Mecal Srl
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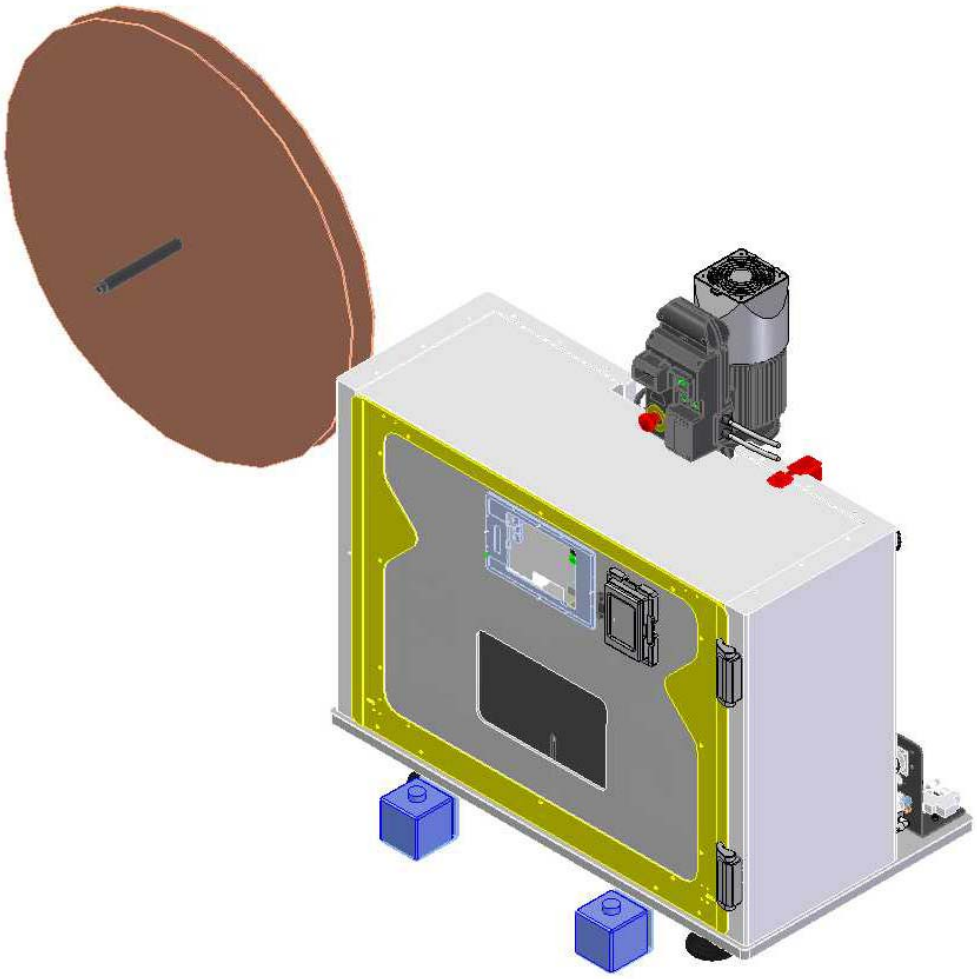
Registro delle Imprese di Alessandria n. 11690 - CCIAA Alessandria - REA N. 153887 - N. Meccanografico AL002563
Codice Fiscale 01328270069 – Codice ISO: IT - Partita Iva: 01328270069

OPERATING MANUAL
7_HSD BODY STATION 180°

CAUTION! Start-up and operation of Mecal equipment run 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 November 2016 and may be subject to change. MECAL also declares that the images shown in this manual may not be updated with technical changes made to products for the sake of improvements or special requests.

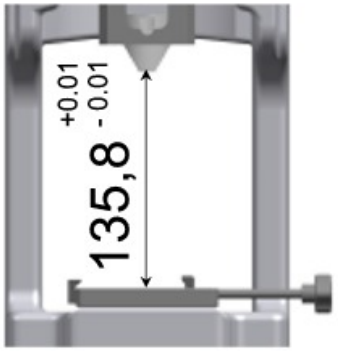
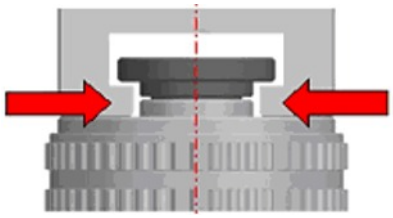
Index

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
• Check correct press crimping height setting at bottom dead centre BDC equal to 135.8mm. The magnum installed on-board equipment should NOT be installed under other presses.	
• Carefully check alignment between the axis of the press and the work tool.	
• Position the adjusting ring according to the instructions contained on the identification plate.	

Note: After having installed the applicator, have the press perform a complete cycle with a step by step process, to check that:

- There are no impediments to free applicator operation
- The terminal is correctly positioned, aligned on the anvil and with crimping and cutting parts

2) General instructions

2.1) Use

The Body Station, the 7th step on the Mecal HSD (High Speed Data) wire production line is composed of:
- One P107C press
- One special magnum applicator
- One strip cutter
- One vision system composed of three video cameras

Thanks to its vision system, the machine performs a check of the correct positioning and integrity of the pins inside the insulator, also verifying that the body has been fitted on the insulator.
Once the control phase has been passed, the machine proceeds with terminal crimping and squashing.
The electronic equipment enables just in time viewing of the verification process at the start of the cycle.
Process quality is controlled by the optical fibres and by the vision system which verify the correct position of wires, also from a load cell present on the press able to monitor every individual crimp.
The station is equipped with a pneumatic casing which permits the operator to insert the wire, completely closing the work area after activation of the two-hand 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 Body Station

ID	**BD020**
DIMENSIONS (mm)	**5-7 BAR**
DIMENSIONS ("")	**W1520Xh1200xD730**
WEIGHT	**W60.23Xh38.58xD19.68**
POWER SUPPLY	**200Kg**
CABLE CROSS-SECTION	**110-240V 50-60Hz**
CYCLE TIME	**HSD Dacar® 535-566**
DIMENSIONS (mm)	**circa sec**

MRSP Miniapplicatore Restyling Laterale Sinistro Pneumatico

Model: LMP
Work height at BDC: 135,8mm
Press stroke: 40 / 30mm
Terminal pitch: cilindro adattabile
Terminal thickness: 0.6mm
Wire type: 566
Supply system: aria 5/6 Bar
Weight:12 Kg circa
Dimensions: W378 x H200 x D525mm

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 crimped terminal section (attached to file on CD)
- Capability (attached to file on CD)

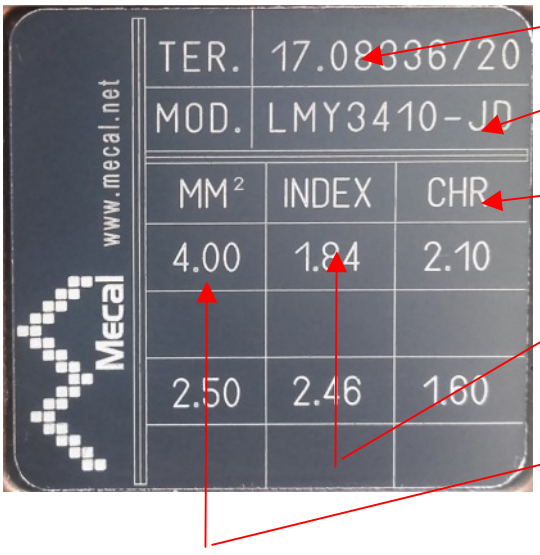
Upon delivery:

- 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



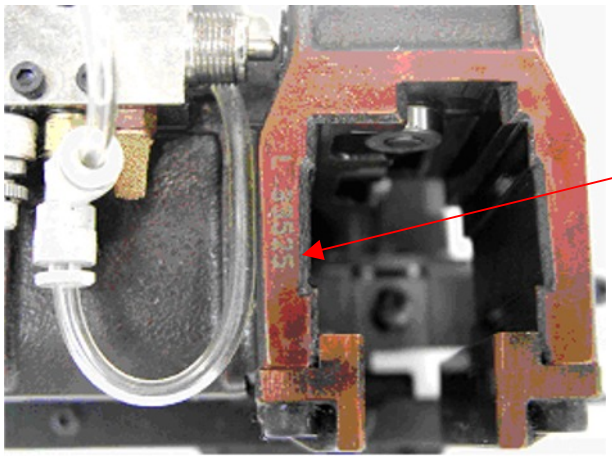
Client or supplier terminal P/N

Applicator model relative to terminal P/N

Crimping height (CHR)

Adjusting ring position (INDEX) referring to crimping height (CHR)

Minimum and maximum wire cross-section



Mini-applicator serial number

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

2.5) Safety requirements

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 position "0".

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

Announce operations on the line switch.

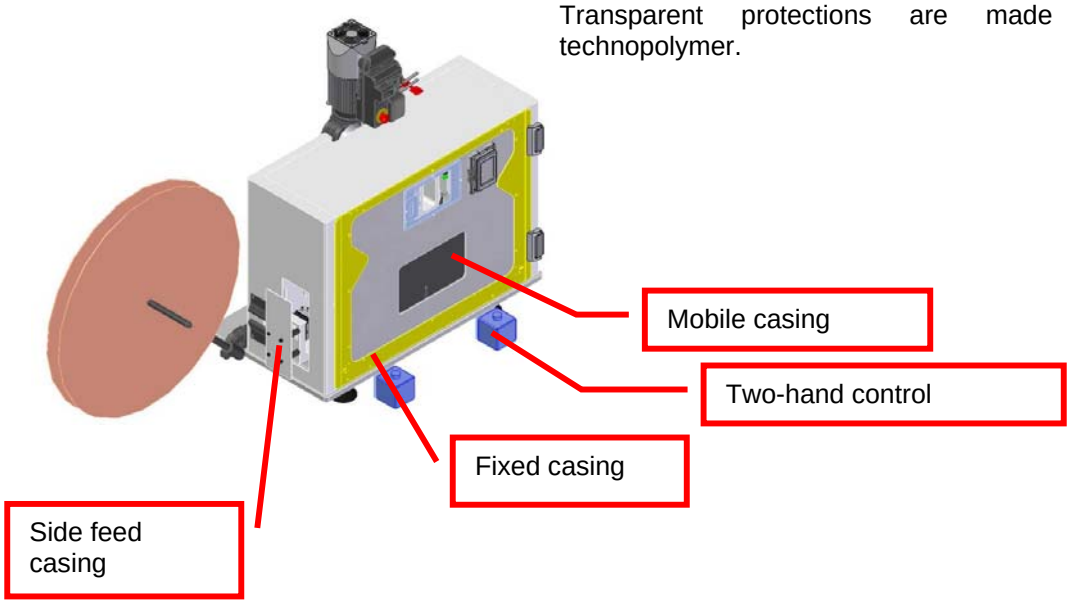
CAUTION: read the following carefully:

- The Mecal press complies with requirements if a Mecal type applicator or die is used or installed.

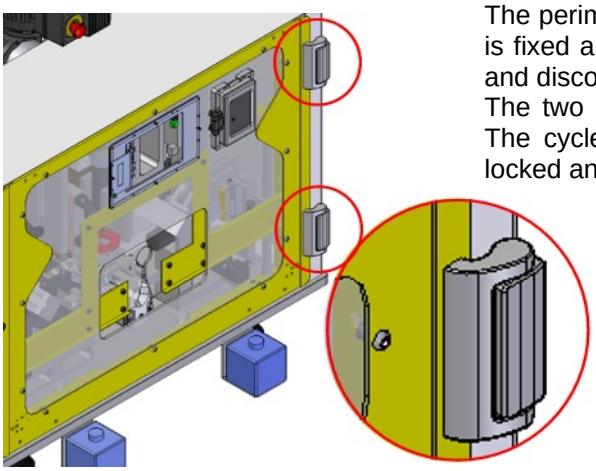
  The distance of the casing from the tool must exceed 10 mm with a 6 mm wide slot as required by the standard (UNI – EN294). Verify this in the event that tools other than standard Mecal have been installed.

- 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 wire for which it has been designed.

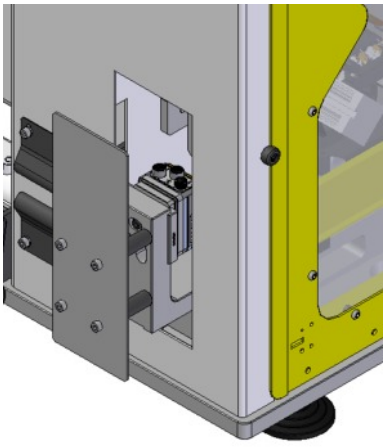
2.6) Protections



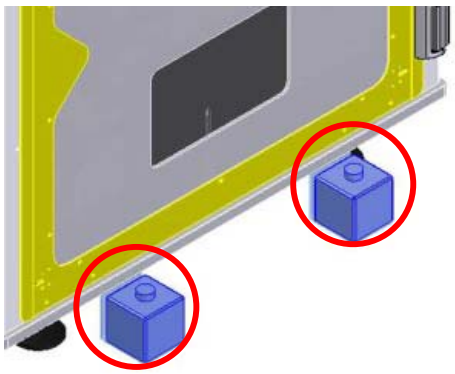
End and side feed protective casing
Transparent protections are made in clear Lexan technopolymer.



Fixed casing
The perimeter part of the central window of the end feed casing is fixed and can be opened only with the machine switched off and disconnected from the power mains.
The two side hinges control correct closure of the work area. The cycle cannot be started up if the casing is not correctly locked and closed.



Side feed protective casing
Closure of the side casing portion, connected to the carriage for left vision system video camera movement, is guaranteed by a sensor which detects its correct position and by manual fastening.



Two-hand control

Machine and work cycle resetting are started by means of a two-hand control located in front of the machine.

Lock/Unlock key

Equipment is provided with a key to unlock the machine in the event of jamming.
Turn the key to the UNLOCK position and the machine will free the wire and reset.

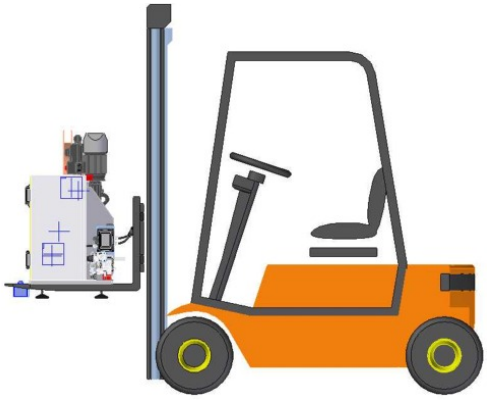
Mecal recommends giving the key to maintenance operators.

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, switched off and the air inlet closed.

3.1) Unpacking, lifting and transport

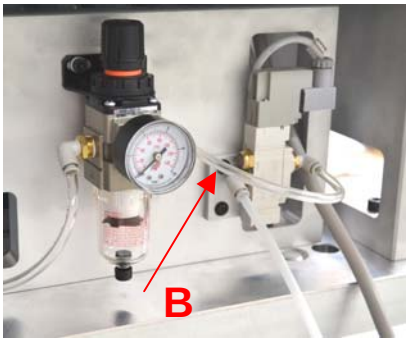


- Use proper equipment to handle packaging.
- Verify by checking the accompanying document that the equipment has not been damaged and that there are no missing parts.
- If any anomalies are detected, inform Mecal no later than 10 days from the date of receipt.
- The crimping station can be lifted and moved in the work position using the base plate as a surface for the forklift. When the machine is removed from packaging for the first time, it is necessary to attach the 6 anti-vibration feet that were removed to prevent damage during transport under the base plate.
- 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.

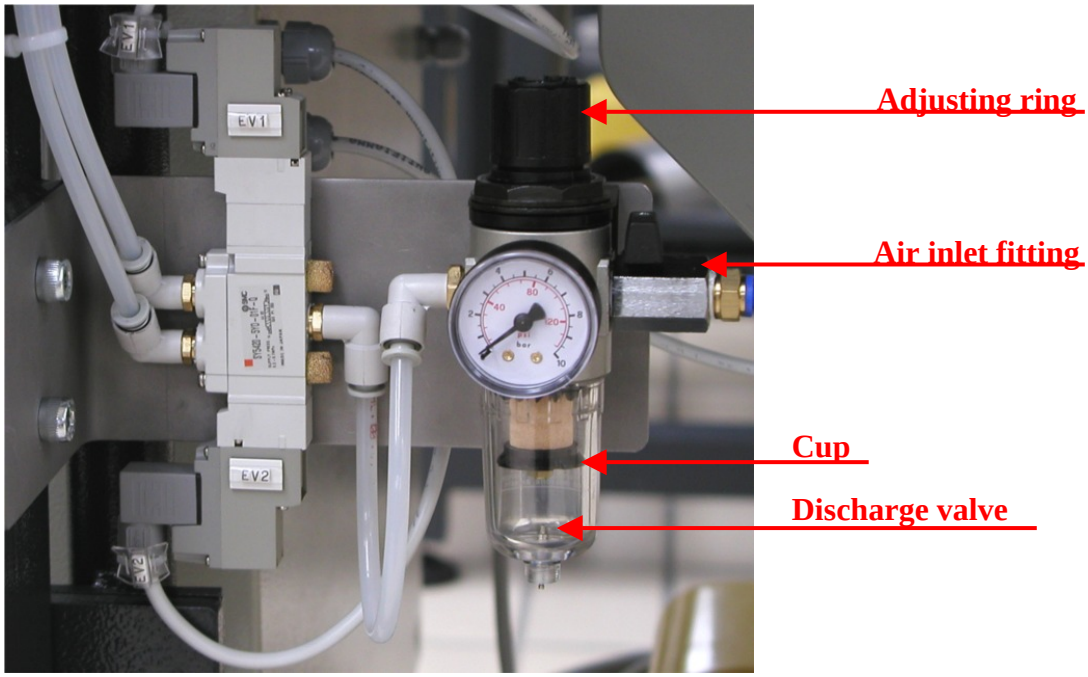
3.2) Pneumatic connection

The main electrical and pneumatic connections are on the rear 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**.

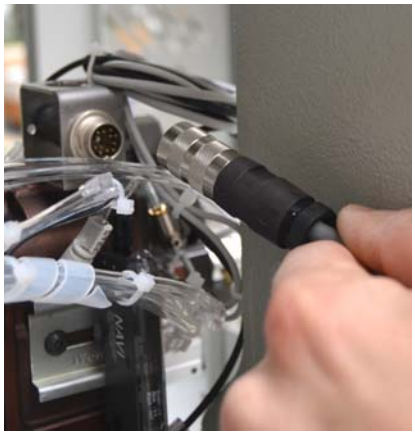


Connect the pneumatic supply to the corresponding fitting (diameter 6 mm, quick coupling for Rilsan tubes). Make sure that the output pressure from the filter/regulator unit is 6 bar (pressure gauge is calibrated Mpa 6 bar = 0.6 MPa). If output pressure from the unit needs to be adjusted, use the pressure adjusting ring: activate it in the clockwise direction to increase pressure or in the counter-clockwise direction to decrease it. Below is an image of the air regulation/filter unit. Periodically check the condensate cup, empty periodically as needed by pressing on the corresponding valve.



3.2.1) Pneumatic and electric applicator connection

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



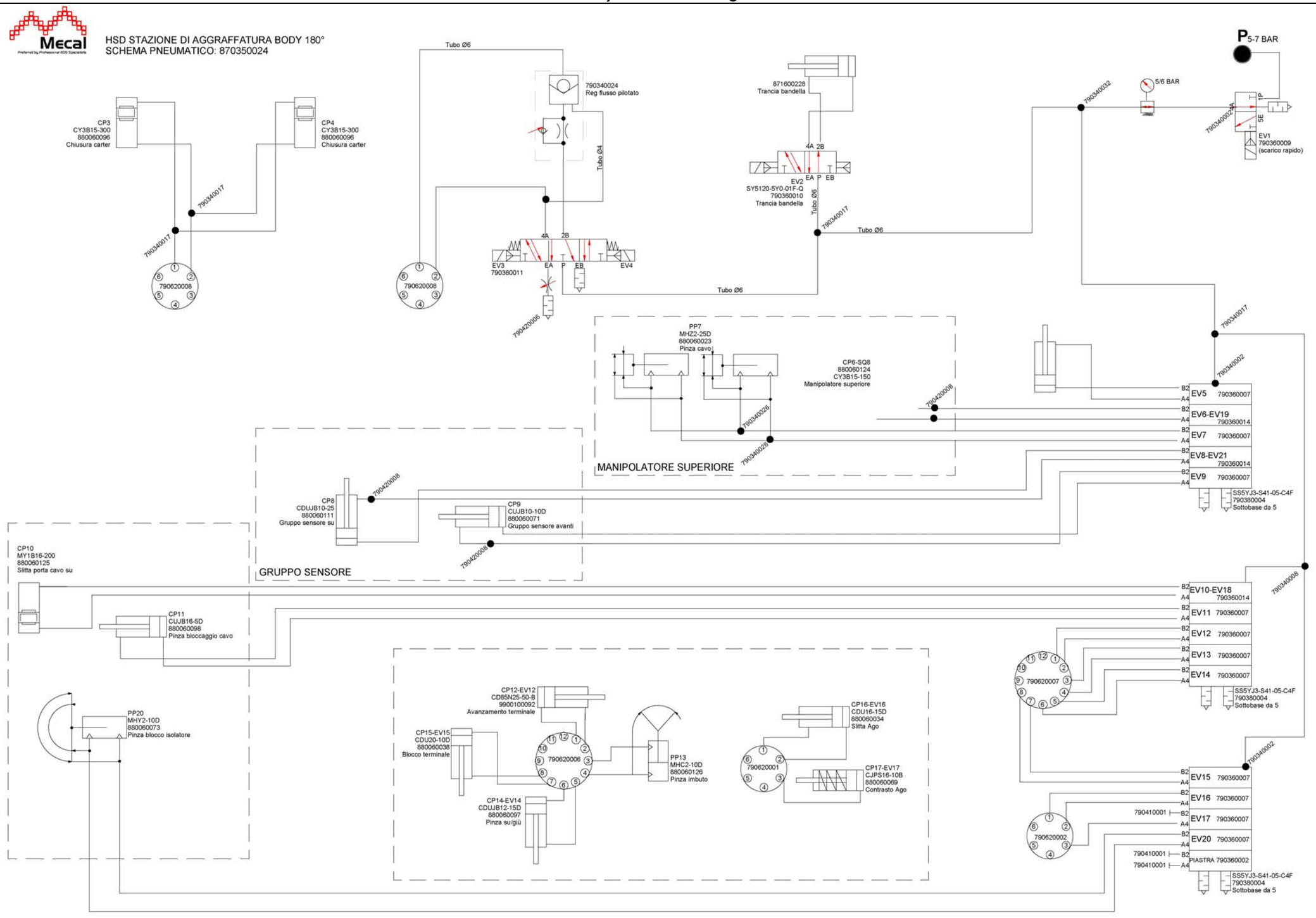
Connect the flying electric connector located on the machine with the panel connector positioned on the mini-applicator. Make sure that the locking ring is inserted and tightened.

