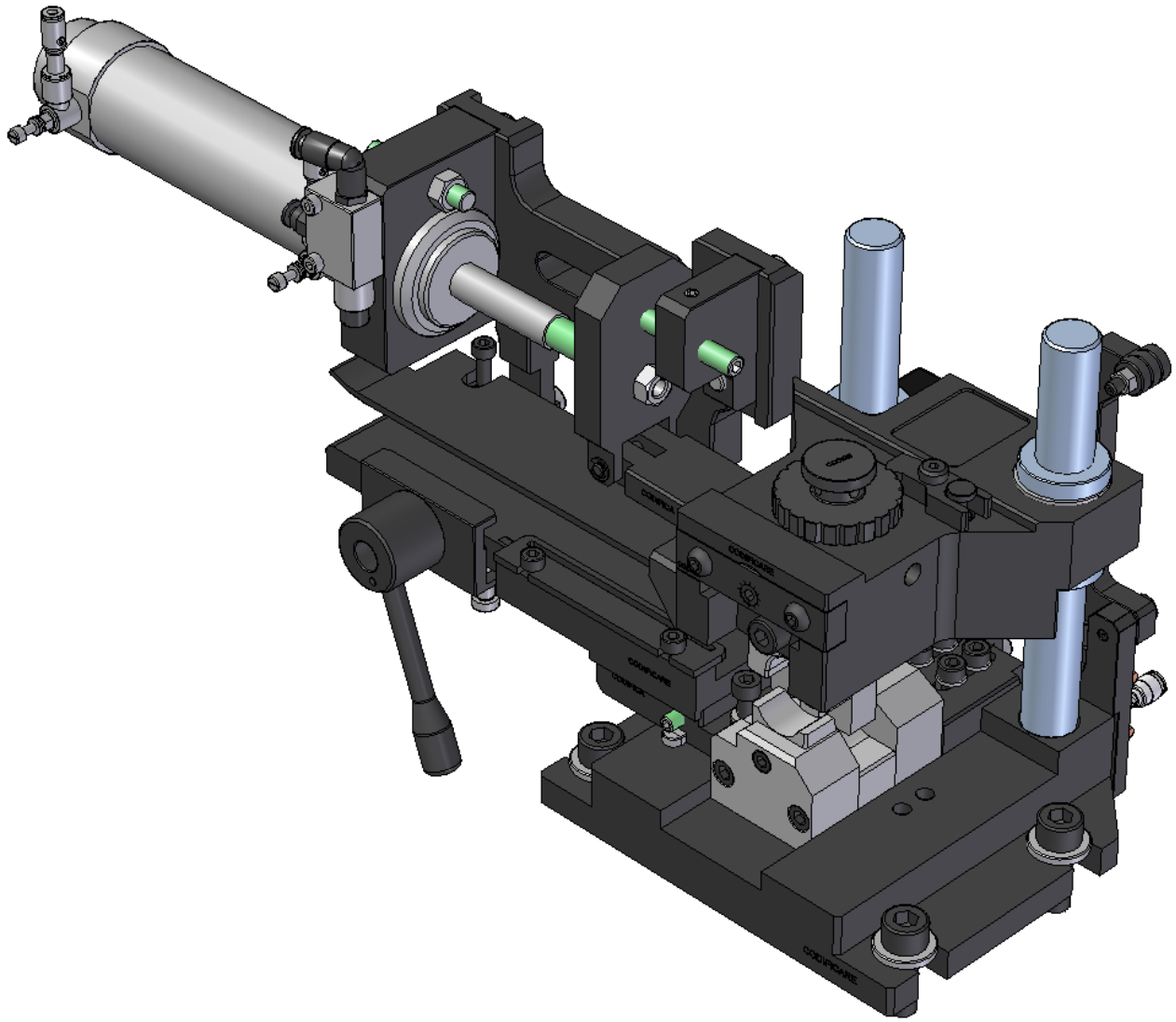
Mecal Srl
Sede legale e Stab.: Strada per Felizzano, 18 - 15043 Fubine (Al)
Tel. (0131) 792792 - Fax (0131) 792733/792734Cap. Soc. € 500.000 int.vers.
Registro delle Imprese di Alessandria n. 11690 - CCIAA Alessandria - REA N. 153887 - N. Meccanografico AL002563
Codice Fiscale 01328270069 – Codice ISO: IT - Partita Iva: 01328270069

USE AND MAINTENANCE MANUAL
MSMP

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.



MECAL s.r.l.

Strada per Felizzano 18
Fubine (AL) 15043
Italy

Phone: +39 0131 792792
Fax: +39 0131 792733
Email: sales@mecal.net
Web: www.mecal.net

These instructions were created in December 2017 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.

