



MATRIX **evo**

MATRIX **pro**

Operating Manual

Original Instructions

D439848XA

vers. 4



EN



(c) 2012 SILCA S.p.a. – Vittorio Veneto

This manual has been drawn up by SILCA S.p.a.

All rights reserved. No part of this publication can be reproduced or circulated by any means whatsoever (photocopies, microfilm or other) without the consent of SILCA S.p.a.

Edition: June 2012

Printed at Vittorio Veneto

by SILCA S.p.a.

Via Podgora, 20 (Z.I.)

31029 VITTORIO VENETO (TV) – Italy

The Manufacturer declines any responsibility for possible inaccuracies in this document due to printing or transcription errors. The Manufacturer reserves the right to alter the information without prior notice, except when they affect safety. This document or any of its parts cannot be copied, altered or reproduced without written authorization from the Manufacturer. Keep the manual and look after it for the entire life cycle of the machine.

The information has been drawn up by the manufacturer in his own language (Italian) to provide users with the necessary indications to use the key-cutting machine independently, economically and safely.

IMPORTANT NOTE: in compliance with current regulations relating to industrial property, we hereby state that the trade-marks or trade names mentioned in our documentation are the exclusive property of authorized manufacturers of locks and users.

Said trade-marks or trade names are nominated only for the purposes of information so that any lock for which our keys are made can be rapidly identified.

INDICE

USE OF THE MANUAL	1
GLOSSARY SYMBOLS-TERMINOLOGY	2
GENERAL WARNINGS	4
1 MACHINE DESCRIPTION.....	5
2 WORKING PARTS - Matrix PRO.....	6
3 WORKING PARTS - Matrix EVO	7
4 ACCESSORIES PROVIDED	8
4.1 Technical data	8
5 ELECTRIC DIAGRAM	9
6 HANDLING	10
6.1 Packing.....	10
6.2 Transport	10
6.3 Unpacking.....	10
6.4 Handling the machine.....	10
7 MACHINE INSTALLATION AND PREPARATION	11
7.1 Checking for damage	11
7.2 Environmental conditions	11
7.3 Positioning	11
7.4 Safety devices	11
7.5 Work station description	12
7.6 Starting the key-cutting machine	13
7.6.1 Starting the motor.....	13
7.6.2 Cutter motor on warning light	13
7.6.3 Led lamp (matrix pro version).....	13
7.6.4 Led lamp (matrix evo version).....	13
8 MACHINE CALIBRATION AND REGULATION	14
8.1 Fitting and removing tools	14
8.2 Micrometer gauge.....	15
8.3 Calibration / tool alignment.....	16
8.4 Tracer point spring.....	17
8.5 Carriage spring for laser keys.....	18
8.6 Clamps	20
8.6.1 The clamp unit has several seats dedicated to the positioning of different types of keys:	21
9 CUTTING	25
9.1 Fitting keys	25
9.2 Key stop.....	25
9.3 Cutting dimple keys	26
9.3.1 Back cuts	26
9.3.2 Inclined cuts.....	27
9.4 Cutting laser type keys	28
9.4.1 Cutting laser keys with narrow stems.....	29
9.5 Cutting fichet type keys (h profile)	30

9.6	Cutting tubular keys (MATRIX PRO version).....	31
10	MAINTENANCE.....	32
10.1	Tightening and replacing the belt	32
10.2	Removing the upper front unit	33
10.3	Replacing the rollbar.....	33
10.4	Replacing the transparent safety shield	34
10.5	Replacing the lamp.....	34
10.6	Adjusting/replacing the vertical carriage spring	35
10.7	Checking and replacing fuses	36
10.8	Replacing the calibration key pad electronic circuit board.....	37
10.9	Replacing the condenser.....	37
10.10	Replacing the motor	38
10.11	Replacing the transformer	38
10.12	Replacing switches: master and motor on.....	39
10.13	Aligning/calibrating the clamp.....	40
10.13.1	Control alignment left-hand stationary jaws.....	40
10.13.2	Control alignment right-hand stationary jaws	41
10.14	Replacing the jaws	42
10.14.1	Replacing the left-hand stationary jaws.....	42
10.14.2	Replacing right-hand stationary jaws.....	42
10.14.3	Replacing left-hand clamp mobile jaw.....	43
10.14.4	Replacing right-hand mobile clamp jaw.....	43
11	DECOMMISSIONING.....	44
12	AFTER-SALES SERVICE	45
12.1	How to apply for after-sales service	45

USE OF THE MANUAL

This manual has been drawn up by the Manufacturer and is an integral part of the machine literature. The manual gives information it is obligatory for the operator to know and which makes it possible to use the machine safely.

User's Manual

This user's manual is provided because it is essential for proper use and maintenance of the machine. The manual must be kept carefully throughout the life of the machine, including the decommissioning stage. Keep in a dry place close to the machine where it is always to hand for the operator.



IT IS OBLIGATORY to read the manual carefully before using the machine.

Readers' characteristics

This manual must be read and its contents acquired by those who will use it.

Manufacturer's ID

MATRIX has an ID plate located on the back of the machine, showing the serial number.

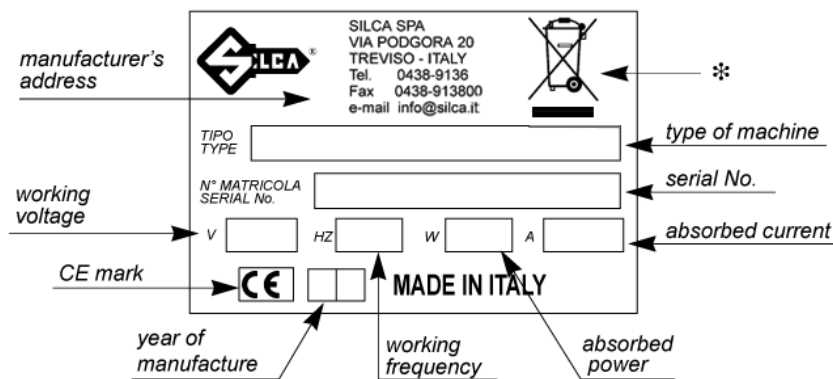


Fig. 1

(*) See Ch. 11 DECOMMISSIONING .

How to apply for after-sales service

Silca provides purchasers of MATRIX with After-Sales Service.

For the total safety of the operator and machine, any operation not described in the manual must be carried out by the manufacturer or in the special Service Centres recommended by Silca.

At the end of the manual there is a list of manufacturers' and authorized Service Centre addresses.

The warranty card attached to the machine covers free repairs or replacement of faulty parts for 24 months from the date of purchase*. All operations must be agreed by the user with Silca or the Service Centre.

* Damage caused by negligence or wrong use of the machine by the user will null the warranty.

GLOSSARY SYMBOLS-TERMINOLOGY

To facilitate reading, a glossary is given below of commonly used symbols and terms connected to keys and the key-cutting machine.

These symbols and terms will be used in the manual with reference to this page, but we advise reading the list before the rest of the manual.

GLOSSARY	
Tools	cutters and Tracer Points
Clamp unit	clamp set: pull-out tilting clamp unit (right and left hand) for positioning keys
Vertical carriage	spindle unit (tracer point and cutter) with relative support (Z axis)
Clamp carriage	clamp support perpendicular carriages (X, Y axes)
Safety shield	transparent shield to prevent swarf scattering and (partially) protect the operator
Front	vertical carriage cover
Hole	dimple cut on the stem or back of the key

TERMINOLOGY

For those inexperienced in the subject of keys and key cutting, below is an illustration of the most frequently used terms:









1) Head	3) Stop	5) Tip	7) Cuts
2) Neck	4) Stem	6) Back	8) Diameter




Fig. 2

(*) Matrix PRO only

GRAPHICS IN THE USER'S MANUAL

					
Pay attention	Obligation to read the manual	Position of clamp carriage to the left	Position of clamp carriage to the right	Activation of tracer point spring	Deactivation of tracer point spring

GRAPHICS ON THE MATRIX KEY-CUTTING MACHINE

			
Obligatory use of safety goggles	Cutter release - Matrix PRO only -	Tracer point spring ON	Tracer point spring OFF

 <p>Adhesive labels Mass - RPM - Fusibles</p>	<p>ATTENTION DANGEROUS MOBILE PARTS</p>	
	<p>Adhesive label "DANGEROUS MOBILE PARTS"(cap.4) place the adhesive label in the way illustrated.</p>	

Fig. 3

Fig. 4

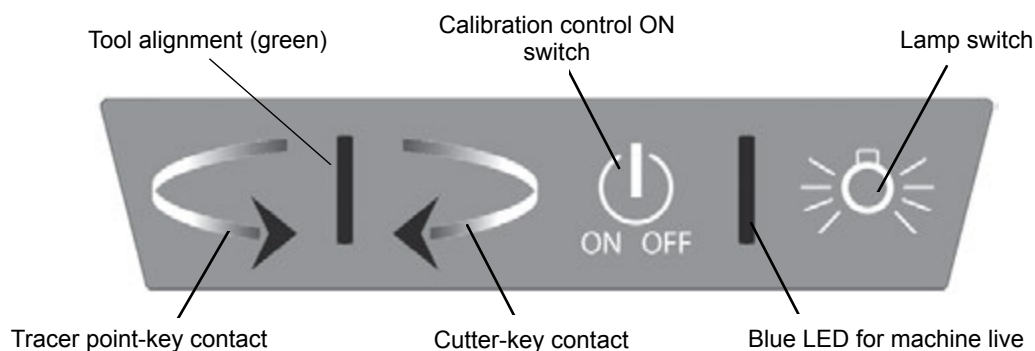


Fig. 5

GENERAL WARNINGS

MATRIX is designed to the principles of European Standards (CE).

Right from the design stage solutions have been adopted to eliminate hazards for the operator in all the stages of use: handling, regulation, use and maintenance.

The materials used in manufacture and the components employed in using MATRIX are not dangerous and ensure that the machine complies to current standards.

Silca S.p.A. has also experimented and applied numerous technical solutions that allow the key-cutting machine to optimize the quality of the cut keys.

To guarantee maintaining these results over time, please follow the instructions below:

- Observe the procedures described in this manual;
- Always use Original Silca Tools as they are designed to make the best of MATRIX and provide quality key-cutting;
- Use Silca key blanks, made with top quality materials;
- Have the key-cutting machine checked periodically by an authorized Silca After-Sales Service Centre (list at the end of this manual); always use Silca Original Spare Parts. Beware of imitations!

NORMAL USE

MATRIX is a key-cutting machine and must be installed and used according to the rules and specifications established by the manufacturer.

Any other use different from that indicated in this manual will cause the forfeiture of all customers' rights to make claims on Silca S.p.A. and may be an unknown source of hazard for the operator or third parties.



ATTENTION: Negligent use or failure by the operator to observe the instructions in this manual are not covered by the warranty and the manufacturer declines any responsibility in such cases.

RESIDUAL RISKS

On the Matrix key-cutting machine there is a residual risk of injury in the cutter spindle area (cutter rotating) if the vertical axis for laser cuts is blocked.

Furthermore, the MATRIX key-cutting machine has residual risks when gaining access to parts in motion (not fully protected) and the risk of chippings flying into the air during the key copying process. These residual risks in the product are reported in special warnings ("ATTENTION MOVING PART HAZARD") and involve the obligatory use of personal protective devices (GOGGLES).

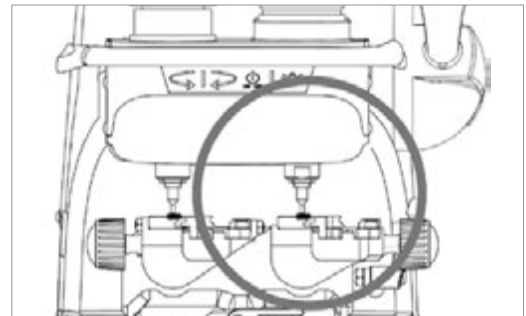


Fig. 6

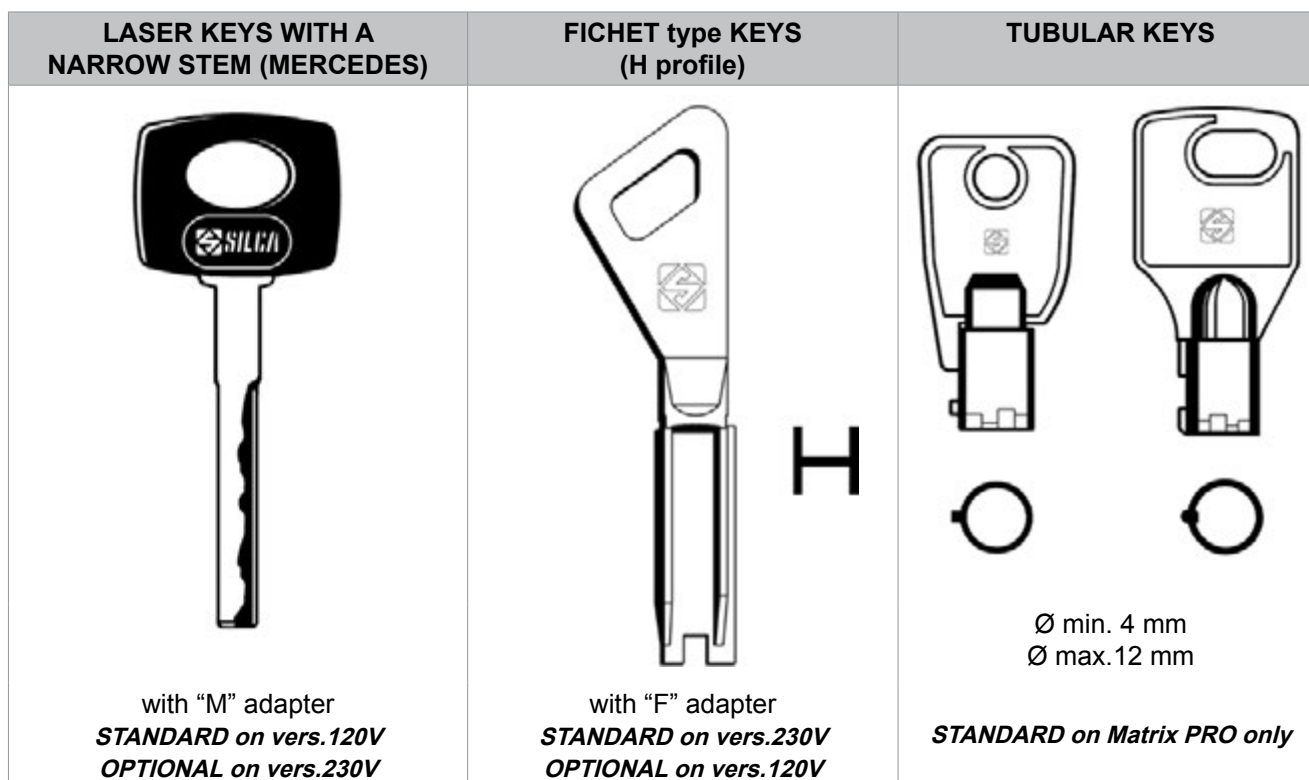
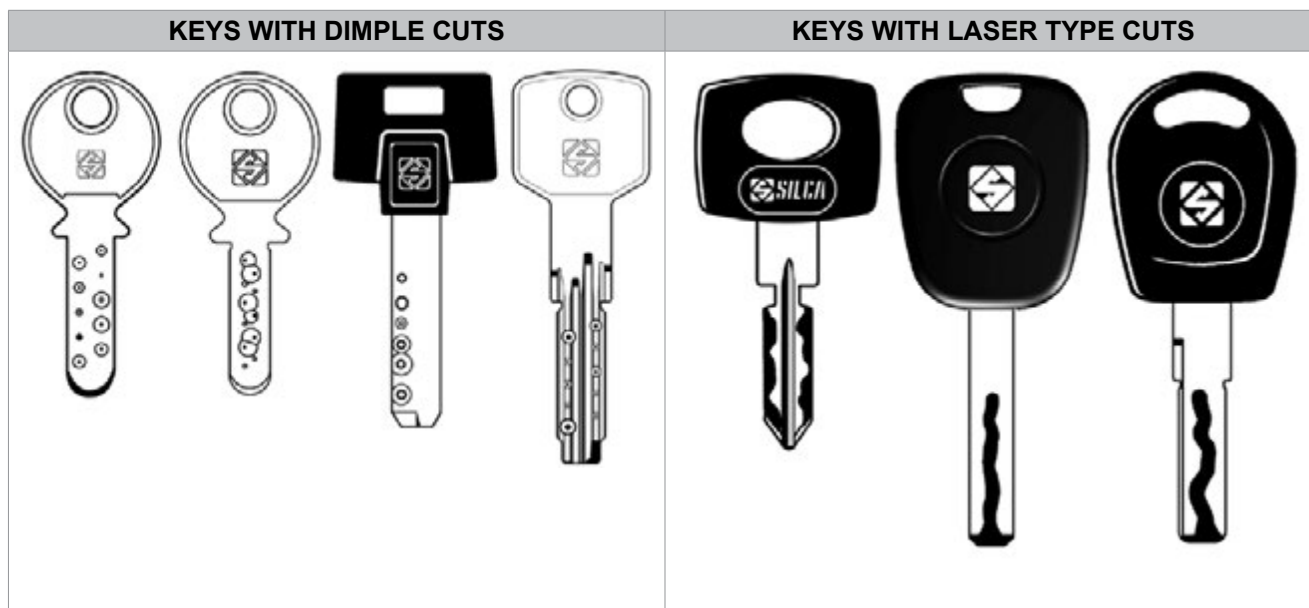
SAFETY REGULATIONS

- Always disconnect the machine when it is not in use or when performing maintenance operations.
- Check the electrical wiring periodically; replace any wires that show signs of wear.
- Always work with dry hands free of grease or oil.
- Never pull hard on the power lead and make sure it does not come into contact with oil, sharp objects or heat. Never remove the earth wire from the plug. Make sure the earth wire connection is sound.
- Do not use the machine in dangerous environments (wet or damp).
- All visitors, especially children, must stay at a safe distance from the machine and must never come into contact with the electric wiring.

1 MACHINE DESCRIPTION

The MATRIX key-cutting machine gives excellent technical performance of great precision. The standard clamp on MATRIX is used to cut the following types of keys:

- keys with flat or inclined dimple cuts
- keys with laser type cuts
- laser keys with a narrow stem (Mercedes)
- Fichet type keys (H profile) (see note)
- tubular keys (Matrix PRO only)



2 WORKING PARTS - MATRIX PRO

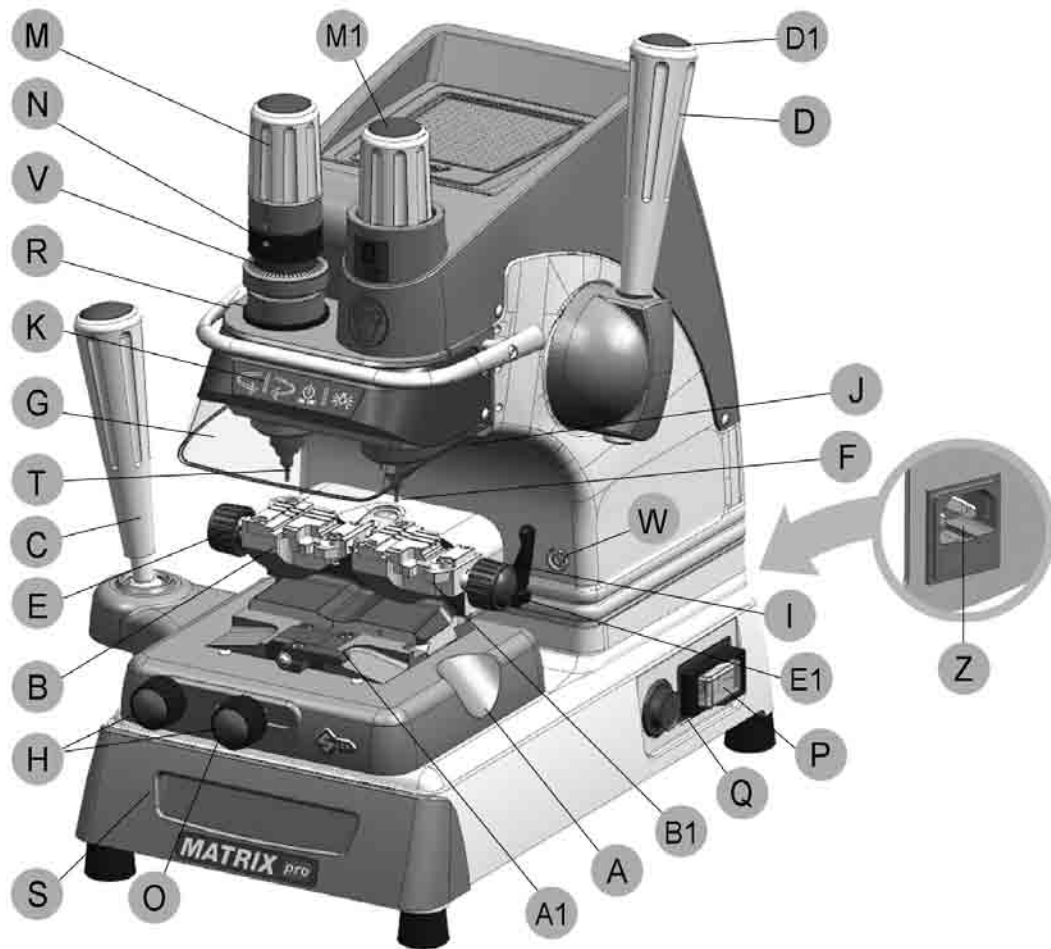


Fig. 7

- | | |
|--|--|
| A - clamp carriage (X-Y axes) | M - tracer point locking knob |
| A1- clamp locking lever | M1- cutter locking knob |
| B - left-hand tilting clamp | N - tracer point spring cam |
| B1- right-hand tilting clamp | O - carriage spring knob |
| C - clamp carriage lever (X-Y axes) | P - ON/OFF switch |
| D - vertical carriage lever (Z axis) | Q- motor ON switch |
| D1- lever release and motor start button | R - rollbar |
| E - left-hand clamp knob | S - tool box |
| E1- right-hand clamp knob | T - tracer point |
| F - cutter | V - tracer point regulation micrometric ring |
| G - transparent safety shield | W- motor ON warning light |
| H - clamp carriage locking knob | Z - power socket |
| I - clamp tilt locking lever | |
| J - lamp | |
| K - calibration unit key pad | |

