i51 & i51-e
USER MANUAL

SIC MARKING
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PRESENTATION

Thank you for choosing a dot marking system (also called micro-percussion) for your marking applications.

SIC MARKING systems contribute to improve the tracability of your products while complying with the industrial standards.

We would like to welcome you as a user of our systems.

This guide contains the installation and use instructions of the dot marking type machines. We recommend that you read it carefully before installing the system.

Please contact our technical department for any further information.

INSTALLATION AND START-UP

1. UNPACKING

Except if we deliver the system, it is generally supplied in an appropriate packaging, which needs to be kept for any return of the material.

Remove the sub-systems carefully (controller, control handbox, possible options …) from their packages.

The machine should only be lifted by the column and the base ; it should never be lifted by the head housing.
Weight of the machine : 35 kg

2. INSTALLATION

2.1. Fastening

- ✓ Column-type machines
  - Install the machine on a rigid and stable support frame
  - After installing the entire marking machine, fasten the base with 2 M10 screws.

- ✓ Integrated-type machines
  - Install the machine on a rigid and stable support frame
  - Fasten the marking head onto the machine by complying with the indications of the integration plan, **available thread length 12 mm max.**

- ✓ Portable-type machines
  - No fastening : marking gun designed to be held manually

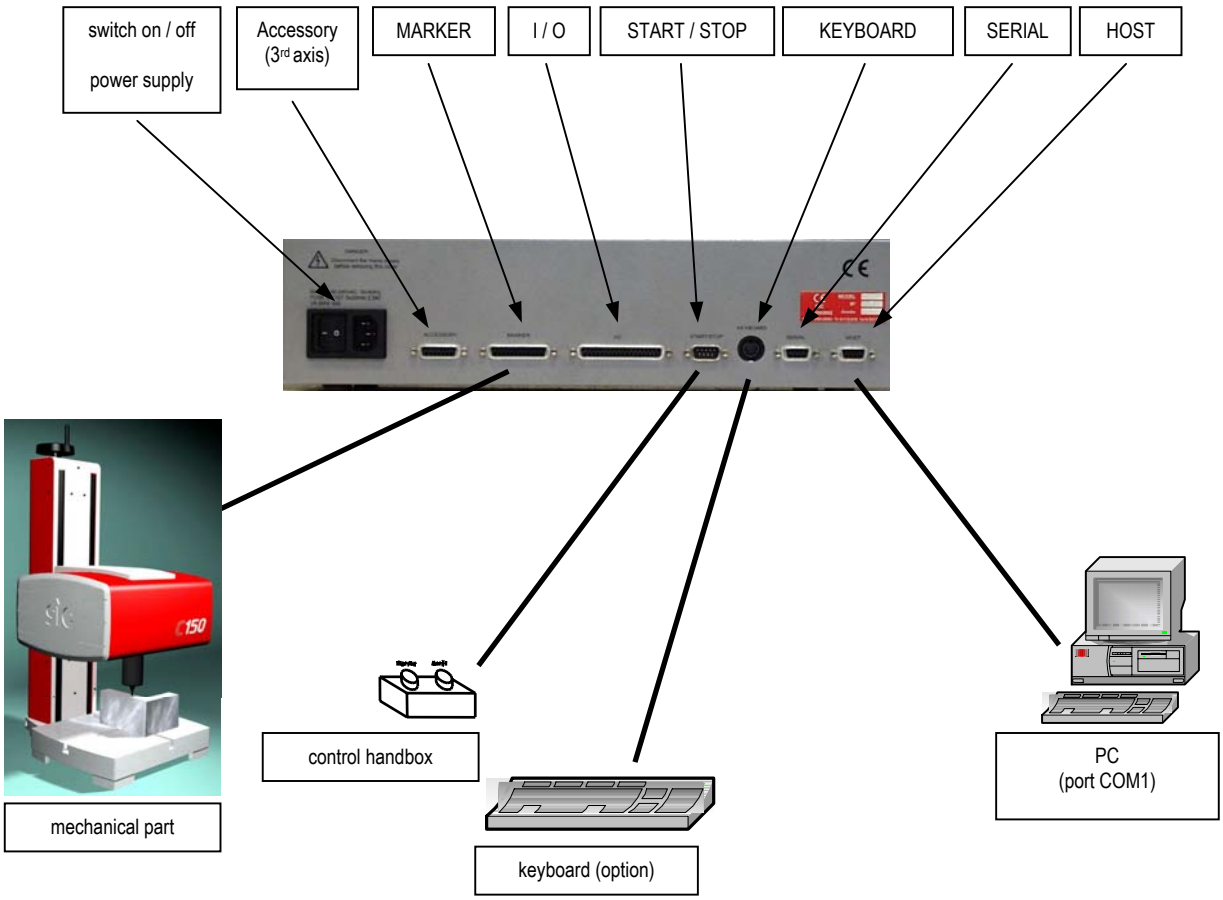
Note : The integrated and portable type machines are designed to function in all positions (vertical, horizontal, stylus towards the bottom or the top)

2.2. Connections

- Using the SUB-D 25 connector, connect the marking machine to the "marker" connector located at the rear of the controller. For the integrated type machines, proceed the same way using a connection cable.
- Correctly fasten the screws of the connector.

