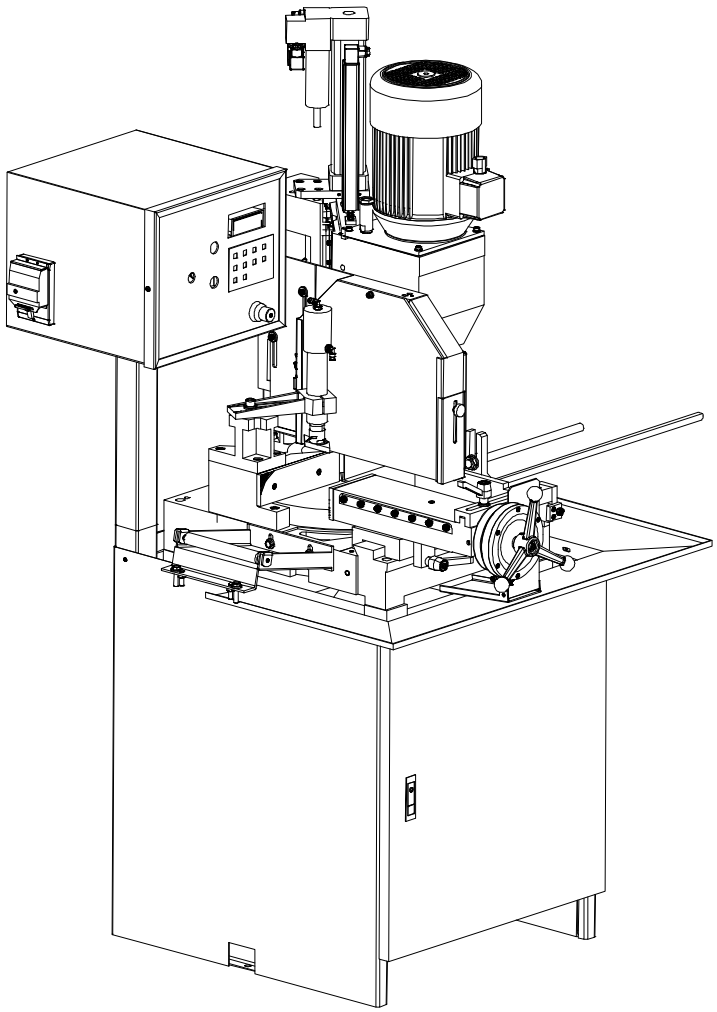


EN TIGER 352 SX–EVO

YEAR OF MANUFACTURE: _____

CE

HU

Eredeti használati utasítás fordítása

„EK" MEGFELELŐSÉGI NYILATKOZAT
(a 2006/42/EK GÉPEK IRÁNYELV II A melléklete szerint)

A gyártó:

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

Ezúton kijelenti, hogy az alábbi fémipari körfűrész

Megnevezés:	**FŰRÉSZGÉP**
Gép modell:	**TIGER 352 SX–EVO**
Sorozatszám:	
Gyártási év:	

megfelel az alábbi irányelveknek:

- **2006/42/EK GÉPEK IRÁNYELV**
  - **EN 16093:2017**
- **2014/30/UE „EMC” IRÁNYELV**
  - **EN 50370–1:2006 Emission**
  - **EN 50370–2:2003 Immunity**

Műszaki dokumentáció felelőse
(Walter Di Giovanni)

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Via Enzo Magnani, 1
61045 - Pergola - PU -
OLASZORSZÁG

Megbízott igazgató
William Giacometti

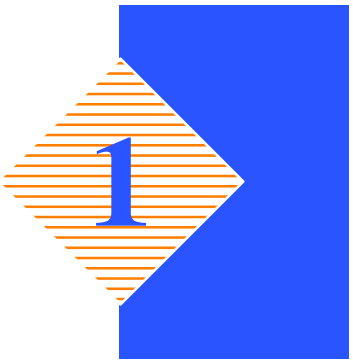
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Introduction and technical specifications



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.

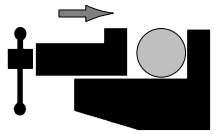
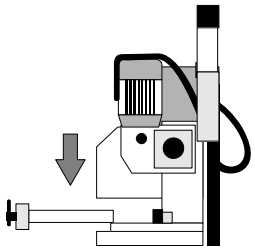
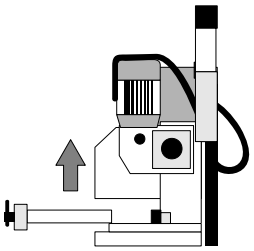
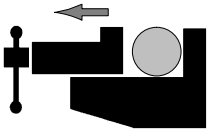
TIGER 352 SX−EVO is a 4-speed vertical shearing machine and can perform mitre cuts of 60° on the left and 45° on the right.
These features, together with its good cutting capabilities, result in a very versatile machine.

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.

MEPGroup

MEP

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DESIGNATION	SAWING MACHINE
MODEL	
SERIAL NUMBER	
WEIGHT kg	
YEAR OF MANUFACTURE	

CE

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

General technical data

CUTTING SPEEDS		
Speeds 1/2/3/4 (standard speed)	rpm	15/30/45/90
Speeds optional 1/2/3/4	rpm	30/60/90/180

Warning All models can be equipped with the Inverter, an optional device, which offers a range of speeds comprised between **15÷150 rpm** As the machine is predisposed for the Inverter, it can be installed by the client or factory pre–installed on request made during the ordering procedure.

BLADE		
External disc diameter	mm	350
Internal hole diameter	mm	32
Blade thickness	mm	2,5

RATED ELECTRICAL POWER		
Standard three phase head spindle motor	kW	2,6/1,8
Optional three phase head spindle motor	kW	3/2,2
Electric coolant pump motor	kW	0,1
Max installed power	kW	3,1

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.	20
Oil for transmission box	capacità Lt.	4,8

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	1440
8	230/400	10/5,7	1,8	715
Stator wound with enamelled copper wire, class H 200°C.				
Class F insulation (limit temperature TL 155°C).				
IP 55 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI–EN 60034–1:2011				

N.B. Example of class F insulation: in air–cooled machines at an ambient temperature of 40° C, the allowable overtemperature is 100° C (where 100° C represents the allowable ΔT).

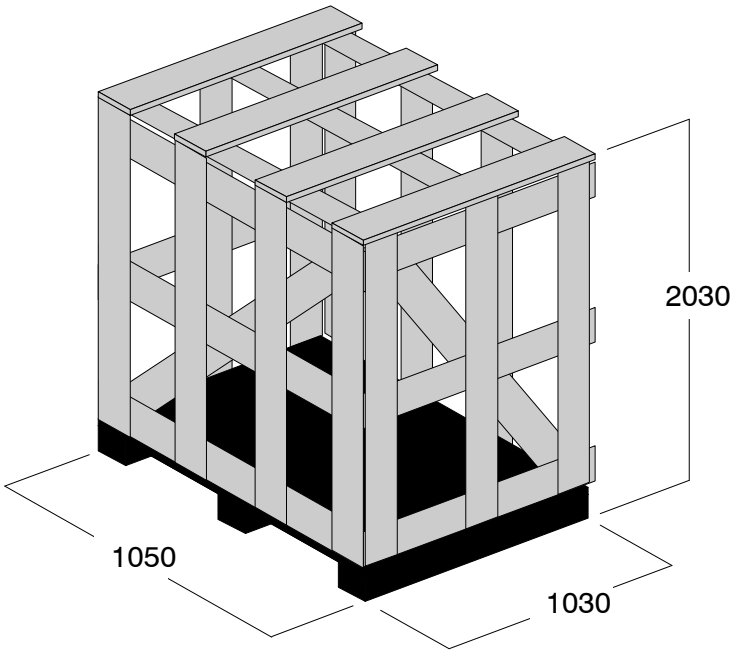
SPINDLE MOTOR (OPTIONAL)				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
2	230/400	15/6,1	3	2875
4	230/400	9,8/4,6	2,2	1440
Stator wound with enamelled copper wire, class H 200°C.				
Class F insulation (limit temperature TL 155°C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI–EN 60034–1:2011				

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–EN 60034–1:2011			

CUTTING CAPACITY for HOLLOW sections			
Section			
0°	115	95	180 x 95
45° ⧫	110	95	125 x 95
45° ⧫	110	95	125 x 95
60° ⧫	90	80	90 x 95

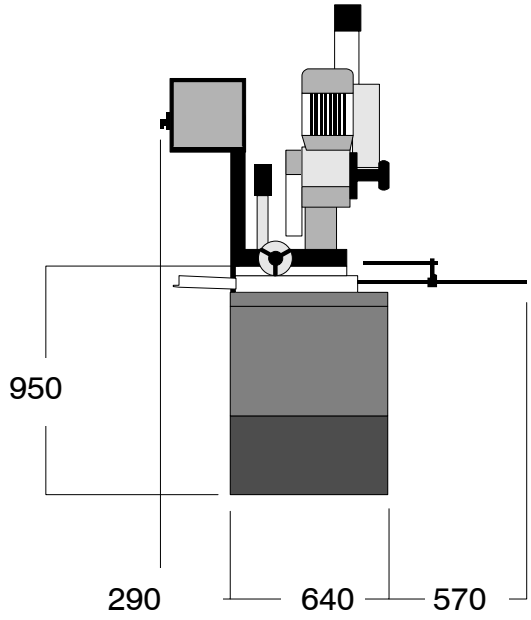
CUTTING CAPACITY for SOLID sections		
Section		
0°	90	
45° ⧫		64 x 90
45° ⧫		64 x 90
60° ⧫		45 x 90

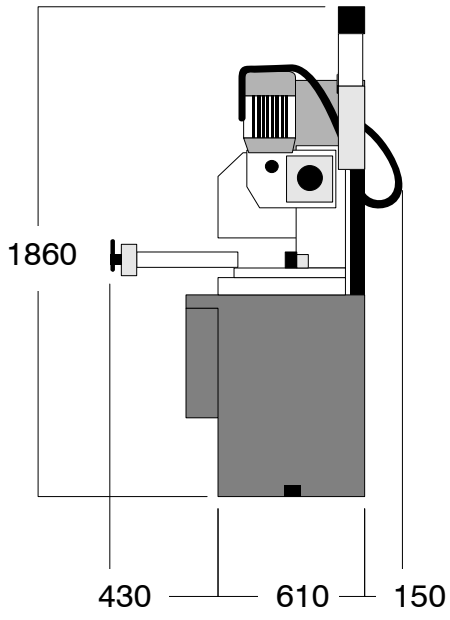
PACKED WEIGHT		
Wooden cage and pallet	kg	70
Wooden pallet	kg	20

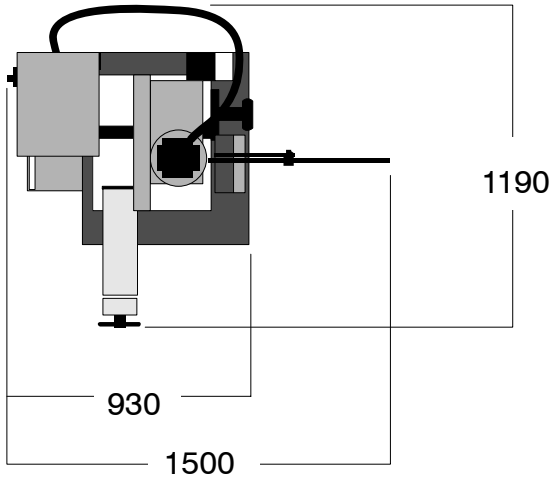


Dimensions

MACHINE INSTALLED		
Work table height	mm	950
Weight	kg	425





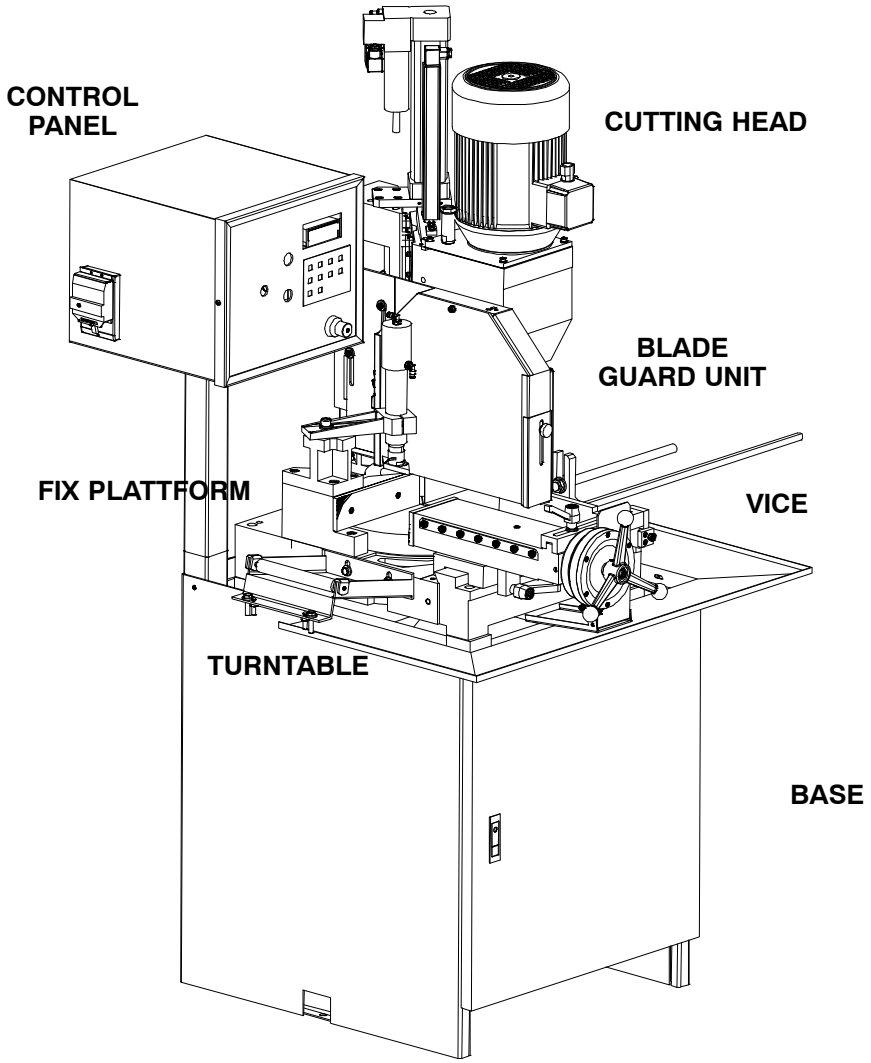


Functional parts

2

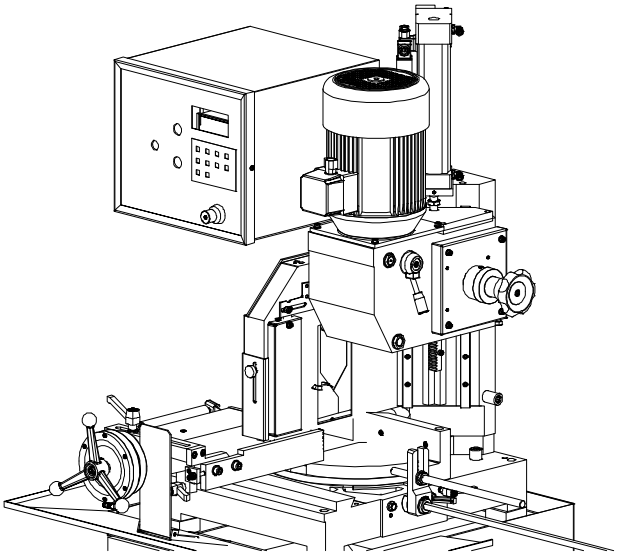
TIGER 352 SX–EVO model

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.



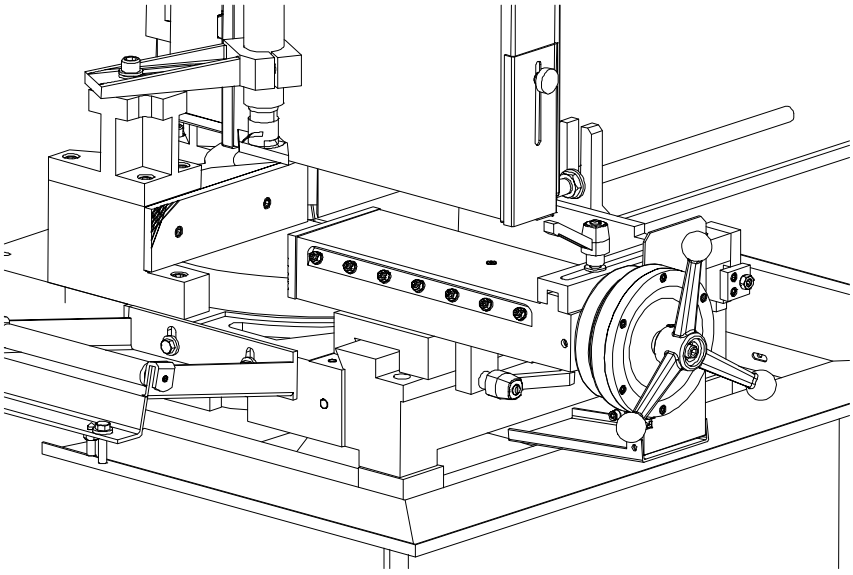
Cutting head

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.



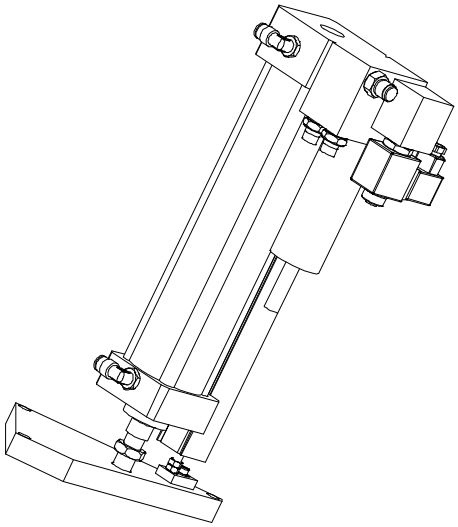
Vice

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. The vice approaching movement is manual and the closing is operated by a pneumatic cylinder.



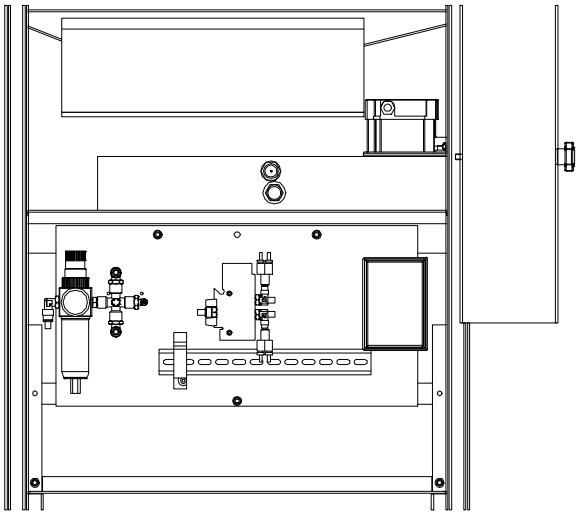
Oil pneumatic unit

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 **TIGER 352 SX−EVO** has a spring located in the cutting head.



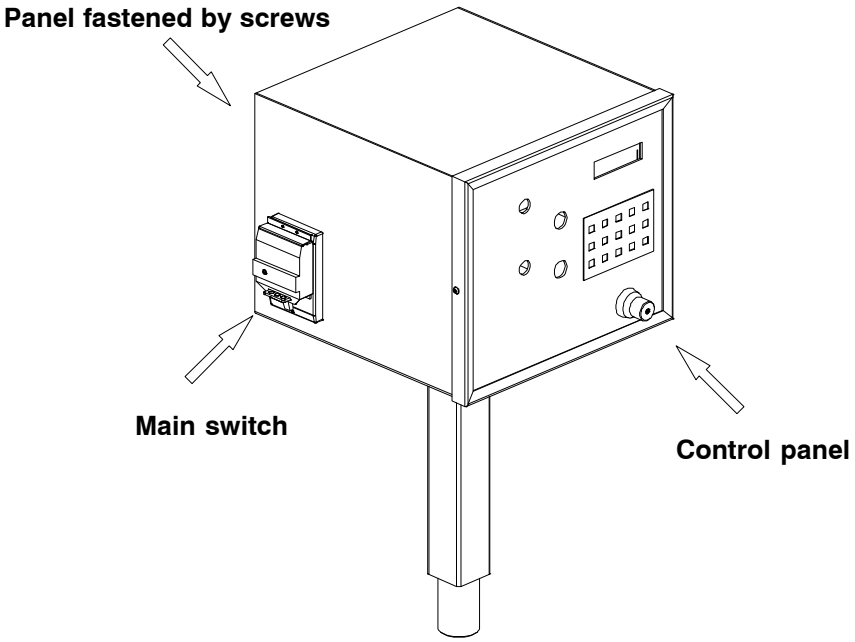
Electro−pneumatic unit

The panel shown in the diagram below is the electro−pneumatic unit. It consists of an air treatment unit (1) and an electro−valve (2); the unit serves to filter the air entering the circuit. The box above the air treatment unit is for the coolant and its electric pump (3).



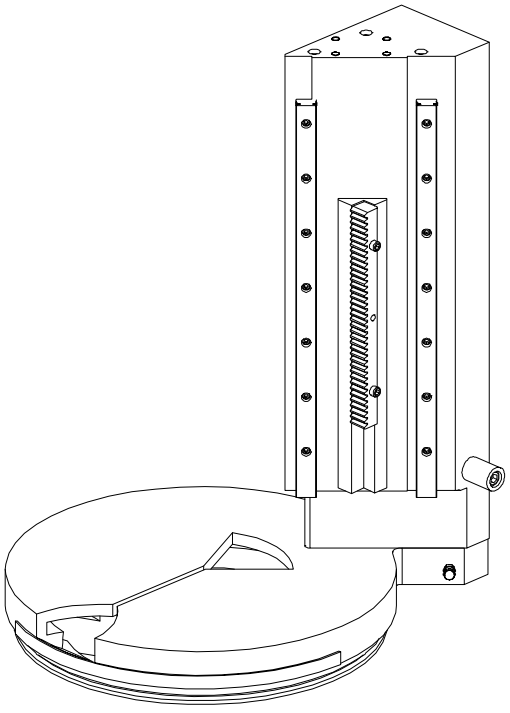
Control Panel

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.

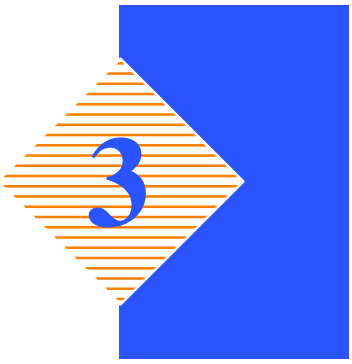


Turntable

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.



Safety and accident prevention



The **TIGER 352 SX–EVO** 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 disk vertical sawing machine **TIGER 352 SX–EVO** is intended exclusively for cutting metallic materials, ferrous or non–ferrous, in section or solid.
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 **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 EN 12464−1 :2011“Lighting in work environments”).

CONNECTIONS

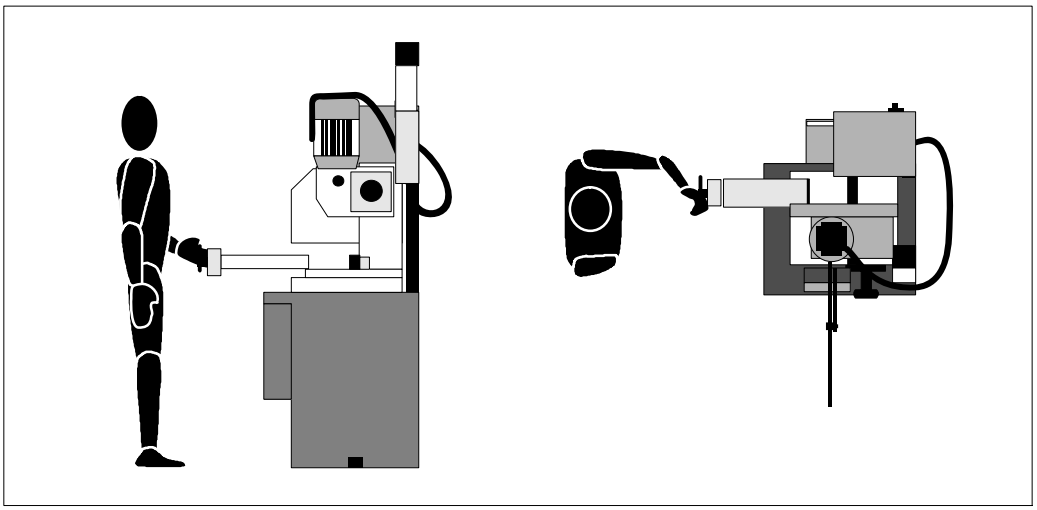
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the “Machine Specification” tables; replace if necessary.

EARTHING

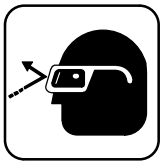
The installation of the earthing system must comply with the requirements set out in EN 60204−1:2006/AC:2010.

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.



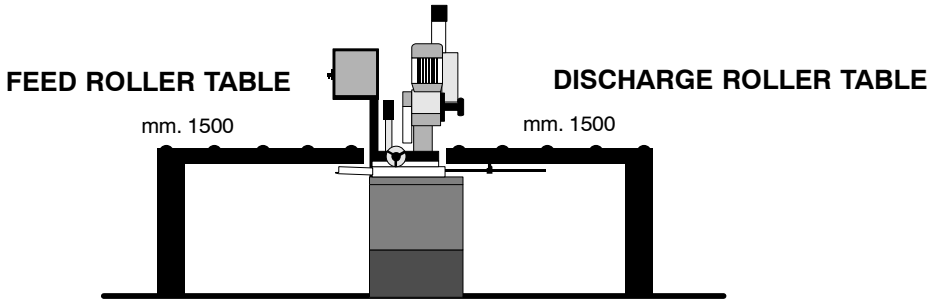
Do not wear oversize clothing with long sleeves, oversize gloves, bracelets, necklaces or any other object that may become entangled in the machine during working; long hair must be tied back and bunched.



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. Before removing the devices supporting and moving the material, fasten the latter in place using the machine's clamping devices or other suitable equipment.





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

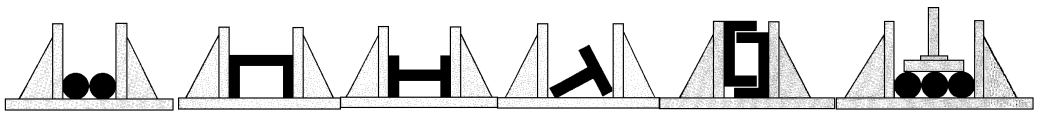


The operator MUST NOT perform any risky operations or those not required for the machining in course (e.g. remove swarf or metal shavings form the machine while cutting).

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 MEP 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 **TIGER 352 SX–EVO** band saw.

Reference standards

MACHINE SAFETY

- MACHINES DIRECTIVE 2006/42/CE;
- Directive 2014/30/UE "EMC – Electromagnetic Compatibility";
- Directive 2014/35/UE known as "Low voltage directive".
- EN 16093:2017 Machine tools - Safety - Sawing machines for cold metal
- EN ISO 12100:2010 "Safety of machinery - General principles for design - Risk assessment and risk reduction".

HEALTH AND SAFETY AT WORK

- D.lgs 81/08 and subsequent amendment D.lgs 106/09 ;Directive 91/382/CE;2003/10/CE for the protection of workers against risks caused by exposure to physical, chemical and biological agents during working;
- Directive89/391/CE and Special EEC Directives No. 89/654/CE 2009/104/CE for improvements in health and safety at work;
- Directive 2004/37/CE for the protection of workers against risks deriving from exposure at work to carcinogenic substances;
- Directive 92/58/CE and No. 79/640/CE on safety signs at work.

PERSONAL PROTECTION

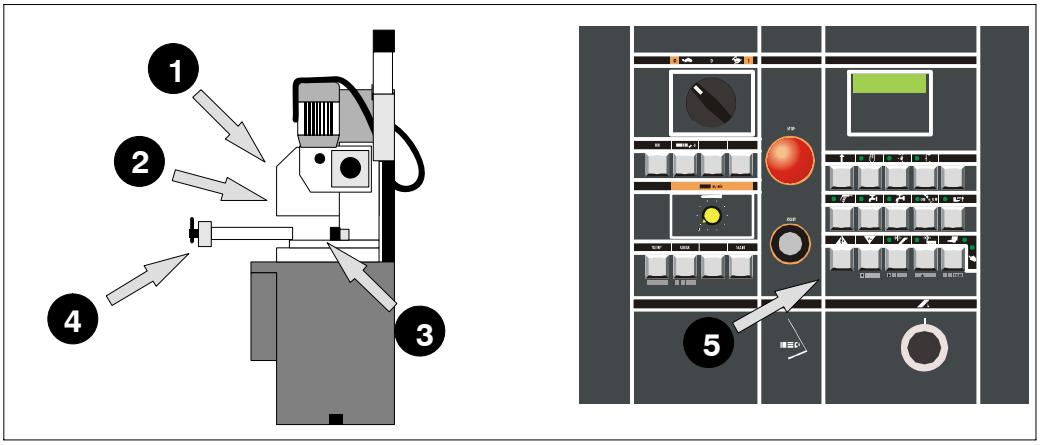
- Directive89/656/CE and Regulation 2016/425/UE on the use of personal protection devices.

ENVIRONMENTAL PROTECTION

- Directive 2006/12/CE on waste disposal;
- Directive 2008/98/CE on the disposal of used oil.
- Directive 2015/863/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS III).

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 EN 16093:2017;
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 8 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 changed: 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 EN 60204−1:2006/AC: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.

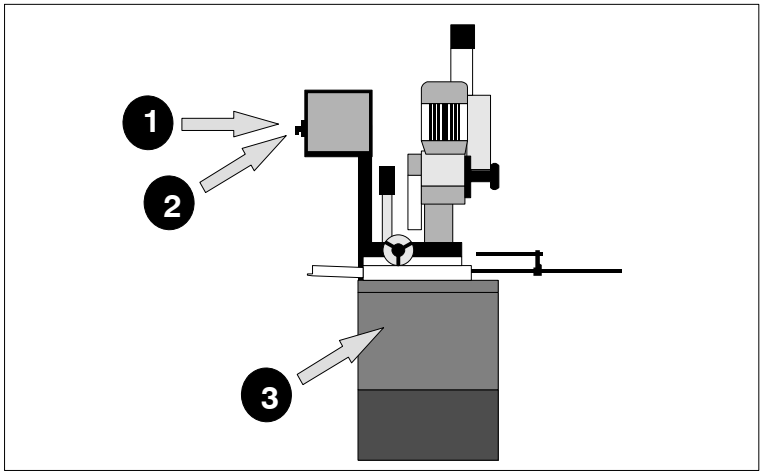
Emergency devices

In accordance with Italian standard EN 60204−1:2006/AC: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 TIGER 352 SX−EVO:

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.
3. **Pressure contact (pressure switch):** this device inhibits all functions of the machine immediately, when pressure in the compressed air system drops below 3 Bar.



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**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 16093:2017, EN ISO 12100:2010 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	**TIGER 352 SX–EVO**
Reference standard	EN ISO 3746:2010

Results		
Test 1st	**Description**	Ø 100 mm pipe in FE37 steel Disc blade HSS–DMO5 0 350 T6
	Results	**Mean sound level (Leq) 76,42 dB (A)** Environmental correction (K) 2.97 dB(A) Peak sound power (Lw) 87,34 dB(A)
Test 2nd	**Descriprion**	Ø 80 mm solid tube in C40 steel. Disc blade HSS–DMO5 0 350 T6
	Results	**Mean sound level (Leq) 76,50 dB(A)** Environmental correction (K) 2.97 dB(A) Peak sound power (Lw) 87,42 dB(A)
Test 3rd	**Description**	40x70 mm solid tube in C40 steel. Disc blade HSS–DMO5 0 350 T6
	Results	**Mean sound level (Leq) 76,19 dB(A)** Environmental correction (K) 2.97 dB(A) Peak sound power (Lw) 87,12 dB(A)

Vibration emission

This sawing machine complies with the norms EN 1299:1997 + A1:2008 and EN ISO 20643:2008/A1:2012, 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 2014/30/UE e 2014/35/UE and **MACHINES DIRECTIVE 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 **TIGER 352 SX–EVO**.

Emissions

- EN 61000–6–4:2007 + A1:2011 Electromagnetic Compatibility (EMC) – Generic standard regarding emissions. Part 6–4: Industrial Environment.
- EN 55011:2009 + A1:2010 Industrial, scientific, and medical radio frequency appliances (ISM). Characteristics of radio frequency disturbance – Limits and methods of measurement.
- EN 50370–1:2005 Electromagnetic compatibility (EMC) – Product family standard for machine tools – Part 1: Emission

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

- IEC 61000−6−2:2005 + AC:2005 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.
- IEC 61000−4−3:2006 + AMD1:2007 + AMD2:2010 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 3: Radiated, radio−frequency, electromagnetic field immunity test.
- IEC 61000−4−4:2012 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 4: Fast transients/bursts immunity tests – Basic publication.
- IEC 61000−4−5:2014 + AMD:2017 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 5: Surge immunity test.
- IEC 61000−4−6:2013 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 6: Immunity to conducted interference, induced by radio frequency fields.
- IEC 61000−4−11:2006 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 11: Voltage dips, short interruptions and voltage variations immunity tests.
- EN 50370−2:2003 Electromagnetic compatibility (EMC) – Product family standard for machine tools – Part 2: Immunity

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

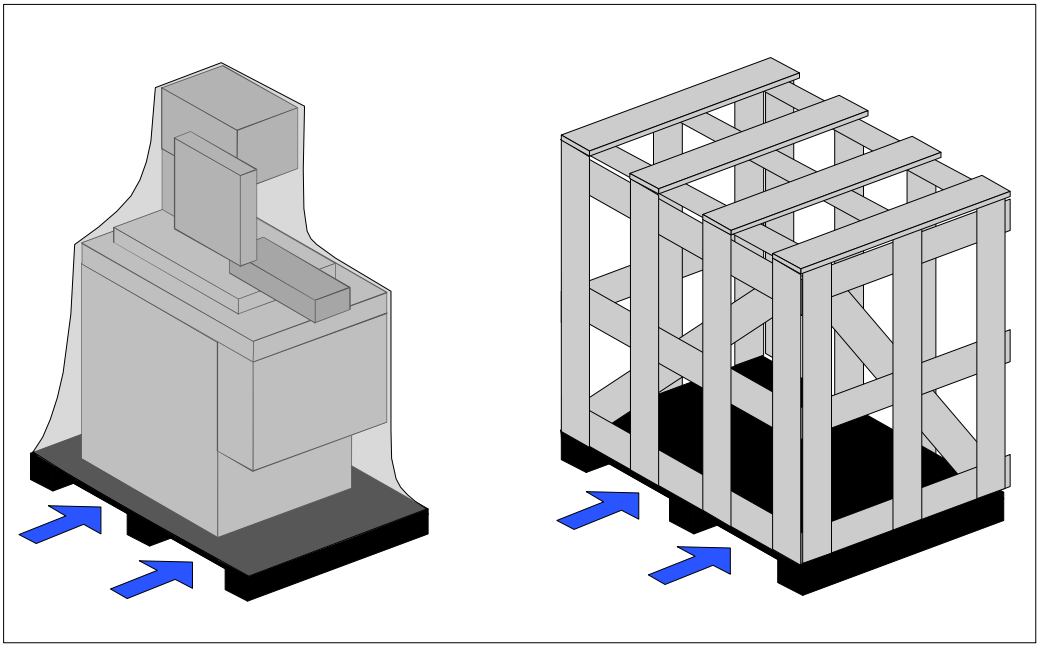
Machine installation

4

Packaging and storage

MEP S.p.A. 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:

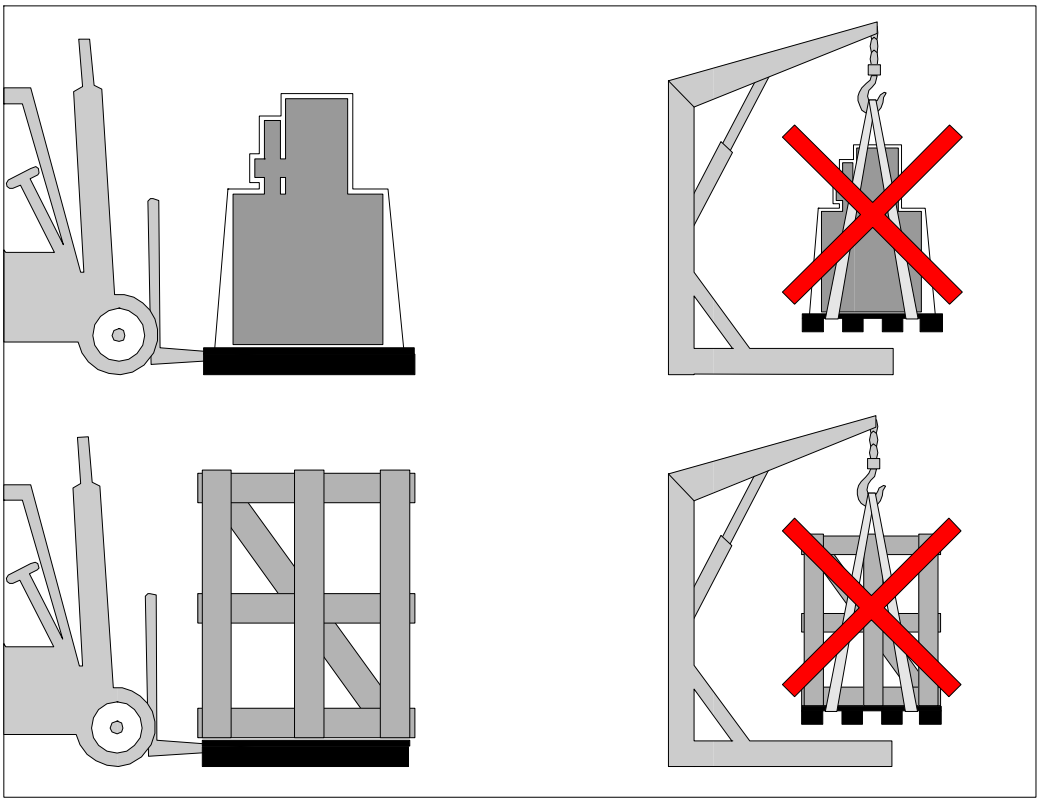


1. on a pallet with straps and heat−shrink plastic;
2. on a pallet with straps, heat−shrink plastic and a wooden crate.

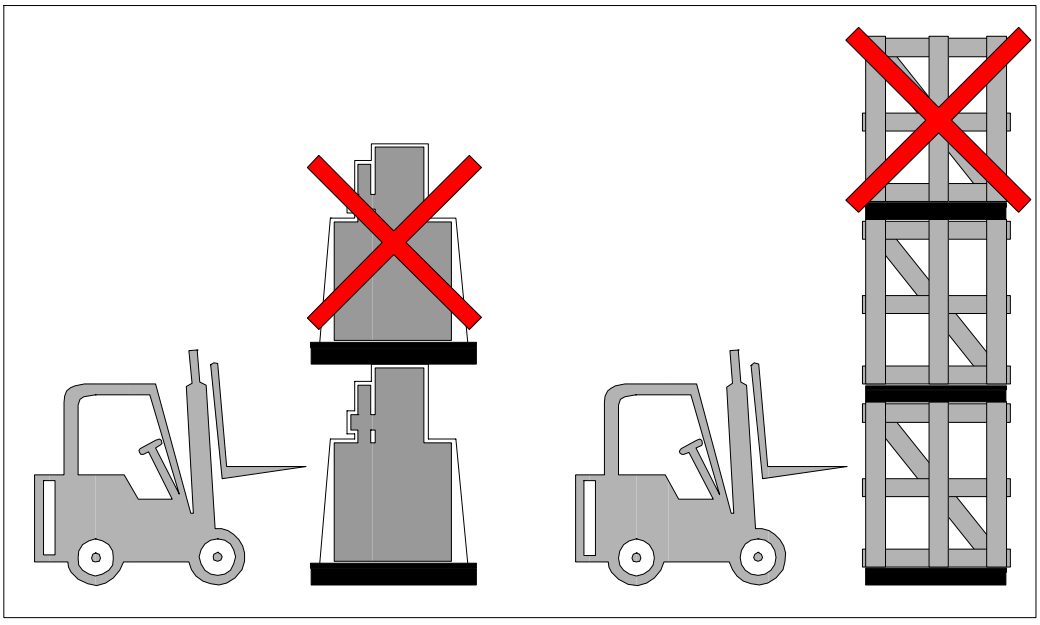
Warning In both cases, for correct balancing the machine must be handled using a fork−lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

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.



