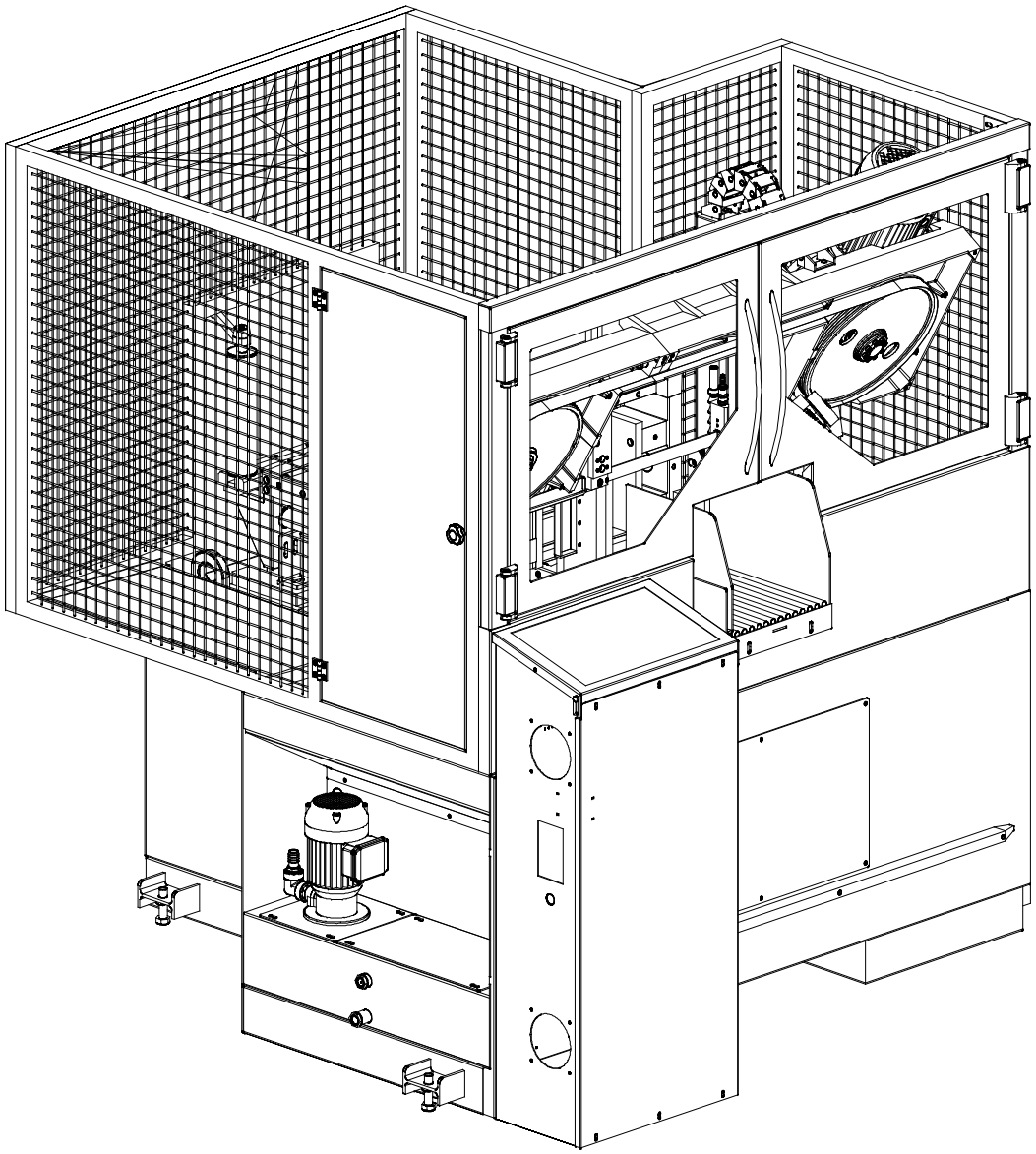


USE AND MAINTENANCE MANUAL

EN

H-230 A

YEAR OF MANUFACTURE: _____

CE EN

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

The manufacturer:

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

Hereby declares that the bandsawing machine:

Machine Type:	**SAWING MACHINE**
Machine model:	**H-230A**
Serial number:	
Year of manufacture:	

is in specification with the following directives:

- **EEC MACHINES DIRECTIVE 2006/42/CE (D.Lgs. 17/2010)**
  - **EN 13898:2003 + A1:2009**
- **DIRECTIVE 2014/30/UE "EMC" (D.Lgs. 80/2016)**
  - **EN 50370-1:2005 Emission**
  - **EN 50370-2:2003 Immunity**
- **DIRECTIVE 2014/35/UE "LVD" (D.Lgs. 86/2016)**

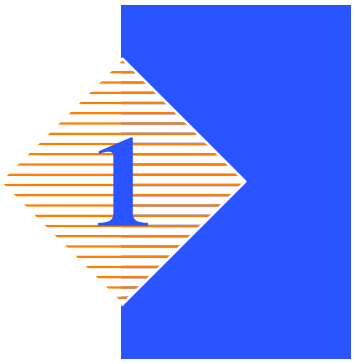
Responsible of a Technical File
(Walter Di Giovanni)

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

Managing Director
(William Giacometti)

Pergola, lì _____

Introduction and technical specifications



Foreword

Hyd- Mech,in response to modern production techniques, has developed the new **H- 230 A**.

This work tool has been designed to satisfy the wide range of cutting needs of a modern workshop with simplicity and reliability, while at the same time complying with all EEC safety standards.

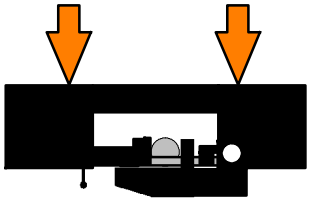
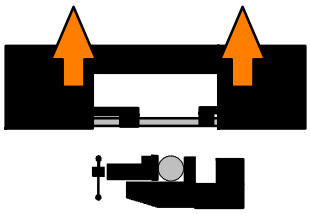
The **H- 230 A** is structurally rigid, silent and safe: it produces a minimum of waste while its great versatility makes it suitable for cutting various materials such as stainless steel light alloys, aluminium, copper and bronze at high speed and with high precision.

Its high cutting capacity make this model the ideal solution for satisfying the wide strange of cutting needs of machine shops, turneries, structural steel shops and engineering workshops.
Please keep this instruction manual for future reference in a known location and easily accessible to all users of the device. HYD·MECH offers a great variety of options, components, and features for its various models.
Therefore, some of the equipment described in this manual (various illustrations and drawings) may not be applicable to your particular machine.
The information and specifications provided in this manual were accurate at the time of printing. HYD·MECH reserves the right to discontinue or change specifications or design at any time without notice and without incurring any obligation.
We congratulate our clients on having chosen this product, which will give effective and faithful service for many years, especially if the instructions contained in this use and maintenance manual are carefully followed.

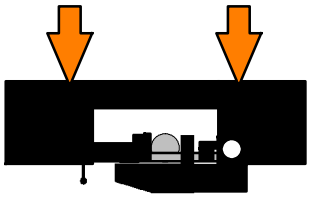
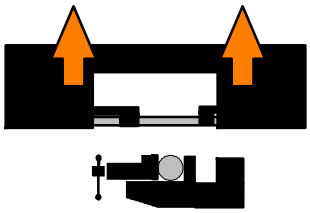
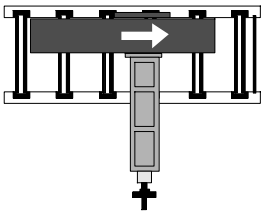
Warning This band saw has been exclusively designed to cut metals.

Machine presentation

The **H- 230 A** is a hydraulic electro- mechanical cutting saw for solid and section cutting of metals. Machine operation is either SEMIAUTOMATIC or AUTOMATIC. In Semi- automatic mode, after setting the head cutting stroke on the control panel and the head downstroke speed, the operator close the vise and presses the start button on the control panel to start up the band saw; cont'd:

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

In **Automatic** mode, after setting the head cutting stroke on the control panel, the operator close the vise and presses the start button on the control panel to start up the band saw; cont'd:

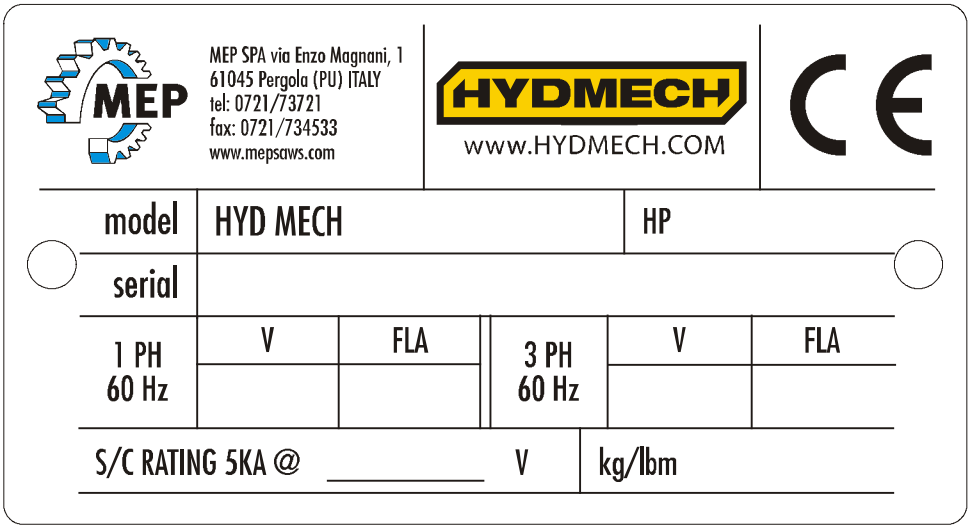
1. The cutter vice closes 	2. The head lowers until the cut is made (FHLS) 	3. The head returns to start position (RHLS) 	4. The feed vice closes 
5. The cutter vice opens 	6. The cutting material is fed 	7. The cutting vice closes 	8. The feed vice opens and the cutting cycle starts up 

Machine specification

Rating plate

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 manual.



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

CUTTING SPEEDS		
Blade rotation speed	mt/min ft/min	15÷100 49÷328

BAND SAW		
Rated size	mm in	2950 x 27 x 0,9 116.14 x 1.06 x 0.03
Max/min blade length	mm in	2950±15 116.14±0.59
Blade height	mm in	27 1.06
Blade width	mm in	0,9 0.03
Band saw tension	kg lbs	900 1980

Attention When choosing the cutting tool, if its dimensions do not correspond to those included in the "Rated size" section, check that the dimensions at least fall within the admissible max/min specifications.

ABSORBED ELECTRIC POWER		
Spindle motor	kW hp	2,2 2.95
Lubricant/coolant fluid electric pump motor	kW hp	0,18 0.24
Hydraulic unit motors	kW hp	0,75 1.00
Servo- valve and feeder stepper motor	kW hp	0,65 0.87

ABSORBED ELECTRIC POWER		
Blade brush and swarf remover motor (optional)	kW hp	0,05 0.07
Cooling fan motor	kW hp	0,04x2 0.05x2
Max. absorbed electric power	kW hp	3,91 5.23

HYDRAULIC POWER PACK MOTOR SPECIFICATIONS
4- pole, three- phase, asynchronous; Frequency 50 Hz.

Nr. poles	Voltage (Volts)	Absorption (Amps.).	Power (kW) (hp)	rpm
4	230/400	3,34/1,93	0,75/0,9 1.00/1.21	1380/1650
Protection rating IP 55.				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

LUBRICANT/COOLANT FLUID AND OIL		
Oil for transmission box	capacità kg lbs	0,32 0.70
Hydraulic oil (feeder unit)	capacità lt	33
Lubricant/coolant fluid (oil concentration 5- 6%)	capacità lt	95

VICE		
Vice max. opening	mm in	235 9.25

SPINDLE MOTOR
4- pole, three- phase, asynchronous; Frequency 50 Hz.

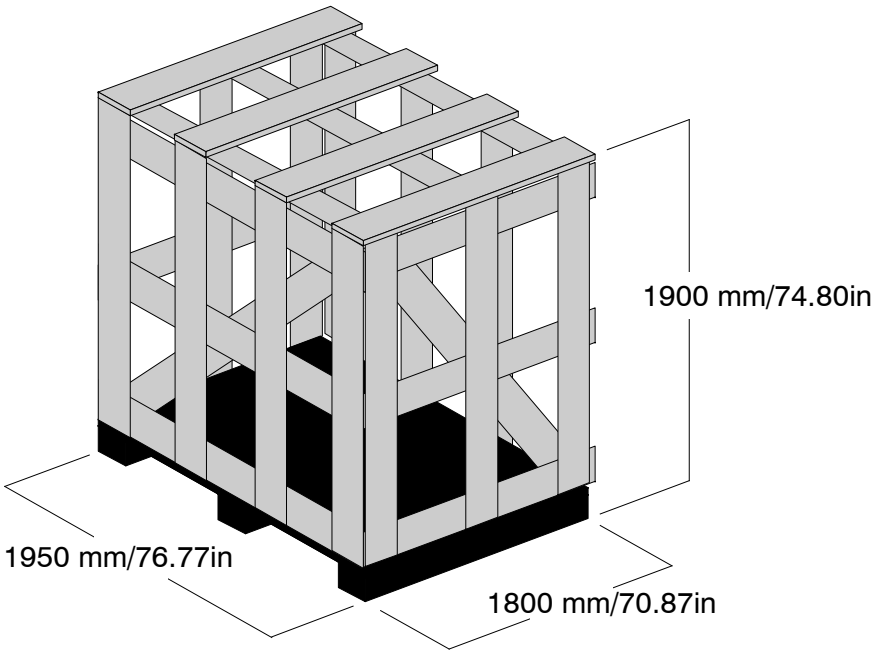
No.of poles	Current (Volts)	Absorption (Amps)	Power (kW) (hp)	rpm
4	230/400	8/4,4	1,5 2.01	1415
Stator wound with enamelled copper wire, class H 200° C.				
Class F insulation (limit temperature TL 155° C).				
Protection rating IP 54.				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

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

ELECTROPUMP MOTOR Single phase; Frequency 50 Hz.					
Voltage (Volts)	**Absorption (Amps)**	**Power (kW) (hp)**	**rpm**	**Delivery rate lt/min**	**Head (mt.) (ft)**
230	0,53	0,37 0.5	2800	11	1,5 4.92
400	0,34	0,37 0.5	2800	11	1,5 4.92
Protection rating IP 55.					
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.					

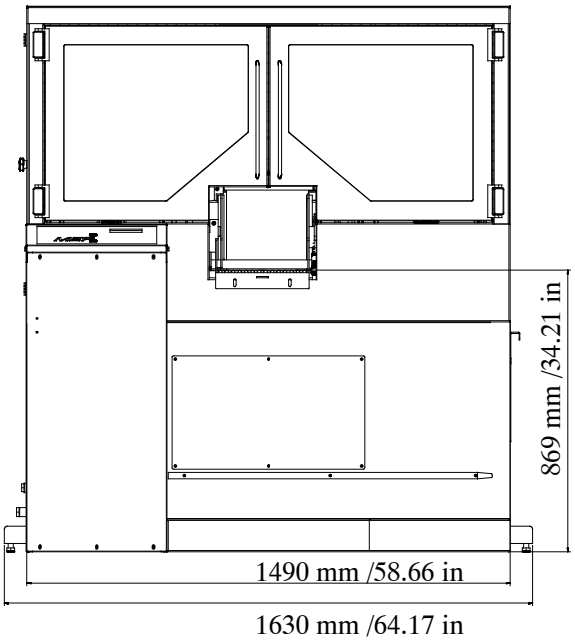
CUTTING CAPACITY		
Section	●	■
0°	230 mm 9”	230 mm 9”

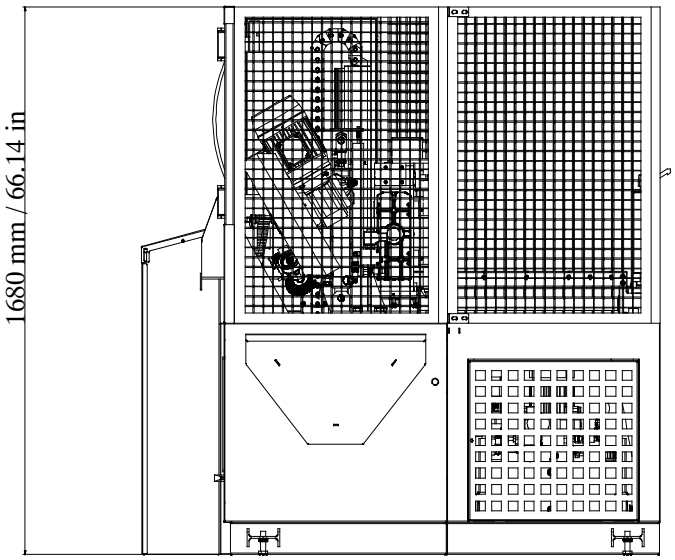
PACKED WEIGHT		
Wooden cage and pallet	Kg lbs	150 330
Wooden pallet	Kg lbs	70 154

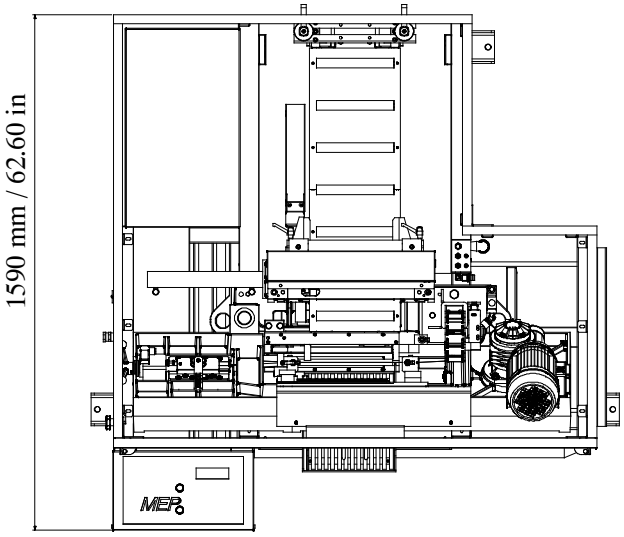


Dimensions

MACHINE INSTALLED		
Work table height	mm in	870 34.25
Weight	kg lbs	1000 2200







Functional parts

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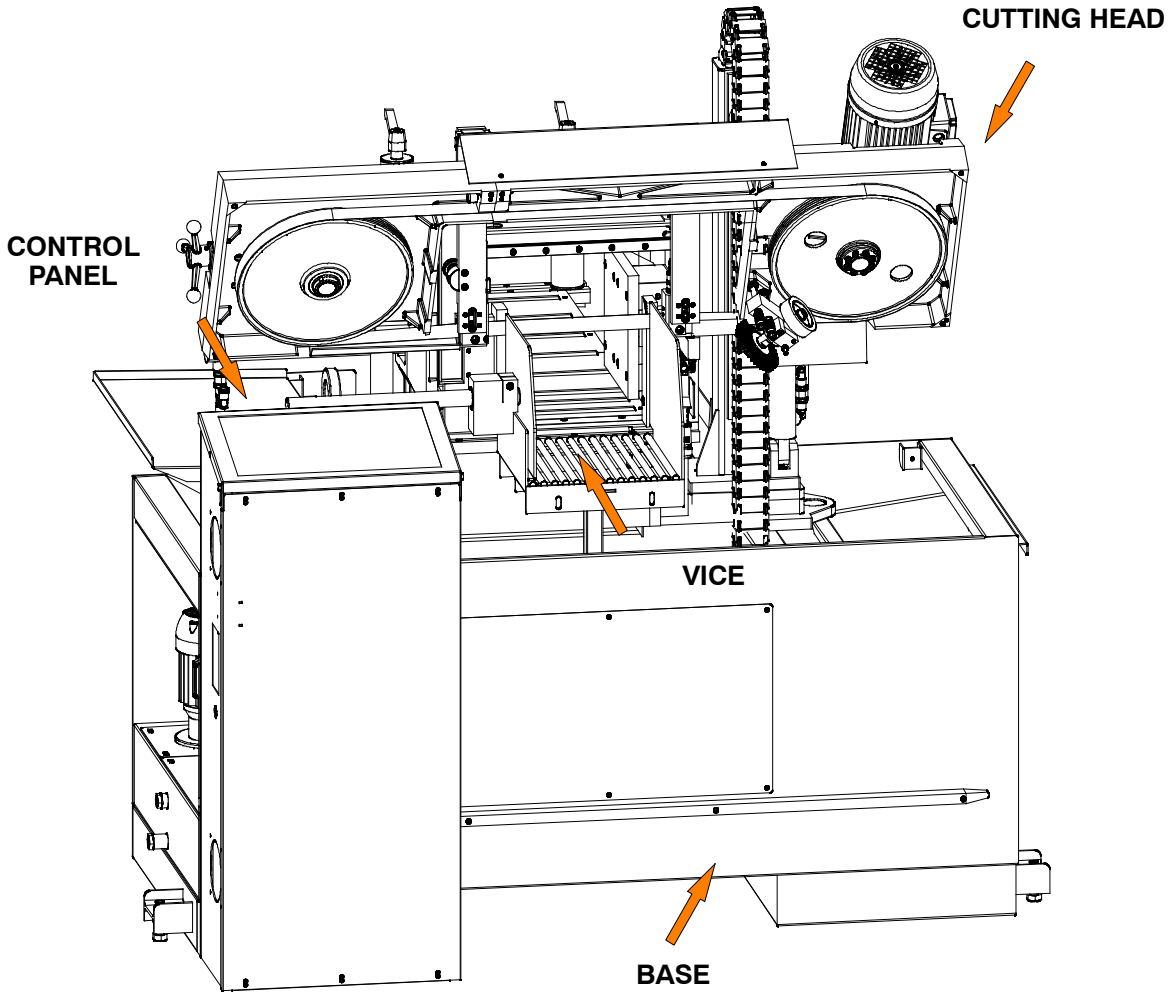
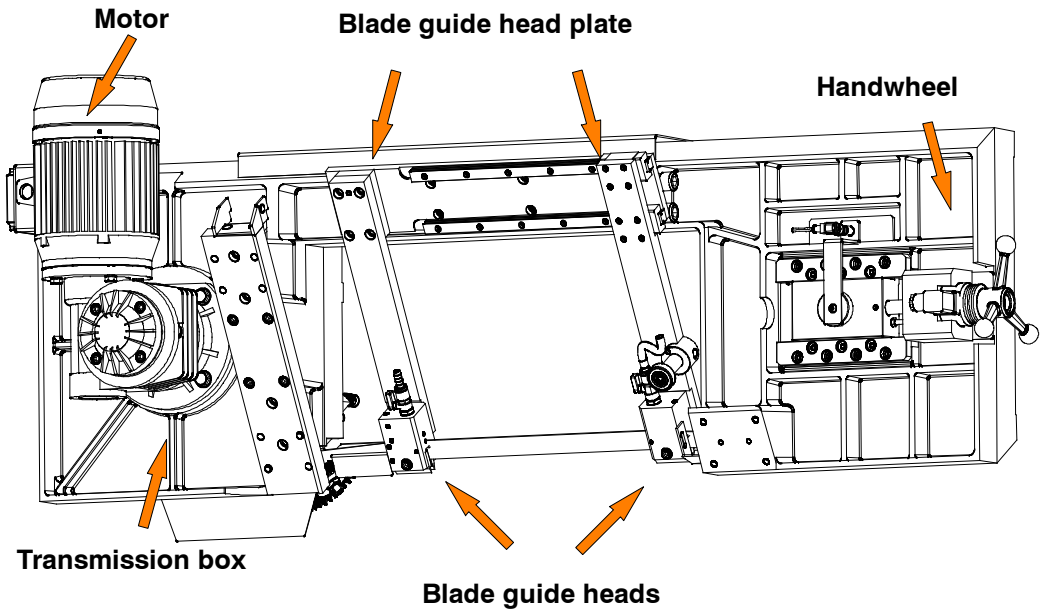
H-230 A model

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.



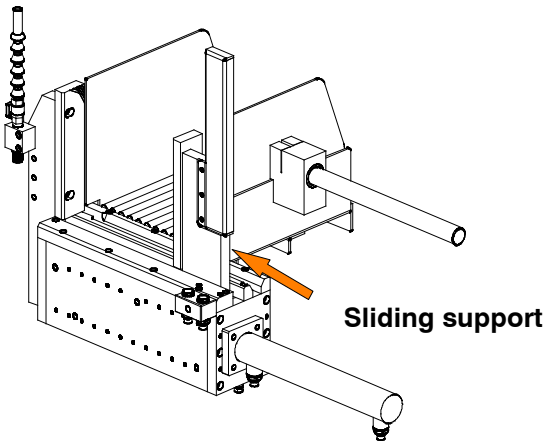
Cutting head

The operating head is the cutting component and is made up of a bow from cast iron on which the following elements are installed: band, band guide components, band tensioning unit, worm screw reducer and spindle motor.
The cutting bow slides on linear guides, with ball recirculation slides, installed on columns for getting a better cutting stability and longer blade life. Feeding is by a stepper motor and screw/nut with recirculating balls.
The machine is equipped with a laser system to position the bar accurately to carry out non- standard or facing cuts.



The cutting vice

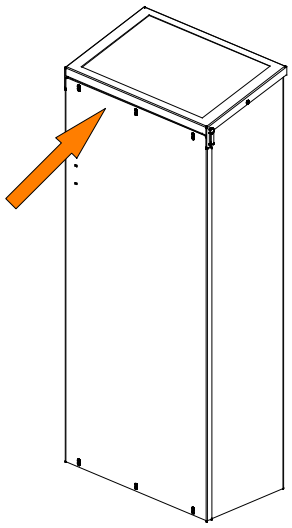
The vice is the unit that clamps the workpiece during cutting; it consists of a vice support, fixed to the work table on which a mobile jaw is mounted. The opening or closing movement is carried out through the relevant keys on the consolle.



Control Panel

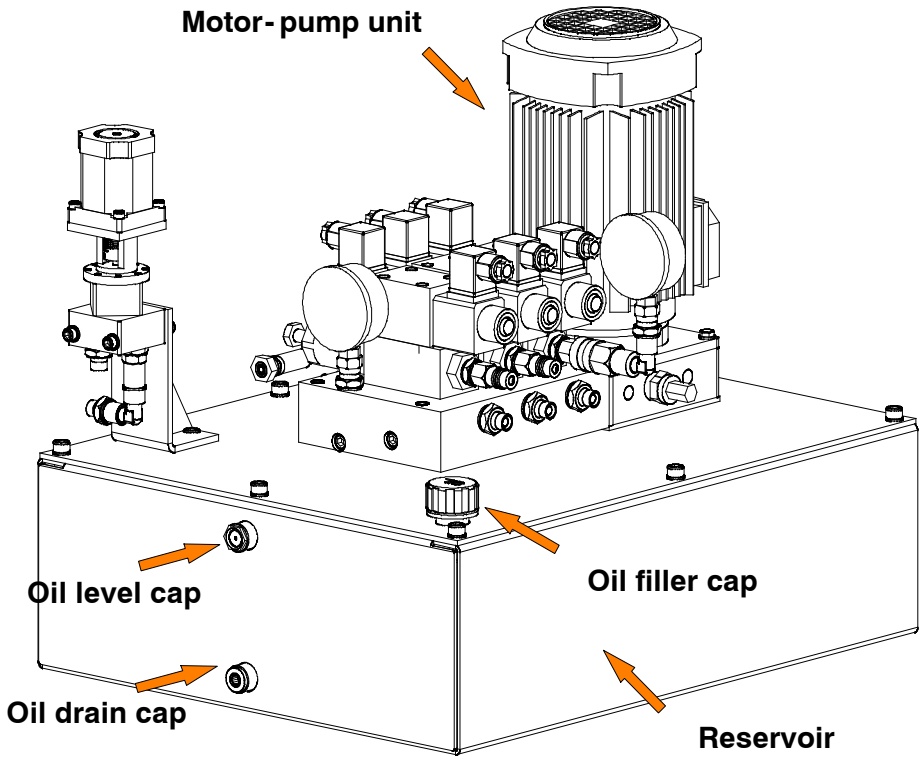
The control panel has a protection rating of IP 54 and contains the electronic equipment. Access to the control panel is protected by a safety panel mounted on hinges and fastened with screws, specially designed to prevent tampering.
The control panel is installed on a structural fixed console and enables the operator to steadily monitor the cutting area in total safety.

Control panel



Hydraulic Power Pack Unit

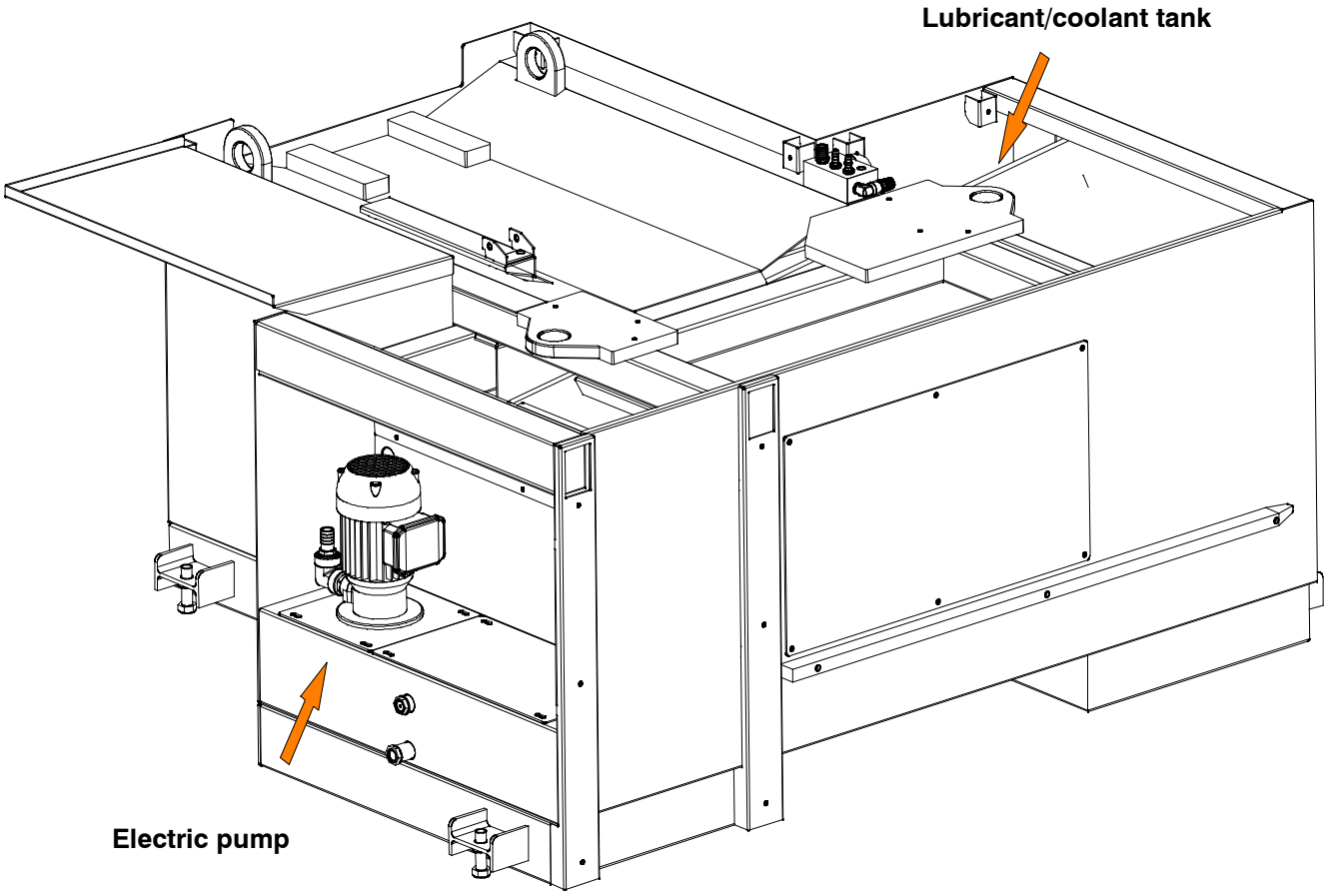
The hydraulic power pack activate the head cylinder, the cutting vice and the feed vice. It is situated on the back of the machine under the metal guard. An electro- valve piloted by the machine controller ensures exchange of oil in the circuits.



Base

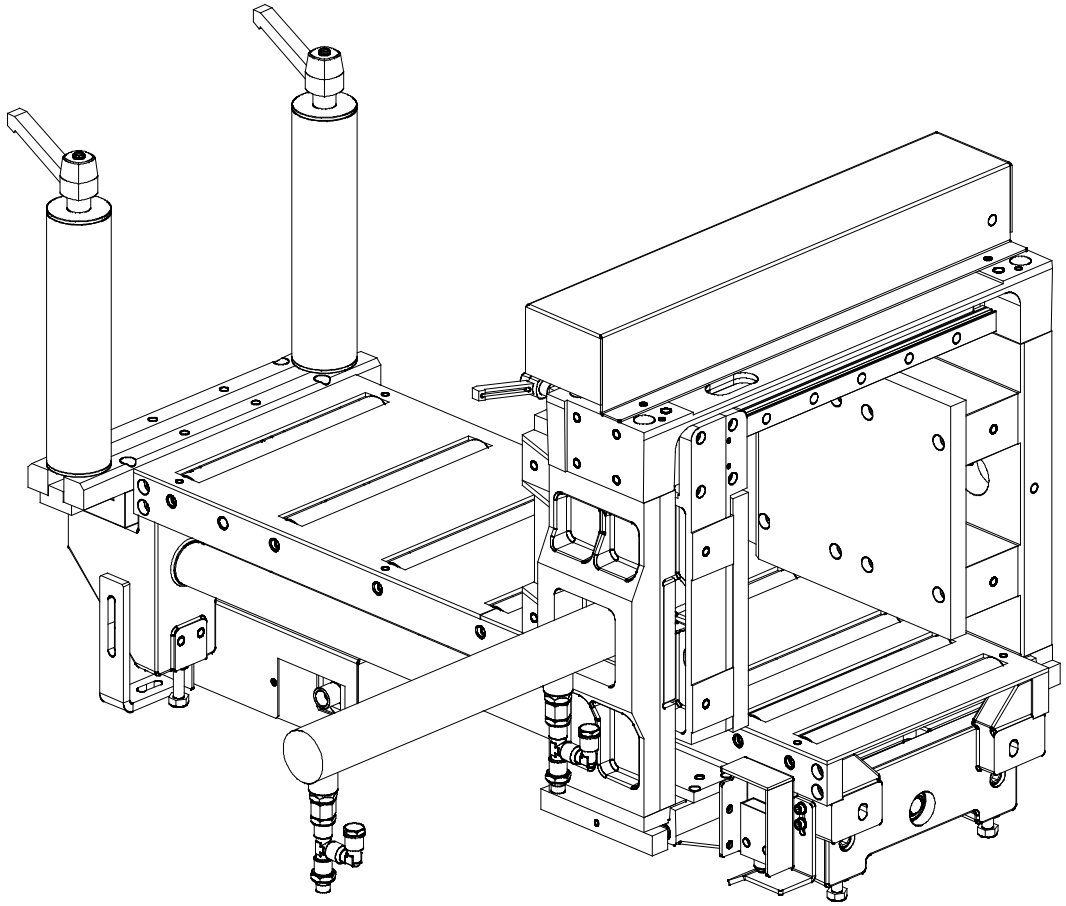
This unit features a large coolant collection surface which conveys the coolant to the rear tank via the tank cover, and a swarf collection drawer.
The electric pump seated inside the tray sucks the clean liquid from the progressive filter system and makes it circulate again to ensure an efficient flowing of the processing residues and the lube- refrigeration of the cutting tool.

The coolant gun is on the right of the cutting plane. On the front right of the base there is a chip tray that can be replaced with an optional chip extractor.
The hydraulic control unit and the electric board are located in the right rear side.

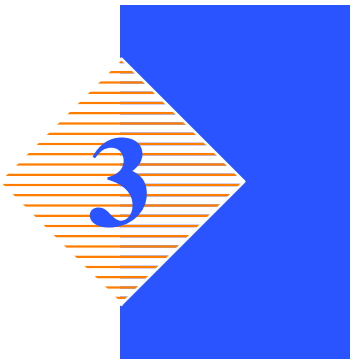


Feeder

The material is fed by the feeder trolley. Having locked the material in position using a hydraulic clamp, the trolley moves the material to be cut on guides. The numeric control manoeuvres the feeder trolley step- by- step, with great precision, thus allowing the operator to set up 1000 batches of pieces to be cut on the same bar, each with differing quantities and lengths.



Safety and accident prevention



The **H- 230 A** 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 **H- 230 A** band saw cutting machine 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 **EEC MACHINES DIRECTIVE 2006/42/CE** :

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

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

General recommendations

LIGHTING

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

CONNECTIONS

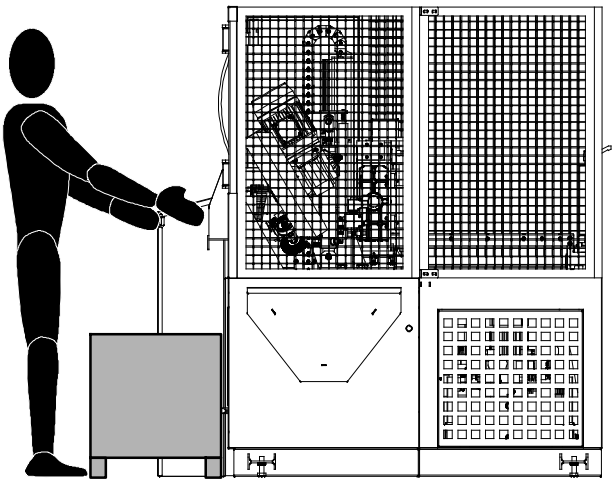
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the “Machine Specification” tables; replace if necessary.

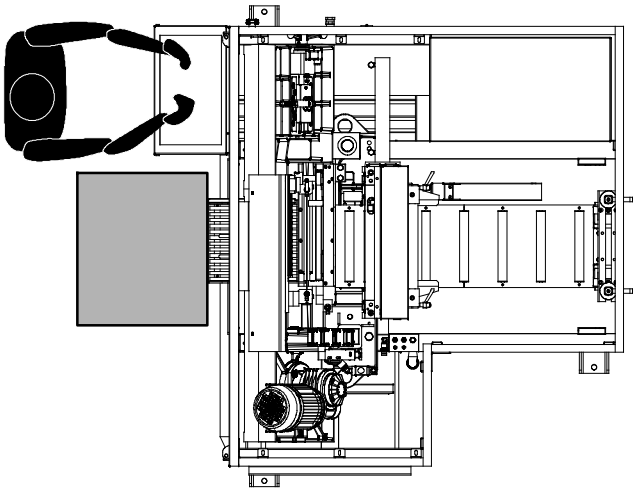
EARTHING

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

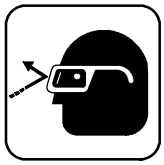
OPERATOR POSITION

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





Recommendations to the operator



Always wear proper goggles or protective glasses.

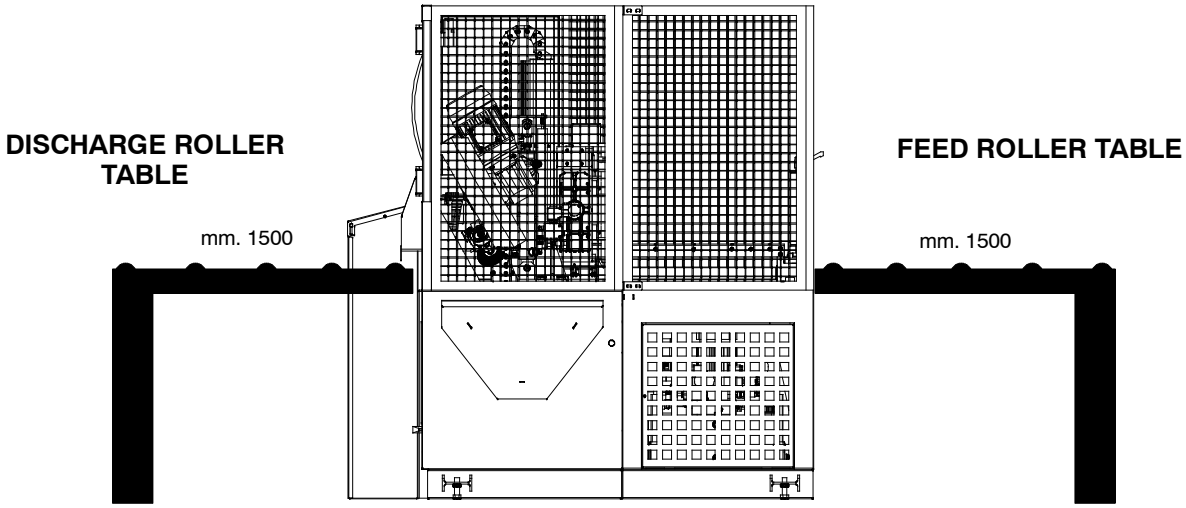
Do not use the machine without the guards in position. Replace the polycarbonate windows, if subject to corrosion.

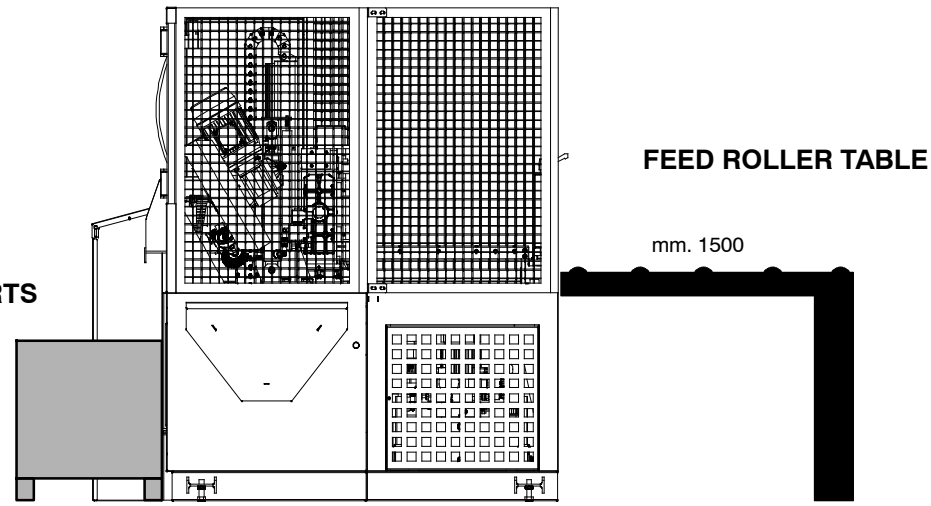
Do not allow hands or arms to encroach on the cutting zone while the machine is in operation.

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

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

Before starting cutting operations, support the material at both ends of the machine using the support arm - standard, or OPTIONAL accessories such as the feed and discharge roller tables shown in the diagram below. Before removing the devices supporting and moving the material, fasten the latter in place using the machine's clamping devices or other suitable equipment.



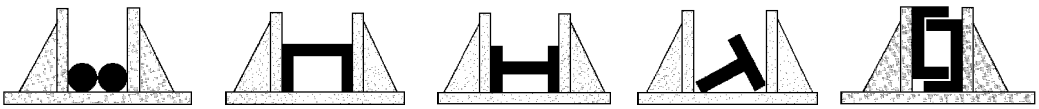


Any maintenance work on the hydraulic or pneumatic systems must be carried out only after the pressure in the system has been released.

The operator must not perform any risky operations or operations not required for the machining operation under way (e.g. remove swarf or metal shavings from the machine while cutting).

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

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 different profiles correctly in our machines are shown below.



Do not use the machine to cut pieces that exceed the capacity of the machine as listed in the machine specifications.

Never move the machine while it is cutting.

Do not use blades of different sizes to those recommended in the machine 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 working on the band saw, wear gloves only when handling materials and for tool changing or adjustment operations. Only perform 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 push- button immediately. If this does not free the blade, slowly loosen the vice, remove the piece and check the blade or blade teeth for breakage. Replace the blade if necessary.

Before carrying out any repair work on the machine, consult the hyd-mech Technical Assistance Service: this can be done through a representative in the country of use of the machine.

Adjustment of the blade- guide head must only be carried out with the machine at a standstill.

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 **H- 230 A** band saw.

Reference standards

MACHINE SAFETY

- EEC MACHINES DIRECTIVE 2006/42/CE ;
- EEC directive no. 2014/30/EU “EMC - Electromagnetic Compatibility”;
- EEC Directive No. 2014/35/EU known as “Low voltage directive”.
- EN 13898:2003+A1:2009 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

- EEC Directive No. 80/1107; 83/477;86/188;88/188; 88/642 for the protection of workers against risks caused by exposure to physical, chemical and biological agents during working;

- EEC Directive No. 89/391 and Special EEC Directives No. 89/654 and No. 89/655 for improvements in health and safety at work;
- EEC Directive No. 90/394 for the protection of workers against risks deriving from exposure at work to carcinogenic substances;
- EEC Directive No. 77/576 and No. 79/640 on safety signs at work.

PERSONAL PROTECTION

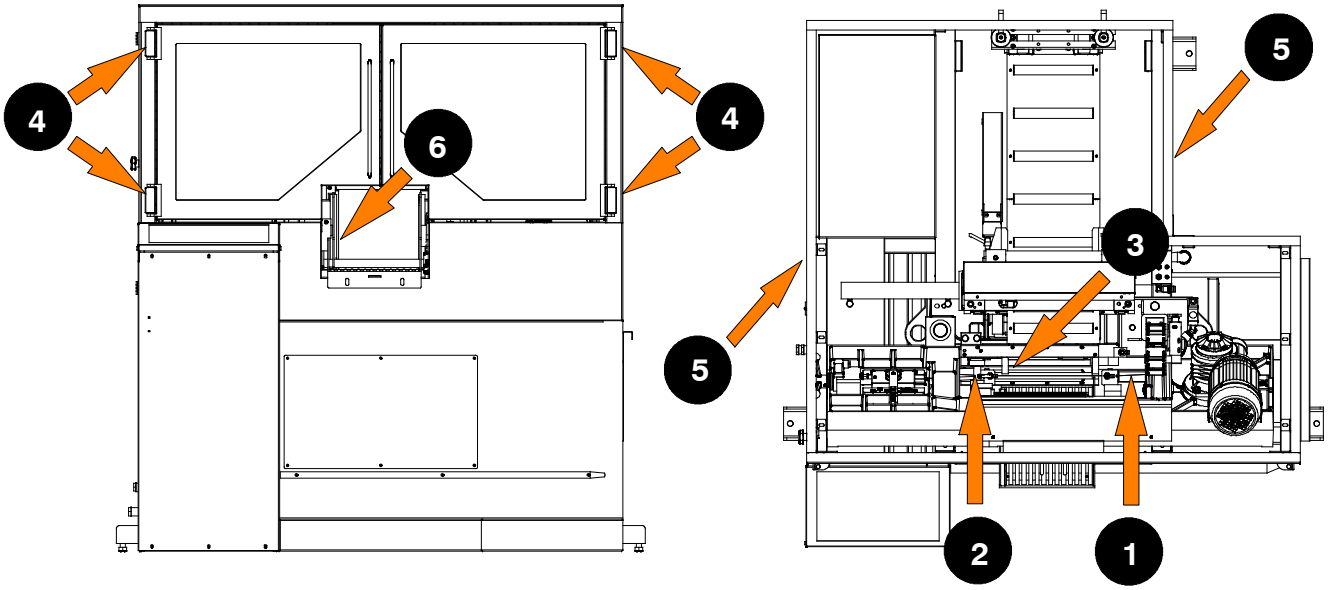
- EEC Directive No. 89/656 and No. 89/686 on the use of personal protection devices.

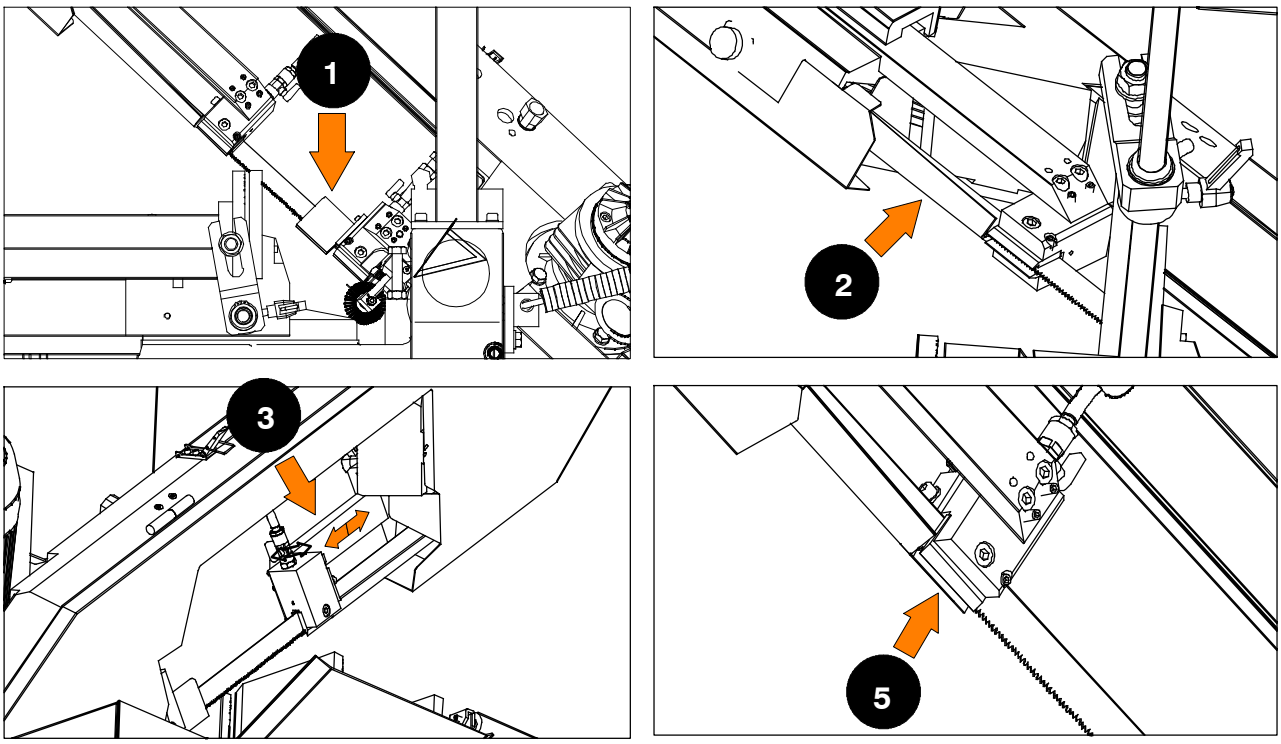
ENVIRONMENTAL PROTECTION

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

Protection against accidental contact with the blade

1. Metal guard screwed to the rear blade guide head;
2. metal guard screwed to the front blade guide head;
3. front head sliding support: when the head is at maximum aperture, the support ensures that the blade is covered, leaving free only the part of the blade engaged in the actual cutting, in accordance with Presidential Decree no. 547/55, art. 108;
4. front protection doors, with electric limit switches, to enable the access to the cutting area only with stopped machine;
5. enclosure on the whole machine perimeter.
6. the cutting vice is started up by hydraulic devices, and the blocking of the piece occurs through a control panel key;





Electrical equipment

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

- Access to electrical control panel limited by screws and panel- lock device, allowing panel to be opened only after the electricity supply has been turned off;
- 24 Vac Control voltage for actuators, in accordance with chapter 6 or European Standard ”Control and indication circuits”, paragraph 2 ”Control Circuits” sub- section 1 ”Preferential voltage values for control circuits”;
- plant short- circuit protection by means of rapid fuses, earthing of all plant parts connected with work as well as all foreseeable accidental contact; a thermal- magnetic overload cutout switch shuts down the motor;
- protection from accidental start- up by a minimum voltage relay in case of power failure.

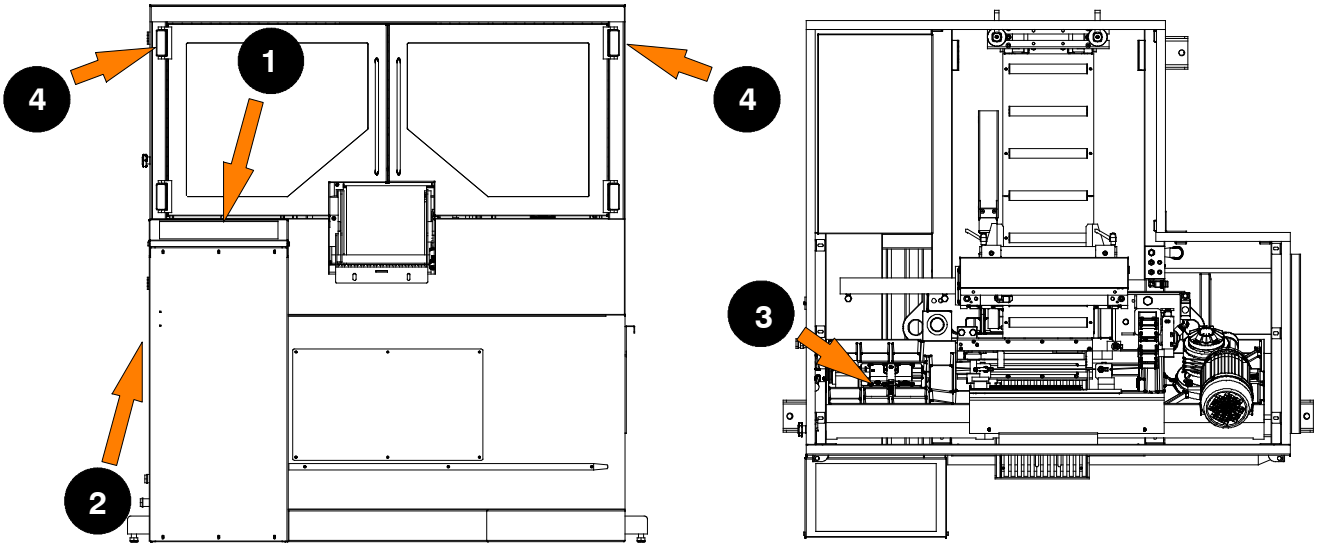
Emergency devices

In accordance with Standard EN 60204-1:2010:

- **Chapter 5 Section 6 Sub-section 1 ”Emergency stop device”**: «the emergency stop device immediately stops all the dangerous and other functions of the machine»;
- **chapter 6 Section 2 Sub-section 4 Point 7 ”Protective guards”:** «the removal of protective guards designed to prevent access to dangerous parts or zones causes the machine to stop immediately; replacing the guards does not restart the functions, which must be reset».

...Emergency devices applicable to the H- 230 A:

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, 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. **Loading cell for band tensioning detection:** the machine stops immediately if the blade breaks or pressure in the tensioning cylinder drops.
4. **Protective guard for blade:** a coded microswitch is operated if the blade cover is accidentally or intentionally opened during the machine operating cycle, immediately shutting down all functions.



Noise level of the machine

Noise can cause hearing damage and represents one the problems faced by many countries who adopt their own standards. In accordance with the **EEC MACHINES DIRECTIVE 2006/42/CE** , we are listing the standards that specify noise levels for machine tools.
The following paragraph explains the modes and the detected sound power and pressure values released by the sawing machine.
These values comply with norm EN 13898:2003 + A1:2009, EN ISO 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		**H- 230 A**
Reference standard		ISO 3746

Results		
Test 1st	**Description**	C 40 steel cut - pipe 50x82 mm (1.97x3.23 in) Bimetal band 2950x27x09 (116.14x1.06x0.03 in) S.GLB Z 5/7
	Results	**Mean sound level (Leq) 75,24 dB (A)** Environmental correction (K) 3,42 dB(A) Peak sound power (Lw) 86,34 dB(A)
Test 2nd	**Descriprion**	C 40 steel cut - solid rod 150 mm dia. Ø (5.9 in) Bimetal band 2950x27x09 (116.14x1.06x0.03) M42 Z 3/4
	Results	**Mean sound level (Leq) 74,19 dB(A)** Environmental correction (K) 3,42 dB(A) Peak sound power (Lw) 83,89 dB(A)
Test 3rd	**Description**	34CND6 material cut - pipe 140x130 mm (5.51x5.11 in) Bimetal band 2950x27x09 (116.14x1.06x0.03) S.GLB Z 10/14
	Results	**Mean sound level (Leq) 74,21 dB(A)** Environmental correction (K) 3,42 dB(A) Peak sound power (Lw) 84,69 dB(A)

Vibration emission

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

Electromagnetic compatibility

As from 1 January 1996 all electrical and electronic appliances bearing the CE marking that are sold on the European market must conform to Directive 2014/30/UE e 2014/35/UE and **EEC 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 **H- 230 A**;
Test report no. 011200.

Emissions

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

- CEI EN 61000-6-2 (2000) Electromagnetic Compatibility (EMC) - Generic standard on immunity. Part 6-2: Industrial Environment.
- EN 61000-4-2 + A1 (1996-1999) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 2: Electrostatic discharge immunity tests - Basic publication.

- EN 61000-4-3 Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 3: Radiated, radio- frequency, electromagnetic field immunity test.
- EN 61000-4-4 (1996) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 4: Fast transients/bursts immunity tests - Basic publication.
- EN 61000-4-5 (1997) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 5: Surge immunity test.
- EN 61000-4-6 (1995) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 6: Immunity to conducted interference, induced by radio frequency fields.
- EN 61000-4-11 (1977) Electromagnetic Compatibility (EMC) - Part 4: Test and measurement techniques - Section 11: 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

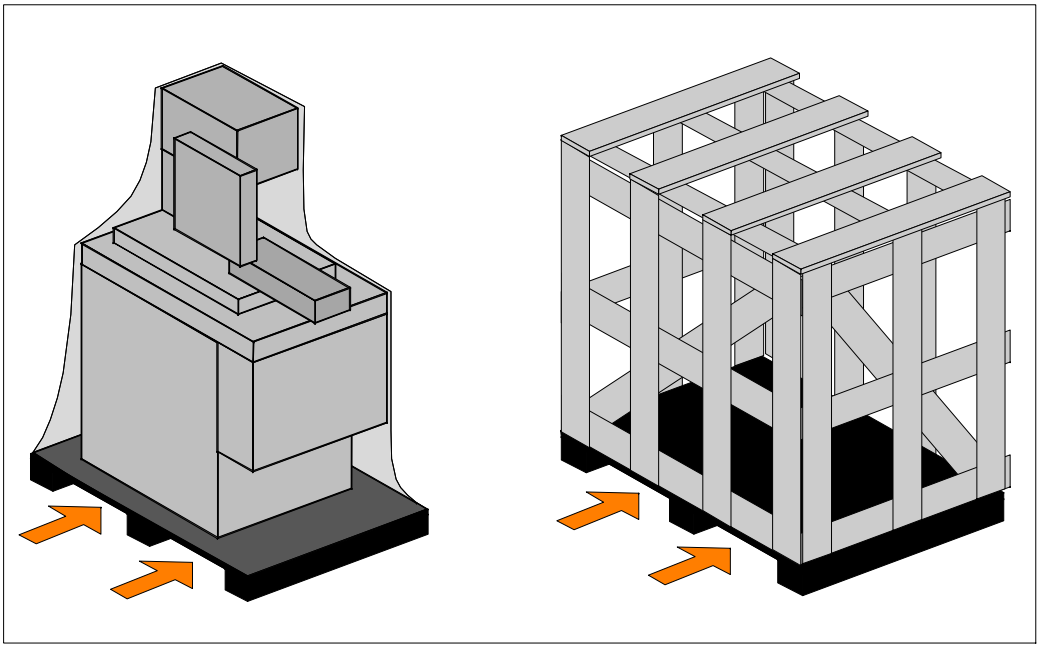
Machine installation

4

Packaging and storage

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

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

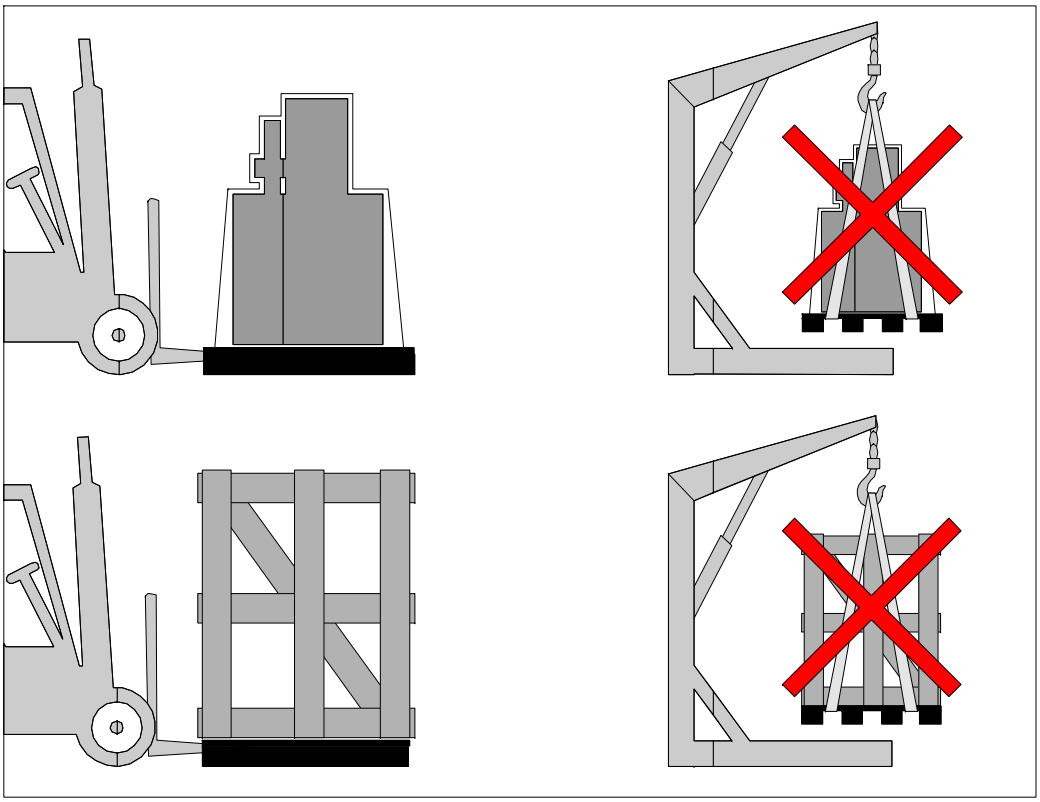


1. on a pallet with straps and heat- shrink plastic;
2. on a pallet with straps, heat- shrink plastic and a wooden crate.

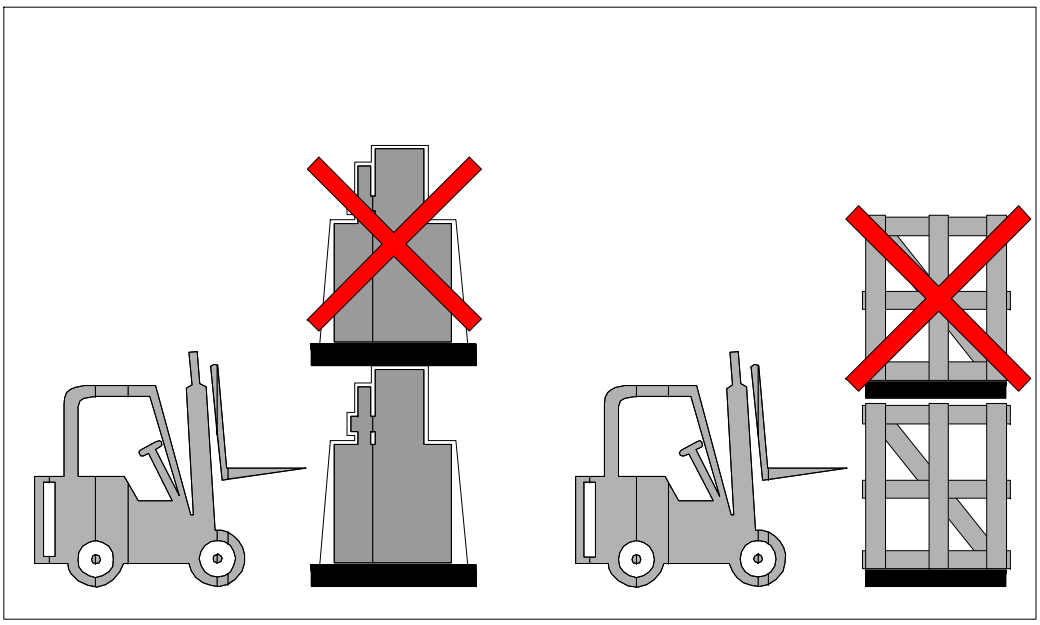
Warning In both cases, for correct balancing the machine must be handled using a fork- lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

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

Attention Do not handle the packed machine using slings.

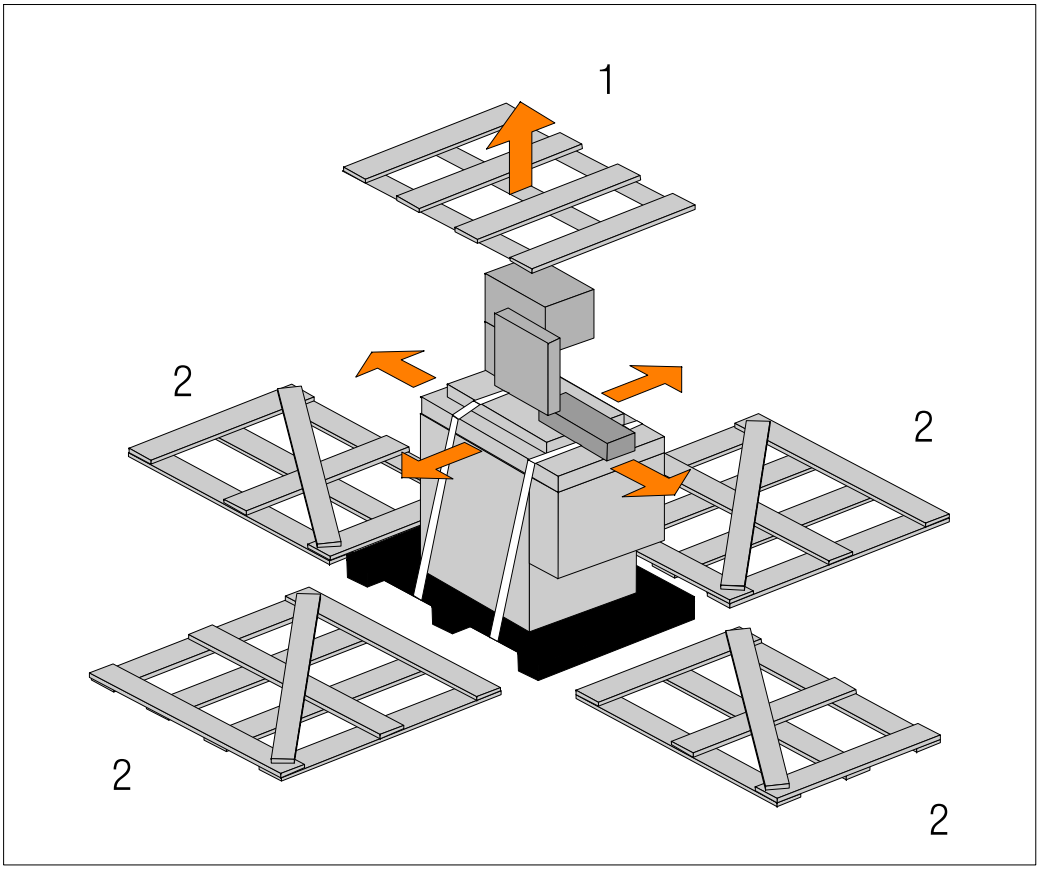


Attention When storing, machines palletized and shrink- wrapped must not be stacked two high, and machines pallettized and crated must not be stacked two high.

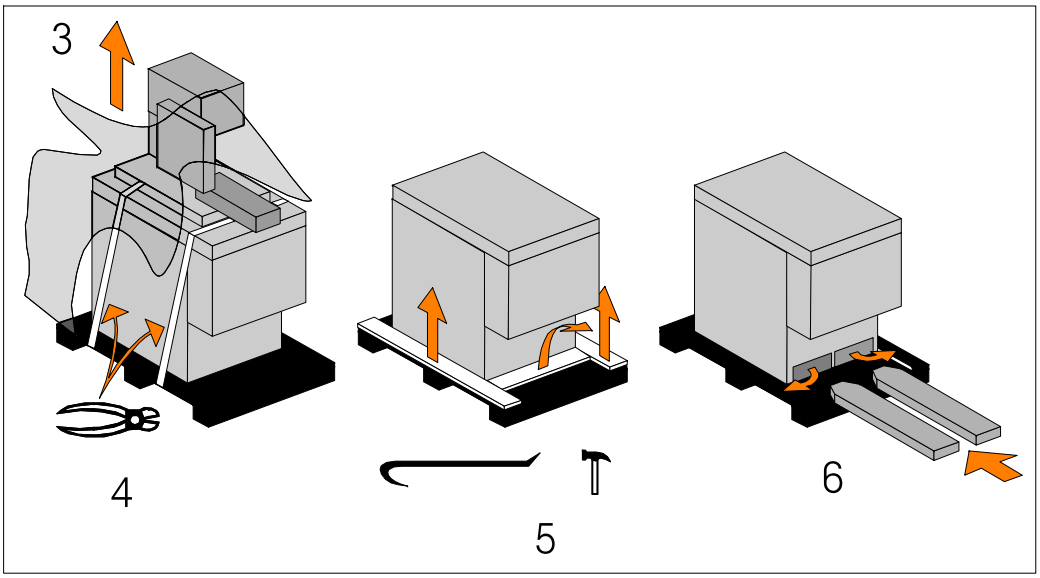


To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

1. remove nails and lift the top of the cage;
2. remove nails and lower walls;



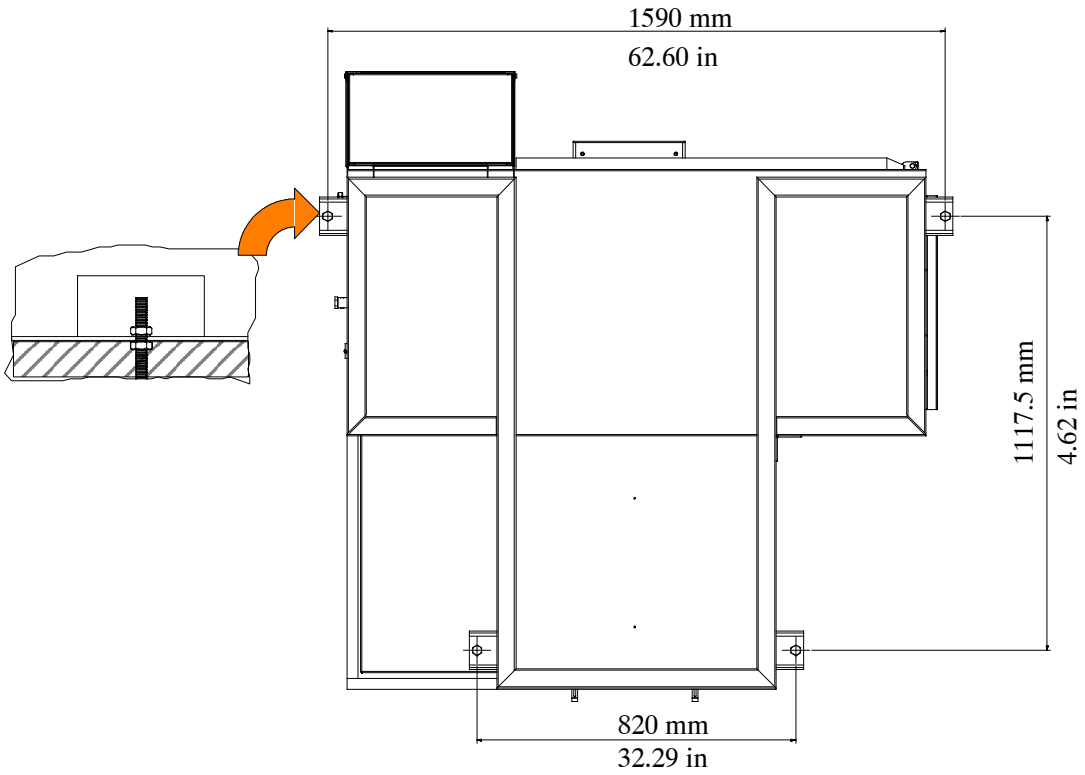
3. remove heat- shrink covering;
4. remove the straps;
5. remove nails from pallet securing planks and remove planks;
6. remove the front panel and insert fork tines.



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;
- 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 **H- 230 A** 2- SPEED machine is supplied complete with:

CHARACTERISTICS	STANDARD	OPTIONAL
Electronic blade tensioning transducer	✓	
Infeed unit with step motor and recirculating ballscrew (length 500 mm/19.68 in)	✓	
Band rotation control with stop signal generated in real time in the event of tool locking up	✓	
Chip collection drawer, which can be replaced by motor chip discharger unit (optional)	✓	
Acoustic and flashing light signal in case of machine stop	✓	
2950x27x0.9 (116.14x1.06x0.03) bimetal blade for solid and section materials	✓	
Blade cleaning brush	✓	
Presetting for the movement with truck lift and eyebolt rings for crane lifting	✓	
Four low voltage controls: polyester membrane keyboard with heat- formed buttons, tactile feel and buzzer on activation	✓	
Head stroke limits programmed from the control panel, according to the dimensions of the bar to be cut	✓	
Automatic control of the cutting force, with servovalve	✓	
Coolant tank housed in the base	✓	
7” touch screen display and mechanical buttons for the operating functions of the sawing machine	✓	
Latest generation hydraulic control unit, with high efficiency and low energy consumption	✓	
Mechanical blade tensioner	✓	
Positioning of the feeder shuttle and of the cutting head by means of joystick	✓	
Cabinet for electric and electronic appliances with distinct connections	✓	
Accessory kit	✓	
Electronic speed control (inverter) 15÷100 mt/min (49÷324 ft/min)	✓	
K110 roller table on supply side - kit 1500 mm / 59.05 in		✓
Feed roller table K110HD		✓
Discharge roller table K110HD		✓
Roller plane adapter, unloading side	✓	
Roller platform adapter on infeed side	✓	
K110/R1/R2/R3 roller table for discharge side, 1500÷6000 mm (59.05÷236.2 in)		✓
5 l can of emulsible oil		✓
Motor- driven auger chip ejector		✓
System for the automatic backing of the feeding vice rear jaws*		✓
Laser beam pointer and working lamp*		✓
Vertical vices for cutting bundles (230 x 230 mm / 9.05 x 9.05 in)*		✓
Pair of vertical rollers for aligning the fed bar	✓	
Piece- unloading adjustable guide	✓	
Mist lubrication system		✓

***ACCESSORIES AVAILABLE ON REQUEST**

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

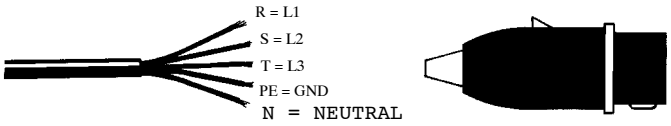
- 4 and 10 mm (0.16 and 0.39 in) Allen keys;
- pipe wrench 10 mm / 0.39 in;
- manual pump for topping up the oil in the pneumatic cylinder;
- Use and Maintenance manual, including order form for parts in relevant user language.

Connection to the power supply

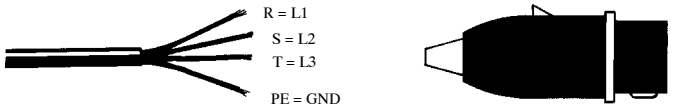
Before connecting the machine to the power supply, check that the socket is not connected in series with other machines. This requirement is fundamental for the good operation of the machine. To connect the machine to the power supply, proceed as follows:

▶ 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

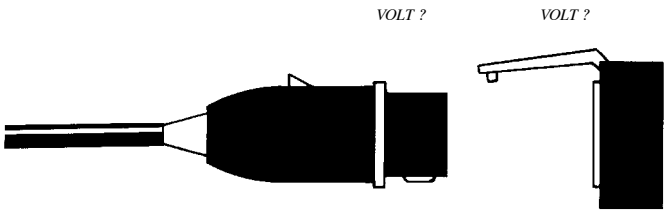


CONNECTION FOR **"4-CORE"** WIRE SYSTEMS WITH NEUTRAL

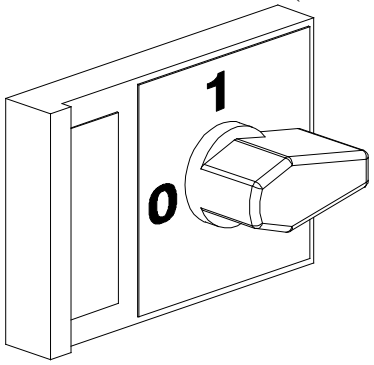


Attention When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase- neutral.**

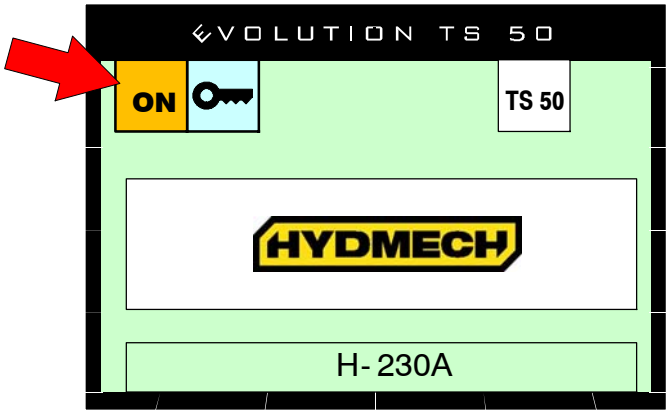
▶ Insert the plug in the socket, ensuring that the mains voltage is the same as that for which the machine has been setup.



▶ Power the machine, rotating the main switch (the control console lights up)



▶ press the ON button on the control console;



▶ press RESET.

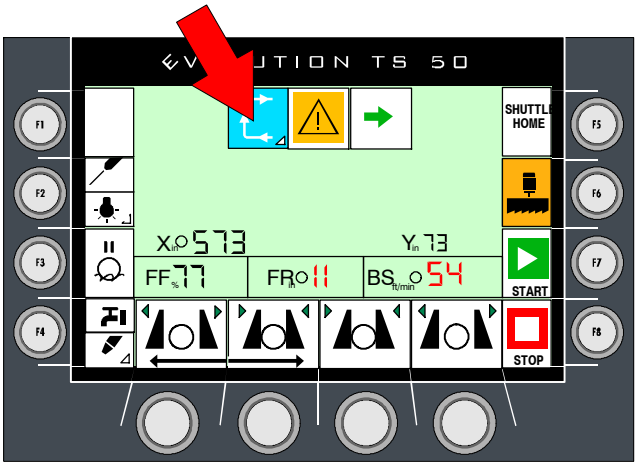
The above sequence (ON and RESET buttons) must be performed each time the machine is switched on and before tensioning the saw band during a normal production cycle.

N.B. The machine will not start if the tension of the saw band is not between 600-1600 Kg (1320-3520 lbs).

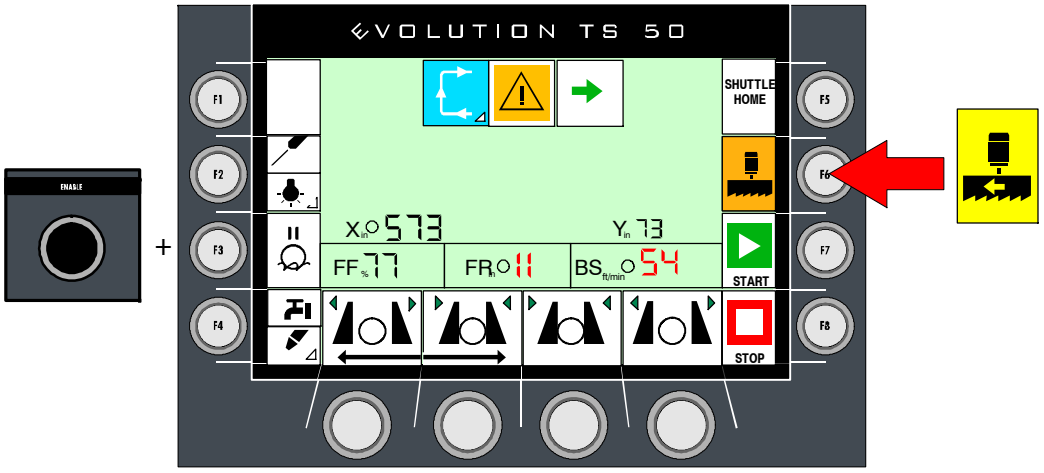
Ensure that the hydraulic power pack rotation is correct. To do this, proceed as follows:

▶ make sure the machine is not in emergency status (red mushroom head button released); otherwise, release the emergency stop button and press RESET.

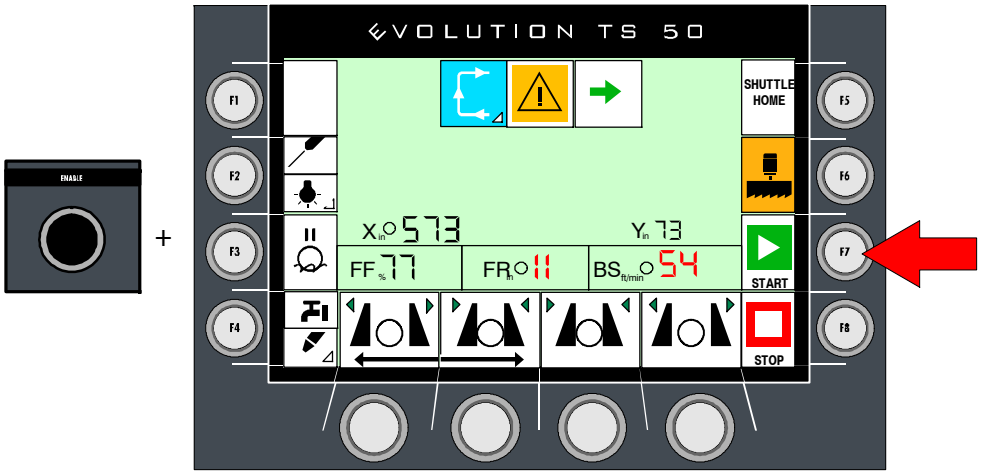
▶ Select the semiautomatic machining mode, pressing the box shown in the figure on the touch screen.



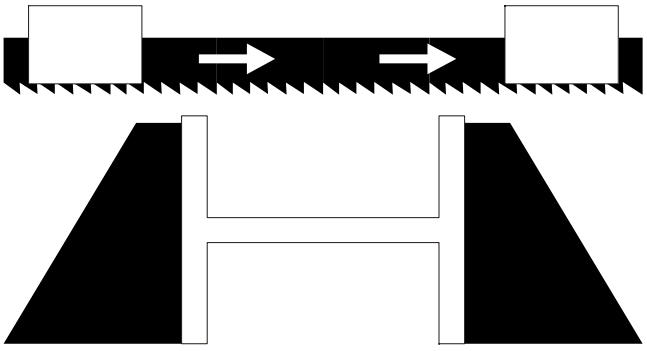
▶ Enable the band rotation by holding the control enabling key and the key shown in the figure (F6) pressed; the box lights on to indicate it has been selected.



▶ Start the cutting cycle holding the control enabling key and the key shown in the figure (F7) pressed; the band starts turning and the machine cuts. At the cut end the head goes up again, ready to make a new working cycle.



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 power supply input.



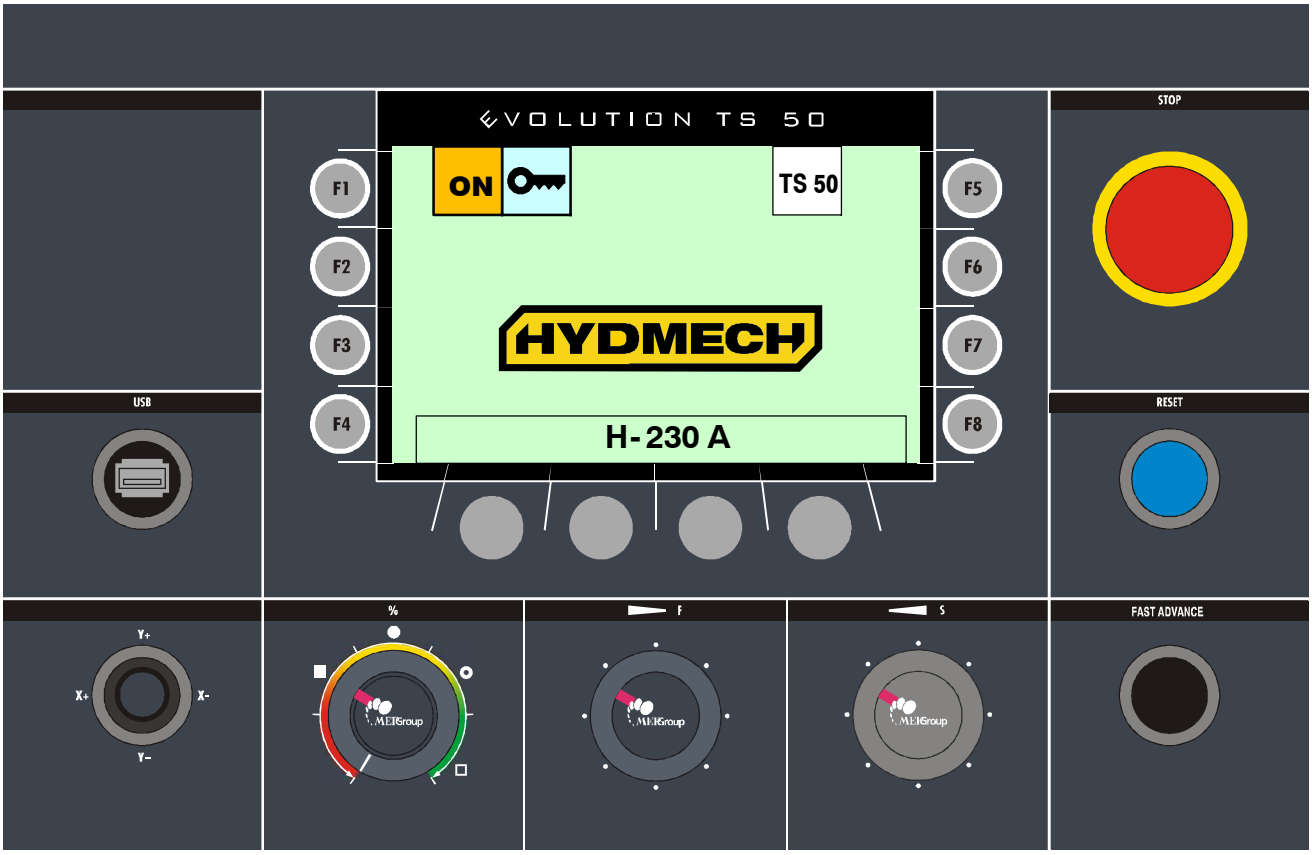
The sawing machine is now ready to start the work for which it was designed. Chapter 5 provides a detailed description of the various functions of the machine and its operating cycles.

Description of machine operation

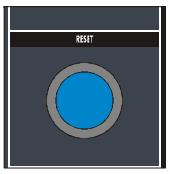
This chapter analyses all the machine functions. We begin with a description of the pushbuttons and other components on the control panel.

Description of the control panel

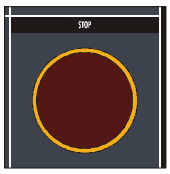
The control console is housed inside the control panel in an IP 54 rated housing which is tamperproof and resistant to dust and moisture. The control panel swivels on two articulated joints so that it can be positioned by the operator for greater ease of use and safety. The control console for the **H- 230 A** is illustrated below.



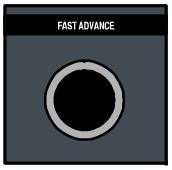
Key for control console keyboard



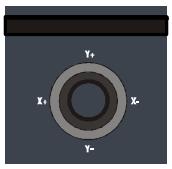
RESET:
Press to reactivate machine functions after an alarm.



EMERGENCY STOP:
This button will stop both the hydraulic and blade motors. The head motion will cease. The vises remain as they are, but if closed, they will lose gripping force. For this reason all long stock should be supported so that it will not fall.
To reset the button, simply rotate through 45°.

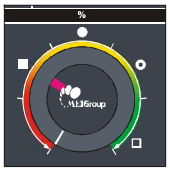


FAST ADVANCE BUTTON:
Hold down to increase up/down speed head and forward/backward speed feeder.

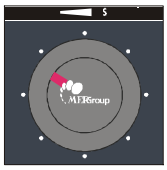


JOYSTICK:
is enabled to move the head upwards and downwards and to move the feeder forwards and backwards.

FEED RATE POTENTIOMETER:
Adjusts the head feeding speed.

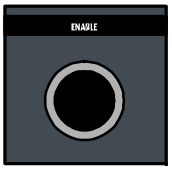


FEED FORCE POTENTIOMETER:
Potentiometer for adjusting the blade motor max. absorption.



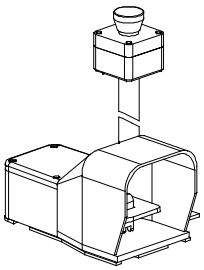
BLADE SPEED POTENTIOMETER:
Potentiometer for the continuous adjustment (inverter) of the band rotation speed.

USB PORT:
Communication port for software update and machine diagnostics.



ENABLE COMMANDS:
It is located on the right side of the control panel. Hold down to enable the opening and closing of the vises.

