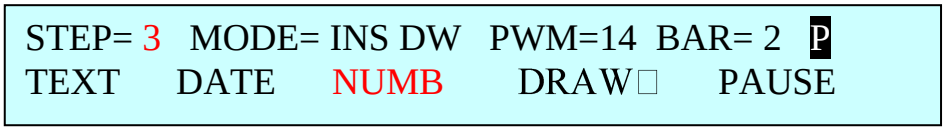
THE ONLY VARIABLE TO BE CHANGED IS ONLY THE Y COORDINATE

Pos.Y= 5	**Y axis positioning coordinate**

" right arrow" key **Key "** ⟶	**To proceed to the next function and the next screen** **To go on to the next screen**
" ENTER"	**If the marking variables are not to be changed (dot distance, PWM, speed etc.) it is possible to complete the programming by pressing the key "ENTER"**

AT THIS POINT YOU HAVE COMPLETED THE PROGRAMMING OF THE STEP 3

THE DISPLAY STILL SHOWS THE FIRST SCREEN BUT THE NEXT STEP IS BEING HANDLED



YOU HAVE FINISHED TO PROGRAM THE MEMORY, NOW IT IS POSSIBLE TO CARRY OUT A MARKING TEST WITHOUT STROKES BY TAKING AWAY THE PRESSURE.

TO PERFORM THE MARKING IT IS NECESSARY TO PROCEEED WITH THE PLATE POSITIONING, THEN MANUALLY ADJUST THE DISTANCE BETWEEN STYLUS AND PIECE.

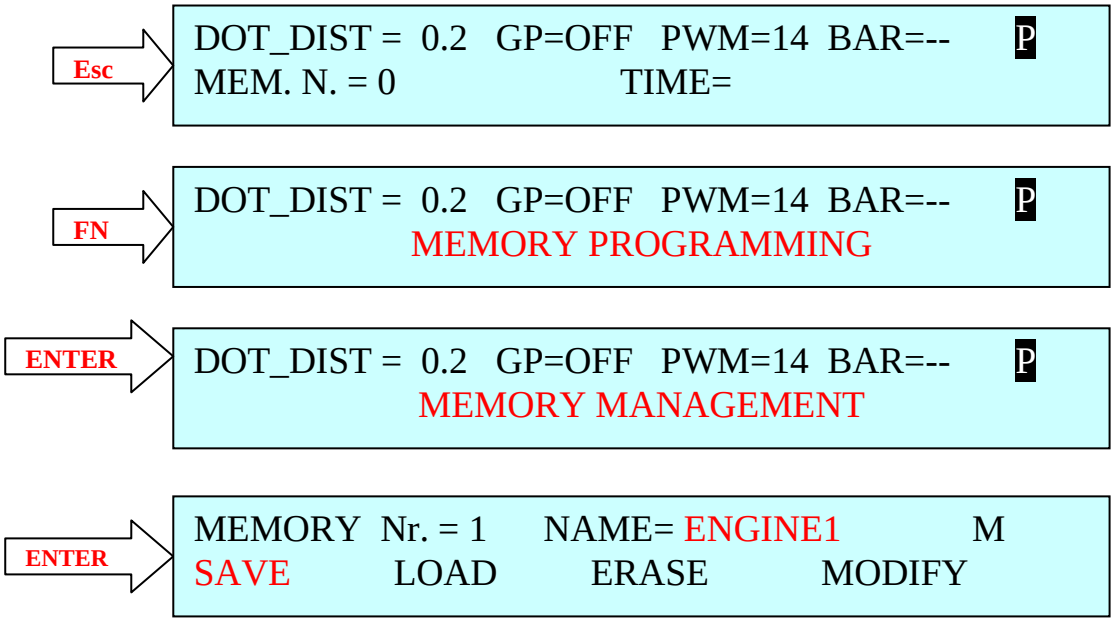
REMAINING IN THIS SCREEN, YOU ONLY HAVE TO PRESS THE START KEY ON THE STAMPER FRONT PANEL.

IF ALL PARAMETERS WERE EXACT YOU WILL SEE THE STYLUS MOVE AND CARRY OUT THE SHIFTS ACCORDING TO THE PROGRAMMED JOB WITHOUT STROKES, THIS ALLOWS TO CHECK IF THE PROGRAMMED POSITIONS ARE EXACT, IN CASE OF ERROR IT WILL BE POSSIBLE TO CHANGE THE JOB BY SELECTING THE STEP AND CHANGING ONLY THE X AND Y COORDINATES, THEN REPEAT THE TEST UNTIL THE COORDINATES ARE CORRECT.

SET THE MARKING PRESSURE TO THE PROGRAMMED VALUE AND PRESS START.

AFTER CHECKING THAT EVERYTHING IS CORRECT IT IS POSSIBLE TO SAVE THE JOB IN THE STAMPER PROCEEDING AS FOLLOWS

PRESS THE "ESC " KEY TO SET THE DISPLAY TO THE FOLLOWING SCREEN



MEMORY Nr. = 1	**Displays the first free NUMBER among the 100 available jobs in the marker**
NAME = ENGINE1	**It allows to program the name to give to the job, TYPE IN ENGINE1 (max 10 characters)**
M	**It indicates that we are in uppercase mode**
SAVE	**To store the job in the marker**
LOAD	**To call a job resident in the marker**
CANCEL	**To delete the selected job**
CHANGE	**To modify the selected job**

Press " ENTER "	**To confirm the storing in the marker of the job 1 with name " ENGINE 1"**

DOT_DIST = 0.2 GP=OFF PWM=14 BAR= 2 P
MEM. N. = 1 TIME=

Press " START "	**To carry out the marking of the job 1 with name "ENGINE 1"**

AT THE END OF THE MARKING THE DISPLAY WILL SHOW THE TIME (IN SECONDS) NEEDED FOR THE WHOLE MARKING PROCESS

DOT_DIST = 0.2 GP=OFF PWM=14 BAR= 2 P
MEM. Nr = 1 TIME= 18,2