JMA NEO V.01 Key Cutting Machine User Manual

Contents

JMA NEO V.01 Key Cutting Machine

Product Information

NEO V.01 Key Cutting Machine

The NEO V.01 Key Cutting Machine is a duplicating machine used for making duplicate keys. It comes with different accessories and components that help in the process of duplicating keys. The machine has the following parts:

- Circuitry
- Carriage
- Fingerboard
- Motor
- Clamping device
- Cutter
- Probe

The machine is capable of making duplicates for various types of keys. These include:

- SEA-1 key
- OP-WH.P and OP-WY.P keys
- HU-HAA.P key
- BM-6.P key
- ME-4.P, ME-6.P, ME-7.P, and ME-8.P keys
- KA-2, KA-3, and KA-4 keys
- WIN-1D, WIN-2D, WIN-3D, and WIN-4D keys
- JIS-4.P key
- FO-6.P key

Product Usage Instructions

Follow the steps below to use the machine:

1. General Instructions:
    - Transport the machine carefully and check if all components are present in the package.
    - Verify the identification label before use.
2. Accessories:
    - Attach the carriage, fingerboard, and clamping device to the machine.
    - Change the cutter and probe as per the key type.
    - Adjust the cutter speed as per requirement.
3. Duplicating:
    - Place the original key in the clamping device and secure it.
    - Use the probe to read the key and adjust it accordingly.
    - Start the machine and wait for the duplication process to complete.
4. Maintenance:
    - Adjust the clamping device as per requirement.
    - Clean the machine after use and dispose of waste material properly.
5. Safety:
    - Handle the machine with care and avoid any physical contact with moving parts.
    - Dispose of waste material properly to avoid any harm to the environment.

MACHINE OVERVIEW

GENERAL ASPECTS

The NEO key cutting machine was designed taking into account the current safety standards in force in the EEC. That safety of the personnel involved in the handling of this type of machine can only be achieved with a well-designed programme of personal safety, like the implementation of maintenance programme and following the recommendations as well as meeting all the safety standards included in this manual.
Although the installation of the machine is not difficult, we recommend not to install, adjust or handle it before reading this manual.
The machine leaves our factory ready for use and only needs calibrating operations for the tools that are going to be used.

TRANSPORTATION AND PACKAGING

The NEO machine comes in a sturdy cardboard box, protected with packaging foam, with the following dimensions:

- **Width =** 520 mm
- **Height =** 650 mm
- **Depth =** 575 mm

Weight of machine plus packaging = 23 kg
When unpacking the machine, carefully inspect it to see if it has suffered any damage during transportation.
If a problem is found, immediately inform the shipping carrier and do not use the machine until the shipping agent has performed the corresponding inspection.
When moving the machine from one location to another, it is advisable to pick the machine up using its base, not other parts.

INDENTIFICATION LABEL
The NEO key cutting machine has an identification label, containing the serial number or registration number of the machine, name and address of the manufacturer, EC marking and year of manufacturing.

MACHINE CHARACTERISTICS

The NEO is a robust and precise machine that enables the duplication of a wide variety of key types.

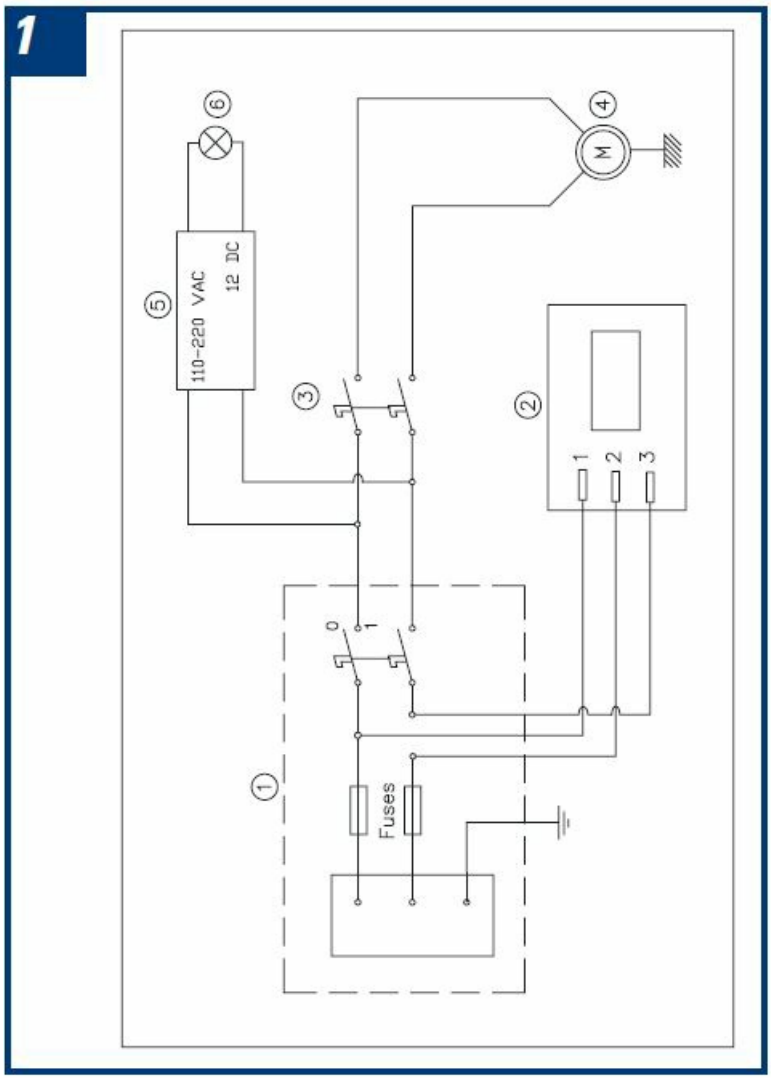
ACCESSORIES
The machine has a series of accessories for use and maintenance.

- 2 fuses
- Allen key of 2.5
- Allen key of 3 (special in T)
- 2 rounded tip plates
- F-1 cutter
- P-1 tracer

ELECTRIC CIRCUIT
The main components of the electric circuit are as follows:

Power point
Connection plate
2-position switch
Motor
Transformer
LED lighting diodes

See figure 1



TECHNICAL DATA

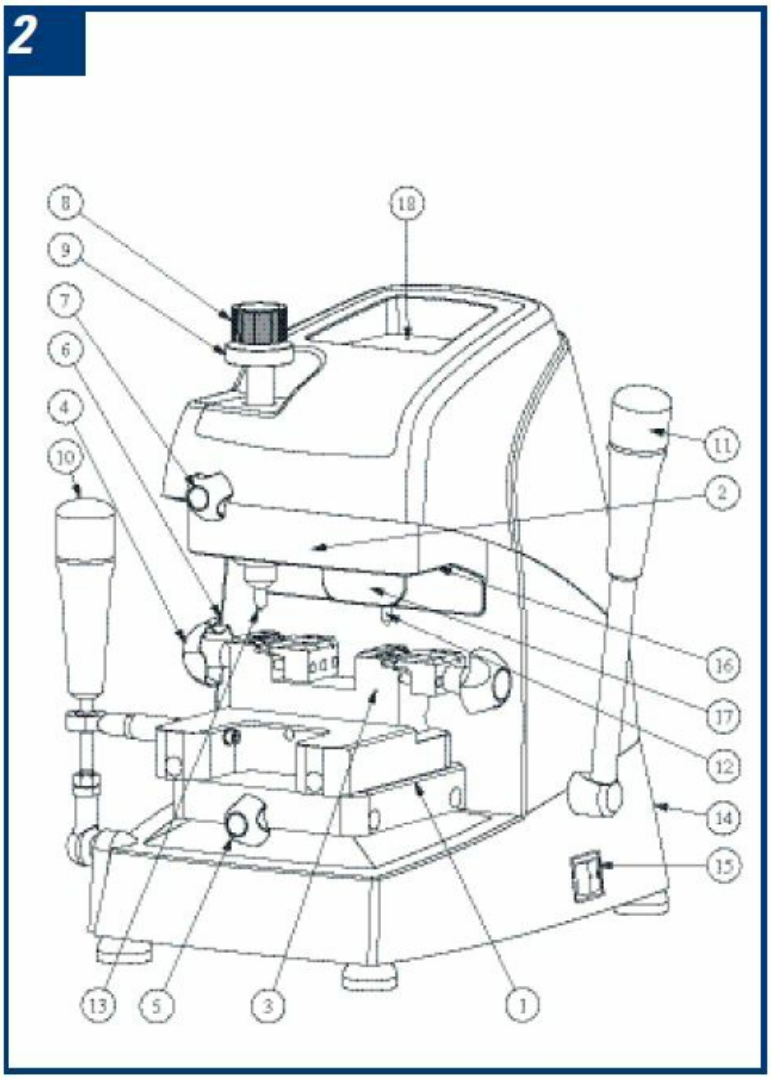
- **Motor:** DC 180 W; 220 V (Optional: DC 180 W; 120 V)
- **Cutter:** HSS
- **Cutter speed:** 5,500 rpm
- **Clamps:** Interchangeable
- **Movements:** Guided by rectified axis
- **Tool travel:** X axis = 28 mm; Y axis = 44 mm; Z axis = 24 mm
- **Dimensions:** Height = 380 mm; Width = 240 mm; Depth = 350 mm
- **Weight:** 17 kg

MAIN ELEMENTS OF THE MACHINE

1. CLAMP-HOLDER SLIDE (X – Y AXES)
2. MACHINE HEAD (Z AXIS)
3. CLAMP
4. CLAMP HANDLE
5. CLAMP-HOLDER SLIDE LOCKING HANDLE (X AXIS)
6. MACHINE HEAD LOCKING LEVER (Z AXIS)
7. TRACER MOVEMENT SPRING LEVER

8. TRACER HEIGHT ADJUSTMENT WHEEL
9. TRACER ADJUSTMENT LOCKING NUT
10. SLIDE MOVEMENT LEVER (X – Y AXES)
11. MACHINE HEAD LEVER (Z AXIS)
12. CUTTER
13. TRACER
14. GENERAL SWITCH
15. CUTTER TURNING SWITCH
16. LED LIGHTING
17. CHIP GUARD
18. RAY FOR TOOLS AND ACCESSORIES

See figure 2



COMPONENTS AND FUNCTIONAL PARTS

CHANGING THE CUTTER AND TRACER

To release the cutter, slacken the two set screws of the cutter-carrying axis and remove the cutter. When inserting the new cutter, ensure it is positioned into place such that it no longer moves inside.
To release the tracer, slacken the set screw of the tracer-carrying axis and remove the tracer. When inserting the new tracer, ensure it is placed into positioned such that it no longer moves inside.

