

E46L

E46LA

E46L TWA

E46L TWA



INSTALLATION, OPERATION AND MAINTENANCE MANUAL rev 1.5 06/19

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2 CERTIFICATION

The manufacturer *ELBO CONTROLLI S.r.l.* under its responsibility

DECLARES THAT:

The tool presetter mod. E46L/E46LA/E46LTW/E46LTWA conforms to safety standards where enforceable.

- **2006/42/CE Machinery Directive (MD)**
to the harmonized standards EN ISO 12100:2010
- **2014/30/EU Electromagnetic Compatibility Directive (EMC)**
to the harmonized standards EN61326-1:2013, EN55011:2009+A1:2010 ISM (group 1, class A), EN61000-3-2:2014, EN61000-3-3:2013, EN61000-4-2:2009, EN61000-4-3:2006+A1:2008+A2:2010, EN61000-4-4:2012, EN61000-4-5:2006, EN61000-4-6:2009, EN61000-4-11:2004
- **2014/35/EU Low Voltage Directive (LVD)**
to the harmonized standards EN60950-1:2006+A2: 2013, EN60204-1:2006+A1:2009, EN61010-1:2010

- **2011/65/EU Restriction of Hazardous Substances (RoHS II)**



- **2012/19/EU Waste Electrical and Electronic Equipment (WEEE)**



as shown in the test reports enclosed to our technical brochure.

Declared in Meda
Date:

The Legal Representative
TASCA MASSIMILIANO

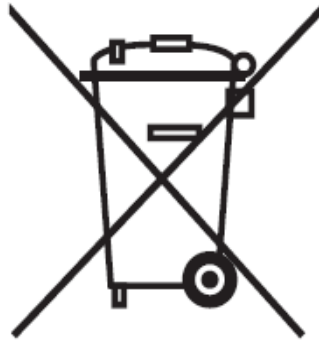
 ELBO CONTROLLI S.r.l. Via S. Giorgio, 21 20821 Meda (MB) Italia			
Modello / Model			
Numero seriale / SN			
Anno costruzione / Year			
Tensione / Voltage	V		
Corrente / Current	A		
Massa / Weight	Kg		

The information relating to this tool presetter is listed on the identification plate stamped on the left-hand side of the machine as shown above.

3 DISPOSAL

Information obligations to the end-users

DISPOSAL OF WASTE MATERIALS



INFORMATION FOR PROFESSIONAL USERS

According to the 2002/95/CE, 2002/96/CE and 2003/108/CE Directives, relative to reduction in the use of hazardous substances in electrical and electronic apparatus, as well as to disposal of waste materials.

The symbol of a crossed wheelie-bin applied on the apparatus indicates that at the end of its useful life the product must be collected separately from other waste materials.

The separate waste collection of the apparatus, which has reached the end of its useful life, is organized and managed by the national dealer.

The end-user who desires to get rid of the present apparatus must therefore contact the national dealer and follow the given instructions.

Suitable separate waste collection for future recycling, treatment and environmentally friendly disposal contributes towards preventing any possible negative effects on the environment and on health, and encourages the re-use and recycling of the materials the apparatus is made up of.

Unauthorised disposal of the product by the end-user will lead to payment of the administrative sanctions in force in the country where it is marketed.

4 PRESENTATION

First of all, thank you for choosing us: you will definitely be happy with the *E46L*, *E46LTW*, *E46LA* and *E46LTWA* ELBO CONTROLLI tool presetter and you can enjoy increased turnover from your CN machines.

The *E46L* / *E46LTW* / *E46LA* / *E46LTWA* tool presetter were manufactured in compliance with the principles of ergonomics and simplicity, offering important technological solutions. The mechanical systems, electronics and software deal with tool measurement and pre-adjustment. The 214V camera vision system, designed by ELBO CONTROLLI, is used to acquire measurement data both automatically and manually.

The excellent quality-price ratio and the measurement precision make *E46L* / *E46LTW* / *E46LA* / *E46LTWA* unique in their category.

4.1 E46L /E46LA model features

Measurement range: max diameter 400 mm (radius 200 mm); max height 600 mm.

Machine structure in mechanical high strength steel which is interchangeable over time, lowered on the ground with 3 fixed supports and 1 adjustable support in steel.

Base and column in natural granite: max linearity error 2 µm/m certification with Taylor Hobson res.1 µm/m electronic millesimal level.

Interchangeable rotating spindle-holder ISO/BT/HSK/VDI (to specify) maximum run-out error < 2 µm.

Spindle-holder identification system (SP-ID) with NFC technology to automatically identify the spindle-holder after each replacement.

Spindle index in four angular positions: 0°-90°-180°-270°

Double vault arc prismatic slideways: 2 axis slideways X; 1 axis slideway Z.

Double re-circulating ball bearing slides (4), lubricated for life (preloading slides/slideways: P/H).

Universal mechanical tool clamping managed via software (ISO/BT tools only).

Pneumatic-mechanic brake of the spindle-holder rotation with radial compensation of the clamping force: no axis angular run error.

Constant load Archimedean spiral spring to counteract the force of gravity on mobile masses.

Vision system for tool measuring and cutting inspection consisting of:

- C-MOS sensor framed image area 10 x 10mm.
- Magnification 26X
- Bi-telecentric lens
- Optical doublets at low F/Number in order to eliminate the error of the clearness circle.
- Red light episcopic leds illuminator with ring lens, red light diasopic led puntiform illuminator.

Machine operator interface through:

- Full HD LCD 22" colour Touch-Screen monitor
- Intel I3 Quad Core Processor
- UBUNTU 14.04 LTS LINUX operating system
- Data storage on solid state disk SSD
- X and Z axes block management with control maximum speed of translation 2mm/sec.
- 4 USB ports (keyboard, mouse, Dymo printer and one spare) and 1 LAN port

Software standard:

- CNC machine origin management and adapters
- Tool list creation and/or single tool, possibility to create a customized format
- Automatic change of CNC machine origin allocation
- Tool set and Post Processor universal generator

- Magnetic chip code-holders (Balluff for example, hardware not included)
- Printable tool set report
- Theoretical measurements and tolerances management

ELBO CONTROLLI Linear Transducers in optical glass type SLIDE 371 certified HP laser

- Axes resolution: X = 1 μm , Z = 1 μm

Anti-dust cover provided for when not in use.

Overall dimensions: L = 1237 mm, H = 1874 mm, D = 646 mm

Net weight ~ 255 Kg

E46L MODEL OPTIONS:

- C axis display spindle body and spindle-holder
- Spindle-holder Identification System (SP-ID) for additional spindle-holder, mounted on the interchangeable rotating spindle-holder.

E46LA AVAILABLE FUNCTIONS:

- Motor providing automatic rotation of the spindle with pneumatic engagement of the motion transmission for zero backlash (patented system) Spindle-holder identification system (SP-ID) with NFC technology to automatically identify the spindle-holder after each replacement
- C axis display spindle body and spindle-holder
- Spindle-holder Identification System (SP-ID) for additional spindle-holder, mounted on the interchangeable rotating spindle-holder.
- Spindle holder auto rotation with automatic tool measurement cycles for single cutter or multi edged cutter
- TLA technology (Tool Link App) for tool data transmission directly to numerical control memory (DNC)
- Ready for TID infrastructure for tool identification with Datamatrix code

4.2 E46LTW / E46LTWA model features

Measurement range: max diameter 320 mm (radius 160 mm); max height 600 mm.

Machine structure in mechanical high strength steel which is interchangeable over time, lowered on the ground with 3 fixed supports and 1 adjustable support in steel, equipped with adjustment supports for the monitor and keyboard.

Base and column in natural granite: max linearity error 2 µm/m certification with Taylor Hobson res.1 µm/m electronic millesimal level.

Interchangeable rotating spindle-holder ISO/BT/HSK/VDI ... etc. (to specify) maximum run-out error < 2 µm.

Spindle-holder identification system (SP-ID) with NFC technology to automatically identify the spindle-holder after each replacement

Spindle index in four angular positions: 0°-90°-180°-270°

Double vault arc prismatic slideways: 2 axis slideways X; 1 axis slideway Z.

Double re-circulating ball bearing slides (4), lubricated for life (preloading slides/slideways: P/H).

Universal mechanical tool clamping managed via software. (only for ISO/BT tools).

Pneumatic-mechanic braking of the spindle-holder rotation with radial compensation of the clamping force: no axis angular run error.

Constant load Archimedean spiral spring to counteract the force of gravity on mobile masses.

Machine operator interface through

- Full HD LCD 22" Touch-Screen monitor
- Intel I3 Quad Core Processor
- UBUNTU 14.04 LTS LINUX operating system
- Data storage on solid state disk SSD
- X and Z axes block management with control maximum speed of translation 2mm/sec.
- 4 USB ports (keyboard, mouse, Dymo printer and one spare) and 1 LAN port

Software standard:

- CNC machine origin management and adapters
- Creation of tool lists and/or individual tool
- Automatic change of CNC machine origin allocation
- Tool set and Post Processor universal generator
- Magnetic chip code-holders (Balluff for example, hardware not included)
- Printable tool set report
- Theoretical measurements and tolerances management

Camera no. 1: tool measurement (diascopic) and cutting-edge inspection (episcopic):

- Bi-telecentric lens
- Optical doublets at low F/Number in order to eliminate the error of the clearness circle
- Magnification 26X, digital zoom 2x and 4x available
- C-MOS sensor 1,3 Mega pixels, USB 2.0 High speed connection
- Framed image area 10 x 10 mm (3 times bigger than standard values)
- Illuminator: episcopic toroidal lens and circular red leds; diascopic illuminator with punctiform red light led.

Camera no. 2 and no. 3: cutting-edge inspection (episcopic) with on screen measurement:

- Bi-telecentric lens
- Opportunity to view the tool from the top (front) or from the side (chest).
- Thanks to the rotating support at 90° the camera from the top can be removed to avoid hindering the measurement operations.
- Magnification 60X , digital zoom 2x and 4x available;

- C-MOS sensor 1,3 Mega pixels, USB 2.0 High speed connection
- Framed image area 4 x 4 mm (3.9µm/pixel)
- Illuminator: episcopic ring with diffused light and low angle: reduced glare caused by tool surface.

ELBO CONTROLLI linear Transducers in optical glass type SLIDE 371 certified HP laser:

- Axes resolution: X = 1 µm, Z = 1 µm

Anti-dust cover provided for when not in use.

Overall dimensions: L = 1237 mm, H = 1874 mm, D = 646 mm

Net weight ~ 265 Kg

OPTIONS:

- C axis display spindle body and spindle-holder
- Spindle-holder Identification System (SP-ID) for spindle-holders, mounted on the interchangeable rotating spindle-holder.

E46LTWA AVAILABLE FUNCTIONS:

- Motor providing automatic rotation of the spindle with pneumatic engagement of the motion transmission for zero backlash (patented system) Spindle-holder identification system (SP-ID) with NFC technology to automatically identify the spindle-holder after each replacement
- C axis display spindle body and spindle-holder
- Spindle-holder Identification System (SP-ID) for additional spindle-holder, mounted on the interchangeable rotating spindle-holder.
- Spindle holder auto rotation with automatic tool measurement cycles for single cutter or multi edged cutter
- TLA technology (Tool Link App) for tool data transmission directly to numerical control memory (DNC)
- Ready for TID infrastructure for tool identification with Datamatrix code

4.3 “IS” Version

The E46L and LA series presetters in the "IS" version offer an integrated solution for the toolroom including:

E46 series preset

22” double vertical touchscreen monitor

TID software preset kit (Automatic Tool Identification System)

TP32 software license (Integrated Tool Management System).

For this version, three different configurations are available

- LITE: with 8 users, annual technical support (10h), installation and training (2 days)
- PLUS: with 16 users, annual technical support (20h), installation and training (2 days)
- PRO: with 32 users, annual technical support (40h), installation and training (4 days), multi-warehouse management, ISO 13399 compatibility and modeling course



5 WARNINGS

5.1 Foreword

This operation and maintenance manual of the E46L / E46LTW / E46LA / E46LTWA tool presetter describes the machine in the unpacking, any re-packaging, preparation and connection phases and its mechanical parts, while for the entire software part refer to the relevant manual supplied with the machine.

It is an integral part of the equipment, therefore it must be carefully kept for subsequent references.

All the procedures and information contained in this manual cannot be a substitute for the end user's adequate tool presetting knowledge but they provide the necessary information for the correct and proper use of the E46L / E46LTW / E46LA / E46LTWA tool presetter.

Unauthorised equipment handling, non-compliance of instructions, improper or incorrect use may lead to unforeseen results for which ELBO CONTROLLI S.r.l. declines all civil or criminal liability.

ELBO CONTROLLI S.r.l. reserves the right to modify at any time the tool presetter and the operator's manual without prior notice, on account of the continuous technical updating of the product in pursuit of the Company strategy aimed at perfecting presetting technology of tool measurement and presetting and to achieve ultimate customer satisfaction.

All suggestions for improvement to the apparatus or manual are welcome either by fax or letter to our head office.

5.2 Purpose

The aim of the manual is to allow the E46L / E46LTW / E46LA / E46LTWA tool presetter operator to become acquainted with the machine's operating directions, routine and non-routine maintenance and the proper operating procedures and to show all the required necessary actions from the tool presetter introduction until its disposal.

ELBO CONTROLLI S.r.l. only approves the allowed uses and the reported configuration; any other use or configuration is not recommended, as it may compromise the tool's proper functioning and/or its safety.

This manual does not replace the knowledge and the technical expertise of the personnel involved in the use of the tool presetter machine and is to be considered as a guide before and during use.

This manual must be read following the chapters in their logical order, because the repeated information is explained in full only the first time it appears; afterwards it is just mentioned because it constitutes knowledge already acquired.

5.3 Font characters and heading layout

This manual is subdivided into chapters, which contain homogeneous information; each chapter is identified by a title in the following typographical character:

X. FIRST CHAPTER

Each chapter is identified by a title in the following text format:

X.X First paragraph

The paragraph can contain sub-paragraphs identified with the text format:

X.X.X First sub-paragraph

The operation or maintenance procedures are identified by:

☒ Procedure

then the procedure will be identified with:

step 1

step 2

.....

step 4

Notes or instructions are identified using the following format:

✓ *Note or instructions of particular interest.*

6 PREPARATION AND INSTALLATION**6.1 Packing list**

Before proceeding with preparation and installation, check that the tool presetter packaging contains the following components:

TOOL PRESETTER MOD.☐ E46L☐ E46LTW☐ E46LA☐ E46LTWA**ROTATING SPINDLE**☐ ISO 30☐ ISO 40☐ ISO 45☐ ISO 50☐ HSK 63☐☐☐**RESETTING GAUGES**☐ ISO 30☐ ISO 40☐ ISO 45☐ ISO 50☐ HSK 63☐☐☐**REDUCERS**☐ ISO VDI☐ other**DYMO LABELLER** ☐**LABELS** ☐**POWER SUPPLY UNIT****OPERATION MANUAL (PDF)****TEST REPORT****WARRANTY****COVER**

Checked by QC.....

6.2 Safety norms

The personnel involved with the E46L / E46LTW / E46LA / E46LTWA tool presetter are not required to use any particular protection, however they must be informed of the following potential dangers:

In particular conditions of measurement of the vertical axis, the illuminator of the vision system 214L or 214 LT can be an obstacle at head height if the machine is used without the necessary attention and care. It should be noted that the manipulation of tools should be performed with attention and possible hand protection. Because of their nature tools are sharp and therefore potentially dangerous.

- ✓ *The person responsible for employee safety should train the users of the tool presetter, by imposing the reading of this manual as a pre-requisite (in Italy see D.L. 81/08).*

6.3 Suggested use of the machine

The E46L / E46LTW / E46LA / E46LTWA tool presetter is an instrument to preset and measure the tools surveying their dimensions along the X-Z axes, in accordance with the axes definition of the machine using the above-mentioned tools. The measurable tools are to be compatible with the tool presetter spindle; any attempt to adapt the tool presetter spindle taper without using the appropriate adapters supplied by ELBO CONTROLLI S.r.l. is to be considered improper use.

The maximum weight of the tool to be measured is 40 kg.

Any other use is to be considered improper and compromising the operator's safety.

- ✓ *The E46L / E46LTW / E46LA / E46LTWA tool presetter is to be handled by a single person in conditions of tested and controlled efficiency, in respect of all procedures described in this manual..*

6.4 Packing, transport and storage

The machine must be handled inside its proper case, which protects it from normal mechanical stresses. Shipping instructions, particularly the specified total weight, transport position and vulnerability to atmospheric agents and the need to handle with care are printed on the packing with internationally recognized symbols.

Keep the original packing and use it for further transportation of the machine.

Tool presetter transportation is to be carried out by qualified carriers able to grant the correct handling of the transported goods, observing the following precautions:

- lift only with trolleys or pallet jacks;
- do not bump, throw, drop, roll, or drag the case;
- do not overload the packing by piling more than three cases;
- avoid exposure to atmospheric agents;
- maintain the prescribed transportation position.

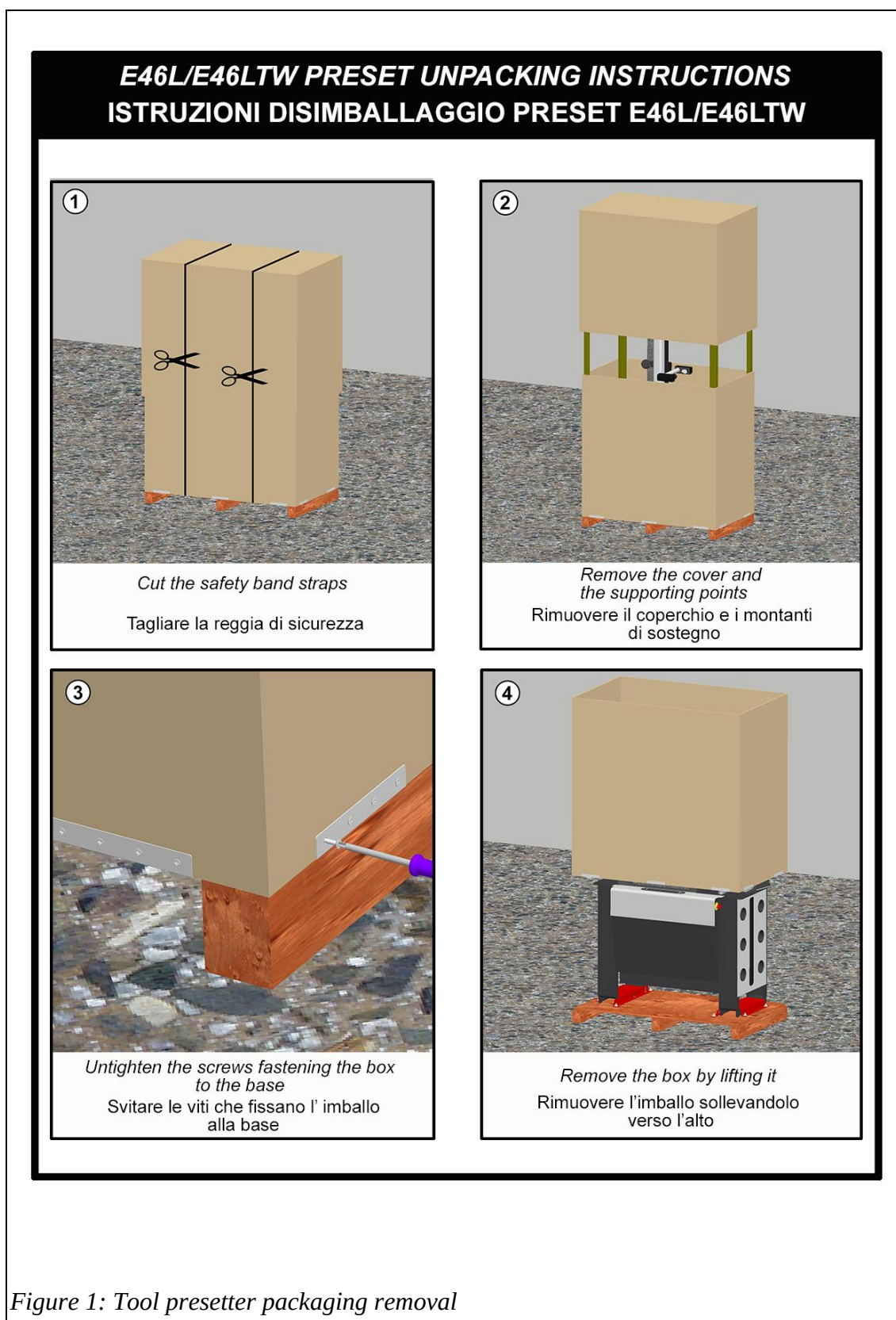
The storage environment must fall within the following environmental conditions:

- away from atmospheric agents;
- temperature between -10 and 50 °C;
- relative humidity between 20% and 95% without condensation.

