

MATRIX **evo**

MATRIX **pro**

Operating manual

Translation of the original instructions

CE

D439848XA

vers. 6.0

EN



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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.

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CE DECLARATION

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.

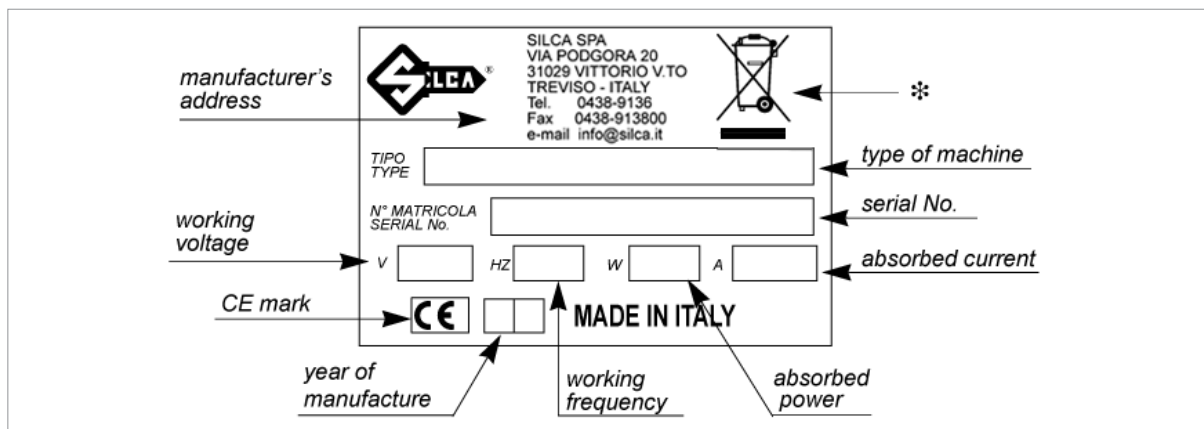


Fig. 1

(*) See Ch. 11 DISPOSAL .

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. If the manual was downloaded is necessary visit the website to see the contacts (www.silca.biz).

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

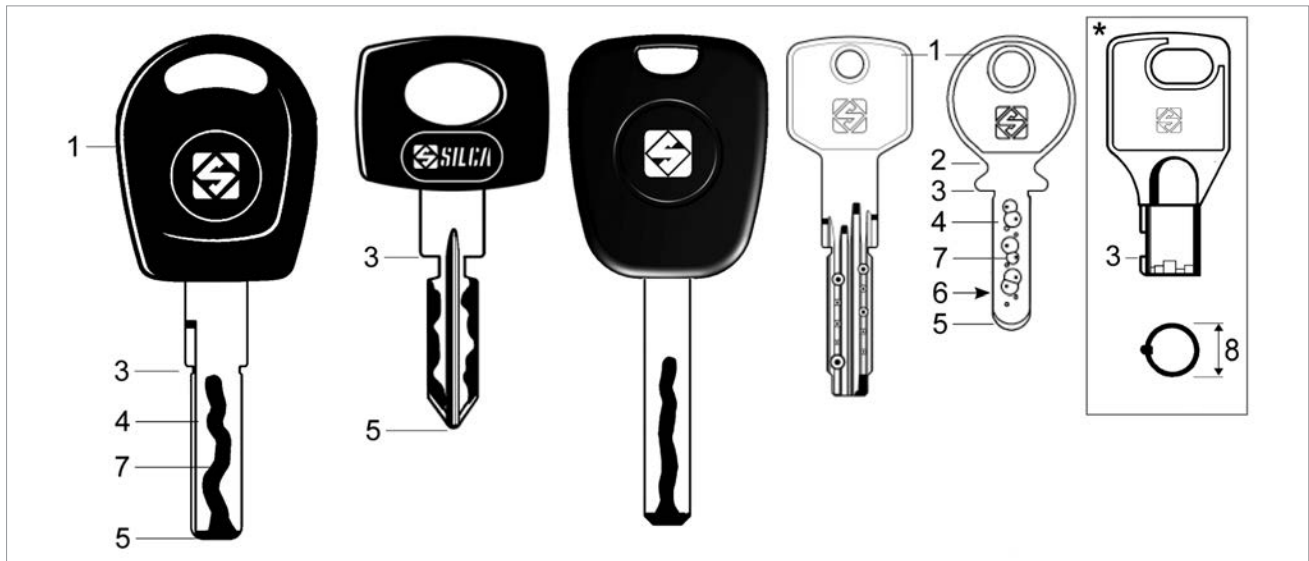
To facilitate reading, a glossary is given below of commonly used symbols and terms connected to keys and the key-cutting machine.

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


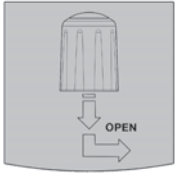


Fig. 2

(*) 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 Keep all body parts away from moving parts</p>	
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Fig. 3

Fig. 4

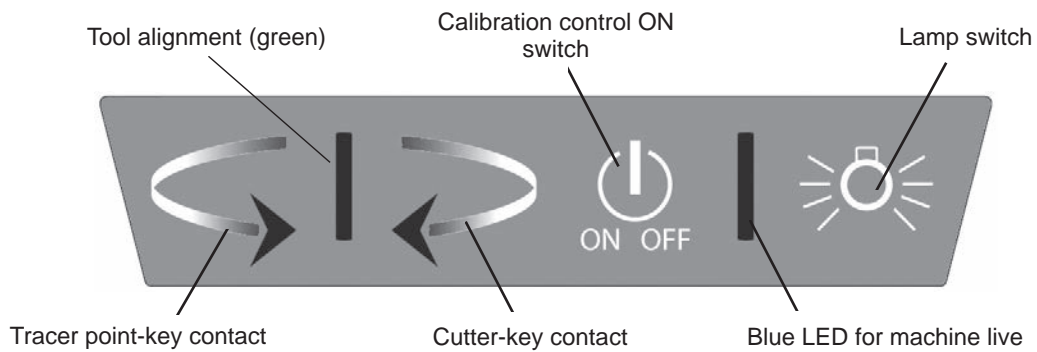


Fig. 5

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;**
- **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.

The key-cutting machine must be used only by skilled personnel (professional use).

The key-cutting machine is designed for use on business or industrial premises (e.g. hardware shops, key cutting centers, etc...). 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 (Fig. 4, page 3) and involve the obligatory use of personal protective devices (GOGGLES).

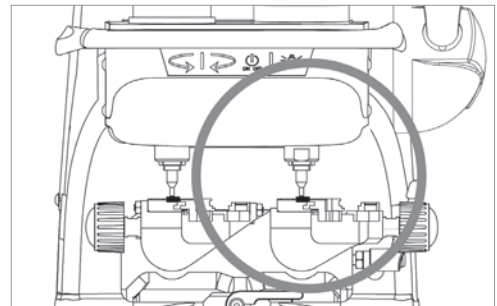


Fig. 6

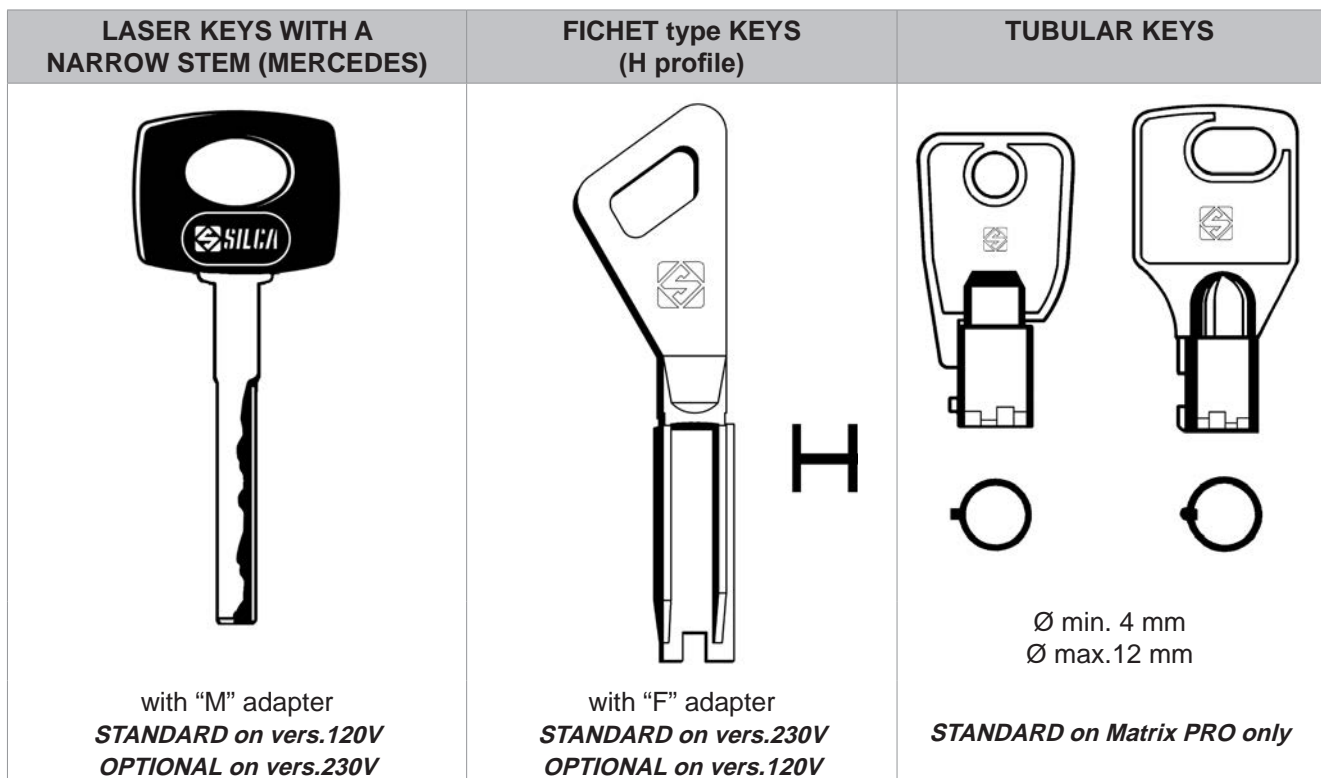
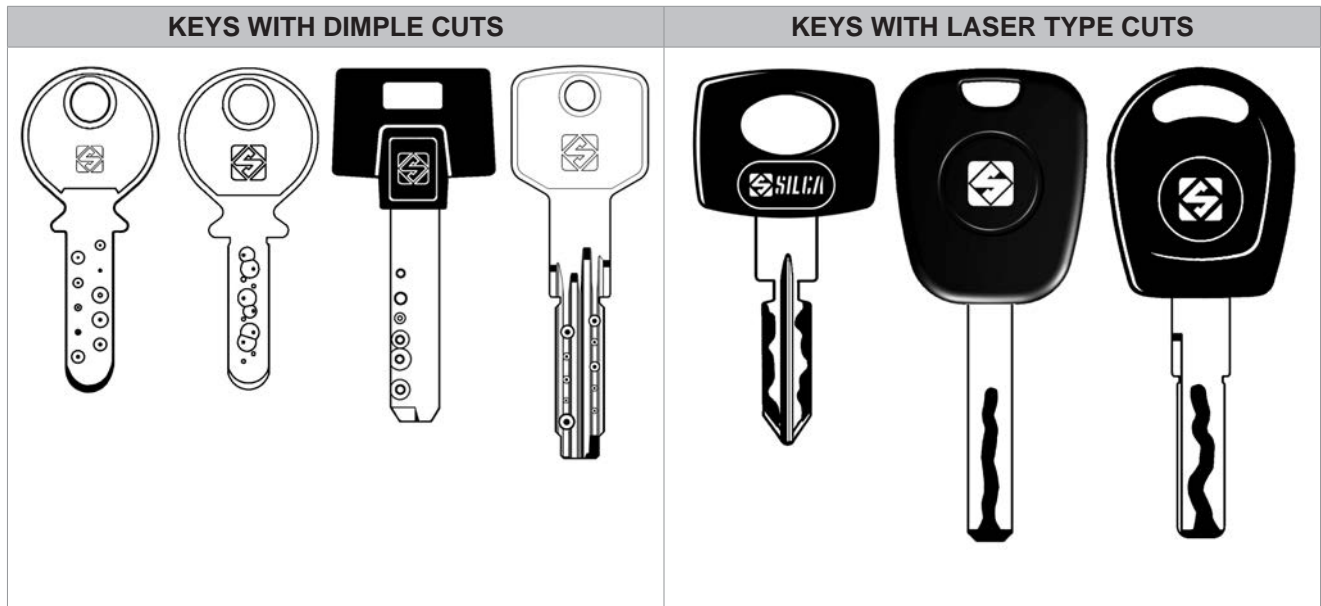
SAFETY REGULATIONS

- **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. This equipment should not be used where children may be present.**