CUTTER SPEED

On the right side of the machine, there is a switch with two positions (“0” and “I”). This switch serves to activate the turning speed of the cutter:

0 = Cutter stopped
I = Cutter turning

LOCKING THE SLIDE ON THE “X” AXIS
Locking the “X” axis is used to perform cuts or straight line points in the direction of the “Y” axis.
To lock/unlock the slide in this direction, move the corresponding lever.

TRACER MOVEMENT SPRING
There are two different ways of using the tracer, depending on the work to be carried out:

- Tracer movement spring: The tracer movement spring is only and exclusively used for the coding of dimple keys.
- Locked tracer: A locked tracer is used to perform duplicate operations with the advancement of the slide. In general, this is for the duplication of waves keys.

To activate the tracer movement spring, loosen the corresponding lever. The tracer point is positioned slightly below its adjustment position, with regards to the cutter. This tracer position enables the slight insertion into the hole of the original key before the cutter begins to cut the duplicate key. Therefore, sharp movements and vibrations of the slide are avoided.
To deactivate the spring movement of the slide, the tracer must be manually pushed upwards and, once it reaches its top point, it must be locked using the corresponding
lever.

VERTICAL ADJUSTMENT OF THE TRACER
Every time there is a change of cutter/tracer the vertical adjustment of the tracer must be performed. This can be done as follows:
Secure the cutter and tracer in their corresponding tool positions. Ensure they are inserted fully.
Secure two of the same keys in the machine’s clamp.
Remove the tracer movement spring (locked tracer).
Lower the machine head until the cutter and tracer are supported on the keys secured in the clamps. Then follow these instructions, depending on the situation:

1. THE CUTTER AND TRACER TOUCH THEIR RESPECTIVE KEYS AT THE SAME TIME: This means that the height of the tracer is calibrated.
2. THE TRACER TOUCHES THE KEY BUT THE CUTTER DOES NOT: If this happens, raise the position of the tracer. This can be done as follows:
    - Activate the tracer movement spring by moving the corresponding lever.
    - Unlock the tracer adjustment wheel by slightly loosening the locking nut.
    - Lower the machine head until the tracer is supported on a straight part of the key.
    - Turn the tracer adjustment wheel anticlockwise until the cutter and tracer touch their respective keys at the same time.
    - Once in this position, lock the tracer adjustment wheel again by tightening the locking nut.
3. THE CUTTER TOUCHES THE KEY BUT THE TRACER DOES NOT: If this happens, lower the position of the tracer. This can be done as follows:
    - Activate the tracer movement spring by moving the corresponding lever.
    - Unlock the tracer adjustment wheel by slightly loosening the locking nut.

- Turn the tracer adjustment wheel approximately one rotation clockwise until the point of the tracer is in a lower position than the point of the cutter.
- Therefore, this is the same scenario as point “2” (The tracer touches the key but the cutter does NOT).
- Follow the instructions for point 2.

KEY CUTTING

KEY CUTTING PROCESS

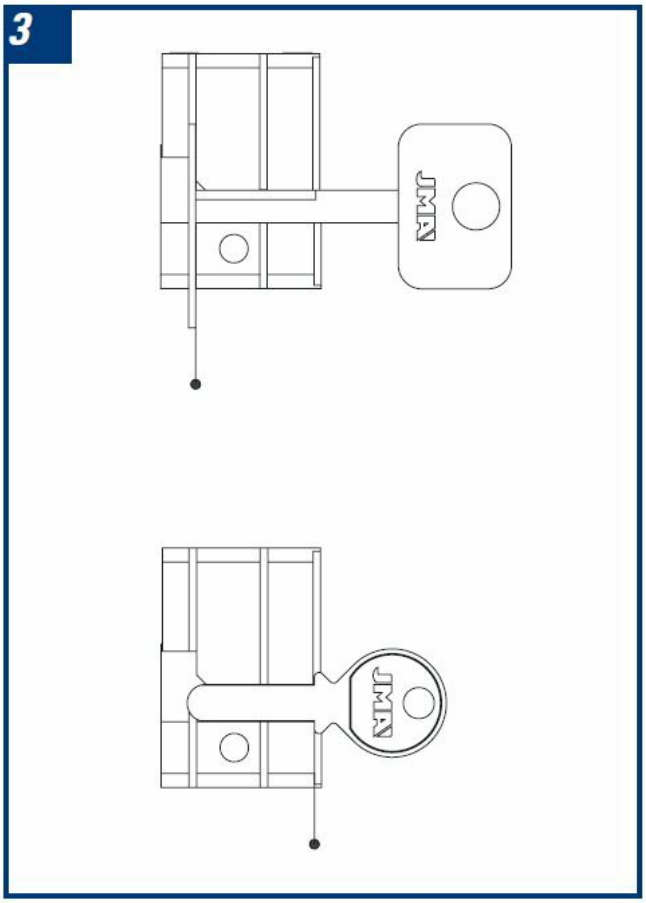
Turn on the machine by activating the general switch located on the back right of the machine.
The LED lighting will automatically be activated to improve visibility in the area of work. With the help of the table included in this manual, select the cutter and tracer required to cut the key.
Change the cutter and tracer.
Secure the original key in the left part of the clamp and the key to be cut in the right. When securing the keys, bear in mind the following details:

- **END OF THE KEY:** Key ends may vary.
- **ADAPTOR:** Some specific key models may require the use of an adaptor.

Perform the vertical adjustment of the tracer. Activate the systems that simplify the duplication work:

- **TRACER:** Activate or deactivate the tracer movement spring, based on the type of key to be cut.
- **SLIDE:** Based on the key model, the locking of the slide can be activated in the direction of the X axis.

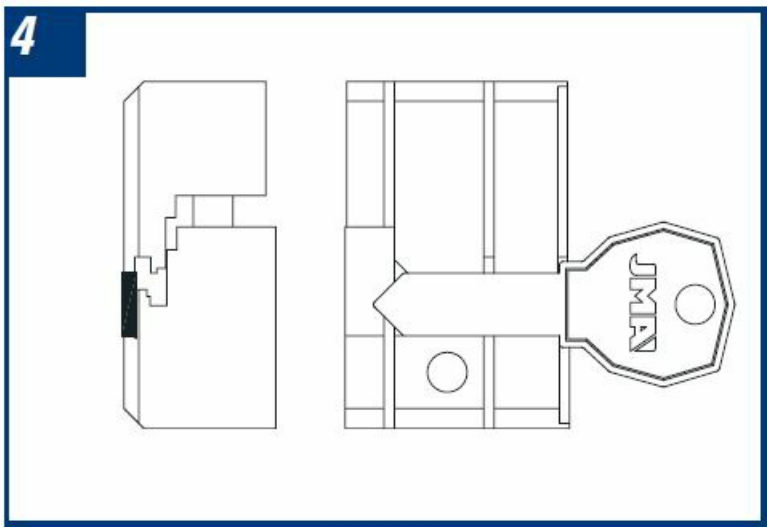
Start the cutter by flicking the corresponding switch. Proceed to cut the key.
See figure 3



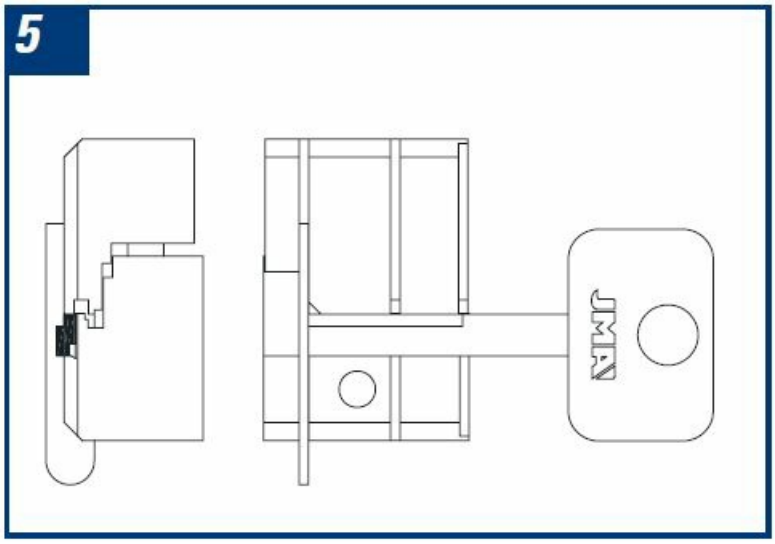
SEA-1 KEY

Use the drill/tracer: F-3 / P-3. Secure the key in the clamp.

Vertically adjust the tracer.
The tracer must be locked (deactivate the movement spring).
Lower the tracer slightly. (To do this, move the adjustment wheel by turning it roughly 1/10 of a rotation).
Afterwards, the tracer must be entered into the groove and the machine head should be locked.
After that, raise the position of the tracer slightly to ensure it does not drag the key. NOTE: Enter the middle of the groove, without touching the sides, and on the second entry, enter on the right side and exit on the left, without applying pressure (only lightly supporting the tracer).
NOTE: For the duplication of side points, use the F-1 / P-1 cutter/tracer. Activate the tracer movement spring.
See figure 4

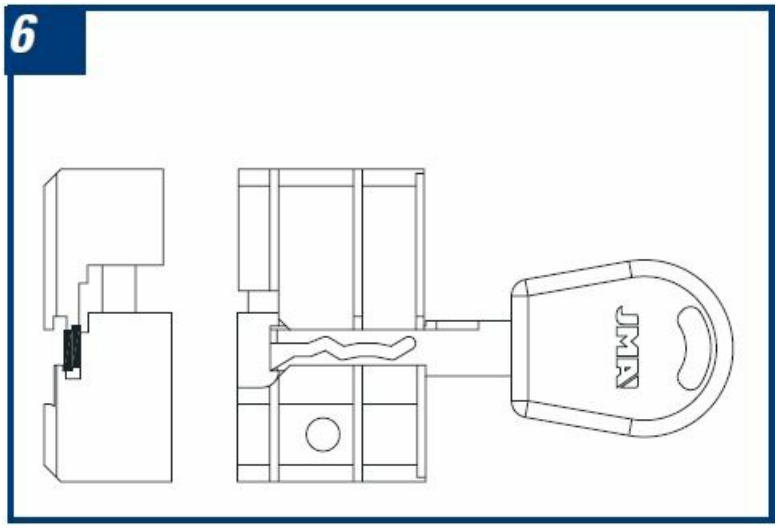


OP-WH.P AND OP-WY.P KEYS
Use the drill/tracer: F-11 / P-11.
Secure the key in the clamp.
Vertically adjust the tracer.
The tracer must be locked (deactivate the movement spring).
Lower the tracer slightly. (To do this, move the adjustment wheel by turning it roughly 1/10 of a rotation).
Afterwards, the tracer must be entered into the groove and the machine head should be locked.
After that, raise the position of the tracer slightly to ensure it does not drag the key. NOTE: We recommend performing a first rough cut and then performing a finishing cut following the whole profile of the key. This should be done starting at the tip of the key and moving towards the head.
See figure 5