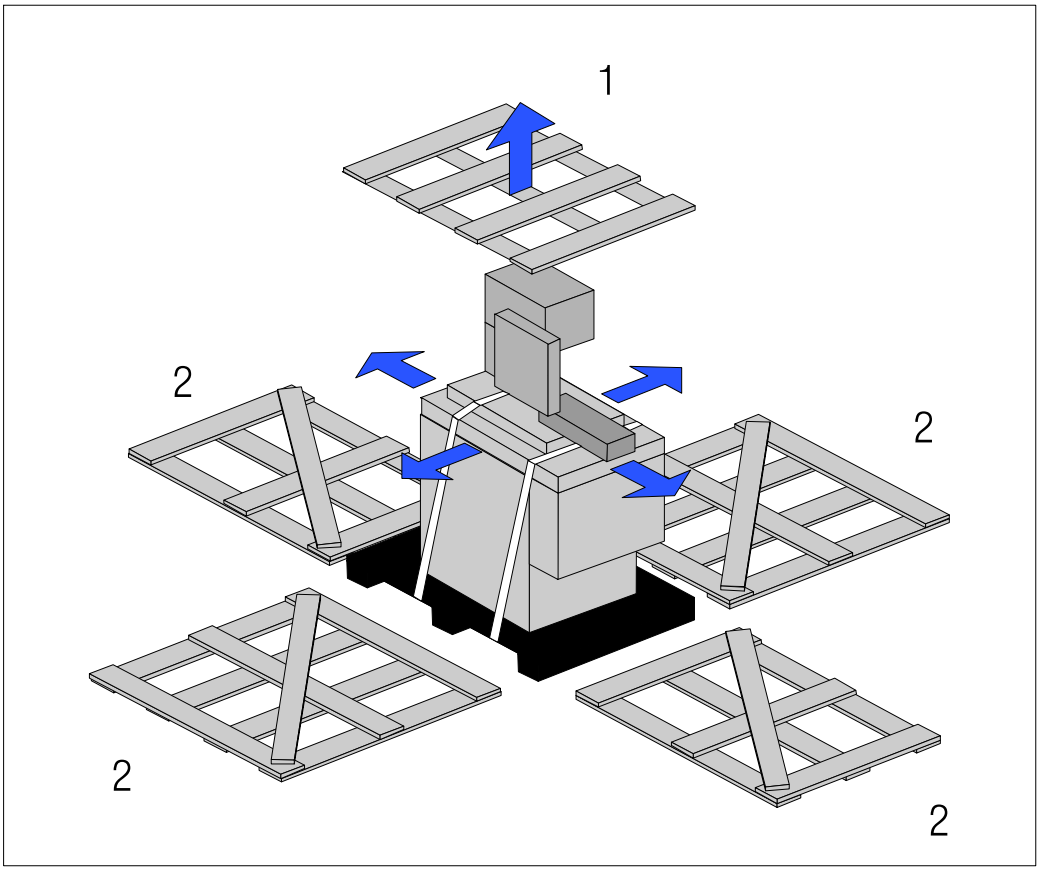
Attention When storing, machines palletized and shrink–wrapped must not be stacked two high, and machines pallettized and crated must not be stacked three high.



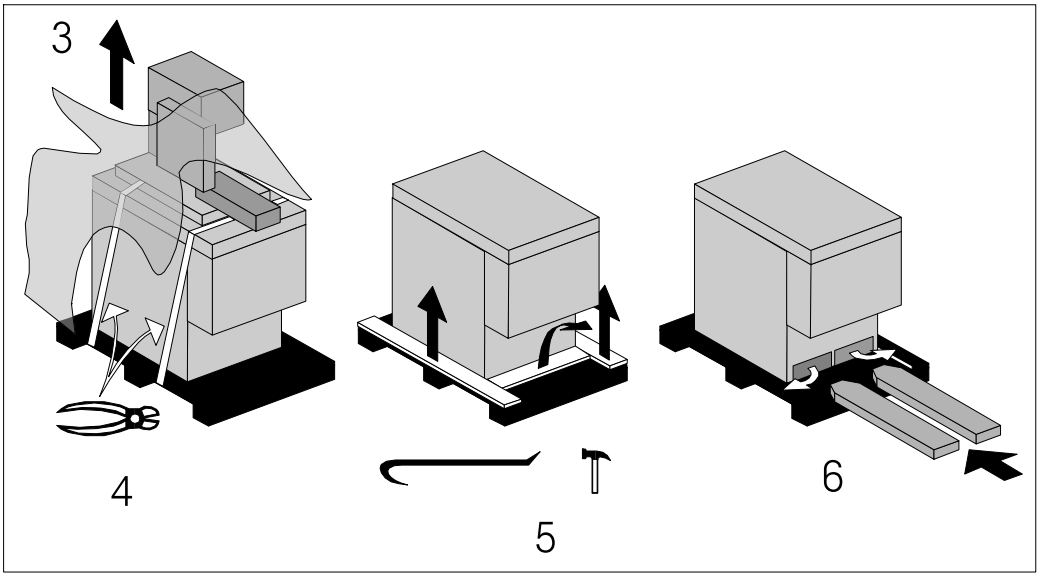
To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

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

2. remove nails and lower walls;



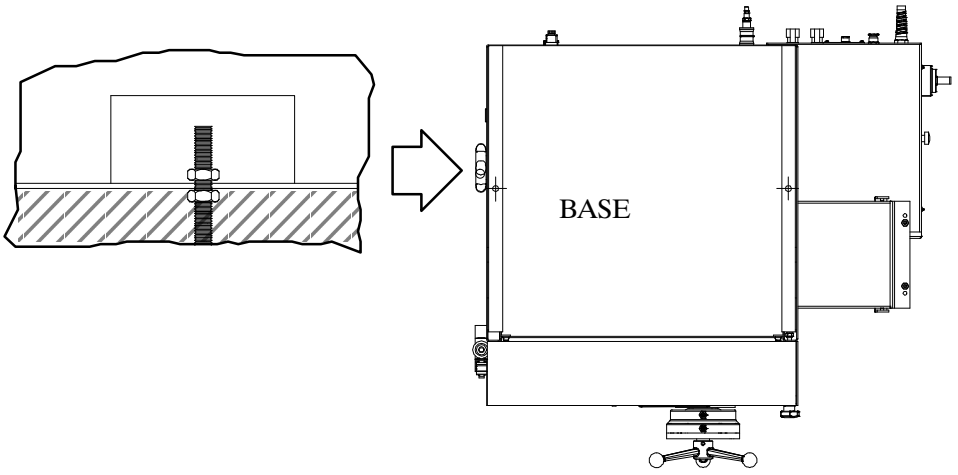
3. remove heat−shrink covering;
4. remove the straps;
5. remove nails from pallet securing planks and remove planks;
6. remove the front panel and insert fork tines.



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 **TIGER 352 SX–EVO** 4–SPEED machine is supplied complete with:

CHARACTERISTICS	STANDARD	OPTIONAL
Machine with microprocessor with one controlled axis, with latest generation MEP controller exclusively designed by MEP for its semi–automatic sawing machines	✓	
Display at 16 characters read on 2 lines to visualize technological parameters: number of cuts, cutting time, amperometer, diagnostics and/or caution messages (more than 100) visualized in the language of use	✓	
Displaying and recording of alarms and errors with possibility of displaying the event log	✓	
The head stroke is set directly from the control panel according to the dimensions of the bars to be cut	✓	
Four–speed blade rotation 15/30/45/90 rpm	✓	
Coaxial cylinder with by–pass valve for the fast movement and linear potentiometric transducer for reading the head position	✓	
Rotating platform turning on a central pin with axial bearing for a better accuracy on the set cutting angles	✓	
Chromium–plated steel rod for customized cut with etched millimetric scale and tilting stroke	✓	
Preset to be equipped with the spray mist system, as well as with the standard–delivered traditional lubrication with emulsible oils		✓
Pedestal with removable swarf collecting drawer and removable tank for coolant	✓	
Electric pump for lubrication/cooling of disc	✓	
Vice with rag prevention device and double workpiece clamping feature	✓	
Possibility of making angled cuts from 0° to 45° right and 60° left	✓	
Double set of gears to obtain a high cutting output	✓	
Head with vertical sliding on linear guides and ball–recirculating pre–charged slides	✓	
Blade cleaning brush	✓	
Electric control panel: totally identifiable cabling, stand–by, main switch with lockable panel–closing device, speed switch, emergency device, thermal–magnetic overload cutout, minimum voltage relay, voltage drop protection, 24 V low–voltage plant	✓	
Pneumatic vertical vice	✓	
Circular blade HSS DMo5/M2 D.350x32x2.5 for solid sections and profiles		✓
Set up for movement with transpallets	✓	
Pneumatic supplementary vice		✓
Supplementary pedal control*		✓
Bar support		✓
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		✓

CHARACTERISTICS	STANDARD	OPTIONAL
5 l can of emulsible oil		✓
15/30 rpm spindle*		✓

***ACCESSORIES AVAILABLE ON REQUEST**

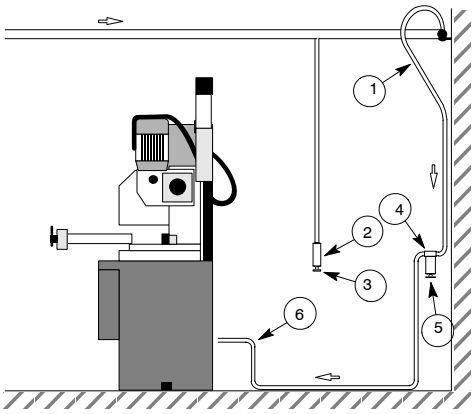
The bag of accessories is enclosed in the machine before being packed and contains:

- 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



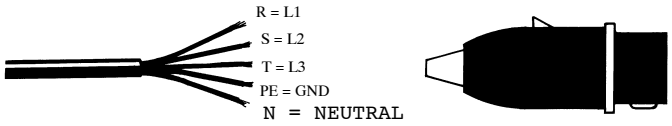
Connection to the power supply

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.

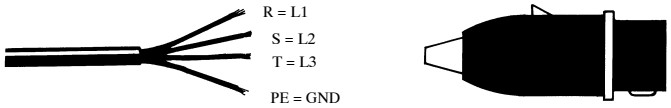
To connect the machine to the power supply, proceed as follows:

▶ 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

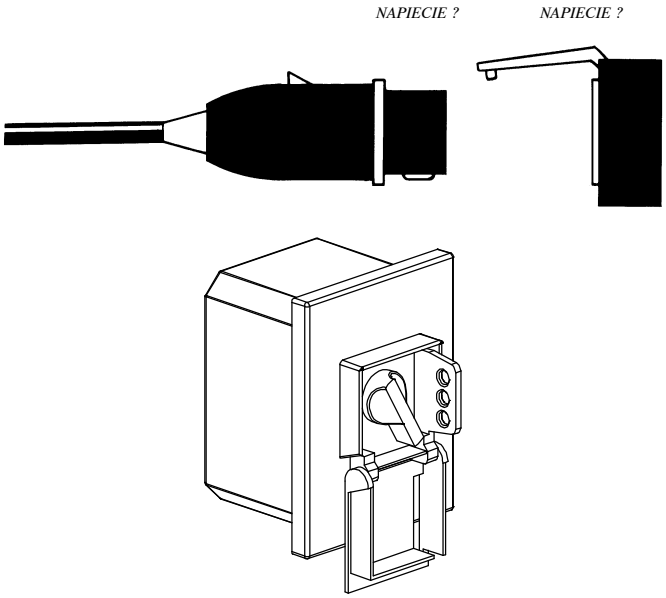


CONNECTION FOR **"4−CORE"** WIRE SYSTEMS WITH NEUTRAL



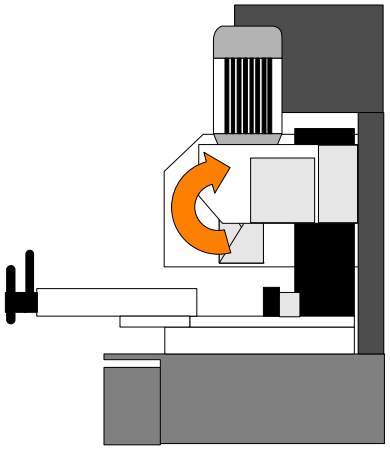
Attention When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase–neutral.**

▶ 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

5

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 **TIGER 352 SX−EVO** is shown in the picture below:



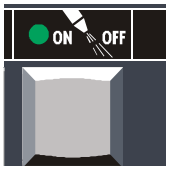
Key of control console keyboard



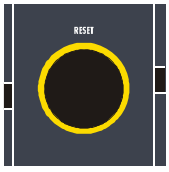
Initialisation key: enables machine operation



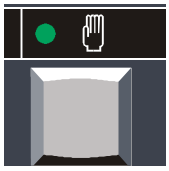
Cutting speed selection: hare (fast), turtle (slow) and zero (deselection)



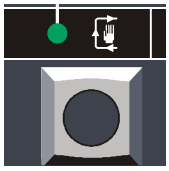
Selection for min. lubrication (optional)



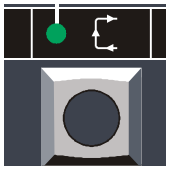
RESET key: resets the machine after an emergency condition or conflicting command



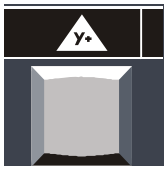
Nonoperating



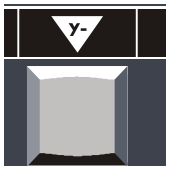
Nonoperating



Semi−automatic cycle key



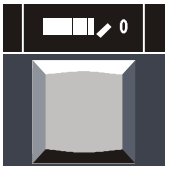
Head “up” key



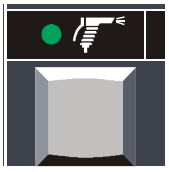
Head “down” key



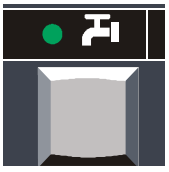
Machine parameters input/edit key



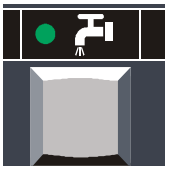
Zeroing key for cuts made



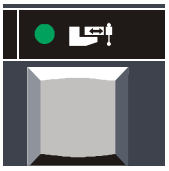
Nonoperating



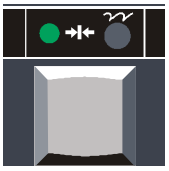
No lubricant/coolant key



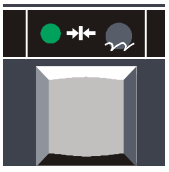
Lubricant/coolant spray cock key (only available during cycle)



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



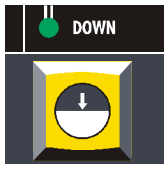
Nonoperating



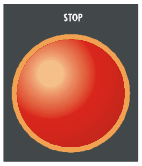
Hydraulic adjuster for choosing the head lowering speed



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°

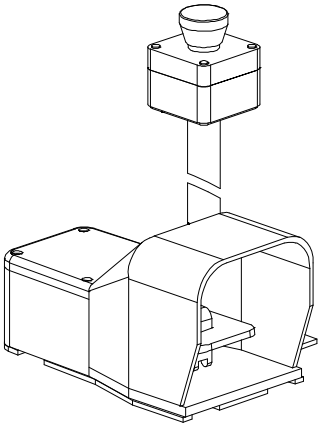


Key for displaying the machine parameters for performing a machining cycle: PT head position, VL blade speed, T cutting time, PZ cut piece number, I motor absorption



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)



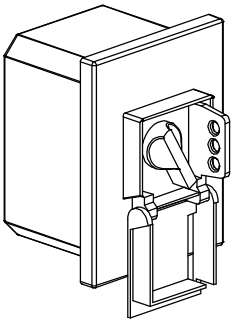
The machine can be equipped with a remote control device, enabling the start of the semiautomatic cycle through pedals and the emergency stop through red mushroom push button (optional).

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

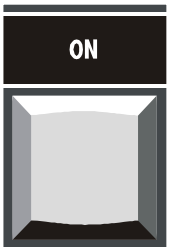
On the left side of the control board, the machine is equipped with a main switch that, when set ON (1), powers the machine. When set to ON (1), this switch powers up the machine. The main switch is fitted with three power failure protection systems. In fact, in the event of a power failure, this switch 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

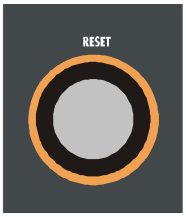
▶ Power up the machine by turning the main switch.



▶ press the ON key;

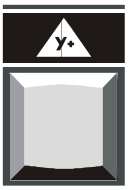


▶ Press the RESET key as prompted on the display.

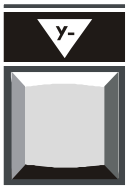


Cutting head movement

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.

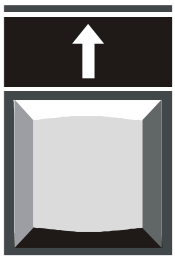


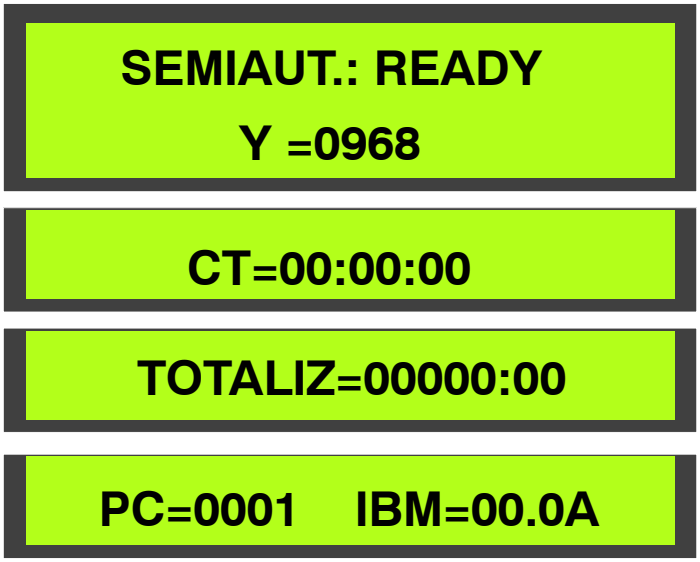
Head “down” key



Head “up” key

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

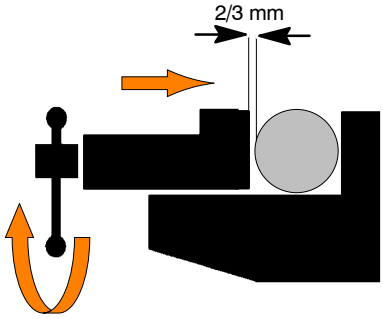




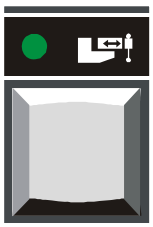
Clamping the work piece in the vice

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;



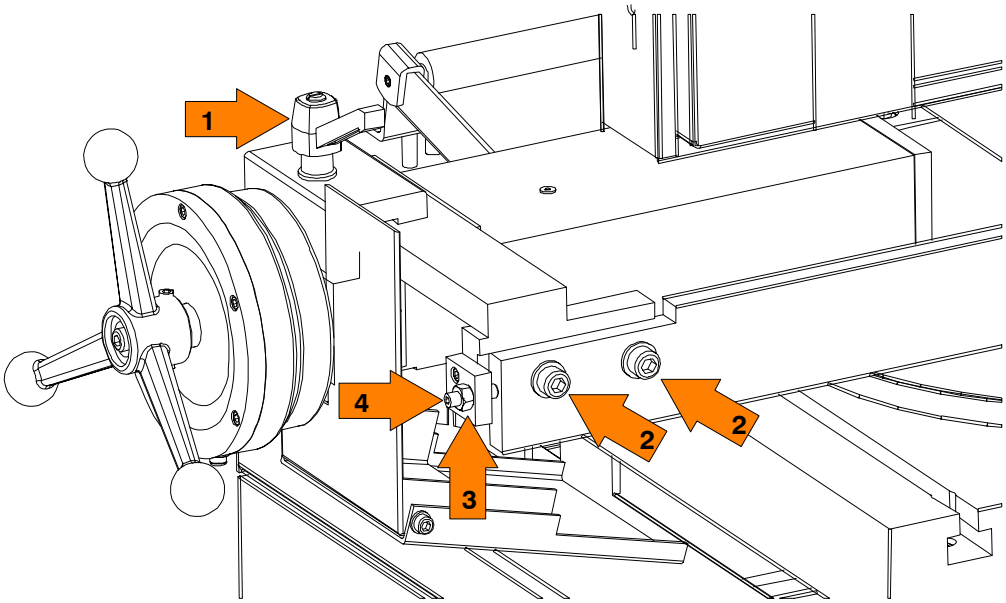
- ▶ make sure the workpiece is securely clamped in the vice by trying to move it manually.

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.

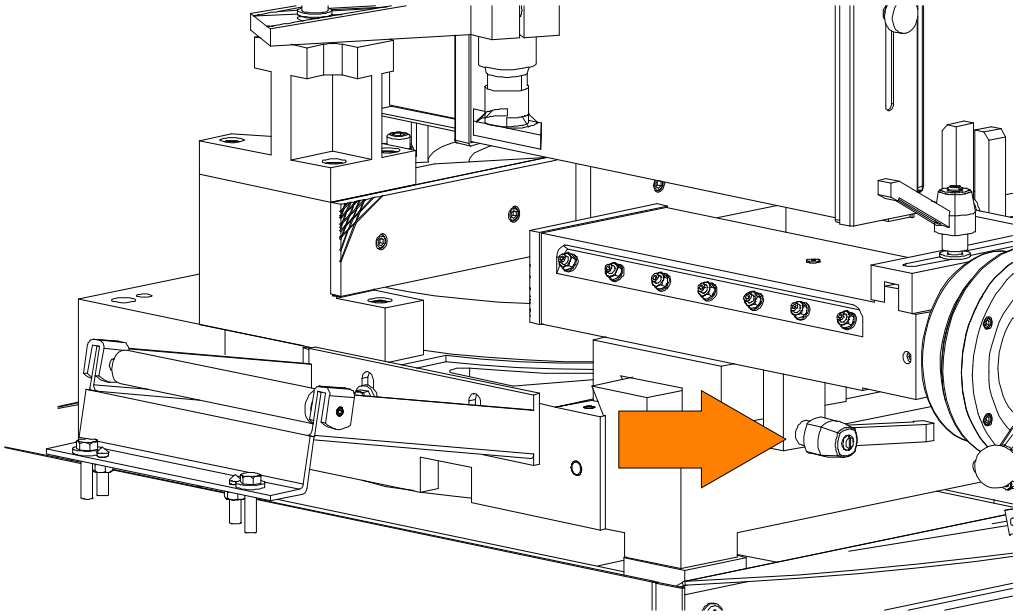
To adjust the longitudinal position of the vice jaw, proceed as follows:

- 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:

- Release the locking lever illustrated in the figure below.
- Position the vice to the right or left and lock the lever.



Preliminary check list for cutting operation

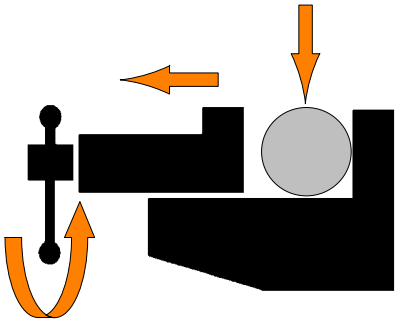
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

- 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

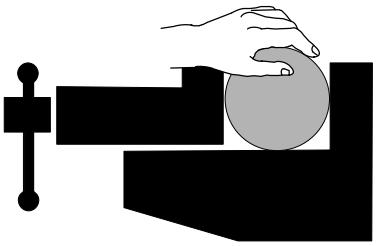
Sequence of operations for performing a cut:

- position the workpiece in the vice and calculate the length of cut (using the measuring rod for cuts to measure).

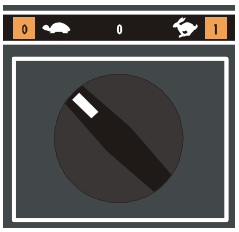


- secure the piece in the cutter vice; manually move vice towards the workpiece leaving a minimum distance of 2÷3 mm, lock the vice with the open/close button on the base or with the foot pedal if fitted;
- Make sure the workpiece is securely clamped in the vice by trying to move it manually.

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.

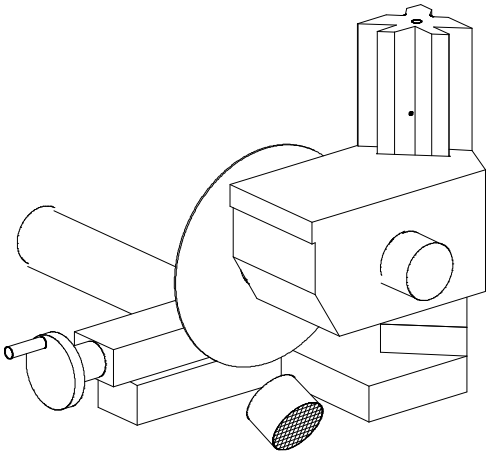


- select the cooling lubricant delivery mode;
- Select the cutting speed on the “Polarity change switch” in accordance with the type of material to cut (shape, thickness, hardness, etc.).



- 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;



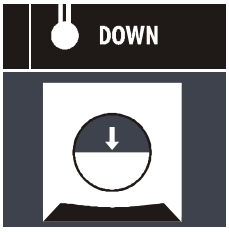
▶ on completing the cut the head will return automatically to the Head Back Limit (FCTI), ready for a new cut cycle;

▶ Free the workpiece from the vice by pressing the open/close vice button on the control panel.

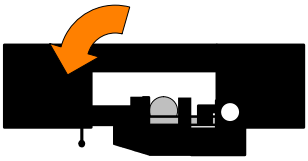
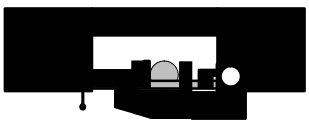
UP and DOWN function

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.

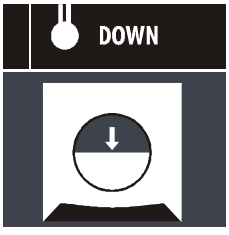
▶ Select the semiautomatic cycle, press the DOWN button.



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.

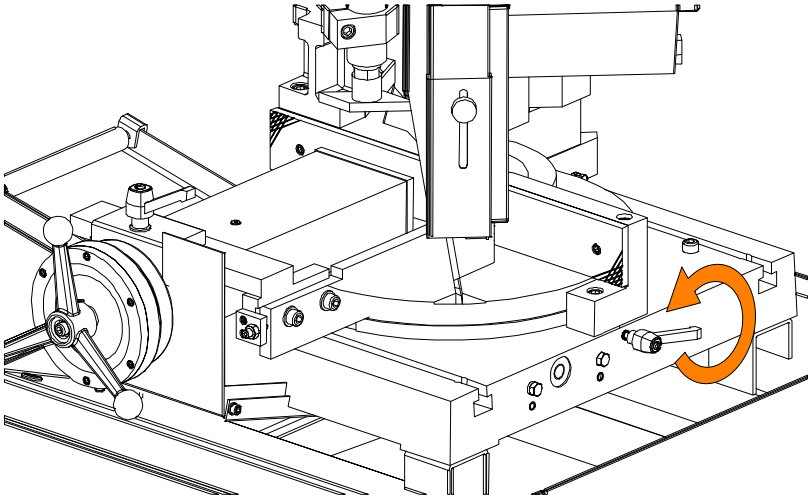
Angled cuts

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;

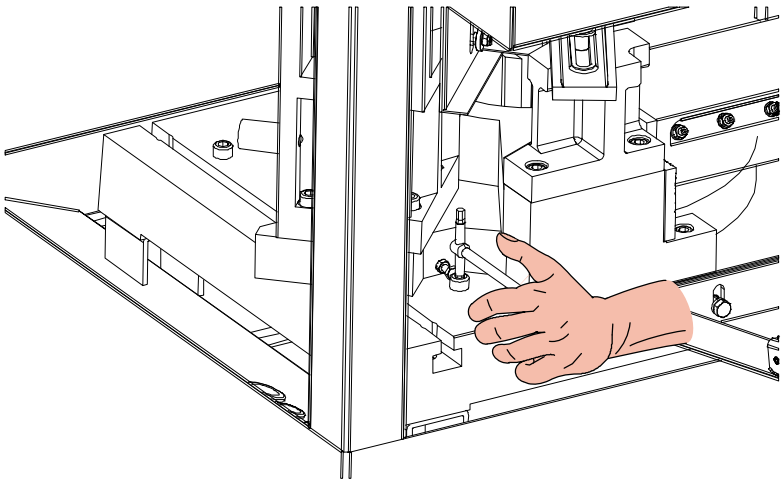
▶ rotate the tool head until it's tight against the stop, and check that it's at 455 on the scale on the slideway;



▶ 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:

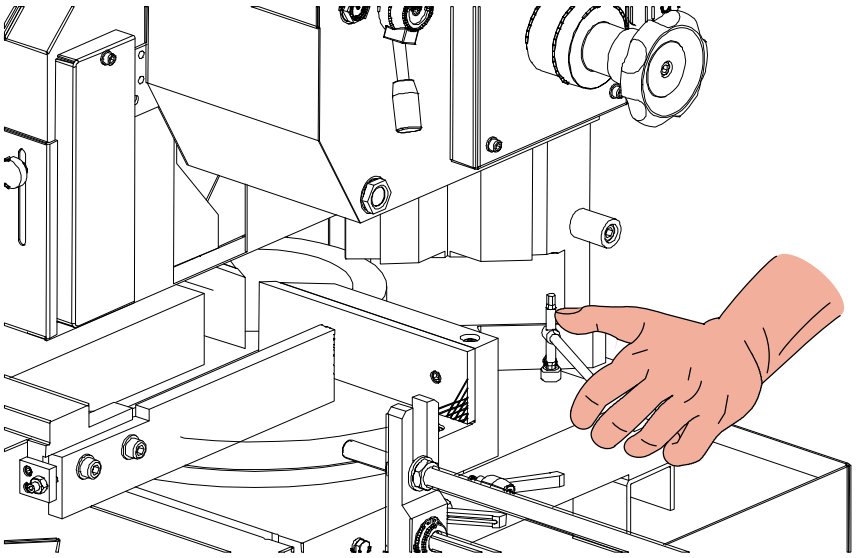
▶ remove the stop at 45° left;



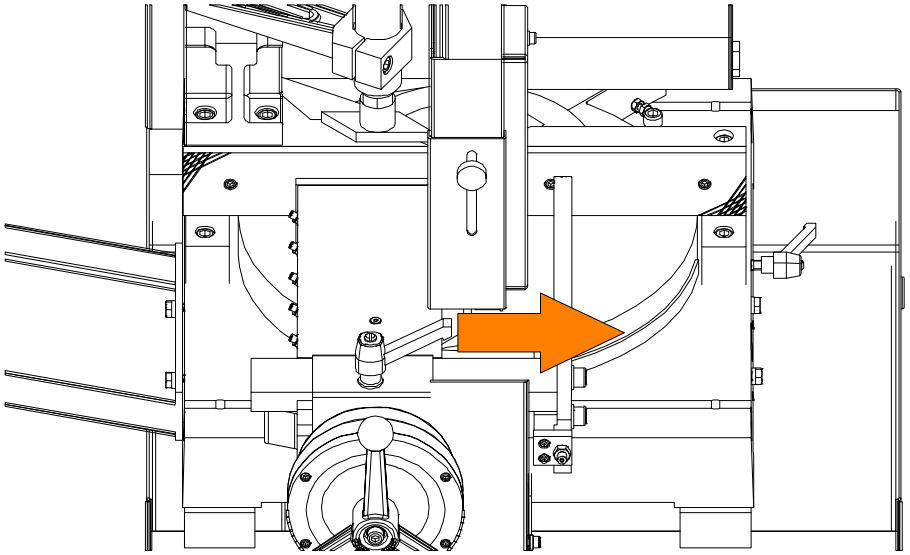
▶ rotate the tool head to 60° left, clamp the turntable and cut the part.

Angled cuts 45° to the right

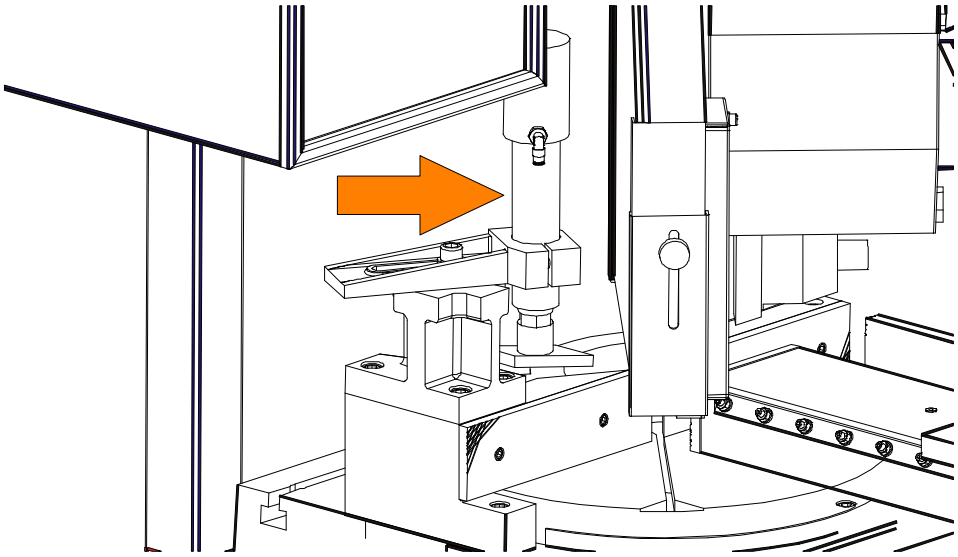
- ▶ Loosen the ratchet lever located at the right of the slideway;
- ▶ Remove the cutting stop at 0°;



- ▶ 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

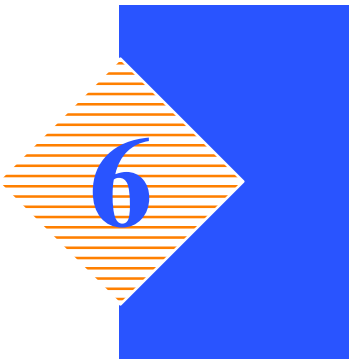


- if mounted, remove the cut−to−size rod.
- if necessary, adjust the position of the vertical pneumatic vice;



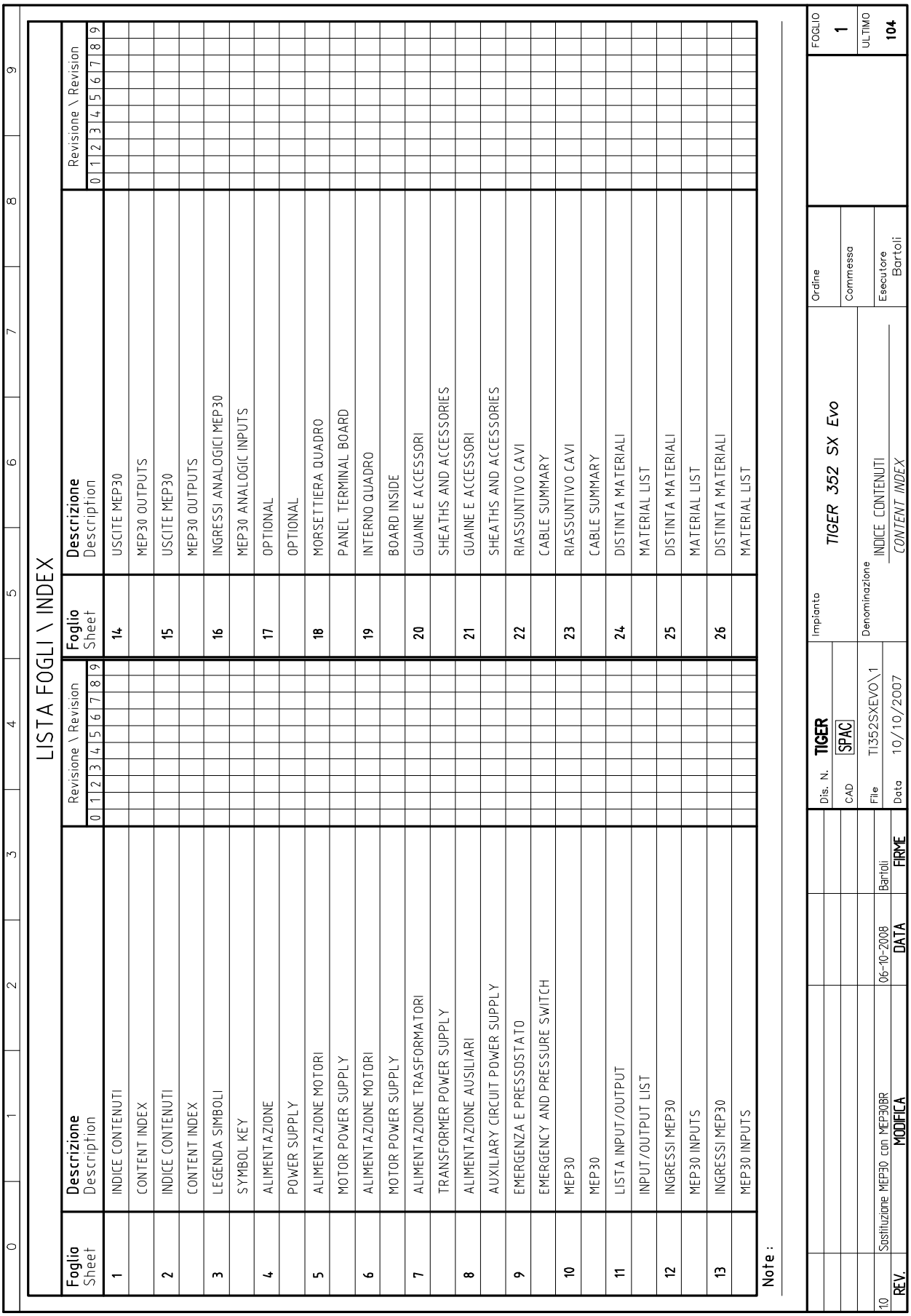
- Lock the turntable and cut the part.