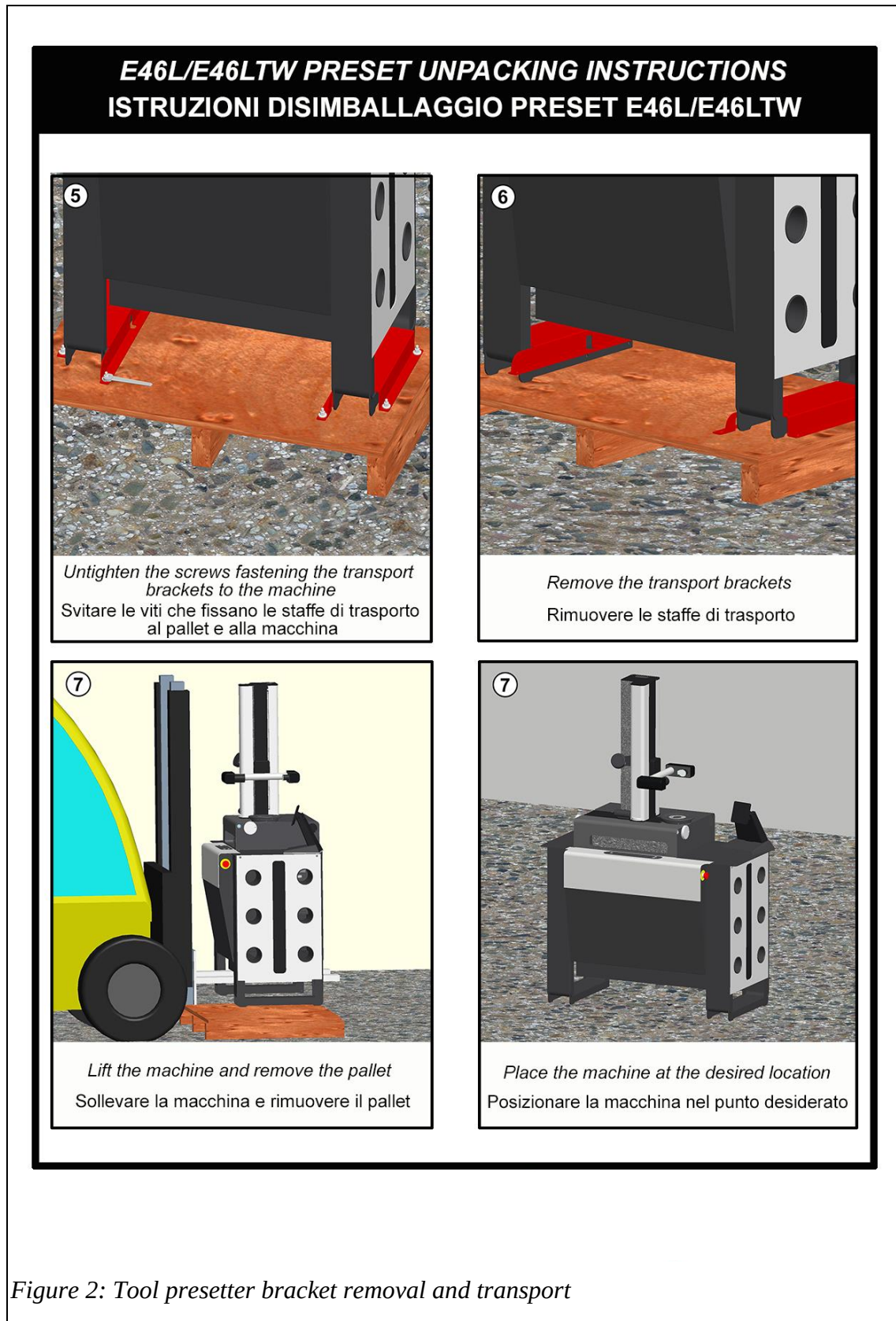
6.5 Unpacking

After the machine has been transferred to the installation site, the unpacking procedure must be followed with reference to the attached sheet. As for packing, the reverse procedure must be followed.

☒ Unpacking procedure

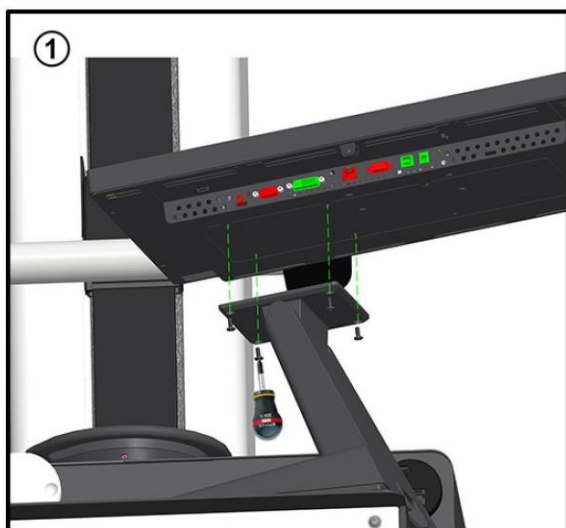


Once cardboard packaging is removed, remove the anchorage brackets and transport the tool presetter.

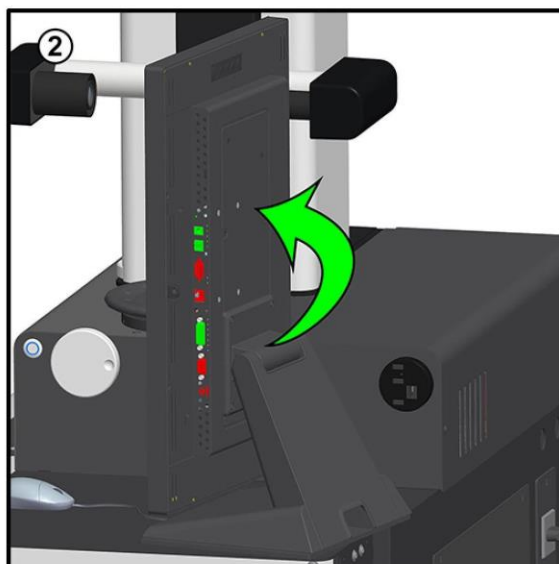


6.6 LCD monitor installation

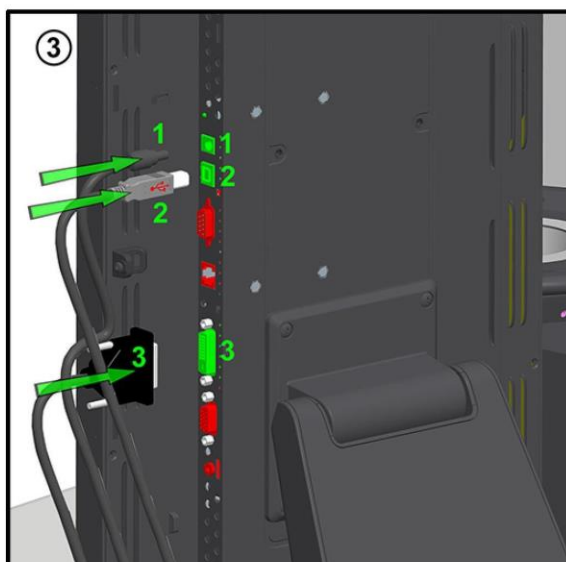
✗ LCD screen assembling procedure

E46L/E46LTW PRESETTER MONITOR INSTALLATION INSTRUCTIONS
ISTRUZIONI MONTAGGIO MONITOR PRESET E46L/E46LTW

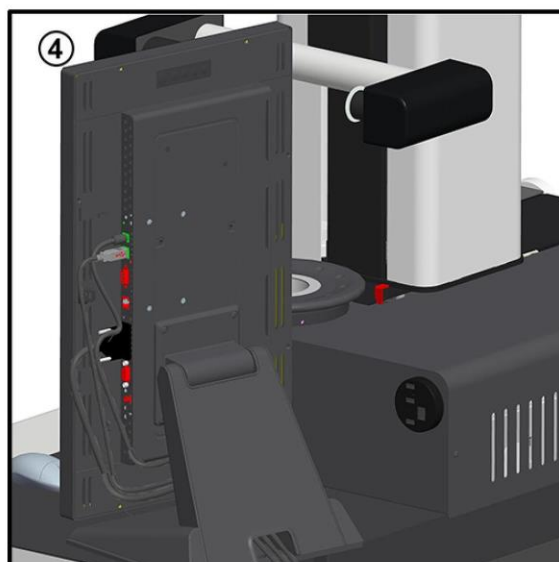
① Place the VESA connection, as in fig. 1.
Fasten the monitor by tighten the 4 screws.
Posizionare l'attacco VESA, come in fig. 1.
Fissare il monitor con le 4 viti.



② Bring the monitor in vertical position.
Portare il monitor in posizione verticale.

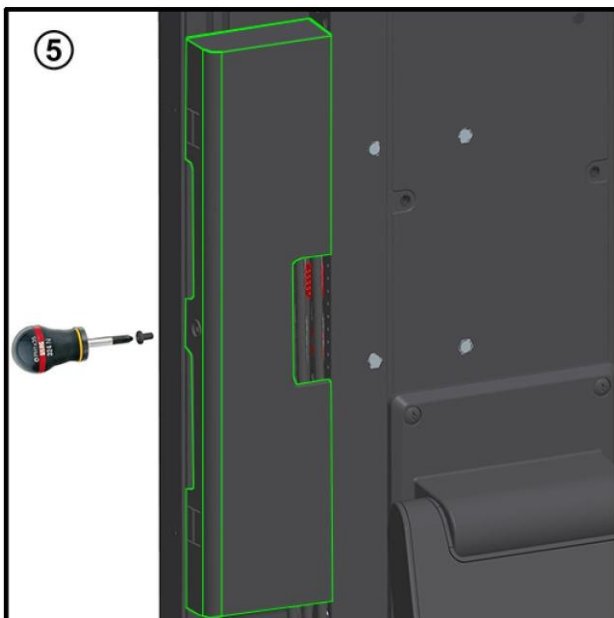


③ Insert the connectors, as in fig. 3.
Inserire i connettori, come in fig. 3.

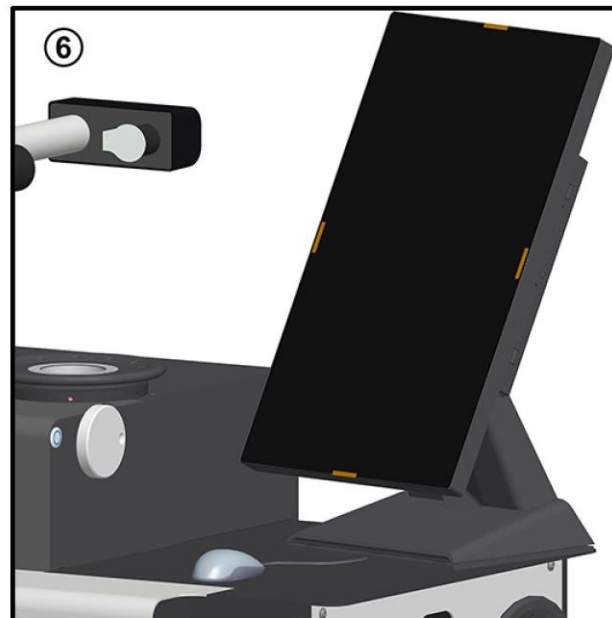


④ Ensure that the connectors are correctly inserted.
Assicurarsi che i connettori siano inseriti correttamente.

Figure 3: LCD monitor assembly and connection

E46L/E46LTW PRESETTER MONITOR INSTALLATION INSTRUCTIONS
ISTRUZIONI MONTAGGIO MONITOR PRESET E46L/E46LTW

Place the cover by fastening the screw.
Posizionare il coperchio fissandolo con la vite.



Place the monitor in the desired position.
Posizionare il monitor nella posizione desiderata.

Figure 4: LCD monitor assembly and connection

6.7 Machine stabilisation



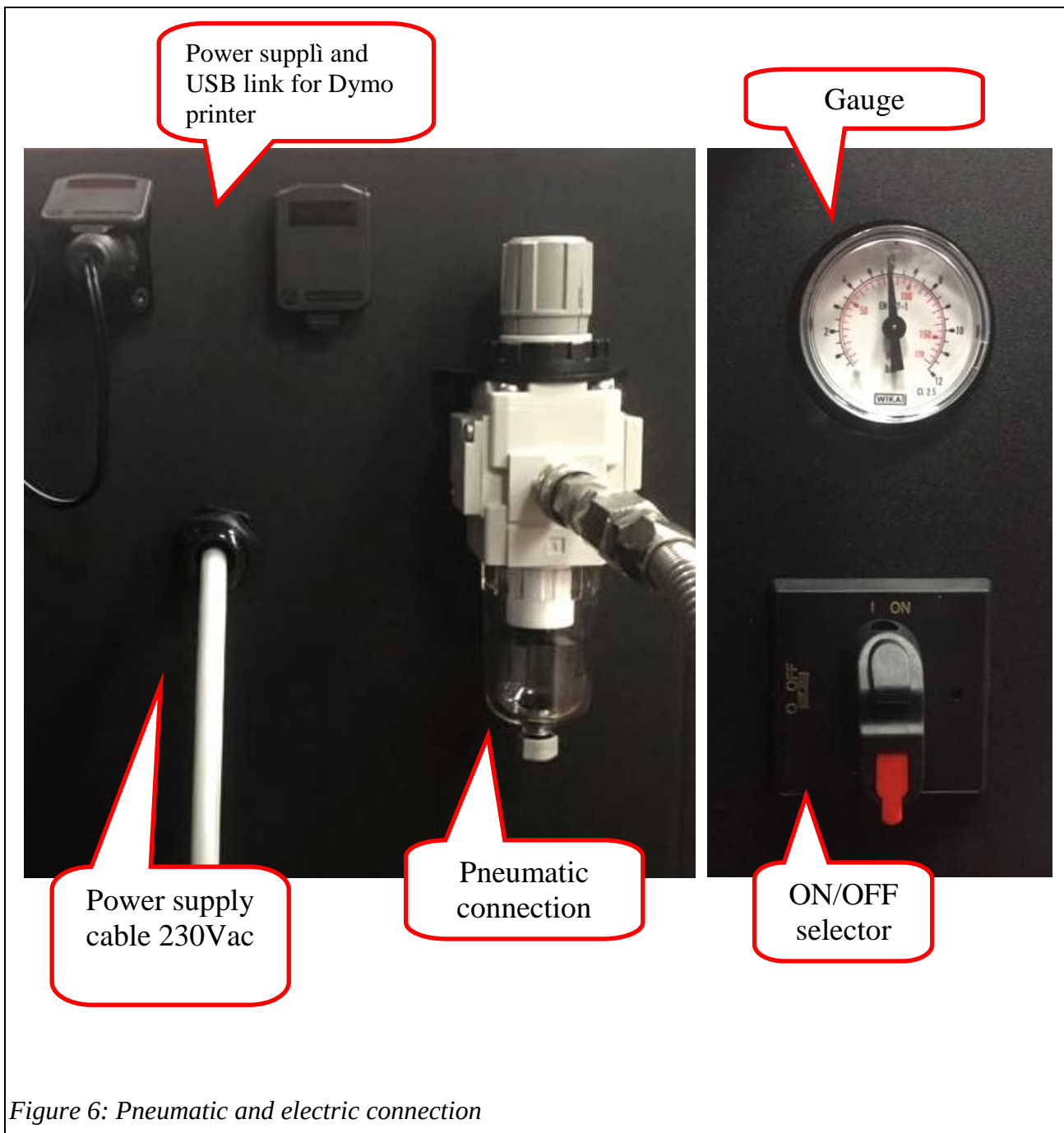
Figure 5: Machine stabilisation feet

Position the machine on a flat and level surface (± 1.5 cm / m).

In the event of oscillations, use the adjustment grub screw on the rear left side of the support feet.

Locate the tool presetter in an area lacking in excessive vibrations that could rebound on the machine stability.

6.8 Electric and pneumatic connection



Connect the tool presetter to the compressed air system and set the feed pressure between 5 and 6 bar. Connect the tool presetter to the earthed system with a yellow/green conductor of minimum section 2.5 sq. mm fixed on the provided terminal. Connect a plug on the power supply cable and connect the tool presetter to the electricity transmission grid by inserting the plug into the 115-230 Vac mains socket. Bring the selector to the ON position to power the machine.

6.9 Mouse and Keyboard

With the E46L, E46LTW, E46LA ed E46LTWA machines, a mouse and a keyboard are supplied for positioning as in the figure.