HU-HAA.P KEY

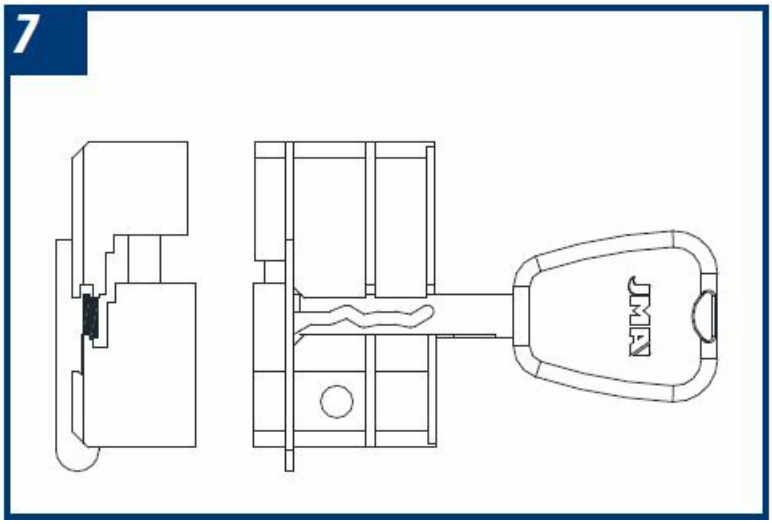
Use the drill/tracer: F-11 / P-11.
Secure the key in the clamp area designed exclusively for securing a HU-HAA.P key. Secure the key.
Vertically adjust the tracer.
The tracer must be locked (deactivate the movement spring).
Lower the tracer slightly. (To do this, move the adjustment wheel by turning it roughly 1/10 of a rotation).
Afterwards, the tracer must be entered into groove and the machine head should be locked.
After that, raise the position of the tracer slightly to ensure it does not drag the key. NOTE: Enter the middle of the groove, without touching the sides, and on the second entry, enter on the right side and exit on the left, without applying pressure (only lightly supporting the tracer).
See figure 6



BM-6.P KEY

- Use the drill/tracer: F-11 / P-11.
- Secure the key as shown in the corresponding figure.
- Secure the key.
- Vertically adjust the tracer.
- The tracer must be locked (deactivate the movement spring).
- Lower the tracer slightly. (To do this, move the adjustment wheel by turning it roughly 1/10 of a rotation).
- Afterwards, the tracer must be entered into the groove and the machine head should be locked.
- After that, raise the position of the tracer slightly to ensure it does not drag the key.

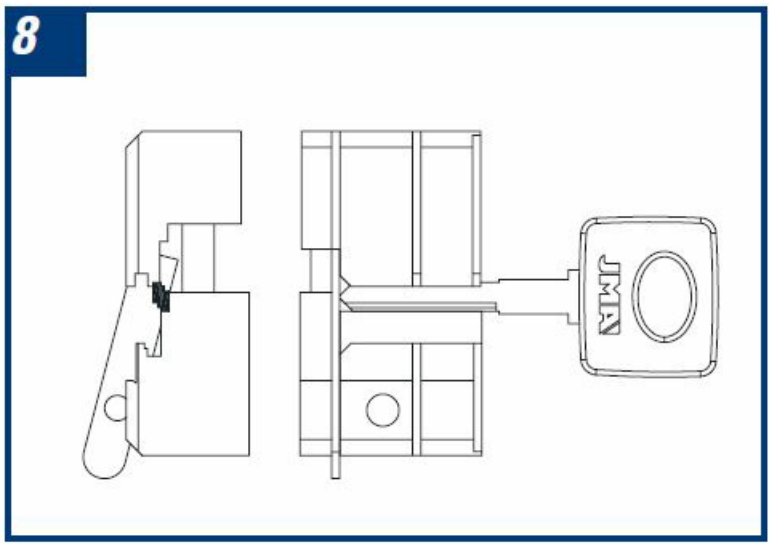
NOTE: Enter the middle of the groove, without touching the sides, and on the second entry, enter on the right side and exit on the left, without applying pressure (only lightly supporting the tracer).
See figure 7



ME-4.P, ME-6.P, ME-7.P AND ME-8.P KEYS

- Use the drill/tracer: F-11 / P-11.
- Secure the key in the clamp area designed exclusively for securing a MERCEDES key.
- Secure the key.
- Vertically adjust the tracer.
- The tracer must be locked (deactivate the movement spring).
- Lower the tracer slightly. (To do this, move the adjustment wheel by turning it roughly 1/10 of a rotation).
- Afterwards, the tracer must be entered into the groove and the machine head should be locked.
- After that, raise the position of the tracer slightly to ensure it does not drag the key.

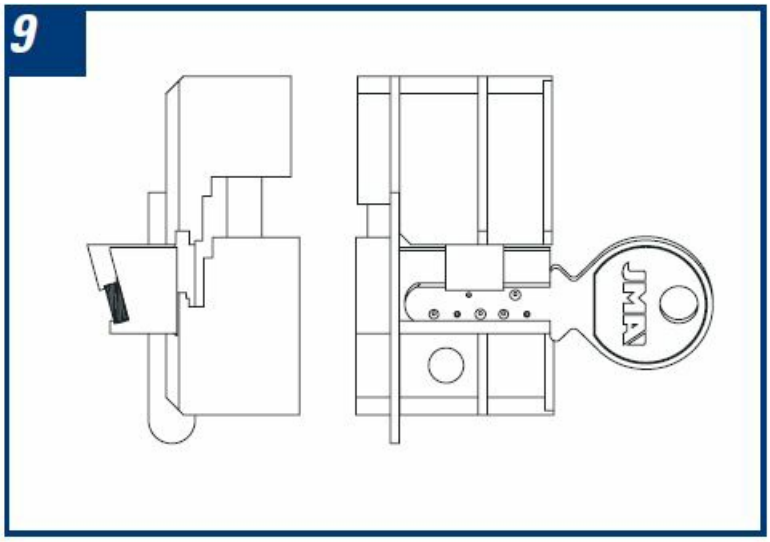
NOTE: We recommend performing a first rough cut and then performing a finishing cut following the whole profile of the key.
See figure 8



KA-2, KA-3 AND KA-4 KEYS

- Depending on the key model to be duplicated, a different cutter/tracer pair will be used. See table.
- Depending on the key model to be duplicated, the use of an AD-5º, AD-15º or AD-45º adaptor will be necessary. See table.
- Position the adaptors in the clamp.
- Secure the keys in the adaptors.
- The tracer movement spring must be activated.
- Activate the locking handle of the clamp-holding slide (X axis) to facilitate the work.
- Cut one of the two line grooves.
- Turn the key, such that the head continues to face the machine. In this position, cut the second line groove.
- The same operations will need to be performed on the other side of the key.

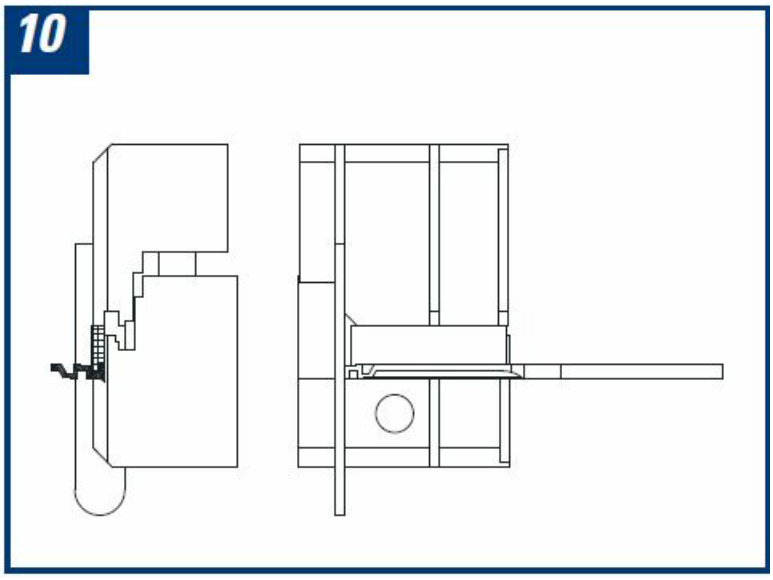
See figure 9



WIN-1D, WIN-2D, WIN-3D AND WIN-4D KEYS

- Use the drill/tracer: F-15 / P-15.
- Secure two flat key blanks in the clamp and perform the vertical adjustment of the tracer.
- The tracer must be locked (deactivate the movement spring).
- Remove the two flat key blanks.
- Secure the key in the clamp using the P-WIN template.
- The original key should be secured with the perforated side facing up.
- Enter the tracer exactly in one of the points and lock the machine head at that height.
- Perform cutting.

