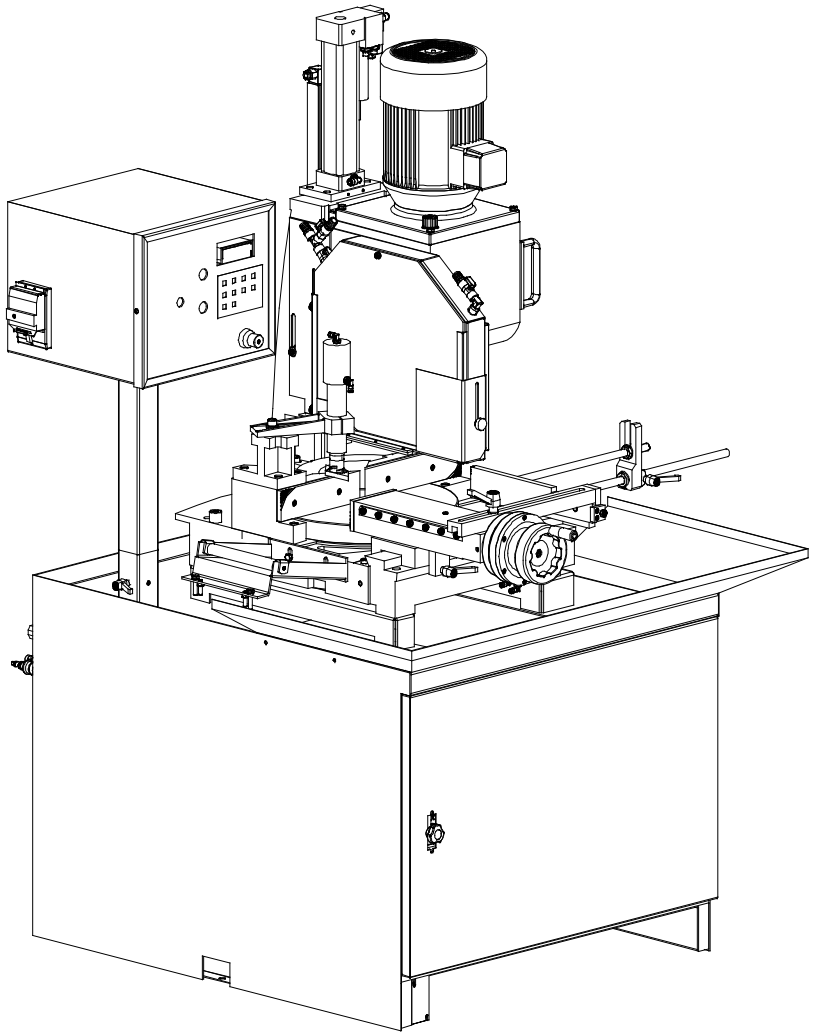


USE AND MAINTENANCE MANUAL

EN C370-2SI

YEAR OF MANUFACTURE: _____

EN

”CE” CONFORMITY DECLARATION
(according to EEC MACHINES DIRECTIVE 2006/42/CE annex II A)

The manufacturer:

MEP S.p.A.
Via Enzo Magnani, 1
61045 Pergola (PU) ITALIA
Tel. 072173721- Fax 0721734533

Hereby declares that the circular sawing machine:

Machine Type:	**SAWING MACHINE**
Machine model:	**C370- 2SI**
Serial number:	
Year of manufacture:	

is in specification with the following directives:

- **DIRECTIVE EEC MACHINES DIRECTIVE 2006/42/CE**
- **DIRECTIVE 2006/95/CE ”LVD”**
- **DIRECTIVE 2004/108/CE ”EMC”**
- **D. Lgs. 17/2010**

Responsible of a Technical File
(Walter Di Giovanni)

c/o MEP SPA
Via Enzo Magnani, 1
61045 - Pergola - PU - ITALY

Managing Director
(William Giacometti)

Pergola, lì _____

Introduction and technical specifications

1

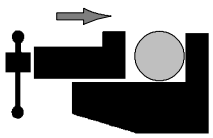
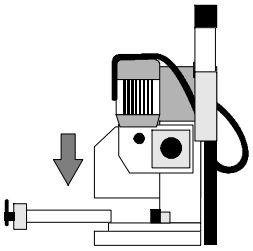
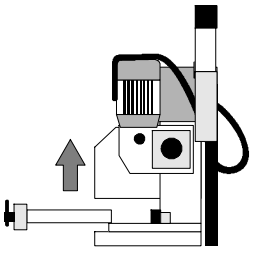
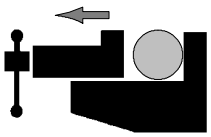
Foreword

We have decades of experience in the construction of the best metal- cutting machines. Our experience, our knowledge of our customers and constant technological development of design and production equipment allow us to offer a specific solution for every type of cutting need. This work tool has been designed as a simple and reliable answer to the wide range of cutting needs of the modern workshop. The **C370- 2SI** is an electro- pneumatic, semiautomatic vertical sawing machine, which can execute left angled cuts at 60 degrees and right angled cuts at 45 degrees. These features, together with optimal cutting capabilities, make the **C370- 2SI** a highly versatile machine. Congratulations for having chosen this product which, by following the instructions contained in this user and maintenance handbook, will guarantee you years of dependable service.

Warning This band saw has been exclusively designed to cut metals.

Machine presentation

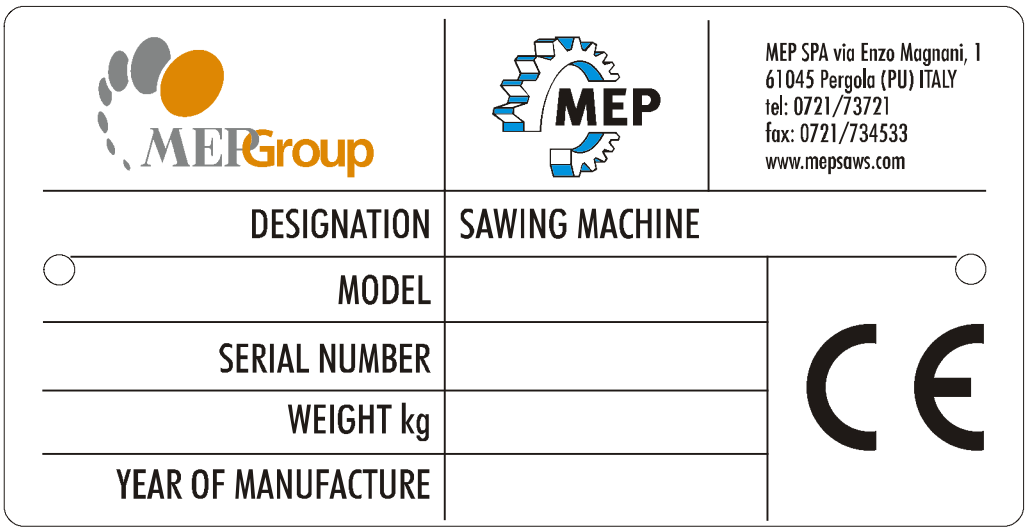
The machine can operate in SEMI- AUTOMATIC mode: after setting the head cutting stroke on the control panel and the head downstroke speed, the operator positions the vice 2÷3 mm from the workpiece and presses the start button (or optional foot pedal if fitted) on the control panel to start up the band saw. The vice then clamps the material, the head lowers, cuts the piece and returns to its start position and the vice opens again.

1. The cutter vice closes	2. The head lowers until the cut is made (FCTA)	3. The head returns to start position (FCTI)	4. The cutter vice opens
			

Machine specification

The anodised aluminium name plate is riveted on the side of the machine; the same data are reproduced on the declaration of conformity included with this use and maintenance manu-

al.



N.B. When communicating with the Technical Service department, the model, serial number and year of manufacture of the machine must be quoted.

CUTTING SPEEDS		
Speeds 1/2/3/4 (standard speed)	rpm	15 ÷ 150

BLADE		
External disc diameter	mm	370
Internal hole diameter	mm	32
Blade thickness	mm	3

RATED ELECTRICAL POWER		
Optional three phase head spindle motor	KW	5,5
Electric coolant pump motor	KW	0,1
Max installed power	KW	5,6

WORKING PRESSURE		
Max. working pressure for opening/closing vice	Bar	6
Air consumption for a complete cycle	Nl/min	7,35

N.B. The ”air consumption for vice” value refers to standard conditions (temperature 0° and pressure 1.013 bar, i.e. density 1.3 x 10- 3 Kg/l) where 1 Kg/min. = 772 Nl/min.

LUBRICANT/COOLANT FLUID AND OIL		
Lubricant/coolant fluid (oil concentration 5- 6%)	capacità Lt.	80
Oil for transmission box	capacità Lt.	9

VICE		
Vice max. opening	mm	190

SPINDLE MOTOR (STANDARD)				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
4	230/400	14,5/8	2,6	1.440
8	230/400	10/5,7	1,8	715
Stator wound with enamelled copper wire, class H 200° C.				

SPINDLE MOTOR (STANDARD)				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
Class F insulation (limit temperature TL 155° C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

N.B. Example of class F insulation: in air- cooled machines at an ambient temperature of 40° C (according to CEI 2- 3 and IEC 85), the allowable overtemperature is 100° C (where 100° C represents the allowable ΔT).

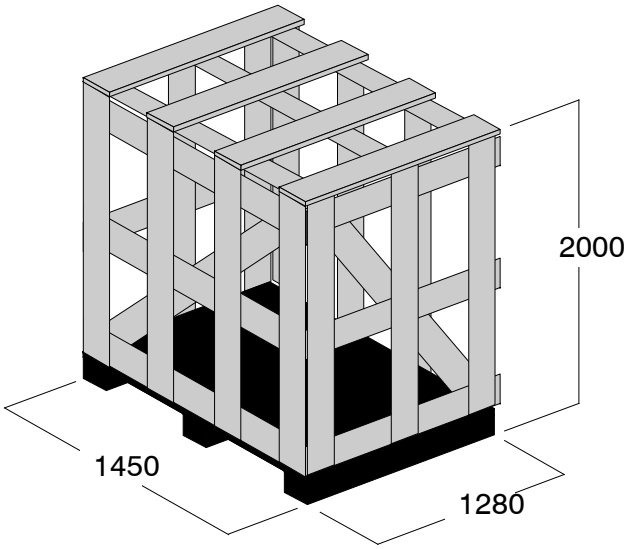
SPINDLE MOTOR (OPTIONAL)				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
4	230/400	9,8/4,6	5,5	1440
Stator wound with enamelled copper wire, class H 200° C.				
Class F insulation (limit temperature TL 155° C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

ELECTROPUMP MOTOR			
Voltage (Volts)	**Absorption (Amps)**	**Power (Kw)**	**rpm**
230	0,53	0,1	2800
400	0,34	0,1	2800
Protection rating IP 55.			
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.			

CUTTING CAPACITY for SOLID sections				
Section				
0°	120	100	180 x 100	
45° ◗	70	70		70 x 100
45° ◖	70	70		70 x 100
60° ◖	50	50		50 x 100

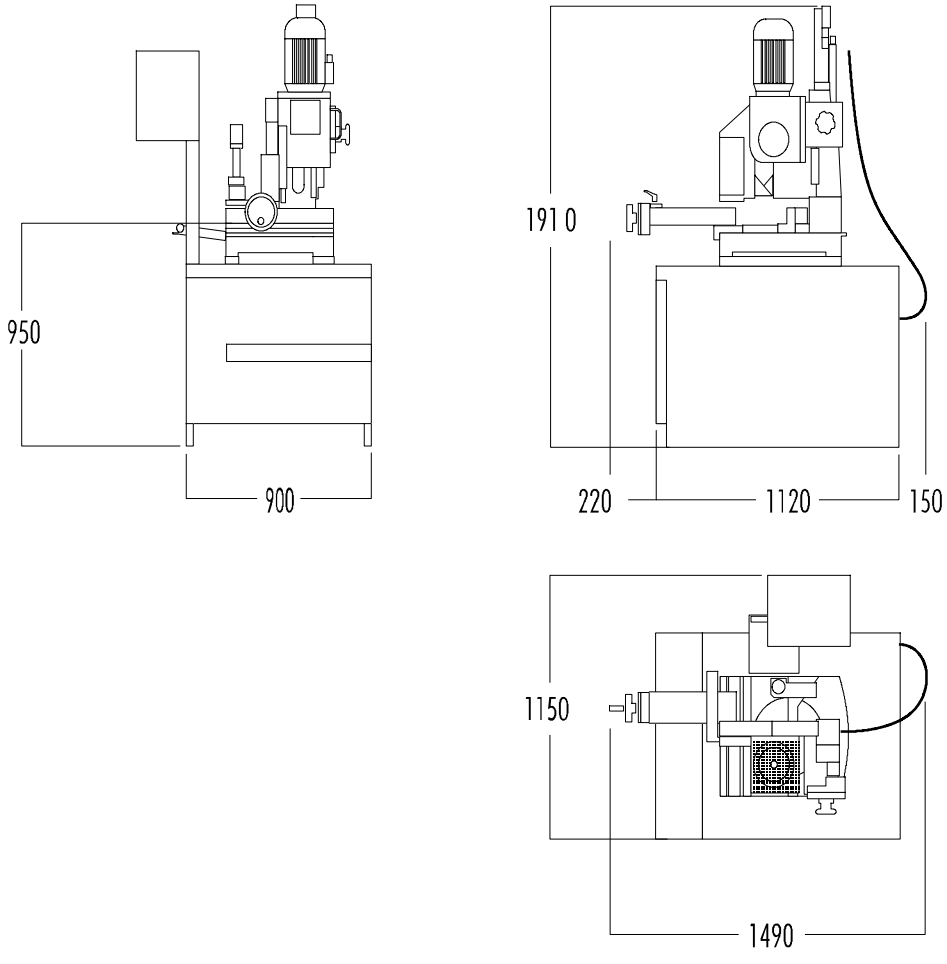
CUTTING CAPABILITY FOR SECTIONS				
Section				
0°	120	110	180 x 100	
45° ◗	115	100	120 x 100	
45° ◖	115	100	120 x 100	
60° ◖	115	90		90 x 100

PACKED WEIGHT		
Wooden cage and pallet	Kg	70
Wooden pallet	Kg	20



Dimensions

MACHINE INSTALLED		
Work table height	mm	950
Weight	Kg	640

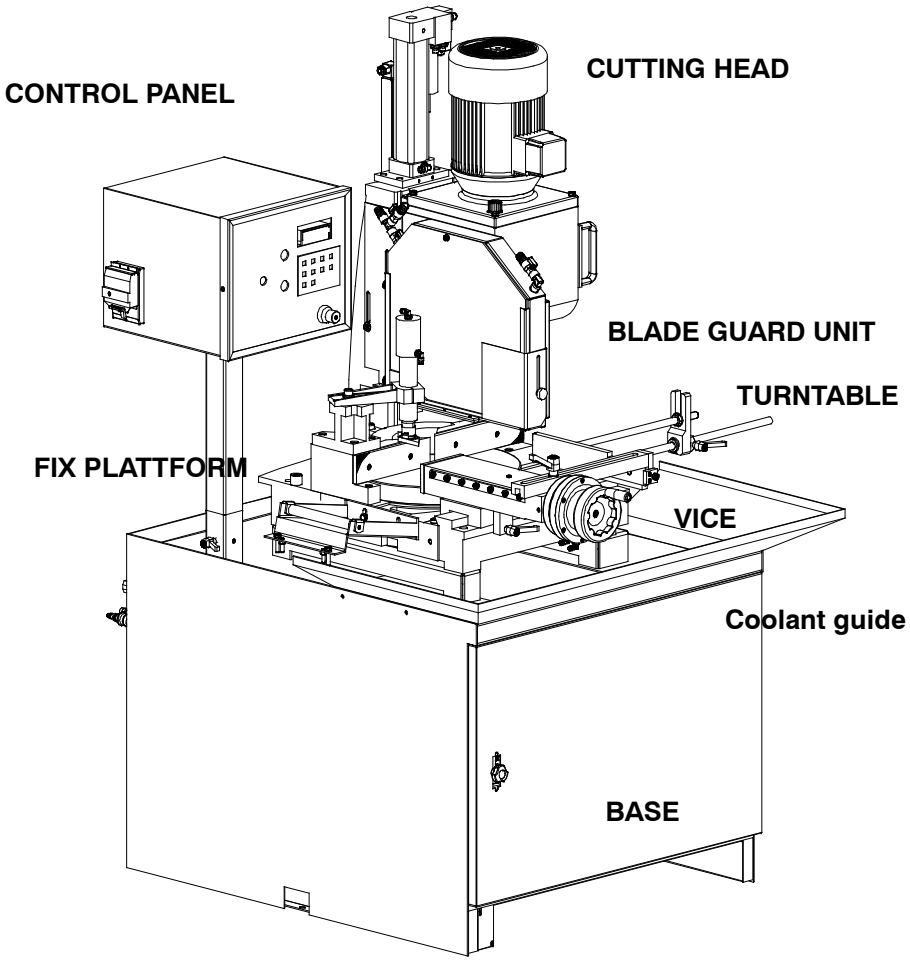


Functional parts

2

C370-2SI model

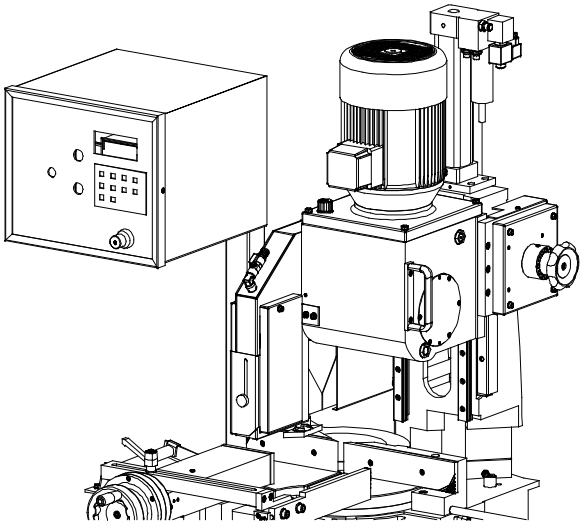
In order for the user to move towards a full understanding of how the machine works, which is described in detail in the chapter 5, this chapter deals with the main units and their locations.



Cutting head

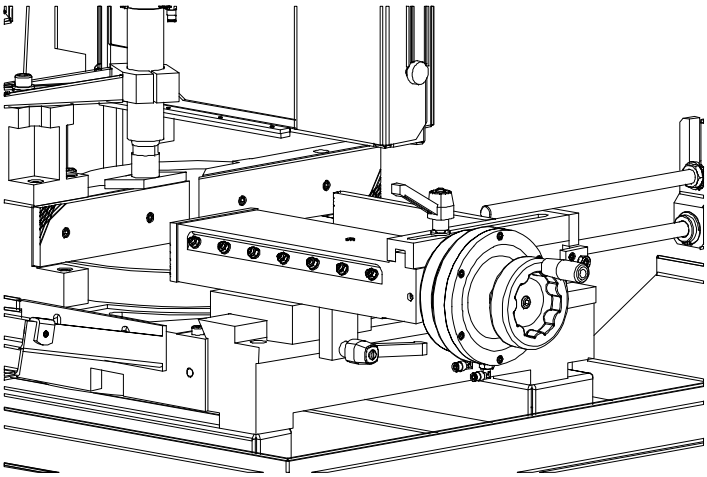
The cutting head is the unit that cuts the material. It consists of a cast iron head on which the following are mounted: the band saw, the blade guide components, the blade tensioner components, the transmission box and the spindle motor. The

operating head runs on linear guides with ball- recirculating pre- charged slides and makes a vertical stroke from the up position to the down one; this stroke can be programmed through the control board.



Vice

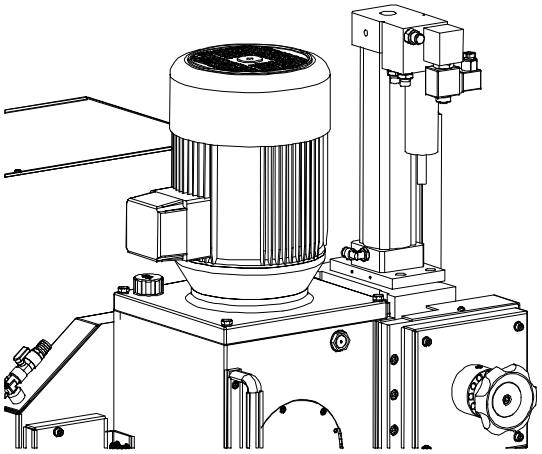
The vice is the unit that clamps the workpiece in place during cutting; it consists of a vice support, commonly known as a lead nut, fixed to the work table, and a lead screw with a slideway on which the mobile jaw is mounted. The vice is controlled by the vice opening and closing button or by the start button. The vice approaching movement is manual and the closing is operated by the cylinder (pneumatic).



Oil pneumatic unit

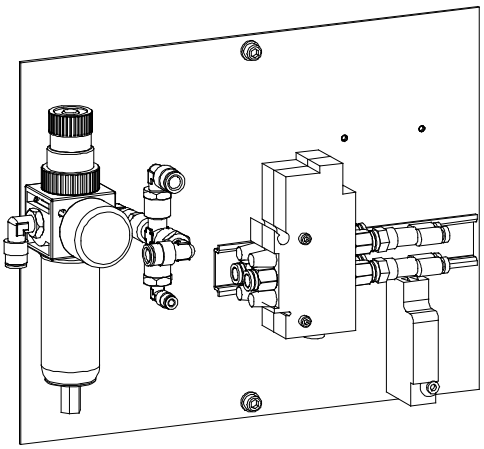
This unit drives and regulates the upward and downward movement of the cutting head and consists of a hydro- pneumatic cylinder and recovery electro- valves. The head descent regulator on the control panel can be used to regulate the quantity of oil that flows into the cylinder and naturally the downward movement

speed of the cutting head. To facilitate the upward movement of the head, the **C370- 2SI** has a spring located in the cutting head.



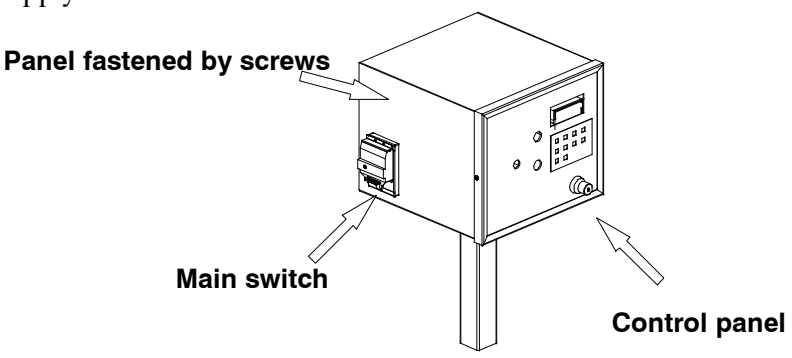
Electro- pneumatic unit

The panel shown in the diagram below is the electro- pneumatic unit. It consists of an air treatment unit and an electro- valve; the unit serves to filter the air entering the circuit.



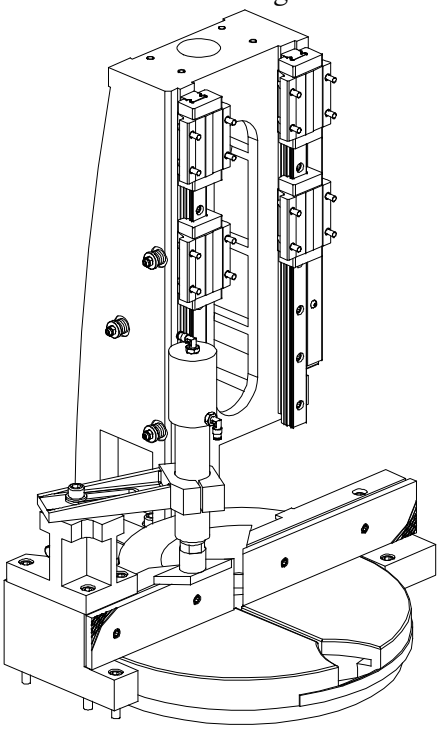
Control Panel

The control panel has a protection rating of IP 54 and contains the electrical equipment. Access is gained by removing a few screws, while the operator's safety is guaranteed by a key- operated safety switch, designed to prevent any intentional interference with the unit. In fact, removing the control panel from its mounting simultaneously extracts the key from the switch, thus cutting- off the electricity supply to the machine.



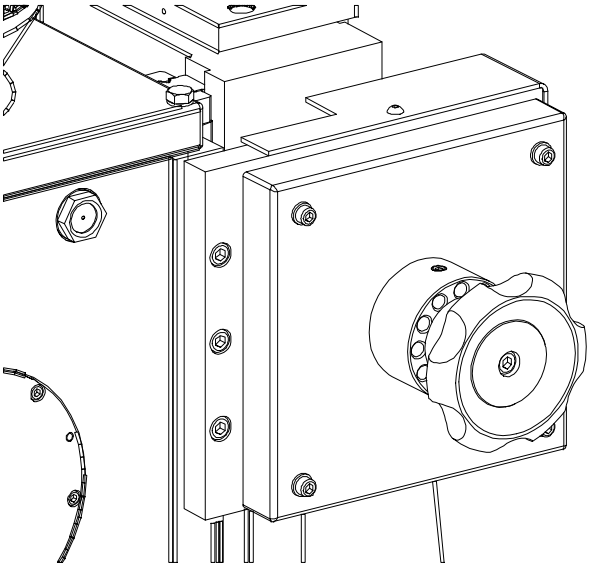
Turntable

A cast iron casting forms the fulcrum for the cutting head, and the support for the work table and the control panel. Releasing the locking lever on the slideway allows the cutting head to be rotated to the right and to the left.

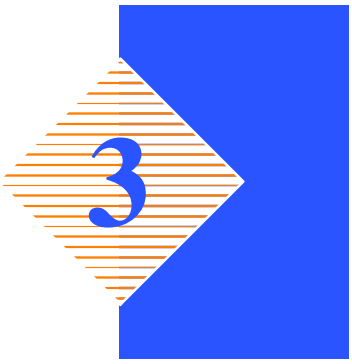


Head lift unit

This device has a preloaded spring that allows easy up and down movement of the head.



Safety and accident prevention



The **C370- 2SI** has been designed and produced in accordance with European standards. For the correct use of the machine we recommend that the instructions contained in this chapter are carefully followed.

Use of the machine

The **C370- 2SI** circular saw is designed to cut exclusively ferrous and non- ferrous profiles and solid metal sections. Other types of material and machining are not compatible with the specific characteristics of the saw. The employer is responsible for instructing the personnel who, in turn, are obliged to inform the operator of any accident risks, safety devices, noise emission and accident prevention regulations provided for by international standards and national laws regarding the use of the machine. The operator must be perfectly aware of the position and function of all the machine's controls.The instructions, warnings and accident prevention standards in this manual must be respected without question by all those concerned.The following definitions are those provided for by **EEC MACHINES DIRECTIVE 2006/42/CE** :

- "Danger zone": any zone in and/or around a machine in which the presence of a person constitutes a risk for the safety and health of that person.
- "Person exposed": any person finding himself either completely or partly in a danger zone.
- "Operator": the person or persons given the responsibility of installing, operating, adjusting, maintaining, cleaning, repairing or transporting the machine.

Attention

The manufacturer declines any responsibility whatsoever, either civil or criminal, should there be unauthorised interference or replacement of one or more parts or assemblies on the machine, or if accessories, tools and consumable materials are used that are different from those recommended by the manufacturer itself or if the machine is employed in a plant system and its proper function is thereby altered.

General recommendations

LIGHTING

Insufficient lighting for the types of operation envisaged could constitute a safety hazard for the persons concerned. For this reason, the machine user must provide lighting in the working area sufficient to eliminate all shadowy areas while also avoiding any blinding light concentrations. (Reference standard ISO 8995- 89 “Lighting in work environments”).

CONNECTIONS

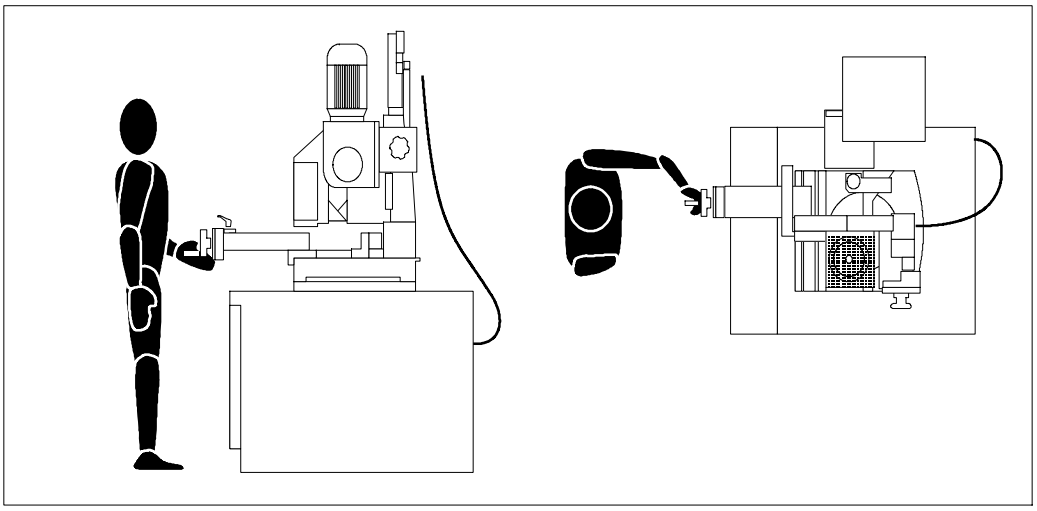
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the “Machine Specification” tables; replace if necessary.

EARTHING

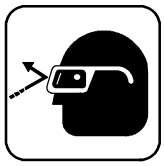
The installation of the earthing system must comply with the requirements set out in EN STANDARD 60204- 1:2010.

OPERATOR POSITION

The position of the operator controlling machine operations must be as shown in the diagram below.



Recommendations to the operator



Always wear proper goggles or protective glasses.

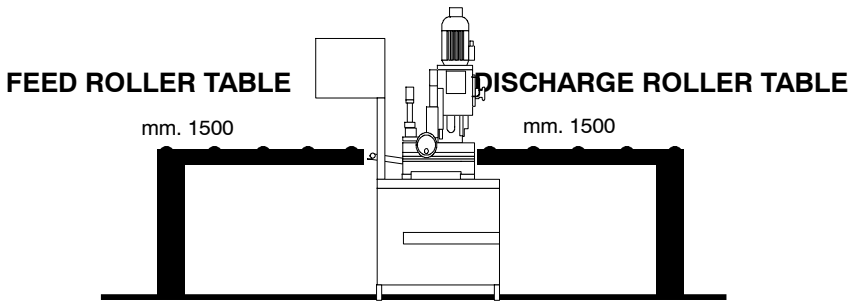
Do not use the machine without the guards in position. Replace the polycarbonate windows , if subject to corrosion.

Do not allow hands or arms to encroach on the cutting zone while the machine is in operation.

Do not wear oversize clothing with long sleeves, oversize gloves, bracelets, necklaces or any other object that may become entangled in the machine during working; long hair must be tied back and bunched.

Always disconnect the power supply to the machine before carrying out any maintenance work whatsoever, including in the case of abnormal operation of the machine.

Before starting cutting operations, support the material at both ends of the machine using the support arm - standard, or OPTIONAL accessories such as the feed and discharge roller tables shown in the diagram below.



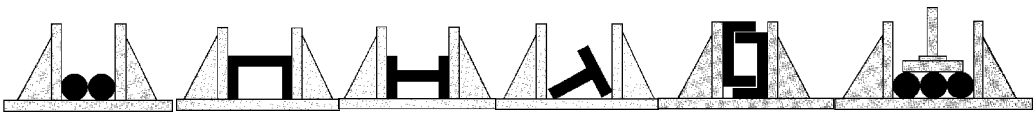
Any maintenance work on the hydraulic or pneumatic systems must be carried out only after the pressure in the system has been released.

The operator MUST NOT perform any risky operations or those not required for the machining in course (e.g. remove swarf or metal shavings form the machine while cutting).

Remove equipment, tools or any other objects from the cutting zone; always keep the working area as clean as possible.

Do not use the machine for cutting pieces which exceed the cutting capacity described in the technical specifications or are less than 5 mm

Before starting any cutting operations, ensure that the workpiece is securely held in the vice and the machine has been set correctly. A number of examples of how to clamp the different profiles correctly in our machines are shown below.



Never move the machine while it is cutting.

Do not use blades of different sizes to those recommended in the machine's specifications.

When cutting very short pieces, make sure that they are not dragged behind the support shoulder, where they could jam in the blade.

When using the pneumatic vice (version MA) check that the jaws actually move right up to and effectively block the piece, as the maximum travel in only 6 mm, and check that the clamping pressure is correct.

When working on the bandsaw, only wear gloves when handling materials and tool change or adjustment operations. Only carry out one operation at a time and do not hold more than one item or operate more than one device simultaneously. Keep hands as clean as possible.

Warning: if the blade jams in the cut, press the emergency stop pushbutton immediately. If this does not free the blade, slowly release the vice, remove the piece and check that the blade or its teeth for damage, if need be replace the blade.

Before carrying out any repair works on the machine, consult the Technical Service; this can also be done through an agency in the country in which the machine is being used.

Machine safety devices

This use and maintenance manual is not intended as purely a guide for the use of the machine in a strictly productive environment, it is instead an instrument providing information on how to use the machine correctly and safely. The following standards are those specified by the EEC Committee in the directives regarding safety of machinery, health and safety at work, personal protection and safeguarding of the environment. These standards have been applied to the **C370- 2SI** band saw.

Reference standards

MACHINE SAFETY

- EEC MACHINES DIRECTIVE 2006/42/CE ;
- EEC directive no. 2004/108/CE “EMC - Electromagnetic Compatibility”;
- EEC Directive No. 2006/95/CE known as “Low voltage directive”.
- EN 13898:2003+A1:2009 Machine tools - Safety - Sawing machines for cold metal

HEALTH AND SAFETY AT WORK

- EEC Directive No. 80/1107; 83/477;86/188;88/188; 88/642 for the protection of workers against risks caused by exposure to physical, chemical and biological agents during working;
- EEC Directive No. 89/391 and Special EEC Directives No. 89/654 and No. 89/655 for improvements in health and safety at work;
- EEC Directive No. 90/394 for the protection of workers against risks deriving from exposure at work to carcinogenic substances;
- EEC Directive No. 77/576 and No. 79/640 on safety signs at work.

PERSONAL PROTECTION

- EEC Directive No. 89/656 and No. 89/686 on the use of personal protection devices.

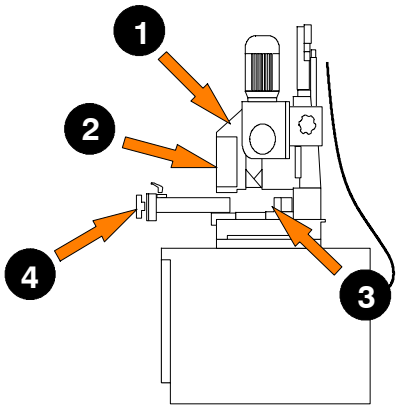
ENVIRONMENTAL PROTECTION

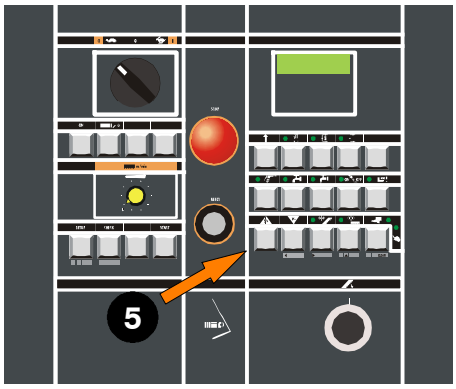
- EEC Directive No. 75/442 on waste disposal;
- EEC Directive No. 75/439 on the disposal of used oil.
- Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

Protection against accidental contact with the blade

1. Metal disc guard fixed to the upright section that guides the movement of the head. The height of this guard can be regulated so that the only part of the blade exposed is that used for the actual cutting in accordance with DPR 547/55 art. 108;
2. steel sheet guard of adjustable height located on the part of the blade guard between the operator and disc and used as splash guard;
3. vertical pneumatic vice and vice with rag prevention device and double clamping for improved hold on workpiece (optional double pneumatic vice);
4. the cutting vice is operated pneumatically via a button on the control panel and has a maximum travel of 6 mm. The jaw that clamps the material must be moved to within a distance of 2÷3 mm of the workpiece;
5. blade approaching device to the piece to be cut: the operator can approach,

through the head lifting and lowering buttons, the blade to the piece to be cut, to clear only the stroke sufficient and necessary for this operation.





Electrical equipment

In accordance with Italian standard CEI EN 60204- 1:2010, derived from European Standard EN 60204- 1:2010:

- access to electrical board limited by screws and automatic electro- thermal main switch with Minimum Voltage Coil;
- 24 Vac Control voltage for actuators, in accordance with chapter 6 of European Standard ”Control and indication circuits” paragraph 2 ”Control Circuits” sub- section 1 ”Preferential voltage values for control circuits”;
- plant protected against short circuits by quick blowing fuses and earthing of all work and accidental contact parts;
- protection from accidental start- up by a minimum voltage relay in the case of power failure.

Emergency devices

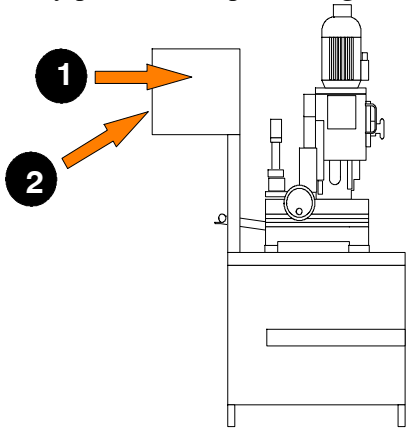
In accordance with Standard EN 60204- 1:2010:

- **Chapter 5 Section 6 Sub- section 1 ”Emergency stop device”**: «the emergency stop device immediately stops all the dangerous and other functions of the machine».

... Emergency devices applicable to the C370- 2SI:

1. **Emergency stop**: a non- return mushroom- head pushbutton, colour red on yellow background, is located on the control panel of the machine. To release the pushbutton, the actuator must be rotated 45°. After the emergency situation has been resolved, the machine must be reset.
2. **Automatic thermal- magnetic cutout switch with thermal- magnetic relay**: the machine auto switch, located on the control panel, has two protection systems against voltage drops. In the case of a voltage drop, all electrical components are disengaged, the machine stops immediately, and automatic restart

when the power supply returns is inhibited. Another function is that of resetting the thermal relay provided to protect against overcurrents.



Noise level of the machine

Noise can cause hearing damage and represents one the problems faced by many countries who adopt their own standards. In accordance with the **EEC MACHINES DIRECTIVE 2006/42/CE** , we are listing the standards that specify noise levels for machine tools.
The following paragraph explains the modes and the detected sound power and pressure values released by the sawing machine.
These values comply with norm EN 13898:2003 + A1:2009, EN ISO 12001:2010 and EN ISO 4871:2009,concerning the rules for drawing and presenting a procedure for noise tests and the declaration and check of sound emission values by machines and equipment.

Noise level measurement

Noise levels are measured using an instrument known as an Integrator noise-meter which registers the equivalent continuous acoustic pressure level at the work station.The damage caused by noise depends on three parameters: level, frequency and duration. The equivalent level concept Leq combines the three parameters and supplies just one indication. The Leq is based on the principle of equal energy, and represents the continuous stationary level containing the same amount of energy, expressed in dBA, as that actually fluctuating over the same period of time.This calculation is made automatically by the integrator noise-meter. The measurements are taken every 60 seconds, in order to obtain a stabilised value. The reading stays on the display for a sufficient time to enable a reading to be taken by the operator.Measurements are taken by holding the instrument at approximately 1 metre from the machine at a height of 1.60 metres above the platform at the operator's work station.
Two measurements are taken: the first while the machine operates without cutting anything, the second while cutting in manual mode.

Noise level values

Identification		
Machine type		Band saw for metal applications
Model		**C370- 2SI**
Reference standard		ISO 3746
Results		
Test 1st	**Description**	Steel cut C40 - pipe with ø 100 mm thickness (thickness 60 mm) Disc blade HSS 350x2,5x32 z=90 t=12
	Results	**Mean sound level (Leq) 73,6 dB (A)** Environmental correction (K) 0,5 dB(A) Peak sound power (Lw) 90,6 dB(A)
Test 2nd	**Descriprion**	Steel cut - boxed 100 X 100 mm Disc blade HSS 350x2,5x32 z=140
	Results	**Mean sound level (Leq) 80,5 dB(A)** Environmental correction (K) 0,5 dB(A) Peak sound power (Lw) 97,6 dB(A)

Vibration emission

This sawing machine complies with the norms EN1299 and EN1033, as the machine vibration emission on the devices controlled by the operator does not exceed the threshold of 2.5 m/s^2

Electromagnetic compatibility

As from 1 January 1996 all electrical and electronic appliances bearing the CE marking that are sold on the European market must conform to Directive 2004/108/CE, 2006/95/CE and 2006/42/CE. The prescriptions regard two specific aspects in particular:

1. “EMISSIONS: during its operation, the appliance or system must not emit spurious electromagnetic signals of such magnitude as to contaminate the surrounding electromagnetic environment beyond clearly prescribed limits”;
2. “IMMUNITY: the appliance or system must be able to operate correctly even when it is placed in an electromagnetic environment that is contaminated by disturbances of defined magnitude”.

The following text contains a list of the applied standards and the results of the electromagnetic compatibility testing of machine model **C370- 2SI**; Test report no. 170201.

Emissions

- CEI EN 61000-6-4 (2002) Electromagnetic Compatibility (EMC) - Generic standard regarding emissions. Part 6-4: Industrial Environment.
- EN 55011 (1999) Industrial, scientific, and medical radio frequency appliances (ISM). Characteristics of radio frequency disturbance - Limits and methods of measurement.
- EN 55014-1 (2002) Electromagnetic Compatibility - Prescriptions for domestic

appliances, electric power tools, and similar equipment. Part 1: Standard Emission in relation to product family.

CONDUCTED EMISSIONS				
Gate A	**Freq. (MHz)**	**Q- peak limit (dBuV)**	**Mean value limit (dBuV)**	**Result**
A.C. power supply input	0.15 - 0.5 0.5 - 5 5 - 30	79 - 73 (linear reduction with log of frequency) 73 73	66 - 60 (linear reduction with log of frequency) 60 60	Complies

CONDUCTED EMISSIONS - ANALYSIS OF INTERMITTENT DISTURBANCES	
Gate	**Result**
A.C. power supply input	Not applicable

IRRADIATED EMISSIONS			
Gate	**Freq. (MHz)**	**Q- peak limit (10 m) (dBuV/m)**	**Result**
Enclosure	30 - 230 230 - 1000	40 47	Complies

Immunity

- CEI EN 61000-6-2 (2000) Electromagnetic Compatibility (EMC) - Generic standard on immunity. Part 6-2: Industrial Environment.
- EN 61000-4-2 + A1 (1996-1999) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 2: Electrostatic discharge immunity tests - Basic publication.
- EN 61000-4-3 (1996) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 3:
- EN 61000-4-4 (1996) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 4: Fast transients/bursts immunity tests - Basic publication.
- EN 61000-4-5 (1997) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 5:
- EN 61000-4-6 (1995) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 6: Immunity to conducted interference, induced by radio frequency fields.
- EN 61000-4-11 (1977) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 11:

IMMUNITY TO ELECTROSTATIC DISCHARGES			
Gate	**Test levels**	**Evaluation criterion**	**Result**
Enclosure	contact 4 kV steel plate 4 kV in air 8 kV	B	Complies

IMMUNITY TO VOLTAGE (BURSTS)			
Gate	**Test levels**	**Evaluation criterion**	**Result**
A.C. power supply input	2 kV	B	Complies

IMMUNITY TO CONDUCTED ELECTROMAGNETIC FIELDS			
Gate	**Test levels**	**Evaluation criterion**	**Result**
A.C. power supply input	10V	A	Complies

IMMUNITY TO IRRADIATED ELECTROMAGNETIC FIELDS			
Gate	**Test levels**	**Evaluation criterion**	**Result**
Enclosure	10 V/m	A	Complies

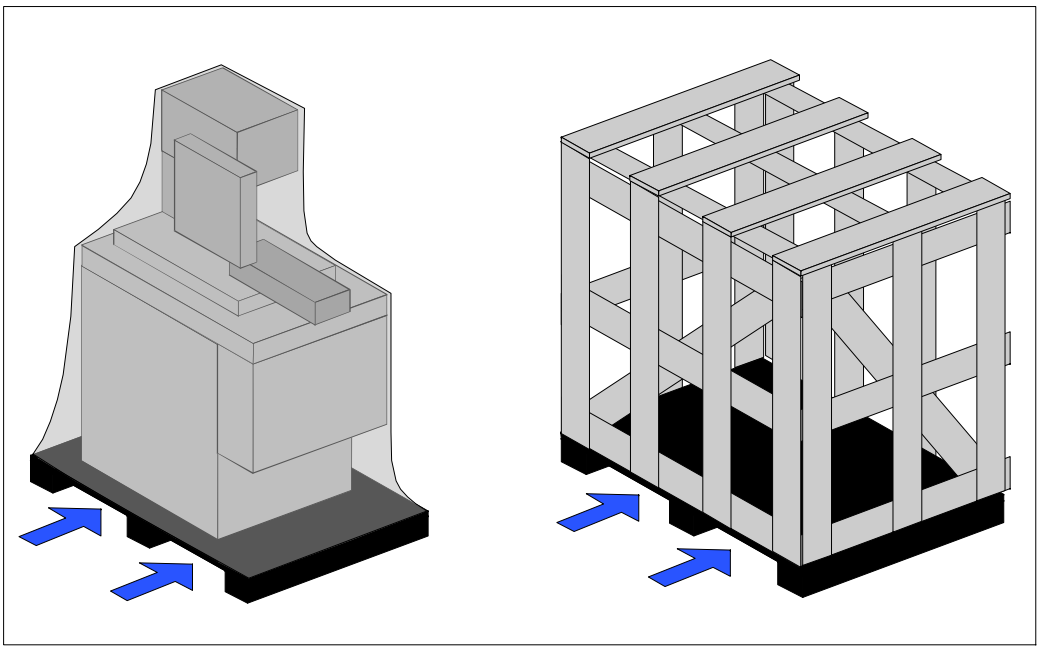
Machine installation

4

Packaging and storage

Hyd- MEch use packing materials that guarantee the integrity and protection of the machine during its transport to the customer.

The type of packing differs according to the size, weight and destination. Therefore the customer will receive the machine in one of two following ways:



1. on a pallet with straps and heat- shrink plastic;
2. on a pallet with straps, heat- shrink plastic and a wooden crate.

Warning

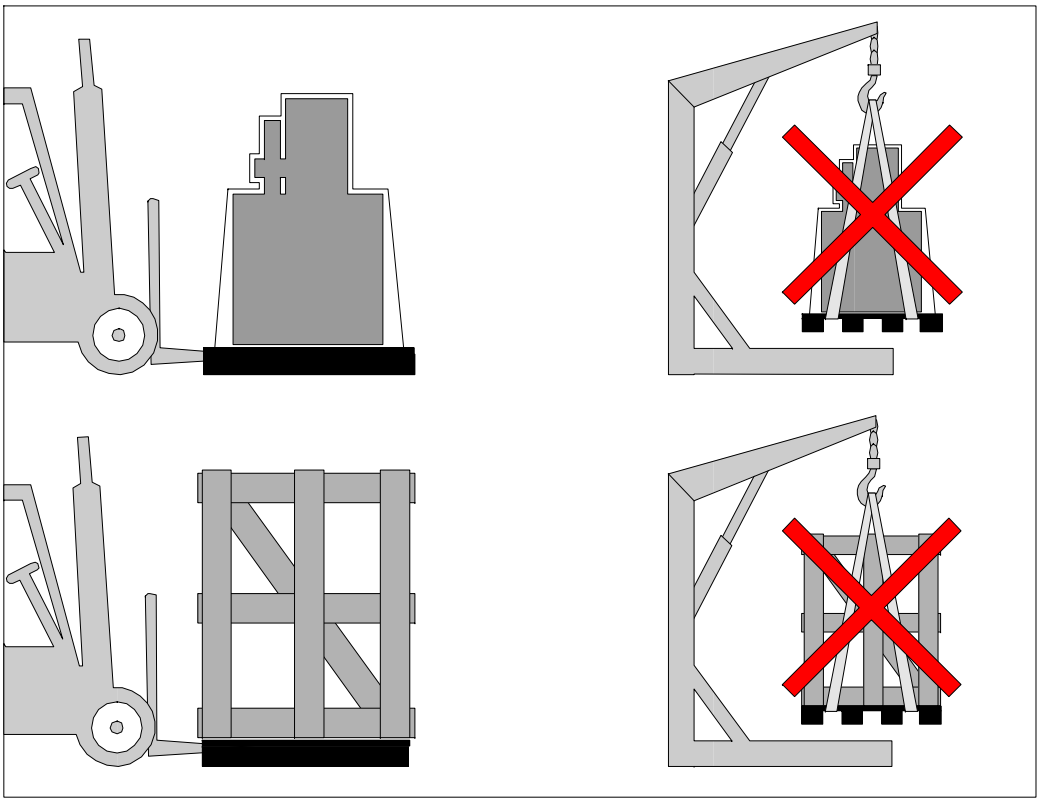
In both cases, for correct balancing the machine must be handled using a fork- lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

Attention

Before carrying out lifting operations, make sure that the weight of the machine, as indicated on the crating or other packaging, is within the forklift truck load limit.