Indice

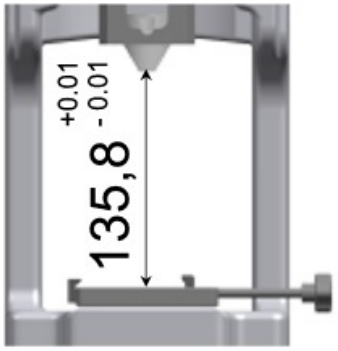
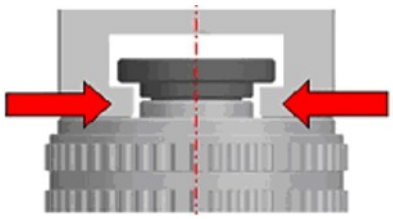
1) Introduction

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

• Check correct press crimping height setting at bottom dead centre BDC equal to 135.8 mm. **Remove the baseplate for the mini-applicator bracket so that crimping height is 142.6.**	
• 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 mini-applicator, have the press perform a complete cycle by means of a special key or handwheel to check that:

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

1.2) Symbols

	**CAUTION**: this symbol is used to indicate some parts of the manual containing operations that must be read carefully
	**STOP**: this symbol is used to indicate some parts of the manual containing operations that must be controlled and so, therefore, do not proceed. Mechanical damage can be caused to the machine.
	**INFORMATION**: this symbol is used to indicate some parts of the manual containing general informative notes
	**RECYCLE**: this symbol indicates the parts of the machine or packaging that must be recycled or disposed of according to current regulations
	**SAVE**: this symbol is used to indicate some parts of the manual with notes or suggestions regarding equipment data that needs to be saved

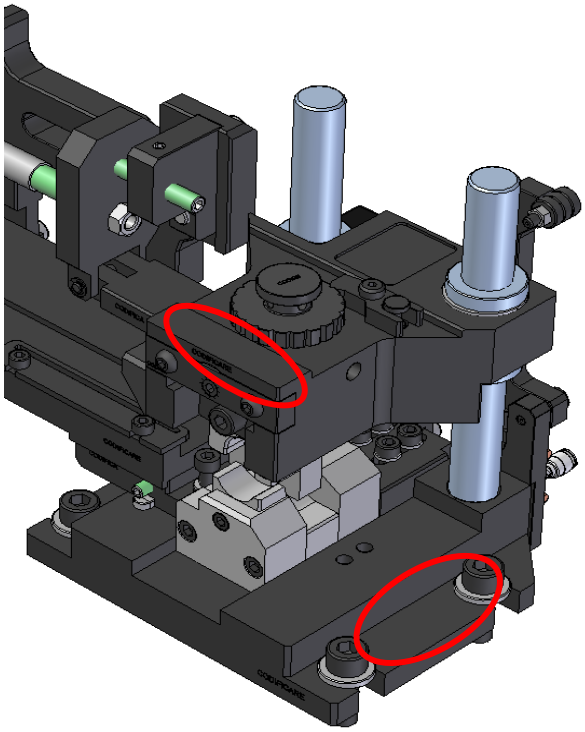
2) General instructions

2.1) Use

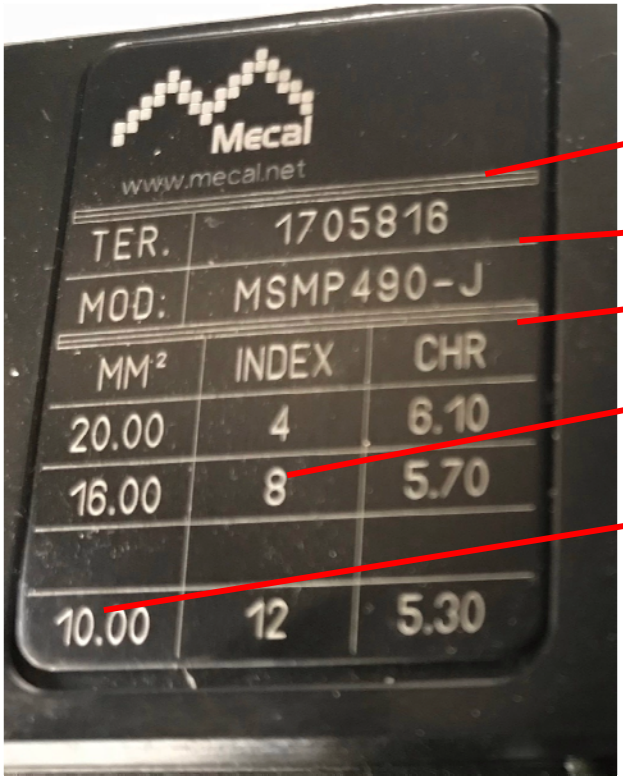
The MSMP lateral pneumatic post die is a new breakthrough in the Mecal product range. It has been designed to crimp terminals in strips wrapped around wheels with left-to-right feeding, and boasts some new features compared to the existing dies. The upper plate is lighter and is equipped with a continuous adjusting ring with 0.05 mm step, which allows for extremely precise control on the conductor crimping height. Insulation crimping can also be controlled by a new system set on the front side of the die, which can be easily adjusted by means of a simple screw. Plate sliding has been improved by means of two recirculating ball bushings. MSMP is also equipped with a non-resettable 7-digit piece counter. Suitable coupling for this product include the P40 or P80, with the CFA/CPM load cell designed by Mecal.