See figure 10

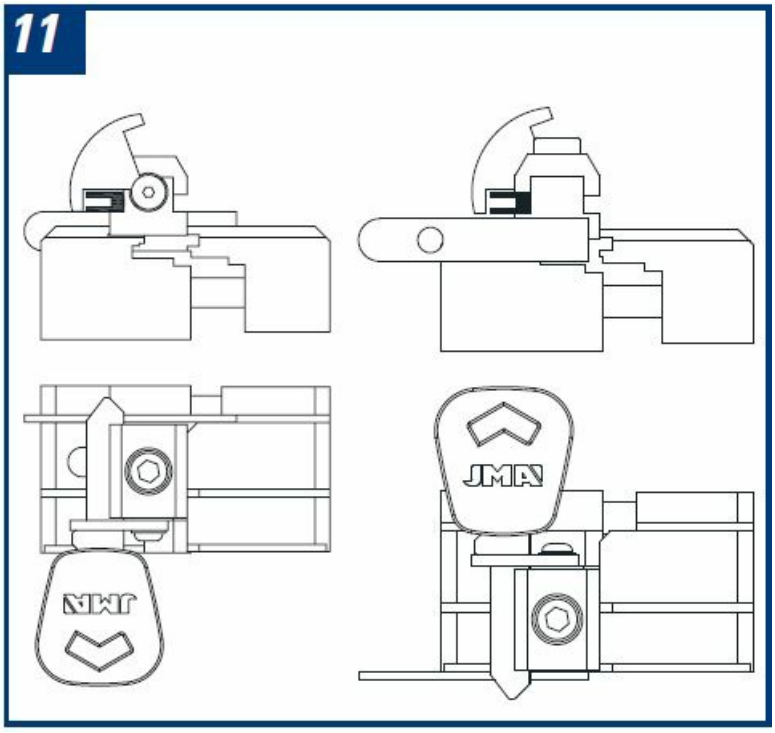


JIS-4.P KEY

- Use the drill/tracer: F-11 / P-11.
- Secure the key in the clamp using the AD-MJ adaptor.
- Secure the adaptors in the clamp.
- Secure the key in the adaptor up against the turning plate of the adaptor.
- Vertically adjust the tracer.

- The tracer must be locked (deactivate the movement spring).
- Perform first cut.
- Turn the two keys to the other side of the adaptor. Re-secure the adaptor in the clamp, turning 180º.
- Finish second cut.

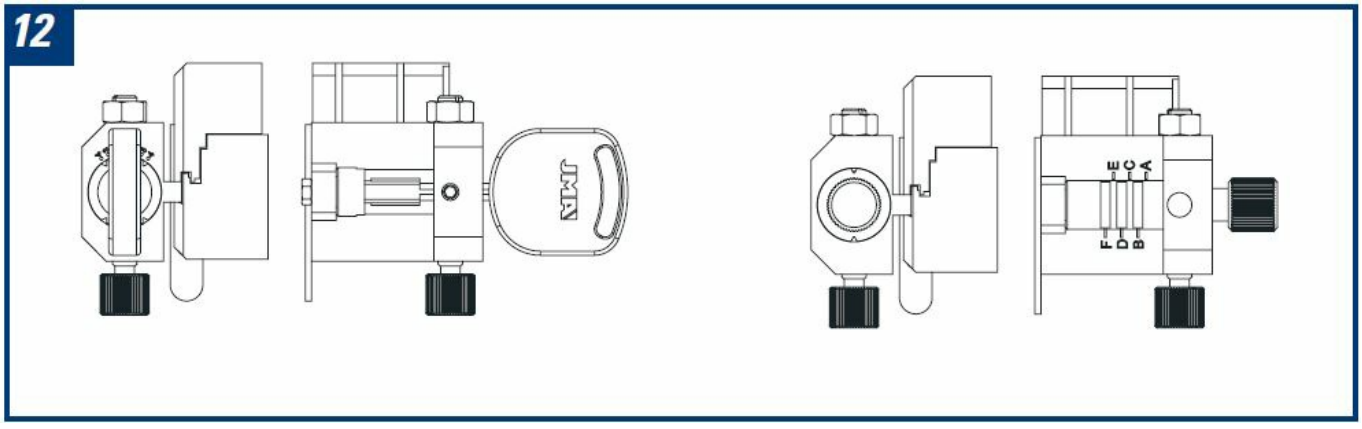
See figure 11



FO-6.P KEY

- Use the drill/tracer: F-22 / P-22.
- Secure the key in the clamp using the corresponding AD-FO adaptor.
- Position and secure the adaptors in the clamp with the exterior of the clamp.
- When positioning the key, ensure it is flat so the cuts can be symmetrically distributed on the key.
- The tracer must be locked (deactivate the movement spring).
- Enter the tracer in the groove of a letter. Lock the height of the machine head and raise the tracer slightly so it does not drag the adaptor.
- Perform cutting.

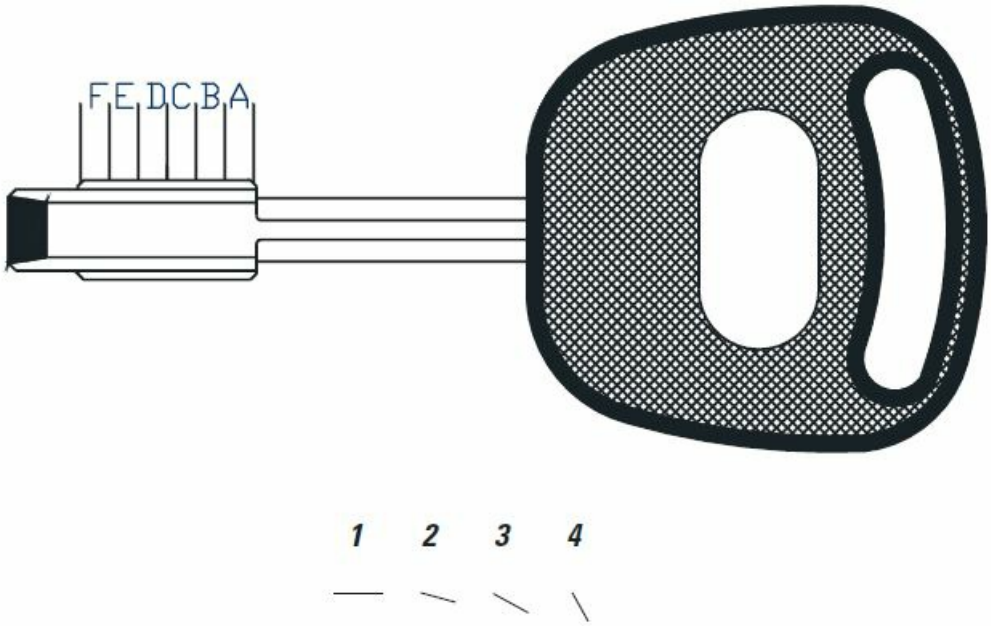
See figure 12



READING THE CUT OF THE ORIGINAL KEY

The original key has six duplicate positions, which are defined by the letters A, B, C, D, E and F, as shown in the following figure.

In each of the positions of a key, there are four different possible combinations (defined by numbers), which are displayed below and numbered:



“Height” no. 1 indicates that it should not be duplicated. Position no. 2 indicates that there is a small groove in the key. When it is larger, it corresponds to height no. 3. Height no. 4 is for the greatest grooves in a key.

Therefore, the key is taken and marked with combinations from one of six positions, as indicated below:

POSITION	A	B	C	D	E	F
COMBINATION	3	4	1	2	4	2

NOTE: The combination number series acts as the key code.

MAINTENANCE

When carrying out any maintenance operation, the following requirements must be fulfilled:

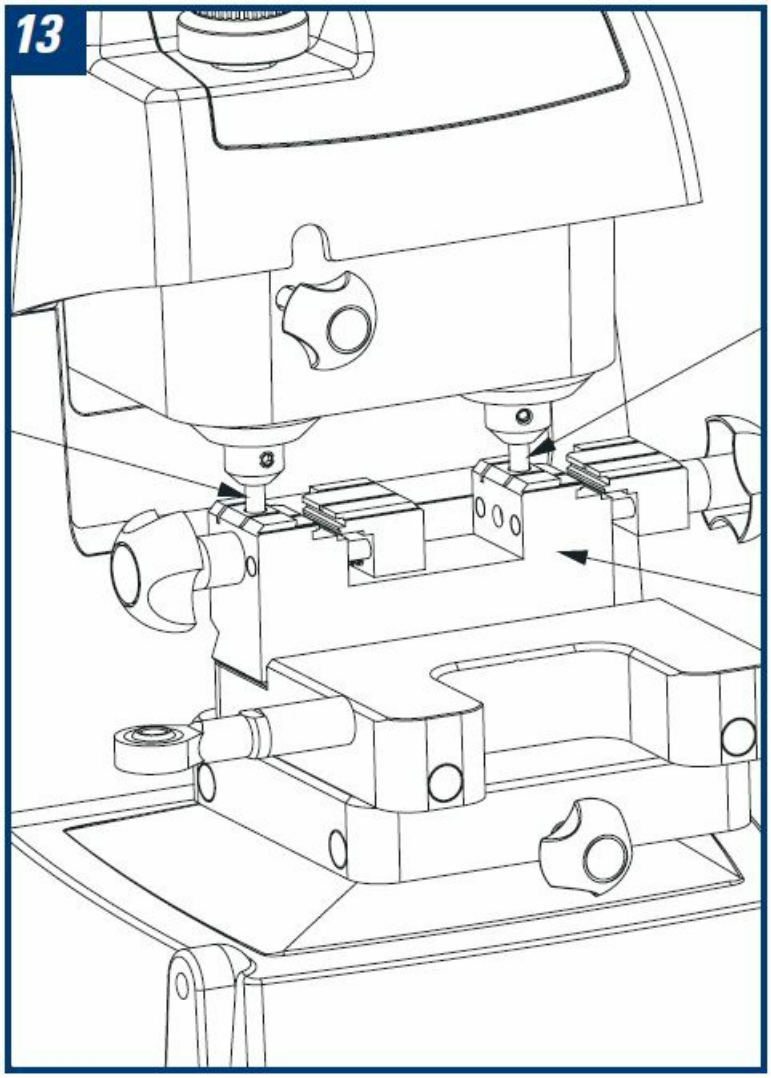
1. Never perform an operation with the machine running.
2. The power supply cable must be disconnected.
3. The manual instructions must be strictly followed.
4. Use original spare parts.

ADJUSTMENT OF THE CLAMP

The machine leaves the factory with the clamp (M) regulated, meaning subsequent adjustment operations are required. If the clamp is replaced by a new one in the future, the adjustment of the new clamp will need to be undertaken. To do this, follow these steps:

1. Take two tools (for example, the, P-1 and F-1) and secure them in their corresponding tool belts, more specifically, with the points facing inwards.
2. Slacken the three screws (20) that secure the clamp-holder slide to the structure of the machine.
3. Lower the machine head until the two tools are entered in the corresponding clamp holes. In this position, lock the machine head using the “Machine head locking lever” (6).
4. Finally, tighten the three screws (20) that secure the clamp-holder slide to the structure of the machine.

