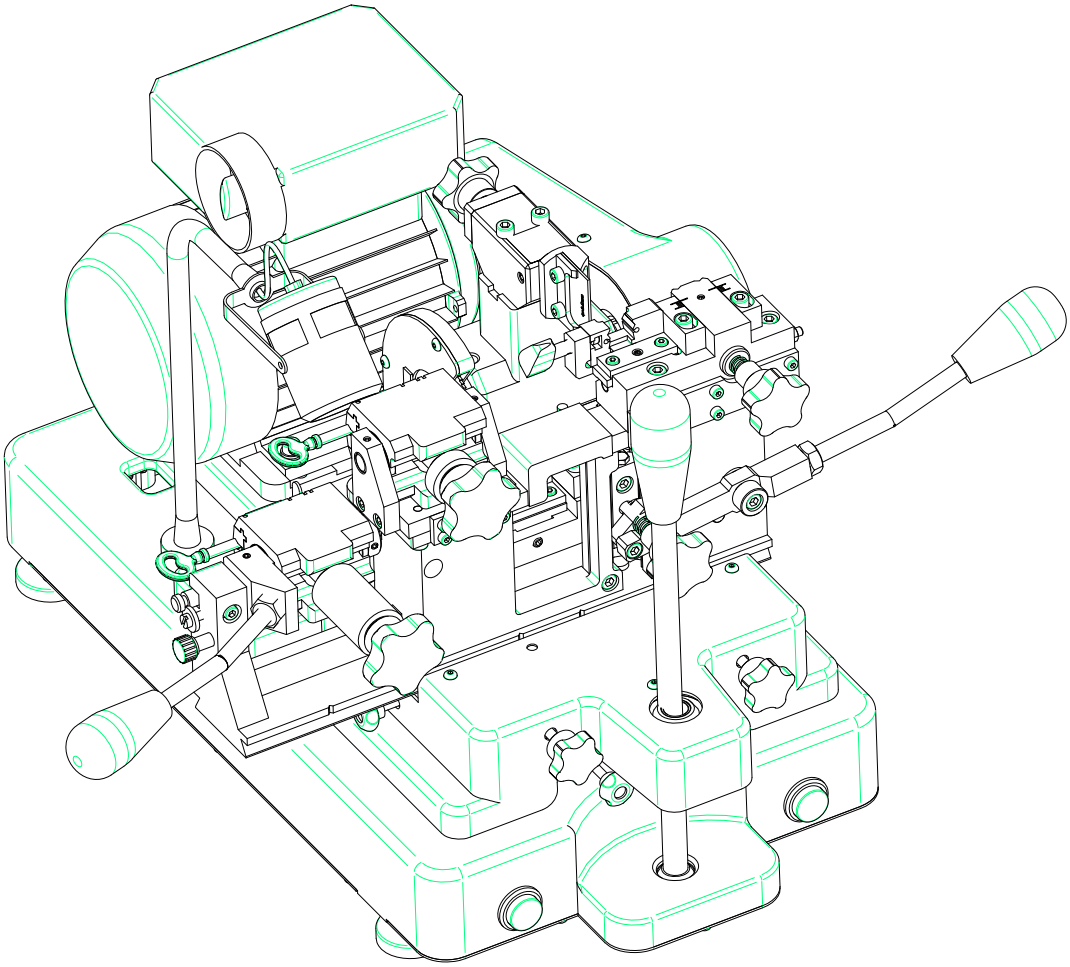


SENA

INSTRUCTION MANUAL

CONTENTS:

1 PRESENTATION AND GENERAL ASPECTS

1.1 GENERAL POINTS

The SENA key cutting machine has been designed on the basis of the safety standards currently in force in the EU.
The safety of the personnel involved in the handling of this type of machines can only be achieved with a well designed worker safety programme, like the implementation of a maintenance programme and following recommended advice as well as compliance with the safety standards included in this manual.

Although the machine is not difficult to install, it is best not to try to install, adjust or use it without having first read this manual.
The machine leaves our factory ready for use and only requires calibration operations for the tools that are going to be used.

1.2 TRANSPORT AND PACKING

The machine comes inside packing with the following dimensions:
Width = 520 mm, length = 600 mm, height = 500mm
Weight of machine plus packing = 55 Kg.
When you unpack the machine, check carefully if it has suffered any damage during transportation. If you find any problems, please inform the carrier immediately and do not do anything with the machine until the carrier's agent has carried out an inspection.

1.3 IDENTIFICATION LABEL

The SENA key cutting machine has an identification label, specifying the serial number, manufacturer's name and address, the CE mark and the year of manufacture.

2 CHARACTERISTICS OF THE MACHINE

The SENA key cutting machine is a professional semi-automatic key cutting machine.

It has been prepared to cut single and double bladed bit keys, pump keys, Muel type keys and vertical groove keys. The machine's design enables all the models of key mentioned to be cut without having to change the slide, only having to move the slide to the correct position. These characteristics make it a versatile machine.

The clamps have been designed to ensure that the keys are clamped correctly. Flat keys and wedge bit mortice keys can be cut.

The clamp-holder slide is mounted on guides that slide on roller cages. This system provides the machine with maximum precision, rigidity and sensitivity when it is being used.

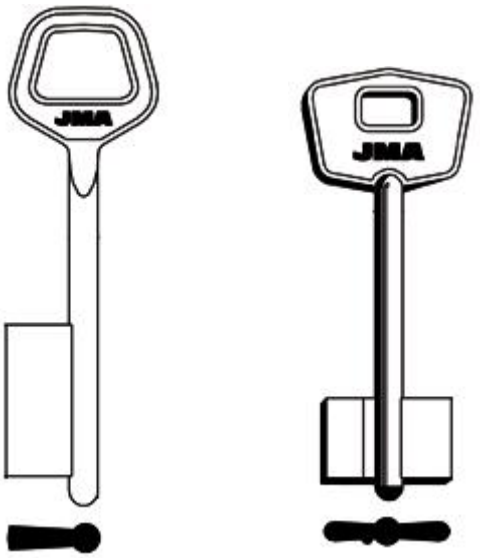
Asynchronous motor with two speeds which provides greater flexibility when cutting keys (speed1: steel, speed2: brass).

It also has an adjustable lamp to light any area of the machine and a brush for removing burrs on the key.

2.1 FAMILY OF KEYS

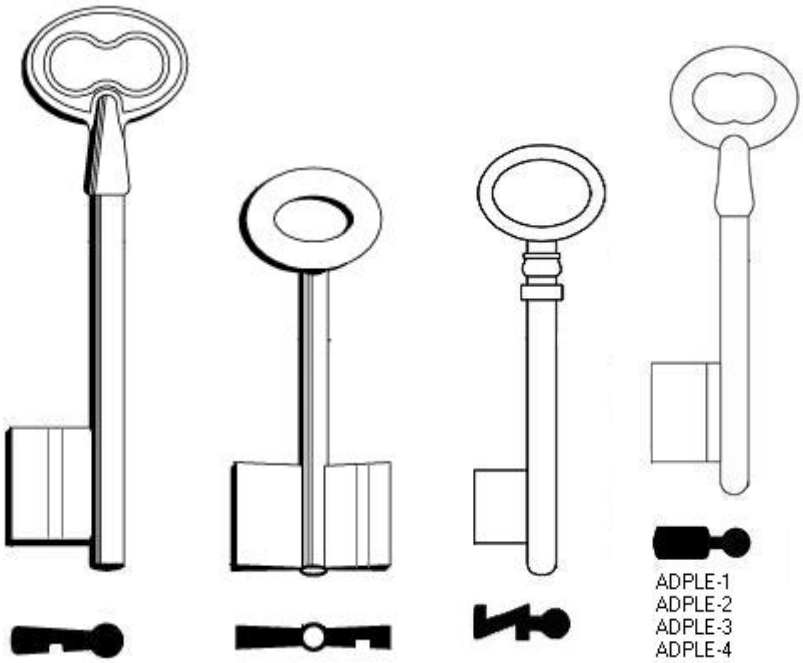
The SENA machine can cut the following types of keys:

- Single and double blade bit keys.



