

TECHNIFOR MANUAL

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INSTRUCTIONS FOR MARKING CONTROL UNIT

UC112 - UC122



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PREFACE

1.1) Updates

The updating index A0 corresponds to the first edition of this manual.

The alphabetical character (A) is the major index and the number character (0), the minor index.

The minor index will change after minor updatings (modifications of only some of the pages of the manual).

Only the modified pages will bear the new updated index.

The major index will change after a complete updating of the manual and will generate a new edition.

The minor index will then return to zero.

The chart below will permit you to keep track of the various updatings since the first edition.

Date of Revision	Revision Name	Modified pages
March	0203A0	First edition
September 2003	0309A1	Modifications : - page 3-15 : parameters : value for program number - page 3-28 : syntax and remarks - page 3-66 : parameters : value for program number - page 3-68 : parameters : value for program number
November 2003	0311B0	Modifications : - Revision of manual - Insertion of instructions for the UC122
June 2005	0506B1	- Correction of the XS command
September 2005	0509C0	- Addition of commands CE , E@CB(...)@ , and VE - Update of the SB command
November 2005	0511C1	Addition of a remark about the SV command, page 3-92
January 2006	0601D0	Change in certifying organization

1.2) The TECHNIFOR Marking Environment

A TECHNIFOR marking machine is made up of an electromechanical unit and an electronic unit.

The electromechanical unit existing in various presentations depending on the industrial environment, is based on the principle of an X-Y table that moves a vibrating marking stylus. The X-Y table is run by high-performance step-by-step motors while the stylus receives its orders from the pneumatic solenoid valves. Their number as well as the air flow rate will determine the marking depth that will be produced.

The electronic (Control) unit controls the movements of the stylus along the X and Y table.

Built on a 32-bit microprocessor, the Control Unit contains the program in the Flash Memory that manages the movements of the character fonts and logotypes to be traced. The Control Unit also contains the axis boards required to control the step-by-step motors.

The Control Unit is equipped with a 6I/2O board.

These two interconnected units will receive the marking data to be marked from any computer system capable of sending computerized data via a RS232 serial port

Power Requirements :

- 24 VDC or 24VAC for high power
- Compressed air 6 Bar (87 PSI) for the pneumatic models.

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COMMAND INSTRUCTIONS

COMMAND INSTRUCTIONS

2.1 - Introduction

Instruction commands are classified in 4 categories :

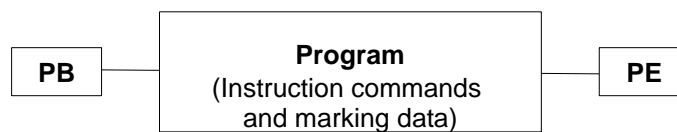
- **Configuration Commands**

This type of command will permit you to modify the following parameters :

- . The speed,
- . The date and hour codes,
- . The counters,
- . And other possible variables.

- **Programming Commands**

This type of command will permit the operator to create and program a marking file. These commands should be entered between the two specific instructions that follow :



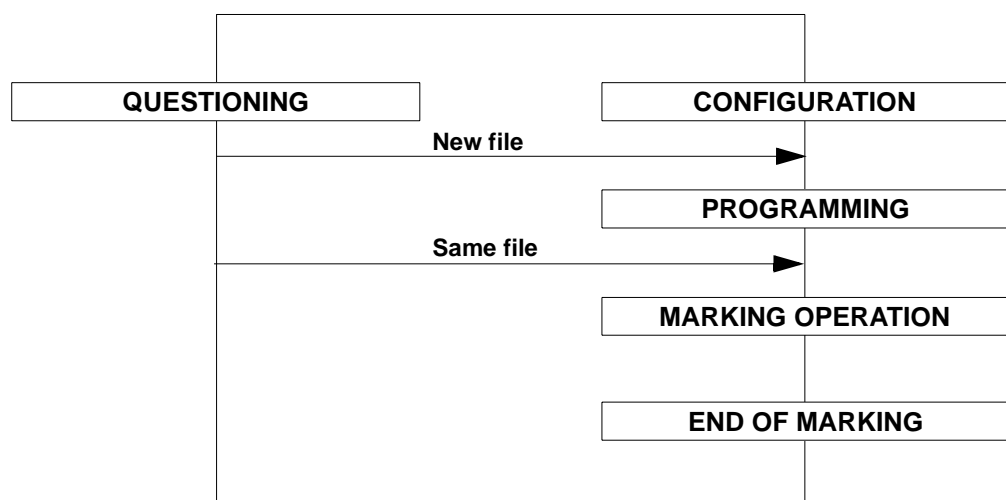
- **Marking Execution Commands**

This type of command will permit you to select a marking file, launch the marking or reinitialize it.

- **Interrogation Commands**

This last type of command will permit you to question the Central Control Unit to obtain information regarding various parameters (counter status, specific codes, etc.....).

2.2 - Functioning algorithm



2.3 - List of initial parameters

<ESC>*<CR> Command

This command will permit you to set the following parameters to their defaults:

Marking mode (writing)	: normal,
Character compression rate	: 100,
Font selection	: N°0 or N°3,
Character spacing	: 100%,
Stroke code selection	: 2,
Marking mode selection	: Linear ,
Characters size	: 30 current units.

2.4 - List of parameters saved after turning the Control Unit off

RS232 communication parameters
Marking speed
Movement speed
Time delay for lifting/lowering of the stylus
Acceleration ramp
Counter status
Variable status
Days - months - years - hours code status
Shift code status
Marking programs
Logos
Character fonts

2.5 - List of unsaved parameters

Every other parameter.

2.6 - Communication sequence with the Control Unit

Among the instructions described in this manual :

The escape character will be represented by the : <ESC> (ASCII code : 027 - hexadecimal : 1B) symbol.

The carriage return character will be represented by the: <CR> (ASCII code : 013 - hexadecimal: 0D) symbol.

2.7 - General format of command sequences

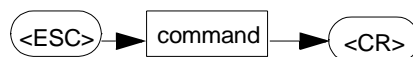
The functions of the marking system can be activated by instructions sent from the programming software using the principle sequences described below :

Marking is prepared with the programming software organized in the form of marking blocks.

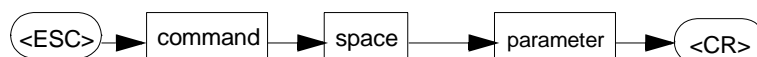
A syntax control is performed for every instruction received . If the command received is not correct, the syntax control system will send an error character to the programming software.

The system of marking commands can be activated by instructions sent from the programming PC using the principle described below :

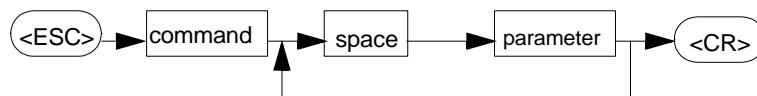
1 - Commands without parameters



2 - Commands with a parameter



3 - Commands with several parameters



Marking will be prepared in the command system. This is made up of marking blocks. The marking orders will be transmitted to the Control Unit in a series of command sequences with the following general format:

Examples

<ESC>I400■1000■25■28<CR>

Initialization of the Control Unit with a speed of 400 units/s «stylus down», 1000 units/s «stylus up», a time delay of 20 ms for lowering of the stylus and 20 ms for raising of the stylus.

<ESC>PU<CR>

This command will lift the point of the stylus .

A syntax control will be made for every command received and will trigger the sending of an error character to the programming software.

A semantic control will detect problems in executing the commands received and will return an error character to the programming software (compatibility test of the programmed movement in relation to the paths that are possible with the marking system).

2.7.1) Alphabetical list of commands

		Description	Option	Type of instruction	Page
Symbol	*	Initialization of parameters		Configuration	3-3

A	AC	Activating the off-limits control		Configuration	3-4
	AD	Deactivating error statement		Marking execution	3-5
	AI	Defining an angle for Italic text		Programming	3-6
	AJ	Activating the downstroke		Configuration	3-7
	AM	Cancellation of marking		Marking execution	3-8
	AT	Downloading completed		Marking execution	3-9

B	BB	Locating the block		Programming	3-10
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C	CA	Automatic centering		Programming	3-11
	CC	Compression/expansion coefficient		Programming	3-12
	CD	Day of the week code configuration <i>program version < 6.00</i>		Configuration	3-13
	CD	Day of the week code configuration <i>program version ≥ 6.00</i>		Configuration	3-14
	CE	Day of the month configuration <i>program version ≥ 6.50</i>		Configuration	3-15
	CM	Month code configuration <i>program version < 6.00</i>		Configuration	3-16
	CM	Month code configuration <i>program version ≥ 6.00</i>		Configuration	3-17
	CtrlE	Marking once		Marking execution	3-18
	CtrlF	Repeat last marking		Marking execution	3-19
	CtrlG	Emulation of start button or start cycle contact		Marking execution	3-20
	CY	Year code configuration <i>program version < 6.00</i>		Configuration	3-21
	CY	Year code configuration <i>program version ≥ 6.00</i>		Configuration	3-22

		Description	Option	Type of instruction	Page
D	DC	Deactivating the off-limits control		Configuration	3-23
	DD	Changing the date in the Control Unit		Configuration	3-24
	DG	Marking priority specification		Configuration	3-25
	DIR	List of Fonts, Logos and Marking programs		Question	3-26
	DJ	Deactivating the downstroke		Configuration	3-27
	DM	Memory available ?		Question	3-28
	DT	Downloading Fonts and Logos		Marking execution	3-29

E	E	Marking in Normal mode		Programming	3-30
	E@BRANCH(...)	Selection of files by the 6E/2S board		Programming	3-31
	E@CB(...)	Data acquisition <i>program version ≥ 6.00</i>		Programming	3-33
	E@XM@	Matrix marking		Programming	3-34

F	F	Marking in Mirrored mode		Programming	3-36
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G	G	Marking in Reflected mode		Programming	3-37
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H	H	Marking in Inverted mode		Programming	3-38
		Configuration of a format for the marking		Configuration	3-39

I	I	Speed configuration		Configuration	3-41
	IH	Changing the time in the Control Unit		Configuration	3-42
	IM	Importing marking programs		Question	3-43
	IV	Program version number		Question	3-44
	IZ	Configuration of the Z AXIS	Z Axis	Configuration	7-4

J	J	Force code		Programming	3-45
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COMMAND INSTRUCTIONS

		Description	Option	Type of instruction	Page
K	K?	Counter status? <i>program version < 5.03</i>		Question	3-47
	K?	Counter status? <i>program version ≥ 5.03</i>		Question	3-48
	KT	Counter configuration <i>program version < 5.03</i>		Configuration	3-49
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L	LE	Machine configuration? <i>program version < 6.00</i>		Question	3-52
	LE	Machine configuration? <i>program version ≥ 6.00</i>		Question	3-53
	LL	Choice of language?		Question	3-56
	LO	Marking logos		Programming	3-57

M	M	Absolute movement		Programming	3-58
	MA	Angular marking		Programming	3-59
	MC	Circular marking		Programming	3-60
	ML	Marking a circle or an ellipse		Programming	3-64
	MN	Setting marking in Normal mode		Programming	3-65
	MO	Mode change		Configuration	3-66
	MO?	Question mode		Question	3-68
	MX	Configuration of a DATAMATRIX®	DATAMATRIX	Programming	5-4

N	N	Relative movement		Programming	3-69
	NB	Independent marking		Marking execution	3-70
	NT	Fonts or Logo downloading start up		Marking execution	3-71

O	O	Return to origin along the X, then the Y axis		Programming	3-72
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		Description	Option	Type of instruction	Page
P	PA	Machine's parameters ?		Question	3-73
	PB	Program start up		Programming	3-74
	PD	Lowering the stylus		Programming	3-75
	PE	End of program		Programming	3-76
	PI	Marking dots		Programming	3-77
	PO	Selection of character font		Programming	3-78
	PR	Configuration messages for data reception <i>program version ≥ 6.00</i>	Data reception	Configuration	6-7
	PS	Program deletion		Marking execution	3-79
	PU	Lifting the stylus		Programming	3-80
	P?	Questions on data reception <i>program version ≥ 6.00</i>	Data reception	Question	6-5

Q	Q	State of Inputs ? <i>program version ≥ 6.00</i>		Question	3-81
	QT?	Changing the "Julian" date ? <i>program version ≥ 5.03</i>		Question	3-83

R	R?	Number of free recordings in the historical file <i>program version ≥ 6.00</i>	Data reception	Question	6-8
	RB	Retrieval/reinitialization of historical file <i>program version ≥ 6.00</i>	Data reception	Question	6-9

S	SB	Pause during marking		Programming	3-84
	SC	Inter-character spacing		Programming	3-85
	SM	Selection of writing style		Programming	3-86
	SP	Deleting Fonts or Logos		Marking execution	3-87
	ST	Machine's status ?		Question	3-88
	SU	Configuration of point wearing device <i>program version ≥ 5.03</i>		Configuration	3-89
	SU?	Point wearing device ? <i>program version ≥ 5.03</i>		Question	3-90
	SV	Configuration of parameters for RS 232 connector		Configuration	3-91

		Description	Option	Type of instruction	Page
T	TA	Size of characters or logo		Programming	3-92
	TH	Configuration of a shift timetable for a shift code <i>program version < 5.03</i>		Configuration	3-93
	TQ	Configuration of shift codes <i>program version ≥ 5.03</i>		Programming	3-94
	TQ ?	Timetable for shift codes ? <i>program version ≥ 5.03</i>		Question	3-95

U	UU	Configuration of Control Unit		Configuration	3-96
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	VE	Day of the month code ? <i>program version ≥ 6.50</i>		Question	3-97
V	VJ	Day of the week code ?		Question	3-98
	VM	Month code ?		Question	3-99
	VQ	Timetables for shift codes ? <i>program version < 5.03</i>		Question	3-100
	VR	Configuration of a variable <i>program version ≥ 5.03</i>		Configuration	3-101
	VS	Saving in a variable		Configuration	3-102
	VY	Year codes ?		Question	3-103
	V?	Variables ? <i>program version ≥ 5.03</i>		Question	3-104

W	WL	Change of language		Configuration	3-105
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X	XE	Encoding and marking of a character chain	DATAMATRIX	Programming	5-6
	XS	Configuration for DATAMATRIX marking <i>program version ≥ 6.00</i>	DATAMATRIX	Programming	5-7

Z	ZI	Configuration of Z Axis ? <i>program version ≥ 6.00</i>	Axe Z	Question	7-5
	ZO	Z Axis return to origin <i>program version ≥ 6.00</i>	Axe Z	Programming	7-6
	ZR	Movement relative to Z Axis <i>program version ≥ 6.00</i>	Axe Z	Programming	7-7

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DESCRIPTION OF COMMANDS


DESCRIPTION OF COMMANDS

* Initialization of parameters		Configuration Command
Syntax	<ESC>*<CR>	
Application	This sequence will permit you to initialize certain marking parameters .	
Remark(s)	<p>It is recommended to transmit this sequence every time the machine is initialized. Programming will be started with default values and will thus avoid a parameter remaining with an unknown value that would give a marking not corresponding to what was desired.</p> <p>The default parameters are the following :</p> <ul style="list-style-type: none"> . Marking : Normal, (<ESC>E<CR>) . Marking : Linear, (<ESC>MN<CR>) . Character fonts : <ul style="list-style-type: none"> - 0 for a pneumatic marking head (<ESC>PO0<CR>) - 3 for an electromagnetic marking head(<ESC>PO3<CR>) . Compression rate: 100%, (<ESC>CC100<CR>) . Inter-character spacing: 100%, (<ESC>SC100<CR>) . Force code: 2, (<ESC>J2<CR>) . Size of characters: 30 current units, (<ESC>TA30<CR>) 	
Control Unit response	<p>When the Control Unit loads a character font, it will emit an Xoff code (ASCII decimal code :19, Hexadecimal : 0C).</p> <p>Once this operation has been carried out the Control Unit will indicate that it is ready to receive new data. It will then emit the Xon code (ASCII decimalCode 17, Hexadecimal :11)</p> <p><u>NB</u> : These codes are not visible, if you specify : Xon/Xoff handshake control, in the configuration of your RS232 connector.</p>	

AC Activating the off-limits control		Configuration Command
Syntax	<ESC>AC<CR>	
Application	This sequence will permit you to activate the off-limits control. Once activated, the Control Unit will transmit an error code to the programming device when the text is not within the authorized area. This command will increase the calculation time.	
Control Unit Response	When the marking is off-limits, the Control Unit will transmit the "dL" error code after having received the <ESC>PE instruction (See page 3-76).	
Remark(s)	<p>It is recommended that this option only be used when setting up the marking program. This command should be transmitted before programming.</p> <p>When the Control Unit is turned on, the off-limits control will resume the state in which it was left when the Control Unit was turned off. (See DC command for the deactivation of the off-limits control, page 3-23).</p>	

AD Exit error mode		Marking execution
Syntax	<ESC>AD<CR>	
Application	<p>This sequence will permit you to release a error that has just appeared. After a cycle stop provoked by either the machine or the software, this command will inform the Control Unit of the error and request that the Control Unit exit the error mode.</p>	
Comment(s)	<p>When this command has been sent, the Control Unit will wait for one of the following types of commands :</p> <ul style="list-style-type: none"> • Configuration, • Programming, • Question. 	

AI Defining an angle for Italic text		Programming command
Syntax	<ESC>AIaaaa<CR>	
Parameter(s)	aaaa : Angle of character inclination. The whole number value will be between 0 and 3600, expressed in tenths of degrees.	
Application	This sequence will permit you to define an angle for italic text.	
Example(s)	<p>Marking "TECHNIFOR" at the coordinates X = 20mm and Y = 30mm, character size 3mm, Force code 2, no compression, standard spacing, normal writing, non-centered, in italics at 30°, at average speed with a pneumatic stylus.</p> <pre> <ESC>*<CR> <ESC>UU1<CR> <ESC>DG■1<CR> <ESC>PB999<CR> <ESC>O<CR> <ESC>BB<CR> <ESC>MN<CR> <ESC>CC100<CR> <ESC>SM1<CR> <ESC>AI300<CR> <ESC>TA30<CR> <ESC>J2<CR> <ESC>M200■300<CR> <ESC>PO0<CR> <ESC>SC100<CR> <ESC>ETECHNIFOR<CR> <ESC>O<CR> <ESC>PE999<CR> </pre>	
Remark(s)	<p>Do not use angular values between 90° and 270° as they will create a division by zero.</p> <p>This command should always be preceded by the <ESC> SM■1<CR> instruction : (see page 3-86).</p>	

<div>AJ</div> <div>Activating the downstroke</div>		Configuration
		Command
Syntax	<ESC>AJ<CR>	
Application	<p>This sequence will permit you to activate the downstroke.</p> <p>When the downstroke has been registered, the text reference line will be placed below the lowest part of the downstroke on lower case letters.</p> <p>This line will be determined by the "start marking" coordinates and by the direction of the text.</p>	
Example(s)		
Remark(s)	<p>When this parameter is activated, the marked text shift upwards towards the higher value of the downstroke value.</p> <p>(For n° 0 and 1 fonts, the downstroke will correspond to 30% of the size of the desired character).</p> <p>See "DJ" instruction for the deactivation of the downstroke, page 3-27.</p>	

AM Marking cancellation		Marking execution
Syntax	<ESC>AM<CR>	
Application	<p><u>This sequence will :</u></p> <ul style="list-style-type: none"> • Stop the marking in progress and set the Control Unit in the error mode. • Stop programming and set the Control Unit in a "waiting for instructions" position. <p>This sequence will also permit you to exit the independent mode.</p>	
Control Unit Response(s)	<p><u>If this sequence is sent during :</u></p> <ul style="list-style-type: none"> • Programming : the Control Unit will send a release "Z" character to the programming system, • Marking : it will be interrupted immediately and the Control Unit will send a "dZ" character as well as the "Z" character. 	