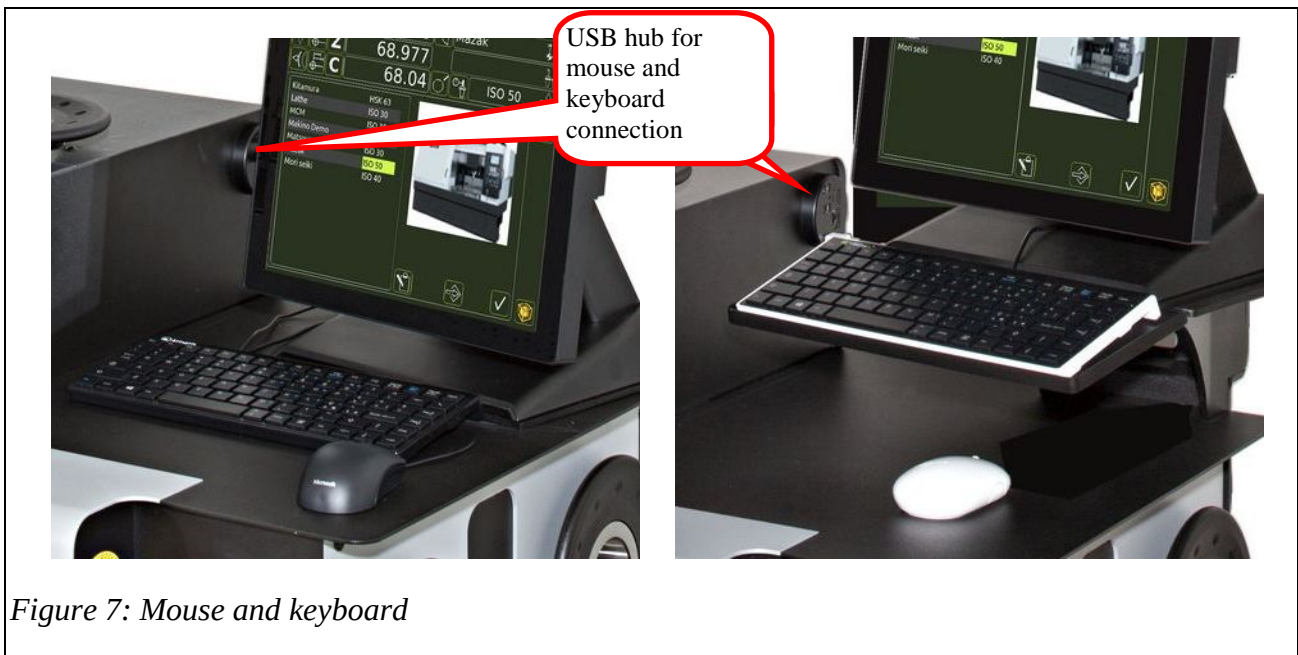


Figure 7: Mouse and keyboard

The cables should then be connected indifferently to two of the three USB ports on the USB HUB as indicated in the figure

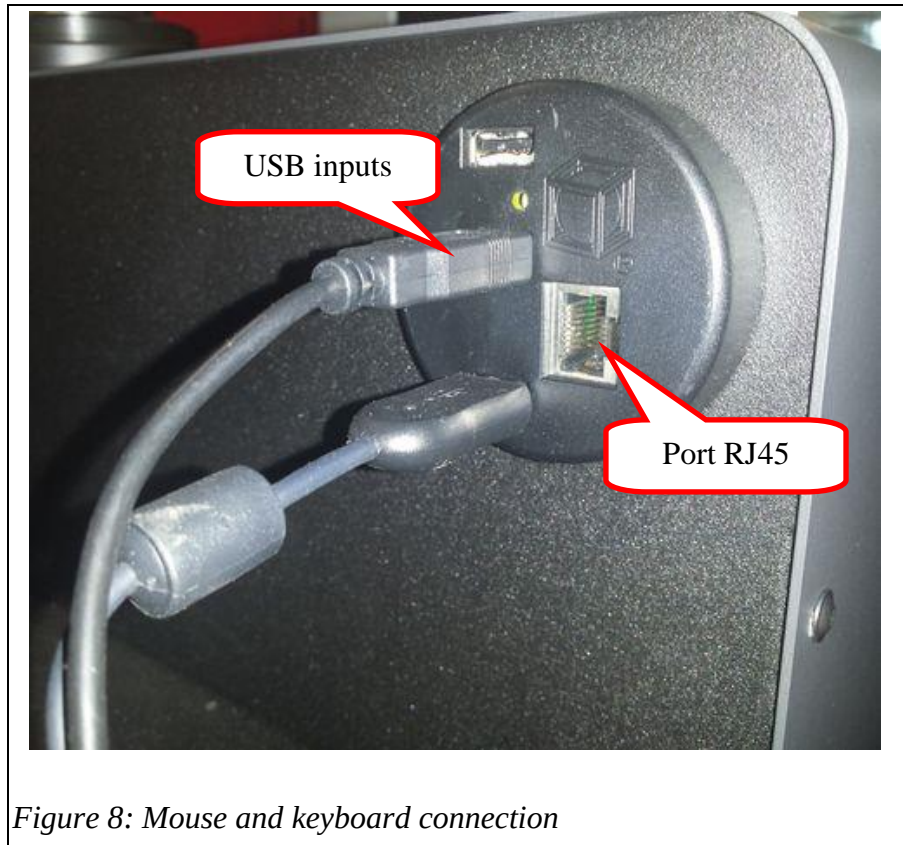


Figure 8: Mouse and keyboard connection

Using connector RJ45, you can interface the machine with the company cabled network.

6.10 Machine views

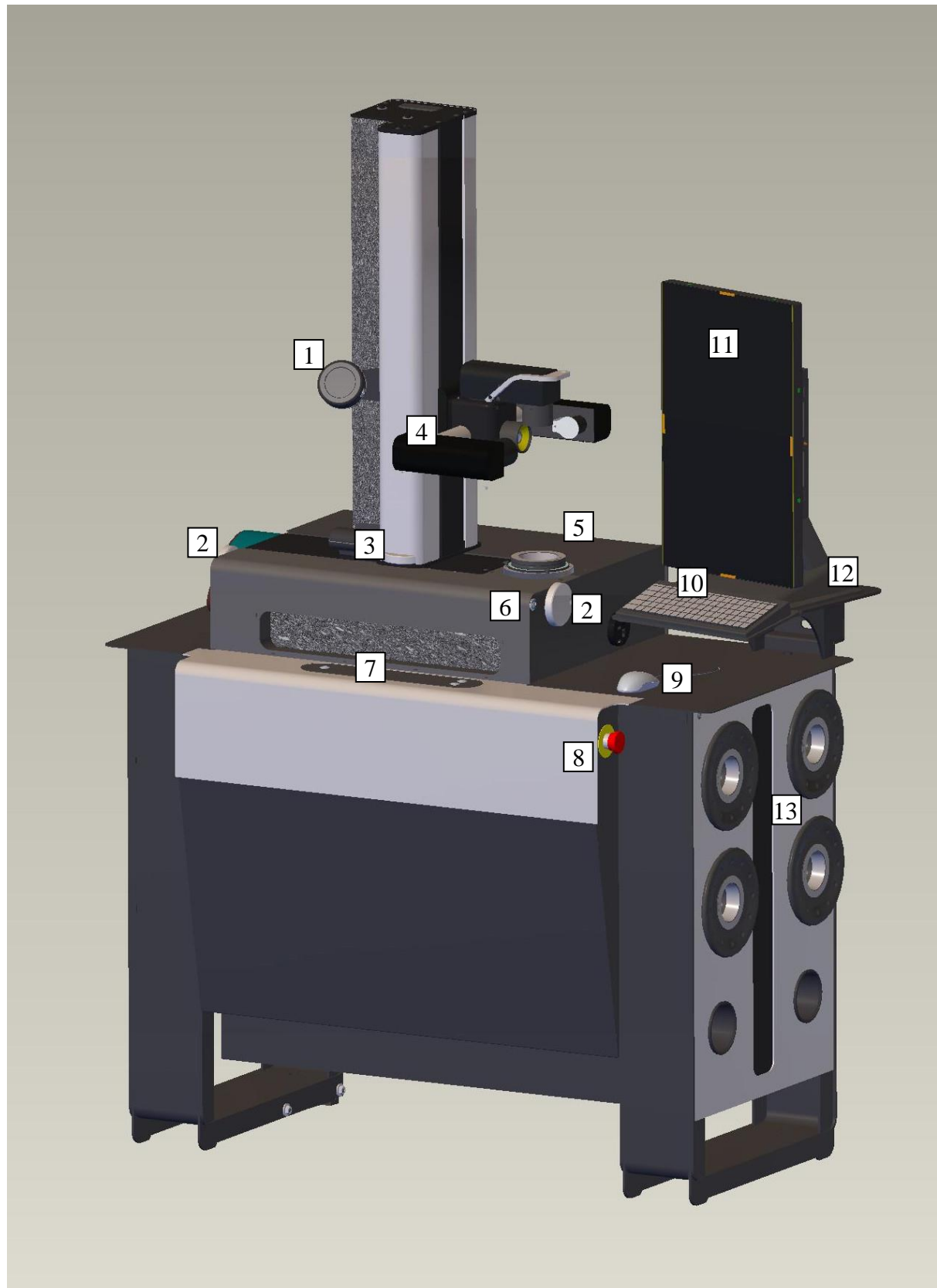


Figure 9: Tool presetter front view

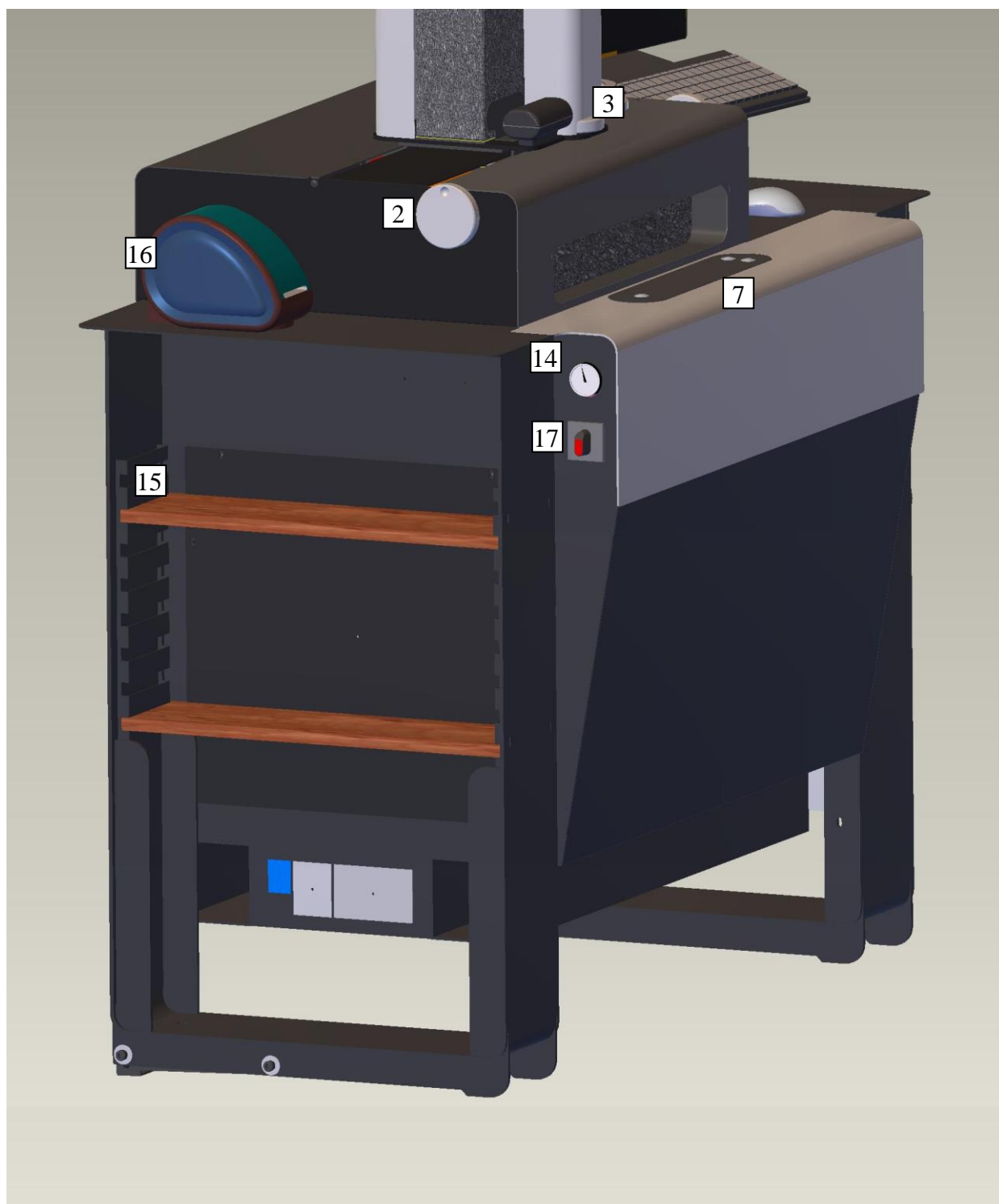


Figure 10: Left side view

LEGEND

1. X and Z axes rapid movement handle
2. X axis micrometric movement
3. Z axis micrometric movement
4. Vision system (214L for E46L/LA, 214LT for E46LTW/LTWA)
5. Interchangeable rotating spindle-holder
6. Switch on button
7. Tool clamping/unclamping command panel
8. Emergency stop button
9. Mouse
10. Mini-keyboard
11. 22" touch-screen monitor
12. Monitor and keyboard support (Only on E46LTW/LTWA)
13. Interchangeable rotating spindle-holder compartment
14. Air pressure gauge
15. Object holder shelves
16. Dymo labeller (optional)
17. ON/OFF selector.

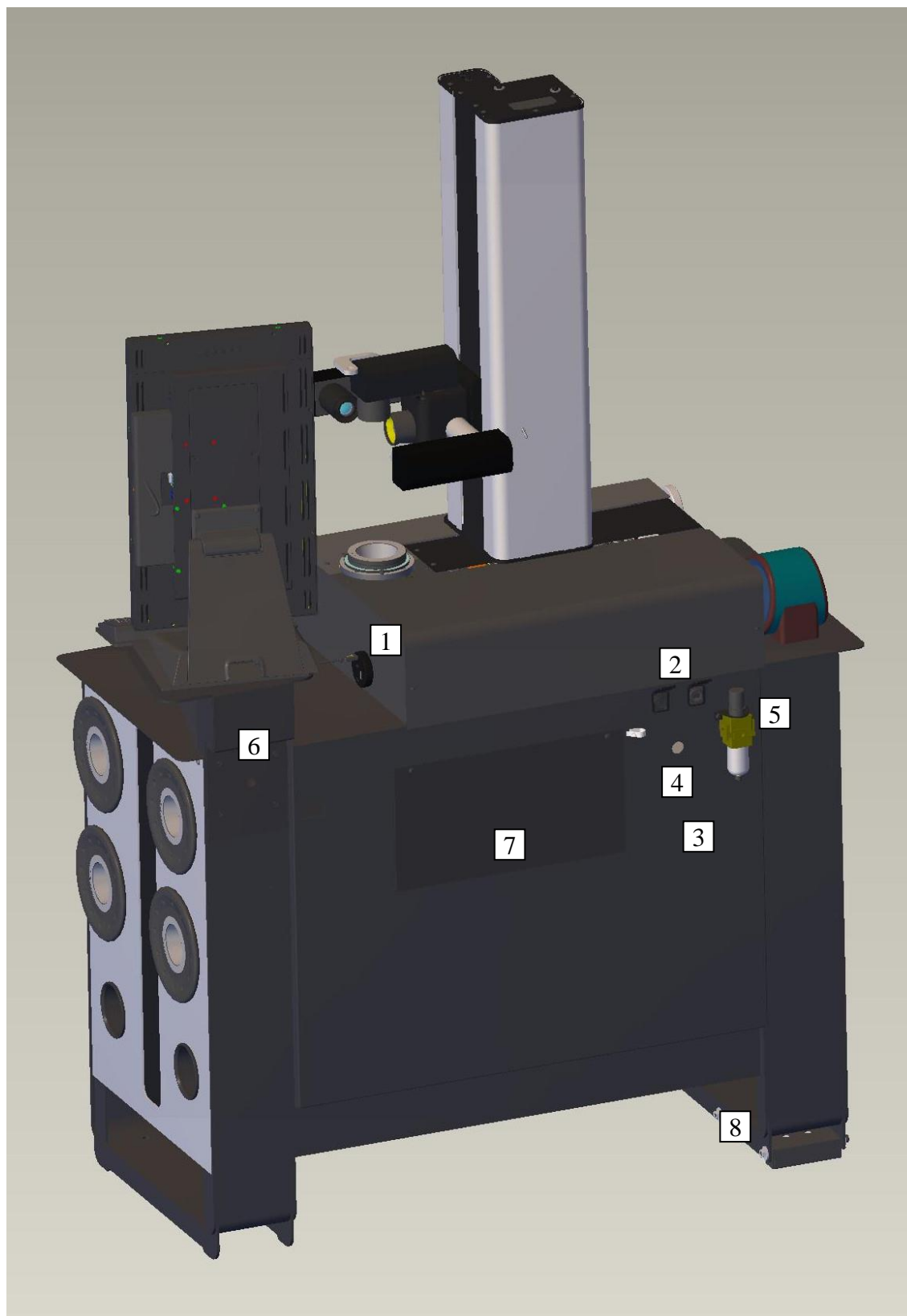


Figura 11: rear view

LEGEND

1. Hub 3 USB socket + network socket RJ45
2. Power supply sockets and USB for Dymo labeller (Optional)
3. Terminal for ground cable
4. Power supply cable output
5. Pneumatic power supply input with filter and pressure regulator
6. LCD monitor fastening knob (only for E46L/LA version)
7. Inspection window
8. Adjustable feet to stabilise machine

6.11 Working conditions

As the tool presetter is a precision instrument, it shall be positioned in a trouble free site (free from dusts and/or air corrosive substances, excessive vibrations, violent ranges of temperature), safe from sun rays direct illumination and far from windows and skylights. It shall be positioned preferably in rooms with diffused artificial lighting and a space for working facilitating measurement takings.

The instrument does not generate acoustic emissions, apart from the sound of the pneumatic solenoid valves exhaust, when they are activated by the push button panel, lower than the limit of 70 dB A.

The recommended climatic conditions are as follows:

away from atmospheric agents;

temperature between 10 and 40 °C;

relative humidity between 20% and 95% without condensation.

✓ *The best performance is obtained in a constant-temperature environment.*

6.12 Power supplies

Electrical circuit: power supply 115/230V AC, 50/60Hz, 200W.

Pneumatic circuit: compressed air between 5 and 6 bar.

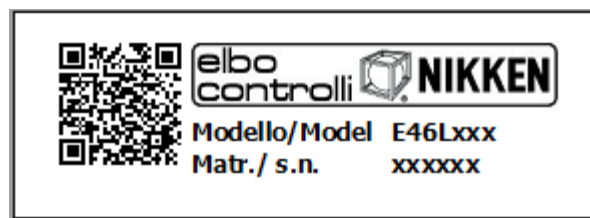
6.13 Machine DNA

DNA is a service provided by Elbo Controlli for machines manufactured from January 2013.

It consists of a QR code through which you can access a dedicated web page for your tool presetter.

It is possible to immediately visualize:

- Technical data and serial numbers of every component of the machine
- CE mark declaration of conformity
- The warranty certificate
- Test reports (access with password)
- Accuracy graph (access with password)
- Configurator file of the machine (access with password)



The label with the code is visible on the left-hand side of the frontal case at the base of the machine.

Scanning is possible through mobile devices such as smartphones and tablets with free software installed or through free software for PC which can scan the code.

This service can be used to retrieve lost documents (e.g. CE mark), updated test reports and accuracy graphs if a recalibration has been carried-out, to find out the serial numbers of the components of the machine (requested in case of assistance) without removing the carters of the machine.

Data regarding the test reports are protected, as indicated above, by an access password which is the numeric part of your Elbo Controlli client number.

If you don't have one, you can request it by sending an e-mail to the address:

sales@elbocontrolli.it

specifying the model and the serial number of your tool presetter and your personal information for the registration in our client database (company name, address and VAT no.).

The label containing the QR code is available in triple copy, in fact, other than that on the machine you can also find a technical documentation attachment and one outside the packaging with the delivery documents.

An example of a web page follows relating to the machine.