Note : for more details about the connections, please check the controller manual.

Never unplug the controller when it is under tension as it may seriously damage the material.



USE OF THE MACHINE

1. SAFETY

	An intense use may cause the temperature of the system to rise up to 100°C.
	It is recommended to wear safety glasses.
	It is also recommended to wear a noise reducing helmet. Acoustic value of the machine : 76 dB on a piece of steel at medium speed
	The marking system should never be used without any surface to mark as the marking head may break.

2. CONTROLLER

See controller manual

3. SOFTWARE

See software manual

4. MARKING MACHINE

4.1. Positioning and clamping of the part to be marked

Even if the part is not submitted to high forces, it is necessary to immobilize it in order to reach an optimal marking quality.

Depending on the type of parts and the working conditions, the clamping system can vary from the simple manual fastening of the part against an angle iron (bracket) to the mechanical, magnetic or pneumatic fastening.

When using a marking gun, place the universal non-skid support against the surface to be marked and manually hold the gun during the marking.

The fastening device should maintain the part so that the stylus movements are parallel to the surface to be marked.

For the portable type machines, if the marking is always conducted on the same type of parts, we advise you to make a customized tooling to always keep the same marking position.

4.2. Machine adjustment

The marking quality highly depends on the part to be marked ; a smooth and flat surface is much easier to mark than a rough and irregular surface.

It is generally necessary to adapt the marking force to the height of the character. The smaller the character is, the lower the impact has to be to obtain a good legibility. The software also enables to choose various widths for the marking matrix.

To obtain a good marking quality, it is fundamental to adjust the force and the distance. When using marking guns, the distance between the stylus and the part can be modified by adjusting the position of the front plate.

For your information, hereafter are some values about the distance between the stylus and the part depending on the marking force :

Force	1	2	3	4	5	6	7	8	9
Minimum distance	0.5	0.5	0.5	1	1	2	3	5	6
Maximum distance	1	2	3	5	6	7	9	9	9

Maximum distance between the stylus and the part : 9 mm

We recommend that you make trials before marking a new part.

4.3. Launch / Stop the marking

- Set the controller in marking mode (for more information, please see the software manual)

- Position the part to be marked
- Launch the marking by pressing the "Start" button on the control handbox or the "Marche" button on the gun handle (portable type machine)
- To stop the marking, press the "Stop" button on the control handbox or press the "Marche" button of the gun handle for more than 2 seconds.

MAINTENANCE

1. INTRODUCTION

Dot marking machines have been developed and realized especially to meet the needs of our clients who want a machine which is :

- Performing,
- Robust,
- Reliable,
- Ergonomic.

It requires very little maintenance and if you observe the preventive maintenance recommendations, you will *increase the life-expectancy* of your machine.

However, if a problem of any kind should occur, please refer to this manual, which will help you solve the problem.

2. AFTER-SALES SERVICE

Please contact our local distributor first.
To find out about our local distributor, you can check our website :
www.sic-marking.com
If you can not reach our distributor, please call SIC MARKING at +33.4.72.54.80.00.

SIC MARKING or its distributor offer the following services :

- ✓ ***Phone support***

Please do not hesitate to contact us for any technical problem.

- ✓ ***On-site intervention***

We can help you install, set up the machine on-site, as well as repair it and provide personal training.

- ✓ ***Maintenance contract***

Thanks to the maintenance contract, we provide regular maintenance of your marking machine.

3. PREVENTIVE MAINTENANCE

If you want to keep your machine in a good working condition, it is necessary to do the following actions :

- **clean** the stylus pin guide and the stylus assembly regularly
- **avoid** dust and abrasive particles on the guiding and driving elements

How to clean the stylus pin guide and the stylus assembly

- Unplug the marking machine
- Unscrew the stylus pin guide (see General layout of the stylus assembly in appendix)
- Remove the stylus, the spring and the core
- Clean all parts and remove the grease
- **Lubricate the stylus and the stylus pin guide using exclusively the oil supplied with your maintenance kit.**
- Reassemble the machine and **manually fasten the stylus pin guide**

Note : please pay attention to the direction when reassembling the core (see General layout of the stylus assembly in appendix)

