

OPERATING MANUAL 5_HSD CRIMPING STATION

CAUTION! Start-up and operation of Mecal equipment is reserved for qualified personnel who have understood and will adhere to the contents of this manual. Any operations not described in this manual could cause damage to persons or affect the functionality of equipment itself.





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These instructions were created in April 2017 and may be subject to change. Furthermore, MECAL declares that the images shown in this manual may not have been updated with technical changes made to products for the sake of improvements or special requests.

Contents

1) Introduction	5
1.1) Important warnings.....	5
2) General instructions	6
2.1) Use.....	6
2.2) Technical information.....	6
2.3) Inspection upon delivery.....	7
2.4) Machine identification.....	8
2.5) Safety requirement.....	9
2.6) Protections.....	11
3) Commissioning	12
3.1) Unpacking, lifting and transport.....	12
3.2) Pneumatic connection.....	14
3.2.1) <i>Pneumatic mini-applicator connection</i>	14
3.3) Pneumatic diagram.....	15
3.4) Electrical diagram.....	16
3.5) Press calibration.....	39
3.6) Mini-applicator installation.....	39
3.6.1) <i>Mini-applicator fastening</i>	39
3.7) Dereeler preparation.....	41
3.8) Terminal insertion.....	45
4) Start-up and use	48
4.1) Stop and reset.....	49
5) Process adjustments	51
5.1) Cable alignment with the mini-applicator crimping area.....	51
5.2) Cable alignment with the cycle start-up unit.....	51
5.3) Pitch adjustment for crimping left and right side cables.....	52
5.4) Clamp unit adjustment.....	53
5.5) Crimping table adjustment.....	53
5.5.1) <i>Table height adjustment</i>	54
5.5.2) <i>Table position adjustment</i>	54
5.6) Display operation.....	55
6) Maintenance adjustments	60
6.1) Cable presence sensor_ SQ1.....	60
6.2) Cable closing clamp sensor_ SQ4 adjustment.....	60
6.3) Cycle start-up unit cylinder sensor_ SQ3 adjustment.....	61
6.4) Table transfer cylinder sensor_ SQ9 and SQ31 adjustment.....	62
6.5) Needle position sensor_ SQ 5 adjustment.....	62
6.6) Table height sensor_ SQ13 adjustment.....	62
6.7) Table position sensor_ SQ10 adjustment.....	62
7) 90°-180° transformation	63
8) Working cycle	66
STEP 1. <i>Display</i>	66
STEP 2. <i>Cable insertion</i>	66
STEP 3. <i>Cycle start-up</i>	67
STEP 4. <i>Cycle end</i>	67

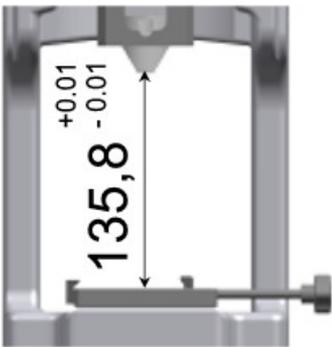
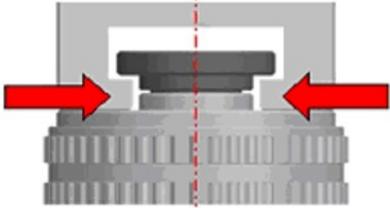
9) Maintenance	68
9.1) Spare parts	68
9.2) Spare parts recommended by Mecal	69
9.3) Example of documentation.....	70
9.4) Cleaning.....	70
9.5) Storage	70
9.6) Demolition and disposal	71
10) Troubleshooting and problem resolution	72
11) Error signals	75
12) After sales service	78

1) Introduction

Mecal guarantees the safety of its production equipment only if the machine and its accessories are used in full compliance with safety regulations and with the following use and maintenance manual. Mecal excludes all liability for any changes made and/or tampering which endangers the safety of the machine. This document provides support for the installation, start-up up, use and maintenance of the product in question. It complements but does not replace other documents, data sheets or diagrams. No more than one operator can work on each piece of equipment.

CAUTION:
Carefully read the instructions before installing and operating equipment.

1.1) Important warnings

Phase	Operation
<ul style="list-style-type: none"> Verify the correct height calibration of presses at the bottom dead centre (BDC), equal to 135.8 mm. 	
<ul style="list-style-type: none"> Absolutely verify press axis alignment with working equipment. 	
<ul style="list-style-type: none"> Position the adjustment ring nut according to the indications contained on the identification plate. 	
<p>Note: After having installed the mini-applicator, use the corresponding key or handwheel to manually force the press to carry out a complete cycle to verify that:</p> <ul style="list-style-type: none"> There are no impediments to free mini-applicator operation The terminal is correctly positioned in line with the anvil and with crimping and cutting components 	

2) General instructions

2.1) Use

The crimping station is the 5th step in the Mecal production line for HSD (High Speed Data) cables. It is made up of a combination of two P107C presses, two special applicators, and a transfer table equipped with a variable inclination arm.

The machine carries out crimping on 4 HSD cable conductors and, thanks to the two presses and the changing of the 4 applicators, allows for the application of male and female pins. The electronic equipment allows the user to choose different working configurations depending on the type of wiring to be created. Process quality is controlled by means of fibre optics which ensure correct cable positioning, reading the colours of conductors, and by two load cells present on the presses that monitor each individual crimping. The station is equipped with a pneumatic casing that allows the operator to insert cables, but completely closes the working area after activation of the two-handed cycle start switch.

Equipment is intended for use in industrial environments. The machine can be used for cold metal working only or, more specifically, solely for crimping applications. Its use for any application other than specified is **STRICTLY PROHIBITED**.

2.2) Technical information

HSD Crimping Station

AIR PRESSURE	5-7 BAR
DIMENSIONS (mm)	W2400xH1300xD1050
DIMENSIONS (")	W94,48xH81.18xD40.94
DIMENSIONS without DEREELEER (mm)	W1400xH1300xD1050
DIMENSION S without DEREELEER (")	W55,11Xh51.18xD41.33
WEIGHT	500Kg
POWER SUPPLY	110-240V 50-60Hz
CABLE CROSS-SECTION	HSD Dacar® 535, 566
90° CYCLE TIME	approximately 20 sec
180° male or female CYCLE TIME	approximately 19 sec
180° male and female CYCLE TIME	approximately 40 sec

MRSP Pneumatic Left-Side Restyling Mini-applicator

Model: MRSP

Working height at BDC: 135.8mm

Press working stroke: 40 / 30mm

Terminal pitch: Max. stroke 35mm

Terminal thickness: 0.2 mm

Wire section: Four 0.5 mm cables

Feeding system: air pressure 5/6 Bar

Weight: 4.5 Kg (9.9 lb)

Dimensions (mm): 240x140x150

Dimensions ("): 9.44x5.51x5.9

2.3) Inspection upon delivery

The applicator is delivered in a separate package containing:

- One mini-applicator
- Crimping samples created for testing
- CD containing use and maintenance instructions

(Optional) upon request:

- Spare parts kit
- Photo of the crimped terminal section (CD file attachment)
- Capability (CD file attachment)

Upon delivery:

-  Make sure that there is no damage to the applicator and that there are no missing parts, checking the accompanying document.
-  If any defects are detected, inform Mecal no later than 10 days from the date of receipt.



Packaging must be disposed of according to current regulations, not release into the environment: contact authorised companies for disposal.

2.4) Machine identification



CD with serial number and documentation complete with Data Sheet, BOM and exploded diagrams

2.5) Safety requirement

When equipment is in use it must be equipped with all safety devices. Before performing any cleaning or maintenance operations:



Set the main switch to "0".



Cut off power to the line switch and disconnect the equipment power cable.



Announce operations on the line switch.

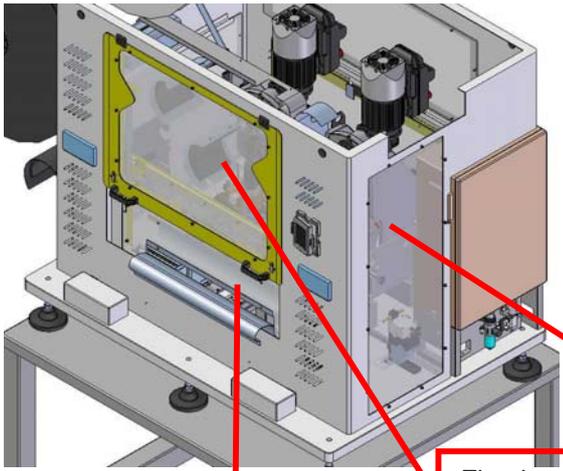
CAUTION: read the following carefully:

- Mecal equipment complies with safety requirements if Mecal mini-applicators MRSP6375-JKA, MRSP6375-JKB, MRSP6375-JKC, MRSP6375-JKD are installed.

The distance of the casing from the tool must be greater than 10mm, with a slot that is 6mm wide, as required by the standard (UNI – EN294). Verify whenever non-standard Mecal tools have been installed.

- Equipment is provided with safety protections which, if removed, prevent operation.
- Do not attempt to use equipment without safety protections.
- Modifying protection slots or guards aimed at protecting the operator from moving parts, preventing the insertion of fingers or hands, is prohibited. Do not tamper with or inhibit microswitches or safety sensors.
- Do not intervene or leave maintenance equipment (wrenches, grippers, etc.) on moving press parts when on.
- Do not remove warning labels: replace them when deteriorated.
- Leave a space of one metre around the perimeter of the machine to permit access to and maintenance of parts by the operators responsible.
- Equipment must be installed in an industrial environment where there is no risk of water jets. Do not direct jets or sprays on electrical equipment when cleaning.
- Equipment must only be used for the type of cable for which it has been designed.

2.6) Protections



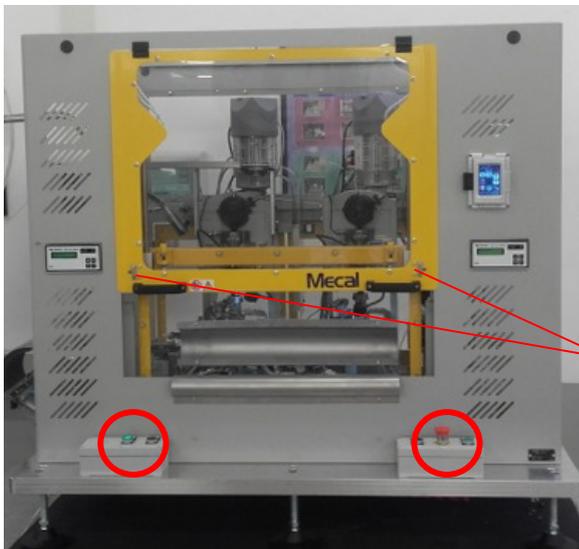
The transparent protections are constructed in clear Lexan technopolymer material. The upper half of front casing is fixed and can only be opened with the machine shut off and disconnected from the electrical mains for mini-applicator installation/removal, calibration and maintenance operations (see chapter 7, maintenance).

The lower half of the casing is mobile. Operation is described in detail in chapters 3 and 4.

Side protection

Fixed casing

Mobile casing



Two-hand control

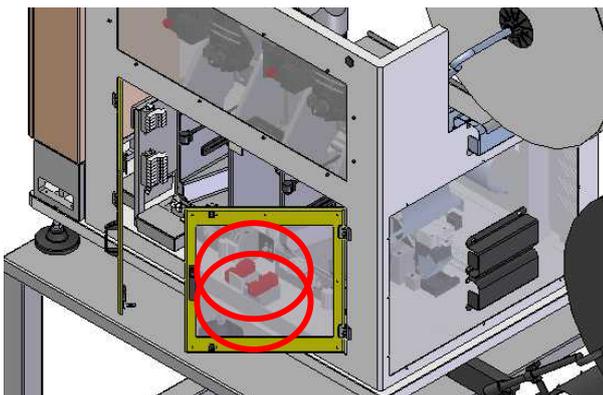
Machine and working cycle reset is carried out by means of a two-hand control located in front of the machine.

Maintenance safety



Maintenance safety

The fixed casing can be opened only to carry out maintenance operations by unscrewing the safety blocks. Removing upper casing safety devices during production phases is strictly prohibited.



Rear casing

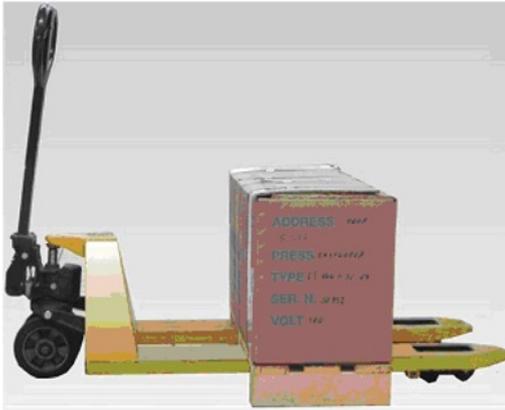
The rear part of the machine is accessible via two doors that act on two safety switches. The switches detect when casing is opened and cut off the current and discharge the pneumatic system on equipment. Power and air are restored when the protections are closed.

3) Commissioning

This section describes all the operations and checks required to manage the machine during the period from delivery and implementation. Please carefully follow the instructions provided herein and contact Mecal with any doubts or uncertainty.

CAUTION: all installation operations must be carried out with the machine in emergency conditions or switched off and the air inlet closed.

3.1) Unpacking, lifting and transport

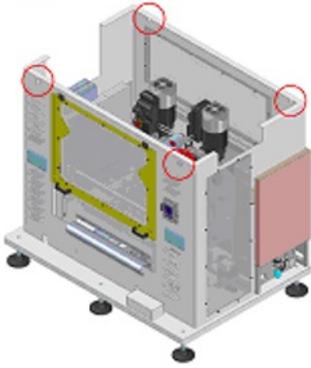


- Use proper equipment to handle packaging.
- Verify by checking the accompanying document that the equipment has not been damaged and that there are no missing parts.
- If any anomalies are detected, inform Mecal no later than 10 days from the date of receipt.
- Packaging must be disposed of as per regulations in force.
- Make sure that the support surface is suitable for the weight of the equipment and that it is firmly secured in place.
- Do not dispose of packing in the environment: contact authorised companies for disposal.



The crimping station can be lifted and moved in the working position using the baseplate as a support for the forklift. When the machine is removed from packaging the first time, the 6 anti-vibration dampers which were removed to prevent damage during transport must be re-attached.



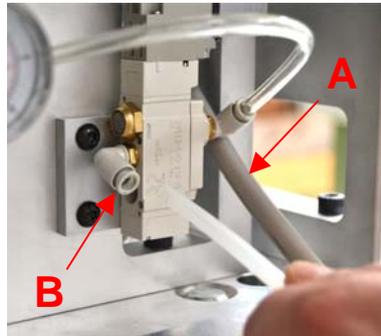
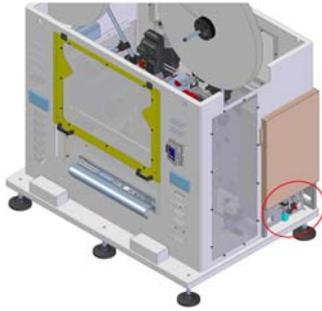


CAUTION: Machine casing is provided with 4 holes at the top corners. These holes are used solely for removal from the casing itself. **DO NOT** move the machine using these gripping points which risks serious damage to all equipment.

3.2) Pneumatic connection

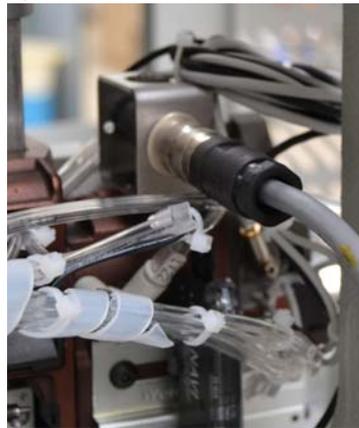
The main electrical and pneumatic connections are on the right side of the machine.

- Connect the network **A** power cable, which comes out directly from the electrical panel, to a normal outlet.
- Connect a Ø6mm air hose to pneumatic fitting **B**.



3.2.1) Pneumatic mini-applicator connection

CAUTION: To avoid collisions, make sure there are no mechanical obstructions on all moving systems before connecting all the pneumatic components.



Connect the electrical flying connector on the machine with the panel connector located on the mini-applicator. Make sure that the locking washer is inserted and tightened.



Connect the flying pneumatic connectors, located on the mini-applicator, with the panel pneumatic connectors on the back of equipment. Make sure that the locking washers are inserted and tightened.

CAUTION: all connector connecting operations should be carried out with the press in emergency conditions or switched off and without air in the system.

3.3) Pneumatic diagram



3.4) Electrical diagram

WIRING DIAGRAM

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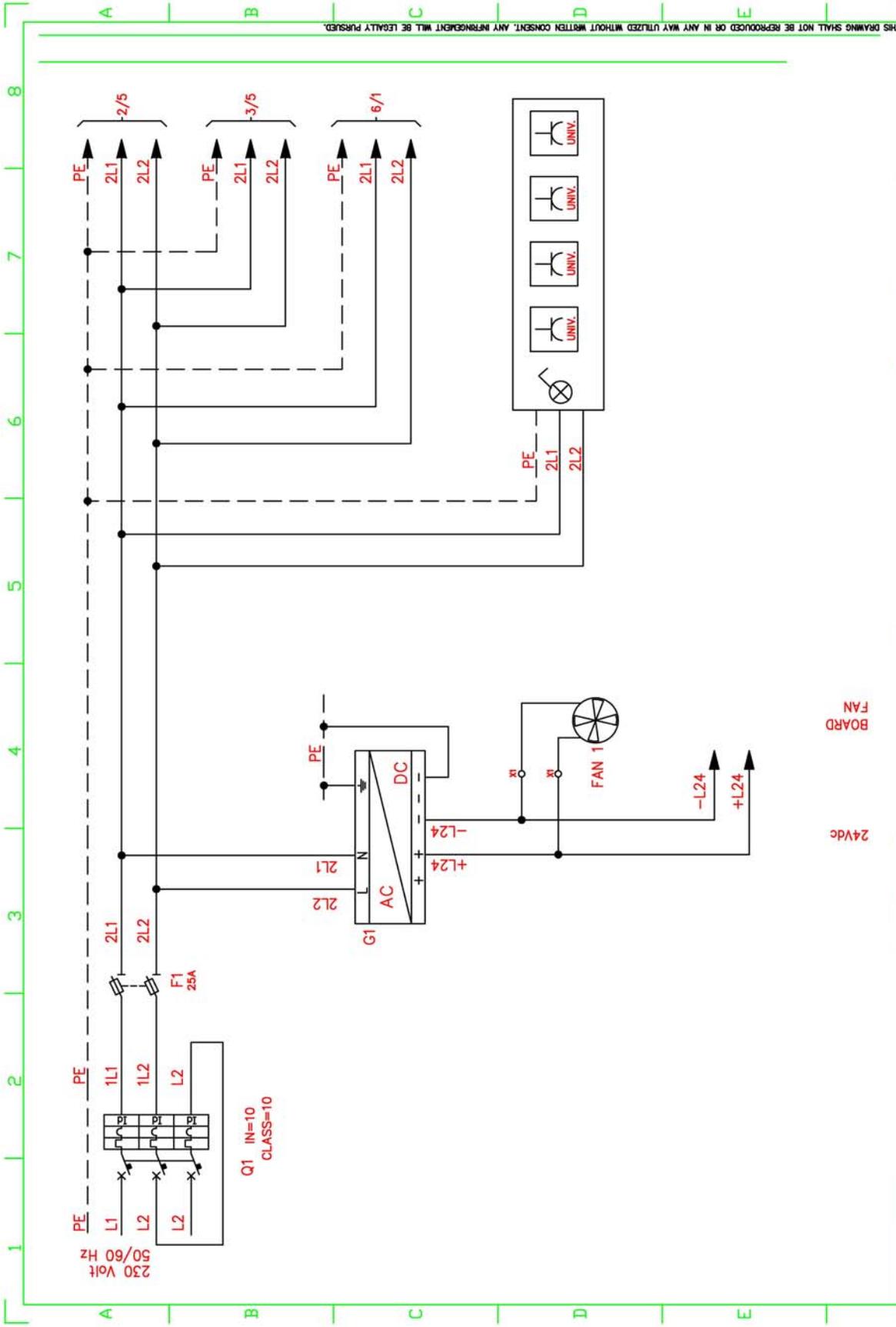
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MCB120 PROGRAM A6 : MCP120AZR00

MCB120 PROGRAM A7 : MCP120AZR00

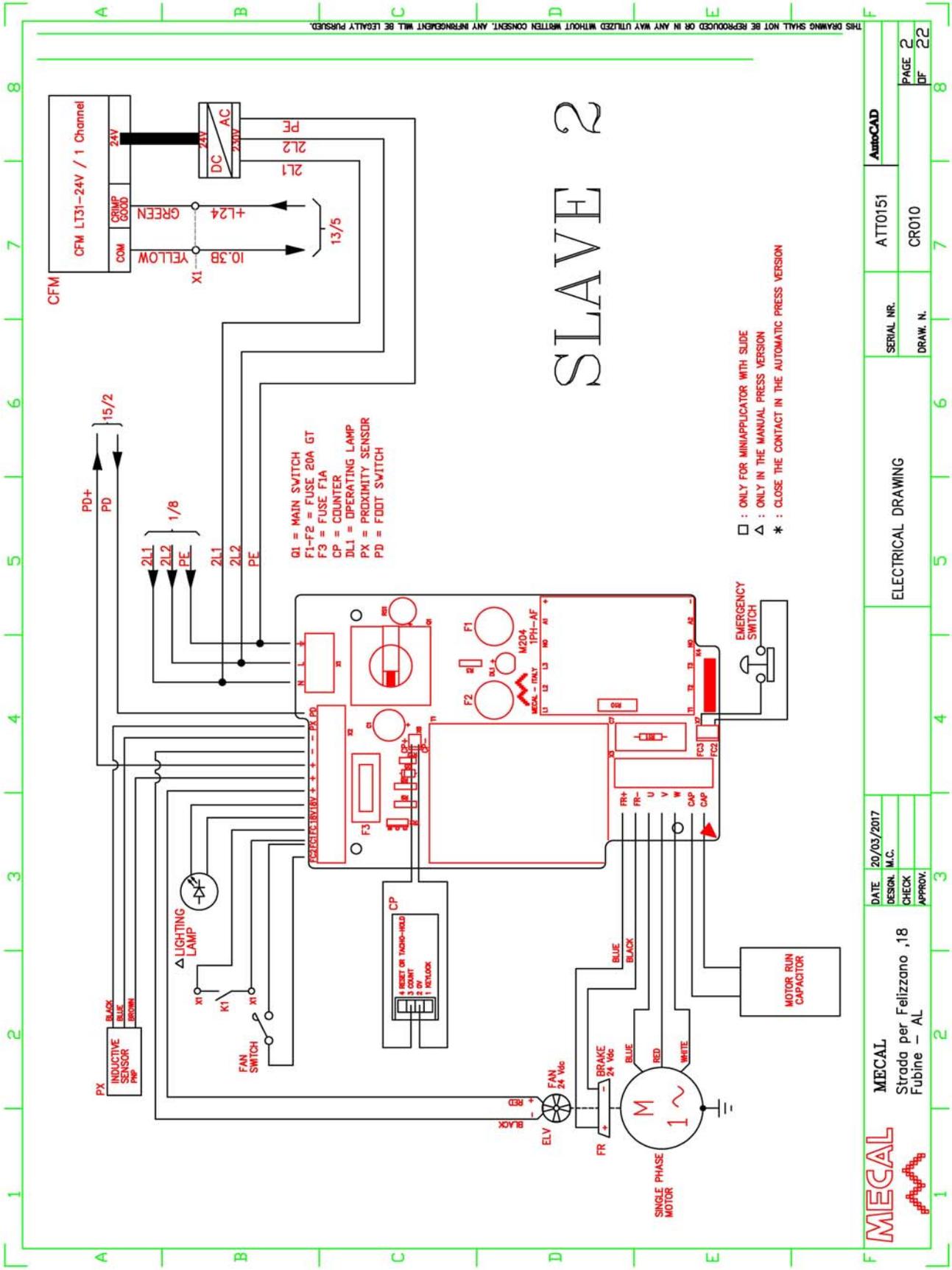
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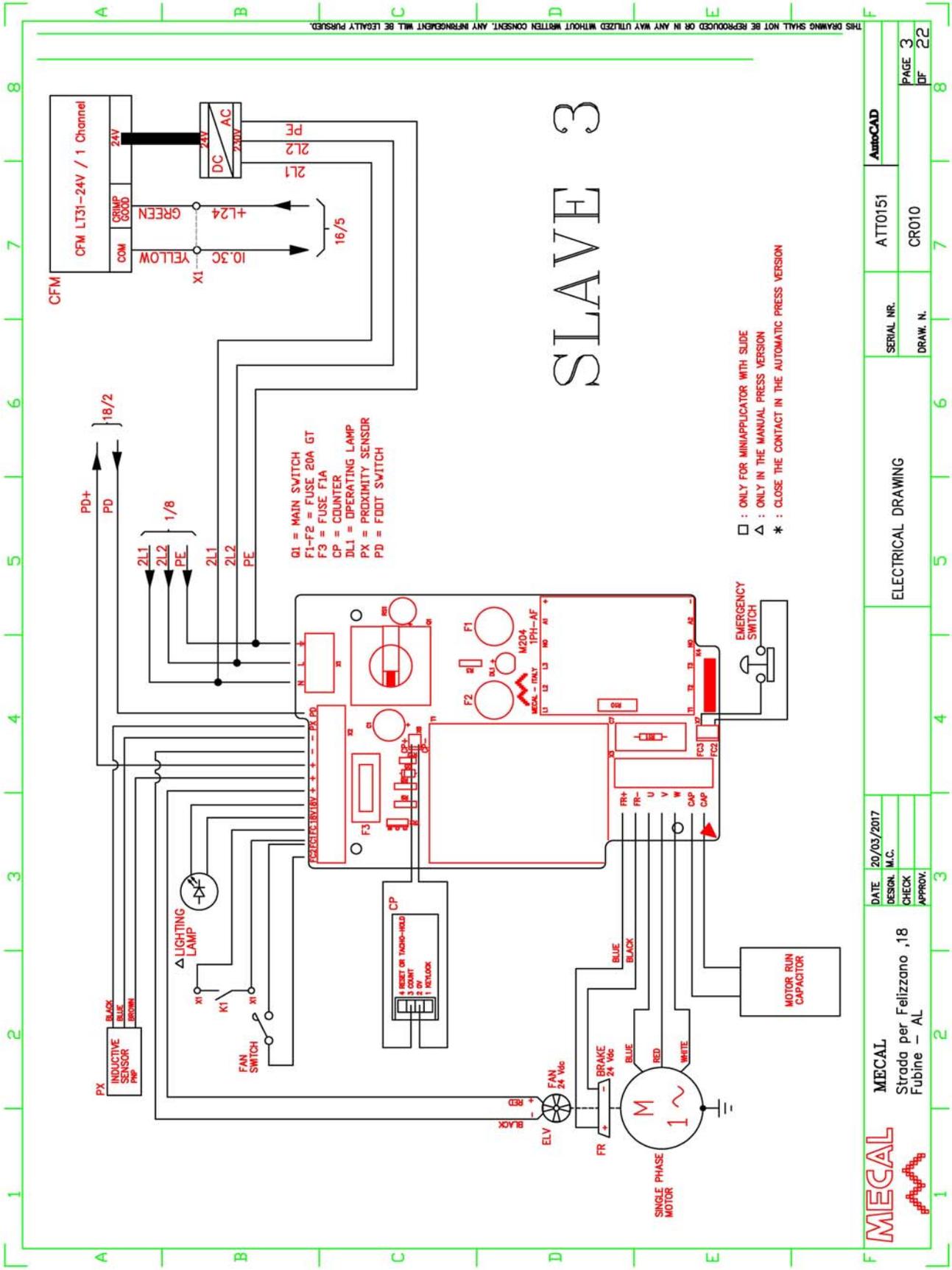