Matr. Preset / Preset s.n.: 200001

Modello / Model: E46LT

Matr. granito orizzontale / Granite base s.n.: 03

Matr. granito verticale / Granite column s.n.: 475

Sistema di Visione / Vision System: 214LT

Matr. / s.n.: 214V0001

Elettronica / Electronics: 214

Matr. / s.n.: 2140002

Riga ottica asse X / X axis optical scale: 371

Corsa mm. / Length mm.: 200

Matr. / s.n.: 54947

Riga ottica asse Z / Z axis optical scale: 371

Corsa mm. / Length mm.: 600

Matr. / s.n.: 54949

Certificato di Garanzia
Warranty CertificateDichiarazione CE
CE Declaration

Login

Inserire codice cliente Elbo Controlli (solo numerico)

Insert Elbo Controlli client code (number only)

Submit

Se non si conosce il codice cliente, inviare un' e-mail a sales@elbocontrolli.it specificando il modello e il numero di serie del Preset ed i propri dati anagrafici. (Ragione Sociale, indirizzo, Partita IVA)

If you don't have customer code, send an e-mail to sales@elbocontrolli.it specifying Preset model and serial number and your own personal details. (Name, Address, VAT number)

Figure 12: Machine DNA card

7 MACHINE SWITCH ON AND OFF

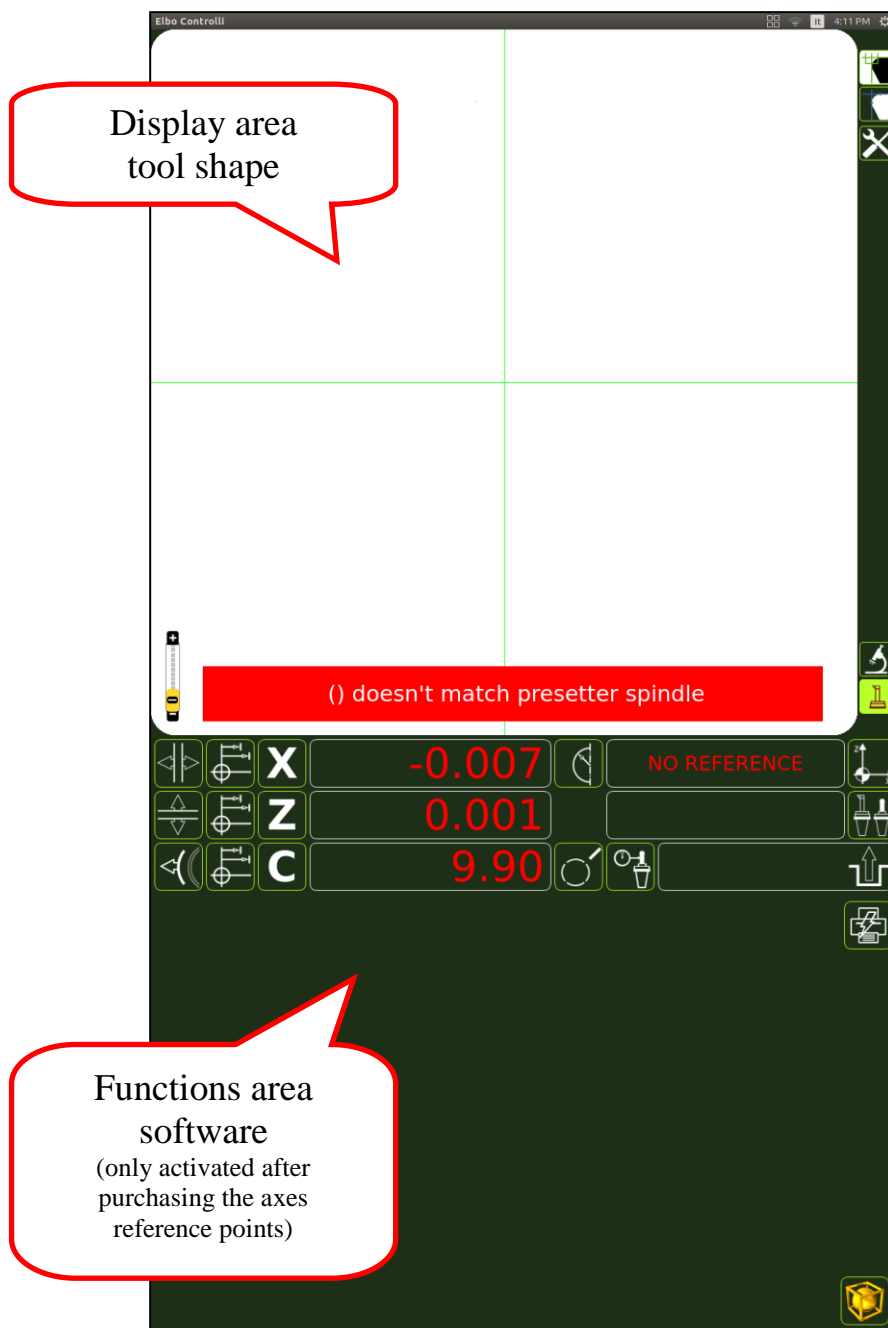
7.1 Foreword

Before switching on the machine, you need to proceed with electrical and pneumatic connection as described in paragraph 6.8.

7.2 Start



Commute the main switch placed on the back of the machine in the "ON" position, then press the start button on the right hand side of the machine (beside the handwheel for X axis micrometric movement) and wait for the software to start



7.3 Machine switch off

You are advised not to leave the machine on over consecutive days, you are therefore advised to switch it off at night at the end of the work shift.

To do so, press the switch on button on the right hand side of the machine (beside the handwheel for micrometric movement on the X axis) and wait for the machine to switch off, then commute the main switch on the back of the machine to the "OFF" position.



On switching back on, it will be indispensable to repeat the axes zeroing operation (Chap. 7.3)

8 AXES MOVEMENT

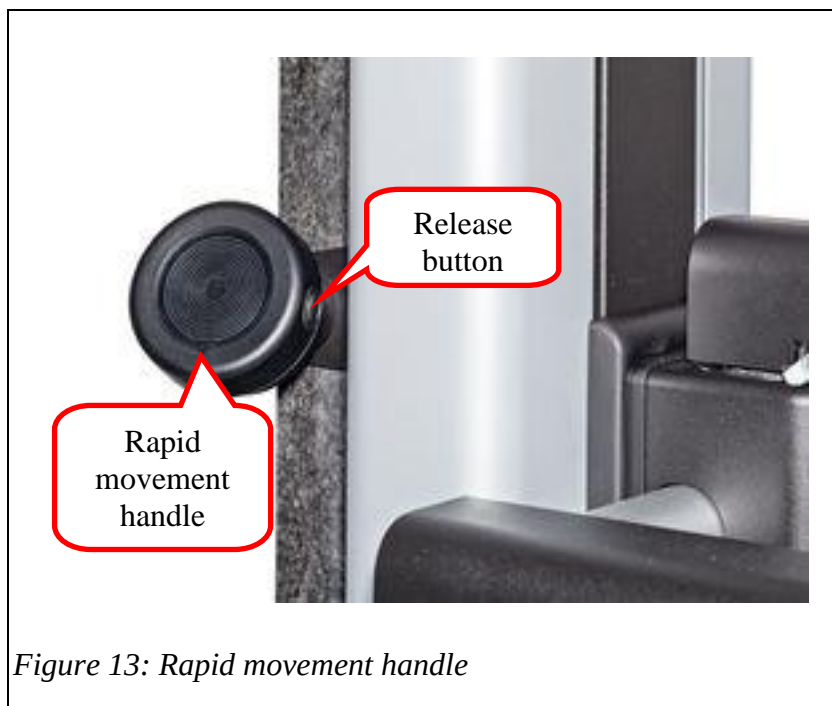
8.1 Axes movements

Axes movements are manual and have two movements, rapid and micrometric.

The rapid movement is used to frame the tool in the 214L / 214LT of view and to move away at the end of the measurement. The micrometric movement is used for the collimation of the tool's profile and the measurement acquisition.

8.1.1 Rapid movement

To move the axes in the rapid mode, grip the handle and press the release button (see picture), then turn the handle in the desired direction (X and Z). It is now possible to release the button, every axis will be unlocked until its movement speed is near zero.



Moving the axes simultaneously enables you to reach the measurement area of the tool faster, while the lock/unlock software function enables only one axis to be moved by keeping the other still.

To activate or disable the axis block, press the relevant unlock button on the touch screen monitor



Axis X Unclamped



Axis X Clamped



Axis Z Unclamped



Axis Z Clamped

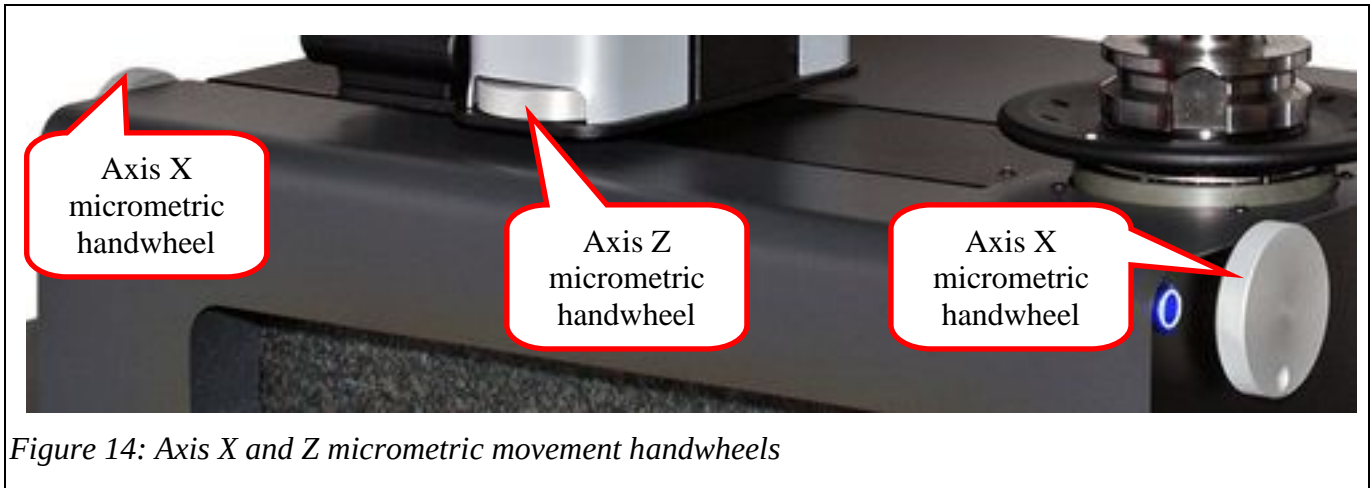
✓ To avoid damage to the tool presetter, do not bump on mechanical stopper placed at the end of axes stroke

8.1.2 Micrometric movement

After framing the tool profile with the rapid movement mode, precision collimation of measurement points is possible with the handwheels (X and Z axes).

Micrometric movements are always active when axes are locked, that means the release button is released.

The handwheel rotation determines a 1,25mm movement of the concerned axis per rotation.



9 INTERCHANGEABLE ROTATING SPINDLE**9.1 Foreword**

The paragraph illustrates the functions relating to the interchangeable rotating spindle, its replacement and use of the spindle reducer adaptors.

If you have different rotating spindles, follow these instructions to replace them.

9.2 Rotating spindle substitution

Move the column to a position so that it is easy to disassemble the spindle: axis X completely to the left, Z completely up.

Remove any tool from the spindle, disable the brake and index (if present)

Remove the rotating spindle towards the top keeping it parallel to the column.

Clean the extracted spindle and lubricate the rectified parts with anti-oxidizing liquid (i.e. PRO-setral-KS Spray), before placing it in one of the spindle-holder compartments on the right of the machine.

Pick the desired spindle-holder from the spindle-holder compartment and clean it.

Insert the new spindle-holder into the spindle body of the tool presetter, keeping it parallel to the column. if you don't have different rotating spindles but adapters only, follow the next procedure.

9.3 Procedure for the spindle adapter substitution

Remove the adapter (if present), clean it and lubricate the rectified parts with antioxidant liquid (i.e. PRO-setral-KS Spray), then place it in a secure place.

Clean the spindle-holder and the new adapter.

Insert the new adapter into the spindle-holder.

9.4 Spindle index

The **spindle index** is only present on machines equipped with a series of spindle holders type VDI and is enabled if the active origin concerns a machine configured with a lathe.

This function allows mechanical orientating and clamping of the spindle in four positions, one every 90°. For machines equipped with motorized spindle (E46LA / E46LTWA) the index function is automatic and the motor performs the positioning, followed by the spindle brake.

The spindle index function is controlled by the following key, whose icon represents the status:



Spindle index disabled



Spindle index activated

9.5 Spindle brake

The machine is equipped with a manual pneumatic-mechanical brake with spindle-holder rotation with radial compensation of the clamping force: the **spindle rotation brake** function allows stoppage of the spindle rotation in the desired position, for example after finding the maximum focus point of the tool.

The spindle brake function is controlled by the following key, whose icon represents the status:



Spindle brake disabled



Spindle brake activated

9.6 Motorized tool-holder clamping/unclamping system

The **tool clamping/unclamping** function starts the guided procedure that enables mechanical clamping/unclamping of the tool inside the spindle taper to enable a higher level of precision during tool measurement.

E46L, E46LTW, E46LA and E46LTWA presetting machines now can be equipped with the new servo-actuated motorized tool-holder clamping system.

The clamping of the tool-holder on the tool presetter rotating spindle simulates the working conditions on the CNC machines, clamping the tool with a pulling force between 250 and 300 Kg.

The ability to clamp the tools is universal: the collets inside the spindle have a stroke that engage all the standard pull studs and drag it down until it reaches the nominal clamping force.

Operator safety is guaranteed by the need to simultaneously press the “confirm” button and the clamping/unclamping button.

The machine requires both of the operator’s hands to be used, in order to avoid the potential danger of crushing the fingers under the tool-holder: If during the unclamping procedure one or both buttons are released, the servo-motor automatically stops.

9.6.1 Tool-holder clamping



Figure 15: Tool clamping/unclamping command panel

To start the clamping device, insert the tool in the spindle and simultaneously press the "confirm"




and "tool clamping" keys .

After a few moments, once the maximum clamping force is reached, the device will automatically stop and indicate on screen the condition of clamping executed:



✓ *Attention: the guarantee of executed tool clamping is valid when the internal collect is always brought back in the upper position before the clamping procedure starts, especially with very short pull studs.*

During operation, releasing the key will produce a temporary stop in the descent of the traction collects of the pull-stud, it will then be possible to operate a pulsed descent or reverse the direction in case of failure or malfunctions.



Releasing the "confirm" key  will lead to a permanent stop of the operation in progress, forcing the user to also release the arrow key before proceeding again by simultaneously activating both the keys.

✓ *The maximum delay in Confirm button pressing to Clamping or Unclamping buttons pressing is approx. 0.3 seconds.*

✓ *The tool clamping time varies depending on the length of the retention knob (pull-stud). Indeed the collect inside the spindle has a travel up to 55 mm in order to lock all the normed pull-studs (ISO A/B, B ANSI, DIN, MAS BT, JIS B). Therefore the clamping time will depend on the needed travel and will be between 1 and 6 seconds.*

9.6.2 Tool-holder unclamping

To release the tool-holder from the tool presetter's spindle, you have to simultaneously press the

“Confirm” buttons  and the “Unclamping tool” , until the tool-holder will be totally free.

At this stage pay attention, because the “unclamped” tool signal does not confirm that the tool is free and can be removed from the spindle.



To ensure the following clamping you should always bring the collet inside the spindle back to the upper travel limit.

9.7 Emergency stop button

The emergency stop button will interrupt the supply of voltage to the clamping tool motor, allowing the arrest in case of control system loss, because of failures or malfunctions; it also prevents movement of the axes, since it inhibits the pneumatic system not enabling unclamping.

No other function of the machine is inhibited; electronics and the vision system are powered and operative.



9.8 Safety norms

The personnel involved with the “motorized tool-holder clamping system” is not required to use any particular protection, however must be informed of the following potential dangers:

- the force exerted by the instrument during the tool clamping is between 250 and 300 Kg.
- to activate clamping and unclamping of the tool, the operator must forcibly use his two hands: you need to however ensure there is nobody in that instant working on the tool itself, risking crushing of hands under the tool-holder flange

- in case of need, you can immediately reverse the direction of rotation, releasing the clamping button and pressing the unclamping button.
- pressing the emergency stop button will cut the power to the motor, which therefore remains in its actual position which it had on pressing
- remember that handling the tools must be carried out paying attention and if necessary protecting your hands, since by nature the tools are sharp and therefore potentially dangerous.

✓ *The person responsible for employee safety should train the users of the tool presetter, by imposing the reading of this manual as a pre-requisite (in Italy see D.L. 81-08).*

9.9 SP-ID function (optional on E46LTW)

The model E46L machines are equipped with a series of spindle recognition systems called SP-ID, that allow the machine to recognise the type of interchangeable spindle-holder assembled. SP-ID is assembled as standard on the main spindle-holder of the machine, while it is optional for any additional spindle-holders.

SP-ID is available as an optional also on model E46LTW and the relevant spindle-holders.

By inserting a spindle-holder equipped with a recognition system, the machine analyses the machine origins in the archive and proposes the choice only between those whose spindle is compatible with that inserted.



If a single compatible origin exists, this is automatically activated.

SP-ID is therefore one of the many software tools that the tool presetter E46L and E46LTW makes available to reduce the possibility to a minimum of error by the operator carrying out the measurement.

10 VISION SYSTEM

10.1 Foreword

The tool presetter E46L and E46LA are equipped with a vision system on the individual camera model 214L for measurement and inspection of tools, while the tool presetter E46LTW and E46LTWA are equipped with a vision system 214LT with three cameras for front vision (head) and side (chest) vision of the tool.

The latter system enables builders and sharpeners of tools to measure all the geometric characteristics of the tool.

The image shot by the vision system is displayed on a 22" monitor.

10.2 22" Touch Screen Monitor

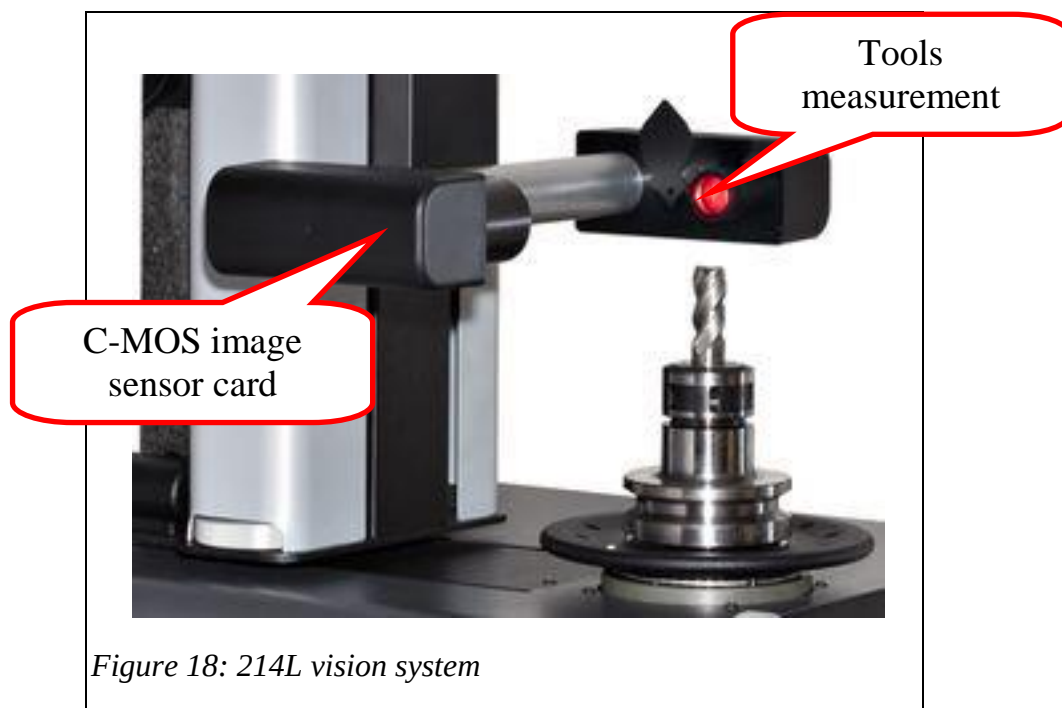


Figure 17: 22" Touch Screen Monitor

Tool presetters E46L / E46LTW / E46LA / E46LTWA arrange a 22" touch-screen capacitive monitor arranged vertically for better display.