Diagrams, exploded views and replace–ment parts



This chapter contains functional diagrams and exploded views of the **TIGER 352 SX–EVO**. 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



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			MEP30 OUTPUTS	
2	INDICE CONTENUTI		15	USCITE MEP30	
	CONTENT INDEX			MEP30 OUTPUTS	
3	LEGENDA SIMBOLI		16	INGRESSI ANALOGICI MEP30	
	SYMBOL KEY			MEP30 ANALOGIC INPUTS	
4	ALIMENTAZIONE		17	OPTIONAL	
	POWER SUPPLY			OPTIONAL	
5	ALIMENTAZIONE MOTORI		18	MORSETTIERA QUADRO	
	MOTOR POWER SUPPLY			PANEL TERMINAL BOARD	
6	ALIMENTAZIONE MOTORI		19	INTERNO QUADRO	
	MOTOR POWER SUPPLY			BOARD INSIDE	
7	ALIMENTAZIONE TRASFORMATORI		20	GUAINE E ACCESSORI	
	TRANSFORMER POWER SUPPLY			SHEATHS AND ACCESSORIES	
8	ALIMENTAZIONE AUSILIARI		21	GUAINE E ACCESSORI	
	AUXILIARY CIRCUIT POWER SUPPLY			SHEATHS AND ACCESSORIES	
9	EMERGENZA E PRESSOSTATO		22	RIASSUNTIVO CAVI	
	EMERGENCY AND PRESSURE SWITCH			CABLE SUMMARY	
10	MEP30		23	RIASSUNTIVO CAVI	
	MEP30			CABLE SUMMARY	
11	LISTA INPUT/OUTPUT		24	DISTINTA MATERIALI	
	INPUT/OUTPUT LIST			MATERIAL LIST	
12	INGRESSI MEP30		25	DISTINTA MATERIALI	
	MEP30 INPUTS			MATERIAL LIST	
13	INGRESSI MEP30		26	DISTINTA MATERIALI	
	MEP30 INPUTS			MATERIAL LIST	

Note :

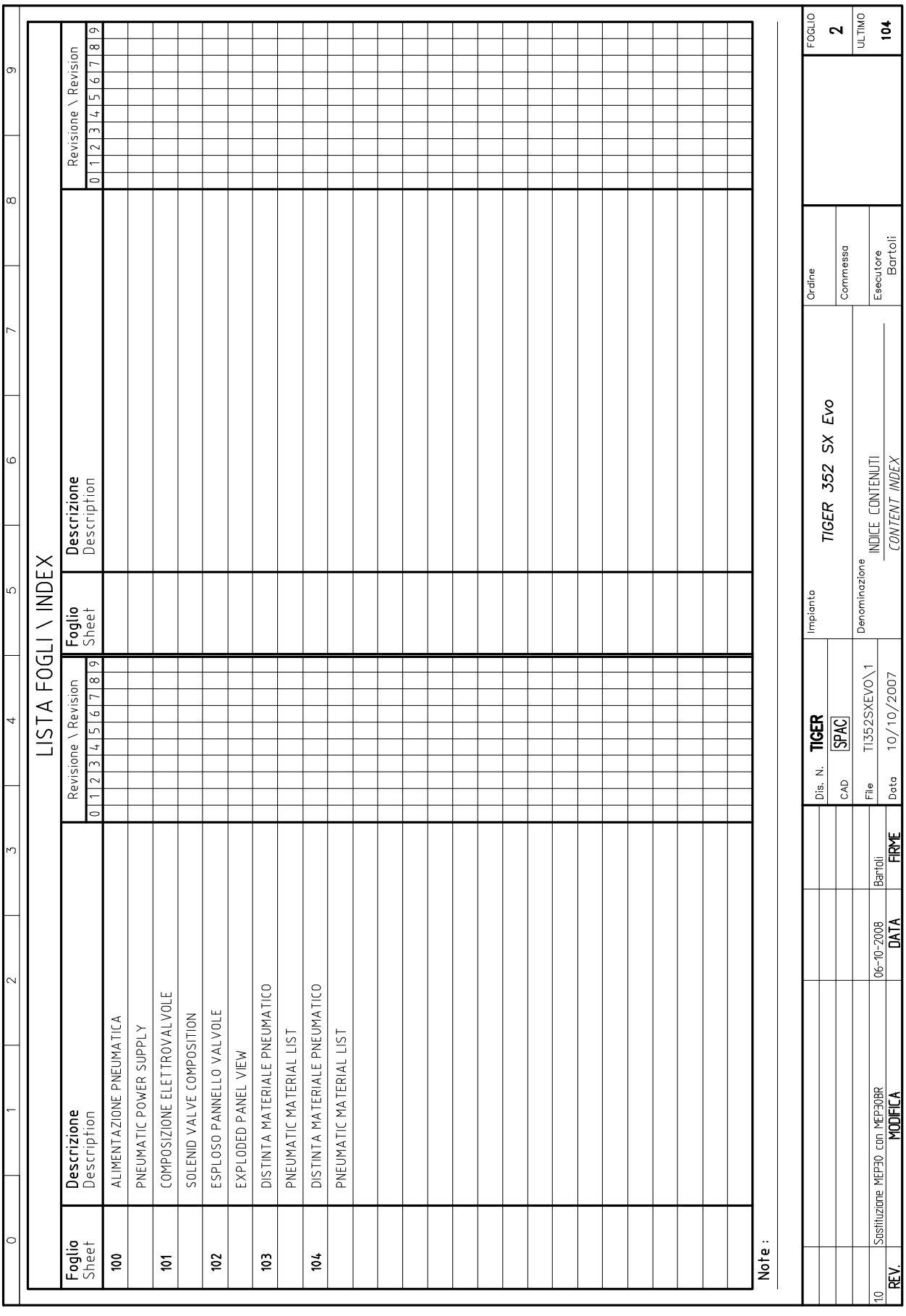
REV.		DATA	FIRME
10	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli
	MODIFICA		

Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007

Impianto
Denominazione
TIGER 352 SX Evo
INDICE CONTENUTI
CONTENT INDEX

Ordine
Commessa
Esecutore Bartoli

FOGLIO 1
ULTIMO 104



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 :

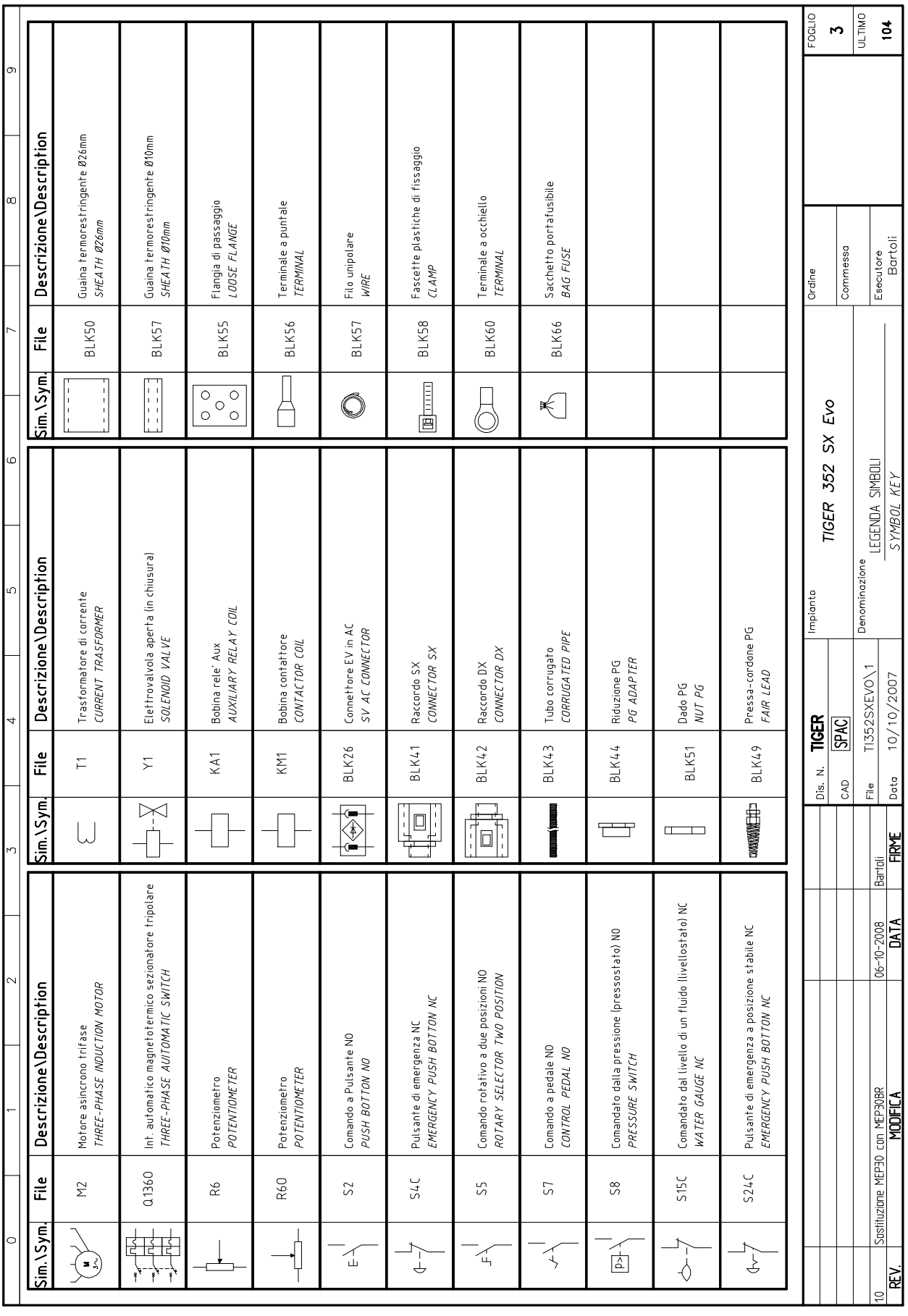
REV.	MODIFICA	DATA	FIRME
10	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli

Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007

Impianto: TIGER 352 SX Evo
Denominazione: INDICE CONTENUTI / CONTENT INDEX

Ordine
Commessa
Esecutore Bartoli

FOGLIO 2
ULTIMO 104



Sim.\Sym.	File	Descrizione\Description
	M2	Motore asincrono trifase *THREE-PHASE INDUCTION MOTOR*
	Q1360	Int. automatico magnetotermico sezionatore tripolare *THREE-PHASE AUTOMATIC SWITCH*
	R6	Potenziometro *POTENTIOMETER*
	R60	Potenziometro *POTENTIOMETER*
E	S2	Comando a Pulsante NO *PUSH BOTTON NO*
	S4C	Pulsante di emergenza NC *EMERGENCY PUSH BOTTON NC*
F	S5	Comando rotativo a due posizioni NO *ROTARY SELECTOR TWO POSITION*
	S7	Comando a pedale NO *CONTROL PEDAL NO*
P>	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*
	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*
	BLK51	Dado PG *NUT PG*
	BLK49	Pressa-cordone PG *FAIR LEAD*

Sim.\Sym.	File	Descrizione\Description
	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*

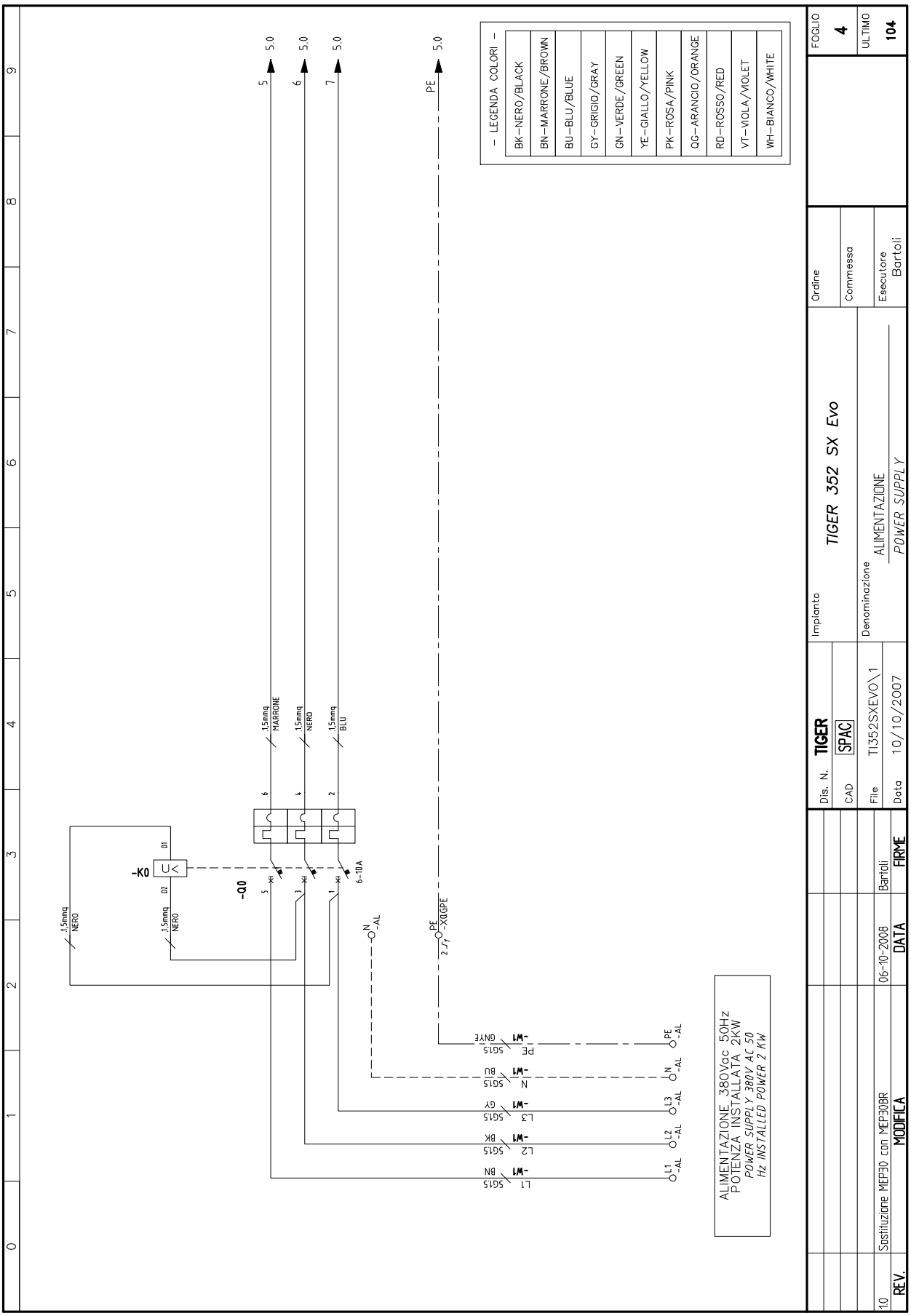
REV.		DATA	
10	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli

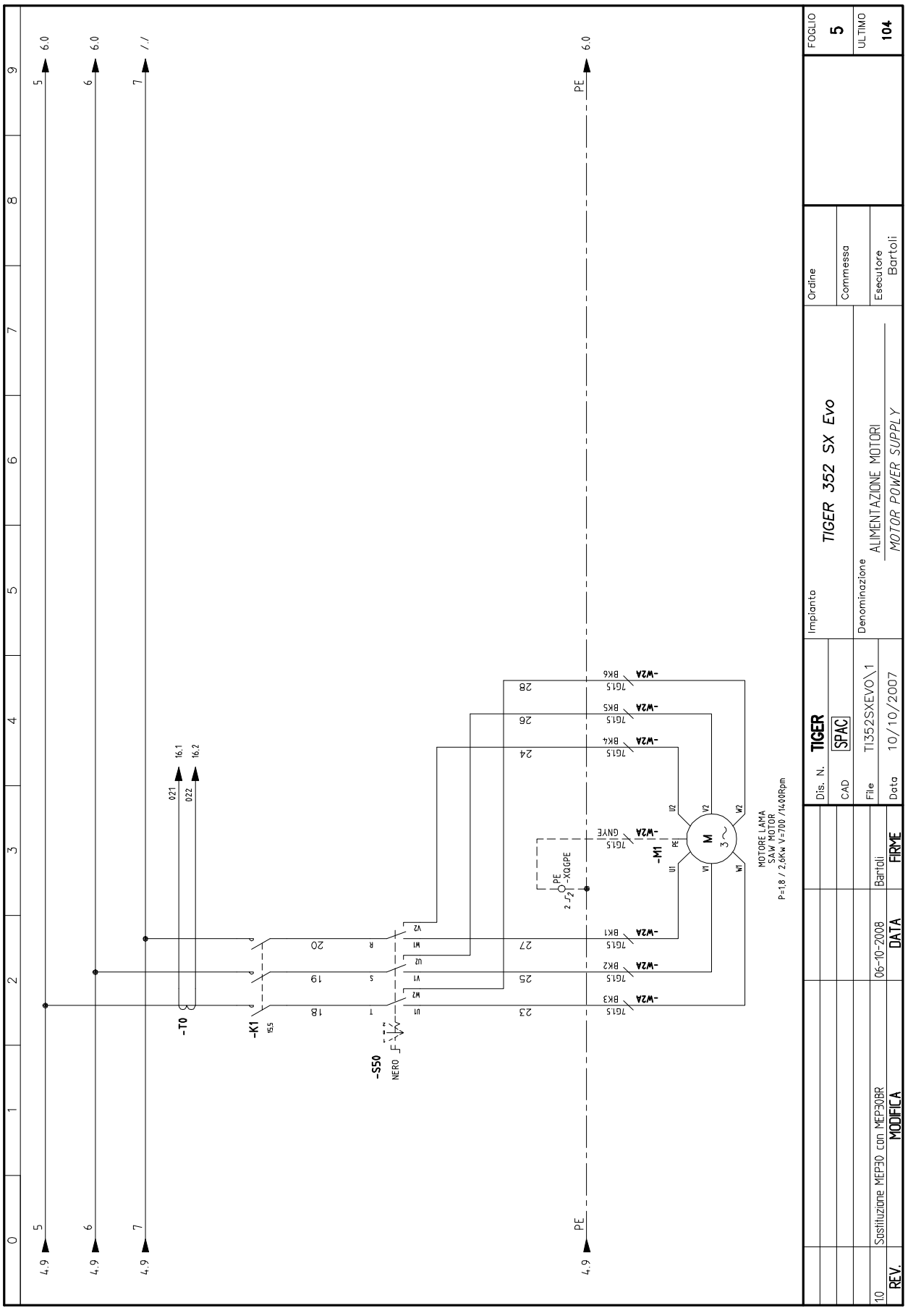
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007

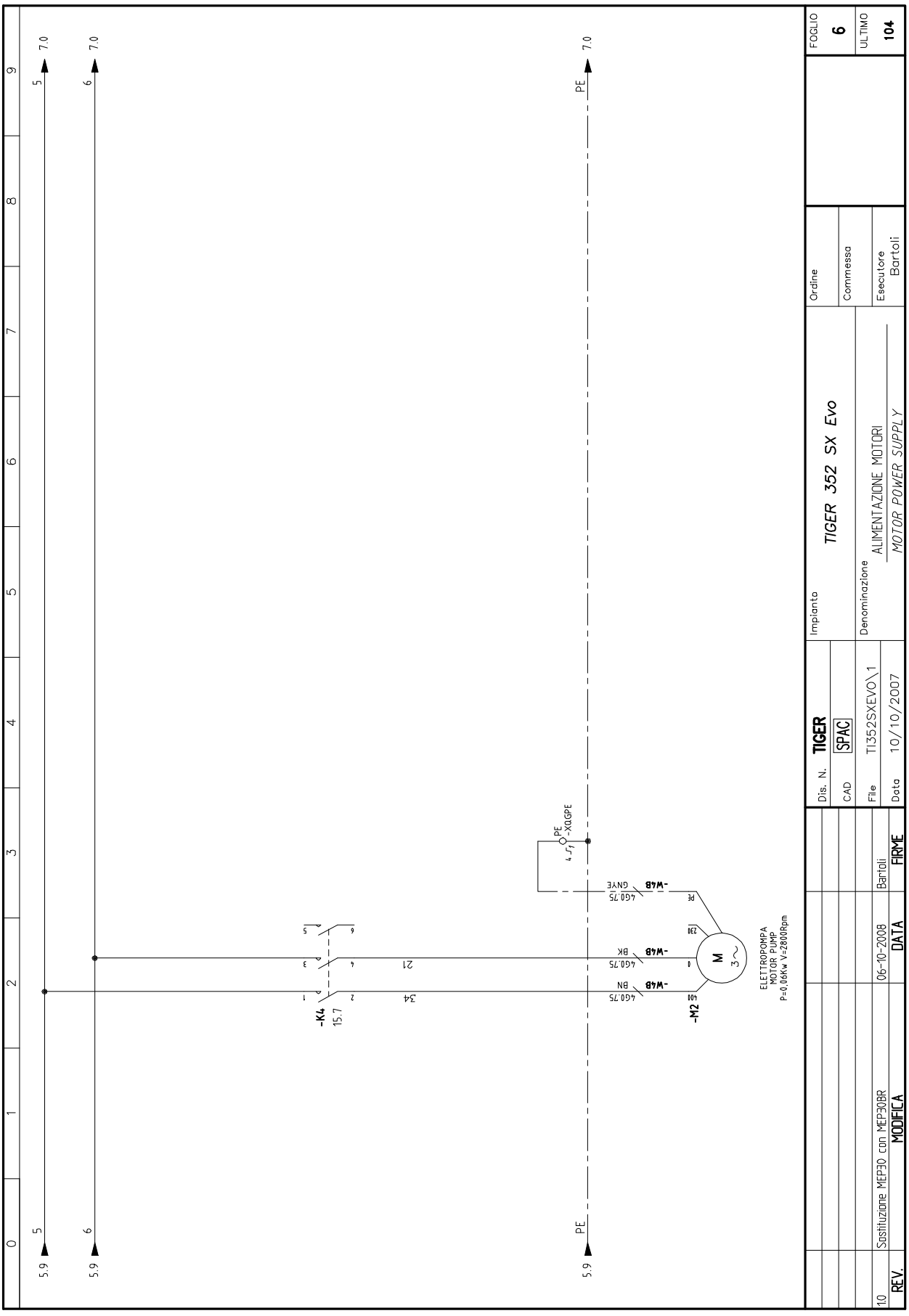
Impianto
TIGER 352 SX Evo
Denominazione
LEGENDA SIMBOLI
SYMBOL KEY

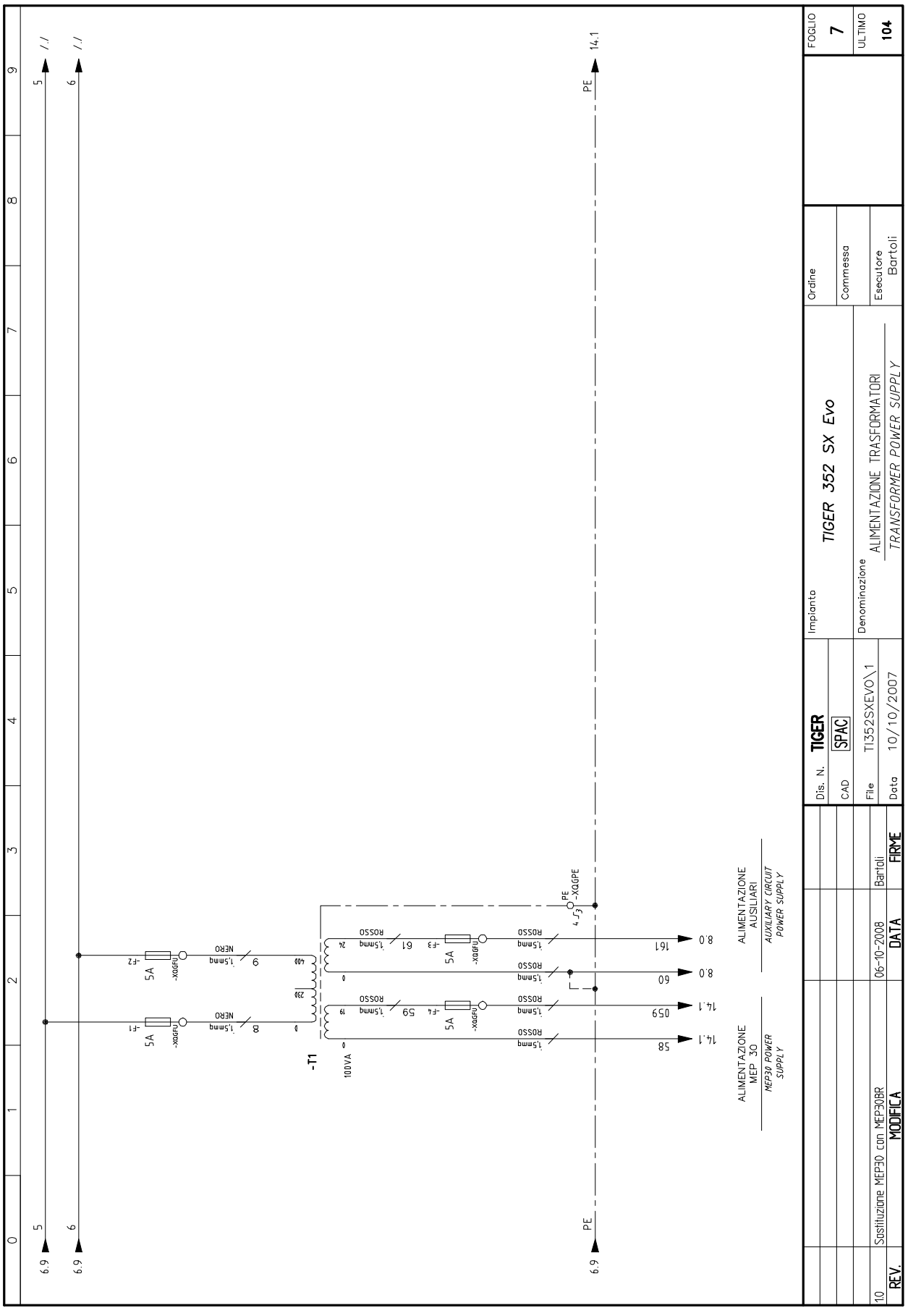
Ordine
Commessa
Esecutore Bartoli

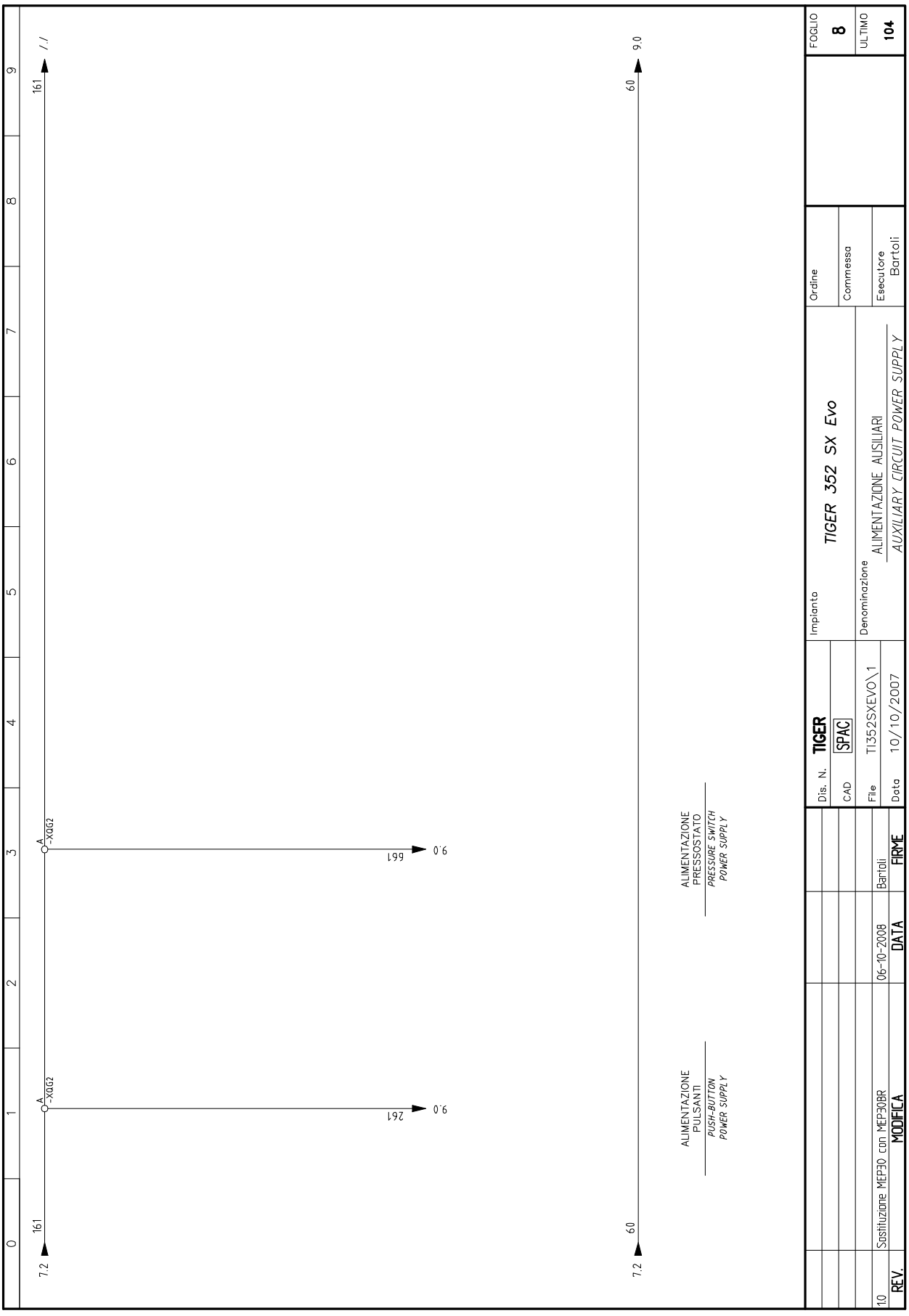
FOGLIO 3
ULTIMO 104

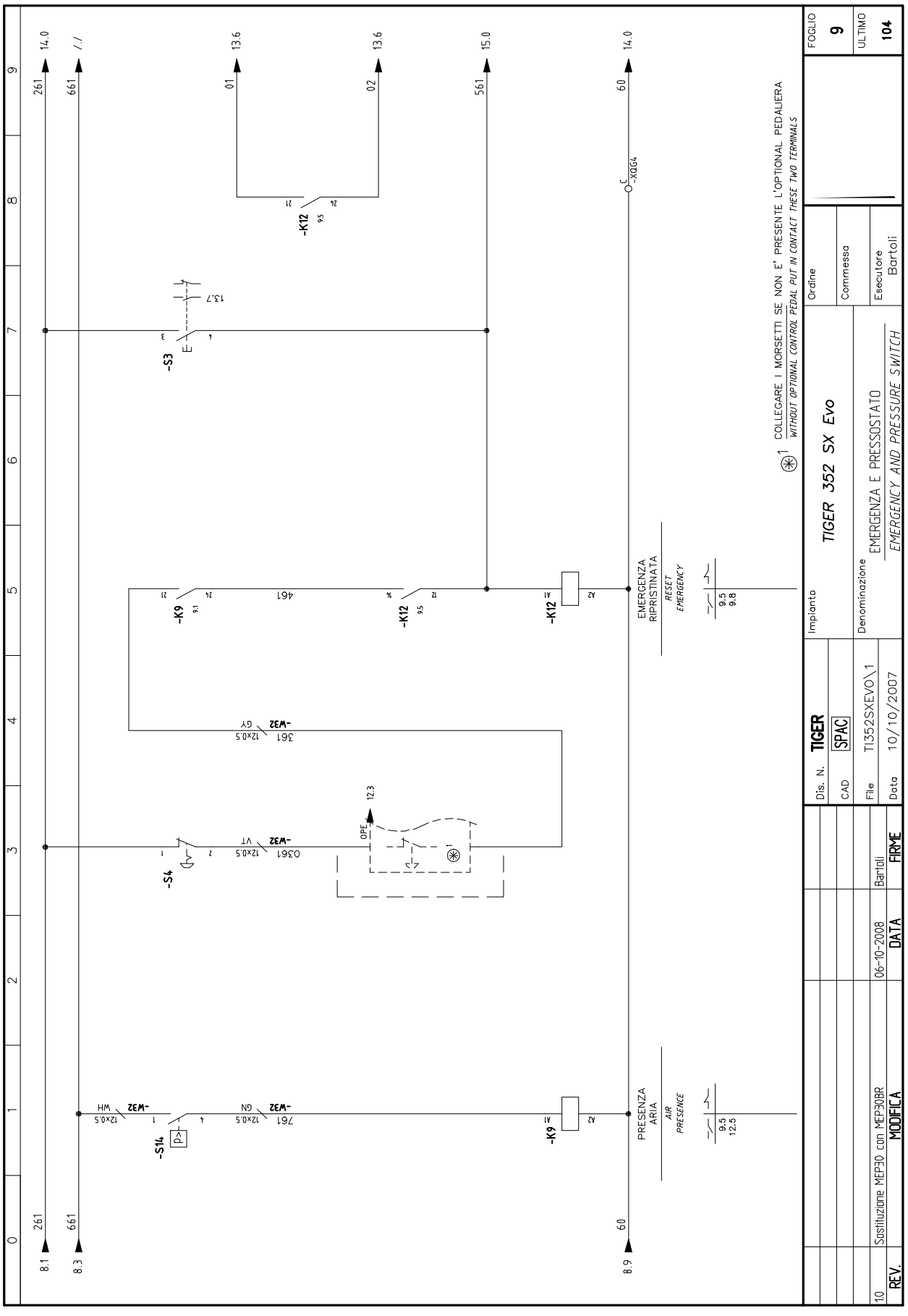

– LEGENDA COLORI –
BK–NERO/BLACK
BN–MARRONE/BROWN
BU–BLU/BLUE
GY–GRIGIO/GRAY
GN–VERDE/GREEN
YE–GIALLO/YELLOW
PK–ROSA/PINK
QG–ARANCIO/ORANGE
RD–ROSSO/RED
VT–VIOLA/VIOLET
WH–BIANCO/WHITE
ALIMENTAZIONE 380Vac 50Hz
POTENZA INSTALLATA 2KW
POWER SUPPLY 380V AC 50
Hz INSTALLED POWER 2 KW
-K0
-Q0
-W1
-XG
-AL
1,5mmq NERO
1,5mmq MARRONE
1,5mmq BLU
5G1,5
5.0
6-10A
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
ALIMENTAZIONE
POWER SUPPLY
Ordine
Commessa
Esecutore Bartoli
FOGLIO 4
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

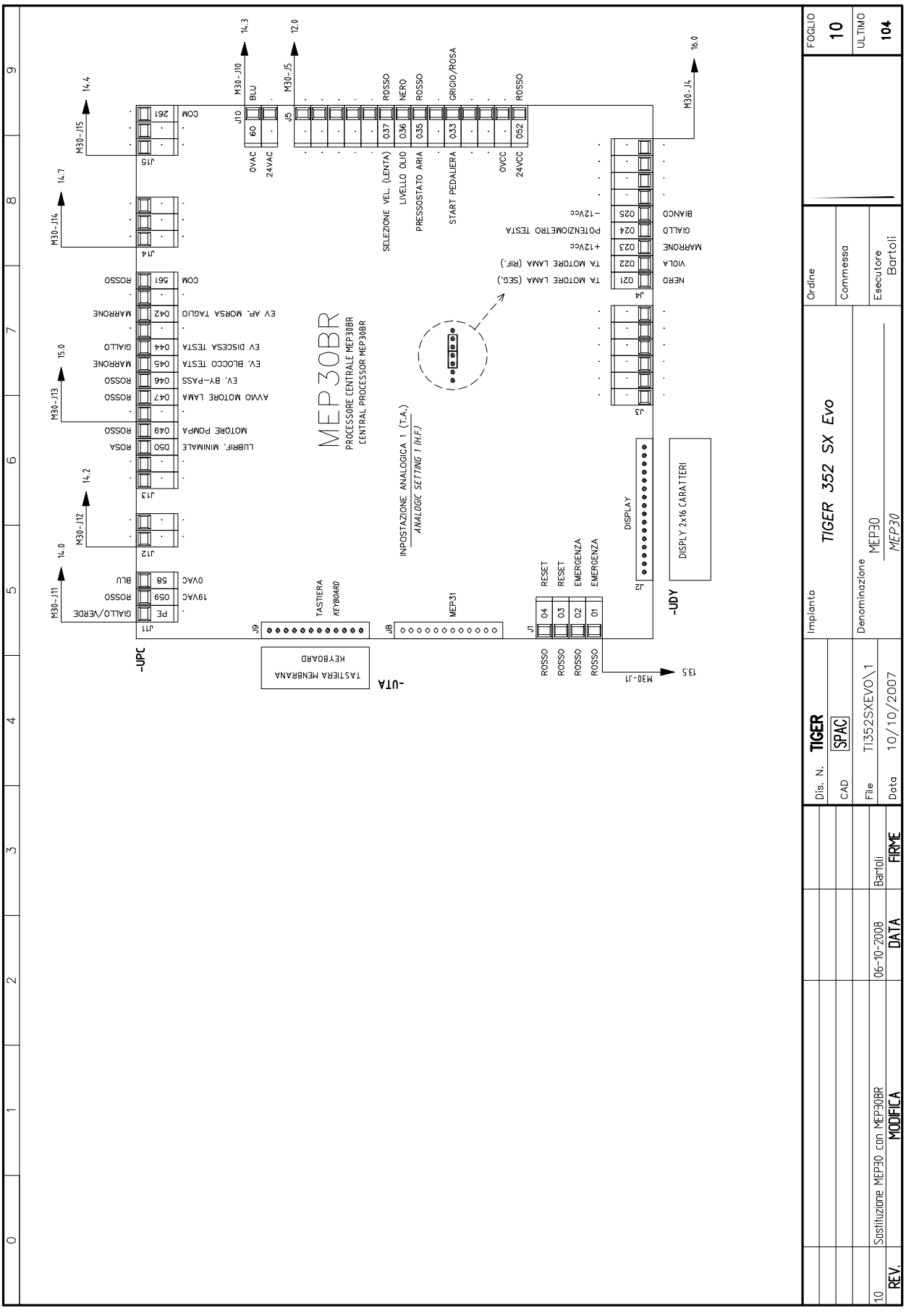

TIGER 352 SX Evo
MOTOR POWER SUPPLY
ALIMENTAZIONE MOTORI
Impianto
Denominazione
Ordine
Commessa
Esecutore Bartoli
FOGLIO 5
ULTIMO 104
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
MOTORE LAMA
SAW MOTOR
P=1.8 / 2.6Kw V=700 /1400Rpm
-M1
-K1
-T0
-S50
-XAGPE
-W2A
1.0 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

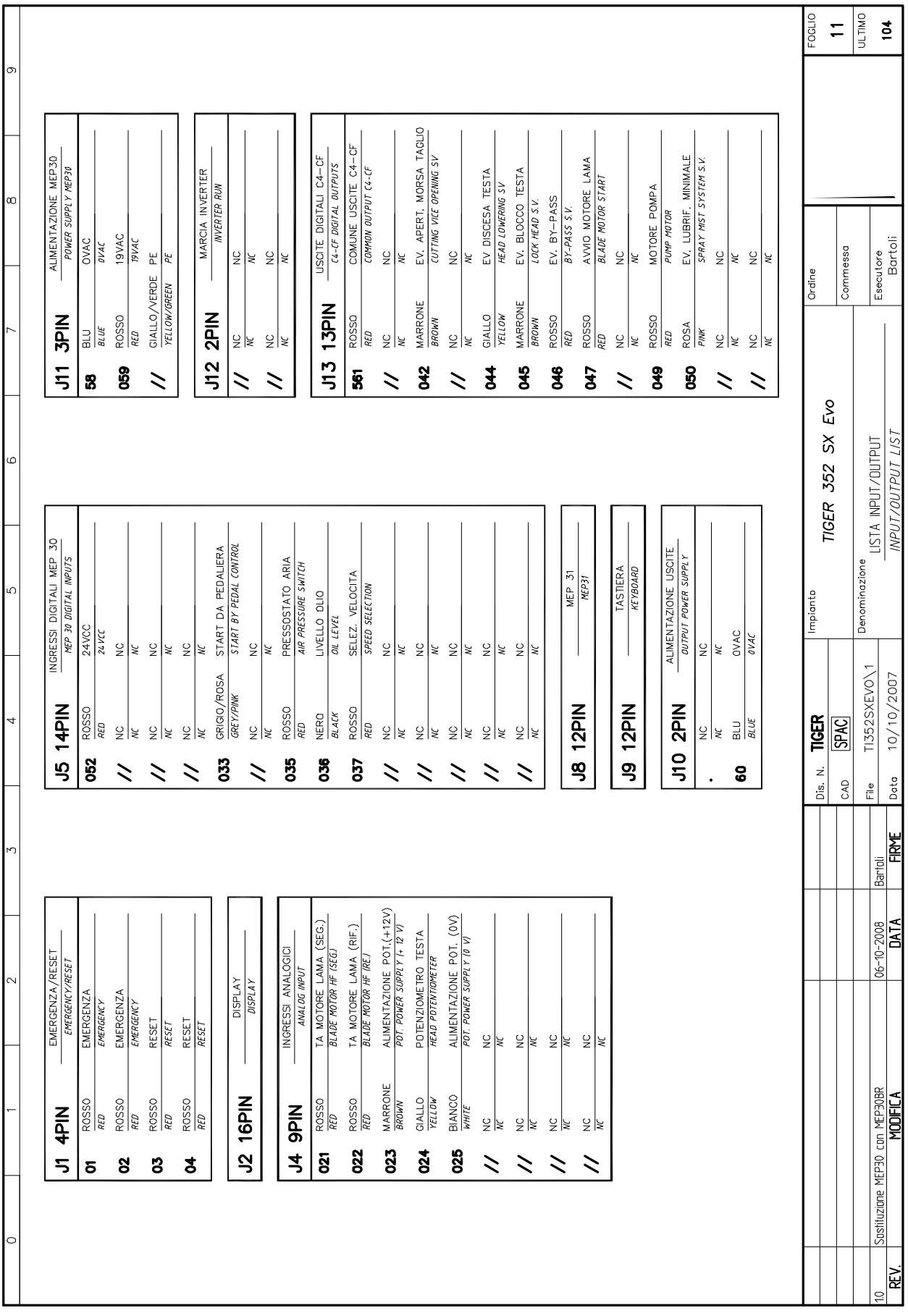

0 1 2 3 4 5 6 7 8 9
5 7.0
6 7.0
PE 7.0
5 5.9
6 5.9
PE 5.9
PE -XGGPE
-W48 GNYE 4G0.75
-W48 BK 4G0.75
-W48 BN 4G0.75
-K4 15.7
-M2
M 3~
ELETTROPOMPA
MOTOR PUMP
P=0.06Kw V=2800Rpm
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
ALIMENTAZIONE MOTORI
MOTOR POWER SUPPLY
Ordine
Commessa
Esecutore Bartoli
FOGLIO 6
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

