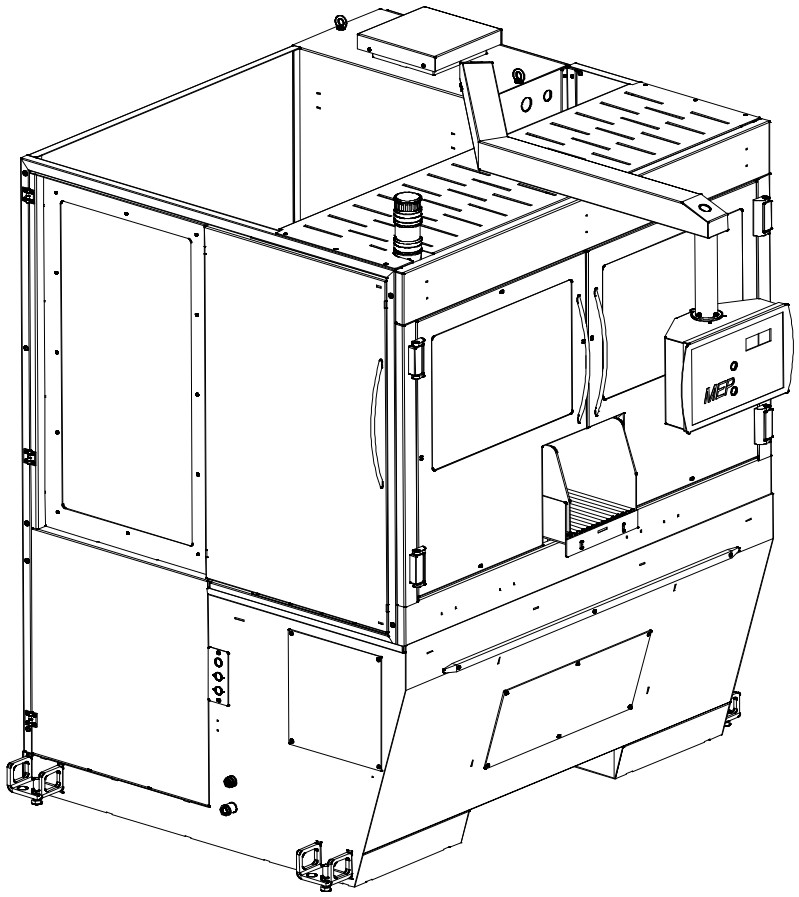


USE AND MAINTENANCE MANUAL

EN SHARK 230–1 NC HS 5.0

YEAR OF MANUFACTURE: _____

CE

EN

Translation of the original instructions

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

The manufacturer:

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

Hereby declares that the sawing machine:

Machine Type:	**SAWING MACHINE**
Machine model:	**SHARK 230–1 NC H[illegible].0**
Serial number:	
Year of manufacture:	

is in specification wit[illegible]e following di[illegible]s:

- **EEC MACHI[illegible]S DIREC[illegible]2/CE**
  - **EN 1609[illegible]17**
- **DIREC[illegible]VE 201[illegible]/UE [illegible]MC**
  - **EN [illegible]370–1:200[illegible]**
  - **[illegible]50370–2:2003 [illegible]**

Resp[illegible]nsible of a[illegible]chni[illegible]l File
(Walte[illegible]Di Gi[illegible]nn

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

M[illegible]aging D[illegible]ctor
(Wi[illegible]m Giac[illegible]netti)

Pergola, lì _____

FAC SIMILE

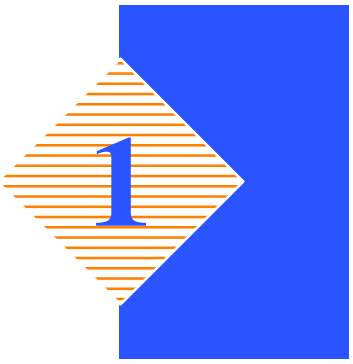
Introduction and technical specifications ..... **1—1**
Foreword ..... 1—1
Machine presentation ..... 1—2
Machine specification ..... 1—3
Rating plate ..... 1—3
Dimensions ..... 1—6
Functional parts ..... **2—1**
SHARK 230—1 NC HS 5.0 model ..... 2—1
Cutting head ..... 2—2
The cutting vice ..... 2—2
Control Panel ..... 2—3
Hydraulic Power Pack Unit ..... 2—4
Base ..... 2—5
Feeder ..... 2—6
Safety and accident prevention ..... **3—1**
Use of the machine ..... 3—1
General recommendations ..... 3—2
Recommendations to the operator ..... 3—3
Machine safety devices ..... 3—6
Reference standards ..... 3—6
Protection against accidental contact with the blade ..... 3—6
Electrical equipment ..... 3—7
Emergency devices ..... 3—8
Noise level of the machine ..... 3—9
Noise level measurement ..... 3—9
Noise level values ..... 3—9
Vibration emission ..... 3—10
Electromagnetic compatibility ..... 3—10
Machine installation ..... **4—1**
Packaging and storage ..... 4—1
Anchoring the machine ..... 4—4
Minimum requirements ..... 4—4
Check list ..... 4—5
Connection to the power supply ..... 4—6
Description of machine operation ..... **5—1**
Description of the control panel ..... 5—1
Key for control console keyboard ..... 5—2
Symbol key ..... 5—3
Basic instructions for carrying out a cutting operation cycle ..... 5—5
Blade tension ..... 5—5
Moving the cutting head up and down ..... 5—6
Manoeuvring the feeder ..... 5—6
Clamping the work piece in the vice ..... 5—8
Width of cut ..... 5—9
Cutting cycles ..... 5—10
UTILITY STEP ..... 5—10

Preliminary check list for cutting operation 5–11
Starting up the machine 5–12
Semi–automatic operating cycle 5–16
Automatic mode single job 5–23
Automatic operating cycle with single cycle 5–30
Automatic operating cycle with continuous cycle 5–38
Diagrams, exploded views and replace–ment parts 6–1
APSL3 drive for step motors 6–1
MEANING OF THE PARAMETERS IN THE TABLE 6–2
SCHEMATIC CONFIGURATION OF INPUTS / OUTPUTS 6–5
LAYOUT OF APSL3 DRIVE COMPONENTS 6–6
How to read the wiring diagrams 6–7
D2–Letter codes used to designate the type of component 6–9
Standardised Wiring Diagrams 6–12
MEP50 central unit 6–67
Exploded views 6–68
Drive pulley section bow unit 6–68
Idle pulley section bow unit 6–70
Head unit 6–72
Cradle unit 6–74
Vice assembly 6–76
Protection unit 6–78
Base assembly 6–80
Feeder shuttle unit 6–82
Feeder roller conveyor group 6–84
Control unit group 6–86
Control panel unit 6–88
Motor–driven auger chip ejector (optional) 6–90
Double Vice assembly (optional) 6–92
Retractable vice (optional) 6–94
Control unit group (optional) 6–96
Adjustments 7–1
Displaying and editing the set–up parameters 7–1
Parameter List 7–3
Analog device setting 7–10
Potentiometer setting 7–10
Encoder setting 7–10
Control memory management 7–11
Machine type selection 7–11
Machine working pressures 7–12
Hydraulic pressure 7–12
Cutting head 7–14
Blade tensioner slide play adjustment 7–14
Adjusting operating head travel 7–14
Blade guide parts 7–15

Blade guide heads 7–15
Blade steady buttons 7–15
Blade guide plates 7–15
Blade 7–17
Tool change 7–17
Blade perpendicularity 7–18
Rotation axis control 7–20
Feeder 7–20
Maintenance and choice of consumables 8–1
The role of the operator 8–1
Maintenance requirements 8–2
General maintenance 8–2
Daily 8–2
Weekly 8–2
Monthly 8–3
Maintenance of working parts 8–3
Hydraulic powerpack 8–3
Consumable materials 8–3
Oil for transmission box 8–4
Oils for hydraulic circuit 8–4
Oil for lubricant/coolant fluid 8–4
Oils for spray mist system (optional) 8–4
Cutting speed and choice of tools 9–1
Cutting speed 9–1
Standard machine 9–1
Choice of blade 9–2
Saw tooth pitch 9–2
Cutting speed and downstroke speed 9–3
Types of swarf: 9–3
Lubricant/coolant fluid 9–4
Blade structure 9–4
Blade types 9–5
Conventional rake 9–5
Positive rake 9–5
Variable pitch 9–5
Variable pitch blades with 0° cutting angle 9–6
Variable pitch with positive rake (from 9 to 10 degrees) 9–6
Set: 9–6
Standard or splayed set 9–6
Undulated set 9–7
Alternating grouped sets 9–7
Alternating set 9–7
Blade selection table relating to cutting speed and downstroke speed 9–8
Classification of steels 9–9
Classification of steels 9–10
Troubleshooting 10–1

Troubleshooting blade and cutting problems 10–1
Troubleshooting 10–8
Displaying the diagnostics menu 10–8
Digital Output 10–11
Analog Input 10–12
Analog Output 10–13
Troubleshooting 10–13
User setup 10–14
Encoder 10–17
Browser 10–17
Machine alarms and warning messages 10–18
Alarms 10–18
Warning messages 10–22
Optional 11–1
Optional 11–1
Blade 11–1
Roller table 11–1
Can of emulsible oil 11–1
Minimal lubrication system 11–1
Motor–driven auger chip ejector 11–2
Accessories available on request 11–3
Software setting for the options 11–3

Introduction and technical specifications



Foreword

MEP S.p.A.,in response to modern production techniques, has developed the new **SHARK 230–1 NC HS 5.0**.

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 **SHARK 230–1 NC HS 5.0** 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.

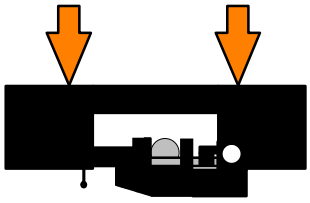
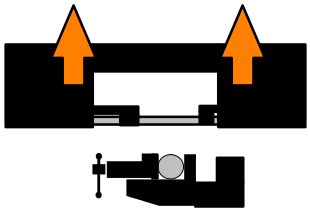
Its high cutting capacity make this model the ideal solution for satisfying the wide strange of cutting needs of machine shops, turneries, structural steel shops and engineering workshops.

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.

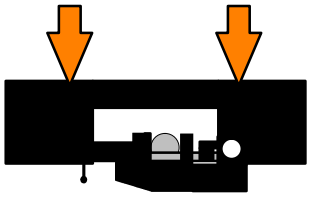
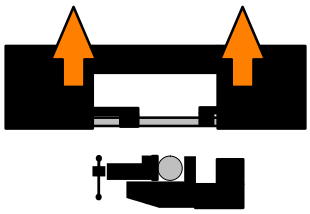
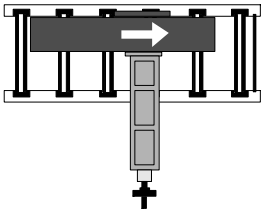
Warning This band saw has been exclusively designed to cut metals.

Machine presentation

The **SHARK 230–1 NC HS 5.0** 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 positions the vice 2÷3 mm from the workpiece 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
			

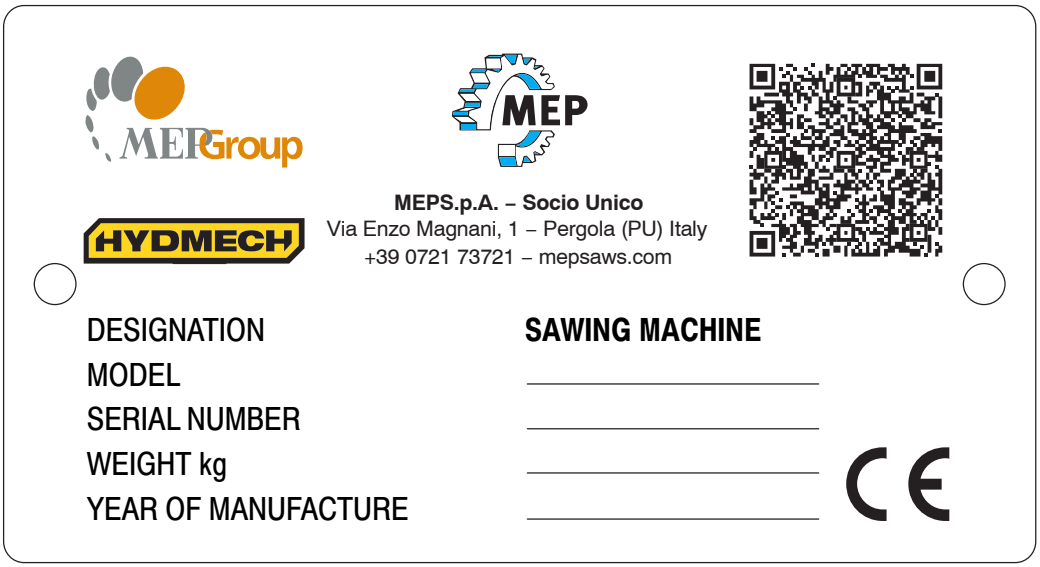
In **Automatic** mode, after setting the head cutting stroke on the control panel, the operator positions the vice 2÷3 mm from the workpiece and presses the start button on the control panel to start up the band saw; cont'd:

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	m/min	15÷100

BAND SAW		
Rated size	mm	2950 x 27 x 0,9
Max/min blade length	mm	2950±15
Blade height	mm	27
Blade width	mm	0,9
Band saw tension	bar/kg	70 / 900

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	2,2
Lubricant/coolant fluid electric pump motor	kW	0,18
Hydraulic unit motors	kW	0,75
Servo–valve and feeder stepper motor	kW	0,65
Blade brush and swarf remover motor (optional)	kW	0,05

ABSORBED ELECTRIC POWER		
Cooling fan motor	kW	0,04x2
Max. absorbed electric power	kW	3,91

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

Nr. poles	Voltage (Volts)	Absorption (Amps.).	Power (Kw)	rpm
4	230/400	3,34/1,93	0,75/0,9	1380/1650
Protection rating IP 55.				
Conforming to CEI−EN 60034−1:2011				

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

VICE		
Vice max. opening	mm	235

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

No.of poles	Current (Volts)	Absorption (Amps)	Power (Kw)	rpm
4	230/400	8/4,4	1,5	1415
Stator wound with enamelled copper wire, class H 200°C.				
Class F insulation (limit temperature TL 155°C).				
Protection rating IP 55.				
Conforming to CEI−EN 60034−1:2011				

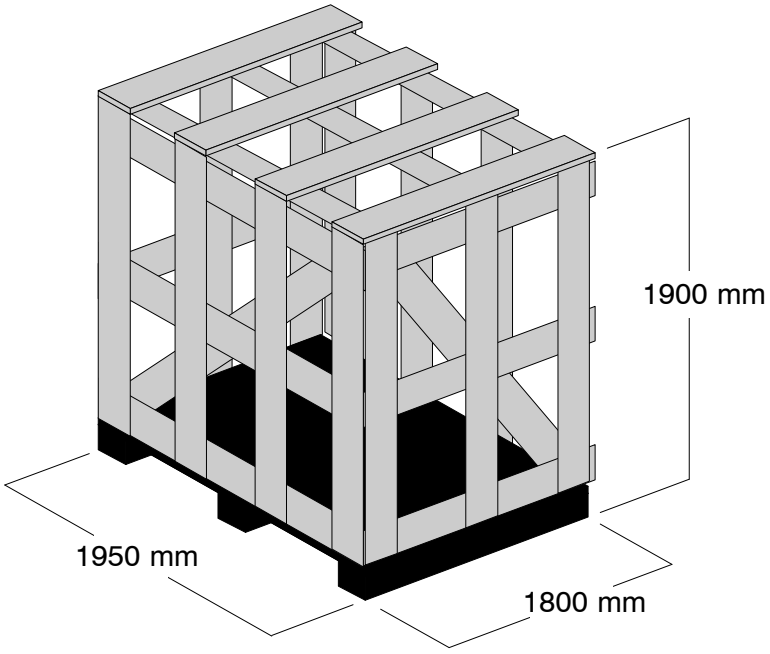
N.B. Example of class F insulation: in air−cooled machines at an ambient temperature of 40° C, the allowable overtemperature is 100° C (where 100¿C represents the allowable DT).

ELECTROPUMP MOTOR
Three−phase; Frequency 50 Hz.

Voltage (Volts)	Absorption (Amps)	Power (Kw)	rpm	Delivery rate lt/min	Head (mt.)
230	0,74	0,15	2800	60	4
400	0,43	0,15	2800	60	4
Protection rating IP 54.					
Conforming to CEI−EN 60034−1:2011					

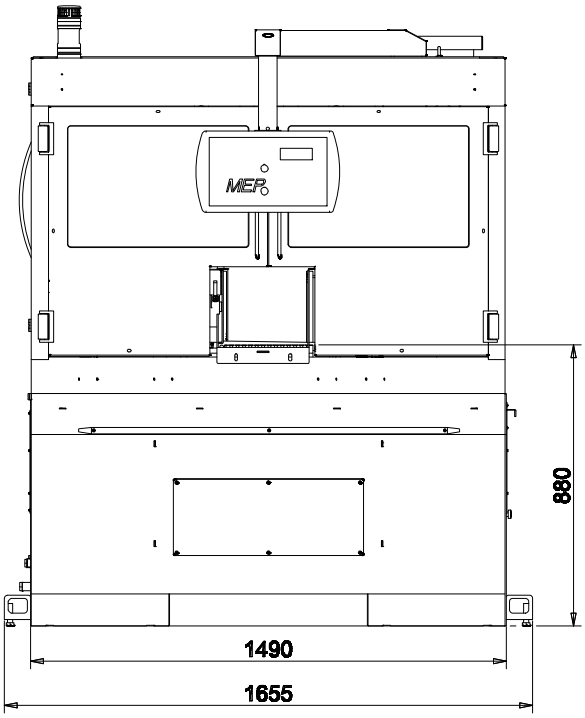
CUTTING CAPACITY		
Section	●	■
0°	230	230

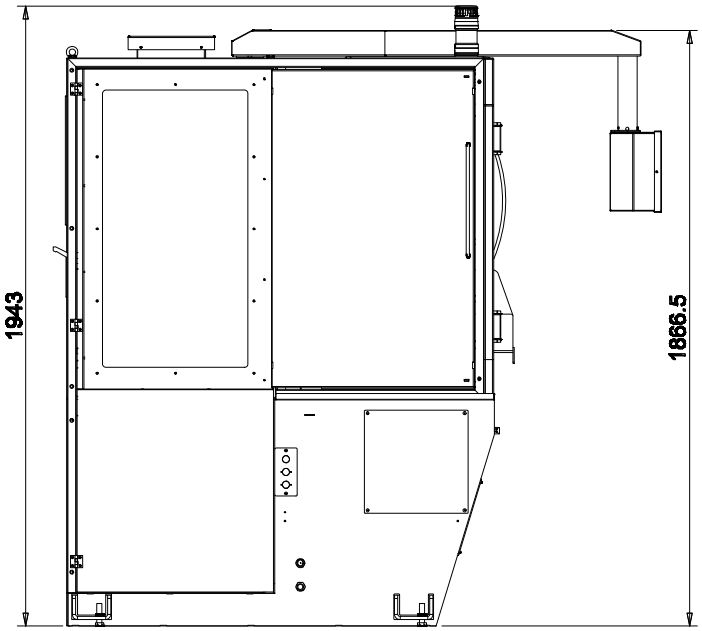
PACKED WEIGHT		
Wooden cage and pallet	kg	150
Wooden pallet	kg	70

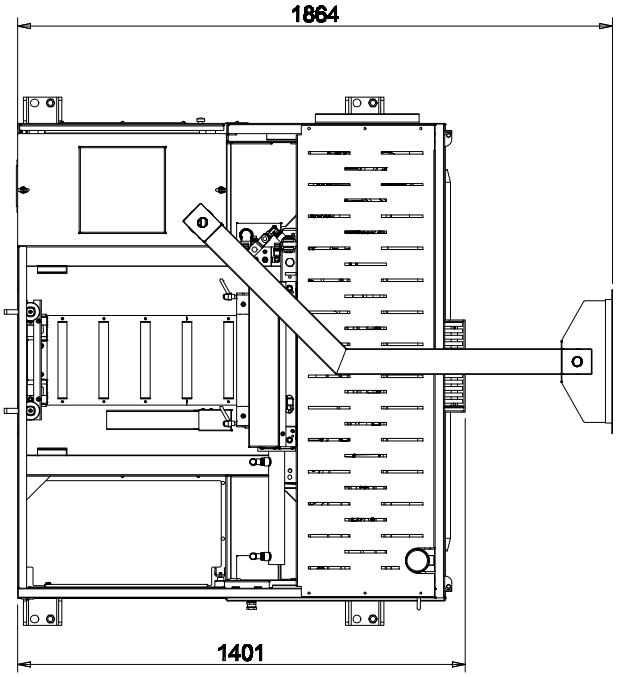


Dimensions

MACHINE INSTALLED		
Work table height	mm	870
Weight	kg	1000





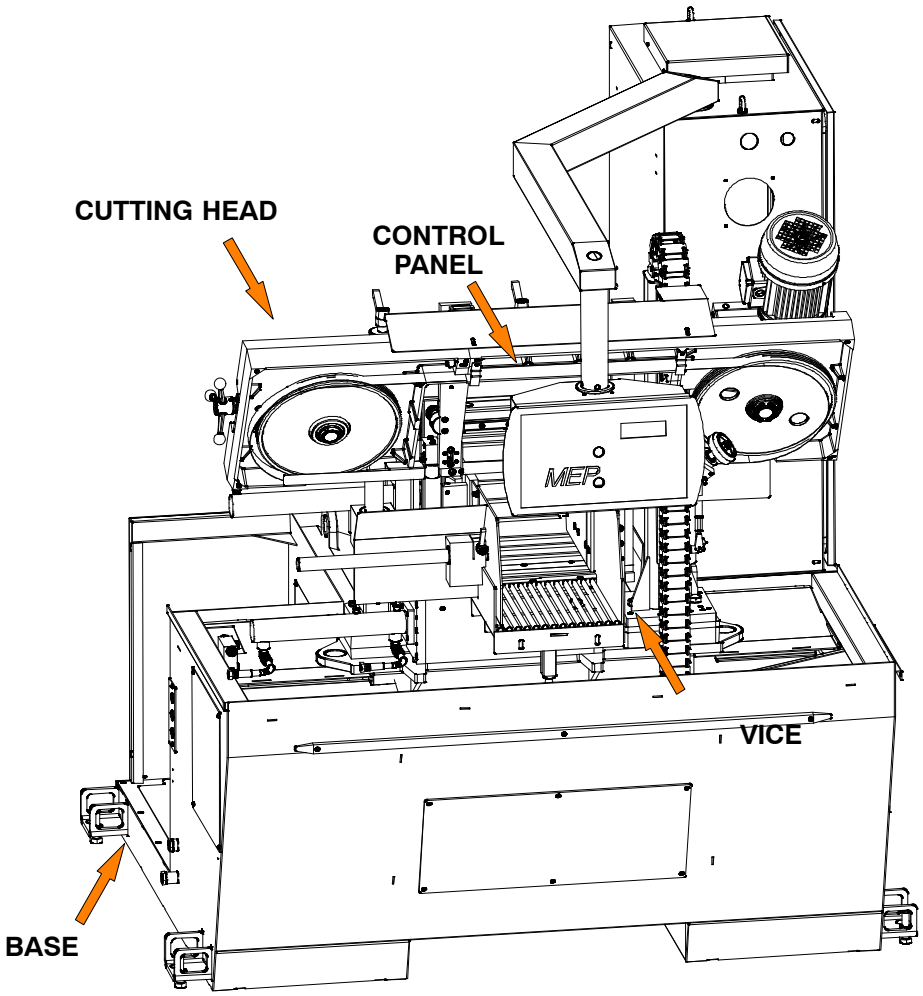


Functional parts

2

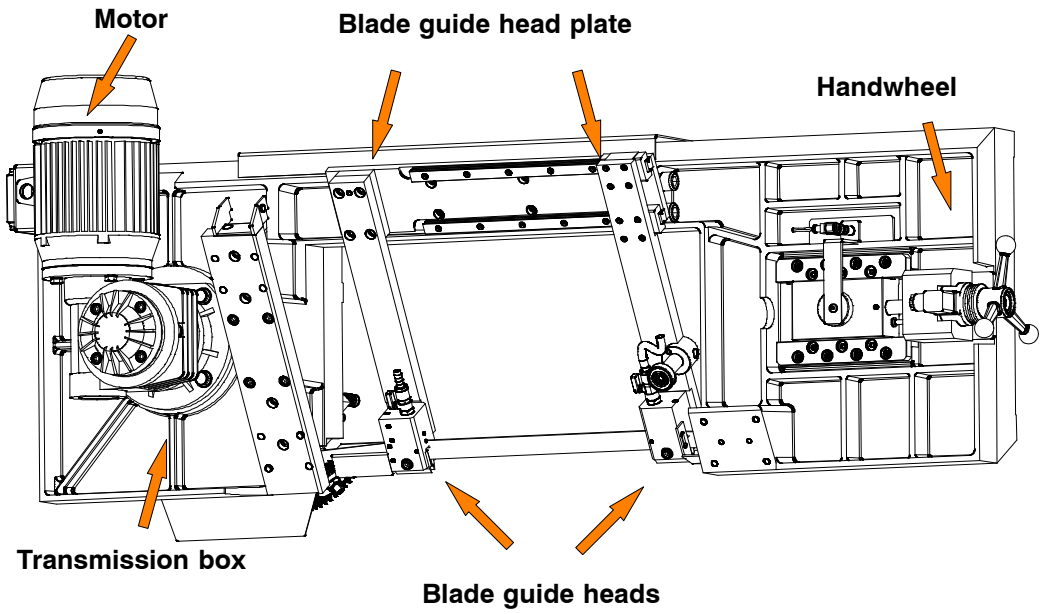
SHARK 230–1 NC HS 5.0 model

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.



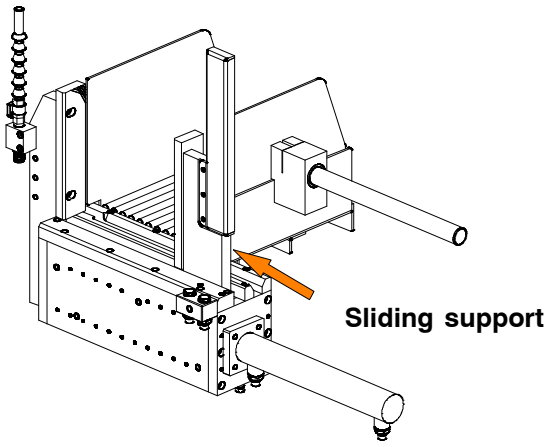
Cutting head

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.



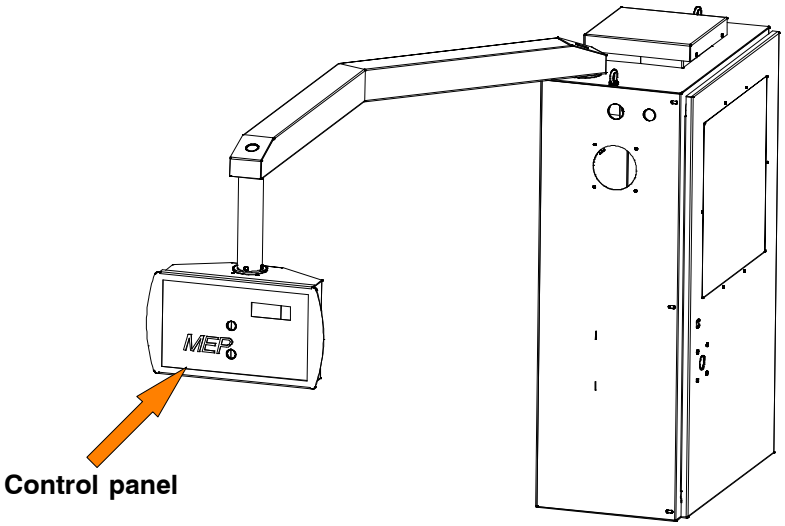
The cutting vice

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.



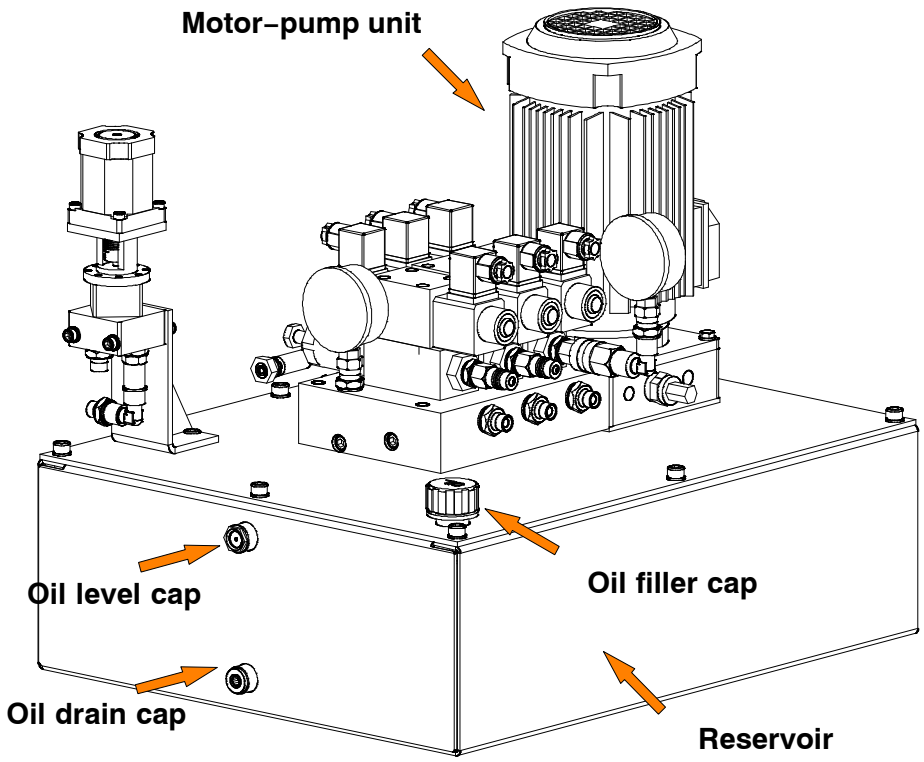
Control Panel

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.



Hydraulic Power Pack Unit

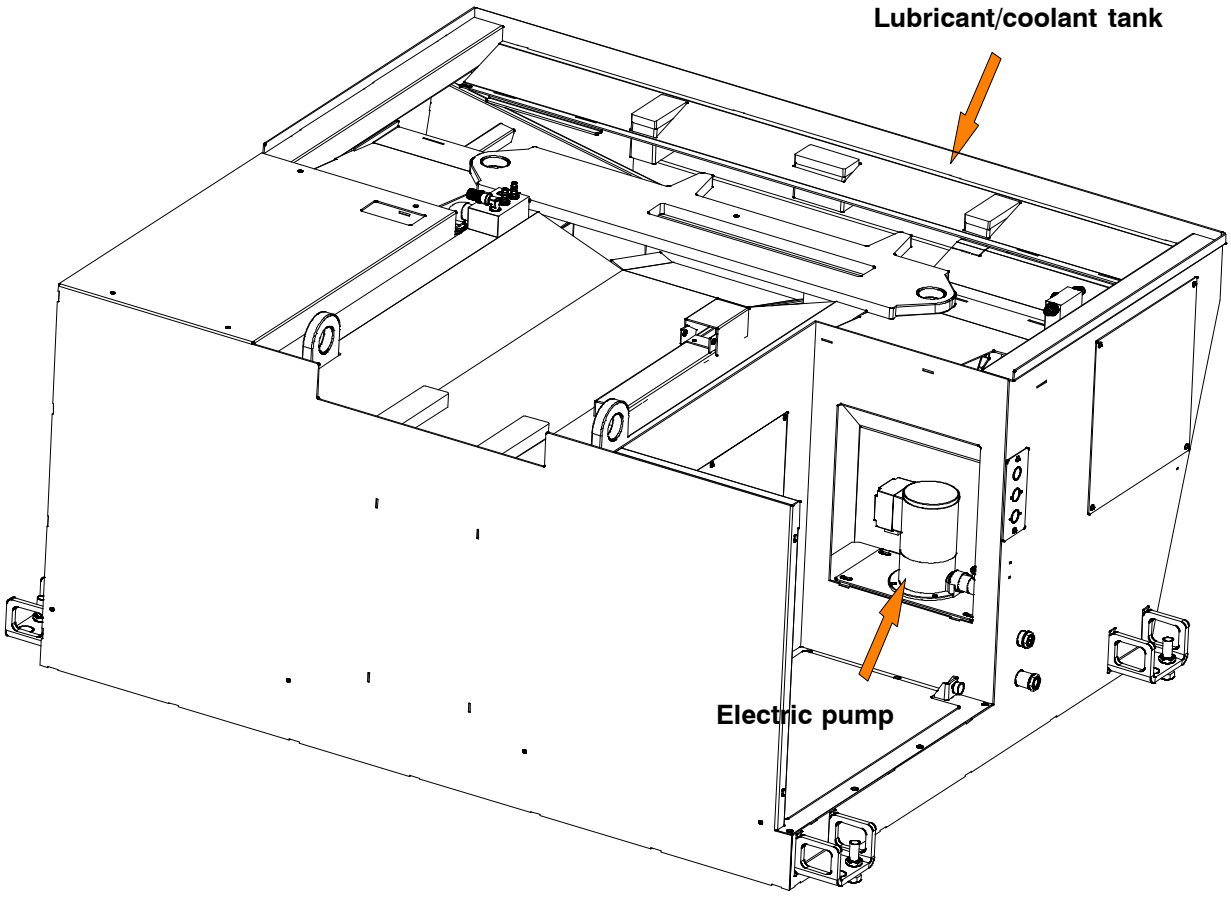
The hydraulic power pack activate the blade tension cylinder, the head cylinder, the cutting vice and the feed vice. It is situated on the back of the machine under the metal guard. An electro–valve piloted by the machine controller ensures exchange of oil in the circuits.



Base

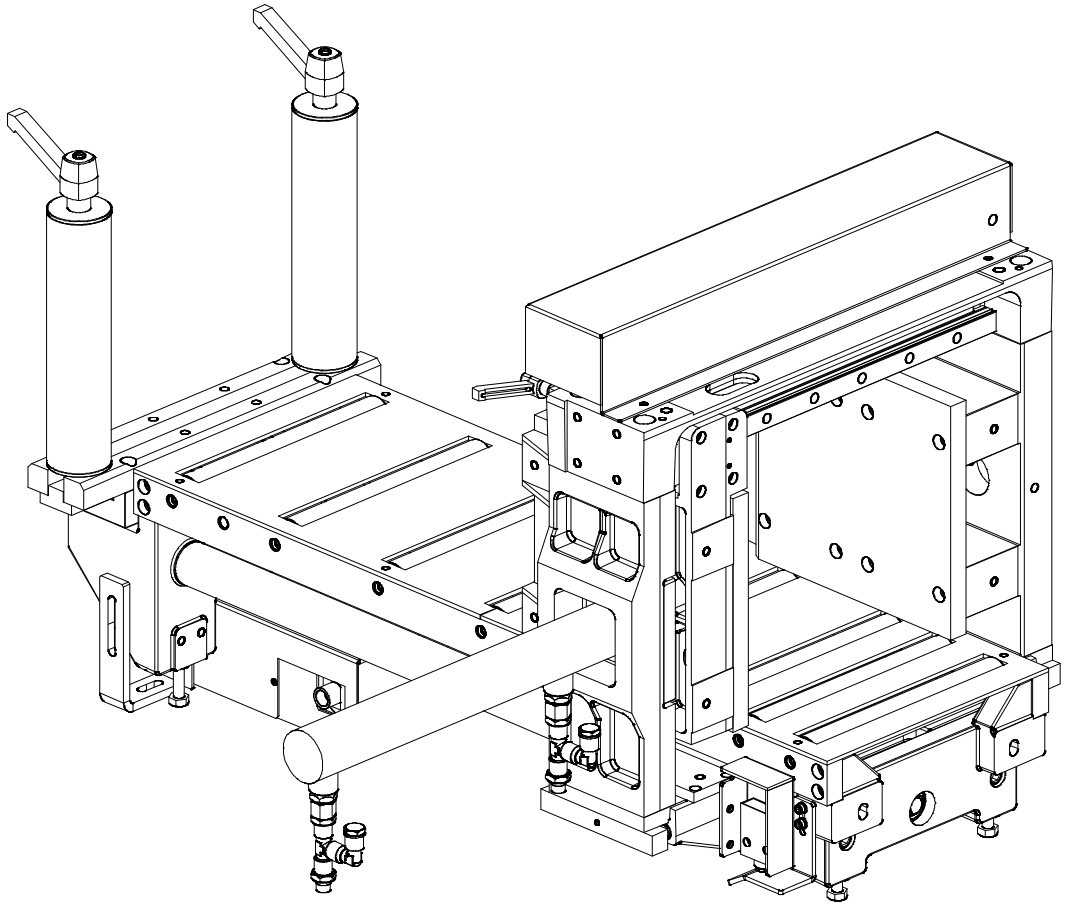
This unit features a large coolant collection surface which conveys the coolant to the rear tank via the tank cover, and a swarf collection drawer.
The electric pump seated inside the tray sucks the clean liquid from the progressive filter system and makes it circulate again to ensure an efficient flowing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

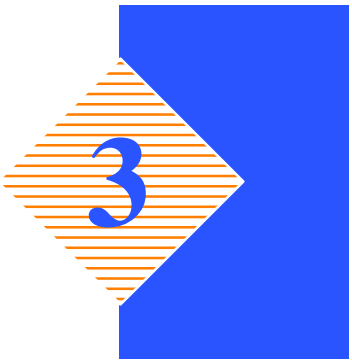


Feeder

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 **SHARK 230–1 NC HS 5.0** 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 **SHARK 230–1 NC HS 5.0** 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 **MACHINES DIRECTIVE 2006/42/CE**

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

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

General recommendations

LIGHTING

Insufficient lighting for the types of operation envisaged could constitute a safety hazard for the persons concerned. For this reason, the machine user must provide lighting in the working area sufficient to eliminate all shadowy areas while also avoiding any blinding light concentrations. (Reference standard EN 12464−1 :2011“Lighting in work environments”).

CONNECTIONS

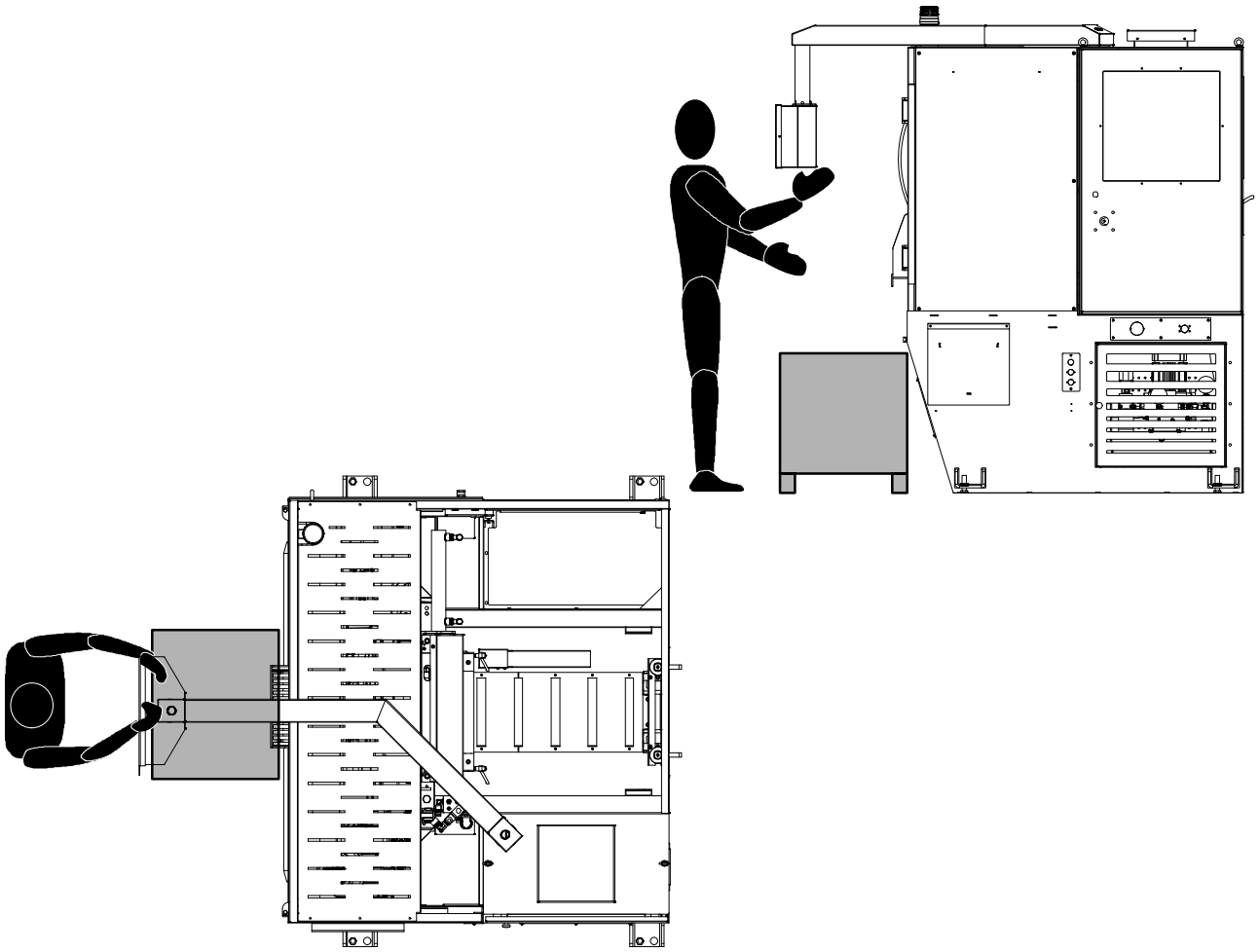
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the “Machine Specification” tables; replace if necessary.

EARTHING

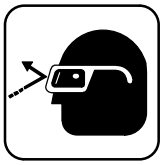
The installation of the earthing system must comply with the requirements set out in EN 60204−1:2006/AC:2010.

OPERATOR POSITION

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



Recommendations to the operator



Always wear proper goggles or protective glasses.



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



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



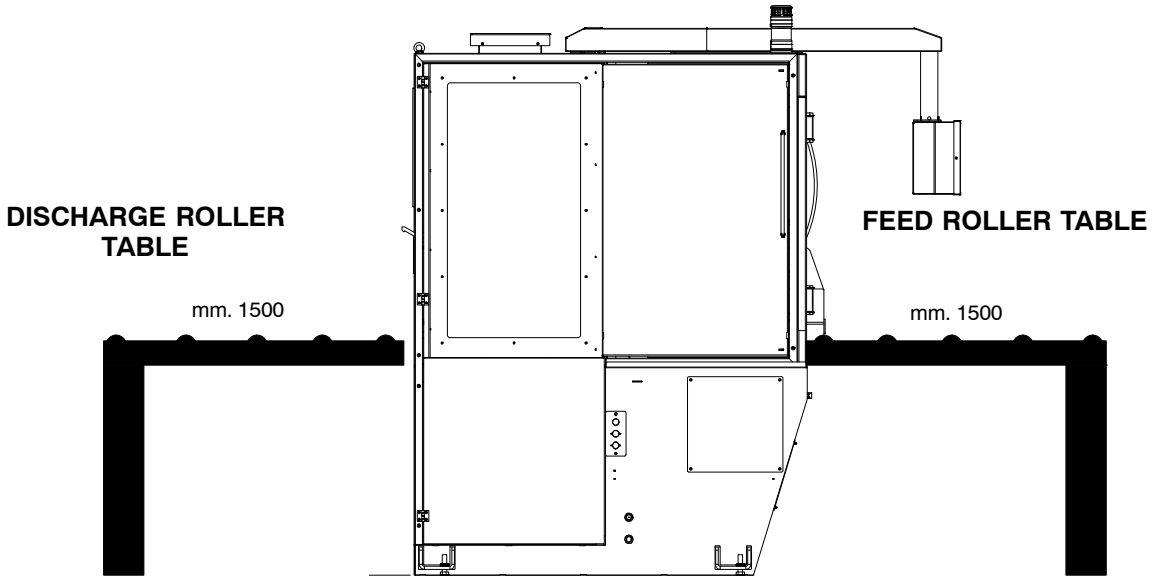
Do not wear oversize clothing with long sleeves, oversize gloves, bracelets, necklaces or any other object that may become entangled in the machine during working; long hair must be tied back and bunched.

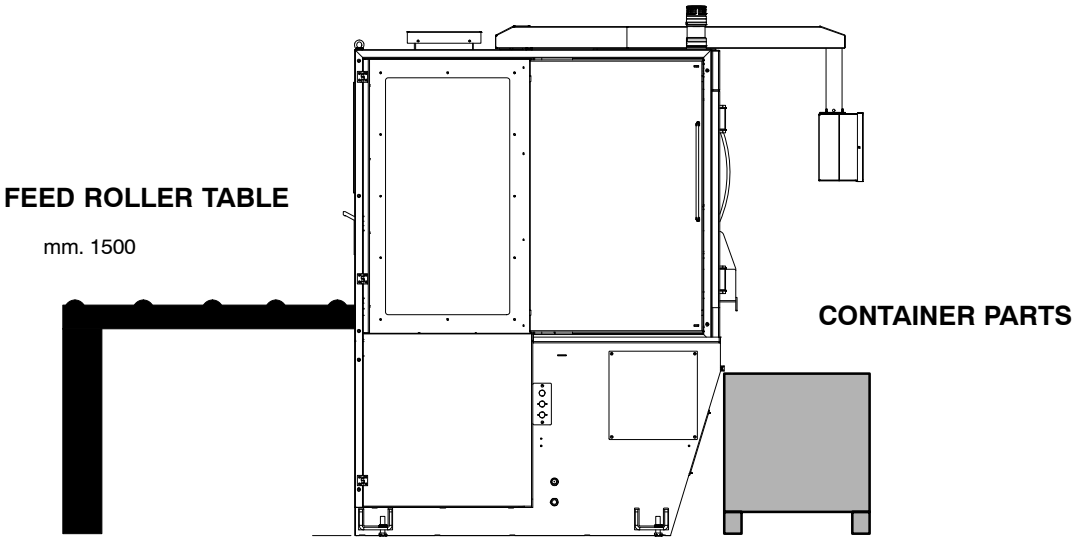


Always disconnect the power supply to the machine before carrying out any maintenance work whatsoever, including in the case of abnormal operation of the machine.



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







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



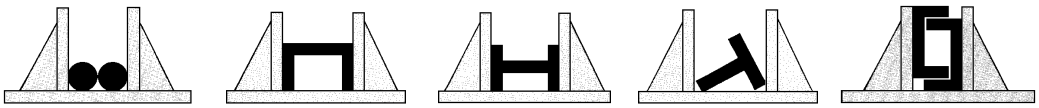
The operator must not perform any risky operations or operations not required for the machining operation under way (e.g. remove swarf or metal shavings from the machine while cutting).



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 MEP 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 **SHARK 230–1 NC HS 5.0** band saw.

Reference standards

MACHINE SAFETY

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

HEALTH AND SAFETY AT WORK

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

PERSONAL PROTECTION

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

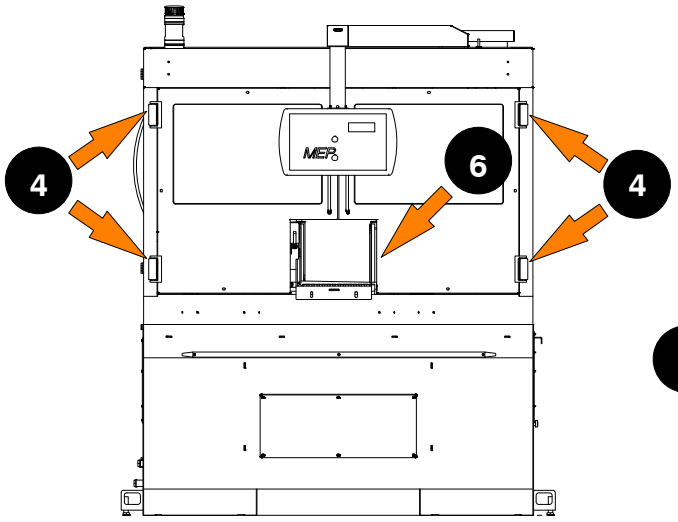
ENVIRONMENTAL PROTECTION

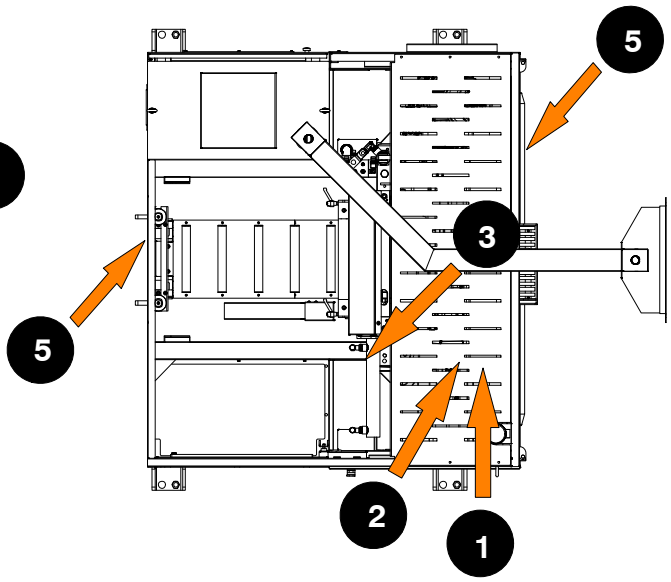
- Directive 2006/12/CE on waste disposal;
- Directive 2008/98/CE on the disposal of used oil.
- Directive 2015/863/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS III).

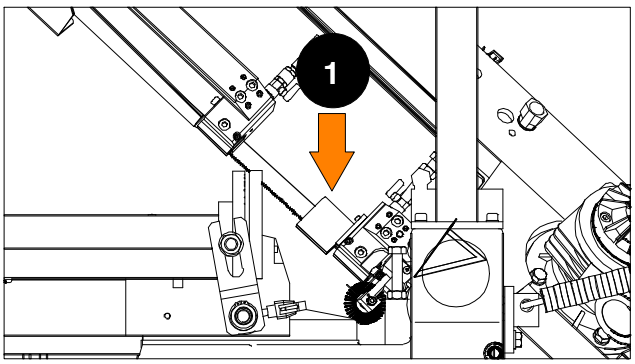
Protection against accidental contact with the blade

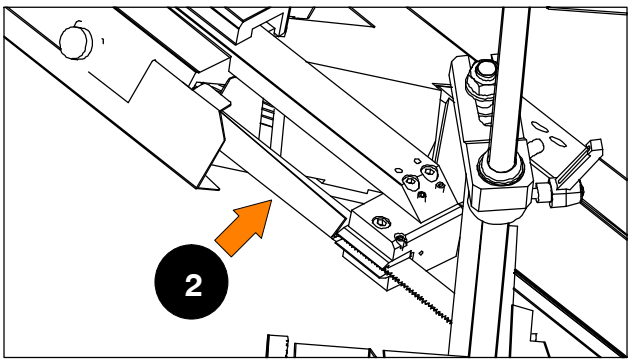
1. Metal guard screwed to the rear blade guide head;
2. metal guard screwed to the front blade guide head;
3. front head sliding support: when the head is at maximum aperture, the support ensures that the blade is covered, leaving free only the part of the blade engaged in the actual cutting, in accordance with Presidential Decree EN 16093:2017;
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.

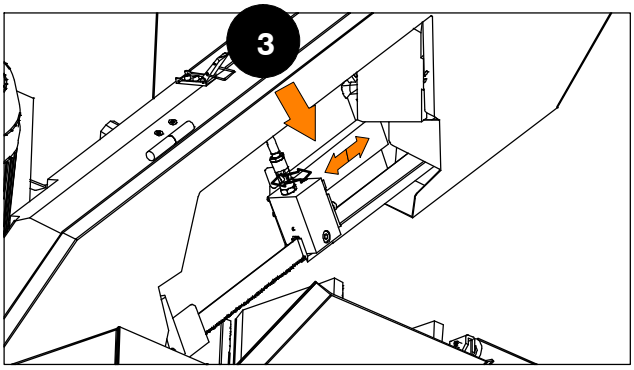
6. the cutting vice is started up by hydraulic devices, and the blocking of the piece occurs through a control panel key;

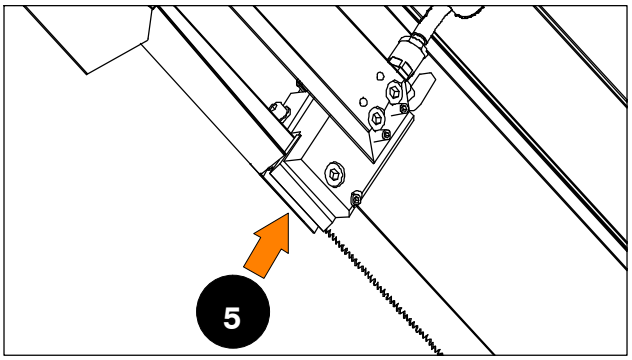












Electrical equipment

In accordance with Italian standard EN 60204−1:2006/AC: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.

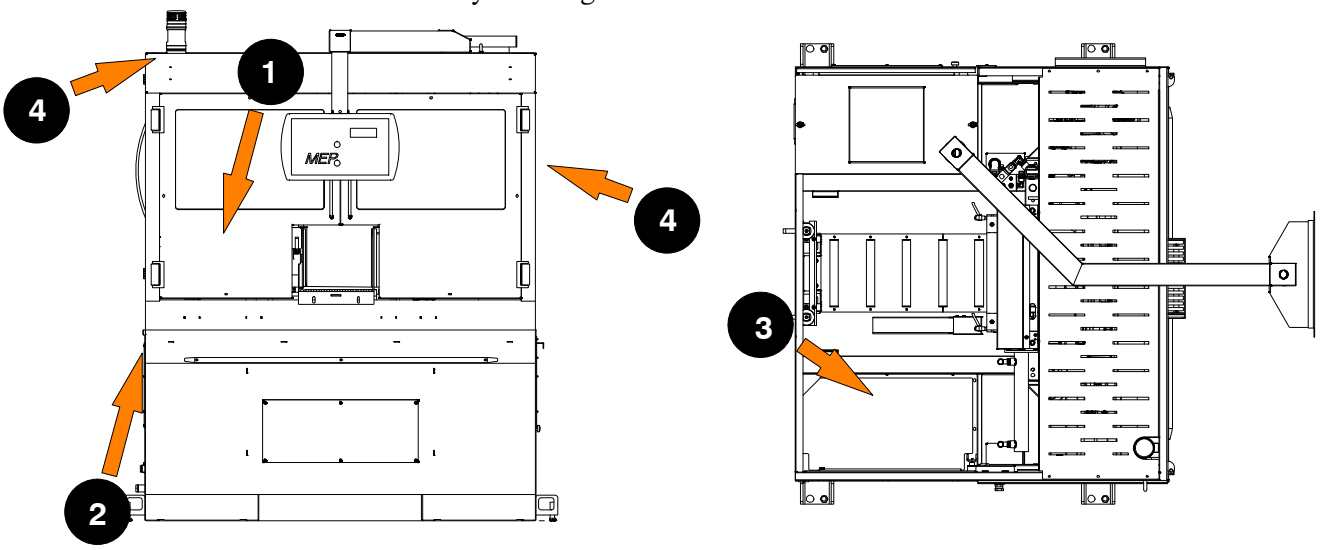
Emergency devices

In accordance with Italian standard EN 60204−1:2006/AC:2010.

- **Chapter 5 Section 6 Sub−section 1 ”Emergency stop device”**: «the emergency stop device immediately stops all the dangerous and other functions of the machine»;
- **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 SHARK 230−1 NC HS 5.0:

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**MACHINES DIRECTIVE 2006/42/CE** , we are listing the standards that specify noise levels for machine tools.
The following paragraph explains the modes and the detected sound power and pressure values released by the sawing machine.
These values comply with norm EN 16093:2017, EN ISO 12100:2010 and EN ISO 4871:2009,concerning the rules for drawing and presenting a procedure for noise tests and the declaration and check of sound emission values by machines and equipment.

Noise level measurement

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

Noise level values

Identification	
Machine type	Band saw for metal applications
Model	**SHARK 230−1 NC HS 5.0**
Reference standard	EN ISO 3746:2010

Results		
Test 1st	**Description**	C 40 steel cut − pipe 50x82 mm Bimetal band 2950 x 27 x 0,9 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 Bimetal band 2950 x 27 x 0,9 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 Bimetal band 2950 x 27 x 0,9 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 EN 1299:1997 + A1:2008 and EN ISO 20643:2008/A1:2012, as the machine vibration emission on the devices controlled by the operator does not exceed the threshold of 2.5 m/s^2

Electromagnetic compatibility

As from 1 January 1996 all electrical and electronic appliances bearing the CE marking that are sold on the European market must conform to Directive 2014/30/UE e 2014/35/UE and **MACHINES DIRECTIVE 2006/42/CE**. The prescriptions regard two specific aspects in particular:

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

The following text contains a list of the applied standards and the results of the electromagnetic compatibility testing of machine model **SHARK 230–1 NC HS 5.0**.

Emissions

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

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

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

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

Immunity

- IEC 61000−6−2:2005 + AC:2005 Electromagnetic Compatibility (EMC) – Generic standard on immunity. Part 6–2: Industrial Environment.
- EN 61000−4−2 + A1 (1996−1999) Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 2: Electrostatic discharge immunity tests – Basic publication.
- IEC 61000−4−3:2006 + AMD1:2007 + AMD2:2010 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 3: Radiated, radio−frequency, electromagnetic field immunity test.
- IEC 61000−4−4:2012 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 4: Fast transients/bursts immunity tests – Basic publication.
- IEC 61000−4−5:2014 + AMD:2017 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 5: Surge immunity test.
- IEC 61000−4−6:2013 Electromagnetic Compatibility (EMC) – Part 4: Test and measurement techniques – Section 6: Immunity to conducted interference, induced by radio frequency fields.
- 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

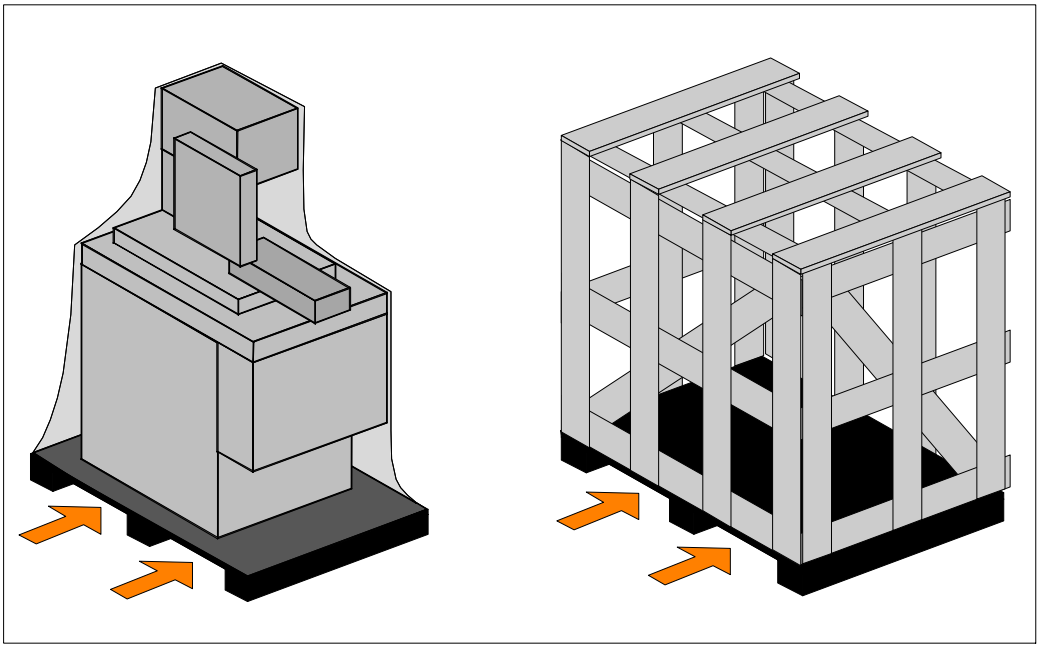
Machine installation

4

Packaging and storage

MEP S.p.A. use packing materials that guarantee the integrity and protection of the machine during its transport to the customer.

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

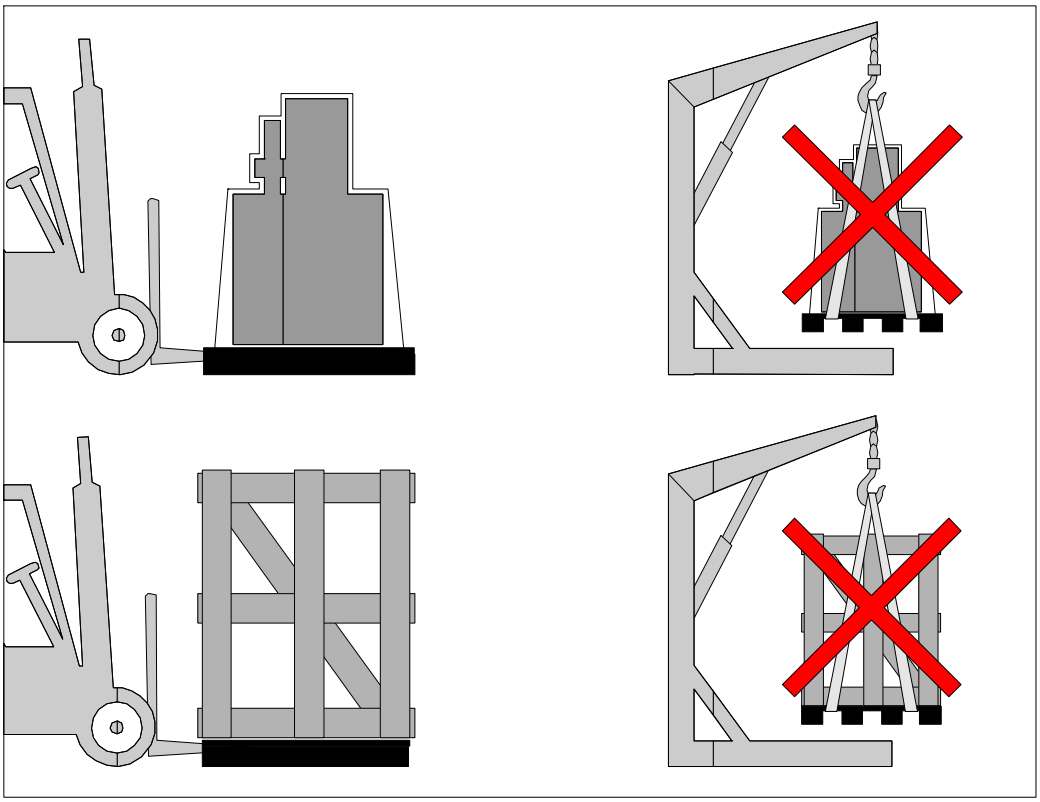


1. on a pallet with straps and heat−shrink plastic;
2. on a pallet with straps, heat−shrink plastic and a wooden crate.

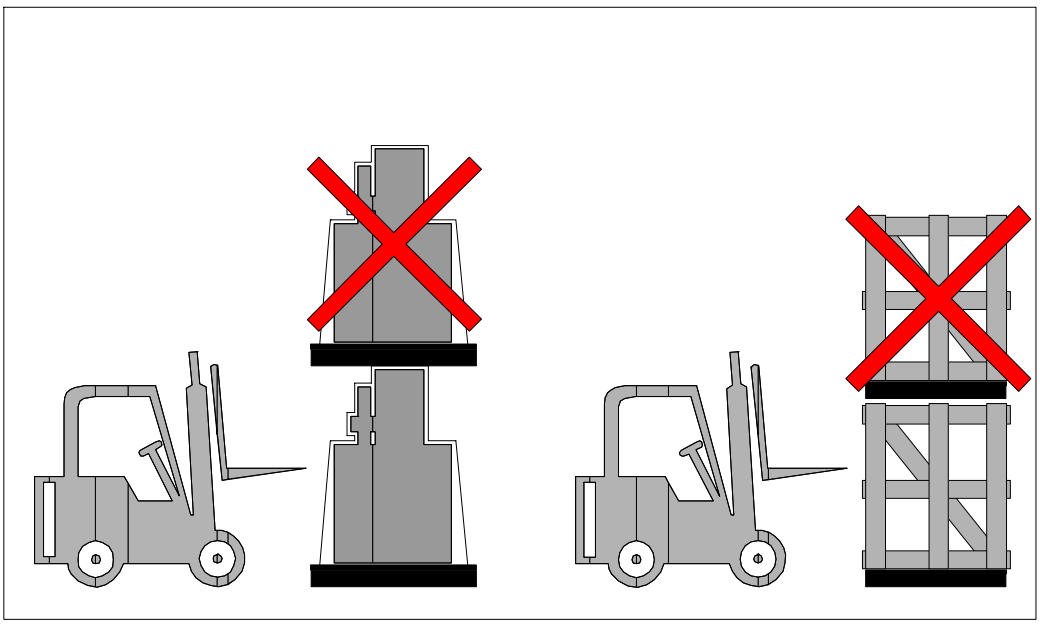
Warning In both cases, for correct balancing the machine must be handled using a fork−lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

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

Attention Do not handle the packed machine using slings.

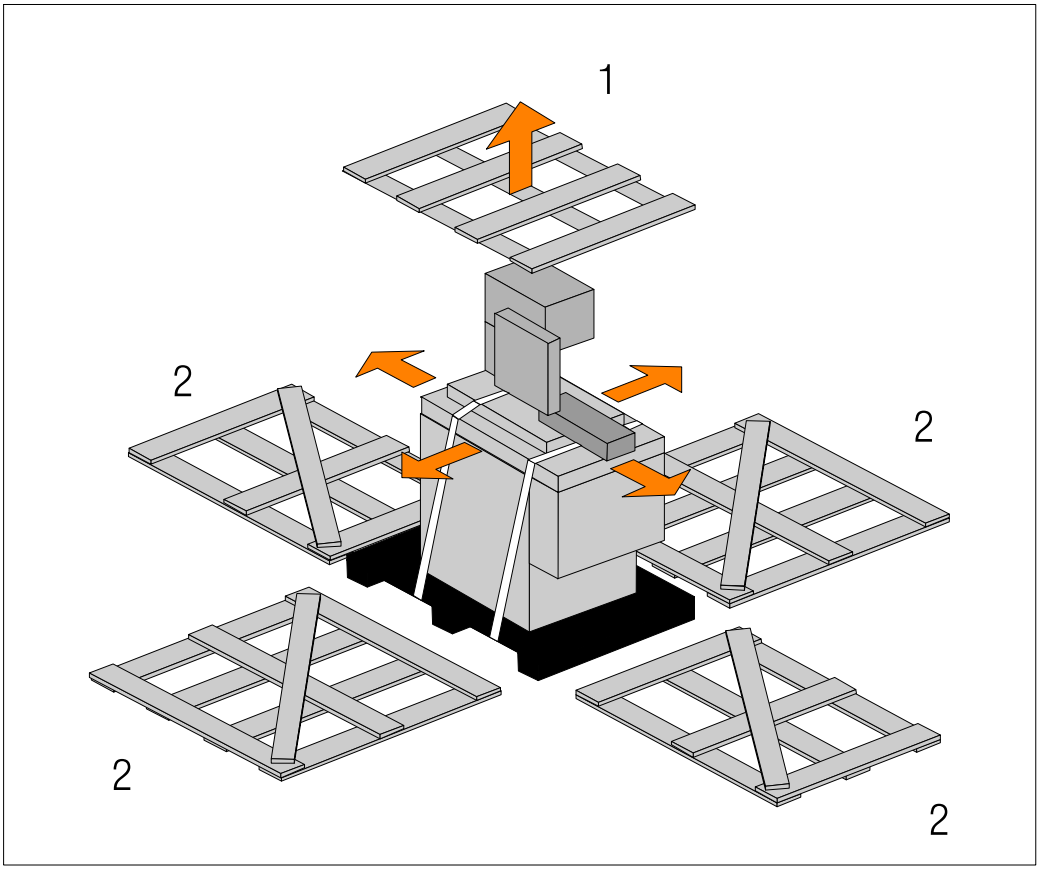


Attention When storing, machines palletized and shrink–wrapped must not be stacked two high, and machines pallettized and crated must not be stacked two high.

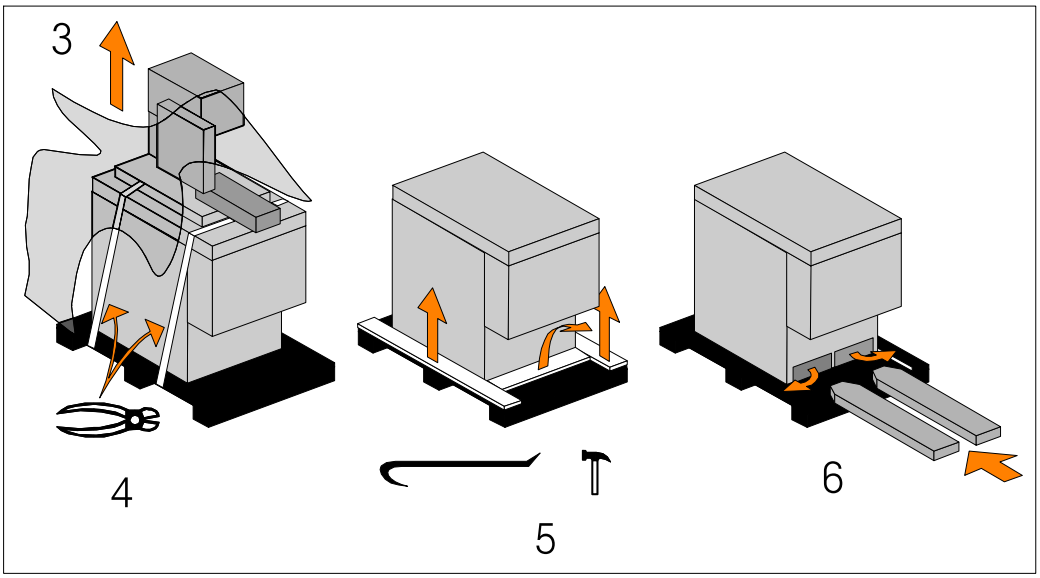


To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

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



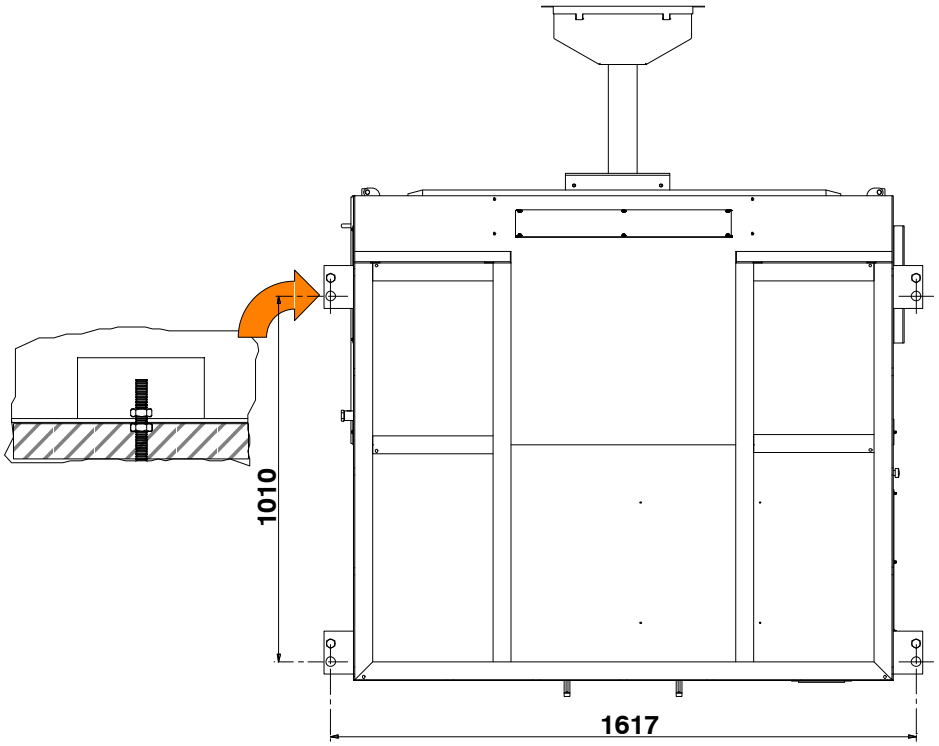
3. remove heat−shrink covering;
4. remove the straps;
5. remove nails from pallet securing planks and remove planks;
6. remove the front panel and insert fork tines.



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 **SHARK 230–1 NC HS 5.0** 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)	✓	
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	✓	
2950 x 27 x 0,9 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	✓	
Hydraulic power unit of the latest generation with high efficiency and low energy consumption	✓	
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	✓	
K110 roller table on supply side – kit 1500 mm		✓
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		✓
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)*		✓
Pair of vertical rollers for aligning the fed bar	✓	
Piece–unloading adjustable guide	✓	
Min. lubrication system		✓

***ACCESSORIES AVAILABLE ON REQUEST**

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

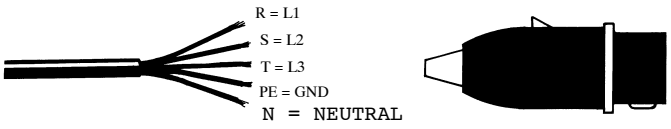
- 4 and 10 mm Allen keys;
- pipe wrench 10 mm;
- manual pump for topping up the oil in the pneumatic cylinder;
- Use and Maintenance manual, including order form for parts in relevant user language.

Connection to the power supply

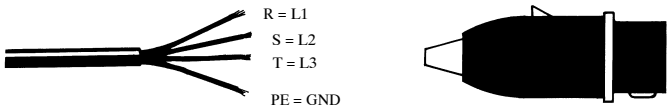
Before connecting the machine to the power supply, check that the socket is not connected in series with other machines. This requirement is fundamental for the good operation of the machine. To connect the machine to the power supply, proceed as follows:

▶ 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

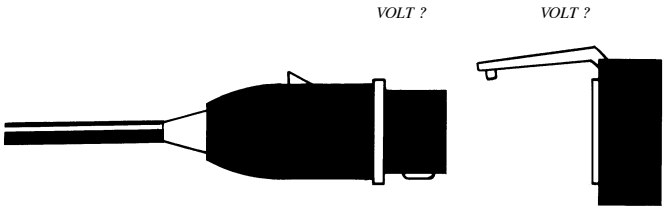


CONNECTION FOR **"4−CORE"** WIRE SYSTEMS WITH NEUTRAL

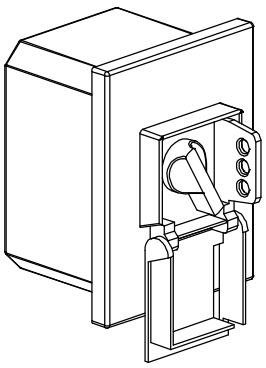


Attention When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase−neutral.**

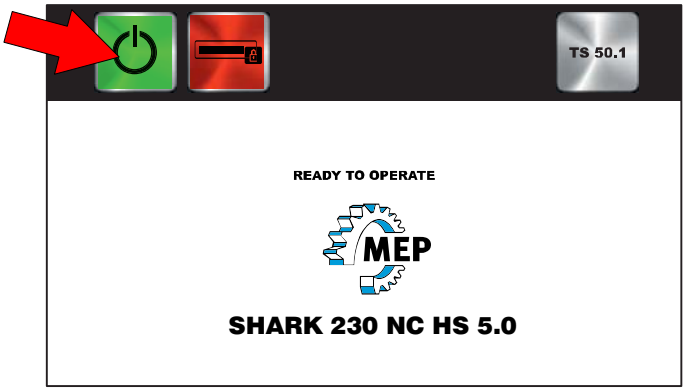
▶ Insert the plug in the socket, ensuring that the mains voltage is the same as that for which the machine has been setup.



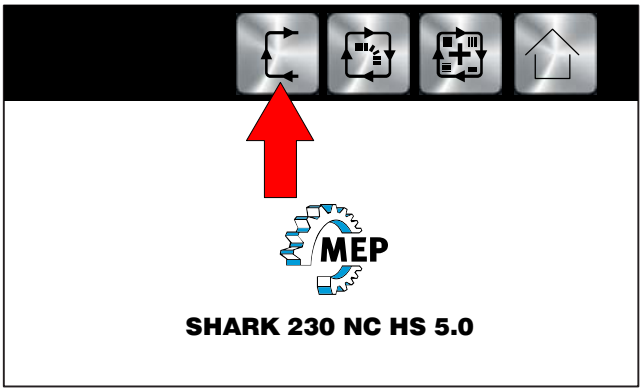
▶ Power the machine, rotating the main switch (the control console lights up)



▶ press the ON button on the control console;



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



▶ 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.

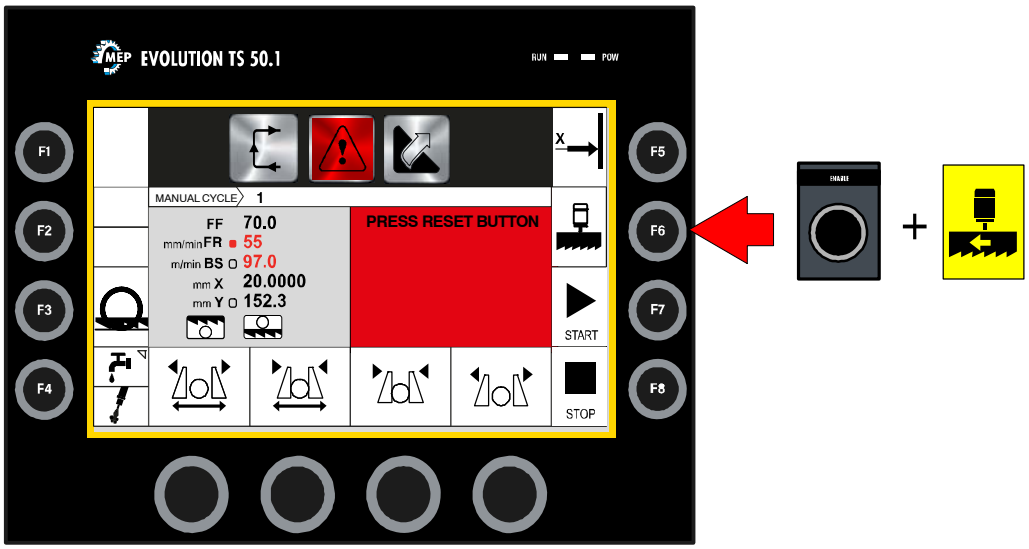
N.B. The machine will not start if the tension of the saw band is not between 600–900 Kg.

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

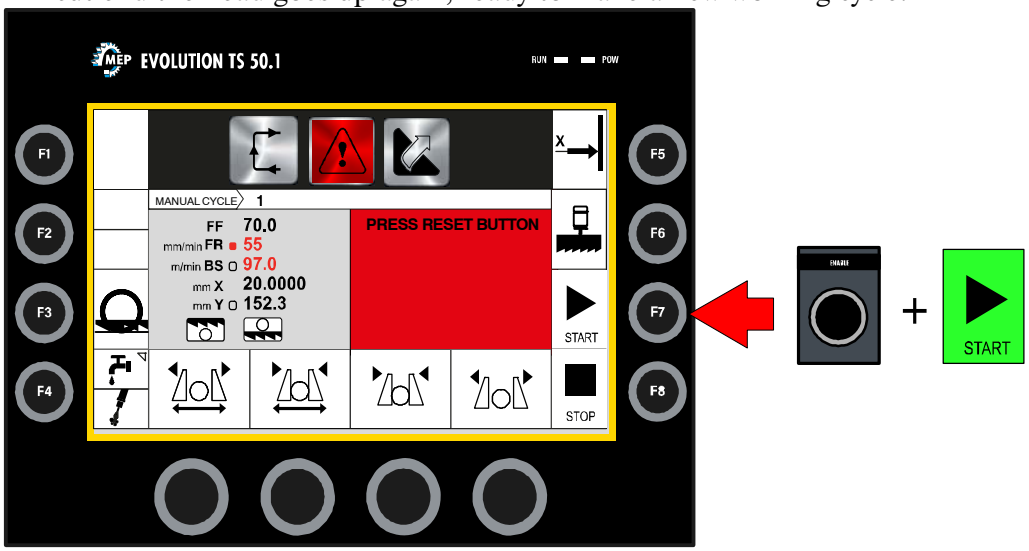
▶ make sure the machine is not in emergency status (red mushroom head button released); otherwise, release the emergency stop button and press RESET.

▶ Enable the band rotation by holding the control enabling key and the key

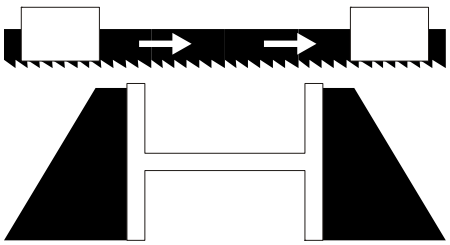
shown in the figure (F6) pressed; the box lights on to indicate it has been selected.



▶ 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

5

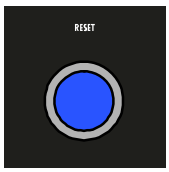
This chapter analyses all the machine functions. We begin with a description of the pushbuttons and other components on the control panel.

Description of the control panel

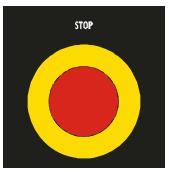
The control console is housed inside the control panel in an IP 54 rated housing which is tamperproof and resistant to dust and moisture. The control panel swivels on two articulated joints so that it can be positioned by the operator for greater ease of use and safety. The control console for the **SHARK 230–1 NC HS 5.0** is illustrated below.



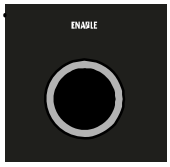
Key for control console keyboard



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°.