MOBILE START - EMERGENCY DEVICE. The machine is equipped with a remote control device which controls start- up of the semi- automatic cycle by the foot pedal and emergency shut- down by the red mushroom head button.

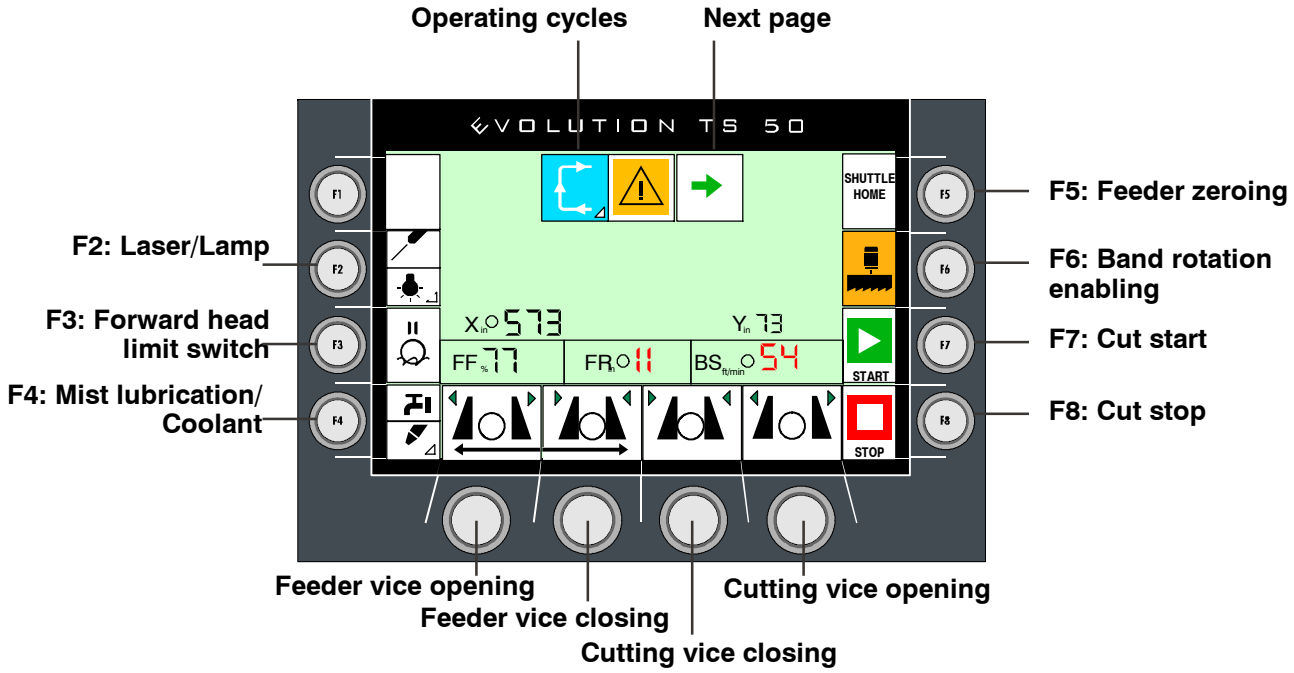


THERMAL-MAGNETIC CIRCUIT-BREAKER WITH UNDERVOLTAGE COIL

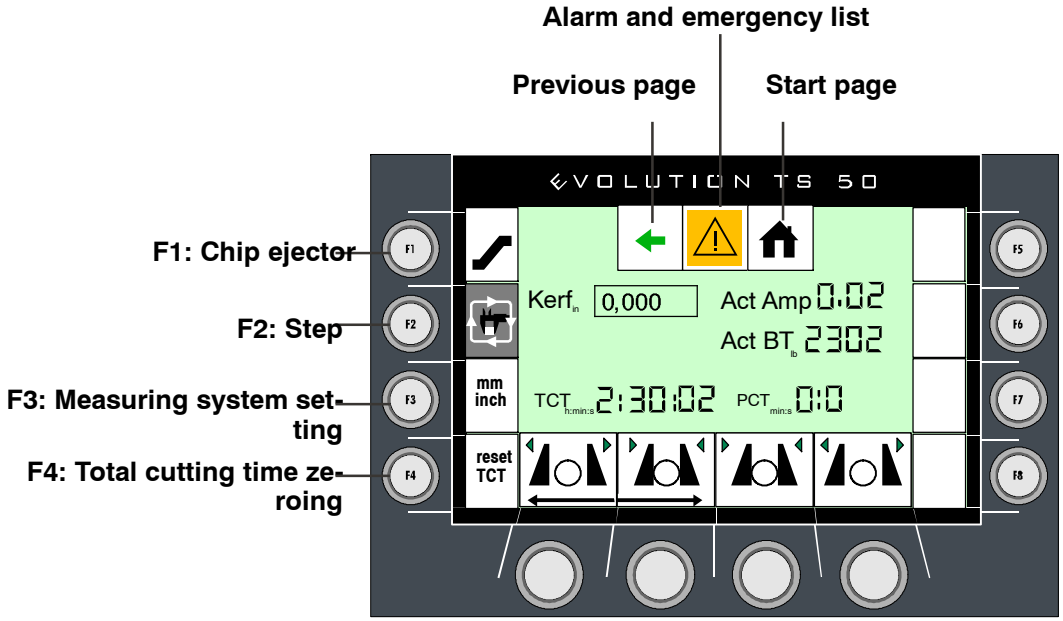
On the left side of the control board, the machine is equipped with a main switch that, when set ON (1), powers the machine.
The main switch is fitted with three power failure protection systems. In fact, in the event of a power failure, this switch disconnects all the electrical devices, causing the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

Symbol key

The key for the symbols used on the display follows.



Pressing the “Next page” key, you can display the second machining screen:

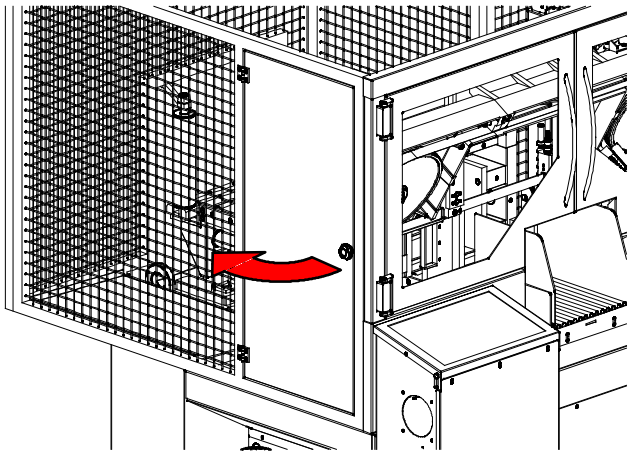


Basic instructions for carrying out a cutting operation cycle

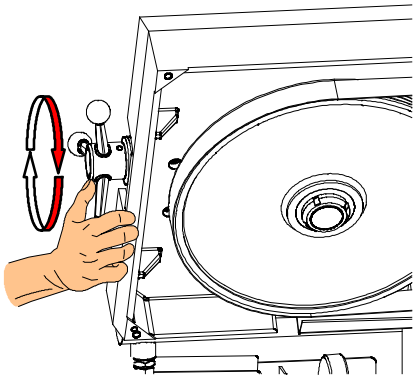
Blade tension

To increase blade life it is recommended to tension the blade at the beginning of the work shift and to detension it at the end.
The saw machine cannot work if the blade tensioning value is not within 600 and 1600 kg (1320- 3520 lbs) range (default values within machine parameters).

▶ Open the door on the left side of the machine.

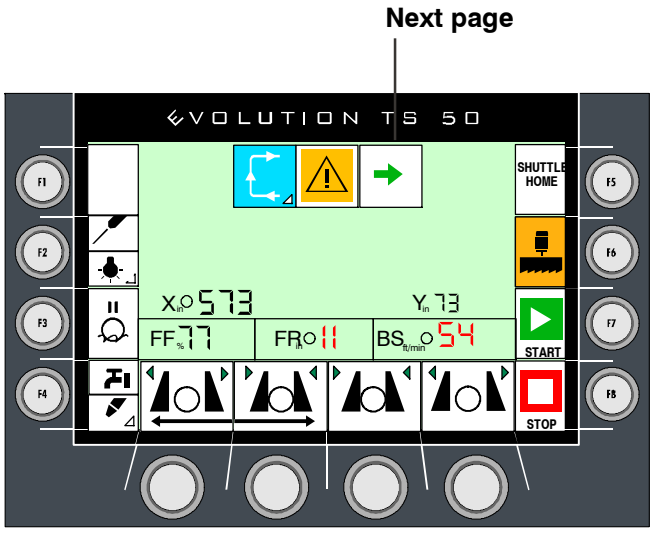


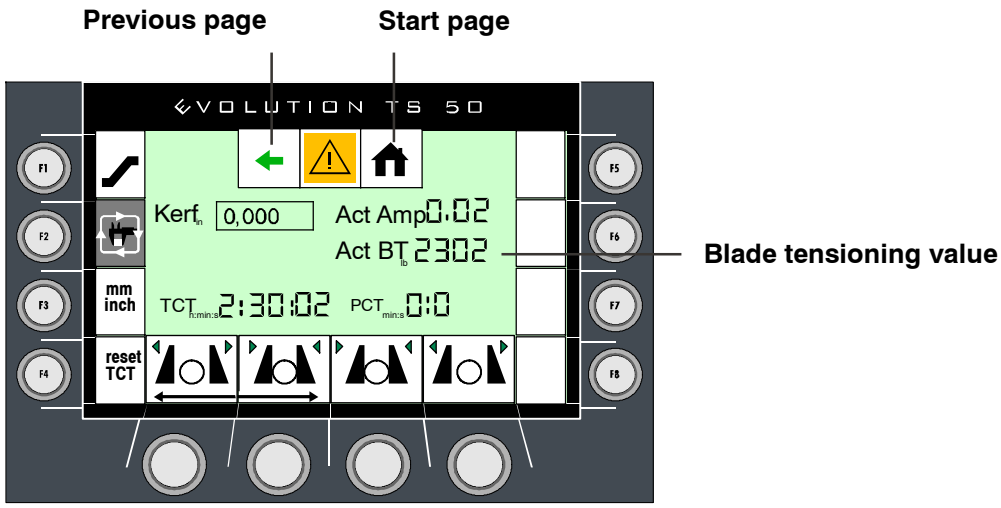
▶ Turn the hand wheel clockwise to increase the tension of the blade and check the value in kg on the display (the optimal value during the working phase is 900 kg / 1980 lbs).



To check the blade tensioning value it is necessary to get in the second working screen:

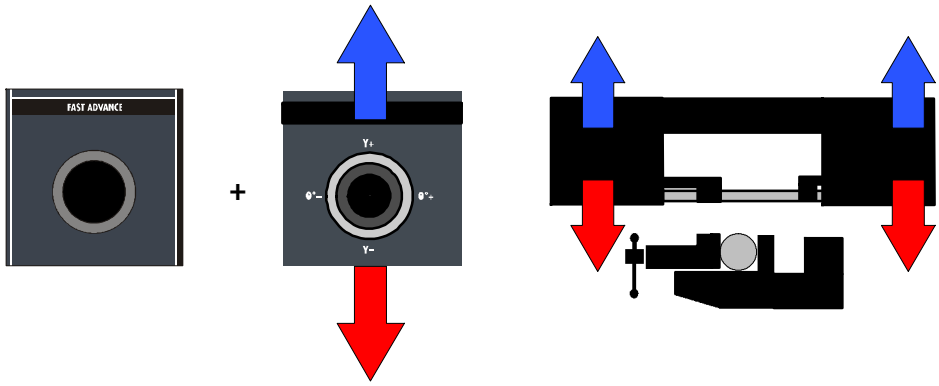
▶ From the first working screen, touch the green arrow on the display to get in the second working screen.





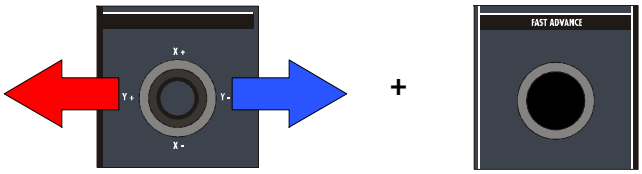
Moving the cutting head up and down

The cutting head can be moved upwards and downwards using the joystick; if you hold the fast advance key pressed at the same time the cutting head moves faster.



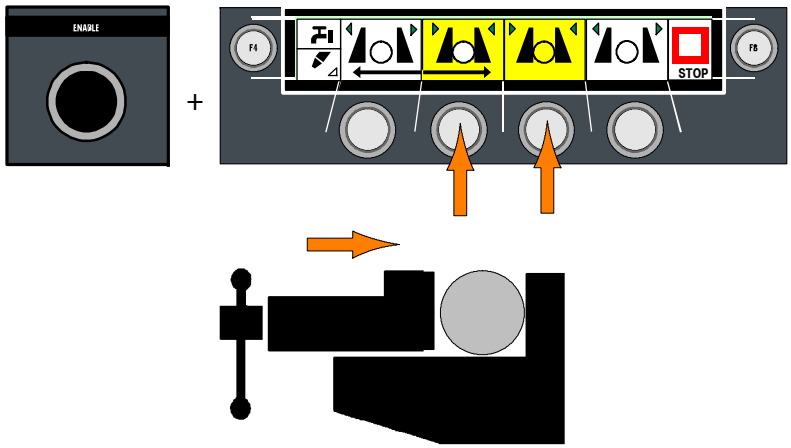
Manoeuvring the feeder

The feeder can be moved using the joystick, only if the head is completely up. If you hold the fast advance key pressed at the same time the feeder moves faster.



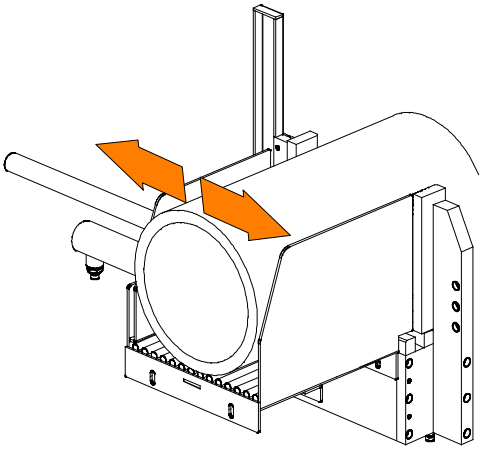
Clamping the work piece in the vice

To operate the jaws, press and hold the ENABLE button and press the button to open or close the vises (cutting or feeding).



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;
- Close the cutting vice by holding the control enabling button and the vice closing button pressed at the same time.
- make sure that the material is well blocked by trying to move it manually



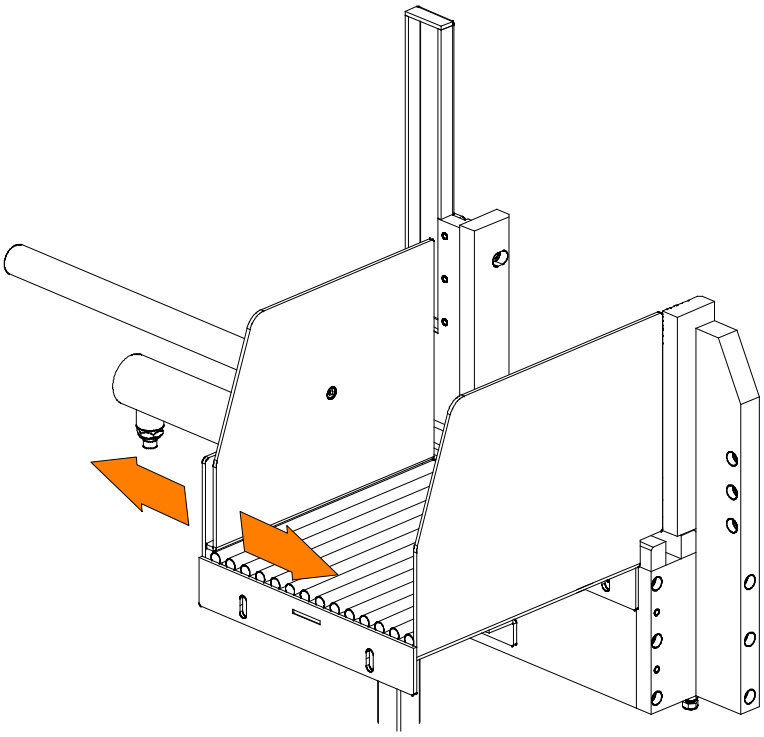
Width of cut

The machine is fitted with protections that protect the entire blade stroke leaving only the part of the blade required to make the cut itself exposed. This includes the rear (fixed) head and the front (mobile) head, as required by current standards.
The cutting width is automatically adapted with the positioning of the cutting vice.

- ▶ Position the workpiece on the work table in the vicinity of the blade downstroke trajectory and clamp it in the vice;

N.B. The machine is supplied with a laser projector for the positioning of the material under the blade vertical.

Warning Adjust the position of the piece- unloader guide paying.



Preliminary check list for cutting operation

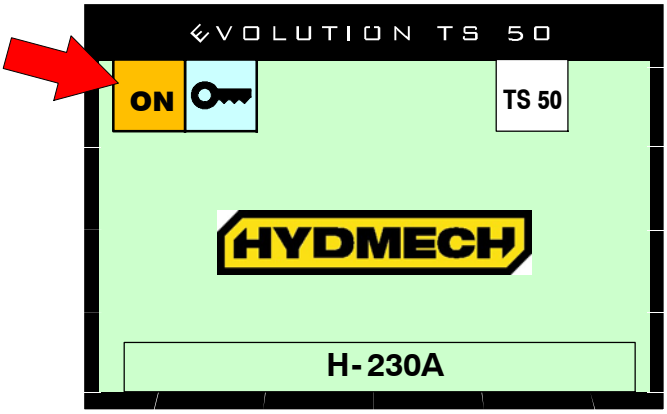
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

- ▶ blade tension;
- ▶ 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 all protections are in place and correctly locked;
- ▶ the level of lubricant/coolant and that the electropump is activated;
- ▶ that the blade downstroke speed and cutting pressure are correct.

Starting up the machine

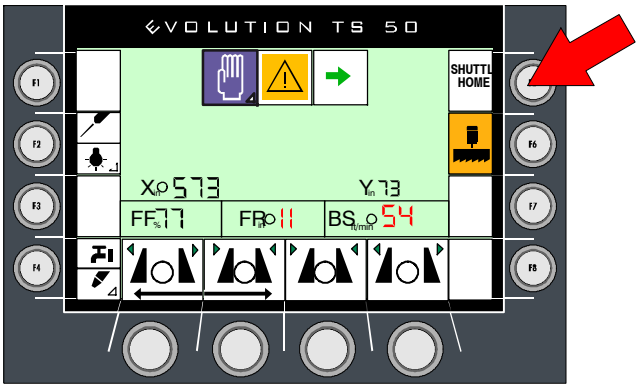
The presentation and start- up display appears when the machine is switched on.

▶ Tap on the box with the on symbol on the touchscreen.



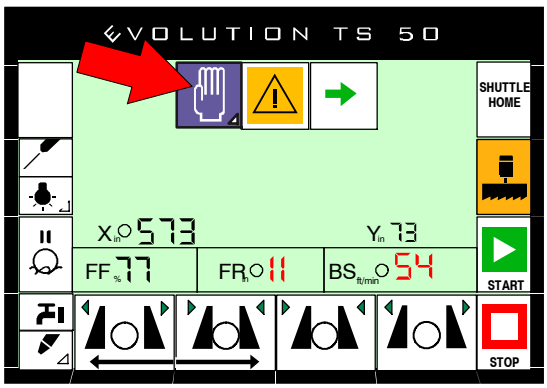
▶ press reset and release the emergency mushroom button if pressed, the head rises completely.

▶ Zero the feeder by pressing holding down the key enabling command and the key shown in figure (F5).



This sawing machine can carry out single or series cuts stored in max. 100 programs (job), that can even be repeated, to be ordered in a 5 preset sequence (queue) compose by 20 programs each one.

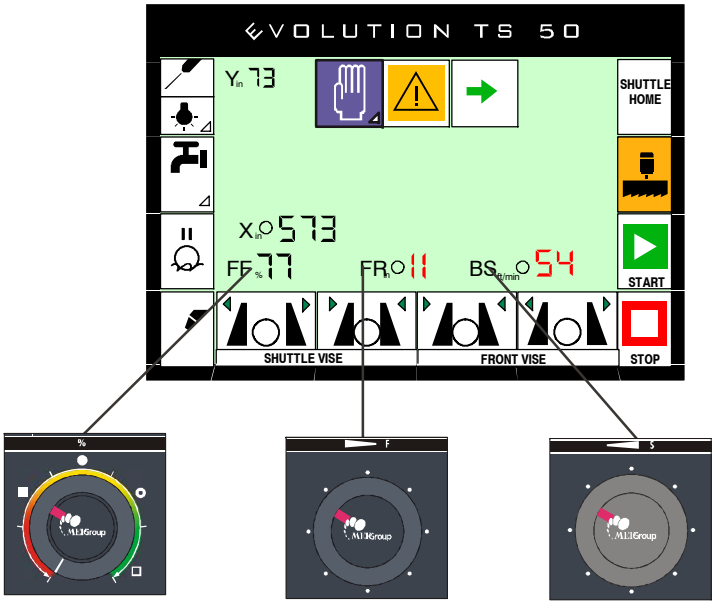
▶ After the initialization of the sawing machine the display shows the following screen. Press the box shown in the figure until the symbol of the wished cycle is displayed.



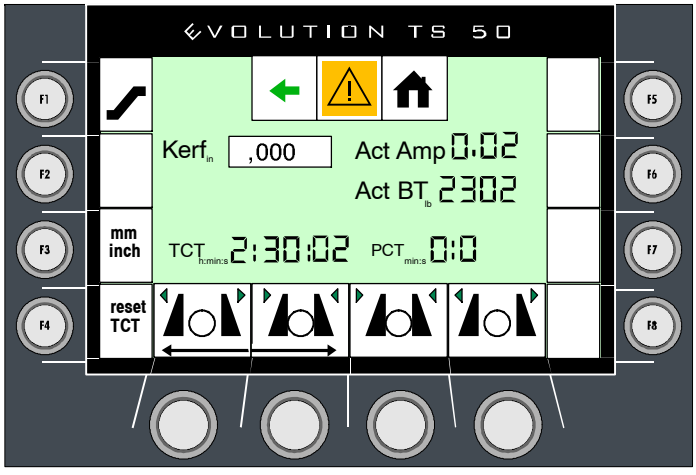
The available working cycles are: manual, dynamic semiautomatic, semiautomatic, automatic with single program, automatic with single cycle and automatic with

continuous cycle.
In the manual cycle the cutting only involves the setting of the rear head limit switches (RHLS) and forward head limit switches (FHLS); then, after having positioned the material at the wished cutting length, start by the Cut start key (F7).

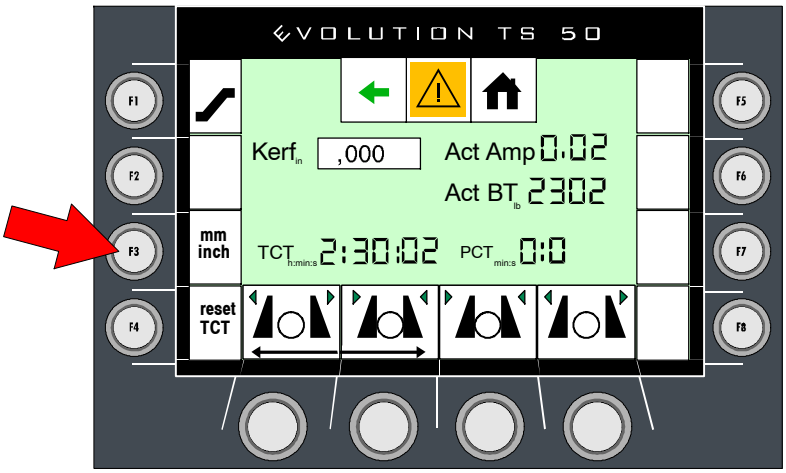
During the machining cycle, by pressing the box in the figure, it is possible to check the machine operating parameters:
FF = Feed Force, value of the cutting force that can be set through the potentiometer from the control board.
FR = Feed Rate, value of the cutting head lowering speed that can be set through the potentiometer from the control board.
BS = Blade Speed, value of the band rotation speed that can be set through the potentiometer from the control board.



Pressing the arrow key shown in the figure the second page of the operating parameters can be displayed:
Kerf = blade thickness
Blade deviation = deviation blade
Act BT = Actual Blade Tension, current value of blade tension;
Act AMP = Actual Ampere, current value of motor absorption;
PCT = Partial Cutting Time;
TCT = Total Cutting Time.



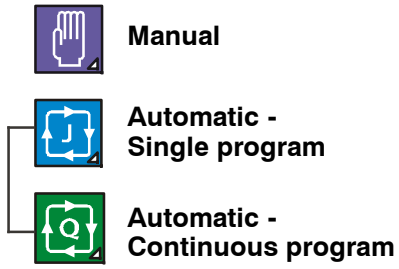
N.B. Pressing the key shown in the figure the decimal metric measuring system or the Imperial measuring system can be set.

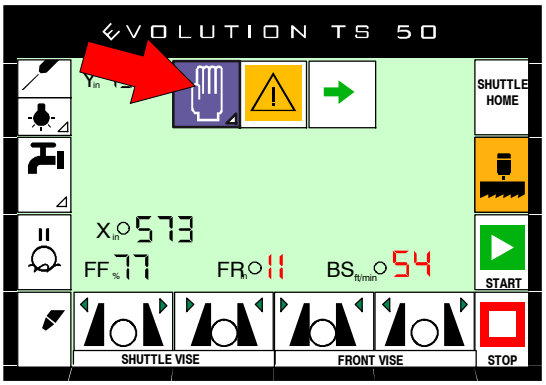


Cutting cycles

This sawing machine can carry out single or series cuts stored in max. 100 programs (job), that can even be repeated, to be ordered in a 5 preset sequence (queue) compose by 20 programs each one.

▶ After the initialization of the sawing machine the display shows the following screen. Press the box shown in the figure until the symbol of the wished cycle is displayed.



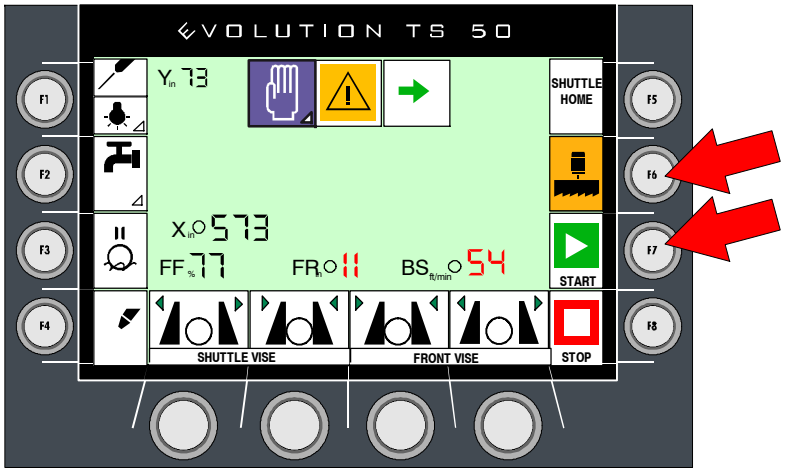


The available machining cycles are: manual, automatic with single program and automatic with continuous program.
In the manual cycle the cutting only involves the setting of the rear head limit switches (RHLS) and forward head limit switches (FHLS); then, after having positioned the material at the wished cutting length, start by the Cut start key (F7).
As for the automatic cycle, it can operate with single or automatic program.

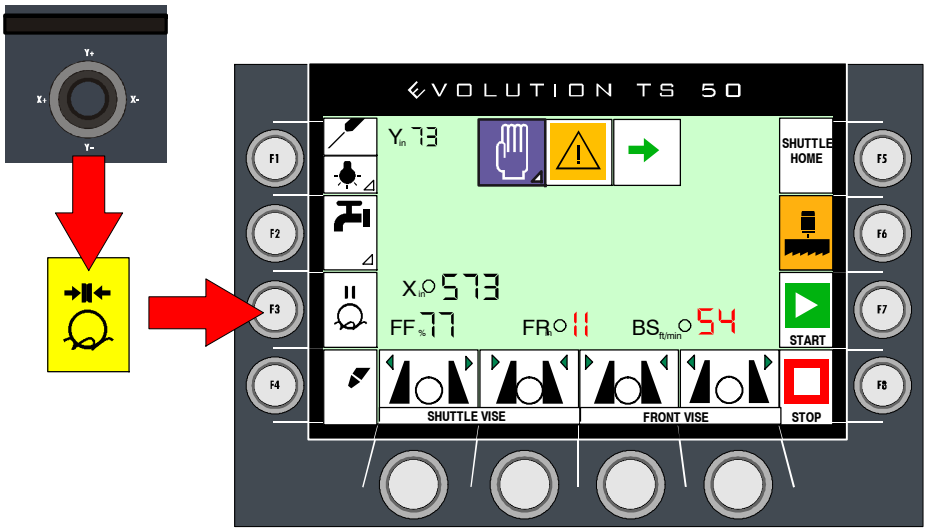
Cutting stroke setting

To set the cutting stroke it is necessary to determine the RHLS (rear head limit switch) and FHLS (forward head limit switch) points.

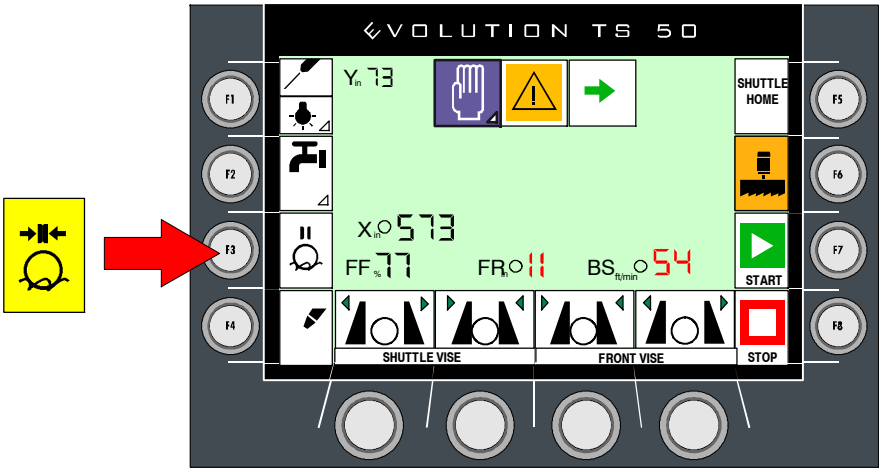
▶ To set the RHLS point just press the cycle start key (F7), after having pressed the band rotation enabling key (F6), to start the band rotation and the head lowering: in this way the RHLS (rear head limit switch) point is automatically stored and determines the head start position when the cycle is started.



▶ To set the FHLS after having set the RHLS point, delete the existing FHLS point lowering the head using the joystick; the FHLS setting box (F2) starts flashing to indicate that the FHLS point has been deleted.

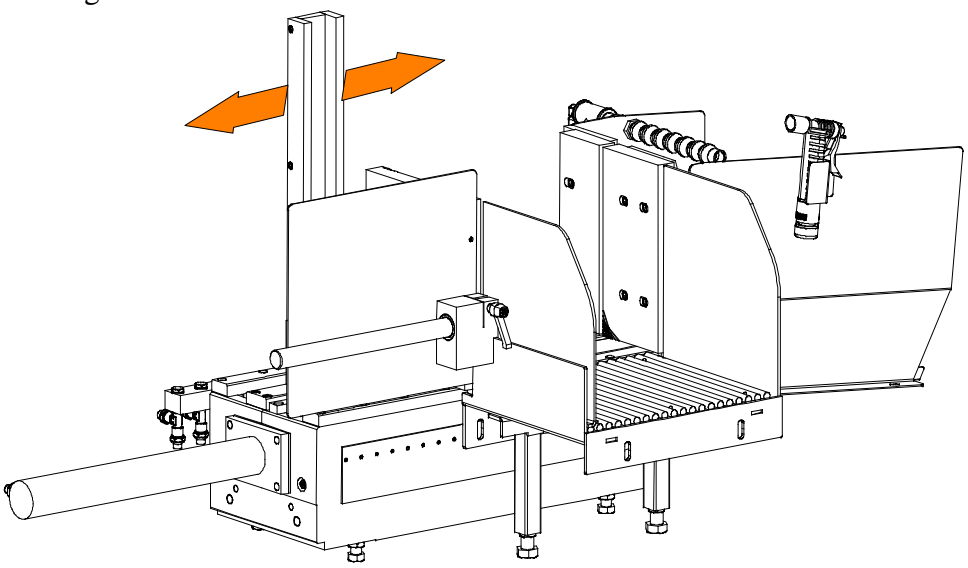


▶ When the head reaches the wished cutting end point, press the FHLS setting key (F2) shown in the figure, the corresponding box lights up to indicate that it has been set.

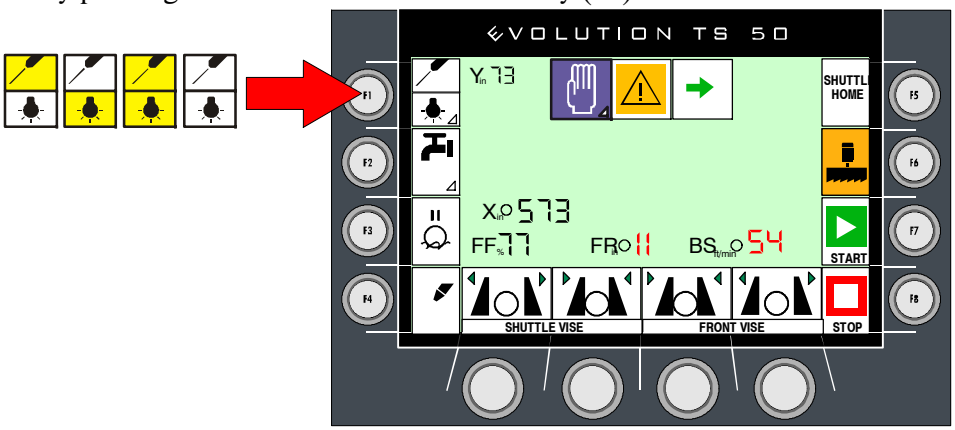


Width of cut

The machine is fitted with protections that protect the entire blade stroke leaving only the part of the blade required to make the cut itself exposed. This includes the rear (fixed) head and the front (mobile) head, as required by current standards.
The cutting width is automatically adapted with the positioning of the cutting vice on the loading side.



N.B. The machine is equipped with a lamp for lighting the working table and with a laser projector to aid the machine positioning under the blade vertical. These options can be selected by pressing once or more times the same key (F1) on the icon left.



Preliminary check list for cutting operation

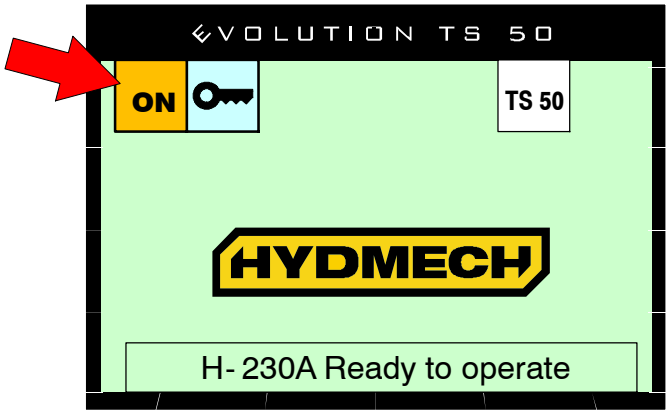
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

- blade tension;
- 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 all protections are in place and correctly locked;
- the level of lubricant/coolant and that the electropump is activated;

Manual operating cycle

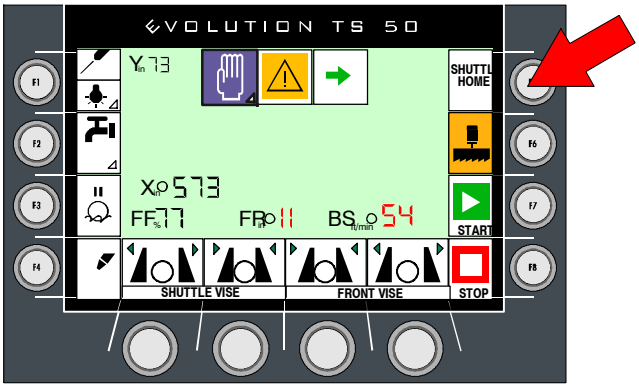
The operation sequence for running a manual cutting cycle:

- power up the machine by turning the main switch;
- Tap on the box with the on symbol on the touchscreen.



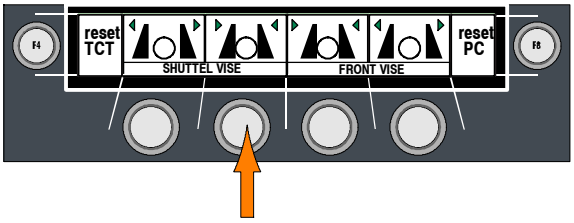
- press reset and release the emergency button if pressed, the head rises completely

▶ Zero the feeder by pressing the key shown in figure (F5).

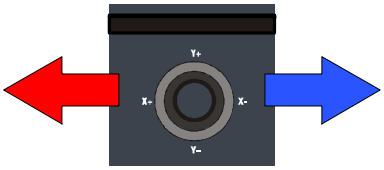


▶ Position the material inside the feeding vice.

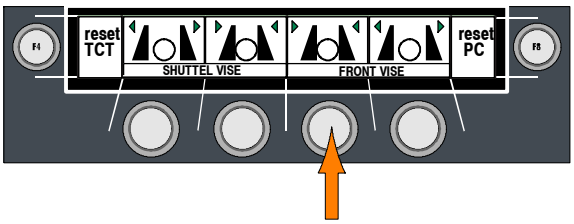
▶ Close the feeding vice by pressing the relevant key on the console.



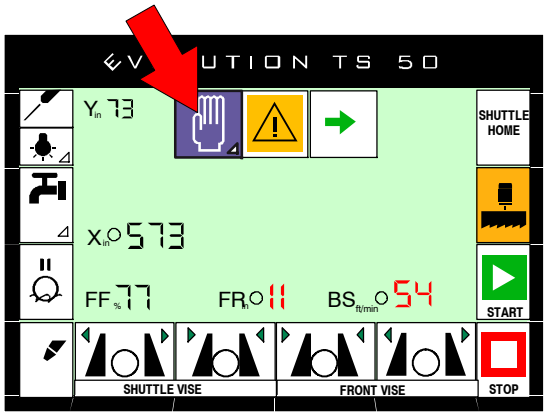
▶ Feed the material being machined and move it using the joystick. The machine is equipped with a lamp for lighting the working table and with a laser projector to aid the machine positioning under the blade vertical.



▶ Close the front vice by holding down the corresponding key from the control panel.

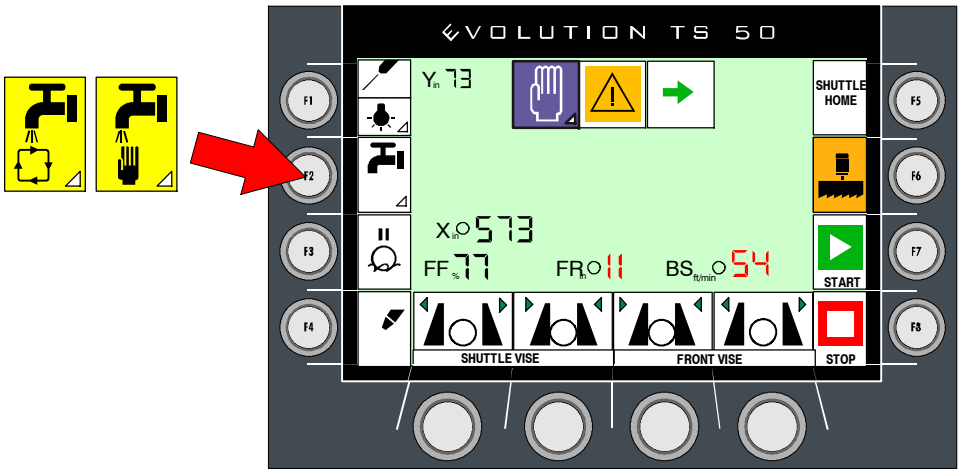


▶ Select the manual machining mode, pressing the box shown in the figure on the touch screen.



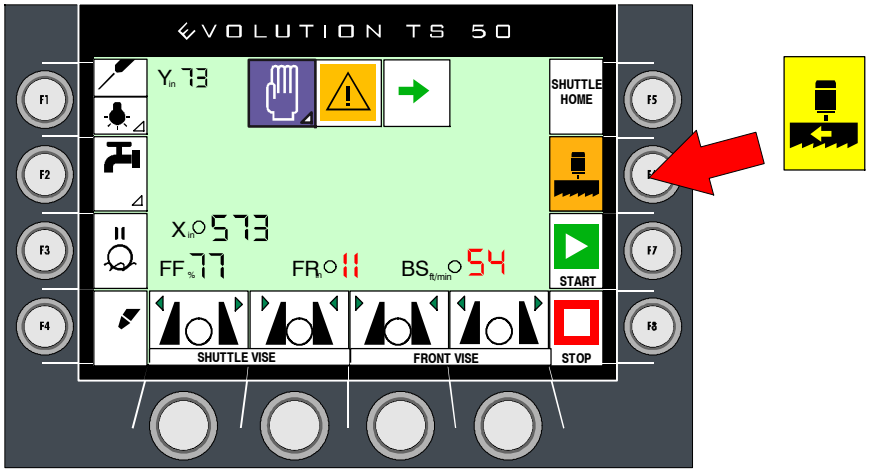
▶ Set the cutting parameters, previously shown, using the following adjusters.

▶ Set the fluid jet by pressing the button shown in the figure (F2). The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).

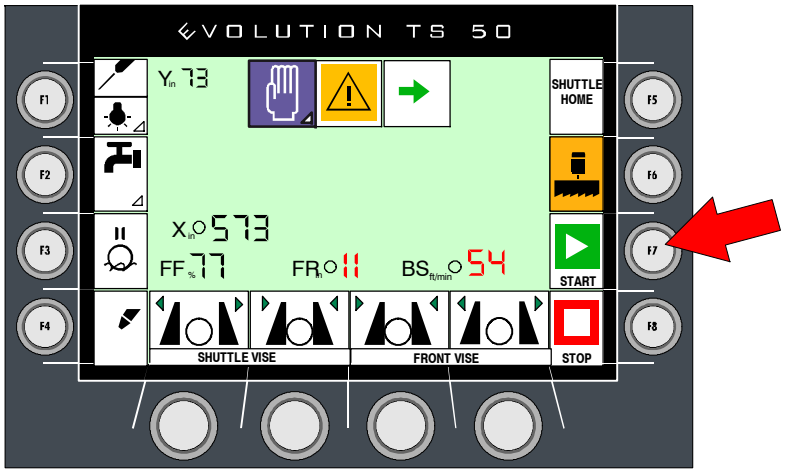


▶ Position the head at approximately 10 mm (0.39 in) from the workpiece.

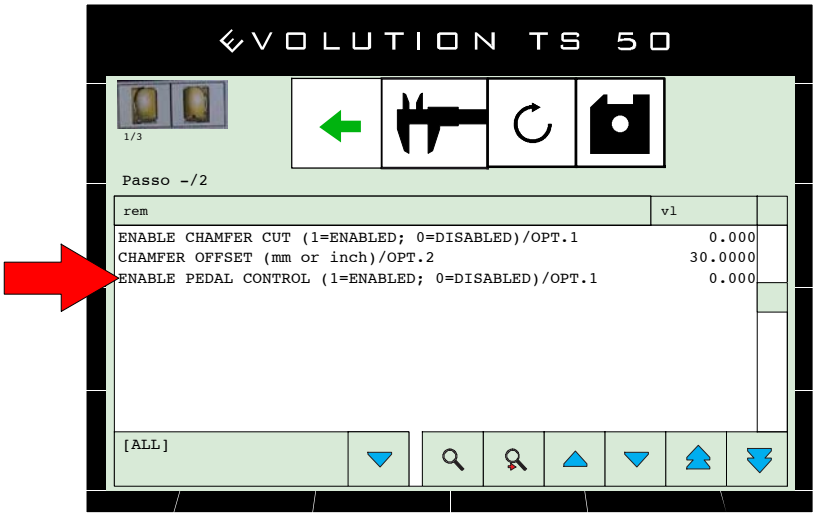
▶ Press the band rotation enabling key (F6).



▶ Press the cycle start key (F7) to start the band rotation and the head lowering at the set speeds. The RHLS point is automatically stored in this way, as explained before.



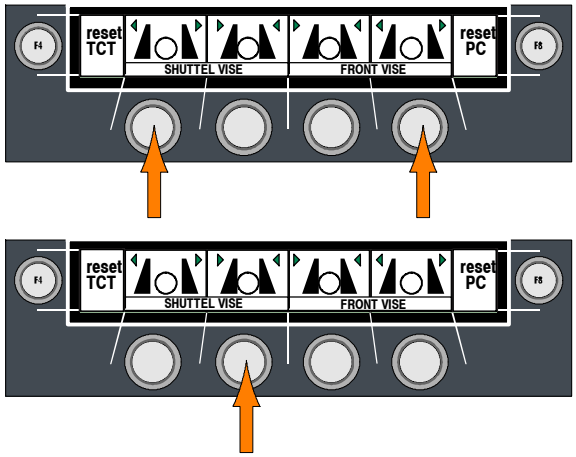
N.B. If the sawing machine is equipped with optional pedal control the cycle start control can be made from remote station. In this case it is necessary to enable the operation of the pedals, by selecting the appropriate entry in the list of options.



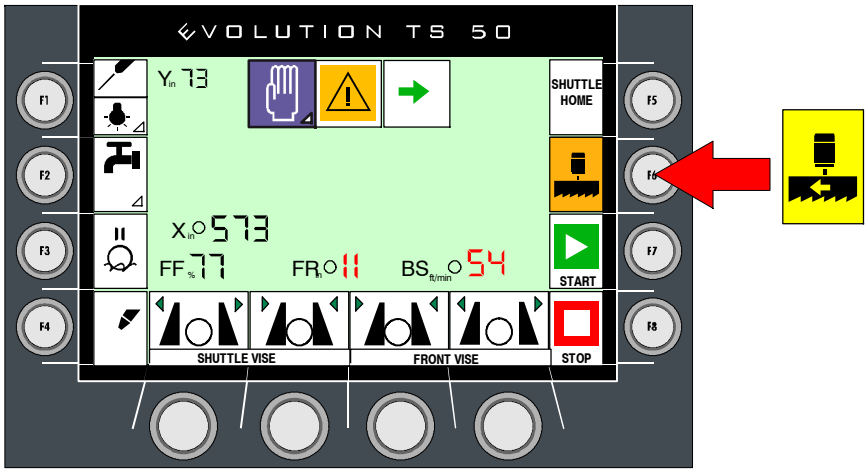
▶ Press the pedal control to start the working cycle.

N.B. If the existing FHLS point is to be deleted now, follow the operations described above.

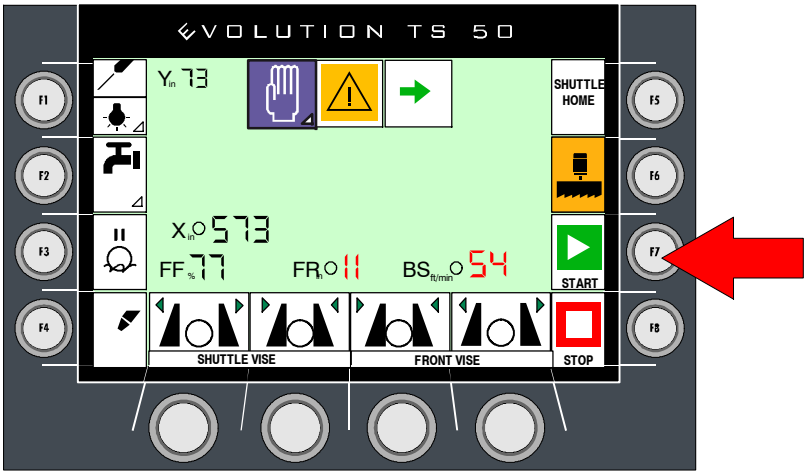
- When the head reaches the FHLS point the band stops and the head returns to the set RHLS point, ready to make a new cutting cycle.
- Open both vices by holding the open vices button.
  Then feed the workpiece, as already explained, and finally close the front vice by holding down the corresponding key from the control panel.



- Enable the band rotation by pressing the key shown in the figure (F6), the box lights on to indicate it has been selected.

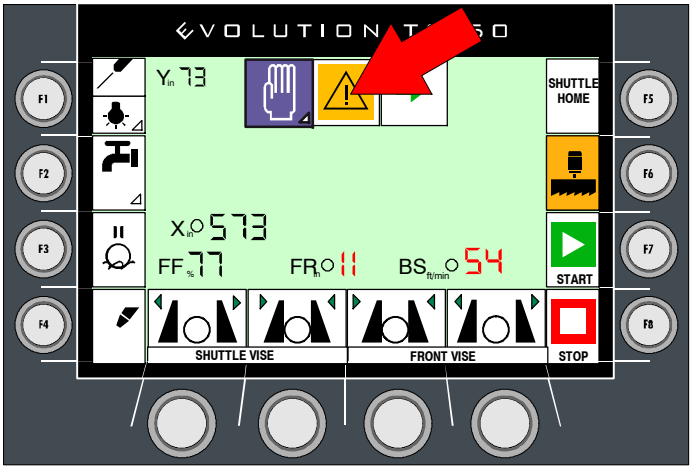


- Start the cutting cycle pressing the key shown in the figure (F7), the band starts turning and the machine cuts.
  At the cut end, the head rises again, ready for a new machining cycle.



N.B. Tap on the touchscreen box shown in the figure to see problems during operation. The box will turn blue to indicate caution and red to indicate a machine

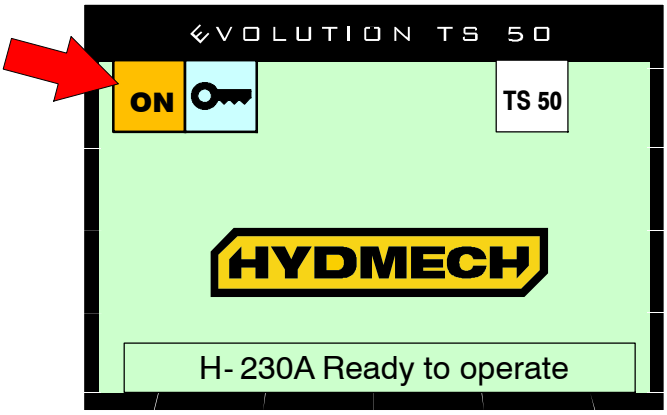
alarm. See chapter 10 for a complete list of alarms.



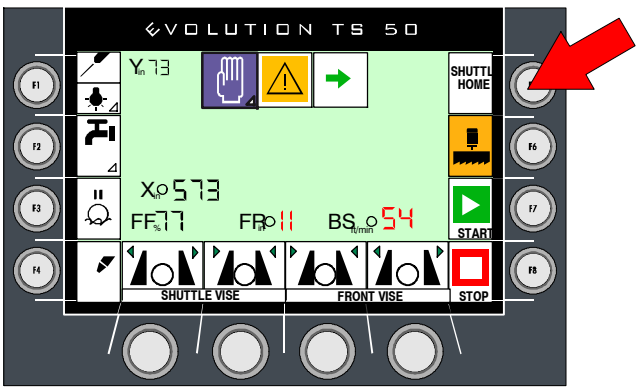
Automatic mode single job

The operation sequence for running in automatic mode and single job:

- power up the machine by turning the main switch;
- tap on the box with the on symbol on the touchscreen;

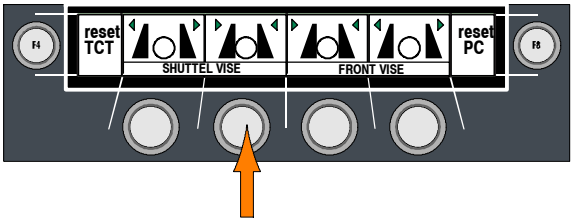


- press reset and release the emergency button if pressed, the head rises completely.
- Zero the feeder by pressing the key shown in figure (F5).

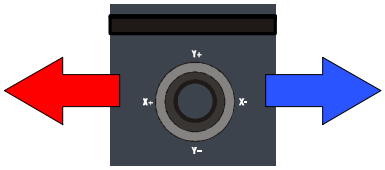


- Position the material inside the feeding vice.

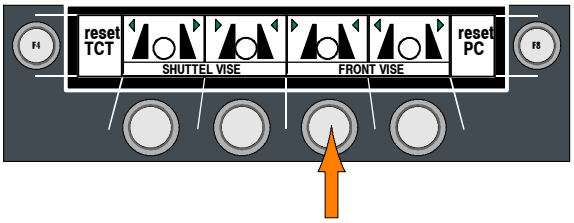
▶ Close the feeding vice by pressing the relevant key on the console.



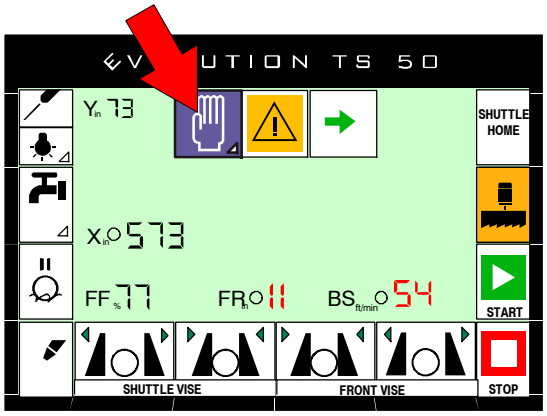
▶ Position the workpiece, moving it by the joystick.



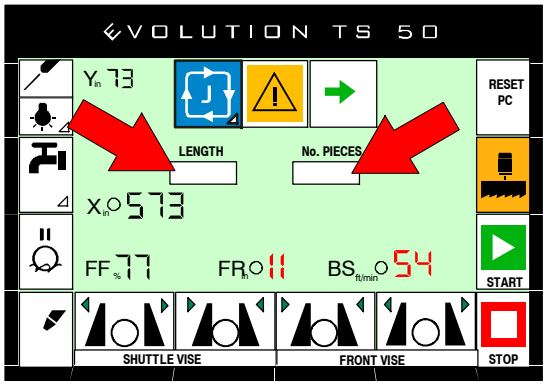
▶ Close the front vice by holding down the corresponding key from the control panel.



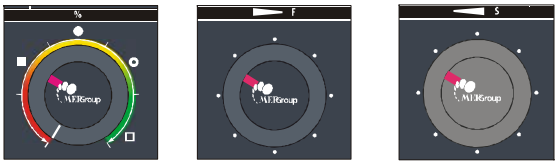
▶ Select the automatic machining mode with single program, pressing the box shown in the figure on the touch screen.



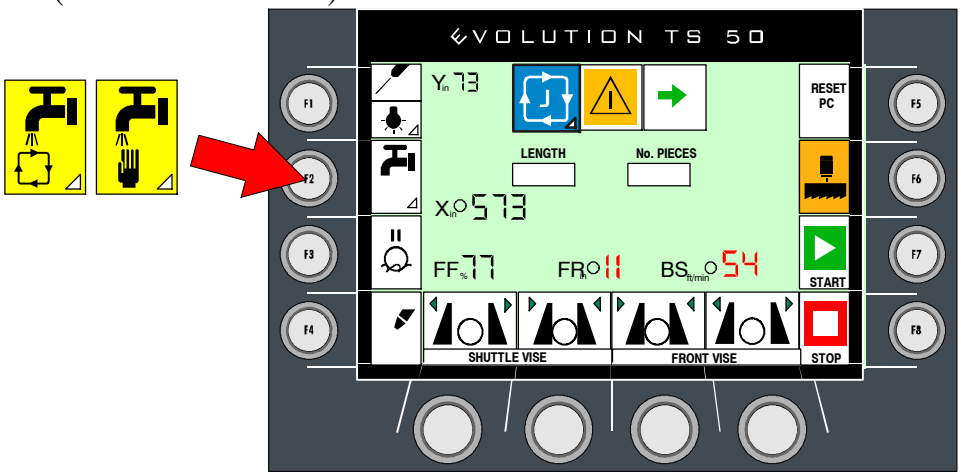
▶ Set the wished length and the wished number of cuts pressing the boxes shown in the figure and entering the values on the keypad that pops up automatically.



▶ Set the cutting parameters, previously shown, using the following adjusters.

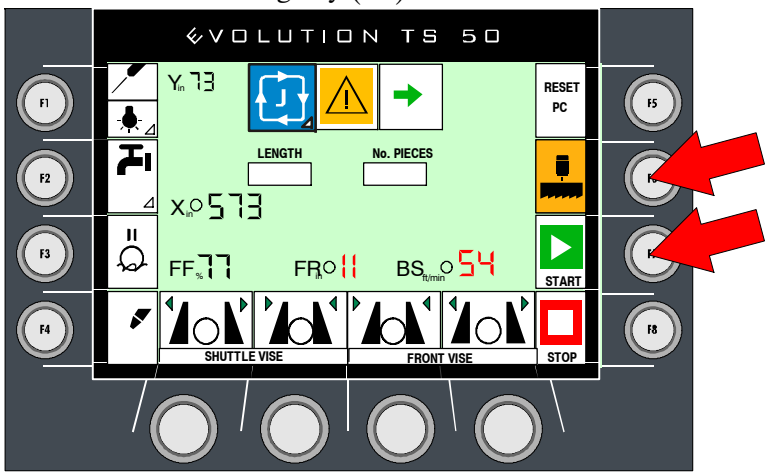


▶ Set the fluid jet by pressing the button shown in the figure (F2). The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).



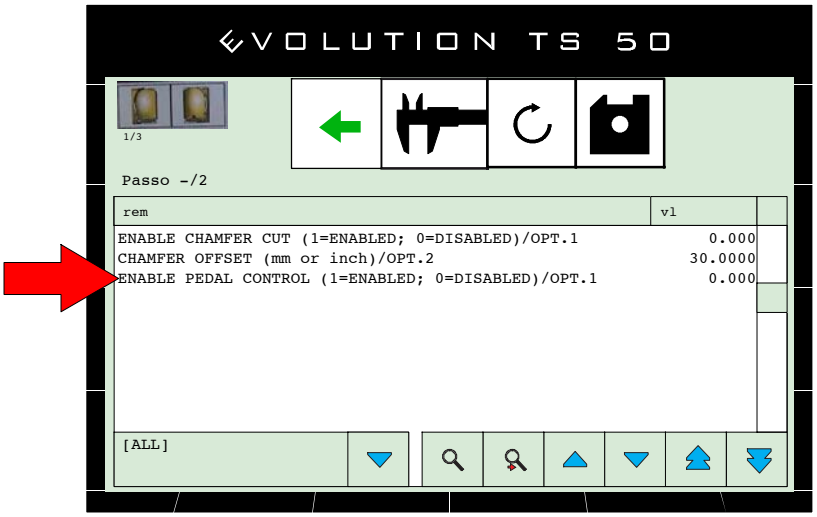
▶ Position the head at approximately 10 mm (0.39 in) from the workpiece.

▶ Press the band rotation enabling key (F6).



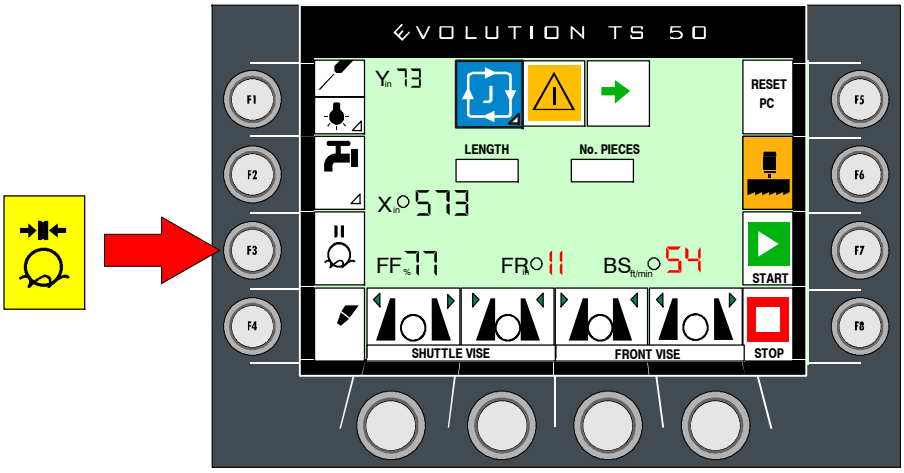
▶ Press the cycle start key (F7) to start the band rotation and the head lowering at the set speeds. The RHLS point is automatically stored in this way, as explained before.

N.B. If the sawing machine is equipped with optional pedal control the cycle start control can be made from remote station. In this case it is necessary to enable the operation of the pedals, by selecting the appropriate entry in the list of options.



▶ Press the pedal control to start the working cycle.

N.B. If the existing FHLS point is to be deleted now, follow the operations described above.



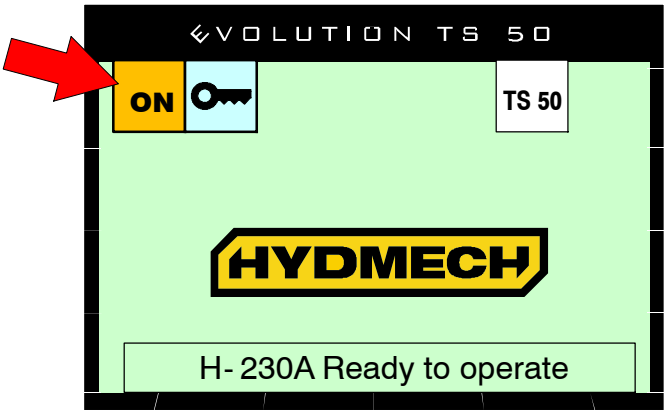
The sawing machine makes the programmed cuts. At the end, the head rises again and the band motor stops.

Automatic mode queue

The operation sequence for running in automatic mode queue:

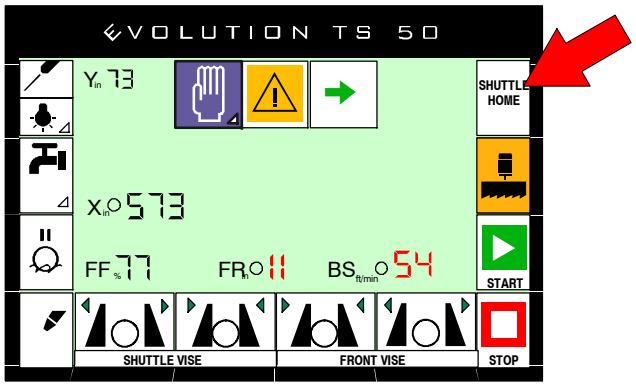
▶ power up the machine by turning the main switch;

▶ tap on the box with the on symbol on the touchscreen;



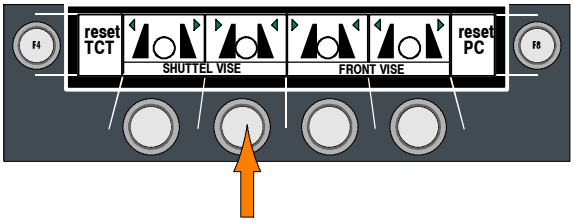
▶ press reset and release the emergency mushroom button if pressed, the head rises completely.

N.B. If previous machinings have been made already and the feeder has not been zeroed, zero it pressing the key shown in the figure.

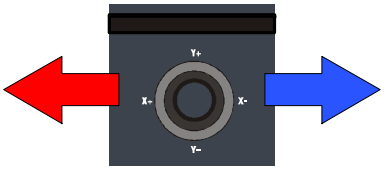


▶ Position the material inside the feeding vice.

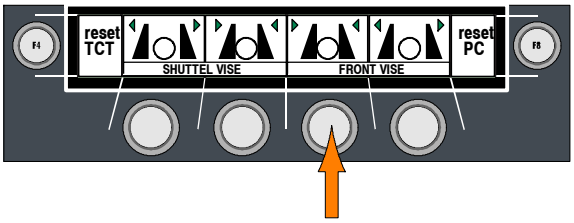
▶ Close the feeding vice by pressing the relevant key on the console.



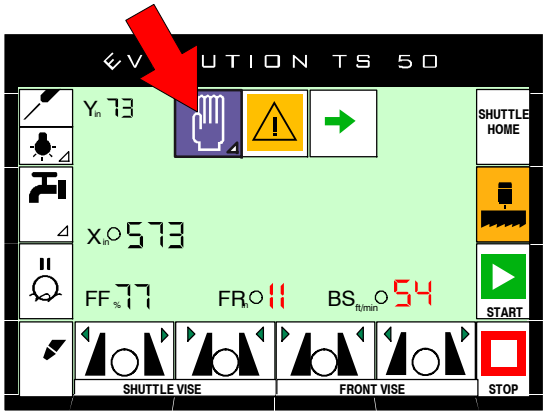
▶ Position the workpiece, moving it by the joystick.



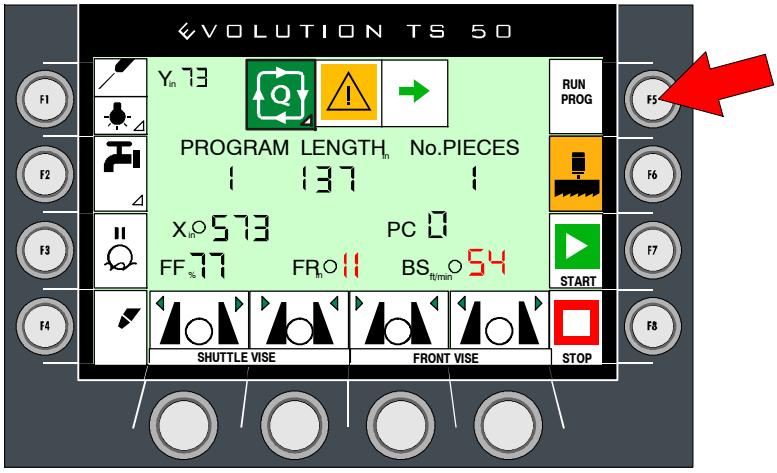
▶ Close the front vice by holding down the corresponding key from the control panel.



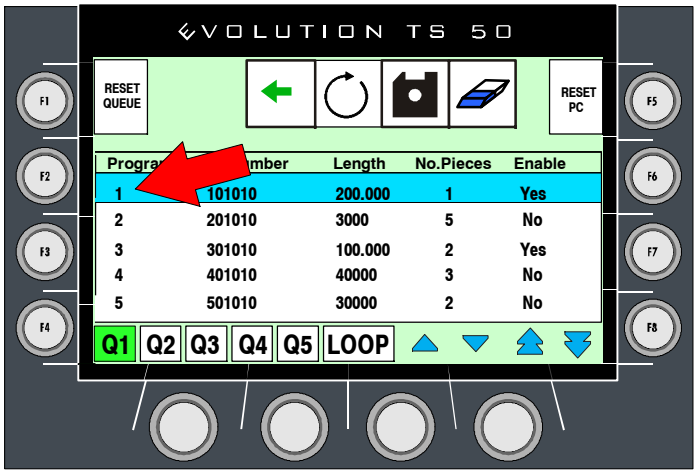
▶ Select the automatic machining mode with continuous program, pressing the box shown in the figure on the touch screen.



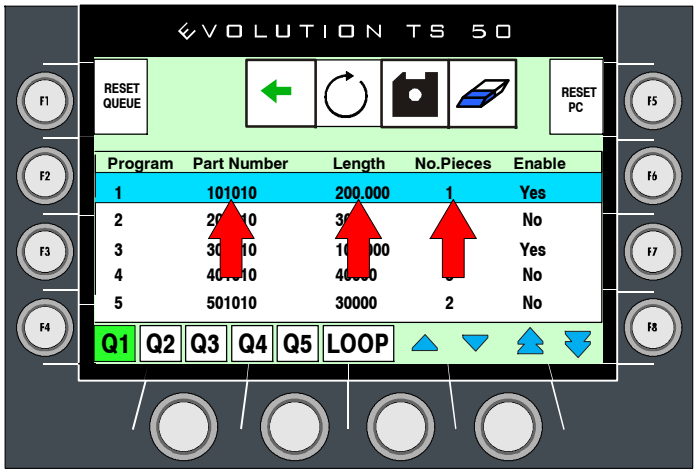
▶ Press the RUN/PROG key to access the programming page for the automatic operation with continuous program.



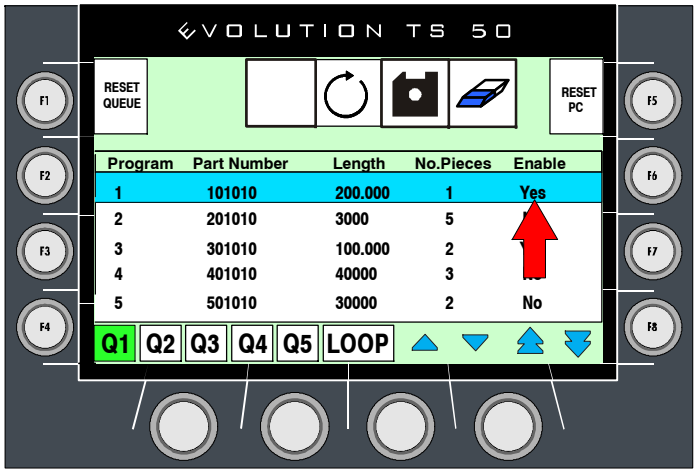
▶ The display shows the following screen listing all programs (max. 20) of the queue selected. Press the program number to select the one to be set.



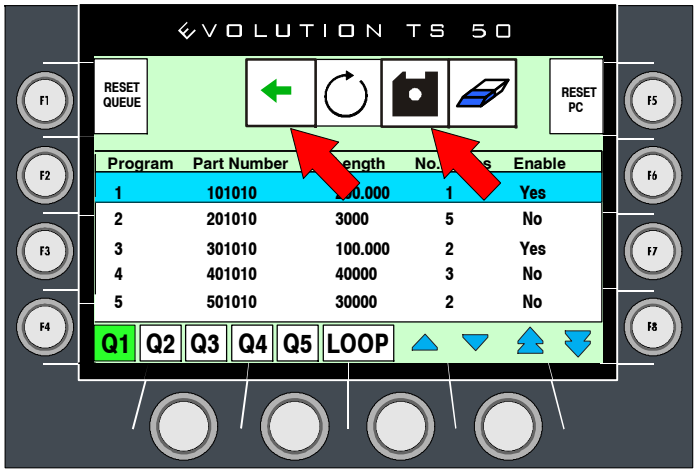
▶ Press to edit all values of “Part Number” (company identification code), “Length” (piece length), and “Nr. Pieces” (number of pieces) using the key-pad.



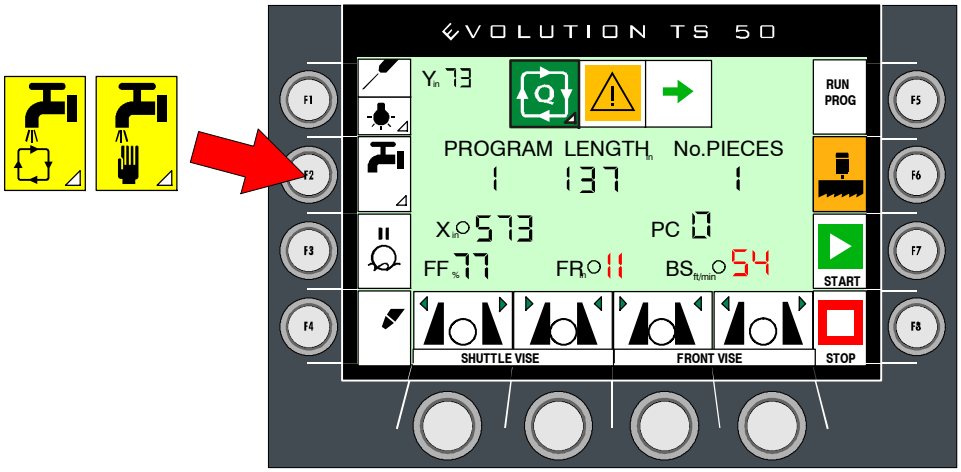
▶ In the end choose to activate or deactivate the selected by “Enable” (Yes / No).



N.B. Press the F1 key to zero the program queue.
Press the F5 key to zero the piece number.
Before returning to the machining screen, press the data saving key and then the green arrow shown in the figure.



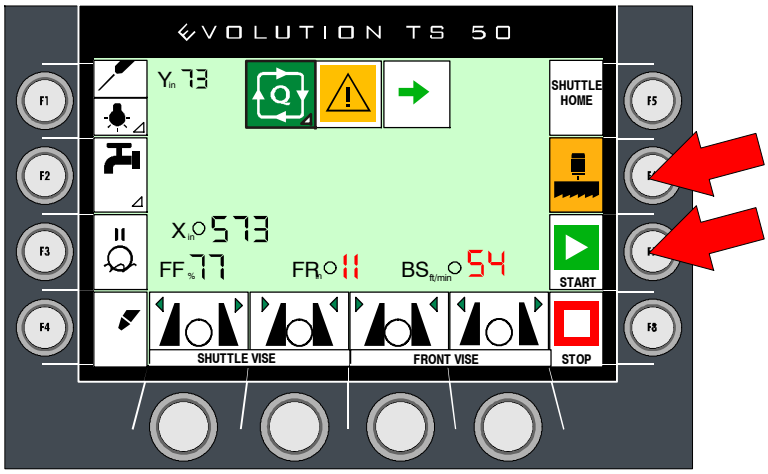
▶ Set the fluid jet by pressing the button shown in the figure. The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).



▶ Set the cutting parameters, previously shown, using the following adjusters.

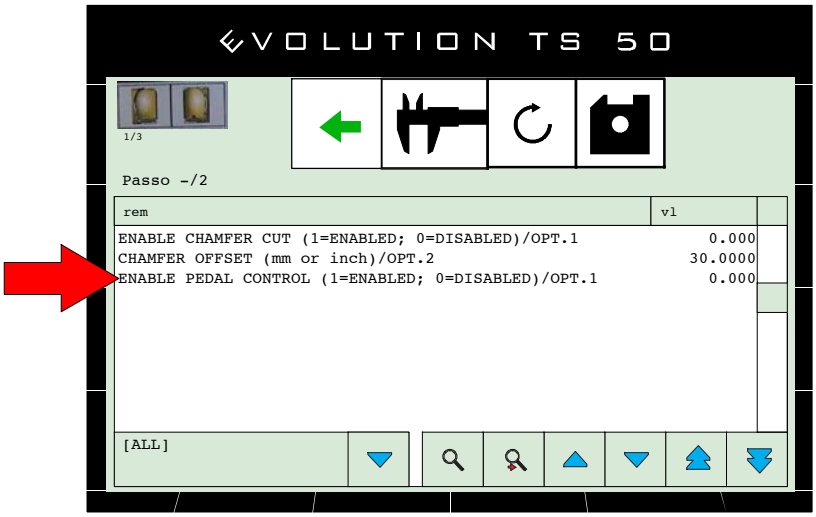
▶ Position the head at about 10 mm (0.39 in) from the material being machined, moving it with the joystick.

▶ Press the band rotation enabling key (F6).



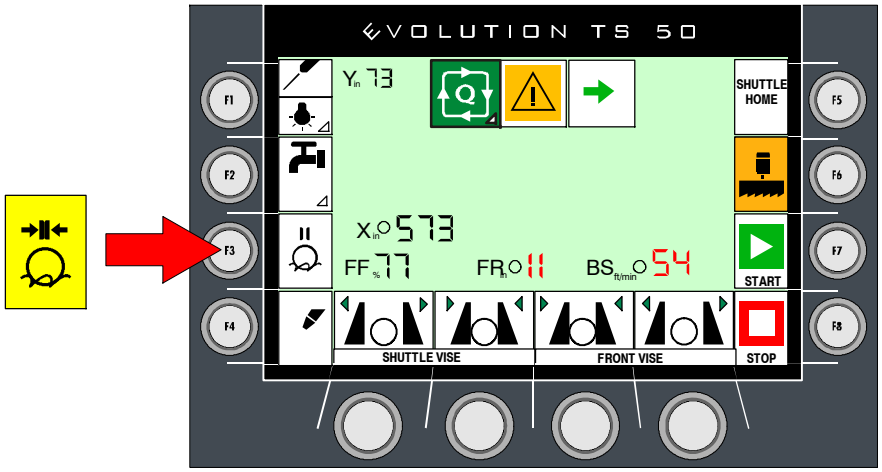
▶ Press the F7 cycle start key to start the band rotation and the head lowering. The RHLS point is automatically stored in this way, as explained before. At the end, the band stops and the head rises again.

N.B. If the sawing machine is equipped with optional pedal control the cycle start control can be made from remote station. In this case it is necessary to enable the operation of the pedals, by selecting the appropriate entry in the list of options.



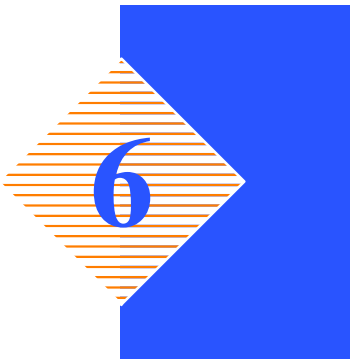
▶ Press the pedal control to start the working cycle.

N.B. If the existing FHLS point is to be deleted now, follow the operations described above.



The sawing machine then feeds new material performing all the program cuts and continues with the set sequence. If the machining cycle must be stopped, press F8 Cycle Stop. To start it again, press F7 Cycle Start.

Diagrams, exploded views and replacement parts



This chapter contains functional diagrams and exploded views of the **H- 230 A**. 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.

APS/P drive for step motors

FOREWORD

This drive allows you to control a step motor, using the RS485.
When the ENABLE input is connected to +12 Vdc/+24 Vdc the drive is disabled (current on motor = 0) resulting in the rotation of the motor being interrupted. When it is disconnected, or connected to 0 V, the drive will be re- enabled and the motor will be energised after at least 1 step is started.
The rate of acceleration/deceleration, the current, and the step division, can be adjusted using the dip- switches and trimmers on the card (see tables).
The two outputs allow the machine to display if the drive is protected (READY_OUT) and if positioning in progress has finished (BUSY).

CHARACTERISTICS

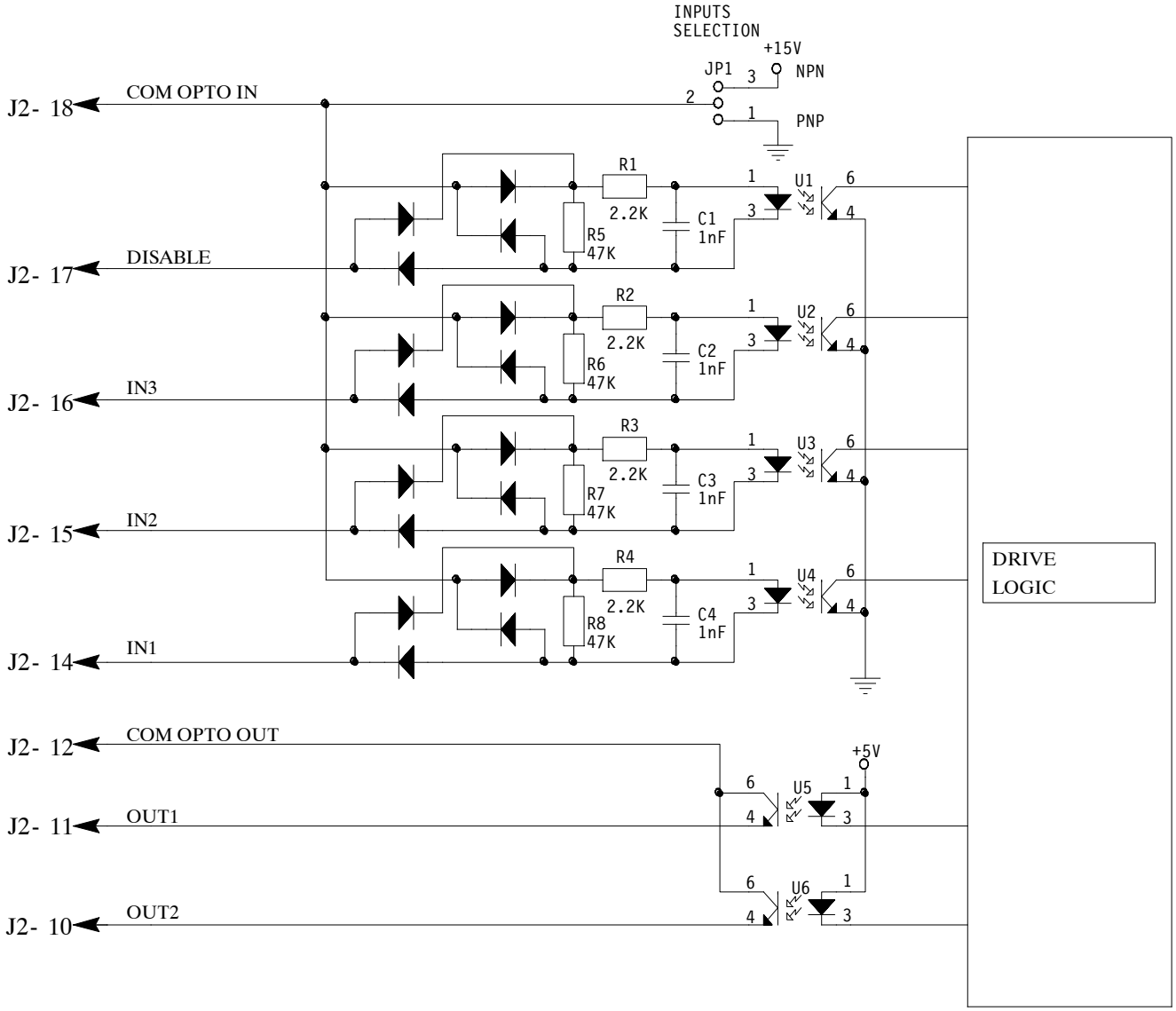
CUT	APS3/P
V DC NOM. [V]	40- 80
V DC MAKS. [V]	90
V DC MIN. [V]	30
N MAKS. [A]	10
N MIN. [A]	1
N KROK [A]	0.5
Operating temperature [° C]	0- 45

MEANING OF THE PARAMETERS IN THE TABLE

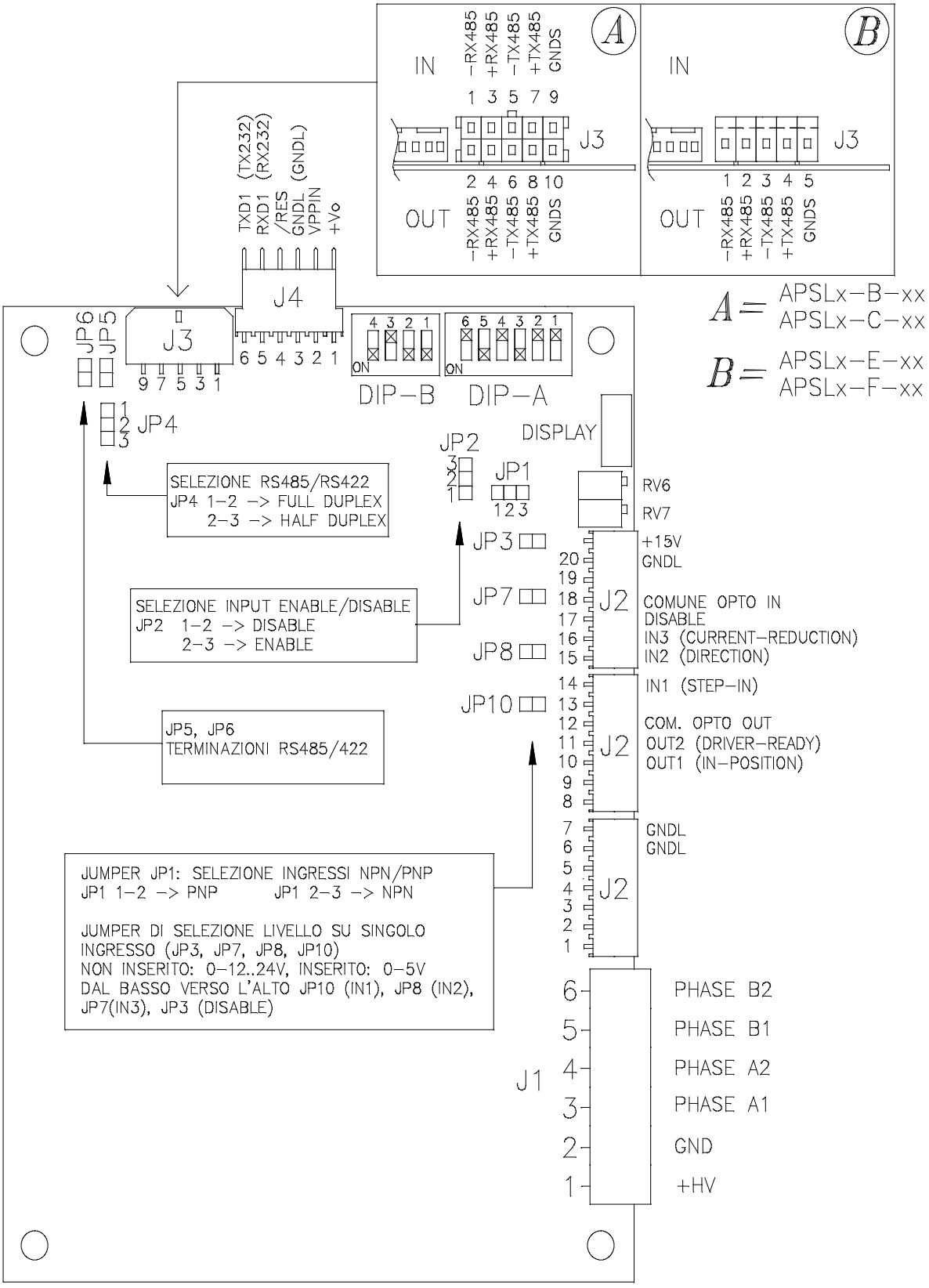
- **Vdc nom:** Nominal voltage at which the drive can be powered.
- **Vdc max:** Maximum voltage at which the drive can operate, where this limit is exceeded the protection intervenes, inhibiting the operation of the drive itself.
- **Vdc min:** Minimum voltage at which the drive can operate. When the voltage drops below this limit, the protection intervenes, inhibiting the operation of the drive itself.
- **I max:** Maximum value for the phase current.
- **I min:** Minimum value for the phase current.
- **I step:** Difference between the settable current values.
- **Operating temperature:** Forced ventilation is necessary for currents exceeding 6A.