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

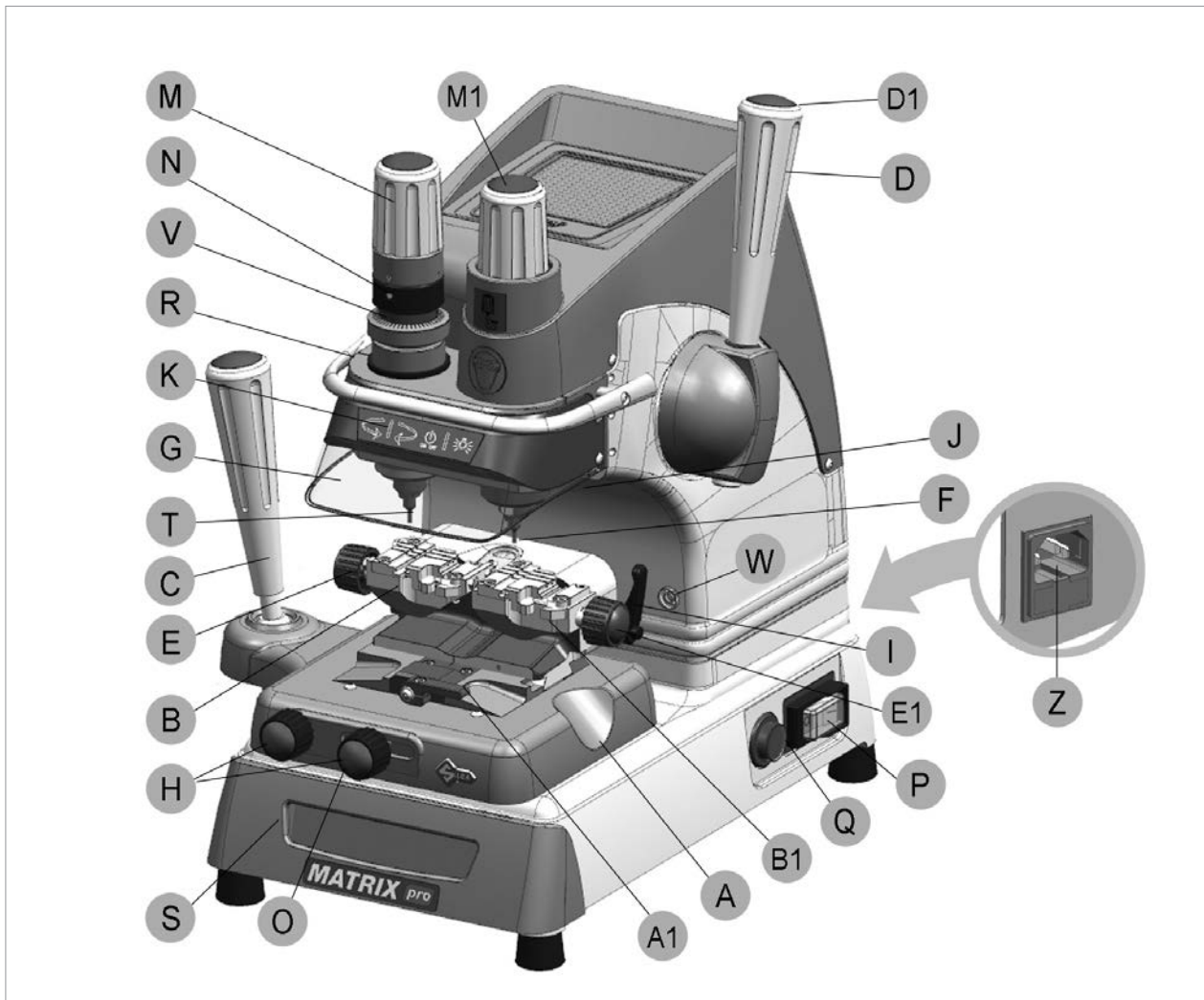


Fig. 7

- | | |
|--|--|
| 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

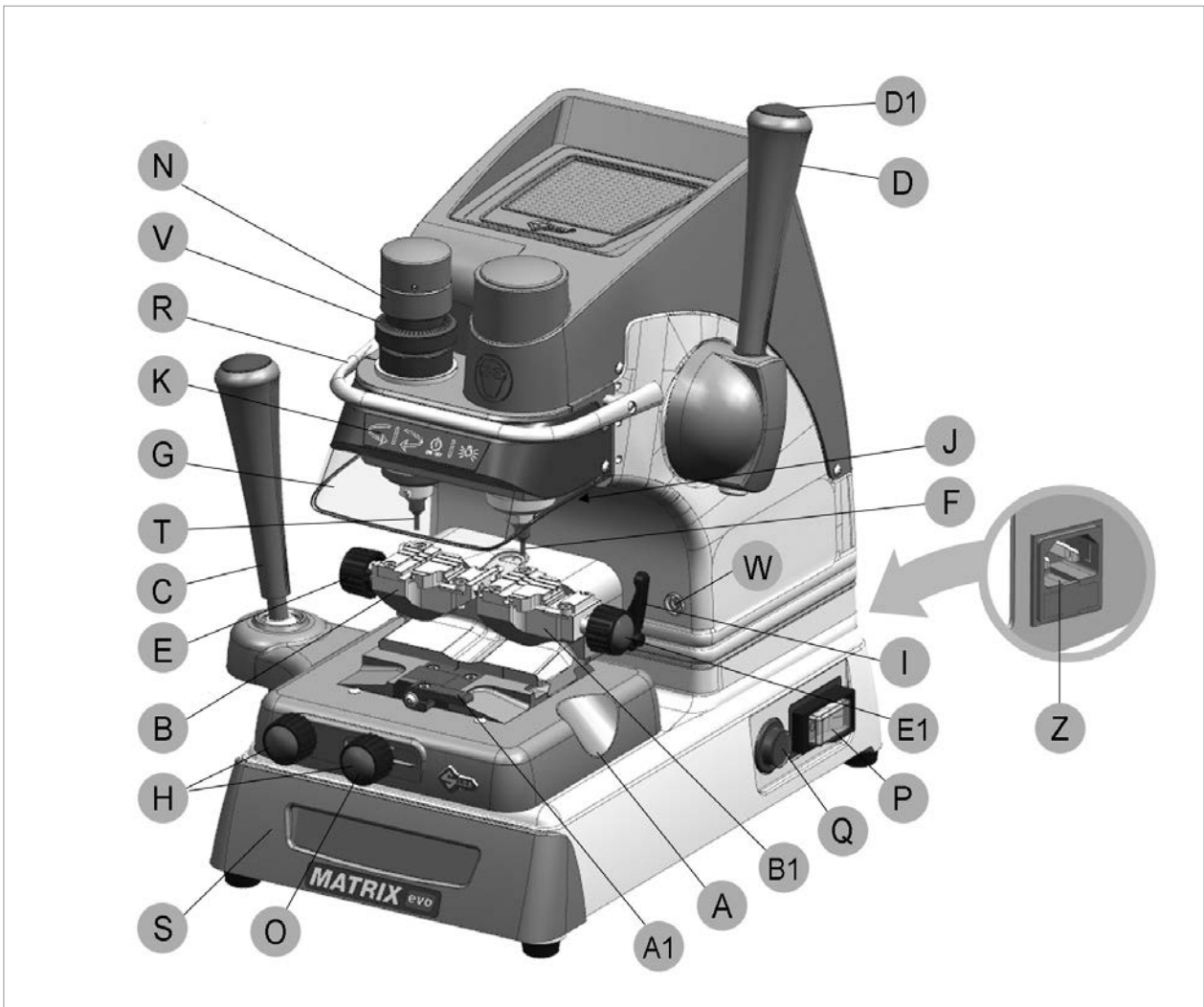
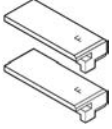
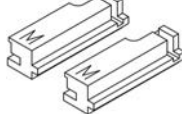
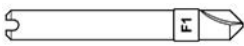



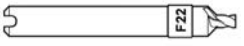
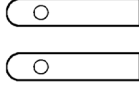





Fig. 8

- | | |
|--|--|
| 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		

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

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.

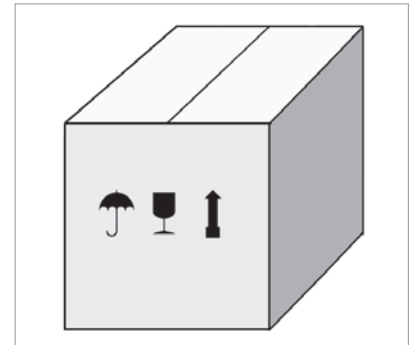


Fig. 10



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.

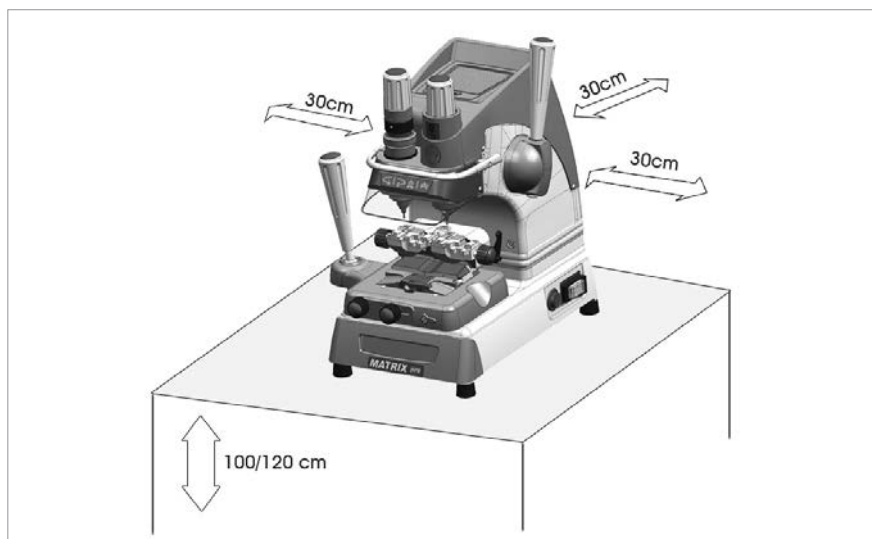


Fig. 11

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.

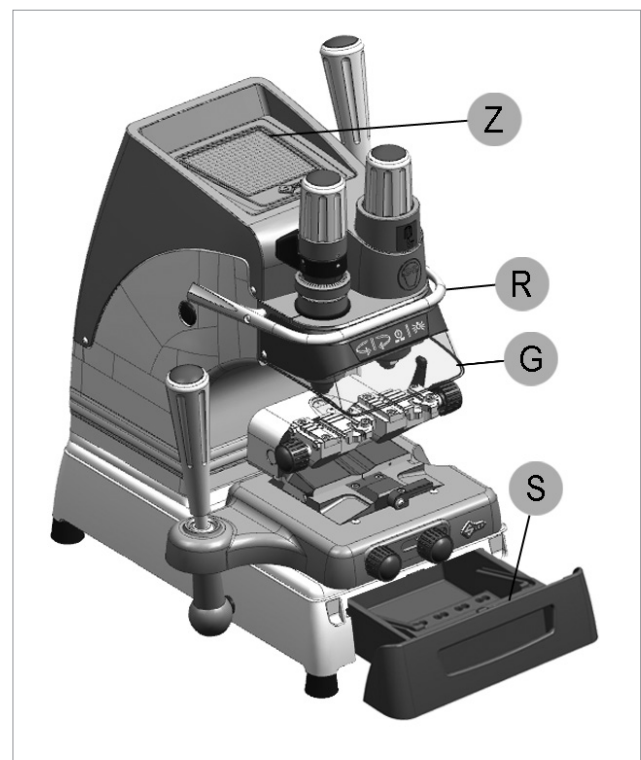


Fig. 13

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).

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.

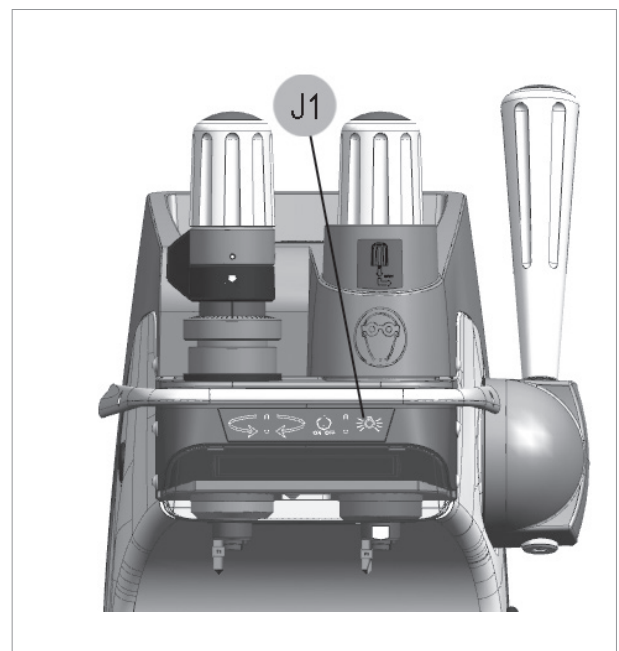


Fig. 15

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).

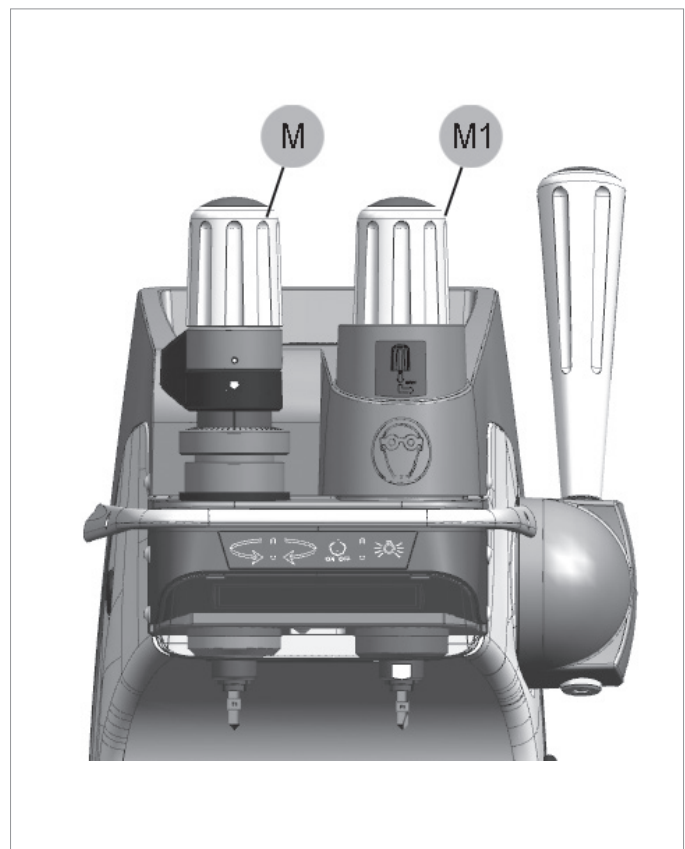


Fig. 17

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.

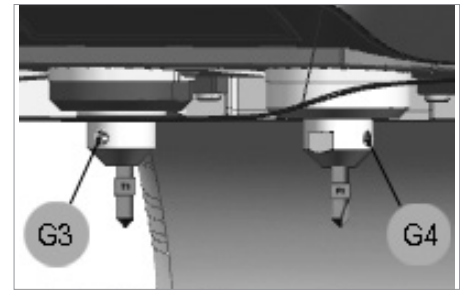


Fig. 18

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:

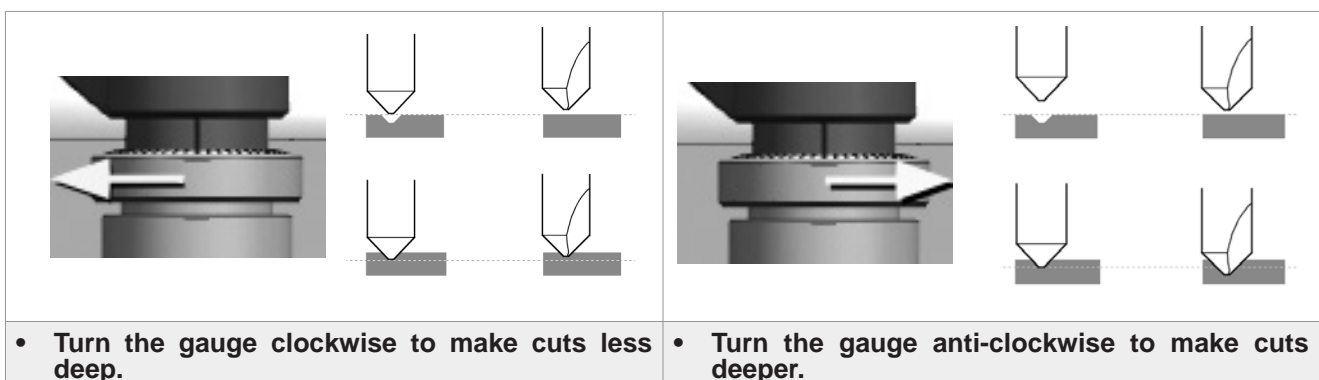
- loosen the grub screw (G4) with the hex wrench and remove the tool.

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



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.

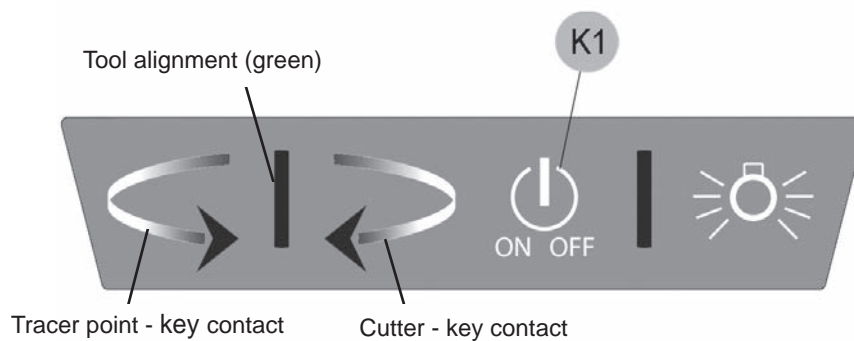


Fig. 20

- 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.