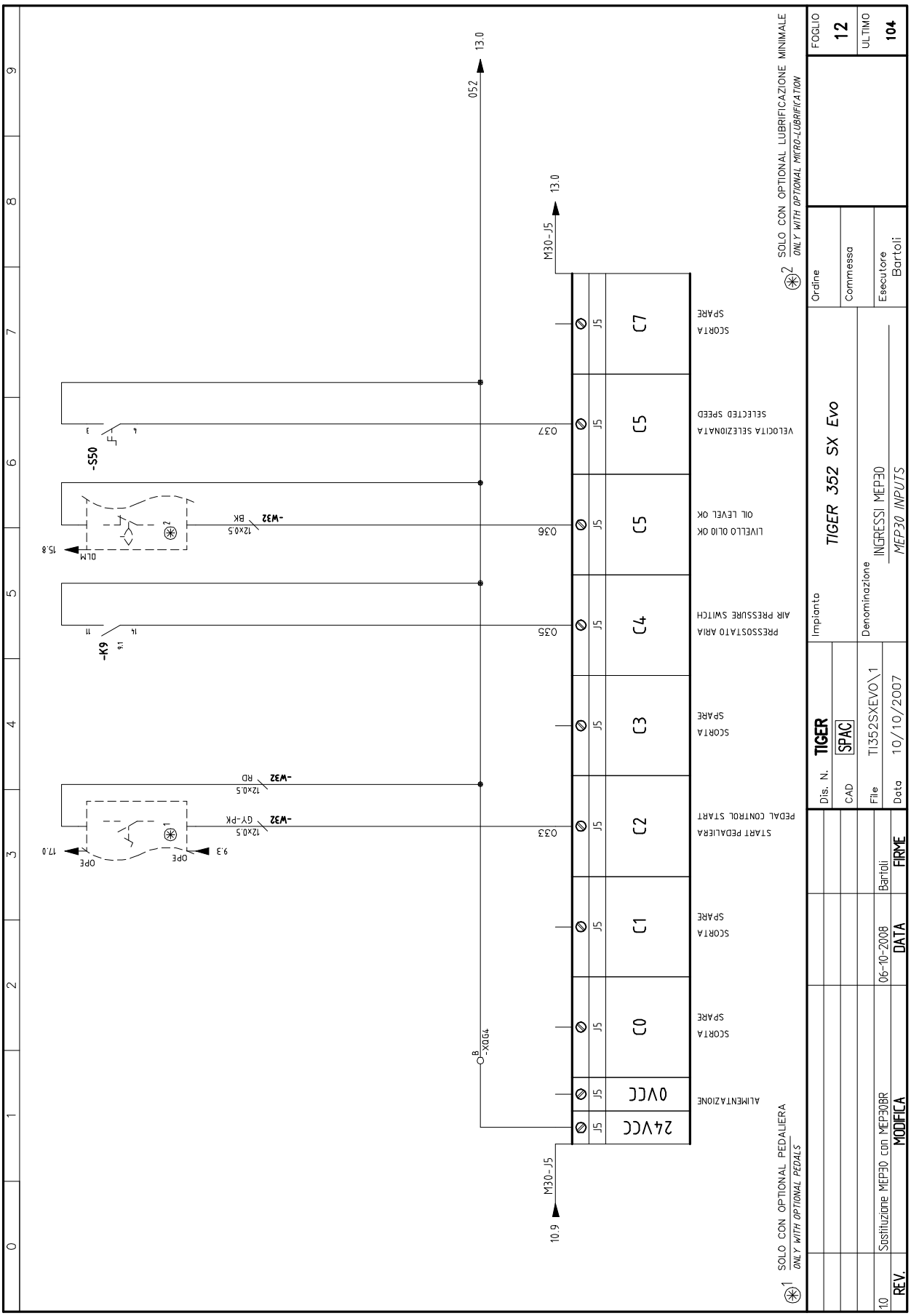

Impianto
TIGER 352 SX Evo
Denominazione
ALIMENTAZIONE TRASFORMATORI
TRANSFORMER POWER SUPPLY
Ordine
Commessa
Esecutore
Bartoli
FOGLIO
7
ULTIMO
104
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
REV.
DATA
FIRME
10
Sostituzione MEP30 con MEP30BR
06-10-2008
Bartoli
MODIFICA
-T1
100 VA
230
400
ALIMENTAZIONE MEP 30
MEP30 POWER SUPPLY
ALIMENTAZIONE AUSILIARI
AUXILIARY CIRCUIT POWER SUPPLY
PE
6.9
14.1
8.0
14.1
5A
NERO
ROSSO
1,5mm

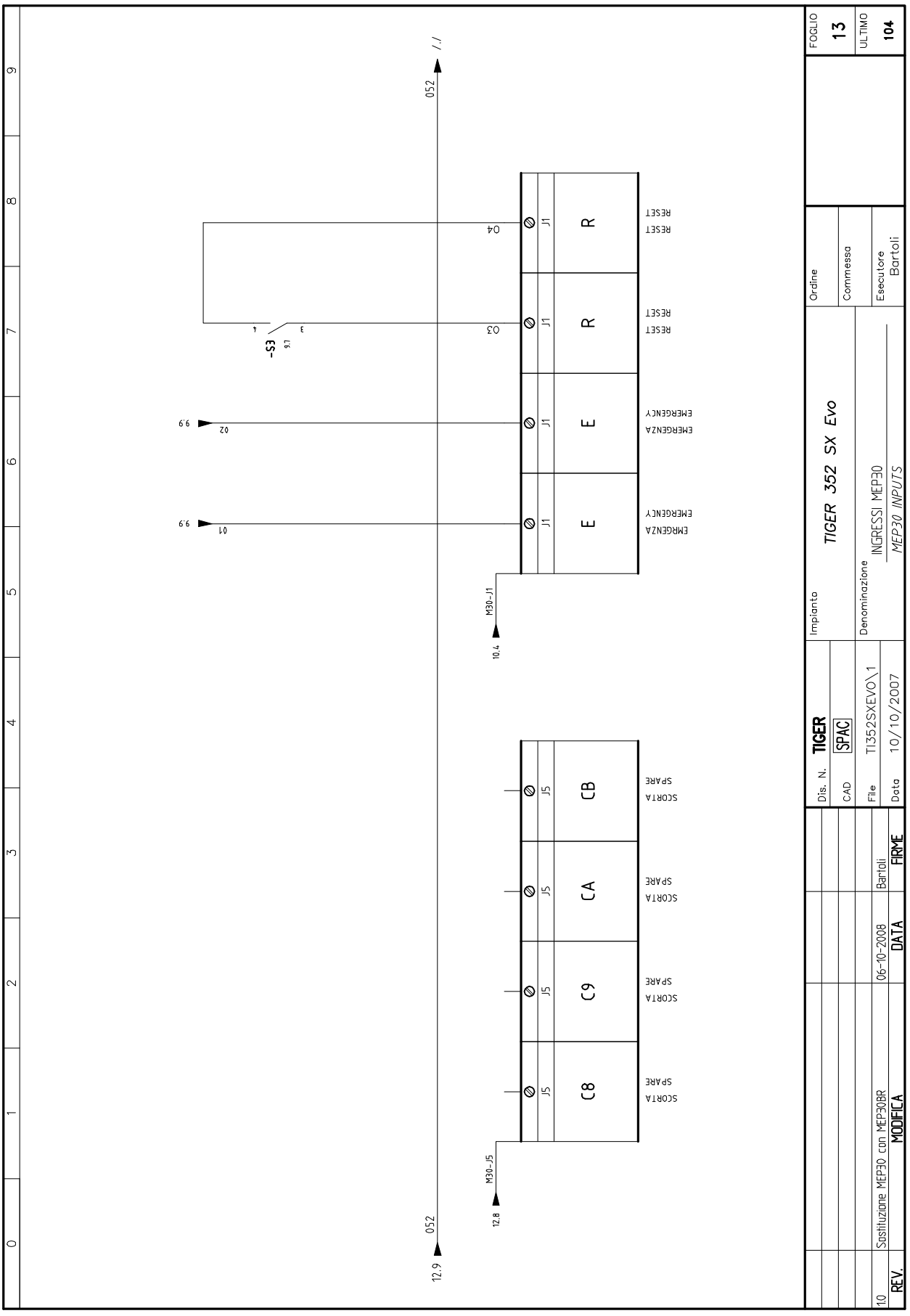

0 1 2 3 4 5 6 7 8 9
/ /
161
7.2
161
-XQG2
261
9.0
-XQG2
661
9.0
ALIMENTAZIONE PULSANTI
PUSH-BUTTON POWER SUPPLY
ALIMENTAZIONE PRESSOSTATO
PRESSURE SWITCH POWER SUPPLY
60
9.0
60
7.2
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
ALIMENTAZIONE AUSILIARI
AUXILIARY CIRCUIT POWER SUPPLY
Ordine
Commessa
Esecutore Bartoli
FOGLIO 8
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

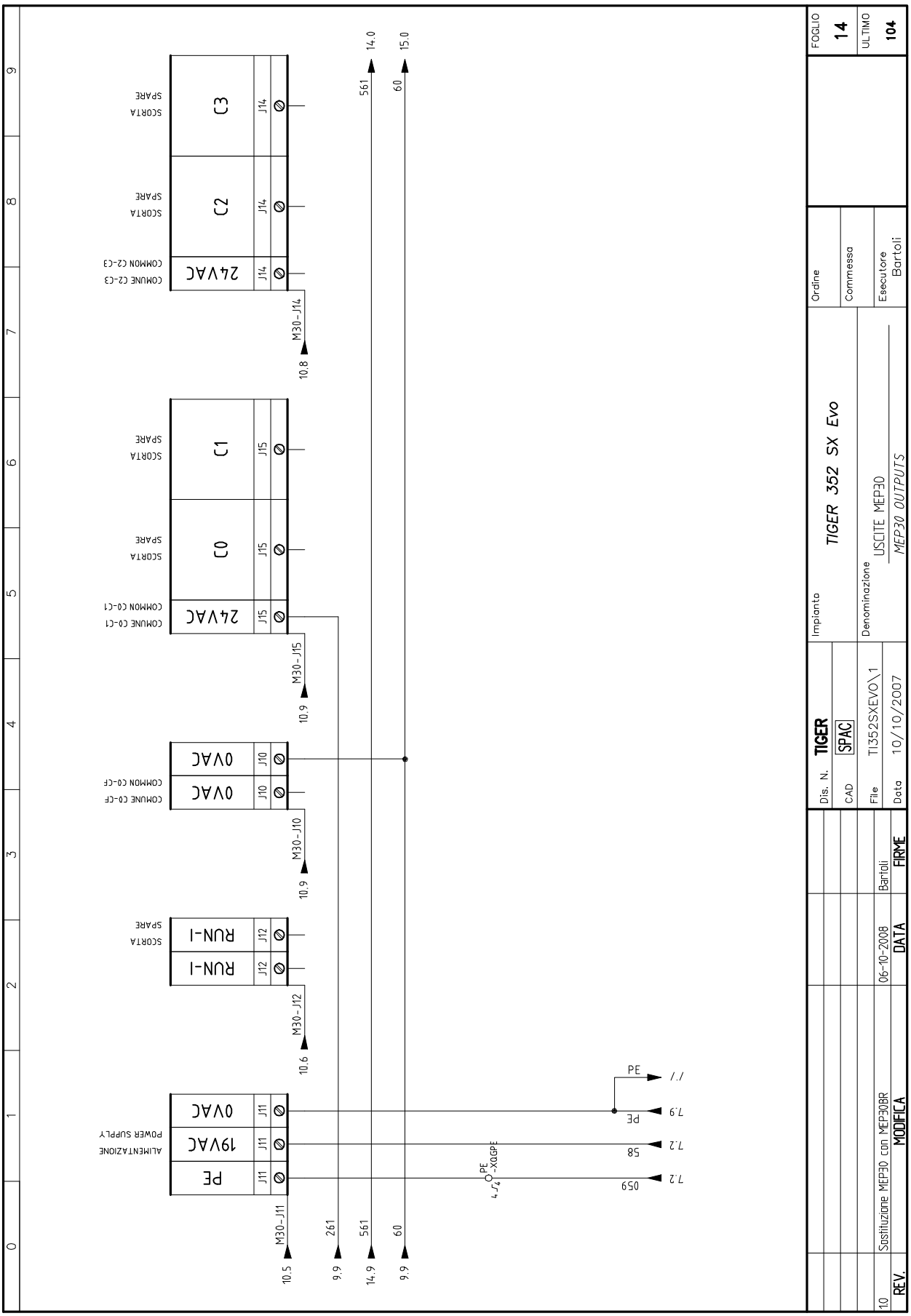

COLLEGARE I MORSETTI SE NON E' PRESENTE L'OPTIONAL PEDALIERA
WITHOUT OPTIONAL CONTROL PEDAL PUT IN CONTACT THESE TWO TERMINALS
TIGER 352 SX Evo
EMERGENZA E PRESSOSTATO
EMERGENCY AND PRESSURE SWITCH
Esecutore Bartoli
FOGLIO 9
ULTIMO 104
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
-S3
-S4
-S14
-K9
-K12
-W32
-XG64
EMERGENZA RIPRISTINATA
RESET EMERGENCY
PRESENZA ARIA
AIR PRESENCE
06-10-2008 Bartoli
Sostituzione MEP30 con MEP30BR
MODIFICA
DATA
FIRME

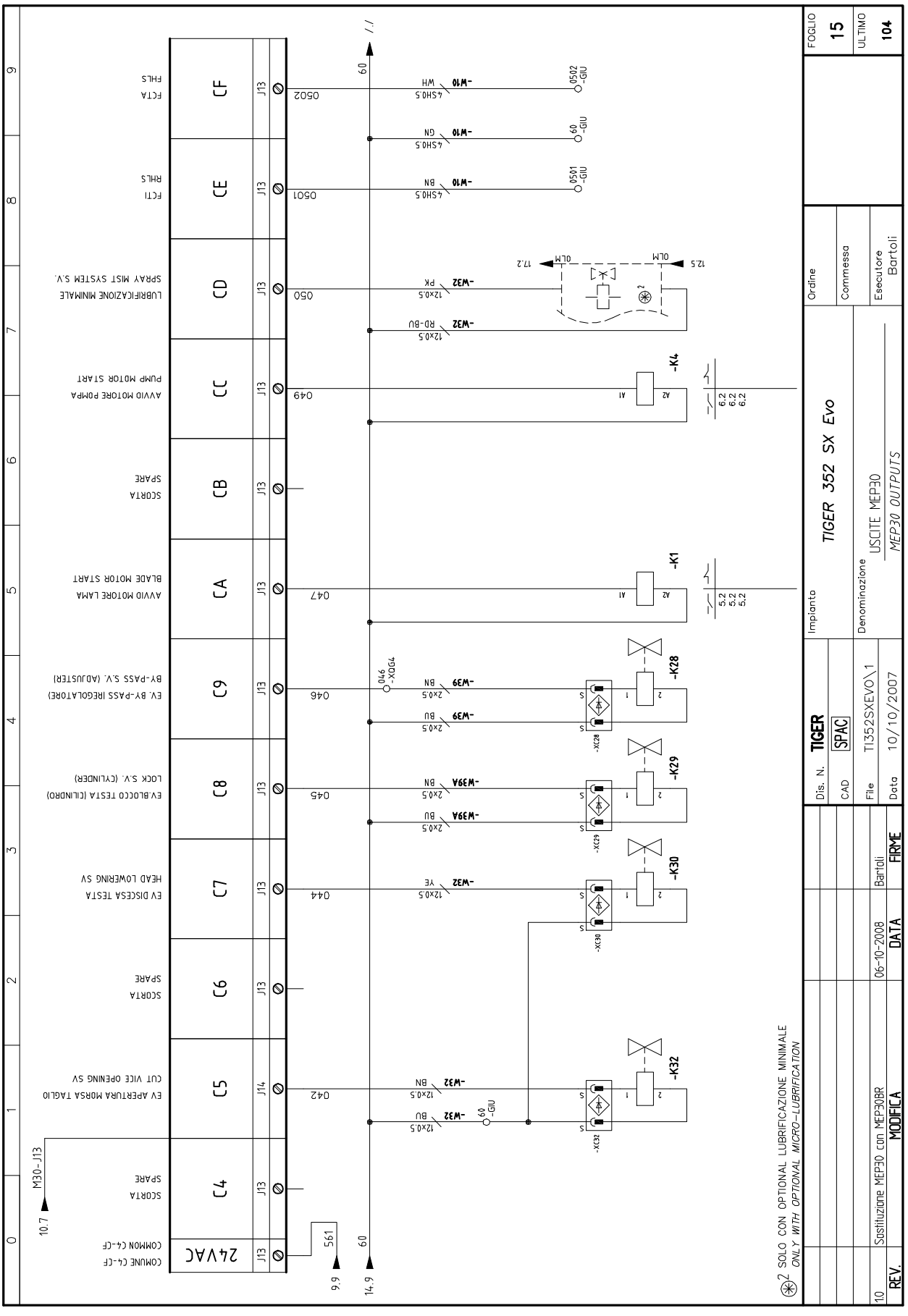

MEP30BR
PROCESSORE CENTRALE MEP30BR
CENTRAL PROCESSOR MEP30BR
-UPC
-UTA
-UDY
TASTIERA MENBRANA
KEYBOARD
TASTIERA
KEYBOARD
MEP31
DISPLAY
DISPLY 2x16 CARATTERI
INPOSTAZIONE ANALOGICA 1 (T.A.)
ANALOGIC SETTING 1 (H.F.)
SELEZIONE VEL. (LENTA)
LIVELLO OLIO
PRESSOSTATO ARIA
START PEDALIERA
POTENZIOMETRO TESTA
TA MOTORE LAMA (RIF.)
TA MOTORE LAMA (SEG.)
EV AP. MORSA TAGLIO
EV DISCESA TESTA
EV. BLOCCO TESTA
EV. BY-PASS
AVVIO MOTORE LAMA
MOTORE POMPA
LUBRIF. MINIMALE
RESET
EMERGENZA
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto TIGER 352 SX Evo
Denominazione MEP30 MEP30
Ordine
Commessa
Esecutore Bartoli
FOGLIO 10
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

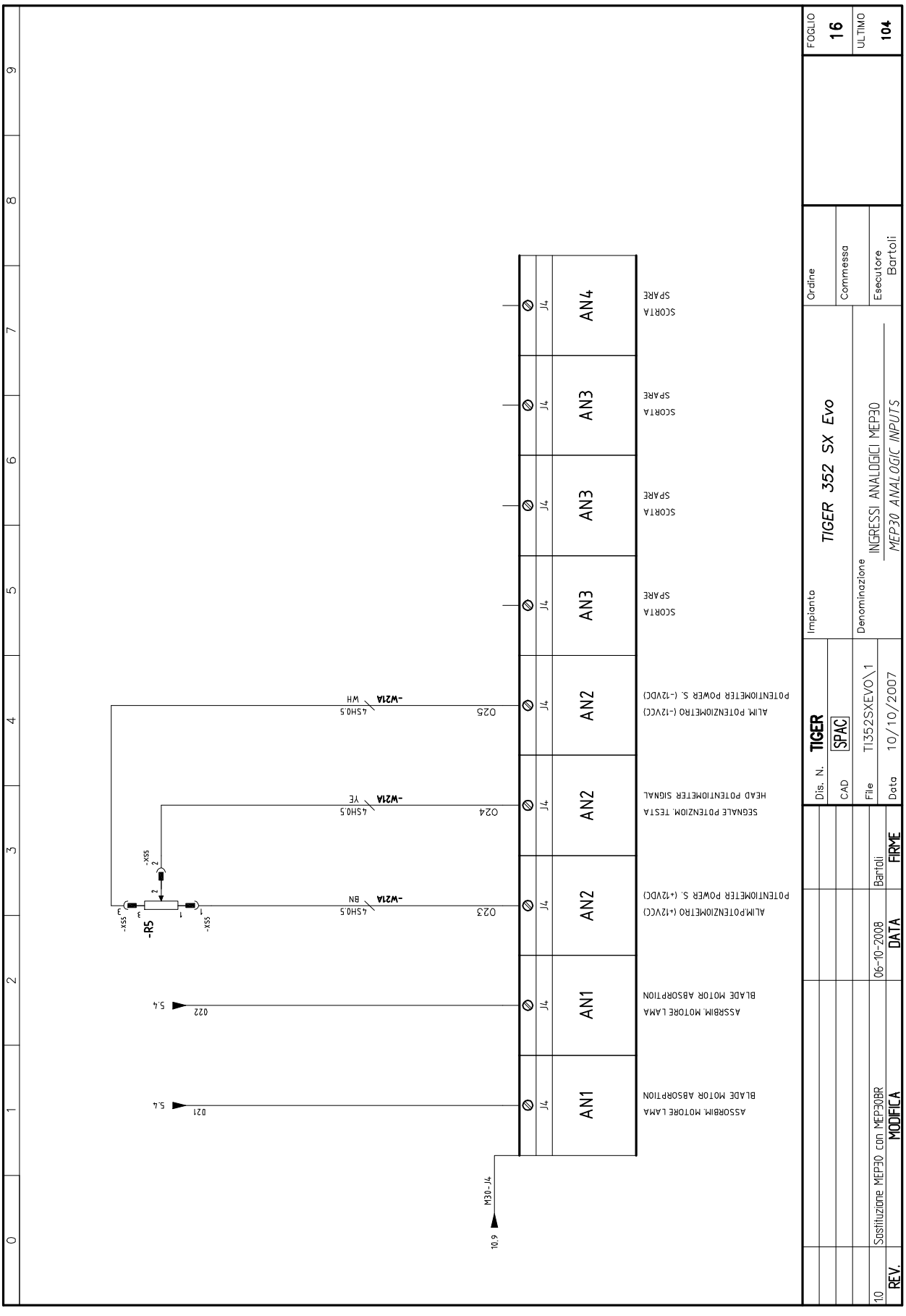

J1 4PIN
EMERGENZA/RESET
EMERGENCY/RESET
01 ROSSO EMERGENZA
RED EMERGENCY
02 ROSSO EMERGENZA
RED EMERGENCY
03 ROSSO RESET
RED RESET
04 ROSSO RESET
RED RESET
J2 16PIN
DISPLAY
DISPLAY
J4 9PIN
INGRESSI ANALOGICI
ANALOG INPUT
021 ROSSO TA MOTORE LAMA (SEG.)
RED BLADE MOTOR HF (SEG)
022 ROSSO TA MOTORE LAMA (RIF.)
RED BLADE MOTOR HF (REF)
023 MARRONE ALIMENTAZIONE POT.(+12V)
BROWN POT. POWER SUPPLY (+ 12 V)
024 GIALLO POTENZIOMETRO TESTA
YELLOW HEAD POTENTIOMETER
025 BIANCO ALIMENTAZIONE POT. (0V)
WHITE POT. POWER SUPPLY (0 V)
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
J5 14PIN
INGRESSI DIGITALI MEP 30
MEP 30 DIGITAL INPUTS
052 ROSSO 24VCC
RED 24VCC
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
033 GRIGIO/ROSA START DA PEDALIERA
GREY/PINK START BY PEDAL CONTROL
// NC NC
NC NC
035 ROSSO PRESSOSTATO ARIA
RED AIR PRESSURE SWITCH
036 NERO LIVELLO OLIO
BLACK OIL LEVEL
037 ROSSO SELEZ. VELOCITA
RED SPEED SELECTION
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
J8 12PIN
MEP 31
MEP31
J9 12PIN
TASTIERA
KEYBOARD
J10 2PIN
ALIMENTAZIONE USCITE
OUTPUT POWER SUPPLY
. NC NC
NC NC
60 BLU 0VAC
BLUE 0VAC
J11 3PIN
ALIMENTAZIONE MEP30
POWER SUPPLY MEP30
58 BLU 0VAC
BLUE 0VAC
059 ROSSO 19VAC
RED 19VAC
// GIALLO/VERDE PE
YELLOW/GREEN PE
J12 2PIN
MARCIA INVERTER
INVERTER RUN
// NC NC
NC NC
// NC NC
NC NC
J13 13PIN
USCITE DIGITALI C4-CF
C4-CF DIGITAL OUTPUTS
561 ROSSO COMUNE USCITE C4-CF
RED COMMON OUTPUT C4-CF
// NC NC
NC NC
042 MARRONE EV. APERT. MORSA TAGLIO
BROWN CUTTING VICE OPENING SV
// NC NC
NC NC
044 GIALLO EV DISCESA TESTA
YELLOW HEAD LOWERING SV
045 MARRONE EV. BLOCCO TESTA
BROWN LOCK HEAD S.V.
046 ROSSO EV. BY-PASS
RED BY-PASS S.V.
047 ROSSO AVVIO MOTORE LAMA
RED BLADE MOTOR START
// NC NC
NC NC
049 ROSSO MOTORE POMPA
RED PUMP MOTOR
050 ROSA EV. LUBRIF. MINIMALE
PINK SPRAY MIST SYSTEM S.V.
// NC NC
NC NC
// NC NC
NC NC
// NC NC
NC NC
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
LISTA INPUT/OUTPUT
INPUT/OUTPUT LIST
Ordine
Commessa
Esecutore Bartoli
FOGLIO 11
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

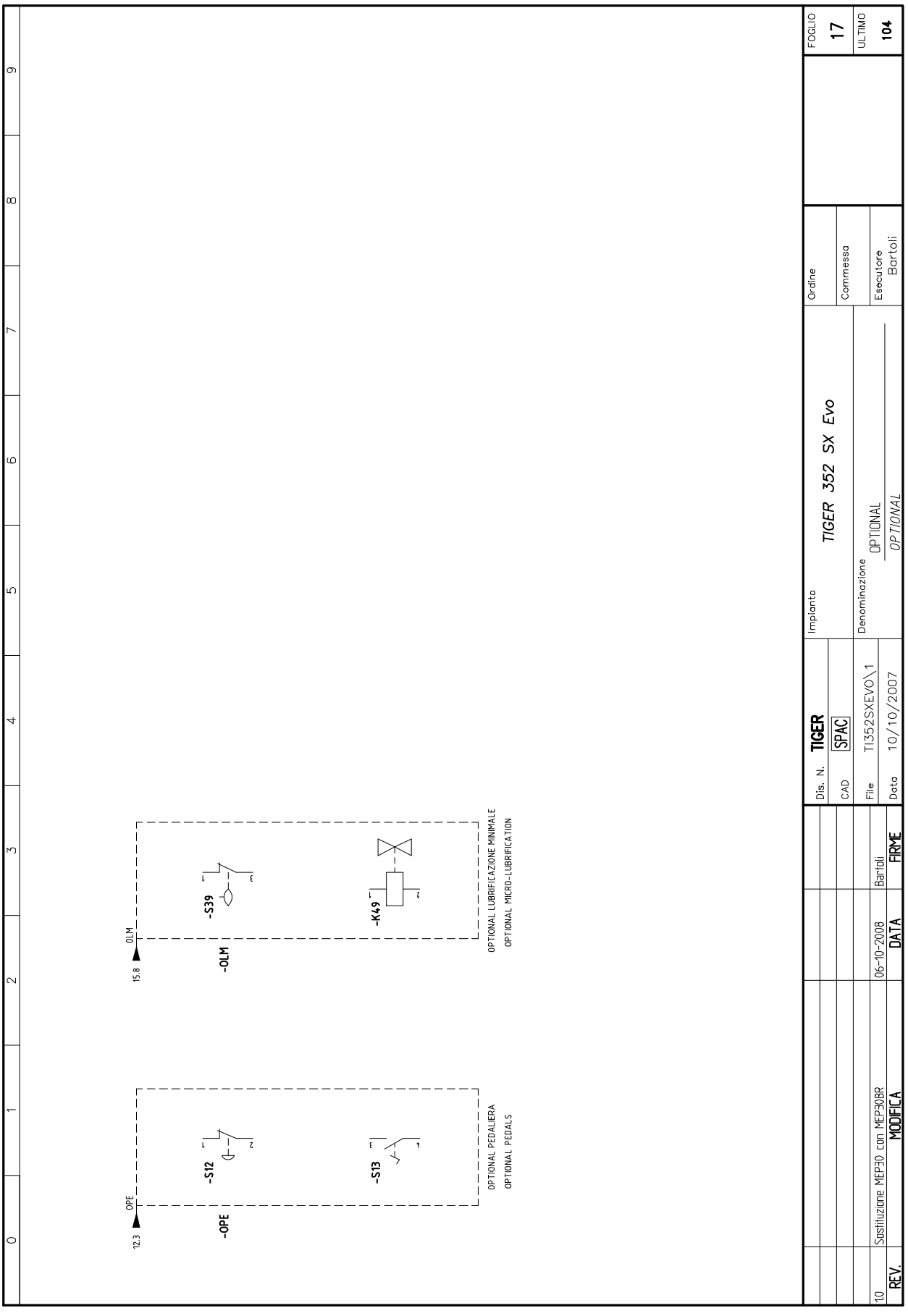

SOLO CON OPTIONAL PEDALIERA
ONLY WITH OPTIONAL PEDALS
SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
ONLY WITH OPTIONAL MICRO-LUBRIFICATION
ALIMENTAZIONE
0VCC
24VCC
SCORTA SPARE
PEDAL CONTROL START
START PEDALIERA
AIR PRESSURE SWITCH
PRESSOSTATO ARIA
OIL LEVEL OK
LIVELLO OLIO OK
SELECTED SPEED
VELOCITA SELEZIONATA
M30-J5
13.0
10.9
052
033
035
036
037
-S50
-K9
-W32
-XQG4
DLM
OPE
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
INGRESSI MEP30
MEP30 INPUTS
Ordine
Commessa
Esecutore Bartoli
FOGLIO 12
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

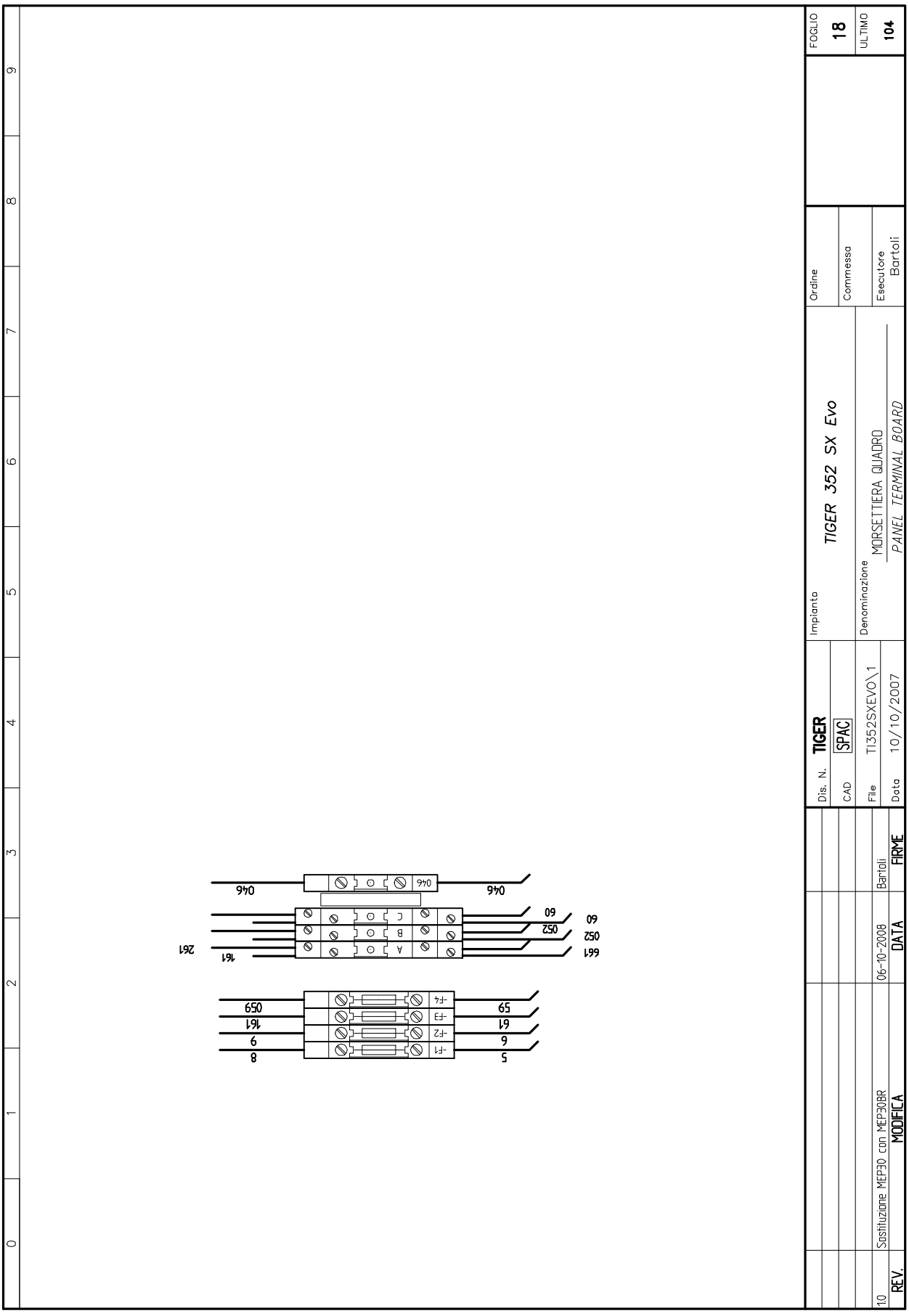

FOGLIO 13
ULTIMO 104
Impianto TIGER 352 SX Evo
Ordine
Commessa
Esecutore Bartoli
Denominazione INGRESSI MEP30
MEP30 INPUTS
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
REV. MODIFICA DATA FIRME
1.0 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
052
12.9
M30-J1
10.4
M30-J5
12.8
-S3
RESET
EMERGENZA
SCORTA SPARE
C8
C9
CA
CB
J1
J5
R
E

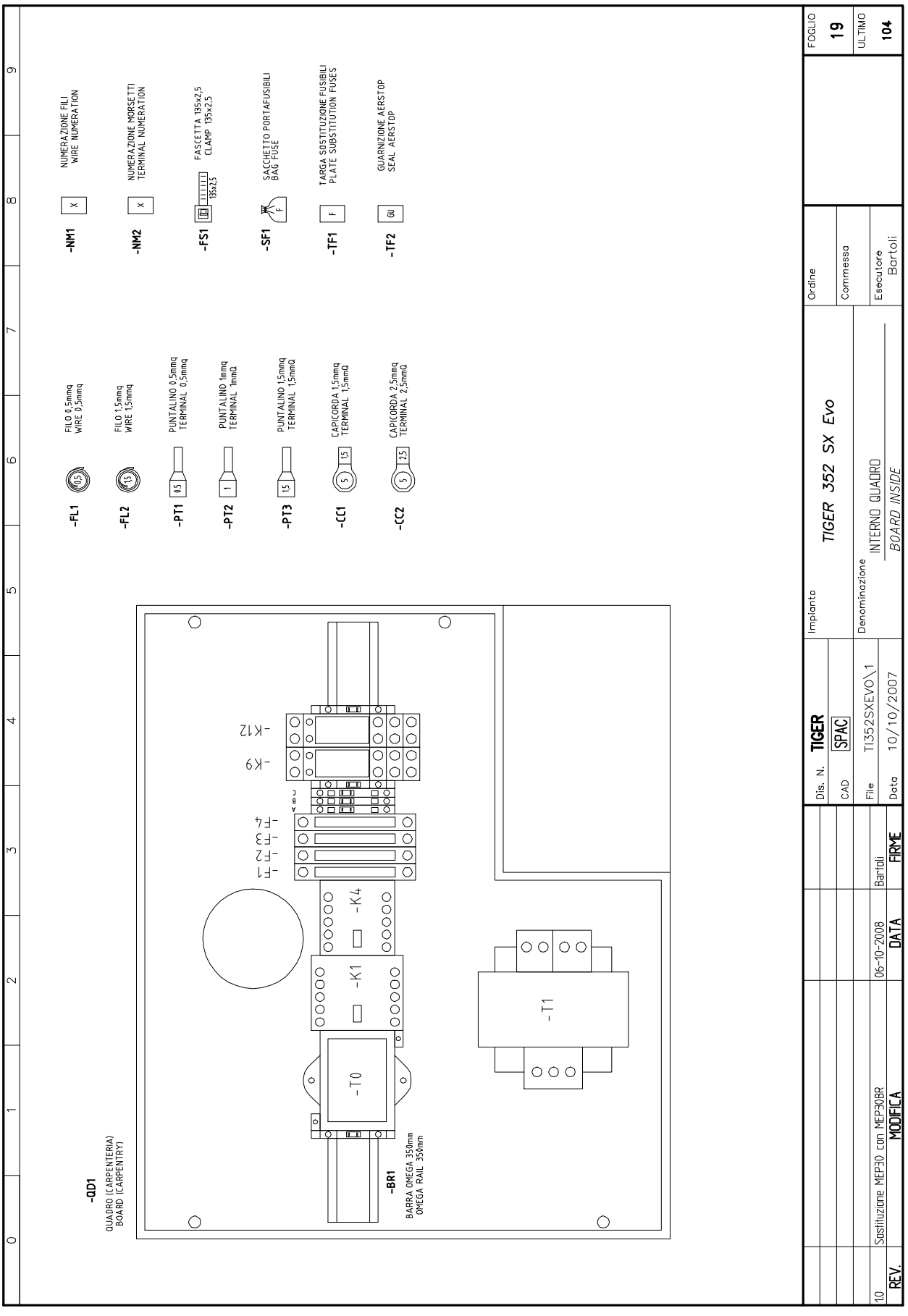

0
1
2
3
4
5
6
7
8
9
PE
19VAC
0VAC
ALIMENTAZIONE
POWER SUPPLY
J11
M30-J11
10.5
261
9.9
561
14.9
60
9.9
RUN-I
RUN-I
SCORTA
SPARE
J12
M30-J12
10.6
0VAC
0VAC
COMUNE C0-CF
COMMON C0-CF
J10
M30-J10
10.9
24VAC
C0
C1
COMUNE C0-C1
COMMON C0-C1
SCORTA
SPARE
J15
M30-J15
10.9
24VAC
C2
C3
COMUNE C2-C3
COMMON C2-C3
J14
M30-J14
10.8
561
14.0
60
15.0
PE
PE
-XGQPE
059
58
7.2
7.2
7.9
PE
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
USCITE MEP30
MEP30 OUTPUTS
Ordine
Commessa
Esecutore Bartoli
FOGLIO 14
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