4. TROUBLE SHOOTING

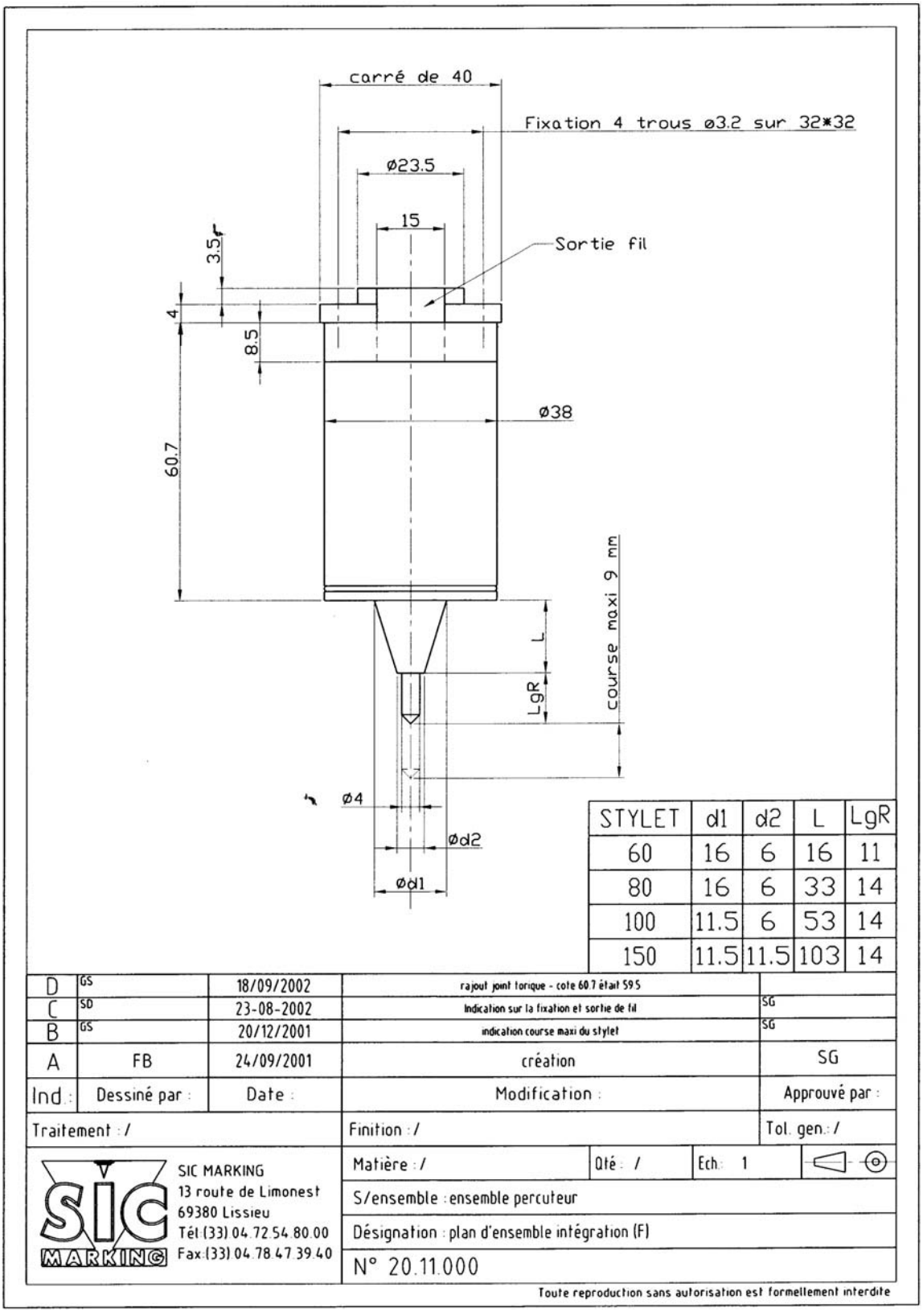
Problem	Check	Solution
The stylus assembly does not move on the X and Y axes	Check that : - The controller is on - A marking program is loaded and the controller is in marking mode (see software manual) - The machine is correctly linked to the controller - The cable is in working condition - The control handbox is connected (except for gun marking machines) - The movements on the X and Y axes are not blocked when the machine is on.	 - See controller manual - Load a program and set the machine in marking mode - Reposition the connectors - Open the connectors and check the wires either visually or with a ohmmeter. - Reposition the connectors - Remove any obstacle or clean the guiding rails and the driving mechanisms
The marking head does not go back home before marking	Check that : - The sensors cables are correctly connected and in good working condition - The origin sensors work properly (in home position, the red lights located on the sensors are off, otherwise they are on). - The driving belts are not broken on the integrated type or column type machines	 - Reconnect the wires or replace the damaged cables - Replace the sensors - Replace the damaged belt
The stylus assembly moves (X,Y) but the stylus does not	Check that : - The stylus is not blocked by anything - The solenoid is in good working condition (no overheating, short circuit…)	 - Disassemble the machine, clean it, lubricate it with the oil provided in your maintenance kit and re-assemble (see General layout in appendix) - Replace the solenoid
The marking quality is terrible : - The dots are not aligned - The impacts are not regular	Check that : - The part is correctly maintained during the entire marking process and the machine is correctly fastened - The marking speed is not too high compared with the marking to be made (size) - There is no backlash in the X and Y axes - The distance between the stylus and the part is correct - The stylus pin is in good working condition - The stylus can move correctly - There is no backlash between the stylus pin guide and the stylus	 - Redo the marking after fastening the part and/or the machine properly - Reduce the marking speed - Please contact the after sales service - Change the distance (see manual) - Replace the stylus - Clean the stylus pin guide and the stylus - Change the stylus pin guide