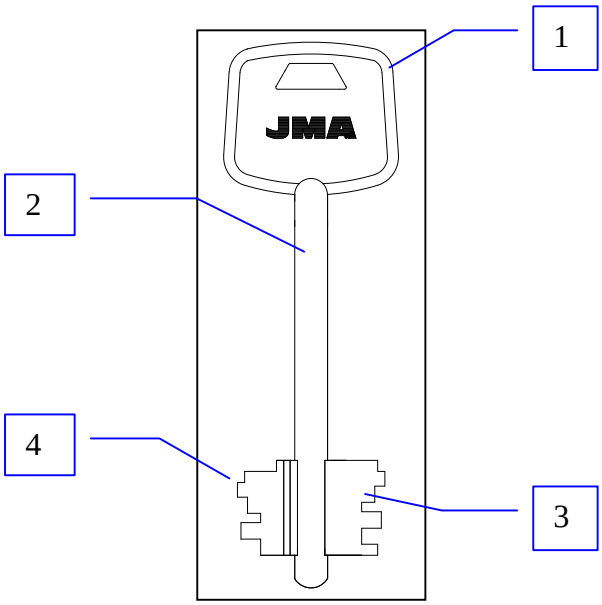
- Pump keys with flat or cylindrical stems, Muel type keys.

- Keys with vertical grooves, wedge bit mortice and ADPLE-1-2-3-4 keys.



2.2 PARTS OF THE KEY

1. Head
2. Stem
3. Blade
4. Teeth



2.3 TECHNICAL INFORMATION

The main technical information is given below:

Motor: Single phase, 2 speeds 2800-1400 rpm, 220V/ 50HZ, 0.55-0.37Kw

Cutter: Hard metal ∅80 x 16 x1,5 mm.

Clamps: 3 models

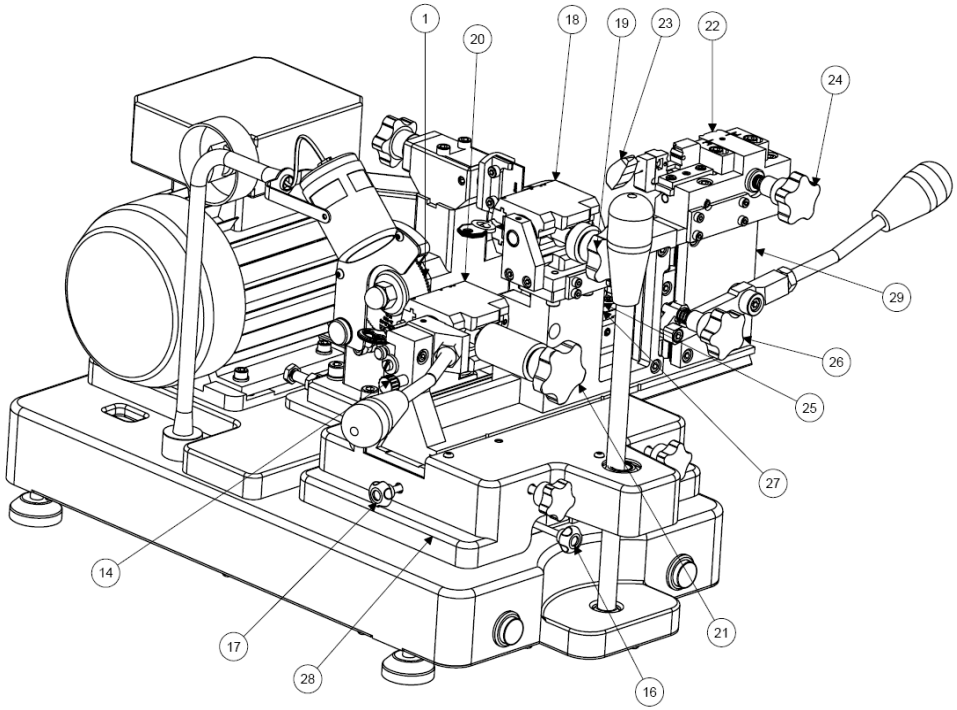
Displacement: Guides with roller cage.

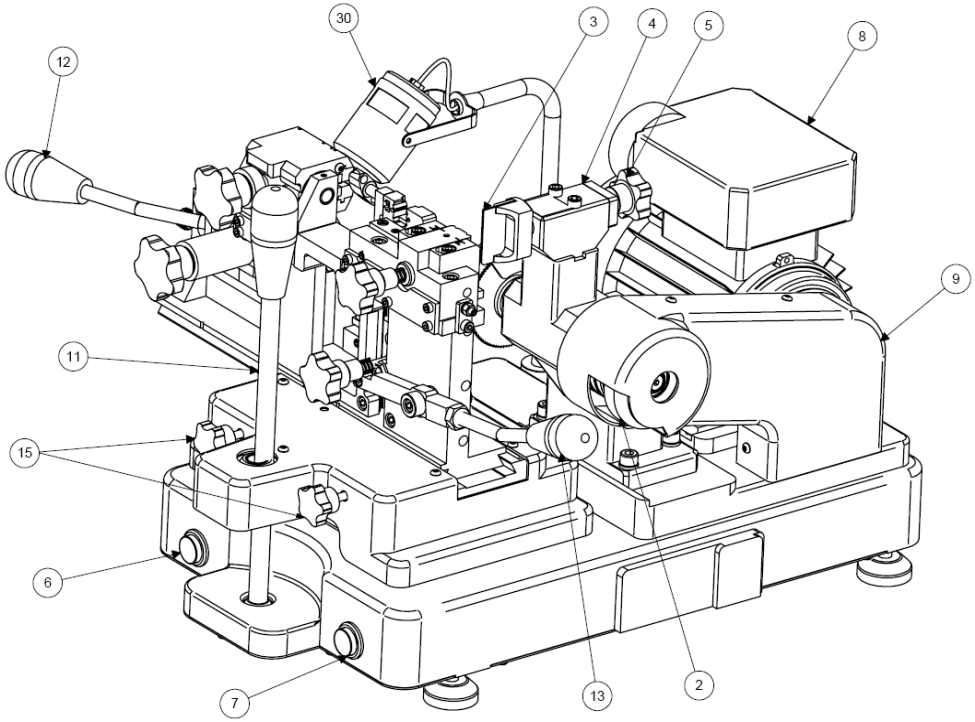
Dimensions: Width = 500 mm, Depth = 245 mm,
Height = 280 mm.

Weight: 50 Kg.

2.4 MAIN ELEMENTS OF THE MACHINE

1. Cutter.
2. Brush.
3. Tracer.
4. Tracer support.
5. Tracer adjustment control.
6. Light switch.
7. ON/OFF switch.
8. Motor with ON/OFF selector.
9. Belt protector.
10. Cutter protector.
11. Lever.
12. Lever to turn moving clamp for single / double bladed keys.
13. Lever to move moving clamp for pump keys.
14. Blocking shaft for moving clamp for single / double bladed keys.
15. Clamp-holder slide blocking knob.
16. X slide blocking knob.
17. Y slide blocking knob.
18. Fixed clamp for single /double bladed keys.
19. Single / double bladed key clamping fixed clamp knob.
20. Single / double bladed key moving clamp.
21. Single / double bladed key clamping moving clamp knob.
22. Pump key and vertical groove key fixed clamp.
23. Pump key clamping fixed clamp knob.
24. Vertical groove key clamping fixed clamp knob.
25. Pump and vertical groove key moving clamp.
26. Pump key clamping moving clamp knob.
27. 1 key clamping moving clamp knob
28. X and Y stop.
29. Clamp-holder slide.
30. Lamp.





2.5 PRELIMINARY OPERATIONS AND WARNINGS.

Place the machine on a solid table that will withstand the weight, bearing in mind that the line and machine voltage must be the same.

The machine has been tested at our facilities before being sent out.

Before starting up the machine and carrying out any operation, block the X and Y slides with controls **16** and **17**.