ENABLE COMMANDS:
Hold pressed to enable machine commands.



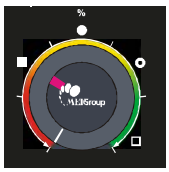
JOYSTICK:
This moves the head upwards–downwards and rightwards–leftwards while the enable commands button is pressed.



KNOB S:
This adjusts the band rotation speed.



KNOB F:
This adjusts the head descent speed.

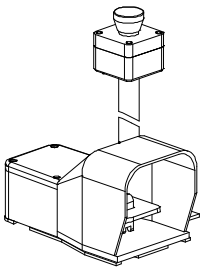


KNOB A%:
Adjusts the current absorption depending on the machine cutting force



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

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.

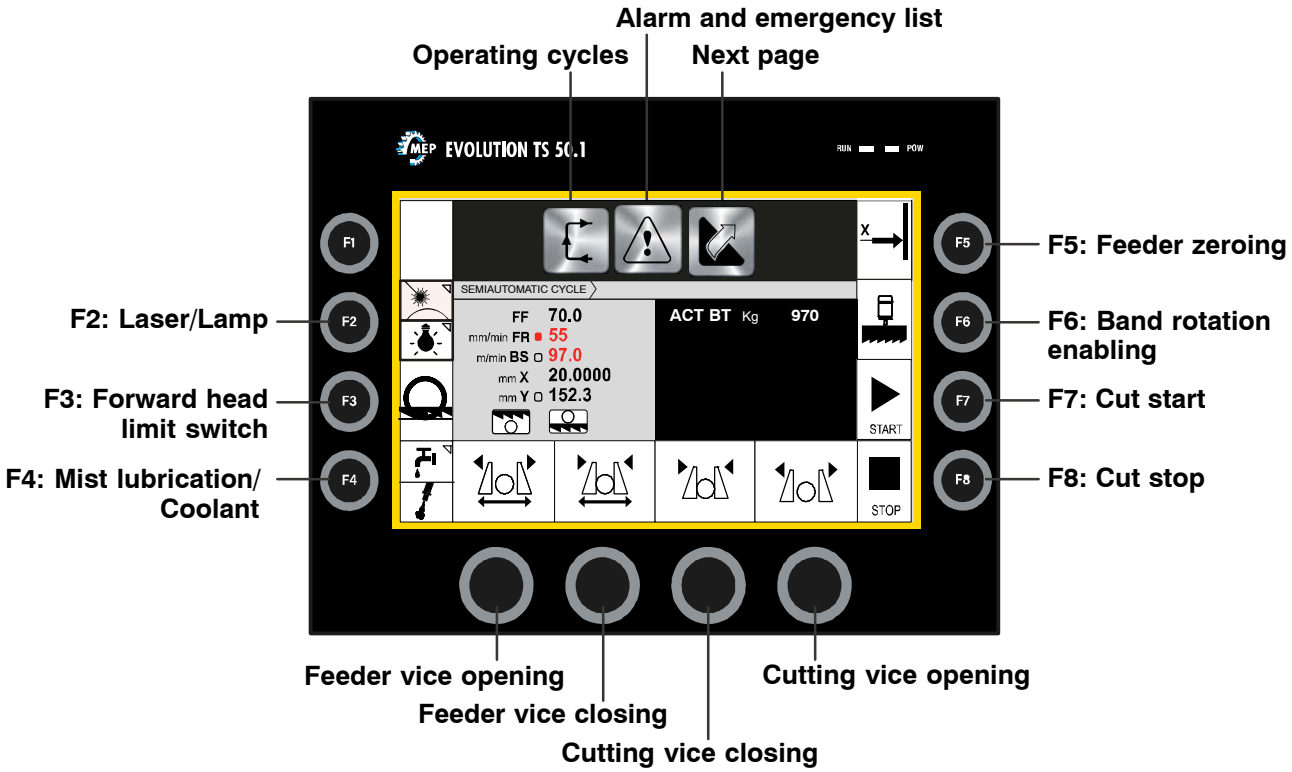


THERMAL–MAGNETIC CIRCUIT–BREAKER WITH UNDERVOLTAGE COIL

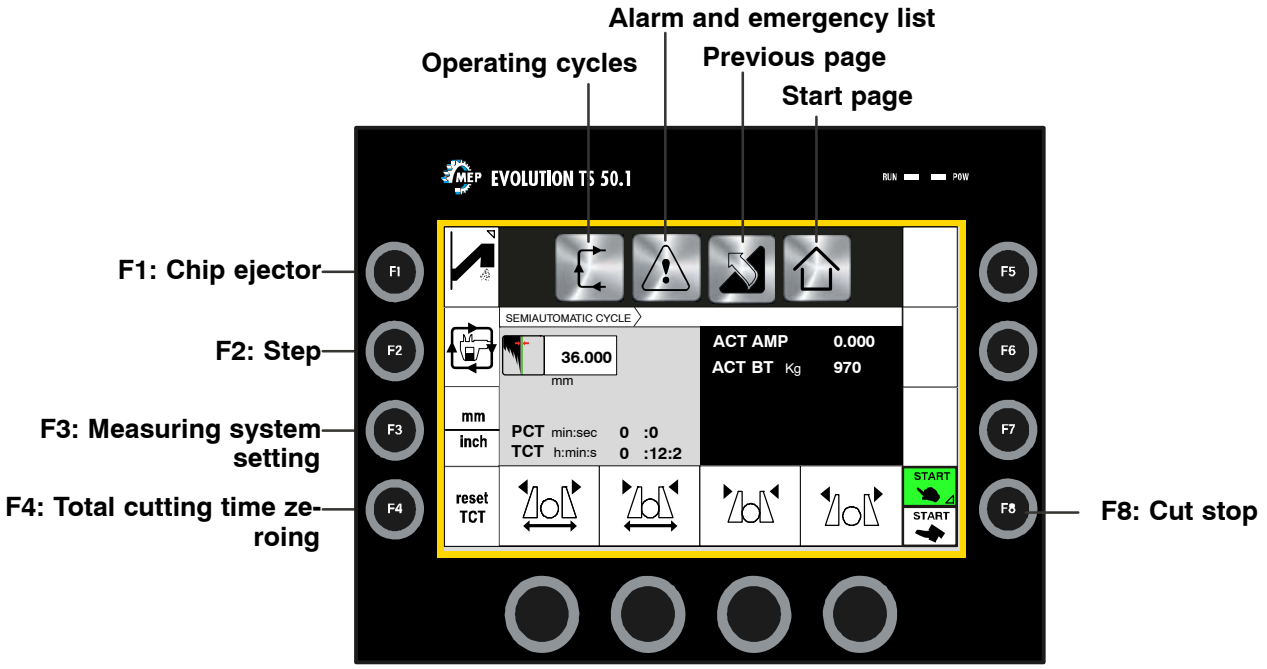
On the left side of the control board, the machine is equipped with a main switch that, when set ON (1), powers the machine.
The main switch is fitted with three power failure protection systems. In fact, in the event of a power failure, this switch disconnects all the electrical devices, causing the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

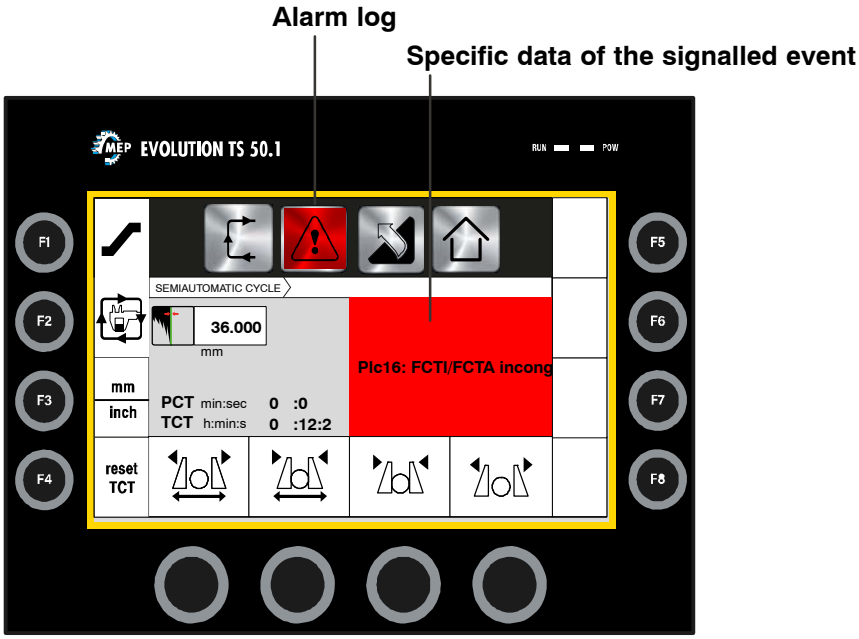
The key for the symbols used on the display follows.



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



If there is an alarm message, the system displays the alarm icon in red and a box where the text of the last recorded alarm is displayed.



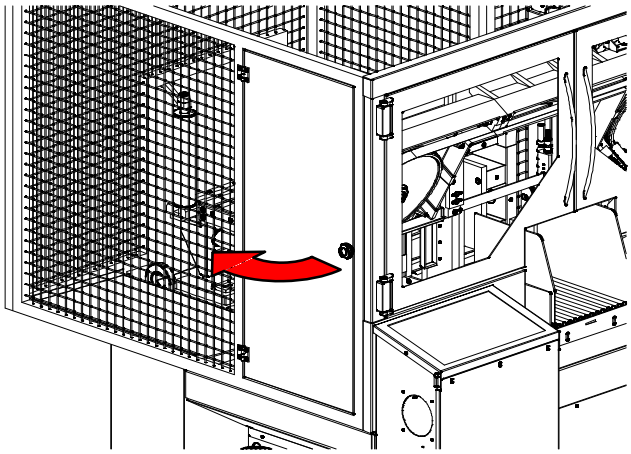
Pressing the red boxes you can access the alarm log as well as the characteristic data of the event occurred.

Basic instructions for carrying out a cutting operation cycle

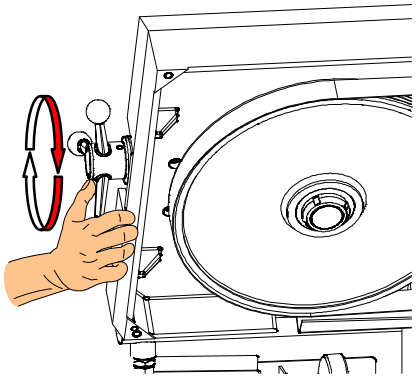
Blade tension

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 range (default values within machine parameters).

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

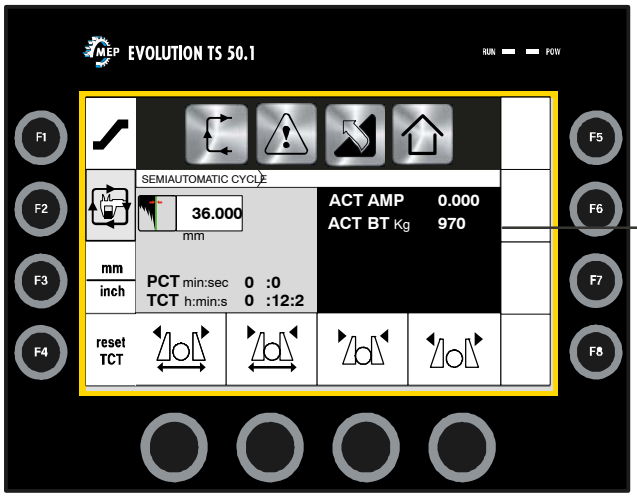


▶ Turn the hand wheel clockwise to increase the tension of the blade and check the value in kg on the display (the optimal value during the working phase is 900 kg / 1980 lb).



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

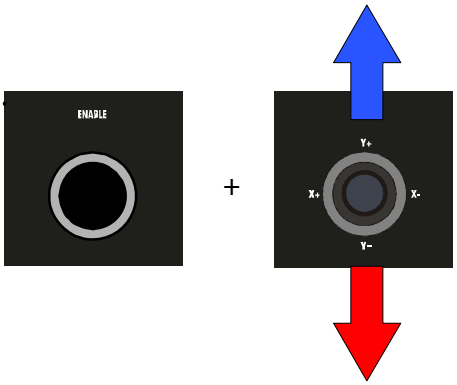
▶ From the first working screen, touch the green arrow on the display to get in the second working screen.



Blade tensioning value

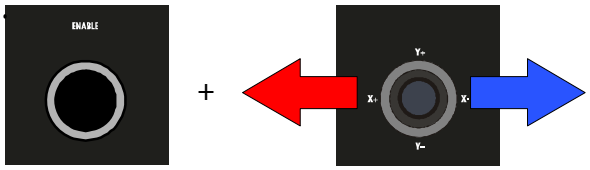
Moving the cutting head up and down

The cutting head can be moved up and down by pressing the enable commands button and using the joystick at the same time. Refer to the control console keyboard description in this chapter.



Manoeuvring the feeder

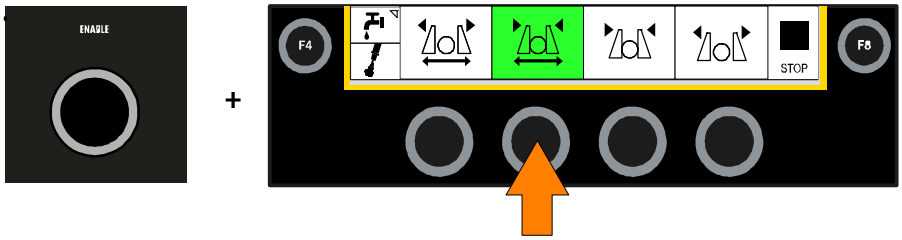
The feeder can be moved using the joystick, holding the control enabling key pressed at the same time. Due to safety reasons, the movement is enabled only if the head is completely up.



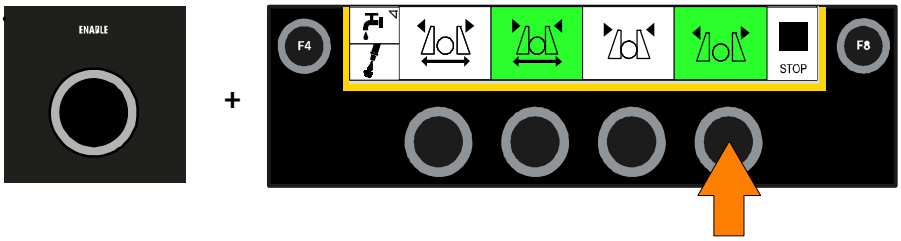
You can also move the material being processed using the joystick to position it at a preset height. The instructions are below:

▶ Position the material inside the feeding vice.

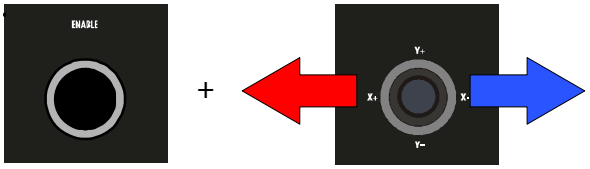
▶ Close the feeding vice by holding the control enabling button and the vice closing button pressed at the same time.



▶ Open the cutting vice by manually adapting the opening with the flywheel and using the button.

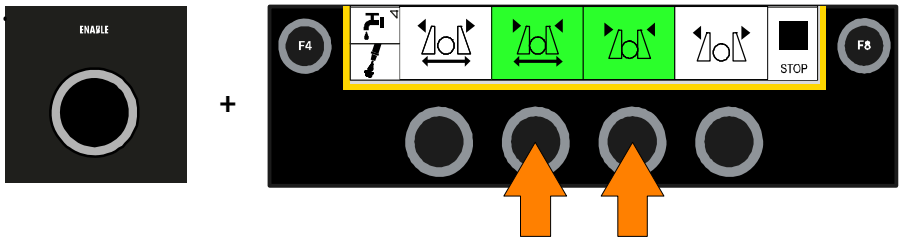


▶ Feed the material being processed to the preset height using the joystick and holding the control enabling key pressed. If the stroke is not sufficient repeat the operation for a new stroke.



Warning Before handling the material in the feeder, take the cutting head totally up so that it does not interfere with the tool.

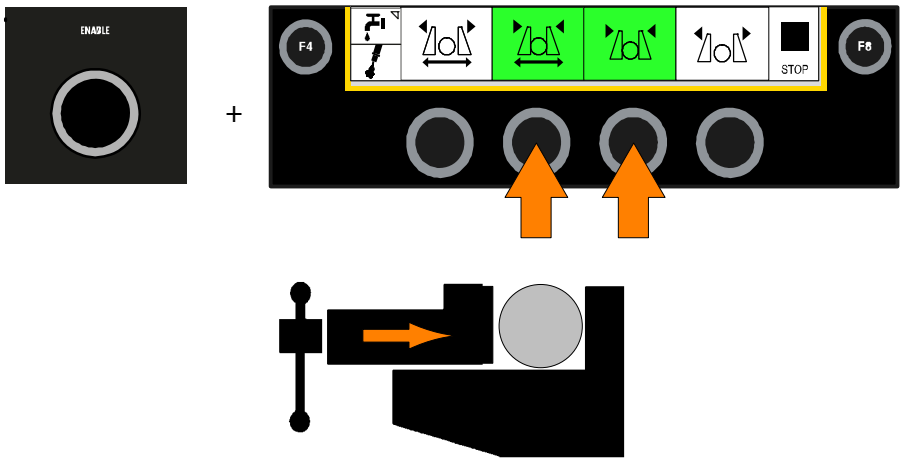
▶ Close the cutting vice by holding the control enabling button and the vice closing button pressed at the same time.



▶ Make the cut in the wished machining mode.

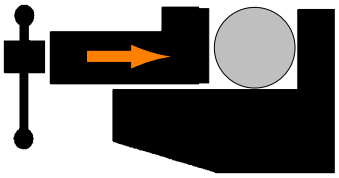
Clamping the work piece in the vice

Vice opening and closure, for the cutting vice and the feeder vice, are controlled by the corresponding buttons on the control console.

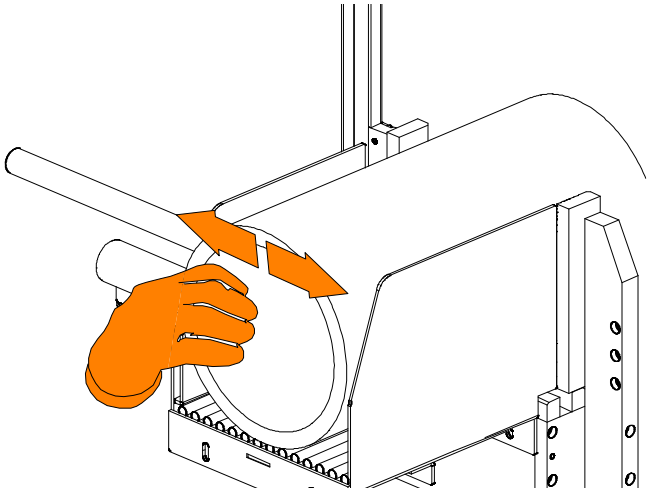


However, to ensure that the workpiece is securely clamped in the vice, proceed as follows:

- make sure the workpiece dimensions do not exceed the machine's cutting capacity;
- make sure the piece is correctly supported on both sides of the machine;



- 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.



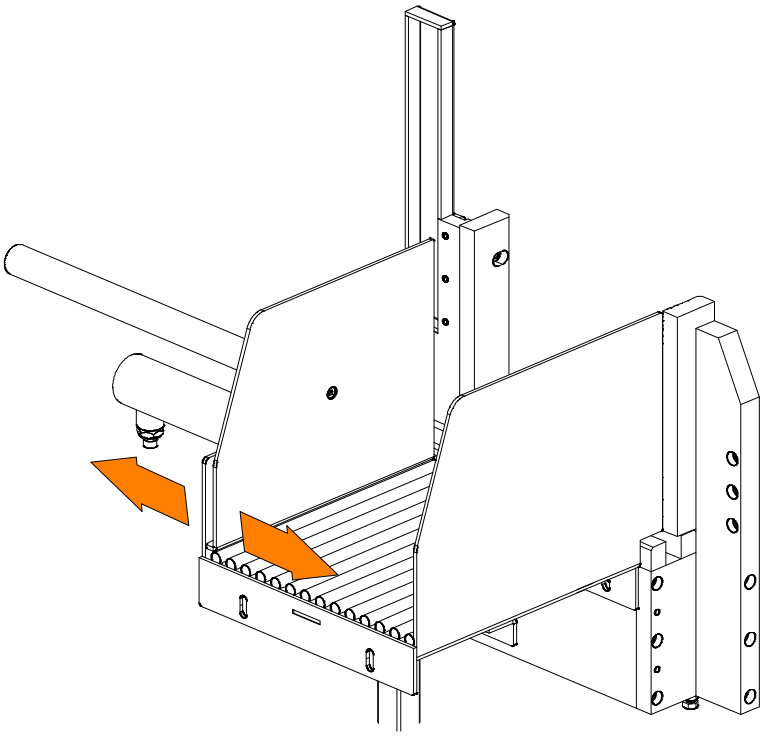
Width of cut

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 proximity to 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.



Cutting cycles

This sawing machine can cut in Semiautomatic and Automatic cycles. In automatic mode, it can carry out single or series cuts stored in max. 10 programs that can run individually or in sequence.

▶ after initializing the sawing machine, the display shows ”main menu”



Semiautomatic



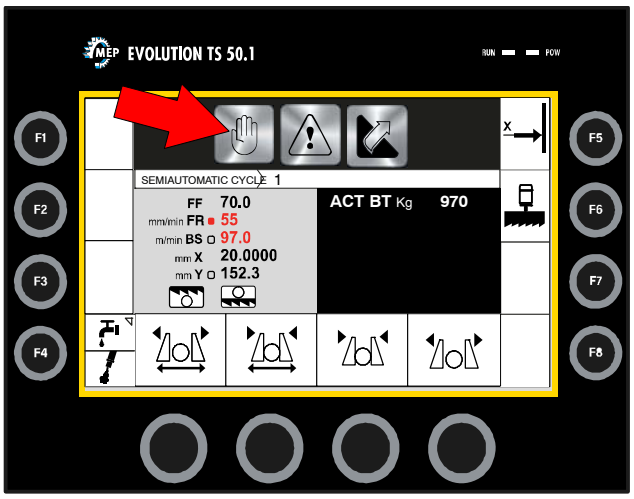
Automatic – Single program

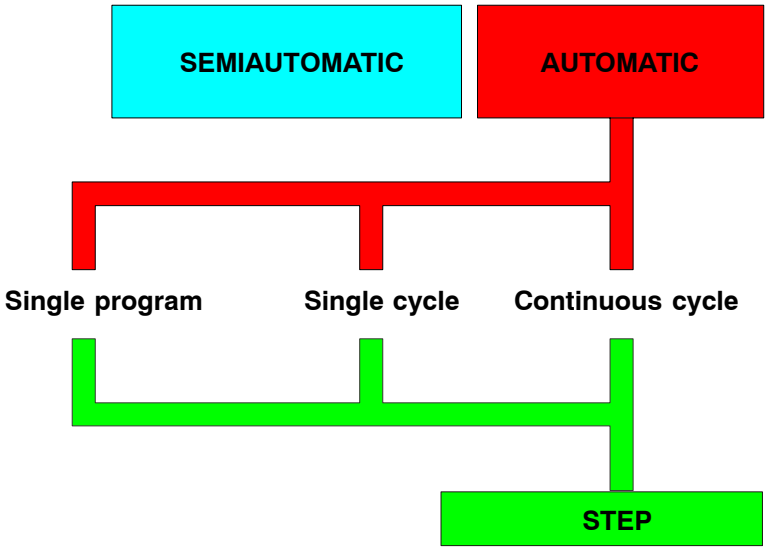


Automatic – Single cycle



Automatic – Continuous cycle





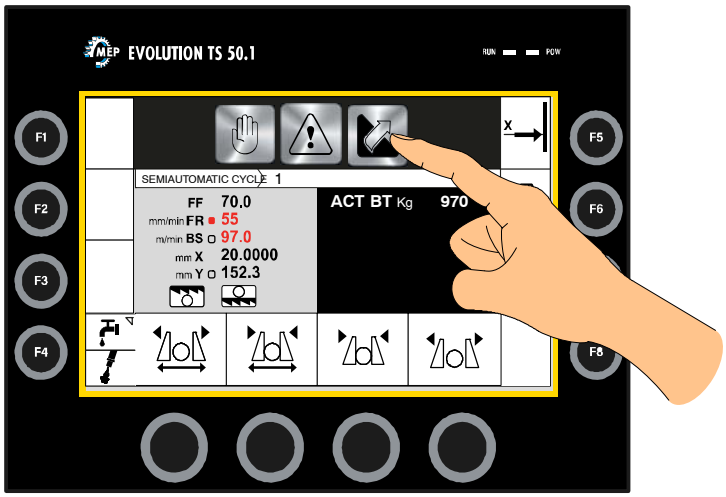
AUTOMATIC CYCLE

- Single program: it carries out exclusively the programmed cycle directly on the working video page. After setting the length and the number of necessary pieces, it runs the program stopping the cycle and giving a light and sound alarm.
- Single cycle: it carries out the stored programs one at a time and stops waiting for the consent before the next program.
- Continuous cycle: it carries out the stored programs like in the single cycle but at the end of each program it AUTOMATICALLY goes to the next program.

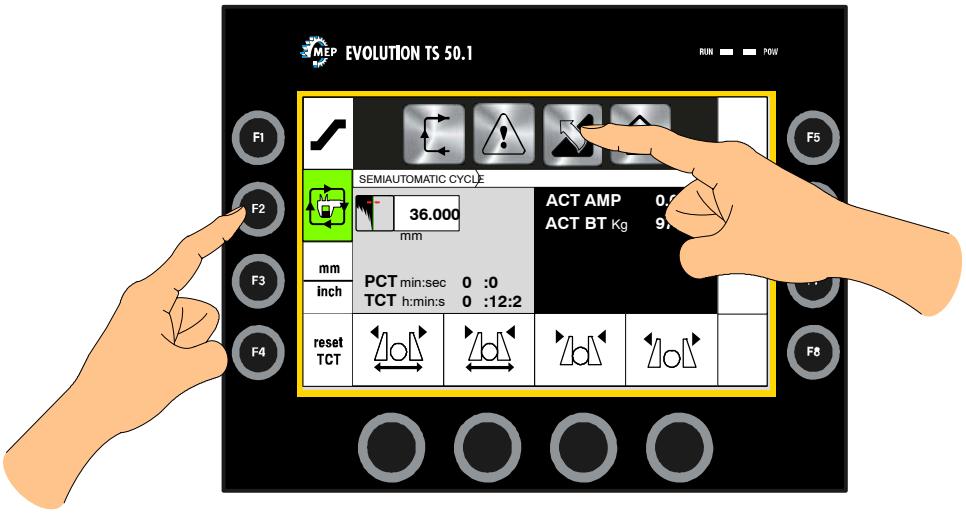
UTILITY STEP

- STEP: accessible from any cycle. In the automatic cycle it makes the bar facing cut, the first piece cut and then stops so that the piece can be measured.

▶ Press the box shown in the figure to access the second video page;



▶ Press the “Step” box to activate this function and return to the working page by pressing the previous page box: the activated Step signal will be displayed on the upper left.



▶ Proceed like a standard automatic working cycle, restarting it at every cut made by the machine, pressing simultaneously the Control enabling button and the key F7 (Start).

Preliminary check list for cutting operation

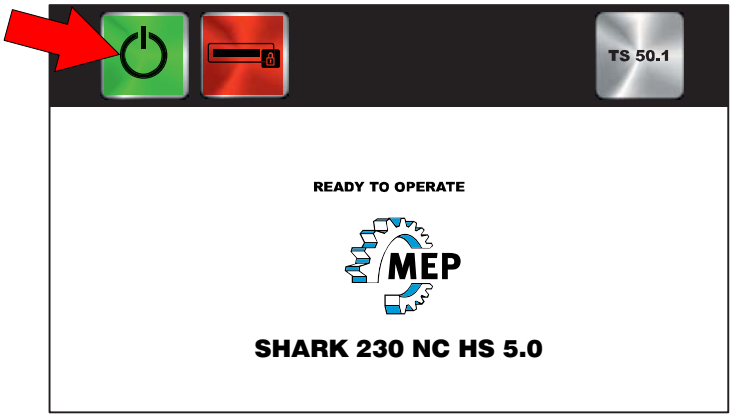
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

▶ 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.

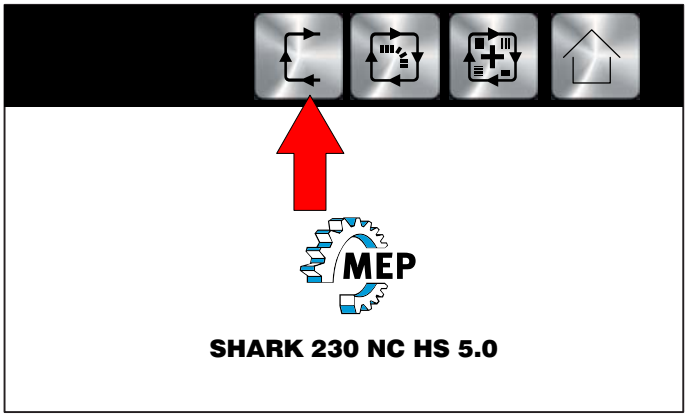
Starting up the machine

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

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



▶ choose a machining cycle pressing the relevant key on the console;

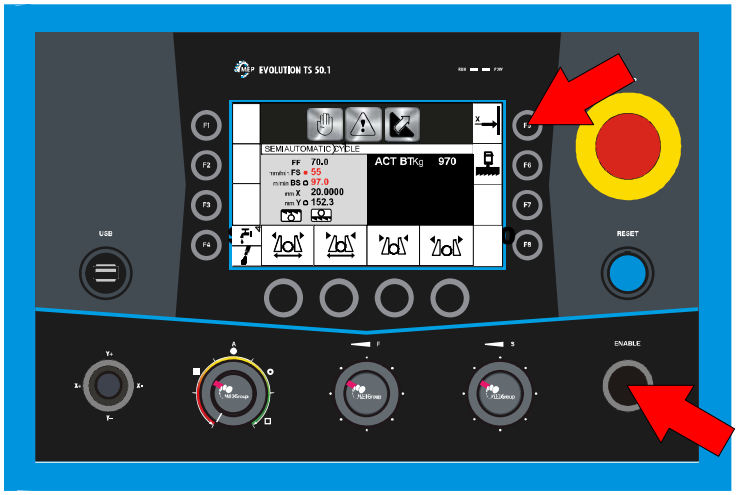


▶ release the emergency mushroom button if pressed, then press the RESET button: the head rises completely up.



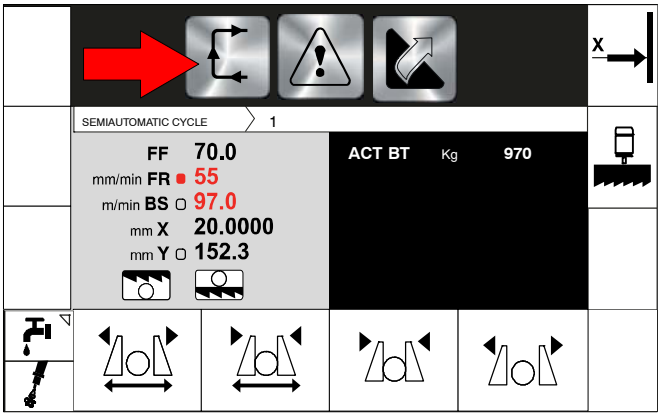
N.B. The above described procedure must always be followed before starting the work with the sawing machine.

▶ Set the feeder to zero by pressing, in sequence and simultaneously, the control enabling keys and the F5 key shown in the figure.



This sawing machine can carry out single or series cuts stored in max. 10 programs, that can even be repeated, to be ordered in a preset sequence.

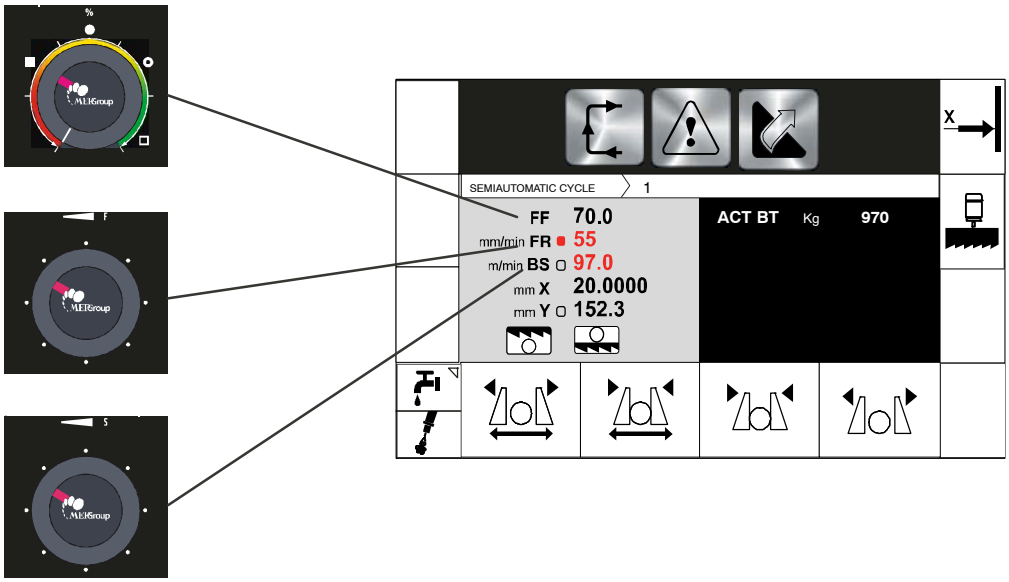
▶ After the initialization of the sawing machine the display shows the following screen. Press the box shown in the figure until the symbol of the wished cycle is displayed.



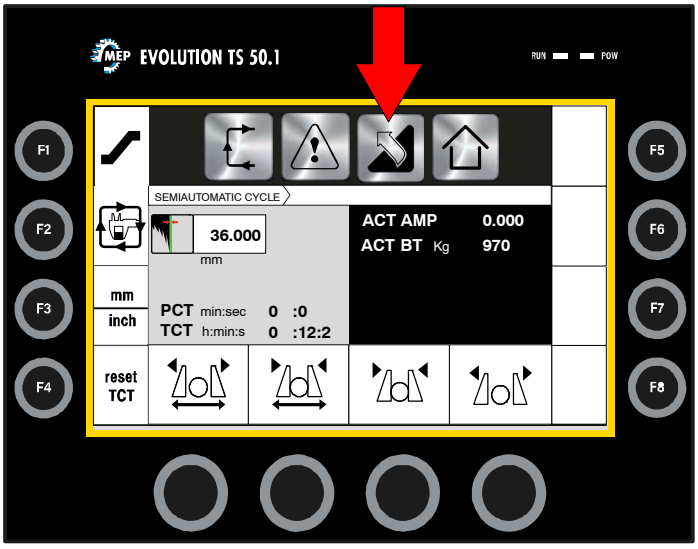
The available working cycles are: semiautomatic, automatic with single program, automatic with single cycle and automatic with continuous cycle.
In the manual cycle the cutting only involves the setting of the rear head limit switches (RHLS) and forward head limit switches (FHLS); then, after having 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

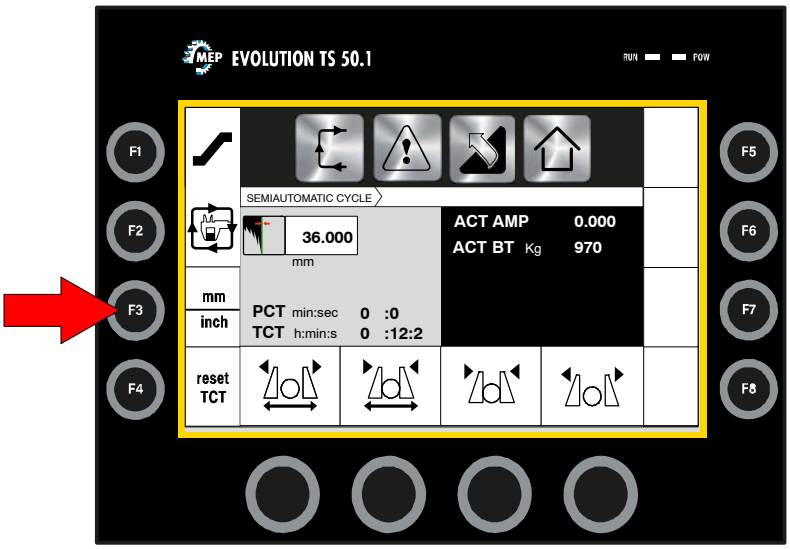
potentiometer from the control board.



Pressing the arrow key shown in the figure the second page of the operating parameters can be displayed:
Kerf = blade thickness
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.



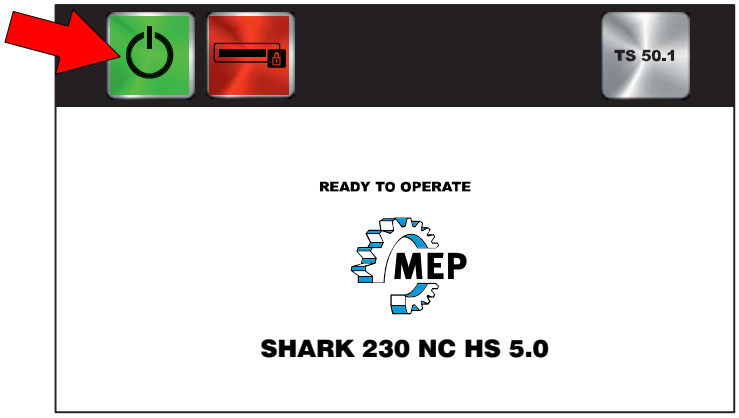
N.B. Pressing the key (F3) shown in the figure the decimal metric measuring system or the Imperial measuring system can be set.



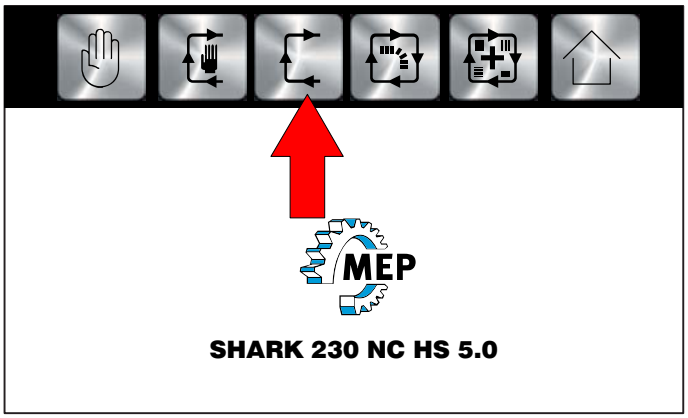
Semi–automatic operating cycle

The operation sequence for running a semiautomatic cutting cycle:

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



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

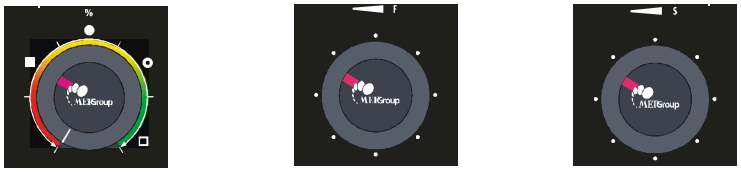


- Release the emergency mushroom button if pressed, then press the RESET button.

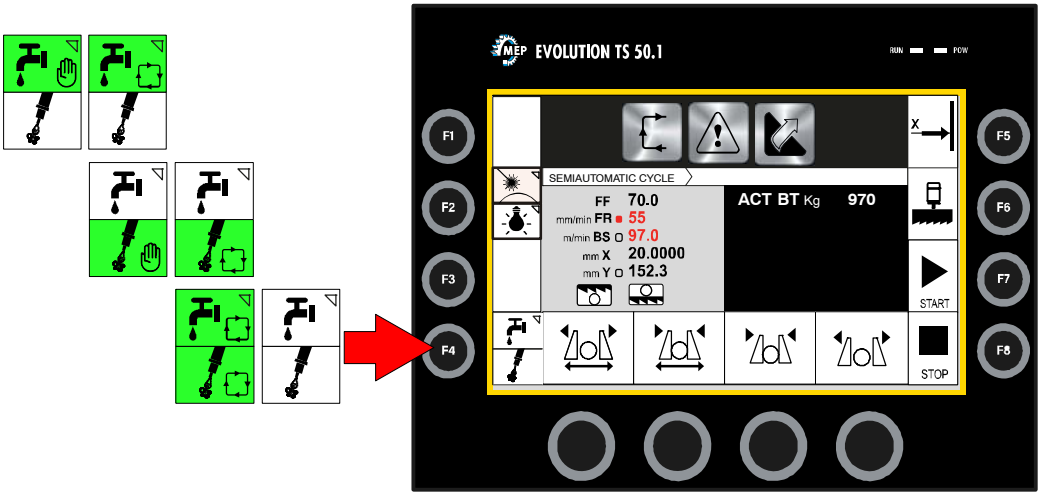


▶ Set the cutting parameters, previously shown, using the following adjusters.

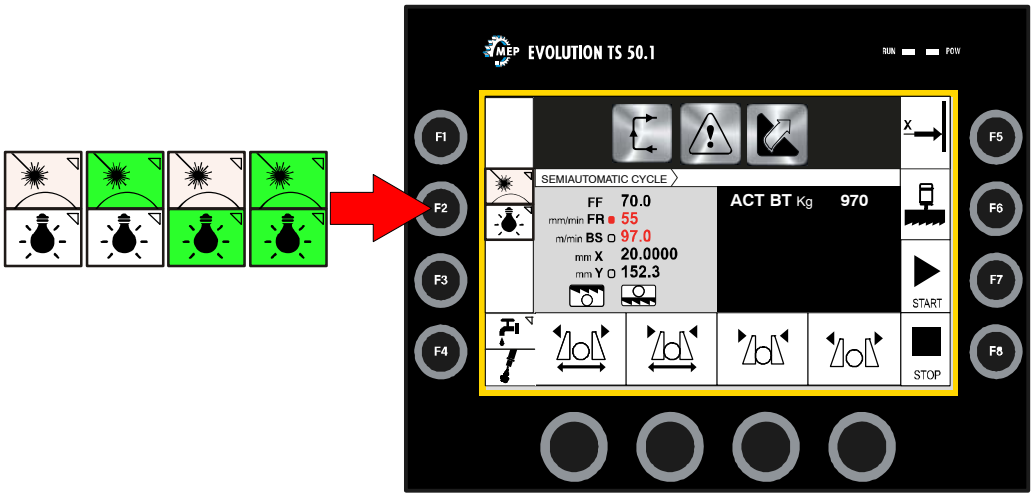
Attention In this step it is recommended to set the head lower adjuster at the min. value, to prevent the head from lowering too fast breaking the blade.



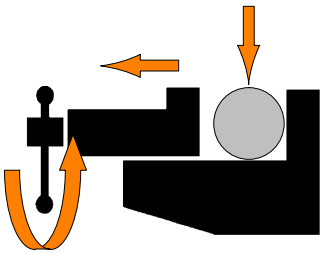
▶ Set the fluid jet by pressing the button shown in the figure (F4). The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).



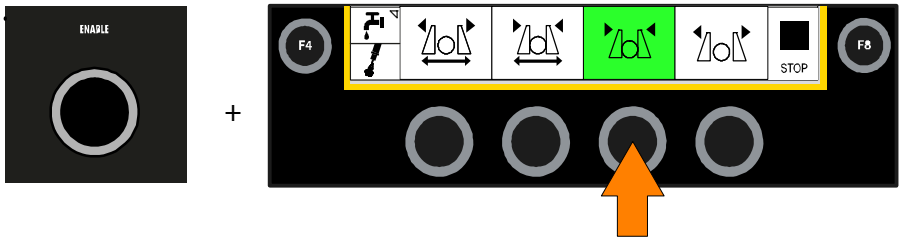
N.B. The machine can be equipped with a lamp for lighting the working table and with a laser projector (optional) to aid the machine positioning under the blade vertical. These options can be selected by pressing once or more times the same key (F2) on the icon left.



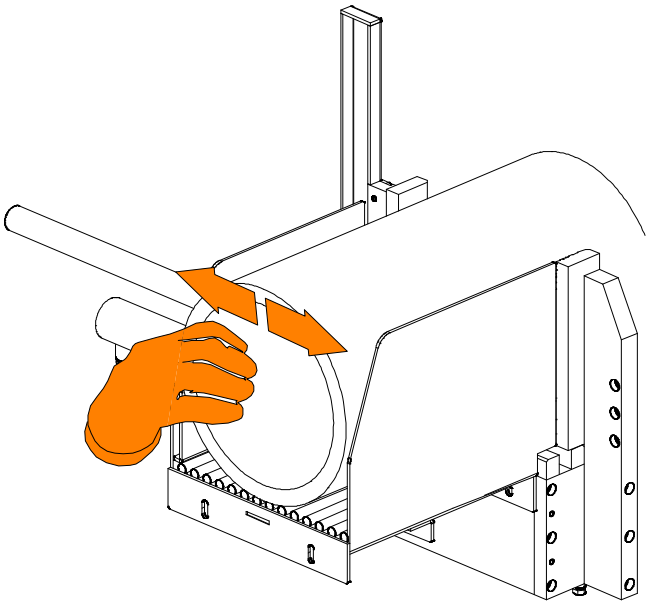
▶ Open the vice by rotating the handwheel anti−clockwise and position the workpiece between the jaws.



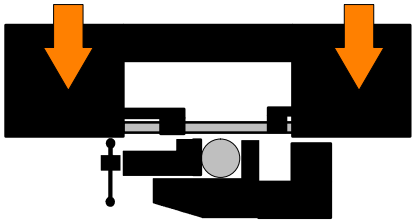
▶ Close the cutting vice by holding the control enabling button and the vice closing button pressed at the same time.



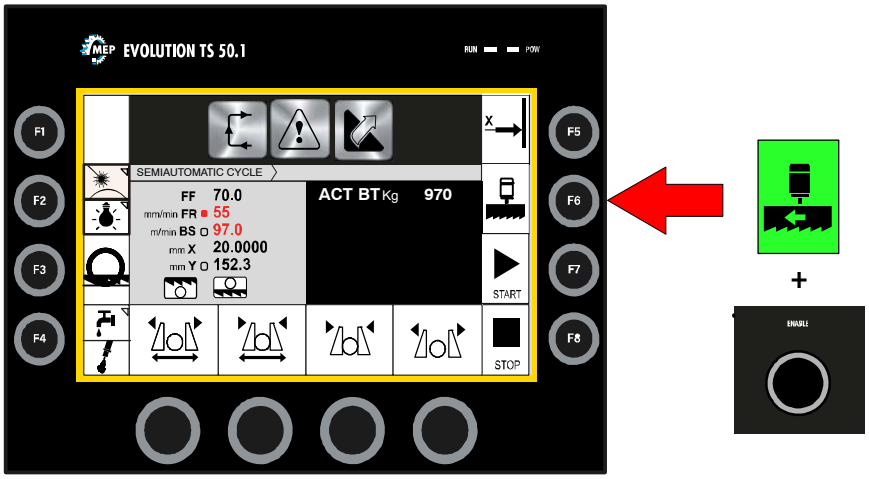
▶ Check that the workpiece is effectively locked in positon!



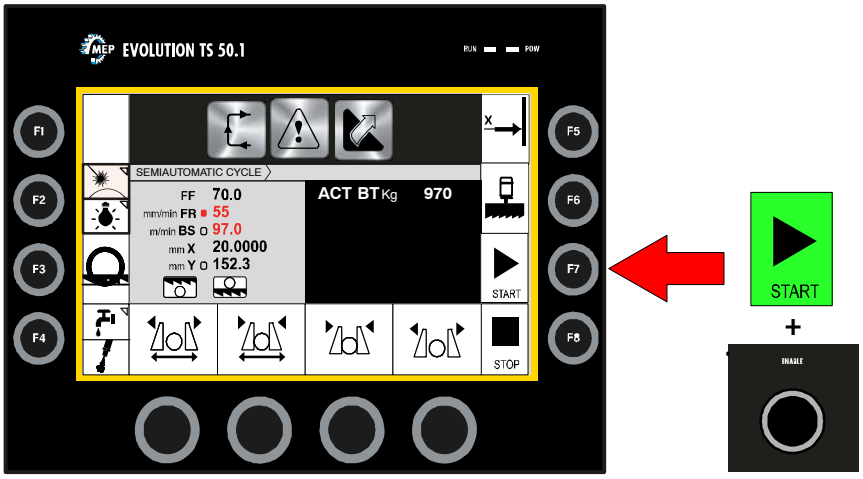
▶ Position the head at approximately 10 mm from the workpiece.



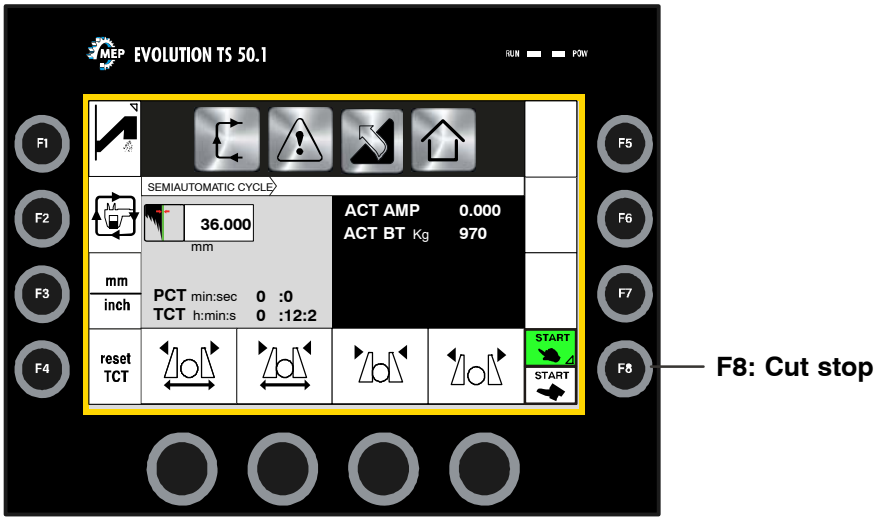
▶ Hold the control enabling key and the band rotation enabling key (F6) pressed at the same time.



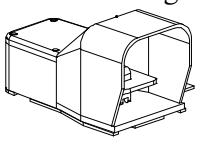
▶ Hold the control enabling key and the cycle start key (F7) pressed at the same time to start the band rotation and the head lowering at the set speeds. The RHLS point is automatically stored in this way.



N.B. If the sawing machine is equipped with optional pedal board the cycle start can be controlled remotely. In this case, it is necessary to carry out two operations:
– enable the pedal board by activating the relevant item in the option list, as explained in Chapter 11 of this manual;
– choose the start from pedal board in the second page of the working cycle.



▶ Press the pedal control to start the working cycle.



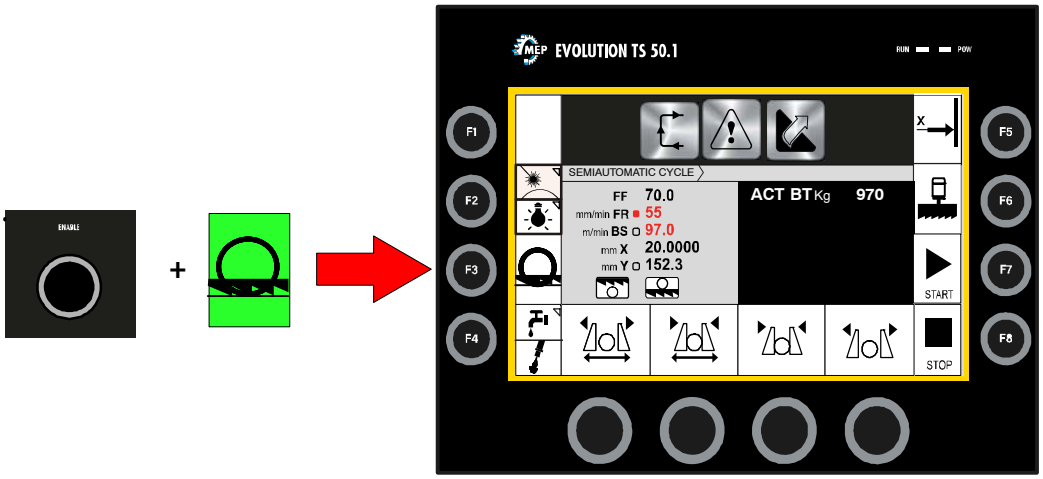
▶ Set the cutting parameters, previously shown, using the following adjusters.





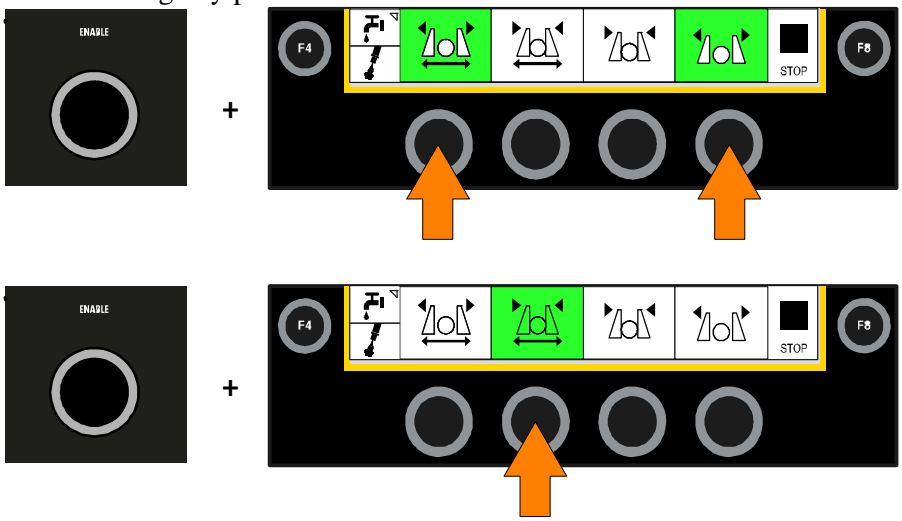
Now the blade starts, the cutting cylinder is under pressure and the lubricant/coolant supply starts.

N.B. At this point, hold the enable commands button pressed and move the head down using the joystick to delete the existing FHLS point: the FHLS setup box will start blinking to indicate that the FHLS point was deleted. When the head reaches the required end of cutting point, press the FHLS setup button shown in the figure together with the enable commands button. The corresponding box will light up to indicate that it was selected.

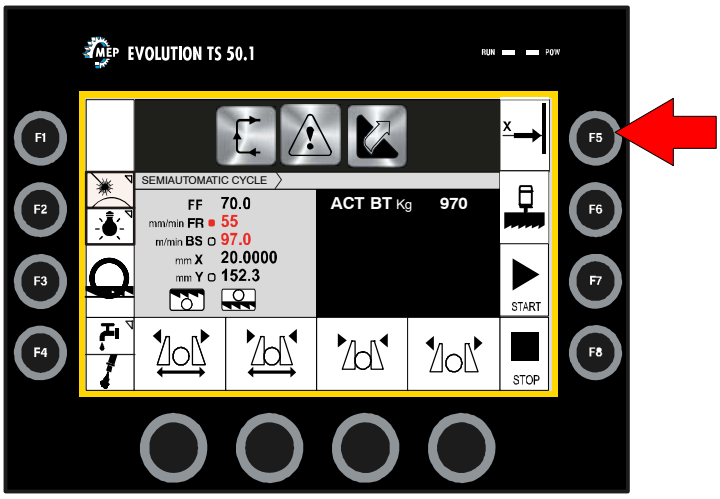


▶ When the head reaches the FHLS point the band stops and the head returns to the set RHLS point, ready to make a new cutting cycle.

▶ Open both vices holding the control enabling key and the vice opening key pressed at the same time. Feed the material to be machined, as explained above, and then close the cutting vice by holding the control enabling key and the vice closing key pressed.

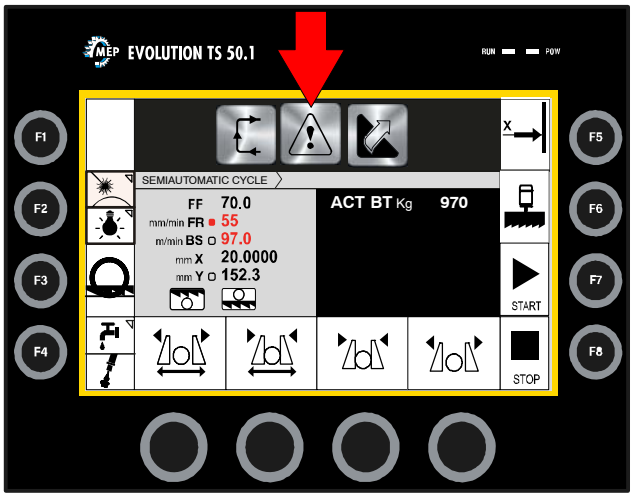


N.B. The sawing machine zeroes the feeder shuttle when the automatic cycles are started. If the feeder must be zeroed before the cycle start, select the semi–automatic working cycle and zero by pressing the control enabling key and the F5 key shown in the figure at the same time.



Warning

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.



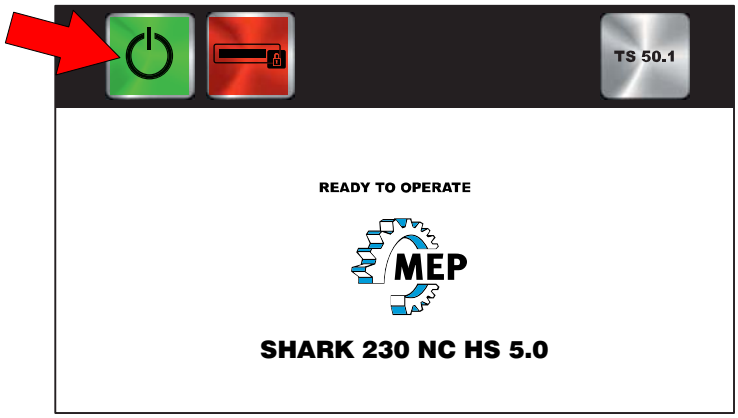
Automatic mode single job

- Single program: it carries out exclusively the programmed cycle directly on the working video page. After setting the length and the number of necessary pieces, it runs the program stopping the cycle and giving a light and sound alarm.

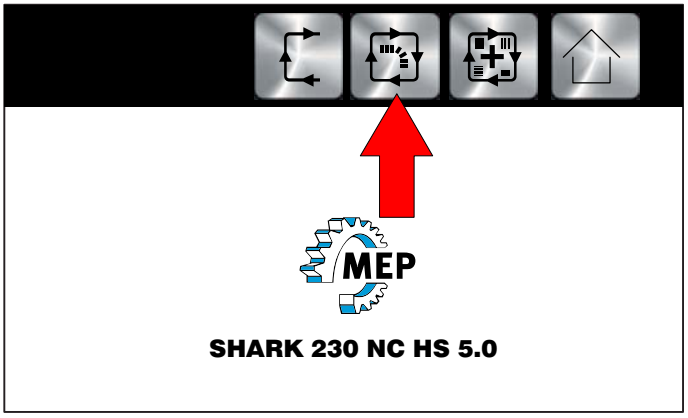
The operation sequence for running in automatic mode and single job:

▶ power up the machine by turning the main switch;

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



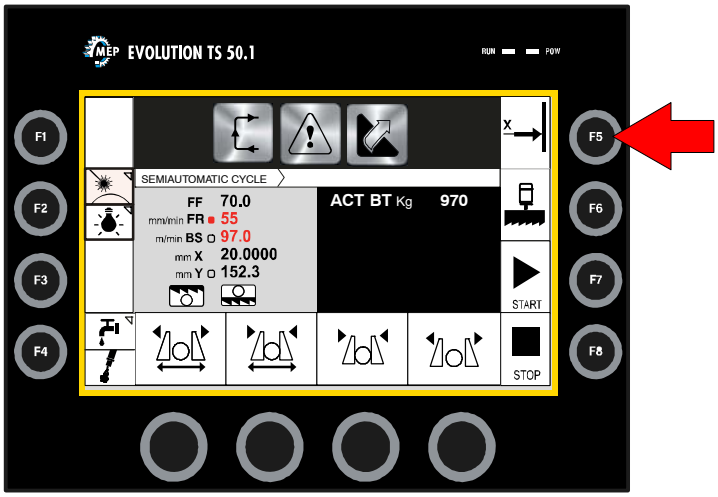
▶ Select the automatic – Single program working mode, pressing the box shown in the figure on the touch screen.



▶ release the emergency mushroom button if pressed, then press the RESET button.



N.B. The sawing machine zeroes the feeder shuttle when the automatic cycles are started. If the feeder must be zeroed before the cycle start, select the semi–automatic working cycle and zero by pressing the control enabling key and the F5 key shown in the figure at the same time.

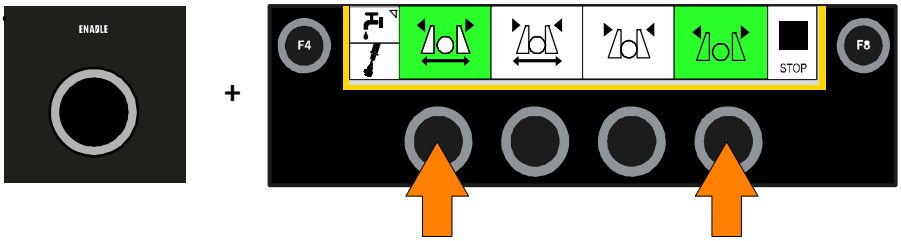


▶ Completely lift the cutting bow using the joystick (Y+), and pressing the ENABLE button at the same time.



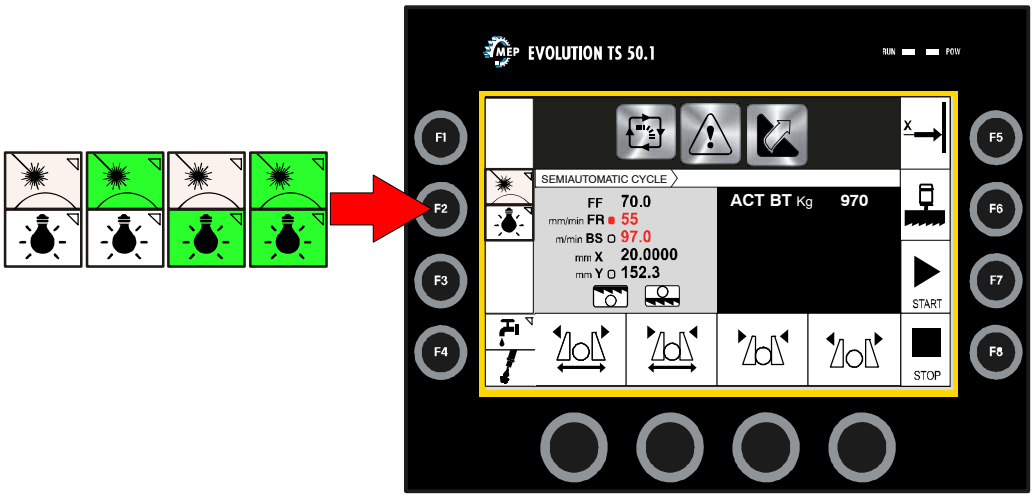
Warning The head lifting completely up is recommended to avoid the accidental contact between the material and the blade during the insertion inside the vices.

▶ Open the cutting and feeding vices holding the control enabling key and the relevant buttons on the keyboard pressed at the same time.

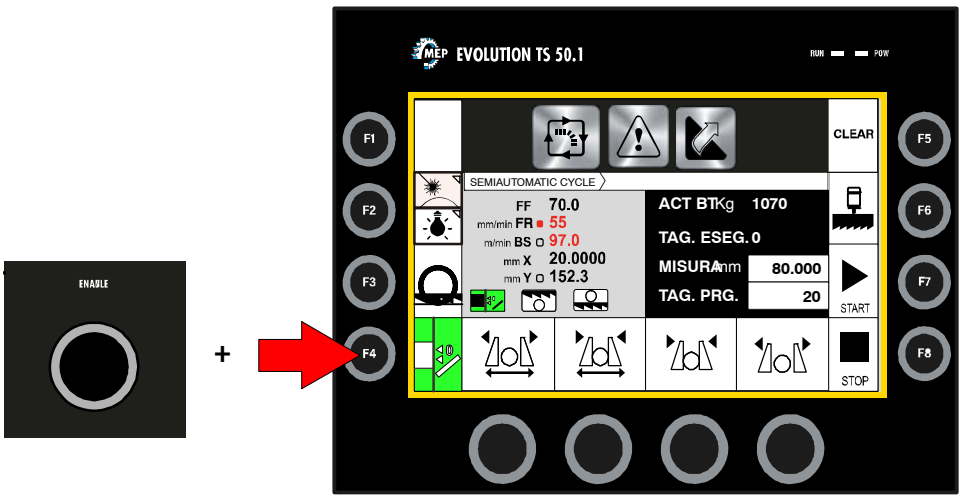


▶ Position the material inside the feeding vice.

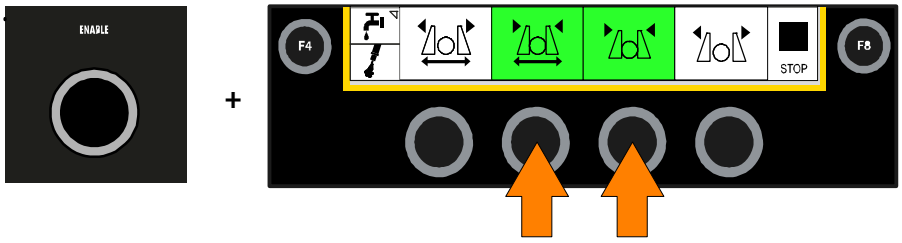
N.B. The machine can be equipped with the laser−lamp accessory to illuminate the working table and to make the material positioning under the blade vertical easier. Pressing the F2 key several times you can choose either or both.



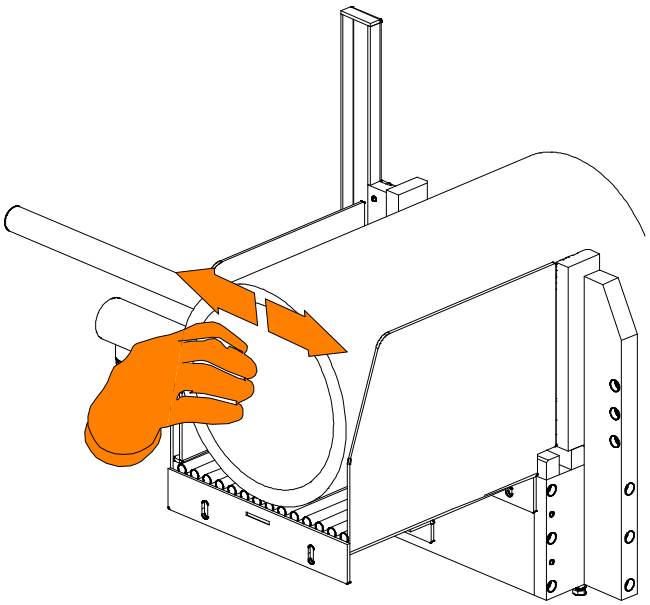
Warning In the standard automatic operation the sawing machine never counts the first cut, as it is considered as a bar facing scrap. To exclude this function, deactivate it pressing the ENABLE + F4 keys in sequence and at the same time. To re−activate it, use the same control.



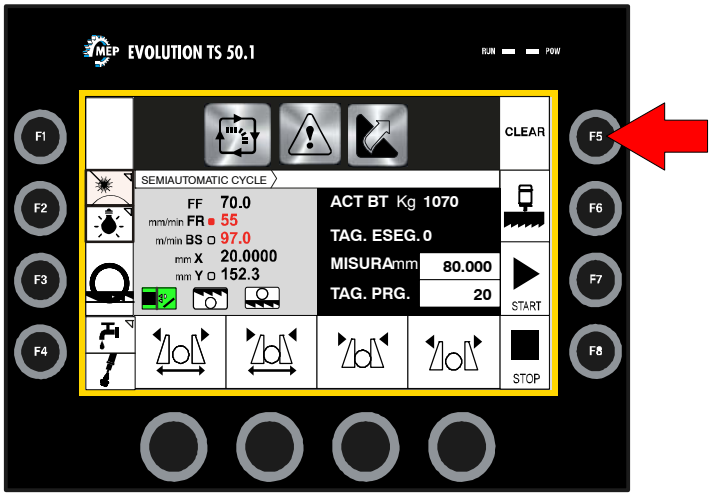
▶ Close both vices by holding the control enable button and the vice closing buttons pressed in sequence and at the same time.



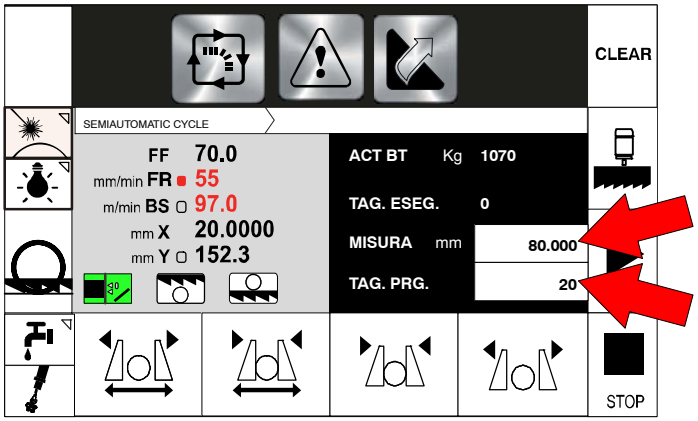
Attention Check that the workpiece is effectively locked in positon!



▶ Press CLEAR (F5) to set the number of pieces cut in the previous machining to zero.



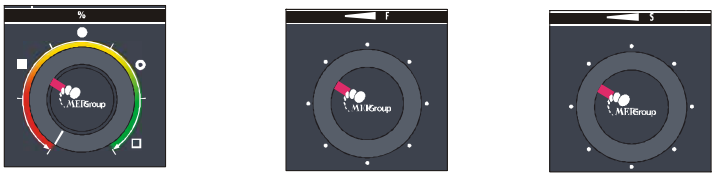
▶ Set the wished length and the wished number of cuts pressing the boxes shown in the figure and entering the values on the keypad that pops up automatically.



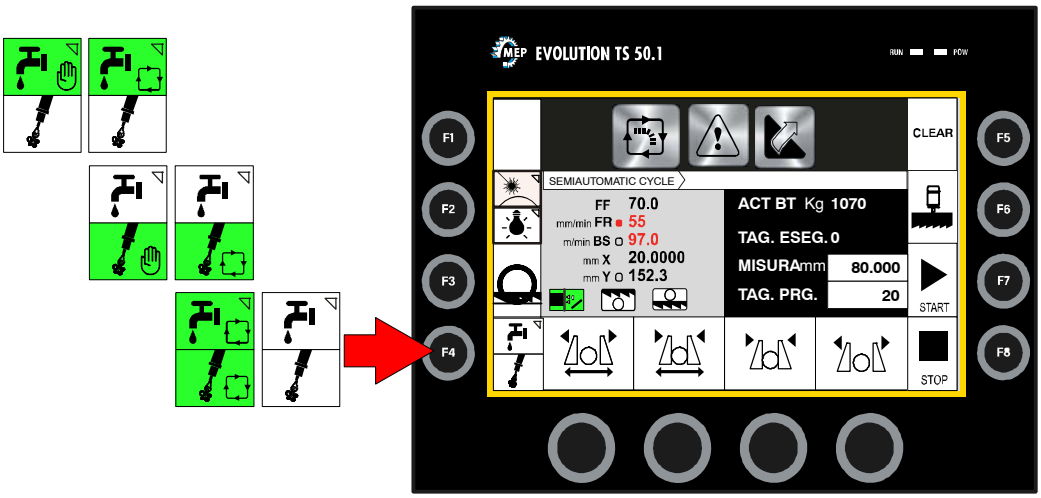
▶ Set the cutting parameters, previously shown, using the following adjusters.

Attention

In this step it is recommended to set the head lower adjuster at the min. value, to prevent the head from lowering too fast breaking the blade.

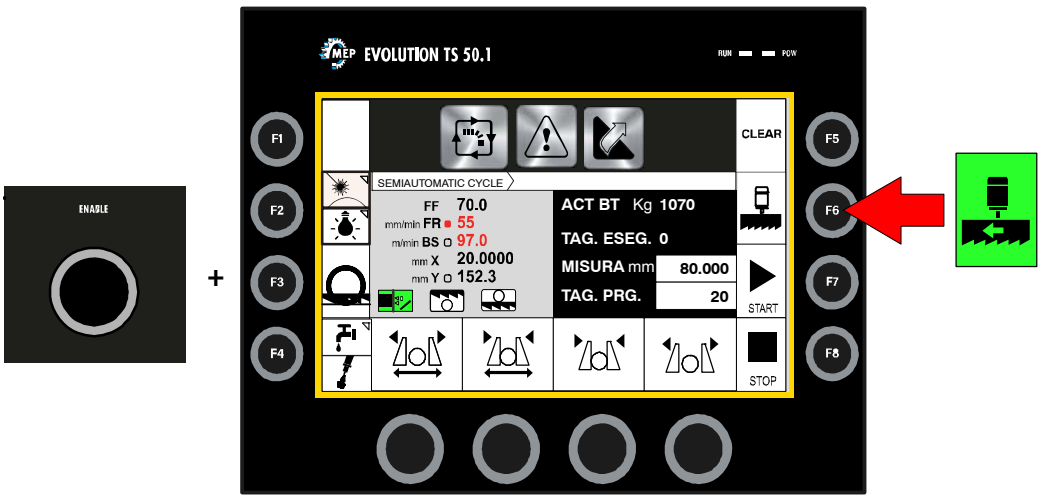


▶ Set the fluid jet by pressing the button shown in the figure (F4). The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).

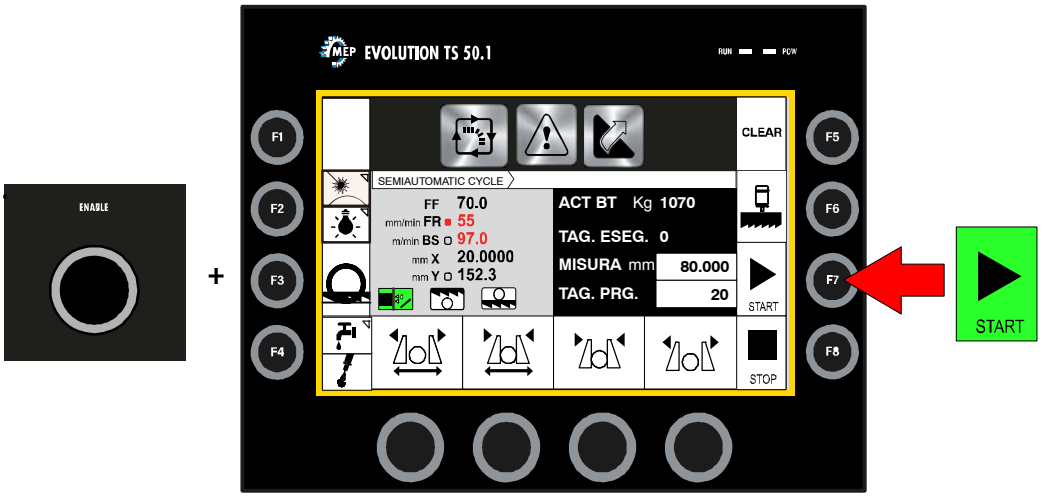


▶ Position the head at approximately 10 mm from the workpiece.

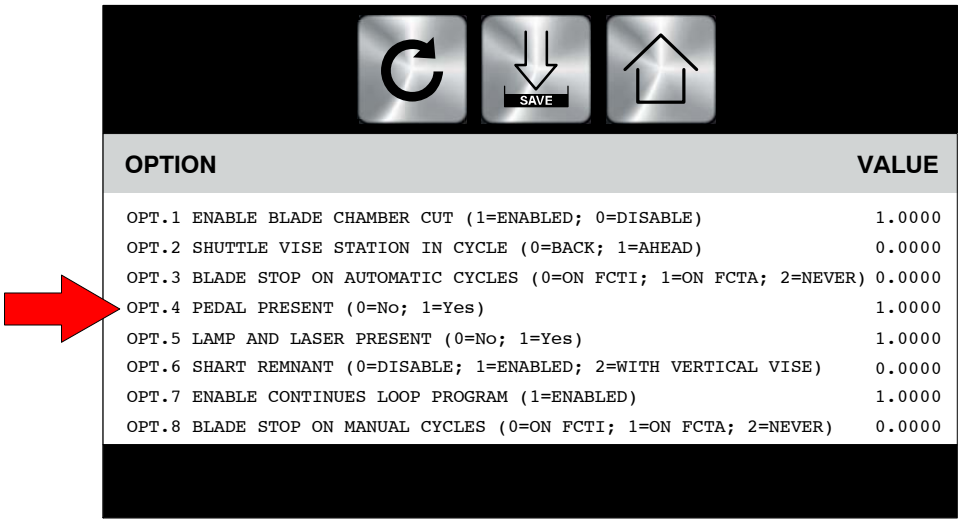
▶ Hold the control enabling key and the band rotation enabling key (F6) pressed at the same time.



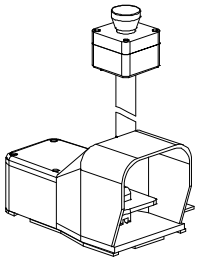
▶ Hold the control enabling key and the cycle start key (F7) pressed at the same time to start the band rotation and the head lowering at the set speeds. The RHLS point is automatically stored in this way.



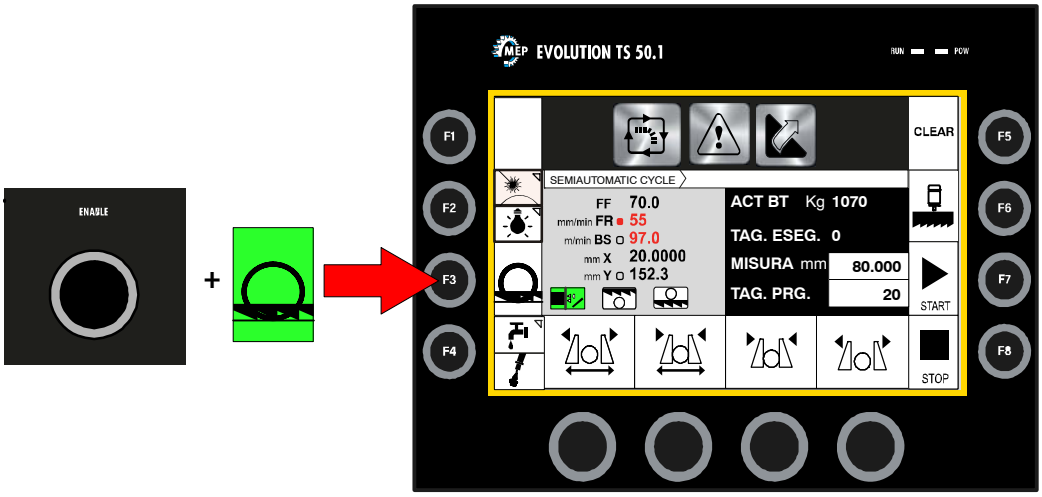
N.B. If the sawing machine is equipped with optional pedal control the cycle start control can be made from remote station. In this case it is necessary to enable the operation of the pedals, by selecting the appropriate entry in the list of options.



▶ Press the pedal control to start the working cycle.



N.B. Then, if the existing FHLS point is to be deleted, follow the operations previously described in the semiautomatic cycle for deleting and setting again the head stroke limits.



The sawing machine is running before cutting and then trimming the planned cuts. At the end of the top and head band motor stops. If you intend to repeat the cycle or start a new job, press CLEAR (F5) to clear the cut pieces.

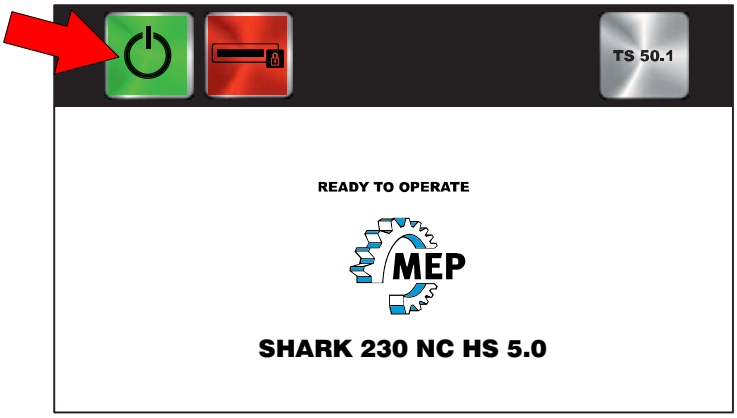
Automatic operating cycle with single cycle

- Single cycle: it carries out the stored programs one at a time and stops waiting for the consent before the next program.

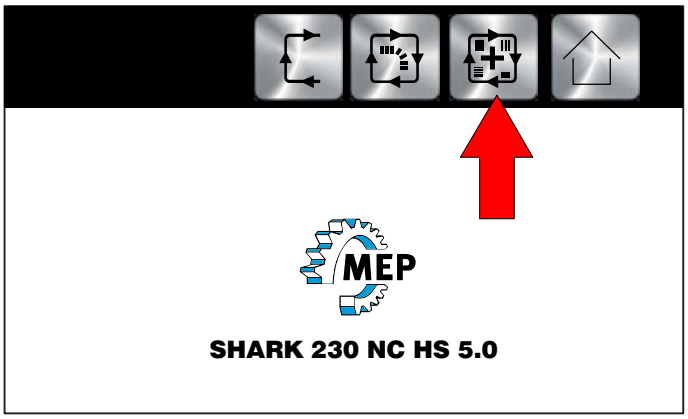
Sequence of the operations for an automatic cutting with single cycle:

▶ power up the machine by turning the main switch;

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



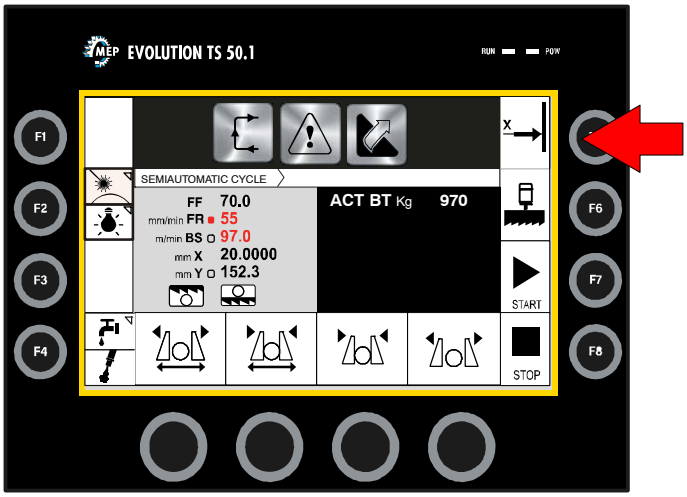
▶ select the single cycle – automatic working mode, pressing the box indicated in the figure on the touch screen.