AT Downloading completed		Marking execution
Syntax	[CRC16]<ESC>AT■number<CR>	
Parameter(s)	<i>Number</i> : Number given to a font (between 100 and 999), logo (between 100 and 999) or a file (between 000 and 999).	
Application	This sequence indicates that the downloading of fonts or logos has been completed.	
Remark(s)	The CRC16 is algorithm that can detect errors during transmission by analysing the message to be transmitted. This will be calculated on 2 bytes.	
Control Unit response(s)	The machine will reply RT0<CR> if the transfer has been done correctly	

BB Locating a block		Programming command
Syntax	<ESC>BB<CR>	
Application 1	<p>When marking several marking blocks within a program, each block should be precisely located so that its various characteristics not be mixed up with those of other blocks. The BB command should be entered at the beginning of each block. It will permit you to locate the beginning of a block, hence the end of the preceding one.</p>	
Example	<p> <ESC>BB<CR> (beginning of the block) <ESC>M100■200<CR> <ESC>TA 30<CR> <ESC>ETEXTE1<CR> <ESC>BB<CR> (beginning of the next block) 3 </p>	
Application 2	<p>See Pge 3-32 (E@XM...@ command) for matrix marking definition :</p> <ul style="list-style-type: none"> -The E@XM...@ should be considered as a marking block. -The basic element may be made up of several marking blocks. The BB command should be used at the beginning of each one so as to clearly locate each of them. 	
Example	<p> <ESC>BB<CR> (beginning of the matrix) <ESC>E@XM■1■2■2■2■6■7.5■4■0@<CR> <i>(matrix n°1 , 2 blocks, size 2*2,spacing: 6 mm between lines and 7.5 mm between columns, total of 4 elements and marking in a horizontal direction)</i> <ESC>BB<CR>(beginning of block 1) <ESC>M100■200<CR> <ESC>TA 30<CR> <ESC>ETEXTE1<CR> <ESC>BB<CR>(beginning of block 2) <ESC>M100■300<CR> <ESC>TA 40<CR> <ESC>ETEXTE2<CR> </p>	

CA Automatic centering		Programming command
Syntax	<ESC>CA<CR>	
Application	This sequence will permit the center of the text to be marked on the pre-designated coordinates .	
Example(s)	<p>Marking the word TECHNIFOR at the coordinates X = 20mm and Y = 30mm, character size : 3mm, Force code : 2, no compression, standard spacing, normal centered writing, average speed with a pneumatic stylus.</p> <p> <ESC>*<CR> <ESC>UU1<CR> <ESC>DG■1<CR> </p> <p> <ESC>PB999<CR> <ESC>O<CR> <ESC>BB<CR> </p> <p> <ESC>CC100<CR> <ESC>TA30<CR> <ESC>J2<CR> <ESC>M200■300<CR> <ESC>PO0<CR> <ESC>SC100<CR> <ESC>CA<CR> <ESC>ETECHNIFOR<CR> <ESC>O<CR> <ESC>PE999<CR> </p>	
Remark(s)	<p>This sequence can be combined with all other writing sequences (Normal, Italic, Reflected, Mirrored, Angular and Circular).</p> <p>It will be cancelled by the normal writing mode sequence (see the <ESC>MN<CR> command page 3-65).</p>	

CC Compression/expansion coefficient		Programming command
Syntax	<ESC>CCv<CR>	
Parameter(s)	v : Compression/expansion coefficient of characters according to width, with a whole number value between 1 and 999 (expressed as a percentage).	
Application	This sequence will permit the choice of the percentage of character compression/expansion.	
Example(s)	<p>Marking the word TECHNIFOR at the coordinates X = 20mm and Y = 30mm, character size : 3mm, Force code : 2, 90 % compression, standard spacing, normal writing, centered, average speed with a pneumatic stylus.</p> <p><ESC>*<CR></p> <p><ESC>UU1<CR></p> <p><ESC>DG■1<CR></p> <p><ESC>PB999<CR></p> <p><ESC>O<CR></p> <p><ESC>BB<CR></p> <p><ESC>MN<CR></p> <p><ESC>CC90<CR></p> <p><ESC>TA30<CR></p> <p><ESC>J2<CR></p> <p><ESC>M200■300<CR></p> <p><ESC>PO0<CR></p> <p><ESC>SC100<CR></p> <p><ESC>ETECHNIFOR<CR></p> <p><ESC>O<CR></p> <p><ESC>PE999<CR></p> <p>The <ESC>CC120<CR> command is to be used for characters expanded to 120% :</p>	
Remark(s)	<p>To obtain normal marking (neither compressed, nor expanded) the value to be used is 100 (this means 100% of the character).</p> <p>Characters will be compressed if the value is between 1 and 99.</p> <p>Characters will be expanded if the value is between 101 and 999.</p>	

CD (< version 6.00) Day of the week code configuration		Configuration Command
Syntax	<ESC>CD■j1■j2■j3■j4■j5■j6■j7■<CR>	
Parameter(s)	<p>■ Character space</p> <p>jx : Personalized day of the week code. Day of the week codes should not have any spaces, and cannot exceed 8 characters.</p> <p>NB : j1 is Sunday, j2 is Monday, j3 is Tuesday, etc.....</p>	
Application	This sequence will permit the setting of a code for each of the 7 days of the week. (see page 3-39 for marking the code).	
Example(s)	<p><ESC>CD■SUN■MON■TUE■WED■THU■FRI■SAT<CR></p> <p>On Wednesdays, the "WED" text will be marked (to mark the code, see "DF" instruction page 8-39).</p>	
Remark(s)	<p>By default and without using this command, there will be no value.</p> <p>To check the day of the week codes programmed in the Control Unit, use the <ESC>VJ<CR> sequence : (See page 3-97).</p>	

CD (\geq version 6.00) Day of the week code configuration		Configuration Command
Syntax	<ESC>CD■j1■j2■j3■j4■j5■j6■j7■<CR>	
Parameter(s)	<p>■ ASCII 12 Code jx : Personalized day of the week code. Day of the week codes should not exceed 8 characters.</p> <p>NB : j1 is Sunday, j2 is Monday, j3 is Tuesday, etc.....</p>	
Application	This sequence will permit the setting of a code for each of the 7 days of the week. (see page 3-39 for marking the code)	
Example(s)	<p><ESC>CD■SUN■MON■TUE■WED■THU■FRI■SAT<CR></p> <p>On Wednesdays, the "WED" text will be marked (if marking of the days of the week is requested, see page 3-38).</p>	
Remark(s)	<p>By default and without using this command, there will be no value.</p> <p>To check the day of the week codes programmed in the Control Unit, use the <ESC>VJ<CR> sequence : (See page 3-97).</p>	

CE (\geq version 6.50) Days of the month configuration		Configuration Command
Syntax	<ESC>CEnumber■xx■xx■xx...■xx<CR>	
Parameter(s)	■ ASCII 12 code number : Day at which the configuration begins. xx : Personalized day code. The day codes must not exceed 8 characters.	
Application	This sequence will permit you to set a code for each day of the month.	
Example(s)	<ul style="list-style-type: none"> • <u>Configuring each day of the month</u> <ESC>CE1■J1■J2■J3■J4■J5■J6■J7■J8■J9■J10■J11■J12■J13■J14■J15■J16■J17■J18■J19■J20■J21■J22■J23■J24■J25■J26■J27■J28■J29■J30■J31<CR> The configuration begins with the first day of the month (number =1). • <u>Configuring several days in the month</u> <ESC>CE12■J13■J14■J15■J16■J17<CR> The configuration begins on the 12th day of the month (number =12). 	
Remark(s)	The syntax for marking day codes is @JS@. There is no default value for this command. If the configuration is past the 31st day, the program will display an error message and does not take into account the new configuration. To check the day codes programmed in the Control Unit, use the <ESC>VE<CR> sequence .	

CM (< version 6.00) Month code configuration		Configuration Command
Syntax	<ESC>CM■m1■m2■m3...■m12<CR>	
Parameter(s)	■ Character space mx : Personalized month code. The month code should not have any spaces and cannot exceed 10 characters.	
Application	This sequence will permit you to set a code for each of the 12 months of the year. (See page 3-39 for marking the code)	
Example(s)	<ESC>CM■JAN■FEB■MAR■APR■MAI■JUN■JUL■AUG■SEP■ OCT ■NOV■DEC<CR> In March, the "MAR" text will be marked (if marking of month codes is requested, see page 3-39).	
Remark(s)	By default and without using this command, there will be no value. To check the month codes programmed in the Control Unit, use the <ESC>VM<CR> sequence : (see page 3-99).	

CM (\geq version 6.00) Month code configuration		Configuration Command
Syntax	<ESC>CM■m1■m2■m3...■m12<CR>	
Parameter(s)	■ ASCII 12 Code mx : Personalized month code. The month code should not exceed 10 characters.	
Application	This sequence will permit you to set a code for each of the 12 months of the year. (See page 3-39 for marking the code)	
Example(s)	<ESC>CM■JAN■FEB■MAR■APR■MAI■JUN■JUL■AUG■SEP■ OCT ■NOV■DEC<CR> In March, the "MAR" text will be marked (if marking of month codes is requested, see page 3-39).	
Remark(s)	By default and without using this command, there will be no value. To check the month codes programmed in the Control Unit, use the <ESC>VM<CR> sequence : (see page 3-99).	

CtrlE Marking once		Execution of marking
Syntax	<p style="text-align: center;"><ESC>CtrlE■number<CR></p> <p style="text-align: center;">ASCII decimal code of CtrlE : 5, Hexadecimal : 05</p>	
Parameter(s)	<p>number : Number of the program to be marked, with a whole number value between 000 and 999.</p>	
Application	<p>This sequence will permit the marking program to be executed only once.</p>	
Example(s)	<p>When the Central Control Unit is waiting for the start cycle to begin, it will send the X<CR> message (see page 4-33) .</p> <p>When the Central Control Unit cannot find the requested program number or if the program cannot be read, it will send back the L<CR> message (see page 4-15). The <ESC>AD<CR> instruction (see page 3-5) will permit exiting from the Reset mode.</p>	
Remark(s)	<p><ESC>CtrlE■099<CR></p> <p>Request for program n° 099 to be executed.</p>	

CtrlF Repeating the last marking		Execution of marking
Syntax	<p style="text-align: center;"><ESC>CtrlF<CR></p> <p style="text-align: center;">ASCII decimal code of CtrlF : 6, Hexadecimal : 06</p>	
Application	This sequence will permit you to repeat the last marking executed.	
Control Unit response(s)	<p>When the Control Unit is waiting for the start cycle to begin, it will send the X<CR> message (see page 4-33).</p> <p>When the Control Unit cannot find the requested program number or if the program cannot be read, it will send the L<CR>message back (see page 4-15). The <ESC>AD<CR> command (see page 3-5) will permit exiting from the Reset mode.</p>	

CtrlG Emulation of the start button or the start cycle contact		Execution of marking
Syntax	<p style="text-align: center;"><ESC>CtrlG<CR></p> <p style="text-align: center;">ASCII decimal code of CtrlG : 7, Hexadecimal : 07</p>	
Application	This sequence will permit you to begin marking without pressing on the start button.	
Remark(s)	<p>This sequence will avoid the closing of a contact on the terminal of the communication interface.</p> <p>The status of the Control Unit will change (see <ESC>ST<CR> command page 3-88). This status question command will permit you to determine when to close the contact on the terminal of the communication interface .</p>	

CY (<version 6.00> Year code configuration		Configuration Command
Syntax	<ESC>CY■base■a0■a1■ ... ■a9<CR>	
Parameter(s)	<p>■ Character space</p> <p>base : Year serving as a reference for the code, with a 4 figure whole number value.</p> <p>ax : Personalized year code.</p> <p>The year codes should not have any spaces and cannot exceed 10 characters.</p>	
Application	<p>This sequence will permit you to set a code for each year. Up to five years can be personalized. (See page 3-39).</p>	
Example(s)	<p><ESC>CY■2001■1■2■3■ ■5<CR></p> <p>During 2003, the text "3" will be marked (if the marking of the year codes has been requested, see page 3-39).</p>	
Remark(s)	<p>By default and without using this command, there will be no value.</p> <p>To check the year code programmed in the Control Unit, use the <ESC>VY<CR> sequence (see page 3-103).</p>	


CY (\geq version 6.00) Year code configuration		Configuration Command
Syntax	<ESC>CY■base■a0■a1■ ... ■a9<CR>	
Parameter(s)	<p>■Character space</p> <p>base : Year serving as a reference for the code, with a 4 figure whole number value.</p> <p>ax : Personalized year code.</p> <p>The year codes should not have any spaces and cannot exceed 10 characters.</p>	
Application	<p>This sequence will permit you to set a code for each year. Up to five years can be personalized.</p> <p>(See page 3-38).</p>	
Example(s)	<p><ESC>CY■2001■1■2■3■ ■5<CR></p> <p>During 2003, the text "3" will be marked (if the marking of the year codes has been requested, see page 3-38).</p>	
Remark(s)	<p>By default and without using this command, there will be no value.</p> <p>To check the year code programmed in the Control Unit, use the <ESC>VY<CR> sequence (see page 3-103).</p>	

DC Deactivating the off-limits control		Configuration Command
Syntax	<ESC>DC<CR>	
Application	This sequence will permit you to deactivate the off-limits control. When the off-limits control is deactivated, the stylus can move to the mechanical stop if the text is too long or if the coordinates are incorrect. Data processing is faster.	
Remark(s)	It is therefore preferable to set up the program before deactivating the off-limits control.	

DD Changing the date in the Control Unit		Configuration Command
Syntax	<ESC>DD■yyyy■mm■dd<CR>	
Parameter(s)	■Character space yyyy : Year in 4 figures, whole number value. mm : Month in 2 figures, whole number value between 1 and 12. dd : Day in 2 figures, whole number value between 1 and 31.	
Application	This sequence will permit you to set the date in the Control Unit's internal clock.	
Control Unit response(s)	When the Control Unit makes changes within its internal clock, it will inform the programming device that it cannot receive any more data. This is why it will transmit the "Xoff" code (ASCII decimal code : 19, Hexadecimal : 0C).	
Example(s)	<ESC>DD■1999■02■12<CR> Update made February 12, 1999.	
Remark(s)	To check the date in the Control Unit, use the <ESC>PA<CR> instruction (see page 3-73).	

DG Marking priority specification		Configuration command
Syntax	<ESC>DG■i<CR>	
Parameter(s)	<p>■Character space i : Marking priority.</p> <p>Potential values :</p> <ul style="list-style-type: none"> • 0 : Excellent marking quality Slow speed : long cycle • 1 : Good marking quality fast speed : intermediate cycle • 2 : Average marking quality Very fast speed : short cycle 	
Application	This sequence will permit you to determine a marking priority.	
Example(s)	<p>The following sequence should be sent to the machine to optimize the cycle running time :</p> <p><ESC>DG■2<CR></p>	
Remark(s)	<p>This parameter has a direct effect on the machine's marking and movement speeds. It is generally used after the I instruction command (see page 3-41) that configures these movement and marking speeds.</p>	

DIR List of fonts, Logos and Marking programs		Question command
Syntax	<ESC>DIR<CR>	
Application	This sequence will permit you to find the following list of files available in the Control Unit : - Character fonts, - Logos, - Marking programs.	
Control Unit response(s)	The list of fonts, logos and marking programs will be sent back in the following manner : <u>- Marking programs :</u> Program number.PGM, Remark, File size in <CR> Bytes <u>- Fonts :</u> Font number.POL, <CR> Font designation <u>- Logos :</u> Logo number.LOG, Logo name, File size in <CR> Bytes	
Example(s)	Example of a list : 957.PGM,File example,200 000.POL,X STANDARD HD UC200: (XSTD200. 001.POL,X HIGH LEGIBILITY HD UC200 : (XP 002.POL,X STANDAR HDNOR : (XHDNOR.PO2) 99.LOGO CE CN200 (LGOCE200.PO2) 103.LOG,Logo Technifor;1060	
Remark(s)	Fonts between 0 and 99 are saved in the EPROM. It is therefore impossible to delete them.	

DJ Deactivating the downstroke		Configuration Command
Syntax	<ESC>DJ<CR>	
Application	This sequence will permit you to deactivate the downstroke option. When this is not activated, the text support line will be placed above the bottom of the downstroke on lower case letters. This support line is determined by the start coordinates and the direction of the text.	
Example(s)		
Remark(s)	For activation of the downstroke option, see command "AJ" page 3-7.	

DM Available memory ?		Question command
Syntax	<ESC>DM<CR>	
Application	This sequence will permit you to know the number of available bytes in the machine's memory.	
Control Unit response(s)	<p>The machine will send back the following response :</p> <p>Number<CR></p> <p>Number : number of available bytes.</p>	

DT Downloading Fonts or Logos		Marking execution
Syntax	<ESC>DT■number■type■description logo<CR>	
Parameter(s)	<p>■Character space</p> <p>Number : Number given to the font (between 100 and 999), logo (between 0 and 999), or to the file (between 0 and 999).</p> <p>Type : will indicate the type of data : _Type=1 for fonts _Type=2 for logos _Type=3 for the files</p> <p>Description : alphanumeric zone containing 32 characters maximum for logos and the files.</p>	
Application	This sequence will inform the Control Unit that a font, a Logo or a file is about to be downloaded.	
Remark(s)	There is no remark zone for a font; the designation of the font was already taken into account in the file provided by TECHNIFOR	

E.... Marking in Normal mode		Programming command
Syntax	<code><ESC>Etext<CR></code> or <code><ESC>E@Format@<CR></code>	
Parameter(s)	Text =Text to be marked (simple text). The text to be marked should not exceed 30 characters. Format = Format to be marked (marking of variable data - counters, dates, shifts, variables...) (see page 3-39)	
Application	This sequence will permit you to mark a simple text or a format in the normal mode.	
Example(s)	Marking of a simple text : <code><ESC>ETECHNIFOR<CR></code> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">TECHNIFOR</div> Marking of a counter : <code><ESC>E@K0@<CR></code> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">021</div> Marking of a personalized format : <code><ESC>E@DD"/"MM"/"YY@<CR></code> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">10/09/01</div>	

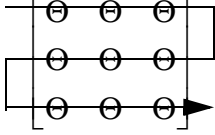
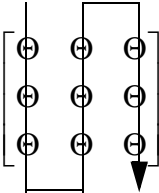
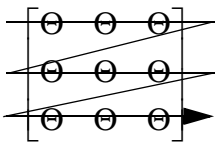
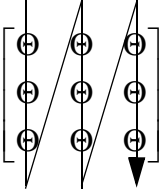
E@BRANCH(...)@ Selection of files with the 6I/2O board		Programming command
Syntax	E@BRANCH(Edébut;Efin;Evalid;Offset)@	
Application	This sequence will permit you to to execute the file whose number is the result of the input decoding operation.	
Parameter(s)	<p>Edébut : name of the first input used for coding the number of the file to be executed.</p> <p>Efin : name of the last input used for coding the number of the file to be executed.</p> <p>Evalid : name of the validation input (the state of the coding inputs will not be taken into account unless the input designated by Evalid = 1 or if Evalid = I*,*).</p> <p>Offset : numeric value added to the result of the combination of inputs.</p>	
Remark(s)	<p>This command corresponds to the text zone of a marking block. It should therefore be placed within a block.</p> <p>A file containing a BRANCH instruction should not be stocked in the Program no.999.</p> <p>When the BRANCH instruction has been executed, the program will execute the file whose number is the result of the decoding operation.</p> <p>When the called file has been executed, the program will resume its progression in the main file (after the BRANCH instruction)</p> <p>The decoding procedure used is the following :</p> <p>Enter the name of the first input and the name of the last input that make up the code. This will implicitly designate a series of contiguous inputs.</p> <p>Decoding of the inputs contained between Edebut and Efin will not be made unless the validation input (entered in the BRANCH instruction) has been activated.</p> <p>If Evalidation = 0, the program will go to the next instruction, no matter what the logical state of the other inputs.</p> <p>If Evalidation = 1, the system will acknowledge the state of the other inputs (coding inputs) and will connect to the corresponding file.</p> <p>It is also possible to not use the validation input so as to use all the coding coding inputs, for example. In this case, it is necessary to enter in the BRANCH instruction that Evalid = I*,*.</p> <p>The offest value is a numeric value between 0 and 999 that will be added to the result of the binary combination of inputs. This will permit you to easily address files with a high number without having to use too many coding inputs.</p>	

E@BRANCH(...)@ Selection of files with the 6I/2O board	Programming command
Example(s)	<pre> <ESC>PB998<CR> <ESC>O<CR> <ESC>BB<CR> <ESC>MN<CR> <ESC>CC100<CR> <ESC>TA03<CR> <ESC>J0<CR> <ESC>M200■200<CR> <ESC>PO0<CR> <ESC>SC100<CR> <ESC>ETECHNIFOR<CR> <ESC>BB<CR> <ESC>E@BRANCH(I0,0;I0,2;I0,4;200)@<CR> <ESC>O<CR> <ESC>PE998<CR> </pre> <p>BRANCH Command :</p> <ul style="list-style-type: none"> - 3 coding inputs: Inputs 0, 1 and 2. It is therefore possible to code between 0 and 7 (8 files). - I0,4 is the validation input. The file corresponding to the coding will be executed when input 4 = 1. - Offset = 200. Depending on the coding, a file between° 200 and 207 will be selected.

E@CB(...)@ (≥ version 6.00) Data Acquisition		Programming Command
Syntax	<ESC>E@CB (cardeb,carfin,port,enregistrement,v,lot)@<CR>	
Application	This command allows you to receive data via the RS232 cable or via the machine keyboard while marking is in progress.	
Parameter(s)	<p>cardeb: Position (number) of the first character, out of the series of characters received, to be saved in the "v" variable.</p> <p>carfin: Position (number) of the last character, out of the series of characters received, to be saved in the "v" variable.</p> <p>port: 0 = data received from RS232 2 = data received from the keyboard</p> <p>enregistrement: defines whether or not the data received will be saved in the log file. 0 = data will not be saved 1 = data will be saved (100 maximum)</p> <p>v : number of the variable in which the data will be saved.</p> <p>lot: number of markings to be done with these programmed parameters, before asking if new parameters are necessary. 0 = just one data reception is necessary for the first marking 1 = data reception is necessary for each marking -1 = data reception happens at the operator's request</p> <p>A request is made:</p> <ul style="list-style-type: none"> • by activating an Input (the number is determined in the "Dialogue Configuration" menu. • by pressing "Control+Alt+G" simultaneously. • by sending the command <Esc>CI<Cr> via the RS232. 	
Example(s)	<p><ESC>E@CB(3,8,0,0,4,1)@<CR></p> <ul style="list-style-type: none"> • Data is received via the RS232 cable • Characters in position 3 through 8 are saved in variable V4. • The data is not saved in the log file of the machine. • Data reception is necessary for each marking. <p>Data received : AZERTYUIOPQSDF Data saved in variable V4 : ERTYUI Text to be entered in the "Text" zone of the marking block : @V4@</p>	

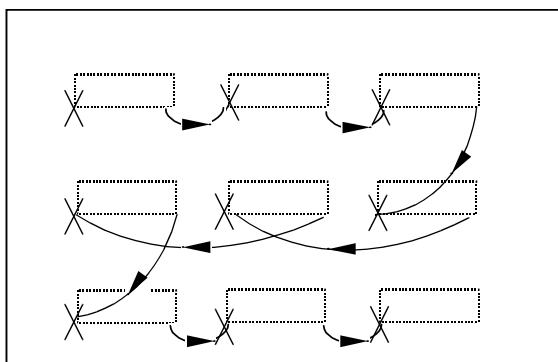
.../...