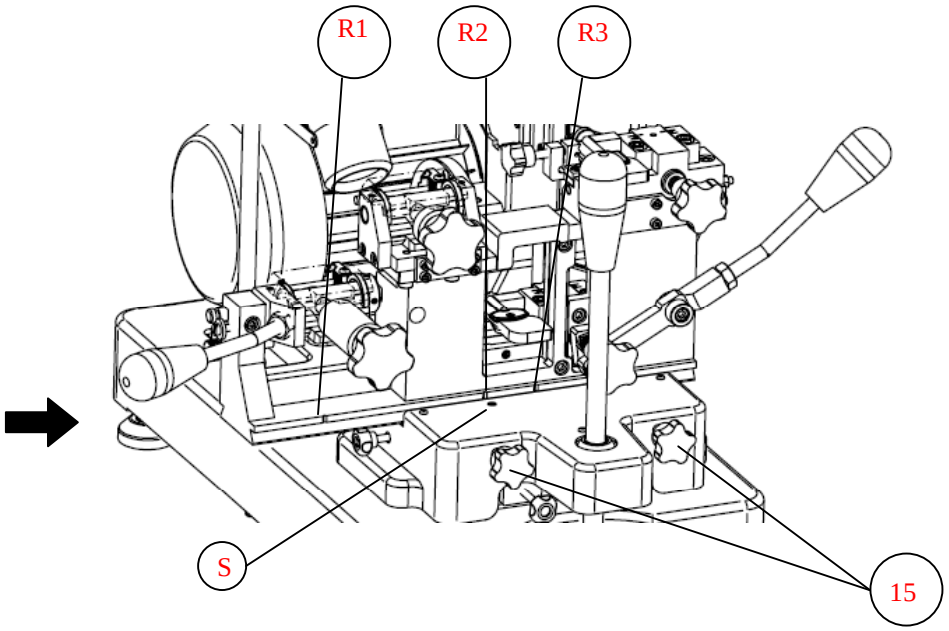
The key clamping operations and slide movements must be carried out with the machine switched off.

Positions on the clamp-holder slide:

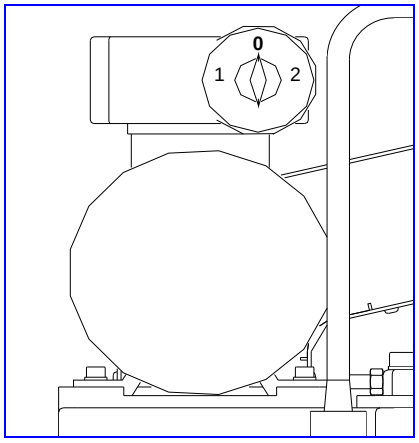
Sliding the slide on the dovetail, position one of the three reference points **R** with the base reference point **S**.

- The first reference point **R1** is for cutting single and double bladed bit keys.
- The second reference point **R2** is for cutting pump keys and Muel type keys.
- The third reference point **R3** is for cutting keys with vertical grooves, wedge bit mortice and ADPLE1,2,3,4 keys.

Once the slide is in the correct position, block it by turning the knobs (15).



Remember that the machine has two speeds:



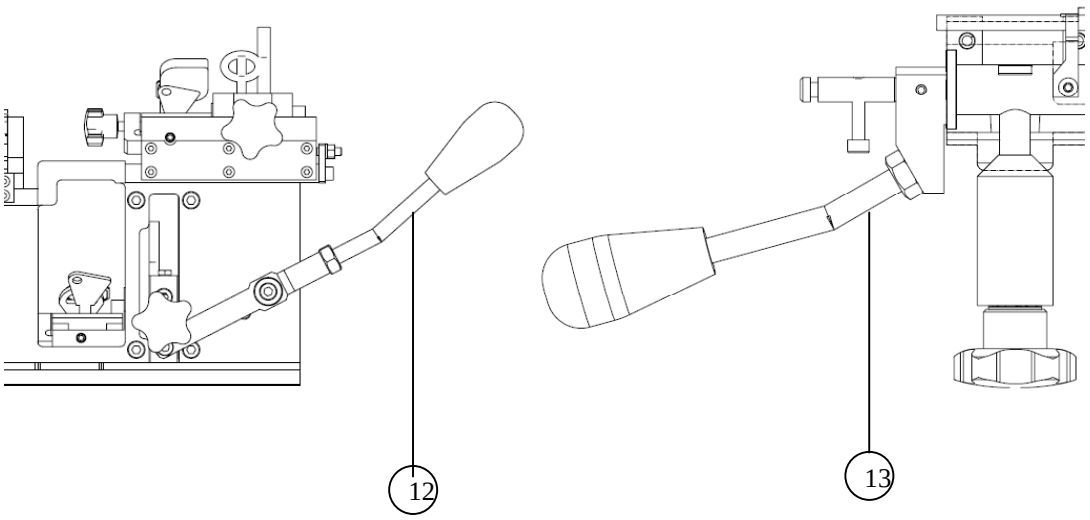
SPEED 1= STEEL 700 rpm
SPEED 2 = BRASS 1400 rpm

When starting up the machine, press the start button (7) and turn the motor selector to speed 1 or 2. Once the cutting operation has been completed, set the selector to the 0 position and press the button (7) again to completely switch off the machine.

2.5.1 Installing the levers

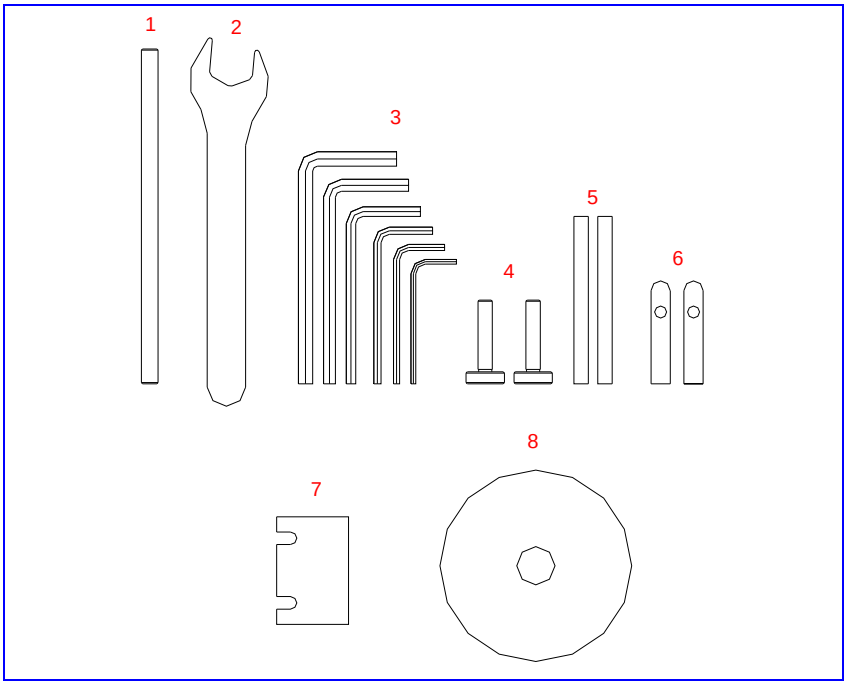
- Fitting levers **12** and **13**

Screw the lever (12 and 13) to the right position and tighten the nut.