▶ release the emergency mushroom button if pressed, then press the RESET button.



N.B. The sawing machine zeroes the feeder shuttle when the automatic cycles are started. If the feeder must be zeroed before the cycle start, select the semi–automatic working cycle and zero by pressing the control enabling key and the F5 key shown in the figure at the same time.

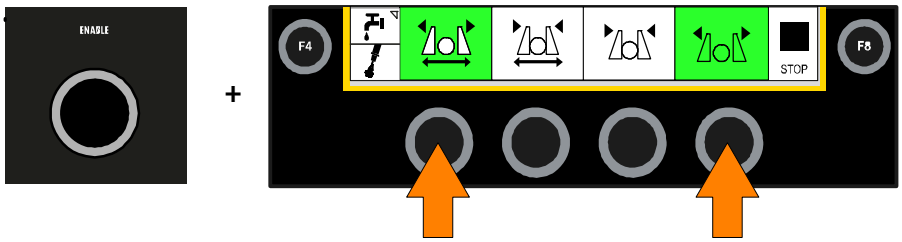


▶ Lift the cutting bow completely using the joystick (Y+), pressing the ENABLE button at the same time.



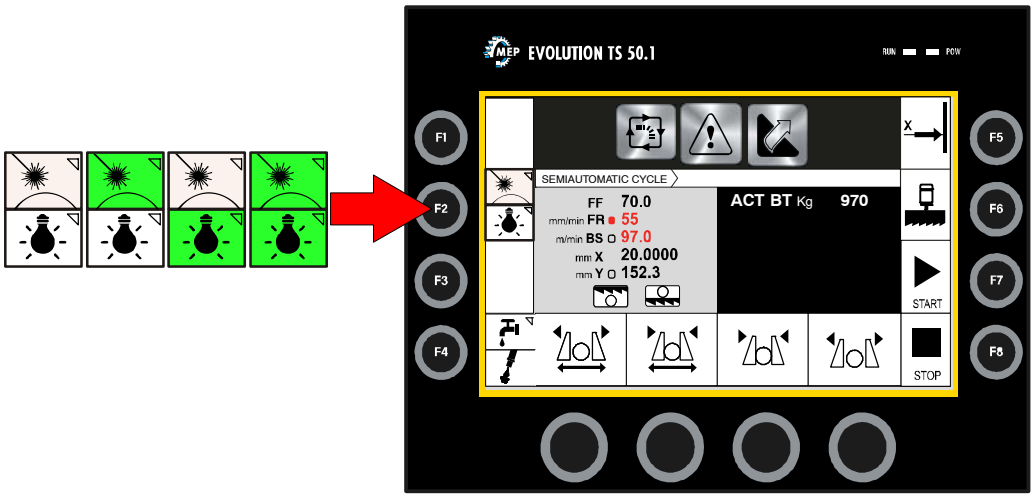
Warning The head lifting completely up is recommended to avoid the accidental contact between the material and the blade during the insertion inside the vices.

▶ Open the cutting and feeding vices holding the control enabling key and the relevant buttons on the keyboard pressed at the same time.

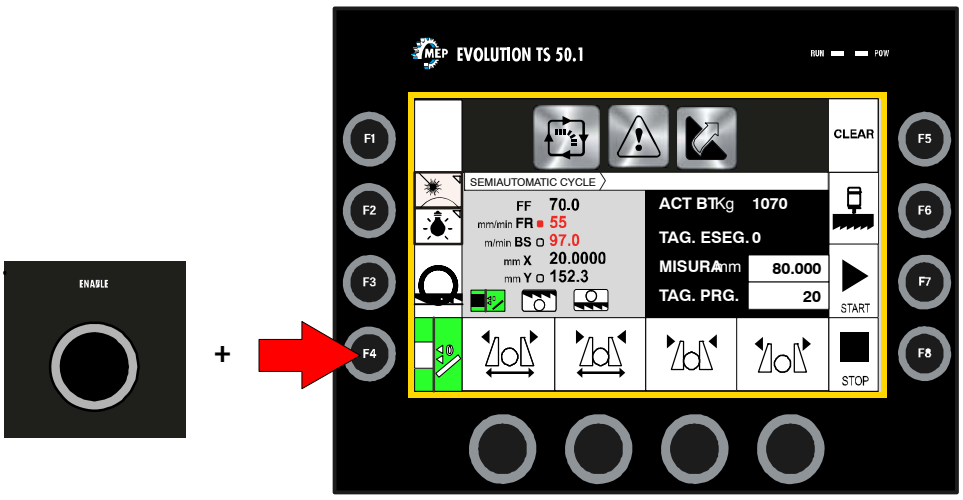


▶ Position the material inside the feeding vice.

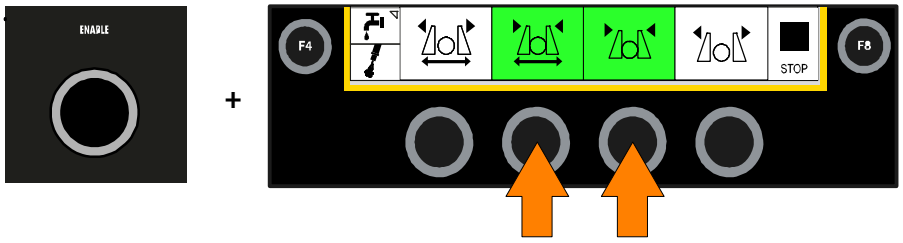
N.B. The machine can be equipped with the laser−lamp accessory to illuminate the working table and to make the material positioning under the blade vertical easier. Pressing the F2 key several times you can choose either or both.



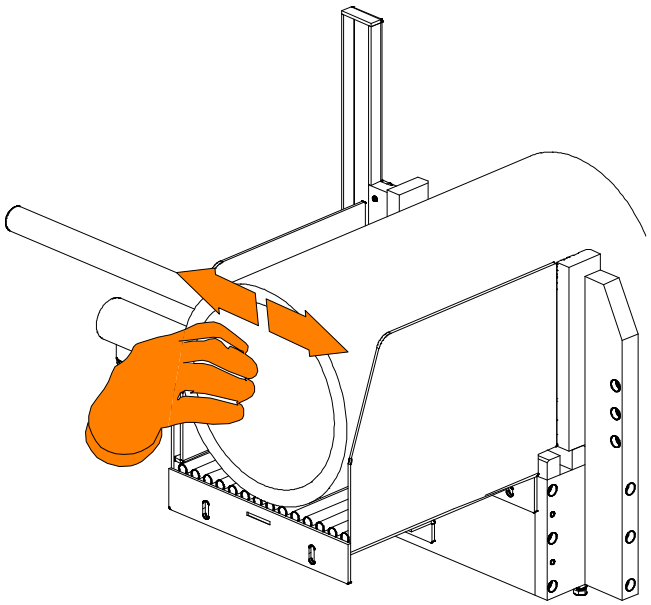
Warning In the standard automatic operation the sawing machine never counts the first cut, as it is considered as a bar facing scrap. To exclude this function, deactivate it pressing the ENABLE + F4 keys in sequence and at the same time. To re−activate it, use the same control.



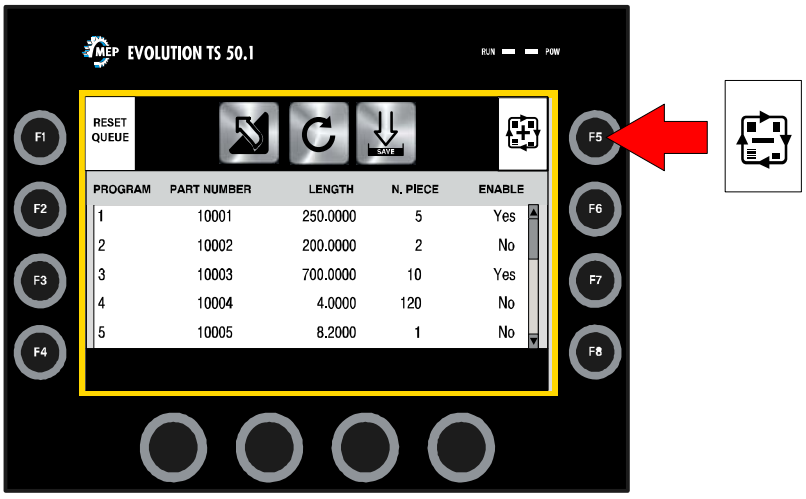
▶ Close both vices by holding the control enable button and the vice closing buttons pressed in sequence and at the same time.



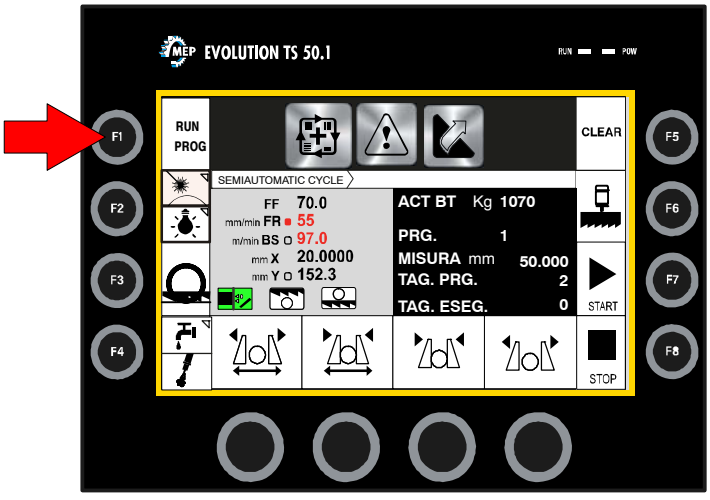
Attention Check that the workpiece is effectively locked in positon!



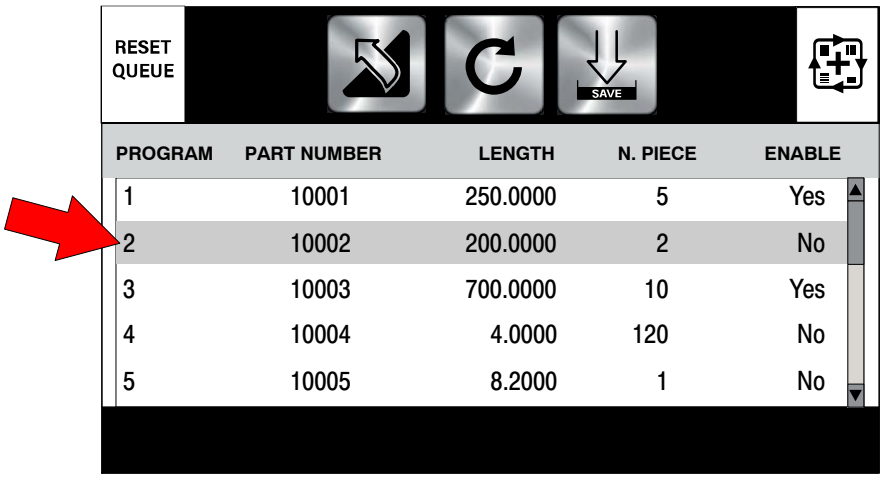
▶ Press the F5 key to select the Single Cycle – Automatic working mode (icon with "–")



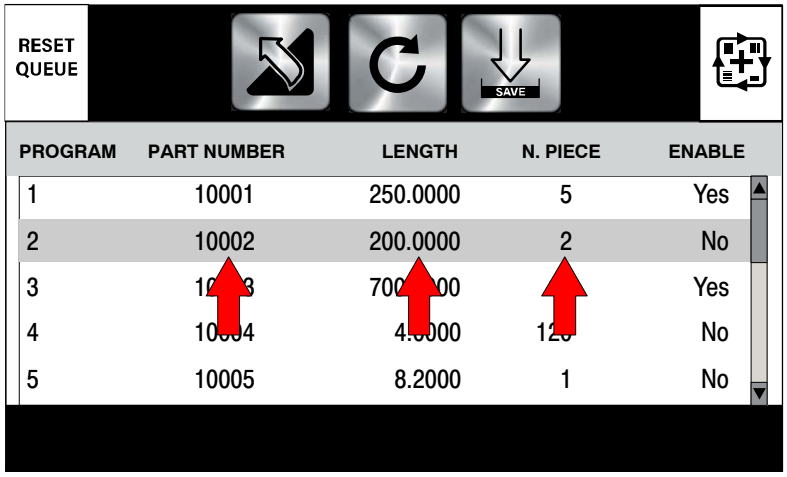
▶ Press the RUN/PROG key to access the programming page for the automatic operation with single cycle.



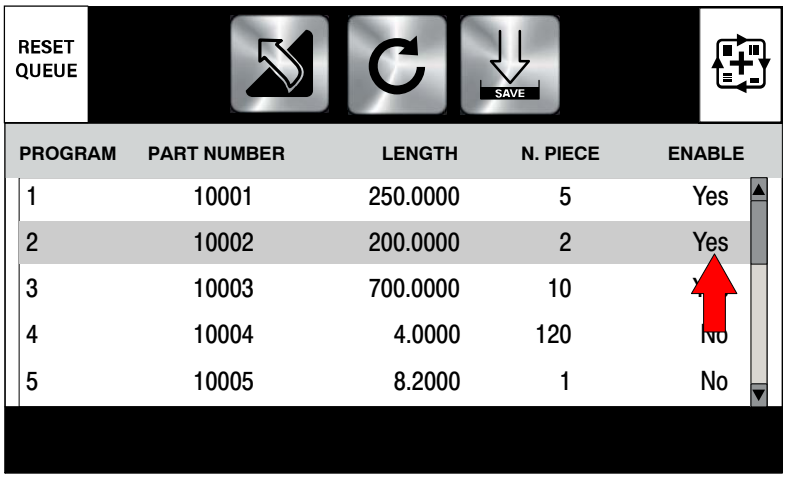
▶ The display shows the following screen listing all programs (max. 10). Press the program number to select the one to be set.



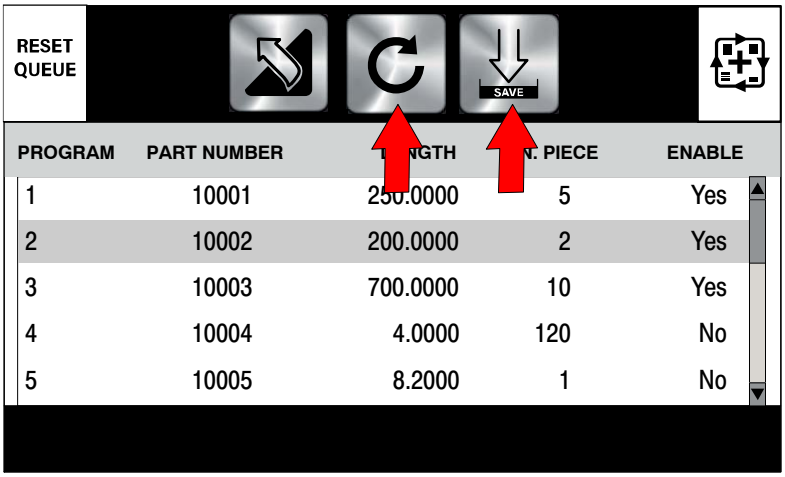
▶ Press to edit all values of “Part Number” (company identification code), “Length” (piece length), and “Nr. Piece” (number of pieces) using the key-pad.



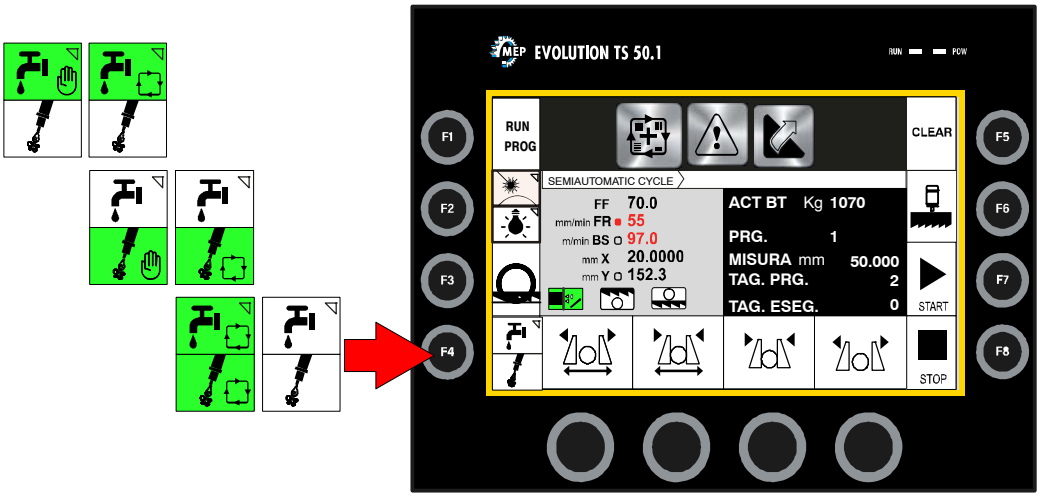
▶ In the end choose to activate or deactivate the selected by “Enable” (Yes / No).



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.

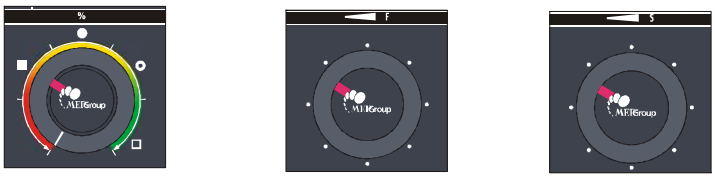


▶ Set the fluid jet by pressing the button shown in the figure. The box will light up to indicate that it is selected. Adjust the amount using the valves on the blade guide head. Press the button repeatedly to select the dispensing mode (automatic or manual).



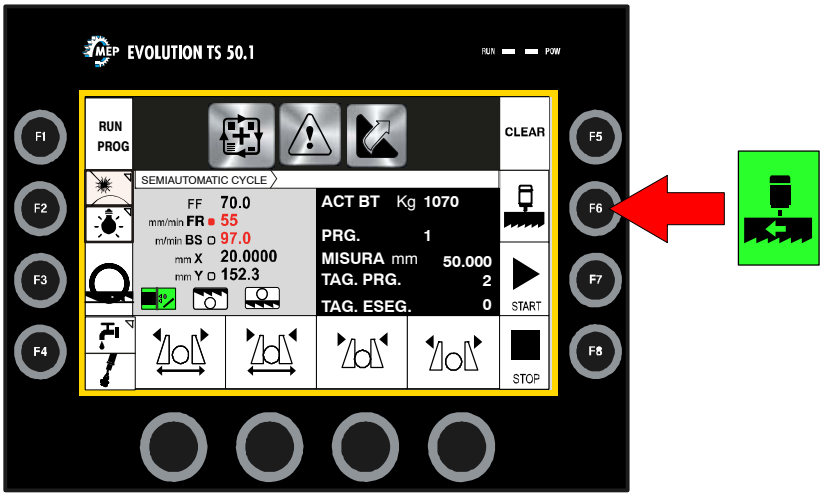
▶ Set the cutting parameters, previously shown, using the following adjusters.

Attention In this step it is recommended to set the head lower adjuster at the min. value, to prevent the head from lowering too fast breaking the blade.

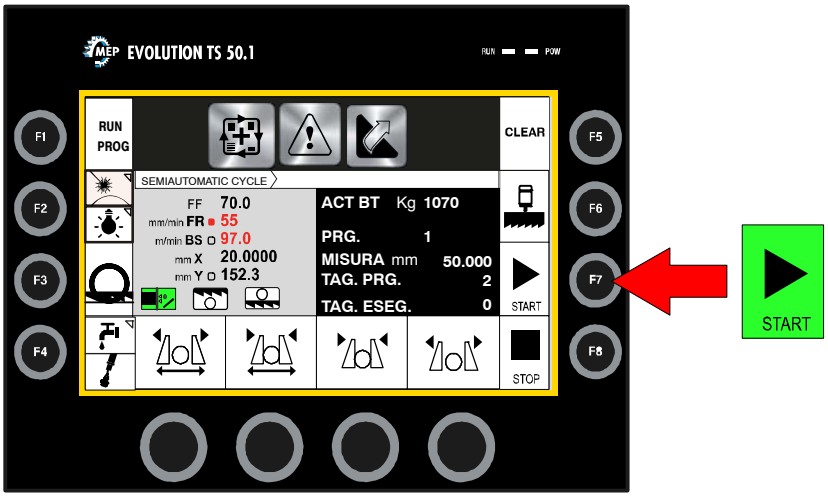


▶ Position the head at approximately 10 mm from the workpiece.

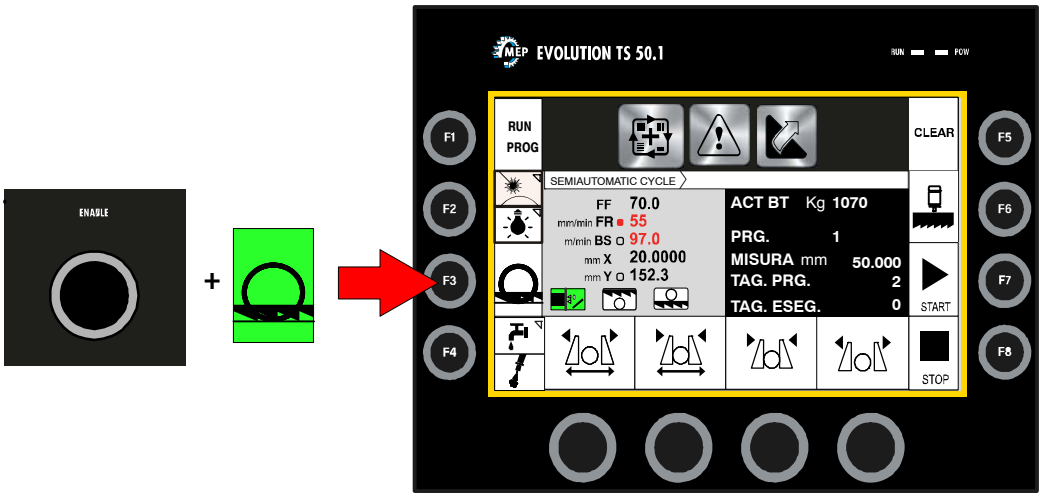
▶ Press the band rotation enabling key (F6).



▶ 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.

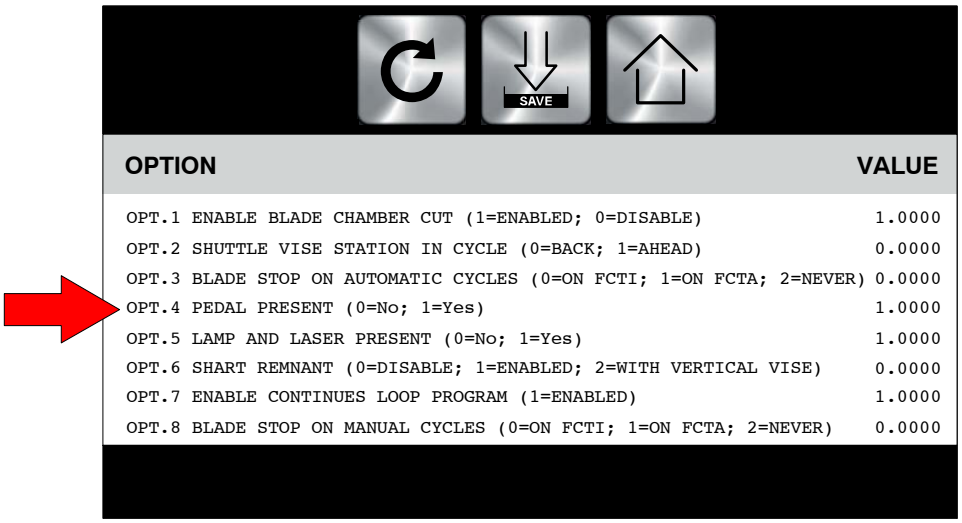


N.B. If the existing FHLS point is to be deleted now, follow the operations described above.



The sawing machine first makes the facing cut and then the previously stored programs, stopping at the end of each performed program, waiting for the start by the operator before going to the next program. At the end, the head rises again and the band motor stops. To repeat the cycle or to start a new machining press CLEAR (F5) to set the cut pieces to zero.

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.



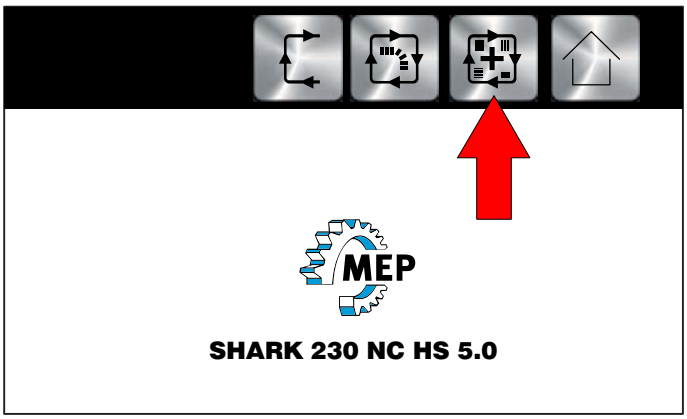
If the machining cycle must be stopped, press F8 Cycle Stop. To start it again, press an uold down the enabling command key and F7 Cycle Start key.

Automatic operating cycle with continuous cycle

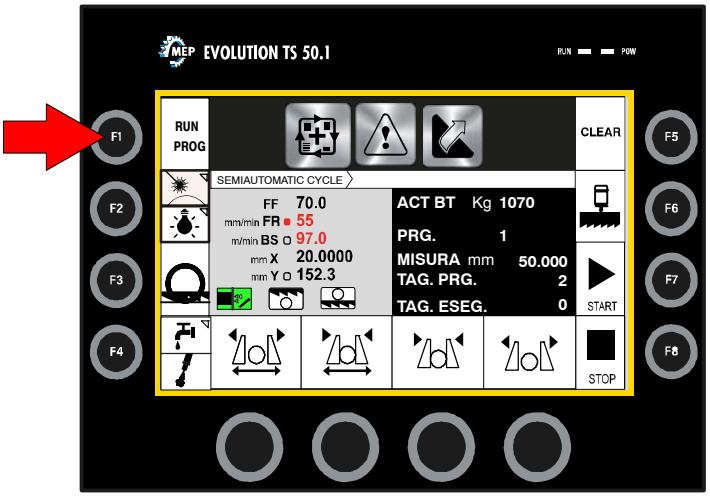
- Continuous cycle: it carries out the stored programs like in the single cycle but at the end of each program it AUTOMATICALLY goes to the next program.

The machine programming to carry out this type of automatic operation is the same as the one for the single cycle explained in the previous paragraph:

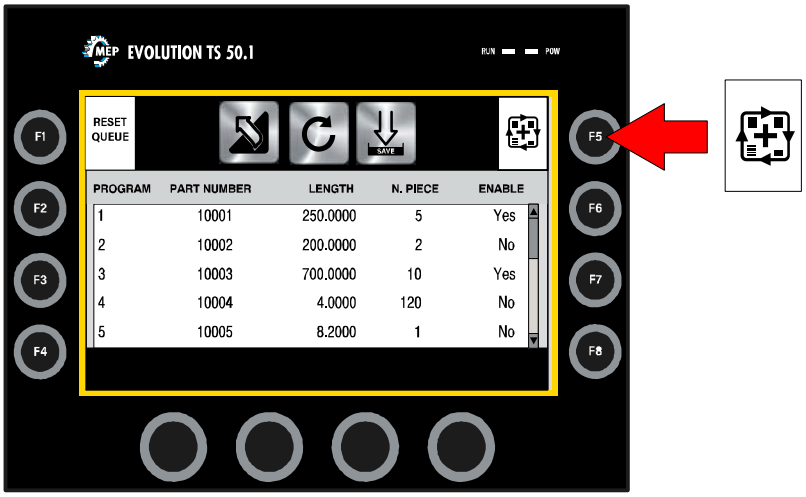
▶ After having initialized the machine, prepared the material to be machined and set the functional parameters, select the automatic machining mode with continuous cycle, pressing the box shown in the figure on the touch screen.



▶ Press the RUN/PROG key to program the cuts and lengths to be made as explained in the previous paragraph.

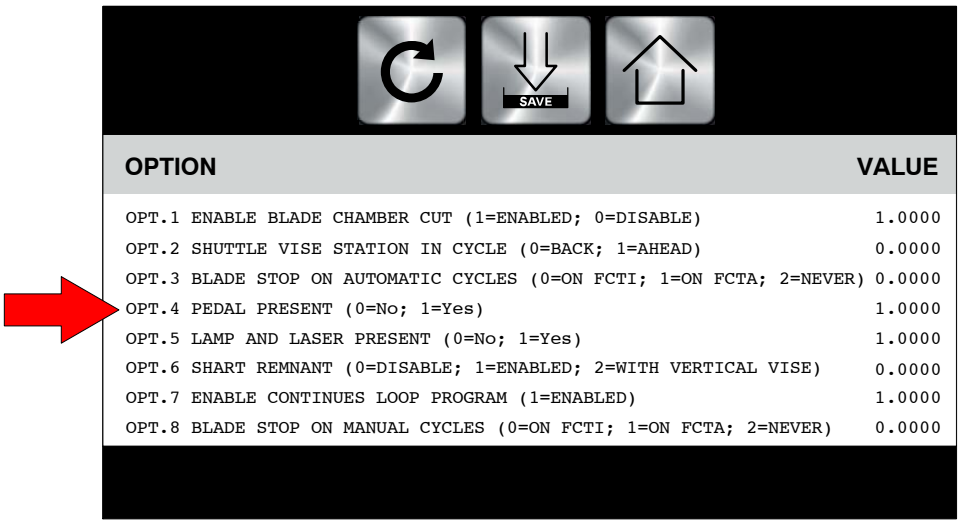


▶ Press the F5 key to select the Continuous Cycle – Automatic working mode (icon with “+”)



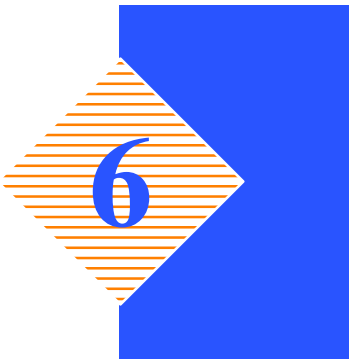
The sawing machine then feeds new material performing all the program cuts and continues automatically with the next ones according to the set sequence.

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.



If the machining cycle must be stopped, press F8 Cycle Stop. To start it again, press an uold down the enabling command key and F7 Cycle Start key.

Diagrams, exploded views and replace–ment parts



This chapter contains functional diagrams and exploded views of the **SHARK 230–1 NC HS 5.0**. 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.

APSL3 drive for step motors

FOREWORD

This drive enables to control a stepper motor using a direction–step pulse train. By connecting the input ENABLE with +15 V dc/+24 V dc the drive will be enabled (current in the motor = 12 A) with following power supply to the stepper motor, after sending at least 1 step, disconnecting or connecting with 0 V the drive will be disabled and the motor will be stopped, without supplying any torque.
The acceleration/deceleration ramp, the current and the step division can be adjusted using the dip switches and the trimmers on the card (see tables).

CHARACTERISTICS

CUT	APSL3
VDC NOM. [V]	40–80
VDC MAX. [V]	90
VDC MIN. [V]	30
I MAX. [A]	12
I MIN. [A]	1
I LÉPÉS [A]	0.5
Operating temperature [°C]	0–55

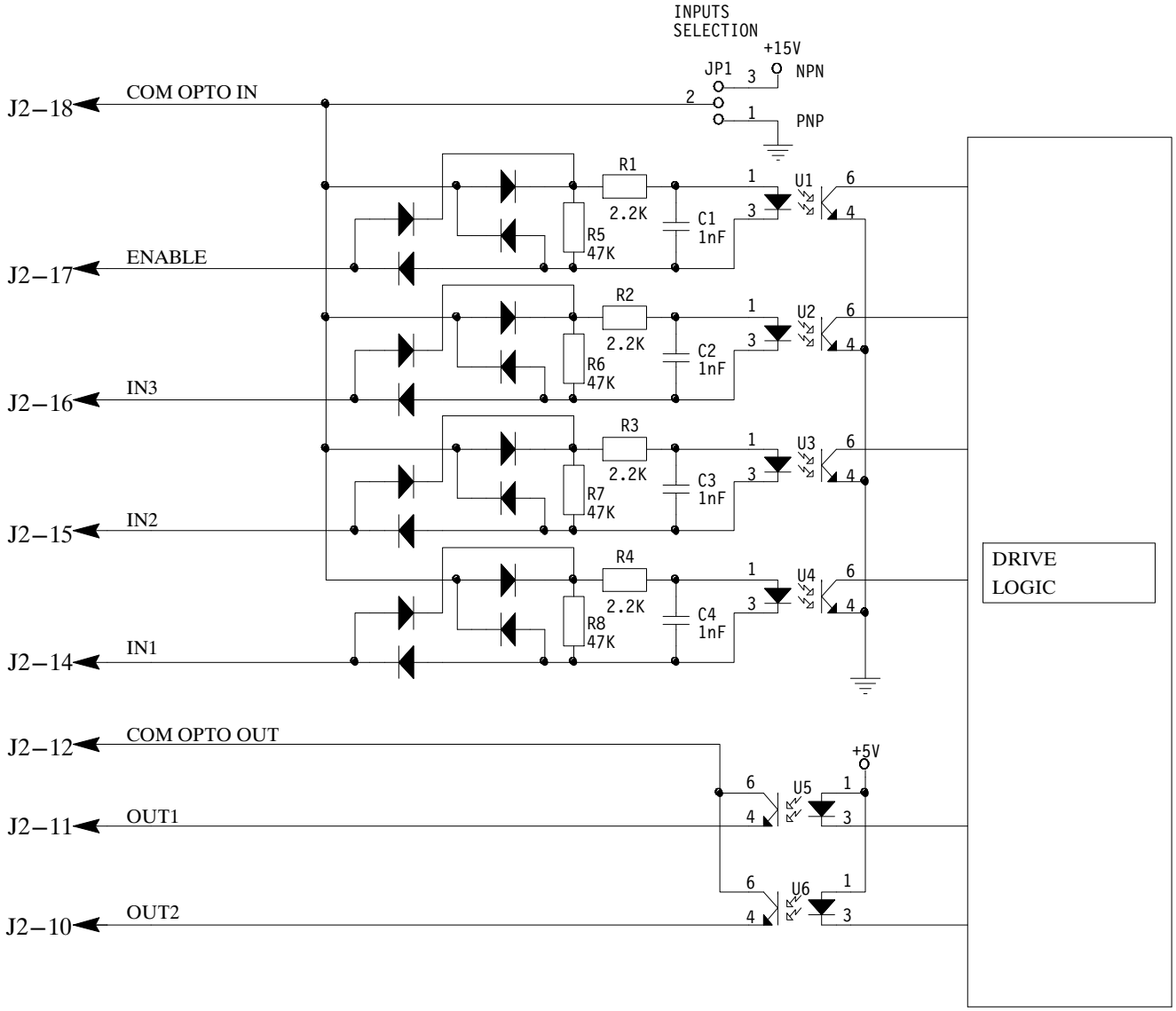
MEANING OF THE PARAMETERS IN THE TABLE

- **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.

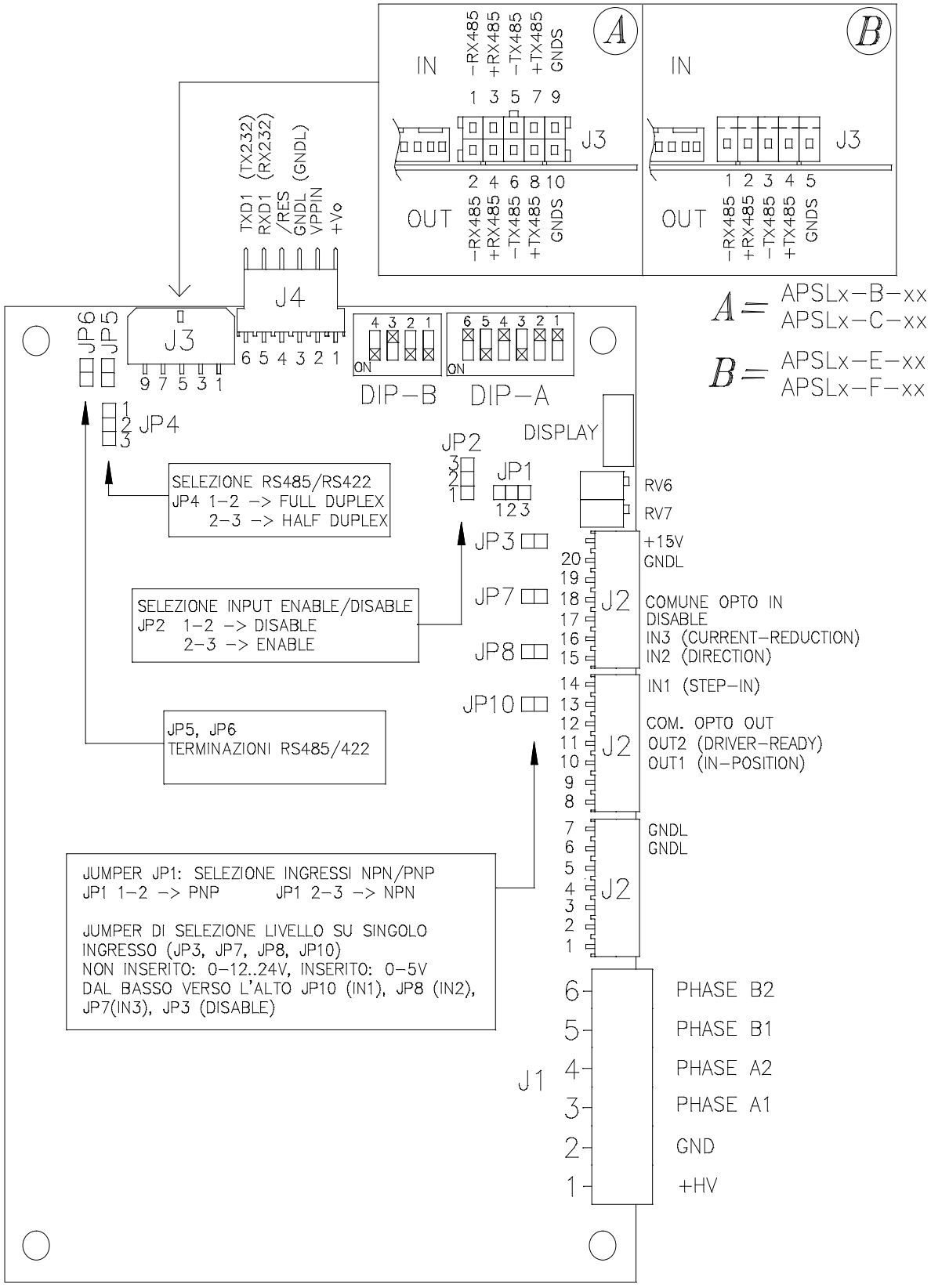
TECHNICAL CHARACTERISTICS – APSL3 DRIVE	
Power supply	Terminal Name: + HV (Positive power supply) GND (0 V)
Podłączenia silnika **Engine connection**	FAZA A1 = Faza A1 silnika krokowego FAZA A2 = Faza A2 silnika krokowego FAZA B1 = Faza B1 silnika krokowego FAZA B2 = Faza B2 silnika krokowego PHASE A1 = 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
Wyjścia **Outputs**	Są to optoizolowane wyjścia typu PNP „open collector” (maks. 10 mA) Of a PNP optoinsulated type “open collector” (10 mA max)
	Ponieważ są zawsze optoizolowane, należy podłączyć zewnętrzne zasilanie (+12 V/+24 V) do wspólnego zacisku optoizolatorów (pin 12, złącze J2). Maksymalny prąd dla każdego wyjścia (10 mA). 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).
Wejścia **Inputs**	Są to wejścia typu PNP (od 12 V DC do 24 V DC) Of a PNP type (from 12 Vdc to 24 Vdc)
	Nie optoizolowane: zwieracz JP1 – włączony Pin 12 złącza J2 – podłączony do +15V obwodu pomocniczego (pin 21, złącze J2) (zacisk wspólny optoizolatorów wejściowych) Not optoinsulated: jumper JP1 –inserted Pin 12 of connector J2 –connected to +15V auxiliary (pin 21 connector J2) (common input optoinsulators)
	Optoizolatory: zwieracz JP1 – nie włączony Pin 18 złącza J2 – podłączony do GND zewnętrznego zasilania (zacisk wspólny optoizolatorów wejściowych) Optoinsulated: jumper JP1–not inserted Pin 18 on connector J2 –connected to GND of outside power supply (common input optoinsulators)

TECHNICAL CHARACTERISTICS – APSL3 DRIVE	
Zabezpieczenia **Protections and safety devices**	Zabezpieczenia przeciwzwarciowe: – pomiędzy wyjściami – między wyjściami i dodatnim zaciskiem zasilania W razie wystąpienia jednej z powyższych sytuacji, napęd wyłączy mostek zasilania i wyświetli na monitorze komunikat o błędzie: „u” = błędna wartość napięcia zasilania „t” = zadziałanie zabezpieczenia termicznego „c” = zadziałanie zabezpieczenia nadprądowego w razie zwarcia międzyfazowego lub przeciążenia prądowego. Jeśli napęd nie jest w stanie zabezpieczenia, na monitorze będzie wyświetlana litera „r” (ready). 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).
	Zabezpieczenie termiczne przed przegrzewaniem Thermal protection against overheating
	Zabezpieczenie przed podnapięciem i przepięciem w sieci Mains undervoltage and overvoltage safety devices

SCHEMATIC CONFIGURATION OF INPUTS / OUTPUTS



LAYOUT OF APSL3 DRIVE COMPONENTS

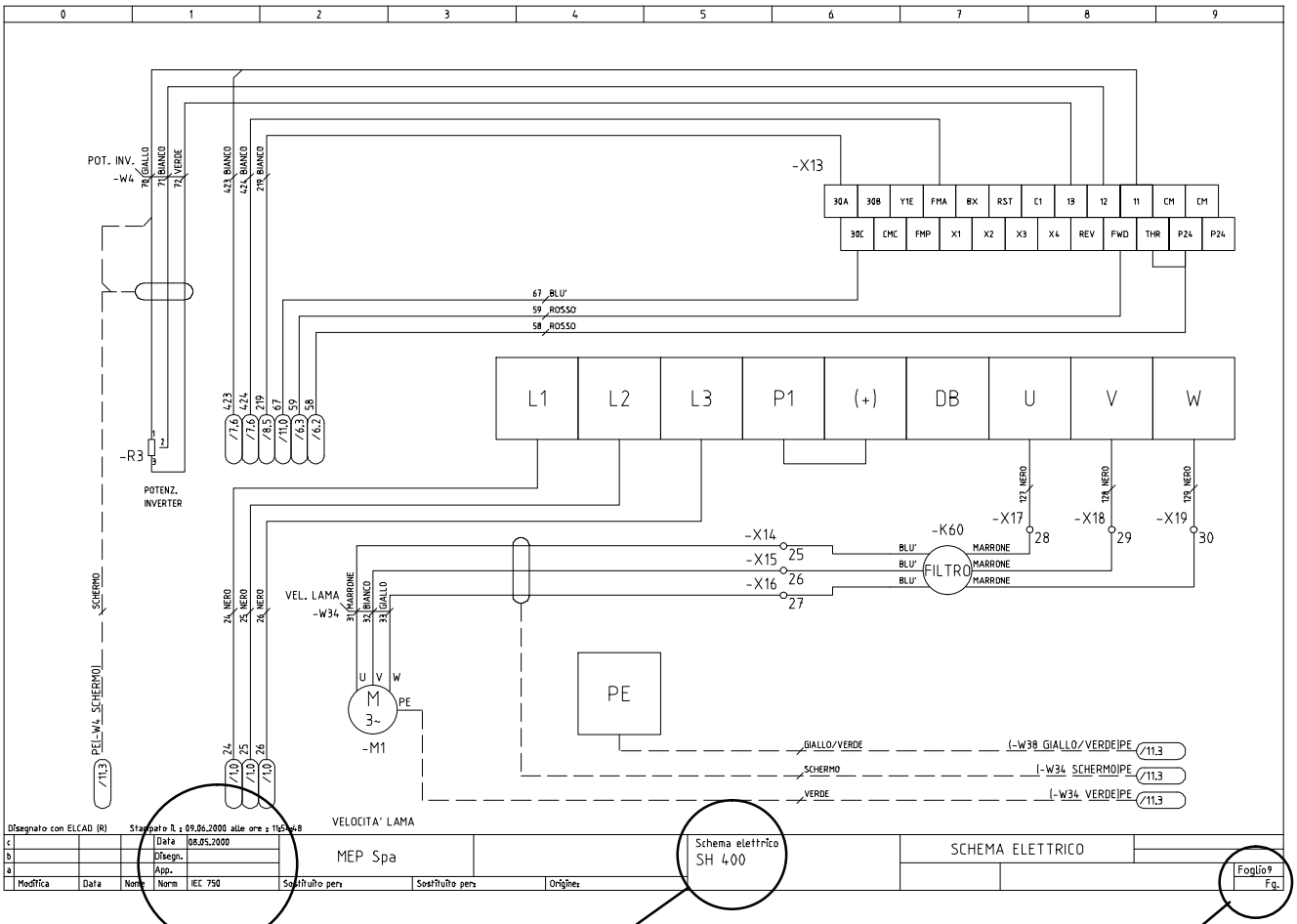


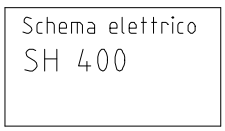
How to read the wiring diagrams

With the introduction of the new standardised wiring diagrams, the following gives an illustration of the way in which they have been drawn up.

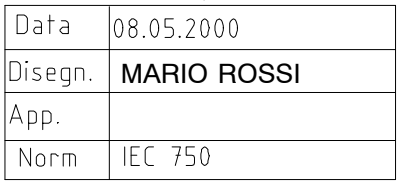
Each sheet of the project contains a box which gives the following information:

The numbers indicate the columns into which the entire drawing is divided





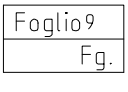
Indications of the model of machine



Indications of the date production started

Identification of the designer

Identification of the Reference Standard

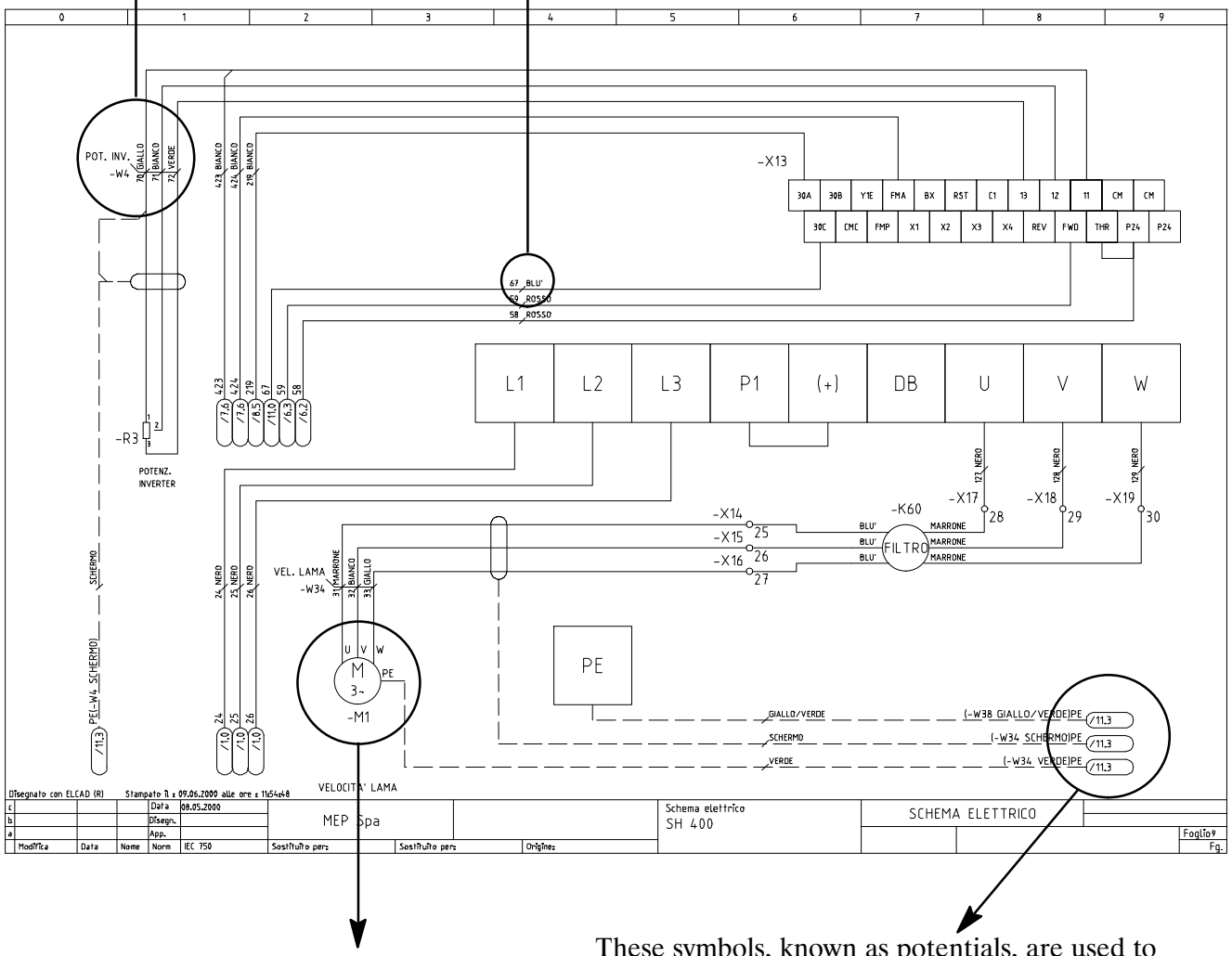


Indication of the page number

Each component in the wiring diagram is identified by a unique alphanumeric identification code, in compliance with regulations:

The wire is identified by the code –W4

This symbol identifies the wire with its relative number and colour



The motor is identified by the code –M1

These symbols, known as potentials, are used to provide page references: the first number indicates the page to be referred to, the second number, after the dot, identifies the column on that page; example /11.8 indicates that the wire continues on page no. 11 in column 8

The pages following the wiring diagrams contain the following lists:

1. components list (list of all components) and terminals list (list of all the terminals) with the following information:
   - in–house article code;
   - identification code;
   - reference, no. of the page and column on which it can be found;
   - description;
   - manufacturer.

ART. COD.	ID	PRES. REF	DESCRIPTION	MANUFACTURER
022.2151	–B1	/5.2	STRAIN GAUGE	DELTATEC

2. wires list (list of all wires) with the following information:
   - in−house article code;
   - identification code;
   - description;
   - section of wire (mm2);
   - colour of wire;
   - start: indicates the component (identification code and contact number) at which the wire starts;
   - end: indicates the component (identification code and contact number) at which the wire ends; e.g.

CODE	CABLE	DESCRIPTION	SECTION	NO.	COLOUR	START		END	
022.0141	–W7	RESET+EMER-GENZA	0.50	317	BIANCO	–S3	4	–K10	14

In this example, wire no. 317 white, identified as −W7, starts from contact no. 4 on component −S3, and ends at contact no. 14 on component −K10.
Enclosed below is Appendix D2 to European Standard EN 60204−1

D2−Letter codes used to designate the type of component

LETTER	TYPE OF COMPONENT	EXAMPLES	IDENTIFICATION OF THE APPLIANCE
A	Complex units	Laser Maser Regulator	A
B	Transducers converting a non electrical signal to an electrical signal and vice versa	Transistor amplifier IC amplifier Magnetic amplifier Valve amplifier Printed circuit board Drawer Rack	AD AJ AM AV AP AT AR
C	Capacitors		C
D	Binary operators, timing devices, storage devices	Digital integrated circuits and devices: Delay line Bistable element Monostable element Recorder Magnetic memory Tape or disk recorder	D
E	Various materials	Devices not specified in this table	E
F	Protective Devices	Lightning protectors Arrestors	F
		Instant action current threshold protector Delayed action current threshold protector Instant and delayed action current threshold protector Fuse Voltage threshold protector	FA FR FS FU FV

LETTER	TYPE OF COMPONENT	EXAMPLES	IDENTIFICATION OF THE APPLIANCE
G	Generators, feeders	Rotating generators Crystal oscillators	G
		Accumulator battery Rotating or static frequency converter Power feeder	GB GF GS
H	Signaling Devices	Buzzer Optical signal, indicator light device	HA HL
J			
K	Relays, Contactors	Instant all or nothing relays or instant contactors Bistable relays or interdependent contactors (All or nothing contactors with mechanical contact or permanent magnet etc.) Contactors Polarised relays Reed relays All or nothing timed relays (timers)	KA KL KM KP KR KT
L	Inductors, reactors	Inductor Stop coil Reactor	L
M	Motors		M
N	Analogue intgrated circuits	Operational amplifiers Hybrid analog/digital appliances	N
P	Measurement equipment, test devices	Indicator, recorder and integrator measurement devices Signal generators	P
Q	Power circuit switching appliances	Automatic switch Engine saver switch Knife switch	QF QM QS
R	Resistors	Fixed or variable resistor (rheostat)	R
S	Command or control devices	Selector or switch Button (including electronic proximity switch) Numerical all or nothing sensors (single step) of mechanical and electronic type: – Liquid level sensor –Pressure sensor Position sensor (including proximity) –Rotation sensor –Temperature probe	SA SB SL SP SQ SR ST

LETTER	TYPE OF COMPONENT	EXAMPLES	IDENTIFICATION OF THE APPLIANCE
T	Transformers	Current transformer Control circuit supply transformer Power transformer Magnetic stabiliser Voltage transformer	TA TC TM TS TV
U	Modulators, converters	Discriminator Demodulator Frequency converter Coder Converter Inverter Telegraphic repeater	U
V	Electronic pipes, semiconductors	Electronic pipe Gas discharge pipe Diode Transistor Thyristor	V
W	Transmission lines, wave guides, antennas	Conductor Cable Bar Wave guide Wave guide directional coupler Dipole Parabolic antenna	W
X	Terminals, sockets, plugs	Connector bar Test plug Plug Socket Terminal connector band	XB XJ XP XS XT
Y	Electrically operated mechanical appliances	Electromagnet Electromagnetic brake Electromagnetic clutch Magnetic table spindle Electromagnetic valve	YA YB YC YH YV
Z	Transformers, impedence adapters, equalizers, band limiters	Line equalizer Compresser Crystal filter	Z

LISTA FOGLI \ INDEX

Foglio Sheet	Descrizione Description	Revisione \ Revision 0	1	2	3	4	5	6	7	8	9
1	INDICE CONTENUTI										
	Content Index										
2	INDICE CONTENUTI										
	Content Index										
3	LEGENDA SIMBOLI										
	Symbol Key										
4	LEGENDA SIMBOLI										
	Symbol Key										
5	ALIMENTAZIONE										
	Power Supply										
6	ALIMENTAZIONE MOTORI 400V										
	Motor Power Supply 400V										
7	ALIMENTAZIONE MOTORI 400V										
	Motor Power Supply 400V										
8	ALIMENTAZIONE TRASFORMATORI										
	Transformer Power Supply										
9	ALIMENTAZIONE MOTORE STEPPER										
	Stepper Motor Power Supply										
10	ALIMENTAZIONE AUSILIARI										
	Auxiliary Circuit Power Supply										
11	CONNESSIONI PLC DI SICUREZZA 1										
	SAFETY PLC Connections 1										
12	CONNESSIONI PLC DI SICUREZZA 2										
	SAFETY PLC Connections 2										
13	CONNESSIONI PLC DI SICUREZZA 3										
	SAFETY PLC Connections 3										
14	CONNESSIONI PLC DI SICUREZZA 4										
	SAFETY PLC Connections 4										
15	AUSILIARI INVERTER Lenze										
	Inverter Lenze Auxiliary Circuits										
16	AUSILIARI MOTORE STEPPER										
	Stepper Motor Auxiliary Circuits										
17	UNITA' CENTRALE MEP50										
	Central Unit MEP50										
18	INGRESSI DIGITALI MEP50										
	Digital Input MEP50										
19	INGRESSI DIGITALI MEP50										
	Digital Input MEP50										
20	USCITE DIGITALI MEP50										
	Digital Output MEP50										
21	USCITE DIGITALI MEP50										
	Digital Output MEP50										
22	USCITE DIGITALI MEP50										
	Digital Output MEP50										
23	INGRESSI ANALOGICI MEP50										
	Analog Input MEP50										
24	INGRESSI ANALOGICI MEP50										
	Analog Input MEP50										
25	USCITE STEPPER MEP50										
	Stepper Output MEP50										
26	USCITA ANALOGICA E SERIALE MEP50										
	Analog Output and Serial MEP50										

Note :

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: INDICE CONTENUTI / Content Index

Ordine/Requisition
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 1
Segue/Follow: 2
Ultimo/Last: 220

LISTA FOGLI \ INDEX

Foglio Sheet	Descrizione Description	Revisione \ Revision 0	1	2	3	4	5	6	7	8	9
27	ALIMENTAZIONE E ENCODER PANNELLO										
	Power Supplay and Panel Encoder										
28	OPTIONAL										
	Optional										
29	MORSETTIERA QUADRO										
	Panel Terminal Board										
30	INTERNO QUADRO										
	Board Inside										
31	GUAINE E ACCESSORI										
	Sheaths and Accessories										
32	RIASSUNTIVO CAVI										
	Cable Summary										
33	RIASSUNTIVO CAVI										
	Cable Summary										
34	RIASSUNTIVO CAVI										
	Cable Summary										
35	RIASSUNTIVO CAVI										
	Cable Summary										
36	RIASSUNTIVO CAVI										
	Cable Summary										
37	RIASSUNTIVO CAVI										
	Cable Summary										
38	DISTINTA MATERIALI										
	Material List										
39	DISTINTA MATERIALI										
	Material List										

Foglio Sheet	Descrizione Description	Revisione \ Revision 0	1	2	3	4	5	6	7	8	9
40	DISTINTA MATERIALI										
	Material List										
41	DISTINTA MATERIALI										
	Material List										
42	DISTINTA CAVI										
	Cable list										
43	DISTINTA CAVI										
	Cable list										

Note :

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: INDICE CONTENUTI / Content Index

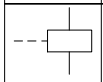
Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

MEP

Foglio/Page: 2
Segue/Follow: 3
Ultimo/Last: 220

Translation of the original instructions

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*

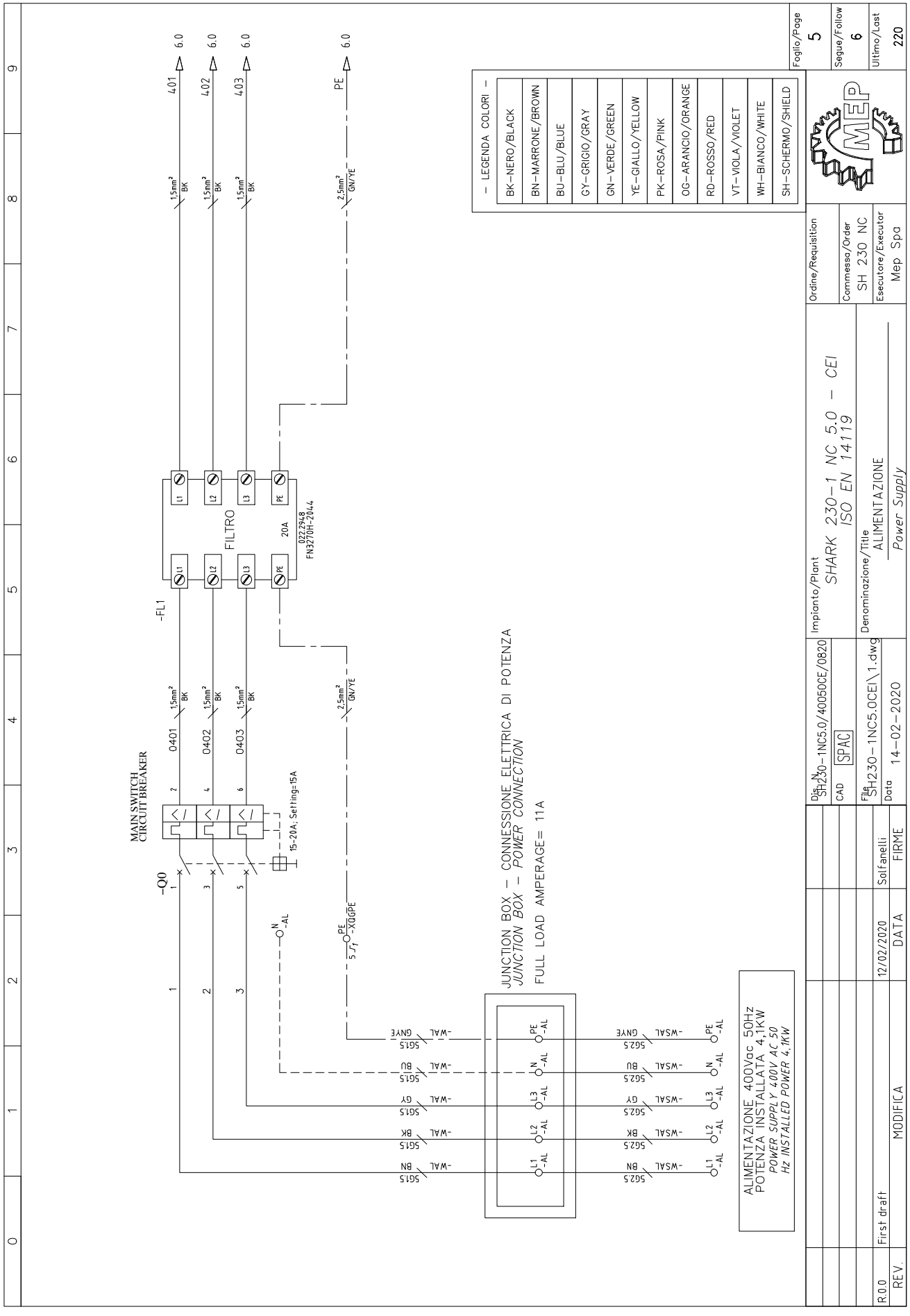
				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant *SHARK 230-1 NC 5.0 - CEI ISO EN 14119*	Ordine/Requisition		Foglio/Page 3
				CAD SPAC		Commessa/Order SH 230 NC		Segue/Follow 4
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title LEGENDA SIMBOLI	Esecutore/Executor Mep Spa		Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	*Symbol Key*			
REV.	MODIFICA	DATA	FIRME					

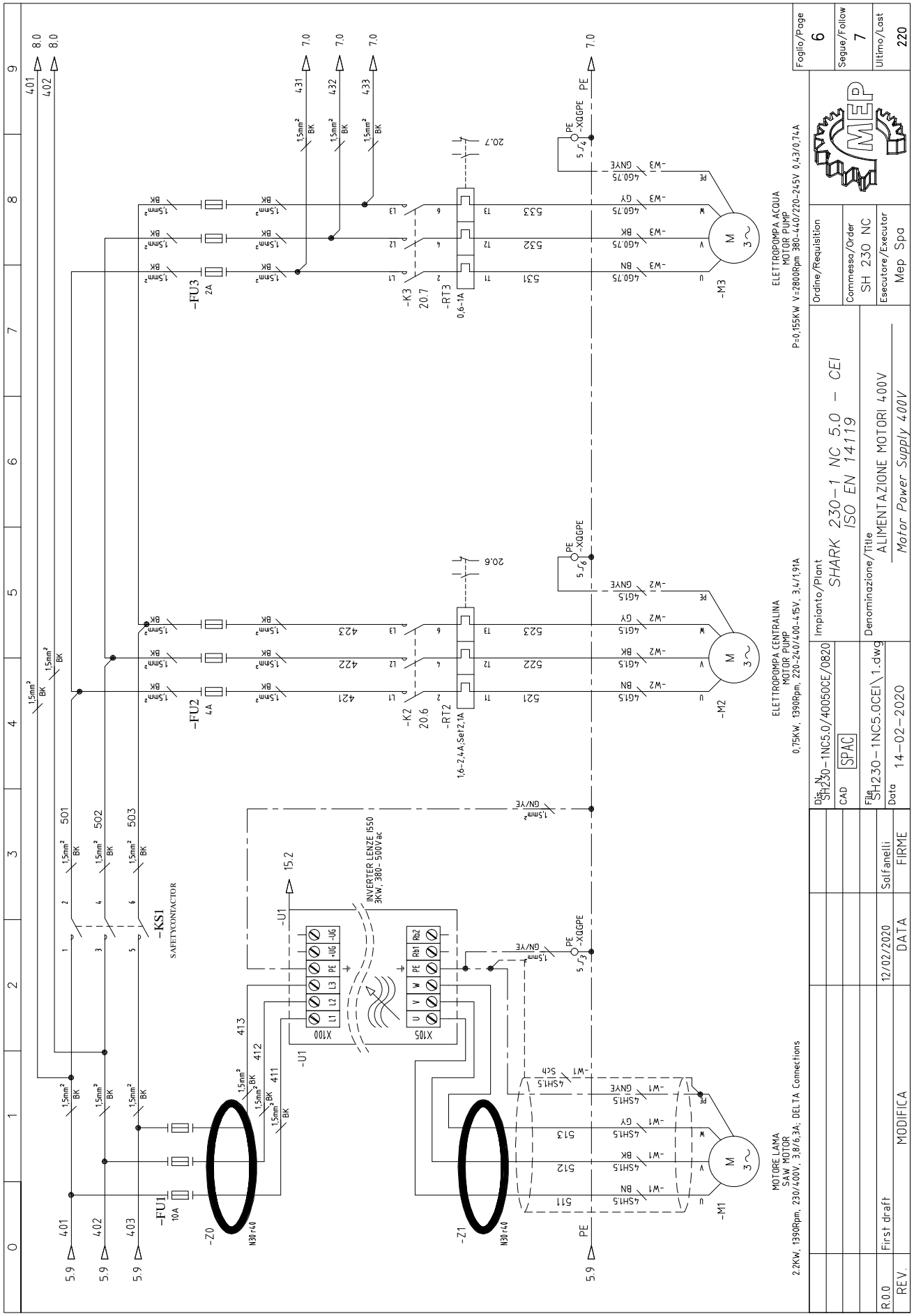
Sim.\Sym.	File	Descrizione\Description
	BLK58	Fascette plastiche di fissaggio *Plastic clamp*
	BLK60	Terminale a occhiello *Terminal*
	BLK66	Sacchetto portafusibile *Bag fuse*
	SPX08E	Dispositivo di prossimita' induttivo D.C. NO *Sensor of proximity fed DC NO*

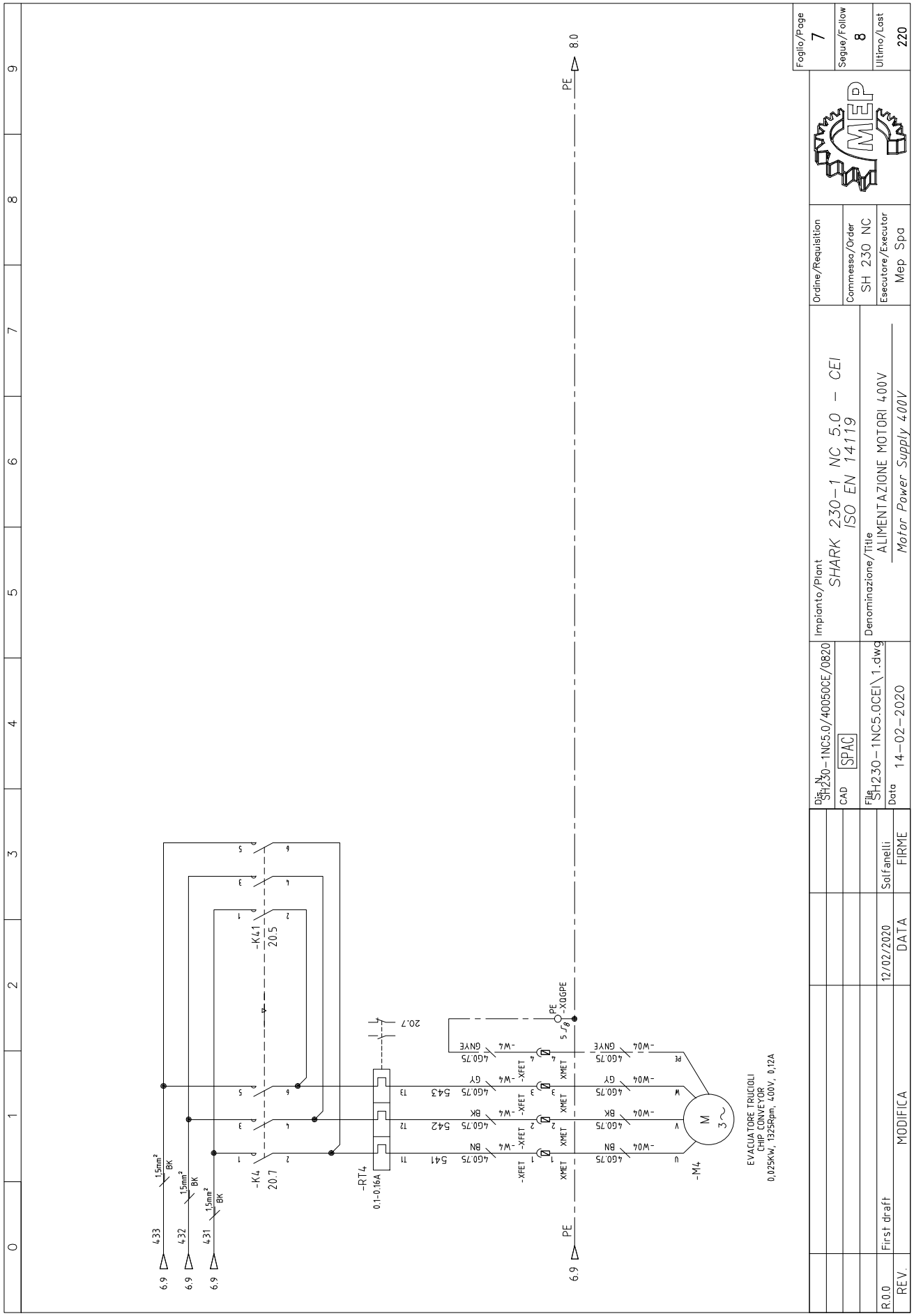
Sim.\Sym.	File	Descrizione\Description

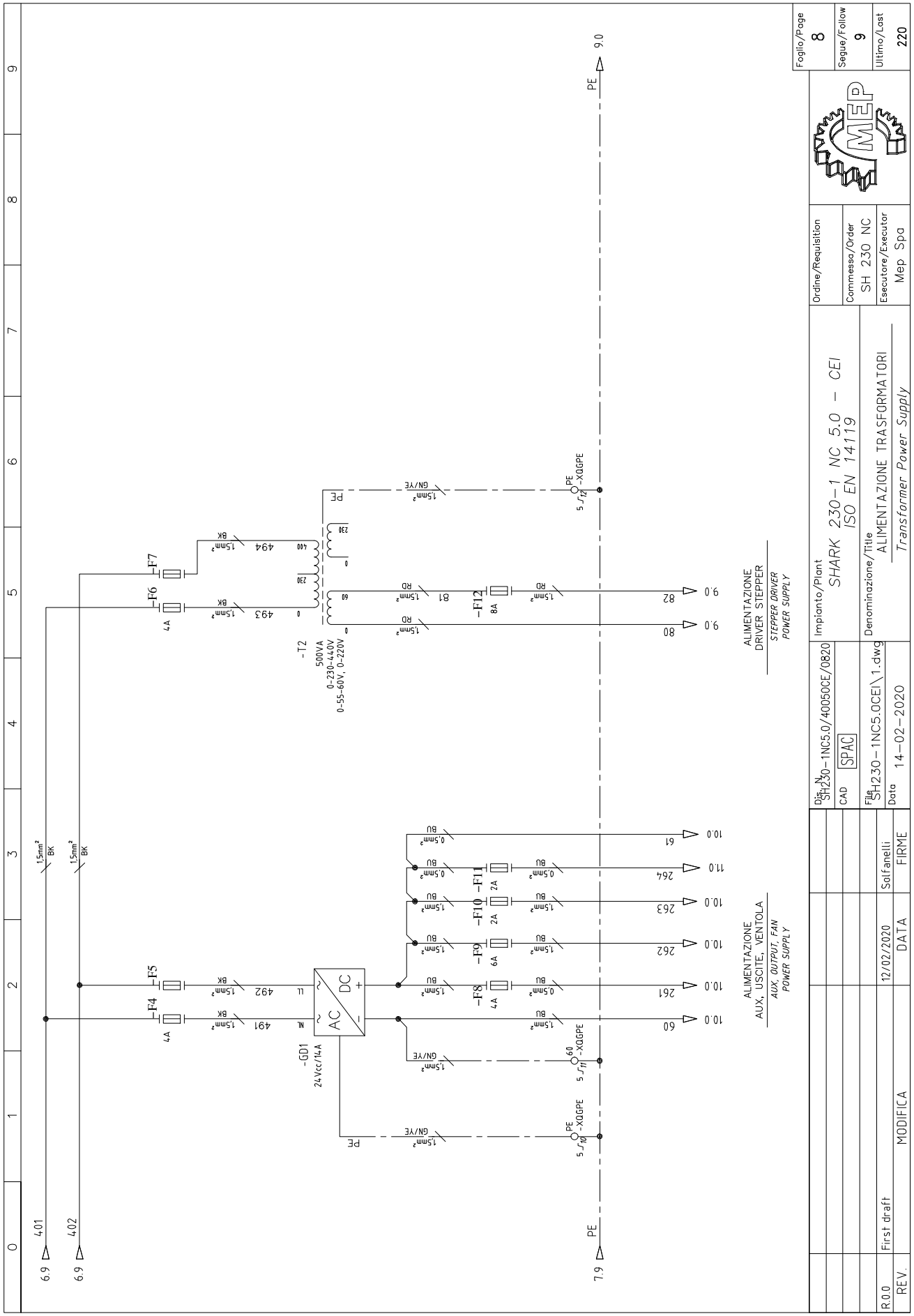
Sim.\Sym.	File	Descrizione\Description

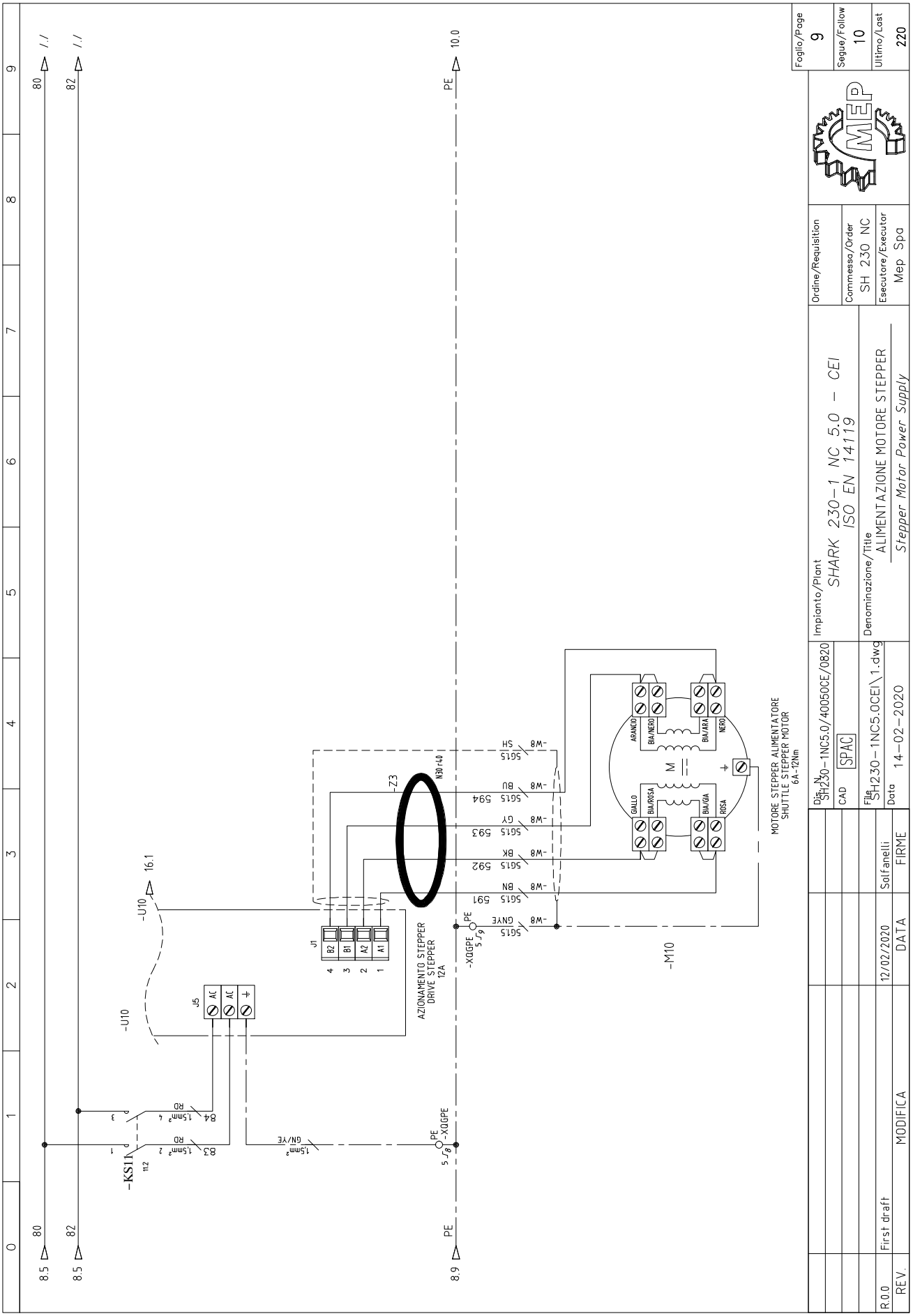
				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition		Foglio/Page 4
				CAD SPAC		Commessa/Order SH 230 NC		Segue/Follow 5
R.0.0	First draft	12/02/2020	Solfanelli	File SH230-1NC5.0CEI\1.dwg	Denominazione/Title LEGENDA SIMBOLI	Esecutore/Executor Mep Spa		Ultimo/Last 220
REV.	MODIFICA	DATA	FIRME	Data 14-02-2020	*Symbol Key*			

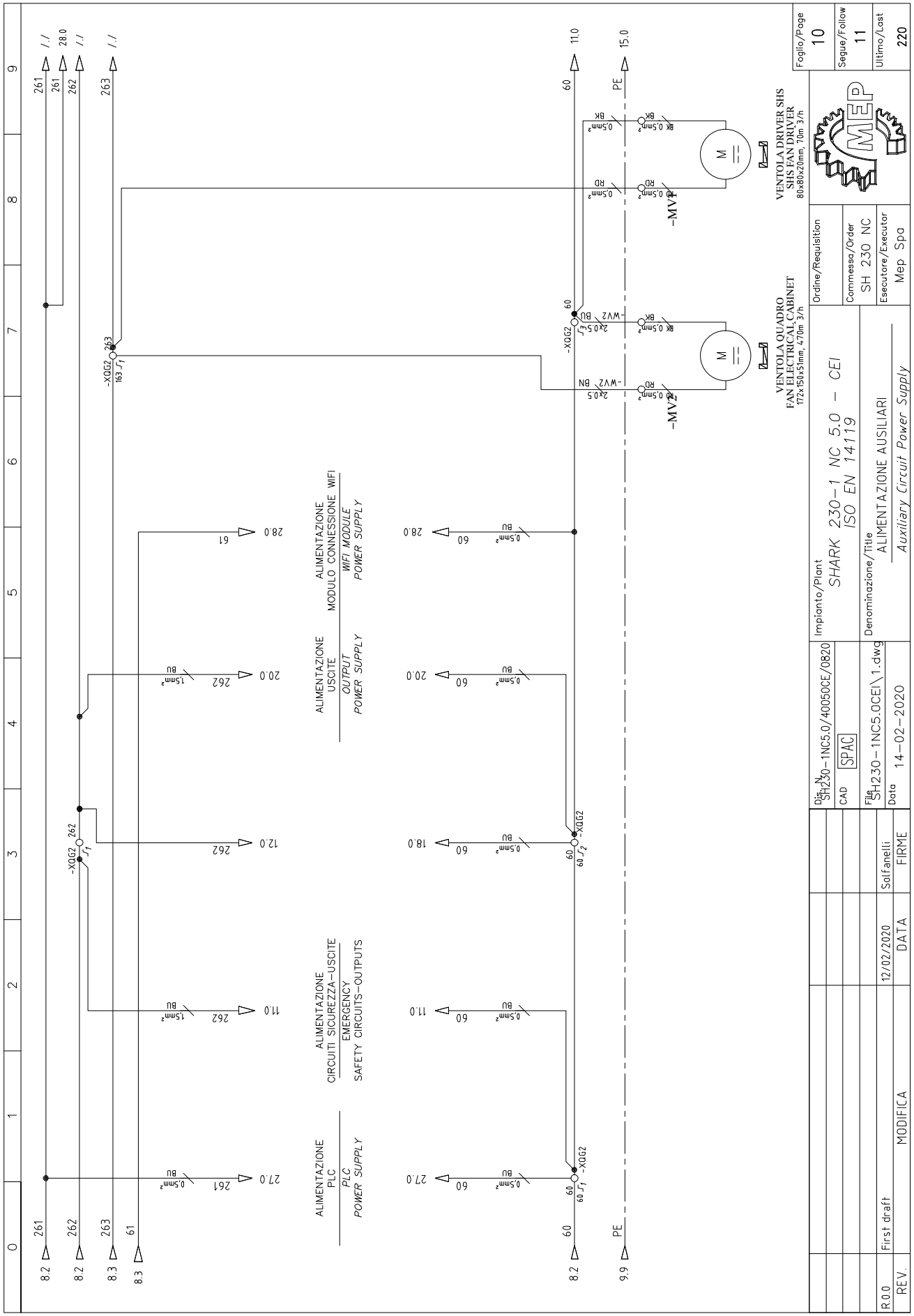

- LEGENDA COLORI -
BK-NERO/BLACK
BN-MARRONE/BROWN
BU-BLU/BLUE
GY-GRIGIO/GRAY
GN-VERDE/GREEN
YE-GIALLO/YELLOW
PK-ROSA/PINK
OG-ARANCIO/ORANGE
RD-ROSSO/RED
VT-VIOLA/VIOLET
WH-BIANCO/WHITE
SH-SCHERMO/SHIELD
MAIN SWITCH
CIRCUIT BREAKER
-Q0
15-20A, Setting=15A
-FL1
FILTRO
022.2948
FN3270H-20/44
20A
JUNCTION BOX - CONNESSIONE ELETTRICA DI POTENZA
JUNCTION BOX - POWER CONNECTION
FULL LOAD AMPERAGE= 11A
ALIMENTAZIONE 400Vac 50Hz
POTENZA INSTALLATA 4,1KW
POWER SUPPLY 400V AC 50
Hz INSTALLED POWER 4,1KW
401
402
403
PE
0401
0402
0403
-XGGPE
-XAL
-WAL
-WSAL
Foglio/Page 5
Segue/Follow 6
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title ALIMENTAZIONE
Power Supply
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH1230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.00 First draft 12/02/2020 Salfanelli
REV. MODIFICA DATA FIRME