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

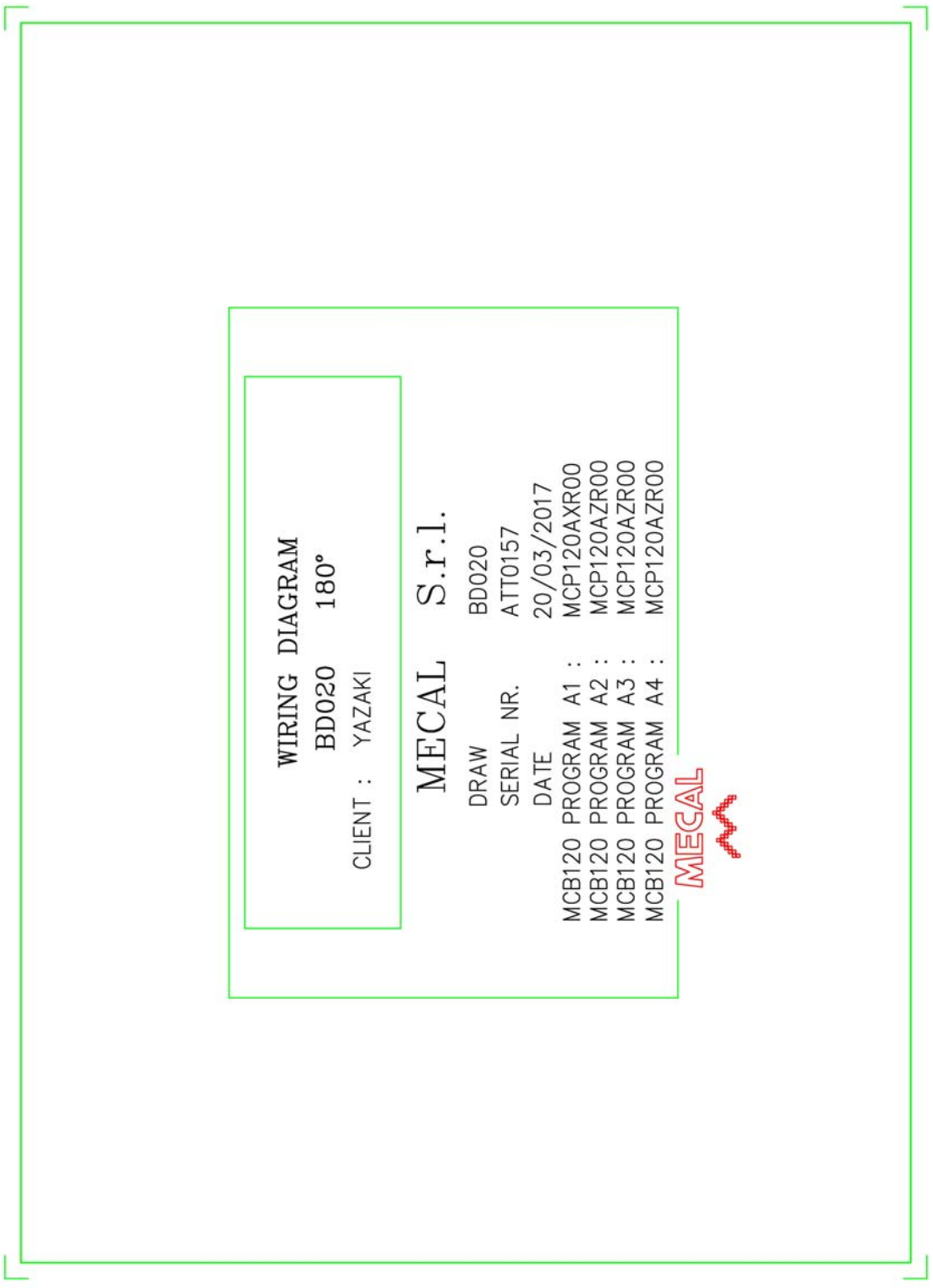
Standard pressure: 5-7 bar

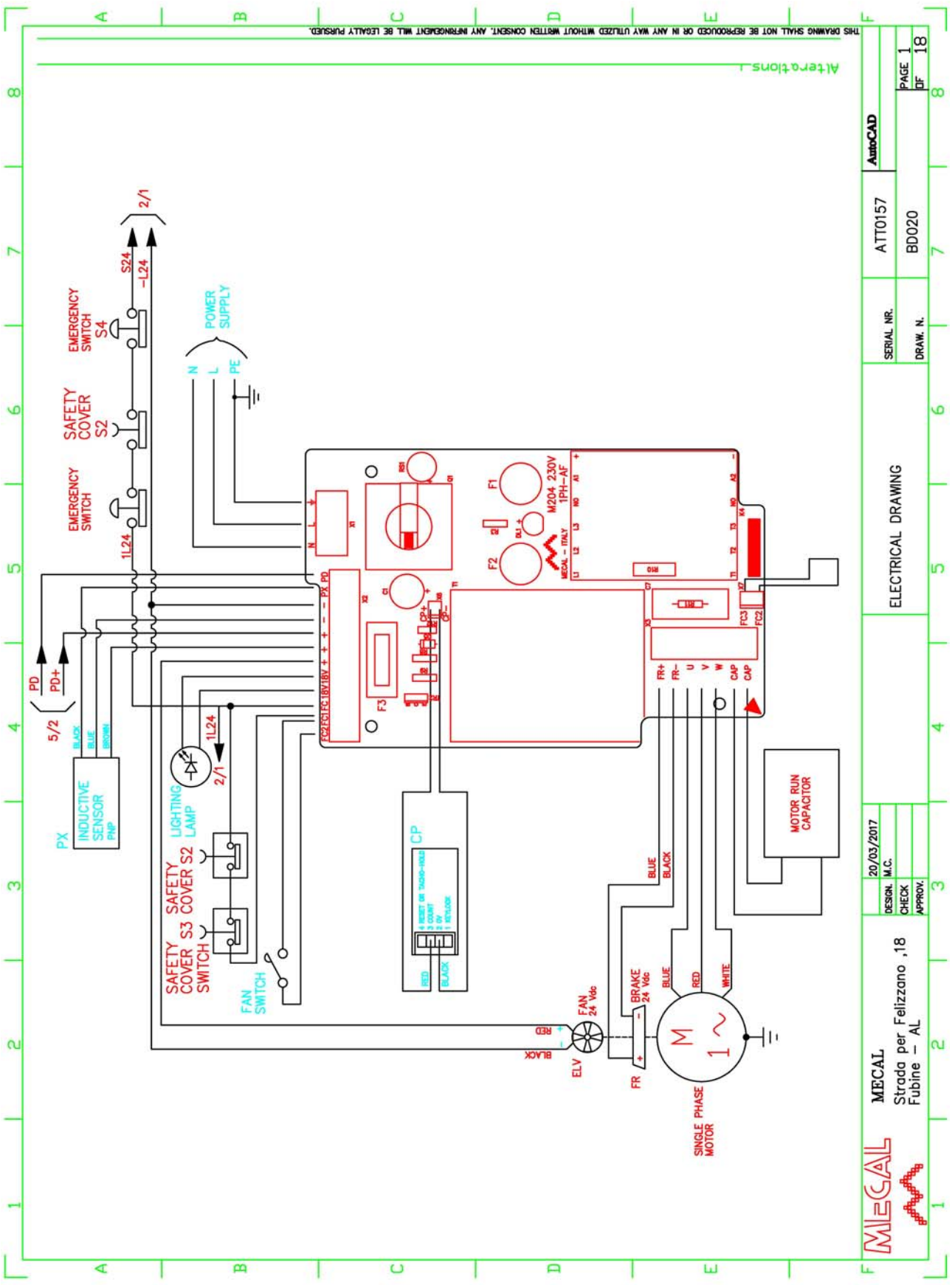
CAUTION: all connector connecting operations should be carried out with the press in emergency conditions, switched off and without air in the system.

3.3) Pneumatic diagram



3.4) Electrical diagram

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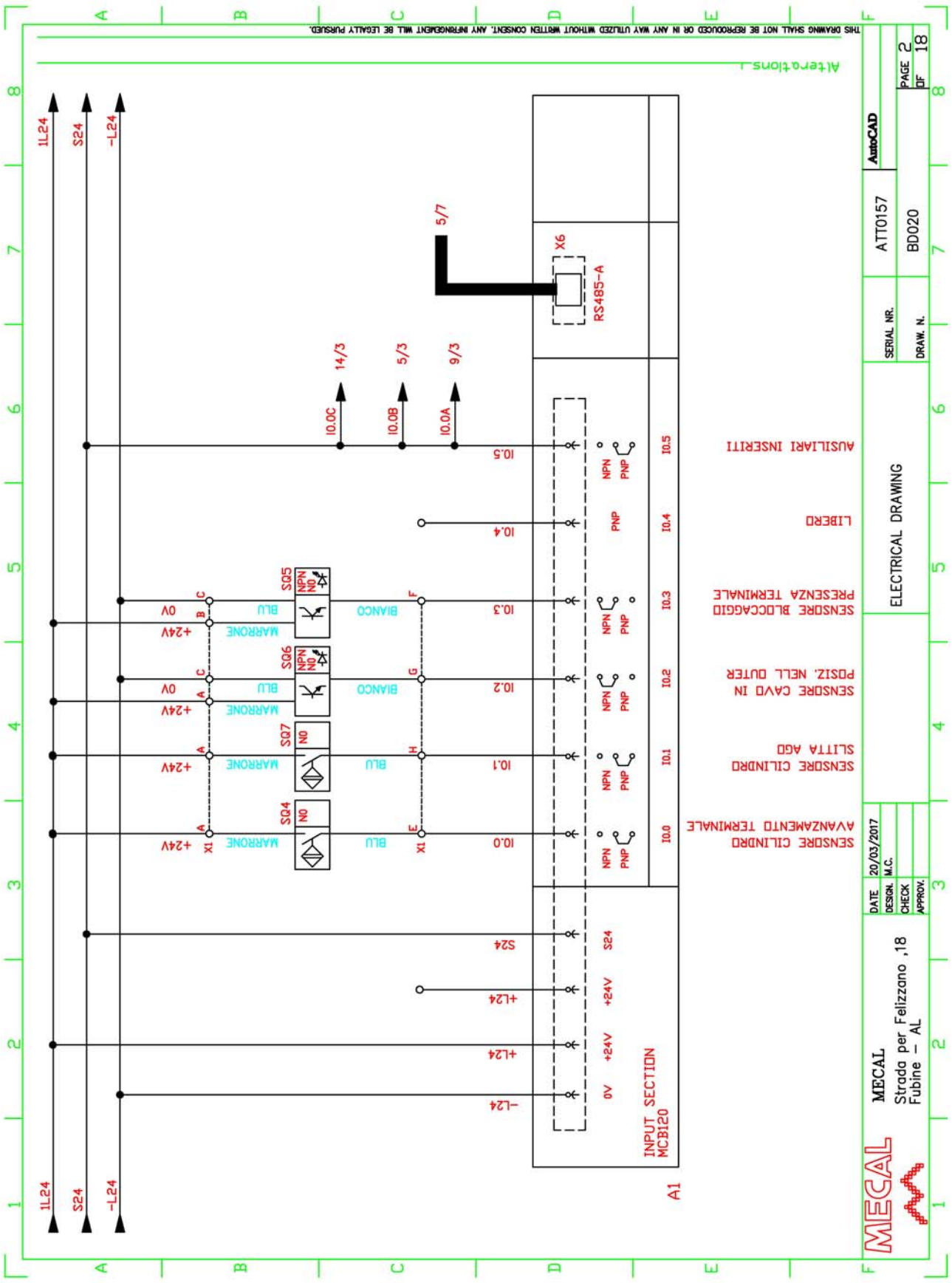
MECAL
Strada per Felizzano ,18
Fubine – AL
SINGLE PHASE MOTOR
MOTOR RUN CAPACITOR
INDUCTIVE SENSOR PNP
LIGHTING LAMP
SAFETY COVER S2
SAFETY COVER S3 SWITCH
FAN SWITCH
EMERGENCY SWITCH S4
SAFETY COVER S2
EMERGENCY SWITCH
POWER SUPPLY
BRAKE 24 Vdc
FAN 24 Vdc
M204 230V 1PH–AF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Alterations
1L24
S24
-L24
5/7
X6
RS485-A
14/3
5/3
9/3
I0.0C
I0.0B
I0.0A
I0.5
I0.4
I0.3
I0.2
I0.1
I0.0
AUSILIARI INSERITI
LIBERO
SENSORE BLOCCAGGIO PRESENZA TERMINALE
SENSORE CAVO IN POSIZ. NELL OUTER
SENSORE CILINDRO SLITTA AGO
SENSORE CILINDRO AVANZAMENTO TERMINALE
NPN
PNP
SQ5
SQ6
SQ7
SQ4
NPN NO
NO
BLU
BIANCO
MARRONE
0V
+24V
X1
S24
+L24
-L24
INPUT SECTION
MCB120
A1
ELECTRICAL DRAWING
AutoCAD
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SERIAL NR.
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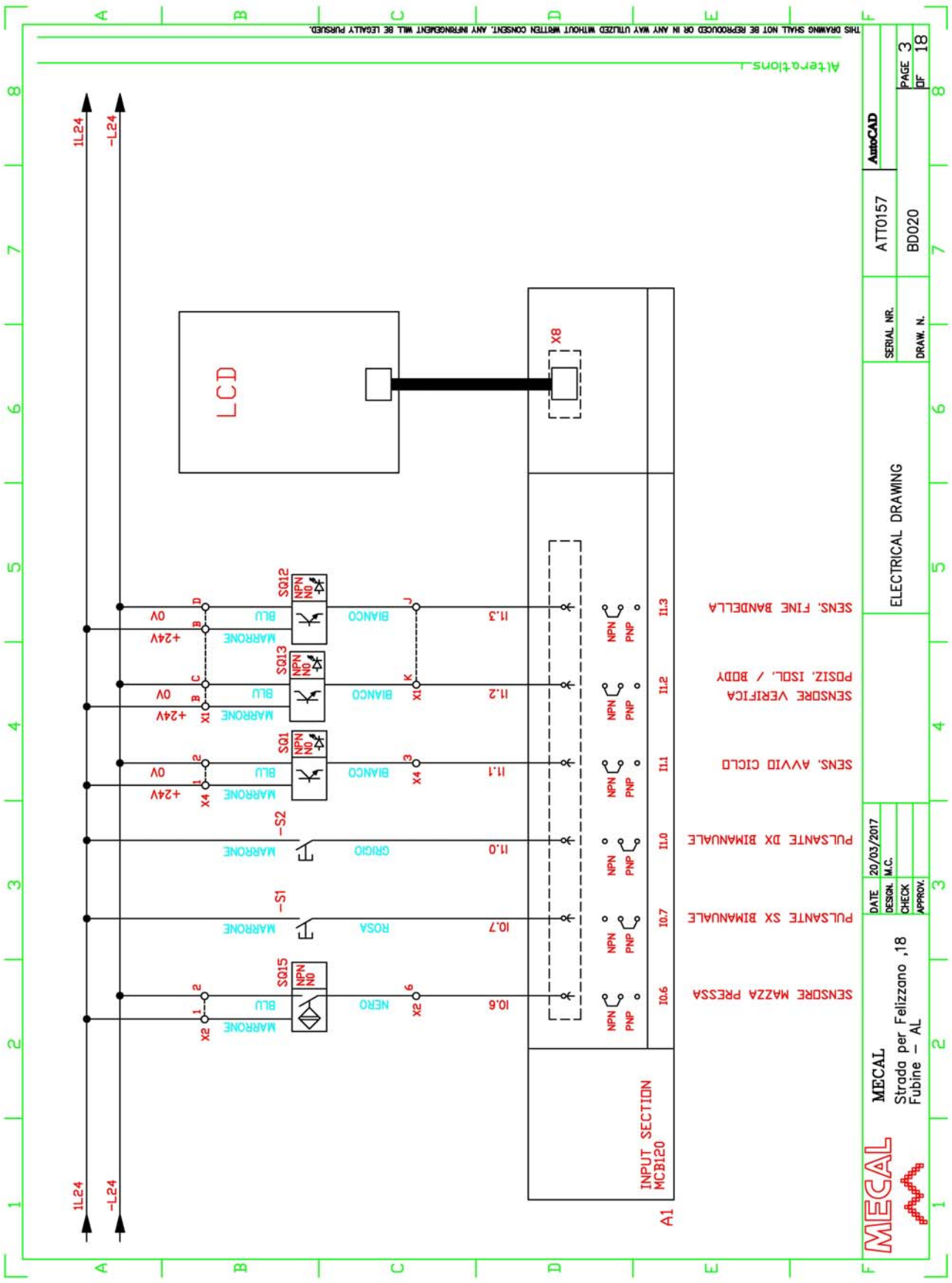
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LCD
X8
SQ12
SQ13
SQ1
SQ15
-S2
-S1
NPN NO
+24V
0V
MARRONE
BLU
BIANCO
GRIGIO
ROSA
NERO
I1.3
I1.2
I1.1
I1.0
I0.7
I0.6
NPN
PNP
I1.3
I1.2
I1.1
I1.0
I0.7
I0.6
SENS. FINE BANDELLA
SENSORE VERIFICA POSIZ. ISOL. / BODY
SENS. AVVIO CICLO
PULSANTE DX BIMANUALE
PULSANTE SX BIMANUALE
SENSORE MAZZA PRESSA
INPUT SECTION
MCB120
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ELECTRICAL DRAWING
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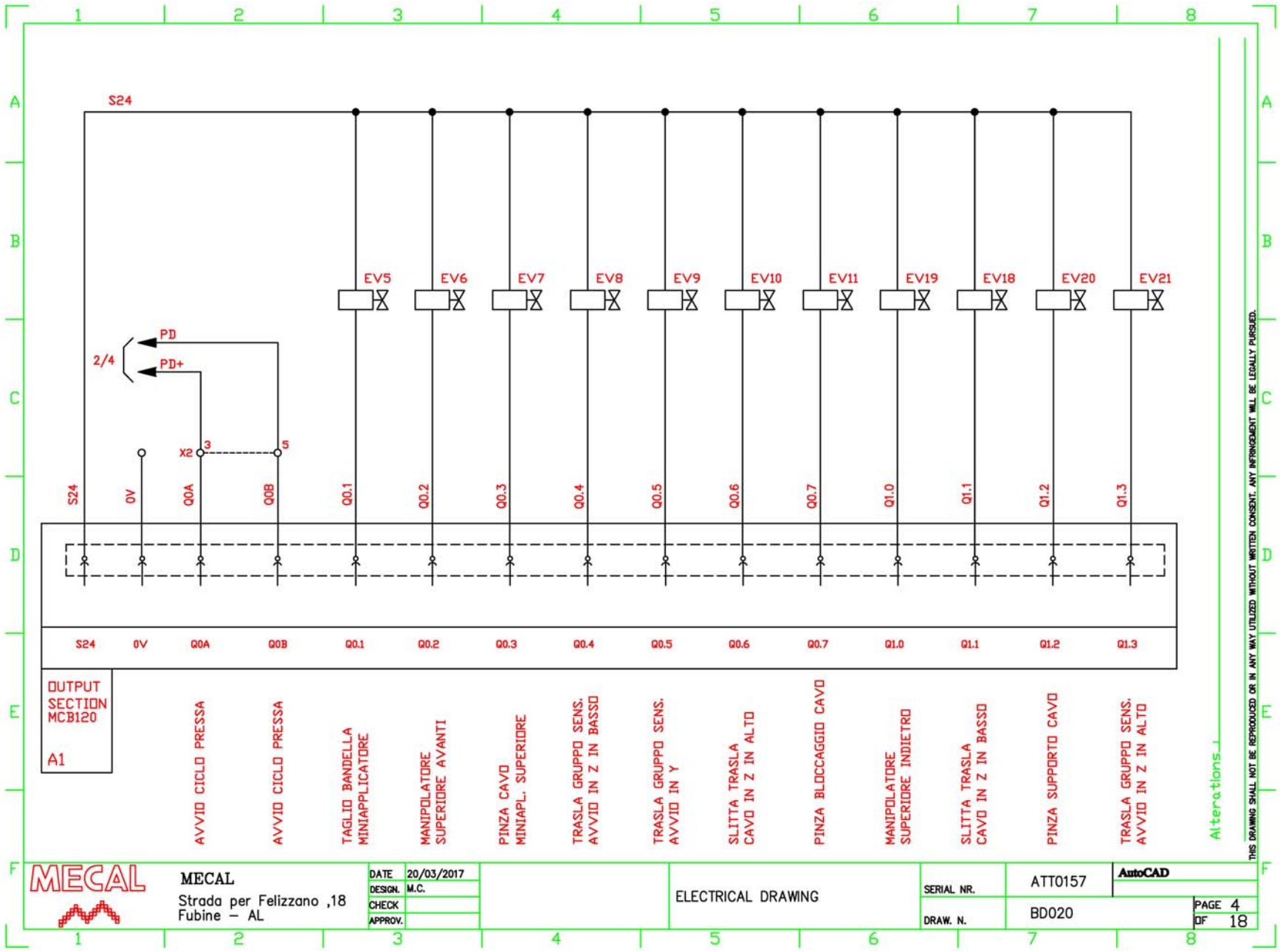
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EV5
EV6
EV7
EV8
EV9
EV10
EV11
EV19
EV18
EV20
EV21
PD
2/4
PD+
X2
3
5
S24
0V
Q0A
Q0B
Q0.1
Q0.2
Q0.3
Q0.4
Q0.5
Q0.6
Q0.7
Q1.0
Q1.1
Q1.2
Q1.3
OUTPUT SECTION MCB120
A1
AVVIO CICLO PRESSA
AVVIO CICLO PRESSA
TAGLIO BANDELLA MINIAPPLICATORE
MANIPOLATORE SUPERIORE AVANTI
PINZA CAVO MINIAPL. SUPERIORE
TRASLA GRUPPO SENS. AVVIO IN Z IN BASSO
TRASLA GRUPPO SENS. AVVIO IN Y
SLITTA TRASLA CAVO IN Z IN ALTO
PINZA BLOCCAGGIO CAVO
MANIPOLATORE SUPERIORE INDIETRO
SLITTA TRASLA CAVO IN Z IN BASSO
PINZA SUPPORTO CAVO
TRASLA GRUPPO SENS. AVVIO IN Z IN ALTO
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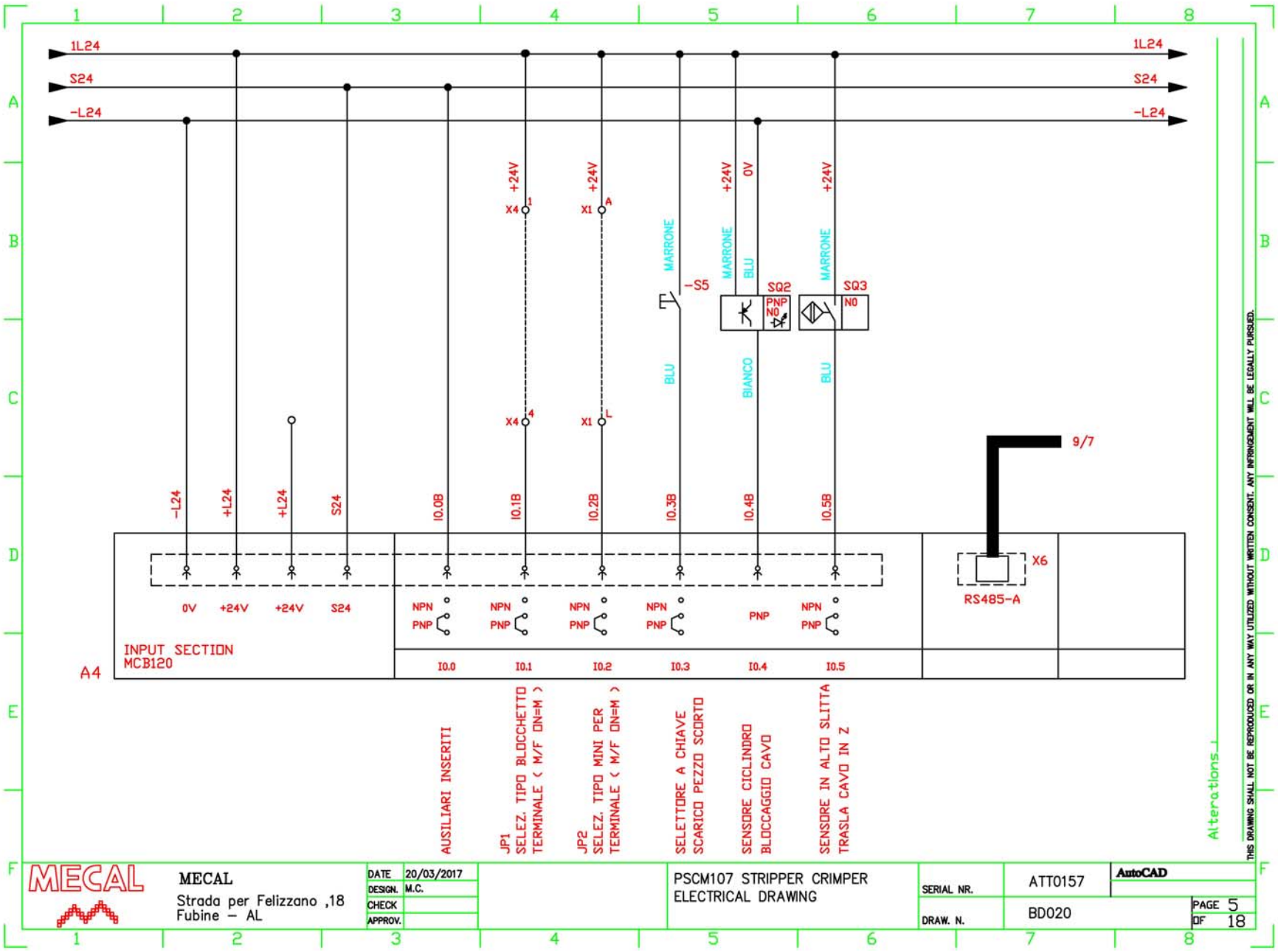
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S24
-L24
+24V
0V
MARRONE
BLU
BIANCO
-S5
SQ2
SQ3
PNP
NO
X4
X1
9/7
X6
RS485-A
-L24
+L24
+L24
S24
I0.0B
I0.1B
I0.2B
I0.3B
I0.4B
I0.5B
0V
+24V
+24V
S24
NPN
PNP
INPUT SECTION
MCB120
A4
I0.0
I0.1
I0.2
I0.3
I0.4
I0.5
AUSILIARI INSERITI
JP1
SELEZ. TIPO BLOCCHETTO
TERMINALE (M/F ON=M)
JP2
SELEZ. TIPO MINI PER
TERMINALE (M/F ON=M)
SELETTORE A CHIAVE
SCARICO PEZZO SCORTO
SENSORE CICLINDRO
BLOCCAGGIO CAVO
SENSORE IN ALTO SLITTA
TRASLA CAVO IN Z
Alterations
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Strada per Felizzano ,18
Fubine – AL
DATE 20/03/2017
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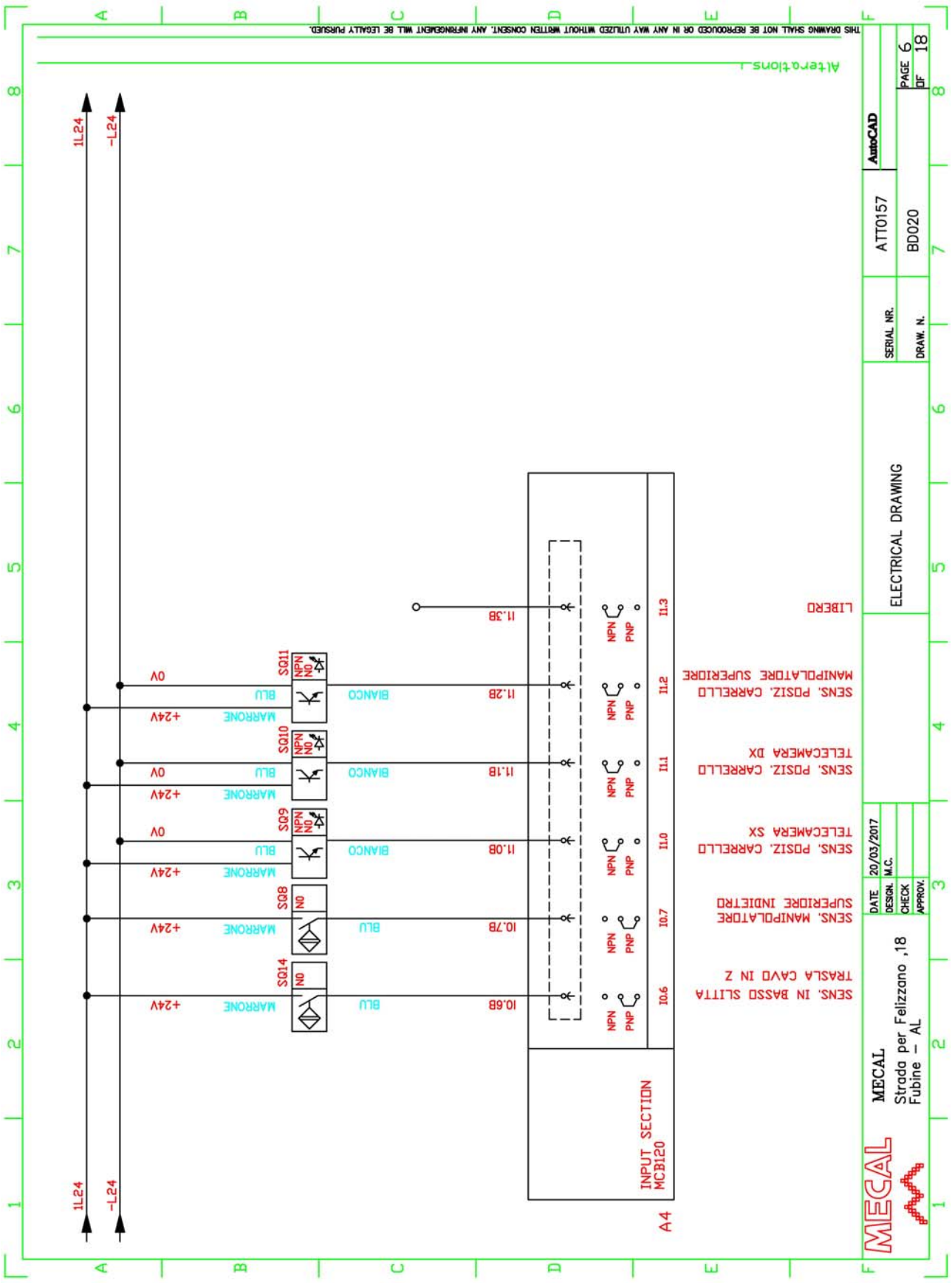
THIS DRAWING SHALL NOT BE REPRODUCED OR IN ANY WAY UTILIZED WITHOUT WRITTEN CONSENT. ANY INFRINGEMENT WILL BE LEGALLY PURSUED.
Alterations
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-L24
SQ11
SQ10
SQ9
SQ8
SQ14
NPN NO
NO
0V
+24V
MARRONE
BLU
BIANCO
I1.3B
I1.2B
I1.1B
I1.0B
I0.7B
I0.6B
NPN
PNP
I1.3
I1.2
I1.1
I1.0
I0.7
I0.6
LIBERO
SENS. POSIZ. CARRELLO MANIPOLATORE SUPERIORE
SENS. POSIZ. CARRELLO TELECAMERA DX
SENS. POSIZ. CARRELLO TELECAMERA SX
SENS. MANIPOLATORE SUPERIORE INDIETRO
SENS. IN BASSO SLITTA TRASLA CAVO IN Z
INPUT SECTION
MCB120
A4
ELECTRICAL DRAWING
SERIAL NR.
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BD020
AutoCAD
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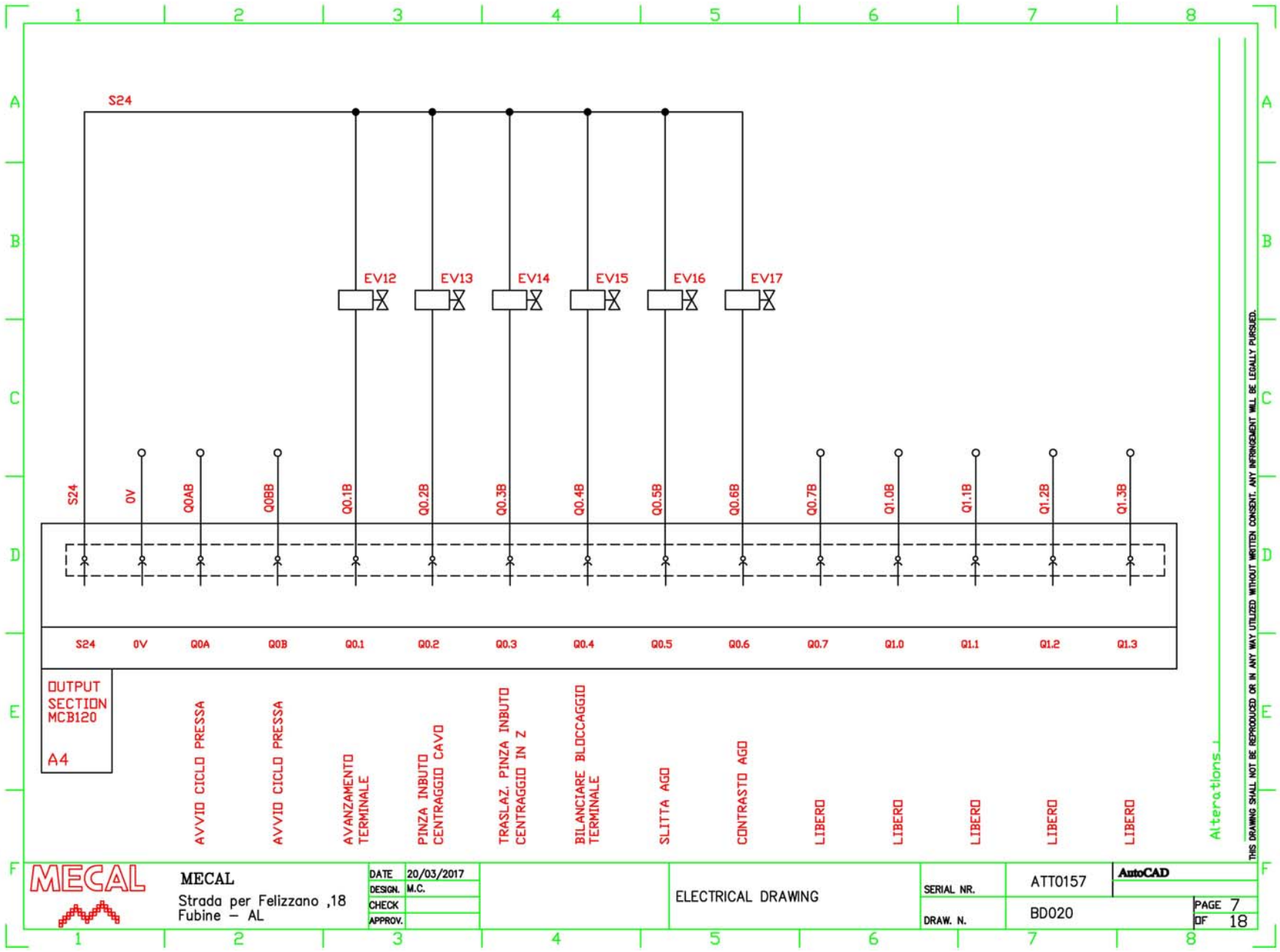
S24
EV12
EV13
EV14
EV15
EV16
EV17
S24
0V
Q0AB
Q0BB
Q0.1B
Q0.2B
Q0.3B
Q0.4B
Q0.5B
Q0.6B
Q0.7B
Q1.0B
Q1.1B
Q1.2B
Q1.3B
S24
0V
Q0A
Q0B
Q0.1
Q0.2
Q0.3
Q0.4
Q0.5
Q0.6
Q0.7
Q1.0
Q1.1
Q1.2
Q1.3
OUTPUT SECTION MCB120
A4
AVVIO CICLO PRESSA
AVVIO CICLO PRESSA
AVANZAMENTO TERMINALE
PINZA INBUTO CENTRAGGIO CAVO
TRASLAZ. PINZA INBUTO CENTRAGGIO IN Z
BILANCIARE BLOCCAGGIO TERMINALE
SLITTA AGO
CONTRASTO AGO
LIBERO
LIBERO
LIBERO
LIBERO
LIBERO
Alterations
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MECAL
Strada per Felizzano ,18
Fubine – AL
DATE 20/03/2017
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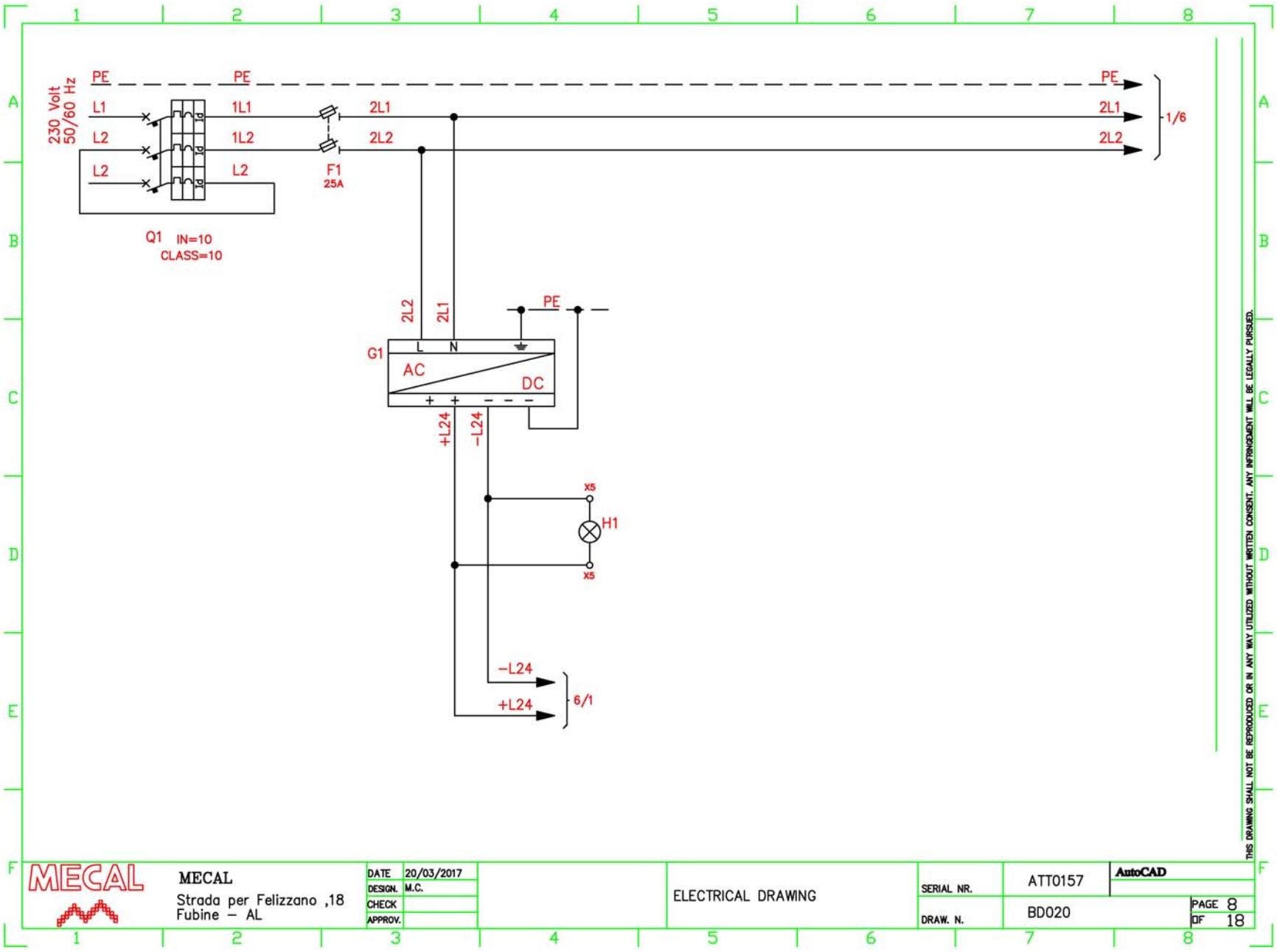