2.6 COMPONENTS AND FUNCTIONAL PARTS

2.6.1 Accessories



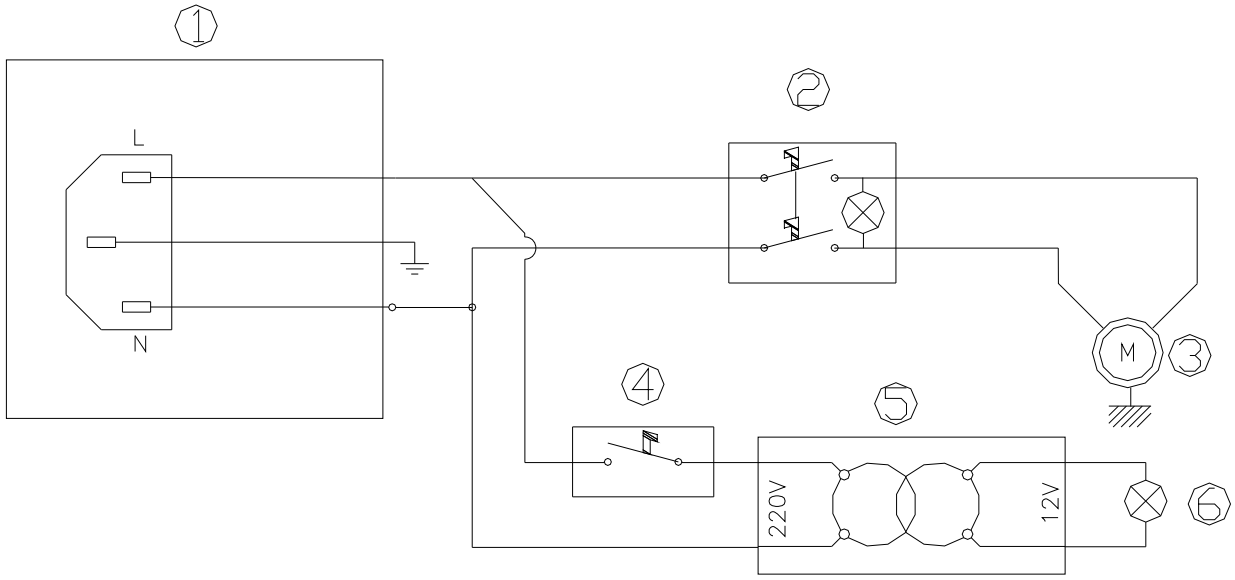
1. ∅7x70 rod for changing the cutter.
2. Size 18 spanner.
3. Set of allen keys (2.5, 3, 4, 5, 6).
4. Side adjustment pieces.
5. ∅6x70 cutting depth adjustment rod.
6. Key stop plate.
7. 1mm thick tracer.
8. Ø80x1x16 cutter.

} For cutting keys with machining equal to or smaller than 1mm.

2.6.2 Electric circuit

These are the main components of the electric and electronic circuits:

1. Socket.
2. Start switch with red light.
3. 2-speed motor.
4. Blue lighting switch.
5. Transformer.
6. Halogen lamp.



3 HOW TO OPERATE THE MACHINE

3.1 MACHINE ADJUSTMENT

The machine leaves our factory ready for use and you only need to check that it is working properly from time to time.

N.B.: ANY OPERATIONS INVOLVING MOVING THE SLIDES, MAINTENANCE, CLAMPING AND RELEASING KEYS HAVE TO BE CARRIED OUT WITH THE MACHINE STOPPED.

3.1.1 Adjustment of the tracer point.

For the machine to work properly you need to check the machine adjustment by placing the slide in the (R1) and (R2) positions.

Procedure

- Undo the knobs (15) and align the first position of the slide (R1) with the reference point (S).
- Put the adjustment rods (V) into the clamps and clamp them by turning the knobs. See Fig.1
- Bring the clamps towards the tracer point (I) and the cutter (F), manually turn the cutter in the opposite direction to the operating direction, until it has completed a full turn so that the adjustment pieces coincide on the tracer point and the cutter.
- If the adjustment pieces do not coincide with the cutter and the tracer point, proceed as follows:
    - Undo the setscrew (P). Turn the knob (Y) until the cutter touches the adjustment rod.
    - Secure the position of the tracer point by tightening the blocking setscrew (P).

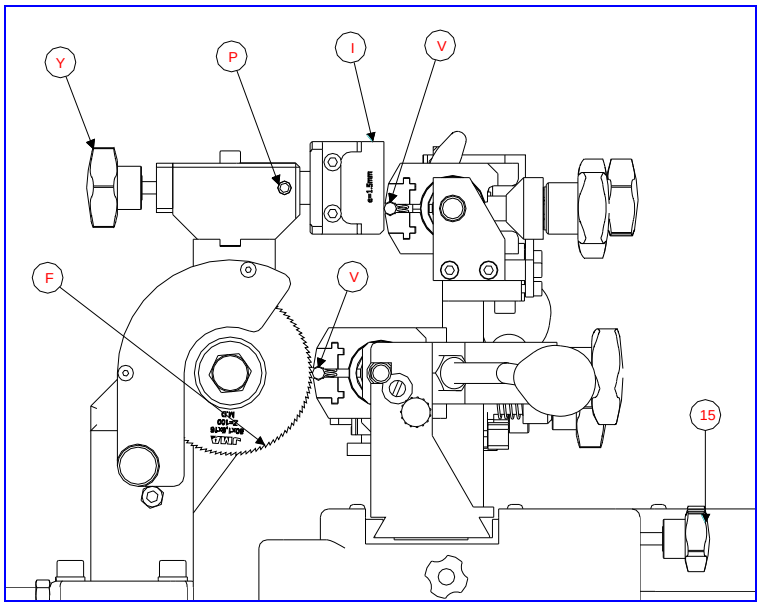


Fig.1

- Repeat the same operation aligning the position of the slide (R2) with the reference point (S) to check that the clamp for pump keys and vertical groove keys is properly adjusted. To do this, use the adjustment rod W as shown in Fig.2

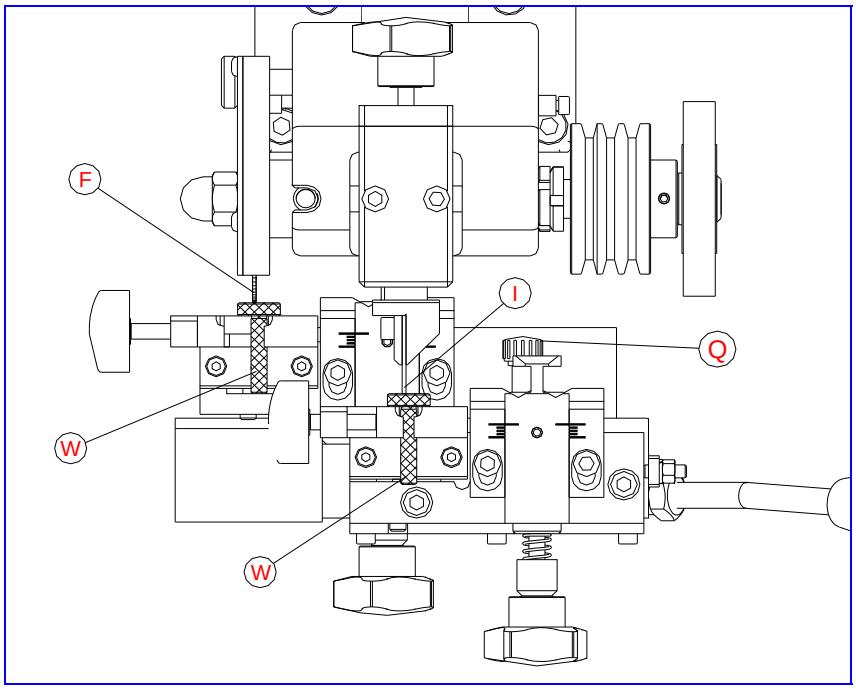


Fig.2

The tracer point has to be adjusted every time the cutter or tracer point is changed. Mainly, you need to adjust the cutting depth and check the side adjustment.

3.2 KEY CUTTING

3.2.1 Cutting bit keys.

- Undo the knobs (15) and align the first position of the slide (R1) with the reference point (S).
- Insert the keys into the clamps, taking are that the blade of the key butts up against the clamp's key stop plate (T), as shown in Fig.3. Once the key has been inserted clamp the keys by tightening the knobs (P).
- Start the machine and holding the slide by means of the lever, bring the keys towards the tracer point (I) and the cutter (F).
- We recommend that you work slowly, without forcing the cutter. Cutting is achieved by turning the clamp-holder slide using the knob (N), to do this you have to move the rod (M) to the left. It is best to carry out the machining, by turning the knob (N), from top to bottom.
- If there are some burrs on the cut key after the cutting operation, these can be removed using the brush provided with the machine.

N.B.: ANY OPERATIONS INVOLVING MOVING THE SLIDES, CLAMPING AND RELEASING KEYS HAVE TO BE CARRIED OUT WITH THE MACHINE STOPPED.