See figure 13



REPLACING THE FUSES
If the machine does not start when the corresponding switches are activated, the fuses must be checked. This operation can be carried out as follows:

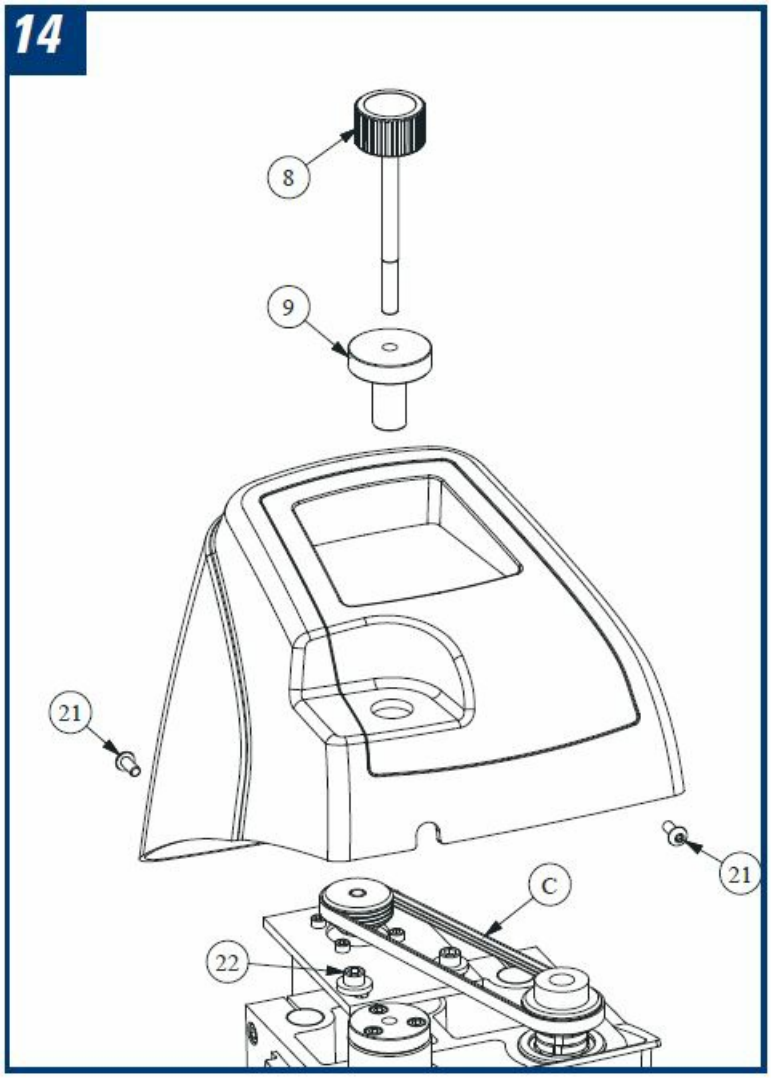
1. Switch off the machine using the general switch and disconnect the power supply cable.
2. Remove the fuse holders located next to the general switch.
3. Check (use a tester) if a fuse has blown and, if so, replace it for another of the same type and value.

TIGHTENING AND REPLACING THE BELT
To review the tautness of the belt (C) or to replace it, follow these steps:

1. Turn off the machine using the general switch and disconnect the power supply cable.
2. Loosen the “Tracer adjustment locking screw” (9) and unscrew the “Tracer height adjustment wheel” (8) until it is removed.
3. Unscrew the four screws (21) that secure the “Machine head guard” and remove it. The screws are located on the front and back of the machine.
4. Loosen, but do not remove, the two screws (22) that fasten the motor support plate to the machine head.

TIGHTENING:
While the motor is pushing the rear part of the machine, tighten the two screws (22).

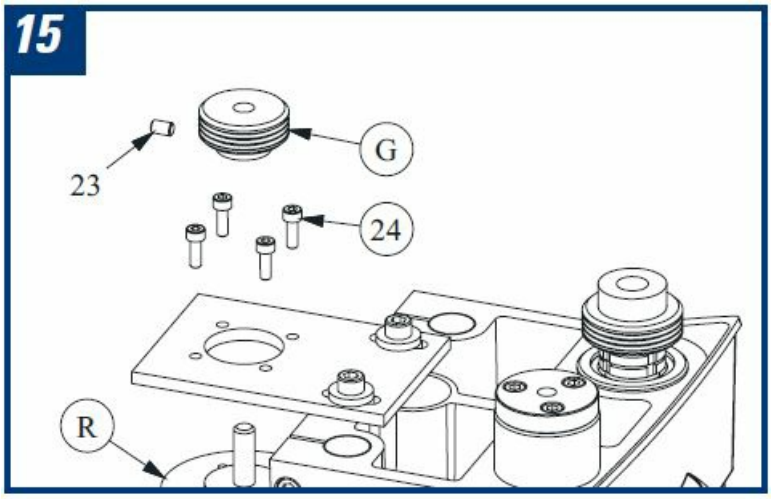
REPLACEMENT:
To replace the belt, the same operations as those for tightening should be performed, but with a new belt.
See figure 14



REPLACING THE MOTOR
This operation is done as follows:

1. Turn the machine off using the general switch and disconnect the power supply cable.
2. Loosen the “Tracer adjustment locking screw” (9) and unscrew the “Tracer height adjustment wheel” (8) until it is removed.
3. Unscrew the four screws (21) that secure the “Machine head guard” and remove it. The screws are located on the front and back of the machine.
4. Disconnect the power supply cables that reach the motor.
5. Loosen, but do not remove, the two screws (22) that fasten the motor support plate to the machine head.
6. Remove the belt (C).
   NOTE: To facilitate the understanding of step 1) to 6), see the figure in section 4.3 (Tightening and replacing the belt).
7. Unscrew the set screw (23) that secures the motor fan belt and remove the fan belt (G).
8. Unscrew the four screws (24) that secure the motor (R) to its support plate and remove it.
9. To set up the new motor, perform the same operations in reverse order.

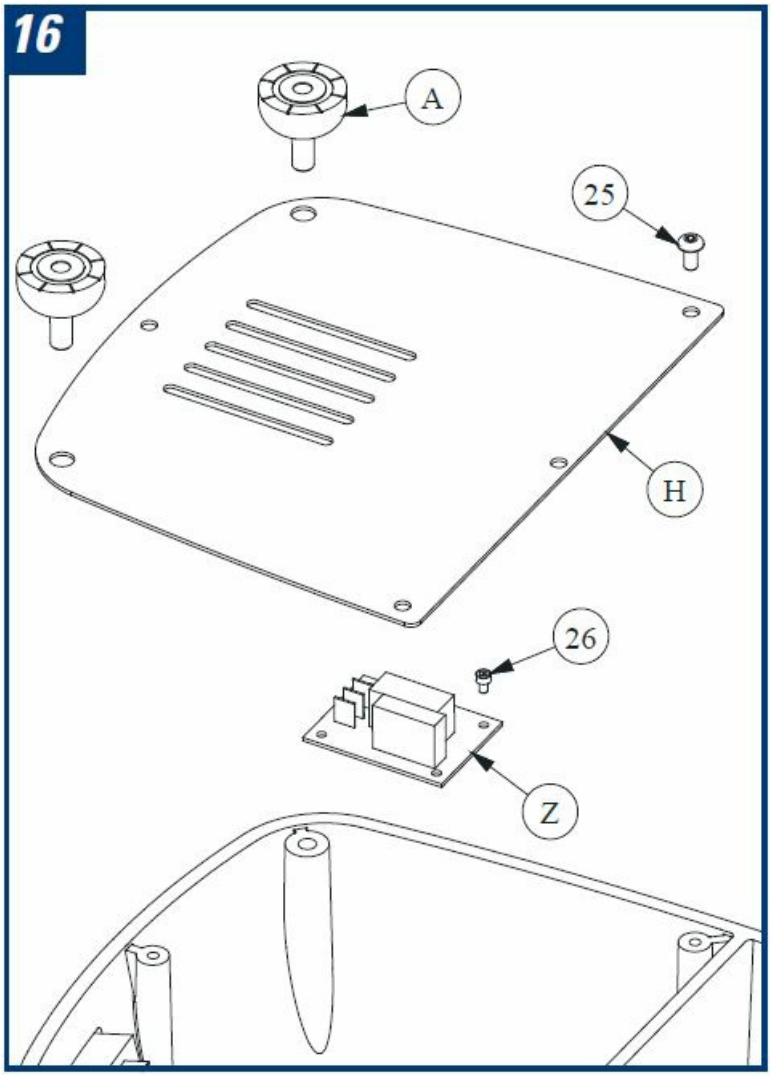
See figure 15



REPLACING THE CONNECTION PLATE
This operation is done as follows:

1. Turn the machine off using the general switch and disconnect the power supply cable.
2. Unscrew the two rear legs (A) of the machine and remove them.
3. Unscrew the four screws (25) that secure the lower protection plate (H) and remove it.
4. Disconnect all of the connection plate wires (Z), noting the previous position of each wire.
5. Unscrew the four screws (26) that fasten the connection plate (Z) to the machine structure and remove it.
6. To set up the new connection plate, perform the same operations in reverse order.

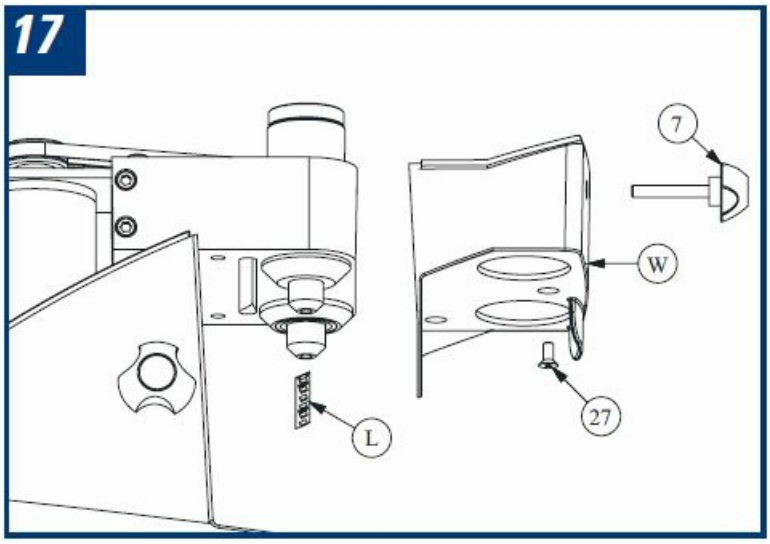
See figure 16



REPLACING THE LED LIGHTS
This operation is done as follows:

1. Turn the machine off using the general switch and disconnect the power supply cable
2. Loosen the “Tracer adjustment locking screw” (9) and unscrew the “Tracer height adjustment wheel” (8) until it is removed.
3. Unscrew the four screws (21) that secure the “Machine head guard” and remove it. The screws are located on the front and back of the machine.
4. At the connection terminals, remove the two LED strap wires, noting the previous position of each wire.
   NOTE: To facilitate the understanding of step 1) to 4), see the figure in section 4.3 (Tightening and replacing the belt).
5. Remove the cutter (F) and tracer (P) from their corresponding tool supports.
6. Remove the “Tracer movement spring lever” (7).
7. Unscrew the three screws (27) that fasten the burr protector (W) to the machine head and remove it.
8. Detach the LED strap (L) and remove it.
9. To set up the new LED strap, perform the same operations in reverse order.