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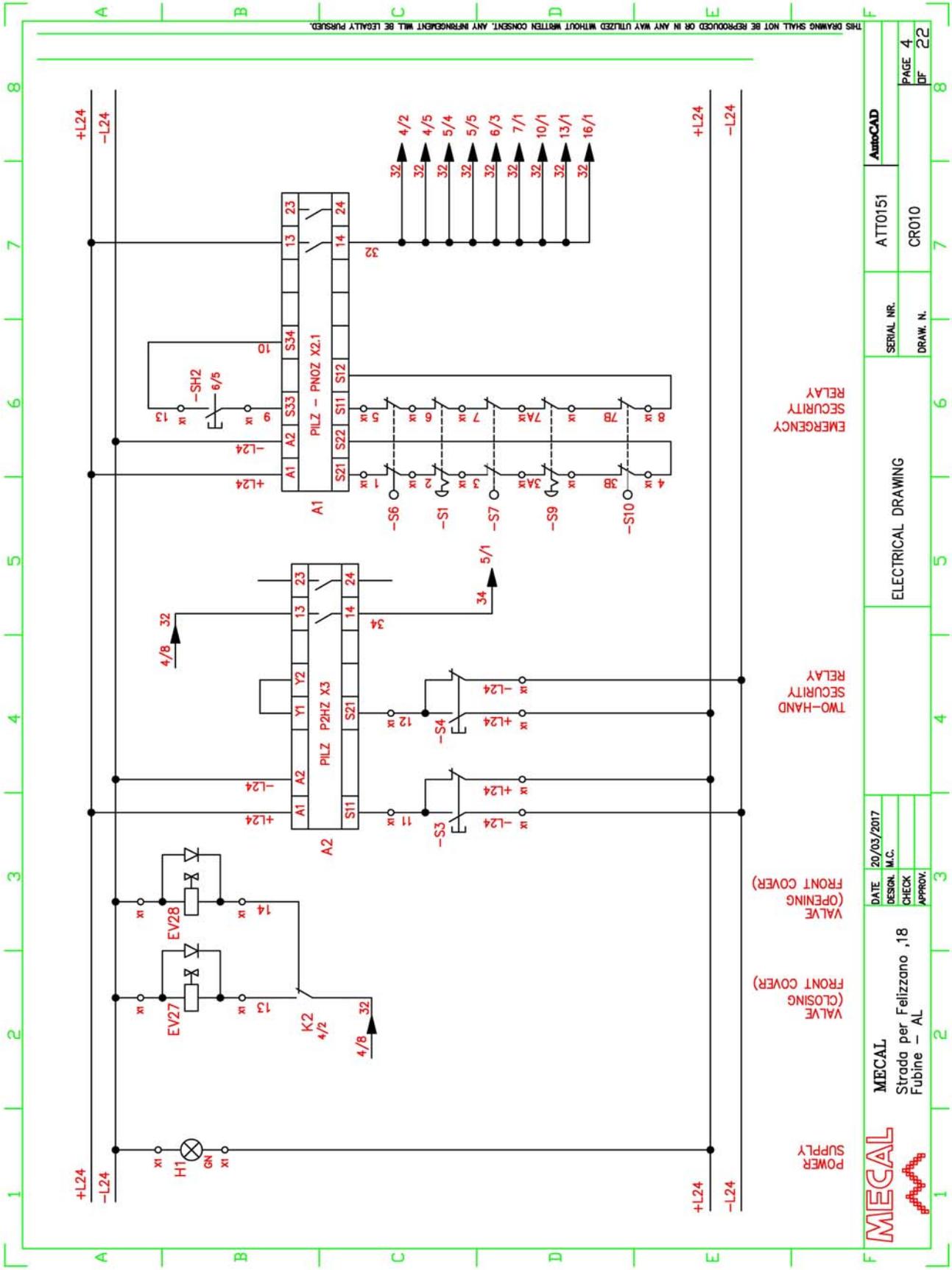
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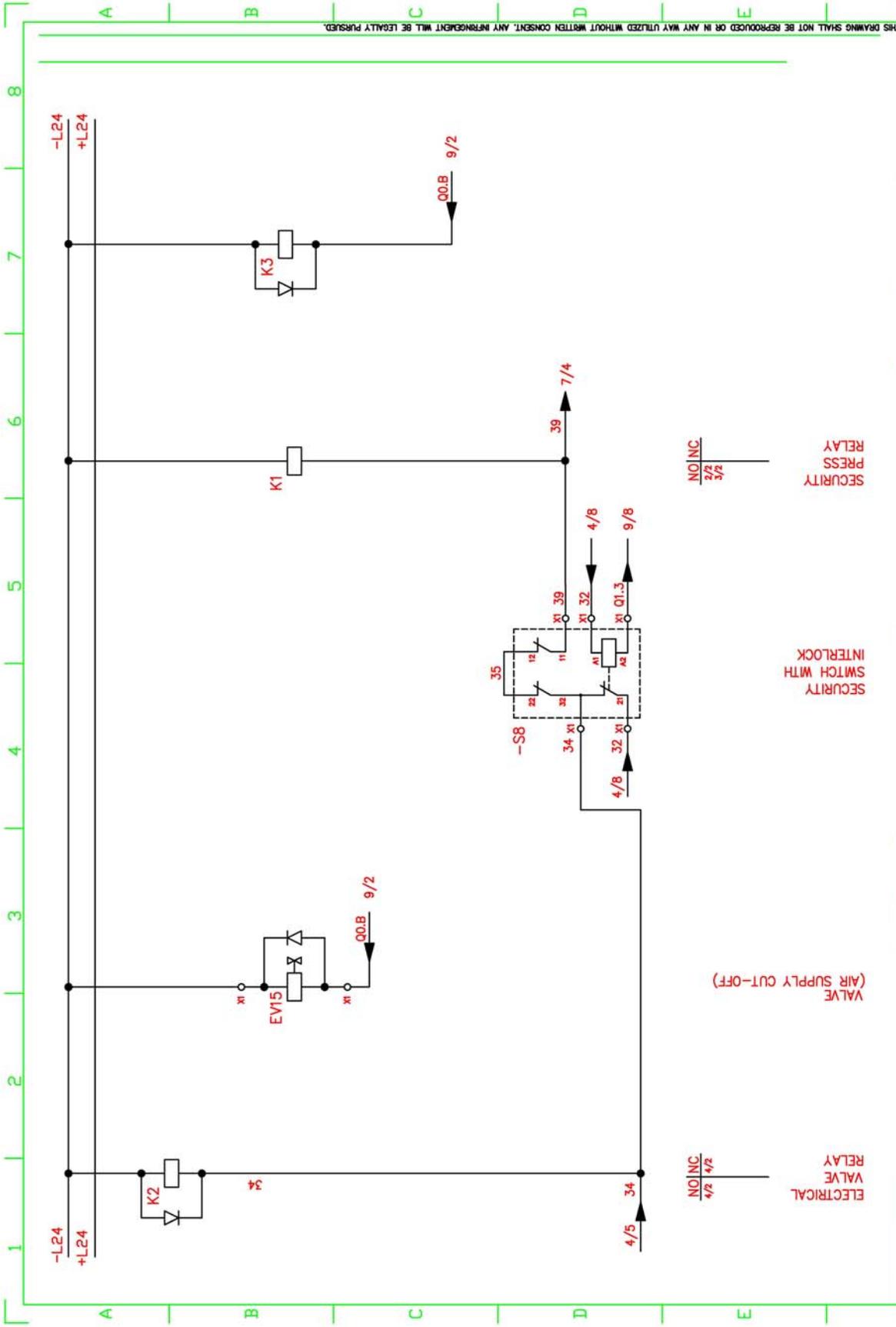
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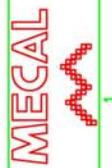
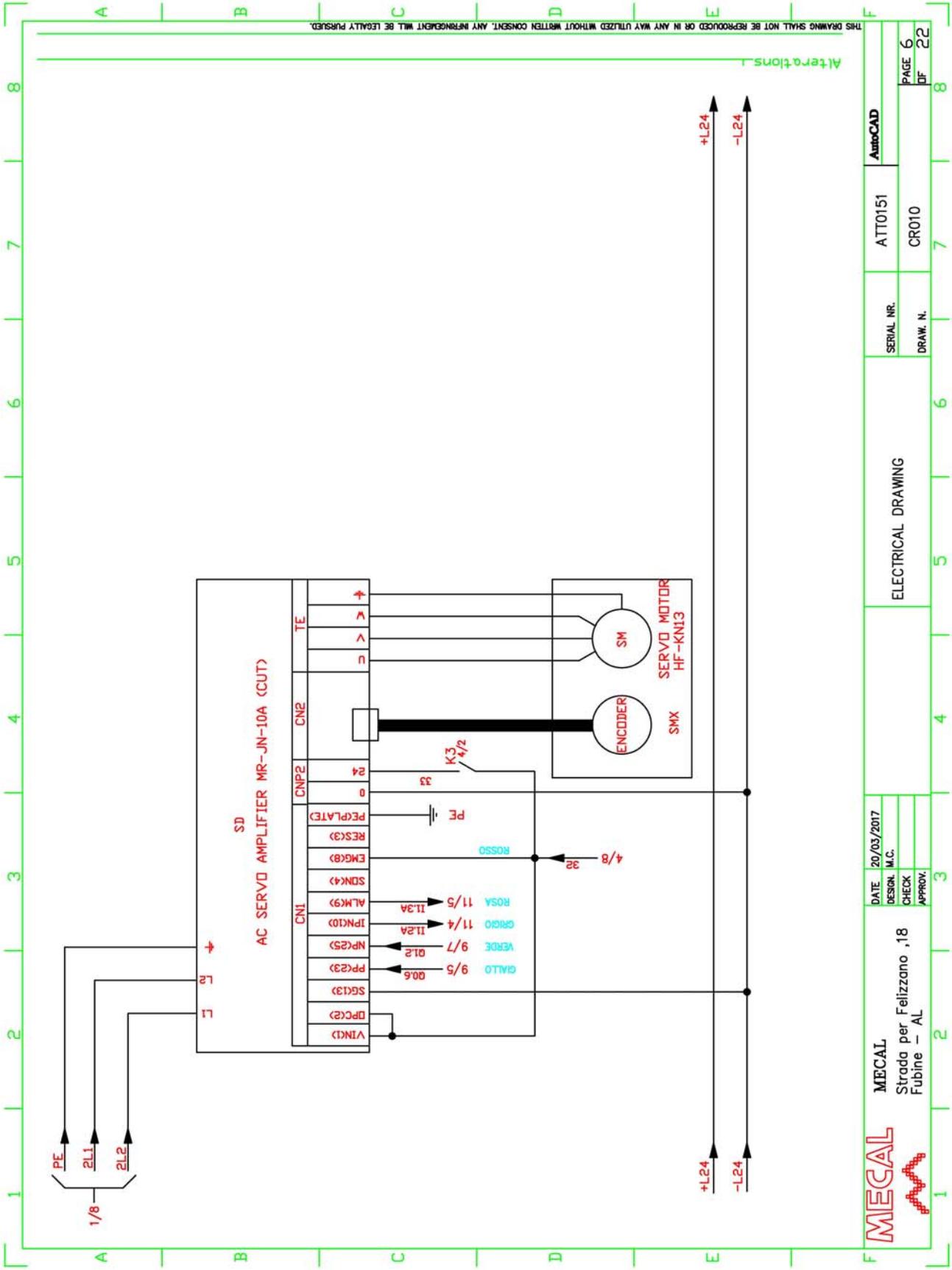
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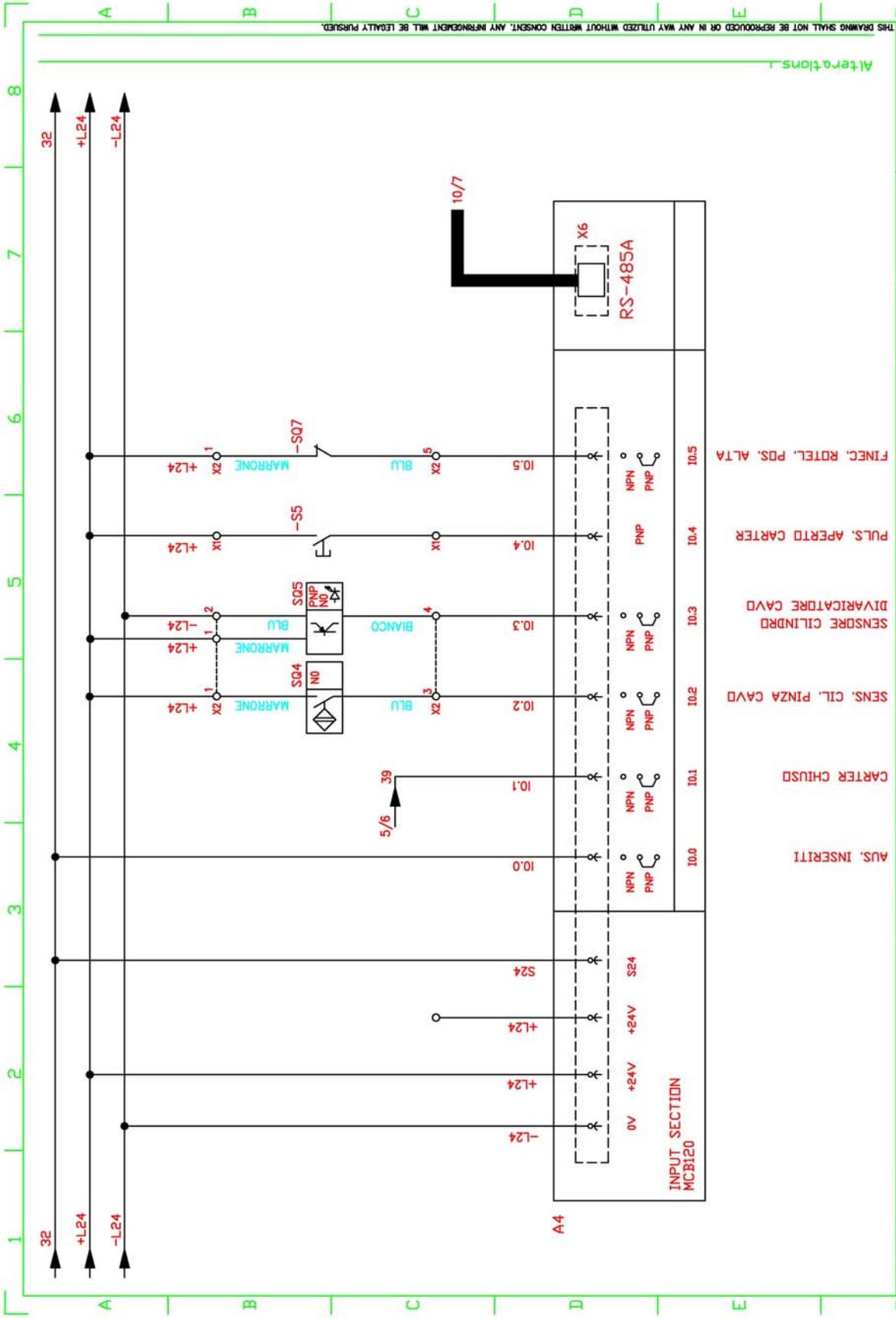
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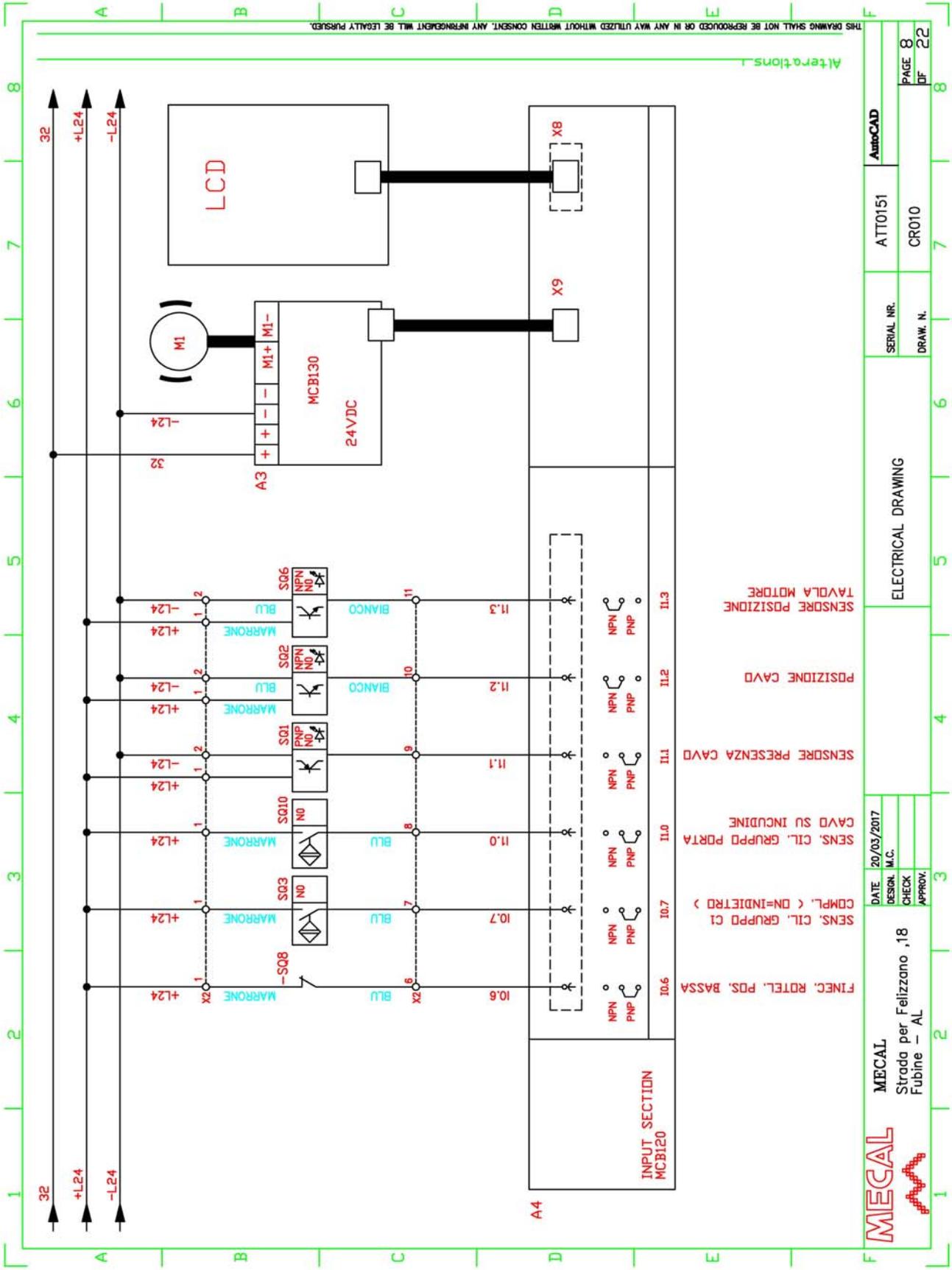
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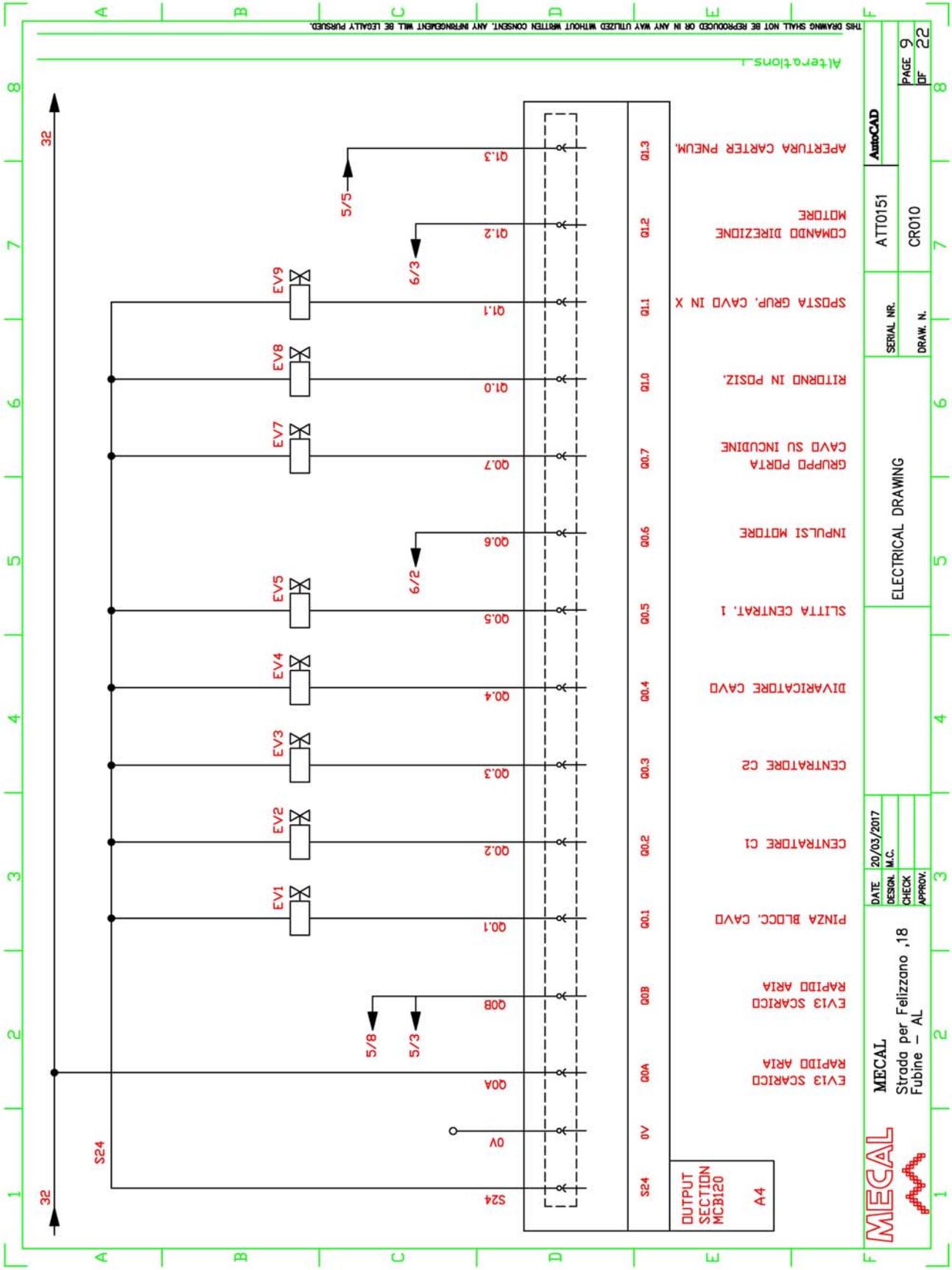
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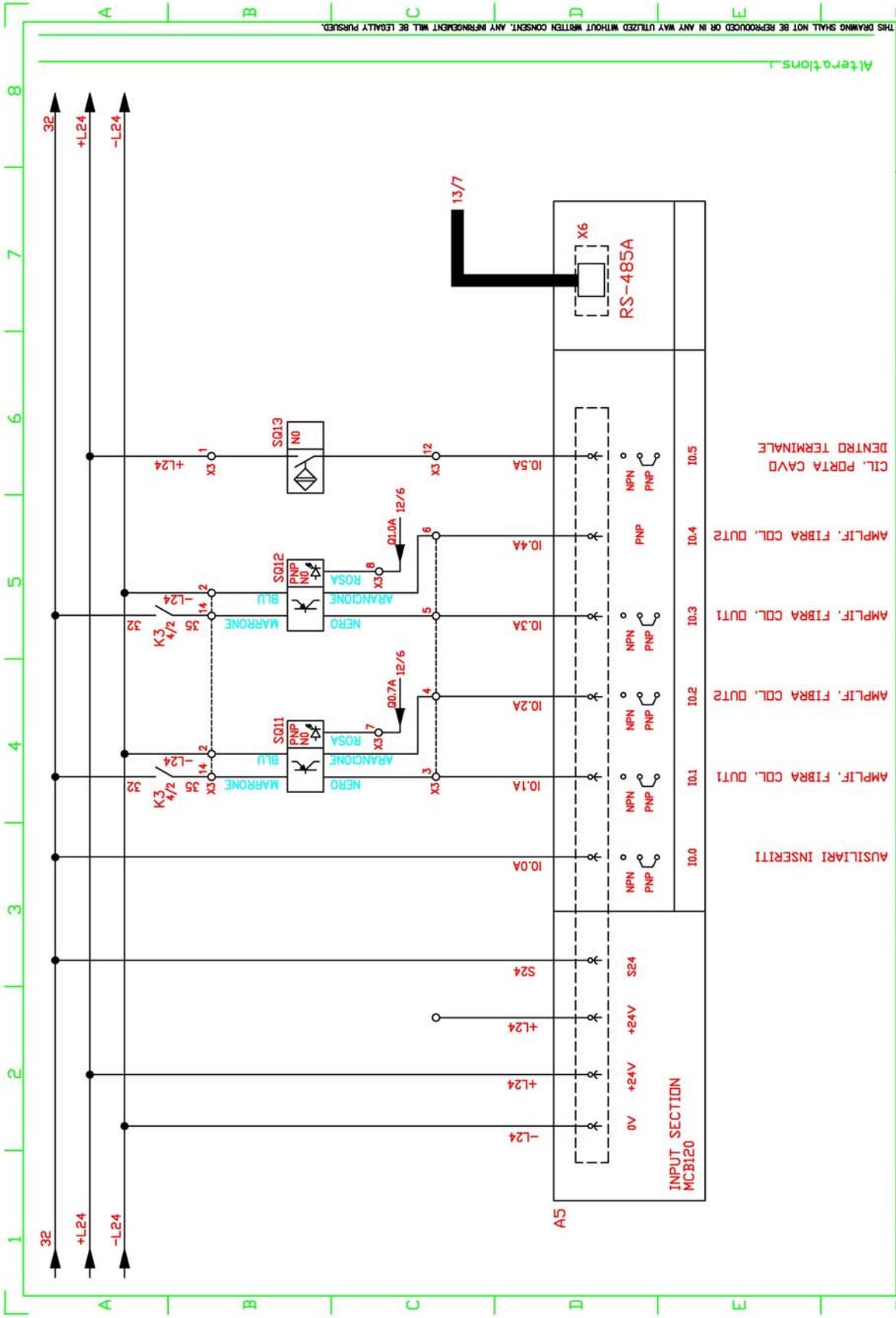
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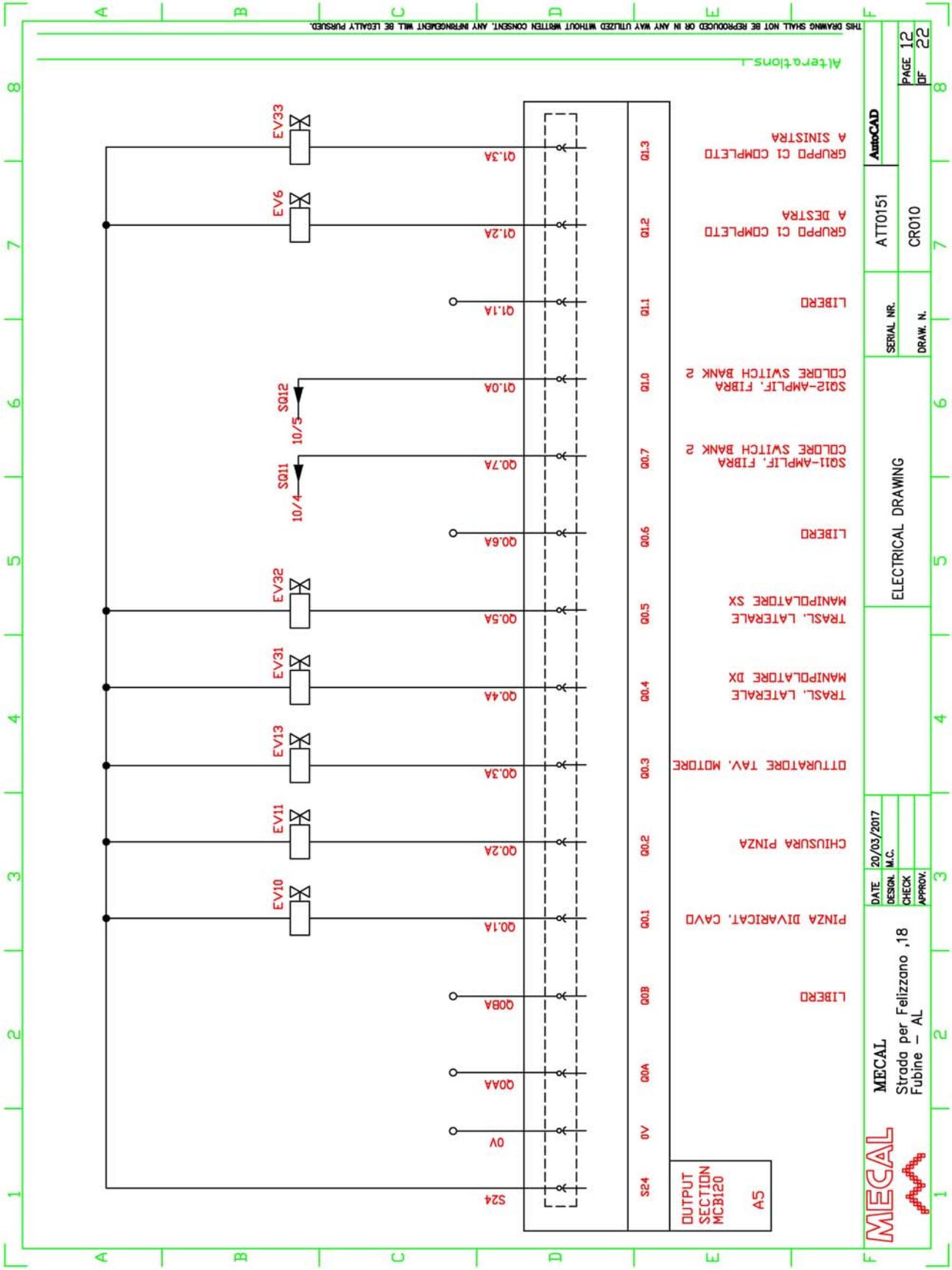
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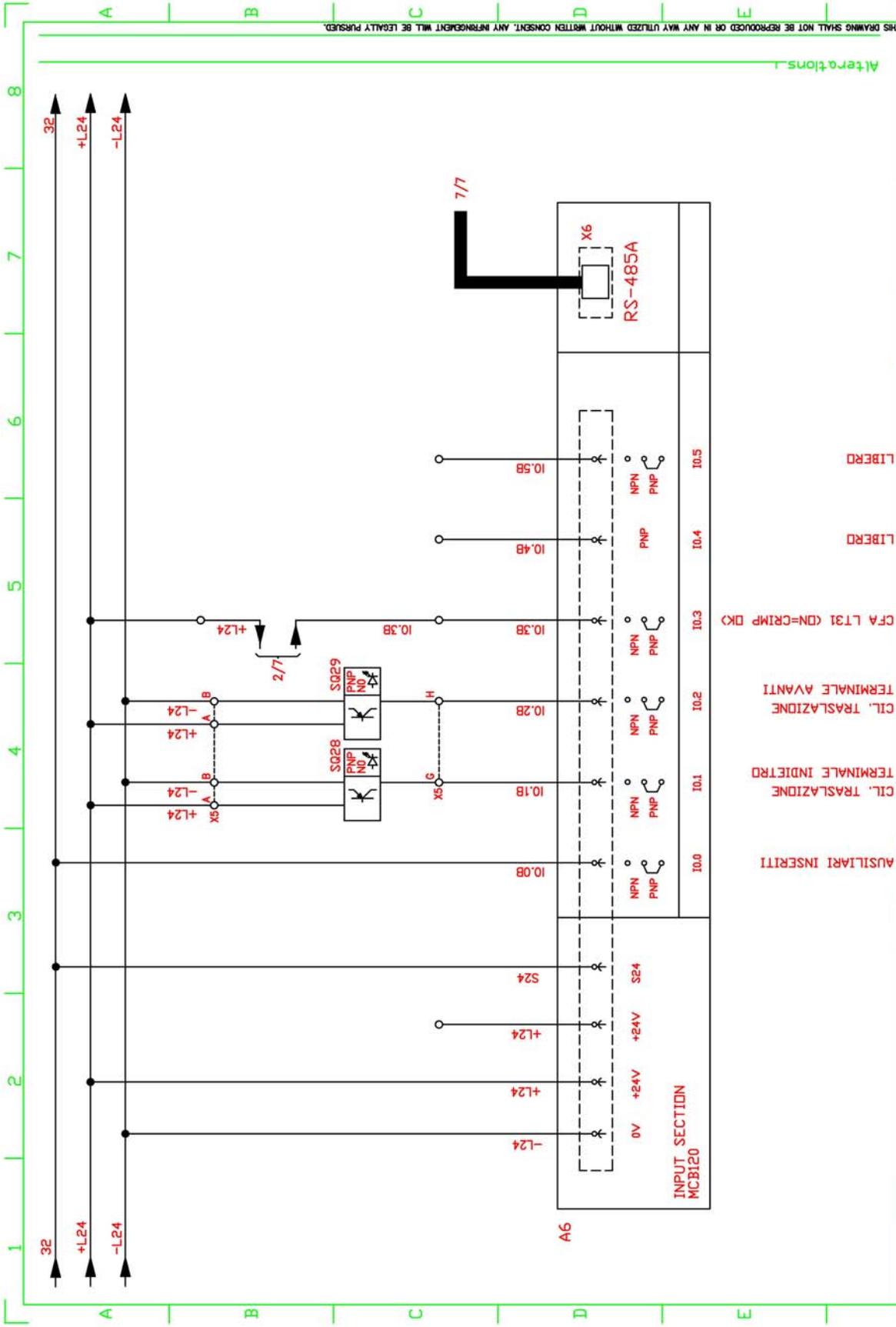
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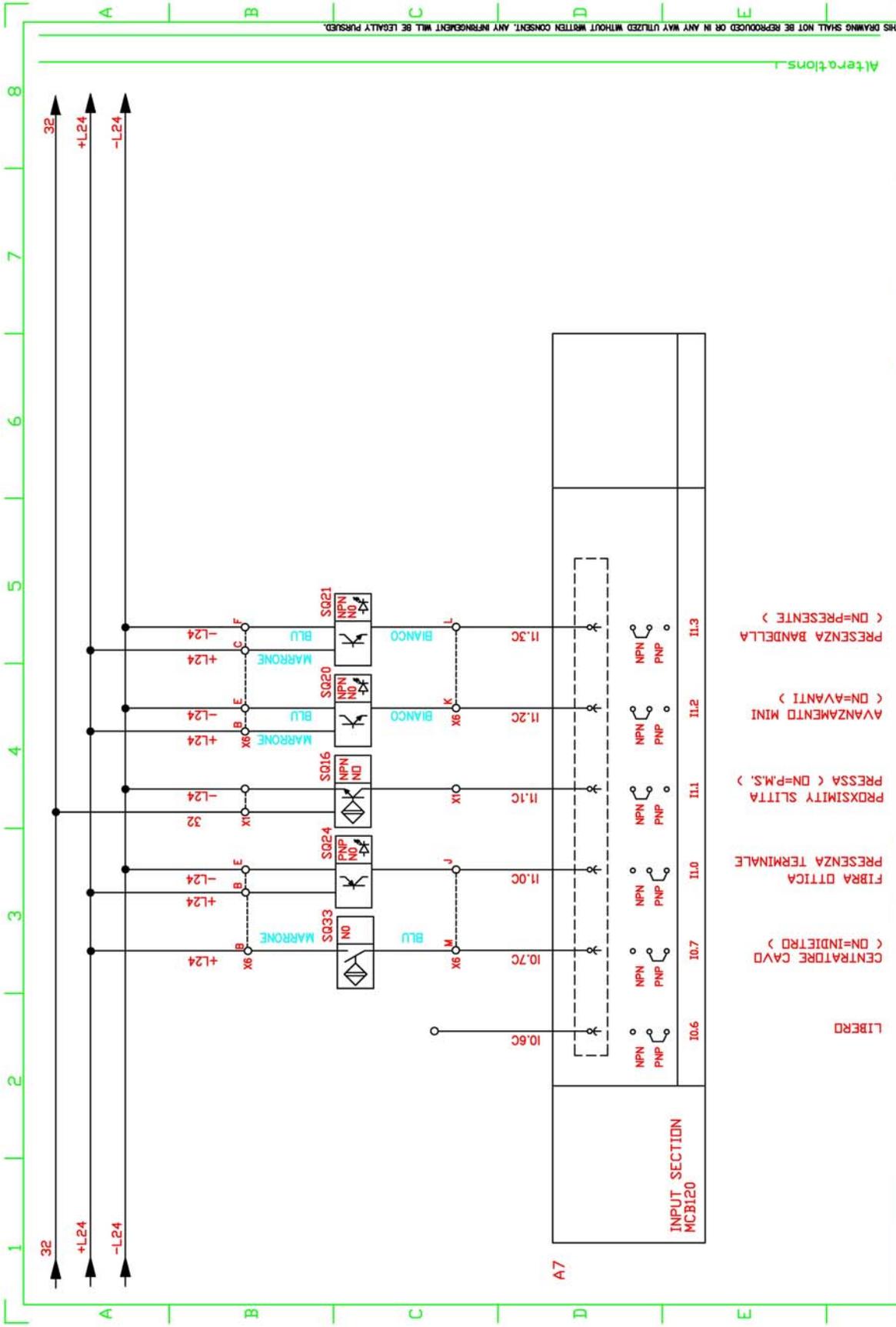
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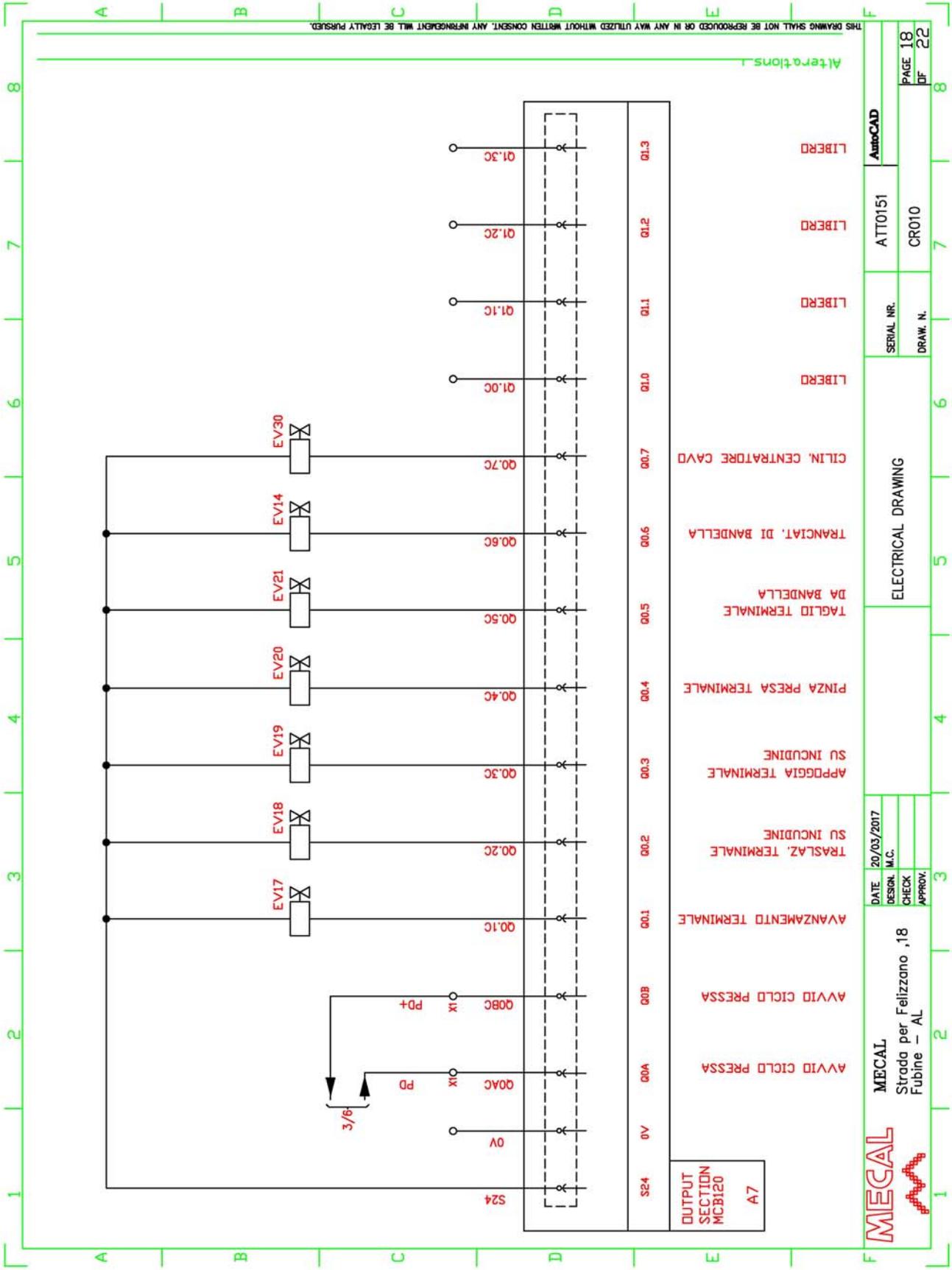
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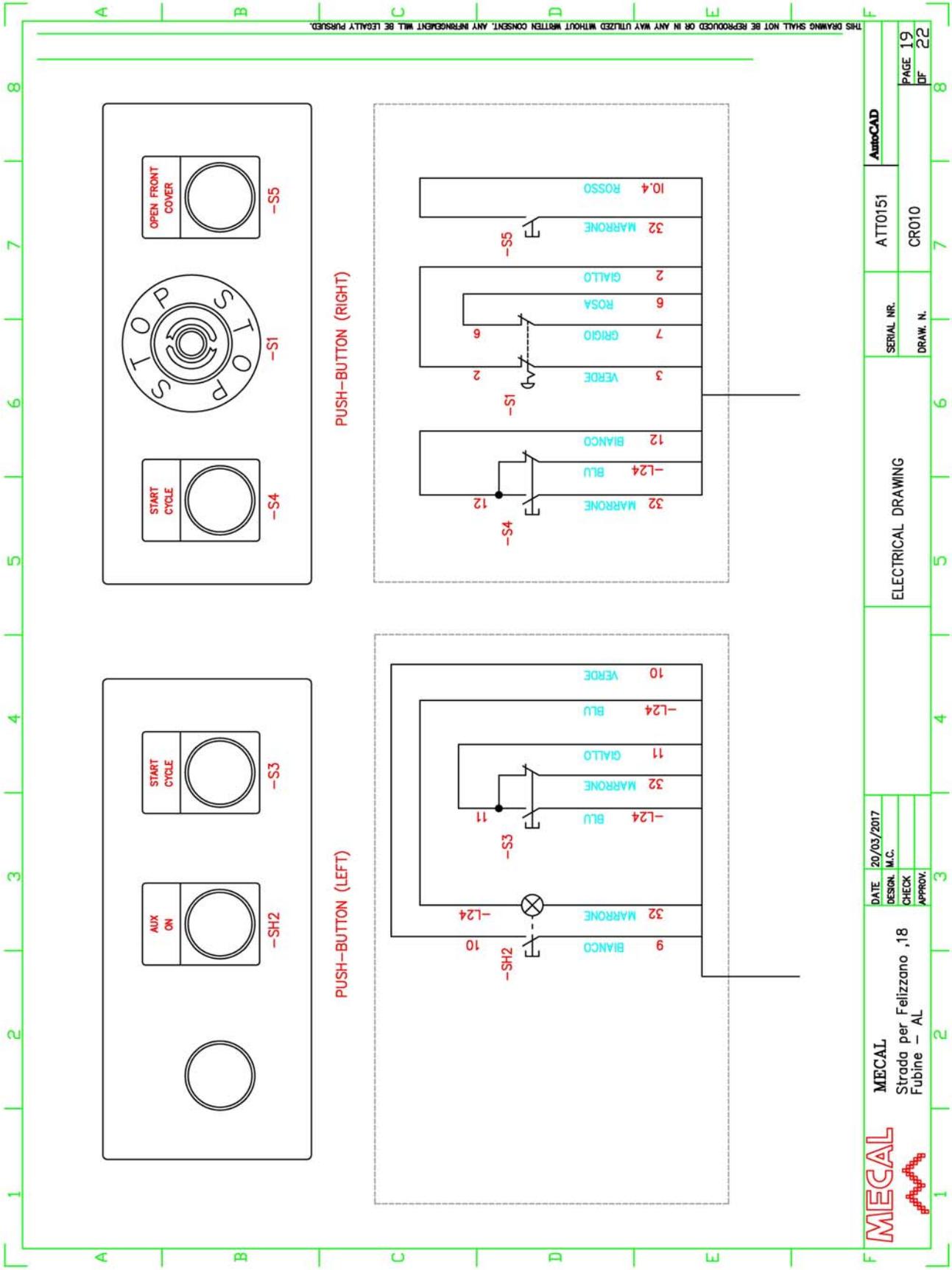