Equipment is intended for use in industrial environments. This machine can only be used for crimping terminals that are up to 1.5mm thick and with a cable cross-section of max 25mm. Its use for any application other than specified is **STRICTLY PROHIBITED**.

2.2) Machine identification



The serial number of the die is initialled at the top and on the lower side of the applicator.



Crimping data is contained on the identification plate.

Terminal P/N

Die model

CHR Crimping height

INDEX ring position

MM^2 cable cross-section range

2.3) Technical information

MSMP

ID	MSMP
WORKING HEIGHT	142.6mm (5.61’’9
WORKING STROKE	50mm
TERMINAL THICKNESS	Up to 1.5mm
CABLE CROSS-SECTION	Max 25mm^2
AIR PRESSURE	5/6 Bar
WEIGHT	17 Kg (37.4 lb)
DIMENSIONS (mm)	W510xH210xD190
DIMENSIONI (‘’)	W20.1xH8.3xD7.5
REGOLAZIONE J	Ring resolution 0.05mm

2.3) Inspection upon delivery

The applicator is delivered in a separate package containing:

- Equipment
- FTP area use and maintenance instructions

(Optional) upon request:

- Spare parts kit

Upon delivery:

-  Verify by checking the accompanying document that the equipment has not been damaged and that there are no missing parts.

-  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.

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 and switched off and the air inlet closed.

3.1) Unpacking, lifting and transport

- Use proper equipment to handle packaging.
- Make sure that there is no damage to the applicator and that there are no missing parts, checking the accompanying document.
- 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 applicator and that it is firmly secured in place.
- Do not dispose of packing in the environment: contact authorised companies for disposal.

3.2) Compatibility

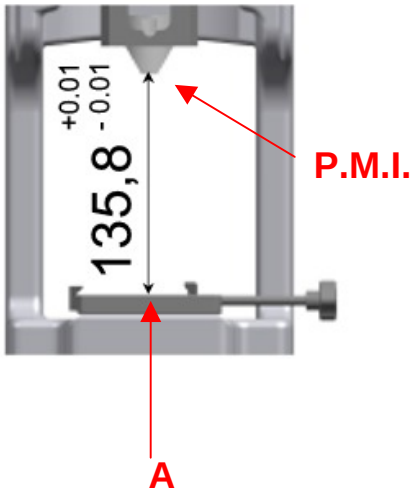
MSMP type post dies are equipped as standard with a continuous adjusting ring to control crimping height. They are identified with the letter J.

Die application on presses						
Press / Pressa / Two Post Die / Stampo	TT	P107C	P40	P80	P120	P200
MSMP	✗	✗	✓ P.M.I. 142,6 mm Version _J	✓ P.M.I. 142,6 mm Version _	✗	✗

BDC is intended as the Bottom Dead Centre and is the working distance between the base and the press "T" shank for die mounting. **BDC** is also the maximum closing distance of the die when it is applied on the press itself.

3.3) Press crimping height setting

STP Press crimping height setting instrument STP



Correct press operation is ensured by its relative calibration setting. 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).