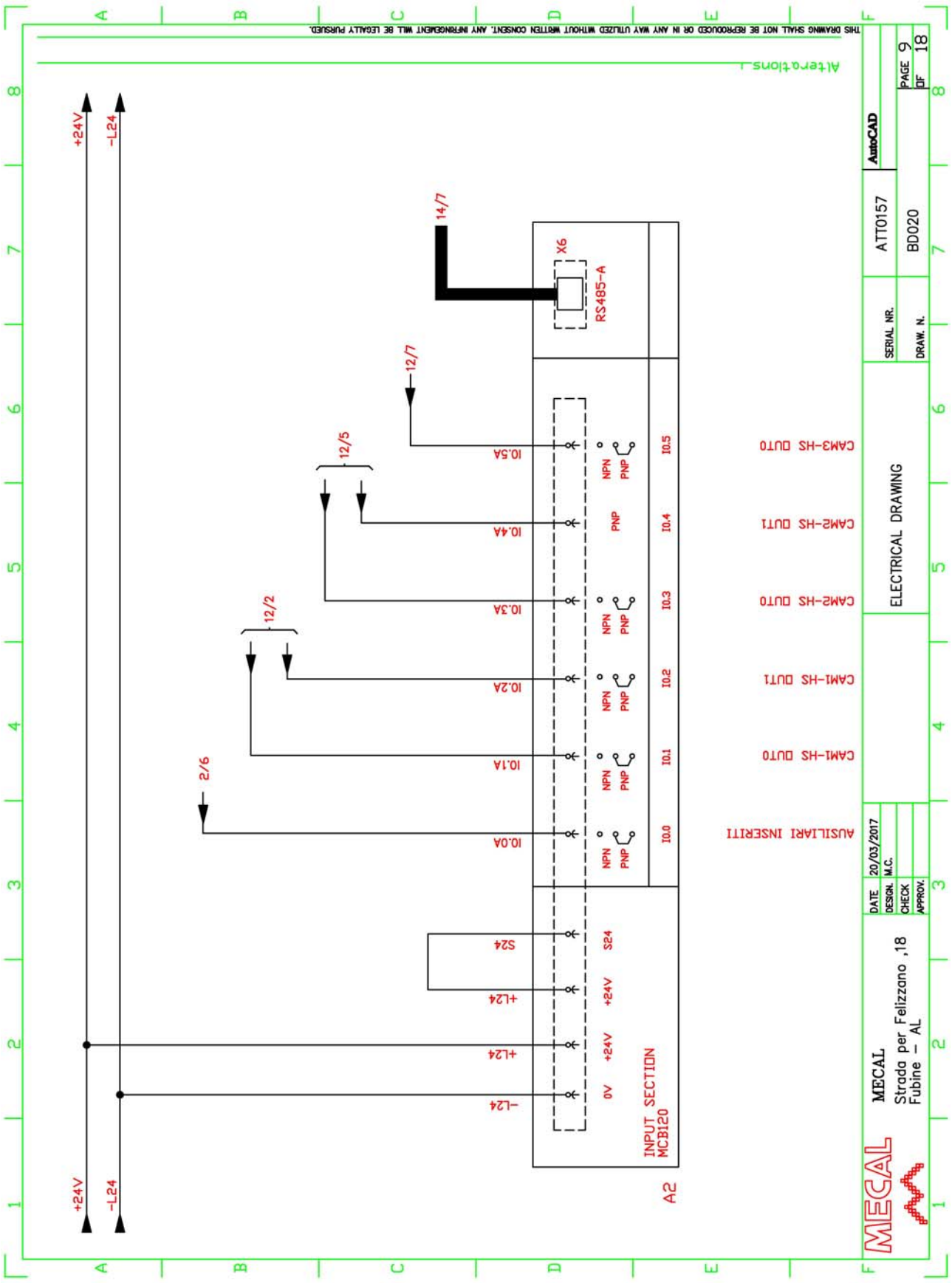
+24V
-L24
14/7
X6
RS485-A
12/7
12/5
12/2
2/6
10.5A
10.4A
10.3A
10.2A
10.1A
10.0A
NPN
PNP
I0.5
I0.4
I0.3
I0.2
I0.1
I0.0
CAM3-HS OUT0
CAM2-HS OUT1
CAM2-HS OUT0
CAM1-HS OUT1
CAM1-HS OUT0
AUSILIARI INSERITI
S24
+L24
0V
INPUT SECTION
MCB120
A2
ELECTRICAL DRAWING
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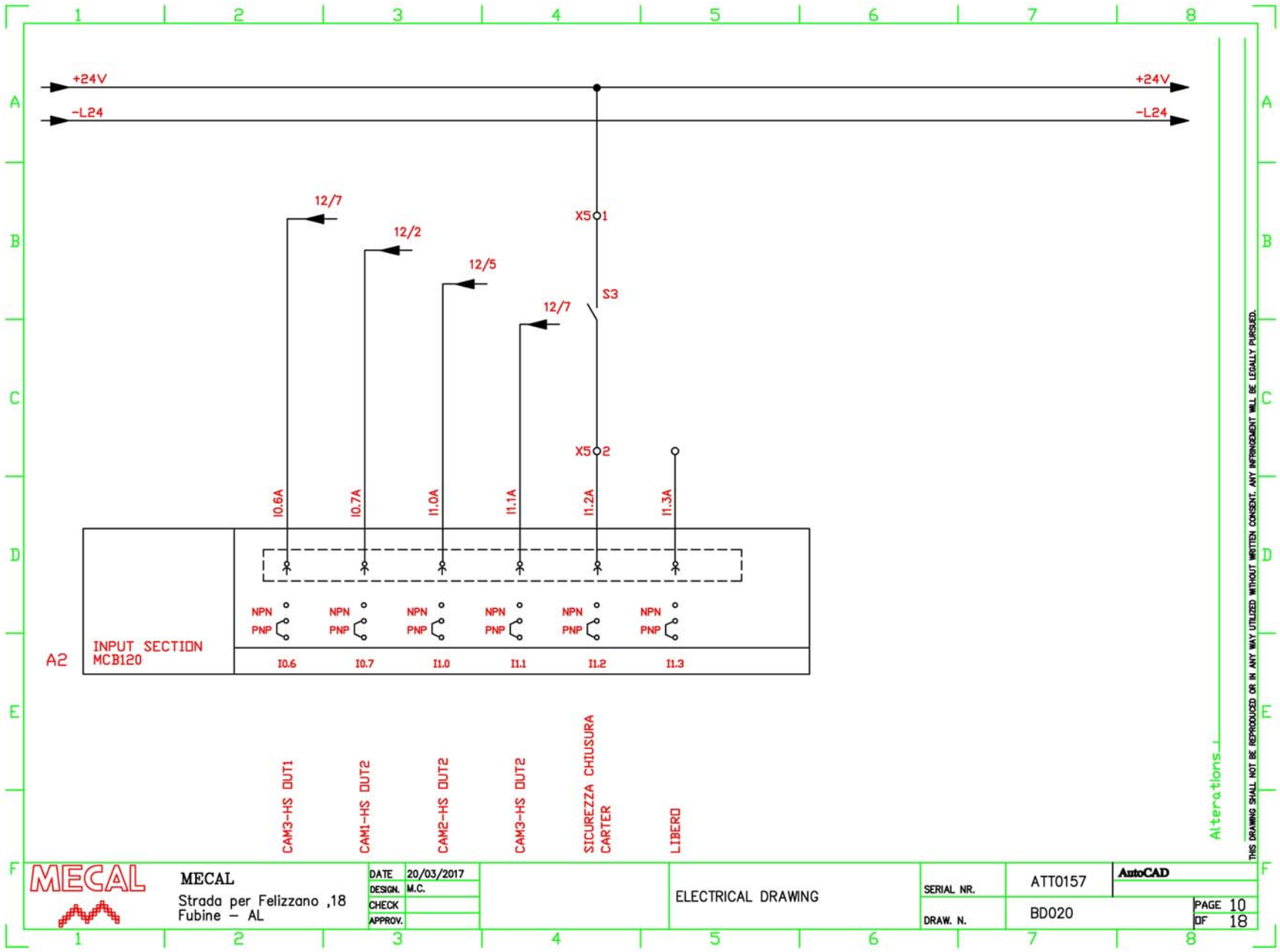
+24V
-L24
+24V
-L24
12/7
12/2
12/5
12/7
X5 1
S3
X5 2
I0.6A
I0.7A
I1.0A
I1.1A
I1.2A
I1.3A
NPN
PNP
A2
INPUT SECTION
MCB120
I0.6
I0.7
I1.0
I1.1
I1.2
I1.3
CAM3-HS OUT1
CAM1-HS OUT2
CAM2-HS OUT2
CAM3-HS OUT2
SICUREZZA CHIUSURA CARTER
LIBERO
Alterations
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Alterations
+24V
-L24
K1
EV1
EV2
EV3
EV4
21
22
24
9/7
9/4
9/2
Q1.3A
Q1.2A
Q1.1A
Q1.0A
Q0.7A
Q0.6A
Q0.5A
Q0.4A
Q0.3A
Q0.2A
Q0.1A
Q0BA
Q0AA
0V
S24
Q1.3
Q1.2
Q1.1
Q1.0
Q0.7
Q0.6
Q0.5
Q0.4
Q0.3
Q0.2
Q0.1
Q0B
Q0A
0V
S24
CAM3-IN2 (JOB LOAD SWITCH)
CAM2-IN2 (JOB LOAD SWITCH)
CAM1-IN2 (JOB LOAD SWITCH)
RELE COMANDO APERTURA CHIUSURA CARTER
TRANCIA BANDELLA
CAM3-IN1 (JOB ID NUMBER)
CAM3-TRIGGER
CAM2-IN1 (JOB ID NUMBER)
CAM2-TRIGGER
CAM1-IN1 (JOB ID NUMBER)
CAM1-TRIGGER
SCARICO RAPIDO ARIA
CHIUSURA CARTER
APERTURA CARTER
OUTPUT SECTION MCB120
A2
MECAL
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Alterations
LIGHT 3
LIGHT CONNECTOR
CAM 3
POWER CONNECTOR
HS OUT 3
HS OUT 2
HS OUT 1
HS OUT 0
IN3
IN2
IN1
TRIGGER
OUTPUT COMMON
INPUT COMMON
GROUND
+24VDC
ETHERNET CONNECTOR
RED
BLACK
GREEN
WHITE/VIOLET
ORANGE
VIOLET
YELLOW
BLUE
GREY
BROWN
WHITE/BROWN
WHITE/YELLOW
FROM ETHERNET SWITCH
LIGHT 2
LIGHT 1
CAM 2
CAM 1
+24V
-L24
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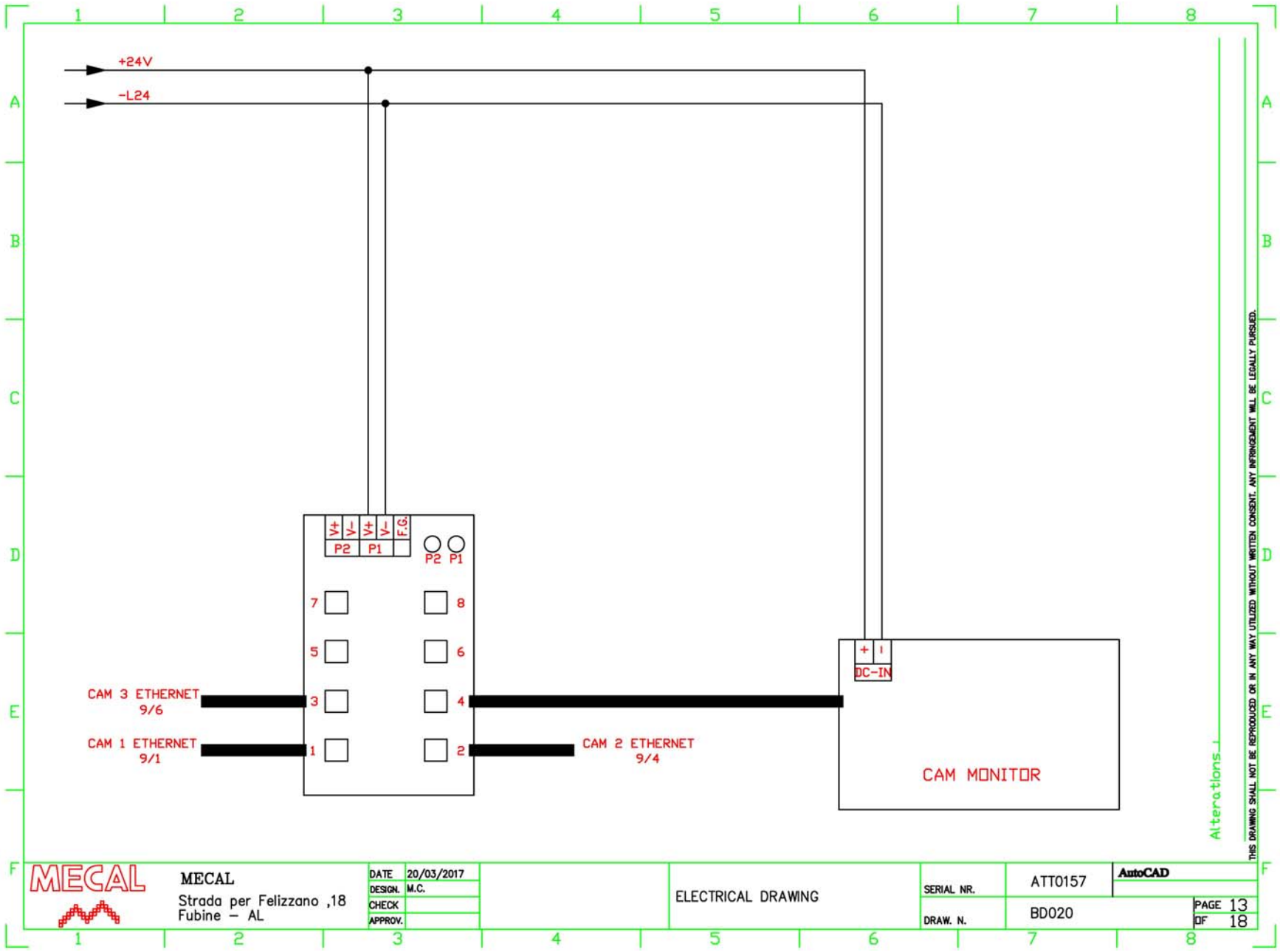
+24V
-L24
V+
V-
V+
V-
F.G.
P2
P1
P2 P1
7
8
5
6
3
4
1
2
CAM 3 ETHERNET
9/6
CAM 1 ETHERNET
9/1
CAM 2 ETHERNET
9/4
+
-
DC-IN
CAM MONITOR
Alterations
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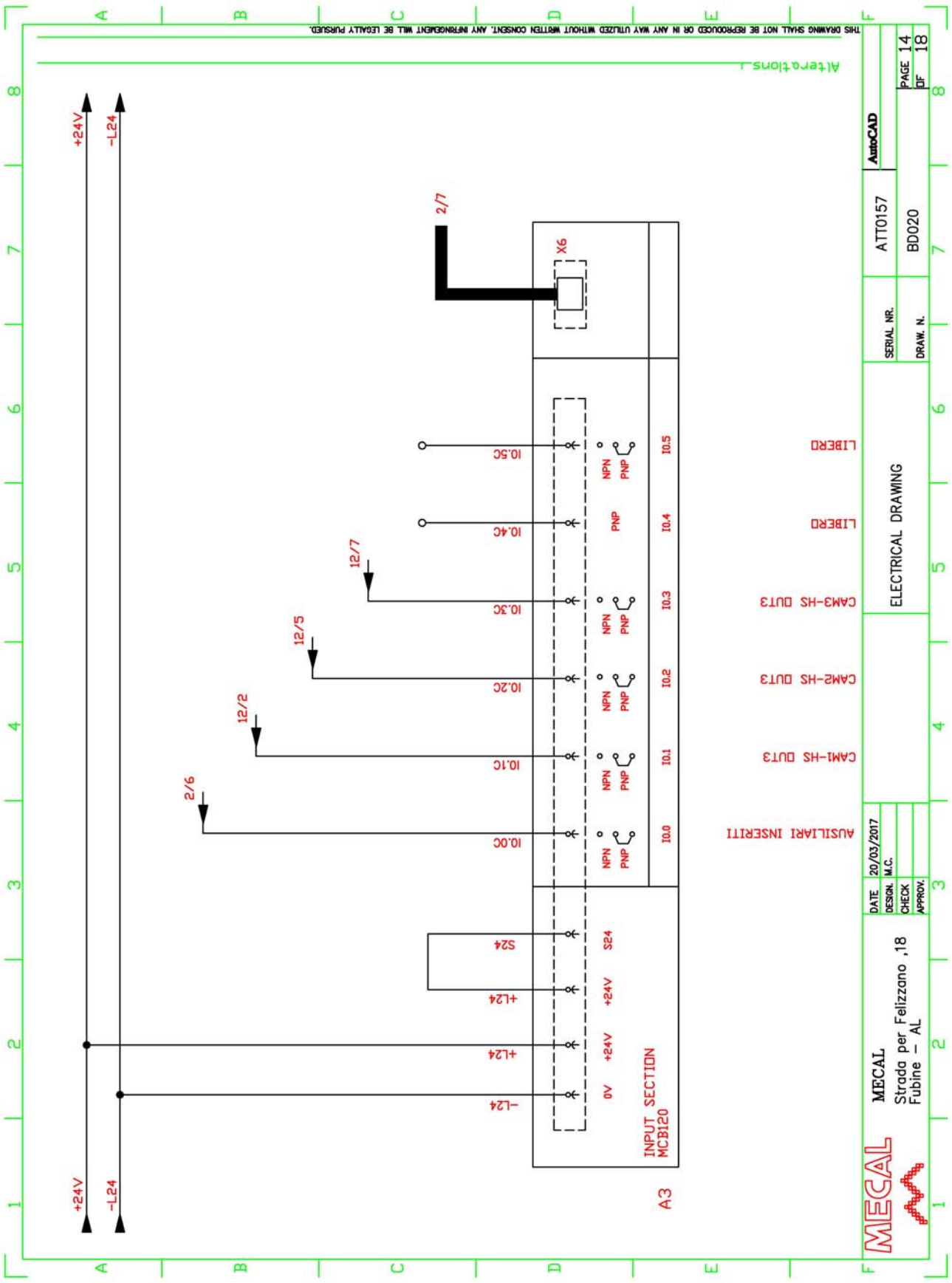
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Alterations
+24V
-L24
2/7
X6
10.5C
10.4C
12/7
10.3C
12/5
10.2C
12/2
10.1C
2/6
10.0C
NPN
PNP
I0.5
I0.4
I0.3
I0.2
I0.1
I0.0
LIBERO
LIBERO
CAM3-HS OUT3
CAM2-HS OUT3
CAM1-HS OUT3
AUSILIARI INSERITI
S24
+L24
+L24
-L24
0V
+24V
+24V
S24
INPUT SECTION
MCB120
A3
MECAL
Strada per Felizzano ,18
Fubine – AL
DATE
DESIGN.
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ELECTRICAL DRAWING
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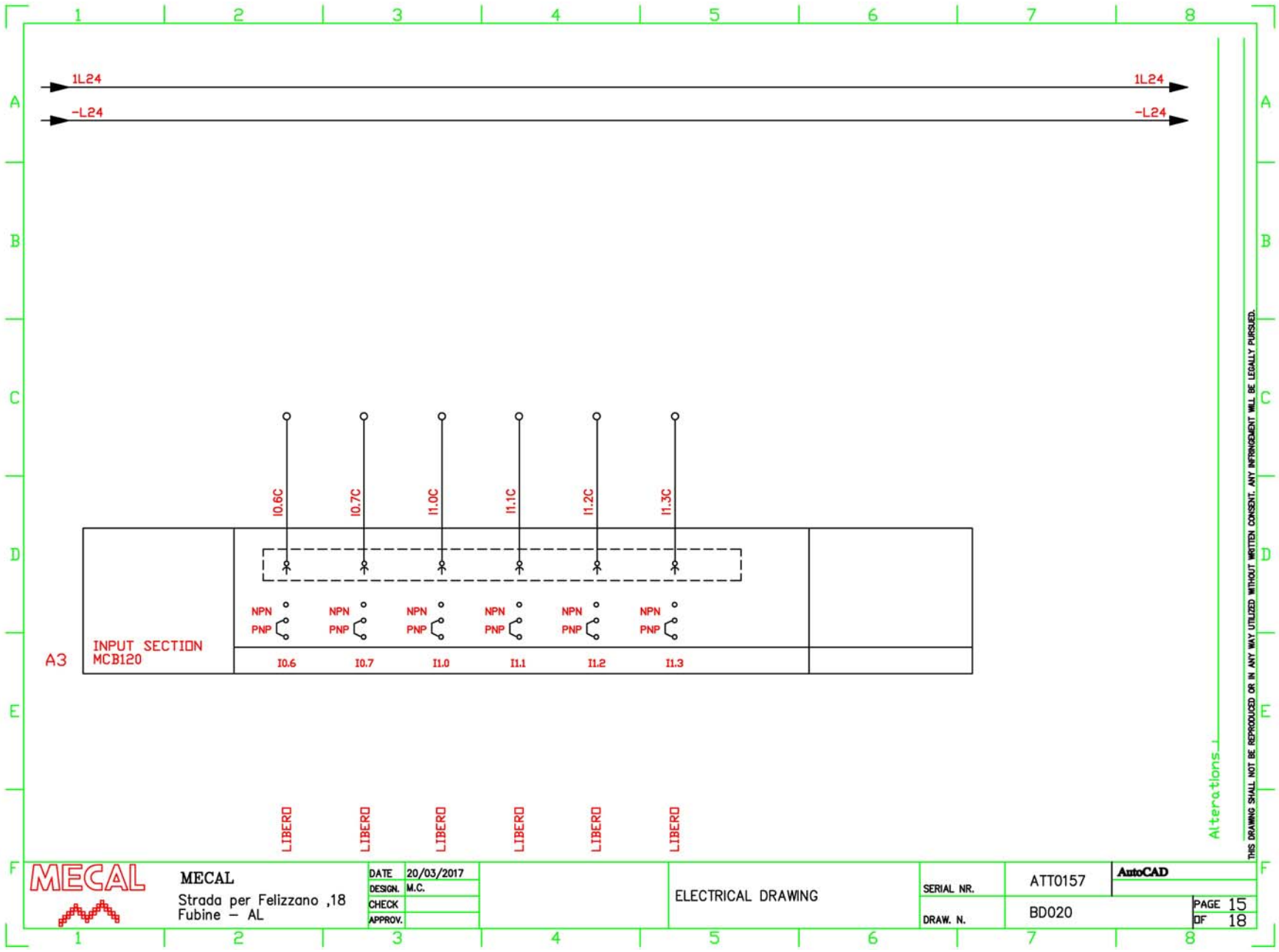
1L24
-L24
1L24
-L24
I0.6C
I0.7C
I1.0C
I1.1C
I1.2C
I1.3C
NPN
PNP
A3
INPUT SECTION
MCB120
I0.6
I0.7
I1.0
I1.1
I1.2
I1.3
LIBERO
Alterations
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Alterations
AutoCAD
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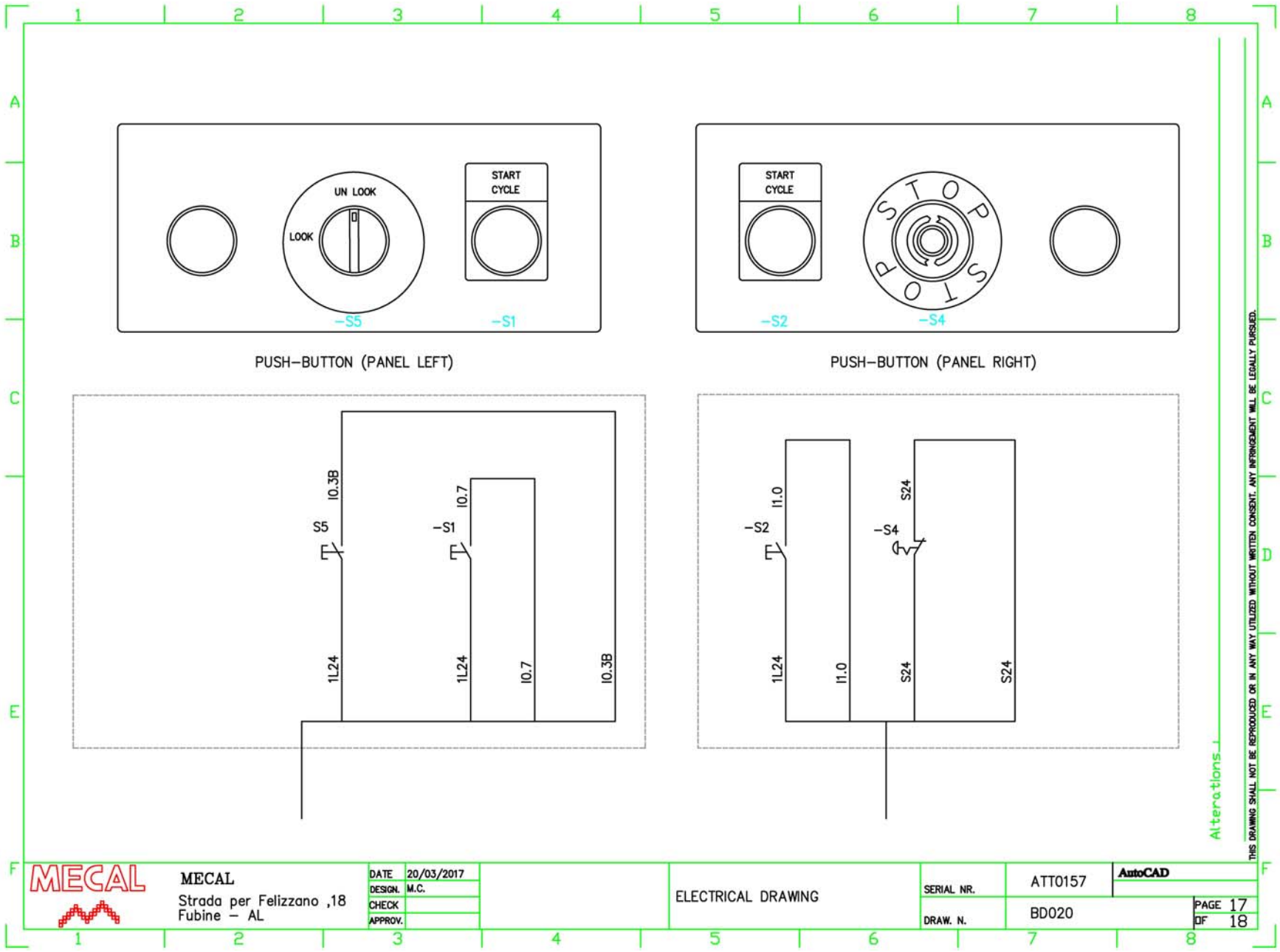
MECAL
Strada per Felizzano ,18
Fubine – AL
OUTPUT SECTION MCB120
A3
S24
0V
Q0A
Q0B
Q0.1
Q0.2
Q0.3
Q0.4
Q0.5
Q0.6
Q0.7
Q1.0
Q1.1
Q1.2
Q1.3
LIBERO
CAM1 - ONLINE SWITCH
CAM2 - ONLINE SWITCH
CAM3 - ONLINE SWITCH
12/2
12/4
12/7
Q0.1C
Q0BC
Q0AC
0V
S24
Q0.2C
Q0.3C
Q0.4C
Q0.5C
Q0.6C
Q0.7C
Q1.0C
Q1.1C
Q1.2C
Q1.3C