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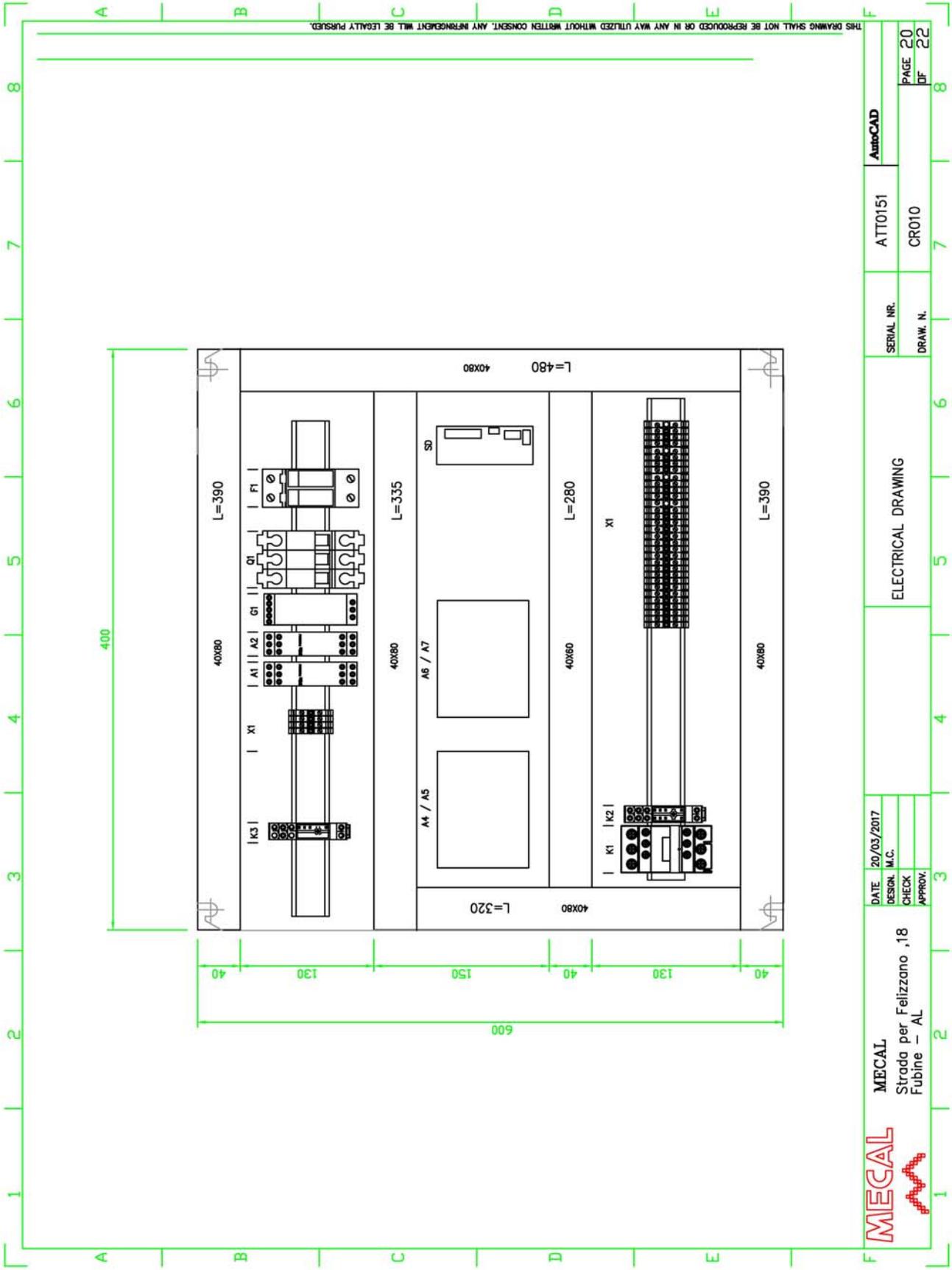
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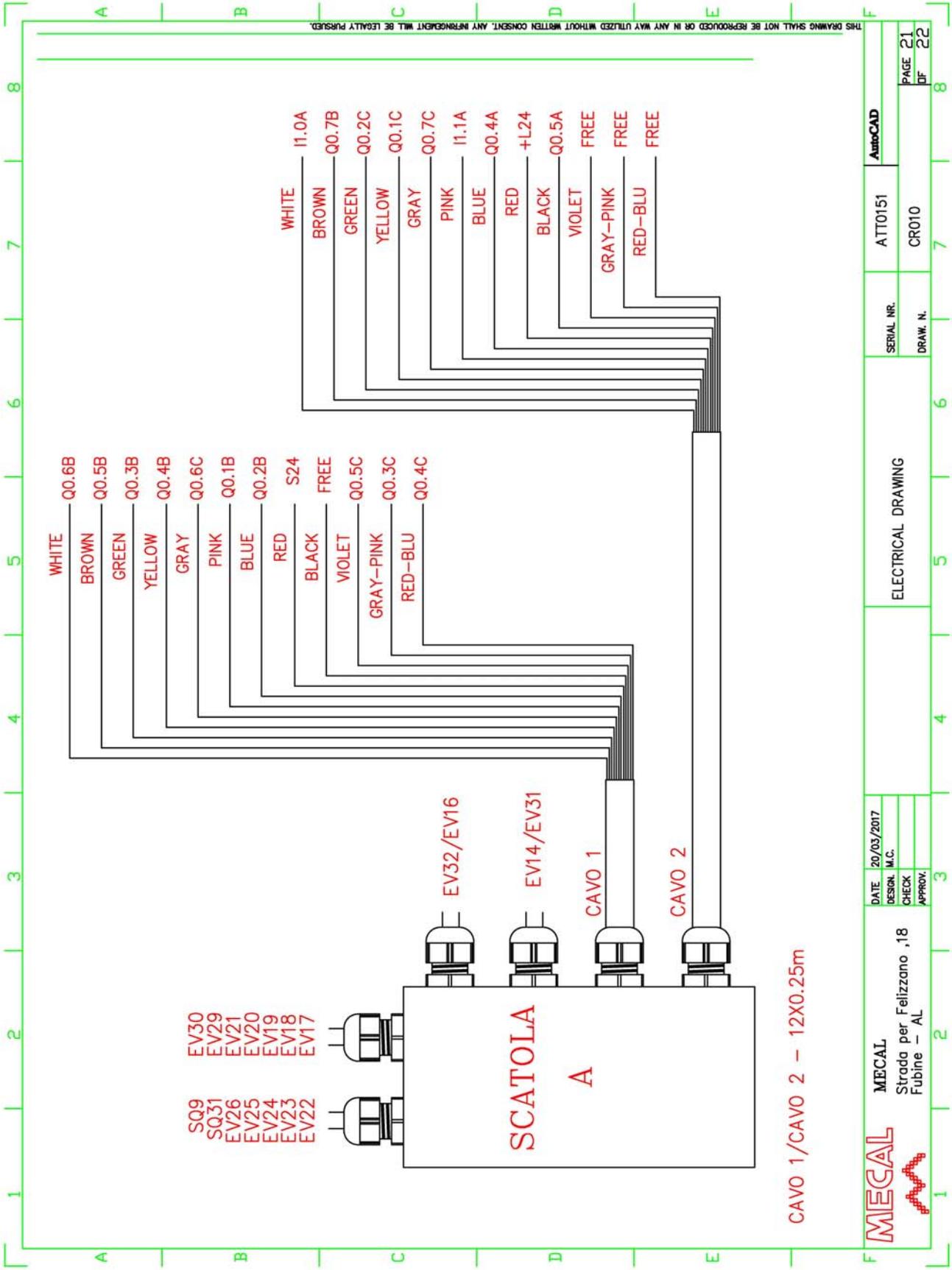
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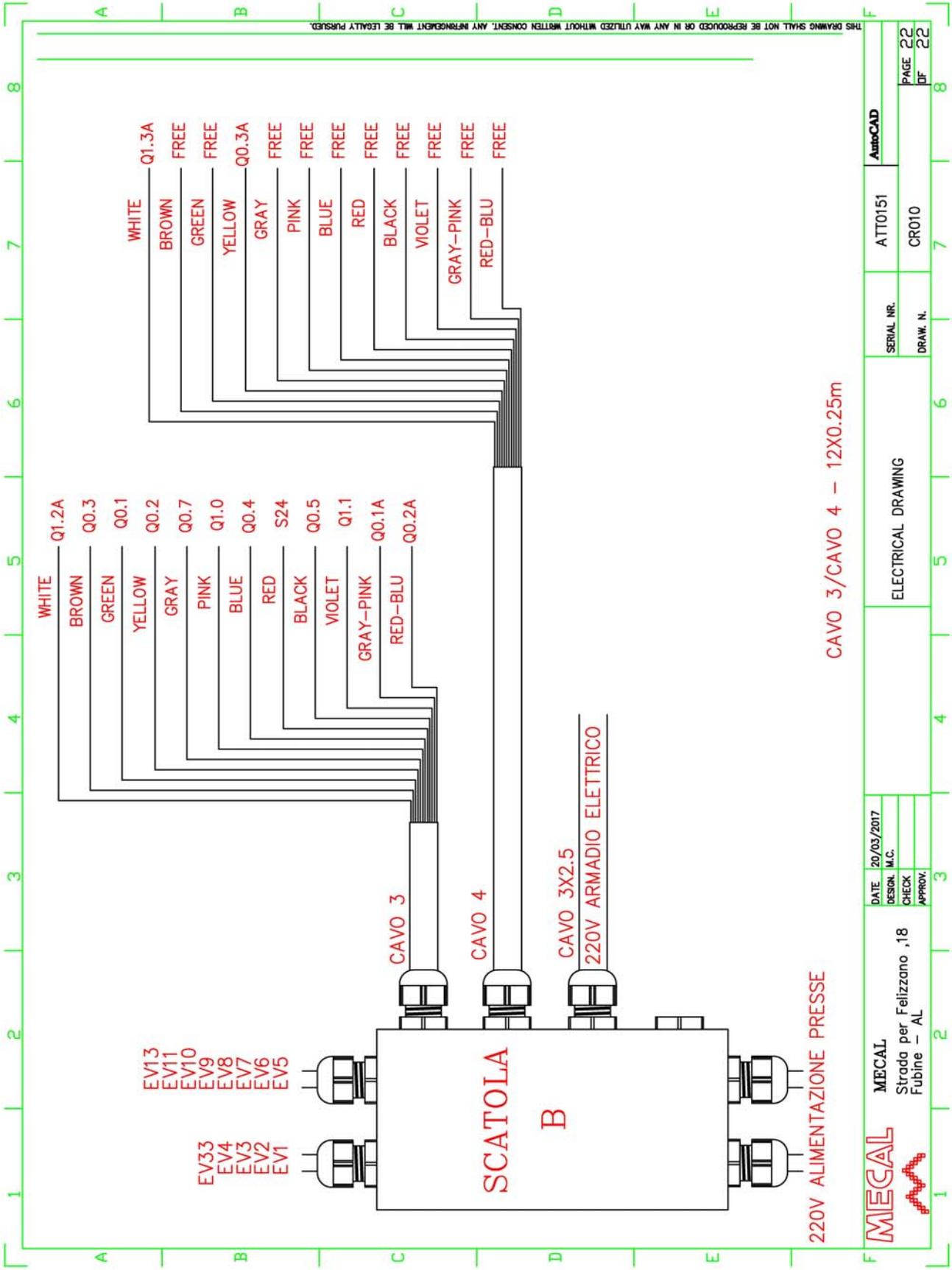
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3.5) Press calibration

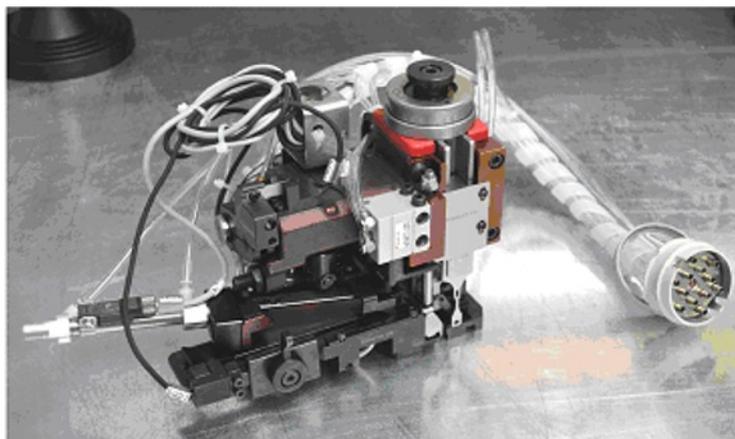


Press calibration is very important for correct operation. Clean clamping surfaces “A,” ensuring a suitable support surface between the base of the press and that of the mini-applicator. Use the STP Calibration Tool to verify the correct working height, which should be BDC 135.8mm (± 0.01 mm).

Note: MECAL supplies its machines tested and calibrated. Check the P107 instruction manual provided.

3.6) Mini-applicator installation

The Crimping Station fits 2 P107 presses on-board. A special mini-applicator derived from the MRSP family of pneumatic Mecal mini-applicators is installed on each of these. Repeat each operator for both of the two applicators.

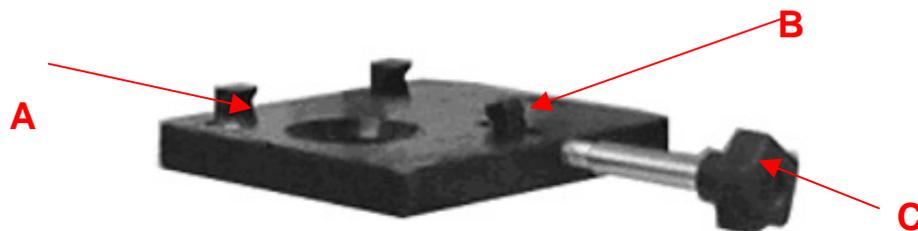
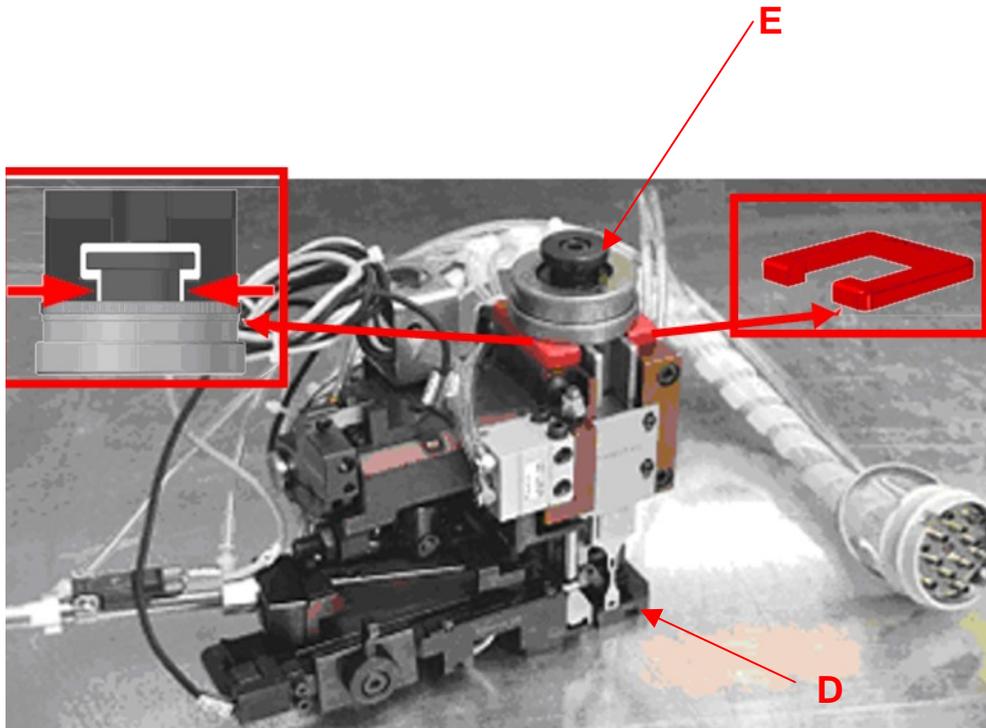


3.6.1) Mini-applicator fastening

The mini-applicators are packaged with a rubber protection (set between the adjustment ring nut and the body of the mini-applicator) to prevent damage from crimping and cutting components. Remove the protection upon installation.

Position the applicator on the mounting base **A**, align the base **D** with the tooth **B** and tighten the tightening knob **C**.

Verify that it has been closed correctly, checking that the applicator is perfectly adherent to the mounting base **A**. The pin **E** must be centred with the press "T" connection.



3.7) Dereeler preparation

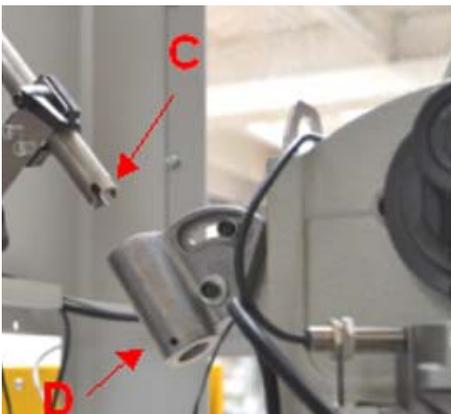
CAUTION: Before performing any operations, always switch off the machine, and check and cut off power from the main switch

Assemble the two dereelers, referring to the exploded diagram at the end of this manual. The dereeler is used to hold the terminal reel and wind the separator paper between one winding and another. Due to dimensions, the assembly of the dereelers on the two presses will be slightly different.