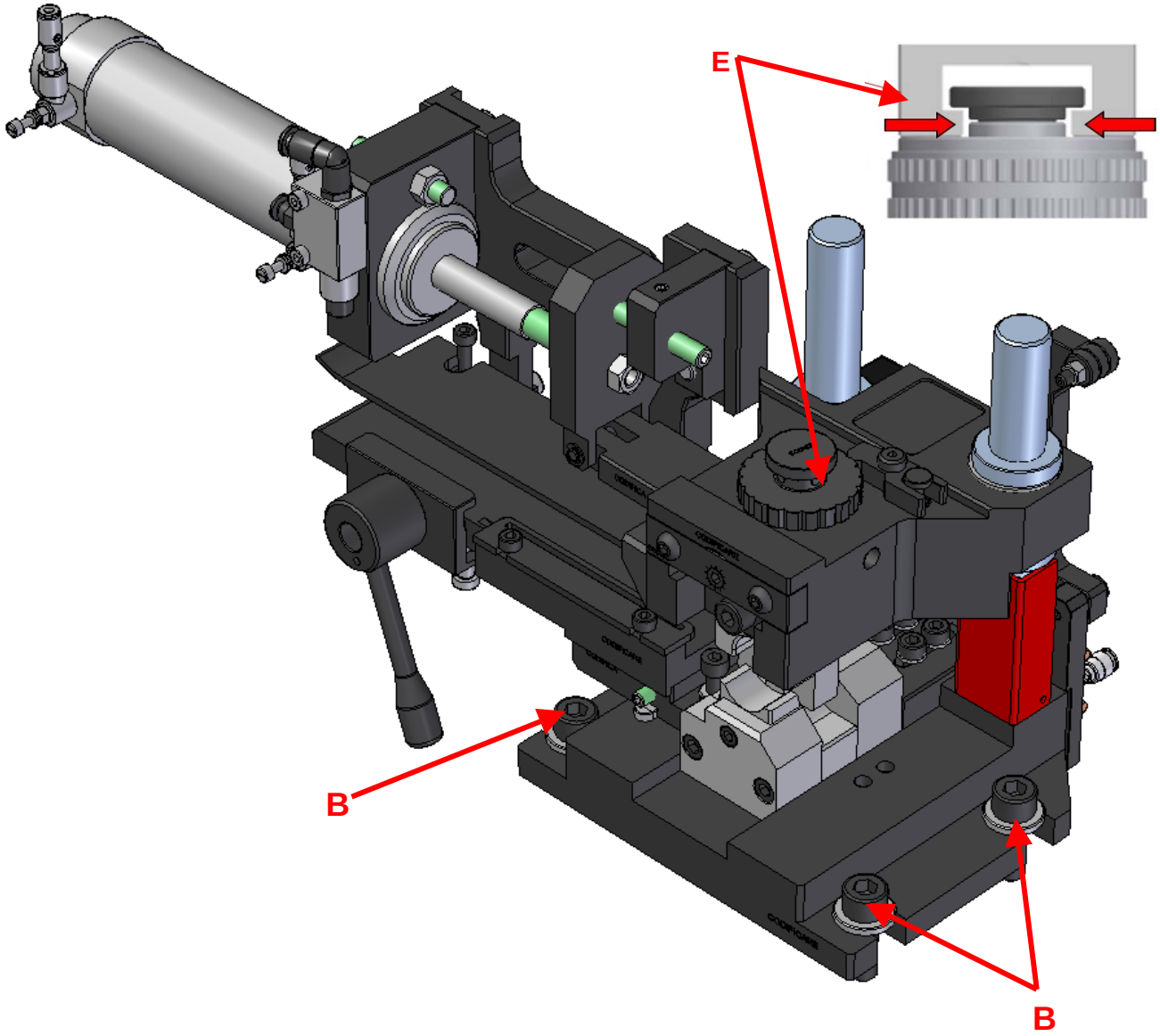
3.3) Mini-applicator installation

Adjust press P040 or P080 using the corresponding STP instrument, setting the BDC to 135.8 and setting the stroke to 40 mm. Then remove the mini-applicator baseplate and set the stroke to 50 mm. The resulting working height will be 142.6 mm.

3.3.1) Diefastening

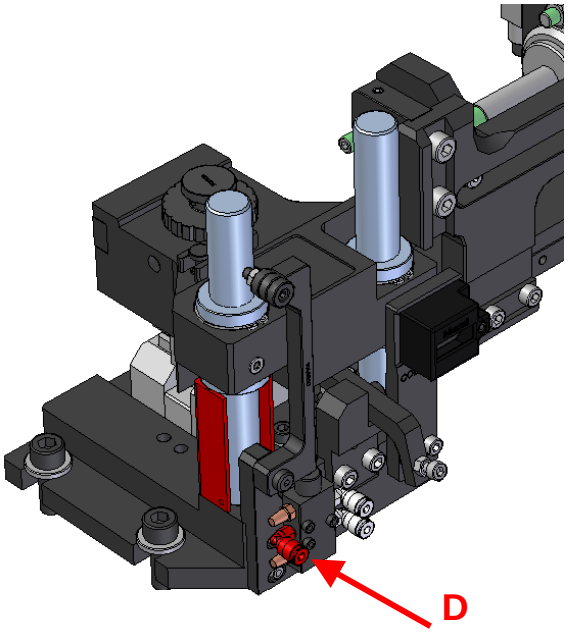
The die is packaged with a protection placed on a post to avoid damaging the crimping and cutting parts.
Position the die on the press fixing base, check that closure occurs correctly, checking that the applicator is perfectly adherent to the fixing base and that pin **E** is centred with the press "T" shank. Secure the four screws **B** to lock the die in place.

Remove the protection just before carrying out the press cycle.



3.2.2) Pneumatic connection

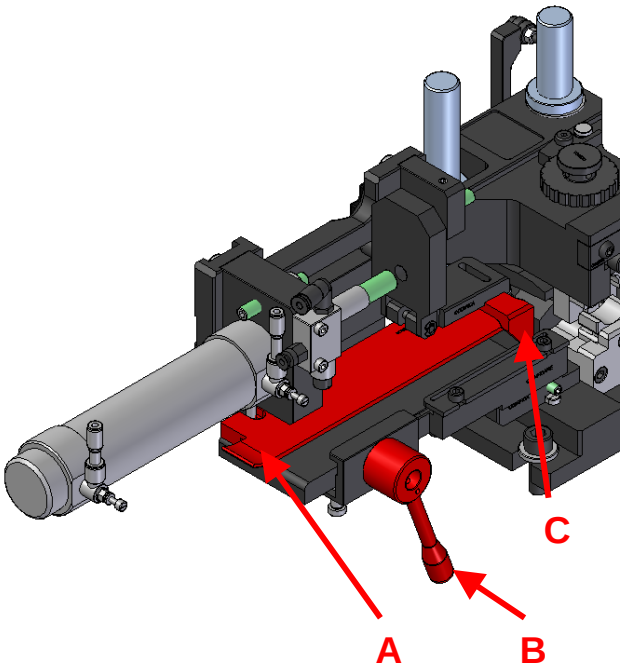
CAUTION: to avoid collisions, make sure there are no mechanical obstructions on all moving systems before connecting all the pneumatic components.