E@XM...@**Matrix marking****Programming
Command****Parameter(s)****Markdir** : Marking direction of the matrix

Value	Description	Path
0	horizontal back and forth	
1	vertical back and forth	
2	horizontal scanning	
3	vertical scanning	

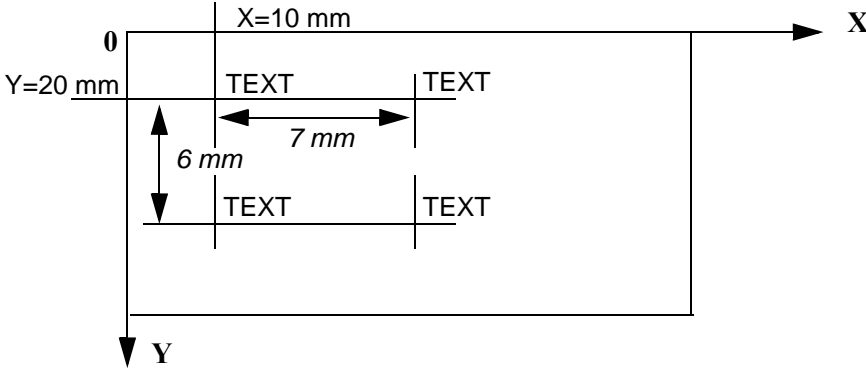
Attention :

The movement direction of the stylus will reverse from one line to another when marking horizontally, and from one column to another in the case of vertical back and forth marking. However, in the case of horizontal marking, the following movement direction of the stylus will be obtained :



The sense of direction will therefore be direct for the odd number lines and columns indexes and indirect for the even indexes.

.../...


<div>E@XM...@</div> <div>Matrix marking</div>		Programming command
Remark(s)	<div>-The X and Y position of the first block determining the basic element will be taken into consideration to position the whole matrix in relation to this central point (see page 3-10).</div> <div>- The BB command will be used to locate the blocks making up the basic element of the matrix.</div> <div>-The E@XM...@ instruction should be considered a marking block. It should therefore be preceded by the BB command (see page 3-10).</div>	
Example(s)	<div><ESC>BB<CR></div> <div><ESC>E@XM■1■1■2■2■6■7■4■0@<CR></div> <div>(matrix n°1 , 1 block, size 2*2, 6 mm space between lines, et 7 mm between columns, a total of 4 elements , marking in the horizontal direction)</div> <div><ESC>BB<CR></div> <div><ESC>M100■200<CR></div> <div><ESC>TA 30<CR></div> <div><ESC>ETEXTE<CR></div> <div></div>	

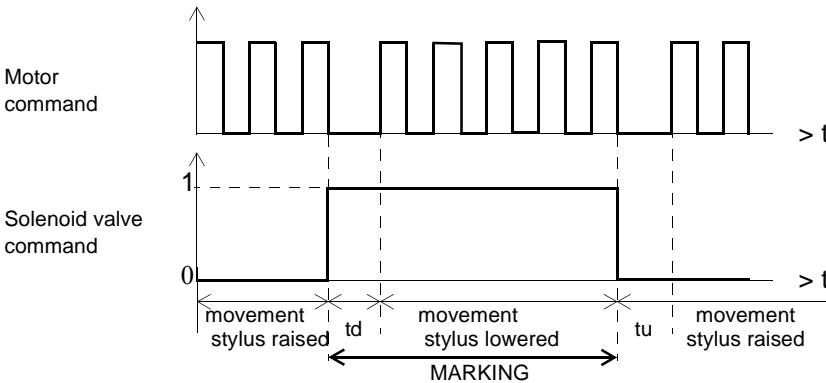
F.... Marking in Mirrored mode		Programming command
Syntax	$\langle \text{ESC} \rangle \text{Ftext} \langle \text{CR} \rangle$ or $\langle \text{ESC} \rangle \text{F@Format@} \langle \text{CR} \rangle$	
Parameter(s)	text = text to be marked (simple text). The text to be marked should not contain more than 30 characters. Format = Format to be marked (marking of variable data: counters, dates, shifts, variables...)(see page 3-39)	
Application	This sequence will permit you to mark a text in the mirrored mode.	
Example(s)	<p>Marking of a simple text</p> $\langle \text{ESC} \rangle \text{FTECHNIFOR} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; text-align: center;">TECHNIFOR</div> <p>Marking of a counter :</p> $\langle \text{ESC} \rangle \text{F@K0@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; text-align: center;">150</div> <p>Marking of a personalized format :</p> $\langle \text{ESC} \rangle \text{F@DD"/"MM"/"YY@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; text-align: center;">10\00\01</div>	

G... Marking in Reflected mode		Programming command
Syntax	$\langle \text{ESC} \rangle \text{Gtext} \langle \text{CR} \rangle$ or $\langle \text{ESC} \rangle \text{G@Format@} \langle \text{CR} \rangle$	
Parameter(s)	Text = text to be marked (simple text). The text to be marked should not contain more than 30 characters. Format = Format to be marked (marking of variable data: counters, dates, shifts, variables...)(see page 3-39)	
Application	This sequence will permit you to mark a text in the reflected mode.	
Example(s)	<p>Marking of a simple text</p> $\langle \text{ESC} \rangle \text{GTECHNIFOR} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">TECHNIFOR</div> <p>Marking of a counter :</p> $\langle \text{ESC} \rangle \text{G@K0@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">05J</div> <p>Marking of a personalized format :</p> $\langle \text{ESC} \rangle \text{G@DD"/"MM"/"YY@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">J0\02\0J</div>	

H.... Marking in Inverted mode		Programming command
Syntax	$\langle \text{ESC} \rangle \text{Htext} \langle \text{CR} \rangle$ or $\langle \text{ESC} \rangle \text{H@Format@} \langle \text{CR} \rangle$	
Parameter(s)	Text = text to be marked (simple text). The text to be marked should not contain more than 30 characters. Format = Format to be marked (marking of variable data: counters, dates, shifts, variables...)(see page 3-39)	
Application	This sequence will permit you to mark a text in the inverted mode.	
Example(s)	<p>Marking of a simple text :</p> $\langle \text{ESC} \rangle \text{HTECHNIFOR} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">TECHNIFOR</div> <p>Marking of a counter :</p> $\langle \text{ESC} \rangle \text{H@K0@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">021</div> <p>Marking a personalized format :</p> $\langle \text{ESC} \rangle \text{H@DD"/"MM"/"YY@} \langle \text{CR} \rangle$ <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">10/60/01</div>	

Configuration of a format for the marking			Configuration command																																																																																
Syntax	None : This is not a command instruction. It is the contents of the E---,F---,G---,H--- instructions																																																																																		
Parameter(s)	<div>List of available FORMAT CODES to use for the format to be marked.</div> <table><tr><th>FORM AT CODES</th><th>DESCRIPTION</th><th>Associated configuration command</th><th>Question command</th></tr><tr><td>DD</td><td>Number of the day : between 01 and 31</td><td>DD</td><td>PA</td></tr><tr><td>DS</td><td>Special day of the week code</td><td>CD</td><td>VJ</td></tr><tr><td>JS</td><td>Special day of the month code</td><td>CE</td><td>VE</td></tr><tr><td>MM</td><td>N° of the month : between 01 and 12</td><td>DD</td><td>PA</td></tr><tr><td>MS</td><td>Special month code</td><td>CM</td><td>VM</td></tr><tr><td>YYYY</td><td>Year in 4 figures</td><td>DD</td><td>PA</td></tr><tr><td>YY</td><td>Year in the 2 last figures</td><td>DD</td><td>PA</td></tr><tr><td>Y</td><td>Year in the one last figure</td><td>DD</td><td>PA</td></tr><tr><td>YS</td><td>Special year code</td><td>CY</td><td>VY</td></tr><tr><td>hh</td><td>Hours between 00 and 23</td><td>IH</td><td>PA</td></tr><tr><td>mm</td><td>Minutes between 00 and 59</td><td>IH</td><td>PA</td></tr><tr><td>ss</td><td>Seconds between 00 and 59</td><td>IH</td><td>PA</td></tr><tr><td>WW</td><td>N° of the week between 0 and 53</td><td>DD</td><td>PA</td></tr><tr><td>CCC</td><td>N° of the day of the year between 001 and 366</td><td>DD</td><td>PA</td></tr><tr><td>Q</td><td>Time slots for n° of shifts</td><td>TH</td><td>VQ</td></tr><tr><td>Kn</td><td>Counter value (number n)</td><td>KT</td><td>K?</td></tr><tr><td>"....."</td><td>Free text contained within quotation marks</td><td></td><td></td></tr><tr><td>V</td><td>Variable value (number n)</td><td>VR</td><td>V?</td></tr><tr><td>m</td><td>First figure of tenths of minute</td><td>IH</td><td>PA</td></tr></table>			FORM AT CODES	DESCRIPTION	Associated configuration command	Question command	DD	Number of the day : between 01 and 31	DD	PA	DS	Special day of the week code	CD	VJ	JS	Special day of the month code	CE	VE	MM	N° of the month : between 01 and 12	DD	PA	MS	Special month code	CM	VM	YYYY	Year in 4 figures	DD	PA	YY	Year in the 2 last figures	DD	PA	Y	Year in the one last figure	DD	PA	YS	Special year code	CY	VY	hh	Hours between 00 and 23	IH	PA	mm	Minutes between 00 and 59	IH	PA	ss	Seconds between 00 and 59	IH	PA	WW	N° of the week between 0 and 53	DD	PA	CCC	N° of the day of the year between 001 and 366	DD	PA	Q	Time slots for n° of shifts	TH	VQ	Kn	Counter value (number n)	KT	K?	"....."	Free text contained within quotation marks			V	Variable value (number n)	VR	V?	m	First figure of tenths of minute	IH	PA
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Application	<div>The Format should be marked with one of the following instructions:<div><ESC>E@Format@<CR> <ESC>F@Format@<CR> <ESC>G@Format@<CR> <ESC>H@Format@<CR></div></div> <div>It may be directly made up of either one FORMAT CODE or a combination of FORMAT CODES.</div> <div>Simple format: Format =>hh</div> <div>Combined format: Format =>hh■mm■ss</div>																																																																																		

Configuration of a format for the marking		Configuration command
Application	<p><u>Operating principle for this command:</u></p> <div style="text-align: center;">  </div>	
Example(s)	<p>Format => CCC Marking of this format on September 10, 2001 will produce : 253</p> <p>Format => "Paris, ■"DD"/"MM"/"YY marking fo this format on September 10, 2001 will produce : Paris , 10/09/01</p>	
Remark(s)	<p>Before determining a format or marking it, it is necessary to follow the configuration of format codes steps.</p> <p>Example :</p> <ul style="list-style-type: none"> • If you wish to mark one of the elements of the day's date (MM,DD or YY), it will be necessary to verify the date in the Control Unit (<ESC>PA<CR>) or configure it (<ESC>DD<CR>): <p>The configuration commands and associated instructions for the format codes have been given in the chart above as an additional aid.</p>	

I Speed configuration		Configuration Command
Syntax	<ESC>Ivd■vu■td■tu <CR>	
Application	This sequence will permit the configuration of the : <ul style="list-style-type: none"> - Marking speed - Movement speed - Delay for lowering of the stylus - Delay for raising of the stylus 	
Parameter(s)	<p>■ : Character space</p> <p>vd : Marking speed, rotation of the motors whilst the stylus is marking (Standard unit / second).</p> <p>vu : Movement speed, rotation of the motors whilst the stylus is not marking (Standard unit / second).</p> <p>td : Delay for lowering of stylus, value expressed in milliseconds (tenths accepted). This value corresponds to the waiting time between the moment when the stylus air supply is ordered and the moment when the motors begin to move.</p> <p>tu : value expressed in milliseconds (tenths accepted). This value corresponds to the waiting time between the moment when the stopping of the stylus air supply is ordered and the moment when the motors begin to move.</p>  <p>The diagram illustrates the timing of the speed configuration command. It shows two signals over time: 'Motor command' and 'Solenoid valve command'. The 'Motor command' is represented by a series of pulses. The 'Solenoid valve command' is represented by a single pulse. The timeline is divided into four main phases: 'movement stylus raised', 'td' (delay), 'movement stylus lowered', and 'tu' (delay). The 'MARKING' phase is indicated by a double-headed arrow spanning the 'movement stylus lowered' phase.</p>	
Control Unit response(s)	If the speed configuration is correct, the Control Unit sends W<CG>. (see page 4-32).	

IH Changing the time in the Central Control Unit		Configuration Command
Syntax	<ESC>IH■hh■mm■ss<CR>	
Parameter(s)	hh : Hour in 2 figures, whole number value between 0 and 23, mm : Minutes in 2 figures, whole number value between 0 and 59, ss : Seconds in 2 figures, whole number value between 0 and 59.	
Application	This sequence will permit you to set the time on the Control Unit's internal clock.	
Example(s)	Setting the time to 11 hours and 30 minutes : <ESC>IH■11■30■00<CR>	
Control Unit response(s)	<p>When the Control Unit changes its internal time, it will inform the programming device that it can not receive any more data. In this case, it will transmit the following "Xoff" code (ASCII decimal code : 19, Hexadecimal : 0C).</p> <p>Once the change has been made, the Control Unit will signal that it is ready to receive new data. In this case, it will give out the following "Xon" code. (ASCII decimal code : 17, Hexadecimal : 11).</p> <p>NB : These codes will not be visible if the Xon/Xoff handshake control has been specified in the configuration of your RS232 connection.</p>	
Remark(s)	Use the <ESC>PA<CR> instruction to check that the Control Unit time is set correctly (see page 3-73).	

IM Importation of marking programs		Question command
Syntax	<ESC>IM■ <i>number</i> <CR>	
Parameter(s)	■: Character space <i>number</i> : will indicate the number of the file that is to be imported (between 000 and 999).	
Application	This sequence will permit you to receive the contents of one or all of the marking program(s) saved in the Control Unit.	
Example(s)	Request for transmission of the contents of the n° 099 program . ESC>IM■099<CR>	

IV Program version number ?		Question command
Syntax	<ESC>IV<CR>	
Parameter(s)	This sequence will permit you to know the Control Unit's internal program version number.	
Control Unit response(s)	n.nn<CR>	
Example	Sending of <ESC>IV<CR> : Control Unit response : 1.21<CR>	
Remarks(s)	It is absolutely necessary to give the program version number when requesting any information from Technifor.	

J Force code				Programming command																																																
Syntax	<ESC>Jn<CR>																																																			
Parameter(s)	PNEUMATIC MACHINES																																																			
	n : code used to operate the solenoid valves included in the machine. Whole number value between 1 and 6 and -1.																																																			
Application	This sequence will permit you to determine the width of the marked stroke,by a combination of solenoid valves :																																																			
	<div>MACHINES EQUIPPED WITH 2 Solenoid Valves</div> <table><tr><th>FORCE OF STRIKE</th><th>STROKE CODE(n)</th><th>Solenoid Valve N°1</th><th>Solenoid Valve N°2</th><th colspan="2">STYLUS TO BE USED</th></tr><tr><td>WEAK</td><td>0</td><td>ACTIVATED</td><td></td><td colspan="2">S0-S1-S2</td></tr><tr><td>AVERAGE</td><td>2</td><td>ACTIVATED</td><td>ACTIVATED</td><td colspan="2">S0-S1-S2</td></tr></table> <div>MACHINES EQUIPPED WITH 3 Solenoid Valves</div> <table><tr><th>FORCE OF STRIKE</th><th>FORCE CODE(n)</th><th>Solenoid Valve N°1</th><th>Solenoid Valve N°2</th><th>Solenoid Valve N°3</th><th>STYLUS TO BE USED</th></tr><tr><td>WEAK</td><td>0</td><td>ACTIVATED</td><td></td><td></td><td>S0-S1-S2</td></tr><tr><td>AVERAGE</td><td>2</td><td>ACTIVATED</td><td>ACTIVATED</td><td></td><td>S0-S1-S2</td></tr><tr><td>STRONG</td><td>4</td><td>ACTIVATED</td><td></td><td>ACTIVATED</td><td>S2</td></tr><tr><td>VERY STRONG</td><td>6</td><td>ACTIVATED</td><td>ACTIVATED</td><td>ACTIVATED</td><td>S2</td></tr></table>					FORCE OF STRIKE	STROKE CODE(n)	Solenoid Valve N°1	Solenoid Valve N°2	STYLUS TO BE USED		WEAK	0	ACTIVATED		S0-S1-S2		AVERAGE	2	ACTIVATED	ACTIVATED	S0-S1-S2		FORCE OF STRIKE	FORCE CODE(n)	Solenoid Valve N°1	Solenoid Valve N°2	Solenoid Valve N°3	STYLUS TO BE USED	WEAK	0	ACTIVATED			S0-S1-S2	AVERAGE	2	ACTIVATED	ACTIVATED		S0-S1-S2	STRONG	4	ACTIVATED		ACTIVATED	S2	VERY STRONG	6	ACTIVATED	ACTIVATED	ACTIVATED
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VERY STRONG	6	ACTIVATED	ACTIVATED	ACTIVATED	S2																																															
Example(s)	Average stroke marking with a standard 2 Solenoid valve marking head : <ESC>J2<CR>																																																			
Remark(s)	<div>- The force code -1 is available for marking simulations (no solenoid valves are activated).</div> <div>- The default value (command <ESC>*<CR>) is 2.</div>																																																			

J Force code		Programming command
Parameter(s)	ELECTOMAGNETIC MACHINES in dot by dot mode	
	n : Code determining the value of the current intensity circulating within the electro-magnet installed in the machine. (values are between 1 and 6) 1 : corresponds to the lowest intensity. 6 : corresponds to the highest intensity.	
Application	This sequence will permit you to determine the depth of the impact in relation to the current sent to the electro-magnet.	

K? (> version 5.03) Counter status request		Question command
Syntax	<ESC>K?<CR>	
Application	This sequence will permit you to know the status of the counters.	
Control Unit response(s)	k■A/N■inprocess■start■end■increment■batch■raz<CR> ■: Character space k : Number of the counter (between 0 and 3). A/N : Type of counter, two possibilities : A : alphanumeric counter : figures 0 to 9 then letters A to Z. N : numeric counter : numbers only . underway : Current value of the counter (to be used for the next marking). start : Initial value of the counter. end : End value of the counter. increment : Increment value of the counter (positive or negative) batch : Number of markings executed before increment raz : The time that the counter will be reset to the start value. A string of characters in the form of YYYYMMDDhhmm, representing the date and hour when the counter will return to its initial value. The resetting of the initial value will be systematically executed once a day at the time determined by the programmed date. When this value is equal to 999999999999, or #####, the RAZ will not be carried out.	
Remark(s)	When the counter has a start value equal to 1 and an end value equal to 999, if the Control Unit replies between : - 1 and 999 : the insignificant zeros will not be marked, - 001 and 999 : the insignificant zeros will be marked.	

K? (\geq version 5.03) Counter status request		Question command
Syntax	<ESC>K?<CR>	
Application	This sequence will permit you to know the status of the counters.	
Control Unit response(s)	k■A/N■inprocess■start■end■increment■batch■raz<CR> ■: Character space k : Number of the counter (between 0 and 7). A/N : Type of counter, two possibilities : A : alphanumeric counter : figures 0 to 9 then letters A to Z. N : numeric counter : numbers only . underway : Current value of the counter (to be used for the next marking). start : Initial value of the counter. end : End value of the counter. increment : Increment value of the counter (positive or negative) batch : Number of markings executed before increment raz : The time that the counter will be reset to the start value. A string of characters in the form of YYYYMMDDhhmm, representing the date and hour when the counter will return to its initial value. The resetting of the initial value will be systematically executed once a day at the time determined by the programmed date. When this value is equal to 999999999999, or #####, the RAZ will not be carried out.	
Remark(s)	When the counter has a start value equal to 1 and an end value equal to 999, if the Control Unit replies between : - 1 and 999 : the insignificant zeros will not be marked, - 001 and 999 : the insignificant zeros will be marked.	

KT (< version 5.03) Counter configuration		Configuration Command
Syntax	<ESC>KT■k■A/N■inprocess■start■end■increment■batch■raz<CR>	
Parameter(s)	<p>■: Character space</p> <p>k : Number of the counter (whole number value between 0 and 9)</p> <p>A/N : Type of counter, two possibilities :</p> <p style="padding-left: 40px;">A : alphanumeric counter : figures 0 to 9 then letters A to Z.</p> <p style="padding-left: 40px;">N : numeric counter : numbers only.</p> <p>underway : Current value of the counter, (to be used for the next marking) 6 characters max.</p> <p>start : Initial value of the counter, 6 characters maximum.</p> <p>end : End value of the counter, 6 characters maximum.</p> <p>increment : Increment value of the counter, (positive or negative) .</p> <p>batch : Number of markings executed using the current value before this is incremented.</p> <p>raz : The time at which the counter will be reset to the start value. A string of characters in the form of YYYYMMDDhhmm, representing the date and time when the counter will return to its initial value. The resetting to the initial value will be systematically executed once a day at the time determined by the programmed date.</p>	
Application	This sequence will permit you to configure one of the four available counters.	
Example(s)	<p><ESC>KT0■N■1234■0001■9999■1■1■999999999999<CR></p> <p>Counter No.0 is numeric and will be incremented after each marking from 0001 to 9999. The next marking will be 1234. It will not be reset to its initial value.</p> <p><ESC>KT3■A■ABCD■ZZZZ■0001■-1■2■199702191200<CR></p> <p>Counter No.3 is alphanumeric and will be decremented by one unit every two parts from ZZZZ to 0001. The next marking will be ABCD. It will be reset to its initial value (ZZZZ) on February 19, 1997 at 12:00, .</p>	
Remark(s)	- If the reset of a counter to its initial value is not desired, the raz parameter should be set at 999999999999 or #####.	