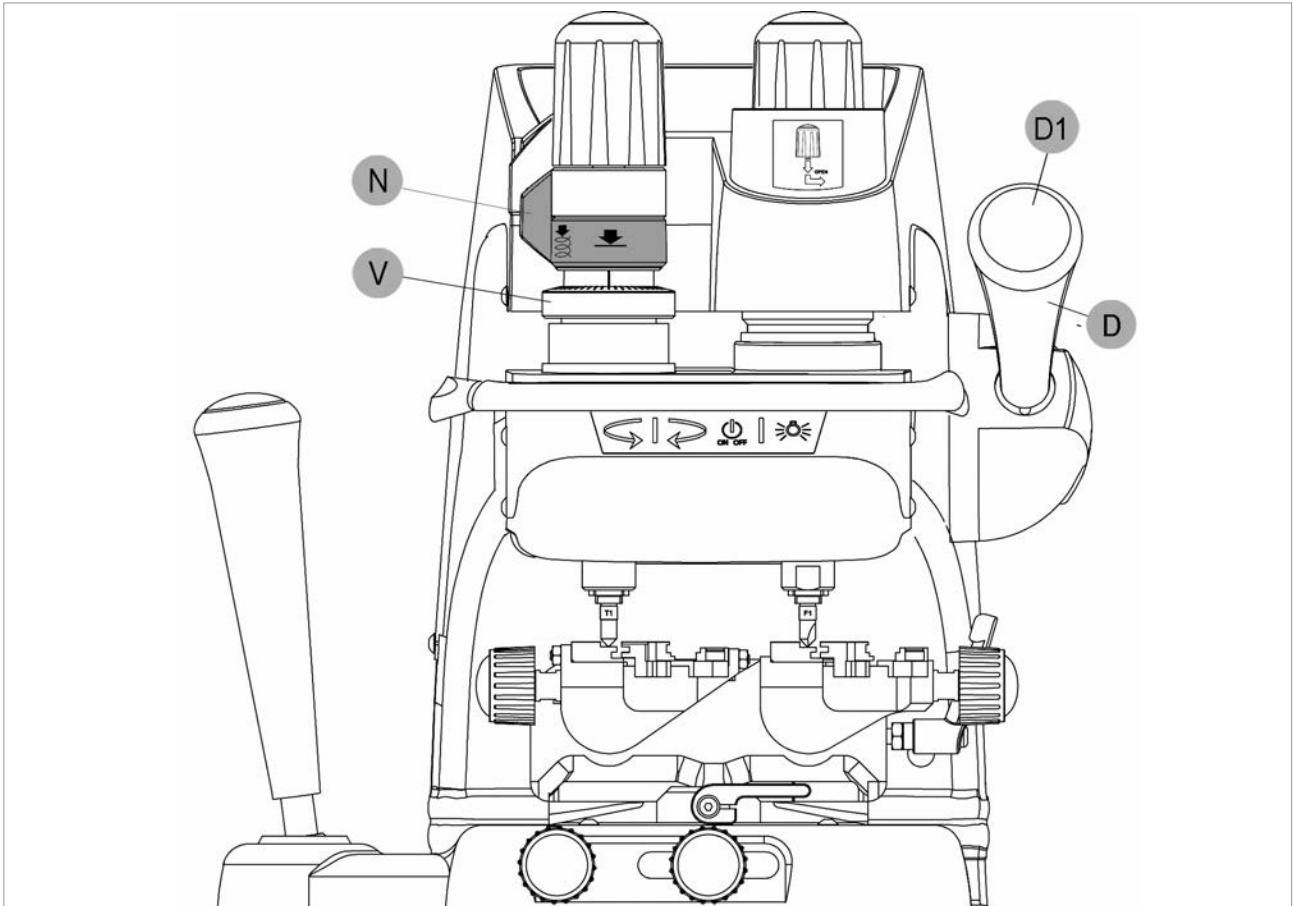
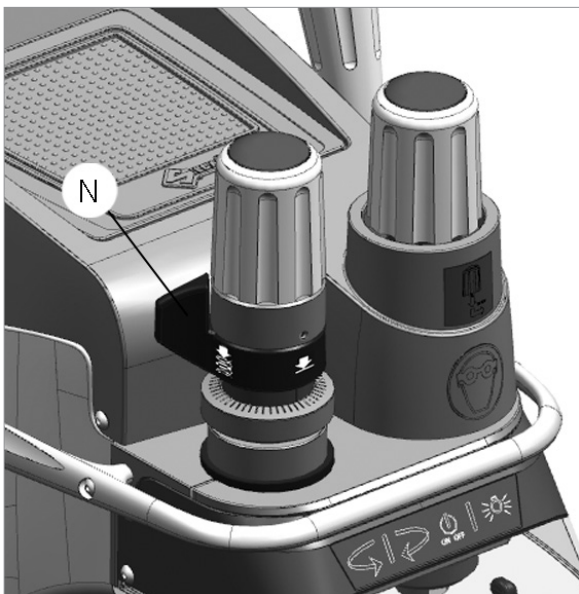


Fig. 21

8.4 TRACER POINT SPRING



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.



Fig. 22

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**

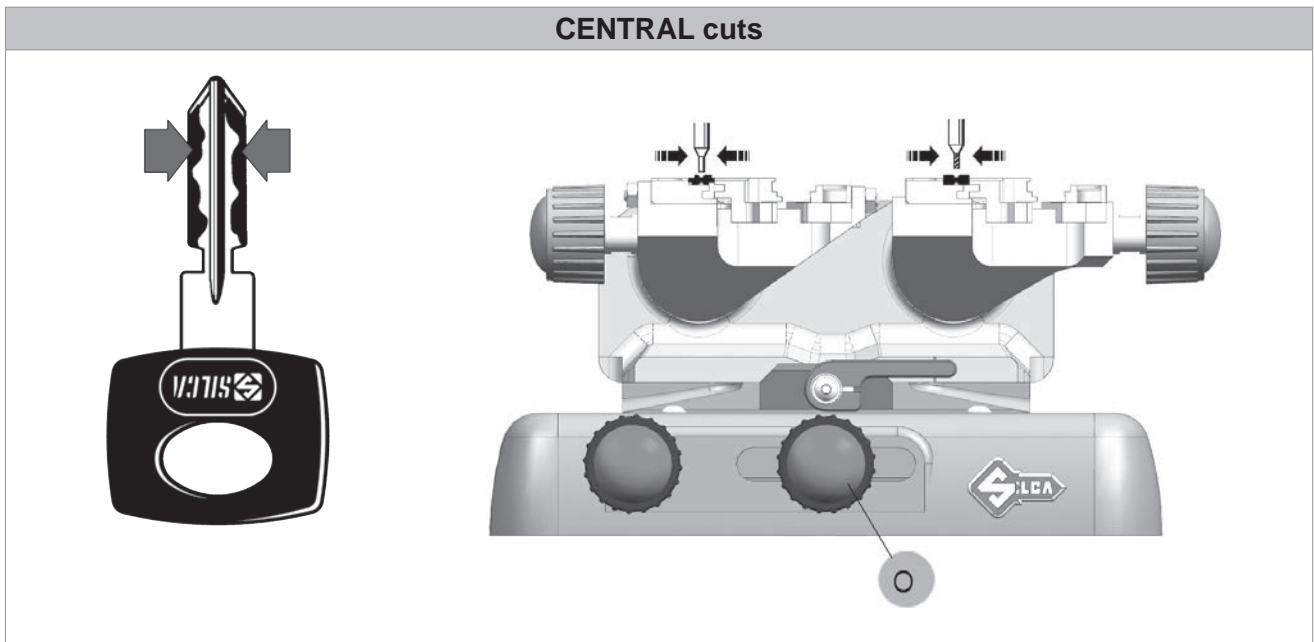


Fig. 23

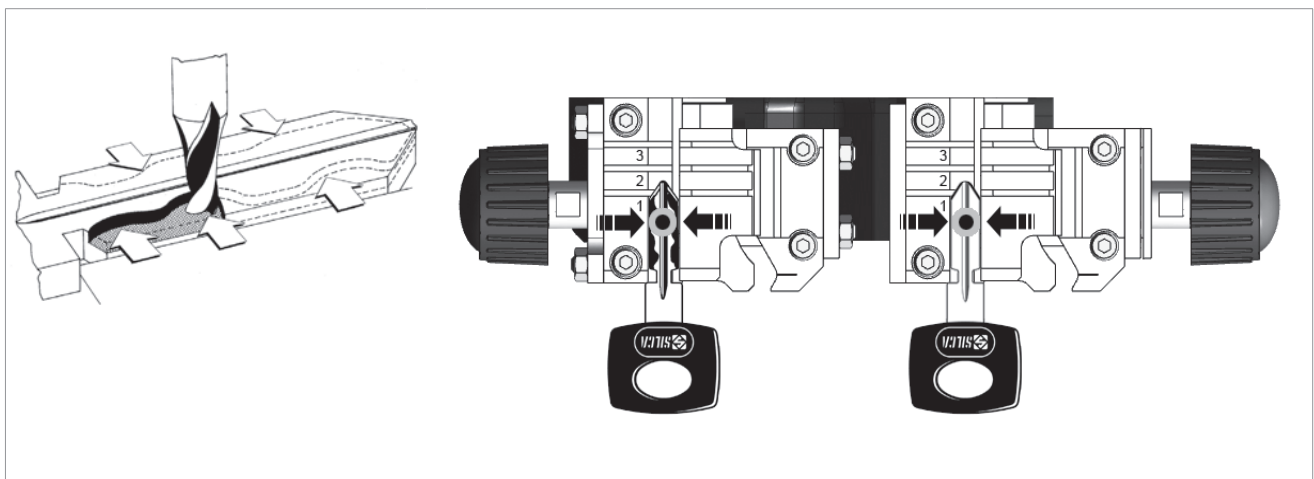


Fig. 24

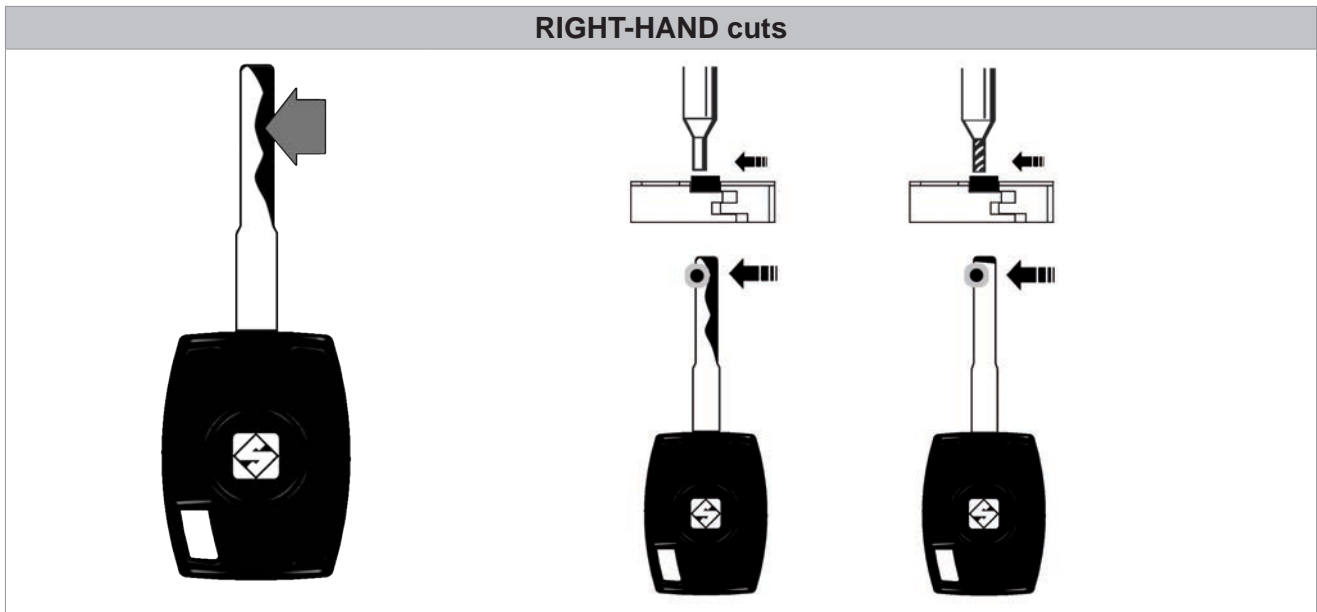


Fig. 25

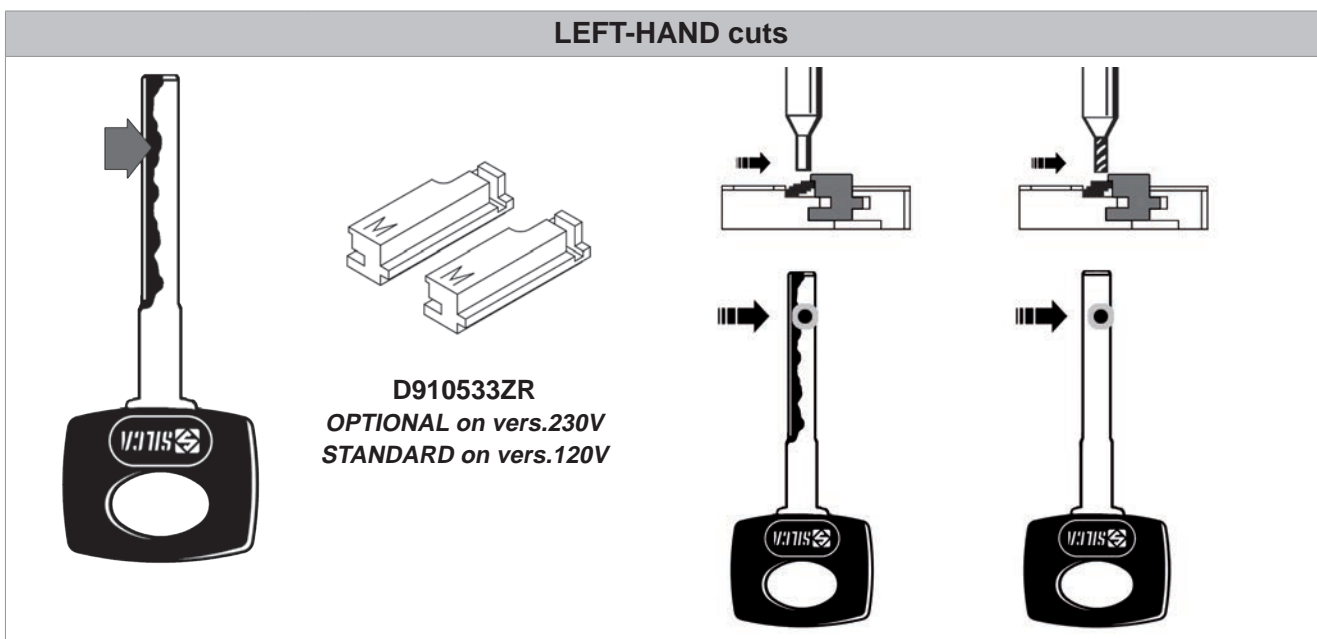


Fig. 26

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.

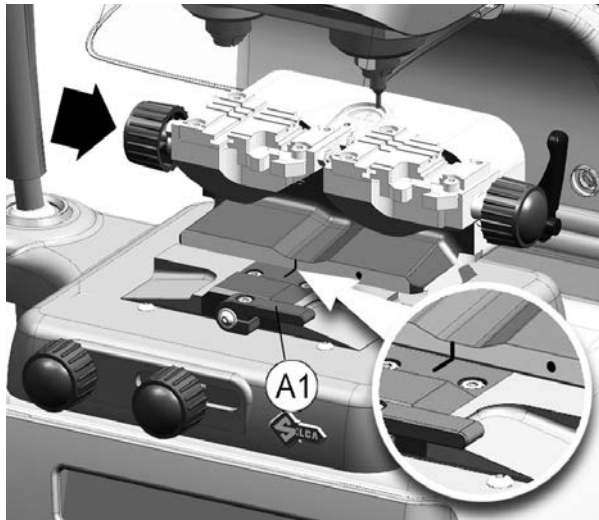


Fig. 27



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.