Connect the air supply hose to fitting D with operating pressure at approximately 5/6 Bar.

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

3.2.3) Terminal insertion



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 or with the linked binding until it engages with the pawl **C** and close the clutch.

	**It is advisable to manually perform a complete press cycle with the corresponding key and check that:** **1) There are no mechanical impediments in sliding parts** **1) The terminal must be correctly positioned, aligned with the crimping and cutting parts. If this does not occur, check the paragraphs (pitch adjustment) and (terminal adjustment).**

	If any mechanical impediments are encountered during the manual cycle, check: 1) Correct press die locking 2) Correct press setting at BDC 135 (see manual P107C) 3) Check that the position of the rings is not fully open/closed If the terminal is not correctly positioned: 1) Verify that the pawl is in the correct engaged position. 1) Verify that the clutch eccentric or lever is in working position

4) Start-up and use

Pay due attention when manoeuvring for die installation/removal and setting so as not to damage any part.

- Make sure the die has been correctly installed and adjusted on the machine.
- Make sure that there are no impediments in moving parts.
- Follow the start-up instructions on the machine where the die is installed.

4.1) Stop and reset

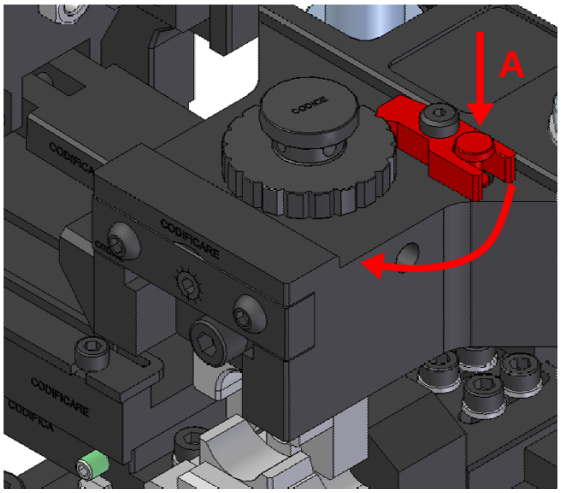
Follow the start-up instructions on the machine where the die is installed.
Make sure that there are no impediments to sliding in moving parts.

5) Process adjustments

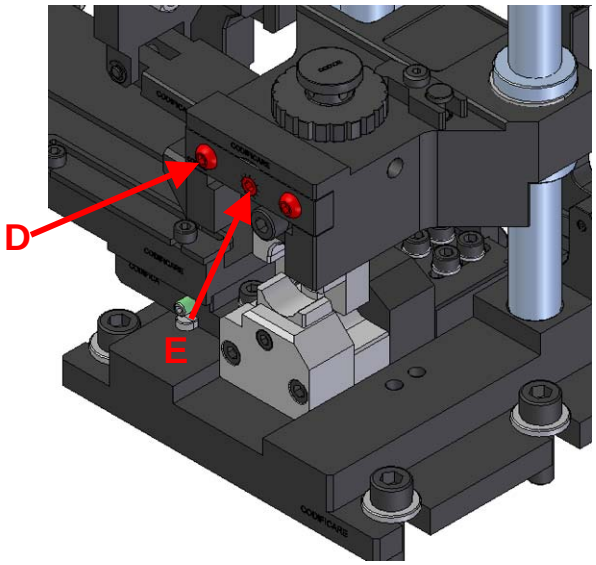
5.1) Ring setting

Before installing the dies on the presses, make sure that the adjustment ring is positioned at the correct working height.

Adjust the ring 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 working position of the ring.

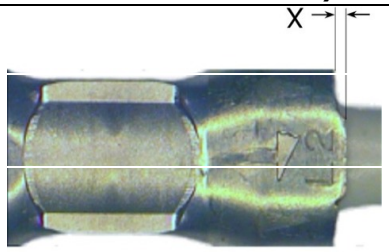


Crimping height adjustment of the copper knife is made by pressing on the locking pin **A** of the position marking pawl **B** and move the pawl by freeing the ring **C**.
Set the ring according to the values contained on the plate. Each click equals 0.05 mm.
Turn the ring in the clockwise direction to raise the crimping height of the terminal and in the counter-clockwise direction to lower it.
Adjust the ring, locking it again with the position marking pawl.