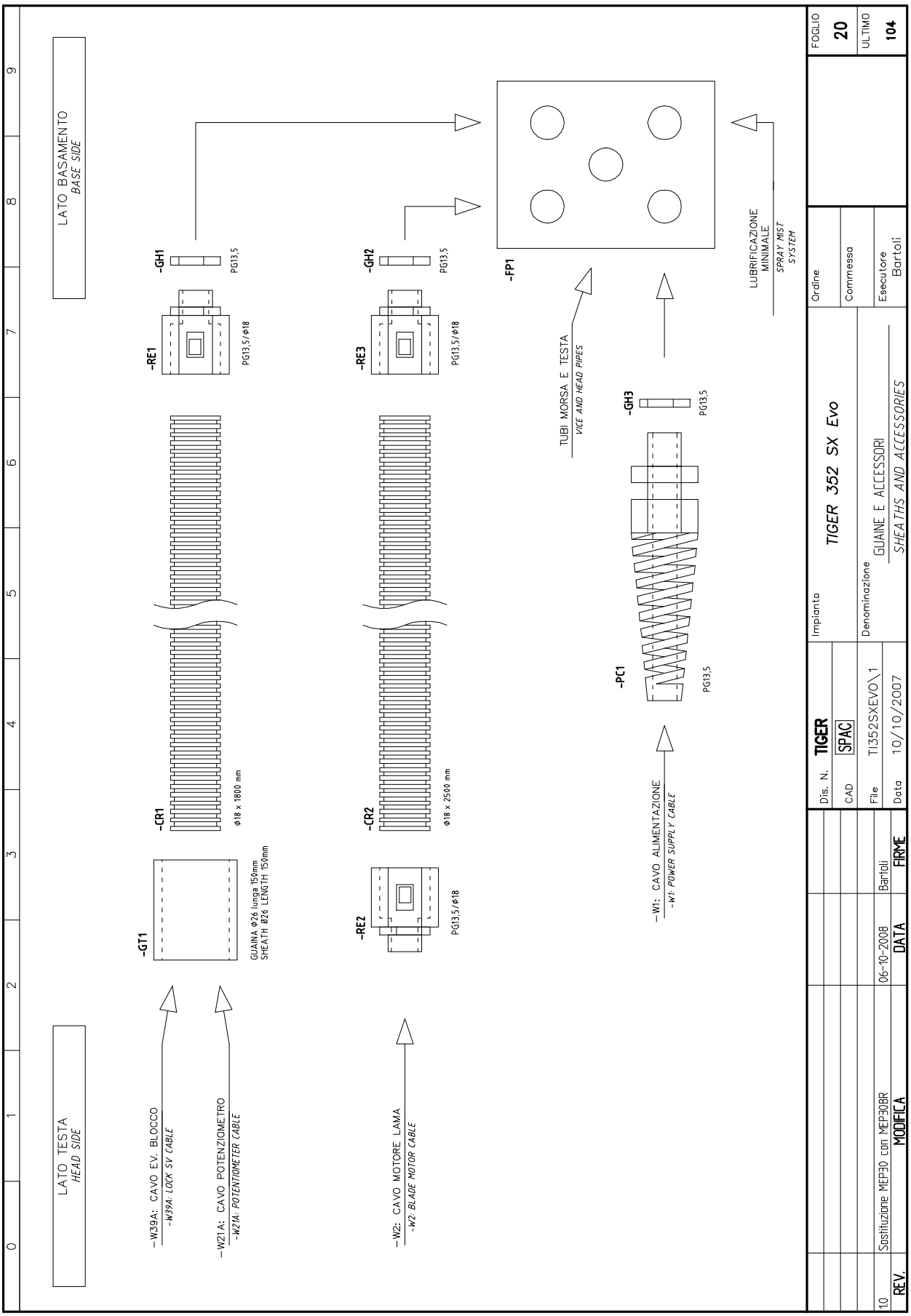

TIGER 352 SX Evo
MEP30 OUTPUTS
USCITE MEP30
Impianto
Denominazione
Ordine
Commessa
Esecutore
Bartoli
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
FOGLIO 15
ULTIMO 104
SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
ONLY WITH OPTIONAL MICRO-LUBRIFICATION
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME
24VAC
COMUNE C4-CF
COMMON C4-CF
SCORTA SPARE
EV APERTURA MORSA TAGLIO
CUT VICE OPENING SV
SCORTA SPARE
EV DISCESA TESTA
HEAD LOWERING SV
EV.BLOCCO TESTA (CILINDRO)
LOCK S.V. (CYLINDER)
EV. BY-PASS (REGOLATORE)
BY-PASS S.V. (ADJUSTER)
AVVIO MOTORE LAMA
BLADE MOTOR START
SCORTA SPARE
AVVIO MOTORE POMPA
PUMP MOTOR START
LUBRIFICAZIONE MINIMALE
SPRAY MIST SYSTEM S.V.
FCT1 RHLS
FCTA FHLS
C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF
J13 J14
-K1 -K4 -K28 -K29 -K30 -K32
-W10 -W32 -W39 -W39A
-XC28 -XC29 -XC30 -XC31
-XDG4
-GIU
M30-J13
10.7
561
9.9
14.9
60
047 049 046 045 044 042 050 050A 050B 050C 050D 050E 050F 050G 050H 050I 050L 050M 050N 050O 050P 050Q 050R 050S 050T 050U 050V 050W 050X 050Y 050Z 0501 0502
OLM
12.5
17.2
5.2 5.2 5.2
6.2 6.2 6.2

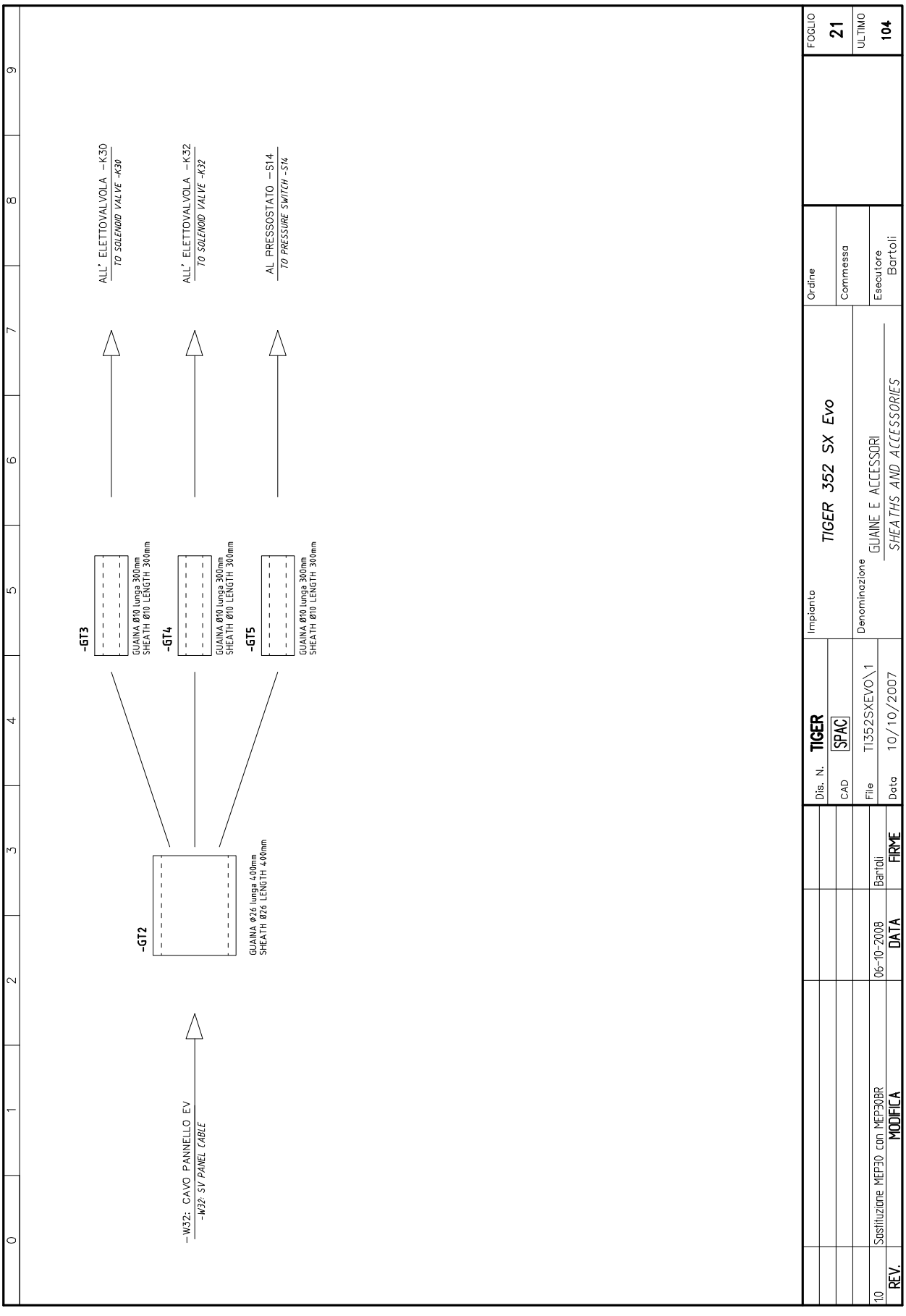

AN1
AN2
AN3
AN4
J4
M30-J4
10.9
ASSRBM. MOTORE LAMA
BLADE MOTOR ABSORPTION
ALIM.POTENZIOMETRO (+12VCC)
SEGNALE POTENZIOM. TESTA
HEAD POTENTIOMETER SIGNAL
ALIM. POTENZIOMETRO (-12VCC)
POTENTIOMETER POWER S. (-12VDC)
SCORTA
SPARE
-RS
-W21A
4SH0.5
BN
YE
WH
-XSX-
O21
O22
O23
O24
O25
5.4
FOGLIO 16
ULTIMO 104
Ordine
Commessa
Esecutore Bartoli
Impianto TIGER 352 SX Evo
Denominazione INGRESSI ANALOGICI MEP30
MEP30 ANALOGIC INPUTS
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

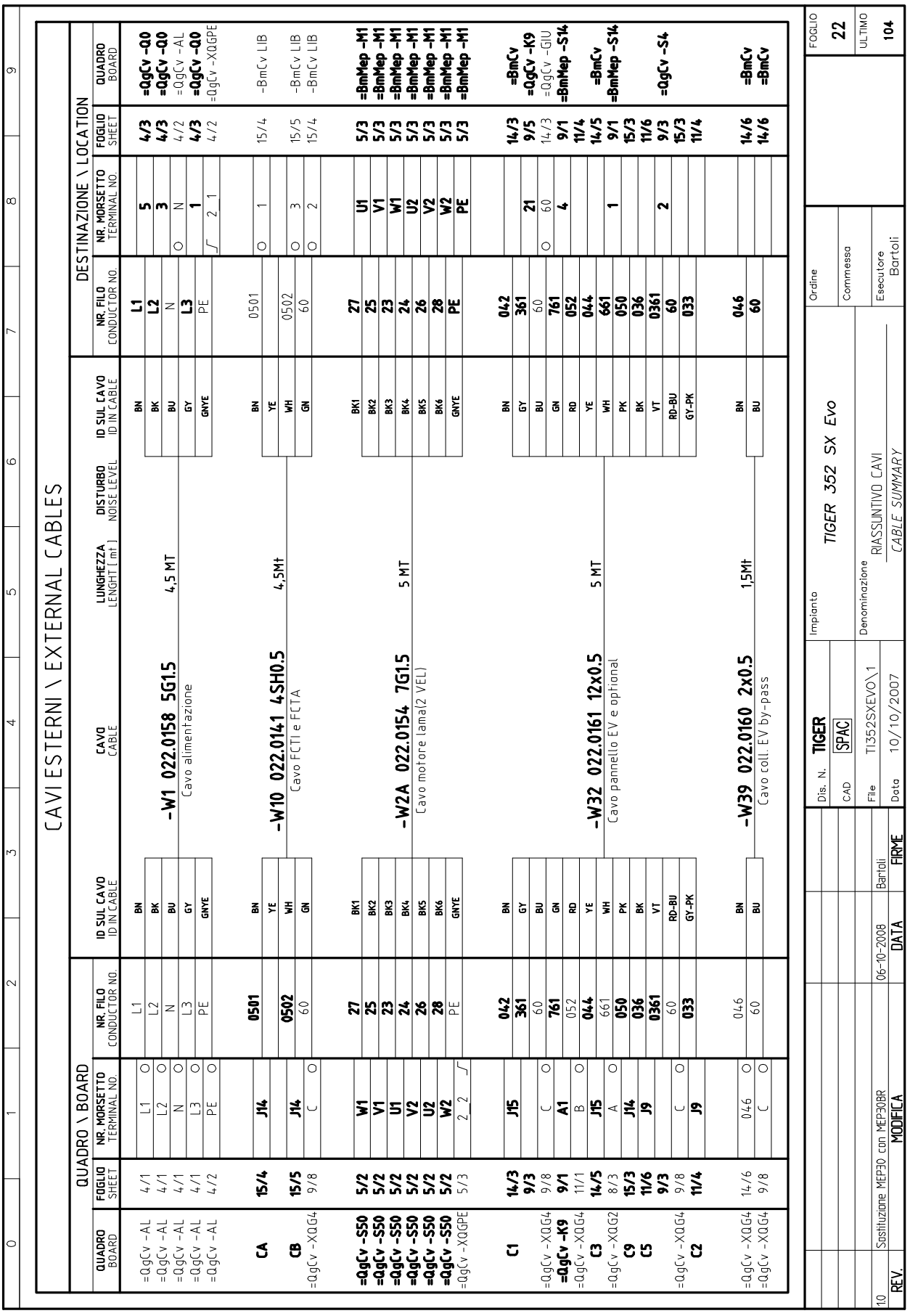

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OPE
12.3
-OPE
-S12
-S13
OPTIONAL PEDALIERA
OPTIONAL PEDALS
OLM
15.8
-OLM
-S39
-K49
OPTIONAL LUBRIFICAZIONE MINIMALE
OPTIONAL MICRO-LUBRIFICATION
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
OPTIONAL
OPTIONAL
Ordine
Commessa
Esecutore Bartoli
FOGLIO 17
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME

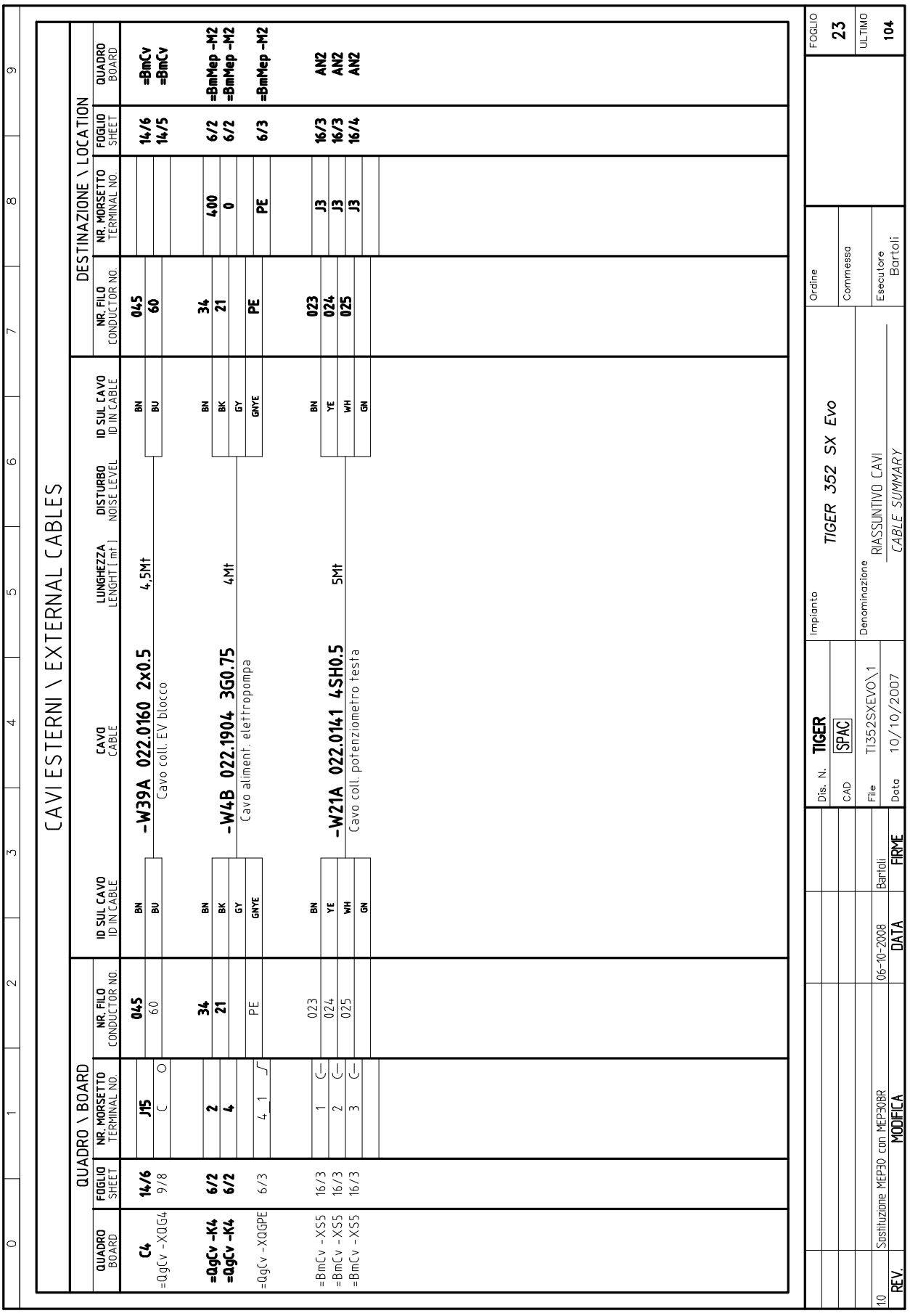

046
046
046
60
052
661
60
052
261
161
A
B
C
-F4
-F3
-F2
-F1
059
161
9
8
59
61
6
5
FOGLIO
18
ULTIMO
104
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
MORSETTIERA QUADRO
PANEL TERMINAL BOARD
Ordine
Commessa
Esecutore Bartoli
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME


-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
-FL1
FILO 0,5mmq
WIRE 0,5mmq
-FL2
FILO 1,5mmq
WIRE 1,5mmq
-PT1
PUNTALINO 0,5mmq
TERMINAL 0,5mmq
-PT2
PUNTALINO 1mmq
TERMINAL 1mmQ
-PT3
PUNTALINO 1,5mmq
TERMINAL 1,5mmQ
-CC1
CAPICORDA 1,5mmq
TERMINAL 1,5mmQ
-CC2
CAPICORDA 2,5mmq
TERMINAL 2,5mmQ
-QD1
QUADRO (CARPENTERIA)
BOARD (CARPENTRY)
-BR1
BARRA OMEGA 350mm
OMEGA RAIL 350mm
-T0
-K1
-K4
-T1
-K9
-K12
-F1
-F2
-F3
-F4
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
INTERNO QUADRO
BOARD INSIDE
Ordine
Commessa
Esecutore
Bartoli
FOGLIO 19
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME


LATO BASAMENTO
BASE SIDE
LATO TESTA
HEAD SIDE
-GH1
-GH2
-GH3
-RE1
-RE2
-RE3
-CR1
-CR2
-GT1
-FP1
-PC1
PG13,5
PG13,5/Ø18
Ø18 x 1800 mm
Ø18 x 2500 mm
GUAINA Ø26 lunga 150mm
SHEATH Ø26 LENGTH 150mm
-W39A: CAVO EV. BLOCCO
-W39A: LOCK SV CABLE
-W21A: CAVO POTENZIOMETRO
-W21A: POTENTIOMETER CABLE
-W2: CAVO MOTORE LAMA
-W2: BLADE MOTOR CABLE
-W1: CAVO ALIMENTAZIONE
-W1: POWER SUPPLY CABLE
TUBI MORSA E TESTA
VICE AND HEAD PIPES
LUBRIFICAZIONE MINIMALE
SPRAY MIST SYSTEM
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES
Ordine
Commessa
Esecutore Bartoli
FOGLIO 20
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME


-W32: CAVO PANNELLO EV
-W32: SV PANEL CABLE
-GT2
GUAINA Ø26 lunga 400mm
SHEATH Ø26 LENGTH 400mm
-GT3
GUAINA Ø10 lunga 300mm
SHEATH Ø10 LENGTH 300mm
-GT4
GUAINA Ø10 lunga 300mm
SHEATH Ø10 LENGTH 300mm
-GT5
GUAINA Ø10 lunga 300mm
SHEATH Ø10 LENGTH 300mm
ALL' ELETTOVALVOLA -K30
TO SOLENOID VALVE -K30
ALL' ELETTOVALVOLA -K32
TO SOLENOID VALVE -K32
AL PRESSOSTATO -S14
TO PRESSURE SWITCH -S14
Dis. N. TIGER
CAD SPAC
File T1352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES
Ordine
Commessa
Esecutore Bartoli
FOGLIO 21
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME


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
-W1 022.0158 5G1.5
4,5 MT
Cavo alimentazione
-W10 022.0141 4SH0.5
4,5Mt
Cavo FCTI e FCTA
-W2A 022.0154 7G1.5
5 MT
Cavo motore lama(2 VEL)
-W32 022.0161 12x0.5
5 MT
Cavo pannello EV e optional
-W39 022.0160 2x0.5
1,5Mt
Cavo coll. EV by-pass
TIGER 352 SX Evo
RIASSUNTIVO CAVI
CABLE SUMMARY
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
Denominazione
Ordine
Commessa
Esecutore Bartoli
FOGLIO 22
ULTIMO 104
10 Sostituzione MEP30 con MEP30BR 06-10-2008 Bartoli
REV. MODIFICA DATA FIRME


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
C4
=QgCv -XQG4
14/6
9/8
J15
045
BN
-W39A 022.0160 2x0.5
4,5Mt
BN
045
14/6
=BmCv
60
BU
Cavo coll. EV blocco
BU
60
14/5
=BmCv
=QgCv -K4
6/2
2
34
BN
-W4B 022.1904 3G0.75
4Mt
BN
34
6/2
=BmMep -M2
=QgCv -K4
6/2
4
21
BK
BK
21
4.00
6/2
=BmMep -M2
GY
GY
0
=QgCv -XQGPE
6/3
4 1
PE
GNYE
Cavo aliment. elettropompa
GNYE
PE
PE
6/3
=BmMep -M2
=BmCv -XS5
16/3
1
023
BN
-W21A 022.0141 4SH0.5
5Mt
BN
023
J3
16/3
AN2
=BmCv -XS5
16/3
2
024
YE
Cavo coll. potenziometro testa
YE
024
J3
16/3
AN2
=BmCv -XS5
16/3
3
025
WH
WH
025
J3
16/4
AN2
GN
GN
10
Sostituzione MEP30 con MEP30BR
06-10-2008
Bartoli
REV.
MODIFICA
DATA
FIRME
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007
Impianto
TIGER 352 SX Evo
Denominazione
RIASSUNTIVO CAVI
CABLE SUMMARY
Ordine
Commessa
Esecutore
Bartoli
FOGLIO
23
ULTIMO
104

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-GT1	'022.0180	Guaina termoretraibile 26mm	'=BmCv	20	0.15
'-GT2		Guaina termoretraibile 26mm	'=BmCv	21	0.40
'-GT3	'022.0181	Guaina termoretraibile 10mm	'=BmCv	21	0.35
'-GT5		Guaina termoretraibile 10mm	'=BmCv	21	0.35
'-GT4		Guaina termoretraibile 10mm	'=BmCv	21	0.35
'-RE2	'022.0211	Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	20	1
'-RE3		Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	20	1
'-RE1		Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	20	1
'-PC1	'022.0234	Pressacordone 3246 nero PG13,5	'=BmCv	20	1
'-GH1	'022.0244	Dado grigio PG13,5	'=BmCv	20	1
'-GH2		Dado grigio PG13,5	'=BmCv	20	1
'-GH3		Dado grigio PG13,5	'=BmCv	20	1
'-XS5	'022.0378	Connettore AC 3 poli per valvola DC	'=BmCv	16	1
'-R5	'022.1801	Potenziometro lineare corsa 250mm	'=BmCv	16	1
'-CR1	'022.2602	Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	'=BmCv	20	2.50
'-CR2		Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	'=BmCv	20	1.80
'-FP1	V.d.M.	Flangia passaggio cavi TI372SxEvo	'=BmCv	20	1
'-OLM	'090.1601	Gruppo lubrificazione munimale SHARK	'=BmLmCv	17	1
'-M1	'019.1904	Motore KW 2,6/1,84 3K112MB8/4 B14 V. 380	'=BmMep	5	1
'-M2	'028.0270	Elettropompa EZ/C monofase 230/400V 50/60Hz	'=BmMep	6	1
'-S14	V.d.P.	Vedi distinta pneumatica	'=BmMep	9	1
'-OPE	'090.0672	Comando supplementare a pedaliera	'=BmPeMep	17	1
'-K32	V.d.P.	Vedi distinta pneumatica	'=PpCv	15	1
'-K30		Vedi distinta pneumatica	'=PpCv	15	1
'-K29		Vedi distinta pneumatica	'=PpCv	15	1
'-K28		Vedi distinta pneumatica	'=PpCv	15	1
'-QD1	'016.0722	Carpenteria quadro TI372 SX Evo	'=QgCv	19	1
'-FS1	'019.5353	Fascetta in plastica 135x2,5	'=QgCv	19	30
'-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
'-Q0	'022.0126	Barretta per neutro N-PKZ0 cod. 82160	'=QgCv	4	1
'-FL1	'022.0171	Cordicella unipolare 1 X 0,5	'=QgCv	19	17.00
'-FL2	'022.0172	Cordicella unipolare 1x1,50	'=QgCv	19	10.00
'-NM1	'022.0290	Etichetta segnafilo	'=QgCv	19	260
'-NM2		Etichetta segnafilo	'=QgCv	19	8

REV.	MODIFICA	DATA	FIRME
1.0	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli

Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007

Impianto: TIGER 352 SX Evo
Denominazione: DISTINTA MATERIALI / MATERIAL LIST

Ordine
Commessa
Esecutore: Bartoli

FOGLIO 24
ULTIMO 104

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-CC2	'022.0296	Terminale a occhiello Ø5 da 2,5mmq (Blu)	'=QgCv	19	1
'-CC1	'022.0304	Terminale a occhiello Ø5 da 1,5mmq (Rosso)	'=QgCv	19	5
'-PT1	'022.0311	Terminale a puntale da 0,5mmq (Bianco)	'=QgCv	19	80
'-PT2	'022.0312	Terminale a puntale da 1mmq (Grigio)	'=QgCv	19	10
'-PT3		Terminale a puntale da 1mmq (Grigio)	'=QgCv	19	45
'-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
'-UDY	'022.0757	Display MEP30 LCD 2x16	'=QgCv	10	1
'-BR1	'022.0900	Barra omega	'=QgCv	19	0.35
'-S3	'022.0937	Blocchetto NA M22-K10 cod. 216376	'=QgCv	9	1
'-S3		Blocchetto NA M22-K10 cod. 216376	'=QgCv	9	1
'-S50		Blocchetto NA M22-K10 cod. 216376	'=QgCv	12	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	19	1
'-S50	'022.1226	Selettore 2P. M22-WKV cod.216874 + portacontatti M22-A cod 216374	'=QgCv	12	1
'-S4	'022.1245	Emergenza M22-PVT cod.263467 + M22-A 216374 + M22-K01 216378	'=QgCv	9	1
'-Q0	'022.1287	Interuttore PKZM0-10 (termica) cod. 72739	'=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	7	1
'-XQG4	'022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla 56.703.0055.0	'=QgCv	15	1
'-XQGFU	022.2256 + 022.1136 + 022.1136	Morsetto portafusibile a molla + N° 2 fusibili da 500V 5A	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile a molla + N° 2 fusibili da 500V 5A	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile a molla + N° 2 fusibili da 500V 5A	'=QgCv	7	1
'-XQGFU		Morsetto portafusibile a molla + N° 2 fusibili da 500V 5A	'=QgCv	7	1
'-XQG4	'022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	9	1
'-XQG4		Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	12	1
'-XQG2		Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	'=QgCv	8	1
'-XQG4	'022.2288	Piastra di chiusura x morsetto a 4 fili 07.312.7155.0	'=QgCv		1
'-XQGPE	'022.2321	Barra da 15x15mm con 10 fori 6mm	'=QgCv	6	1
'-UPC	'022.2818	Controllore MEP 30/B con rele	'=QgCv	10	1
'-K1	'022.3002	Contattore DILM9-10 (24 V. 50.60 HZ) cod.276694	'=QgCv	15	1
'-K4	'022.3004	Minicontattore 9 AMP. - DILEM-10 (24V.50.60 HZ) cod. 21417	'=QgCv	15	1
'-S50	'022.3054	Selettore 2 velocita 20A T0-5-70331 GB/E	'=QgCv	5	1
'-TF2	'025.0604	Guarnizione aerstop	'=QgCv	19	1.40

REV.	MODIFICA	DATA	FIRME
1.0	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli

Dis. N.	TIGER	Impianto	TIGER 352 SX Evo
CAD	SPAC		
File	TI352SXEVO\1	Denominazione	DISTINTA MATERIALI / MATERIAL LIST
Data	10/10/2007		

Ordine		FOGLIO 25
Commessa		ULTIMO 104
Esecutore	Bartoli	

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-UTA	'031.2030	Consolle di programmazione SX EVO	'=QgCv	10	1
'-TF1	'031.2622	Targa sostituzione fusibili	'=QgCv	19	1
'-SF1	'047.0182	Sacchetto portafusibili	'=QgCv	19	1

TIPO/TYPE	DESCRIZIONE/DESCRIPTION	FORMAZ./FORMAT.	LUNGH./LENGHT
'022.0141	Cavo schermato 4x0,5	4SH0.5	9.50
'022.0154	Cavo 7x1,5mmq	7G1.5	5.00
'022.0158	Cavo 5x1,5mmq	5G1.5	4.50
'022.0160	Cavo 2x0.5mmq	2x0.5	6.00
'022.0161	Cavo 12x0.50mmq	12x0.5	5.00
'022.1904	Cavo 3x0.75mmq	3G0.75	4.00

REV.	MODIFICA	DATA	FIRME
1.0	Sostituzione MEP30 con MEP30BR	06-10-2008	Bartoli

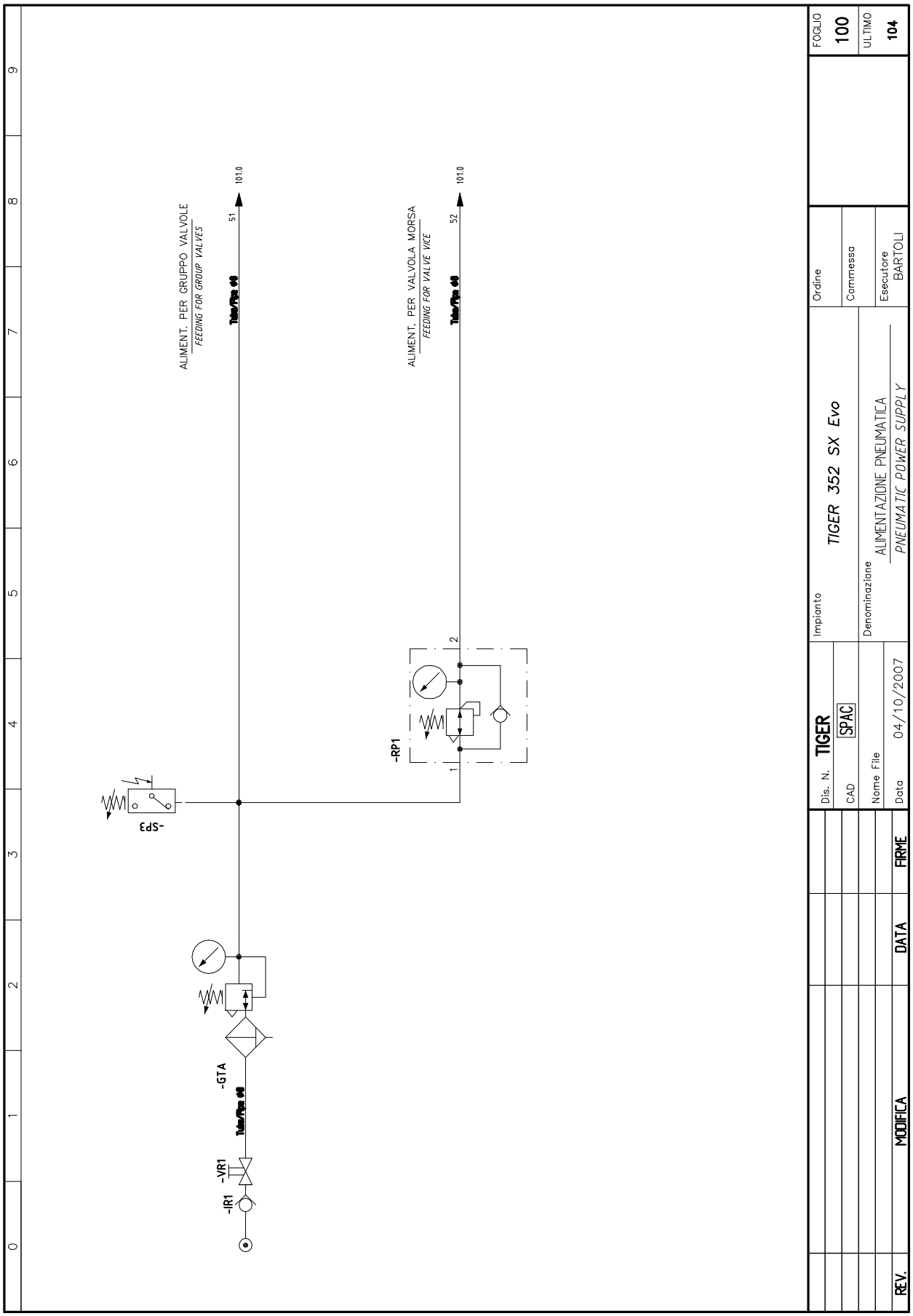
Dis. N. TIGER
CAD SPAC
File TI352SXEVO\1
Data 10/10/2007

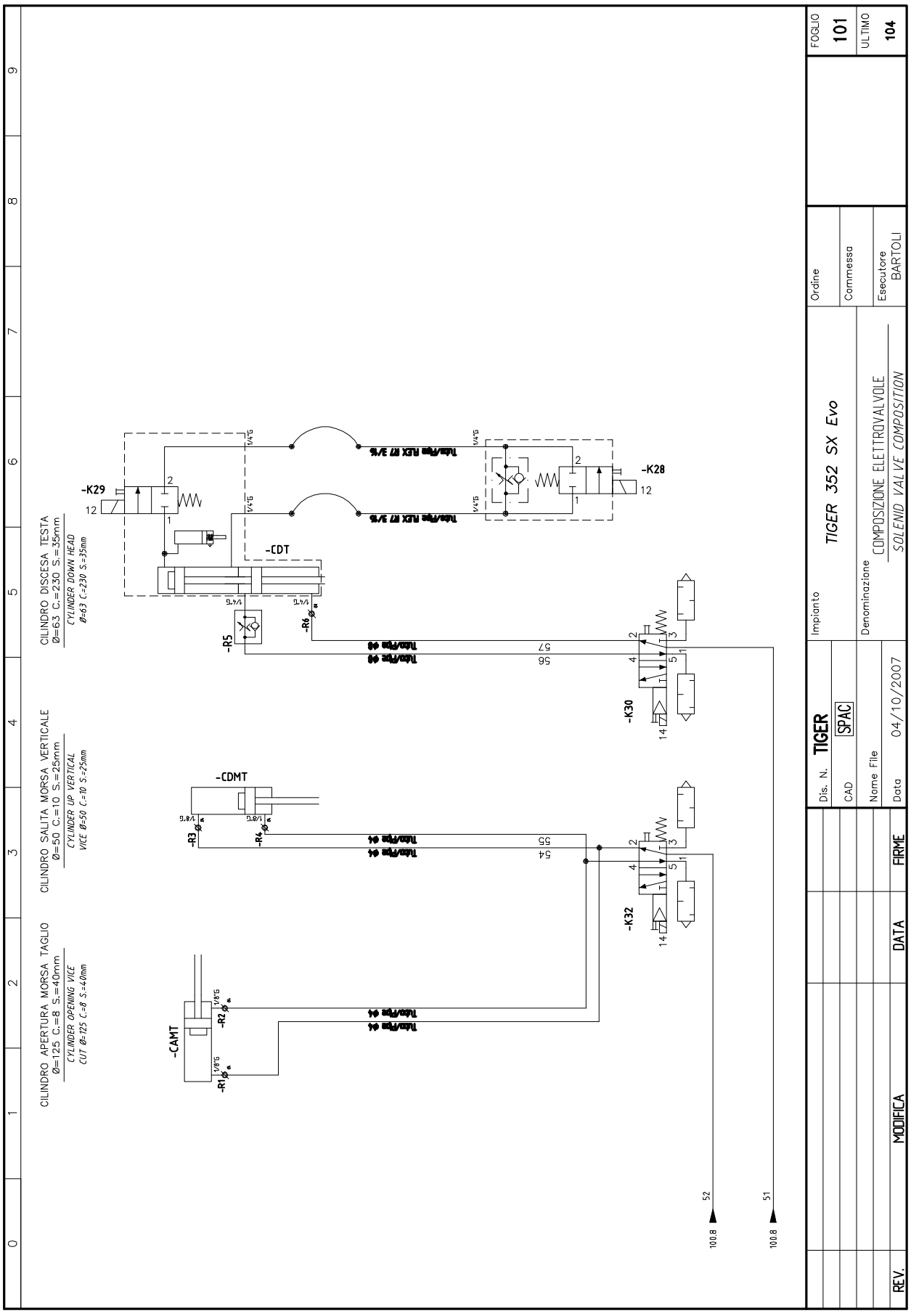
Impianto: TIGER 352 SX Evo
Denominazione: DISTINTA MATERIALI / MATERIAL LIST
Ordine
Commessa
Esecutore: Bartoli