The top half displays the images of the tool profiles, the bottom half all the software functions. The work is therefore very intuitive for the operator who can interact with the machine without having to attend complicated training. For use, refer to the software manual supplied with the machine.

10.3 214L vision system



The working principle of the 214L vision system is similar to that of the optical profile projector: a source of collimated light throws a profile tool between the two elements projected on an image sensor C-MOS with 1.3 Mega pixel, crossing an adequate shooting lens.

The shape of the tool acquired by the image sensor is displayed in real time on the monitor on the machine; the viewing area is approx. 10 x 10 mm.

To facilitate detection of the measures, you can choose, as an alternative to the analogue image taken, the digital representation with maximum contrast.

Furthermore, it is equipped with two bars for the focusing control of the image, one takes the focus of the X axis movement and the other of the Z axis, helping the operator to easily locate the point of maximum tangency of the tool.

As with projectors, it is possible to measure angles by directly comparing the tool profile and the grid profiles on the screen.

The real advantage is the elimination of the subjectivity typical of optical systems, which makes our measurements objective and repetitive.

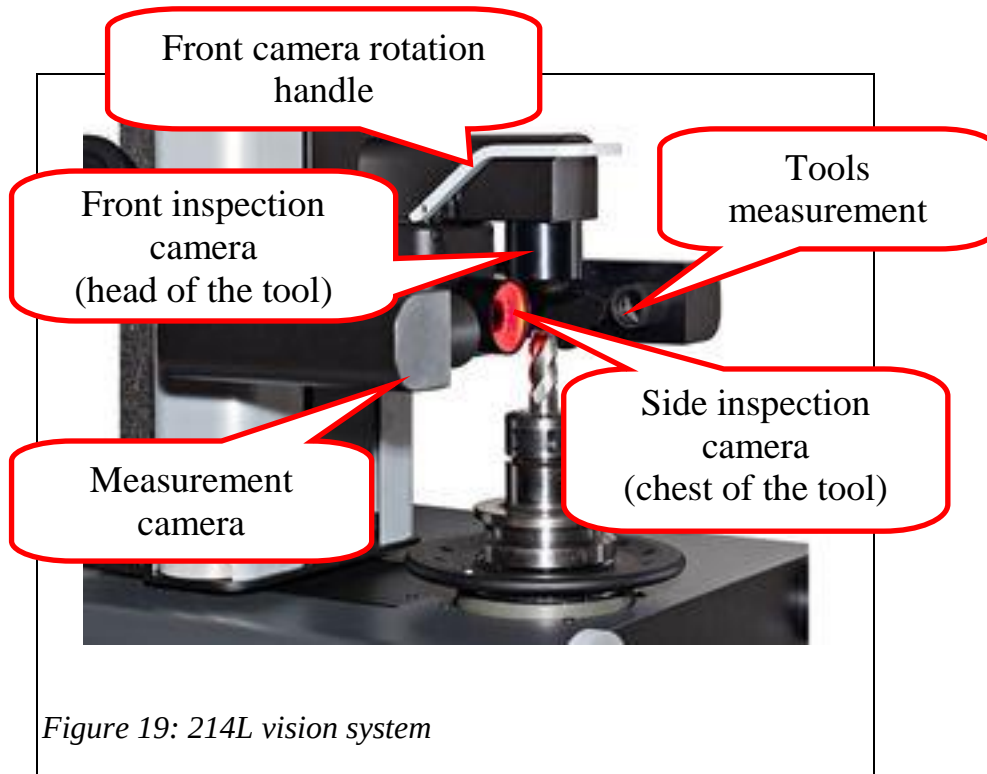
In fact, 214L can analyse the cutting edge of the tool and find its measurement points on the profile, with a resolution of 1µm.

The operator can choose to measure on the fixed grid with the digital comparators shown on the screen or to measure automatically on screen, obtaining measurements in real time from the sum of the coordinates of the central grid and the relative position of the image.

In both cases, measurements are constantly displayed on the screen, providing all the necessary information in the same area.

The 214L vision system also allows the automatic calculation of the geometric elements that are to be found on the tool profile (angles, radius), or in manual mode, the ones that are to be found both on the profile and during the inspection of the tool. The software will supply different display options and will allow saving them in graphic format.

10.4 214LT vision system



The 214LT vision system, other than the camera already described in model 214L, also has two cameras that enable inspection of the tool from the side and front. These two cameras, whose viewing area is 4 x 4 mm., also allows measurement of all the geometric characteristics of the tool.

10.5 Front camera positioning

To bring the front camera to the working position, press the unclamping lever then turn anti-clockwise paying attention not to knock any tools on the rotating spindle.

Once arrived to stop, release the lever until the camera is blocked in the correct position.

To bring the camera to the previous position, repeat the procedure in the reverse direction, rotating it clockwise.

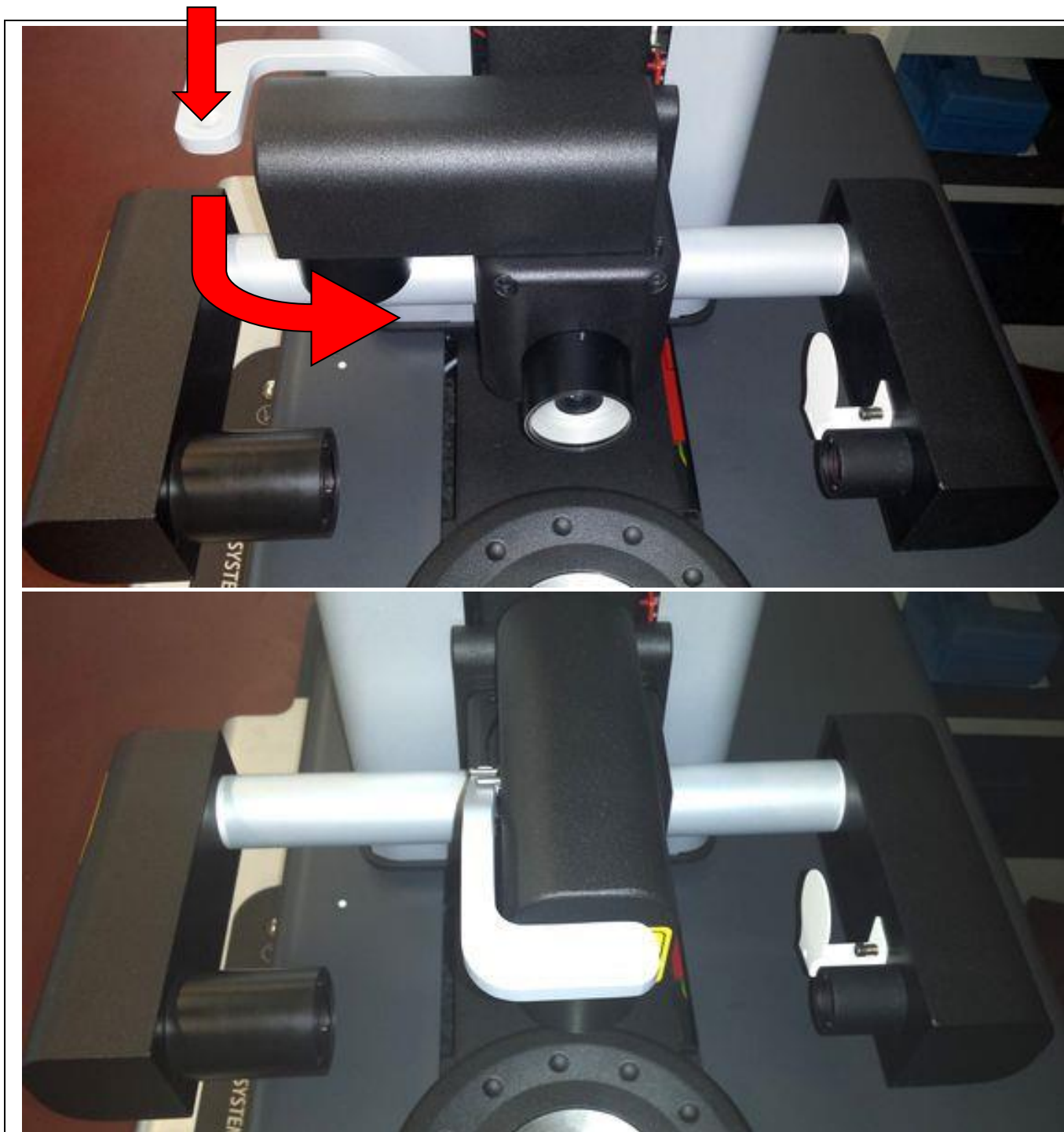


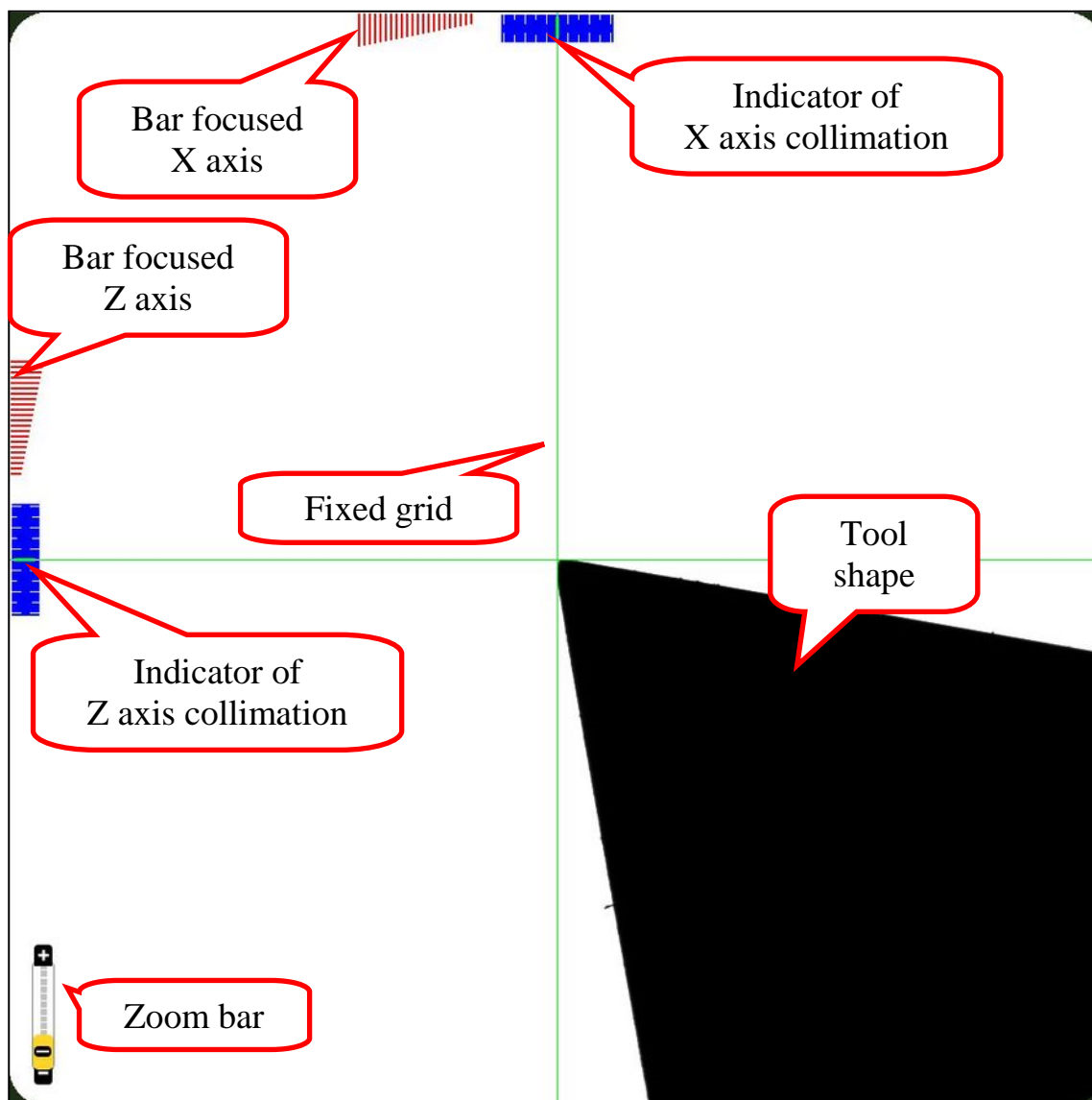
Figure 20: Front camera positioning handle

10.6 Focusing of image

With 214L/214LT, measurements are taken in the same way as the ones taken with an optical profile projector; it is therefore necessary to frame the tool's profile on screen, bringing it inside the light beam through rapid manual movements.

Before measuring, rotate the spindle to search for the point with best image focusing.

The display always shows two control bars for the focusing of the image (one for each axis); collimation indicators appear if the grid is near to help you to obtain the perfect tangency with the grid; just rotate the cutting edge until the highest possible value on the axis to obtain the best focus.



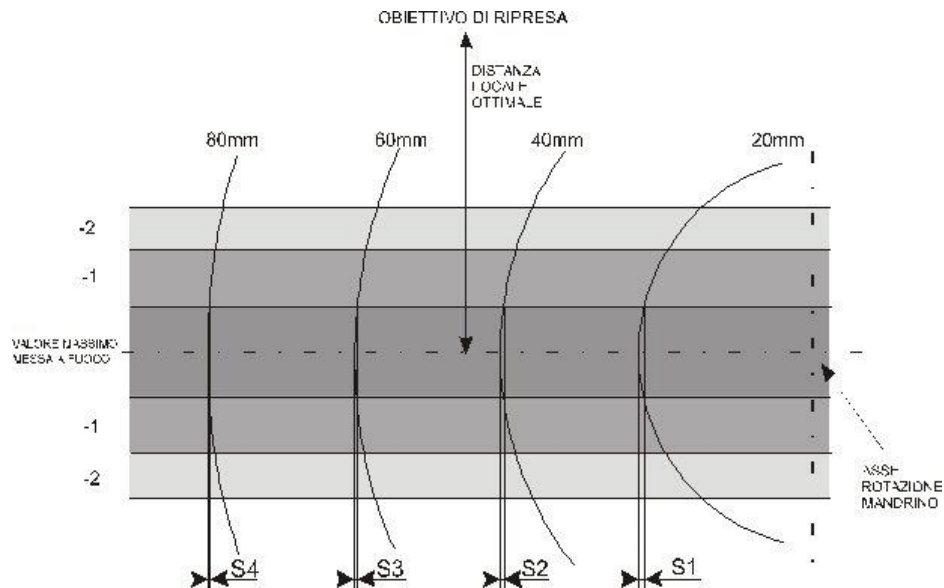
- ✓ *The values the 214L/214LT takes as focusing reference correspond to the X and Z two measurement points.*

The focusing control bars give information concerning the sharpness of the image in the measurement points indicated in the picture; different indications (in the maximum value) between different tools, or cutting edges of the same tool can be obtained. This varies according to the degree of wear or to the lip relief.

For a correct measurement you need to reach the highest possible value, shown by the peak indicator on each bar.

Don't forget that the point to measure is the one relative to the maximum tangency of the tool and that the focusing is necessary only to facilitate the research; in fact the **maximum tangency will always correspond to the maximum focusing value**. This also means that, in the range of the maximum focusing value, a residual measuring of incorrectness is included, which is determined by the radius of the measured tool.

The following picture shows the relationship between the focusing value (index of the distance of the tool from the shooting lens) and the maximum tangency of the tool (index of the angular position of the tool against the spindle rotation axis).



The residual measuring incorrectness (S1, S2, S3, S4) depends on the radius of the tool measured and corresponds approximately to 0.01 mm, for tools with a 20 mm radius, while it is lower than 0.001 mm. for tool radii exceeding 80 mm.

On the basis of these considerations it is necessary to always find the best obtainable focus possible, and find the maximum tangency on the fixed grid later.

11 TOOL MEASUREMENT AND INSPECTION

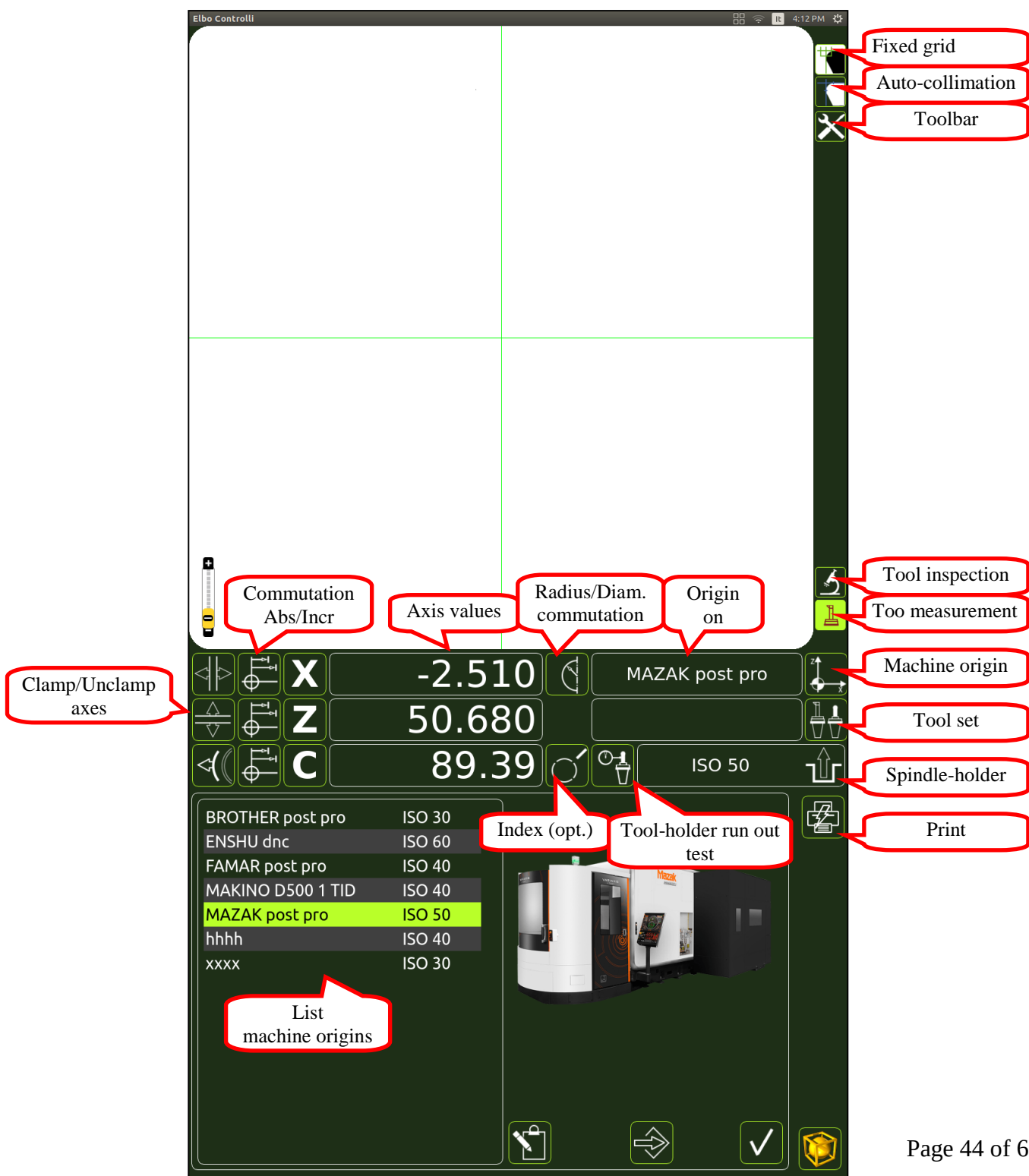
11.1 Axes reference points

When software is switched on, it will automatically look for axes reference points, engraved on the measurement optical scales. In these fixed positions, the software will indicate the origin of any NC machine.