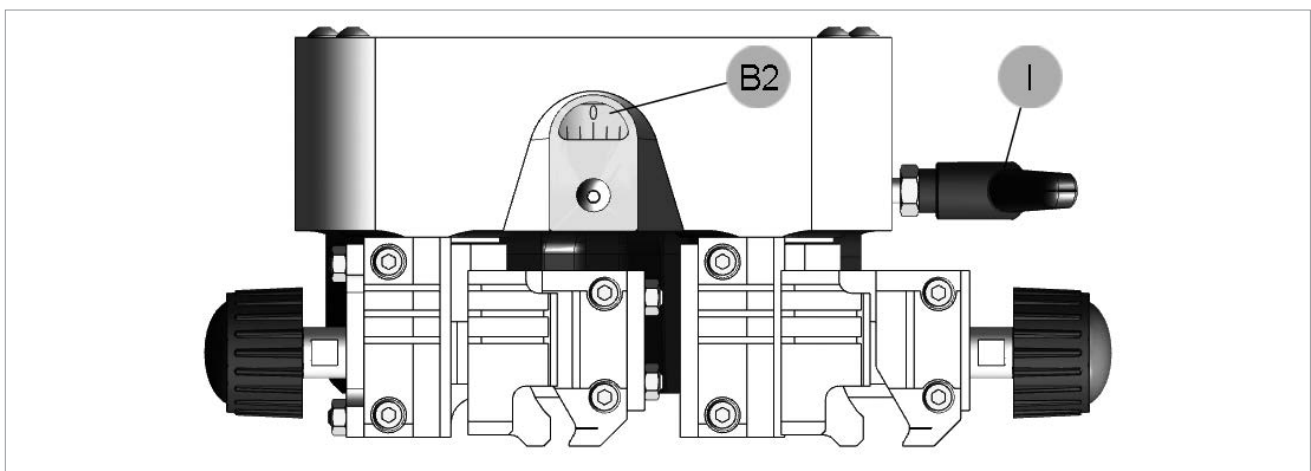


Fig. 29 - Matrix PRO clamps

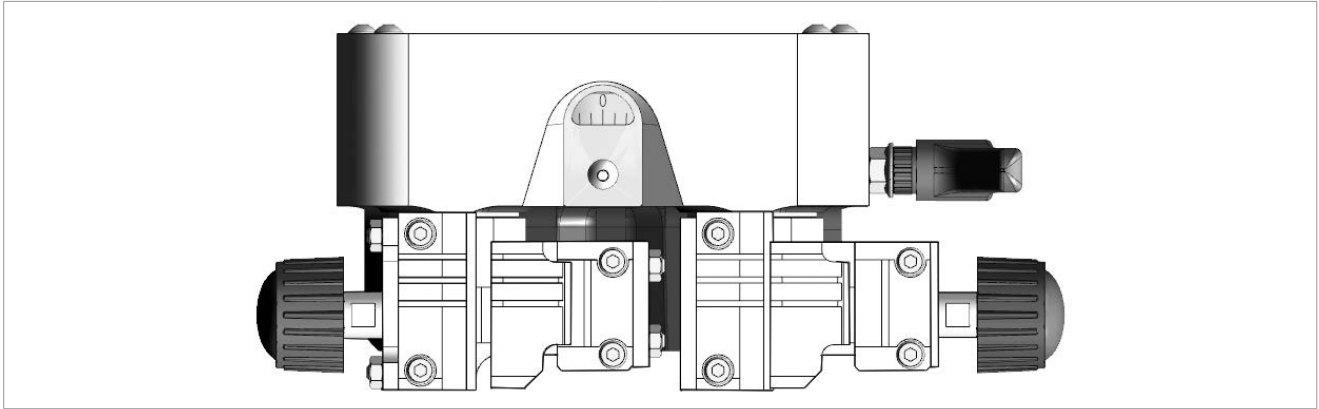


Fig. 30- Matrix EVO clamps

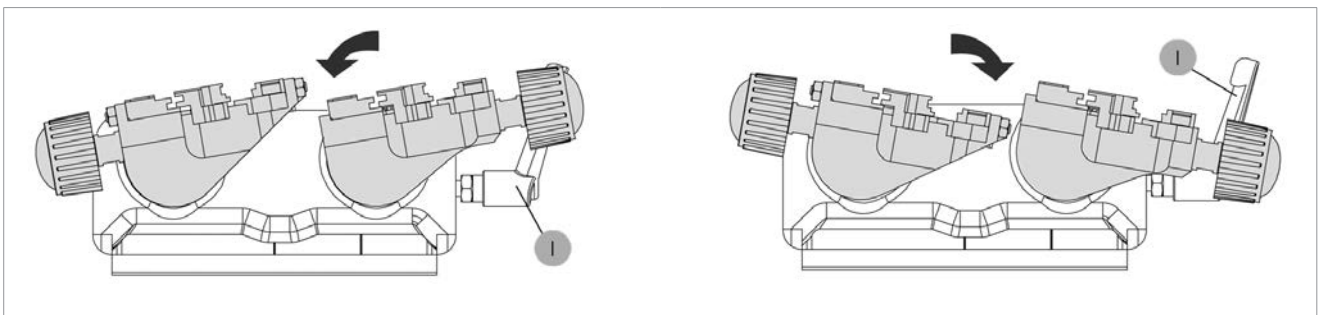


Fig. 31

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

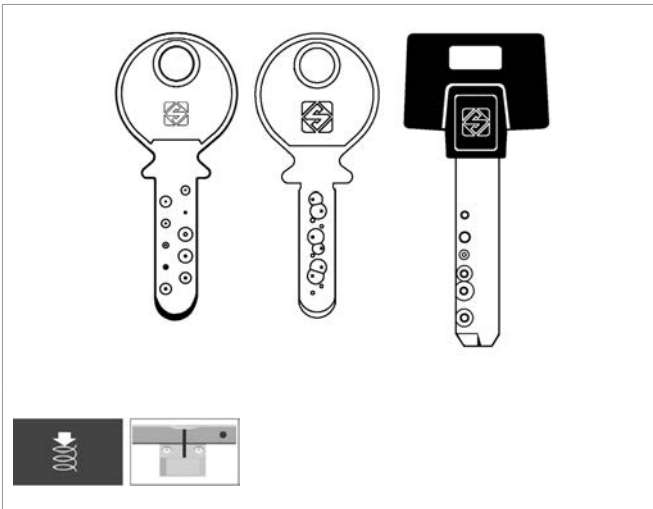


Fig. 32



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).

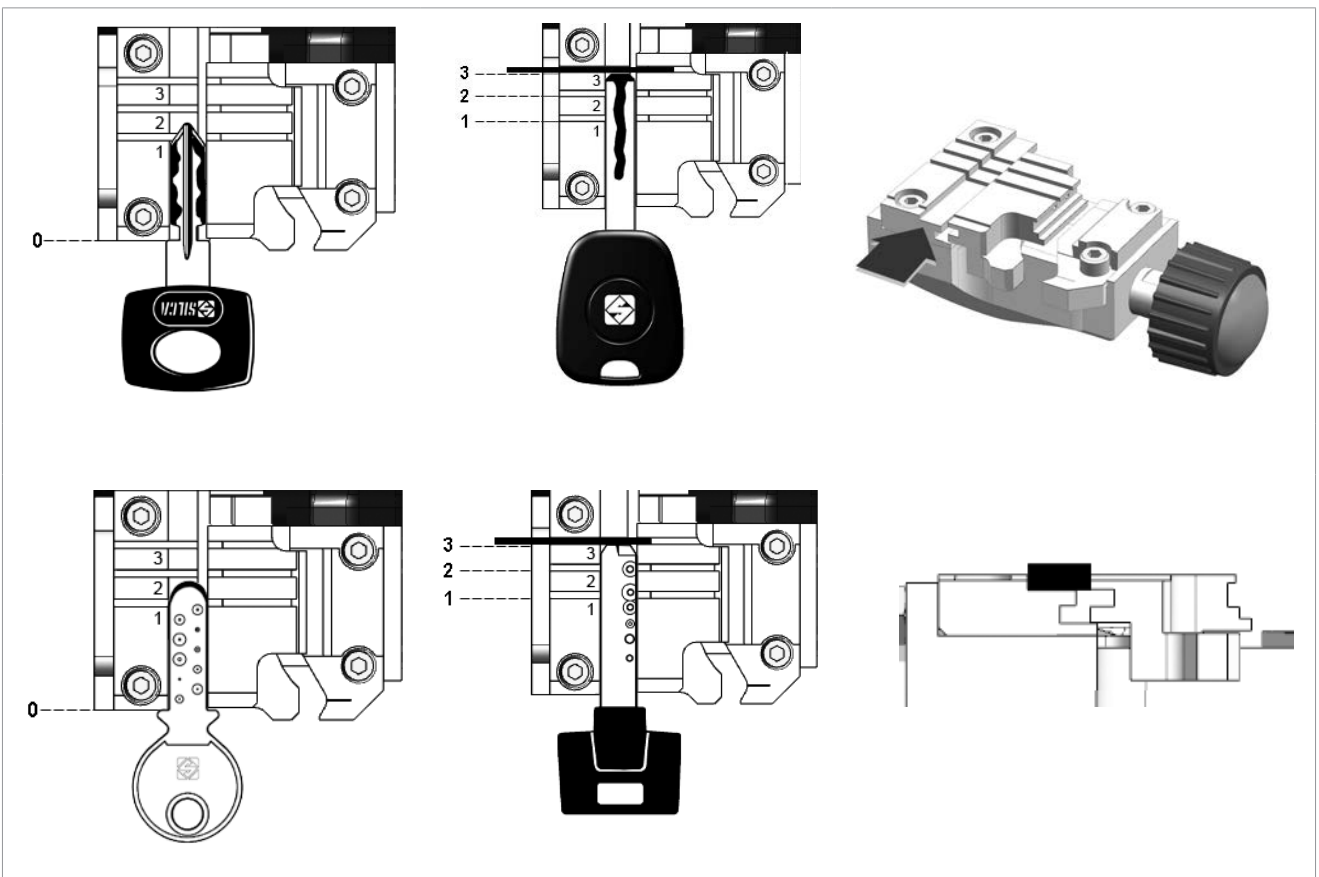


Fig. 34

FICHET KEYS WITH H PROFILE

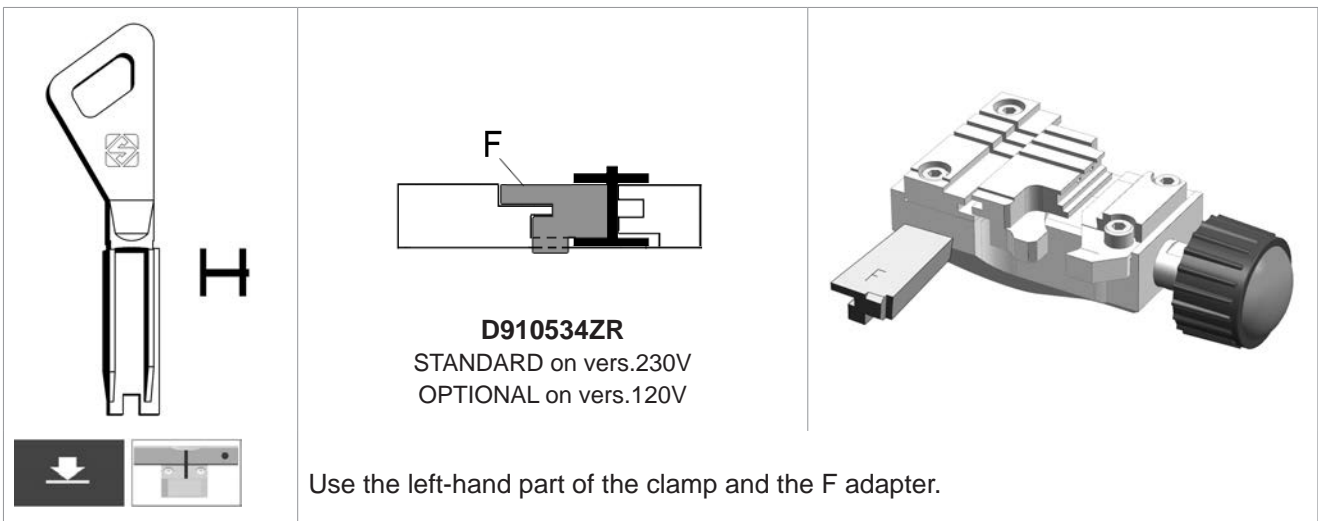


Fig. 35

LASER KEYS WITH A NARROW STEM (MERCEDES)