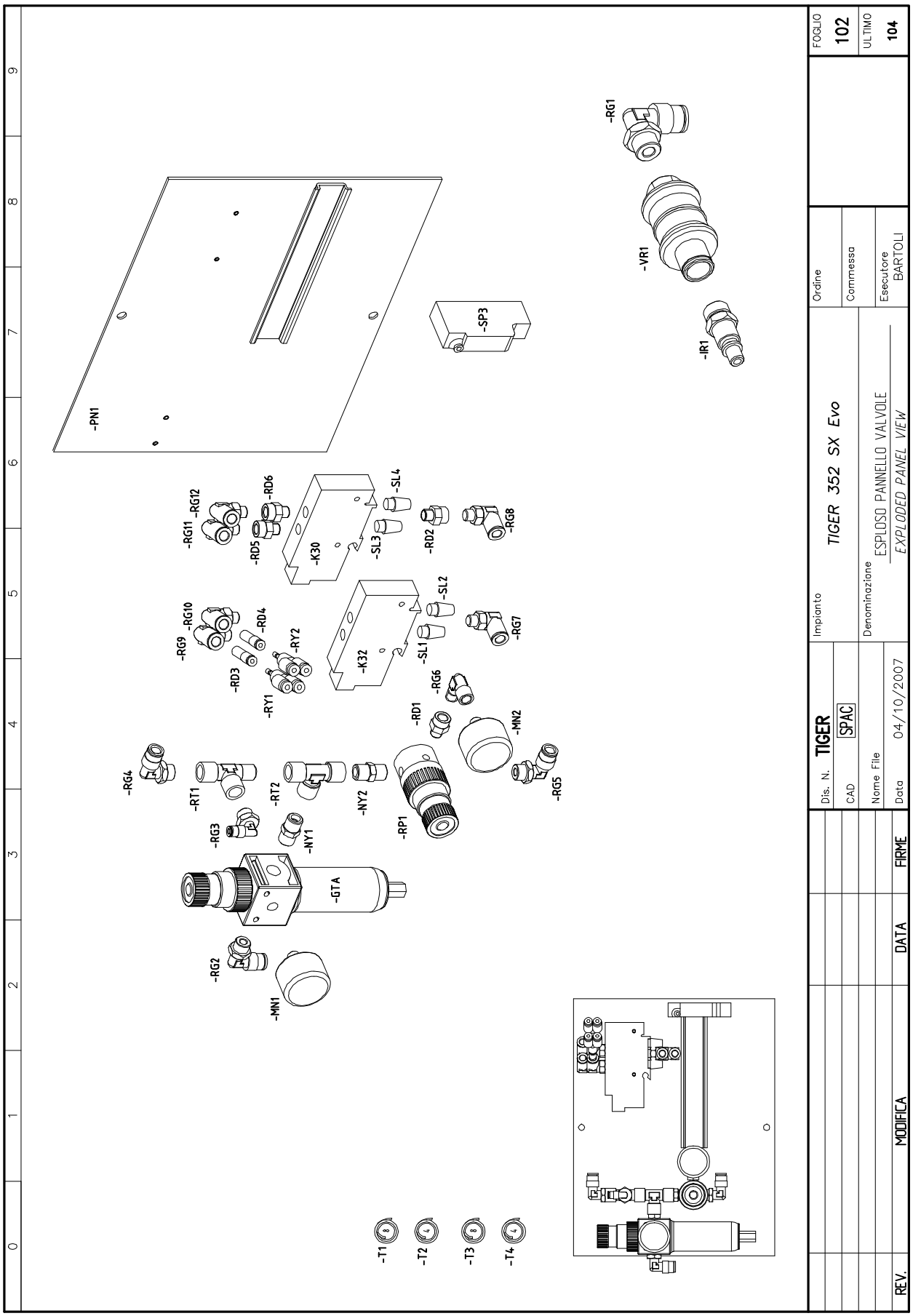
FOGLIO 26
ULTIMO 104

Translation of the original instructions

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
-K30
-K32
-R1
-R2
-R3
-R4
-R5
52
51
100.8
Dis. N. TIGER
CAD SPAC
Nome File
Data 04/10/2007
REV.
MODIFICA
DATA
FIRME
Impianto
TIGER 352 SX Evo
Denominazione
COMPOSIZIONE ELETTROVALVOLE
SOLENID VALVE COMPOSITION
Ordine
Commessa
Esecutore BARTOLI
FOGLIO 101
ULTIMO 104


-PN1
-SP3
-RG1
-VR1
-IR1
-RG11
-RG12
-RD5
-RD6
-K30
-SL3
-SL4
-RD2
-RG8
-RG9
-RG10
-RD3
-RD4
-RY1
-RY2
-K32
-SL1
-SL2
-RG7
-RG6
-RD1
-MN2
-RG5
-RG4
-RT1
-RG3
-RT2
-NY1
-NY2
-RP1
-GTA
-RG2
-MN1
-T1
-T2
-T3
-T4
FOGLIO 102
ULTIMO 104
Ordine
Commessa
Esecutore BARTOLI
Impianto TIGER 352 SX Evo
Denominazione ESPLOSO PANNELLO VALVOLE
EXPLODED PANEL VIEW
Dis. N. TIGER
CAD SPAC
Nome File
Data 04/10/2007
REV. MODIFICA DATA FIRME

0	1	2	3	4	5	6	7	8	9

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
'-R6		Raccordo a gomito da 1/4"G a Ø8mm	'=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	6.00
'-T4	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=BmMep	102	9.00
'-R5	'043.0453	Regolatore di flusso SCU 606 da 1/4"G	'=BmMep	101	1
'-VR1	'043.0601	Valvola VMS 114-1/4 08	'=BmMep	100	1
'-PN1	'034.0747	Pannello pneumatico TI-CB-SX-NC con barra omega	'=PpCv	102	1
'-SP3	'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
'-RG9		Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1
'-RG10		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
'-RG12		Raccordo a gomito da 1/8"G a Ø8mm	'=PpCv	102	1
'-RT2	'043.0216	Raccordo a "T" FFF da 1/4"G	'=PpCv	102	1
'-RT1	'043.0219	Raccordo a "T" MFF da 1/4"G	'=PpCv	102	1
'-RD3	'043.0225	Riduzione M/F da tubo Ø8/Ø4mm	'=PpCv	102	1
'-RD4		Riduzione M/F da tubo Ø8/Ø4mm	'=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
'-RY1	'043.0235	Giunto a "Y" Ø4mm	'=PpCv	102	1
'-RY2		Giunto a "Y" Ø4mm	'=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

REV.	MODIFICA	DATA	FIRME

Dis. N. TIGER
CAD SPAC
Nome File
Data 04/10/2007

Impianto: TIGER 352 SX Evo
Denominazione: DISTINTA MATERIALE PNEUMATICO / PNEUMATIC MATERIAL LIST

Ordine
Commessa
Esecutore: BARTOLI

FOGLIO 103
ULTIMO 104

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-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
'-K32	043.0608 + 022.580	Elettrovalvola pneumatica montaggio singolo 5/2 da 1/8 PVLB111618 PARKER + bobina 24VAC	'=PpCv	101	1
'-K30		Elettrovalvola pneumatica montaggio singolo 5/2 da 1/8 PVLB111618 PARKER + bobina 24VAC	'=PpCv	101	1
'-SL1	'0436.0202	Silenziatore da 1/8"G in ottone sinterizzato	'=PpCv	102	1
'-SL2		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

REV.	MODIFICA	DATA	FIRME

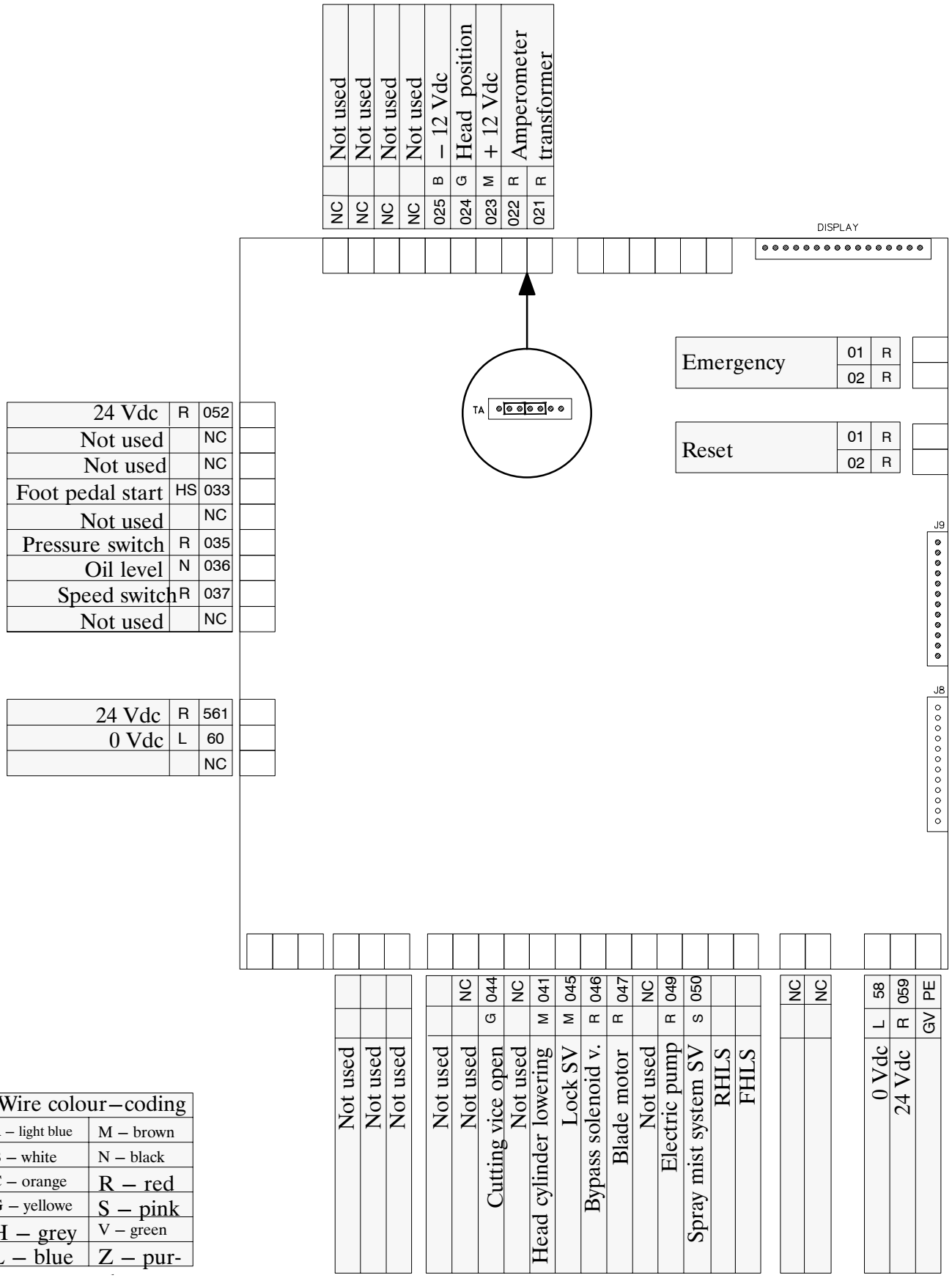
Dis. N. TIGER
CAD SPAC
Nome File
Data 04/10/2007

Impianto: TIGER 352 SX Evo
Denominazione: DISTINTA MATERIALE PNEUMATICO / PNEUMATIC MATERIAL LIST

Ordine
Commessa
Esecutore: BARTOLI

FOGLIO 104
ULTIMO 104

IUD/IUV card

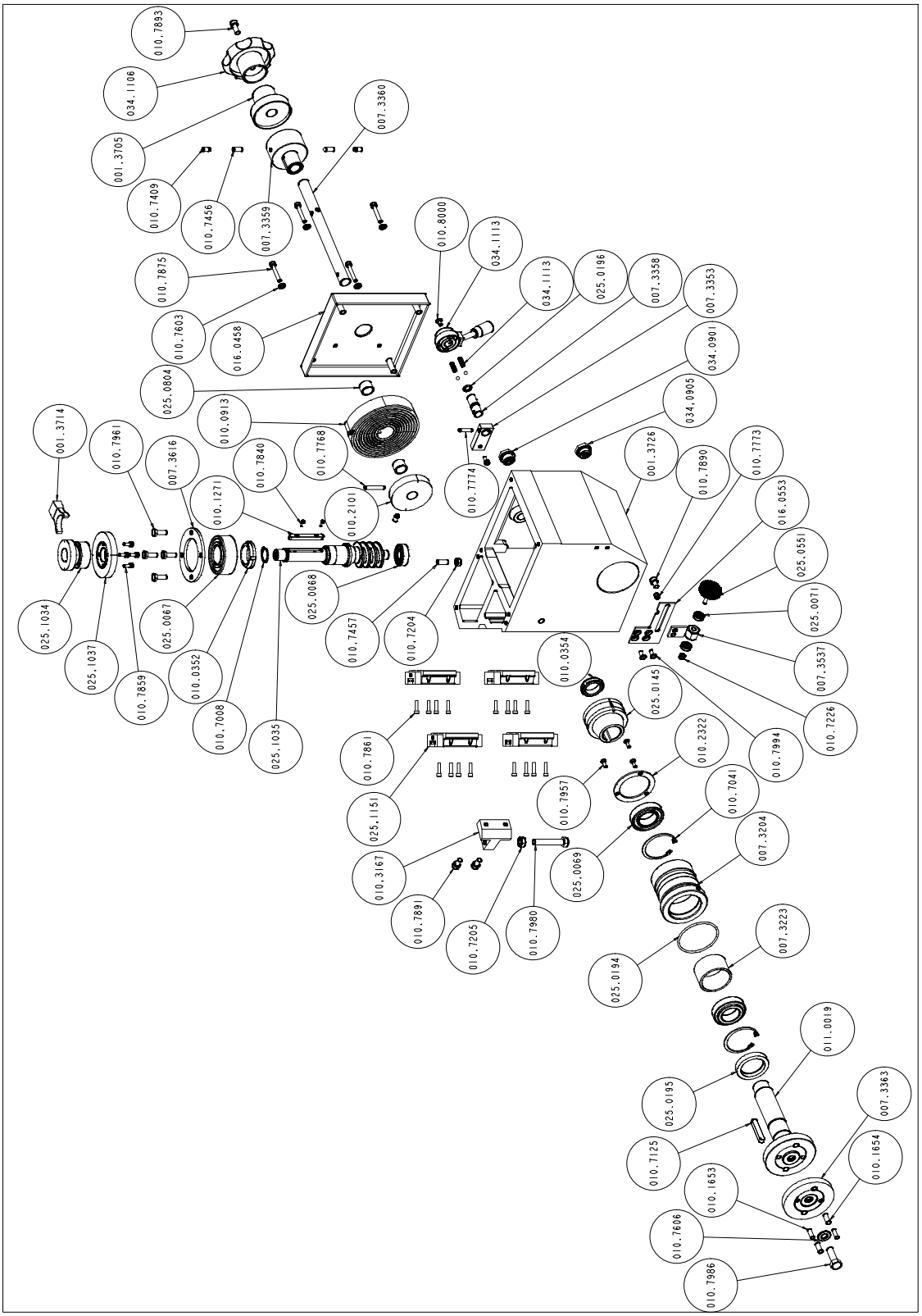


Wire colour–coding	
A – light blue	M – brown
B – white	N – black
C – orange	R – red
G – yellowe	S – pink
H – grey	V – green
L – blue	Z – pur-

Exploded views

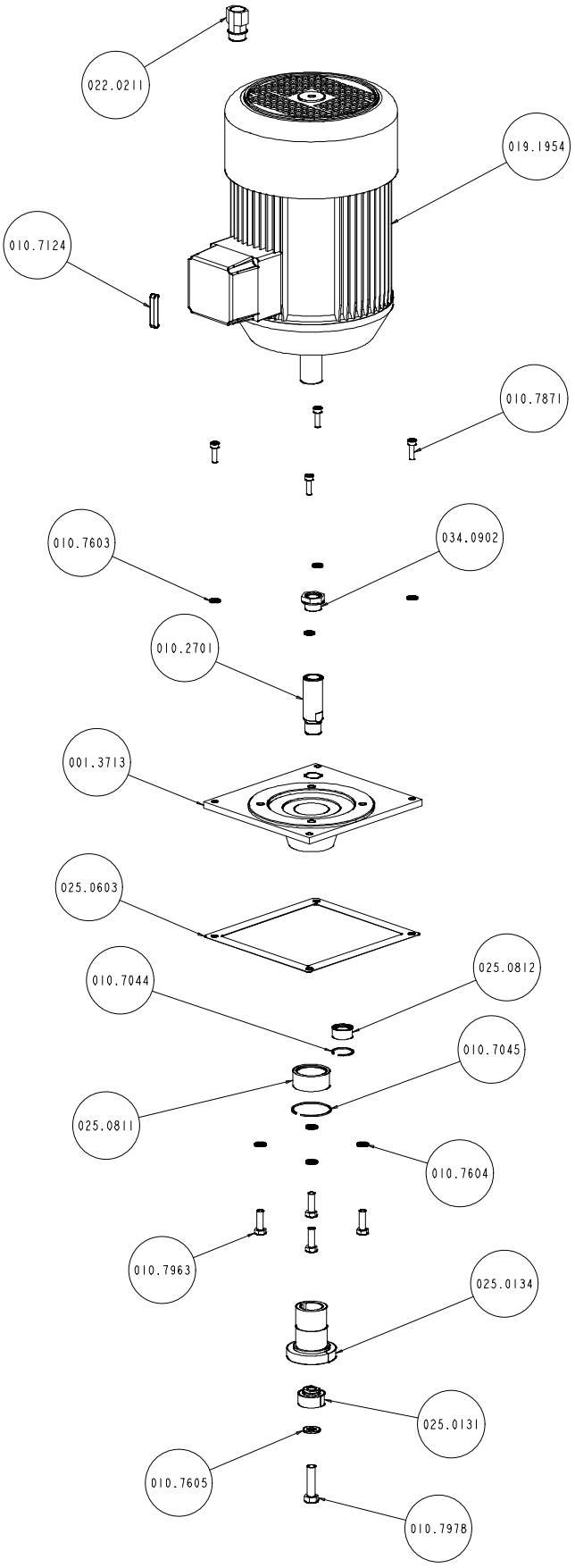
This part of the manual contains detailed exploded views of the machine which can help to gain a deeper knowledge of how it is made.

Head unit



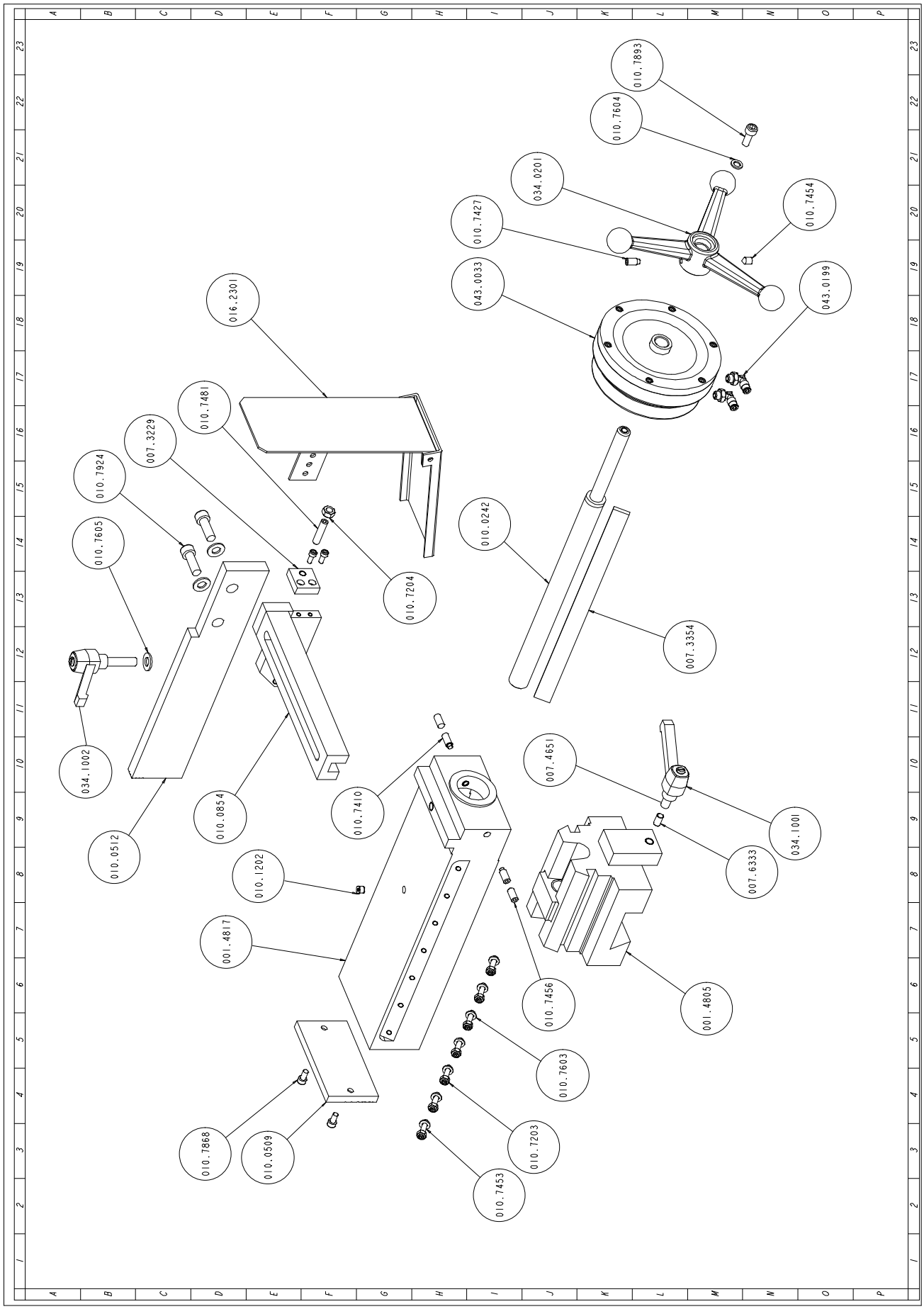
Code	Description	U. of M.	Quantity
025.0145	CORONA ELICOIDALE DIS. 86.06.0	NR	1,000
025.0194	ANELLO DI TENUTA OR 176 VITON	NR	1,000
025.0195	ANELLO DI TENUTA 45X62X10 G VI	NR	1,000
025.0196	ANELLO DI TENUTA OR 3043 VITON	NR	1,000
025.0551	SPAZZOLA PULILAMA 6X25 030 GG4	NR	1,000
025.0804	BOCCOLA GRAFITATA L. 15 DIAM.	NR	2,000
025.1034	RUOTA DENTATA 43007/53 ALBERO	NR	1,000
025.1035	ALBERO VITE SENZA FINE 43003/5	NR	1,000
025.1037	RUOTA DENTATA 43005/53 ALBERO	NR	1,000
025.1151	PATTINO LGW20HAZ1C	NR	4,000
034.0901	TAPPO LIVELLO OLIO 1/2 "GAS.	NR	1,000
034.0905	TAPPO OLIO TAO/3 1/2" NERO	NR	1,000
034.1106	VOLANTINO DIAM.100 A 6 LOBI	NR	1,000
010.7840	VITE TCEI 3 X 10	NR	2,000
034.1113	VOLANTINO DI MANOVRA X TI350 4 VEL.	NR	2,000

Motor assembly



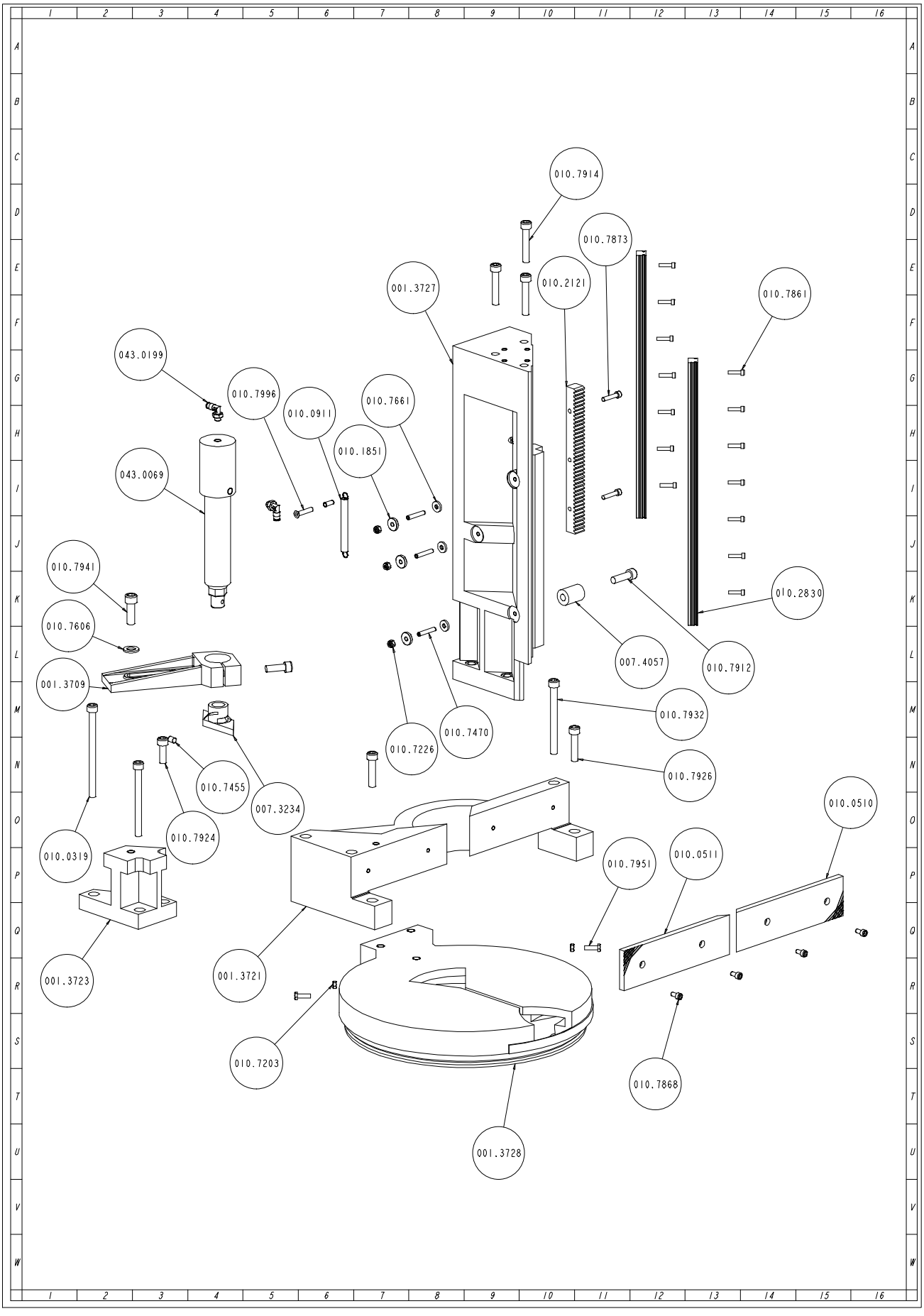
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001.3713	COPERCHIO SUPERIORE TESTA	NR	1,000
010.2701	PROLUNGA TAPPO OLIO TI 350	NR	1,000
010.7044	ANELLO SEEGER PER FORI 0 26	NR	1,000
010.7045	ANELLO SEEGER PER FORI 0 48	NR	1,000
010.7124	CHIAVETTA 8 X 7 X 45	NR	1,000
010.7603	RONDELLA DIAM. 6	NR	4,000
010.7604	RONDELLA DIAM. 8	NR	4,000
010.7605	RONDELLA DIAM. 10	NR	1,000
010.7871	VITE TCEI 6 X 20	NR	4,000
010.7963	VITE TE 8 X 25	NR	4,000
010.7978	VITE TE 10 X 40	NR	1,000
019.1954	KW 2,6/1,84 8/4P.C112 B.14 V.3	NR	1,000
022.0211	RACCORDO RAPIDO SEM PG 13,5	NR	1,000
025.0131	RUOTA DENTATA 43004/53 ALB. MO	NR	1,000
025.0134	RUOTA DENTATA 43006/53 ALB.MOT	NR	1,000
025.0603	GUARNIZIONE TESTA 4 VEL.	NR	1,000
025.0811	BOCCOLA A RULLINI DHK 4020 HK	NR	1,000
025.0812	BOCCOLA A RULLINI DHK 2012 HK	NR	1,000
034.0902	TAPPO OLIO SFP 1/2” ROSSO	NR	1,000

Vice


010.7893
010.7604
034.0201
010.7427
010.7454
043.0033
043.0199
016.2301
010.7481
007.3229
010.7924
010.7605
010.7204
010.0242
007.3354
034.1002
010.0512
010.0854
010.7410
007.4651
034.1001
007.6333
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010.7868
010.0509
010.7203
010.7453

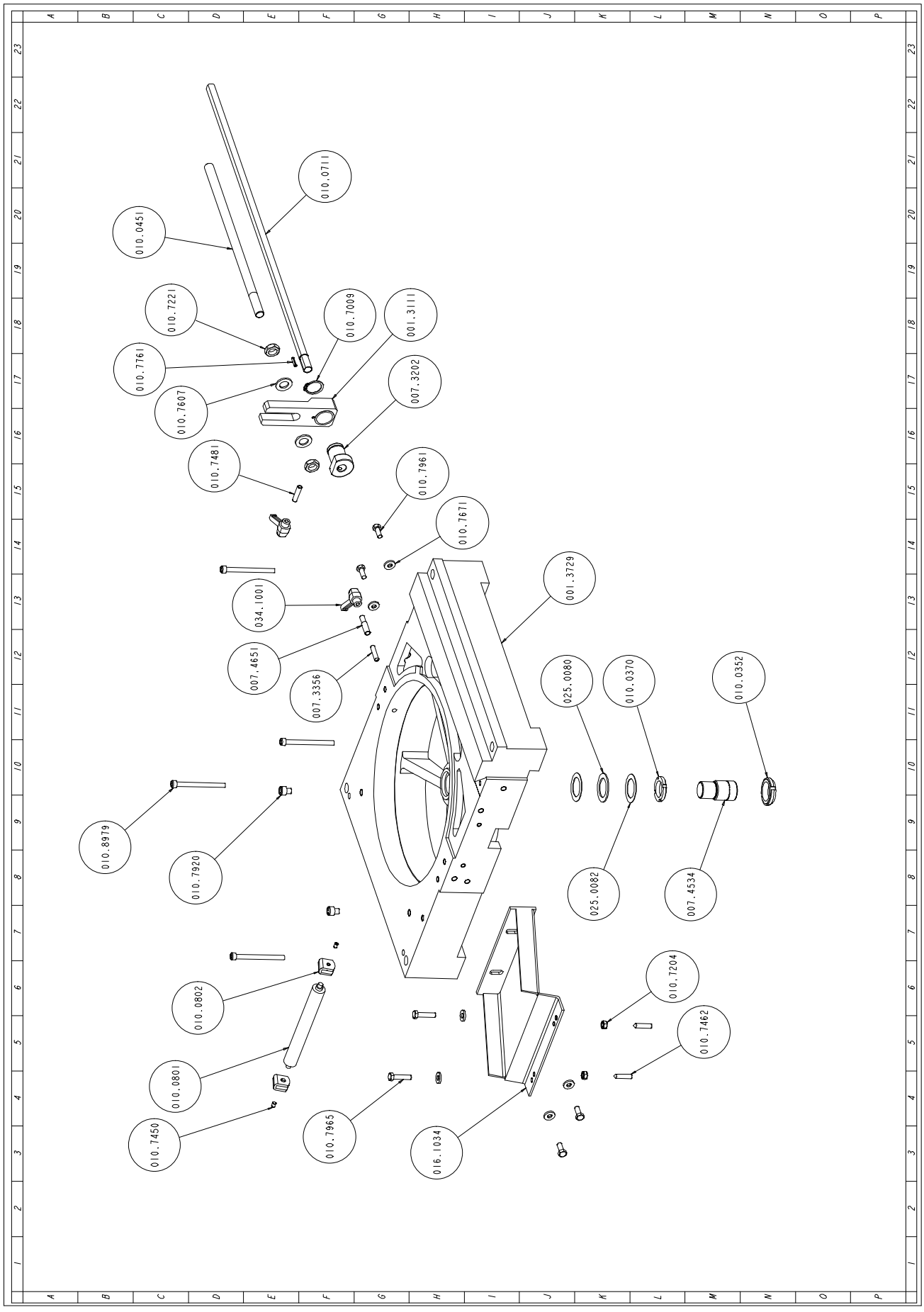
Code	Description	U. of M.	Quantity
001.4805	SUPPORTO MORSA M	NR	1,000
001.4817	SCORREVOLE MORSA TI 370 SX	NR	1,000
007.3229	TASSELLO X BATTUTA SCORR. ANTI	NR	1,000
007.3354	LARDONE MORSA	NR	1,000
007.6333	PERNO BLOCCAGGIO MORSA TI 370	NR	1,000
007.4651	GRANO BLOCCAGGIO PIANO ROTANTE	NR	1,000
010.0242	VITE MORSA	NR	1,000
010.0509	GANASCIA MORSA	NR	1,000
010.0512	GANASCIA ANTIBAVA	NR	1,000
010.0854	SUPPORTO SCORREVOLE GANASCIA A	NR	1,000
010.1202	OLIATORE A SFERA DIAM. 8	NR	1,000
010.7203	DADO M6	NR	7,000
010.7204	DADO M8	NR	1,000
010.7410	GRANO VCE P.CIL. 8 X 16	NR	2,000
010.7427	GRANO VCE P.CIL. 8 X 12	NR	1,000
010.7453	GRANO VCE P.CON. 6 X 30	NR	7,000
010.7454	GRANO VCE P.CON. 8 X 8	NR	1,000
010.7456	GRANO VCE P.CON. 8 X 16	NR	2,000
010.7481	GRANO VCE PUNTA PIANA 8 X 35	NR	1,000
010.7491	GRANO VCE PUNTA PIANA 10 X 60	NR	1,000
010.7603	RONDELLA DIAM. 6	NR	7,000
010.7604	RONDELLA DIAM. 8	NR	1,000
010.7605	RONDELLA DIAM. 10	NR	3,000
010.7859	VITE TCEI 5 X 12	NR	6,000
010.7860	VITE TCEI 5 X 15	NR	6,000
010.7868	VITE TCEI 6 X 12	NR	2,000
010.7893	VITE TCEI 8 X 20	NR	3,000
010.7924	VITE TCEI 10 X 30	NR	2,000
010.9074	GRANO VCE PUNTA PIANA 10 X 20	NR	1,000
016.2301	RACCOGLITORE ACQUA MORSA TI 35	NR	1,000
025.0203	ANELLO TENUTA 35X25X7	NR	1,000
025.0452	RULLI 6X6 AISI 420	NR	1,000
034.0201	VOLANTINO MORSA GRANDE	NR	1,000
034.1001	LEVA A SCATTO 8 MA	NR	1,000
034.1002	LEVA A SCATTO 10 MA	NR	1,000
043.0033	CILINDRO VOLAMPRESS 125–8	NR	1,000
043.0199	ATTACCO A GOMITO GIREV.4X1/8 C	NR	2,000

Turntable


010.7914
010.7873
001.3727
010.2121
010.7861
043.0199
010.7996
010.0911
010.7661
010.1851
043.0069
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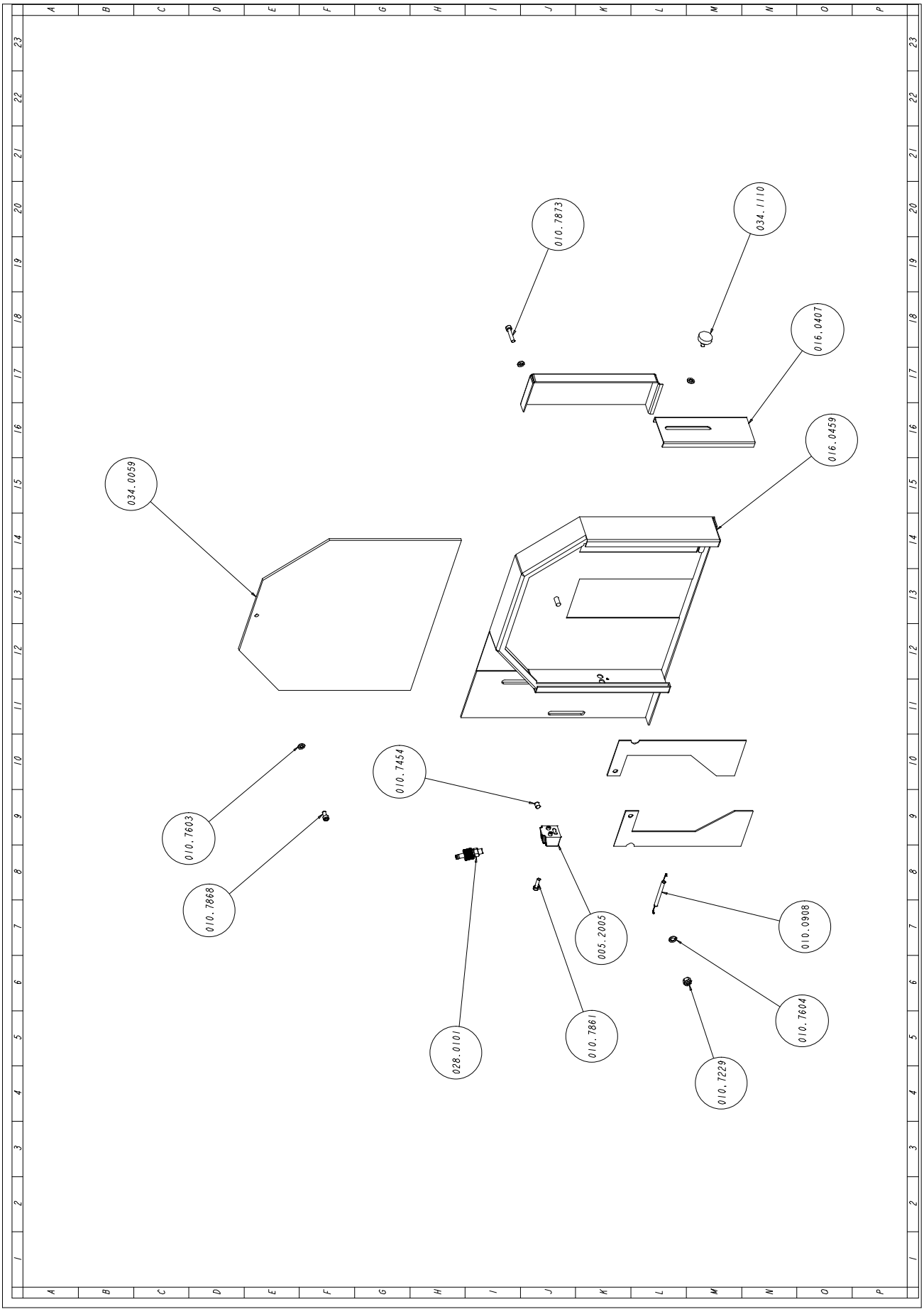
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001.3709	STAFFA BLOCCAGGIO CILINDRO SUP	NR	1,000
001.3721	SQUADRO MORSA	NR	1,000
001.3723	SUPPORTO CILINDRO SUPPLEMENTAR	NR	1,000
001.3727	.COLONNA PORTANTE TI 352	NR	1,000
001.3728	PIATTAFORMA GIREVOLE TI 350 N.	NR	1,000
007.3234	BOCCOLA/GANASCIA X CILIN.SUPPL	NR	1,000
007.4057	BOCCOLA BATTUTA FINE CORSA	NR	1,000
010.0319	VITE 8.8 TCEI 10X140 TI	NR	1,000
010.0510	GANASCIA MORSA DESTRA	NR	1,000
010.0511	GANASCIA MORSA SINISTRA	NR	1,000
010.0911	MOLLA RICHIAMO CARTER DISCO	NR	1,000
010.1851	BOCCOLA PER CARTER DISCO –DIAM	NR	3,000
010.2121	CREMAGLIERA	NR	1,000
010.2830	GUIDA PATTINO HGW 20 HC2 RO 430 E20 ZB–H	NR	2,000
010.7203	DADO M6	NR	2,000
010.7226	DADO AUTOBLOCCANTE M6	NR	3,000
010.7455	GRANO VCE P.CON. 8 X 10	NR	1,000
010.7470	GRANO VCE PUNTA PIANA 6 X 35	NR	3,000
010.7606	RONDELLA DIAM. 12	NR	1,000
010.7661	RONDELLA SPESSORE DIAM. 6 X 3	NR	3,000
010.7861	VITE TCEI 5 X 20	NR	14,000
010.7868	VITE TCEI 6 X 12	NR	4,000
010.7873	VITE TCEI 6 X 30	NR	2,000
010.7912	VITE TCEI 10 X 35	NR	1,000
010.7914	VITE TCEI 10 X 55	NR	3,000
010.7924	VITE TCEI 10 X 30	NR	2,000
010.7926	VITE TCEI 10 X 45	NR	2,000
010.7932	VITE TCEI 10 X 110	NR	2,000
010.7941	VITE TCEI 12 X 35	NR	1,000
010.7951	VITE TE 6 X 20	NR	2,000
010.7996	VITE TSPEI 6 X 30	NR	1,000
043.0069	CILINDRO MORSE	NR	1,000
043.0199	ATTACCO A GOMITO GIREV.4X1/8 C	NR	2,000