The left press dereeler will have to be assembled as in the figure, with the curved plate **A** and the paper winder motor **B** turned to the left.

On the right press dereeler, the curved plate is absent and the paper winder motor will be turned to the right.



The terminal reel to be processed with the right mini-applicator is supported by the dereeler installed on the left press. Insert the dereeler rod base in the adjustable support on the left side of the left press. The polarization **C** at the dereeler rod base must engage onto the pin inserted into the hole **D** of the support.

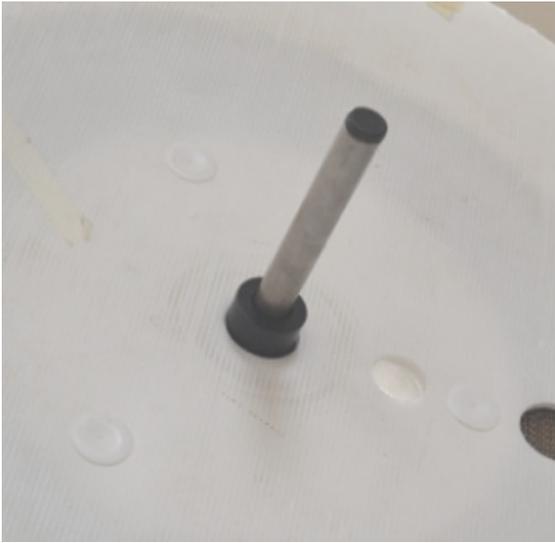


The terminal reel to be processed with the left mini-applicator is supported by the dereeler installed on the left side of the equipment.

Loosen the screws **E** of the support on the right side of the right press. Insert the dereeler rod and re-tighten the screws **E**.



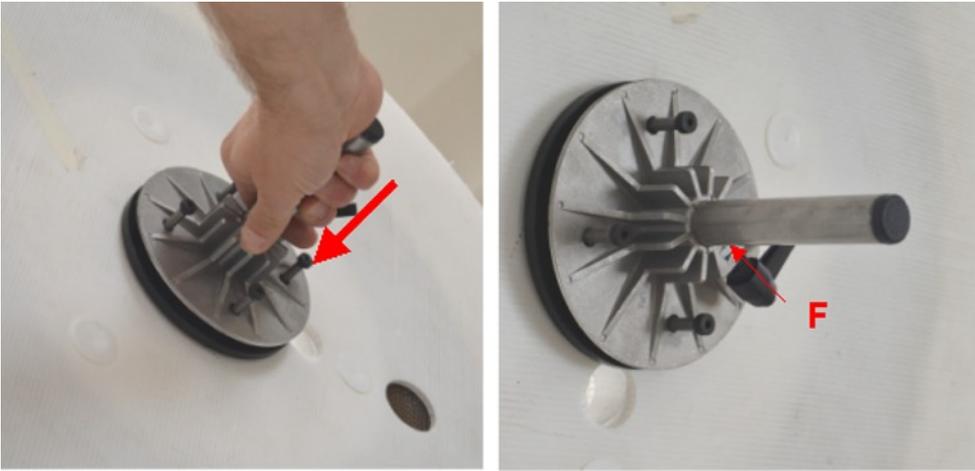
Insert the terminal reel on the overhanging part of the dereeler rod.



Fit the pin bushing on the dereeler rod and slide it until it enters into the central hole of the reel.



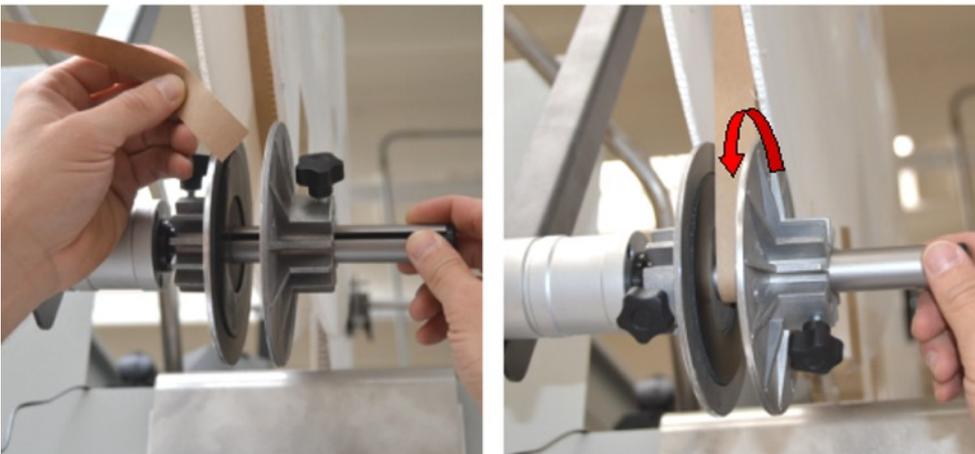
Insert the fixing flange, bringing it to end stop on the reel surface.



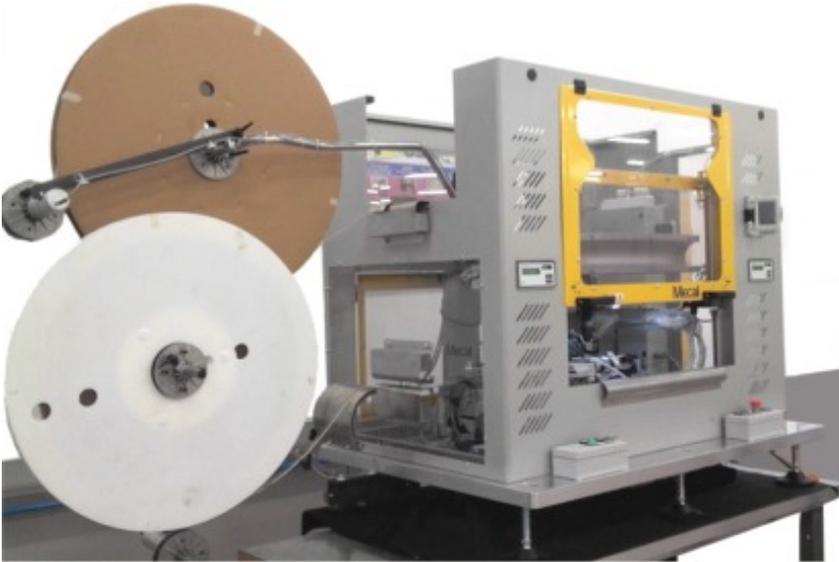
Apply pressure on the clutch, pushing the flange toward the reel and, at the same time, fix the position, tightening the clamping lever **F**.



Connect the power cables on the machine to both paper winder motors.



Insert the end of the paper strip of the reel inside the slot on the paper winder shaft. Manually wind the shaft in the counter-clockwise direction a few turns.



Dereelers fully assembled and ready for use.

3.8) Terminal insertion

Before being inserted into the mini-applicators, the terminal strip must be positioned correctly to slide without hindrances.

Before being inserted into the mini-applicators, the terminal strip must be positioned correctly to slide without hindrances.

Note: The mini-applicators assembled on two presses are:

	left press	right press
90°	MRSP6375-JKD	MRSP6375-JKC
180°	MRSP6375-JKA	MRSP6375-JKB

Left press:



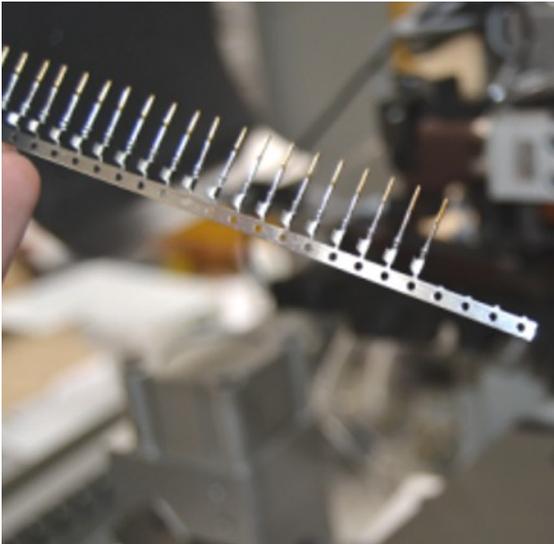
Insert the strip inside the machine casing as shown in the figure.



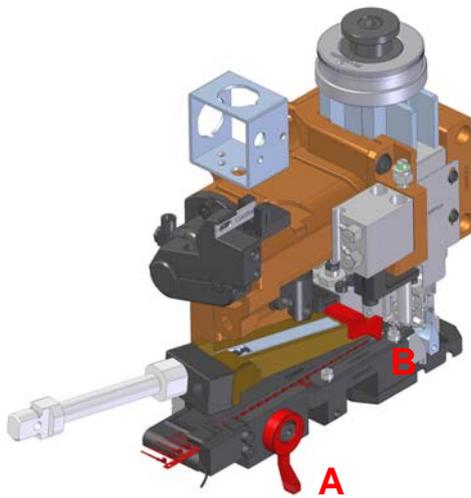
Slide the terminals over the curved plate on the left side of the press and insert it in the slot.



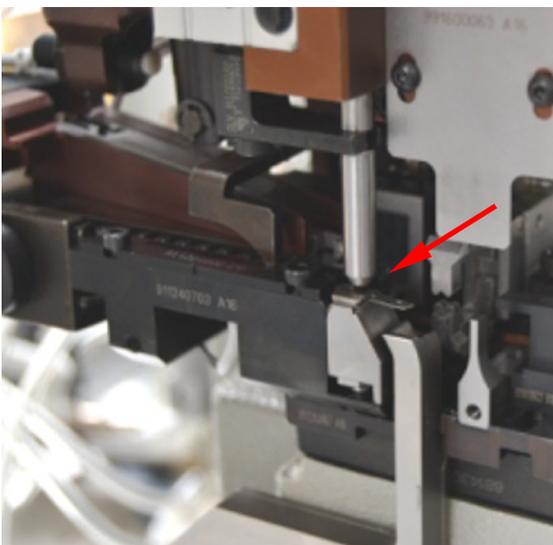
Insert the strip in the oiler.



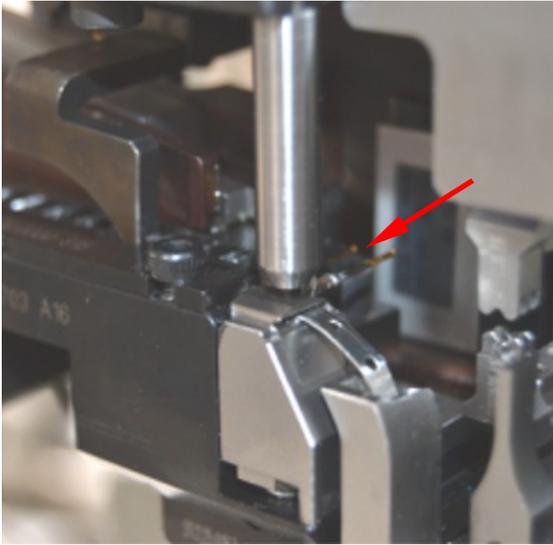
Before inserting the terminal strip in the mini-applicator, cut the first 4 or 5 terminals as shown in the figure.



Arrange the mini-applicator for terminal insertion, releasing the clutch **A**. Insert the strip in the slide, slowly sliding it until you hear the click of the pawl **B** which hooks to a sprocket hole.



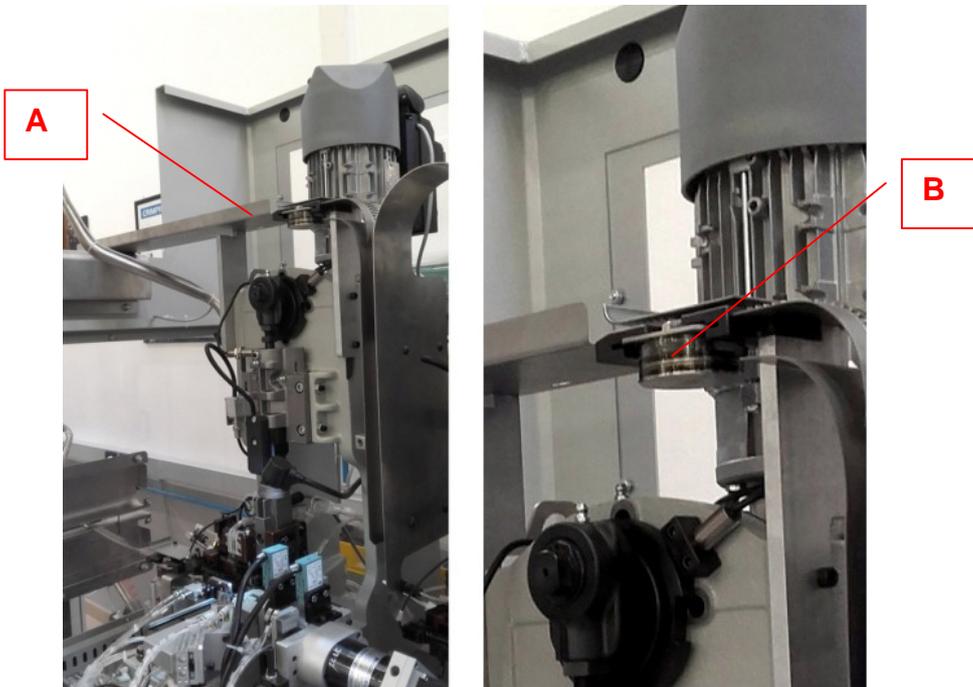
Push the terminals forward until part of the strip comes out from the floating blade as shown in the figure.



With the aid of a screwdriver, direct the strip inside the conveyor. Push the terminals forward until the first useful terminal clicks into the position indicated in the figure, aligned with the cylindrical presser. Tighten the clutch **A**.

Right press:

Slide the terminal strip into guide A and in oiler B as shown in the figure. Then repeat the passages described for the left press to insert the terminals in the mini-applicator.



It is advisable to use the corresponding key to manually perform a complete press cycle and to check that there are no mechanical impediments in the sliding parts. The terminal must be positioned correctly aligned with the crimping and cutting parts.

If during the manual cycle you experience mechanical impediments, verify:

- 1) Correct applicator locking on the press
- 2) Correct press setting at BDC 135.8mm (P107 press manual) and paragraph 3.4
- 3) Make sure that the position of the locking washers is not completely open/closed (mini-applicator manual).

If the terminal is not positioned correctly:

- 1) Check that the pawl tooth is in the correct hooking position (holes on the strip for the sides).
- 4) Check that the clutch eccentric or the lever is in the working position (mini-applicator manual).

4) Start-up and use

Pay due attention when manoeuvring for equipment installation/removal and calibration so as not to damage any part of the machine.



- Make sure that the line selector (A) on the equipment electrical box is on and set to number "1".
- Switch on the two load cells.
- Make sure that the emergency switch (B) is disconnected.
- Activate the auxiliary button AUX (C).
- Activate the two-hand control (D). When this control is activated, the casing closes, equipment resets and goes into position and the casing opens again for cycle start-up.
- Select the desired program on the touch-screen.
- Check pneumatic power (6 Bar).
- Load the material to be processed.
- Start up the two-hand control (make sure that the safety guard is correctly positioned).
Note: the safety guard has been designed to prevent equipment operation unless it is correctly positioned.
- To start the cycle, read chapter 6.

4.1) Stop and reset



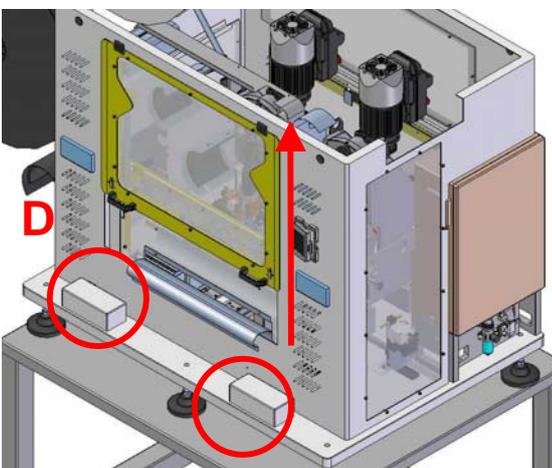
If you need to stop the machine at any time during the cycle, press the emergency button. The emergency button cuts off power to equipment and discharges the pneumatic system.



To restore the emergency, release the button, turning it in the clockwise direction until you hear a release "click."

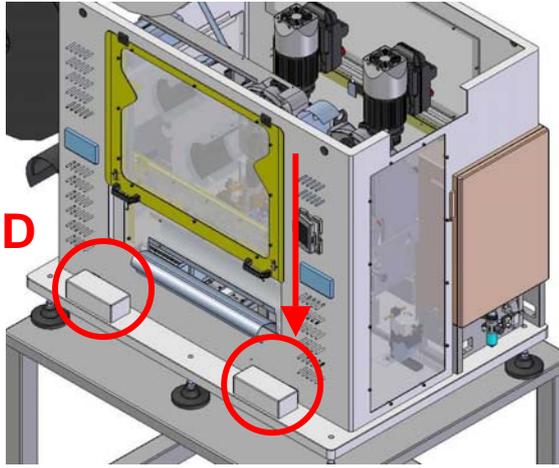


Activate the auxiliary button AUX "C".



Activate the two-hand control "D".

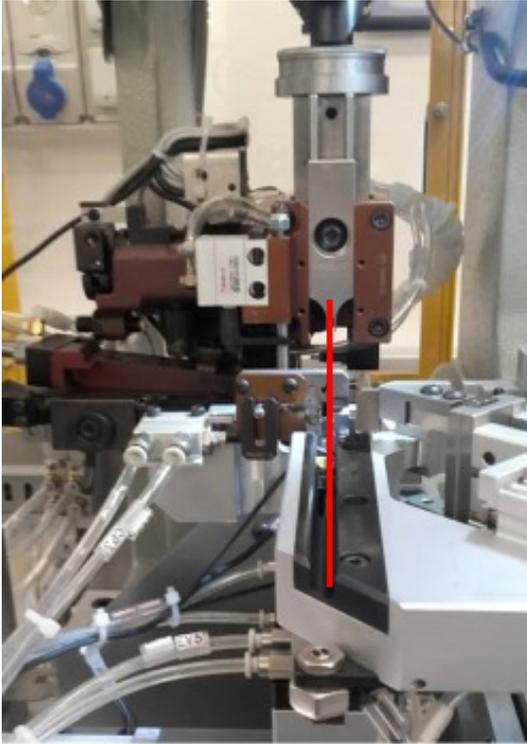
Open the casing and remove the components that caused jamming.



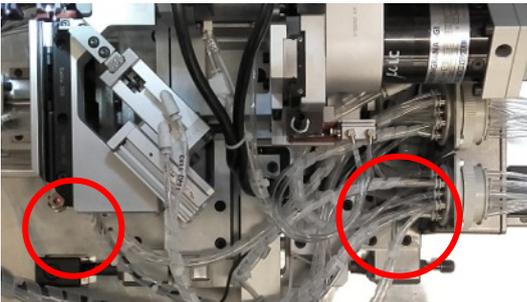
Reactivate the two-hand operation, the cover closes automatically and the machine resets.

5) Process adjustments

5.1) Cable alignment with the mini-applicator crimping area



Cable alignment with the crimping area is the result of table movement, regulated by two decelerators set to the left and right of the equipment.



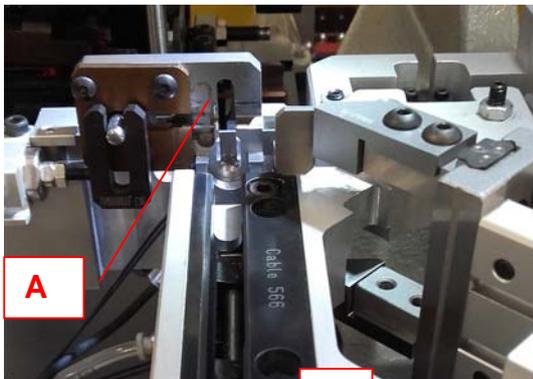
Decelerator regulation occurs by unscrewing the nut and adjusting the decelerator to move the table to the left or right. Re-tighten the nut when you have reached the desired position.

Left mini-applicator: tighten to move to the left.
loosen to move to the right.

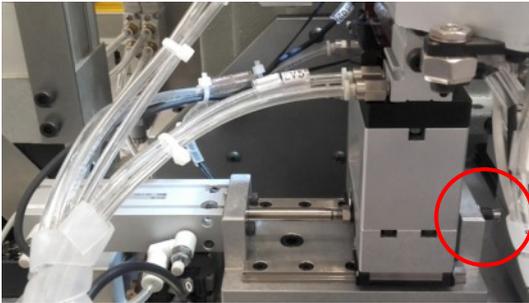
Right mini-applicator: tighten to move to the right.
loosen to move to the left.

Note: The decelerator pitch is 1.75.

5.2) Cable alignment with the cycle start-up unit

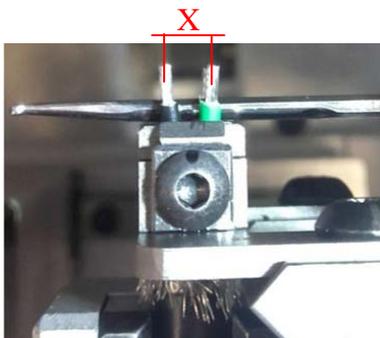


Align the cable support unit "B" with the operating cycle start-up unit "A".



The cycle start-up unit is moved by the corresponding cylinder. Loosen or tighten the decelerator to move the unit to the right or left. Unscrew the nut on the decelerator, prepare the unit for cycle start-up in the desired position, adjust the decelerator and screw back in the nut.

5.3) Pitch adjustment for crimping left and right side cables

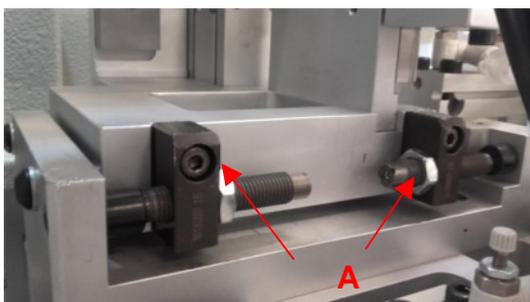


X=Cable pitch



Pitch 1,25

The pitch for cable crimping can be adjusted by means of the two decelerators located at the support base of the mobile arm.



The left decelerator adjusts the position of the cables positioned on the right, while the right decelerator adjusts the position of cables on the left.

Decelerator adjustment (pitch 1.25) is carried out by unscrewing nut "A", adjusting the positioning by tightening or loosening and then re-tightening the nut. Caution: this adjustment meets the requirements of the right and left mini-applicator. If the crimped cable at a station is not consistent with requirements, adjust crimping axiality by intervening on the clamp unit (paragraph 5.4).

5.4) Clamp unit adjustment



The HSD cable is composed of 4 internal cables which need to be crimped individually. Cables are preventively moved apart to ensure this process.



Upper clamp screw

Mecal recommends adjusting the upper clamp in alignment with the lower clamp. Adjust as desired if the result is not satisfactory. Unscrew the fixing screw, move the clamp to be adjusted and re-fasten the screw.

Lower clamp screw

5.5) Crimping table adjustment

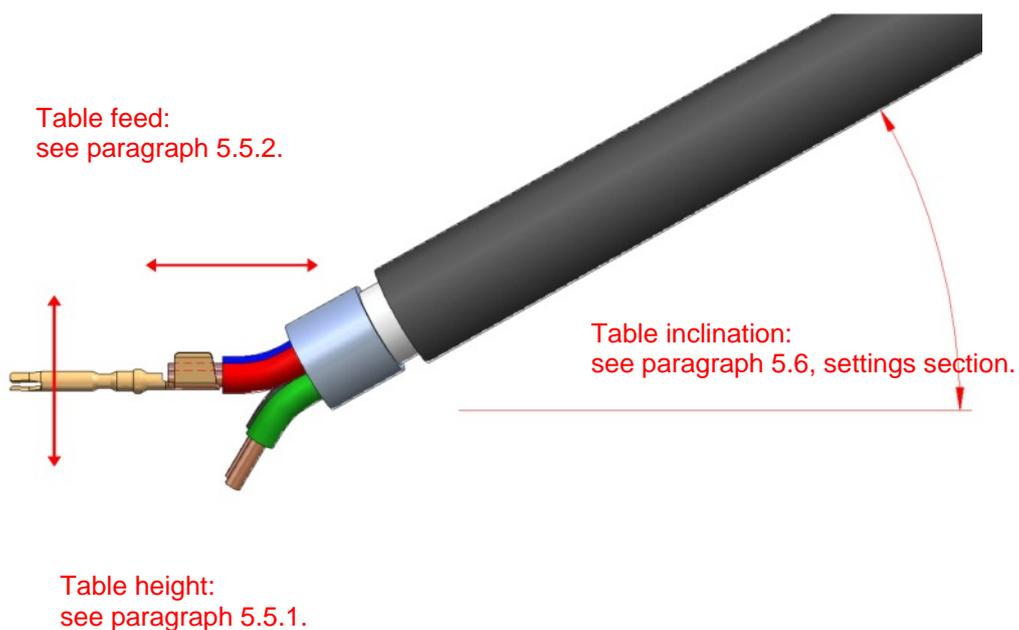
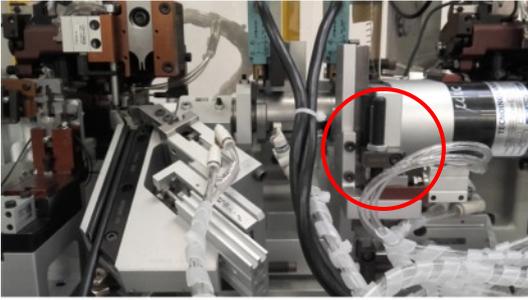


Table feed:
see paragraph 5.5.2.

Table inclination:
see paragraph 5.6, settings section.

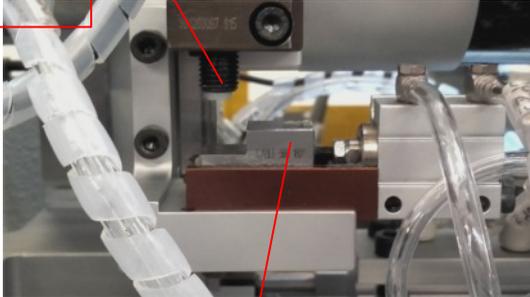
Table height:
see paragraph 5.5.1.

5.5.1) Table height adjustment



The table position determines the position of the strands on the copper area of the terminals. This is adjusted by means of the dowel which works on a shutter. The shutter has been shaped in order to process both short terminals on the right mini-applicator (table inclined downward) and long terminals on the left mini-applicator (table inclined upward).

Dowel



Adjustments are made by unscrewing the locking nut, adjusting the dowel (screwing or unscrewing it to raise or lower the table) and then re-tightening the nut.

Note: Adjustment can be made equally on the right or left mini-applicator. Furthermore, you simply need to make the adjustment on a single shutter plane.

Shutter

5.5.2) Table position adjustment



Table position feeds forward or backward, determining the position of the strands inside the terminal flaps. With mini-applicator adjustments, it is necessary to establish the "overlay" value present on the data sheet.

Table adjustment is carried out by adjusting the two decelerators adjacent to the presses.

Unscrew the nut and intervene on the decelerator (screwing it in to move backward and unscrewing it to bring the table toward the mini-applicator). Screw the nut in again to lock the position.

Note: Decelerator adjustments are independent. Adjustment made on the left decelerator does not compromise movement and adjustment on the right decelerator.

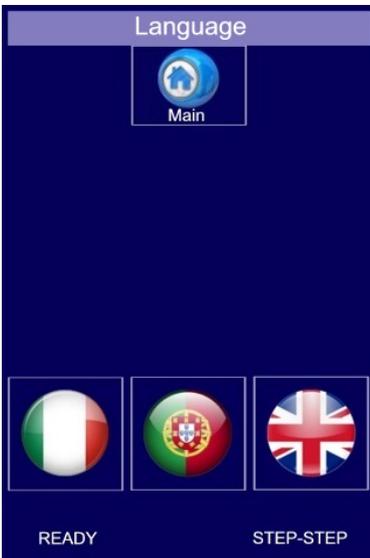
5.6) Display operation



The Home Screen is divided into two parts: the upper one, NOT selectable, specifies to the operator how cable colours that he has decided to crimp should be positioned.

There are 4 selectable menus at the bottom:

- Language
- Information
- Mode (see page 56)
- Settings (see page 57)



Select the icon  on the main menu to open the languages screen. Select the flag that corresponds to the desired language.



Info Screen  is divided into 3 sections:

- Counter: is not resettable and provides the total number of machine cycles.
- Reset: resettable counter, the operator can decide when to reset the count depending on need (i.e. reset the count to verify the last maintenance cycles).
- Batch: the batch quantity can be set with a countdown. The message BATCH DONE appears at the bottom left when the batch is completed.