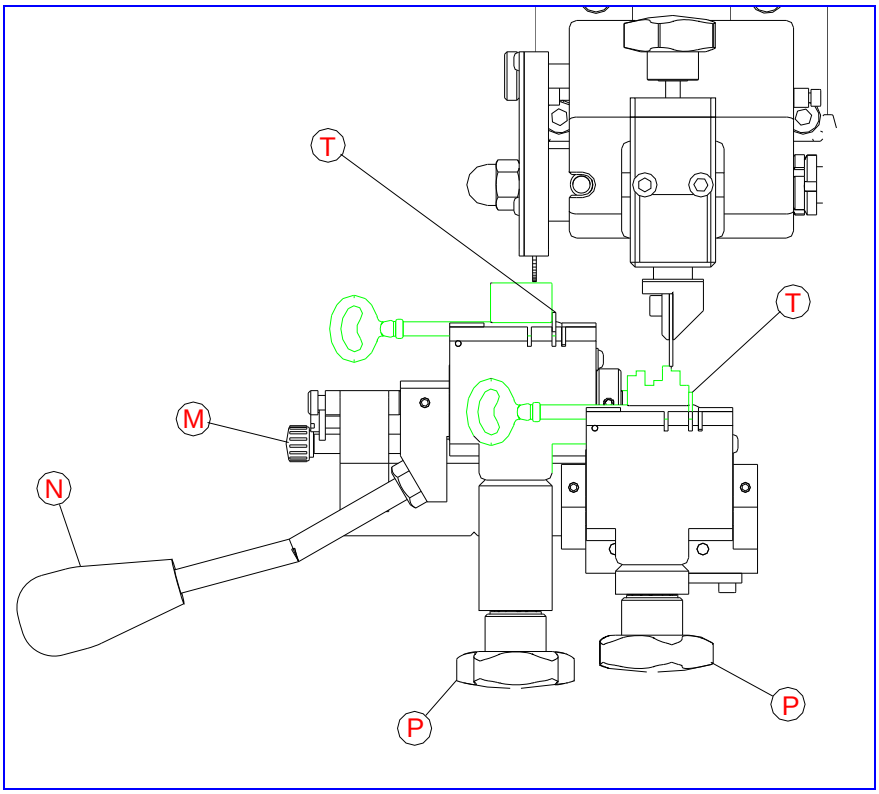


Fig.3

3.2.2 Cutting pump keys and Muel type keys.

3.2.2.1 Pump keys.

- Undo the knobs (15) and align the second position of the slide (R2) with the reference point (S).
- Insert the keys into the clamps, taking care that the blade of the key butts up against the front stop of the clamp, as shown in Fig.4. Once the key has been inserted clamp the keys by turning the knobs (P1).
- Start the machine and holding the slide by means of the lever, bring the keys towards the tracer point (I) and the cutter (F).
- We recommend that you work slowly, without forcing the cutter. Cutting is achieved by moving the clamp with vertical movements, to do this you have to move the rod (Q) upwards and using the lever (P) move the clamp vertically.
- If there are some burrs on the cut key after the cutting operation, these can be removed using the brush provided with the machine.

N.B.: ANY OPERATIONS INVOLVING MOVING THE SLIDES, CLAMPING AND RELEASING KEYS HAVE TO BE CARRIED OUT WITH THE MACHINE STOPPED.

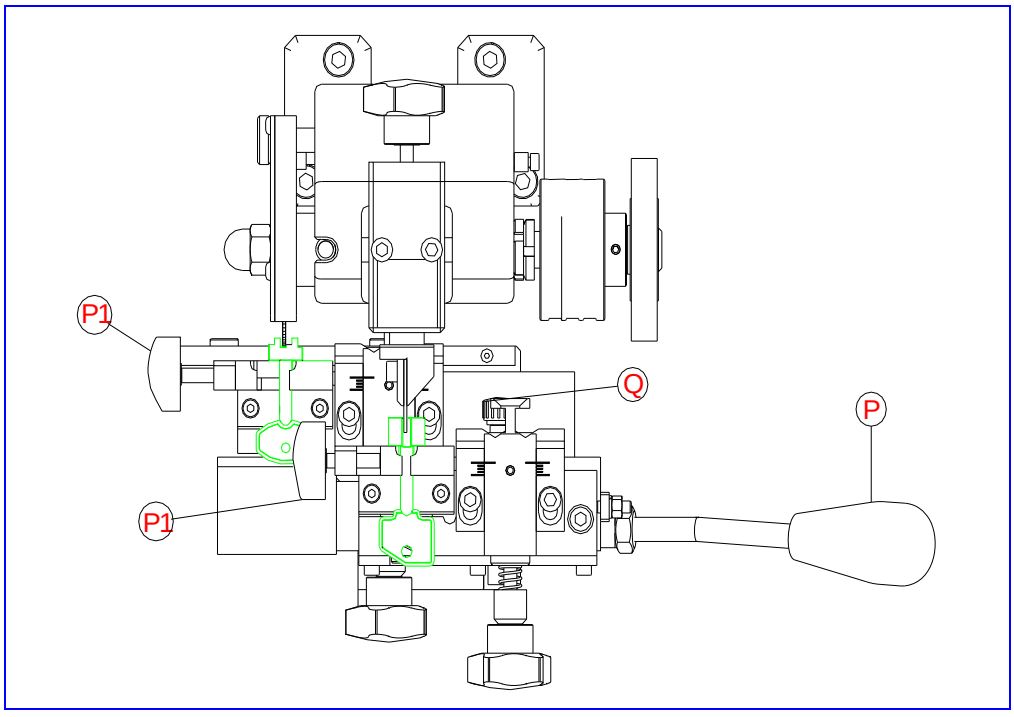


Fig.4

3.2.2.2 Muel type keys.

- Undo the knobs (15) and align the second position of the slide (R2) with the reference point (S).
- Undo the setscrew (T), turn the clamp 45º as shown in Fig.5.
- Then secure the clamp in this position by turning the setscrew (T) so that the clamp is blocked.
- Insert the keys into the clamps, taking care that the key goes right to the bottom of the groove. Once the key has been inserted clamp the keys by turning the knob (P1). See Fig.6.
- Start the machine and holding the slide by means of the lever, bring the keys towards the tracer point (I) and the cutter (F).
- We recommend that you work slowly, without forcing the cutter. Cutting is achieved by moving the clamp with vertical movements, to do this you have to take out the rod (Q) and with the lever (P) move the clamp vertically. See Fig.10
- If there are some burrs on the cut key after the cutting operation, these can be removed using the brush provided with the machine.

N.B.: ANY OPERATIONS INVOLVING MOVING THE SLIDES, CLAMPING AND RELEASING KEYS HAVE TO BE CARRIED OUT WITH THE MACHINE STOPPED.

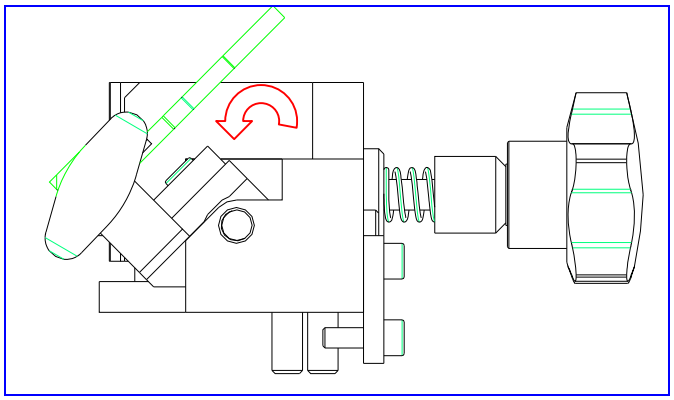


Fig.5

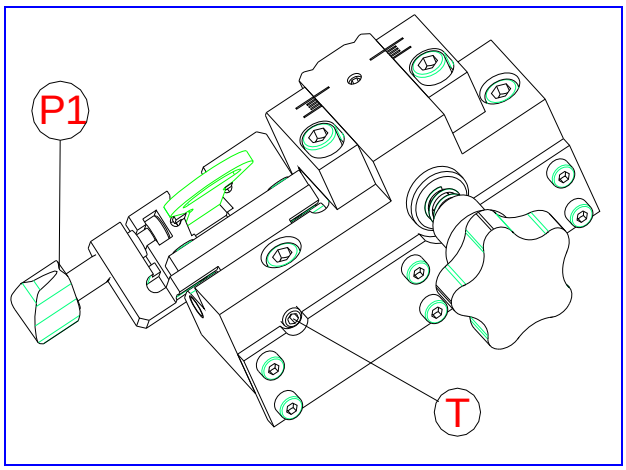


Fig.6

3.2.3 Cutting vertical groove keys, wedge bit mortice and ADPLE1,2,3,4 keys.

- Undo the knobs (15) and align the third position of the slide (R3) with the reference point (S).
- Insert the keys to be cut into the clamp, making sure that the head of the key is parallel to the clamp. Then, undo the screw (T3 or T4) and fit the stop (T1 or T2) resting it on the blade of the key and then tighten up the screw again. Once the key has been inserted clamp it by turning the knob (P2).
- Put the blank key into the moving clamp, making sure that the head of key is parallel to the clamp. Bring the slide with the keys towards the tracer point and the cutter; check that the cutter touches the key. If this is not the case, move the stop (T3 o T4) until the cutter touches the key. Once the keys have been inserted clamp them by turning the knobs (P2).
- Start the machine and holding the slide by means of the lever, bring the keys towards the tracer point (I) and the cutter (F).
- We recommend that you work slowly, without forcing the cutter. Cutting is achieved by moving the clamp with vertical movements, to do this you have to remove the rod (Q) and with the lever (P) move the clamp vertically. See Fig.7
- If there are some burrs on the cut key after the cutting operation, these can be removed using the brush provided with the machine.