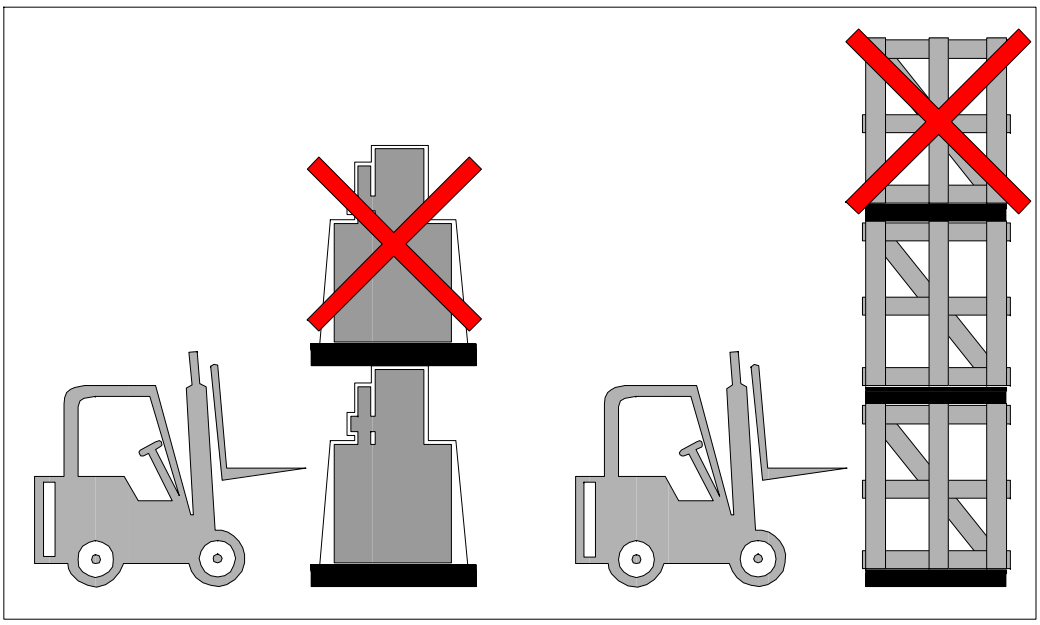
Attention

Do not handle the packed machine using slings.



Attention

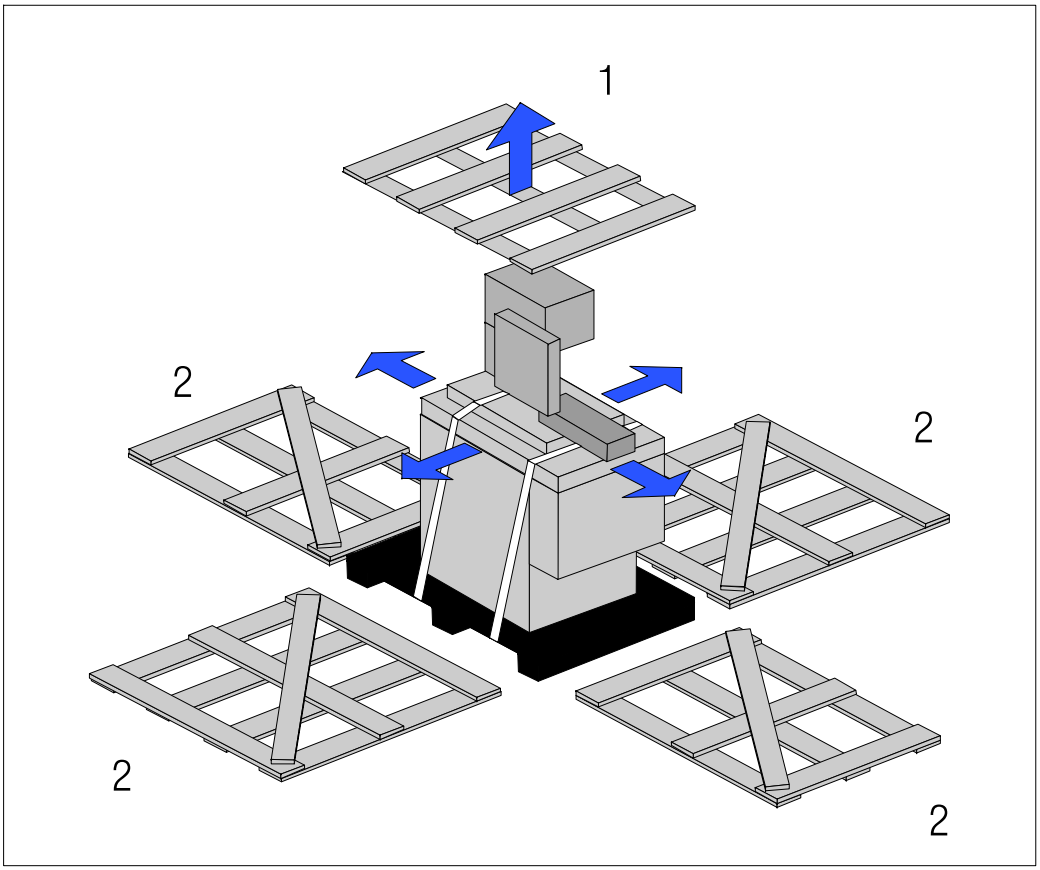
When storing, machines palletized and shrink- wrapped must not be stacked two high, and machines pallettized and crated must not be stacked three high.



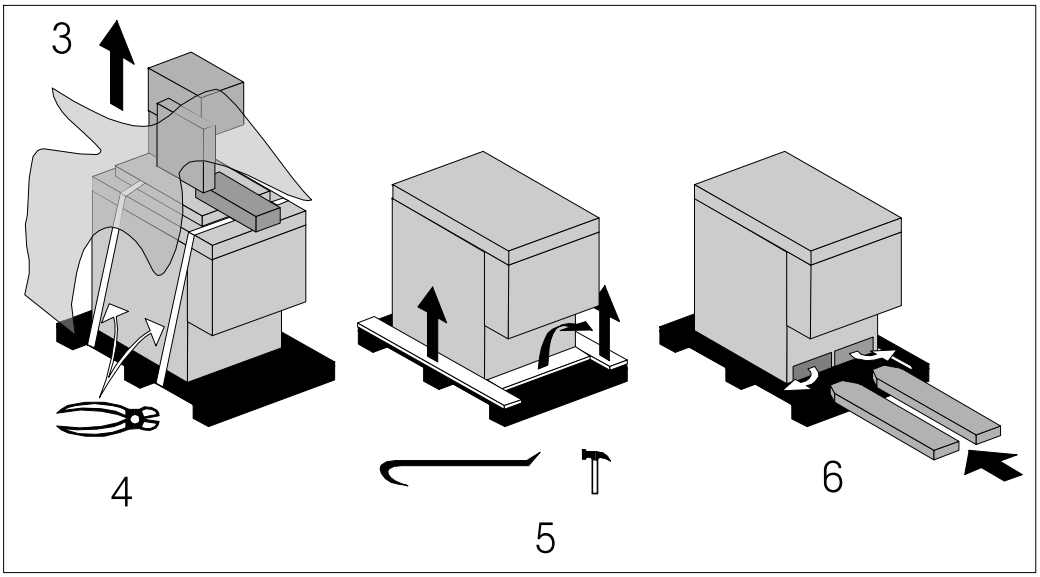
To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

1. remove nails and lift the top of the cage;

2. remove nails and lower walls;



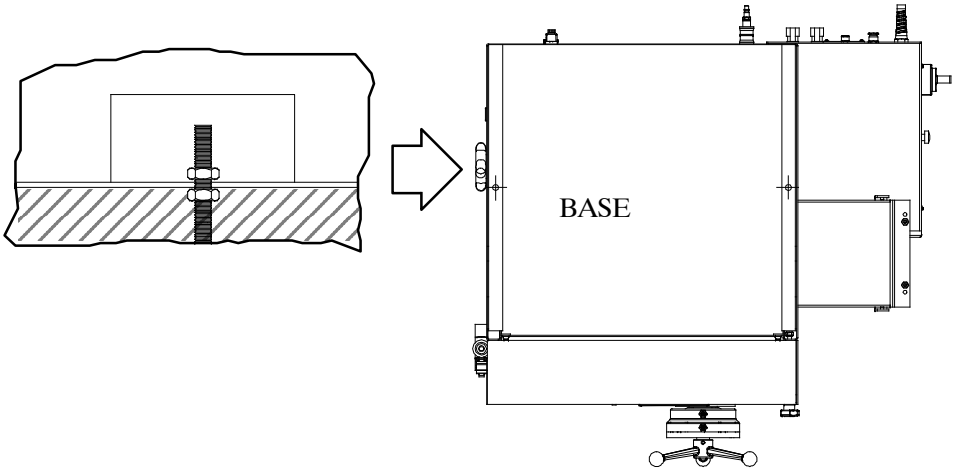
3. remove heat- shrink covering;
4. remove the straps;
5. remove nails from pallet securing planks and remove planks;
6. remove the front panel and insert fork tines.



To locate the machine in the workplace, **the machine dimensions** and necessary operator working space, including **the spaces laid** down in safety standards, **must be taken into account.**

Anchoring the machine

The base of the machine is anchored to the floor by two permanent studs located on the sides of the base. The studs are screwed into nuts previously sunk into the concrete, and tightened from above with lock nuts. The schematic specifications set out in Chapter 1 should be taken into account when positioning the machine.



Minimum requirements

For the machine to function correctly, the room in which it is to be installed must satisfy the following requirements:

- power supply voltage/frequency: refer to the values on the rating plate;
- Working pressure (MA version) not less than 6 Bar and not greater than 8 Bar;
- temperature of machine location: from - 10 to + 50° C;
- relative humidity: not more than 90%
- lighting: not less than 500 Lux.

Warning

The machine is already protected against voltage variations, but will only run trouble- free if the variations do not exceed ± 10%.

Check list

Before starting installation, check that all the accessories, whether standard or optional, supplied with the machine are present. The basic version of the **C370- 2SI** 2- SPEED machine is supplied complete with:

CHARACTERISTICS	STANDARD	OPTIONAL
Pedestal with removable swarf collecting drawer and removable tank for coolant	✓	
Electric pump for lubrication/cooling of disc	✓	
Possibility of making angled cuts from 0° to 45° right and 60° left	✓	
Blade cleaning brush	✓	
Low voltage control panel: soft polyester keyboard, with thermo- shaped buttons, with tactile feeling and sound signal when operating	✓	
Display at 16 characters read on 2 lines to visualize technological parameters: blade speed, number of cuts, cutting time, amperometer, diagnostics and/or caution messages (more than 100) visualized in the language of use	✓	
Recording of alarms and errors with possibility of displaying the event log	✓	
Pneumatic vertical vice	✓	
Circular blade HSS DMo5/M2 D.350x32x2.5 for solid sections and profiles	✓	
Set up for movement with transpallets	✓	
The saw head moves on twin linear guide with pre- loaded recirculating ball sliding blocks	✓	
Three- stage drive system	✓	
Blade rotation motor with inverter to enable cuts at speeds from 15 to 150 rpm*	✓	
Rotating pin with pre- loaded thrust bearing	✓	
Programming of head stroke limits via control panel	✓	
Pneumatic clamp with steel thrust gib	✓	
Pneumatic supplementary vice		✓
Foot pedal to start cycle and for emergency stop function*		✓
Anti- burr device for double workpiece locking	✓	
Device for cutting to size with steel bar and millimetre gauge	✓	
Bar support arm complete with roller and with facility for loading platforms	✓	
Preset to be equipped with the spray mist system (OPTIONAL), as well as with the standard- delivered traditional lubrication with emulsible oils	✓	
Precision grading etched on the rotating platform	✓	
Easily movable vice unit with fast, safe and accurate locking along the whole machine width	✓	
Coaxial cylinder with by- pass valve for the fast movement and linear potentiometric transducer for reading the head position	✓	
K40 roller table module for feed side, 1500 mm		✓
Feed side roller table support		✓
Discharge side roller table adapter		✓
K40 roller table for discharge side, 1500 mm		✓
K40 roller table for discharge side, 3000 mm		✓
K40 roller table for discharge side, 4500 mm		✓
K40 roller table for discharge side, 6000 mm		✓
5 l can of emulsible oil		✓

***ACCESSORIES AVAILABLE ON REQUEST**

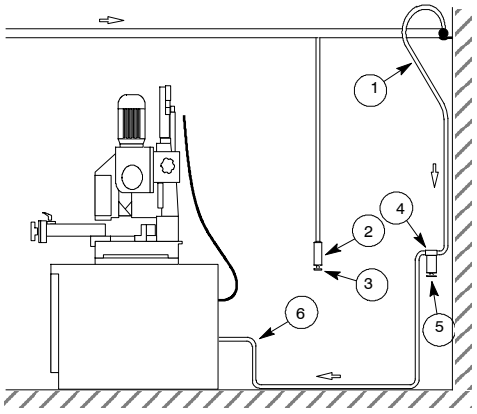
The bag of accessories is enclosed in the machine before being packed and contains:

- 3, 4, 5, 6, 8 and 10 mm Allen keys;
- 19 mm double open- ended and box wrenches;
- 20 mm Ø rod for cuts to measure with an 8 mm Ø ratchet fork and lever + VCE M8x35 Allen grub screw;
- arm with roller on which the bars to be cut rest and for fitting the feed side roller tables;
- this Use and Maintenance Manual.

Connection to the compressed air

To ensure perfect operation and a long service life, it is recommended that the machine is connected to a compressed air system having the characteristics reported in the diagram below.

KEY
1 - DOWN PIPE
2 - CONDENSATE COLLECTOR
3 - DRAIN COCK
4 - AIR FILTER
5 - DRAIN COCK
6 - CONNECTING HOSE



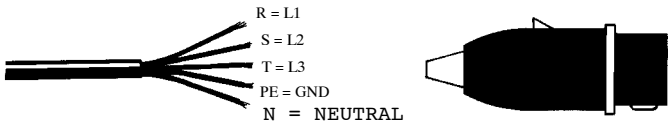
Connection to the power supply

Before connecting the machine to the power supply, check that the socket is not connected in series with other machines. This requirement is fundamental for the good operation of the machine.

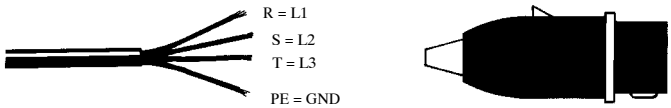
To connect the machine to the power supply, proceed as follows:

▶ connect the power supply cable of the machine to a plug which matches the socket to be used. (EN 60204- 1; par. 5.3.2)

CONNECTION FOR **"5-CORE"** WIRE SYSTEMS WITH NEUTRAL



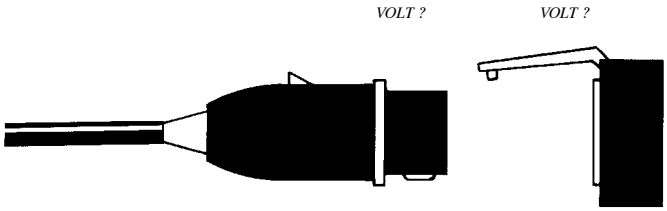
CONNECTION FOR **"4-CORE"** WIRE SYSTEMS WITH NEUTRAL



Attention

When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase-neutral.**

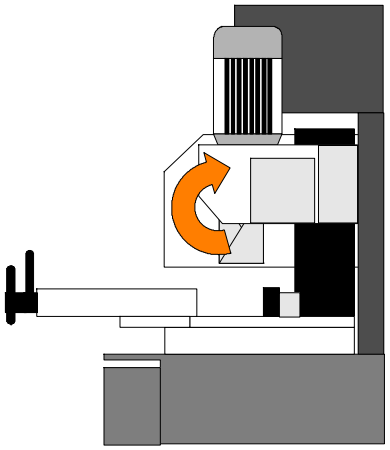
▶ Insert the plug in the socket, ensuring that the mains voltage is the same as that for which the machine has been setup.



▶ Power the machine, rotating the main switch on the console left side (the control console lights up).

Attention

Ensure that the blade moves in the correct direction as shown in the above figure. If it does not, simply reverse two of the phase wires on the machine's power supply input.



The sawing machine is now ready to start the work for which it was designed. Chapter 5 provides a detailed description of the various functions of the machine and its operating cycles.

Description of machine operation

This chapter analyses all the machine functions. We begin with a description of the pushbuttons and other components on the control panel.

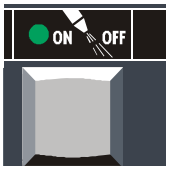
Description of the control panel

The control console is housed inside the control panel, a tamperproof IP 54 protection class housing sealed against dust and moisture. The control panel swivels on two articulated joints so that it can be positioned as required by the operator for greater ease- of- use and safety. The control board of the **C370- 2SI** is shown in the picture below:

Key of control console keyboard

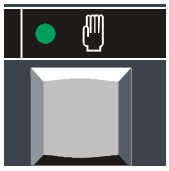
Initialisation key: enables machine operation

Cutting speed selection: hare (fast), turtle (slow) and zero (deselection)

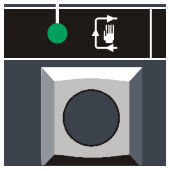


Selection for min. lubrication (optional)

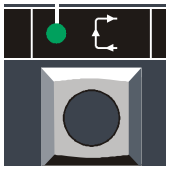
RESET key: resets the machine after an emergency condition or conflicting command



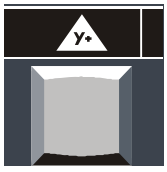
Nonoperating



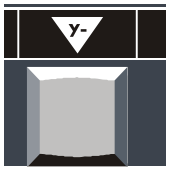
Nonoperating



Semi- automatic cycle key

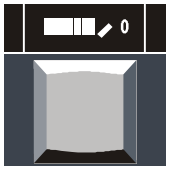


Head “up” key

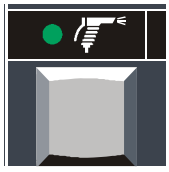


Head “down” key

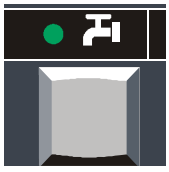
Machine parameters input/edit key



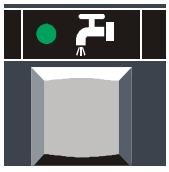
Zeroing key for cuts made



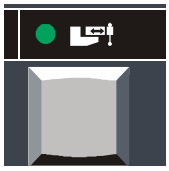
Nonoperating



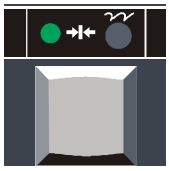
No lubricant/coolant key



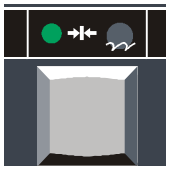
Lubricant/coolant spray cock key (only available during cycle)



Vice opening/closing



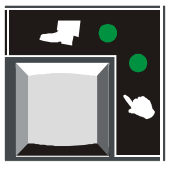
FCTI (Head Upstroke Limit) memory key for Head Positioning System



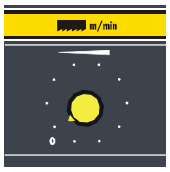
FCTA (Head Downstroke Limit) memory key for Head Positioning System

Diagnostics key

Programmed cycle start key



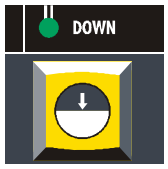
Foot pedal or console START selection key



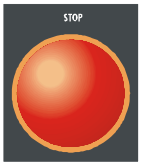
Nonoperating

Hydraulic adjuster for choosing the head lowering speed

Switch to activate or deactivate the laser to position the bar accurately to carry out non- standard or facing cuts, or to activate or deactivate the lamp for lighting the cutting area.



Button to stop the cutting head at the FHLS point when it reaches the cut end in the semiautomatic and semiautomatic- dynamic machining cycle.

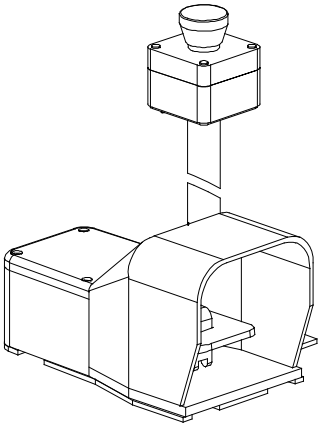


Mushroom head emergency stop button: when pressed, this button immediately shuts down the machine. To reset the emergency stop button, simply rotate through 45°

Key for displaying the machine parameters for performing a machining cycle: TL blade tension, PT head position, VL blade speed, T cutting time, PZ cut piece number, I motor absorption

Button to take the cutting head to the stored RHLS point during the semiautomatic and semiautomatic- dynamic machining cycle, when the head reaches the cut end and if the DOWN button has been previously activated.

MOBILE START-EMERGENCY DEVICE (optional)



The machine can be equipped with a remote control device, enabling the start of the semiautomatic cycle through pedals and the emergency stop through red mushroom push button (optional).

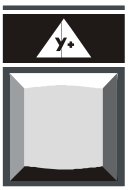
THERMAL-MAGNETIC CIRCUIT-BREAKER WITH UNDERVOLTAGE COIL AND DOOR LOCKING DEVICE

On the left side of the control board, the machine is equipped with a main switch that, when set ON (1), powers the machine. When set to ON (1), this switch powers up the machine. The main switch is fitted with three power failure protection systems. In fact, in the event of a power failure, this switch disconnects all the electrical devices, causing the machine to immediately shut down, and prevents it from automatically starting up again when power is restored. This device also resets the thermal relay fitted to protect against current overloads.

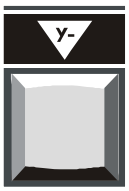
Basic instructions for carrying out a cutting operation cycle

Cutting head movement

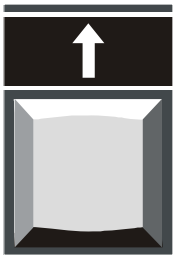
The cutting head can be moved by the head lifting and lowering buttons, described in the key to the control console keyboard in this chapter, enabled in the working mode with SEMI- AUTOMATIC cycle.

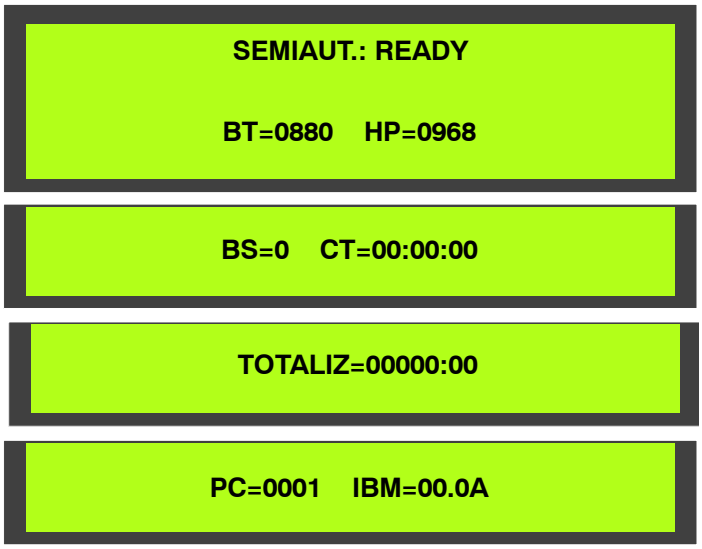


Head “down” key



Head “up” key



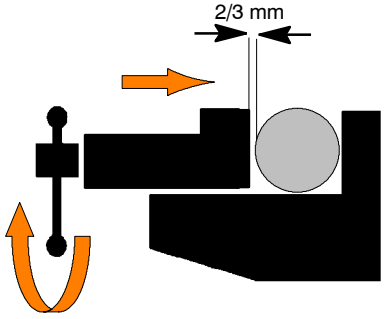


N.B. During any processing cycle it is possible to control the machine operating parameters BT (blade tensioning) and HP (head position), pressing the key below it is also possible to display the values BS (blade speed), CT (cutting time), PC (cut piece counting) and IBM (motor current absorption).

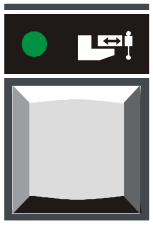
Clamping the work piece in the vice

Vice opening and closure is controlled by the corresponding buttons on the control console. However, to ensure that the workpiece is securely clamped in the vice, proceed as follows:

- Make sure the workpiece dimensions do not exceed the machine’s cutting capacity;
- make sure the piece is correctly supported on both sides of the machine;
- move the vice to within 2÷3 mm of the workpiece using the handwheel;



▶ press the vice closure button;



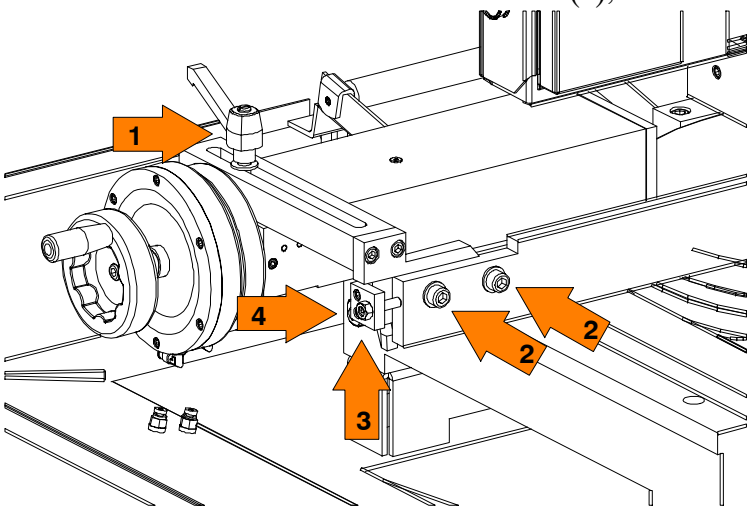
▶ make sure the workpiece is securely clamped in the vice by trying to move it manually.

N.B. If the vice was already closed by the pneumatic piston, it may not block the piece. In this case it is necessary to repeat the operation, i.e.: open the vice by pressing the specific button, bring the moving jaw near to the piece and block it again with the closing button, bearing in mind that the stroke of the pneumatic piston is approx. 6 mm.

Width of cut

The machine is fitted with barriers which adjust to suit the cross- section of the workpiece. The vice is fitted as standard with a rag prevention device that serves to support the material and prevent the formation of ragged edges at the end of the cut. To adjust the rag prevention device transversely:

▶ loosen the release lever located above the vice slide (1);



▶ movement the rag prevention device arm to the right or left;
▶ tighten the release lever.

To adjust the longitudinal position of the vice jaw, proceed as follows:

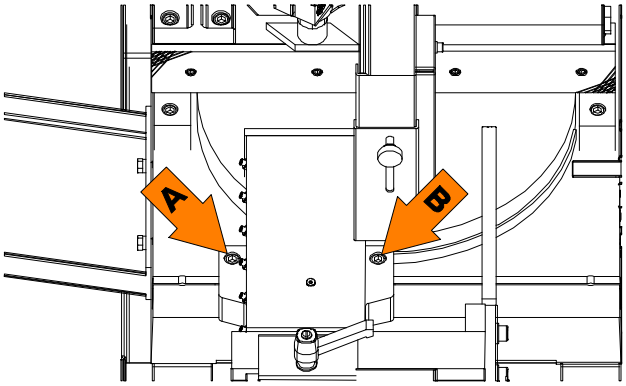
▶ tighten the cutting vice completely;
▶ slacken the two screws located to the side of the rag prevention device (2);
▶ slacken the nut that locks the grub screw (3);
▶ adjust the longitudinal position of the rag prevention vice jaw by slackening or tightening the grub screw (4) until the position of the rag prevention jaw is aligned with that of the cutting jaw;
▶ hold the grub screw steady using the Allen key and tighten the locking nut.

Transverse position of the vice

Position the cutting vice as close as possible to the cutting zone to ensure that vibrations are cut down and that the cutting zone is provided with greater cover. To move the vice body transversely, proceed as follows:

▶ slacken the screws (A- B) that clamp the lead nut locking plate;
▶ move the vice body along the groove cut into the fixed table until it is in the desired position;

▶ tighten the two locking screws on the lead nut.



Preliminary check list for cutting operation

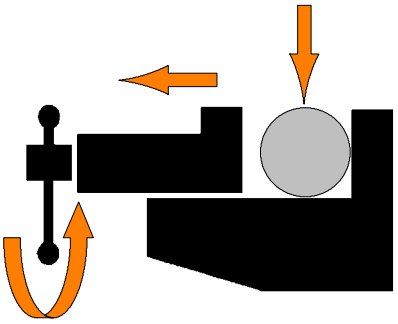
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

▶ ensure that the guard is free to slide;
▶ ensure that the cutting angle is correct and that the rotary platform is blocked;
▶ that the work piece is properly clamped in place;
▶ that the blade teeth are correct for the job to be begun;
▶ that the speed selected is right for the kind of piece to be cut;
▶ that the blade downstroke speed and the cutting pressure are correct.
▶ the level of lubricant/coolant and that the electropump is activated;
▶ that all protections are in place and correctly locked.

Semi-automatic operating cycle

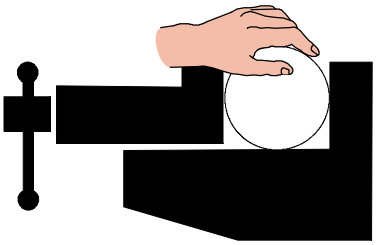
Sequence of operations for performing a cut:

- power up the machine by pressing the reset button;
- position the workpiece in the vice and calculate the length of cut (using the measuring rod for cuts to measure).

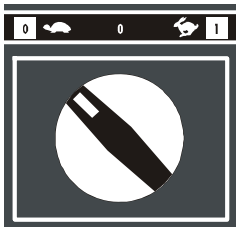


- secure the piece in the cutter vice; manually move vice towards the workpiece leaving a minimum distance of 2÷3 mm, lock the vice with the open/close button on the base or with the foot pedal if fitted;
- Make sure the workpiece is securely clamped in the vice by trying to move it manually.

N.B. If the vice was already closed by the pneumatic piston, it may not block the piece. In this case it is necessary to repeat the operation, i.e.: open the vice by pressing the specific button, bring the moving jaw near to the piece and block it again with the closing button, bearing in mind that the stroke of the pneumatic piston is approx. 6 mm.

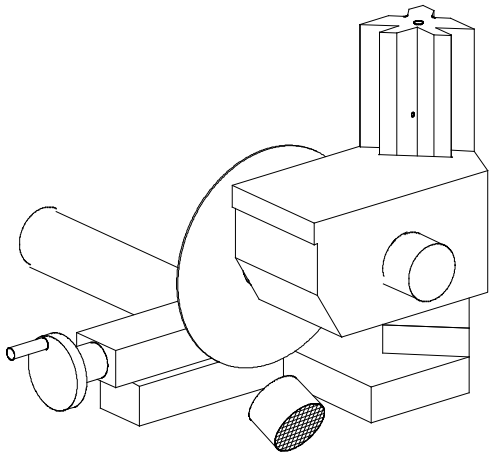


- select the cooling lubricant delivery mode;
- Select the cutting speed on the “Polarity change switch” in accordance with the type of material to cut (shape, thickness, hardness, etc.).



- set the Head Back Limit (FCTI) and the Head Forward Limit (FCTA), as described above;
- press the start button to start the cycle, after making sure you reset the head downstroke speed regulator, to avoid sudden downward movement of the head;

- ▶ The motor starts up and starts the blade moving, at the same time starting the lubricant/coolant pump.
- ▶ increase the head downstroke speed until reaching an optimum value;

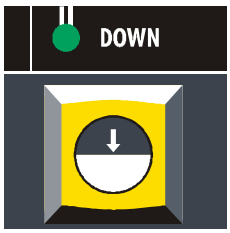


- ▶ on completing the cut the head will return automatically to the Head Back Limit (FCTI), ready for a new cut cycle;
- ▶ Free the workpiece from the vice by pressing the open/close vice button on the control panel.

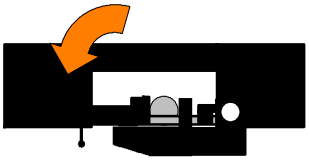
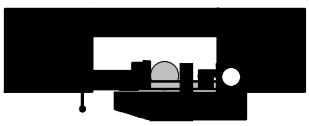
UP and DOWN function

In the semiautomatic cycle this function enables to stop the head at the RHLS to make operations on the cut piece holding it locked in the vice after the cut.

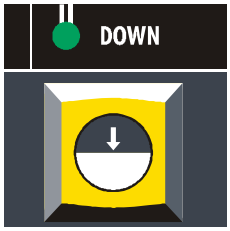
- ▶ Select the semiautomatic cycle, press the DOWN button.



The cutting cycle is the following:

1. The cutter vice closes	2. The band starts and the head lowers till the cut end (FHLS)	3. The head stops at the FHLS point and the band stops	4. The cutting vice remains closed
			

- ▶ Press the UP button to return the head to the RHLS, then the vice opens automatically.



Warning

In the semiautomatic- dynamic machining cycle the head return spring must be detensioned to prevent the spring pulling force from lifting the head when it has reached the FHLS point.

▶ Press the Down button to deactivate this function.Press the Down button to deactivate this function.

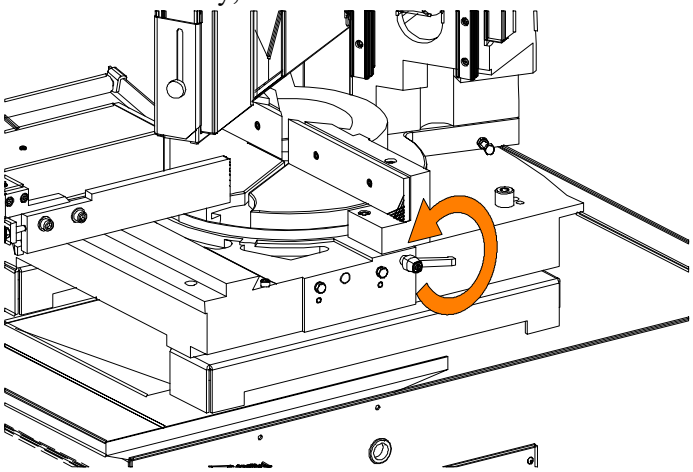
Angled cuts

The machine can make angled cuts from 60° left to 45° right. Reference stops are mounted on the sides of the turntable to facilitate rapid 0°, 45° and 60° cuts to the left and 45° cuts to the right.

Angled cuts 45° and 60° to the left

▶ Loosen the ratchet lever located at the right of the slideway;

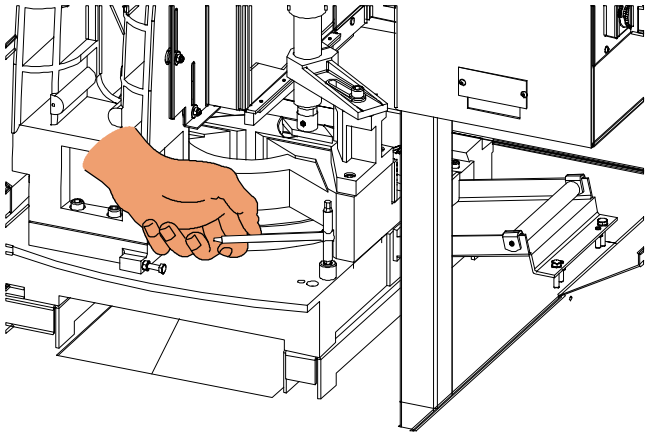
▶ rotate the tool head until it's tight against the stop, and check that it's at 455 on the scale on the slideway;



▶ tighten the ratchet lever and cut the part.

If the cut has to be done at an angle of 60° left, the stop on the back of the slideway must be removed:

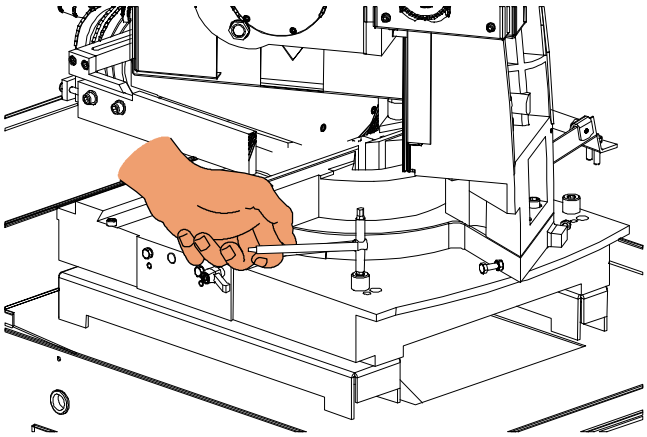
▶ remove the stop at 45° left;



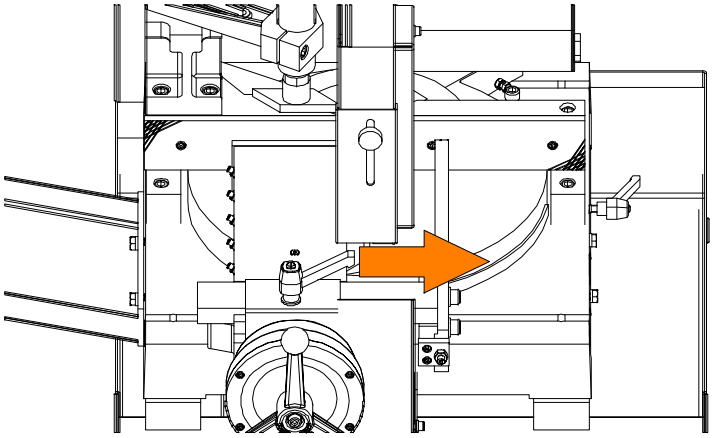
▶ rotate the tool head to 60° left, clamp the turntable and cut the part.

Angled cuts 45° to the right

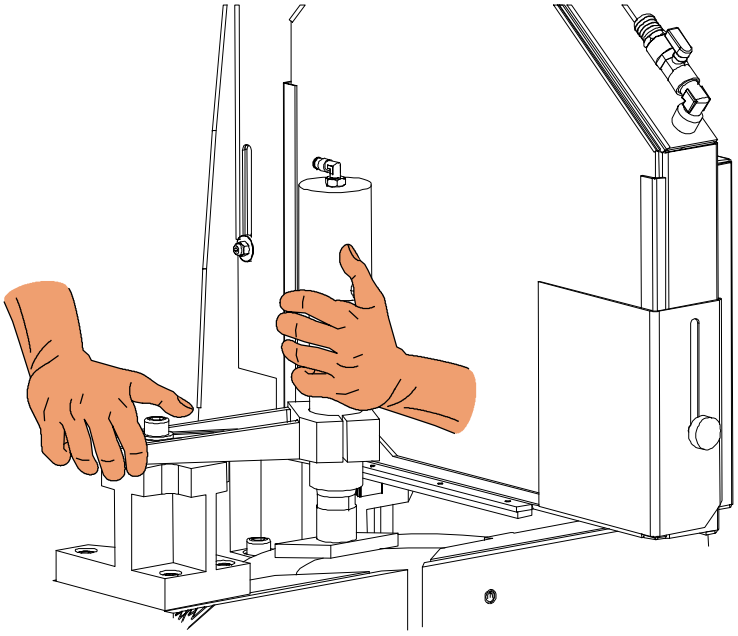
- Loosen the ratchet lever located at the right of the slideway;
- Remove the cutting stop at 0° ;



- lift the tool head up and rotate it, making sure that the cutter disk does not collide with the vice;
- move the vice from left position to right position

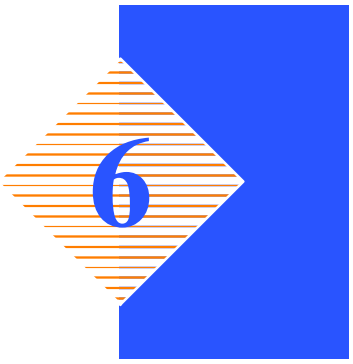


- if mounted, remove the cut- to- size rod.
- if necessary, adjust the position of the vertical pneumatic vice;



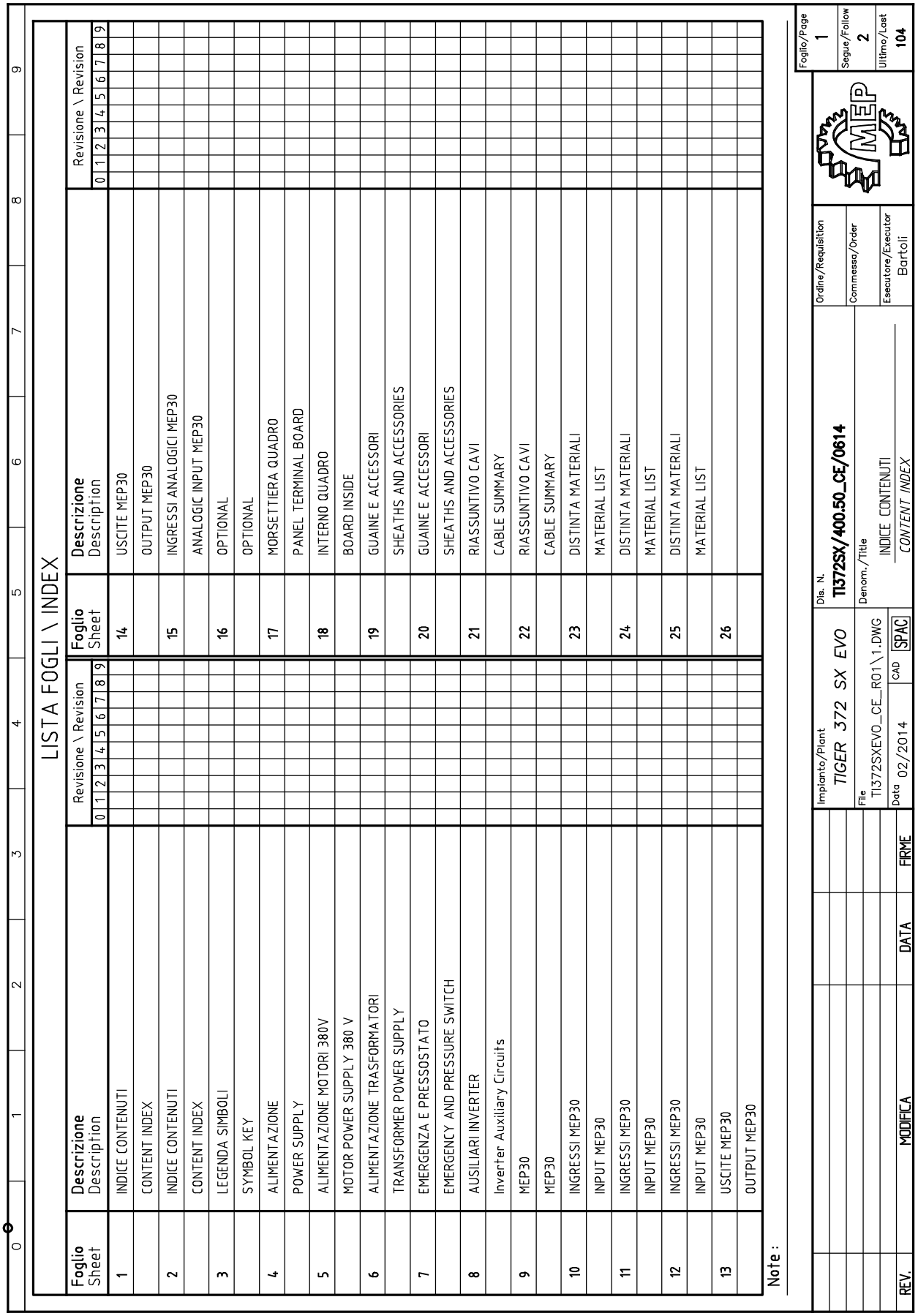
- Lock the turntable and cut the part.

Diagrams, exploded views and replacement parts



This chapter contains functional diagrams and exploded views of the **C370- 2SI**. This document is intended to help in identifying the location of the various components making up the machine, giving information useful in carrying out repair and maintenance operations; This chapter will also enable the user to order replacement parts with no risk of misunderstanding, as all parts are given codes.