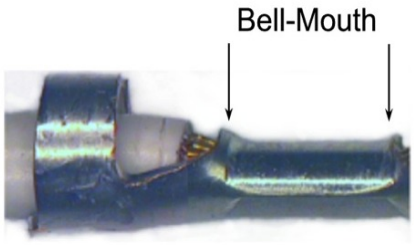


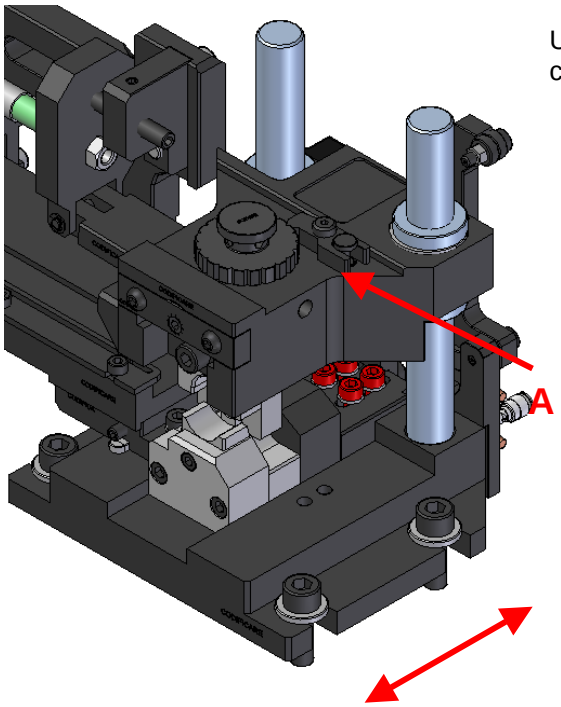
Isulator knife crimping height adjustment is made by adjusting the pin **E**.
Loosen the screws **D** using the 4 mm Allen wrench and use the same tool to adjust the pin **E** (the clockwise direction lowers the crimping height and the counter-clockwise direction raises it).
Lock the screws **D** once again after the height has been adjusted.

5.2) Bell-mouth and wire bar end adjustment



Bell-mouth adjustment is carried out by aligning the terminal with the thickness of the copper crimper. Terminal displacement also defines height **X** of the wire bar end.





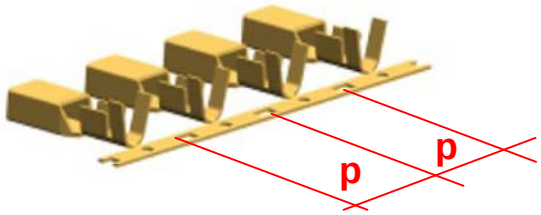
Unscrew the four locking screws **A** and align the lower crimpers with the upper ones, then re-tighten the screws.

	Once the adjustments have been completed, it is advisable to manually perform a complete press cycle with the corresponding key and verify correct terminal position on the anvil axis and the correct feeding pitch.

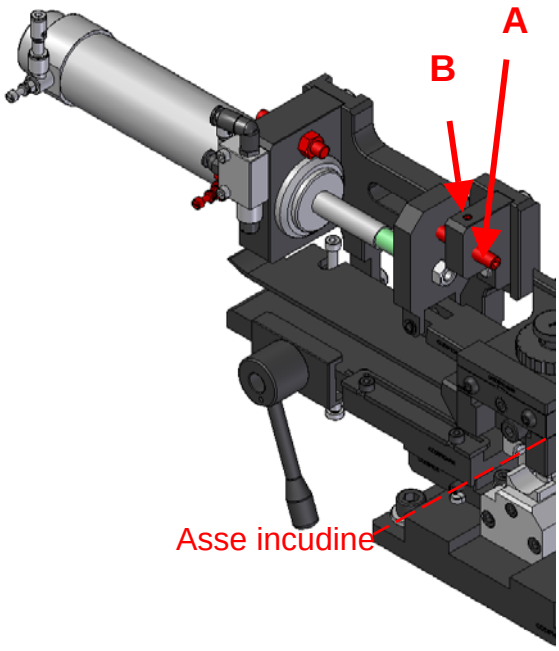
	CAUTION: all installation operations must be carried out with the press in emergency conditions or switched off.

5.2) Terminal pitch adjustment

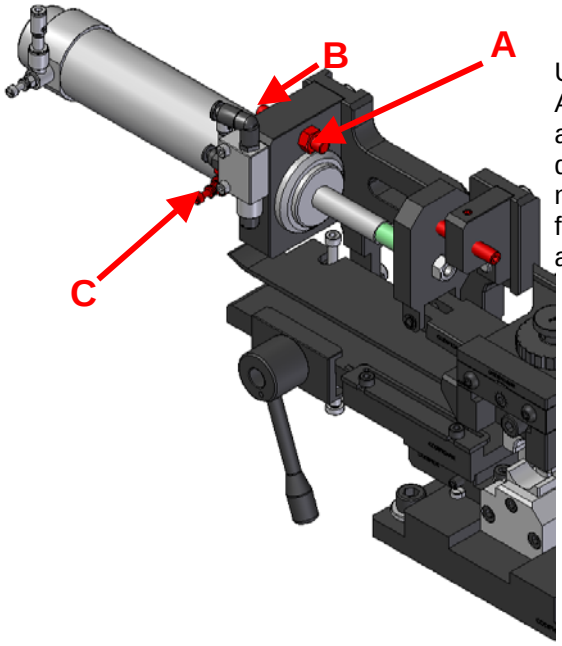
Pitch **p** is the distance between one terminal and the next.