UN LOOK
LOOK
START CYCLE
-S5
-S1
START CYCLE
STOP
-S2
-S4
PUSH-BUTTON (PANEL LEFT)
PUSH-BUTTON (PANEL RIGHT)
10.3B
10.7
S5
-S1
1L24
1L24
10.7
10.3B
I1.0
S24
-S2
-S4
1L24
I1.0
S24
S24
Alterations
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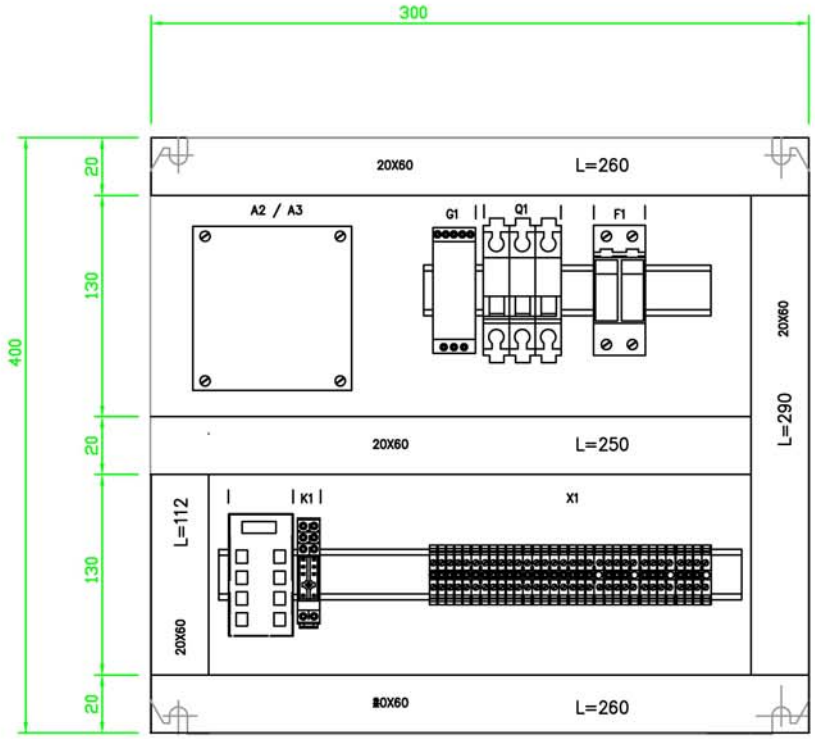

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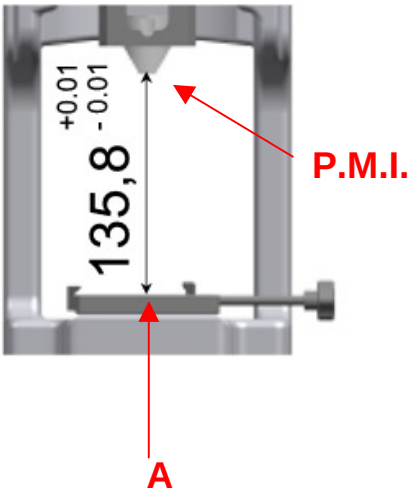
3.5) Press crimping height setting

Strumento di taratura Pressa STP



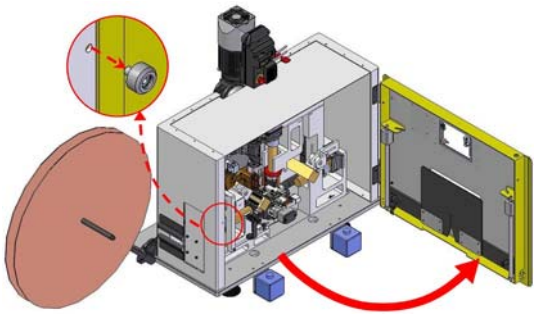
Press crimping height setting is very important for correct operation. Clean the baseplate surfaces "**A"**, guaranteeing a good support surface between the base of the press and that of the mini-applicator. Use the corresponding STP Crimping height instrument to verify the correct working height which must be BDC 135.8mm (±0.01mm).

Note: MECAL supplies machines pre-tested and calibrated. Check the supplied P107 instruction manual.

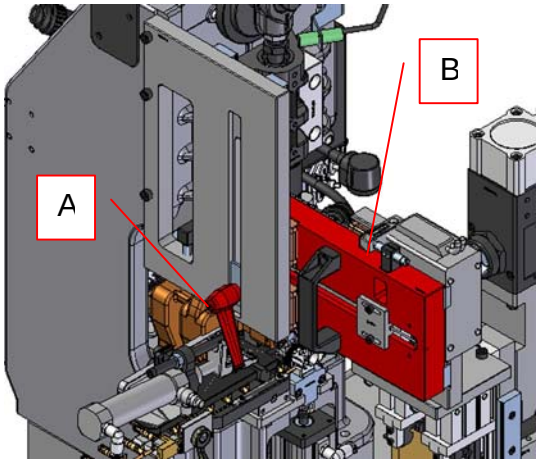
3.6) Magnum mini-applicator installation

CAUTION: before installing the mini-applicator, make sure the mini-applicator is properly adjusted and that the equipment is set up as follows.

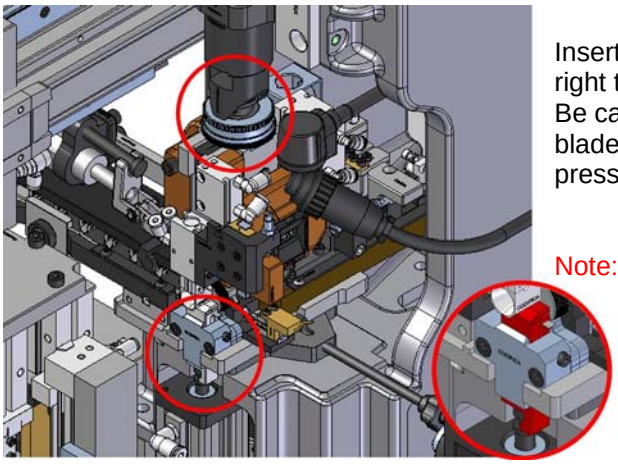
3.6.1) Arrangement for applicator installation/uninstallation



Open the fixed casing by unscrewing the bush with a size 5 hex wrench.

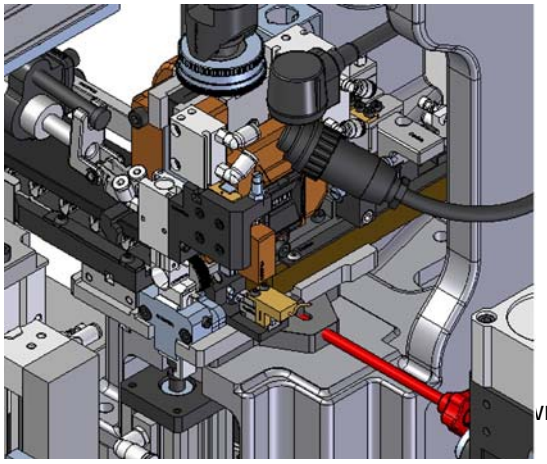


Loosen the knob “A” .
Move the manipulator “B” upward.



Insert the magnum, bringing it to position and moving it from right to left.
Be careful to insert the cylinder connection inside the floating blade and the adjusting ring in the "T" connection on the press.

Note: Do not bump into the cameras.



Fasten the base of the applicator to the base of the press, screwing the rod into the base.
Connect the pneumatic and electrical connections as described in Chapt. 3.2, insert the terminal as described in Chapt. 3.6 and adjust the magnum adjusting ring with the values contained on the plate Chapt. 5.3.
Reset the machine, re-lowering the manipulator.

wn in the figure. Make sure that no tubes are crushed,

Uninstall the magnum according to the same previously described procedure.