Fix plattform assembly



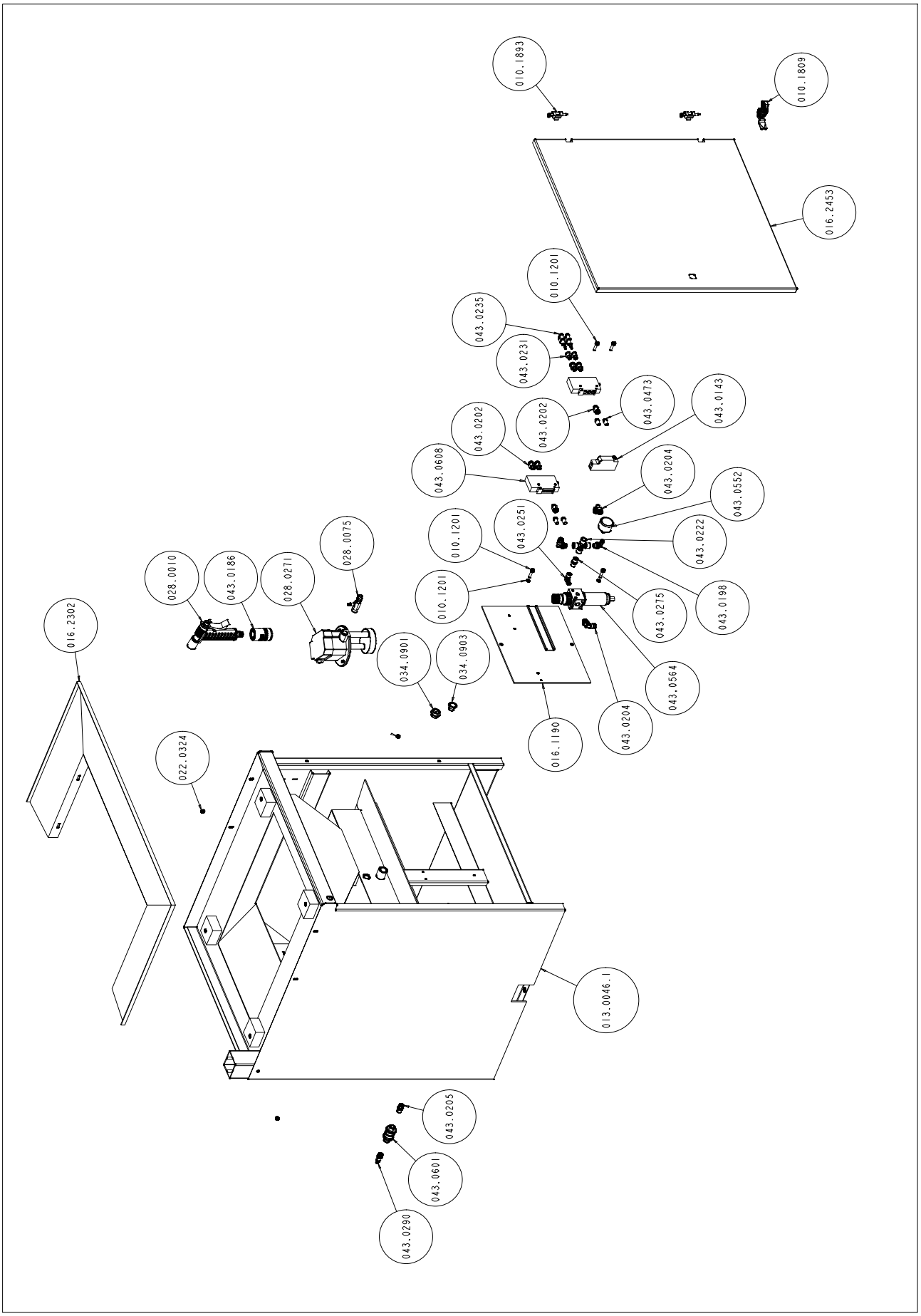
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001.3111	DISTANZIALE BATTUTA	NR	1,000
001.3729	PIATTAFORMA FISSA	NR	1,000
007.3202	BOCCOLA X BATTUTA	NR	1,000
007.3356	PERNO BLOCCAGGIO PIANO GIREVOL	NR	1,000
007.4534	PERNO DI CENTRO	NR	1,000
007.4651	GRANO BLOCCAGGIO PIANO ROTANTE	NR	1,000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5	NR	1,000
010.0370	GHIERA 5S 30X1,5	NR	1,000
010.0451	TIRANTE BATTUTA TAGLI MISURA	NR	1,000
010.0711	ASTA MILLIM.CROMATA MM.600 FIL	NR	1,000
010.0801	RULLO TIPO	NR	1,000
010.0802	SUPPORTO PER RULLO	NR	2,000
010.7009	ANELLO SEEGER DIAM. 30	NR	1,000
010.7204	DADO M8	NR	2,000
010.7221	DADO M16 BASSO	NR	2,000
010.7450	GRANO VCE P.CIL. 6 X 6	NR	2,000
010.7462	GRANO VCE P.CON. 8 X 30	NR	2,000
010.7481	GRANO VCE PUNTA PIANA 8 X 35	NR	1,000
010.7607	RONDELLA DIAM. 16	NR	2,000
010.7671	RONDELLA SPESSORE DIAM. 8 X 3	NR	6,000
010.7761	SPINA ELASTICA DIAM. 4 X 20	NR	1,000
010.7920	VITE TCEI 10 X 10	NR	2,000
010.7961	VITE TE 8 X 20	NR	4,000
010.7965	VITE TE 8 X 35	NR	2,000
010.8979	VITE TCEI 8 X 95	NR	4,000
016.1034	BRACCETTO APPOGGIA BARRA	NR	1,000
025.0080	GABBIA ASSIALE A RULLINI AXK 3	NR	1,000
025.0082	RALLA AS 3552	NR	2,000
034.1001	LEVA A SCATTO 8 MA PK55	NR	2,000

Blade guard unit



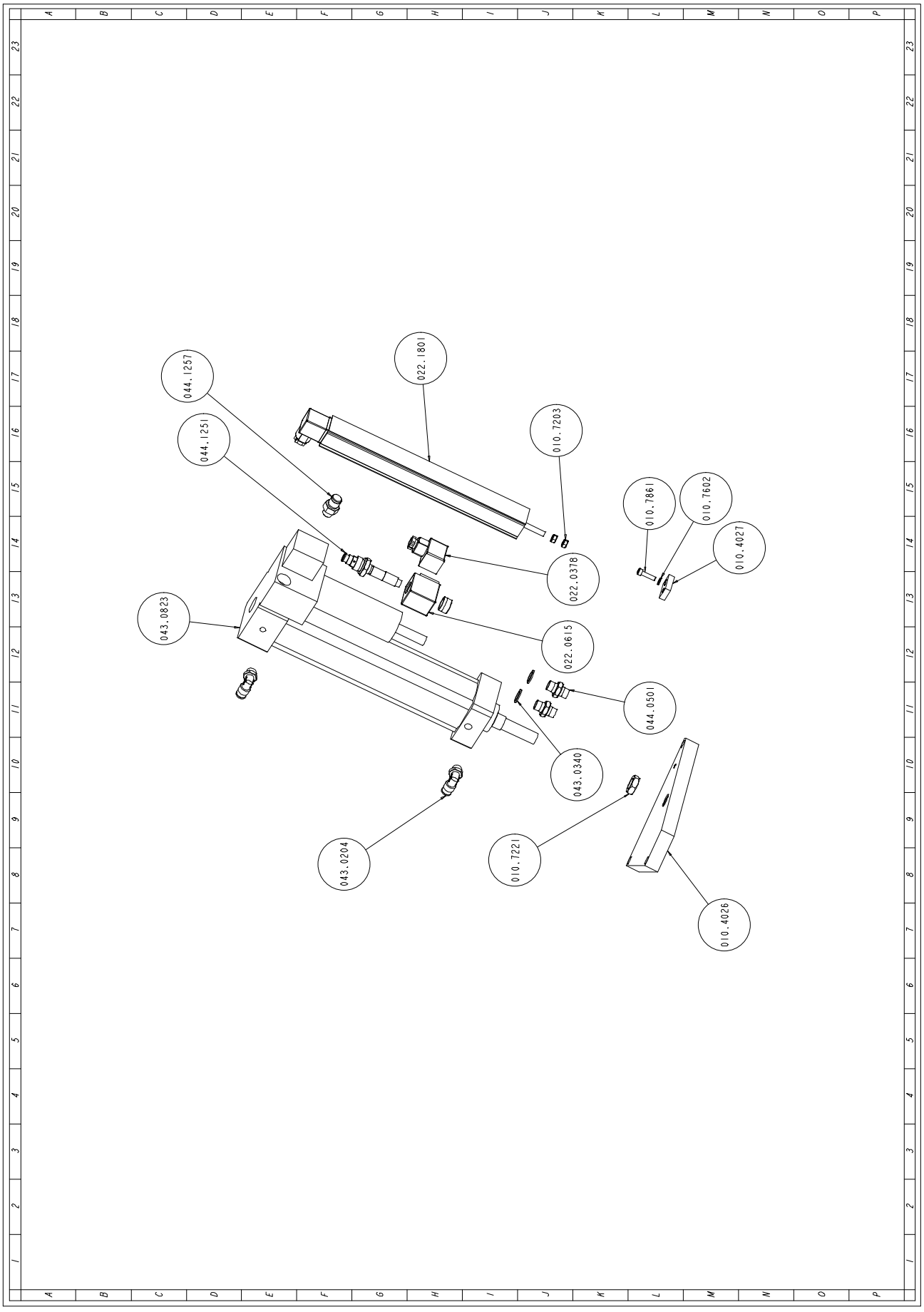
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005.2005	SPRUZZATORE RUBINETTO	NR	1,000
010.0908	MOLLA CARTER DISCO	NR	1,000
010.7229	DADO AUTOBLOCCANTE M8	NR	1,000
010.7454	GRANO VCE P.CON. 8 X 8	NR	1,000
010.7603	RONDELLA DIAM. 6	NR	3,000
010.7604	RONDELLA DIAM. 8	NR	1,000
010.7861	VITE TCEI 5 X 20	NR	1,000
010.7868	VITE TCEI 6 X 12	NR	1,000
010.7873	VITE TCEI 6 X 30	NR	1,000
016.0407	PARASCHIZZI ANTERIORE	NR	1,000
016.0459	CARTER DISCO	NR	1,000
028.0101	REGOLATORE PER RUBINETTO 8 X 1	NR	1,000
034.0059	PROTEZ.LEXAN TI 350 + AD.SCELT	NR	1,000
034.1110	VOLANTINO DIAM.30 M6 X 10	NR	1,000

Base assembly



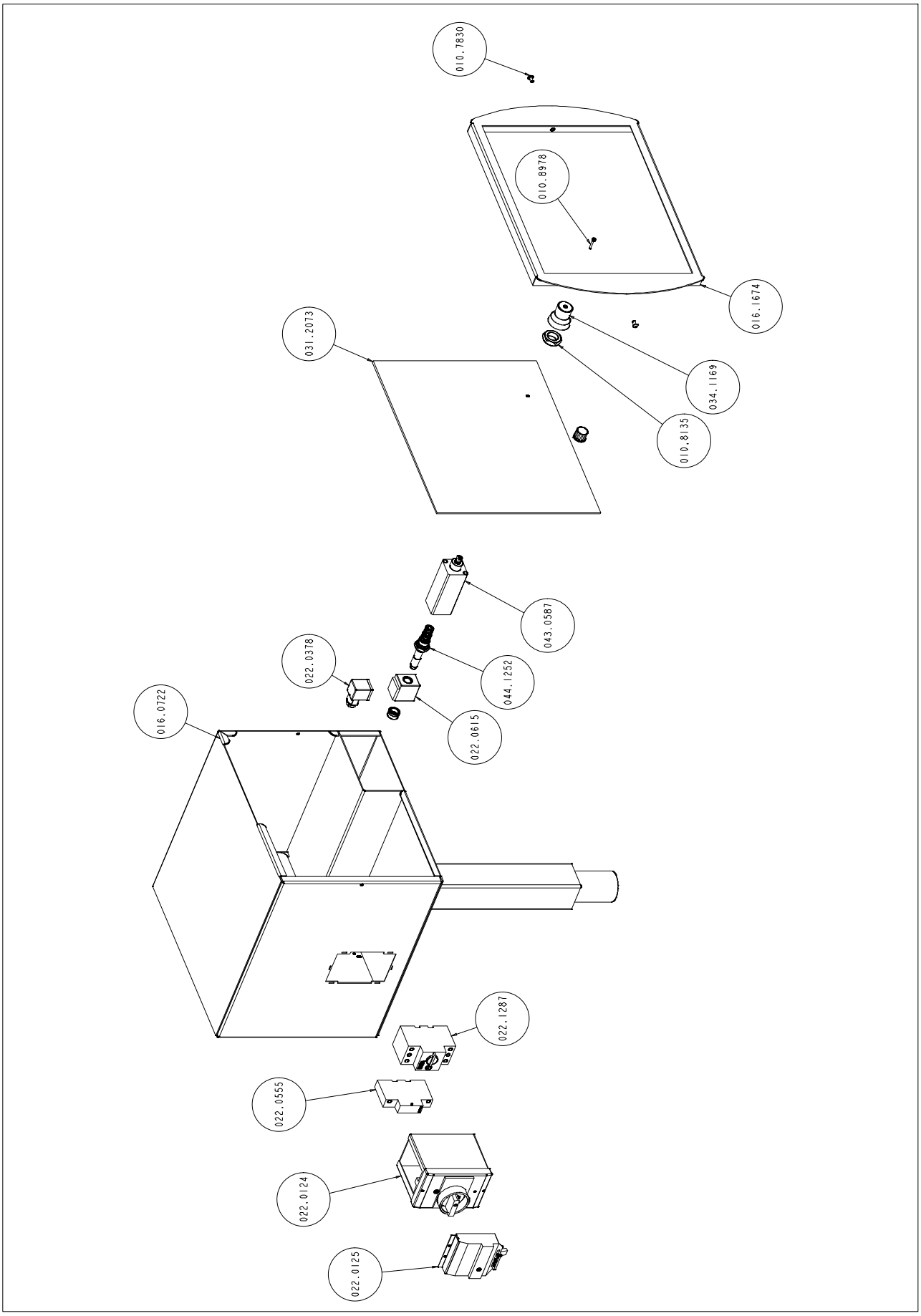
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013.0046.1	PIEDISTALLO TI 352 – 352 MA – 352 SX EVO	NR	1,000
016.2302	RACCOGLITORE ACQUA MORSA	NR	1,000
022.0324	PASSACAVI 24 INC.MM.2.5	NR	2,000
028.0010	PISTOLA	NR	1,000
028.0075	RACCORDO A T 3/8 X 17 X 9	NR	1,000
028.0271	ELETTROPOMPA EZ/C V. 220–380	NR	1,000
016.1190	QUADRO PNEUMATICO	NR	1,000
034.0901	TAPPO LIVELLO OLIO 1/2 ”GAS.	NR	1,000
034.0903	TAPPI OLIO 3/8” GAS	NR	1,000
043.0143	PRESSOSTATO PNEUM.PS1P1091	NR	1,000
043.0186	RACCORDO FEMMINA 1/2 AQUASTOP	NR	1,000
043.0198	ATTACCO A GOMITO GIREV.4X1/4 C	NR	1,000
043.0204	ATTACCO A GOMITO 8X1/4 – CL 65	NR	3,000
043.0205	ATTACCO A ESAGONO 8X1/4 – CL 6	NR	1,000
043.0222	RACCORDO A CROCE CL 2033 1/4	NR	1,000
043.0231	RIDUZIONE MF 1_8 CL2520	NR	2,000
043.0235	BIFORCAZ. A Y TUBO 4MM. 242753	NR	2,000
043.0251	ATTACCO A GOMITO MF 1_8 CL2520	NR	1,000
043.0275	NIPPLO CONICO A2–1/4 – CL 2500	NR	1,000
043.0290	INNESTO RAPIDO 1/4 GHIOTTO 13/	NR	1,000
043.0473	SILENZIATORE IN OTTONE 1/8” CL	NR	4,000
043.0552	MANOMETRO DIAM. 40	NR	1,000
043.0564	FR 1/4 20–08	NR	1,000
043.0601	VALVOLA VMS 114–1/4 08	NR	1,000
043.0608	VALVOLA 5 VIE 1/8 PVLB111618 P	NR	2,000
010.1201	VITERIA E BULLONERIA	NR	3,000
043.0202	ATTACCO A ESAGONO 8X1/8 – CL 6511	NR	2,000
010.1893	CERNIERA SPORTELLO PIEDISTALLO N.T.	NR	1,000
010.1809	CHIUSURA SPORTELLO	NR	1,000
016.2453	SPORTELLO PIED. TI 352 – MA – SX EVO	NR	1,000

Cylinder unit



Code	Description	U. of M.	Quantity
010.4026	PIASTRA FISSAGGIO STELO CILIND	NR	1,000
010.4027	PIASTRA FISSAGGIO POTENZIOMETR	NR	1,000
010.7203	DADO M6	NR	2,000
010.7221	DADO M16 BASSO	NR	1,000
010.7602	RONDELLA DIAM. 5	NR	1,000
010.7861	VITE TCEI 5 X 20	NR	1,000
022.0378	CONNETT.BOBINA VALV. RIGENERAT	NR	2,000
022.0615	BOBINA X VALVOLA RIGENERATRICE	NR	1,000
022.1801	POTENZIOMETRO LINEARE LWH225–0	NR	1,000
043.0204	ATTACCO A GOMITO 8X1/4 – CL 65	NR	2,000
043.0340	RONDELLA RAME 13X19X1,5–1/4	NR	2,000
043.0823	UNITA' IDROPNEUMATICA	NR	1,000
044.0501	NIPPLO NP 1/4 IDRAULICO	NR	2,000
044.1251	VALVOLA RIGENERATRICE CILINDRO	NR	1,000
044.1257	VALVOLA DI CARICO CILINDRO	NR	1,000

Control panel



Code	Description	U. of M.	Quantity
010.7830	VITE BUTON 5X10	NR	4
010.8135	DADO M20 BASSO	NR	1
010.8978	VITE TCEI 3X20	NR	1
016.0722	QUADRO COMANDI	NR	1
022.0124	CUSTODIA ISOLANTE E–PKZO–GR	NR	1
022.0125	BLOCCO LUCCHETTABILE SBV–PKZO–E	NR	1
022.1287	INTERRUTORE PKZM0–10	NR	1
034.1169	MANOPOLA DI REGOLAZIONE MONOGIRO	NR	1
043.0587	REGOLATORE DISCESA TESTA	NR	1
044.1252	VALVOLA RIGENERATRICE CILINDRO	NR	1
034.0488	CORNICE X QUADRO COMANDI TI 352 – 372 SXI–EVO	NR	1
022.0555	SGANCIATORE U–PKZ0 V.400.50 COD.73138	NR	1
022.0378	CONNETTORE V.1406 X BOBINA RAC VALVOLA	NR	1
022.0615	BOBINA V24 RAC X VALVOLA RIGENERATRICE	NR	1
031.2073	CONSOLLE DI PROGRAMMAZIONE SX–SXI EVO NT	NR	1
016.1674	CORNICE QUADRO COMANDI X SXI EVO	NR	1

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.

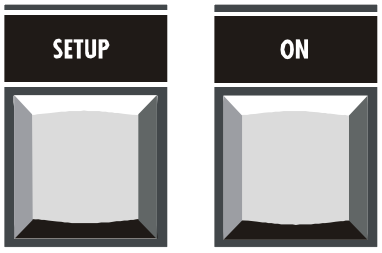
Displaying and editing the set–up parameters

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

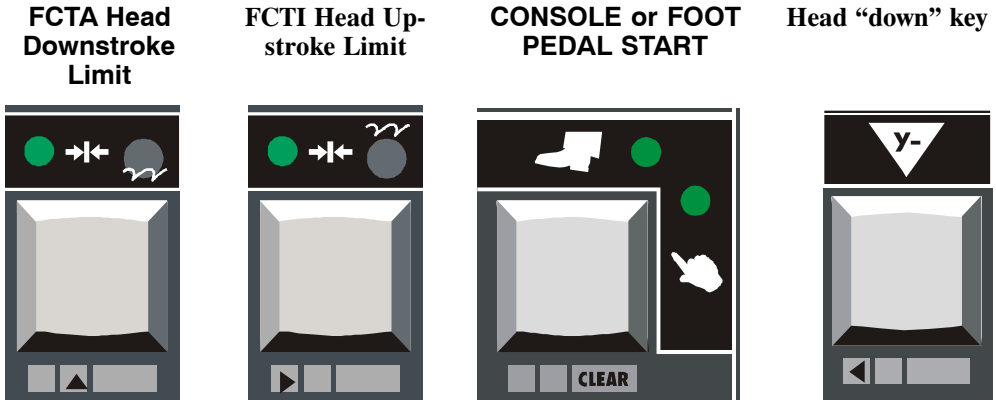
▶ Power up the machine at the main switch located on the left hand side.



▶ 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 ▶.



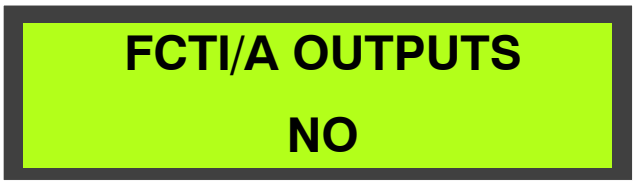
Minimal lubrication system settings

▶ 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).



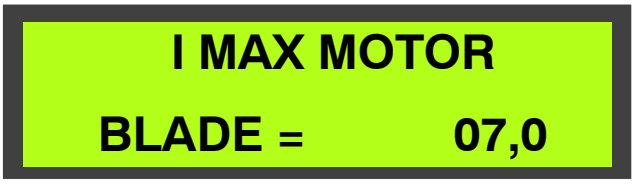
Cutting vice opening/closing time setting

▶ 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 ▶.



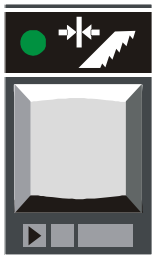
Display backlighting time setting

▶ 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:

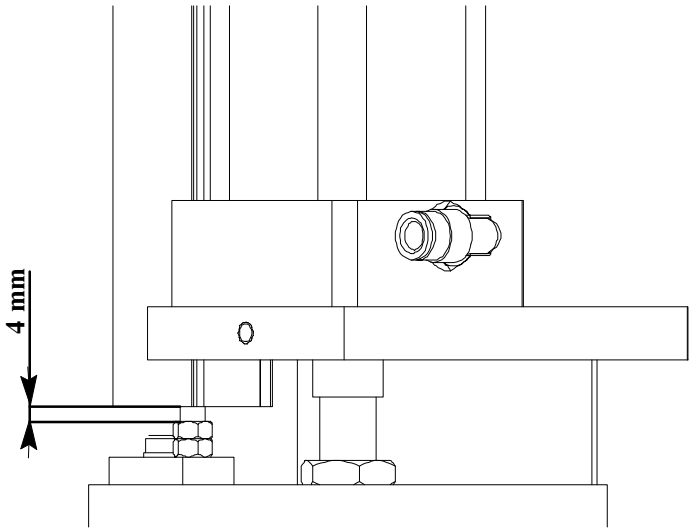




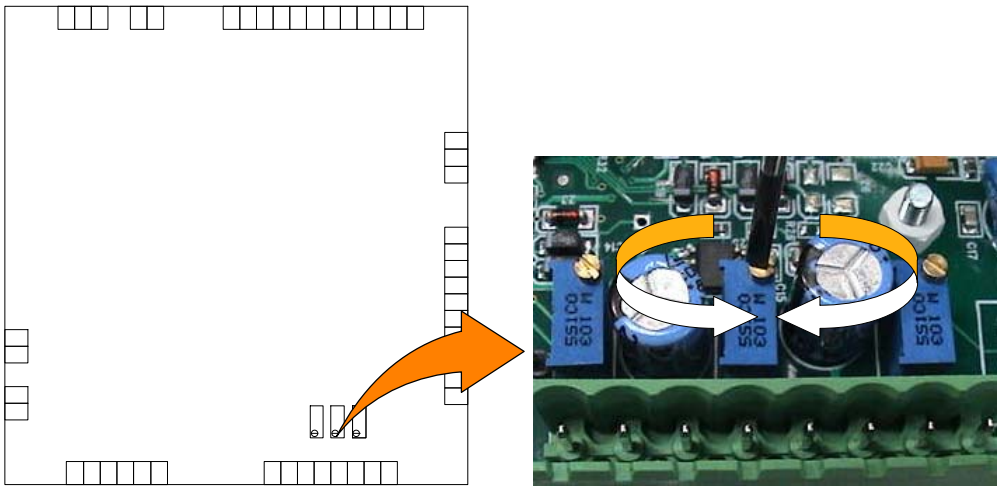
▶ press in sequence and simultaneously the⇑ key and the key for the head lowering (Y+), to position the cutting head completely upwards;

N.B. When the cutting head is totally up, the potentiometer stem is inside the potentiometer body. In this position make sure that the adjustment nut for the stem

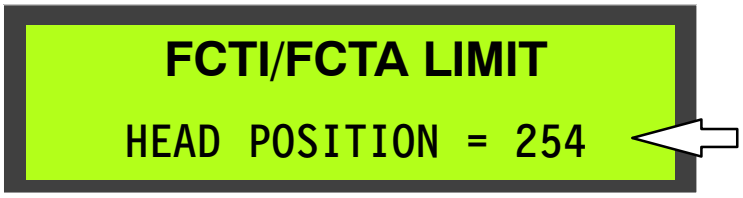
max. stroke is at about 4 mm from the lower base of the linear potentiometer.



- Open the control board removing the frame and pull the keyboard out of the console;
- Identify the board IUD/IUV of the controller MEP 30 to adjust the potentiometer indicated by the arrow in the following image:

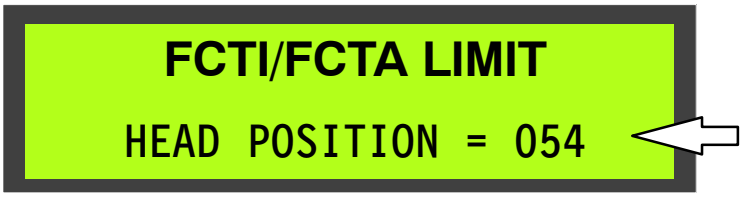


- The IUD/IUV board includes three adjacent potentiometers. Adjust the adjustment screw of the potentiometer indicated by the arrow by a screw−driver at a value of 254; the obtained variation is displayed on the machine.



- 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−).



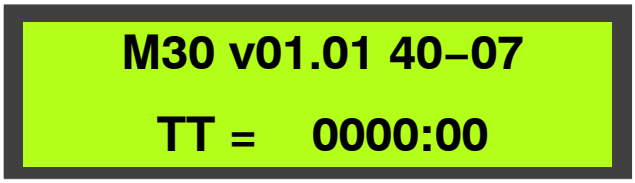
▶ Press in sequence and simultaneously the keys ⇑ and FHLS to store the obtained value.

▶ 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

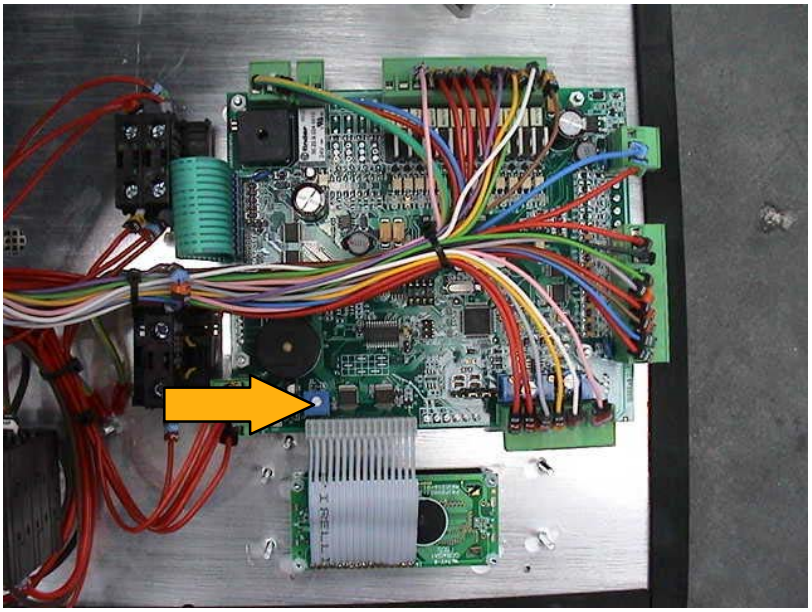
▶ This parameter indicates the installed software version and the total working time of the machine.



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.

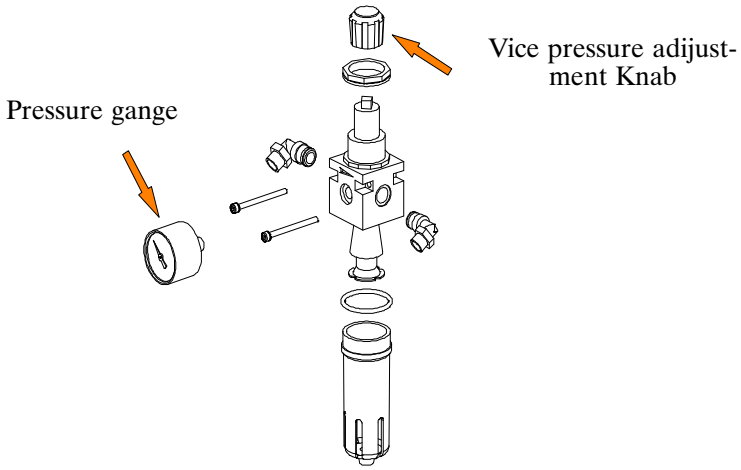
▶ To adjust the brightness, first remove the screws fixing the front console panel. The photo below illustrates the MEP 30 controller card on which the brightness potentiometer is marked by an arrow.



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

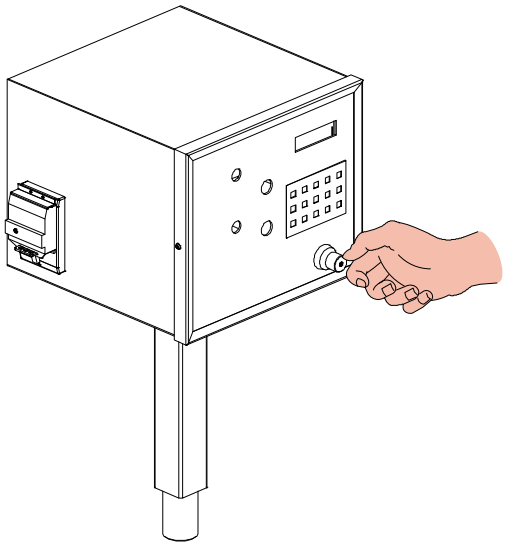
Air treatment unit

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

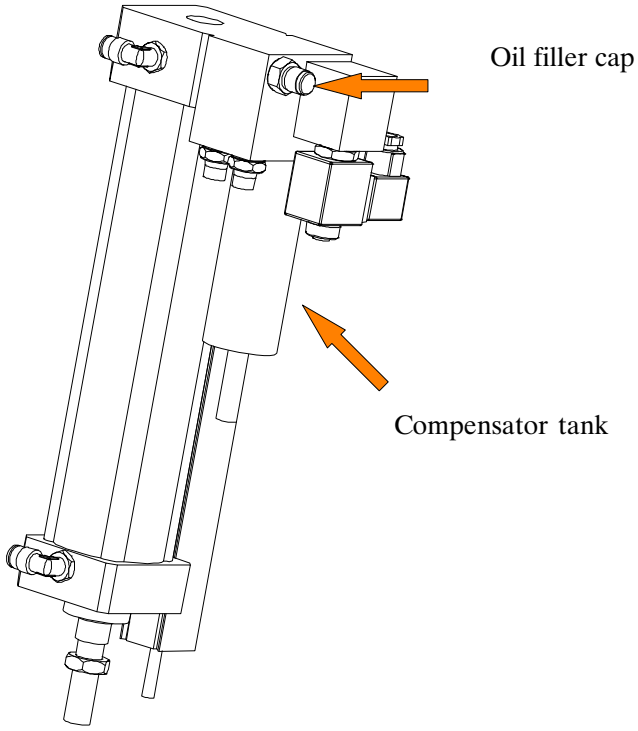
The cutting head cuts the material pushed by a hydro pneumatic cylinder, with a downstroke speed set by the oil flow regulator on the control panel. The regulator has a scale of 0 to 9 and is indicated on the panel by the symbol  : when this is rotated clockwise, the downstroke speed is reduced, when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



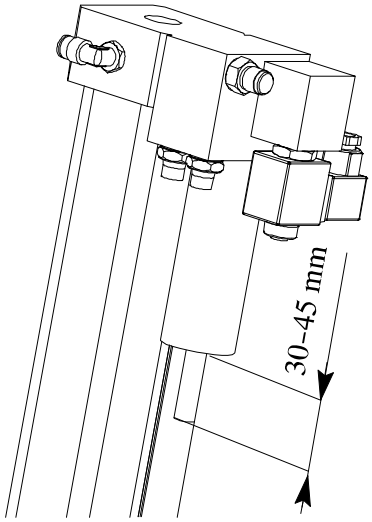
Cutting head actuator cylinder (CPT)

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.



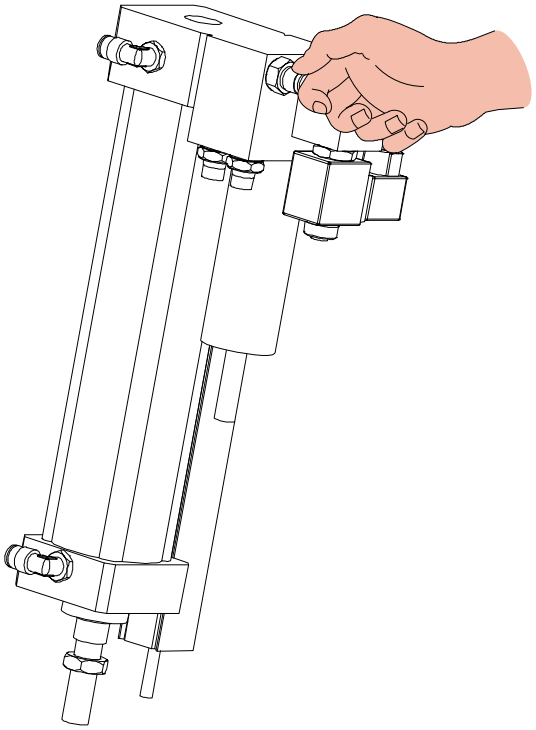
The level decrease is evaluated by measuring the distance between the seat of the split pin on the stem and the tank that, in standard conditions, must be about 30 mm when the cutting head is in the FCTA position (forward head limit switch) and about 45 mm when the head is in FCTI (backward head limit switch).



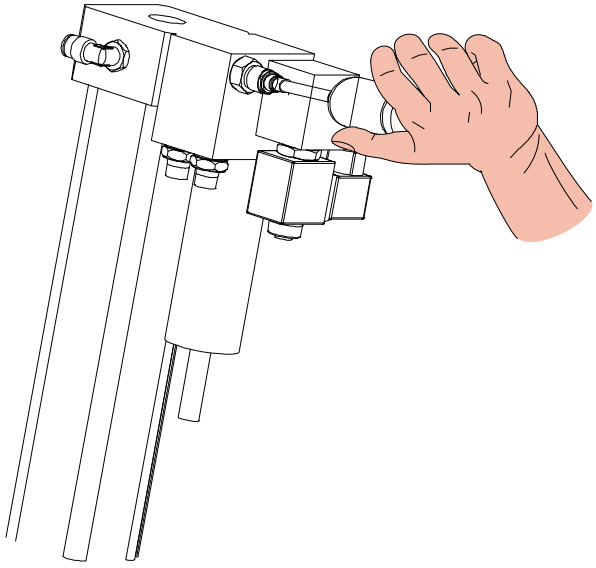
If this is not the case, top up the oil level as follows:

▶ 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.

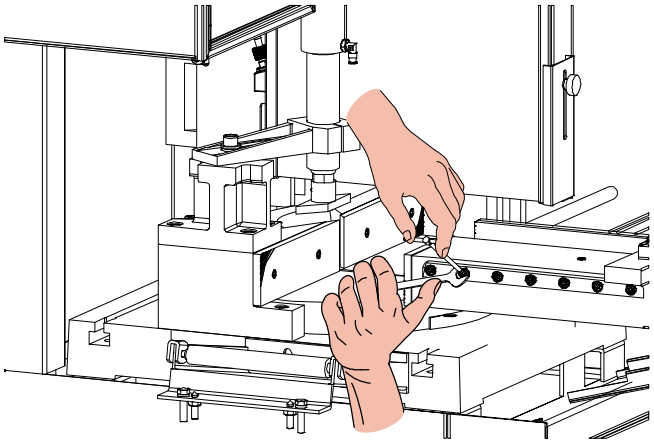
Vice

The shearing vice, which is a standard fitting on the **TIGER 352 SX–EVO**, 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.

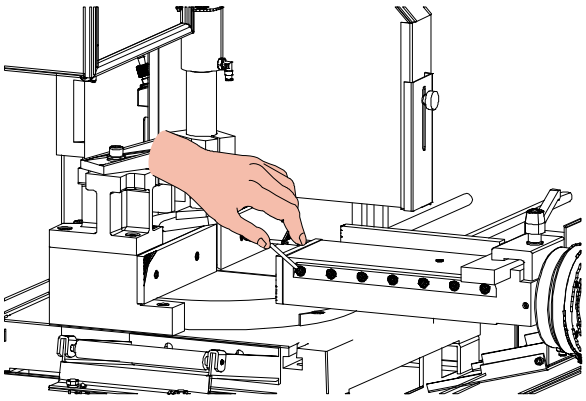
Adjusting the vice play

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.

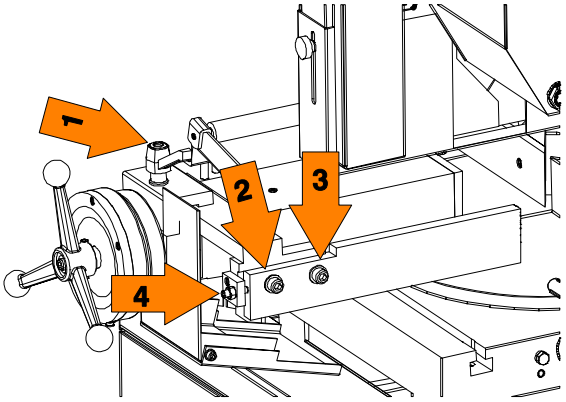


- close the vice until the other two grub screws coincide with the lead screw.
- repeat this adjustment on the gib grub screws for the entire length of the slideway
- at the end of the operation, use the handwheel to move the slide backwards and forwards, identifying the zones where the grub screws exert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



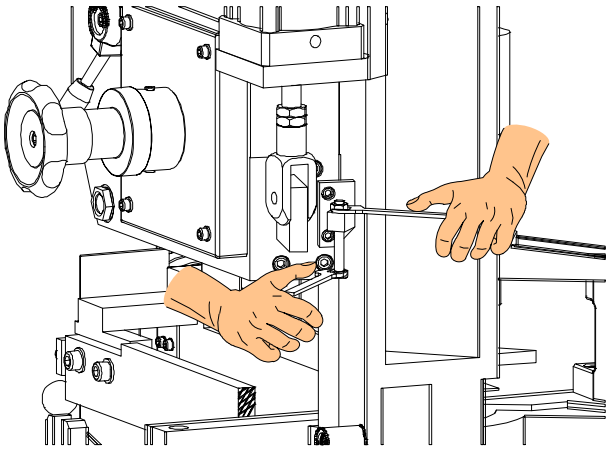
To adjust the longitudinal position of the vice jaw, proceed as follows:

- 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.