Standardised Wiring Diagrams (CENELEC Standard)



LISTA FOGLI \ INDEX

Foglio Sheet	Descrizione Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9	Foglio Sheet	Descrizione Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9
1	INDICE CONTENUTI		14	USCITE MEP30	
	CONTENT INDEX			OUTPUT MEP30	
2	INDICE CONTENUTI		15	INGRESSI ANALOGICI MEP30	
	CONTENT INDEX			ANALOGIC INPUT MEP30	
3	LEGENDA SIMBOLI		16	OPTIONAL	
	SYMBOL KEY			OPTIONAL	
4	ALIMENTAZIONE		17	MORSETTIERA QUADRO	
	POWER SUPPLY			PANEL TERMINAL BOARD	
5	ALIMENTAZIONE MOTORI 380V		18	INTERNO QUADRO	
	MOTOR POWER SUPPLY 380 V			BOARD INSIDE	
6	ALIMENTAZIONE TRASFORMATORI		19	GUAINE E ACCESSORI	
	TRANSFORMER POWER SUPPLY			SHEATHS AND ACCESSORIES	
7	EMERGENZA E PRESSOSTATO		20	GUAINE E ACCESSORI	
	EMERGENCY AND PRESSURE SWITCH			SHEATHS AND ACCESSORIES	
8	AUSILIARI INVERTER		21	RIASSUNTIVO CAVI	
	Inverter Auxiliary Circuits			CABLE SUMMARY	
9	MEP30		22	RIASSUNTIVO CAVI	
	MEP30			CABLE SUMMARY	
10	INGRESSI MEP30		23	DISTINTA MATERIALI	
	INPUT MEP30			MATERIAL LIST	
11	INGRESSI MEP30		24	DISTINTA MATERIALI	
	INPUT MEP30			MATERIAL LIST	
12	INGRESSI MEP30		25	DISTINTA MATERIALI	
	INPUT MEP30			MATERIAL LIST	
13	USCITE MEP30		26		
	OUTPUT MEP30				

Note :

REV.	MODIFICA	DATA	FIRME

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Data: 02/2014 CAD SPAC

Dis. N.: TI372SX/400.50_CE/0614
Denom./Title: INDICE CONTENUTI / CONTENT INDEX

Ordine/Requisition
Commessa/Order
Esecutore/Executor: Bartoli

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LISTA FOGLI \ INDEX

Foglio / Sheet	Descrizione / Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9	Foglio / Sheet	Descrizione / Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9
100	ALIMENTAZIONE PNEUMATICA				
	PNEUMATIC POWER SUPPLY				
101	COMPOSIZIONE ELETTROVALVOLE				
	SOLENID VALVE COMPOSITION				
102	ESPLOSO PANNELLO VALVOLE				
	EXPLODED PANEL VIEW				
103	DISTINTA MATERIALE PNEUMATICO				
	PNEUMATIC MATERIAL LIST				
104	DISTINTA MATERIALE PNEUMATICO				
	PNEUMATIC MATERIAL LIST				

Note :

REV.	MODIFICA	DATA	FIRME

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File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: TI372SX/400.50_CE/0614

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Esecutore/Executor: Bartoli

MEP

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Sim.\Sym.	File	Descrizione\Description
	M2	Motore asincrono trifase THREE-PHASE INDUCTOR MOTOR
	Q1360	Int. automatico magnetotermico sezionatore tripolare THREE-PHASE AUTOMATIC SWITCH
	R6	Potenziometro POTENTIOMETER
	R60	Potenziometro POTENTIOMETER
	S2	Comando a Pulsante NO PUSH BOTTON NO
	S4C	Pulsante di emergenza NC EMERGENCY PUSH BOTTON NC
	S5	Comando rotativo a due posizioni NO ROTARY SELECTOR TWO POSITION
	S7	Comando a pedale NO CONTROL PEDAL NO
	S8	Comandato dalla pressione (pressostato) NO PRESSURE SWITCH
	S15C	Comandato dal livello di un fluido (livellostato) NC WATER GAUGE NC
	S24C	Pulsante di emergenza a posizione stabile NC EMERGENCY PUSH BOTTON NC

Sim.\Sym.	File	Descrizione\Description
	T1	Trasformatore di corrente CURRENT TRASFORMER
	Y1	Elettrovalvola aperta (in chiusura) SOLENOID VALVE
	KA1	Bobina rele' Aux AUXILIARY RELAY COIL
	KM1	Bobina contattore CONTACTOR COIL
	BLK12	Inverter (Potenza) INVERTER (POWER)
	BLK14	Inveter (Comando) INVERTER (AUX)
	BLK26	Connettore EV in AC SV AC CONNECTOR
	BLK41	Raccordo SX CONNECTOR SX
	BLK42	Raccordo DX CONNECTOR DX
	BLK43	Tubo corrugato CORRUGATED PIPE
	BLK44	Riduzione PG PG ADAPTER

Sim.\Sym.	File	Descrizione\Description
	BLK51	Dado PG NUT PG
	BLK49	Pressa-cordone PG FAIR LEAD PG
	BLK50	Guaina termorestringente Ø26mm SHEATH Ø26mm
	BLK57	Guaina termorestringente Ø10mm SHEATH Ø10mm
	BLK55	Flangia di passaggio LOOSE FLANGE
	BLK56	Terminale a puntale TERMINAL
	BLK57	Filo unipolare WIRE
	BLK58	Fascette plastiche di fissaggio CLAMP
	BLK60	Terminale a occhiello TERMINAL
	BLK66	Sacchetto portafusibile BAG FUSE

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: *TIGER 372 SX EVO*

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**

Denom./Title: LEGENDA SIMBOLI / *SYMBOL KEY*

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

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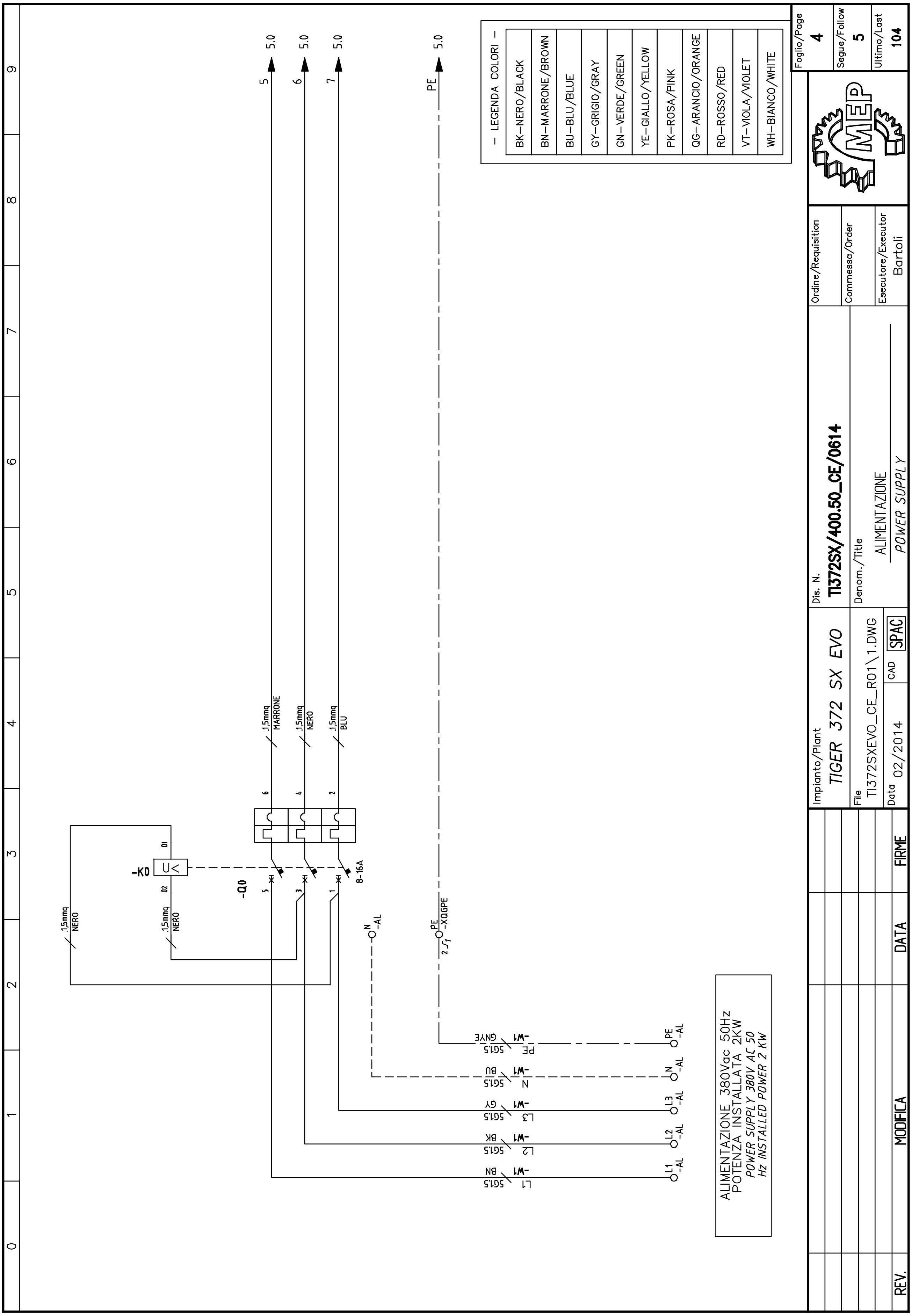

- LEGENDA COLORI -
BK-NERO/BLACK
BN-MARRONE/BROWN
BU-BLU/BLUE
GY-GRIGIO/GRAY
GN-VERDE/GREEN
YE-GIALLO/YELLOW
PK-ROSA/PINK
OG-ARANCIO/ORANGE
RD-ROSSO/RED
VT-VIOLA/VIOLET
WH-BIANCO/WHITE
ALIMENTAZIONE 380Vac 50Hz
POTENZA INSTALLATA 2KW
POWER SUPPLY 380V AC 50 Hz
INSTALLED POWER 2 KW
-K0
-Q0
8-16A
-XQGPE
1,5mmq NERO
1,5mmq MARRONE
1,5mmq BLU
5G1.5
-W1
-AL
Impianto/Plant
TIGER 372 SX EVO
Dis. N.
TI372SX/400.50_CE/0614
File
TI372SXEVO_CE_R01\1.DWG
Denom./Title
ALIMENTAZIONE
POWER SUPPLY
Data 02/2014
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Esecutore/Executor
Bartoli
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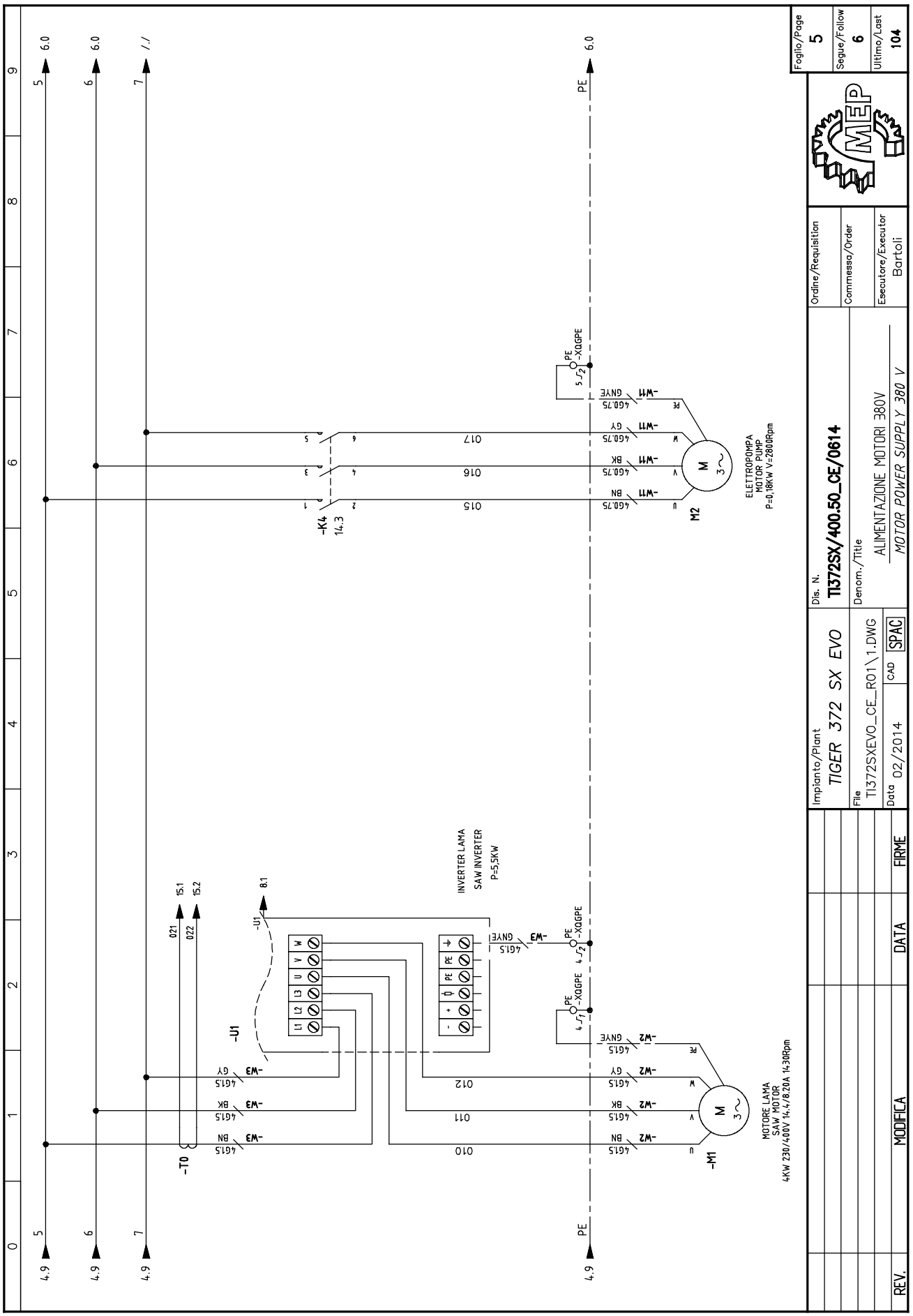
MODIFICA
DATA
FIRME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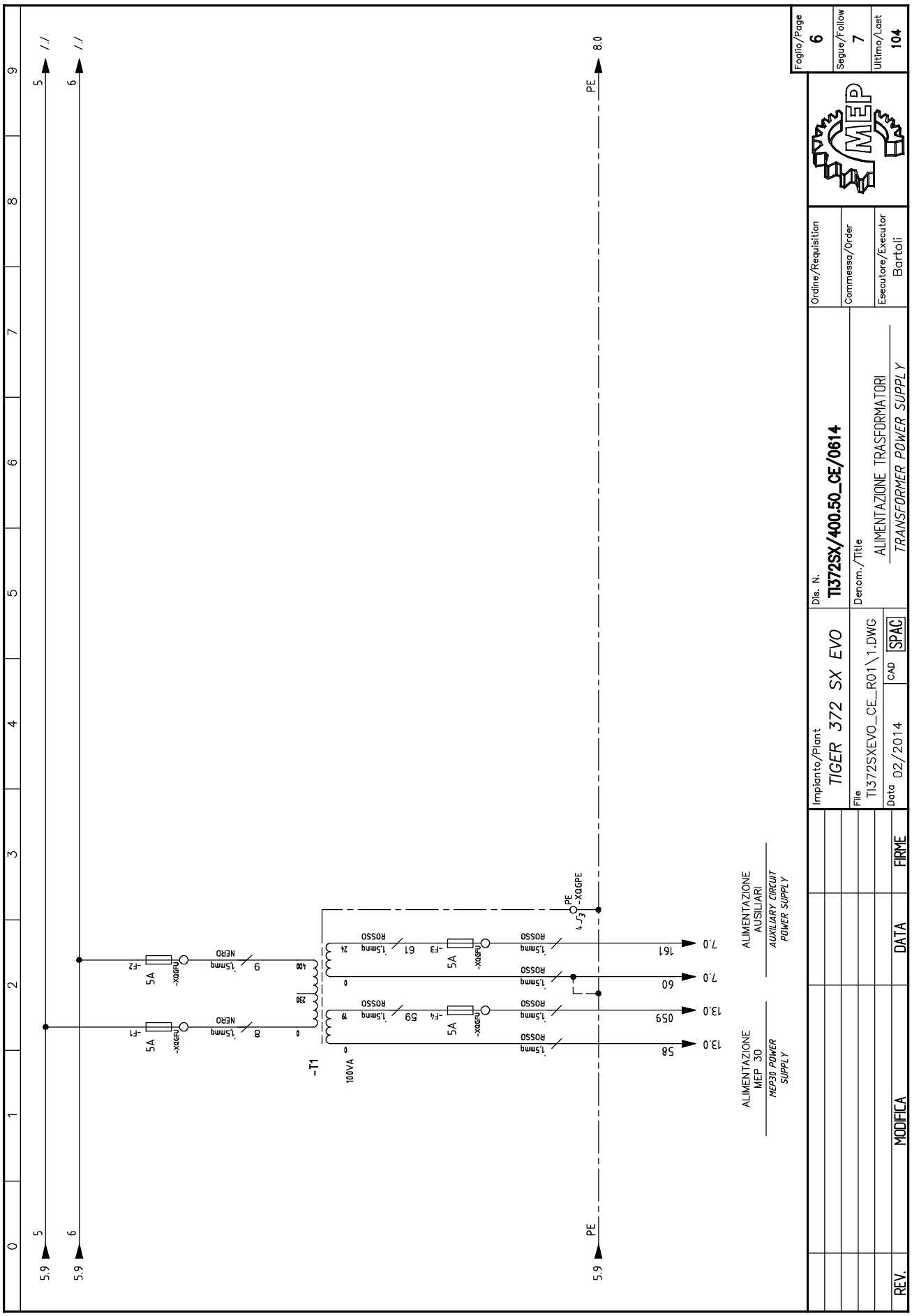
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Dis. N. TI372SX/400.50_CE/0614
Denom./Title ALIMENTAZIONE MOTORI 380V
MOTOR POWER SUPPLY 380 V
Impianto/Plant TIGER 372 SX EVO
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME
-K4 14.3
-M2
ELETTROPOMPA
MOTOR PUMP
P=0,18KW V=2800Rpm
-M1
MOTORE LAMA
SAW MOTOR
4KW 230/400V 14.4/8.20A 1430Rpm
-U1
INVERTER LAMA
SAW INVERTER
P=5,5KW
-T0
PE
6.0
4.9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Ordine/Requisition
Commessa/Order
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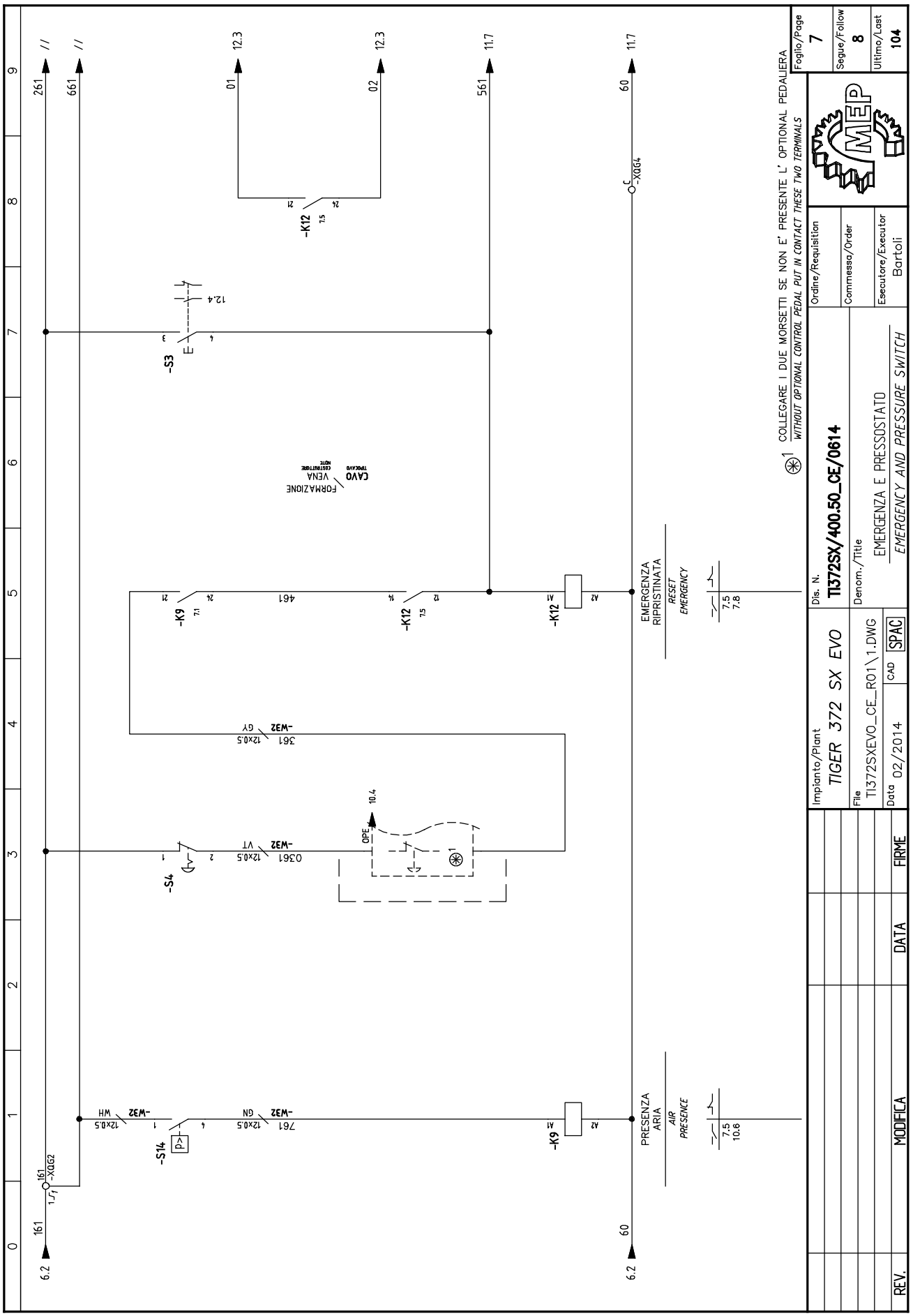
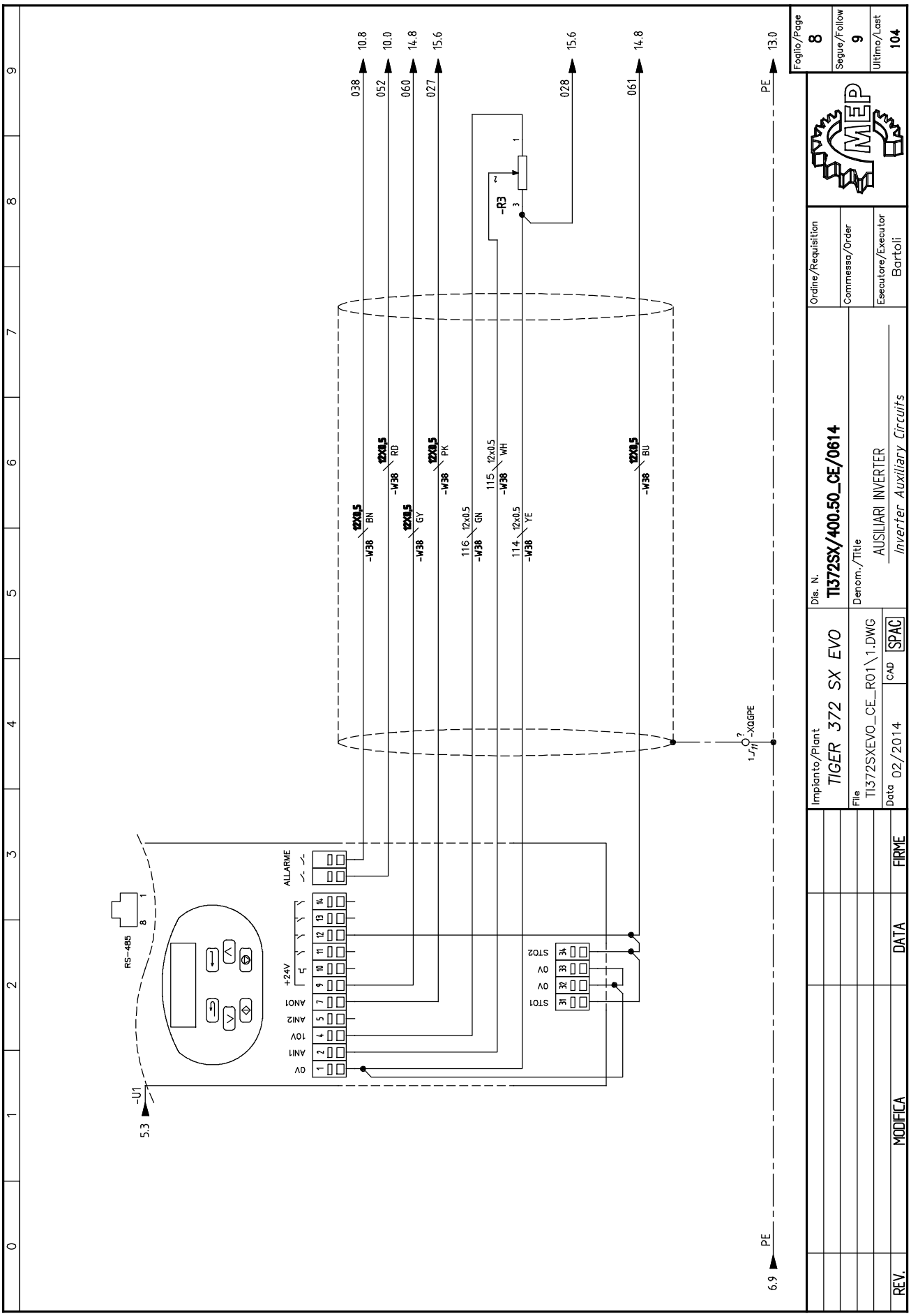
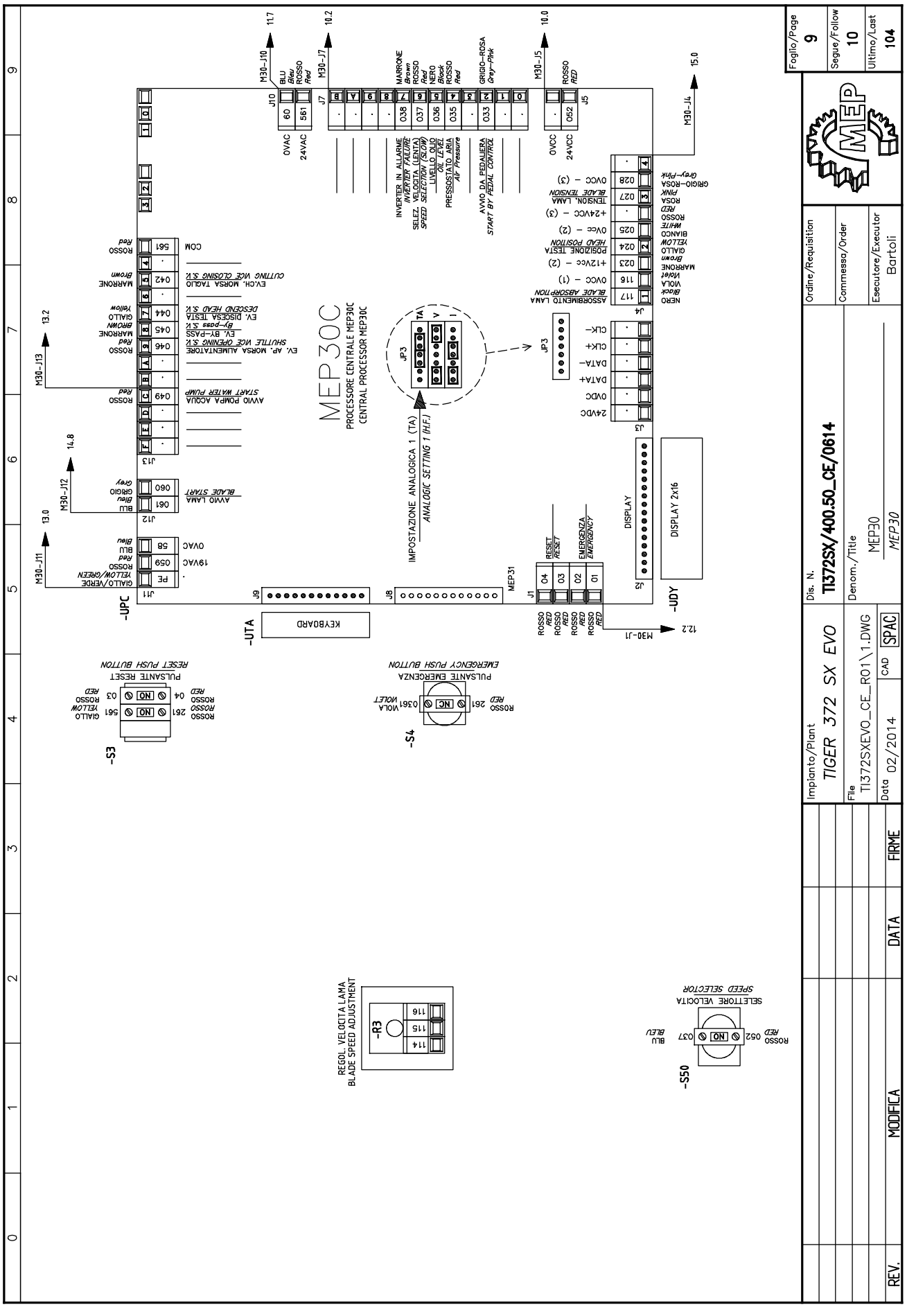
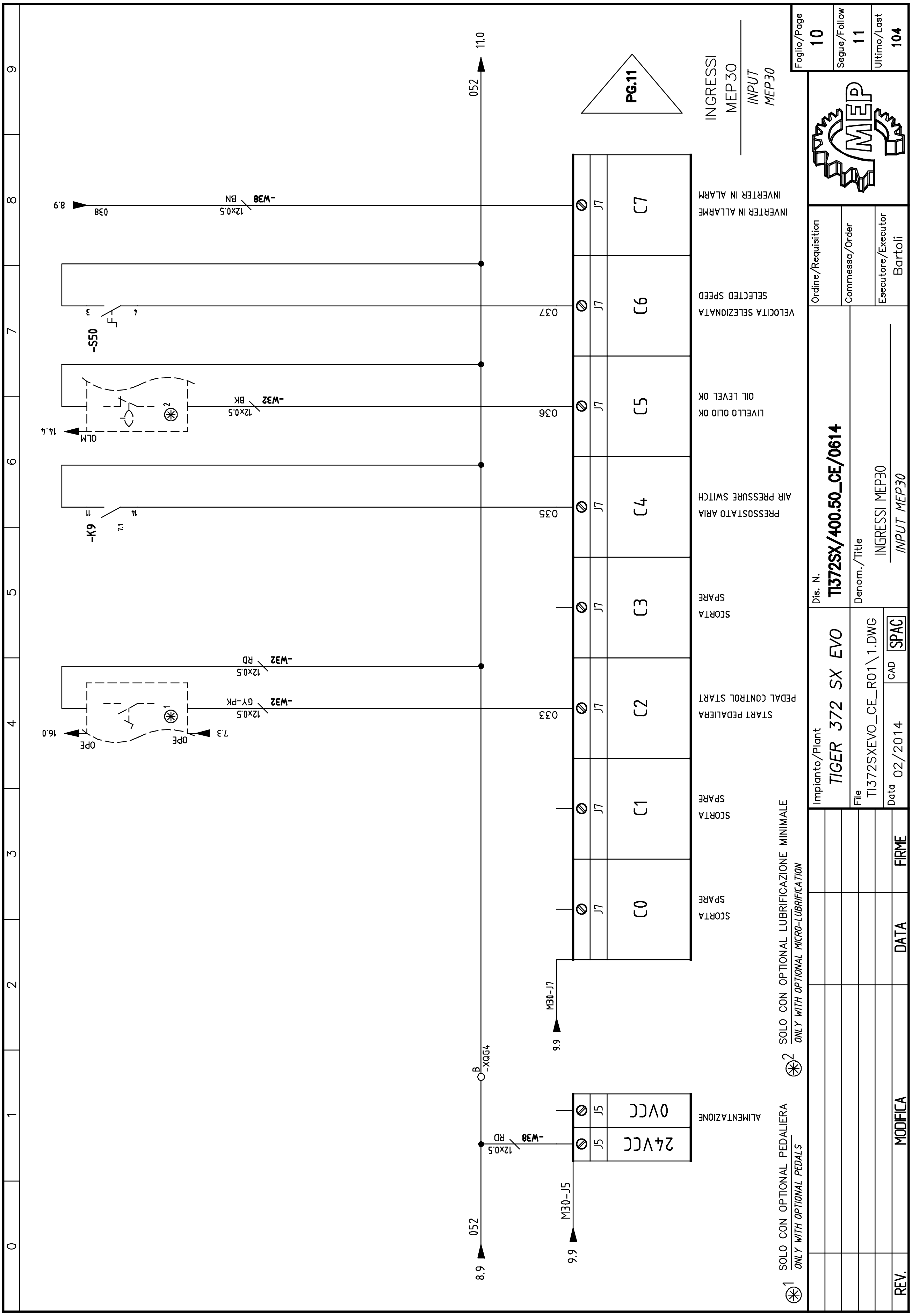
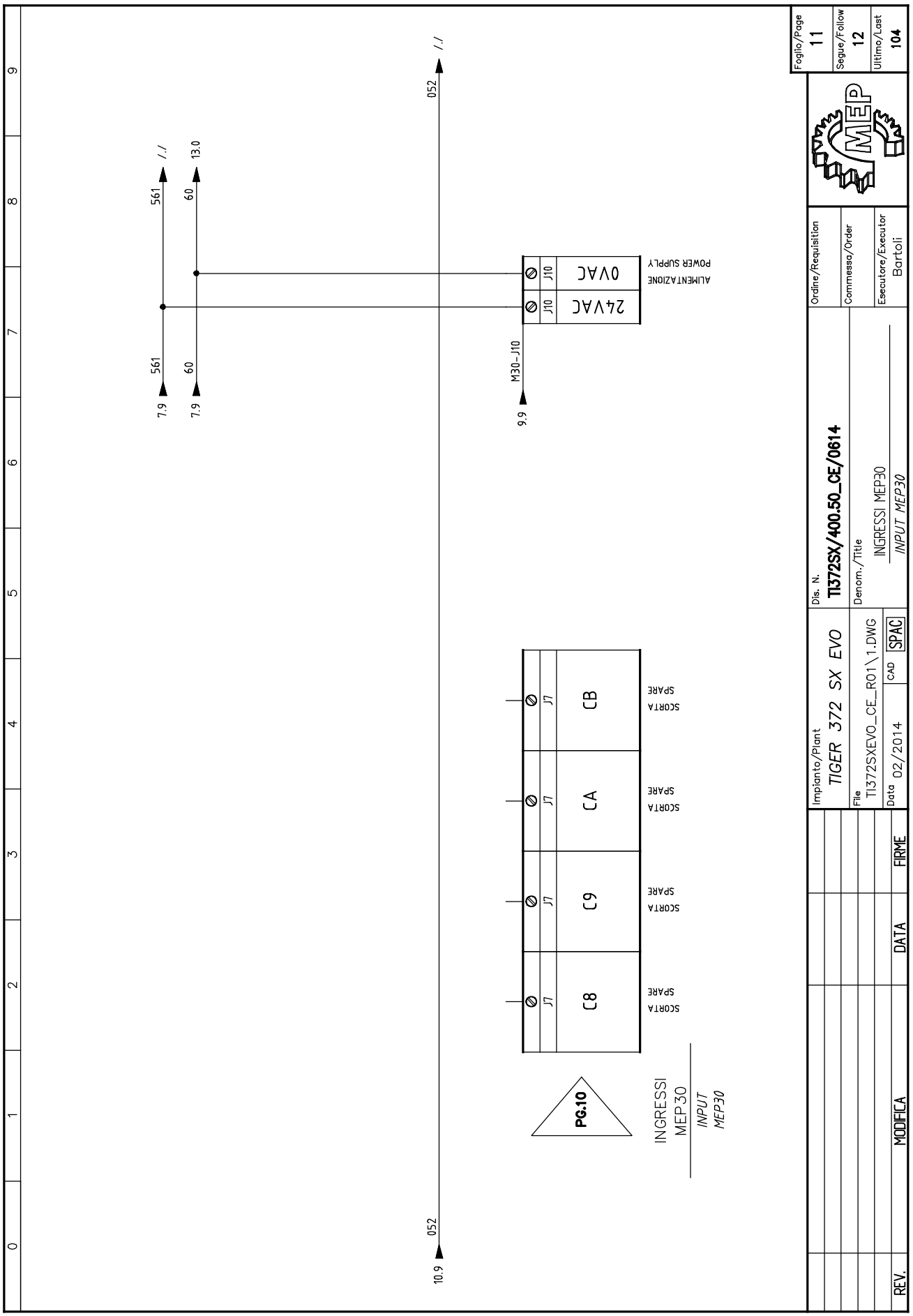
TRANSFORMER POWER SUPPLY
REV. MODIFICA DATA FIRME
ALIMENTAZIONE MEP 30
MEP30 POWER SUPPLY
ALIMENTAZIONE AUSILIARI
AUXILIARY CIRCUIT POWER SUPPLY
-T1
100VA
5A
-F1
-F2
-F3
-F4
-XAGPE
PE
5.9
8.0
7.0
13.0

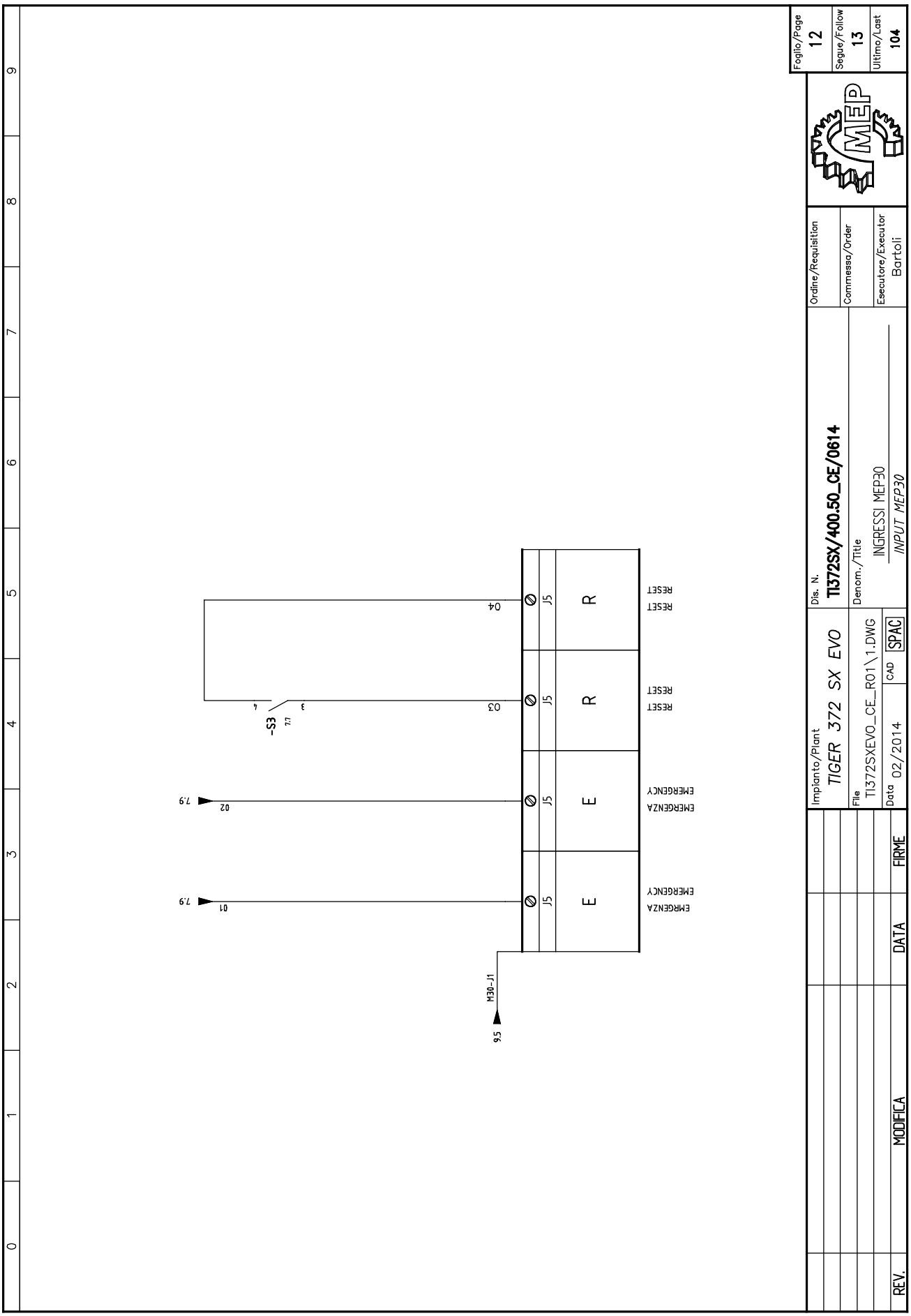

COLLEGARE I DUE MORSETTI SE NON E' PRESENTE L' OPTIONAL PEDALIERA
WITHOUT OPTIONAL CONTROL PEDAL PUT IN CONTACT THESE TWO TERMINALS
Foglio/Page 7
Segue/Follow 8
Ultimo/Last 104
Impianto/Plant TIGER 372 SX EVO
Dis. N. TI372SX/400.50_CE/0614
Denom./Title EMERGENZA E PRESSOSTATO
EMERGENCY AND PRESSURE SWITCH
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME
-S3
-S4
-S14
-K9
-K12
-W32
-XG62
-XG64
EMERGENZA RIPRISTINATA
RESET EMERGENCY
PRESENZA ARIA
AIR PRESENCE
FORMAZIONE VENA
CAVO

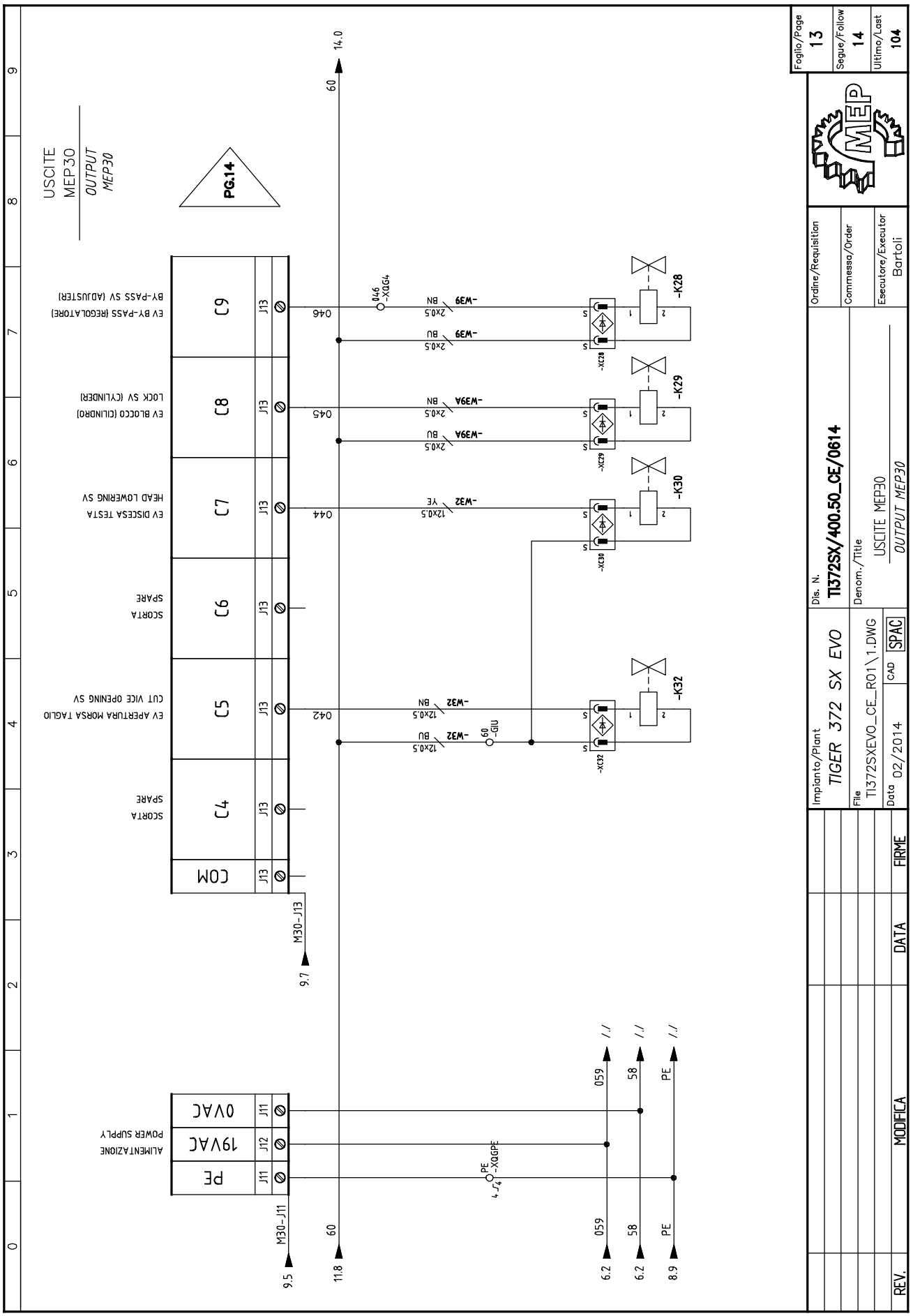

Foglio/Page 8
Segue/Follow 9
Ultimo/Last 104
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Dis. N. T1372SX/400.50_CE/0614
Denom./Title AUSILIARI INVERTER
Inverter Auxiliary Circuits
Impianto/Plant TIGER 372 SX EVO
File T1372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME
-U1
RS-485
ALLARME
+24V
0V
ANI1
ANI2
10V
ANO1
STO1
STO2
-R3
-XAGPE
PE
-W38
038
052
060
027
028
061
115
116
114
BN
RD
GY
PK
GN
WH
YE
BU
12x0.5

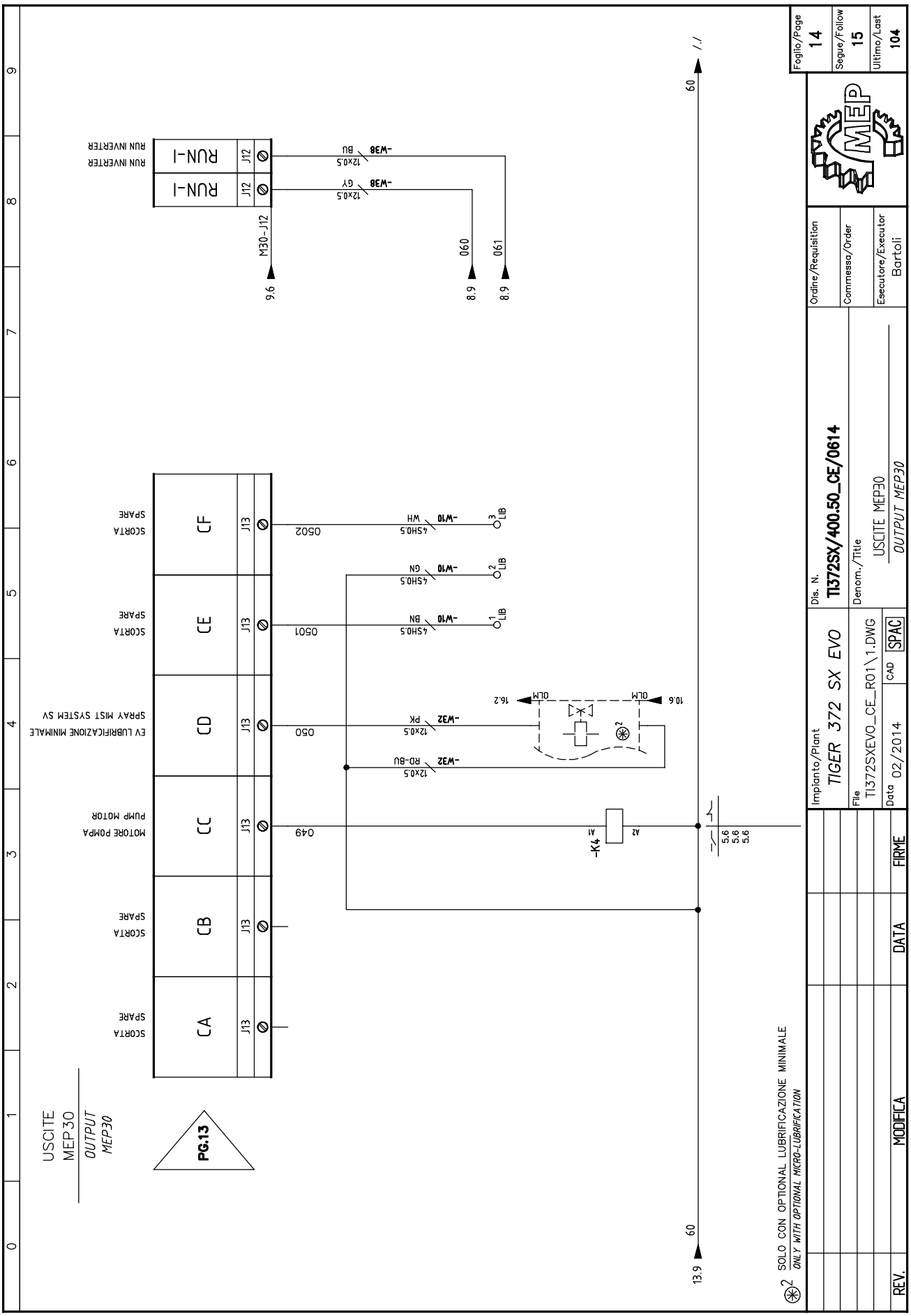

MEP30C
PROCESSORE CENTRALE MEP30C
CENTRAL PROCESSOR MEP30C
-UPC
-UTA
-UDY
KEYBOARD
DISPLAY 2x16
IMPOSTAZIONE ANALOGICA 1 (TA)
ANALOGIC SETTING 1 (H.F.)
-S3
-S4
-S50
-R3
REGOL. VELOCITA LAMA
BLADE SPEED ADJUSTMENT
SELETTORE VELOCITA
SPEED SELECTOR
PULSANTE RESET
RESET PUSH BUTTON
PULSANTE EMERGENZA
EMERGENCY PUSH BUTTON
Foglio/Page 9
Segue/Follow 10
Ultimo/Last 104
Dis. N. TI372SX/400.50_CE/0614
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Impianto/Plant TIGER 372 SX EVO
Denom./Title MEP30 MEP30
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME

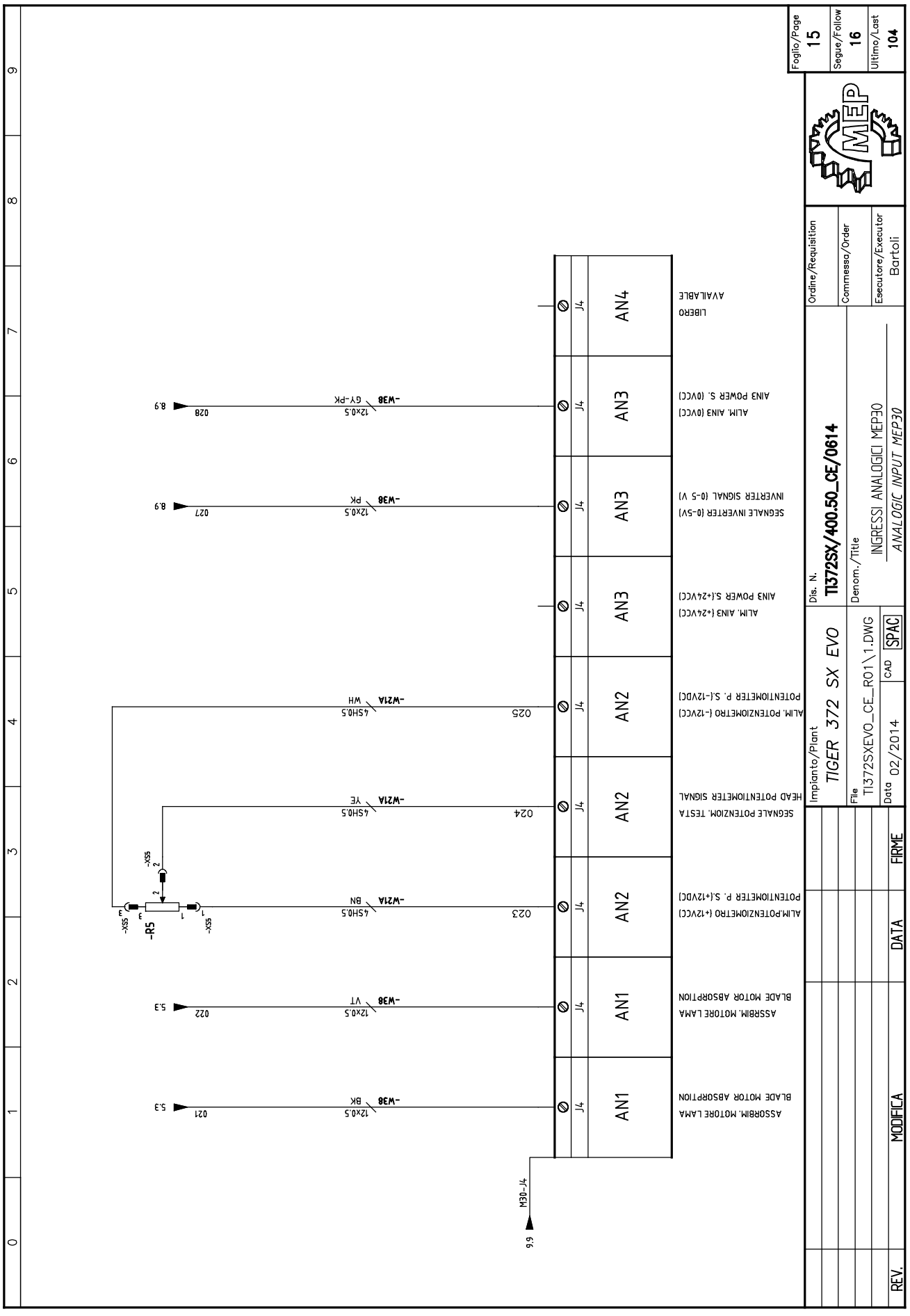

INGRESSI MEP30
INPUT MEP30
PG.11
INVERTER IN ALLARME
INVERTER IN ALARM
VELOCITA SELEZIONATA
SELECTED SPEED
LIVELLO OLIO OK
OIL LEVEL OK
PRESSOSTATO ARIA
AIR PRESSURE SWITCH
SCORTA
SPARE
START PEDALIERA
PEDAL CONTROL START
ALIMENTAZIONE
24VCC
0VCC
C0
C1
C2
C3
C4
C5
C6
C7
-S50
-K9
-W38
-W32
M30-J7
M30-J5
-XQG4
SOLO CON OPTIONAL PEDALIERA
ONLY WITH OPTIONAL PEDALS
SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
ONLY WITH OPTIONAL MICRO-LUBRIFICATION
Foglio/Page 10
Segue/Follow 11
Ultimo/Last 104
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Dis. N. TI372SX/400.50_CE/0614
Denom./Title INGRESSI MEP30
INPUT MEP30
Impianto/Plant TIGER 372 SX EVO
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV.
MODIFICA
DATA
FIRME