TECHNICAL CHARACTERISTICS - APS/P DRIVE	
Power supply	Terminal Name: + HV (Positive power supply) GND (0 V)
Engine connection	PHASE A1 = Phase A1 of the step motor PHASE A2 = Phase A2 of the step motor PHASE B1 = Phase B1 of the step motor PHASE B2 = Phase B2 of the step motor
Outputs	Of a PNP optoinsulated type “open collector” (10 mA max)
	Also optoinsulated, so an external power supply (+12V/+24V) must be connected to the terminal common to the optoinsulators (Pin 12 connector J2). Maximum current for each output (10 mA).
Inputs	Of a PNP type (from 12 Vdc to 24 Vdc)
	Not optoinsulated: jumper JP1 - inserted Pin 12 of connector J2 - connected to +15V auxiliary (pin 21 connector J2) (common input optoinsulators)
	Optoinsulated: jumper JP1- not inserted Pin 18 on connector J2 - connected to GND of outside power supply (common input optoinsulators)
Protections and safety devices	Protections against short circuits: - between outputs - between outputs and the positive power supply terminal If one of the conditions above occurs, the drive will disable the power bridge, and display the error conditions on the screen: “u” = wrong power supply voltage value “t” = thermal protector intervention “c” = max. current protector intervention. due to a short circuit across the phases, or excess current. If the drive is not disabled by a protective device, the display will indicate the letter “r” (ready).
	Thermal protection against overheating
	Mains undervoltage and overvoltage safety devices

SCHEMATIC CONFIGURATION OF INPUTS / OUTPUTS



LAYOUT OF APS/P DRIVE COMPONENTS



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R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: INDICE CONTENUTI
Content Index

Ordine/Requisition
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

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	Board Inside			Cable list	
28	GUAINE E ACCESSORI				
	Sheaths and Accessories				
29	RIASSUNTIVO CAVI				
	Cable summary				
30	RIASSUNTIVO CAVI				
	Cable Summary				
31	RIASSUNTIVO CAVI				
	Cable Summary				
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37	DISTINTA MATERIALI				
	Material List				
38	DISTINTA MATERIALI				
	Material List				
39	DISTINTA MATERIALI				
	Material List				

Note :

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Denominazione/Title: INDICE CONTENUTI / *Content Index*
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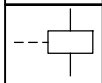
Sim.\Sym.	File	Descrizione\Description
	H5	Lampada *Lamp*
	H11	LED *Led*
	M2	Motore asincrono trifase *Three–phase inductor motor*
	M9	Motore corrente alternata monofase *Single–phase inductor motor*
	Q1360	Int. automatico magnetotermico sezionatore tripolare *Three–phase automatic switch*
	R1	Resistore *Resistor*
	R6	Potenziometro *Potentiometer*
	R60	Potenziometro *Potentiometer*
	S2	Comando a Pulsante NO *Push button NO*
	S4C	Pulsante di emergenza NC *Emergency push button NC*
	S5	Comando rotativo a due posizioni NO *Rotary selector two position*

Sim.\Sym.	File	Descrizione\Description
	S7	Comando a pedale NO *Control pedal NO*
	S13C	Fine corsa comandato a camma libero NC *Limit switch free NC*
	S14C	Fine corsa comandato a camma azionato NC *Limit switch actuated NC*
	S15C	Comandato dal livello di un fluido (livellostato) NC *Water gauge NC*
	T2	Trasformatore per ausiliari con schermo *Trasformer for auxiliary white shield*
	Y1	Elettrovalvola (A) *Solenoid valve (A)*
	Y1A	Elettrovalvola (B) *Solenoid valve (B)*
	KA1	Bobina rele' Aux *Auxiliary relay coil*
	KM1	Bobina contattore *Contactor coil*
	BLK11	Trasformatore per ausiliari con schermo *Trasformer for auxiliary white shield*
	BLK12	Inverter (potenza) *Inverter (power)*

Sim.\Sym.	File	Descrizione\Description
	BLK13	Azionamento (potenza) *Drive (power)*
	BLK14	Inverter (ausiliari) *Inverter (auxiliary)*
	BLK15	Azionamento (ausiliari) *Drive (auxiliary)*
	BLK21	Motore passo-passo *Stepper motor*
	BLK41	Raccordo SX *Connector SX*
	BLK42	Raccordo DX *Connector DX*
	BLK43	Tubo corrugato *Corrugated pipe*
	BLK44	Riduzione PG *PG adapter*
	BLK51	Dado PG *PG nut*
	BLK56	Terminale a puntale *Terminal*
	BLK57	Filo unipolare *Wire*

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Dis. N. H230A
CAD SPAC
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Impianto/Plant
H–230A_240/60Hz

Denominazione/Title
LEGENDA SIMBOLI
Symbol Key

Ordine/Requisition

Commessa/Order
H–230A

Esecutore/Executor
Solfanelli

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Sim.\Sym.	File	Descrizione\Description
	BLK58	Fascette plastiche di fissaggio *Plastic clamp*
	BLK60	Terminale a occhiello *Terminal*
	BLK66	Sacchetto portafusibile *Bag fuse*
	SPX08E	Dispositivo di prossimita' induttivo D.C. NO *Sensor of proximity fed DC NO*

Sim.\Sym.	File	Descrizione\Description

Sim.\Sym.	File	Descrizione\Description

REV.	MODIFICA	DATA	FIRME
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Dis. N. H230A
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Data 20/10/2017

Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: LEGENDA SIMBOLI
Symbol Key

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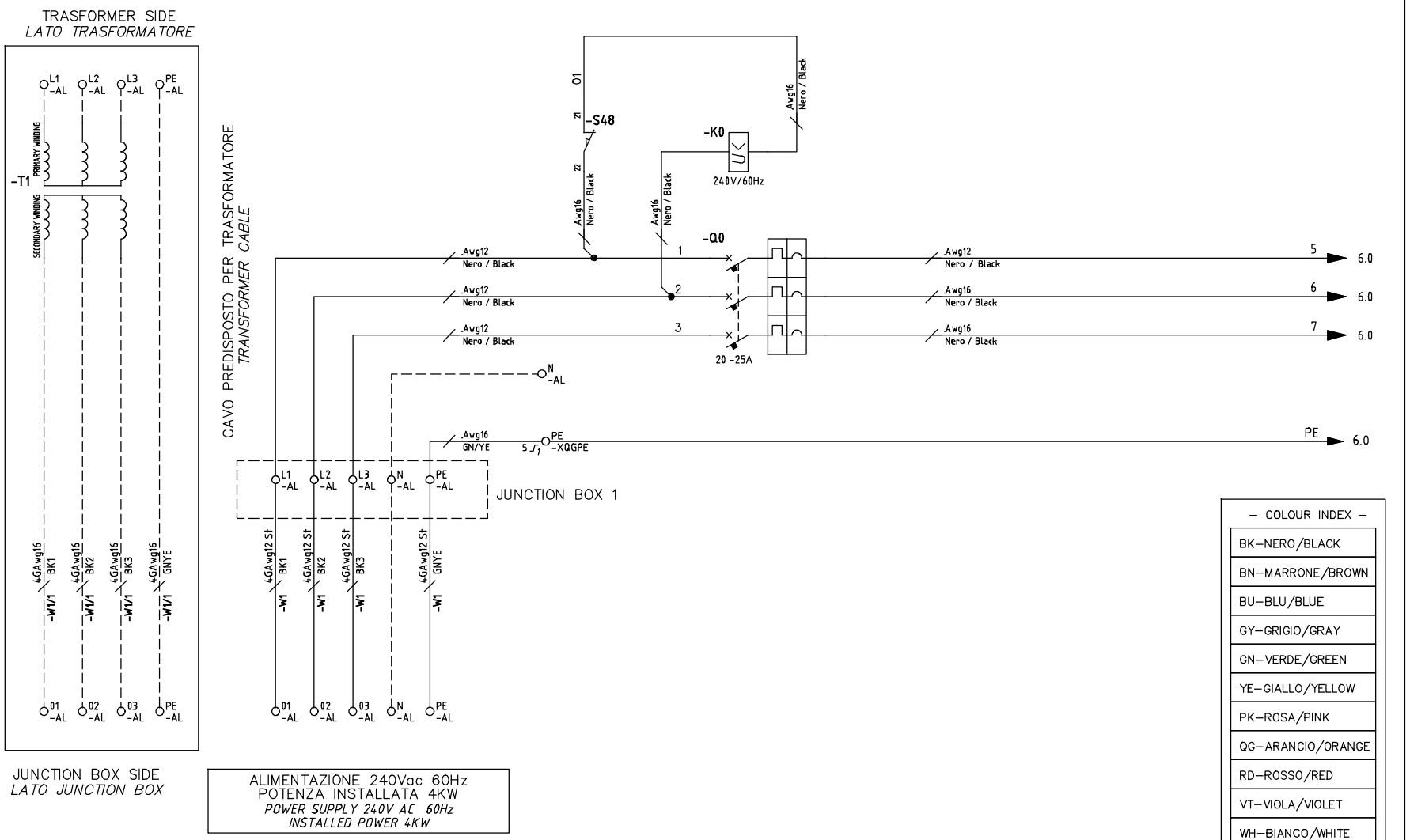

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R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H–230A_240/60Hz*

Denominazione/Title: ALIMENTAZIONE / *Power Supply*

Ordine/Requisition:

Commessa/Order: H–230A

Esecutore/Executor: Solfanelli

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Segue/Follow: 6
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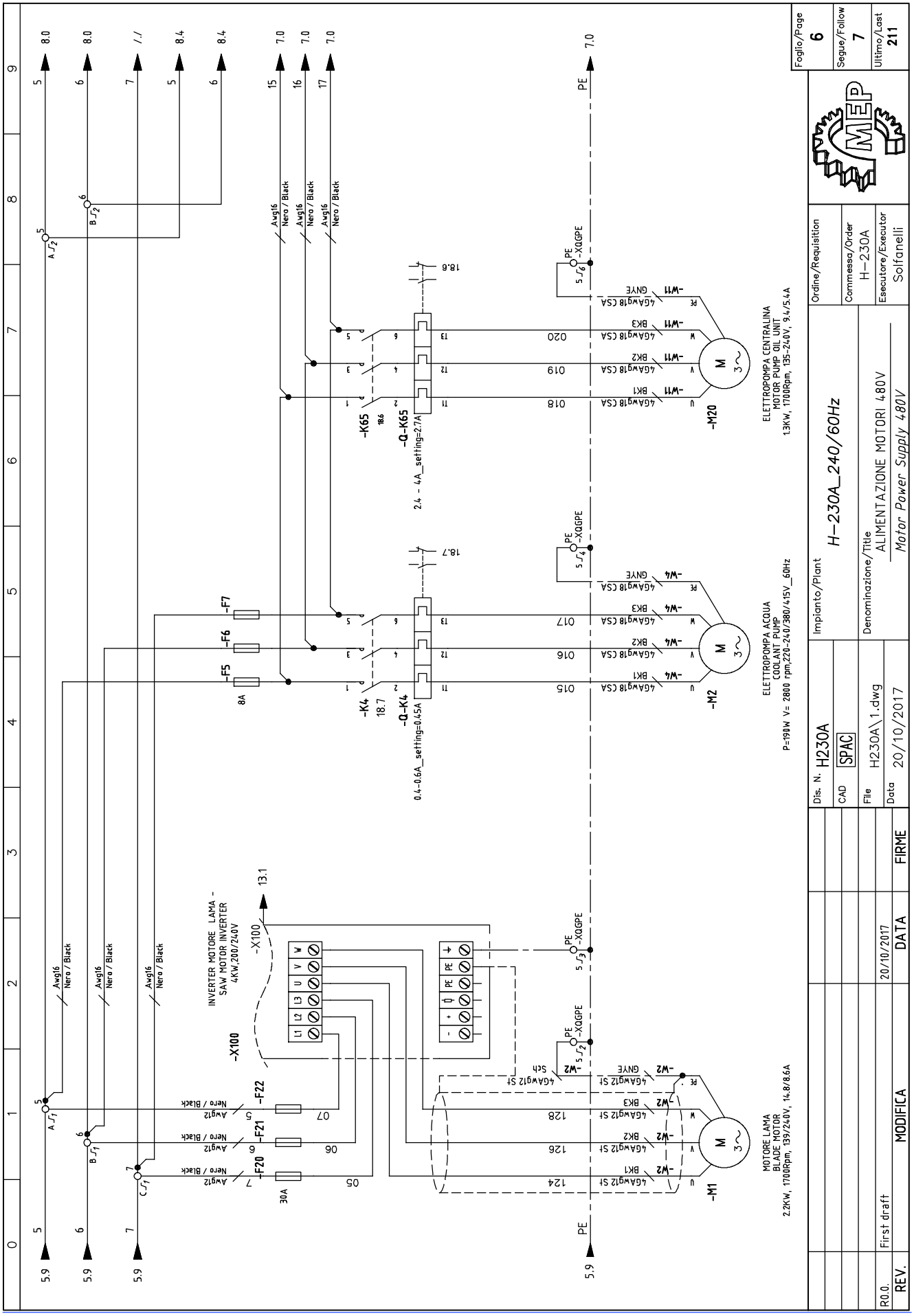
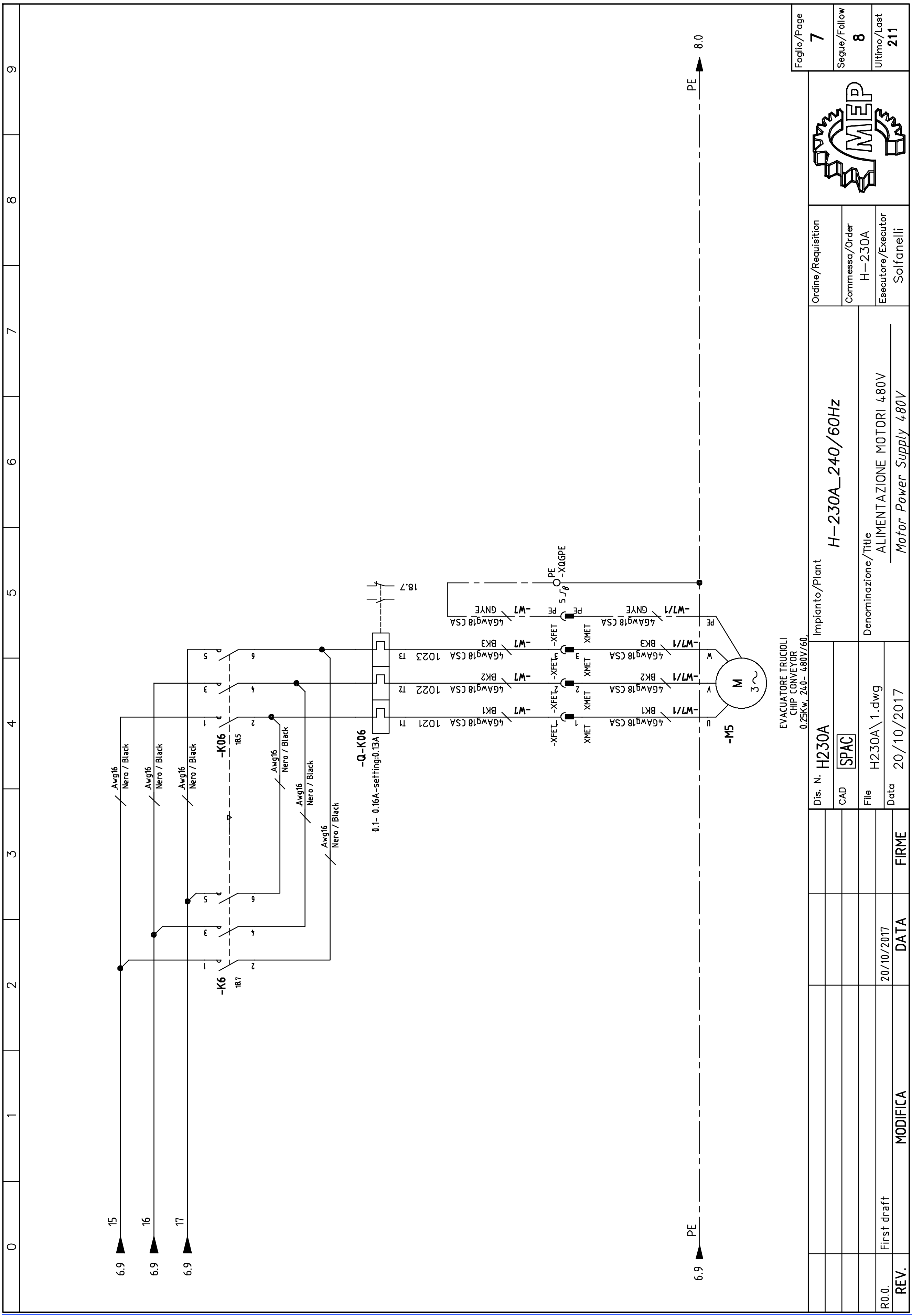
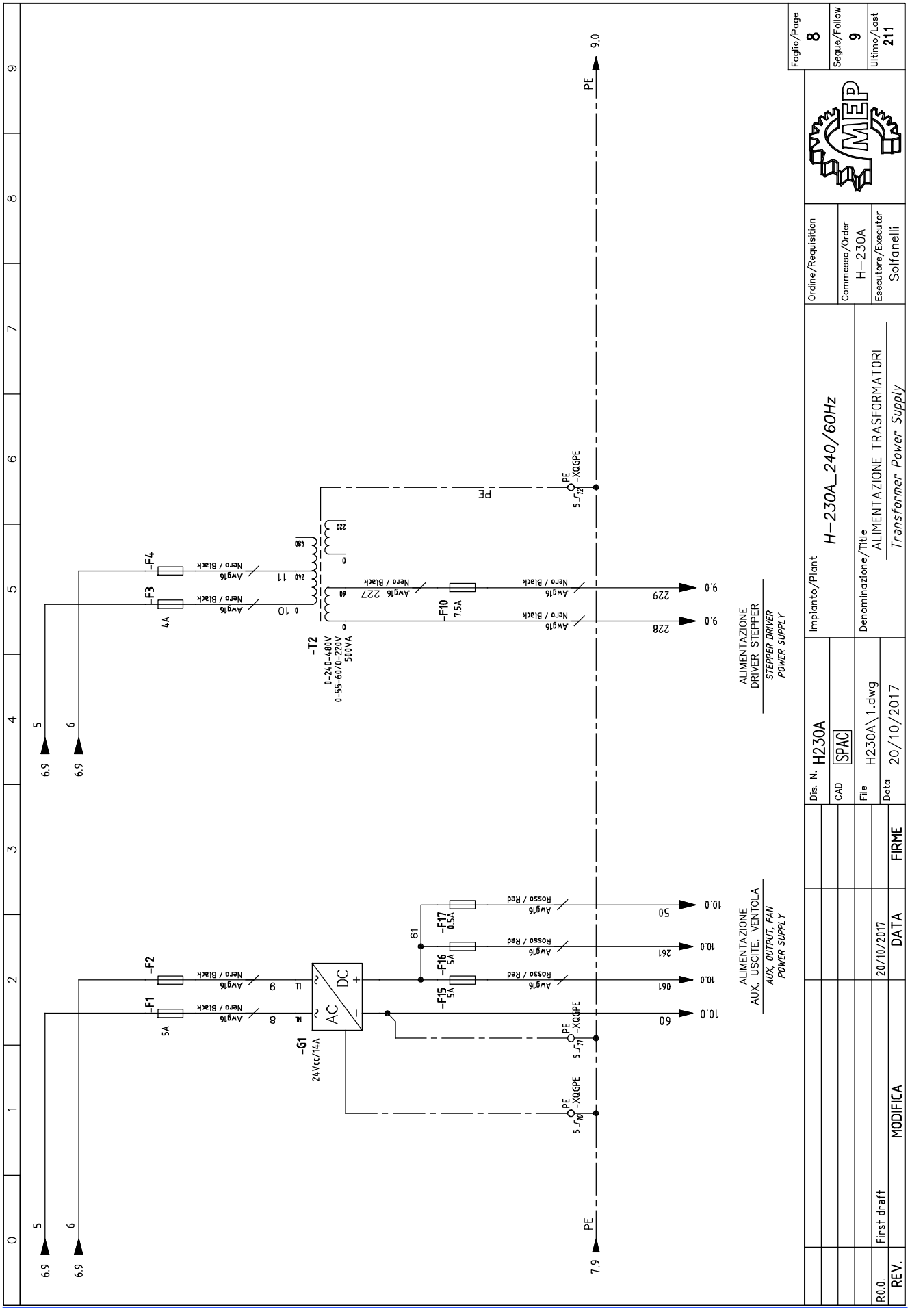
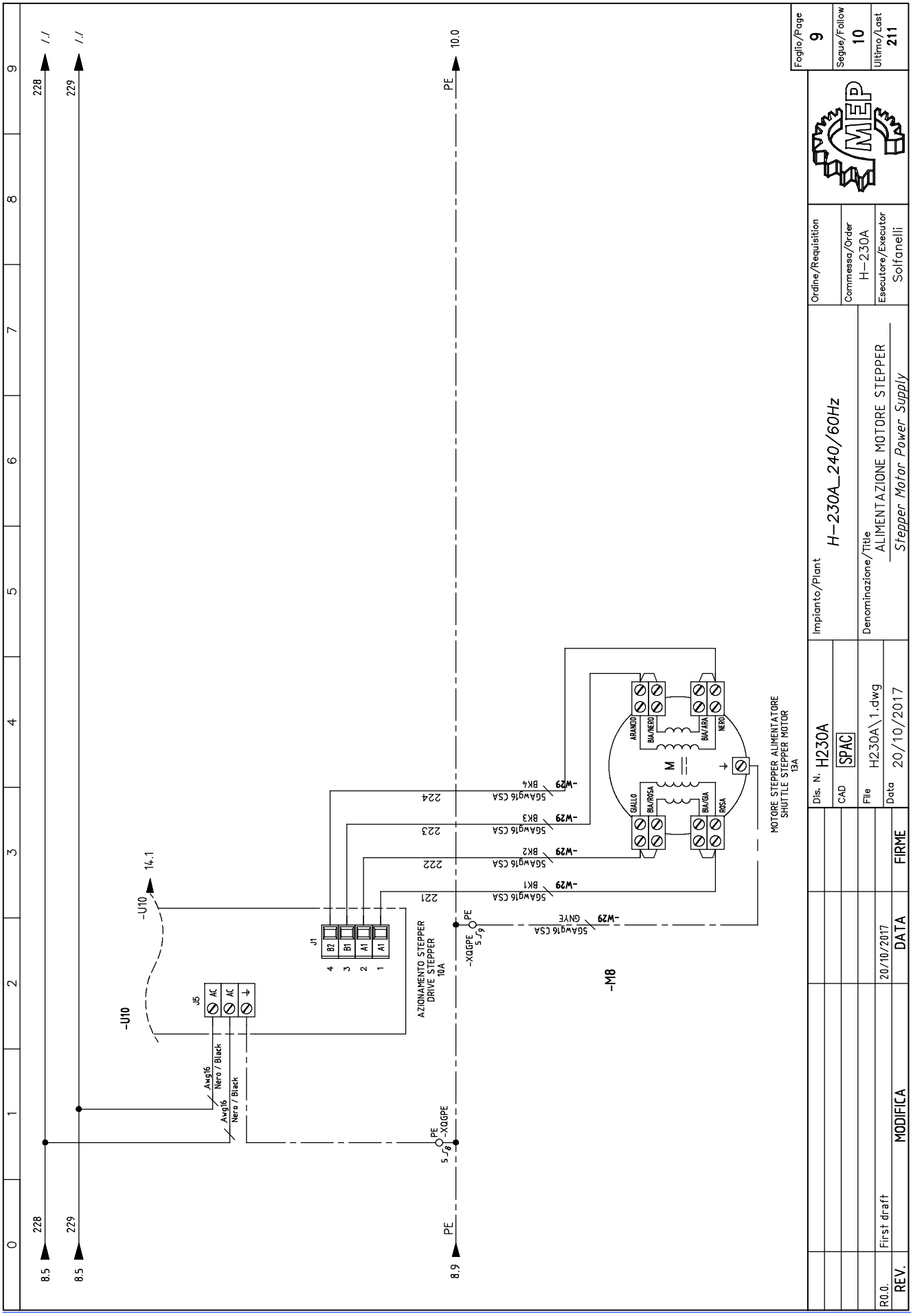

H-230A_240/60Hz
Motor Power Supply 480V
ALIMENTAZIONE MOTORI 480V
H230A
H230A\1.dwg
20/10/2017
SPAC
Solfanelli
H-230A
Foglio/Page 6
Segue/Follow 7
Ultimo/Last 211
MOTORE LAMA
BLADE MOTOR
2.2KW, 1700Rpm, 139/240V, 14.8/8.6A
ELETTROPOMPA ACQUA
COOLANT PUMP
P=190W V= 2800 rpm,220-240/380/415V 60Hz
ELETTROPOMPA CENTRALINA
MOTOR PUMP OIL UNIT
1.3KW, 1700Rpm, 135-240V, 9.4/5.4A
INVERTER MOTORE LAMA -
SAW MOTOR INVERTER
4KW,200/240V
-M1
-M2
-M20
-X100
-K4
-K65
-Q-K4
-Q-K65
-F5
-F6
-F7
-F20
-F21
-F22
0.4-0.6A_setting=0.45A
2.4 - 4A_setting=2.7A
REV.
R0.0.
First draft
MODIFICA
DATA
20/10/2017
FIRME


Foglio/Page 7
Segue/Follow 8
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant
H-230A_240/60Hz
Denominazione/Title
ALIMENTAZIONE MOTORI 480V
Motor Power Supply 480V
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
EVACUATORE TRUCIOLI
CHIP CONVEYOR
0.25Kw, 240- 480V/60,
-Q-K06
0.1- 0.16A-setting:0.13A
-K06
-K6
-M5
-XQGPE
Awg16 Nero / Black
4GAwg18 CSA
PE
6.9
8.0
18.7


Foglio/Page 8
Segue/Follow 9
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title ALIMENTAZIONE TRASFORMATORI
Transformer Power Supply
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
FIRME
DATA
MODIFICA
REV.
R0.0 First draft 20/10/2017
-T2 0-240-480V 0-55-60/0-220V 500VA
-G1 24Vcc/14A
-F1 5A
-F2
-F3 4A
-F4
-F10 7.5A
-F15 5A
-F16 5A
-F17 0.5A
-XQGPE
ALIMENTAZIONE DRIVER STEPPER
STEPPER DRIVER POWER SUPPLY
ALIMENTAZIONE AUX, USCITE, VENTOLA
AUX, OUTPUT, FAN POWER SUPPLY
Awg16 Nero / Black
Awg16 Rosso / Red
AC DC
PE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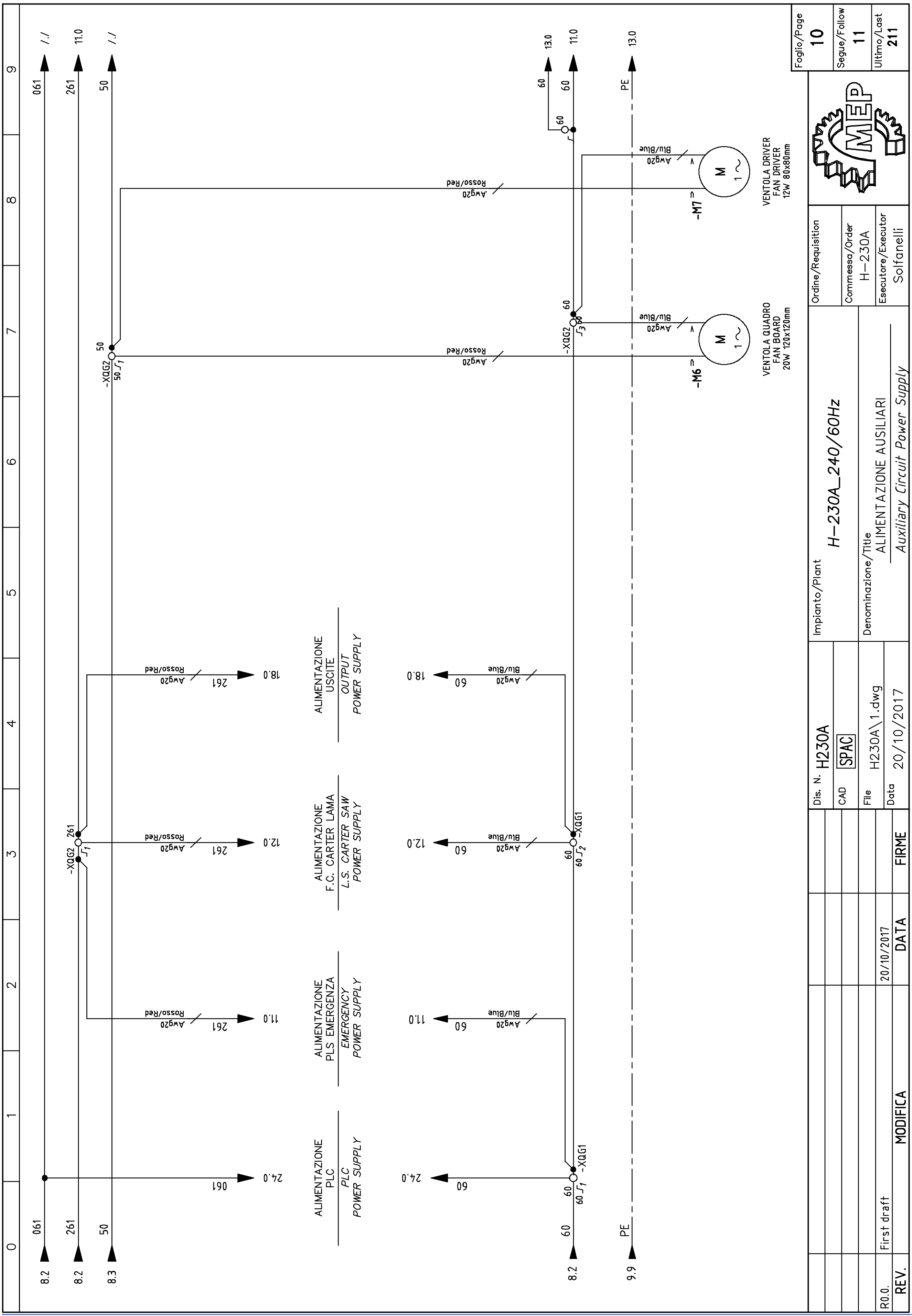
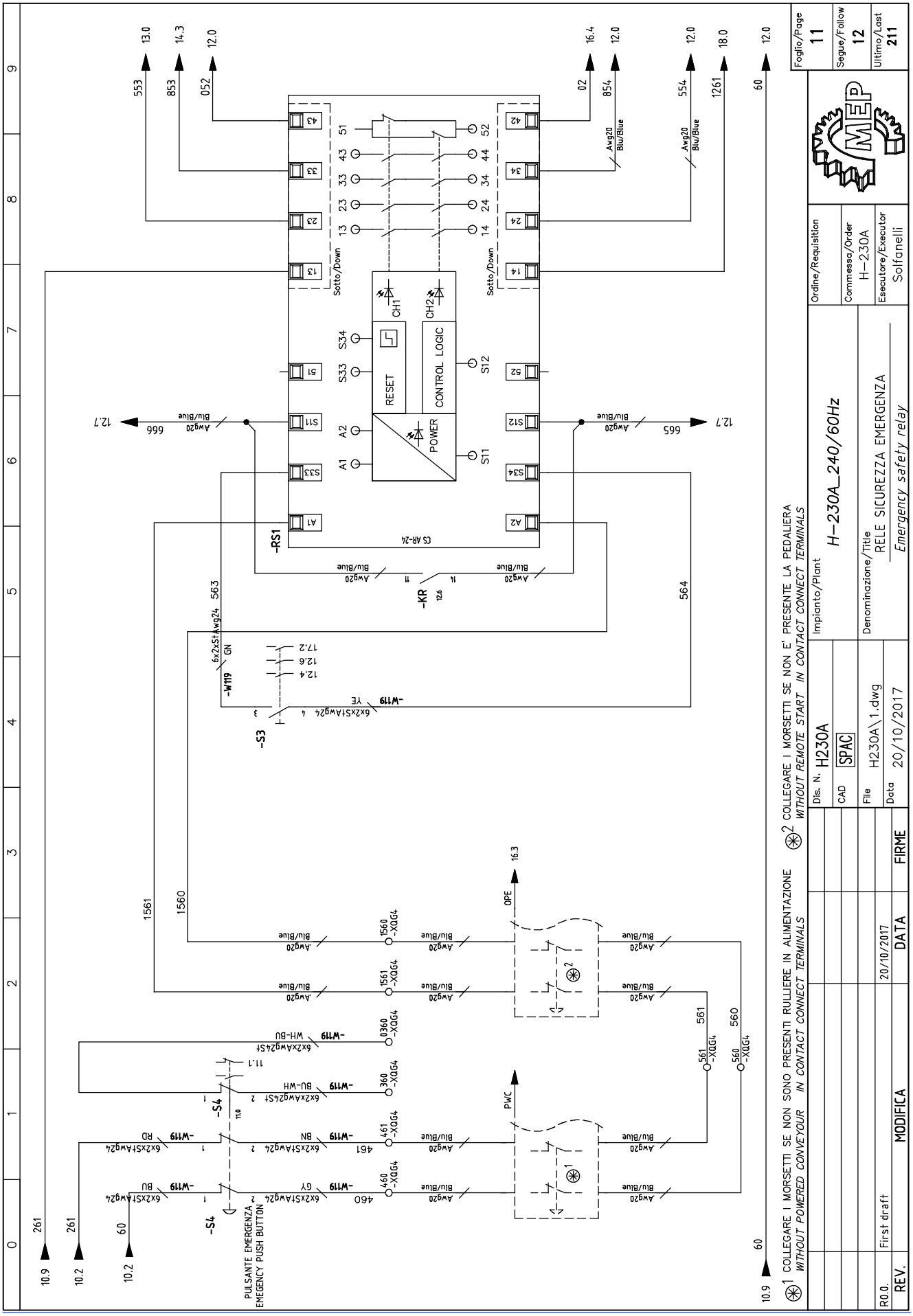
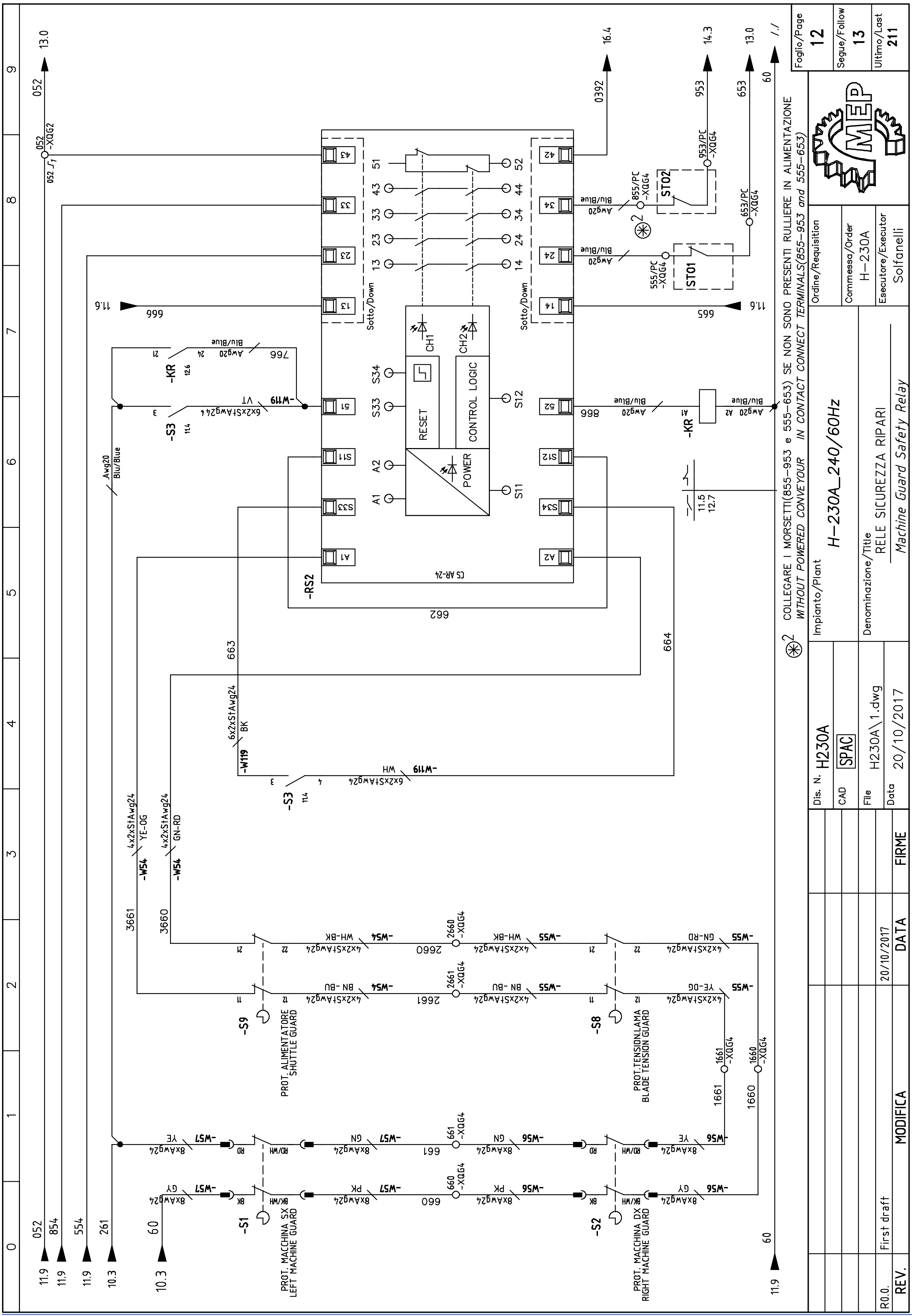
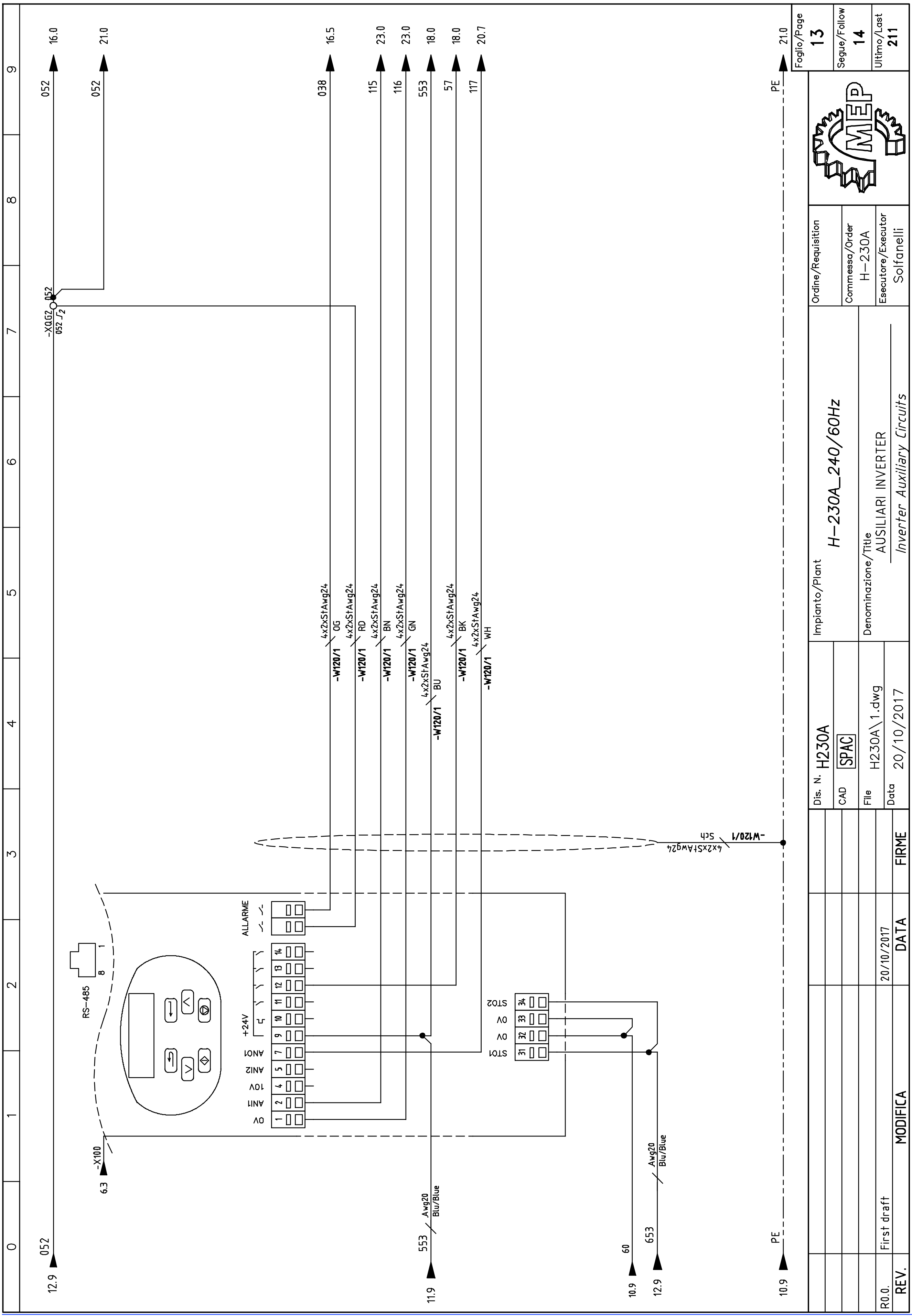
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title ALIMENTAZIONE MOTORE STEPPER
Stepper Motor Power Supply
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
-U10
-M8
J5
J1
AZIONAMENTO STEPPER
DRIVE STEPPER
10A
MOTORE STEPPER ALIMENTATORE
SHUTTLE STEPPER MOTOR
13A
-W29
5GAWG16 CSA
Avg16 Nero / Black
ARANCIO
BIA/NERO
BIA/ARA
NERO
GIALLO
BIA/ROSA
BIA/GIA
ROSA
PE
-XQGPE
228
229
8.5
8.9
10.0
14.1

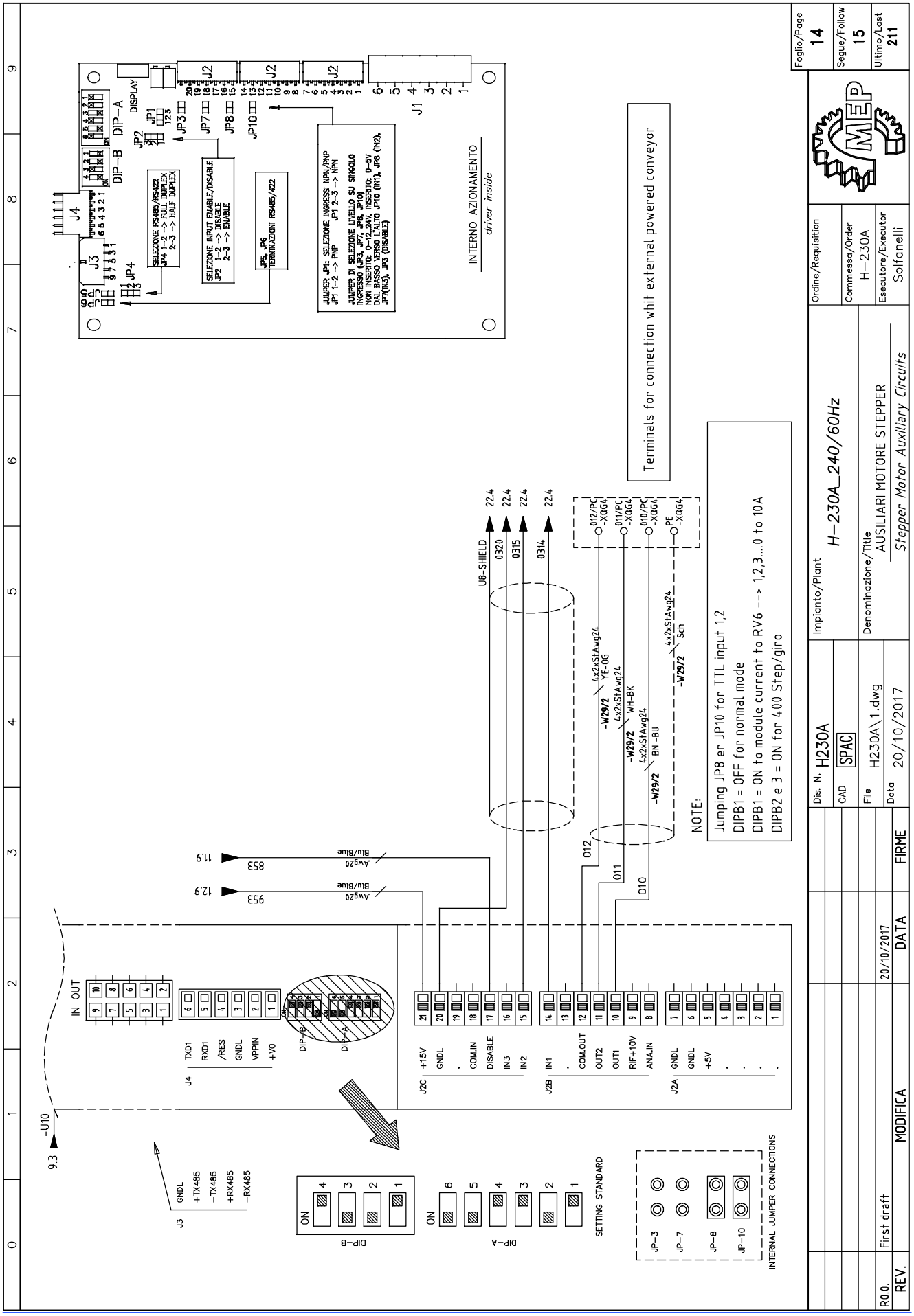

ALIMENTAZIONE PLC
PLC POWER SUPPLY
ALIMENTAZIONE PLS EMERGENZA
EMERGENCY POWER SUPPLY
ALIMENTAZIONE F.C. CARTER LAMA
L.S. CARTER SAW POWER SUPPLY
ALIMENTAZIONE USCITE
OUTPUT POWER SUPPLY
VENTOLA QUADRO
FAN BOARD
20W 120x120mm
VENTOLA DRIVER
FAN DRIVER
12W 80x80mm
-M6
-M7
-XQG1
-XQG2
Rosso/Red
Blu/Blue
Awg20
Foglio/Page 10
Segue/Follow 11
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title ALIMENTAZIONE AUSILIARI
Auxiliary Circuit Power Supply
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME

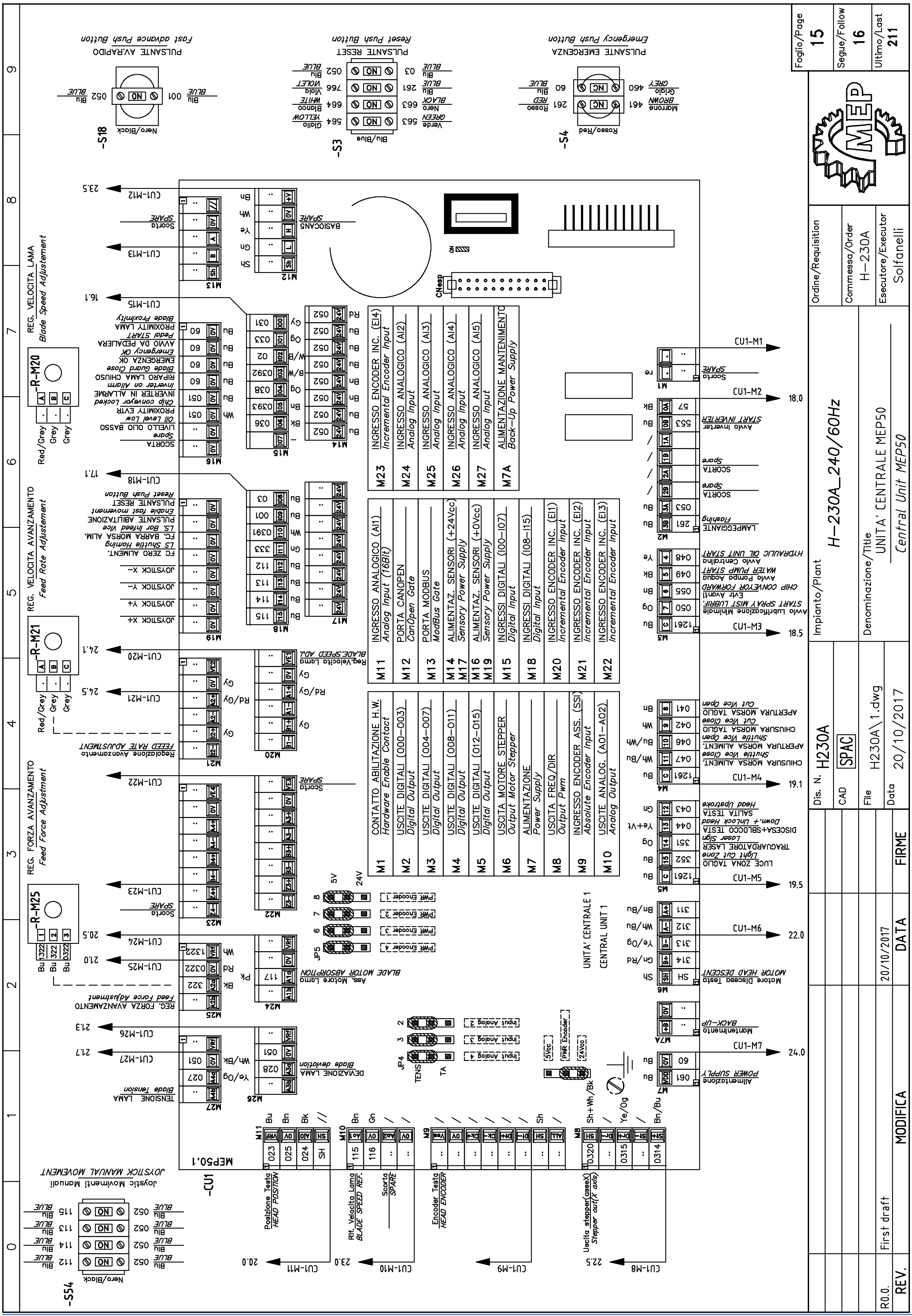

H-230A_240/60Hz
RELE SICUREZZA EMERGENZA
Emergency safety relay
H230A
SPAC
H230A\1.dwg
20/10/2017
MODIFICA
DATA
FIRME
First draft
CONTROL LOGIC
RESET
POWER
CH1
CH2
-RS1
-KR
-S3
-S4
PULSANTE EMERGENZA
EMEGENCY PUSH BUTTON
Sotto/Down
COLLEGARE I MORSETTI SE NON SONO PRESENTI RULLIERE IN ALIMENTAZIONE
WITHOUT POWERED CONVEYOUR IN CONTACT CONNECT TERMINALS
COLLEGARE I MORSETTI SE NON E' PRESENTE LA PEDALIERA
WITHOUT REMOTE START IN CONTACT CONNECT TERMINALS

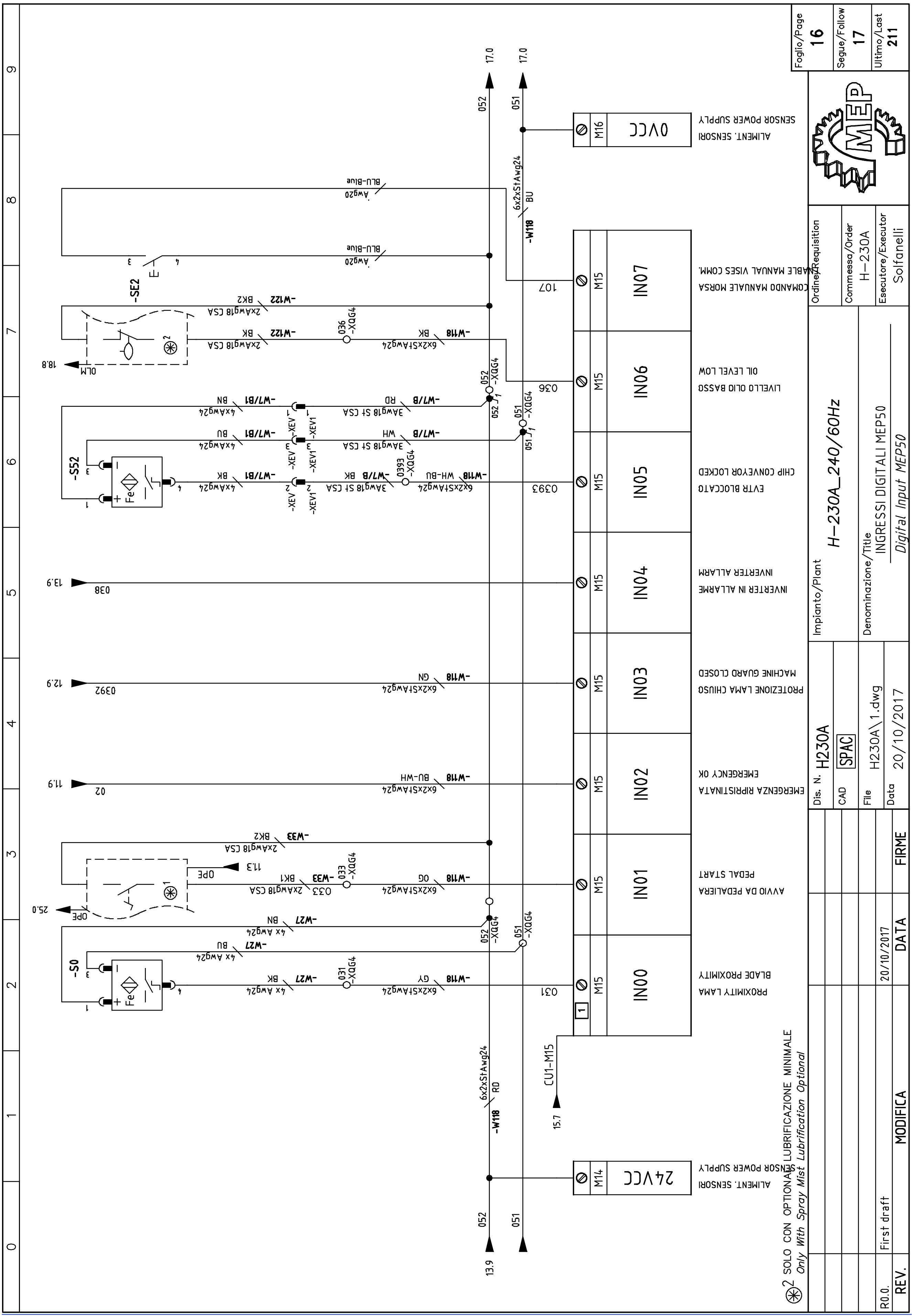

COLLEGARE I MORSETTI(855-953 e 555-653) SE NON SONO PRESENTI RULLIERE IN ALIMENTAZIONE
WITHOUT POWERED CONVEYOUR IN CONTACT CONNECT TERMINALS(855-953 and 555-653)
H-230A_240/60Hz
RELE SICUREZZA RIPARI
Machine Guard Safety Relay
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Foglio/Page 12
Segue/Follow 13
Ultimo/Last 211
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
-RS2
CS AR-24
RESET
CONTROL LOGIC
POWER
PROT. MACCHINA SX LEFT MACHINE GUARD
PROT. MACCHINA DX RIGHT MACHINE GUARD
PROT. ALIMENTATORE SHUTTLE GUARD
PROT. TENSION.LAMA BLADE TENSION GUARD
ST01
ST02
-KR
-S3
-S1
-S2
-S8
-S9

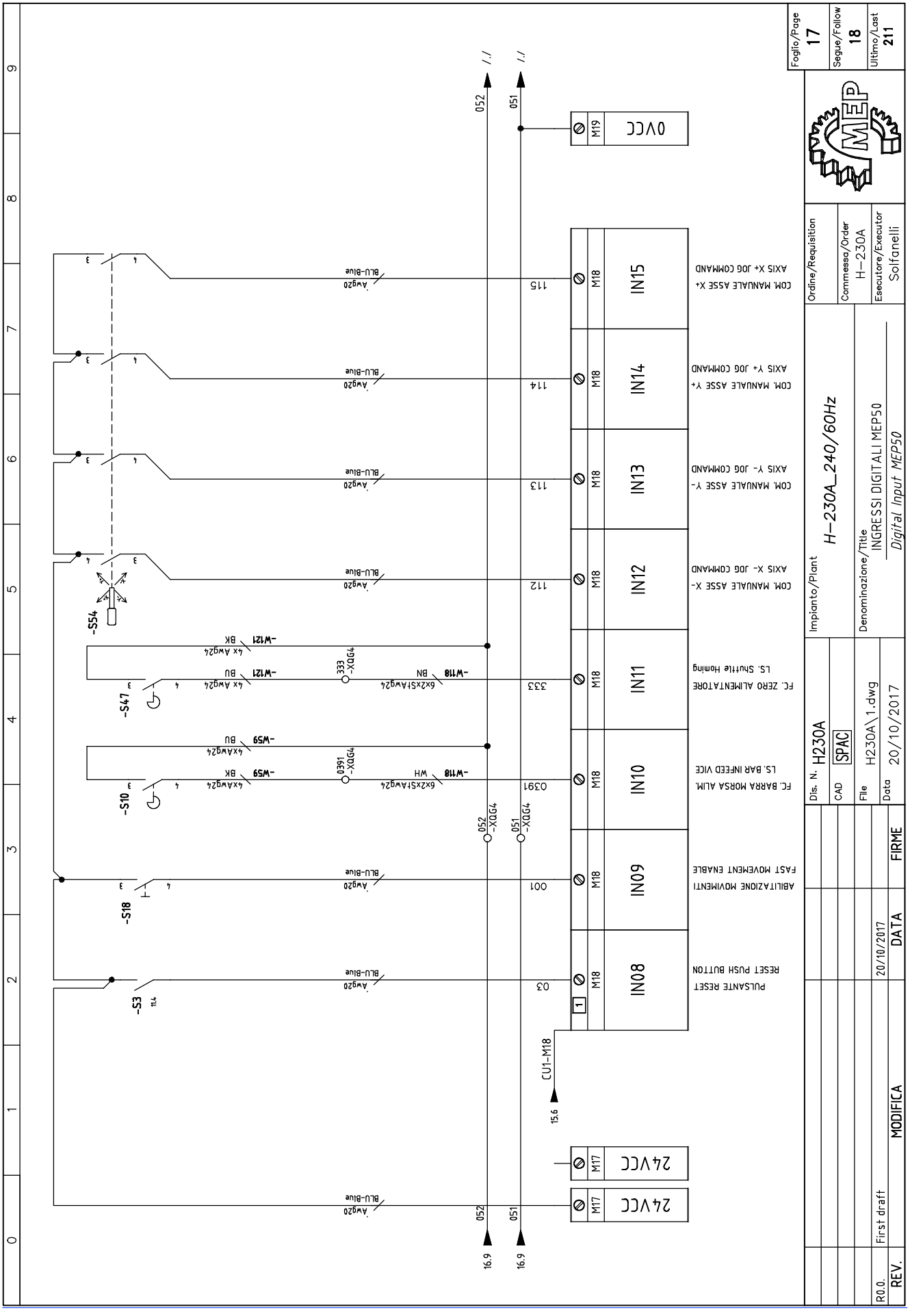


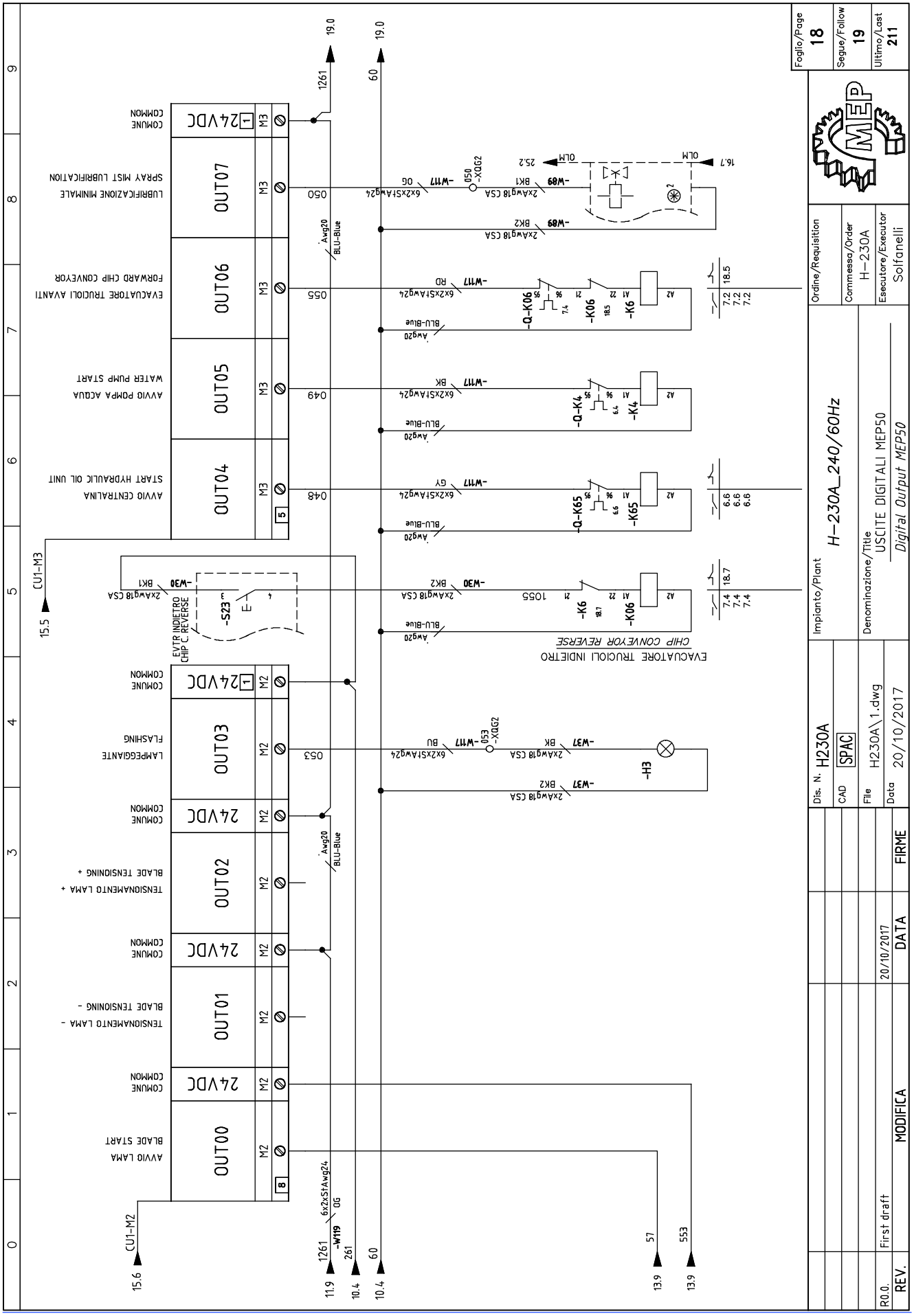
-X0G2
052
038
115
116
553
57
117
PE
-W120/1
4x2xStAwg24
OG
RD
BN
GN
BU
BK
WH
Sch
RS-485
ALLARME
+24V
0V
AN1
10V
AN2
AN01
ST01
ST02
-X100
Avg20
Blu/Blue
Impianto/Plant
H-230A_240/60Hz
Denominazione/Title
AUSILIARI INVERTER
Inverter Auxiliary Circuits
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
Foglio/Page
13
Segue/Follow
14
Ultimo/Last
211
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0.
First draft
20/10/2017
REV.
MODIFICA
DATA
FIRME

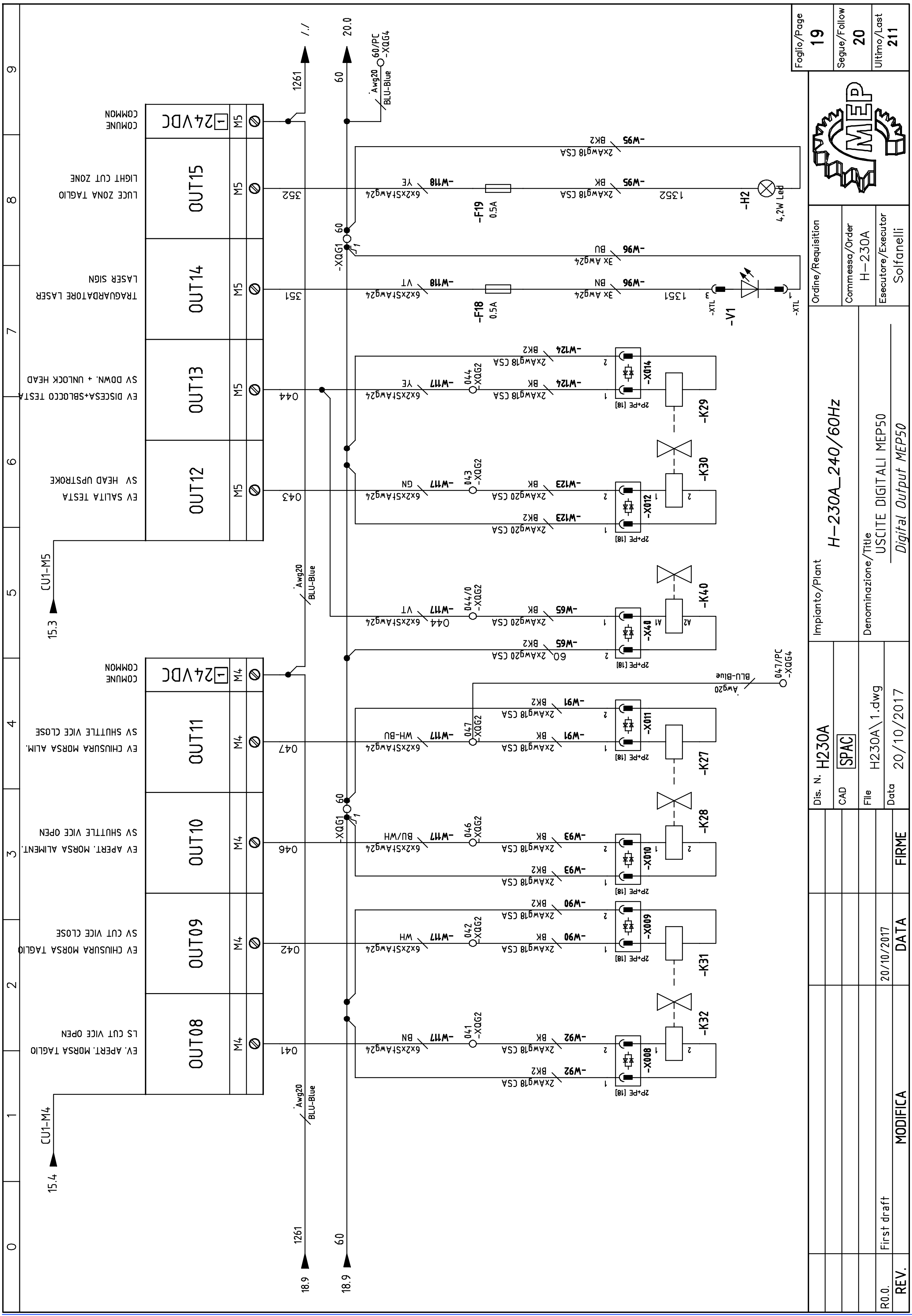

INTERNO AZIONAMENTO
driver inside
Terminals for connection whit external powered conveyor
H-230A_240/60Hz
AUSILIARI MOTORE STEPPER
Stepper Motor Auxiliary Circuits
H230A
SPAC
H230A\1.dwg
20/10/2017
First draft
MODIFICA
DATA
FIRME
NOTE:
Jumping JP8 er JP10 for TTL input 1,2
DIPB1 = OFF for normal mode
DIPB1 = ON to module current to RV6 --> 1,2,3....0 to 10A
DIPB2 e 3 = ON for 400 Step/giro
SETTING STANDARD
INTERNAL JUMPER CONNECTIONS
Foglio/Page 14
Segue/Follow 15
Ultimo/Last 211


H-230A_240/60Hz
UNITA' CENTRALE MEP50
Central Unit MEP50
Impianto/Plant
Denominazione/Title
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
Foglio/Page
15
Segue/Follow
16
Ultimo/Last
211
Dis. N.
H230A
CAD
SPAC
File
H230A\1.dwg
Data
20/10/2017
R0.0.
First draft
20/10/2017
REV.
MODIFICA
DATA
FIRME
PULSANTE EMERGENZA
Emergency Push Button
PULSANTE RESET
Reset Push Button
PULSANTE AV.RAPIDO
Fast advance Push Button
Joystic Movimenti Manuali
JOYSTICK MANUAL MOVEMENT
UNITA' CENTRALE 1
CENTRAL UNIT 1
MEP50.1
-CU1
-S4
-S3
-S18
-S54
-R-M20
-R-M21
-R-M25
REG. VELOCITA LAMA
Blade Speed Adjustment
REG. VELOCITA AVANZAMENTO
Feed Rate Adjustment
REG. FORZA AVANZAMENTO
Feed Force Adjustment

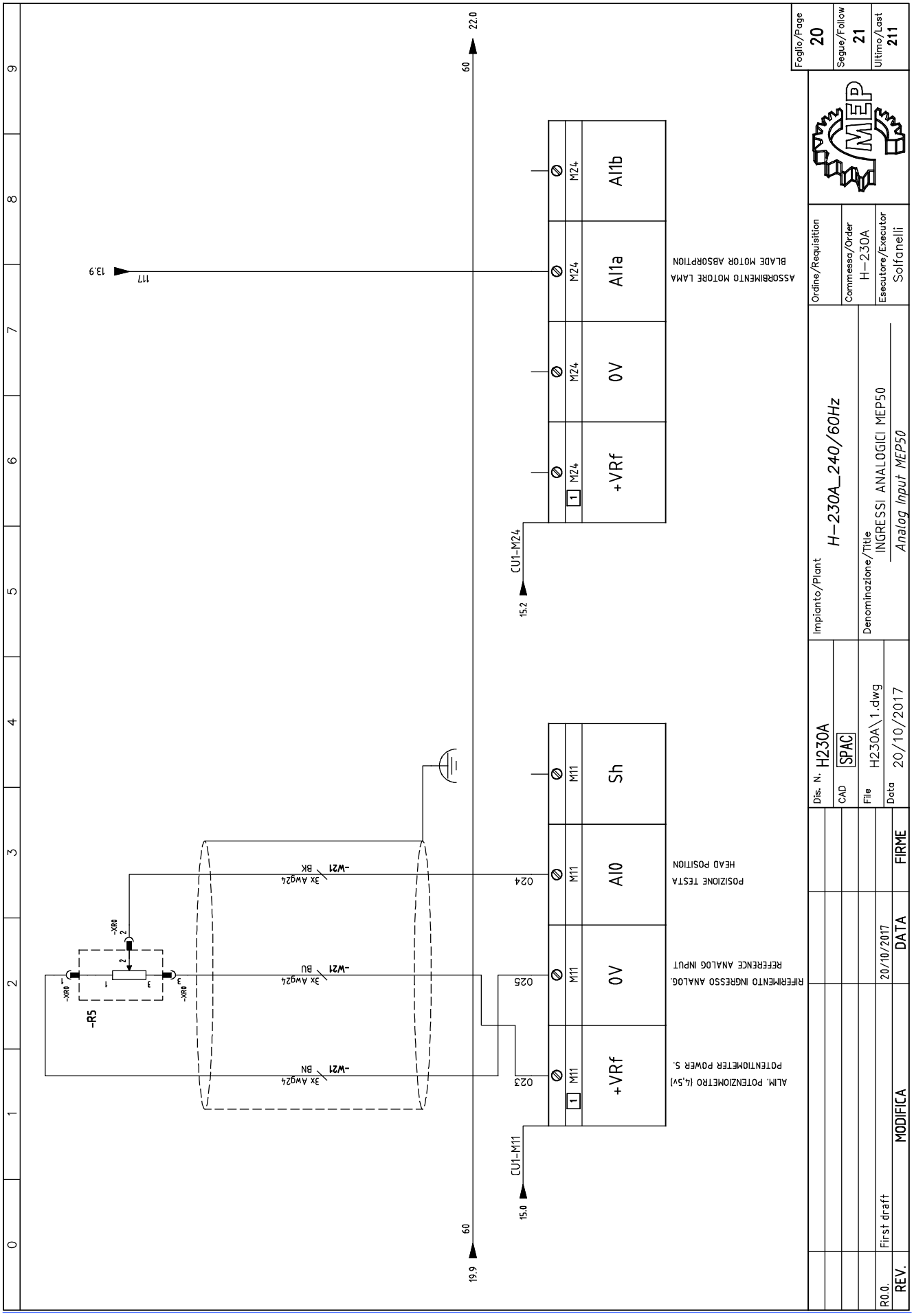

Foglio/Page 16
Segue/Follow 17
Ultimo/Last 211
MEP
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title INGRESSI DIGITALI MEP50
Digital Input MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
SENSOR POWER SUPPLY
ALIMENT. SENSORI
0VCC
24VCC
IN00 PROXIMITY LAMA BLADE PROXIMITY
IN01 AVVIO DA PEDALIERA PEDAL START
IN02 EMERGENZA RIPRISTINATA EMERGENCY OK
IN03 PROTEZIONE LAMA CHIUSO MACHINE GUARD CLOSED
IN04 INVERTER IN ALLARME INVERTER ALLARM
IN05 EVTR BLOCCATO CHIP CONVEYOR LOCKED
IN06 LIVELLO OLIO BASSO OIL LEVEL LOW
IN07 COMANDO MANUALE MORSA ENABLE MANUAL VISES COMM.
2 SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
Only With Spray Mist Lubrification Optional

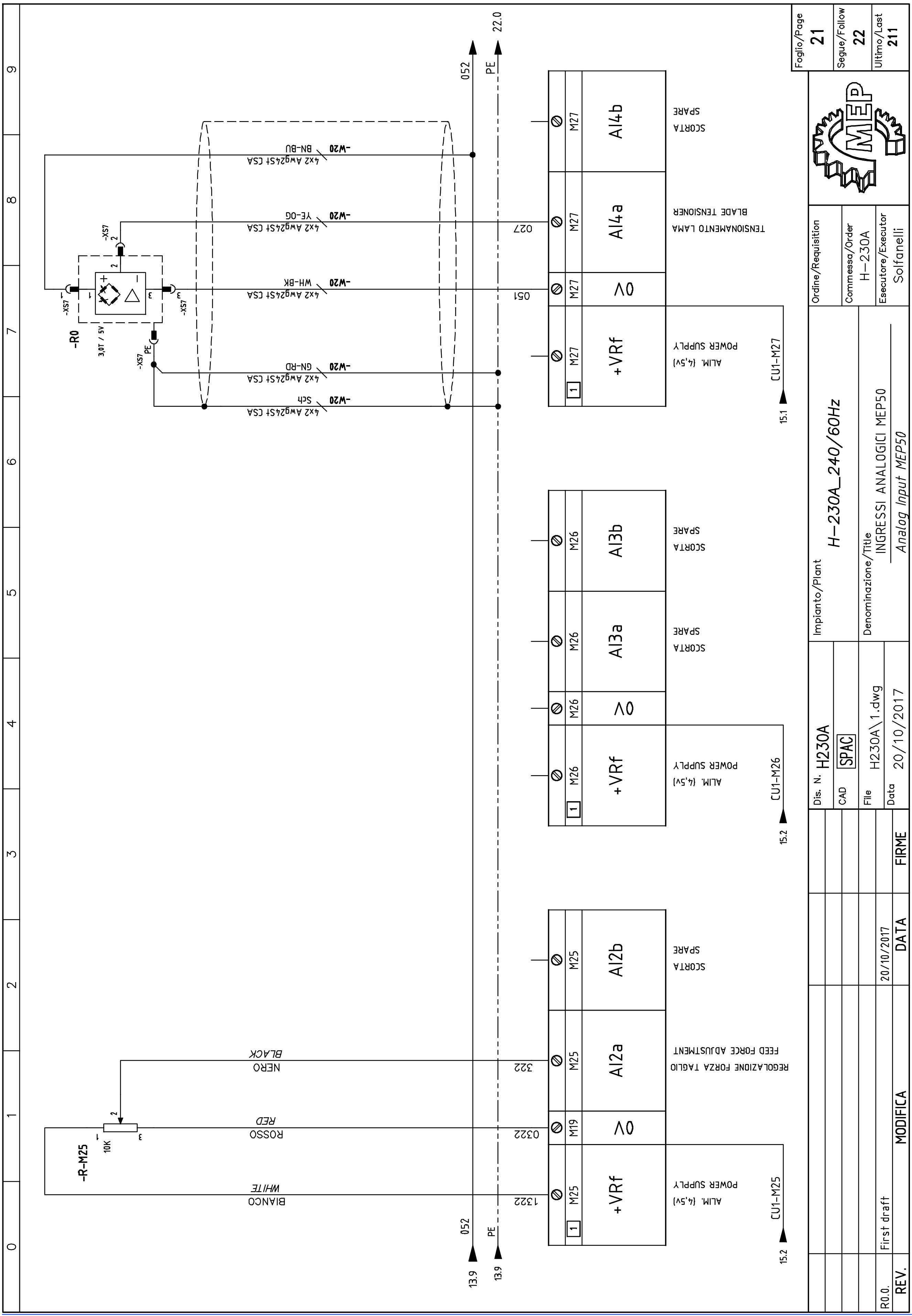

Foglio/Page 17
Segue/Follow 18
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title INGRESSI DIGITALI MEP50
Digital Input MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
0VCC
24VCC
IN15
IN14
IN13
IN12
IN11
IN10
IN09
IN08
COM. MANUALE ASSE X+ AXIS X+ JOG COMMAND
COM. MANUALE ASSE Y+ AXIS Y+ JOG COMMAND
COM. MANUALE ASSE Y- AXIS Y- JOG COMMAND
COM. MANUALE ASSE X- AXIS X- JOG COMMAND
FC. ZERO ALIMENTATORE LS. Shuttle Homing
FC. BARRA MORSA ALIM. LS. BAR INFEED VICE
ABILITAZIONE MOVIMENTI FAST MOVEMENT ENABLE
PULSANTE RESET RESET PUSH BUTTON
-S54
-S47
-S10
-S18
-S3
-W118
-W121
-W59
-XQG4
CU1-M18


Foglio/Page 18
Segue/Follow 19
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title USCITE DIGITALI MEP50
Digital Output MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
FIRME
DATA 20/10/2017
MODIFICA
REV. R0.0 First draft
OUT00 AVVIO LAMA BLADE START
OUT01 TENSIONAMENTO LAMA - BLADE TENSIONING -
OUT02 TENSIONAMENTO LAMA + BLADE TENSIONING +
OUT03 LAMPEGGIANTE FLASHING
OUT04 AVVIO CENTRALINA START HYDRAULIC OIL UNIT
OUT05 AVVIO POMPA ACQUA WATER PUMP START
OUT06 EVACUATORE TRUCIOLI AVANTI FORWARD CHIP CONVEYOR
OUT07 LUBRIFICAZIONE MINIMALE SPRAY MIST LUBRIFICATION
24VDC COMUNE COMMON
EVACUATORE TRUCIOLI INDIETRO CHIP CONVEYOR REVERSE
-S23 EVTR INDIETRO CHIP C. REVERSE
-H3
-K4
-K65
-K06
-K9
-Q-K4
-Q-K65
-Q-K06
-W30
-W37
-W89
-W117
-W119
-XQG2
CU1-M2
CU1-M3
6x2xSfAwg24
2xAwg18 CSA
Awg20 BLU-Blue
Awg20 BLU-Blue



H-230A_240/60Hz
USCITE DIGITALI MEP50
Digital Output MEP50
Foglio/Page 19
Segue/Follow 20
Ultimo/Last 211
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
OUT08 EV. APERT. MORSA TAGLIO LS CUT VICE OPEN
OUT09 EV CHIUSURA MORSA TAGLIO SV CUT VICE CLOSE
OUT10 EV APERT. MORSA ALIMENT. SV SHUTTLE VICE OPEN
OUT11 EV CHIUSURA MORSA ALIM. SV SHUTTLE VICE CLOSE
OUT12 EV SALITA TESTA SV HEAD UPSTROKE
OUT13 EV DISCESA+SBLOCCO TESTA SV DOWN. + UNLOCK HEAD
OUT14 TRAGUARDATORE LASER LASER SIGN
OUT15 LUCE ZONA TAGLIO LIGHT CUT ZONE
24VDC COMUNE COMMON
CU1-M4
CU1-M5
-K27 -K28 -K29 -K30 -K31 -K32 -K40
-F18 0.5A
-F19 0.5A
-H2 4,2W Led
-V1


Foglio/Page 20
Segue/Follow 21
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title INGRESSI ANALOGICI MEP50
Analog Input MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
REV. DATA FIRME
R0.0 First draft 20/10/2017
MODIFICA
ASSORBIMENTO MOTORE LAMA
BLADE MOTOR ABSORPTION
Al1a
Al1b
+VRf
0V
M24
CU1-M24
15.2
POSIZIONE TESTA
HEAD POSITION
Al0
Sh
M11
CU1-M11
15.0
RIFERIMENTO INGRESSO ANALOG.
REFERENCE ANALOG INPUT
ALIM. POTENZIOMETRO (4,5V)
POTENTIOMETER POWER S.
-R5
-W21
3x Awg24
BK
BU
BN
024
025
023
22.0
19.9
60
117
13.9



H-230A_240/60Hz
INGRESSI ANALOGICI MEP50
Analog Input MEP50
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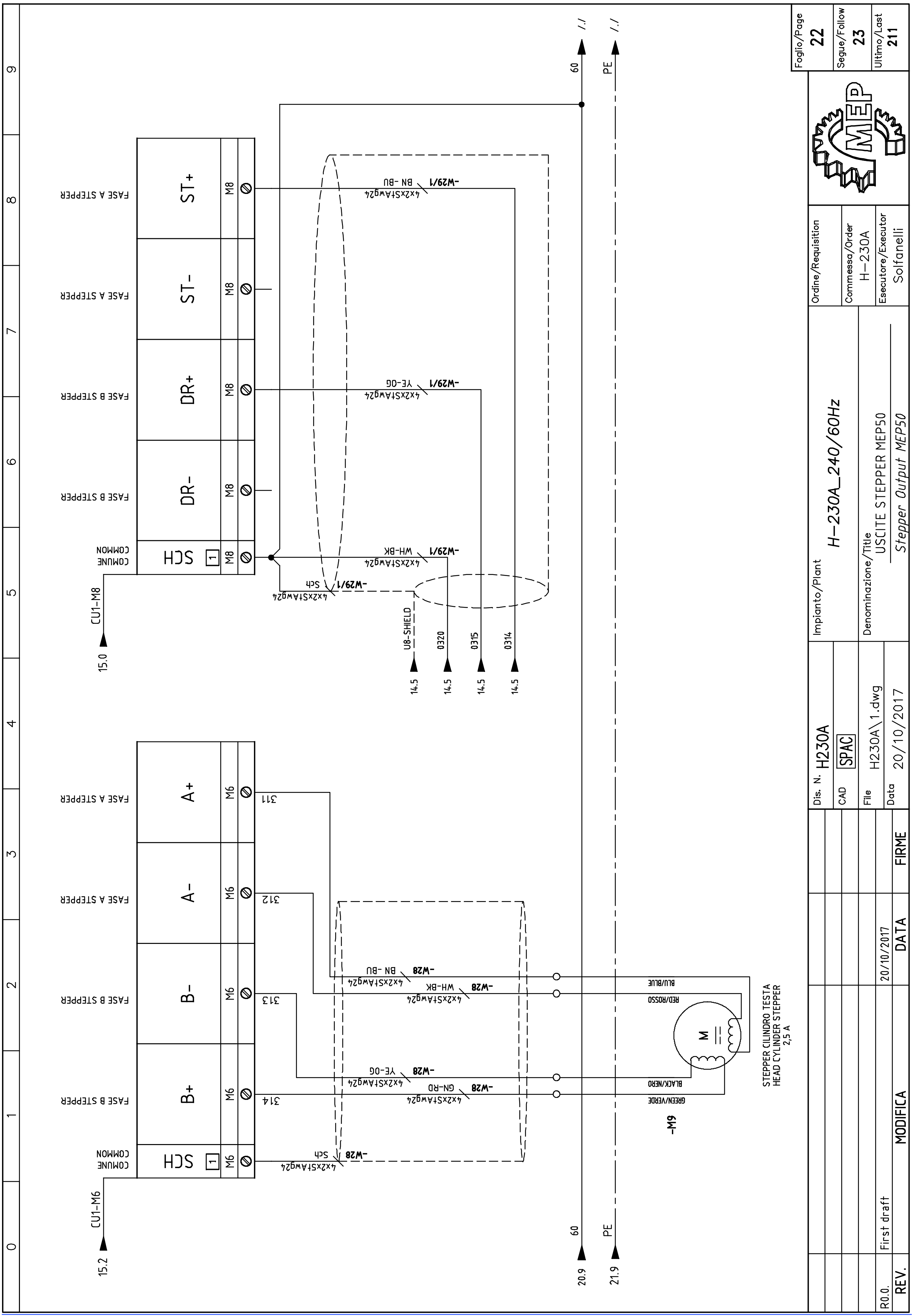
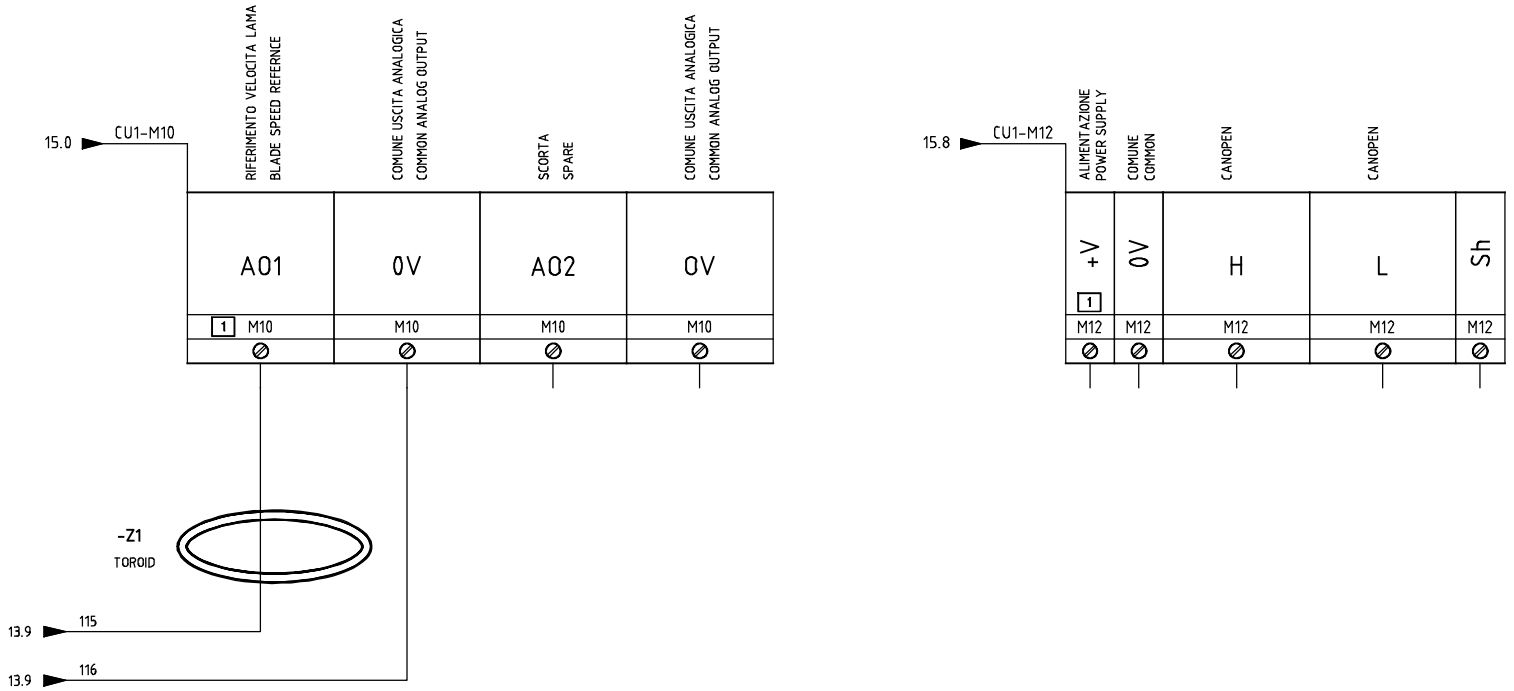
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant
Denominazione/Title
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME
AI2a REGOLAZIONE FORZA TAGLIO
FEED FORCE ADJUSTMENT
AI4a TENSIONAMENTO LAMA
BLADE TENSIONER
SCORTA
SPARE
ALIM. (4,5V)
POWER SUPPLY
+VRf
0V
AI2b
AI3a
AI3b
AI4b
M25
M19
M26
M27
CU1-M25
CU1-M26
CU1-M27
-R-M25
10K
-R0
3,0T / 5V
-XS7
-W20
4x2 Awg24St CSA
BN-BU
YE-OG
WH-BK
GN-RD
Sch
BIANCO
WHITE
ROSSO
RED
NERO
BLACK
1322
0322
322
051
027
052
PE
13.9
22.0
15.1
15.2


FASE A STEPPER
FASE B STEPPER
COMUNE COMMON
CU1-M8
CU1-M6
ST+
ST-
DR+
DR-
SCH
A+
A-
B-
B+
M8
M6
-W29/1 BN-BU 4x2xSTAWg24
-W29/1 YE-OG 4x2xSTAWg24
-W29/1 WH-BK 4x2xSTAWg24
-W29/1 Sch 4x2xSTAWg24
U8-SHIELD
0320
0315
0314
-W28 BN-BU 4x2xSTAWg24
-W28 WH-BK 4x2xSTAWg24
-W28 YE-OG 4x2xSTAWg24
-W28 GN-RD 4x2xSTAWg24
-W28 Sch 4x2xSTAWg24
311
312
313
314
BLU/BLUE
RED/ROSSO
BLACK/NERO
GREEN/VERDE
-M9
STEPPER CILINDRO TESTA
HEAD CYLINDER STEPPER
2,5 A
60
PE
Foglio/Page 22
Segue/Follow 23
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title USCITE STEPPER MEP50
Stepper Output MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME



REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
USCITA ANALOGICA E SERIALE MEP50
Analog Output and Serial MEP50