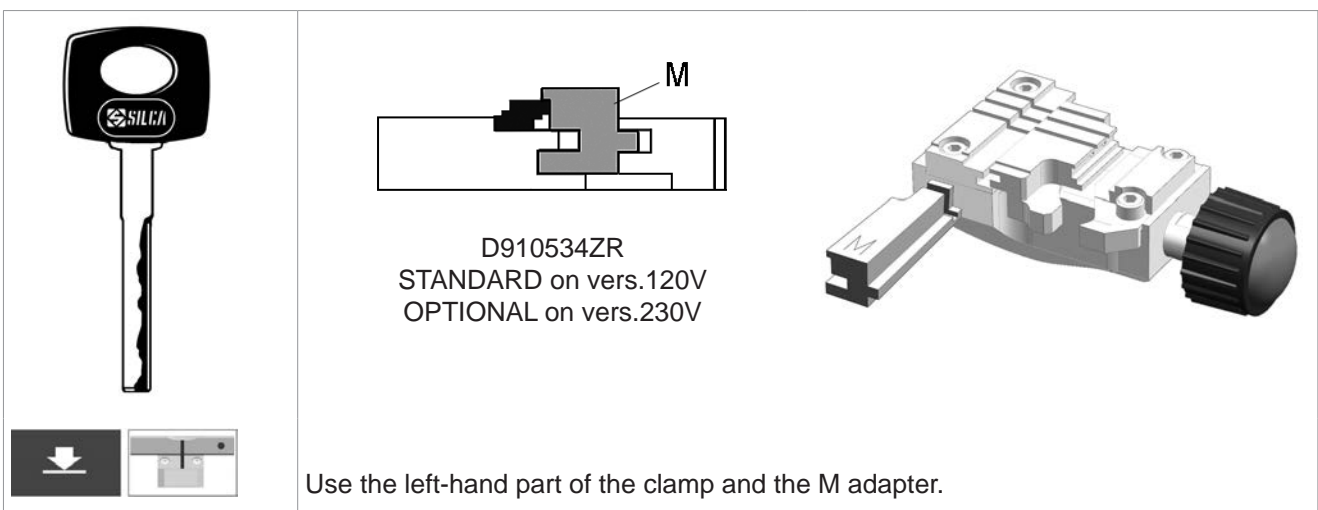


Fig. 36

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

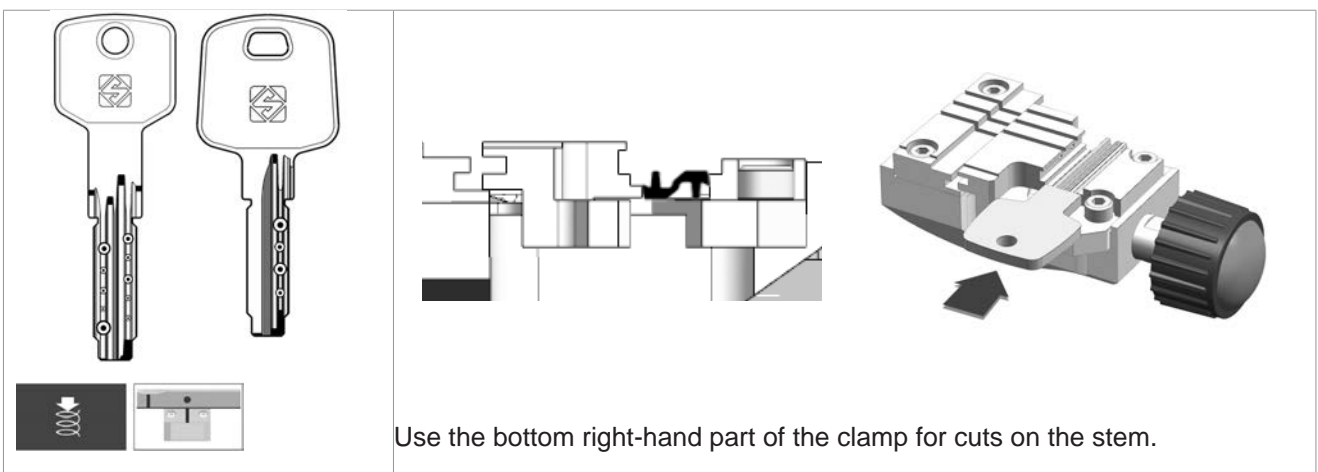


Fig. 37

LASER KEYS WITH HU66 PROFILE

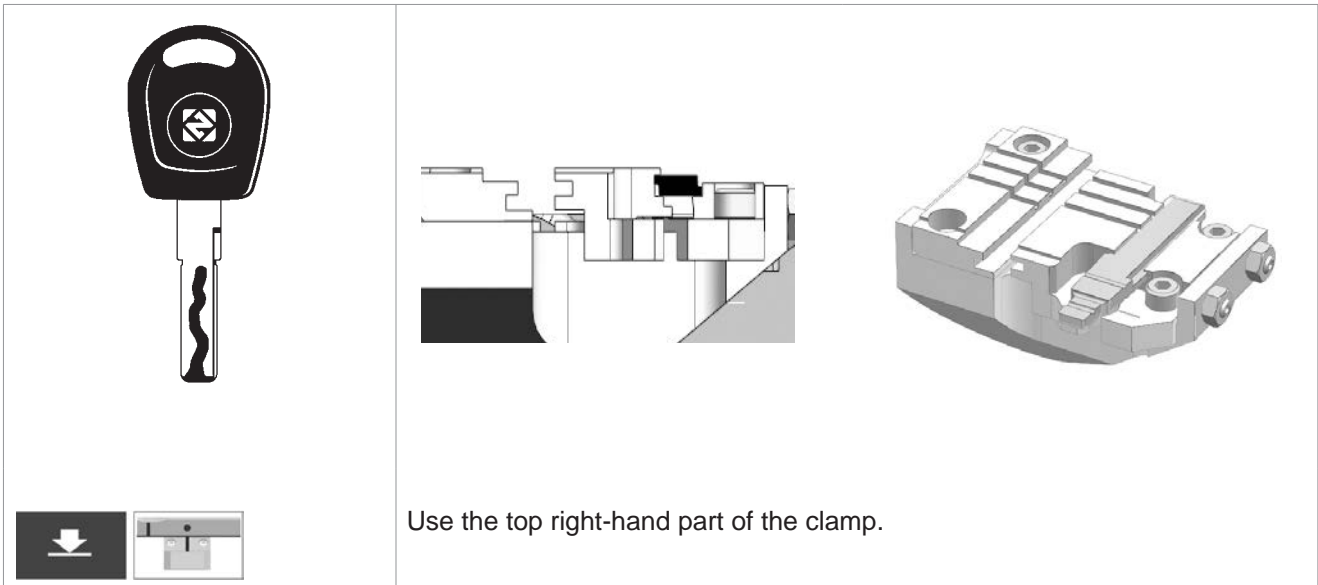


Fig. 38

TUBULAR KEYS (MATRIX PRO VERSION ONLY)

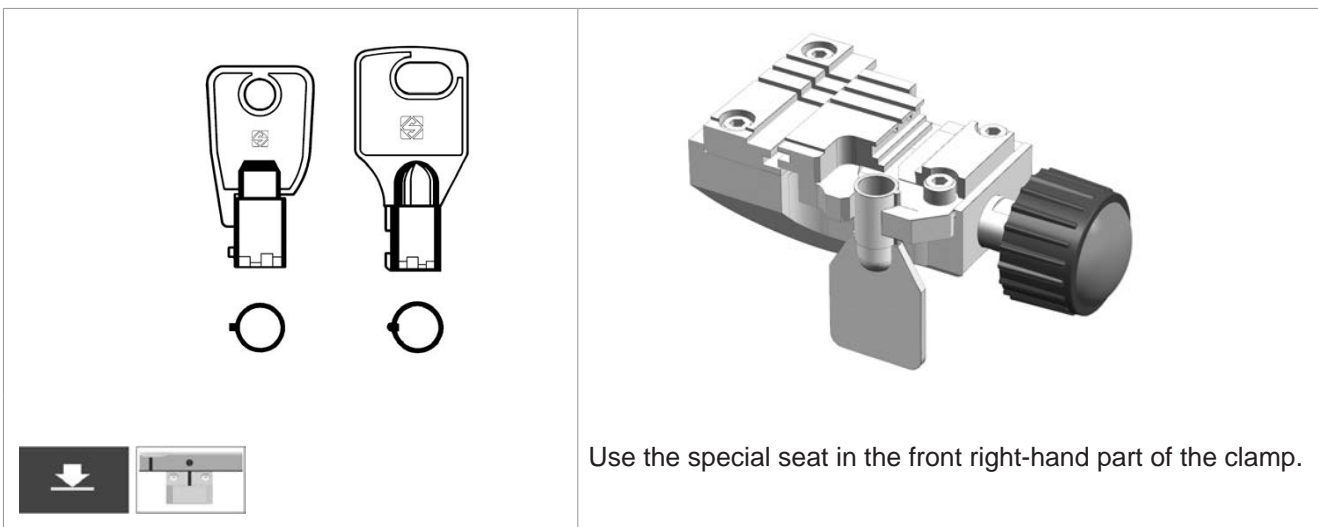


Fig. 39

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.

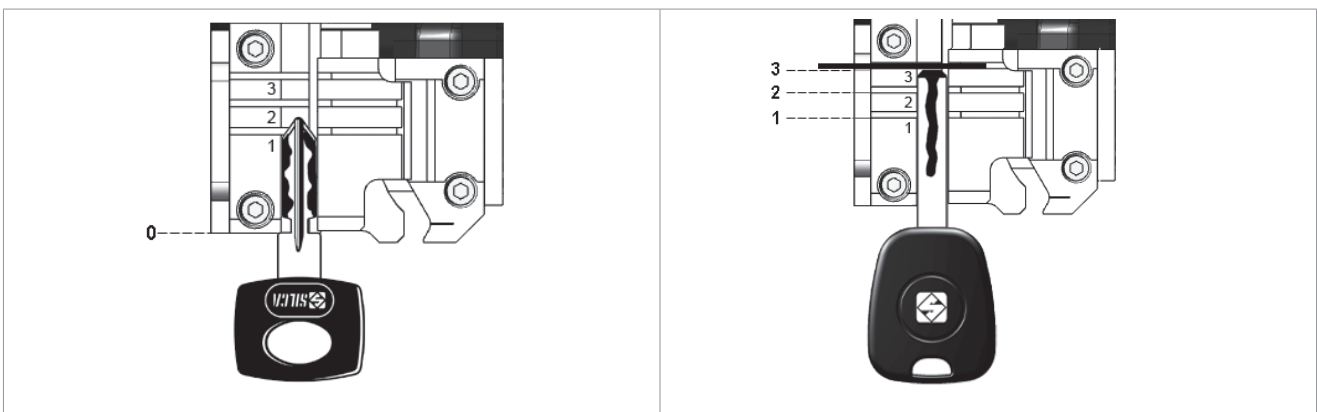


Fig. 40

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.

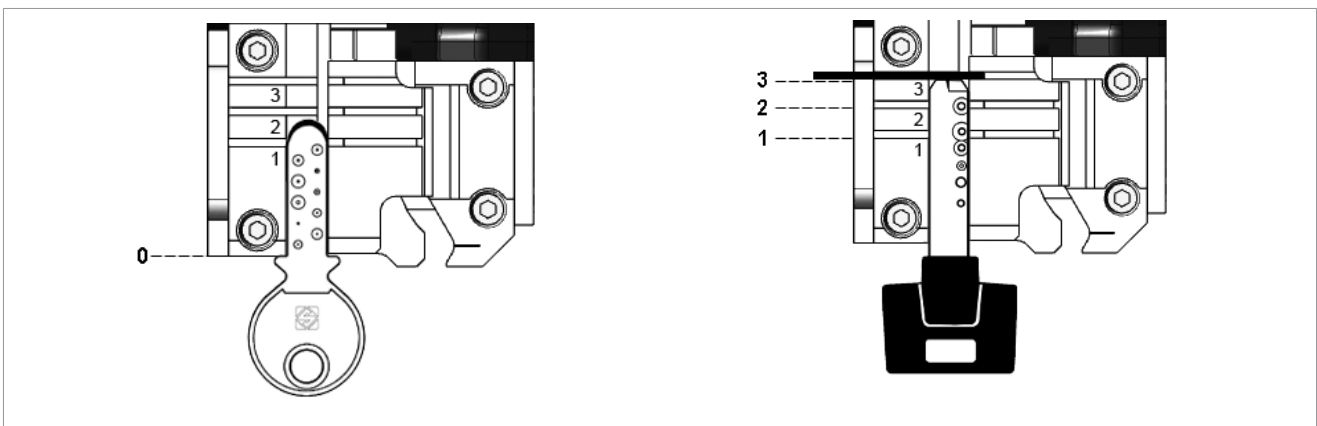


Fig. 42

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).

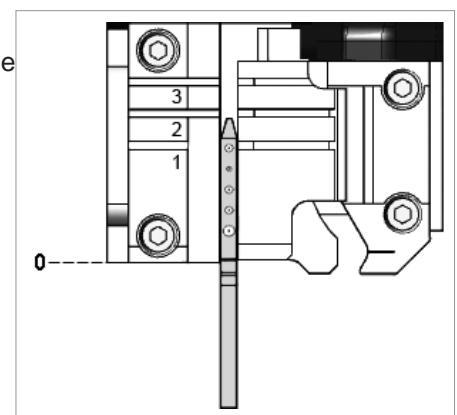


Fig. 43

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.

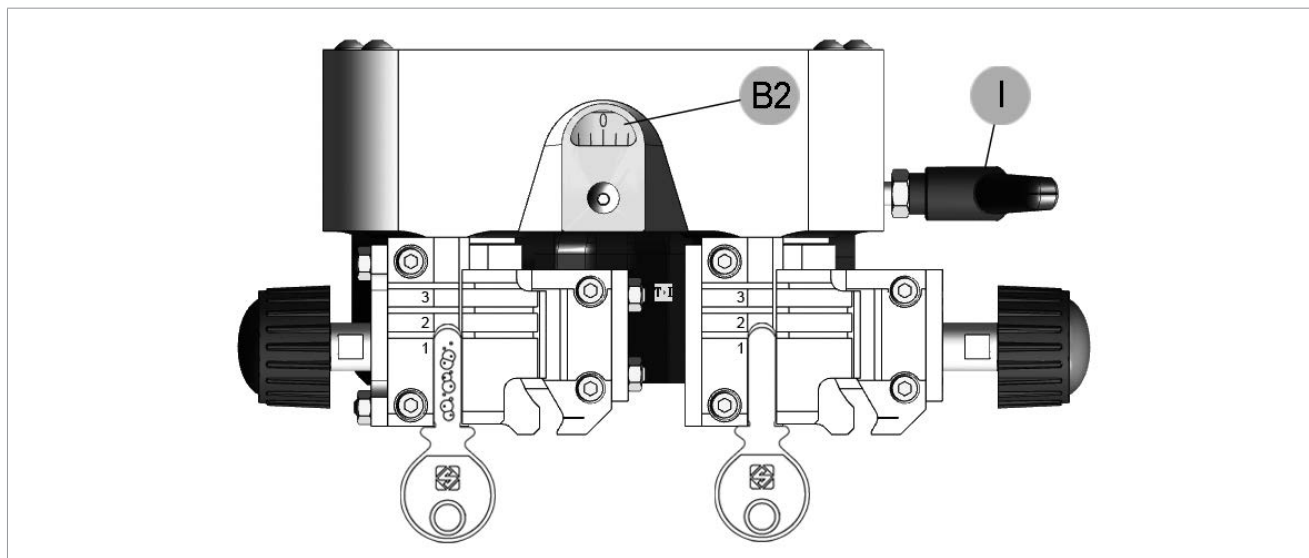


Fig. 44

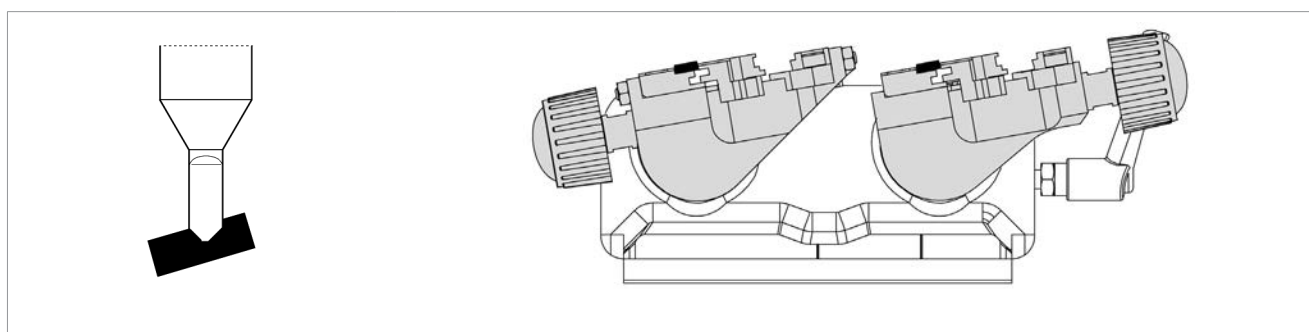


Fig. 45

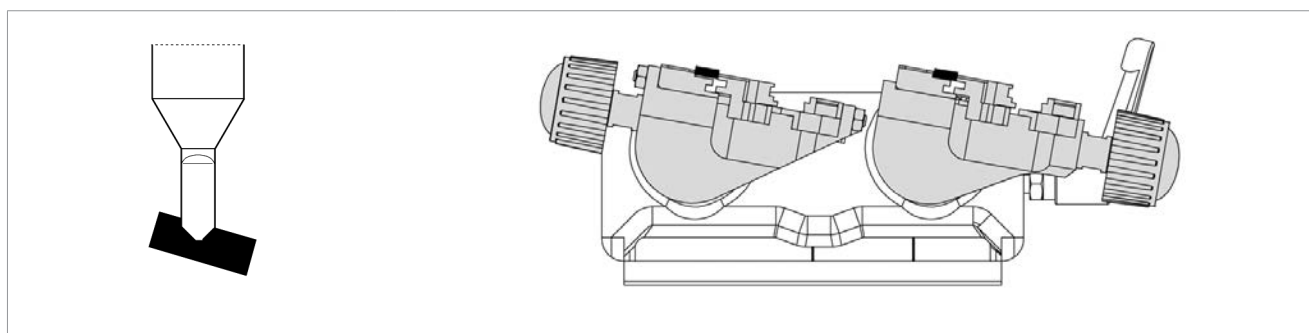


Fig. 46

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.