KT (\geq version 5.03) Counter configuration		Configuration Command
Syntax	<ESC>KT■k■A/N■inprocess■start■end■increment■batch■raz<CR>	
Parameter(s)	<p>■: Character space</p> <p>k : Number of the counter (whole number value between 0 and 7)</p> <p>A/N : Type of counter, two possibilities :</p> <p style="padding-left: 40px;">A : alphanumeric counter : figures 0 to 9 then letters A to Z.</p> <p style="padding-left: 40px;">N : numeric counter : numbers only.</p> <p>underway : Current value of the counter, (to be used for the next marking) 8 characters max.</p> <p>start : Initial value of the counter, 8 characters maximum.</p> <p>end : End value of the counter, 8 characters maximum.</p> <p>increment : Increment value of the counter, (positive or negative)</p> <p>batch : Number of markings executed using the current value before this is incremented.</p> <p>raz : The time at which the counter will be reset to the start value. A string of characters in the form of YYYYMMDDhhmm, representing the date and time when the counter will return to its initial value. The resetting to the initial value will be systematically executed once a day at the time determined by the programmed date.</p>	
Application	This sequence will permit you to configure one of the four available counters.	
Example(s)	<p><ESC>KT0■N■1234■0001■9999■1■1■999999999999<CR></p> <p>Counter No.0 is numeric and will be incremented after each marking from 0001 to 9999. The next marking will be 1234. It will not be reset to its initial value.</p> <p><ESC>KT3■A■ABCD■ZZZZ■0001■-1■2■199702191200<CR></p> <p>Counter No.3 is alphanumeric and will be decremented by one unit every two parts from ZZZZ to 0001. The next marking will be ABCD. It will be reset to its initial value (ZZZZ) on February 19, 1997 at 12:00, .</p>	
Remark(s)	- If the reset of a counter to its initial value is not desired, the raz parameter should be set at 999999999999 or #####.	

KT		Configuration Command																								
Configuration of a counter (utilization of "jokers")																										
Using the "#" characters	<p>A "#" character will be ignored when managing the zero reset. This means that a zero reset every day at noon will be requested by transmitting 2000#####1200 for the raz variable.</p> <p>It is possible to indicate every 23rd of the month at 5:50AM the 2000##230550 chain in the same manner.</p>																									
Marking of the non significant zeros	<p>Their marking is directly specified by the format of the start and end values.</p> <p>The number of digits used in the start zones will give the current value except if otherwise specified for the end value, and taking into consideration that :</p> <p>-the number of digits of the end value will be equal or higher than the number of digits of the start value in the case of an increment.</p> <p>-the number of digits of the end value will be equal or lower than the number of digits of the start value in the case of a decrement.</p> <p>Examples :</p> <table><tr><th>Start value</th><th>End value</th><th>Increment</th><th>Next</th></tr><tr><td>1</td><td>99</td><td>1</td><td>1,2,3,.....,99</td></tr><tr><td>001</td><td>099</td><td>1</td><td>001,002,.....,010,011,....,099</td></tr><tr><td>001</td><td>999</td><td>1</td><td>001,002,.....,099,100,101,....,999</td></tr><tr><td>01</td><td>9999</td><td>1</td><td>01,....,09,10,11,....,100,....,9999</td></tr><tr><td>785</td><td>07</td><td>- 1</td><td>785,....,11,10,09,08,07</td></tr></table>		Start value	End value	Increment	Next	1	99	1	1,2,3,.....,99	001	099	1	001,002,.....,010,011,....,099	001	999	1	001,002,.....,099,100,101,....,999	01	9999	1	01,....,09,10,11,....,100,....,9999	785	07	- 1	785,....,11,10,09,08,07
Start value	End value	Increment	Next																							
1	99	1	1,2,3,.....,99																							
001	099	1	001,002,.....,010,011,....,099																							
001	999	1	001,002,.....,099,100,101,....,999																							
01	9999	1	01,....,09,10,11,....,100,....,9999																							
785	07	- 1	785,....,11,10,09,08,07																							
Remark	<p>The first four characters corresponding to the year will not be taken into consideration. They should be sent however for accounting reasons.</p>																									

LE (< version 6.00) Configuration of the machine ?		Question command
Syntax	<ESC>LE■parameter<CR> OR <ESC>LE<CR>	
Parameter(s)		Information sent back
	TETE	Name of the marking head
	SERIE	Number of the Control Unit’s CE plate or Project number
	PASX	Value of one movement step along X (1/1000 of a millimeter)
	PASY	Value of one movement step along Y (1/1000 of a millimeter)
	POx	Font validity (x correponds to the number of this font)
	ENTREES	Number of validated inputs
	SORTIES	Number of validated outputs
	EV	Number of solenoid valves being used
	INVERSY	Type of machine origin
	DISTRI	Reserved
	ZONE	Commercialization zone
	RA	Ramp
	VITMAR	Marking speed
	VITDEP	Movement speed
	STARTSTOP	Starting speed
	TUp	Tempo command - stylus lifted
	TDw	Tempo command - stylus lowered
	PC	Reserved
	HPGL	Validity of the DMC option
	CB	Reserved
	TYPE	Reserved
	COURSEX	Type of head
	COURSEY	X path boundary (in mm.)
	COURSEZ	Y path boundary (in mm.)
	I_BOOST	Z path boundary (in mm.) - non activated
	I_STANDBY	Reserved
	PAS_MM_X	Reserved
	PAS_MM_Y	X Step resolution
	RESET	Y step resolution
	TETE	Reserved

LE (< version 6.00) Machine configuration ?		Question command
Application	This sequence will permit you to know the configuration of the Control Unit.	
Control Unit response(s)	<p>The response will depend on the parameter used. (see list of parameters above).</p> <p>If you do not specify which parameters you wish to know, theControl Unit will send back information on all the parameters. These will be in the same order as they appear on the list.</p>	
Example(s)	<p><u>Sending the sequence :</u></p> <p style="text-align: center;"><ESC>LE■PO1<CR></p> <p><u>Response of the Control Unit :</u></p> <ul style="list-style-type: none"> • font N°1 present : 1 • font N°1 absent : 0 	
Remark(s)	<p>When the <ESC>LE<CR> sequence is given without specifying a parameter, the Control Unit will send back the list of all parameters in the same order as they appear on the list.</p> <p>If you have any problem with your marking equipment, please contact TECHNIFOR, always providing us with the following information :</p> <ul style="list-style-type: none"> • CE plate number, • Serial number, • Type of marking head, • Program version. 	

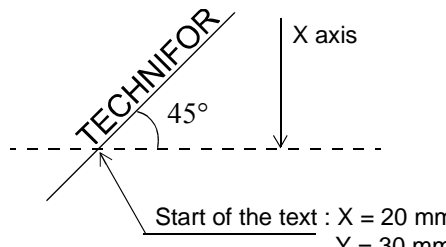
LE (≥ version 6.00) Configuration of the machine ?		Question command
Syntax	<ESC>LE■parameter<CR> OR <ESC>LE<CR>	
Parameter(s)		Information sent back
	TETE	Name of the marking head
	SERIE	Number of the Control Unit’s CE plate or Project number
	PASX	Value of one movement step along X (1/1000 of a millimeter)
	PASY	Value of one movement step along Y (1/1000 of a millimeter)
	POx	Font validity (x corresponds to the number of this font)
	ENTREES	Number of validated inputs
	SORTIES	Number of validated outputs
	INVERSY	Number of solenoid valves being used
	RETORG	Type of machine origin
	DISTRI	Defines return order of X and Y axes
	ZONE	Reserved
	RA	Commercialization zone
	VITMAR	Ramp
	VITDEP	Marking speed
	STARTSTOP	Movement speed
	VMM	Starting speed
	VDM	Maximum marking speed
	TUp	Maximum speed of movement
	TDw	Tempo command - stylus lifted
	PC	Tempo command - stylus lowered
	DMC	Reserved
	HPGL	Option
	CB	Reserved
	MATRIX	Option
	TH	Option
	TB	Reserved
	EV	Reserved
	TYPE	Parameters relating to the number of solenoid valves (0-4)
	COURSEX	Type of head
	COURSEY	X path boundary (in mm.)
	TETE	Y path boundary (in mm.)

LE (≥ version 6.00) Configuration of the machine ?		Question command																						
Parameter(s) continued	<table><tr><td></td><td>Information sent back</td></tr><tr><td>COURSEZ</td><td>Z path boundary (in mm.) - non activated</td></tr><tr><td>I_BOOST</td><td>Reserved</td></tr><tr><td>I_STANDBY</td><td>Reserved</td></tr><tr><td>PAS_MM_X</td><td>X Step resolution</td></tr><tr><td>PAS_MM_Y</td><td>Y Step resolution</td></tr><tr><td>PAS_MM_Z</td><td>Z Step resolution</td></tr><tr><td>AXEZ</td><td>Option</td></tr><tr><td>RESET</td><td>Reserved</td></tr><tr><td>RESDMC</td><td>Step resolution for circular marking device</td></tr><tr><td>MECA</td><td>Reserved</td></tr></table>			Information sent back	COURSEZ	Z path boundary (in mm.) - non activated	I_BOOST	Reserved	I_STANDBY	Reserved	PAS_MM_X	X Step resolution	PAS_MM_Y	Y Step resolution	PAS_MM_Z	Z Step resolution	AXEZ	Option	RESET	Reserved	RESDMC	Step resolution for circular marking device	MECA	Reserved
		Information sent back																						
	COURSEZ	Z path boundary (in mm.) - non activated																						
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	I_STANDBY	Reserved																						
	PAS_MM_X	X Step resolution																						
	PAS_MM_Y	Y Step resolution																						
	PAS_MM_Z	Z Step resolution																						
	AXEZ	Option																						
	RESET	Reserved																						
	RESDMC	Step resolution for circular marking device																						
	MECA	Reserved																						
Application	This sequence will permit you to know the configuration of the Control Unit																							
Reponse(s) of the Control Unit	The response depends on the parameter used (see list of parameters) When you do not specify the parameters, the Control Unit will send all of the parameters in the order they appear in the list of parameters.																							
Example(s)	<u>Sending the sequence :</u> <ESC>LE■PO1<CR> <u>Response of the Control Unit :</u> • font N°1 present : 1 • font N°1 absent : 0																							
Remark(s)	When the sequence <ESC>LE<CR> is sent without specifying the parameters, the Control Unit will send all of the parameters in the order they appear in the paragraph "Parameters". If you have any problem with your marking equipment, please contact TECHNIFOR, always providing us with the following information : • CE plate number, • Serial number, • Type of marking head, • Program version.																							

LL Language ?		Question command
Syntax	<ESC>LL<CR>	
Application	This sequence will permit you to know which language has been activated in the machine.	
Control Unit response(s)	Number<CR> Number : Number given to the language - whole number value between 0 and 3.	
Remark(s)	<p>Refer to the machine's "LANGUAGE" menu to know the numbers given to the various languages.</p> <p>Use the WL command to configure the language (see page 3-105).</p>	

LO Marking logos		Programming command
Syntax	<ESC>LOdirection■number<CR>	
Parameter(s)	<p>direction : Marking direction of the logo, with a value between 5 and 8 :</p> <p>5 : Normal mode, 6 : Mirrored mode, 7 : Reflected mode, 8 : Inverted mode.</p> <p>number : Number of the logo present in the Central Control Unit, with a whole number value between 100 and 999.</p>	
Application	This sequence will permit you to mark a logo which has already been downloaded into the Control Unit.	
Example(s)	<p>Marking Logo number 110 with coordinates : X = 20 mm and Y = 30 mm, character size : 3 mm, Force code 2, no compression, in Mirrored mode, average speed with a pneumatic stylus :</p> <pre> <ESC>*<CR> <ESC>UU1<CR> <ESC>DG■1<CR> <ESC>PB999<CR> <ESC>O<CR> <ESC>MN<CR> <ESC>CC100<CR> <ESC>TA30<CR> <ESC>J2<CR> <ESC>M200■300<CR> <ESC>LO6■110<CR> <ESC>O<CR> <ESC>PE999<CR> </pre>	
Remark(s)	<p>The CE logo n°99, provided standard with pneumatic machines, and n°98, provided standard with electromagnetic machines, have a .POL extension.</p> <p>To mark these two logos, the following commands should be used to replace the <ESC>LO command .</p> <p>-<ESC>POi<CR> to select a logo (see page 3-78),</p> <p>-<ESC>E?<CR> to mark the logo in Normal mode (see page 3-30).</p> <p>It is also possible to execute the marking in Mirrored (<ESC>F?<CR> see page 3-36), Reflected (<ESC>G?<CR> see page 3-37), or Inverted mode (<ESC>H?<CR> see page 3-38).</p>	

M Absolute movement		Programming command
Syntax	<ESC>Mxxx■yyy<CR>	
Parameter(s)	■ : Character space xxx : Absolute coordinates along the X axis, whole number value expressed in current units. yyy : Absolute coordinates along the Y axis, whole number value expressed in current units.	
Application	This sequence will permit you to execute an absolute movement up to the given coordinates along the X and Y axis.	
Example(s)	<ESC>UU1<CR> current units 1/10 of mm. <ESC>M200■300<CR> Absolute movement along X : 20mm, and Y : 30 mm.	
Remark(s)	Negative xxx or yyy values are invalid and will create a semantic error <ESC>L<CR> (see page 4-15). An absolute movement corresponds to a movement in relation to the origin of the machine. A relative movement corresponds to a movement in relation to the current position of the stylus (see N command, page 3-69).	

MA Angular marking		Programming command
Syntax	<ESC>MAaaaa<CR>	
Parameter(s)	aaaa : Inclination angle of the axis along which the text is to be marked, with a whole number value between 0 and 3599, expressed in 1/10th of degrees.	
Application	This sequence will permit you to mark a text at a given angle in relation to the horizontal X axis.	
Example(s)	<p>Marking the text TECHNIFOR at : X=20mm and Y=30mm, character size : 3mm, Force code 2, no compression, standard spacing, in Normal mode, 45° angle, average speed with a pneumatic stylus.</p> <pre> <ESC>*<CR> <ESC>UU1<CR> <ESC>I■200■1000■20■20<CR> <ESC>PB999<CR> <ESC>O<CR> <ESC>MN<CR> <ESC>CC100<CR> <ESC>TA30<CR> <ESC>J2<CR> <ESC>M200■300<CR> <ESC>PO0<CR> <ESC>SC100<CR> <ESC>MA450<CR> <ESC>ETECHNIFOR<CR> <ESC>O<CR> <ESC>PE999<CR> </pre> 	
Remark(s)	<p>This command should be followed by the text marking command (<ESC>ETECHNIFOR<CR> see page 3-31) or the logo marking command (<ESC>LO see page 3-57). The coordinates of the first character in the string of text or the logo will be those determined by the last positioning instruction.</p> <p><u>A given direction will remain unchanged until either of the two following commands are received :</u></p> <ul style="list-style-type: none"> - back to Normal mode command(<ESC>MN<CR> see page 3-65), - angular marking command with a new angle (<ESC>MA see page 3-59). 	

MC Circular marking		Programming command
Syntax	<ESC>MCOxnOynrnaaaans1ns2nihnivnd<CR>	
Parameter(s)	<p> ■: Character space Ox : X coordinate of the center of the fictive circle - whole number value expressed in current units. Oy : Y coordinate of the centre of the fictive the circle - whole number value expressed in current units. r : Radius of the circle - whole number value expressed in current units. aaaa : Angular coordinate at start marking - whole number value expressed in 1/10th of degrees. s1 : Sense of direction of the characters in relation to the base line of the base circle. Two values are possible : 1 or 2. s1 = 1 : characters outside the outline of the circle , s1 = 2 : characters inside the outline of the circle . s2 : Sense of direction for the marking of the characters around the fictive base circle. Two values are possible : 1 or 2. s2 = 1 : counter-clockwise direction, s2 = 2 : clockwise direction. ih : Sense of direction for the marking of the characters in relation to the horizontal (X) axis . Two values are possible : 0 or 1. ih = 0 : inverted, ih = 1 : normal. iv : Sense of direction for the marking of the characters in relation to the vertical (Y) axis . Two values are possible : 0 or 1. iv = 0 : inverted, iv = 1 : normal. d : Indications concerning the dilation of the circle along the Y axis. This parameter will permit you to mark characters along ellipses. Whole number value expressed as a percentage, d = 100 corresponds to the tracing of a circle. </p>	
Application	This sequence will permit you to mark a circular text.	

MC Circular marking	Programming command
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Example(s)

Marking the text "TECHNIFOR", coordinates of the fictive circle at $X = 20$ mm and $Y = 30$ mm, character size : 3 mm, force code 2, no compression, standard spacing, **Circular marking on the outside of a fictive circle with a 40mm. diameter, in a counter-clockwise direction starting at 225° , inverted characters in relation to the horizontal (X) and vertical (Y) axes, no dilation (100 %), average speed, pneumatic stylus.**

<ESC>*<CR>

<ESC>UU1<CR>

<ESC>DG■1<CR>

<ESC>PB999<CR>

<ESC>O<CR>

<ESC>MN<CR>

<ESC>CC100<CR>

<ESC>TA30<CR>

<ESC>J2<CR>

<ESC>PO0<CR>

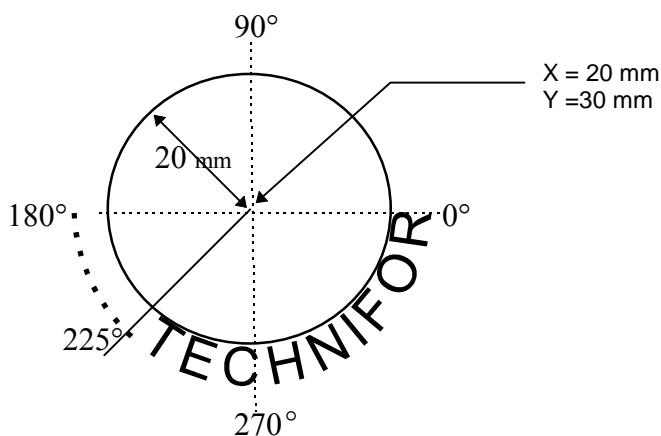
<ESC>SC100<CR>

<ESC>MC200■300■200■2250■1■1■0■0■100<CR>

























<ESC>ETECHNIFOR<CR>

<ESC>O<CR>

<ESC>PE999<CR>



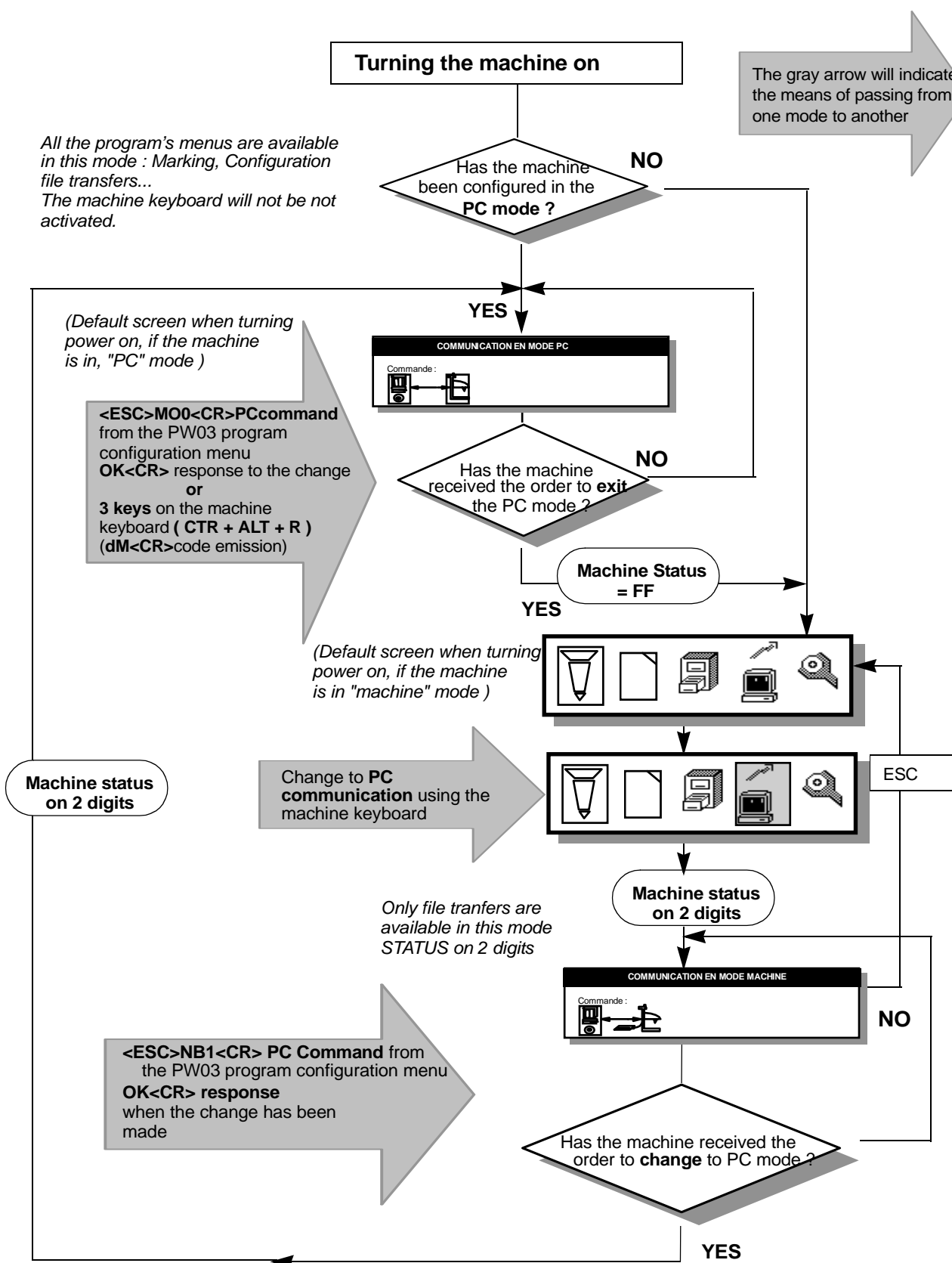
..