See figure 17



SAFETY

For safety reasons, we recommend following these guidelines:
Do not attempt to start or handle the machine until all issues regarding safety, installation instructions, operating guides and maintenance procedures have been fulfilled and understood.
Always disconnect the power supply before performing any cleaning or maintenance work.
Always keep the machine clean, as well as its surrounding environment.
Work with dry hands.
Always use protective glasses even though the machine has protective elements. Ensure that the machine is earthed.
We recommend working with the machine at a height where the user is comfortable: The highly recommended option is to work sitting down. Adjust the height of the seat until the eyes of the user are at the same height as the highest point of the machine. If standing to work, depending on the height of the user, it is recommended that you place a support between the table and the machine, such that the eyes of the user are at the same height as the highest point of the machine.

MACHINE WASTE

Waste is understood to be any substance or object originating from human activities or natural cycles, abandoned or designed to be abandoned.

6.1 PACKAGING

As the packaging in which the NEO is supplied is cardboard, it can be recycled as packaging.
As waste, and considered solid urban waste, it can only be placed in special containers for the recycling of cardboard.
The casing that protects the machine within the cardboard box is made of polymer material comparable to solid urban waste. It cannot be eliminated in any other way than through normal waste removal facilities.

SWARF

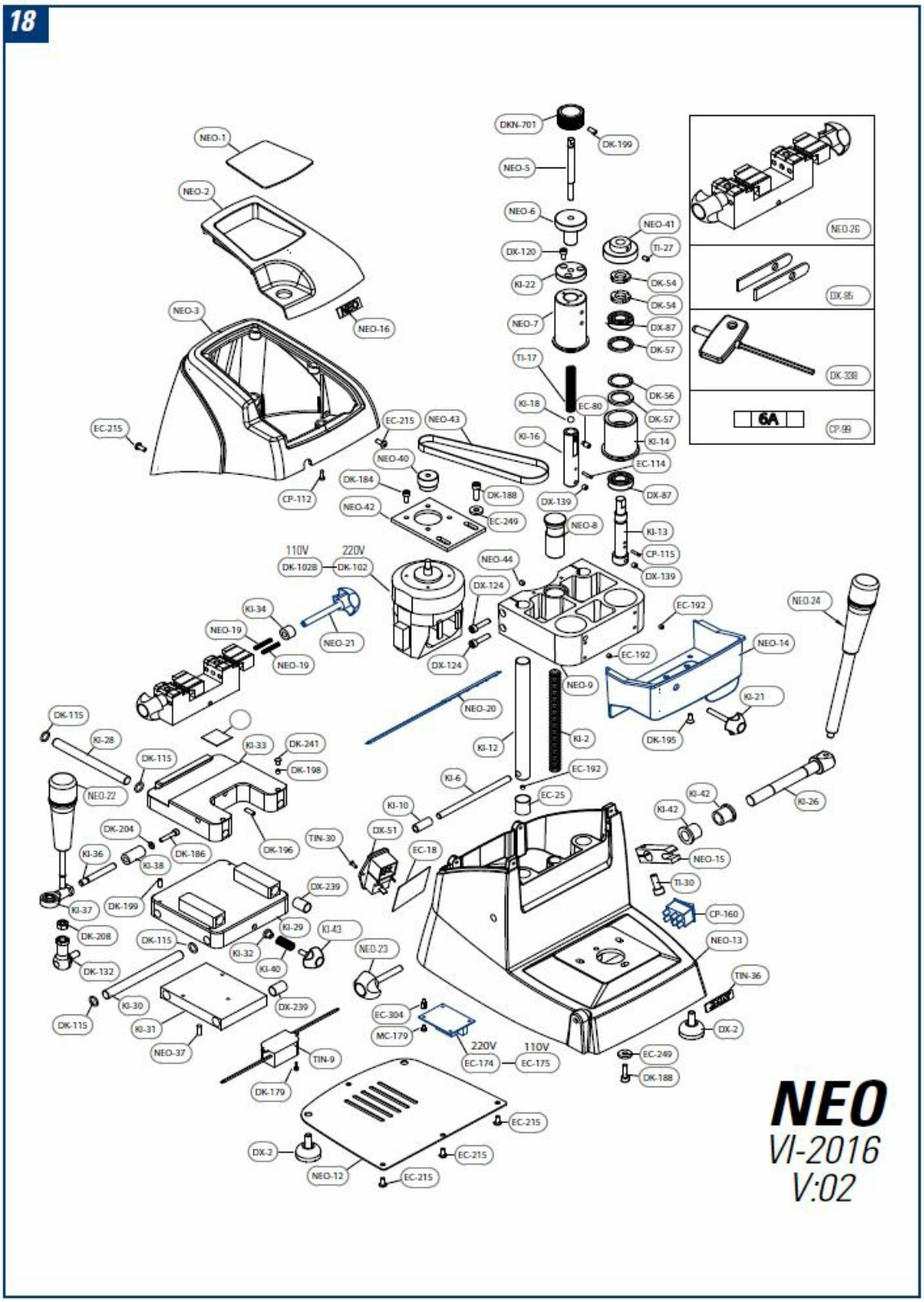
The waste produced in the duplication of keys is classified as special waste, but it is classified as solid urban waste, for example, a metal scouring pad. This waste will be removed according to the classification of current legislation in the EU, being delivered to special waste removal facilities.

MACHINE

Before destroying the machine, it must be out of service, which is done by cutting the electric supply source and separating the plastic pieces from the metal pieces.
After doing this, all the waste may be eliminated in accordance with the current legislation in the country where the machine is being used.

ASSEMBLY DRAWING

See figure 18



PARTS NO

REFERENCIA *REFERENCE REFERENCE ARTIKELNUMMER REFERENCJA REFERÊNCIA*	***MARCA*** *MANUFACTURER MARQUE HERSTELLER MARKA* *MARCA*	***FRESA*** *CUTTER FRAISE FRÄSER FREZARKA FRESA*	***PALPADOR*** *TRACER POINT PALPEUR TASTER CZUJNIK APALPADOR*	***ADAPTADOR*** *ADAPTOR ADAPTATEUR ADAPTER ADAPTER ADAPTADOR*

ABC-6	*ABC*	*F-5*	*P-5*	
ABC-7	*ABC*	*F-5*	*P-5*	
ABL-1	*ABLOY*	*F-11*	*P-11*	*AD-ABL*
ABL-2	*ABLOY*	*F-11*	*P-11*	*AD-ABL*
ABL-3	*ABLOY*	*F-11*	*P-11*	*AD-ABL*
ABL-4	*ABLOY*	*F-11*	*P-11*	*AD-ABL*
ABU-16	*ABUS*	*F-1*	*P-1*	
ABU-34	*ABUS*	*F-1*	*P-1*	*AD-CI*
ABU-61	*ABUS*	*F-1*	*P-1*	*AD-CI*
ABU-63	*ABUS*	*F-1*	*P-1*	*AD-CI*
ABU-66	*ABUS*	*F-1*	*P-1*	*AD-CI*
AGA-12	*AGA*	*F-13*	*P-13*	
AGA-25	*AGA*	*F-13*	*P-13*	
AGA-29	*AGA*	*F-5*	*P-5*	
AGA-38	*AGA*	*F-5*	*P-5*	
AGA-39	*AGA*	*F-5*	*P-5*	
AGA-42	*AGA*	*F-5*	*P-5*	
AGA-43	*AGA*	*F-5*	*P-5*	
AGA-44	*AGA*	*F-5*	*P-5*	
AGA-48	*AGA*	*F-5*	*P-5*	
AGA-49	*AGA*	*F-5*	*P-5*	
AGA-50	*AGA*	*F-5*	*P-5*	
AGB-2	*AGB*	*F-1*	*P-1*	
AGB-4	*AGB*	*F-1*	*P-1*	
AGB-5	*AGB*	*F-1*	*P-1*	
AHR-2	*AHRAM*	*F-1*	*P-1*	
AHR-3	*AHRAM*	*F-1*	*P-1*	
AMG-8D	*AMIG*	*F-5*	*P-5*	
AMG-9D	*AMIG*	*F-5*	*P-5*	
AMG-10	*AMIG*	*F-5*	*P-5*	
AMG-10D	*AMIG*	*F-5*	*P-5*	
AP-1D	*APEX*	*F-13*	*P-13*	
AP-3D	*APEX*	*F-13*	*P-13*	