3 WORKING PARTS - MATRIX EVO

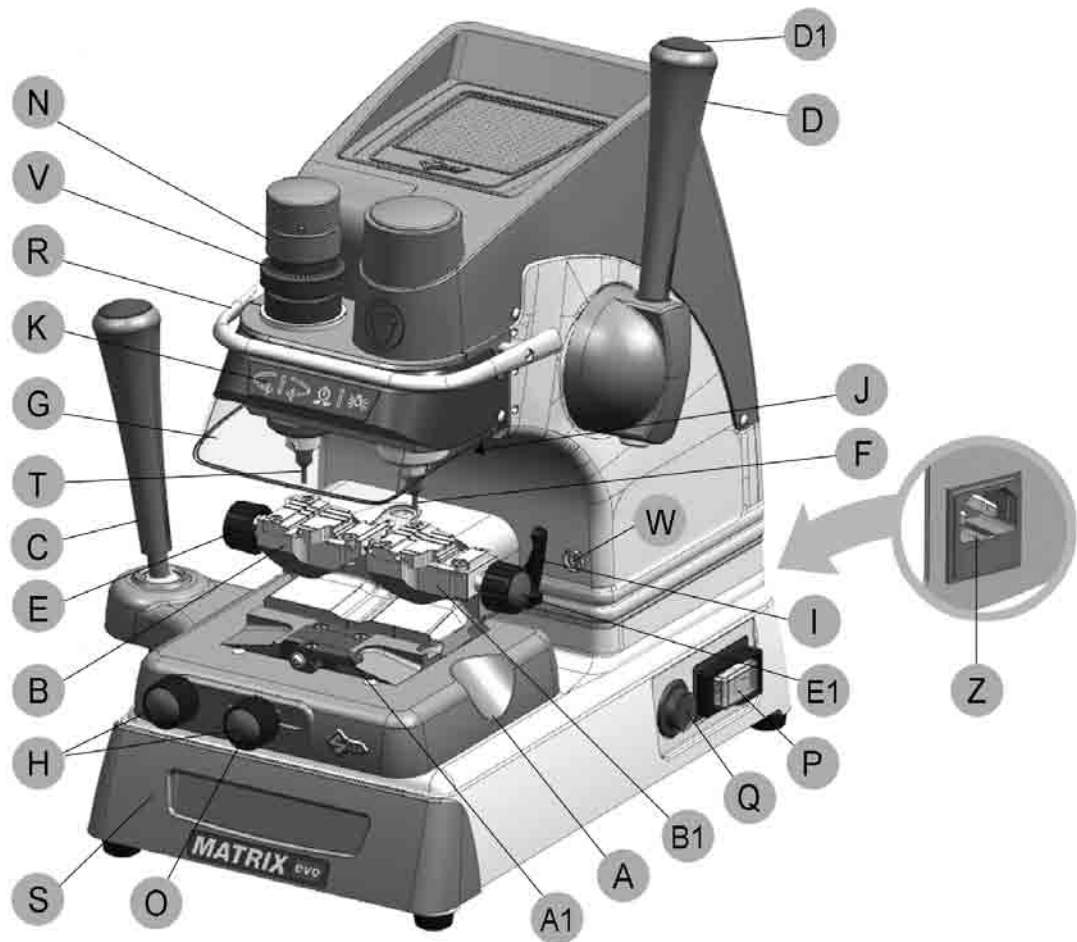
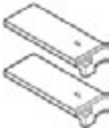
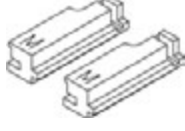


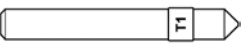

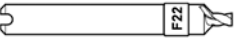
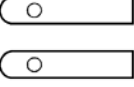






Fig. 8

- | | |
|---------------------------------------|--|
| A - clamp carriage (X-Y axes) | N - tracer point spring cam |
| A1- clamp locking lever | O - carriage spring knob |
| B - left-hand tilting clamp | P - ON/OFF switch |
| B1- right-hand tilting clamp | Q - motor ON switch |
| C - clamp carriage lever (X-Y axes) | R - rollbar |
| D - vertical carriage lever (Z axis) | S - tool box |
| D1- lever release and motor ON button | T - tracer point |
| E - left-hand clamp knob | V - tracer point regulation micrometric ring |
| E1- right-hand clamp knob | W - motor ON warning light |
| F - cutter | Z - power socket |
| G - transparent safety shield | |
| H - clamp carriage locking knob | |
| I - clamp tilt locking lever | |
| J - lamp | |
| K - calibration unit key pad | |

4 ACCESSORIES PROVIDED

MATRIX comes with a series of accessories for use and maintenance (tools, hex wrenches, fuses, etc.) provided in a special holder:

	FICHET adapter "F" D910534ZR (STANDARD on vers.230V)		MERCEDES adapter "M" D910533ZR (STANDARD on vers.120V)
	F1 cutter		fuse 2 pcs 2,5 Amp - rapid (230V) 6,3 Amp - rapid (120V/100V)
	T1 tracer point		2.5 mm hex wrench
	F22 cutter		Steel bar
	T22 tracer point		Calibration pins
	fuse 1 pc 500 mA - rapid		Adhesive label "DANGEROUS MOBILE PARTS"

4.1 TECHNICAL DATA

Power supply:	230V-50/60Hz - 0,75 Amp. - 170 Watt 100V/120V - 50/60Hz - 2,3 Amp. - 220 Watt
Cutter motor:	single phase 1 speed motor 230V - 50/60 Hz
Cutters:	Super speed steel
Tool speed:	6000 rpm (for cutters in super speed steel)
Movements:	on 3 axes by ball guides
Clamps:	tilting with interchangeable plates
Runs:	X axis: 40 mm Y axis: 50 mm Z axis: 30 mm
Dimensions:	width: 310 mm (maximum lever operating space 400 mm) depth: 400 mm height: 470 mm
Illumination:	LED lamp
Mass:	Kg. 24,6
Noise rating:	Lp (A) = 70,5 dB (A) brass dimple keys Lp (A) = 75,9 dB(A) brass keys with laser cuts Lp (A) = 76,6 dB(A) steel keys with laser cuts

5 ELECTRIC DIAGRAM

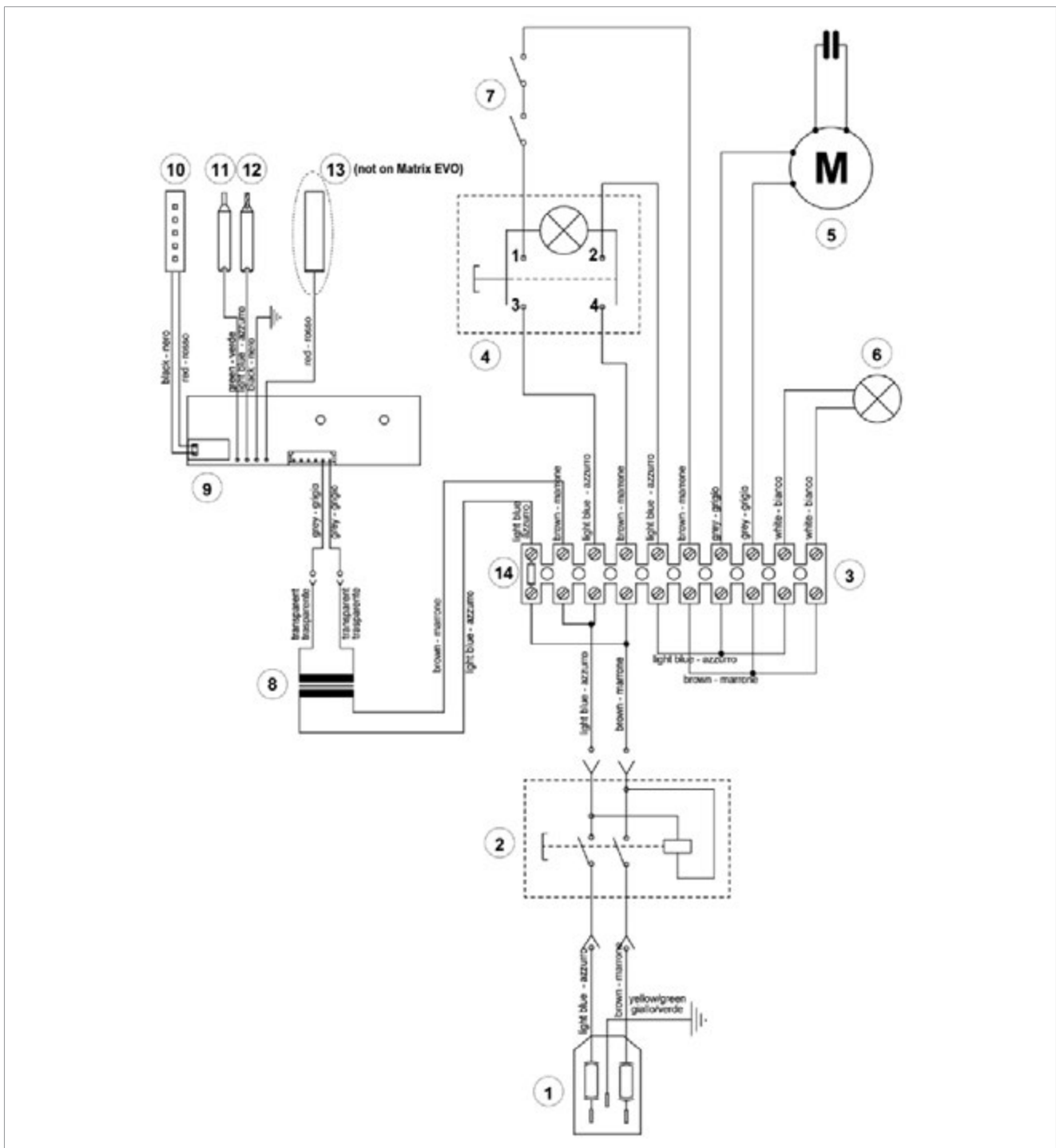


Fig. 9

- | | |
|--|---------------------------------|
| 1) Fuses: 2,5 Amp (230V) - 6,3 Amp (100V/120V) | 8) Transformer |
| 2) Safety switch | 9) LED circuit |
| 3) Terminal board | 10) LED lamp |
| 4) Motor ON/OFF switch | 11) Tracer point contact |
| 5) Motor 6,3mF (230V) - 14 mF(100V/120V) | 12) Cutter contact |
| 6) Motor warning light (LED) | 13) Antenna (not on Matrix EVO) |
| 7) Motor safety microswitch | 14) Fuse 500 mA - rapid |

6 HANDLING

The MATRIX key-cutting machine is easy to handle and there are no special hazards involved in moving it. The packed machine can be carried manually by one person.

6.1 PACKING

The packing for the MATRIX key-cutting machine ensures safe handling of the machine and all its components.

Packing comprises expanded plastic material wrapped around the machine. The robust cardboard box in which it is placed and the nylon wrapping protect the machine even when stored for a long period.

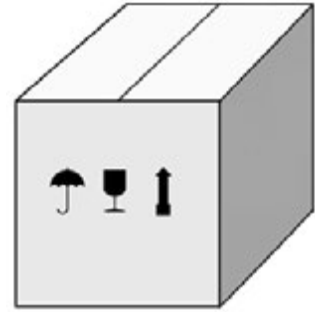


Fig. 10



Keep dry



Handle with care



Up

6.2 TRANSPORT

The symbols on the outside of the cardboard box give indications for transport.



ATTENTION: keep the packing for future machine transfers.

6.3 UNPACKING

To remove the machine from its packing:

- 1) Cut the strapping with scissors and remove.
- 2) Open the box carefully without damaging it.
- 3) Free the machine from the protective shells.
- 4) Check the contents of the packing, comprising:
 - MATRIX key-cutting machine.
 - Documentation comprising: user's manual, spare parts sheet, specialist guide and warranty.
 - Power lead.
 - Tool holder.

6.4 HANDLING THE MACHINE

Once removed from its packing place MATRIX directly on the work bench; one person can easily perform this operation.



ATTENTION: lift the machine by holding onto the base. Never lift the machine by gripping the clamps, levers or other parts.

7 MACHINE INSTALLATION AND PREPARATION

Installation is the customer's task and does not require any special skills.

The key-cutting machine is supplied ready for use and does not need calibration except for the tools to be used; however, the operator is required to make certain checks and prepare the machine for use.

7.1 CHECKING FOR DAMAGE

MATRIX is a solid compact machine and will not break if handling, unpacking and installation are carried out to the instructions in this manual. However, it is good practice to check that the machine has not been damaged.

7.2 ENVIRONMENTAL CONDITIONS

To make the most of the key-cutting machine, bear in mind the following environmental parameters: it is advisable for the area to be dry with good air circulation.

The optimum environmental conditions for machine operation are:

- temperature 10° C to 40° C;
- relative humidity: approx. 60%.

7.3 POSITIONING

- 1) Place the key-cutting machine on a solid horizontal work bench suitable for the weight of the machine (24,6 Kg). The work bench should be approximately 100-120 cm high to facilitate access to the working parts. We recommend leaving at least 30 cm clearance behind and around the machine to ensure good ventilation and facilitate handling (Fig. 11).
- 2) Make sure machine voltage is suitable for the mains supply and that the latter is earthed with a differential switch.
- 3) Connect the power lead to the machine.

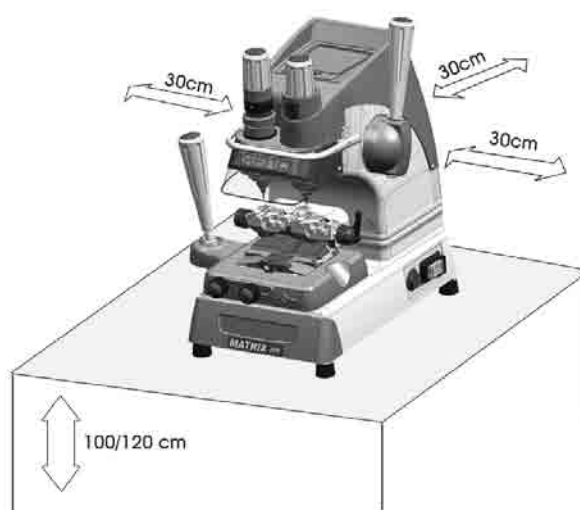


Fig. 11

7.4 SAFETY DEVICES

- **ON/OFF master switch (P)**

The master switch (P) is electromagnetic and turns the machine off automatically when power fails. When power returns the switch must be reset manually to provide the machine with voltage.

- **Push button (D1) to release the lever and start the motor**

When push button (D1) is not activated there is no risk of involuntarily or accidentally moving the lever (D) and preventing the motor from starting.

- **Warning light (W) cutter motor on**

The right-hand front part of the machine (behind the clamp unit) has a warning light (W). The warning light flashes when the cutter motor is on.

7.5 WORK STATION DESCRIPTION

The machine is operated by a single person using the following controls:

- **ON/OFF master switch (P)** located on the right-hand side of the machine.
- **Motor ON/OFF switch (Q).**
- **Vertical carriage lever (D)** with push button (D1) to release the lever and start the motor.
- **Clamp unit**
- **Lever (left-hand) (C)**
- **Key pad (calibration and illumination) (K)**

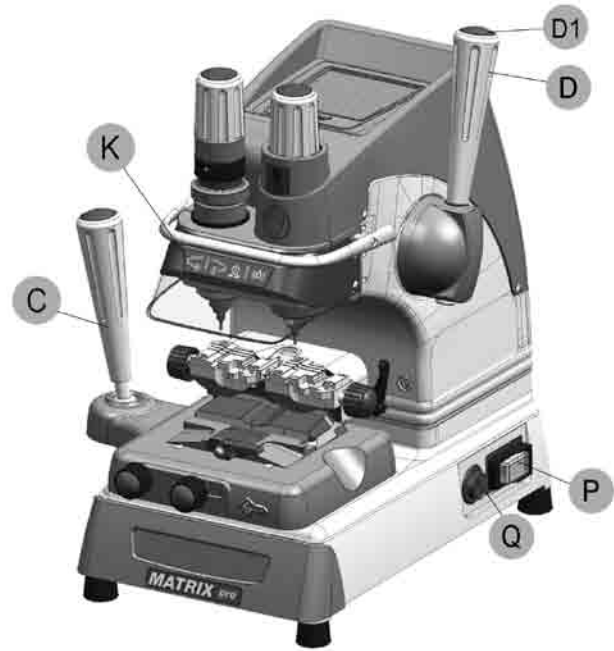


Fig. 12

- **ORGANIZER SHELF (Z)**

The top part of the cover incorporates an area for the operator to use as a place for things such as key blanks or cut keys. It is advisable not to put too many things in this area, as they could accidentally fall off.

- **ROLLBAR (R)**

The purpose of this special bar is to assist the operator during key cutting. It is used as a rest for the left hand when moving the clamp carriage (centering cuts on dimple keys or cutting path for laser keys). It ensures smooth synchronised carriage movements during cutting operations.

- **TRANSPARENT SAFETY SHIELD (G)**

Special plexiglass shield to limit the dispersal of swarf.

- **TOOL BOX (S)**

In the bottom part of the machine front, under the clamp unit carriage, there is a tool box with an open part to use as a handle for pulling out the box. Inside it has 20 spaces for holding tracer points and cutters, and a larger area for other small tools and/or keys.

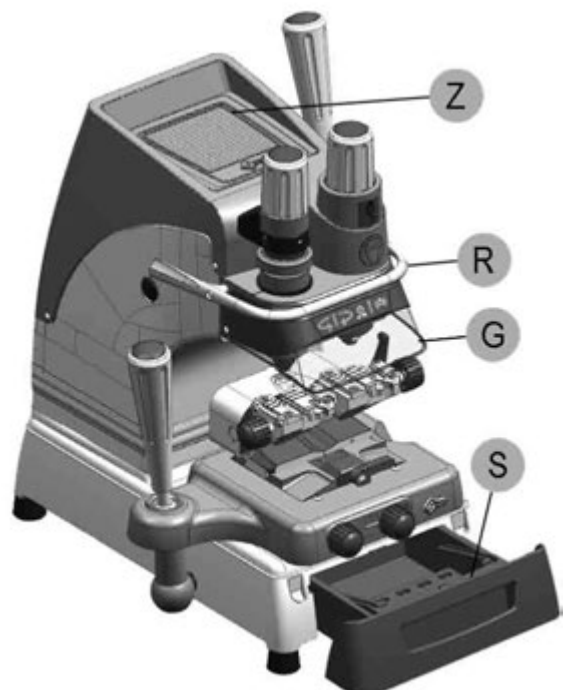


Fig. 13

7.6 STARTING THE KEY-CUTTING MACHINE

- 1) Connect the power lead.
- 2) Turn on the key-cutting machine with the master switch (P). A beep sounds and for a second all the warning lights (leds) on the key pad/control board (K) light up simultaneously on the machine front (blue vertical bar – green vertical bar -2 red arrows) (Fig. 5).
- 3) When the beep stops only the blue warning light stays on to indicate that the machine is live.

Note: if the conditions described above do not occur, see chap. 10.7.

7.6.1 STARTING THE MOTOR

With the machine connected and on:

- 1) press the luminous switch (Q) to power the motor.(Fig. 12).
- 2) Press the push button (D1) on the vertical axis lever (D) and lower the lever.



ATTENTION: if the motor does not start and the lever (D) will not move, check that the lever is fully tightened.

A flashing warning light (W) signals that the motor is on (Ch.7.6.2). Attention: cutter in motion!

- 3) To turn off the motor release the lever (D) or turn off one of the 2 switches (P) or (Q).

7.6.2 CUTTER MOTOR ON WARNING LIGHT

There is a warning light (W) on the right-hand part of the machine front (behind the clamps unit) (Fig. 14). When the cutter motor is on the warning light flashes.



Fig. 14

7.6.3 LED LAMP (MATRIX PRO VERSION)

When the key-cutting machine is turned on the lamp is off. To turn on the lamp simply take a hand up to the clamp or spindle area.

The light goes on automatically due to a proximity sensor inside the front part..

This function can be disabled by the operator:

Turning on:

- lightly touch the lamp button (J1) to keep the light on.

Turning off:

- lightly touch the lamp button (J1) again; after a few seconds initial conditions are automatically reset.

Note: every time the machine is turned on the initial illumination function is reset (turning on by proximity sensor).



Fig. 15

7.6.4 LED LAMP (MATRIX EVO VERSION)

When the key-cutting machine is turned on the lamp is off. Lightly touch the button (J1) to turn the lamp on or off.

8 MACHINE CALIBRATION AND REGULATION

Before carrying out cutting operations the clamps and tools must be regulated. The spring devices on the machine to facilitate cutting operations for the operator are activated or deactivated according to the type of key to be cut:

- vertical spring for the tracer point used for dimple keys (ch.8.4)
- cross spring for the carriage used for laser keys (ch.8.5)

8.1 FITTING AND REMOVING TOOLS



ATTENTION: carry out this operation with the cutter motor off.