MC Circular marking					Programming command																																					
Example(s)	<table><tr><th colspan="6">EXHAUSTIVE SUMMARY TABLE OF TEXT MARKING POSSIBILITIES IN CIRCULAR MODE</th></tr><tr><th>s1</th><th>s2</th><th>ih</th><th>iv</th><th colspan="2">RESULT</th></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>1</td><td>2</td><td>1</td><td>1</td><td></td><td></td></tr><tr><td>2</td><td>1</td><td>0</td><td>0</td><td></td><td></td></tr><tr><td>2</td><td>2</td><td>1</td><td>1</td><td></td><td></td></tr></table>						EXHAUSTIVE SUMMARY TABLE OF TEXT MARKING POSSIBILITIES IN CIRCULAR MODE						s1	s2	ih	iv	RESULT		1	1	0	0			1	2	1	1			2	1	0	0			2	2	1	1		
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	1	2	1	1																																						
	2	1	0	0																																						
	2	2	1	1																																						
Remark(s)	<p>Each character will be radially positioned along the outline of the fictive circle.</p> <p>The center of the fictive circle can be positioned outside of the marking zone. In this case, this instruction will allow the introduction of negative values for the circle coordinates.</p> <p>Example :</p> <p>MC-100■-30■200■3500■1■2■1■1■100</p> <p>Other modes such as Inverted, Reflected and Mirrored modes are not compatible with this procedure.</p>																																									

ML Marking a circle or an ellipse		Programming command
Syntax	<code><ESC>ML■Ox■Oy■r■d■a1■a2■p<CR></code>	
Parameter(s)	<p> ■ : Character space Ox : X coordinate of the center of the circle; whole number value in current units. Oy : Y coordinate of the center of the circle; whole number value in current units. r : Radius of the circle; whole number value in current units. d : Expansion ratio of the circle in relation to the Y axis. This parameter will permit you to mark ellipses. Whole number value expressed as a percentage, d=100 will correspond to a circle. a1 : Start angle for the tracing of the circle. Whole number value expressed in degrees. a2 : End angle for the tracing of the circle. Whole number value expressed in degrees. p : Angular step between two segments, with a whole number value between 1 and 90°. The smaller the value, the better the definition of the circle, but the longer the marking time required. </p>	
Application	This sequence will permit you to mark circles, ellipses and certain geometrical shapes.	
Example(s)	Marking a circle with a diameter of 40 mm. with its center at the coordinates X = 20 mm and Y = 30 mm. <code><ESC>ML■200■300■200■100■0■360■10<CR></code>	
Remark(s)	specific "p" values will permit you to obtain geometric shapes: p = 120 = a triangle, p = 90 = a square, p = 60 = a hexagon.	

MN Setting marking to Normal mode		Programming command
Syntax	<ESC>MN<CR>	
Application	This sequence will permit you to return to the normal marking mode. After giving this command, all characters will be marked along a line parrallel to the X axis.	
Remark(s)	All marking modes programmed before this instruction will be cancelled.	

MO Mode change		Configuration command
Syntax	<ESC>MO<i>Number</i><CR>	
Parameter(s)	Number : Possible values : 0 or 1 0 : Forcing the machine mode, 1 : forcing the PC mode.	
Application	This sequence will change the machine mode.	
Response(s) of the Control Unit	OK<CR> This sequence will confirm the mode change.	
Remark(s)	Use the <ESC>MO?<CR>sequence to ask for the mode currently configured in the machine (see page 3-68).	



MO? Question mode		Configuration command
Syntax	<ESC>MO?<CR>	
Application	This sequence will permit you to know the machine mode.	
Control Unit response(s)	The machine will return to the number corresponding to the active mode : 0<CR> : Machine mode, 1<CR> : PC mode.	
Remark(s)	Use the MO command to configure the mode (see page 3-66).	

N Relative movement		Programming command
Syntax	<ESC>Nxxx■yyy<CR>	
Parameter(s)	■ : Character space x : Relative movement distance along the X axis, with a whole number value expressed in current units. y : Relative movement distance along the Y axis, with a whole number expressed in current units.	
Application	This sequence will permit you to execute a movement which is relative to the current position of the stylus. These values can be positive or negative.	
Example(s)	Current unit : 1/10mm (<ESC>UU■1<CR>) Movement of the stylus : 10 mm in a positive direction along the X axis, and 10 mm in a positive direction along the Y axis. <ESC>N100■100<CR> Movement of the stylus : 20 mm in a negative direction along the X axis, and 30 mm in a positive direction along the Y axis. <ESC>N-200■300<CR> Movement of the stylus : 40 mm in a positive direction along the X axis, and 10 mm in a negative direction along the Y axis <ESC>N400■-100<CR> Movement of the stylus : 1 mm in a negative direction along the X axis, and 1 mm in a negative direction along the Y axis. <ESC>N-10■-10<CR>	
Remark(s)	An absolute movement corresponds to a movement in relation to the machine's origin. (see M command - page 3-57). A relative movement is a movement which is relative to the current position of the stylus.	

NB Independent marking		Execution of marking
Syntax	<ESC>NB■repetition■program n°<CR>	
Parameter(s)	<p>■ : Character space</p> <p>repetition : Number of repetitions of the marking program, with a value between 0 and 32 761. The value 0 will correspond to an infinite number of repetitions.</p> <p>program n° : Number of the program to be marked, with a value between 000 and 999.</p>	
Application	<p>This sequence will require that the Control Unit work in the independent mode.</p> <p>The Control Unit will manage the marking. It is therefore possible to disconnect the RS 232 connection.</p>	
Remark(s)	<ul style="list-style-type: none"> - Sending the <ESC>CtrlG<CR> instruction through the serial port (see page 3-3-20), will permit you to launch the marking using the software (emulation of the start cycle button). - The Control Unit will continue to send the control codes back (see chapter 3) . - The <ESC>ST<CR> command (see page 3-3-88) will permit you to know if the Central Control Unit is in the independent mode or not. If it is, it will return the FF<CR> code . - The <ESC>AM<CR> instruction (see page 3-3-8) will permit you to exit the independent mode. The Control Unit will then send the Z<CR> code back (see page 4-4-35).It will then be possible to resume communication. 	

NT Beginning the downloading of Fonts, Logos and files		Marking execution command
Syntax	<p style="text-align: center;"> <ESC>NT <u>Caution</u> : No <CR> </p>	
Application	<p>This sequence will inform the Control Unit that a font, a logo or a file is about to be downloaded.</p> <p>Data concerning fonts, logos or files must be given right after this instruction.</p>	
Remark(s)	<p>This sequence should always be preceded by the <ESC>DT instruction (see page 3-29)</p> <p>When all data has been downloaded, the AT<CR> instruction should be used (see page 3-9) to inform the Control Unit that the downloading has been completed.</p>	

O Return to origin		Programming command
Syntax	<ESC> O <CR>	
Application	This sequence will permit the marking head to return to the origin point 0.	
Remark(s)	<p>It is recommended that the return to origin be used systematically at the beginning and end of the marking programs.</p> <p>Two detectors will inform the Control Unit that the marking head has returned to the point of origin (one detector per axis).</p> <p>When a return to the point of origin is requested, the Control Unit will register the theoretical position of the stylus and return to the X = 0 and Y = 0 position.</p>	

PA Parameters of the machine ?		Question command
Syntax	<ESC>PA<CR>	
Application	This sequence will permit you to know the Control Unit's different parameters.	
Control Unit response(s)	<p>p■v■cx■cy■cz■px■py■pz■jj■mm■aa■hh■min■sec<CR></p> <p>p : Current font being used (by default p = 0). v : Version of the Control Unit's internal program cx : Maximum movement path along the X axis, expressed in motor steps. cy : Maximum movement path along the Y axis, expressed in motor steps . cz : - NON ACTIVE - px : - NON ACTIVE py : - NON ACTIVE pz : - NON ACTIVE - jj : Current day in the Control Unit's clock mm : Current month in the Control Unit's clock. aa : Current year in the Control Unit's clock. hh : Current hour in the Control Unit's clock. min : Current minute in the Control Unit's clock. sec : Current seconds in the Control Unit's clock.</p>	
Remark(s)	<p>When the stylus is at the origin, the px and py values will be equal to 0.</p> <p>This sequence will permit you to check the date and hour on the Control Unit's internal clock.</p>	

PB Program start		Programming command
Syntax	<ESC>PBn°<CR>	
Parameter(s)	n° : Number of the program, with a whole number value between 000 and 999.	
Application	This sequence will inform the Control Unit that a marking program is beginning.	
Remark(s)	<p>This sequence should be followed by the <ESC>PE instruction (see page 3-74) at the end of the program.</p> <p>To cancel the loading of a marking program underway, use the :</p> <ul style="list-style-type: none"> • "Cancel marking" : <ESC>AM<CR> command (see page 3-8), 	

PD Lowering the stylus		Programming command
Syntax	<ESC> PD <CR>	
Application	This sequence will permit you to : <ul style="list-style-type: none"> • activate the vibration of the stylus when using a pneumatic marking head, • lower the stylus when using an electromagnetic marking head. 	
Example(s)	Marking a 10 mm x 10 mm square with a pneumatic marking head, current units 1/10 mm, starting point coordinates : X = 50 mm and Y = 50 mm : <pre> <ESC>M500■500<CR> <ESC>PD<CR> <ESC>M600■500<CR> <ESC>M600■600<CR> <ESC>M500■600<CR> <ESC>M500■500<CR> <ESC>PU<CR> </pre> This example does not apply to electromagnetic marking heads.	
Remark(s)	The stylus will remain in the lowered position until the "Raise the stylus" <ESC>PU<CR> instruction is sent : (see page 3-3-80). The speed used when lowering the stylus corresponds to the marking speed (speed configuration <ESC>I instruction : see page 3-3-41). This command, used when the stylus is in motion, can be used to mark frames as well as more complex shapes. This instruction cannot be used when marking texts or logotypes.	

PE End of program		Programming command
Syntax	<ESC>PE n° <CR>	
Parameter(s)	n° : Program number, with a whole number value between 000 and 999.	
Application	This sequence will permit you to inform the Control Unit that the marking program has finished.	
Control Unit response(s)	<p>RT0 : This code will be given when all instructions sent between <ESC>PB<CR> and <ESC>PE<CR> are correct.</p> <p>Hlll : This code will be given when the Control Unit detects a syntax error Hlll on line number lll. The line containing the <ESC>PB<CR> instruction will be taken into account when determining the number of the line.</p> <p>Llll : This code will be given when the Control Unit detects a semantic error Llll on line number lll. The line containing the <ESC>PB<CR> instruction will be taken into account when determining the number of the line.</p> <p>Nlll : This code will be given when the Control Unit detects that an option was not validated. The line containing the <ESC>PB<CR> instruction will be taken into account when determining the number of the line.</p>	
Remarks)	<p>This sequence should be preceded by the <ESC>PB (instruction see page 3-72).</p> <p>To cancel the loading of a marking program under way, use the :</p> <ul style="list-style-type: none"> • "Cancel marking" : <ESC>AM<CR> command (see page 3-8), 	

PI Marking dots		Programming command
Syntax	<ESC>PI■Tpd■Tpu■Number<CR>	
Parameter(s)	■ : Character space Tpd : Delay Pen Down. Tpu : Delay Pen Up. Number : Number of impacts to be carried out.	
Application	This sequence will permit you to order the Pen Down and Pen Up delay, as well as the number of Pen Down/Pen Up to be carried out.	
Examples	The command <ESC>PI■4■3■50<CR> will order the marking of 50 impacts at current coordinates, with a delay of 4 ms for Pen Down and a delay of 3 ms for Pen Up.	

PO Font selection		Programming command
Syntax	<ESC>POi<CR>	
Parameter(s)	i : Number of the character font, with a whole number value between 0 and 999.	
Application	This sequence will permit you to determine the character font to be used.	
Remark(s)	<ul style="list-style-type: none"> - The memory receiving the downloaded fonts is a stored memory Downloading is not necessary after each use. - The fonts will be stored in the Control Unit's EPROM, and numbered between 0 and 99. - Characters are considered to be segment sequences or a series of dots to be marked. Technifor provides these characters, grouped in fonts. - Different sizes and orientations of characters may be obtained by homothetic calculation. - Characters have a variable width. 	

PS Deleting a program		Execution of marking
Syntax	<ESC>PS■n°<CR>	
Parameter(s)	■ : Character space n° : Number of the program to be deleted, with a whole number value between 000 and 999.	
Application	This sequence will permit you to delete a program from the saved memory.	
Remark(s)	To obtain the list of programs stored in the memory, use the <ESC>DIR<CR> instruction (see page 3-26).	

PU Raising the stylus		Programming command
Syntax	<ESC>PU<CR>	
Parameter(s)	This sequence will permit you to : <ul style="list-style-type: none"> • deactivate the vibration of the stylus when using a pneumatic marking head, • raise the stylus when using an electromagnetic marking head. 	
Remark(s)	<p>This is the stylus' natural position.</p> <p>The stylus will always be in the raised position when the Control Unit is being programmed, or when marking has stopped.</p> <p>The speed used while raising the stylus corresponds to its movement speed. (Speed configuration <ESC>I instruction : see page 3-41).</p>	

Q State of Inputs ?		Question Command
Syntax	<ESC>Q<CR>	
Application	This sequence will permit you to know the state of the inputs	
Response(s) of the Control Unit	<p>The state of inputs is sent in the form of a hexadecimal byte, text code ASCII</p> <p>The response will appear in the form of : ab<CR>, in which a and b are 2 characters amongst the whole : {0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F}.</p>	
Example(s)	<p>If the Inputs 1, 2, 3 and 5 are activated, the Control Unit will respond 2E. Which corresponds to : 101110, in binary code.</p> <p>If the Inputs 0,1,2,3,4 and 5 are activated, the Control Unit will respond 2F. Which corresponds to : 111111, in binary code.</p>	
Remark(s)	The first bit (on the right) corresponds to Input 0.	

QT Configuring the time at which the "Julian" date is changed		Configuration Command
Syntax	<ESC>QT■hhmmss<CR>	
Parameters(s)	■ : ASCII 12 code hhmmss : Hours Minutes Seconds format	
Application	This sequence permits the configuration of the time at which the number of the day of the year will change (the "Julian" date).	
Example(s)	<ESC>QT■050000<CR> The change of the number of the day will take place every day at 5:00am. Example : Wednesday 16th of October 2002. - At 4:00am the number marked will be : 288, - At 5:00am the number marked will be : 289.	
Remark(s)	Marking of the number of the day in the year will be obtained by the key word : @CCC@.	

QT? (\geq version 5.03) Time at which the "Julian" date is changed ?		Question Command
Syntax	<ESC>QT?<CR>	
Application	This sequence will permit you to know the time at which the number of the day will change.	
Control Unit response(s)	hhmmss<CR> Response format : hours minutes seconds	
Example(s)	<ESC>QT?<CR> Control Unit response : 063000. Change of number of day every day at 06 hours and 30 minutes.	
Remark(s)		

SB Pause during marking		Programming command
Syntax	<ESC> SB <CR>	
Application	This sequence will permit you to interrupt the marking at the end of a block, during the execution of a program.	
Control Unit response(s)	When the Control Unit is on pause : - it will send the P<CR> code (see page 4-28) via the serial connection,	
Remark(s)	<ul style="list-style-type: none"> •The <ESC>CtrlG<CR> instruction (see page 3-20) or closing the "start marking" contact will permit you to continue the execution of the program. •This command is not taken into account if used in a marking block which contains: <ul style="list-style-type: none"> - An activated Output - A reset Output - Standby of an Input 	

SC Inter-character spacing		Programming command
Syntax	<ESC>SCi<CR>	
Parameter(s)	i : Value of the inter-character spacing, whole number value between 1 and 999, expressed as a percentage.	
Application	This sequence will permit you to determine the space between characters.	
Remark(s)	By default, i = 100 %. This sequence should be preceded by the "select a font" instruction <ESC>POi<CR> (see page 3-78).	

SM Choosing a writing style		Programming command
Syntax	<ESC>SMi<CR>	
Parameter(s)	i : Value of the writing style. Two possible values : 0 : Normal writing (default value), 1 : Italic writing.	
Application	This sequence will permit you to choose a style of writing.	
Remark(s)	Use the following instructions one after the other for italic marking : - "Choice of the writing style" - "Determining an angle for italic writing" : <ESC>AIi<CR> (voir page 3-6).	

SP Deleting Fonts or Logos		Execution of marking
Syntax	<ESC>SP■i■type<CR>	
Parameter(s)	<p>i : Number of the font or the logo to be deleted, with a whole number value between 100 and 999.</p> <p>type : Type of deletion. Two values are possible :</p> <p>1 : for a font, 2 : for a logo.</p>	
Application	This sequence will permit you to delete a font or logo saved in the Control Unit's memory.	
Remark(s)	<p>To obtain the list of fonts or logos which are in the Control Unit's memory, use the <ESC>DIR<CR> instruction (see page 3-26).</p> <p>Fonts and logos are numbered between 0 and 99, and cannot be deleted since they are saved in the Flash memory.</p>	

ST Status of the machine ?		Question command
Syntax	<ESC>ST<CR>	
Application	This sequence will give you the machine's status.	
Response(s) of the Control Unit	<p>The response contains 2 figures :</p> <p>Status Origin<CR></p> <p><u>1st figure</u> : State of the Control Unit. Status = 1 : Control Unit not operating (waiting for a command), Status = 2 : Control Unit ready to mark, waiting the "start marking" signal, Status = 3 : Control Unit - marking under way</p> <p><u>2nd figure</u> : Stylus position . Origin = 0 : the stylus is not at the origin point , Origin = 1 : the stylus is at the origin on the X and Y axis (0,0).</p> <p>If the machine is in independent mode, the Control Unit will transmit the FF<CR> code . If it is in machine mode and ready to mark, the Control Unit will transmit the FE<CR> code If the RESET switch is on, the Control Unit will transmit the FD<CR> code.</p>	

SU (\geq version 5.03) Configuration of device to indicate wearing of point		Question Command
Syntax	<ESC>SU■unit■consigne■init■output■text■<CR>	
Parameter(s)	<p>■ ASCII 12 code</p> <p>unit : Value indicating the transmission unit of the "consigne".</p> <p>consigne : Total marking distance (active stylus) above which the message will be displayed.</p> <p>init : Value showing whether the total distance covered to date should be set back to zero. 0 : do not change the total distance covered. 1 : set the total distance covered back to zero.</p> <p>output : Output to be activated when the distance covered to date reaches the value of the "consigne" (This will be * if no output should be activated).</p> <p>text : Text to be displayed when the distance covered reaches the value of the "consigne" (32 characters max).</p>	
Application	This sequence will permit you to configure the device for indicating wearing of the stylus point.	
Example(s)	<ESC>SU■0■5647■1■O0,2■"CHANGE POINT-STATION 598■"<CR>	

SU (\geq version 5.03) Device to indicate wearing of point ?		Question Command
Syntax	<ESC>SU■?<CR>	
Application	This sequence will permit to know the Control Unit configuration of the device for indicating wearing of the stylus point	
Parameter(s)	unit■consigne■init■output■text■<CR> ■ ASCII 12 code unit : Value indicating the transmission unit of the. consigne : Total marking distance (active stylus) above which the message will be displayed. output : Output to be activated when the distance covered to date reaches the value of the "consigne" (This will be * if no output should be activated). text : Text to be displayed when the distance covered to date reaches the value of the "consigne" (32 characters max).	
Example(s)	<ESC>SU■?<CR> The Control Unit will respond: 5647■124■00,2■"CHANGE POINT-STATION 5983■<CR>	
Remark(s)	The configuration of this device can be done using the <ESC>SU command (see page 3-89)	

SV Establishing RS 232 connection		Configuration Command
Syntax	<ESC>SV■bauds■bits■stop■parity<CR>	
Parameter(s)	<p>Bauds : Transmission speed in bytes/second, whole number value between 110 and 19200 bytes/second.</p> <p>Bytes : Number of data bytes, possible values : 7 or 8.</p> <p>Stop : Number of stop bytes, possible values : 1 or 2.</p> <p>Parity : Type of parity :</p> <p>0 : No parity (None),</p> <p>1 : Odd parity (Odd),</p> <p>2 : Even parity (Even).</p>	
Application	This sequence will permit you to configure the RS 232 connection with the Control Unit.	
Response(s) of the Control Unit	The Control Unit will transmit the OK<CR> code (see page 4-27) when the operation has been successfully completed. This code will be transmitted with the RS232 connection's new parameters.	
Example(s)	<p><u>Value by default (first connection) :</u></p> <p><ESC>SV■19200■8■1■0<CR></p> <p>19200 bauds, 8 data bytes, 1 stop bytes, No parity.</p> <p><u>Value given after sending three 200ms BREAK signals, at an interval of 1 second :</u></p> <p><ESC>SV■1200■7■1■2<CR></p> <p>1200 Bauds, 7 Data bytes, 1 Stop bytes, Even parity.</p>	
Remark(s)	<p>The flow control Xon / Xoff is always activated.</p> <p>It can't be deactivated.</p>	

TA Size of characters and logotypes		Programming command
Syntax	<ESC>TAi<CR>	
Parameter(s)	i : Character or logo height (excluding downstroke and accents) in current units, with a whole number value between 1 and 800.	
Application	This sequence will permit you to determine the size of characters or logos to be marked.	
Example(s)	<ESC>TA100<CR> Marking of 10 mm. characters in current UU1 units . Marking 1 inch characters (2,54 mm) in current UU2 units .	
Remark(s)	Character width will depend on the font used. It can vary from one character to another.	