Pitch adjustment between one terminal and the other 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 in the working position**.



Terminal adjustment on the anvil axis is also called fine regulation and is used to align the terminal perfectly with the crimping parts (anvil, copper crimper, insulating crimper). This operation should be carried out with the press in the "stand-by" position at BDC (bottom dead centre). The feeding cylinder must be in the feeding position and the terminal must be on the anvil. Loosen the locking dowel B and turn the adjustment dowel A. Once the correct position has been decided, re-tighten the locking dowel B.



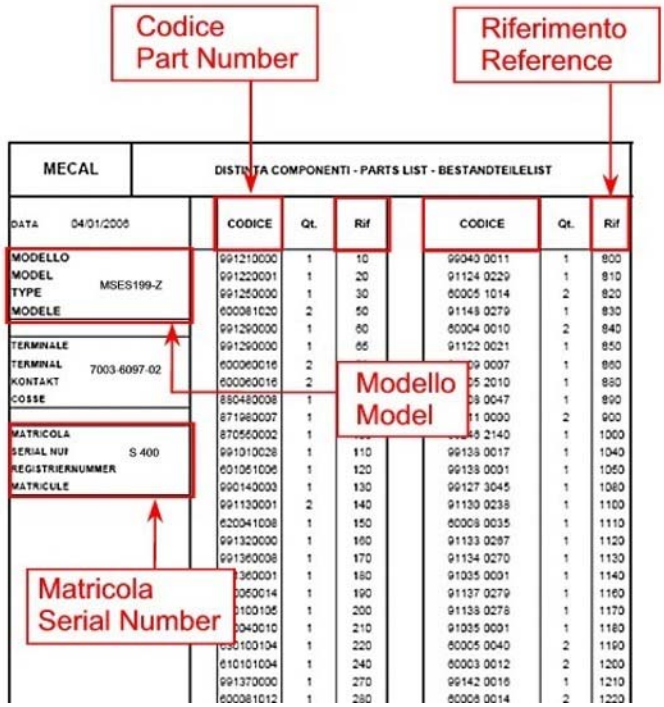
Use the corresponding key to manually perform a press cycle. As soon as the pneumatic valve changes the cylinder, stop to adjust the pitch. Loosen the locking nut **A** and adjust the dowel **B** until adjustment has been made. Tighten the locking nut A. The feeding speed can be defined by means of the air flow regulator **C**. Repeat this operation until the desired adjustment has been reached.