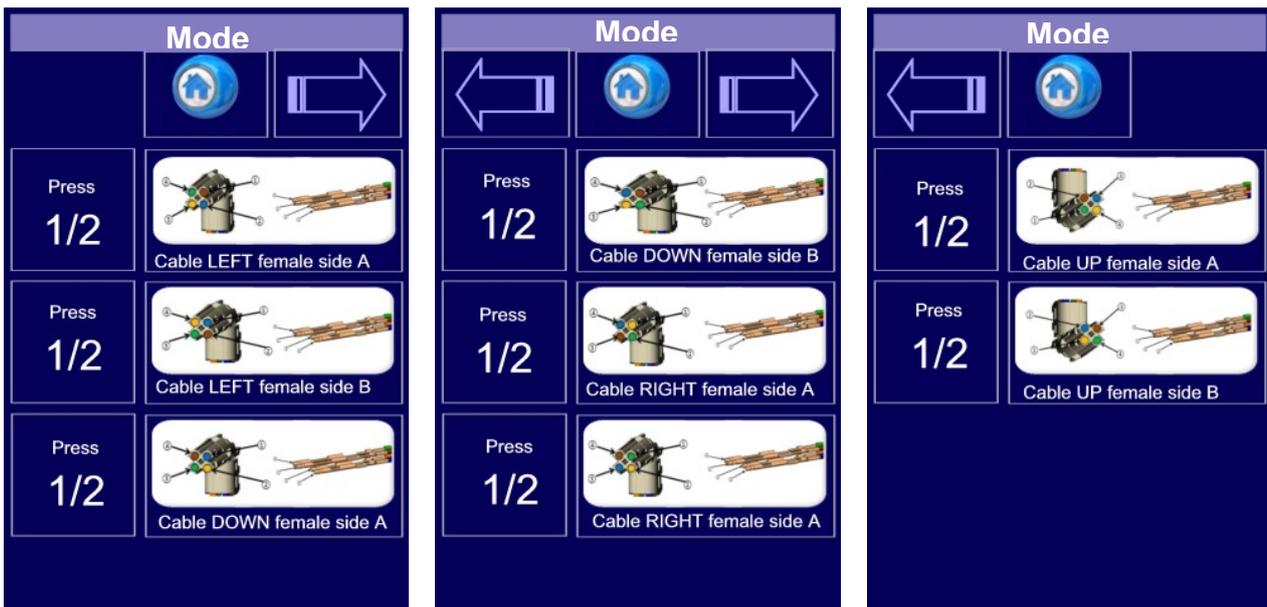
Mode Screen is composed of 3 menus:

- Sel mode pressing the icon  it is possible to select AUTO (automatic) or STEP by STEP cycle function.
- Sel cavo press 566 or 535 to select the cable to be processed.
- Contact press icon  to select whether to implement 180° or 90° crimping. For both types, two other screens (see pages 31, 32) will open for you to select cable polarization.



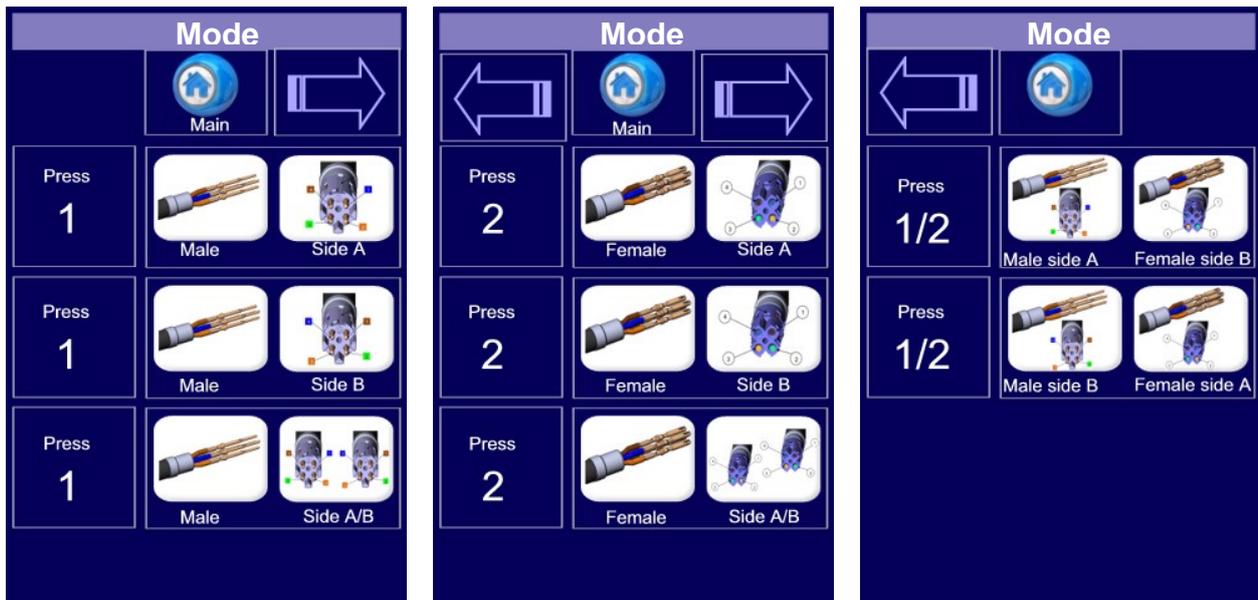
The command brings you back to the main screen.

90° contact screen



Select polarization from the 8 offered. An indication of the cable chosen and the position of colours will appear at the top of the main menu.

180° contact screen



Select polarization from the 8 offered. An indication of the cable chosen and the position of colours will appear at the top of the main menu.

Setting screen



Select icon  to activate three adjustments:

Select  to increase/decrease crimping inclination upward.

Select  to increase/decrease crimping inclination downward.

Select  to activate or deactivate the machine on buzzer.

- Errors on sensors
- Errors detected by the fibre optics



Select control  to access the password entry screen. The test menu will open once the password has been entered.

CAUTION: Require password to Mecal and let it available only to workers performing maintenance

Test screen



-PAL3001 press the icon  to perform a press test, assessing the correct crimping height adjustment on the press and its “stability”. Press button Press 1 or Press 2 to choose on which press to perform a test.

CAUTION: remove the mini-applicator and insert the PAL3001 instrument in its housing.

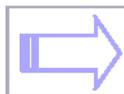
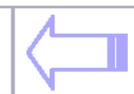


- Headroom press the icon  and the mini-applicator will perform unloaded crimping, testing the cut and movement of the terminal on the anvil. Also in this case, press button Press 1 or Press 2 to choose which press and mini-applicator to operate.



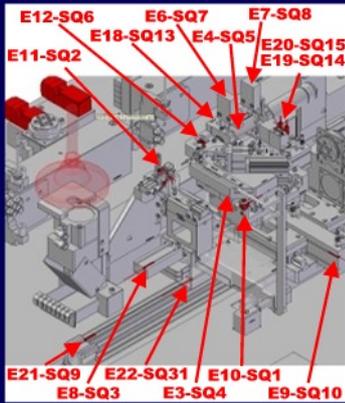
- Insulation crimping press the icon  to verify load cell operation, inserting the unstripped cable in the mini and starting up the crimping cycle.



The arrows   allow you to change the page while

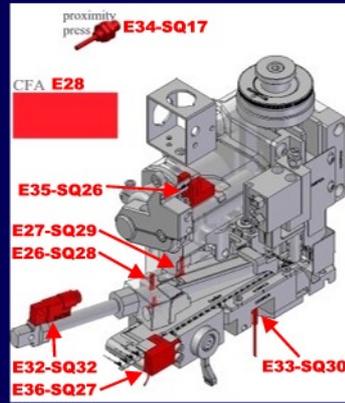
the control  brings you to the main screen.

Allarms



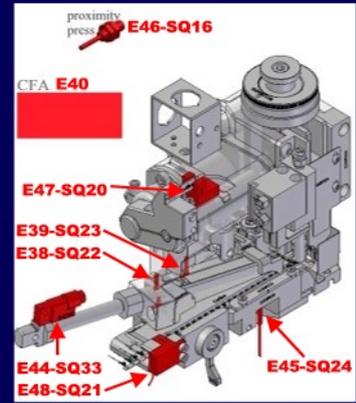
E..

Allarms



E..

Allarms



E..

The alarms screen appears whenever the sensor detects an error. The image represents the position of sensors installed on equipment and relative errors, while the band underneath the figure signals the error.

6) Maintenance adjustments

CAUTION: all adjustment operations must be carried out with the machine in emergency conditions or switched off and the air inlet closed (see chapter 2.5).

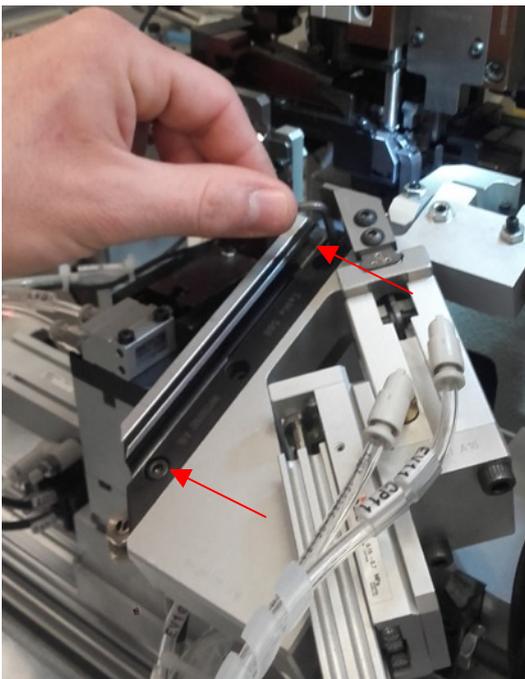
The adjustments described below are only to be applied for special maintenance.

6.1) Cable presence sensor_SQ1



Follow the Sunx attachment for sensor adjustment.

6.2) Cable closing clamp sensor_ SQ4 adjustment



Unscrew the cable support fixing screws and remove them.

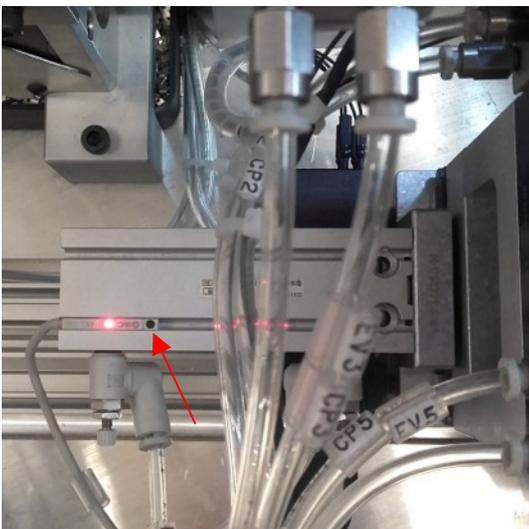


Close the cable locking clamp, pushing it to the left.



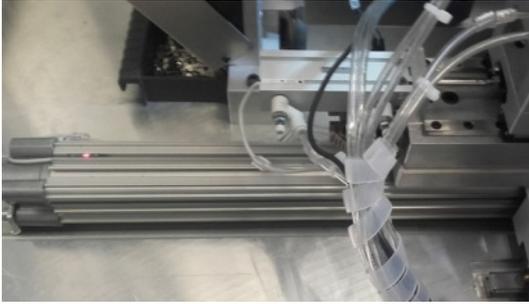
Insert the sensor in the cylinder housing and push it slightly until the red LED switches on. Secure the sensor by tightening the screw.

6.3) Cycle start-up unit cylinder sensor_ SQ3 adjustment



The cycle start-up unit sensor reads the stand-by position of the cylinder. Move the cycle start-up unit to the left (cylinder stand-by position) and insert the sensor until the red LED switches on and secure it with the screw.

6.4) Table transfer cylinder sensor_ SQ9 and SQ31 adjustment



The table transfer cylinder sensor verifies that the cylinder is in stand-by position, with regard to the left and press in the work area for the right press, allowing cycle start-up.

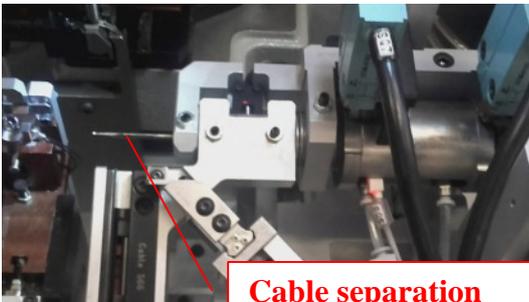
Left press:

The sensor is adjusted, bringing the table to the left (cylinder stand-by position). Insert the sensor and move it until the red LED lights up and then stop it by tightening the sensor screw.

Right press:

The sensor is adjusted, bringing the table to the right (cylinder working position). Insert the sensor and move it until the red LED lights up and then stop it by tightening the sensor screw.

6.5) Needle position sensor_ SQ 5 adjustment



**Cable separation
needle**

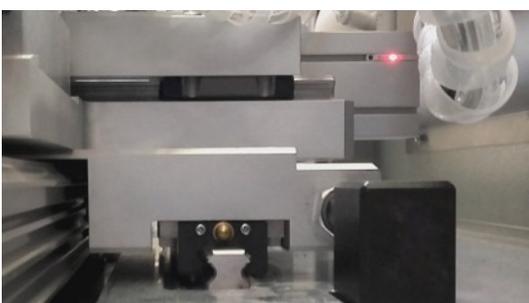
The forward position of the needle is read by the sensor. To adjust it, remove the needle, place the sensor in its housing and move it until the red LED lights up. Stop it by tightening the sensor screw.

6.6) Table height sensor_ SQ13 adjustment



The sensor gives consent to the control unit when the table is in the raised position. To adjust it, make sure that the table is positioned upward, insert the sensor until the red LED lights up and fasten the screw.

6.7) Table position sensor_ SQ10 adjustment

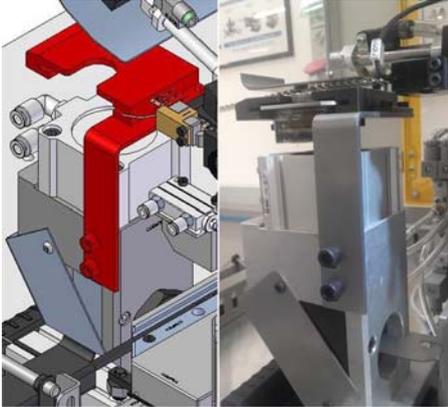


The rearmost position is read by the sensor which is adjusted by bringing the table toward the operator. Insert the sensor in the cylinder housing until the red LED lights up, fasten with the screw.

7) 90°-180° transformation

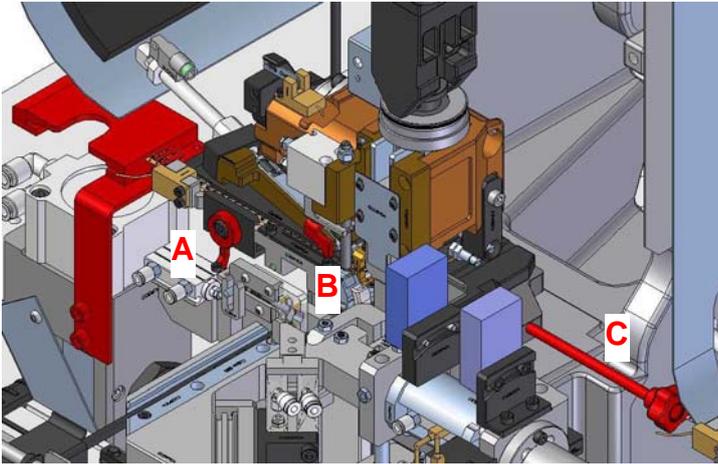
Equipment can process cable 566 for 90° and 180° connectors, replacing the mini-applicators, the table stop and the terminal reels. Follow the steps outlined in the following chapter and use Mecal parts only.

Switch off the machine by pressing the emergency button. Then, electrically disconnect the main system from the side panel (see chapt. 2.6 and 4.1).



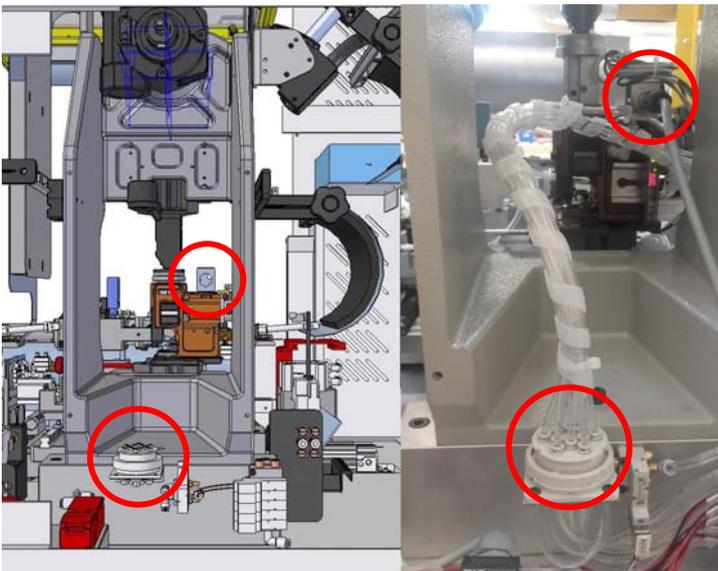
Unscrew the left oiler support and set it in a safe, stable place.

Release the clutch (A) on the mini and loosen the pawl (B) in order to slide off the terminal.



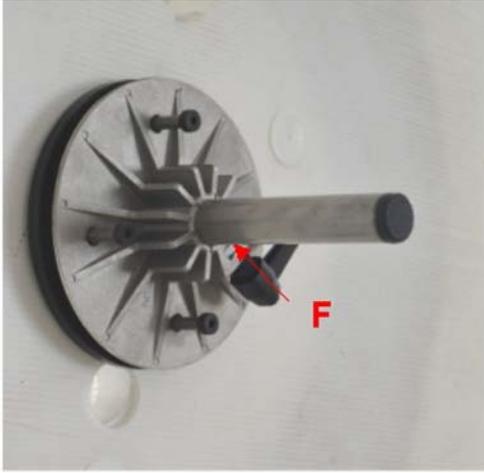
Insert the red support collar between the ram and the body.

Unscrew the base lever (C).

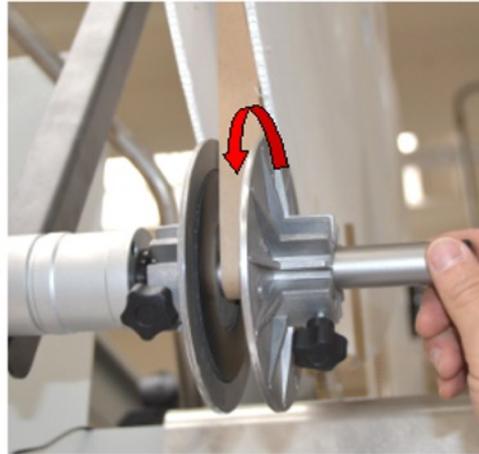


Open the rear casing and unscrew the electrical and pneumatic connections.

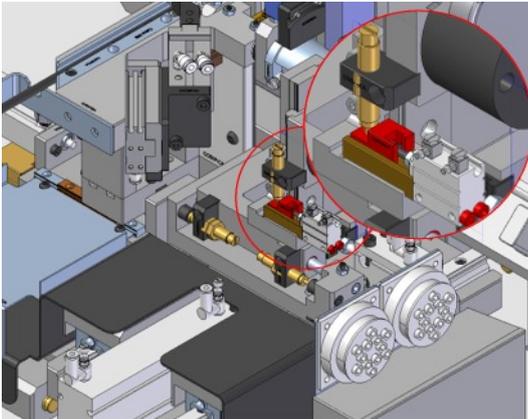
Remove the mini from the press (see chapt. 8.5).



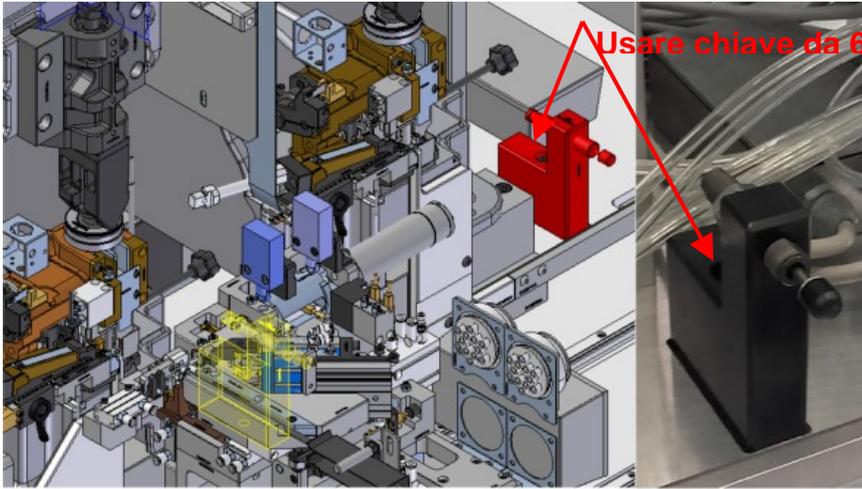
Release the clamping lever **F** and remove the reel fixing flange and the terminal reel.



Remove the paper present on the winder.
Repeat all previously described operations for both mini-applicators.



Replace the valve by unscrewing the two screws of the cylinder, remove the the otturatore from its housing and unhook from the attack to "T" of the cylinder. Replace plug, grease and place the group in its seat again; retighten the screws.



Using a size 6 wrench, disassemble the 2 table stop blocks and replace them with those suitable for the production to be performed. Insert the blocks in their housings, bring them to end stop toward the rear part and secure them.

Be careful not to move the decelerator set on the block. If it is moved, find its initial position and move it back there.

Install the mini-applicators and terminal reels relative to the application to be processed,

following the information described in chapter 3.

CAUTION the mini-applicator that processes male terminals must be installed on the left press, while the mini-applicator for female terminals must be installed on the right press.

Re-install the left oiler.

Restart the machine as described in chapt.4 and select the program for the chosen application (see chapt.5).

8) Working cycle

Make sure that equipment is on (see chapter 4).

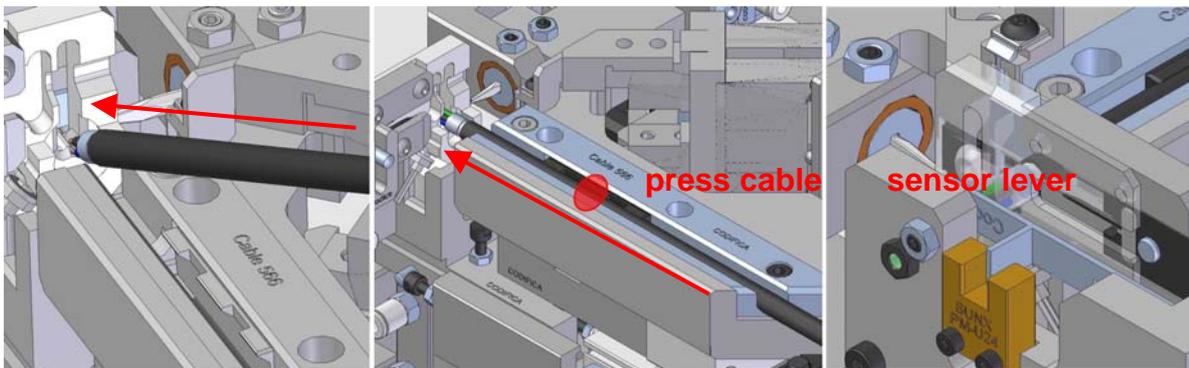
STEP 1. Display



Start-up of the first working cycle involves an initial phase in which the operator must select the desired program from the touch-screen panel, choosing from the following options:

- Select language
- Set the batch (optional see pg. 55).
- Select the cable (see pg. 56).
- Select the type of polarization (see pgs.56-57).
- Set the buzzer (see pg. 57).

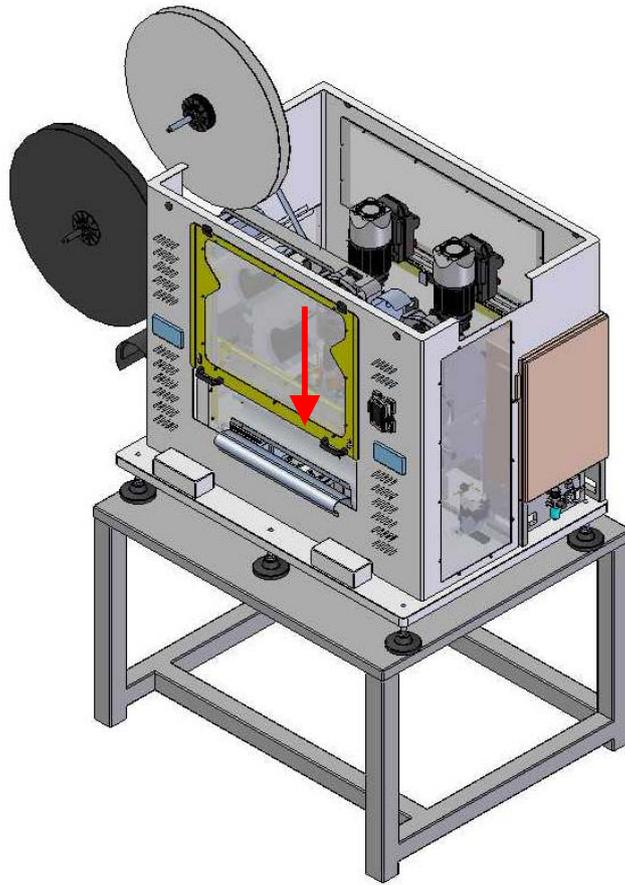
STEP 2. Cable insertion



Cable insertion must be implemented from the top downward, taking care not to trap the strands in the small holes on the sensors. Once you have correctly inserted the part to be crimped, spread out the cable in its support and press slightly. Finally, push the entire cable all the way forward to switch the sensor lever on.

STEP 3. Cycle start-up

Activate the two-hand control to safely close the mobile casing and start up the cycle.



STEP 4. Cycle end

At the end of the cycle, the mobile guard will open automatically, the cable will be freed and the operator can then remove it.

9) Maintenance

!! Before performing any operations, always switch off the machine, and check and cut off power from the main switch!!

9.1) Spare parts

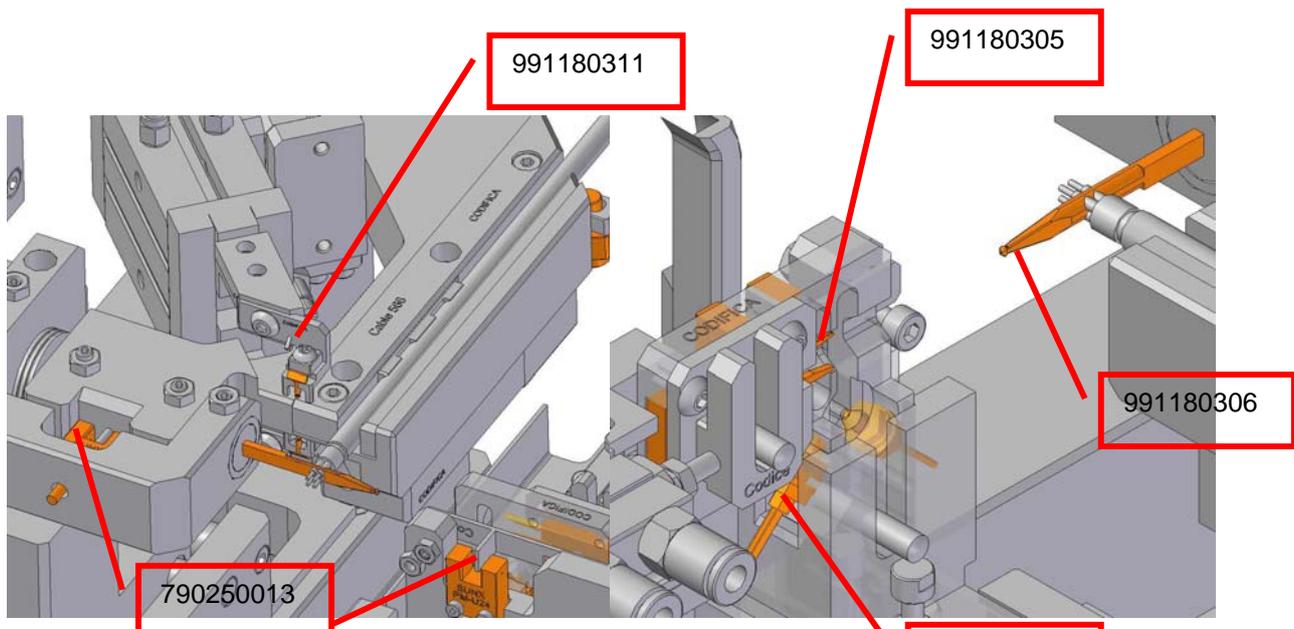
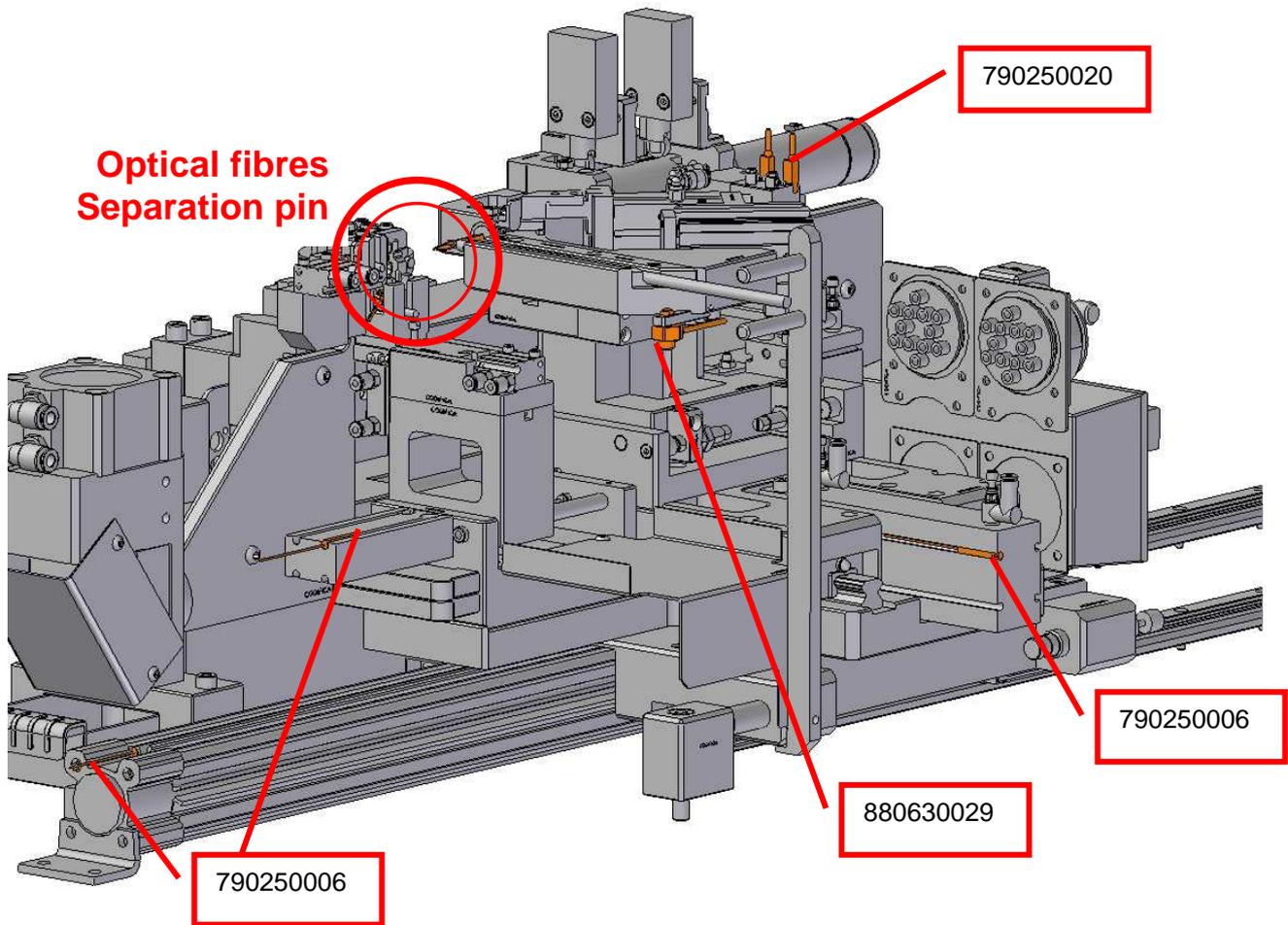
Only install spare parts with the correct code number contained on the part and included in the documentation in the attached CD. For correct use and for good quality, use **original spare parts** only.