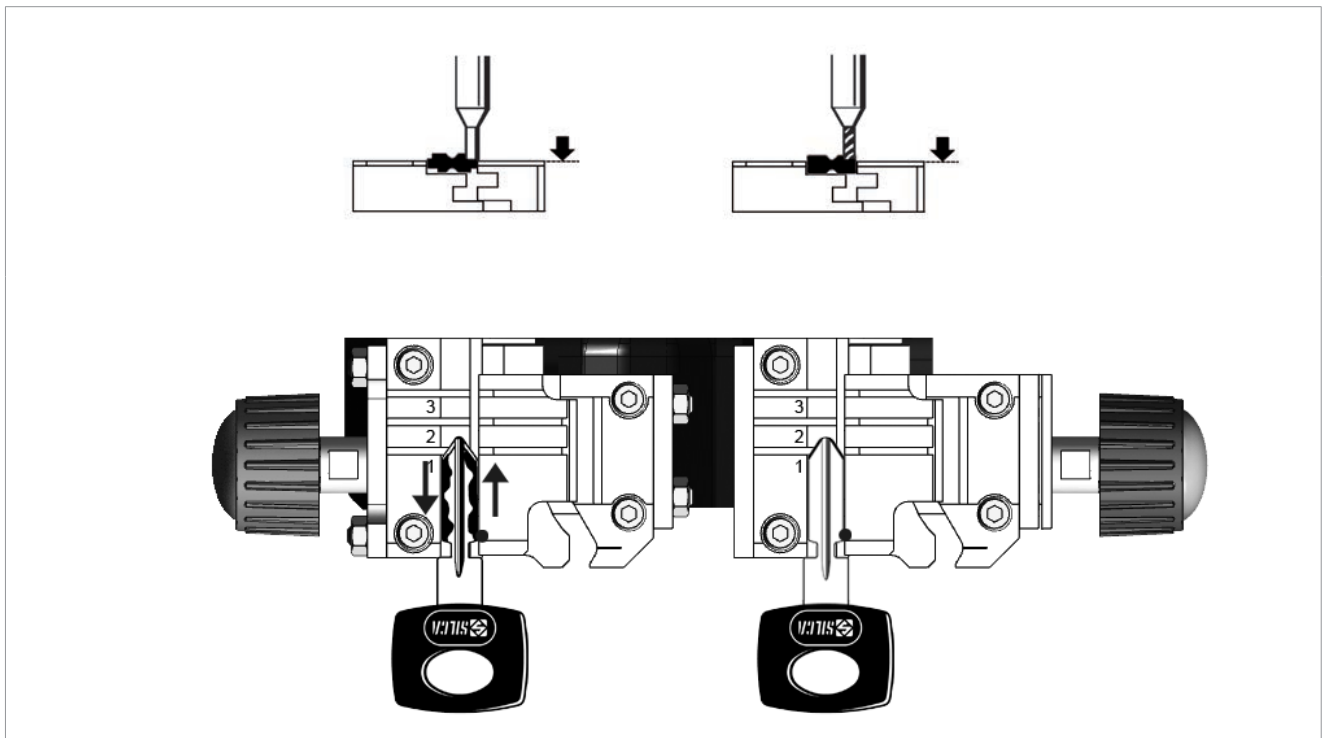


Fig. 47

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:

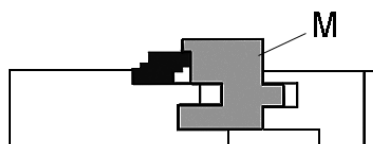
- 2) fit the adapter onto the left-hand clamp and align the groove with the one on the clamp for "Stop 2" (Fig. 49).

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

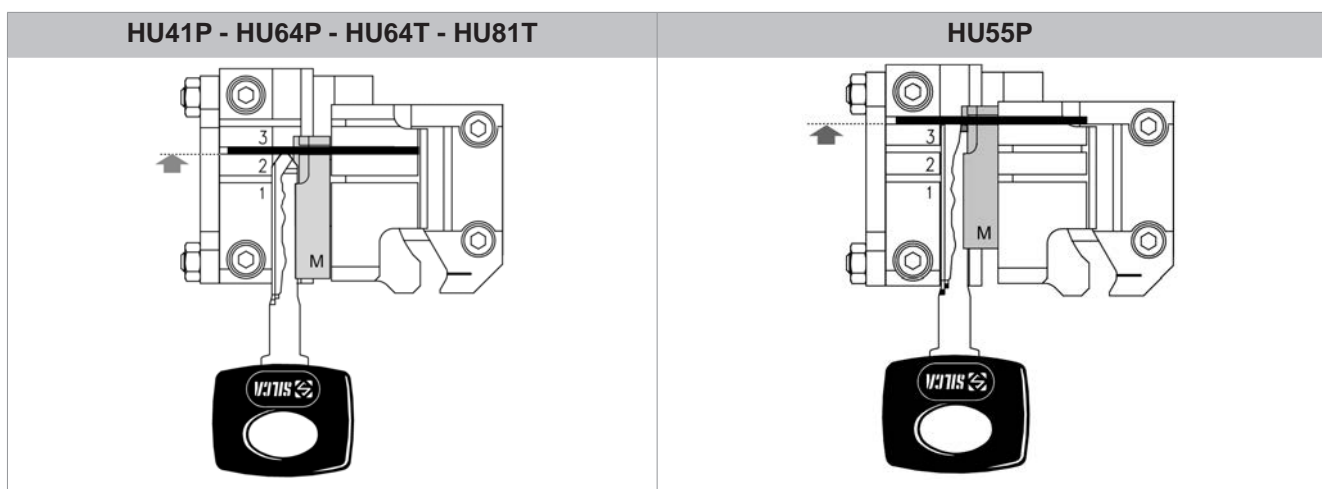


Fig. 49

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.

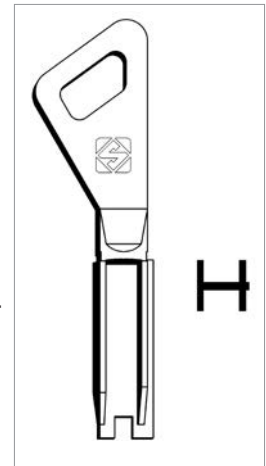


Fig. 51

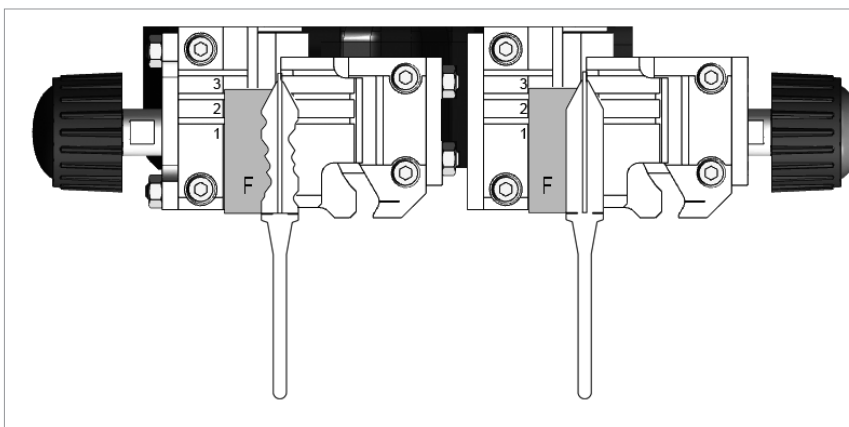


Fig. 52

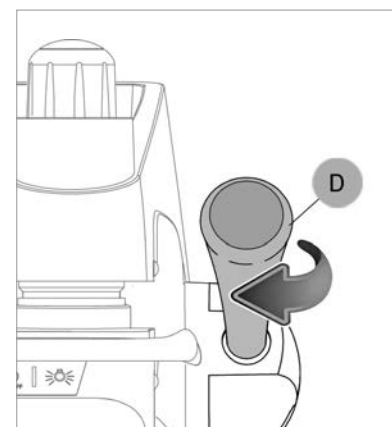


Fig. 53

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.

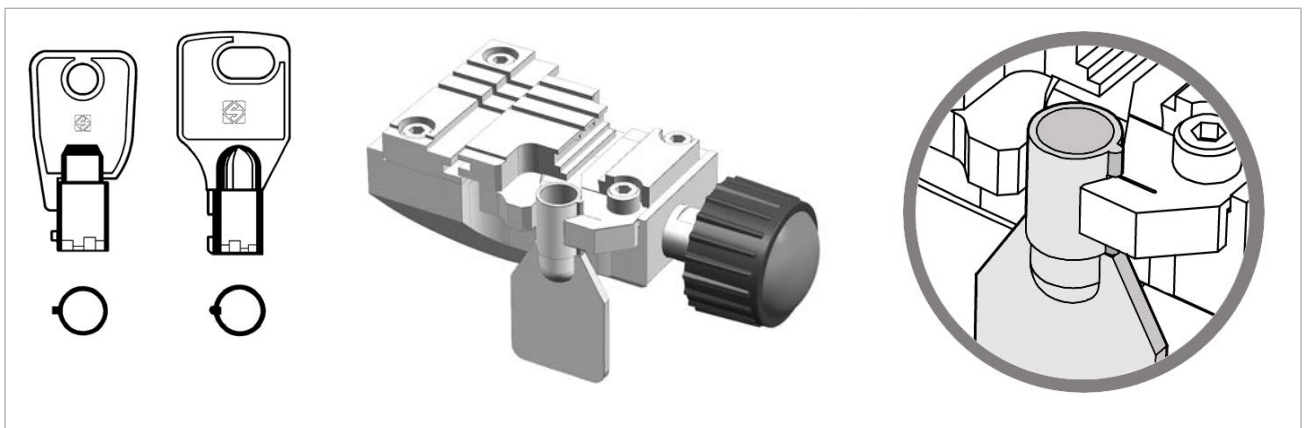


Fig. 54

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).

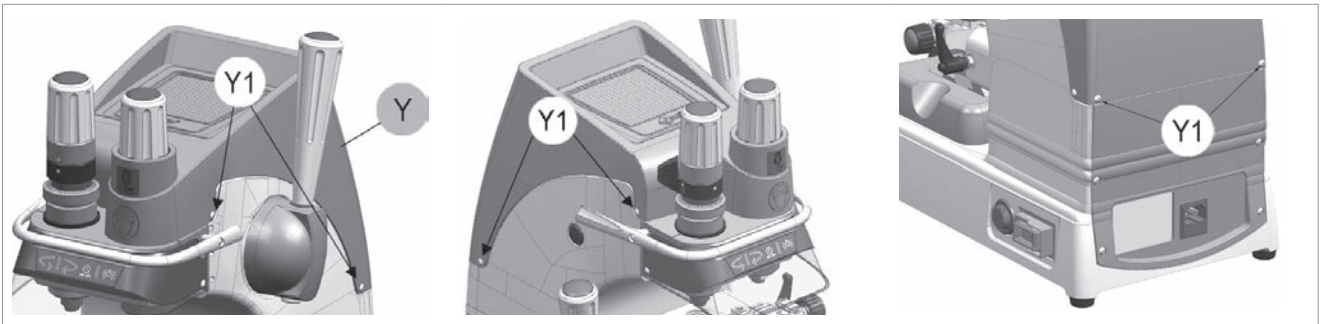


Fig. 55

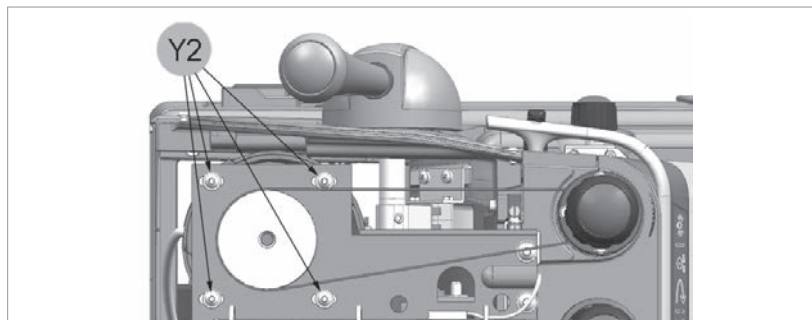


Fig. 56

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).

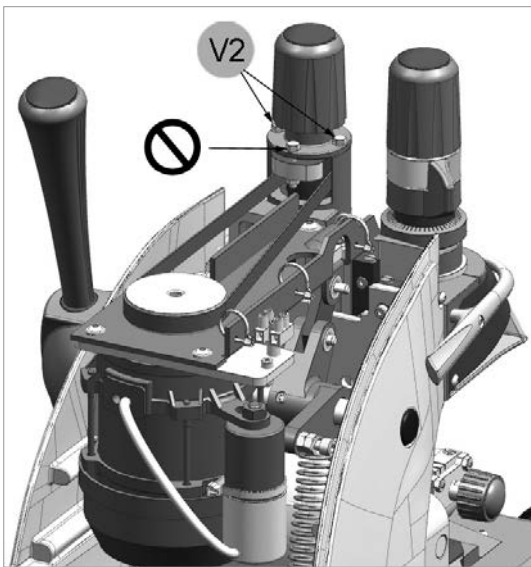


Fig. 57

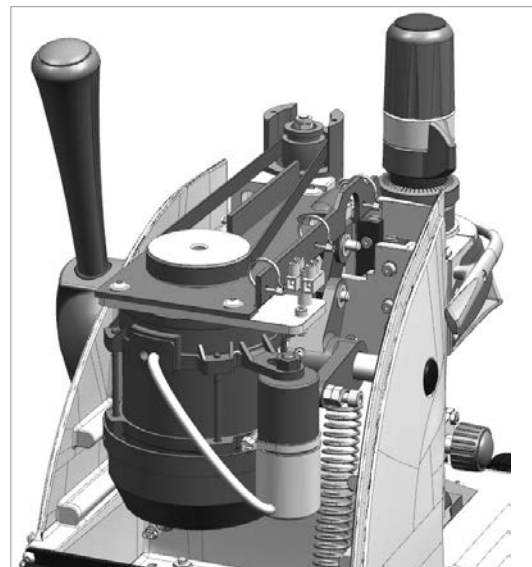


Fig. 58

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).

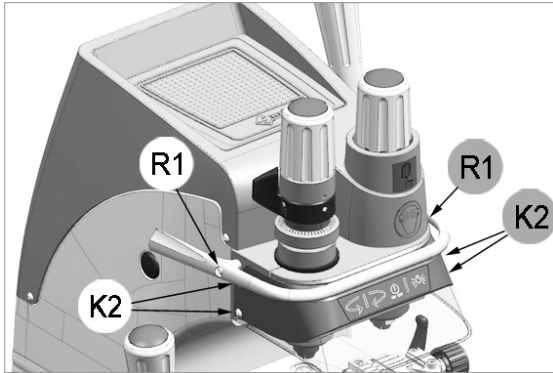


Fig. 59

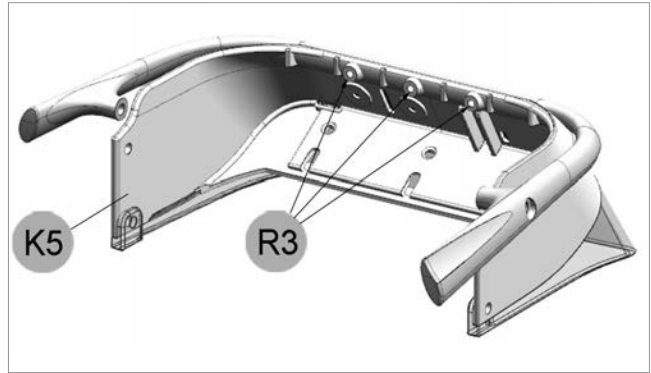


Fig. 60

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

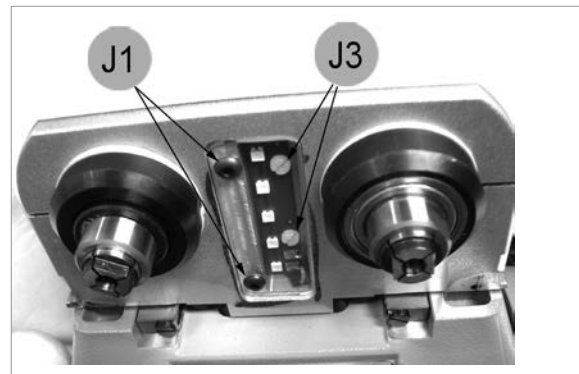


Fig. 62

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.