For this reason the axes values will be red, indicating that the machine cannot display any significant measurement due to the lack of reference to a machine origin.

In these conditions the keys for machine origin and tool tables are disabled.

The first operation is therefore to move both axes until they reach the zero references on the optical scale to activate the default origin and display the corresponding value in white as shown in the following picture.



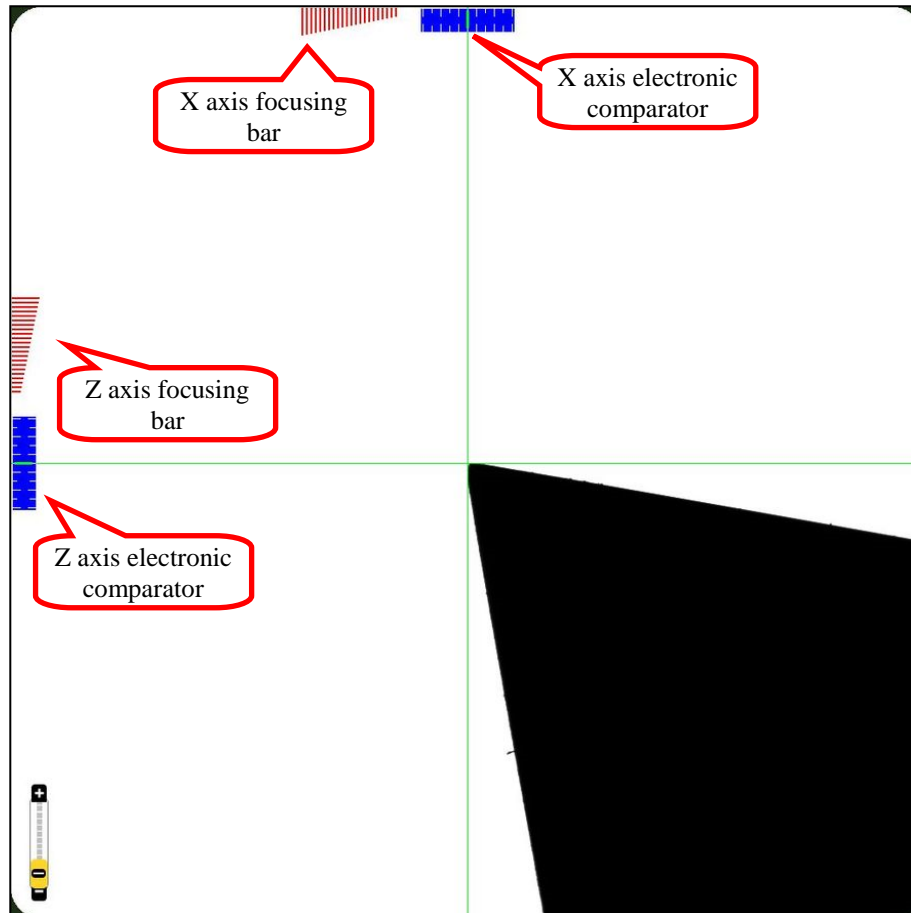
11.2 Tool measurement



There are two ways of measuring a tool: Collimation on a fixed grid or auto-collimation.

In both cases, the first operation to conduct, having inserted and blocked the tool on the spindle-holder is to search the maximum focus point of the tool, corresponding to the maximum tangency.

This operation is facilitated by the focus bar (one per axis) on the screen; simply turn the cutting edge to reach the highest possible value on the relevant axis to obtain the best focus.



11.2.1 Collimation on fixed grid



The measures taken on the fixed grid use the same technique as the profile optical projector: you need to move with micrometric movement of the axes of the machine, until the shape of the tool is tangent with the central grid on the screen.

The measurement with a profile projector is influenced by the capacity of operator to recognize the best focusing of image and its tangency with a serigraphic line (which covers the image) on the projection screw; it means that it is a subjective measurement.

The same operation performed with the 214L and 214LT allows obtaining the same result, as the image profile is electronically examined, and the measurement is pointed out according to the scale of two blue-coloured analogue comparators (one for each axis) that are shown in the display.

These two reset when a new measurement is taking place as if a traditional mechanical hand comparator was being used.

When the indicator line becomes green, it means that the tool has a perfect tangency with the reticule.

☒ Procedure for collimation on fixed grid

- frame the tool on the screen (rapid movement)
- check that the tool's cutting edge is clean from dust, chips or other impurities which could alter the measurement results
- focus the image on the axis that you want to measure rotating the spindle
- focus the image, on the axis, which is intended to be the measured, by rotating the spindle .
- search for the maximum tangency point rotating the spindle while watching the analogue comparator
- collimate the image with the grid, clearing the analogue comparator to zero (micrometric movement).

11.2.2 Auto-collimation

With auto-collimation it is not necessary to bring the image in collimation in a fixed point of screen; in fact it is enough to set the tool in the visual area of screen so that 214L/214LT can measure it.

Obviously, being able to measure on the whole vision area does not exclude the need to focus the image and search for the maximum tangency to obtain correct measurements.

With auto-collimation, the measurement is the result of the algebraic sum of the relative position of the image displayed and the position of the central grid.

Slight differences in values, scanned automatically in different areas of the screen, are due to the working tolerances of the lenses and the illuminator lenses, and to other optical, electronic and mechanical factors.

On the one hand, auto-collimation measurement allows for greater speed and simplicity of measurement, on the other hand it allows more tolerance compared to the same measurement taken on a fixed grid.

During this type of measurement, display value is green.

☒ Procedure of collimation with auto-collimation

- frame the tool on the screen (rapid movement)
- check that the cutting-edge is clean from dust, chips or other impurities which could alter the measurement result;
- focus the image on the axis that you want to measure rotating the spindle, numerically check that the measurement taken expresses the maximum tangency of the tool.

11.2.3 Particular cases of collimation

214L/214LT automatically recognizes the orientation of the tool and measures it from the left or from the right for the X axis and from above or from below for the Z axis.

When the tool is framed, the system analyses the image and sets the suitable collimation direction.

Only with auto-collimation, priority is given to measurements from the left for the X axis and from above for the Z axis; this means that with two valid measurements for the X axis, only the left one will be considered.

Of course it is always possible to choose between auto-collimation or collimation on a fixed grid: in both cases 214L/214LT recognizes automatically the side of the tool to be measured

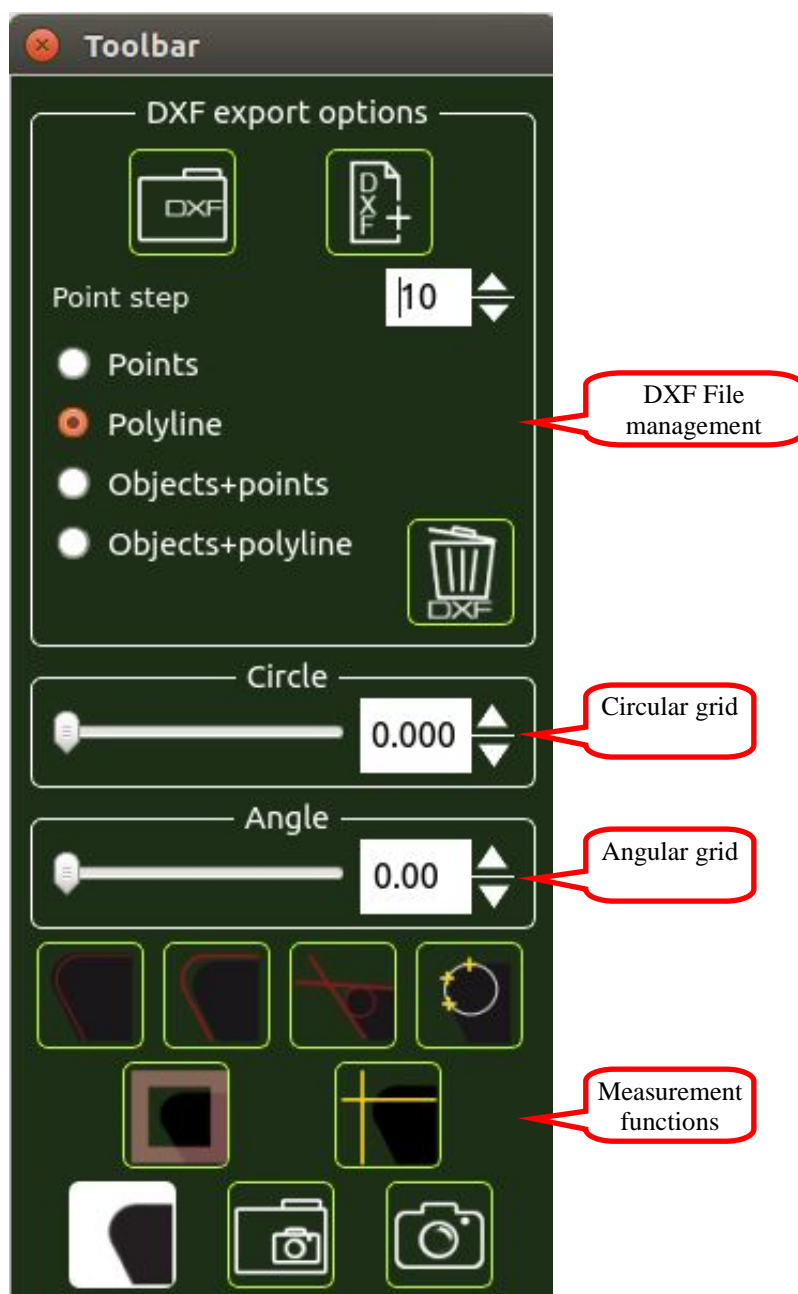
Although 214L/214LT recognizes and measures the tool's profile, there are particular cases in which the desired measurement cannot be done automatically or with the help of digital comparators. This happens when the point to measure is internal in respect of the shape of the tool.

In these cases, the measurement must be carried out using the "Region Of Interest".

11.2.4 Tool measurement toolbar



Pressing the Toolbar key in measurement mode, you open the screen with a window containing a series of functions that will be explained in detail in the software manual.



11.3 Tool inspection

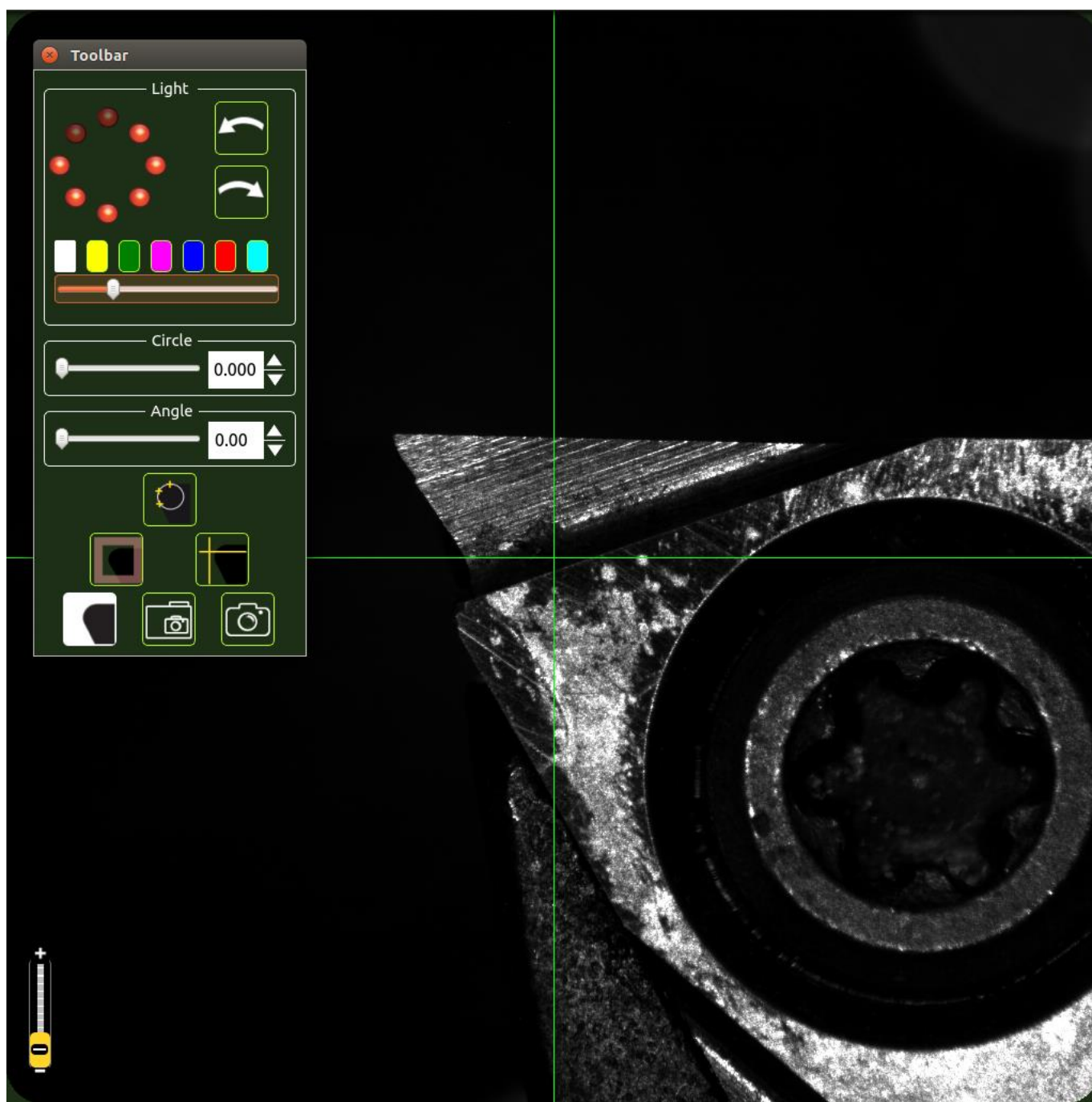


214L/214LT can show the cutting-edge area in order to detect anomalies.

Obviously, you can also carry out “manual” measurements of the displayed parts by using circular, angular or fixed reticules.

Automatic measurement functions and focusing indication are disabled, as they need an image where the tool profile is as clear as possible (diascopic).

If you activate the inspection mode, the 214L/214LT vision system will commute the display by turning off the diascopic light source and turning on the annular episcopic lighting.



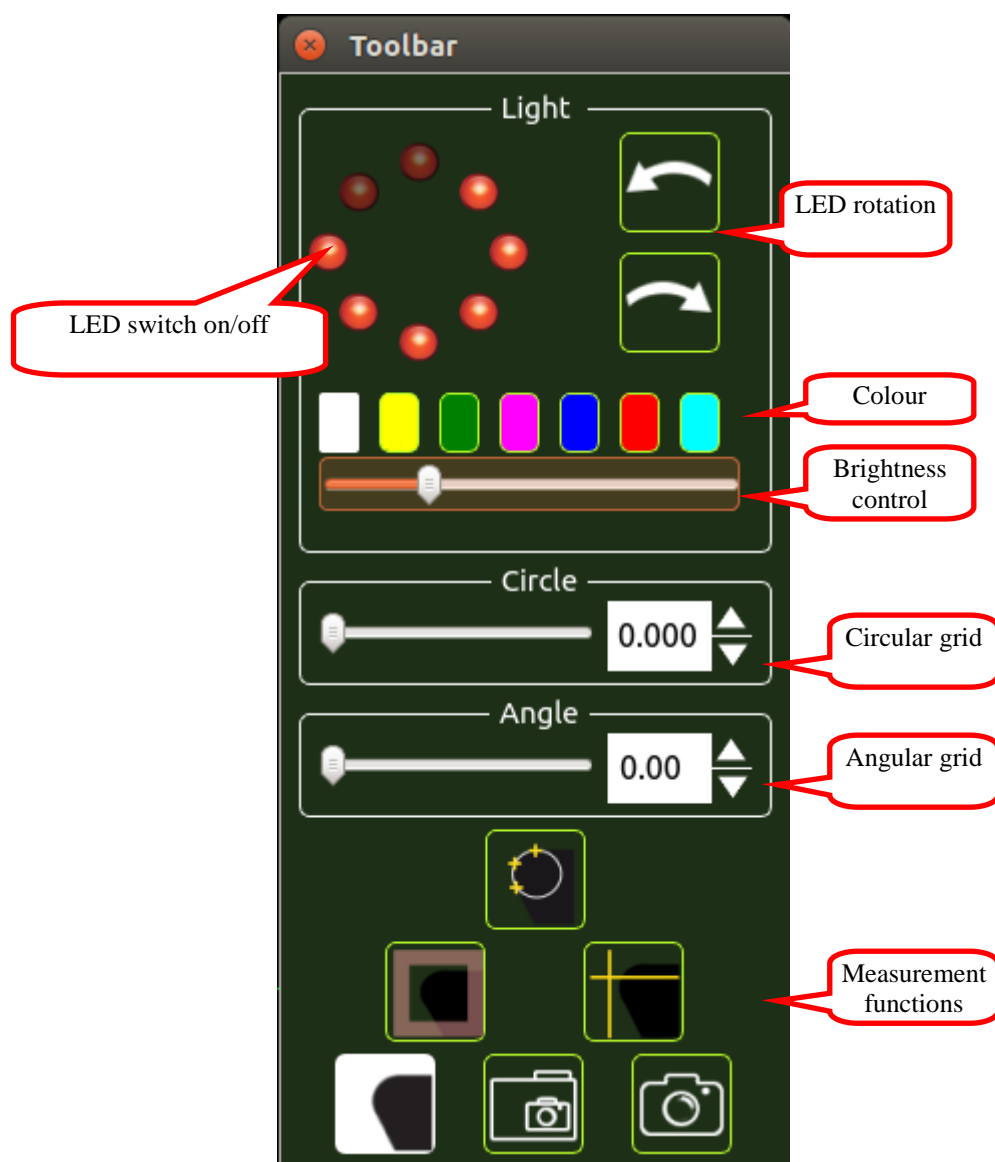
As you can see in the screen on the side, the measurement functions keep active, while a panel is displayed, which allows managing the tool vision at best.

You can manage the lighting intensity to obtain the correct level of contrast for the framed part. In fact, tools are often very reflective; therefore, it is necessary to control the quantity of light used and to slightly rotate the position of the spindle to examine the surface.