TH (< version 5.03) Configuration of time-slots for a shift code		Configuration Command
Syntax	<ESC>TH■hd■hf■code<CR>	
Parameter(s)	■ : Character space hd : Shift start time (hours-minutes), with a whole number value between 0000 and 2359. hf : Shift finishing time (hour-minutes), with a whole number value between 0000 and 2359. code : Shift code for the time-slot defined as above (limited to 8 characters).	
Application	This command will permit you to determine time slots when defining work shifts.	
Example(s)	Commands to determine 3 shift codes A, B and C, with the following time-slots : A : From 6:00 to 13:59 : 1st Shift B : From 14:00 to 21:59 : 2nd Shift C : From 22:00 to 6:00 : 3rd Shift <ESC>TH■0000■0000<CR> <ESC>TH■0600■1359■A<CR> <ESC>TH■1400■2159■B<CR> <ESC>TH■2200■0559■C<CR>	
Remark(s)	<p>To delete all the shift codes, send the following <ESC>TH■00■00■00■00<CR> command :</p> <p>The Control Unit will not perform any coherence check on the timetable data. It is therefore up to the programmer to make sure that the hours do not overlap so as to avoid uncertain results.</p> <p>The determined time-slots are valid for everyday of the week, every month and every year.</p> <p>It is possible to program up to 4 shift codes.</p> <p>To mark the shift code underway , use the "Q" format code of the "Define format" command (see page 3-38).</p>	

TQ (≥ version 5.03)	
Configuration of time-slots for a shift code	
Syntax	Configuration Command
	<ESC>TQ■N■hhmm■HHMM■code<CR>
Parameter(s)	<p>■ : Character space</p> <p>N : Number of the day of the week. This will be a value between 1 and 7. (1= Monday, 2= Tuesday, 7=sunday).</p> <p>hhmm : Time-slot start time. This will be a value between 0000 and 2359.</p> <p>HHMM : Time-slot finish time. This will be a value between 0000 and 2359.</p> <p>code : Shift code for the time-slot defined as above (limited to 20 characters).</p>
Application	This command will permit you to configure 5 shift codes maximum for each day of the week.
Example(s)	<p>Commands to determine 3 shift codes A, B and C, for Wednesday:</p> <p>A : From 0:00 to 07:59 : 1st Shift</p> <p>B : From 08:00 to 15:59 : 2nd Shift</p> <p>C : From 16:00 to 23:59 : 3rd Shift</p> <p style="text-align: center;"> <ESC>TQ■3■0000■0000<CR> <ESC>TQ■3■0000■0759■A<CR> <ESC>TQ■3■0800■1559■B<CR> <ESC>TQ■3■1600■2359■C<CR> </p> <p>➔ On Wednesday, code A will be marked until 07 hours 59 mins 59 secs.</p>
Remark(s)	<p>To delete the shift codes of the entire week, send the following <ESC>TQ■0■0000■0000■0<CR> command :</p> <p>To delete all the shift codes of one day of the week, send the following <ESC>TQ■N■0■0000■0000■0<CR> command, N being the day in question.</p> <p>The Control Unit will not perform any coherence check on the timetable data. It is therefore up to the programmer to make sure that the hours do not overlap so as to avoid uncertain results.</p> <p>Each time, the Control Unit will check that for each time-slot, the starting time is before the finish time.</p> <p>It is possible to program up to 5 shift codes maximum for each day of the week.</p> <p>To mark the shift code underway , use the "Q" format code of the "Define format" command (see page 3-38).</p>

TQ■?N (≥ version 5.03) Time-slots for shift codes ?		Question
		Command
Syntax	<ESC>TQ■N■hhmm■HHMM■code<CR>	
Parameter(s)	■ : Character space N : Number of the day of the week. This will be a value between 1 and 7. (1= Monday, 2= Tuesday, 7=sunday - 0 = every day of the week).	
Application	This command will permit you to know the time-slots for the programmed shift codes.	
Control Unit response(s)	NbFrames<CR> N hhmm HHMM Code <CR> NbFrames : Number of frames that will follow the last one. N : Number of the day of the week. This will be a value between 1 and 7. (1= Monday, 2= Tuesday, 7=sunday). hhmm : Time-slot start time. This will be a value between 0000 and 2359. HHMM : Time-slot finish time. This will be a value between 0000 and 2359. code : Shift code for the time-slot defined as above (limited to 20 characters).	
Example(s)	<ul style="list-style-type: none"> Time-slots for Monday ? : <ESC>TQ■?■1<CR> The Control Unit will respond : 3<CR> 1 0000 0759 A<CR> 1 0800 1559 B<CR> 1 1600 2359 C<CR> Time-slots for every day of the week ? : <ESC>TQ■?■1<CR> The Control Unit will respond : X<CR> 1 0000 0759 A<CR> 1 0800 1559 B<CR> 1 1600 2359 C<CR> 2 0000 0759 D<CR> 2 0800 1559 E<CR> 2 1600 2359 F<CR> X represents the number of defined time-slots. 	
Remark(s)	By default, no time-slots are defined in the Control Unit. To configure time-slots, use the <ESC>TQ instruction (see page 3-94).	

UU Configuration of the current units		Configuration Command
Syntax	<ESC>UU <i>i</i> <CR>	
Parameter(s)	<i>i</i> : Units chosen, with a whole number value of 1 or 2. 1 : current units = 1/10 mm (by default), 2 : current units = 1/100 inch,	
Application	This sequence will permit you to select the current units used by the Control Unit.	
Remark(s)	This sequence will logically not be executed more than once during each work session. It will be saved as an operating parameter after a power cut.	

VE (\geq version 6.50) Request for day of the month code		Question command
Syntax	<ESC>VE<CR>	
Application	This sequence will permit you to know the state of the codes for each day of the month programmed in the Control Unit's memory.	
Control Unit response(s)	<p>The Control Unit will transmit the day of the month codes as follows :</p> <p style="text-align: center;"> code1<CR> code2<CR> code3<CR> ... code31<CR> </p> <p>code1 : Code for the first day of the month</p>	
Remark(s)	<p>If a day has not been configured, the Control Unit will show a blank field.</p> <p>To configure the day codes for each month, the sequence is <ESC>CE.....<CR>.</p>	

VJ Request for Day of the week code		Question command
Syntax	<ESC>VJ<CR>	
Application	This sequence will permit you to know the state of the codes for each day of the week programmed in the Control Unit's memory.	
Control Unit response(s)	<p>The Control Unit will transmit the day of the week codes that follow :</p> <p style="text-align: center;"> j1<CR> j2<CR> ... j7<CR> </p> <p> j1 : Day code for Sunday, j2 : Day code for monday, j7 : Day code for Saturday. </p>	
Remark(s)	The <ESC>CD> sequence should be used to configure the days of the week code (see page 3-3-13).	

VM Request for Month code		Question command
Syntax	<ESC>VM<CR>	
Application	This sequence will permit you to know the state of the month codes programmed in the Control Unit's memory.	
Response(s) of the Control Unit	<p>The Control Unit will transmit the month codes that follow :</p> <p style="text-align: center;"> m1<CR> m2<CR> ... m12<CR> </p> <p> m1 : Month code for January, m2 : Month code for February, m12 : Month code for December. </p>	
Remark(s)	To set the month codes, use the <ESC>CM command (see page 3-3-15).	

VQ (< version 5.03) Request for shift time-slots and codes		Question command
Syntax	<ESC>VQ<CR>	
Application	This sequence will permit you to know the state of the time-slots for the programmed shift codes.	
Control Unit response(s)	<p>The Control Unit will give the following sequence :</p> <p>hd■md■hf■mf■code<CR></p> <p>hd : Hour of the beginning of the shift, md : Minute of the beginning of the shift, hf : Hour of the end of the shift, mf : Minute of the end of the shift, code : Code for the above shift time-slot.</p>	
Remark(s)	<p>There are no default values for shift time-slots in the Control Unit's memory.</p> <p>To set a shift time-slot, use the <ESC>TH sequence (see page 3-93).</p>	

VR (\geq version 5.03) Configuration of a variable		Configuration Command
Syntax	<ESC>VR■v■value<CR>	
Parameter(s)	<p>v : Number of the variable. This will be a value between 0 and 10. (1 = Monday, 2 = Tuesday, 7 = Sunday).</p> <p>value : Alphanumeric chain of 32 characters max, except for variable number 10, which can contain up to 200 characters.</p>	
Application	This command will permit you to configure a variable for a given chain of characters.	
Example(s)	<p><ESC>VR■0■TECHNIFOR<CR></p> <p>The V0 variable will take the TECHNIFOR value no matter which marking program is being used.</p> <p>To mark the V0 variable, use the E@V0@ sequence.</p>	
Remark(s)	<p>Only variable n°10 can contain 200 characters, but it's contents cannot be displayed on the machine's screen.</p> <p>One variable makes it possible to memorize a constant character chain in the Control Unit.</p> <p>The variables are used with the Bar code option</p> <p>To request information on the variables configured in the Control Unit, use the <ESC>V?<CR> sequence</p>	

VS Saving in a variable		Configuration Command
Syntax	<ESC>@VS(text;v)@<CR>	
Parameter(s)	text : Contents of the variable to be saved. This can be a fixed text or a key word. v : Number of the variable in which the contents of the "text" will be saved.	
Application	This sequence will permit you to save a variable in which, for example, the hour, minute and second at which the program was given this command have been saved. Subsequently, a time saved in this way can be marked at several different places in the file.	
Example(s)	<ESC>@VD(@hhmmss;2)<CR> The "hoursminutessseconds" format will be saved in variable V2. To mark the contents of this variable V2, use the E@V2@ sequence.	
Remark(s)	To find out the configuration of the variables, use the <ESC>V?<CR> sequence.	

VY Request for Year code		Question Command
Syntax	<ESC>VY<CR>	
Application	This sequence will permit you to know the state of the year codes programmed in the Control Unit's memory.	
Response(s) of the Control Unit	<p>The Control Unit will transmit the year codes that follow :</p> <p style="text-align: center;"> base<CR> a0<CR> a1<CR> ... a4<CR> </p> <p> base : Base year for the following ten years, a0 : Year code of the base year, a1 : Year code of the base year +1, a4 : Year code of the base year +4. </p>	
Remark(s)	To set the year codes, use the <ESC>CY sequence (see page 3-21).	

V?(≥ version 5.03) Variables ?		Question Command
Syntax	$\langle \text{ESC} \rangle \text{V?} \langle \text{CR} \rangle$ $\langle \text{ESC} \rangle \text{V?} \blacksquare \text{v} \langle \text{CR} \rangle$	
Parameter(s)	<p>\blacksquare : Character space</p> <p>v : Number of the variable. This will be a value between 0 and 10. (1 = Monday, 2 = Tuesday, 7 = Sunday).</p>	
Application	This command will permit you to know the contents of each variable programmed in the Control Unit.	
Example(s)	<p>The Control Unit will send the contents of the variables programmed in the form :</p> <p>v\blacksquarevalue$\langle \text{CR} \rangle$</p> <p>v : Number of the variable, value : Contents of the variable.</p>	
Remark(s)	<p>For variables not programmed, the Control Unit will send their number only.</p> <p>To configure the variables , use the $\langle \text{ESC} \rangle \text{VR}$ sequence.</p>	

WL Configuration de la langue		Configuration Command
Syntax	<ESC>WL■number<CR>	
Parameter(s)	■ : Space bar. Number : Number which corresponds to the language, whole number between 0 and 3.	
Application	This sequence will allow you to define the language used by the machine.	
Example	<ESC>WL■0<CR> The language corresponding to the number 0 will be selected.	
Remark(s)	To locate the numbers attributed to the different languages possible, refer to the "LANGUAGE" menu of the machine. The languages are numbered sequentially from left to right. To know in what language the machine is currently configured, use the sequence <ESC>LL<CR> (see page 3-56).	

4

DESCRIPTION OF CODES SENT BY THE CONTROL UNIT

DESCRIPTION OF CODES SENT BY THE CONTROL UNIT

4.1 - Thematic list of codes

4.1.1) Error codes

Command	Description	Page
dcz	Z path error	4-7
dL	Marking head off-limit	4-8
dMX	DATAMATRIX error	4-9
Dpz	Sensor error	4-10
doz	Z origin error	4-11
dx,dy	Return to origin error (X or Y)	4-12
dZ	Stop cycle detection	4-13
H	Syntax error	4-14
L	Semantic error	4-15
N	Non-valid option	4-16
RT1	Downloading error	4-17
RT2	Memory full	4-18
RT3	Maximum number of lines exceeded	4-19
RT4	Back-up error	4-20
RT5	Oversized downloaded logo	4-21
T	Data reception error	4-22

4.1.2) Control codes

Command	Description	Page
dI	Marking interruption signal	4-23
dM	Exit PC mode	4-24
dR	Marking resumption signal	4-25
dT	Power on	4-26
OK	Modifications of RS232 parameters completed	4-27
P	Control Unit pause in marking	4-28
RT0	Back-up completed	4-29
U	Waiting data reception	4-30
V	Data reception correct	4-31
W	Speed modification executed	4-32
X	Waiting for "start cycle" signal	4-33
Y	Marking cycle completed	4-34
Z	Marking cycle interrupted	4-35
ZOF	Return to Z Axis origin completed	4-36
ZW	Z Axis configuration correct	4-37

4.2 - Alphabetical list of codes

		Descriptif	Type de code	Page
D	dcz	Z path error	Error	4-7
	dI	Marking interruption signal	Control	4-23
	Dpz	Sensor error	Error	4-10
	doz	Z origin error	Error	4-11
	dM	Exit PC mode	Control	4-24
	dMX	DATAMATRIX error	Error	4-9
	dL	Marking head off-limits	Error	4-8
	dx, dy	Return to origin error (X or Y)	Error	4-12
	dR	Marking resumption signal	Control	4-25
	dT	Power on	Control	4-26
	dZ	Stop cycle detection	Error	4-13

H	H	Syntax error	Error	4-14
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L	L	Semantic error	Error	4-15
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N	N	Non-valid option	Error	4-16
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O	OK	Modification of RS232 parameters completed	Control	4-27
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P	P	Control Unit pause in marking	Control	4-28
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R	RT0	Back-up completed	Control	4-29
	RT1	Downloading error	Error	4-17
	RT2	Memory full	Error	4-18
	RT3	Maximum number of lines exceeded	Error	4-19
	RT4	Back-up error	Error	4-20

DESCRIPTION OF CODES SENT BY THE CONTROL UNIT

T	T	Data reception error	Error	4-32
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U	U	Waiting for data reception	Control	4-32
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V	V	Data reception correct	Control	4-32
----------	----------	------------------------	---------	------

W	W	Speed change made	Control	4-32
----------	----------	-------------------	---------	------

X	X	Waiting for "start cycle" signal	Control	4-33
----------	----------	----------------------------------	---------	------

Y	Y	Marking cycle completed	Control	4-34
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Z	Z	Marking cycle interrupted	Control	4-35
	ZOF	Z Axis return to origin completed	Control	4-36
	ZW	Z Axis configuration correct	Control	4-37

4.3 - Description of codes

4.3.1) Error codes

dcz Z path error		Error code
Syntax	dcz<CR>	
Application	This code will be sent by the Control Unit when the Z Axis reaches the end of its path without having detected the part that is to be marked.	
Response to	This is a response to : @ZT(...;...;...)@ syntax which permits the automatic detection of the part.	
Remark(s)	This code will only be sent when the "Sensor" option is activated in the "Z Axis Configuration" menu, during usage of the syntax which permits the automatic detection of the part.	

dL <i>lll</i> or dL Marking head off limits		Error code
Syntax	dL<i>lll</i><CR>	
Application	This code will be sent by the Control Unit when it detects that the marking head is off limits for a given operation.	
Response to	<p>This is a response to :</p> <ul style="list-style-type: none"> • <ESC>PE<CR> End of program. In this case, <i>lll</i> will correspond to the number of the line where the fault has occurred (excepting «PB»). • An instruction for the movement of the stylus. In this case, the number of the line will not be given. 	
Remark(s)	<p>This code will only be sent when the "Activation of the off limits control" option command has been given. (see commands <ESC>AC<CR> (page 3-4) and <ESC>DC<CR> (page 3-23)).</p> <p>This code will avoid the marking head's carriages jamming in a mechanical stop and being damaged.</p> <p>Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received.</p>	

dMX DATAMATRIX error		Error code
Syntax	dMX■code■line<CR>	
Application	<p>The Control Unit will send this code when the coding of data in a DATAMATRIX format is not possible.</p> <p>■ : Character space. dMX : DATAMATRIX fault. code : Error number. The most common values are : 1022 : the chain of characters to be coded is empty. 1032 : the chain of characters to be coded is too long in relation to the selected DATAMATRIX format. line : number of the line where the error occurred.</p>	

Dpz Sensor error		Error code
Syntax	Dpz<CR>	
Application	This error code will be emitted by the Control Unit when the test of the sensor integrated into the electromagnetic stylus is not correct.	
Remark(s)	The electromagnetic stylus is only fitted with a sensor when the option of a Z Axis with sensor is used.	

doz Origin error		Error code
Syntax	doz<CR>	
Application	This error code will be emitted by the Control Unit after a return to origin has been requested, if the Z Axis does not manage to return to its point of origin.	
Response to	This is a response to <ESC>ZO<CR> return to the origin.	
Remark(s)	<p>If such an error should occur, it will be necessary to check :</p> <ul style="list-style-type: none"> • that no object is obstructing the movements, • that the Z Axis is correctly connected to the Control Unit, • that the detector is operating correctly. 	

dx,dy Return to origin error(X or Y)		Error code
Syntax	dx = X origin error dy = Y3.5 origin error	
Application	This error code will be emitted by the Control Unit when there is an origin error.	
Response to	This is a response to the absence of presence of the detector after the start position has been given for : <ul style="list-style-type: none"> • the X axis, • and/or the Y axis, 	
Remark(s)	If such an error should occur, it will be necessary to check : <ul style="list-style-type: none"> • that no object is obstructing the movements, • that the head is correctly connected to the Control Unit, • that the detectors are operating correctly. Send the <ESC>AD<CR> sequence to the Control Unit to confirm that the error message has been received (see page 3-5)	

dZ Stop cycle detection		Error code
Syntax	dZ<CR>	
Application	This code will be sent by the Control Unit in the following case : <ul style="list-style-type: none"> • detection of the circuit opening between terminals 3 and 16 of the communication interface. 	
Response to	This is a response to the opening of the bridge between terminals 3 and 16 with the SUB-D25 connector.	
Remark(s)	Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received.	

<i>Hlll</i> or H Syntax error		Error code
Syntax	<i>Hlll</i> <CR>	
Application	This code will be given by the Control Unit when a syntax error occurs during the transmission of a command instruction.	
Response to	<p>This is a response to :</p> <ul style="list-style-type: none"> • <ESC>PE<CR> Program end. In this case, <i>lll</i> corresponds to the number of the line where the error occurred (excepting "PB"). • an instruction other than programming. In this case, the number of the line will not be given. 	
Remark(s)	<p>After this code has been received, the syntax of the corresponding instruction should be checked.</p> <p>Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received.</p>	

<i>Llll</i> or L Semantic error		Error code
Syntax	<i>Llll</i> <CR>	
Application	This code will be given by the Control Unit when a semantic error occurs during the transmission of a command instruction.	
Response to	<p>This is a response to :</p> <ul style="list-style-type: none"> • <ESC>PE<CR> Program end. In this case, <i>lll</i> corresponds to the number of the line where the error occurred (excepting "PB"). • an instruction received other than programming. In this case, the number of the line will not be given. 	
Remark(s)	<p>After this code has been received, the coherence of the parameters within the incorrect instruction should be checked.</p> <p>Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received.</p> <p>This code can also be sent when asking to :</p> <ul style="list-style-type: none"> • Execute a program which is non-existent in the Control Unit's memory. • Repeat the last <ESC>Ctrl F<CR> program (see page 3-19), without having executed it previously using the <ESC>Ctrl E<CR> command (see page 3-18). 	

<i>Nlll or N</i> Non-valid option		Error code
Syntax	<i>Nlll</i> <CR>	
Applications	This code will be sent by the Control Unit when it detects a request for the use of an option which is not authorized.	
Response to	Any command for use of the following options : <ul style="list-style-type: none"> • DATAMATRIX, • Data reception, • Z Axis (UC122 only) • DMC (UC122 only) 	
Remark(s)	The DATAMATRIX, Data reception, Z Axis and DMC options will be provided upon request from our sales department.	

RT1 Downloading error		Error code
Syntax	RT1<CR>	
Application	This code will be sent by the Control Unit when a font or a logo has not been successfully downloaded.	
Response to	This is a response to the <ESC>AT<CR> instruction . This code replaces the RT0 code.	
Remarks(s)	<p>The transmission of this code means that :</p> <ul style="list-style-type: none"> • an error or a defect has been detected in the font / logo data list. • A defect for the font in the [CRC 16] code has been detected . • The downloading time allowed between each data entry has been exceeded. • Send the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received. 	

RT2 Memory full		Error code
Syntax	RT2<CR>	
Application	This code will be given by the Control Unit when its memory is full. Saving fonts, logos or programs will be impossible.	
Response to	<p>This is a response to :</p> <ul style="list-style-type: none"> • The <ESC>AT<CR> instruction , for a font or a logo (see page 3-9), • The <ESC>PE<CR> instruction , for a program (see page 3-76). 	
Remark(s)	<ul style="list-style-type: none"> • To avoid this defect, some data saved in the Control Unit's memory should be deleted. This can be done by sending the following instructions : . <ESC>SP<CR>, for fonts or logos (see page 3-87), . <ESC>PS<CR>, for programs (see page 3-79). • To obtain the list of data present in the Control Unit, use the <ESC>DIR<CR> instruction (see page 3-26). • To know the amount of available memory in the Control Unit, use the <ESC>DM<CR> instruction (see page 3-28). • Send the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received. 	