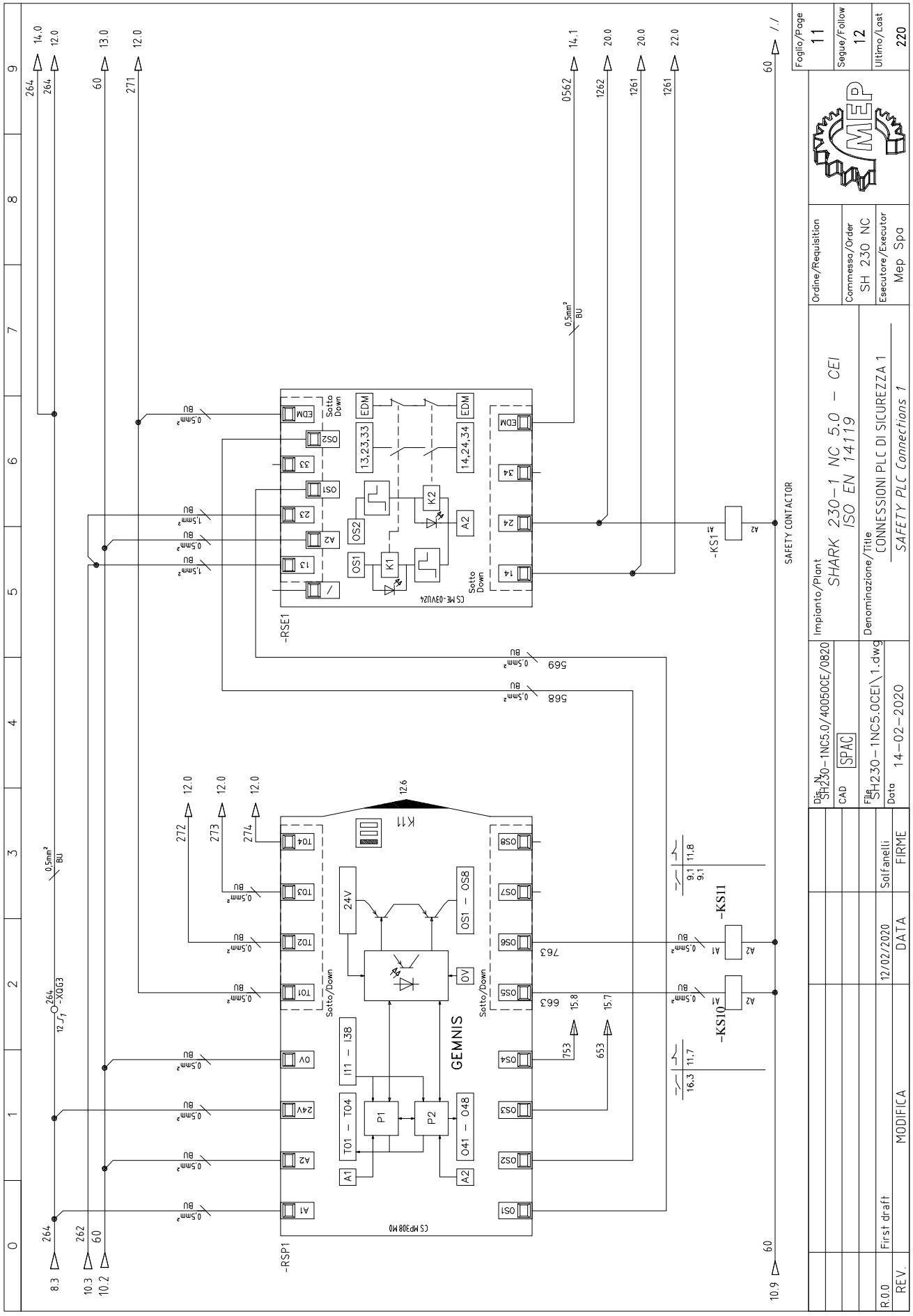

SHARK 230-1 NC 5.0 - CEI ISO EN 14119
ALIMENTAZIONE MOTORI 400V
Motor Power Supply 400V
SH230-1NC5.0/400500CE/0820
SH230-1NC5.OCEI\1.dwg
14-02-2020
MODIFICA
DATA
FIRME
First draft
Solfanelli
12/02/2020
MOTORE LAMA
SAW MOTOR
2.2KW, 1390Rpm, 230/400V, 3,8/6,3A; DELTA Connections
ELETTROPOMPA CENTRALINA
MOTOR PUMP
0,75KW, 1390Rpm, 220-240/400-415V, 3,4/1,91A
ELETTROPOMPA ACQUA
MOTOR PUMP
P=0,155KW V=2800Rpm 380-440/220-245V 0,43/0,74A
-KS1
SAFETYCONTACTOR
-FU1
10A
-FU2
4A
-FU3
2A
-K2
-K3
-RT2
1,6-2,4A;Sez.1A
-RT3
0,6-1A
-U1
INVERTER LENZE I550
3KW, 380- 500Vac
-M1
-M2
-M3
-Z0
-Z1
N30 r44
SH 230 NC
Commessa/Order
Esecutore/Executor
Mep Spa
Ordine/Requisition
Impianto/Plant
Denominazione/Title
Foglio/Page 6
Segue/Follow 7
Ultimo/Last 220

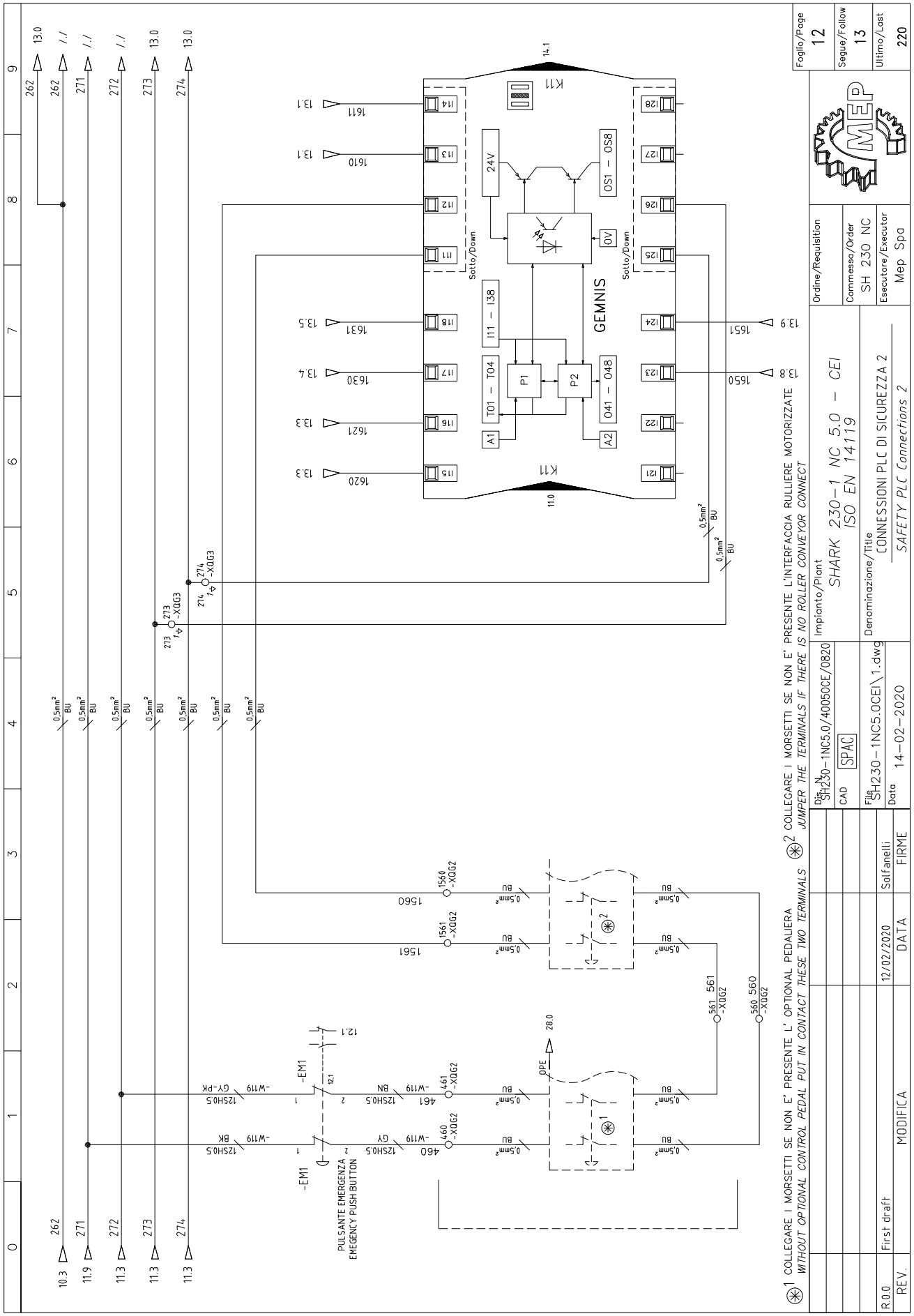

Foglio/Page 7
Segue/Follow 8
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title ALIMENTAZIONE MOTORI 400V
Motor Power Supply 400V
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH1230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME
-K4 20.7
-K41 20.5
-RT4 0.1-0.16A
-M4
EVACUATORE TRUCIOLI CHIP CONVEYOR 0,025KW, 1325Rpm, 400V, 0,12A
-XQGPE
PE
8.0
6.9
20.7
433
432
431
1,5mm² BK

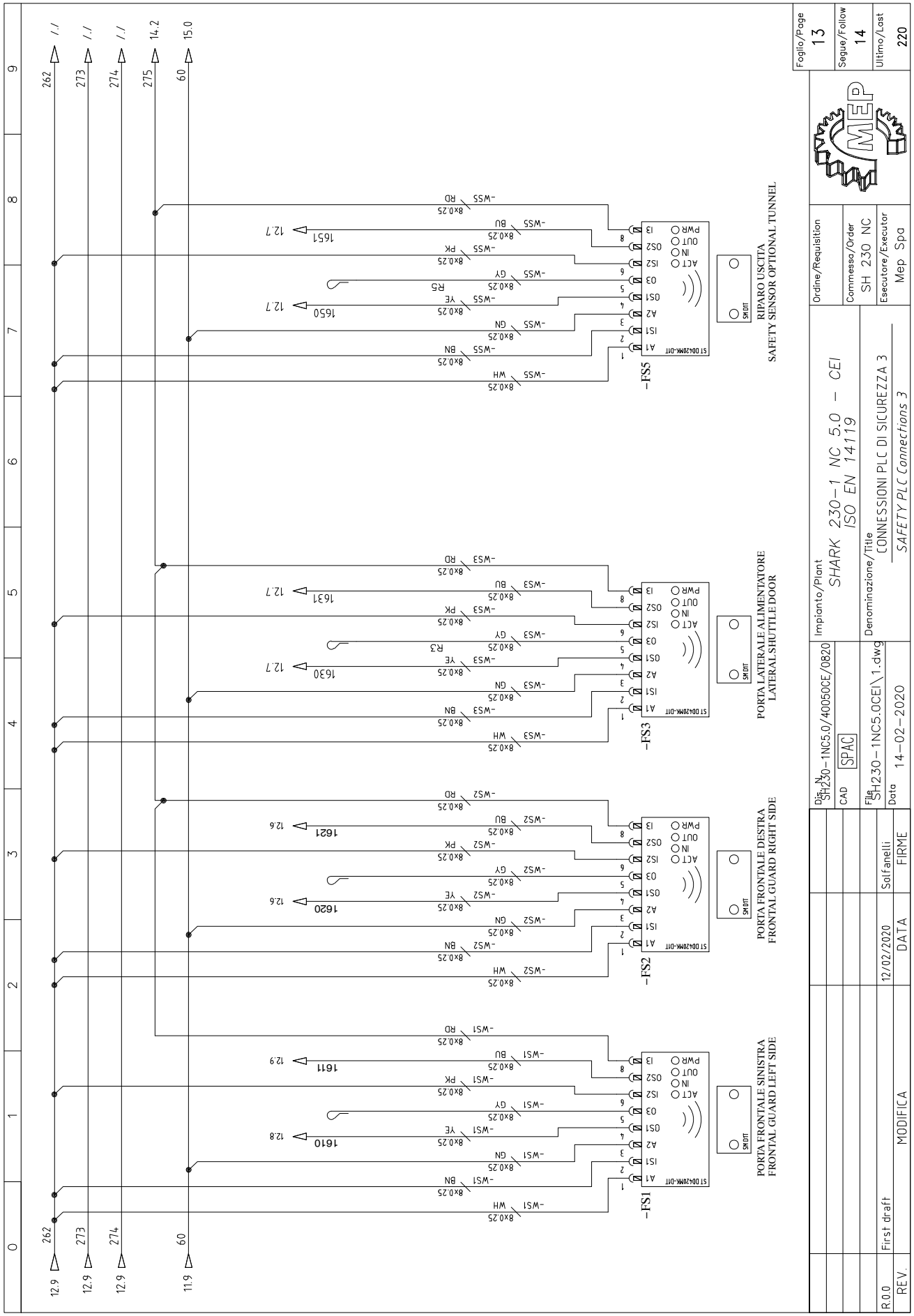

Foglio/Page 8
Segue/Follow 9
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title ALIMENTAZIONE TRASFORMATORI
Transformer Power Supply
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.00 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME
-T2 500VA 0-230-440V 0-55-60V, 0-220V
-GD1 24Vcc/4uA
-F4 4A
-F5
-F6 4A
-F7
-F8 4A
-F9 6A
-F10 2A
-F11 2A
-F12 8A
ALIMENTAZIONE DRIVER STEPPER
STEPPER DRIVER POWER SUPPLY
ALIMENTAZIONE AUX, USCITE, VENTOLA
AUX, OUTPUT, FAN POWER SUPPLY
PE
401
402

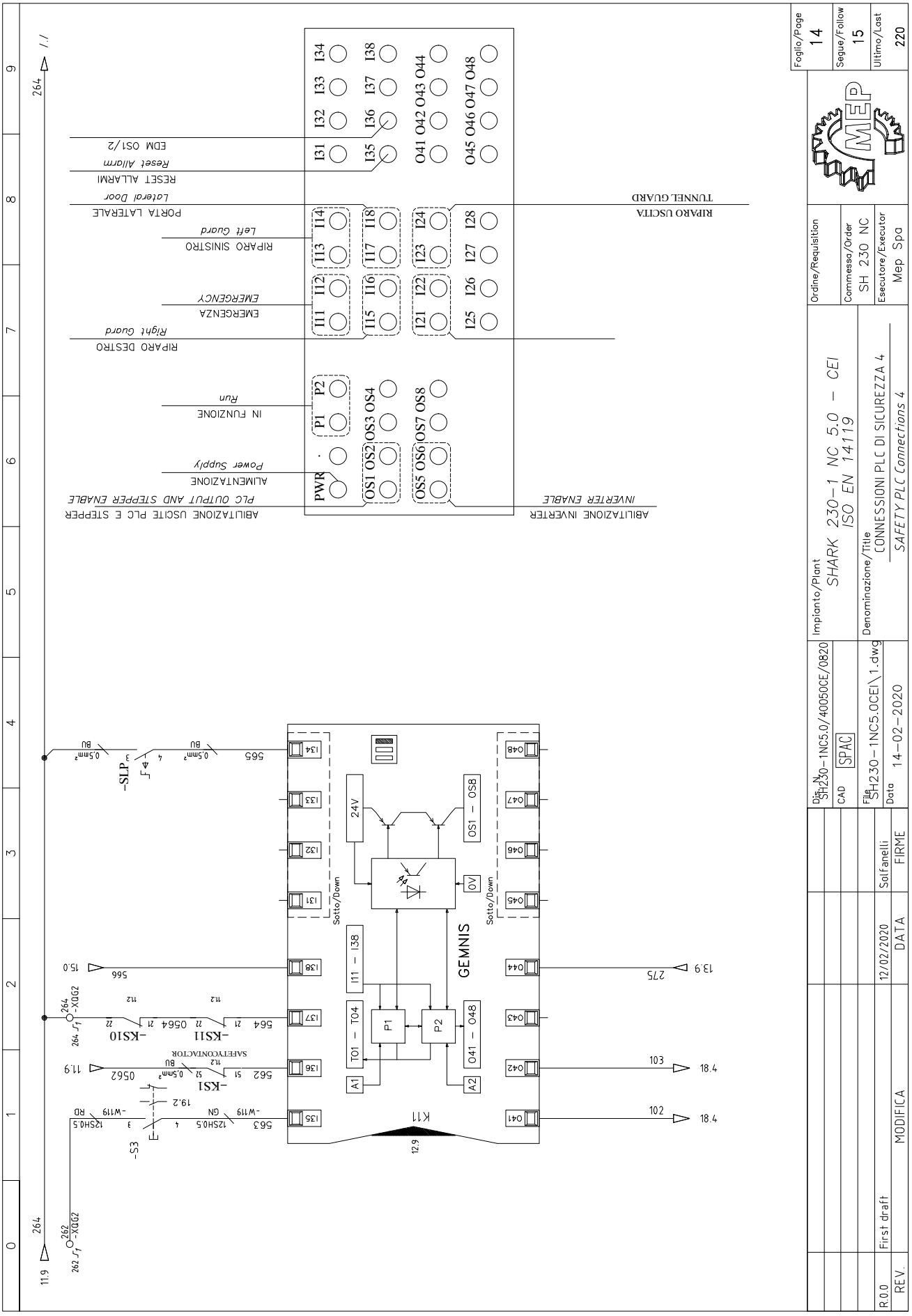

Foglio/Page 9
Segue/Follow 10
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title ALIMENTAZIONE MOTORE STEPPER
Stepper Motor Power Supply
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME
-KS1
-U10
-Z3
-M10
-XQGPE
AZIONAMENTO STEPPER
DRIVE STEPPER
12A
MOTORE STEPPER ALIMENTATORE
SHUTTLE STEPPER MOTOR
6A-12Nm
ARANCIO
BIA/NERO
BIA/ARA1
NERO
GIALLO
BIA/ROSA
BIA/GIA
ROSA
PE
80
82
8.5
8.9
10.0
16.1

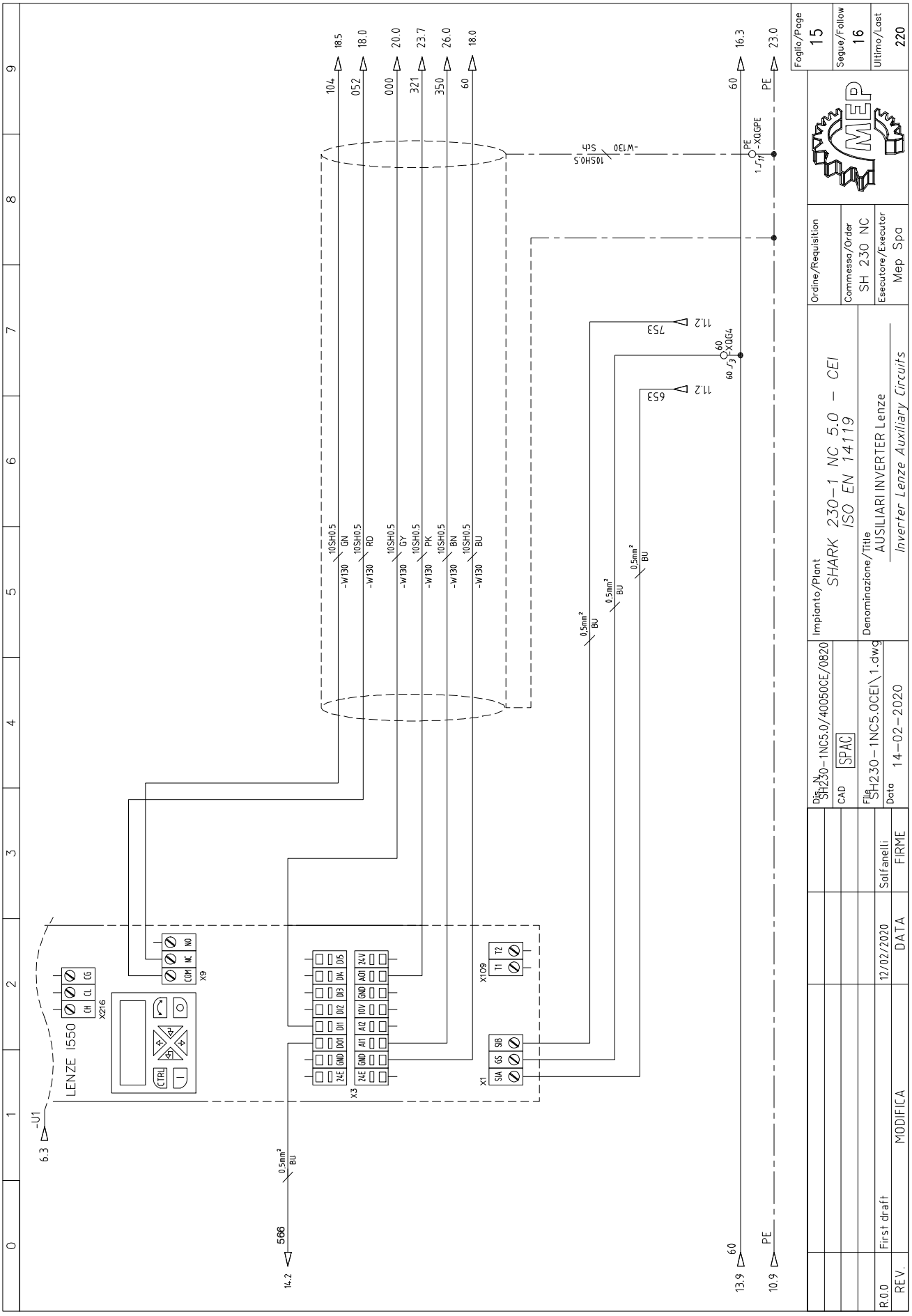

ALIMENTAZIONE PLC
POWER SUPPLY
ALIMENTAZIONE CIRCUITI SICUREZZA-USCITE
EMERGENCY
SAFETY CIRCUITS-OUTPUTS
ALIMENTAZIONE USCITE
OUTPUT
POWER SUPPLY
ALIMENTAZIONE MODULO CONNESSIONE WIFI
WIFI MODULE
POWER SUPPLY
-MV1
-MV2
VENTOLA DRIVER SHS
SHS FAN DRIVER
80x80x20mm, 70m 3/h
VENTOLA QUADRO
FAN ELECTRICAL CABINET
172x150x51mm, 470m 3/h
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
ALIMENTAZIONE AUSILIARI
Auxiliary Circuit Power Supply
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
Impianto/Plant
Denominazione/Title
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Ordine/Requisition
Foglio/Page 10
Segue/Follow 11
Ultimo/Last 220
REV. MODIFICA DATA FIRME
R.0.0 First draft 12/02/2020 Solfanelli

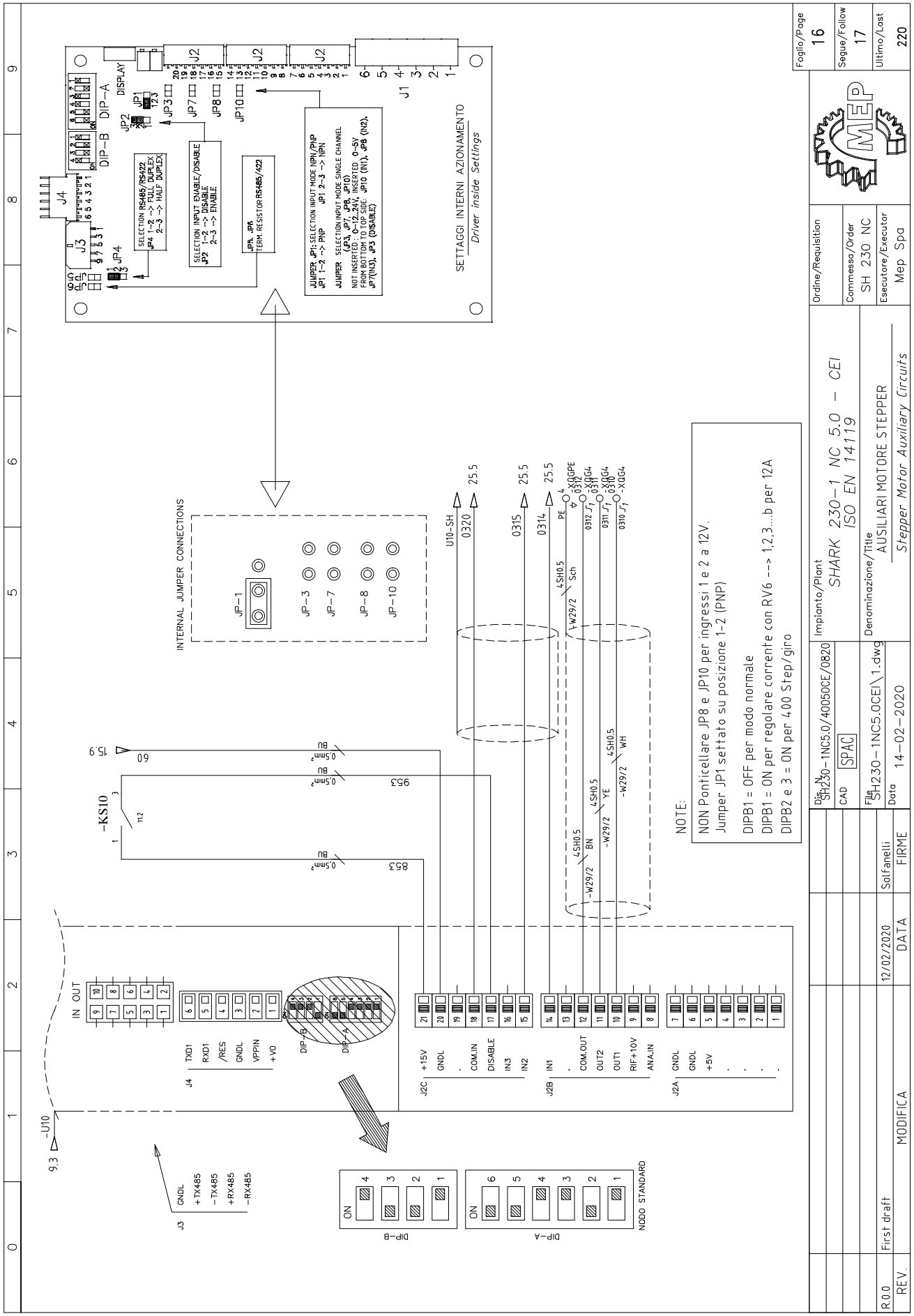

-RSP1
-RSE1
GEMNIS
SAFETY CONTACTOR
-KS10
-KS11
-KS1
Impianto/Plant
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title
CONNESSIONI PLC DI SICUREZZA 1
SAFETY PLC Connections 1
Esecutore/Executor
Mep Spa
Commessa/Order
SH 230 NC
Ordine/Requisition
Foglio/Page
11
Segue/Follow
12
Ultimo/Last
220
Dis. N.
SH230-1NC5.0/400500E/0820
CAD
SPAC
File
SH1230-1NC5.0CEI\1.dwg
Data
14-02-2020
Salfanelli
FIRME
12/02/2020
DATA
First draft
MODIFICA
R.0.0
REV.

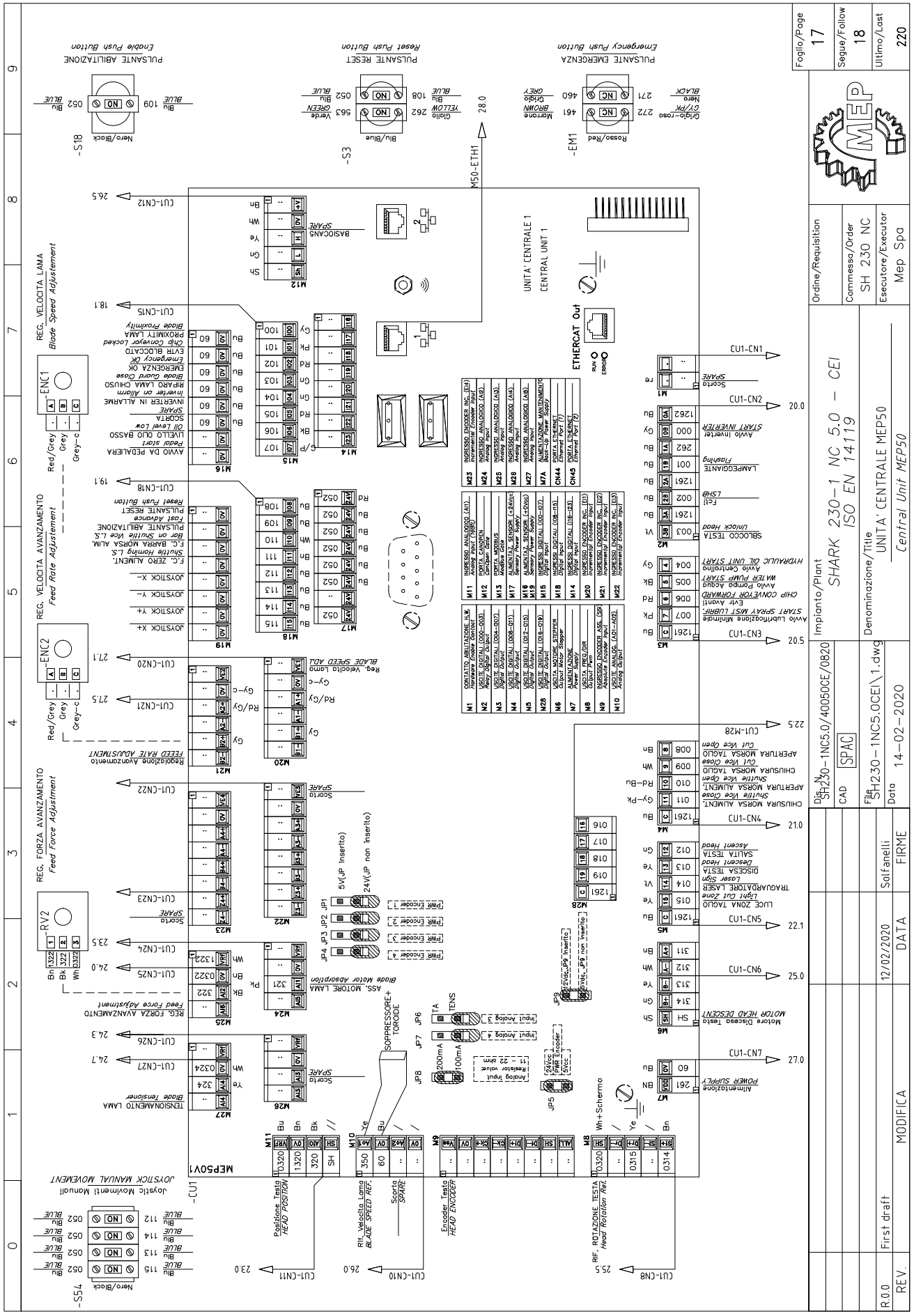

GEMNIS
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
CONNESSIONI PLC DI SICUREZZA 2
SAFETY PLC Connections 2
Mep Spa
SH 230 NC
SH230-1NC5.0/400500CE/0820
SH230-1NC5.OCEI\1.dwg
14-02-2020
Solfanelli
First draft
MODIFICA
DATA
FIRME
1 COLLEGARE I MORSETTI SE NON E' PRESENTE L' OPTIONAL PEDALIERA
WITHOUT OPTIONAL CONTROL PEDAL PUT IN CONTACT THESE TWO TERMINALS
2 COLLEGARE I MORSETTI SE NON E' PRESENTE L'INTERFACCIA RULLIERE MOTORIZZATE
JUMPER THE TERMINALS IF THERE IS NO ROLLER CONVEYOR CONNECT
PULSANTE EMERGENZA
EMEGENCY PUSH BUTTON

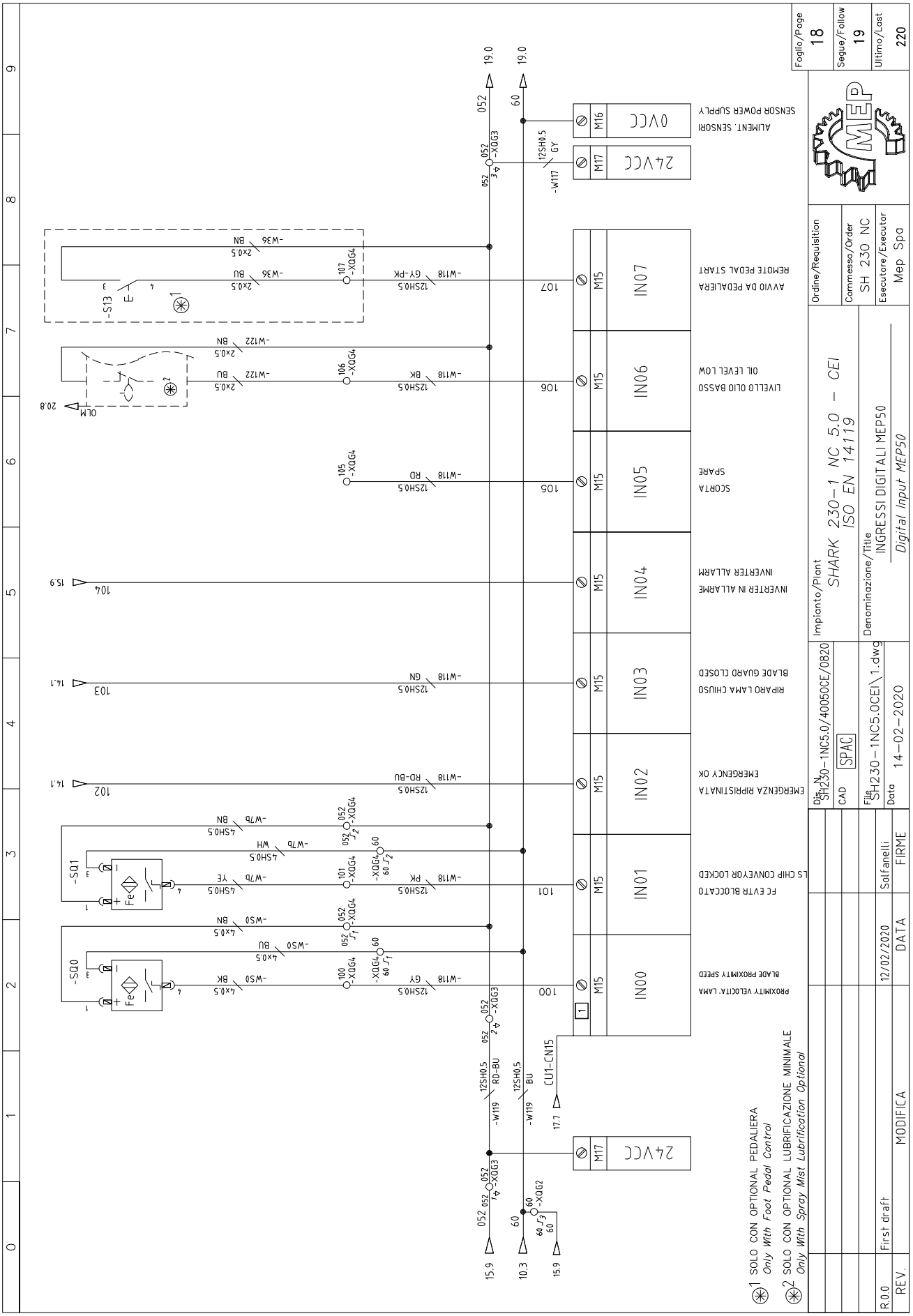

SAFETY PLC Connections 3
CONNESSIONI PLC DI SICUREZZA 3
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
SH230-1NC5.0/400500E/0820
SH1230-1NC5.OCEI\1.dwg
14-02-2020
SH 230 NC
Mep Spa
PORTA FRONTALE SINISTRA
FRONTAL GUARD LEFT SIDE
PORTA FRONTALE DESTRA
FRONTAL GUARD RIGHT SIDE
PORTA LATERALE ALIMENTATORE
LATERAL SHUTTLE DOOR
RIPARO USCITA
SAFETY SENSOR OPTIONAL TUNNEL
-FS1
-FS2
-FS3
-FS5
MODIFICA
First draft
12/02/2020
Salfanelli

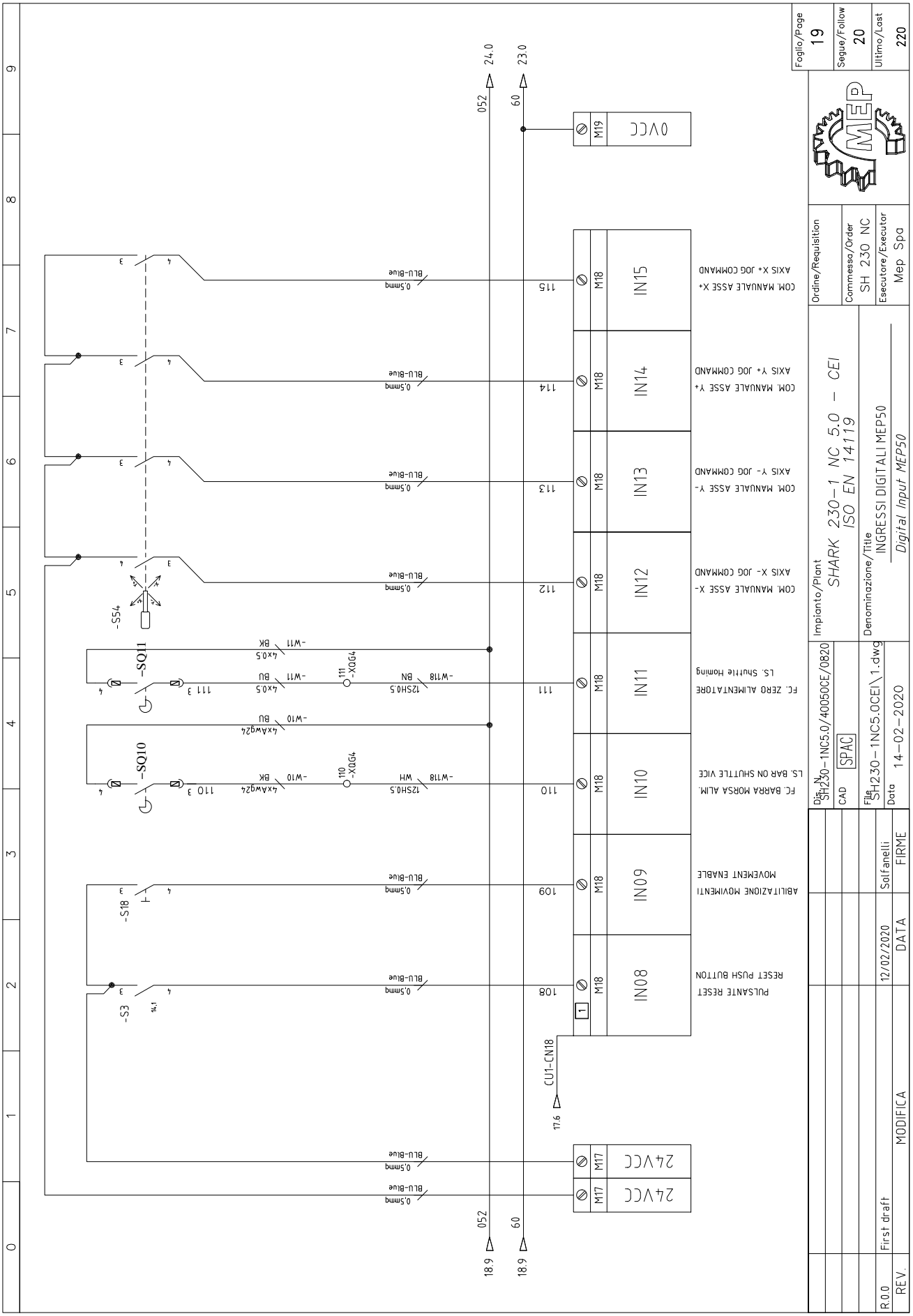

ABILITAZIONE USCITE PLC E STEPPER
PLC OUTPUT AND STEPPER ENABLE
ABILITAZIONE INVERTER
INVERTER ENABLE
ALIMENTAZIONE
Power Supply
IN FUNZIONE
Run
RIPARO DESTRO
Right Guard
EMERGENZA
EMERGENCY
RIPARO SINISTRO
Left Guard
PORTA LATERALE
Lateral Door
RESET ALLARMI
Reset Allarm
EDM OS1/2
RIPARO USCITA
TUNNEL GUARD
PWR
OS1 OS2 OS3 OS4
OS5 OS6 OS7 OS8
P1 P2
I11 I12 I13 I14 I15 I16 I17 I18
I21 I22 I23 I24 I25 I26 I27 I28
I31 I32 I33 I34 I35 I36 I37 I38
O41 O42 O43 O44 O45 O46 O47 O48
GEMNIS
24V
0V
Sotto/Down
-SLP
-KS1
-KS10
-KS11
-S3
K11
A1
A2
P1
P2
Foglio/Page 14
Segue/Follow 15
Ultimo/Last 220
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title CONNESSIONI PLC DI SICUREZZA 4
SAFETY PLC Connections 4
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.0CE\1.dwg
Data 14-02-2020
REV. MODIFICA DATA FIRME
R.0.0 First draft 12/02/2020 Solfanelli

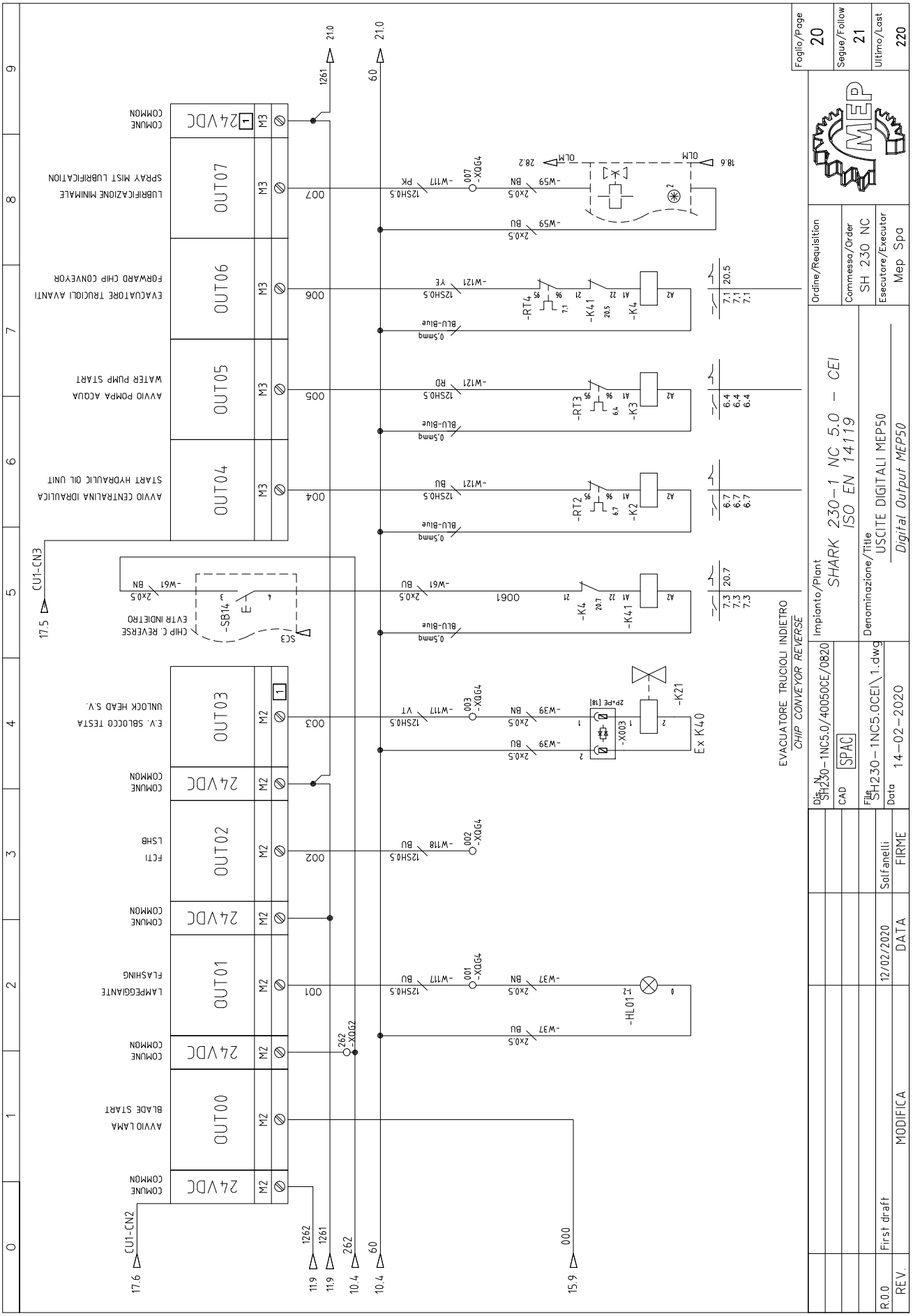

LENZE I550
-U1
X216
X9
X3
X1
X109
-W130
-XQG4
-XQGPE
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
AUSILIARI INVERTER Lenze
Inverter Lenze Auxiliary Circuits
SH230-1NC5.0/400500E/0820
SH1230-1NC5.0CEI\1.dwg
14-02-2020
SPAC
Mep Spa
SH 230 NC
Foglio/Page 15
Segue/Follow 16
Ultimo/Last 220
First draft
MODIFICA
DATA
FIRME

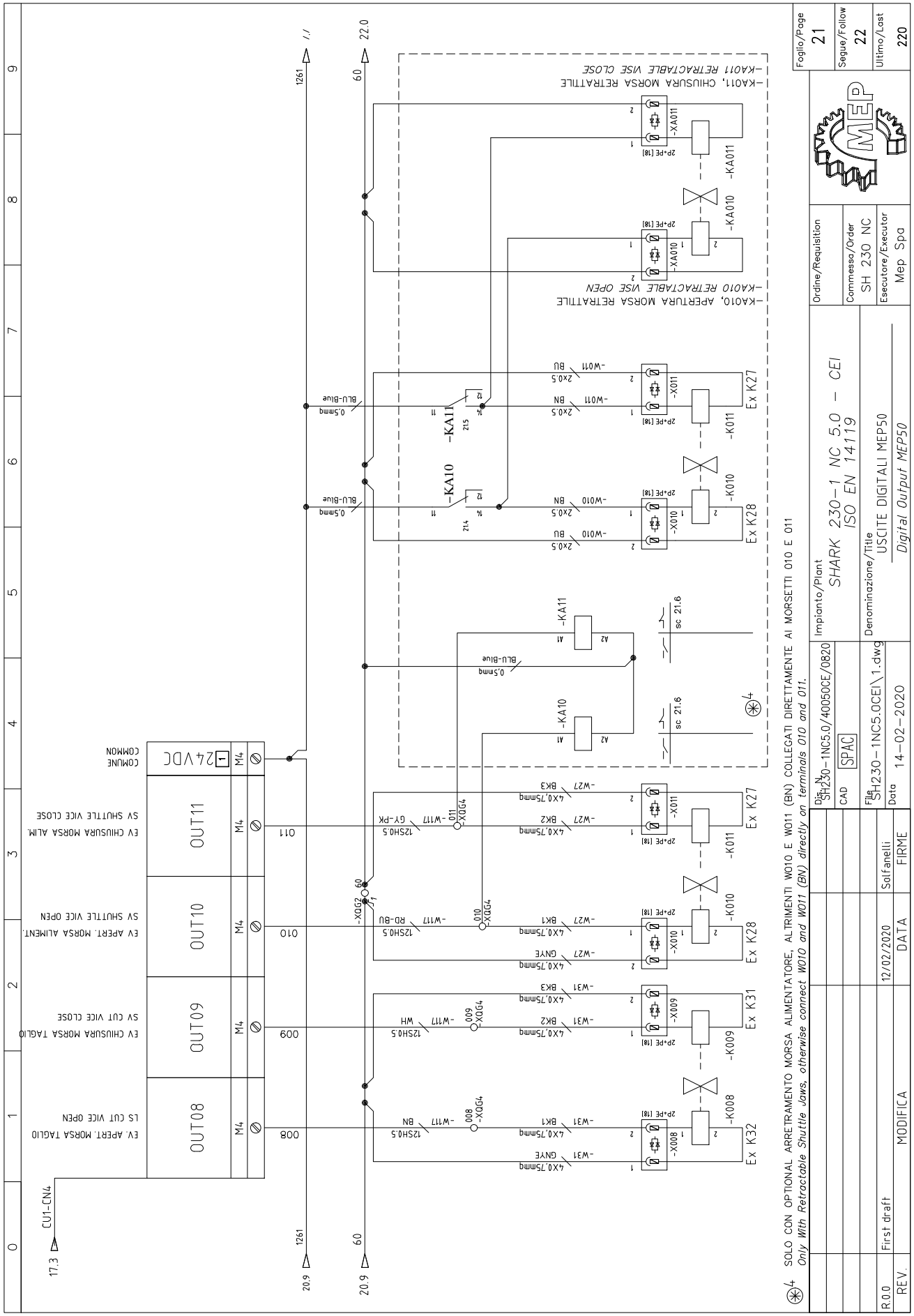

SETTAGGI INTERNI AZIONAMENTO
Driver inside Settings
INTERNAL JUMPER CONNECTIONS
NOTE:
NON Ponticellare JP8 e JP10 per ingressi 1 e 2 a 12V.
Jumper JP1 settato su posizione 1-2 (PNP)
DIPB1 = OFF per modo normale
DIPB1 = ON per regolare corrente con RV6 --> 1,2,3...b per 12A
DIPB2 e 3 = ON per 400 Step/giro
NODO STANDARD
SHARK 230-1 NC 5.0 - CEI ISO EN 14119
AUSILIARI MOTORE STEPPER
Stepper Motor Auxiliary Circuits
Mep Spa
SH 230 NC
Foglio/Page 16
Segue/Follow 17
Ultimo/Last 220
MODIFICA
First draft
12/02/2020
Solfanelli
14-02-2020

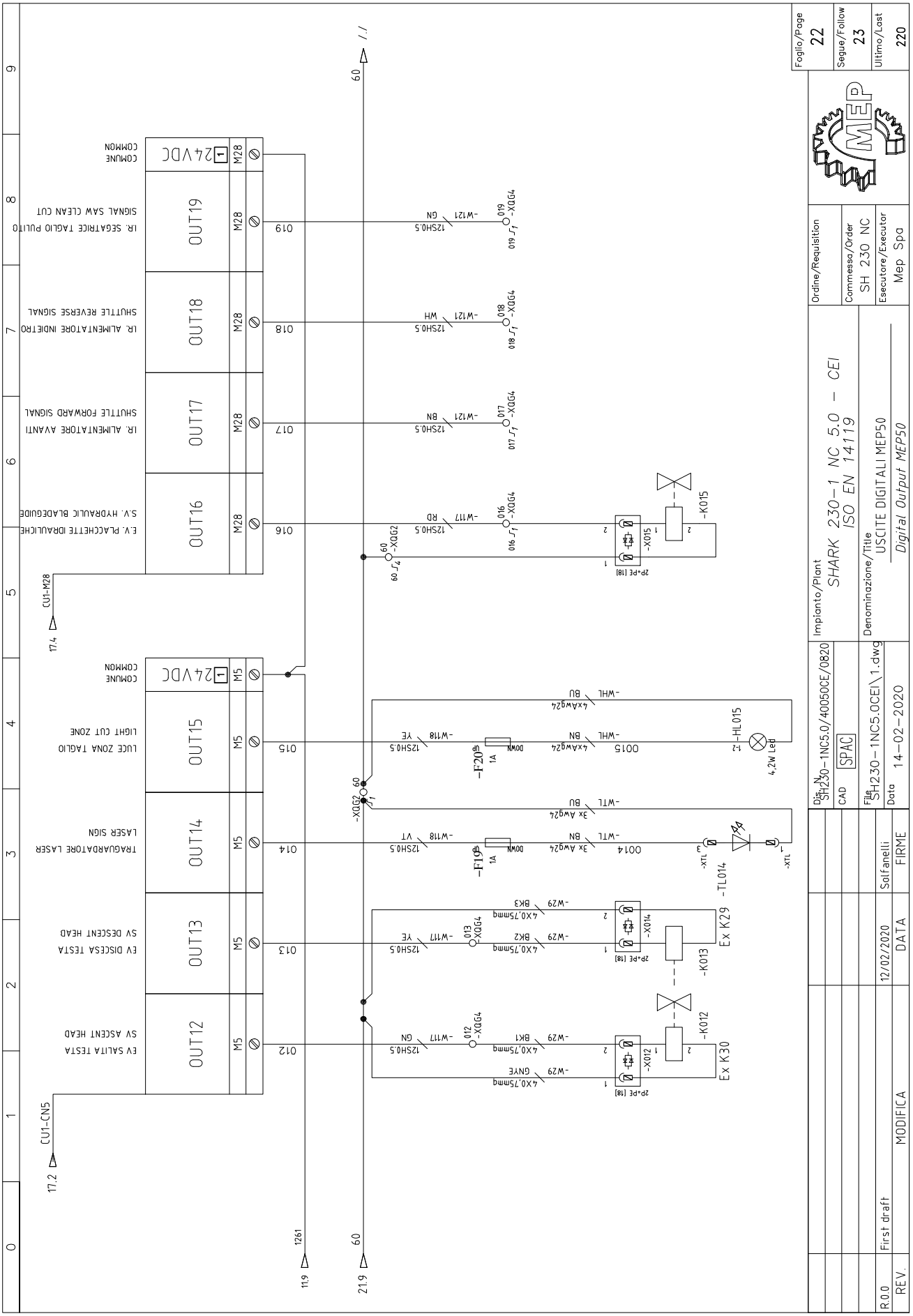

Foglio/Page 17
Segue/Follow 18
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title UNITA' CENTRALE MEP50
Central Unit MEP50
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
REV. MODIFICA DATA FIRME
R.00 First draft 12/02/2020 Salfanelli
UNITA' CENTRALE 1
CENTRAL UNIT 1
PULSANTE EMERGENZA
Emergency Push Button
PULSANTE RESET
Reset Push Button
PULSANTE ABILITAZIONE
Enable Push Button
ETHERCAT Out
REG. VELOCITA LAMA
Blade Speed Adjustement
REG. VELOCITA AVANZAMENTO
Feed Rate Adjustement
REG. FORZA AVANZAMENTO
Feed Force Adjustement
JOYSTICK MANUAL MOVEMENT
Joystic Movimenti Manuali
ME P50 V1
-CU1
-S54
-S1S
-S3
-EM1
M50-ETH1
SPAC

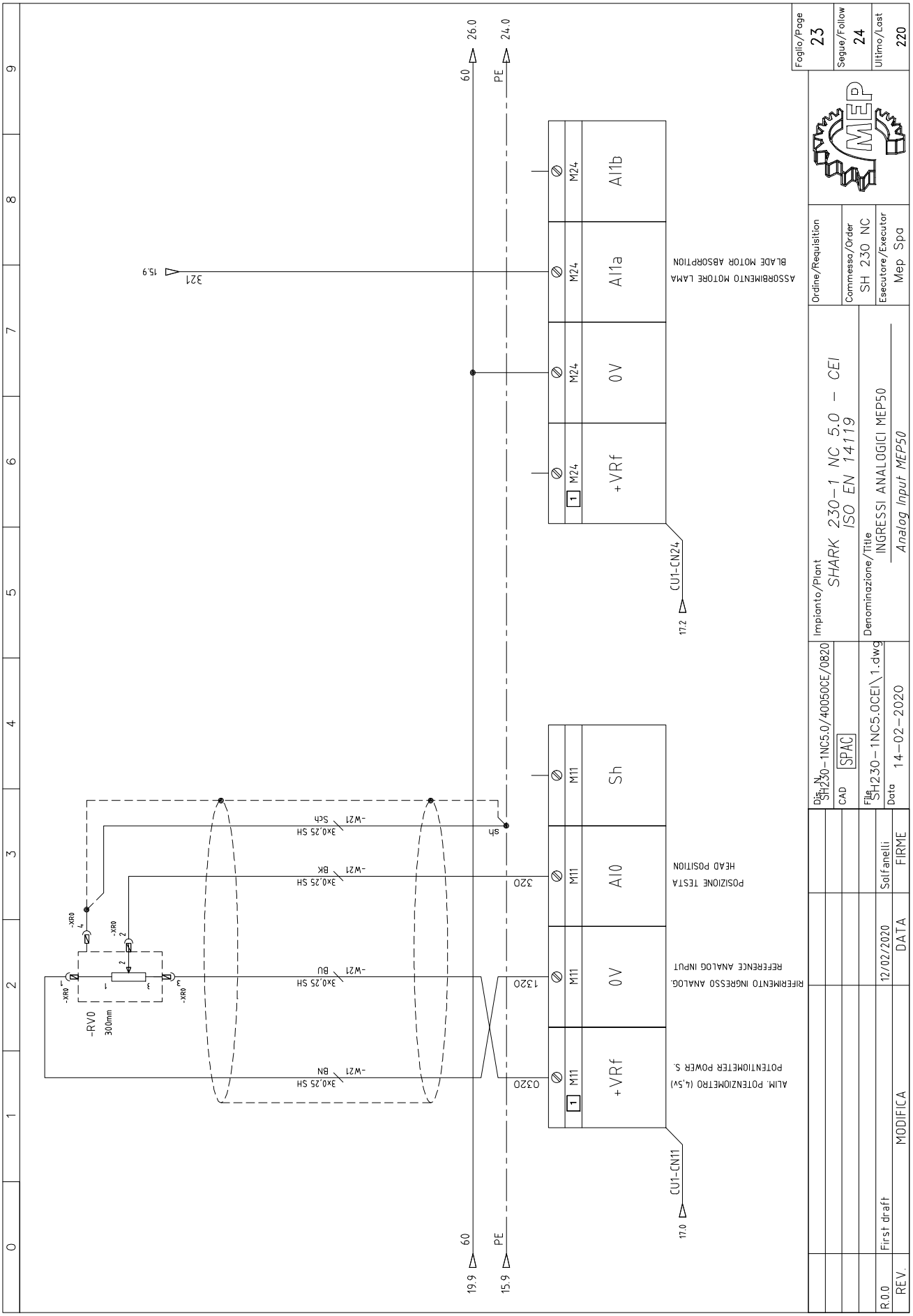

Foglio/Page 18
Segue/Follow 19
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title INGRESSI DIGITALI MEP50
Digital Input MEP50
Dis. N. SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli FIRME
REV. MODIFICA DATA
1 SOLO CON OPTIONAL PEDALIERA
Only With Foot Pedal Control
2 SOLO CON OPTIONAL LUBRIFICAZIONE MINIMALE
Only With Spray Mist Lubrification Optional
0VCC
24VCC
ALIMENT. SENSORI
SENSOR POWER SUPPLY
IN07
AVVIO DA PEDALIERA
REMOTE PEDAL START
IN06
LIVELLO OLIO BASSO
OIL LEVEL LOW
IN05
SCORTA
SPARE
IN04
INVERTER ALLARME
INVERTER IN ALLARME
IN03
RIPARO LAMA CHIUSO
BLADE GUARD CLOSED
IN02
EMERGENZA RIPRISTINATA
EMERGENCY OK
IN01
FC EVTR BLOCCATO
LS CHIP CONVEYOR LOCKED
IN00
PROXIMITY VELOCITA' LAMA
BLADE PROXIMITY SPEED
-S13
-SQ1
-SQ0
OLM

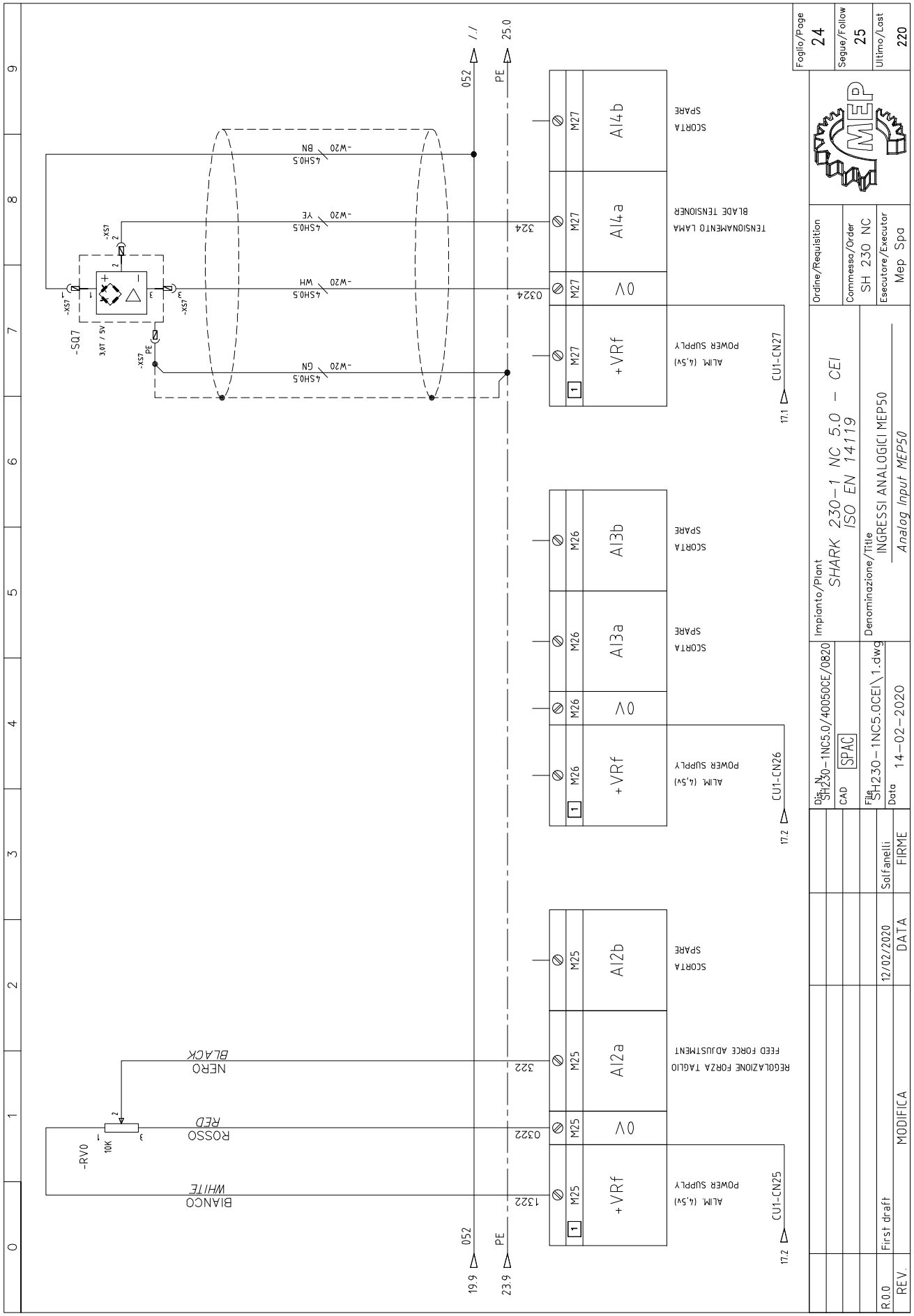

Foglio/Page 19
Segue/Follow 20
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title INGRESSI DIGITALI MEP50
Digital Input MEP50
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Salfanelli
REV. MODIFICA DATA FIRME
0VCC
24VCC
24VCC
IN15
IN14
IN13
IN12
IN11
IN10
IN09
IN08
M19
M18
M17
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 ON SHUTTLE VICE
ABILITAZIONE MOVIMENTI MOVEMENT ENABLE
PULSANTE RESET RESET PUSH BUTTON
-S54
-SQ11
-SQ10
-S18
-S3
-XQG4
CU1-CN18
0,5mmq Blu-Blue
4x0,5 BK
4x0,5 BU
4xAwg24 BU
4xAwg24 BK
12SH0,5 BN
12SH0,5 WH
-W11
-W10
-W118
111
110
109
108
115
114
113
112
052
60
24.0
23.0
18.9
17.6

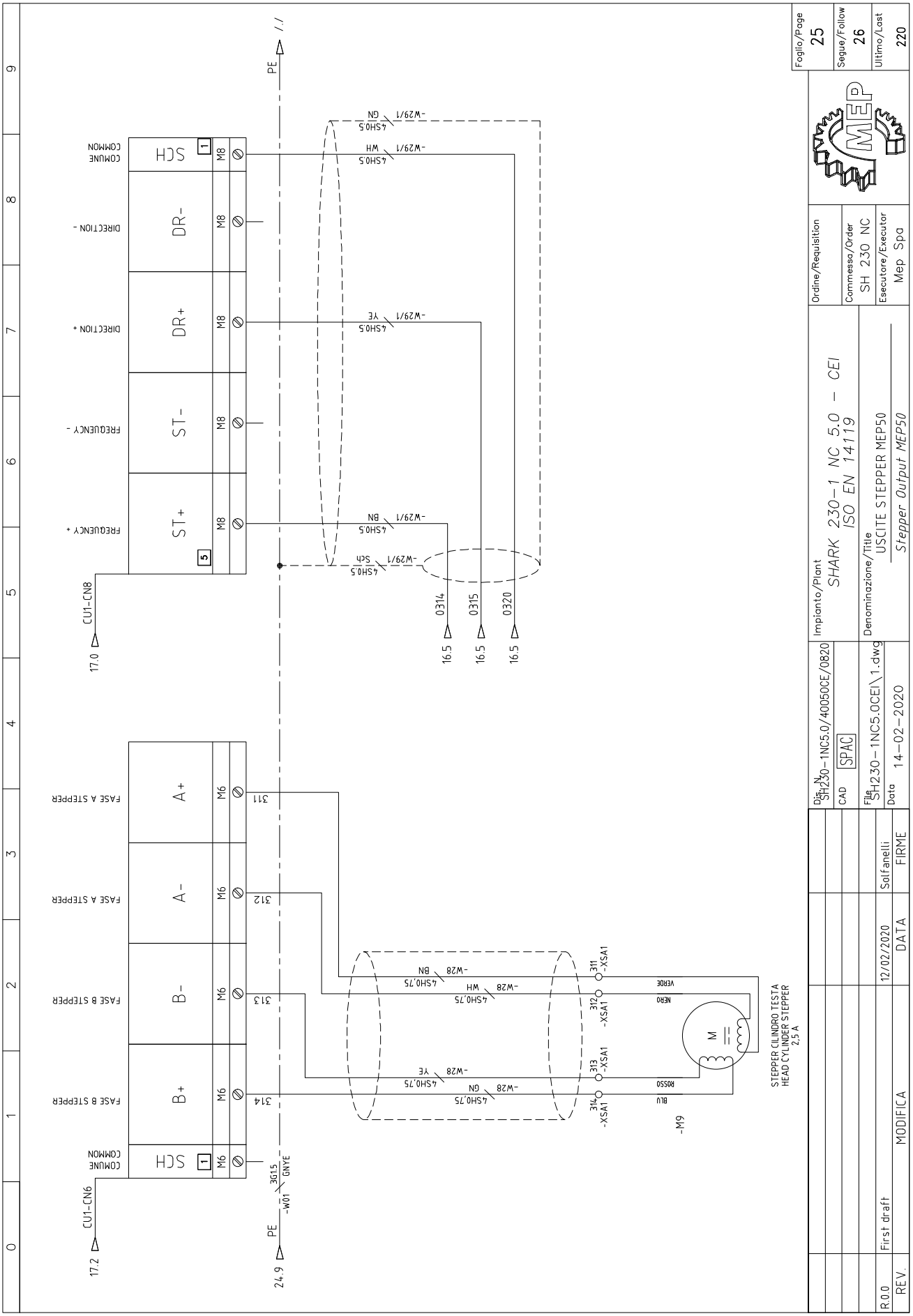

Foglio/Page 20
Segue/Follow 21
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title USCITE DIGITALI MEP50
Digital Output MEP50
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
EVACUATORE TRUCIOLI INDIETRO
CHIP CONVEYOR REVERSE
OUT00 OUT01 OUT02 OUT03 OUT04 OUT05 OUT06 OUT07
24VDC COMMON
AVVIO LAMA BLADE START
LAMPEGGIANTE FLASHING
FCTI LSHB
E.V. SBLOCCO TESTA UNLOCK HEAD S.V.
AVVIO CENTRALINA IDRAULICA START HYDRAULIC OIL UNIT
AVVIO POMPA ACQUA WATER PUMP START
EVACUATORE TRUCIOLI AVANTI FORWARD CHIP CONVEYOR
LUBRIFICAZIONE MINIMALE SPRAY MIST LUBRIFICATION
CHIP C. REVERSE EVTR INDIETRO
-SB14
-K21
-HL01
-RT2
-RT3
-RT4
-K2
-K3
-K4
-K41
CU1-CN2
CU1-CN3
R.0.0 First draft
REV. MODIFICA 12/02/2020 Solfanelli
DATA FIRME

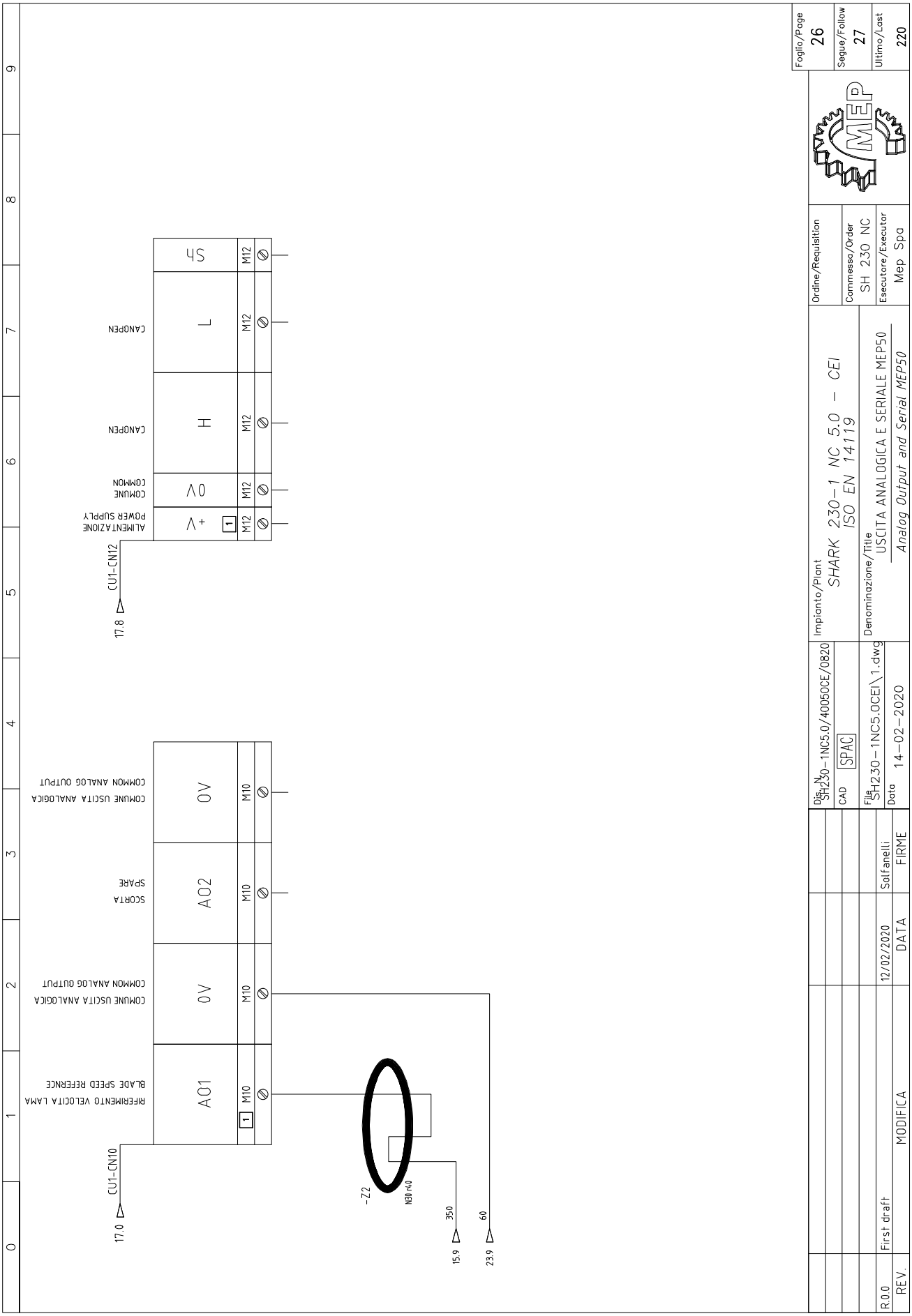

Foglio/Page 21
Segue/Follow 22
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title USCITE DIGITALI MEP50
Digital Output MEP50
Dis. N° SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
First draft 12/02/2020 Salfanelli
MODIFICA DATA FIRME
REV. R.0.0
SOLO CON OPTIONAL ARRETRAMENTO MORSA ALIMENTATORE, ALTRIMENTI W010 E W011 (BN) COLLEGATI DIRETTAMENTE AI MORSETTI 010 E 011
Only With Retractable Shuttle Jaws, otherwise connect W010 and W011 (BN) directly on terminals 010 and 011.
-KA010, APERTURA MORSA RETRATTILE
-KA010 RETRACTABLE VISE OPEN
-KA011, CHIUSURA MORSA RETRATTILE
-KA011 RETRACTABLE VISE CLOSE
OUT08
OUT09
OUT10
OUT11
24VDC
COMUNE
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
CU1-CN4
-KA10
-KA11
Ex K27
Ex K28
Ex K31
Ex K32
-K008
-K009
-K010
-K011
-W011
-W010
-W31
-W27
-W17
-XQG4
-XQG2
-XA010
-XA011
sc 21.6
0,5mmq BLU-Blue
4x0,75mmq
2x0,5
12SH0,5
2P+PE [18]

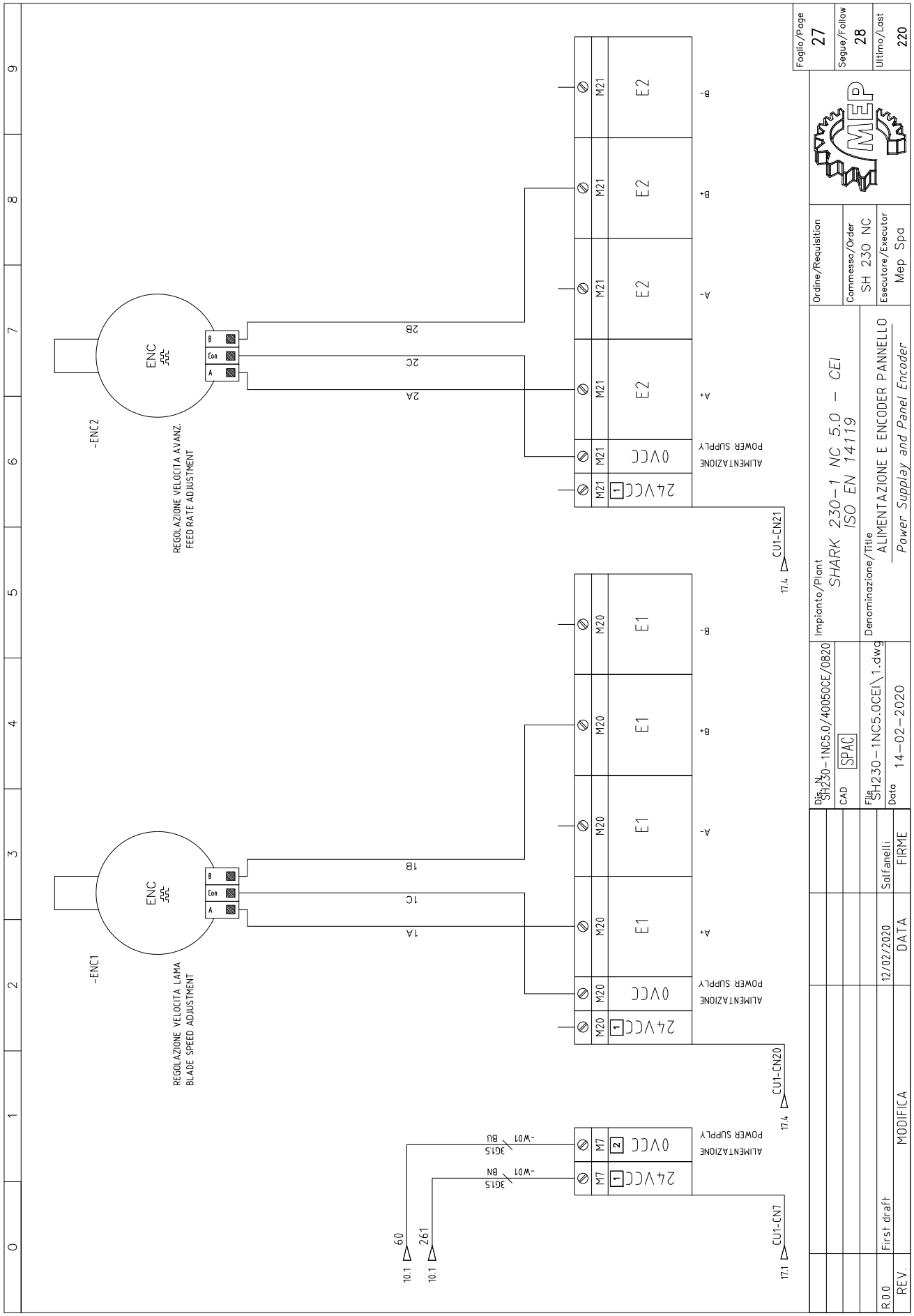

Foglio/Page 22
Segue/Follow 23
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title USCITE DIGITALI MEP50 Digital Output MEP50
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
R.0.0 First draft Solfanelli 12/02/2020
REV. MODIFICA DATA FIRME
OUT12 OUT13 OUT14 OUT15 OUT16 OUT17 OUT18 OUT19
24VDC
COMUNE COMMON
EV SALITA TESTA SV ASCENT HEAD
EV DISCESA TESTA SV DESCENT HEAD
TRAGUARDATORE LASER LASER SIGN
LUCE ZONA TAGLIO LIGHT CUT ZONE
E.V. PIACCHETTE IDRAULICHE S.V. HYDRAULIC BLADEGUIDE
I.R. ALIMENTATORE AVANTI SHUTTLE FORWARD SIGNAL
I.R. ALIMENTATORE INDIETRO SHUTTLE REVERSE SIGNAL
I.R. SEGATRICE TAGLIO PULITO SIGNAL SAW CLEAN CUT
CU1-CN5
CU1-M28
-K012 -K013 -K015
Ex K30 Ex K29
-TL014
-HL015
-F19 -F20
-XQG2 -XQG4
-W117 -W118 -W121 -W29
4x0,75mmq 12SH0.5
2P+PE [18]
4x Avg24 3x Avg24
4,2W LED