6) Maintenance

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

6.1) Spare parts

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



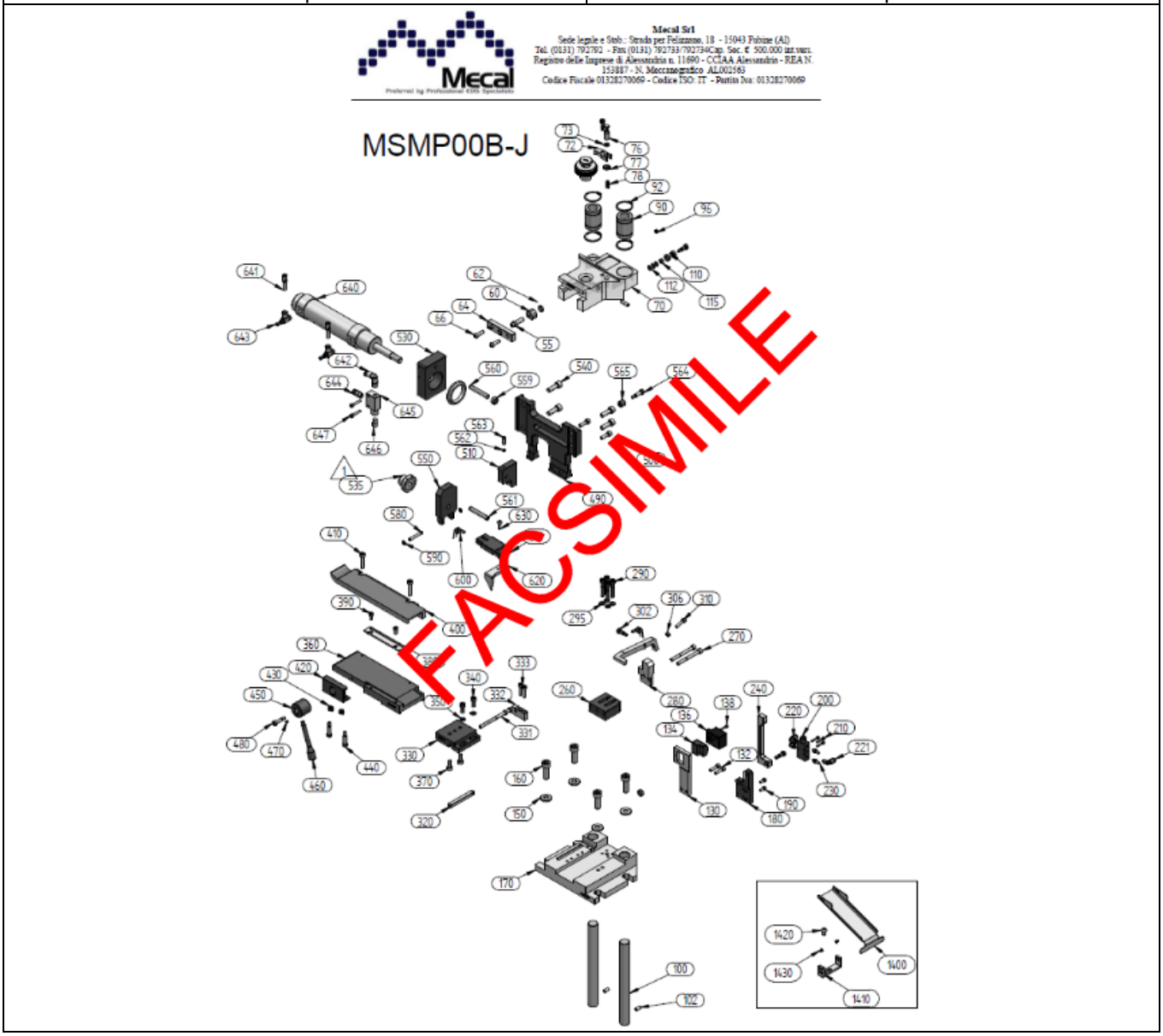
6.2) Documentation

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

The code of the part to be replaced/ ordered is identified with reference to the exploded diagram (Ref) matching the code (see fig. pg 17).

Base exploded	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.

6.3) Cleaning

It is advisable to clean during the operating cycle.

Routine cleaning

Remove any scraps that could damage die operation.

The die must be cleaned and lubrication every 8 hours of operation or when it is removed after use before storage.

Special cleaning

- Remove the terminal with the reel (if they are linked contacts) and the die from the press.
- Remove the upper part of the die, sliding it off from the guide posts. **DO NOT REMOVE THE CRIMPERS**.
- Use a cloth to clean all moving parts, removing old grease, dirt and scraps that may have deposited anywhere during machining.
- Check the crimpers, the anvil and the cutting parts and remove them in the event of excessive wear or damage.
- Insert the upper part of the die, replacing it in the corresponding guide posts. If the die is stored, the crimpers and anvil must be protected by inserting the red sheet spacer on the die post and spraying the entire die with a layer of protective oil.

6.4) Storage

When the die 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 applicator shown on the piece counter to best manage the wear and requirements of spare parts.

IMPORTANT: It is important to take note of or record the number of applicator cycles so that routine maintenance and replacement of spare parts are carried out correctly

.

6.5) 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.

7) Troubleshooting and problem resolution

Defect	Possible cause	Operation
The die is not locked correctly on the press base.	• The contact surfaces are not clean. • The die is not in axis with the "T" shaft.	• Clean the support surfaces, removing any processing residue deposited or any waste. • Check the "T" shaft position.
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 BDC at working height 142.6mm (for J version dies). • The die adjustment ring (version J) is completely open. • The red protection on the posts has not been removed. • The die is not centred with the press.	• Verify the press working height with an appropriate instrument (see paragraph 5 pg.16). • Check the ring height J. The more open position could cause interference between the crimpers and the anvil. • Remove the protection from the posts.
The press does not perform a machining cycle even though safety devices have been activated.	• The press cycle start sensor has not switched during the manual cycle. • Guard sensors are deactivated. • The emergency button has been activated.	• The press has not been performed a complete cycle during manual press cycle installation manoeuvres. Make sure that this occurs, switching the cycle start sensor (proximity). • Make sure that all safety systems (guards and barriers) have been activated and have not been interrupted. • Make sure that the emergency button has not been engaged; if so, disengage it.
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 die in use.	• Release the corresponding lever to deactivate it and enable terminal insertion. • Verify that the terminal code on the reel corresponds to the one indicated on the die plate for data sheet.
Terminal feeding is not running correctly.	• Incorrect air pressure • Pawl engaging position on the terminal • 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/slot of the strip (side feed) or the copper/resin fins (end feed). • Make sure that the clutch is activated on the die 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 5.2 pg. 15 – 5.2 pg. 16. • 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. • 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 5.1 pg.13) 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 (see point 5.2 pg.16).

		• 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 crimped terminal does not reach the sheer strength declared in the tables.	• The press has not been set to the correct BDC at working height 142.6mm (for J version dies). • The crimping height adjustment ring is incorrectly positioned. • Incorrect wire cross-section	• Check the press working height at BDC using a corresponding calibration instrument as indicated in point 5.2 pg. 16. • Check correct position correspondence of the crimping height adjustment ring with the values contained on the plate or data sheet (point 5.1 pg. 13). • Make sure that the cross-section of the cable used corresponds to the working position.

8) 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