Lever (D) fully raised.
Clamp carriage lever (C) fully down.



Fig. 16

Matrix PRO version

Tracer point

Fitting:

- insert the tracer point all the way into its spindle, with numbered ring towards the clamp.
- Hold the tracer point in this position and turn the upper knob (M) clockwise to lock.

Removing:

- turn the knob (M) anti-clockwise to open the self-centering gripper and remove the tool. Rotate the knob without exerting pressure until it clicks.

Cutter

Fitting:

- insert the cutter all the way into its spindle, with numbered ring towards the clamp.
- Turn the tool to fit it into its seat (anti-rotation system).
- Hold the cutter in this position and turn the knob (M1) clockwise to lock. Do not exert pressure to turn the knob slightly (M1).

Removing:

- press knob (M1) lightly downwards and turn anti-clockwise to open the self-centering gripper and remove the tool. Do not exert pressure to turn the knob slightly (M1).



Fig. 17

Matrix EVO version

Tracer point

Fitting:

- insert the tracer point all the way into the spindle with the numbered ring towards the clamp.
- hold the tool in this position and tighten the grub screw (G3) with the hex wrench provided.

Removing:

- loosen the grub screw (G3) with the hex wrench and remove the tool.

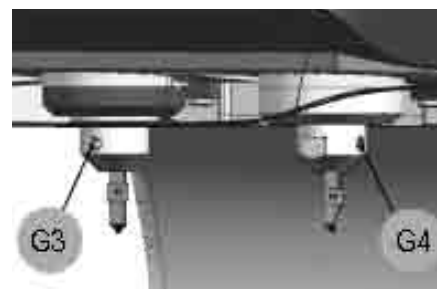


Fig. 18

Cutter

Fitting:

- insert the cutter into the spindle with the numbered ring towards the clamp.
- hold the tool in this position and tighten the grub screw (G4) with the hex wrench.

Removing:

- loosen the grub screw (G4) with the hex wrench and remove the tool.

8.2 MICROMETER GAUGE



The micrometer gauge is used for tool alignment and also for adjusting small variations in depths often necessary on worn keys. After tool alignment (green bar) the depth of cuts can be reduced or increased by turning the micrometer gauge (V) to the left or right. Each line on the gauge corresponds to an increase of 0.02 mm.

Fig. 19

<ul style="list-style-type: none"> • Turn the gauge clockwise to make cuts less deep. 	<ul style="list-style-type: none"> • Turn the gauge anti-clockwise to make cuts deeper.

8.3 CALIBRATION / TOOL ALIGNMENT

Carry out this operation with the key-cutting machine on.



ATTENTION: check that the motor start switch (Q) is off.

- 1) Check that the clamps are in the horizontal position (ref. 0) (Ch.8.6).
- 2) Turn the cam (N) clockwise all the way to disable the tracer point spring (Ch.8.4).
- 3) Fit and secure the two tools (tracer point and cutter) in their respective spindles.
- 4) Press the button (K1) on the front of the machine to enable the key pad/control board.

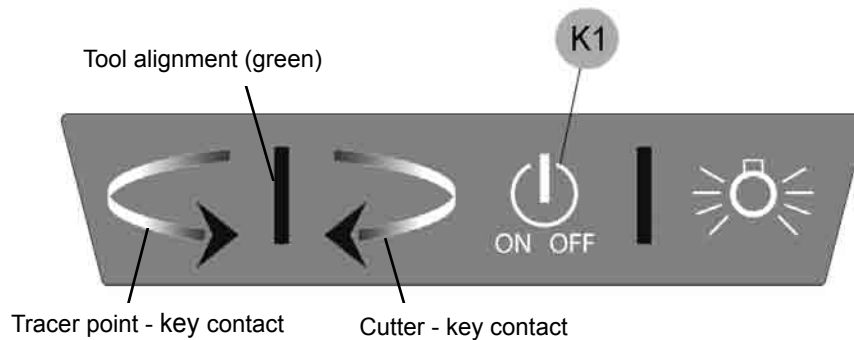


Fig. 20

- 5) Press the lever (D) release button (D1), lower the vertical carriage and take the tools into contact with the clamp surface (seat of the key)(Fig. 21) There are three possibilities:

- **Central green bar illuminated - Green arrows illuminated - CALIBRATION OK**

In this case both tools are in contact with the keys and aligned.

Note: from this position it is advisable to turn the gauge (V) clockwise by a couple of clicks.

- **Left-hand red arrow illuminated - Tracer point side**

In this case only the tracer point is in contact with the key.

Hold the vertical carriage down and turn the gauge (V) anti-clockwise in the direction of the illuminated arrow. Calibration is complete as soon as the green vertical bar illuminates together with the two green arrows.

- **Right-hand red arrow illuminated - Cutter side**

In this case only the cutter is in contact with the key.

Hold the vertical carriage down and turn the gauge (V) clockwise in the direction of the illuminated arrow so that the red light on the left-hand arrow goes on. From this position hold down firmly the right-hand lever and turn the gauge (V) one click at a time. Calibration is complete as soon as the green vertical bar illuminates together with the two green arrows.



ATTENTION: at the end of calibration press the button (K1) to disable the key pad/control board.

- 6) Now it's possible to proceed with duplication.

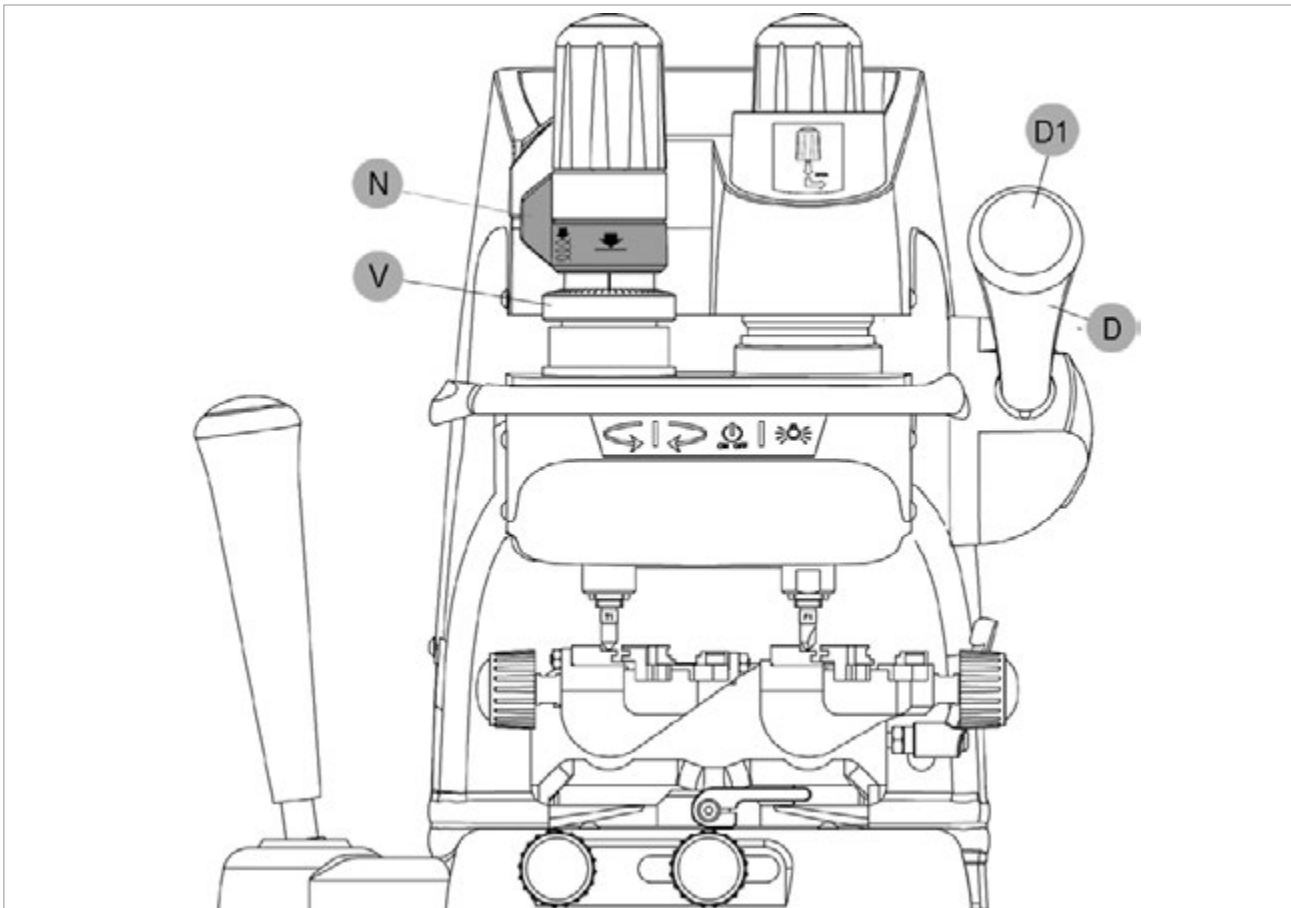


Fig. 21

8.4 TRACER POINT SPRING

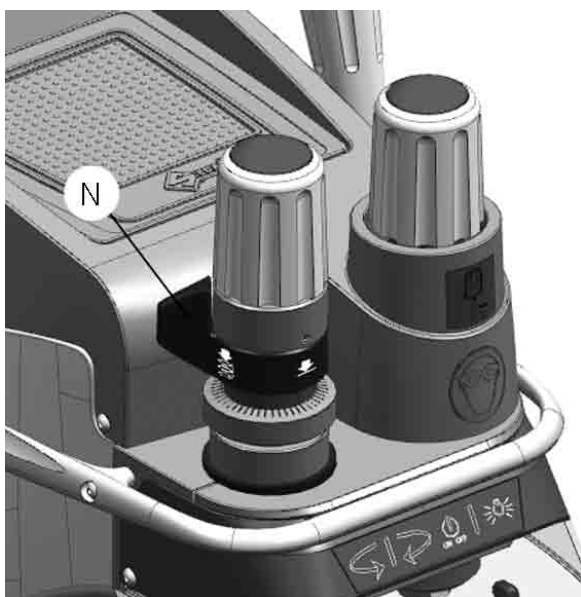


Fig. 22

The machine comes with a rapid system for enabling or disabling the tracer point spring.

- **To enable the tracer point spring function.**
Turn/push the cam (N) all the way anti-clockwise.
- **To disable the tracer point spring function.**
Turn/push the cam (N) all the way clockwise.

Enable the tracer point spring:

- to cut dimple and tubular keys.



Disable the tracer point spring:

- for calibration operations.
- to cut keys with laser cuts and vehicle keys in general.



8.5 CARRIAGE SPRING FOR LASER KEYS

The MATRIX key-cutting machine comes with a spring system on the clamp carriage to control the range of movement, considerably facilitating the cutting of laser keys. The spring function for laser keys is activated by means of the knob (O) (Fig. 23) and causes pressure on the tool sides along the cutting track when making cuts; this method allows the operator to trace cuts manually without pressing crosswise with the lever (C). Fig. 24, Fig. 25 and Fig. 26 illustrate the three examples of use of the spring system:

- **CENTRAL cuts**
- **RIGHT-HAND cuts**
- **LEFT-HAND cuts**

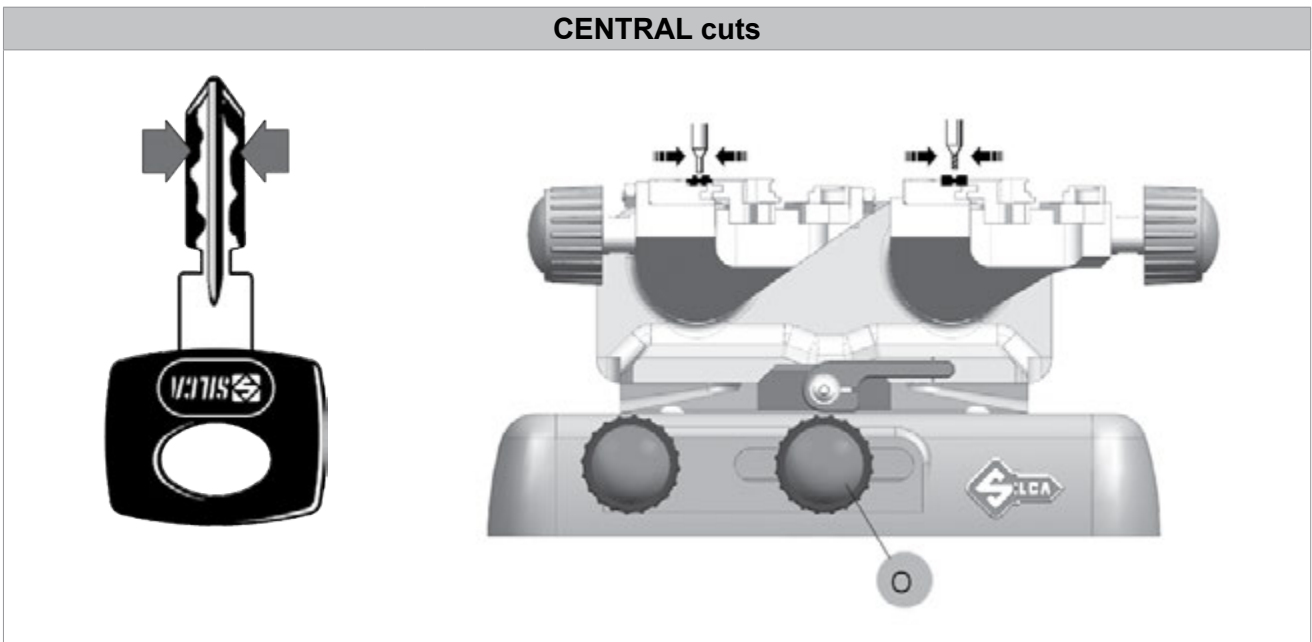


Fig. 23

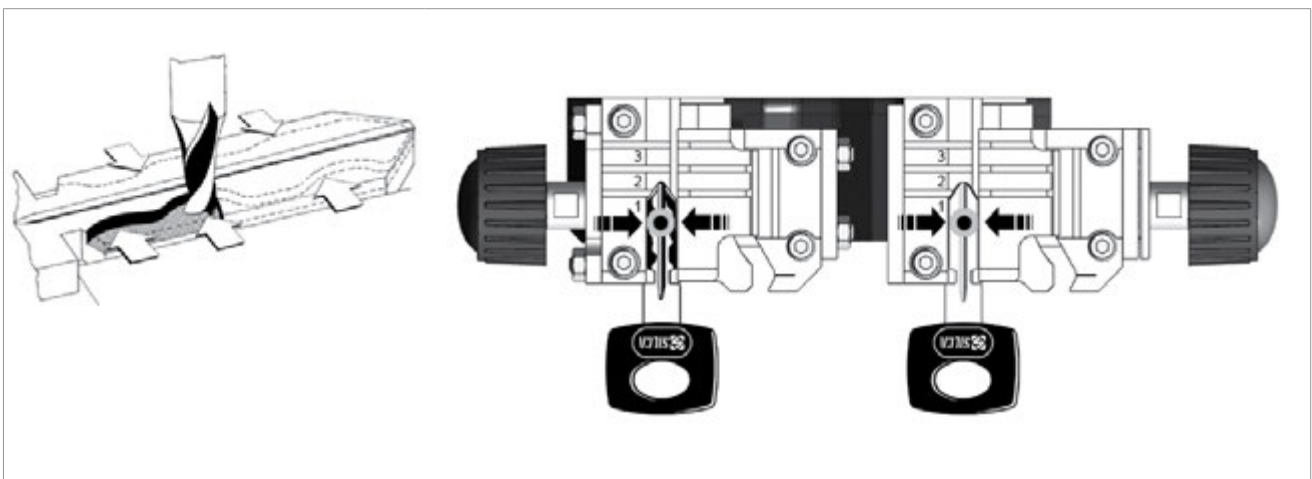


Fig. 24

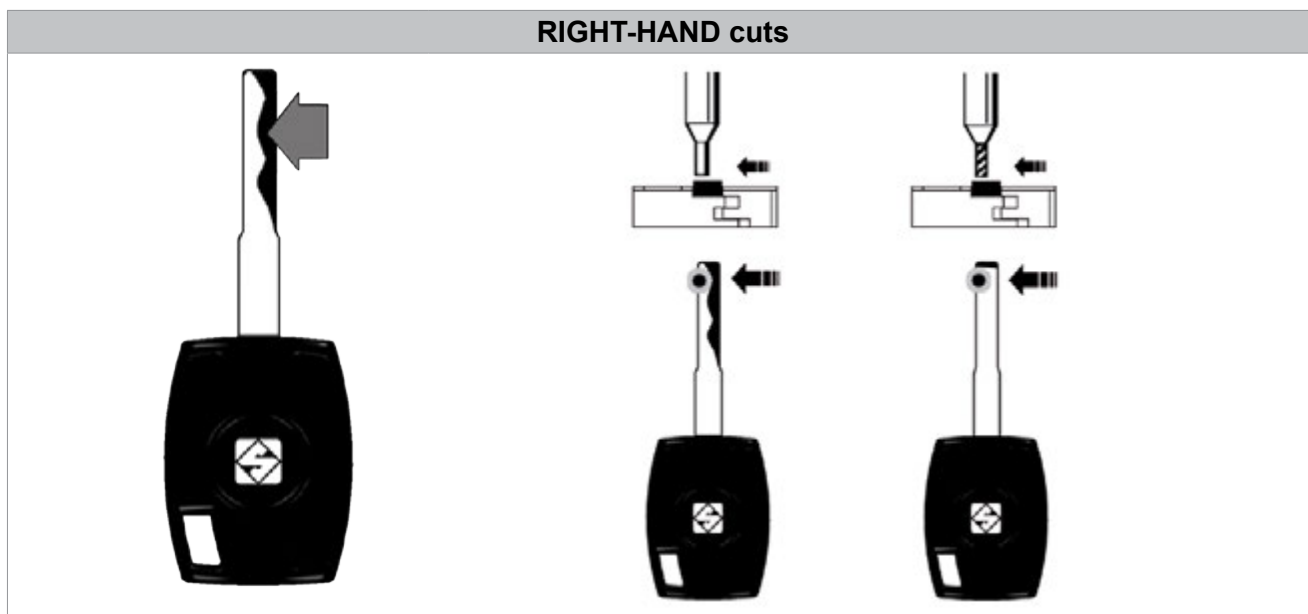


Fig. 25

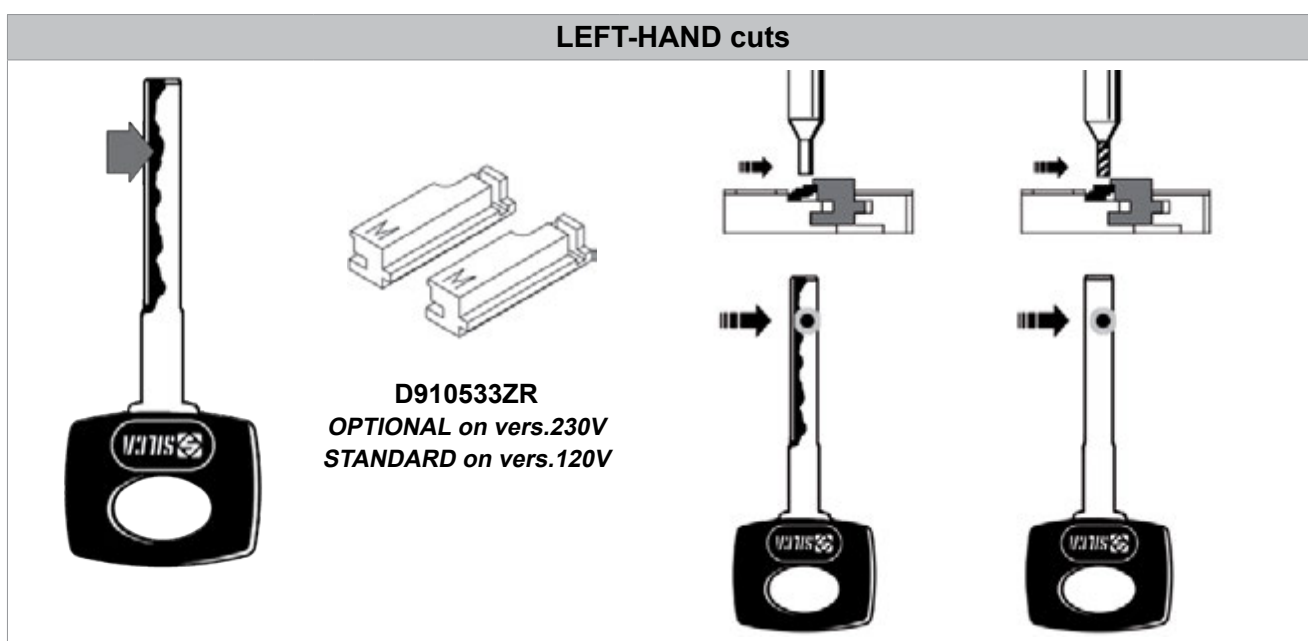


Fig. 26

REGULATING CARRIAGE SPRING for LASER KEYS

With the motor power switch (Q) off, loosen the knob (O) slightly (Fig. 23).

- **Central cuts:**

Take the tools above the keys centred over the key stem (Fig. 24).

- **Right-hand cuts:**

Take the tools above the keys to the left of the key stem (Fig. 25).

- **Left-hand cuts:**

Take the tools above the keys to the right of the key stem (Fig. 26).

- Lock the knob (O) and proceed with cutting.

8.6 CLAMPS

The machine comes with a set of tilting clamps (0 +- 45°). The clamp unit can be pulled out and placed into the guides according to the operator's needs. The clamp unit has two positioning notches according to the type of jaws to be used for cutting (Fig. 27 and Fig. 28).