If you have checked everything and the system still does not work, please contact our after sales services.

APPENDIX

1. STYLUS ASSEMBLY

1.1. General layout (overall dimensions)



STYLET	d1	d2	L	LgR
60	16	6	16	11
80	16	6	33	14
100	11.5	6	53	14
150	11.5	11.5	103	14

D	GS	18/09/2002	rajout joint torique - cote 60.7 était 59.5	
C	SD	23-08-2002	Indication sur la fixation et sortie de fil	SG
B	GS	20/12/2001	indication course maxi du stylet	SG
A	FB	24/09/2001	création	SG
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Traitement : /			Finition : /	Tol. gen. : /

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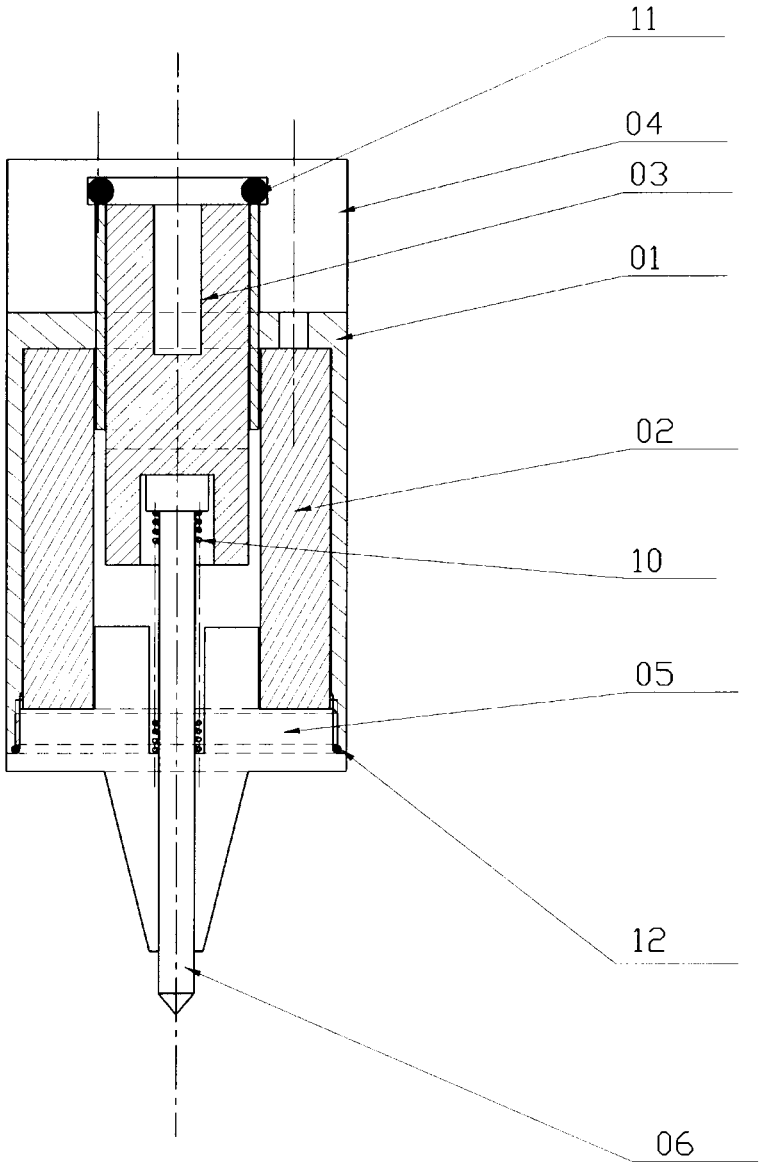
Matière : /	Qté : /	Ech : 1
S/ensemble : ensemble percuteur		
Désignation : plan d'ensemble intégration (F)		
N° 20.11.000		