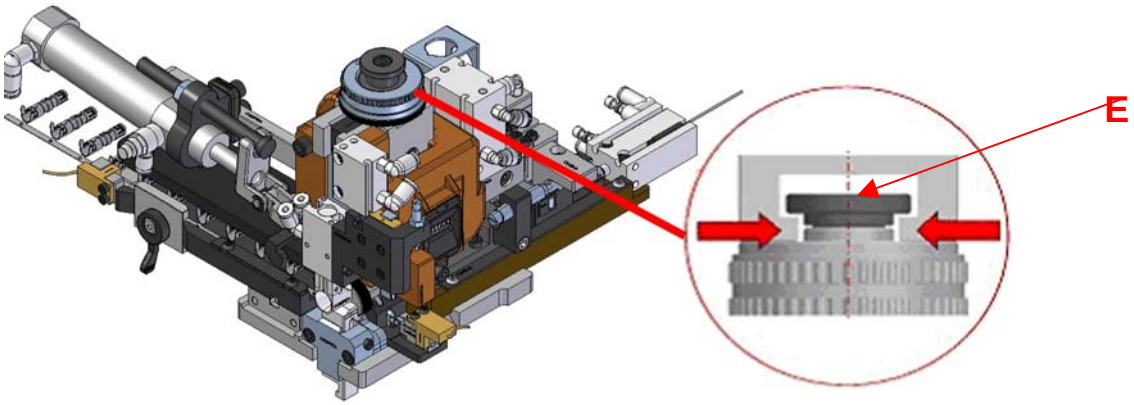
Before removing the magnum, be careful to verify that you have removed the terminal and disconnected the pneumatic and electrical system.
Do not bump into the video cameras and illuminators.

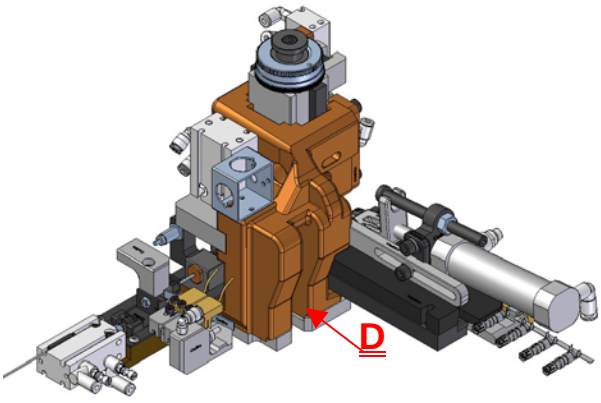
3.6.2) Magnum applicator settings

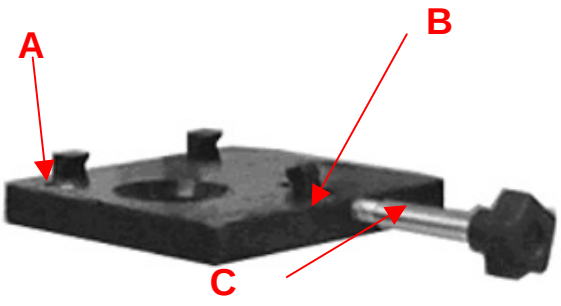
Before installing the applicator on the press, it is important to verify that the applicator has been correctly adjusted. (see Chapt.5.1, 5.2 and 5.3)

3.6.3) Applicator fastening

- The Magnum applicator is packaged with a rubber protection set between the wire crimper and the anvil to prevent damage of said parts. Remove the protection upon installation.
- Position the tool at the fixing base **A** of the press, align the base **D** of the Magnum with the pawl **B** and screw in the tightening knob **C**.
- Make sure that closing occurs in the correct manner, checking that the tool perfectly adheres to the fixing base **A**.
- The pin **E** on the applicator must be centred with the "T" shank on the press.



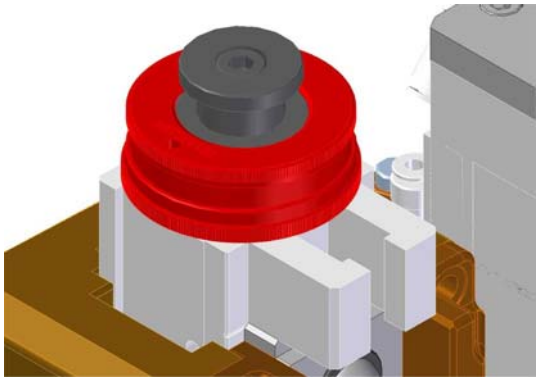




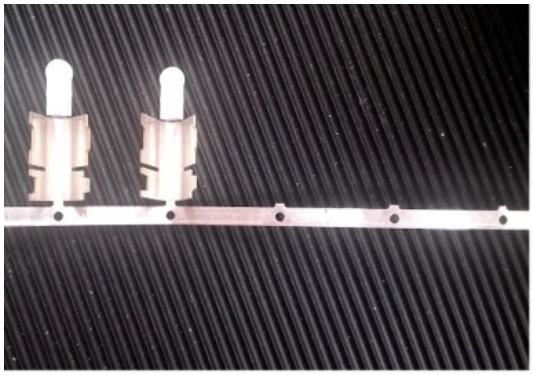
3.7) Terminal insertion

Make sure that the terminal strips are positioned correctly and slide without obstructions before being inserted in the mini-applicator.

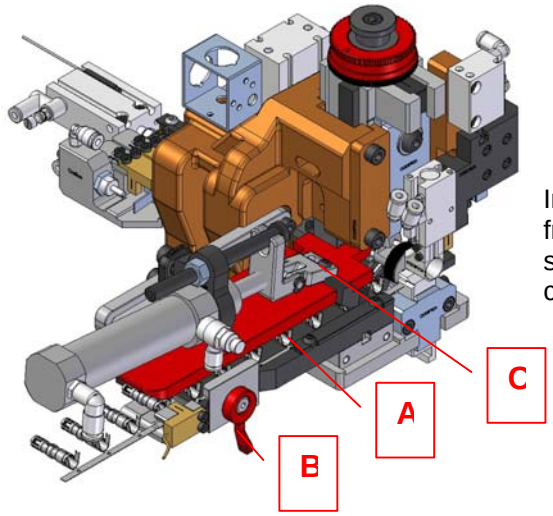
Insert the strip inside the machine casing, having it pass from the slot on the left side of the equipment.



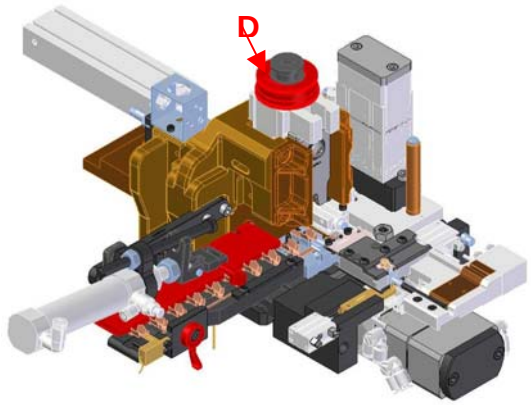
Adjust the mini-applicator ring in the position corresponding to the **larger** section.



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



Insert the terminal to be crimped in the guide **A** after having freed the clutch by means of the eccentric part **B**. Push the strip terminal until it engages with the pawl **C** and close the clutch.



Sample the section of the wire to be used, having arranged the adjusting ring "Copper **D**" as indicated by the values on the plate located on the applicator body. If the detected crimping height does not correspond with said references, check:

- Press crimping height setting at BDC 135.8mm, see paragraph 1.1. (important warnings) and 3.5 (Installation).
- Adjust the ring (only if deviation is a few centimetres).

CAUTION:

It is advisable to perform a complete step by step press cycle and check that:

- There are no mechanical impediments in sliding parts

The terminal must be correctly positioned, aligned with the crimping and cutting parts. If this does not occur, check the next paragraphs 5.2 (pitch adjustment) and 5.1 (terminal adjustment).
If any mechanical impediments are encountered during the manual cycle, check:

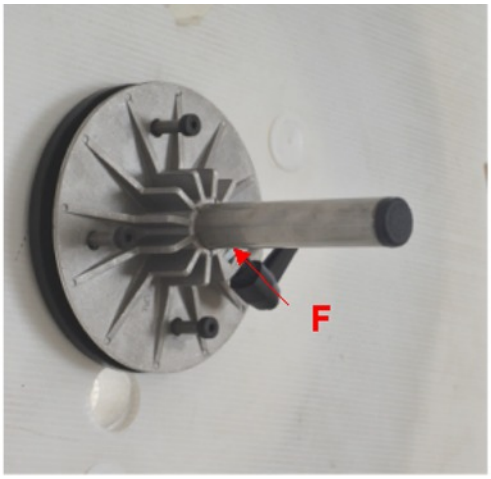
- Correct locking of applicator on the press, paragraph 3.5 (Magnum installation)
- Correct setting of the press at BDC 135.8mm, see paragraph 1.1. (important warnings) and 3.5 (Installation).
- Check that the position of the rings is not fully open/closed (see 5.2).

If the terminal is not correctly positioned:

- Verify that the pawl is in the correct engaged position (holes on strips for side feeds, copper/resin fins for end feeds or other, see 5.2).
- Verify that the clutch eccentric or lever is in working position (see 5.2).
- Make sure that the strip has entered into the cutter intake.

3.8) Reel insertion

Remove the fixing flange and replace the reel.



Re-insert the flange, slightly press down, pushing the flange toward the reel. Secure the position, tightening the locking handle **F**.

4) Start-up and use

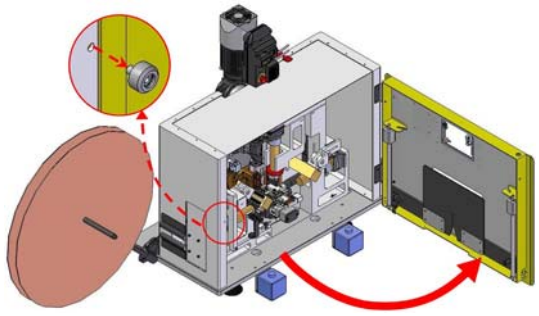
Pay due attention when manoeuvring for equipment installation/removal and crimping height setting so as not to damage any part of the machine.

- Check that the material to be processed is loaded and close the front door.
- Check that the line switch (A) located on the equipment electrical box is on and set to number "1".
- Check that the switch (C) set near the two-hand control is disconnected.
- Make sure that the emergency switch (B) is disconnected.
- Check pneumatic power (5-7 Bar).
- Wait for pneumatic circuit loading.
- Activate the two-hand control to start the cycle.
- To start the cycle, read chapter 8.
-

4.1) Stop and reset

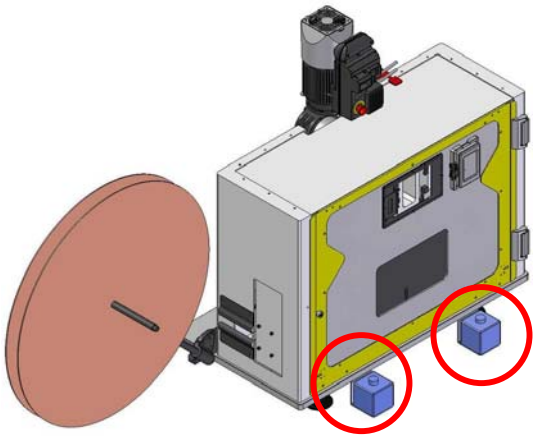
If you need to stop the machine at any time during the cycle, press one of the two emergency buttons.
The emergency button cuts off power to equipment and discharges the pneumatic system.

Use the key to unlock, moving to the UNLOCK position.



Open the casing by unscrewing the locking bush and remove the components that caused jamming.

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



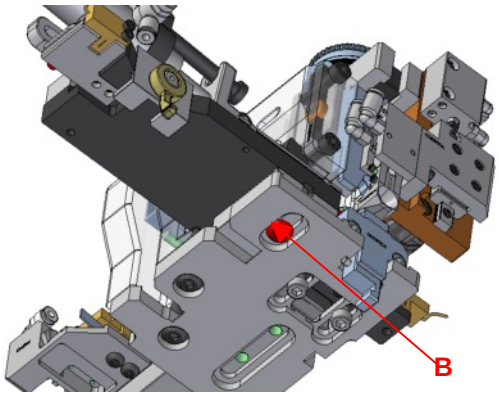
Close the fixed casing back up and activate the two-hand control for reset.

Re-lock the system using the key, moving to the LOCK position.

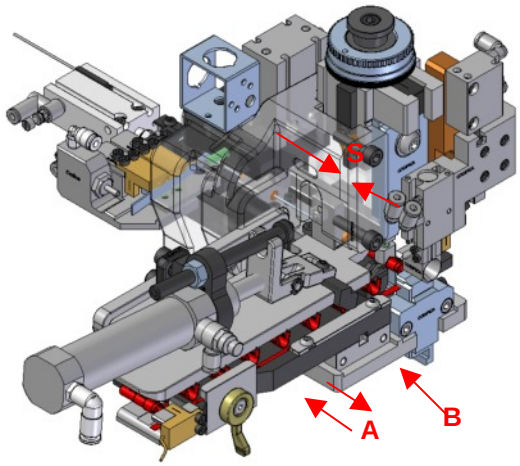
5) Production adjustments

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

5.1) Crimper alignment

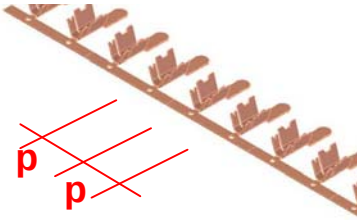


Unscrew screws "B".

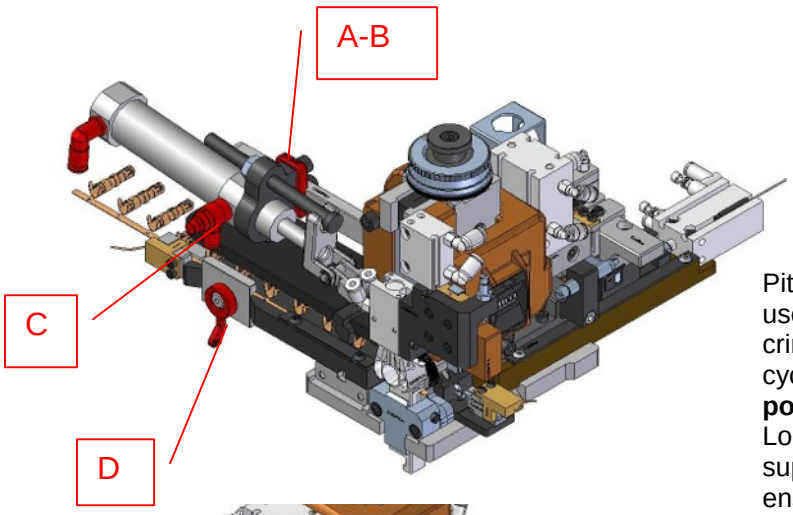


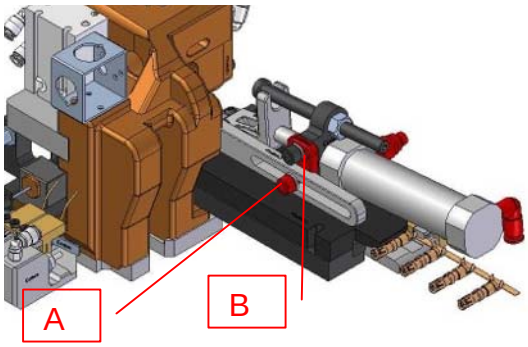
Terminal alignment with the wire crimper **S** (copper) occurs by moving the terminal feeding slide **A**.
Re-tighten the screw "B".

5.2) Terminal pitch adjustment

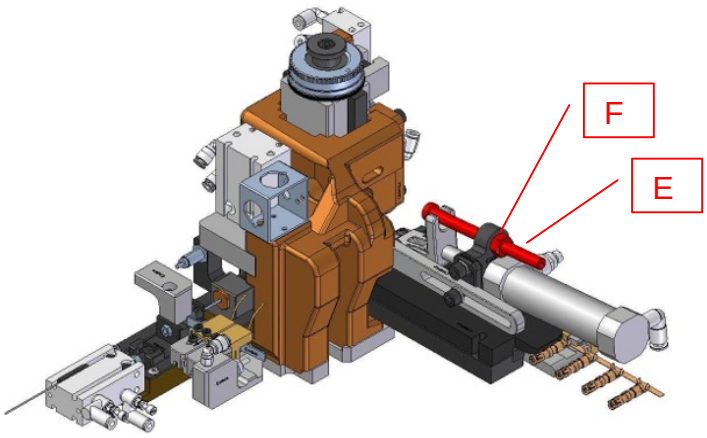


Pitch **p** is the distance between one terminal and the next.

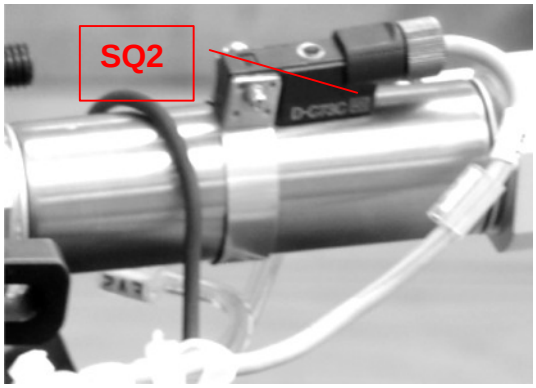




Pitch P adjustment on the Magnum applicator is used to engage the terminal and move it to crimping position during each complete operating cycle. **The terminal must be set in the crimping position with clutch D in the operating phase**. Loosen the locking screw **A** and move the support **B** until adjustment has been made. To ensure correct adjustment, move the pawl slightly over the anchoring point (normally corresponds with the hole or slot present on the strip). Tighten the locking screw A.
The feeding speed can be defined by means of the air flow regulator **C**.

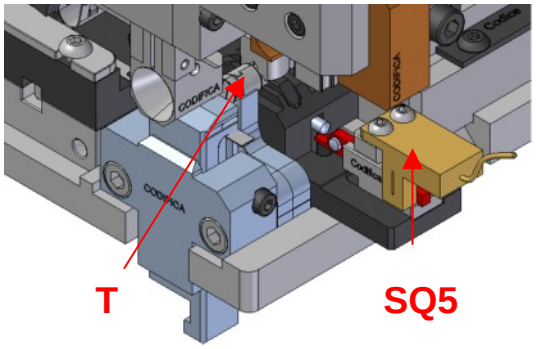


The terminal arrival position is defined by the cylinder stroke. Loosen the lock nut F and regulate the adjustment screw E. Once the correct position has been found, re-tighten the lock nut F. Repeat the operation until the desired adjustment has been set.

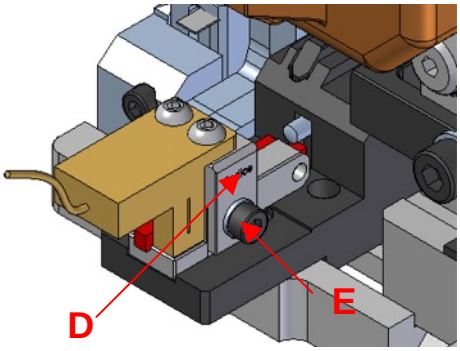


Once the pitch has been adjusted, proceed with the sensor with detects cylinder position.
Move the sensor toward the anvil and search the cylinder arrival position, returning toward the outside with the sensor. Fasten the sensor and test it, activating solenoid valve EV2 a couple of times to verify correct adjustment.

5.2.1) Regolazione sensore presenza terminale



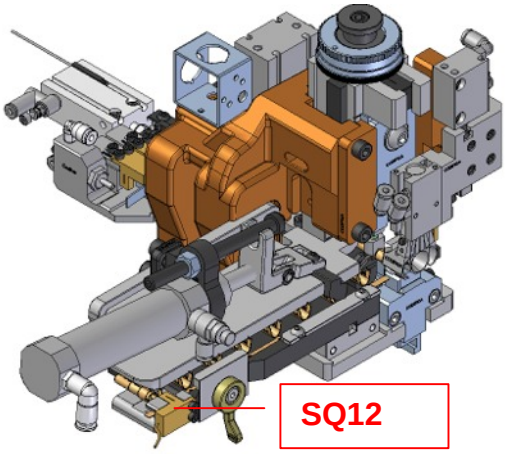
Presence sensor SQ5 is activated under the condition that terminal T is positioned and locked correctly in its housing.
Presence sensor B can be adjusted to determine the signal precision value. When the terminal is locked, loosen locking screw E. Adjust the sensor support D so that the signal is interrupted and the LED switches on. Tighten the locking screw E.
If sensor SQ5 (piece presence) is not activated, the working cycle program activates further terminal feeding, restarting the cycle from the beginning.



Use the sensor screen to verify that the fibre has been switched.
Test it a couple of times to make sure that it has been correctly adjusted.

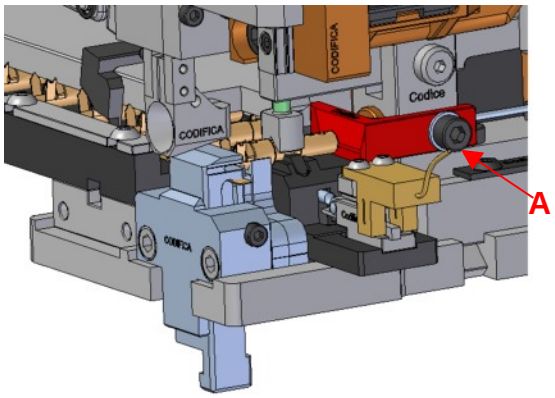
CAUTION: if the emergency control is activated after fibre reading, data detected by the fibre will be cancelled. Therefore, verify that there are no missing terminals between the fibre and the anvil before re-starting.

5.2.2) Strip presence sensor SQ12 adjustment



The optical sensor (SQ12) verifies the presence of Outer terminal banding strips. It is always active and does not have any adjustments. When the strip ends, the sensor deactivates the signal, sending an error message to the press. Replace the finished reel with a new one.

5.3) Terminal position



The terminal reference enables the terminal to stay aligned with knives during cutting and crimping.

Unscrew the screw "A", move the reference to the desired position, then re-tighten the fixing screw.

Take a couple of samples to test that the wire bar end and the crimping impression are according to specifications. If not, repeat this operation.

5.4) Regulating the adjusting ring

The wire cross-sections to be used (mm² or AWG), the values for copper adjusting ring position (INDEX) and the crimping height values (CHR expressed in mm) are contained on the applicator plate.

Adjusting the crimping height on the conductor (adjusting ring type A)

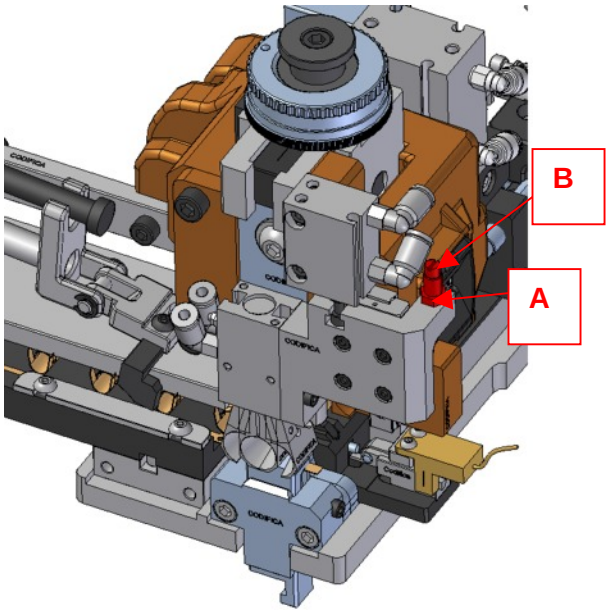
To correctly set the adjusting ring and obtain crimping values declared on the Technical Data Sheet and on the plate, proceed as indicated in the following example:
Application example: **Sect. 10.00 mm² INDEX=2.46 CHR=5.05**
The adjusting rings have a maximum range of 2.7 mm, therefore we find labelling from 0 to 27 with a resolution of 0.01 mm for each click on each outer circular crown. To set the value INDEX=2.46, rotate the adjusting ring A until reaching the engraved number nearest to the one needed, moving it closer to the operating field, in this specific example the value is 24. Keeping in mind that each click equals 0.01mm, you will need to increase by 6 clicks to obtain 2.46 as indicated on the plate. The INDEX value is indicative as it is based on the type of press used and on the different bending due to the work load, therefore values may slightly deviate from those indicated. Further adjustment on adjusting ring A may be necessary to obtain the final result of the operating height CHR=5.05mm.

Adjusting the insulating crimping height (adjusting ring type B)

The applicator plate does not contain any insulating crimping data. If the customer supplies crimping parameters, they will be indicated on the Technical Data Sheet. The achievement of required values is guaranteed by means of the adjusting ring **B**, with an adjustment process that is the same as the one described prior for adjusting ring **A**. If no crimping specifications have been supplied, Mecal suggests setting the adjusting ring **B** to position 0 and increasing its value until the desired result is achieved.
Reference index C
The reference index for both adjusting rings is represented by a line on the mark **C**.

The data declared on the Technical Data Sheet has been collected using a Mecal P107 press set at a height of 135.8mm (Bottom Dead Centre).