- 1) Turn the lever (A1) anti-clockwise to move the clamp sideways and/or remove it. Turn the lever (A1) clockwise to lock the clamp in place.

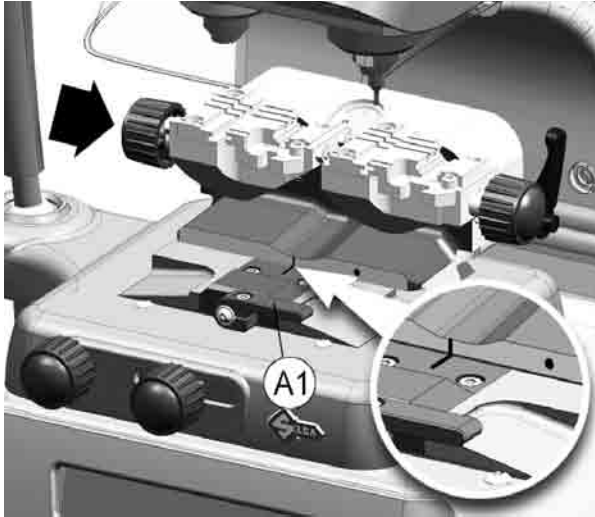


Fig. 27

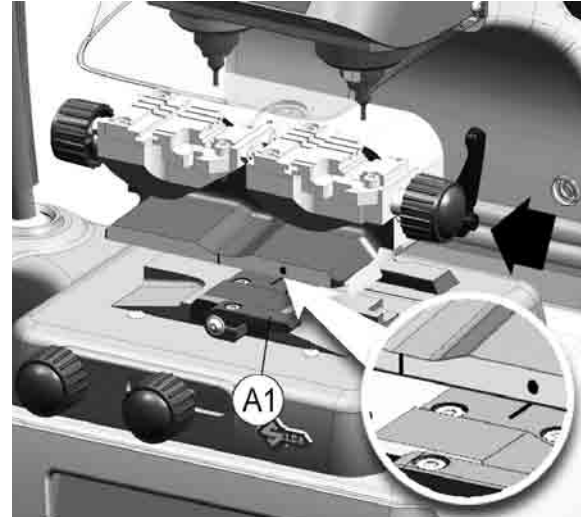


Fig. 28

- 2) Loosen the handle (I) in order to turn/incline the clamp for the cutting angle required. The angle is shown on the central body (B2). The values of 0°, 15°, 30° and 45° are visible, whereas to see the others the reference lines must be used. Each line corresponds to 5°.

Each clamp (right or left hand) comprises 3 jaws.

- Standard stationary jaw (located on left)
- Mobile central jaw
- Right-hand stationary jaw

NOTE: Carefully clean the clamp before and/or after cutting a key.

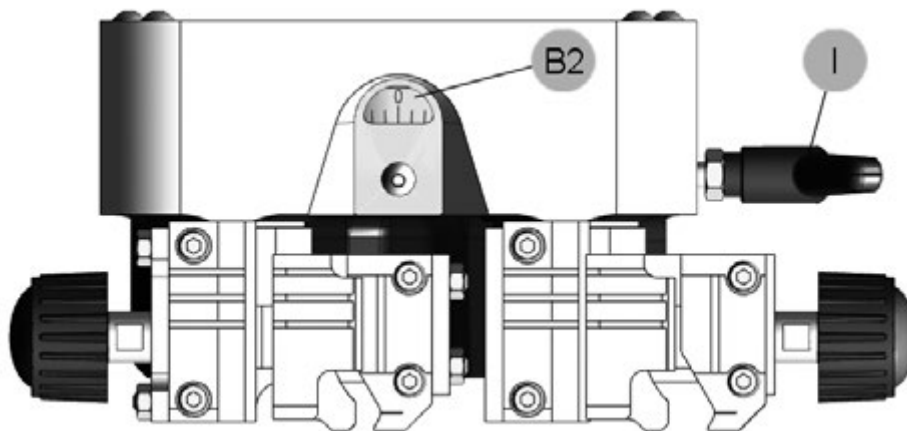


Fig. 29 - Matrix PRO clamps

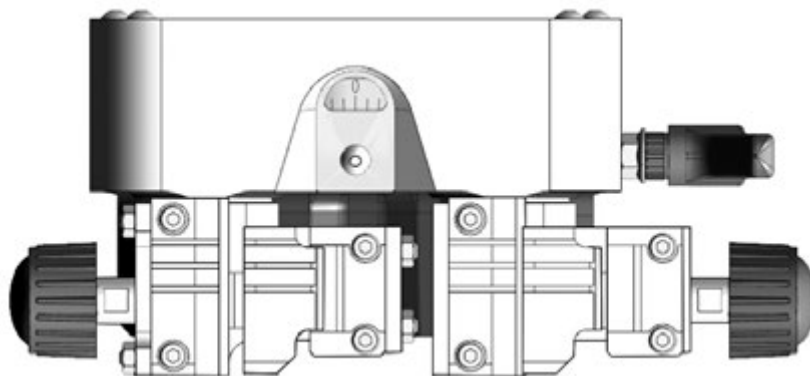


Fig. 30- Matrix EVO clamps

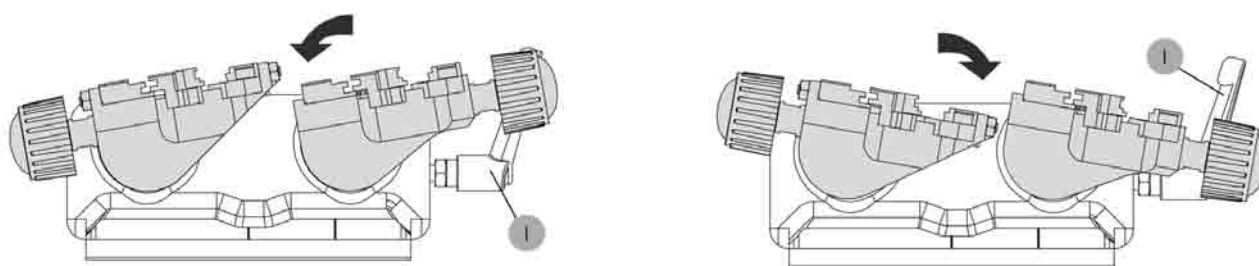


Fig. 31

8.6.1 THE CLAMP UNIT HAS SEVERAL SEATS DEDICATED TO THE POSITIONING OF DIFFERENT TYPES OF KEYS:

- keys with dimple cuts and laser keys
- laser keys with a narrow stem (Mercedes)
- Fichet keys with H profile
- Cisa / Abus / Bricard (with CS62-CS70 ... profiles) keys
- vehicle keys with HU66 profiles
- tubular keys (Matrix Pro version only).

KEYS WITH DIMPLE CUTS AND LASER KEYS

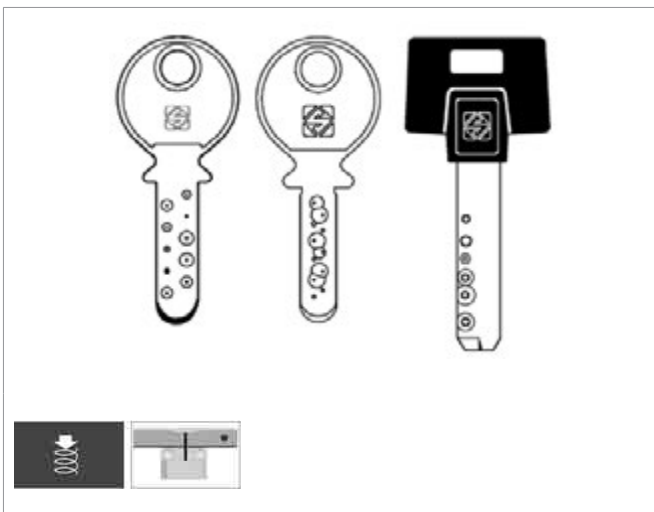


Fig. 32



Fig. 33

Use the left-hand part of the clamp for keys with head stop (stop 0) or tip stop (Stop 1 - Stop 2 - Stop 3).

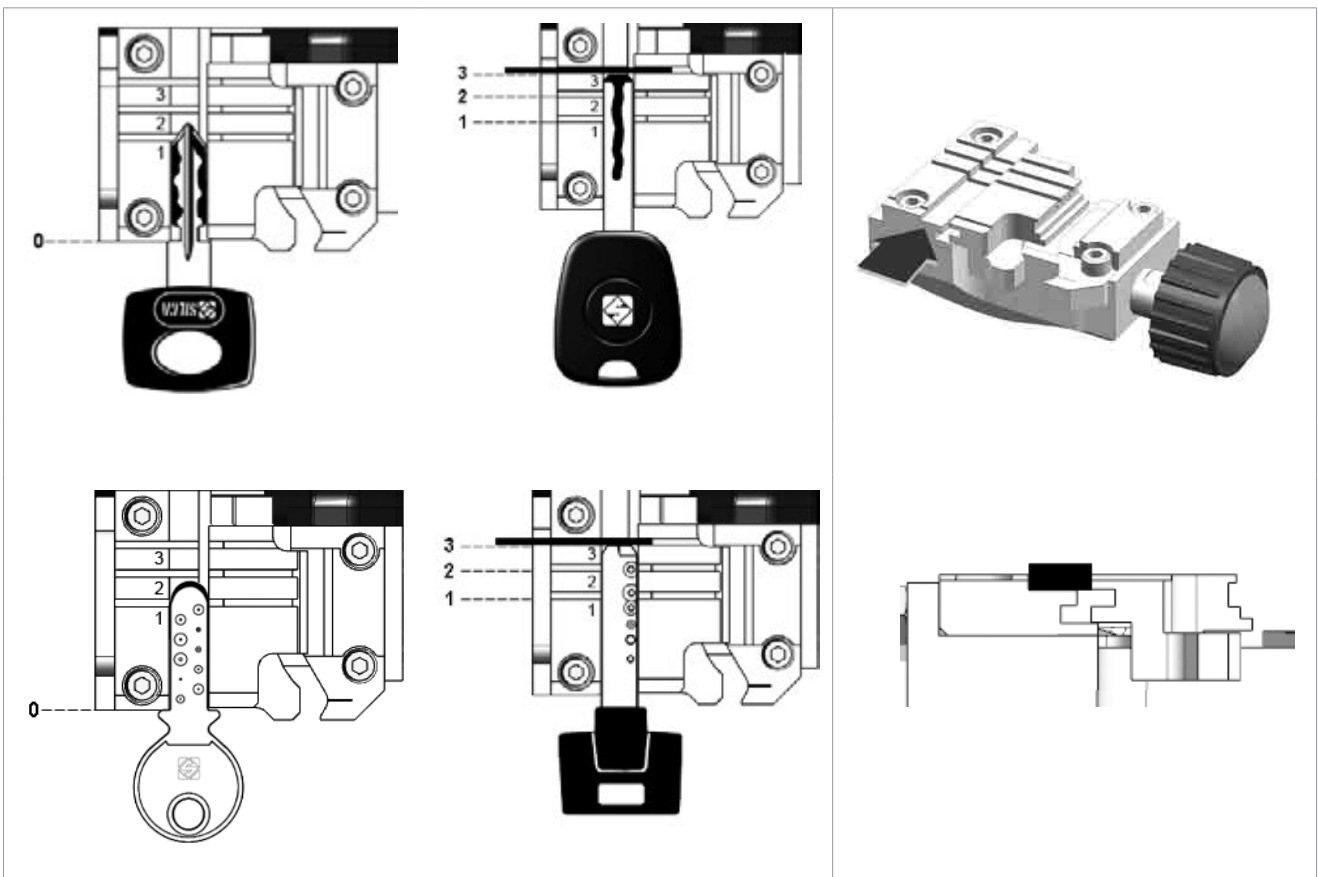


Fig. 34

FICHET KEYS WITH H PROFILE

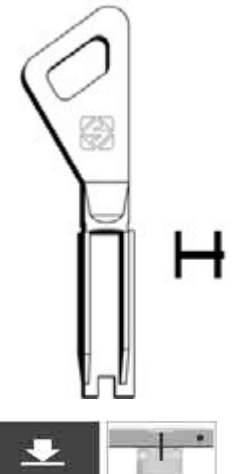
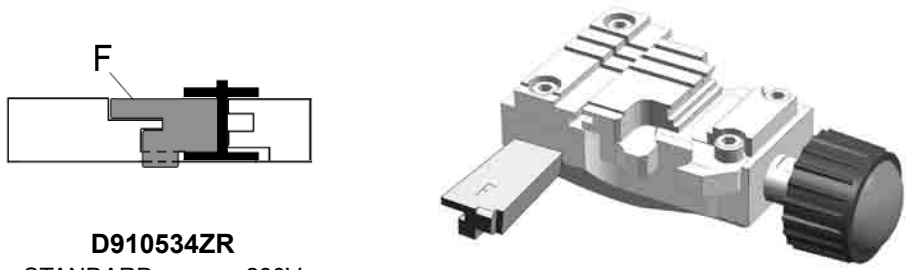
	 <p>D910534ZR STANDARD on vers.230V OPTIONAL on vers.120V</p> <p>Use the left-hand part of the clamp and the F adapter.</p>
---	--

Fig. 35

LASER KEYS WITH A NARROW STEM (MERCEDES)


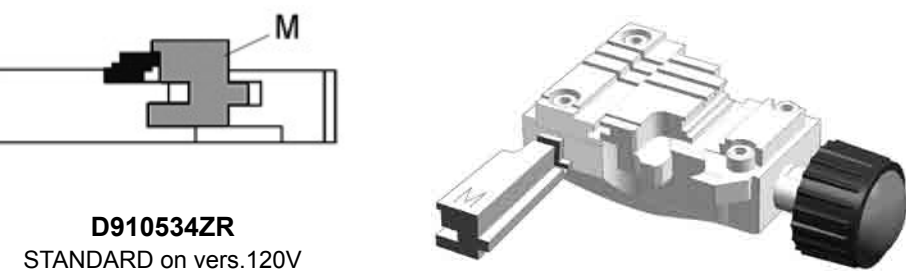
	 <p>D910534ZR STANDARD on vers.120V OPTIONAL on vers.230V</p> <p>Use the left-hand part of the clamp and the M adapter.</p>
--	---

Fig. 36

KEYS WITH DIMPLE CUTS CISA / ABUS / BRICARD (with CS62-CS70-BD13... profile)


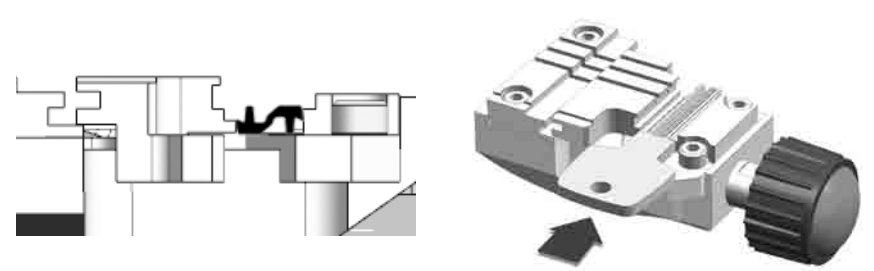
	 <p>Use the bottom right-hand part of the clamp for cuts on the stem.</p>
---	---

Fig. 37

LASER KEYS WITH HU66 PROFILE

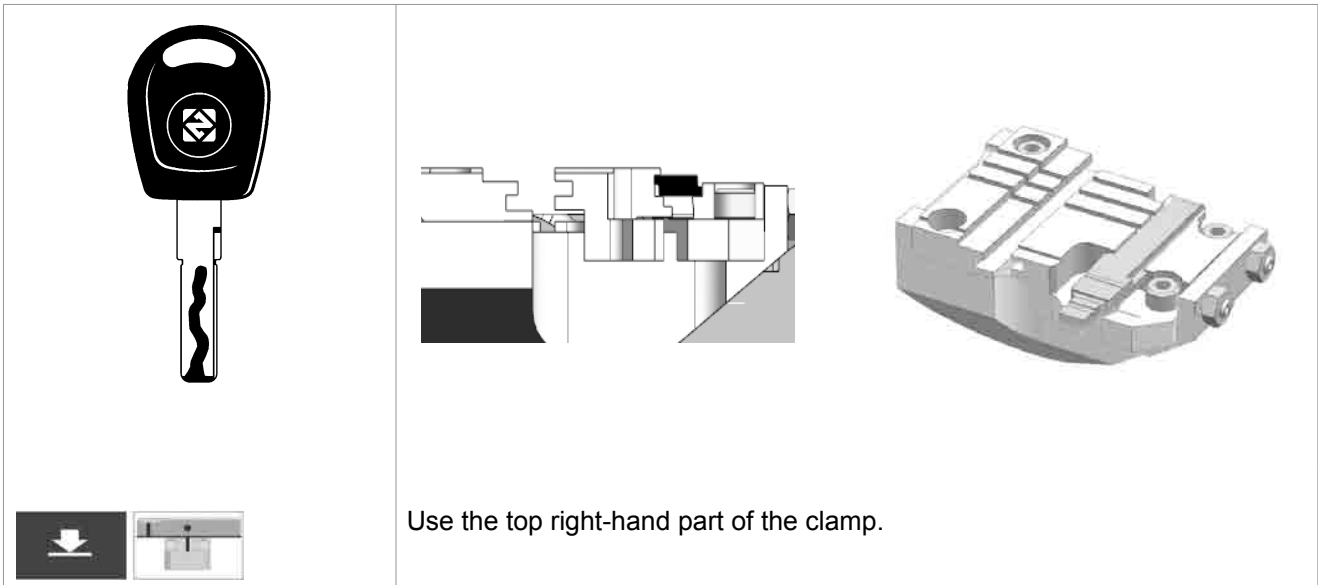


Fig. 38

TUBULAR KEYS (MATRIX PRO VERSION ONLY)

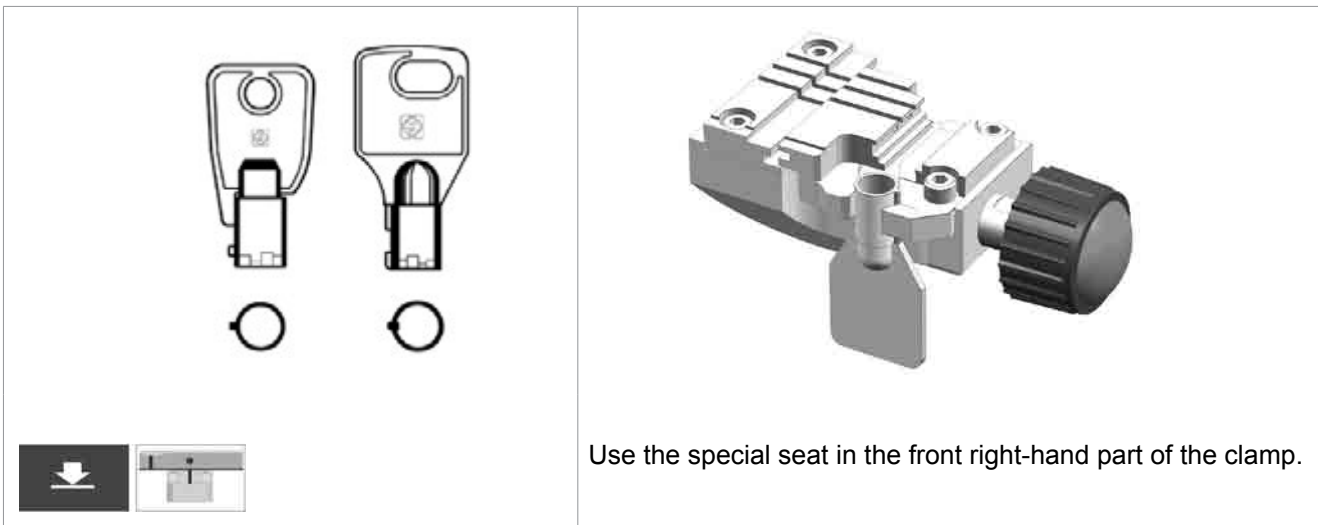


Fig. 39

For other types of keys consult the Specialist Guide for the key-cutting machine in use.

9 CUTTING



ATTENTION: Please see the following warnings to ensure completely safe cutting operations:

- Always work with dry hands.
- Check that the machine is earthed.
- Wear the safety goggles even when the machine has a safety shield.
- Start the motor only after completing the following operations:
 - fitting keys into the clamps
 - fitting and calibrating tools.
- Keep your hands out of the way of the cutter in motion.
- For each cutting operation make sure the clamp is in the horizontal position (reference notch 0) except when keys need inclined cuts.
- Cut the key only if calibration has taken place:
 - insert the necessary tools
 - turn on the key-cutting machine
 - disable the tracer point spring
 - proceed with calibration

9.1 FITTING KEYS

- 1) Take the clamp carriage towards the operator until you feel the limit switch click.
- 2) Insert the original key into the left-hand clamp and the key to be cut into the right-hand clamp, taking care to:
 - type of stop on key (Ch. 8.6.1)
 - choice of key seat (Ch.8.6.1).
 - secure the keys with the knobs (E) (E1).

9.2 KEY STOP

The notches 0-1-2-3 on the clamp are used according to the type of key stop:

- 0: for keys with back stop (towards head - Fig. 40).
- 1-2-3: for keys with tip stop (Fig. 41)

Choice of stops 1 - 2 - 3 is determined by the length of the key stem.



ATTENTION: the cutting path must always lie within the clamp surface.