N.B.: ANY OPERATIONS INVOLVING MOVING THE SLIDES, CLAMPING AND RELEASING KEYS HAVE TO BE CARRIED OUT WITH THE MACHINE STOPPED.

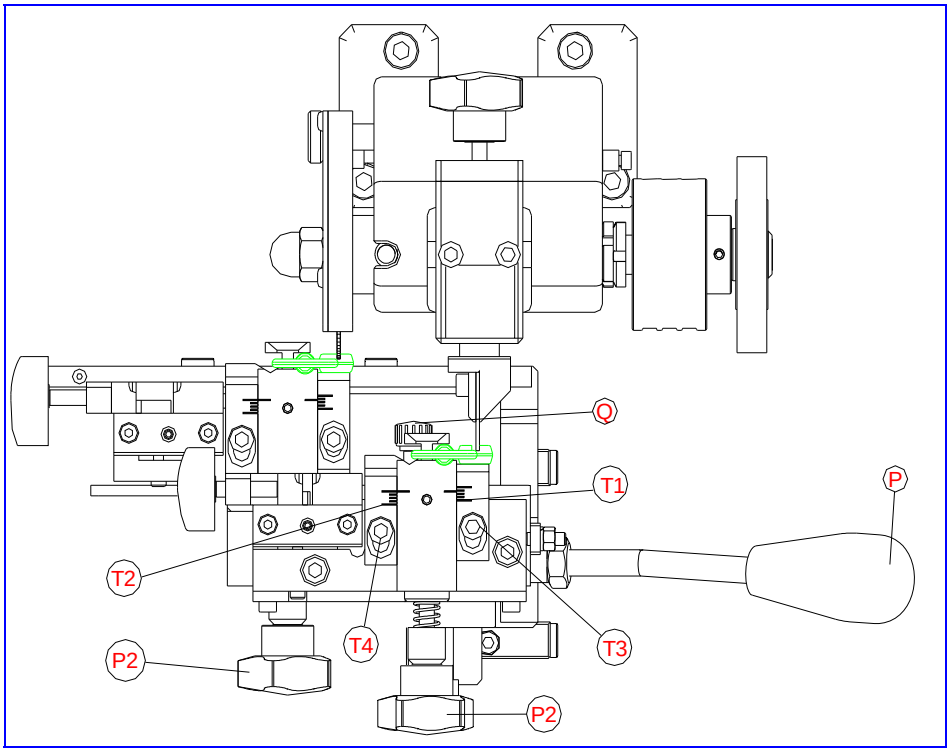


Fig.7

4 MAINTENANCE AND SAFETY

When carrying out any maintenance work it is necessary to adhere to the following requirements:

1. Never carry out any maintenance work with the machine in operation.
2. The electrical power cable must be unplugged.
3. The indications in this manual must be strictly adhered to.
4. Only use original spare parts.

4.1 CHANGING THE CUTTER OR THE BRUSH

Move the cutter guard (G) back for a moment.
To change the cutter: With the help of the spanner (L), block the cutter shaft with the rod (J) and undo the nut (K) – left-hand thread – securing the cutter (F). Then replace the cutter, and finally put the cutter guard back into place.

To change the brush: Remove the belt guard and block the cutter shaft with the help of the rod. Undo the screw (R) with the help of an allen key. Replace the brush and finally put the cutter guard back into place. See Fig.8.

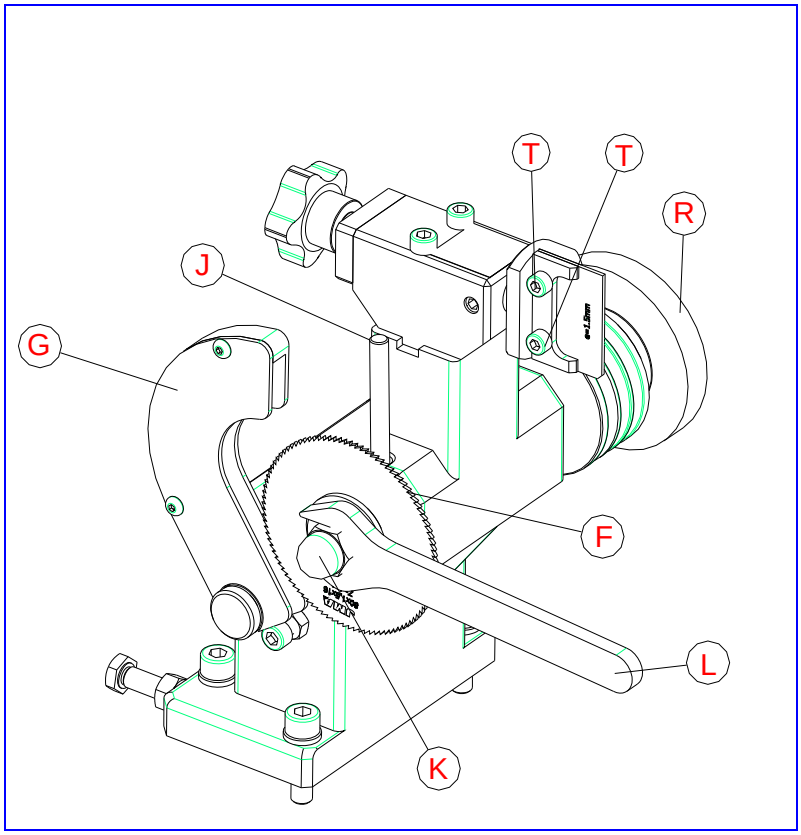


Fig.8

4.2 CHANGING THE TRACER POINT

Undo the screws (T), replace the tracer point and tighten the screws with the help of an allen key. Then check whether the machine is properly adjusted, by following the steps given in section 3.1.1. See Fig.1 and 2.

4.3 ADJUSTING THE CLAMPS.

THIS ADJUSTMENT IS ONLY NECESSARY WHEN CHANGING A CLAMP.

The different adjustments for the different clamps are described below.

4.3.1 Single and double bladed bit key clamp cutting depth adjustment.

This adjustment is only necessary when you change the single or double bladed bit key clamp.

- Fit the two adjustment pieces (V) into the clamp, as shown in Fig 9. Move the rod (M) forward so that the clamp is in the correct adjustment position.
- Bring the clamps towards the tracer point (I) and the cutter (F), so that the adjustment pieces coincide with the tracer point and cutter.
- If the adjustment pieces do not coincide with the cutter and the tracer point, proceed as follows:

  - Undo the two screws (P) and (Q) on the clamp you are adjusting (the clamp that has been changed) and using a small plastic mallet, tap the clamp gently forwards or backwards so that the cutter (F) and the tracer point (I) coincide with the adjustment rods (V). See Fig 10.
  - The distance is perfectly adjusted, with the tracer point and the cutter coinciding perfectly with the respective adjustment parts. Next, tighten the screws (Q), and brake and block the clamp with the screws (P), so that when cutting the clamp does not become poorly adjusted due to the blows.