AP-4D	*APEX*	*F-13*	*P-13*	
AP-5D	*APEX*	*F-19*	*P-19*	
ASH-2	*ASHICO*	*F-5*	*P-5*	
AX-2.P	*AXA*	*F-1*	*P-1*	
AZ-7	*AZBE*	*F-15*	*P-15*	
AZ-8D	*AZBE*	*F-5*	*P-5*	
AZ-9	*AZBE*	*F-13*	*P-13*	
AZ-12	*AZBE*	*F-13*	*P-13*	
AZ-14	*AZBE*	*F-13*	*P-13*	
AZ-29	*AZBE*	*F-13*	*P-13*	
AZ-32	*AZBE*	*F-13*	*P-13*	
BAI-8D	*BASI*	*F-5*	*P-5*	
BAI-9D	*BASI*	*F-5*	*P-5*	
BAG-1	*BAGEM*	*F-1*	*P-1*	
BDA-1	*BAODEAN*	*F-14*	*P-14*	
BEY-1D	*BEY*	*F-13*	*P-13*	
BEY-2D	*BEY*	*F-19*	*P-19*	
BKY-1	*BORKEY*	*F-1*	*P-1*	
BKY-2	*BORKEY*	*F-1*	*P-1*	
BM-1.P	*BMW*	*F-1*	*P-1*	
BM-4	*BMW*	*F-11*	*P-11*	*AD-MJ*
BM-5.P	*BMW*	*F-11*	*P-11*	*AD-MJ*
BM-6.P	*BMW*	*F-11*	*P-11*	
BM-6.P1C1	*BMW*	*F-11*	*P-11*	
BRAS-1	*BRAS*	*F-13*	*P-13*	
BUL-1	*BULAT*	*F-1*	*P-1*	
BRI-16	*BRICARD*	*F-1*	*P-1*	
BRI-25	*BRICARD*	*F-1*	*P-1*	
BRI-26	*BRICARD*	*F-1*	*P-1*	
BRI-27	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRI-28	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRI-29	*BRICARD*	*F-1*	*P-1*	*AD-CI*

BRI-30	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRI-31	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRI-33	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRI-34	*BRICARD*	*F-1*	*P-1*	*AD-CI*
BRICARD VTX	*BRICARD*	*F-23*	*P-23*	
BUL-1	*BULAT*	*F-1*	*P-1*	
BYP-1D	*BYP*	*F-19*	*P-19*	

REFERENCIA *REFERENCE REFERENCE ARTIKELNUMMER REFERENCJA REFERÊNCIA*	***MARCA*** *MANUFACTURER MARQUE HERSTELLER MARKA* *MARCA*	***FRESA*** *CUTTER FRAISE FRÄSER FREZARKA FRESA*	***PALPADOR*** *TRACER POINT PALPEUR TASTER CZUJNIK APALPADOR*	***ADAPTADOR*** *ADAPTOR ADAPTATEUR ADAPTER ADAPTER ADAPTADOR*
CAY-2	*CAYS*	*F-1*	*P-1*	
CE-114	*CES*	*F-32*	*P-32*	
CES WSM	*CES*	*F-32*	*P-32*	
CHU-10	*CHUBB*	*F-1*	*P-1*	
CI-14	*CISA*	*F-1*	*P-1*	
CI-17	*CISA*	*F-1*	*P-1*	
CI-21	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-25	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-26	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-30	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-31	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-32	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-33	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-35	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-48	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-56	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-57	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-59	*CISA*	*F-1*	*P-1*	
CI-60	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-66	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-71	*CISA*	*F-1*	*P-1*	*AD-CI*

CI-72	*CISA*	*F-1*	*P-1*	*AD-CI*
CI-73	*CISA*	*F-1*	*P-1*	*AD-CI*
CIT-1P	*CITROEN*	*F-11*	*P-11*	
COR-37	*IFAM*	*F-19*	*P-19*	
COR-77	*CORBIN*	*F-5*	*P-5*	
CVL-9D	*CVL*	*F-13*	*P-13*	
DAF-2	*DAF*	*F-13*	*P-13*	
DAF-3D	*DAF*	*F-13*	*P-13*	
DAF-4D	*DAF*	*F-13*	*P-13*	
DEK-3	*DEKABA*	*F-1*	*P-1*	
DEK-4	*DEKABA*	*F-1*	*P-1*	
DEK-8	*DEKABA*	*F-1*	*P-1*	
DLC-1	*DELCA*	*F-1*	*P-1*	
DLC-2	*DELCA*	*F-1*	*P-1*	
DLC-3	*DELCA*	*F-1*	*P-1*	
DO-3	*DOMUS*	*F-1*	*P-1*	
DO-4	*DOMUS*	*F-1*	*P-1*	
DOM-17I	*DOM*	*F-1*	*P-1*	
DOM-22	*DOM*	*F-1*	*P-1*	
DOM-30	*DOM*	*F-1*	*P-1*	
DOM-31	*DOM*	*F-1*	*P-1*	
DOM-32	*DOM*	*F-1*	*P-1*	
DOM-33	*DOM*	*F-1*	*P-1*	*AD-STS*
DOM-34	*DOM*	*F-1*	*P-1*	*AD-STS*
DOM-39	*DOM*	*F-1*	*P-1*	
DOM-39 *(agujero rasgado)* *(elongated hole)*	*DOM DOM*	*F-1 F-23*	*P-23*	
DOM-43	*DOM*	*F-1*	*P-1*	
DOM-56D	*DOM*	*F-1*	*P-1*	
DOM-63D	*DOM*	*F-1*	*P-1*	
DOM-B1	*DOM*	*F-1*	*P-1*	

DOM-B2	*DOM*	*F-1*	*P-1*	
DR-1	*DIERRE*	*F-11*	*P-11*	
ELZ-10	*ELZETT*	*F-1*	*P-1*	
EZ-DS10	*EZCURRA*	*F-1, F-16*	*P-1, P-16*	
EZ-DS10E	*EZCURRA*	*F-1, F-16*	*P-1, P-16*	
EZ-DS15	*EZCURRA*	*F-1, F-16*	*P-1, P-16*	
EZ-DS15R	*EZCURRA*	*F-1, F-16*	*P-1, P-16*	
FAC-19	*FAC*	*F-1*	*P-1*	
FAC-23	*FAC*	*F-1*	*P-1*	
FAC-24	*FAC*	*F-1*	*P-1*	
FAV-1D	*FAVOUR*	*F-5*	*P-5*	
FAV-2	*BYP*	*F-5*	*P-5*	
FAY-1D	*FAYN*	*F-5*	*P-5*	
FF-13	*F.F.*	*F-13*	*P-13*	
FI-16P	*TRW-SIPEA*	*F-11*	*P-11*	
FO-6.P	*FORD*	*F-22*	*P-22*	*AD-FO*
FO-24P	*FORD*	*F-11*	*P-11*	
FTH-7	*FTH*	*F-5*	*P-5*	
FTH-16	*FTH*	*F-5*	*P-5*	

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FTH-23	*FTH*	*F-5*	*P-5*	
FTH-24	*FTH*	*F-5*	*P-5*	
FTH-25	*FTH*	*F-5*	*P-5*	
FTH-26D	*FTH*	*F-5*	*P-5*	
FTH-29	*FTH*	*F-5*	*P-5*	
FTH-30	*FTH*	*F-5*	*P-5*	
GDA-1.P	*GERDA*	*F-1*	*P-1*	
GIOB-3.P	*LANCIA*	*F-6*	*P-6*	
HOND-17.P	*HONDA*	*F-11*	*P-11*	

HOND-31P	*HONDA*	*F-11*	*P-11*	
HU-2.P	*HUF*	*F-11*	*P-11*	
HU-DH.P	*VOLVO*	*F-11*	*P-11*	
HU-DN.P	*VOLVO*	*F-11*	*P-11*	
HU-HAA.P1	*HUF*	*F-11*	*P-11*	
HY-18P1C1	*HYUNDAI*	*F-11*	*P-11*	
IF-2	*IFAM*	*F-1*	*P-1*	
IF-4	*IFAM*	*F-1*	*P-1*	
IF-6	*IFAM*	*F-19*	*P-19*	
INCE-1E	*INCECA*	*F-18*	*P-18*	
INCE-2E	*INCECA*	*F-18*	*P-18*	
IR-1.P	*IR*	*F-1*	*P-1*	
IS-6D	*ISEO*	*F-13*	*P-13*	
IS-10.P	*ISEO*	*F-1*	*P-1*	
IS-14D	*ISEO*	*F-1*	*P-1*	
ITO-2D	*ITO*	*F-1*	*P-1*	
JAR-1E	*JARDI*	*F-14*	*P-14*	*AD-JAR1E*
JIS-4.P	*JIS*	*F-11*	*P-11*	*AD-MJ*
KA-1	*KABA (8)*	*F-1*	*P-1*	
KA-2	*KABA (20)*	*F-5, F43*	*P-5, P-43*	*AD-45º*
KA-3	*KABA (GEMINI)*	*F-1*	*P-1*	*AD-15º*
KA-4	*KABA (CUATRO)*	*F-1*	*P-1*	*AD-15º*
KA-4	*KABA NUEVA*	*F-1*	*P-26*	*ADAPTADOR KA-4*
KA-5	*KABA*	*F-5*	*P-5*	
KA-6	*KABA*	*F-1*	*P-1*	
KA-7	*KABA*	*F-1*	*P-1*	
KA-8	*KABA*	*F-1*	*P-1*	
KA-10	*KABA*	*F-1*	*P-1*	
KA-11	*KABA*	*F-1*	*P-1*	
KAE-1	*KALE*	*F-1*	*P-1*	
KAE-2	*KALE*	*F-1*	*P-1*	
KAE-4	*KALE*	*F-1*	*P-1*	

KAE-10D	*KALE*	*F-1*	*P-1*	
KAE-11D	*KALE*	*F-13*	*P-13*	
KAE-12D	*KALE*	*F-13*	*P-13*	
KE-1	*KESO*	*F-1*	*P-1*	*AD-5º*
KE-2	*KESO*	*F-1*	*P-1*	
KE-3	*KESO (2000)*	*F-5*	*P-5*	
KE-4	*KESO (2000)*	*F-1*	*P-1*	
JAU-1.P	*TIBBE*	*F-1*	*P-1*	
JAU-2.P	*TIBBE*	*F-1*	*P-1*	
LAP- 4	*LAPERCHE*	*F-13*	*P-13*	
LAP- 8D	*LAPERCHE*	*F-13*	*P-13*	
LAP-10D	*LAPERCHE*	*F-13*	*P-13*	
LAP-11D	*LAPERCHE*	*F-13*	*P-13*	
LAP-13.P	*LAPERCHE*	*F-13*	*P-13*	
LAP-17.P	*LAPERCHE*	*F-13*	*P-13*	
LAP-20.P	*LAPERCHE*	*F-13*	*P-13*	
LAP-21.P	*LAPERCHE*	*F-13*	*P-13*	
LAP-22.P	*LAPERCHE*	*F-13*	*P-13*	
LAP-23.P	*LAPERCHE*	*F-13*	*P-13*	
LIN-13	*LINCE*	*F-12B*	*P-12B*	
LIN-13	*LINCE*	*F-5*	*P-5*	
LIN-19D	*LINCE*	*F-5*	*P-5*	
LIN-21D	*LINCE*	*F-1*	*P-1*	
LIN-26D	*LINCE*	*F-5*	*P-5*	
LT-1	*LT*	*F-1*	*P-1*	
MAS-15P	*MASTER*	*F-6*	*P-6*	
MASL-1	*MASTER LOCK*	*F-1*	*P-1*	
MAZ-12.P1	*MAZDA*	*F-1*	*P-1*	
MCM- 4SS	*MCM*	*F-1*	*P-1*	
MCM- 4SS	*MCM*	*F-B*	*P-B*	