Download files in .pdf format via the "Documents" icon to access the BOM with part codes and reference to identification shown in the exploded diagram. Verify that the model and serial number correspond with the applicator in question.

9.2) Spare parts recommended by Mecal

To improve maintenance processes, Mecal recommends the purchasing of some parts that are sensitive to wear.



Codes:

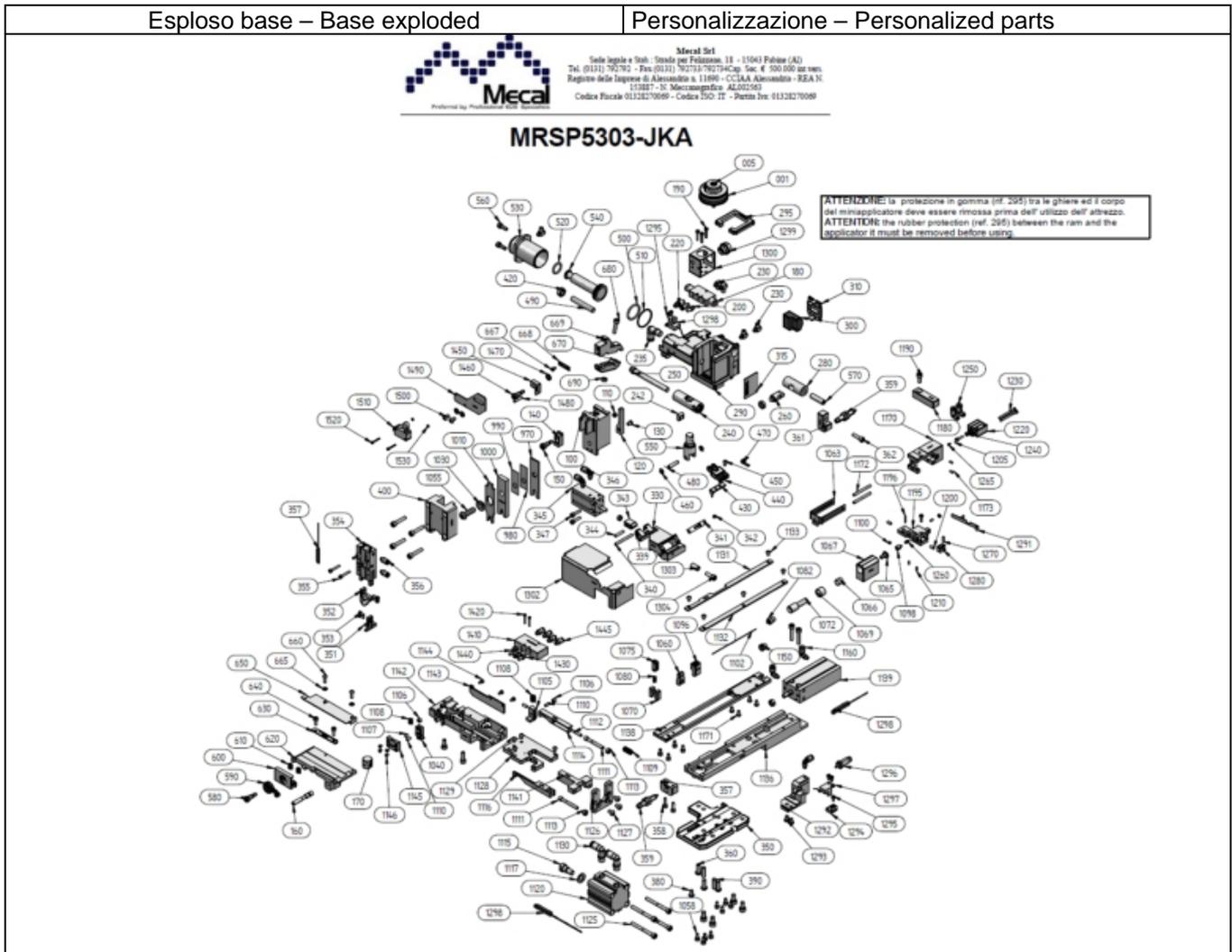
991180311 quantity 2
 790250013 quantity 2
 991180306 quantity 1
 991180305 quantity 1

880630038 quantity 3
 790250006 quantity 6
 880630038 quantity 2
 880630029 quantity 1

9.3) Example of documentation

Example of documentation.

- Pg.1 Data sheet complete with information relating to mini-applicator identification and testing
- Pg.2 BOM
- Pg.3 Representation of base mini-applicator parts
- Pg.4 Representation of personalized parts and high-wear parts of the mini-applicator



MECAL recommends saving files related to the BOM, data sheets and exploded diagrams inherent to the machine on the PC, to make a secure backup and a simpler search by serial number if you have multiple machines.

9.4) Cleaning

During the working cycle, clean equipment and the workstation at least every 4 hours. Periodically clean the machine using non-aggressive products so as to preserve machine characteristics over time.

IMPORTANT!! : Do not use alcohol or alcohol-based products to clean the transparent protections but use soap and water only. The use of alcohol-based products weakens protections.

9.5) Storage

When equipment is not used for a prolonged period of time, perform the required cleaning operations. Before setting it in the warehouse, spray all its parts with a layer of protective oil. It is advisable to take note of the number of cycles of the equipment shown on the counter located on the display to best manage the wear and requirements of spare parts.

9.6) Demolition and disposal

Applicator disposal is subject to directive listed below:



User information

Part of the Operating Instructions Scrupulously store and comply with equipment

All instructions contained in this information are general safety precautions which we strongly recommended following. They may not however only specifically relate to single parts or procedures relating to use and may necessarily appear in other parts of this publication and/or in instructions for use of other pieces of equipment, of which they are an integral part.

WEEE Policy

Under Article 13 of Legislative Decree 25 July 2005, n. 151 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, regarding the reduction of hazardous substances in electrical and electronic equipment, including the disposal of waste."

"SEPARATE COLLECTION"

The wheeled bin symbol on the equipment or packaging indicates that the product must be collected separately from other waste at the end of its life.

The user must therefore give or (have a third party give) equipment at end of life to the appropriate differentiated collection centres for electronic and electro-technical waste, or return it to the dealer upon purchase of a new equipment of equivalent type, in the ratio of one to one.

Appropriate separate collection for the subsequent recycling, treatment and environmentally compatible disposal of decommissioned equipment helps prevent negative impact on the environment and health and promotes the re-use and/or recycling of the materials making up the product.

Illegal dumping of the product by the user entails the application of administrative penalties (Article 255 and on of Legislative Decree N. 152/06) provided by law.

When disposing of the individual parts of the press due to replacement, we recommend the following CER codes:

Iron, Steel	CER 170409
Copper, Bronze, Brass	CER 170401
Aluminium	CER 170402
Plastic material	CER 170203
Used oil	CER 130205
Electrical parts	CER 160214

These codes are indicative and it is the responsibility of the equipment owner to ensure the correct disposal mode and codes.

10) Troubleshooting and problem resolution

Follow the directions in the mini-applicator and press manual for troubleshooting.

The cycle does not start:

- Verify that the air system is open and electrical connections are connected.
- Verify that the SQ1 sensor is clean, adjusted and properly connected.
- Verify that the sensor lever has been activated.
- Make sure that there are no scraps or impediments to sensor lever stroke.
- Make sure that the sensor lever has been correctly adjusted.
- The sensor lever unit may not be in the correct position. Make sure that there are no impediments compromising corresponding cylinder operation.
- The table may not be in the correct position. Check that there are no impediments to the table stroke, verify that sensors SQ9, SQ31, SQ3 SQ10 are reading and are properly adjusted.
- Verify that the machine was reset the end of the previous cycle.
- Verify that the emergency button has been reset.
- Make sure the cable is inserted by placing the wire colours according to the selected program.
- Make sure that the two-hand control is activated.

The locking and separating clamps will not activate:

- Make sure that sensors are functioning.
- Make sure that there are no hindrances to cylinder movement.
- Make sure that the correct program is selected on the display.

The table will not move:

- Make sure that sensors are functioning.
- Make sure that there are no hindrances to cylinder movement.
- Check signals on the display.

The table will not incline:

- Check inclination settings on the display.
- Make sure that there are no hindrances to table movement.
- Verify that moving parts are active and not damaged.

The machine is not reset at the end of the cycle:

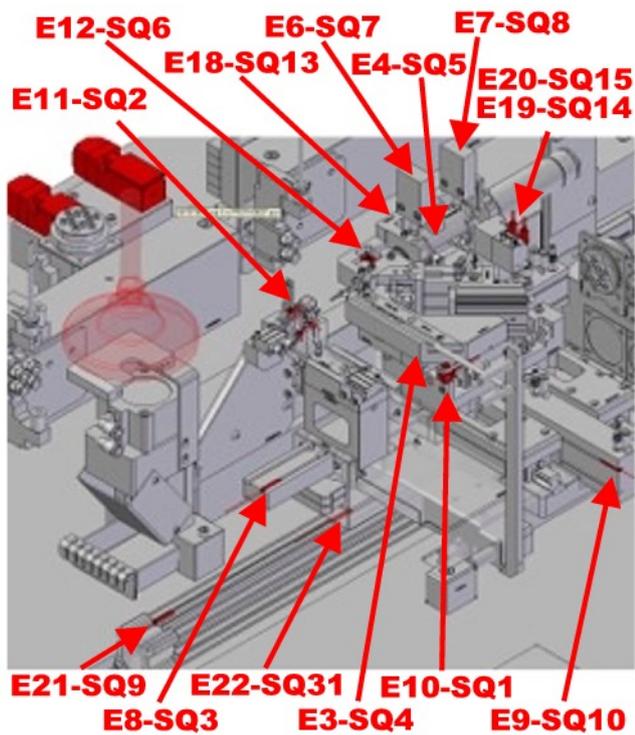
- Make sure that the two-hand control is activated (upon first machine start-up only).
- Make sure that there are no hindrances to cylinder movement for table transfer.
- Sensor SQ1 detects cable presence. Remove the cable at the end of the cycle, verify that the sensor is clean and connected correctly.

ERROR CODE	SENSOR MESSAGE	MEANING	SOLUTIONS
E3	SQ4	Cable clamp cylinder sensor	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The sensor may be burnt→ Replace the sensor.
E4	SQ5	Cable separator cylinder sensor	<ul style="list-style-type: none"> -The sensor cable may be broken→ Replace sensor.

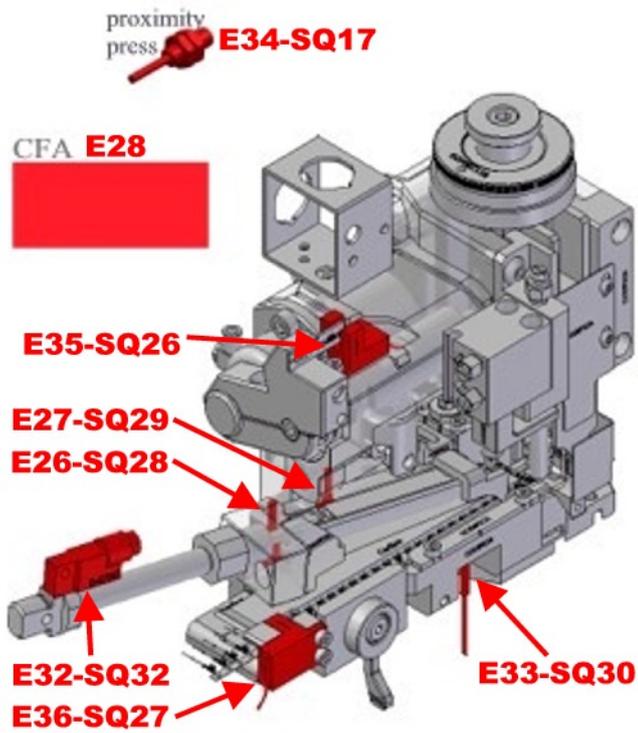
			<ul style="list-style-type: none"> - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted.
E6	SQ7	Runner end stop position high	
E7	SQ8	Runner end stop position low	
E8	SQ3	Cylinder unit c1 compl. (on=back)	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The table is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt→ Replace the sensor.
E9	SQ10	Cable holder unit cyl. sensor on anvil	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The table is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt→ Replace the sensor.
E10	SQ1	Cable presence fibre	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Check that it is correctly adjusted (see manufacturer catalogue). - The sensor may be dirty→ Clean sensor.
E11	SQ2	Cable position	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. - Make sure that the sensor lever has been correctly adjusted.
E12	SQ6	Motor table position sensor	<ul style="list-style-type: none"> -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary

			- Make sure that they are correctly adjusted.
E18	SQ13	Cable holder cylinder inside terminal	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The table is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt—> Replace the sensor.
E21	SQ9	Side manip. transf. cyl. sensor (left)	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The table is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt—> Replace the sensor.
E22	SQ31	Side manipulator transfer cylinder sensor (right)	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The table is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt—> Replace the sensor.

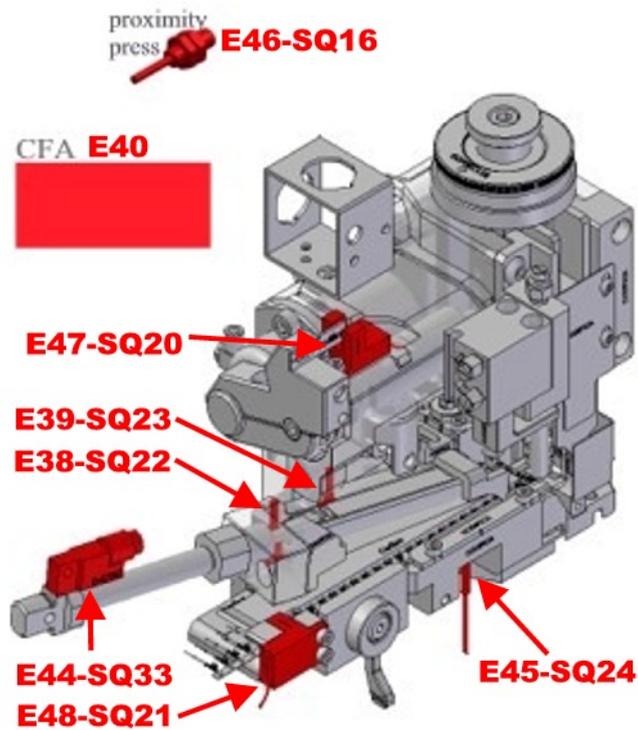
11) Error signals



ERROR CODE	SENSOR MESSAGE	MEANING
E3	SQ4	Cable clamp cylinder sensor
E4	SQ5	Cable separator cylinder sensor
E6	SQ7	Runner end stop position high
E7	SQ8	Runner end stop position low
E8	SQ3	Cylinder unit c1 compl. (on=back)
E9	SQ10	Cable holder unit cyl. sensor on anvil
E10	SQ1	Cable presence fibre
E11	SQ2	Cable position
E12	SQ6	Motor table position sensor
E18	SQ13	Cable holder cylinder inside terminal
E19	SQ14	Motor back table shutter cylinder
E20	SQ15	Motor forward table shutter cylinder
E21	SQ9	Side manip. transf. cyl. sensor (left)
E22	SQ31	Side manipulator transfer cylinder sensor (right)



ERROR CODE	SENSOR MESSAGE	MEANING
E26	SQ28	terminal transfer cylinder back
E27	SQ29	terminal transfer cylinder forward
E28	CFA	load cell
E32	SQ32	cable centring device (on=back)
E33	SQ30	terminal presence optical fibre
E34	SQ17	press slide proximity (on=tdc)
E35	SQ26	terminal feed (on=forward)
E36	SQ27	strip presence (on=present)



ERROR CODE	SENSOR MESSAGE	MEANING
E38	SQ22	terminal transfer cylinder back
E39	SQ23	terminal transfer cylinder forward
E40	CFA	load cell
E44	SQ33	cable centring device (on=back)
E45	SQ24	terminal presence optical fibre
E46	SQ16	press slide proximity (on=tdc)
E47	SQ20	terminal feed (on=forward)
E48	SQ21	strip presence (on=present)

Should an abnormality occur, make sure that the sensor involved in the "error" is not blocked or obscured by machining scrap, that the pneumatic system is pressurised and that sensors are not damaged or disconnected.

12) After sales service

For any remaining unresolved problems or questions, notify MECAL technical support at these contacts:

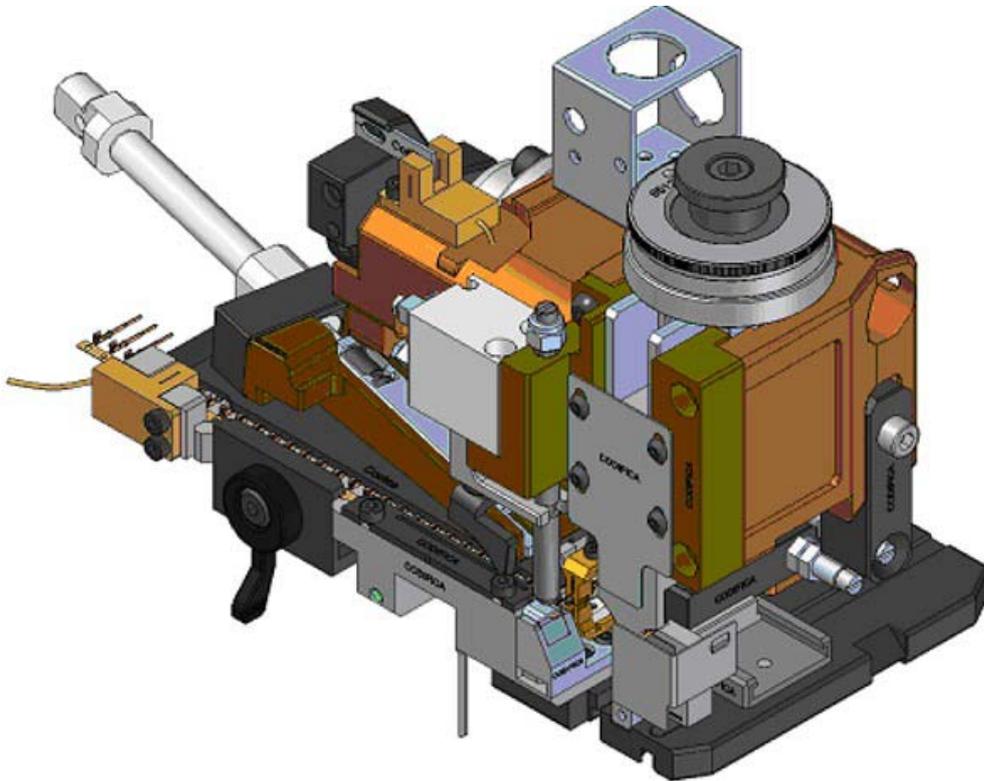
Tel: +39 0131 792792 (hours 8:00am – 12:00pm / 1:30pm – 5:30pm from Mon. to Fri.)

Fax +39 0131 792733

e_mail support@mecal.net

OPERATING INSTRUCTIONS FOR HSD DESIGN RESTYLING MINI-APPLICATOR

CAUTION! Start-up and operation of Mecal equipment is reserved for qualified personnel who have understood and will adhere to the contents of this manual. Any operations not described in this manual could cause damage to persons or affect the functionality of equipment itself.





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Preferred by Professional EDS Specialists

These instructions were created in May 2016 and may be subject to change. Furthermore, MECAL declares that the images shown in this manual may not have been updated with technical changes made to products for the sake of improvements or special requests.

Contents

OPERATING INSTRUCTIONS FOR HSD DESIGN RESTYLING MINI-APPLICATOR	1
1) Introduction.....	5
1.1) Important warnings.....	5
1.2) Symbols	6
2) General instructions.....	7
2.1) Use.....	7
2.2 Identification	7
2.2) Technical information	9
2.3) Inspection upon delivery	10
2.5) Safety requirement.....	11
2.6) Protections	11
3) Commissioning.....	11
3.1) Unpacking, lifting and transport.....	11
3.2) Press calibration.....	12
3.3) Mini-applicator installation	12
3.3.1) <i>Mini-applicator fastening</i>	13
3.3) Pneumatic mini-applicator connection.....	14
3.4) Terminal insertion.....	14
3.4) Pneumatic diagram	16
4) Start-up and use	17
4.1) Stop and reset.....	17
5) Process adjustments.....	17
5.1) Ring nut setting	17
5.2) Terminal pitch adjustment	18
5.3 Cutting presser adjustment	18
5.4 Clamp unit adjustment.....	19
5.4.1 <i>Clamp unit adjustment for terminal support</i>	19
5.4.2 <i>Clamp unit adjustment for transfer on the crimping axis</i>	20
5.5) Bell-mouth adjustment	21
5.6) Lower die adjustment.....	21
6) Maintenance adjustments.....	22
6.1) Centring device adjustment.....	22
6.2) Strip presence control sensor	22
6.3) Terminal feed sensor adjustment.....	22
6.4) Cable presence fibre adjustment.....	23
6.5) Clamp unit transfer cylinder sensor adjustment	23
6.6) Centring device cylinder sensor adjustment.....	23
7) Maintenance	24
7.1) Spare parts	24
7.2) Spare parts recommended by Mecal	25
7.2.1) <i>Mini-applicator replacement parts</i>	25
7.3) Example of documentation.....	26
7.4) Cleaning	27
7.5) Storage	27
7.6) Demolition and disposal	28

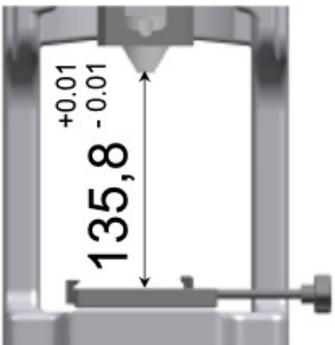
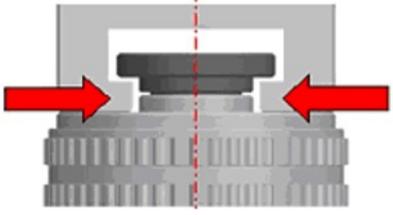
8) Troubleshooting and problem resolution.....29
9) Error signals32
10) After sales service.....33

1) Introduction

Mecal guarantees the safety of its production equipment only if the machine and its accessories are used in full compliance with safety regulations and with the following use and maintenance manual. Mecal excludes all liability for any changes made and/or tampering which endangers the safety of the machine. This document provides support for the installation, start-up up, use and maintenance of the product in question. It complements but does not replace other documents, data sheets or diagrams. No more than one operator can work on each piece of equipment.

CAUTION:
Carefully read the instructions before installing and operating equipment.

1.1) Important warnings

Phase	Operation
<ul style="list-style-type: none"> Verify the correct height calibration of presses at the bottom dead centre (BDC), equal to 135.8 mm. 	
<ul style="list-style-type: none"> Absolutely verify press axis alignment with working equipment. 	
<ul style="list-style-type: none"> Position the adjustment ring nut according to the indications contained on the identification plate. 	
<p>Note: After having installed the mini-applicator, use the corresponding key or handwheel to manually force the press to carry out a complete cycle to verify that:</p> <ul style="list-style-type: none"> There are no impediments to free mini-applicator operation The terminal is correctly positioned in line with the anvil and with crimping and cutting components 	

1.2) Symbols



CAUTION: This symbol is used to indicate certain parts of the manual that contain operations that should be read carefully.



STOP: This symbol is used to indicate certain parts of the manual that contain operations that should be checked and therefore should not be continued. Mechanical damage could be caused to the machine.



INFORMATION: This symbol is used to indicate certain parts of the manual that contain general information notes.



RECYCLE: This symbol indicates parts of the machine or package which must be recycled or disposed of according to current regulations.



SAVE: This symbol is used to indicate certain parts of the manual that contain notes or tips where equipment data saving would be opportune.

2) General instructions

2.1) Use

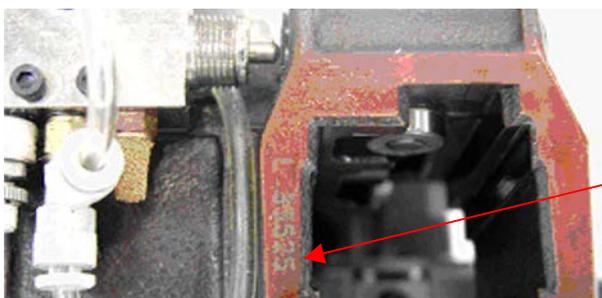
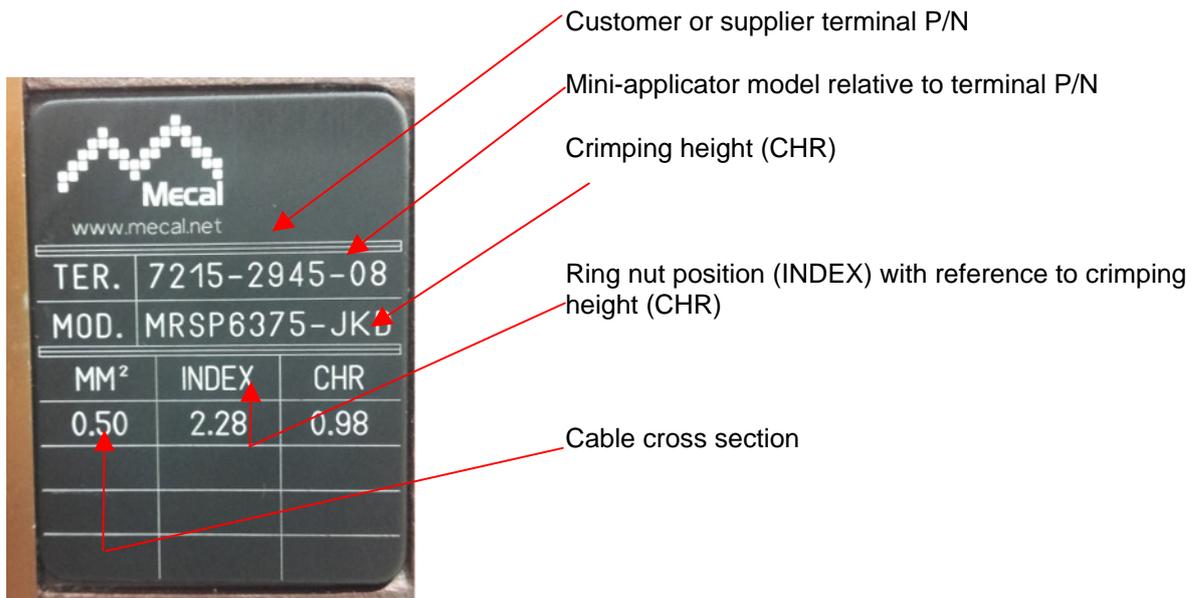
The Mini-applicator line is used to crimp chained terminals with cables of various cross sections. They are primarily utilised for terminals with thickness up to 1.2 mm and a pitch of less than 41 mm. This new concept in applicators is provided with: fusion cast iron body, front fastening of parts for greater accessibility, and broad accessibility and ease for various adjustments. The mini-applicator is equipped with a non-resettable seven-digit piece counter to keep wearing parts under control. The crimping height adjustment ring nut is continuous with 0.01mm resolution and a 2.7mm field of adjustment.

The line also includes a pneumatic version for terminals that unwind reels from right to left and from left to right, and a manual version with slide for crimping loose terminals (not linked to one another).

Equipment is intended for use in industrial environments. The machine can be used for cold metal working only or, more specifically, solely for crimping applications. Its use for any application other than specified is **STRICTLY PROHIBITED**.

Mini-applicators MRSP6375-JKA, MRSP6375-JKB, MRSP6375-JKC, MRSP6375-JKD can only be installed on press P107C present on 5_HSD Crimping station equipment.