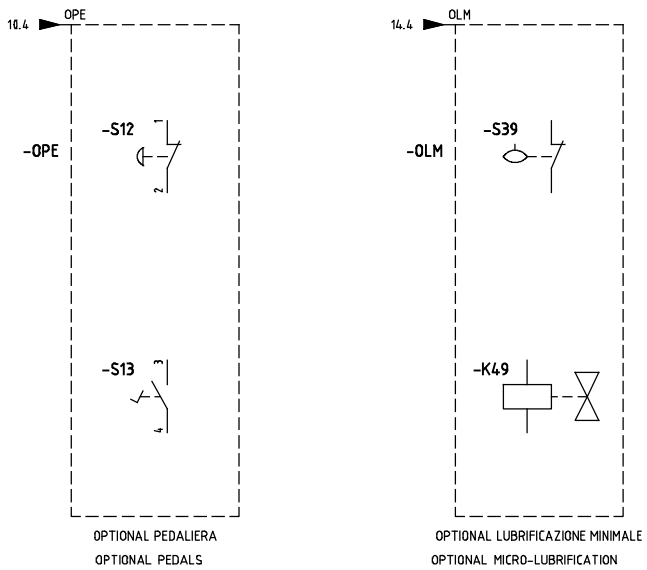

Foglio/Page 11
Segue/Follow 12
Ultimo/Last 104
Impianto/Plant TIGER 372 SX EVO
Dis. N. TI372SX/400.50_CE/0614
Denom./Title INGRESSI MEP30 INPUT MEP30
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
REV. MODIFICA DATA FIRME
052 /./
561 /./ 13.0
561 7.9 60 7.9
M30-J10 9.9
ALIMENTAZIONE POWER SUPPLY
24VAC J10
0VAC J10
SCORTA SPARE
CB CA C9 C8
J7
PG.10
INGRESSI MEP30
INPUT MEP30
052 10.9


Foglio/Page 12
Segue/Follow 13
Ultimo/Last 104
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Dis. N. T1372SX/400.50_CE/0614
Denom./Title INGRESSI MEP30
INPUT MEP30
Impianto/Plant TIGER 372 SX EVO
File T1372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME
M30-J1
9.5
01
02
03
04
7.9
7.9
-S3
J5
E
R
EMERGENZA
RESET


USCITE
MEP30
OUTPUT
MEP30
PG.14
ALIMENTAZIONE
POWER SUPPLY
0VAC
19VAC
PE
SCORTA
SPARE
EV APERTURA MORSA TAGLIO
CUT VICE OPENING SV
SCORTA
SPARE
EV DISCESA TESTA
HEAD LOWERING SV
EV BLOCCO (CILINDRO)
LOCK SV (CYLINDER)
EV BY-PASS (REGOLATORE)
BY-PASS SV (ADJUSTER)
COM
C4
C5
C6
C7
C8
C9
J11
J12
J13
M30-J11
M30-J13
-K28
-K29
-K30
-K32
-W39
-W39A
-W32
-XQG4
-XQGPE
-GIU
Foglio/Page 13
Segue/Follow 14
Ultimo/Last 104
Impianto/Plant
TIGER 372 SX EVO
File
TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
Dis. N.
TI372SX/400.50_CE/0614
Denom./Title
USCITE MEP30
OUTPUT MEP30
Ordine/Requisition
Commessa/Order
Esecutore/Executor
Bartoli
REV.
MODIFICA
DATA
FIRME


USCITE MEP30
OUTPUT MEP30
PG.13
CA
CB
CC
CD
CE
CF
SCORTA SPARE
MOTORE POMPA
PUMP MOTOR
EV LUBRIFICAZIONE MINIMALE
SPRAY MIST SYSTEM SV
RUN INVERTER
-K4
-W2
-W10
-W38
M30-J12
SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
ONLY WITH OPTIONAL MICRO-LUBRIFICATION
Impianto/Plant
TIGER 372 SX EVO
Dis. N.
T1372SX/400.50_CE/0614
Denom./Title
USCITE MEP30
OUTPUT MEP30
File
T1372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
Foglio/Page 14
Segue/Follow 15
Ultimo/Last 104
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
REV.
MODIFICA
DATA
FIRME


Foglio/Page 15
Segue/Follow 16
Ultimo/Last 104
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
Impianto/Plant TIGER 372 SX EVO
Dis. N. TI372SX/400.50_CE/0614
Denom./Title INGRESSI ANALOGICI MEP30
ANALOGIC INPUT MEP30
File TI372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME
AN4 AN3 AN2 AN1
LIBERO AVAILABLE
AIN3 POWER S. (0VCC)
ALIM. AIN3 (0VCC)
SEGNALE INVERTER (0-5V)
INVERTER SIGNAL (0-5 V)
AIN3 POWER S.(+24VCC)
ALIM. AIN3 (+24VCC)
ALIM. POTENZIOMETRO (-12VCC)
POTENTIOMETER P. S.(-12VDC)
SEGNALE POTENZIOM. TESTA
HEAD POTENTIOMETER SIGNAL
ALIM.POTENZIOMETRO (+12VCC)
POTENTIOMETER P. S.(+12VDC)
ASSORBIM. MOTORE LAMA
BLADE MOTOR ABSORPTION
ASSRBIM. MOTORE LAMA
BLADE MOTOR ABSORPTION
M30-J4
-W38 12x0.5 GY-PK
-W38 12x0.5 PK
-W38 12x0.5 VT
-W38 12x0.5 BK
-W21A 4SH0.5 WH
-W21A 4SH0.5 YE
-W21A 4SH0.5 BN
-R5
-XSS
028
027
025
024
023
022
021
8.9
5.3
9.9



OPTIONAL PEDALIERA
OPTIONAL PEDALS

OPTIONAL LUBRIFICAZIONE MINIMALE
OPTIONAL MICRO-LUBRIFICATION

REV.	MODIFICA	DATA	FIRME

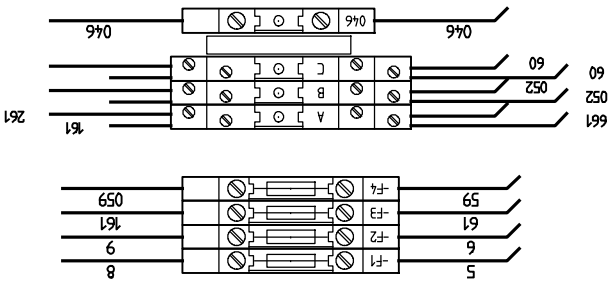
Impianto/Plant: *TIGER 372 SX EVO*
File: TI372SXEVO_CE_R01\1.DWG
Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**
Denom./Title: OPTIONAL / *OPTIONAL*

Ordine/Requisition:
Commessa/Order:
Esecutore/Executor: Bartoli

MEP

Foglio/Page: 16
Segue/Follow: 17
Ultimo/Last: 104



REV.	MODIFICA	DATA	FIRME				

Impianto/Plant: TIGER 372 SX EVO
File: TI372SXEVO_CE_R01\1.DWG
Data: 02/2014 CAD SPAC

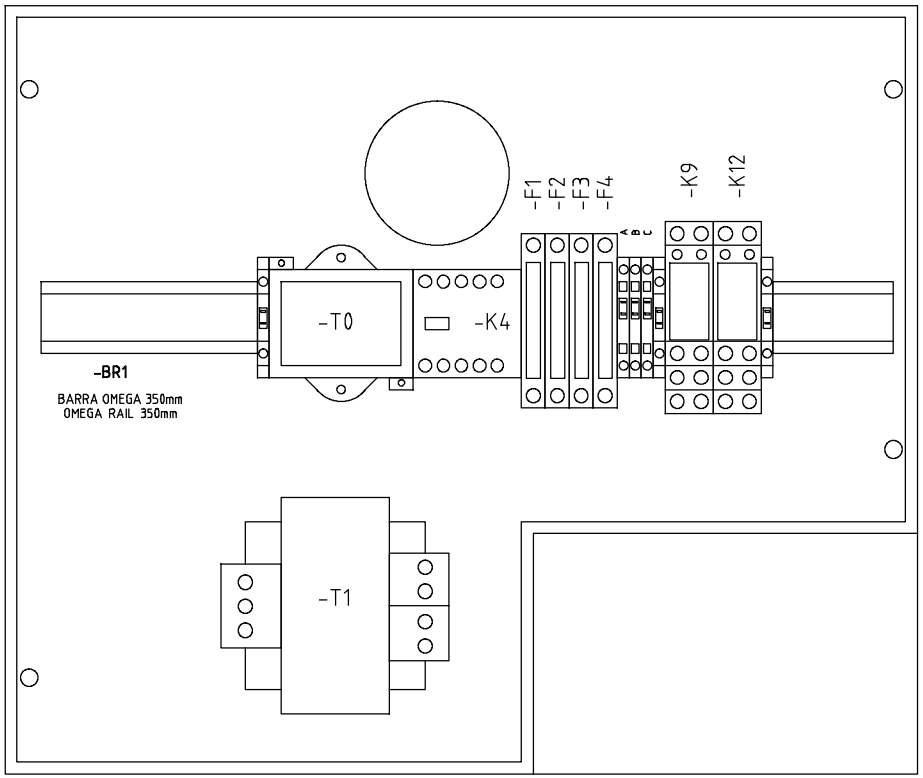
Dis. N.: TI372SX/400.50_CE/0614
Denom./Title: MORSETTIERA QUADRO
PANEL TERMINAL BOARD

Ordine/Requisition
Commessa/Order
Esecutore/Executor: Bartoli

Foglio/Page 17 | Segue/Follow 18 | Ultimo/Last 104

-QD1

QUADRO (CARPENTERIA)
BOARD (CARPENTRY)



-FL1 FILO 0,5mmq
WIRE 0,5mmq

-FL2 FILO 1,5mmq
WIRE 1,5mmq

-PT1 PUNTALINO 0,5mmq
TERMINAL 0,5mmq

-PT3 PUNTALINO 1,5mmq
TERMINAL 1,5mmQ

-CC1 CAPICORDA 1,5mmq
TERMINAL 1,5mmQ

-CC2 CAPICORDA 2,5mmq
TERMINAL 2,5mmQ

-NM1 NUMERAZIONE FILI
WIRE NUMERATION

-NM2 NUMERAZIONE MORSETTI
TERMINAL NUMERATION

-FS1 FASCETTA 135x2,5
CLAMP 135x2,5

-SF1 SACCHETTO PORTAFUSIBILI
BAG FUSE

-TF1 TARGA SOSTITUZIONE FUSIBILI
PLATE SUBSTITUTION FUSES

-TF2 GUARNIZIONE AERSTOP
SEAL AERSTOP

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: TIGER 372 SX EVO

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: TI372SX/400.50_CE/0614

Denom./Title: INTERNO QUADRO / BOARD INSIDE

Ordine/Requisition:

Commessa/Order:

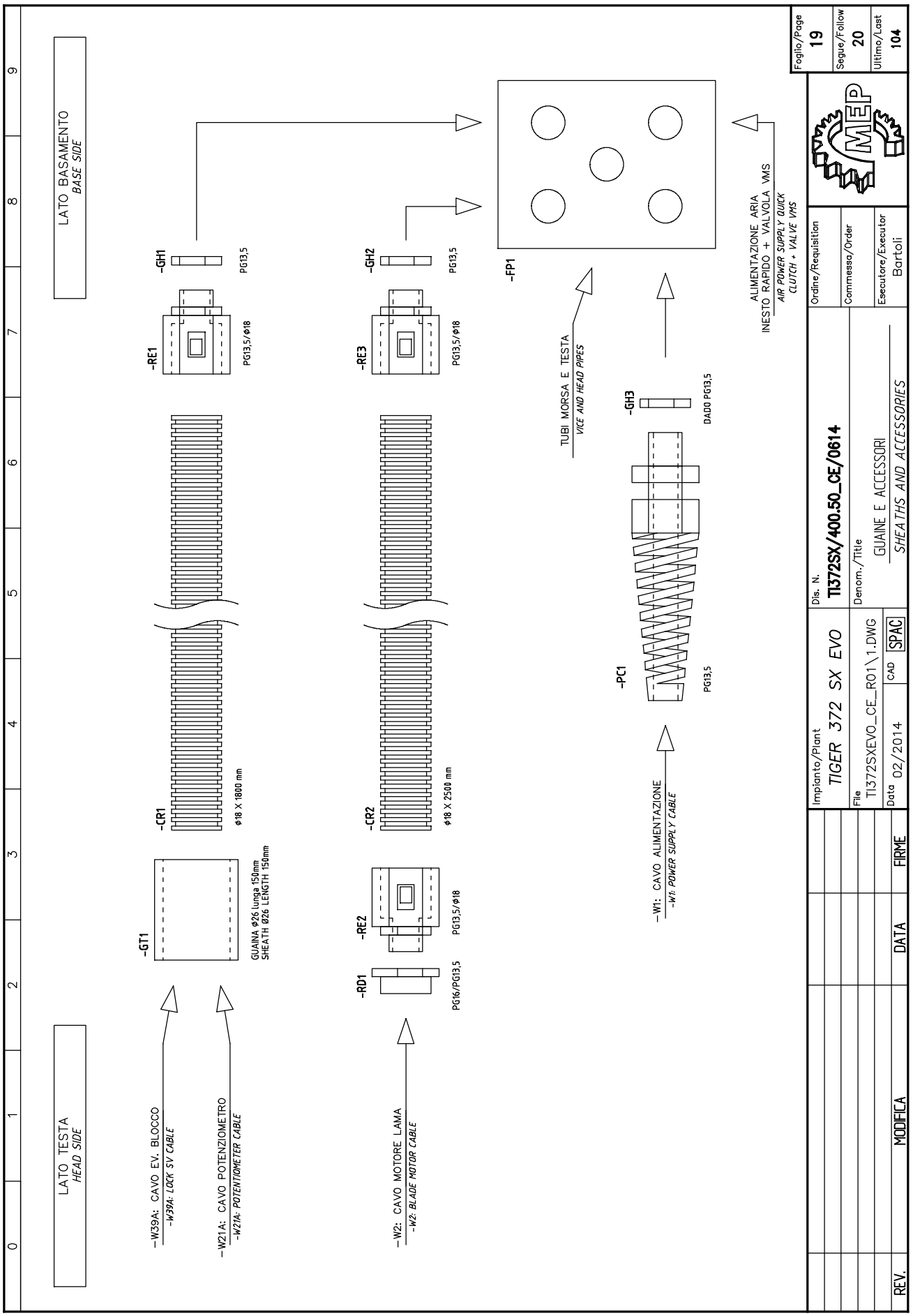
Esecutore/Executor: Bartoli

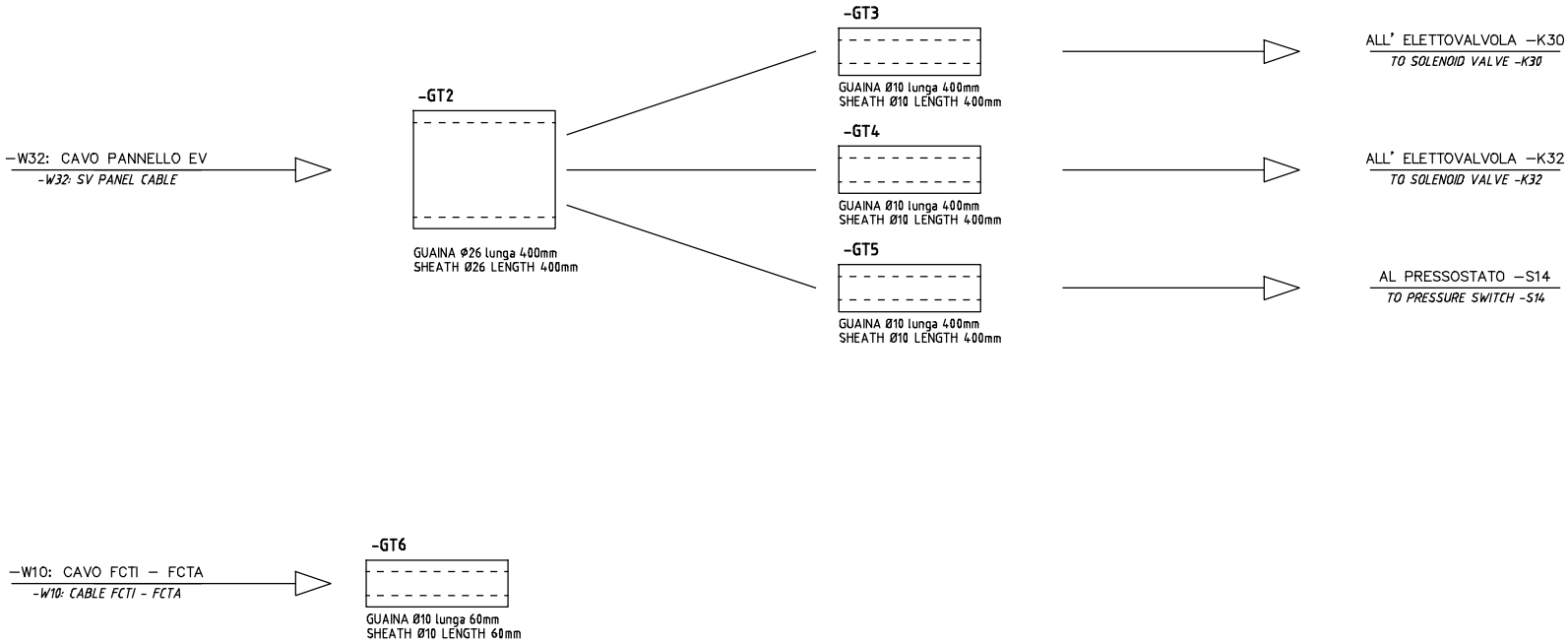
MEP

Foglio/Page: 18

Segue/Follow: 19

Ultimo/Last: 104


LATO TESTA
HEAD SIDE
LATO BASAMENTO
BASE SIDE
-W39A: CAVO EV. BLOCCO
-W39A: LOCK SV CABLE
-W21A: CAVO POTENZIOMETRO
-W21A: POTENTIOMETER CABLE
-W2: CAVO MOTORE LAMA
-W2: BLADE MOTOR CABLE
-GT1
GUAINA Ø26 lunga 150mm
SHEATH Ø26 LENGTH 150mm
-CR1
Ø18 X 1800 mm
-CR2
Ø18 X 2500 mm
-RE1
-RE2
-RE3
-RD1
PG16/PG13,5
PG13,5/Ø18
-GH1
-GH2
-GH3
PG13,5
DADO PG13,5
-PC1
-W1: CAVO ALIMENTAZIONE
-W1: POWER SUPPLY CABLE
-FP1
TUBI MORSA E TESTA
VICE AND HEAD PIPES
ALIMENTAZIONE ARIA
INESTO RAPIDO + VALVOLA VMS
AIR POWER SUPPLY QUICK
CLUTCH + VALVE VMS
REV.
MODIFICA
DATA
FIRME
Impianto/Plant
TIGER 372 SX EVO
File
T1372SXEVO_CE_R01\1.DWG
Data 02/2014
CAD SPAC
Dis. N.
T1372SX/400.50_CE/0614
Denom./Title
GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES
Ordine/Requisition
Commessa/Order
Esecutore/Executor
Bartoli
Foglio/Page
19
Segue/Follow
20
Ultimo/Last
104



REV.	MODIFICA	DATA	FIRME

Impianto/Plant: TIGER 372 SX EVO

Dis. N.: TI372SX/400.50_CE/0614

File: TI372SXEVO_CE_R01\1.DWG

Denom./Title: GUAINE E ACCESSORI / SHEATHS AND ACCESSORIES

Data: 02/2014 CAD SPAC

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

Foglio/Page: 20

Segue/Follow: 21

Ultimo/Last: 104

CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -AL	4/1	L1 ○	L1	BN				BN	**L1**	**5**	**4/3**	**=QgCv -Q0**
=QgCv -AL	4/1	L2 ○	L2	BK				BK	**L2**	**3**	**4/3**	**=QgCv -Q0**
=QgCv -AL	4/1	N ○	N	BU	**-W1 022.0158 5G1.5**	4,5 MT		BU	N	○ N	4/2	=QgCv -AL
=QgCv -AL	4/1	L3 ○	L3	GY	Cavo alimentazione			GY	**L3**	**1**	**4/3**	**=QgCv -Q0**
=QgCv -AL	4/2	PE ○	PE	GNYE				GNYE	PE	⎍ 2_1	4/2	=QgCv -XQGPE
CA	**16/4**	**J14**	**0501**	BN				BN	0501	○ 1	16/4	-BmCv LIB
				YE	**-W10 022.0141 4SH0.5**	4,5Mt		YE				
CB	**16/5**	**J14**	**0502**	WH	Cavo FCTI e FCTA			WH	0502	○ 3	16/5	-BmCv LIB
=QgCv -XQG4	9/8	C ○	60	GN				GN	60	○ 2	16/4	-BmCv LIB
=QgCv -K4	**6/1**	**2**	**015**	BN				BN	**015**	**U**	**6/1**	**=BmMep -M2**
=QgCv -K4	**6/1**	**4**	**016**	BK	**-W11 022.0162 4G0.75**	5,5 MT		BK	**016**	**V**	**6/1**	**=BmMep -M2**
=QgCv -K4	**6/1**	**6**	**017**	GY	Collegamento pompa			GY	**017**	**W**	**6/1**	**=BmMep -M2**
=QgCv -XQGPE	6/2	2_2 ⎍	7	GNYE				GNYE	**7**	**PE**	**6/1**	**=BmMep -M2**
=QgCv -U1	**5/2**	**U**	**010**	BN				BN	**010**	**U**	**5/1**	**=BmMep -M1**
=QgCv -U1	**5/2**	**V**	**011**	BK	**-W2 022.0143 4G1.5**	4 MT		BK	**011**	**V**	**5/1**	**=BmMep -M1**
=QgCv -U1	**5/2**	**W**	**012**	GY	Cavo motore lama			GY	**012**	**W**	**5/1**	**=BmMep -M1**
=QgCv -XQGPE	5/2	4_1 ⎍	7	GNYE				GNYE	**7**	**PE**	**5/2**	**=BmMep -M1**
=QgCv -T0	**5/1**		**5**	BN				BN	**5**	**L3**	**5/2**	**=QgCv -U1**
=QgCv -Q0	**4/3**	**4**	**6**	BK	**-W3 022.0143 4G1.5**	5 MT		BK	**6**	**L2**	**5/2**	**=QgCv -U1**
=QgCv -Q0	**4/3**	**2**	**7**	GY	Cavo alimentazione inverter			GY	**7**	**L1**	**5/2**	**=QgCv -U1**
=QgCv -XQGPE	5/2	4_2 ⎍	7	GNYE				GNYE	7		0/2	
=BmCv -XS5	17/3	1 ⊂—	023	BN				BN	**023**	**J3**	**17/3**	**AN2**
=BmCv -XS5	17/3	2 ⊂—	024	YE	**-W21A 022.0141 4SH0.5**	5Mt		YE	**024**	**J3**	**17/3**	**AN2**
=BmCv -XS5	17/3	3 ⊂—	025	WH	Cavo coll. potenziometro testa			WH	**025**	**J3**	**17/4**	**AN2**
				GN				GN				

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: *TIGER 372 SX EVO*

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**

Denom./Title: RIASSUNTIVO CAVI / *CABLE SUMMARY*

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

Foglio/Page: 21

Segue/Follow: 22

Ultimo/Last: 104

CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
			042	BN				BN	042		15/3	=BmCv
C1	15/3	J15	361	GY				GY	361	21	9/5	=QgCv -K9
	9/3		60	BU				BU	60	○ 60	15/3	=QgCv -GIU
=QgCv -XQG4	9/8	C ○	761	GN				GN	761	4	9/1	=BmMep -S14
=QgCv -K9	9/1	A1	052	RD				RD	052		12/4	
=QgCv -XQG4	12/1	B ○	044	YE	-W32 022.0161 12x0.5	4,5MT		YE	044		15/5	=BmCv
C3	15/5	J15	661	WH	Cavo pannello EV e optional			WH	661	1	9/1	=BmMep -S14
=QgCv -XQG2	8/3	A ○	050	PK				PK	050		16/3	
C9	16/3	J14	036	BK				BK	036		12/6	
C5	12/6	J9	0361	VT				VT	0361	2	9/3	=QgCv -S4
	9/3		60	RD-BU				RD-BU	60		16/3	
=QgCv -XQG4	9/8	C ○	033	GY-PK				GY-PK	033		12/4	
C2	12/4	J9										
			038	BN				BN	038	J9	12/8	C7
=QgCv	10/4		060	GY				GY	060	J13	16/1	RUN-I
=QgCv	10/3	B2	061	BU				BU	061	J13	16/1	RUN-I
=QgCv	10/3	B4	116	GN				GN	116	10V	10/3	=QgCv
=QgCv -R3	10/6	3	052	RD				RD	052	J6	12/1	24VCC
=QgCv	10/3		028	YE	-W38 022.0161 12x0.5	4,5 MT		YE	028	0V	10/3	=QgCv
=QgCv -R3	10/7	1	115	WH	Cavo comandi inverter			WH	115	A2	10/3	=QgCv
=QgCv -R3	10/7	2	027	PK				PK	027	J3	17/6	AN3
=QgCv	10/3	B1		BK				BK				
				VT				VT				
				RD-BU				RD-BU				
			028	GY-PK				GY-PK	028	J3	17/6	AN3
=QgCv	10/3	0V										
			046	BN	-W39 022.0160 2x0.5	1,5Mt		BN	046		15/6	=BmCv
=QgCv -XQG4	15/6	046 ○	60	BU	Cavo coll. EV by-pass			BU	60		15/6	=BmCv
=QgCv -XQG4	9/8	C ○										
			045	BN	-W39A 022.0160 2x0.5	5,0Mt		BN	045		15/6	=BmCv
C4	15/6	J15	60	BU	Cavo coll. EV blocco			BU	60		15/5	=BmCv
=QgCv -XQG4	9/8	C ○										

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: TIGER 372 SX EVO
Dis. N.: TI372SX/400.50_CE/0614
File: TI372SXEVO_CE_R01\1.DWG
Denom./Title: RIASSUNTIVO CAVI / CABLE SUMMARY
Data: 02/2014 CAD SPAC
Ordine/Requisition:
Commessa/Order:
Esecutore/Executor: Bartoli

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NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-GT1	'022.0180	Guaina termoretraibile 26mm	'=BmCv	22	0,15
'-GT2		Guaina termoretraibile 26mm	'=BmCv	23	0,40
'-GT3	'022.0181	Guaina termoretraibile 10mm	'=BmCv	23	0,40
'-GT5		Guaina termoretraibile 10mm	'=BmCv	23	0,40
'-GT4		Guaina termoretraibile 10mm	'=BmCv	23	0,40
'-GT6		Guaina termoretraibile 10mm	'=BmCv	23	0,06
'-RE2	'022.0211	Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	22	1
'-RE3		Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	22	1
'-RE1		Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	22	1
'-RD1	'022.0217	Riduzione M/F PG 16/13,5	'=BmCv	22	1
'-PC1	'022.0234	Pressacordone 3246 nero PG13,5	'=BmCv	22	1
'-GH3	'022.0244	Dado grigio PG13,5	'=BmCv	22	1
'-GH1		Dado grigio PG13,5	'=BmCv	22	1
'-GH2		Dado grigio PG13,5	'=BmCv	22	1
'-XS5	'022.0378	Connettore AC 3 poli per valvola DC	'=BmCv	18	1
'-R5	'022.1801	Potenziometro lineare corsa 250mm	'=BmCv	18	1
'-CR1	'022.2602	Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	'=BmCv	22	1,80
'-CR2		Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	'=BmCv	22	2,5
'-FP1	V.d.G.B.	Vedi distinta Gruppo Basamento	'=BmCv	22	1
'-OLM	'090.1601	Gruppo lubrificazione munimale SHARK	'=BmLmCv	19	1
'-M1	'019.2002	Motore KW 4 4P T112 MA4 V.230/400	'=BmMep	5	1
'-M2	'028.0260	Elettropompa V.230-400.50 HZ SPV33	'=BmMep	6	1
'-K32	V.d.P.	Vedi distinta pneumatica	'=BmMep	16	1
'-K30		Vedi distinta pneumatica	'=BmMep	16	1
'-K29		Vedi distinta pneumatica	'=BmMep	16	1
'-S14		Vedi distinta pneumatica	'=BmMep	9	1
'-K28		Vedi distinta pneumatica	'=BmMep	16	1
'-OPE	'090.0672	Comando supplementare a pedaliera	'=BmPeMep	19	1
			'=QgCv	10	1
'-QD1	'016.0723	Quadro comandi CB SX N.T.	'=QgCv	21	1
'-FS1	'019.5353	Fascetta in plastica 135x2,5	'=QgCv	21	25
'-R3	'022.0045	Potenziometro 10K	'=QgCv	10	1
'-T0	'022.0069	Trasformatore amperometrico 500/1A	'=QgCv	5	1
'-Q0	'022.0124	Custodia isolante E-PKZ0-GR con manopola rossa	'=QgCv	4	1
'-Q0	'022.0125	Blocco luchettabile SBV-PKZ0-E cod.35127	'=QgCv	4	1

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: TIGER 372 SX EVO

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: TI372SX/400.50_CE/0614

Denom./Title: DISTINTA MATERIALI / MATERIAL LIST

Ordine/Requisition:

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Esecutore/Executor: Bartoli

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NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-Q0	'022.0126	Barretta per neutro N-PKZO cod. 82160	'=QgCv	4	1
'-FL1	'022.0171	Cordicella unipolare 1 X 0,5	'=QgCv	21	16,5
'-FL2	'022.0172	Cordicella unipolare 1x1,50	'=QgCv	21	4,00
'-NM1	'022.0290	Etichetta segnafilo	'=QgCv	21	320
'-NM2		Etichetta segnafilo	'=QgCv	21	8
'-CC2	'022.0296	Terminale a occhiello Ø5 da 2,5mmq (Blu)	'=QgCv	21	1
'-CC1	'022.0308	Terminale a occhiello Ø5 da 1,5mmq (Rosso)	'=QgCv	21	5
'-PT1	'022.0311	Terminale a puntale da 0,5mmq (Bianco)	'=QgCv	21	90
'-PT3	'022.0312	Terminale a puntale da 1,5mmq (Nero)	'=QgCv	21	25
'-XQGPE	'022.0377	Morsetto PE da 2.5 mm singolo per 2 fili a molla WK4 SLU	'=QgCv	4	1
'-K0	'022.0555	Sganciatore U-PKZO V.400.50	'=QgCv	4	1
'-U1	'022.0725	Inverter KW5,5 SK2402 completo di porta modbus V380-500.50.60	'=QgCv	5	1
'-UDY	'022.0757	Display MEP30 LCD 2x16	'=QgCv	11	1
'-BR1	'022.0900	Barra omega	'=QgCv	21	0,35
'-S50	'022.0937	Blocchetto NA M22-K10 cod. 216376	'=QgCv	13	1
'-S3		Blocchetto NA M22-K10 cod. 216376	'=QgCv	9	1
'-S3		Blocchetto NA M22-K10 cod. 216376	'=QgCv	9	1
'-K9	022.0994 + 022.2391	Rele 24VAC - 2 contatti scambio + zoccolo	'=QgCv	9	1
'-K12		Rele 24VAC - 2 contatti scambio + zoccolo	'=QgCv	9	1
'-SF1	'022.1133	Microfusibile T 1AMP. 250V	'=QgCv	21	1
'-S50	'022.1226	Selettore 2P. M22-WKV cod.216874 + portacontatti M22-A cod 216374	'=QgCv	13	1
'-S4	'022.1245	Emergenza M22-PVT cod.263467 + M22-A 216374 + M22-K01 216378	'=QgCv	9	1
'-Q0	'022.1288	Interuttore PKZM0-16 (termica) cod. 46938	'=QgCv	4	1
'-S3	'022.1406	Pulsante M22-D-Y cod. 216598 + M22-A cod 216374	'=QgCv	9	1
'-T1	'022.1651	Trasformatore 100VA V.230-400 S0.24 S0.19	'=QgCv	7	1
'-XQGPE	'022.2247	Morsetto PE da 2.5 mm singolo per 4 fili a molla WK4 D2/2 SLU	'=QgCv	5	1
'-XQG4	'022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla 56.703.0055.0	'=QgCv	16	1
'-XQG4	'022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	13	1
'-XQG4		Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	9	1
'-XQG2		Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	8	1
'-XQGFU	'022.2260	Morsetto portafusibile 56.704.4053.0+Z1.298.1653.0+07.312.4353.0	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile 56.704.4053.0+Z1.298.1653.0+07.312.4353.0	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile 56.704.4053.0+Z1.298.1653.0+07.312.4353.0	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile 56.704.4053.0+Z1.298.1653.0+07.312.4353.0	'=QgCv	7	1
'-XQG4	'022.2288	Piastra di chiusura x morsetto a 4 fili 07.312.7155.0	'=QgCv		1

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: *TIGER 372 SX EVO*

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**

Denom./Title: DISTINTA MATERIALI / *MATERIAL LIST*

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

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NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-UPC	'022.2810	Controllore MEP 30 SX EVO	'=QgCv	11	1
'-K4	'022.3004	Minicontattore 9 AMP. - DILEM-10 (24V.50.60 HZ) cod. 21417	'=QgCv	17	1
'-TF2	'025.0604	Guarnizione aerstop	'=QgCv	21	1,40
'-UTA	'031.2030	Consolle di programmazione SX EVO	'=QgCv	11	1
'-TF1	'031.2622	Targa sostituzione fusibili	'=QgCv	21	1
'-R3	'034.1166	Manopola per comando potenziometro 22mm	'=QgCv	10	1
'-SF1	'047.0182	Sacchetto portafusibili	'=QgCv	21	1

TIPO/TYPE	DESCRIZIONE/DESCRIPTION	FORMAZ./FORMAT.	LUNGH./LENGHT
'022.0141	Cavo schermato per tensionatore e potenziometro	4SH0.5	9.50
'022.0143	Cavo schermato 4x1,5mmq	4G1.5	9.00
'022.0158	Cavo 5x1,5mmq	5G1.5	4.50
'022.0160	Cavo 2x0.5mmq	2x0.5	6.50
'022.0161	Cavo 12x0.50mmq	12x0.5	9.00
'022.0162	Cavo 4x0.75mmq	4G0.75	5.50

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: *TIGER 372 SX EVO*

File: TI372SXEVO_CE_R01\1.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**

Denom./Title: DISTINTA MATERIALI

MATERIAL LIST

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

MEP

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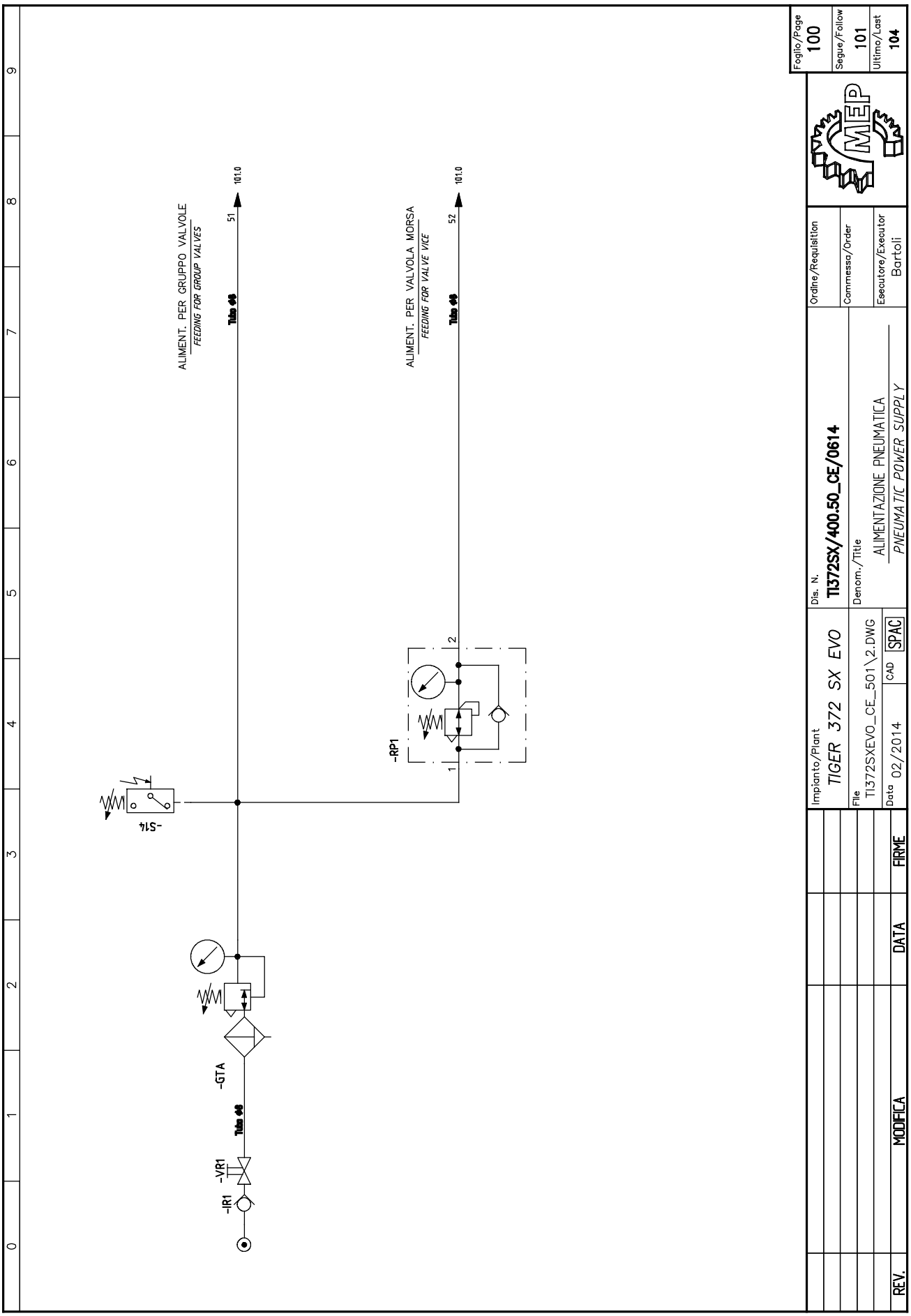
ALIMENT. PER GRUPPO VALVOLE
FEEDING FOR GROUP VALVES
ALIMENT. PER VALVOLA MORSA
FEEDING FOR VALVE VICE
101.0
101.0
51
52
Tubo ø8
Tubo ø8
Tubo ø8
-S14
-RP1
-GTA
-VR1
-IR1
1
2
0
1
2
3
4
5
6
7
8
9
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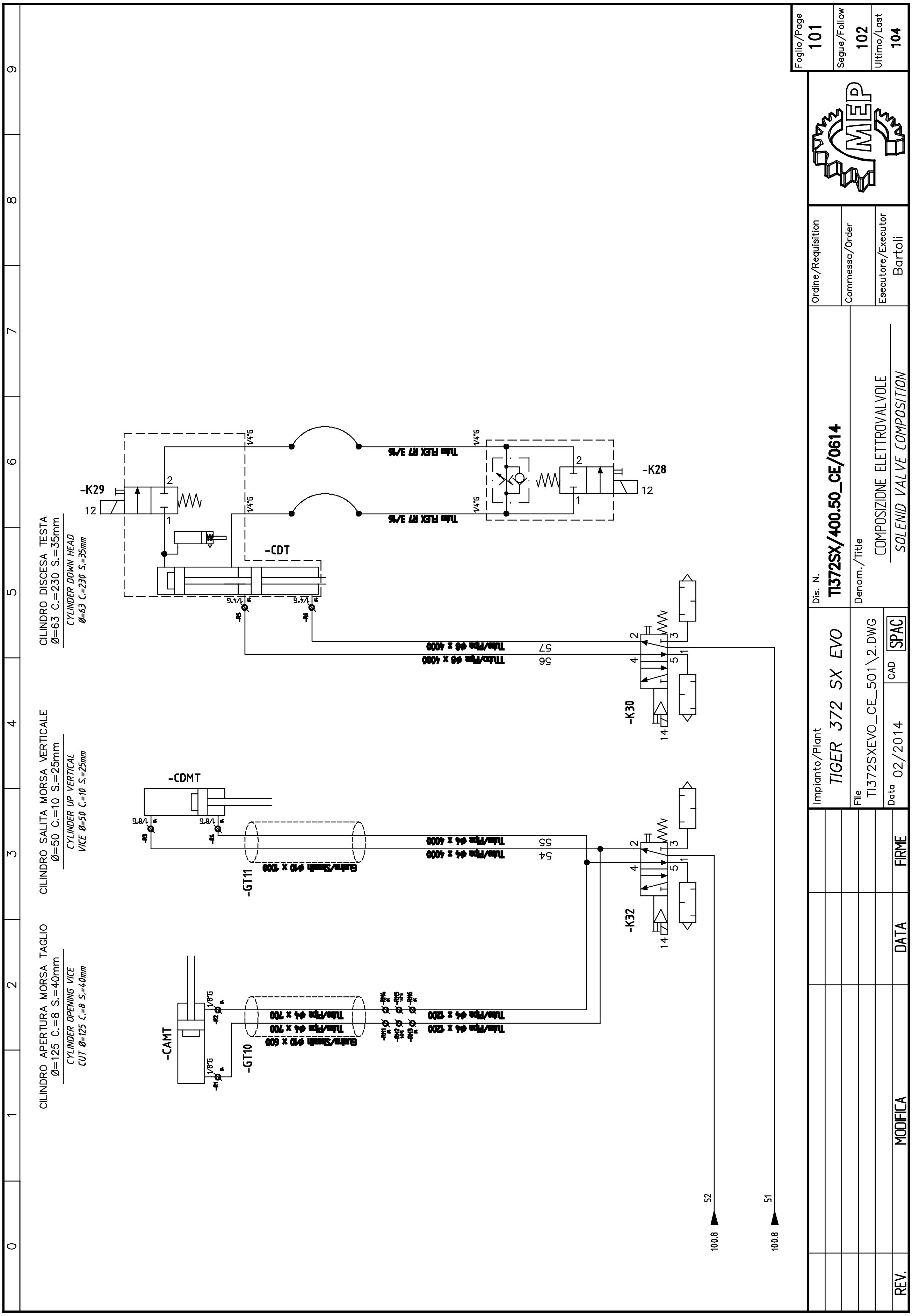
Impianto/Plant TIGER 372 SX EVO
Dis. N. T1372SX/400.50_CE/0614
Ordine/Requisition
Commessa/Order
Esecutore/Executor Bartoli
File T1372SXEVO_CE_501\2.DWG
Data 02/2014
CAD SPAC
Denom./Title ALIMENTAZIONE PNEUMATICA
PNEUMATIC POWER SUPPLY
REV.
MODIFICA
DATA
FIRME


CILINDRO DISCESA TESTA
Ø=63 C.=230 S.=35mm
CYLINDER DOWN HEAD
Ø=63 C=230 S=35mm
CILINDRO SALITA MORSA VERTICALE
Ø=50 C.=10 S.=25mm
CYLINDER UP VERTICAL
VICE Ø=50 C=10 S=25mm
CILINDRO APERTURA MORSA TAGLIO
Ø=125 C.=8 S.=40mm
CYLINDER OPENING VICE
CUT Ø=125 C=8 S=40mm
-K29
-K28
-CDT
-CDMT
-CAMT
-GT11
-GT10
-K30
-K32
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Commessa/Order
Esecutore/Executor Bartoli
Dis. N. TI372SX/400.50_CE/0614
Denom./Title
COMPOSIZIONE ELETTROVALVOLE
SOLENID VALVE COMPOSITION
Impianto/Plant TIGER 372 SX EVO
File TI372SXEVO_CE_501\2.DWG
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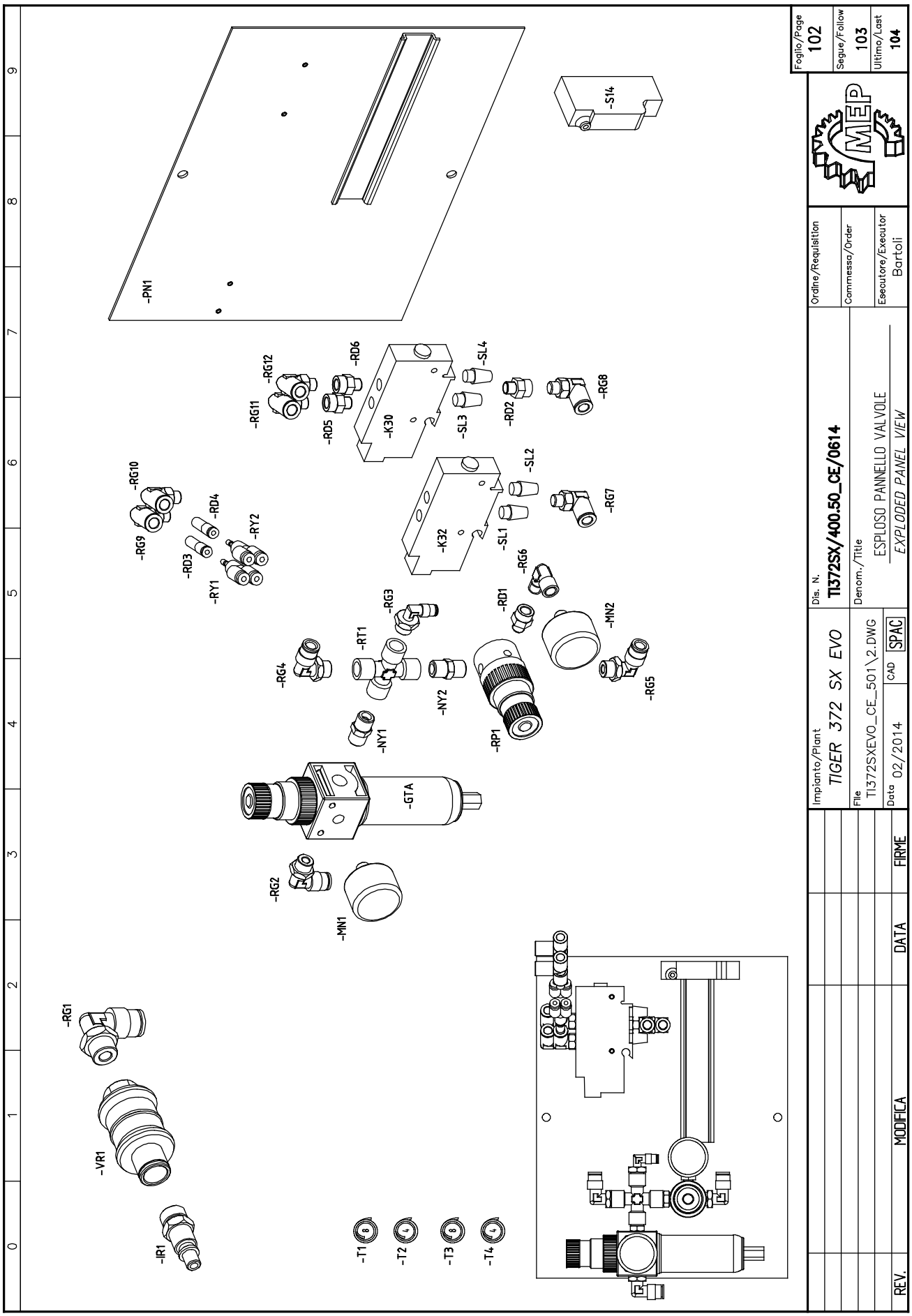
-PN1
-S14
-RG12
-RD6
-RG11
-RD5
-K30
-SL4
-SL3
-RD2
-RG8
-RG10
-RG9
-RD4
-RD3
-RY2
-RY1
-K32
-SL2
-SL1
-RG7
-RG6
-RG3
-RD1
-MN2
-RT1
-RG4
-NY2
-RG5
-NY1
-RP1
-GTA
-RG2
-MN1
-RG1
-VR1
-IR1
-T1
-T2
-T3
-T4
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Ordine/Requisition
Commessa/Order
Esecutore/Exeutor Bartoli
Dis. N. T1372SX/400.50_CE/0614
Denom./Title ESPLOSO PANNELLO VALVOLE
EXPLODED PANEL VIEW
Impianto/Plant TIGER 372 SX EVO
File T1372SXEVO_CE_501\2.DWG
Data 02/2014
CAD SPAC
REV. MODIFICA DATA FIRME