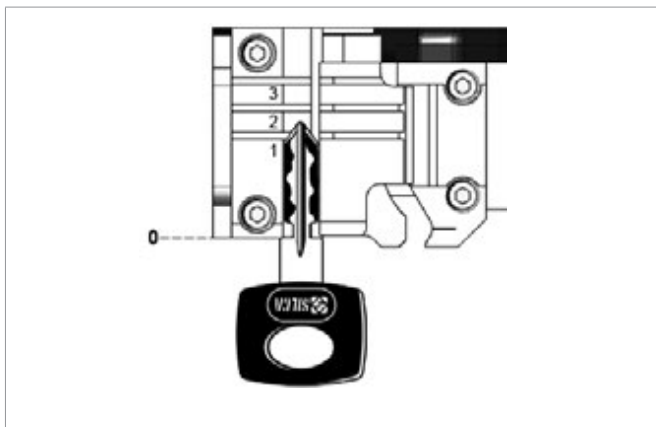


Fig. 40

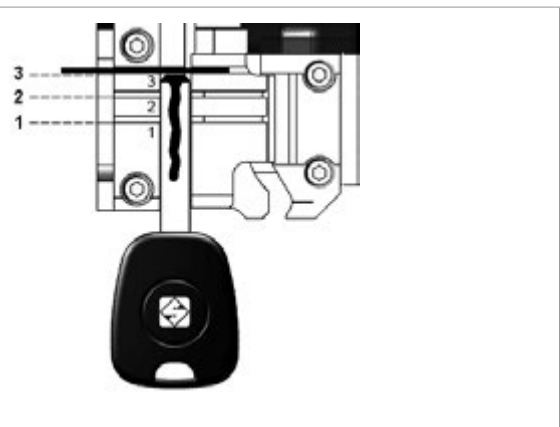


Fig. 41

After fitting the keys into the clamps, follow the instructions for the type of key to be cut (9.3 Cutting dimple keys; 9.4 CUTTING laser TYPE keys; 9.5 Cutting FICHET type keys (H profile); 9.6 CUTTING tubular keys (MATRIX PRO version)).

9.3 CUTTING DIMPLE KEYS

- 1) Enable the tracer point spring (Ch.8.4).
- 2) Press the motor on switch (Q).
- 3) Insert the two keys into their clamps.
- 4) Take care when positioning the keys:
 - Stop 0 for keys with stops.
 - Stop 1 / 2 / 3 for keys without stops, using the bar provided for tip stop.
- 5) Attention: if the bar is used, remove it before making the cuts.
- 6) Grip the levers (C) and (D).
- 7) Press the button (D1) and lower the vertical carriage to start the motor.
- 8) Hold the carriage with the left-hand lever (C), lower the tool unit by means of the right-hand lever (D) until the tracer point tip centres one of the holes. Continue to lower the lever (using the tracer point spring function) to reach the cutting depth.
- 9) Repeat this operation for each hole on the key.
- 10)End cutting on the first side, release the lever (D) to stop the motor.
- 11)Remove the cut key only and place it on the second side (the key has the same cuts on both sides).
- 12)Proceed with cutting side 2.

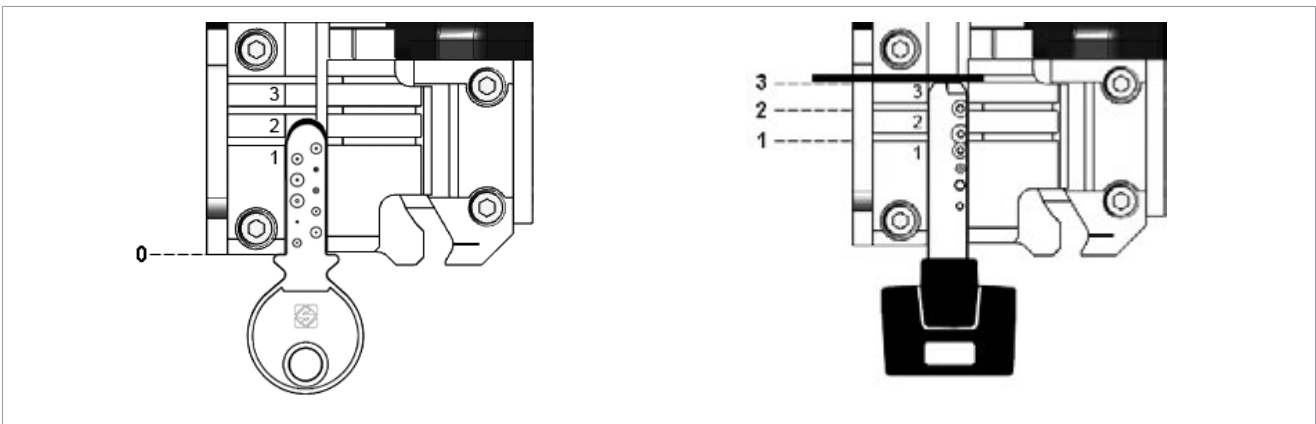


Fig. 42

9.3.1 BACK CUTS

If there are cuts on the back of the key, stand it upright on the bottom of the clamp (Fig. 43).

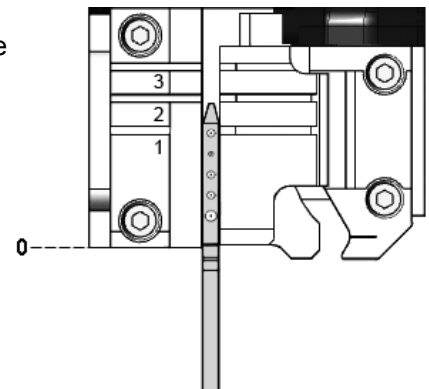


Fig. 43

9.3.2 INCLINED CUTS

Proceed as follows for keys with inclined cuts:

- 1) Loosen the handle (I) to free the clamps and incline them to the chosen angle (see index (B2) on graduated drum) (Fig. 44).
- 2) Lock the clamps in place with the handle (I).
- 3) Make the cuts.

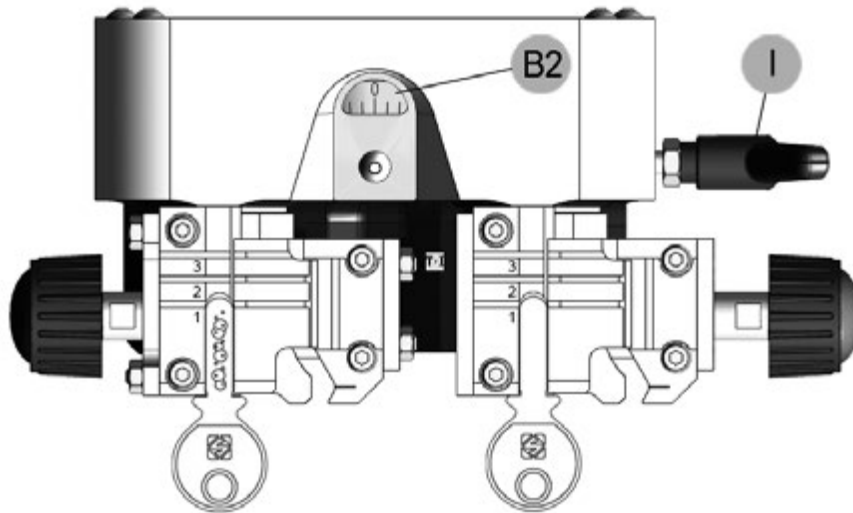


Fig. 44

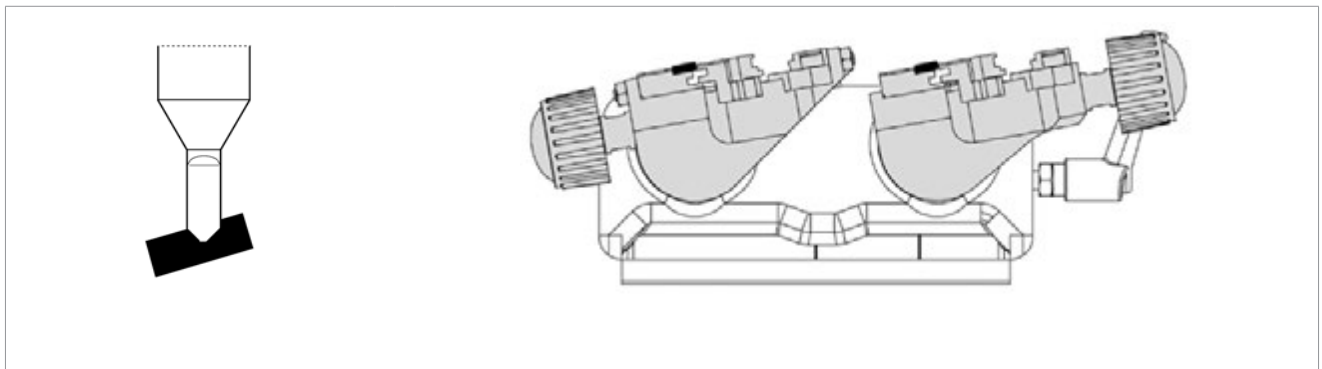


Fig. 45

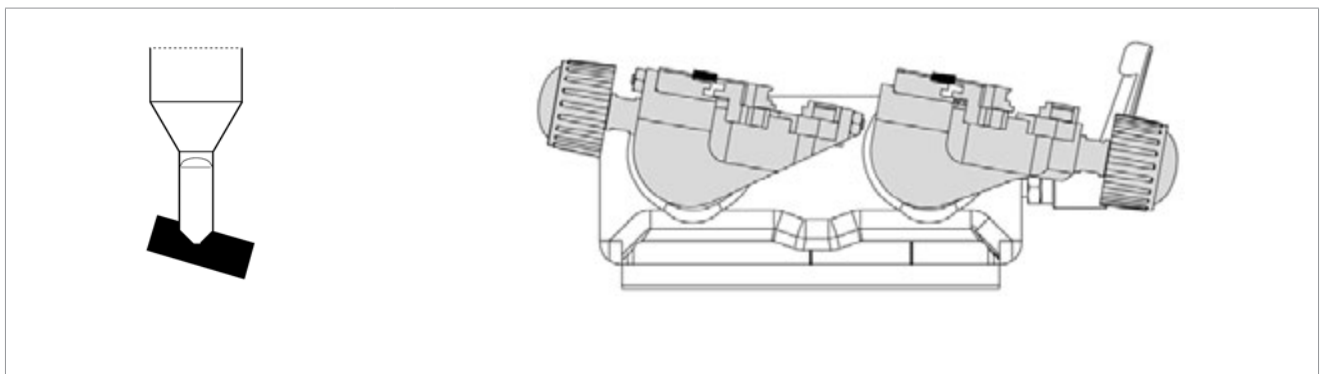


Fig. 46

9.4 CUTTING LASER TYPE KEYS



- 1) Disable the tracer point spring (Ch.8.4).
- 2) Turn on the motor with the switch (Q).
- 3) Insert the two keys into their clamps.
- 4) Take care when positioning the keys:
 - Stop 0 for keys with stops (Ch. 9.2).
 - Stop 1 / 2 / 3 for keys without stops, using the bar provided for tip stop (Ch. 9.2).
- 5) Attention: if the bar is used, remove it before making the cuts.
- 6) Adjust carriage spring for laser keys (Ch.8.5) - Optional.
- 7) Grip the levers (C) and (D).
- 8) Press the button (D1) and lower the vertical carriage to start the motor.
- 9) Keep the clamp carriage still with the left-hand lever (C) and lower the tool unit by means of the right-hand lever (D) until the tracer point reaches the cutting depth.
- 10) Without exerting pressure, turn the lever (D) clockwise to lock the height reached.
- 11) Move the lever (C) to trace all the cuts on the key with the tracer point.
 - **For right-hand cuts it is advisable to make the cuts by moving the tracer point from the head to the tip.**
 - **For left-hand cuts it is advisable to make the cuts by moving the tracer point from the tip to the head.**
- 12) When side 1 has been cut, turn off the motor with the switch (Q).
- 13) Remove the key blank only and turn it 180° to cut side 2. The key has the same cuts on both sides.
- 14) Start the motor with the switch (Q) and make the cuts.

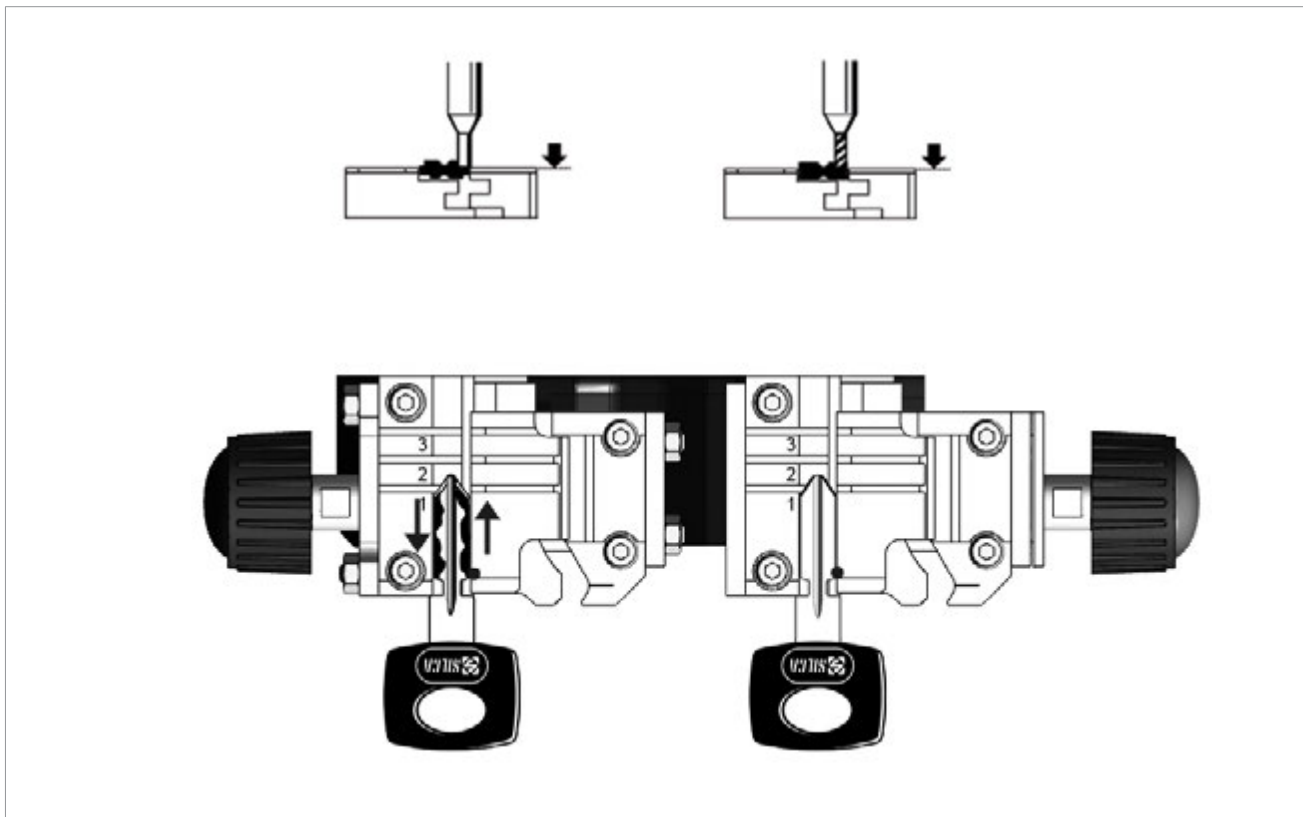


Fig. 47

9.4.1 CUTTING LASER KEYS WITH NARROW STEMS

Another function of the clamp is to cut laser keys with narrow stems by fitting the adapter M (standard on 120V version, optional on 230V version).



Follow the instructions below:

- 1) open the clamps by loosening the knobs (E) (E1).

Silca ref. HU41P, HU64P, HU64T - HU81T:

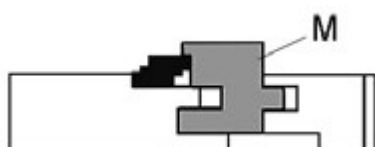
- 2) fit the adapter onto the left-hand clamp and align the groove with the one on the clamp for "Stop 2" (Fig. 49).

Silca ref. HU55P:

- 3) fit the adapter onto the left-hand clamp and align the groove with the one on the clamp for "Stop 3" (Fig. 50).
- 4) slide the stop bar into the groove.
- 5) insert the key and take it right up against the bar.
- 6) secure adapter and key by tightening the knob (E).
- 7) remove the bar and repeat the same operation on the right-hand clamp.

Cutting:

- 8) disable the tracer point spring (cap.8.4).
 - 9) grip the levers (C) and (D).
 - 10) press the button (D1) and lower the vertical carriage to start the motor.
 - 11) hold the clamp carriage still with the left-hand lever (C) and lower the tool unit with the right-hand lever (D) until the tracer point touches the depth of the cut.
 - 12) without exerting pressure, turn the lever (D) clockwise to block the height.
 - 13) move the lever (C) to trace all the cuts on the key with the tracer point.
- **For left-hand cuts we advise tracing the cuts by taking the tracer point from the tip to the head.**
- 14) when the first side has been cut, turn off the motor with switch (Q).
 - 15) remove the key blank only and turn 180° to cut the second side. The key has the same cuts on both sides.
 - 16) re-start the motor with switch (Q) and proceed with cutting.



D910533ZR

STANDARD on vers.120V
OPTIONAL on vers. 230V

Fig. 48

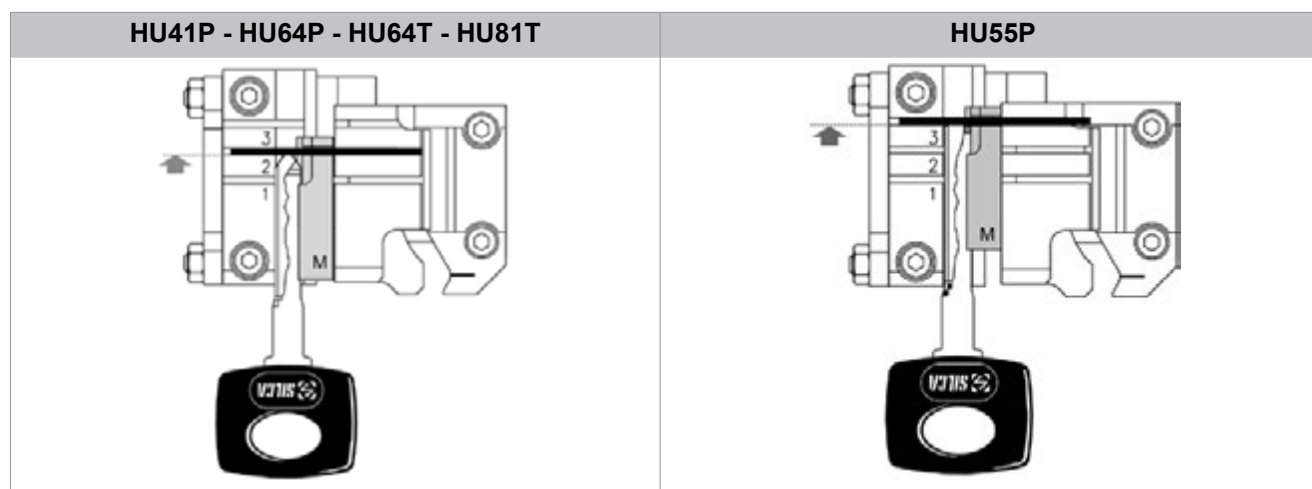


Fig. 49

Fig. 50

9.5 CUTTING FICHET TYPE KEYS (H PROFILE)

- 1) Open the clamps slightly by loosening the knobs (E) (E1).
- 2) Fit the adapters and take them up against the clamps (Fig. 51).
- 3) Insert the keys taking the stop up against the adapter (Fig. 52).
- 4) Secure adapters and keys by tightening the knobs (E) (E1).

Check that the motor ON switch (Q) is OFF.

- 5) Disable the tracer point spring (Ch. 8.4).
- 6) Adjust the spring for the laser key carriage (Ch.8.5 - central cuts) Optional.
- 7) Grip the levers (C) and (D).
- 8) Press the button (D1) and lower the vertical carriage.
- 9) Keep the clamp carriage still with the left-hand lever (C); lower the tool unit with the right-hand lever (D), stopping before coming into contact with the clamp (close to the key).
- 10) Without exerting pressure, turn the lever (D) clockwise to lock the height reached (Fig. 53).
- 11) Start the motor with the switch (Q).
- 12) Move the lever (C) to trace all the cuts on the key with the tracer point.

Note:

- For right-hand cuts it is advisable to make the cuts by moving the tracer point from the head to the tip.
- For left-hand cuts it is advisable to make the cuts by moving the tracer point from the tip to the head.

- 13) When side 1 has been cut, turn off the motor with the switch (Q).
- 14) Remove both keys, turn 180° and fit them into their clamps/adapters again. Start the motor with the switch (Q) and make the cuts.