Ordine/Requisition

Commessa/Order
H-230A

Esecutore/Executor
Solfanelli

Foglio/Page
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Ultimo/Last
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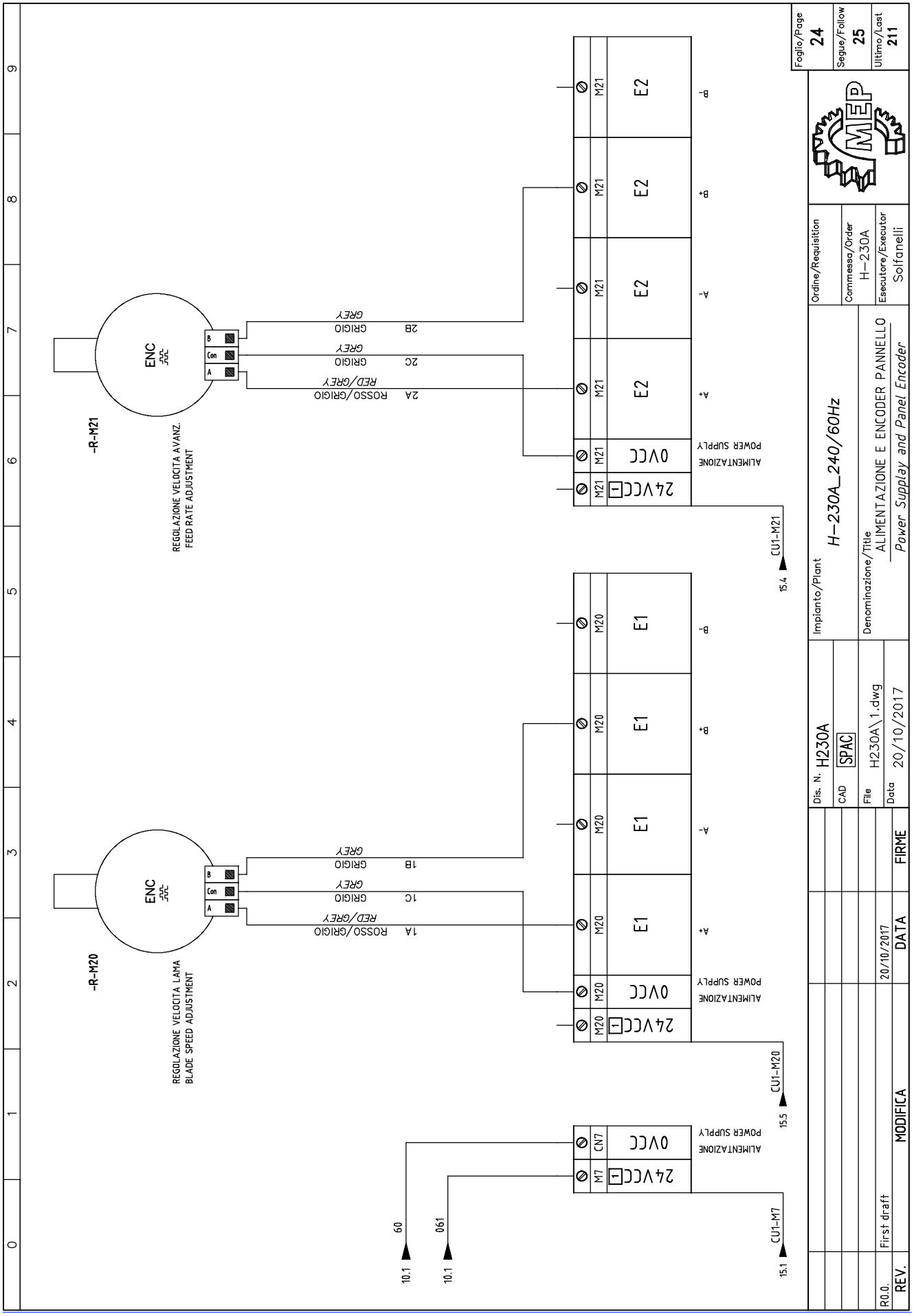
-R-M21
REGOLAZIONE VELOCITA AVANZ.
FEED RATE ADJUSTMENT
ENC
B
Con
A
2A ROSSO/GRIGIO RED/GREY
2C GRIGIO GREY
2B GRIGIO GREY
-R-M20
REGOLAZIONE VELOCITA LAMA
BLADE SPEED ADJUSTMENT
1A ROSSO/GRIGIO RED/GREY
1C GRIGIO GREY
1B GRIGIO GREY
24VCC
0VCC
ALIMENTAZIONE
POWER SUPPLY
M21
M20
M7
CN7
E1
E2
A+
A-
B+
B-
CU1-M21
CU1-M20
CU1-M7
15.4
15.5
15.1
10.1
60
61
Foglio/Page 24
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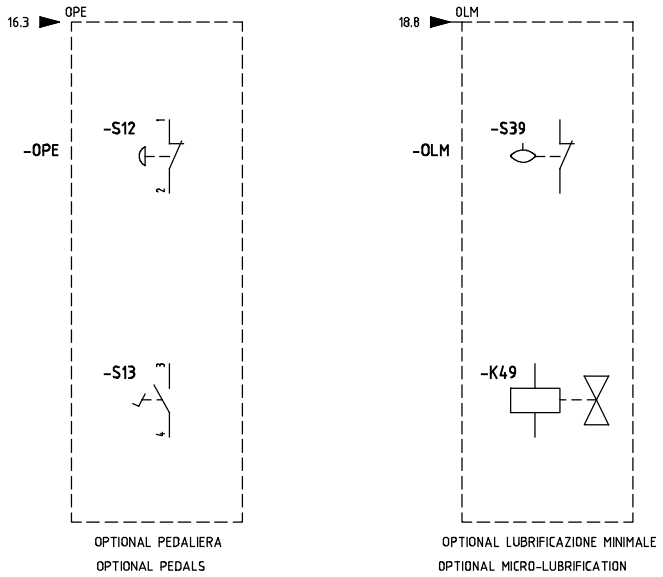
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title ALIMENTAZIONE E ENCODER PANNELLO
Power Supply and Panel Encoder
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
REV. MODIFICA DATA FIRME
R0.0 First draft 20/10/2017



OPTIONAL PEDALIERA
OPTIONAL PEDALS

OPTIONAL LUBRIFICAZIONE MINIMALE
OPTIONAL MICRO-LUBRIFICATION

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Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
OPTIONAL
Optional

Ordine/Requisition

Commessa/Order
H-230A

Esecutore/Executor
Solfanelli

MEP

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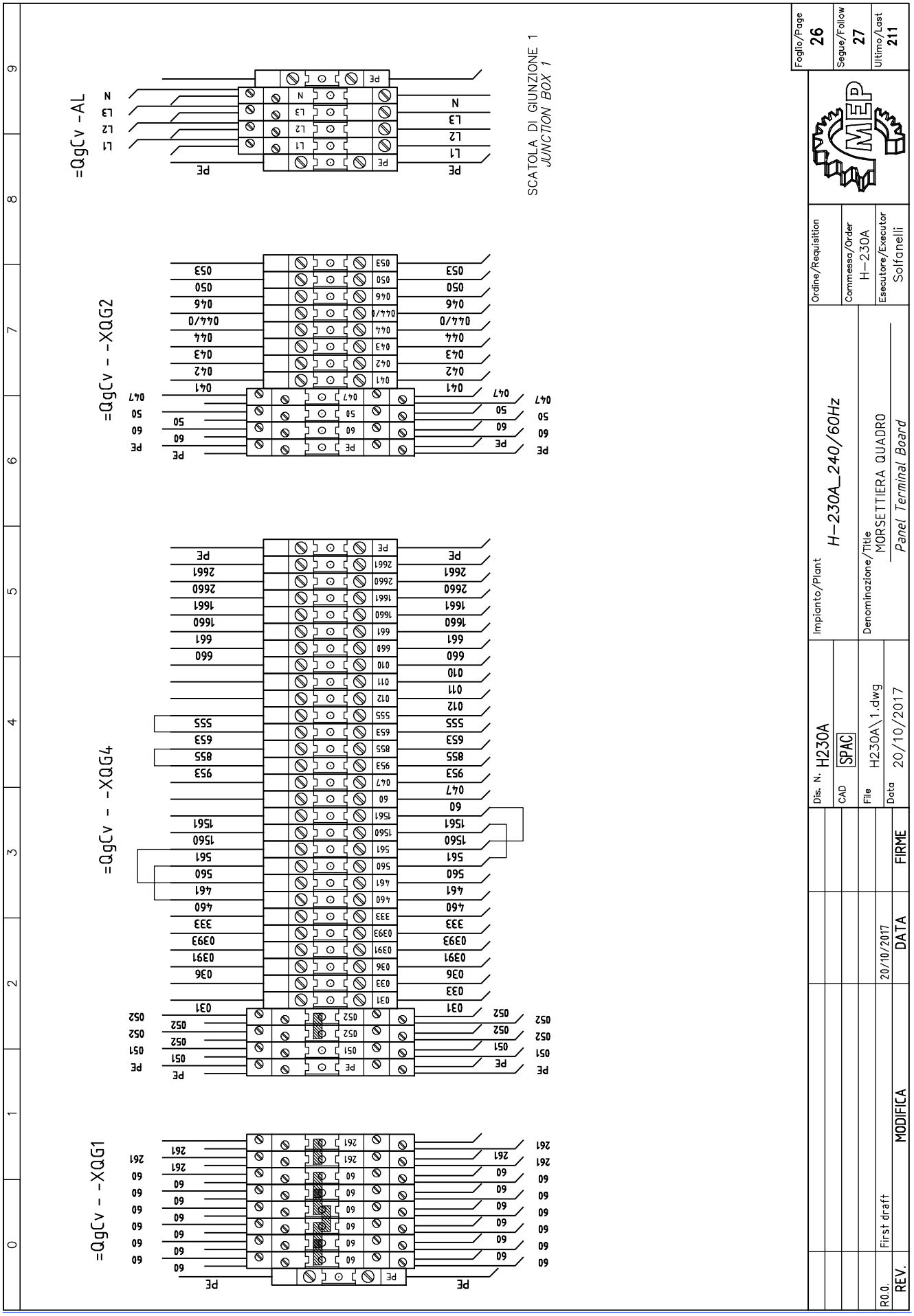
SCATOLA DI GIUNZIONE 1
JUNCTION BOX 1
=QgCv -AL
=QgCv - -XQG2
=QgCv - -XQG4
=QgCv - -XQG1
H-230A_240/60Hz
MORSETTIERA QUADRO
Panel Terminal Board
H230A
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First draft
MODIFICA
DATA
FIRME
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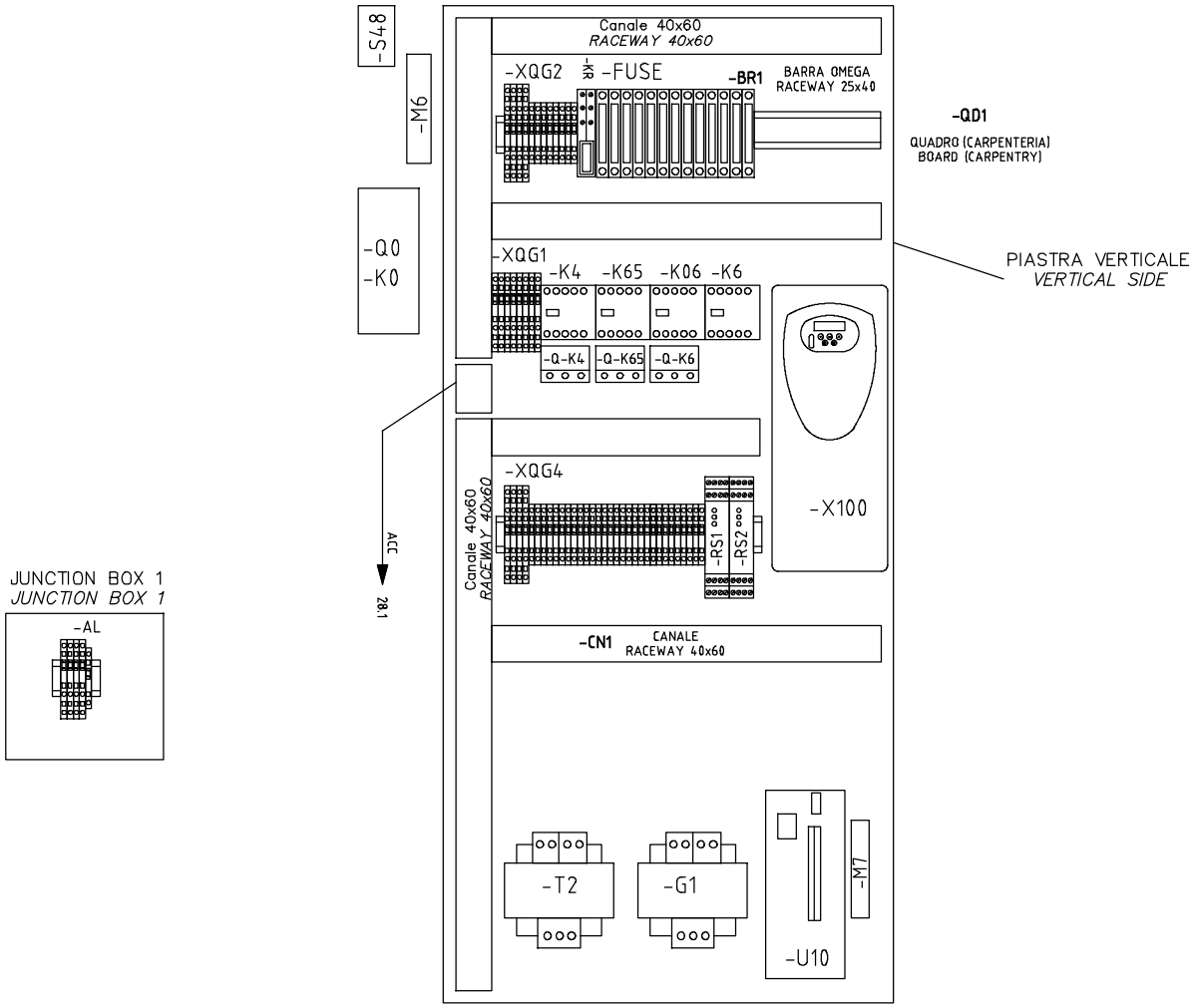

-FL1 FILO Awg20 / WIRE Awg20

-FL2 FILO Awg16 / WIRE Awg16

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

-PT2 PUNTALINO 1,5mmq / TERMINAL 1,5mmQ

-GN

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

-NM1 NUMERAZIONE FILI / WIRE NUMERATION

-NM2 NUMERAZIONE MORSETTI / TERMINAL NUMERATION

-FS1 FASCETTA 140x3.5 / CLAMP 140x3.5

-TF2 GUARNIZIONE AERSTOP / SEAL AERSTOP

REV.	MODIFICA	DATA	FIRME
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Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: H-230A_240/60Hz
Denominazione/Title: INTERNO QUADRO / Board Inside
Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

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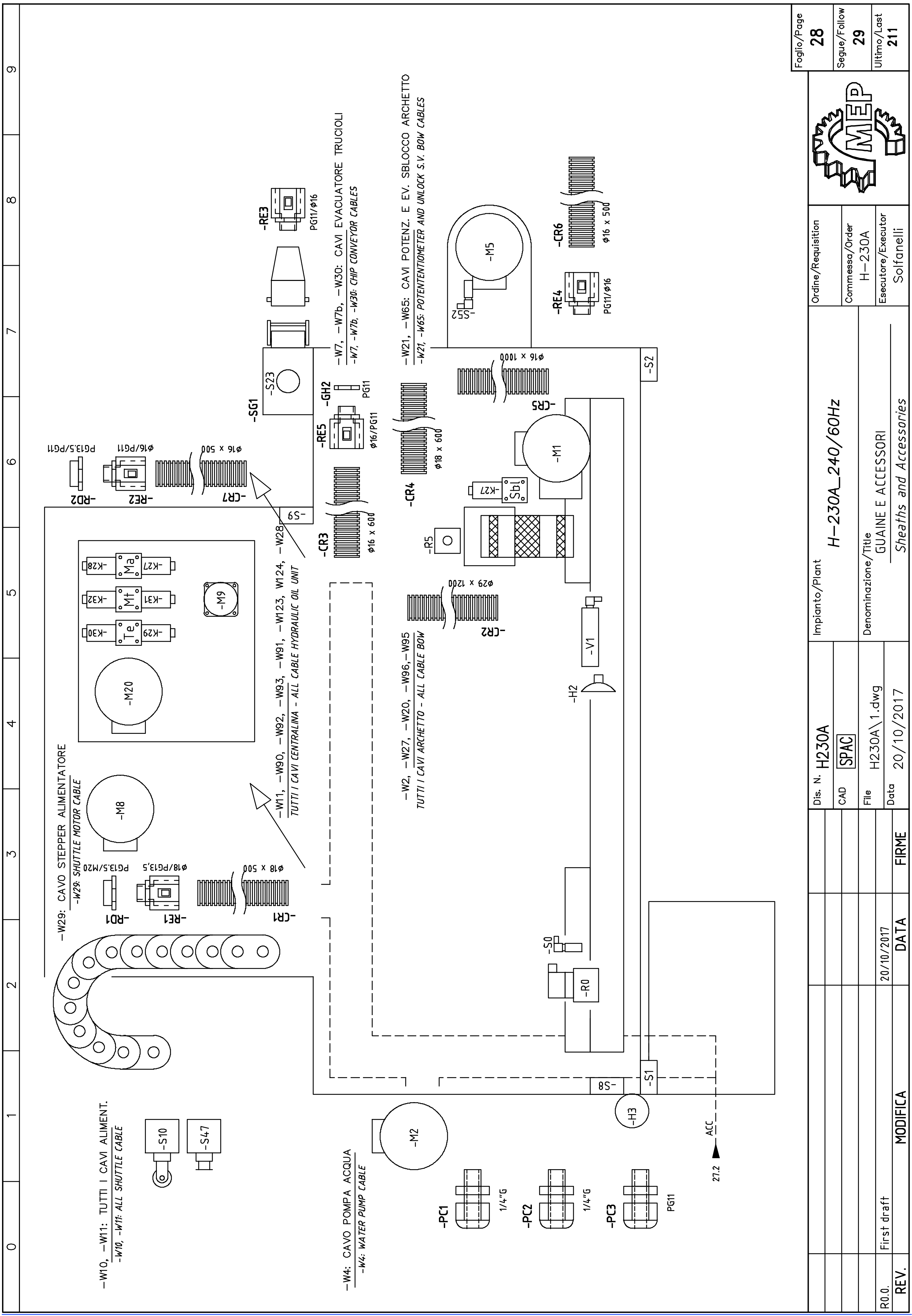
-W10, -W11: TUTTI I CAVI ALIMENT.
-W10, -W11: ALL SHUTTLE CABLE
-W4: CAVO POMPA ACQUA
-W4: WATER PUMP CABLE
-W29: CAVO STEPPER ALIMENTATORE
-W29: SHUTTLE MOTOR CABLE
-W11, -W90, -W92, -W93, -W91, -W123, W124, -W28
TUTTI I CAVI CENTRALINA - ALL CABLE HYDRAULIC OIL UNIT
-W2, -W27, -W20, -W96, -W95
TUTTI I CAVI ARCHETTO - ALL CABLE BOW
-W7, -W7b, -W30: CAVI EVACUATORE TRUCIOLI
-W7, -W7b, -W30: CHIP CONVEYOR CABLES
-W21, -W65: CAVI POTENZ. E EV. SBLOCCO ARCHETTO
-W21, -W65: POTENTENTIOMETER AND UNLOCK S.V. BOW CABLES
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Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_240/60Hz
Denominazione/Title GUAINE E ACCESSORI
Sheaths and Accessories
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0 First draft 20/10/2017
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
			018	BK1				BK1	018			
=BmMep -M20	6/6	U	019	BK2				BK2	019	T1	6/6	=QgCv -Q-K65
=BmMep -M20	6/7	V	020	BK3	-W11 022.1984			BK3	020	T2	6/7	=QgCv -Q-K65
=BmMep -M20	6/7	W	PE	GNYE	Hydraulic motor cable			GNYE	PE	T3	6/7	=QgCv -Q-K65
=BmMep -M20	6/7	PE								○ 5_6	6/8	=QgCv -XQGPE
			1024	BK1				BK1	1024			
=QgEtMep XMET	7/4	1	1025	BK2				BK2	1025	U	7/4	=QgEtMep -M5
=QgEtMep XMET	7/4	2	1026	BK3	-W7/1 022.1984			BK3	1026	V	7/4	=QgEtMep -M5
=QgEtMep XMET	7/5	3	7	GNYE	Chip conveyor cable 2			GNYE	7	W	7/5	=QgEtMep -M5
=QgEtMep XMET	7/5	PE								PE	7/5	=QgEtMep -M5
			1021	BK1				BK1	1021			
=QgCv -XFET	7/4	1	1022	BK2				BK2	1022	T1	7/4	=QgCv -Q-K06
=QgCv -XFET	7/4	2	1023	BK3	-W7 022.1984			BK3	1023	T2	7/4	=QgCv -Q-K06
=QgCv -XFET	7/5	3	7	GNYE	Chip conveyor cable			GNYE	7	T3	7/5	=QgCv -Q-K06
=QgCv -XFET	7/5	PE								○ 5_8	7/5	=QgCv -XQGPE
			015	BK1				BK1	015			
=BmMep -M2	6/4	U	016	BK2				BK2	016	T1	6/4	=QgCv -Q-K4
=BmMep -M2	6/5	V	017	BK3	-W4 022.1984			BK3	017	T2	6/5	=QgCv -Q-K4
=BmMep -M2	6/5	W	PE	GNYE	Coolant pump motor cable			GNYE	PE	T3	6/5	=QgCv -Q-K4
=BmMep -M2	6/5	PE								○ 5_4	6/5	=QgCv -XQGPE
			061	BK	-W01 022.1980	1.30Mt		BK	061	CN7	24/1	24VCC
=QgCv -F15	8/2		60	BK2	Controller supply cable			BK2	60	CN7	24/1	0VCC
=QgCv -XQG1	10/1	60_1 ○										
				BK1	-W33 022.1980			BK1				
				BK2				BK2				

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Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable summary

Ordine/Requisition
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -Q-K4	18/7	95	049	BK				BK	049	CN3	18/7	OUT05
=QgCv -XQG2	19/2	041 ○	041	BN				BN	041	CN4	19/2	OUT08
=QgCv -Q-K65	18/6	95	048	GY				GY	048	CN3	18/6	OUT04
=QgCv -XQG2	18/4	053 ○	053	BU				BU	053	CN2	18/4	OUT03
=QgCv -XQG2	19/6	043 ○	043	GN				GN	043	CN5	19/6	OUT12
=QgCv -XQG2	19/7	044 ○	044	YE				YE	044	CN5	19/7	OUT13
=QgCv -XQG2	19/2	042 ○	042	WH	-W117 022.1906			WH	042	CN4	19/2	OUT09
=QgCv -XQG2	19/5	044/0 ○	044	VT				VT	044	CN5	19/7	OUT13
=QgCv -Q-K06	18/7	95	055	RD				RD	055	CN3	18/7	OUT06
=QgCv -XQG2	18/8	050 ○	050	OG				OG	050	CN3	18/8	OUT07
				BU-WH				BU-WH				
			047	WH-BU				WH-BU	047			
=QgCv -XQG2	19/4	047 ○		Sch				Sch		CN4	19/4	OUT11
			036	BK				BK	036			
=QgCv -XQG4	16/7	036 ○	333	BN				BN	333	CN15	16/7	IN06
=QgCv -XQG4	17/4	333 ○	031	GY				GY	031	CN18	17/4	IN11
=QgCv -XQG4	16/2	031 ○	051	BU				BU	051	CN15	16/2	IN00
=QgCv -XQG4	16/6	051_1 ○	0392	GN				GN	0392	CN16	16/9	0VCC
=QgCv -R-S2	12/8	CS AR-24	352	YE				YE	352	CN15	16/4	IN03
=QgCv -F19	19/8		0391	WH	-W118 022.1906			WH	0391	CN5	19/8	OUT15
=QgCv -XQG4	17/4	0391 ○	351	VT				VT	351	CN18	17/4	IN10
=QgCv -F18	19/7		052	RD				RD	052	CN5	19/7	OUT14
=QgCv -XQG4	16/3	052 ○	769	OG				OG	769	○ 052_2	13/7	=QgCv -XQG2
=QgCv -XQG4	16/3	033 ○	02	BU-WH				BU-WH	02	CN15	16/3	IN01
=QgCv -R- S1	11/9	CS AR-24	0393	WH-BU				WH-BU	0393	CN15	16/4	IN02
=QgCv -XQG4	16/6	0393 ○		Sch				Sch		CN15	16/6	IN05

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Dis. N. H230A
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Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.		NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt] / DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -R-S2	12/6	CS AR-24		663	BK			BK	663	3	12/4	=QgCv -S3
=QgCv -XQG4	11/1	461	○	461	BN			BN	461			
=QgCv -XQG4	11/0	460	○	460	GY			GY	460	2	11/0	=QgCv -S4
=QgCv -XQG1	10/1	60_1	○	60	BU			BU	60	1	11/0	=QgCv -S4
=QgCv -S3	11/4	3		563	GN			GN	563	CS AR-24	11/6	=QgCv -R- S1
=QgCv -S3	11/4	4		564	YE			YE	564	CS AR-24	11/6	=QgCv -R- S1
=QgCv -R-S2	12/6	CS AR-24		664	WH	-W119 022.1906		WH	664	4	12/4	=QgCv -S3
=QgCv -R-S2	12/6	CS AR-24		766	VT			VT	766	4	12/6	=BmCv -S3
=QgCv -XQG2	10/3	1	○	261	RD			RD	261			
=QgCv -R- S1	11/7	CS AR-24		1261	OG			OG	1261	CN2	18/2	24VDC
					BU-WH			BU-WH				
					WH-BU			WH-BU				
					Sch			Sch				
				116	GN			GN	116			
	13/2	0V		115	BN			BN	115	CN10	23/2	0V
	13/2	A2		57	BK			BK	57	CN10	23/1	AO1
	13/2	B5		553	BU			BU	553	CN2	18/1	OUT00
	13/2	B2		052	RD	-W120/1 022.1905		RD	052	CN2	18/1	24VDC
	13/2				YE			YE		○ 052_2	13/7	=QgCv -XQG2
				117	WH			WH	117			
	13/2	B1		038	OG			OG	038	CN24	20/7	AI1a
	13/3			PE	Sch			Sch	PE	CN15	16/5	IN04
=QgCv -XQGPE	5/4	5_1	○									
					BK1			BK1				
				60	BK2	-W123 022.1980		BK2	60			
=QgCv -XQG1	19/8	_1	○							1	19/6	=QgCv -X012
					GN			GN				
					BN			BN				
					BK			BK				
					BU			BU				
					RD	-W20 022.1905		RD				
					YE			YE				
					WH			WH				
					OG			OG				
				PE	Sch			Sch	PE			
=QgMep -XS7	21/7	PE	○							○ 5_1	5/4	=QgCv -XQGPE

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CAD	SPAC
File	H230A\1.dwg
Data	20/10/2017
Impianto/Plant	H-230A_240/60Hz
Denominazione/Title	RIASSUNTIVO CAVI / Cable Summary
Ordine/Requisition	
Commessa/Order	H-230A
Esecutore/Executor	Solfanelli

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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
=SaCv	22/1		314	GN-RD				GN-RD	314			
=SaCv	22/2		311	BN -BU				BN -BU	311	CN6	22/1	B+
=SaCv	22/2		312	WH-BK	-W28 022..1905			WH-BK	312	CN6	22/3	A+
=SaCv	22/1		313	YE-OG				YE-OG	313	CN6	22/3	A-
SCH	22/1	CN6	SCR	Sch				Sch	SCR	CN6	22/2	B-
				GN-RD				GN-RD				
=QgCv	14/2	14	0314	BN -BU				BN -BU	0314			
=QgCv	14/2	20	0320	WH-BK	-W29/1 022..1905			WH-BK	0320	CN8	22/8	ST+
=QgCv	14/2	15	0315	YE-OG				YE-OG	0315	CN8	22/5	SCH
SCH	22/5	CN8	???	Sch				Sch	???	CN8	22/7	DR+
				GN-RD				GN-RD				
=QgCv -XQG4	14/5	010/PC ○	010	BN -BU				BN -BU	010	10	14/2	=QgCv
=QgCv -XQG4	14/5	011/PC ○	011	WH-BK	-W29/2 022..1905			WH-BK	011	11	14/2	=QgCv
=QgCv -XQG4	14/5	012/PC ○	012	YE-OG				YE-OG	012	12	14/2	=QgCv
=QgCv -XQG4	14/5	PE ○	13	Sch				Sch	13			
-S3	12/2	21	3660	GN-RD				GN-RD	3660	CS AR-24	12/5	=QgCv -R-S2
=BmMep -S9	12/2	12	2661	BN -BU				BN -BU	2661	○ 2661	12/2	=QgCv -XQG4
-S3	12/2	22	2660	WH-BK	-W54 022..1905			WH-BK	2660	○ 2660	12/2	=QgCv -XQG4
=BmMep -S9	12/2	11	3661	YE-OG				YE-OG	3661	CS AR-24	12/5	=QgCv -R-S2
				Sch				Sch				
=QgCv -XQG4	12/1	1660 ○	1660	GN-RD				GN-RD	1660	22	12/2	-S3
=BmMep -S8	12/2	11	3661	BN -BU				BN -BU	3661	○ 2661	12/2	=QgCv -XQG4
=QgCv -XQG4	12/2	2660 ○	3660	WH-BK	-W55 022..1905			WH-BK	3660	21	12/2	-S3
=BmMep -S8	12/2	12	1661	YE-OG				YE-OG	1661	○ 1661	12/1	=QgCv -XQG4
				Sch				Sch				

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Dis. N. H230A
CAD SPAC
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Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

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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
				WH				WH				
				BN				BN				
			661	GN				GN	661			
=QgCv -XQG4	12/1	661 ○	1661	YE				YE	1661			
=QgCv -XQG4	12/1	1661 ○	1660	GY	-W56 022.2053			GY	1660			
=QgCv -XQG4	12/1	1660 ○	660	PK	Left guard machine cable			PK	660			
=QgCv -XQG4	12/0	660 ○		BU				BU				
				RD				RD				
				WH				WH				
				BN				BN				
			661	GN				GN	661			
=QgCv -XQG4	12/1	661 ○	261	YE	-W57 022.2053			YE	261			
=BmCv -S3	12/6	3	60	GY	Right guard machine cable			GY	60			
=QgCv -XQG1	10/3	60_2 ○	660	PK				PK	660			
=QgCv -XQG4	12/0	660 ○		BU				BU				
				RD				RD				
				BK1	-W65 022.1980			BK1				
=QgCv -XQG1	19/3	_1 ○	60	BK2				BK2	60	2	19/5	=QgCv -X40
			052	BK				BK	052	○ 052	17/3	=QgCv -XQG4
=BmMep -S47	17/4		111	BU	-W121 022.0398	3.50Mt		BU	111	○ 333	17/4	=QgCv -XQG4
=BmMep -S47	17/4			BN	Zero setting shuttle limit switch			BN				
				WH				WH				
			221	BK				BK	221	A1	9/3	=QgCv -U10
=BmMep -M8	9/3	BIA/GIA	222	BK1				BK1	222	A1	9/3	=QgCv -U10
=BmMep -M8	9/3	GIALLO	223	BK2	-W29 022.1979	4.00Mt		BK2	223	B1	9/3	=QgCv -U10
=BmMep -M8	9/4	ARANCIO	224	BK3	Power stepper motor cable			BK3	224	B2	9/3	=QgCv -U10
=BmMep -M8	9/4	BIA/ARA	PE	GNYE				GNYE	PE	○ 5_9	9/2	=QgCv -XQGPE
=BmMep -M8	9/4											

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Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -AL	5/2	L1	L1	BK1				BK1	L1	01	5/2	=QgCv -AL
=QgCv -AL	5/2	L2	L2	BK2	-W1 022.0188	2.00Mt		BK2	L2	02	5/2	=QgCv -AL
=QgCv -AL	5/3	L3	L3	BK3	General supply cable			BK3	L3	03	5/3	=QgCv -AL
=QgCv -AL	5/3	PE	PE	GNYE				GNYE	PE	PE	5/3	=QgCv -AL
=QgCv -AL	5/0	01	354	BK1				BK1	354	SECONDARY WINDING	5/0	-T1
=QgCv -AL	5/1	02	356	BK2	-W1/1 022.0188	3.00Mt		BK2	356		5/1	-T1
=QgCv -AL	5/1	03	358	BK3	General supply cable from trasf.			BK3	358		5/1	-T1
=QgCv -AL	5/1	PE	360	GNYE				GNYE	360	PE	5/1	=QgCv -AL
=QgCv -XQG4	16/7	036	106	BK	-W122 022.1980	2.00Mt		BK	106			
=QgCv -XQG4	16/7	052_1	052	BK2	Minimal lubrification optional cable			BK2	052			
=QgCv -XQG2	19/7	044	013	BK	-W124 022.1980	3.00Mt		BK	013	1	19/7	=QgCv -X014
=QgCv -XQG1	19/3	_1	60	BK2	SV head down cable			BK2	60	2	19/7	=QgCv -X014
=BmMep -M1	6/1	U	124	BK1				BK1	124	U	6/2	=QgCv -X100
=BmMep -M1	6/1	V	126	BK2	-W2 022.0188	5.50Mt		BK2	126	V	6/2	=QgCv -X100
=BmMep -M1	6/1	W	128	BK3	Blade motor cable			BK3	128	W	6/2	=QgCv -X100
=BmMep -M1	6/1	PE	PE	GNYE				GNYE	PE	5_2	6/2	=QgCv -XQGPE
=QgMep -XR0	20/2	1	023	BN				BN	023	CN11	20/2	0V
=QgMep -XR0	20/2	2	024	BK	-W21 022.0355	5.00Mt		BK	024	CN11	20/3	AI0
=QgMep -XR0	20/2	3	025	BU	Head potentiometer cable			BU	025	CN11	20/1	+VRf
=BmMep -S0	16/2	4	100	BK				BK	100	031	16/2	=QgCv -XQG4
=BmMep -S0	16/2	3	051	BU	-W27 022.0398	7.00Mt		BU	051			
=BmMep -S0	16/2	1	052	BN	Blade proximity cable			BN	052	052	16/3	=QgCv -XQG4
				WH				WH				
=QgMep -S23	18/5	4	1055	BK	-W30 022.1980	3.10Mt		BK	1055	21	18/5	=QgCv -K6
				BK2	Reverse chip conveyor cable			BK2				

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Impianto/Plant: H-230A_240/60Hz
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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
=BmMep -H3	18/4		001	BK	-W37 022.1980	3.50Mt		BK	001	○ 053	18/4	=QgCv -XQG2
=BmMep -H3	18/4		60	BK2	Flashing cable			BK2	60	○ 60_2	10/3	=QgCv -XQG1
				BN				BN				
=QgCv -XQG4	17/4	0391 ○	110	BK	-W59 022.0424	4.00Mt		BK	110		17/4	=BmMep -S10
=QgCv -XQG4	17/3	052 ○	052	BU	Bar infeed vice limit switch			BU	052		17/4	=BmMep -S10
				WH				WH				
=QgCv -XQG4	16/6	0393 ○	395	BK				BK	395	⊂ 2	16/6	=BmMep -XEV1
=QgCv -XQG4	16/6	051_1 ○	051	WH	-W7/B 022.1982	3.10Mt		WH	051	⊂ 3	16/6	=BmMep -XEV1
=QgCv -XQG4	16/7	052_1 ○	052	RD	Chip conveyor			RD	052	⊂ 1	16/6	=BmMep -XEV1
				Sch				Sch				
=BmMep -XEV	16/6	1 ⊂	052	BN				BN	052	1	16/6	=BmMep -S52
=BmMep -XEV	16/6	2 ⊂	394	BK	-W7/B1 022.0424	1.50Mt		BK	394	4	16/6	=BmMep -S52
=BmMep -XEV	16/6	3 ⊂	051	BU	Chip conveyor			BU	051	3	16/6	=BmMep -S52
				WH				WH				
				BK	-W89 022.1980	1.80Mt		BK				
=QgCv -XQG1	10/3	60_2 ○	60	BK2	Spray mist sistem			BK2	60			
=QgCv -XQG2	19/2	042 ○	009	BK	-W90 022.1980	3.00Mt		BK	009	1	19/2	=QgCv -X009
=QgCv -XQG1	10/3	60_2 ○	60	BK2	SV cutting vice closing cable			BK2	60	2	19/3	=QgCv -X009
=QgCv -XQG2	19/4	047 ○	011	BK	-W91 022.1980	3.00Mt		BK	011	1	19/4	=QgCv -X011
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV shuttle vice closing cable			BK2	60	2	19/4	=QgCv -X011
=QgCv -XQG2	19/2	041 ○	008	BK	-W92 022.1980	3.00Mt		BK	008	2	19/2	=QgCv -X008
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV cutting vice opening cable			BK2	60	1	19/1	=QgCv -X008
=QgCv -XQG2	19/3	046 ○	010	BK	-W93 022.1980	3.00Mt		BK	010	2	19/3	=QgCv -X010
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV shuttle vice opening cable			BK2	60	1	19/3	=QgCv -X010

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Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
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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
=BmMep -H2	19/8		1352	BK	-W95 022.1980	5.00Mt		BK	1352		19/8	=QgCv -F19
=BmMep -H2	19/8		60	BK2	Work zone lamp cable			BK2	60	1	19/8	=QgCv -XQG1
=QgCv -XTL	19/7	3	1351	BN	-W96 022.0355	5.00Mt		BN	1351		19/7	=QgCv -F18
				BK				BK				
=QgCv -XTL	19/7	1	60	BU	Laser cable			BU	60	1	19/8	=QgCv -XQG1

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Impianto/Plant: H-230A_240/60Hz
Denominazione/Title: RIASSUNTIVO CAVI / Cable Summary

Ordine/Requisition:
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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-S48	022.0037	Finecorsa di sicurezza con chiave 1NO + 1NC	Safety Switch with key 1NO + 1NC	LS S11 ZB – MOELLER	=BmCv	5	1
-GN	022.0293	Terminale a giunto (Rosso)	Wire Terminal Connection Red	1,5mmq F1615 PSK	=BmCv	27	1
-K0	022.0553	Bobina di minima 240/60	Releaser 240/60	U-PKZ0 V.240.60 cod. 073146 - Moeller	=BmCv	5	1
-KR	022.0993 + 022.2391	Rele 24VCC – 2 contatti scambio + zoccolo	Relay 24 VCC – 2 exchange contacts + base	40.52.9.024.0000 + 95.05.SPA - FINDER	=BmCv	12	1
-K27		Elettrovalvola aperta (in chiusura) secondo solenoide			=BmMep	19	1
-K29					=BmMep	19	1
-K31					=BmMep	19	1
-RD2					=BmMep	28	1
-RE2					=BmMep	28	1
-S1	010.1886	Finecorsa a cerniera complementare aletta stretta	Complementary hinge	HC AA PIZZATO	=BmMep	12	1
-S2					=BmMep	12	1
-S1	010.1897	Finecorsa a cerniera aletta stretta 2NC + 1NO+ cavo 0.70Mt +M12	Hinge limit switch 2NC + 1NO	HP AA052F-0,7PMS1 PIZZATO	=BmMep	12	1
-S2					=BmMep	12	1
-SG1	016.1271	Scatola derivazione metallica	Metal junction box?	95x95 P.70	=BmMep	28	1
-M8	019.3408	Motore stepper 21Nm 13A 1,8°	Stepper Motor 21Nm 13A 1,8° FL110STH150-1304A-H-1	FL110STH150-1304A-H-1 FULLING	=BmMep	9	1
-M9	019.3555	Motore stepper 1,9Nmt 2,8A 1,8°	Stepper motor 1,9Nmt 2,8A 1,8°	FL57STH76-2804-A-12 FULLING	=BmMep	22	1
-M1	019.3627	Motore KW 2,2 M90L4P.B14 V189/240.60 14,8/8,60A		019.3627	=BmMep	6	1
-M20	019.4015	Motore centralina C80-B14, 1.1KW 115-200(9.40-5.40) 1420rpm, 1.3KW 135-240(9.40-5.40) 1700rpm CSA	Motor oil unit 1.1KW 115-200(9.40-5.40) 1420rpm, 1.3KW 135-240(9.40-5.40) 1700rpm CSA	019.4015	=BmMep	6	1
-RE5	022.0210	Raccordo rapido dritto	Rapid straight Joint PG11/Ø16	SEM PG11/Ø16	=BmMep	28	1
-RE1	022.0211	Raccordo rapido dritto	Rapid straight joint SEM PG13,5/Ø19	SEM PG13,5/Ø19	=BmMep	28	1
-PC1	022.0232	Pressacavo metallico	Metal Cable Gland	1/4"G	=BmMep	28	1
-PC2					=BmMep	28	1
-PC3	022.0237	Pressacavo	Cable Gland PG11	BS03	=BmMep	28	1
-GH2	022.0245	Dado grigio		PG11	=BmMep	28	1
-XEV1	022.0282 + 022.0267	Connettore volante ILME (CK03VS pioli + CKM04) 5 poli per evacuatore trucioli	Mobile connector ILME (CK03VS + CKM04) 5 poles	CK03VS pioli + CKM04	=BmMep		1
-XEV	022.0283 + 022.0268	Connettore volante ILME (CK03VGS leva + CKF04) 5 poli per evacuatore trucioli			=BmMep		1
-RD1	022.0349	Riduzione	Joint Reduction	M/F M20/PG13,5	=BmMep	28	1
-S0	022.0522	Sensore di prossimita PNP lungo conn. M12	Proximity sensor PNP long with M12 connector.	B00122-DIS388 – SELET	=BmMep	16	1
-S52	022.0527	Sensore di prossimita PNP corto conn. M12	Proximity sensor PNP short with M12 connector.	B02122POC5 – SELET	=BmMep	16	1
-S10	022.0543	Finecorsa a rotella 1NO+1NC conn. M12 laterale	Limit Switch with roll 1NO+1NC	NB B110BB-DMK PIZZATO	=BmMep	17	1
-S47					=BmMep	17	1
-S8	022.0544	Finecorsa a chiave 2 NC	Limit Switch with fork 2NC	FR 993-D10 PIZZATO	=BmMep	12	1
-S9					=BmMep	12	1
-V1	022.1191	Traguardatore laser a riga 12x70 24Vcc 635nm 5mW e conn. M8	Laser Line Sign	MOD 50EM 24V e connettore - RLI	=BmMep	19	1
-R5	022.1814	Potenziometro lineare IP67 corsa 300mm	Linear potentiometer IP67 range 300mm	TX2 0300 cod. 716 002 101 NOVOTECNIK	=BmMep	20	1
-CR3	022.2601	Guaina POLIFLEX Ø16	Poliflex Covering Ø16	NW 12-1200127	=BmMep	28	1
-CR5					=BmMep	28	1
-CR1	022.2602	Guaina POLIFLEX Ø18	Poliflex Covering Ø18	NW 14-1200143	=BmMep	28	1
-CR4					=BmMep	28	1
-CR2	022.2604	Guaina POLIFLEX Ø29	Poliflex covering Ø29	NW 23-1200232	=BmMep	28	1
-H3	022.3254	Lampeggiante LED 24 VAC/Vdc	Flashing LED 24 VAC/Vdc	SL7-CB-IMH + SL7-BL24Y + SL7-AP24	=BmMep	18	1
-H2	022.3255	Faro Led 4,2W 16/36 VCC 330LM	LED LIGHT 4,2W 16/36 VCC 330LM		=BmMep	19	1
-M2	028.0261	Elettropompa 190W V.220-240/380-415, 0.74/0.43A	Electropump 190W V.220-240/380-415, 0.74/0.43A		=BmMep	6	1
		Comando a pedale NO			=BmPeMep	16	1
-SE2	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=BmPeMep	16	1

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Impianto/Plant
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-SE2	022.0937	Contatto pulsantiera NA	Normally open contact	M22-K10 cod. 216376 Moeller	=BmPeMep	16	1
-SE2	022.1405	Pulsante nero	Black push button	M22-D-S cod. 216590	=BmPeMep	16	1
-OPE	090.0672	Comando supplementare a pedaliera per Shark	Foot-pedal device for Shark		=BmPeMep	25	1
-R-M20	010.3744	Manopola Alluminio Nero e Logo Mep	Black Knob with Mep Icon	Ø38x23mm - Albero Ø6	=QgCv	24	1
-R-M21					=QgCv	24	1
-R-M25	010.3748	Manopola Alluminio Logo HydMech con riferimento	Knob with HydMech Icon and reference	Ø38x23mm - Albero Ø6	=QgCv	21	1
-M7	016.0624	Staffa per ventola azionamento P/P	Support for driver fan cooler		=QgCv	10	1
-QD1	016.0789	Quadro elettrico SH 230 Nc HS e Spider	Electric panel SH 230 Nc HS and Spider		=QgCv	27	1
-Q-K06	019.3507	Motore Panasonic V200/50__60, 0.25/0.22A	Panasonic Motor V200/50__60, 0.25/0.22A?	019.3507	=QgCv	7	1
-M6	019.5117	Griglia per ventola 120x120	Cover for fan cooler 120x120 ?	ALFA GM120	=QgCv	10	1
-M7	019.5123	Griglia per ventola 80x80	Cover for fan cooler 80x80	ALFA GM 80	=QgCv	10	1
-M6	019.5220	Ventola raffreddamento 120x120 24Vdc	Fan cooling 120x120 24Vdc	V108MBW24DC AlfaPlastic	=QgCv	10	1
-M7	019.5221	Ventola raffreddamento 80x80 - 24Vdc	Fan cooling 80x80 - 24Vdc	V108 DSW24V - ALFAELECTRIC	=QgCv	10	1
-FS1	019.5353	Fascetta in plastica 140x3,5	Plastic clamp 140x3,5	32031 Legrand	=QgCv	27	1
-R-M25	022.0045	Potenziometro 10K monogiro	Potentiometer 10K single turn	91A1AB28B15L - Mexico	=QgCv	21	1
-FL1	022.0133	Filo unipolare AWG20 CSA (0.5mmq)	Single wire AWG20 CSA (0.5mmq)		=QgCv	27	1
-FL2	022.0134	Filo unipolare AWG16 CSA (1.5mmq)	Single wire AWG16 CSA (1.5mmq)		=QgCv	27	1
-XFET	022.0281 + 022.0262	Connettore fisso ILME (CK03I + CKF03)	Fixed connector ILME (CK03I + CKF03)	CK03I + CKF03	=QgCv		1
-NM1	022.0290	Etichetta segnafilo	Cable maker and wire		=QgCv	27	1
-NM2					=QgCv	27	1
-CC1	022.0296	Terminale a occhiello (Blu)	Wire Terminal Connection Blue	Ø5 da 2,5mmq	=QgCv	27	1
-PT1	022.0311	Terminale a puntale da (Bianco)	Wire Terminal Connection White	0,5mmq DZ5CE005	=QgCv	27	1
-PT2	022.0312	Terminale a puntale da (Nero)	Wire Terminal Connection Black	1,5mmq DZ5CE015	=QgCv	27	1
-XTL	022.0376	Connettore F303N5000 per prossimity con 5Mt di cavo.	Connettor F303N5000 for connector with 5Mt cable.	022.0376	=QgCv		1
-X008	022.0429	Connettore EV idra. in DC con varistore (V1401)	Connector for solenoid valve DC with varistor	2 poli + PE - V1401 SHIELD	=QgCv	19	1
-X009					=QgCv	19	1
-X010					=QgCv	19	1
-X011					=QgCv	19	1
-X012					=QgCv	19	1
-X014					=QgCv	19	1
-X40					=QgCv	19	1
-X100	022.0743	Inverter V200-240. 50.60, 4KW	Inverter V200-240 .50.60, 4KW ; 17.6A	M300 - 04200176 - ControlTechniques	=QgCv	6	1
-CU1	022.0760.1	Display MEP50 TS__REV1	Display MEP50 TS__REV1	RAKIT7WIDE. TFT 7" Word WideTouch Screen +Cavo dati	=QgCv	15	1
-BR1	022.0900	Barra omega	Omega guide DIN		=QgCv	27	1
-CN1	022.0903	Canalina portacavi in plastica	Cable holding plastic channel	40x60	=QgCv	27	1
-G1	022.0908	Alimentatore Switching Vi 230-400-500VAC Vu 24Vdc 14A	Switching power supply Vi 240-400-500VAC Vu 24Vcc 14A	FLEX28024B AdelSystem	=QgCv	8	1
-S4	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=QgCv	11	1
-S18					=QgCv	17	1
-S54	022.0932	Contatto pulsantiera NA	Normally open contact	MCB-10 cod. E0570 5 - ABB	=QgCv	17	4
-S4	022.0936	Contatto pulsantiera NC	Normally close contact	M22-K01 cod. 216678 - Moeller	=QgCv	11	3
-S3	022.0937	Contatto pulsantiera NA	Normally open contact	M22-K10 cod. 216376 Moeller	=QgCv	11	4
-S18					=QgCv	17	1
-S4	022.1245	Fungo emergenza	Emergency push button	M22-PVT cod.263467	=QgCv	11	1
-Q0	022.1292	Magnetotermico 20-25A	Magneto-termal overload 20-25A	PKZM0-25 cod. 46989 Moeller	=QgCv	5	1
-R-M20	022.1322	Encoder da pannello Mep50	Panel encoder Mep 50		=QgCv	24	1

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Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: DISTINTA MATERIALI / *Material List*
Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-R-M21	022.1322	Encoder da pannello Mep50	Panel encoder Mep 50		=QgCv	24	1
-U10	022.1330	Azionamento per motori passo-passo (60VAC +20% - 10A) + modbus	Driver for step motor (30-100V) + modbus	APSL3 E OP/S130	=QgCv	9	1
-S18	022.1405	Pulsante nero	Black push button	M22-D-S cod. 216590	=QgCv	17	1
-S3	022.1406	Pulsante giallo	Yellow push button	M22-D-Y cod. 216598	=QgCv	11	1
-T2	022.1683	Trasformatore UL/CSA	Transformer 500VA UL/CSA	500VA P.0-240-480 S.0-55/60/65 (450VA)/0-220 (50VA)	=QgCv	8	1
	022.2053	Connettore dritto M12 con 5MT cavo UL/CSA 8x0.25mmq	Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq	SAC-8P- 5,0-PUR/M12FS- 1520369	=QgCv		1
-R0	022.2152	Tensionatore elettronico 3T	Electronic tensioner 3T	TR-S-A/3T 1,5V- 900Kg Deltateck	=QgCv	21	1
-F20 -F21 -F22	022.2239	Portafusibile 3 x (10,3x38) - 690V 32A	Fuse holding terminal 3 x (10,3x38) 690V 32A	2033038 BCH 32A ItalWeber	=QgCv	6	3
-F1 -F2	022.2240	Portafusibile 2 x (10,3x38) - 690V 32A	Fuse holding terminal 2 x (10,3x38) 690V 32A	2032038 BCH 32A ItalWeber	=QgCv	8	1
-F3 -F4					=QgCv	8	1
-XQG4	022.2245	Morsetto 2,5mmq per 4 fili a molla - PHOENIX	Terminal 2,5(4)mmq for 4 wires - PHOENIX	ST2,5- QUATTRO_3031306	=QgCv		2
-F10	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A	Fuse holding terminal 1 x (10,3x38) 690V 32A	2031038 BCH 32A ItalWeber	=QgCv	8	1
-F15					=QgCv	8	1
-F16					=QgCv	8	1
-F17					=QgCv	8	1
-F18					=QgCv	19	1
-F19					=QgCv	19	1
-AL	022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla	Single pole spring terminal 2,5mmq	56.703.0055.0	=QgCv		5
-XQG2					=QgCv		9
-XQG4					=QgCv		40
-XQG2	022.2257	Morsetto da 2.5 mm singolo per 3 fili a molla 56.703.5055.0	Triple pole spring terminal 2,5mmq	56.703.5055.0	=QgCv		1
	022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	Quadruple pole spring terminal 2,5mmq	56.703.5155.0	=QgCv		3
-XQG1					=QgCv		2
-XQG2					=QgCv		4
-XQGPE	022.2321	Barra da 15x15mm con 10 fori 6mm			=QgCv		1
-CU1	022.2832.1	Controllore Mep50C_REV1_senza display	Controller Mep50C_REV1_without display	Cod. UN07MEP006	=QgCv	15	1
-Z1	022.2903	Toroide ferrite N30 r40	Ferrites Toroids N30 r40	212-0976 - RS	=QgCv	23	1
-K6	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	18	1
-K06					=QgCv	18	1
-K4	022.3012	Contattore 3KW NO (24 V Dc)	Contactor 3KW NO (24 V Dc)	DILM7-10 cod.276565 Moeller	=QgCv	18	1
-K65					=QgCv	18	1
-RS1	022.3811	Rele sicurezza 4NO, 1NC cat.3	Safety relay 4NO, 1NC cat.3	CS AR-24V024 PIZZATO	=QgCv	11	1
-RS2					=QgCv	12	1
-Q-K65	022.3813	Rele termico 4-6A	Termal overload 4-6A	ZB12-6A cod. 278439 Moeller	=QgCv	6	1
-Q-K4	022.3819	Rele termico 0.6-1.0A	Termal overload 0.6-1.0A	ZB12-1.0A cod. 278435 Moeller	=QgCv	6	1
-S54	022.3920	Joystick 4 posizioni instabile con sblocco	Joystic 4 positions unstable with unlocking	MSJ12-60B cod. EL770 4 - ABB	=QgCv	17	1
-K06	022.3924	Kit ponti potenza per teleinvertitore	Kit for contactor reversing	DILM12-XLR	=QgCv	18	1
-CU1	022.4091	Cavo USB per pannello di comando con connettore	Cable 60 cm for command panel with USB connector	M222-USB-SA ;107412 EATON	=QgCv	15	1
-R-M20	025.0235	Anello di tenuta	Potentiometer 10K single turn	NI-18-25-4.5	=QgCv	24	1
-R-M21					=QgCv	24	1
-R-M25					=QgCv	21	1
-TF2	025.0604	Guarnizione aerstop	Control panel gasket		=QgCv	27	1
-M6	028.0174	Filtro per ventola 120x120	Fan filter 120x120	M12R	=QgCv	10	1
-CU1	031.2081	Consolle di programmazione MEP50 H11A, H230A,H14A.1	Programming consolled MEP50 H11A, H230A,H14A.1		=QgCv	15	1
-M6	034.0414	Coperchio alettatore per ventola 120x120	Fan filter 120x120	M12C-7032	=QgCv	10	1

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Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
DISTINTA MATERIALI
Material List

Ordine/Requisition

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Esecutore/Executor
Solfanelli

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-M6	034.0431	Base per ventola 120x120 230V	Base for fan cooling 120x120	A12-7032	=QgCv	10	1
-F1 -F2	054.4538	Fusibile Ritardato 10.3x38 - 5A UL/CSA	Fuse Time delay 10.3x38 - 5A UL/CSA	5A 600V ATDR5	=QgCv	8	2
-F15					=QgCv	8	1
-F16					=QgCv	8	1
-F20 -F21 -F22	054.4543	Fusibile Ritardato 10.3x38 - 30A UL/CSA	Fuse Time delay 10.3x38- 30A UL/CSA	30A 600V ATDR30	=QgCv	6	3
-F5 -F6 -F7	054.4544	Fusibile Ritardato 10.3x38 - 8A UL/CSA	Fuse Time delay 10.3x38- 8A UL/CSA	8A 600V ATDR8	=QgCv	6	3
-F17	054.4659	Fusibile Ritardato 10.3x38 - 0.5A UL/CSA	Fuse Time delay10.3x38 - 0.5A UL/CSA	0.5A 600V ATDR1/2	=QgCv	8	1
-F18					=QgCv	19	1
-F19					=QgCv	19	1
-F3 -F4	054.4662	Fusibile Ritardato 10.3x38 - 4A UL/CSA	Fuse Time delay 10.3x38 - 4A UL/CSA	4A 600V ATDR4	=QgCv	8	2
-F10	054.4664	Fusibile Ritardato 10.3x38 - 7.5A UL/CSA	Fuse Time delay 10.3x38 - 7.5A UL/CSA	7.5A 600V ATDR7-1/2	=QgCv	8	1
-AL	10 mm	Morsetto da 10 mm non abbinato a costruttore			=QgCv		8
-AL	2.5 mm	Morsetto da 2.5 mm non abbinato a costruttore			=QgCv		6
-XR0	022.0369	Connettore 3 poli per tensionatore elettronico	Connector 3-poles for strain gauge	022.0369	=QgMep		1
-XS7					=QgMep		1
-S23	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=QgMep	18	1
-S23	022.0937	Contatto pulsantiera NA M22-K10 cod. 216376	Normally open contact	M22-K10 cod. 216376 Moeller	=QgMep	18	1
-S23	022.1405	Pulsante M22-D-N cod. 216598 + M22-A cod 216374	Black push button	M22-D-S cod. 216590	=QgMep	18	1

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Impianto/Plant: *H-230A_240/60Hz*
Denominazione/Title: DISTINTA CAVI / *Cable list*
Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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-W28 -W29/1 -W29/2 -W54 -W55	022..1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA								
-W9	022.0137	Cavo multipolare schermato 4x0,75			Cable with shield 4 x 0.75mmq		022.0137			3.5
-W126 -W127	022.0139	Cavo multipolare 2xAwg20 CSA (2X0,5)			Cable 2 x AWG20 CSA (0.5mmq)		022.0139			
-W45 -W46 -W47	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro			Cable with shield 4 x 0.5mmq					4 6 6
-W3	022.0178	Cavo 4GAwg18(0.75) UL 2587 CSA			Single wire 0.5mmq		022.0178			5
-W21	022.0355	Cavo 3xAwg24 per proxy con connettore M8 dritto. L=5Mt			Cable with straight connector M8. L=5Mt		1669628			5
-WS0	022.0422	Cavo pressofuso con connettore M12 90° lungo 10Mt			Cable with M12 90° connector; Lenght: 10Mt		1681389			10
-W10	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247			3
-W20 -W120/1 -WS2	022.1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 4x2 Awg24 CSA		022.1905			 5
-W117 -W118	022.1906	Cavo schermato 6x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 6x2 Awg24 CSA		022.1906			
-W33 -W65 -W89 -W122 -W123	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA			Cable 2X AWG18 OIL RESISTANT UL 2587 CSA		022.1980			 1.8 2
-W7/B	022.1982	Cavo schermato 3x Awg18 St oil resistant UL 2587 CSA			Cable 3xAWG18ST OIL RESISTANT UL 2587 CSA		022.1982			3.1
-W4 -W7/1 -W11	022.1984	Cavo oil resistant 4G x Awg18 TRAY-ER UL-CSA			Cable 4G X AWG18 oil resistant UL 2587 CSA		022.1984			
-W1/1	022.0188	Cavo 4GAwg16 UL 2587 CSA			Cable 4G Awg16 UL 2587 CSA Φ7.6		022.0188	=BmCv		3
	N07V-K							=BmCv		
-W7/B1	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247	=BmMep		1.5
-W61	022.0139	Cavo multipolare 2xAwg20 CSA (2X0,5)			Cable 2 x AWG20 CSA (0.5mmq)		022.0139	=QgCv		4
-W32 -W96	022.0355	Cavo 3xAwg24 per proxy con connettore M8 dritto. L=5Mt			Cable with straight connector M8. L=5Mt		1669628	=QgCv =QgCv		5 5
-W26 -W59	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247	=QgCv =QgCv		10 4
-W115 -WS1 -WS8 -WS9	022.1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 4x2 Awg24 CSA		022.1905	=QgCv =QgCv =QgCv =QgCv		4 5 5 5
-W119	022.1906	Cavo schermato 6x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 6x2 Awg24 CSA		022.1906	=QgCv		
-W01 -W30 -W37	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA			Cable 2X AWG18 OIL RESISTANT UL 2587 CSA		022.1980	=QgCv =QgCv =QgCv		1.3 3.1 3.5

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Impianto/Plant
H-230A_240/60Hz

Denominazione/Title
Distinta Materiali

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-W39	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA	Cable 2X AWG18 OIL RESISTANT UL 2587 CSA	022.1980	=QgCv		5
-W90					=QgCv		3
-W91					=QgCv		3
-W92					=QgCv		3
-W95					=QgCv		5
-W124					=QgCv		3
-W125					=QgCv		
-W5	022.1981	Cavo 4G Awg18 oil resistant UL 2587 CSA	Cable 4G AWG18 OIL RESISTANT CSA	022.1981	=QgCv		6
-W8					=QgCv		5
-W25	022.1982	Cavo schermato 3x Awg18 St oil resistant UL 2587 CSA	Cable 3xAWG18ST OIL RESISTANT UL 2587 CSA	022.1982	=QgCv		4
-W7	022.1984	Cavo oil resistant 4G x Awg18 TRAY-ER UL-CSA	Cable 4G X AWG18 oil resistant UL 2587 CSA	022.1984	=QgCv		
-W56	022.2053	Cavo SAC-8P- 5,0-PUR/M12FS con M12 diritto	Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq	1520369	=QgCv		
-W57					=QgCv		
	N07V-K				=QgCv		
	N07V-K 1x2.5/RD				=QgCv		
-W2	022.1983	Cavo schermato 4G x Awg12 CSA	Cable 4G X AWG12 schielded	022.1983	=BmCv		5.5
-W27	022.0398	Cavo 4xAwg24 per prossimity con connettore M12 dritto.10Mt	Straight connector M12 10MT cable 4x0.5mmq	1683002	=QgCv		7
-W121					=QgCv		3.5
-W29	022.1979	Cavo 5G Awg16 UL 2587 CSA	Cable 5G AWG16 UL 2587 CSA	022.1979	=QgCv		4
-W93	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA	Cable 2X AWG18 OIL RESISTANT UL 2587 CSA	022.1980	=QgCv		3
-W1	022.1983	Cavo schermato 4G x Awg12 CSA	Cable 4G X AWG12 schielded	022.1983	=QgCv		2

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Ordine/Requisition:
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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: INDICE CONTENUTI / *Content Index*

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Esecutore/Executor: Solfanelli

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Sim.\Sym.	File	Descrizione\Description
	H5	Lampada *Lamp*
	H11	LED *Led*
	M2	Motore asincrono trifase *Three–phase inductor motor*
	M9	Motore corrente alternata monofase *Single–phase inductor motor*
	Q1360	Int. automatico magnetotermico sezionatore tripolare *Three–phase automatic switch*
	R1	Resistore *Resistor*
	R6	Potenziometro *Potentiometer*
	R60	Potenziometro *Potentiometer*
	S2	Comando a Pulsante NO *Push button NO*
	S4C	Pulsante di emergenza NC *Emergency push button NC*
	S5	Comando rotativo a due posizioni NO *Rotary selector two position*

Sim.\Sym.	File	Descrizione\Description
	S7	Comando a pedale NO *Control pedal NO*
	S13C	Fine corsa comandato a camma libero NC *Limit switch free NC*
	S14C	Fine corsa comandato a camma azionato NC *Limit switch actuated NC*
	S15C	Comandato dal livello di un fluido (livellostato) NC *Water gauge NC*
	T2	Trasformatore per ausiliari con schermo *Trasformer for auxiliary white shield*
	Y1	Elettrovalvola (A) *Solenoid valve (A)*
	Y1A	Elettrovalvola (B) *Solenoid valve (B)*
	KA1	Bobina rele' Aux *Auxiliary relay coil*
	KM1	Bobina contattore *Contactor coil*
	BLK11	Trasformatore per ausiliari con schermo *Trasformer for auxiliary white shield*
	BLK12	Inverter (potenza) *Inverter (power)*

Sim.\Sym.	File	Descrizione\Description
	BLK13	Azionamento (potenza) *Drive (power)*
	BLK14	Inverter (ausiliari) *Inverter (auxiliary)*
	BLK15	Azionamento (ausiliari) *Drive (auxiliary)*
	BLK21	Motore passo-passo *Stepper motor*
	BLK41	Raccordo SX *Connector SX*
	BLK42	Raccordo DX *Connector DX*
	BLK43	Tubo corrugato *Corrugated pipe*
	BLK44	Riduzione PG *PG adapter*
	BLK51	Dado PG *PG nut*
	BLK56	Terminale a puntale *Terminal*
	BLK57	Filo unipolare *Wire*

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Sim.\Sym.	File	Descrizione\Description
	BLK58	Fascette plastiche di fissaggio *Plastic clamp*
	BLK60	Terminale a occhiello *Terminal*
	BLK66	Sacchetto portafusibile *Bag fuse*
	SPX08E	Dispositivo di prossimita' induttivo D.C. NO *Sensor of proximity fed DC NO*

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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: LEGENDA SIMBOLI
Symbol Key

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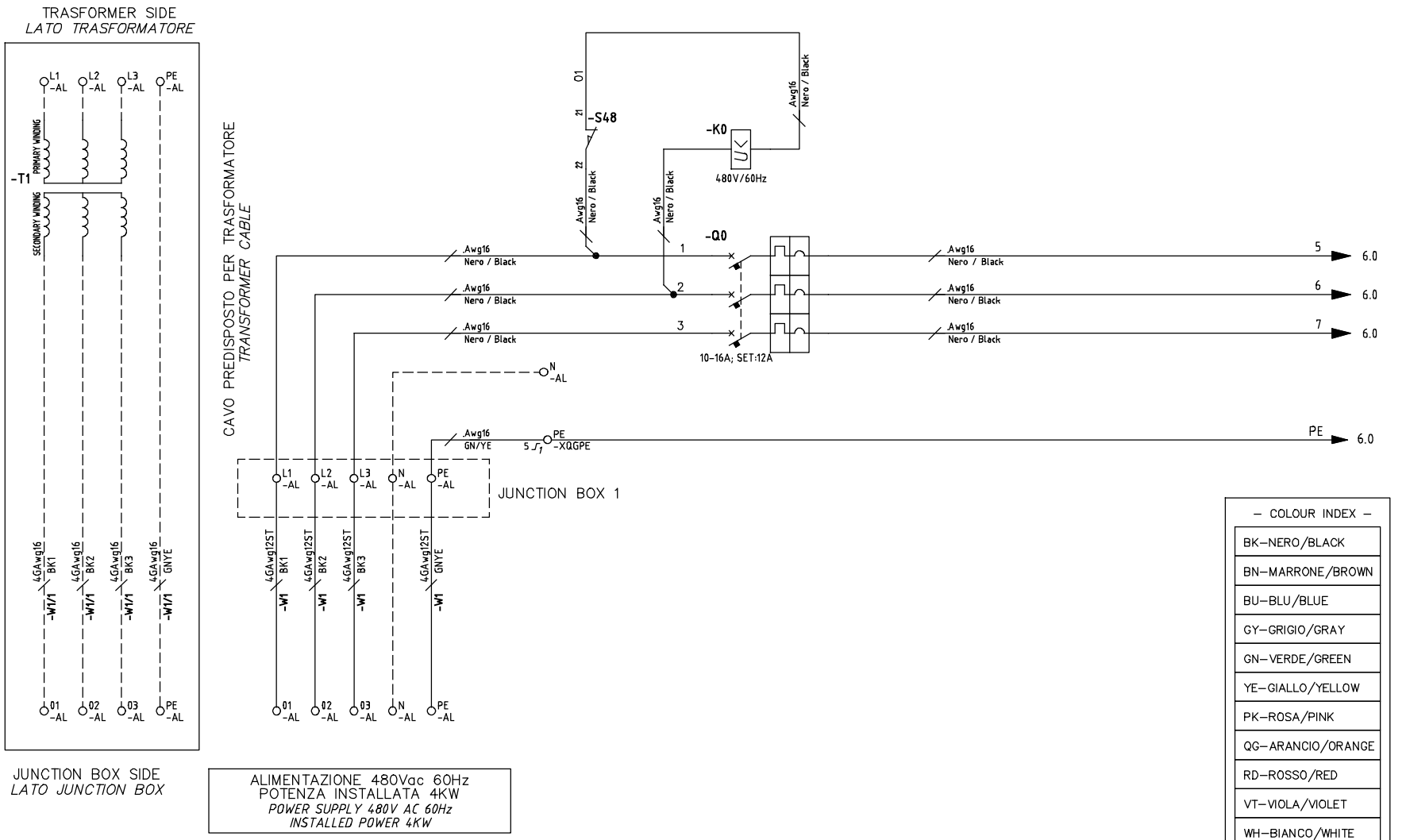

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Denominazione/Title	ALIMENTAZIONE *Power Supply*
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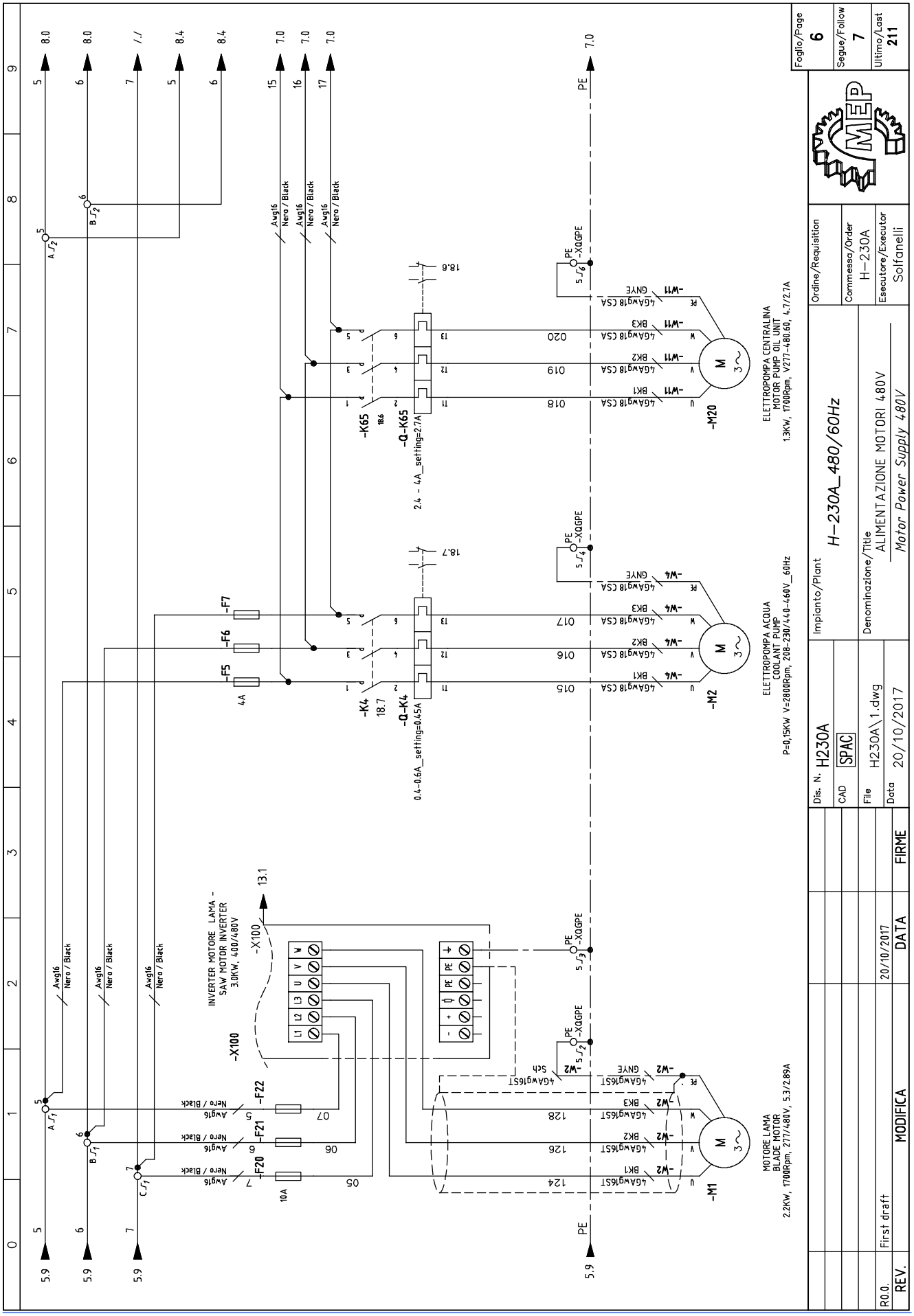
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Motor Power Supply 480V
ALIMENTAZIONE MOTORI 480V
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Esecutore/Executor
Solfanelli
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Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
REV. MODIFICA DATA FIRME
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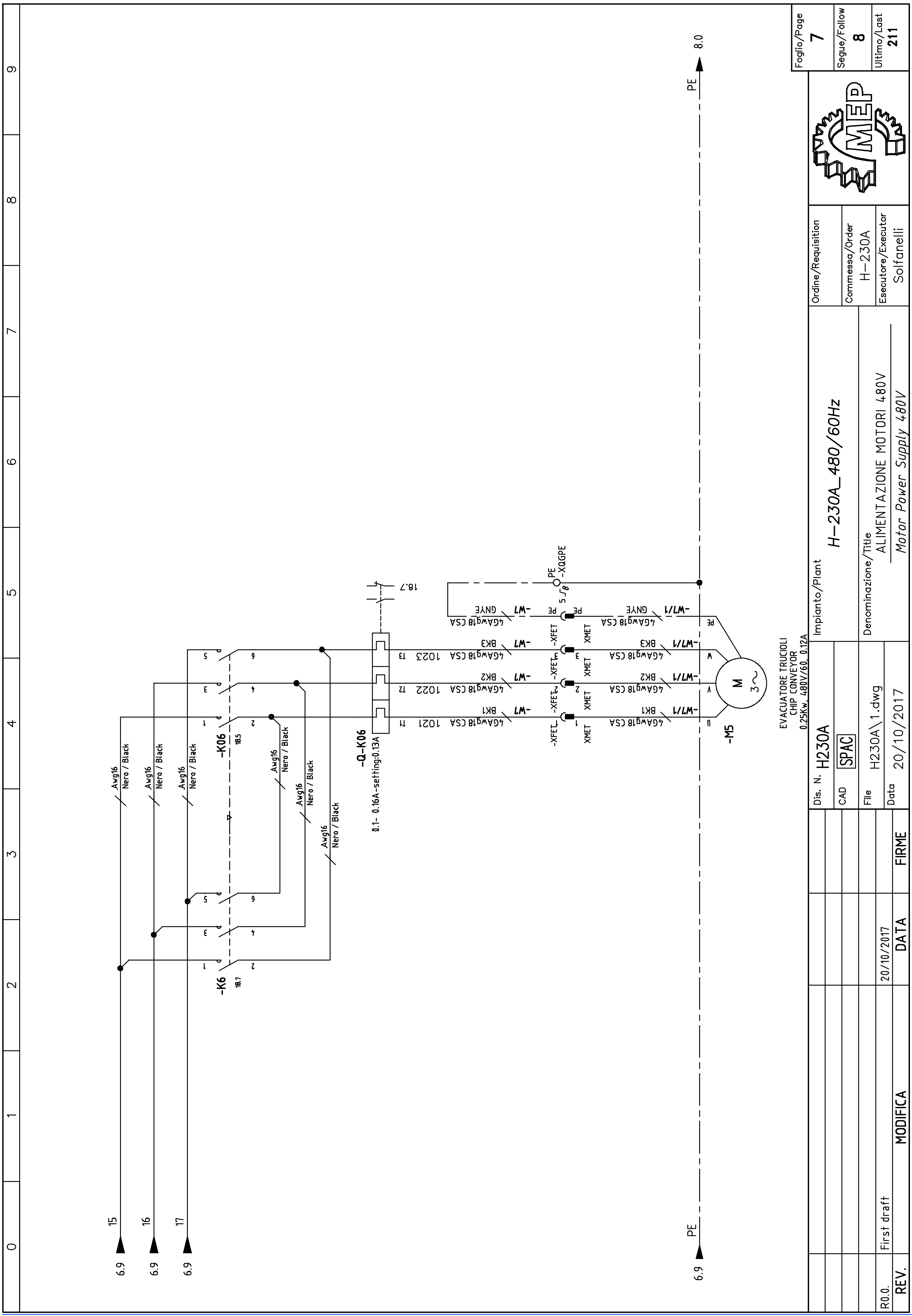
ELETTROPOMPA CENTRALINA
MOTOR PUMP OIL UNIT
1.3KW, 1700Rpm, V277-480.60, 4.7/2.7A
ELETTROPOMPA ACQUA
COOLANT PUMP
P=0,15KW V=2800Rpm, 208-230/440-460V_60Hz
MOTORE LAMA
BLADE MOTOR
2.2KW, 1700Rpm, 277/480V, 5.3/2.89A
INVERTER MOTORE LAMA -
SAW MOTOR INVERTER
3.0KW, 400/480V
-M20
-M2
-M1
-K65
-Q-K65
2.4 - 4A_setting=2.7A
-K4
-Q-K4
0.4-0.6A_setting=0.45A
-F5
-F6
-F7
-F20
-F21
-F22
-X100
-XQGPE
4GAWG18 CSA
4GAWG16ST
Awg16 Nero / Black
GNYE
BK1
BK2
BK3
10A
4A


EVACUATORE TRUCIOLI
CHIP CONVEYOR
0.25Kw, 480V/60, 0.12A
-M5
-Q-K06
0.1- 0.16A-setting:0.13A
-K06
-K6
Awg16 Nero / Black
4GAwg18 CSA
-XFET
XMET
-XQGPE
Impianto/Plant
H-230A_480/60Hz
Denominazione/Title
ALIMENTAZIONE MOTORI 480V
Motor Power Supply 480V
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
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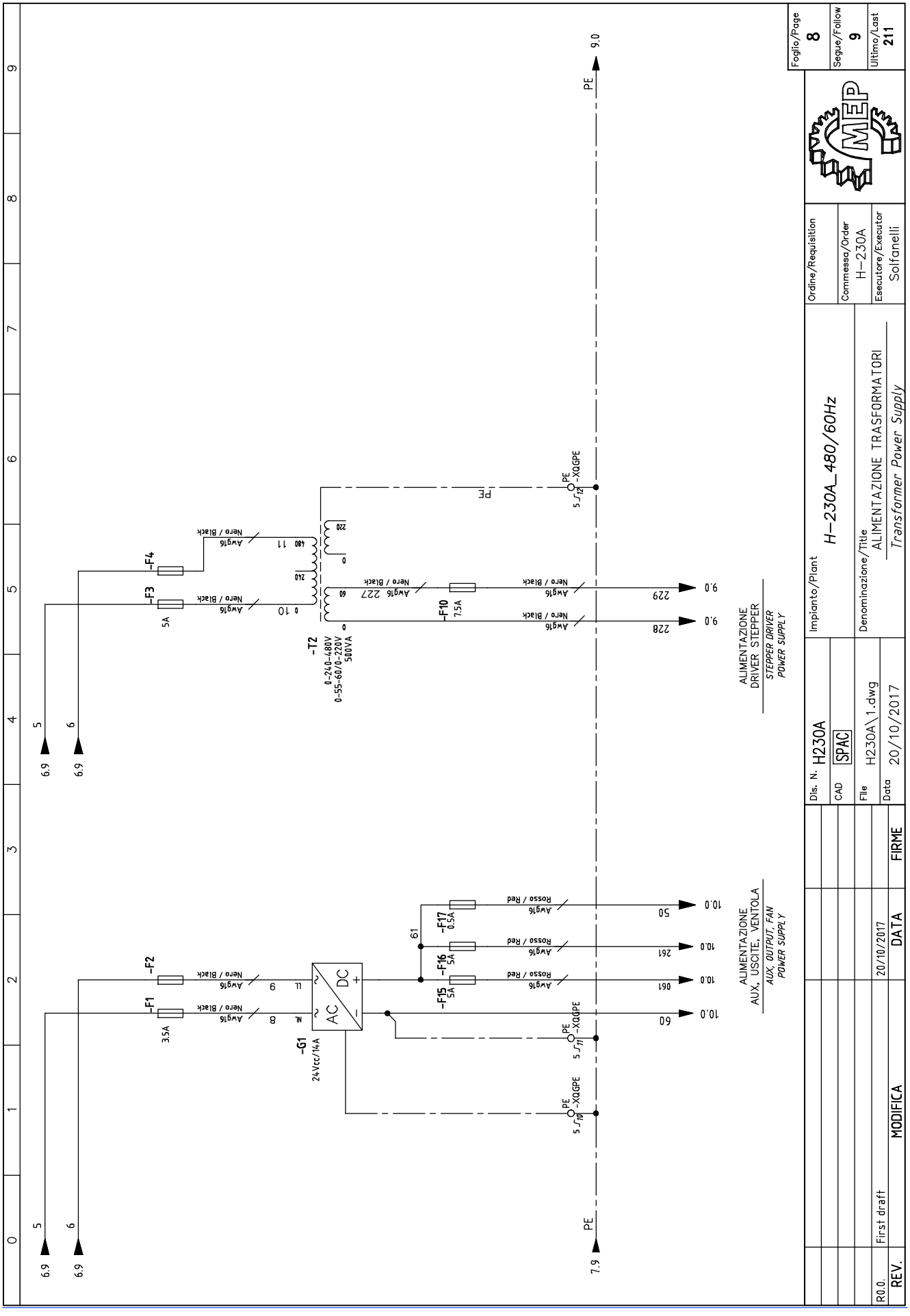
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Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title ALIMENTAZIONE TRASFORMATORI
Transformer Power Supply
Dis. N. H230A
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FIRME
DATA
MODIFICA
REV.
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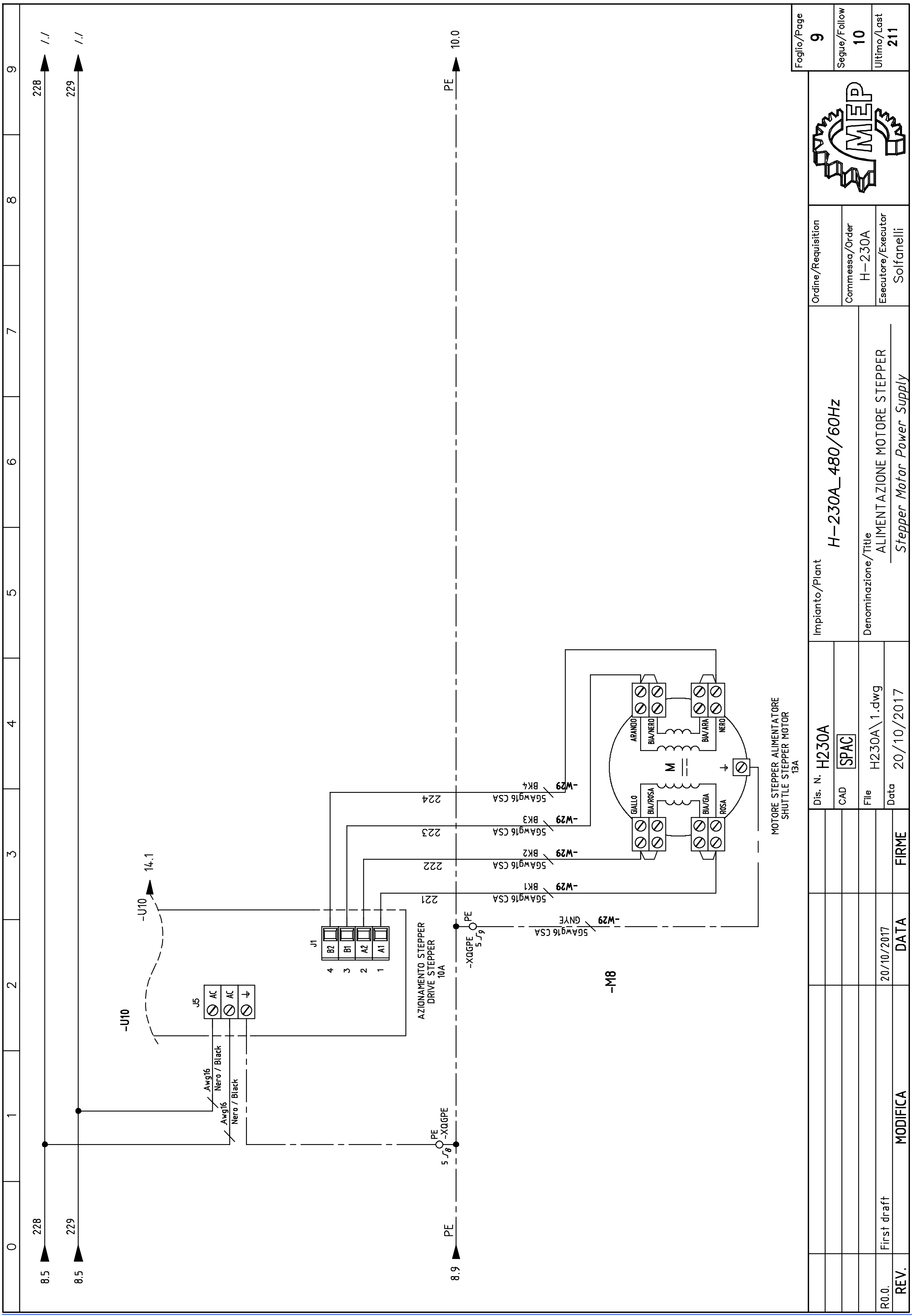
-T2 0-240-480V 0-55-60/0-220V 500VA
-G1 24Vcc/14A AC DC
-F1 3.5A
-F2
-F3 5A
-F4
-F10 7.5A
-F15 5A
-F16 5A
-F17 0.5A
-XQGPE
ALIMENTAZIONE DRIVER STEPPER
STEPPER DRIVER POWER SUPPLY
ALIMENTAZIONE AUX, USCITE, VENTOLA
AUX, OUTPUT, FAN POWER SUPPLY
Awg16 Nero / Black
Awg16 Rosso / Red
PE



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MEP
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant
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Denominazione/Title
ALIMENTAZIONE MOTORE STEPPER
Stepper Motor Power Supply
Dis. N. H230A
CAD SPAC
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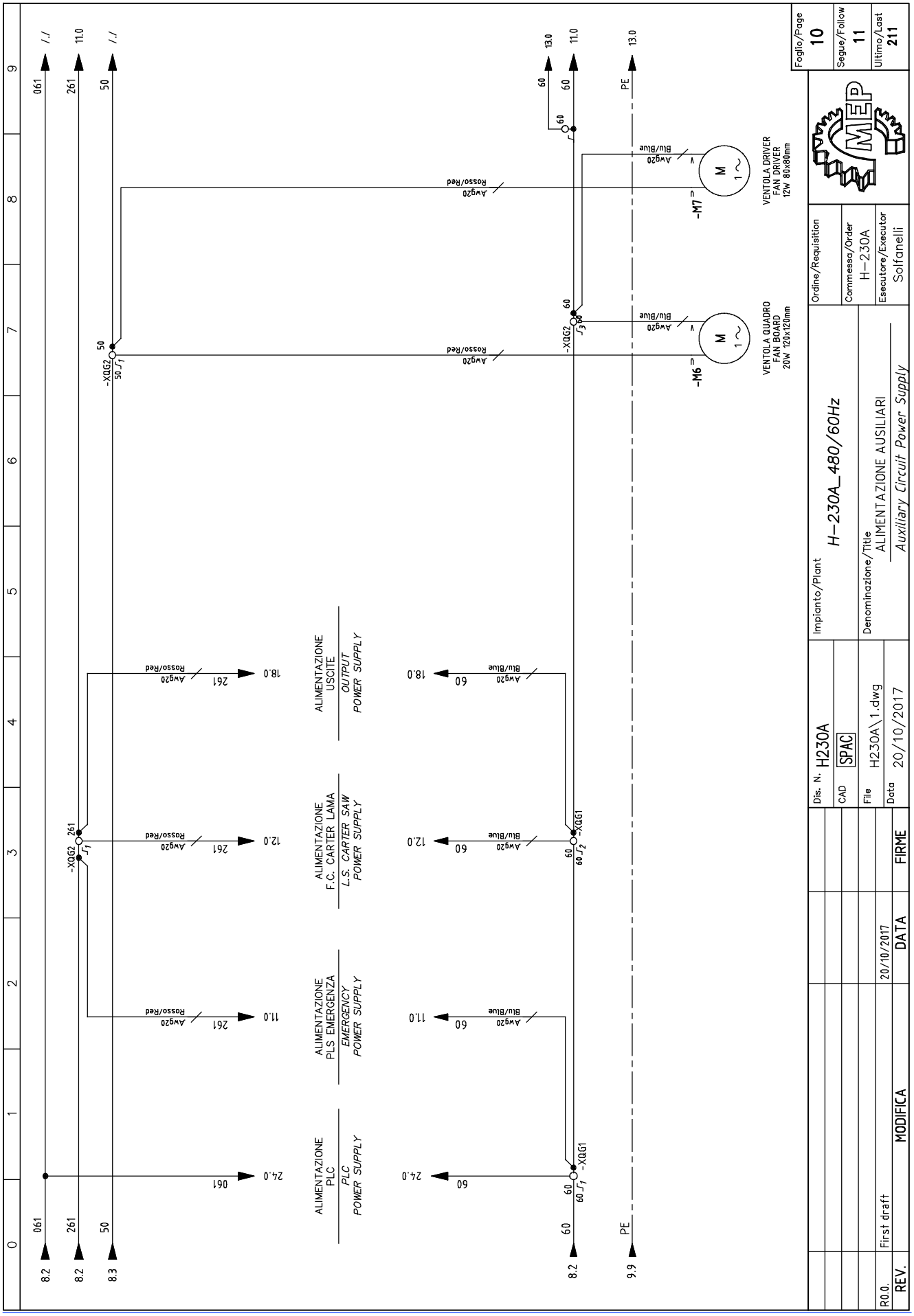
228 /./
229 /./
PE 10.0
8.5 228
8.5 229
8.9 PE
-U10
14.1
J5
AC
AC
Awg16 Nero / Black
Awg16 Nero / Black
PE -XQGPE
J1
B2 B1 A2 A1
4 3 2 1
AZIONAMENTO STEPPER
DRIVE STEPPER
10A
-XQGPE
221 222 223 224
-W29 BK1 5GAwg16 CSA
-W29 BK2 5GAwg16 CSA
-W29 BK3 5GAwg16 CSA
-W29 BK4 5GAwg16 CSA
-W29 GNYE 5GAwg16 CSA
-M8
ARANCIO
BIA/NERO
BIA/ARA
NERO
GIALLO
BIA/ROSA
BIA/GIA
ROSA
M
MOTORE STEPPER ALIMENTATORE
SHUTTLE STEPPER MOTOR
13A