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-R1	'043.0199	Raccordo a gomito da 1/8"G a Ø4mm	'=BmMep	101	1
'-R2		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMep	101	1
'-R3		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMep	101	1
'-R4		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMep	101	1
'-RG1	'043.0204	Raccordo a gomito da 1/4"G a Ø8mm	'=BmMep	102	1
'-R5		Raccordo a gomito da 1/4"G a Ø8mm	'=BmMep	101	1
'-R6		Raccordo a gomito da 1/4"G a Ø8mm	'=BmMep	101	1
'-RM1	'043.0206	Raccordo diritto da 1/8"G a Ø4mm	'=BmMep	101	1
'-RM4		Raccordo diritto da 1/8"G a Ø4mm	'=BmMep	101	1
'-RM3		Raccordo diritto da 1/8"G a Ø4mm	'=BmMep	101	1
'-RM6		Raccordo diritto da 1/8"G a Ø4mm	'=BmMep	101	1
'-RG10	'043.0208	Raccordo a gomito da 1/8"G a Ø8mm	'=BmMep	102	1
'-RG9		Raccordo a gomito da 1/8"G a Ø8mm	'=BmMep	102	1
'-RD3	'043.0225	Riduzione M/F da tubo Ø8/Ø4mm	'=BmMep	102	1
'-RD4		Riduzione M/F da tubo Ø8/Ø4mm	'=BmMep	102	1
'-RY1	'043.0235	Giunto a "Y" Ø4mm	'=BmMep	102	1
'-RY2		Giunto a "Y" Ø4mm	'=BmMep	102	1
'-RM2	'043.0281	Manicotto da 1/8"G	'=BmMep	101	1
'-RM5		Manicotto da 1/8"G	'=BmMep	101	1
'-IR1	'043.0290	Innesto rapido ghiotto 1/4"G 13/A	'=BmMep	100	1
'-T3	'043.0301	Tubo rilsan 8X6 NERO COD.17257181	'=BmMep	102	8,00
'-T4	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=BmMep	102	12,00
'-VR1	'043.0601	Valvola VMS 114-1/4 08	'=BmMep	100	1
'-GT10	'022.0181	Guaina termoretraibile 10mm	'=BmMep	101	0,60
'-GT11		Guaina termoretraibile 10mm	'=BmMep	101	1,00
'-PN1	'034.0747	Pannello pneumatico TI-CB-SX-NC con barra omega	'=PpCv	102	1
'-S14	'043.0143	Pressostato pneumatico montag. barra PS1P1091 Parker	'=PpCv	100	1
'-RG3	'043.0198	Raccordo a gomito da 1/4"G a Ø4mm	'=PpCv	102	1
'-RG2	'043.0204	Raccordo a gomito da 1/4"G a Ø8mm	'=PpCv	102	1
'-RG4		Raccordo a gomito da 1/4"G a Ø8mm	'=PpCv	102	1
'-RG5		Raccordo a gomito da 1/4"G a Ø8mm	'=PpCv	102	1
'-RG7	'043.0208	Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1
'-RG8		Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1
'-RG12		Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1
'-RG11		Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: TIGER 372 SX EVO

File: TI372SXEVO_CE_501\2.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: TI372SX/400.50_CE/0614

Denom./Title: DISTINTA MATERIALE PNEUMATICO / PNEUMATIC MATERIAL LIST

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

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NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-RT1	'043.0222	Raccordo a croce CL2033 da 1/4"G	'=PpCv	102	1
'-RD1	'043.0231	Riduzione diritta M/F da 1/8"G	'=PpCv	102	1
'-RD2		Riduzione diritta M/F da 1/8"G	'=PpCv	102	1
'-RD5		Riduzione diritta M/F da 1/8"G	'=PpCv	102	1
'-RD6		Riduzione diritta M/F da 1/8"G	'=PpCv	102	1
'-RG6	'043.0251	Riduzione gomito M/F da 1/8"G	'=PpCv	102	1
'-NY1	'043.0275	Nipplo da 1/4"G	'=PpCv	102	1
'-NY2		Nipplo da 1/4"G	'=PpCv	102	1
'-T1	'043.0301	Tubo rilsan 8X6 NERO COD.17257181	'=PpCv	102	0,50
'-T2	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=PpCv	102	0,50
'-MN1	'043.0552	Manometro Ø40 con attacco assiale da 1/8"G	'=PpCv	102	1
'-MN2		Manometro Ø40 con attacco assiale da 1/8"G	'=PpCv	102	1
'-GTA	'043.0564	Regolatore di pressione da 1/4"G FR042	'=PpCv	100	1
'-RP1	'043.0580	Regolatore di pressione da 1/4"G MR038	'=PpCv	100	1
'-K30	043.0608 + 022.580	Elettrovalvola pneumatica montaggio singolo 5/2 da 1/8 PVLB111618 PARKER + bobina 24VAC	'=PpCv	101	1
'-K32		Elettrovalvola pneumatica montaggio singolo 5/2 da 1/8 PVLB111618 PARKER + bobina 24VAC	'=PpCv	101	1
'-SL2	'0436.0202	Silenziatore da 1/8"G in ottone sinterizzato	'=PpCv	102	1
'-SL3		Silenziatore da 1/8"G in ottone sinterizzato	'=PpCv	102	1
'-SL4		Silenziatore da 1/8"G in ottone sinterizzato	'=PpCv	102	1
'-SL1		Silenziatore da 1/8"G in ottone sinterizzato	'=PpCv	102	1

REV.	MODIFICA	DATA	FIRME

Impianto/Plant: *TIGER 372 SX EVO*

File: TI372SXEVO_CE_501\2.DWG

Data: 02/2014 CAD: SPAC

Dis. N.: **TI372SX/400.50_CE/0614**

Denom./Title: DISTINTA MATERIALE PNEUMATICO / *PNEUMATIC MATERIAL LIST*

Ordine/Requisition:

Commessa/Order:

Esecutore/Executor: Bartoli

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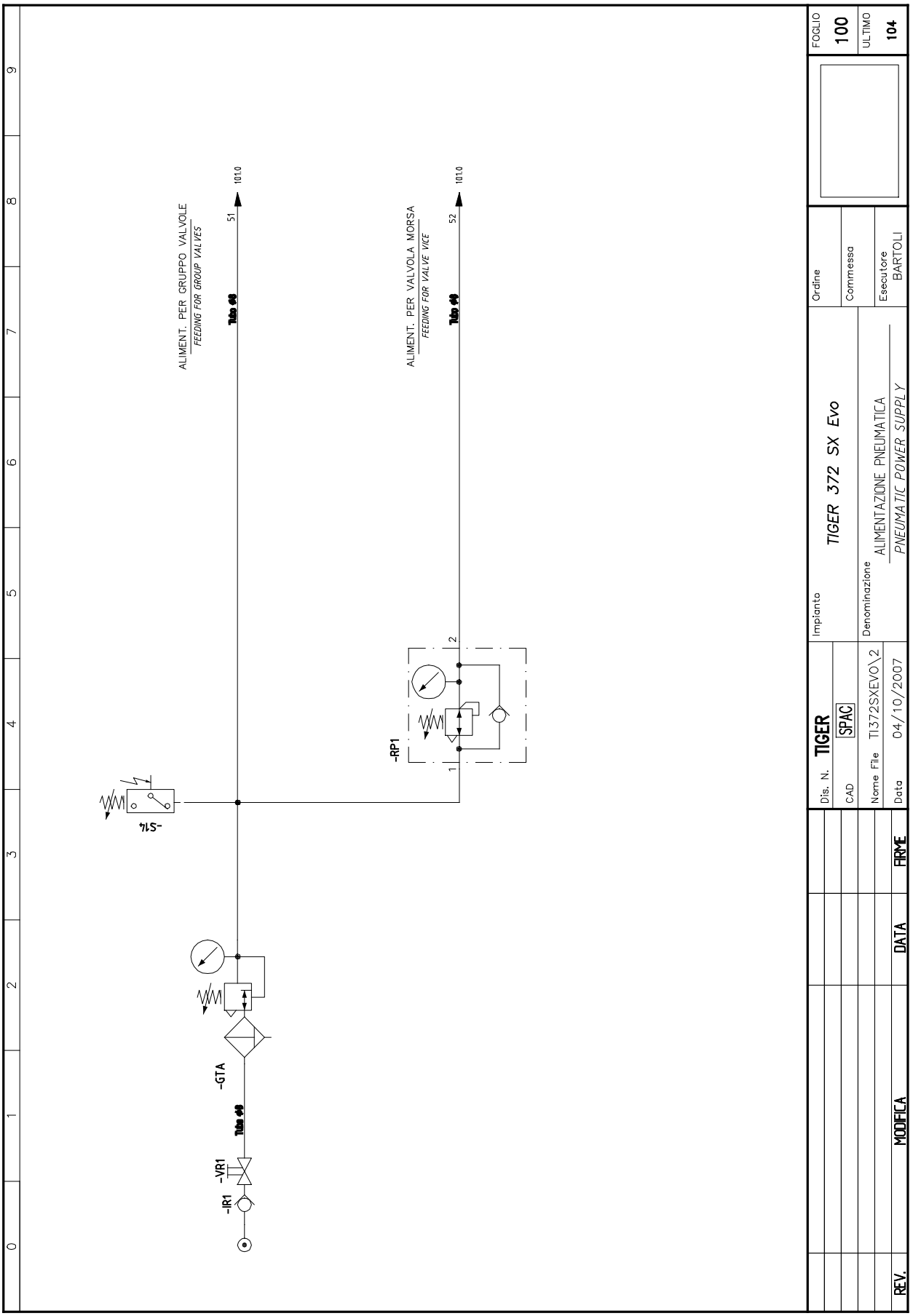
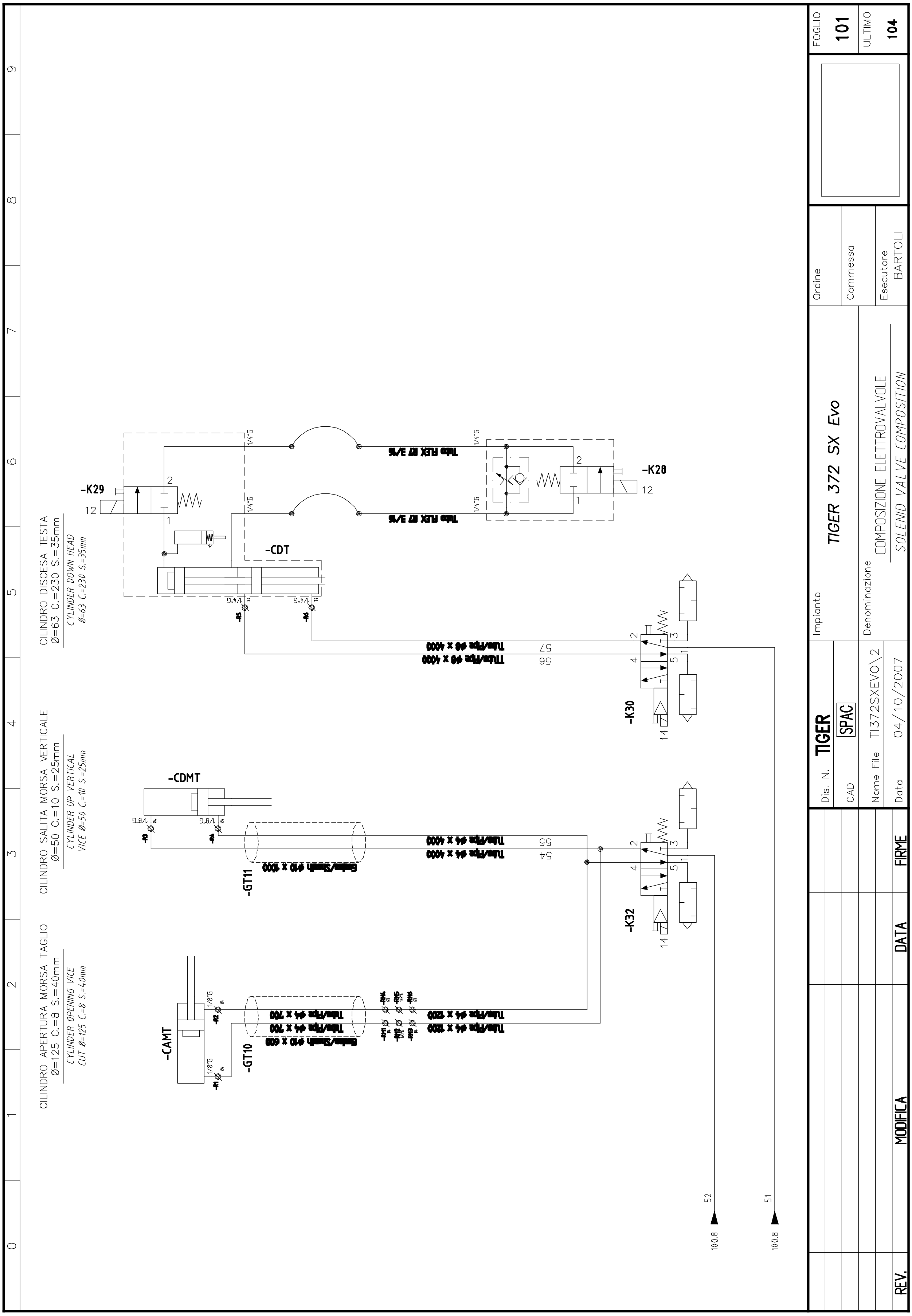
List of components

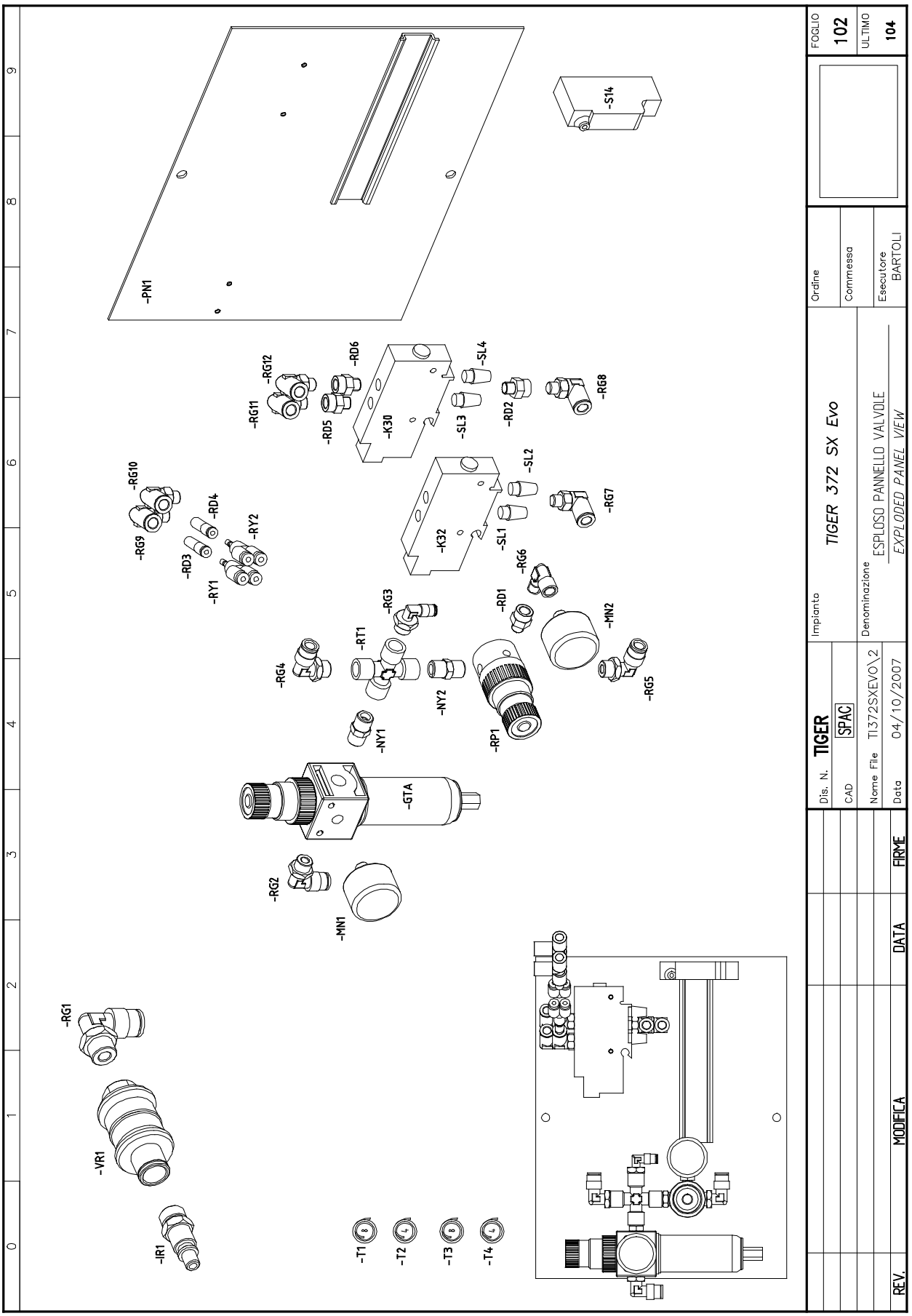
Item	Type	Description	Board	Sh	Q.ty
'- GT1	'022.0180	COVERING MM 26	'=BMCV	22	0.15
'- GT2		COVERING MM 26	'=BMCV	23	0.4
'- GT3	'022.0181	COVERING MM 10	'=BMCV	23	0.4
'- GT5		COVERING MM 10	'=BMCV	23	0.4
'- GT4		COVERING MM 10	'=BMCV	23	0.4
'- GT6		COVERING MM 10	'=BMCV	23	0.06
'- RE2	'022.0211	RAPID JOINT SEM PG 13,5	'=BMCV	22	1
'- RE3		RAPID JOINT SEM PG 13,5	'=BMCV	22	1
'- RE1		RAPID JOINT SEM PG 13,5	'=BMCV	22	1
'- RD1	'022.0217	REDUCTION PG 16- M PG 13,5- F	'=BMCV	22	1
'- PC1	'022.0234	CORD PRESSER 3246 BLACK PG13.5	'=BMCV	22	1
'- GH3	'022.0244	LOCK NUT 3217B GREY PG 13,5	'=BMCV	22	1
'- GH1		LOCK NUT 3217B GREY PG 13,5	'=BMCV	22	1
'- GH2		LOCK NUT 3217B GREY PG 13,5	'=BMCV	22	1
'- XS5	'022.0378	CONNECTOR F.REGENERATOR VALVE COIL	'=BMCV	18	1
'- R5	'022.1801	LINEAR POTENTIOMETER TI 370 CNC	'=BMCV	18	1
'- CR1	'022.2602	POLIFLEX COVERING NW 14- 1200143	'=BMCV	22	1.8
'- CR2		POLIFLEX COVERING NW 14- 1200143	'=BMCV	22	2.5
'- FP1	V.D.G.B.	SEE BASE GROUP PARTS LIST	'=BMCV	22	1
'- OLM	'090.1601	SPRAY MIST SYSTEM SHARK	'=BMLMCV	19	1
'- M1	'019.2002	MOTOR KW 4 4P T112 MA4 V.230/400	'=BMMEP	5	1
'- M2	'028.0260	ELECTROPUMP V.230- 400.50 HZ SPV33	'=BMMEP	6	1
'- K32	V.D.P.	SEE PNEUMATIC PARTS LIST	'=BMMEP	16	1
'- K30		SEE PNEUMATIC PARTS LIST	'=BMMEP	16	1
'- K29		SEE PNEUMATIC PARTS LIST	'=BMMEP	16	1
'- S14		SEE PNEUMATIC PARTS LIST	'=BMMEP	9	1
'- K28		SEE PNEUMATIC PARTS LIST	'=BMMEP	16	1
'- OPE	'090.0672	FOOT- PEDAL DEVICE N.S. TI- CB- SHAX/I- CNC	'=BMPEMEP	19	1
			'=QGCV	10	1
'- QD1	'016.0723	CONTROL PANEL SBA 4 POS.	'=QGCV	21	1
'- FS1	'019.5353	LEGRAND CLAMP ART.32031 140X3,5	'=QGCV	21	25
'- R3	'022.0045	POTENTIOMETER 10 K.	'=QGCV	10	1
'- T0	'022.0069	AMPEROMETRIC TRAFO	'=QGCV	5	1
'- Q0	'022.0124	HOUSING W.RED HANDLE	'=QGCV	4	1
'- Q0	'022.0125	LOCKABLE BLOCK	'=QGCV	4	1
'- Q0	'022.0126	LOCKABLE DEVICE COD.82160	'=QGCV	4	1
'- FL1	'022.0171	UNI- POLAR STRING 1X0,50	'=QGCV	21	16.5
'- FL2	'022.0172	UNI- POLAR STRING 1X1,50	'=QGCV	21	4
'- NM1	022.0290	CABLE MARKER AND WIRES	'=QGCV	21	320
'- NM2		CABLE MARKER AND WIRES	'=QGCV	21	8
'- CC2	'022.0296	WIRE TERMINAL CONNEC.S 2,5 MMQ GROMMET F 5 BF- M5	'=QGCV	21	1
'- CC1	'022.0308	WIRE TERMINAL CONNECT.A 3/P BM 00119	'=QGCV	21	5
'- PT1	'022.0311	CONNECTION TERMINAL DZ5CE005	'=QGCV	21	90
'- PT3	'022.0312	CONNECTION TERMINAL DZ5CE015	'=QGCV	21	25
'- XQGP-E	'022.0377	TERMINAL 8 WA 1011- 1PF00 EARTH	'=QGCV	4	1

Item	Type	Description	Board	Sh	Q.ty
'- K0	'022.0555	RELEASER U- PKZ0 V.400.50	'=QGCV	4	1
'- U1	'022.0725	INVERTER KW 5,5 SK2401 V.380- 480.50.60	'=QGCV	5	1
'- UDY	'022.0757	DISPLAY MEP 30	'=QGCV	11	1
'- BR1	'022.0900	OMEGA 3 GUIDE	'=QGCV	21	0.35
'- S50	'022.0937	NORMALLY OPEN CONTACT	'=QGCV	13	1
'- S3		NORMALLY OPEN CONTACT	'=QGCV	9	1
'- S3		NORMALLY OPEN CONTACT	'=QGCV	9	1
'- K9	022.0994 + 022.2391	FINDER RELAY 24 V.AC 4052 + Z317.02 F.FINDER RELAY 4052	'=QGCV	9	1
'- K12		FINDER RELAY 24 V.AC 4052 + Z317.02 F.FINDER RELAY 4052	'=QGCV	9	1
'- SF1	'022.1133	FUSE T 1AMP. 250V. M 18- 20- 23	'=QGCV	21	1
'- S50	'022.1226	2 POSITION SWITCH + CONTACT BOX M22- A COD 216374	'=QGCV	13	1
'- S4	'022.1245	EMERGENCY M22- PVT COD.263467 + M22- A 216374 + M22- K01 216378	'=QGCV	9	1
'- Q0	'022.1288	SWITCH PKZM0- 16 (THERMAL RELAY) COD. 46938	'=QGCV	4	1
'- S3	'022.1406	PUSH- BUTTON M22- D- Y COD. 216598 + M22- A COD 216374	'=QGCV	9	1
'- T1	'022.1651	TRAFO 100VA V.230- 400 S0.24 S0.19	'=QGCV	7	1
'- XQGP-E	'022.2247	WPE 1,5 ZZ FIXED GROUND TERMINAL	'=QGCV	5	1
'- XQG4	'022.2256	SINGLE POLE SPRING TERMINAL 56.703.0055.0	'=QGCV	16	1
'- XQG4	'022.2258	QUADRUPLE POLE SPRING TERMINAL 56.703.5155.0	'=QGCV	13	1
'- XQG4		QUADRUPLE POLE SPRING TERMINAL 56.703.5155.0	'=QGCV	9	1
'- XQG2		QUADRUPLE POLE SPRING TERMINAL 56.703.5155.0	'=QGCV	8	1
'- XQGF-U	'022.2260	FUSE HOLDING TERMINAL 56.704.4053. 0 +Z1.298.1653.0 + 07.312.4353.0	'=QGCV	7	1
'- XQGFU		FUSE HOLDING TERMINAL 56.704.4053. 0 +Z1.298.1653.0 + 07.312.4353.0	'=QGCV	7	1
'- XQGFU		FUSE HOLDING TERMINAL 56.704.4053. 0 +Z1.298.1653.0 + 07.312.4353.0	'=QGCV	7	1
'- XQGFU		FUSE HOLDING TERMINAL 56.704.4053. 0 +Z1.298.1653.0 + 07.312.4353.0	'=QGCV	7	1
'- XQG4	'022.2288	CLOSING PLATE 07.312.7155.0	'=QGCV		1
'- UPC	'022.2810	CONTROLLER MEP 30 SH 282- 332- 422- 452 SXI EVO	'=QGCV	11	1
'- K4	'022.3004	MINI CONTACTOR 9 AMP	'=QGCV	17	1
'- TF2	'025.0604	CONTROL PANEL GASKET	'=QGCV	21	1.4
'- UTA	'031.2030	PROGRAMMING CONSOLLE SXI EVO NEW	'=QGCV	11	1
'- TF1	'031.2622	REPLACE FUSE ADHESIVE SIGN	'=QGCV	21	1
'- R3	'034.1166	KNOB 22 MM F. POTENTIOMETER	'=QGCV	10	1
'- SF1	'047.0182	PRINTED ENVELOPES	'=QGCV	21	1

Pneumatic diagram




CILINDRO DISCESA TESTA
Ø=63 C.=230 S.=35mm
CYLINDER DOWN HEAD
Ø=63 C.=230 S.=35mm
CILINDRO SALITA MORSA VERTICALE
Ø=50 C.=10 S.=25mm
CYLINDER UP VERTICAL
VICE Ø=50 C.=10 S.=25mm
CILINDRO APERTURA MORSA TAGLIO
Ø=125 C.=8 S.=40mm
CYLINDER OPENING VICE
CUT Ø=125 C.=8 S.=40mm
-K29
-K28
-CDT
-CDMT
-CAMT
-GT11
-GT10
-K30
-K32
Tubo FLEX 1/2 3/16
Tubo/Pipe Ø8 x 4000
Tubo/Pipe Ø4 x 4000
Tubo/Pipe Ø4 x 700
Tubo/Pipe Ø4 x 1200
Guaina/Sheath Ø10 x 1000
Guaina/Sheath Ø10 x 600
100.8
TIGER 372 SX Evo
COMPOSIZIONE ELETTROVALVOLE
SOLENID VALVE COMPOSITION
Dis. N. TIGER
CAD SPAC
Nome File TI372SXEVO\2
Data 04/10/2007
Impianto
Denominazione
Ordine
Commessa
Esecutore BARTOLI
FOGLIO 101
ULTIMO 104
REV.
MODIFICA
DATA
FIRME


-PN1
-S14
-RG12
-RG11
-RD6
-RD5
-K30
-SL4
-SL3
-RD2
-RG8
-RG10
-RG9
-RD4
-RD3
-RY1
-RY2
-SL2
-K32
-SL1
-RG7
-RG6
-RD1
-RG3
-RT1
-RG4
-NY2
-NY1
-RP1
-MN2
-RG5
-GTA
-RG2
-MN1
-RG1
-VR1
-IR1
-T1
-T2
-T3
-T4
FOGLIO 102
ULTIMO 104
Ordine
Commessa
Esecutore BARTOLI
Impianto TIGER 372 SX Evo
Denominazione ESPLOSO PANNELLO VALVOLE
EXPLODED PANEL VIEW
Dis. N. TIGER
CAD SPAC
Nome File TI372SXEVO\2
Data 04/10/2007
REV. MODIFICA DATA FIRME

List of components

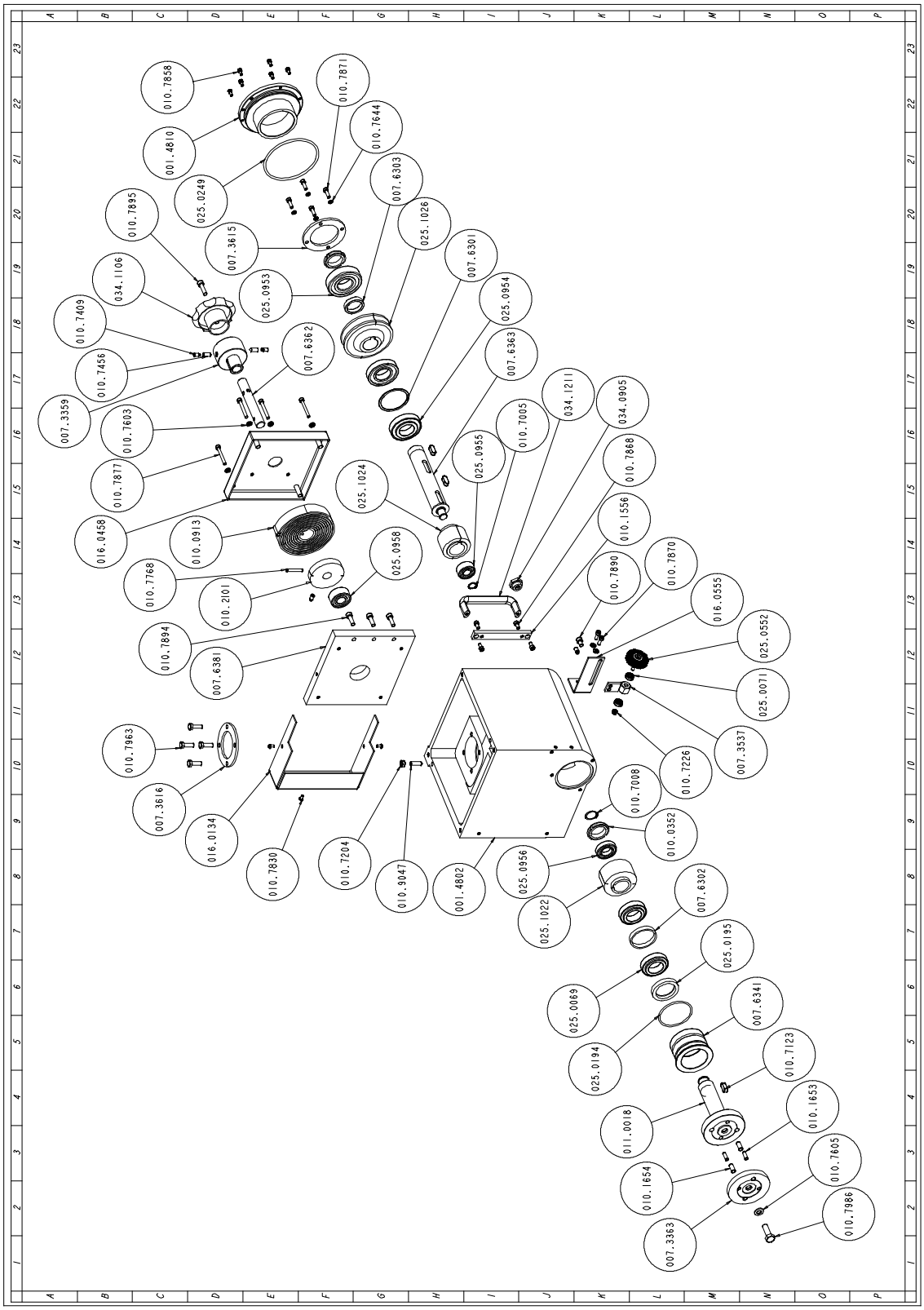
Item	Type	Description	Board	Sh	Q.ty
'- R1	'043.0199	4X1/8 TURNING ELBOW JOINT	'=BMMEP	101	1
'- R2		4X1/8 TURNING ELBOW JOINT	'=BMMEP	101	1
'- R3		4X1/8 TURNING ELBOW JOINT	'=BMMEP	101	1
'- R4		4X1/8 TURNING ELBOW JOINT	'=BMMEP	101	1
'- RG1	'043.0204	8X1/4 - CL 6521 ELBOW COUPLING	'=BMMEP	102	1
'- R5		8X1/4 - CL 6521 ELBOW COUPLING	'=BMMEP	101	1
'- R6		8X1/4 - CL 6521 ELBOW COUPLING	'=BMMEP	101	1
'- RM1	'043.0206	4X1/8 - CL 6511 HEXAGONAL COUPLING	'=BMMEP	101	1
'- RM4		4X1/8 - CL 6511 HEXAGONAL COUPLING	'=BMMEP	101	1
'- RM3		4X1/8 - CL 6511 HEXAGONAL COUPLING	'=BMMEP	101	1
'- RM6		4X1/8 - CL 6511 HEXAGONAL COUPLING	'=BMMEP	101	1
'- RG10	'043.0208	8X1/8 - CL 6521 ELBOW COUPLING	'=BMMEP	102	1
'- RG9		8X1/8 - CL 6521 ELBOW COUPLING	'=BMMEP	102	1
'- RD3	'043.0225	DA 4X8 - CL 6800 REDUCTION	'=BMMEP	102	1
'- RD4		DA 4X8 - CL 6800 REDUCTION	'=BMMEP	102	1
'- RY1	'043.0235	Y BRANCHING 4 MM	'=BMMEP	102	1
'- RY2		Y BRANCHING 4 MM	'=BMMEP	102	1
'- RM2	'043.0281	1/8 M 8/8 - CL 2543 SLEEVE	'=BMMEP	101	1
'- RM5		1/8 M 8/8 - CL 2543 SLEEVE	'=BMMEP	101	1
'- IR1	'043.0290	1/4 QUICK COUPLING	'=BMMEP	100	1
'- T3	'043.0301	8X6 BLACK RILSAN HOSE	'=BMMEP	102	8
'- T4	'043.0302	4X2.7 BLACK RILSAN HOSE	'=BMMEP	102	12
'- VR1	'043.0601	VMS 114- 1/4 08 VALVE	'=BMMEP	100	1
'- GT10	'022.0181	COVERING MM 10	'=BMMEP	101	0.6
'- GT11		COVERING MM 11	'=BMMEP	101	1
'- PN1	'034.0747	PNEUMATIC PANEL TI 350 SX	'=PPCV	102	1
'- S14	'043.0143	PS1P1091 PNEUMATIC PRESSURE SWITCH	'=PPCV	100	1
'- RG3	'043.0198	4X1/4 TURNING ELBOW JOINT	'=PPCV	102	1
'- RG2	'043.0204	8X1/4 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG4		8X1/4 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG5		8X1/4 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG7	'043.0208	8X1/8 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG8		8X1/8 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG12		8X1/8 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RG11		8X1/8 - CL 6521 ELBOW COUPLING	'=PPCV	102	1
'- RT1	'043.0222	CL 2033 1/4 CROSS JOINT	'=PPCV	102	1
'- RD1	'043.0231	1/8- 1/8 MF CL 2520 REDUCTION	'=PPCV	102	1
'- RD2		1/8- 1/8 MF CL 2520 REDUCTION	'=PPCV	102	1
'- RD5		1/8- 1/8 MF CL 2520 REDUCTION	'=PPCV	102	1
'- RD6		1/8- 1/8 MF CL 2520 REDUCTION	'=PPCV	102	1
'- RG6	'043.0251	M.F. ELBOW RLA 8 - 1/8 - CL 2020	'=PPCV	102	1
'- NY1	'043.0275	A2- 1/4 - CL 2500 CONICAL NIPPLE	'=PPCV	102	1
'- NY2		A2- 1/4 - CL 2500 CONICAL NIPPLE	'=PPCV	102	1
'- T1	'043.0301	8X6 BLACK RILSAN HOSE	'=PPCV	102	0.5
'- T2	'043.0302	4X2.7 BLACK RILSAN HOSE	'=PPCV	102	0.5
'- MN1	'043.0552	MANOMETER 0 40	'=PPCV	102	1
'- MN2		MANOMETER 0 41	'=PPCV	102	1

Item	Type	Description	Board	Sh	Q.ty
'- GTA	'043.0564	FR 1/4 20- 08	'=PPCV	100	1
'- RP1	'043.0580	MR 1/4 O- 8 REGULATOR	'=PPCV	100	1
'- K30	043.0608 + 022.580	5 WAY 1/8 PVLB111618 PARKER VALVE + COIL 24VAC	'=PPCV	101	1
'- K32		6 WAY 1/8 PVLB111618 PARKER VALVE + COIL 24VAC	'=PPCV	101	1
'- SL2	043.0202	1/8" G BRASS SILENCER	'=PPCV	102	1
'- SL3		1/8" G BRASS SILENCER	'=PPCV	102	1
'- SL4		1/8" G BRASS SILENCER	'=PPCV	102	1
'- SL1		1/8" G BRASS SILENCER	'=PPCV	102	1

Exploded views

This part of the manual contains detailed exploded views of the machine which can help to gain a deeper knowledge of how it is made.

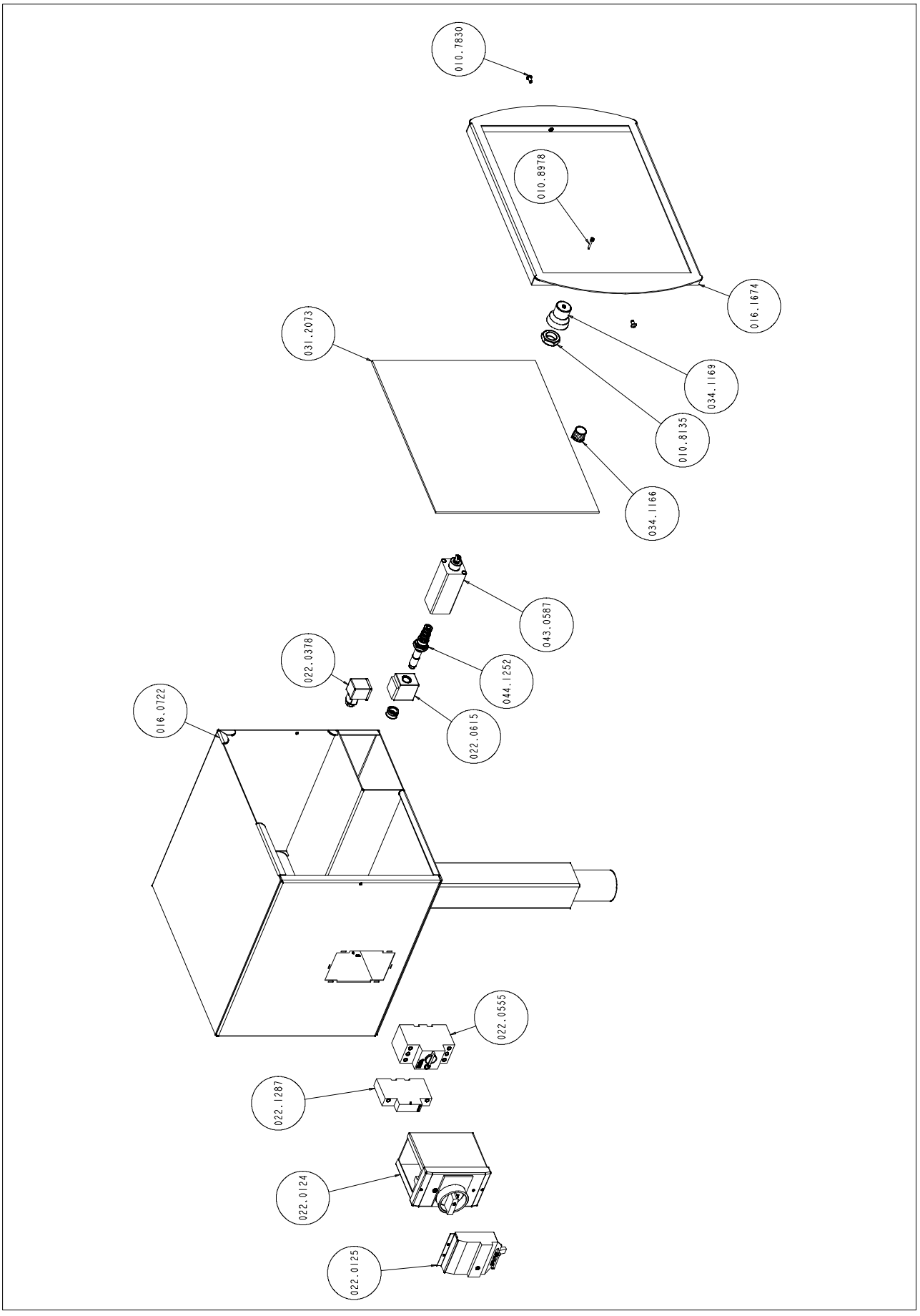
Head unit



Code	Description	Description	Quantity
001.4802	TESTA OPERATRICE	GEAR BOX TI 370 CNC	1,000
001.4810	FLANGIA SECONDO STADIO	FLANGE TI 370 CNC	1,000
007.3363	FLANGIA ESTERNA	OUTER FLANGE TI 350 - 370 0 98	1,000
007.3359	BOCCOLA RIPRESA CORSA	BUSHING TI 350	1,000
007.3537	PIASTRINO PULILAMA COMPLETO	BLADE BRUSH CLEANER SUPPORT	1,000
007.3615	GHIERA SECONDO STADIO TI 370 CNCFE	SECOND STAGE RING NUT TI 370 CNCFE	1,000
007.3616	GHIERA FIX CUSCINETTO	RING NUT CN- TI 350- SH 280*320	1,000
007.6301	DISTANZIALE SECONDO STADIO TI370CNC	SECOND STAGE SPACER TI 370 CNCFE	1,000
007.6302	DISTANZIALE IØ STADIO TI 370 CNCFE	FIRST STAGE SPACER TI 370 CNCFE	1,000
007.6303	DISTANZIALE CORONA II STADIO TI 370	SECOND STAGE BRONZE SPACER TI 370	1,000
007.6341	TAMPONE IØ STADIO RIDUZIONE	FIRST STAGE PAD TI 370	1,000
007.6362	ALBERO MOVIMENTO TESTA TI 370 CNCFE	HEAD MOVEMENT SHAFT TI 370 CNCFE	1,000
007.6363	ALBERO D.35 IIØ STADIO TI 370 CNCFE	SECOND STAGE SHAFT D.35 TI 370 CNCFE	1,000
007.6381	FLANGIA PORTAMOLLA RICHIAMO TESTA	SPRING HOLDER FLANGE TI 370 CNC	1,000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5	SELF- LOCKING RING NUT 35X1,5	2,000
010.0913	MOLLA SOLLEVAMENTO TESTA	HEAD SPRING TI 350/370	1,000
010.1201	VITERIA E BULLONERIA	SCREWS AND BOLTS	5,000
010.1556	STAFFA FISSAGGIO MANIGLIA TESTA	GEAR BOX HANDLE FIX BRACKET TI 370 CNC	1,000
010.1653	PERNO FLANGIA	FLANGE PIN 0 7 X 22	2,000
010.1654	PERNO FLANGIA	FLANGE PIN 0 9 X 19	2,000
010.2101	RUOTA SOLLEVAMENTO TESTA	HEAD LIFTING WHEEL TI 350	1,000
010.7005	ANELLO SEEGER DIAM. 17	0 17 SEEGER RING (010.7005)	1,000
010.7008	ANELLO SEEGER DIAM. 25	0 25 SEEGER RING (010.7008)	1,000
010.7123	CHIAVETTA 10 X 8 X 25	10 X 8 X 25 KEY	3,000
010.7204	DADO M8	M8 SCREW NUT (010.7204)	1,000
010.7226	DADO AUTOBLOCCANTE M6	M6 SELF- LOCKING SCREW NUT	1,000
010.7409	GRANO VCE P.CIL. 8 X 10	8 X 10 CYLIND.POINT VCE GRUB SCREW	4,000
010.7456	GRANO VCE P.CON. 8 X 16	8 X 16 CONICAL POINT VCE GRUB SCREW	2,000
010.7603	RONDELLA DIAM. 6	0 6 WASHER (010.7603)	6,000
010.7605	RONDELLA DIAM. 10	0 10 WASHER (010.7605)	1,000
010.7768	SPINA ELASTICA DIAM. 6 X 40	ELASTIC PIN DIAM. 6 X 40	1,000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW (010.7830)	3,000
010.7858	VITE TCEI 5 X 10	TCEI 5 X 10 SCREW	6,000
010.7868	VITE TCEI 6 X 12	TCEI 6 X 12 SCREW	4,000
010.7870	VITE TCEI 6 X 16	TCEI 6 X 16 SCREW (010.7870)	2,000
010.7871	VITE TCEI 6 X 20	TCEI 6 X 20 SCREW (010.7871)	4,000
010.7877	VITE TCEI 6 X 45	TCEI 6 X 45 SCREW	4,000
010.7890	VITE TCEI 8 X 12	TCEI 8 X 12 SCREW (010.7890)	1,000
010.7894	VITE TCEI 8 X 25	TCEI 8 X 25 SCREW (010.7894)	3,000
010.7895	VITE TCEI 8 X 30	TCEI 8 X 30 SCREW	1,000
010.7963	VITE TE 8 X 25	TE 8 X 25 SCREW (010.7963)	4,000
010.7986	VITE TE 12 X 35	TE 12 X 35 SCREW (010.7986)	1,000
011.0018	.ALBERO PORTADISCO TI 370	BLADE SHAFT TI 370	1,000
016.0134	CARTER RUOTA SOLLEVAMENTO TESTA DI	GEAR BOX WHEEL COVER TI 370 CNCFE	1,000
016.0458	COPERCHIO MOLLA	SPRING COVER TI 350/370	1,000
016.0555	GUIDA SPAZZOLA PULILAMA TI 370 SX	BAND BRUSH GUIDE TI 370 SX	1,000
025.0069	CUSCINETTO 32007X	BEARING 32007X	2,000
025.0071	CUSCINETTO 626 2RS	BEARING 626 2RS	2,000
025.0195	ANELLO TENUTA 62X45X10 G VITON	45X62X10 G VITON CLAMPING RING	1,000
025.0194	ANELLO TENUTA OR 176 G VITON	176 G VITON OR CLAMPING RING	1,000
025.0249	ANELLO TENUTA OR 201- 2- 351	O RING 201- 2- 351	1,000
025.0552	SPAZZOLA PULILAMA 6X25 030 GG53	BAND BRUSH 6X25 030 SHARK	1,000
025.0953	CUSCINETTO 6307	BEARING 6307	1,000
025.0954	CUSCINETTO 30207	BEARING 30207	2,000
025.0955	CUSCINETTO 3203	BEARING 3203	1,000
025.0956	CUSCINETTO 6005	BEARING 6005	1,000
025.0958	CUSCINETTO 3204 A 2RS	BEARING 3204 A 2RS	1,000
025.1022	RUOTA ELIC.CILINDR.ALBERO MANDRINO	SPINDLE WHEEL TI 370 CNCFE	1,000
025.1024	RUOTA ELICOIDALE CILINDR.IIØSTADIO	HELICOIDAL WHEEL TI 370 CNCFE	1,000