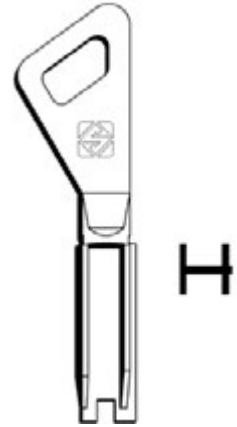


Fig. 51

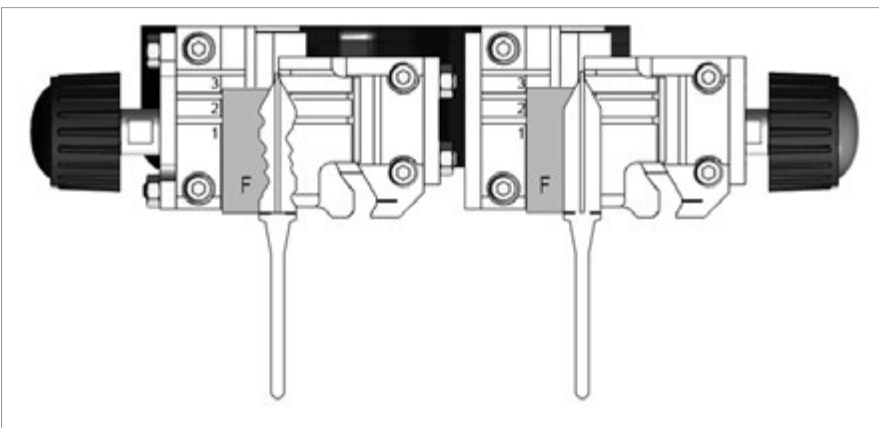


Fig. 52

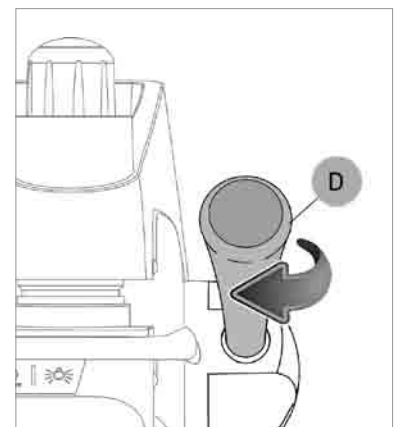


Fig. 53

9.6 CUTTING TUBULAR KEYS (MATRIX PRO VERSION)

Check that the motor ON switch (Q) is OFF.



- 1) Insert the tools into their spindles.
- 2) Fit the keys into their seats on the clamps (original key in the left-hand clamp and key blank in the right-hand clamp).
- 3) Take care when positioning the keys, the stop goes up against the jaws aligned with the notch.
- 4) Enable the tracer point spring function.
- 5) Turn on the motor.
- 6) Prip the levers (C) and (D).
- 7) press the button (D1) and lower the vertical carriage to start the motor.
- 8) Hold the carriage with the left-hand lever (C), lower the vertical carriage with the right-hand lever (D) until the tracer point centres on one of the cuts in the key and continue to lower (using the tracer point spring function) to reach cutting depth.
- 9) Move the lever (C) slightly to complete each single cut.
- 10) Repeat this operation for each cut on the key.

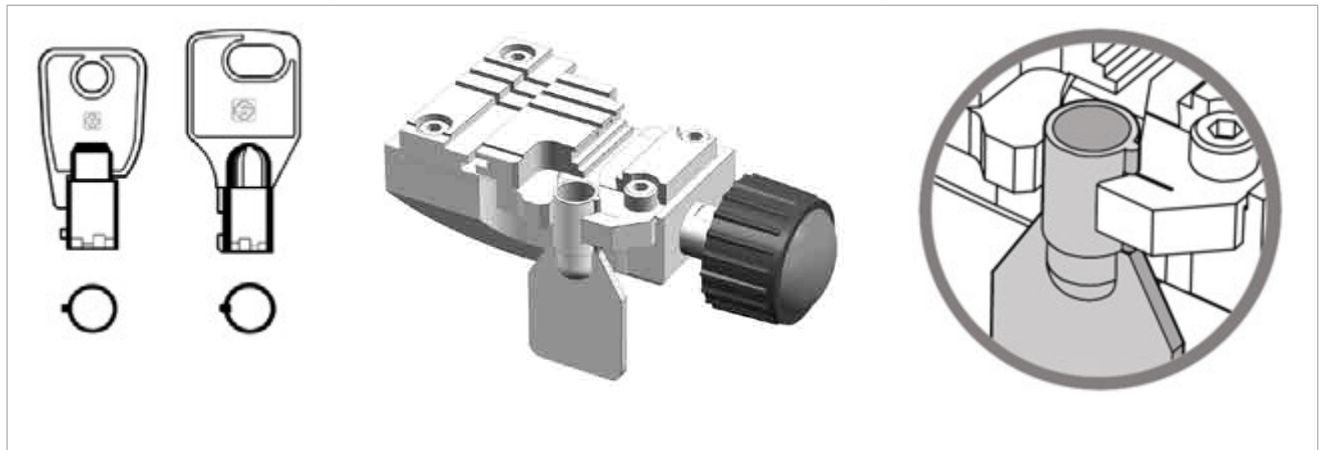


Fig. 54

10 MAINTENANCE



ATTENTION: when repairing or replacing parts the “CE” label is guaranteed only if original spare parts provided by the manufacturer are used.

The MATRIX key-cutting machine does not need special maintenance, but it is good practice to check and if necessary replace parts subject to wear: belts, lamp and vertical carriage spring.

Replacement operations are simple and can be performed by the operator.

CLEANING: it is advisable to keep the carriage and clamps clean by regularly brushing away the swarf deriving from cutting operations.

ATTENTION: DO NOT USE COMPRESSED AIR!



ATTENTION: to maintain machine efficiency we recommend using protective oil such as WD40 or similar to apply to the burnished mechanical parts. This will prevent oxidation of the parts in question (clamps, guides, carriages...). Make sure the oil does not come into contact with the electronic parts.

Before performing any type of maintenance (checks or replacements) read the warnings below:

- do not perform any maintenance operations with the machine on.
- always disconnect the power lead.
- follow the instructions in the manual carefully.
- use original spare parts.

10.1 TIGHTENING AND REPLACING THE BELT

If vibrations occur on the top part of the key-cutting machine, check the state and tightness of the belt in the way described:

- 1) Turn off the master switch and disconnect the power lead.
- 2) Loosen the 6 screws (Y1) and remove the top safety guard (Y).
- 3) Loosen (without removing) the 4 allen screws (Y2) securing the motor (Fig. 56).

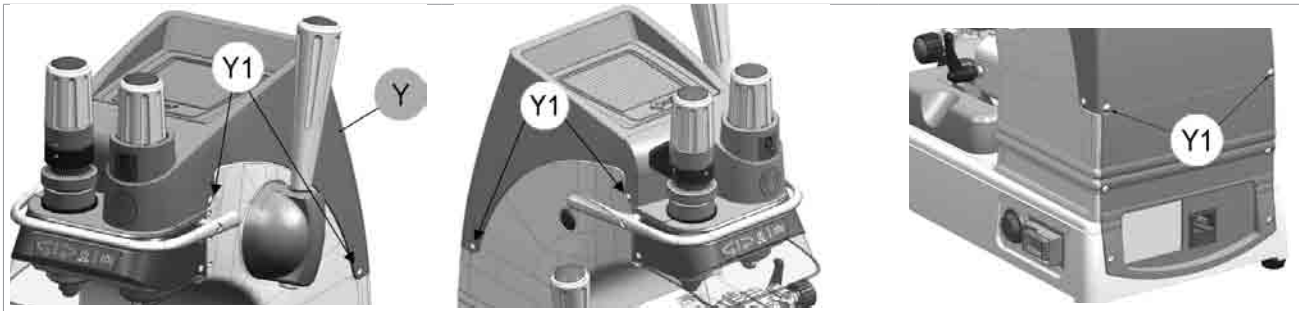


Fig. 55

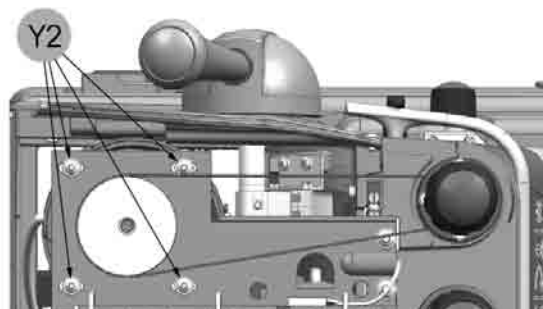


Fig. 56

Tightening:

- Increase belt tension by pushing the motor towards the back of the machine.

Replacing:

- 1) Loosen the 2 screws (V2). (Matrix PRO only).
- 2) Remove the knob unit by pulling towards the back of the machine (Matrix PRO version only).
- 3) Loosen the belt by pushing the motor gently towards the tracer point and cutter.
- 4) Remove the belt and replace.
- 5) Tighten by pushing the motor towards the back of the machine.
 - secure the motor by tightening the 4 allen screws (Y2).
 - re-position the knob unit and secure with the 2 screws (V2) (Matrix PRO only).
 - replace the top safety guard (Y) and secure with the 6 screws (Y1).

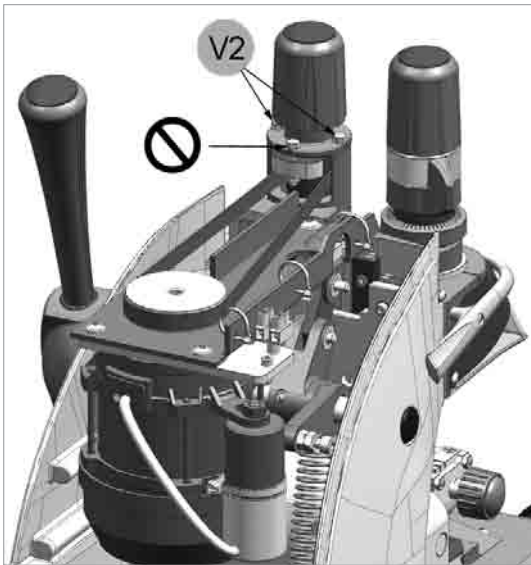


Fig. 57

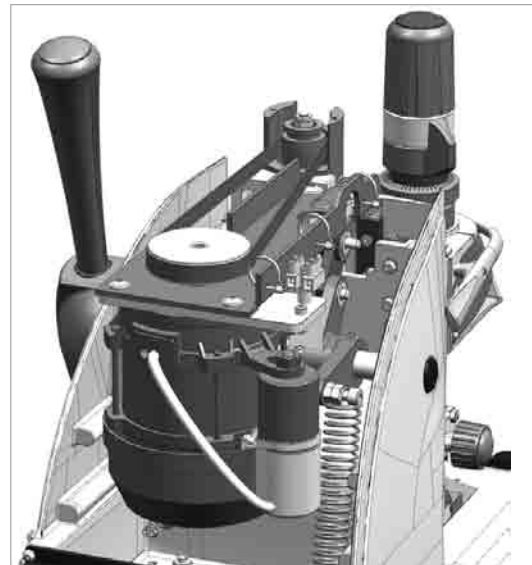


Fig. 58

10.2 REMOVING THE UPPER FRONT UNIT

- 1) Switch the machine off and disconnect the power lead.
- 2) Remove the 2 screws (R1) securing the rollbar (Fig. 59).
- 3) Loosen the 4 screws (K2) securing the upper front unit (K5) and remove.

10.3 REPLACING THE ROLLBAR

- 1) Remove the upper front unit (K1) (Ch. 10.2).
- 2) Loosen the 3 screws (R3) and remove the rollbar (R) (Fig. 60).
- 3) Fit the new rollbar and secure with the 3 screws (R3).
- 4) Replace the upper front unit on the machine and secure with the 4 screws (K2).
- 5) Secure the rollbar with the 2 screws (R1).

10.4 REPLACING THE TRANSPARENT SAFETY SHIELD

- 1) Remove the upper front unit (Ch.10.2).
- 2) Use a screwdriver to detach the shield from the upper front unit.
- 3) Attach the new shield to the upper front unit.
- 4) Replace the cover on the machine and secure with the 4 screws (K2).
- 5) Secure the rollbar with the 2 screws (R1).

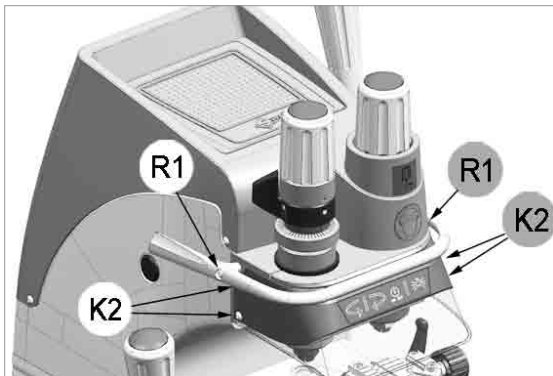


Fig. 59

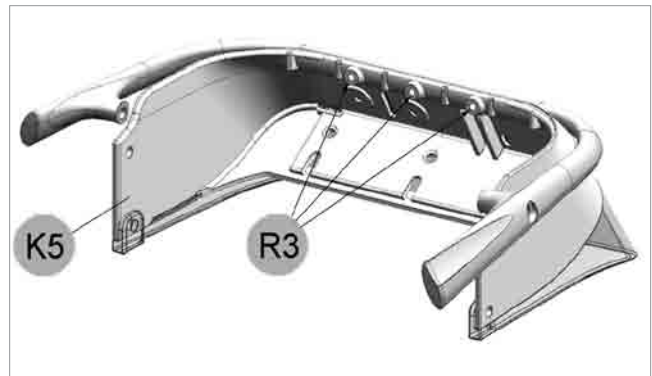


Fig. 60

10.5 REPLACING THE LAMP

Follow the instructions below to replace the lamp:

- 1) Remove the upper front unit (Ch. 10.2).
- 2) Disconnect the connector (J4) (Fig. 61).
- 3) Loosen and remove the 2 screws (J1) securing the lamp glass (Fig. 62).
- 4) Loosen and remove the 2 screws (J3) securing the LED board.
- 5) Pull the LED lamp downwards.
- 6) Fit the new LED board so that the wire passes over the top and connect the connector to the board.
- 7) Secure the new board with the 2 screws (J3).
- 8) Secure the lamp glass with the 2 screws (J1).
- 9) Connect the connector (J4).
- 10) Replace the upper front unit on the machine and secure with the 4 screws (K2).
- 11) Secure the rollbar with the 2 screws (R1).



Fig. 61

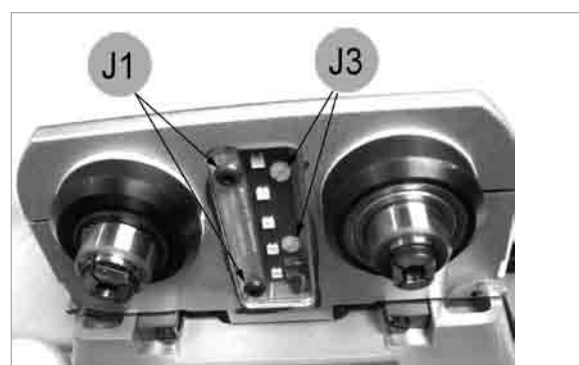


Fig. 62

10.6 ADJUSTING/REPLACING THE VERTICAL CARRIAGE SPRING

If the vertical carriage (Z axis) seems loose it is advisable to adjust the spring and replace if necessary. Proceed as follows:

- 1) Switch off the machine and disconnect the power lead.
- 2) Remove the 6 screws (Y1) to detach the top safety guard (Y) (Fig. 55).
- 3) Loosen the 4 screws (Y3) and remove the rear panel (Fig. 63).
- 4) Turn the machine so that its back faces the operator.

to increase spring tightness:

- perform operations 1 and 2 shown in Fig. 65.

to decrease spring tightness:

- perform operations 1 and 2 shown in Fig. 66.

- 5) Replace the safety guard (Y) and secure with the 6 screws (Y1) (Fig. 51).

To replace the spring:

- follow the instructions in points 1. 2. 3.
- replace the spring and adjust tightness.



Fig. 63

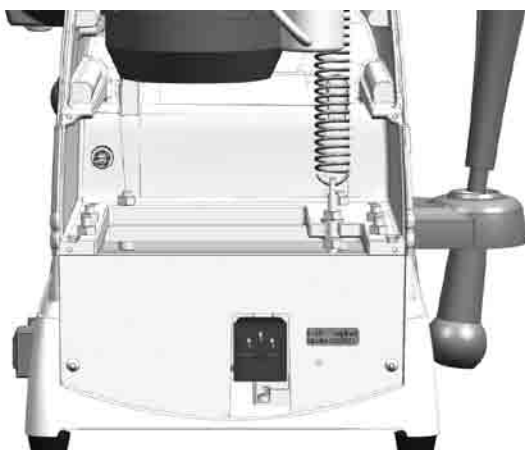


Fig. 64

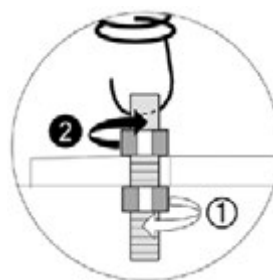


Fig. 65

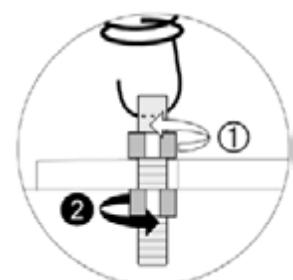


Fig. 66

10.7 CHECKING AND REPLACING FUSES

Fuses should be checked with an instrument for measuring continuity (tester, ohmeter, multimeter, etc.) as they may appear normal to the eye even when electrically damaged. Each fuse must be replaced with one of the same value (Amperes) and type (rapid or delayed), as shown in the manual. The MATRIX key-cutting machine has:

2 fuses:

- 2,5 Amperes rapid on the 230 Volt key-cutting machine.
- 6,3 Amperes rapid on the 100/120 Volt key-cutting machine

located in the mains socket, they protect the machine from voltage variations and possible short circuits.

If the machine does not go on when the switch is activated, it is advisable to check the fuses in the way described:

- 1) Turn off the machine with switch (P) and disconnect the power lead.
- 2) Use a screwdriver to remove the fuses.



Fig. 67

1 fuse:

500 mA rapid

situated on the terminal board, it protects the calibration keypad circuit board from possible short circuiting. Check the fuse when the blue LED does not illuminate with the machine on (circuit board not powered).

Follow the instructions below:

- 1) Turn off switch (P) and detach the power lead.
- 2) Place the key-cutting machine on its back and loosen the 4 screws (P4) to remove the bottom safety plate (Fig. 75).
- 1) Take the fuse out of its seat (V3) (Fig. 68 and Fig. 69).
- 2) Replace and secure the bottom safety plate with the 4 screws (P4).
- 3) Return the key-cutting machine to its proper position.

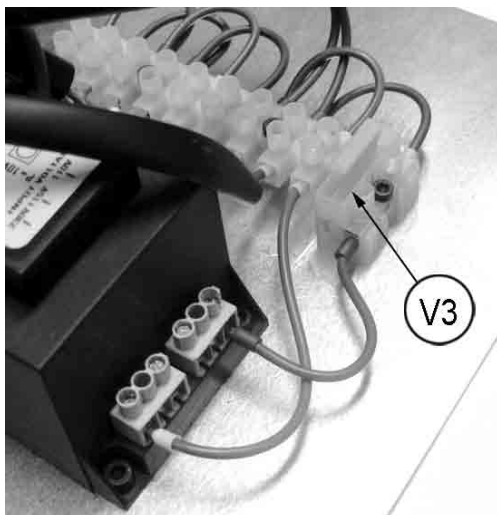


Fig. 68

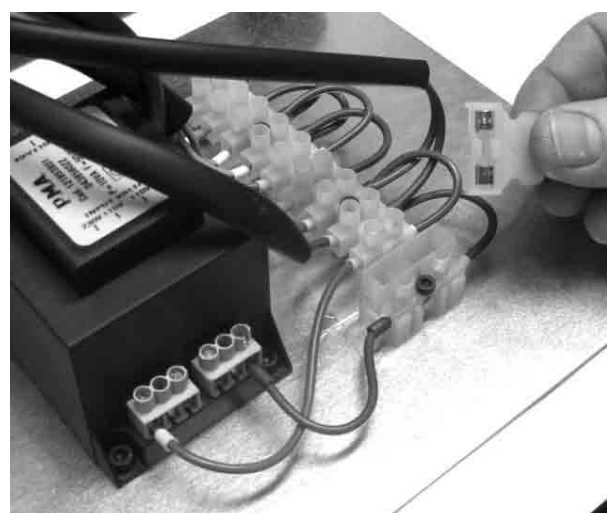


Fig. 69

10.8 REPLACING THE CALIBRATION KEY PAD ELECTRONIC CIRCUIT BOARD

If the key pad (K) is not working properly replace the electronic circuit board inside it as described below:

- 1) Remove the upper front unit (Ch. 10.2).
- 2) Detach the connectors (J4 and (R4) (Fig. 70).
- 3) Remove the 4 screws (a) (b) (c) (d) paying attention to the position of the wires.
- 4) Remove the 2 screws (K4) fixing the circuit board.
- 5) Replace the circuit board, secure with the 2 screws and re-connect the 2 connectors (J4) and (R4) and the 4 wires with screws (a) (b) (c) (d).
- 6) Replace the upper front unit on the machine and secure with the 4 screws (Ch. 10.2).
- 7) Secure the rollbar with the 2 screws (R1) (Ch. 10.3).

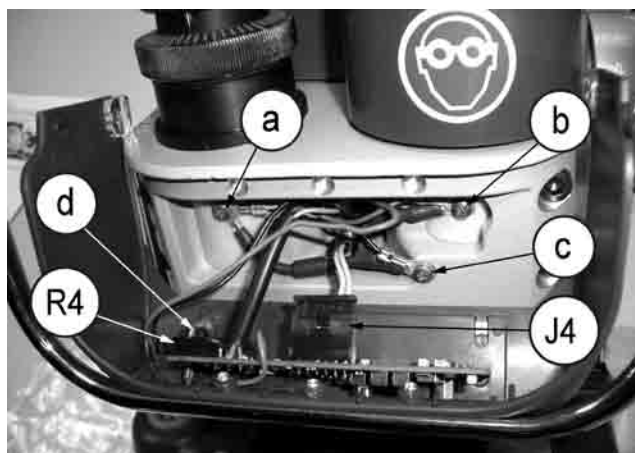


Fig. 70

10.9 REPLACING THE CONDENSER

- 1) Disconnect the key-cutting machine from the mains.
- 2) Loosen the 6 screws (Y1) and remove the top cover (Fig. 55).
- 3) Move the protective cap on the condenser (Fig. 72).
- 4) Disconnect the connectors from the condenser, paying attention to their position.
- 5) Loosen the condenser fixing nut (C3).
- 6) Connect the connectors to the new condenser and replace the protective cap.
- 7) Secure the condenser with the nut (C3).
- 8) Replace the top cover and tighten the 6 screws (Y1).