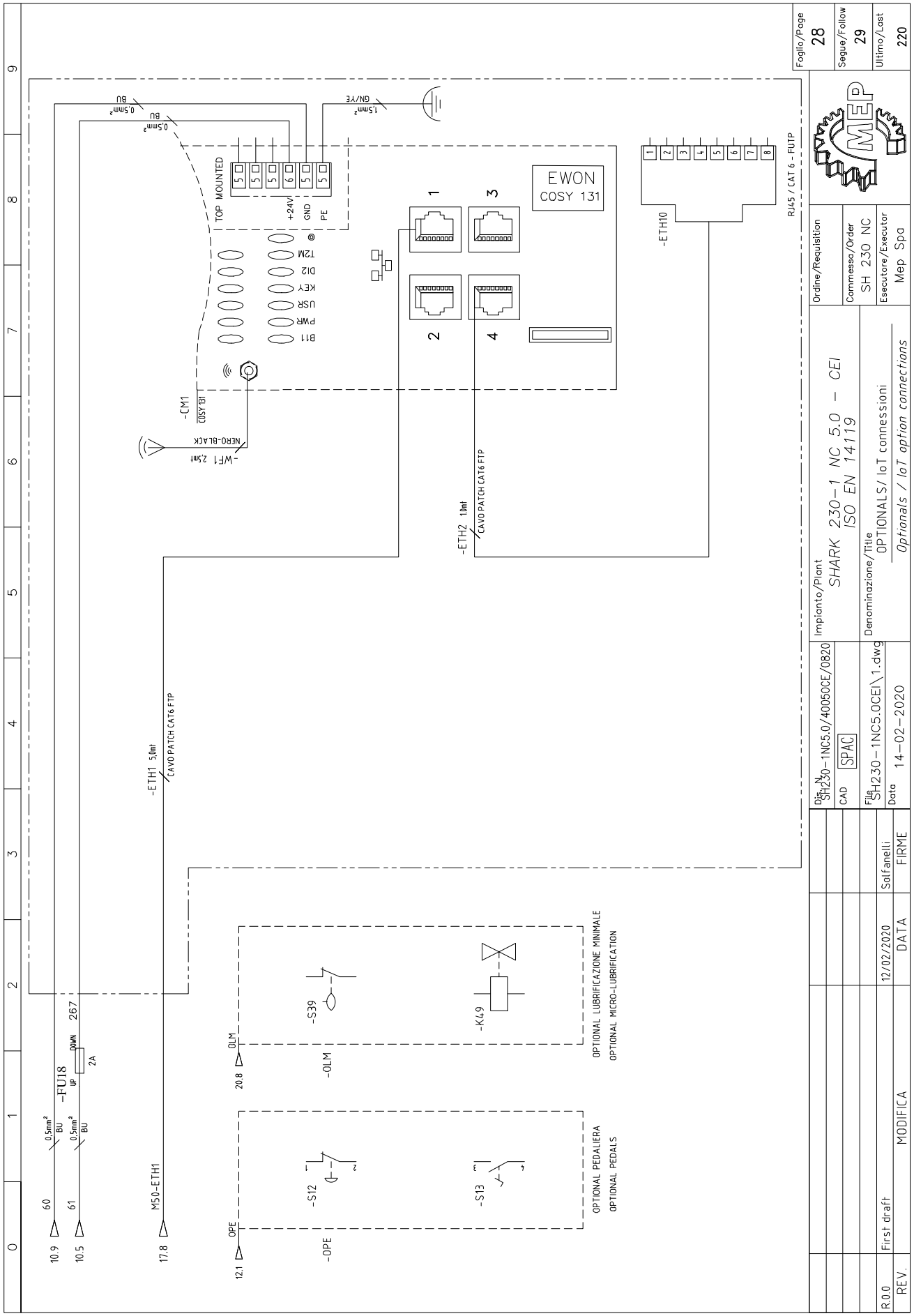

Foglio/Page 23
Segue/Follow 24
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title INGRESSI ANALOGICI MEP50
Analog Input MEP50
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH1230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Salfanelli
REV. MODIFICA DATA FIRME
ASSORBIMENTO MOTORE LAMA
BLADE MOTOR ABSORPTION
POSIZIONE TESTA
HEAD POSITION
RIFERIMENTO INGRESSO ANALOG.
REFERENCE ANALOG INPUT
ALIM. POTENZIOMETRO (4,5V)
POTENTIOMETER POWER S.
+VRf
0V
AI1a
AI1b
AI0
Sh
CU1-CN24
CU1-CN11
-RV0
300mm
3x0,25 SH
-W21
BK
BU
BN
Sch
-XR0
26.0
24.0
19.9
15.9
17.2
17.0
15.9
321
320
1320
0320

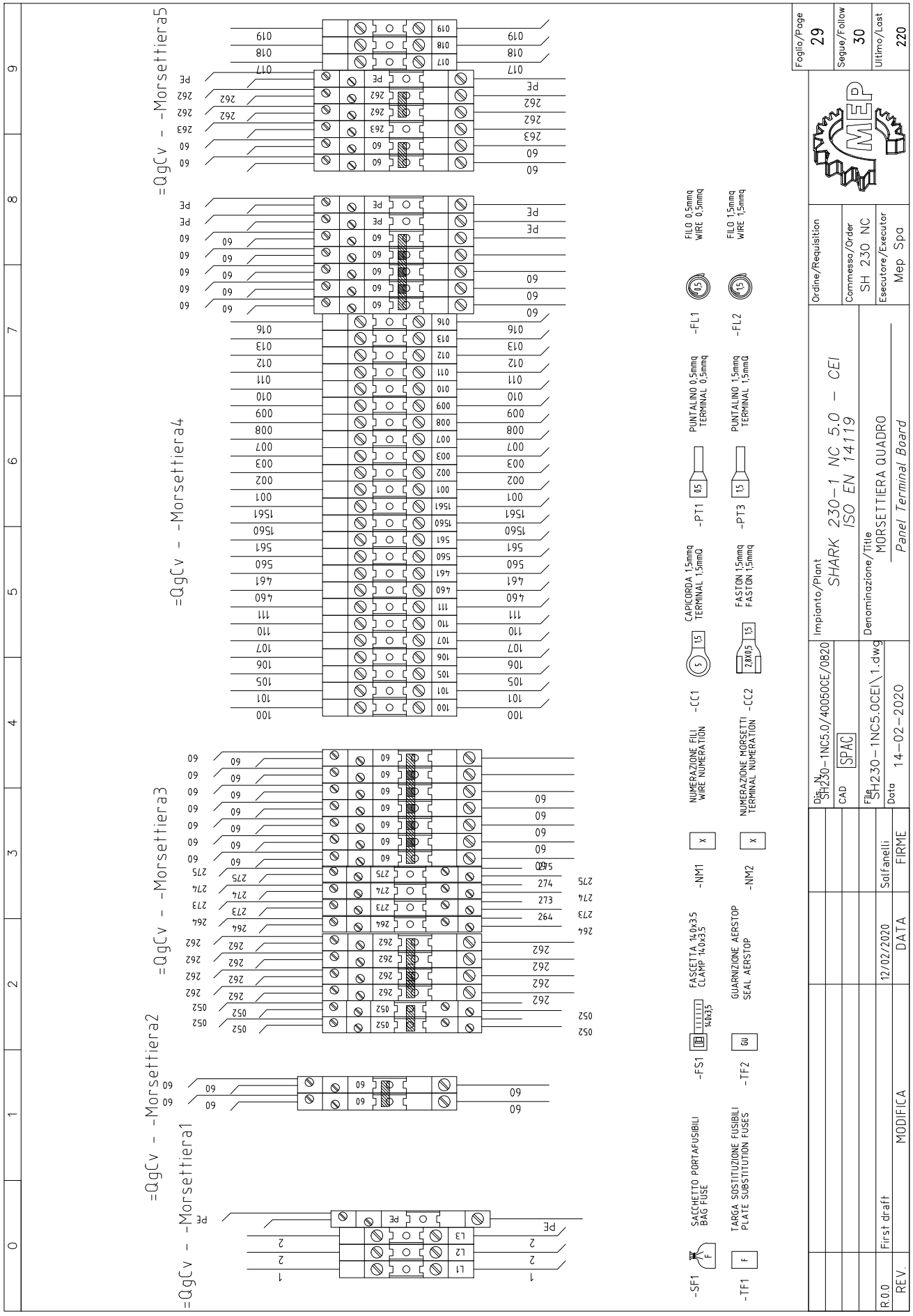

Foglio/Page 24
Segue/Follow 25
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title INGRESSI ANALOGICI MEP50
Analog Input MEP50
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
REV. MODIFICA DATA FIRME
R.0.0 First draft 12/02/2020 Solfanelli
AI4b
AI4a
AI3b
AI3a
AI2b
AI2a
+VRf
SCORTA
SPARE
TENSIONAMENTO LAMA
BLADE TENSIONER
REGOLAZIONE FORZA TAGLIO
FEED FORCE ADJUSTMENT
ALIM. (4,5V)
POWER SUPPLY
CU1-CN27
CU1-CN26
CU1-CN25
-SQ7
-RV0
10K
NERO BLACK
ROSSO RED
BIANCO WHITE
4SH0.5 -W20 BN
4SH0.5 -W20 YE
4SH0.5 -W20 WH
4SH0.5 -W20 GN
052
PE
25.0
19.9
23.9
17.1
17.2
0324
0322
1322

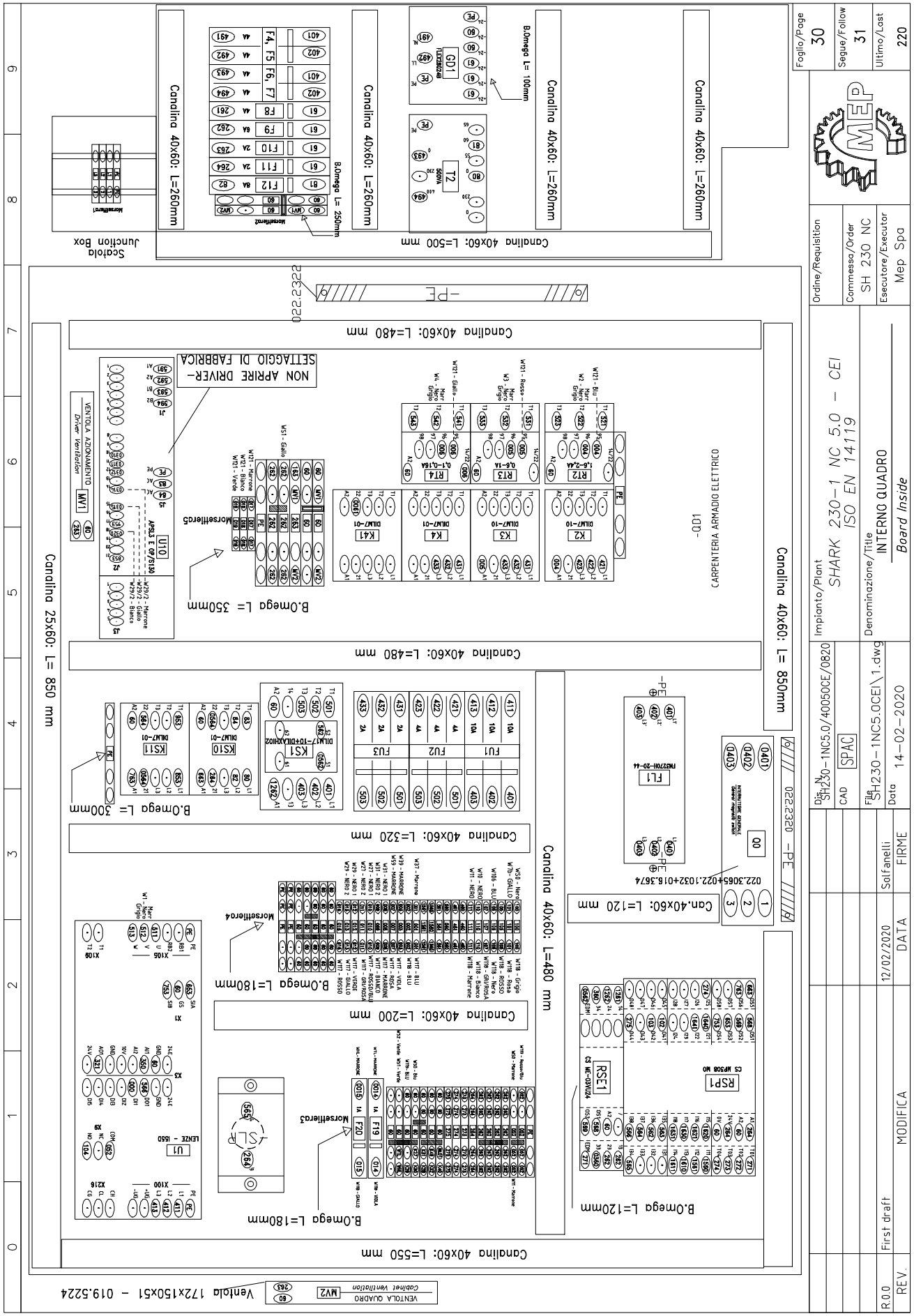

Foglio/Page 25
Segue/Follow 26
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title USCITE STEPPER MEP50
Stepper Output MEP50
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH1230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME
PE
CU1-CN8
CU1-CN6
ST+
ST-
DR+
DR-
A+
A-
B+
B-
FREQUENCY +
FREQUENCY -
DIRECTION +
DIRECTION -
COMMUNE
FASE A STEPPER
FASE B STEPPER
-M9
-W01
-W28
-W29/1
-XSA1
STEPPER CILINDRO TESTA
HEAD CYLINDER STEPPER
2,5 A

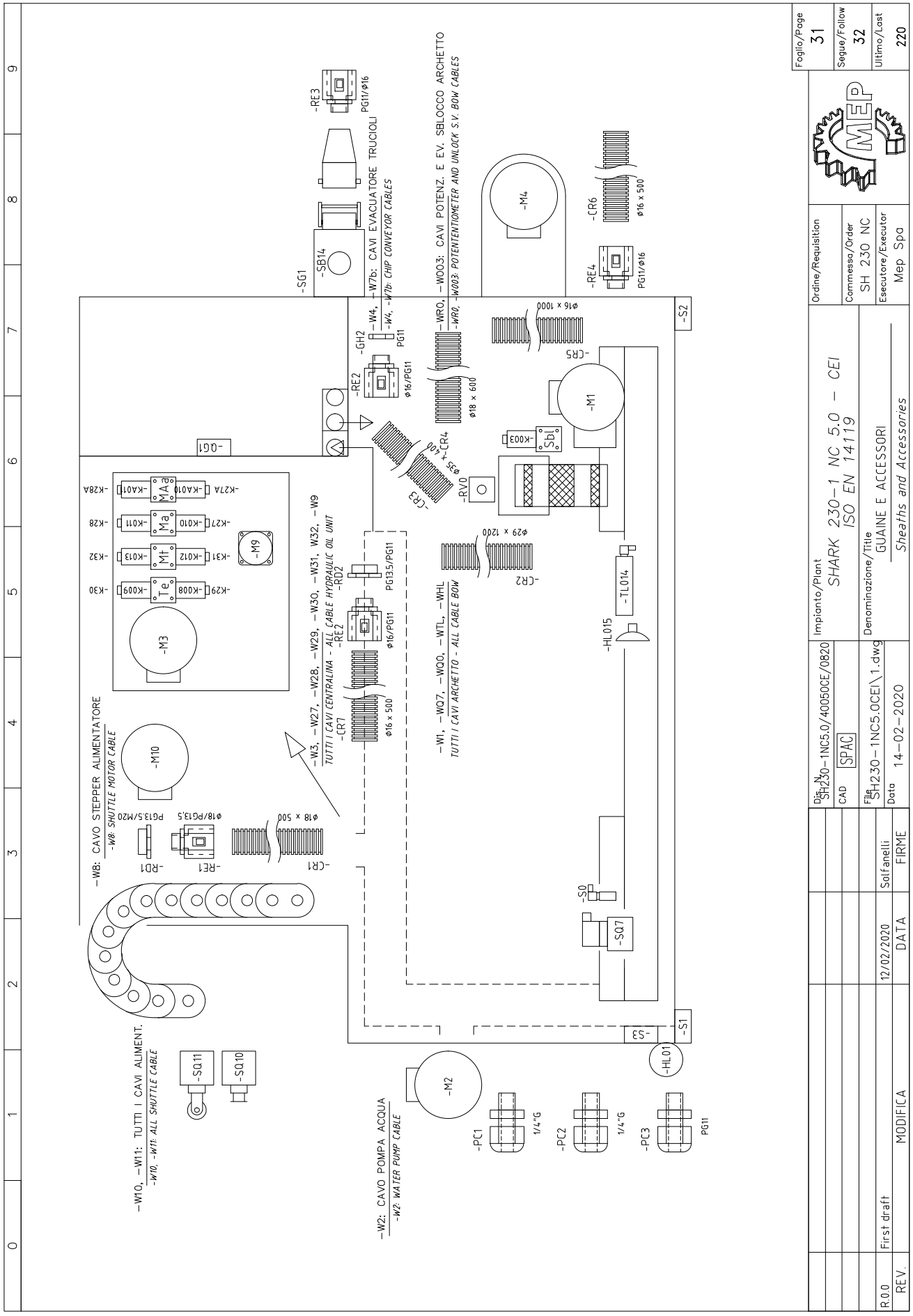

Foglio/Page 26
Segue/Follow 27
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title USCITA ANALOGICA E SERIALE MEP50
Analog Output and Serial MEP50
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME
CU1-CN10
17.0
RIFERIMENTO VELOCITA' LAMA
BLADE SPEED REFERENCE
COMUNE USCITA ANALOGICA
COMMON ANALOG OUTPUT
SCORTA
SPARE
COMUNE USCITA ANALOGICA
COMMON ANALOG OUTPUT
AO1
AO2
0V
0V
M10
M10
M10
M10
-Z2
N30 N40
15.9
350
23.9
60
CU1-CN12
17.8
ALIMENTAZIONE
POWER SUPPLY
COMUNE
COMMON
CANOPEN
CANOPEN
+V
0V
H
L
5V
M12
M12
M12
M12
M12


-ENC1
REGOLAZIONE VELOCITA LAMA
BLADE SPEED ADJUSTMENT
-ENC2
REGOLAZIONE VELOCITA AVANZ.
FEED RATE ADJUSTMENT
ENC
B
Con
A
1A
1C
1B
2A
2C
2B
M20
M21
M7
E1
E2
24VCC
0VCC
ALIMENTAZIONE
POWER SUPPLY
A+
A-
B+
B-
CU1-CN20
CU1-CN21
CU1-CN7
17.4
17.1
10.1
60
261
3G1.5
-W01
BN
BU
Foglio/Page 27
Segue/Follow 28
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title ALIMENTAZIONE E ENCODER PANNELLO
Power Supplay and Panel Encoder
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME


EWON
COSY 131
TOP MOUNTED
+24V
GND
PE
B11
PWR
USR
KEY
D12
T2M
-CM1
-WF1 2,5mt
NERO-BLACK
-ETH10
RJ45 / CAT 6 - FUTP
-ETH2 10mt
CAVO PATCH CAT6 FTP
-ETH1 5,0mt
CAVO PATCH CAT6 FTP
-FU18
2A
M50-ETH1
-S39
-K49
-OLM
OLM
-S12
-S13
-OPE
OPE
OPTIONAL LUBRIFICAZIONE MINIMALE
OPTIONAL MICRO-LUBRIFICATION
OPTIONAL PEDALIERA
OPTIONAL PEDALS
Foglio/Page 28
Segue/Follow 29
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title OPTIONALS/ IoT connessioni
Optionals / IoT option connections
Dis. N SH230-1NC5.0/400500CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.0.0 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME


=QgCv - -Morsettiera1
=QgCv - -Morsettiera2
=QgCv - -Morsettiera3
=QgCv - -Morsettiera4
=QgCv - -Morsettiera5
-SF1 SACCHETTO PORTAFUSIBILI BAG FUSE
-TF1 TARGA SOSTITUZIONE FUSIBILI PLATE SUBSTITUTION FUSES
-FS1 FASCETTA 140x3.5 CLAMP 140x3.5
-TF2 GUARNIZIONE AERSTOP SEAL AERSTOP
-NM1 NUMERAZIONE FILI WIRE NUMERATION
-NM2 NUMERAZIONE MORSETTI TERMINAL NUMERATION
-CC1 CAPICORDA 1,5mmq TERMINAL 1,5mmQ
-CC2 FASTON 1,5mmq FASTON 1,5mmq
-PT1 PUNTALINO 0,5mmq TERMINAL 0,5mmQ
-PT3 PUNTALINO 1,5mmq TERMINAL 1,5mmQ
-FL1 FILO 0,5mmq WIRE 0,5mmq
-FL2 FILO 1,5mmq WIRE 1,5mmq
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.OCEI\1.dwg
Data 14-02-2020
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title MORSETTIERA QUADRO
Panel Terminal Board
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Foglio/Page 29
Segue/Follow 30
Ultimo/Last 220
R.00 First draft 12/02/2020 Solfanelli
REV. MODIFICA DATA FIRME


Foglio/Page 30
Segue/Follow 31
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title INTERNO QUADRO
Board Inside
Dis. N SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
REV. DATA FIRME
R.00 First draft 12/02/2020 Solfanelli
MODIFICA
-QD1
CARPENTERIA ARMADIO ELETTRICO
Canalina 40x60: L=500 mm
Canalina 40x60: L=260mm
Canalina 40x60: L=480 mm
Canalina 40x60: L=850mm
Canalina 25x60: L= 850 mm
Canalina 40x60: L=320 mm
Canalina 40x60: L=200 mm
Canalina 40x60: L=550 mm
Can.40x60: L=120 mm
B.Omega L= 350mm
B.Omega L= 300mm
B.Omega L=180mm
B.Omega L=120mm
NON APRIRE DRIVER-SETTAGGIO DI FABBRICA
Scatola Junction Box
Ventola 172x150x51 - 019.5224
VENTOLA QUADRO Cabinet Ventilation
MV2
MV1
Morsettiera1
Morsettiera2
Morsettiera3
Morsettiera4
Morsettiera5
T2 500VA
GD1
RSP1
RSE1
K2
K3
K4
K41
K51
K10
K11
FU1
FU2
FU3
FL1
R12
R13
R14
U1
U10
X1
X3
X5
X9
X100
X108
X216
022.3065+022.1032+018.3674
022.2322


-W8: CAVO STEPPER ALIMENTATORE
-W8: SHUTTLE MOTOR CABLE
-W10, -W11: TUTTI I CAVI ALIMENT.
-W10, -W11: ALL SHUTTLE CABLE
-W2: CAVO POMPA ACQUA
-W2: WATER PUMP CABLE
-W3, -W27, -W28, -W29, -W30, -W31, -W32, -W9
TUTTI I CAVI CENTRALINA - ALL CABLE HYDRAULIC OIL UNIT
-W1, -WQ7, -WQ0, -WTL, -WHL
TUTTI I CAVI ARCHETTO - ALL CABLE BOW
-W7b: CAVI EVACUATORE TRUCIOLI
-W7b: CHIP CONVEYOR CABLES
-W003: CAVI POTENZ. E EV. SBLOCCO ARCHETTO
-W003: POTENTIENTIOMETER AND UNLOCK S.V. BOW CABLES
-W4, -W7b
-WR0, -W003
-M1
-M2
-M3
-M4
-M9
-M10
-SB14
-SG1
-GH2
-RE1
-RE2
-RE3
-RE4
-RD1
-RD2
-CR1
-CR2
-CR3
-CR4
-CR5
-CR6
-CR7
-RV0
-TL014
-HL015
-HL01
-SQ7
-SQ10
-SQ11
-PC1
-PC2
-PC3
-S0
-S1
-S2
-S3
-G1
-K003
-K009
-K008
-K29
-K30
-K012
-K013
-K31
-K32
-K010
-K011
-K27
-K28
-K27A
-K28A
-K01
-K01A
Sb1
Te
Mt
Ma
MAd
PG135/PG11
PG11/ø16
PG13.5/M20
ø18/PG13.5
ø16/PG11
ø16 x 500
ø16 x 1000
ø18 x 600
ø35 x 400
ø29 x 1200
1/4"G
Foglio/Page 31
Segue/Follow 32
Ultimo/Last 220
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title GUAINE E ACCESSORI
Sheaths and Accessories
Dis. N. SH230-1NC5.0/400500E/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020
R.00 First draft 12/02/2020 Salfanelli
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
=QgCv -F8	8/2		261	BN				BN	261	M7	27/1	24VCC
=QgCv -XQG2	10/1	60_1 ○	60	BU	-W01 022.0151	5,00mt		BU	60	M7	27/1	0VCC
=QgCv -FL1	5/6	PE	PE	GNYE	PLC Mep50 SUpply cable			GNYE	PE			
				BN	-W010 022.0160			BN				
				BU	Shuttle retract vise open			BU				
=QgCv -KA11	21/6	14	011	BN	-W011 022.0160			BN	011	1	21/6	=QgCv -X011
=QgCv -XQG2	21/3	_1 ○	60	BU	Shuttle retract vise close			BU	60	2	21/7	=QgCv -X011
=QgEtMep XMET	7/1	1 ○	1024	BN				BN	1024	U	7/1	=QgEtMep -M4
=QgEtMep XMET	7/1	2 ○	1025	BK	-W04 022.0162	3.00Mt		BK	1025	V	7/1	=QgEtMep -M4
=QgEtMep XMET	7/1	3 ○	1026	GY	Chip conveyor motor cable2			GY	1026	W	7/1	=QgEtMep -M4
=QgEtMep XMET	7/1	4 ○	7	GNYE				GNYE	7	PE	7/1	=QgEtMep -M4
=BmMep -M1	6/0	U	511	BN				BN	511	X105	6/2	=QgCv -U1
=BmMep -M1	6/1	V	512	BK				BK	512	V	6/2	=QgCv -U1
=BmMep -M1	6/1	W	513	GY	-W1 022.0143	5.00Mt		GY	513	W	6/2	=QgCv -U1
=BmMep -M1	6/1	PE	PE	GNYE	Blade motor supply cable			GNYE	PE	PE	6/2	=QgCv -U1
=BmMep -M1	6/1	PE	PE	Sch				Sch	PE	PE	6/2	=QgCv -U1
				BN				BN				
=BmCv -SQ10	19/4	3	110	BK	-W10 022.0424	5,0 mt		BK	110	○ 110	19/4	=QgCv -XQG4
=BmCv -SQ10	19/4	4	052	BU	Shuttle BAr infeed sensor			BU	052	○ 052_3	18/8	=QgCv -XQG3
				WH				WH				
				BN				BN				
=QgCv -XQG3	18/8	052_3 ○	052	BK	-W11 022.0424			BK	052	4	19/4	=BmCv -SQ11
=QgCv -XQG4	19/4	111 ○	111	BU	L.SW: Shuttle axis zero homing			BU	111	3	19/4	=BmCv -SQ11
				WH				WH				

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI / Cable Summary

Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

MEP

Foglio/Page: 32
Segue/Follow: 33
Ultimo/Last: 220

Translation of the original instructions

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
			008	BN				BN	008			
=QgCv -XQG4	21/1	008		GY				GY		M4	21/1	OUT08
=QgCv -XQG3	18/8	052_3	001	BU				BU	001	M17	18/8	24VCC
=QgCv -XQG4	20/2	001	012	GN				GN	012	M2	20/2	OUT01
=QgCv -XQG4	22/2	012	016	RD				RD	016	M5	22/2	OUT12
=QgCv -XQG4	22/6	016_1	013	YE				YE	013	M28	22/6	=QgCv OUT16
=QgCv -XQG4	22/2	013	009	WH	-W117 022.0147	1,5Mt		WH	009	M5	22/2	OUT13
=QgCv -XQG4	21/2	009	007	PK	Cavo Uscite			PK	007	M4	21/2	OUT09
=QgCv -XQG4	20/8	007		BK				BK		M3	20/8	OUT07
			003	VT				VT	003			
=QgCv -XQG4	20/4	003	010	RD-BU				RD-BU	010	M2	20/4	OUT03
=QgCv -XQG4	21/2	010	011	GY-PK				GY-PK	011	M4	21/2	OUT10
=QgCv -XQG4	21/3	011		Sch				Sch		M4	21/3	OUT11
			111	BN				BN	111			
=QgCv -XQG4	19/4	111	100	GY				GY	100	M18	19/4	IN11
=QgCv -XQG4	18/2	100	002	BU				BU	002	M15	18/2	IN00
=BmCv -XQG4	20/3	002	103	GN				GN	103	M2	20/3	OUT02
K11	14/1		104	RD				RD	104	M15	18/4	IN03
=QgCv -XQG4	18/6	105	015	YE				YE	015	M15	18/6	IN05
=QgCv -F20	22/4	UP	110	WH	-W118 022.0147	1,8Mt		WH	110	M5	22/4	OUT15
=QgCv -XQG4	19/4	110	101	PK	Cavo Ingressi - Uscite			PK	101	M18	19/4	IN10
=QgCv -XQG4	18/3	101	106	BK				BK	106	M15	18/3	IN01
=QgCv -XQG4	18/7	106	014	VT				VT	014	M15	18/7	IN06
=QgCv -F19	22/3	UP	102	RD-BU				RD-BU	102	M5	22/3	OUT14
K11	14/1		107	GY-PK				GY-PK	107	M15	18/4	IN02
=QgCv -XQG4	18/7	107		Sch				Sch		M15	18/7	IN07

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 33
Segue/Follow: 34
Ultimo/Last: 220

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
			561	BN				BN	561			
=QgCv -XQG2	12/1	21 ○	560	GY				GY	560		12/1	=QgCv -EM1
=QgCv -XQG2	12/1	22 ○	60	BU				BU	60	2	12/1	=QgCv -EM1
=QgCv -XQG2	10/3	60_2 ○	563	GN				GN	563	M10	26/2	0V
=QgCv -SB08	14/1	4	264	RD				RD	264		14/1	K11
=QgCv -XQG2	14/0	262 ○		YE				YE		3	14/1	=QgCv -SB08
				WH	-W119 022.0147	4,0Mt		WH				
				PK	Cavo Giunzioni Quadro comandi			PK				
			271	BK				BK	271			
=QgCv -RSP1	11/2	CS MP308 M0		VT				VT		1	12/1	=QgCv -EM1
			052	RD-BU				RD-BU	052			
=QgCv -XQG3	18/0	052_1 ○	272	GY-PK				GY-PK	272	○ 052_2	18/2	=QgCv -XQG3
=QgCv -RSP1	11/2	CS MP308 M0		Sch				Sch			12/1	=QgCv -EM1
			017	BN				BN	017			
=QgCv -XQG4	22/6	017_1 ○		GY				GY		M28	22/6	=QgCv OUT17
			004	BU				BU	004			
=QgCv OUT04	20/6	M3	019	GN				GN	019	95	20/6	=QgCv -RT2
=QgCv -XQG4	22/8	019_1 ○	005	RD				RD	005	M28	22/8	OUT19
=QgCv -RT3	20/7	95	006	YE				YE	006	M3	20/7	OUT05
=QgCv -RT4	20/7	95	018	WH	-W121 022.0147	4.00 mt		WH	018	M3	20/7	OUT06
=QgCv -XQG4	22/7	018_1 ○		PK	Auxiliary signals cable			PK		M28	22/7	OUT18
				BK				BK				
				VT				VT				
				RD-BU				RD-BU				
				GY-PK				GY-PK				
				Sch				Sch				
			052	BN				BN	052			
=QgCv -XQG3	18/2	052_2 ○	106	BU	-W122 022.0160	4,50mt		BU	106			
=QgCv -XQG4	18/7	106 ○			Oil level low spray mist lubrication							

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI / Cable Summary

Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

MEP

Foglio/Page: 34
Segue/Follow: 35
Ultimo/Last: 220

Translation of the original instructions

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
				YE				YE				
=QgCv -XQG3	18/0	052_1	052	RD				RD	052			
IN04	18/5	M15	104	GN				GN	104			
				WH				WH				
				BK				BK				
=QgCv -XQG2	18/0	60_3	60	BU	-W130 022.0144	3.00Mt		BU	60			
A01	26/1	M10	350	BN	Inverter auxiliary signals cable			BN	350			
OUT00	20/1	M2	000	GY				GY	000			
AI1a	23/7	M24	???	PK				PK	???			
				VT				VT				
			PE	Sch				Sch	PE			
=QgCv -XQGPE	15/8	1_11								PE	5/6	=QgCv -FL1
			531	BN				BN	531			
=QgCv -RT2	6/4	T1	532	BK				BK	532	U	6/4	=BmMep -M2
=QgCv -RT2	6/4	T2	533	GY	-W2 022.0152	3,50mt		GY	533	V	6/4	=BmMep -M2
=QgCv -RT2	6/5	T3	PE	GNYE	Hydraulic oil unit motor cable			GNYE	PE	W	6/5	=BmMep -M2
=QgCv -XQGPE	6/5	5_6								PE	6/5	=BmMep -M2
			052	BN				BN	052			
=QgMep -XS7	24/7	1	324	YE				YE	324	052_3	18/8	=QgCv -XQG3
=QgMep -XS7	24/8	2	0324	WH	-W20 022.0141	5,80mt		WH	0324	M27	24/8	AI4a
=QgMep -XS7	24/7	3	PE	GN	Strain Guage sensor device			GN	PE	M27	24/7	0V
=QgMep -XS7	24/7	PE		Sch				Sch				
			320	BK				BK	320			
=QgMep -XR0	23/2	2	0320	BU				BU	0320	M11	23/3	AI0
=QgMep -XR0	23/2	3	1320	BN	-W21 022.2063	5.00 mt		BN	1320	M11	23/1	+VRf
=QgMep -XR0	23/2	1	sh	Sch	Head potentiometer transducer cable			Sch	sh	M11	23/2	0V
=QgMep -XR0	23/3	4										
				BK1				BK1				
=QgCv -XQG4	21/2	010	011	BK2				BK2	011	1	21/2	=QgCv -X010
=QgCv -XQG4	21/3	011	60	BK3	-W27 022.2086	3.80mt		BK3	60	1	21/3	=QgCv -X011
=QgCv -XQG2	21/3	1	60	GNYE	S.V. Shuttle vice			GNYE	60	2	21/3	=QgCv -X011
=QgCv -XQG2	21/3	1								2	21/2	=QgCv -X010

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 35
Segue/Follow: 36
Ultimo/Last: 220

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 -XSA1	25/2	312	312	WH				WH	312	M6	25/3	A-
=SaCv -XSA1	25/1	313	313	YE				YE	313	M6	25/2	B-
=SaCv -XSA1	25/1	314	314	GN	-W28 022.0137			GN	314	M6	25/1	B+
=SaCv -XSA1	25/2	311	311	BN	Head proportional valve stepper motor			BN	311	M6	25/3	A+
				Sch				Sch				
=QgCv -XQG4	22/2	012	012	BK1				BK1	012	2	22/2	=QgCv -X012
=QgCv -XQG4	22/2	013	013	BK2	-W29 022.2086	3.80mt		BK2	013	1	22/2	=QgCv -X014
=QgCv -XQG2	21/3	_1	60	BK3	S.V. Head Cut Up/Down			BK3	60	2	22/3	=QgCv -X014
=QgCv -XQG2	22/3	_1	60	GNYE				GNYE	60	1	22/1	=QgCv -X012
=QgCv ST+	25/6	M8	0314	BN				BN	0314			
=QgCv DR+	25/7	M8	0315	YE				YE	0315	15	16/2	=QgCv
=QgCv SCH	25/8	M8	0320	WH	-W29/1 022.0141	4,80mt		WH	0320			
				GN	Serial step/dir. signals cable			GN				
				Sch				Sch				
=QgCv -XQG4	16/6	0312_1	312	BN				BN	312	12	16/2	=QgCv
=QgCv -XQG4	16/6	0311_1	311	YE				YE	311	11	16/2	=QgCv
=QgCv -XQG4	16/6	0310_1	310	WH	-W29/2 022.0141	1,30mt		WH	310	10	16/2	=QgCv
				GN	Shuttle drive step/dir. signals cable			GN				
=QgCv -XQGPE	16/6	PE_	4	Sch				Sch	4			
=QgCv -RT3	6/7	T1	521	BN				BN	521	U	6/7	=BmMep -M3
=QgCv -RT3	6/8	T2	522	BK				BK	522	V	6/8	=BmMep -M3
=QgCv -RT3	6/8	T3	523	GY	-W3 022.0162	2.50mt		GY	523	W	6/8	=BmMep -M3
=QgCv -XQGPE	6/8	5_4	PE	GNYE	Coolant pump motor cable			GNYE	PE	PE	6/8	=BmMep -M3
=QgCv -XQG4	21/1	008	008	BK1				BK1	008	2	21/1	=QgCv -X008
=QgCv -XQG4	21/2	009	009	BK2				BK2	009	1	21/2	=QgCv -X009
=QgCv -XQG2	10/3	60_2	60	BK3	-W31 022.2086	3.80mt		BK3	60	2	21/2	=QgCv -X009
=QgCv -XQG2	21/3	_1	60	GNYE	S.V. Main Cut Vice			GNYE	60	1	21/1	=QgCv -X008

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI / Cable Summary

Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

MEP

Foglio/Page: 36
Segue/Follow: 37
Ultimo/Last: 220

Translation of the original instructions

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 -XQG3	18/2	052_2 ○	052	BN	-W36 022.0160			BN	052	3	18/7	=BmMep -S13
=QgCv -XQG4	18/7	107 ○	107	BU				BU	107	4	18/7	=BmMep -S13
=QgCv -XQG4	20/2	001 ○	001	BN	-W37 022.0160	5,0mt		BN	001	1-2	20/2	=BmMep -HL01
=QgCv -XQG2	10/3	60_2 ○	60	BU	Machine flashing lamp			BU	60	0	20/2	=BmMep -HL01
=QgCv -XQG4	20/4	003 ○	003	BN	-W39 022.0160	3,50mt		BN	003	1	20/4	=QgCv -X003
=QgCv -XQG2	10/3	60_2 ○	60	BU	Solenoid valve unlock head cylinder			BU	60	2	20/4	=QgCv -X003
=QgCv -XFET	7/1	1 ⊂	541	BN				BN	541	T1	7/1	=QgCv -RT4
=QgCv -XFET	7/1	2 ⊂	542	BK				BK	542	T2	7/1	=QgCv -RT4
=QgCv -XFET	7/1	3 ⊂	543	GY	-W4 022.0162	3.60Mt		GY	543	T3	7/1	=QgCv -RT4
=QgCv -XFET	7/1	4 ⊂	7	GNYE	Chip conveyor motor cable			GNYE	7	○ 5_8	7/2	=QgCv -XQGPE
=QgCv -XQG4	20/8	007 ○	007	BN	-W59 022.0160	4,50mt		BN	007			
=QgCv -XQG2	10/3	60_2 ○	60	BU	Solenoid Valve spray mist lubrication			BU	60			
=QgCv -XQG2	10/3	1 ○	262	BN	-W61 022.0160	5,00mt		BN	262	3	20/5	=QgMep -SB14
=QgCv -K4	20/5	21	0061	BU	Push button Chip conveyor reverse			BU	0061	4	20/5	=QgMep -SB14
=QgCv -XQG4	18/3	052_2 ○	052	BN				BN	052	1	18/3	=BmMep -SQ1
=QgCv -XQG4	18/3	101 ○	101	YE				YE	101	4	18/3	=BmMep -SQ1
=QgCv -XQG4	18/3	60_2 ○	60	WH	-W7b 022.0141	3.10Mt		WH	60	3	18/3	=BmMep -SQ1
				GN	Chip conveyor Locked Sensor			GN				
				Sch				Sch				
=QgCv -U10	9/3	A1	591	BN				BN	591	BIA/GIA	9/3	=BmMep -M10
=QgCv -U10	9/3	A1	592	BK				BK	592	GIALLO	9/3	=BmMep -M10
=QgCv -U10	9/3	B2	594	BU	-W8 022.0158	2.50Mt		BU	594	BIA/ARA	9/4	=BmMep -M10
=QgCv -U10	9/3	B1	593	GY	Shuttle stepper motor cable			GY	593	ARANCIO	9/4	=BmMep -M10
=QgCv -XQGPE	9/2	5_9 ○	PE	GNYE				GNYE	PE		9/4	=BmMep -M10

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI
Cable Summary

Ordine/Requisition
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 37
Segue/Follow: 38
Ultimo/Last: 220

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	5/1	L1 ○	1	BN	-WAL 022.0158 Cavo alimentazione generale	3.00Mt		BN	1	1	5/3	=QgCv -Q0
=QgCv -AL	5/1	L2 ○	2	BK				BK	2	3	5/3	=QgCv -Q0
=QgCv -AL	5/2	N ○	N	BU				BU	N	○ N	5/1	=QgCv -AL
=QgCv -AL	5/1	L3 ○	3	GY				GY	3	5	5/3	=QgCv -Q0
=QgCv -AL	5/2	PE ○	PE	GNYE				GNYE	PE	○ 5_1	5/2	=QgCv -XQGPE
=BmMep -HL015	22/4	1-2	0015	BN	-WHL 022.0424 Work zone lamp cable			BN	0015	DOWN	22/4	=QgCv -F20
				BK				BK				
=BmMep -HL015	22/4	0	60	BU				BU	60	○ _1	22/3	=QgCv -XQG2
				WH				WH				
=QgCv -XQG4	18/2	052_1 ○	052	BN	-WS0 022.0422 Proximity Blade speed sensor			BN	052	1	18/2	=BmMep -SQ0
=QgCv -XQG4	18/2	100 ○	100	BK				BK	100	4	18/2	=BmMep -SQ0
=QgCv -XQG4	18/2	60_1 ○	60	BU				BU	60	3	18/2	=BmMep -SQ0
				WH				WH				
=QgMep -FS1	13/1	1	262	WH	-WS1 022.2053 L.SW. RFID SAfety Left guard	3.50mt		WH	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS1	13/1	2	262	BN				BN	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS1	13/1	3	60	GN				GN	60	○ 60_1	10/1	=QgCv -XQG2
=QgMep -FS1	13/1	4	1610	YE				YE	1610			
=QgMep -FS1	13/1	5	274	GY				GY	274			
=QgMep -FS1	13/1	6	262	PK				PK	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS1	13/1		1611	BU				BU	1611			
				RD				RD				
=QgMep -FS2	13/2	1	262	WH	-WS2 022.2053 L.SW. RFID SAfety Right guard	3.00mt		WH	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS2	13/2	2	262	BN				BN	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS2	13/3	3	60	GN				GN	60	○ 60_1	10/1	=QgCv -XQG2
=QgMep -FS2	13/3	4	1620	YE				YE	1620			
=QgMep -FS2	13/3	5	274	GY				GY	274			
=QgMep -FS2	13/3	6	262	PK				PK	262	○ _1	10/3	=QgCv -XQG2
=QgMep -FS2	13/3		1621	BU				BU	1621			
=QgMep -FS1	13/1	8	275	RD				RD	275	8	13/3	=QgMep -FS2

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

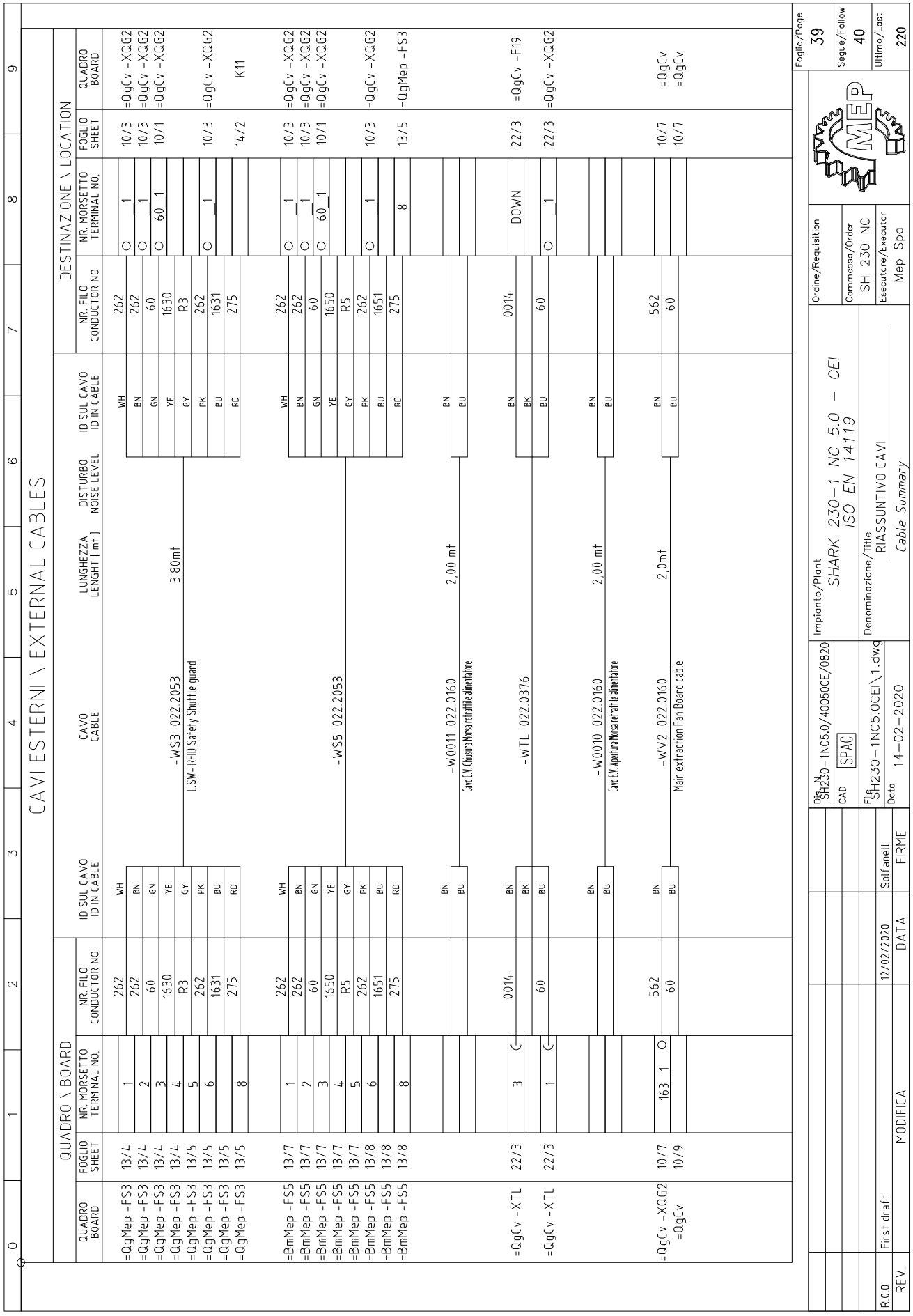
Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: RIASSUNTIVO CAVI / Cable Summary

Ordine/Requisition:
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 38
Segue/Follow: 39
Ultimo/Last: 220

Translation of the original instructions


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
=QgMep -FS3 13/4 1 262 WH -WS3 022.2053 3.80mt L.SW- RFID Safety Shuttle guard 10/3 =QgCv -XQG2
=QgMep -FS3 13/4 2 262 BN 10/3 =QgCv -XQG2
=QgMep -FS3 13/4 3 60 GN 10/3 =QgCv -XQG2
=QgMep -FS3 13/4 4 1630 YE 10/1 =QgCv -XQG2
=QgMep -FS3 13/5 5 R3 GY
=QgMep -FS3 13/5 6 262 PK 10/3 =QgCv -XQG2
=QgMep -FS3 13/5 1631 BU
=QgMep -FS3 13/5 8 275 RD 14/2 K11
=BmMep -FS5 13/7 1 262 WH 10/3 =QgCv -XQG2
=BmMep -FS5 13/7 2 262 BN 10/3 =QgCv -XQG2
=BmMep -FS5 13/7 3 60 GN 10/1 =QgCv -XQG2
=BmMep -FS5 13/7 4 1650 YE
=BmMep -FS5 13/7 5 R5 GY
=BmMep -FS5 13/7 6 262 PK 10/3 =QgCv -XQG2
=BmMep -FS5 13/8 1651 BU
=BmMep -FS5 13/8 8 275 RD 13/5 =QgMep -FS3
-WS5 022.2053
=QgCv -XTL 22/3 3 0014 BN -W0011 022.0160 2,00 mt BN
Cavo E.V. Chiusura Mensa rete/alle alimentatore BU
=QgCv -XTL 22/3 1 60 BU -WTL 022.0376 BN 0014 22/3 =QgCv -F19
BK
BU 60 22/3 =QgCv -XQG2
-W0010 022.0160 2,00 mt BN
Cavo E.V. Apertura Mensa rete/alle alimentatore BU
=QgCv -XQG2 10/7 163_1 562 -WV2 022.0160 2,0mt BN 10/7 =QgCv
=QgCv 10/9 60 Main extraction Fan Board cable BU 10/7 =QgCv
Dis. N. SH230-1NC5.0/400500E/0820
CAD SPAC
File SH1230-1NC5.OCEI\1.dwg
Data 14-02-2020
Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title RIASSUNTIVO CAVI
Cable Summary
Ordine/Requisition
Commessa/Order SH 230 NC
Esecutore/Executor Mep Spa
Foglio/Page 39
Segue/Follow 40
Ultimo/Last 220
R.0.0 First draft 12/02/2020 Salfanelli
REV. MODIFICA DATA FIRME

0	1	2	3	4	5	6	7	8	9	
Nome/Item	Tipo/Type	Descrizione/Description		Descrizione EN			Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
	022.2243	Morsetto 2,5(4)mmq per 2 fili a molla - PHOENIX		Terminal 2,5(4)mmq for 2 wires - PHOENIX			ST2,5- 3031212	=QgCv		4
-AL	2.5 mm	Morsetto da 2.5 mm non abbinato a costruttore						=QgCv		6
-CC1	022.0304	Terminale a occhiello (Rosso)		Wire Terminal Connection Red			Ø5 da 1,5mmq A5/P-B15/P	=QgCv	29	1
-CC2	022.0307	Terminale a faston (Rosso)		Wire Terminal Connection Red			2.8x0.5 da 1,5mmq A00T/P	=QgCv	29	1
-CM1	022.3711	MODULO REMOTO WIFI PER TELEASSISTENZA		Remote WIFI module for tele-assistance			COSY 131 - EWON	=QgCv	28	1
-CR1	022.2602	Guaina POLIFLEX Ø18		Poliflex Covering Ø18			NW 14-1200143	=BmMep	31	1
-CR2	022.2604	Guaina POLIFLEX Ø29		Poliflex covering Ø29			NW 23-1200232	=BmMep	31	1
-CR3	022.2604	Guaina POLIFLEX Ø29		Poliflex covering Ø29			NW 23-1200232	=BmMep	31	1
-CR4	022.2602	Guaina POLIFLEX Ø18		Poliflex Covering Ø18			NW 14-1200143	=BmMep	31	1
-CR5	022.2601	Guaina POLIFLEX Ø16		Poliflex Covering Ø16			NW 12-1200127	=BmMep	31	1
-CR6	022.2601	Guaina POLIFLEX Ø16		Poliflex Covering Ø16			NW 12-1200127	=QgEtMep	31	1
-CR7	022.2601	Guaina POLIFLEX Ø16		Poliflex Covering Ø16			NW 12-1200127	=QgEtMep	31	1
-CU1	022.0279	Kit morsetti volanti Mep50C		Kit mobile terminals Mep50C controller			ISAC	=QgCv	17	1
	022.0760.1	Display MEP50 TS_REV1		Display MEP50 TS_REV1			RAKIT7WIDE. TFT 7" Word WideTouch Screen +Cavo dati			1
	031.2085	Consolle di programmazione MEP 50 V.1.0 TOUCH SCREEN 7 INCH X NC EVO-SH230NCHS		Programming consolled MEP 50 V.1.0 TOUCH SCREEN 7 INCH X NC EVO-SH230NCHS						1
	022.2834	Controllore Mep50C_V1.0_senza display		Controller Mep50C_V1.0_without display						1
-EM1	022.1245	Fungo emergenza		Emergency push button			M22-PVT cod.263467	=QgCv	12	1
	022.0911	Portacontatti		Carrier for pushbutton			M22-A cod. 216374			1
	022.0936	Contatto pulsantiera NC		Normally close contact			M22-K01 cod. 216678 - Moeller			2
-ENC1	010.3744	Manopola Alluminio Nero e Logo Mep		Black Knob with Mep Icon			Ø38x23mm - Albero Ø6	=QgCv	27	1
	025.0235	Anello di tenuta		Potentiometer 10K single turn			NI-18-25-4.5			1
	022.1322	Encoder da pannello Mep50		Panel encoder Mep 50						1
-ENC2	010.3744	Manopola Alluminio Nero e Logo Mep		Black Knob with Mep Icon			Ø38x23mm - Albero Ø6	=QgCv	27	1
	025.0235	Anello di tenuta		Potentiometer 10K single turn			NI-18-25-4.5			1
	022.1322	Encoder da pannello Mep50		Panel encoder Mep 50						1
-ETH1	022.3307	CAVO di rete ethernet 5 metri Cat6 schermato		Ethernet cable Lenght 5 meters Cat6 shielded				=QgMep	28	1
-ETH10	022.2064	Connettore femmina RJ45 GR21.21		Female Plug RJ45			CJK 8FT - ILME	=BmCv	28	1
	022.0281	Custodia plastica da incasso 1 leva Gr 21.21		Plastic Case Embedding One Lever Gr 21.21			CK 03 I- ILME			1
-ETH2	022.1923	Cavo Ethernet Cat6 1mt e RJ45 Schermati		Patch Cord Cat6 with RJ45 Shield			2005071 - CCS	=QgMep	28	1
-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
	022.1163	Fusibile 10,3x38 AM (ritardato) 2A		Fuse 10,3x38 AM			500V 2AMP			1
-F11	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
	022.1163	Fusibile 10,3x38 AM (ritardato) 2A		Fuse 10,3x38 AM			500V 2AMP			1
-F12	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
	022.1160	Fusibile 10,3x38 AM (ritardato) 8A		Fuse 10,3x38 AM			500V 8AMP			1
-F19	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A		Fuse holding terminal 1 x (10,3x38) 690V 32A			2031038 BCH 32A ItalWeber	=QgCv	22	1
	022.1165	Fusibile 10,3x38 AM (ritardato)1A		Fuse 10,3x38 AM			500V 1AMP			1
-F20	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A		Fuse holding terminal 1 x (10,3x38) 690V 32A			2031038 BCH 32A ItalWeber	=QgCv	22	1
	022.1165	Fusibile 10,3x38 AM (ritardato)1A		Fuse 10,3x38 AM			500V 1AMP			1
-F4 -F5	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
	022.1162	Fusibile 10,3x38 AM (ritardato) 4A		Fuse 10,3x38 AM			500V 4AMP			2
-F6 -F7	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
	022.1162	Fusibile 10,3x38 AM (ritardato) 4A		Fuse 10,3x38 AM			500V 4AMP			2
-F8	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
	022.1162	Fusibile 10,3x38 AM (ritardato) 4A		Fuse 10,3x38 AM			500V 4AMP			1

				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition	Foglio/Page 40
				CAD SPAC		Commessa/Order SH 230 NC	Segue/Follow 41
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title DISTINTA MATERIALI	Esecutore/Executor Mep Spa	Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	Material List		
REV.	MODIFICA	DATA	FIRME				

Nome/Item	Tipo/Type	Descrizione/Description	Descrizione EN	Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-F9	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
	022.1161	Fusibile 10,3x38 AM (ritardato) 6A	Fuse 10,3x38 AM	500V 6AMP			1
-FL1	022.2948	FILTRO EMC TRIFASE 520VAC 20A	Filter EMC Three-phases SHAFFNER 20A	FN3270H-20-44	=QgCv	5	1
-FL2	022.0172	Filo unipolare 1,50mmq	Single wire 1,50mmq		=QgCv	29	1
-FS1	022.4008	sensore RFID ST DD420MK-D1T	D ST DD420MK-D1T	ST DD420MK-D1TPIZZATO	=QgMep	13	1
-FS2	022.4008	sensore RFID ST DD420MK-D1T	D ST DD420MK-D1T	ST DD420MK-D1TPIZZATO	=QgMep	13	1
-FS3	022.4008	sensore RFID ST DD420MK-D1T	D ST DD420MK-D1T	ST DD420MK-D1TPIZZATO	=QgMep	13	1
-FS5	022.4008	sensore RFID ST DD420MK-D1T	D ST DD420MK-D1T	ST DD420MK-D1TPIZZATO	=BmMep	13	1
-FU1	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
	022.1159	Fusibile 10,3.x38 AM (ritardato) 10A	Fuse 10,3x38 AM	500V 10AMP			3
-FU18	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A	Fuse holding terminal 1 x (10,3x38) 690V 32A	2031038 BCH 32A ItalWeber	=QgMep	28	1
	022.1163	Fusibile 10,3x38 AM (ritardato) 2A	Fuse 10,3x38 AM	500V 2AMP			1
-FU2	022.1162	Fusibile 10,3x38 AM (ritardato) 4A	Fuse 10,3x38 AM	500V 4AMP	=QgCv	6	3
	022.2239	Portafusibile 3 x (10,3x38) - 690V 32A	Fuse holding terminal 3 x (10,3x38) 690V 32A	2033038 BCH 32A ItalWeber			1
-FU3	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
	022.1163	Fusibile 10,3x38 AM (ritardato) 2A	Fuse 10,3x38 AM	500V 2AMP			3
-GD1	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
-GH2	022.0245	Dado grigio		PG11	=BmMep	31	1
-HL01	022.3254	Lampeggiante LED 24 VAC/Vdc	Flashing LED 24 VAC/Vdc	SL7-CB-IMH + SL7-BL24 + SL7-AP24	=BmMep	20	1
-HL015	022.3255	Faro Led 4,2W 16/36 VCC 330LM	LED LIGHT 4,2W 16/36 VCC 330LM		=BmMep	22	1
-K009		Elettrovalvola aperta (in chiusura) secondo solenoide			=BmMep	21	1
-K013		Elettrovalvola aperta (in chiusura) secondo solenoide			=BmMep	22	1
-K015	V.d.Id.	Vedi distinta idraulica	See hydraulic BOM	V.d.Id.	=CiCv	22	1
-K2	022.3012	Contattore 3KW NO (24 V Dc)	Contactor 3KW NO (24 V Dc)	DILM7-10 cod.276565 Moeller	=QgCv	20	1
-K21	V.d.Id.	Vedi distinta idraulica	See hydraulic BOM	V.d.Id.	=BmMep	20	1
	044.1278	Elettrovalvola idraulica 2/2 unidirezionale NC mont. in linea da 1/4"G 24Vcc senza connettore	Hydraulic electrovalve 2/2 NC 1/4"G 24Vdc	Oil system			1
-K3	022.3012	Contattore 3KW NO (24 V Dc)	Contactor 3KW NO (24 V Dc)	DILM7-10 cod.276565 Moeller	=QgCv	20	1
-K4	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	20	1
	022.3924	Kit ponti potenza per teleinvertitore	Kit for contactor reversing	DILM12-XLR			1
-K41	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	20	1
-KA010	V.d.Id.	Vedi distinta idraulica	See hydraulic BOM	V.d.Id.	=BmMep	21	1
-KA011		Elettrovalvola aperta (in chiusura) secondo solenoide			=BmMep	21	1
-KA10	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	=QgCv	21	1
	022.1593	Soppressore con Varistore 24 Vac/24Vdc	Varistor suppressor with 24 Vac / 24Vdc	99.02.0.024.98 - FINDER			1
-KA11	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	=QgCv	21	1
	022.1593	Soppressore con Varistore 24 Vac/24Vdc	Varistor suppressor with 24 Vac / 24Vdc	99.02.0.024.98 - FINDER			1
-KS1	022.3015	Contattore 7.5KW (24 V Dc)	Contactor 7.5KW (24 V Dc)	DILM17-10 (RDC24) cod.277018 Moeller	=QgCv	11	1
	022.0938	Contatto ausiliario 2 NC per contattore DILM9-10	Auxiliary contact for DILM9-10	DILA-XHI02 cod.276420 Moeller			1
-KS10	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	11	1
-KS11	022.3011	Contattore 3KW - NC (24 V Dc)	Contactor 3KW NC (24 V Dc)	DILM7-01 cod.276600 Moeller	=QgCv	11	1
-M1	019.3621	Motore KW2.2 1390Rpm	Motor KW2.2 1390Rpm	M90L4P.B14 V.230-400	=BmMep	6	1
-M10	019.3407	Motore stepper 12Nmt 6A 1,8°	Stepper motor 12Nmt 6A 1,8°	FL886TH156-5708AL FULLING	=BmMep	9	1
-M2	019.4009	Motore centralina HP 1 C80 B14 V.230 400-415.50/240-480.60 UL-CSA	Motor HP 1 C80 B14 V.230 400-415.50/240-480.60 UL-CSA	019.4009	=BmMep	6	1
-M3	028.0260	Elettropompa V.220-254/380-440.50-60 HZ 150W	Electropump V.220-240/380-415.50-60 HZ 150W	SPV33 o 4COA6-12HP1	=BmMep	6	1
-M4	019.3501	Motore 25W 4P 1325 Rpm	Motor 25W 4P 1325 Rpm	Panasonic 380/400v M8MA25GK4 CGA	=QgEtMep	7	1

REV.	MODIFICA	DATA	FIRME
R.0.0	First draft	12/02/2020	Solfanelli

Dis. N. SH230-1NC5.0/40050CE/0820
CAD SPAC
File SH230-1NC5.0CEI\1.dwg
Data 14-02-2020

Impianto/Plant: SHARK 230-1 NC 5.0 - CEI ISO EN 14119
Denominazione/Title: DISTINTA MATERIALI
Material List

Ordine/Requisition
Commessa/Order: SH 230 NC
Esecutore/Executor: Mep Spa

Foglio/Page: 41
Segue/Follow: 42
Ultimo/Last: 220

0	1	2	3	4	5	6	7	8	9
Nome/Item	Tipo/Type	Descrizione/Description			Descrizione EN		Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-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	25	1
-MV1	019.5221	Ventola raffreddamento 80x80 - 24Vdc			Fan cooling 80x80 - 24Vdc		V108 DSW24V - ALFAELECTRIC	=QgCv	10	1
	019.5123	Griglia per ventola 80x80			Cover for fan cooler 80x80		ALFA GM 80			1
	016.0624	Staffa per ventola azionamento P/P			Support for driver fan cooler					1
-MV2	019.5127	Griglia per ventola 150x150			Cover for fan cooler 150x150		ALFAGM150	=QgCv	10	1
	019.5224	Ventola 172X150X51 tensione 24Vdc 470 MC/H			Fan size 172x150x51 tension 24Vdc 470 MC/H		V108EXMBT24V			1
-NM1	022.0290	Etichetta segnafilo			Cable maker and wire			=QgCv	29	1
-NM2	022.0290	Etichetta segnafilo			Cable maker and wire			=QgCv	29	1
-OLM	090.1607	Gruppo lubrificazione minimale SHARK in DC			Spray mist oil system for Shark DC voltage			=BmLmCv	28	1
-OPE	090.0672	Comando supplementare a pedaliera per Shark			Foot-pedal device for Shark			=BmPeMep	28	1
-PC1	022.0232	Pressacavo metallico			Metal Cable Gland		1/4"G	=BmMep	31	1
-PC2	022.0232	Pressacavo metallico			Metal Cable Gland		1/4"G	=BmMep	31	1
-PC3	022.0237	Pressacavo			Cable Gland PG11		BS03	=BmMep	31	1
-PT1	022.0311	Terminale a puntale da (Bianco)			Wire Terminal Connection White		0,5mmq DZ5CE005	=QgCv	29	1
-PT3	022.0312	Terminale a puntale da (Nero)			Wire Terminal Connection Black		1,5mmq DZ5CE015	=QgCv	29	1
-Q0	022.3065	Interruttore Magnetotermico scatolato 15-20A; 25KA			Magneto-termal overload Switch 15-20A; 25KA		NZMB1-A20-NA; EATON	=QgCv	5	1
	022.1032	Comando bloccaporta NZM1-XHB-DAR-NA			Rotary handle door lock PNZM1-XHB-DAR-NA		NZM1-XHB-DAR-NA cod: 125959			1
-QD1	016.2930	QUADRO COMANDI PENSILE COMPLETO SH 230-1 NC 5.0			Complete electrical box for SH 230-1 NC 5.0			=QgMep	30	1
-RD1	022.0349	Riduzione			Joint Reduction		M/F M20/PG13,5	=BmMep	31	1
-RD2								=BmMep	31	1
-RE1	022.0211	Raccordo rapido dritto			Rapid straight joint SEM PG13,5/Ø19		SEM PG13,5/Ø19	=BmMep	31	1
-RE2								=BmMep	31	1
	022.0210	Raccordo rapido dritto			Rapid straight Joint PG11/Ø16		SEM PG11/Ø16			1
-RE3	022.0210	Raccordo rapido dritto			Rapid straight Joint PG11/Ø16		SEM PG11/Ø16	=QgEtMep	31	1
-RE4	022.0210	Raccordo rapido dritto			Rapid straight Joint PG11/Ø16		SEM PG11/Ø16	=QgEtMep	31	1
-RSE1	022.3290	Modulo espansione 3NO+1NC Ple			Expansion module 3NO +1NC		CS ME03VU24 - PIZZATO	=QgCv	11	1
-RT2	022.3821	Rele termico 1,6-2,4A			Termal overload 1,6-2,4A		ZB12-2,4A cod. 278437 Moeller	=QgCv	6	1
-RT3	022.3819	Rele termico 0.6-1.0A			Termal overload 0.6-1.0A		ZB12-1.0A cod. 278435 Moeller	=QgCv	6	1
-RT4	022.3817	Rele termico 0.1-0.16A			Termal overload 0.1-0.16A		ZB12-0.16A cod. 278431 Moeller	=QgCv	7	1
-RV0	022.1814	Potenziometro lineare IP67 corsa 300mm			Linear potentiometer IP67 range 300mm		TX2 0300 cod. 716 002 101 NOVOTECNIK	=BmMep	23	1
	010.3744	Manopola Alluminio Nero e Logo Mep			Black Knob with Mep Icon		Ø38x23mm - Albero Ø6	=QgCv	24	1
	025.0235	Anello di tenuta			Potentiometer 10K single turn		NI-18-25-4.5			1
	022.0045	Potenziometro 10K monogiro			Potentiometer 10K single turn		91A1AB28B15L - Mexico			1
-S18	022.0911	Portacontatti per pulsantiera			Carrier for pushbutton		M22-A cod. 216374	=QgCv	19	2
	022.0937	Contatto pulsantiera NA			Normally open contact		M22-K10 cod. 216376 Moeller			2
	022.1405	Pulsante nero			Black push button		M22-D-S cod. 216590			2
-S3	022.1408	Pulsante blu			Blue push button		M22-D-B cod. 216600	=QgCv	14	1
	022.0937	Contatto pulsantiera NA			Normally open contact		M22-K10 cod. 216376 Moeller			1
-S54	022.3927	JOYSTICK E2AC-DXBX2600 4 POS. CON BLOCCO			JOYSTICK E2AC-DXBX2600 4 POS.		E2AC-DXBX2600- PIZZATO	=QgCv	19	1
	022.3928	BLOCCHETTO N.A. PER JOYSTICK CP10G2V1			N.O. BLOCK FOR JOYSTICK CP10G2V1		CP10G2V1 - PIZZATO			4
-SB14	022.1405	Pulsante M22-D-N cod. 216598 + M22-A cod 216374			Black push button		M22-D-S cod. 216590	=QgMep	20	1
	022.0937	Contatto pulsantiera NA M22-K10 cod. 216376			Normally open contact		M22-K10 cod. 216376 Moeller			1
	022.0911	Portacontatti per pulsantiera			Carrier for pushbutton		M22-A cod. 216374			1
-SF1	047.0182	Sacchetto portafusibili			Printed envelopes			=QgCv	29	1
	022.1133	Microfusibile			Microfuse		1AMP. 250V			1

				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition	Foglio/Page 42
				CAD SPAC		Commessa/Order SH 230 NC	Segue/Follow 43
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title DISTINTA MATERIALI	Esecutore/Executor Mep Spa	Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	*Material List*		
REV.	MODIFICA	DATA	FIRME				

0	1	2	3	4	5	6	7	8	9
Nome/Item	Tipo/Type	Descrizione/Description		Descrizione EN			Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-SF1	022.1135	Microfusibile		Microfuse			2,5AMP. 250V	=QgCv	29	1
-SG1	016.1271	Scatola derivazione metallica		Metal junction box?			95x95 P.70	=BmMep	31	1
-SLP	022.0937	Contatto pulsantiera NA		Normally open contact			M22-K10 cod. 216376 Moeller	=QgCv	14	1
	022.1405	Pulsante nero		Black push button			M22-D-S cod. 216590			1
-SQ0	022.0522	Sensore di prossimita PNP lungo conn. M12		Proximity sensor PNP long with M12 connector.			B00122-DIS388 - SELET	=BmMep	18	1
-SQ1	022.0527	Sensore di prossimita PNP corto conn. M12		Proximity sensor PNP short with M12 connector.			B02122P0C5 - SELET	=BmMep	18	1
-SQ10	022.0543	Finecorsa a rotella 1NO+1NC conn. M12 laterale		Limit Switch with roll 1NO+1NC			NB B110BB-DMK PIZZATO	=BmCv	19	1
-SQ11	022.0543	Finecorsa a rotella 1NO+1NC conn. M12 laterale		Limit Switch with roll 1NO+1NC			NB B110BB-DMK PIZZATO	=BmCv	19	1
-SQ7	022.2152	Tensionatore elettronico 3T		Electronic tensioner 3T			TR-S-A/3T 1,5V- 900Kg Deltateck	=QgCv	24	1
-T2	022.1601	Trasformatore 500 0-230-400 V.0-60/0-220		Transformer			500 0-230-400 V.0-60/0-220	=QgCv	8	1
-TF1	031.2622	Targa sostituzione fusibili		Replace fuse adhesive sign				=QgCv	29	1
-TF2	025.0604	Guarnizione aerstop		Control panel gasket				=QgCv	29	1
-TL014	022.1191	Traguardatore laser a riga 12x70 24Vcc 635nm 5mW e conn. M8		Laser Line Sign			MOD 50EM 24V e connettore - RLI	=BmMep	22	1
-U1	090.1721	Inverter completo 3 KW V.400-480.50.60 CF I550 CON PORTA MODBUS RTU		Complete Inverter V380-480.50.60, 3KW with Modbus RTU			I550 - I55AE...- LENZE	=QgCv	6	1
-U10	022.1330	Azionamento per motori passo-passo (30-100V) + modbus		Driver for step motor (30-100V) + modbus			APSL3 E OP/S130	=QgCv	9	1
-WF1	022.3712	ANTENNA WIFI CON CAVO 2,5M. CON ATTACCO COASSIALE		Antenna WIFI with cable 2,5mt with connector			EW99007	=QgMep	28	1
-X003	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	20	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	21	1
-X009	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	21	1
-X010	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	21	1
	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD			1
-X011	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	21	1
	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD			1
-X012	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	22	1
-X014	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	22	1
-X015	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	22	1
-XA010	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	21	1
-XA011	022.0429	Connettore EV idra. in DC con varistore (V1401)		Connector for solenoid valve DC with varistor			2 poli + PE - V1401 SHIELD	=QgCv	21	1
-XFET	022.0281 + 022.0262	Connettore fisso ILME (CK03I + CKF03)		Fixed connector ILME (CK03I + CKF03)			CK03I + CKF03	=QgCv		1
-XQG2	022.2243	Morsetto 2,5mmq per 2 fili a molla - PHOENIX		Terminal 2,5(4)mmq for 2 wires - PHOENIX			ST2,5- 3031212	=QgCv		7
	022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla		Quadruple pole spring terminal 2,5mmq			56.703.5155.0			3
	022.2263	Morsetto PEda 2.5 mm singolo per 4 fili a molla		Quadruple pole spring terminal 2,5mmq			WK4 D2/2 SLU. 57.504.9155.0			2
-XQG3	022.2245	Morsetto 2,5(4)mmq per 4 fili a molla - PHOENIX		Terminal 2,5(4)mmq for 4 wires - PHOENIX			ST2,5- QUATTRO_3031306	=QgCv		4
-XQG4	022.2219	Morsetto 2.5(4)mmq per 4 fili a molla - PHOENIX		Terminal 2.5(4)mmq for 4 wires - PHOENIX			D-STTB-2.5_3031270	=QgCv		7
	022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla		Single pole spring terminal 2,5mmq			56.703.0055.0			16
	022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla		Single pole spring terminal 2,5mmq			56.703.0055.0	=BmCv		1
	022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla		Quadruple pole spring terminal 2,5mmq			56.703.5155.0	=QgCv		2
-XQGPE	022.2321	Barra da 15x15mm con 10 fori 6mm						=QgCv		3
-XR0	022.0369	Connettore 3 poli per tensionatore elettronico		Connector 3-poles for strain gauge			022.0369	=QgMep		1
-XS7	022.0369	Connettore 3 poli per tensionatore elettronico		Connector 3-poles for strain gauge			022.0369	=QgMep		1
-XSA1	022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla 56.703.0055.0		Single pole spring terminal 2,5mmq			56.703.0055.0	=SaCv		4
-XTL	022.0376	Connettore F303N5000 per prossimity con 5Mt di cavo.		Connettor F303N5000 for connector with 5Mt cable.			022.0376	=QgCv		1
-Z0	022.2903	Toroide ferrite N30 r40		Ferrites Toroids N30 r40			212-0976 - RS	=QgCv	6	1
-Z1	022.2903	Toroide ferrite N30 r40		Ferrites Toroids N30 r40			212-0976 - RS	=QgCv	6	1
-Z2	022.2903	Toroide ferrite N30 r40		Ferrites Toroids N30 r40			212-0976 - RS	=BmCv	26	1

				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition	Foglio/Page 43
				CAD SPAC		Commessa/Order SH 230 NC	Segue/Follow 44
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title DISTINTA MATERIALI	Esecutore/Executor Mep Spa	Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	Material List		
REV.	MODIFICA	DATA	FIRME				

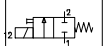
0	1	2	3	4	5	6	7	8	9	
Nome/Item	Tipo/Type	Descrizione/Description		Descrizione EN			Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-Z3	022.2903	Toroide ferrite N30 r40		Ferrites Toroids N30 r40			212-0976 - RS	=QgCv	9	1
XMET	022.0282 + 022.0261	Connettore volante ILME (CK03VS pioli + CKM03)		Mobile connector ILME (CK03VS + CKM03) 4 poles			CK03VS + CKM03	=QgEtMep		1

				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition		Foglio/Page 44
				CAD SPAC		Commessa/Order SH 230 NC		Segue/Follow 45
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title DISTINTA MATERIALI	Esecutore/Executor Mep Spa		Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	*Material List*			
REV.	MODIFICA	DATA	FIRME					

Translation of the original instructions

0	1	2	3	4	5	6	7	8	9
Nome/Item	Tipo/Type	Descrizione/Description		Descrizione EN			Codice Interno	Quadro/Board	Fg/Sh	Q.ta/Q.ty
-W0010	022.0160	Cavo 2x0,5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		2
-W0011	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		2
-W01	022.0151	Cavo 3G1.5mmq		Cable 3 x 1.5mmq				=QgCv		
-W010	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W011	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W04	022.0162	Cavo 4G0.75mmq		Cable 4 x 0.75mmq			022.0162	=QgEtMep		
-W1	022.0143	Cavo schermato 4x1.5		Cable with shield 4 x 1.5mmq				=QgCv		
-W10	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt		SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt			022.0424	=QgCv		
-W11	022.0397	Cavo pressofuso con connettore M12 90° lungo 5Mt		SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt			022.0424			
-W117	022.0147	Cavo schermato 12x0.5		Cable with shield 12 x 0.5mmq				=QgCv		
-W118	022.0147	Cavo schermato 12x0.5		Cable with shield 12 x 0.5mmq				=QgCv		
-W119	022.0147	Cavo schermato 12x0.5		Cable with shield 12 x 0.5mmq				=QgCv		
-W121	022.0147	Cavo schermato 12x0.5		Cable with shield 12 x 0.5mmq				=QgCv		
-W122	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W130	022.0144	Cavo schermato 10x0.5		Cable with shield 10 x 0.5mmq			022.0144	=QgCv		
-W2	022.0152	Cavo 4G1.5mmq		Cable 4x 1.5mmq			022.0152	=QgCv		
-W20	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro		Cable with shield 4 x 0.5mmq				=QgMep		
-W21	022.2063	Connettore M8 con 5Mt di cavo 3x0,25mmq schermato		Connector M8 straight with 5MTschielded cable UL/CSA			1521737	=QgMep		
-W27	022.2086	Cavo per doppio connettore per valvole 5mt					1458046	=QgCv		
-W28	022.0137	Cavo multipolare schermato 4x0,75		Cable with shield 4 x 0.75mmq			022.0137	=SaCv		
-W29	022.2086	Cavo per doppio connettore per valvole 5mt					1458046	=QgCv		
-W29/1	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro		Cable with shield 4 x 0.5mmq				=QgCv		
-W29/2	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro		Cable with shield 4 x 0.5mmq				=QgCv		
-W3	022.0162	Cavo 4G0.75mmq		Cable 4 x 0.75mmq			022.0162	=QgCv		
-W31	022.2086	Cavo per doppio connettore per valvole 5mt					1458046	=QgCv		
-W36	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W37	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W39	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W4	022.0162	Cavo 4G0.75mmq		Cable 4 x 0.75mmq			022.0162	=QgCv		
-W59	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W61	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		
-W7b	022.0141	Cavo schermato 4x0.5 per tensionatore e potenziometro		Cable with shield 4 x 0.5mmq				=QgCv		
-W8	022.0158	Cavo 5x1.5mmq		Cable 5 x 1.5mmq			022.0158	=QgCv		
-WAL	022.0158	Cavo 5x1.5mmq		Cable 5 x 1.5mmq			022.0158	=QgCv		
-WHL	022.0424	Cavo pressofuso con connettore M12 90° lungo 5Mt		SAC-4P- 5,0-PUR/M12FR, M12 90° connector: lenght 5Mt			022.0424	=QgCv		
-WS0	022.0424	Cavo pressofuso con connettore M12 90° lungo 10Mt		Cable with M12 90° connector; Lenght: 10Mt			022.0422	=QgCv		
-WS1	022.2053	Cavo 8x0.25 lung. 5Mt con connettore M12 dritto		Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq				=QgCv		
-WS2	022.2053	Cavo 8x0.25 lung. 5Mt con connettore M12 dritto		Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq				=QgCv		
-WS3	022.2053	Cavo 8x0.25 lung. 5Mt con connettore M12 dritto		Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq				=QgCv		
-WS5	022.2053	Cavo 8x0.25 lung. 5Mt con connettore M12 dritto		Straight connector M12 with 5Mt cable UL/CSA 8x0.25mmq				=QgCv		
-WTL	022.0355	Cavo 3xAwg24 per prossimity con connettore M12 90°. L=5Mt		Connettor F303N5000 for connector with 5Mt cable.			022.0376	=QgCv		
-WV2	022.0160	Cavo 2x0.5mmq		Cable 2 x 0.5mmq			022.0160	=QgCv		

				Dis. N. SH230-1NC5.0/40050CE/0820	Impianto/Plant SHARK 230-1 NC 5.0 - CEI ISO EN 14119	Ordine/Requisition	Foglio/Page 45
				CAD SPAC		Commessa/Order SH 230 NC	Segue/Follow 201
				File SH230-1NC5.0CEI\1.dwg	Denominazione/Title DISTINTA CAVI	Esecutore/Executor Mep Spa	Ultimo/Last 220
R.0.0	First draft	12/02/2020	Solfanelli	Data 14-02-2020	Cables List		
REV.	MODIFICA	DATA	FIRME				

Sim.\Sym.	File	Descrizione\Description
⌀	BLK106	Raccordo *Union*
	FFLH53	Valvola di massima *Maximum valve*
	FFLH97	Valvola direz. 4/3 centri chiusi *Maximum valve*
	FFLP40	Valvola di esclusione *Maximum valve*
	FFLP42	Manometro *Maximum valve*
	FFLP53	Motore elettrico *Maximum valve*
	FFLP54	Valvola controllo flusso *Maximum valve*
	FFLP62A	Valvola unidirezionale *Maximum valve*
	FFLP62B	Valvola apertura reg. *Maximum valve*
	FFLP75A	Cilindro a doppio effetto *Maximum valve*
	FFLP154	Elettrovalvola 2/2 ritorno a molla meccanica *Maximum valve*

Sim.\Sym.	File	Descrizione\Description
	CIL-VERT	Cilindro a doppio effetto
	FILTROID	Filtro
	POMPAID	Pompa idraulica
	REG-IDM	Blocco controllo pressione e flusso

Sim.\Sym.	File	Descrizione\Description

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto
SHARK 230 NC 5.0 - CEI

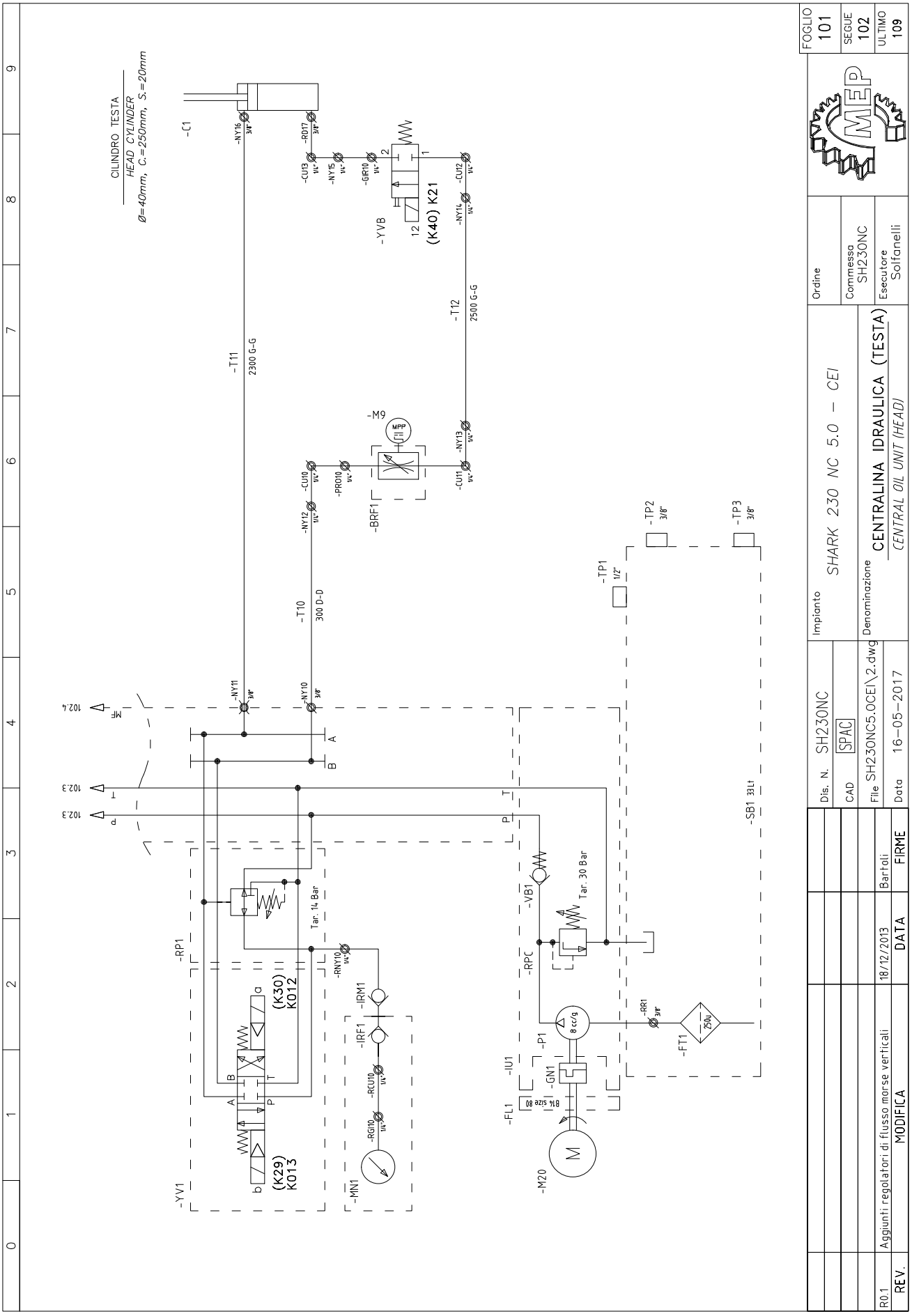
Denominazione
LEGENDA SIMBOLI
SYMBOL KEY