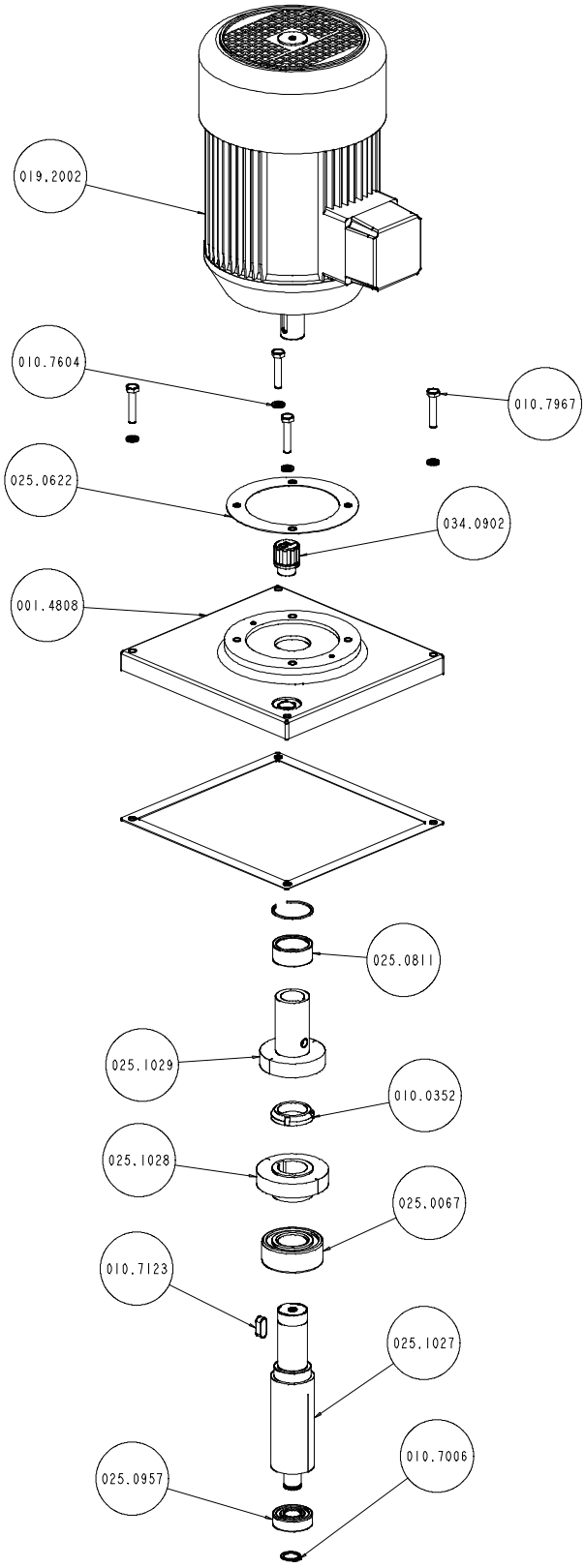
Code	Description	Description	Quantity
025.1026	CORONA ELICOIDALE Z 20 MN 5	BRONZE GEAR Z 20 MN 5 TI 370	1,000
034.0905	TAPPO OLIO TAO/3 1/2" NERO	TAO/3 1/2" BLACK OIL CAP	1,000
034.1106	VOLANTINO DIAM.100 A 6 LOBI	O 100/6 LOBE HANDWHEEL TIGER	1,000
034.1211	MANIGLIA GN- 565- 20- 128.SW	GN- 565- 20- 128.SW HANDLE	1,000

Control panel



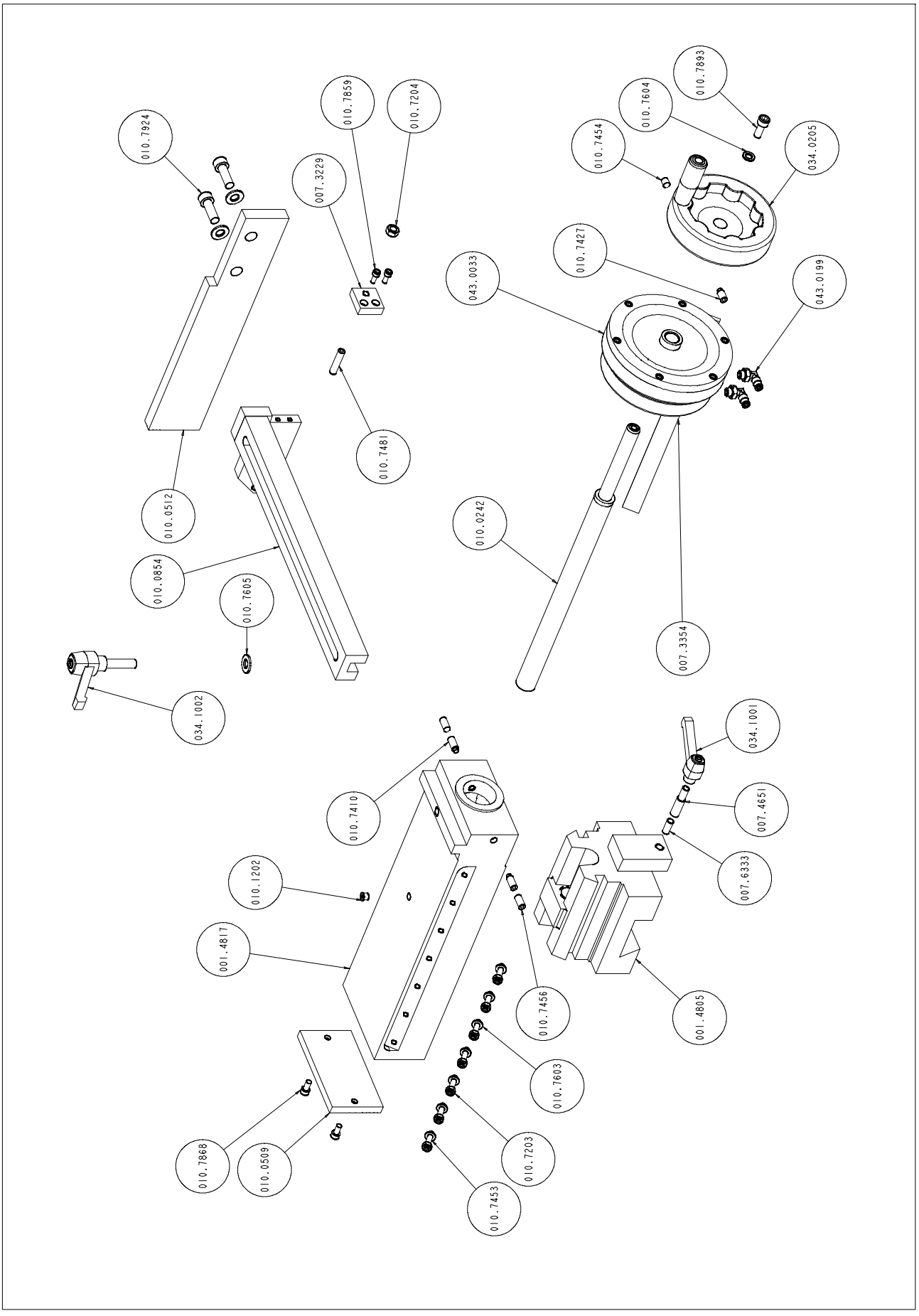
Code	Description	Description	Quantity
010.7830	VITE BUTON 5X10	5 X 10 BUTON SCREW (010.7830)	4.000
010.8135	DADO M20 BASSO	M20 LOW NUT	1.000
010.8978	VITE TCEI 3X20	3X20 TCEI SCREW	1.000
016.0722	QUADRO COMANDI	CONTROL PANEL TI 352 - 372 SX	1.000
022.0124	CUSTODIA ISOLANTE E- PKZO- GR	HOUSING W.RED HANDLE	1.000
022.0125	BLOCCO LUCCHETTABILE SBV- PKZO- E	LOCKABLE BLOCK	1.000
022.1287	INTERRUTORE PKZM0- 10	SWITCH PKZM0- 10 (THERMAL)	1.000
034.1169	MANOPOLA DI REGOLAZIONE MONOGIRO	FEED RATE KNOB (W/ SEMICIRCLE HOLE)	1.000
043.0587	REGOLATORE DISCESA TESTA	HEAD DOWN STROKE REGULATOR	1.000
044.1252	VALVOLA RIGENERATRICE CILINDRO	CYLINDER REGENERATING VALVE	1.000
022.0555	SGANCIATORE U- PKZ0 V.400.50 COD.73138	RELEASER U- PKZ0 V.400.50	1.000
022.0378	CONNETTORE V.1406 X BOBINA RAC VALVO-LA	CONNECTOR F.REGENERATOR VALVE COIL	1.000
022.0615	BOBINA V24 RAC X VALVOLA RIGENERATRI-CE	COIL X CYLINDER VALVE	1.000
031.2073	CONSOLLE DI PROGRAMMAZIONE	PROGRAMMING CONSOLLE	1.000
016.1674	CORNICE QUADRO COMANDI	CONSOLE FRAME	1.000
034.1166	MANOPOLA X COMANDO POTENZIOM.22 MM.	KNOB 22 MM F. POTENTIOMETER	1.000

Motor assembly



Code	Description	Description	Quantity
001.4808	FLANGIA MOTORE VERTICALE	VERTICAL MOTOR FLANGE	1,000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5	SELF- LOCKING RING NUT 35X1,5	1,000
010.7006	ANELLO SEEGER DIAM. 20	0 20 SEEGER RING	1,000
010.7123	CHIAVETTA 10 X 8 X 25	10 X 8 X 25 KEY	1,000
010.7604	RONDELLA DIAM. 8	0 8 WASHER (010.7604)	4,000
010.7967	VITE TE 8 X 40	TE 8 X 40 SCREW	4,000
019.2002	KW 2,6/1,84 8/4P.C112 B.14 V.380	KW 4 4P.B.14 GR112 S6 60% V.230- 400/240-	1,000
025.0067	CUSCINETTO 3207	BEARING 3207	1,000
025.0811	BOCCOLA A RULLINI DHK 4020 HK	ROLLER BUSHING DHK 4020 HK	1,000
025.0957	CUSCINETTO 6204	BEARING 6204	1,000
025.1027	VITE SENZA FINE MN 5	WORM SCREW MN 5	1,000
025.1028	RUOTA ELIC.CIL.VITE S/F CONDOTTA	HELICOIDAL WHEEL Z 39 MN 2	1,000
025.1029	RUOTA ELIC.CIL.ELBERO MOTORE PIGN.	HELICOIDAL WHEEL Z 35 MN 2	1,000
034.0902	TAPPO OLIO CENTRALINA IDRAULICA	”SFP 1/2”” RED OIL CAP”	1,000
025.0622	GUARNIZIONE MOTORE CN 275- 350	MOTOR GASKET CN 275- 350	1,000

Vice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010.1202
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001.4805
010.7603
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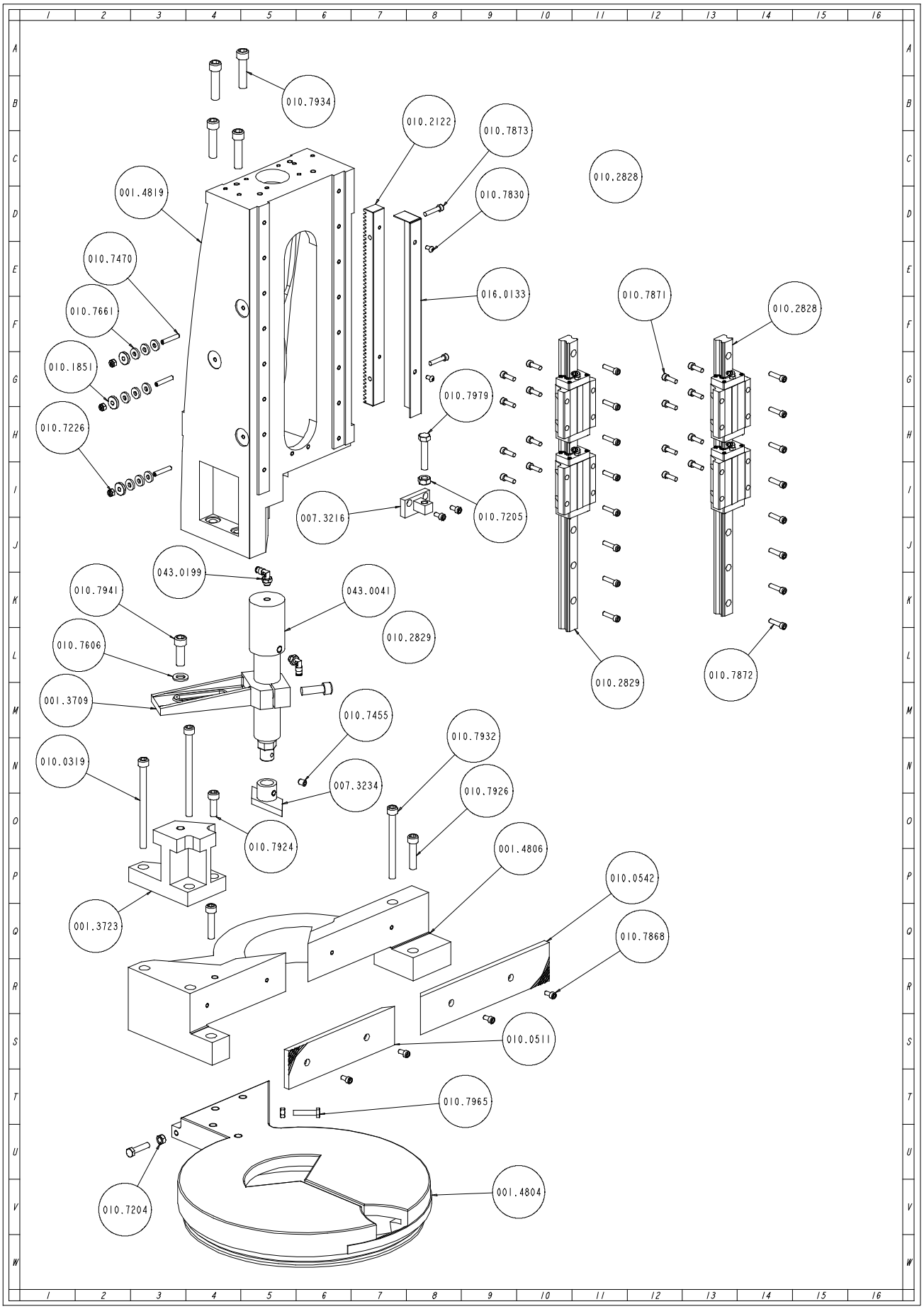
010.0509
010.7203
010.7453

Code	Description	Description	Quantity
001.4805	SUPPORTO MORSA M.1755	VICE SUPPORT TI 370 CNC	1,000
001.4817	.SCORREVOLE MORSA TI 370 SX	VICE BACK STOP TI 370 SX	1,000
007.3229	TASSELLO X BATTUTA SCORR. ANTIBAVA	FIXING PLATE TI- FC	1,000
007.3354	LARDONE MORSA	VICE GIB TI 350	1,000
007.4651	GRANO BLOC PIANO GIREVOLE	LOCKING GRUB SCREW SH 200- CB330- 450	1,000
007.6333	PERNO BLOCCAGGIO MORSA TI 370	VICE LOCKING PIN TI 370	1,000
010.0242	VITE MORSA	VICE SCREW 420X24 TI350MA- SX- AX	1,000
010.0509	GANASCIA MORSA	VICE JAW TI 350 N.S.	1,000
010.0512	GANASCIA ANTIBAVA	ANTI BURR JAW TI 350	1,000
010.0854	SUPPORTO SCORREVOLE GANASCIA ANTI-	SIDING ANTIBURR JAW SUPPORT	1,000
010.1201	VITERIA E BULLONERIA	SCREWS AND BOLTS	1,000
010.7203	DADO M6	M6 SCREW NUT (010.7203)	7,000
010.7204	DADO M8	M8 SCREW NUT (010.7204)	1,000
010.7410	GRANO VCE P.CIL. 8 X 16	8 X 16 CYLIND.POINT VCE GRUB SCREW	2,000
010.7427	GRANO VCE P.CIL. 8 X 12	8 X 12 CYLIND.POINT VCE GRUB SCREW	1,000
010.7453	GRANO VCE P.CON. 6 X 30	6 X 30 CONICAL POINT VCE GRUB SCREW	7,000
010.7454	GRANO VCE P.CON. 8 X 8	8 X 8 CONICAL POINT VCE GRUB SCREW	1,000
010.7456	GRANO VCE P.CON. 8 X 16	8 X 16 CONICAL POINT VCE GRUB SCREW	2,000
010.7481	GRANO VCE PUNTA PIANA 8 X 35	8X35 FLAT POINT VCE GRUB SCREW	1,000
010.7603	RONDELLA DIAM. 6	0 6 WASHER (010.7603)	7,000
010.7604	RONDELLA DIAM. 8	0 8 WASHER (010.7604)	1,000
010.7605	RONDELLA DIAM. 10	0 10 WASHER (010.7605)	3,000
010.7859	VITE TCEI 5 X 12	TCEI 5 X 12 SCREW (010.7859)	2,000
010.7868	VITE TCEI 6 X 12	TCEI 6 X 12 SCREW	2,000
010.7893	VITE TCEI 8 X 20	TCEI 8 X 20 SCREW (010.7893)	3,000
010.7924	VITE TCEI 10 X 30	TCEI 10 X 30 SCREW (010.7924)	2,000
034.0205	VOLANTINO MORSA	VPRA/125 HANDWHEEL SH + PH	1,000
034.1001	LEVA A SCATTO 8 MA	LEVER 8 MA PK55	1,000
034.1002	LEVA A SCATTO 10 MA	LEVER 10 MA	1,000
043.0033	CILINDRO VOLAMPRESS 125- 8	AIR CYLINDER 125- 8	1,000
043.0199	ATTACCO A GOMITO GIREV.4X1/8 CL6521	4X1/8 TURNING ELBOW JOINT	2,000

Turntable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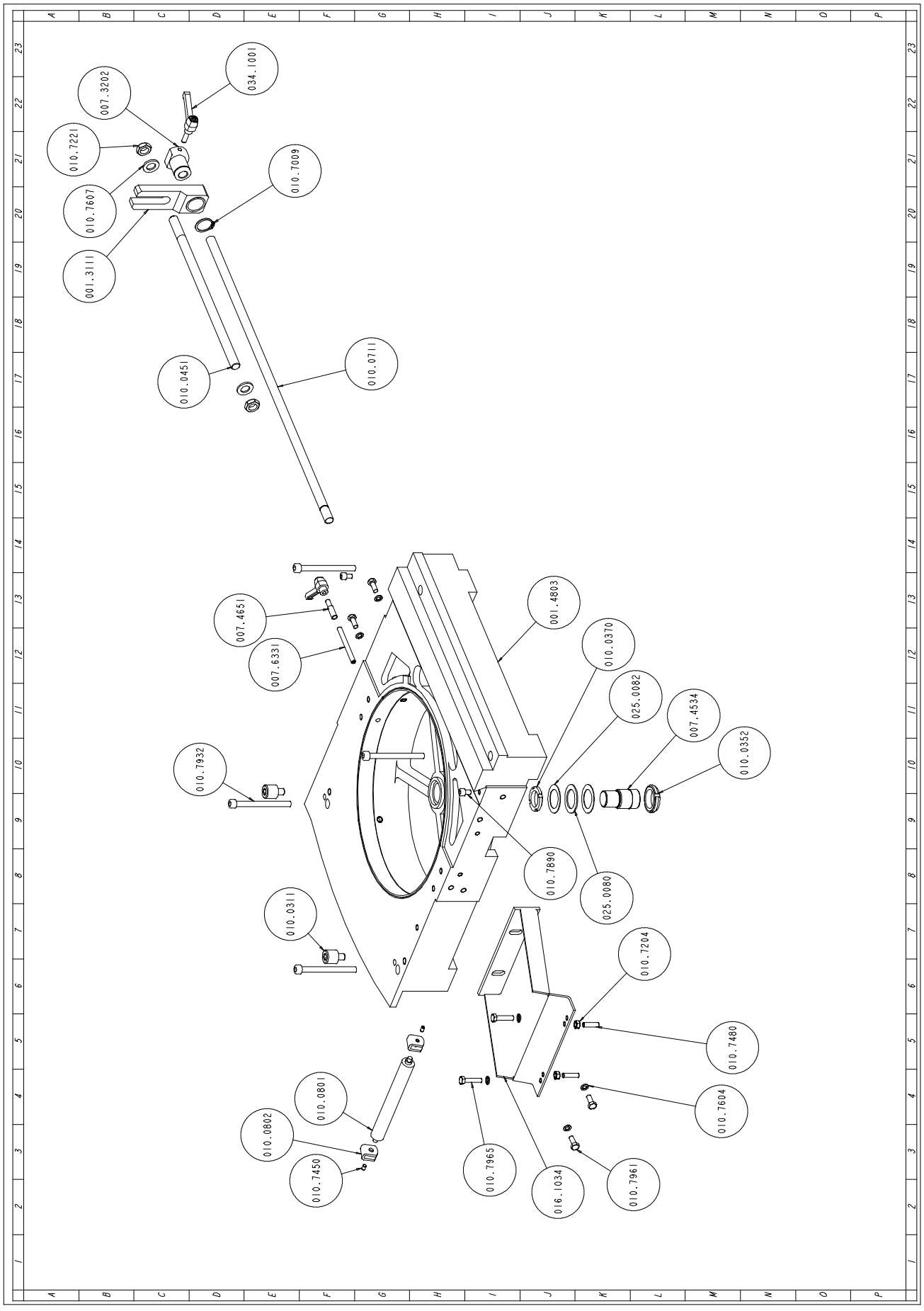
010.0542
001.3723
010.7868
010.0511
010.7965
010.7204
001.4804

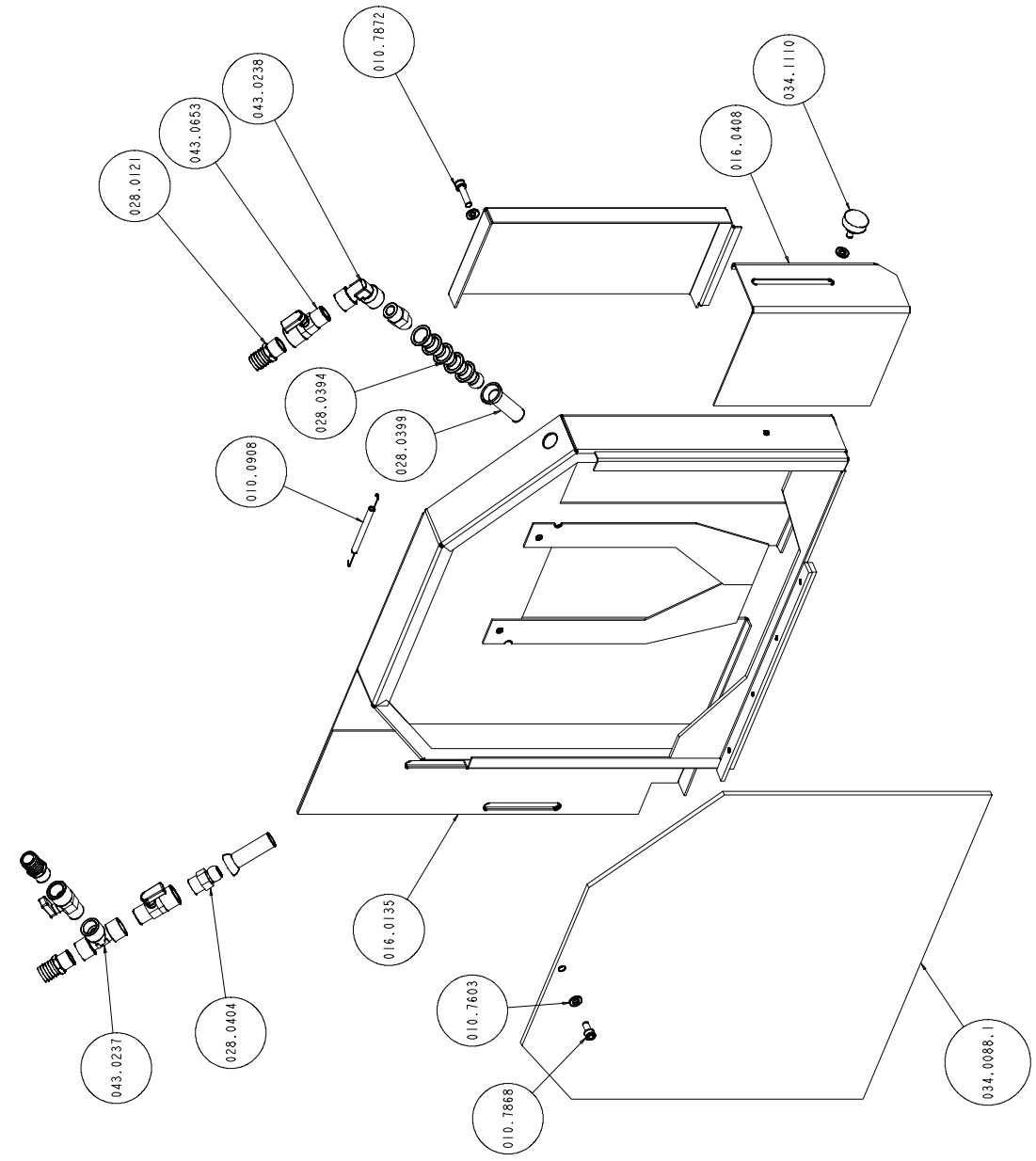
Code	Description	Description	Quantity
001.4804	PIATTAFORMA ROTANTE	ROTATING PLATFORM	1.000
001.4819	COLONNA PORTANTE	SUP.COLLUM	1.000
010.7934	VITE TCEI 12 X 50	TCEI 12 X 50 SCREW	4.000
010.2122	CREMAGLIERA TI 370 CNCFE	RACK TI 370 CNCFE	1.000
010.7873	VITE TCEI 6 X 30	TCEI 6 X 30 SCREW	2.000
016.0133	CARTER CREMAGLIERA SOLLEVAMENTO TE-STA	RACK COVER TI 370 CNC	1.000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW (010.7830)	2.000
010.7204	DADO M8	M8 SCREW NUT (010.7204)	2.000
010.7965	VITE TE 8 X 35	TE 8 X 35 SCREW (010.7965)	2.000
001.4806	SQUADRO MORSA TI 370 CNC	VICE BACK STOP TI 370 CNC	1.000
010.7926	VITE TCEI 10 X 45	TCEI 10 X 45 SCREW	2.000
010.7932	VITE TCEI 10 X 110	TCEI 10 X 110 SCREW (010.7932)	1.000
001.3723	SUPPORTO CILINDRO SUPPLEMENTARE	SUPPORT TI 350 SX- AX- CNC	1.000
010.0319	VITE 8.8 TESTA CILINDRICA ESAGONO IN-CASSATO 10X140 TI	SCREW 8.8 10X140 TI	2.000
010.7924	VITE TCEI 10 X 30	TCEI 10 X 30 SCREW (010.7924)	1.000
010.0542	GANASCIA MORSA DESTRA TI 370	RIGHT VICE JAW TI 370	1.000
010.0511	GANASCIA MORSA SINISTRA TI 350	LEFT VICE JAW TI 350	1.000
010.7868	VITE TCEI 6 X 12 (010.7868)	TCEI 6 X 12 SCREW	6.000
001.3709	STAFFA BLOCCAGGIO CILINDRO SUPPLE-MENTARE	BRACKET TI- CB 330- 400- 450 MOD.706	1.000
010.7606	RONDELLA 0 12	0 12 WASHER (010.7606)	1.000
010.7941	VITE TCEI 12 X 35	TCEI 12 X 35 SCREW	2.000
043.0041	CILINDRO MORSE 50X10 0 40 L.150 DOP-PIOEFFETTO	50X10 DOUBLE EFFECT VICE CYLINDER	1.000
043.0199	ATTACCO A GOMITO GIREVOLE 4X1/8 CL 6521	4X1/8 TURNING ELBOW JOINT	2.000
007.3234	BOCCOLA GANASCIA X CILINDRO SUPPLE MENTARE	JAW BUSHING TI- CB	1.000
010.7455	GRANO VCE PUNTA CONICA 8 X 10	8 X 10 CONICAL POINT VCE GRUB SCREW	1.000
010.7470	GRANO VCE PUNTA PIANA 6 X 35	6X35 FLAT POINT VCE GRUB SCREW	3.000
010.7661	RONDELLA SPESSORE DIAM. 6 X 3	THICKNESS WASHER DIAM. 6X3 (010.7661)	9.000
010.1851	BOCCOLA PER CARTER DISCO TI O 20	BLADE COVER BUSHING TI 0 20	3.000
010.7226	DADO AUTOBLOCCANTE M6 (010.7226)	M6 SELF- LOCKING SCREW NUT	3.000
010.2828	GUIDA PATTINO HGW25- HC- 2- R0465- E30_ ZB- H	SLIDE GUIDE HGW25- HC- 2- R0465- E30_ ZB- H	1.000
010.2829	GUIDA PATTINO HGW25- HC- 2- R0490- E30_ ZB- H	SLIDE GUIDE HGW25- HC- 2- R0490- E30_ZB- H	1.000
010.7872	VITE TCEI 6 X 25 (010.7872)	TCEI 6 X 25 SCREW (010.7872)	16.000
010.7871	VITE TCEI 6 X 20 (010.7871)	TCEI 6 X 20 SCREW (010.7871)	16.000
007.3218	BATTUTA FINECORSA TESTA IN BASSO	LIMIT SWITCH STOP TI370- TI372- TI402	1.000
010.7979	VITE TE 10 X 50	TE 10 X 50 SCREW	1.000
010.7205	DADO M10	M10 SCREW NUT (010.7205)	1.000

Fix plattform assembly



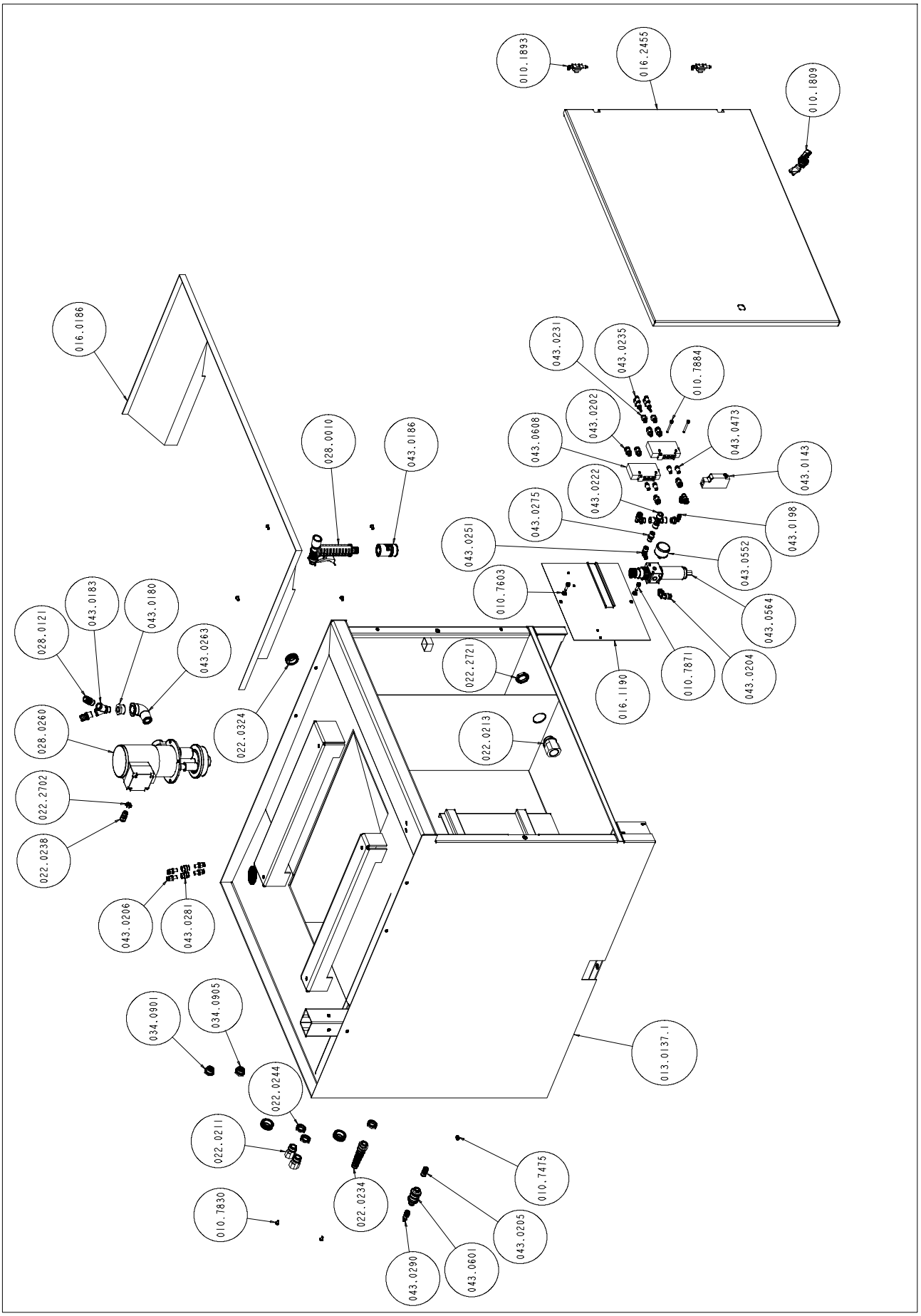
Code	Description	Description	Quantity
001.3111	DISTANZIALE BATTUTA	STOP SPACER	1,000
001.4803	PIATTAFORMA	FIXED PLATFORM	1,000
007.3202	BOCCOLA X BATTUTA	BUSHING FOR STOP	1,000
007.4534	PERNO DI CENTRO	CENTRE PIN	1,000
007.4651	GRANO BLOCCAGGIO PIANO ROTANTE	LOCKING GRUB SCREW	1,000
007.6331	PERNO BLOCCAGGIO PIANO GIREVOLE	ROTATING TABLE LOCKING PIN TI 370	1,000
010.0311	VITE TCEI M12X16 BATT.PIANO GIREVO.	SCREW M12X16 ROTATING TABLE STOP	2,000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5	SELF- LOCKING RING NUT 35X1,5	1,000
010.0370	GHIERA 5S 30X1,5	RING NUT 5S 30X1,5	1,000
010.0451	TIRANTE BATTUTA TAGLI MISURA	CUT TO MEASURE STOP TIE ROD	1,000
010.0711	ASTA MILLIM.CROMATA MM.600 FIL. M16	MM SCALE 6000	1,000
010.0801	RULLO TIPO	ROLLER 304011 0 24	1,000
010.0802	SUPPORTO PER RULLO	ROLLER SUPPORT	2,000
010.1201	VITERIA E BULLONERIA	SCREWS AND BOLTS	1,000
010.7009	ANELLO SEEGER DIAM. 30	0 30 SEEGER RING	1,000
010.7204	DADO M8	M8 SCREW NUT	2,000
010.7221	DADO M16 BASSO	M16 LOW SCREW NUT	2,000
010.7450	GRANO VCE P.CIL. 6 X 6	6 X 6 CYLINDRICAL POINT VCE GRUB	2,000
010.7480	GRANO VCE PUNTA PIANA 8 X 30	8 X 30 FLAT POINT VCE GRUB SCREW	2,000
010.7481	GRANO VCE PUNTA PIANA 8 X 35	8X35 FLAT POINT VCE GRUB SCREW (010.7481	1,000
010.7604	RONDELLA DIAM. 8	0 8 WASHER	6,000
010.7607	RONDELLA DIAM. 16	0 16 WASHER	2,000
010.7890	VITE TCEI 8 X 12	TCEI 8 X 12 SCREW	2,000
010.7932	VITE TCEI 10 X 110	TCEI 10 X 110 SCREW	4,000
010.7961	VITE TE 8 X 20	TE 8 X 20 SCREW	4,000
010.7965	VITE TE 8 X 35	TE 8 X 35 SCREW	2,000
016.1034	BRACCETTO APPOGGIA BARRA	BAR SUPPORT ARM	1,000
025.0080	GABBIA ASSIALE A RULLINI AXK 3552	AXIAL CAGE WITH ROLLERS AXK 3552	1,000
025.0082	RALLA AS 3552	CENTER PLATE AS 3552	2,000
034.1001	LEVA A SCATTO 8 MA PK55	LEVER 8 MA PK55	2,000

Blade guard unit



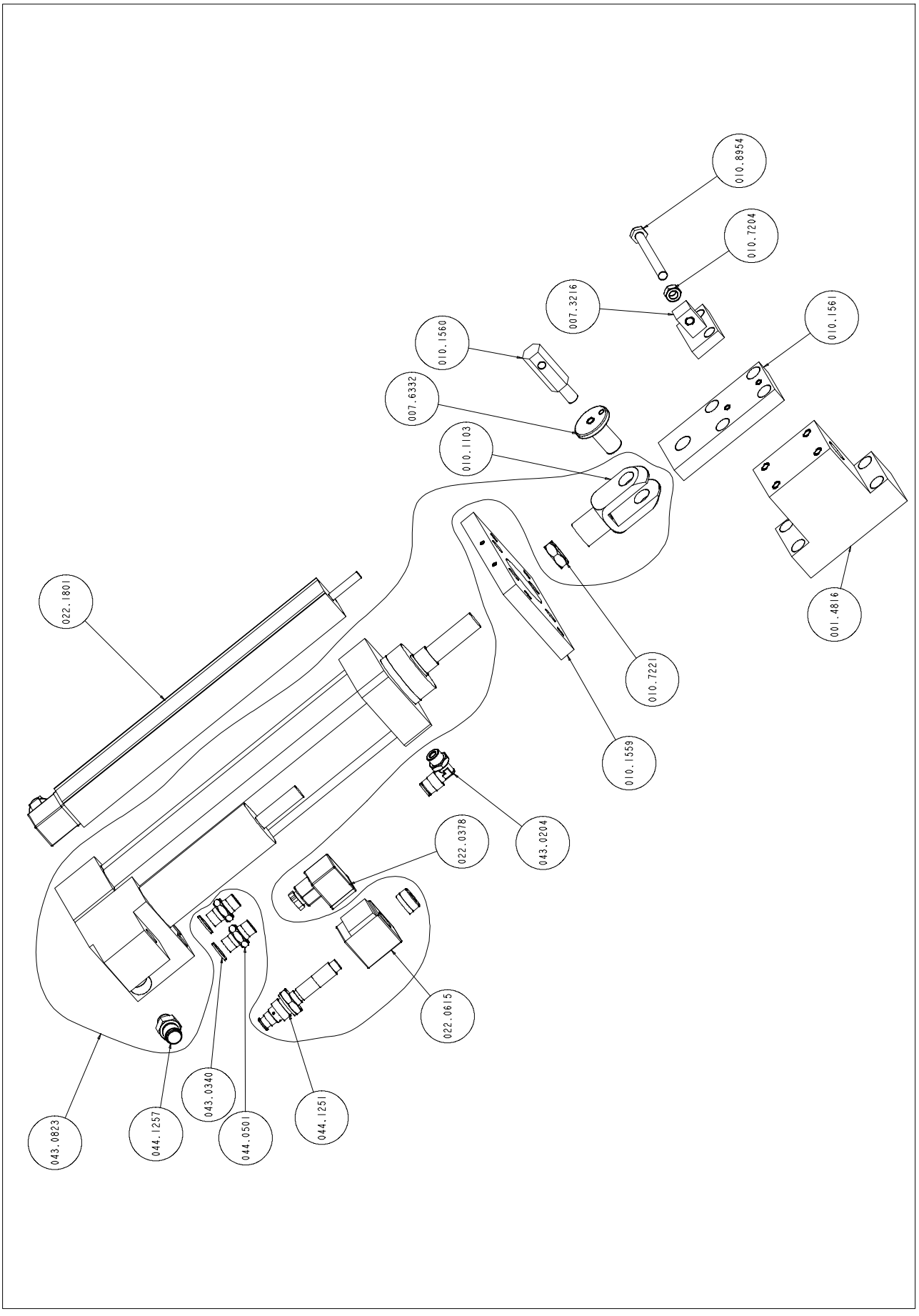
Code	Description	Description	Quantity
010.0908	MOLLA CARTER DISCO	BLADE COVER SPRING	1,000
010.7603	RONDELLA DIAM. 6	0 6 WASHER	3,000
010.7868	VITE TCEI 6 X 12	TCEI 6 X 12 SCREW	1,000
010.7872	VITE TCEI 6 X 25	TCEI 6 X 25 SCREW	1,000
016.0135	CARTER DISCO TI 370 SX	BLADE GUARD	1,000
016.0408	PARASCHIZZI ANTERIORE TI 370 SX	FRONT SPLASH SHIELD	1,000
028.0121	RACCORDO 3/8- 17 CL 2601	JOINT 3/8- 17 CL 2601	3,000
028.0394	TUBO LOOC LINE 1/2 ART. 59861	LOOC LINE HOSE 1/2	1,000
028.0399	UGELLO 0 12,7 - 1/2 ART. 59863	NOZZLE 0 12,7 - 1/2	2,000
028.0404	RACCORDO 3/8 NPT LOOC LINE 1/2	FITTING 3/8 NPT	2,000
034.0088.1	PROTEZIONE LEXAN CARTER LAMA	BLADE GUARD	1,000
034.1110	VOLANTINO DIAM.30 M6 X 10	O 30 M6 X 10 HANDWHEEL	1,000
043.0237	RACCORDO A T FFF 3/8	3/8 T JOINT	1,000
043.0238	RACCORDO A GOMITO FF 3/8	3/8 ELBOW JOINT	1,000
043.0653	RUBINETTO M/F 3/8 CL 6310	M/F 3/8 CL 6310 TAP	3,000

Base assembly



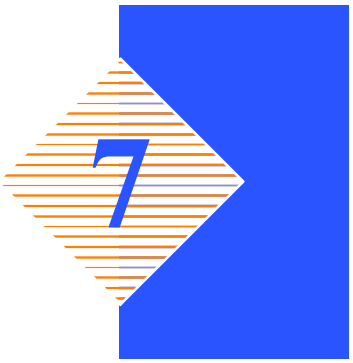
Code	Description	Description	Quantity
010.7603	RONDELLA DIAM. 6	0 6 WASHER (010.7603)	2,000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW (010.7830)	6,000
010.7871	VITE TCEI 6 X 12	TCEI 6 X 20 SCREW (010.7871)	2,000
013.0137.1	PIEDISTALLO TI 372 SX EVO	STEEL BASE TI 372 SX EVO	1,000
016.0186	RACCOGLITORE ACQUA TI 370 SX	WATER COLLECTOR TI 370 SX	1,000
022.0211	RACCORDO RAPIDO SEM PG 13,5	RAPID JOINT SEM PG 13,5	2,000
022.0213	RACCORDO RAPIDO SEM PG 21	RAPID JOINT SEM PG 21	1,000
022.0234	PRESSACORDONE 3246 NERO PG 13,5	CORD PRESSER	1,000
022.0244	CONTRODADO 3217B GRIGIO PG 13	LOCK NUT 3217B GREY PG 13,5	3,000
022.0324	PASSACAVI 24 INC.MM.2.5	FAIRLEADS 24 INC.M M.2.5	2,000
022.2721	CONTRODADO PG 21	LOCK NUT PG 21	1,000
028.0010	PISTOLA	COOLANT PISTOL SH- TI 8966	1,000
028.0121	RACCORDO 3/8- 17 CL 2601	JOINT 3/8- 17 CL 2601	2,000
028.0260	ELETTROPOMPA	ELECTROPUMP 230- 400.50 HZ SPV33	1,000
034.0901	TAPPO LIVELLO OLIO 1/2 ”GAS.	1/2” GAS. OIL LEVEL CAP	1,000
034.0905	TAPPO OLIO TAO/3 1/2” NERO	TAO/3 1/2” BLACK OIL CAP	1,000
043.0143	PRESSOSTATO PNEUM.PS1P1091	PS1P1091 PNEUMATIC PRESSURE SWITCH	1,000
043.0183	RACCORDO A Y 90Ø MASCHIO 3/8	Y MALE JOINT 3/8	1,000
043.0186	RACCORDO FEMMINA 1/2 AQUASTOP	1/2 WATERASTOP FEMALE JOINT	1,000
043.0198	ATTACCO A GOMITO GIREV.4X1/4 CL6521	4X1/4 TURNING ELBOW JOINT	1,000
043.0202	ATTACCO A ESAGONO 8X1/8 - CL 6511	8X1/8 - CL 6511 HEXAGONAL COUPLING	4,000
043.0204	ATTACCO A GOMITO 8X1/4 - CL 6521	8X1/4 - CL 6521 ELBOW COUPLING	3,000
043.0205	ATTACCO A ESAGONO 8X1/4 - CL 6510	8X1/4 - CL 6510 HEXAGONAL COUPLING	1,000
043.0206	ATTACCO A ESAGONO 4X1/8 - CL 6511	4X1/8 - CL 6511 HEXAGONAL COUPLING	4,000
043.0222	RACCORDO A CROCE CL 2033 1/4	CL 2033 1/4 CROSS JOINT	1,000
043.0235	BIFORCAZ. A Y TUBO 4MM. 24275320	Y BRANCHING 4 MM	2,000
043.0251	GOMITO MF 1/8	M.F. ELBOW RLA 8 - 1/8 - CL 2020	1,000
043.0263	RACCORDO A GOMITO M/F ZINCATO 3/4	3/4 ELBOW JOINT	1,000
043.0275	NIPPLO CONICO A2- 1/4 - CL 2500	A2- 1/4 - CL 2500 CONICAL NIPPLE	1,000
043.0281	MANICOTTO 1/8 M 8/8 - CL 2543	1/8 M 8/8 - CL 2543 SLEEVE	2,000
043.0290	INNESTO RAPIDO 1/4 GHIOTTO 13/A	1/4 QUICK COUPLING	1,000
043.0473	SILENZIATORE IN OTTONE 1/8” CL 2921	”1/8”” CL 2921 BRASS SILENCER”	4,000
043.0552	MANOMETRO DIAM. 40	MANOMETER 0 40	1,000
043.0564	FR 1/4 20- 08	FR 1/4 20- 08	1,000
043.0601	VALVOLA VMS 114- 1/4 08	VMS 114- 1/4 08 VALVE	1,000
043.0608	VALVOLA 5 VIE 1/8 PVLB111618 PARKER	5 WAY 1/8 PVLB111618 PARKER VALVE	2,000
010.7884	VITE TCEI 4X40	TCEI 4 X 40 SCREW	2,000
016.1190	PANNELLO PNEUMATICO	PNEUM.EQUIPMENT WIRING PANEL	1,000
022.0238	PRESSACAVO PG7	CABLE PRESSER PG 7 BS01	1,000
022.2702	DADO PG7	NUT PG 7 BL01	1,000
043.0180	RIDUZIONE M3/4 F3/8	REDUCTION M 3/4- F 3/8	1,000
043.0231	RIDUZIONE MF1/8	1/8- 1/8 MF CL 2520 REDUCTION	2,000
010.1809	CHIUSURA SPORTELLO	DOOR LOCKING WIT KEY	1,000
016.2455	SPORTELLO PIEDISTALLO TI 372 SX EVO	STEEL BASE DOOR TI 372 SX EVO	1,000
010.1893	CERNIERA SPORTELLO PIEDISTALLO N.T.	PROTECTION DOOR HINGE N.T.	1,000
010.7475	GRANO VCE PUNTA PIANA 8 X 8	8 X 8 FLAT POINT VCE GRUB SCREW	1,000

Cylinder unit



Code	Description	Description	Quantity
001.4816	SUPPORTO AGGANCIO CILINDRO	SUPPORT	1,000
007.3216	BATTUTA FINECORSA	LIMIT SWITCH STOP	1,000
007.6332	PERNO FORCELLA	FORK PIN	1,000
010.1103	FORCELLA 16 X 1,5	16 X 1,5 FORK	1,000
010.8954	VITE TE 8 X 80	8 X 80 TE SCREW	1,000
010.1559	STAFFA FISSAGGIO CILINDRO	CYLINDER FIX BRACKET	1,000
010.1560	STAFFA TRASCINAMENTO POTENZIOMETRO	POTENTIOMETER BRACKET	1,000
010.1561	STAFFA AGGANCIO CILINRO	CYLINDER FIX BRACKET	1,000
010.7204	DADO M8	M8 SCREW NUT	1,000
010.7221	DADO M16 BASSO	M16 LOW SCREW NUT	1,000
022.0378	CONNETT.BOBINA VALV. RIGENERATRICE	CONNECTOR F.REGENERATOR VALVE COIL	2,000
022.0615	BOBINA X VALVOLA RIGENERATRICE CIL.	COIL X CYLINDER VALVE	1,000
022.1801	POTENZIOMETRO LINEARE LWH225- 024309	LINEAR POTENTIOMETER	1,000
043.0204	ATTACCO A GOMITO 8X1/4 - CL 6521	8X1/4 - CL 6521 ELBOW COUPLING	1,000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	13X19X1,5- 1/4 COPPER WASHER	2,000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	2,000
044.1251	VALVOLA RIGENERATRICE CILINDRO	CYLINDER REGENERATING VALVE 310SX- AX	1,000
044.1257	VALVOLA DI CARICO CILINDRO	CYLINDER LOADING VALVE	1,000
043.0823	UNITA' IDROPNEUM.0 63 C.230	HYDROPNEUMATIC UNIT 0.63 C.230	1,000

Adjustments



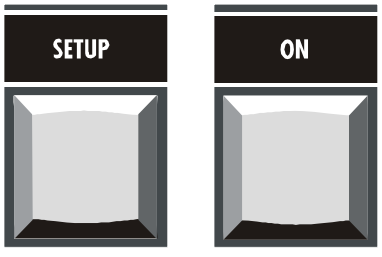
The steps for setting the electronic, mechanical, and pneumatic systems on SX models, are illustrated in this chapter. By following these instructions you can “customise” your machine to carry out the type of cut to be made, thus optimising the time taken for this operation.