Fig. 71



Fig. 72

10.10 REPLACING THE MOTOR

- 1) Disconnect the key-cutting machine from the mains.
- 2) Loosen the 6 screws (Y1) and remove the top cover (Fig. 55).
- 3) Loosen the 2 screws (W1) fixing the motor wires to the terminal board and the screw on the earth wire (W2).
- 4) Loosen the 4 screws (Y2) securing the motor.
- 5) Remove the motor pulley belt.
- 6) Loosen the grub screw (P2) securing the motor pulley and pull upwards to remove (Fig. 74).
- 7) Grip the motor with one hand and use the other to loosen and remove the 4 screws (Y2).
- 8) Pull the motor out from back of the machine.



Fig. 73

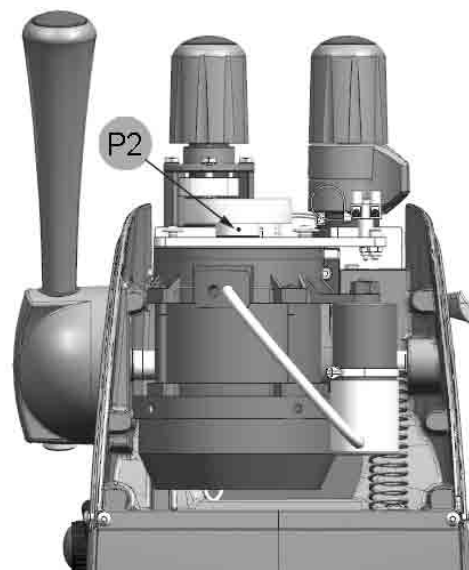


Fig. 74

10.11 REPLACING THE TRANSFORMER

- 1) Disconnect the power lead from the machine.
- 2) Turn the key-cutting machine on its back and loosen the 4 screws (P4) to remove the bottom safety guard (Fig. 75).
- 3) Loosen the 2 screws (Z2) fixing the low voltage (transparent) cables (20V) (Fig. 76).
- 4) Loosen the 2 screws (Z3) fixing the mains supply wires (a wire in position 0 and a wire corresponding to the voltage being used).
- 5) Loosen the 4 screws (T3) securing the transformer and remove.
- 6) Install and secure the new transformer with the 4 screws (T3).
- 7) Use the screws (Z2) to fix the 2 transparent low voltage cables in the 12 Volt connectors on the transformer.
- 8) Secure the 2 mains supply wires to the connectors on the transformer (a wire in position 0 and one corresponding to the voltage being used), with their screws (Z3).



Take care that the position is correct according to the voltage (Fig. 76).

- 9) Replace and secure the bottom safety guard with the 4 screws (P4).
- 10) Return the key-cutting machine to the upright position.

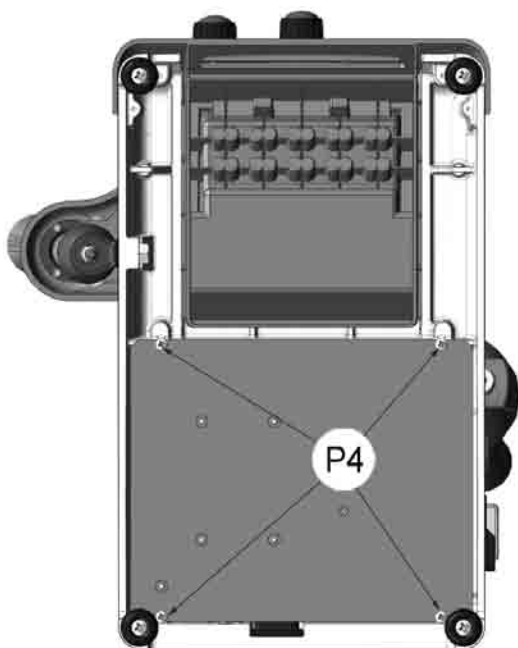


Fig. 75

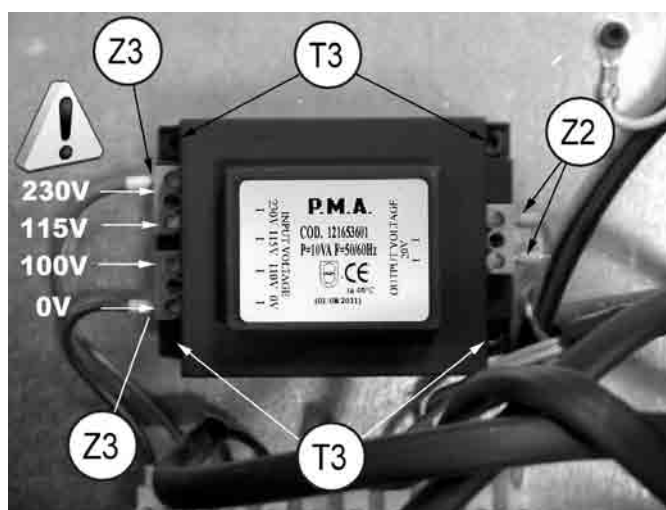


Fig. 76

10.12 REPLACING SWITCHES: MASTER AND MOTOR ON

- 1) Disconnect the power lead from the machine.
- 2) Turn the key-cutting machine onto its back and loosen the 4 screws (P4) to remove the bottom safety guard (Fig. 75).
- 3) Disconnect the wires from the switch to be replaced, paying attention to their position.
- 4) Press the fixing "tabs" on the switch so that it can be pulled out.
- 5) Insert the new switch into the special seat.
- 6) Reconnect the connectors.
- 7) Replace and secure the bottom safety guard with the 4 screws (P4).
- 8) Return the key-cutting machine to the upright position.



Fig. 77

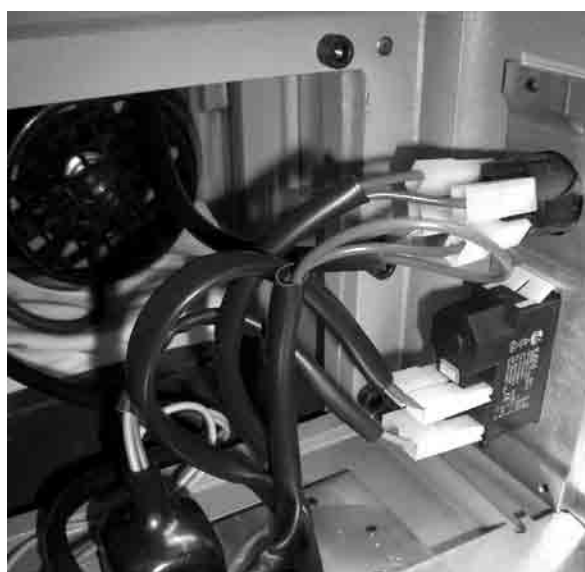


Fig. 78

10.13 ALIGNING/CALIBRATING THE CLAMP

The key-cutting machine comes from Silca with the clamp perfectly aligned. Alignment is necessary only if:

- a jaw falls from the clamp and has to be replaced
- caduta accidentale del morsetto

- 1) Make sure the motor ON switch is OFF.
- 2) Fit and secure the 2 calibrating pins (provided) to the 2 spindles as if they were tools. N.B.: the flat part (with greater diameter) must be visible (towards the clamp).
- 3) Turn on the key-cutting machine with the master switch (P).
- 4) Enable the key pad /calibration control board with key (K1).
- 5) Disable the tracer point spring (Ch. 8.4).
- 6) Place the clamp set on the right or left hand notch, according to the control to be performed.

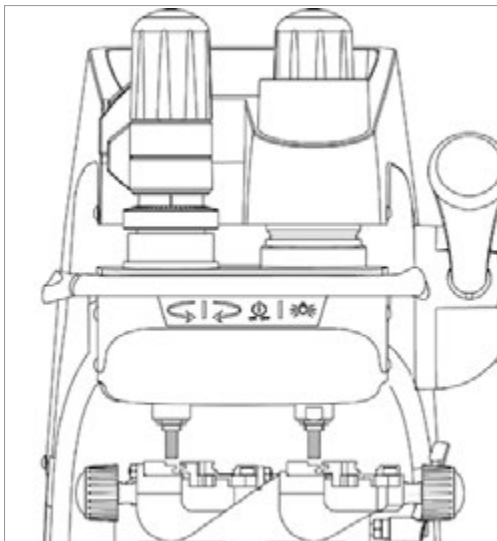


Fig. 79

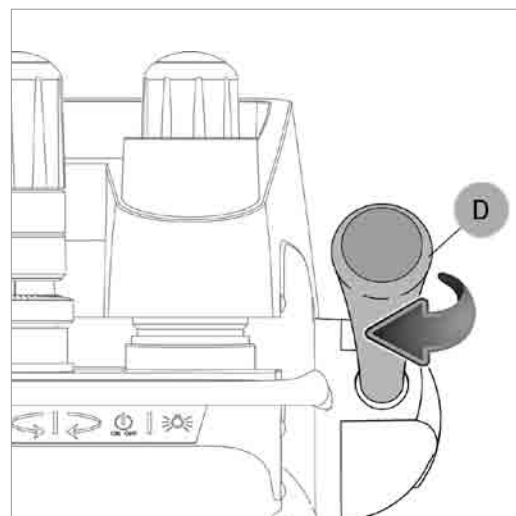


Fig. 80

10.13.1 CONTROL ALIGNMENT LEFT-HAND STATIONARY JAWS

- 1) Lower the vertical carriage with the lever (D (Fig. 80).
- 2) Align the 2 pins on the key surface (Ch.8.3).
- 3) When the pins are aligned, raise them slightly with the lever (D) so that they are not in contact with the key surface.
- 4) Turn the lever (D) clockwise to lock the height of the vertical carriage.
- 5) Move the clamp carriage with the lever (C) and take the pins into contact with several points on the left-hand jaw (also on the side of Stop 0). If the calibration board shows a green light the left-hand jaws are aligned.
- 6) If not, loosen the 2 screws (B3) and regulate the jaw (if necessary, loosen the 2 nuts (B4) and regulate the 2 grub screws B5) until the condition described above is achieved.

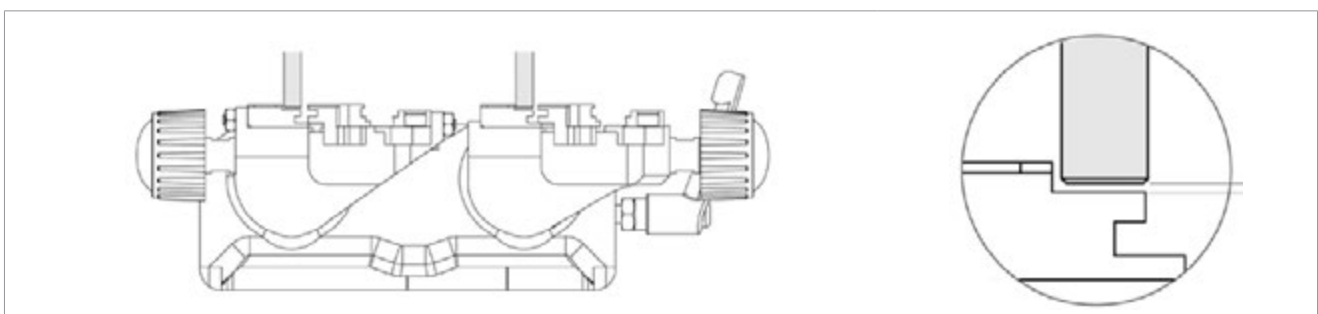


Fig. 81

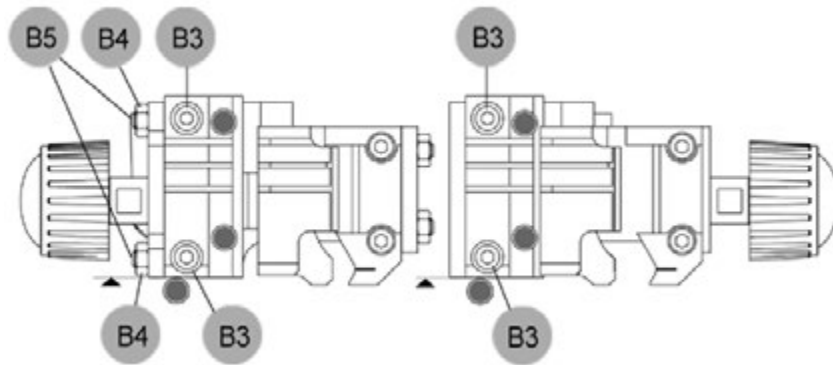


Fig. 82

10.13.2 CONTROL ALIGNMENT RIGHT-HAND STATIONARY JAWS

- 1) Lower the vertical carriage with the lever (D).
- 2) Align the 2 pins (Ch.8.3) on the key surface (seat for CS62 keys).
- 3) When the pins are aligned, raise them slightly with the lever (D) so that they are a few mm below the top surface of the clamp. Turn the lever (D) clockwise to lock the height of the vertical carriage.
- 4) Move the clamp carriage with the lever (C) and take the pins into contact with several points on the right-hand jaw. If the calibration board shows a green light the right-hand jaws are aligned.
- 5) If not, loosen the 2 screws (H3) and regulate the jaw (if necessary, loosen the 2 nuts (H4) and regulate the 2 grub screws (H5) until the condition described above is achieved.

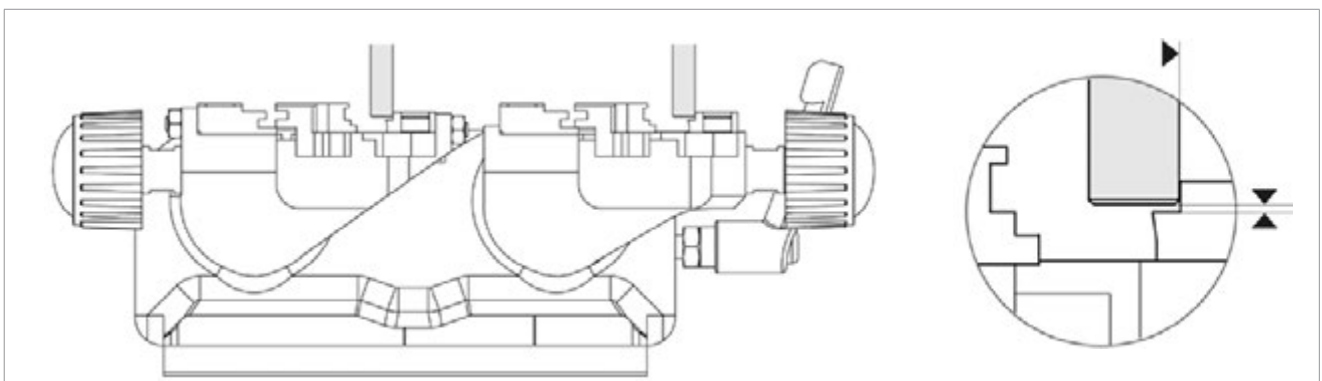


Fig. 83

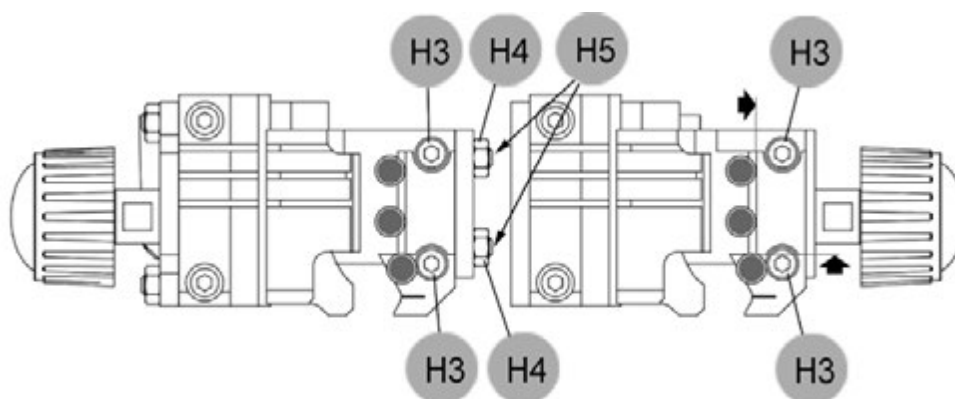


Fig. 84

10.14 REPLACING THE JAWS

Make sure the motor ON switch is OFF

10.14.1 REPLACING THE LEFT-HAND STATIONARY JAWS

- 1) Loosen the 2 screws (B3) and remove the jaw.
- 2) Fit the new jaw up against the left-hand side and align also from the front (Fig. 86).
- 3) Tighten the 2 screws (B3) without exerting pressure.
- 4) Check alignment (Ch. 10.13.1) and then fully tighten the 2 screws (B3).

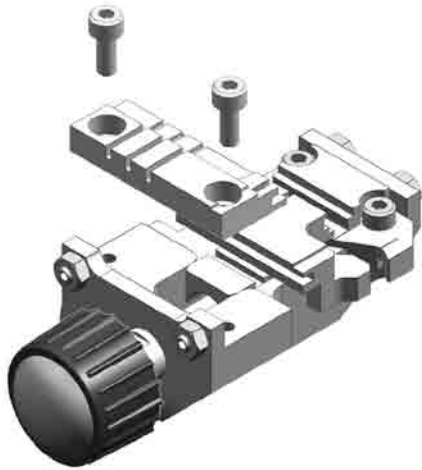


Fig. 85

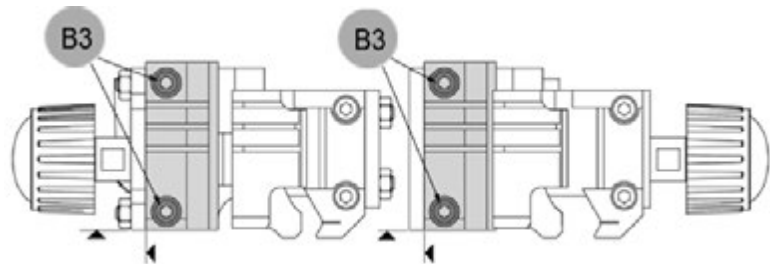


Fig. 86

10.14.2 REPLACING RIGHT-HAND STATIONARY JAWS

- 1) Loosen the 2 screws (H3) and remove the jaw.
- 2) Carefully clean the seat and fit the new jaw up against the right-hand side and align also from the front (Fig. 88).
- 3) Tighten the 2 screws (H3) without exerting pressure.
- 4) Check alignment (Ch. 10.13.2) and then fully tighten the 2 screws (H3).

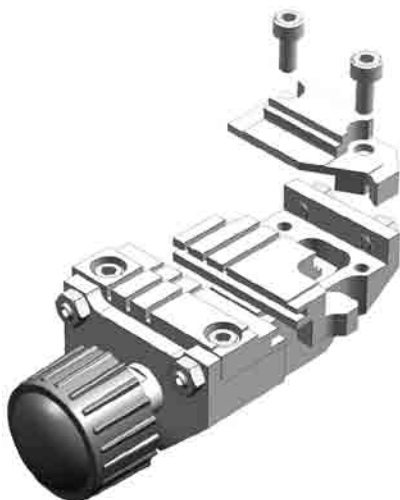


Fig. 87

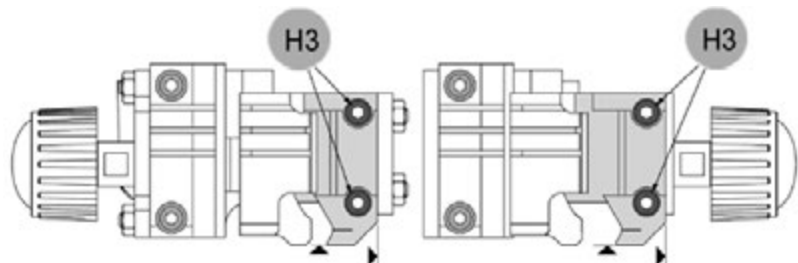


Fig. 88

10.14.3 REPLACING LEFT-HAND CLAMP MOBILE JAW

- 1) Loosen the 2 screws (B3) and remove the stationary jaw (Ch.10.14.1).
- 2) Remove the knob (E) stop plate (S4) (Fig. 89).
- 3) Fully unscrew the knob (E).
- 4) Remove the mobile jaw and clean the clamp.
- 5) Fit the new jaw, screw in the knob and replace the plate (S4).
- 6) Fit the stationary jaw up against the left-hand side and align also from the front (Fig. 86).
- 7) Tighten the 2 screws (B3) without exerting pressure.
- 8) Check alignment (Ch. 10.13.1) and then fully tighten the 2 screws (B3).