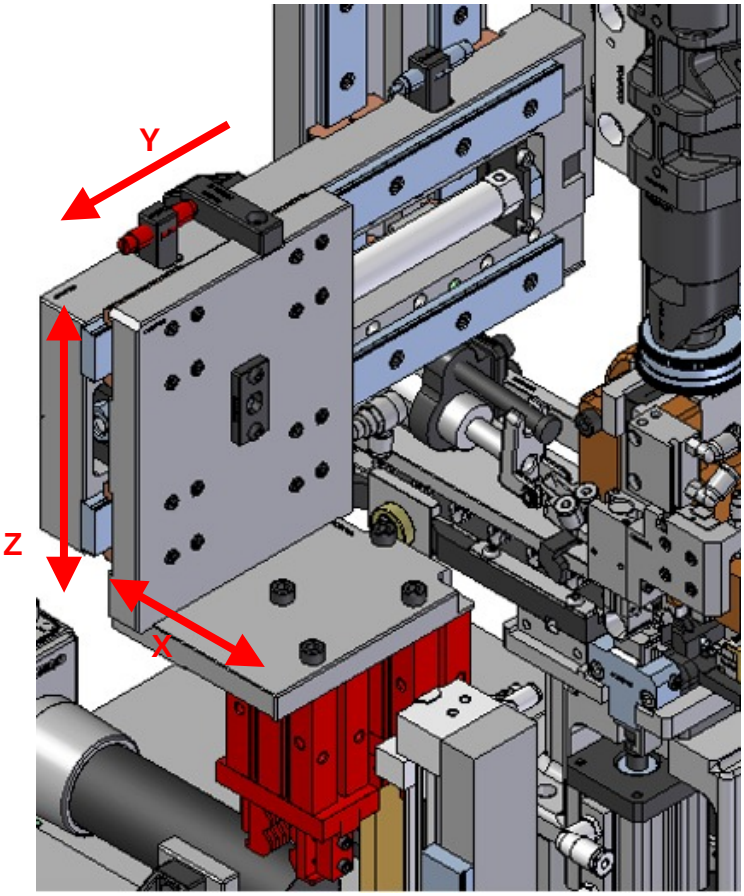
5.5) Centring the funnel with respect to contact



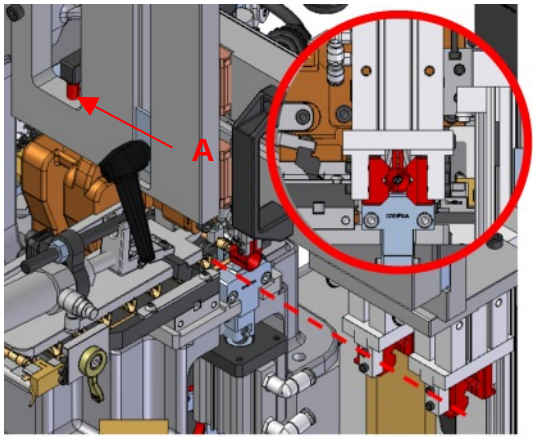
Lock the terminal with the presser, activating the solenoid valve EV15. Cut the strip EV5 and lower the funnel with solenoid valve EV14.
Unscrew the nut "A" and turn the dowel "B" to centre the funnel on the terminal.

Verify correct centring by inserting the wire in the funnel. Insertion should be free without any interference.

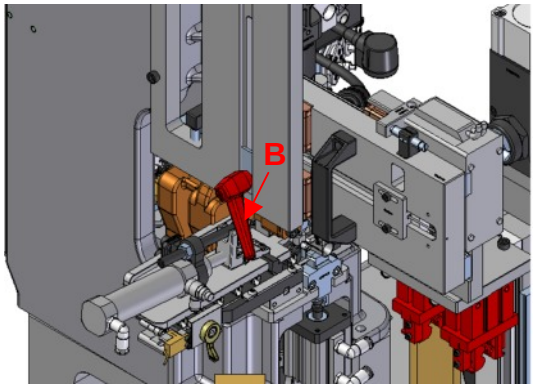
5.6) Clamp unit adjustment



5.6.1) Centring clamps with respect to the funnel and terminal (Z)



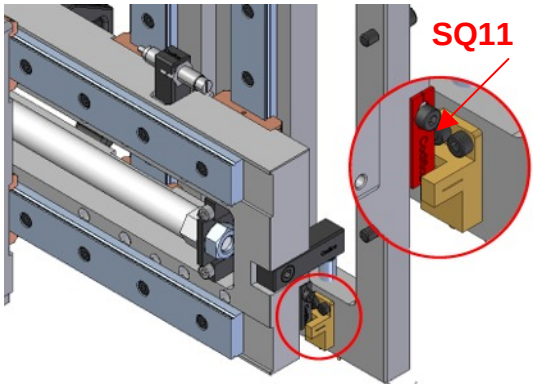
Clamp unit alignment with respect to the terminal is decided by decelerator "A".



Loosen the fixing handle "B" and move the unit upward. Loosen the fixing nut on the decelerator "A" and adjust the dowel, loosening it (clamps raise) or tightening it (clamps lower). Lower the unit again, bringing it to the reference position on the decelerator and making sure that it has reached the desired position. Secure the nut on the decelerator "A".

Make sure that it does not collide with any equipment parts.

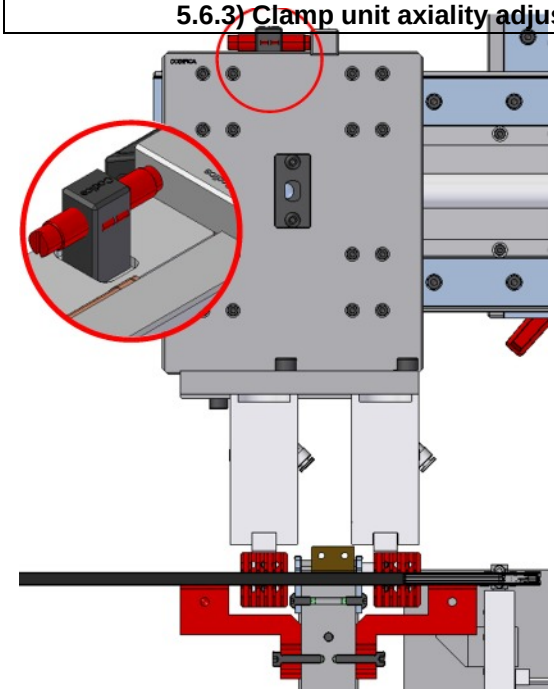
5.6.2) Clamp centring sensor adjustment with respect to funnel (Z)



Unscrew the fixing screw on the sensor SQ11 level and move the sensor lever upward, bringing it outside the sensor reading field.
Make sure that the clamp unit is in the correct operating position, or rather stopped on the decelerator.
Slowly move the sensor lever downward, stopping the sensor flow. With the relative screw, fix the lever as soon as the sensors interrupts its beam.

Check that the sensor correctly reads the clamp position a couple of times.

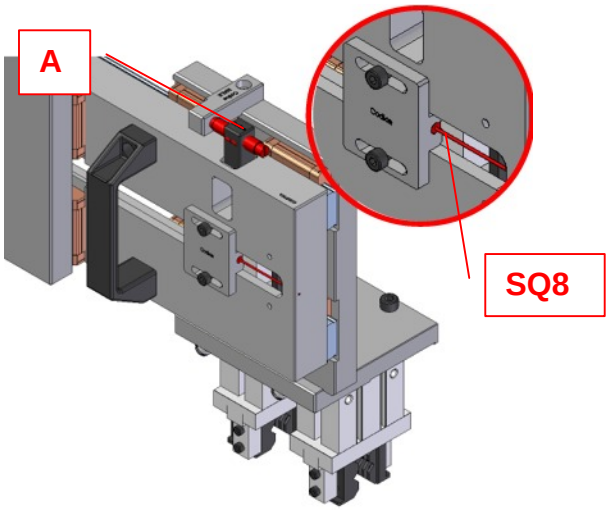
5.6.3) Clamp unit axiality adjustment with respect to the wire support unit (Y)



Unscrew the fixing nut and adjust the decelerator.
The top clamp unit must be centred with the wire support on the bottom unit. Tighten or loosen to find the correct position. Re-screw the lock nut again on the decelerator.

Make sure that the two units do not have any parts that can collide.

5.6.4) Clamp unit position sensor axial to the wire support unit (Y) SQ8

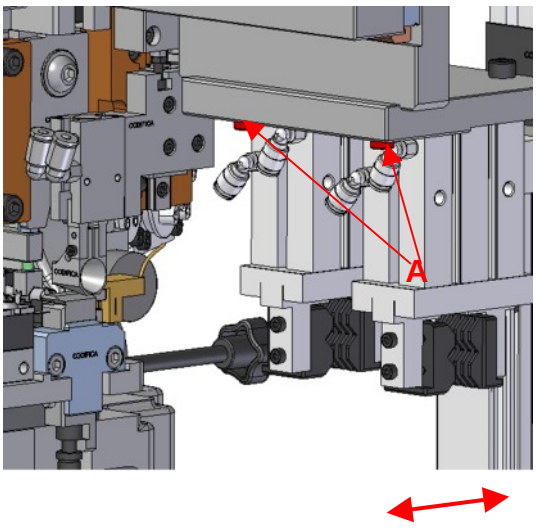


The sensor SQ8 detects clamp position, giving consent to the wire support unit to move upward.

Adjust the sensor, moving the clamp unit in the reference position on the decelerator "A", unscrew the support screws on the sensor SQ8 and move the support toward the rear of the machine. Move the support toward the clamp unit and fix the screws as soon as the sensor activates.

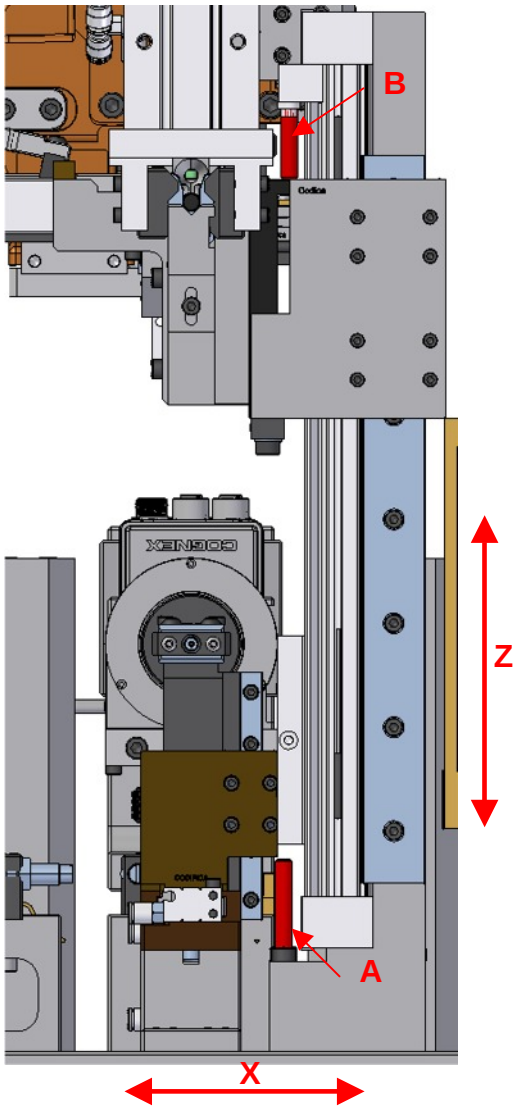
Test it a couple of times to make sure that the sensor has been correctly adjusted.

5.6.5) Clamp unit adjustment in X with respect to the terminal



Move the clamp unit to the wire gripping position.
Adjust the clamp unit axially to the terminal and to the funnel.
Unscrew the screws "A" and move the unit. Re-fix screws after adjustment has been completed.

5.7) Wire support unit adjustment

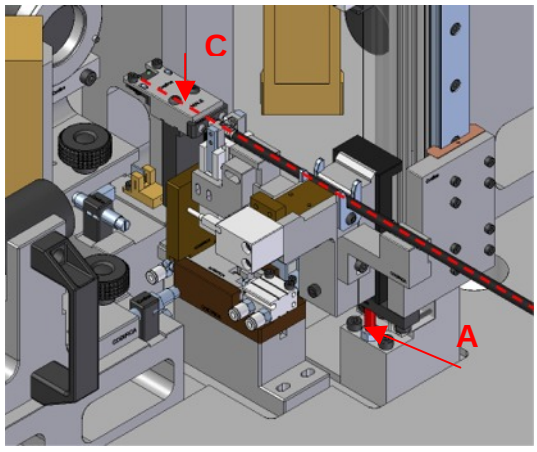


The wire support unit is adjusted by two dowels.

Dowel “A” sets the wire position. Wire support must be axial with the insulator reference (chapt. 5.6.1).

Dowel “B” adjusts the arrival position of the wire support unit, which must be aligned with the terminal and with the top wire gripping clamps. (Chapt. 5.6.3).

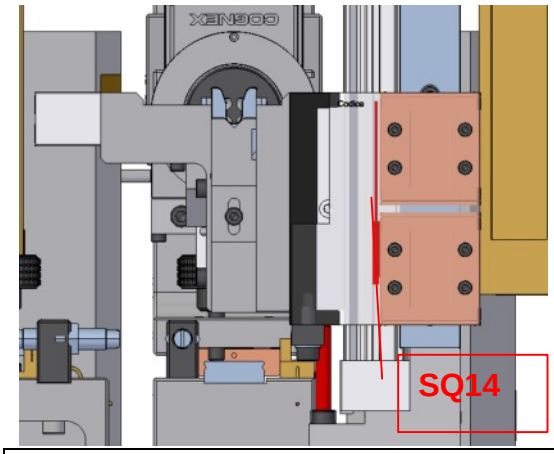
5.7.1) Dowel "A" wire support unit adjustment



Unscrew the fixing nut on dowel "A", adjust the dowel so that the wire support unit is aligned with the insulator reference "C". Re-lock the nut.

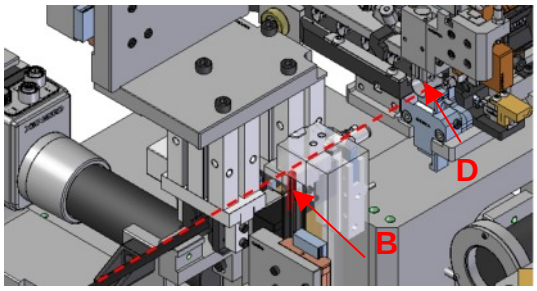
Caution: when inserting the wire in the insulator reference, the wire must not have any bends or deformations due to improper adjustment.

5.7.2) Dowel "A" wire support unit sensor adjustment SQ14



Move the wire support unit to an aligned position with the insulator reference. Unscrew the screw on sensor SQ14 and move it upward, slowly bring the sensor down, searching for cylinder position recognition. The LED will switch on when the position has been reached.
Fix the sensor and verify a couple times that adjustment has been performed correctly, activating solenoid valve EV10.

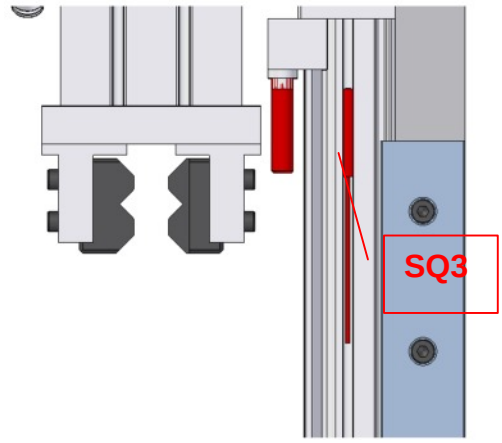
5.7.3) Dowel "B" wire support unit adjustment



Unscrew the fixing nut on dowel "B", adjust the dowel so that the wire support unit is aligned with the terminal and the funnel "D". Re-lock the nut.

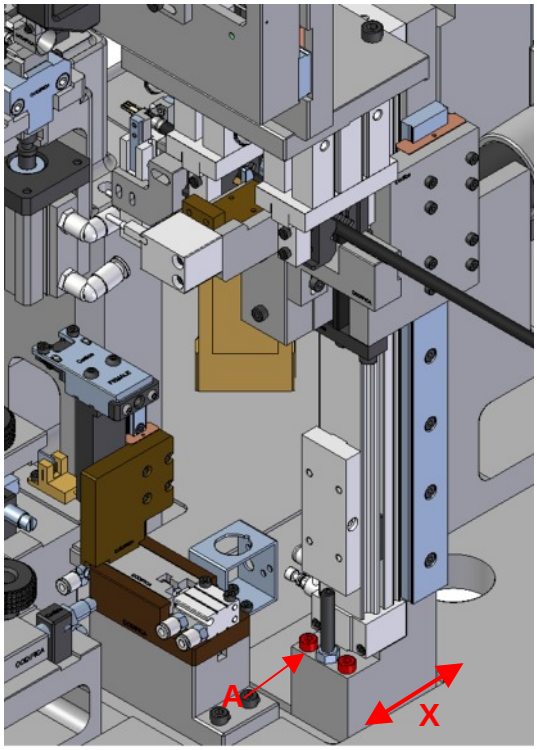
Caution: when inserting the wire in the funnel, the wire must not have any bends or deformations due to improper adjustment.

5.7.4) Dowel "B" wire support unit sensor adjustment SQ3



Move the wire support unit to an aligned position with the terminal and funnel, activating solenoid valve EV10.
Unscrew the screw on sensor SQ3 and move it downward, slowly bring the sensor up, searching for cylinder position recognition. The LED will switch on when the position has been reached.
Fix the sensor and verify a couple times that adjustment has been performed correctly, activating solenoid valve EV10.

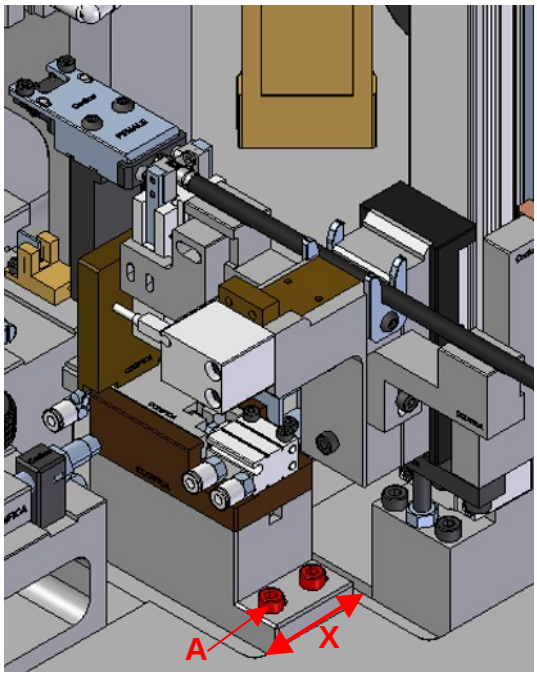
5.7.5) Wire support unit adjustment in X with respect to the clamp unit



Activate EV10, moving the wire support unit to the wire release position (upward).
Adjust axiality in X of the unit, unscrewing the screws "A". Re-tighten all screws once adjustment has been made.

Test the release passage and wire gripping a couple of times. If adjustment has been performed correctly, the latter will not undergo displacement or deformation.

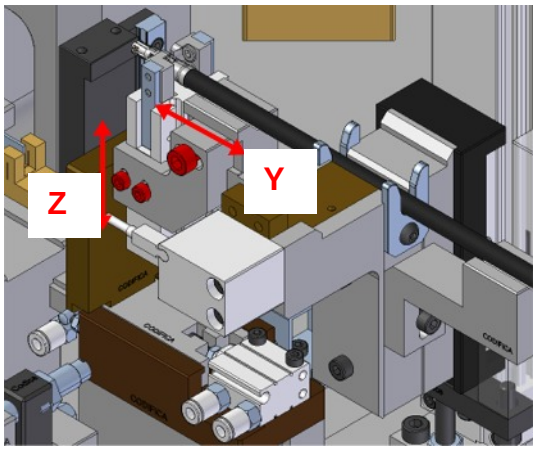
5.8) Insulator reference centring adjustment in X



Adjust axiality in X of the insulator reference with respect to the wire support unit, unscrewing the screws "A". Re-tighten all screws once adjustment has been made.

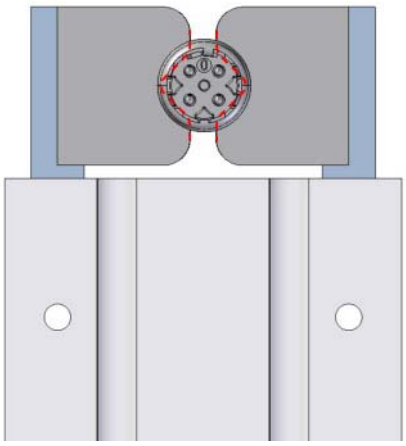
Test the wire insertion passage a couple of times. If adjustment has been performed correctly, it should not have any deformations.

5.9) Insulator holder clamp adjustment

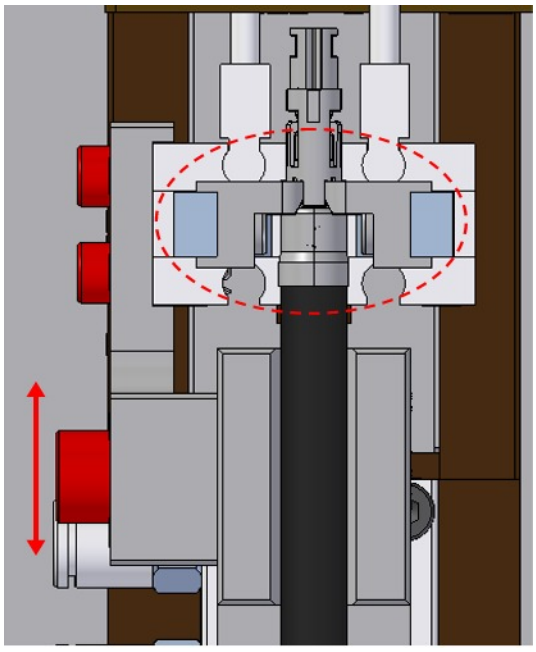


After having inserted the wire in the insulator reference, the pneumatic clamp will being operation, locking the insulator and ensuring its position during verification by the video cameras.

As it has to lock both the male and female insulator, the clamp must be adjusted both in "Z" and in "Y" so as to ensure fixing on the full part of the insulator.



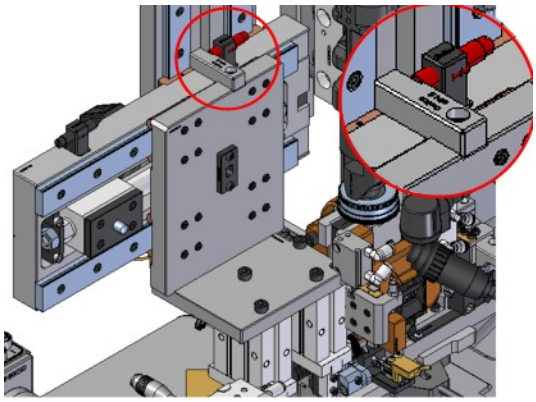
Adjusting in "Z"
Unscrew the screws "A" and move the clamp up or down. The wire must be closed at the centre of the two "V" (see figure).



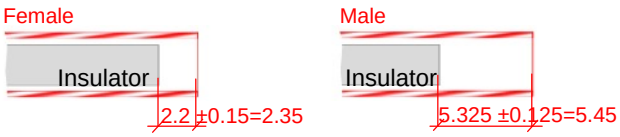
Adjusting in "Y"
Unscrew the screws "B" and move the clamp forward or backward. The wire must be closed in the more solid part of the insulator, ensuring the seal and stability of the wire during checks by the video cameras.

Caution: The insulator does not move during insulator support movement if adjusted correctly.

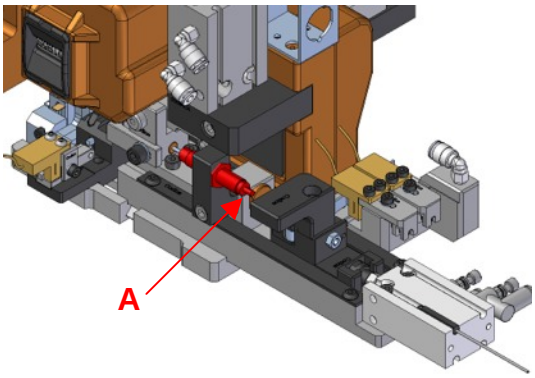
5.10) Insulator position in the OUTER/BODY contact



Using the decelerator, mechanically adjust the position of the top manipulator so as to obtain the minimum measurement of insulator insertion in the OUTER/BODY contact.
Unscrew the locking nut, adjust the decelerator and re-fasten the nut.
The insertion positions to maintain are 2.2 for the Female contact and 5.325 for the Male contact.