It is possible to individually switch on and off the eight leds on the ring illuminator, using the relevant tags or rotate them in a clockwise or anti-clockwise direction, until the best lighting conditions are found to examine the surface of the tool, as shown in the two figures below.

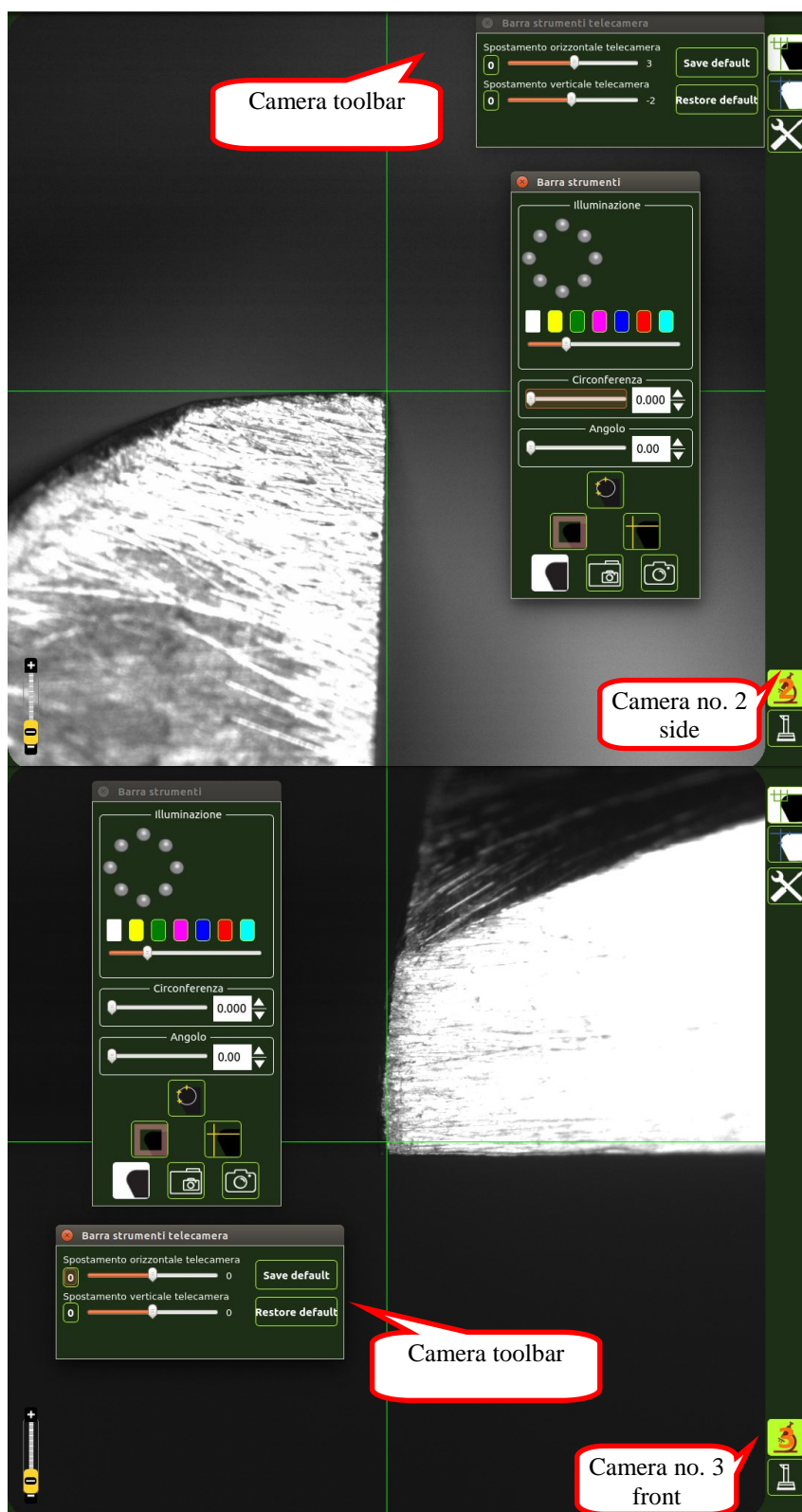
To even further improve tool vision, you can change the complementary colour of the black to represent the screen: it is possible to choose from the seven colours, to even further emphasise any micro-faults of the cutting edge inspected.

To modify the colour used in inspection mode, press the relevant key by selecting the desired colour.



11.3.1 Tool inspection with E46LTW/E46LTWA

In E46LTW and E46LTWA, as already said, there are two additional cameras to enable front and side tool inspection.



For front and side it is not possible to switch on and off the Leds or rotate them, while the choice of colour, the brightness adjustment, the measurement functions and the angular and fixed reticules remain available.

There is also a second toolbar that enables horizontal or vertical digital movement of the camera to bring in axis with the tool without this being turned.

Certain examples follow of views and measurements conducted with the front and side cameras.

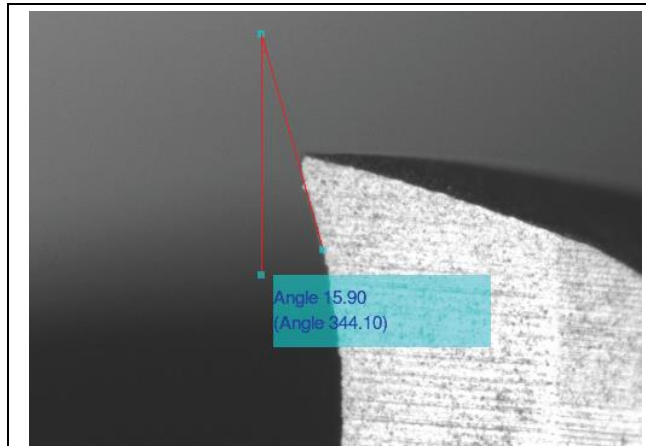


Figure 21: e.g. inspection 214LT front view

Cylindrical mill 3 cutting edges diam. 10mm. Front view: angle measurement of lip relief (cutting angle), determines the working performance of the tool.

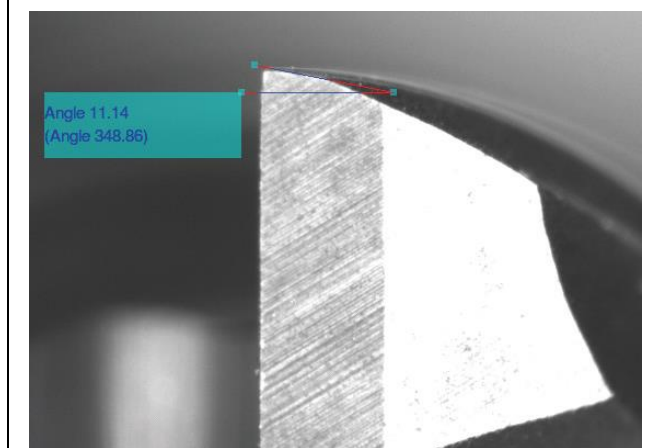


Figure 22: e.g. inspection 214LT front view

Cylindrical mill 4 cutting edges diam. 6mm. Front view: measurement of back lip relief (1st and 2nd release time), necessary for finishing without vibrations on the worked material.

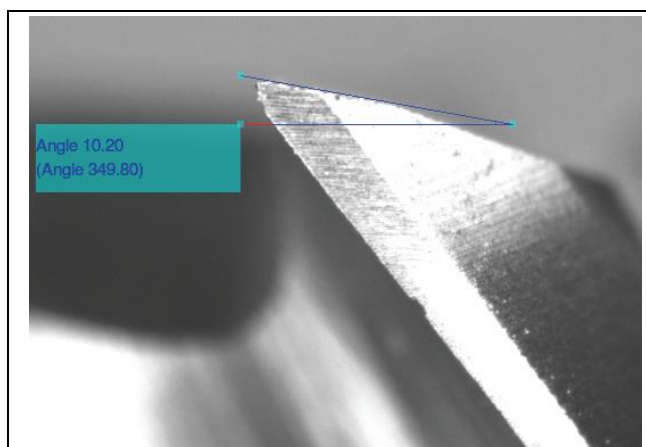


Figure 23: e.g. inspection 214LT side view

Cylindrical mill 4 cutting edges diam. 6mm. Side view (chest): angular measurement of the propeller and top lip relief, determining the type of work and workable material.

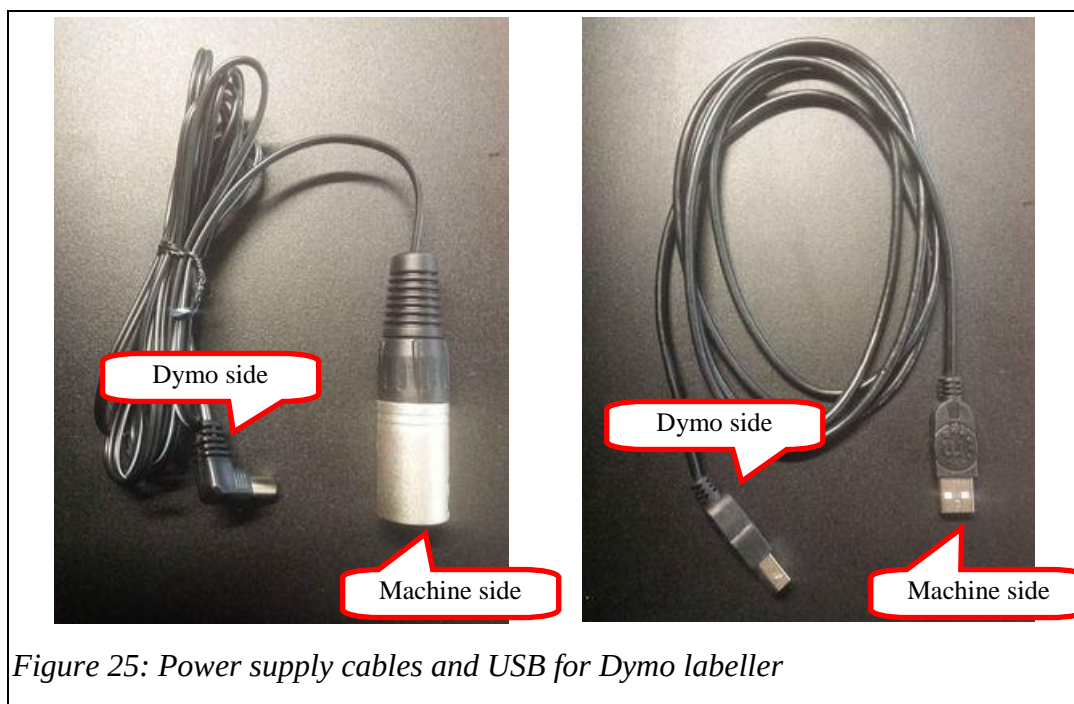
12 DYMO LABELLER (optional)

12.1 Positioning and connection of Dymo labeller

If a Dymo label printer was purchased with this machine, position it on a shelf placed on the left hand side of the machine as shown in the figure.



A cable is supplied with the machine to power the labeller and one for connection to the USB port.



Connect the two cables to the labeller as shown in the figure, then insert them in the specific sockets on the back of the machine.



The power supply cable means you don't have to use the original power supply cable of the labeller that would require a power socket near the machine.

13 MAINTENANCE

13.1 Routine Maintenance

The tool presetter does not need any specific maintenance, however we suggest the following maintenance.

13.1.1 Spindles, adapters, resetting gauges lubrication

To maintain perfect efficiency and to grant long term precision it is wise to clean and lubricate these basic tool presetter parts at every substitution and before replacing them in a proper place.

Concerning the spindle, which is often alone and is always positioned on the tool presetter, it is necessary to clean only the rectified visible parts; at least at the end of the working shift, in order to preserve them from oxidation.

For every lubricating operation we suggest you use special antioxidization product, such as the PRO-setral-KS Spray or something similar.

13.1.2 LCD monitor cleaning

To clean the LCD use a clean cloth, soaked in suitable degreasing products (do not use solvents and abrasive products). As for the optical systems, the lens and the illuminator, use an antistatic cloth; in case, moisten the surface with a spray or detergent liquids specific for optical lenses.

13.1.3 Compressed air filter cleaning

Check periodically the pneumatic system filter placed on the back of the tool presetter and corresponding to the compressed air connection tube (see Figure 11 point 6) and, when required, operate the valve in order to blow off any condensation, which could be formed in the transparent cap. When it is necessary to clean the filter, disconnect the pneumatic feed and unscrew the transparent cap; then, by using gasoline or another kind of solvent, disassemble and clean the filtering piece. Dry it by compressed air blowing, before reallocating it in its seat.

13.1.4 Vacuum filter cleaning

The tool clamping purifier filter (vacuum filter), must be cleaned if you note a decrease in the clamping power of the tool; periodic cleaning is recommended based on the use and work environment every 6-12 months.

Tool clamping purifier filter cleaning procedure

- disconnect the tool presetter from the external pneumatic circuit and the electrical circuit;
- access the vacuum filter placed on the power supply board (see Figure 12 point 19);
- remove the filter cap unscrewing it in an anti-clockwise direction;
- clean the cap and the filtering element, if the filtering element is damaged, replace it;
- re-assemble the cap by screwing it in clockwise;
- re-connect the tool presetter to the external pneumatic circuit and the electrical circuit;

13.1.5 Clutch wheel cleaning (E46LA/E46LTWA only)

To guarantee the efficiency of the Presetter equipped with motorized spindle (E46LA/E46LTWA model), periodically clean both the clutch wheel that transfer the motion of the motor to the spindle and the spindle guide.

☒ Clutch wheel cleaning procedure

- remove the spindle from the Presetter;
- start the cleaning procedure for the clutch wheel using the software command;
- clean the clutch wheel while it is accessible from the spindle compartment;
- stop the procedure by software command.

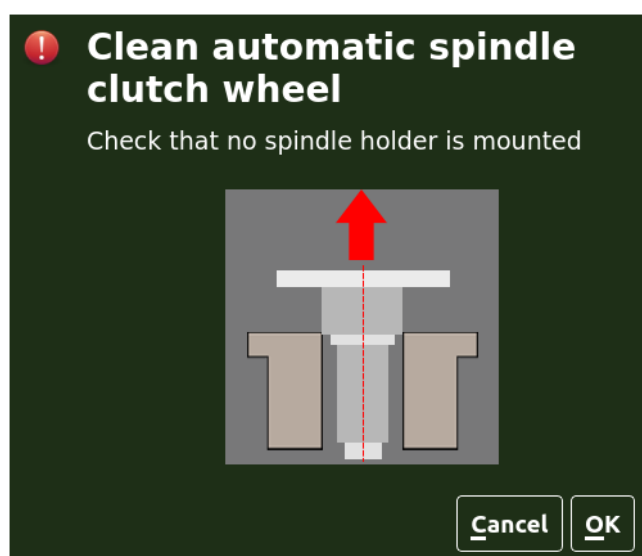


Figure 28: Clutch wheel cleaning procedure start



Figure 29: Performing the clutch wheel cleaning procedure

13.1.6 Absolute calibration of linear axes (E46LA / E46LTWA only)

Following a maintenance procedure linked to the optical lines of the machine, or if anomalies in the functioning of the measuring cycles performed by automatic functions are detected, it will be necessary to perform a new absolute calibration of the linear axes.

Since the procedure is completely analogous to the registration of a new machine origin, it will be necessary to have a resetting gauge.

☒ Setting linear axes absolute zero

- insert the resetting gauge into the spindle holder;
- access the maintenance menu;
- press the command to set the absolute zeroes of the linear axes;
- insert the radial dimension of the gauge and collimate with the fixed reticle;
- confirm the value along the X axis;
- enter the height dimension of the gauge and collimate with the fixed reticle;

- confirm the value along the Z axis;
- check the result of the procedure and confirm.