H-230A_480/60Hz
ALIMENTAZIONE AUSILIARI
Auxiliary Circuit Power Supply
Impianto/Plant
Denominazione/Title
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
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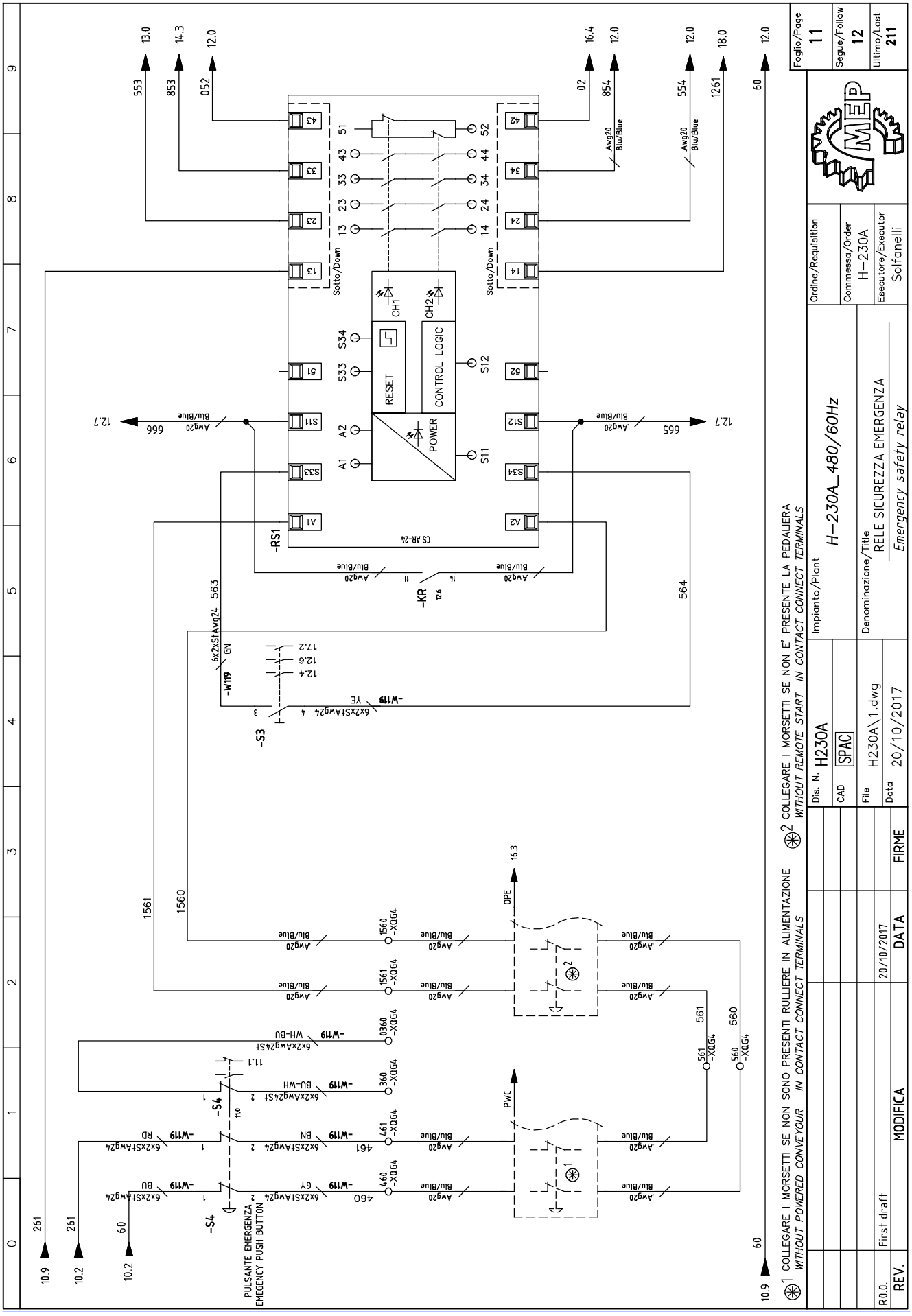
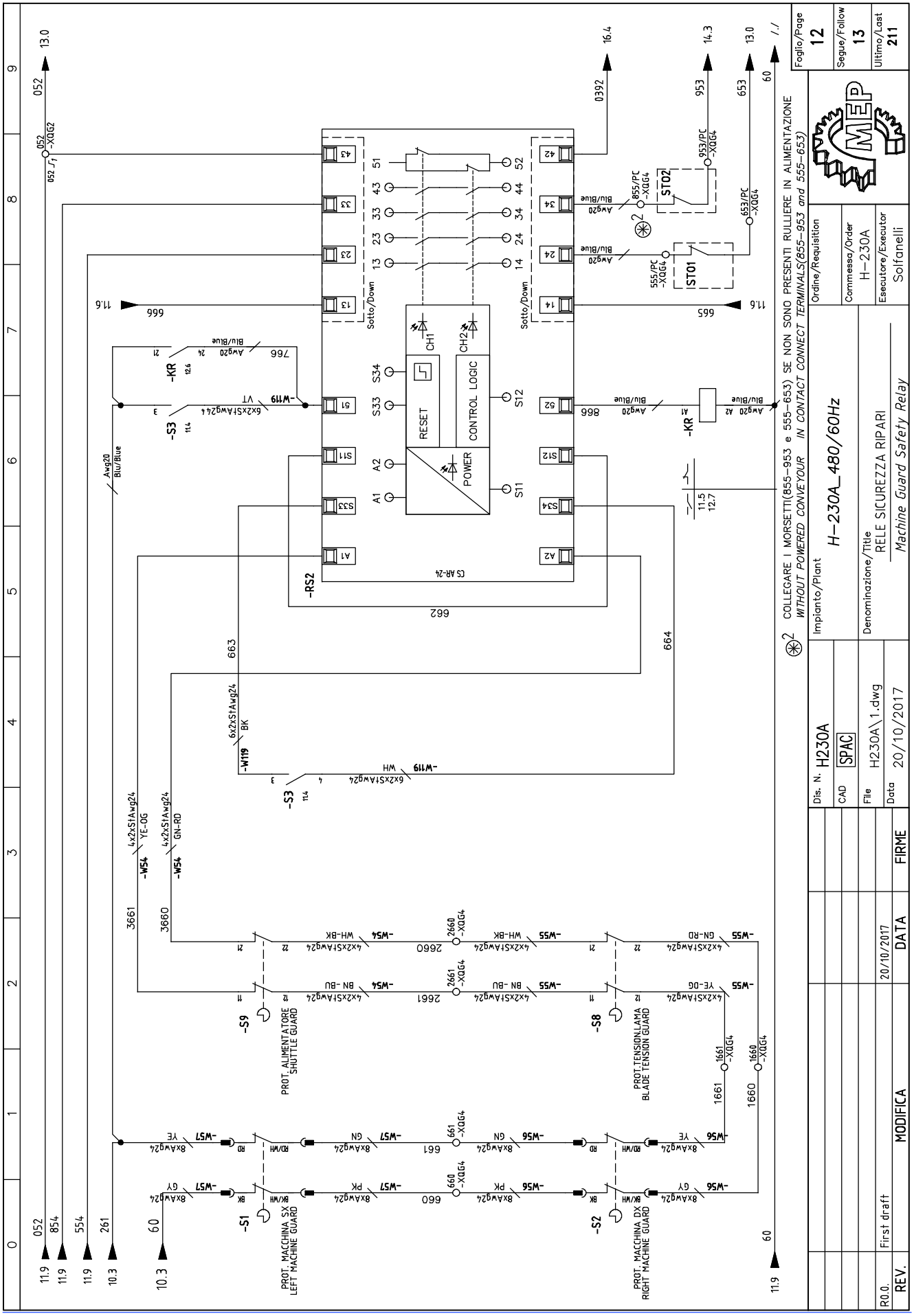
VENTOLA DRIVER
FAN DRIVER
12W 80x80mm
VENTOLA QUADRO
FAN BOARD
20W 120x120mm
-M7
-M6
-XQG2
-XQG1
ALIMENTAZIONE PLC
PLC POWER SUPPLY
ALIMENTAZIONE PLS EMERGENZA
EMERGENCY POWER SUPPLY
ALIMENTAZIONE F.C. CARTER LAMA
L.S. CARTER SAW POWER SUPPLY
ALIMENTAZIONE USCITE
OUTPUT POWER SUPPLY
Awg20 Rosso/Red
Awg20 Blu/Blue
PE


H-230A_480/60Hz
RELE SICUREZZA EMERGENZA
Emergency safety relay
H230A
SPAC
H230A\1.dwg
20/10/2017
MODIFICA
DATA
FIRME
First draft
PULSANTE EMERGENZA
EMEGENCY PUSH BUTTON
-RS1
-KR
-S3
-S4
CONTROL LOGIC
RESET
POWER
CH1
CH2
Sotto/Down
COLLEGARE I MORSETTI SE NON SONO PRESENTI RULLIERE IN ALIMENTAZIONE
WITHOUT POWERED CONVEYOUR IN CONTACT CONNECT TERMINALS
COLLEGARE I MORSETTI SE NON E' PRESENTE LA PEDALIERA
WITHOUT REMOTE START IN CONTACT CONNECT TERMINALS


-KR
-RS2
-S1
-S2
-S3
-S8
-S9
-ST01
-ST02
-W119
-W54
-W55
-W56
-W57
CONTROL LOGIC
RESET
POWER
CH1
CH2
Sotto/Down
PROT. ALIMENTATORE SHUTTLE GUARD
PROT. TENSIONLAMA BLADE TENSION GUARD
PROT. MACCHINA SX LEFT MACHINE GUARD
PROT. MACCHINA DX RIGHT MACHINE GUARD
COLLEGARE I MORSETTI(855-953 e 555-653) SE NON SONO PRESENTI RULLIERE IN ALIMENTAZIONE
WITHOUT POWERED CONVEYOUR IN CONTACT CONNECT TERMINALS(855-953 and 555-653)
H-230A_480/60Hz
Machine Guard Safety Relay
RELE SICUREZZA RIPARI
Impianto/Plant
Denominazione/Title
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
Foglio/Page
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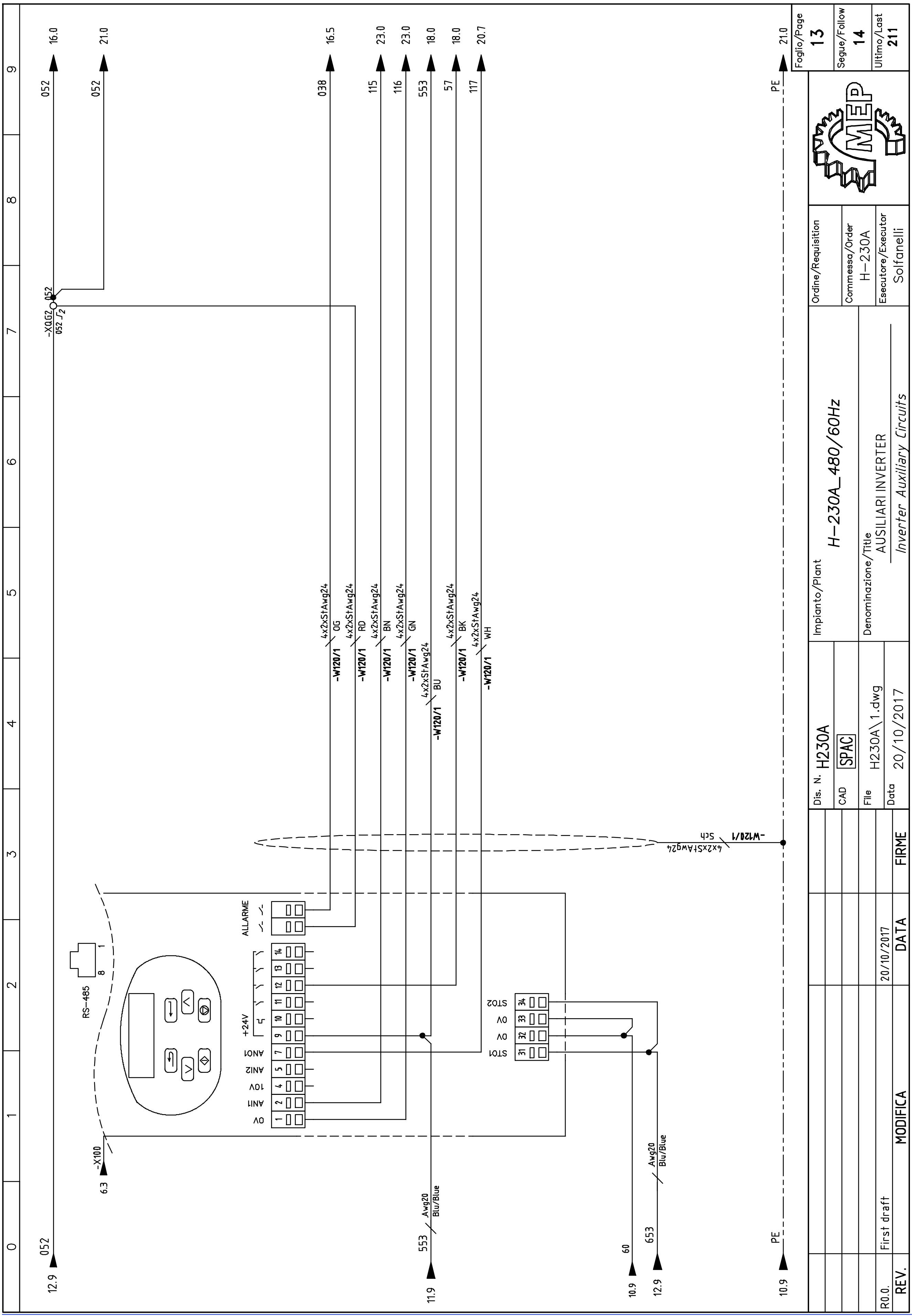

RS-485
ALLARME
+24V
0V
AN11
10V
AN12
AN01
ST01
ST02
-X100
-XQG2
-W120/1
4x2xStAwg24
Sch
Awg20 Blu/Blue
PE
Dis. N. H230A
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Data 20/10/2017
Impianto/Plant
H-230A_480/60Hz
Denominazione/Title
AUSILIARI INVERTER
Inverter Auxiliary Circuits
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
Foglio/Page
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Segue/Follow
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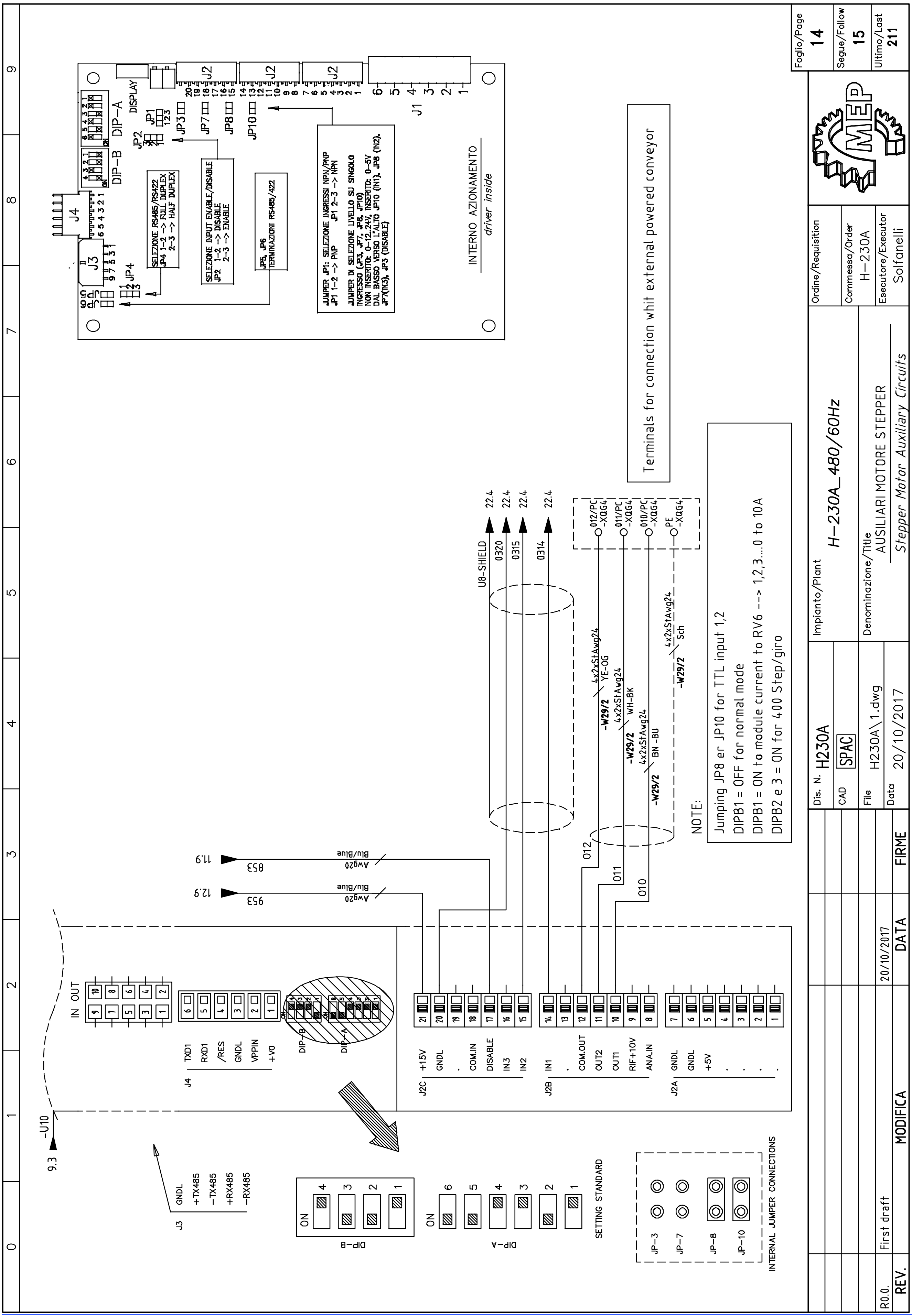
First draft
20/10/2017
REV.
MODIFICA
DATA
FIRME



INTERNO AZIONAMENTO
driver inside
DIP-A
DIP-B
DISPLAY
JP1
JP2
JP3
JP4
JP7
JP8
JP10
J1
J2
J3
J4
SELEZIONE RS485/RS422
JP4 1-2 -> FULL DUPLEX
2-3 -> HALF DUPLEX
SELEZIONE INPUT ENABLE/DISABLE
JP2 1-2 -> DISABLE
2-3 -> ENABLE
JP5, JP6
TERMINAZIONI RS485/422
JUMPER JP1: SELEZIONE INGRESSI NPN/PNP
JP1 1-2 -> PNP JP1 2-3 -> NPN
JUMPER DI SELEZIONE LIVELLO SU SINGOLO INGRESSO (JP3, JP7, JP8, JP10)
NON INSERITO: 0-12,24V, INSERITO: 0-5V
DAL BASSO VERSO L'ALTO JP10 (IN1), JP8 (IN2), JP7(IN3), JP3 (DISABLE)
Terminals for connection whit external powered conveyor
U8-SHIELD
0320
0315
0314
22.4
012/PC -XQG4
011/PC -XQG4
010/PC -XQG4
PE -XQG4
4x2xStAwg24
YE-OG
WH-BK
BN-BU
Sch
-W29/2
012
011
010
853
953
Awg20
Blu/Blue
11.9
12.9
NOTE:
Jumping JP8 er JP10 for TTL input 1,2
DIPB1 = OFF for normal mode
DIPB1 = ON to module current to RV6 --> 1,2,3....0 to 10A
DIPB2 e 3 = ON for 400 Step/giro
-U10
9.3
IN OUT
J4 TXD1 RXD1 /RES GNDL VPPIN +V0
J2C +15V GNDL . COM.IN DISABLE IN3 IN2
J2B IN1 . COM.OUT OUT2 OUT1 RIF+10V ANA.IN
J2A GNDL GNDL +5V . . . . .
J3 GNDL +TX485 -TX485 +RX485 -RX485
ON
SETTING STANDARD
INTERNAL JUMPER CONNECTIONS
JP-3
JP-7
JP-8
JP-10
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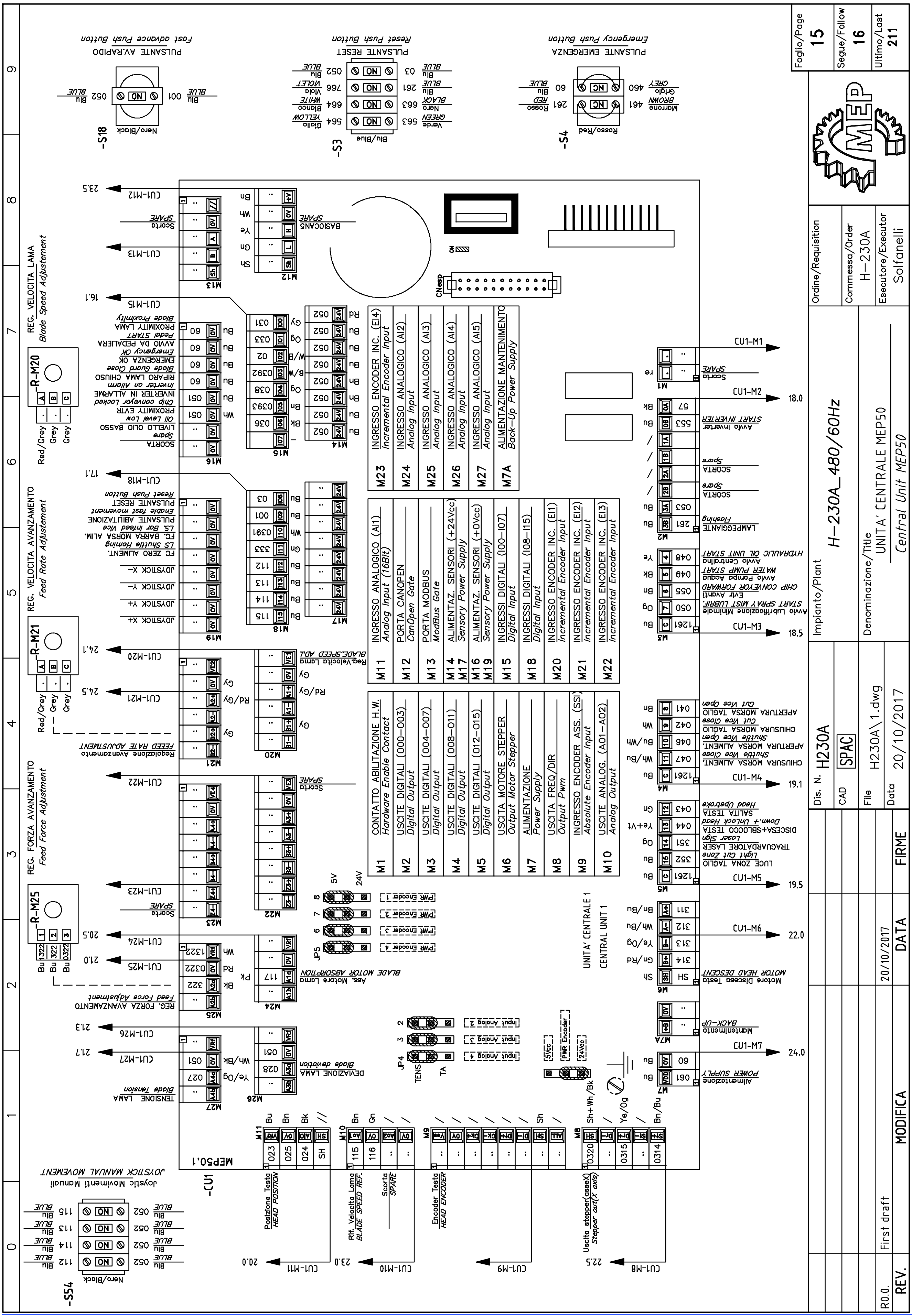
MEP
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title AUSILIARI MOTORE STEPPER
Stepper Motor Auxiliary Circuits
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0. First draft 20/10/2017
REV. MODIFICA DATA FIRME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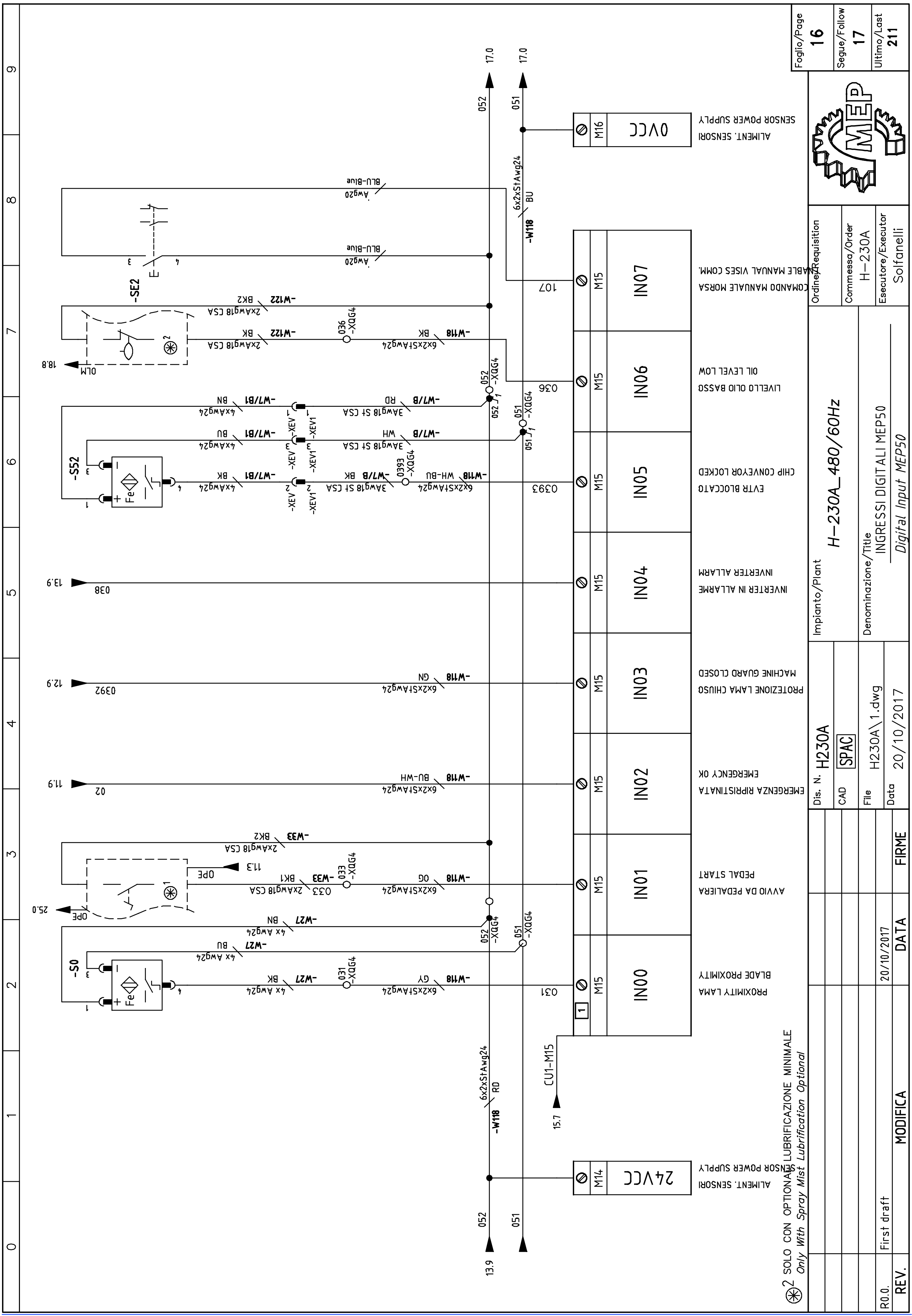
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title UNITA' CENTRALE MEP50
Central Unit MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
R0.0 First draft 20/10/2017
REV. MODIFICA DATA FIRME
UNITA' CENTRALE 1
CENTRAL UNIT 1
MEP50.1
PULSANTE EMERGENZA
Emergency Push Button
PULSANTE RESET
Reset Push Button
PULSANTE AV.RAPIDO
Fast advance Push Button
Joystic Movimenti Manuali
JOYSTICK MANUAL MOVEMENT


IN00
PROXIMITY LAMA
BLADE PROXIMITY
IN01
AVVIO DA PEDALIERA
PEDAL START
IN02
EMERGENZA RIPRISTINATA
EMERGENCY OK
IN03
PROTEZIONE LAMA CHIUSO
MACHINE GUARD CLOSED
IN04
INVERTER IN ALLARME
INVERTER ALLARM
IN05
EVTR BLOCCATO
CHIP CONVEYOR LOCKED
IN06
LIVELLO OLIO BASSO
OIL LEVEL LOW
IN07
COMANDO MANUALE MORSA
ENABLE MANUAL VISES COMM.
0VCC
ALIMENT. SENSORI
SENSOR POWER SUPPLY
24VCC
ALIMENT. SENSORI
SENSOR POWER SUPPLY
2 SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
Only With Spray Mist Lubrification Optional
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Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title INGRESSI DIGITALI MEP50
Digital Input MEP50
Dis. N. H230A
CAD SPAC
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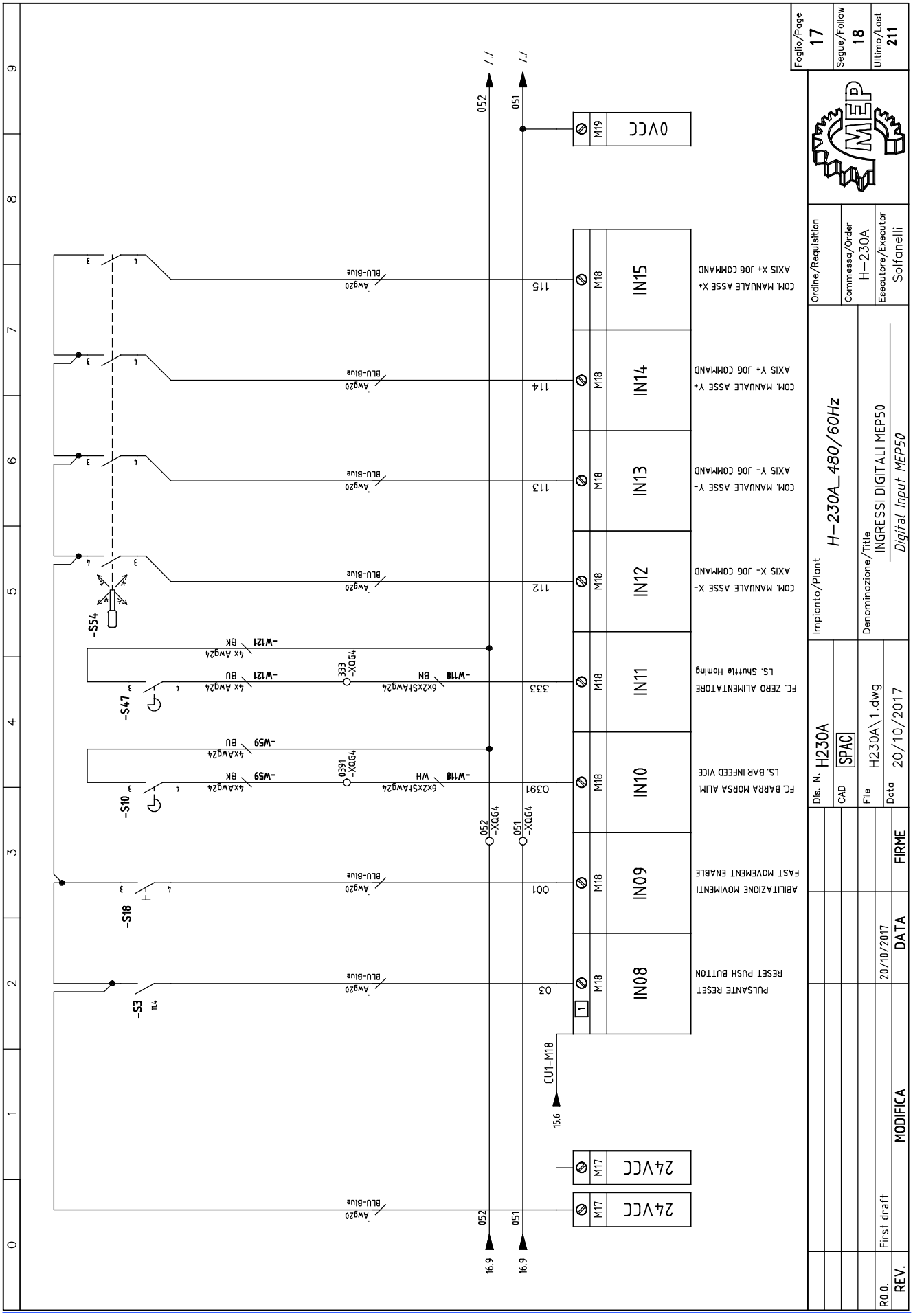
REV. MODIFICA DATA FIRME
MEP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Digital Input MEP50
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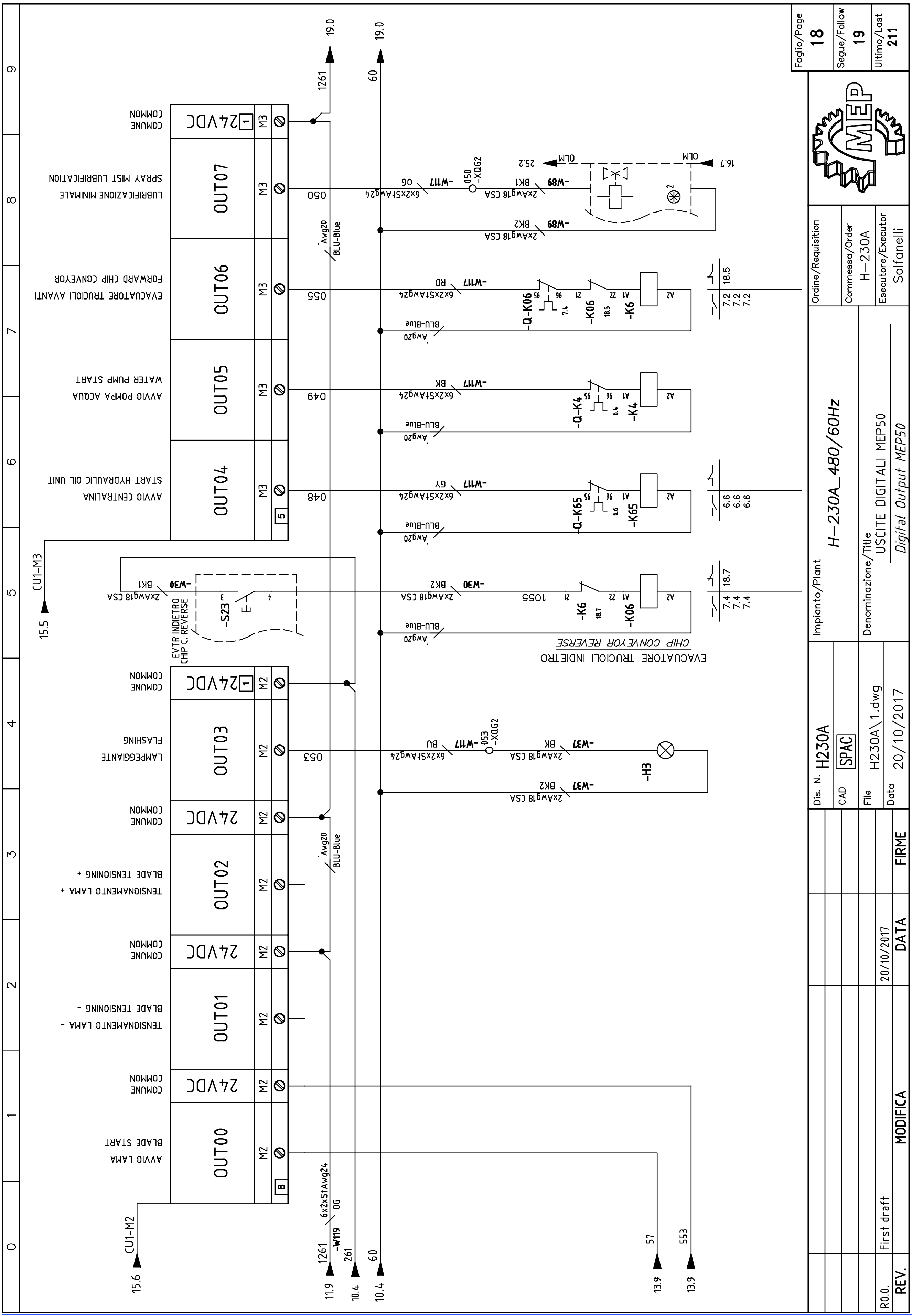
DATA
MODIFICA
First draft
20/10/2017
REV.
R0.0.
0VCC
24VCC
IN15
IN14
IN13
IN12
IN11
IN10
IN09
IN08
COM. MANUALE ASSE X+ AXIS X+ JOG COMMAND
COM. MANUALE ASSE Y+ AXIS Y+ JOG COMMAND
COM. MANUALE ASSE Y- AXIS Y- JOG COMMAND
COM. MANUALE ASSE X- AXIS X- JOG COMMAND
FC. ZERO ALIMENTATORE LS. Shuttle Homing
FC. BARRA MORSA ALIM. LS. BAR INFEED VICE
ABILITAZIONE MOVIMENTI FAST MOVEMENT ENABLE
PULSANTE RESET RESET PUSH BUTTON
-S54
-S47
-S10
-S18
-S3
-W118
-W121
-W59
-XQG4
CU1-M18


OUT00
AVVIO LAMA
BLADE START
OUT01
TENSIONAMENTO LAMA -
BLADE TENSIONING -
OUT02
TENSIONAMENTO LAMA +
BLADE TENSIONING +
OUT03
LAMPEGGIANTE
FLASHING
OUT04
AVVIO CENTRALINA
START HYDRAULIC OIL UNIT
OUT05
AVVIO POMPA ACQUA
WATER PUMP START
OUT06
EVACUATORE TRUCIOLI AVANTI
FORWARD CHIP CONVEYOR
OUT07
LUBRIFICAZIONE MINIMALE
SPRAY MIST LUBRIFICATION
24VDC
COMUNE
COMMON
EVACUATORE TRUCIOLI INDIETRO
CHIP CONVEYOR REVERSE
EVTR INDIETRO
CHIP C. REVERSE
-S23
-H3
-K06
-K6
-K4
-K65
-Q-K06
-Q-K4
-Q-K65
CU1-M2
CU1-M3
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Esecutore/Executor
Solfanelli
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Denominazione/Title
USCITE DIGITALI MEP50
Digital Output MEP50
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
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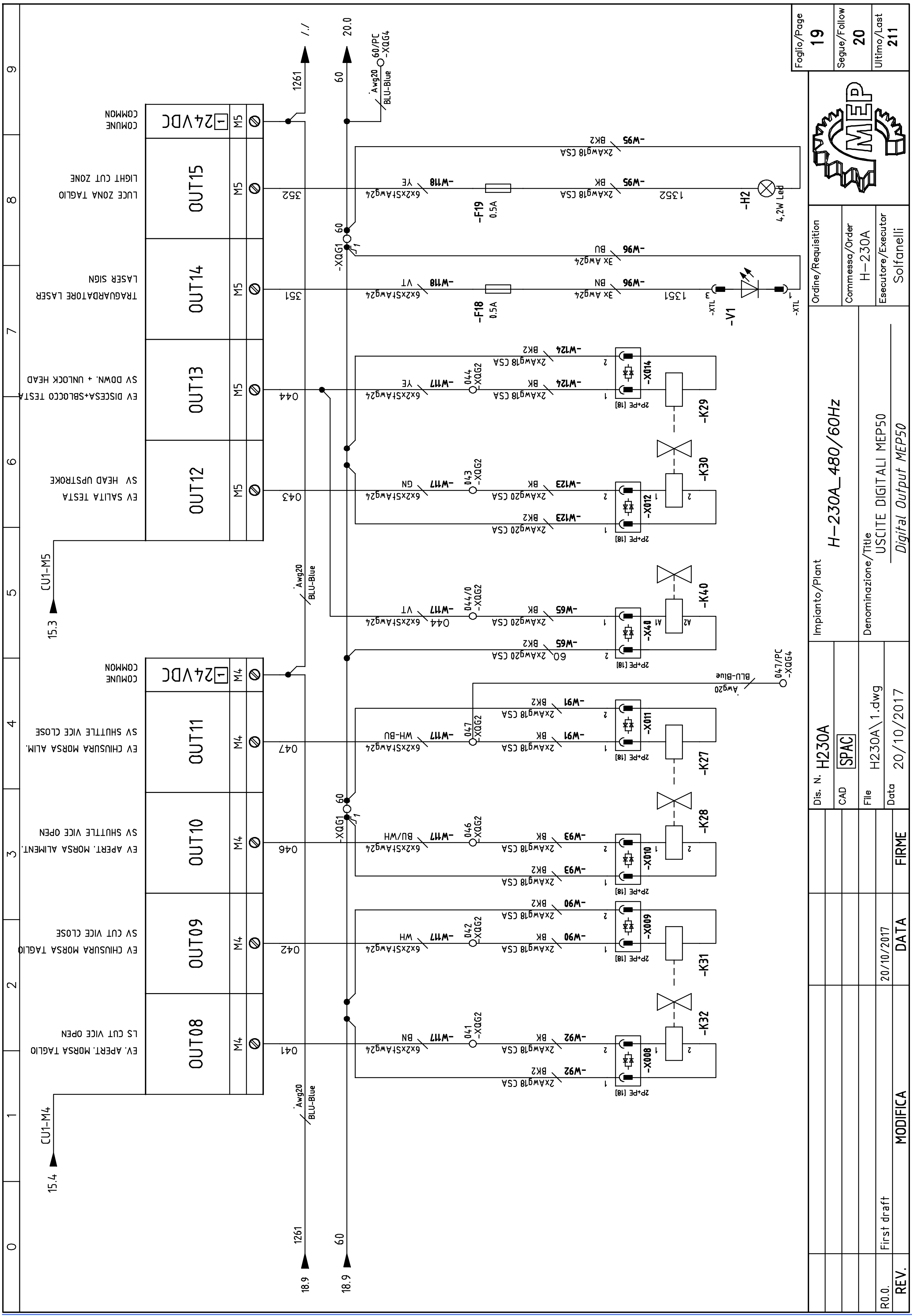

OUT08
OUT09
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
24VDC
COMUNE
COMMON
EV. APERT. MORSA TAGLIO
LS CUT VICE OPEN
EV CHIUSURA MORSA TAGLIO
SV CUT VICE CLOSE
EV APERT. MORSA ALIMENT.
SV SHUTTLE VICE OPEN
EV CHIUSURA MORSA ALIM.
SV SHUTTLE VICE CLOSE
EV SALITA TESTA
SV HEAD UPSTROKE
EV DISCESA+SBLOCCO TESTA
SV DOWN. + UNLOCK HEAD
TRAGUARDATORE LASER
LASER SIGN
LUCE ZONA TAGLIO
LIGHT CUT ZONE
CU1-M4
CU1-M5
-K27
-K28
-K29
-K30
-K31
-K32
-K40
-F18
-F19
-H2
-V1
Impianto/Plant
H-230A_480/60Hz
Denominazione/Title
USCITE DIGITALI MEP50
Digital Output MEP50
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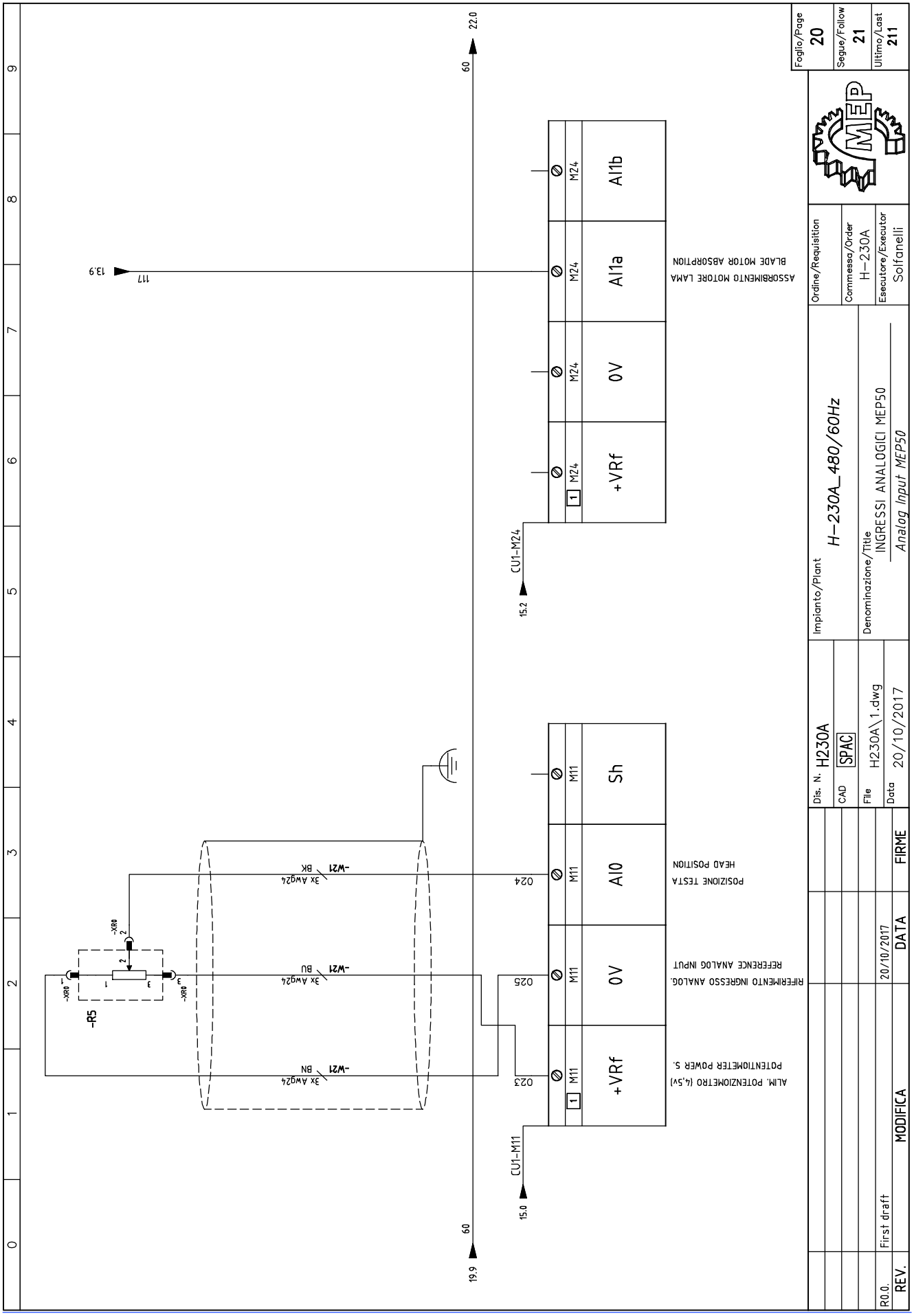
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Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title INGRESSI ANALOGICI MEP50
Analog Input MEP50
Dis. N. H230A
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File H230A\1.dwg
Data 20/10/2017
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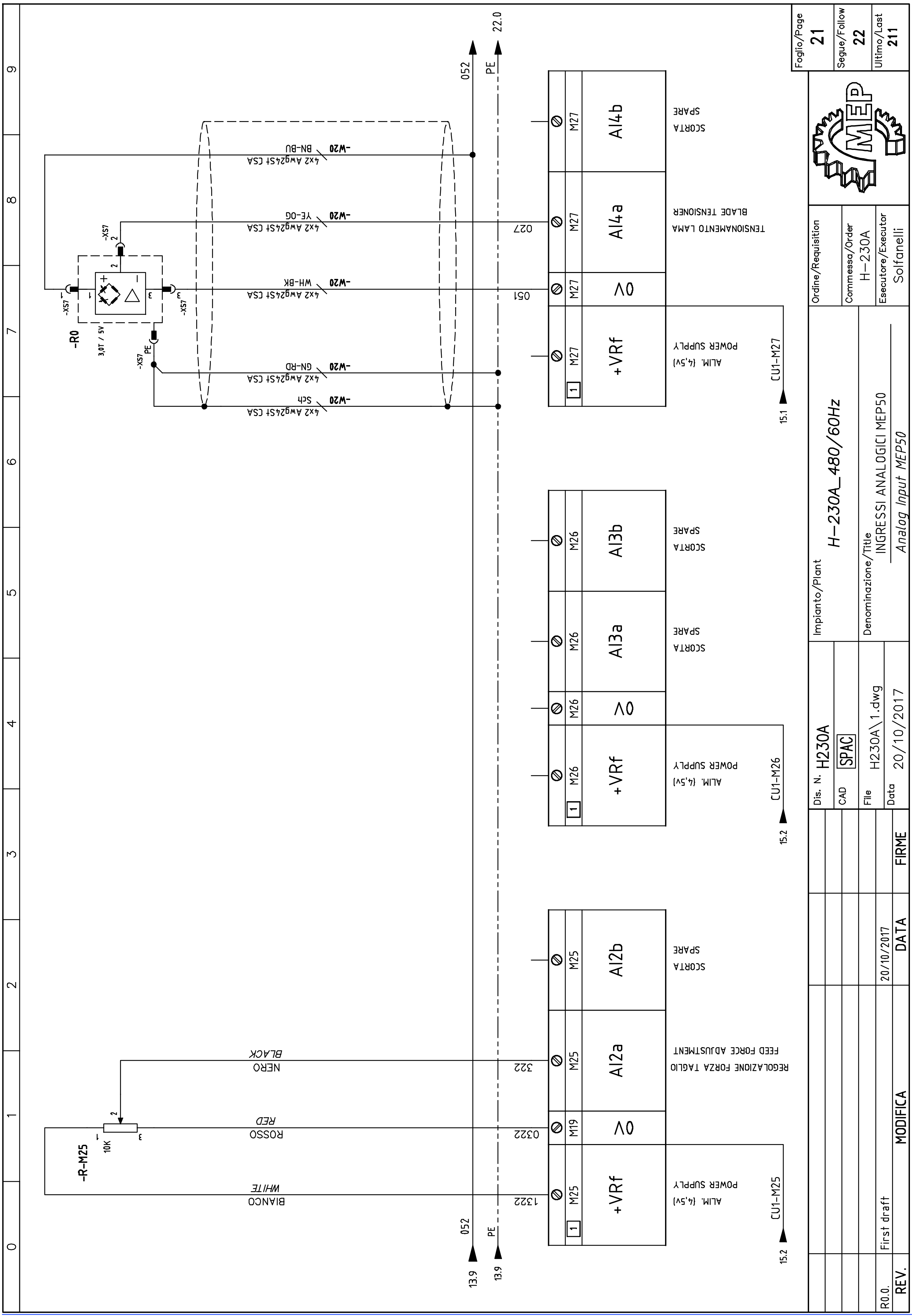
ASSORBIMENTO MOTORE LAMA
BLADE MOTOR ABSORPTION
+VRf 0V AI1a AI1b
M24 M24 M24 M24
CU1-M24
15.2
POSIZIONE TESTA
HEAD POSITION
+VRf 0V AI0 Sh
M11 M11 M11 M11
CU1-M11
15.0
RIFERIMENTO INGRESSO ANALOG.
REFERENCE ANALOG INPUT
ALIM. POTENZIOMETRO (4,5V)
POTENTIOMETER POWER S.
-R5
-W21 3x AWG24 BK
-W21 3x AWG24 BU
-W21 3x AWG24 BN
024
025
023
22.0
60
19.9
13.9
117


H-230A_480/60Hz
INGRESSI ANALOGICI MEP50
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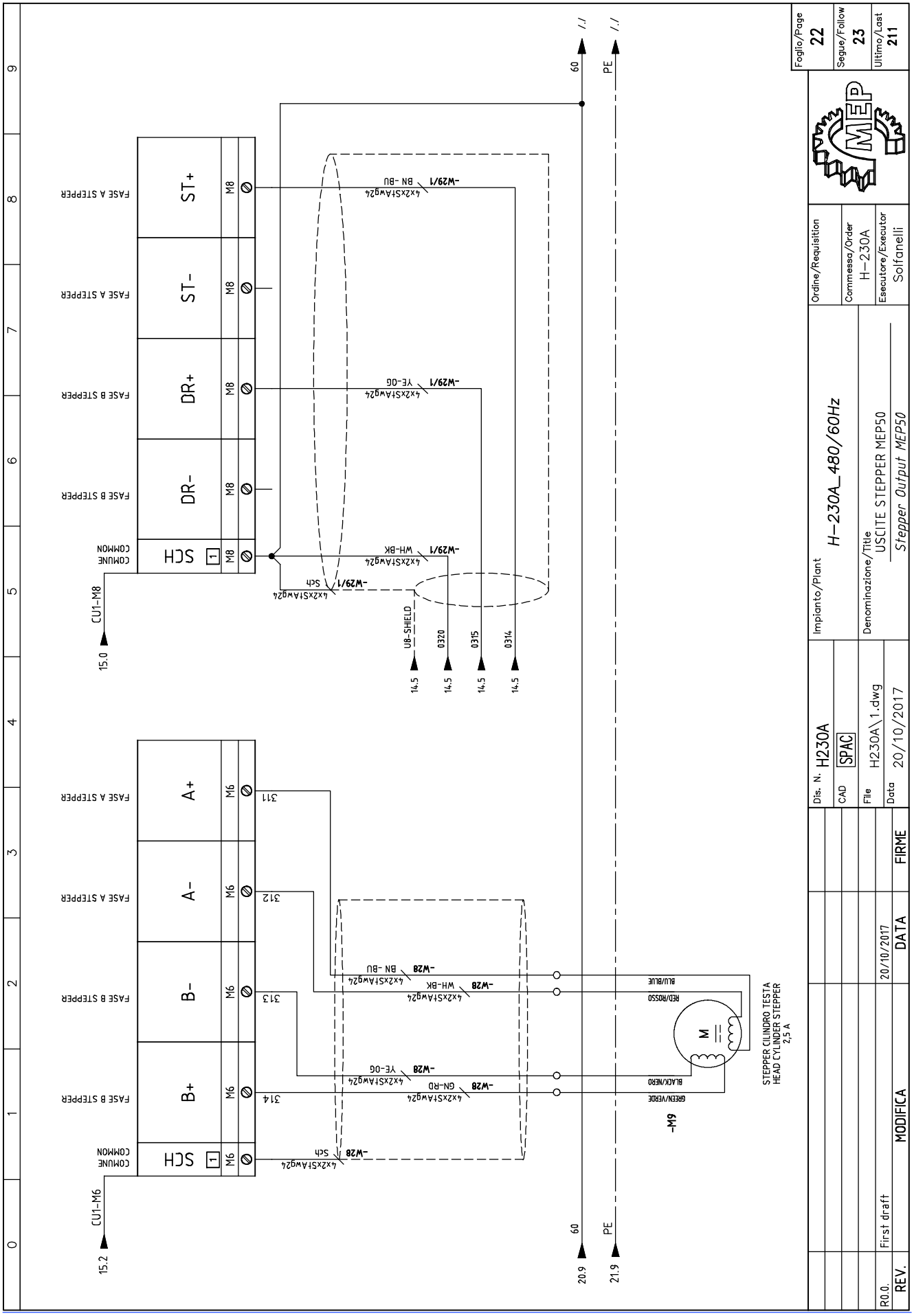
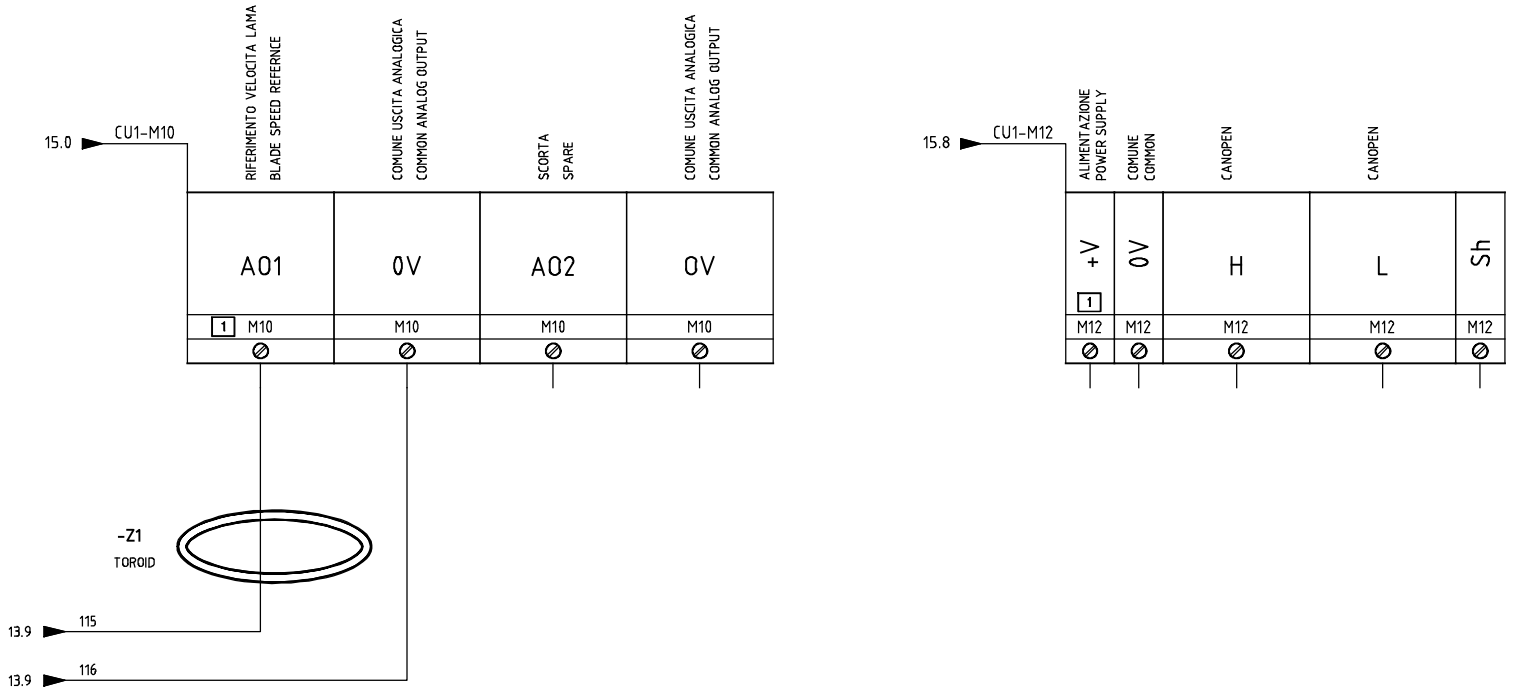
AI4b
AI4a
0V
+VRf
AI3b
AI3a
AI2b
AI2a
SCORTA
SPARE
TENSIONAMENTO LAMA
BLADE TENSIONER
ALIM. (4,5V)
POWER SUPPLY
REGOLAZIONE FORZA TAGLIO
FEED FORCE ADJUSTMENT
CU1-M27
CU1-M26
CU1-M25
-W20 4x2 Awg24Sf CSA
BN-BU
YE-OG
WH-BK
GN-RD
Sch
-R0
3,0T / 5V
-XS7
-R-M25
10K
BIANCO
WHITE
ROSSO
RED
NERO
BLACK
052
PE
22.0
13.9
15.1
15.2


H-230A_480/60Hz
USCITE STEPPER MEP50
Stepper Output MEP50
H230A
H230A\1.dwg
20/10/2017
Solfanelli
SCH
ST+
ST-
DR+
DR-
A+
A-
B+
B-
COMMUNE COMMON
FASE A STEPPER
FASE B STEPPER
CU1-M8
CU1-M6
-W29/1
-W28
-M9
STEPPER CILINDRO TESTA
HEAD CYLINDER STEPPER
2,5 A
MODIFICA
DATA
FIRME
First draft
20/10/2017



REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

Dis. N.	H230A
CAD	SPAC
File	H230A\1.dwg
Data	20/10/2017

Impianto/Plant
H-230A_480/60Hz

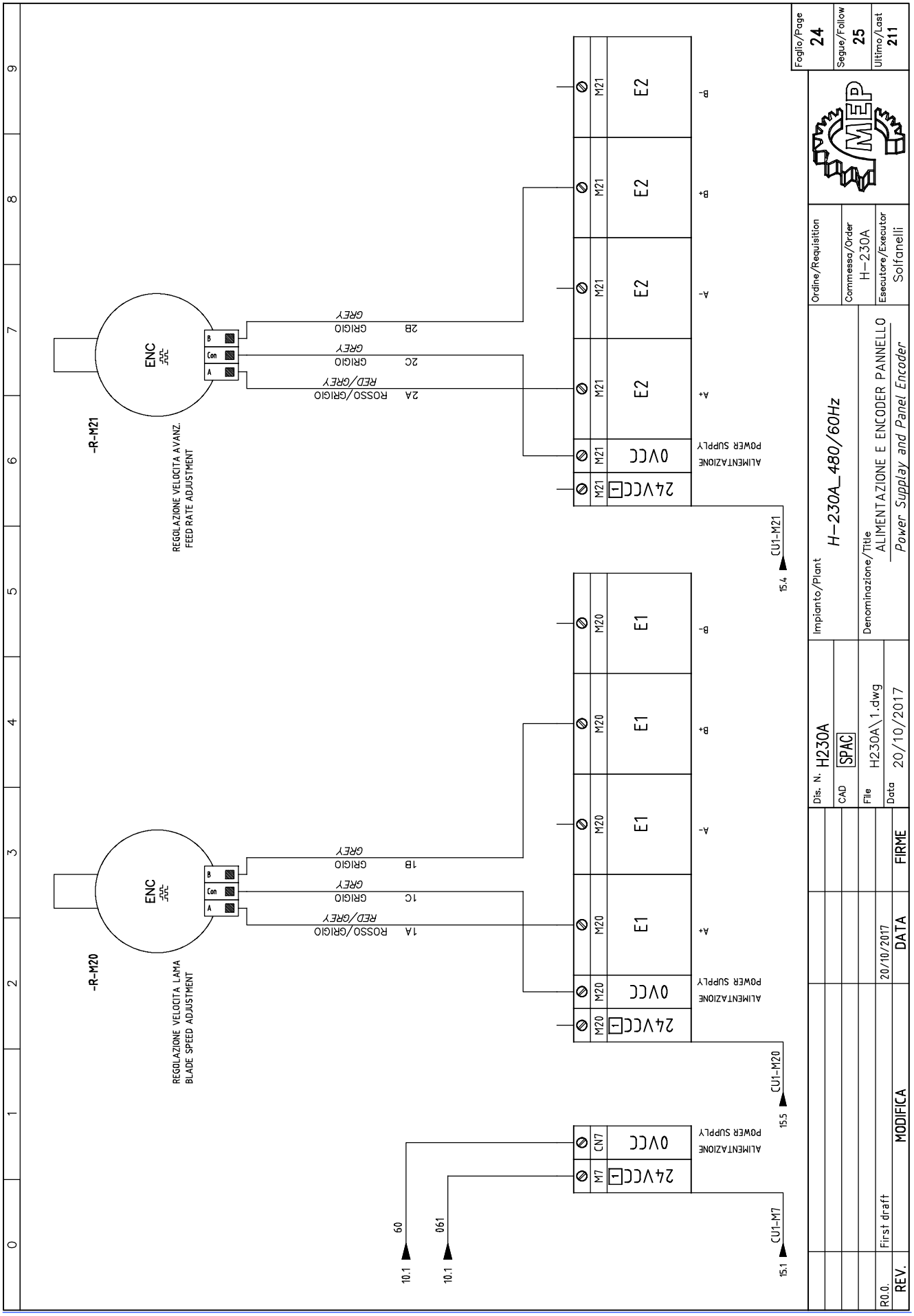
Denominazione/Title
USCITA ANALOGICA E SERIALE MEP50
Analog Output and Serial MEP50

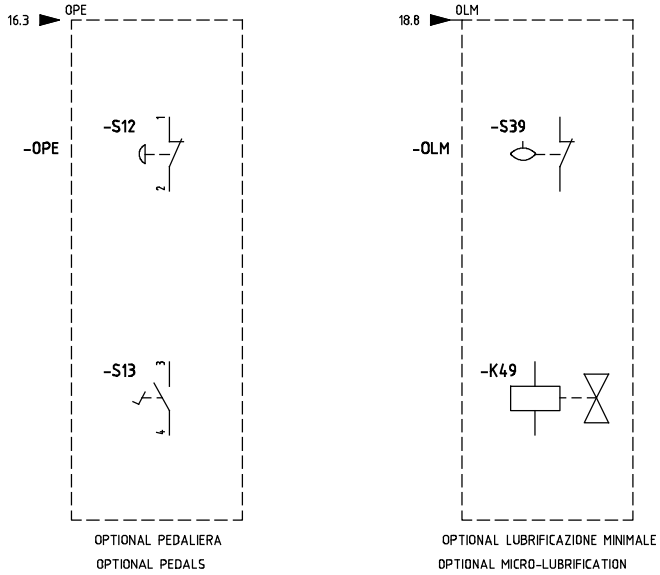
Ordine/Requisition

Commessa/Order
H-230A

Esecutore/Executor
Solfanelli

Foglio/Page	23
Segue/Follow	24
Ultimo/Last	211


Foglio/Page 24
Segue/Follow 25
Ultimo/Last 211
Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli
Impianto/Plant H-230A_480/60Hz
Denominazione/Title ALIMENTAZIONE E ENCODER PANNELLO
Power Supply and Panel Encoder
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017
REV. MODIFICA DATA FIRME
R0.0. First draft 20/10/2017
-R-M21
ENC
B
Con
A
2A ROSSO/GRIGIO RED/GREY
2C GRIGIO GREY
2B GRIGIO GREY
REGOLAZIONE VELOCITA AVANZ.
FEED RATE ADJUSTMENT
-R-M20
1A ROSSO/GRIGIO RED/GREY
1C GRIGIO GREY
1B GRIGIO GREY
REGOLAZIONE VELOCITA LAMA
BLADE SPEED ADJUSTMENT
ALIMENTAZIONE
POWER SUPPLY
24VCC
0VCC
M21
M20
M7
CN7
E2
E1
A+
A-
B+
B-
CU1-M21
CU1-M20
CU1-M7
15.4
15.5
15.1
10.1
60
61



OPTIONAL PEDALIERA
OPTIONAL PEDALS

OPTIONAL LUBRIFICAZIONE MINIMALE
OPTIONAL MICRO-LUBRIFICATION

REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
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Data 20/10/2017

Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
OPTIONAL
Optional

Ordine/Requisition

Commessa/Order
H-230A

Esecutore/Executor
Solfanelli

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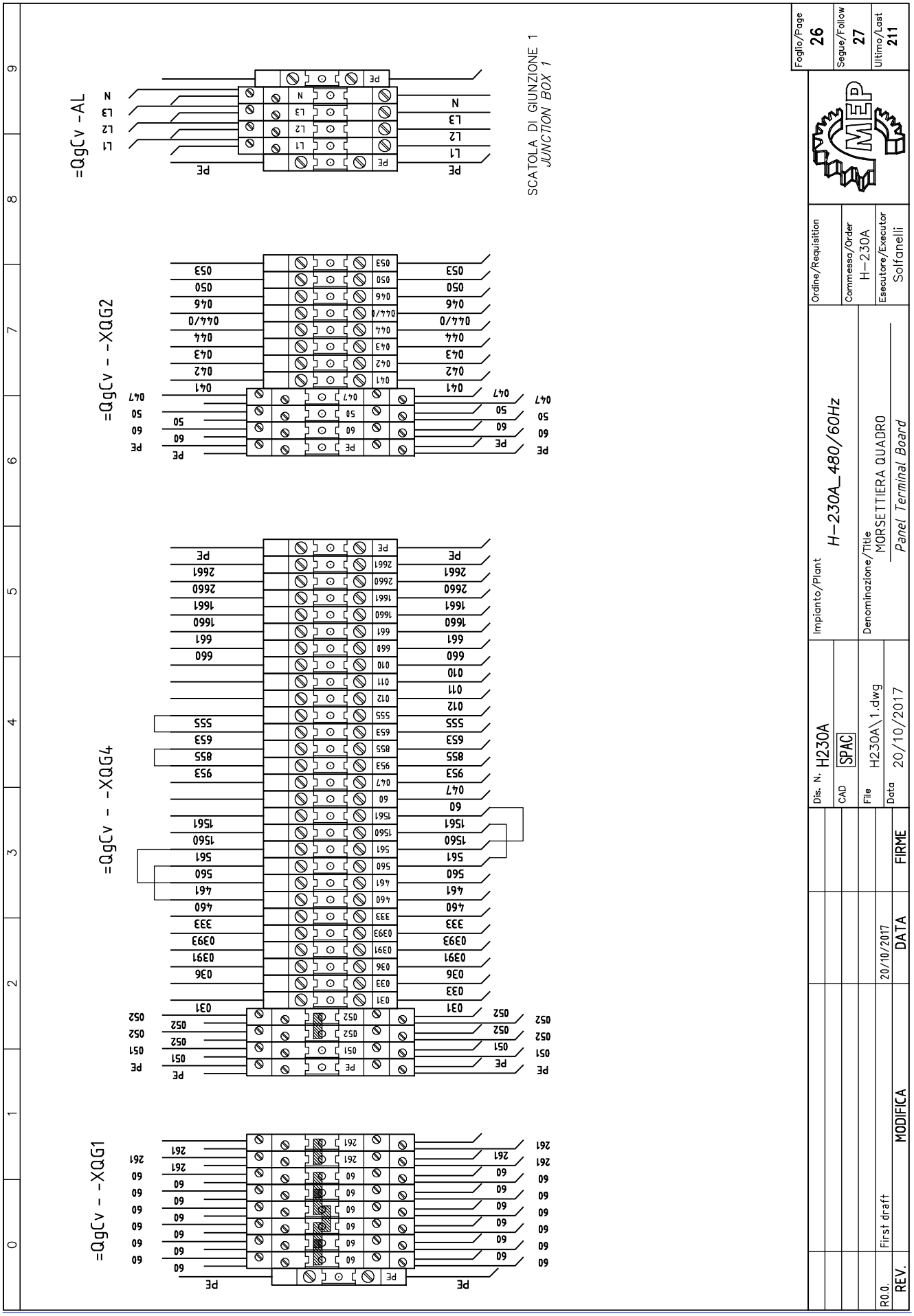
=QgCv -AL
=QgCv - -XQG1
=QgCv - -XQG2
=QgCv - -XQG4
SCATOLA DI GIUNZIONE 1
JUNCTION BOX 1
H-230A_480/60Hz
Panel Terminal Board
MORSETTIERA QUADRO
H230A
H230A\1.dwg
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DATA
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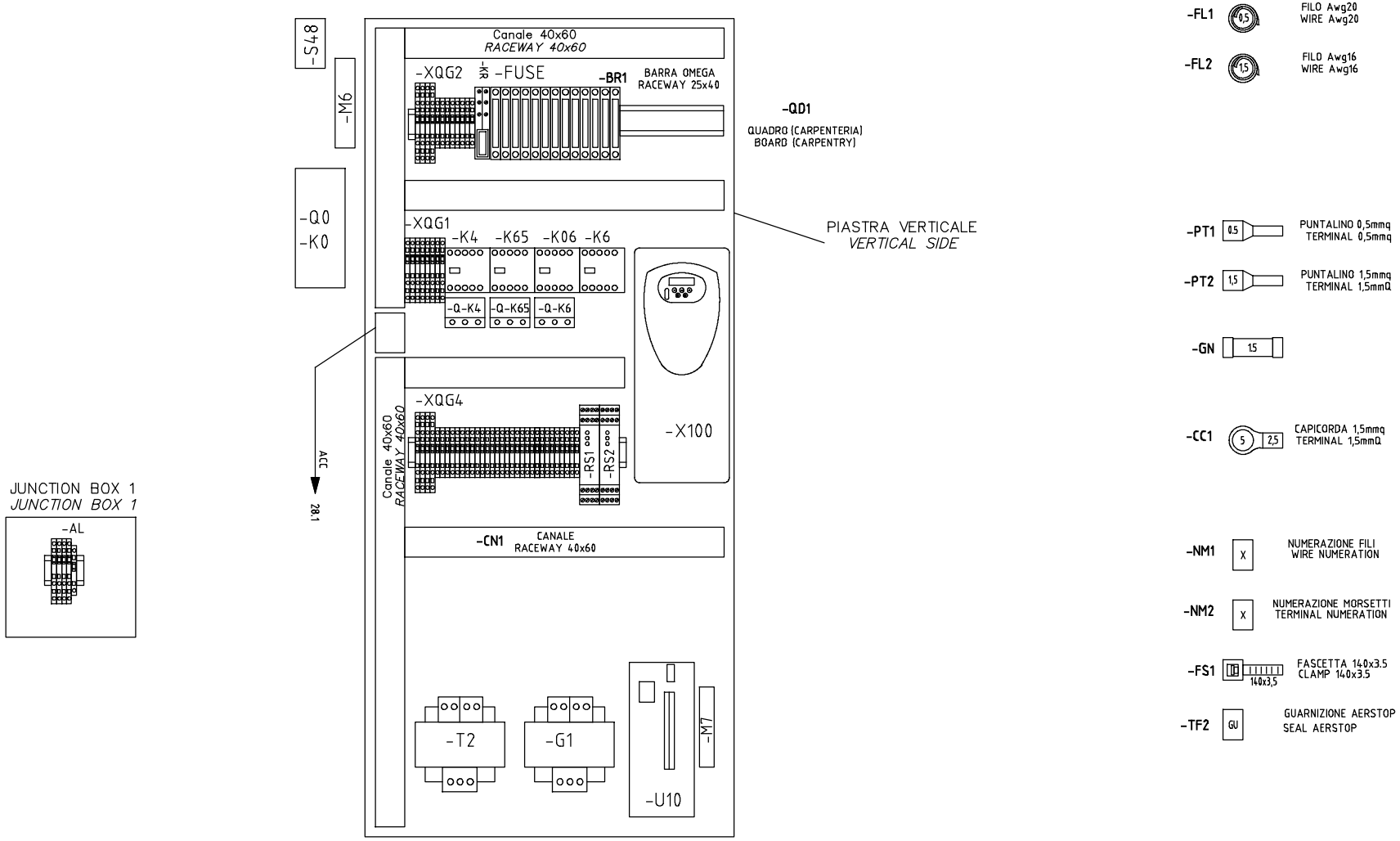


-FL1 FILO Awg20 / WIRE Awg20

-FL2 FILO Awg16 / WIRE Awg16

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

-PT2 PUNTALINO 1,5mmq / TERMINAL 1,5mmQ

-GN

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

-NM1 NUMERAZIONE FILI / WIRE NUMERATION

-NM2 NUMERAZIONE MORSETTI / TERMINAL NUMERATION

-FS1 FASCETTA 140x3.5 / CLAMP 140x3.5

-TF2 GUARNIZIONE AERSTOP / SEAL AERSTOP

REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

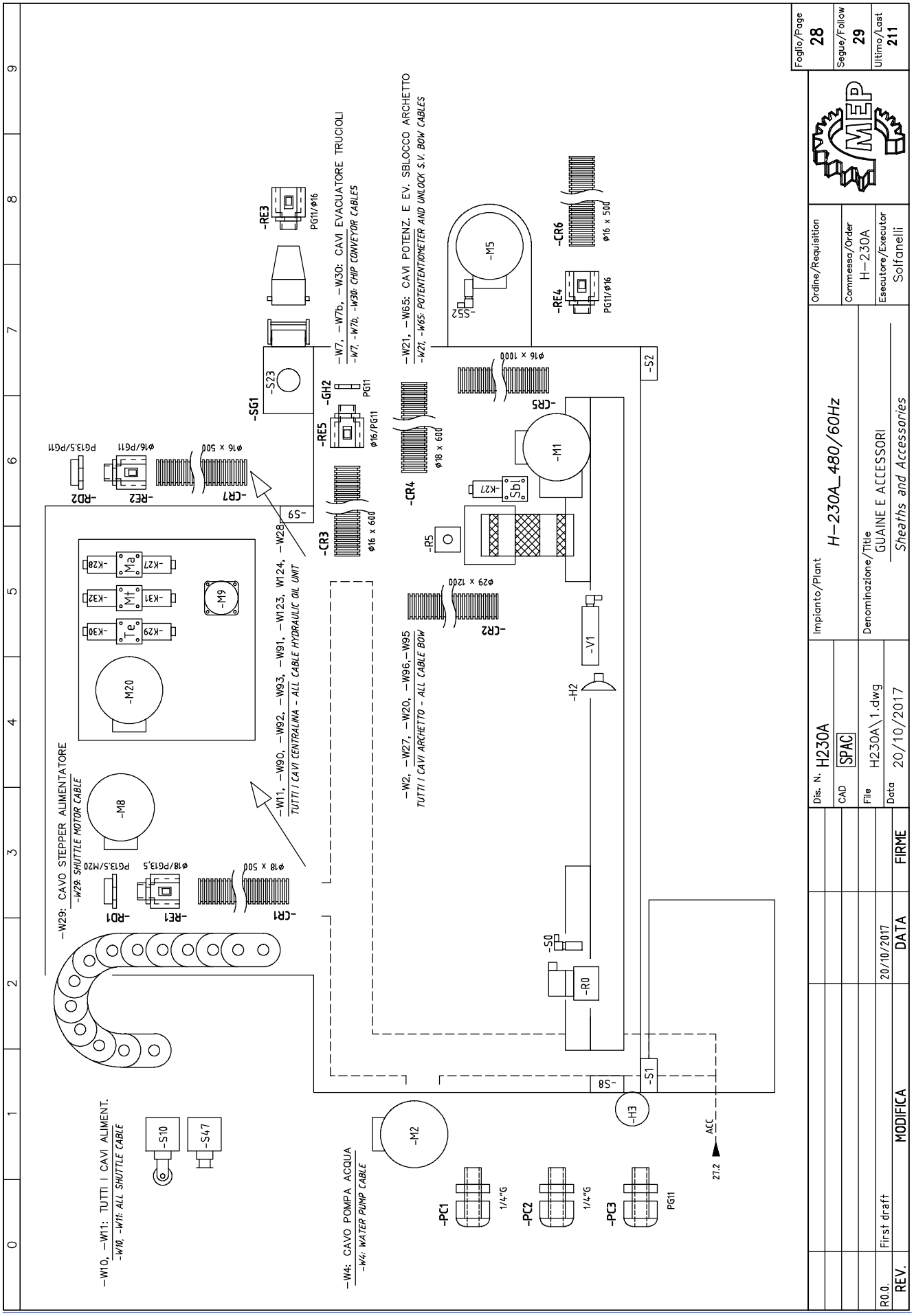
Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: H-230A_480/60Hz
Denominazione/Title: INTERNO QUADRO / Board Inside

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

Foglio/Page: 27
Segue/Follow: 28
Ultimo/Last: 211


-W29: CAVO STEPPER ALIMENTATORE
-W29: SHUTTLE MOTOR CABLE
-W11, -W90, -W92, -W93, -W91, -W123, W124, -W28
TUTTI I CAVI CENTRALINA - ALL CABLE HYDRAULIC OIL UNIT
-W2, -W27, -W20, -W96, -W95
TUTTI I CAVI ARCHETTO - ALL CABLE BOW
-W10, -W11: TUTTI I CAVI ALIMENT.
-W10, -W11: ALL SHUTTLE CABLE
-W4: CAVO POMPA ACQUA
-W4: WATER PUMP CABLE
-W7, -W7b, -W30: CAVI EVACUATORE TRUCIOLI
-W7, -W7b, -W30: CHIP CONVEYOR CABLES
-W21, -W65: CAVI POTENZ. E EV. SBLOCCO ARCHETTO
-W21, -W65: POTENTIOMETER AND UNLOCK S.V. BOW CABLES
-M1
-M2
-M5
-M8
-M9
-M20
-CR1
-CR2
-CR3
-CR4
-CR5
-CR6
-RE1
-RE2
-RE3
-RE4
-RE5
-RD1
-RD2
-RO
-R5
-S0
-S1
-S2
-S9
-S10
-S47
-S23
-SG1
-GH2
-V1
-H2
-H3
-PC1
-PC2
-PC3
1/4"G
PG11
ACC
27.2
Impianto/Plant
H-230A_480/60Hz
Denominazione/Title
GUAINE E ACCESSORI
Sheaths and Accessories
Ordine/Requisition
Commessa/Order
H-230A
Esecutore/Executor
Solfanelli
Foglio/Page
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20/10/2017

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
=BmMep -M20	6/6	U	018	BK1				BK1	018	T1	6/6	=QgCv -Q-K65
=BmMep -M20	6/7	V	019	BK2				BK2	019	T2	6/7	=QgCv -Q-K65
=BmMep -M20	6/7	W	020	BK3	-W11 022.1984			BK3	020	T3	6/7	=QgCv -Q-K65
=BmMep -M20	6/7	PE	PE	GNYE	Hydraulic motor cable			GNYE	PE	○ 5_6	6/8	=QgCv -XQGPE
=QgEtMep XMET	7/4	1	1024	BK1				BK1	1024	U	7/4	=QgEtMep -M5
=QgEtMep XMET	7/4	2	1025	BK2				BK2	1025	V	7/4	=QgEtMep -M5
=QgEtMep XMET	7/5	3	1026	BK3	-W7/1 022.1984			BK3	1026	W	7/5	=QgEtMep -M5
=QgEtMep XMET	7/5	PE	7	GNYE	Chip conveyor cable 2			GNYE	7	PE	7/5	=QgEtMep -M5
=QgCv -XFET	7/4	1	1021	BK1				BK1	1021	T1	7/4	=QgCv -Q-K06
=QgCv -XFET	7/4	2	1022	BK2				BK2	1022	T2	7/4	=QgCv -Q-K06
=QgCv -XFET	7/5	3	1023	BK3	-W7 022.1984			BK3	1023	T3	7/5	=QgCv -Q-K06
=QgCv -XFET	7/5	PE	7	GNYE	Chip conveyor cable			GNYE	7	○ 5_8	7/5	=QgCv -XQGPE
=BmMep -M2	6/4	U	015	BK1				BK1	015	T1	6/4	=QgCv -Q-K4
=BmMep -M2	6/5	V	016	BK2				BK2	016	T2	6/5	=QgCv -Q-K4
=BmMep -M2	6/5	W	017	BK3	-W4 022.1984			BK3	017	T3	6/5	=QgCv -Q-K4
=BmMep -M2	6/5	PE	PE	GNYE	Coolant pump motor cable			GNYE	PE	○ 5_4	6/5	=QgCv -XQGPE
=QgCv -F15	8/2		061	BK	-W01 022.1980	1.30Mt		BK	061	CN7	24/1	24VCC
=QgCv -XQG1	10/1	60_1 ○	60	BK2	Controller supply cable			BK2	60	CN7	24/1	0VCC
				BK1	-W33 022.1980			BK1				
				BK2				BK2				

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R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable summary

Ordine/Requisition
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

MEP

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -Q-K4	18/7	95	049	BK				BK	049	CN3	18/7	OUT05
=QgCv -XQG2	19/2	041 ○	041	BN				BN	041	CN4	19/2	OUT08
=QgCv -Q-K65	18/6	95	048	GY				GY	048	CN3	18/6	OUT04
=QgCv -XQG2	18/4	053 ○	053	BU				BU	053	CN2	18/4	OUT03
=QgCv -XQG2	19/6	043 ○	043	GN				GN	043	CN5	19/6	OUT12
=QgCv -XQG2	19/7	044 ○	044	YE				YE	044	CN5	19/7	OUT13
=QgCv -XQG2	19/2	042 ○	042	WH	-W117 022.1906			WH	042	CN4	19/2	OUT09
=QgCv -XQG2	19/5	044/0 ○	044	VT				VT	044	CN5	19/7	OUT13
=QgCv -Q-K06	18/7	95	055	RD				RD	055	CN3	18/7	OUT06
=QgCv -XQG2	18/8	050 ○	050	OG				OG	050	CN3	18/8	OUT07
				BU-WH				BU-WH				
			047	WH-BU				WH-BU	047			
=QgCv -XQG2	19/4	047 ○		Sch				Sch		CN4	19/4	OUT11
			036	BK				BK	036			
=QgCv -XQG4	16/7	036 ○	333	BN				BN	333	CN15	16/7	IN06
=QgCv -XQG4	17/4	333 ○	031	GY				GY	031	CN18	17/4	IN11
=QgCv -XQG4	16/2	031 ○	051	BU				BU	051	CN15	16/2	IN00
=QgCv -XQG4	16/6	051_1 ○	0392	GN				GN	0392	CN16	16/9	0VCC
=QgCv -R-S2	12/8	CS AR-24	352	YE				YE	352	CN15	16/4	IN03
=QgCv -F19	19/8		0391	WH	-W118 022.1906			WH	0391	CN5	19/8	OUT15
=QgCv -XQG4	17/4	0391 ○	351	VT				VT	351	CN18	17/4	IN10
=QgCv -F18	19/7		052	RD				RD	052	CN5	19/7	OUT14
=QgCv -XQG4	16/3	052 ○	769	OG				OG	769	○ 052_2	13/7	=QgCv -XQG2
=QgCv -XQG4	16/3	033 ○	02	BU-WH				BU-WH	02	CN15	16/3	IN01
=QgCv -R- S1	11/9	CS AR-24	0393	WH-BU				WH-BU	0393	CN15	16/4	IN02
=QgCv -XQG4	16/6	0393 ○		Sch				Sch		CN15	16/6	IN05

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CAD SPAC
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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition
Commessa/Order H-230A
Esecutore/Executor Solfanelli

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.		NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt] / DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -R-S2	12/6	CS AR-24		663	BK			BK	663	3	12/4	=QgCv -S3
=QgCv -XQG4	11/1	461	○	461	BN			BN	461			
=QgCv -XQG4	11/0	460	○	460	GY			GY	460	2	11/0	=QgCv -S4
=QgCv -XQG1	10/1	60_1	○	60	BU			BU	60	1	11/0	=QgCv -S4
=QgCv -S3	11/4	3		563	GN			GN	563	CS AR-24	11/6	=QgCv -R- S1
=QgCv -S3	11/4	4		564	YE			YE	564	CS AR-24	11/6	=QgCv -R- S1
=QgCv -R-S2	12/6	CS AR-24		664	WH	-W119 022.1906		WH	664	4	12/4	=QgCv -S3
=QgCv -R-S2	12/6	CS AR-24		766	VT			VT	766	4	12/6	=BmCv -S3
=QgCv -XQG2	10/3	1	○	261	RD			RD	261			
=QgCv -R- S1	11/7	CS AR-24		1261	OG			OG	1261	CN2	18/2	24VDC
					BU-WH			BU-WH				
					WH-BU			WH-BU				
					Sch			Sch				
				116	GN			GN	116	CN10	23/2	0V
	13/2	0V		115	BN			BN	115	CN10	23/1	AO1
	13/2	A2		57	BK			BK	57	CN2	18/1	OUT00
	13/2	B5		553	BU			BU	553	CN2	18/1	24VDC
	13/2	B2		052	RD	-W120/1 022.1905		RD	052	○ 052_2	13/7	=QgCv -XQG2
	13/2				YE			YE				
				117	WH			WH	117			
	13/2	B1		038	OG			OG	038	CN24	20/7	AI1a
	13/3			PE	Sch			Sch	PE	CN15	16/5	IN04
=QgCv -XQGPE	5/4	5_1	○									
					BK1			BK1				
				60	BK2	-W123 022.1980		BK2	60			
=QgCv -XQG1	19/8	1	○							1	19/6	=QgCv -X012
					GN			GN				
					BN			BN				
					BK			BK				
					BU			BU				
					RD	-W20 022.1905		RD				
					YE			YE				
					WH			WH				
					OG			OG				
				PE	Sch			Sch	PE	○ 5_1	5/4	=QgCv -XQGPE
=QgMep -XS7	21/7	PE	○									

REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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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
			314	GN-RD				GN-RD	314			
=SaCv	22/1		311	BN -BU				BN -BU	311	CN6	22/1	B+
=SaCv	22/2		312	WH-BK	-W28 022..1905			WH-BK	312	CN6	22/3	A+
=SaCv	22/2		313	YE-OG				YE-OG	313	CN6	22/3	A-
=SaCv	22/1		SCR	Sch				Sch	SCR	CN6	22/2	B-
SCH	22/1	CN6										
				GN-RD				GN-RD				
			0314	BN -BU				BN -BU	0314			
=QgCv	14/2	14	0320	WH-BK	-W29/1 022..1905			WH-BK	0320	CN8	22/8	ST+
=QgCv	14/2	20	0315	YE-OG				YE-OG	0315	CN8	22/5	SCH
=QgCv	14/2	15	???	Sch				Sch	???	CN8	22/7	DR+
SCH	22/5	CN8										
				GN-RD				GN-RD				
			010	BN -BU				BN -BU	010	10	14/2	=QgCv
=QgCv -XQG4	14/5	010/PC ○	011	WH-BK	-W29/2 022..1905			WH-BK	011	11	14/2	=QgCv
=QgCv -XQG4	14/5	011/PC ○	012	YE-OG				YE-OG	012	12	14/2	=QgCv
=QgCv -XQG4	14/5	012/PC ○	13	Sch				Sch	13			
=QgCv -XQG4	14/5	PE ○										
			3660	GN-RD				GN-RD	3660	CS AR-24	12/5	=QgCv -R-S2
-S3	12/2	21	2661	BN -BU				BN -BU	2661	○ 2661	12/2	=QgCv -XQG4
=BmMep -S9	12/2	12	2660	WH-BK	-W54 022..1905			WH-BK	2660	○ 2660	12/2	=QgCv -XQG4
-S3	12/2	22	3661	YE-OG				YE-OG	3661	CS AR-24	12/5	=QgCv -R-S2
=BmMep -S9	12/2	11		Sch				Sch				
			1660	GN-RD				GN-RD	1660	22	12/2	-S3
=QgCv -XQG4	12/1	1660 ○	3661	BN -BU				BN -BU	3661	○ 2661	12/2	=QgCv -XQG4
=BmMep -S8	12/2	11	3660	WH-BK	-W55 022..1905			WH-BK	3660	21	12/2	-S3
=QgCv -XQG4	12/2	2660 ○	1661	YE-OG				YE-OG	1661	○ 1661	12/1	=QgCv -XQG4
=BmMep -S8	12/2	12		Sch				Sch				