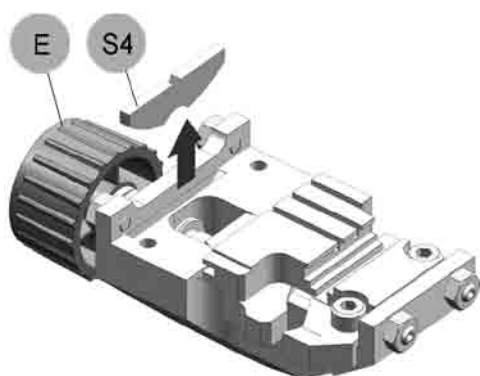


Fig. 89

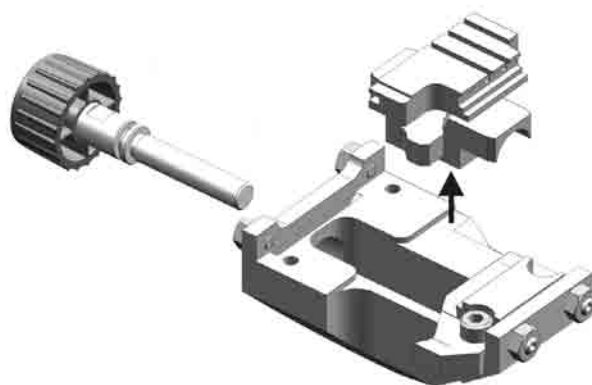


Fig. 90

10.14.4 REPLACING RIGHT-HAND MOBILE CLAMP JAW

- 1) Loosen the 2 screws (H3) and remove the stationary jaw (Ch.10.14.2).
- 2) Remove the knob (E1) stop plate (U4).
- 3) Fully unscrew the knob (E1).
- 4) Remove the mobile jaw and clean the clamp.
- 5) Fit the new jaw, screw in the knob and replace the plate (U4).
- 6) Fit the stationary jaw up against the right-hand side and align also from the front.
- 7) Tighten the 2 screws (H3) without exerting pressure.
- 8) Check alignment (Ch.10.13.2) and then fully tighten the 2 screws (H3).

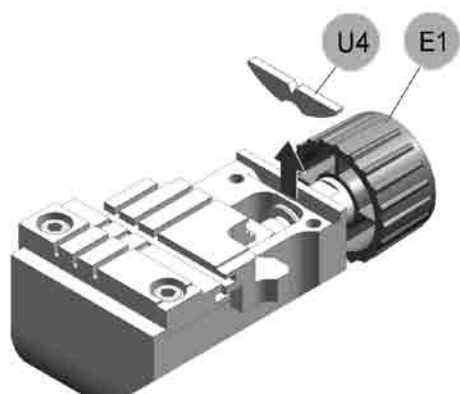


Fig. 91

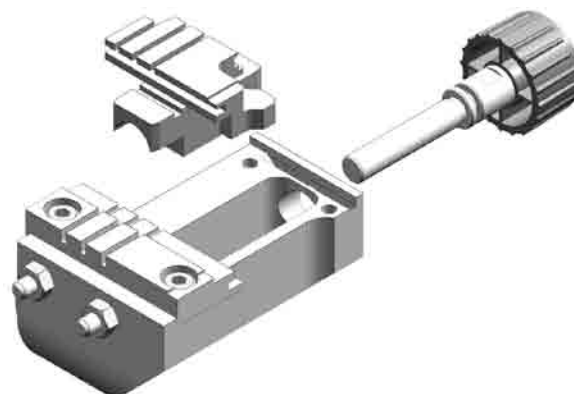


Fig. 92

11 DECOMMISSIONING

To decommission the machine it must be made unusable by:

- **deactivating the power supply;**
- **separating the plastic parts from the metal parts.**

After doing the above, dispose of the waste in compliance with the current directives in the country where the machine is located.

Waste disposal

CEE regulations lay down special methods for disposing of waste (**).

Machine

MATRIX is not only a durable machine, but is also re-usable.
Recycling is a good environmentally friendly practice.

Packing

The MATRIX device is consigned in a cardboard packing box which can be re-used if undamaged. When it is to be thrown away it is classified as solid urban waste and should be placed in the special paper collecting bins. The protective shell containing the machine is in expanded polyethylene, classified as SUW, and can therefore be placed in an ordinary waste.

Waste from key-cutting

Residue deriving from key cutting is classified as special waste, but can be included in solid urban waste (SUW) as metal scourers. This waste must be disposed of in the special collection centres according to its classification by current laws in Italy and the European Union. If it is contaminated or contains harmful-noxious substances which transform the metal residue included in SUW into harmful-noxious substances, it is included in the lists of the appendices to current regulations in Italy and the European Union for waste disposal.



INFORMATION TO USERS

Under the terms of art. 10 of Directive 2002/96/CE dated 27/01/2003 regarding waste from electric and electronic equipment (WEEE),

- The symbol shown above is also attached to equipment and indicates that it has been placed on the market and must be separated and disposed of when no longer wanted (including all components, sub-assemblies and consumables that are an integral part of the product).
- Please contact SILCA S.p.A. or any other subject on the national registers of other countries in the European Union for information about waste disposal systems for the equipment. Household waste (or of similar origins) can be disposed of by the separate urban waste collection system.
- When purchasing new equipment of an equivalent kind the unwanted equipment can be given back to the dealer. The dealer will then contact the authority responsible for collecting it.
- Separate waste collection of unwanted equipment and its forwarding to treatment, recovery and environmentally friendly disposal makes it possible to avoid potential negative effects on the environment and human health, and assists recycling and recovery of materials.
- Unauthorized disposal of the product by the user is punished by the application of fines established by the countries which have received Directives 91/156/CE and 91/689/CE.

(**) wastes are substances or objects deriving from human activity or natural cycles which are discarded, or intended to be discarded.

12 AFTER-SALES SERVICE

Silca provides full service to purchasers of the MATRIX machine. To ensure total safety for the operator and the machine, any operations not specified in this manual shall be carried out by the manufacturer or in the special Service Centres recommended by Silca.

On the back cover of the manual there is a list of the manufacturer's addresses; the following page lists the addresses of specialized Service Centres.

12.1 HOW TO APPLY FOR AFTER-SALES SERVICE

The warranty attached to the MATRIX machine guarantees free repairs or replacement of faulty parts within 24 months of purchase. Any other operation shall be agreed by the user with Silca or its Service Centres.



VITTORIO VENETO 13/01/2012

CE DECLARATION OF MACHINE COMPLIANCE

**SILCA S.p.A. - VIA PODGORA 20 (Z.I.)
31029 VITTORIO VENETO (TV) - (ITALY)
TEL. 0438 9136 - FAX. 0438 913800**

Declares under its own responsibility that the **Key-cutting machine** model

MATRIX PRO

complies with the requirements of the following European Directives:

European Union **DIRECTIVE 2006/42/CE** (Machines)
and with the EN 12100 Standards

European Union **DIRECTIVE 2004/108/CE** (Electromagnetic Compatibility)
and with the EN 55022 ; EN 55024 ; EN 61000-3-2 ; EN 61000-3-3 Standards

European Union **DIRECTIVE 2006/95/CE** (Low Voltage)
and with the EN 60950-1 ; EN 62233 Standards

| 12 |

Claudio Tomasella of the Silca S.p.A. Research & Development Division is authorized to create a Technical File.

Operations Director

Stefano Setti

SILCA S.p.A.
Via Podgora, 20 (Z.I.)
31029 Vittorio Veneto (TV) Italy

A Member of the Kaba Group

Tel. +39 0438 9136 Fax +39 0438 913800 www.silca.it info@silca.it
P. IVA C.F. e Reg. Impr. IT03286730266 REA TV 258111
Cap. Soc. € 10.000.000 I.v. Export TV 038851

Società soggetta a direzione e coordinamento di Kaba Holding AG, con sede in Rümlang (Svizzera),
Hofwisenstrasse 24, ai sensi e per gli effetti degli articoli 2497 - 2497sexies del Codice Civile.





VITTORIO VENETO 13/01/2012

CE DECLARATION OF MACHINE COMPLIANCE

**SILCA S.p.A. - VIA PODGORA 20 (Z.I.)
31029 VITTORIO VENETO (TV) - (ITALY)
TEL. 0438 9136 - FAX. 0438 913800**

Declares under its own responsibility that the **Key-cutting machine** model

MATRIX EVO

complies with the requirements of the following European Directives:

European Union **DIRECTIVE 2006/42/CE** (Machines)
and with the EN 12100 Standards

European Union **DIRECTIVE 2004/108/CE** (Electromagnetic Compatibility)
and with the EN 55022 ; EN 55024 ; EN 61000-3-2 ; EN 61000-3-3 Standards

European Union **DIRECTIVE 2006/95/CE** (Low Voltage) | **12** |
and with the EN 60950-1 ; EN 62233 Standards

Claudio Tomasella of the Silca S.p.A. Research & Development Division is authorized to create a Technical File.

Operations Director

Stefano Setti

SILCA S.p.A.
Via Podgora, 20 (Z.I.)
31029 Vittorio Veneto (TV) Italy

A Member of the Kaba Group

Tel. +39 0438 9136 Fax +39 0438 913800 www.silca.it info@silca.it
P. IVA C.F. e Reg. Impr. IT03286730266 REA TV 258111
Cap. Soc. € 10.000.000 I.v. Export TV 038851

Società soggetta a direzione e coordinamento di Kaba Holding AG, con sede in Rümlang (Svizzera),
Hofwisenstrasse 24, ai sensi e per gli effetti degli articoli 2497 - 2497sexies del Codice Civile.





**SERVICE CENTERS - CENTRI DI ASSISTENZA - KUNDENDIENSTZENTREN - CENTRES D'ASSISTANCE
CENTROS DE ASISTENCIA - CENTROS DE ASSISTÊNCIA - BIJSTANDSCENTRA**

COUNTRY	COMPANY	ADDRESS	CITY	AREA CODE	PHONE	FAX e-mail
Algeria	Sarl Maghreb Clés	Coopérative Ettadhamoune Local 21/A	Badjarah / Alger	16209	+213-21-264934	+213-21-264888 asmaghreb_cle@yahoo.fr
Argentina	Distribuidora Frappampino S.r.l.	La Rioja, 483	Cordoba	5000	+54-351-4216368	+54-351-4229003 frappampino@arnet.com.ar
Australia	Locksmiths' Supply Co. Pty Ltd.	140/158 Dryburgh St.	North Melbourne	VIC 3051	+61-39-3297222	+61-39-3281731 lsc@lsc.com.au
Austria	Erwe Gmbh	Feldgasse, 16	Feldkirchen	A-9560	+43-42762816	+43-42765054 firma@erwe.at
Belgium	Duitman Bvba	Zinkstraat 13	Halle	1500	+32-2-3831620	+32-2-3831622 info@duitman.be
Brazil	Kaba Do Brasil Ltda.	Rua Guilherme Asbahr Neto 510	São Paulo	04646- 001	+55-11-5545-4510	+55-11-5545-4515 kaba@kabadobrasil.com.br
Bulgaria	Intesa S.r.l.	1, Kukush	Sofia	01309	+359-2-8211425	+359-2-8211347 info@intesa.bg
Burkina Faso	Diallo Mamoudou	Av.Houari Boumedienne Porte N. 1651	01BP / 2957 Ouagadougou 01		+226-710448	+226-710002 dialloebauchedecles@yahoo.fr
China	Silca China	Xinhua Industrial Zone	Guanghai County, Taishan, Canton		+86-750-5325698	+86-750-5315655 alan@tswahyat.com
Colombia	Flexon Llaves S.A.	Av.Carrera 70 No.99 - 55 Entrada 1	Bogotá		+571-2538300	+571-5331842
Croatia	Ferrotechna d.o.o.	Japodska, 66c	Pula	52100	+385-52-503-529 +385-52-502-609	+385-52-503-529 ferrotechna@pu.t-com.hr
Cyprus	G.H. Yacoubian Ltd.	74/B, Regaena Street	Nicosia		+357-22-663525	+357-22-669009 ghycy@spidernet.com.cy
Czech Republic	H&B Plus. s.r.o.	Zatecká, 8	Plzen	30148	+420-377-225903	+420-377-225904 plzen@klice-hb.cz
Denmark	Agenturcentret A.S	Brydehusvej 20	Ballerup	2750	+45-70111211	+45-70111221 agentur@agenturcentret.dk
Egypt	Gam Transworld	23 Omer Ibn El-Khatar Street	Heliopolis El Cairo		+20-2-22404705 +20-2-26441401	+20-2-22404705 gam@intouch.com
Finland	Hardware Group Finland Oy. (Hgf Ltd)	Luostarinportti 5	Kirkkonummi	02400	+358-9-2219490	+358-9-2962186 asiakaspalvelu@hgf.fi
France	SILCA S.A.S.	12, Rue de Rouen B.P.37	Z.I. Limay Porcheville	78440	+33-1-30983500	+33-1-30983501 info@silca.fr
Germany	SILCA GmbH	Siemensstrasse, 33	Velbert	42551	+49-2051-2710	+49-2051-271172 info@silca.de
Greece	Chrisikos K. Ioannhs	7 Pipsou St.	Thessalonik	TK 54627	+30-2310-510336	+30-2310-521651 info@chrisikos.gr
Greece	F. Sotiropoulos & Son O.E.	Patission Str., 110	Athens	11257	+30-210-8234009	+30-210-8238480 roulasot@otenet.gr
Greece	GEMKA-Karidis G. & Sons OE	Lykoirygoy St. 14-16	Athens	10552	+30-210-3243000	+30-210-3249571 g_karidis@yahoo.com
Greece	Fr.Ili Raptakis	Pili Iisou 10	Iraklion - Crete		+30-2810-285000	+30-2810-280165 raptakis_keys@her.forthnet.gr
Guinea	Soguintec S.A.	Calle Abilio Balboa	Malabo - Provincia del Bioko Norte		+240-556618	
Holland	Duitman B.V.	Aquamarijnstraat 5	7554 NM - Hengelo		+31-74-2452520	+31-74-2452522 info@duitman.nl
Holland	H. Cillekens & Zn. B.V.	Metaalweg, 4	JB Roermond	6045	+31-475-325147	+31-475-325148 info@hcillekens.nl
Holland	Steenhauer B.V.	Oude Raadhuisstraat 1	Ap Leidschendam	2266	+31-70-3177262	+31-70-3177333 info@steenhauer.nl
Hong Kong	Professional Lock Centre Co. Ltd.	Unit A-D, 9/F. Gemstar Tower, 23 Man Lock Street	Hunghom, Kowloon, Hong Kong		+852-23302268	+852-23302082 plc@plc.com.hk
Hungary	Kaba Elzett	Megyeri út 51	Budapest	1044	+36-1-3501011	+36-1-3290692 info@elzett.hu
India	Minda Silca Engineering Ltd.	Plot No. 37, Toy City	Greater Noida	201308	+91-987-397630 +91-987-397631	+91-120-2351301 info@mindsilca.in
Iran	Klidavarshayan Co.	No.73 Stakhr. St - Emam Khomaini Ave.	Tehran		+98-216-6702757	+98-216-735649 klidavar@yahoo.com
Israel	A.M.C.I. Locksmith Supply Ltd.	22 Efal Street Kiryat Aryeh P.O.Box 3667	Petah Tikva	49130	+972-3-9230331	+972-3-9230332 amci@bezeqint.net
Italy	SILCA S.p.A.	Via Podgora, 20 (Z.I.)	Vittorio Veneto - TV	31029	+39-0438-9136	+39-0438-913800 silca@silca.it
Japan	Clover Co. Ltd	1-2-40 Haradanaka, Toyonaka-shi	Osaka	561- 0807	+81-6-6844-2111	+81-6-6844-1147 info@cloverkey.co.jp

COUNTRY	COMPANY	ADDRESS	CITY	AREA CODE	PHONE	FAX e-mail
Kenya	MPPS Ltd.	P.O. Box 31347	Nairobi		+254-20-6532913 +254-20-6533370	+254-20-6533369 mpps@swiftkenya.com
Kuwait	Hasawi & Sabano Co. For Gen.Trad.	P.O. Box 42105	Kuwait City	70652	+965-24832505	+965-2622778 sabanokuwait@sabano.com
Latvia	Solo F Ltd.	Salaspils 12	Riga	1057	+371-7278359	+371-7876901 solo.f@apollo.lv
Lebanon	Mouawad Books & Stationary Sarl.	Mouawad Str. Mouawad Center, 60094 Jal el Dib	Beyrouth		+961-4-711202	+961-4-11206 hicham.mouawad@mouawadmb.com
Macedonia	Panevski & Sinovi	Llidenska , 11	Kumanovo	1300	+389-31-411545	+389-31-412411 panevski@mt.net.mk
Malta	Unimark Ltd.	32, Zerafa Str.	Hmr 03 Marsa		+356-21-231540	+356-241319 pl@waldonet.net.mt
Mexico	Corporacion Cerrajera Alba Sa De Cv	Circuito Gustavo BAZ, 16 Atizapan de Zaragoza	Messico D.F.	52966	+52-55-53667200	+52-55-53667291 info@kaba-mexico.com
Mozambique	Davel Importacao Comercio e Servicos	Rua Do Carmo NR.54 - 3º Solat	Coimbra	3000	+351 239833858	+351 914506747
New Zealand	Baber LSC Limited	Unit 5, 6 Argus Place Auckland	Glenfield	1310	+649-444-5117	+649-444-5119 info@baberslc.co.nz
Nigeria	Chilex Security Products Ltd.	12, Olowu Street P.O. Box 5153	Ikeja - Lagos		+234-1-4965005	+234-1-4965005 chilexproducts@yahoo.co.uk
Norway	Prodib Ab	Montorgat 16	Eskilstuna	632 29	+46-16-168000	+46-16-145590 prodib@prodib.se
Poland	Dar-Mar	ul. Napoleona, 17	Kobyłka	05-230	+48-22-7710118	+48-22-7710118 dar-mar@dar-mar.pl
Poland	Z.P.U.H. Expres Wojcieck Kowalczyk	32-447 Siepraw 795	Siepraw		+48-1227-46365	+48-1227-46365 expres@expres.pl
Portugal	Casa Das Chaves Da Falagueira Da	Estrada Da Falagueira 5B	Amadora	2701	+351-214936430	+351-214912403 ch.falagueira@mail.telepac.pt
Portugal	Luso Chav'	Av. Rodrigues de Freitas, 199-A	Porto	4000-303	+351-22-5104702	+351-22-5361248 geral@lusochav.pt
Romania	M&C Business S.r.l.	36, Badea Cartan Street 2nd District	Bucharest	20064	+40-213118602	+40-212120155 main_office@mcbusiness.ro
Russia	Strazh	16/2, pt. Komsomolskiy	Moscow	119021	+7 495 7083440	+7-495-7083292
Russia	O.O.O. Peter Key	Mihaylovsky Pereulok, 7b	Saint Petersburg	198095	+7-812-2520241	+7-812-2523885 peterkey@peterkey.ru
Saudi Arabia	Fahd Omar Bamashmous Est.	P.O. Box 20919	Jeddah	21465	+966-2-6422588	+966-2-6447238 bamashmous_est@hotmail.com
Serbia	Silkon D.O.O.	29, Novembra 70	Belgrade	11000	+381-11-2080200	+381-11-3290017 silkon@ptt.yu
Singapore	Silca Soxxi Pte. Ltd.	21 Toh Guan Rd. East #01-12 Toh Guan Centre	Singapore	608609	+65-6316-8100	+65-6316-4470 info@silca.sg
Slovakia	H&B Slovakia s.r.o.	Ovsistske Nam. 1	Bratislava	85104	+421-2-6252-0032 +421-2-6252-0033	+421-2-6252-0034 hb.slovakia@kluce-hb.sk
South Africa	Sanlic International (Pty) Ltd.	46, Hulbert Street New Centre	Johannesburg		+27-11-4939717	+27-11-6831312 acoetzee@voltex.co.za
Spain	Silca Key Systems S.A.	C/Santander 73/A	Barcelona	08020	+34-93-4981400	+34-93-2788004 silca@silca.es
Sweden	Prodib Ab	Montorgat 16	Eskilstuna	632 29	+46-16-168000	+46-16-145590 prodib@prodib.se
Switzerland	Robert Rieffel Ag	Widenholzstrasse 8	Wallisellen	8304	+41-44-8773333	+41-44-8773322 info@rieffel.ch
Syria	Muheiddin Arabi Katbi	P.O. Box 1322	Damascus		+963-11-2212407 +963-11-2224588	+963-11-2224588 +963-11-3737001
Taiwan	Global Tecspiro Ltd.	11F-2 N.42-2 Lian Sheng St.	Jhongho City Taipei		+886-2-22494028	+886-2-22425735 vincent@carkey.tw
Turkey	Kadiköy Anahtar San.Ve.Tic.Ltd.Sti.	Osmanaja Mah.Nüzhet Efendi Sk.No.56	Kadiköy - Istanbul		+90-216-4145254	+90-216-3475488 info@kadikoyanahatar.net
U.A.E.	Sabano Trading Co.Llc	P.O. Box 32075	Dubai		+971-4-2682400	+971-4-2622778 sabanodubai@sabano.com
Ukraine	Service-Centre Kopir	Segedskaya 12	Odessa	65009	+38-487-433196	+38-487-190777 v@key.odessa.ua
United Kingdom	SILCA Ltd.	6 Lloyds Court Manor Royal	Crawley	RH10 9QU	+44-1293-531134	+44-1293-531108 sales@silcald.co.uk
U.S.A.	Kaba Ilco Corp.	400 Jeffreys Road, P.O. Box 2627	Rocky Mount NC 27804		+1-252-446-3321	+1-252-446-4702 custsvc@irm.kaba.com
Venezuela	La Casa del Cerrajero C.A.	Av. Principal de Maripérez	Caracas		+58-212-793-0083	+58-212-781-8692 cerrajero@cantv.net
Yemen	Sabano Trading Co.Llc	P.O. Box 32075	Dubai U.A.E.		+971-4-2682400	+971-4-2622778 sabanodubai@sabano.com



SILCA S.p.A.

Via Podgora, 20 (Z.I.)
31029 VITTORIO VENETO (TV)
Tel. 0438 9136 Fax 0438 913800
E-mail: silca@silca.it
www.silca.biz

Members of the Kaba Group