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MCM- 4SS	*MCM*	*F-C*	*P-C*	
MCM- 11S	*MCM*	*F-1*	*P-1*	
MCM- 11S	*MCM*	*F-B*	*P-B*	
MCM- 11S	*MCM*	*F-C*	*P-C*	
MCM-10	*MCM*	*F-13*	*P-13*	*AD-MCM*
MCM-16	*MCM*	*F-1*	*P-1*	
MCM-21D	*MCM*	*F-1*	*P-1*	
MCM-27	*MCM*	*F-13*	*P-13*	
ME-2.P	*MERCEDES*	*F-11*	*P-11*	*AD-MJ*
ME-3.P	*MERCEDES*	*F-11*	*P-11*	*AD-MJ*
ME-4.P	*MERCEDES*	*F-11*	*P-11*	
ME-5.P	*MERCEDES*	*F-11*	*P-11*	
ME-6.P	*MERCEDES*	*F-11*	*P-11*	
ME-7.P	*MERCEDES*	*F-11*	*P-11*	
ME-8.P	*MERCEDES*	*F-11*	*P-11*	
ME-10.P	*MERCEDES*	*F-11*	*P-11*	
ME-11.P	*MERCEDES*	*F-11*	*P-11*	
ME-12.P	*MERCEDES*	*F-11*	*P-11*	
MLM-4	*MLM*	*F-1*	*P-1*	
MULT-2.P	*MULTLOCK*	*F-12A*	*P-12A*	
MULT-2.P	*MULTLOCK*	*F-12B*	*P-12B*	
MULT-3.P	*MULTLOCK*	*F-12A*	*P-12A*	
MULT-3.P	*MULTLOCK*	*F-12B*	*P-12B*	
MULT-4.P	*MULTLOCK*	*F-12A*	*P-12A*	
MULT-4.P	*MULTLOCK*	*F-12B*	*P-12B*	
MULT-5.P	*MULTLOCK*	*F-12A*	*P-12A*	
MULT-5.P	*MULTLOCK*	*F-12B*	*P-12B*	
MUL-T10.P	*MULTLOCK*	*F-12A*	*P-12A*	
MUL-T10.P	*MULTLOCK*	*F-12B*	*P-12B*	

MUL-T16.P	*MULTLOCK*	*F-12A*	*P-12A*	
MUL-T16.P	*MULTLOCK*	*F-12B*	*P-12B*	
NE-40.P	*VOLVO*	*F-11*	*P-11*	
NE-41.P	*VOLVO*	*F-11*	*P-11*	
NE-51P2	*PEUGEOT*	*F-11*	*P-11*	
OJ-Q	*OJMAR*	*F-5*	*P-5*	
OMC-3	*OMEC*	*F-1*	*P-1*	
OMC-4	*OMEC*	*F-1*	*P-1*	
OMC-7	*OMEC*	*F-1*	*P-1*	
OP-11C1	*OPEL*	*F-11*	*P-11*	
OP-WH.P	*OPEL*	*F-11*	*P-11*	
OP-WHC	*OPEL*	*F-11*	*P-11*	
OP-WY.P	*OPEL*	*F-11*	*P-11*	
PFA-13D (lateral)	*PFAFFENHAIN*	*F-34*	*P-34*	
PFA-14D (lateral)	*PFAFFENHAIN*	*F-34*	*P-34*	
PFA-15D (lateral)	*PFAFFENHAIN*	*F-34*	*P-34*	
PFA-16D (lateral)	*PFAFFENHAIN*	*F-34*	*P-34*	
PEN-2	*PENZMASH*	*F-1*	*P-1*	
PEU-1C1	*PEUGEOT/ VALEO*	*F-11*	*P-11*	
PEU2C1	*VALEO/PEUGEOT*	*F-11*	*P-11*	
PIC-8D	*PICARD*	*F-1*	*P-1*	
PICARD VTX	*PICARD*	*F-23*	*P-23*	
PTN-1D	*POTENT*	*F-19*	*P-19*	
PTN-2D	*POTENT*	*F-19*	*P-19*	
ROSE-1	*ROSSETTI*	*F-1*	*P-1*	
SAA-1.P	*SAAB*	*F-11*	*P-11*	
SAG-1T	*TSAG*	*F-8W*	*P-8*	
SEA-1	*SEA*	*F-3*	*P-3 Canal*	
SEA-1	*SEA*	*F-1*	*P-1 Lateral*	
SEA-2	*SEA*	*F-3*	*P-3 Canal*	
SEA-2	*SEA*	*F-1*	*P-1 Lateral*	
SCR-1	*SECURITAL*	*F-1*	*P-1*	
SEC-1	*SECUREMME*	*F-23*	*P-23*	

SEC-2	*SECUREMME*	*F-19*	*P-19*	
SEC-3	*SECUREMME*	*F-19*	*P-19*	
SER-3D	*SERRALLER*	*F-1*	*P-1*	
SIP-4P4	*TRW-SIPEA*	*F-11*	*P-11*	
SIP4-P3	*TRW-SIPEA*	*F-11*	*P-11*	
SPI-1	*SPIDER*	*F-1*	*P-1*	
SPI-1D	*SPIDER*	*F-1*	*P-1*	
STS-35	*STS*	*F-1*	*P-1*	
STS-36	*STS*	*F-1*	*P-1*	
STS-37	*STS*	*F-1*	*P-1*	

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STS-38	*STS*	*F-1*	*P-1*	
STS-X5	*STS*	*F-5*	*P-5*	*AD-STS*
STS-X6	*STS*	*F-5*	*P-5*	*AD-STS*
SUB-2.P	*SUBARU*	*F-11*	*P-11*	
TC-1	*TECON*	*F5*	*P5*	
T-10P	*STS-TESA*	*F5*	*P-5*	
T-10	*STS – TESA*	*F-13*	*P-13*	
T-10 2005	*TESA*	*F-1*	*P-1*	
TE-T11	*TESA*	*F-5*	*P-5*	
T-14	*STS*	*F-5*	*P-5*	
TE-T12PLUS	*TESA*	*F-5*	*P-5*	*AD-T12P*
TE-T60	*TESA*	*F-5*	*P-5*	
TE-T61	*TESA*	*F-5*	*P-5*	
TE-T80	*TESA*	*F-5*	*P-5*	
TE-T80SC	*TESA*	*F-5*	*P-5*	
TE-T82	*TESA*	*F-5*	*P-5*	
TEC-2	*TECSESA*	*F-5*	*P-5*	
TIT-6	*TITAN*	*F-1*	*P-1*	
TOK-14D	*TOK WINKHAUS*	*F-15*	*P-15*	

TOV-2	*TOVER*	*F-1*	*P-1*	
TOV-4	*TOVER*	*F-1*	*P-1*	
TOV-5 (2f25)	*TOVER*	*F-1*	*P-1*	
TOV-5 (2f25)	*TOVER*	*F-6*	*P-6*	
TOV-6	*TOVER*	*F-1*	*P-1*	
TOV-7	*TOVER*	*F-1*	*P-1*	
TOYO-18.P	*TOYOTA*	*F-11*	*P-11*	
TOYO-30.P1	*TOYOTA*	*F-11*	*P-11*	
TRL-4P	*TRELOCK*	*F-11*	*P-11*	
TRO-1	*TARONI*	*F-1*	*P-1*	
TRO-1D	*TARONI*	*F-1*	*P-1*	
TV-3	*IX – STS -TESA*	*F-1*	*P-1*	
TV-5	*IX – STS -TESA*	*F-1*	*P-1*	
TV-8	*IX – STS -TESA*	*F-1*	*P-1*	
TV-9	*IX – STS – TESA*	*F-1*	*P-1*	
TX-1	*SH-2 SH-3*	*F-19*	*P-19*	
TP00CIT-1.P	*VALEO*	*F-11*	*P-11*	
TP00PEU-1.P	*VALEO*	*F-11*	*P-11*	
TKY-2	*T-KEY*	*F-1*	*P-1*	
UCEM-5D	*UCEM*	*F-14*	*P-14*	
UCEM-5I	*UCEM*	*F-14*	*P-14*	
UCEM-8D.P	*UCEM*	*F-13*	*P-13*	
UCEM-13D	*UCEM*	*F-13*	*P-13*	
UCEM-17D	*UCEM*	*F-13*	*P-13*	
URB-3D	*URBIS*	*F-1*	*P-1*	
URB-4D	*URBIS*	*F-1*	*P-1*	
VA-15	*VACHETTE*	*F-21*	*P-21*	
VA-70	*VACHETTE*	*F-1*	*P-1*	
VI-14	*VIRO*	*F-13*	*P-13*	
WAN-1D	*WANJIN*	*F-5*	*P-5*	
WIL-22	*WILKA*	*F-1*	*P-1*	
WIN-1D	*WINKHAUS*	*F-15*	*P-15*	*P-WIN*
WIN-1I	*WINKHAUS*	*F-15*	*P-15*	*P-WIN*

WIN-2D	*WINKHAUS*	*F-15*	*P-15*	*P-WIN*
WIN-3D	*WINKHAUS*	*F-15*	*P-15*	*P-WIN*
WIN-4D	*WINKHAUS*	*F-15*	*P-15*	*P-WIN*
YA-23	*YALE*	*F-11*	*P-11*	*AD-JIS*
YAR-1	*YARDENI*	*F-1*	*P-1*	
YA-81	*YALE*	*F-19*	*P-19*	
YA-280D	*YALE*	*F-5*	*P-5*	
YAR-1	*YARDENI*	*F-13*	*P-13*	
YAR-2	*YARDENI*	*F-1*	*P-1*	
YAR-3	*YARDENI*	*F-13*	*P-13*	
ZA-10	*ZADI*	*F-1*	*P-1*	
ZA-14P	*ZADI*	*F-33*	*P-33*	

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Documents / Resources

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