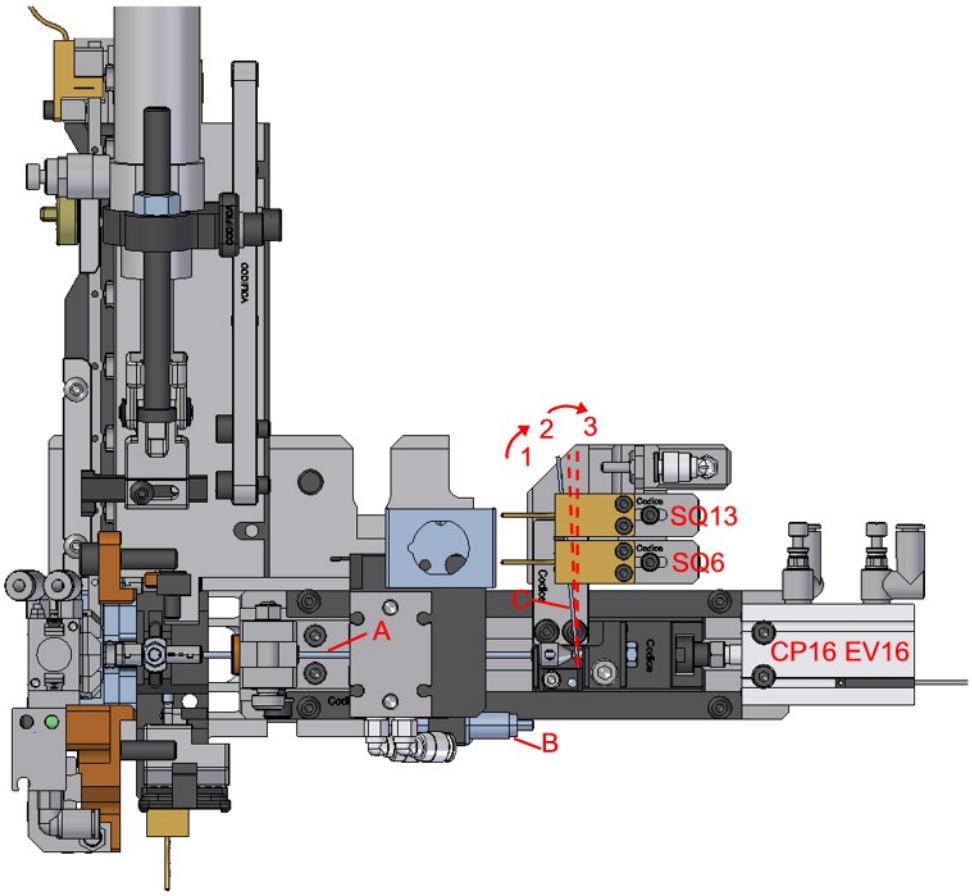
5.11) Needle position, checking insulator placement in the terminal



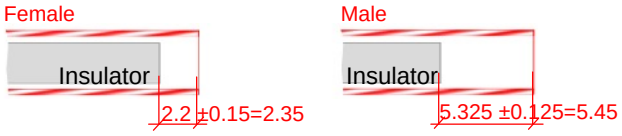
Correct placement of the insulator in the terminal is verified by two sensors SQ6 and SQ13, which are activated by their relative sensor lever.
The sensor lever transmits the depth of insertion of the insulator verified by the needle. Proceed as follows to adjust the needle stroke.

- Loosen lock nut on the decelerator "A".
- Completely unscrew decelerator "A".
- Move the insulator inside the terminal using the wire holder clamps.
- Tighten solenoid valve EV16, bringing the needle forward.
- Unscrew decelerator "A" until the insulator is reached.
- Further unscrew by a half a turn (0.5mm) decelerator "A".
- Secure the nut on the decelerator "A".

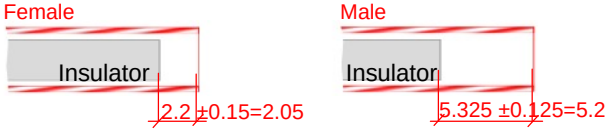
5.11.1) Needle position, sensor SQ6 and SQ13 adjustment



- Using the decelerator, mechanically adjust the position of the top manipulator so as to obtain the minimum measurement of insulator insertion in the OUTER/BODY contact.
  The insertion positions to maintain are 2.35 for the Female contact and 5.45 for the Male contact.



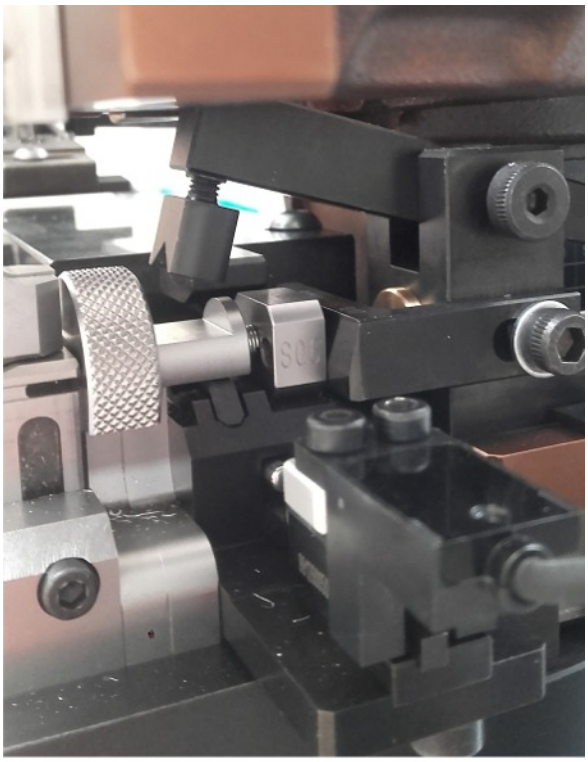
- Move the detection needle "A" to the reading position by means of cylinder CP16, activated by solenoid valve EV16.
- Adjust the reading position of the needle "A" by means of the decelerator "A". The needle in position moves axially by approximately 0.3/0.5mm. Sensor lever "C" moves in the clockwise direction from position 1 to 2.
- Loosen the locking screw and move SQ6 toward the rear of equipment. Slowly and precisely move SQ6 toward the front of the machine until sensor reading is detected (red LED on sensor panel will switch on). Tighten the locking screw. Perform some tests and verify with different insulators.
- Set the new insulator in position.
- Adjust mechanically.
- Using the decelerator, mechanically adjust the position of the top manipulator so as to obtain the maximum measurement of insulator insertion in the OUTER/BODY contact.
- The insertion positions to maintain are 2.05 for the Female contact and 5.2 for the Male contact.



- Move the detection needle on the insulator "A", which was previously adjusted, to the reading position by means of CP16/EV16.

- Loosen the locking screw and move sensor SQ14 toward the rear of equipment. Slowly and precisely move SQ13 toward the front of the machine until sensor reading is detected (red LED on sensor panel will switch on). Tighten the locking screw. Perform some tests and verify with different insulators.

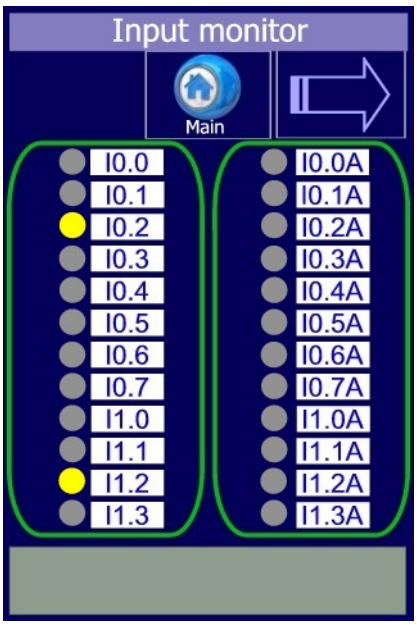
5.11.2) Master gage



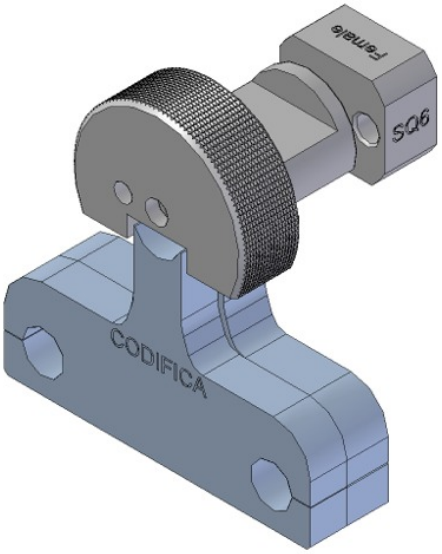
As an alternative to the process explained in Chapt. 5.10.1, sensor SQ6 and SQ13 adjustment can be performed using the Master Gage.
The values to be adjusted are those described in Chapt. 5.10.1.

CAUTION the adjustment dowel on sensors SQ6 and SQ13 are labelled "FEMALE" or "MALE".
Use the "FEMALE" dowel for the female applicator and "MALE" for the male applicator.

- Close the equipment door and release the emergency.

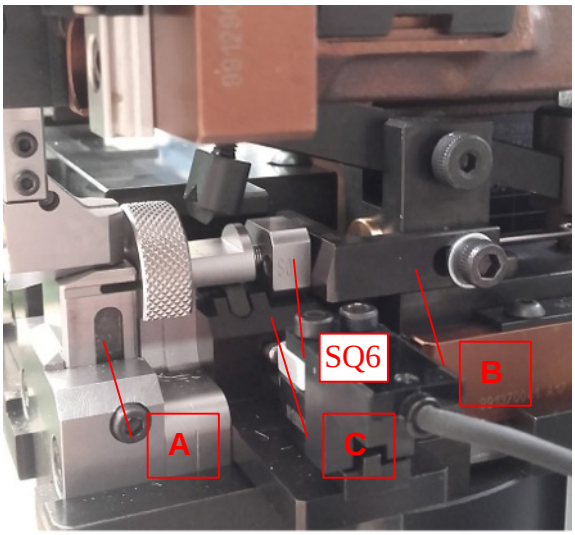


- Activate the sensor screen by clicking twice on the right bottom corner of the display. Sensor SQ6 is identified with the wording I0.2 and SQ13 with the wording I1.2.

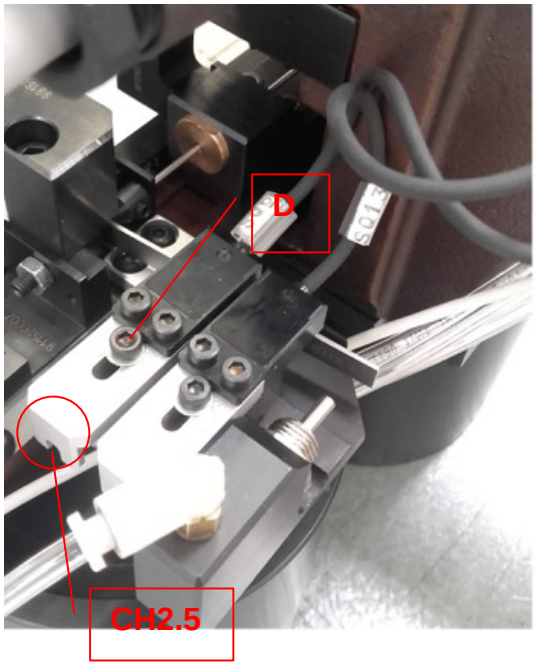


Sensor SQ6 adjustment

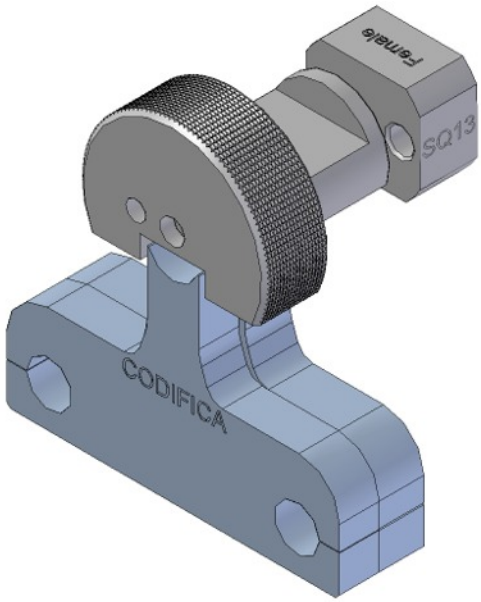
- Use the Master Gage instrument.
- The adjustment buffer should be arranged with the writing SQ6 in the direction of the right side of the equipment.
- Remove the applicator ram.
- Compress the master gage and fit the discharge on the knurled component on the copper anvil.



- Proceed with lifting the floating blade "A". The Master Gage remains fitted between the floating blade "A" and the terminal reference "B".
- Make sure that the dowel containing the wording SQ6 is resting on the terminal support "C" and on reference "B".
- Activate cylinder CP16 by means of solenoid valve EV16.

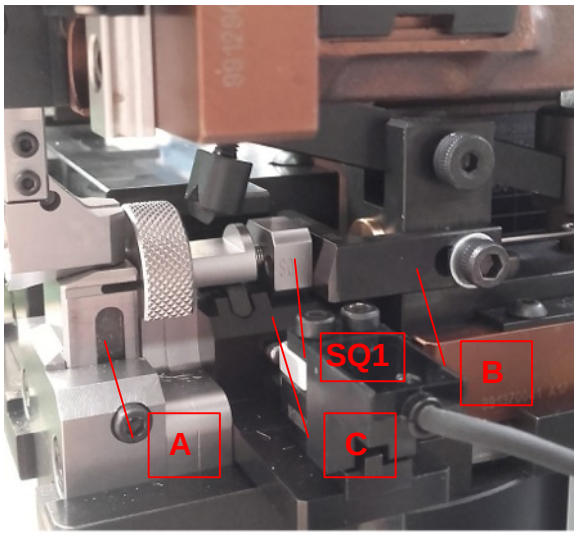


- Slightly loosen screw "D".
- Use a CH 2.5 wrench to adjust under the sensor support.
- Completely unscrew the screw under the support to find zero point.
- Tighten, looking for the sensor on the panel to switch on.
- Re-tighten the fixing screw "D".
- Verify a couple of times by activating and deactivating EV16.

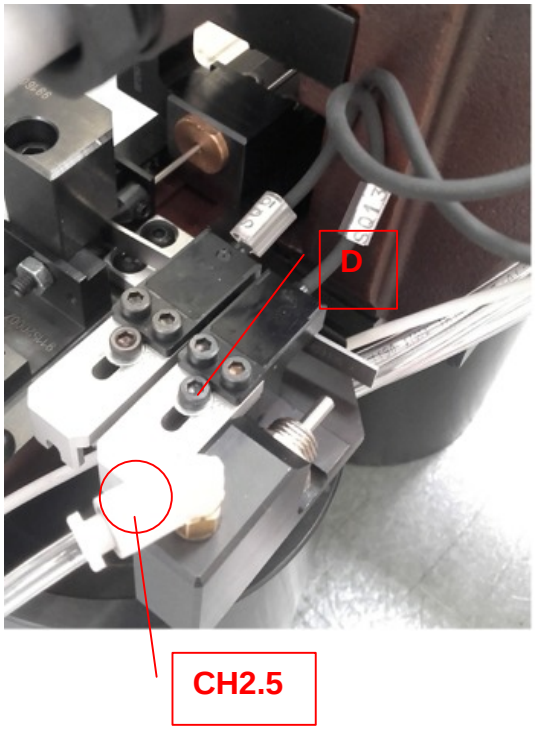


Sensor SQ13 adjustment

- Use the Master Gage instrument.
- The adjustment buffer should be arranged with the writing SQ13 in the direction of the right side of the equipment.
- Remove the applicator ram.
- Compress the master gage and fit the discharge on the knurled component on the copper anvil.



- Proceed with lifting the floating blade "A". The Master Gage remains fitted between the floating blade "A" and the terminal reference.
- Make sure that the dowel containing the wording SQ6 is resting on the terminal support "C" and on reference "B".
- Activate cylinder CP16 by means of solenoid valve EV16.



- Slightly loosen screw "D".
- Use a CH 2.5 wrench to adjust under the sensor support.
- Completely unscrew the screw under the support to find zero point.
- Tighten, looking for the sensor on the panel to switch on.
- Re-tighten the fixing screw "D".
- Verify a couple of times by activating and deactivating EV16.

5.12) Display operation

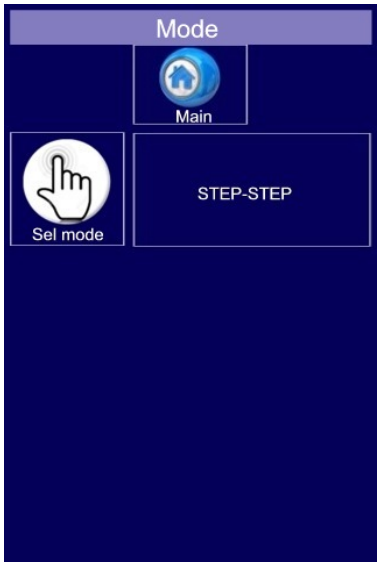
The Home screen is composed of 4 selectable menus:

- Language
- Information
- Mode (see page 64)
- Settings (see page 64)

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 the 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 and count 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 2 menu:

- <u>Sel mode</u> pressing the icon  , it is possible to select AUTO (automatic) or STEP by STEP cycle function.

The command  brings you back to the main screen.

The settings screen  is composed of 2 menus:

- <u>Buzzer:</u> press the icon  to activate or deactivate the buzzer to signal:
  - Machine on
  - Errors on sensors
  - Errors detected by the fibre optics

- <u>Adjustments:</u> select the control  to access the screen for password entry, which sends the user to activate or deactivate the video camera and illuminator function.

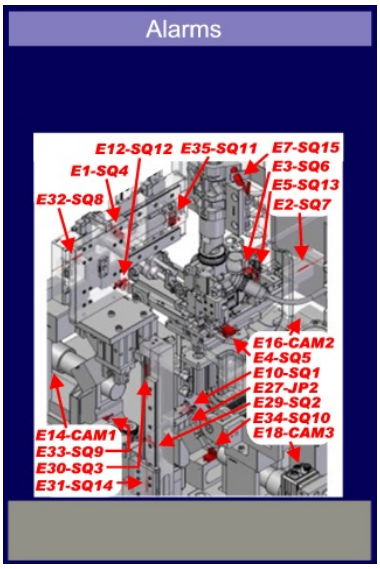
Caution: Request the password from Mecal and only make it available to maintenance personnel.

Video camera activation or deactivation screen:

- Camera rear view  activates or deactivates the rear camera
- Camera sides view  activates or deactivates the side cameras
- Number of squashing  user can set the number of squashing operations to perform

-

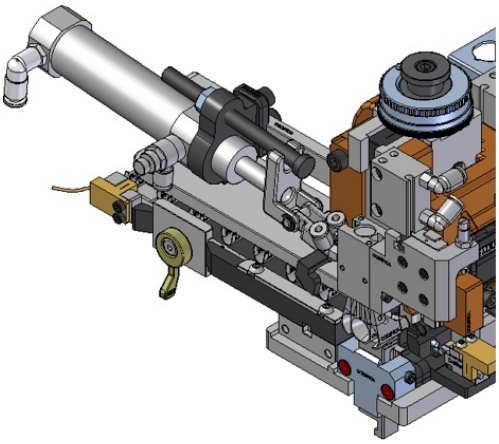
Illuminator activation screen:
Select individual illuminators to activate them manually.



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

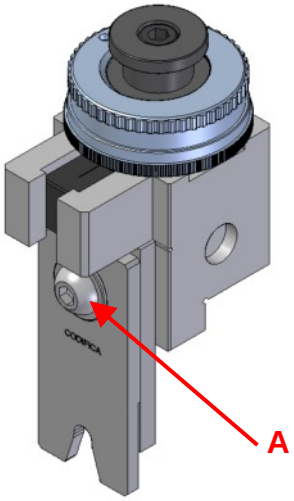
6.1) Anvil replacement



Unscrew the floating blade cover screws, remove the cover and the floating blade and replace the anvils. Re-insert the floating blade cover and the blade, re-tighten screws.

Caution: do not change positions of parts.

6.2) Knife replacement



Remove the mini ram, unscrew locking screw "A" and replace the cutting tools, taking care to follow the original sequence and then re-tighten the fixing screw.

7) Transformation 535-566

Equipment transformation from wire 535 to wire 566 involves the changing of three components:

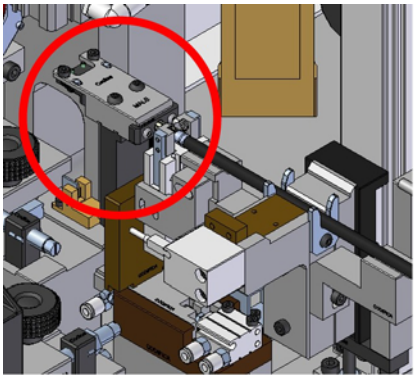
- magnum
- insulator recognition block
- decelerator reference dowel

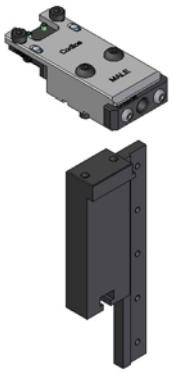
Caution: electronic checks only verify correspondence between the magnum and the insulator recognition block. Equipment will generate an error if there is no correspondence.
Make sure that you have changed the material to be processed.

7.1) Magnum change 535-566

Follow instructions contained in chapters 3 and 5 to change the applicator relative to the wire being processed.

7.2) Insulator recognition block change 535-566



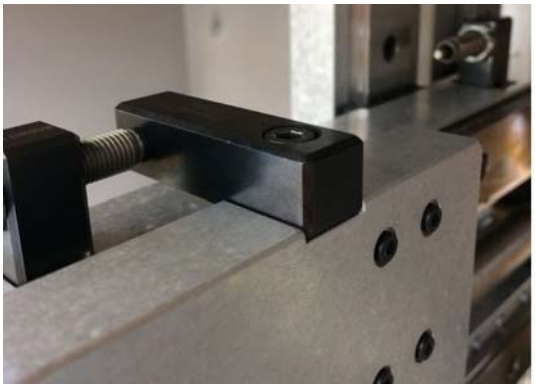


Replace the block and connect the relative connector. Unscrew the fixing screws, replace the block, connect the connector and re-tighten the screws.

CAUTION: magnum and block connectors

Connector connection

7.3) Decelerator reference dowel change 535-566



The decelerator establishes the arrival point of the wire inside the magnum.

Unscrew the fixing screw and replace the decelerator reference dowel, then re-tighten screws.

Caution: equipment does not detect the type of dowel installed. Check that the dowel corresponds with the type of wire to be processed.

8) Working cycle

Make sure that equipment is on (see chapter 4).
Make sure that the applicator is adjusted (see Chapter 5.1, 5.2, 5.3).
Make sure that the message READY is present on the display.

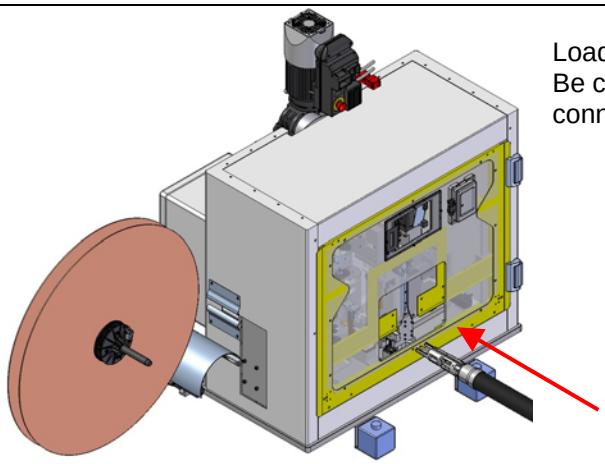
CAUTION:
Check that the terminal is positioned one pitch before the crimping area

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:

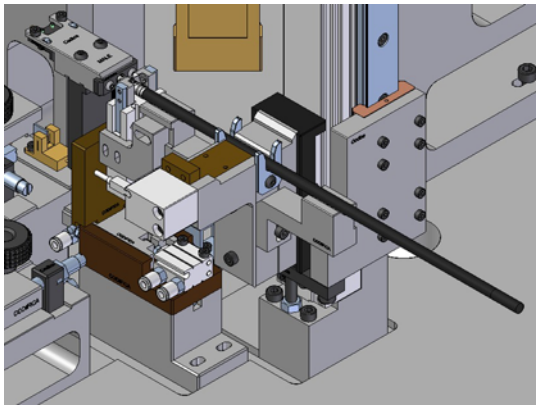
- Select language
- Set the batch (optional, see page 62).
- Select the mode (see page 63).
- Set the buzzer and video cameras (optional, see page 63).

STEP 2. Cable insertion



Load the wire on board.
Be careful to make sure you have correctly inserted the connector in its support.

STEP 2.2



Insert the wire on the wire support.

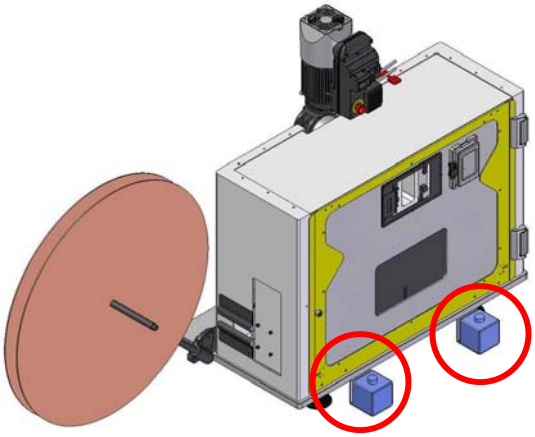
STEP 2.3

Insert the insulator in the insulator recognition block and push until the sensor switches inside it.
Caution: the insulator must be positioned with the central pawl downward, as shown in the figure.