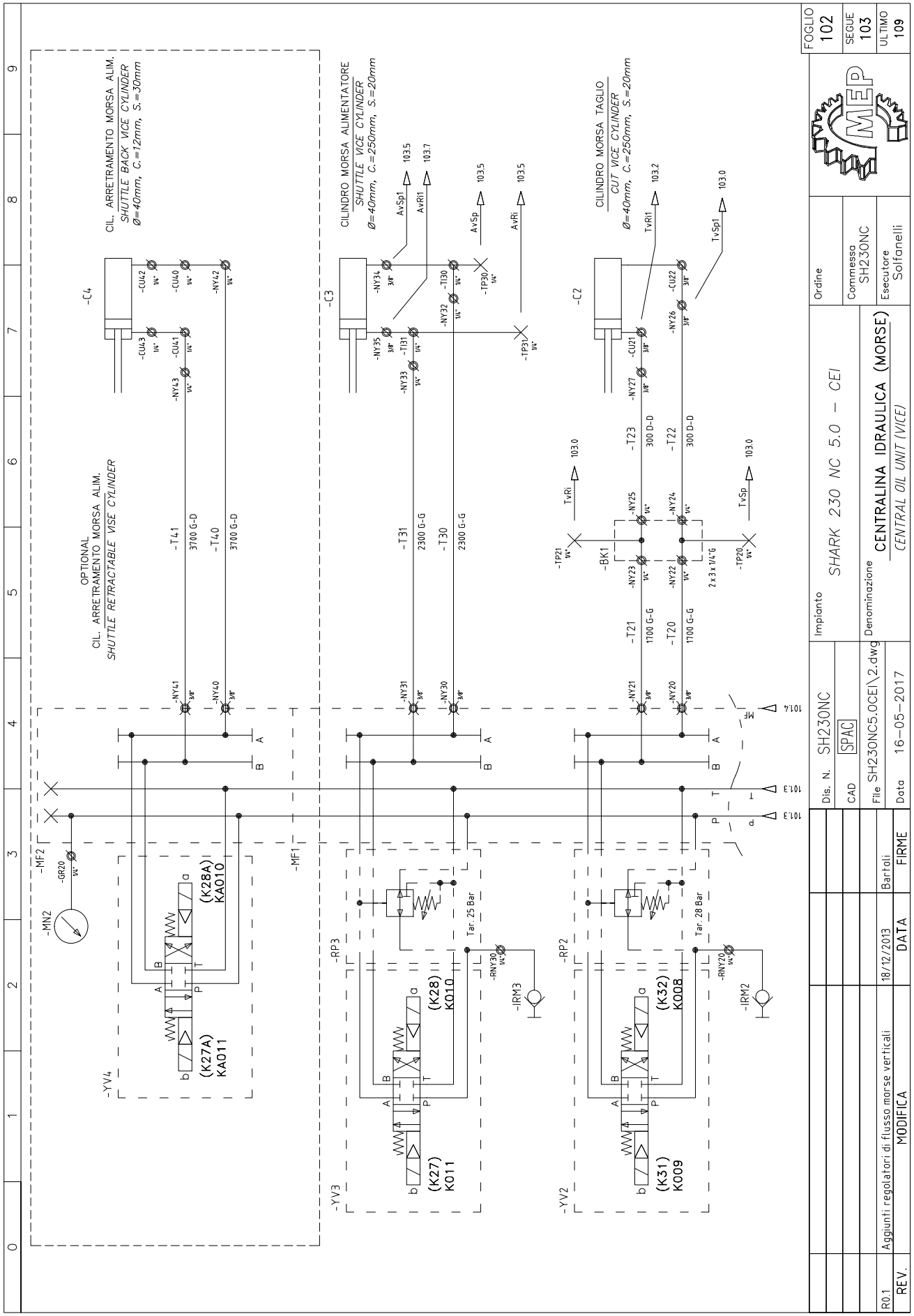
Ordine
Commessa SH230NC
Esecutore Solfanelli

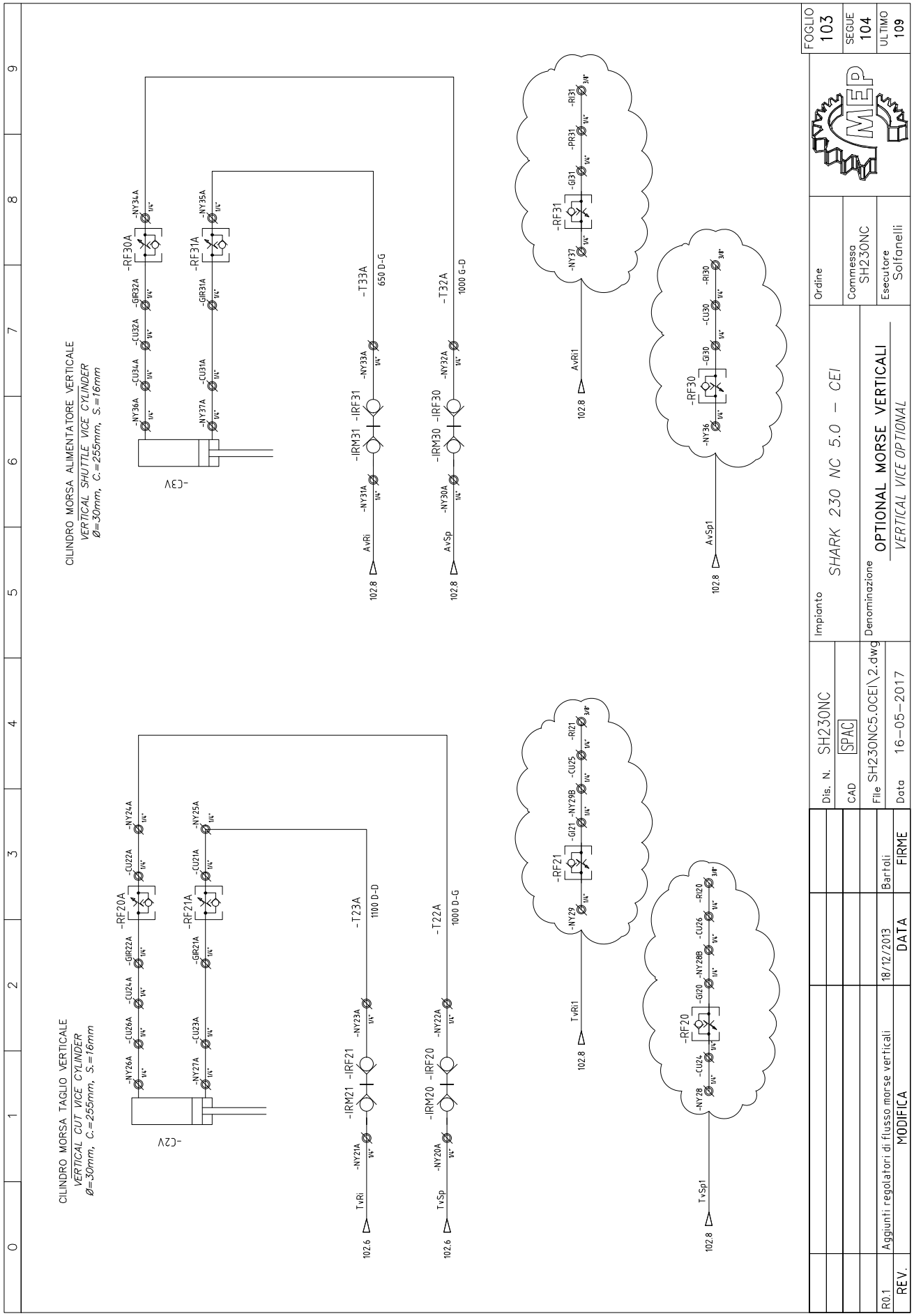
MEP

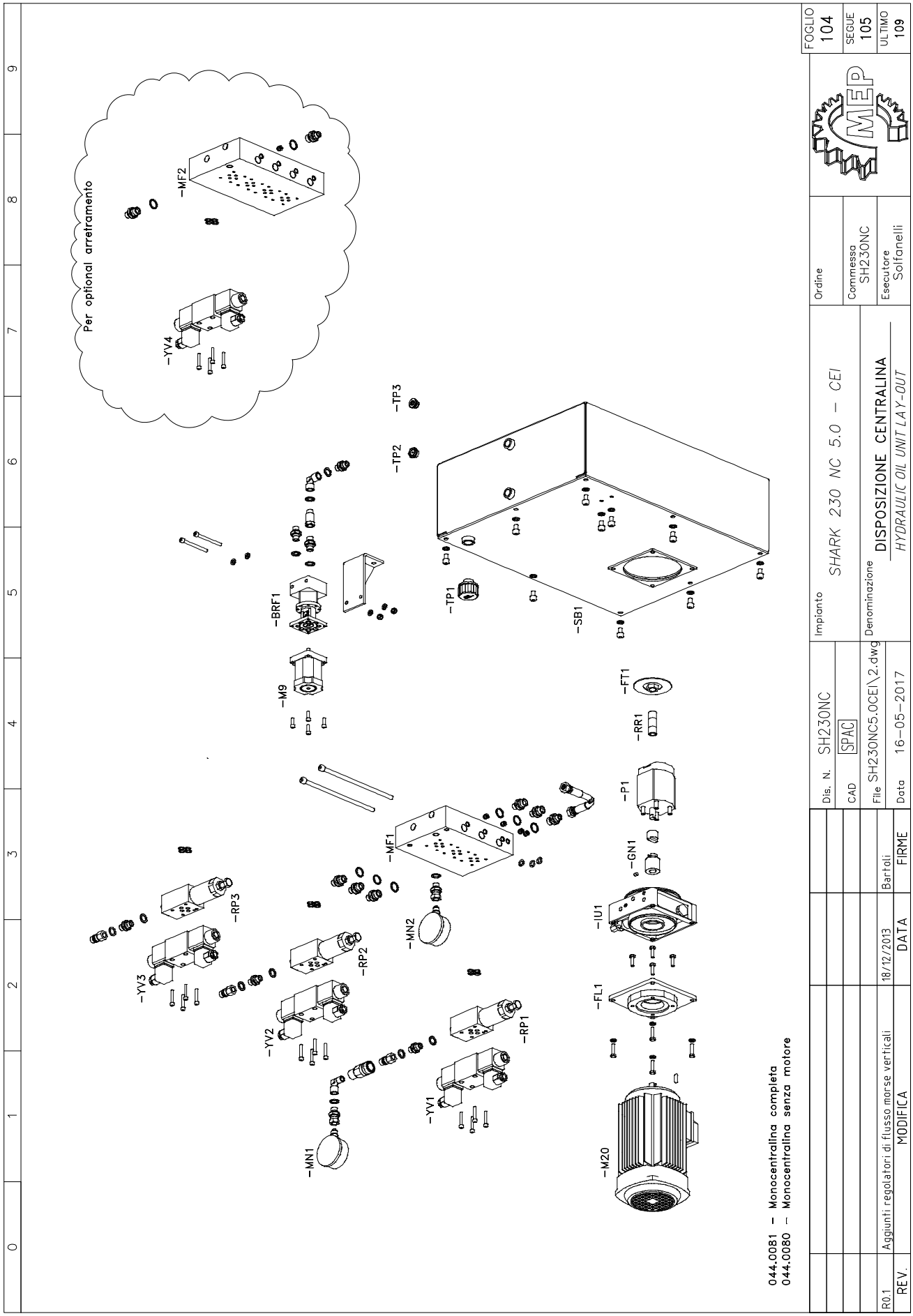
FOGLIO 100
SEGUE 101
ULTIMO 109

Translation of the original instructions


CILINDRO TESTA
HEAD CYLINDER
Ø=40mm, C.=250mm, S.=20mm
-C1
-T11
2300 G-G
-T12
2500 G-G
-T10
300 D-D
-YVB
(K40) K21
-M9
-BRF1
-TP1
1/2"
-TP2
3/8"
-TP3
3/8"
-SB1
-RP1
Tar. 14 Bar
(K30)
K012
(K29)
K013
-YV1
-MN1
-IRM1
-IRF1
-RCU10
-RGI10
-RNY10
-VB1
Tar. 30 Bar
-RPC
-FL1
-IU1
-GN1
-P1
8 cc/g
-M20
-RR1
-FT1
250µ
FOGLIO 101
SEGUE 102
ULTIMO 109
Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017
Impianto
SHARK 230 NC 5.0 - CEI
Denominazione
CENTRALINA IDRAULICA (TESTA)
CENTRAL OIL UNIT (HEAD)
Ordine
Commessa SH230NC
Esecutore Solfanelli
R0.1 Aggiunti regolatori di flusso morse verticali 18/12/2013 Bartoli
REV. MODIFICA DATA FIRME


CIL. ARRETRAMENTO MORSA ALIM.
SHUTTLE BACK VICE CYLINDER
Ø=40mm, C.=12mm, S.=30mm
CILINDRO MORSA ALIMENTATORE
SHUTTLE VICE CYLINDER
Ø=40mm, C.=250mm, S.=20mm
CILINDRO MORSA TAGLIO
CUT VICE CYLINDER
Ø=40mm, C.=250mm, S.=20mm
OPTIONAL
CIL. ARRETRAMENTO MORSA ALIM.
SHUTTLE RETRACTABLE VISE CYLINDER
-C4
-C3
-C2
-MF2
-MF1
-MN2
-GR20
-YV4
-YV3
-YV2
-RP3
-RP2
-IRM3
-IRM2
-BK1
(K27A) KA011
(K28A) KA010
(K27) K011
(K28) K010
(K31) K009
(K32) K008
Tar. 25 Bar
Tar. 28 Bar
2300 G-G
3700 G-D
1700 G-G
300 D-D
2 x 3 x 1/4"G
AvSp1
AvRi1
AvSp
AvRi
TvRi1
TvSp1
TvRi
TvSp
103.5
103.7
103.0
103.2
101.3
101.4
FOGLIO 102
SEGUE 103
ULTIMO 109
Dis. N. SH230NC
CAD SPAC
File SH230NC5.OCE\2.dwg
Data 16-05-2017
Impianto SHARK 230 NC 5.0 - CE
Denominazione CENTRALINA IDRAULICA (MORSE)
CENTRAL OIL UNIT (VICE)
Ordine
Commessa SH230NC
Esecutore Solfanelli
R0.1 Aggiunti regolatori di flusso morse verticali 18/12/2013 Bartoli
REV. MODIFICA DATA FIRME


CILINDRO MORSA ALIMENTATORE VERTICALE
VERTICAL SHUTTLE VICE CYLINDER
Ø=30mm, C.=255mm, S.=16mm
CILINDRO MORSA TAGLIO VERTICALE
VERTICAL CUT VICE CYLINDER
Ø=30mm, C.=255mm, S.=16mm
-RF30A
-RF31A
-RF20A
-RF21A
-T33A
650 D-G
-T32A
1000 G-D
-T23A
1100 D-D
-T22A
1000 G-G
-RF31
-RF30
-RF21
-RF20
SHARK 230 NC 5.0 - CEI
OPTIONAL MORSE VERTICALI
VERTICAL VICE OPTIONAL
SH230NC
SPAC
SH230NC5.0CEI\2.dwg
16-05-2017
18/12/2013
Bartoli
MODIFICA
DATA
FIRME
Aggiunti regolatori di flusso morse verticali
R0.1
FOGLIO 103
SEGUE 104
ULTIMO 109
Solfanelli


Per optional arretramento
-MF2
-YV4
-TP3
-TP2
-TP1
-SB1
-BRF1
-M9
-FT1
-RR1
-P1
-GN1
-IU1
-FL1
-M20
-MF1
-MN2
-RP3
-YV3
-RP2
-YV2
-RP1
-YV1
-MN1
044.0081 - Monocentralina completa
044.0080 - Monocentralina senza motore
FOGLIO 104
SEGUE 105
ULTIMO 109
Impianto SHARK 230 NC 5.0 - CEI
Ordine
Commessa SH230NC
Esecutore Solfanelli
Denominazione DISPOSIZIONE CENTRALINA
HYDRAULIC OIL UNIT LAY-OUT
Dis. N. SH230NC
CAD SPAC
File SH230NC5.OCEI\2.dwg
Data 16-05-2017
R0.1 Aggiunti regolatori di flusso morse verticali 18/12/2013 Barfoli
REV. MODIFICA DATA FIRME

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE IT (DB)	DESCRIZIONE EN (DB)	DB.CODICEINTERNO	Q.TA/Q.TY	QUADRO/BOARD	FG/SH
'-IRM4	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiArrCv	102
'-MF2	'007.5233	Base idraulica 4 posti CETOP 3 per housing BUCHER	Hydraulic manyfold 4 module CETOP3 for housing BUCHER		1	'=CiArrCv	102
'-NY40	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiArrCv	102
'-NY41	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiArrCv	102
'-RNY40	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiArrCv	102
'-RP4	'044.1275	Valvola modulare idraulica riduttice 3-35Bar	Moduler valve pressure reduction 3-35Bar	CETOP3 su "A" reg. a vite sx MBRV-02A Danxin	1	'=CiArrCv	102
'-YV4	'043.1002	Elettrovalvola idraulica 4/3 centri chiusi CETOP 3 24Vcc	Hydraulic electrovalve 4/3 close center CETOP3 24Vdc	MD1L- S1/10 N-D24K1 DUPLOMATIC	1	'=CiArrCv	102
'-C4	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiArrMep	102
'-CU40	'043.0250	Raccordo gomito M/F da 1/4"G	Elbow coupling M/F 1/4"		1	'=CiArrMep	102
'-CU41	'043.0250	Raccordo gomito M/F da 1/4"G	Elbow coupling M/F 1/4"		1	'=CiArrMep	102
'-CU42	'043.0250	Raccordo gomito M/F da 1/4"G	Elbow coupling M/F 1/4"		1	'=CiArrMep	102
'-CU43	'043.0250	Raccordo gomito M/F da 1/4"G	Elbow coupling M/F 1/4"		1	'=CiArrMep	102
'-NY42	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiArrMep	102
'-NY43	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiArrMep	102
'-T40	'044.0150	Tubo idraulico 1/4"G 3700 D-G		'044.0150	1	'=CiArrMep	102
'-T41	'044.0150	Tubo idraulico 1/4"G 3700 D-G		'044.0150	1	'=CiArrMep	102
'-C1	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiBmMep	101
'-C2	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiBmMep	102
'-C3	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiBmMep	102
'-CU12	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiBmMep	101
'-CU13	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	101
'-CU21	'043.0252	Raccordo gomito M/F da 3/8"G		'043.0252	1	'=CiBmMep	102
'-CU22	'043.0252	Raccordo gomito M/F da 3/8"G		'043.0252	1	'=CiBmMep	102
'-GIR10	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiBmMep	101
'-NY14	'044.0505	Nipplo ID. a flusso ridotto MM 1/4"G	Hydraulic nipple reduced flow MM 1/4"G		1	'=CiBmMep	101
'-NY15	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	101
'-NY16	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiBmMep	101
'-NY22	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY23	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY24	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY25	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY26	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiBmMep	102
'-NY27	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiBmMep	102
'-NY32	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY33	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiBmMep	102
'-NY34	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiBmMep	102
'-NY35	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiBmMep	102
'-RD17	'043.0227	Riduzione M/F da 3/8-1/4"G	Reductions M/F da 3/8-1/4"G	CL2531	1	'=CiBmMep	101
'-T11	'044.0126	Tubo idraulico 1/4"G 2300 G-G	Hydraulic flex pipe 1/4"G 2300 C-C		1	'=CiBmMep	101

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto: SHARK 230 NC 5.0 – CEI
Denominazione: DISTINTA COMPONENTI / MATERIAL LIST

Ordine
Commessa SH230NC
Esecutore Solfanelli

FOGLIO 105
SEGUE 106
ULTIMO 109

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE IT (DB)	DESCRIZIONE EN (DB)	DB.CODICEINTERNO	Q.TA/Q.TY	QUADRO/BOARD	FG/SH
'-T12	'044.0125	Tubo idraulico 1/4"G 2500 G-G	Hydraulic flex pipe 1/4"G 2500 C-C		1	'=CiBmMep	101
'-T20	'044.0143	Tubo idraulico 1/4"G 1700 G-G		'044.0143	1	'=CiBmMep	102
'-T21	'044.0143	Tubo idraulico 1/4"G 1700 G-G		'044.0143	1	'=CiBmMep	102
'-T22	'044.0121	Tubo idraulico 1/4"G 300 D-D	Hydraulic flex pipe 1/4"G 300 D-D		1	'=CiBmMep	102
'-T23	'044.0121	Tubo idraulico 1/4"G 300 D-D	Hydraulic flex pipe 1/4"G 300 D-D		1	'=CiBmMep	102
'-T30	'044.0126	Tubo idraulico 1/4"G 2300 G-G	Hydraulic flex pipe 1/4"G 2300 C-C		1	'=CiBmMep	102
'-T31	'044.0126	Tubo idraulico 1/4"G 2300 G-G	Hydraulic flex pipe 1/4"G 2300 C-C		1	'=CiBmMep	102
'-TI30	'043.0216	Raccordo a "T" FFF da 1/4"G	'"T" coupling FFF 1/4"G	CL2003	1	'=CiBmMep	102
'-TI31	'043.0216	Raccordo a "T" FFF da 1/4"G	'"T" coupling FFF 1/4"G	CL2003	1	'=CiBmMep	102
'-YVB	'044.1250	Elettrovalvola idraulica 2/2 unidirezionale NC mont. in linea da 1/4"G 24Vca con connettore	Hydraulic electrovalve 2/2 NC 1/4"G 24Vac	Oil system	1	'=CiBmMep	101
'-BK1	'007.6676	Distributore idraulico doppio 3 vie 1/4"G	Hydraulic distributor double tree-way 1/4"G		1	'=CiCv	102
'-BRF1	'043.0582	Regolatore idraulico di flusso per stepper baffo B da 1/4"G	Hydraulic flow regolator tipe B for stepper 1/4"G		1	'=CiCv	101
'-CU10	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiCv	101
'-CU11	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiCv	101
'-FL1	'044.5166	Flangia accoppiamento motore C80 B14	Power pack motor flange C80 B14	drive 131 200.6582.0043.0 Bucher	1	'=CiCv	101
'-FT1	'044.5001	Filtro aspirazione ID. Ø 80mm 250micron 3/8"G fem.	Oil filter for hydraulic unit Ø 80mm 250micron 3/8"G fem.	200.5461.12010 Bucher	1	'=CiCv	101
'-GN1	'044.4636	Giunto elas. lato motore C80 B14	Connecting coupling motor side C80 B14	drive 131 200.6594.0019.0 Bucher	1	'=CiCv	101
'-GN1	'044.4637	Giunto elas. lato pompa AP100 S309	Connecting coupling pump side	drive 131 200.6594.0033.0 Bucher	1	'=CiCv	101
'-GR20	'044.0553	Raccordo girevole ID.per manometro MF-1/4"G	Hydraulic rotating coupling for manometer M/F 1/4"		1	'=CiCv	102
'-IRF1	'044.0453	Innesto rapido femmina ID. F-1/4"G	Hydraulic female quick lock coupling F-1/4"G		1	'=CiCv	101
'-IRM1	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiCv	101
'-IRM2	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiCv	102
'-IRM3	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiCv	102
'-IU1	'044.5152	Base UP100 K3P0-01	Housing UP100 K3P0-01	200.7404.1038.1 Bucher	1	'=CiCv	101
'-M9	V.d.E.	Vedi distinta elettrica	See electric list		1	'=CiCv	101
'-M20	V.d.E.	Vedi distinta elettrica	See electric list		1	'=CiCv	101
'-MF1	'007.5232	Base idraulica 3 posti CETOP 3 per housing BUCHER	Hydraulic manyfold 3 module CETOP3 for housing BUCHER		1	'=CiCv	102
'-MN1	'043.0557	Manometro ID. 0-60bar Ø40 con attacco radiale da 1/4"G	Hydraulic manometer Ø60 1/4"G	WIKA	1	'=CiCv	101
'-MN2	'043.0557	Manometro ID. 0-60bar Ø40 con attacco radiale da 1/4"G	Hydraulic manometer Ø60 1/4"G	WIKA	1	'=CiCv	102
'-NY10	'044.0503	Nipplo ID. MM-3/8"G - 1/4"G	Hydraulic nipple MM-3/8"G - 1/4"G		1	'=CiCv	101
'-NY11	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiCv	101
'-NY12	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiCv	101
'-NY13	'044.0505	Nipplo ID. a flusso ridotto MM 1/4"G	Hydraulic nipple reduced flow MM 1/4"G		1	'=CiCv	101
'-NY20	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiCv	102
'-NY21	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiCv	102
'-NY30	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiCv	102
'-NY31	'044.0506	Nipplo ID. a flusso ridotto MM-3/8"G a 1/4"G	Hydraulic nipple reduced flow MM-3/8"G - 1/4"G		1	'=CiCv	102
'-P1	'044.4508	Pompa 7.8 cc/giro per housings	Pump 7,8cc/rev fou housings	AP100/8 S309 - 200.7482.8013.0 Bucher	1	'=CiCv	101
'-PRO10	'044.0650	Prolunga esagonale ID. da 36mm M/F 1/4"G	Hydraulic extension 36mm M/F 1/4"G		1	'=CiCv	101

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto: *SHARK 230 NC 5.0 - CEI*
Denominazione: DISTINTA COMPONENTI
MATERIAL LIST

Ordine
Commessa SH230NC
Esecutore Solfanelli

MEP

FOGLIO 106
SEGUE 107
ULTIMO 109

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE IT (DB)	DESCRIZIONE EN (DB)	DB.CODICEINTERNO	Q.TA/Q.TY	QUADRO/BOARD	FG/SH
'-RCU10	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiCv	101
'-RGI10	'044.0553	Raccordo girevole ID.per manometro MF-1/4"G	Hydraulic rotating coupling for manometer M/F 1/4"		1	'=CiCv	101
'-RNY10	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiCv	101
'-RNY20	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiCv	102
'-RNY30	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiCv	102
'-RP1	'044.1275	Valvola modulare idraulica riduttice 3-35Bar	Moduler valve pressure reduction 3-35Bar	CETOP3 su "A" reg. a vite sx MBRV-02A Danxin	1	'=CiCv	101
'-RP2	'044.1275	Valvola modulare idraulica riduttice 3-35Bar	Moduler valve pressure reduction 3-35Bar	CETOP3 su "A" reg. a vite sx MBRV-02A Danxin	1	'=CiCv	102
'-RP3	'044.1275	Valvola modulare idraulica riduttice 3-35Bar	Moduler valve pressure reduction 3-35Bar	CETOP3 su "A" reg. a vite sx MBRV-02A Danxin	1	'=CiCv	102
'-RPC	'044.1263	Valvola di massima idraulica a cartuccia per housing Bucher	Max valve pressure reduction for housing		1	'=CiCv	101
'-RR1	'044.5159	Tubo pescante idraulico M-M3/8"G	Suction pipe M-M3/8"G	lung. 50mm	1	'=CiCv	101
'-SB1	'016.2097	Serbatoio centralina idraulica cap.33Lt per SH230	Hydraulic oil unit 33 lt for SH230		1	'=CiCv	101
'-T10	'044.0121	Tubo idraulico 1/4"G 300 D-D	Hydraulic flex pipe 1/4"G 300 D-D		1	'=CiCv	101
'-TP1	'034.0906	Tappo plastico da 1/2"G con sfiato	Breather plastic. cap 1/2"G		1	'=CiCv	101
'-TP2	'034.0900	Tappo livello olio 3/8"G	Oil level cap 3/8"G	SLNT 38	1	'=CiCv	101
'-TP3	'044.5162	Tappo scarico olio 3/8"G con OR	Oil drain tap 3/8"G with OR	AN612	1	'=CiCv	101
'-TP20	'043.0260	Tappo da 1/4"G	Cap 1/4"G	CL2611	1	'=CiCv	102
'-TP21	'043.0260	Tappo da 1/4"G	Cap 1/4"G	CL2611	1	'=CiCv	102
'-TP30	'043.0260	Tappo da 1/4"G	Cap 1/4"G	CL2611	1	'=CiCv	102
'-TP31	'043.0260	Tappo da 1/4"G	Cap 1/4"G	CL2611	1	'=CiCv	102
'-VB1	'044.4554	Valvola di ritegno idraulica per housing BOUCHER	Check valve for housing BOUCHER	RS3/817 - 200.7876.0141.0	1	'=CiCv	101
'-YV1	'043.1002	Elettrovalvola idraulica 4/3 centri chiusi CETOP 3 24Vcc	Hydraulic electrovalve 4/3 close center CETOP3 24Vdc	MD1L- S1/10 N-D24K1 DUPLOMATIC	1	'=CiCv	101
'-YV2	'043.1002	Elettrovalvola idraulica 4/3 centri chiusi CETOP 3 24Vcc	Hydraulic electrovalve 4/3 close center CETOP3 24Vdc	MD1L- S1/10 N-D24K1 DUPLOMATIC	1	'=CiCv	102
'-YV3	'043.1002	Elettrovalvola idraulica 4/3 centri chiusi CETOP 3 24Vcc	Hydraulic electrovalve 4/3 close center CETOP3 24Vdc	MD1L- S1/10 N-D24K1 DUPLOMATIC	1	'=CiCv	102
'-C2V	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiMvBm	103
'-C3V	V.d.M.	Vedi distinta meccanica	See mechanical list	V.d.M.	1	'=CiMvBm	103
'-CU21A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU22A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU23A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU24	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-CU24A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU25	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU26	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU26A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU30	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU31A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU32A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-CU34A	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-GI20	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GI21	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto: SHARK 230 NC 5.0 - CEI
Denominazione: DISTINTA COMPONENTI
MATERIAL LIST

Ordine
Commessa SH230NC
Esecutore Solfanelli

MEP

FOGLIO 107
SEGUE 108
ULTIMO 109

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE IT (DB)	DESCRIZIONE EN (DB)	DB.CODICEINTERNO	Q.TA/Q.TY	QUADRO/BOARD	FG/SH
'-GI30	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GI31	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GIR21A	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GIR22A	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GIR31A	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-GIR32A	'044.0502	Raccordo girevole ID. da MF-1/4"G	Hydraulic rotating coupling M/F 1/4"		1	'=CiMvBm	103
'-IRF20	'044.0453	Innesto rapido femmina ID. F-1/4"G	Hydraulic female quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRF21	'044.0453	Innesto rapido femmina ID. F-1/4"G	Hydraulic female quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRF30	'044.0453	Innesto rapido femmina ID. F-1/4"G	Hydraulic female quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRF31	'044.0453	Innesto rapido femmina ID. F-1/4"G	Hydraulic female quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRM20	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRM21	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRM30	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-IRM31	'044.0452	Innesto rapido maschio ID. F-1/4"G	Hydraulic male quick lock coupling F-1/4"G		1	'=CiMvBm	103
'-NY20A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY21A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY22A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY23A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY24A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY25A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY26A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY27A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY28	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY28B	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY29	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY29B	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY30A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY31A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY32A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY33A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY34A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY35A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY36	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY36A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY37	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-NY37A	'044.0501	Nipplo ID. MM-1/4"G	Hydraulic nipple MM-1/4"G		1	'=CiMvBm	103
'-PR31	'044.0552	Raccordo a gomito ID. MF-1/4"G	Hydraulic elbow coupling M/F 1/4"		1	'=CiMvBm	103
'-RF20	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF20A	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto
SHARK 230 NC 5.0 - CEI

Denominazione
DISTINTA COMPONENTI
MATERIAL LIST

Ordine

Commessa
SH230NC

Esecutore
Solfanelli

MEP

FOGLIO 108
SEGUE 109
ULTIMO 109

Translation of the original instructions

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE IT (DB)	DESCRIZIONE EN (DB)	DB.CODICEINTERNO	Q.TA/Q.TY	QUADRO/BOARD	FG/SH
'-RF21	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF21A	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF30	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF30A	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF31	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RF31A	'044.1264	Regolatore idraulico di flusso unidirezionale 1/4"G	Hydraulic flow regolator 1/4"G	FT257-5 FPU 1/4	1	'=CiMvBm	103
'-RI20	'044.0602	Riduzione ID M/F da 3/8-1/4"G	Reductions M/F da 3/8-1/4"G		1	'=CiMvBm	103
'-RI21	'044.0602	Riduzione ID M/F da 3/8-1/4"G	Reductions M/F da 3/8-1/4"G		1	'=CiMvBm	103
'-RI30	'044.0602	Riduzione ID M/F da 3/8-1/4"G	Reductions M/F da 3/8-1/4"G		1	'=CiMvBm	103
'-RI31	'044.0602	Riduzione ID M/F da 3/8-1/4"G	Reductions M/F da 3/8-1/4"G		1	'=CiMvBm	103
'-T22A	'044.0142	Tubo idraulico 1/4"G 1000 D-G	Hydraulic flex pipe 1/4"G 1000 E-C		1	'=CiMvBm	103
'-T23A	'044.0117	Tubo idraulico 1/4"G 1200 D-D	Hydraulic flex pipe 1/4"G 1200 D-D		1	'=CiMvBm	103
'-T32A	'044.0142	Tubo idraulico 1/4"G 1000 D-G	Hydraulic flex pipe 1/4"G 1000 E-C		1	'=CiMvBm	103
'-T33A	'044.0171	Tubo idraulico 1/4"G 650 D-G	Hydraulic flex pipe 1/4"G 650 E-C		1	'=CiMvBm	103

REV.	MODIFICA	DATA	FIRME
R0.1	Aggiunti regolatori di flusso morse verticali	18/12/2013	Bartoli

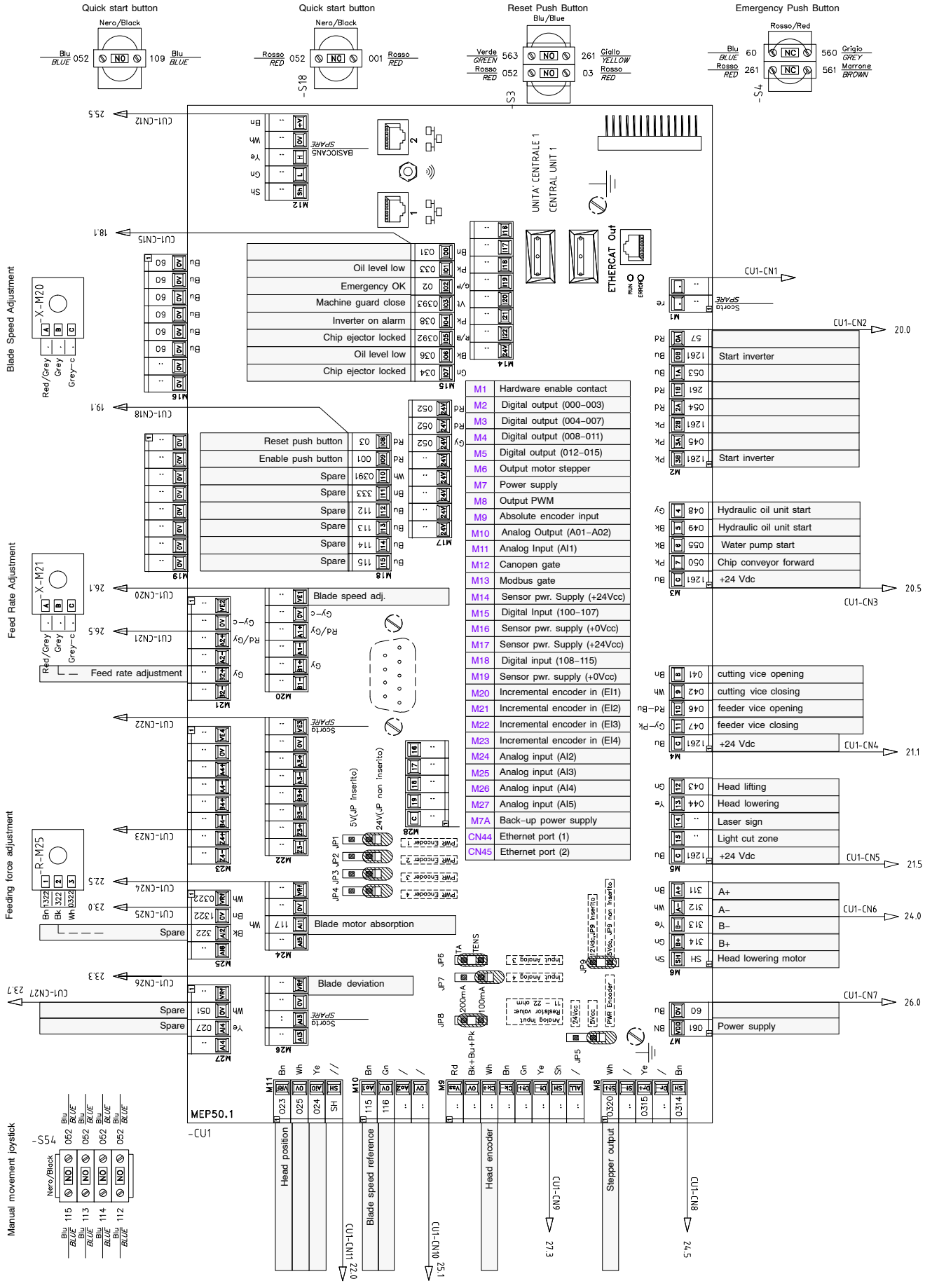
Dis. N. SH230NC
CAD SPAC
File SH230NC5.0CEI\2.dwg
Data 16-05-2017

Impianto: *SHARK 230 NC 5.0 – CEI*
Denominazione: DISTINTA COMPONENTI
MATERIAL LIST

Ordine
Commessa SH230NC
Esecutore Solfanelli

FOGLIO 109
SEGUE //
ULTIMO 109

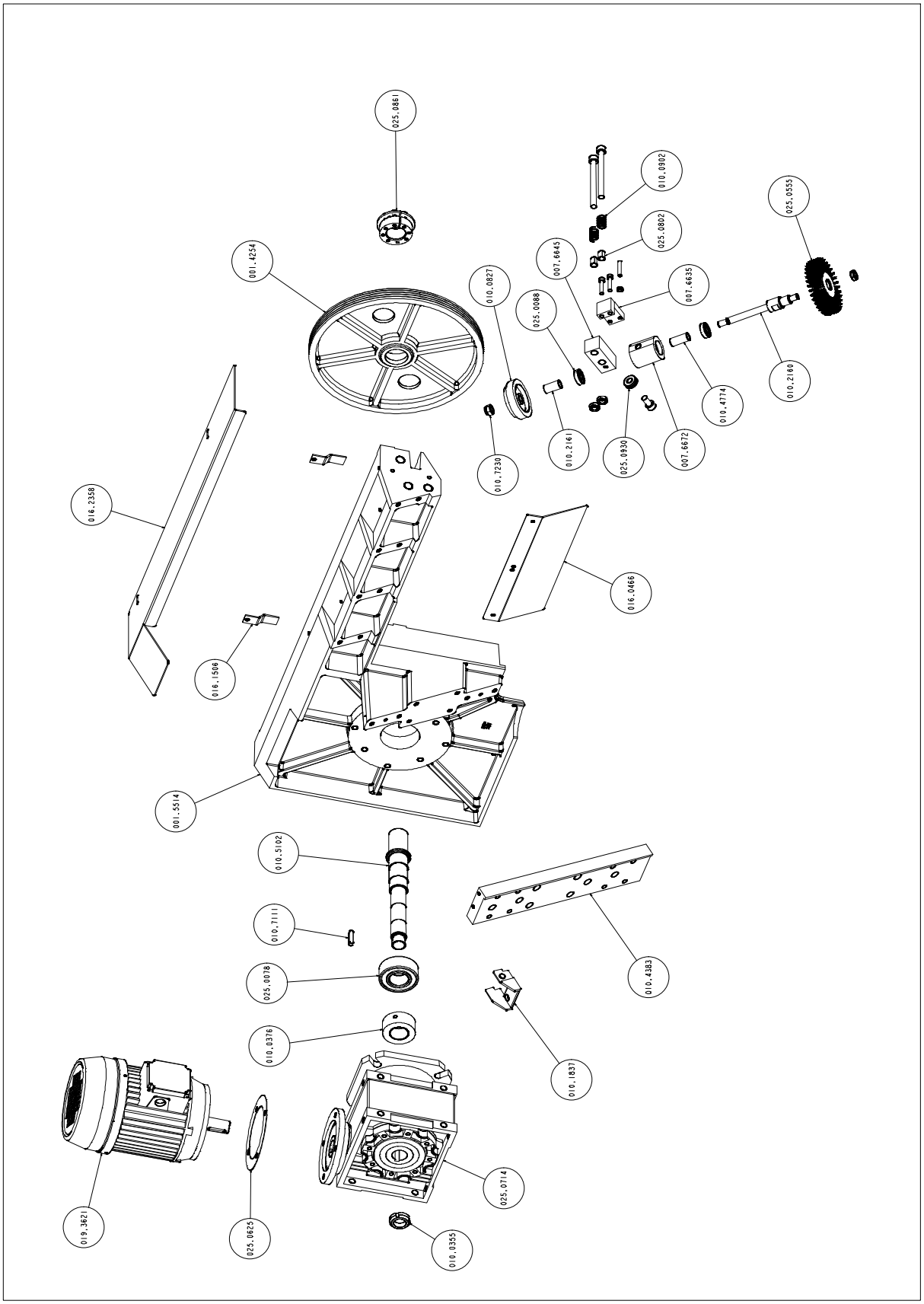
MEP50 central unit



Exploded views

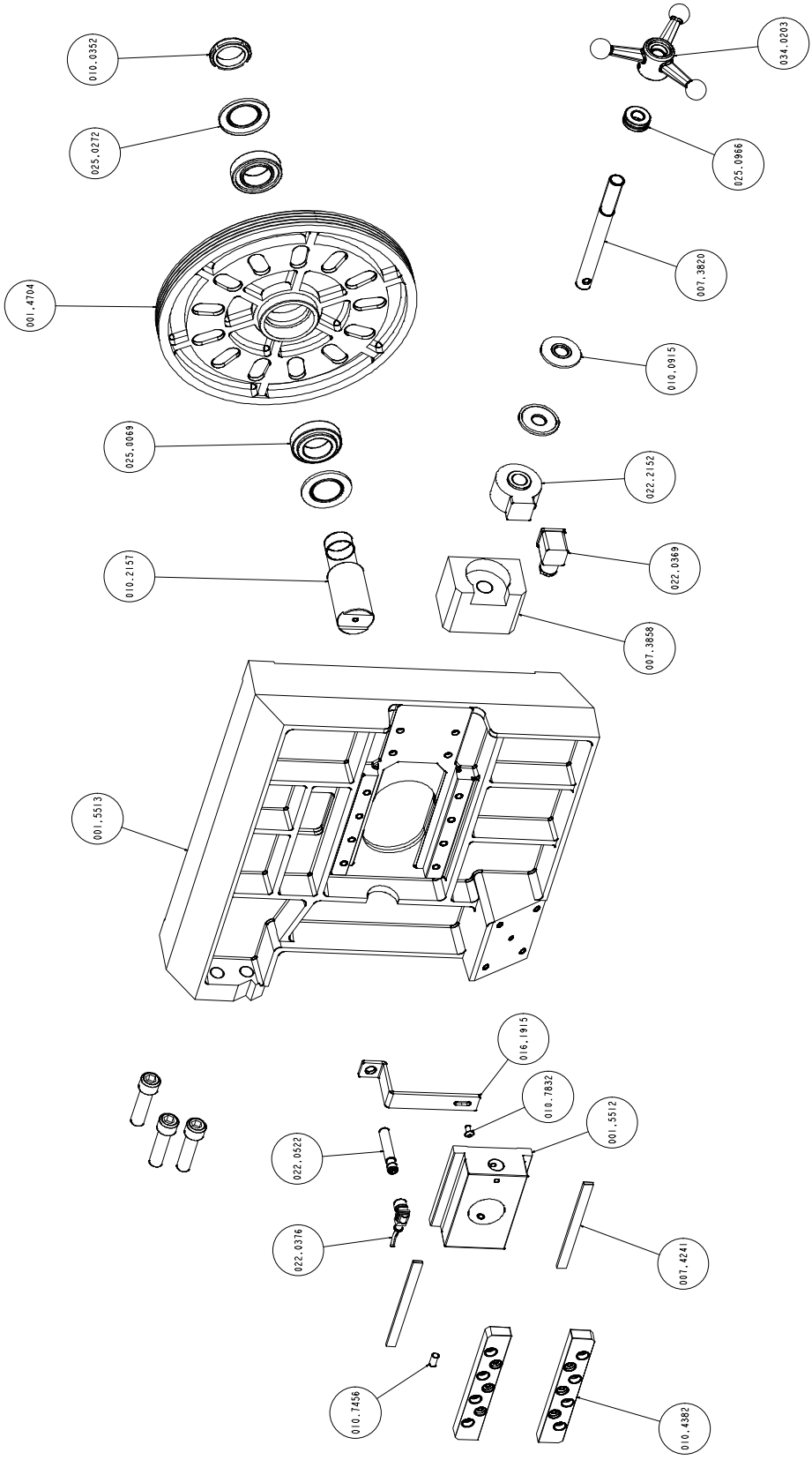
This part of the manual contains detailed exploded views of the machine which can help to gain a deeper knowledge of how it is made.

Drive pulley section bow unit



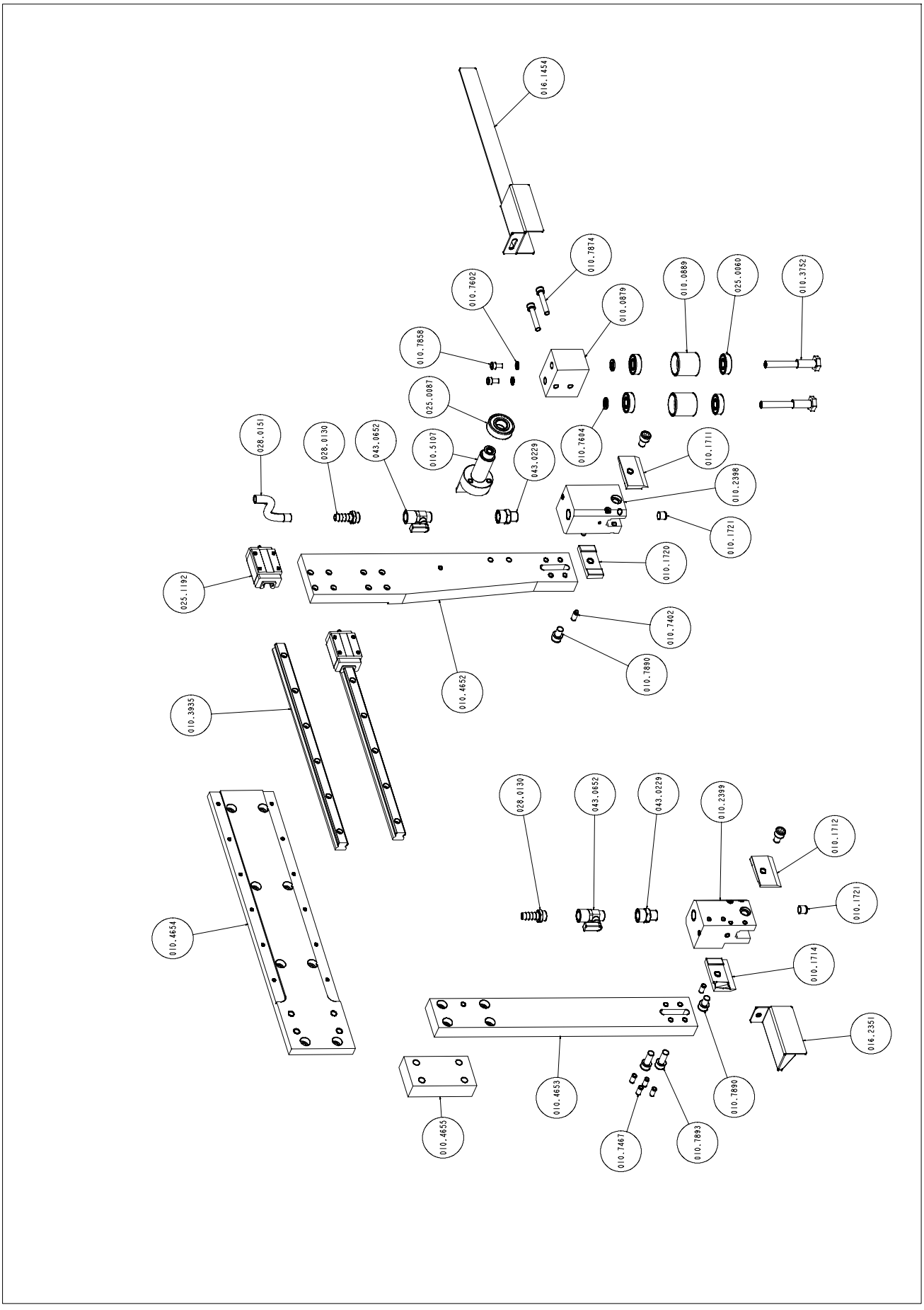
Code	Description	Description	Q.ty
001.4254	PULEGGIA MOTRICE	DRIVING PULLEY	1.000
001.5514	ARCHETTO SEZ. PULEGGIA MOTRICE SH 230–1	MOTOR WHEEL BOW SH 230–1 NC HS MOD. 2311	1.000
007.6635	PIASTRINO REGISTRAZIONE SPAZZOLA PULILAMA SHARK 452	BRUSH REGULATING PLATE	1.000
007.6645	STAFFA FISSAGGIO ALBERO PULILAMA	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
010.5102	ALBERO RIDUTTORE TAGLIA 75 SH 230	DRIVE SHAFT SIZE 75 SH 230	1.000
010.7111	CHIAVETTA 8 X 7 X 32 (010.7111)	8 X 7 X 32 KEY	1.000
010.7230	DADO AUTOBLOCCANTE M10	M10 SELF–LOCKING SCREW NUT	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
025.0714	RIDUTTORE FCNDKO75/RATIO=40:1,90 B14	GEAR BOX	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



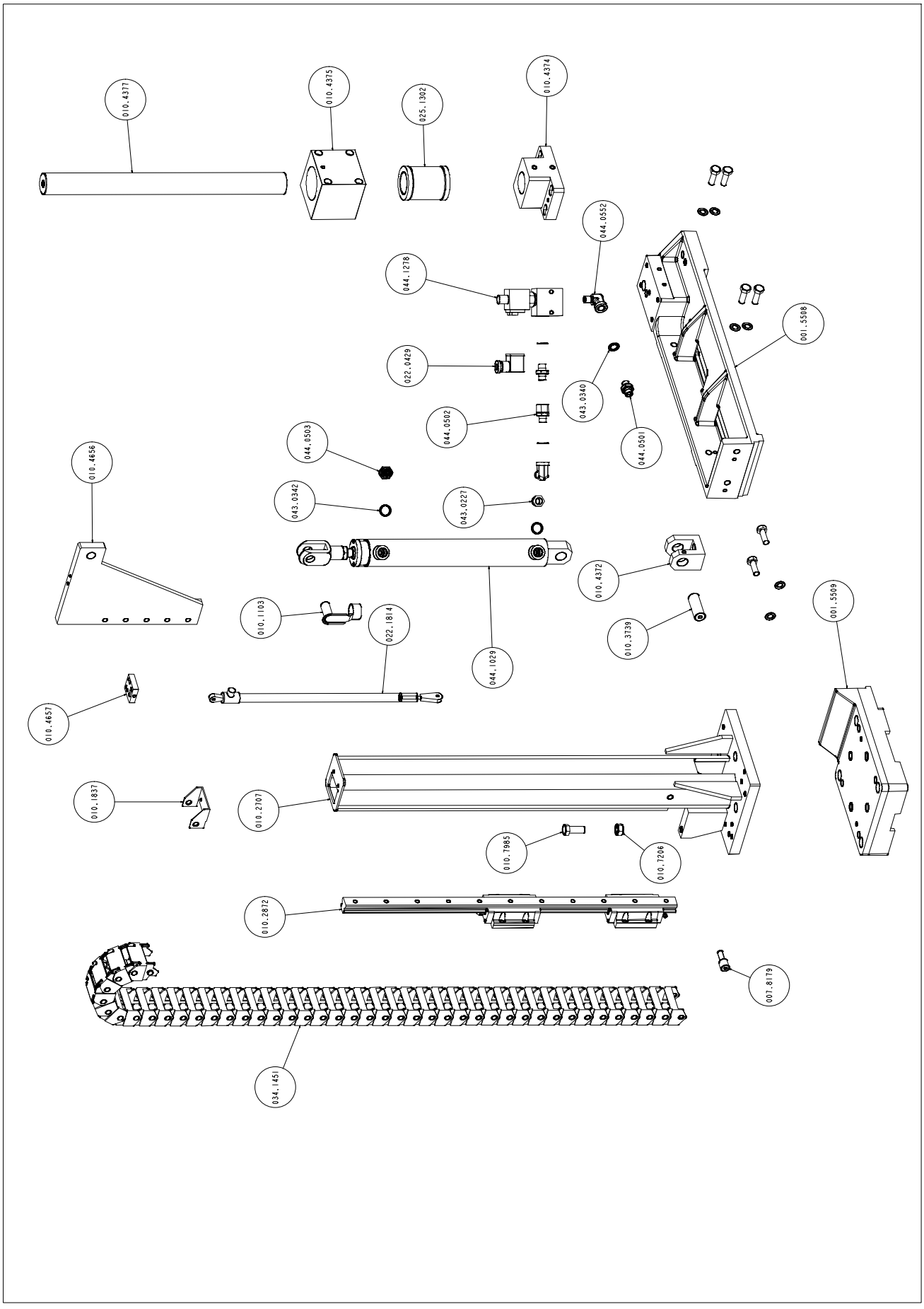
Code	Description	Description	Q.ty
001.4704	PULEGGIA FOLLE SH270/282 CNC M.1705	IDLER WHEEL SH 270/282 CNC	1.000
001.5512	SLITTA TENDILAMA SH 230 NC HS MOD. 1212	BAND TENSIONING SLIDE	1.000
001.5513	ARCHETTO SEZ. PULEGGIA FOLLE SH 230–1 NC	IDLER WHEEL BOW SECTION SH 230–1 NC HS	1.000
007.3820	PERNO REGISTRO 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
010.0915	MOLLA A TAZZA 50X18,4X3 SH	BELLEVILLE SPRING WASHERS 50X18,4X3 SH	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
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
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	1.000
025.0272	ANELLO DI PROTEZIONE NILOS 32007	NILOS SEAL RING 32007	2.000
025.0966	CUSCINETTO 51202 PH 211–261 POS. 11	BEARING	1.000
034.0203	VOLANTINO MORSA MEDIO	MEDIUM VICE HANDWHEEL FC250	1.000

Head unit


016.1454
010.7814
010.7602
010.0879
010.0889
025.0060
010.3752
010.7858
025.0087
028.0151
028.0130
043.0652
010.5107
043.0229
010.7604
010.1711
010.2398
010.1721
025.1192
010.1720
010.7402
010.7890
010.4652
010.3935
028.0130
043.0652
043.0229
010.2399
010.1712
010.1721
010.4654
010.1714
016.2351
010.4653
010.7890
010.4655
010.7467
010.7893

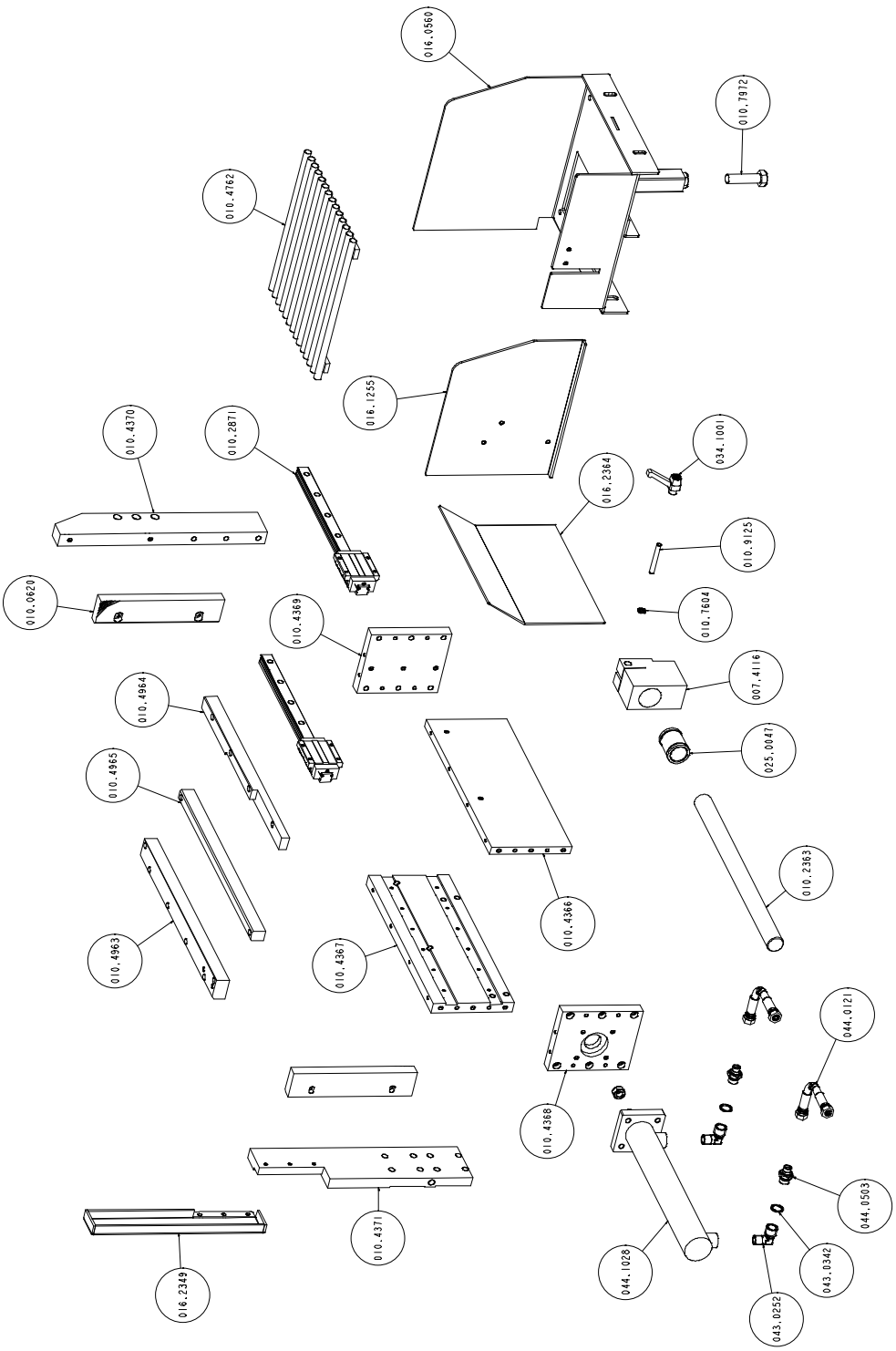
Code	Description	Description	Q.ty
010.0879	SUPPORTO PERNI ECCENTRICI	ECCENTRIC SUPPORT PINS	1.000
010.0889	RULLO PREMILAMA	BAND PUSHER RULLER	2.000
010.1711	GUIDALAMA 1 INSERTO POSTERIORE SH 260	1 INSERT REAR BAND GUIDE	1.000
010.1712	GUIDALAMA 1 INSERTO ANTERIORE SH260	1 INSERT FRONT BAND GUIDE	1.000
010.1714	GUIDALAMA 2 INSERTI ANTERIORE SH260	2 INSERTS FRONT BAND GUIDE SH 260	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
010.2398	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
010.3752	PERNO ECCENTRICO CUSCINETTI PREMILAMA	ECCENTRIC PIN BEARINGS	2.000
010.3935	GUIDA LINEARE HSV15- 340L- E20RAIL	SLIDE GUIDE HSV15- 340L- E20RAIL	1.000
010.4652	STAFFA TESTINA GUIDALAMA ANT.	FRONT HEADGUIDE BRACKET	1.000
010.4653	STAFFA TESTINA GUIDALAMA POST.	REAR BLADE HEAD GUIDE BRACKET	1.000
010.4654	STAFFA FIX. GUIDE LINEARI TESTINE GUID.	BANDGUID GUIDE BRACKET	1.000
010.4655	DISTANZIALE TESTINA GUIDALAMA POSTE-RIORE	REAR HEADGUIDE BRACKET SPACER	1.000
010.5107	ALBERO TRASCINAMENTO TEST. GUID. ANT.	FRONT BAND GUIDE DRAG. SHAFT	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
010.7602	RONDELLA 0 5	0 5 WASHER	1.000
010.7604	RONDELLA DIAM. 8 MM	8 MM WASHER	2.000
010.7858	VITE TCEI 5 X 10	TCEI 5 X 10 SCREW	1.000
010.7874	VITE TCEI 6 X 35	TCEI 6 X 35 SCREW	1.000
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
025.1192	PATTINO HSV15R1SSBLOCK	SLIDE HSV15R1SSBLOCK	1.000
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

Cradle unit


010.4377
010.4375
025.1302
010.4374
044.0552
044.1278
001.5508
022.0429
043.0340
044.0502
044.0501
044.0503
010.4656
043.0342
043.0227
010.4372
001.5509
010.1103
022.1814
010.3739
044.1029
010.4657
010.1837
010.2707
010.7985
010.7206
010.2872
007.8179
034.1451

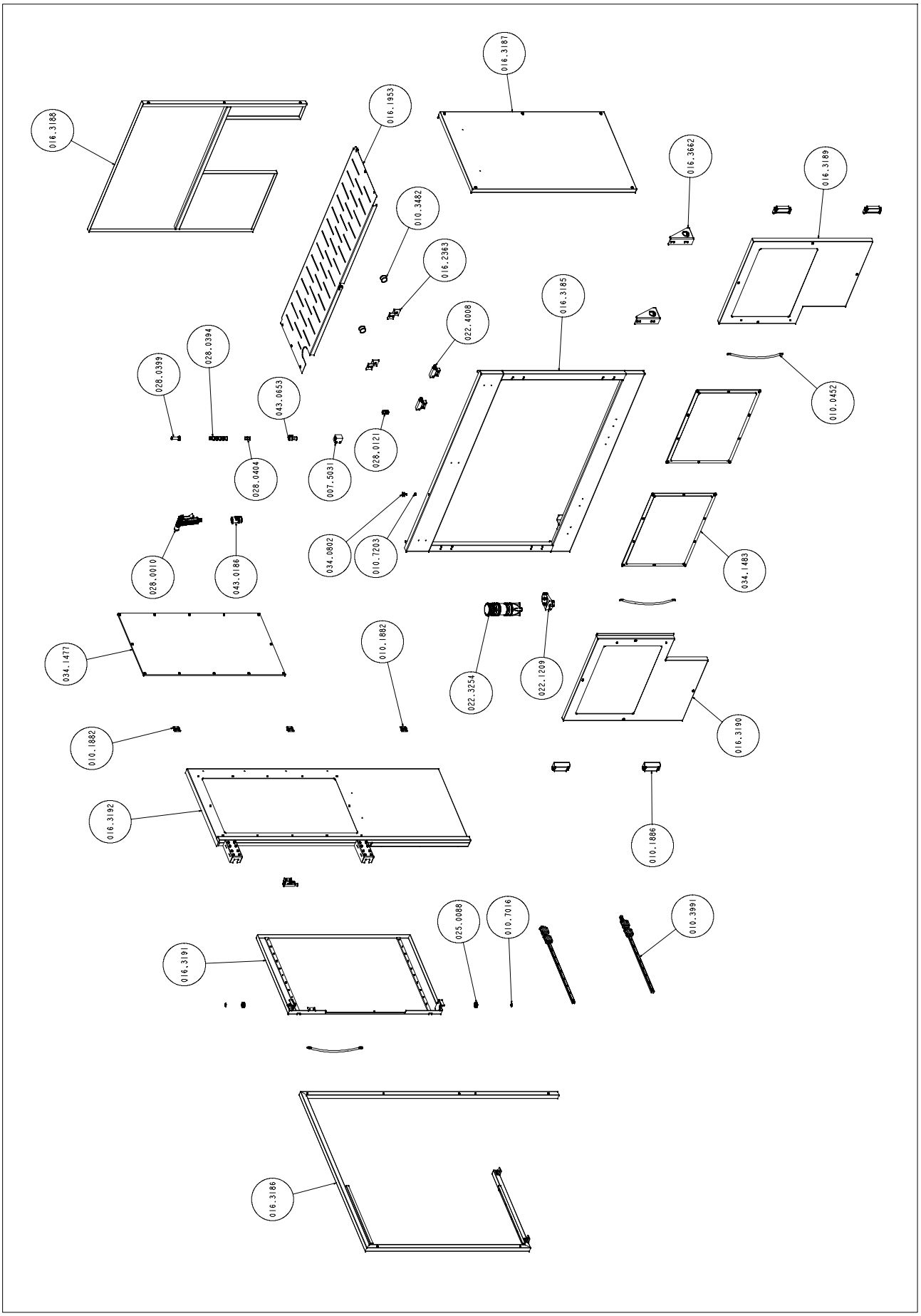
Code	Description	Description	Q.ty
001.5508	CULLA SEZ. PULEGGIA FOLLE SH 230 NC HSMOD. 2308	CRADLE IDLER WHEEL SESSION SH 230 NC HS	1.000
001.5509	CULLA SEZ. PULEGGIA MOTRICE SH 230 NC HSMOD. 2309	CRADLE MOTOR WHEEL SESSION SH 230 NC HS	1.000
007.8179	PERNO FIX POTENZIOMETRO DISCESA TESTA	FIX PIN HEAD POTENTIOMETER	1.000
010.1103	FORCELLA 16 X 1,5	16 X 1,5 FORK	1.000
010.1837	SET ATTACCHI 905.010–905.011 AX–CNC	ATTACHMENTS SET AX–CNC	1.000
010.2707	COLONNA SPM SH 230 NC HS N.T.	COLUMN SPM SH 230 NC HS N.T.	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
010.4372	STAFFA AGGANCIO CILINDRO DISCESA TESTA-SHSH 230 NC HS	HEAD CYLIN. COUPLER BRACKETSH 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
010.4377	COLONNA SPF SH 230 NC HS	COLUMN SPF SH 230 NC HS	1.000
010.4656	STAFFA AGG. CILINDRO DISCESA TESTA CULLA	DOWN STROKE M.P.S.CYL.COUPLER BRACKET	1.000
010.4657	STAFFA FIX POTENZIOMETRO TESTA	POTENTIOMETER FIX BRACKET	1.000
010.7206	DADO M12	M12 SCREW NUT	1.000
010.7985	VITE TE 12 X 30	TE 12 X 30 SCREW	1.000
022.0429	CONNETTORE V.1401 X ELETTROVALVOLA IN DC+LED+ FILTRO	ELECTROVALVE CONNECTOR IN DC+LED+FILTER	1.000
022.1814	POTENZIOMET.LINEARE TX2 0300 716 002 101 IP67 X SH 230 NC HS	LINEAR POTENTIOMETER	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 NIPPLE	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 DOWN STROKE	1.000
044.1278	VALVOLA DI BLOCCO 1/4 24V DC SENZA	ROTATING TABLE LOCKING VALVE V. 24 DC	1.000

Vice assembly



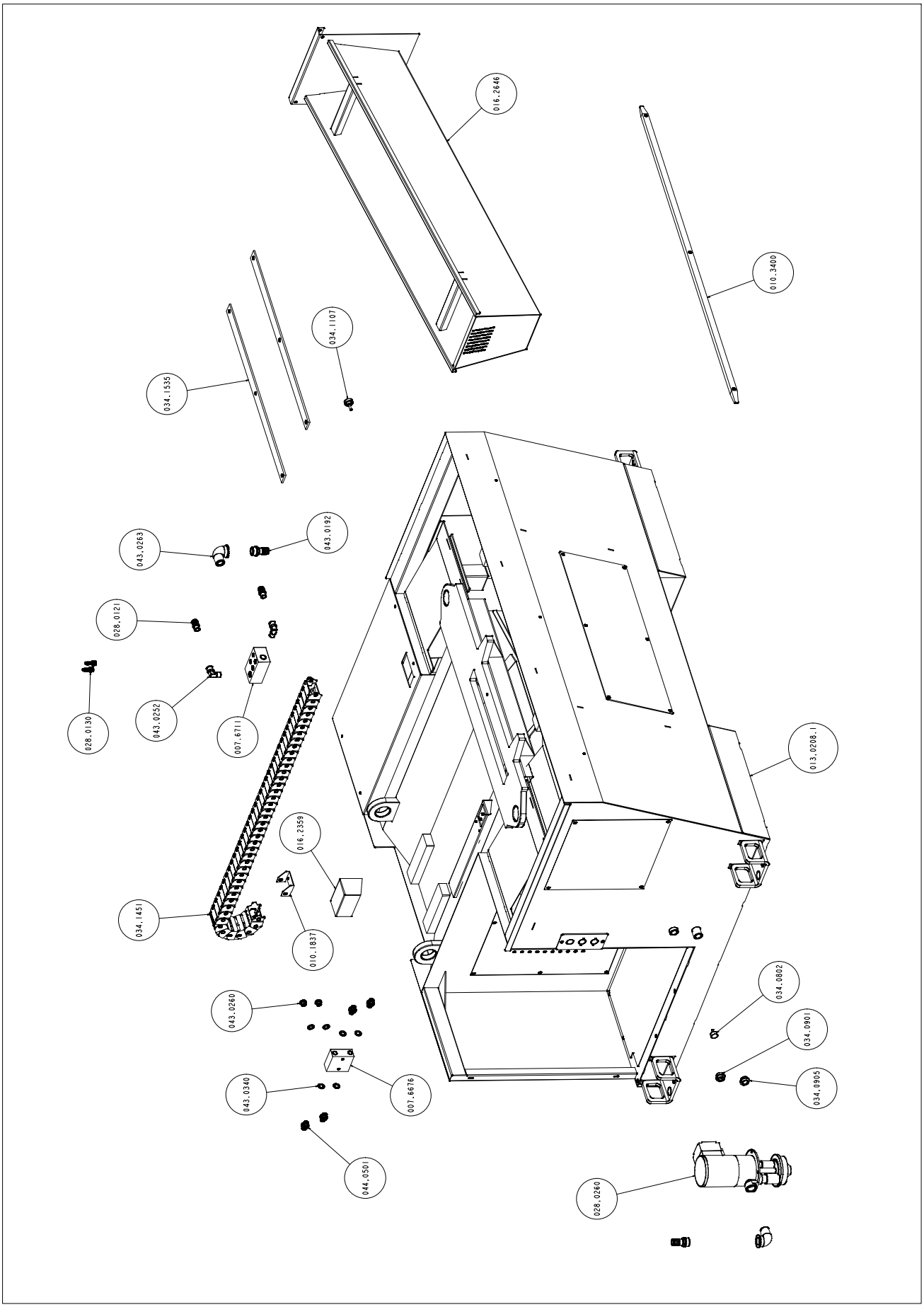
Code	Description	Description	Q.ty
007.4116	SUPPORTO GUIDA SCARICA PEZZI SH 310CN-CHS	GUIDE SUPPORT SH 310 CNC HS	1.000
010.0620	GANASCIA MORSA DI TAGLIO SH 230 NC HS	VICE JAW SH 230 NC HS	2.000
010.2363	ASTA PER GUIDA SCARICA PEZZISH 310 CNC–HS	UNLOADER GUIDE ROD SH 310 CNC–HS	1.000
010.2871	GUIDA PATTINO HGW20–CC–1–R0350–E20–ZB–H	SIDE GUIDE HGW20–CC–1–R0350–E20–ZB–H	2.000
010.4366	SUPPORTO MORSA ESTERNO SH 230 NC HS	VICE SUPPORT SH 230 NC HS	1.000
010.4367	SUPPORTO MORSA INTERNO SH 230 NC HS	VICE SUPPORT SH 230 NC HS	1.000
010.4368	TAPPO MORSA ANTERIORE SH 230 NC HS	FRONT VICE TAP SH 230 NC HS	1.000
010.4369	TAPPO MORSA POSTERIORE SH 230 NC HS	REAR VICE TAP SH 230 NC HS	1.000
010.4370	SUPPORTO GANASCIA FISSA SH 230 NC HS	FIXED JAW SUPPORT SH 230 NC HS	1.000
010.4371	SUPPORTO GANASCIA MOBILE SH 230 NC HS	MOBILE JAW SUPPORT SH 230 NC HS	1.000
010.4762	SUPPORTO SCARICO A RULLI SH 230 NC HS	UNLOAD ROLLER SUP. SH 230 NC HS	1.000
010.4963	PIANO DI TAGLIO SH 230 NC HS	CUT TABLE SH 230 NC HS	1.000
010.4964	PIANO DI TAGLIO ESTERNO LATO SCARICOSH 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
016.0560	GUIDA SCARICA PEZZI SH 230 NC HS	UNLOADER GUIDE SH 230 NC HS	1.000
016.1255	PIASTRA GUIDA SCARICA PEZZI SH 230 NC HS	UNLOADER GUIDE PLATE 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
016.2364	PROTEZIONE GANASCIA MOBILE SH 230 NC HS	MOBILE JAW PROTE. SH 230 NC HS	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

Protection unit



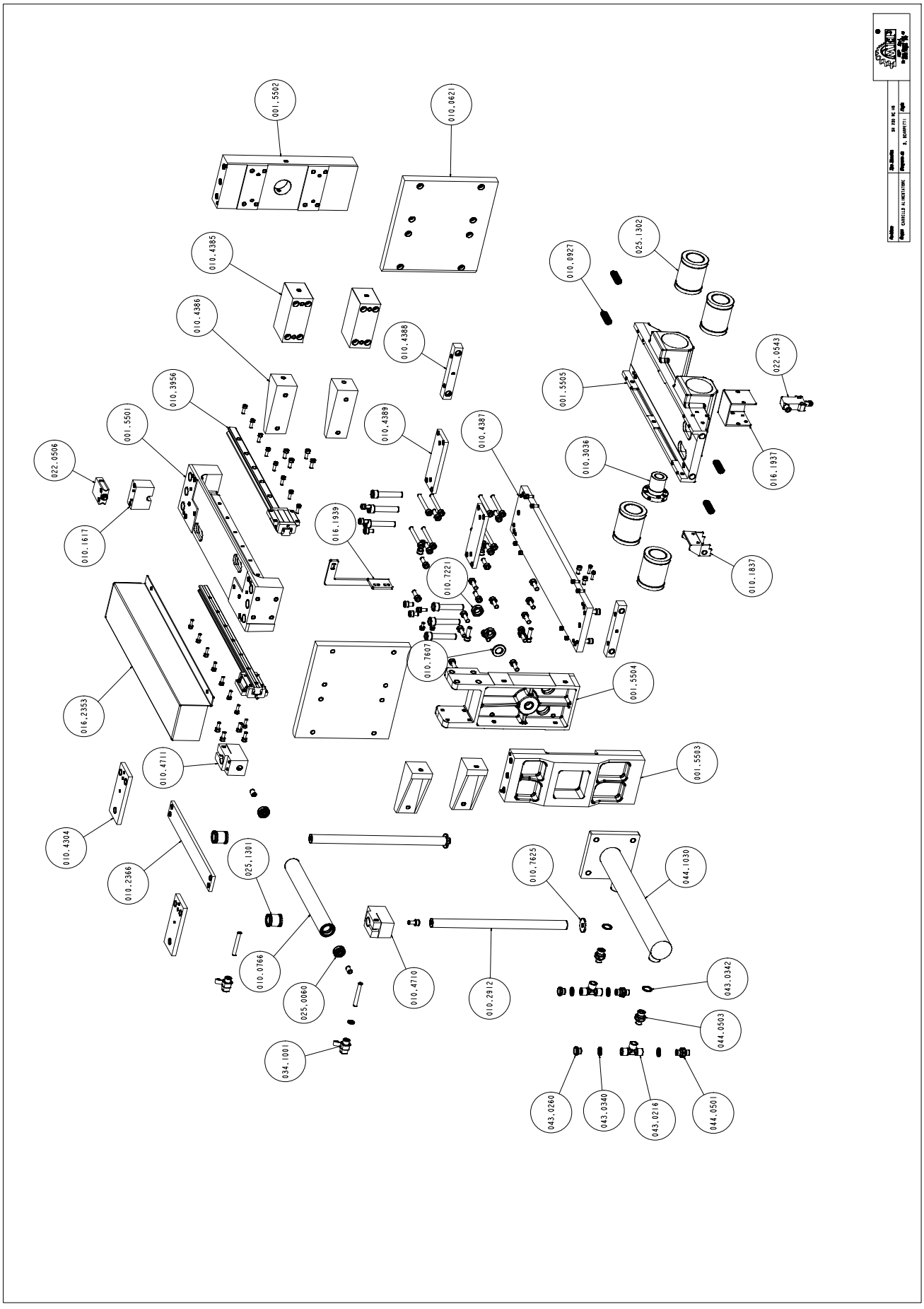
Code	Description	Description	Q.ty
007.5031	SQUADRETTO X LIQUIDO PIANO GIREVOLE	COOLANT PLATE SH 400	1.000
010.0452	MANIGLIA INOX SATINATO SH 310 CNC- HS	HANDLE SH 310 CNC- HS	2.000
010.1882	CERNIERA X SPORTELLO PROTEZIONE MAC-CHINATI 370 CNC	PROTECTION DOOR HINGE TI 370 CNC	2.000
010.1886	CERNIERA COMPLEMENTARE H=100 PROTEZ.SH 420 CNC- HS	ADITI.HINGE H=100 PROTEC. SH 410 DC	2.000
010.3482	MAGNETE 20X35 M 6 X PROTEZIONI SH NC	MAGNET 20X35 M 6 FOR FENCES SH NC	2.000
010.3991	GUIDA + 2 PATTINI HSV15C2SS+630L- E15- MT15	SIDE GUIDE HSV15C2SS+630L- E15- MT15	1.000
010.7016	ANELLO SEEGER DIAM. 12	0 12 SEEGER RING	1.000
010.7203	DADO M6	M6 SCREW NUT	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
016.3185	PROTEZIONE ANTERIORE SH 230- 1 NC HS 5.0	FRONT PROTECTION SH 230- 1 NC	1.000
016.3186	TELAIO PROTEZIONE LATERALE SX IN LAMIERA	SIDE LEFT SIDE PROTECTION FRAME	1.000
016.3187	PROTEZIONE LATERALE DX SH 230- 1 NC HS	RIGHT SIDE PROTECTION	1.000
016.3188	PROTEZIONE POSTERIORE ALIM. SH 230- 1 NC	REAR FEDDER PROTECTOR	1.000
016.3189	SPORTELLO ANTERIORE DX SH 230- 1 NC HS	RIGHT FRONT DOOR	1.000
016.3190	SPORTELLO ANTERIORE SX SH 230- 1 NC HS	LEFT FRONT DOOR	1.000
016.3191	SPORTELLO LATERALE BASSO SX SH 230- 1 NC	LOW SIDE DOOR	1.000
016.3192	SPORTELLO LATERALE ALTO SX SH 230- 1 NC	HIGH SIDE DOOR	1.000
016.3662	STAFFA FIX PROT. ANTERIORE SH 230- 1 NC	FRONT PROTECTION FIXING BRAC-KET	1.000
022.1209	SUPPORTO A SQUADRO X LAMPEGGIANTE LED	SUPPORT SQUARE X FLASHING LED	1.000
022.3254	LAMPEGGIANTE LED 24 VAC SL7- CB- IMH +	FLASHING LED	1.000
022.4008	SENSORE DI SICUREZZA RFID ST DD420MK- D1T	SAFETY SENSORS WITH RFID TECH-NOLOGY	1.000
025.0088	CUSCINETTO 6001 2Z PH 100	BEARING 6001 2Z PH 100	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
034.0802	ARRESTO ELASTICO P 20/10 SH 640 CNC- HS	ELASTIC STOP P 20/10 SH 640 CNC-HS	1.000
034.1477	PROTEZIONE ANT. LEXAN SH 350 CNC- HS 5.0	FRONT LEXAN GUARD SH 350 CNC-HS 5.0	1.000
034.1483	PROTEZIONE LEXAN SPORTELLO SH 230 NC HS	DOOR PROTECTION 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