1.2. General layout (References)



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Traitement :			Finition :	Tol. gen. :
SIC MARKING 13 route de Limonest 69380 Lissieu Tél:(33).04.72.54.80.00 Fax:(33).04.78.47.39.40			Matière : / Qté : / Ech. :	
			S/ensemble : Ensemble percuteur	
			Désignation : Plan d'ensemble	
			N° 20.11.00	

1.3. Terminology and references general layout

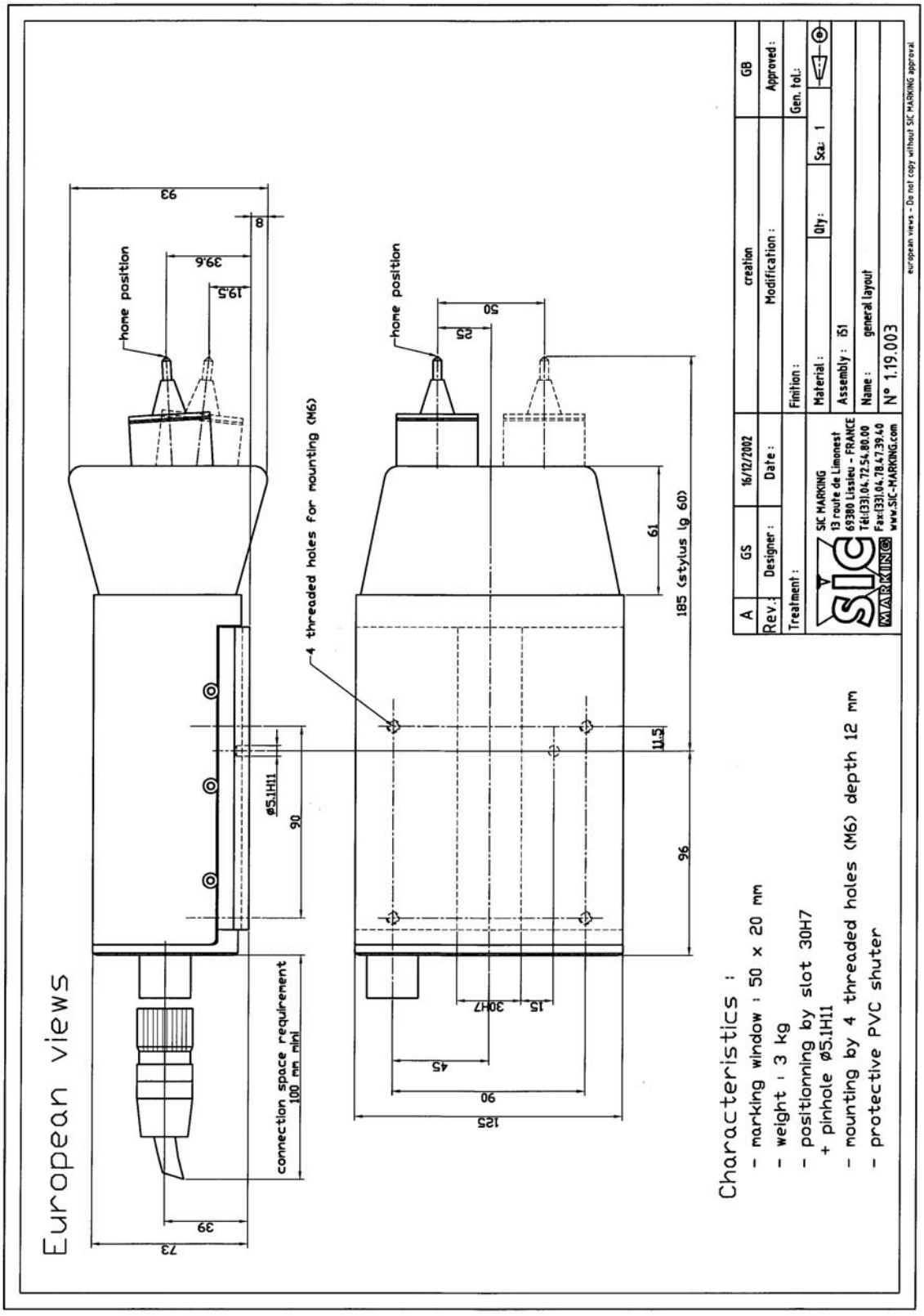
REF	*QTY*	*CODE*	*DESCRIPTION*
1	1		Body
2	1		Solenoid
3	1		Core
4	1		Support mount
5	1		Stylus guide l 60
6	1		Stylus pin l 60
10	1		Spring
11	1		O ring
12	1		Locking O ring