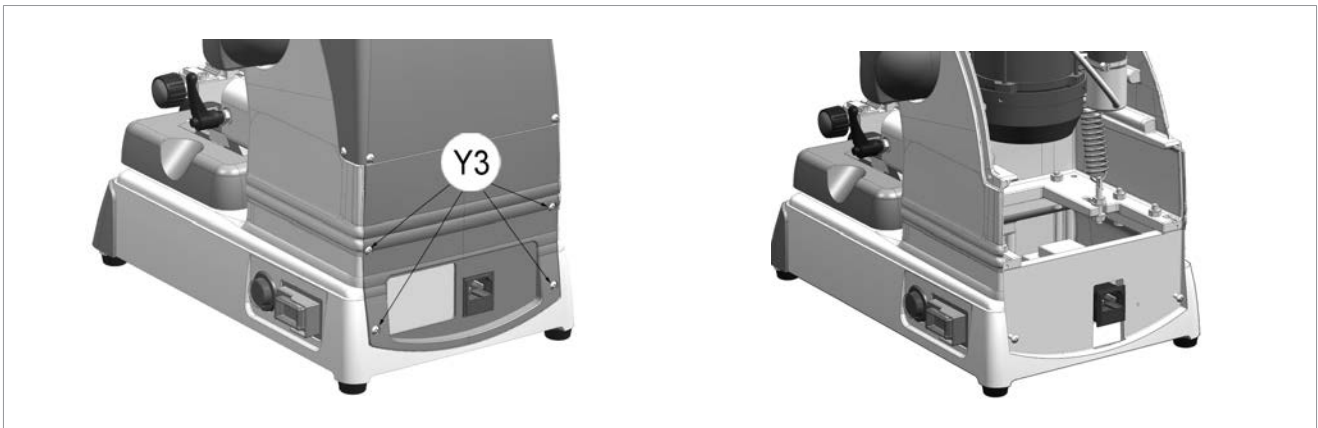


Fig. 63

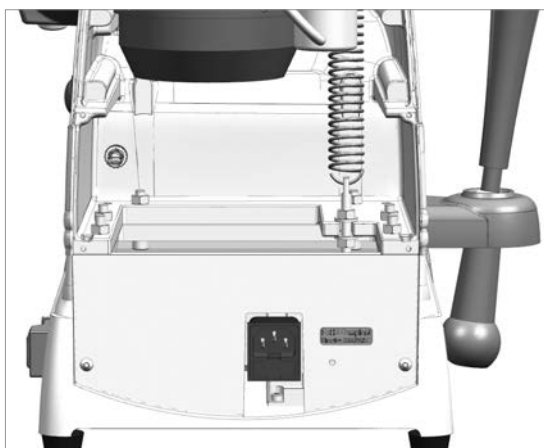


Fig. 64

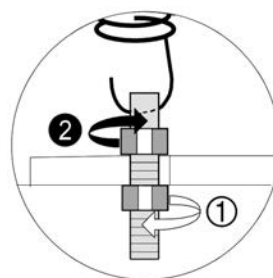


Fig. 65

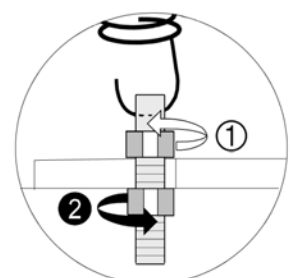


Fig. 66

10.7 CHECKING AND REPLACING FUSES

Fuses should be checked with an instrument for measuring continuity (tester, ohmmeter, 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.

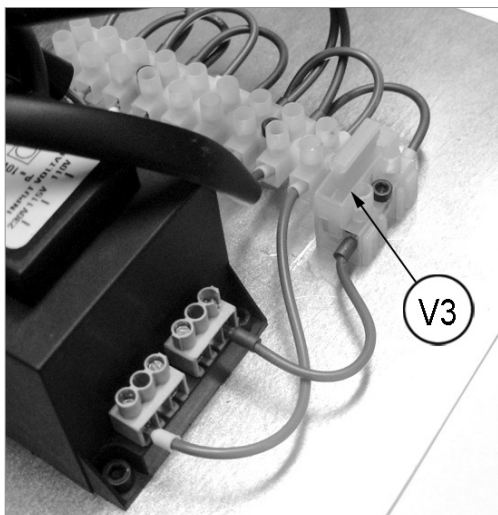


Fig. 68

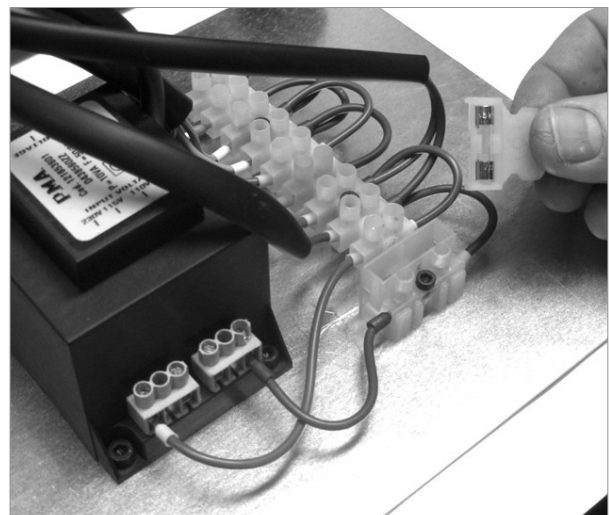


Fig. 69

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).

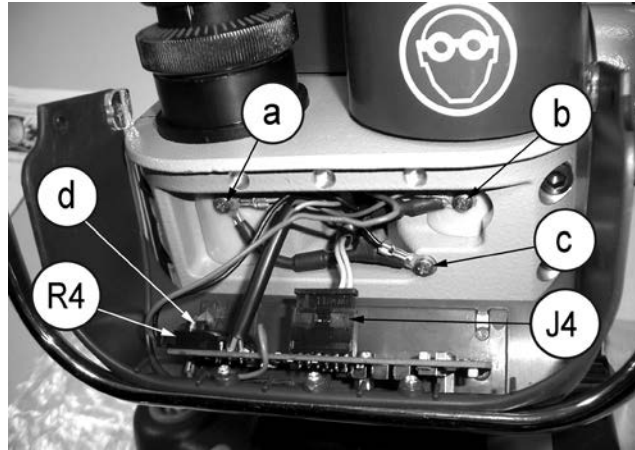


Fig. 70

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.

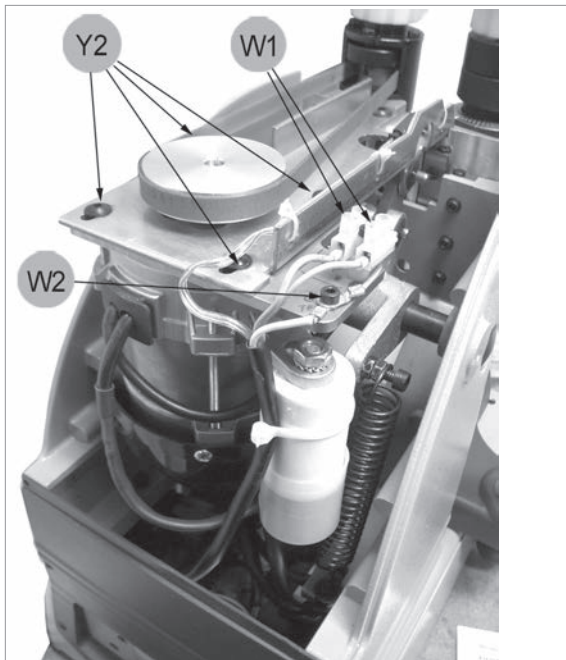


Fig. 73

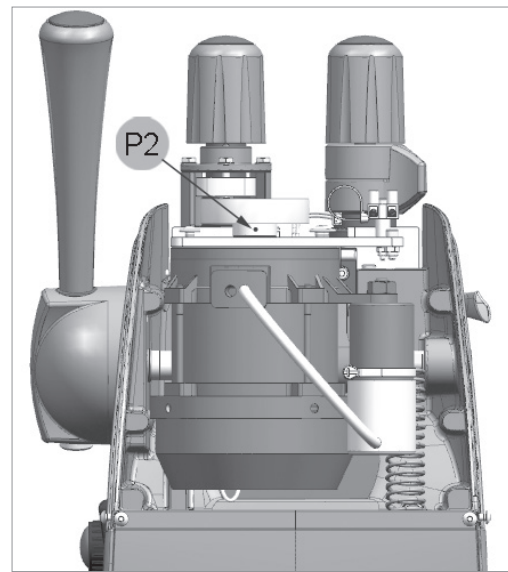


Fig. 74

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.

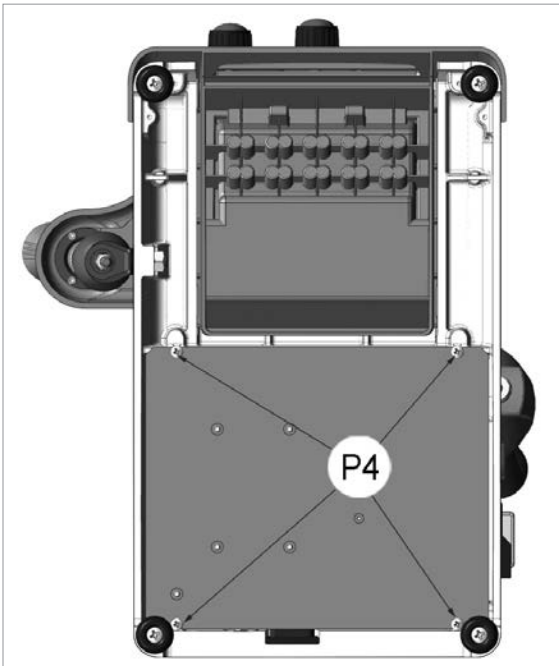


Fig. 75

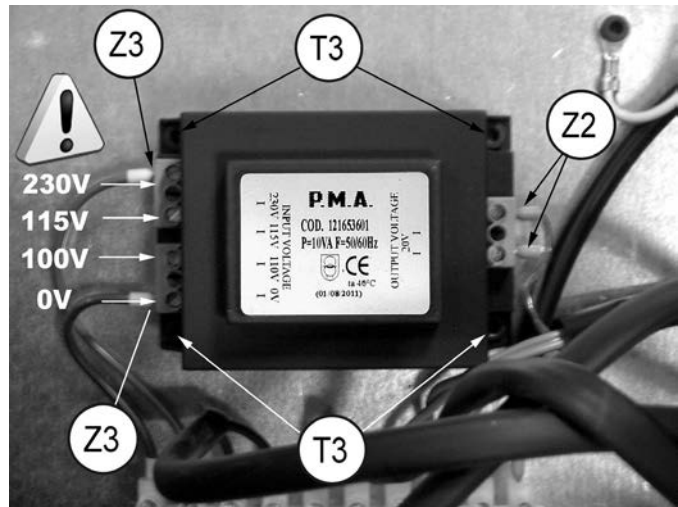


Fig. 76

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

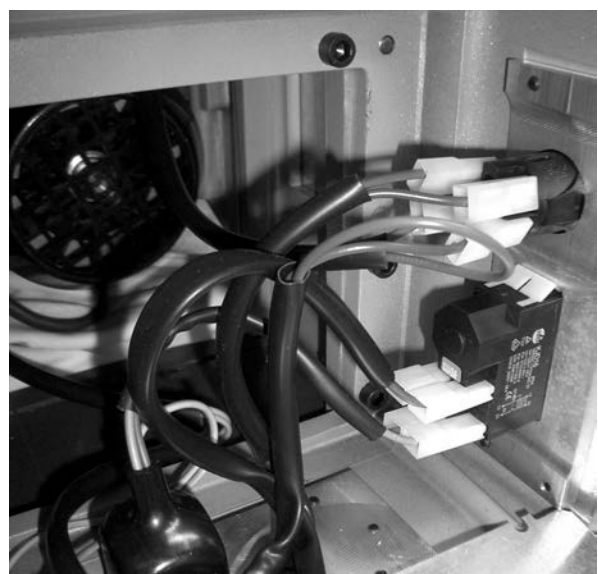


Fig. 78

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.

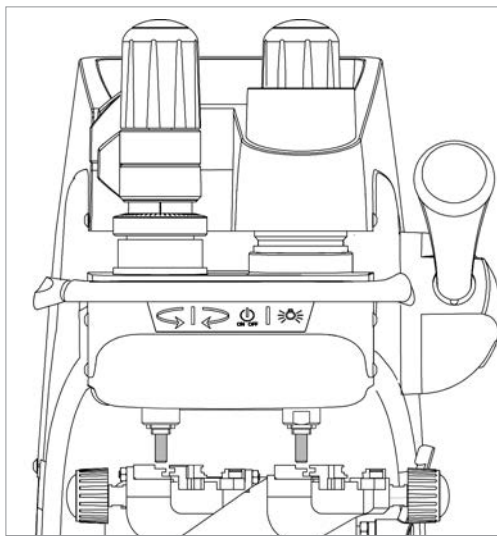


Fig. 79

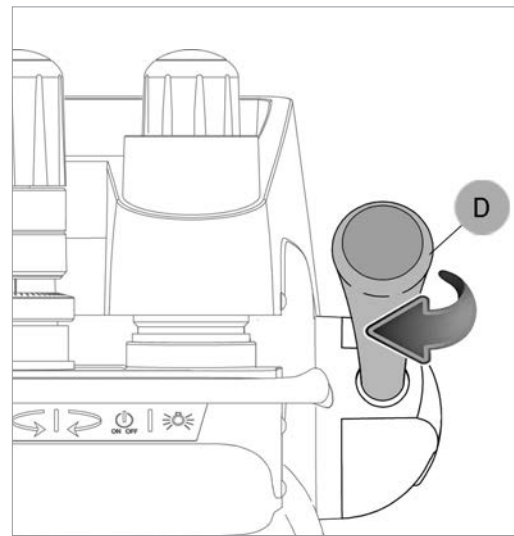


Fig. 80

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.