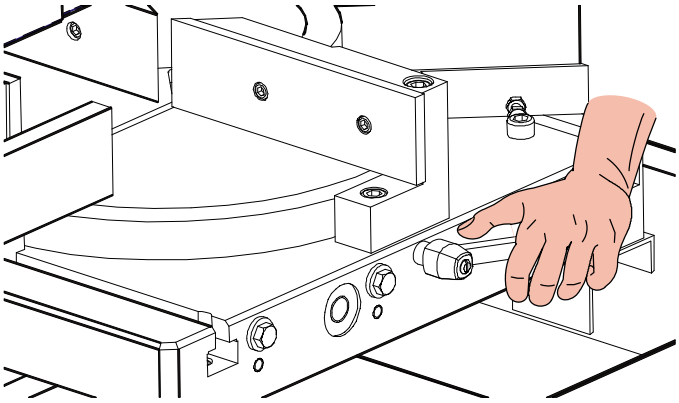
Disc

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.

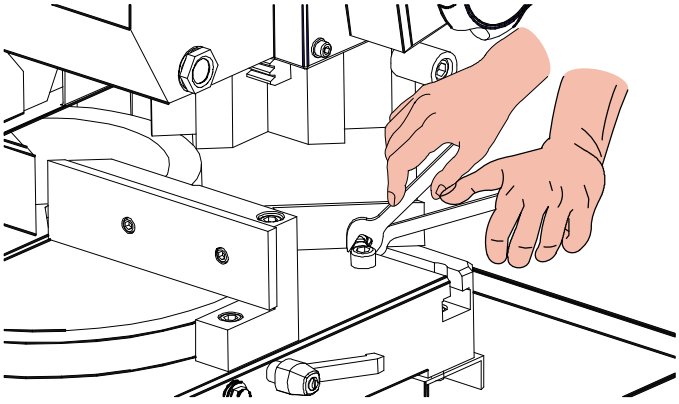
Adjusting the turntable stops

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;



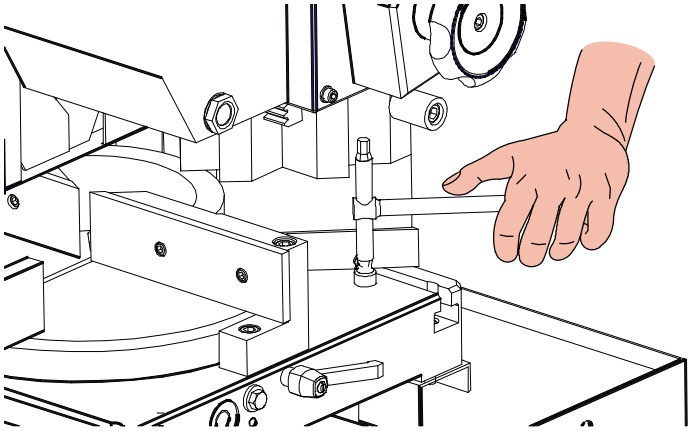
▶ adjust the nut using two 10 mm spanners until the stop corresponds to the 0_ notch; loosen the lock nut and adjust; tighten the lock nut while holding the bolt steady; check and repeat if necessary.



Sequence of operations for 45° right stop:

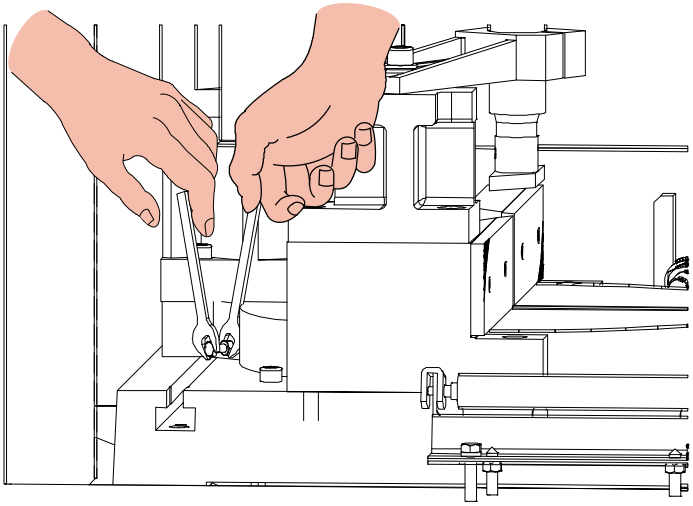
▶ release the turntable by means of the release lever on the right hand side of the table;

▶ 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.



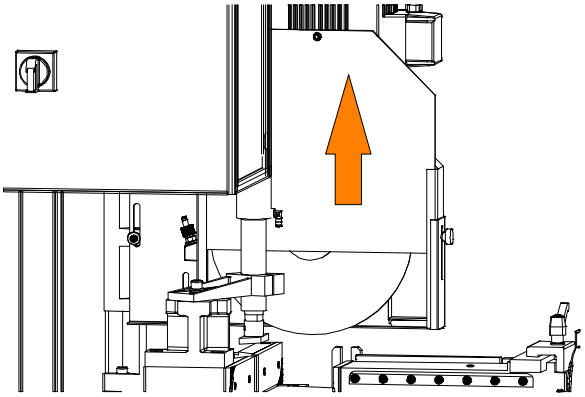
Changing the blade

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:

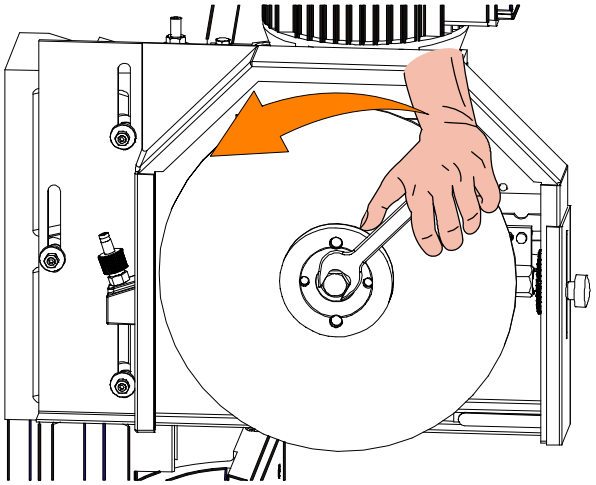
▶ switch off the machine and position the head so that the disc is easily accessible;

▶ 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;

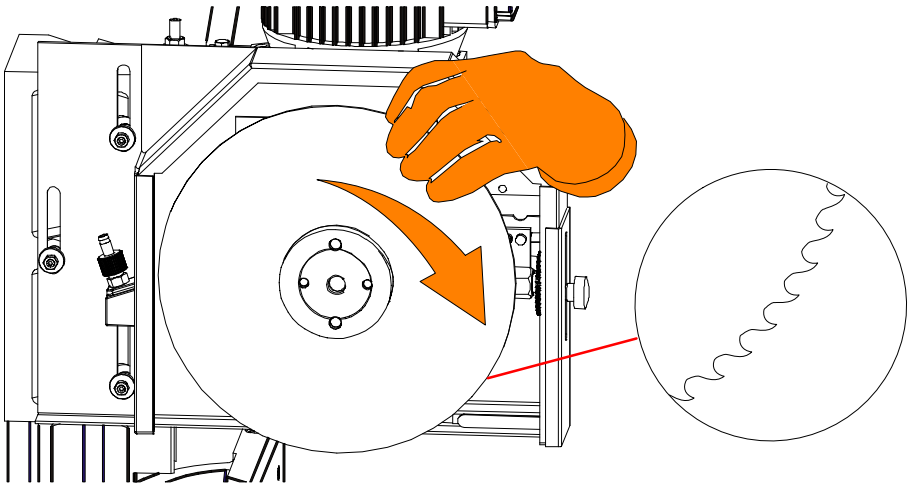
▶ remove the screw with knob to free the plexiglass guard cover and lift it off in a vertical direction;



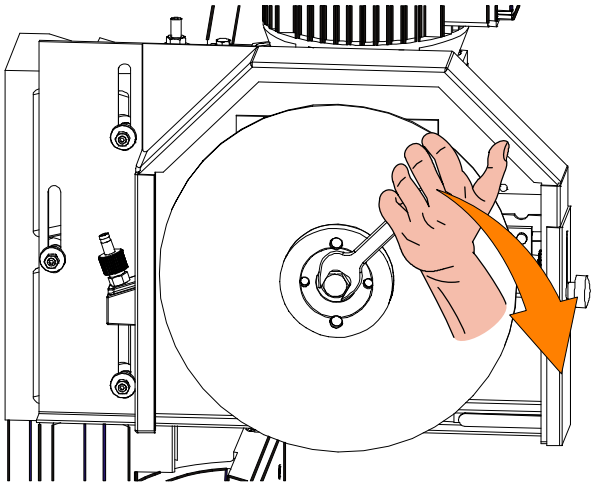
▶ use a 19 mm spanner to slacken the hexagonal screw that locks the disc, turning the spanner in the direction of rotation of the disc; remove the old disc and insert the new one, making sure that the centering pins fit correctly into the holes in the disc;



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.

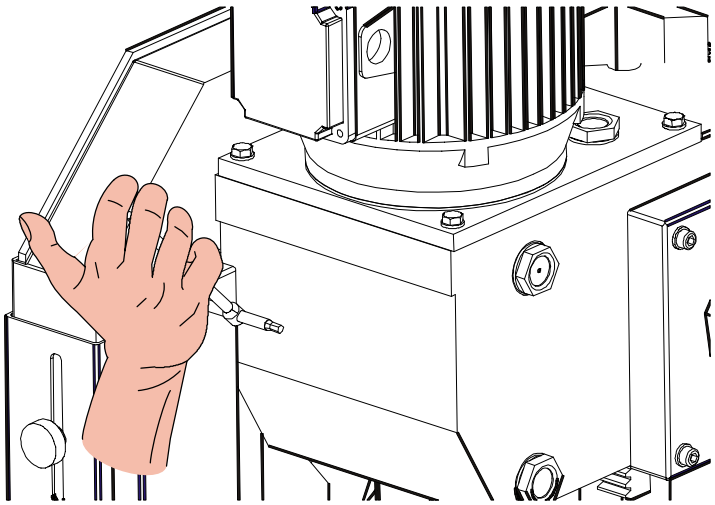


N.B. Adjust the position of the blade–cleaning brush, or replace it when worn.

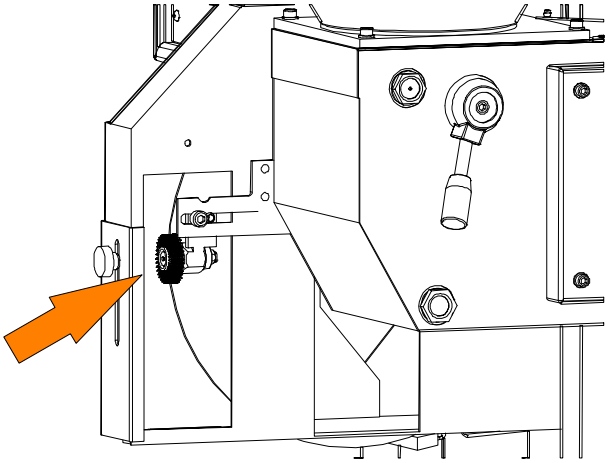
Adjusting the position of the blade–cleaning brush

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.

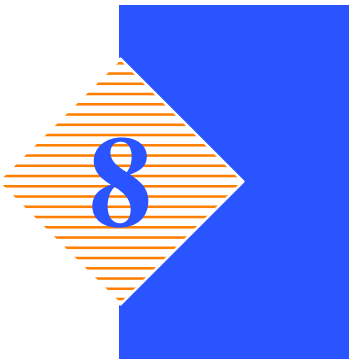
▶ Loosen the screw highlighted in the drawing, and remove the protection;



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



Maintenance and choice of consumables



TIGER 352 SX–EVO 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 MEP S.p.A 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.

Maintenance of working parts

During maintenance work on the **TIGER 352 SX–EVO**, special attention must be paid to operating units such as the hydro–pneumatic cylinder, the loading of which we have already described in the 7 chapter, and the transmission box.

Transmission box

Transmission box maintenance:

- after the first 100 working hours, drain the transmission box through the drain plug located in the rear lower section of the unit and refill with new oil. If, in addition to the yellow filings from the bronze rim, there are other impurities in the drained oil, remove the cover and thoroughly wash the inside. The washing should be carried out using flushing oil, avoiding the use of cotton or threadbare rags for drying. Refill the transmission box;
- after every 2000 working hours repeat the oil change operation.

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 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 Kglt. 4,8

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, MEP 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 15 litres
– oil concentration 5–6%

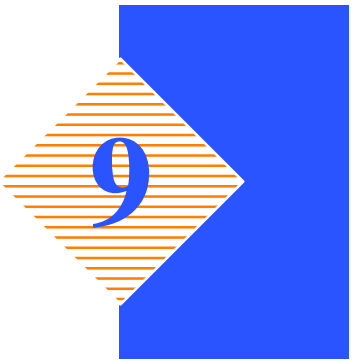
Oils for spray mist system (optional)

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

Cutting speed and choice of tools



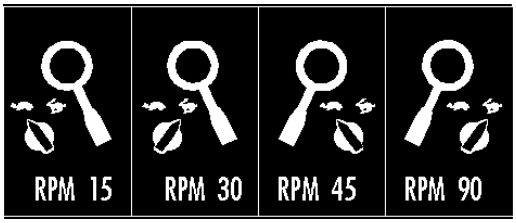
The cut speed is determined by the speed the cutter disc rotates at, and by the feed speed. The latter is set manually by the movement of the tool head, whereas the cutter disc rotation speed is selected on the control panel with the speed setting switch. This chapter describes the various cutting speeds of which the standard and special machine configurations are capable.

Cutting speed

TIGER 352 SX–EVO 4 speed, standard machine

The basic machine version, with 4/8 pole motor, is capable of the following cutting speeds:

- 1st speed = 15 rpm
- 2nd speed = 30 rpm
- 3rd speed = 45 rpm
- 4th speed = 90 rpm



TIGER 352 SX–EVO 4 speed, optional

The optional machine version, with 2/4 pole motor, is capable of the following cutting speeds:

- 1st speed = 15 rpm
- 2nd speed = 30 rpm
- 3rd speed = 45 rpm
- 4th speed = 90 rpm

Choice of blade

The different types of cutter disks that the **TIGER 352 SX–EVO** can mount must, however, have the following main characteristics.

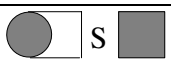
- "Fine tooth pitch": for thin wall materials such as sheet steel, tubes and profiles;
- "Coarse tooth pitch": for large cross–sections; for soft materials (aluminium alloys and soft alloys in general).

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.

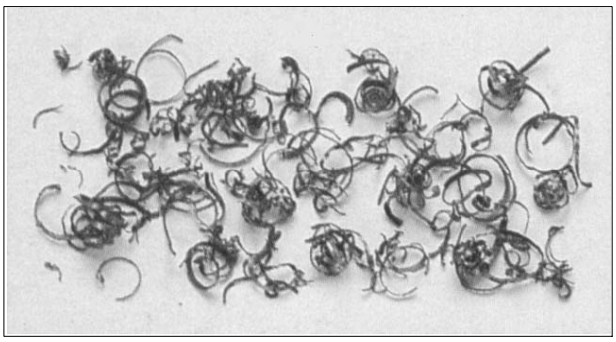
Choice of tooth pitch T as a function of cross–section to be cut for light alloy solid pieces and profiles			
			
S in mm.	Pitch T	S and sp in mm.	Pitch T
10	4–5	10 tl. = 0,5	3
30	6–8	30 tl. = 1,5	4 – 5
50	8–10	50 tl. = 2,5	5 – 6
70	10–12	70 tl. = 3,5	6–7
90	12	90 tl. = 4,5	7 – 8
130	16	130 tl. = 6,5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

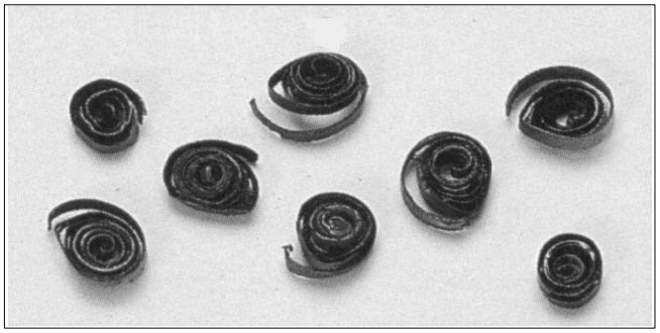
A larger pitch should be chosen when, as a result of the shape of the piece to be cut, the cross–section at any given point exceeds the average cross–section given above.

Types of swarf:

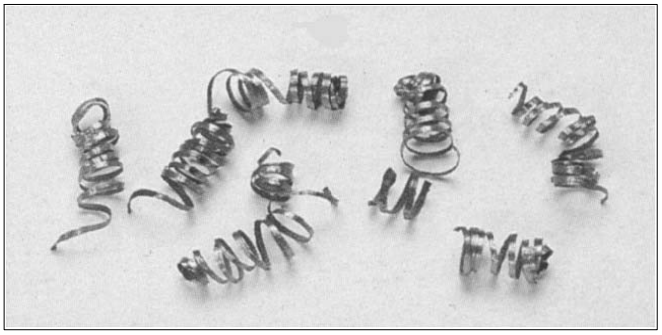
- Very fine or fragmented swarf indicates that the downstroke speed and/or cutting pressure is too low.



- 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.

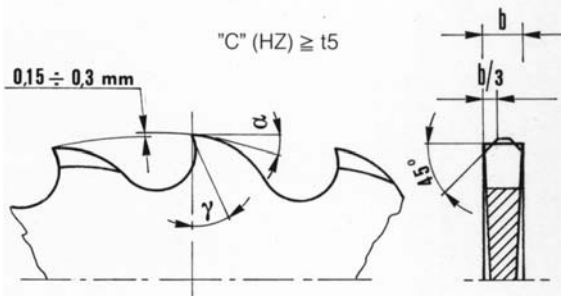
Types of blades

The blades fitted on the **TIGER 352 SX–EVO** have dimensions 350x32x2.5 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).

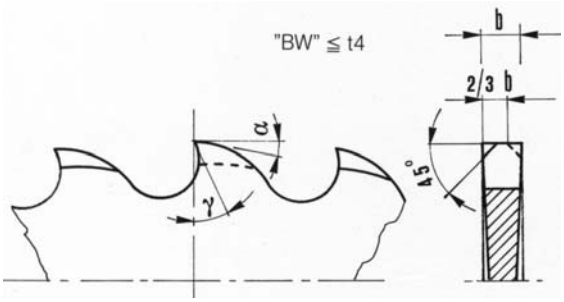
Tooth shape

”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 **TIGER 352 SX–EVO** uses 350x2.5x32 discs made of HSS DMo5 and teeth with type C sharpening for hollow sections; for solid sections it uses 350x32x2 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
352	350	5	220	350	8	140	350	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	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	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 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 m/1'	10–20 Av mm/1'	20–40 T mm	20–40 Vt m/1'	20–40 Av mm/1'	40–60 T mm	40–60 Vt m/1'	40–60 Av mm/1'	60–90 T mm	60–90 Vt m/1'	60–90 Av mm/1'	90–110 T mm	90–110 Vt m/1'	90–110 Av mm/1'	110–130 T mm	110–130 Vt m/1'	110–130 Av mm/1'	130–150 T mm	130–150 Vt m/1'	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	12	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	14	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 steel 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	19	70	17	17	60	16	16	60	
Aluminium and alloys R = 200–400 N/mmq	22	10	6	1100	1800	8	1000	1700	12	900	1600	16	800	1400	18	14	1300	20	17	1100	20	16	900	
Aluminium and alloys R = 300–500 N/mmq	20	8	5	200	400	7	180	400	10	160	350	12	160	300	14	14	300	16	16	250	16	16	250	
Copper R = 200–350 N/mmq	20	10	6	400	600	8	350	600	11	300	550	14	250	500	17	18	500	18	20	500	20	18	400	Emulsion
Hard bronze R = 600–900 N/mmq	15	8	5	400	800	7	400	700	10	350	700	12	300	600	14	16	600	16	18	500	18	16	400	
Phosphor bronze R = 400–600 N/mmq	12	8	4	120	160	8	110	150	8	100	140	10	90	130	12	14	110	14	16	100	16	12	90	
Brass R = 200–400 N/mmq	16	16	5	600	1100	6	600	1100	10	550	1000	12	550	900	16	16	900	18	18	800	18	18	800	Cutting oil
Alloyed brass R = 400–700 N/mmq	12	16	5	500	700	7	400	600	10	350	550	12	350	500	16	16	500	18	18	400	18	18	400	
Titanium and alloys R = 300–800 N/mmq	18	8	4	50	160	4	45	150	6	45	140	10	45	130	12	12	110	14	14	100	16	14	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	110	8	17	90	10	12	100	14	16	90	16	15	80	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	90	8	10	90	12	12	80	14	12	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/mmq
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 C – 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

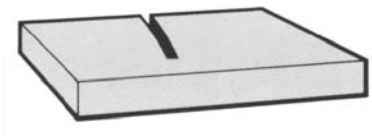
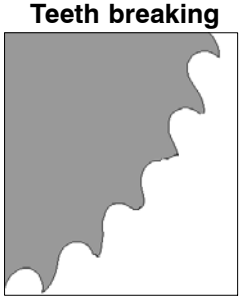
Material	SS Svezia	AISI U.S.A.	DIN Germania	BS Inghilterra	UNI Italia	AFNOR Francia
Carbon steels	1311	1015 – 1035	C 22 – C 35	050 A 20	C 15 – C 35	XC 18
			20 Mn 5 – 28 Mn 6	080 M 46 – 50	C 22 Mn	XC 38 H 1
	1572		CK 22 – CK 50	120 M 19	C 28 Mn	20 M 5
				150 M 28		
Carbon steels	1650	1040 – 1064	CK 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
	2258	6145 – 6152 8630 – 8645	34 Cr Ni Mo 6, 100 Cr 6	311 rodzaj 6, 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

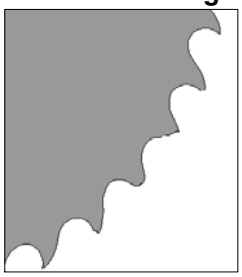
Troubleshooting

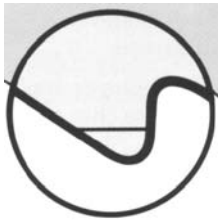
10

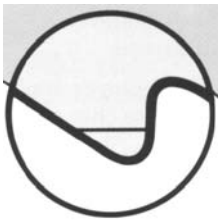
This chapter describes the inspection and troubleshooting procedures for the **TIGER 352 SX–EVO**. Regular inspections and efficient maintenance are essential to ensure your machine gives you a long, trouble–free service life. The chapter is divided into two sections: the first being dedicated specifically 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 MEP 30 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).

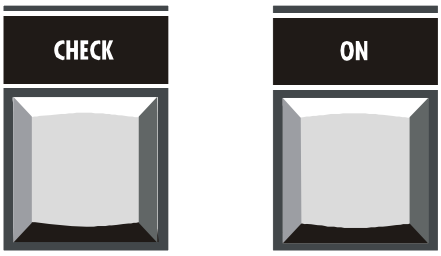
The board IUD/IUV is inside the electric board.

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 MEP 30 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

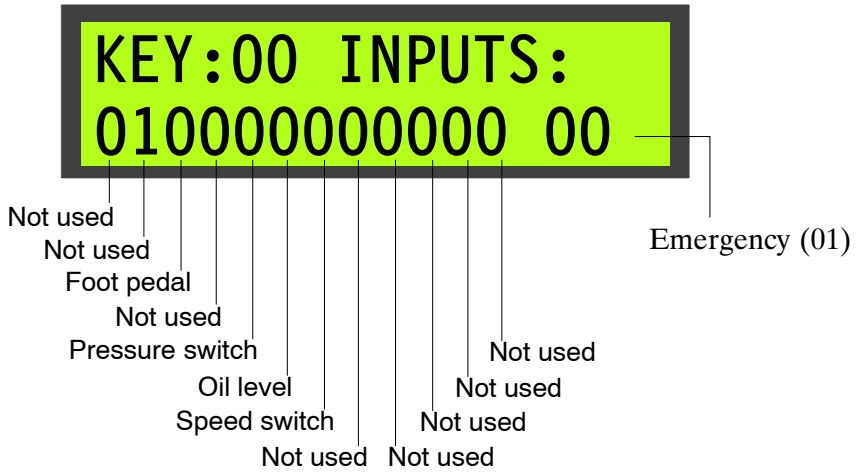
Each console key has an identification number which is displayed on the diagnostics screen after the letter "K", when the key is pressed. For example, when pressing the key for the manual cycle (HAND key), the figure 12 is displayed next to the letter "K":



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.

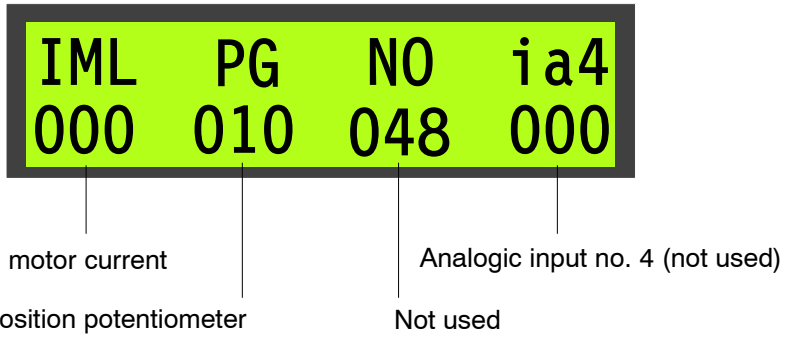
List of IUD–IUV card INPUTS

- 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:

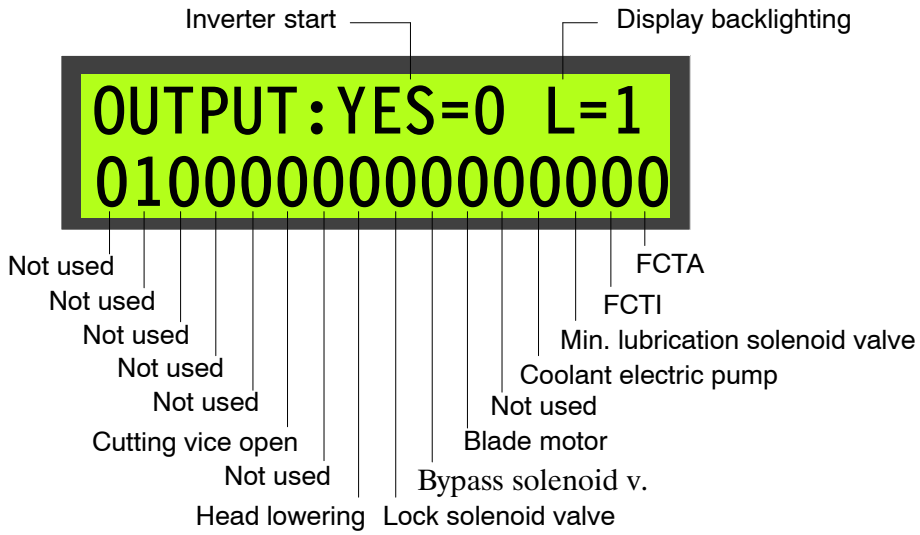




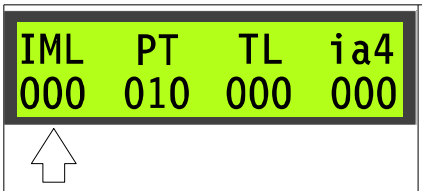
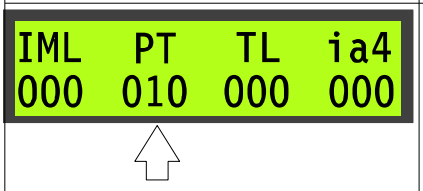
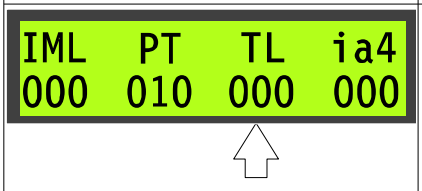
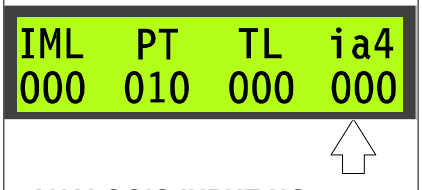
List of IUD–IUV card OUTPUTS

▶ 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:





▶ 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.

 **Current transformer**	**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.
 **Head position potentiometer**	**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**	ANALOGIC INPUT NO. 3 Available for connecting optional instruments.
 **ANALOGIC INPUT NO. 4**	ANALOGIC INPUT NO. 4 Available for connecting optional instruments.

Machine alarms and emergencies

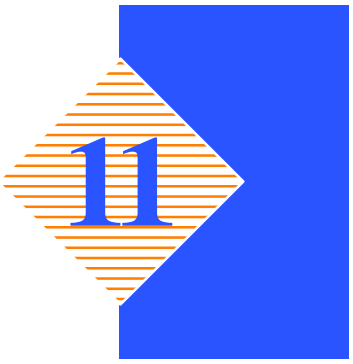
The machine's MEP 30 controller notifies the operator of any alarm or emergency condition which may occur during production by way of acoustic and visual signals. This section lists the messages shown on the display.

PRESS RESET	This message is displayed during the initialisation phase after pressing the ON key
RHLS/F INCONGR. 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 OVER I BLADE MOT	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

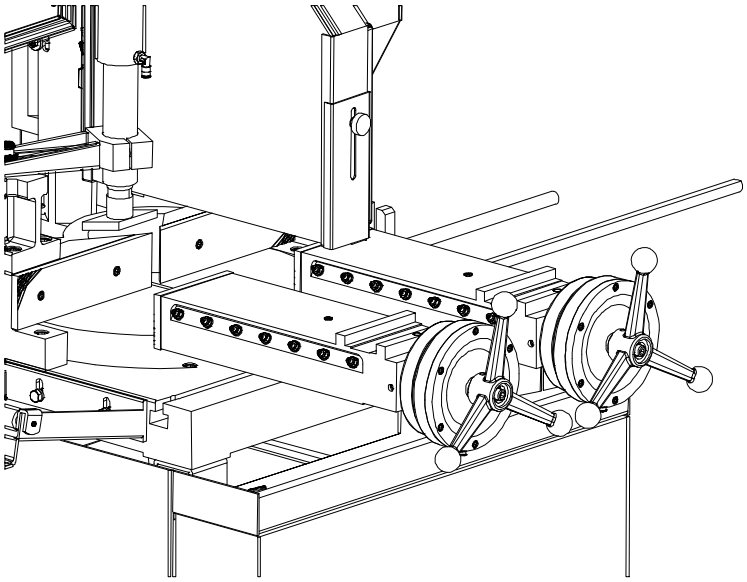


This chapter provides a list of the available accessories that can be fitted to this machine, along with assembly instructions.

Shearing vices

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:

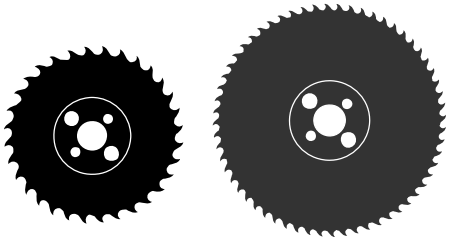
- position the clamp to the right of the blade guard and tighten the feed screw locking plate.
- connect the pneumatic hoses to the opening and closing unions on the pneumatic cylinder of the main pneumatic clamp using Y connectors.



Circular blade

The machine fits:

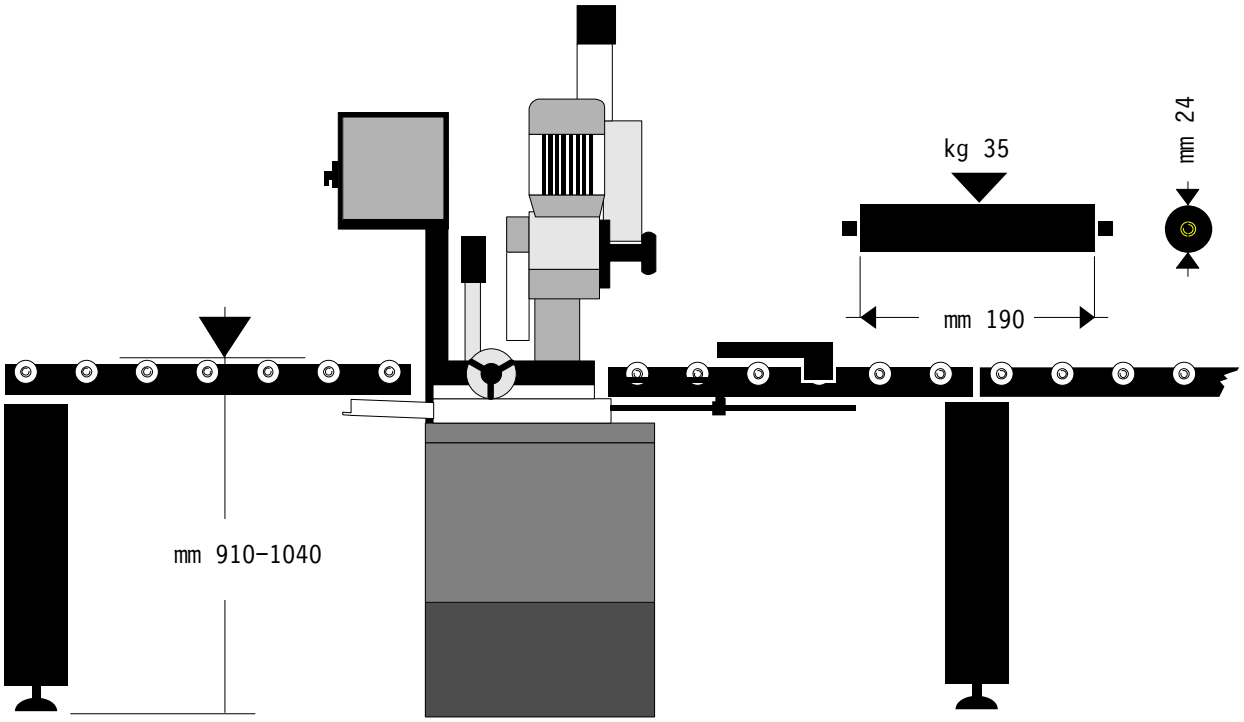
- circular blade HSS DMo5/M2 D.350x32x2.5 for profiles.



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;

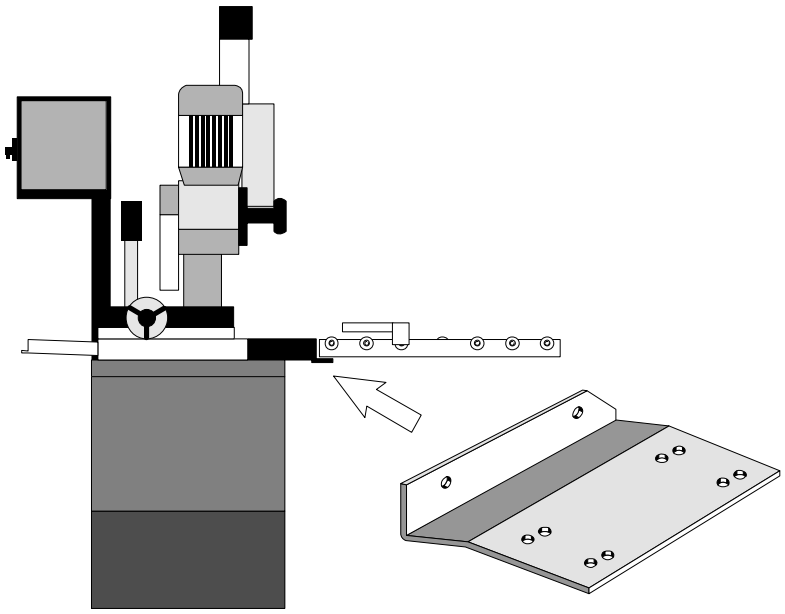


- K40 roller table for discharge side, 3000 mm;
- K40 roller table for discharge side, 4500 mm;
- K40 roller table for discharge side, 6000 mm.
- To fit the roller loading platform on the loading side, the machine has a bar–support arm that one end of the roller–way can be positioned on and then screwed 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.

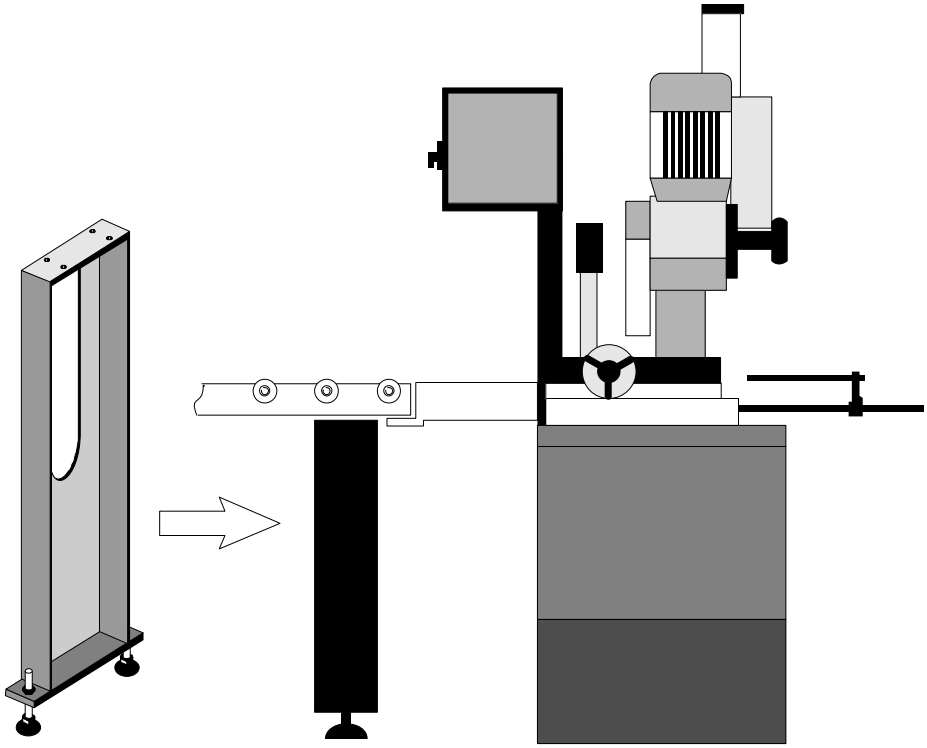


- ▶ Attach the outfeed rolling deck by fixing it with the screws supplied.

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);

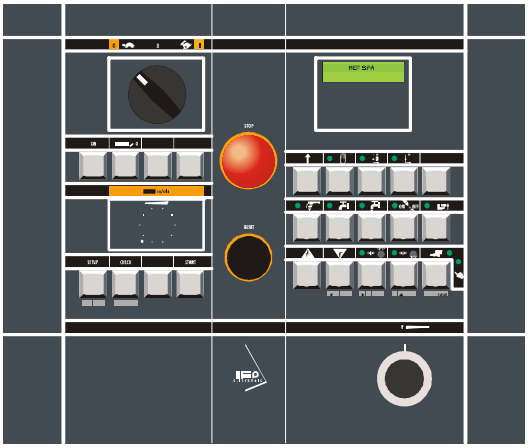


▶ position the support to correspond with the holes on the base of the trailer and reconnect to the adapter.

Foot pedal

This device is used to start the cutting cycle or to stop for emergency.

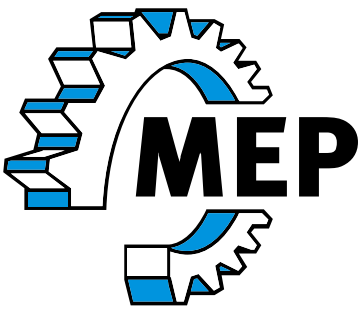
▶ Make a hole with diameter 22 mm on the left side of the base at 150 mm of height from the ground and at 60 mm of deepness.





▶ Make the connection for the selector and the foot pedal as per electric scheme.

Mep spa guarantees that the sold product is free from defects making it unsuitable for its intended use or significantly decreasing its value.
The guarantee shall not apply if the buyer was aware of defects in the product when buying it or if defects were clearly recognizable.
Regulations by the Italian law shall apply to this article.


MEP