Base assembly



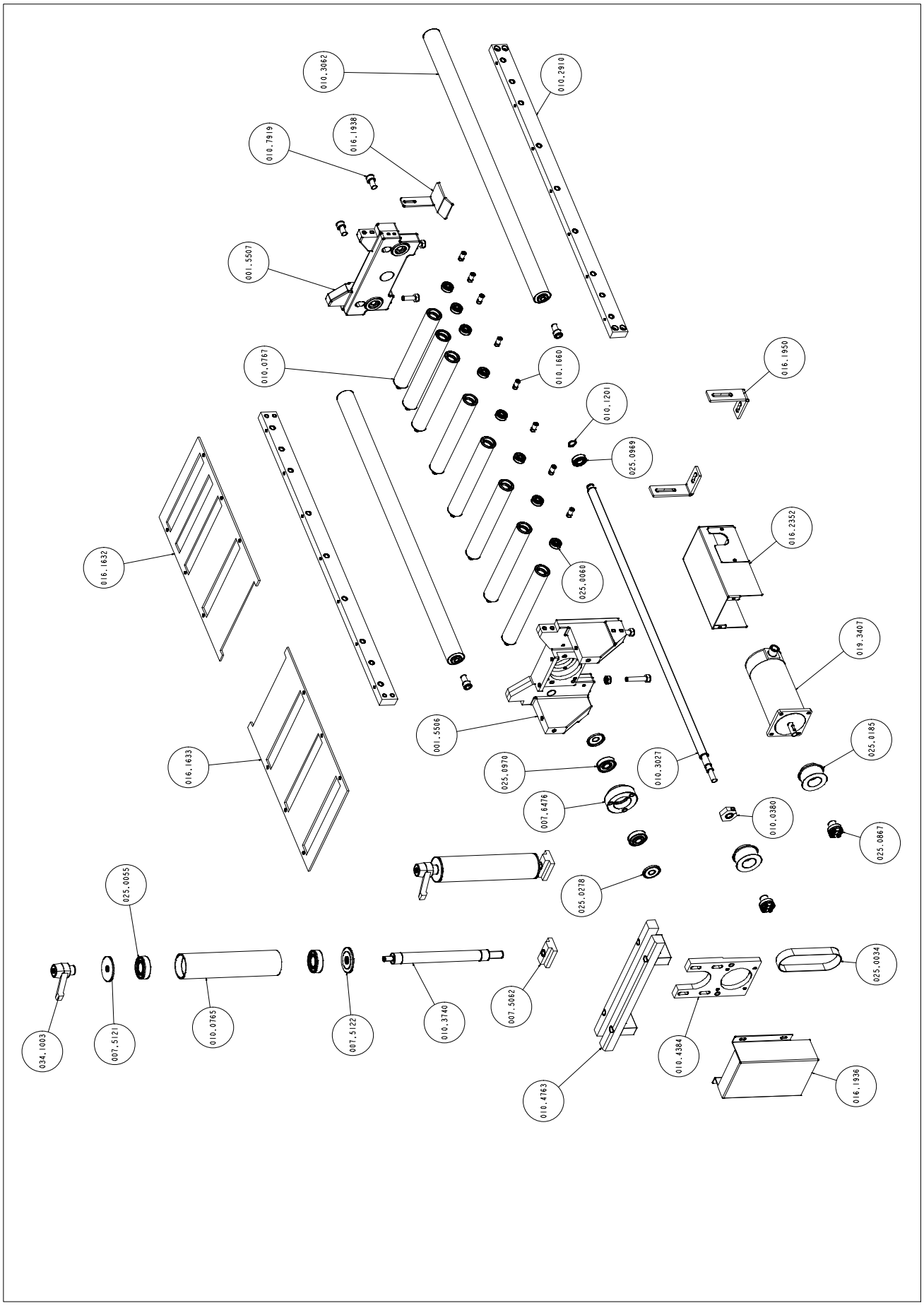
Code	Description	Description	Q.ty
007.6676	BLOCCO DI DERIVAZIONE IDR. X MORSE	HYDRAULIC PANEL SH 230 NC HS	1.000
007.6711	BLOCCO DI DERIVAZIONE IDR. SH 230 NC HSX BASAMENTO	HYDRAULIC PANEL SH 230 NC HS	1.000
010.1837	SET ATTACCHI 905.010–905.011 AX–CNC	ATTACHMENTS SET AX–CNC	1.000
010.3400	BARRA ANTI GRAFFIO N.T. BASAMENTO SH 230	ANTI SCRATCH BAR SH 230 NCHS N.T.	1.000
013.0208.1	PIEDISTALLO SH 230 NC–HS	PEDESTALSH 230 NC–HS	1.000
016.2359	CARTER CAVI CATENA ALIM. SH 230 NC HS	FEEDER CABLE CHAIN CARTER SH 230 NC HS	1.000
016.2646	CASSETTO TRUCIOLI X PIEDISTALLO SH 230	SHAVINGS DRAWER SH 230 N.T.	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
034.0802			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
043.0192	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
043.0340	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



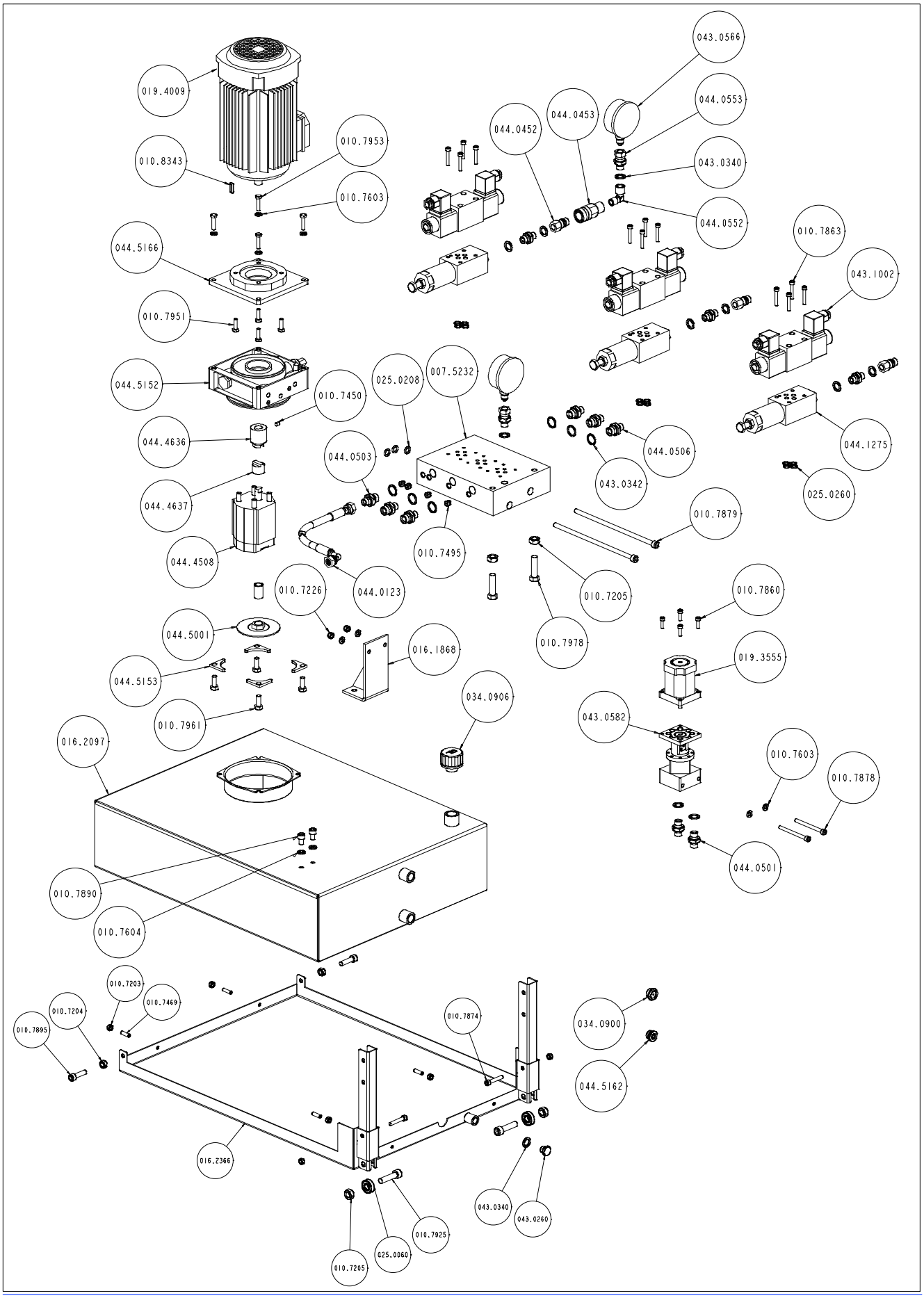
Code	Description	Description	Q.ty
001.5501	TRAVE MORSA ALIMENTATORE	FEEDER VICE BEAM	1.000
001.5502	COLONNA POSTERIORE ALIMENT.	FEEDER REAR COLUMN	1.000
001.5503	COLONNA ANTERIORE ALIMENT.	FEEDER FRONT COLUMN	1.000
001.5504	SCORREVOLE MORSA ALIMENTAT.	FEEDER SLIDING VICE	1.000
001.5505	CARRELLO ALIMENTATORE	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 BAR-RA ALIMENTATORE	FEEDER LIMITSWITCH FIX BRACKET SH	1.000
010.2366	ASTA COLLEGAMENTO SUPPORTO PREMIBAR-RAALIMENTATORE	FEEDER PUSHBAR SUP.ROD JOINT SH230 NC HS	1.000
010.3956	GUIDA +1 PATTINO HSR20A1SSC0S+430L–E20 (GK)–MT15	LINE GUIDE	2.000
010.2912	GUIDA SCORRIMENTO RULLO PREMIBARRAALI-MENTATORE	FEEDER PUSH BAR ROLLER GUIDE SH230 NC–HS	2.000
010.3036	CHIOCCIOLA R2010T2FSI C7A10UC1A1 XALIMEN-TATORI 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. CARREL-LOALIM.	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 MORSAALI-MENTATORE	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



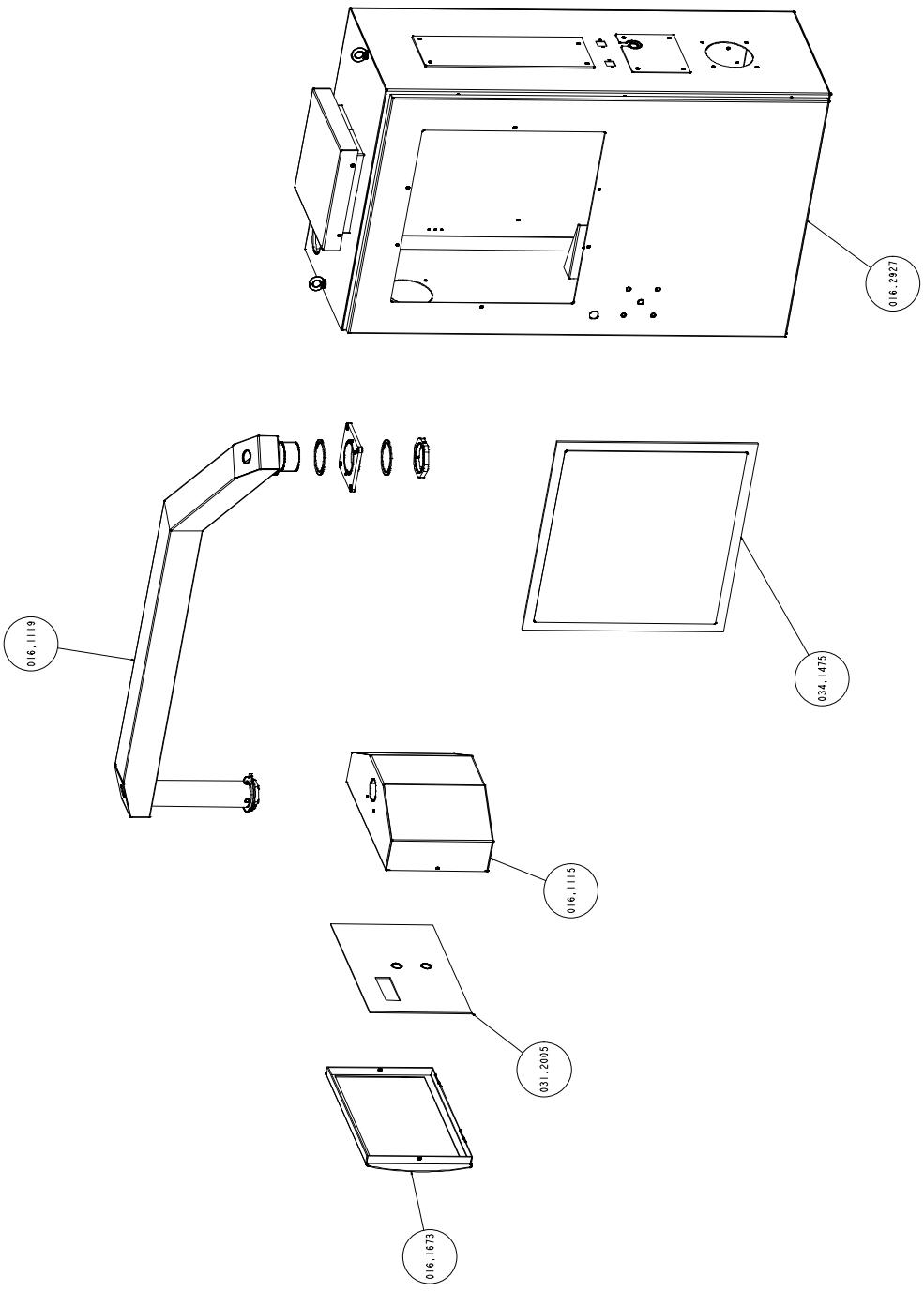
Code	Description	Description	Q.ty
001.5506	STAFFA POSTERIORE ALIMENT. SH 230 NC HSMOD. 2306	FEEDER REAR BRACKET SH 230 NCHS MOD.2306	1.000
001.5507	STAFFA ANTERIORE ALIMENTAT. SH 230 NC HSMOD. 2307	FEEDER FRONT BRACKET SH230 NCHS MOD.2307	1.000
007.5062	TASSELLO FISSAGGIO RULLO VERTICALE ALIMENTATORE	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 BALLSCREW	1.000
010.0380	GHIERA FISSAGGIO VITE RICIRCOLO ALIMENTATORE 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 ALIMENTATORE	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 ALIMENTATORESH 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 LARGH.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 DENTILARGHEZZA 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
025.0278	ANELLO DI PROTEZIONE NILOS 30302 AV	NILOS SEAL RING 30302 AV	2.000

Control unit group



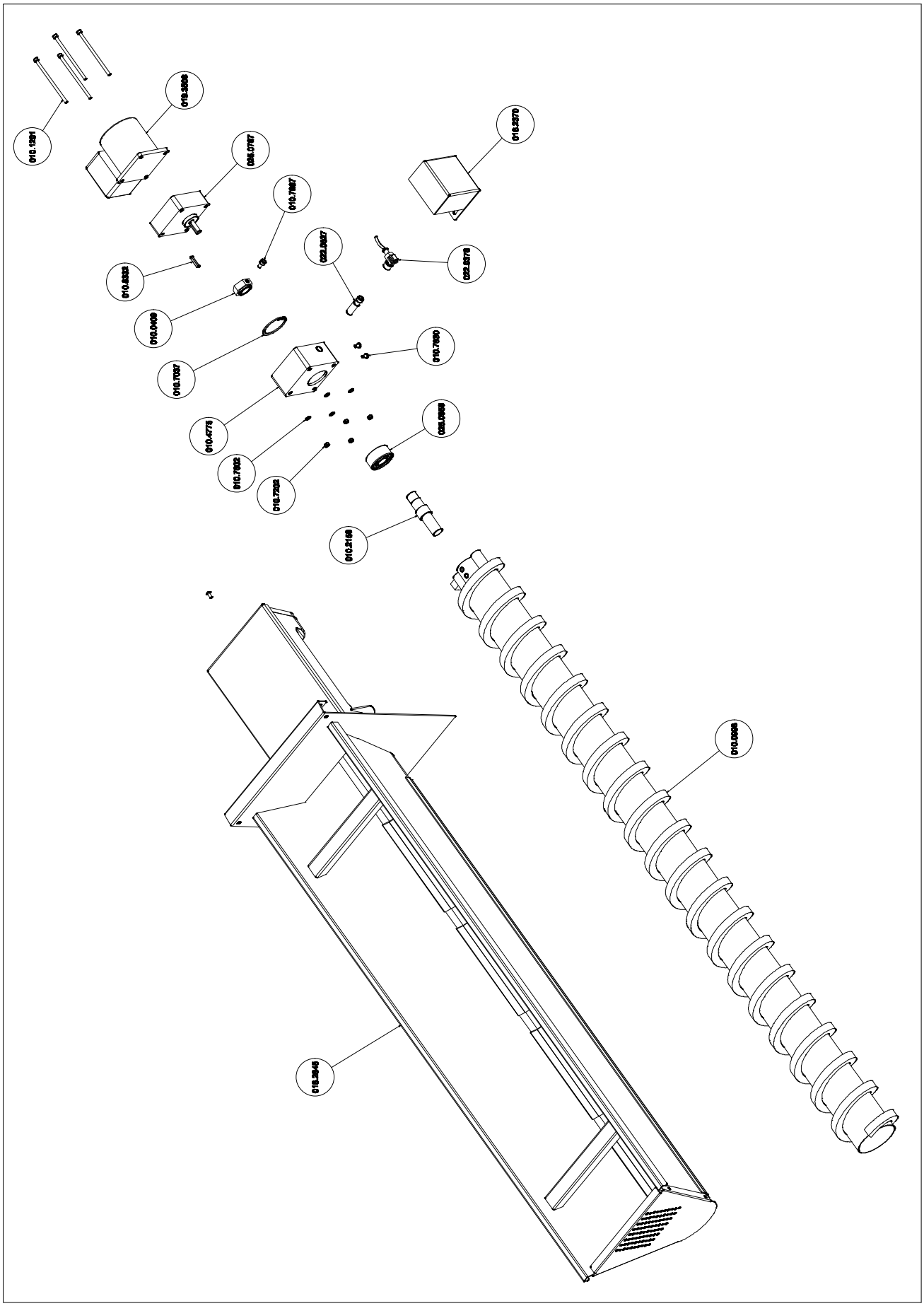
Code	Description	Description	Q.ty
007.5232	BLOCCHETTO IDRAULICO CENTRALINA	MANIFOLD	1.000
016.1868	STAFFA FISSAGGIO MOTORE PASSO–PASSOMO-NOCENTRALINA	MONOUNIT STEP MOTO FIX BRACKET SH310CNC	1.000
016.2097	SERBATOIO CENTRALINA SH230 NC HS ––A––	UNIT TANK SH 230 NC HS ––A––	1.000
016.2366	CASSETTO ESTRAIBILE CENTRALINA SH230NCHS	MONOUNIT DRAWER SH230CNC–HS	1.000
019.3555	MOTORE FL57STH76–2804A–12 X CILINDRO NC	MOTOR F257STH76–2804 FOR CYLIN-DER	1.000
019.4009	MOT CENTR. KW 0,736 C80 4P B14V.230–400–415.50/240–480.60 CERT.UL–CSA	POWER PACK MOTOR HP1 C80B14 V.230 400–41	1.000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	2.000
025.0208	ANELLO TENUTA OR 109–9,13	O RING 109–9,13	3.000
025.0260	ANELLO DI TENUTA OR 20379,25 X 1,78 – 90 SHO-REE	O RING 2037	12.000
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
043.0566	MANOMETRO 0 63 0–100 BAR ATTACCO RADIALE	MANOMETER 0 63 0–100	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
044.0452	INNESTO RAPIDO FLEX.MASCHIO X IR 1/4C IRI/4CM	QUICK LOCK COUPLING	3.000
044.0453	INNESTO RAPIDO FLEX.FEMM.1/4 IRI4CF	1/4 IRI4CF FI. FLEX. QUICK COUPLING	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
044.0650	PROLUNGA 1/4 MF ESAGONALE 36 MM. SH 310SXI	1/4 MF HEX EXTENSION SH310SXI 36 MM	1.000
044.1275	VALVOLA MODULARE RIDUTTRICE DI PRES-SIONEMBRV–02A	MODULER VALVE PRESS.REDUC. MBRV–02A	3.000
044.4508	POMPA IDR. MONOCEN. CC 8 DCM20/30–FUTU-RO420–HCH 18/25 'A'	HYDRAULIC PUMP FOR POWER PACK 'A'	1.000
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
044.5159	ASTA PESCANTE H10A ––A––L 50 2X3/8GAS	SUCTION ROD H10A ––A–– L 50 2X3/8GAS	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

Control panel unit



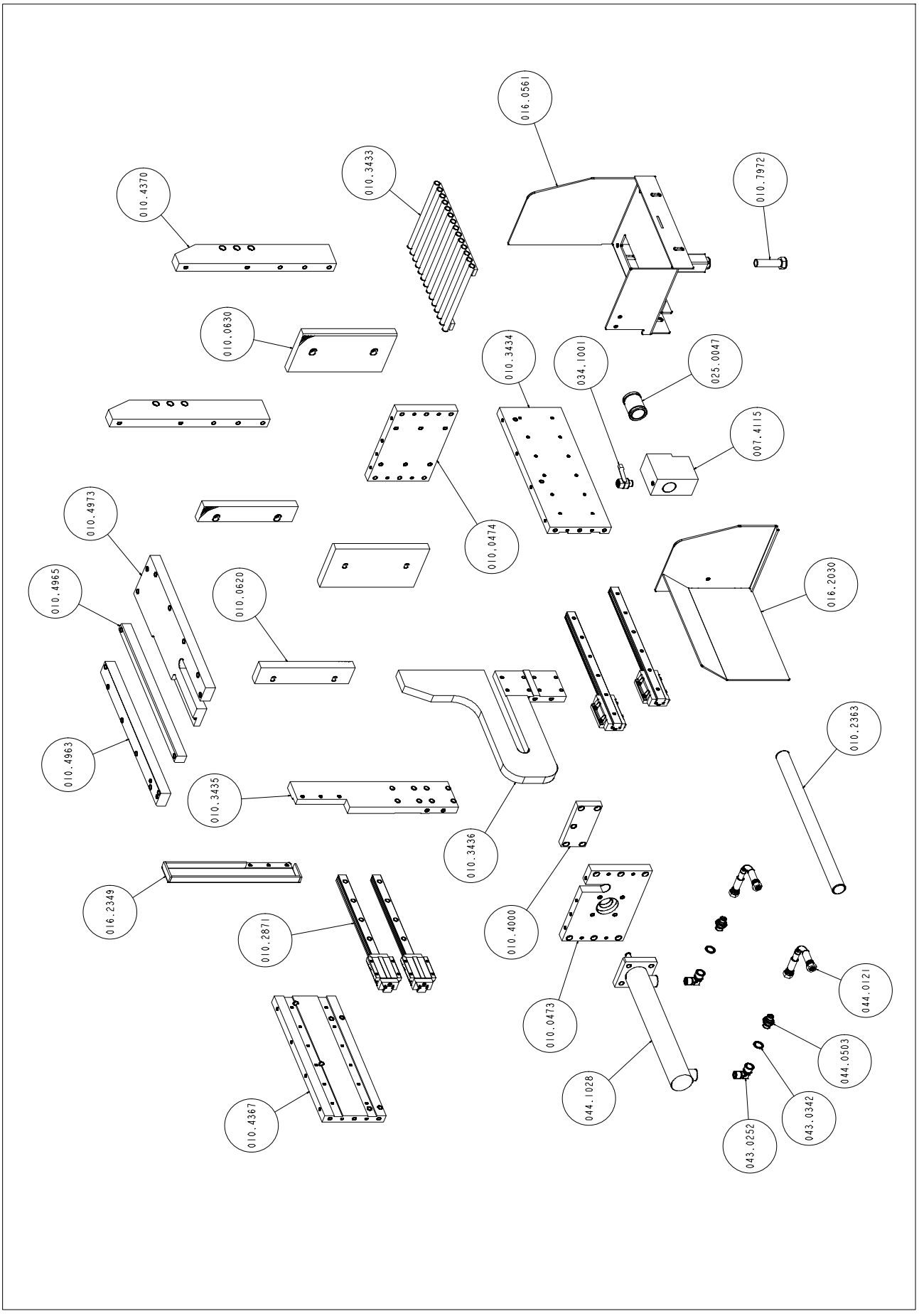
Code	Description	Description	Q.ty
016.1115	SCATOLA QUADRO COMANDI SENZA CORNICE	CONTROL PANEL BOX WITHOUT FRAME	1.000
016.1119	ASTA MOBILE X CONSOLLE SH 230 NC–HS	MOV.ROD SH 230 NC–HS	1.000
016.1673	CORNICE QUADRO COMANDI X NC 5.0	FRAME FOR CONTROL PANEL	1.000
016.2927	QUADRO ELETTRICO SH 230 NC–HS	ELECTRIC PANEL SH 230 NC–HS	1.000
031.2005	CONSOLLE DI PROGRAMMAZIONE X SH230 NC–HS	PROGRAMMING CONSOLLE SH 230 NC–HS	1.000
034.1475	PROTEZIONE LEXAN SHARK 350 CNC–HS 4.0	LEXAN GUARD SHARK 350 CNC–HS 4.0	1.000

Motor–driven auger chip ejector (optional)



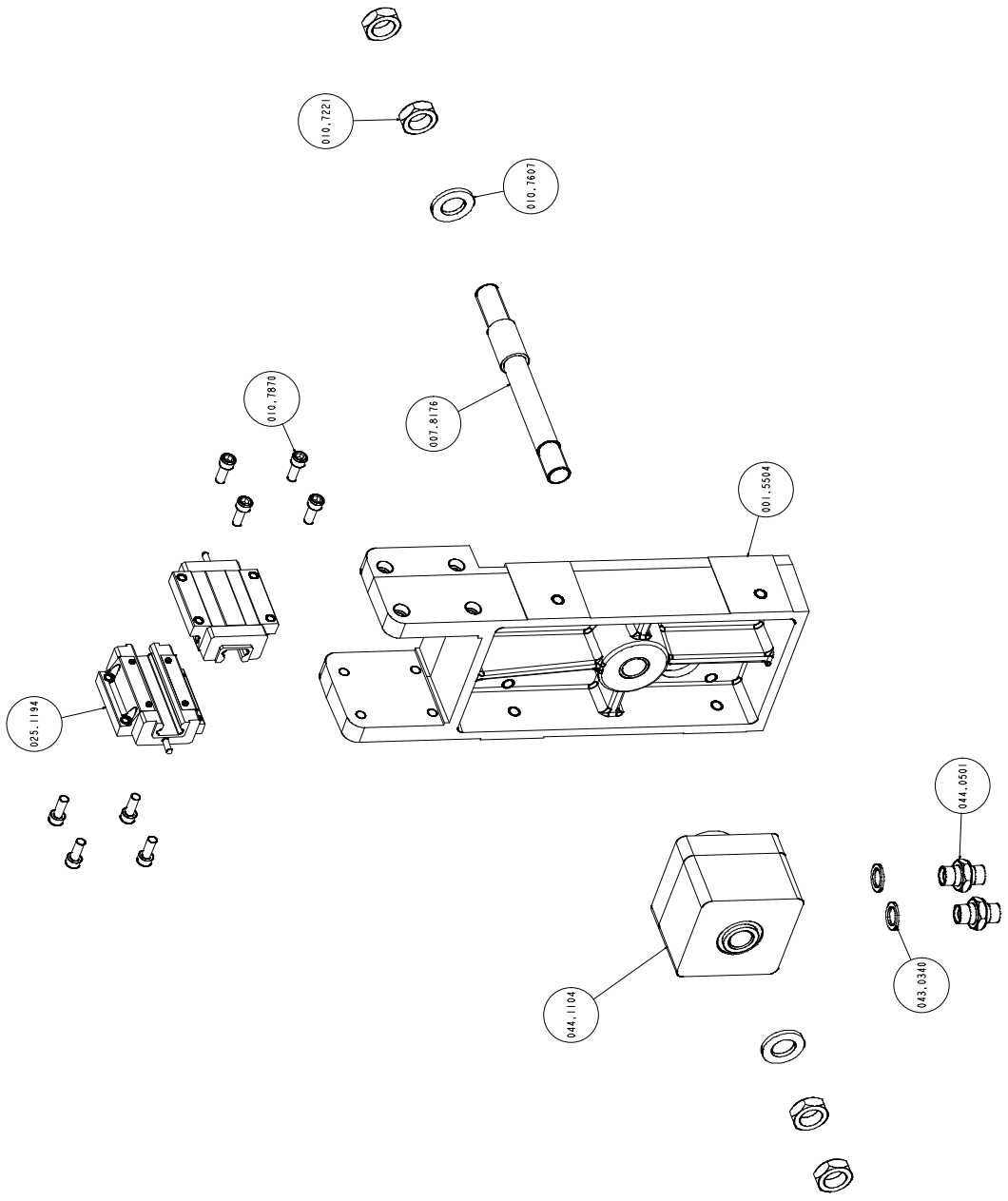
Code	Description	Description	Q.ty
010.0409	DADO M20 ALBERO COCLEA X EV.TRUCIOLI	NUT M20 SHAFT FOR CHIP CONVEYOR	1.000
010.0998	COCLEA A SPIRALE X EV.TRUCIOLI SH 230–1	WELDMENT AUGER SH 230–1	1.000
010.1201	VITERIA E BULLONERIA	SCREWS AND BOLTS	1.000
010.2158	ALBERO COCLEA X EV. TRUCIOLI	WELDMENT AUGER SHAFT	1.000
010.4775	SUPPORTO ALBERO COCLEA X EV. TRUCIOLI	ARCHIMEDEAN SCREW BRACKET X CHIP EVAC.	1.000
010.7037	ANELLO SEEGER PER FORI 0 47	SEEGER RING FOR 0 47 HOLES	1.000
010.7202	DADO M5	M5 SCREW NUT	1.000
010.7602	RONDELLA 0 5	0 5 WASHER	1.000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW	1.000
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
016.2370	CARTER SENSORE COCLEA X EV. TRUCIOLI	GUARD FOR AUGER SENSOR CHIP CONVEYOR	1.000
016.2649	CASSETTO EV. TRUCIOLI A COCLEA PER INOX	DRAWER FOR SHAVINGS EVAC.	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 4X0,5	CONNECTOR FOR PROXIMITY	1.000
022.0527	SENSORE DI PROSSIMITA' PNP–NO	PROXIMITY PNP–NO	1.000
025.0787	RIDUTTORE MX8G120B X EV. TRUCIOLI	REDUCER MX8G120B SH 230	1.000
025.0958	CUSCINETTO 3204 A 2RS	BEARING 3204 A 2RS	1.000

Double Vice assembly (optional)



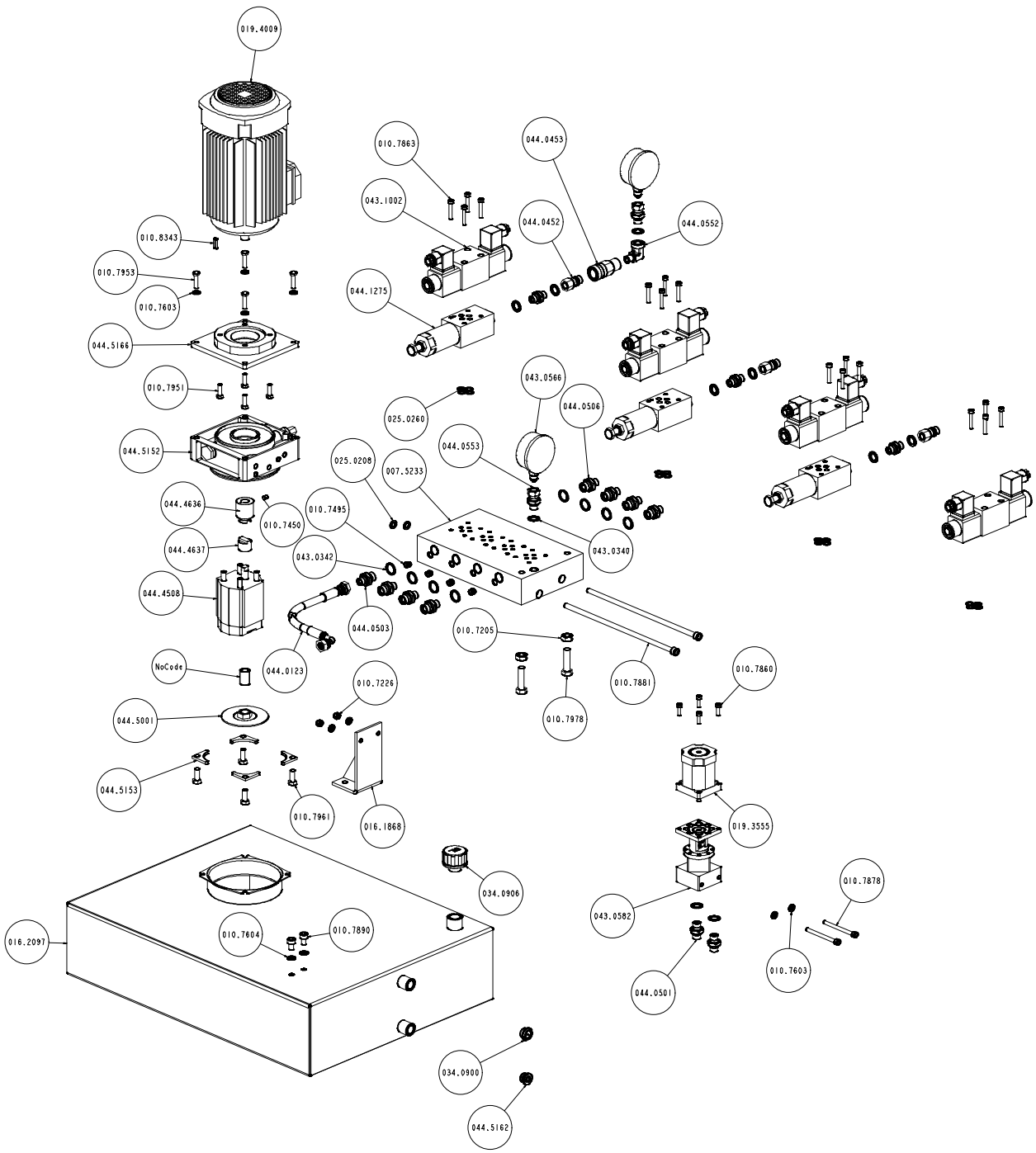
Code	Description	Description	Q.ty
010.0620	GANASCIA MORSA DI TAGLIO SH 230 NC HS	VICE JAW SH 230 NC HS	2.000
010.2363	ASTA PER GUIDA SCARICA PEZZISH 310 CNC–HS	UNLOADER GUIDE ROD SH 310 CNC–HS	1.000
010.2871	GUIDA PATTINO HGW20–CC–1–R0350–E20–ZB–H	SIDE GUIDE HGW20–CC–1–R0350–E20–ZB–H	2.000
010.4367	SUPPORTO 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
010.3433	SUPPORTO SCARICO A RULLI X GUIDA SCARICA	UNLOAD ROLLER SUP. SH 230 NC HS	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

Retractable vice (optional)



Code	Description	Description	Q.ty
010.7221	DADO M16 BASSO	M16 LOW SCREW NUT	4,000
010.7607	RONDELLA 0 16	0 16 WASHER	2,000
010.7870	VITE TCEI 6 X 16	TCEI 6 X 16 SCREW	8,000
025.1194	PATTINO HSV20C1SSBLOCK	SLIDE HSV20C1SSBLOCK	2,000
007.8176	PERNO ARRETRAMENTO GANASCIA ALIM.	FEEDER WITHDRAW JAW PIN	1,000
001.5504	SCORREVOLE MORSA ALIMENTAT. SH 230 NC HSMOD. 2304	FEEDER SLIDING VICE SH 230 NCHS MOD.2304	1,000
044.1144	CILINDRO VOLAMPRESS D.E.SH 330 N.T.SH 292–SH 332	HYDRAULIC CYLINDER SH 330 N.T.	1,000
043.0340	RONDELLA RAME 13X19X1,5–1/4	COPPER WASHER 13X19X1,5–1/4	2,000
044.0501	NIPPLO NP 1/4 IDRAULICO	NP 1/4 HYDRAULIC NIPPLE	2,000

Control unit group (optional)



Code	Description	Description	Q.ty
007.5233	BLOCCHETTO IDRAULICO CENTRALINA	HYDRAULIC UNIT BLOCK	1.000
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
016.2366	CASSETTO ESTRAIBILE CENTRALINA SH230NCHS	MONOUNIT DRAWER SH230CNC–HS	1.000
019.3555	MOTORE FL57STH76–2804A–12 X CILINDRO NC	MOTOR F257STH76–2804 FOR CYLIN-DER	1.000
019.4009	MOT CENTR. KW 0,736 C80 4P B14V.230–400–415.50/240–480.60 CERT.UL–CSA	POWER PACK MOTOR HP1 C80B14 V.230 400–41	1.000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	2.000
025.0208	ANELLO TENUTA OR 109–9,13	O RING 109–9,13	3.000
025.0260	ANELLO DI TENUTA OR 20379,25 X 1,78 – 90 SHO-REE	O RING 2037	12.000
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
043.0566	MANOMETRO 0 63 0–100 BAR ATTACCO RADIALE	MANOMETER 0 63 0–100	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	4.000
044.0123	TUBO CENTRALINA IDRAULICA MM.500 1X90° R7 1/4	HYDR.UNIT HOSE MM 500 1X90° R7 1/4	1.000
044.0452	INNESTO RAPIDO FLEX.MASCHIO X IR 1/4C IRI/4CM	QUICK LOCK COUPLING	3.000
044.0453	INNESTO RAPIDO FLEX.FEMM.1/4 IRI4CF	1/4 IRI4CF FI. FLEX. QUICK COUPLING	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
044.0650	PROLUNGA 1/4 MF ESAGONALE 36 MM. SH 310SXI	1/4 MF HEX EXTENSION SH310SXI 36 MM	1.000
044.1275	VALVOLA MODULARE RIDUTTRICE DI PRES-SIONEMBRV–02A	MODULER VALVE PRESS.REDUC. MBRV–02A	3.000
044.4508	POMPA IDR. MONOCEN. CC 8 DCM20/30–FUTU-RO420–HCH 18/25 'A'	HYDRAULIC PUMP FOR POWER PACK 'A'	1.000
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
044.5159	ASTA PESCANTE H10A ––A––L 50 2X3/8GAS	SUCTION ROD H10A ––A–– L 50 2X3/8GAS	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

Adjustments

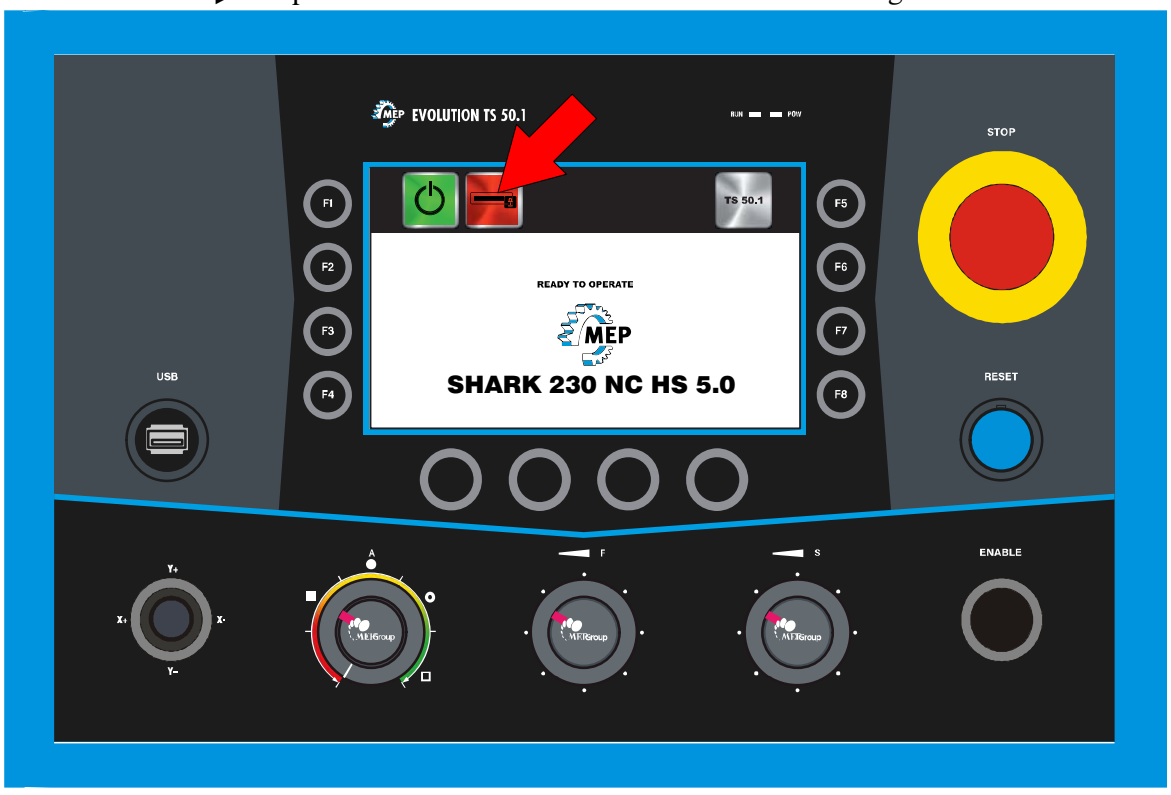
This chapter describes the operations required to adjust the electronic, mechanical and the hydraulic systems. By following these instructions, you can “customise” your machine to suit the type of cut required, thereby optimising cutting times.

Displaying and editing the set–up parameters

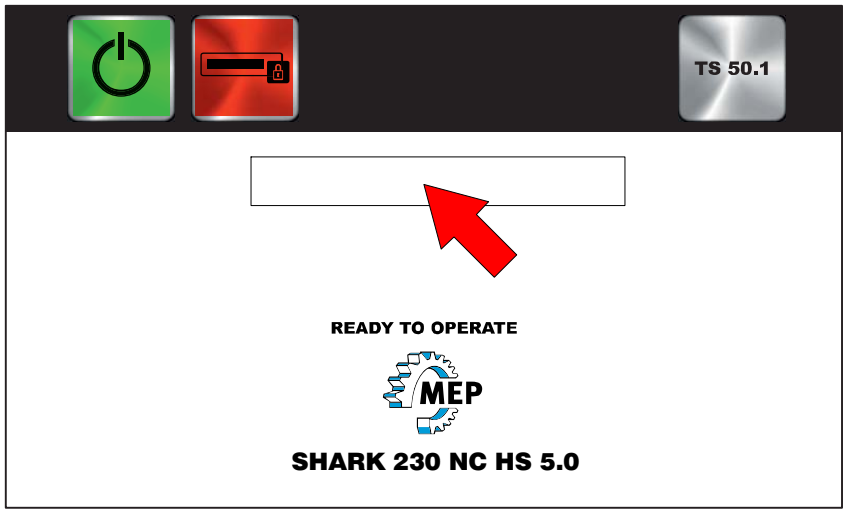
The machine set–up parameters may be programmed directly from the control console.

Attention Modifying the set–up parameters may compromise the operation of the machine. This functionality is to be used solely by the service technicians.

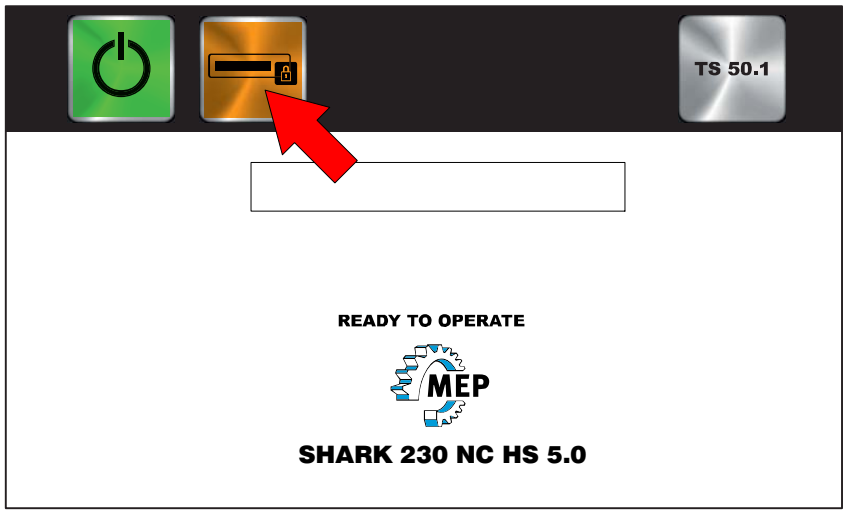
- ▶ Power the machine by turning the main switch on the left of the control board.
- ▶ Tap on the box on the touchscreen shown in the figure.



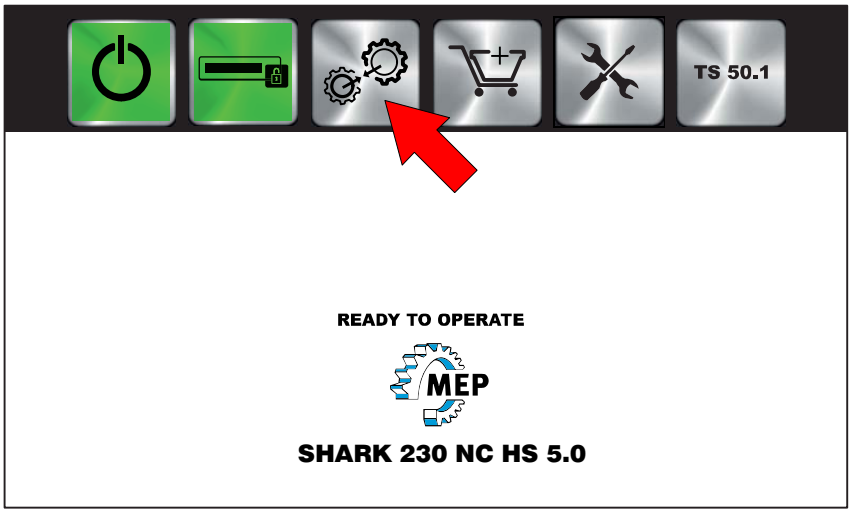
▶ The password entry box will open. Tap the box to open the keypad. Enter 734533.



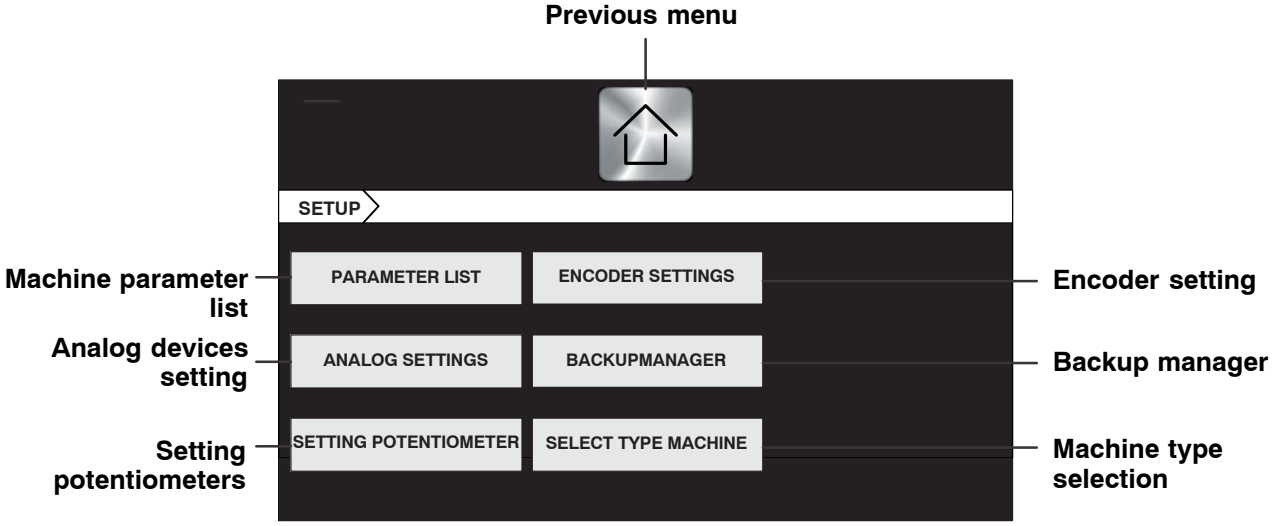
▶ Tap on the box shown in the figure.



▶ Tap on the box shown in the figure.

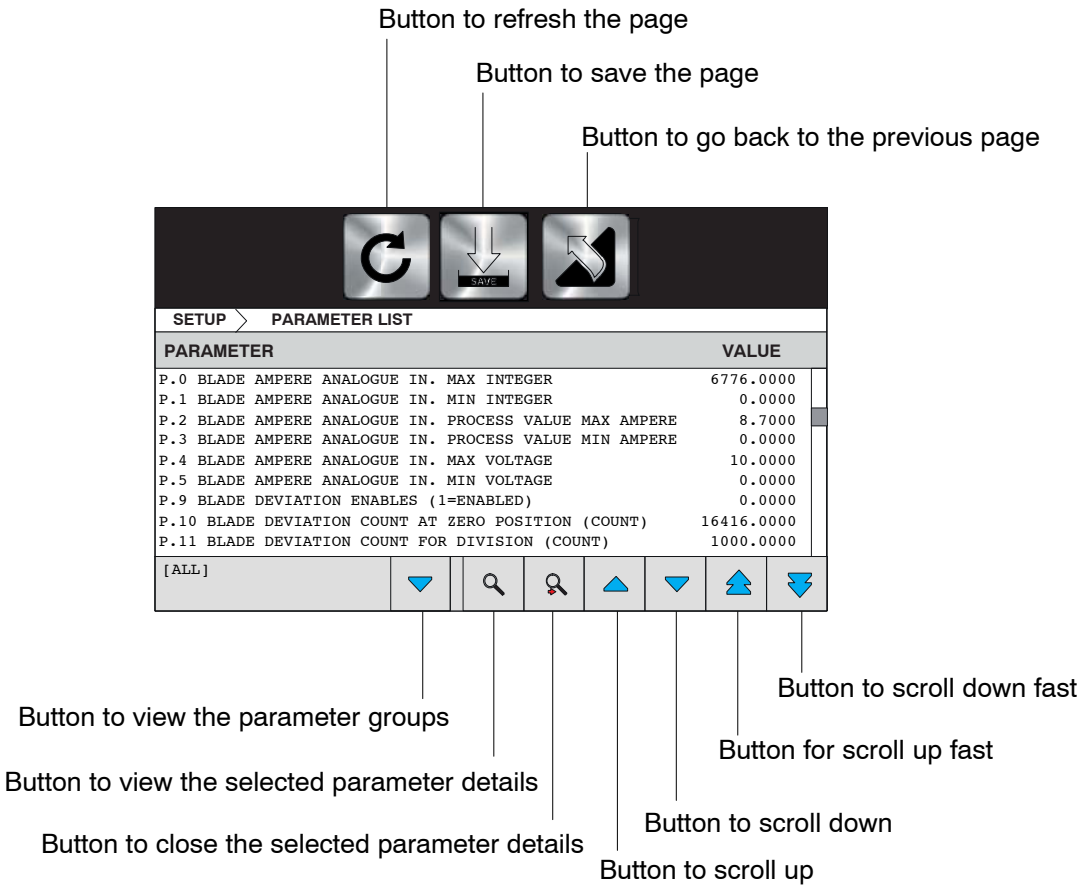


▶ The next video page shows the available functions



Parameter List

▶ Once inside the “Parameter List” menu, use the following three keys to navigate through the different menu screens:



The machine setup parameters divided by topic are shown below.

Blade Motor		
Nr.	**Parameter / Description**	**Value**
P.0	**MAX BLADE MOTOR CONSUMPTION (LEVELS):** Analogue input counter value corresponding to the maximum ampere.	5681.0000
P.1	**MIN BLADE MOTOR CONSUMPTION (LEVELS)** Analogue input counter value corresponding to the minimum ampere.	48.0000
P.2	**MAX BLADE MOTOR CONSUMPTION (AMPERE)** Ampere corresponding to maximum analogue input value.	2.7500
P.3	**MIN BLADE MOTOR CONSUMPTION (AMPERE)** Ampere corresponding to minimum analogue input value.	0.0000
P.4	**MAX BLADE MOTOR CONSUMPTION VOLTAGE (V)** Voltage corresponding to maximum analogue input value.	10.0000
P.5	**MIN BLADE MOTOR CONSUMPTION VOLTAGE (V)** Voltage corresponding to minimum analogue input value.	0.0000
P.23	**BLADE MOTOR CONSUMPTION SCAN (SEC)** Control execution time (sec).	0.1500
P.24	**BLADE MOTOR SWITCHING−ON DELAY (SEC) (IF 0 OFF)** Activation delay in seconds (if 0 is off).	1.0000
P.25	**HEAD LOWERING REDUCTION ST. M. ON CONSUMPTION CONTROL (M/MIN OR INCH/MIN)** Correction step.	25.0000
P.27	**TIME FOR BLADE MOTOR MAX I ALARM (SEC)** Alarm time for reaching the motor max. current (sec).	1.0000
P.29	**ENCODER S MAX VALUE (M/MIN OR FT/MIN)** Speed set point maximum value S.	100.0000
P.30	**ENCODER S MIN VALUE (M/MIN OR FT/MIN)** Speed set point minimum value S.	15.0000
P.31	**MAXIMUM AI SPEED VALUE (COUNTERS)** Speed reference maximum value (analogue input maximum value).	32767.0000
P.32	**MINIMUM AI SPEED VALUE (COUNTERS)** Speed reference minimum value (analogue input minimum value).	0.0000
P.33	**BLADE MOTOR STOP DELAY (SEC)** Stop delay for cleaning cut (sec).	0.1000
P.34	**ENCODER S READING REVERSAL (1=REVERSED)** Blade speed encoder counter inversion.	1.0000
P.35	**MAX ENCODER S (M/MIN OR FT/MIN)** Blade speed maximum value.	100.0000
P.36	**MIN ENCODER S (M/MIN OR FT/MIN)** Blade speed minimum value.	15.0000
P.37	**ENCODER S PULSE (MM/PULSE OR INCH/PULSE)** Relationship between impulses and rotation measure.	1.0000

Blade Motor		
P.43	**BLADE SPEED MONITORING BEFORE ENABLING ON DELAY SEC** Delay in controlling the min. Speed.	8.0000
P.45	**BLADE SPEED MONITORING NUMBER OF PICK–UP PULSES PERIOD** Number of spokes/pulley.	13.0000
P.47	**BLADE SPEED MONITORING MIN SPEED WATCH DOG VALUE M/MIN OR FT/MIN** Min. speed in m/min or ft/min.	10.0000
P.114	**CURRENT THRESHOLD FOR MAXIMUM FEED CORRECTION (A)** Motor max. absorption value.	3.0000
P.140	**SPEED ENCODER TYPE (0=LINEAR 1=LOGARITHMIC)** Encoder type.	0.0000
P.141	**LOGARITHMIC SPEED ENCODER X1 THRESHOLD (COUNTERS):** X1 correction factor for managing the head lowering speed encoder in logarithmic mode.	4.0000
P.142	**LOGARITHMIC SPEED ENCODER X2 THRESHOLD (COUNTERS):** X2 correction factor for managing the head lowering speed encoder in logarithmic mode.	8.0000
P.143	**LOGARITHMIC SPEED ENCODER X1 MULTIPLIER:** X1 correction multiplier for managing the head lowering speed encoder in logarithmic mode.	10.0000
P.144	**LOGARITHMIC SPEED ENCODER X2 MULTIPLIER:** X2 correction multiplier for managing the head lowering speed encoder in logarithmic mode.	1000.0000

Head Transducer		
Quantity	**Parameter / Description**	**Value**
P.13	**MAX HEAD POSITION (LEVELS):** Maximum counter value.	30073.0000
P.14	**MIN HEAD POSITION (LEVELS):** Minimum counter value.	2696.0000
P.15	**REAR HEAD LIMIT POSITION (MM or INCH):** Max. value in mm or inches of the totally up position of the head.	251.0000
P.16	**FORWARD HEAD LIMIT POSITION (MM or INCH):** Min. value in mm or inches of the totally down position of the head.	0.0000
P.17	**MAX HEAD POSITION VOLTAGE (V):** Voltage value corresponding to the totally up position of the head.	8.7000
P.18	**MIN HEAD POSITION VOLTAGE (V):** Voltage value corresponding to the totally down position of the head.	0.0000

LEVEL_1		
Quantity	**Parameter / Description**	**Value**
P.26*	**BLADE MOTOR MAX I (A)** Maximum allowed current.	8.5000

LEVEL_1		
P.44	**PULLEY DIAMETER (MM OR INCH):** Pulley diameter.	320.0000
P.46	**MINIMUM BLADE SPEED CONTROL TIME (SEC)(0=DISABLED)** Delay in controlling single impulses.	0.5000
P.51*	**MAX BLADE TENSIONING ALARM (KG OR LB):** Maximum voltage allowed to apply adjustment.	1200.0000
P.52*	**MIN BLADE TENSIONING ALARM (KG OR LB):** Minimum voltage allowed to apply adjustment.	600.0000
P.80	**CALIBRATION PARAMETER MEASUREMENT SYSTEM (MKS=1,IMPERIAL=0):** Imperial = 0.0: sets measuring system MKS (0) or IMPERIAL (1).	1.0000
P.86*	**MAXIMUM Y END OF TRAVEL (MM OR INCH):** Y axis maximum limit switch (mm or inch).	249.0000
P.87*	**MINIMUM Y END OF TRAVEL (MM OR INCH):** Y axis minimum limit switch (mm or inch).	0.5000
P.89*	**Y DECELERATION SPACE (MM or INCH):** Deceleration space (mm or inch): distance from target position at which slow descent is set.	2.0000
P.93*	**RHLS CPT SPEED (MM OR IN/MIN):** Slow Y position speed (mm/min or inch/min).	90.0000
P.94*	**CPT ABATING SPEED (MM/MIN OR INCH/MIN):** Y upward speed (mm/min or inch/min).	2400.0000
P.117*	**MAX REAR X AXIS VALUE (MM / INCH):** Feeder max. Stroke.	603.0000
P.119*	**SLOW X AXIS MANUAL SPEED (MM/MIN OR INCH/MIN):** Slow feeding.	500.0000
P.120*	**FAST X AXIS MANUAL SPEED (MM/MIN OR INCH/MIN):** Fast feeding.	1500.0000
P.121*	**X AXIS BEYOND ZERO (MM or INCH):** X axis beyond zero mm or inch.	10.0000
P.122*	**X AXIS ZEROING SPEED (MM/MIN OR INCH/MIN):** Speed of search for microswitch while the trolley is zeroed.	2000.0000
P.123	**X AXIS MICRO RELEASE SPEED (MM/MIN OR INCH/MIN):** Speed of release from the search while the trolley is zeroed.	300.0000
P.131*	**SLOW Y AXIS MANUAL SPEED (MM/MIN OR INCH/MIN):** Slow manual head lowering.	850.0000
P.132*	**FAST Y AXIS MANUAL SPEED (MM/MIN OR INCH/MIN):** Fast manual head lowering.	2032.0000
P.133	**RHLS OFFSET MM OR INCH:** Offset for rear head limit switch.	0.1000
P.134*	**X AXIS FWD/BCKW SPEED (MM/MIN OR INCH/MIN):** Feeder speed in cutting cycle.	4000.0000
P.186	**OUT 3 (0=BLADE TENS.+;1=MOT.BRUSH;2=FCTI)**	0.0000
P.192*	**X AXIS POSITIONING SPEED (MM/MIN OR INCH/MIN)**	4000.0000

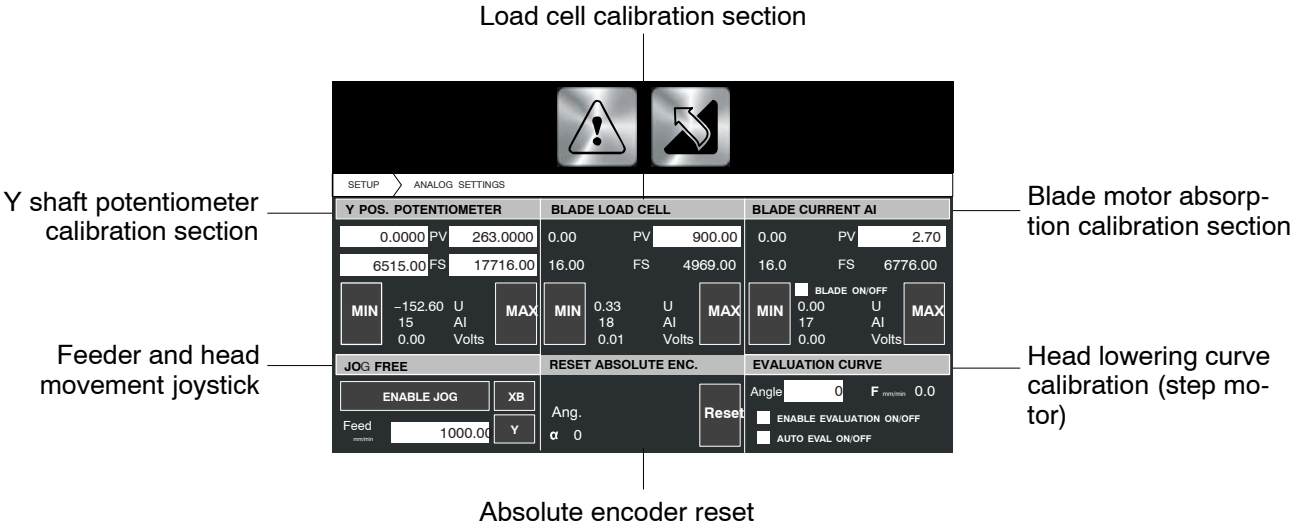
Blade Tension		
Quantity	**Parameter / Description**	**Value**
P.57	**MAX BLADE TENSIONING VALUE(LEVELS):** Maximum counter value from load cell analogue input.	4912.0000
P.58	**MIN BLADE TENSIONING VALUE(LEVELS):** Minimum counter value from load cell analogue input.	48.0000
P.59	**MAX BLADE TENSIONING (KG or LB):** Load cell analogue input maximum value allowed for acquisition.	900.0000
P.60	**MIN BLADE TENSIONING (KG or LB):** Load cell analogue input minimum value allowed for acquisition.	0.0000
P.62	**MAX BLADE TENSIONING VOLTAGE (V):** Load cell analogue input voltage maximum value.	10.0000
P.63	**MIN BLADE TENSIONING VOLTAGE (V):** Load cell analogue input voltage minimum value.	0.0000
Cutting Head		
Quantity	**Parameter / Description**	**Value**
P.67	**ENCODER F READING REVERSAL (1=REVERSED):** Enables the reversal of the reading for the F value scale.	1.0000
P.68	**MAX ENCODER F (MM/MIN or INCH/MIN):** Max. speed that can be set by encoder F.	1000.0000
P.69	**MAX ENCODER F (MM/MIN or INCH/MIN):** Min. speed that can be set by encoder F.	0.0000
P.70	**ENCODER F PULSE (MM/PULSE OR INCH/PULSE):** Relationship between impulse and supply measure.	1.0000
P.75	**ENCODER F RETENTION ENABLEMENT (1=ENABLED):** Enables the retentive memory of the encoder F.	1.0000
P.82	**Y AXIS ST. MOTOR OPENING (DEGREES):** U axis maximum stroke (mm or inch).	300.0000
P.90	**TOLERANCE FOR HEAD FEEDING CONTROL (MM OR INCH):** Check of the head advancing tolerance.	1.0000
P.113	**Y HEAD LOWERING PID CORRECTION INCREMENT (DEGREES):** F correction factor.	1.8000
P.115	**SCAN ON HEAD LOWERING SPEED CONTROL (SEC):** Time between one correction and the next.	0.1000
P.124	**MAX H POTENTIOMETER VALUE (% OR A):** Max. displayed value of H.	8.5000
P.125	**MIN H POTENTIOMETER VALUE (% OR A):** Min. displayed value of H.	3.2000
P.126	**MAX H POTENTIOMETER VALUE (LEVELS):** Max. levels of the H potentiometer.	32400.0000
P.127	**MIN H POTENTIOMETER VALUE (LEVELS):** Min. levels of the H potentiometer.	16.0000

Cutting Head		
P.128	**MAX CUTTING FORCE CURRENT CONTROL (AMPERE):** Max. set current of blade motor.	8.5000
P.129	**MIN CUTTING FORCE CURRENT CONTROL (AMPERE):** Max. set current of blade motor.	3.2000
P.135	**F ENCODER TYPE (0=LINEAR 1=LOGARITHMIC):** Setting the encoder feeding as linear or logarithmic (0 = linear; 1 = logarithmic).	1.0000
P.136	**LOGARITHMIC FEED ENCODER X1 THRESHOLD (COUNTERS):** X1 correction factor for managing the head lowering speed encoder in logarithmic mode.	4.0000
P.137	**LOGARITHMIC FEED ENCODER X2 THRESHOLD (COUNTERS):** X2 correction factor for managing the head lowering speed encoder in logarithmic mode.	8.0000
P.138	**LOGARITHMIC FEED ENCODER X1 MULTIPLIER:** X1 correction multiplier for managing the head lowering speed encoder in logarithmic mode.	10.0000
P.139	**LOGARITHMIC FEED ENCODER X2 MULTIPLIER:** X2 correction multiplier for managing the head lowering speed encoder in logarithmic mode.	1000.0000
P.151	**FEED DISPLAY IN FILTERED CYCLE (1=ENABLED):** Displaying of the filtered F value in machining cycle.	1000.0000
P.174	**PERIOD OF ALARM FOR HEAD BLOCKED (SEC):** Set time for alarm publishing.	250.0000
P.185	**BLADE SAFETY POSITION (MM OR INCH):**	−50.0000
Timings		
Quantity	**Parameter / Description**	**Value**
P.96	**HYDRAULIC PUMP OFF DELAY (SEC):** Hydraulic pump off delay before stopping (seconds).	50.0000
P.150	**SIREN DEACTIVATION TIME (MIN):** Siren off time.	1.0000
P.152	**TIME FOR LOCKED EJECTOR ALARM (SEC) (PROXIMITY):** Time for chip ejector jammed alarm.	20.0000
PASSWORD		
Quantity	**Parameter / Description**	**Value**
P.99	**USER PASSWORD VALUE:** Password value setting.	7210721.0000
Misc		
Quantity	**Parameter / Description**	**Value**
P.101	**MACHINE TYPE (0=SHARK230 1=SHARK331 2=SHARK332 3=SHARK281 4=SHARK282 5=SHARK330 6=TIGER352 7=COBRA352 8=C350−2NC 9=PNF350−2NC 10=TIGER352V 11=SHARK350):** Defines the machine type (set automatically by loading the machine .cns file).	0.0000

Misc		
P.102	**ABSOLUTE ENCODER ZEROING (DEGREES):** Offset value for absolute encoder.	0.0000
P.153	**TYPE LOGO (0=MEP; 1=ZEPH; 2=S&F; 3=TAKEKO; 4=SCOTT; 5=PM; 6=HYDMECH).**	0.0000
AXIS CART		
Quantity	**Parameter / Description**	**Value**
P.118	**MIN FORWARD X AXIS VALUE (MM / INCH):** Feeder min. Stroke.	0.0000
P.189	**MAX. LENGTH FOR MICRO SEARCH (MM OR INCH)**	603.0000
OPTIONAL:		
Quantity	**Parameter / Description**	**Value**
P.163	**CLEAN CUT OFFSET (MM or INCH):** feeder movement measurement for the passage of the blade during the rising of the head.	4.0000
P.164	**FEED FORCE MANAGEMENT TYPE (0=%\; 1=A):** Feed Force regulator value scale management mode.	1.0000
P.175	**DISPLAYING AN ALARM FOR ONCE (1 = ENABLE 0 = DISABLE):** Enables the possibility of displaying one alarm at a time.	1.0000
P.176	**ENABLE POP−UP ALARM (1 = ENABLE 0 = DISABLE):** Enables the possibility of displaying alarm messages in pop−up windows.	0.0000
P.187	**ENABLE CHECK SHUTTLE POS WHIT OVER STROKE (1=ENABLED)**	1.0000
P.188	**QUEUE FILE BACKUP ENABLEMENT (1=ENABLED)**	0.0000
P.190	**BITS PRESENT (1=YES; 0=NO)**	0.0000
P.191	**MATERIAL HANDLING ENABLING (1=YES; 0=NO)**	0.0000
P.END	**DEBUG DISPLAY ENABLEMENT:** debug procedure enablement.	0.0000
VICES:		
Quantity	**Parameter / Description**	**Value**
P.183	**STOP CLOSING VICE ON END OF STOCK MICRO (1=ACTIVE)**	1.0000

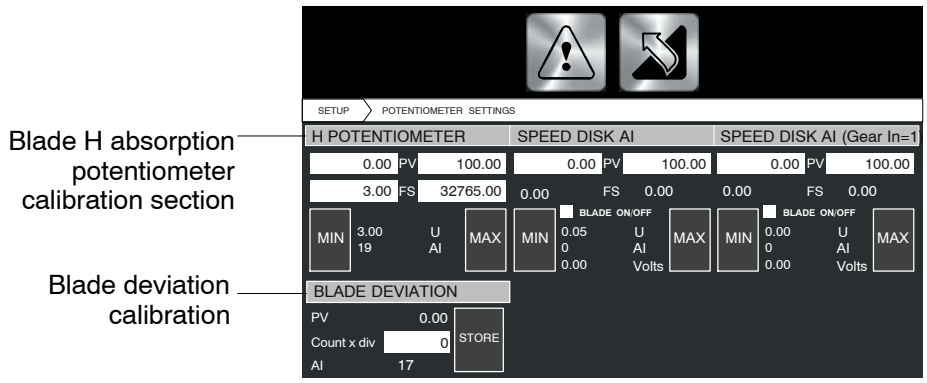
Analog device setting

In this page you can calibrate the machine analog devices



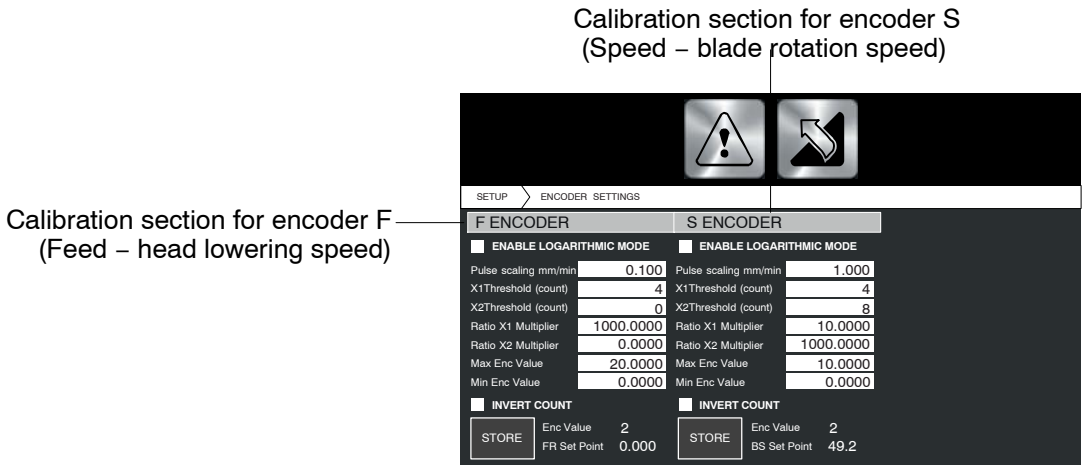
Potentiometer setting

In this page you can calibrate the H blade motor absorption potentiometer, the encoders: F (feed) for adjusting the head lowering; S (speed) for adjusting the speed of the blade rotation (Speed 1–2 for disc machines only) and of the blade deviation device.



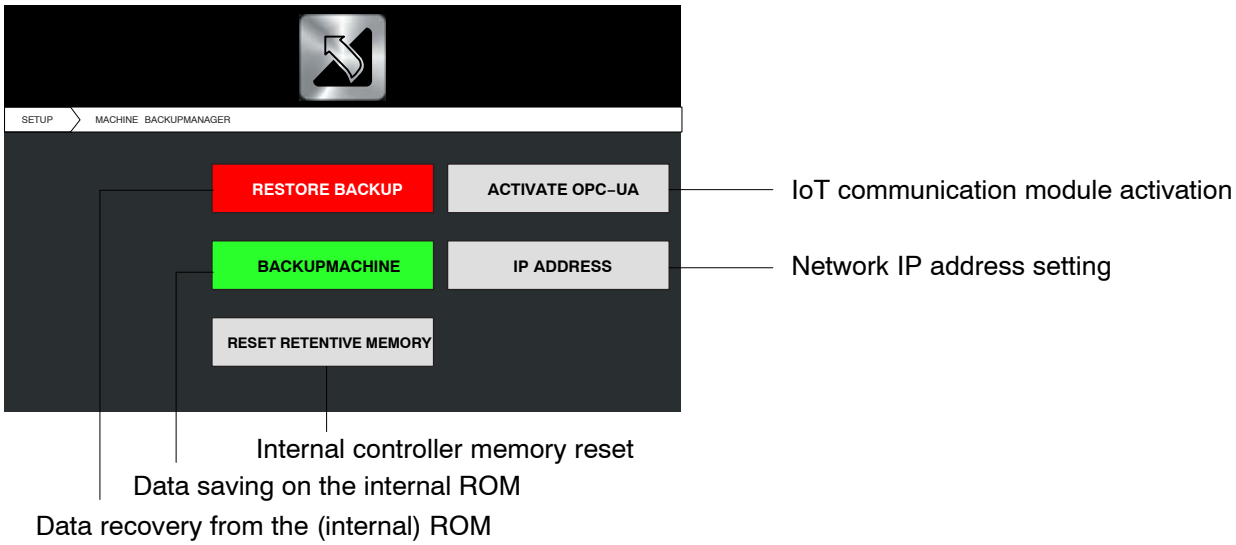
Encoder setting

In this page your can calibrate the encoders: F (feed) for adjusting the head lowering; S (speed) for adjusting the blade rotation speed.



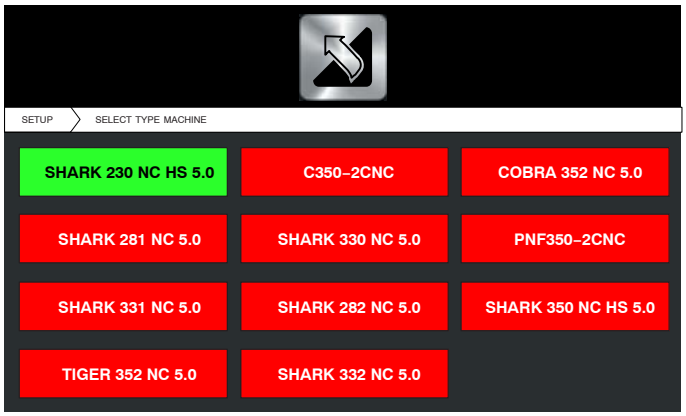
Control memory management

In this page you can manage the control memory data by saving it (backup) or resetting it (restore) on a USB storage device. You can also configure the network for the data transmission, if the machine is equipped with IoT device.



Machine type selection

In this page you can select the model of the sawing machine, each one customised with its own parameters.



Machine working pressures

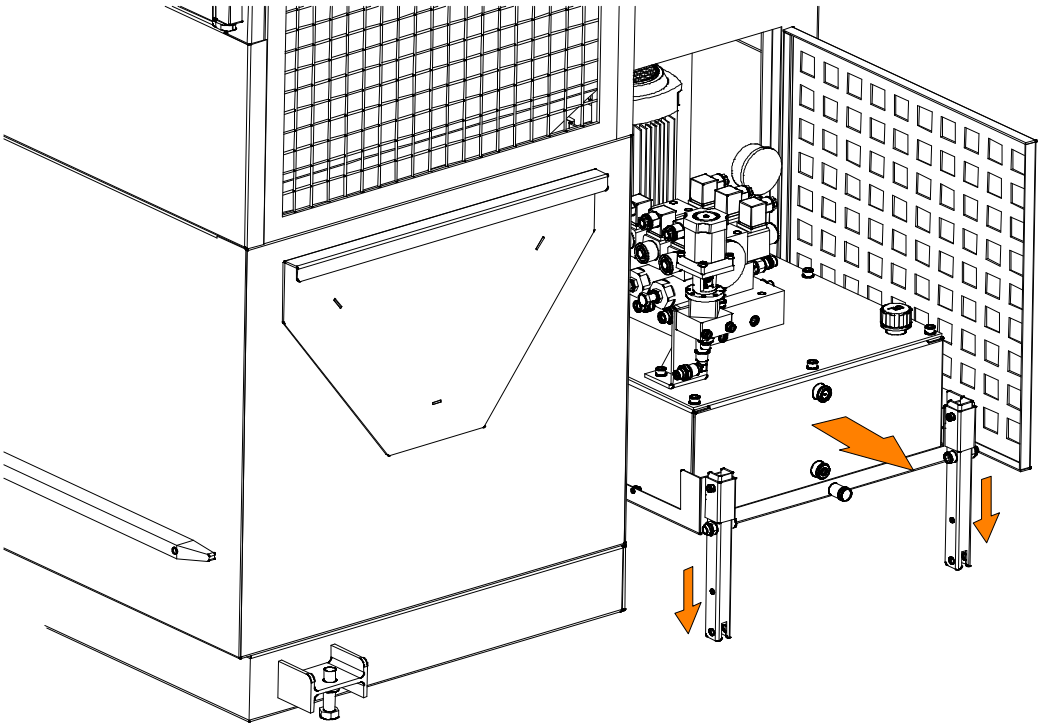
This section describes the procedures to change the vice and head operating pressures. Both adjustments strongly depend on the material type being processed.
The vice locking pressure can be set if the material could be strained or could be quite unstable while cutting.
The head lowering speed can be set by a flow adjuster on the control console.



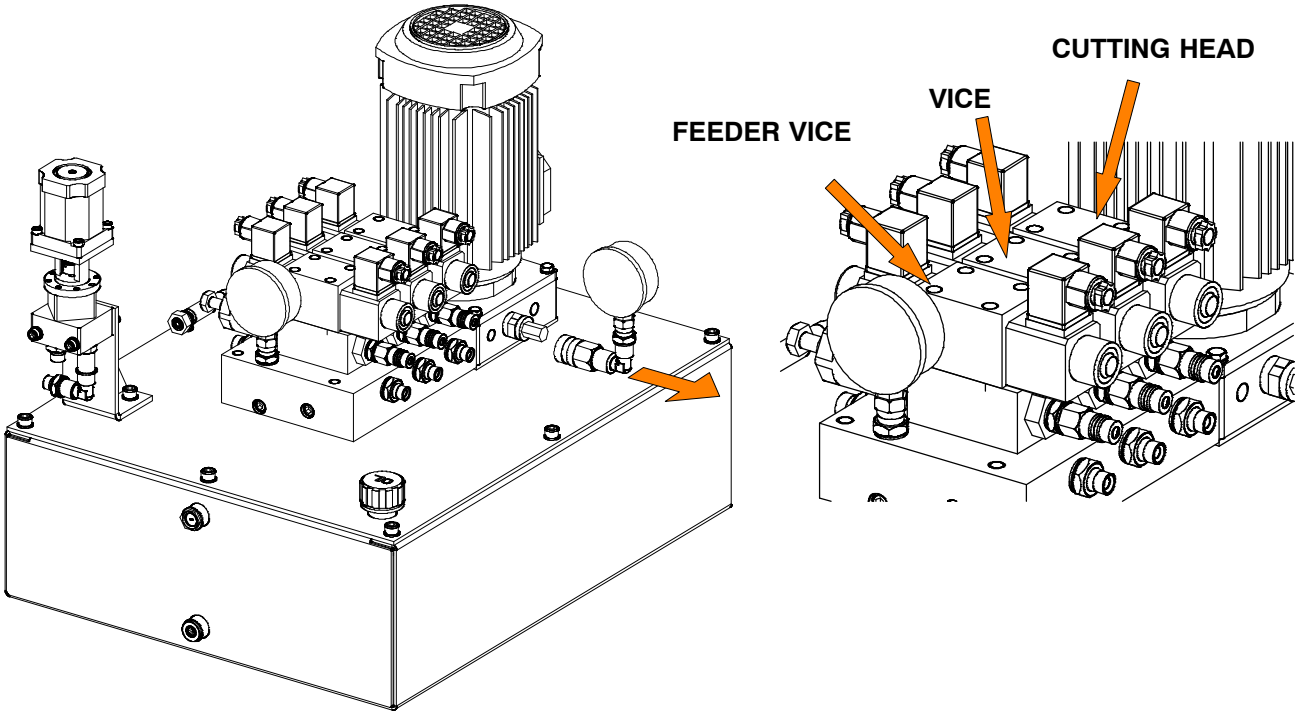
Hydraulic pressure

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

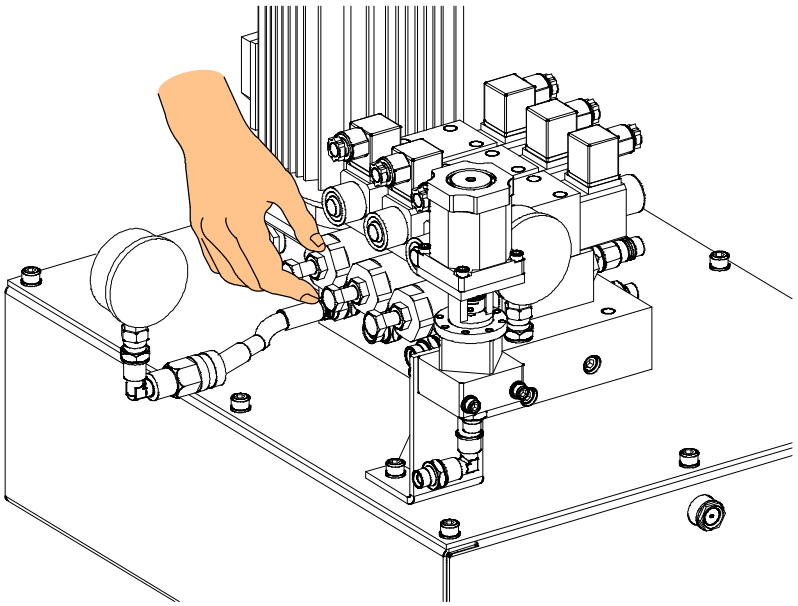
▶ Remove the fastening screws and pull out the power pack from inside the base.