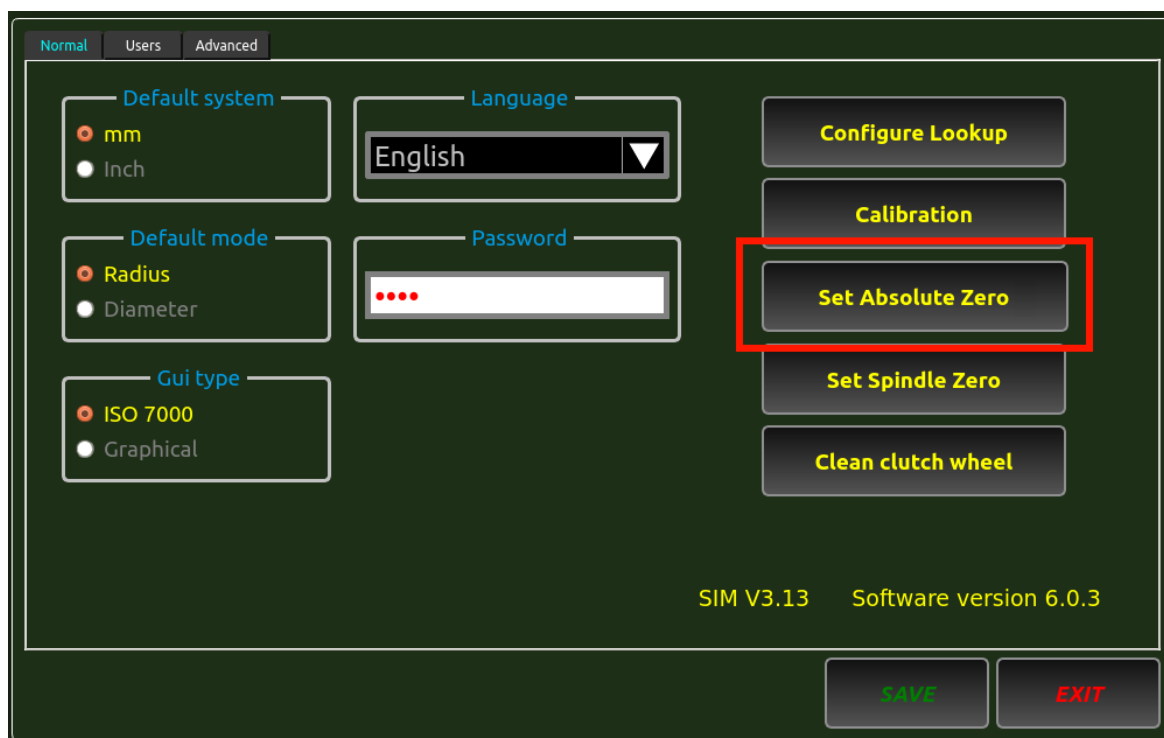


Figure 30: Command for setting the absolute calibration of the linear axes

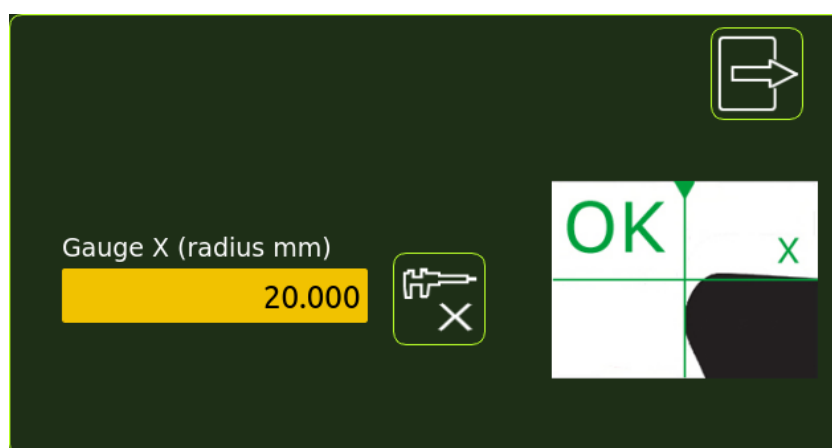


Figure 31: X axis absolute calibration

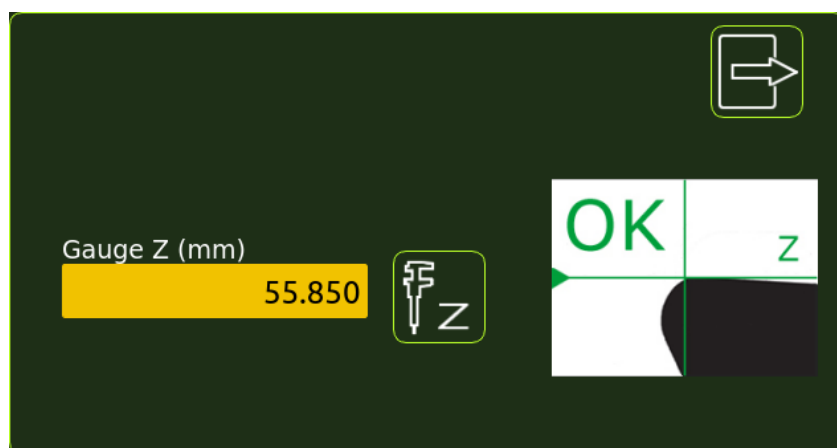


Figura 32: Z axis absolute calibration

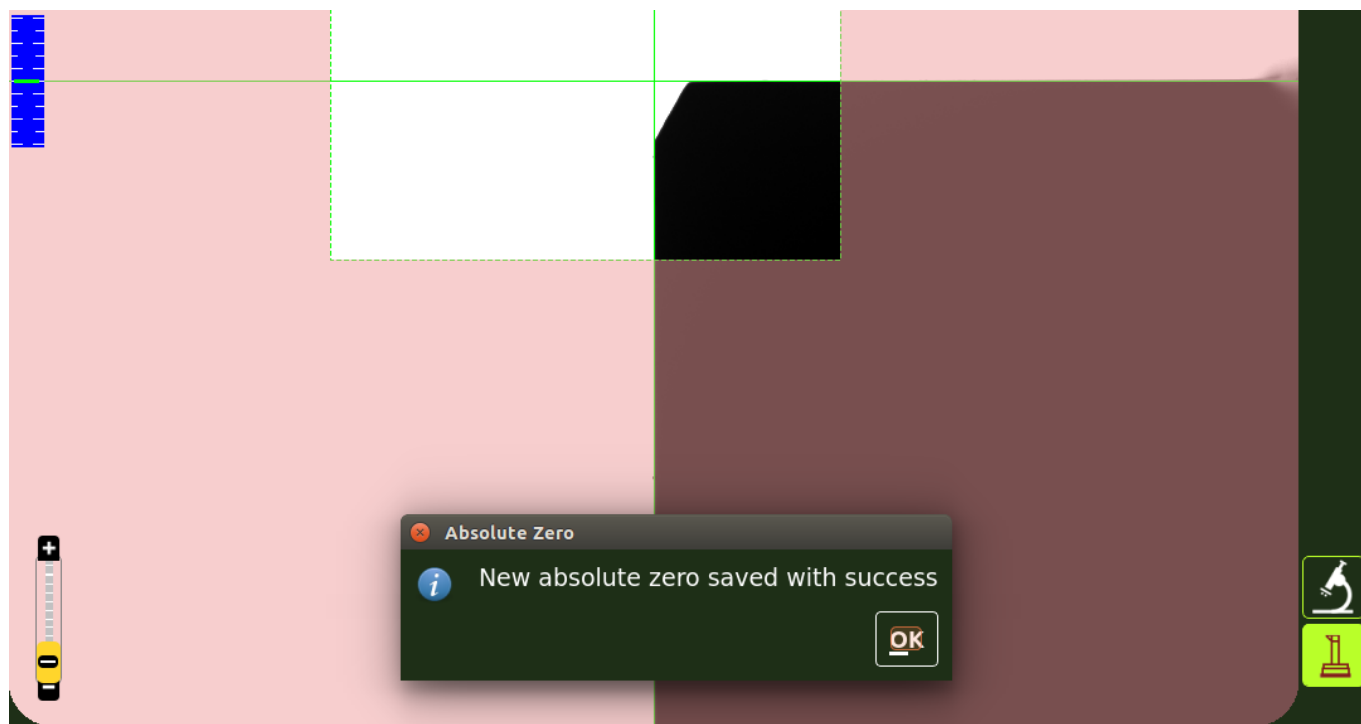


Figura 33: Result of calibration procedure

14 TROUBLE SHOOTING

14.1 Foreword

This chapter is dedicated to solving the most common problems that arise during the use of the tool presetter. Each problem is associated with a series of checks to be carried out and corrective actions. Obviously, the list is not exhaustive: if necessary, contact customer care at your local dealer.

14.2 Problems, causes and solutions

14.2.1 PROBLEM: tool presetter does not switch on.

CAUSE: main power supply failure.

SOLUTION: check the connection with the external power supply circuit;
check any external switches and/or fuses and, if damaged, replace them.

CAUSE: Tool presetter power supply failure.

SOLUTION: check that the ON/OFF switch to be found on the rear of the machine is in the ON position;

check that the PC switch is on and blue.

14.2.2 PROBLEM: the axes do not release.

CAUSE: axes lock keys inserted via software.

SOLUTION: release key of the relevant axis

CAUSE: pneumatic power supply failure or pressure too low.

SOLUTION: power the tool presetter with compressed air between 5÷6 BAR.

CAUSE: Solenoid or electronic valve damaged.

SOLUTION: Contact technical service assistance for the component replacement.

14.2.3 PROBLEM: difficulty moving axis Z upwards.

CAUSE: Balance weight spring broken.

SOLUTION: remove the rear protection case of the column, verify the balance weight spiral spring is broken and contact technical assistance service for the component replacement.

14.2.4 PROBLEM: the index does not work. (optional VDI tool-holder only)

CAUSE: pneumatic power supply failure or pressure too low.

SOLUTION: power the tool presetter with compressed air between 5÷6 BAR.

CAUSE: Solenoid or electronic valve damaged.

SOLUTION: Verify the functioning of the pilot lamp of the tool lock/unlock button, and contact technical service assistance for the component replacement.

14.2.5 Problem: axes calculation is incorrect but produces repeated measurement .

CAUSE:

SOLUTION: Contact technical service assistance

14.2.6 PROBLEM: calculation is incorrect and the measurement are not repetitive.

CAUSE: Due to an impact, the 214L/214LT fixed reticle is no more parallel to the axis of the machine.

SOLUTION: see next problem.

CAUSE: Damaged axes management board or detection system.

SOLUTION: see next problem

14.2.7 PROBLEM: axes counting does not take place.

CAUSE: Damaged axes management board or detection system.

SOLUTION: If the defect affects both the axis, the trouble is likely to concern the electronic equipment ; otherwise, the failure is due to the measurement system or to the cables. Contact technical service assistance for the component replacement.

14.2.8 PROBLEM: auto-collimation gives different measurements on different parts of the screen.

CAUSE: Incorrect calibration.

SOLUTION: check the calibration parameter and contact technical service assistance.

CAUSE: 214L/214LT fixed reticle is not parallel to the axis of the tool presetter.

SOLUTION: see the following point.

14.2.9 PROBLEM: 214L/214LT fixed grid is not parallel to the tool presetter axes and/or the image's focus is not at the point of maximum tangency of tool.

CAUSE: Possibly the 214L/214LT was jarred, thus moving the 214L/214LT out of position.

SOLUTION: check the mechanical integrity of the support and the fixing of all optical components, then contact technical assistance.

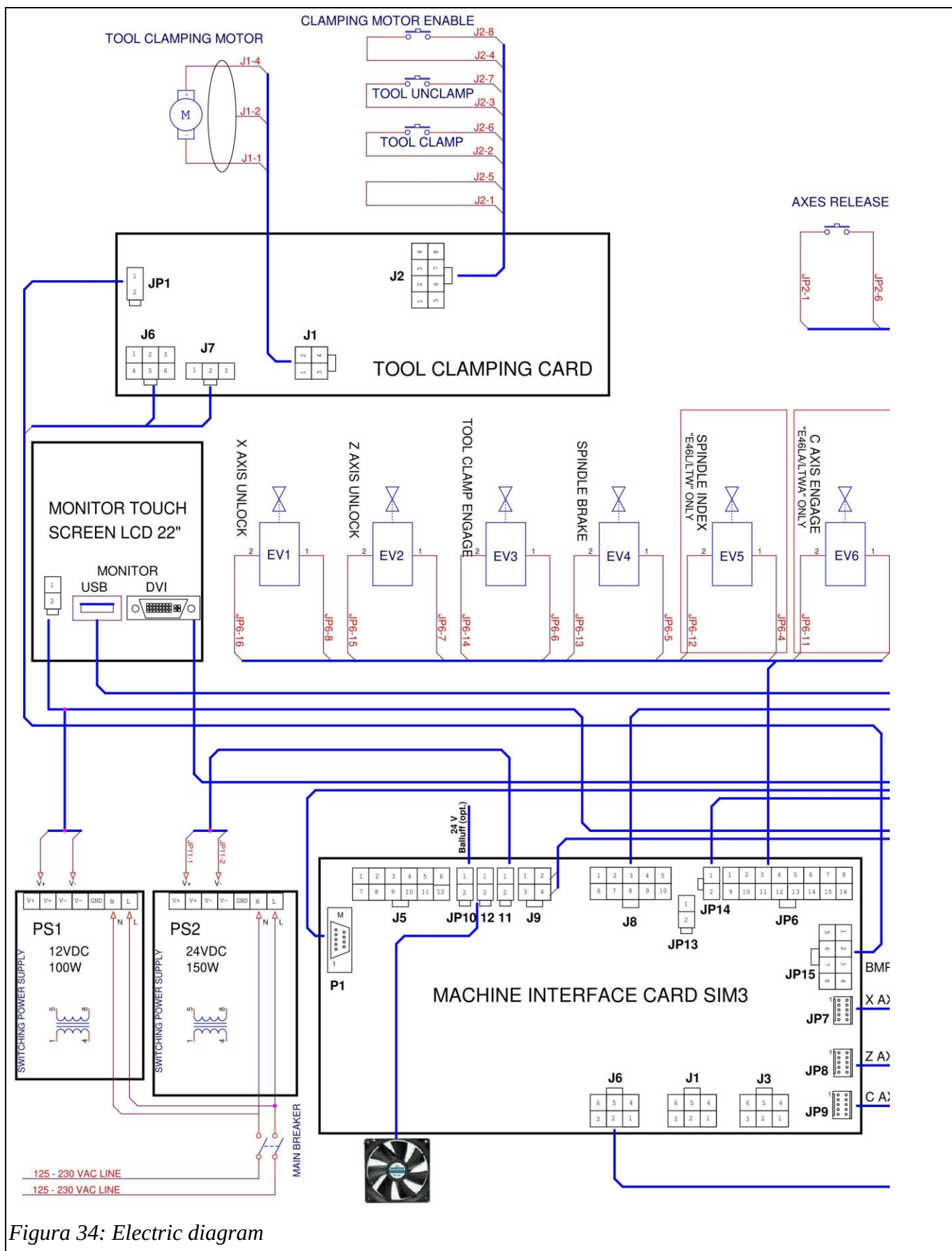
15 ELECTRIC DIAGRAM

Figura 34: Electric diagram

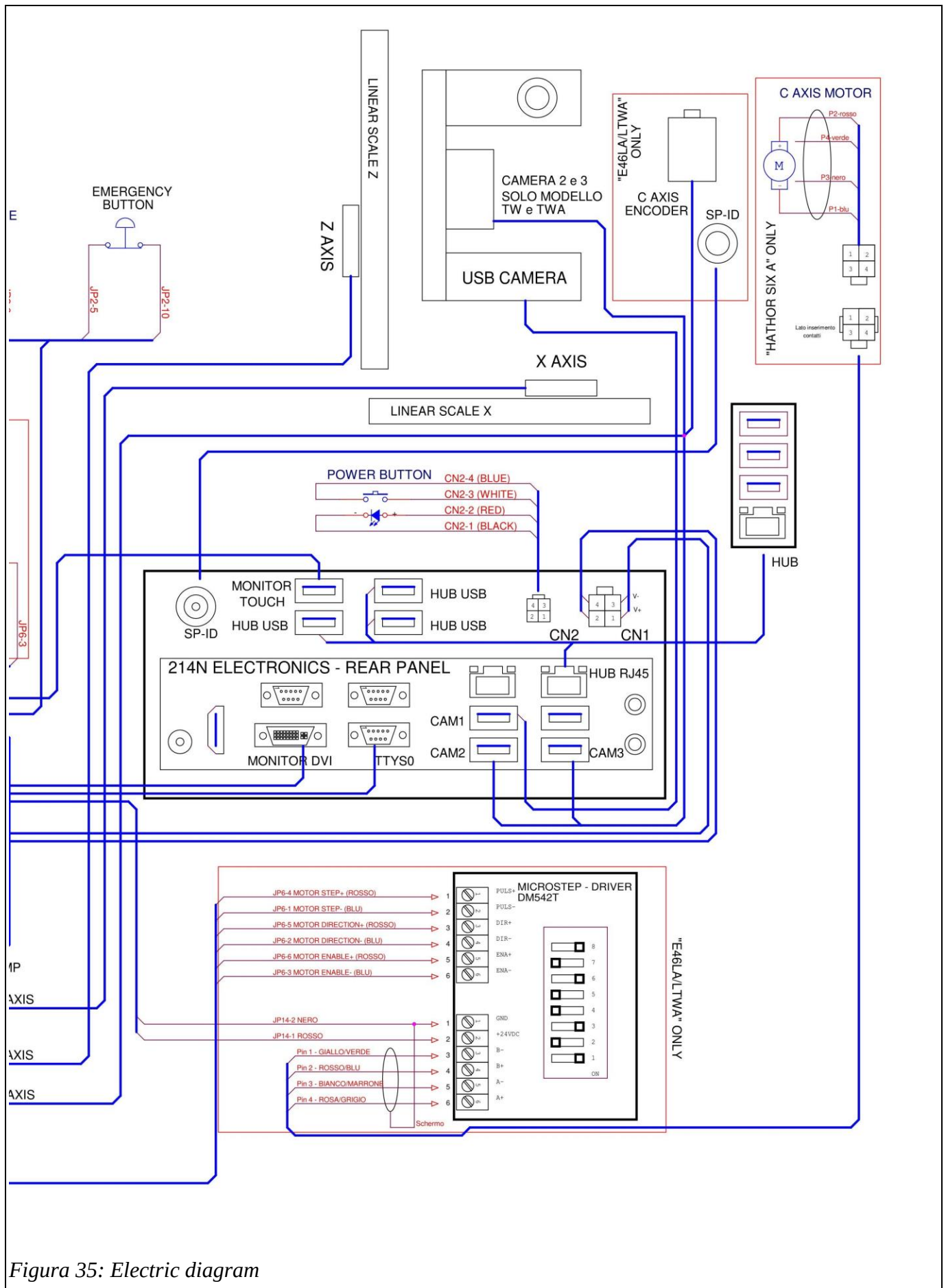


Figura 35: Electric diagram

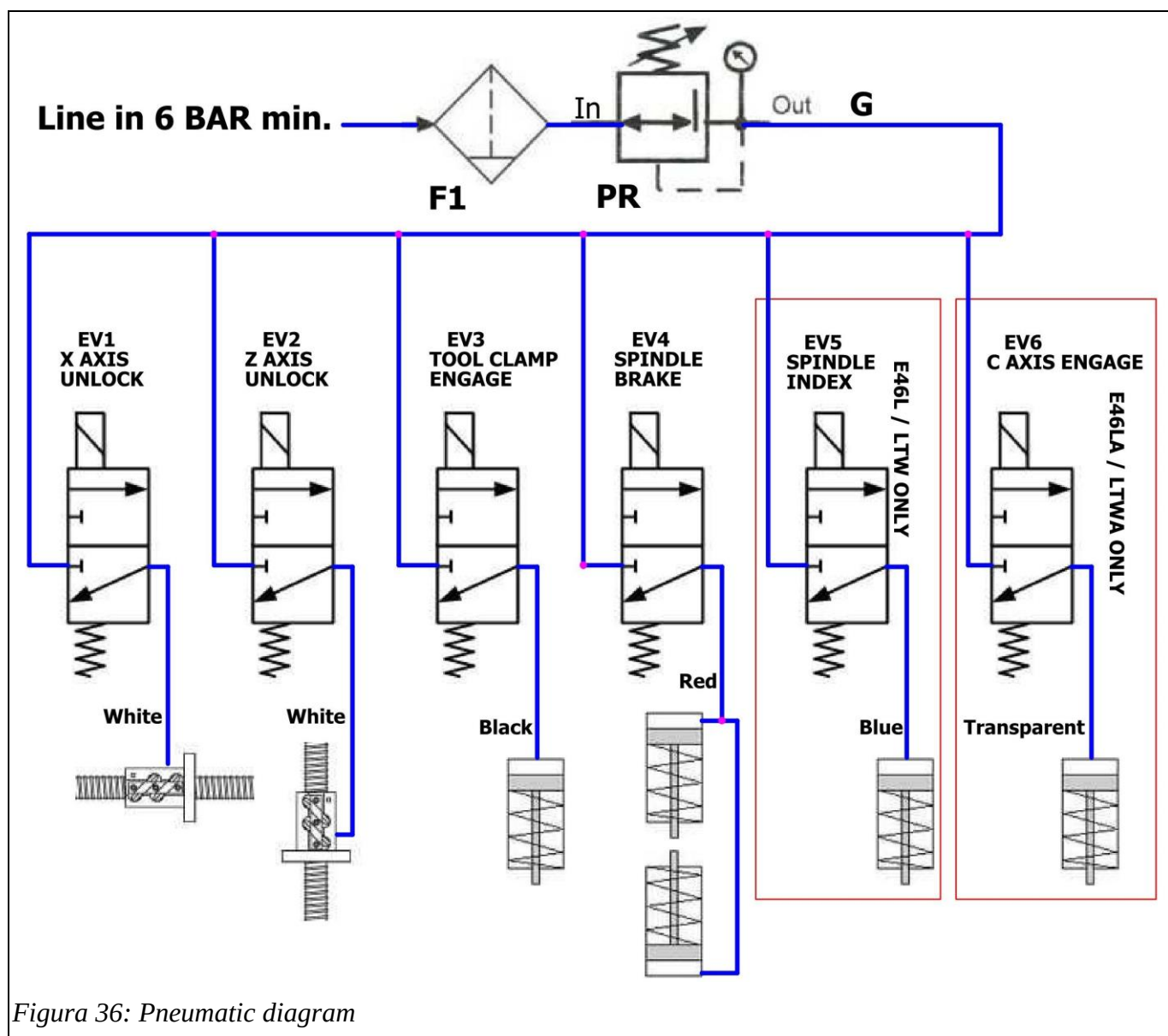
16 PNEUMATIC DIAGRAM

Figura 36: Pneumatic diagram

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