1.4. Terminology and references spare parts

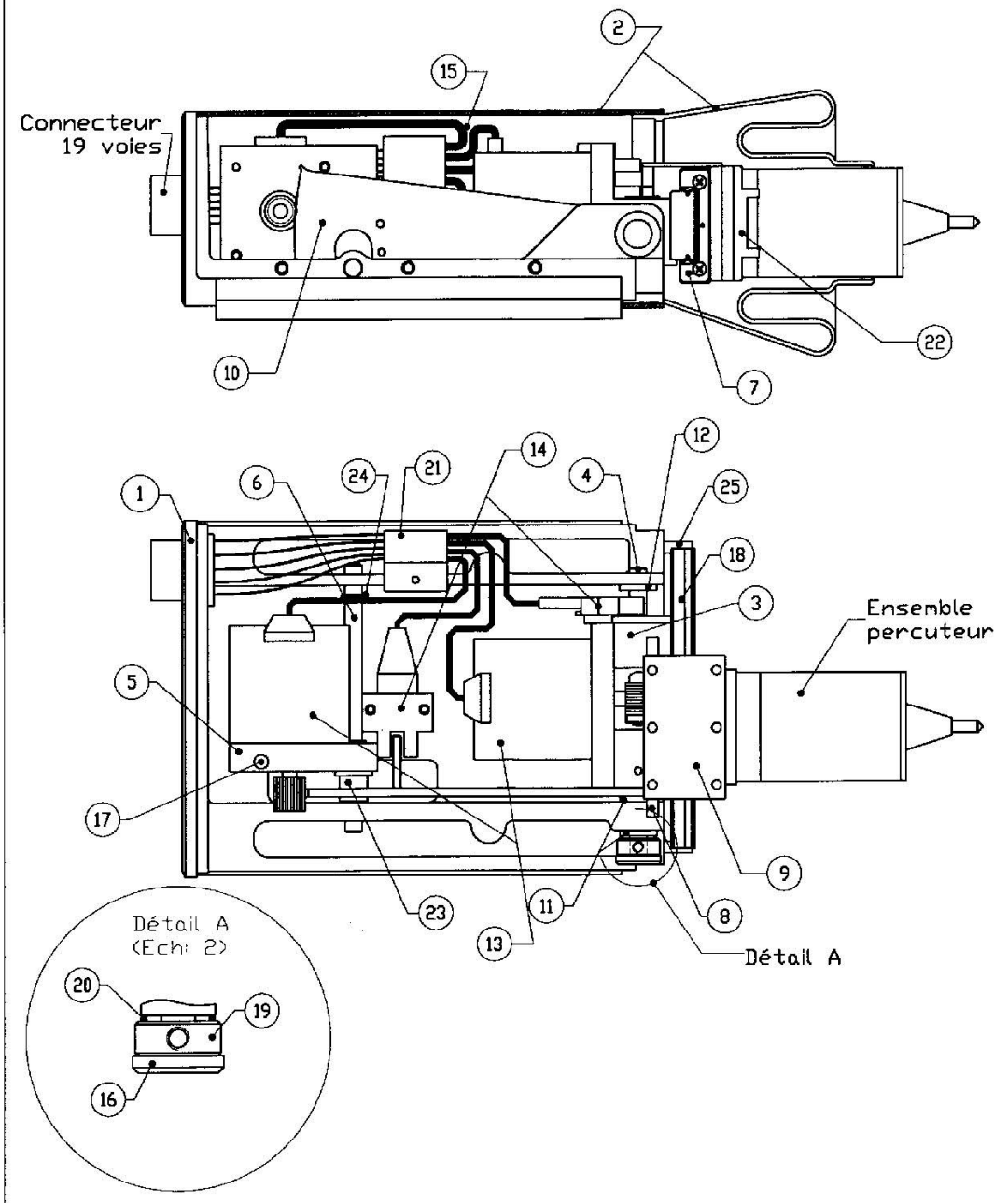
REF	*QTY*	*CODE*	*DESCRIPTION*
1 à 4	1	3 200 003	Solenoid assembly
6	1	1 120 012	Stylus pin L 60
5	1	1 120 017	Stylus guide L 60
	1	1 120 013	Stylus pin L 80
	1	1 120 023	Stylus guide L 80
	1	1 120 014	Stylus pin L 100
	1	1 120 024	Stylus guide L 100
10	1	2 120 006	Spring