2.2 Identification



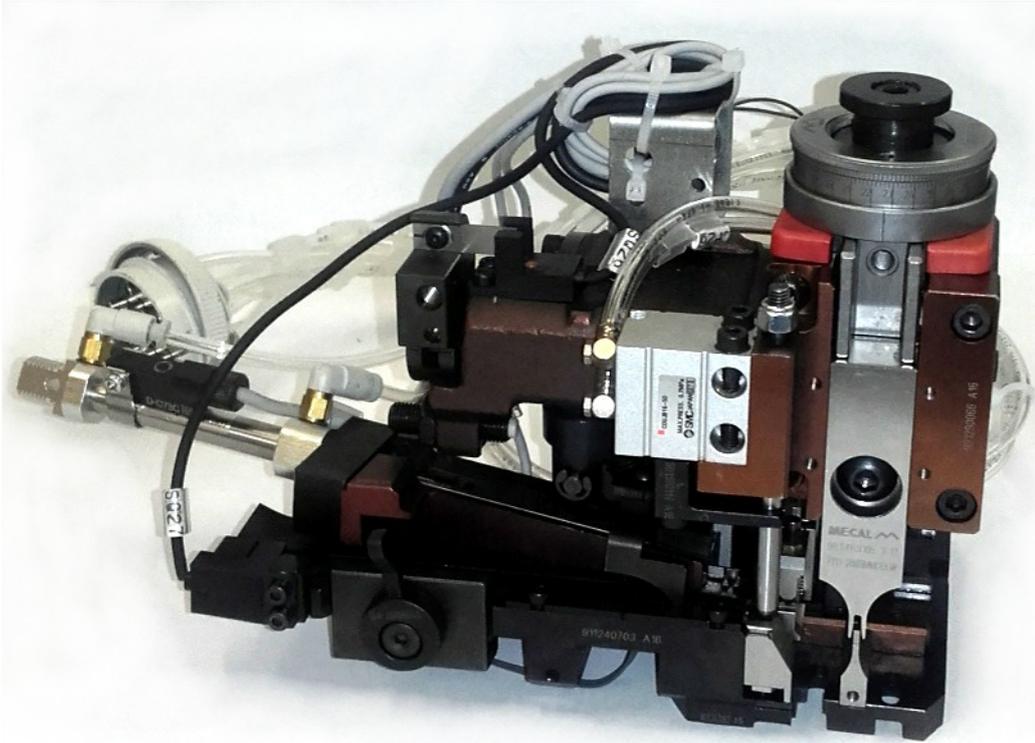


TECHNICAL DATA SHEET FOR MANIPULATOR	
Model	MPH 2000
Capacity	2000 kg
Reach	10000 mm
Speed	100 mm/s
Accuracy	±0.05 mm
Repeatability	±0.02 mm
Power	15 kW
Weight	1500 kg
Dimensions	2000 x 2000 x 2000 mm
Installation	Indoor
Control	PC
Interface	RS-232C
Options	None

BOM	
Part No.	Description
001	Base
002	Column
003	Beam
004	End Effector
005	Motor
006	Encoder
007	Ball Screw
008	Ball Nut
009	Guide Rail
010	Guide Wheel
011	Bracket
012	Fastener
013	Seal
014	Oil
015	Wiring
016	Software
017	Manual
018	Accessories

CD with serial number and documentation complete with Data Sheet, BOM and exploded diagrams

2.2) Technical information



MRSP Pneumatic Left-Side Restyling Mini-applicator

Model: MRSP

Working height at BDC: 135.8mm

Press working stroke: 40 / 30mm

Terminal pitch: Max. stroke 35mm

Terminal thickness: 0.2 mm

Wire section: Four 0.5 mm cables

Feeding system: air pressure 5/6 Bar

Weight: 4.5 Kg (9.9 lb)

Dimensions (mm): 240x140x150

Dimensions ("): 9.44x5.51x5.9

2.3) Inspection upon delivery

The applicator is delivered in a separate package containing:

- One mini-applicator
- Crimping samples created for testing
- CD containing use and maintenance instructions

(Optional) upon request:

- Spare parts kit
- Photo of the crimped terminal section (CD file attachment)
- Capability (CD file attachment)

Upon delivery:

-  Make sure that there is no damage to the applicator and that there are no missing parts, checking the accompanying document.
-  If any defects are detected, inform Mecal no later than 10 days from the date of receipt.



Packaging must be disposed of according to current regulations, not release into the environment: contact authorised companies for disposal.

2.5) Safety requirement

The mini-applicators only functions if installed on the machine for which it has been designed. Please see the safety requirements of the equipment on which it will be utilised.

2.6) Protections

The mini-applicator must be installed on an encased machine that complies with safety requirements. Mini-applicator moving parts must not be within reach of operators.

3) Commissioning

This section describes all the operations and checks required to manage the applicator during the period from delivery and implementation. Please carefully follow the instructions provided herein and contact Mecal with any doubts or uncertainty.

CAUTION: all installation operations must be carried out with the machine in emergency conditions or switched off and the air inlet closed.

3.1) Unpacking, lifting and transport

- Use proper equipment to handle packaging.
- Verify by checking the accompanying document that the equipment has not been damaged and that there are no missing parts.
- If any anomalies are detected, inform Mecal no later than 10 days from the date of receipt.
- Packaging must be disposed of as per regulations in force.
- Make sure that the support surface is suitable for the weight of the equipment and that it is firmly secured in place.
- Do not dispose of packing in the environment: contact authorised companies for disposal.



3.2) Press calibration

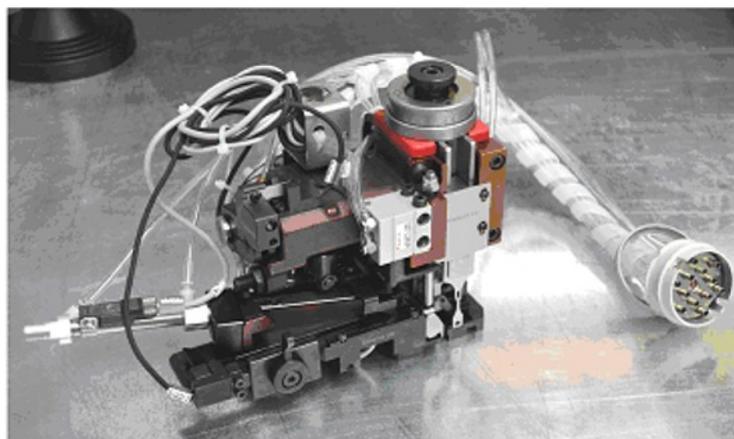


Correct press operation is guaranteed by its relative calibration. Clean clamping surfaces "A," ensuring a suitable support surface between the base of the press and that of the mini-applicator. Use the STP Calibration Tool to verify the correct working height, which should be BDC 135.8mm (± 0.01 mm).

Note: MECAL supplies its machines tested and calibrated. Check the P107 instruction manual provided.

3.3) Mini-applicator installation

The Crimping Station fits 2 P107 presses on-board. A special mini-applicator derived from the MRSP family of pneumatic Mecal mini-applicators is installed on each of these. Repeat each operator for both of the two applicators.

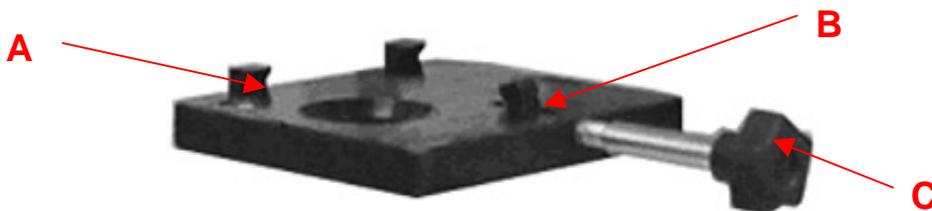
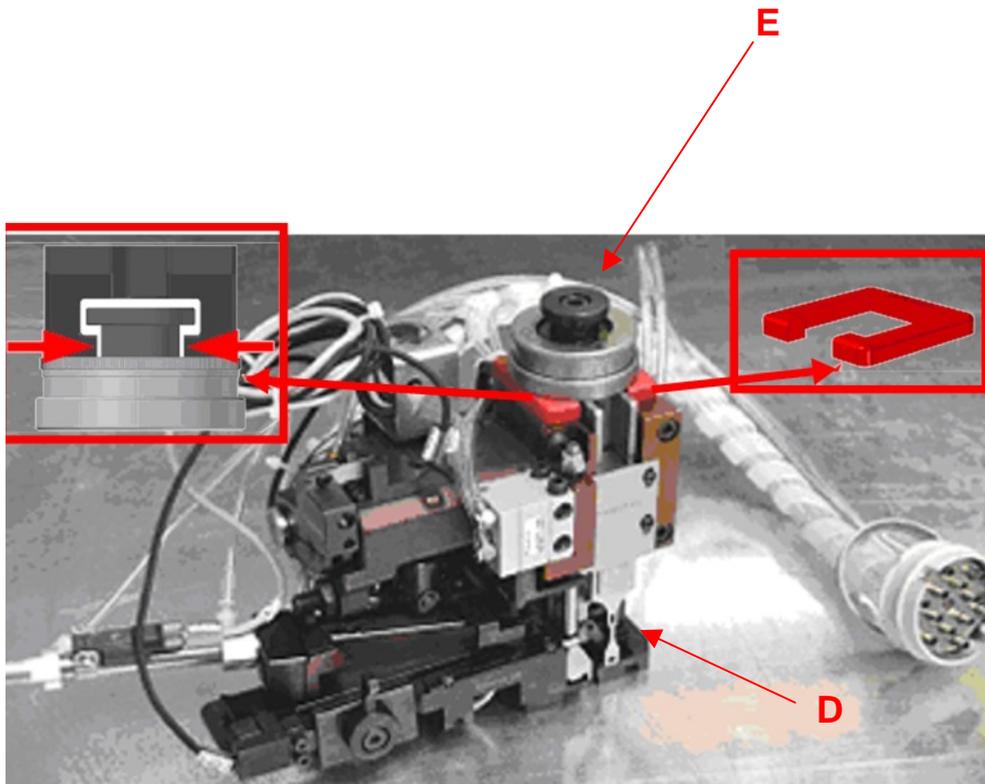


3.3.1) Mini-applicator fastening

The mini-applicators are packaged with a rubber protection (set between the adjustment ring nut and the body of the mini-applicator) to prevent damage from crimping and cutting components. Remove the protection upon installation.

Position the applicator on the mounting base **A**, align the base **D** with the tooth **B** and tighten the tightening knob **C**.

Verify that it has been closed correctly, checking that the applicator is perfectly adherent to the mounting base **A**. The pin **E** must be centred with the press "T" connection.



3.3) Pneumatic mini-applicator connection

CAUTION: To avoid collisions, make sure there are no mechanical obstructions on all moving systems before connecting all the pneumatic components.



Connect the electrical flying connector on the machine with the panel connector located on the mini-applicator. Make sure that the locking washer is inserted and tightened.

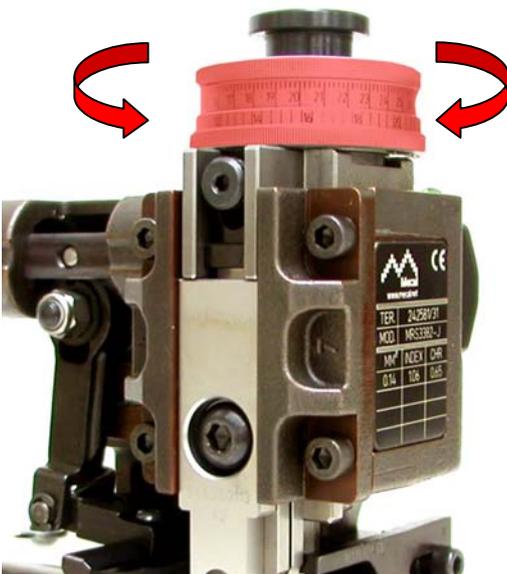


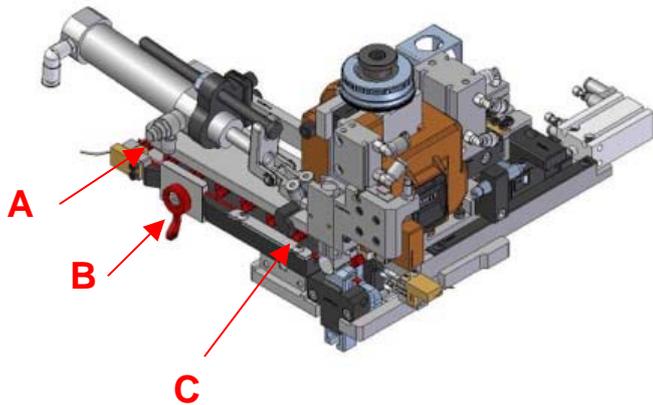
Connect the flying pneumatic connectors, located on the mini-applicator, with the panel pneumatic connectors on the back of equipment. Make sure that the locking washers are inserted and tightened.

CAUTION: all connector connecting operations should be carried out with the press in emergency conditions or switched off and without air in the system.

3.4) Terminal insertion

Adjust the mini-applicator ring nut in the position corresponding to the **largest** cross section.





The mini-applicator **MUST** be pneumatically and electrically connected and the system must contain air at a pressure of approximately **6 BAR**. Insert the terminal to be crimped in the guide **A** after having freed the clutch by means of the eccentric lever **B**. Push the terminal to hooking position with the pawl tooth **C** and close the clutch.



It is advisable to use the corresponding key to manually perform a complete press cycle and to check that:

- 1) There are no mechanical impediments in the sliding parts
- 2) The terminal must be positioned correctly aligned with the crimping and cutting parts. Otherwise, see paragraphs (pitch adjustment) and (terminal adjustment)

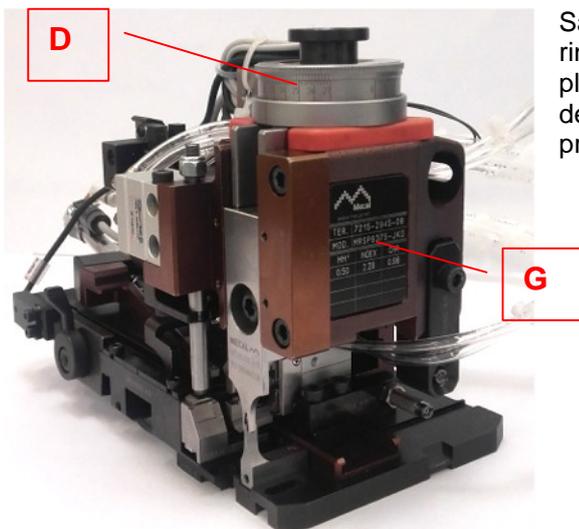


If during the manual cycle you experience mechanical impediments, verify:

- 1) Correct applicator locking on the press
- 2) Correct press setting at BDC equal to 135 (see P107C manual).
- 3) Make sure that the position of the locking washers is not completely open/closed.

If the terminal is not positioned correctly:

- 1) Check that the pawl tooth is in the correct hooking position.
- 2) Check that the clutch eccentric or the lever is in the working position.



Sample the cable cross section to be used, having arranged ring nut "Copper **D**" as indicated in the values on identification plate **G** located on the applicator body. If the crimping height detected does not correspond with these references, check press calibration at BDC.

3.4) Pneumatic diagram

4) Start-up and use

Pay due attention when manoeuvring for mini-applicator installation/removal and its calibration so as not to damage any part.

- Make sure the mini-applicator has been installed and adjusted correctly on-board the machine.
- Make sure that there are no hindrances to moving parts.
- Follow start-up instructions on the machine where the mini-applicator is installed.

4.1) Stop and reset

Follow start-up instructions on the machine where the mini-applicator is installed.
Make sure that there are no hindrances to the sliding of moving parts.

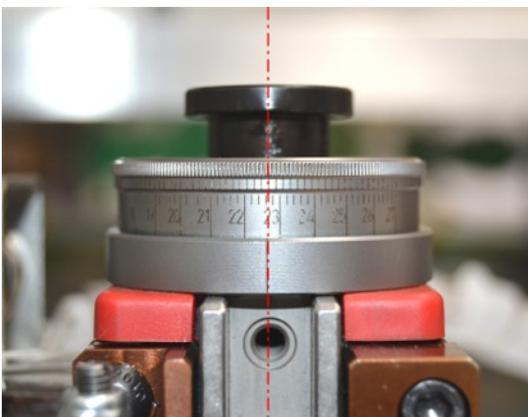
5) Process adjustments

5.1) Ring nut setting

Before installing the applicators on the presses, it is important to make sure that the adjustment ring nut is positioned at the correct operating height.

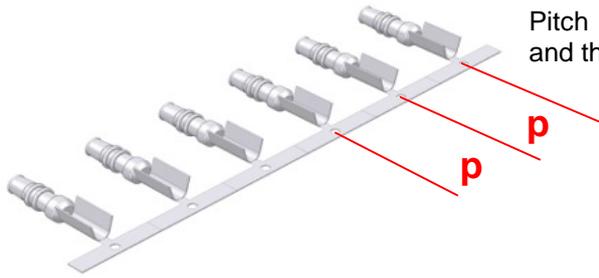


Adjust the ring nut according to the "INDEX" value contained on the identification plate and corresponding to the cross section of the cable to be processed. INDEX represents the operating position of the centesimal ring nut. In the example photo, the value for the only cross section present is 0.50 mm² is equal to 2.27 mm.

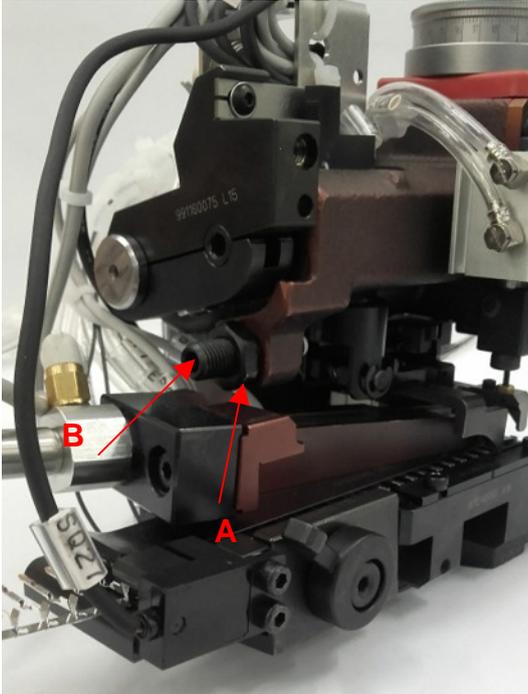


The ring nut has a travel range of 2.7 mm with resolution of 1 hundredth. The graduated scale on the outer diameter contains tenths of a millimetre in correspondence with numbered notches. Each numbered notch is divided into 10 parts, each 1 hundredth. In the example photo, the ring nut is positioned on 22.7 tenths of a millimetre, corresponding to INDEX 2.27 mm indicated on the identification plate.

5.2) Terminal pitch adjustment



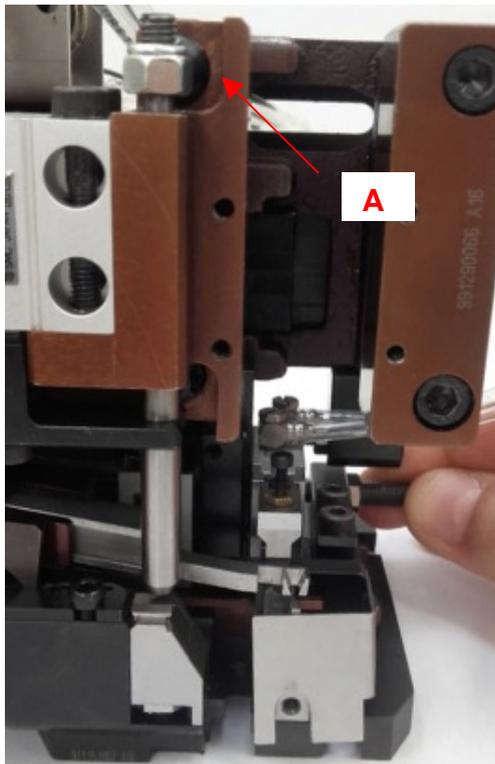
Pitch p is determined by the distance between one terminal and the next.



Pitch adjustment p on the mini-applicator is used to hook the terminal and bring it in the pick-up position on clamps and to strip cutting. Loosen the nut **A** and turn the adjustment dowel **B** with a CH4 hex wrench. Rotate the dowel **B** in the clockwise direction to reduce terminal pitch and counter-clockwise to increase it. Once adjustment has been completed, tighten the locking nut **A**. Feed speed can be controlled by means of the cylinder air flow regulator.

To adjust the arrival position of the terminal, loosen the locking screw **C** and turn the adjustment screw with a CH4 hex wrench. Rotate in the clockwise or counter-clockwise direction to determine the correct position. Once adjustment has been defined, tighten the locking screw **A**.

5.3 Cutting presser adjustment

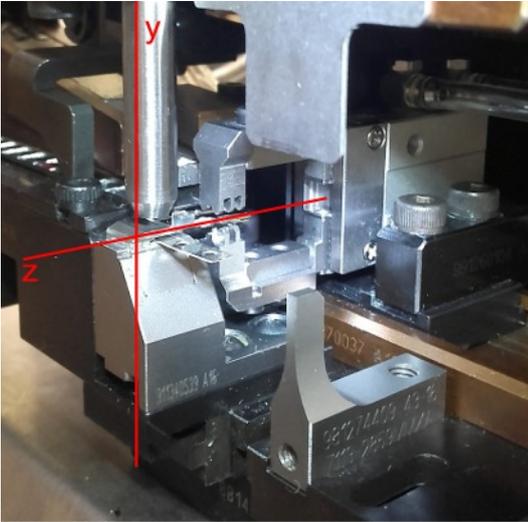


Front cutting presser adjustment allows the cutting blade to intervene and separate the terminal from the strip. This adjustment is made by tightening or loosening the self-locking nut that acts as the end stop on the presser. Tighten the nut to lower the presser less and loosen the nut to increase the presser stroke.

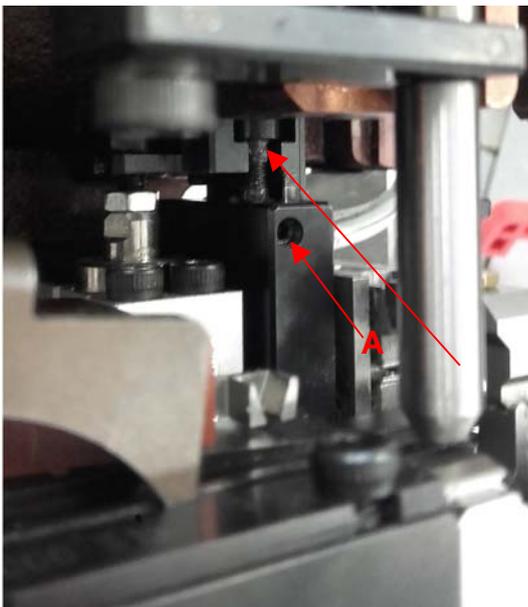
5.4 Clamp unit adjustment

The clamp unit has the double function of supporting the terminal during strip cutting and moving the terminal on the crimping axis.

5.4.1 Clamp unit adjustment for terminal support



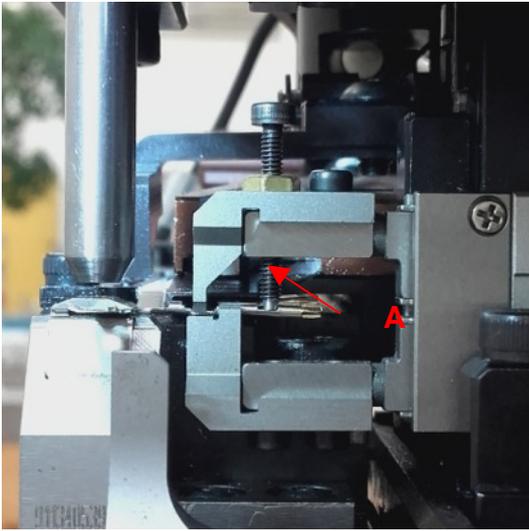
Terminal support adjustment during the strip cutting phase is calibrated with respect to the z and y axes.



The clamp closing position with respect to the z axis is adjusted with the cylinder "T" connection. Unscrew the fixing dowel and just the "T" connection. Tighten it to raise the clamps or loosen to lower them. Mecal recommends adjusting the grip to prevent deformation.

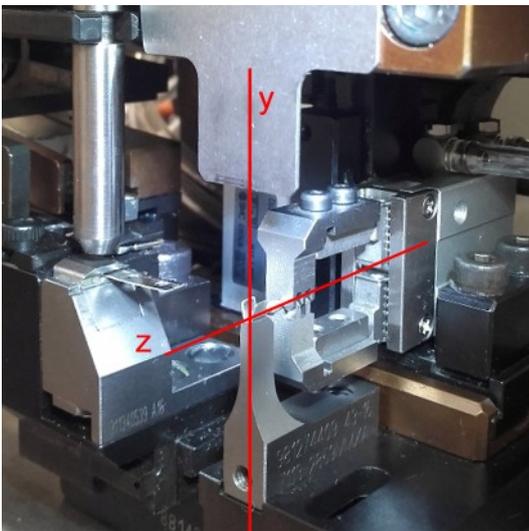


Adjust the decelerator to adjust the clamp unit with respect to the y axis.
Loosen the locking nut on the decelerator. Tighten the dowel to move the unit toward the anvil (left) or loosen it to bring it toward the terminal slide (right).

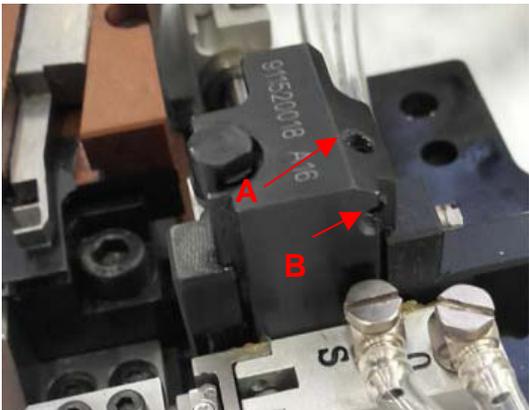


The clamp unit incorporates the terminal press, which intervenes during clamp closing to prevent terminal deformation during the strip cutting phase. The press can be adjusted by unscrewing the fixing nut and tightening or loosening the press. Re-tighten the nut once the desired adjustment has been reached.

5.4.2 Clamp unit adjustment for transfer on the crimping axis

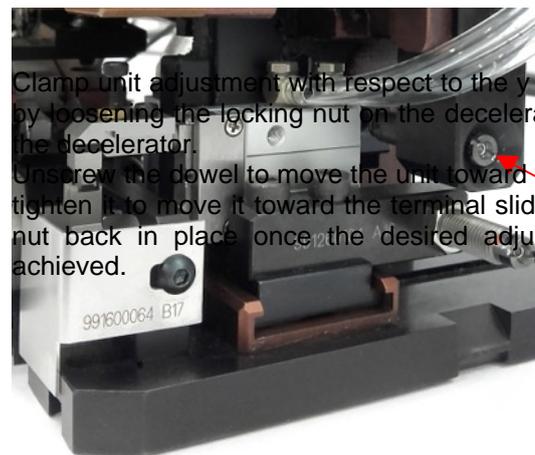


Clamp unit adjustment during the crimping cutting phase is calibrated with respect to the z and y axes.



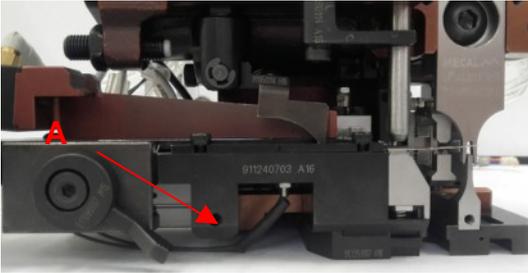
The closing position with respect to the z axis is adjusted by means of the stop dowel (A) located on the same support that adjusts the height of the clamps during the strip cutting phase.

Loosen the locking dowel (B), adjust the dowel (A) until you reach the desired adjustment. Tighten the unit to raise it or loosen it to lower it. Re-tighten the dowel (B) to lock adjustment.



Clamp unit adjustment with respect to the y axis is carried out by loosening the locking nut on the decelerator and adjusting the decelerator. Unscrew the dowel to move the unit toward the anvil (left) and tighten it to move it toward the terminal slide (right). Lock the nut back in place once the desired adjustment has been achieved.

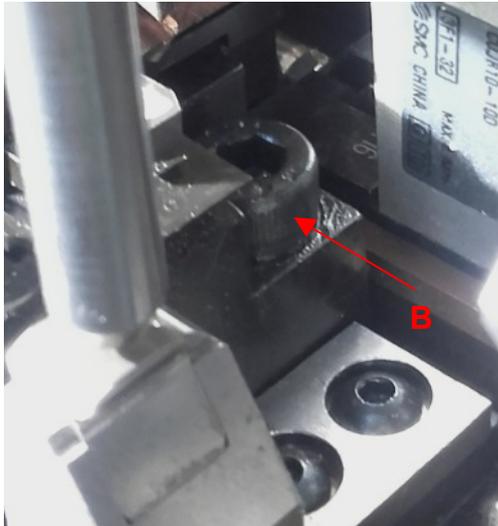
5.5) Bell-mouth adjustment



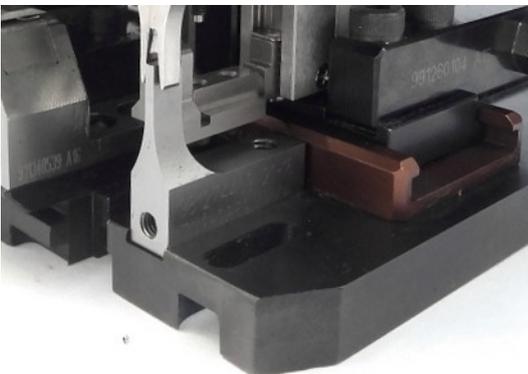
Terminal alignment with the upper crimping die defines the bell-mouth.

Adjustment occurs by moving the terminal conveying slide. Loosen the locking screw B to disengage the slide and proceed with adjustment by means of dowel A.

Rotate it in the clockwise or counter-clockwise direction to achieve the desired adjustment and fasten with screw B.



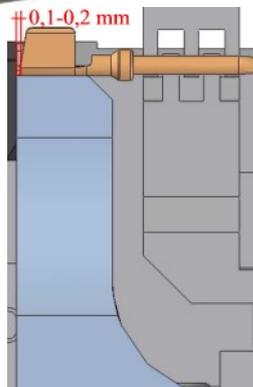
5.6) Lower die adjustment



Anvil alignment with the terminal defines: the crimping imprint and the lower part of the contact and the length of the cut-off dimensions from the strip.