Displaying and editing the set- up parameters

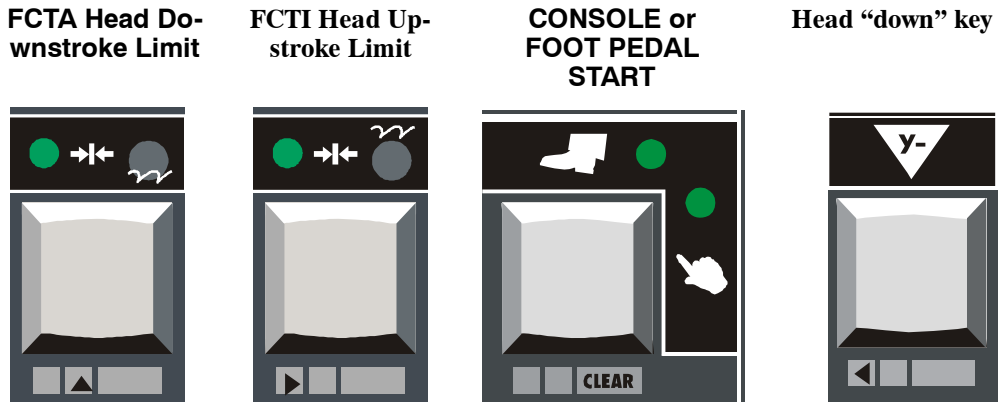
The machine set- up parameters may be programmed directly from the control console.

▶ Power up the machine at the main switch located on the left hand side.

▶ Press simultaneously and in sequence the keys SET- UP and ON;



▶ Once inside the SET- UP menu, use the following keys to navigate through the different menu screens:



▶ The FCTA key (▲) allows you to change parameter settings in increments of one unit.

▶ The FCTI key (▶) instead has two functions: it is used to save parameter settings and navigate inside the SET- UP menu.

▶ The console or foot pedal START selection key allows you to zero the current parameter setting.

▶ The key “Y- ” enables the cursor to return to the previous positions.

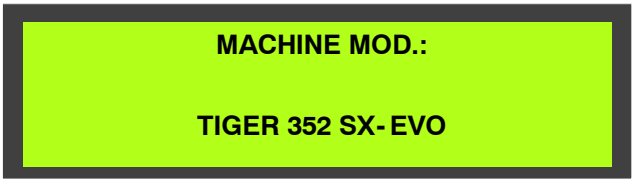
▶ To quit the SETUP parameters, press in sequence and simultaneously the SETUP and ON keys.

Set language parameter

▶ Press ▲ to change the display messages presentation language.

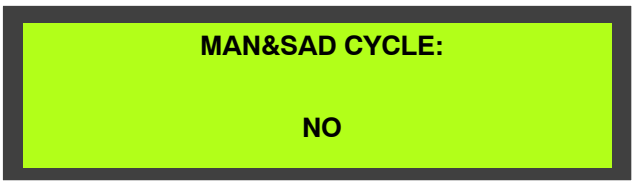
Set parameter for machine type

▶ Press ▶ to display the parameter for the machine type. Press the ▲ key to change machine type; each press of the key corresponds to a different machine configuration.



Semiautomatic- Dynamic and Manual operation setting

This function is not included for this machine model. Thus, do not consider this video page and go to the next one by the key ▶.



Pedal control setting (optional)

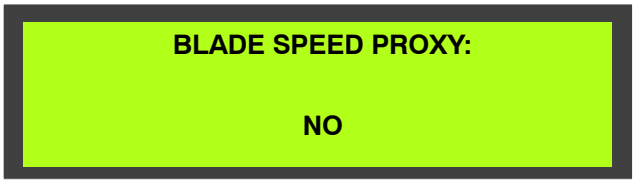
▶ Press ▶ to display the pedal control parameter, then press ▲ to set the presence (YES) or the absence (NO) of this optional.

Inverter presence settings

This function is not included for this machine model. Thus, do not consider this video page and go to the next one by the key ▶.

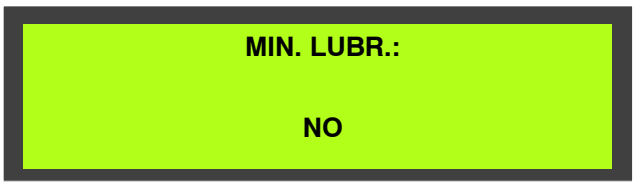
Blade speed proximity settings

This function is not included for this machine model. Thus, do not consider this video page and go to the next one by the key ▶.



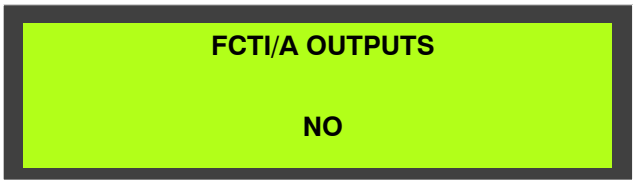
Minimal lubrication system settings

▶ Press ▶ to display the min. lubrication system parameter, then press ▲ to set the presence or the absence of this optional, choosing YES or NO.



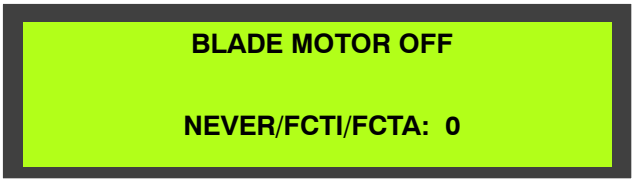
FCTI / FCTA digital output enabling setting

▶ Press the ▶ key to display the parameter enabling or disabling the outputs of the positions FCTI (backward head limit switch) and FCTA (forward head limit switch). Press the ▲ key to set YES or NO.



Disc stop setting

▶ Press the ▶ key to display the disc stop parameter, then press ▲ to set the value of this parameter.
If the value is set as 2, the disc never stops;
if it is set as 1, the disc stops in the RHLS (rear head limit switch) point;
if the value is set as 0, the disc stops in the FHLS (forward head limit switch) point.

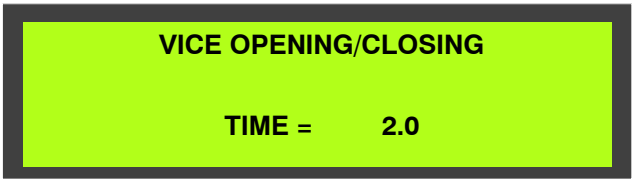


Cutting vice opening setting

▶ Press the ▶ key to display the parameter indicating if the shearing vice must open when the head is in the FCTI (backward head limit switch) point or in the FCTA (forward head limit switch) point; press ▲ to set the value as 0 (vice opening in FCTA), or as 1 (vice opening in FCTI).

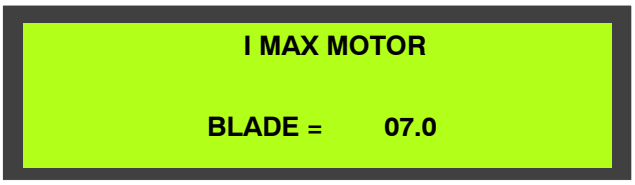
Cutting vice opening/closing time setting

▶ Press the ▶ key to display the parameter indicating the time between the vice closing and the cut start and between the cut end and the vice re- opening. Press ▲ to change this value, ranging between 0.0 and 9.9 seconds.



Machine maximum power input setting

▶ Press the ▶ key to display the parameter and then increase or reduce the value with the ▲ key.

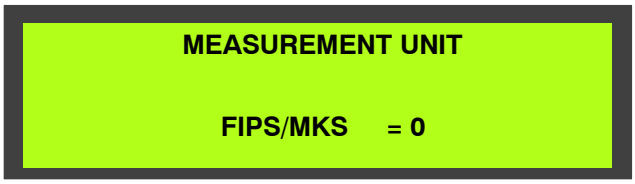


N.B. The factory set values are relative to the motor installed on the machine.

Measurement unit setting

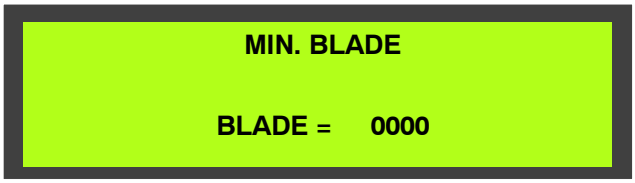
▶ Press the ▶ key to display the parameter, then press ▲ to set the value as 0 or 1, to choose the measurement unit expressed respectively in pounds or

kilograms.



Setting minimum blade tensioning

This function is not included for this machine model. Thus, do not consider this video page and go to the next one by the key ▶.

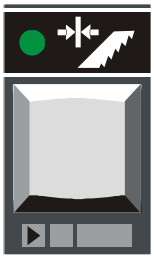


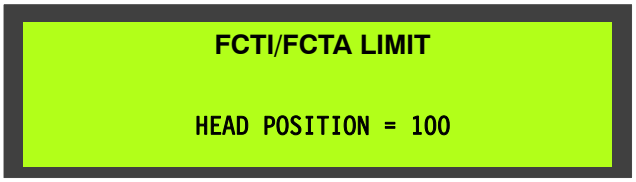
Display backlighting time setting

▶ Press the ▶ key to display the LCD backlighting time parameter, then press the ▲ and ▶ keys to set the time expressed in minutes.

Cutting head stroke

The operating head covers the space between the rear position and the forward position that can be defined in the SET- UP with the FHLS- RHLS parameter. Anyway, it is necessary to check if the operating head actually and not virtually covers the cutting width between its structural limits of rear head limit switch and forward head limit switch.
The adjustment is aimed at setting the value of the head current position both at RHLS (rear limit 254) and at FHLS (forward limit 054) displayed with the linear potentiometer.
To get this result carry out the following adjustment:

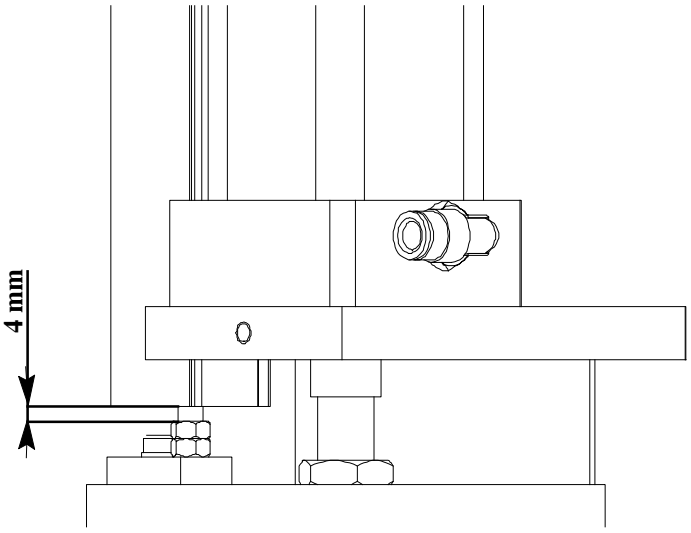




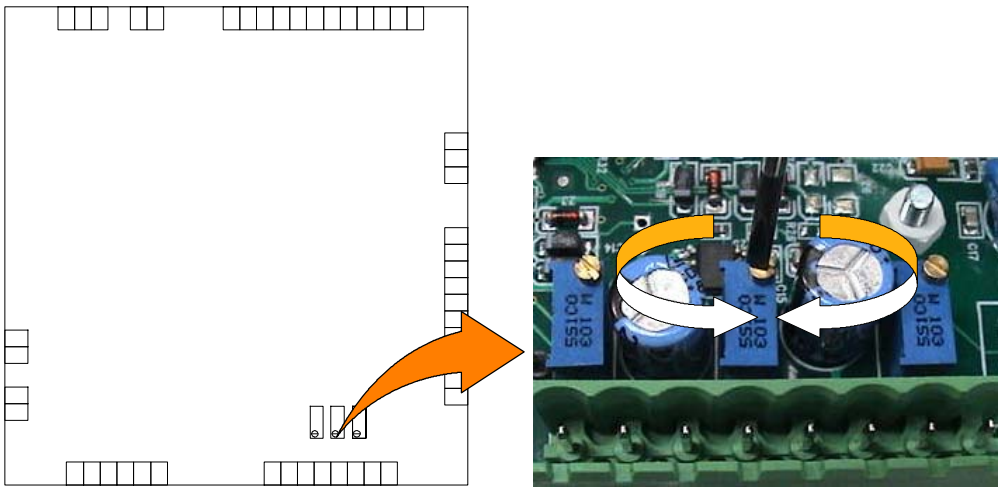
▶ press in sequence and simultaneously the ⇑ key and the key for the head lowering (Y+), to position the cutting head completely upwards;

N.B. When the cutting head is totally up, the potentiometer stem is inside the poten-

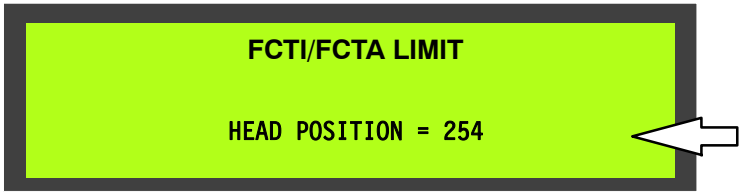
tiometer body. In this position make sure that the adjustment nut for the stem max. stroke is at about 4 mm from the lower base of the linear potentiometer.



- Open the control board removing the frame and pull the keyboard out of the console;
- Identify the board IUD/IUV of the controller M30 to adjust the potentiometer indicated by the arrow in the following image:

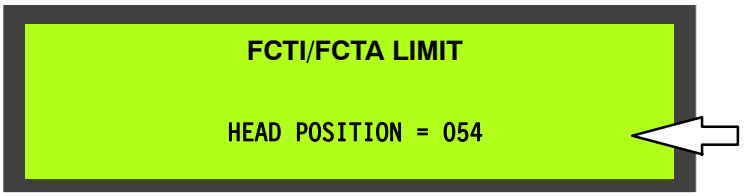


- The IUD/IUV board includes three adjacent potentiometers. Adjust the adjustment screw of the potentiometer indicated by the arrow by a screw- driver at a value of 254; the obtained variation is displayed on the machine.



- Position the console again in its seat and re- install the frame fastening it by screws.
- Press in sequence and simultaneously the keys ⇑ and RHLS to store the obtained value.

▶ Set the FHLS point, taking the head completely down, pressing in sequence and simultaneously the ⇑ key and the key for the head lowering (Y-).



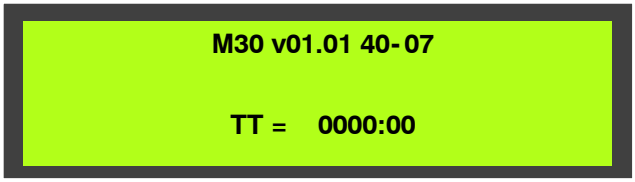
▶ Press in sequence and simultaneously the keys ⇑ and FHLS to store the obtained value.

▶ Press simultaneously and in sequence the keys SET- UP and ON to quit the SETUP parameters:

▶ Test to make sure it is functioning correctly.

Software version and total use time of the machine

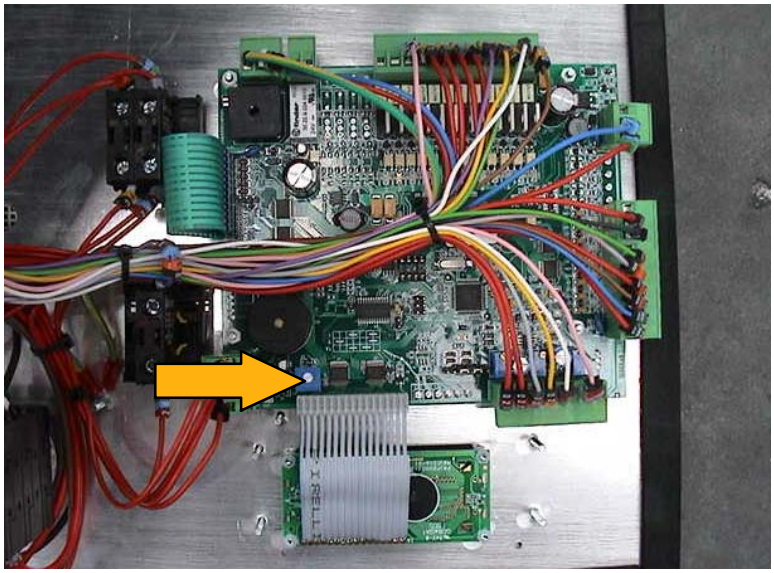
▶ This parameter indicates the installed software version and the total working time of the machine.



Adjusting the display brightness

If external factors like changing ambient lighting conditions in the machine installation site, affect visibility, adjust the brightness of the control and programming console display. This is very important since the operator must be able to clearly read the display messages at all times.

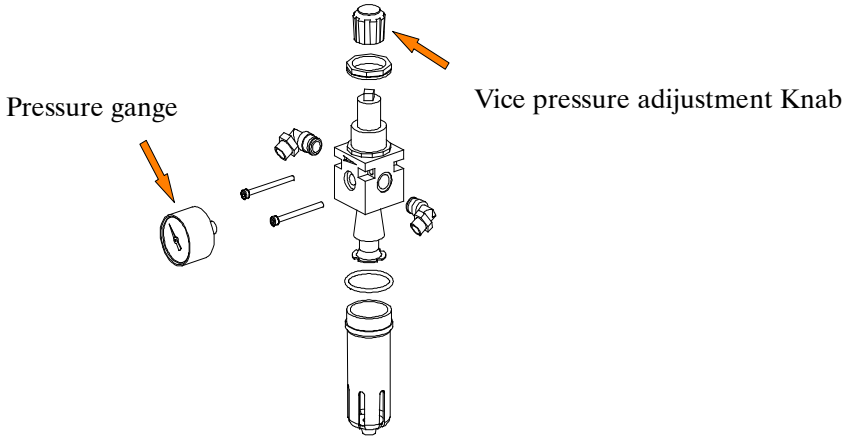
▶ To adjust the brightness, first remove the screws fixing the front console panel. The photo below illustrates the M30 controller card on which the brightness potentiometer is marked by an arrow.



▶ Using a screwdriver, rotate the potentiometer until the required display brightness is obtained.

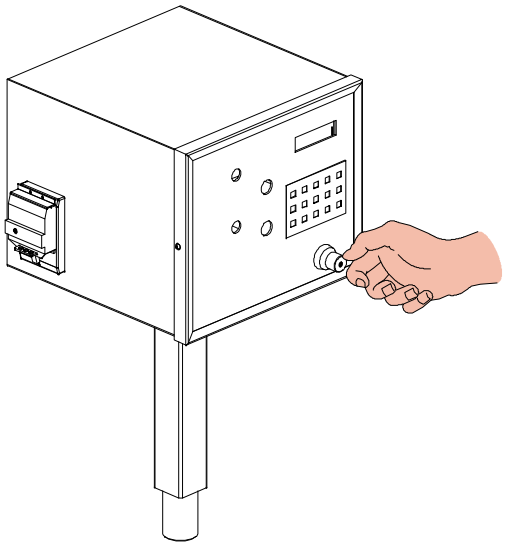
Air treatment unit

The pneumatic circuit on the machine activates the shearing vice by means of the volampress cylinder, and the machine's cutting head by means of the oil pneumatic cylinder. The compressed air is conditioned and purified as it enters by a treatment unit that, when regulated, stabilises the pressure at around 6 Bar, depending on the pressure in use in the factory. In any case, the pressure can be set where material may be deformed or may prove to be unstable during cutting, and the vice is positioned at 2÷3 mm from the workpiece before it is closed. One requirement is for the the user of this machine to provide a plant in his factory with the characteristics shown in Chapter 4. The figure below shows an exploded view of the air treatment unit. The operating pressure of the vice shown on the pressure gauge is set by rotating the handle indicated by the arrow.



Cutting head operating pressure

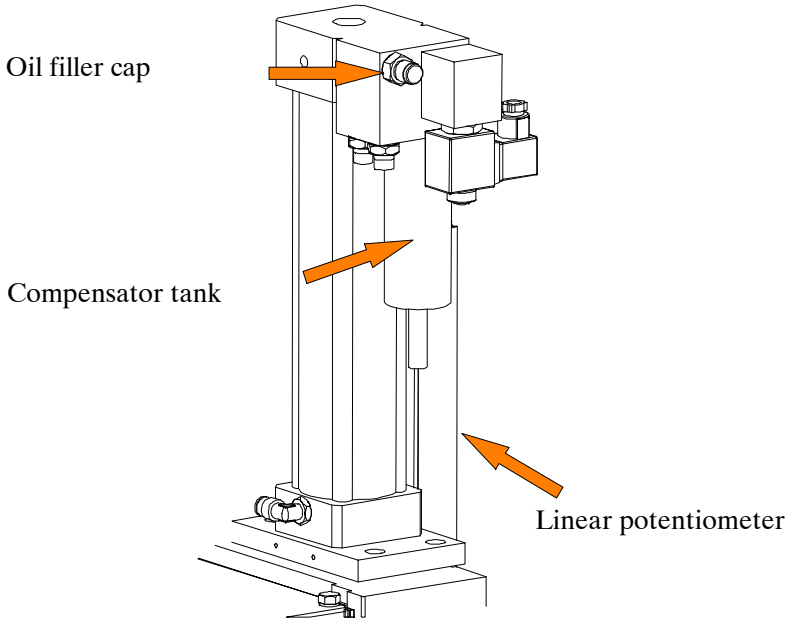
The cutting head cuts the material pushed by a hydro pneumatic cylinder, with a downstroke speed set by the oil flow regulator on the control panel. The regulator has a scale of 0 to 9 and is indicated on the panel by the symbol  : when this is rotated clockwise, the downstroke speed is reduced, when it is turned counter-clockwise the speed is increased.



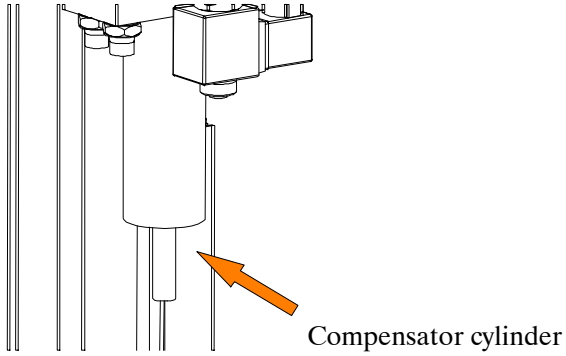
Cutting head actuator cylinder (CPT)

Replenishing the head cylinder

When the oil level in the compensator tank falls it must be topped up. The figure below illustrates the various components of the cutting head cylinder.

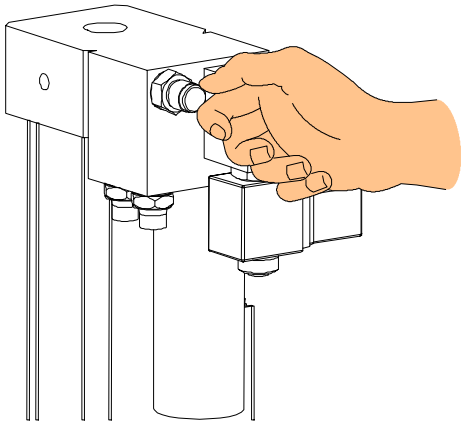


A drop in oil level is identified by the position of the ring on the rod in relation to the oil reservoir, which in normal conditions should be approximately 30 mm.

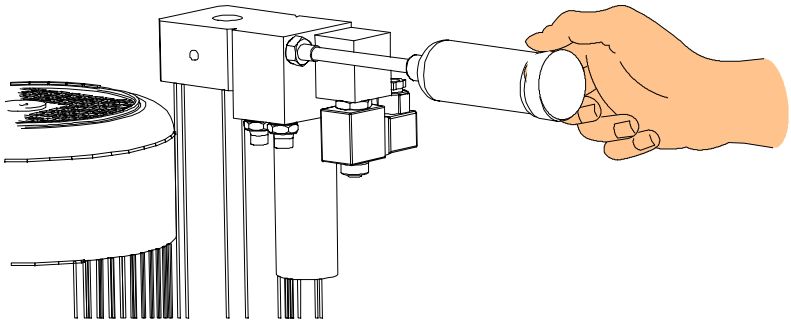


If this is not the case, top up the oil level as follows:

- keep the head in the FCTI position (fully up);
- unscrew and remove the filler cap on the side of the cylinder;



- then, using an electric or manual pump like the one shown in the figure, fill the cylinder with AGIP ATF DEXRON hydraulic oil or one with similar characteristics;



- when the rod protrudes by 30÷45 mm, the correct oil level has been restored;
- run a few dummy cutting strokes in semi- automatic mode to expel any air from inside the circuit. If cutting head movement is not linear and constant, and the rod retracts by several millimetres, top up the oil level again.

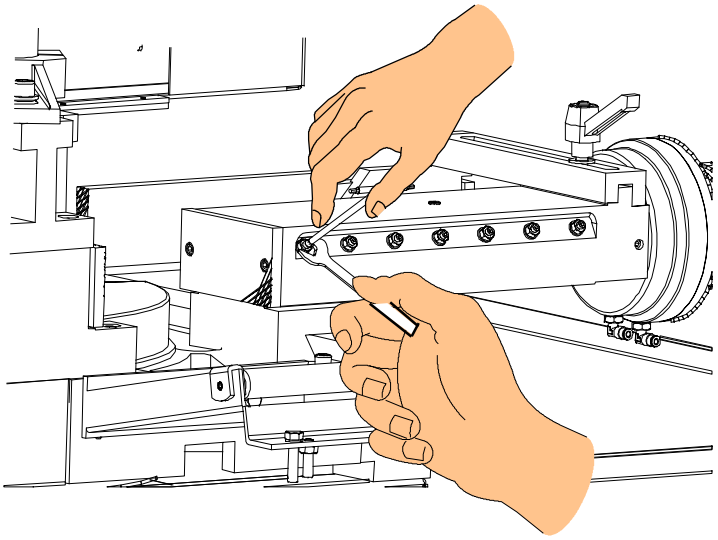
Vice

The shearing vice, which is a standard fitting on the **C370- 2SI**, is equipped with an anti- chip device, adjustable cross positioning, and is driven by a pneumatic cylinder known as the “volampress”. These elements will be dealt with one by one in the following.

Adjusting the vice play

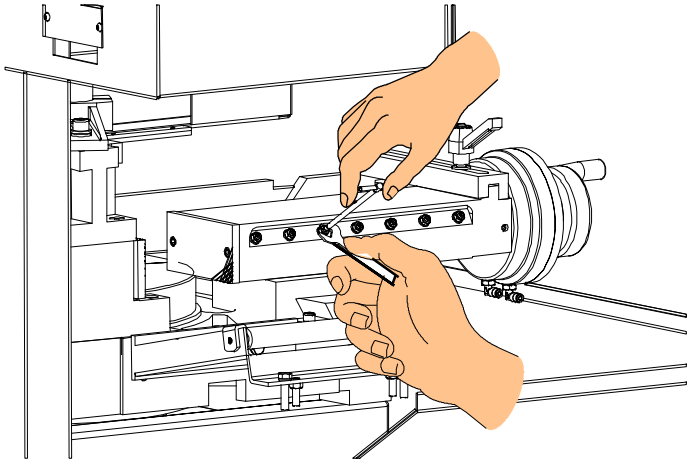
Any play which develops between the slideway and the slide gibs on the vice must be compensated by adjusting the grub screws setting the distance between the gib and lead screw, proceeding as follows:

- slacken all the locknuts on the grub screws in the slide, holding the screws still using an Allen key;
- move the vice to its fully open position;



- adjust the slight pressure exerted by the grub screws on the gib, starting with the first two in contact with the lead screw.

- adjust these two grub screws and tighten the relative lock nuts, keeping the screws still with an Allen key;

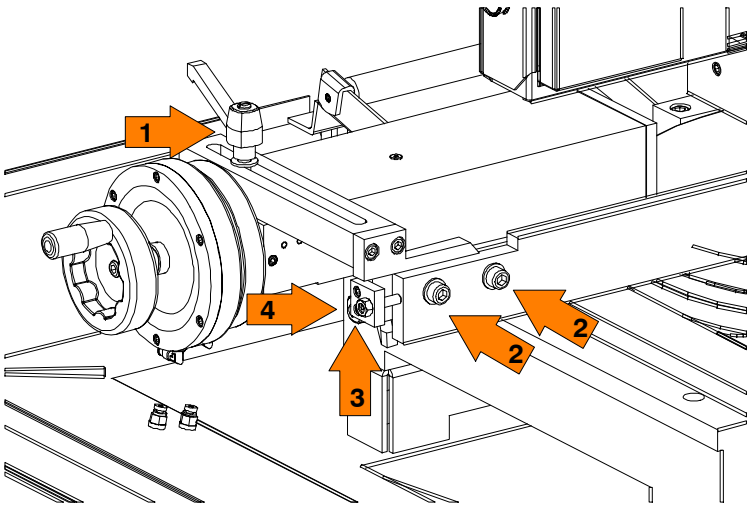


- close the vice until the other two grub screws coincide with the lead screw;
- repeat this adjustment on the gib grub screws for the entire length of the slideway;
- at the end of the operation, use the handwheel to move the slide backwards and forwards, identifying the zones where the grub screws exert greater pressure on the gib;
- repeat the adjustments if necessary.

Rag prevention device

The vice is fitted as standard with a rag prevention device that serves to support the material and prevent the formation of ragged edges at the end of the cut. To adjust the rag prevention device transversely:

- loosen the release lever (1) located above the vice slide;
- movement the rag prevention device arm to the right or left;
- tighten the release lever.



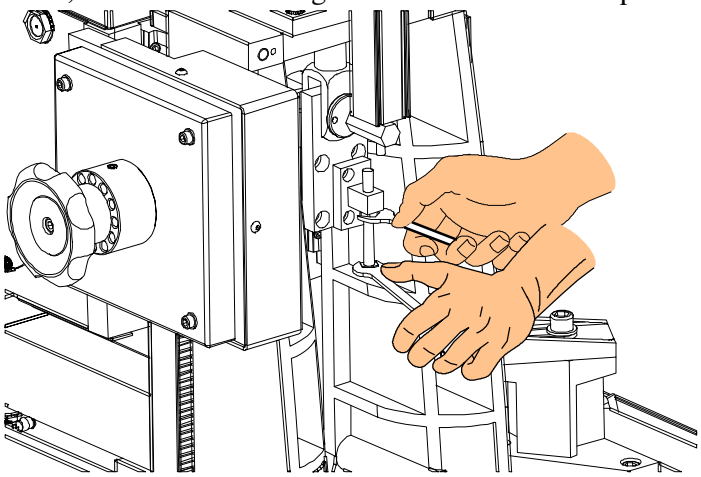
To adjust the longitudinal position of the vice jaw, proceed as follows:

- tighten the cutting vice completely;
- slacken the two screws located to the side of the rag prevention device (2- 3);
- slacken the nut that locks the grub screw;
- adjust the longitudinal position of the rag prevention vice jaw by slackening or tightening the grub screw (4) until the position of the rag prevention jaw is aligned with that of the cutting jaw;

Adjusting operating head travel

During the cutting cycle the cutting head stroke is limited by the FCTI (Head Upstroke Limit) and FCTA (Head Downstroke Limit), set electronically on the control panel, as described on Page 5. The cutting head has a mechanical limiting switch that determines its downstroke:

▶ to change this setting, two hexagonal spanners must be used, one to keep the nut in position, and the other to tighten and loosen the stop screw.



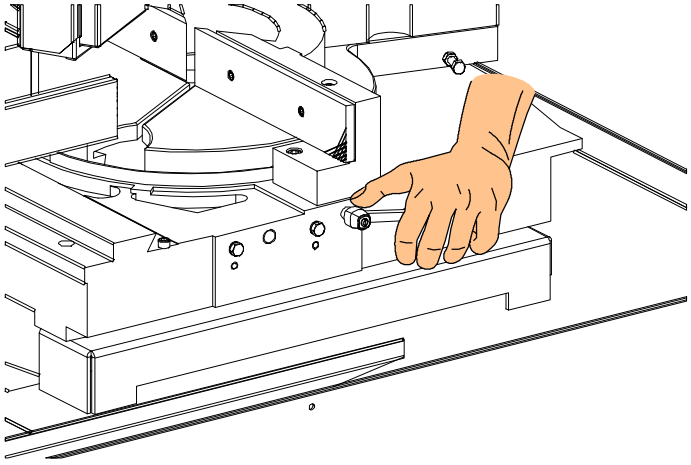
Disc

The HSS cutting discs can be used for any kind of cut since they combine good levels of toughness and elasticity thanks to various coatings, along with a good cutting resistance. The discs are made of a single piece of Tungsten- Molybdenum super- rapid steel with a hardness of about 64±1 HRC. A special characteristic of the discs during cutting is the excellent finish of the cut surfaces.

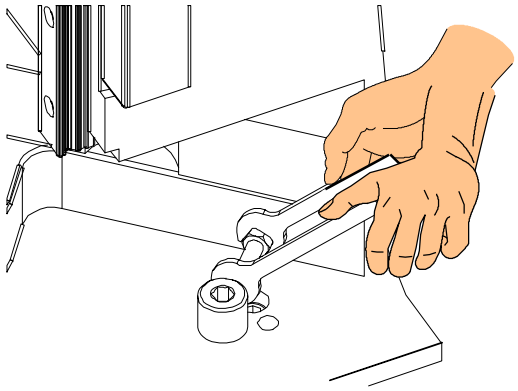
Adjusting the turntable stops

If it found that a cut at 0°, 45° or 60° does not correspond exactly to the angle shown on the turntable, the right and left stops will need adjusting. The procedures for correcting and adjusting the disc stops at 0°, 45° and 60° right and left are described below. Sequence of operations for 0° stop:

▶ release the turntable by means of the release lever on the right hand side of the table;



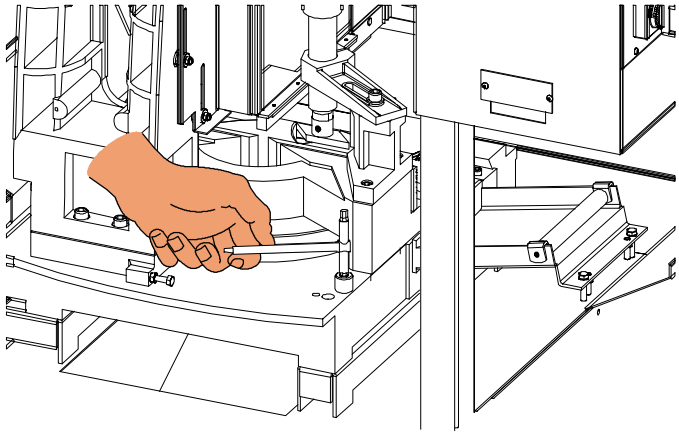
▶ adjust the nut using two 10 mm spanners until the stop corresponds to the 0° notch; loosen the lock nut and adjust; tighten the lock nut while holding the bolt steady; check and repeat if necessary.



Sequence of operations for 45° right stop:

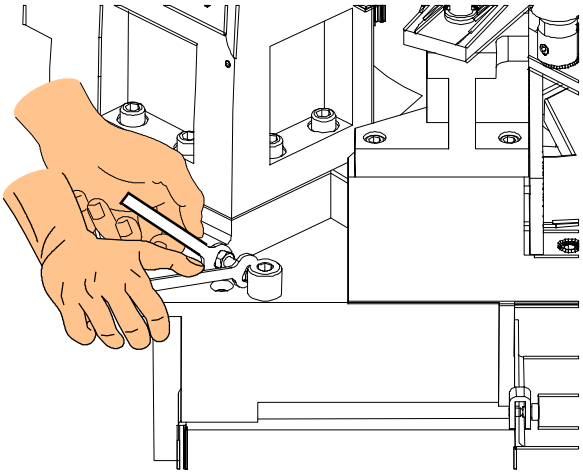
▶ release the turntable by means of the release lever on the right hand side of the table;

▶ remove the screw that functions as the 0° stop so as to reach the 45° right position;



▶ adjust the nut using two 10 mm spanners until the stop corresponds to the 45° notch; loosen the lock nut and adjust;

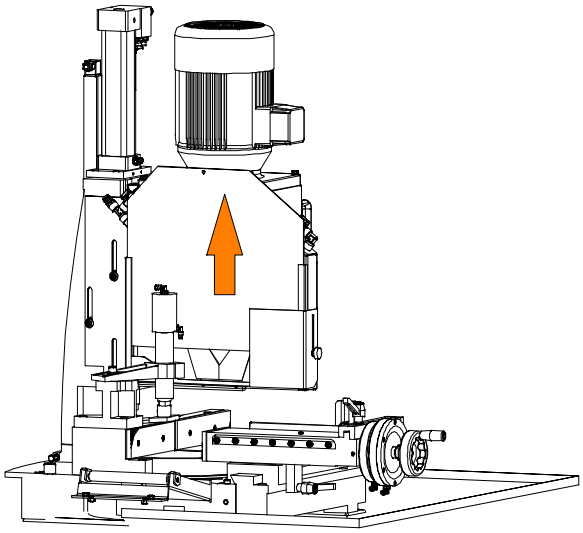
To adjust the 45° and 60° left stops, proceed as for the other positions, but remove the 45° stop screw (shown by the arrow in the photo) to reach the 60° left stop, in the same way as for the 45° right stop described above.



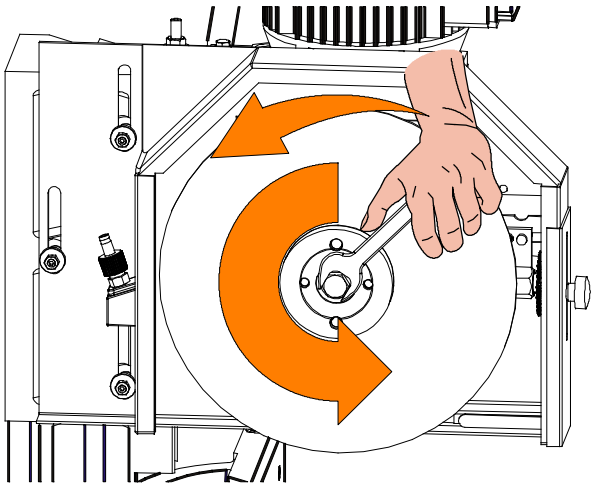
Changing the blade

As we have already said, this machine uses different kinds of blades according to the material to be cut. The procedures described below, however, also apply in the event of wear or breakage of the blade. To replace the blade, proceed as follows:

- switch off the machine and position the head so that the disc is easily accessible;
- the machine is equipped with a vertical pneumatic vice that can be moved away from the guard by unfastening the screw fixing it to the support;
- remove the screw with knob to free the plexiglass guard cover and lift it off in a vertical direction;

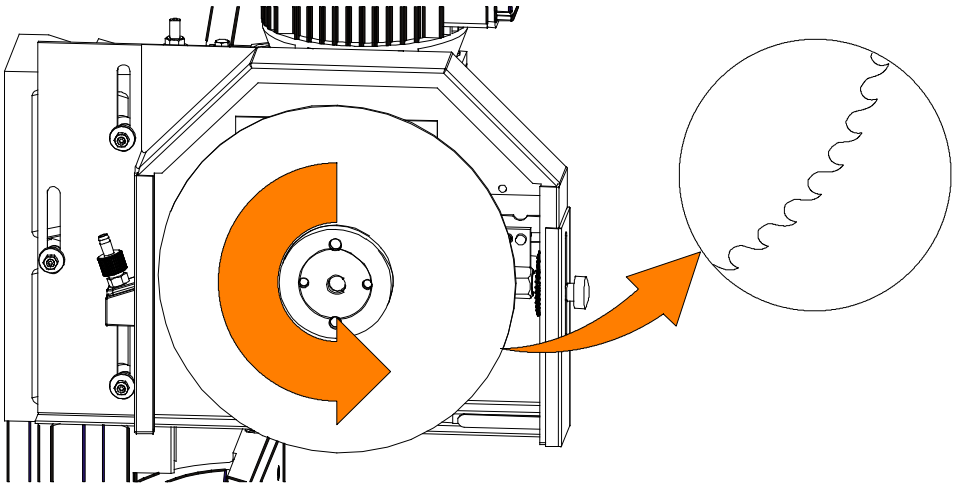


- use a 19 mm spanner to slacken the hexagonal screw that locks the disc, turning the spanner in the direction of rotation of the disc; remove the old disc and insert the new one, making sure that the centering pins fit correctly into the holes in the disc;

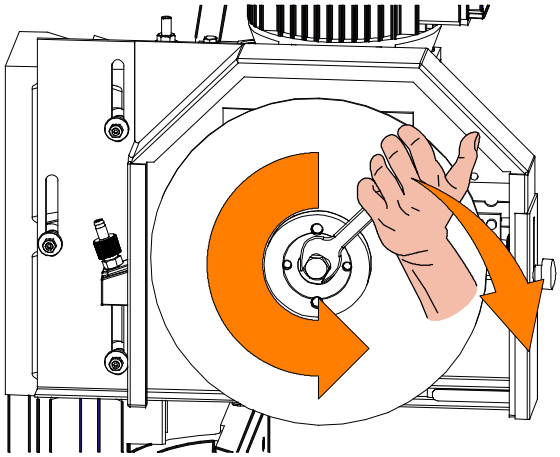


Attention

Make sure that the teeth on the cutter blade are facing in the direction of rotation. When changing the tool, turn the cutter blade until drive is engaged to eliminate any backlash in the drive pins.



▶ Tighten the lock nut and refit all guards and any other components you may have removed to facilitate installation.



N.B. Adjust the position of the blade- cleaning brush, or replace it when worn.

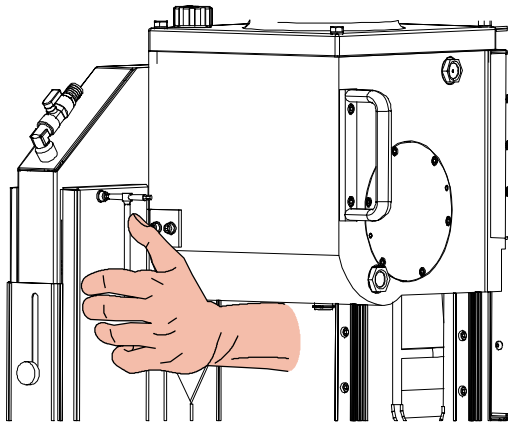
Attention

If disks are fitted with diameters less than 370 mm, adjust the head mechanical stop screw as described above.

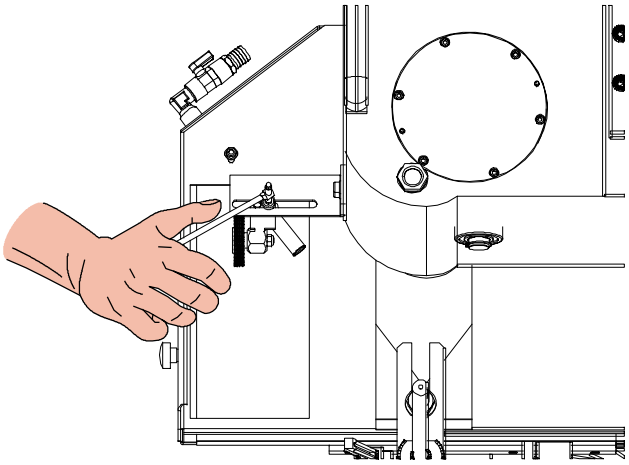
Adjusting the position of the blade- cleaning brush

When the cutter disk is not clean enough, check the blade- cleaning brush for wear and if it's working correctly. The figure below illustrates how the brush should be adjusted if need be.

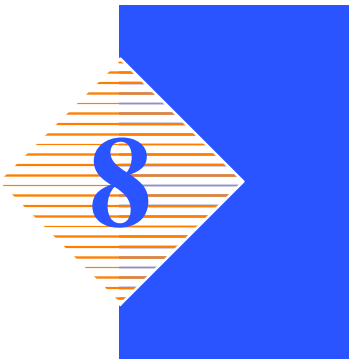
▶ Loosen the screw highlighted in the drawing, and remove the protection;



▶ adjust the position of the blade in relation to the teeth, as shown;



Maintenance and choice of consumables



C370- 2SI is built to be sturdy and long- lasting It has no need of any special maintenance, though, like all other tools, it needs adjusting from time to time, especially if not regularly looked over or used without due care.

This chapter, therefore, is intended as a guide for those who want to look after the machine and get the most out of it for as long as possible.

The role of the operator

The person operating and maintaining the machine must follow these instructions for his own safety, as well as for the safety of other personnel, and in the interests of machine productivity:

- check that his own work and that of the other operators of the machine always complies with the relevant safety standards. Therefore, check that the safety devices are in position and work perfectly and that personal safety requirements are complied with.
- Ensure that the working cycle is efficient and guarantees maximum productivity, checking:
  - the functions of the main components of the machine;
  - the sharpness of the blade and coolant flow;
  - the optimum working parameters for the type of material.
- Check that the quality of the cut is that required and that the final product does not have any machining defects.

Maintenance requirements

- All ordinary and extraordinary maintenance must be carried out with the power switched off and the machine in emergency condition.
- To guarantee perfect operation, all spare parts must be Hyd- Mech originals.
- On completion of maintenance works, ensure that the replaced parts or any tools used have been removed from the machine before starting it up.
- Any behaviour not in accordance with the instructions for using the machine may create risks for the operator.
- Therefore, read and follow all the instructions for use and maintenance of the machine and those on the product itself.

General maintenance

Daily

The daily maintenance operations to carry out on the machine are as follows:

- remove all swarf from the machine (do not use compressed air or fluffy rags);
- empty the swarf drawer (the swarf collection drawer is located in the base and is accessible through the front opening panel);
- top up the lubricant/coolant fluid level;
- check the wear of the blade and change if necessary;
- check the blade cleaning brush, clean it and reposition it: if worn, replace.

Weekly

The weekly maintenance operations are as follows:

- remove all swarf from the machine;
- clean the vice and lubricate all the joints and sliding surfaces using a good quality oil;
- check the oil level in the transmission box; if necessary fill through cap.
- check the vice sliding mechanism. If it is not smooth or is subject to side play, adjust as described in chapter 7.

Monthly

This section lists the operations to be carried out for the monthly maintenance of the machine.

- check that the machine performs cuts perpendicular to the work surface; if not, contact our technical service centre;
- check that the blade is at right angles to the workpiece rest shoulder; if not, contact our technical service centre;
- check that the 0 degree notch on the fixed work table is in line with the graduation on the turntable. If not, adjust as described in chapter 7;

- check the precision of the 45° right and 45° and 60° left stops; if they are not adjusted correctly, proceed as described in chapter 7;
- clean thoroughly the water tank and the electric pump filter.

Consumable materials

It is essential to use specific oils for the pneumatic and lubricant/coolant circuits. The oils suitable for each of these circuits are listed below.

Oils for pneumatic and hydraulic circuit

The machine is supplied with AGIP ATF DEXRON oil, ISO and UNI grade FD 22. The oils are used with the air treatment unit and the hydro- pneumatic cylinder. However the following oils can be regarded as compatible or having equivalent specifications:

API Cis 22 - ARAL Dural SR 22 - CASTROL Hyspin AWS 22 ESSO Spinesso 22 - IP Hydrus oil 22 - TOTAL Azolla ZS 22 VALVOLINE ETC 22 - MOBIL Velocite oil D - Mobil DTE 22 MOBIL ATF 220 - OLIO FIAT HTF 22 - Q8 Haydn 22 - SHELL Tellus oil 22 - BP AUTRAN GM- MP

Oils for lubrication/coolant liquid

The oil used for the lubrication/coolant fluid in the machine is CASTROL Syntolin TFX. Though there are no specific standards for these types of oils, Hyd- Mech considers that CASTROL Syntolin
TFX is the best product available with regard to quality:price ratio. Nevertheless, the following oils of similar characteristics can be said to be compatible:

AGIP NB 200 - SHELL Lutem TT - IP Utens Fluid- F

Finally, one particular blade manufacturer (LENOX) recommends and supplies a coolant under the name of LENOX BAND- ADE SAWING FLUID.

Coolant tank:
- tank capacity 80 litres
- oil concentration 5- 6%

Oils for spray mist system (optional)

The used oil type for the optional spray mist system is BLASER Vascomill 22. The following oils can also be said to have similar characteristics and are therefore compatible:

UNIST Coolube 2210 - FUCHS Plantocut Micro Plus 27

- tank capacity Lt. 1

Oils for transmission box

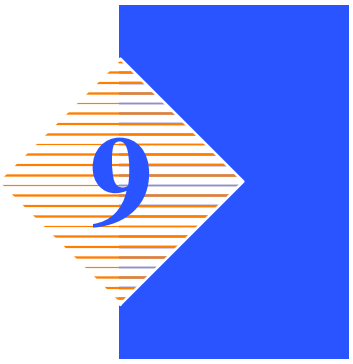
The machine is supplied with SHELL Omala S4 WE 320 oil, ISO and UNI symbol 460. However the following oils can be regarded as compatible or with

equivalent characteristics:

API DT 320 - CASTROL ALPHA SP 320 - AGIP Blasia 320 S

Transmission box:
- capacity lt. 4,8

Cutting speed and choice of tools



The cut speed is determined by the speed the cutter disc rotates at, and by the feed speed. This chapter describes the various cutting speeds of which the standard and special machine configurations are capable.