STEP 3. Video camera consent

At the same time the wire is locked, the video cameras photograph and verify the quality of the process occurred in station 6. In sequence, they evaluate the left side, from the rear, and the right side.

STEP 5. Cycle start-up



Activate the two-hand control, the mobile guard closes to protect the moving parts area. The cycle starts when casing closes.

STEP 6. Cycle end

At the end of the cycle, the mobile guard opens automatically, the wire is freed and the operator can remove it.

9) Manutenzione

!! Prima di effettuare qualsiasi intervento spegnere sempre la macchina verificare e togliere corrente dall'interruttore generale!!

9.1) Particolari di ricambio

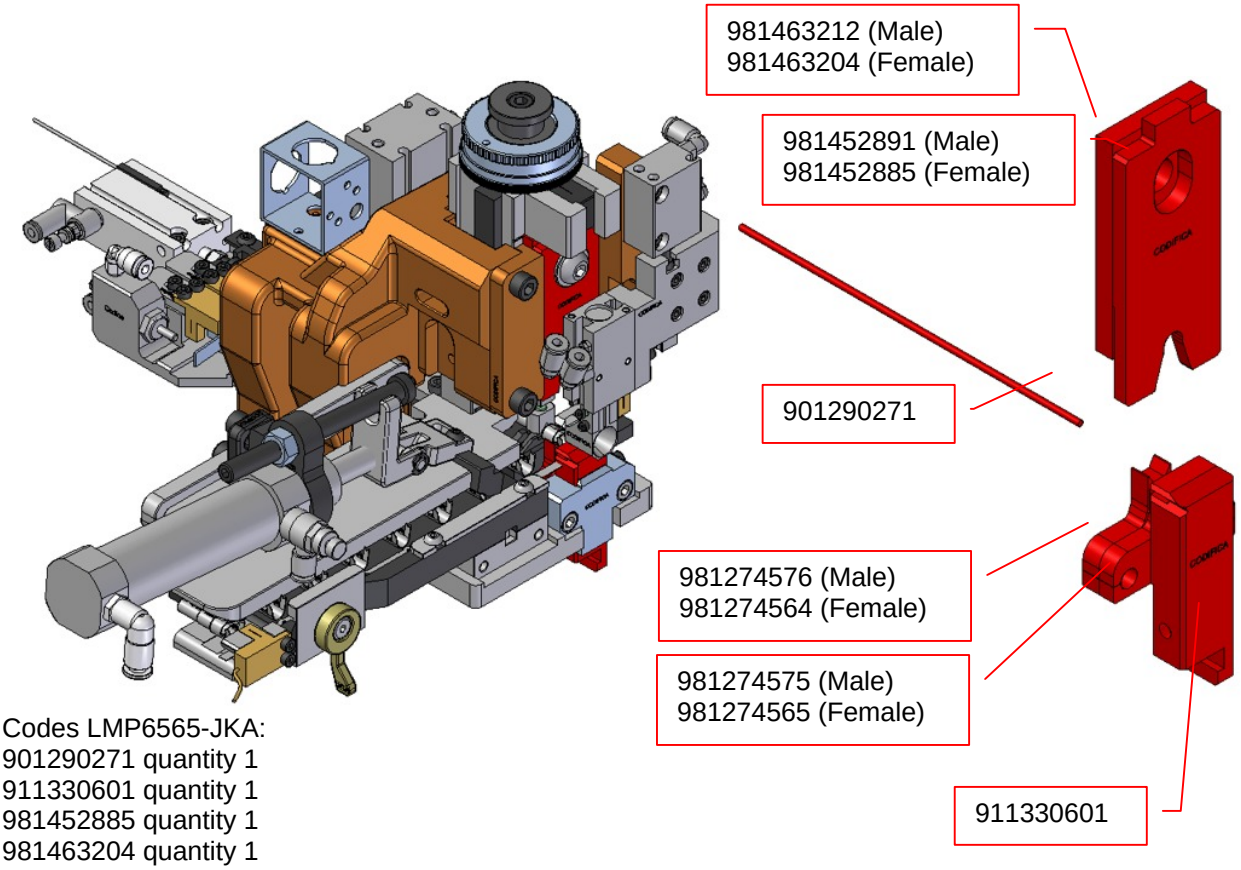
Installare solamente particolari di ricambio con il corretto numero di codice riportato sul particolare e nella documentazione inserite nel CD allegato. Per un corretto utilizzo ed una buona qualità utilizzare solamente **particolari di ricambio originali.**

Scaricare mediante icona "Documentazione" i files in formato .pdf per poter accedere alla distinta base con I codici dei particolari e i riferimenti di identificazione riportati nell'esploso grafico. Verificare il modello e la matricola affinchè corrispondano con l'applicatore in oggetto.

9.2) Spare parts recommended by Mecal

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

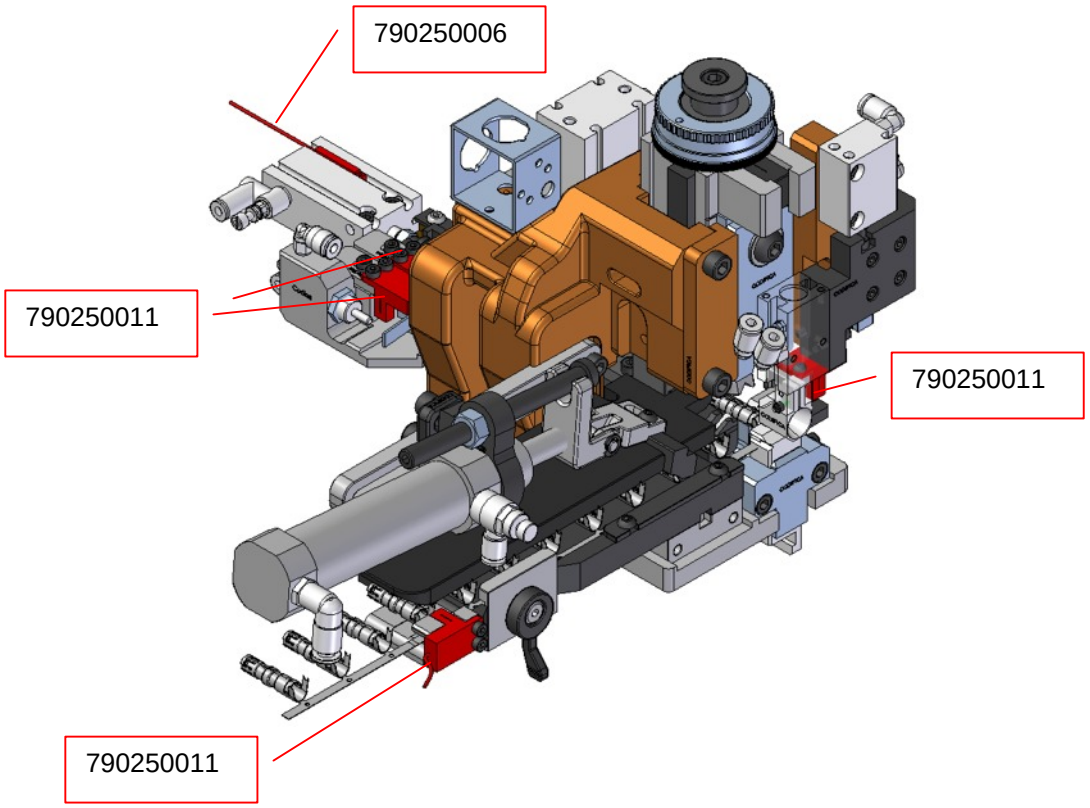
9.2.1) Cutting tool spare parts



Codes LMP6565-JKA:
901290271 quantity 1
911330601 quantity 1
981452885 quantity 1
981463204 quantity 1
981274565 quantity 1
981274564 quantity 1

Codes LMP6565-JKB:
901290271 quantity 1
911330601 quantity 1
981452891 quantity 1
981463212 quantity 1
981274575 quantity 1
981274576 quantity 1

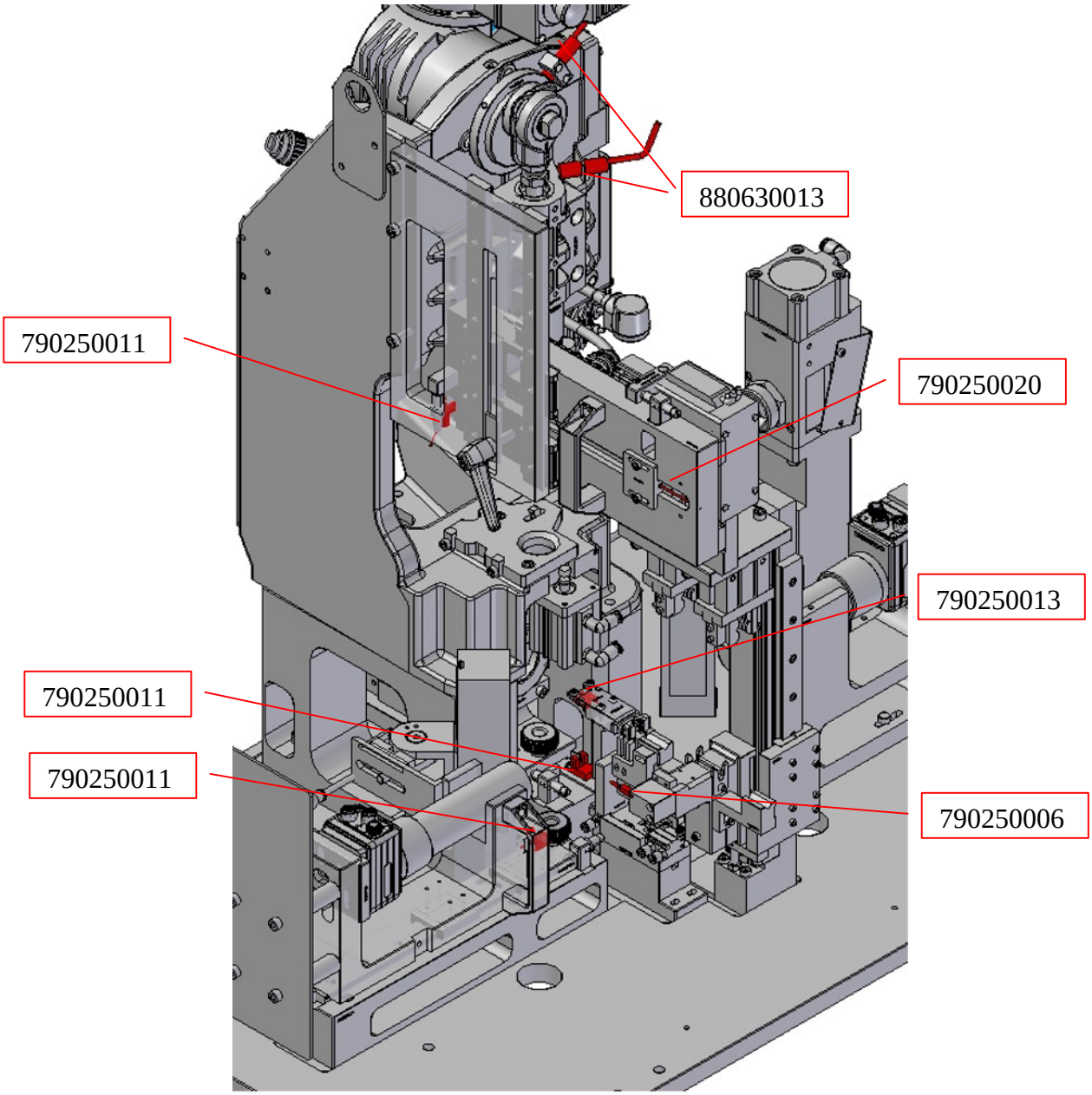
9.2.2) Sensor spare parts



Codes LMP6565-JKA
790250011 quantity 4
790250006 quantity 1

Codes LMP6565-JKB
790250011 quantity 4
790250006 quantity 1

9.2.3) Equipment sensor spare parts



Codes:
750250006 quantity 1
790250011 quantity 3
750250013 quantity 1
750250020 quantity 1
880630013 quantity 2

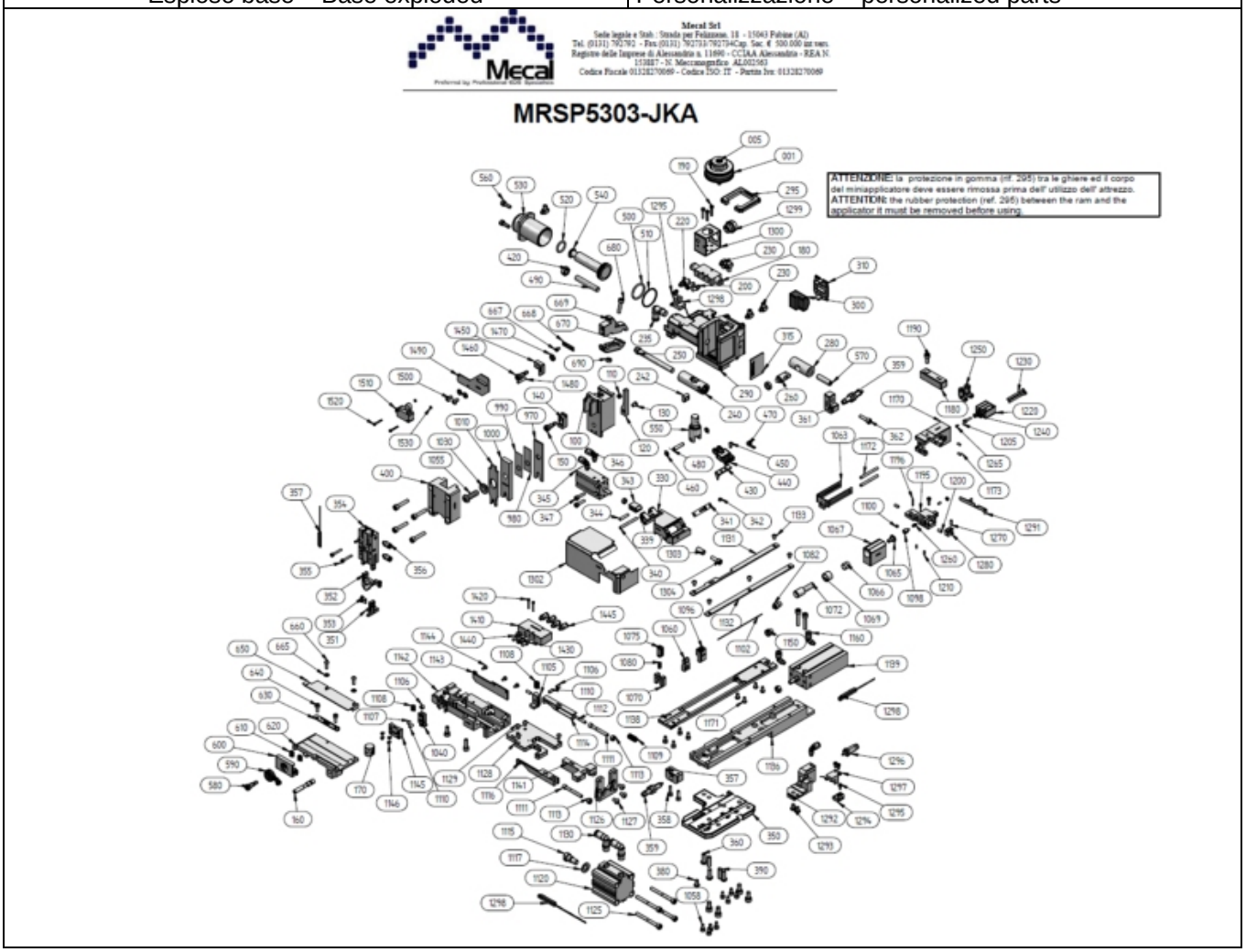
9.3) Example of documentation

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

Esploso base – Base exploded	Personalizzazione – personalized parts



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 8 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

Defect	Possible cause	Operation
The Magnum applicator is not locked correctly on the corresponding press baseplate.	• The contact surfaces are not clean. • The applicator is not correctly centred under the press.	• Clean the support surfaces, removing any processing residue deposited or any waste. • Verify the positioning of the “T” shank and the press baseplate.
During the test cycle, manually implemented with a suitable wrench, mechanical impediments are encountered on BDC passage.	• The press has not been set to the correct height at Bottom Dead Centre 135.8 mm. • The adjusting ring on the applicator is too open, toward 2.7. • The rubber protection on the crimper has not been removed.	• Verify the press height with the appropriate instrument (see point 3.4). • Check the position of the adjusting rings. The more open position with respect to the values listed can cause interference between the crimper and the anvil (see point 3.6). • Remove the rubber protection on the crimpers.
The terminal does not fit in the feeding guide.	• The clutch has not been deactivated and therefore the terminal is not able to pass. • It is not the correct terminal for the applicator.	• Release the clutch eccentric or the corresponding lever to deactivate it and enable terminal outfitting. • Verify that the terminal part number on the reel corresponds to the terminal p/n on the applicator data plate.
Terminal feeding is not running correctly.	• Incorrect air pressure • Incorrect engaging of the terminal on the feeding finger • Clutch deactivated	• Check system air pressure, it should be between 0.5 and 0.6 MPa (5-6 BAR). • Make sure that the feeding finger engages the terminal in the correct hole of the strip (side feed) or the copper/resin fins (end feed). • Make sure that the clutch is activated on the applicator after terminal outfitting.
Incorrect terminal position on the crimping axis	• Press cycle not complete. • Feeding parts may be worn. • Terminal unwinding from the reel is defective.	• In manual mode, repeatedly perform cycles on the press, checking correct terminal engaging and positioning. • Recover feeding part wear by performing adjustments described in points 5.1 and 5.2. • Make sure the reel unwinding occurs correctly, without any mechanical impediments or high resistance. This could cause abnormal bending.
The crimping terminal is deformed.	• Crimping height is incorrect for the wire cross-section used. • The terminal may not be aligned with the crimper. • The crimper may be worn or damaged. • Incorrect wire cross-section	• Compare the position of the adjusting ring with the values declared on the data plate (see point 5.4) and check the crimping height with the appropriate instrument (centimetre or micrometer calliper). • Check the position of the terminal on the crimping axis and adjust as described in point 5.1 and 5.2. • Check the crimpers, cutters and anvils to make sure they are not worn or damaged. Replace immediately if necessary. • Make sure that the cross-section of the wire used corresponds to the working position.
The cycle does not start.	• Equipment does not start up electrically. • The press does not start up electrically. • The left video camera is not correctly positioned. • The material to be processed has not been loaded.	• Make sure that the main switch is in position 1 (on). • Make sure that the press switch is in position 1 (on). • Make sure that the left video camera is at travel limit against the mechanical stop and that the sensor is switched.

	• The pneumatic system is not being powered. • The video cameras are not reading or more than one sensor is in error conditions. • The mini does not correspond to the insulator reference	• Make sure that the wire is correctly inserted, point 2.3 Chapt. 8. • Make sure that the terminal has been loaded. • Check system air pressure, it should be between 0.6 and 0.7 MPa (5-6 BAR). • Check the errors table. • Make sure that the mini and the insulator reference process the same material.

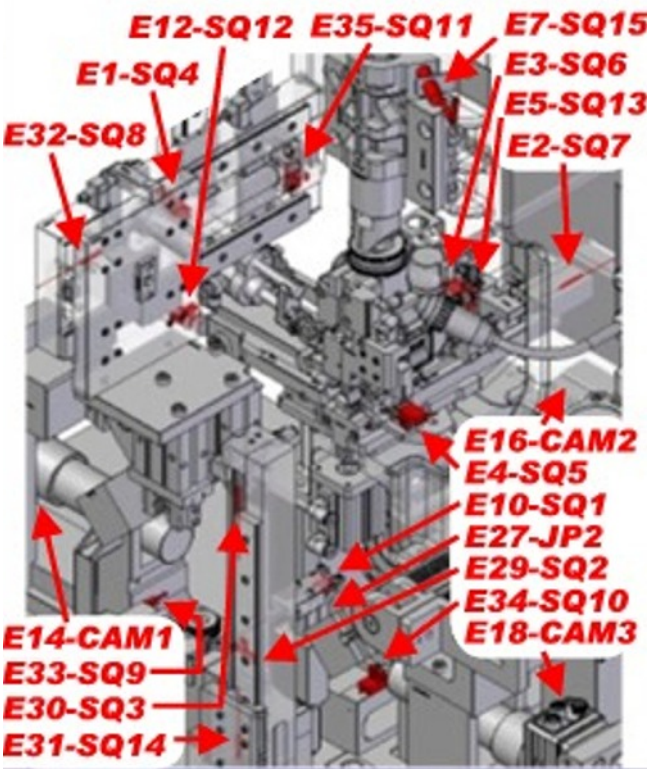
ERROR CODE	SENSOR MESSAGE	MEANING	SOLUTIONS
E1	SQ4	Terminal feeding cylin. sensor	- The pneumatic system is not connected→ Connect system -The sensor cable may be broken→ replace sensor - The sensor is not secured suitably, check screws→ Tighten them if necessary - Make sure that they are correctly adjusted -Make sure that there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt→ Replace the sensor
E2	SQ7	Slide cylin. sensor	
E3	SQ6	Wire sensor in position in outer	- The terminal has not achieved insertion and the sensor detects an error. - 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 there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt→ Replace the sensor
E4	SQ5	Terminal presence locking sensor	- Make sure that the material to be processed has been loaded correctly. - 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
E7	SQ15	Press ram sensor	
E10	SQ1	Cycle start-up sensor	- Make sure that the material to be

			processed has been loaded correctly. - 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
E11	SQ13	Body insul. position verification sensor	- The terminal has not achieved insertion and the sensor detects an error. - 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 there are no impediments to cylinder stroke.→ Clean the area, removing the impediment. -The sensor may be burnt→ Replace the sensor
E12	SQ12	Strip End Sensor	The material is finished and the strip must be replaced. -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
E14	CAM1	Video camera not ready	-Video camera is offline→ Reset online - Make sure that the video camera is connected correctly. - Video camera fault→Contact Mecal
E16	CAM2	Video camera not ready	-Video camera is offline→ Reset online - Make sure that the video camera is connected correctly. - Video camera fault→Contact Mecal
E18	CAM3	Video camera not ready	-Video camera is offline→ Reset online - Make sure that the video camera is connected correctly. - Video camera fault→Contact Mecal
E20	CAM1	No signal end of work	Video camera damaged, contact Mecal.
E21	CAM2	No signal end of work	Video camera damaged, contact Mecal.
E22	CAM3	No signal end of work	Video camera damaged, contact Mecal.
E27	JP2	Mini type select.	The block does not correspond to the applicator→ Connect The connector is faulty or not connected→ Connect the connector or replace if faulty.

E29	SQ2	Wire lock. cylin. sensor	- 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
E30	SQ3	High slide sensor transfers wire in z	The carriage is not in position→ Clean the area of any scrap. - 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
E31	SQ14	Low slide sensor transfers wire in z	The carriage is not in position→ Clean the area of any scrap. - 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
E32	SQ8	Top manipulator sensor back	- 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
E33	SQ9	Left video camera carriage position sensor	- 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
E34	SQ10	Right video camera carriage position sensor	- 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
E35	SQ11	Top manipulator carriage position sensor	- 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
E38	CAM1	No job loaded signal	Missing memory file, memory faulty → Contact Mecal
E39	CAM2	No job loaded signal	Missing memory file, memory faulty → Contact Mecal
E40	CAM3	No job loaded signal	Missing memory file, memory faulty → Contact Mecal

11) Error signals



ERROR CODE	SENSOR MESSAGE	MEANING
E1	SQ4	Terminal feeding cylin. sensor
E2	SQ7	Slide cylin. sensor
E3	SQ6	Wire sensor in position in outer
E4	SQ5	Terminal presence locking sensor
E7	SQ15	Press ram sensor
E10	SQ1	Cycle start-up sensor
E11	SQ13	Body insul. position verification sensor
E12	SQ12	Strip End Sensor
E14	CAM1	Video camera not ready
E16	CAM2	Video camera not ready
E18	CAM3	Video camera not ready
E20	CAM1	No signal end of work
E21	CAM2	No signal end of work
E22	CAM3	No signal end of work
E26	JP1	Block type select.
E27	JP2	Mini type select.
E29	SQ2	Wire lock. cylin. sensor
E30	SQ3	High slide sensor transfers wire in z
E31	SQ14	Low slide sensor transfers wire in z
E32	SQ8	Top manip. sensor back
E33	SQ9	Left video camera carriage posit. sensor
E34	SQ10	Right video camera carriage posit. sensor
E35	SQ11	Top manip. carriage posit. sensor
E38	CAM1	No job loaded signal
E39	CAM2	No job loaded signal
E40	CAM3	No job loaded signal

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