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R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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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
				WH				WH				
				BN				BN				
			661	GN				GN	661			
=QgCv -XQG4	12/1	661 ○	1661	YE				YE	1661			
=QgCv -XQG4	12/1	1661 ○	1660	GY	-W56 022.2053			GY	1660			
=QgCv -XQG4	12/1	1660 ○	660	PK	Left guard machine cable			PK	660			
=QgCv -XQG4	12/0	660 ○		BU				BU				
				RD				RD				
				WH				WH				
				BN				BN				
			661	GN				GN	661			
=QgCv -XQG4	12/1	661 ○	261	YE				YE	261			
=BmCv -S3	12/6	3	60	GY	-W57 022.2053			GY	60			
=QgCv -XQG1	10/3	60_2 ○	660	PK	Right guard machine cable			PK	660			
=QgCv -XQG4	12/0	660 ○		BU				BU				
				RD				RD				
				BK1				BK1				
			60	BK2	-W65 022.1980			BK2	60			
=QgCv -XQG1	19/3	_1 ○								2	19/5	=QgCv -X40
			052	BK				BK	052	○ 052	17/3	=QgCv -XQG4
=BmMep -S47	17/4		111	BU	-W121 022.0398	3.50Mt		BU	111	○ 333	17/4	=QgCv -XQG4
=BmMep -S47	17/4			BN	Zero setting shuttle limit switch			BN				
				WH				WH				
			221	BK				BK	221	A1	9/3	=QgCv -U10
=BmMep -M8	9/3	BIA/GIA	222	BK1				BK1	222	A1	9/3	=QgCv -U10
=BmMep -M8	9/3	GIALLO	223	BK2	-W29 022.1979	4.00Mt		BK2	223	B1	9/3	=QgCv -U10
=BmMep -M8	9/4	ARANCIO	224	BK3	Power stepper motor cable			BK3	224	B2	9/3	=QgCv -U10
=BmMep -M8	9/4	BIA/ARA	PE	GNYE				GNYE	PE	○ 5_9	9/2	=QgCv -XQGPE
=BmMep -M8	9/4											

REV.	MODIFICA	DATA	FIRME
R0.0.	First draft	20/10/2017	

Dis. N. H230A
CAD SPAC
File H230A\1.dwg
Data 20/10/2017

Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition

Commessa/Order
H-230A

Esecutore/Executor
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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -AL	5/2	L1	L1	BK1	-W1 022.0188	2.00Mt		BK1	L1	01	5/2	=QgCv -AL
=QgCv -AL	5/2	L2	L2	BK2				BK2	L2	02	5/2	=QgCv -AL
=QgCv -AL	5/3	L3	L3	BK3				BK3	L3	03	5/3	=QgCv -AL
=QgCv -AL	5/3	PE	PE	GNYE	General supply cable			GNYE	PE	PE	5/3	=QgCv -AL
=QgCv -AL	5/0	01	354	BK1	-W1/1 022.0188	3.00Mt		BK1	354	SECONDARY WINDING	5/0	-T1
=QgCv -AL	5/1	02	356	BK2				BK2	356		5/1	-T1
=QgCv -AL	5/1	03	358	BK3				BK3	358		5/1	-T1
=QgCv -AL	5/1	PE	360	GNYE	General supply cable from trasf.			GNYE	360	PE	5/1	=QgCv -AL
=QgCv -XQG4	16/7	036	106	BK	-W122 022.1980	2.00Mt		BK	106			
=QgCv -XQG4	16/7	052_1	052	BK2	Minimal lubrification optional cable			BK2	052			
=QgCv -XQG2	19/7	044	013	BK	-W124 022.1980	3.00Mt		BK	013	1	19/7	=QgCv -X014
=QgCv -XQG1	19/3	_1	60	BK2	SV head down cable			BK2	60	2	19/7	=QgCv -X014
=BmMep -M1	6/1	U	124	BK1	-W2 022.0188	5.50Mt		BK1	124	U	6/2	=QgCv -X100
=BmMep -M1	6/1	V	126	BK2				BK2	126	V	6/2	=QgCv -X100
=BmMep -M1	6/1	W	128	BK3				BK3	128	W	6/2	=QgCv -X100
=BmMep -M1	6/1	PE	PE	GNYE	Blade motor cable			GNYE	PE	5_2	6/2	=QgCv -XQGPE
=QgMep -XR0	20/2	1	023	BN	-W21 022.0355	5.00Mt		BN	023	CN11	20/2	0V
=QgMep -XR0	20/2	2	024	BK				BK	024	CN11	20/3	AI0
=QgMep -XR0	20/2	3	025	BU	Head potentiometer cable			BU	025	CN11	20/1	+VRf
=BmMep -S0	16/2	4	100	BK	-W27 022.0398	7.00Mt		BK	100	031	16/2	=QgCv -XQG4
=BmMep -S0	16/2	3	051	BU				BU	051			
=BmMep -S0	16/2	1	052	BN	Blade proximity cable			BN	052	052	16/3	=QgCv -XQG4
				WH				WH				
=QgMep -S23	18/5	4	1055	BK	-W30 022.1980	3.10Mt		BK	1055	21	18/5	=QgCv -K6
				BK2	Reverse chip conveyor cable			BK2				

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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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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
=BmMep -H3	18/4		001	BK	-W37 022.1980	3.50Mt		BK	001	○ 053	18/4	=QgCv -XQG2
=BmMep -H3	18/4		60	BK2	Flashing cable			BK2	60	○ 60_2	10/3	=QgCv -XQG1
				BN				BN				
=QgCv -XQG4	17/4	0391 ○	110	BK	-W59 022.0424	4.00Mt		BK	110		17/4	=BmMep -S10
=QgCv -XQG4	17/3	052 ○	052	BU	Bar infeed vice limit switch			BU	052		17/4	=BmMep -S10
				WH				WH				
=QgCv -XQG4	16/6	0393 ○	395	BK				BK	395	⊂ 2	16/6	=BmMep -XEV1
=QgCv -XQG4	16/6	051_1 ○	051	WH	-W7/B 022.1982	3.10Mt		WH	051	⊂ 3	16/6	=BmMep -XEV1
=QgCv -XQG4	16/7	052_1 ○	052	RD	Chip conveyor			RD	052	⊂ 1	16/6	=BmMep -XEV1
				Sch				Sch				
=BmMep -XEV	16/6	1 ⊂	052	BN				BN	052	1	16/6	=BmMep -S52
=BmMep -XEV	16/6	2 ⊂	394	BK	-W7/B1 022.0424	1.50Mt		BK	394	4	16/6	=BmMep -S52
=BmMep -XEV	16/6	3 ⊂	051	BU	Chip conveyor			BU	051	3	16/6	=BmMep -S52
				WH				WH				
				BK	-W89 022.1980	1.80Mt		BK				
=QgCv -XQG1	10/3	60_2 ○	60	BK2	Spray mist sistem			BK2	60			
=QgCv -XQG2	19/2	042 ○	009	BK	-W90 022.1980	3.00Mt		BK	009	1	19/2	=QgCv -X009
=QgCv -XQG1	10/3	60_2 ○	60	BK2	SV cutting vice closing cable			BK2	60	2	19/3	=QgCv -X009
=QgCv -XQG2	19/4	047 ○	011	BK	-W91 022.1980	3.00Mt		BK	011	1	19/4	=QgCv -X011
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV shuttle vice closing cable			BK2	60	2	19/4	=QgCv -X011
=QgCv -XQG2	19/2	041 ○	008	BK	-W92 022.1980	3.00Mt		BK	008	2	19/2	=QgCv -X008
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV cutting vice opening cable			BK2	60	1	19/1	=QgCv -X008
=QgCv -XQG2	19/3	046 ○	010	BK	-W93 022.1980	3.00Mt		BK	010	2	19/3	=QgCv -X010
=QgCv -XQG1	19/3	_1 ○	60	BK2	SV shuttle vice opening cable			BK2	60	1	19/3	=QgCv -X010

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Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition

Commessa/Order
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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
=BmMep -H2	19/8		1352	BK	-W95 022.1980	5.00Mt		BK	1352		19/8	=QgCv -F19
=BmMep -H2	19/8		60	BK2	Work zone lamp cable			BK2	60	○ 1	19/8	=QgCv -XQG1
=QgCv -XTL	19/7	3	1351	BN	-W96 022.0355	5.00Mt		BN	1351		19/7	=QgCv -F18
				BK	Laser cable			BK				
=QgCv -XTL	19/7	1	60	BU				BU	60	○ 1	19/8	=QgCv -XQG1

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Impianto/Plant: H-230A_480/60Hz
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-S48	022.0037	Finecorsa di sicurezza con chiave 1NO + 1NC	Safety Switch with key 1NO + 1NC	LS S11 ZB - MOELLER	=BmCv	5	1
-GN	022.0293	Terminale a giunto (Rosso)	Wire Terminal Connection Red	1,5mmq F1615 PSK	=BmCv	27	1
-K0	022.0556	Bobina di minima 480/60	Releaser 480/60	U-PKZ0 V.480.60 cod. 073147 - Moeller	=BmCv	5	1
-KR	022.0993 + 022.2391	Rele 24VCC - 2 contatti scambio + zoccolo	Relay 24 VCC - 2 exchange contacts + base	40.52.9.024.0000 + 95.05.SPA - FINDER	=BmCv	12	1
-K27		Elettrovalvola aperta (in chiusura) secondo solenoide			=BmMep	19	1
-K29					=BmMep	19	1
-K31					=BmMep	19	1
-RD2					=BmMep	28	1
-RE2					=BmMep	28	1
-S1	010.1886	Finecorsa a cerniera complementare aletta stretta	Complementary hinge	HC AA PIZZATO	=BmMep	12	1
-S2					=BmMep	12	1
-S1	010.1897	Finecorsa a cerniera aletta stretta 2NC + 1NO+ cavo 0.70Mt +M12	Hinge limit switch 2NC + 1NO	HP AA052F-0,7PMS1 PIZZATO	=BmMep	12	1
-S2					=BmMep	12	1
-SG1	016.1271	Scatola derivazione metallica	Metal junction box?	95x95 P.70	=BmMep	28	1
-M8	019.3408	Motore stepper 21Nm 13A 1,8°	Stepper Motor 21Nm 13A 1,8° FL110STH150-1304A-H-1	FL110STH150-1304A-H-1 FULLING	=BmMep	9	1
-M9	019.3555	Motore stepper 1,9Nmt 2,8A 1,8°	Stepper motor 1,9Nmt 2,8A 1,8°	FL57STH76-2804-A-12 FULLING	=BmMep	22	1
-M1	019.3624	Motore KW2.2, V277-480.60	Motor KW2.2, V277-480.60	M90L4P.B14 V277-480.60	=BmMep	6	1
-M20	019.4014	Motore centralina C80-B14, 1.1KW 230-400-415(4.70-2.70) 1420rpm, 1.3KW 277-480(4.70-2.70) 1700rpm CSA	Motor oil unit 1.1KW 230-400(4.70-2.70) 1420rpm, 1.3KW 277-480(4.70-2.70) 1700rpm CSA	019.4014	=BmMep	6	1
-RE5	022.0210	Raccordo rapido dritto	Rapid straight Joint PG11/Ø16	SEM PG11/Ø16	=BmMep	28	1
-RE1	022.0211	Raccordo rapido dritto	Rapid straight joint SEM PG13,5/Ø19	SEM PG13,5/Ø19	=BmMep	28	1
-PC1	022.0232	Pressacavo metallico	Metal Cable Gland	1/4"G	=BmMep	28	1
-PC2					=BmMep	28	1
-PC3	022.0237	Pressacavo	Cable Gland PG11	BS03	=BmMep	28	1
-GH2	022.0245	Dado grigio		PG11	=BmMep	28	1
-XEV1	022.0282 + 022.0267	Connettore volante ILME (CK03VS pioli + CKM04) 5 poli per evacuatore trucioli	Mobile connector ILME (CK03VS + CKM04) 5 poles	CK03VS pioli + CKM04	=BmMep		1
-XEV	022.0283 + 022.0268	Connettore volante ILME (CK03VGS leva + CKF04) 5 poli per evacuatore trucioli			=BmMep		1
-RD1	022.0349	Riduzione	Joint Reduction	M/F M20/PG13,5	=BmMep	28	1
-S0	022.0522	Sensore di prossimita PNP lungo conn. M12	Proximity sensor PNP long with M12 connector.	B00122-DIS388 - SELET	=BmMep	16	1
-S52	022.0527	Sensore di prossimita PNP corto conn. M12	Proximity sensor PNP short with M12 connector.	B02122POC5 - SELET	=BmMep	16	1
-S10	022.0543	Finecorsa a rotella 1NO+1NC conn. M12 laterale	Limit Switch with roll 1NO+1NC	NB B110BB-DMK PIZZATO	=BmMep	17	1
-S47					=BmMep	17	1
-S8	022.0544	Finecorsa a chiave 2 NC	Limit Switch with fork 2NC	FR 993-D10 PIZZATO	=BmMep	12	1
-S9					=BmMep	12	1
-V1	022.1191	Traguardatore laser a riga 12x70 24Vcc 635nm 5mW e conn. M8	Laser Line Sign	MOD 50EM 24V e connettore - RLI	=BmMep	19	1
-R5	022.1814	Potenziometro lineare IP67 corsa 300mm	Linear potentiometer IP67 range 300mm	TX2 0300 cod. 716 002 101 NOVOTECNIK	=BmMep	20	1
-CR3	022.2601	Guaina POLIFLEX Ø16	Poliflex Covering Ø16	NW 12-1200127	=BmMep	28	1
-CR5					=BmMep	28	1
-CR1	022.2602	Guaina POLIFLEX Ø18	Poliflex Covering Ø18	NW 14-1200143	=BmMep	28	1
-CR4					=BmMep	28	1
-CR2	022.2604	Guaina POLIFLEX Ø29	Poliflex covering Ø29	NW 23-1200232	=BmMep	28	1
-H3	022.3254	Lampeggiante LED 24 VAC/Vdc	Flashing LED 24 VAC/Vdc	SL7-CB-IMH + SL7-BL24Y + SL7-AP24	=BmMep	18	1
-H2	022.3255	Faro Led 4,2W 16/36 VCC 330LM	LED LIGHT 4,2W 16/36 VCC 330LM		=BmMep	19	1
-M2	028.0263	Elettropompa V.208-230/440-460_60, 150W 0.9/0.42A	Electropump V.208-230/440-460.50-60 HZ 180W		=BmMep	6	1
		Comando a pedale NO			=BmPeMep	16	1
-SE2	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=BmPeMep	16	1

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Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
DISTINTA MATERIALI
Material List

Ordine/Requisition

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-SE2	022.0937	Contatto pulsantiera NA	Normally open contact	M22-K10 cod. 216376 Moeller	=BmPeMep	16	1
-SE2	022.1405	Pulsante nero	Black push button	M22-D-S cod. 216590	=BmPeMep	16	1
-OPE	090.0672	Comando supplementare a pedaliera per Shark	Foot-pedal device for Shark		=BmPeMep	25	1
		Interruttore automatico magnetotermico sezionatore tripolare			=QgCv	14	1
-R-M20	010.3744	Manopola Alluminio Nero e Logo Mep	Black Knob with Mep Icon	Ø38x23mm - Albero Ø6	=QgCv	24	1
-R-M21					=QgCv	24	1
-R-M25	010.3748	Manopola Alluminio Logo HydMech con riferimento	Knob with HydMech Icon and reference	Ø38x23mm - Albero Ø6	=QgCv	21	1
-M7	016.0624	Staffa per ventola azionamento P/P	Support for driver fan cooler		=QgCv	10	1
-QD1	016.0789	Quadro elettrico SH 230 Nc HS e Spider	Electric panel SH 230 Nc HS and Spider		=QgCv	27	1
-M6	019.5117	Griglia per ventola 120x120	Cover for fan cooler 120x120	ALFA GM120	=QgCv	10	1
-M7	019.5123	Griglia per ventola 80x80	Cover for fan cooler 80x80	ALFA GM 80	=QgCv	10	1
-M6	019.5220	Ventola raffreddamento 120x120 24Vdc	Fan cooling 120x120 24Vdc	V108MBW24DC AlfaPlastic	=QgCv	10	1
-M7	019.5221	Ventola raffreddamento 80x80 - 24Vdc	Fan cooling 80x80 - 24Vdc	V108 DSW24V - ALFAELECTRIC	=QgCv	10	1
-FS1	019.5353	Fascetta in plastica 140x3,5	Plastic clamp 140x3,5	32031 Legrand	=QgCv	27	1
-R-M25	022.0045	Potenziometro 10K monogiro	Potentiometer 10K single turn	91A1AB28B15L - Mexico	=QgCv	21	1
-FL1	022.0133	Filo unipolare AWG20 CSA (0.5mmq)	Single wire AWG20 CSA (0.5mmq)		=QgCv	27	1
-FL2	022.0134	Filo unipolare AWG16 CSA (1.5mmq)	Single wire AWG16 CSA (1.5mmq)		=QgCv	27	1
-XFET	022.0281 + 022.0262	Connettore fisso ILME (CK03I + CKF03)	Fixed connector ILME (CK03I + CKF03)	CK03I + CKF03	=QgCv		1
-NM1	022.0290	Etichetta segnafilo	Cable maker and wire		=QgCv	27	1
-NM2					=QgCv	27	1
-CC1	022.0296	Terminale a occhiello (Blu)	Wire Terminal Connection Blue	Ø5 da 2,5mmq	=QgCv	27	1
-PT1	022.0311	Terminale a puntale da (Bianco)	Wire Terminal Connection White	0,5mmq DZ5CE005	=QgCv	27	1
-PT2	022.0312	Terminale a puntale da (Nero)	Wire Terminal Connection Black	1,5mmq DZ5CE015	=QgCv	27	1
-XTL	022.0376	Connettore F303N5000 per prossimity con 5Mt di cavo.	Connettor F303N5000 for connector with 5Mt cable.	022.0376	=QgCv		1
-X008	022.0429	Connettore EV idra. in DC con varistore (V1401)	Connector for solenoid valve DC with varistor	2 poli + PE - V1401 SHIELD	=QgCv	19	1
-X009					=QgCv	19	1
-X010					=QgCv	19	1
-X011					=QgCv	19	1
-X012					=QgCv	19	1
-X014					=QgCv	19	1
-X40					=QgCv	19	1
-X100	022.0742	Inverter V380-480.50.60, KW3	Inverter V380-480.50.60 KW3; 7,3A	M300 - 03400073A - ControlTechniques	=QgCv	6	1
-CU1	022.0760.1	Display MEP50 TS_REV1	Display MEP50 TS_REV1	RAKIT7WIDE. TFT 7" Word WideTouch Screen +Cavo dati	=QgCv	15	1
-BR1	022.0900	Barra omega	Omega guide DIN		=QgCv	27	1
-CN1	022.0903	Canalina portacavi in plastica	Cable holding plastic channel	40x60	=QgCv	27	1
-G1	022.0908	Alimentatore Switching Vi 230-400-500VAC Vu 24Vdc 14A	Switching power supply Vi 240-400-500VAC Vu 24Vcc 14A	FLEX28024B AdelSystem	=QgCv	8	1
-S4	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=QgCv	11	1
-S18					=QgCv	17	1
-S54	022.0932	Contatto pulsantiera NA	Normally open contact	MCB-10 cod. E0570 5 - ABB	=QgCv	17	4
-S4	022.0936	Contatto pulsantiera NC	Normally close contact	M22-K01 cod. 216678 - Moeller	=QgCv	11	3
-S3	022.0937	Contatto pulsantiera NA	Normally open contact	M22-K10 cod. 216376 Moeller	=QgCv	11	4
-S18					=QgCv	17	1
-S4	022.1245	Fungo emergenza	Emergency push button	M22-PVT cod.263467	=QgCv	11	1
-Q0	022.1288	Magnetotermico 10A - 16A	Magneto-termal overload 10- 16A	PKZM0-16 cod. 72739 Moeller	=QgCv	5	1
-R-M20	022.1322	Encoder da pannello Mep50	Panel encoder Mep 50		=QgCv	24	1

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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: DISTINTA MATERIALI
Material List

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-R-M21	022.1322	Encoder da pannello Mep50	Panel encoder Mep 50		=QgCv	24	1
-U10	022.1330	Azionamento per motori passo-passo (60VAC +20% - 10A) + modbus	Driver for step motor (30-100V) + modbus	APSL3 E OP/S130	=QgCv	9	1
-S18	022.1405	Pulsante nero	Black push button	M22-D-S cod. 216590	=QgCv	17	1
-S3	022.1406	Pulsante giallo	Yellow push button	M22-D-Y cod. 216598	=QgCv	11	1
-T2	022.1683	Trasformatore UL/CSA	Transformer 500VA UL/CSA	500VA P.0-240-480 S.0-55/60/65 (450VA)/0-220 (50VA)	=QgCv	8	1
	022.2053	Connettore dritto M12 con 5MT cavo UL/CSA 8x0.25mmq	Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq	SAC-8P- 5,0-PUR/M12FS- 1520369	=QgCv		1
-R0	022.2152	Tensionatore elettronico 3T	Electronic tensioner 3T	TR-S-A/3T 1,5V- 900Kg Deltateck	=QgCv	21	1
-F20 -F21 -F22	022.2239	Portafusibile 3 x (10,3x38) - 690V 32A	Fuse holding terminal 3 x (10,3x38) 690V 32A	2033038 BCH 32A ItalWeber	=QgCv	6	1
-F1 -F2	022.2240	Portafusibile 2 x (10,3x38) - 690V 32A	Fuse holding terminal 2 x (10,3x38) 690V 32A	2032038 BCH 32A ItalWeber	=QgCv	8	1
-F3 -F4					=QgCv	8	1
-XQG4	022.2245	Morsetto 2,5mmq per 4 fili a molla - PHOENIX	Terminal 2,5(4)mmq for 4 wires - PHOENIX	ST2,5- QUATTRO_3031306	=QgCv		2
-F10	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A	Fuse holding terminal 1 x (10,3x38) 690V 32A	2031038 BCH 32A ItalWeber	=QgCv	8	1
-F15					=QgCv	8	1
-F16					=QgCv	8	1
-F17					=QgCv	8	1
-F18					=QgCv	19	1
-F19					=QgCv	19	1
-AL	022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla	Single pole spring terminal 2,5mmq	56.703.0055.0	=QgCv		5
-XQG2					=QgCv		9
-XQG4					=QgCv		40
-XQG2	022.2257	Morsetto da 2.5 mm singolo per 3 fili a molla 56.703.5055.0	Triple pole spring terminal 2,5mmq	56.703.5055.0	=QgCv		1
	022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla 56.703.5155.0	Quadruple pole spring terminal 2,5mmq	56.703.5155.0	=QgCv		3
-XQG1					=QgCv		2
-XQG2					=QgCv		4
-XQGPE	022.2321	Barra da 15x15mm con 10 fori 6mm			=QgCv		1
-CU1	022.2832.1	Controllore Mep50C_REV1_senza display	Controller Mep50C_REV1_without display	Cod. UN07MEP006	=QgCv	15	1
-Z1	022.2903	Toroide ferrite N30 r40	Ferrites Toroids N30 r40	212-0976 - RS	=QgCv	23	1
-K6	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	18	1
-K06					=QgCv	18	1
-K4	022.3012	Contattore 3KW NO (24 V Dc)	Contactor 3KW NO (24 V Dc)	DILM7-10 cod.276565 Moeller	=QgCv	18	1
-K65					=QgCv	18	1
-RS1	022.3811	Rele sicurezza 4NO, 1NC cat.3	Safety relay 4NO, 1NC cat.3	CS AR-24V024 PIZZATO	=QgCv	11	1
-RS2					=QgCv	12	1
-Q-K65	022.3812	Rele termico 2,4-4A	Termal overload 2,4-4A	ZB12-4A cod. 278438Moeller	=QgCv	6	1
-Q-K06	022.3817	Rele termico 0.1-0.16A	Termal overload 0.1-0.16A	ZB12-0.16A cod. 278431 Moeller	=QgCv	7	1
-Q-K4	022.3824	Rele termico 0.4 - 0.6A	Termal overload 0.4-0.6A	ZB12-0.6A cod. 278434 Moeller	=QgCv	6	1
-S54	022.3920	Joystick 4 posizioni instabile con sblocco	Joystic 4 positions unstable with unlocking	MSJ12-60B cod. EL770 4 - ABB	=QgCv	17	1
-K06	022.3924	Kit ponti potenza per teleinvertitore	Kit for contactor reversing	DILM12-XLR	=QgCv	18	1
-CU1	022.4091	Cavo USB per pannello di comando con connettore	Cable 60 cm for command panel with USB connector	M222-USB-SA ;107412 EATON	=QgCv	15	1
-R-M20	025.0235	Anello di tenuta	Potentiometer 10K single turn	NI-18-25-4.5	=QgCv	24	1
-R-M21					=QgCv	24	1
-R-M25					=QgCv	21	1
-TF2	025.0604	Guarnizione aerstop	Control panel gasket		=QgCv	27	1
-M6	028.0174	Filtro per ventola 120x120	Fan filter 120x120	M12R	=QgCv	10	1
-CU1	031.2081	Consolle di programmazione MEP50 H11A, H230A,H14A.1	Programming consolled MEP50 H11A, H230A,H14A.1		=QgCv	15	1

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Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
DISTINTA MATERIALI
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Ordine/Requisition

Commessa/Order
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Esecutore/Executor
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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-M6	034.0414	Coperchio alettatore per ventola 120x120	Fan filter 120x120	M12C-7032	=QgCv	10	1
-M6	034.0431	Base per ventola 120x120 230V	Base for fan cooling 120x120	A12-7032	=QgCv	10	1
-F3 -F4	054.4538	Fusibile Ritardato 10.3x38 - 5A UL/CSA	Fuse Time delay 10.3x38 - 5A UL/CSA	5A 600V ATDR5	=QgCv	8	2
-F15					=QgCv	8	1
-F16					=QgCv	8	1
-F20 -F21 -F22	054.4541	Fusibile Ritardato 10.3x38 - 10A UL/CSA	Fuse Time delay 10.3x38- 10A UL/CSA	10A 600V ATDR10	=QgCv	6	1
-F17	054.4659	Fusibile Ritardato 10.3x38 - 0.5A UL/CSA	Fuse Time delay10.3x38 - 0.5A UL/CSA	0.5A 600V ATDR1/2	=QgCv	8	1
-F18					=QgCv	19	1
-F19					=QgCv	19	1
-F5 -F6 -F7	054.4662	Fusibile Ritardato 10.3x38 - 4A UL/CSA	Fuse Time delay 10.3x38 - 4A UL/CSA	4A 600V ATDR4	=QgCv	6	4
-F10	054.4664	Fusibile Ritardato 10.3x38 - 7.5A UL/CSA	Fuse Time delay 10.3x38 - 7.5A UL/CSA	7.5A 600V ATDR7-1/2	=QgCv	8	1
-F1 -F2	054.4676	Fusibile Ritardato 10.3x38 - 3.5A UL/CSA	Fuse Time delay 10.3x38 - 3.5A UL/CSA	3.5A 600V ATDR3-1/2	=QgCv	8	1
-AL	10 mm	Morsetto da 10 mm non abbinato a costruttore			=QgCv		8
-AL	2.5 mm	Morsetto da 2.5 mm non abbinato a costruttore			=QgCv		6
-XR0	022.0369	Connettore 3 poli per tensionatore elettronico	Connector 3-poles for strain gauge	022.0369	=QgMep		1
-XS7					=QgMep		1
-S23	022.0911	Portacontatti per pulsantiera	Carrier for pushbutton	M22-A cod. 216374	=QgMep	18	1
-S23	022.0937	Contatto pulsantiera NA M22-K10 cod. 216376	Normally open contact	M22-K10 cod. 216376 Moeller	=QgMep	18	1
-S23	022.1405	Pulsante M22-D-N cod. 216598 + M22-A cod 216374	Black push button	M22-D-S cod. 216590	=QgMep	18	1

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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: DISTINTA CAVI
Cable list

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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-W28 -W29/1 -W29/2 -W54 -W55	022..1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA								
-W9	022.0137	Cavo multipolare schermato 4x0,75			Cable with shield 4 x 0.75mmq		022.0137			3.5
-W126 -W127	022.0139	Cavo multipolare 2xAwg20 CSA (2X0,5)			Cable 2 x AWG20 CSA (0.5mmq)		022.0139			
-W45 -W46 -W47	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro			Cable with shield 4 x 0.5mmq					4 6 6
-W3	022.0178	Cavo 4GAwg18(0.75) UL 2587 CSA			Single wire 0.5mmq		022.0178			5
-W21	022.0355	Cavo 3xAwg24 per proxy con connettore M8 dritto. L=5Mt			Cable with straight connector M8. L=5Mt		1669628			5
-WS0	022.0422	Cavo pressofuso con connettore M12 90° lungo 10Mt			Cable with M12 90° connector; Lenght: 10Mt		1681389			10
-W10	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247			3
-W20 -W120/1 -WS2	022.1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 4x2 Awg24 CSA		022.1905			 5
-W117 -W118	022.1906	Cavo schermato 6x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 6x2 Awg24 CSA		022.1906			
-W33 -W65 -W89 -W122 -W123	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA			Cable 2X AWG18 OIL RESISTANT UL 2587 CSA		022.1980			 1.8 2
-W7/B	022.1982	Cavo schermato 3x Awg18 St oil resistant UL 2587 CSA			Cable 3xAWG18ST OIL RESISTANT UL 2587 CSA		022.1982			3.1
-W4 -W7 -W7/1 -W11	022.1984	Cavo oil resistant 4G x Awg18 TRAY-ER UL-CSA			Cable 4G X AWG18 oil resistant UL 2587 CSA		022.1984			
-W1/1 -W2	022.0188	Cavo 4GAwg16 UL 2587 CSA			Cable 4G Awg16 UL 2587 CSA Φ7.6		022.0188	=BmCv =BmCv		3 5.5
	N07V-K							=BmCv		
-W7/B1	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247	=BmMep		1.5
-W61	022.0139	Cavo multipolare 2xAwg20 CSA (2X0,5)			Cable 2 x AWG20 CSA (0.5mmq)		022.0139	=QgCv		4
-W1	022.0188	Cavo 4GAwg16 UL 2587 CSA			Cable 4G Awg16 UL 2587 CSA Φ7.6		022.0188	=QgCv		2
-W32 -W96	022.0355	Cavo 3xAwg24 per proxy con connettore M8 dritto. L=5Mt			Cable with straight connector M8. L=5Mt		1669628	=QgCv =QgCv		5 5
-W26 -W59	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt			SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt		1668247	=QgCv =QgCv		10 4
-W115 -WS1 -WS8 -WS9	022.1905	Cavo schermato 4x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 4x2 Awg24 CSA		022.1905	=QgCv =QgCv =QgCv =QgCv		4 5 5 5
-W119	022.1906	Cavo schermato 6x2xAwg24St(0.20mmq) UL 2464 CSA			Cable shielded 6x2 Awg24 CSA		022.1906	=QgCv		

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Impianto/Plant
H-230A_480/60Hz

Denominazione/Title
Distinta Materiali

Ordine/Requisition

Commessa/Order
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Esecutore/Executor
Solfanelli

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Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-W01	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA	Cable 2X AWG18 OIL RESISTANT UL 2587 CSA	022.1980	=QgCv		1.3
-W30					=QgCv		3.1
-W37					=QgCv		3.5
-W39					=QgCv		5
-W90					=QgCv		3
-W91					=QgCv		3
-W92					=QgCv		3
-W95					=QgCv		5
-W124					=QgCv		3
-W125					=QgCv		
-W5	022.1981	Cavo 4G Awg18 oil resistant UL 2587 CSA	Cable 4G AWG18 OIL RESISTANT CSA	022.1981	=QgCv		6
-W8					=QgCv		5
-W25	022.1982	Cavo schermato 3x Awg18 St oil resistant UL 2587 CSA	Cable 3xAWG18ST OIL RESISTANT UL 2587 CSA	022.1982	=QgCv		4
-W56	022.2053	Cavo SAC-8P- 5,0-PUR/M12FS con M12 diritto	Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq	1520369	=QgCv		
-W57					=QgCv		
	N07V-K				=QgCv		
	N07V-K 1x2.5/RD				=QgCv		
-W27	022.0398	Cavo 4xAwg24 per prossimity con connettore M12 dritto.10Mt	Straight connector M12 10MT cable 4x0.5mmq	1683002	=QgCv		7
-W121					=QgCv		3.5
-W29	022.1979	Cavo 5G Awg16 UL 2587 CSA	Cable 5G AWG16 UL 2587 CSA	022.1979	=QgCv		4
-W93	022.1980	Cavo 2x Awg18 oil resistant TRAY UL-CSA	Cable 2X AWG18 OIL RESISTANT UL 2587 CSA	022.1980	=QgCv		3

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Impianto/Plant: *H-230A_480/60Hz*
Denominazione/Title: Distinta Materiali

Ordine/Requisition:
Commessa/Order: H-230A
Esecutore/Executor: Solfanelli

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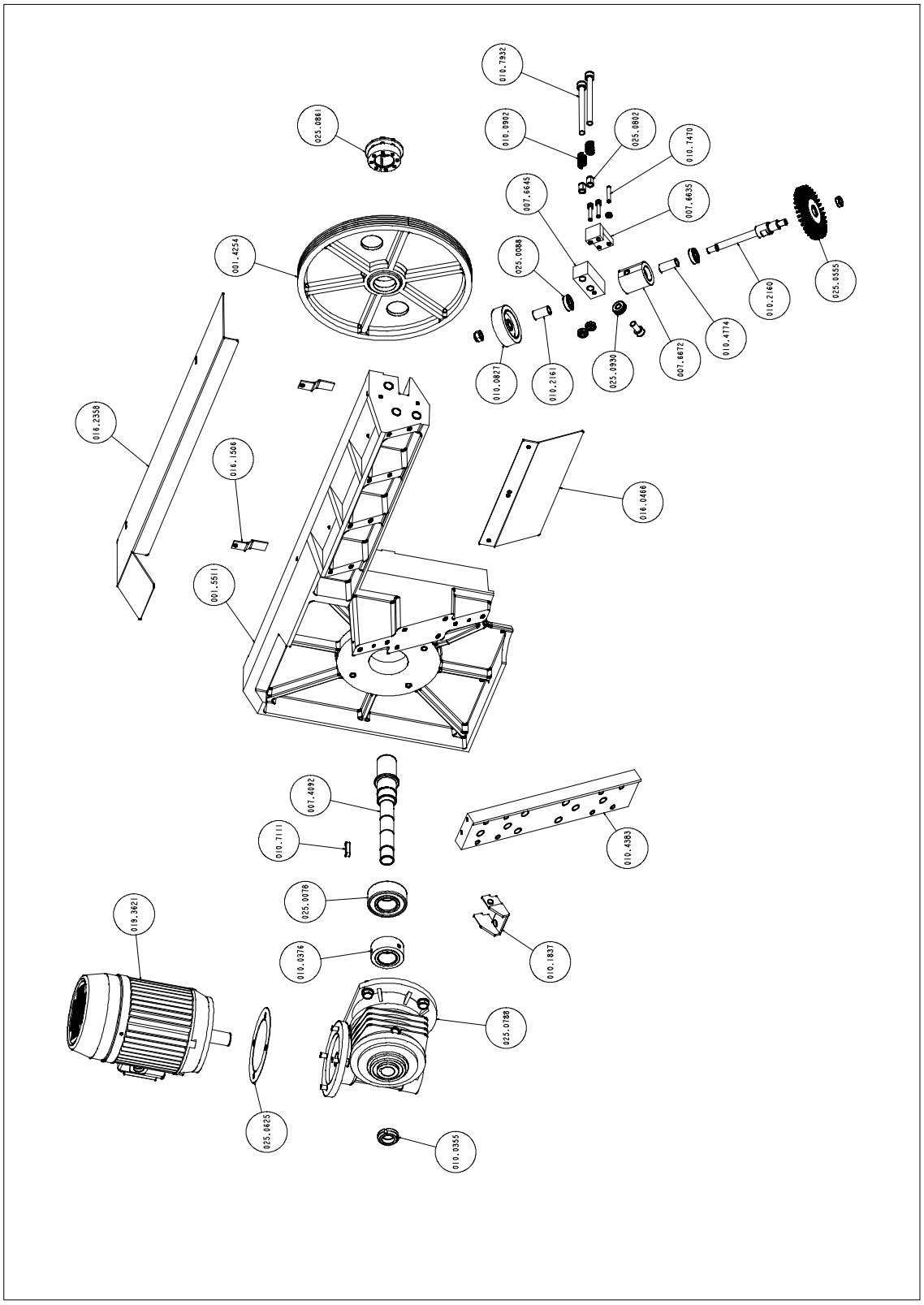
Exploded views

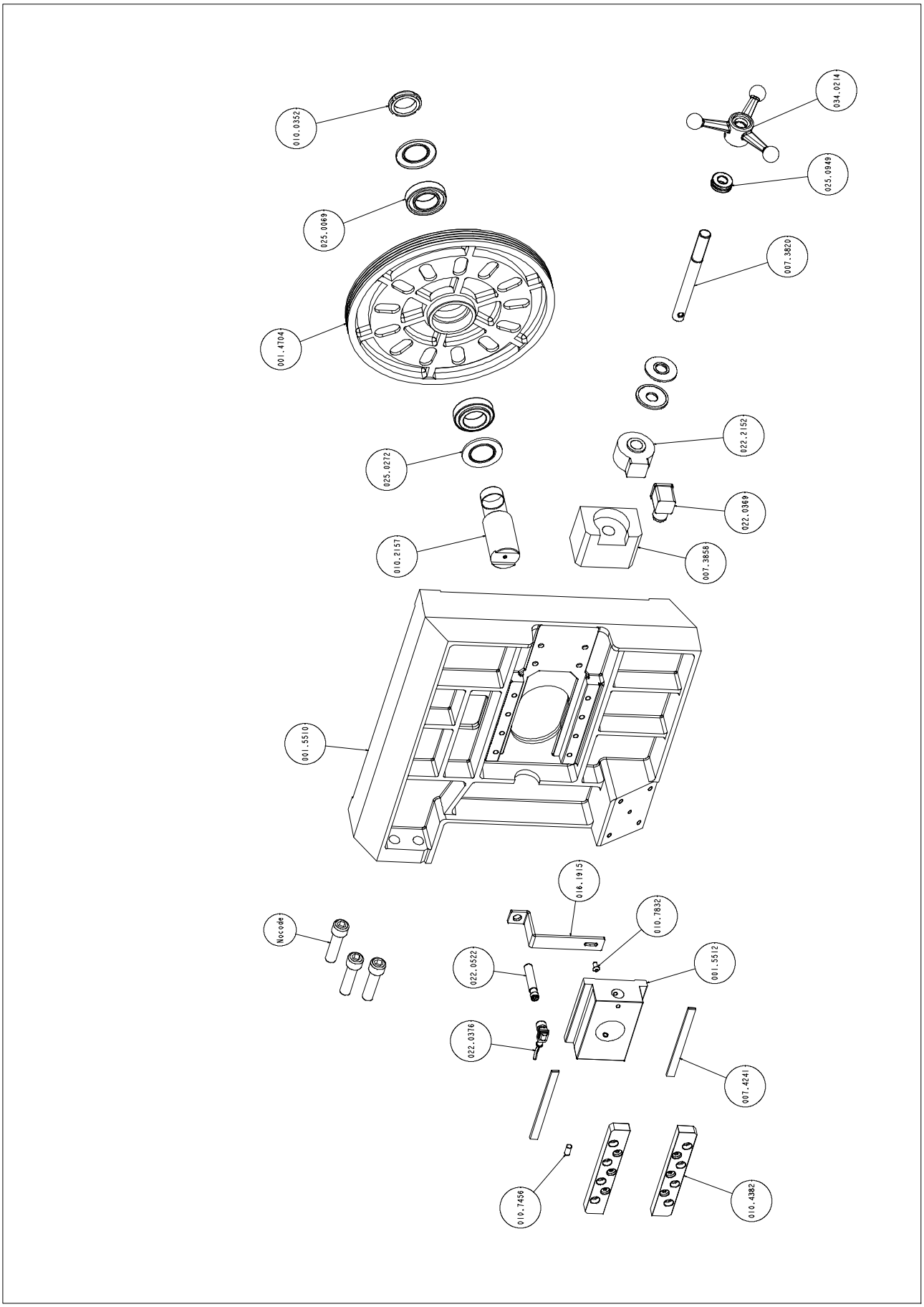
This part of the manual contains detailed exploded views of the machine which can help to gain a deeper knowledge of how it is made.

Drive pulley section bow unit



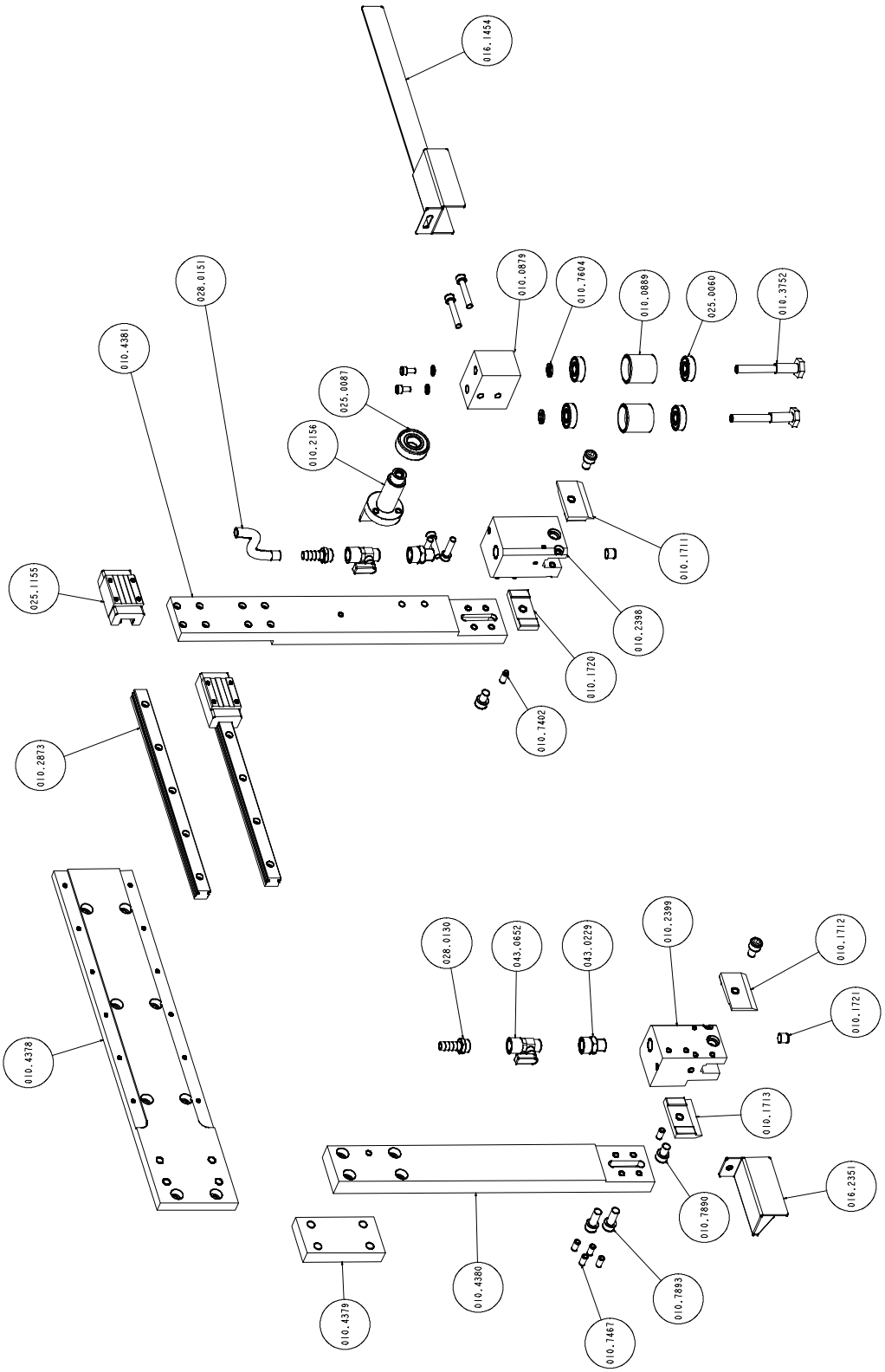
Code	Description	Description	Q.ty
001.4254	PULEGGIA MOTRICE	DRIVING PULLEY	1.000
001.5511	ARCHETTO SEZ. PULEGGIA MOTRICE	MOTOR WHEEL BOW	1.000
007.4092	ALBERO RIDUTTORE CEMENTATO	HARDENED GEARBOX SHAFT	1.000
007.6635	PIASTRINO REGISTRAZIONE SPAZZOLA PULILA-MA SHARK 452	BRUSH REGULATING PLATE	1.000
007.6645	STAFFA FISSAGGIO ALBERO PULILAMA	BRUSH SHAFT FIXING BRACKET	1.000
007.6672	SUPPORTO ALBERO SPAZZOLA PULILAMA	BRUSH SHAFT SUPPORT	1.000
010.0355	GHIERA AUTOBLOCCANTE 25X1,5 TI SH 260- FC	SELF- LOCKING RING NUT 25X1,5	1.000
010.0376	GHIERA X ALBERO RIDUTTORE	GEARBOX SHAFT RING NUT	1.000
010.0827	RUOTA IN GOMMA X SPAZZOLA PULILAMA SH452	RUBBER WHEEL F. CHIP BRUSH	1.000
010.0902	MOLLA PUNTO FISSO TESTA MOD. 95	HEAD FIXED POINT SPRING	2.000
010.4383	STAFFA AGGANCIO ARCHETTO	BOW COUPLER BRACKET	1.000
010.4774	DISTANZIALE CUSCINETTO PULILAMA	BEARING PUSH BAND LOWER SPACER	1.000
010.7111	CHIAVETTA 8 X 7 X 32 (010.7111)	8 X 7 X 32 KEY	1.000
010.7470	GRANO VCE PUNTA PIANA 6 X 35 (010.7470)	6X35 FLAT POINT VCE GRUB SC-REW(010.7470)	1.000
010.7932	VITE TCEI 10 X 110 (010.7932)	TCEI 10 X 110 SCREW (010.7932)	1.000
016.0466	CARTER SPAZZOLA PULILAMA SH 230 NC HS	BAND BRUSH COVER SH 230 NC HS	1.000
016.1506	STAFFA DI FERMO SH 320- 330- 332	LOCKING BRACKET SH 320- 330	2.000
016.2358	CARTER CAVI ARCHETTO SH 230 NC HS	BOW CABLE CARTER SH 230 NC HS	1.000
019.3621	KW 2,2 M90L4P.B14V.230- 400.50/255- 440.60S6 60%	MOTOR KW 2,2	1.000
025.0078	CUSCINETTO 3207A- 2RS1TN9	BEARING 3207A- 2RS1TN9	1.000
025.0088	CUSCINETTO 6001 2Z PH 100	BEARING 6001 2Z PH 100	2.000
025.0555	SPAZZOLA PULILAMA 3103 0 100 SH 400	BAND BRUSH 3103 0 100 SH 400	1.000
025.0625	GUARNIZIONE MOTORE SH 310- 320- 330	MOTOR GASKET SH 310- 320- 330	1.000
025.0788	RIDUTTORE MVF 63 FCO 1A38 90 B14	REDUCER MVF 63 FCO 1A38 90 B14	1.000
025.0802	BOCCOLA GRAFITATA L. 15 DIAM. 10	GRAPHITIZED BUSHING L. 15 DIA M.10	1.000
025.0861	CALETTATORE 0 35X60	CONNECTOR 0 35X60	1.000
025.0930	CUSCINETTO 51100	BEARING 51100	1.000
010.1837	SET ATTACCHI 905.010- 905.011 AX- CNC	ATTACHMENTS SET AX- CNC	1.000
010.2161	DISTANZIALE RUOTA SPAZZOLA PULILAMA	BLADE BRUSH SPACER SH 230 NC HS	1.000
010.2160	ALBERO SPAZZOLA PULILAMA SH 230 NC HS	BRUSH SHAFT SHARK 230 NC HS	1.000

Idle pulley section bow unit



Code	Description	Description	Q.ty
001.4704	PULEGGIA FOLLE SH270/282 CNC M.1705	IDLER WHEEL SH 270/282 CNC	1.000
001.5510	ARCHETTO SEZ. PULEGGIA FOLLE	IDLER WHEEL BOW SECTION	1.000
001.5512	SLITTA TENDILAMA SH 230 NC HS MOD. 1212	BAND TENSIONING SLIDE	1.000
007.3820	PERNO REGISTRO TENSIONAMENTO LAMA	BAND TENSION REGISTER PIN	1.000
007.3858	SUPPORTO TENSIONAMENTO LAMA ELETT. SH230NC HS	SUPPORT	1.000
007.4241	LARDONE SLITTA TENDILAMA SH 320- 330	BAND GUIDE SLIDE GIB SH 320- 330	2.000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5 CN- TI- SH- FC	SELF- LOCKING RING NUT 35X1,5	1.000
010.2157	ALBERO PULEGGIA FOLLE SH 230 NC HS	IDLER PULLEY SHAFT SH 230 NC HS	1.000
010.4382	PIASTRA REGOLAZIONE SLITTA LARDONE	GIB SLIDE ADJUSTMENT PLATE	2.000
016.1915	STAFFA FISSAGGIO PROSSIMITI SH230 NC HS	PROXIMITY FIXING BRACKET	1.000
022.0369	CONNETTORE PER BOBINA U2 E TENSIONATO-RETRSA/3T.00	CONNECTOR F.U2 COIL AND TEN-SIONER	1.000
022.0376	CONNETTORE 90 M12 CON 5 MT. CAVO 3X0,5PER PROSSIMITY	CONNECTOR FOR PROXIMITY	1.000
022.0522	SENSORE PROSSIMITA' PNP X AX- NCEVO	PROXIMITY PNP AX	1.000
022.2152	TENSIONATORE ELETTRONICO TRSA/3T.00	ELECTRONIC TENSIONER TRSA/3T.00	1.000
025.0069	CUSCINETTO 32007X	BEARING 32007X	2.000
025.0272	ANELLO DI PROTEZIONE NILOS 32007	NILOS SEAL RING 32007	2.000
025.0949	CUSCINETTO 51202	BEARING 51202	4.000
034.0214	VOLANTINO TENSIONAMENTO LAMA	BAND TENSIONING HANDWHEEL	1.000
010.7456	GRANO VCE PUNTA CONICA 8 X 16	8 X 16 CONICAL POINT VCE GRUBSC.	1.000
010.7832	VITE BUTON 6 X 12	BUTON SCREW 6 X 12	1.000

Head unit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010.7890
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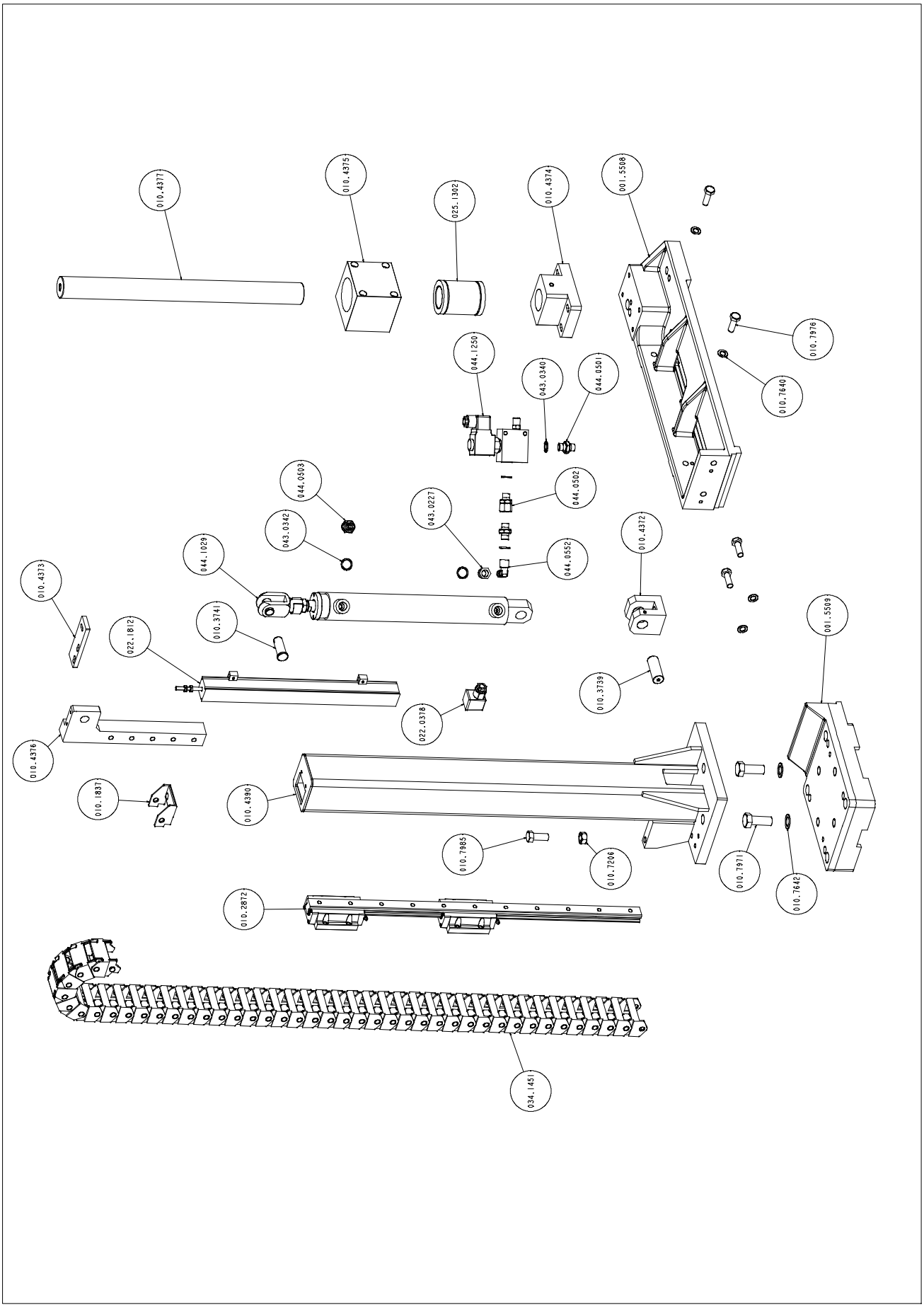
010.7467

Code	Description	Description	Q.ty
010.0879	SUPPORTO PERNI ECCENTRICI	ECCENTRIC SUPPORT PINS	1.000
010.0889	RULLO PREMILAMA	BAND PUSHER RULLER	2.000
010.1711	GUIDALAMA 1 INSERTO POSTERIORE SH 260	1 INSERT REAR BAND GUIDE	1.000
010.1712	GUIDALAMA 1 INSERTO ANTERIORE SH260	1 INSERT FRONT BAND GUIDE	1.000
010.1713	GUIDALAMA 2 INSERTI POSTERIORE SH 260	2 INSERTS REAR BAND GUIDE	1.000
010.1720	GUIDALAMA 2 INSERTI ANTERIORE SH 260	2 INSERTS FRONT BAND GUIDE	1.000
010.1721	PREMILAMA SHARK	BAND PUSHER SH	2.000
010.2156	ALBERO TRASCINAMENTO TEST. GUID. ANT.	FRONT BAND GUIDE DRAG. SHAFT	1.000
010.2398	TESTINA GUIDALAMA ANTERIORE SH 281- 282	REAR HEAD BLADE GUIDE SH 281- 282	1.000
010.2399	TESTINA GUIDALAMA POSTERIORE SH 281 282	HINDER HEAD BLADE GUIDE	1.000
010.2873	GUIDA PATTINO HGR 15 R 0340 C	SLIDE GUIDE HGR 15 R 0340 C	2.000
010.3752	PERNO ECCENTRICO CUSCINETTI PREMILAMA	ECCENTRIC PIN BEARINGS	2.000
010.4378	STAFFA FIX GUIDE LIN. TEST. ANT.	FRONT BANDGUID GUIDE BRACKET	1.000
010.4379	DISTANZIALE STAFFA TEST.GUID.POST.	REAR HEADGUIDE BRACKET SPACER	1.000
010.4380	STAFFA TESTINA GUID. POST. SH230 NC HS	FRONT BLADE HEAD GUIDE BRACKET	1.000
010.4381	STAFFA TESTINA GUID. ANT. SH230 NC HS	FRONT HEADGUIDE BRACKET	1.000
010.7402	GRANO VCE PUNTA CILINDRICA 6 X 12	6 X 12 CYLIND VCE GRUB SCREW	2.000
010.7467	GRANO VCE PUNTA CILINDRICA 8 X 20	GRUB SCREW 8 X 20	8.000
010.7604	RONDELLA DIAM. 8 MM	8 MM WASHER	2.000
010.7890	VITE TCEI 8X12	SCREW TCEI 8 X 12	4.000
010.7893	VITE TCEI 8X20	SCREW TCEI 8 X 20	4.000
016.2351	CARTER LAMA POSTERIORE SH 230 NC HS	REAR BAND COVER SH 230 NC HS	1.000
016.1454	CARTER LAMA ANTERIORE	FRONT BAND COVER	1.000
025.0087	CUSCINETTO 6202 2ZPER PH 100 E SH 420	BEARING 6202 2Z PH 100	1.000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	4.000
025.1155	PATTINO HGH 15 CA ZO C X MORSE VERTICALII-DRAULICHE	SLIDE HGH 15 CA ZO C F. VERTICAL VICE	2.000
028.0130	RACCORDO 1/4- 9 CL 2601	JOINT 1/4- 9 CL 2601	2.000
028.0151	TUBO PLASTIFICATO 07- 11	PLASTIC HOSE 07- 11	4.600
043.0229	RIDUZIONE MF 1/4 - CL 2520	MF 1/4 - CL 2520 REDUCTION	2.000
043.0652	RUBINETTO 1/4 F.M.	1/4 F. M. TAP	2.000
010.3752	PERNO ECCENTRICO CUSCINETTI PREMILAMA	BLADEPUSHER BEARING ECCENTRIC PIN SH230	1.000

Cradle unit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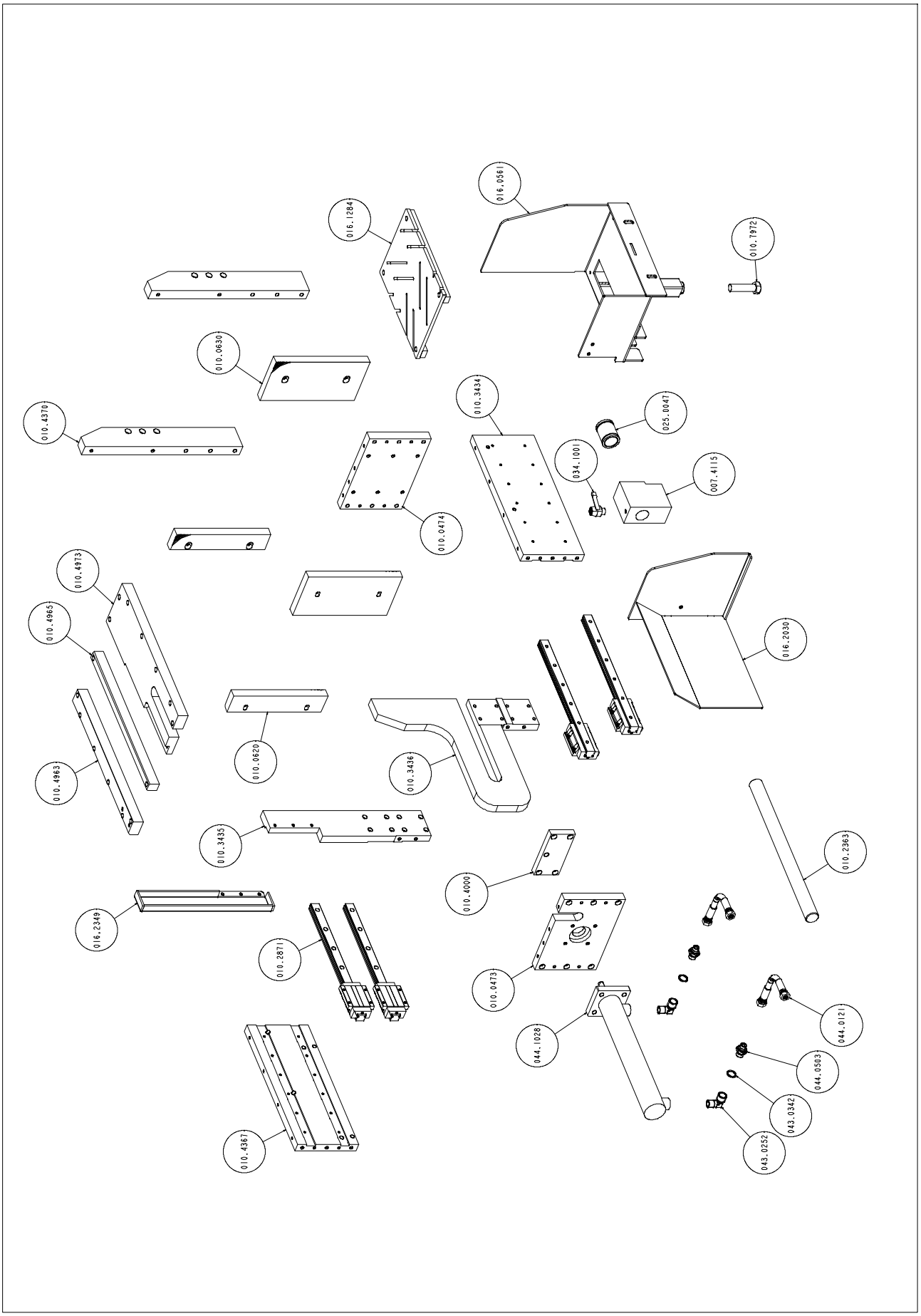
034.1451

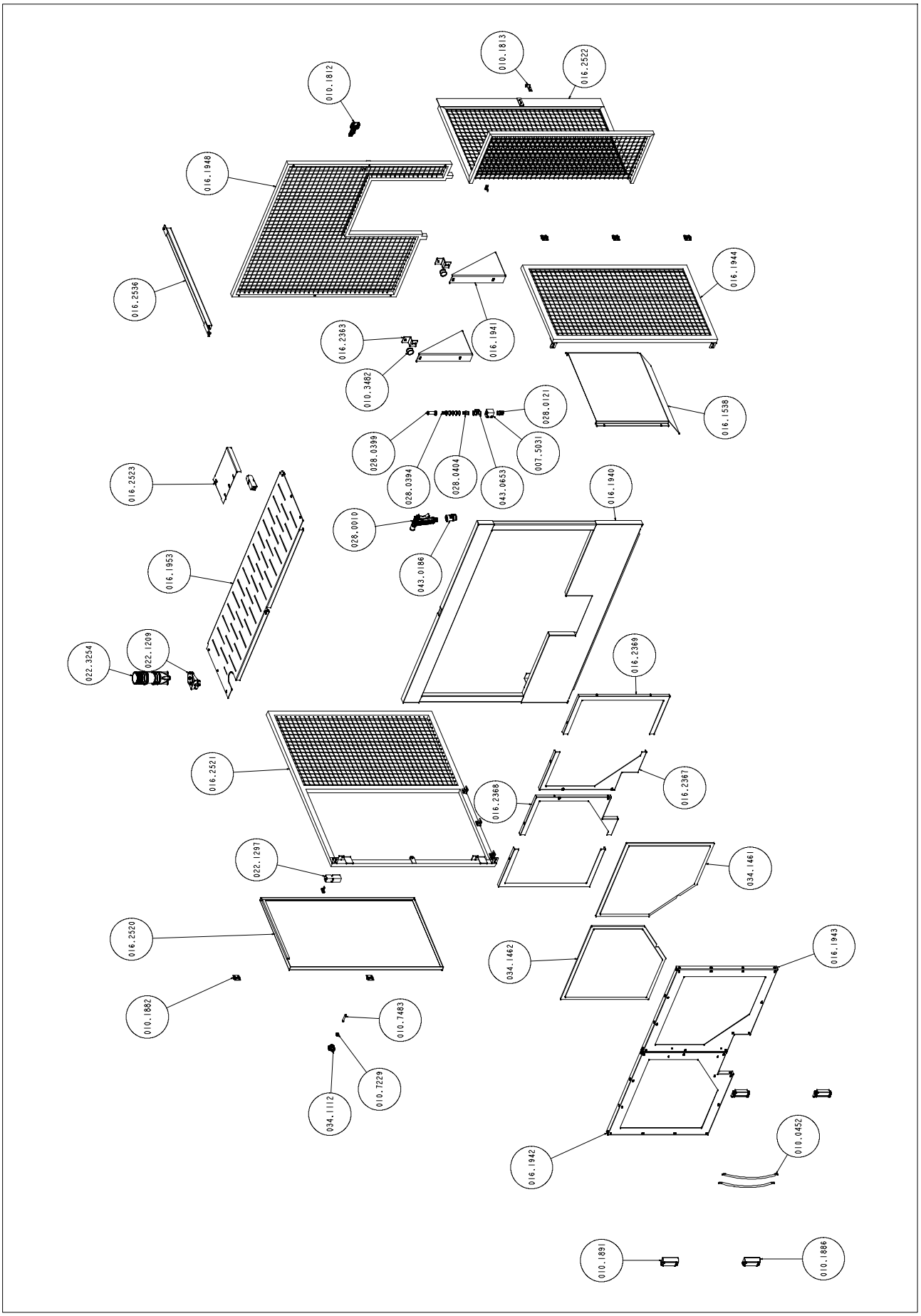
Code	Description	Description	Q.ty
001.5508	CULLA SEZ. PULEGGIA FOLLE SH 230 NC HSMOD. 2308	CRADLE IDLER WHEEL SESSION SH 230 NC HS	1.000
001.5509	CULLA SEZ. PULEGGIA MOTRICE SH 230 NC HSMOD. 2309	CRADLE MOTOR WHEEL SESSION SH 230 NC HS	1.000
010.1837	SET ATTACCHI 905.010- 905.011 AX- CNC	ATTACHMENTS SET AX- CNC	1.000
010.2872	GUIDA PATTINO HGW25- HC- 2- R0640- E20- ZB- H	SIDE GUIDE HGW25- HC- 2- R0640- E20- ZB- H	1.000
010.3739	PERNO SNODO CILINDRO DISCESA TESTA SH230NC HS	CYL.DOWN STROKE HEAD ARTIC.PIN SH230NCHS	1.000
010.3741	PERNO FORCELLA CILINDRO DISCESA ARCHET-TOSH 230 NC HS	DOWN STROKE CYLIND.FORK PIN SH 230 NC HS	1.000
010.4372	STAFFA AGGANCIO CILINDRO DISCESA TESTA-SHSH 230 NC HS	HEAD CYLIN. COUPLER BRACKETSH 230 NC HS	1.000
010.4373	STAFFA FIX POTENZIOMETRO TESTA SH230NCHS	POTENTIOMETER FIX BRACKET SH 230 NC HS	1.000
010.4374	SUPPORTO COLONNA SPF SH 230 NC HS	SPF COLLUMN SUPP SH 230 NC HS	1.000
010.4375	STAFFA AGGANCIO SPF SH 230 NC HS	SPF COUPLER BRACKET SH 230 NC HS	1.000
010.4376	STAFFA AGGAN. CILIN. DISCESA TESTA CULLA-SPM	DOWN STROKE M.P.S.CYL.COUPLER BRACKET	1.000
010.4377	COLONNA SPF SH 230 NC HS	COLUMN SPF SH 230 NC HS	1.000
010.4390	COLONNA SPM SH 230 NC HS	COLUMN SPM SH 230 NC HS	1.000
022.0378	CONNETTORE X BOBINA VALVOLARIGENERATRI-CICE	CONNECTOR F.REGENERATOR VALVE COIL	1.000
022.1812	POTENZIOMETRO LINEARE LWH300- 024312X SH 230 NC HS	LINEAR POTENTIOMETER LWH300- 024312	1.000
025.1302	MANICOTTO A RICIRCOLO DI SFERE 40- 62- 80SH 230 NC HS	RECIRCU.BALL SLEEVE 40- 62- 80 SH230NCHS	1.000
034.1451	CATENA PORTACAVI 17.04.63.0 AX- CNC	CABLES CHAIN AX- CNC	0.600
043.0227	RIDUZIONE 3/8- 1/4 MF - CL 2531	3/8- 1/4 MF - CL 2531 REDUCTION	1.000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	13X19X1,5- 1/4 COPPER WASHER	3.000
043.0342	RONDELLA RAME 3/8	3/8 COPPER WASHER	2.000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	2.000
044.0502	NIPPLO IDRAULICO GIREVOLE GMF 1/4	GMF 1/4 ROTATING HYDRAULIC NIP-PLE	1.000
044.0503	NIPPLO IDRAULICO M 3/8- M 1/4	HYDRAULIC FITTING M 3/8 M 1/4	1.000
044.0552	RACCORDO A GOMITO IDRAULICO MF 1/4 ALTA-PRESSIONE	HYDR. ELBOW JOINT M/F 1/4 HIGH PRESSURE	1.000
044.1029	CILINDRO IDRAULICO 0 40X20X260DISCESA TE-DISCESA TESTA	HYDRAULIC CYLIND.0 40X20X260 DO-WN STROKE	1.000
044.1250	VALVOLA BLOCCAGGIO PIANO GIREVOLE V3D- C- CE- C V. 24	ROTATING TABLE LOCKING VALVE V. 24	1.000

Vice assembly



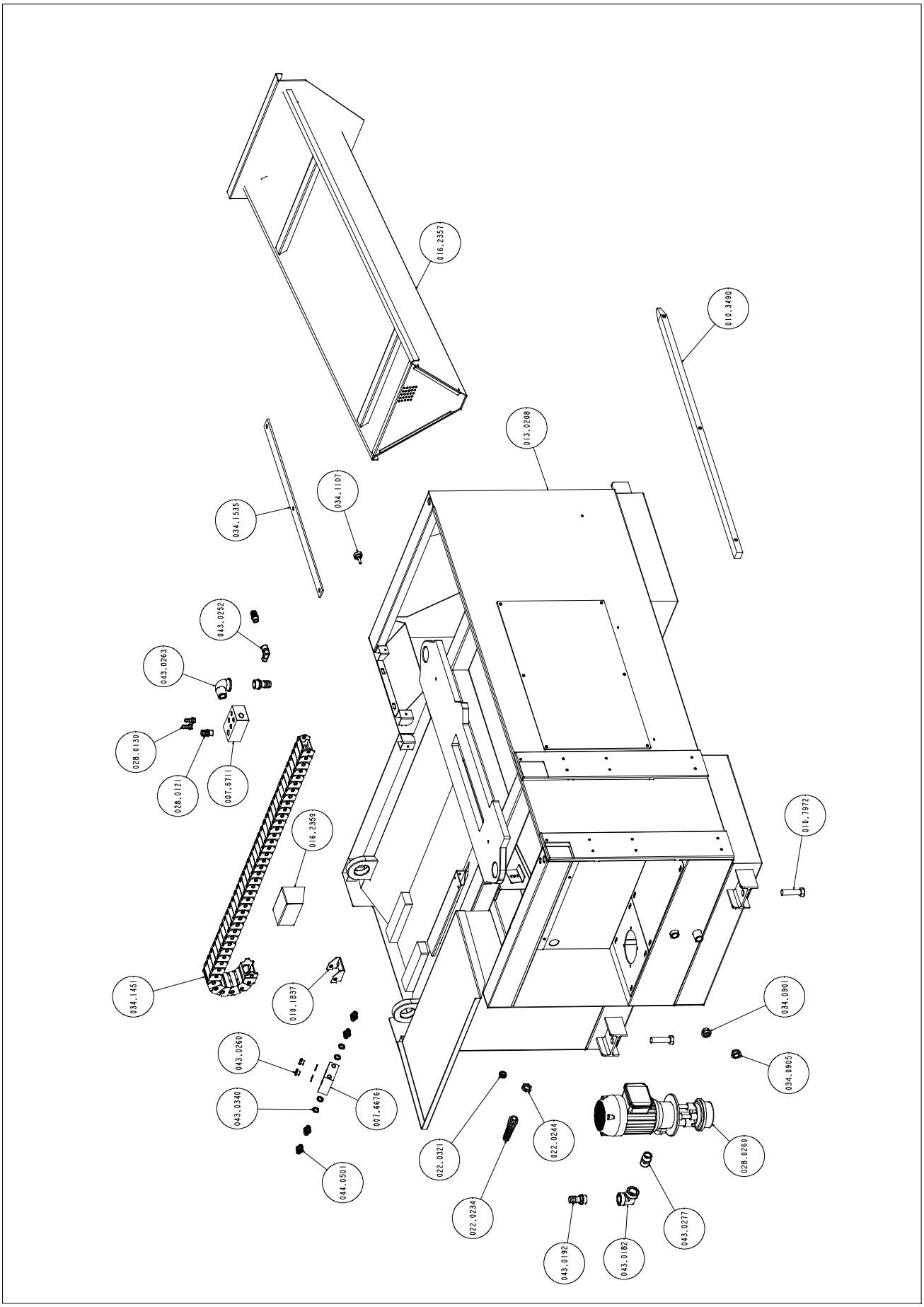
Code	Description	Description	Q.ty
010.0620	GANASCIA MORSA DI TAGLIO SH 230 NC HS	VICE JAW SH 230 NC HS	2.000
010.2363	ASTA PER GUIDA SCARICA PEZZISH 310 CNC-HS	UNLOADER GUIDE ROD SH 310 CNC-HS	1.000
010.2871	GUIDA PATTINO HGW20- CC- 1- R0350- E20- ZB- H	SIDE GUIDE HGW20- CC- 1- R0350- E20- ZB- H	2.000
010.4367	SUPPORTO MORSA INTERNO SH 230 NC HS	VICE SUPPORT SH 230 NC HS	1.000
010.4370	SUPPORTO GANASCIA FISSA SH 230 NC HS	FIXED JAW SUPPORT SH 230 NC HS	1.000
010.4963	PIANO DI TAGLIO SH 230 NC HS	CUT TABLE SH 230 NC HS	1.000
010.4965	PIANO DI TAGLIO INTERNO LATO SCARICOSH 230 NC HS	CUT TABLE SH 230 NC HS	1.000
016.2349	STAFFA TRASCINAMENTO TESTINA GUID. ANT.-SH 230 NC HS	FRONT BAND GUIDE DRAG BRACKET SH 230NCHS	1.000
025.0047	MANICOTTO A SFERA KH 3050 PP	BALL SLEEVE 0658.030.00 AL. TI	1.000
034.1001	LEVA A SCATTO 8 MA PK55	LEVER 8 MA PK55	1.000
043.0252	GOMITO MF 3/8 CL 2020	MF 3/8 CL 2020 ELBOW	2.000
043.0342	RONDELLA RAME 3/8	3/8 COPPER WASHER	2.000
044.0121	TUBO CENTRALINA IDRAULICA R7 1/4 DD 300MM	HYDR.UNIT HOSE R7 1/4 MM 300	2.000
044.0503	NIPPLO IDRAULICO M 3/8- M 1/4	HYDRAULIC FITTING M 3/8 M 1/4	2.000
044.1028	CILINDRO IDRAULICO 0 40X20X255MORSA DI TMORSA DI TAGLIO	HYDRAULIC CYLINDER 0 40X20X255 CUT.VICE	1.000
010.3436	SUPPORTO GANASCIA MOBILE DOPPIA MORSA	HOLDER, MOV.JAW SH230 W/SPLIT VI-CE,OFFS.	1.000
010.4000	PIASTRA FISSAGGIO CILINDRO DOPPIA MORSA	ASSEMBL. PLATE,SPLIT VICE CYLIN-DER SH230	1.000
010.0473	TAPPO ANTERIORE DOPPIA MORSA SH 230	FRONT CAP, SH 230 NC W/ SPLIT VICE	1.000
010.3435	SUPPORTO GANASCIA MOBILE DOPPIA MORSA	HOLDER, MOVABLE JAW SH230 W/ SPLIT VICE	1.000
010.4973	PIANO DI TAGLIO ESTERNO LATO SCARICO	MACHINE TABLE OFFSIDE,SH230 W/SPLIT VICE	1.000
010.0474	TAPPO POSTERIORE DOPPIA MORSA SH 230	REAR CAP, SH 230 NC W/ SPLIT VICE	1.000
016.2030	PIASTRA GUIDA SCARICA PEZZI X DOPPIA	UNLOADER GUIDE PLATE SH 230 NC HS	1.000
007.4115	SUPPORTO GUIDA SCARICA PEZZI SH230 NC HS	GUIDE SUPPORT SH 230 NC HS	1.000
010.0630	GANASCIA MORSA DI TAGLIO LATO SCARICO	JAW, MACHINE VICE, OUTFEED SH230 NC HS	1.000
010.3434	SUPPORTO MORSA ESTERNO SH 230 NC HS X	VICE SUPPORT SH 230 NC HS	1.000
016.1284	PIANO SCARICAPEZZI H- 230	DOWNLOAD PIECES PLAN	1.000
016.0561	GUIDA SCARICA PEZZI X DOPPIA MORSA	UNLOADER GUIDE SH 230 NC HS	1.000
010.7972	VITE TE 16X60	TE 16 X 60 SCREW	1.000

Protection unit



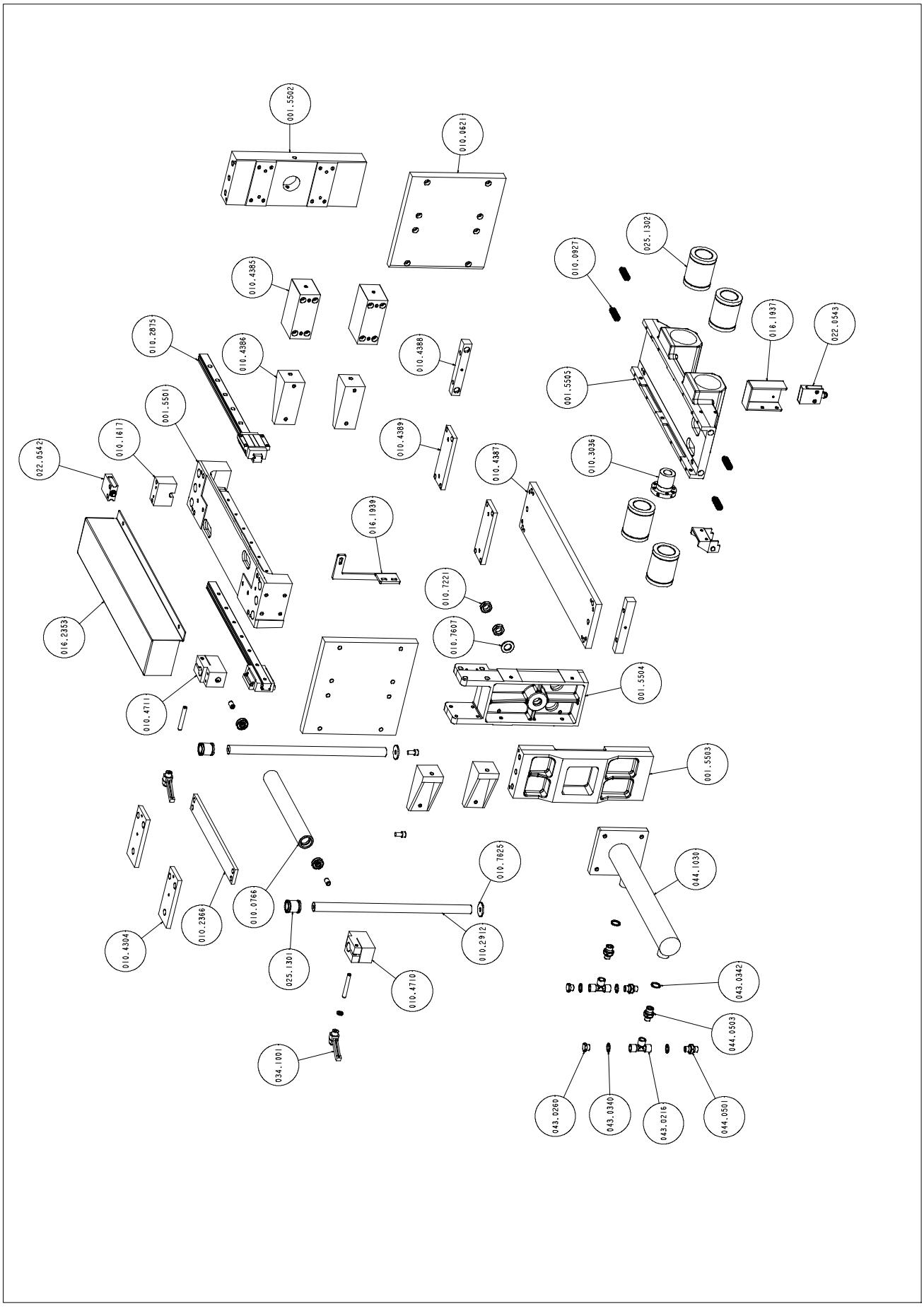
Code	Description	Description	Q.ty
007.5031	SQUADRETTO X LIQUIDO PIANO GIREVOLE	COOLANT PLATE SH 400	1.000
010.0452	MANIGLIA INOX SATINATO SH 310 CNC- HS	HANDLE SH 310 CNC- HS	2.000
010.1882	CERNIERA X SPORTELLO PROTEZIONE MAC-CHINATI 370 CNC	PROTECTION DOOR HINGE TI 370 CNC	2.000
010.1886	CERNIERA COMPLEMENTARE H=100 PROTEZ.SH 420 CNC- HS	ADITI.HINGE H=100 PROTEC. SH 410 DC	2.000
010.1891	CERNIERA X INTERRUTTORE DI SICUREZZA	SAFETY SWITCH HINGE SH420CNCHS SH230NCHS	2.000
010.3482	MAGNETE 20X35 M 6 X PROTEZIONI SH NC	MAGNET 20X35 M 6 FOR FENCES SH NC	2.000
016.1538	PARASCHIZZI POST. ARCHETTO SH 230 NC HS	BOW REAR SPLASH SHIELD SH 230 NC HS	1.000
016.1940	PROTEZIONE ANTERIORE SH 230 NC HS	FRONT PROTECTION SH 230 NC HS	1.000
016.1941	STAFFA FIX PROT. ANTERIORE SH 230 NC HS	FRONT PROTECTION BRACKET SH 230 NC HS	2.000
016.1942	SPORTELLO ANTERIORE SX SH 230 NC HS	FRONT LEFT DOOR SH 230 NC HS	1.000
016.1943	SPORTELLO ANTERIORE DX SH 230 NC HS	FRONT RIGHT DOOR SH 230 NC HS	1.000
016.1944	PROTEZIONE LATERALE DESTRA SH 230 NC HS	RIGHT SIDE PROTECTION SH 230 NC HS	1.000
016.1948	PROTEZ. POSTERIORE ALIMEN. SH 230 NC HS	FEEDER REAR PROTECTION SH 230 NC HS	1.000
016.1953	PROTEZIONE SUPERIORE SH 230 NC HS	TOP PROTECTION SH 230 NC HS	1.000
016.2363	STAFFA FIX CALAMITA SH 230 NC HS	MAGNET FIX BRACKET SH 230 NC HS	2.000
022.1297	INTERRUTTORE DI SICUREZZA CON CHIAVESH 230 NC- HS	SAFETY SWITCH 2NCX SH 230 NC- HS	1.000
028.0010	PISTOLA SH- TI ART. 8966	COOLANT PISTOL SH- TI 8966	1.000
028.0121	RACCORDO 3/8- 17 CL 2601	JOINT 3/8- 17 CL 2601	1.000
028.0394	TUBO LOOC LINE 1/2 ART. 59861	LOOC LINE HOSE 1/2	0.350
028.0399	UGELLO 0 12,7 - 1/2 ART. 59863	NOZZLE 0 12,7 - 1/2	1.000
028.0404	RACCORDO 3/8 NPT LOOC LINE 1/2 ART. 59864	FITTING 3/8 NPT	1.000
034.1112	VOLANTINO O 40 M8 X PIEDISTALLO SH- CB 330	O 40 M8 HANDWHEEL X STEEL BASE SH	1.000
034.1461	PROTEZIONE LEXAN SPORTELLO DESTRO SH 230NC HS	RIGHT DOOR PROTEC.LEXAN SH 230 NC HS	1.000
034.1462	PROTEZIONE LEXAN SPORTELLO SINISTROSH 230 NC HS	LEFT DOOR PROTEC.LEXAN SH 230 NC HS	1.000
043.0186	RACCORDO FEMMINA 1/2 ACQUASTOP	1/2 WATERASTOP FEMALE JOINT	1.000
043.0653	RUBINETTO M/F 3/8 CL 6310	M/F 3/8 CL 6310 TAP	1.000
010.7229	DADO AUTOBLOCCANTE M8	M8 SELF- LOCKING SCREW NUT	1.000
010.7483	GRANO VCE PUNTA PIANA 8X50	8 X 50 FLAT POINT VCE GRUB SCREW	1.000
016.2520	PROTEZIONE VOLANTINO TENS. LAMA SH 230	BAND TENS.PROTEC.SH 230NC HS	1.000
016.2521	PROTEZIONE LATERALE SX SH 230 NC HS N.T.	LEFT SIDE PROTECTION SH230 NC HS	1.000
016.2368	CORNICE CENTRALE SINISTRA FIX LEXAN	CENTRAL LEFT LEXAN FRAME SH 230	1.000
016.2367	CORNICE CENTRALE DESTRA FIX LEXAN SH 230	CENTRAL RIGHT LEXAN FRAME SH230	1.000
016.2369	CORNICE LATERALE FIX LEXAN SH 230 NC HS	SIDE LEXAN FRAME SH 230 NC HS	1.000
022.3254	LAMPEGGIANTE LED 24 VAC SL7- CB- IMH +	FLASHING LED	1.000
022.1209	SUPPORTO A SQUADRO X LAMPEGGIANTE LED	SUPPORT SQUARE X FLASHING LED	1.000
016.2523	STAFFA PER FINECORSA PROT. POSTER. DX	LIMIT SWITCH BRACKET RIGHT REAR	1.000
016.2522	PROTEZIONE POSTERIORE DX SH230 NCHS N.T.	RIGHT REAR PROTECTION SH 230 NC HS N.T.	1.000
016.2536	TRAVE SOSTEGNO PROTEZIONE POST. SH 230	SUPPORT BEAM REAR PROTECTION	1.000
010.1812	CHIUSURA A MOLLA CON APERTURA AG. SH 230	FACILITATED SPRING CLOSING	1.000
010.1813	RISCONTRO CHIUSURA A MOLLA CON APERTU-RA	FINDING SPRING CLOSING	1.000