RT3 Maximum number of lines surpassed		Error code
Syntax	RT2<CR>	
Application	This code will be given by the Control Unit when it detects that a program contains more than the authorized 256 lines.	
Response to	This is a response to the following : <ESC>PE<CR> Instruction .	
Remark(s)	<ul style="list-style-type: none"> • To avoid this happening, you must either : <ul style="list-style-type: none"> . optimize your program, . reduce the number of lines, . split the program in two. • Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received. 	

RT4 Back-up error		Error code
Syntax	RT4<CR>	
Application	This code will be given by the Control Unit when a problem arises after attempting to save a font, logo or a program.	
Response to	This is a response to the following : <ul style="list-style-type: none"> • The <ESC> AT <CR> instruction, for a font or a logo, • The <ESC> PB <CR> instruction, for a program. 	
Remark(s)	<ul style="list-style-type: none"> • If the problem persists, please contact your distributor. • Send the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received. 	

RT5 Oversized downloaded logo		Error code
Syntax	RT5<CR>	
Application	This code will be transmitted by the Control Unit when a problem of memory for a logo occurs.	
Response to	This is a response to the : <ul style="list-style-type: none"> • <ESC> AT <CR> instruction 	
Remark(s)	<ul style="list-style-type: none"> • This code indicates that the number of segments making up the logo is greater than what the memory of the Control Unit can hold. • Warning ! Two logos of the same size (in the PC) are not necessarily made up of the same number of segments. Their sizes in the Control Unit will therefore be different. • Transmit the <ESC>AD<CR> sequence (see page 3-5) to inform the Control Unit that the error code has been received. 	

T Data reception error		Error code
Syntax	T<CR>	
Application	This code will be transmitted by the Control Unit when an error occurs during data reception linked to the "data reception by RS232 connector" command.	
Response to	This is a response after carrying out a marking block containing the @CB(.....)@ syntax.	

4.3.2) Control codes

dI Marking interruption signal		Control code
Syntax	dI<CR>	
Application	<p>This code will be emitted by the machine when marking has been interrupted.</p> <p>Marking will be interrupted when the operator presses on the ENTER key on the machine's keyboard</p>	
Remark(s)	<p>It is possible to resume marking by sending the <ESC>CtrlG<CR> sequence (see page 3-20) or from the machine's keyboard.</p> <p>The resumption of marking will be signalled by the dR<CR> sequence (see page 4-25).</p> <p>Marking interruption will be signalled by the dZ<CR> sequence (see page 4-13).</p>	

dM Exit PC mode		Control code
Syntax	dM<CR>	
Application	It is possible to exit the PC mode by pressing on a combination of keyboard keys (Ctrl + Alt + R). In this case, the machine will return to the dM<CR> sequence to indicate the mode change.	
Remark(s)	The change from one mode to another may be done using the MO command (see page 3-66).	

dR Resumption of marking signal		Control code
Syntax	dR<CR>	
Application	<p>This mode will be emitted by the machine when marking has been resumed after an interruption.</p> <p>Marking will resume after receiving the <ESC>CtrlG<CR> sequence or by a machine keyboard selection.</p>	
Remark(s)	Marking interruption will be signalled by the dI<CR> sequence (see page 4-23).	

<div>dT</div> <div>Power on</div>		Control code
Syntax	dT<CR>	
Application	This code will be given by the Control Unit if it has been correctly initialized when power was switched on.	

OK Modification of RS 232 parameters completed		Control code
Syntax	OK<CR>	
Application	This code will be given by the Control Unit when the parameters of the RS232 connection have been correctly modified.	
Response to	This is a response to : <ul style="list-style-type: none"> • the <ESC>SV<CR> instruction or <ul style="list-style-type: none"> • the transmission of three 200 ms. BREAK signals at an interval of 1 second. The Control Unit will then be in a default mode. 	
Remark(s)	This code will be given with the newly modified RS232 communication parameters.	

P Control Unit pause in marking		Control code
Syntax	P<CR>	
Application	This code will be given by the Control Unit after executing the <ESC>SB<CR> instruction (see page 3-83).	
Response to	This is a response to : The <ESC>SB<CR> instruction (see page 3-83).	
Remark(s)	To continue marking, two possibilities exist : <ul style="list-style-type: none"> • Establish the connection between terminals 2 and 15, and the SUB-D25 connector • Transmit the <ESC>CtrlG<CR> instruction (see page 3-20). 	

RT0 Back-up completed		Control code
Syntax	RT0<CR>	
Application	This code will be given by the Control Unit when a font, logo or program has been successfully and completely downloaded.	
Response to	This is a response to : <ul style="list-style-type: none"> • the <ESC>AT<CR> instruction , for a font or a logo (see page 3-9), • the <ESC>PE<CR> instruction , for a program (see page 3-76). 	
Remark(s)	This code will be replaced by an error code when an error has been detected.	

U Waiting for data reception		Control code
Syntax	U<CR>	
Application	This code will be given by the Control Unit when it is waiting for reception of data during usage of the "Data reception by RS232 connector" option.	
Response to	This is the response after carrying out a marking block containing the @CB(.....)@ syntax.	

V Data reception correct		Control code
Syntax	V<CR>	
Application	This code will be given by the Control Unit to confirm that the data received at the time of an acquisition request are correct.	
Response to	This is the response after carrying out a marking block containing the @CB(.....)@ syntax.	

W Speed change executed		Control code
Syntax	W<CR>	
Application	This code will be given by the Control Unit when the speed parameters have been successfully executed.	
Response to	This is a response to the following instruction : <ul style="list-style-type: none"> • <ESC>I<CR> (see page 3-41). 	
Remark(s)	An <ESC>I<CR> instruction placed between PB and PE will not trigger the sending of the W<CR> command.	

X Waiting for the "start cycle" signal		Control code
Syntax	X<CR>	
Application	This code will be given when the Control Unit is waiting for the "start marking cycle" signal.	
Response to	<p>This is a response to the following :</p> <ul style="list-style-type: none"> • <ESC>CrtlE<CR> instruction (see page 3-18), • <ESC>NB<CR> instruction (see page 3-70), • <ESC>CrtlF<CR> instruction (see page 3-19). 	

Y Marking cycle completed		Control code
Syntax	Y<CR>	
Application	This code will be given by the Control Unit when the marking cycle has been completed.	
Response to	This is an indication that the end of the marking cycle has been reached.	

Z Marking cycle interrupted		Control code
Syntax	Z<CR>	
Application	This code will be given by the Control Unit when the marking cycle has been interrupted.	
Response to	This is a response to : <ul style="list-style-type: none">• the <ESC>AM<CR> instruction (see page 3-8), or• opening the bridge between terminals 3 and 16 and the SUB-D25 connector.	

ZOF Z Axis return to origin completed		Control code
Syntax	ZOF<CR>	
Application	This code will be given by the Control Unit when the Z Axis has returned to its origin.	
Reponse to	This is the response to a forced request for the Z Axis to return to its origin.	
Remark(s)	The code is given once the Z Axis has arrived at the origin.	

ZW Z Axis configuration correct		Control code
Syntax	ZW<CR>	
Application	This code will be given by the Control Unit when the configuration of the Z Axis parameters have been completed correctly.	
Response to	This is a response to the <ESC>IZ.....<CR> instruction.	

DESCRIPTION OF CODES SENT BY THE CONTROL UNIT

5

DATAMATRIX® OPTION



In order to use the following functions, the DATAMATRIX® option must be activated using :

- Parameter MATRIX = 1

See <ESC>LE<CR> instruction page 3-52)

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5.1 - Alphabetical list of commands

	Description	Type of instruction	Page
M			
MX	Configuring parameters of a DATAMATRIX code	Programming	5-4
X			
XE	Encoding and marking of a chain of characters	Programming	5-6
XS	Configuration of the marking speed of a DATAMATRIX code <i>program version ≥ 6.00</i>	Programming	

DATAMATRIX [®] Option	MX Configuration of a DATAMATRIX [®] code	Programming Command																						
Syntax	ESC>MX■Angle■NBLine■NBColumn■SymY■Ltcpp<CR>																							
Parameter(s)	<p>■ : Character space</p> <p>Angle : rotation angle in 1/10ths of degrees - whole number values between 0 and 3599. The center of rotation corresponds to the corner of the "L" of the DATAMATRIX. It will also serve as the reference point for marking positioning.</p> <p>NBLine : Number of lines requested for coding</p> <p>NBColumn : Number of columns requested for coding. If these two parameters = 0, the smaller of the two square matrixes will be used. Otherwise the UC will use the given values, if they are valid and high enough to contain the chain to be coded.</p> <p>List of accepted sizes :</p> <table><tr><td>8*18</td><td>20*20</td></tr><tr><td>8*32</td><td>22*22</td></tr><tr><td>12*26</td><td>24*24</td></tr><tr><td>12*36</td><td>26*26</td></tr><tr><td>16*36</td><td>32*32</td></tr><tr><td>16*48</td><td>36*36</td></tr><tr><td>10*10</td><td>40*40</td></tr><tr><td>12*12</td><td>44*44</td></tr><tr><td>14*14</td><td>48*48</td></tr><tr><td>16*16</td><td>52*52</td></tr><tr><td>18*18</td><td></td></tr></table> <p>SymY : coding symmetry along the Y axis Values : 0 or 1, (0 = normal, 1 = mirrored mode) To obtain symmetry along the X axis (relected mode), the combination SymY = 1 and angle = 1800 will be used. For central symmetry (inverted mode), the angle = 1800 will be used.</p> <p>Ltcpp : marking of the L in a continuous stroke or dot by dot Values : 0 = continuous stroke, 1 = dot by dot</p>		8*18	20*20	8*32	22*22	12*26	24*24	12*36	26*26	16*36	32*32	16*48	36*36	10*10	40*40	12*12	44*44	14*14	48*48	16*16	52*52	18*18	
8*18	20*20																							
8*32	22*22																							
12*26	24*24																							
12*36	26*26																							
16*36	32*32																							
16*48	36*36																							
10*10	40*40																							
12*12	44*44																							
14*14	48*48																							
16*16	52*52																							
18*18																								
Application	This command will permit you to configure the positioning and direction parameters of the DATAMATRIX marking.																							

DATAMATRIX® Option	MX Configuration of a DATAMATRIX® code	Programming Command
Response(s) of the Control Unit	<p>If the error is due to the functioning of the DATAMATRIX , the UC will emit a dX code.</p> <p>Syntax : dX■code■line<CR></p> <p>code : DATAMATRIX error code (between 0 and 65535).</p> <p>line : Given that the <ESC>PB<CR> instruction line = 0, if the error has occurred between <ESC>PB<CR> and <ESC>PE<CR>, the number of the line with the error = <ESC>PB<CR> + n. Otherwise the line = 0.</p>	

DATAMATRIX® Option	XE Coding and marking a chain of characters	Programming Command
Syntax	<ESC>XEtext<CR>	
Parameter(s)	text : text to be coded and marked in DATAMATRIX format Maximum length : 200 characters.	
Application	Marking a chain of characters in a DATAMATRIX format	
Response(s) of the Control Unit	<u>Syntax :</u> dX ■ code ■ line <CR> code : DATAMATRIX error code (between 0 and 65535). line : Given that the <ESC>PB<CR> instruction line = 0, if the error has occurred between <ESC>PB<CR> and <ESC>PE<CR>, the number of the line with the error = <ESC>PB<CR> + n. Otherwise the line = 0.	
Remark(s)	This instruction should always be preceded by the MX instruction that will determine the marking parameters.	

DATAMATRIX Option	XS (\geq version 6.00) Configuration of the marking speed of a DATAMATRIX		Programming command
Syntax	$\langle \text{ESC} \rangle \text{XS} \blacksquare \text{Vdx} \langle \text{CR} \rangle$		
Parameter(s)			■ : Character space. Vdx : Marking speed of DATAMATRIX codes in mm/s.
Application	This sequence allows the configuration of DATAMATRIX codes.		
Example(s)	$\langle \text{ESC} \rangle \text{XS} \blacksquare 20 \langle \text{CR} \rangle$		
Remark(s)	This command can be used in a program to define a specific speed. Used on its own, it will permit you to define a default speed for the marking of DATAMATRIX codes.		

6

DATA RECEPTION OPTION

DATA RECEPTION OPTION

6.1 - Alphabetical list of commands

	Description	Type of instruction	Page
P			
P?	Messages for data reception? <i>program version < 6.00</i>	Question	6-4
P?	Messages for data reception? <i>program version < 6.00</i>	Question	
PR	Configuration of messages for data reception <i>program version < 6.00</i>	Configuration	6-6
PR	Configuration of messages for data reception <i>program version < 6.00</i>	Configuration	6-7

R			
R?	Configuration of data reception <i>program version < 6.00</i>	Configuration	6-8
RB	Number of free recordings in the historical file <i>program version < 6.00</i>	Question	6-9

P? (< version 6.00) Messages for data reception ?		Question command
Syntax	<ESC>P?<CR>	
Application	This sequence will permit you to know the configuration of the messages which will be displayed on the screen of the machine when the "Data reception" mode is in use.	
Control Unit response(s)	P1■Text■P2■Text■P3■<CR> The fields are separated by the ASCII 12 code (■).	
Example(s)	<ESC>P?<CR> The Control Unit will respond : P1■WAITING FOR RECEPTION■P2■MARKING■P3■ERROR !! CAUTION NEW ENTRY■<CR>	
Remark(s)	By default, no message will be configured.	

P? (≥ version 6.00) Messages for data reception?		Configuration Command
Syntax	<ESC>P?<CR>	
Application	This sequence will permit you to configure the messages which will be displayed on the screen of the machine whilst "Data reception" is being carried out, as well as the general pattern of this reception.	
Control Unit response(s)	<p>P1■TextP1■P2■TextP2■P3■TextP3■P4■U■P5■V■P6■T■P7■TextP7■Checksum■I■O0■O1■<CR></p> <p>■ASCII 12 code</p> <p>P1■TextP1 : Message displayed when the machine is waiting for data reception (32 characters maximum).</p> <p>P2■TextP2 : Message displayed when the machine has correctly received the data (32 characters maximum).</p> <p>P3■TextP3 : Message displayed if an error is detected during data reception (32 characters maximum).</p> <p>P4■U : Code sent back by the machine to show that it is waiting for data (14 characters maximum). The character U is programmed by default.</p> <p>P5■V : Code sent back by the machine to show that the data has been received correctly (14 characters maximum). The character V is programmed by default.</p> <p>P6■T : Code sent back by the machine to show that there has been a problem during data reception (14 characters maximum). The character T is programmed by default.</p> <p>P7■TextP7 : If the data received is equal to this field, a new data reading is requested (14 characters maximum).</p> <p>Checksum : Value 0 = checksum not activated. Value 1 : checksum activated.</p> <p>I : Number of the Input that will provoke an asynchronous access to a marking block. Whole number value of between 0 and 5. The value -1 means that the Inputs are not used.</p> <p>O0 : Value 0 = Output n°0 not activated. Value 1 : Output n°0 activated.</p> <p>O1 : Value 0 = Output n°1 not activated. Value 1 : Output n°1 activated. Utilization : will signal a checksum or a reading error.</p>	
Example(s)	<p><ESC>P?<CR></p> <p>P1■WAITING FOR RECEPTION■P2■MARKING■P3■ERROR !! CAUTION NEW ENTRY■P4■U■P5■V■P6■T■P7■RX002■1■0■1■1■<CR></p>	

PR (< version 6.00) Configuration of messages for data reception		Configuration Command
Syntax	<ESC>PR■P1■Text■P2■Text■P3■Text■<CR>	
Parameter(s)	■ASCII 12 code P1 : Message displayed when the machine is waiting for data reception. P2 : Message displayed when the machine has correctly received the data. P3 : Message displayed if an error is detected during data reception. Text : Free text of 32 characters maximum.	
Application	This sequence will allow you to know the configuration of the messages that will be displayed on the screen of the machine whilst "Data reception" is being carried out.	
Example(s)	<ESC>PR■P1■WAITING FOR RECEPTION■P2■MARKING■P3■ERROR !! CAUTION NEW ENTRY■<CR>	
Remark(s)	By default, no message will be configured.	

PR (≥ version 6.00)	
Configuration of messages for data reception	
Syntax	Configuration command
	<code><ESC>PR■P1■TextP1■P2■TextP2■P3■TextP3■P4■TextP4■P5■TextP5■P6■TextP6■P7■TextP7■Checksum■I■O0■O1■<CR></code>
Parameter(s)	<p>■ ASCII 12 code</p> <p>P1■TextP1 : Message displayed when the machine is waiting for data reception (32 characters maximum).</p> <p>P2■TextP2 : Message displayed when the machine has correctly received the data (32 characters maximum).</p> <p>P3■TextP3 : Message displayed if an error is detected during data reception (32 characters maximum).</p> <p>P4■TextP4 : Code sent back by the machine to show that it is waiting for data (14 characters maximum).</p> <p>P5■TextP5 : Code sent back by the machine to show that the data has been received correctly (14 characters maximum).</p> <p>P6■TextP6 : Code sent back by the machine to show that there has been an error during data reception (14 characters maximum).</p> <p>P7■TextP7 : If the data received is equal to this field, a new data reading is requested (14 characters maximum).</p> <p>Checksum : Value 0 = checksum not activated. Value 1 : Checksum activated.</p> <p>I : Number of the Input that will provoke an asynchronous access to a marking block. Whole number value of between 0 and 5. The value -1 means that the Inputs are not used.</p> <p>O0 : Value 0 = Output n°0 not activated. Value 1 : Output n°0 activated.</p> <p>O1 : Value 0 = Output n°1 not activated. Value 1 : Output n°1 activated.</p>
Application	This sequence will allow you to configure the messages that will be displayed in the screen of the machine whilst "Data reception" is being carried out, as well as the general pattern of this reception.
Example(s)	<code><ESC>PR■P1■WAITING FOR RECEPTION■P2■MARKING■P3■ERROR !! CAUTION NEW ENTRY■P4■U■P5■V■P6■T■P7■RX002■1■0■1■1■<CR></code>
Remark(s)	<p>By default, the P4, P5 and P6 messages are configured :</p> <p>P4 = U</p> <p>P5 = V</p> <p>P6 = T.</p>

R? (\geq version 6.00) Number of free recordings in the historical file		Question command
Syntax	<ESC>R?<CR>	
Application	This sequence will permit you to know the number of free recordings remaining in the historical file.	
Control Unit response(s)	The Control Unit will send back a whole number value. The value 0 means that the historical file is full.	
Examples(s)	55<CR> There are 55 free recordings remaining in the historical file	
Remark(s)	To retrieve data recorded in the historical file, or to reboot it, use the <ESC>RB<CR> sequence (see page 6-9).	

RB (\geq version 6.00) Retrieval or rebooting of the historical file		Question command
Syntax	<ESC>RB■init<CR>	
Parameter(s)	■ : Character space. init : Determines if the file should be retrieved or rebooted. Whole number value of 0 or 1. 0 : Retrieval of contents of the historical file. 1 : Rebooting of the historical file.	
Application	This sequence will permit you to retrieve or delete data contained in the historical file.	
Control Unit response(s)	If the init parameter is equal to 1, the Control Unit does not send back a response. If this is not the case, the Control Unit will send back the recordings one by one, separated by the character <CR>. The start of the transmission is marked out by the RB<CR> sequence. The end of the transmission is marked out by the /RB<CR> sequence. Example : RB<CR>Recording1<CR>.....<CR>RecordingN<CR>/RB<CR> .	
Example(s)	<ESC>RB■1<CR> The historical file will be rebooted. ➔ The deleted data will be permanently lost.	
Remark(s)	The historical file can contain up to 100 recordings max. In order to find out the number of free recordings in the Control Unit, use the sequence <SCR>R?<CR> (see page 6-8). Data retrieval format : • If the data acquisition is carried out using the CB command : DDMMYYYY/HHMMSS/CB/Contents of the variable.	

DATA RECEPTION OPTION

7

MOTORIZED Z AXIS OPTION



Option only valid :

- *with the UC122,*
- *from version 6.00 onwards*

7.1 - Alphabetical list of commands

	Description	Type of instruction	Page
I			
IZ	Configuration of the Z Axis	Configuration	7-4

Z			
ZI	Z Axis configuration ?	Question	7-5
ZO	Return of Z Axis to the origin	Test	7-6
ZR	Movement relative to the Z Axis	Programming	7-7

IZ (\geq version 6.00) Configuration of the Z Axis		Configuration command
Syntax	<ESC>IZ■Vstart■Vaxis■Ramp■Path■Detector■Vdetector<CR>	
Parameter(s)	<p>■ : ASCII 12 character</p> <p>Vstart : Starting speed of the Z Axis, expressed in standard units per second.</p> <p>Vaxe : Speed of the Z Axis, expressed in standard units per second.</p> <p>Ramp : Acceleration ramp of the Z Axis, expressed in standard units per second squared.</p> <p>Path : Z Axis path, expressed in standard units per second.</p> <p>Detector : Value 0 = sensor absent. Value 1 = sensor present.</p> <p>Vdetector : Speed of the Z Axis in detection phase, expressed in standard units per second.</p>	
Application	<p>This sequence will permit you to configure the third motorized axis.</p> <p>This command should be used outside of any marking program.</p>	
Control Unit response(s)	If the Z Axis is configured correctly, the Control Unit will send back ZW<CR>.	
Example(s)	<p><ESC>UU1<CR></p> <p><ESC>IZ■10■30■10■1■300■1■10<CR></p>	

ZI (\geq version 6.00) Configuration of the Z Axis ?		Question command
Syntax	<ESC>ZI<CR>	
Application	This sequence will allow you to know the configuration of the Z Axis.	
Control Unit response(s)	The Control Unit will send back in the following order : VStart■VAxis■Acceleration■Path■Sensor■VSensor ■ : ASCII 12 character	
Example(s)	<ESC>ZI<CR>10.0■40.0■100.0■300.0■0■5.0<CR>	

ZO (\geq version 6.00) Z Axis return to origin		Programming command
Syntax	<ESC>ZO<CR>	
Application	This sequence will permit the Z Axis to return to its original position.	
Control Unit response(s)	When the Z Axis has reached its origin, the Control Unit will send back the ZOF<CR> code.	