Cutting speed

C370-2SI, standard machine

The standard version with inverter and 4- pole motor achieves this cutting speed range:

- 15 ÷ 150 rpm.

Choice of blade

The different types of cutter disks that the **C370- 2SI** can mount must, however, have the following main characteristics:

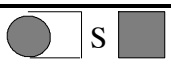
- “Fine tooth pitch”: for thin wall materials such as sheet steel, tubes and profiles;
- “Coarse tooth pitch”: for large cross-sections; for soft materials (aluminium alloys and soft alloys in general).

Tooth pitch

The choice of the most suitable tooth pitch depends on various factors:

- the size of the section;
- the hardness of the material;
- wall thickness.

Solid sections call for discs with a coarse tooth pitch, while small cross- sections require blades with finer teeth. This is because when cutting walls of small cross- section (1÷7 mm) profiles, it is important that the number of teeth actually making the cut should not be too small, otherwise the effect obtained will be one of tearing rather than of swarf removal, leading to a large increase in shearing stress. On the other hand, when cutting thick materials or solid sections using an excessively fine tooth pitch, the swarf collects as a spiral inside the gullet, and since fine tooth pitches have small gullets, the accumulated swarf will exceed the gullet capacity and press against the walls of the workpieces, resulting in poor cutting (same situation with soft materials), greater shearing stress and hence breakage of the blade.

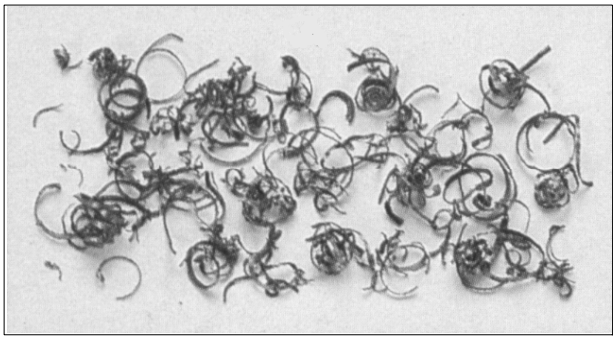
Choice of tooth pitch T as a function of cross- section to be cut for light alloy solid pieces and profiles			
			
S in mm.	Pitch T	S and sp in mm.	Pitch T
10	4- 5	10 sp = 0,5	3
30	6- 8	30 sp = 1,5	4 - 5
50	8- 10	50 sp = 2,5	5 - 6
70	10- 12	70 sp = 3,5	6- 7
90	12	90 sp = 4,5	7 - 8
130	16	130 sp = 6,5	8

KEY:
S = diameter or width of the solid piece to be cut in mm;
sp = thickness of the wall to be cut in mm;
T = tooth pitch in mm.

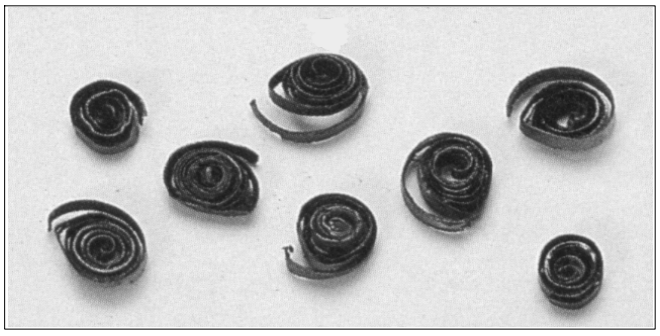
A larger pitch should be chosen when, as a result of the shape of the piece to be cut, the cross- section at any given point exceeds the average cross- section given above.

Types of swarf:

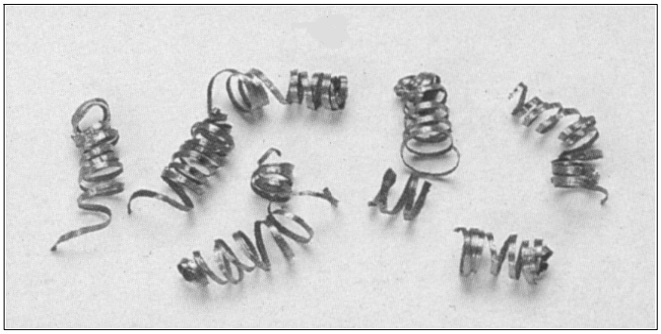
- Very fine or fragmented swarf indicates that the downstroke speed and/or cutting pressure is too low.



- Thick and/or blue swarf indicates that the blade is overloaded.



- Long coils of swarf indicate ideal cutting conditions.



Cutting and feeding speed

The cutting speed, in m/min, and the head feeding speed, in cm^2/min, are limited by the amount of heat generated near to the points of the teeth. If the head feeding speed is too high, the cut will not be straight in either the vertical or the horizontal plane. As we have already said, the cutting speed depends on the strength (kg/mm^2) and hardness (HRC) of the material and the dimensions of the thickest section. The feeding speed depends on the cross- section of the material. Solid or thick- walled materials (thickness > 5 mm), can therefore be cut at high speed providing there is sufficient swarf removal by the blade, while thin- walled materials such as tubes or thin profiles must be cut with a low feeding speed. A new blade requires a wearing- in period, during which time a feeding speed of about half normal speed should be used.

Lubricant/coolant

The lubricating/cooling fluid must ensure that the blade teeth and material in the area of the cut do not overheat. Furthermore, the quantity and pressure must be sufficient to remove the swarf from the cutting zone. The fluid must be an excellent lubricant, such that prevents abrasion of the teeth and welding of the swarf to the teeth themselves (seizing).

Blade structure

The circular blades most frequently used for cutting- off machines are HSS- DMo5/M2 consisting of a single piece and characterised by a high level of toughness and a good cutting resistance. With non- ferrous materials it is normal to use circular blades with brazed hard metal (HM) cutting edges, which offer excellent resistance to wear but low resistance to impact, which in any case is not generally a problem with non- ferrous materials.

Key									
Mo	Molybde- num	Ni	Nickel	Si	Silicon	V	Vanadium	W	Tungsten
Al	Aluminium	C	Carbon	Co	Cobalt	Cr	Chromium	Mn	Manganese

TYPE OF BLADE	*C*	*Cr*	*W*	*Mo*	*V*	*Co*	*HRC*
HSS- DMO 5/M2	0,47	1,00	6,37	1,00	0,12		45- 50

N.B. The numbers in the columns indicate the % content of the element in the steel.

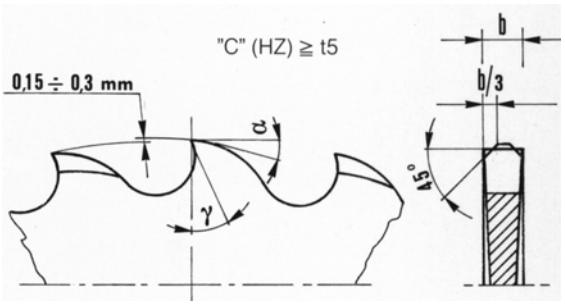
Types of blades

The blades fitted on the **C370- 2SI** have dimensions 370x32x3 and are made of HSS DMO5 since the machine is intended for cutting ferrous materials. In addition to the size and pitch of the teeth, the blades also have other geometric characteristics according to their particular use:

- tooth sharpening, which in this case may be BW with alternate raked tooth or C with roughing tooth raked on both sides and non- raked finishing tooth;
- tooth pitch, the distance between the crests of two subsequent teeth (tooth pitch = T).

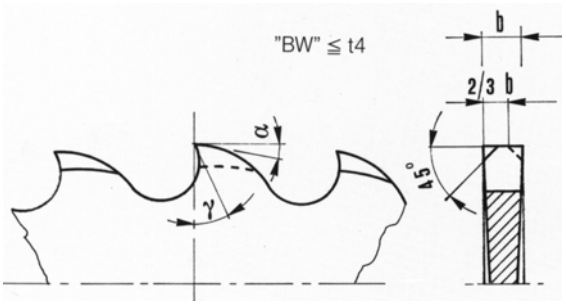
Tooth shape

”C” TYPE SHARPENING (HZ)
Coarse toothing with roughing tooth raked on both sides and non- raked finishing tooth. The roughing tooth is about 0.3 mm higher.



Coarse toothing with roughing tooth and finishing tooth. Used in saws with pitch greater than or equal to 5 mm for cutting ferrous and non- ferrous materials with solid or solid- profiled sections.

”BW” TYPE SHARPENING DIN 1838- UNI 4014
Coarse toothing with teeth alternately raked to the right and left.



Toothing generally used on cutting- off machines for cutting ferrous and alloy materials with tubular and profiled sections.

The **C370- 2SI** uses 370x3x32 discs made of HSS DMo5 and teeth with type C sharpening for hollow sections; for solid sections it uses 370x3x32 discs, again made of HSS. The tooth pitch is also important as shown in the table below. Disc selection table for TIGER machine. Other disc characteristics are: dimensions: internal hole diam. 32 mm, distance between fixing holes 63 mm, tooth shape type C.

TIGER MODEL	○ □			○ □			● ■		
	D.	T	Z	D.	T	Z	D.	T	Z
372	370	5	220	370	8	140	370	12	90

This table can be used to facilitate the choice of toothing since it takes into account both the size of the material to be cut and the diameter of the disc to be used.

	D 200		225		250		275		300		315		350		370		400		425		450		500	
Solid section ● S	S	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z	t z
	10	5 130	6 100	5 140	6 120	5 160	6 128	5 180	6 140															
	30	6 100	8 80	6 120	8 80	6 128	8 100	6 140	8 110	6 160	8 120	7 140	8 120											
	50			8 90	10 70	8 100	10 80	8 110	10 90	8 120	10 90	8 120	10 100	9 120	10 110	10 110	11 100							
	70							10 90	12 70	10 90	12 80	10 100	12 80	11 100	12 90	11 100	12 90	10 120	12 100	10 130	12 110	10 140	12 120	10 150	12 130
	90									12 80	14 70	12 80	14 70	12 90	14 80	12 90	14 80	12 100	14 90	12 110	14 94	12 120	14 100	12 130	14 110
	110											12 80	14 70	12 80	14 70	12 90	14 80	12 100	14 90	12 110	14 94	12 120	14 100	12 130	14 110
	130													12 80	16 70	14 80	16 70	14 90	16 80	14 94	16 84	14 100	16 90	14 110	16 100
	150																	14 90	16 80	14 94	16 84	14 100	16 90	14 110	16 100
Hollow section ○ S D	D																								
	10	3 200	3 200	3 220	3 220	3 250	3 250	3 280	3 280																
	30	4 160	5 130	4 180	5 140	4 200	5 160	4 220	5 180	4 220	5 180	4 240	5 200												
	50			5 140	6 120	5 160	6 128	5 180	6 140	5 180	6 160	5 200	6 160	5 200	6 180	5 220	7 160								
	70							6 140	8 110	6 160	8 120	6 160	7 140	6 180	7 160	7 160	8 140	6 200	7 180	6 220	7 190	6 230	7 200	6 260	7 220
	90									8 120	10 100	7 140	8 120	7 160	8 140	7 160	8 140	7 180	8 160	7 190	8 160	7 200	8 180	7 220	8 200
	110											8 120	10 100	8 140	9 120	8 140	9 120	8 160	9 140	8 160	9 150	8 180	9 160	8 200	9 170
	130													9 120	10 110	9 120	10 110	9 140	10 120	9 150	10 130	9 160	10 140	9 170	10 150
	150															9 120	10 110	9 140	10 120	9 150	10 130	9 160	10 140	9 170	10 150

Blade selection table with respect to cutting speed and downstroke speed

RECOMMENDED CUTTING PARAMETERS	CUTTING ANGLE α	CUTTING ANGLE γ	Cutting section (in mm) 10-20 T mm	10-20 Vt rpm	10-20 Av mm/1'	20-40 T mm	20-40 Vt rpm	20-40 Av mm/1'	40-60 T mm	40-60 Vt rpm	40-60 Av mm/1'	60-90 T mm	60-90 Vt rpm	60-90 Av mm/1'	90-110 T mm	90-110 Vt rpm	90-110 Av mm/1'	110-130 T mm	110-130 Vt rpm	110-130 Av mm/1'	130-150 T mm	130-150 Vt rpm	130-150 Av mm/1'	Recommended lubrificants
Mild steel R = 350- 500 N/mmq	20	8	5	50	160	7	45	150	10	45	140	12	40	130	14	40	110	16	35	100	18	30	90	Emulsion - cutting oil
Medium steel R = 500- 700 N/mmq	18	8	4	30	130	6	30	120	9	25	110	11	25	110	14	20	100	16	20	90	16	15	80	
Hard steel R = 750- 950N/mmq	15	8	4	20	110	6	20	110	8	18	100	11	17	50	14	15	80	16	16	70	16	12	60	
Super hard steel R = 950- 1000 N/mmq	12	6	3	15	60	4	15	60	6	14	50	9	14	50	12	13	45	14	13	45	14	12	40	
Hardened and tempered steel R = 950- 1300 N/mmq	10	6	2	9	35	3	9	33	4	9	30	6	8	28	8	8	25	10	7	25	12	7	22	
Austenitic stainless st R = 500- 800 N/mmq	12	8	4	20	50	6	19	45	8	18	45	11	17	40	14	15	40	16	14	35	16	12	35	
Martensiticstainless R = 500- 800 N/mmq	15	6	4	20	50	6	19	45	8	18	45	11	17	40	14	15	40	16	14	35	16	12	35	
Grey iron	12	8	4	25	100	6	23	100	8	22	90	11	20	80	14	15	880	16	16	70	16	16	60	
Aluminium and alloy R = 200- 400 N/mmq	22	10	6	1100	1800	8	1000	1700	12	900	1600	16	800	1400	18	700	1300	20	600	1100	20	500	900	
Aluminium and alloy R = 300- 500 N/mmq	20	8	5	200	400	7	180	400	10	160	350	12	160	300	14	140	300	16	130	250	16	130	250	
Copper R = 200- 350 N/mmq	20	10	6	400	600	8	350	600	11	300	550	14	250	550	17	200	500	18	150	500	20	120	400	
Hard bronze R = 600- 900 N/mmq	15	8	5	400	800	7	400	700	10	350	700	12	300	600	14	250	600	16	200	500	18	150	400	
Phosphor bronze R = 400- 600 N/mmq	12	8	4	120	160	8	110	150	8	100	140	10	90	130	12	70	110	14	60	100	16	50	90	
Brass R = 200- 400 N/mmq	16	16	5	600	1100	6	600	1100	10	550	1000	12	550	900	16	500	900	18	500	800	18	450	800	Cutting oil
Alloyed brass R = 400- 700 N/mmq	12	16	5	500	700	7	400	600	10	350	600	12	350	500	16	300	500	18	300	400	18	200	400	
Titanium and alloys R = 300- 800 N/mmq	18	8	4	50	160	4	45	150	6	45	140	10	45	130	12	40	110	14	35	100	16	30	90	
Profiles and tubes with wall thickness 0.05 D R = 300- 600 N/mmq	18	8	3	19	130	4	18	120	5	18	130	6	17	110	8	16	130	10	15	110	12	15	100	Emulsion
Profiles and tubes with wall thickness 0.25 D R = 300- 600 N/mmq	15	8	2	35	130	3	33	120	4	30	110	6	30	100	8	28	100	10	26	90	12	24	80	

Classification of steels

The tables on this page provide users with information on materials to cut, enabling their classification with respect to hardness and consequently the correct blade to use.

Types of steel				Hardness		
UNI	DIN	BS	AISI	Brinell HB	HRB	kg/mm2
C 22 - C 35	CK 22 - CK 3	En 2 C - En 6	1022 - 1035	160 - 170	34 - 87	55 - 59
C 45	CK 45	En 8	1040	160 - 180	84 - 89	55 - 61
C 10 - C 15	CK 10 - CK 15	En 32 A - En 328	1010 - 1015	150 - 175	81 - 87	51 - 59
C 60	CK 60	En 9	1060	160 - 180	84 - 89	55 - 61
		4360 - 50 A		160 - 180	84 - 89	55 - 61
	17100	3706 - 1.2.3.	ASTMA - 36/68	160 - 180	84 - 89	55 - 61
45 Cr Si 9	17115	4360		160 - 180	84 - 89	55 - 61
		En 20 A		190 - 215	91 - 97	64 - 73
34 Cr Mo 5	17221	970 - 1955	1065	180 - 205	89 - 94	61 - 69
		En 18 B	5135 - 5145	180 - 200	89 - 93	61 - 67
35 Cr Mo 4	34 Cr Mo	En 19 B	4135	200 - 230	93 - 99	67 - 77
	36 Ni Cr 6	En 111	3135	190 - 230	91 - 99	64 - 77
		En 36	3310 - 3315	200 - 230	93 - 99	67 - 77
20 Nc Cr Mo 2		En 362	4315	200 - 225	93 - 98	67 - 75
		En 100 D	8645	190 - 220	91 - 97	64 - 74
	1880 X C 95	DX	W 1	150 - 190	80 - 91	51 - 64
100 Cr 6	100 Cr 6	En 31	52100	210 - 230	96 - 99	71 - 77
		B 2	L 6	190 - 230	91 - 99	64 - 77
52 Nc Cr Mo KU	56 Ni Cr Mo V 7			217 - 248	97 - 102	73 - 83
	2750 (280W18)	18 % W	T 1	217 - 248	97 - 102	73 - 83
		1507 - 825	1310	160 - 220	84 - 91	55 - 64
		A 2	M 13	200 - 230	93 - 99	67 - 77
	210 Cr 46	A 1	D 3	215 - 240	97 - 101	73 - 81
	4845	En 58 G	309 S	150 - 200	80 - 93	51 - 67
X 12 Cr 13	4001	En 56 A	410	150 - 200	80 - 93	51 - 67
X 6 Cr Ni 1810	4301	En 58 E	304	130 - 170	74 - 86	45 - 58
X Cr Ni 1910						
X 8 Cr Ni Mo 1713	4401	1501 - 845	316	160 - 200	84 - 93	55 - 67
Phosphor bronze				60 - 100	56,5	36
Aluminium bronze				70 - 90	49	32
Manganese bronze				95 - 120	51 - 69	34 - 42
Silicon bronze				70 - 100	56,5	36

Classification of steels

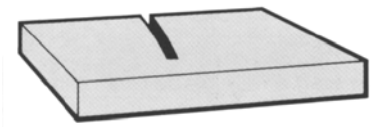
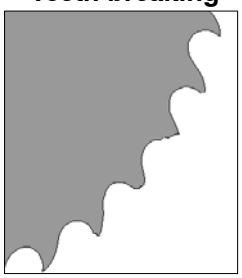
Material	SS Svezia	AISI U.S.A.	DIN Germania	BS Inghilterra	UNI Italia	AFNOR Francia
Carbon steels	1311	1015 - 1035	C 22 - C 35	050 A 20	C 15 - C 35	XC 18
			20 Mn 5 - 28 Mn 6	080 M 46 - 50	C 22 Mn	XC 38 H 1
	1572		CK 22 - CK 50	120 M 19	C 28 Mn	20 M 5
				150 M 28		
Carbon steels	1650	1040 - 1064	CK 60 - CK 101	060 A 40 - 060 A 96		XC 60 - XC 75
			36 Mn 5	070 M 55		40 M 5
	1880	1770 - 1880	Cm 45 - Cm 55	080 A 40 - 080 A 62	C 45 - C 60	XC 42 H 1
						XC 55 H 1
Alloy steel	2120	1335 - 1345		1717 CDS 110		25 CD 4
			25 Cr Mo 4 - 42 Cr Mo 4	708 A 37	25 Cr Mo 4 - 42 Cr Mo 4	
	2255	4130 - 4140		708 M 40		42 CD 4
Alloy steels	2541	4337 - 4340	40 Ni Cr Mo 6	735 A 50, 534 A 99	40 Ni Cr Mo 2 - 40 Ni Cr Mo 7	35 NCD 6
	2230	50100 - 52100	40 Ni Cr Mo 73	817 M 40	30 Ni Cr Mo 8 - 35 Ni Cr Mo 6 KB	50 CV 4
		6145 - 6152				
	2258	8630 - 8645	34 Cr Ni Mo 6, 100 Cr 6	311 typu 6 i 7	50 Cr V 4, 100 Cr 6	100 C 6
Tool steels	2310 - 12	D - 2, D - 3	X 210 Cr 12	BD 2, BD 3	X 205 Cr 12 KU	Z 160 CVD 12
	2754 - 55		X 155 Cr V Mo 121		X 155 Cr V Mo 121 KU	Z 200 C 12
Tool steel	2550	S - 1	60 W Cr V 7	BS 1	55 W Cr V 8 Ku	55 NCVD 7
	2710		55 Ni Cr Mo V 6		55 Ni Cr Mo V 6	
Stainless steels	2324	201, 202	X 2 Cr Ni 189	304 S 15	X 2 Cr Ni 18.11	Z 2 CN 18.10
	2333	302, 304	X 5 Cr Ni 189	304 C 12	X 5 Cr Ni 18.10	Z 6 CN 18.09
			G - X 2 Cr Ni 189	304 S 12	G - X 2 Cr Ni 19.10	Z 3 CN 19.10
Stainless steel	2343	314, 316	X 15 Cr Ni Si 2520	316 S 16	X 16 Cr Ni Si 2520	Z 12 CNS 25.20
			X 5 Cr Ni Mo 1812		X 5 Cr Ni Mo 1713	
	2353	317	X 5 Cr Ni Mo 1713	317 S 16	X 5 Cr Ni Mo 1815	Z 6 CND 17.12

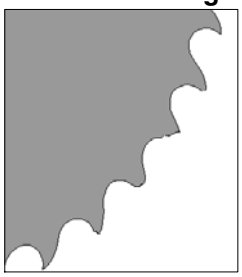
Troubleshooting

10

This chapter describes the inspection and troubleshooting procedures for the **C370- 2SI**. Regular inspections and efficient maintenance are essential to ensure your machine gives you a long, trouble- free service life. The chapter is divided into two sections: the first being dedicated specifically to TROUBLESHOOTING BLADE AND CUTTING PROBLEMS, while the second TROUBLESHOOTING section concerns troubleshooting general machine operating faults. Taken together they form a comprehensive troubleshooting guide which will enable you to follow a methodical procedure for solving any problem.

Troubleshooting blade and cutting problems

PROBLEM	PROBABLE CAUSE	SOLUTION
Cuts not at 90 degrees or angled 	◗ Head speed too high	☞Reduce head speed
	◗ Disc with worn teeth	☞Replace disc
	◗ Orthogonality of disc to workpiece rest shoulder	☞Adjust the position of the blade so that it is at right angles to the workpiece rest shoulder using the 0° adjuster pin; then set the stops at 45° right and left using the appropriate screws.
	◗ Perpendicularity of disc to work surface	☞Contact our Assistance Office
	◗ Cutting speed too low	☞Increase cutting speed.
	◗ Broken teeth	☞Check the hardness of the material being cut
Teeth breaking 	◗ Incorrect lubricant/coolant fluid	☞Check the water and oil emulsion; check that the holes and hoses are not blocked; direct the nozzles correctly.

PROBLEM	PROBABLE CAUSE	SOLUTION
Teeth breaking 	◗ Material too hard	☞Check the cutting speed, feed speed and disc pressure parameters and the type of disc you are using.
	◗ Disc not worn- in correctly	☞With a new disc it is necessary to start cutting at half feeding speed. After the wearing- in period (a cutting surface of about 300 cm2 for hard materials and about 1000 cm^2 for soft materials) the cutting and feed speeds can be brought up to normal values.
	◗ Disc with excessively fine tooth pitch	☞The swarf wedges into the bottom of the teeth causing excessive pressure on the teeth themselves.
	◗ New blade inserted in a partially completed cut.	☞The surface of the cut may have undergone local thermal alteration, making it harder: when starting work again, use a lower cutting speed and head feed speed. A tooth from the old blade may be left in the cut: check and remove before starting work again.
	◗ Workpiece not clamped firmly in place	☞Any movement of the workpiece during cutting can cause broken teeth: check the vice, jaws and clamping pressure.
	◗ Vibration	☞Workpiece vibrates in the vice: check that the slide has been adjusted correctly; check the clamping pressure and if necessary increase.

Rapid tooth wear 	◗ Head speed too slow	☞The blade runs over the material without removing it: increase head speed.
	◗ Cutting pressure too high	☞Reduce cutting pressure.
	◗ Cutting speed too high	☞The teeth slide over the material without cutting it: reduce the cutting speed.
	◗ Insufficient coolant	☞Check the coolant level and clean piping and nozzles.
	◗ Incorrect fluid concentration	☞Check and use the correct concentration.

PROBLEM	PROBABLE CAUSE	SOLUTION
Rapid tooth wear 	◗ Material defective	☞The materials may present altered zones either on the surface, such as oxides or sand, or in section, such as under- cooled inclusions. These zones, which are much harder than the blade, cause the teeth to break: discard or clean these materials.

Broken blade 	◗ Head speed too high	☞Reduce head speed.
	◗ Teeth in contact with material before starting the cut	☞Always check the position of the blade before starting a new job.
	◗ Insufficient coolant	☞Check the coolant level and clean piping and nozzles.
	◗ Vibrations	☞Workpiece vibrates in the vice: check that the slide is regulated correctly; check the clamping pressure and if necessary increase.

Troubleshooting

This section deals with the problems which may occur during machine operation. The M30 controller allows you to test all the machine's electric and electronic devices by checking the status of the input and output signals on the IUD/IUV card (see Chapter 6).

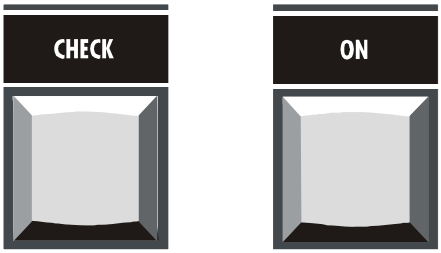
The board IUD/IUV is inside the electric board.

Displaying the diagnostics menu

▶ Power the machine rotating the main switch on the left side of the control

board;

▶ press simultaneously and in sequence the keys CHECK and ON;

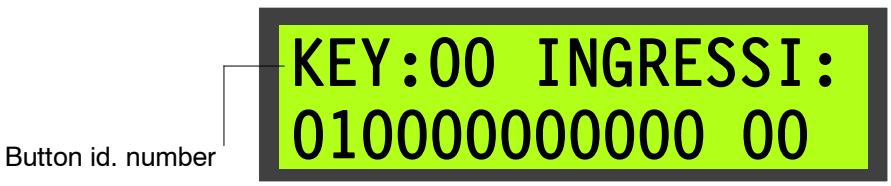


Diagnostics system

Once you have opened the diagnostics menu, a set of characters, each corresponding to an OUTPUT signal on the M30 controller, is displayed. For further information about the machine's outputs, refer to the electrical and electronic diagrams illustrated in Chapter 6 of this manual.

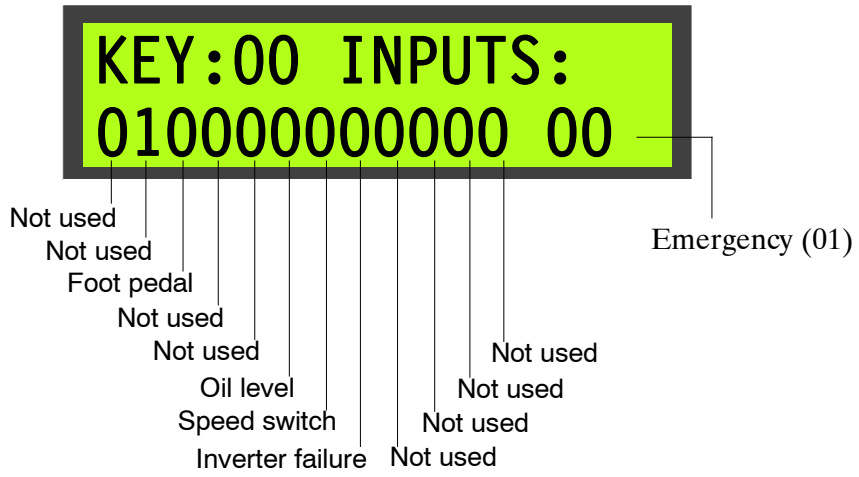
Testing the control console keyboard

Each console key has an identification number which is displayed on the diagnostics screen after the letter "K", when the key is pressed. For example, when pressing the key for the manual cycle (HAND key), the figure 12 is displayed next to the letter "K":

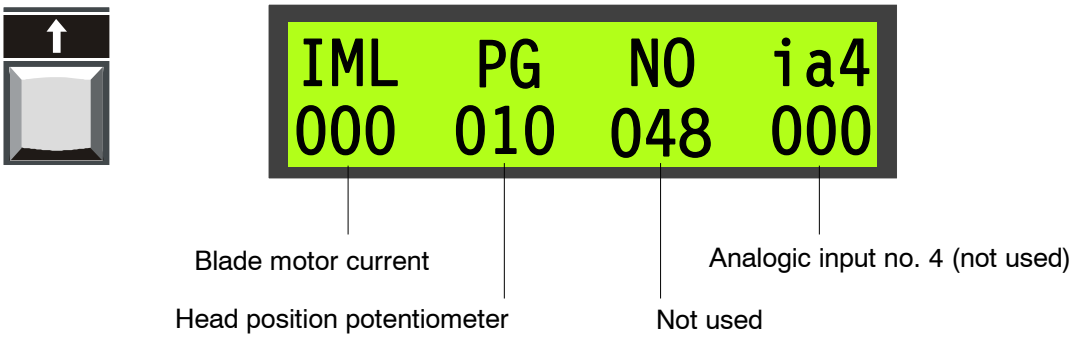


if the figure K does not change pressing the key HAND, the probable malfunctioning is due to the console key that does not deliver power when closed.

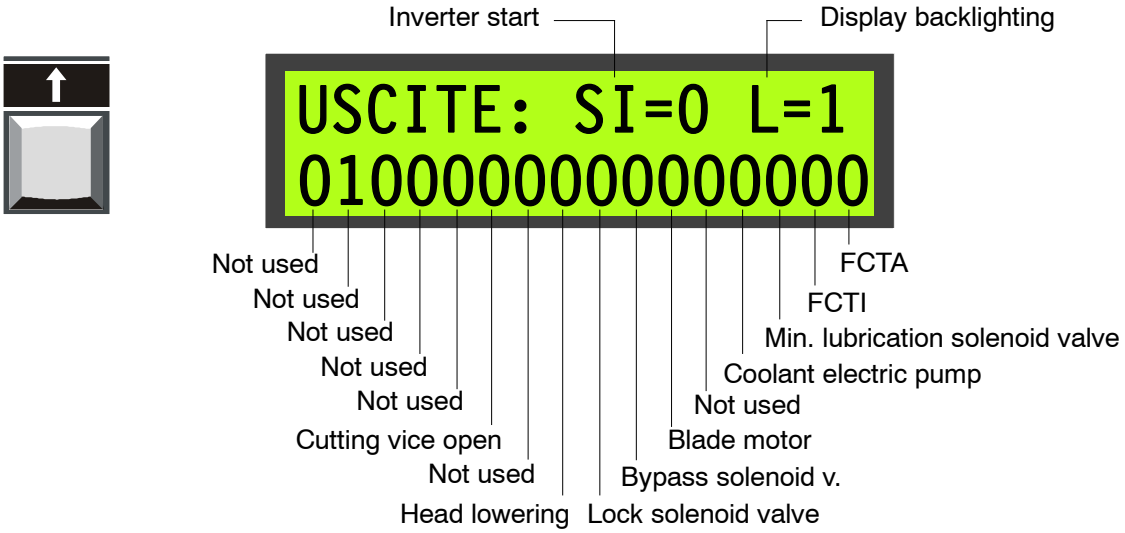
List of IUD-IUV card INPUTS



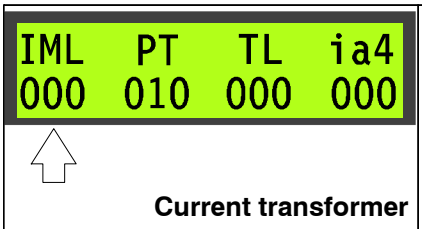
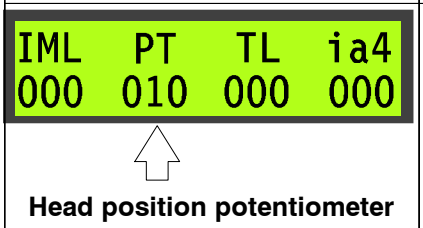
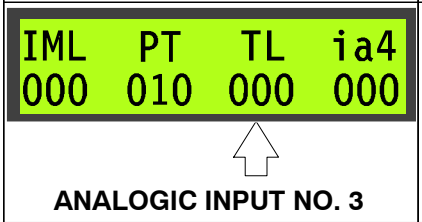
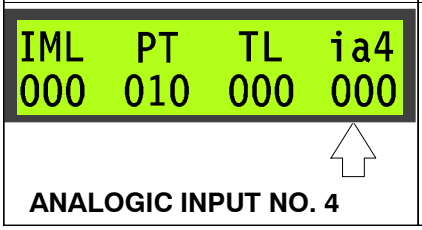
- the digits 0 and 1 shown in the display lower line indicate the status OFF (0) or ON (1) of each single input;
- Starting from the video page of the digital inputs, press the key “arrow up” once to display the list of the analogic inputs of the board IUD/IUV:



List of IUD-IUV card OUTPUTS



▶ Starting from the video page of the digital inputs, press the key “arrow up” once to display the list of the outputs of the board IUD/IUV:

	**AMMETER TRANSFORMER FOR CHECKING BLADE MOTOR ABSORPTION** If the display of blade motor absorption doesn’t visualise the current values any longer, it’s possible to check if the fault is relative to ”AMMETER TRANSFORMER”, to visualisation, to wiring, or to input of IUV board.
	**POTENTIOMETER OF HEAD CYLINDER TRANSDUCER (CUTTING HEAD POSITION)** If, by moving the head upwards or downwards, the value visualised doesn’t change, you can check if the problem is due to the transducer potentiometer, to connections or to problems of the IUV. Move the head manually and check that the value changes on the display.
	ANALOGIC INPUT NO. 3 Available for connecting optional instructions.
	ANALOGIC INPUT NO. 4 Available for connecting optional instructions.

▶ the digits 0 and 1 shown in the display lower line indicate the status OFF (0) or ON (1) of each single output. Pressing the ▶ or ◀ key it is possible to move the cursor till selecting the output to be checked. Pressing the ▲ key it is activated or deactivated.

Machine alarms and emergencies

The machine’s M30 controller notifies the operator of any alarm or emergency condition which may occur during production by way of acoustic and visual signals. This section lists the messages shown on the display.

PRESS RESET	This message is displayed during the initialisation phase after pressing the ON key
PRESS RESET	This message is displayed when the cutting start position is lower than the previous position saved for the cutting end position. ▶ Save both the FCTI and FCTA positions again.
HEAD NOT AT FCTI PRESS RESET	This message is displayed if the head is not positioned at the FCTI position when the cycle is STARTED. ▶ Return the head to the FCTI position before resuming the cycle

SELECT SPEED PRESS RESEt	This message is displayed if the cycle is STARTED without having first selected the cutting speed. ▶Return the head to the FCTI position before resuming the cycle
STOP BUTTON PRESSED PRESS RESET	This message is displayed if an operation is activated before releasing the MUSHROOM HEAD EMERGENCY STOP button. ▶Release the EMERGENCY STOP button and press RESET.
EMERGENCY BLADE GUARD OPEN	This message is displayed if the blade guard is opened, for example, to change the blade. ▶Make sure the blade guard is closed. ▶Check the safety limit switch. ▶Check the connections.
EMERGENCY INVERTER FAILURE	This message is displayed if the machine is equipped with an INVERTER (optional). Press RESET to test the manual commands. ▶Check the inverter contactor. ▶Check the power supply voltage. ▶Check the power phases and supply voltage of the blade motor. ▶Check the connections.
EMERGENCY BLADE STOPPED	Displayed when the blade is jammed while cutting: ▶Press RESET
EMERGENCY AIR PRESSURE	It is displayed when the air pressure from the network fails. ▶Press RESET
EMERGENCY BLADE MOT I OVERC.	It is displayed when there is an overcurrent at the blade motor ▶Press RESET
EMERGENCY BLADE TENSION	This message indicates a mechanical or electric/electronic fault affecting the blade tensioning unit. ▶Check the blade tension. ▶Check the operation of the tensioning slide. ▶Make sure the blade is correctly positioned on the flywheels. ▶Check the STRAIN GAUGE input on the IUV card. ▶Check the condition of the blade. ▶Check the connections.
EMERGENCY ERROR CODE: 01	RESETS OR INTERRUPTS NOT JUSTIFIABLE
EMERGENCY ERROR CODE: 02	EEPROM NOT AVAILABLE

EMERGENCY ERROR CODE: 03	RAM TEST FAILED
EMERGENCY ERROR CODE: 04	ROM TEST FAILED
EMERGENCY ERROR CODE: 05	STATUS OR TEMPLATE NON- EXISTENT
EMERGENCY ERROR CODE: 06	CUTTING CYCLE PHASE NON- EXISTENT
EMERGENCY ERROR CODE: 07	EMERGENCY NOT DEFINED
EMERGENCY ERROR CODE: 07	SERIAL 485 FAILURE
EMERGENCY ERROR CODE: 07	SERIAL 422 FAILURE
EMERGENCY ERROR CODE: 08	UNSTABLE DIGITAL INPUTS
EMERGENCY ERROR CODE: 09	UNSTABLE BLADE (ch0) MOT ABSORB ANAL. INPUT
EMERGENCY ERROR CODE: 10	UNSTABLE HEAD (ch1) POSIT. P. ANAL. IN-PUT
EMERGENCY ERROR CODE: 15	POWER FAILURE

Accessory Installation

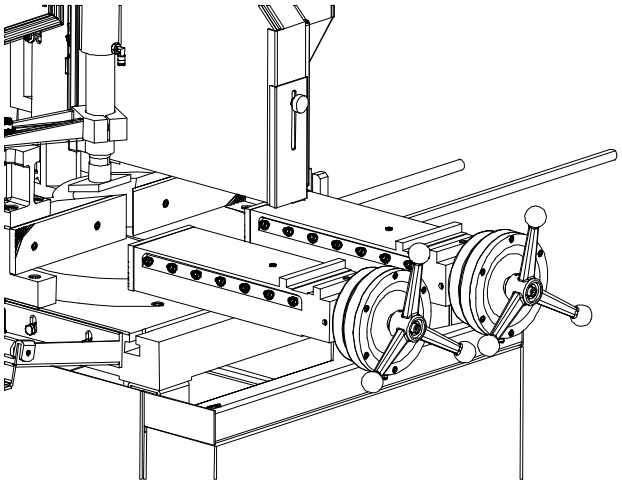
11

This chapter provides a list of the available accessories that can be fitted to this machine, along with assembly instructions.

Supplementary pneumatic vice

As well as the vice fitted as standard on the machine, an additional pneumatic vice can also be fitted. The installation procedures are illustrated below:

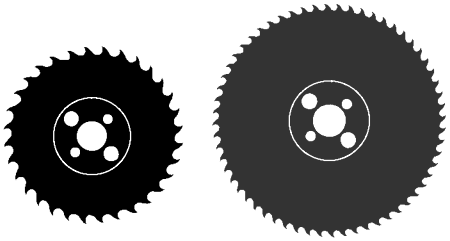
- position the clamp to the right of the blade guard and tighten the feed screw locking plate;
- connect the pneumatic hoses to the opening and closing unions on the pneumatic cylinder of the main pneumatic clamp using Y connectors.



Circular blade

The machine fits:

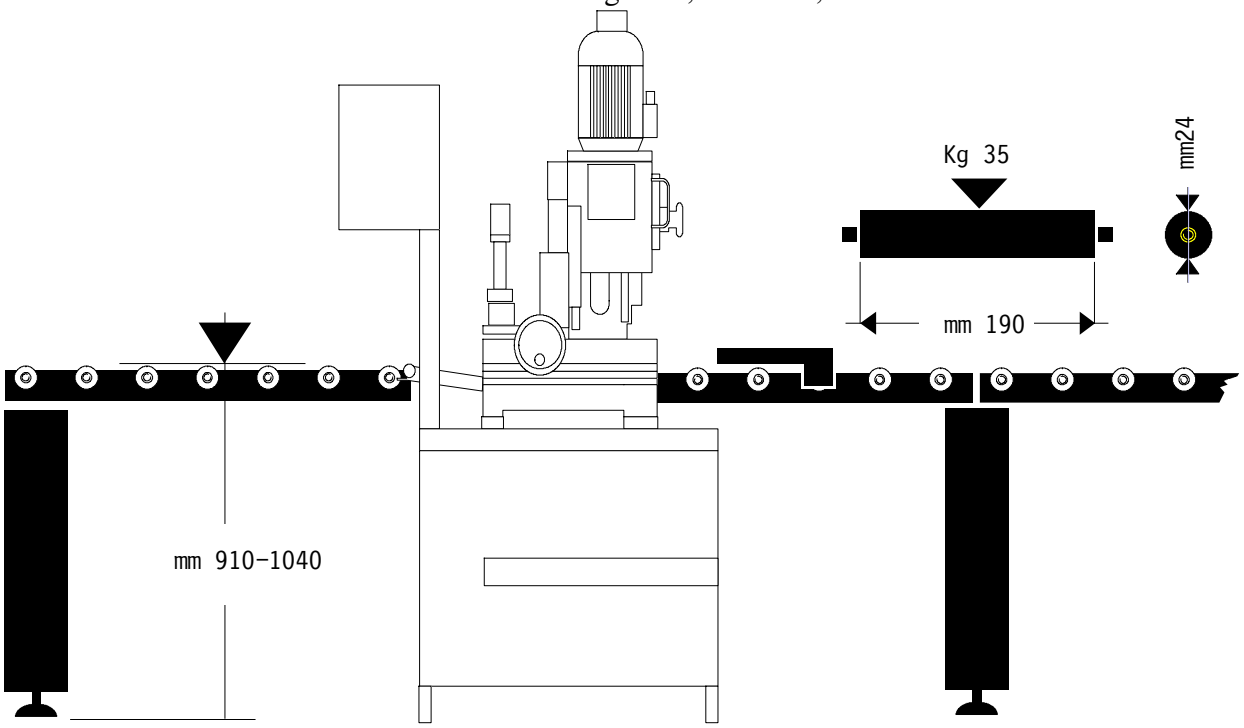
- circular blade HSS DMo5/M2 D. 370x32x3 for profiles.



See chapter 7 of this manual for cutter blade installation instructions.

Roller table

- K40 roller table module for feed side, 1500 mm;
- K40 roller table for discharge side, 1500 mm;

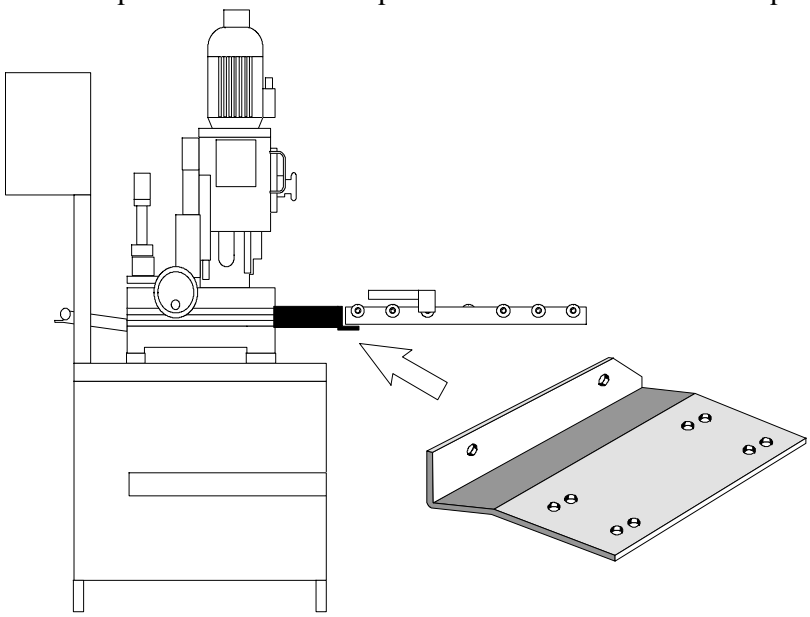


- K40 roller table for discharge side, 3000 mm;
- K40 roller table for discharge side, 4500 mm;
- K40 roller table for discharge side, 6000 mm.
- To fit the roller loading platform on the loading side, the machine has a bar-support arm that one end of the roller-way can be positioned on and then screwed in place.
- To install the roller loading platform on the discharge side an adapter must be used, with or without a support, as explained in the paragraphs that follow.

Adattatore pianale a rulli lato scarico

This device is used to attach the discharge roller table to the machine, and instructions are supplied below for how to assemble it:

- ▶ remove the two TE screws from the right side of the slideway;
- ▶ attach the adapter and secure it in place with the screws removed previously.

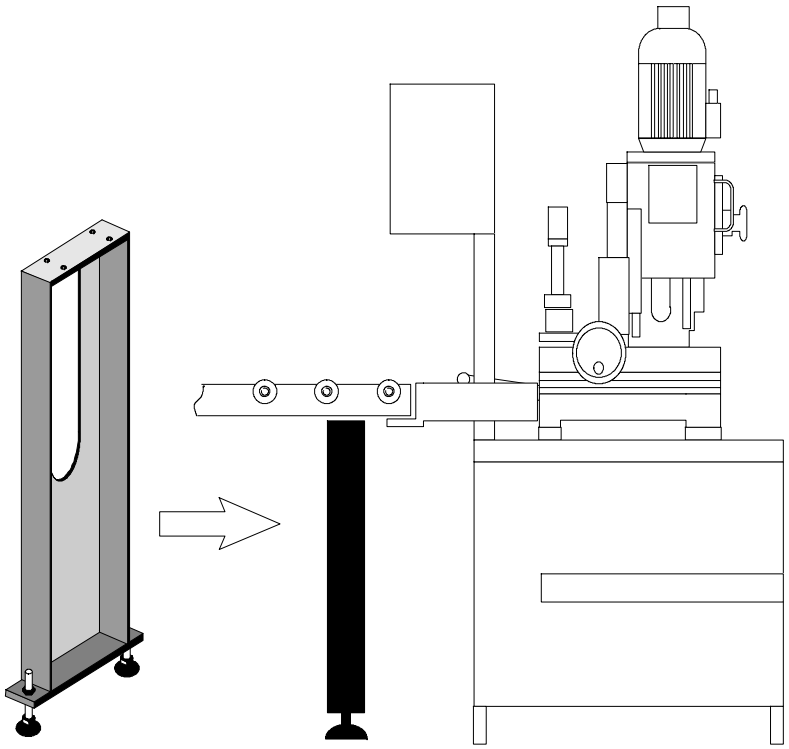


- ▶ Attach the outfeed rolling deck by fixing it with the screws supplied.

Feed side roller table support

This device is used to increase the load- bearing strength of the roller table, both during feeding and discharge. The steps which should be followed to assemble it are illustrated below:

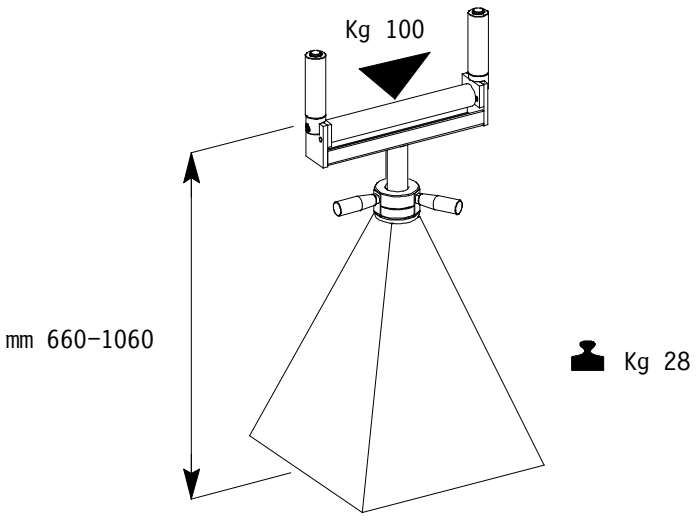
▶ disconnect the table from the adapter (on the discharge side, for example);



▶ position the support to correspond with the holes on the base of the trailer and reconnect to the adapter.

Bar support

This device is used to increase the load- bearing strength of the roller table, both during feeding and discharge. The steps which should be followed to assemble it are illustrated below.



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