Base assembly



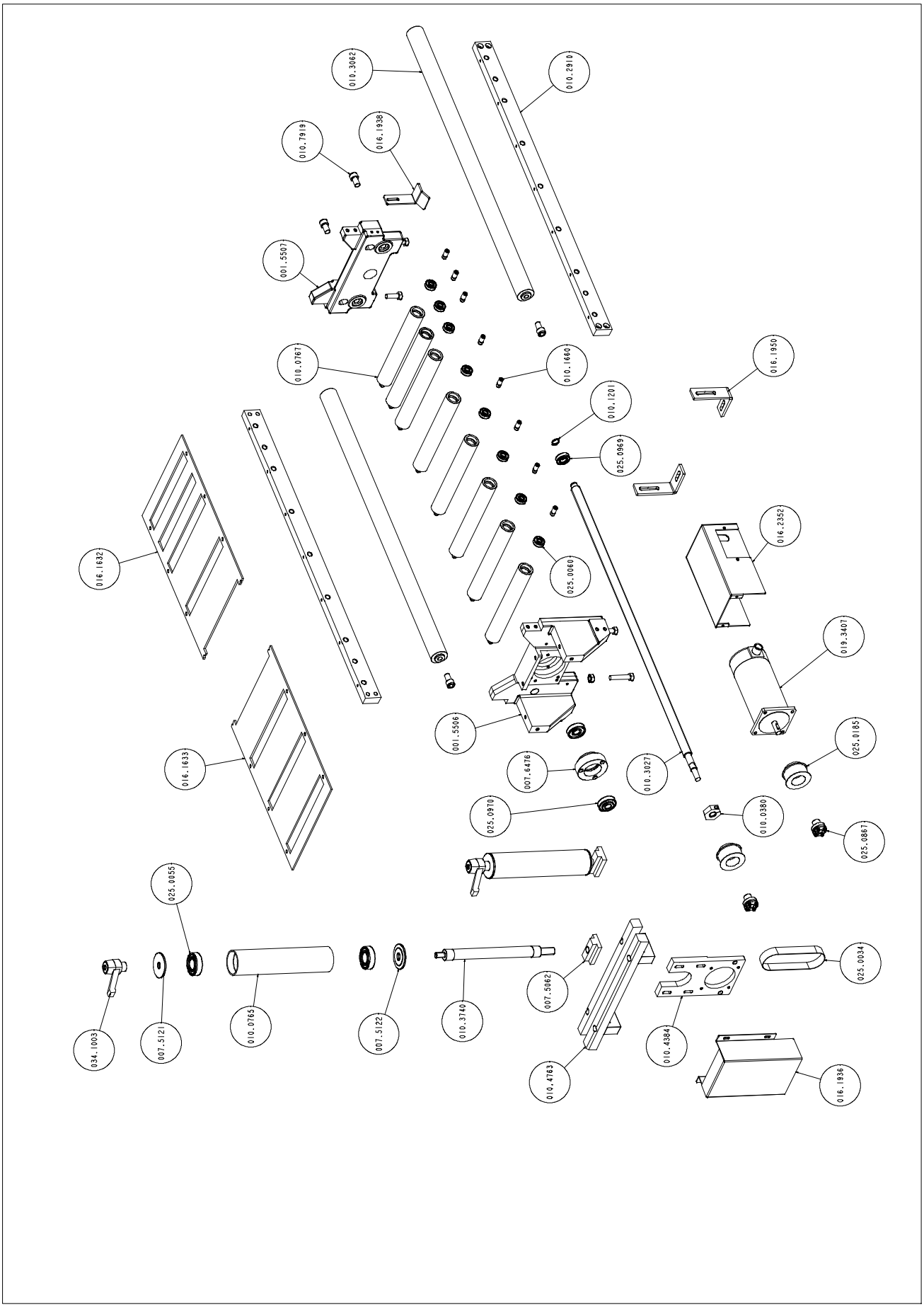
Code	Description	Description	Q.ty
007.6676	BLOCCO DI DERIVAZIONE IDR. X MORSE	HYDRAULIC PANEL SH 230 NC HS	1.000
007.6711	BLOCCO DI DERIVAZIONE IDR. SH 230 NC HSX BASAMENTO	HYDRAULIC PANEL SH 230 NC HS	1.000
010.1837	SET ATTACCHI 905.010- 905.011 AX- CNC	ATTACHMENTS SET AX- CNC	1.000
010.3490	BARRA ANTI GRAFFIO BASAMENTO SH 230 NCHS	ANTI SRATCH BAR SH 230 NCHS	1.000
013.0208	PIEDISTALLO SH 230 NC- HS	PEDESTALSH 230 NC- HS	1.000
016.2357	CASSETTO TRUCIOLI X PIEDISTALLO SH 230NCNC HS	SHAVINGS DRAWER SH 230NC HS	1.000
016.2359	CARTER CAVI CATENA ALIM. SH 230 NC HS	FEEDER CABLE CHAIN CARTER SH 230 NC HS	1.000
022.0234	PRESSACORDONE 3246 NERO PG 13,5	CORD PRESSER	1.000
022.0244	CONTRODADO 3217B GRIGIO PG 13,5	LOCK NUT 3217B GREY PG 13,5	1.000
022.0321	PASSACAVI 12 INC.MM.2	FAIRLEADS 12 INC.M M.2	1.000
028.0121	RACCORDO 3/8- 17 CL 2601	JOINT 3/8- 17 CL 2601	2.000
028.0130	RACCORDO 1/4- 9 CL 2601	JOINT 1/4- 9 CL 2601	2.000
028.0260	ELETTROPOMPA V.220- 240/380- 415.50HZ SPV33	ELECTROPUMP 230- 400.50 HZ SPV33	1.000
034.0901	TAPPO LIVELLO OLIO 1/2 'GAS.	"1/2""GAS. OIL LEVEL CAP"	1.000
034.0905	TAPPO OLIO TAO/3 1/2' NERO	"TAO/3 1/2"" BLACK OIL CAP"""	1.000
034.1107	VOLANTINO O 30 M6 X 20	O 30 M6 X 20 HANDWHEEL	1.000
034.1451	CATENA PORTACAVI 17.04.63.0 AX- CNC	CABLES CHAIN AX- CNC	0.800
034.1535	POLIZENE X SCORRIMENTO CASSETTO CENTR.	POLIXENE X UNIT DRAW SH 230 CNC HS	2.000
043.0182	RACCORDO A GOMITO FF ZINCATO 3/4	3/4 ELBOW ZINKED JOINT	1.000
043.0192	RACCORDO RB 9889 3/4X20	RB 9889 JOINT 3/4X20	2.000
043.0252	GOMITO MF 3/8 CL 2020	MF 3/8 CL 2020 ELBOW	1.000
043.0260	TAPPO TTE4 1/4 - CL 2611	1/4 TAP TTE4	2.000
043.0263	RACCORDO A GOMITO M/F ZINCATO 3/4	3/4 ELBOW JOINT	1.000
043.0277	NIPPLO CONICO ZINCATO 3/4	GALVANISED 3/4 CONICAL NIPPLE	1.000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	13X19X1,5- 1/4 COPPER WASHER	6.000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	4.000

Feeder shuttle unit



Code	Description	Description	Q.ty
001.5501	TRAVE MORSA ALIMENTATORE	FEEDER VICE BEAM	1.000
001.5502	COLONNA POSTERIORE ALIMENT.	FEEDER REAR COLUMN	1.000
001.5503	COLONNA ANTERIORE ALIMENT.	FEEDER FRONT COLUMN	1.000
001.5504	SCORREVOLE MORSA ALIMENTAT.	FEEDER SLIDING VICE	1.000
001.5505	CARRELLO ALIMENTATORE	FEEDER CARRIAGE	1.000
010.0621	GANASCIA ALIMENTATORE SH 230 NC HS	FEEDER JAW SH 230 NC HS	2.000
010.0766	RULLO PREMIBARRA ALIMENTATORE SH 230NCHS	FEEDER ROLLER SH 230 35	1.000
010.0927	MOLLA CARRELLO ALIMENTATORE CNCFE	FEEDER CARRIAGE SPRING CNCFE	4.000
010.1617	STAFFA FISSAGGIO FINECORSA PRESENZA BARRA ALIMENTATORE	FEEDER LIMITSWITCH FIX BRACKET SH	1.000
010.2366	ASTA COLLEGAMENTO SUPPORTO PREMIBARRAALIMENTATORE	FEEDER PUSHBAR SUP.ROD JOINT SH230 NC HS	1.000
010.2875	GUIDA PATTINO HGW20- CC- 1R0430- E20- ZB- H	LINE GUIDE LEN.20	2.000
010.2912	GUIDA SCORRIMENTO RULLO PREMIBARRAALIMENTATORE	FEEDER PUSH BAR ROLLER GUIDE SH230 NC- HS	2.000
010.3036	CHIOCCIOLA R2010T2FSI C7A10UC1A1 XALIMENTATORI SH NC	FE. SCREW R2010T2FSI C7A10UC1A1 X FEEDER	1.000
010.4304	STAFFA FISSAGGIO PREMIBARRA ALIMENTAT.SH 310 CNC- HS	FEEDER PUSH BAR FIX BRACKET SH310CNCHS	2.000
010.4385	DIST. GANASCIA FISSA ALIM. SH 230 NC HS	FEEDER FIX JAW SPACER SH 230 NC HS	2.000
010.4386	RINFORZO GANASCIA ALIMENT. SH 230 NC HS	FEEDER REINFORCE JAW SH 230 NC HS	4.000
010.4387	PIASTRA BASCULANTE CARRELLO ALIMENT.SH 230 NC HS	FEEDER TROLLEY BALANCE.PLATE SH230 NC HS	1.000
010.4388	TASSELLO PIASTRA BASCULANTE SH 230 NC HS	BALANCING INSERT PLATE	2.000
010.4389	STAFFA BLOCCAGGIO PIASTRA BASC. CARRELLOALIM.	FEEDER CLAMPING PLATE SH 230 NC HS	2.000
010.4710	SUPPORTO RULLO PREMIBARRA ANTERIORESH 310 CNC- HS	FRONT ROLLER PUSH BAR SUP.- SH310CNCHS	1.000
010.4711	SUPPORTO RULLO PREMIBARRA POSTERIORESH 310 CNC- HS	REAR ROLLER PUSH BAR SUP.- SH310CNCHS	1.000
016.1937	STAFFA FISSAGGIO FC ALIMENTATORE SH 230NC HS	FEEDER BACK STOP BRACKET SH 230 NC HS	1.000
016.1939	STAFFA FISS. POTENZ. LINEARE MORSA ALIM.SH 230 NC HS	FEEDER VICE POTENT.FIX BRACKET SH230NCHS	1.000
016.2353	PROTEZIONE TRASDUTTORE LINEARE MORSAALIMENTATORE	FEEDER VICE TRASDUCER PROTEC.	1.000
022.0542	FINECORSA A BOTTONE SERIE NBX EV. TRUCIOLI SERIE HS	LIMIT SWITCH	1.000
022.0543	FINECORSA A ROTELLA X SH 230	LIMIT SWITCH	1.000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	18.000
025.1301	MANICOTTO A SFERA KH2030PP ALIM.SH 31010	FEEDER SPHERE SLEEVE KH 2030PP	2.000
025.1302	MANICOTTO A RICIRCOLO DI SFERE 40- 62- 80	RECIRCU.BALL SLEEVE 40- 62- 80	4.000
034.1001	LEVA A SCATTO 8 MA PK55	LEVER 8 MA PK55	2.000
043.0216	RACCORDO A 'T' FFF 1/4 CL 2003	FFF 1/4 CL 2003 T JOINT	2.000
043.0260	TAPPO TTE4 1/4 - CL 2611	1/4 TAP TTE4	2.000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	13X19X1,5- 1/4 COPPER WASHER	2.000
043.0342	RONDELLA RAME 3/8	3/8 COPPER WASHER	2.000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	2.000
044.0503	NIPPLO IDRAULICO M 3/8- M 1/4	HYDRAULIC FITTING M 3/8 M 1/4	2.000
044.1030	CILINDRO IDRAULICO 0 40X20X255MORSA ALIM	HYDRAULIC CYLIND.0 40X20X255 FEEDER VIC	1.000

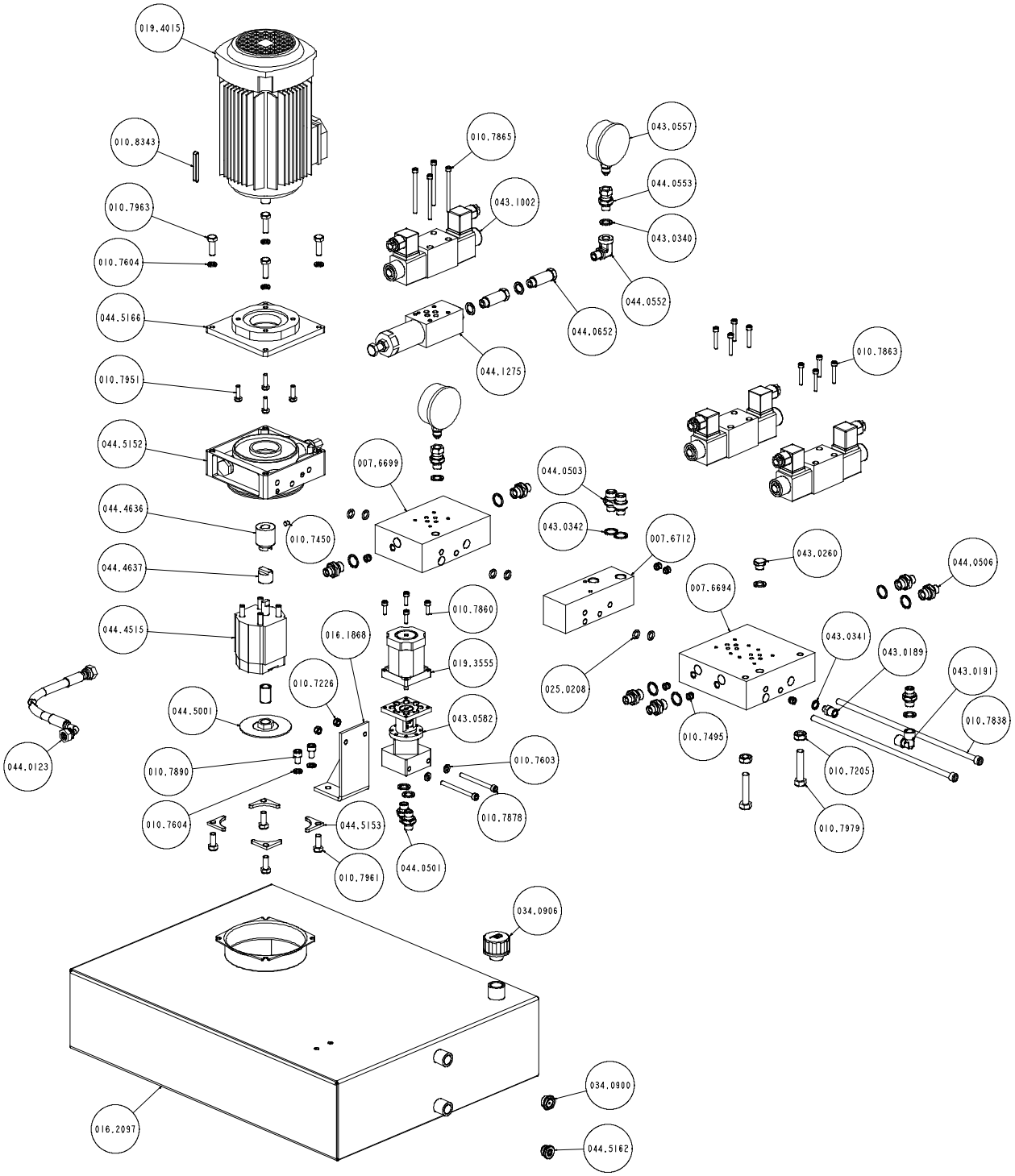
Feeder roller conveyor group



Code	Description	Description	Q.ty
001.5506	STAFFA POSTERIORE ALIMENT. SH 230 NC HSMOD. 2306	FEEDER REAR BRACKET SH 230 NCHS MOD.2306	1.000
001.5507	STAFFA ANTERIORE ALIMENTAT. SH 230 NC HSMOD. 2307	FEEDER FRONT BRACKET SH230 NCHS MOD.2307	1.000
007.5062	TASSELLO FISSAGGIO RULLO VERTICALE ALIMEN-TATORE	FIXING PLATE F.VERT.ROLLER SH 400- 410	2.000
007.5121	RONDELLA SUPERIORE X RULLO VERTICA- LE SH 400	UPPER WASHER SH 400	2.000
007.5122	RONDELLA INFERIORE X RULLO VERTICA- LE SH 400	LOWER WASHER SH 400	2.000
007.6476	MANICOTTO VITE RICIRCOLO ALIMENTATO RE SH 500- 420	SLEEVE FOR RECIRCULATING BALLSC-REW	1.000
010.0380	GHIERA FISSAGGIO VITE RICIRCOLO ALIMENTATO-RE SH N.T.	FIXING RING NUT FOR FEEDER	1.000
010.0765	RULLO VERTICALE ALIMENTATORE SH 230NCHS	FEEDER VERTICAL ROLLER SH 230 NC HS	2.000
010.0767	RULLO ALIMENTATORE 0 35 SH 230 NC HS	FEEDER ROLLER 0 35 SH 230 NC HS	8.000
010.1660	PERNO X RULLO ALIMENTATORE SH 320 AXI	PIN FOR FEEDER ROLLER SH 320 AXI	16.000
010.2910	GUIDA RULLI ALIMENTATORE SH 230 NC HS	FEEDER ROLLER GUIDE SH 230 NC HS	2.000
010.3027	VITE RULLATA R2010/900/900 C7 MM.896X ALIMEN-TATORE	FEEDER SCREW R2010/900/900 C7 MM 896	1.000
010.3062	GUIDA CARRELLO 0 40 L.808 SH 230 NC HS	CARRIAGE GUIDE 0 40 L.808 SH 230 NC HS	2.000
010.3740	PERNO PER RULLO VERTICALE ALIMENTAT.SH 230 NC HS	FEEDER VERT.ROLLER PIN SH230 NC HS	2.000
010.4384	SUPPORTO MOTORE P/P X ALIMENTORE SH 230NC HS	STEP MOTOR HOLDER, FEEDER SH 230 NC HS	1.000
010.4763	SUPPORTO PER RULLO VERTICALE ALIMENTAT.SH 230 NC HS	FEEDER VERT.ROLLER SUP.SH230NC HS	2.000
016.1632	COPERCHIO ANTERIORE ALIMENTATORESH 230 NC HS	FEEDER FRONT COVER SH 230 NC HS	1.000
016.1633	COPERCHIO POSTERIORE ALIMENTATORESH 230 NC HS	FEEDER REAR COVER SH 230 NC HS	1.000
016.1936	CARTER CINGHIA ALIMENTATORE SH 230 NC HS	FEEDER BELT COVER SH 230 NC HS	1.000
016.1938	STAFFA COMANDO FINECORSA ALIMENTATORESH 230 NC HS	FEED. LIMIT SWITCH COM.BRACKET SH230NCHS	1.000
016.1950	SUPPORTO STAFFA POSTERIORE ALIMENTATORE-SH 230 NC HS	FEEDER REAR BRACKET SUPPORT SH 230 NC- HS	2.000
016.2352	PROTEZIONE MOTORE ALIMENTATORESH 230 NC HS	FEEDER MOTO.PROTEC.SH230 NC HS	1.000
019.3407	MOTORE P/P FL86STH156- 5708AL XALIMENTATORI NC	FEEDINGMOTOR	1.000
025.0034	CINGHIA DENTATA METRICA PASSO 8 LAR-GH.20SVILUPPO 376	TIMING BELT 8M 20 376	1.000
025.0055	CUSCINETTO 62.05 2Z C3	BEARING 62.05 2Z C3	4.000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	16.000
025.0185	PULEGGIA DENTATA METR. PASSO 8 22 DENTILAR-GHEZZA CINGHIA 20	WHEEL 22 8M 20	2.000
025.0867	CALETTATORE TLK 110 12X18 SH 652 SXI EVOSH 230 NC HS	KEY TLK 110 SH 652 SXI EVO	2.000
025.0969	CUSCINETTO 6002 2Z	BEARING	1.000
025.0970	CUSCINETTO 30302J2	BEARING	2.000
034.1003	LEVA A SCATTO 12 MA	LEVER 12 MA	2.000

Control unit group

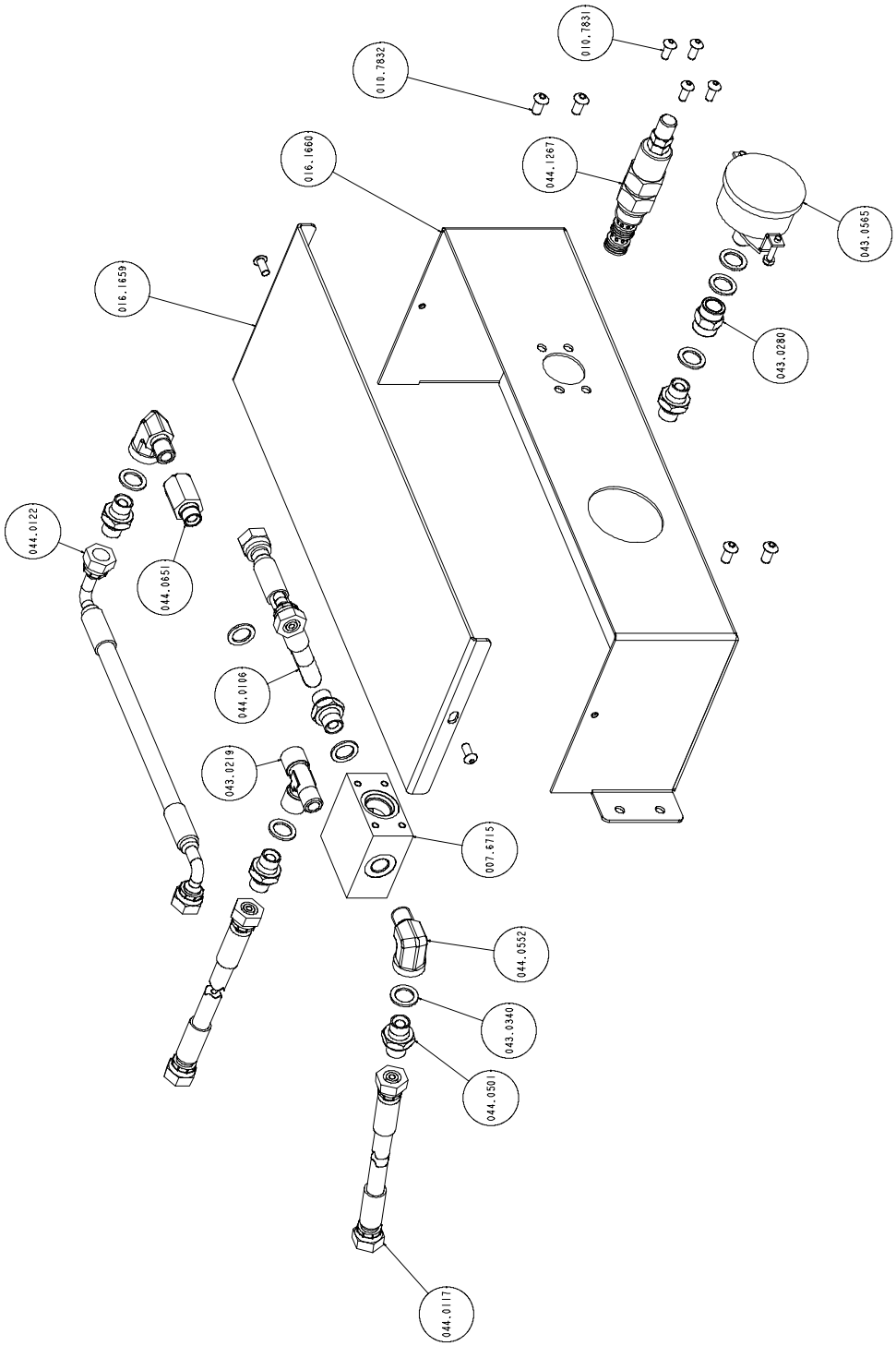
044.0088.2: MONOCENTRALINA IDRAULICA H230 V.240.60
044.0087.1: MONOCENTRALINA SENZA MOTORE H230 60HZ



Code	Description	Description	Q.ty
016.1868	STAFFA FISSAGGIO MOTORE PASSO- PASSOMO-NOCENTRALINA	MONOUNIT STEP MOTO FIX BRACKET SH310CNC	1.000
016.2097	SERBATOIO CENTRALINA SH230 NC HS - - A- -	UNIT TANK SH 230 NC HS - - A- -	1.000
019.3555	MOTORE FL57STH76- 2804A- 12 X CILINDRO NC	MOTOR F257STH76- 2804 FOR CYLIN-DER	1.000
025.0208	ANELLO TENUTA OR 109- 9,13	O RING 109- 9,13	3.000
034.0900	TAPPO LIVELLO OLIO SLNT 38 3/8 PH 211 - POS. 210	SLNT 38 3/8 OIL LEVEL CAP	1.000
034.0906	TAPPO OLIO CENTRALINA IDRAULICA SH 310 SXI	HYDRAULIC UNIT OIL CAP SH 310 SXI	1.000
043.0191	RACCORDO A GOMITO CL 2013 FF 1/4	ELBOW JOINT FF 1/4 CL 2013	1.000
043.0260	TAPPO TTE4 1/4 - CL 2611	1/4 TAP TTE4	1.000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	13X19X1,5- 1/4 COPPER WASHER	13.000
043.0342	RONDELLA RAME 3/8	3/8 COPPER WASHER	6.000
043.0557	MANOMETRO 0- 60 WIKA P.1275 PERCENTRALINA IDRAULICA	WIKA 0 60 MANOMETER SH 310 SXI	2.000
043.0582	REGOLATORE DISCESA TESTA MOTORIZZATO (BAFFO B)	POWERED HEAD DOWN STROKE REGU-LATOR H14A	1.000
043.1002	ELETTROVALVOLA DL3- S1/10N- D24K1 CONBOBI-NA X CENTRALINA SXI- EVO	ELECTROVALVE FOR HYDRAULIC UNIT SXI EVO	3.000
044.0123	TUBO CENTRALINA IDRAULICA MM.500 1X90 R7 1/4	HYDR.UNIT HOSE MM 500 1X90 R7 1/4	1.000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	6.000
044.0503	NIPPLO IDRAULICO M 3/8- M 1/4	HYDRAULIC FITTING M 3/8 M 1/4	1.000
044.0506	NIPPLO E.22X32,5 ZINC.G.	NIPPLEE.22X32,5 ZINC.G.	5.000
044.0552	RACCORDO A GOMITO IDRAULICO MF 1/4 ALTA-PRESSIONE	HYDR. ELBOW JOINT M/F 1/4 HIGH PRE-SSURE	1.000
044.0553	RACCORDO IDRAULICO MF 1/4 GIREVOLE XMANO-METRO CENTRALINA	HYDRAULIC COUPLING FOR POWER PACK MANOM.	2.000
044.1275	VALVOLA MODULARE RIDUTTRICE DI PRES-SIONEMBRV- 02A	MODULER VALVE PRESS.REDUC. MBRV- 02A	3.000
044.4636	GIUNTO COLLEGAMENTO LATO MOTORE GR 80X MONOCENTRALINA	CONNECTING COUPLING FOR CENTRAL UNIT	1.000
044.4637	GIUNTO COLLEGAMENTO LATO POMPA X MONOCENTRALINA	PUMP CONNECTING COUPLING FOR CENTRALUNIT	1.000
044.5001	FILTRO OLIO X CENTRALINA IDRAULICA	OIL FILTER FOR HYDRAULIC UNIT	1.000
044.5152	COLLETTORE PER POMPA DA 5 X NC- CNCCTR UP100K3P0- 01 5 MOD.6/021N7	SQUARE FOR PUMP SUPPORT	1.000
044.5153	STAFFA SERBATOIO X MONOCENTRALINASXI- EVO	POWER PACK TANK BRACKET	1.000
044.5162	TAPPO SCARICO OLIO - A- AN 612 - 3/8 OR	OIL DRAIN TAP - A- AN 612 - 3/8 OR”	1.000
044.5166	FLANGIA MONOCENTRALINA NC- EVO X MOTOREC80B14 - - A- -	POWER PACK MOTOR FLANGE	1.000
019.4015	MOTORE CENT.KW 1,1/1,3 C80 4P B14 S6 60% V. 115- 200.50/ V.136- 240.60 CERT.UL- CSA	MOTOR KW 1,1/1,3 C80 4P B14 S6 60%UL- CSA	1.000
010.8343	CHIAVETTA 5 X 5 X 20	KEY 5 X 5 X 20	1.000
010.7963	VITE TE 8 X 25	TE 8 X 25 SCREW	1.000
010.7604	RONDELLA 0 8	0 8 WASHER	1.000
010.7951	VITE TE 6 X 20	TE 6 X 20 SCREW	1.000
044.4515	POMPA IDR. MONOCEN. CC 6,5 VW18APC- H10A-	POWERPACK HYDRAULIC PUMP - A-	1.000
010.7890	VITE TCEI 8 X 12	TCEI 8 X 12 SCREW	1.000
010.7604	RONDELLA 0 8	0 8 WASHER	1.000
010.7865	VITE TCEI 5 X 70	TCEI 5 X 70	1.000
007.6699	PANNELLO IDRAULICO 1 POSTO MONOCENTRALI-NA SH 310 CNC HS / H- 14A	1POS.HYDR.PANEL MONOUNIT SH310CNC- HS	1.000
010.7495	GRANO VCE PUNTA PIANA 1/8 GAS	1/8”X9 FLAT POINT VCE GRUB SCREW	1.000
010.7979	VITE TE 10 X 50	TE 10 X 50 SCREW	1.000
010.7450	GRANO VCE PUNTA CONICA 6 X 6	6 X 6 CYLINDRICAL POINT VCE GRUB	1.000
010.7226	DADO AUTOBLOCCANTE M6	M6 SELF- LOCKING SCREW NUT	1.000
010.7961	VITE TE 8 X 20	TE 8 X 20 SCREW	1.000
010.7878	VITE TCEI 6 X 70	TCEI 6 X 70 SCREW	1.000
010.7603	RONDELLA 0 6	0 6 WASHER	1.000
010.7205	DADO M10	M10 SCREW NUT	1.000
010.7838	VITE TCEI M8 X 305 TCEI	TCEI 8 X 305 SCREW	1.000

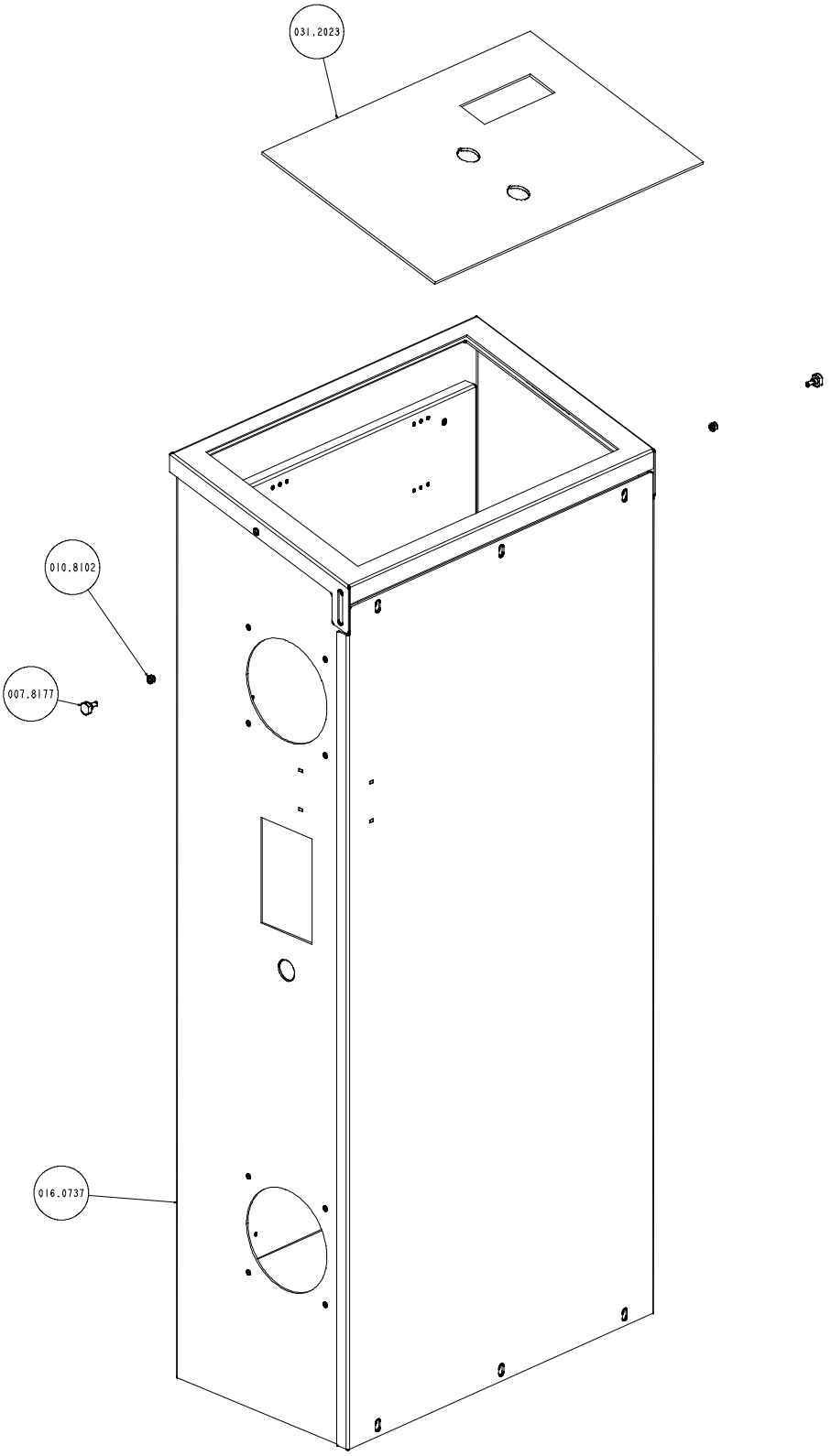
Code	Description	Description	Q.ty
044.0652	PROLUNGA 1/4' M.F. ESAGONALE 43MM.	1/4 MF HEX EXTENSION 43MM.	1.000
010.7863	VITE TCEI 5 X 30	TCEI 5 X 30 SCREW	1.000
007.6712	PANNELLO IDRAUL. X REGOLATORE PRESSIONE REMOTO X CENTRALINA FUTURO 420 / H- 14A	HYDR.PANEL X REMOTE REGU.PRES.- FUTURO420	1.000
007.6694	PANNELLO IDRAULICO 2 POSTI MONOCENTRALINA SH 310 CNC- HS / H- 14A	2POS.HYDR.PANEL MONOUNIT SH310CNC- HS	1.000
043.0341	RONDELLA RAME 10X5 - 1/8	10X5- 1/8 COPPER WASHER	1.000
043.0189	RIDUZIONE 1/4- 1/8 CL 2510 M/M	REDUCTION 1/4- 1/8 M/M	1.000
010.7860	VITE TCEI 5 X 15	TCEI 5 X 15 SCREW	1.000

Remote controller vice group



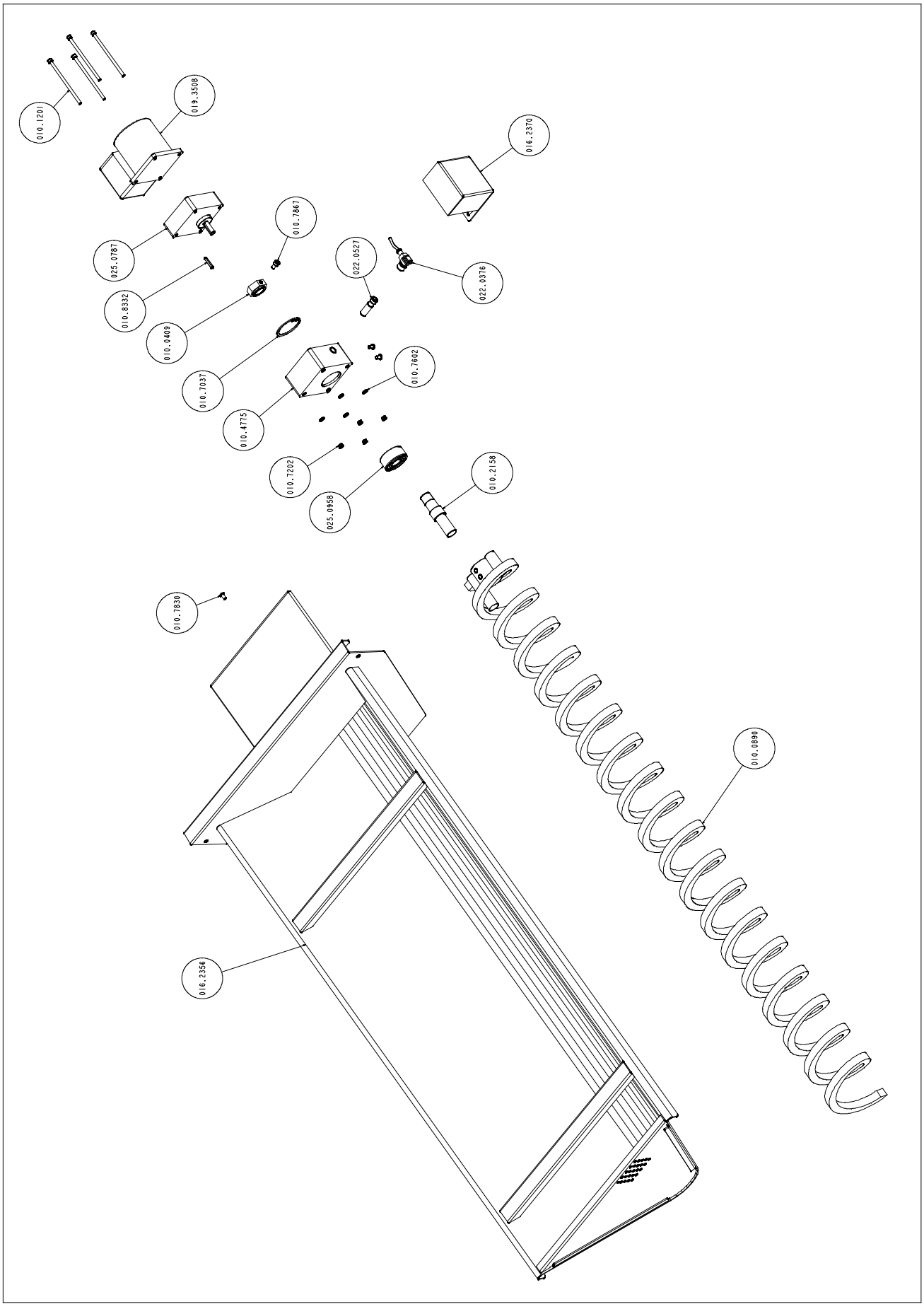
Code	Description	Description	Q.ty
044.0117	TUBO CENTRALINA IDRAULICA 0 10,5 D.D. MM	HYDR.UNIT HOSE 0 10,5 MM 1200 SH270SXI	1.000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	1.000
043.0340	RONDELLA RAME 13X19X1,5- 1/4	COPPER WASHER 13X19X1,5- 1/4	1.000
044.0552	RACCORDO A GOMITO IDRAULICO MF 1/4 ALTA	HYDR. ELBOW JOINT M/F 1/4 HIGH PRESSURE	1.000
007.6715	PANNELLO IDRAULICO X VALVOLA RIDUTTRICE	HYDR.PANNEL F.REMOTE REDU.PRES.VALVE	1.000
043.0219	RACCORDO A - T- MFF 1/4' CL- 2070 310I	MFF 1/4" CL- 2070 310I T JOINT	1.000
044.0106	TUBO CENTRALINA IDRAULICA R7 1/4 1500 MM	HYDR.UNIT HOSE R7 1/14 MM 1500 1X90	1.000
044.0122	TUBO CENTRALINA IDRAULICA R7 1/4 MM 200	HYDR.UNIT HOSE R7 1/4 MM 200 2X90 AXIS	1.000
044.0651	PROLUNGA 1/4' M.F. ESAGONALE 25MM.	1/4"" M.F. EXTENSION 20 MM	1.000
016.1659	COPERCHIO GRUPPO REG. PRES. MORSE REMOTO H230	COVER GROUP REMOTE REGULATOR PRESSURE VICES	1.000
043.0280	MANICOTTO 1/4 M 4/4 - CL 2543	1/4 M 4/4 - CL 2543 SLEEVE	1.000
043.0565	MANOMETRO+ STAFFA 0 50 0- 100 BAR ATTACCO	MANOMETER+BRACKET 0 50 0- 100	1.000
010.7831	VITE BUTON 5 X 12	5 X 12 BUTON SCREW	1.000
044.1267	VALVOLA RIDUTTRICE PRESS. DIRETTA SENZA RELIEVING SH 310 CNC- HS - - A- - RBO8A/0S1	DIRECT PRESSURE RIDUC.VALVE SH310CNCHS	1.000
016.1660	STAFFA FIX. GRUPPO REG. PRESSIONE MORSE REMOTO H230	BRACKET PRESSURE VICES REMOTE CONTROL GROUP	1.000
010.7832	VITE BUTON 6 X 12	BUTON SCREW 6 X 12	1.000

Control panel unit



Code	Description	Description	Q.ty
007.8177	PERNO ROTAZIONE QUADRO COMANDI	PANNEL ROTATION PIN SH 652SXI EVO	2.000
010.8102	DADO AUTOBLOCCANTE M40	SELF BLOCKING NUT M 40	1.000
016.0737	QUADRO COMANDI SH 230 NC HS COMPLETO DIQUADRO ELETTRICO	CONSOLE SH 230 NC HS COMPL.ELEC.-PANEL	1.000
031.2023	CONSOLLE DI PROGRAMMAZIONE	PROGRAMMING CONSOLLE	1.000

Motor- driven auger chip ejector (optional)



Code	Description	Description	Q.ty
010.0409	DADO M20 ALBERO COCLEA	M20 NUT AUGER SHAFT	1.000
010.0890	COCLEA A SPIRALE	AUGER	1.000
010.2158	ALBERO COCLEA	AUGER SHAFT	1.000
010.4775	SUPPORTO ALBERO COCLEA	AUGER BRACKET	1.000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW	3.000
010.7839	VITE TCEI M5 X 95 TCEI	TCEI 5 X 95 SCREW	4.000
010.7867	VITE TCEI 6 X 10	TCEI 6 X 10 SCREW	1.000
010.8332	CHIAVETTA 4 X 4 X 25	KEY 4 X 4 X 25	1.000
016.2356	CASSETTO X EV. TRUCIOLI A COCLEA	DRAWER FOR SHAVINGS EVAC.	1.000
016.2370	CARTER SENSORE COCLEA	SENSOR COVER SCREW	1.000
019.3508	MOTORE PANASONIC 380- 415 M8MX25GK4CGA	PANASONIC MOTOR 380- 415 M8MX25GK4CGA	1.000
022.0376	CONNETTORE 90 M12 CON 5 MT. CAVO 3X0,5PER PROSSIMITY	CONNECTOR FOR PROXIMITY	1.000
022.0527	SENSORE DI PROSSIMITA' PNP- NO (M12X1- 27MM.)	PROXIMITY PNP- NO (M12X1- 27)	1.000
025.0787	RIDUTTORE MX8G120B	REDUCER MX8G120B	1.000
025.0958	CUSCINETTO 3204 A 2RS	BEARING 3204 A 2RS	1.000

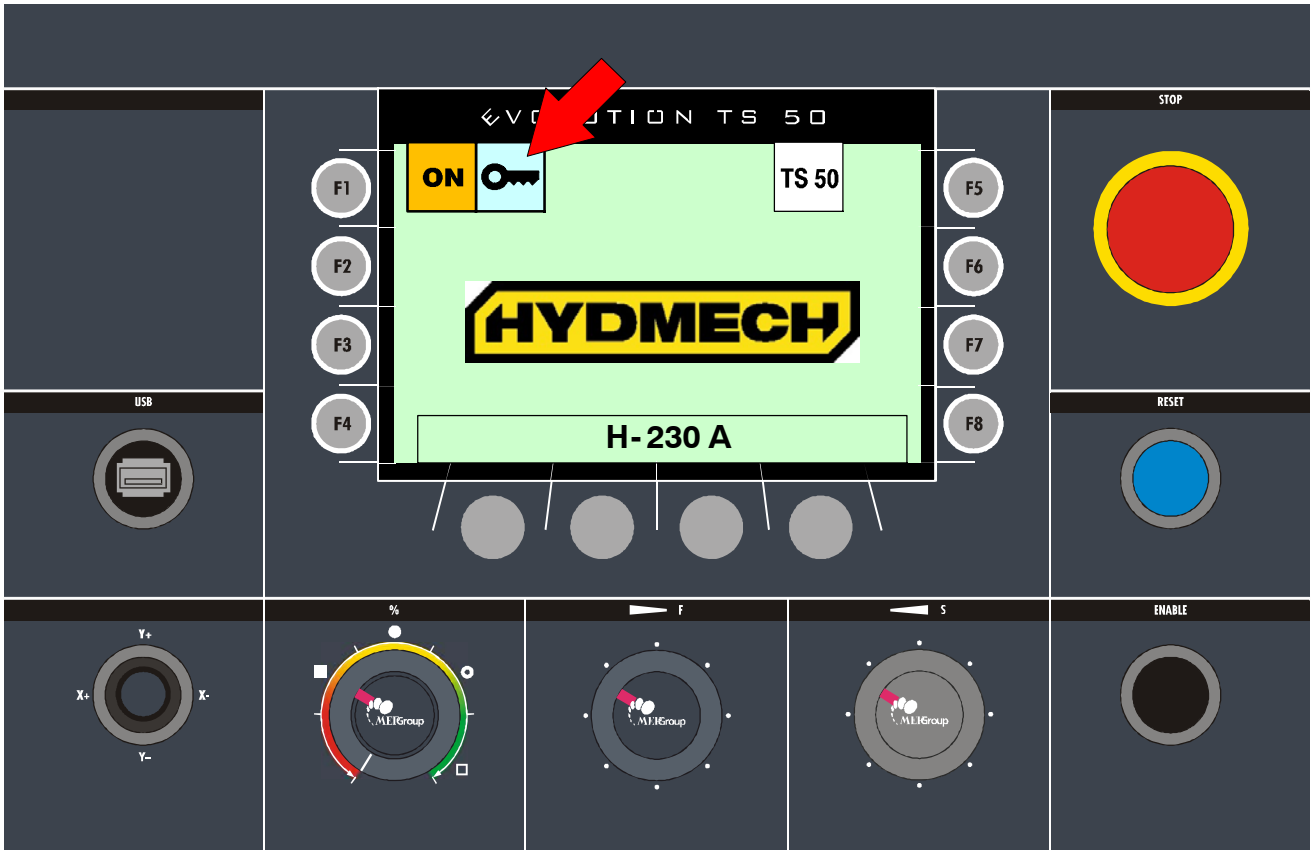
Adjustments

This chapter describes the operations required to adjust the electronic, mechanical and the hydraulic systems. By following these instructions, you can “customise” your machine to suit the type of cut required, thereby optimising cutting times.

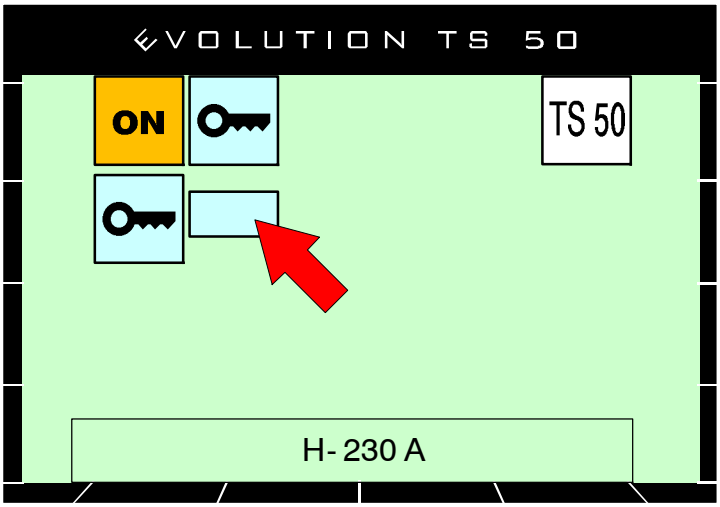
Displaying and editing the set- up parameters

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

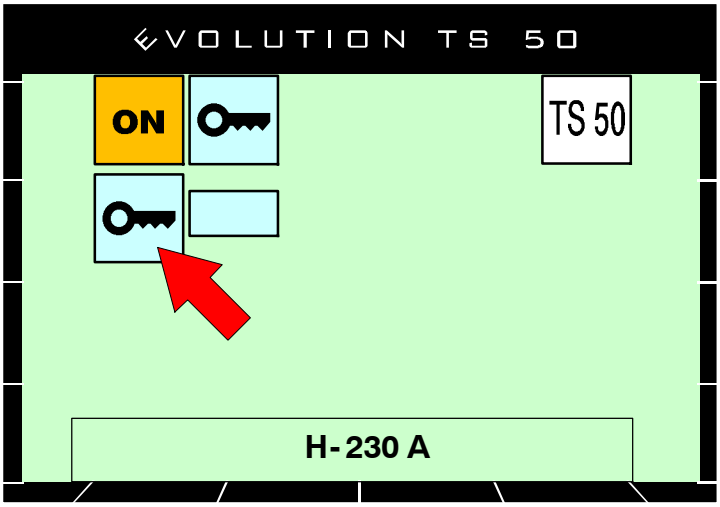
- ▶ Power the machine by turning the main switch on the left of the control board.
- ▶ Tap on the box on the touchscreen shown in the figure.



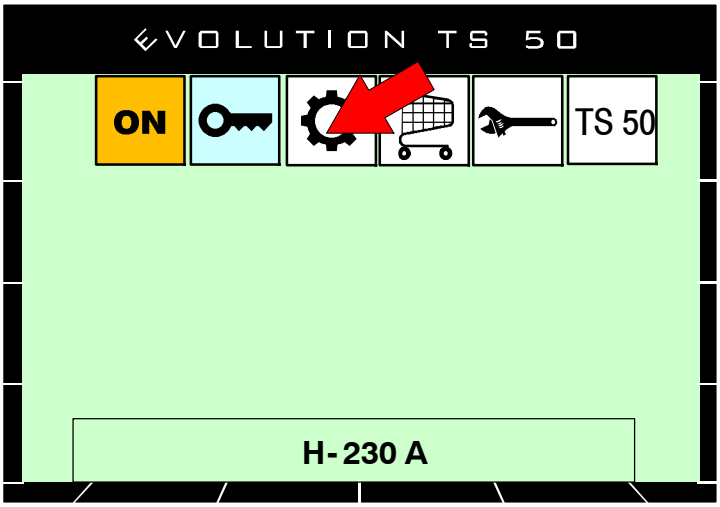
▶ The password entry box will open. Tap the box to open the keypad. Enter 734533.



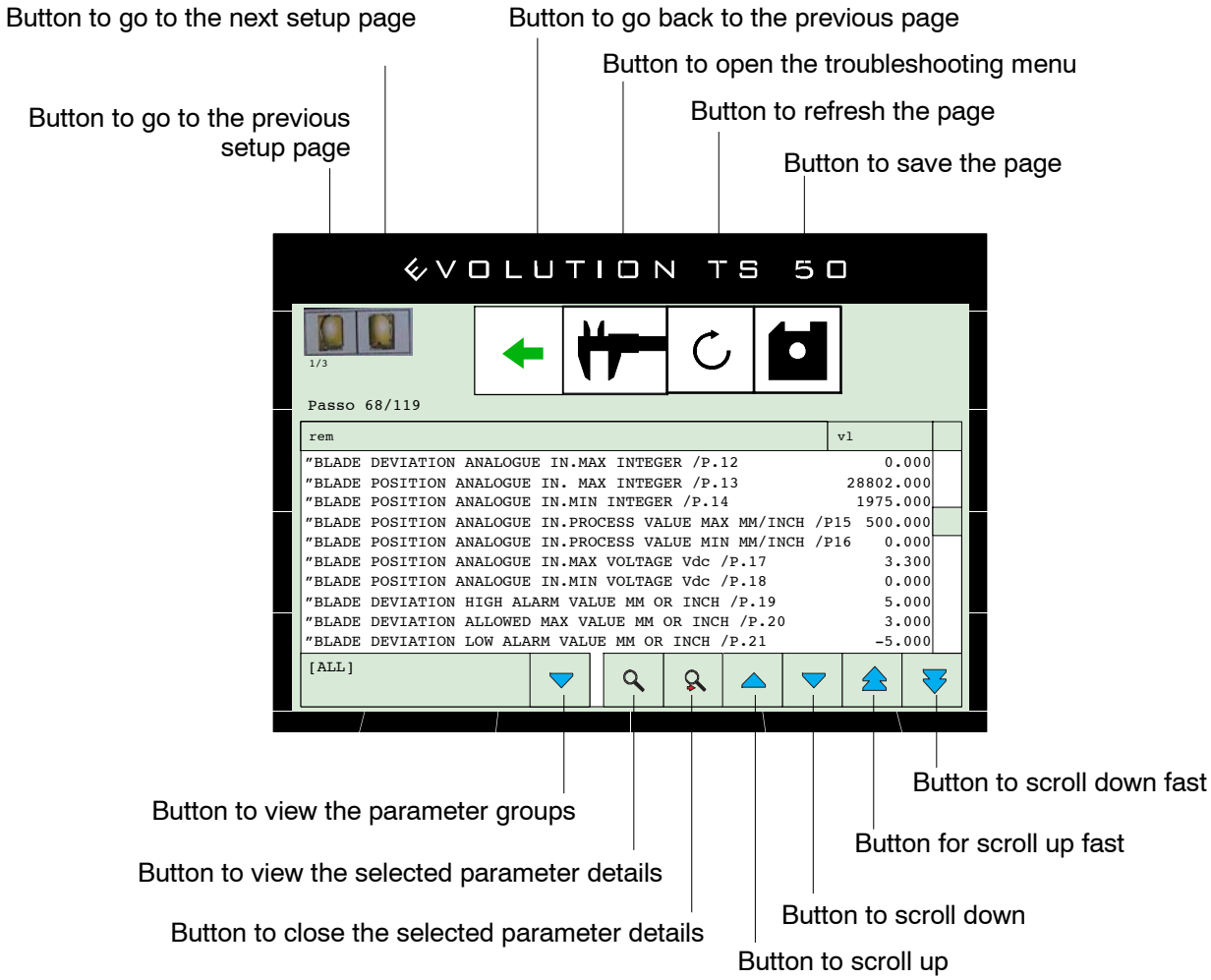
▶ Tap on the box shown in the figure.



▶ Tap on the box shown in the figure.



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



Setup parameters

The machine setup parameters divided by topic are shown below.

BLADE MOTOR:

- **BLADE AMPERE ANALOGUE IN. MAX INTEGER /P0:** Analogue input counter value corresponding to the maximum ampere **(4138.0000).**
- **BLADE AMPERE ANALOGUE IN. MIN INTEGER /P1:** Analogue input counter value corresponding to the minimum ampere **(16.0000).**
- **BLADE AMPERE ANALOGUE IN. PROGRESS VALUE MAX AMPERE /P2:** Ampere corresponding to maximum analogue input value **(2.2000).**
- **BLADE AMPERE ANALOGUE IN. PROGRESS VALUE MIN AMPERE /P3:** Ampere corresponding to minimum analogue input value **(0.0000).**
- **BLADE AMPERE ANALOGUE IN. MAX VOLTAGE /P4:** Voltage corresponding to maximum analogue input value **(10.0000).**
- **BLADE AMPERE ANALOGUE IN. MIN VOLTAGE /P5:** Voltage corresponding to minimum analogue input value **(0.0000).**
- **BLADE AMPERE CONTROL CHECK TIME PERIOD SEC /P23:** Control execution time (sec) **(0.1500).**
- **BLADE AMPERE CONTROL BEFORE ENABLING ON DELAY SEC /P24:** Activation delay in seconds (if 0 is off) **(3.0000).**

- **BLADE AMPERE CONTROL FEED REDUCTION STEP (M/MIN OR FT/MIN) /P25:** Correction step **(82.0209).**
- **BLADE AMPERE CONTROL MAX ALLOWED AMPERE /P26:** Maximum allowed current **(24.0000).**
- **BLADE AMPERE CONTROL MAX AMPERE ALARM ON DELAY SEC /P27:** Maximum motor current alarm filter (sec) **(1.0000).**
- **BLADE SPEED CONTROL MAX ALLOWED (M/MIN OR FT/MIN) /P29:** Speed set point maximum value **(377.2965).**
- **BLADE SPEED CONTROL MIN ALLOWED (M/MIN OR FT/MIN) /P30:** Speed set point minimum value **(49.2125).**
- **BLADE SPEED CONTROL AN. IN. MAX INTEGER VALUE /P31:** Speed reference maximum value (analogue input maximum value) **(32767.0000).**
- **BLADE SPEED CONTROL AN. IN. MIN INTEGER VALUE /P32:** Speed reference minimum value (analogue input minimum value) **(0.0000).**
- **BLADE SPEED CONTROL BEFORE STOPPING ON DELAY SEC /P33:** Stop delay for cleaning cut (sec) **(1.0000).**
- **BLADE SPEED ENCODER COUNTING DIRECTION INVERTING/P34:** Blade speed encoder counter inversion **(1.0000).**
- **BLADE SPEED ENCODER MAX COUNTER VALUE (M/MIN OR FT/MIN) /P35:** Blade speed maximum value **(377.2965).**
- **BLADE SPEED ENCODER MIN COUNTER VALUE (M/MIN OR FT/MIN) /P36:** Blade speed minimum value **(49.2525).**
- **BLADE SPEED ENCODER PULSE SCALING RESOLUTION MM OR INCH/PULSE /P37:** Blade speed encoder resolution scale factor **(1.0000).**
- **BLADE MOTOR STATUS ON MAX CYCLE END MOTOR ON = 1,0 /P97:** Blade motor on time at end of manual cycle **(1.0000).**
- **CURRENT TRESHOLD FOR MAX FEED CORRECTION /P113:** Max. correction threshold when the blade motor overcurrent intervenes during the cut.
- **SPEED ENCODER TYPE (0 = LINEAR; 1 = LOGARITHMIC) /P139**: Setting the encoder speed as linear or logarithmic (0 = linear; 1 = logarithmic).
- **SPEED ENCODER LOGARITHMIC X1 THRESHOLD (COUNT) /P140:** X1 correction factor for managing the band speed encoder in logarithmic mode.
- **SPEED ENCODER LOGARITHMIC X2 THRESHOLD (COUNT) /P141:** X2 correction factor for managing the band speed encoder in logarithmic mode.
- **SPEED ENCODER LOGARITHMIC X1 MULTIPLIER /P142:** X1 correction multiplier for managing the band speed encoder in logarithmic mode.
- **SPEED ENCODER LOGARITHMIC X2 MULTIPLIER /P143:** X2 correction multiplier for managing the band speed encoder in logarithmic mode.

BLADE DEVIATION:

- **BLADE DEVIATION ENABLE (1 = ENABLED) /P9**: Blade deviation enabling (1 = enabled). **(0.0000)**
- **BLADE DEVIATION COUNT AT ZERO POSITION (COUNT) /P10:** Levels at zero blade deviation. **(16416.0000)**
- **BLADE DEVIATION COUNT FOR DIVISION (COUNT) /P11:** Levels for dividing the blade deviation bar. **(500.0000)**
- **BLADE DEVIATION FOR SCAN TIME (SEC) /P12:** Blade deviation reading time. **(0.5000)**

HEAD ENCODER:

- **BLADE POSITION ANALOGUE IN. MAX INTEGER /P13:** Maximum counter value **(10981.000).**
- **BLADE POSITION ANALOGUE IN. MIN INTEGER /P14:** Minimum counter value **(4598.0000).**
- **BLADE POSITION ANALOGUE IN. PROCESS VALUE MAX MM OR INCH /P15:** Maximum value in mm or inch **(267.0000).**
- **BLADE POSITION ANALOGUE IN. PROCESS VALUE MIN MM OR INCH /P16:** Minimum value in mm or inch **(0.0000).**
- **BLADE POSITION ANALOGUE IN. MAX VOLTAGE VDC /P17:** Voltage value corresponding to maximum counter value **(8.7000).**
- **BLADE POSITION ANALOGUE IN. MIN VOLTAGE VDC /P18:** Voltage value corresponding to minimum counter value **(0.0000).**

SHUTTLE AXIS:

- **BLADE SPEED MONITORING BEFORE ENABLING ON DELAY SEC /P43:** Delay in controlling the min. speed. **(8.0000)**
- **BLADE SPEED MONITORING WHEEL DIAMETER MM OR INCH /P44:** Pulley diameter. **(12.5984)**
- **BLADE SPEED MONITORING NUMBER OF PICK- UP PULSES PER ROUND /P45:** Number of impulses/pulley turn. **(4.0000)**
- **BLADE SPEED MONITORING WATCH DOG ON DELAY SEC /P46:** Delay in controlling single impulses. **(0.5000)**
- **BLADE SPEED MONITORING MIN SPEED WATCH DOG VALUE M OR FT/MIN /P47:** Min. speed in m/min or ft/min. **(39.3700)**
- **X POSITIVE SOFTWARE LIMIT (MM - INCH) /P116:** Feeder max. stroke. **(605.0000)**
- **X NEGATIVE SOFTWARE LIMIT (MM - INCH) /P117:** Feeder min. stroke. **(0.0000)**
- **X JOYSTICK FEED SLOW (MM/MIN OR INCH/MIN) /P118:** Slow feeding. **(500.0000)**
- **X JOYSTICK FEED FAST (MM/MIN OR INCH/MIN) /P119:** Fast feeding. **(59.0551)**
- **OVER STROKE X MM OR IN /P120:** Zeroing offset. **(1.0000)**
- **MICRO ENGAGEMENT SPEED MM OR IN/MIN /P121:** Speed of search for microswitch while the trolley is zeroed. **(2000.0000)**
- **MICRO DISENGAGEMENT SPEED HOME MM OR IN/MIN /P122:** Speed of release from the search while the trolley is zeroed. **(300.0000)**
- **SPEED X ON CYCLE MM/MIN OR INCH/MIN /P133:** Feeder speed in cutting cycle. **(4000.0000)**

BLADE TENSION:

- **BLADE TENSION CONTROL MAX ALARM TENSION (KG O LB) /P51:** Maximum voltage allowed to apply adjustment **(4400.0000).**
- **BLADE TENSION CONTROL MIN ALARM TENSION (KG O LB) /P52:** Minimum voltage allowed to apply adjustment **(1320.0000).**
- **BLADE TENSION CONTROL ERROR LARGE TO SMALL PULSE CHANGEOVER (KG O LB) /P53: (100.0000).**
- **BLADE TENSION CONTROL MAX ERROR TOLLERANCE (KG O LB) /P54: (50.0000).**

- **BLADE TENSION CONTROL MIN ERROR TOLLERANCE (KG O LB) / P55: (50.0000)**
- **BLADE TENSION CONTROL SETPOINT (KG O LB) / P56: (3700.0000)**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL MAX INTEGER VALUE /P57:** Maximum counter value from load cell analogue input **(4912.0000).**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL MIN INTEGER VALUE /P58:** Minimum counter value from load cell analogue input **(0.0000).**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL PROCESS VALUE MAX (KG O LB) /P59:** Load cell analogue input maximum value allowed for acquisition **(1984.0000).**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL PROCESS VALUE MIN (KG O LB) /P60:** Load cell analogue input minimum value allowed for acquisition **(0.0000).**
- **BLADE TENSION CONTROL ENABLING /P61:** Automatic blade tension adjustment enable **(1.0000).**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL VOLTAGE VALUE MAX VDC /P62:** Load cell analogue input voltage maximum value **(10.0000).**
- **BLADE TENSION CONTROL AN. IN. LOAD CELL VOLTAGE VALUE MIN VDC /P63:** Load cell analogue input voltage minimum value **(0.0000).**

CLAMPS ENCODER:

- **CLAMPS LOCKING STATUS RISES AFTER SPECIFIED SECS FROM COMMAND /P64:** Time needed to allow clamp closed **(2.0000).**
- **CLAMPS UNLOCKING STATUS RISES AFTER SPECIFIED SECS FROM COMMAND /P65:** Time needed to allow clamp open **(2.0000).**
- **CLAMPS OPENING TIME WITH MANUAL COMMAND PULSE (SEC) /P148:** Time needed to consider the vice open after a manual command **(3.0000).**

CUT HEAD:

- **FEED ENCODER COUNTING DIRECTION INVERTING = 1.0 /P67: (0.0000).**
- **FEED ENCODER MAX COUNTER VALUE M/MIN OR INCH/MIN /P68: (20.0000).**
- **FEED ENCODER MIN COUNTER VALUE M/MIN OR INCH/MIN /P69: (0.0000).**
- **FEED ENCODER PULSE SCALING RESOLUTION MM OR INCH/PULSE /P70: (0.1000).**
- **FEED ENCODER COUNTER RETENTION ENABLING = 1.0 /P75: (1.0000).**
- **UY FEED AXIS FULL STROKE WIDTH MM OR INCH /P82:** U axis maximum stroke (mm or inch) **(300.0000).**
- **Y CUTTING AXIS MAXIMUN POSITION MM OR INCH /P86:** Y axis maximum limit switch (mm or inch) **(9.92125).**
- **Y CUTTING AXIS MINIMUN POSITION MM OR INCH /P87:** Y axis minimum limit switch (mm or inch) **(0.0000).**
- **Y CUTTING AXIS AUTO CYCLING SLOW DOWN FROM TARGET MM OR INCH /P89:** Deceleration space (mm or inch): distance from target position at which slow descent is set **(0.7875).**
- **Y CUTTING AXIS CUTTTING FEED PID CONTROL ERROR MM OR INCH/P90: (5.0000).**

- **Y CUTTING AXIS MODE DOWNGOING FEED MM OR INCH/MIN /P92:** Y descent speed in jog mode (mm/min or inch/min) **(78.7401).**
- **Y CUTTING AXIS AUTO CYCLING SLOW DOWN FEED MM OR INCH/ MIN /P93:** Slow Y position speed (mm/min or inch/min) **(15.0000).**
- **Y CUTTING AXIS ALL MODE UPGOING FEED MM OR INCH /P94:** Y upward speed (mm/min or inch/min) **(122.0473).**
- **Y CUTTING AXIS U OPENING @Y FEED CURVE BYPASS = 1.0 /P95:** Descent speed linearizing curve enable (F) **(0.0000).**
- **Y CUTTING AXIS CUTTTING FEED PID CONTROL INCREASE CORRECTION (DEGREES) /P113** F correction factor **(1.5000).**
- **Y CUTTING AXIS CUTTTING FEED PID CONTROL TIME (SEC) /P114:** Time between one correction and the next **(0.1000).**
- **H ENCODER MAX COUNTER VALUE % /P123:** Max. displayed value of H. **(100.0000)**
- **H ENCODER MIN COUNTER VALUE % /P124:** Min. displayed value of H. **(0.0000)**
- **H POTENTIOMETER ANALOGUE INPUT FS MAX /P125:** Max. levels of the H potentiometer. **(32704.0000)**
- **H POTENTIOMETER ANALOGUE INPUT FS MIN /P126:** Min. levels of the H potentiometer. **(16.0000)**
- **FEED FORCE CURRENT CONTROL MAX (AMPERE) /P127:** Max. set current of blade motor. **(7.0000)**
- **FEED FORCE CURRENT CONTROL MIN (AMPERE) /P128:** Min. set current of blade motor. **(2.0000)**
- **Y JOYSTICK FEED SLOW (MM/MIN OR INCH/MIN) /P130:** Slow manual head lowering. **(850.0000)**
- **Y JOYSTICK FEED FAST (MM/MIN OR INCH/MIN) /P131:** Fast manual head lowering. **(2032.0000)**
- **OFFSET FCTI MM OR INCH /P132:** Offset for rear head limit switch. **(0.5000)**
- **FEED ENCODER TYPE (0 = LINEAR; 1 = LOGARITHMIC) /P134**: Setting the encoder feeding as linear or logarithmic (0 = linear; 1 = logarithmic). **(0.0000)**
- **FEED ENCODER LOGARITHMIC X1 THRESHOLD (COUNT) /P135:** X1 correction factor for managing the head lowering speed encoder in logarithmic mode. **(4.0000)**
- **FEED ENCODER LOGARITHMIC X2 THRESHOLD (COUNT) /P136:** X2 correction factor for managing the head lowering speed encoder in logarithmic mode. **(8.0000)**
- **FEED ENCODER LOGARITHMIC X1 MULITPLIER /P137:** X1 correction multiplier for managing the head lowering speed encoder in logarithmic mode. **(10.0000)**
- **FEED ENCODER LOGARITHMIC X2 MULITPLIER /P138:** X2 correction multiplier for managing the head lowering speed encoder in logarithmic mode. **(1000.0000)**
- **DISPLAY CYCLE FEED FILTERED (1=ENABLED) /P150:** Accuracy filter for the blade lowering value **(1.0000)**

OPTIONAL:

- **MINIMAL LUBRIFICATION ENABLING = 1.0 /P78:** Minimum lubrication enable **(1.0000).**

- **Y RAISE UP ON MANUAL CYCLE (1=ENABLED) /P103:** Y axis upward stroke enabled at end of manual cycle (1=enabled; 0=disabled). Y axis returns to RHLS at the end of the manual cycle **(1.0000).**
- **ENABLED BLADE MINIMUM SPEED CONTROL (1=ENABLED) /P104:** Blade speed proximity enable **(1.0000).**
- **CHIP CONVEYOR ENABLED (1=ENABLED) /P105:** Chip ejector enable **(1.0000).**
- **XB ROTATION EXTERN HANDLING ENABLING (1 = ENABLED) /P106:** Enabling the head manual rotation (1 + enabled) **(1.0000)**
- **TYPE OF BLADE TENSIONING (1 = AUTOMATIC, 0 = MANUAL) /P129:** Setting the automatic or manual blade tensioning (1= automatic; 0 = manual) **(0).**
- **OPEN FRONT VISE AT MANUAL CYCLE END (1 = ENABLED) /P144:** Setting the vice opening at cutting cycle end (1 = enabled). **(1.0000)**
- **TYPE ANGLE SYSTEM (0 = SEXAGESIMAL\; 1=CENTESIMAL) /P146:** Measurement unit of the angle width (1 + centesimal) **(1.0000)**
- **BLADE STOP ON SEMIAUTOMATIC CYCLE** (0=ON FCTI; 1=ON FCTA; 2=NEVER) /**P147**: .Setting the blade stop at the semiautomatic cycle cut end **(1.0000)**
- **ENABLING DEBUG VIEW (1=ENABLED):** Enabling the program debug function **(0.0000).**

VARIOUS:

- **MKS IMPERIAL UNIT SYSTEM SWITCHOVER ENABLING /P80:** Imperial = 0.0: sets measuring system MKS (0) or IMPERIAL (1) **(0.0000).**
- **TYPE MACHINE (0=H14- A 1=H11- A 2=H230- A)/P101:** Defines the machine type (set automatically by loading the machine .cns file) **(1.0000)**.
- **ABSOLUTE TRASDUCER ENCODER OFFSET /P102:** Offset value for absolute encoder **(240.0073).**

TIMER:

- **HYDRAULIC PUMP OFF DELAY AWAITED BEFORE STOPPING SEC /P96:** Hydraulic pump off delay before stopping (seconds) **(50.0000).**
- **CHIP CONVEYOR TIME ON IN AUTO (min) /P107: (0.5000).**
- **CHIP CONVEYOR TIME OFF IN AUTO (min) /P108: (0.5000).**

PASSWORD:

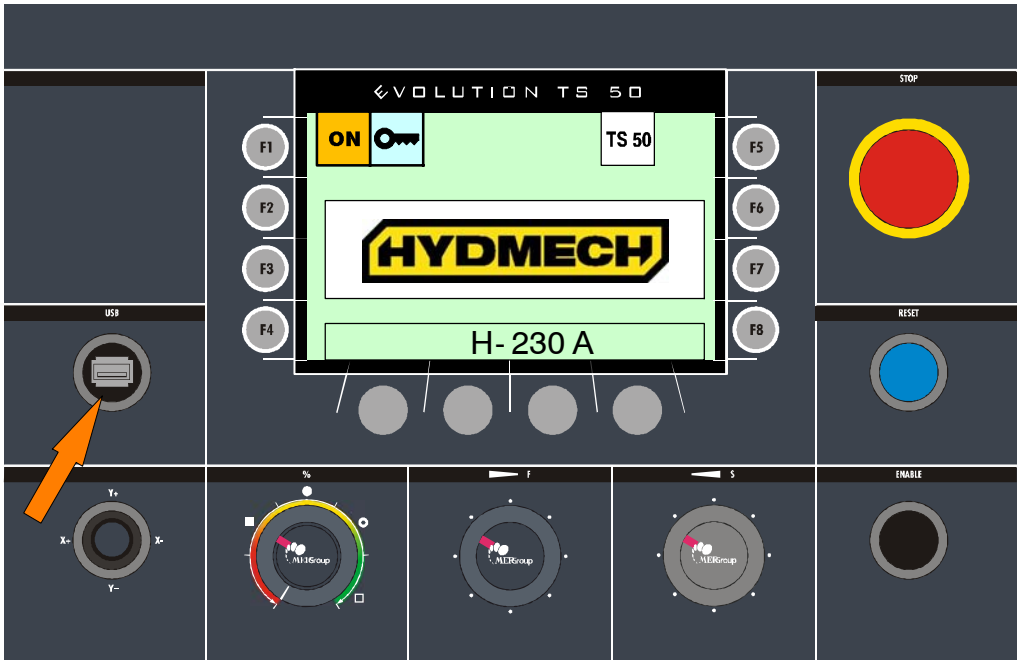
- **USER PASSWORD VALUE /P99:** Password value setting. **(7210721.0000).**

Software update procedure through USB - H-230 A

The operations to update the software through a memory card are described here below.

Attention The operations described below will delete all data of the cutting programs and of the customized settings.

▶ Take the sawing machine off and insert the USB stick containing the update in the port shown in the figure.

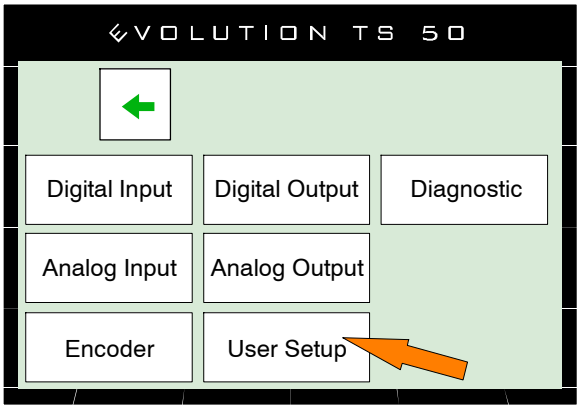


▶ Switch the machine on and wait for the message informing that the update has been completed. Then switch the machine off and on again to run the update.

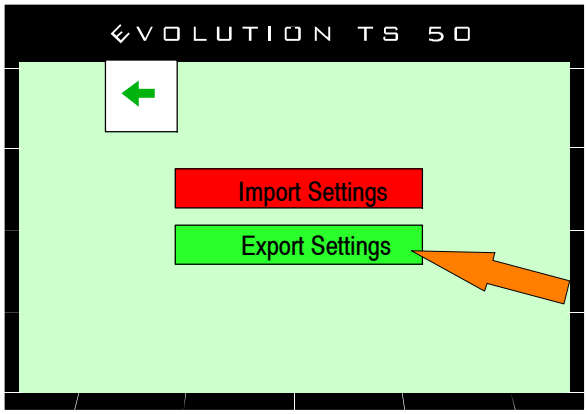
N.B. If the operator wants to keep the customized settings, he needs to make a backup following the operations described below before running the update.

The operations needed for the backup are listed below.

▶ From the Set- Up main menu select the box “User Setup” shown in the figure.

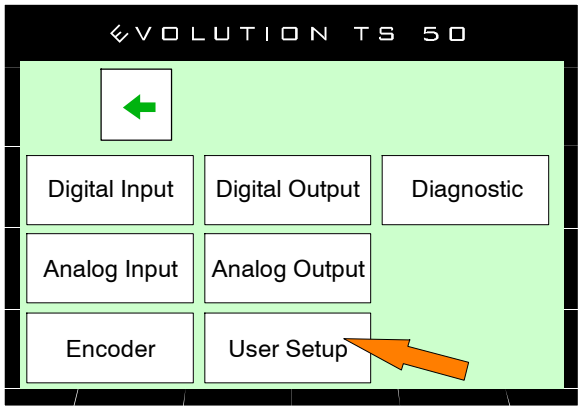


▶ Then, insert an empty USB stick in the suitable port: the box “Export settings” becomes green, press to save the settings.

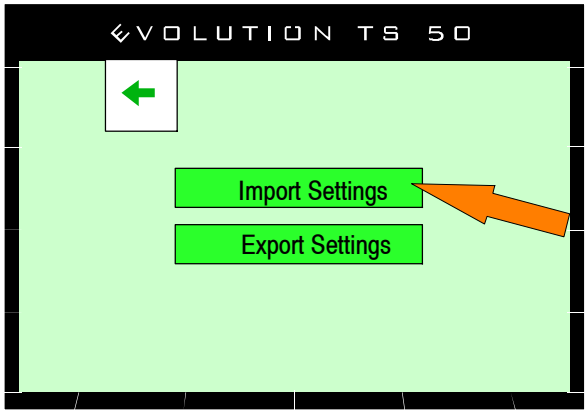


The operations needed for the restore are listed below.

▶ To restore the settings saved in the backup, after the update access the screen “User Set- Up” from the Set- up menu.



▶ Insert the USB stick in the suitable port, the boxes “Import Settings” and “Export Settings” become green. Press the box “Import Settings” to import the previously saved settings.



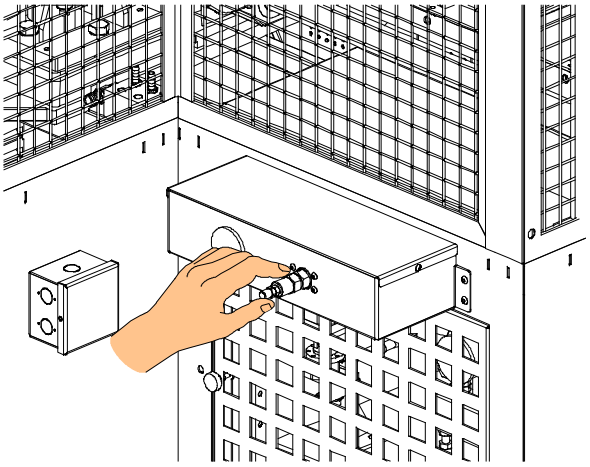
Now the customized settings and the data are again available and the machine is operational.

Machine working pressures

This section describes the procedures for vice tightening pressures by operating on the hydraulic power pack.

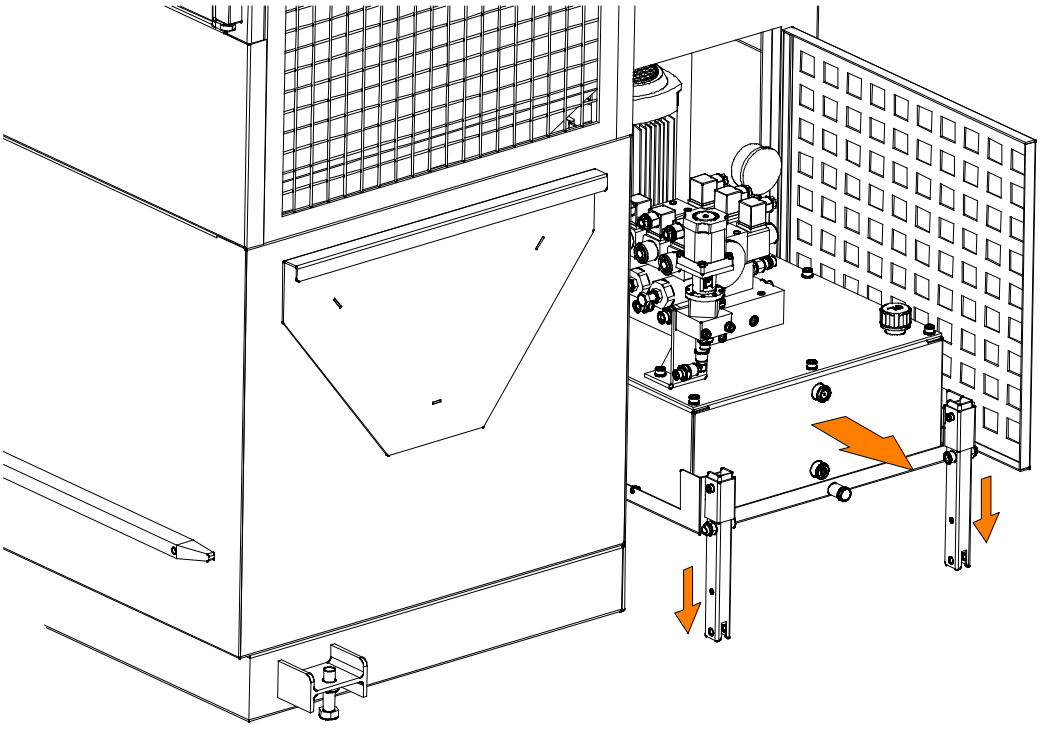
The working pressure of shearing vice, feeding vice and cutting head can be adjusted by the max. pressure valves of the power pack.

▶ Loosen the hex locknut on the maximum pressure regulator valve and using a socket wrench increase (clockwise or decrease (anti- clockwise) thepressure displayed on the pressure gauge.

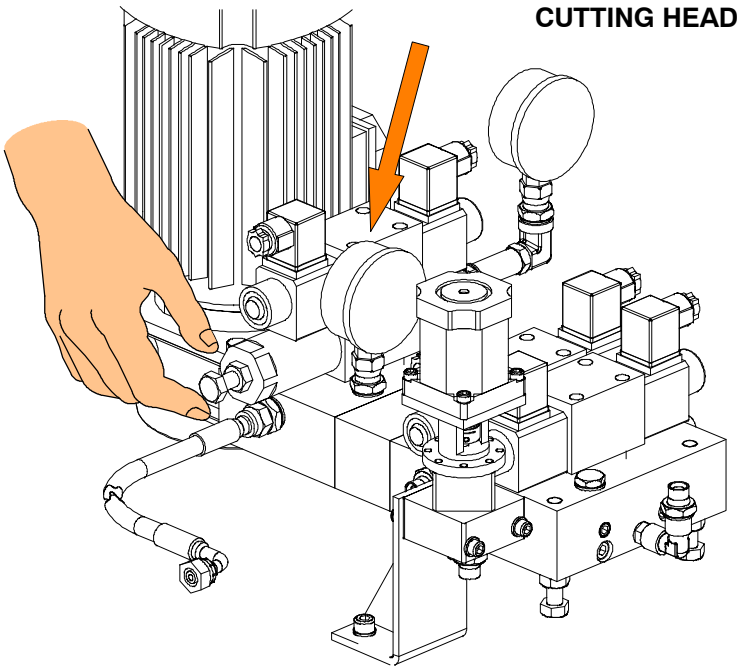


To adjust the operating pressure of the bow of cut:

▶ Remove the fastening screws and pull out the power pack from inside the base.



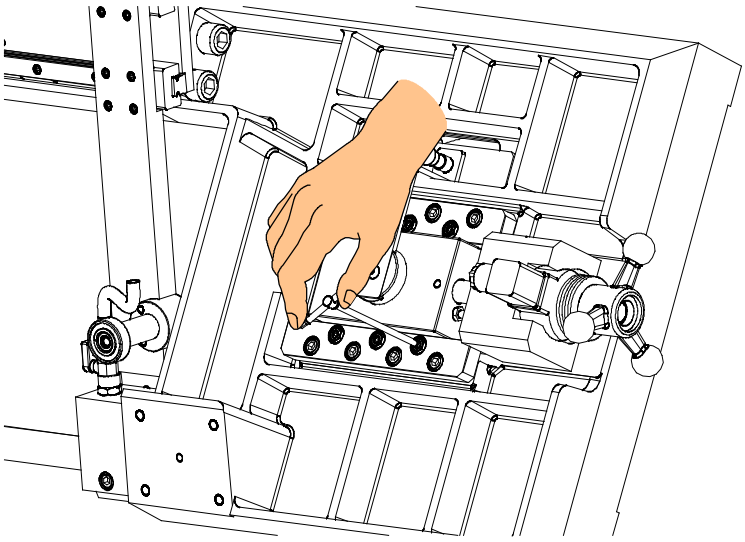
▶ Loosen the hex locknut on the maximum pressure regulator valve and using a socket wrench increase (clockwise or decrease (anti- clockwise) thepressure displayed on the pressure gauge.



▶ After the adjustment, try the new setting and re- position the power pack inside the machine base.

Blade tensioner slide play adjustment

To reduce the play which develops over a period of time between the blade tensioner slide and the slide gibs, the grub screws separating the gibs from the slide must be adjusted as follows:

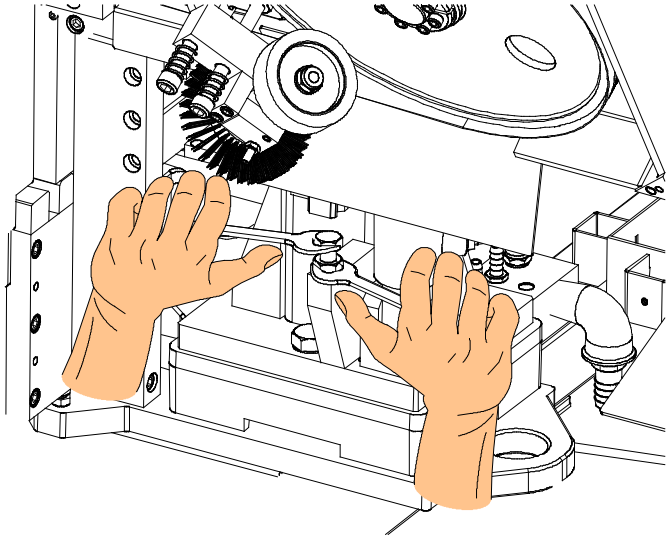


- remove the blade from the flywheels;
- move the slide backwards and forwards to locate any friction or play;
- slacken the nuts, holding the grub screws with a hexagonal pipe wrench;
- if there is play, tighten the grub screws; if there is friction rubbing, loosen the grub screws.

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.



Blade guide parts

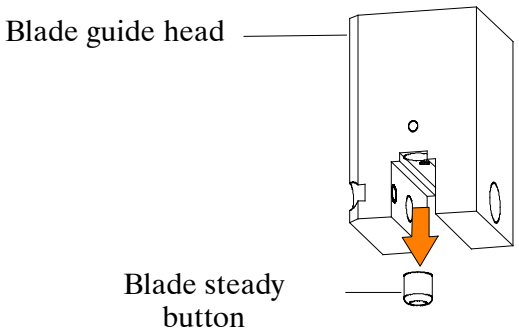
Band saw blades offer enormous advantages to cutting applications, without requiring any special skills by the operator. A description follows of the blade guide adjustments required to ensure correct operation of the saw.

Blade guide heads

The first blade adjustment involves adjustment of the heads. The blade guide heads comprise the blade guide plates which ensure correct longitudinal alignment, the blade steady buttons which control vertical blade flexure, and the coolant supply cocks.

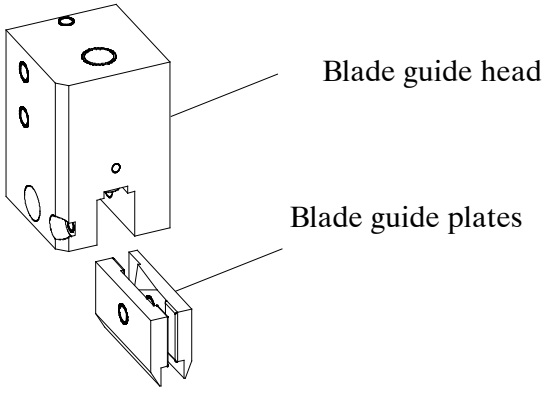
Blade steady buttons

The blade steady buttons prevent upward blade flexure caused by the vertical action of the cutting force. These buttons are fitted on both the front and rear heads, and need no adjustment.



Blade guide plates

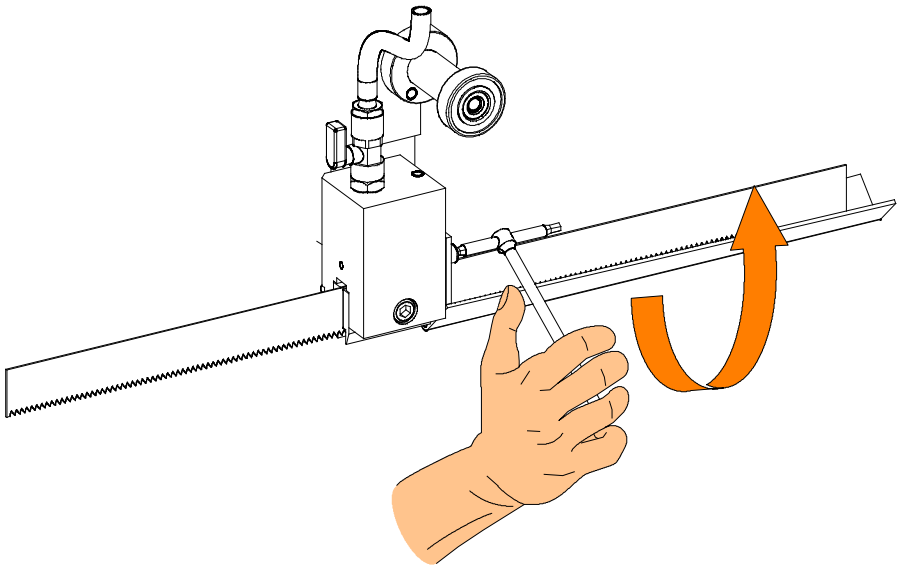
The plate contact points feature widia inserts which guide the blade longitudinally. A small amount of play must exist between the plates and blade to ensure that the blade runs smoothly and perpendicular to the work table.