2. MARKING MACHINE

2.1. General layout (overall dimensions)



2.2. Terminology and references i51



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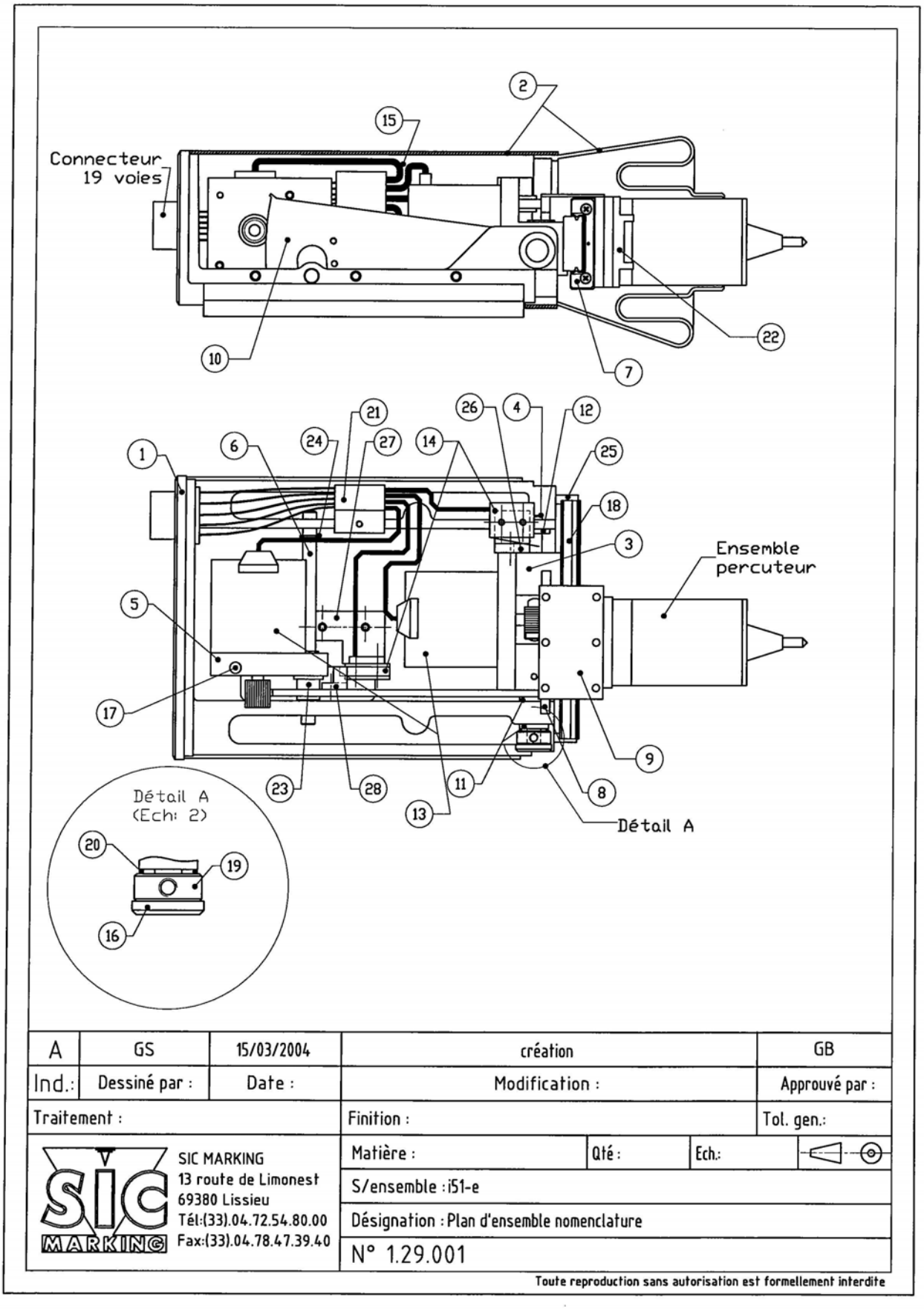
Traitement :			Finition :	Tol. gen.:
SIC MARKING 13 route de Limonest 69380 Lissieu Tél:(33).04.72.54.80.00 Fax:(33).04.78.47.39.40			Matière : / Qté : / Ech.:	
			S/ensemble :i51	
			Désignation : Plan d'ensemble nomenclature	
			N° 1.19.002	

REF	*QTY*	*CODE*	*DESCRIPTION*
1	1	1 310 011	Housing
2	1	4 100 314	Cover + Below
3	1	1 110 079	X motor mount
4	1	1 120 077	Pivot shaft
5	1	1 110 080	Y motor mount
6	1	1 120 078	Y axis mount
7	1	1 110 081	Adapting plate
8	1	1 120 075	Rack
9	1	1 220 065	Spring sheet metal
10	1	1 120 076	Sector gear
11	2	2 120 084	Bronze bushing (6-10-6)
12	1	2 120 085	Bronze straight bushing (6-10-16)
13	2	4 100 320	Wired motor with gear
14	2	2 230 004	Origin sensor
15	1	3 100 039	Wiring module
16	1	1 120 079	Stop bar
17	1	2 120 090	Pin ∅ 5 x 20
	1	2 120 017	Guiding rail
18	1	2 120 082	Spring
19	1	1 120 019	Washer
20	1	2 120 022	Seal
21	1	1 220 029	Connection module support
22	1	1 220 017	Sheet metal 2 way connector support
23	1	1 120 087	Y axis pivot bushing
24	2	2 120 099	Stop ring
25	2	2 120 098	Pin ∅ 4 x 20