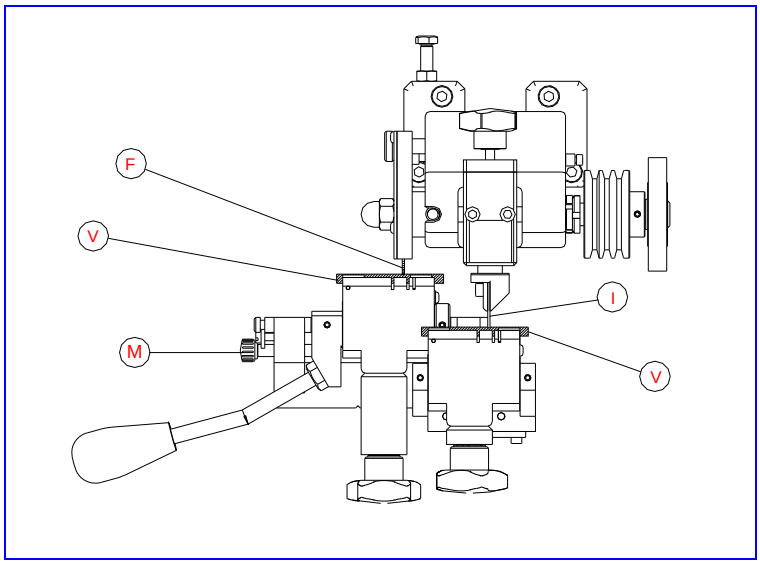


Fig.9

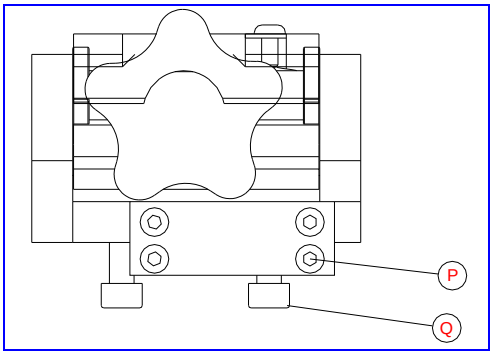


Fig.10

4.3.2 Pump key and vertical groove key clamp cutting depth adjustment.

This adjustment is only necessary when changing the pump or vertical groove clamp.

- Fit the two adjustment pieces (W) so that they butt up to the clamp, as shown in Fig 11. Move the rod (Q) forward so that the clamp is in the correct adjustment position.
- Bring the clamps towards the tracer point (I) and the cutter (F), so that the adjustment pieces coincide with the tracer point and the cutter.
- If the adjustment pieces do not coincide with the cutter and the tracer point, proceed as follows:

- Undo the two screws (R) and (S) on the clamp you are adjusting (the clamp that has been changed) and using a small plastic mallet, tap the clamp gently forwards or backwards so that the cutter (F) and the tracer point (I) coincide with the adjustment rods (V). See Fig 10.
- The distance is perfectly adjusted, with the tracer point and the cutter coinciding perfectly with the respective adjustment parts. Next, tighten the screws (S), and brake and block the clamp with the screws (R), so that when cutting the clamp does not become poorly adjusted due to the blows.

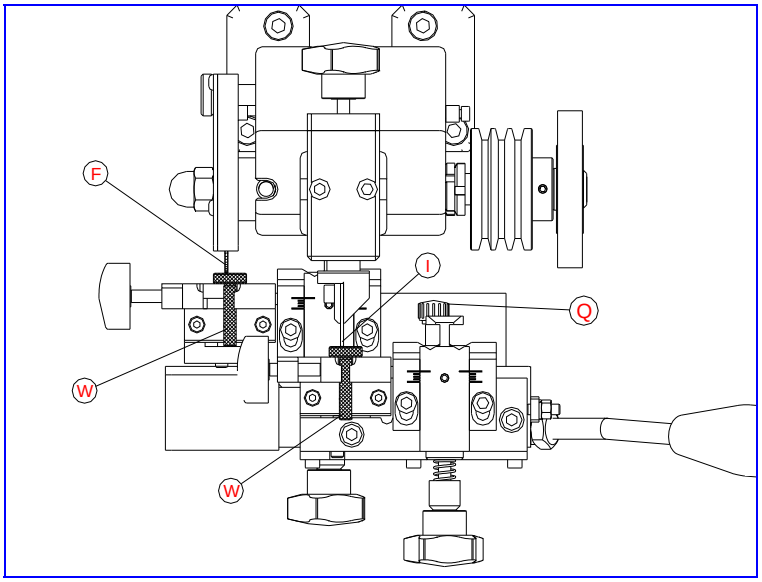


Fig. 11

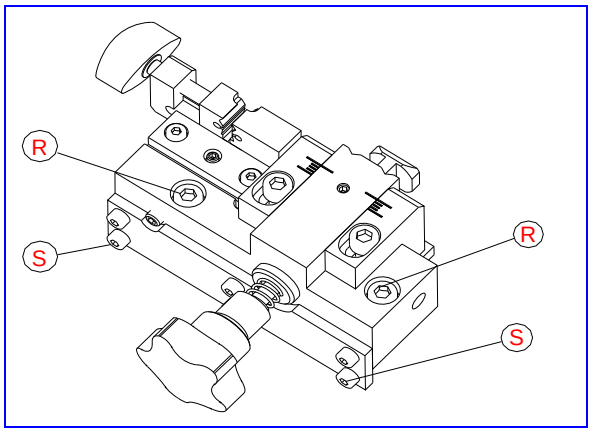


Fig.12

4.3.3 Bit key clamp side adjustment.

This adjustment is only necessary when changing the single and double bladed bit key clamp.

- Put the two adjustment rods (W) right into the clamps, as shown in Fig 13. Move the rod (M) forward so that the clamp is in the correct adjustment position.
- Bring the clamps with the adjustment rods (W) towards the tracer point (I) and the cutter (F), so that the adjustment rods rest on the tracer point and the cutter.
- Turn the cutter with your hand. If the cutter gently touches the adjustment rod, the machining depth is properly adjusted in the machine.
- If when you turn the cutter, it turns freely (without touching), this indicates that it is not cutting deep enough. On the other hand, if the cutter jams up against the adjustment rod, this means that it is cutting too deep.
- If either of these things happens, proceed as follows:

    - Undo the screws (T) and using a flat screwdriver turn the screw (V). See Fig 14.
    - Move the clamp to the right or left until the cutter turns and very gently touches the adjustment rod. Then, tighten up the clamp screws (T) and the machine is adjusted.

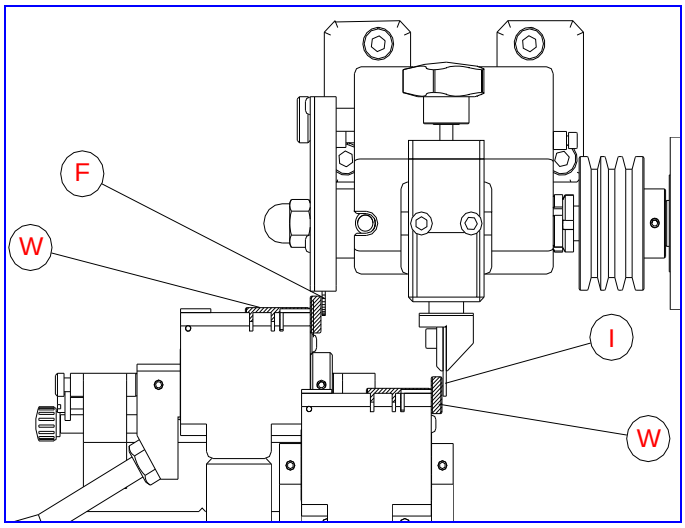


Fig.13

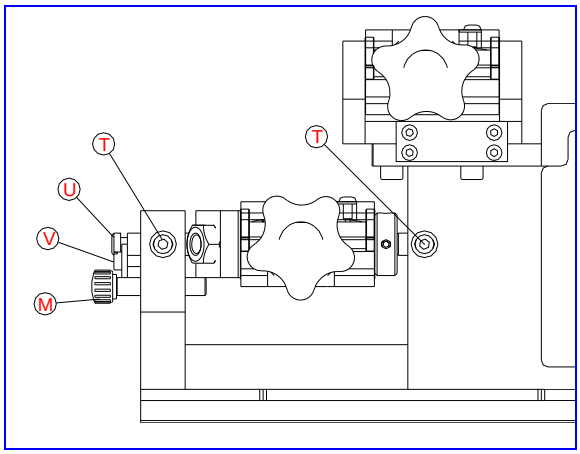


Fig.14

4.3.4 Pump key and vertical groove key clamp side adjustment

This adjustment is only necessary when changing the pump key and vertical groove key clamp.