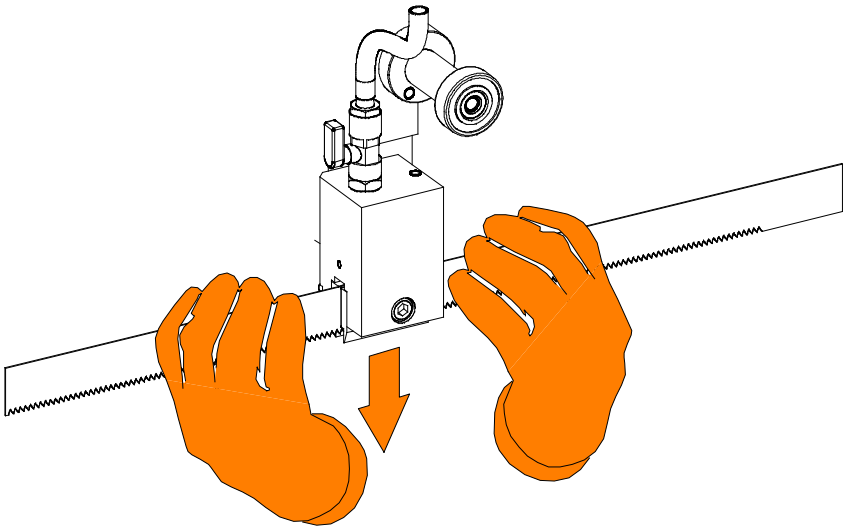
Thanks to the widia inserts, the working life of the guide plates is practically the same as that of the machine itself. However, if due to wear or the assembly of a new blade with a different thickness, the amount of play between the plates and blade changes, the plates must be adjusted as follows:

- ▶ disconnect the machine from the power supply;
- ▶ slacken the blade tension using the handwheel;

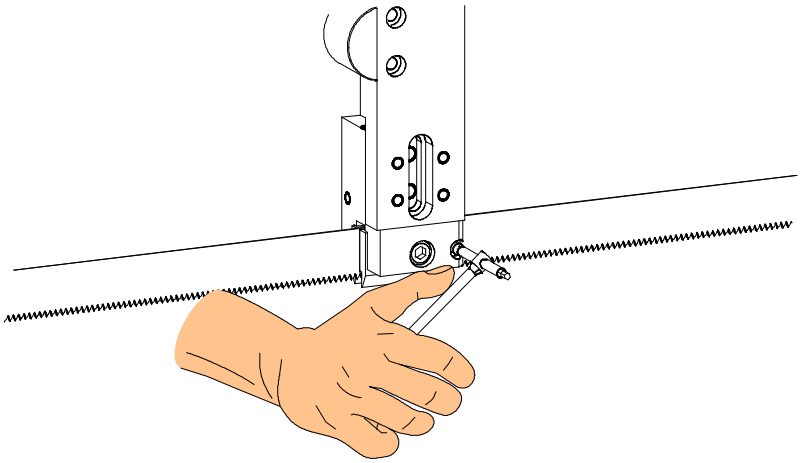
- open the front blade guard by undoing the fixing screw and rotating it as illustrated in the figure below;



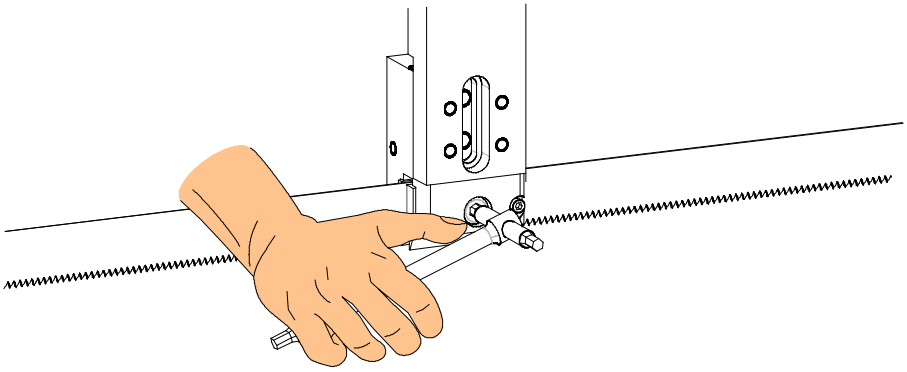
- wear protective gloves when making this adjustment;
- make sure there is a small amount of play between the blade and guide plate inserts;



- if the amount of play is not sufficient for the blade to run smoothly, adjust the locking torque of the two grub screws with an Allen key;



▶ replace any worn plates by removing the plate fixing screw;



▶ repeat the above sequence of steps on the rear blade guide head;
▶ refit the front blade guard;
▶ tension the blade and power up the machine again.

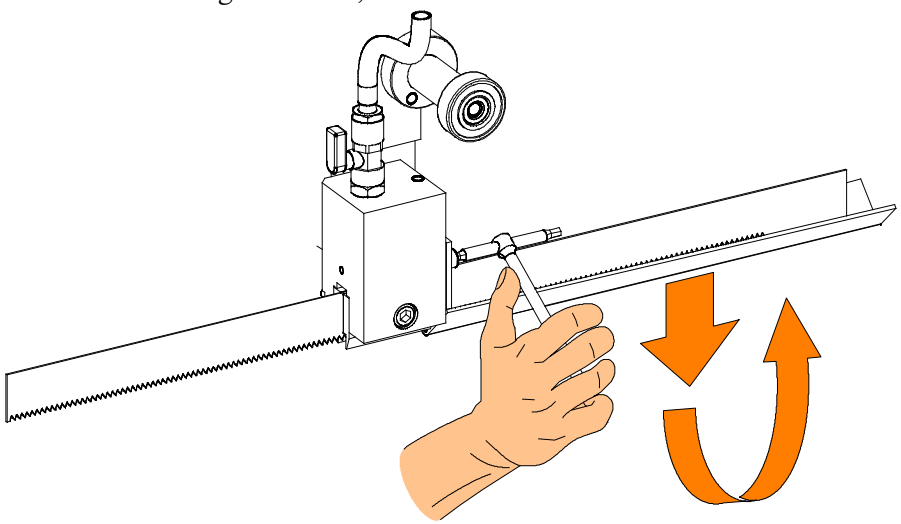
Blade

The adjustments required to ensure correct operation of the blade are described below. For further information about band saw blades, refer to Chapter 9 which provides a more detailed description of the different types of blade.

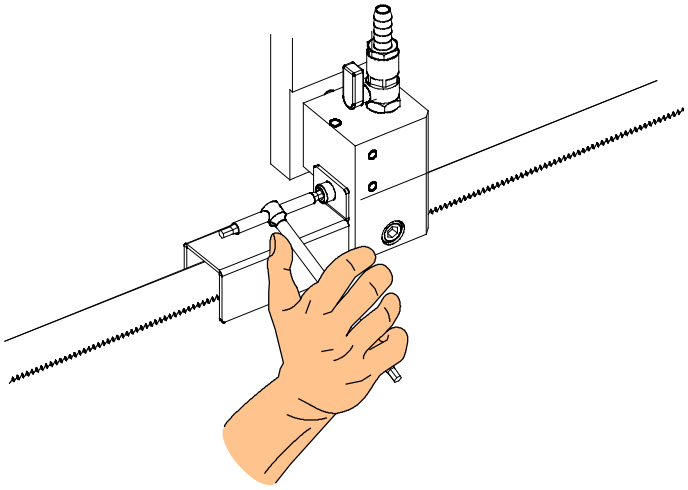
Tool change

Optimum working conditions both enhance operator safety and extend the tool's service life. The cutting tool should in any case be replaced when poor cutting performance starts to affect productivity. The tool changeover procedure is described as follows:

▶ disconnect the machine from the power supply;
▶ slacken the blade tension using the handwheel;
▶ open the front blade guard by undoing the fixing screw and rotating it as illustrated in the figure below;



- remove the rear blade guard by undoing the two fixing screws using an Allen key;

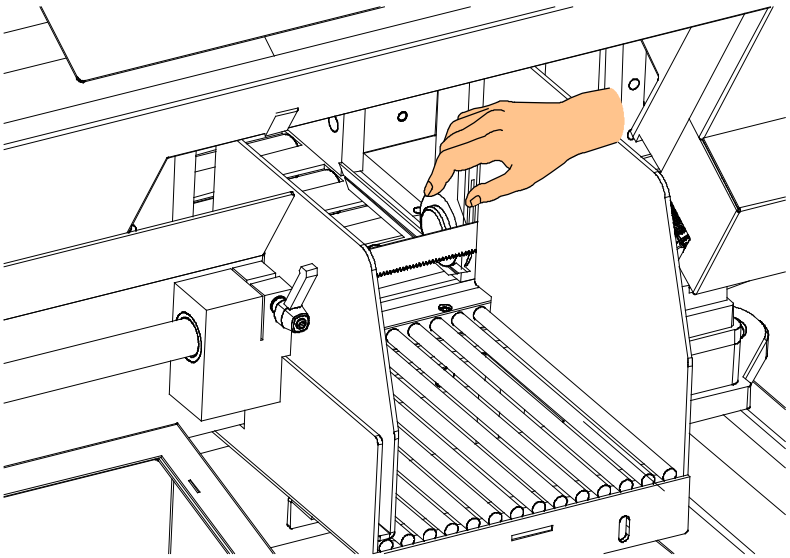


- wear protective gloves when changing the blade;
- remove the worn blade by sliding it off the flywheels and front and rear heads;
- fit the new blade into the front blade guide head;
- make sure the back of the blade is facing the flywheel stop and that the teeth along the lower part of the blade are inclined towards the head pivot.
- Make sure there is a small amount of play between the blade and guide plate inserts;
- repeat the above sequence of steps on the rear blade guide head;
- fit the blade on the flywheels and remount the front and rear blade guards;
- close the cutting head cover, correctly tension the blade and power up the machine.

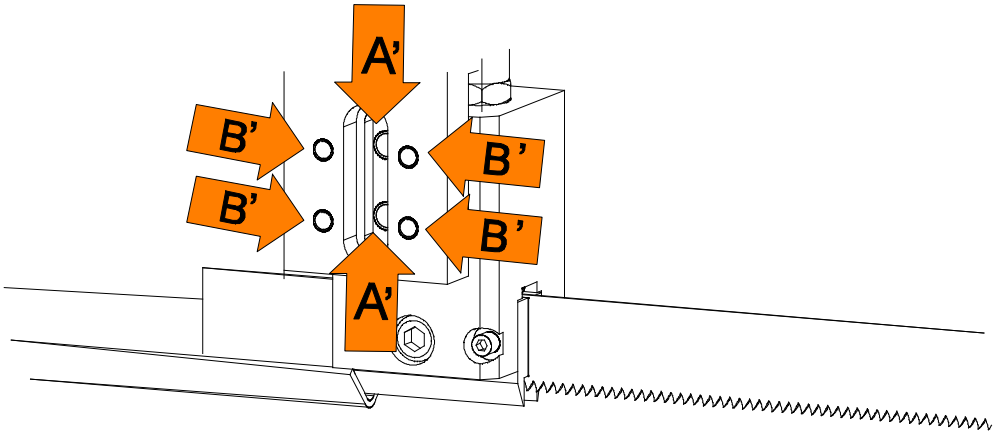
Blade perpendicularity

The perpendicularity of the blade to the work surface, and also the blade tension, are vital for achieving straight cuts. This adjustment is carried out with the help of a workshop square, which should be placed adjacent to the blade resting on the work surface.

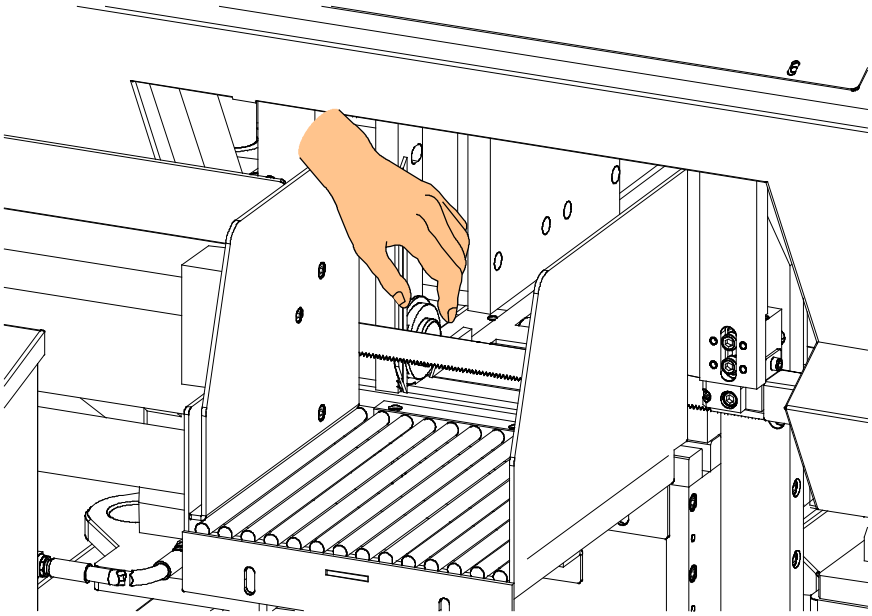
- Position the square on the cleaned work surface and rest it against the blade, close to the right vice jaw at a point where the blade teeth do not prevent contact.



▶ Slacken the TCEI head fixing screw (A) and adjust the two grub screws (B) if the blade touches the square at its lower part. If the point of contact is at the upper part, slacken the TCEI screw (A') and tighten grub screws (B') equally until the blade is perpendicular to the square.



▶ Position the square on the work surface close to the front head.

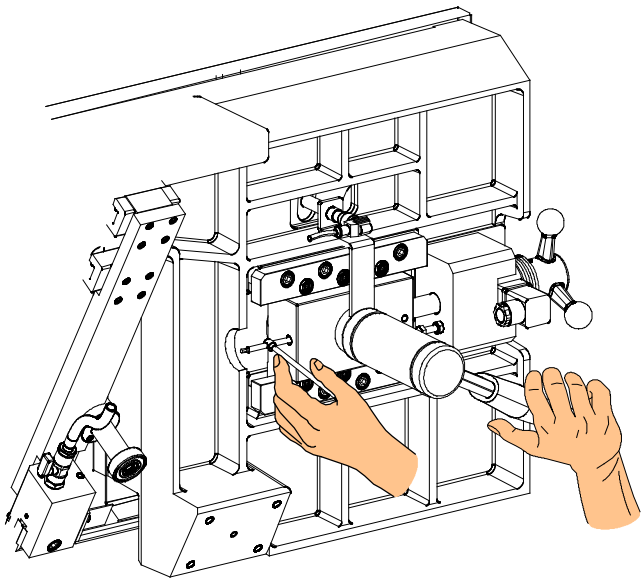


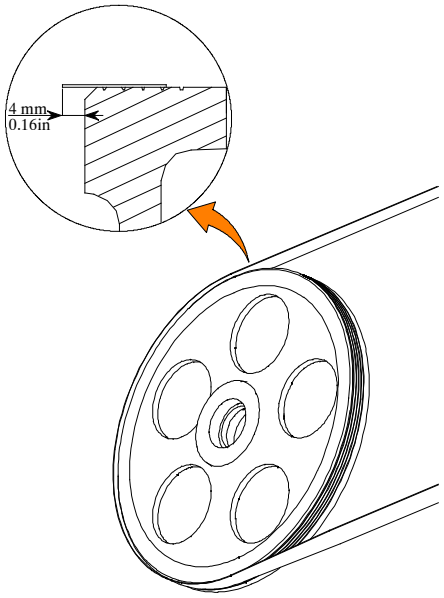
▶ Repeat the squaring operations as for the rear head.

Rotation axis control

Pulleys must be adjusted in their coplanarity. The adjustment is aimed at ensuring the belt rotation, keeping approx. 4 mm (0.16 in) of distance from the point of the belt teeth to the pulley machined surface. This prevents an early wear of the belt.

- ▶ Slacken the blade tension and open the cutting head cover;
- ▶ slacken the grub screw and, using a mallet, tap the shaft in or out;
- ▶ finally, close the cover and set the blade in motion;
- ▶ check the distance between the blade and edge of the wheels;

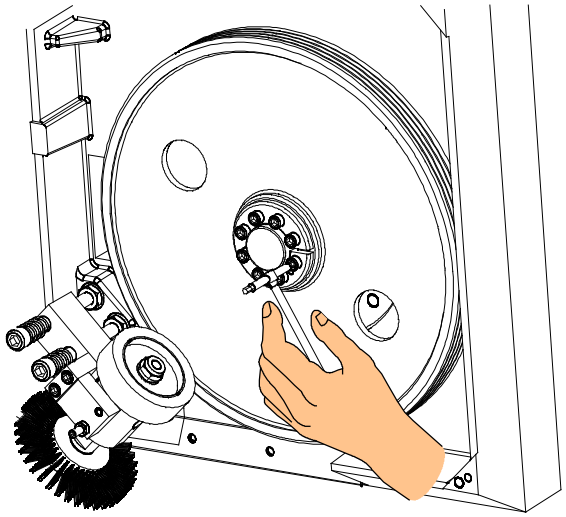




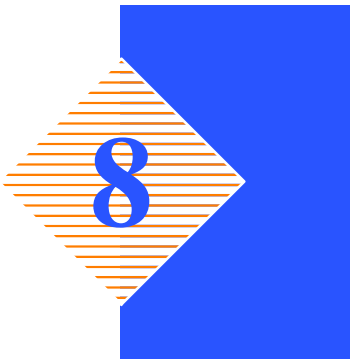
- ▶ if necessary, repeat the operation till getting the correct position.

Rear flywheel alignment is closely linked to adjustment of the front flywheel.

- ▶ Adjust by loosening all pulley locking screws and moving the pulley manually inwards or outwards according to the distance of the blade from the pulley machined surface. Tighten the screws again and check the coplanarity making the belt turn a few times.



Maintenance and choice of consumables



H- 230 A is built to be sturdy and long- lasting It has no need of any special maintenance, though, like all other tools, it needs adjusting from time to time, especially if not regularly looked over or used without due care.

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

The role of the operator

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

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

Maintenance requirements

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

General maintenance

Daily

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

- remove all swarf from the machine (preferably with a non- fibrous cloth);
- empty the swarf drawer (this is located on the right side of the base);
- top up the lubricant/coolant level;

- check state of blade wear and replace if necessary;
- check the blade cleaning brush, clean and relocate; if worn, replace;
- at the end of the working day, slacken the blade to 5 Bar / 72.5 psi (70 Kg / 154 lbs) tension to prevent unnecessary and damaging stress on the machine.

Weekly

The weekly maintenance operations are as follows:

- remove all swarf;
- clean the vice and lubricate all joints and sliding surfaces with a good quality oil;
- Control the blade tension that should be 900 Kg / 1980 lbs (70 Bar / 1015 psi) for the machine to work efficiently.
- clean the air intake vents of the electrical panel: remove the fan and clean the air filter by blasting with compressed air.

- Control the oil level of the hydraulic unit and top up whenever necessary. Check for oil leaks in the hydraulic couplings and that no pipes have been badly bent by accident.

Monthly

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

- check the perpendicularity of the blade to the work surface; if it is necessary to adjust the blade setting, follow the instructions set out in Chapter 7;
- check the state of the widia inserts and the blade steady button; replace if worn or chipped; check their positions and adjust if necessary (see Chapter 7);
- thoroughly clean the bottom of the water tank and the electropump filter.

Maintenance of working parts

During maintenance work on the **H- 230 A**, special attention should be paid to the operating parts described in Chapter 7. The worm reduction gear filted on the machine requires no maintenance.

Hydraulic powerpack

Maintenance of the hydraulic powerpacks:

- after the first 100 working hours it is advisable to clean the tank and the circuit completely, using washing oil, and filter the initial oil used.
- Every 3000 working hours, on completing normal work clean the tank and change the oil.

To clean this power pack, it is advisable to follow these instructions:

- never use cotton or stringy rags;
- empty the system, clean or change the filters and clean the tank;
- fill the system with washing oil;
- run the machine without any load for 30 minutes, making sure that the oil circulates through all its parts;
- drain the washing oil carefully, check the state of cleanliness of the filters and the tank;
- fill using the prescribed oil.

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.

Oil for transmission box

The machine can be equipped with a worm gear which is permanently lubricated and therefore maintenance- free. This gear type has no filler cap, level checker and drain, as it already contains the correct quantity of synthetic oil, guaranteeing perpetual lubrication of the crown and worm gear. Otherwise, the machine can be equipped with a worm gear having filler cap, level checker and drain to top the oil up if necessary. Below, there is a short list of synthetic oils for permanent lubrication:

BP Energol SG XP220 - KLUBER Syntheso D220EP - ESSO Glycolube Range 220 - IP CT614 - SHELL Tivela Oil SC 320 - FINA Girans.

- transmission box capacity litres. 0.320

Oils for hydraulic circuit

The machine's hydraulic system is supplied with FOX YE 32 oil. This oil is used by the head cylinder, vice cylinders, blade tensioning cylinder, and the hydraulic power packs. The following oils may also be regarded as compatible or having equivalent specifications:

API Cis 32 - ARAL Vitam GF 32 - CASTROL Hyspin AWS 32
ESSO Nuto H 32 / HP 32 - IP Hydrus oil 32 - TOTAL Azolla ZS 32
VALVOLINE Hydraulic HLP 32 - MOBIL DTE 24 / 25 / 26
MOBIL Vacuoline Oil 1405 - FIAT HTF 32 - Q8 Haydn 32
SHELL Tellus oil 32 - BP Energol HLP 32

Hydraulic power pack:
- reservoir capacity litres 33

Oil for lubricant/coolant fluid

The oil used for the machine lubricant/coolant fluid is CASTROL Syntolin TFX. Though there are no specific standards for these types of oils, Hyd- Mech considers that the above product has the best price/quality rapport. The following oils can also be said to have similar characteristics and are therefore compatible:

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

Finally, a lubricant/coolant guaranteed and distributed by a band saw manufacturer (LENOX) is BAND- ADE SAWING FLUID LENOX.

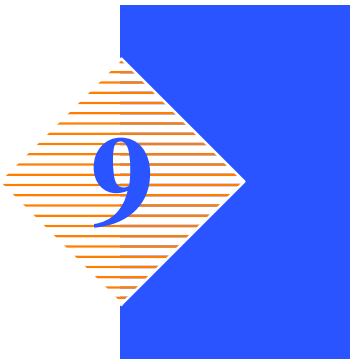
- tank capacity litres. 95
- oil concentration 5- 6 %

Oils for spray mist system (optional)

The oil type used for the machine spray mist system is the cutting oil: Blaser Vascomill F 22.
Though there are no specific standards for these types of oils, Hyd- Mech considers that the above product has the best price/quality rapport. The following oils can also be said to have similar characteristics and are therefore compatible:

SHELL MACROM 401 F22 - AGIP ESTRAMET F20

Cutting speed and choice of tools



The cutting speed is determined by the blade speed and the head feed speed. While the head speed is provided by the downstroke movement of the head, the blade rotation speed can either be fixed or variable. This chapter describes the cutting speeds the machine can operate at in the standard version, as well as the speeds for which the optional electronic speed controller (inverter) is necessary. When using the **H- 230 A**, it is important to select the correct type of blade for the material to be cut. This chapter explains the limitations and specific applications of the different types of blades.

Cutting speed

Standard machine

The standard version with 4- pole motor, has a speed range from 15 to 100 m/min (49÷324 ft/min). The inverter is an electronic instrument installed on the **H- 230 A**, to control the rpm of the spindle motor. This instrument simplifies special cutting jobs by adjusting the blade rotation speed to suit the kind of material being cut. It thus optimises blade usage, since you can adapt a blade not designed for a specific type of material and avoid premature blade wear.
The inverter's specifications are set out below as listed earlier in the *"Machine specifications"* table in Chapter 1.

Inverter technical specifications	
Protection rating	IP 31
Vibration and shock resistance (EN50178)	0.6 gn from 10 to 50 Hz 2 gn from 50 to 150 Hz
Max. relative humidity	93% without condensation or drop- forming
Acceptable Temperature Range (EN 50178)	For warehouse storing: from - 25° C to +65° C For operating purposes: from - 10° C to +40° C
Max. altitude	1000mt. (3242.5 ft) with no derating
Supply	- single phase: 200V - 15% to 240V + 10%
	- three phase: 200V - 15% to 230V + 10% 380V - 15% to 460V + 10%
Frequency	50/60 Hz ± 5%
Output voltage	Maximum voltage equal to the supply voltage
Output frequency range	0,5 a 320 Hz
Max. transients	150% of electronic speed control rated current for 60 secs.
Frequency resolution	- Display: 0.1 Hz - Analog inputs: 0.1 Hz per 100 Hz max.

Inverter technical specifications	
Switching frequency	Adjustable from 2.2 to 12 Hz max.
Electronic speed control protection and safety devices	Galvanic insulation between power and control panel
	Short circuit protection: - of available internal supplies; - between U- V- W output phases between phase and earth for calibres from 5.5 to 15Kw
Motor protections	Thermal protection against overheating and overcurrents
Motor protections	Protection integrated in the electronic speed control with 1^2t calculation
	Protection integrated in the electronic speed control with 1^2t calculation
Motor protections	Protection integrated in the electronic speed control with 1^2t calculation

Choice of blade

When using band saws to cut metals, an important factor is the choice of pitch, i.e. the number of teeth per inch (25.4 mm.), which must be suitable for the workpiece material. The following recommendations may be taken as general guidelines:

- thin- walled materials, such as sheet steel, tubes and profiles require a fine pitch frequency. 3 to 6 teeth should be engaged in the breadth of the material at any one time;
- large section cutting requires a coarse pitch to cope with the higher volume of swarf and optimal tooth penetration;
- soft materials (aluminium alloys, soft bronze etc.) also require a coarse tooth pitch.

Saw tooth pitch

The choice of teeth per inch, therefore, depends on various factors:

- the size of the section;
- the hardness of the material;
- workpiece wall breadth.

Very large dimensions require coarse teeth, while small dimensions require finer teeth. Whatever the case, ensure that there are always at least six teeth engaged in the cut, with reference to the thinnest vertical walls positioned transversally to the blade.
Concerning the type of H machine, a first broad distinction can be made according to the hardness of materials:

	Mild steels < 61 HRB	Hard steels > 65 HRB
	NR. TEETH/INCH	**NR. TEETH/INCH**
MINIMUM	3 / 4	5 / 8
OPTIMUM	4 / 6	6 / 10
MAXIMUM	8 / 12	10 / 14

Cutting speed and downstroke speed

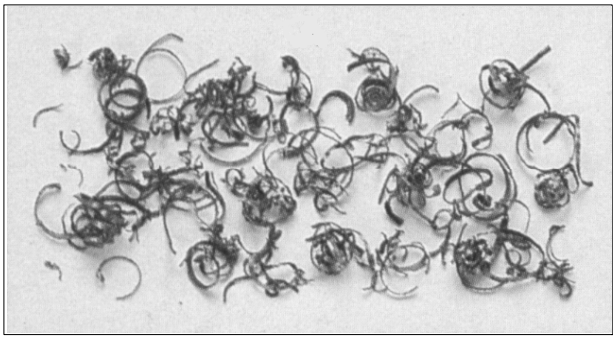
The cutting speed (m/min or ft/min) and the downstroke speed (cm^2/min or in^2/min) are limited by the heat generated around the points of the teeth. If the downstroke speed is too high, the cut will not be straight, either vertically or horizontally.

The cutting speed depends, as indicated above, on the tensile strength of the material (kg/mm^2 or lbs/in^2), its hardness (HRB) and the thickness of largest sections. The downstroke speed depends on the material thickness. Therefore, large- section, solid or thick- walled materials (s > 5 mm or 0.20 in), can be cut at high speeds, providing there is sufficient swarf removal from the blade; thin- walled materials, such as slim piping or profiles, must be cut using low and especially constant downstroke speeds.

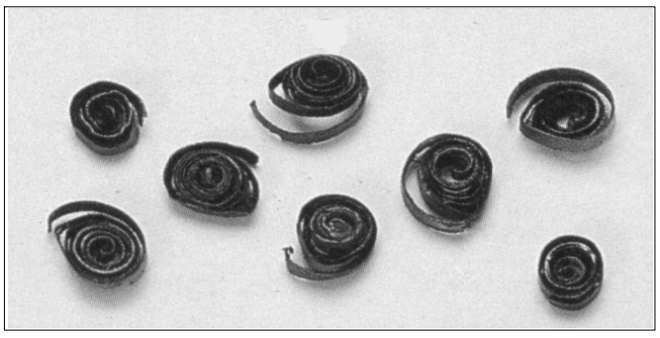
A new blade must be worn in, which in effect means lowering the downstroke speed to about half that of normal (from 60 to 70 cm^2/min or 9.3 to 10.85 in^2/min on normal steels), equal to a removed surface area of about 300 - 600 cm^2 (46.50- 93 in^2).

Types of swarf:

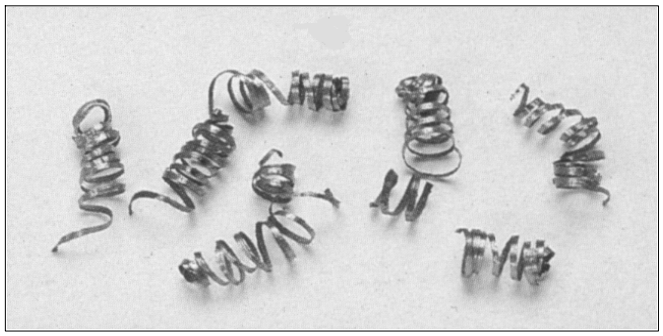
- Very fine or fragmented swarf indicates that the downstroke speed and/or cutting pressure is too low.



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

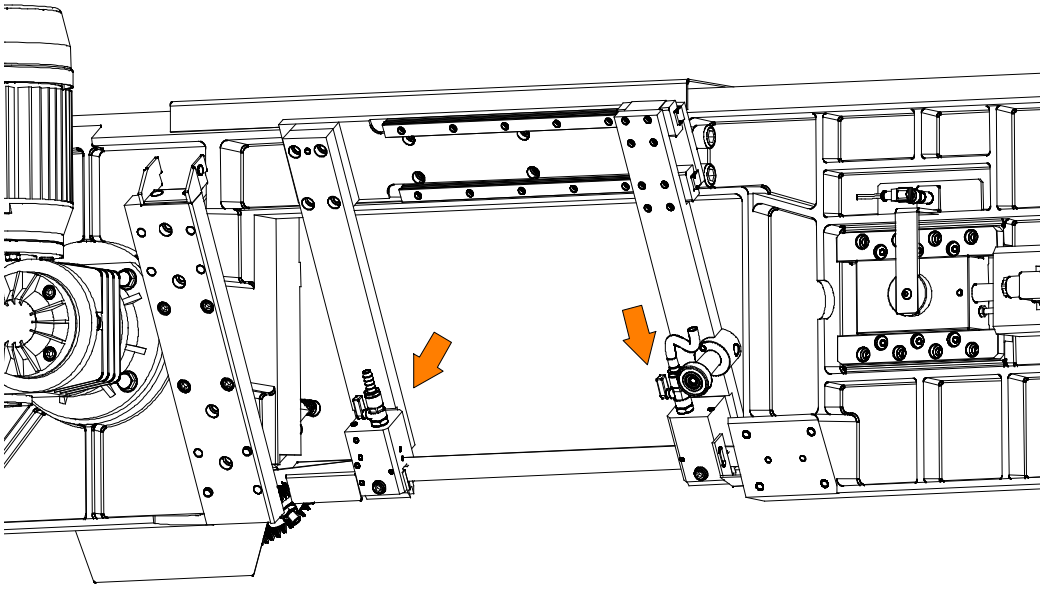


- Long coils of swarf indicate ideal cutting conditions.



Lubricant/coolant fluid

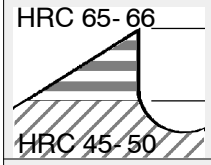
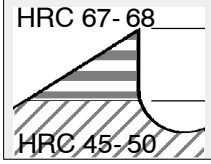
The lubricant/coolant fluid must ensure so that neither the saw teeth nor the work piece material in the cutting zone overheat. Furthermore, there must be a sufficient quantity and pressure of lubricant/coolant to remove swarf from the cutting zone. The lubricant/coolant fluid must be of the highest quality in order to prevent tooth abrasion and welding of swarf to the teeth themselves (seizing).



Blade structure

The most commonly used blades are the bimetal types, i.e. manufactured with a silicon steel body and having a high fatigue strength, and super high- speed steel teeth; the two parts are welded by electronic or laser- welding.
Standardised teeth types are termed M2 and M42; the difference being that M42 teeth are harder due to the addition of cobalt to the steel used to make the teeth.

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

TYPE OF BLADE	C	Mn	Si	Cr	W	Mo	V	Ni	Co	Al	HRC
	0,47	0,75	0,22	1,00		1,00	0,12	0,52		0,08	45- 50
HSS M2 HRC 65- 66  HRC 45- 50	0,85	0,25	0,30	4,15	6,37	5,00	1,92				64- 66
HSS M42 HRC 67- 68  HRC 45- 50	1,07	0,25	0,20	3,75	1,50	9,50	1,15		8,00		67- 69

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

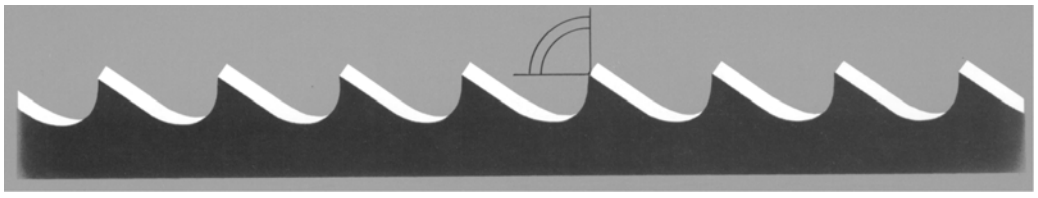
Blade types

The blades mounted on the **H- 230 A** are 2950 x 27 x 0.9 mm. (116.14 x 1.06 x 0.03 in); the length can vary between 2935 mm. and 2965 mm. (from 115.55 to 116.73 in), thanks to the blade tensioner device. The blades, however, apart from size and tooth pitch, are differentiated by other geometrical characteristics which determine their specialised uses:

- tooth cutting angle (rake), can be 0° or positive;
- the tooth pitch can be constant or variable;
- the set, i.e. the various teeth alignments, have many possible configurations.

Conventional rake

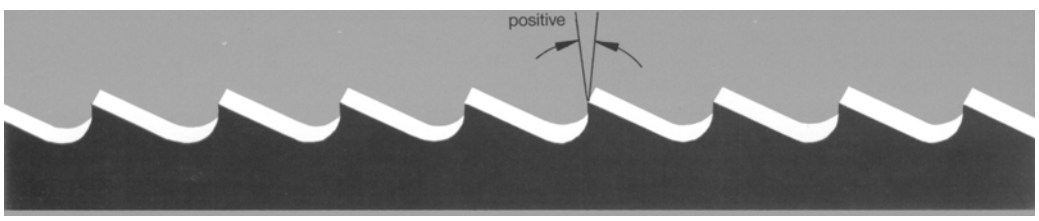
Cutting angle 0°, constant pitch.



In general use, for small or medium section cast iron or steels and rolled materials, for straight or angled cuts.

Positive rake

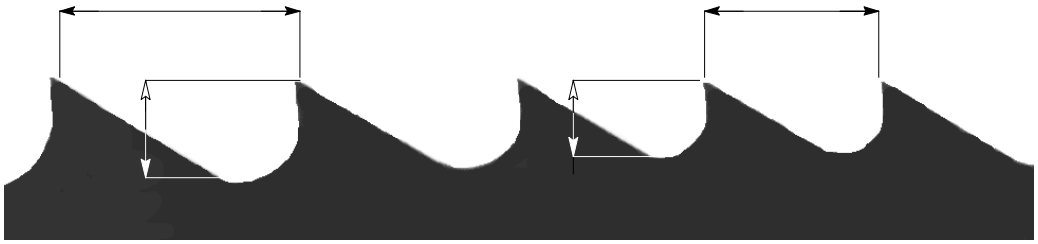
Positive cutting angle 9- 10°, constant pitch.



Can be used for cutting all types of materials, and is particularly suited to low- carbon and non- ferrous steels. Used for cutting very large sections and diameters.

Variable pitch

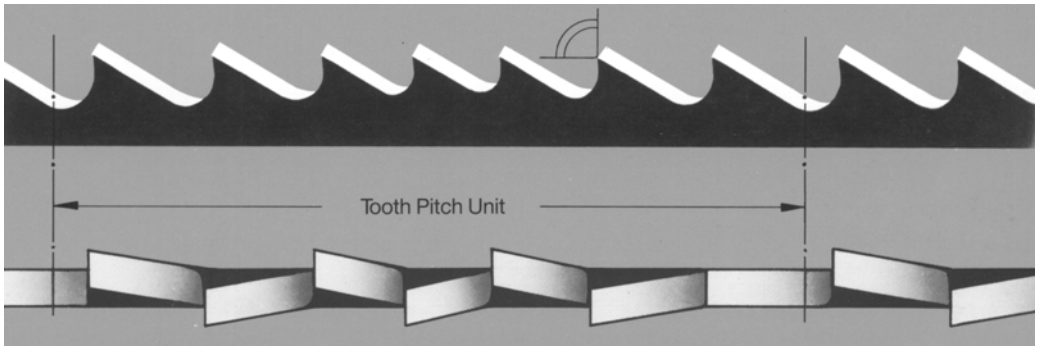
These blades have groups of teeth having different pitches and, as a consequence, have various tooth dimensions and differing relief angles. These are also available in M2 and M42 types with zero and positive rakes. The alternation of the different types of teeth helps to prevent vibration and noise. Elimination of vibration increases the useful life of the tool and improves the cut surface finish.



A further advantage in using these types of blades lies in the fact that a wide range of different material types and dimensions can be cut with the same blade.

Variable pitch blades with 0° cutting angle

This type of tooth formation is ideal for cutting single pipes or medium size bundles, in accordance with the capacity of the machine.

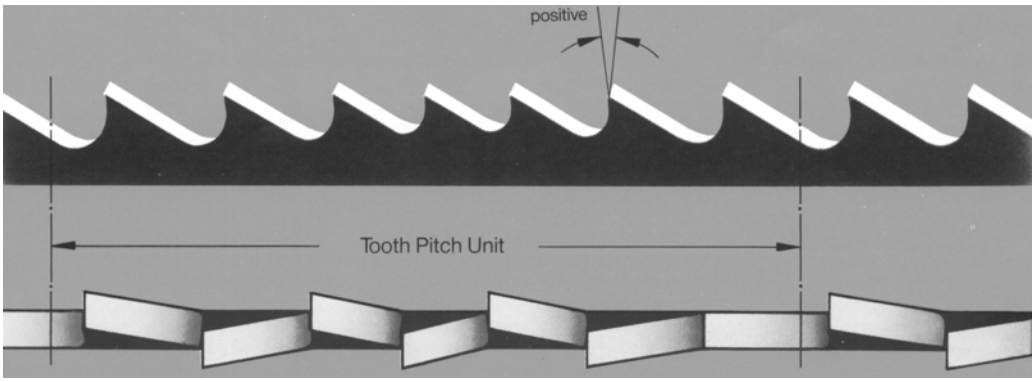


Pitches available: 3- 4 / 4- 6 / 5- 7 / 5- 8 / 6- 10 / 8- 12 / 10- 14.

Variable pitch with positive rake (from 9 to 10 degrees)

This toothing type is the most suitable for cutting large dimension pipes and profiles, including large sections, as well as for cutting solid sections up to the

machine capacity limit.



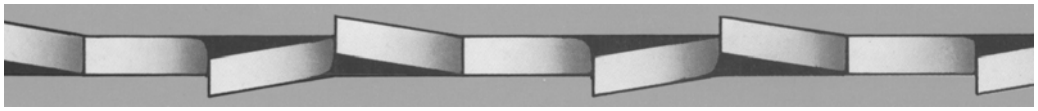
Pitches available: 3- 4 / 4- 6.

Set:

The term set refers to the section of material removed by the blade during the cutting operation, i.e. relating to width of cut and the offset position of the teeth with respect to the blade back.

Standard or splayed set

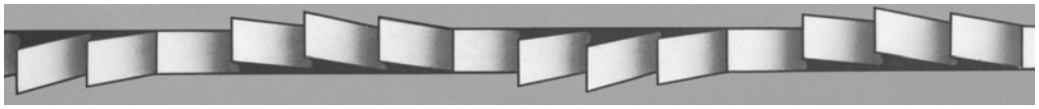
This term is used to describe an alternated angling of the teeth: one to the right, one to the left and one straight.



For general use on materials over 5 mm. (0.20 in) thick. Suitable for cutting steels, castings and non- ferrous hard materials.

Undulated set

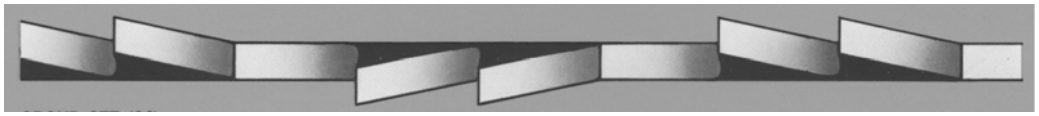
Used to describe groups of teeth undulating alternatively to the right and left.



This type of set is used with very fine teeth for cutting thin pipe walls and small- section profiles (from 1 to 3 mm or from 0.04 to 0.12 in).

Alternating grouped sets

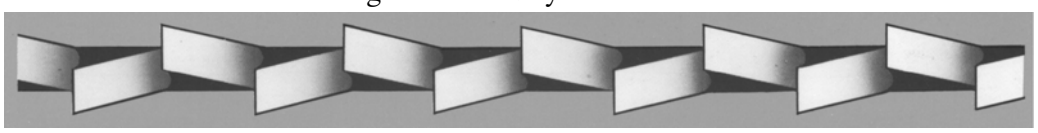
These are groups of teeth angled to the right, one straight tooth, then a further group angled to the left.



This set is used for very fine teeth for cutting very thin sections (less than 1 mm or 0.04 in).

Alternating set

This set is one tooth to the right followed by one to the left.



This set is used for soft non- ferrous materials, plastics and wood.

Blade selection table relating to cutting speed and downstroke speed

Cutting material	Cutting speed mt./min	Dimensions of the cutting section S (mm) S10		10S30		30S50		50S80		80S120		120S230		Lubrication	sq. mt./min. cut
		Blade pitch	Number of teeth per inch												
Structural steel Casehardened steel Steel for turning Mild steel	50 / 70	14	10 / 14	10	10 / 14	8	6 / 10	6	5 / 8	4	4 / 6	3	3 / 4	Emulsible oil Cutting fluid	60 - 70
High- duty cast iron Rolled steel Spring steel	40 / 50	14	10 / 14	10	10 / 14	8	6 / 10	6	5 / 8	4	4 / 6	3	3 / 4	Emulsible oil	50 - 60
Alloy steel Tool steel Valve steel	30 / 40	14	10 / 14	10	10 / 14	8	6 / 10	6	5 / 8	4	4 / 6	3	3 / 4	Emulsible oil Cutting fluid	15 - 20
Stainless steel Nodular cast iron	30 / 40	14	10 / 14	10	10 / 14	8	6 / 10	6	5 / 8	4	4 / 6	3	3 / 4	Emulsible oil	15 - 20
Copper Soft bronze	90 / 150	14	10 / 14	10	10 / 14	6	5 / 8	4	4 / 6	3	3 / 4	3	3 / 4	Emulsible oil	75 - 90
Brass	90 / 300	14	10 / 14	10	10 / 14	6	5 / 8	4	4 / 6	3	3 / 4	3	3 / 4	Emulsible oil	80 - 90
Hard bronze	20 / 40	14	10 / 14	10	10 / 14	6	5 / 8	4	4 / 6	3	3 / 4	3	3 / 4	Emulsible oil	25 - 40
Aluminium	80 / 800	14	10 / 14	6	10 / 14	4	4 / 6	3	3 / 4	3	3 / 4	3	3 / 4	Emulsible oil	70 - 80
Plastics	90 / 400	14	10 / 14	6	10 / 14	4	4 / 6	4	4 / 6	3	3 / 4	3	3 / 4	Emulsible oil	80 - 90

Classification of steels

This page provides a table giving the user specific information on the cutting materials, in order that they can be classified on the basis of their hardness, and thus the correct tool can be selected for the task in hand.

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

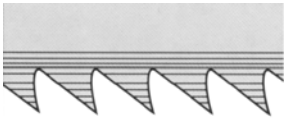
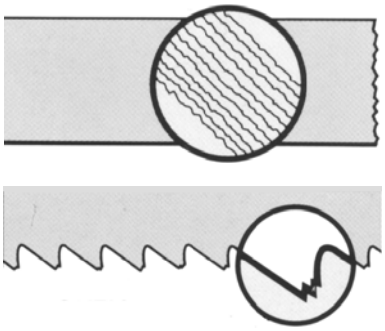
Material	SS Svezia	AISI U.S.A.	DIN Germania	BS Inghilterra	UNI Italia	AFNOR Francia
Carbon steels	1311 1572	1015 - 1035	C 22 - C 35 20 Mn 5 - 28 Mn 6 CK 22 - CK 50	050 A 20 080 M 46 - 50 120 M 19 150 M 28	C 15 - C 35 C 22 Mn C 28 Mn	XC 18 XC 38 H 1 20 M 5
Carbon steels	1650 1880	1040 - 1064 1770 - 1880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

Troubleshooting

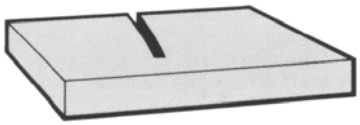
10

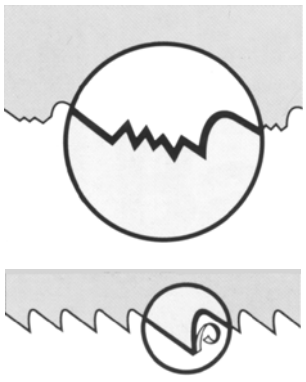
This chapter describes the inspection and troubleshooting procedures for the **H- 230 A**. Regular inspections and efficient maintenance are essential to ensure your machine gives you a long, trouble- free service life. The chapter is divided into two sections: the first being dedicated specifically 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.

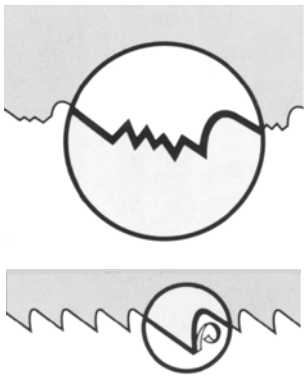
Troubleshooting blade and cutting problems

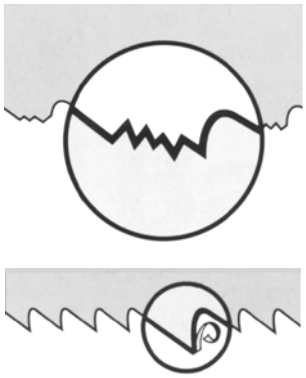
PROBLEM	PROBABLE CAUSE	SOLUTION
Blade scored or scratched 	◗ Widia inserts chipped or worn	☞Replace
	◗ Widia inserts loose or tight	☞Adjust
	◗ Widia inserts dirty	☞Clean and re- adjust correctly
Cutting surfaces scored 	◗ Blade teeth worn	☞Replace blade
	◗ Head downstroke speed too fast	☞Reduce downstroke speed
	◗ Cutting speed too slow	☞Increase cutting speed
	◗ Blade teeth too wide	☞Change for wider teeth
	◗ Free blade guide head too far away	☞Move blade guide head closer so as to leave only that part of the blade free which is needed to effect the cut
	◗ Blade tension low	☞Reset tension to rated tension
	◗ Broken teeth on blade	☞Check and replace blade

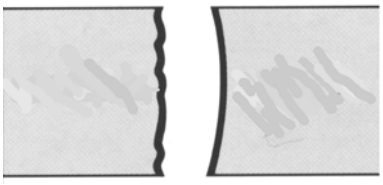
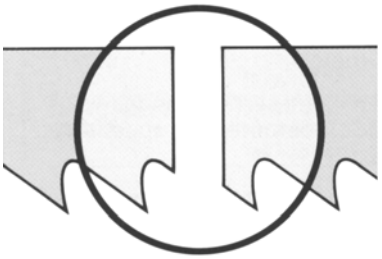
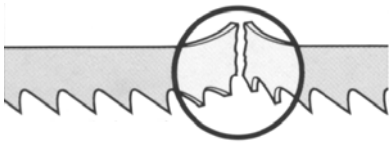
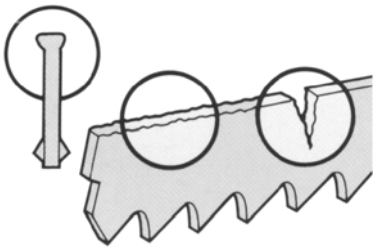
PROBLEM	PROBABLE CAUSE	SOLUTION
Rapid tooth wear 	◗ Teeth pointing in the wrong direction	☞Set teeth in correct direction
	◗ Blade worn in wrongly	☞With a new blade cutting should be done at half- speed and with downstroke speed also at half normal speed. After the blade has been worn in (about 300 cm^2 of work for hard cutting materials and about 1000 cm^2 for soft cutting materials) the cutting and downstroke speeds can be brought up to rated levels
	◗ Material too hard	☞Check cutting speed, downstroke speed and blade pressure, as well as type of band saw being used
	◗ Material defective	☞Surface defects: oxides, sand, surface hardening. Hardened inclusions in section. Reduce cutting and downstroke speeds or clean surface.
	◗ Cutting speed too high	☞The teeth slide on the material without cutting: reduce cutting speed
	◗ Head downstroke speed too slow	☞The band saw runs over the material without removing it: increase downstroke speed
	◗ Insufficient coolant	☞Check coolant level and clean pipes and jets
	◗ Incorrect fluid concentration	☞Check and use the correct concentration
	◗ New blade inserted into a partially- made cut	☞The cutting surface might have been subject to a localised heat- induced alteration, making it harder: recommence cut using a slower cutting and downstroke speed. There may be a broken tooth from the old blade lodged in the cut: check and remove before recommencing work
	◗ Flutter	☞Blade tension too low: tighten. Tooth shape or pitch unacceptable: change type of blade used. Widia blade steady buttons too far from the blade back: adjust guide heads, rotating them slightly to bring them closer to the blade back.

PROBLEM	PROBABLE CAUSE	SOLUTION
Cuts not orthogonal or inclined 	◗ Head downstroke speed too fast	☞Reduce head downstroke speed
	◗ Widia inserts worn	☞Replace
	◗ Inserts loose	☞Adjust width
	◗ Blade guide head positioned wrongly	☞Move mobile head up to the workpiece using the guide plate to leave free only that part of the blade actually needed to make the cut
	◗ Orthogonality of blade to workpiece rest shoulder	☞Check and realign the blade guide heads, then reset the blade orthogonality with the shoulder using the adjustment pin at 0°; then set the stops at 45° right and left by means of the appropriate screws
	◗ Perpendicularity of the blade to the work surface	☞Check and realign the blade guide heads then adjust the blade using the appropriate screws so that it is perpendicular to the work surface
	◗ Blade tension incorrect	☞Bring pressure up to 60 Bar
	◗ Blade worn	☞Replace blade
	◗ Tooth pitch unsuitable	☞Probably a blade with too many teeth per inch is being used; change for a coarser blade
	◗ Cutting speed too slow	☞Increase the cutting speed
	◗ Wrong coolant	☞Check the water and oil emulsion; check that none of the holes or hoses are blocked; direct the jets correctly
	◗ Broken teeth	☞Check the hardness of the material being cut

Broken teeth 	◗ Cutting speed too high	☞Reduce cutting speed
	◗ Downstroke speed too high	☞Reduce downstroke speed

PROBLEM	PROBABLE CAUSE	SOLUTION
Broken teeth 	◗ Cutting pressure too high	☞Check and set to correct pressure
	◗ Tooth pitch unsuitable	☞Teeth too close together: change blade for one with a coarser tooth pitch
	◗ Swarf welded to teeth and gullets	☞Check blade- cleaning coolant jets. Check the blade-cleaning brush. If the swarf is not removed from the blade it will be drawn back into the cut and weld to the teeth, causing tooth breakage
	◗ Swarf welded to teeth and gullets	☞Check blade- cleaning fluid jets. Check blade- cleaning brush. If the swarf is not removed from the blade it will be drawn back into the cut and weld to the teeth, causing the teeth to break.
	◗ Material defects	☞The material may have altered surface areas, such as oxides or sand, or subcooled inclusions in the section. These areas are much harder than the blade and will cause the teeth to break: scrap or clean these materials.
	◗ Workpiece not clamped	☞The blade may break if the workpiece moves during cutting: check the vice, jaws and clamping pressure
	◗ The blade stops in the cut	☞Cutting pressure too high: check and restore to rated pressure. Downstroke speed too fast: reduce speed. Cutting speed too slow: increase. The blade slips on the flywheels: either the wheels are worn and need to be replaced or the blade tension is incorrect (too low) and must be re- adjusted.
	◗ New blade inserted in a partially made cut	☞The cutting surface may have been subjected to a localised heat- induced alteration, making it harder: recommence cut using a slower cutting and downstroke speed. A tooth from the old blade may be left in the cut: check and remove before restarting work.

PROBLEM	PROBABLE CAUSE	SOLUTION
Broken teeth 	◗ Widia inserts positioned incorrectly	☞Adjust the position of the inserts, especially the width, since blade thicknesses can exceed the manufacturer's declared tolerance ratings
	◗ Widia blade steady buttons	☞Two widia blade steady buttons are located in the top of the blade guide heads which press on the back of the blade to transmit cutting pressure. If these buttons are too far from the blade, the blade may be prone to an up and down undulating action or abnormal vibrations, liable to cause the teeth to break: adjust the position of the heads by rotating them downwards so as to bring the blade steady buttons up against the back of the blade
	◗ Sections with large thickness variations	☞The cutting speed and downstroke speed must be chosen to suit the most critical part of the cut
	◗ Teeth angled in the wrong direction	☞Fit blade so that teeth point in the right direction
	◗ Blade run in wrongly	☞When using a new blade, the cutting and downstroke speeds must be reduced to half the normal operating speed. After the blade has been worn in (about 300 cm2 for hard materials and about 1000 cm2 for soft materials) the cutting and downstroke speeds may be returned to their rated levels
	◗ Insufficient coolant	☞Check coolant level and clean fluid lines and jets
	◗ Incorrect fluid concentration	☞Check and use the correct concentration
	◗ Blade tension too high or too low	☞Check and reset to rated tension

PROBLEM	PROBABLE CAUSE	SOLUTION
Blade path fault 	◗ Front flywheel position incorrect	☞Check that the band saw is correctly positioned on the flywheel. Adjust the position of the flywheel under the blade, moving the shaft of the flywheel
	◗ Flywheels worn	☞Replace
	◗ Gaps full of swarf	☞Clean inside machine using blown air.
	◗ Blade guide head alignment	☞Check and adjust
Blade broken    	◗ Cutting speed too high	☞Reduce cutting speed
	◗ Head downstroke too fast	☞Reduce head downstroke speed
	◗ Cutting pressure too high	☞Check and set to correct pressure
	◗ Tooth pitch unsuitable	☞Teeth too close together: change the blade for one with coarser tooth spacings
	◗ Workpiece not clamped properly	☞The blade may break if the workpiece moves during cutting: check the vice, jaws and clamping pressure.
	◗ Widia inserts positioned incorrectly	☞Adjust inserts position, especially the width, since blade thickness can exceed the manufacturer's declared tolerance ratings
	◗ Widia blade steady buttons	☞Can have a milling action on the back of the blade if worn or chipped, causing cracks from the back towards the teeth.
	◗ Position of blade on flywheels incorrect	☞The blade may be scraping on the edges of the flywheels: this problem is generally caused by blades which are deformed or wrongly welded (conical) Adjust the position of the front flywheel by moving the pin, or change the blade
	◗ Blade tension incorrect	☞If the blade tension is too high or too low, the blade will be subjected to abnormal stress: set the tension back to the rated value.

PROBLEM	PROBABLE CAUSE	SOLUTION
	◗ Blade weld fault	☞The point at which a blade is welded is its most critical point; problems could be caused by welds which are not aligned perfectly or have inclusions or blowholes
	◗ Free blade guide head	☞The head is too far away from the workpiece: move the head closer, leaving free only that part of the blade actually needed to make the cut
	◗ Teeth in contact with the material before starting the cut	☞Always check the position of the blade before starting a new job, especially for the semi- automatic cycle
	◗ Widia inserts	☞If worn, the inserts can score the blade, weakening it even to breaking point. If the inserts are too far apart, the blade will whip, striking both the inserts and the material. Replace or adjust
	◗ Insufficient coolant	☞Check coolant fluid level; clean pipes and jets
	◗ Incorrect fluid concentration	☞Check and use the correct concentration
	◗ The blade stops in the cut	☞Cutting pressure too high: check pressure and reset to rated pressure. Head downstroke speed too fast: reduce. Head downstroke speed too slow: increase. The blade slips on the flywheels: incorrect or low blade tension; readjust or increase.

Troubleshooting

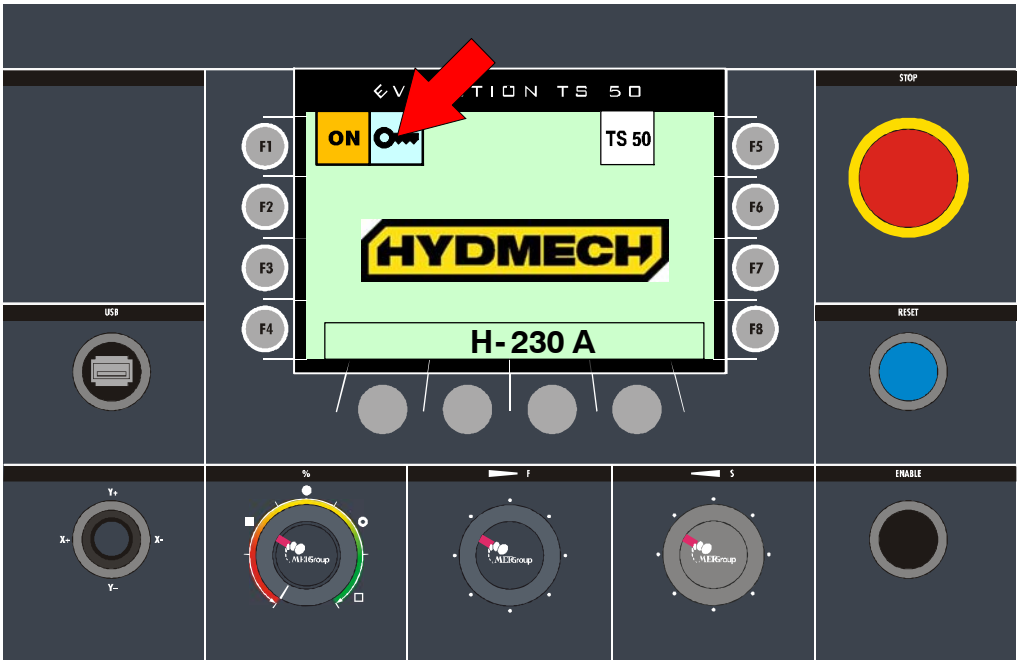
This section deals with the problems which may occur during machine operation. The M50 controller allows you to test all the machine's electric and electronic devices by checking the status of the input and output signals on the IUD/IUV card (see Chapter 5).

The board IUD/IUV is inside the electric board.

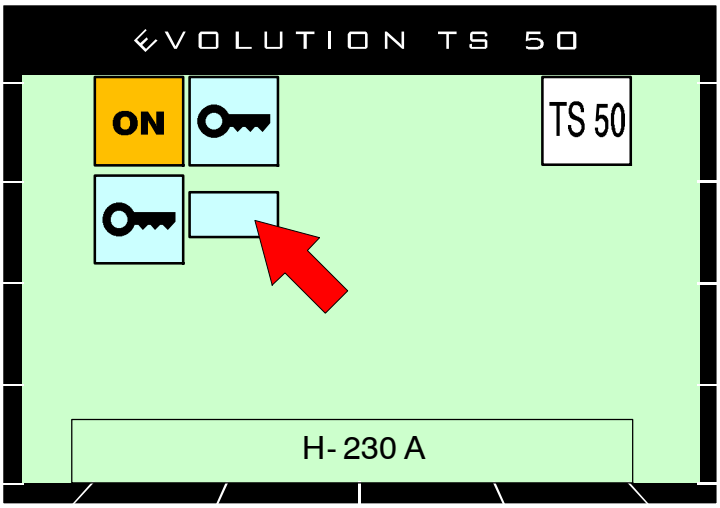
Displaying the diagnostics menu

▶ Power the machine by turning the main switch on the left of the control board.

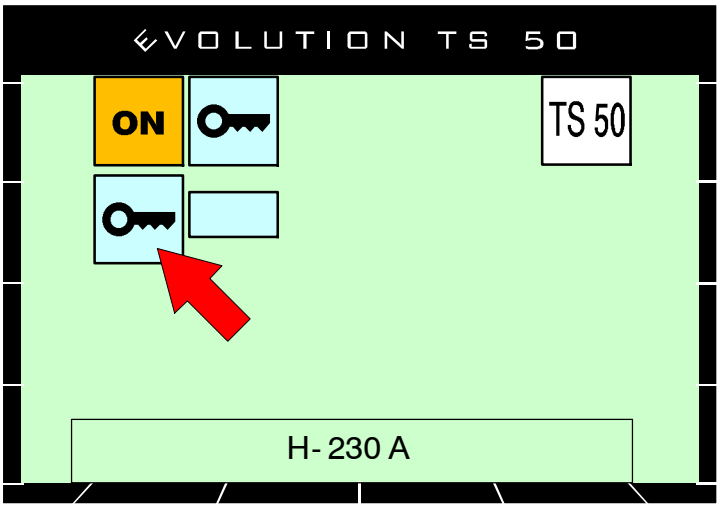
▶ Tap on the box on the touchscreen shown in the figure.



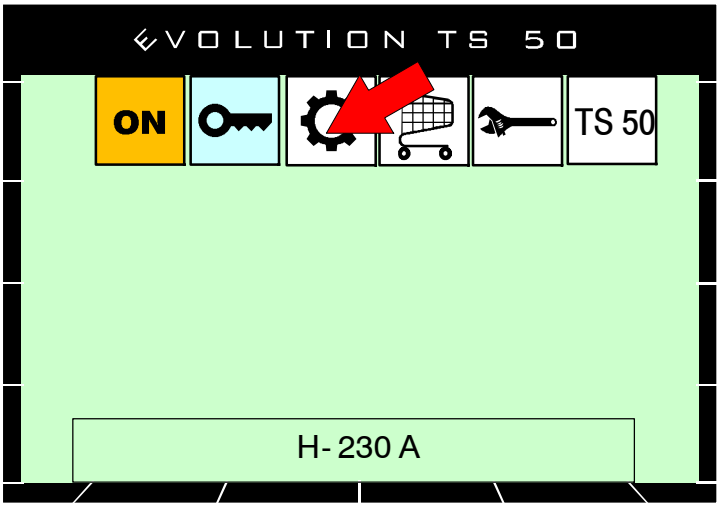
▶ The password entry box will open. Tap the box to open the keypad. Enter 734533.



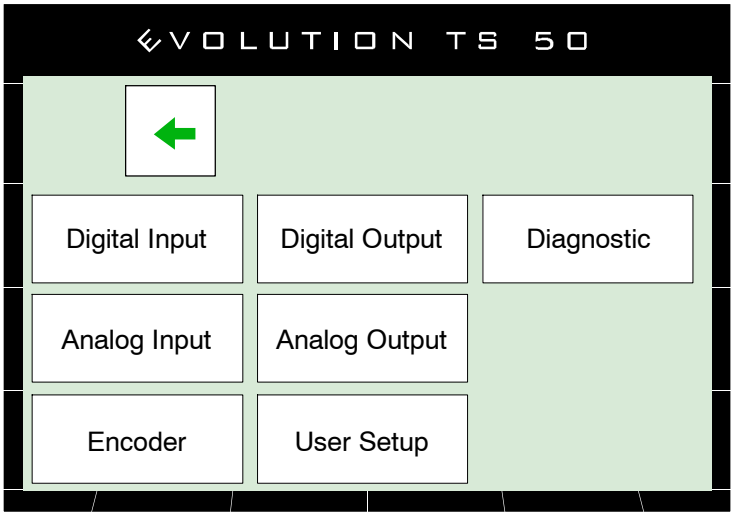
▶ Tap on the box shown in the figure.



▶ Tap on the box shown in the figure.



▶ In the Troubleshooting menu, select the type of input/output to be checked by tapping on the corresponding box:

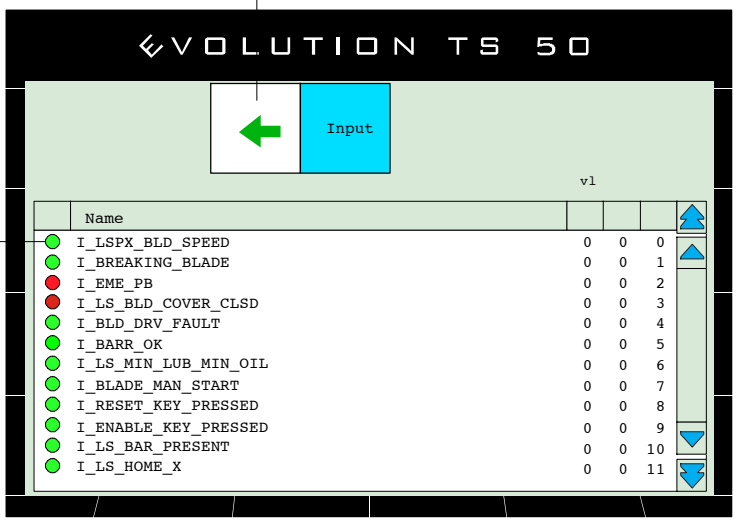


Digital Input

This page can be used to check the state of digital inputs. Information is organised in a table:

Box to go back to the initial list of all inputs and outputs

The icon indicates whether the respective output is on (green) or off (red)



Digital INPUT list

CN13- ALL	**+ 24 VDC**
CN15- ALL	**0 VDC**
CN14- 1 INP 0	**Blade speed proximity switch**
CN14- 2 INP 1	**Blade breakage**
CN14- 3 INP 2	**EMERGENCY STOP BUTTON OK**
CN14- 4 INP 3	**BLADE GUARD CLOSED LIMIT SWITCH**
CN14- 5 INP 4	**ALARM INVERTER**
CN14- 6 INP 5	**START FROM PEDAL BOARD**
CN14- 7 INP 6	**LOW OIL LEVEL**
CN14- 8 INP 7	**Manual start of the band rotation**
CN16- ALL	**+ 24 VDC**

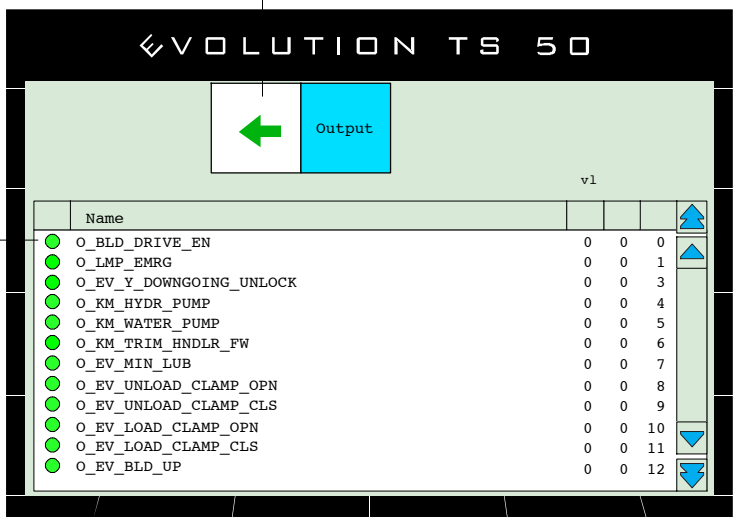
CN19- ALL	**0 VDC**
CN17- 1 INP 8	**RESET BUTTON**
CN17- 2 INP 9	**ENABLE BUTTON**
CN17- 3 INP 10	**Bar presence limit switch**
CN17- 4 INP 11	**Zero- setting limit switch**
CN17- 5 INP 12	**JOYSTICK X-**
CN17- 6 INP 13	**JOYSTICK Y-**
CN17- 7 INP 14	**JOYSTICK Y+**
CN17- 8 INP 15	**OYSTICK Y+**

Digital Output

This page can be used to check the state of digital outputs. Information is organised in a table:

Box to go back to the initial list of all inputs and outputs

The icon indicates whether the respective output is on (green) or off (red)



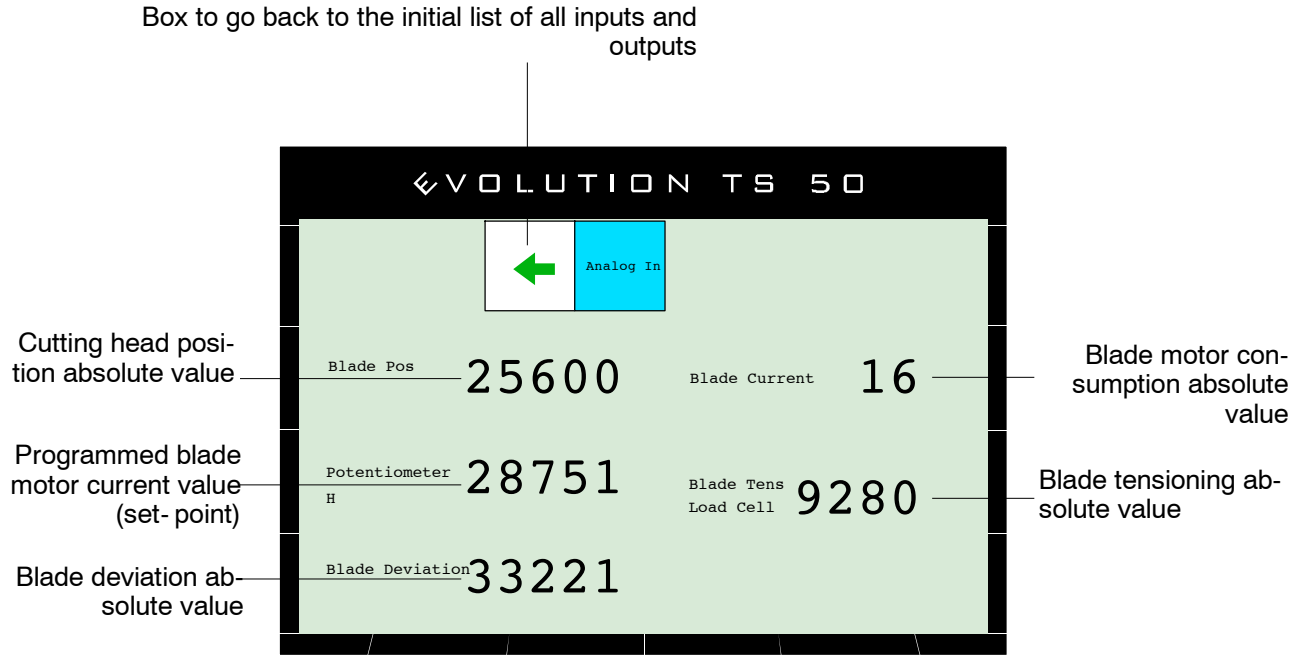
Digital OUTPUT list

CN21- 1 OUT 0	**START INVERTER**
CN21- 2 COM	**+24 VDC**
CN21- 3 OUT 1	**FLASHING**
CN21- 4 COM	**+24 VDC**
CN21- 5 OUT 2	**SPARE**
CN21- 6 COM	**+24 VDC**
CN21- 7 OUT 3	**HEAD LOCK/RELEASE SOLENOID VALVE**
CN21- 8 COM	**+24 VDC**
CN22- 1 OUT 4	**UNIT START KM**
CN22- 2 OUT 5	**WATER PUMP START KM**
CN22- 3 OUT 6	
CN22- 4 OUT 7	**LOW LUBRICATION SOLENOID VALVE**
CN22- 5 COM	**+24 VDC**
CN23- 1 OUT 8	**CHIP EJECTOR Km**
CN23- 2 OUT 9	**CUTTING VICE OPENING Km**
CN23- 3 OUT 10	**CUTTING VICE CLOSING Km**
CN23- 4 OUT 11	**FEEDER VICE OPENING Km**

CN23- 5 COM	+24 VDC
CN24- 1 OUT 12	HEAD LIFTING SOLENOID VALVE
CN24- 2 OUT 13	HEAD LOWERING SOLENOID VALVE
CN24- 3 OUT 14	LASER PROJECTOR
CN24- 4 OUT 15	CUTTING ZONE LIGHT
CN24- 5 COM	+24 VDC

Analog Input

This page can be used to check the state of analogue inputs. Information is organised in a table:

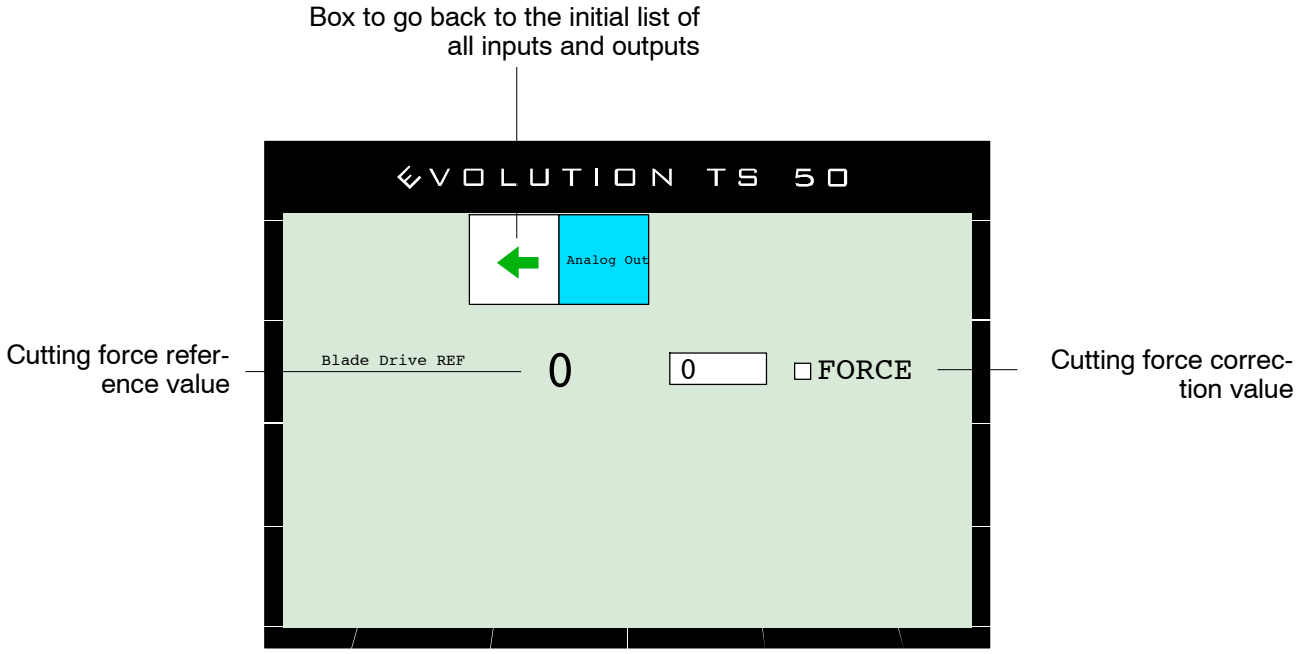


Analog INPUT list

CN26 INP 1 (16B)	HEAD POSITIONING POTENTIOMETER
CN27 INP 2	BLADE MOTOR CONSUMPTION
CN28 INP 3	SPARE
CN29 INP 4	SPARE
CN30 INP 5	SPARE

Analog Output

This page can be used to check the state of analogue outputs. Information is organised in a table:



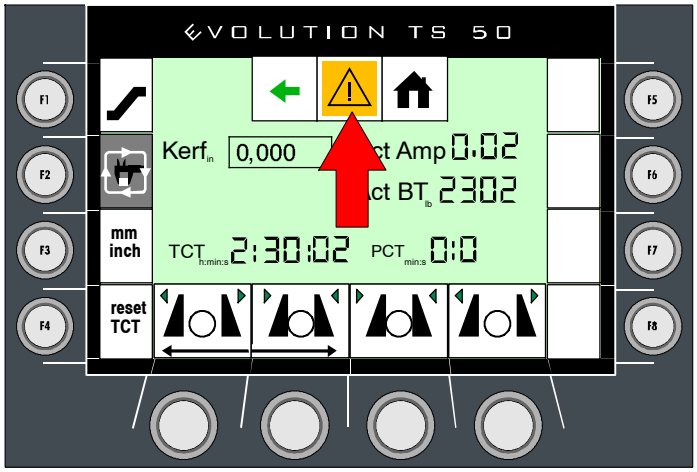
Analogue output list

CN25 OUT 1	**BLADE SPEED REFERENCE**
CN25 OUT 2	**SPARE**

Machine alarms and warning messages

Alarms

The machine's 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.



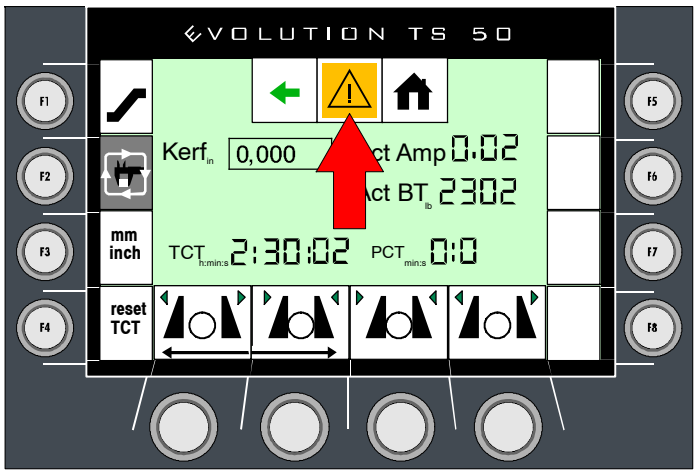
AL1: EMERGENCY: ONE OR MORE ALARMS HAVE TRIPPED	This appears in case of a generic emergency. A specific message follows
AL2: BLADE TENSIONING OUT OF MIN-MAX LIMITS	It is displayed when a mechanical problem occurs in the blade tensioning
AL3: BLADE MOTOR OVERCURRENT	It is displayed during the cutting when the value of the motor absorption is too high
AL4: INSUFFICIENT BLADE REVOLUTION SPEED	This appears when the blade jams in the cut or breaks ▶ Check blade integrity ▶ Check cutting parameters
AL5: HMI EMERGENCY - LOGO OR RESERVED PAGE	This appears in case of controller malfunction
AL6: EMERGENCY STOP BUTTON OR UNIT OPERATED	It is displayed when the emergency mushroom button is pressed
AL7: U AXIS NOT AVAILABLE OR FAULTY OR NOT REFERENCED: CLOSE THE LOGO PAGE AND GO BACK TO THE OPERATIVE PAGE	This appears when the head descent speed adjustment valve is not reset
AL8: XB AXIS NOT AVAILABLE OR FAULTY	This is shown when the pop- up rollers interfere with head revolution ▶ Position the pop- up rollers correctly as shown in Chapter 5
AL9: U AXIS DRIVE FAULTY	This appears in case of head descent adjustment valve malfunction

AL10: XB AXIS DRIVE FAULTY	This appears when there is a head revolution drive malfunction
AL11: LOW MINIMUM LUBRICATION	It is displayed when the oil level in the min. lubrication system lowers. ▶ Top the oil up in the tray till restoring the level.
AL12: BLADE GUARD OPEN @ BLADE CHANGE SEQUENCE DEACTIVATED	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.
AL13: XB AXIS ENCODER REVOLUTION BLOCKED	This appears in case of head revolution problem
AL14: BLADE DRIVE OR MOTOR FAULTY	This is shown when the blade motor inverter does not work correctly
AL15: CUTTING HEAD VICE VERTICAL INTERFERENCE LIMIT SWITCH	This appears when an attempt is made to close the vice must be head is not all up ▶ Take the head all up This appears when an attempt is made to move the head down and the vice is not all up ▶ Open the vices completely
AL16: FORWARD SOFTWARE LIMIT SWITCH UNDER STARTING POSITION (RHLS < YPOS)	This message is displayed when the cutting start position is lower than the previous position saved for the cutting end position. ▶ Save both the RHLS and FHLS positions again.
AL17: PARAMETER LOADING FAILED: RESTART THE MACHINE	This appears when the parameter reading procedure is not successful
AL18: BLADE POSITION ERROR: CHECK ANALOGUE INPUT	This appears when the potentiometer is broken or sends a message which is not compatible with the machine
AL19: LASER ENGAGED AT START OF CYCLE	This is shown when the cutting cycle is started and the fast approach laser is busy
AL20: JOG X NOT POSSIBLE WITH BOTH CLAMPS CLOSED	It is displayed when trying to move the feeder shuttle using the joystick without having opened both vices.
AL21: OUT OF STOCK	It is displayed when the cutting material being fed runs out
AL22: CALCULATING LENGHT ERROR	It is displayed when a calculation error of the length to be fed occurs

AL23: X AXIS HOMING NOT COMPLETED PERFORM THE HOME AXIS MANUALLY	It is displayed when a feeder shuttle position error occurs
AL24: BLADE BROKEN	It is displayed when the blade breaks
AL25: CYCLE STARTING WITH BLADE NOT A FCTI	It is displayed when a cutting cycle is started with head not at RHLS (rear head limit switch)
AL26: BLADE DEVIATION MAX	It is displayed when an excessive blade deviation occurs while machining
AL26: BLADE DEVIATION MIN	It is displayed when a limited blade deviation occurs while machining
AL28: PERIMETRAL PROTECTION OPEN	It is displayed when opening any perimeter guard
AL29: AIR PRESSURE KO	It is displayed when the working pressure is below the min. operating threshold

Warning messages

Tap on the box shown on the figure to see warning messages:



WR1: CHECK MANUAL CUT START CONDITIONS: NO ALARMS, BLADE ENABLED, BLADE ON FCTI, FRONT VISE CLOSED	It is displayed when the manual cycle is started
WR2: SEMIAUTO CUT IN PROGRESS	This appears when the semi- automatic cycle is underway
WR3: POSITIONING IN PROGRESS	This appears when the head positioning is underway

WR4: MINIMUM LUBRICATION: OIL REACHED THE MINIMUM LEVEL	This appears when there is no oil for minimum lubrication
WR5: FORWARD SOFTWARE LIMIT SWITCH ABOVE BACKWARD ONE (FCTA > FCTI)	This appears when the RHLS and RHLS are not coherent
WR6: HYDRAULIC OIL PUMP SELF TURNING OFF TRIGGER	This appears when the machine switches to power save mode after a given time
WR7: INHIBITED COMMAND	This appears when an incorrect operation is attempted
WR8: CHECK CUT START CONDITIONS: NO ALARMS, BLADE ENABLED, BLADE ON FCTI, NUMBER PIECES PROGRAMMED TERMINATED (RESET COUNTER)	This appears when an attempt is made to start the cutting cycle without having checked that the cutting conditions are correct
WR9: AUTO FEED REDUCING CORRECTION TRIGGERED BY AN OVERCURRENT	This appears when the blade motor current exceeds the setting and correction is applied
WR10: BLADE AT ZERO CUTTING FEED SPEED: CANNOT CUT	This appears when the blade setting is too low
WR11: THERMAL SWITCHES NOK	This appears when a thermal switch trips in the control panel
WR12: CHIP CONVEYOR BLOCKED	This appears when the chip ejector is blocked
WR13: JOG WITHOUT HOMING	It is displayed when attempting to move the feeder using the joystick without having set to zero
WR14: WAIT BLADE SPEED REACHED	It is displayed after changing the band rotation speed
WR15: END OF CUTS	It is displayed at the end of the programmed cuts
WR16: END OF QUEUE	It is displayed at the end of the programmed cut sequence
WR17: BLADE DEVIATION WARNING LEVEL	It is displayed when the blade deviation value has reached the caution level

WR18: PRESS BLADE ENABLED BUTTON	It is displayed when trying to start the cycle without having enabled the blade motor before
WR18: COMMAND INHIBITED	It is displayed when the given command does not have the necessary conditions

Optional

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

Optional

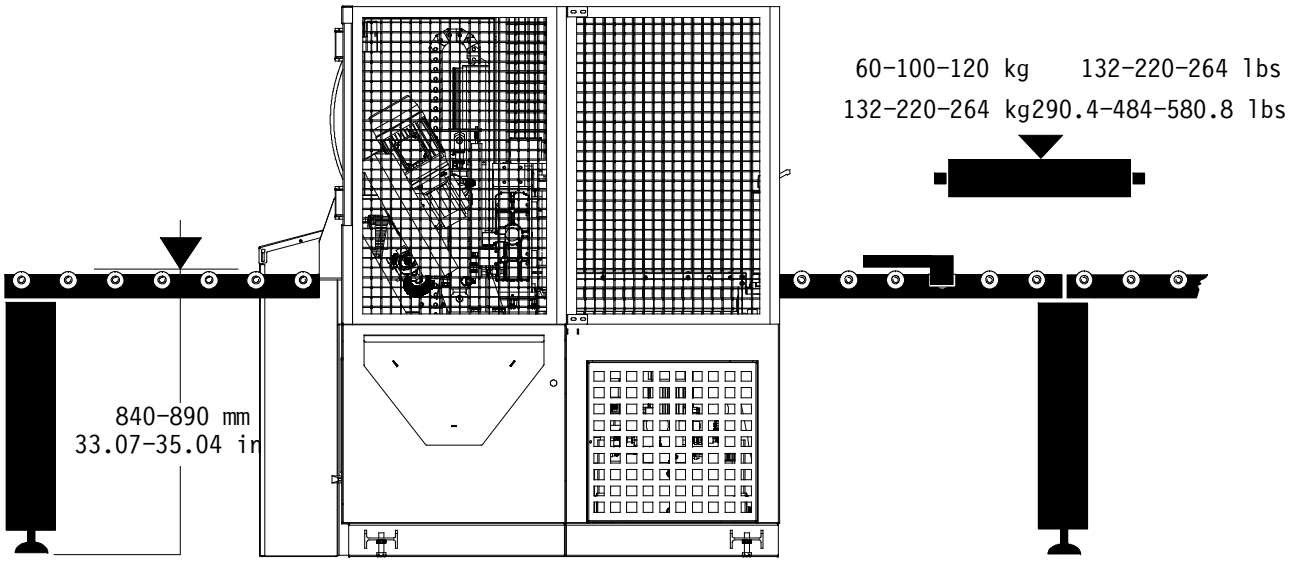
Blade

The blades that can be used on this machine include:

- 2950x27x0.9 (116.14 x 1.06 x 0.03 in) bimetal blade for solid and section materials;

Roller table

- K110/K110HD roller table module for feed side, 1500 mm (59.06 in);



- K110/R1/R2/R3 roller table for discharge side, 1500÷6000 mm (59.06÷236.24 in);

Can of emulsible oil

5 l can of emulsible oil.

Minimal lubrication system

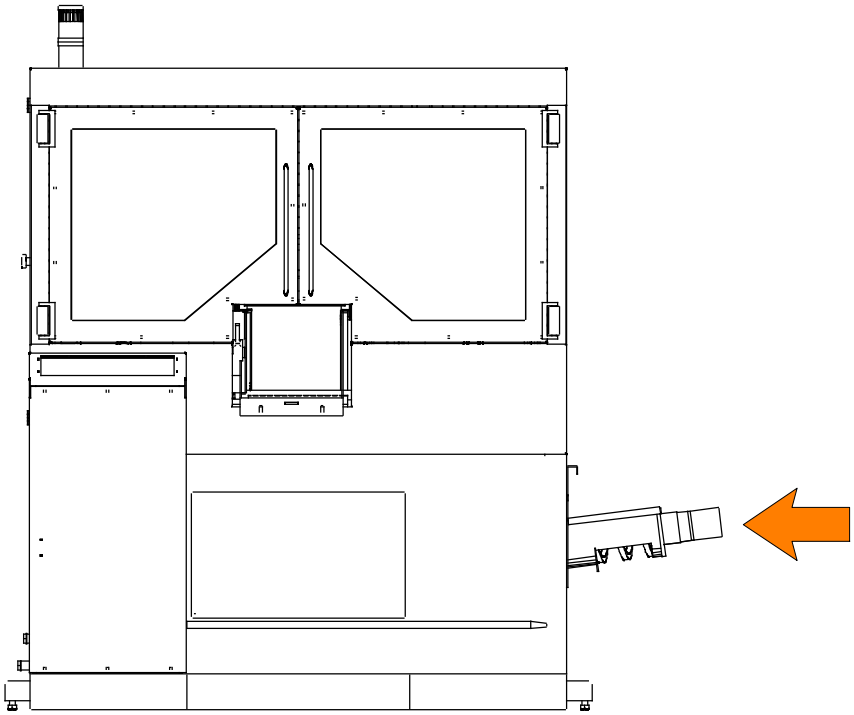
This device was designed to improve lubrication of the tool during cutting.

▶ An instruction book is supplied with the kit to explain how to install this optional unit.

Motor- driven auger chip ejector

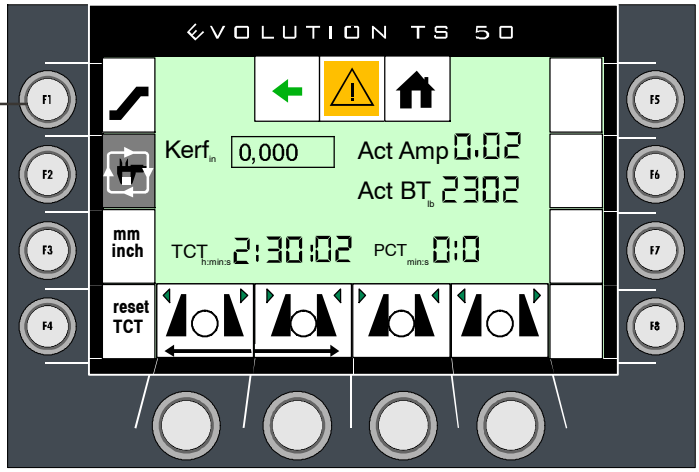
This device can be used to eliminate the chips from the chip collection drawer; for installation, proceed as follows:

- ▶ disconnect the machine from the power supply;
- ▶ extract and remove the chip collection drawer;



- ▶ fit the ejector in the place of the tray.
- ▶ connect the machine to the power supply again;
- ▶ insert the connection plug of the cutout proximity sensor in the already arranged socket;
- ▶ start the machine and select the operating mode on the control panel; from left to right in order: manual, inactive, automatic.

F1: Chip ejector



Accessories available on request

These optional extras must be fitted in the manufacturer's factory, inasmuch as they could be difficult for the user to mount by himself. A list of these parts is provided below:

- laser beam pointer and working lamp;
- vertical hydraulic vices for cutting bundles (230 x 230 mm or 9.05 x 9.05 in);
- System for the automatic backing of the feeding vice rear jaws.

Warranty

Hydmech Group warrants each new sawing machine to be free from failure resulting from defective material and workmanship under proper use and service for a period of two years following the date of shipment to the user. Hydmech's sole obligation under this warranty is limited to the repair or replacement without charge, at Hydmech's factory, warehouse, or approved repair shop, of any part or parts which Hydmech's inspection shall disclose to be defective. Return freight must be prepaid by the user.

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