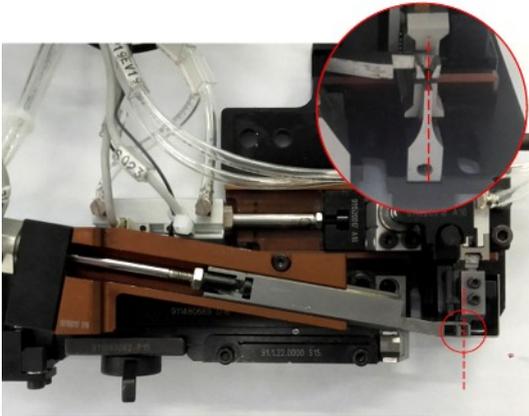
Anvil adjustment is achieved by unscrewing the relative locking screw and moving the anvil to the desired position. The remaining cut-off dimensions of the terminal should be approximately 0.1/0.2 mm and should be positioned flush with the anvil.

Note: The edge of the anvil should not go beyond the edge of the base.



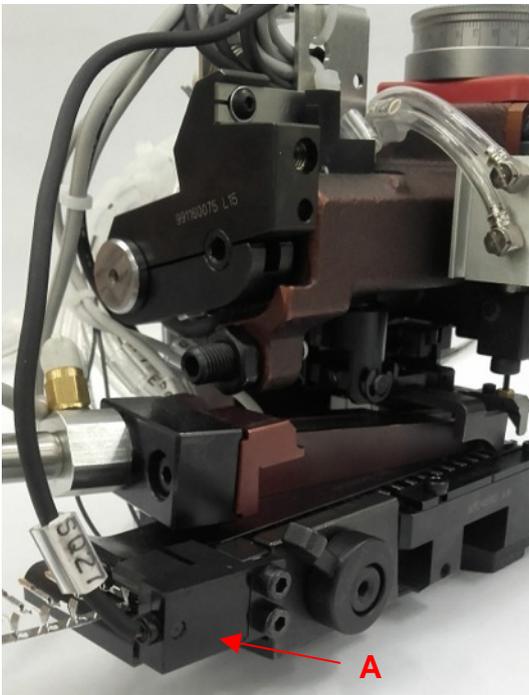
6) Maintenance adjustments

6.1) Centring device adjustment



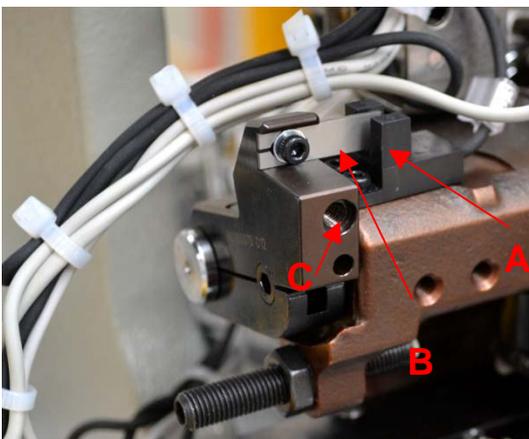
The centring device must be adjusted for alignment with the anvil to facilitate cable insertion in the terminal flaps. Adjustment is carried out by adjusting the "T" connection on the cylinder that moves it.

6.2) Strip presence control sensor



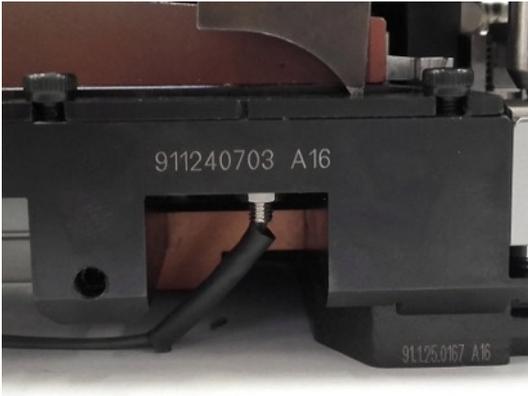
The optical sensor A (SQ27 left mini-applicator and SQ21 right mini-applicator) are used to verify the presence of the terminal binding strip B. This is always active and has no adjustments. When the strips ends, the sensor deactivates the signal, sending the press into error conditions. Replace the empty reel with a new one.

6.3) Terminal feed sensor adjustment



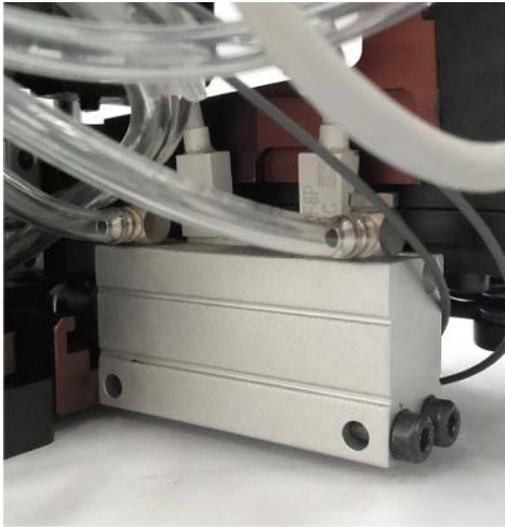
The optical sensor A (SQ28 left mini-applicator and SQ20 right mini-applicator) verify that the mini-applicator has correctly carried out the pitch. After the operation has occurred, the sensor lever B must interrupt the signal and give consent. If this does not occur, loosen the locking screw C, intervene with sensor lever B, adjust the position and tighten the locking screw C.

6.4) Cable presence fibre adjustment



Verify correct terminal presence optical fibre position (SQ30 left mini-applicator and SQ24 right mini-applicator). The fibre must remain under the terminal sliding area.

6.5) Clamp unit transfer cylinder sensor adjustment



Movement of the clamps that bring the loose terminal from the strip cutting area to the crimping area is controlled by two sensors. The rearmost position in the strip cutting area is detected by sensor SQ28 (left mini-applicator) and SQ22 (right mini-applicator). Make sure that the cylinder is in stand-by position, insert the sensor in the corresponding grooving until the red LED lights up and then tighten the screw. The rearmost position of the clamps on the anvil is controlled by sensor SQ29 (left mini-applicator) and SQ23 (right mini-applicator). Adjust the sensor, bringing the clamp unit on the anvil. Insert the sensor in the corresponding grooving until the red LED lights up and then tighten the screw.

6.6) Centring device cylinder sensor adjustment



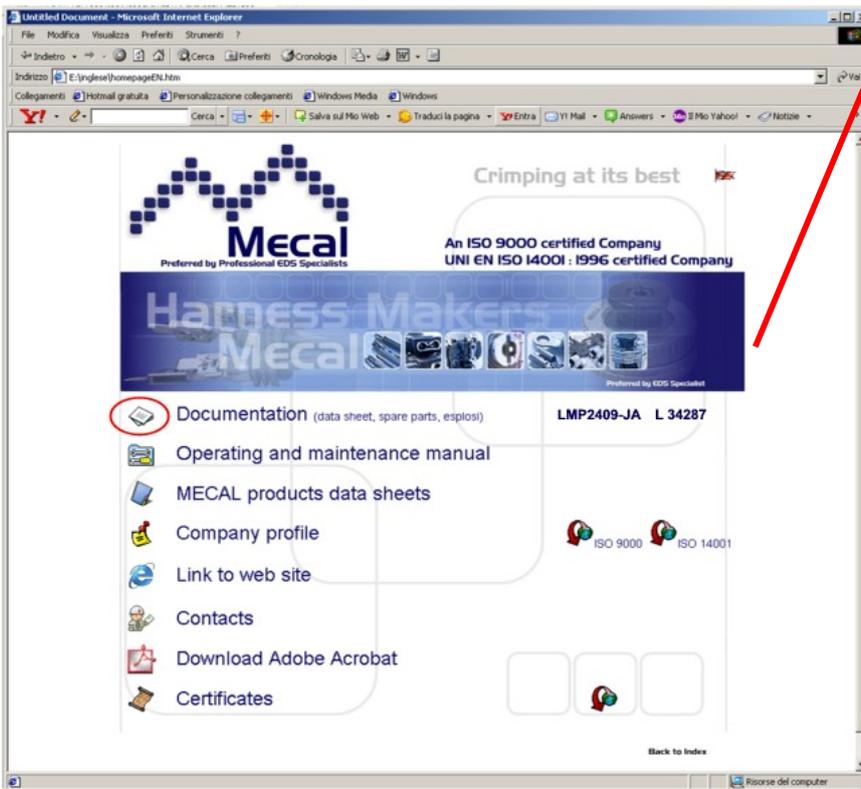
The sensor (SQ32 left mini-applicator and SQ33 right mini-applicator) on the centring device cylinder is adjusted by detecting the cylinder stand-by position. Insert the sensor and secure it as soon as the red LED lights up.

7) Maintenance

!! Before performing any operations, always switch off the machine, and check and cut off power from the main switch!!

7.1) Spare parts

Only install spare parts with the correct code number contained on the part and included in the documentation in the attached CD. For correct use and for good quality, use **original spare parts** only.

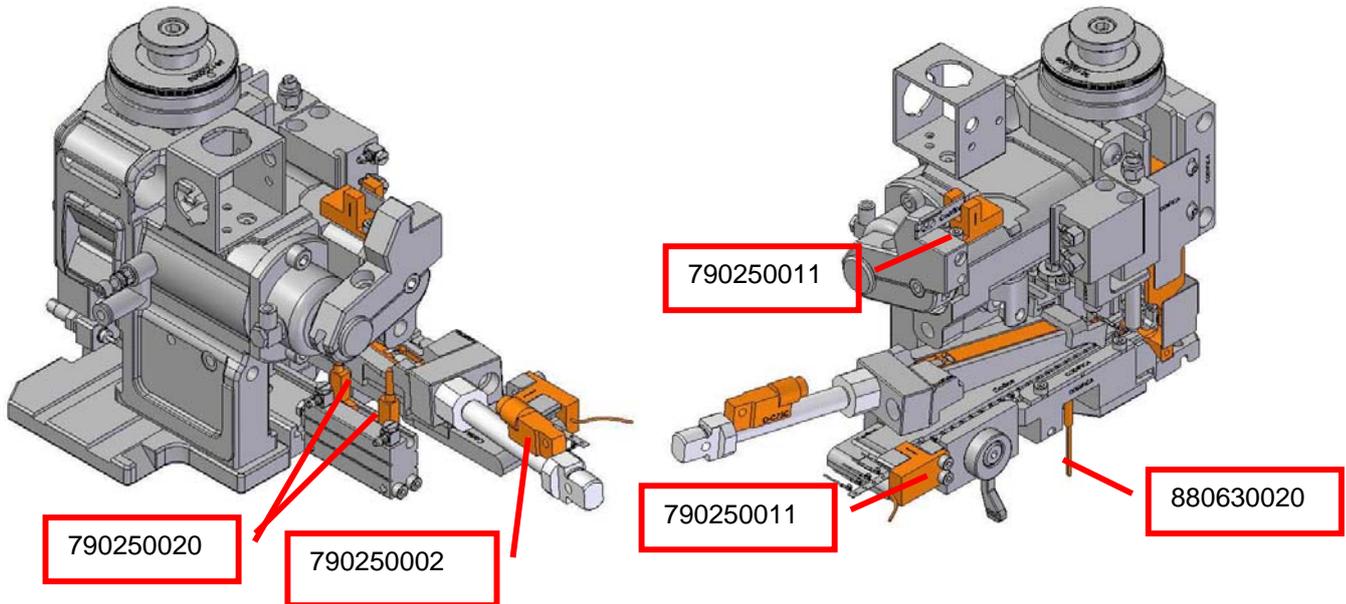


Download files in .pdf format via the "Documents" icon to access the BOM with part codes and reference to identification shown in the exploded diagram. Verify that the model and serial number correspond with the applicator in question.

7.2) Spare parts recommended by Mecal

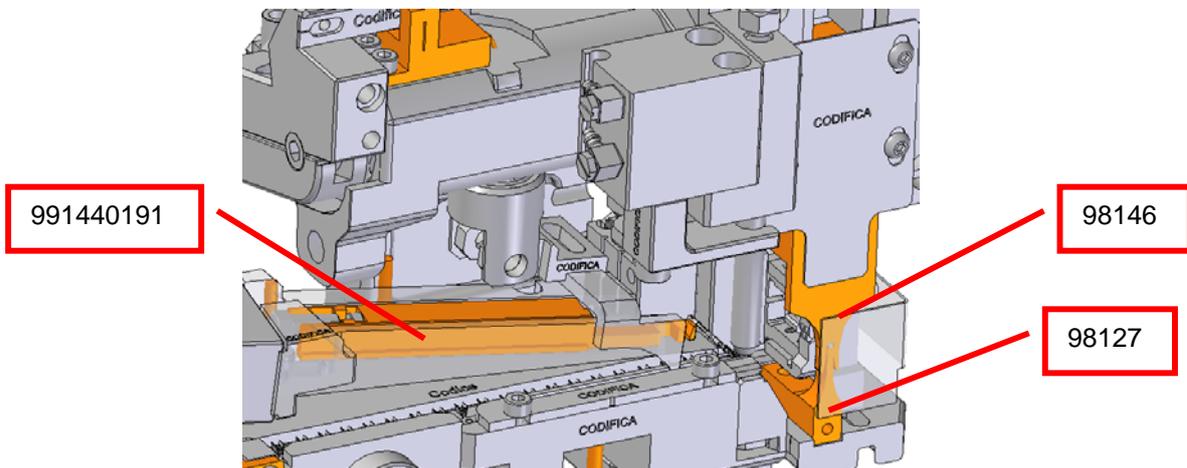
To improve maintenance processes, Mecal recommends the purchasing of some parts that are sensitive to wear.

7.2.1) Mini-applicator replacement parts



Sensor codes common to the 4 mini-applicators (quantities are for individual applicators):

790250002	quantity 1
790250020	quantity 2
790250011	quantity 2
880630020	quantity 1



MRSP6375-JKA codes

991440191	quantity 1
981463105	quantity 1
981274408	quantity 1

MRSP6375-JKC codes

991440191	quantity 1
981463105	quantity 1
981274408	quantity 1

MRSP6375-JKB codes

991440191	quantity 1
981463106	quantity 1
981274409	quantity 1

MRSP6375-JKD codes

991440191	quantity 1
981463106	quantity 1
981274409	quantity 1

7.3) Example of documentation

Example of documentation.

- Pg.1 Data sheet complete with information relating to mini-applicator identification and testing
- Pg.2 BOM
- Pg.3 Representation of base mini-applicator parts
- Pg.4 Representation of personalized parts and high-wear parts of the mini-applicator

Pag.1 DATASHEET

Client (Cliente)

Model (Modello)

Serial number (Matricola)

Terminal code (Codice terminale)

Order N° (N° Ordine)

Applicator Setup (Impostazione applicatore)

Crimping Profile (Profilo matrice Crimping profile)

Crimping Dimensions (Dimensioni di aggraffatura Crimping dimensions)

Pull Force (Carico di stiliamento Pull force)

Test Date (Data di collaudo Test date)

Test Signature (Firma collaudatore Test signature)

Controller Signature (Firma responsabile Controller signature)

Quality Manager (Controllo qualità Quality manager)

Pag.2 Distinta base – Parts list

Part number (Codice particolare)

Exploded reference (Riferimento su esploso exploded reference)

Model (Modello)

Terminal code (Codice terminale)

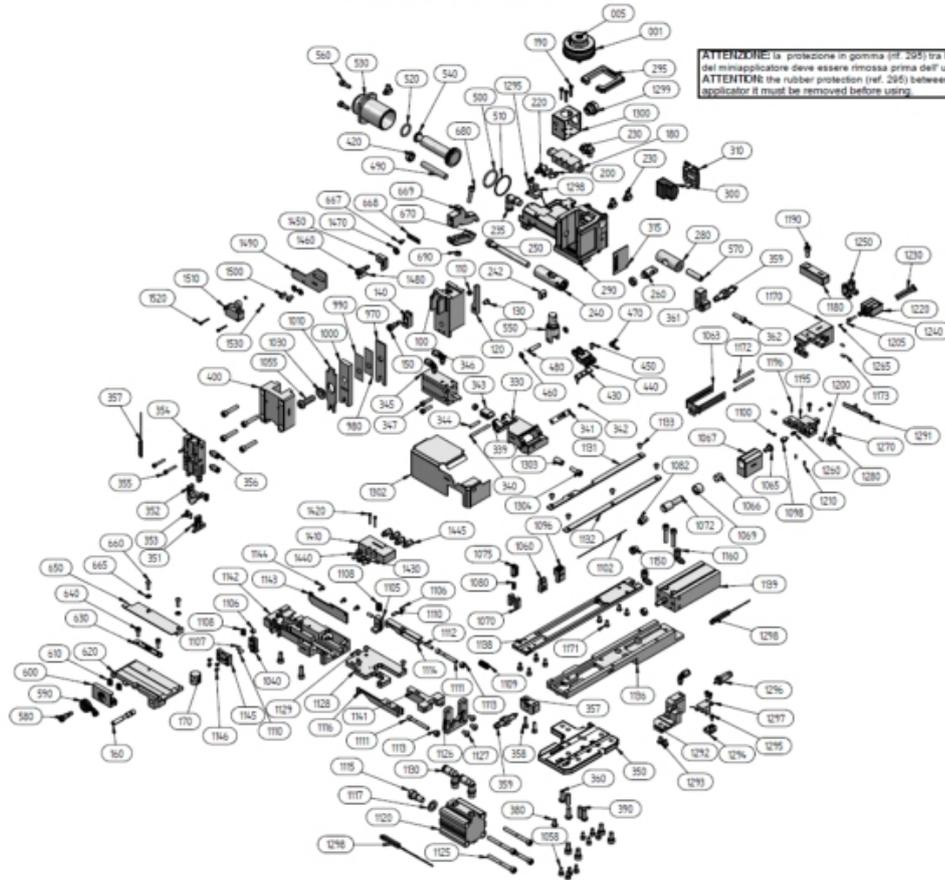
Serial number (Matricola)

Exploded base parts (Particolari esploso base exploded base parts)

Personalized parts (Particolari personalizzazione personalized parts)



MRSP5303-JKA



MECAL recommends saving files related to the BOM, data sheets and exploded diagrams inherent to the machine on the PC, to make a secure backup and a simpler search by serial number if you have multiple machines.

7.4) Cleaning

During the working cycle, clean equipment and the workstation at least every 4 hours. Periodically clean the machine using non-aggressive products so as to preserve machine characteristics over time.

IMPORTANT!! : Do not use alcohol or alcohol-based products to clean the transparent protections but use soap and water only. The use of alcohol-based products weakens protections.

7.5) Storage

When equipment is not used for a prolonged period of time, perform the required cleaning operations. Before setting it in the warehouse, spray all its parts with a layer of protective oil. It is advisable to take note of the number of cycles of the equipment shown on the counter located on the display to best manage the wear and requirements of spare parts.

7.6) Demolition and disposal

Applicator disposal is subject to directive listed below:



User information

Part of the Operating Instructions Scrupulously store and comply with equipment

All instructions contained in this information are general safety precautions which we strongly recommended following. They may not however only specifically relate to single parts or procedures relating to use and may necessarily appear in other parts of this publication and/or in instructions for use of other pieces of equipment, of which they are an integral part.

WEEE Policy

Under Article 13 of Legislative Decree 25 July 2005, n. 151 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, regarding the reduction of hazardous substances in electrical and electronic equipment, including the disposal of waste."

"SEPARATE COLLECTION"

The wheeled bin symbol on the equipment or packaging indicates that the product must be collected separately from other waste at the end of its life.

The user must therefore give or (have a third party give) equipment at end of life to the appropriate differentiated collection centres for electronic and electro-technical waste, or return it to the dealer upon purchase of a new equipment of equivalent type, in the ratio of one to one.

Appropriate separate collection for the subsequent recycling, treatment and environmentally compatible disposal of decommissioned equipment helps prevent negative impact on the environment and health and promotes the re-use and/or recycling of the materials making up the product.

Illegal dumping of the product by the user entails the application of administrative penalties (Article 255 and on of Legislative Decree N. 152/06) provided by law.

When disposing of the individual parts of the press due to replacement, we recommend the following CER codes:

Iron, Steel	CER 170409
Copper, Bronze, Brass	CER 170401
Aluminium	CER 170402
Plastic material	CER 170203
Used oil	CER 130205
Electrical parts	CER 160214

These codes are indicative and it is the responsibility of the equipment owner to ensure the correct disposal mode and codes.

8) Troubleshooting and problem resolution

Should an abnormality occur, make sure that the sensor involved in the "error" is not blocked or obscured by machining scrap, that the pneumatic system is pressurised and that sensors are not damaged or disconnected.

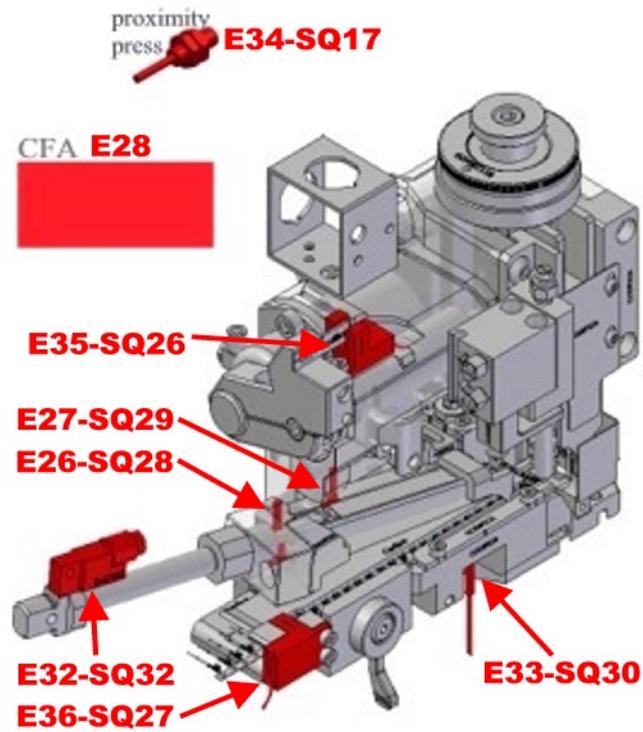
Defect	Possible cause	Operation
The mini-applicator is not locked correctly on its press clamping base.	<ul style="list-style-type: none"> The contact surfaces are not thoroughly clean. The mini-applicator is not centred with the press. 	<ul style="list-style-type: none"> Clean the support surfaces, removing any deposited processing residue or scrap. Check the positions of the "T" connection and the press clamping base.
Mechanical impediments for BDC transfer were detected during the test cycle carried out manually with corresponding key or handwheel.	<ul style="list-style-type: none"> The press is not calibrated to BDC with operating height 135.8mm. The applicator adjustment ring nut is fully open, toward 2.7. The rubber protection on dies has not been removed. 	<ul style="list-style-type: none"> Check the operating height of the press using a suitable tool. Check the position of ring nuts. The larger opening position with respect to the values described could cause interference between the dies and the anvil. Remove the rubber protection from dies.
The terminal will not enter into the conveying guides.	<ul style="list-style-type: none"> The clutch has not been deactivated and therefore terminal transfer is hindered. The terminal is not the right one for the applicator. 	<ul style="list-style-type: none"> Use the clutch eccentric or the corresponding lever to deactivate it and permit terminal preparation. Compare the terminal code contained on the reel with the one indicated on the applicator identification plate.
Terminal feeding is not being carried out correctly.	<ul style="list-style-type: none"> Air pressure in the system Feeding tooth hooking position on the terminal Clutch deactivated 	<ul style="list-style-type: none"> Check the air pressure in the system. It should be between 0.5 and 0.6 MPa (5-6 BAR). Make sure that the feeding tooth hooks the terminal in the correct strip hole. Make sure that the clutch is activated after the terminal has been prepared on the applicator.
The terminal position on the crimping axis is not correct.	<ul style="list-style-type: none"> The complete press cycle has not been carried out. Feeding parts may be worn. Terminal unwinding from the reel is defective. 	<ul style="list-style-type: none"> Perform multiple press cycles in manual mode to ensure correct hooking and positioning of the terminal. Recover feeding part wear by checking adjustments and replacing damaged parts. Verify that the terminal is unwinding properly from the reel without mechanical hindrances or high resistance. Could cause abnormal bending on it
The crimped terminal presents some deformations.	<ul style="list-style-type: none"> The crimping height is incorrect for the cross section of the cable used. The terminal may not be aligned with the crimping dies. The crimping dies may be worn or damaged. The cable cross section is incorrect. 	<ul style="list-style-type: none"> Check the position of the ring nut with values declared by the manufacturer (see point 6.1) and check the crimping height with a suitable tool (centesimal calliper or micrometer). Check the terminal position on the crimping axis and make adjustments. Make sure there is not wear or damage on the crimping and cutting dies and anvils. If so, replace immediately. Make sure that the cross section of the cable used corresponds to the operating position.
The crimped terminal does not reach the retention force declared on tables.	<ul style="list-style-type: none"> The press is not calibrated to BDC with operating height 	<ul style="list-style-type: none"> Check the operating height of the press at BDC using a suitable

	<ul style="list-style-type: none"> 135.8mm. The crimping height adjustment ring nut is positioned incorrectly. The cable cross section is incorrect. 	<ul style="list-style-type: none"> calibration tool as indicated. Compare the correct position of the crimping height adjustment ring nut with the values contained on the identification plate or data sheet. Make sure that the cross section of the cable used corresponds to the operating position.
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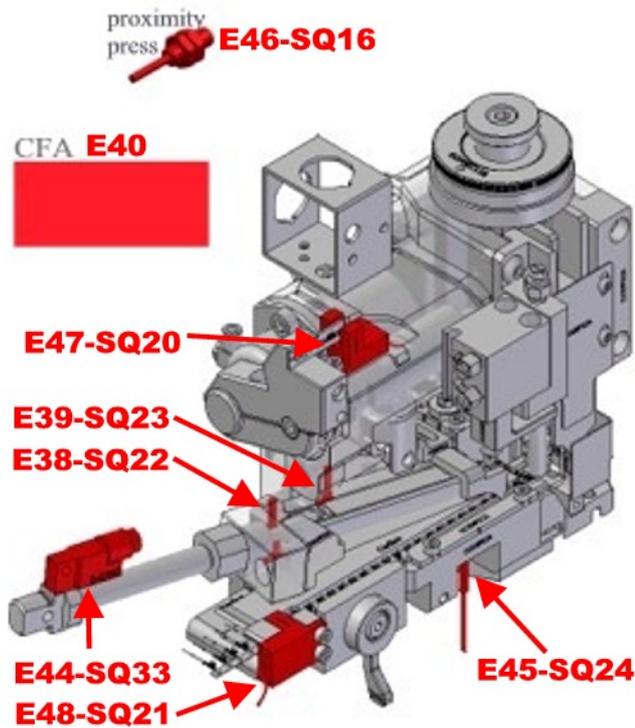
ERROR CODE	SENSOR MESSAGE	MEANING	SOLUTIONS
E26/E38	SQ28/SQ22	terminal transfer cylinder back	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted -The clamp unit is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment -The sensor may be burnt—> Replace the sensor.
E27/E39	SQ29/SQ23	terminal transfer cylinder forward	<ul style="list-style-type: none"> - The pneumatic system is not connected→ connect system -The sensor cable may be broken→ Replace sensor. - The sensor is not secured suitably, check screws→ tighten them if necessary - Make sure that they are correctly adjusted. -The clamp unit is not in the correct position. Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment -The sensor may be burnt—> Replace the sensor.
E28/E40	CFA	load cell	Check that the cell is active→ Activate it
E32/E44	SQ32/SQ33	cable centring device (on=back)	<ul style="list-style-type: none"> - The pneumatic system is not connected→ Connect system -The sensor cable may be broken→ Replace sensor - The sensor is not secured suitably, check screws→ Tighten them if

			<p>necessary</p> <ul style="list-style-type: none"> - Make sure that they are correctly adjusted -The clamp unit is not in the correct position. Make sure that there are no impediments to cylinder stroke→ Clean the area, removing the impediment -The sensor may be burnt→ Replace the sensor
E33/E45	SQ30/SQ24	terminal presence optical fibre	<ul style="list-style-type: none"> - The optical fibre is not secured suitably, check fastening→ Tighten them if necessary - Make sure that the amplifier is reading the fibre data - The fibre may be dirty→ Clean it. - The fibre may be burnt→ Replace it
E34/E46	SQ17/SQ16	press slide proximity (on=tdc)	See P107C instructions
E35/E47	SQ26/SQ20	terminal feed (on=forward)	<p>The sensor level may not be adjusted suitably or it may be disconnected → Attempt to reset it</p> <ul style="list-style-type: none"> - The sensor may be dirty→ Clean sensor -The sensor may be burnt→ Replace the sensor
E36/E48	SQ27/SQ21	strip presence (on=present)	<p>The sensor may not be adjusted suitably or it may be disconnected → Attempt to reset it</p> <ul style="list-style-type: none"> - The sensor may be dirty→ Clean sensor. -The sensor may be burnt→ Replace the sensor

9) Error signals



ERROR CODE	SENSOR MESSAGE	MEANING
E26	SQ28	terminal transfer cylinder back
E27	SQ29	terminal transfer cylinder forward
E28	CFA	load cell
E32	SQ32	cable centring device (on=back)
E33	SQ30	terminal presence optical fibre
E34	SQ17	press slide proximity (on=tdc)
E35	SQ26	terminal feed (on=forward)
E36	SQ27	strip presence (on=present)



ERROR CODE	SENSOR MESSAGE	MEANING
E38	SQ22	terminal transfer cylinder back
E39	SQ23	terminal transfer cylinder forward
E40	CFA	load cell
E44	SQ33	cable centring device (on=back)
E45	SQ24	terminal presence optical fibre
E46	SQ16	press slide proximity (on=tdc)
E47	SQ20	terminal feed (on=forward)
E48	SQ21	strip presence (on=present)

Should an abnormality occur, make sure that the sensor involved in the "error" is not blocked or obscured by machining scrap, that the pneumatic system is pressurised and that sensors are not damaged or disconnected.

10) After sales service

For any remaining unresolved problems or questions, notify MECAL technical support at these contacts:

Tel: +39 0131 792792 (hours 8:00am – 12:00pm / 1:30pm – 5:30pm from Mon. to Fri.)

Fax +39 0131 792733

e_mail support@mecal.net