ZR (\geq version 6.00) Movement relative to the Z Axis		Programming command
Syntax	<ESC>ZRdistance<CR>	
Parameter(s)	distance : Relative distance defined for the movement of the Z Axis. Whole number value, positive or negative, expressed in a standard unit.	
Application	This sequence will permit the Z Axis to make a movement in relation to its current position.	
Control Unit response(s)	If this command is sent when the Z Axis option is not activated (Z Axis = 1), the Control Unit will send back the H<CR> code.	

8

D M C OPTION



This option only pertains to the UC 122.

The functions described in this chapter can only be used if the DMC option is activated:

 **Parameter DMC = 1.**

See instruction <ESC>LE<CR> page 3-55.

8.1 - Alphabetical list of the commands

		Description	Type of instruction	Page
A	AB	Activating the DMC	Programming	

D	DB	Deactivating the DMC	Programming	
	DR	Configuration of the DMC	Configuration	
	DV	DMC speed configuration	Configuration	

M	MM	Marking a circular part	Programming	
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O	OD	DMC origin	Programming	
----------	-----------	------------	-------------	--

R	RD	Configuration of the acceleration ramp for the DMC	Configuration	
----------	-----------	--	---------------	--

8.2 - Description of the commands

DMC Option	AB Activation of the DMC	Programming Command
Syntax	<ESC>AB<CR>	
Application	This sequence will permit you to activate the DMC.	
Control Unit response(s)	When this sequence is sent without the DMC option the Control Unit will send back the Nlll<CR> code.	
Example(s)	<ESC>AB<CR> <ESC>MM400■180■0<CR> <ESC>ETECHNIFOR<CR> <ESC>DB<CR> Marking the word "TECHNIFOR" with the DMC.	
Remark(s)	When operations using the DMC are to be executed it is necessary to: <ul style="list-style-type: none"> - activate the DMC, - execute the marking, - deactivate the DMC using the <ESC>DB<CR>command. 	

DMC Option	DB Deactivation of the DMC	Programming Command
Syntax	<ESC>DB<CR>	
Application	This sequence will permit you to deactivate the DMC.	
Control Unit response(s)	When this sequence is sent without the DMC option the Control Unit will send back the Nlll<CR> code.	
Example(s)	<ESC>AB<CR> <ESC>MM400■180■0<CR> <ESC>ETECHNIFOR<CR> <ESC>DB<CR> Marking the word "TECHNIFOR" with the DMC.	
Remark(s)	When the operations with the DMC are finished, it should be deactivated using the DB command. (It is necessary to have activated the DMC beforehand using the<ESC>AB<CR>command .	

DMC Option	DR Configuration of the DMC	Configuration Command
Syntax	<ESC>DRstep■axis■direction■origin■position<CR>	
Parameter(s)	<p>■ : Space character .</p> <p>step : Resolution of the DMC used, whole number given in 1/100 steps per turn.</p> <p>axis : Possible value 1. 1 : the part is parallel to the X axis of the marking head.</p> <p>direction : Possible values 0 or 1. 0 : clockwise direction, 1 : counter-clockwise direction. <i>Remark</i> : The rotation direction given above corresponds to the rotation of the DMC when the chuck is facing the operator.</p> <p>origin : Possible values 0 or 1. 0 : The DMC used is not equipped with an origin detector, 1 : The DMC used is equipped with an origin detector.</p> <p>position : Possible values 0 or 1. 0 : The DMC chuck is positioned opposite the marking head's origin 1 : The DMC chuck is positioned on the side of the marking head's origin .</p>	
Application	This sequence will permit you to configure the parameters related to the DMC.	
Control Unit response(s)	When this sequence is sent without the DMC option the Control Unit will send back the Nlll<CR> code.	

DMC Option	DV DMC Speed Configuration	Configuration Command
Syntax	<ESC>DVvi■vc<CR>	
Parameter(s)	■ : Space character. vi : DMC rotation speed used for the marking, whole number value given in turns/minutes units. This speed will be used for the combined mode. vc : DMC rotation speed used for movement, whole number value given in turns/minutes units.	
Application	This sequence will permit you to configure the DMC rotation speed during marking as well as when not marking.	
Control Unit response(s)	When this sequence is sent without the DMC option the Control Unit will send back the Nlll<CR>code.	
Example(s)	<ESC>UU1<CR> <ESC>DV100■100<CR> DMC speed configuration: . 10 turns/minute during marking . 10 turns/minute during movement.	
Remark(s)	Contrary to the speed configuration instruction: <ESC>I<CR>, the "DV" command will not send back the W<CR>control code. The acceleration and deceleration ramp can be configured using the <ESC>RD<CR>instruction.	

DMC Option	MM Marking a circular part	Programming Command
Syntax	<ESC>MMdiameter■angle■type<CR>	
Parameter(s)	■ : Space character diameter : Diameter of the part to be marked, whole number value given in current units. angle : Start marking angle. Whole number value given in 1/10 of degrees. type : Possible valeurs 0 or 1. - 0 : Indexed type of marking, the marking of the characters will be executed without rotation of the DMC, - 1 : Combined type of marking. This type is not available yet.	
Application	This sequence will permit you to execute the <u>marking of a text around a circular part</u> . It must be followed by one of the following marking text commands: <ESC>E<CR> <ESC>F<CR> <ESC>G<CR> <ESC>H<CR>	
Control Unit response(s)	When this sequence is sent without the DMC option = 1 the Control Unit will send back the Nlll<CR>code.	

DMC Option	OD DMC origin	Programming Command
Syntax	<ESC>OD<CR>	
Application	<p>This sequence will permit you to execute an origin return with the DMC.</p> <p>If the DMC is equipped with an origin return detector, it will turn until it detects it.</p> <p>If the DMC is not equipped with an origin return detector, it will turn until returning to the theoretical start position.</p>	
Control Unit response(s)	<p>When the DMC is equipped with an origin detector, the Control Unit will send back the "dO"code, if it does not find the detector after a certain lapse of time.</p> <p>When this sequence is sent without the DMC =1 option, (obtained using theDMC = 1 <ESC>LE<CR>instruction), the Control Unit will send back the Nlll<CR>code.</p>	
Remark(s)	<p>If the DMC is not equipped with a detector, the DMC's 0 position will be the position where the DMC will be found when turning on the Control Unit.</p>	

DMC Option	RD Configuration of the DMC acceleration ramp DMC	Configuration Command
Syntax	<ESC>RDa<CR>	
Parameter(s)	a : Acceleration desired for the DMC. Whole number value given in current units /second ² .	
Application	This sequence will permit you to configure the acceleration and deceleration ramp when rotating the DMC.	
Control Unit response(s)	When this sequence is sent without the DMC =1 option, the Control Unit will send back the Nlll<CR> code.	
Remark(s)	The value by default is 30 mm/s ² .	

8.3 - Example of a marking file

```
<ESC>*<CR>
<ESC>UU1<CR>
<ESC>DG 1<CR>
<ESC>KT0 N 001 001 999 1 1 999999999999<CR>
<ESC>AB<CR>
<ESC>DR72000 1 0 0 1<CR>
<ESC>DV100 100<CR>
<ESC>RD30<CR>
<ESC>DB<CR>
<ESC>DC<CR>
<ESC>DJ<CR>
<ESC>PB999<CR>
<ESC>O<CR>
<ESC>BB<CR>
<ESC>MN<CR>
<ESC>CC100<CR>
<ESC>TA30<CR>
<ESC>J2<CR>
<ESC>PO0<CR>
<ESC>SC100<CR>
<ESC>M100 100<CR>
<ESC>AB<CR>
<ESC>MM400 0 0<CR>
<ESC>E123<CR>
<ESC>DB<CR>
<ESC>O<CR>
<ESC>PE999<CR>
```

The DMC is positioned on the origin side of the marking head.
It will turn in the clockwise direction.
Its speed will be 10 turns per minute.
The diameter of the part is 40 mm.

9

FLOWCHART OF A BASIC PROGRAM

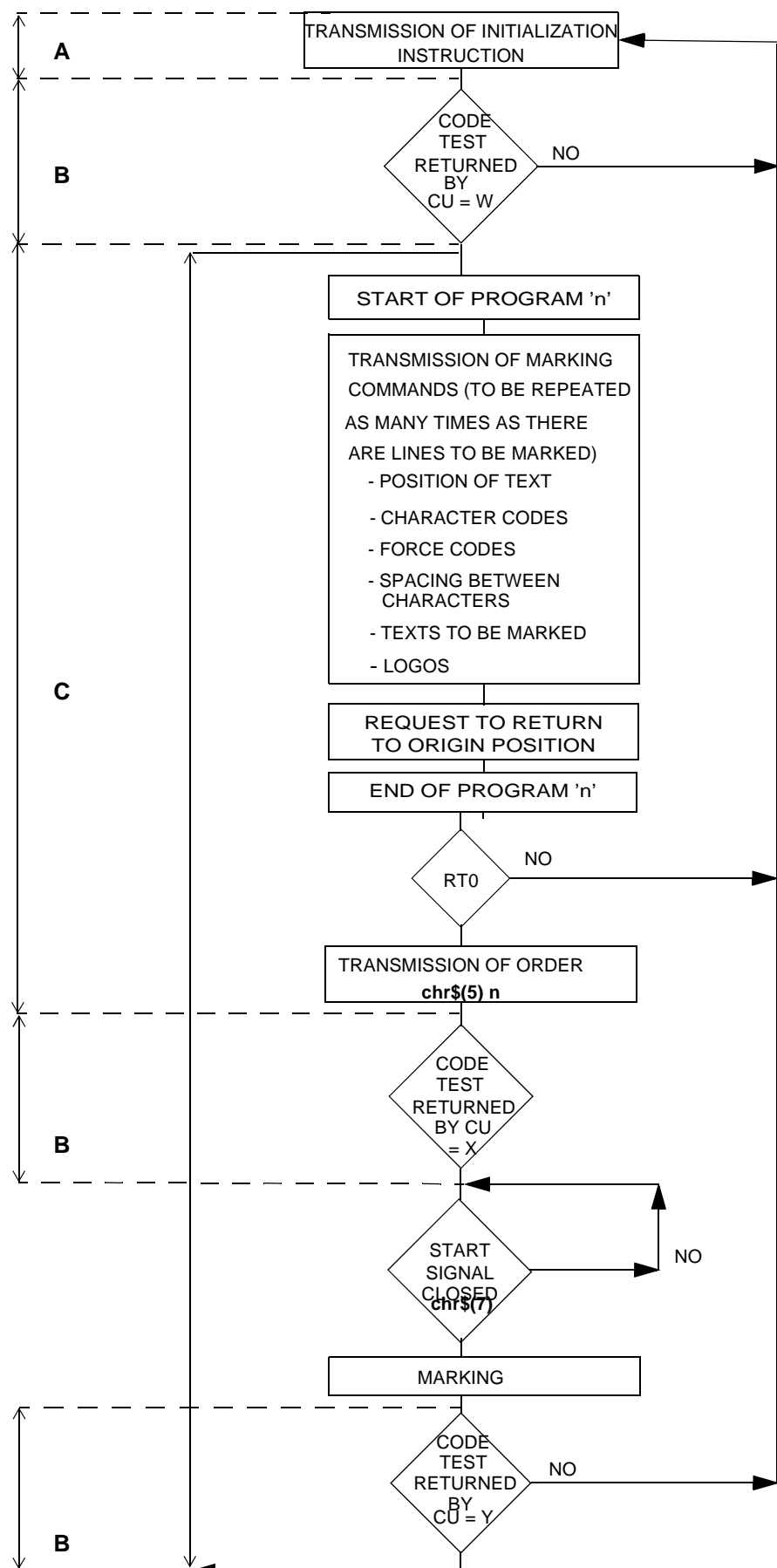
FLOWCHART OF A BASIC PROGRAM

9.1 - Flowchart of a basic program

A : Configuration
procedure

B : Code Test procedure
returned by CU

C : Programming
procedure



FLOWCHART OF A BASIC PROGRAM

10

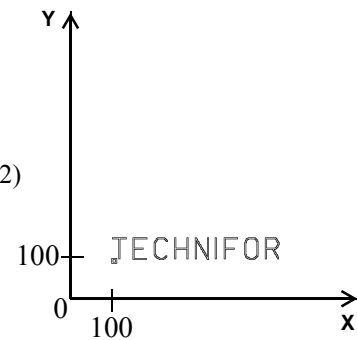
EXAMPLES OF PROGRAMS

10.1) Programming examples explained

Note : For these examples, the unit of measurement used will be 1/10 mm. **and a pneumatic stylus.**

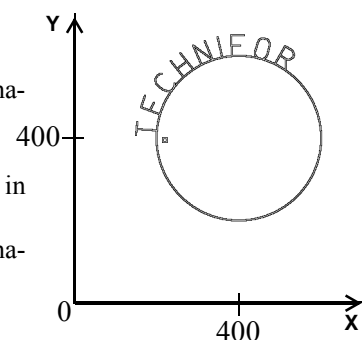
10.1.1 "Linear" marking

<Esc>PB999<CR>	Start of program number 999
<Esc>O<CR>	Marking head return to origin position
<Esc>BB<CR>	Beginning of a block
<Esc>MN<CR>	Normal marking
<Esc>CC100<CR>	No compression or expansion
<Esc>TA50<CR>	Size : 5 mm.
<Esc>J2<CR>	Force Code : 2 (= solenoid valves 1 and 2)
<Esc>M100■100<CR>	Coordinates X =10 mm. and Y=10 mm.
<Esc>PO0<CR>	Selection of character font : 0
<Esc>SC100<CR>	Spacing between characters : 100%
<Esc>ETECHNIFOR<CR>	Text marked : TECHNIFOR
<Esc>O<CR>	Marking head return to origin position
<Esc>PE999<CR>	End of program number 999



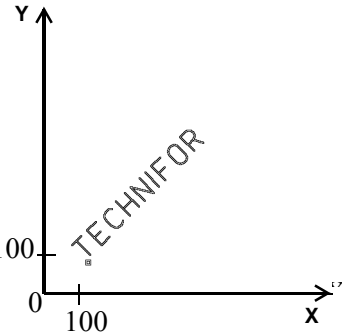
10.1.2 "Circular" marking

<Esc>PB999<CR>	Start of program number 999
<Esc>O<CR>	Marking head return to origin position
<Esc>BB<CR>	Beginning of a block
<Esc>MN<CR>	Normal marking
<Esc>CC100<CR>	No compression or expansion
<Esc>TA50<CR>	Size : 5 mm.
<Esc>J2<CR>	Force Code : 2 (=solenoid valves 1 and 2)
<Esc>PO0<CR>	Selection of character font : 0
<Esc>SC100<CR>	Spacing between characters : 100%
<Esc>MC400■400■200■1800■1■2■1■1■100<CR>	Marking of a circle with center coordinates X=40mm , Y=40mm, radius =20mm. Start marking angle = 180°. Marking in clockwise direction, outside the leaning circle. Normal characters in relation to the horizontal and the vertical axis, no expansion.
<Esc>ETECHNIFOR<CR>	Text marked : TECHNIFOR
<Esc>O<CR>	Marking head return to origin position
<Esc>PE999<CR>	End of program number 999



10.1.3 "Angular" marking

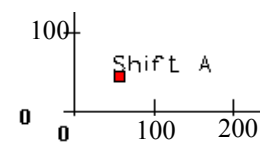
<Esc>PB999<CR>	Start of program number 999
<Esc>O<CR>	Marking head return to origin position
<Esc>BB<CR>	Beginning of a block
<Esc>MN<CR>	Normal marking
<Esc>CC100<CR>	No compression or expansion
<Esc>TA50<CR>	Size : 5 mm.
<Esc>J2<CR>	Force Code : 2 (=solenoid valves 1 and 2)
<Esc>M100■100<CR>	Coordinates X =10 mm and Y=10 mm
<Esc>PO0<CR>	Selection of character font : 0
<Esc>SC100<CR>	Spacing between characters : 100%
<Esc>MA450<CR>	Angle of text = 45° in relation to the X axis
<Esc>ETECHNIFOR<CR>	Text marked : TECHNIFOR
<Esc>O<CR>	Marking head return to origin position
<Esc>PE999<CR>	End of program number 999



10.1.4 Marking a shift code

<Esc>PB999<CR>	Start of program number 999
<Esc>O<CR>	Marking head return to origin position
<Esc>BB<CR>	Beginning of a block
<Esc>MN<CR>	Normal marking
<Esc>CC100<CR>	No compression or expansion
<Esc>TA50<CR>	Size : 5 mm.
<Esc>J2<CR>	Force Code : 2 (=solenoid valves 1 and 2)
<Esc>M100■100<CR>	Coordinates X =10 mm. and Y=10 mm.
<Esc>PO0<CR>	Selection of character font : 0
<Esc>SC100<CR>	Spacing between characters : 100%
<Esc>E@Q@<CR>	Marking of shift code
<Esc>O<CR>	Marking head return to origin position
<Esc>PE999<CR>	End of program number 999

* Shifts have been determined as : 06:00 to 13:59 : Shift A
 14:00 to 21:59 : Shift B
 22:00 to 05:59 : Shift C



10.2) Examples explained in BASIC language

- Using a pneumatic stylus -

DECLARE FUNCTION RETOUR\$(timeout!) ' Declaration of functions

DIM SHARED esc\$, CTRL\$, CTRLG\$, XON\$, XOFF\$

esc\$ = CHR\$(27) ' Declaration of Variables
 CTRL\$ = CHR\$(5)
 CTRLG\$ = CHR\$(7)
 XOFF\$ = CHR\$(19)
 XON\$ = CHR\$(17)

CLS ' Delete screen
 OPEN «COM1:19200,N,8,1,CD0,CS0,DS0,OP0,RS,TB512,RB512» FOR RANDOM AS #1
 ' Activate serial port n°1, parity speed, stop bits
 ' stop, basic parameters, buffer size for sending and receiving (in bytes)

PRINT #1, esc\$ + «*» ' Config. by default
 PRINT #1, esc\$ + «I100 800 35 42» ' Initialization of speeds

W\$ = RETOUR\$(.5) ' 0,5 sec to retrieve W <==> initialization OK
 IF W\$ <> «W» THEN ' If message different, then
 CLS ' Delete screen
 PRINT «INITIALIZATION ERROR : » + W\$
 CLOSE #1 ' Close the serial port (RS 232)
 END
 END IF

PRINT #1, esc\$ + «PB 999» ' Start of program number 999
 PRINT #1, esc\$ + «O» ' Return to origin position
 PRINT #1, esc\$ + «MN» ' Normal marking
 PRINT #1, esc\$ + «CC 100» ' No compression or expansion
 PRINT #1, esc\$ + «M 100 100» ' Start of marking position
 PRINT #1, esc\$ + «TA 30» ' Height of characters
 PRINT #1, esc\$ + «J 2» ' Force Code
 PRINT #1, esc\$ + «PO 0» ' Fonts 0
 PRINT #1, esc\$ + «SC 100» ' Standard spacing
 PRINT #1, esc\$ + «E» + «EXAMPLE PROGRAM» ' Text marked
 PRINT #1, esc\$ + «O» ' Return to origin position
 PRINT #1, esc\$ + «PE 999» ' End of program number 999

rt0\$ = RETOUR\$(2) ' The CU will send RT0 to indicate that the
 program has been downloaded
 IF rt0\$ <> «RT0» THEN ' if RT0 not received
 CLS ' Delete screen
 PRINT «LOADING PROGRAM ERROR : » + rt0\$
 CLOSE #1 ' Close serial port
 END
 END IF

```

PRINT #1, esc$ + CTRL$ + «999»
' Translate program 999 for executing

X$ = RETOUR$(2)
IF X$ <> «X» THEN
' 2 sec to send back X <==> it is OK
' If something else other than X
is received then :
' Delete screen

    CLS
    PRINT «INTERPRETATION ERROR : » + X$
    CLOSE #1
    END
' Close serial port
END IF

PRINT #1, esc$ + CTRLG$
' Simulate activation of the start marking
button

y$ = RETOUR$(30)
IF y$ <> «Y» THEN
' 30 sec to send back Y <==> marking ended
' If something else other than Y
is received then :
' Delete screen

    CLS
    PRINT «EXECUTION ERROR: » + y$
    CLOSE #1
    END
' Close serial port connection
END IF

CLS
CLOSE #1
PRINT «MARKING ENDED.»
' Close serial port connection

FUNCTION RETOUR$ (timeout!)
' This function will send the string characters
read by the serial connection

UC$ = «»

t! = TIMER
DO
    IF t! > TIMER THEN t! = t! = 86400
LOOP UNTIL LOC(1) > 0 OR TIMER - t! > timeout!
' Waiting for data by serial port

IF LOC(1) > 0 THEN
    LINE INPUT #1, UC$
    ' Read the buffer
END IF

IF LEFT$(UC$, 2) = XOFF$ + XON$ THEN
    ' Trick to ignore Xon/Xoff
    UC$ = MID$(UC$, 3)
ELSEIF LEFT$(UC$, 1) = XON$ OR UC$ = XOFF$ THEN
    UC$ = MID$(UC$, 2)
END IF

RETOUR$ = UC$

END FUNCTION

```




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