- Put the two adjustment rods (W) into the clamps, as shown in Fig 15. Move the rod (Q) forward so that the clamp is in the correct adjustment position.
- Bring the clamps with the adjustment rods (W) towards the tracer point (I) and the cutter (F), so that the adjustment rods rest on the tracer point and the cutter.
- Turn the cutter with your hand. If the cutter gently touches the adjustment rod, the machining depth is properly adjusted in the machine.
- If when you turn the cutter, it turns freely (without touching), this indicates that it is not cutting deep enough. On the other hand, if the cutter jams up against the adjustment rod, this means that it is cutting too deep.

- If either of these things happens, proceed as follows:

- Undo the screws (R, S), setscrew nut (M, N) and using a plastic mallet gently tap the sides so that it coincides with the adjustment piece. See Fig 16.
- Move the clamp to the right or left until the cutter turns and very gently touches the adjustment rod. Then, tighten up the screws (R, S) and setscrew nut (M, N) and the machine is adjusted.

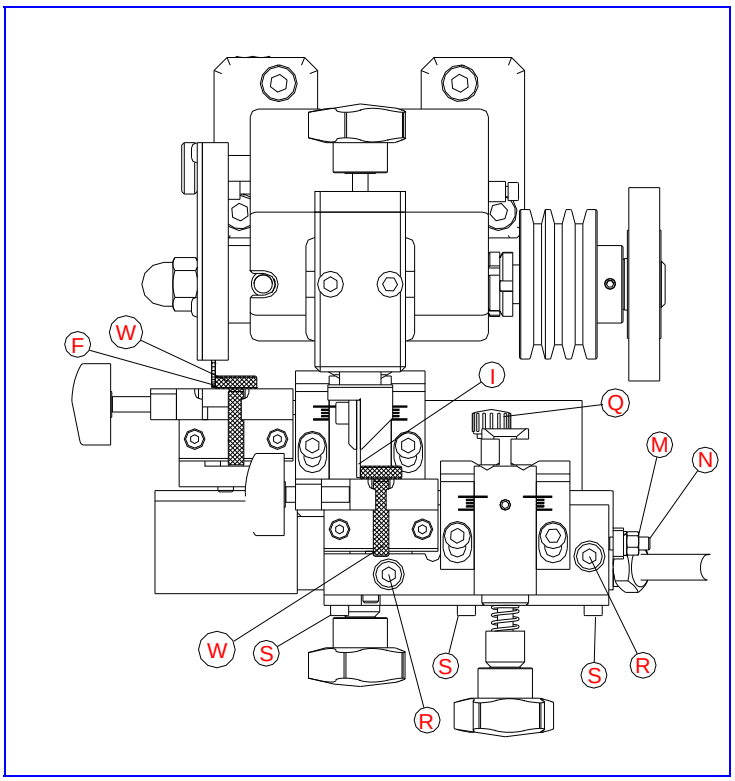


Fig.15

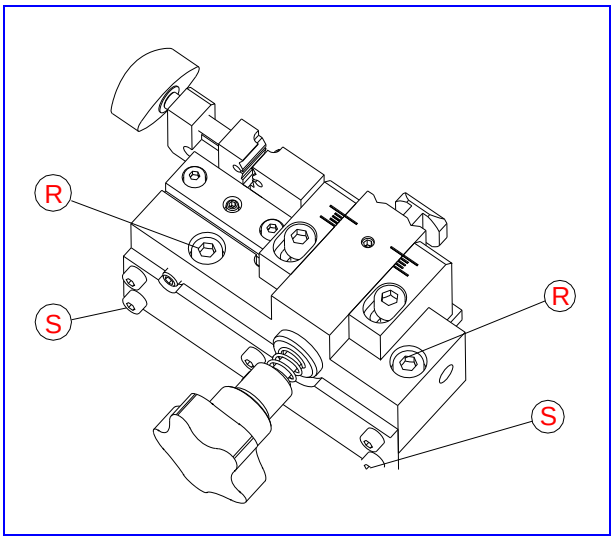


Fig.16

4.4 TIGHTENING OR REPLACING THE BELT

To check the tightness of the belt or to replace it, you need to follow the steps below:

1. Switch off the machine using the main switch and unplug the connection cable.
2. Undo the screws (T) securing the lower protection plate.
3. Undo the four screws (P) securing the motor using an allen key and a spanner.
4. Tighten or replace the belt.
5. To tighten the belt turn the screw (Q) which acts as a stop, moving the position of the motor to the back. Once the belt has been tightened secure the position using the locknut and tighten the four screws (P) securing the motor.
6. To replace the belt, carry out the same operations as for tightening the belt. To fit the new belts remove the belt protection cover (F).See Fig.17

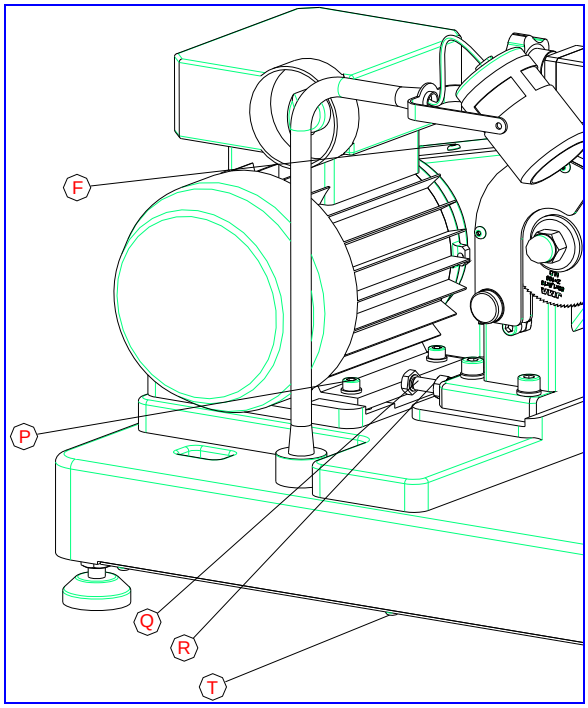


Fig.17

4.5 REPLACING THE LAMP

To replace the lamp, follow the steps given below:

1. Switch off the machine using the main switch and unplug the connection cable.
2. Remove the fixing ring.
3. Remove the lamp and undo the cable.
4. Connect the new lamp to the cable, insert it into its housing and secure with the fixing handle.

4.6 CLEANING THE MACHINE.

At the end of the working day, clean the machine with the brush to keep it in proper working order and prevent any damage to the machine.

4.7 SAFETY RECOMMENDATIONS

1. Do not try and start or operate the machine until all the safety aspects, installation instructions, operators' guide and maintenance procedures have been complied with and understood.
2. Always disconnect the mains electricity supply, before carrying out any cleaning or maintenance work.
3. Keep the cutter clean and free from swarf. As well as the clamp support area so that they cannot jam.
4. Always keep the machine and the area around it clean.
5. Work with dry hands.
6. Always use protective goggles, although the machine is fitted with guards.
7. Make sure that the machine has an earth connection.

5 WASTE DISPOSAL

Waste is understood to be any substance or object from human activities or natural cycles, that is no longer being used or not intended for any further use.

5.1 PACKING

- As the packing the SENA comes in is made of cardboard, it can be recycled as packing.
- As waste, it is comparable to solid urban waste and, therefore, can only be disposed of in special containers for cardboard.
- The elements protecting the machine inside the cardboard box are made of polymeric material comparable to solid urban waste and, therefore, can only de disposed of in the normal installations for waste disposal.

5.2 SWARF

- The waste from the key cutting process is classified as special waste, but is comparable to solid urban waste, like for example a metal scouring pad.
- This waste shall be disposed of as classified by the laws currently in force in the EU, by taking it to special installations for waste disposal.

5.3 MACHINE

- Before demolishing the machine it is necessary to put it out of action first, cutting off the electricity supply and separating the plastic parts from the metal parts.
- After carrying out this operation, all the waste can be disposed of in compliance with the laws in force in the country in which the machine was used.