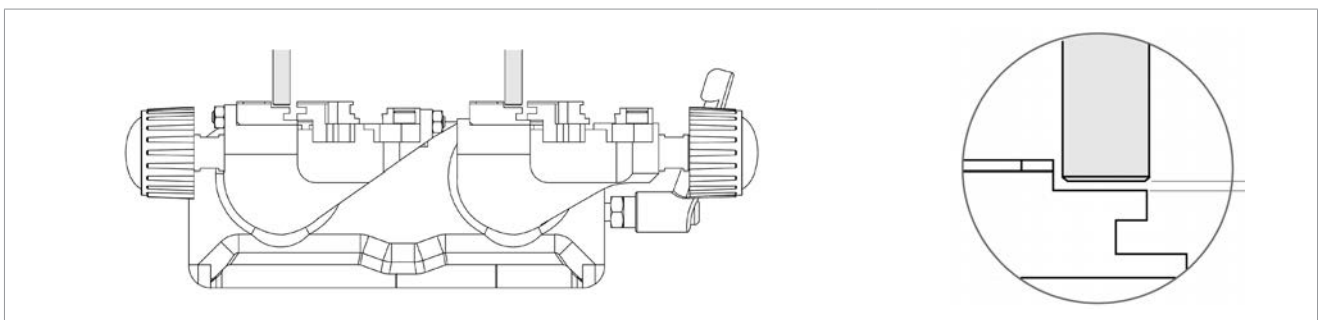


Fig. 81

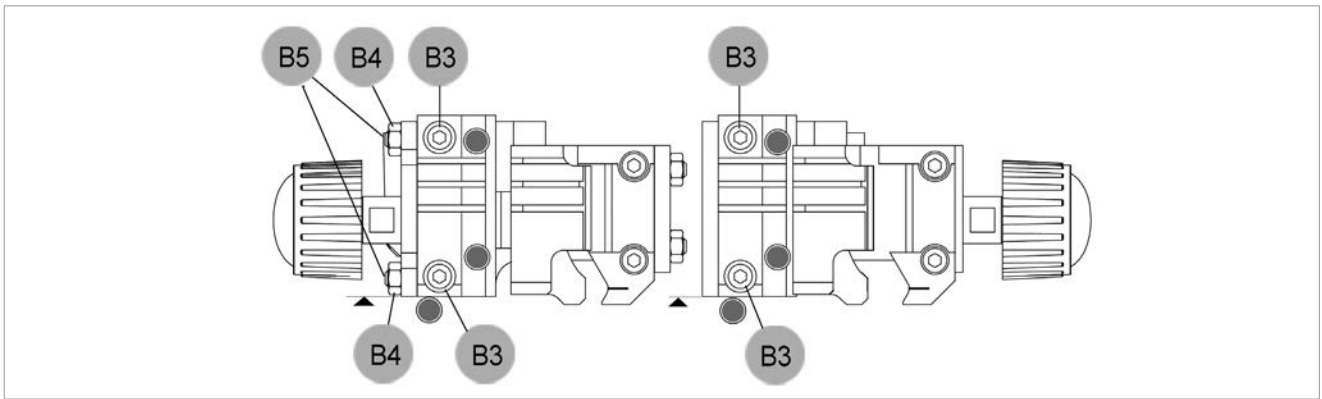


Fig. 82

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.

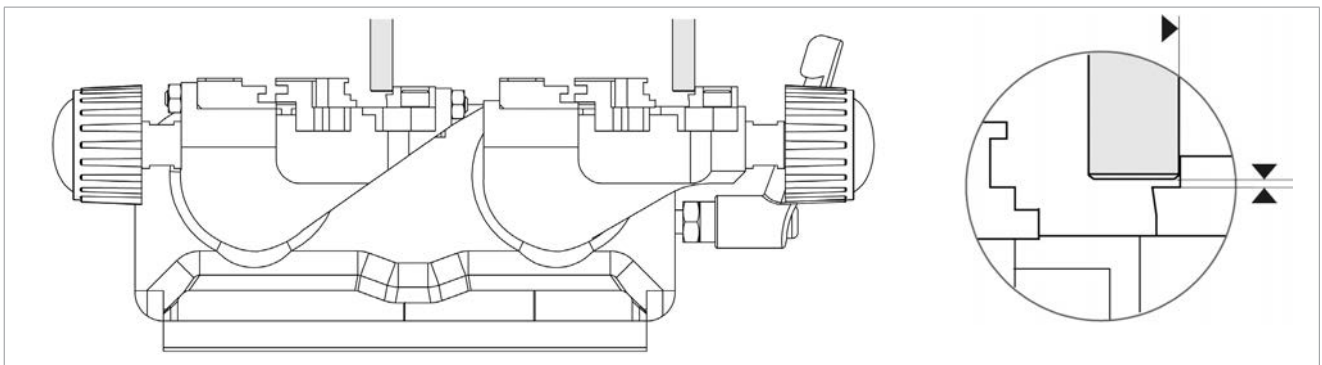


Fig. 83

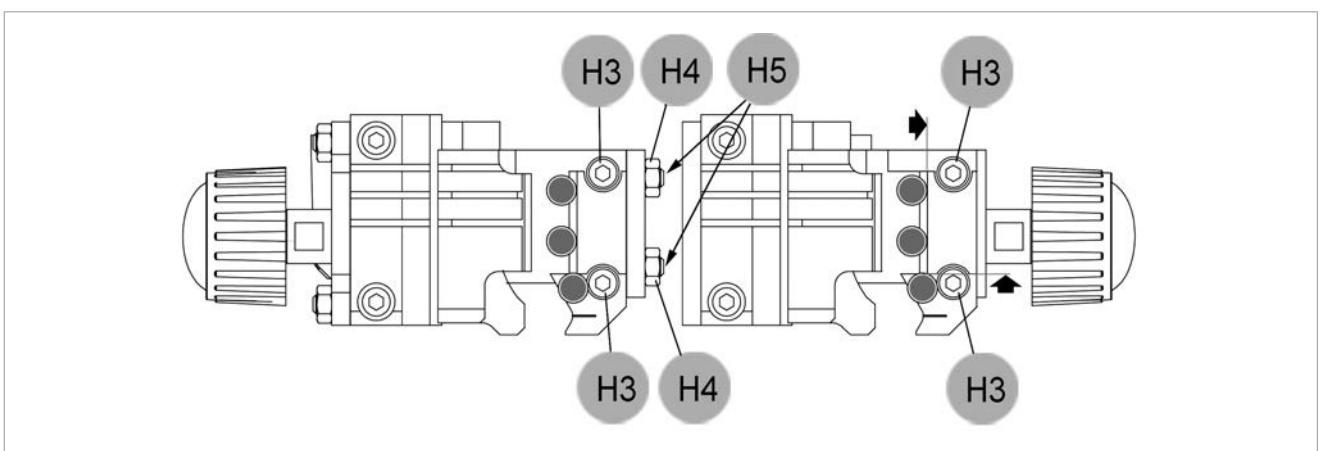


Fig. 84

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).

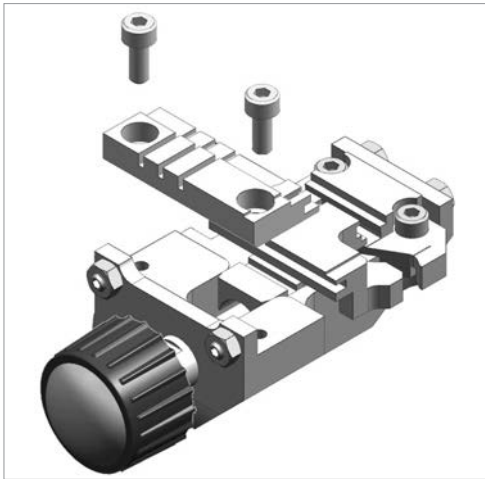


Fig. 85

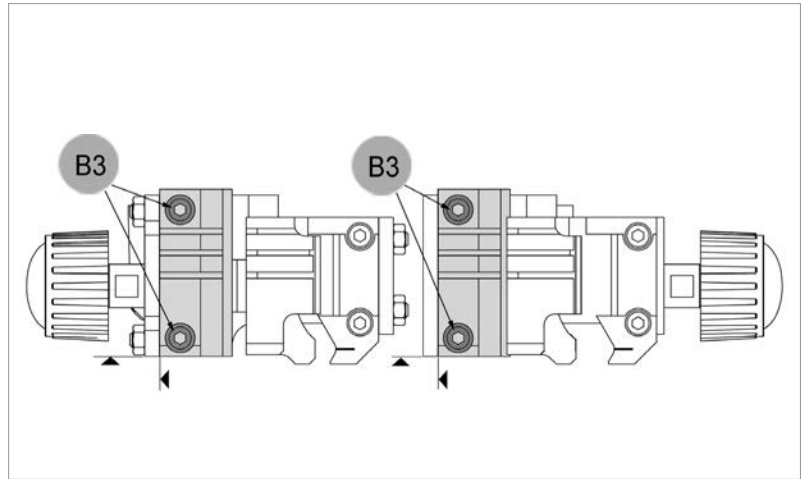


Fig. 86

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).

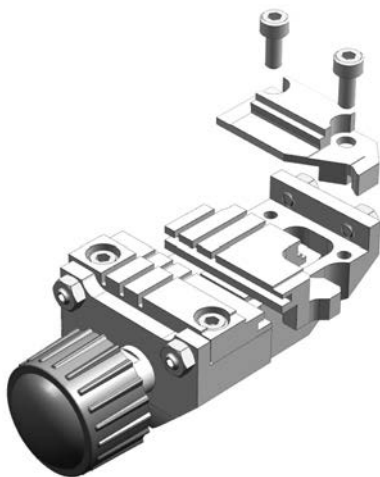


Fig. 87

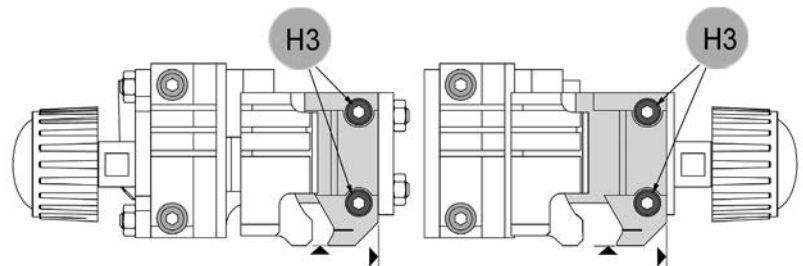


Fig. 88

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).

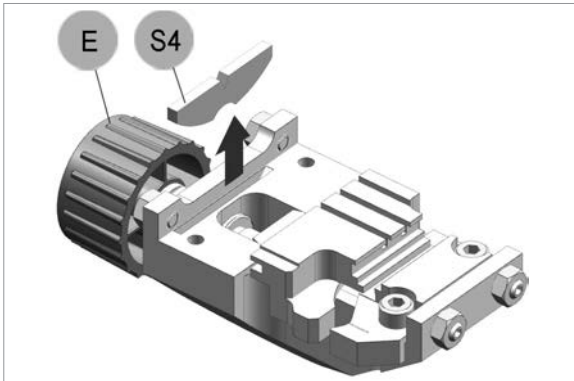


Fig. 89

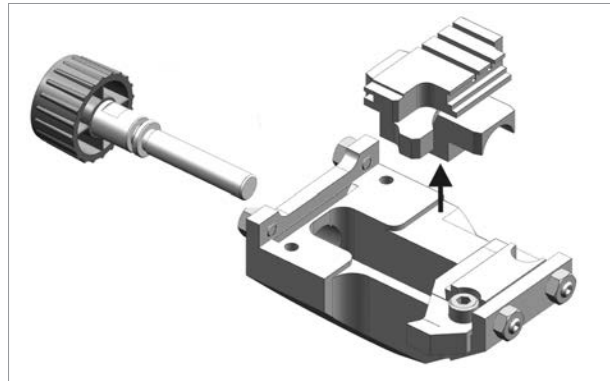


Fig. 90

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).

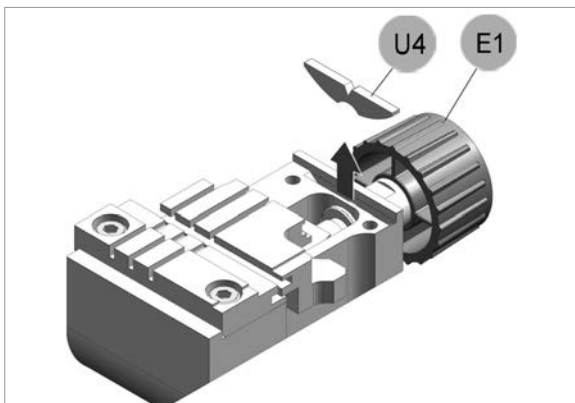


Fig. 91

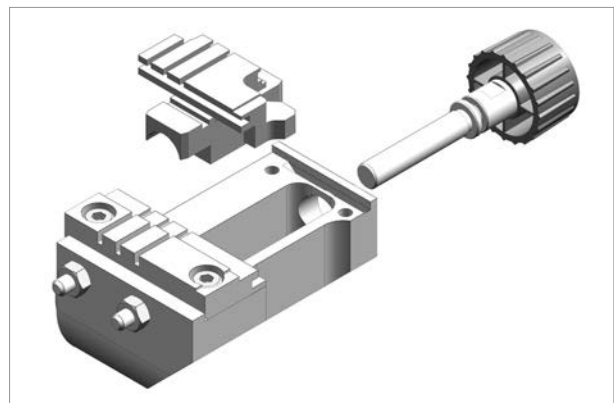


Fig. 92

11 DISPOSAL

For correct disposal please refer to current standards.

INFORMATION FOR USERS OF PROFESSIONAL EQUIPMENT



From “Actuation of Directive 2012/19/EU regarding Waste Electrical and Electronic Equipment (WEEE)”

The symbol of a crossed waste bin found on equipment or its packing indicates that at the end of the product's useful life it must be collected separately from other waste so that it can be properly treated and recycled.

In particular, separate collection of this professional equipment when no longer in use is organised and managed:

- a) directly by the user when the equipment was placed on the market before 31 December 2010 and the user personally decides to eliminate it without replacing it with new equivalent equipment designed for the same use;
- b) by the manufacturer, that is to say the subject which was the first to introduce and market new equipment that replaces previous equipment, when the user decides to eliminate equipment placed on the market before 31 December 2010 at the end of its useful life and replace it with an equivalent product designed for the same use. In this latter case the user may ask the manufacturer to collect the existing equipment;
- c) by the manufacturer, that is to say the subject which was the first to introduce and market new equipment that replaces previous equipment, if it was placed on the market after 31 December 2010;

Suitable separate collection for the purpose of forwarding discarded equipment for recycling, treatment or disposal in an environmentally friendly way helps to avoid possible negative effects on the environment and human health and encourages re-use and/or recycling of the materials making up the equipment.

The sanctions currently provided for by law shall apply to users who dispose of products in unauthorised ways.

12 AFTER-SALES SERVICE

Silca provides full service to purchasers of the 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.

At the end of the manual there is a list of authorized Service Centre addresses; if the manual was downloaded is necessary visit the website to see the contacts (www.silca.biz).

Silca undertakes to make consumables, optional items and spare parts available for the limited time defined in its product obsolescence policy.

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.



EU 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** models

**MATRIX EVO
MATRIX PRO
MATRIX EVO S
MATRIX PRO S**

comply with the requirements of the following European Directives:

European Union **DIRECTIVE 2006/42/EC** (Machines)
European Union **DIRECTIVE 2014/30/EU** (Electromagnetic Compatibility)
European Union **DIRECTIVE 2014/35/EU** (Low Voltage)
European Union **DIRECTIVE 2011/65/EU** (RoHS2)
European Union **DIRECTIVE 2012/19/EU** (WEEE)

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and with the following Standards:

EN 55032:2015	IEC TR 62778:2014
EN 55024:2010 + A1:2015	EN 62471:2008
EN 61000-3-2:2014	EN 62368-1:2014 + EC:2015 + A11:2017
EN 61000-3-3:2013	EN ISO 12100:2010
EN 62233:2008	EN ISO 13849-1:2015
	EN ISO 13849-2:2012

Silca S.p.A. R&D Division is authorized to create a Technical File.

VITTORIO VENETO, 15/01/2019


Pietro Barteselli, CEO