2.3. Terminology and references i51-e



REF	*QTY*	*CODE*	*DESCRIPTION*
1	1	1 310 011	Housing
2	1	4 100 314	Cover + Below
3	1	1 110 079	X motor mount
4	1	1 120 077	Pivot shaft
5	1	1 110 080	Y motor mount
6	1	1 120 078	Y axis mount
7	1	1 110 081	Adapting plate
8	1	1 120 075	Rack
9	1	1 220 065	Spring sheet metal
10	1	1 120 076	Sector gear
11	2	2 120 084	Bronze bushing (6-10-6)
12	1	2 120 085	Bronze straight bushing (6-10-16)
13	2	4 100 320	Wired motor with gear
14	2	2 230 045	mechanical sensor
15	1	3 100 039	Wiring module
16	1	1 120 079	Stop bar
17	1	2 120 090	Pin ∅ 5 x 20
	1	2 120 017	Guiding rail
18	1	2 120 082	Spring
19	1	1 120 019	Washer
20	1	2 120 022	Seal
21	1	1 220 029	Connection module support
22	1	1 220 017	Sheet metal 2 way connector support
23	1	1 120 087	Y axis pivot bushing
24	2	2 120 099	Stop ring
25	2	2 120 098	Pin ∅ 4 x 20
26	1	1 110 103	X sensor support
27	1	1 110 104	Y sensor support
28	1	1 110 105	Y detection

2.4. External connection cables (5 or 10 meters)

SUB D 25 connector	*19 pins connector*	*color (standard cable)*	*color (ROBOTIC cable)*	*element*
1	12	purple	green & brown	solenoid 1
2	12	black	green & white	solenoid 1
4	3	brown & gray	red & brown	Y axis motor
5	4	whie & gray	red & white	Y axis motor
6	5	brown	blue & brown	Y axis motor
7	7	white	blue & white	Y axis motor
8	8	yellow	pink	X axis motor
9	9	green	gray	X axis motor
10	10	brown & green	pink & white	X axis motor
11	11	green & white	pink & gray	X axis motor
12	1	pink	white	start / stop button
13	2	gray	brown	start / stop button
14	12	red	yellow	solenoid 1
15	12	blue	green	solenoid 1
16	18	white & yellow	red & blue	Dallas bus
17	13	red & blue	red	"L" & "+" sensors
18	14	pink & gray	blue	"-" sensors
19	17	yellow & brown	gray & pink	Dallas ground
20	15	red & white	black	Y sensor
21	16	red & brown	purple	X sensor
22	6	blue & white	yellow & brown	solenoid 2
23	6	brown & blue	yellow & white	solenoid 2
24	6	pink & brown	white & gray	solenoid 2
25	6	pink & white	gray & brown	solenoid 2

2.5. Internal cabling plan

19 pins connector	***18 pins connector***	***color***	***element***
3	2	Gray	Y axis motor (orange)
4	3	Red & Blue	Y axis motor (blue)
5	4	Green	Y axis motor (yellow)
6	18	Blue	solenoid 2
7	5	Gray & Pink	Y axis motor (red)
8	11	White & Green	X axis motor (orange)
9	12	White & Yellow	X axis motor (blue)
10	13	White & Gray	X axis motor (yellow)
11	14	Black	X axis motor (red)
12	9	Vert & Jaune	solenoid 1
13	6	Yellow & Brown	L & "+" sensor
13	15	Yellow & Brown	L & "+" sensor
14	7	Brown & Green	"-" sensor
14	16	Brown & Green	"-" sensor
15	17	Yellow	Y sensor
16	8	White	X sensor
17	1	Brown & Gray	Dallas ground
18	10	White & Red	Dallas bus

2.6. Internal cabling plan i51-e (modification)

J1	J2	J3	couleur	section	Commentaire
1					masse Dallas
2					moteur Y (orange)
3					moteur Y (bleu)
4					moteur Y (jaune)
5					moteur Y (rouge)
6	"+" & L			0,25 mm²	5 volts détecteur
7	"-"		gris	0,25 mm²	masse détecteur
8	"out"		noir	0,5 mm²	détection X
9			noir	0,75 mm²	bobine
10					bus Dallas
11					moteur X (orange)
12					moteur X (bleu)
13					moteur X (jaune)
14					moteur X (rouge)
15		"+" & L		0,25 mm²	5 volts détecteur
16		"-"	gris	0,25 mm²	masse détecteur
17		"out"	noir	0,5 mm²	détection Y
18			noir	0,75 mm²	bobine

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Matière : | Qté : | Ech:

S/ensemble : i51-e

Désignation : schéma de câblage

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