▶ Release the pressure gauge for reading the pressure values from the fast coupling as shown in the figure.



▶ On the left side of the power pack fit the pressure gauge in the fast coupling of the hydraulic device to be adjusted (as indicated in the previous diagram), then rotate the knob to increase (clockwise) or to decrease (counterclockwise) the pressure displayed on the pressure gauge.

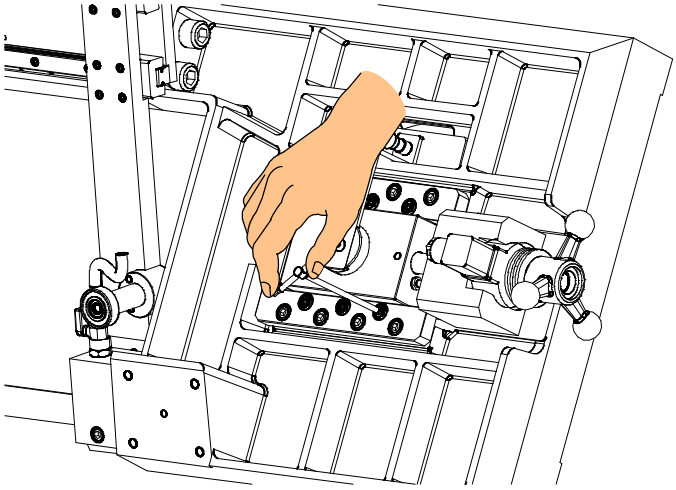


▶ After the adjustment, try the new setting and re−position the power pack inside the machine base.

Cutting head

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:

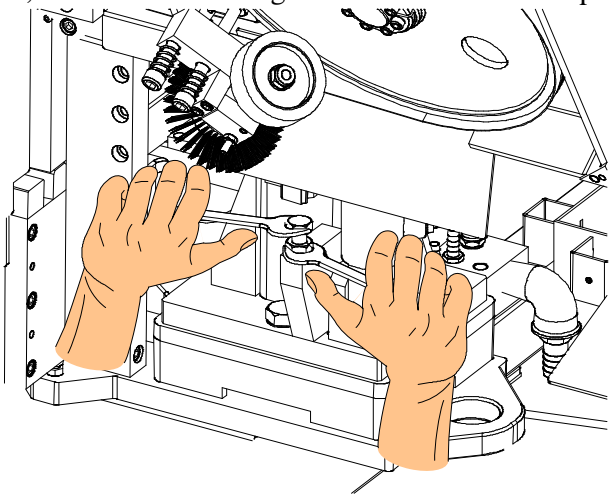


- remove the blade from the flywheels;
- move the slide backwards and forwards to locate any friction or play;
- slacken the nuts, holding the grub screws with a hexagonal pipe wrench;
- if there is play, tighten the grub screws; if there is friction rubbing, loosen the grub screws.

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

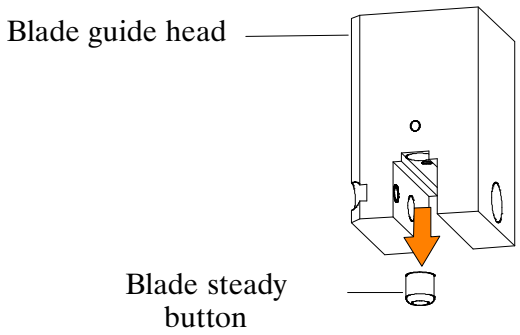
Band saw blades offer enormous advantages to cutting applications, without requiring any special skills by the operator. A description follows of the blade guide adjustments required to ensure correct operation of the saw.

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.

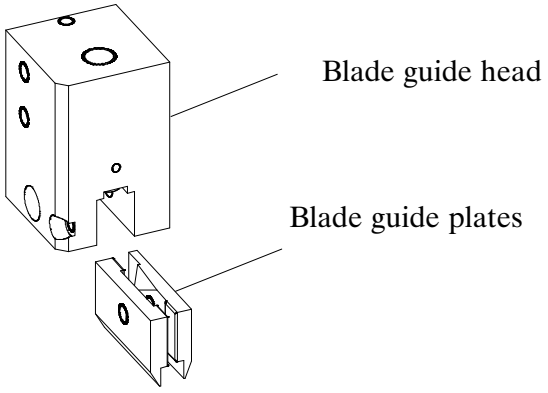
Blade steady buttons

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

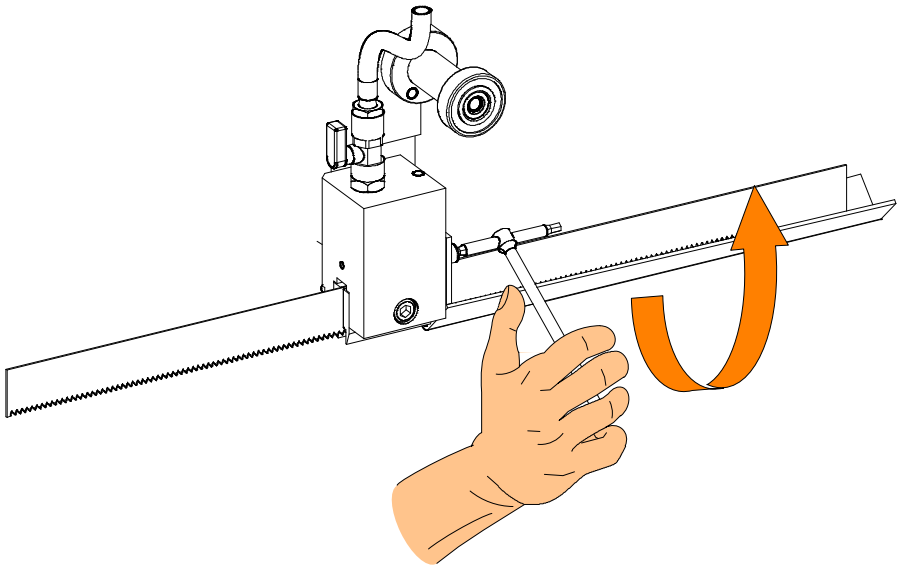
The plate contact points feature widia inserts which guide the blade longitudinally. A small amount of play must exist between the plates and blade to ensure that the blade runs smoothly and perpendicular to the work table.



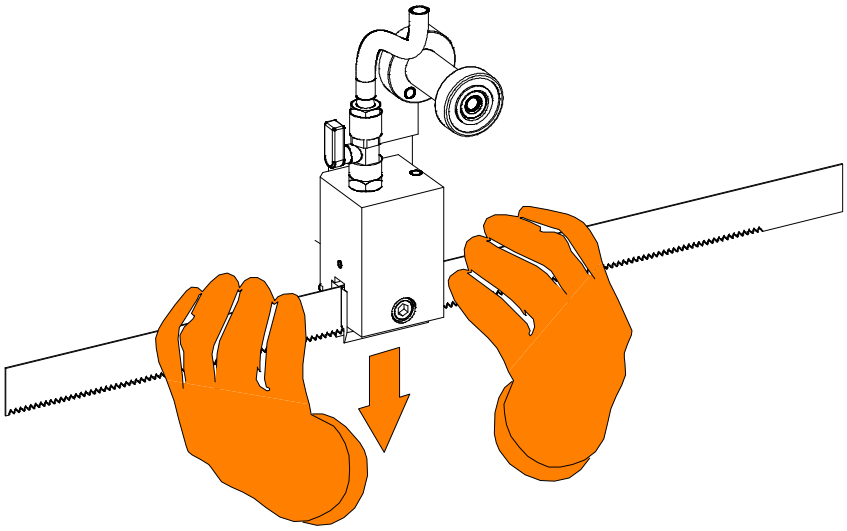
Thanks to the widia inserts, the working life of the guide plates is practically the same as that of the machine itself. However, if due to wear or the assembly of a new blade with a different thickness, the amount of play between the plates and blade changes, the plates must be adjusted as follows:

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

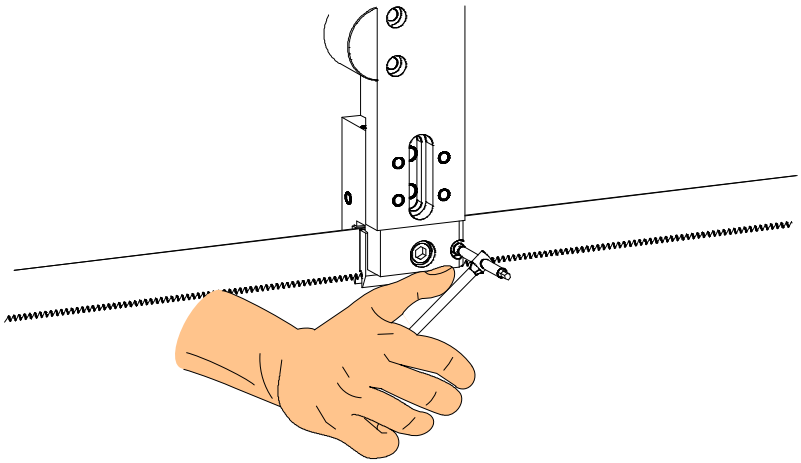
- open the front blade guard by undoing the fixing screw and rotating it as illustrated in the figure below;



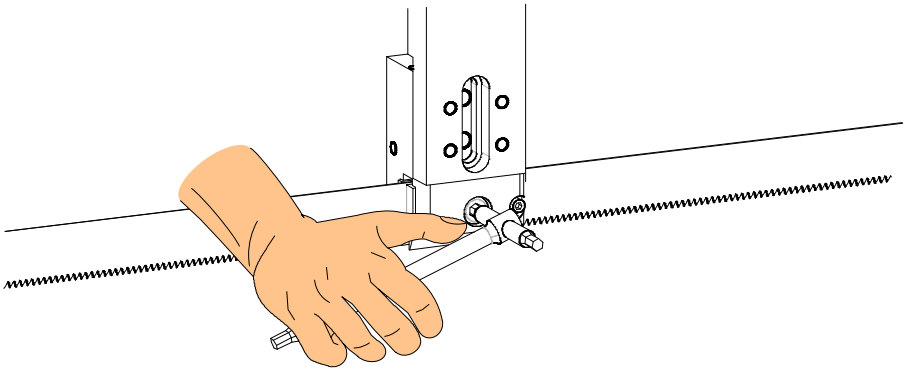
- wear protective gloves when making this adjustment;
- make sure there is a small amount of play between the blade and guide plate inserts;



- 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.

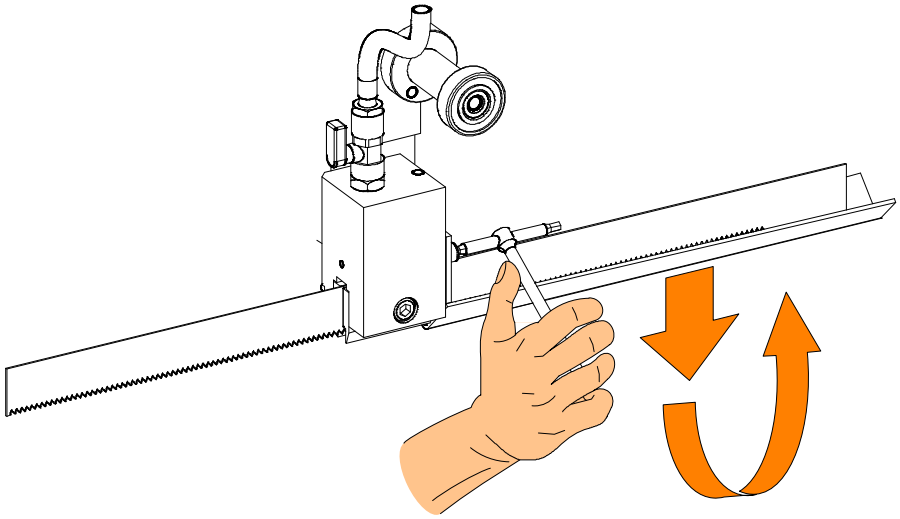
Blade

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.

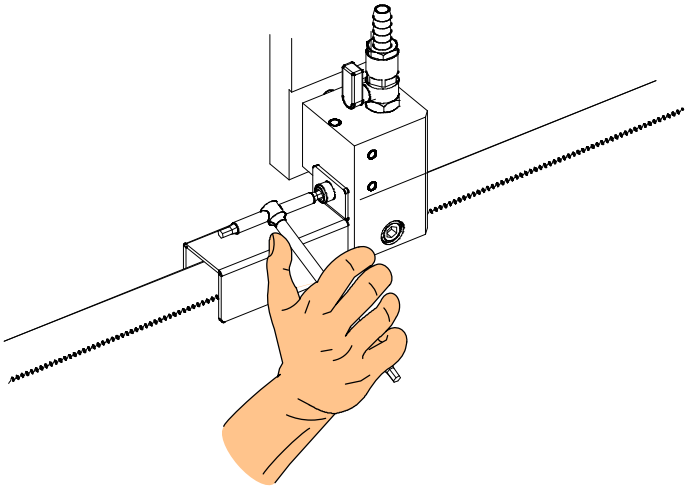
Tool change

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;

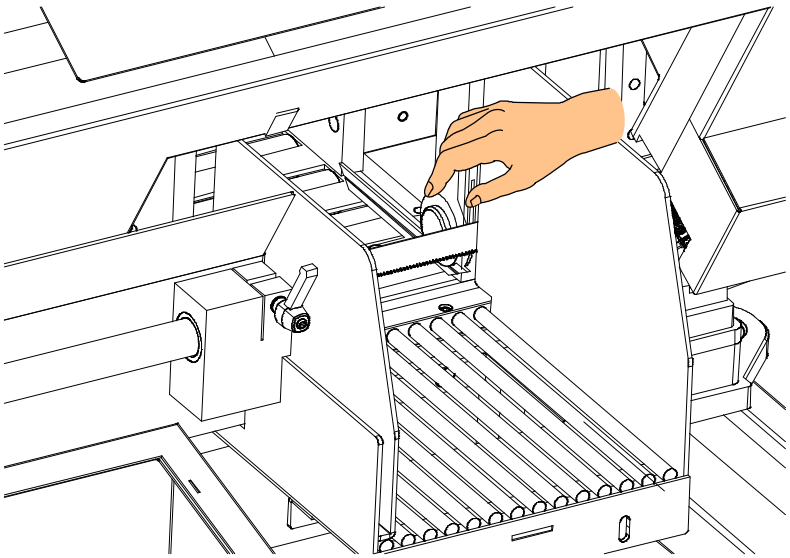


- wear protective gloves when changing the blade;
- remove the worn blade by sliding it off the flywheels and front and rear heads;
- fit the new blade into the front blade guide head;
- make sure the back of the blade is facing the flywheel stop and that the teeth along the lower part of the blade are 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.

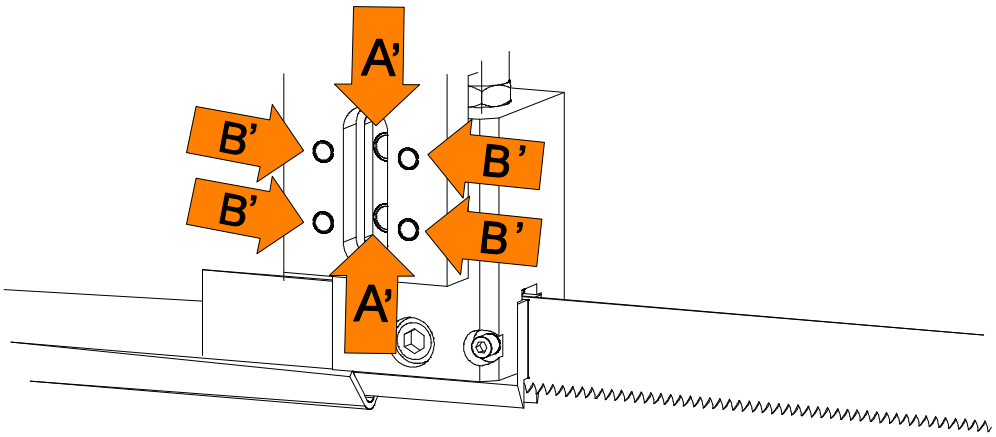
Blade perpendicularity

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.

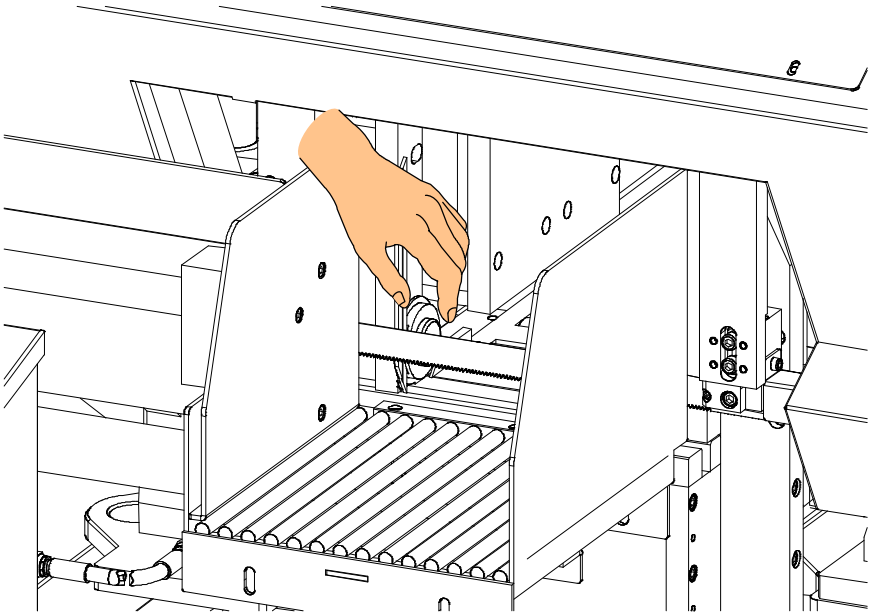
- Position the square on the cleaned work surface and rest it against the blade, close to the right vice jaw at a point where the blade teeth do not prevent contact.



▶ 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.

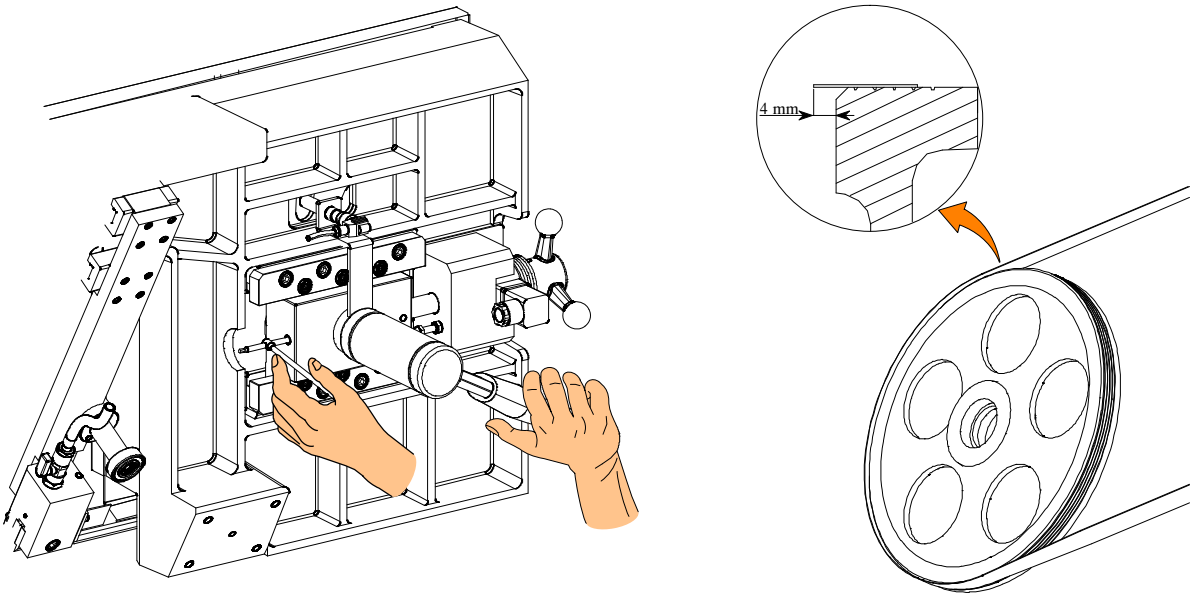


▶ Repeat the squaring operations as for the rear head.

Rotation axis control

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

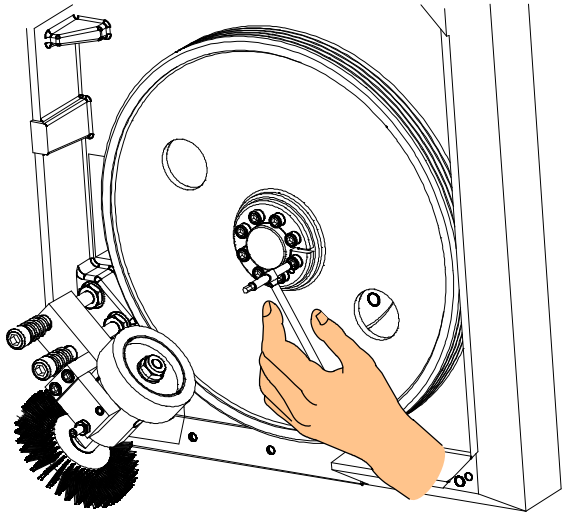
- ▶ Slacken the blade tension and open the cutting head cover;
- ▶ slacken the grub screw and, using a mallet, tap the shaft in or out;
- ▶ finally, close the cover and set the blade in motion;
- ▶ check the distance, as shown in the picture;



- ▶ 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.

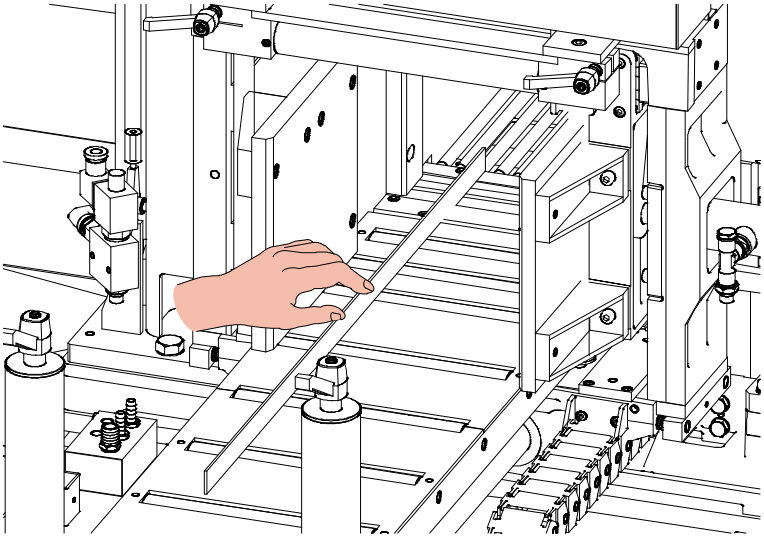


Feeder

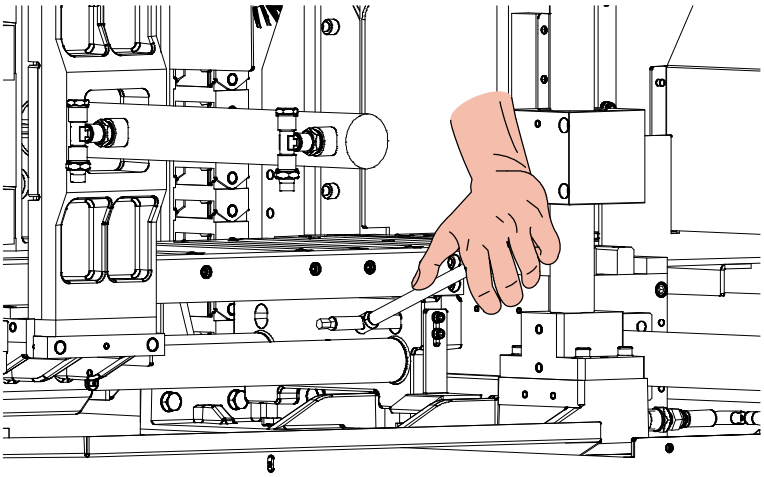
Should the feeder at a later stage in time become misaligned with the cutting table, then use the levelling devices located on the side of the machine and the loading table to restore. Misalignment can be measured using a workshop standard ruler or a straight bar section.

- ▶ Raise the feeder sump;

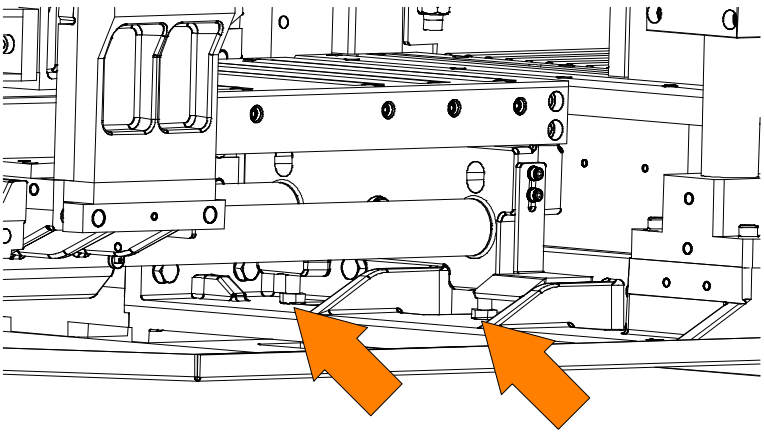
▶ Lay the rule on the feeder to determine the feeder planarity with the cutting plane.



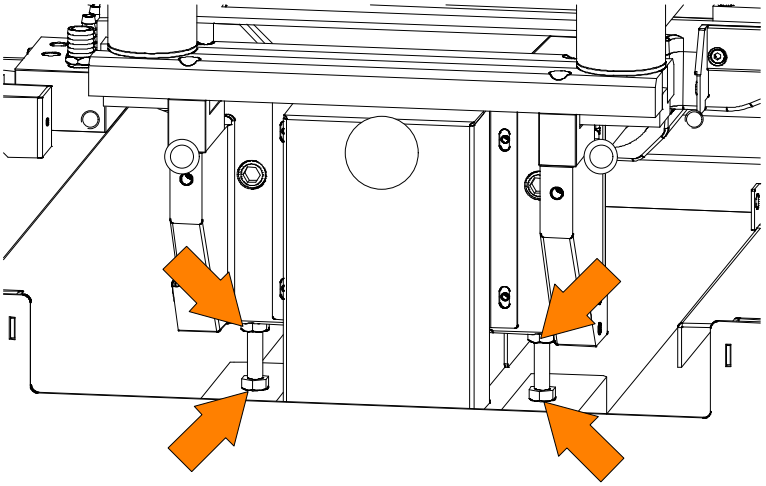
▶ If the feeder plane is not coplanar with the cutting plane, remove the feeding shuttle from the platform, then loosen the two socket head screws fastening the feeder.



▶ Considering that the feeder plane must be higher than the cutting plane, to avoid interference with the passage of the cutting material adjust the feet height according to the dimension detected with the rule on the cutting plane, trying to get a height difference of 0.1 mm between the two planes.

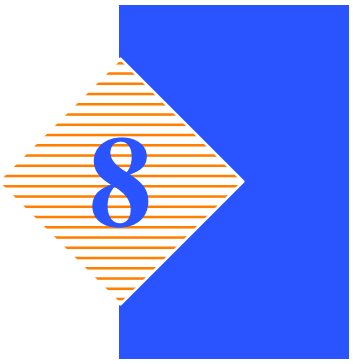


▶ Once the height has been set with a standard ruler near the fixed platform, line up the rest of the feeder using the support pins to adjust as shown in the figure;



▶ open the left door panel on the base to access the adjustment nuts and the 4 support pins;

Maintenance and choice of consumables



SHARK 230–1 NC HS 5.0 is built to be sturdy and long–lasting It has no need of any special maintenance, though, like all other tools, it needs adjusting from time to time, especially if not regularly looked over or used without due care.

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

The role of the operator

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

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

Maintenance requirements

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

General maintenance

Daily

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

- remove all swarf from the machine (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 (70 Kg) 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 (70 Bar) 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 **SHARK 230–1 NC HS 5.0**, 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 every 1000 working hours:

- check the oil level visually, topping up with compatible oil if necessary,
- check that the pipe couplings are tightened;
- check for any leak.

After every 2000 working hours:

- carry out the same operations scheduled after 1000 working hours;
- check that the filters are clean.

After every 3000 working hours:

- carry out the same operations scheduled after 1000 and 2000 working hours;
- check the life declared in the oil specifications;
- drain the circuit and the tank of the power pack, filter the initial oil charge, if the oil life is still valid;
- drain the circuit and the tank of the power pack, replace the initial oil charge, if the oil life is not valid any more;
- never use cotton or frayed rags to clean the tank;
- clean or replace the filters;
- operate the machine idle for 30 minutes to drain the circuit automatically; at the end, check the oil level e possibly top up.

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.
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 − FINA Girans.

− transmission box capacity Lt. 0.320

Oils for hydraulic circuit

The machine's hydraulic system works with AGIP OSO 46 oil. This oil is used by the head cylinder, vice cylinders, blade tensioning cylinder, and the hydraulic power packs.

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, MEP 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.

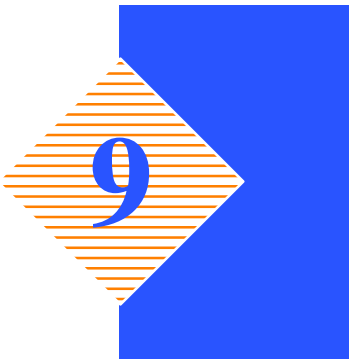
− tank capacity Lt. 95
− oil concentration 5−6 %

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, MEP 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 **SHARK 230–1 NC HS 5.0**, 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. The inverter is an electronic instrument installed on the **SHARK 230–1 NC HS 5.0**, 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. 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 Shark machine, a first broad distinction can be made according to the hardness of materials:

	Mild steels < 61 HRB < 55 kg/mm^2	Hard steels > 65 HRB > 65 kg/mm^2
	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) and the downstroke speed (cm^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), 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), 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.

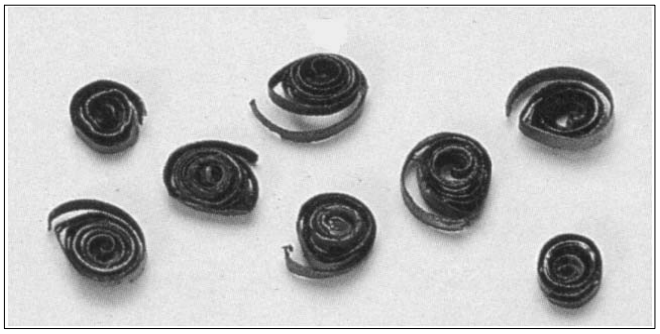
A new blade must be worn in, which in effect means lowering the downstroke speed to about half that of normal (from 60 to 70 cm^2/min on normal steels), equal to a removed surface area of about 300 – 600 cm^2.

Types of swarf:

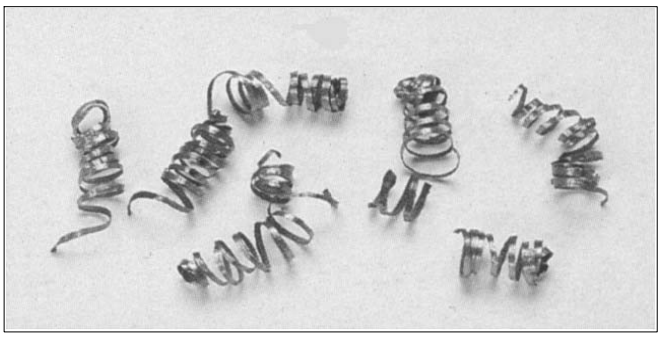
- Very fine or fragmented swarf indicates that the downstroke speed and/or cutting pressure is too low.



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

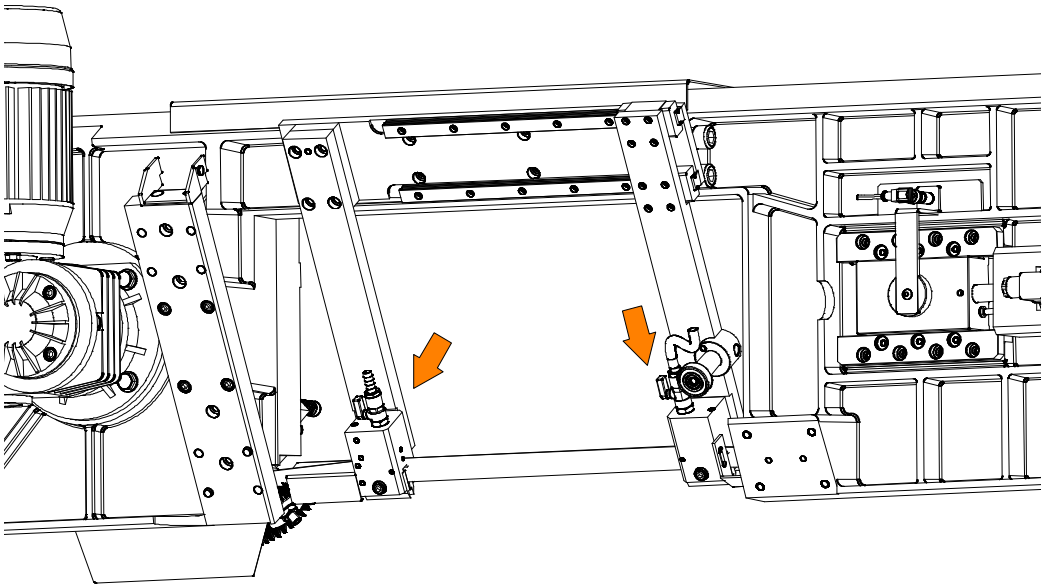


- Long coils of swarf indicate ideal cutting conditions.



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.

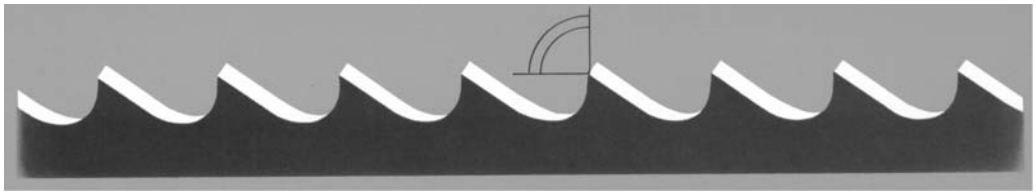
Blade types

The blades mounted on the **SHARK 230–1 NC HS 5.0** are 2950 x 27 x 0,9 mm.; the length can vary between 2935 mm. and 2965 mm., 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

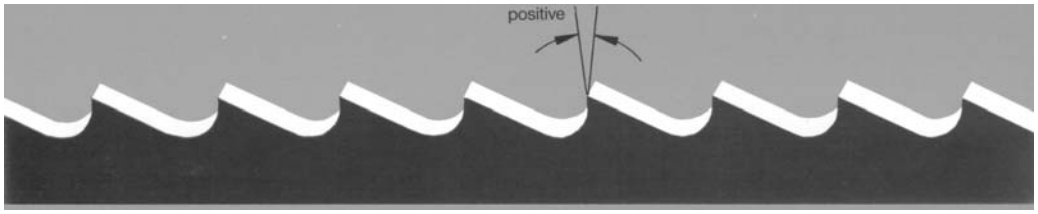
Cutting angle 0°, constant pitch.



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

Positive rake

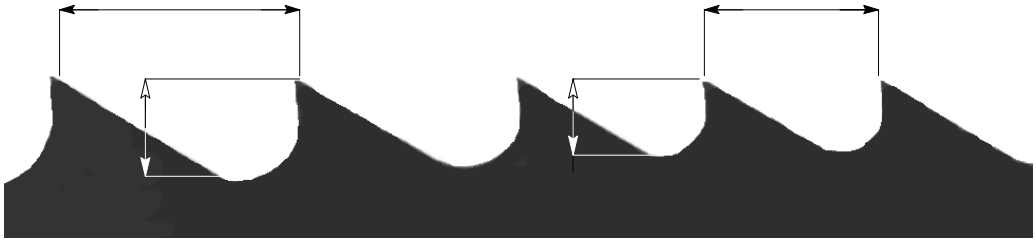
Positive cutting angle 9–10°, constant pitch.



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

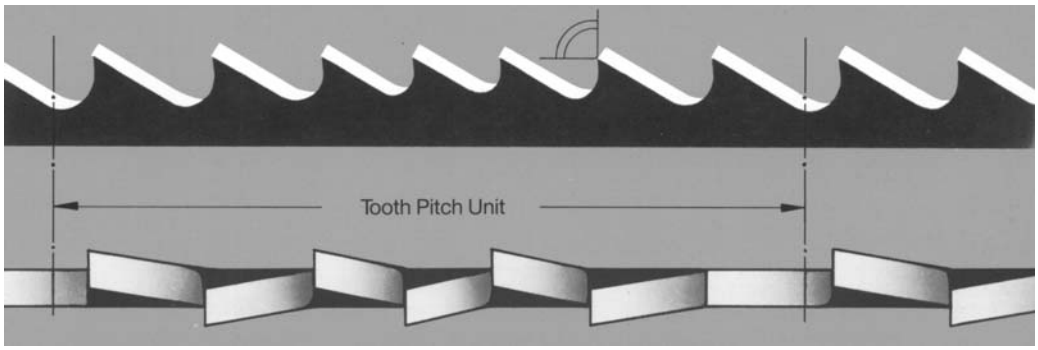
These blades have groups of teeth having different pitches and, as a consequence, have various tooth dimensions and differing relief angles. These are also available in M2 and M42 types with zero and positive rakes. The alternation of the different types of teeth helps to prevent vibration and noise.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

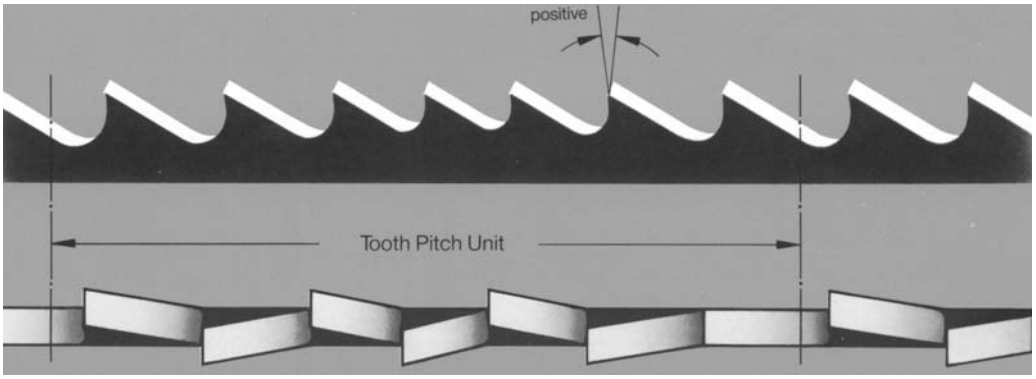
This type of tooth formation is ideal for cutting single pipes or medium size bundles, in accordance with the capacity of the machine.



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.



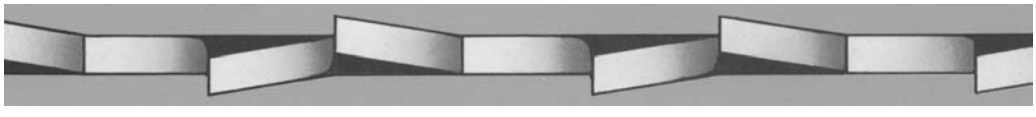
Pitches available: 3–4 / 4–6.

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. thick. Suitable for cutting steels, castings and non–ferrous hard materials.

Undulated set

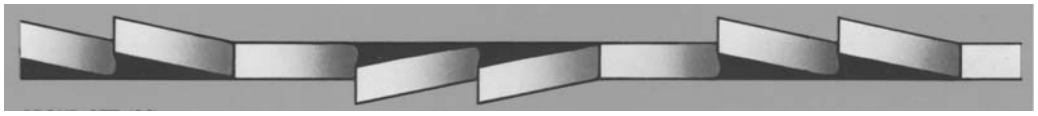
Used to describe groups of teeth undulating alternatively to the right and left.



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

Alternating grouped sets

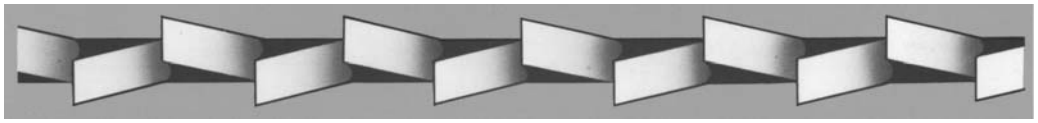
These are groups of teeth angled to the right, one straight tooth, then a further group angled to the left.



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

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
Structural steel Casehardened steel Steel for turning Mild steel	50 / 70	10 / 14	10 / 14	6 / 10	5 / 8	4 / 6	3 / 4	Emulsible oil Cutting fluid	60 – 70
		14	10	8	6	4	3		
High–duty cast iron Rolled steel Spring steel	40 / 50	10 / 14	10 / 14	6 / 10	5 / 8	4 / 6	3 / 4	Emulsible oil	50 – 60
		14	10	8	6	4	3		
Alloy steel Tool steel Valve steel	30 / 40	10 / 14	10 / 14	6 / 10	5 / 8	4 / 6	3 / 4	Emulsible oil Cutting fluid	15 – 20
		14	10	8	6	4	3		
Stainless steel Nodular cast iron	30 / 40	10 / 14	10 / 14	6 / 10	5 / 8	4 / 6	3 / 4	Emulsible oil	15 – 20
		14	10	8	6	4	3		
Copper Soft bronze	90 / 150	10 / 14	10 / 14	5 / 8	4 / 6	3 / 4	3 / 4	Emulsible oil	75 – 90
		14	10	6	4	3	3		
Brass	90 / 300	10 / 14	10 / 14	5 / 8	4 / 6	3 / 4	3 / 4	Emulsible oil	80 – 90
		14	10	6	4	3	3		
Hard bronze	20 / 40	10 / 14	10 / 14	5 / 8	4 / 6	3 / 4	3 / 4	Emulsible oil	25 – 40
		14	10	6	4	3	3		
Aluminium	80 / 800	10 / 14	10 / 14	4 / 6	3 / 4	3 / 4	3 / 4	Emulsible oil	70 – 80
		14	6	4	3	3	3		
Plastics	90 / 400	10 / 14	10 / 14	4 / 6	4 / 6	3 / 4	3 / 4	Emulsible oil	80 – 90
		14	6	4	4	3	3		

Blade pitch **Number of teeth per inch**

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

Classification of steels

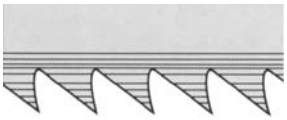
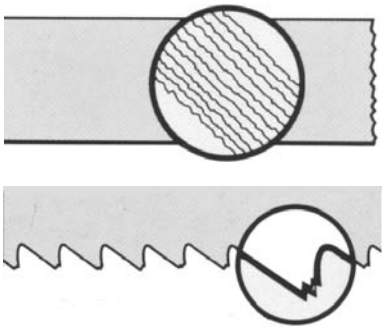
Material	SS Svezia	AISI U.S.A.	DIN Germania	BS Inghilterra	UNI Italia	AFNOR Francia
Carbon steels	1311	1015 – 1035	C 22 – C 35	050 A 20	C 15 – C 35	XC 18
			20 Mn 5 – 28 Mn 6	080 M 46 – 50	C 22 Mn	XC 38 H 1
	1572		CK 22 – CK 50	120 M 19	C 28 Mn	20 M 5
				150 M 28		
Carbon steels	1650	1040 – 1064	CK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

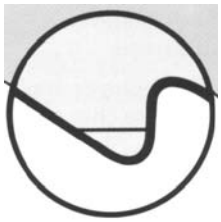
Troubleshooting

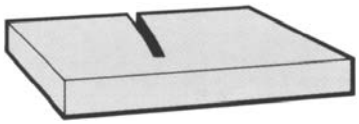
10

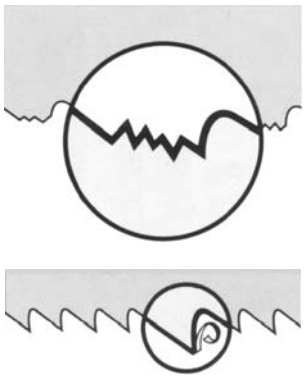
This chapter describes the inspection and troubleshooting procedures for the **SHARK 230–1 NC HS 5.0**. Regular inspections and efficient maintenance are essential to ensure your machine gives you a long, trouble–free service life. The chapter is divided into two sections: the first being dedicated specifically to TROUBLESHOOTING BLADE AND CUTTING PROBLEMS, while the second TROUBLESHOOTING section concerns troubleshooting general machine operating faults. Taken together they form a comprehensive trouble-shooting guide which will enable you to follow a methodical procedure for solving any problem.

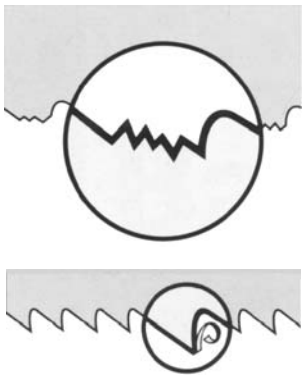
Troubleshooting blade and cutting problems

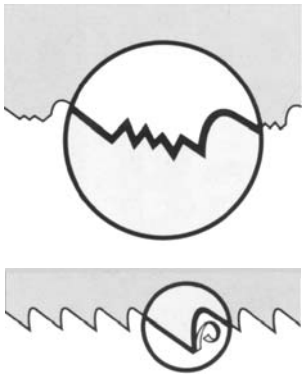
PROBLEM	PROBABLE CAUSE	SOLUTION
Blade scored or scratched 	◗ Widia inserts chipped or worn	☞Replace
	◗ Widia inserts loose or tight	☞Adjust
	◗ Widia inserts dirty	☞Clean and re–adjust correctly
Cutting surfaces scored 	◗ Blade teeth worn	☞Replace blade
	◗ Head downstroke speed too fast	☞Reduce downstroke 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

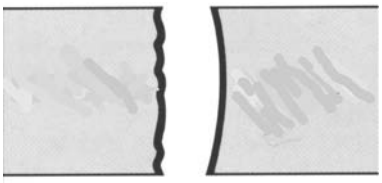
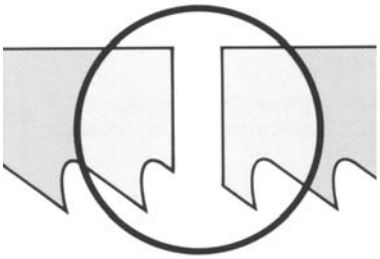
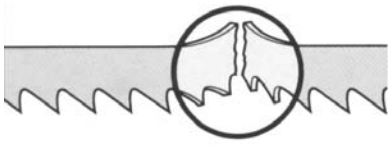
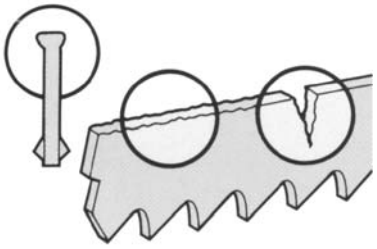
PROBLEM	PROBABLE CAUSE	SOLUTION
Rapid tooth wear 	◗ Teeth pointing in the wrong direction	☞Set teeth in correct direction
	◗ Blade worn in wrongly	☞With a new blade cutting should be done at half–speed and with downstroke speed also at half normal speed. After the blade has been worn in (about 300 cm^2 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

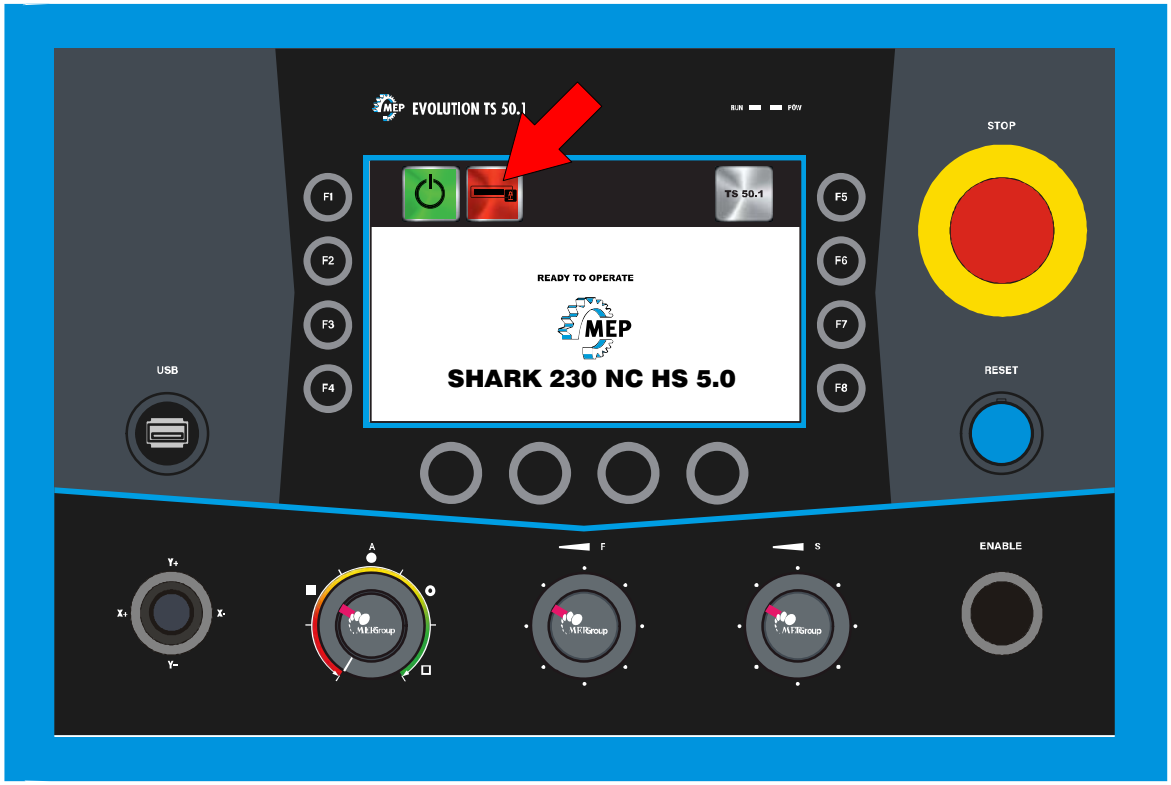
This section deals with the problems which may occur during machine operation. The MEP 50 controller allows you to test all the machine's electric and electronic devices by checking the status of the input and output signals on the IUD/IUV card (see Chapter 5).

The board IUD/IUV is inside the electric board.

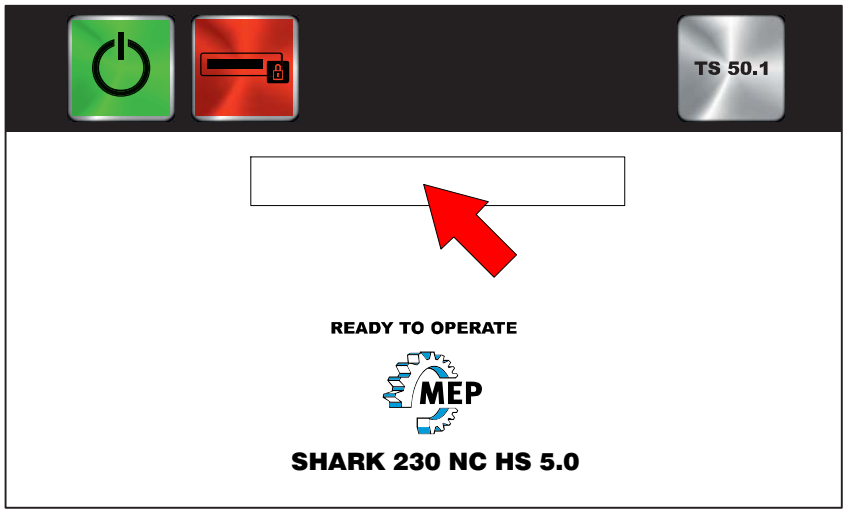
Displaying the diagnostics menu

Attention The access to this function is reserved solely to the service technicians.

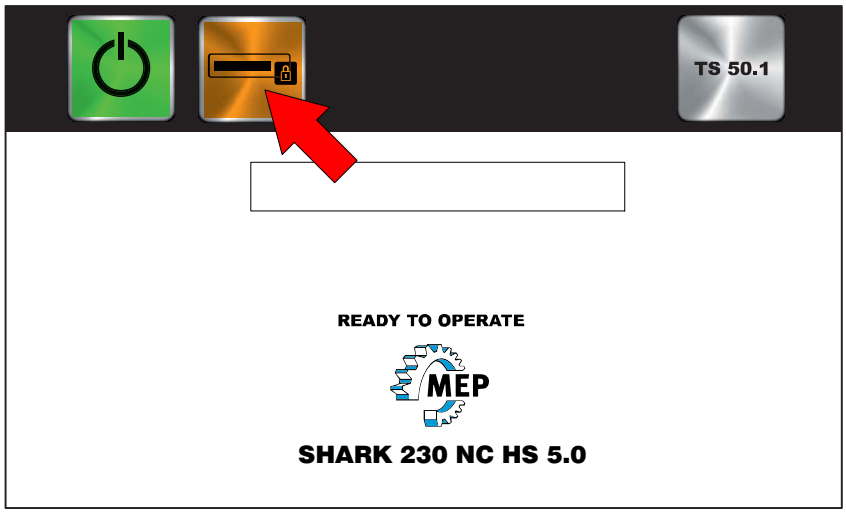
- ▶ Power the machine by turning the main switch on the left of the control board.
- ▶ Tap on the box on the touchscreen shown in the figure.



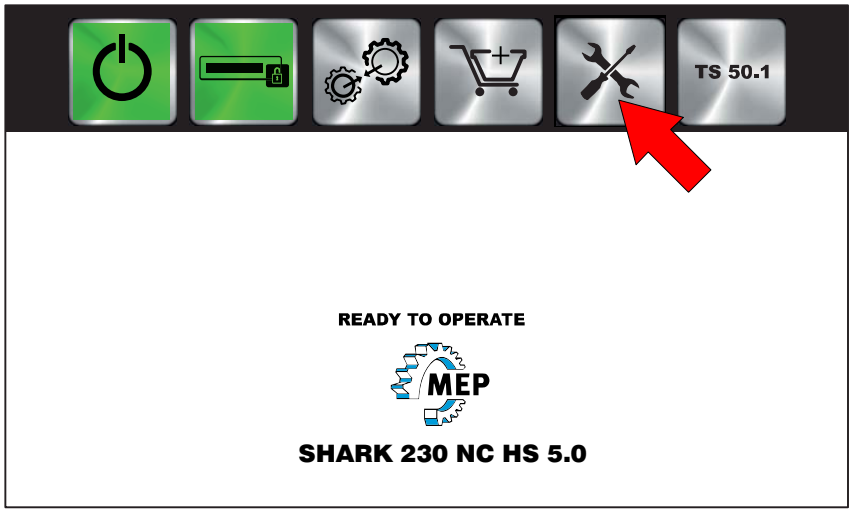
▶ The password entry box will open. Tap the box to open the keypad.



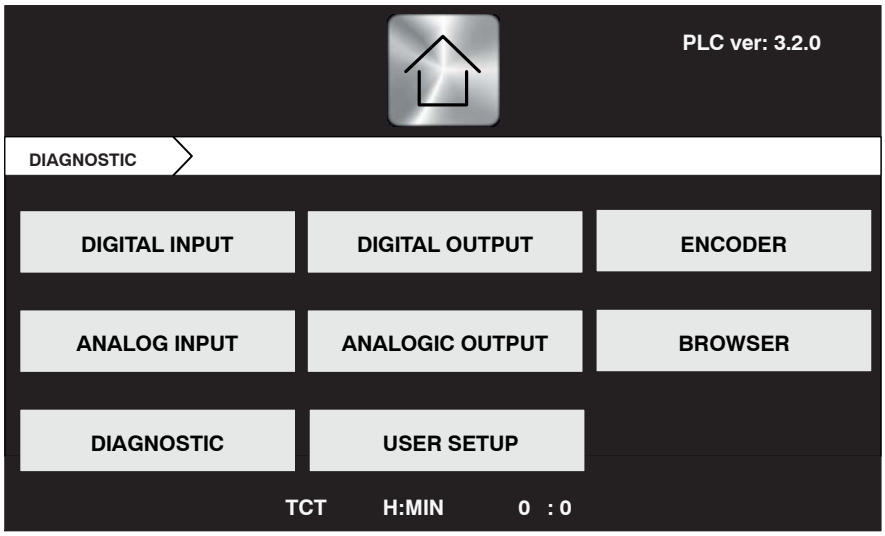
▶ Tap on the box shown in the figure.



▶ 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:

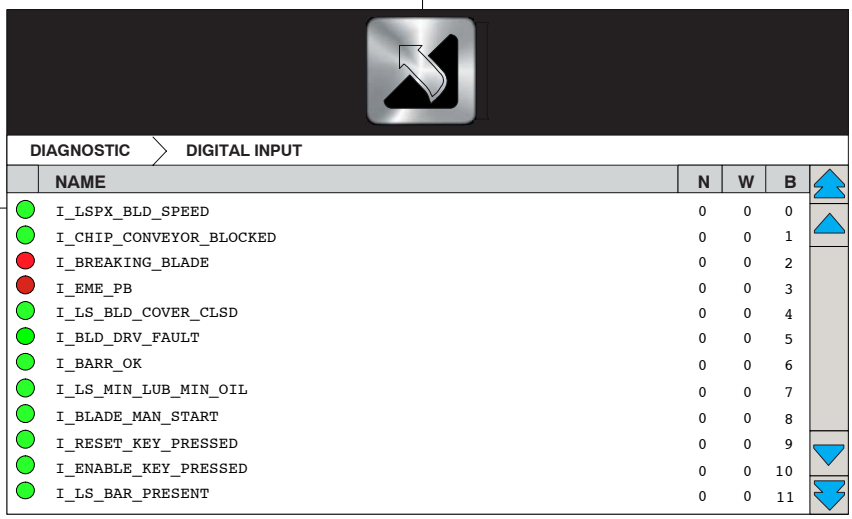


Digital Input

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)



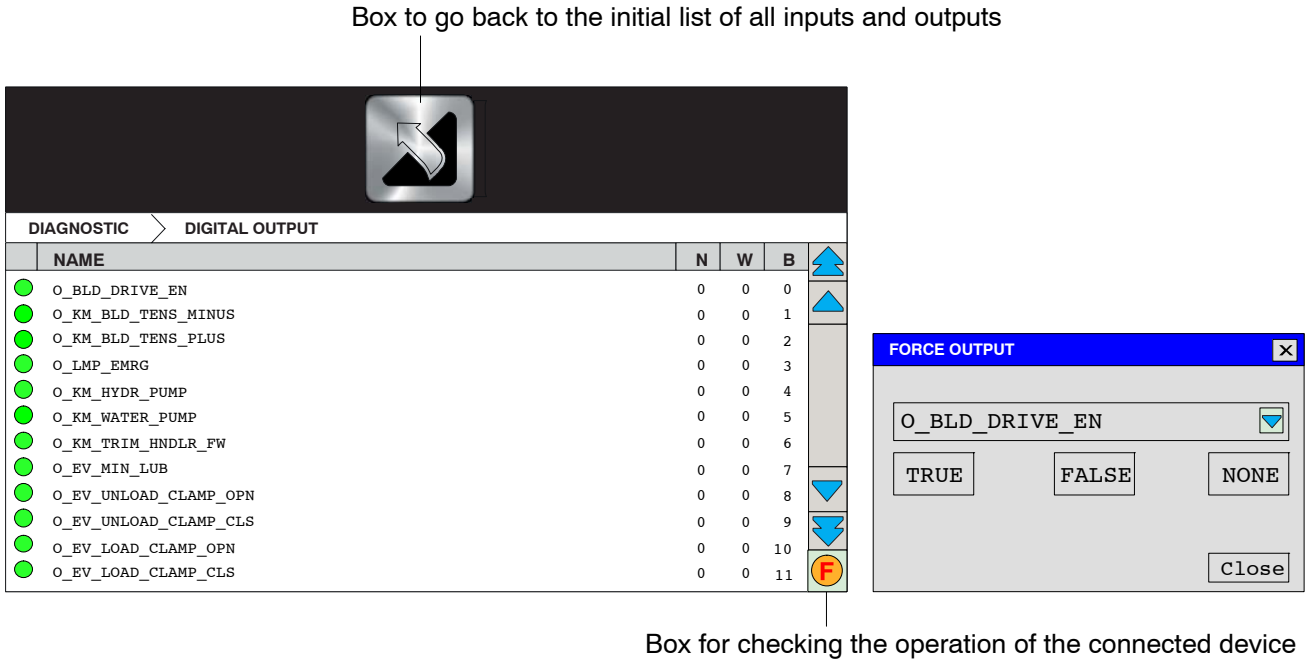
Digital INPUT list

M15–1	**INP 0**	I_LSPX_BLD_SPEED	**Blade speed proximity switch**
M15–2	**INP 1**	I_FOOT_START_PB	**Start from pedal board**
M15–3	**INP 2**	I_EME_PB	**Emergency stop button OK**
M15–4	**INP 3**	I_LS_BLD_COVER_CLSD	**Blade guard closed limit switch**
M15–5	**INP 4**	I_BLD_DRV_FAULT	**Alarm inverter**
M15–6	**INP 5**	I_BARR_OK	**Perimeter guard limit switch**
M15–7	**INP 6**	I_LS_MIN_LUB_MIN_OIL	**Low oil level**
M15–8	**INP 7**	I_BLADE_MAN_START	**Manual start from handle**
M18–1	**INP 8**	I_RESET_KEY_PRESSED	**Reset button**
M18–2	**INP 9**	I_FAST_JOG_KEY_PRESSED	**Enable button**

M18–3	**INP 10**	I_LS_BAR_PRESENT	**Bar presence limit switch**
M18–4	**INP 11**	I_LS_HOME_X	**Zero–setting limit switch**
M18–5	**INP 12**	I_XB_JStckMinus	**Joystick x–**
M18–6	**INP 13**	I_Y_JStckMinus	**Joystick Y–**
M18–7	**INP 14**	I_Y_JStckPlus	**Joystick y+**
M18–8	**INP 15**	I_XB_JStckPlus	**Joystick y+**
		I_A_KEY_PRESSED	**KEY CHECK A**
		I_B_KEY_PRESSED	**KEY CHECK B**
		I_C_KEY_PRESSED	**KEY CHECK C**
		I_D_KEY_PRESSED	**KEY CHECK D**
		I_F1_KEY_PRESSED	**KEY CHECK F1**
		I_F2_KEY_PRESSED	**KEY CHECK F2**
		I_F3_KEY_PRESSED	**KEY CHECK F3**
		I_F4_KEY_PRESSED	**KEY CHECK F4**
		I_F5_KEY_PRESSED	**KEY CHECK F5**
		I_F6_KEY_PRESSED	**KEY CHECK F6**
		I_F7_KEY_PRESSED	**KEY CHECK F7**
		I_F8_KEY_PRESSED	**KEY CHECK F8**

Digital Output

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



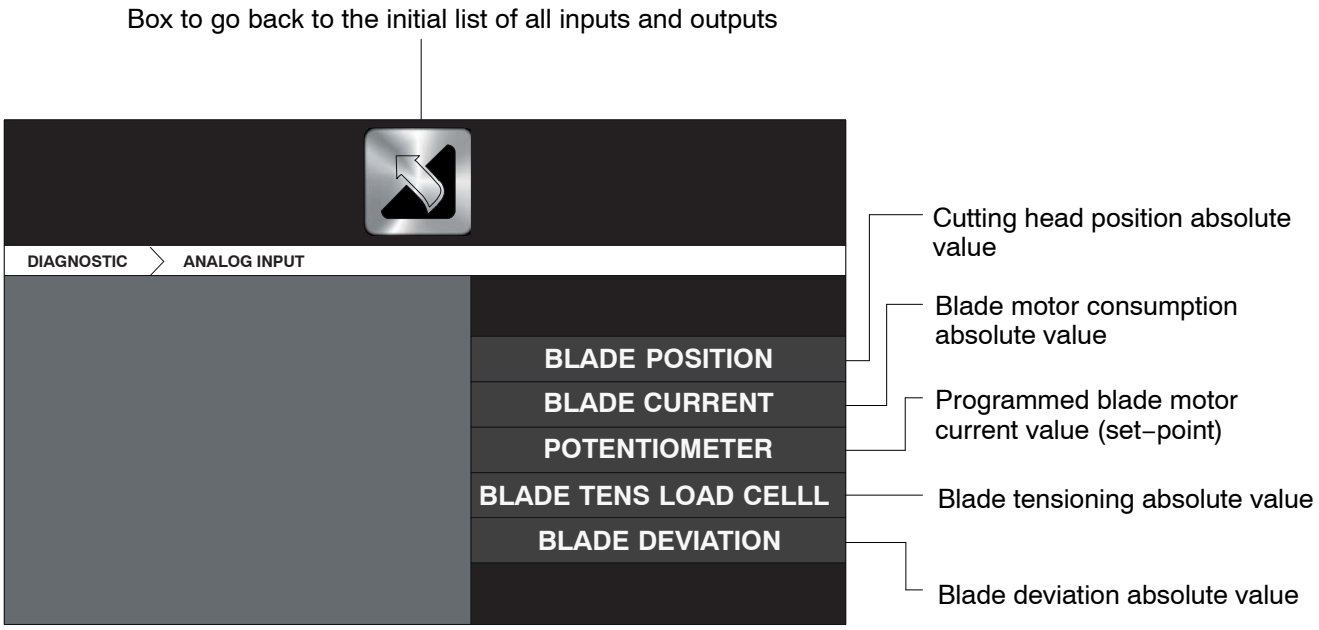
Digital OUTPUT list

M2–8	OUT 0	O_BLD_DRIVE_EN	**START INVERTER**
M2–6	OUT 1	O_LMP_EMRG	**FLASHING**
M2–4	OUT 2	O_OUT3	**SPARE**
M2–2	OUT 3	O_EV_Y_DOWNGOING_UNLOCK	**HEAD LOCK/RELEASE SOLENOID VALVE**
M3–5	OUT 4	O_KM_HYDR_PUMP	**UNIT START KM**
M3–4	OUT 5	O_KM_WATER_PUMP	**WATER PUMP START KM**

M3−3	OUT 6	O_KM_TRIM_HNDLR_FW	**CHIP DISCHARGER UNIT KM**
M3−2	OUT 7	O_EV_MIN_LUB	**LOW LUBRICATION SOLENOID VALVE**
M4−5	OUT 8	O_EV_UNLOAD_CLAMPS_OPN	**CHIP EJECTOR EV**
M4−4	OUT 9	O_EV_UNLOAD_CLAMPS_CLS	**CUTTING VICE OPENING EV**
M4−3	OUT 10	O_EV_LOAD_CLAMPS_OPN	**CUTTING VICE CLOSING EV**
M4−2	OUT 11	O_EV_LOAD_CLAMPS_CLS	**CUTTING VICE OPENING EV**
M5−5	OUT 12	O_EV_BLD_UP	**HEAD LIFTING SOLENOID VALVE**
M5−4	OUT 13	O_EV_BLD_DW	**HEAD LOWERING SOLENOID VALVE**
M5−3	OUT 14	O_HL_LASER_TRIM	**LASER PROJECTOR**
M5−2	OUT 15	O_HL_CUTTING_AREA	**CUTTING ZONE LIGHT**
M28−5	OUT 16	O_HYDR_PLATES	**Not available**
M28−4	OUT 17	O_MAT_HAND_FW	**Not available**
M28−3	OUT 18	O_MAT_HAND_MAN_BW	**Not available**
M28−2	OUT 19	O_MAT_HAND_CLEANCUT_BW	**Not available**
		O_BUZZER_ON	**Not available**
		O_LIKA_ENABLED	**Not available**
		O_Y_ENABLE	**Not available**

Analog Input

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

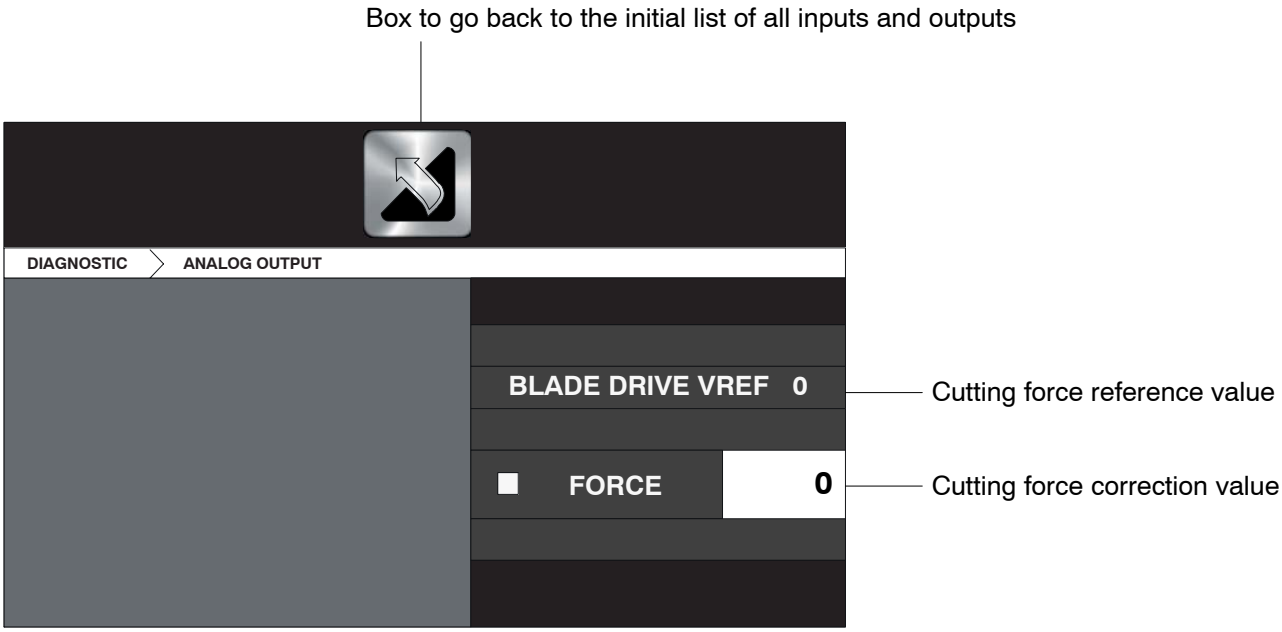


Analog INPUT list

M11	INP 0	**HEAD POSITIONING POTENTIOMETER**
M24	INP 1	**BLADE MOTOR CONSUMPTION**
M24	INP 5	**SPARE**
M25	INP 2	**H PANEL POTENTIOMETER**
M25	INP 6	**SPARE**
M26	INP 3	**SPARE**
M27	INP 4	**BLADE TENSIONING LOAD CELL**

Analog Output

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

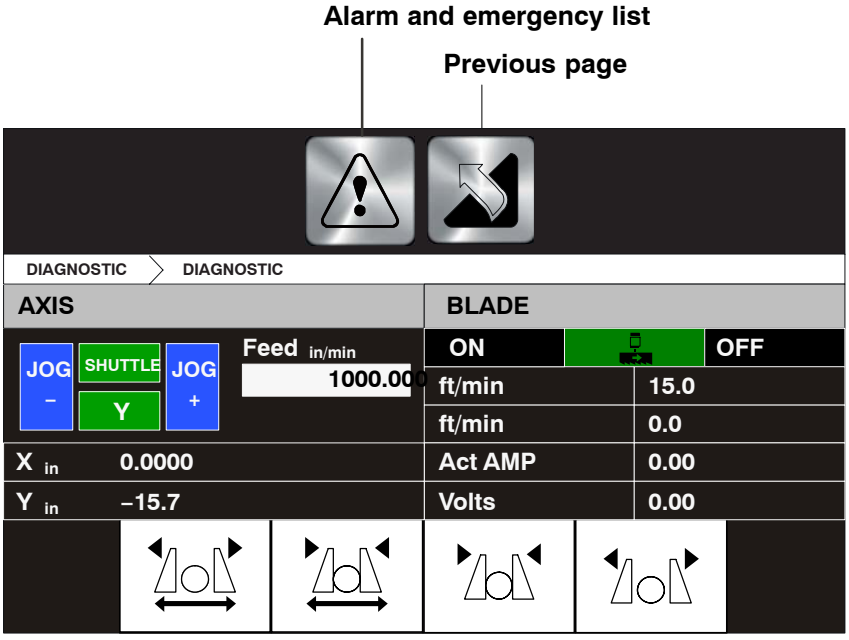


Analogue output list

M10	OUT 1	**BLADE SPEED REFERENCE**
M10	OUT 2	**SPARE**

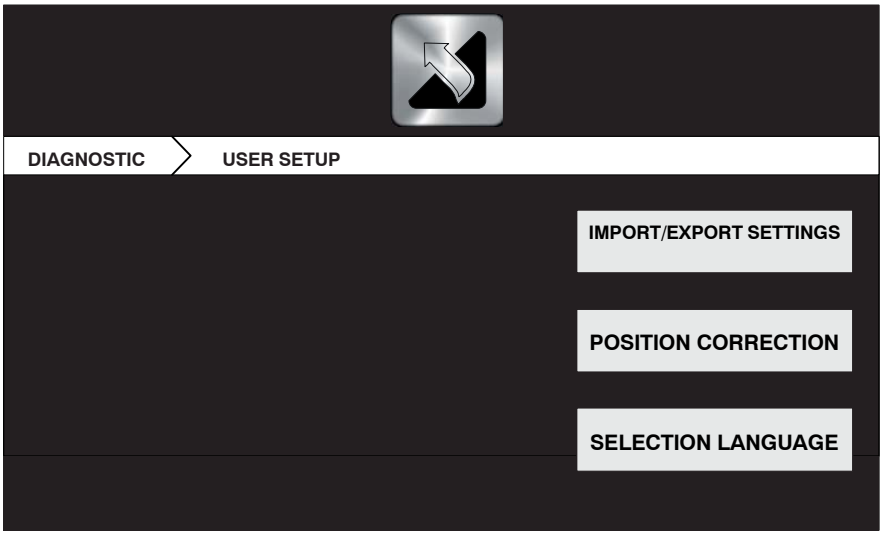
Troubleshooting

In this video page you can check the operation of the X and Y axes and of the belt rotation:



User setup

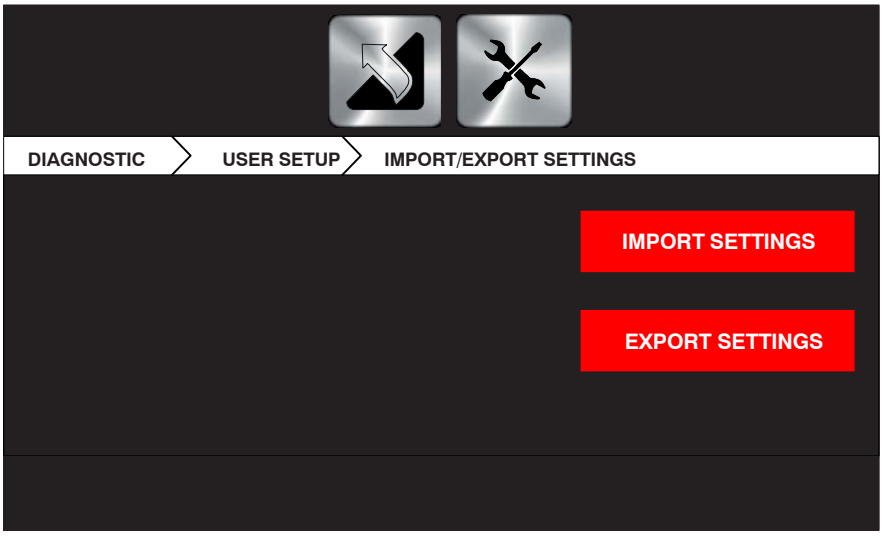
In this video page you can access the machine data importing or exporting utility, the feeder stroke node correction scheme and the selection of the control interface language.



Import / Export settings

You can manage the customised parameters of the machine using an USB key memory:

- Machine parameters
- Machine optional features
- Feeder stroke node correction
- Head lowering curve (HIDMAP)



“Importing” means transferring the contents of the USB key to the controller’s memory.

Attention Each time the ”IMPORT SETTING” operation is performed, the machine must be restarted after the download procedure has been completed.

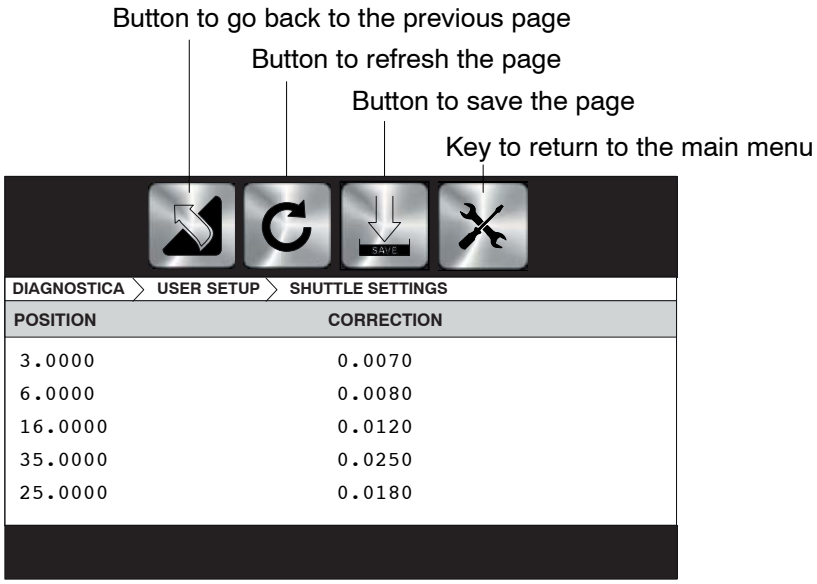
- ▶ Insert the USB Key into the slot in the control panel: the control automatically verifies that the contents of the USB memory are complete with the update/restore files.
- ▶ The download takes about 30 seconds, after which the ”IMPORT SETTINGS” and ”EXPORT SETTINGS” buttons are activated and turn green.
- ▶ Choose ”IMPORT” if you want to do another download, ”EXPORT” if you want to upload the control customizations to the USB key.

“Exporting” means transferring the controller’s memory to the USB memory.

- ▶ Insert the USB Key into the slot in the control panel: the control automatically verifies that the USB memory is empty.
- ▶ Automatically the control writes two text files into the USB key, to define the date and the history of the sawing machine events.
- ▶ Wait about 30 seconds, then activate the ”EXPORT SETTINGS” button which turns green.
- ▶ Press ”EXPORT” to upload the control customizations to the USB key.

Position correction

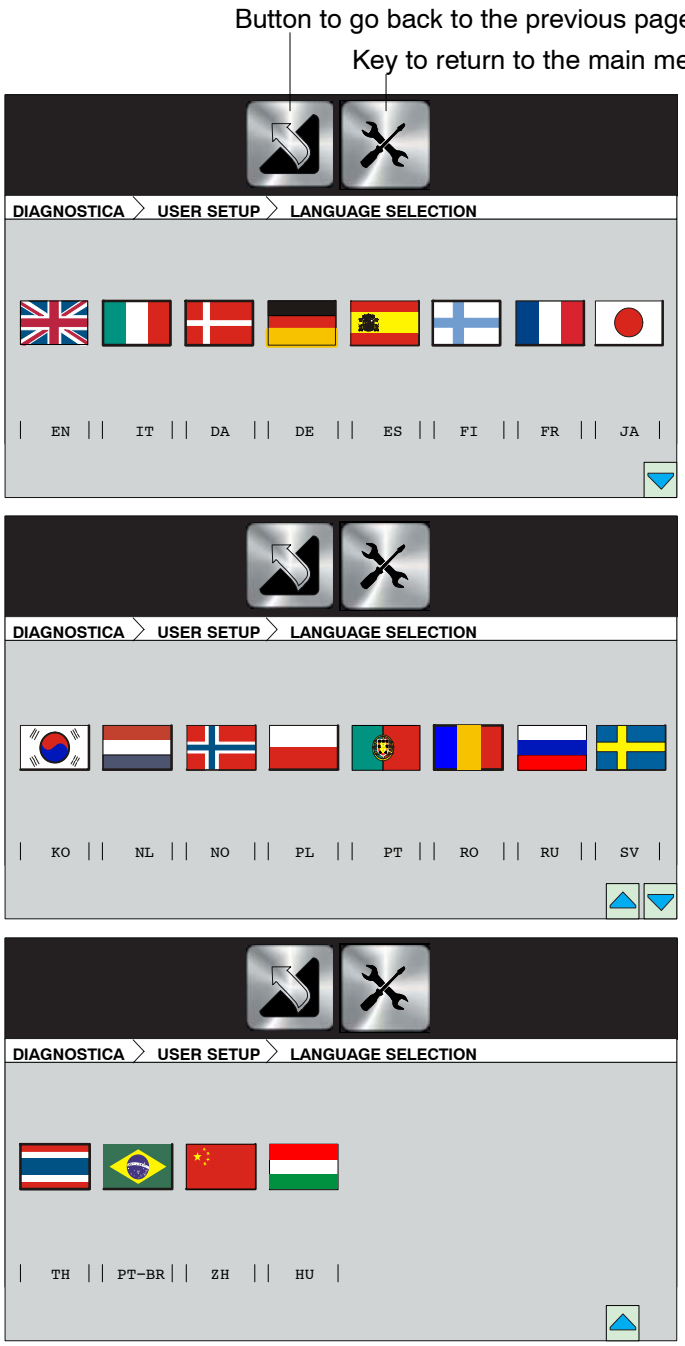
In this video page you can correct the complete stroke of the feeder shuttle entering the correction factors at preset values.



Language selection

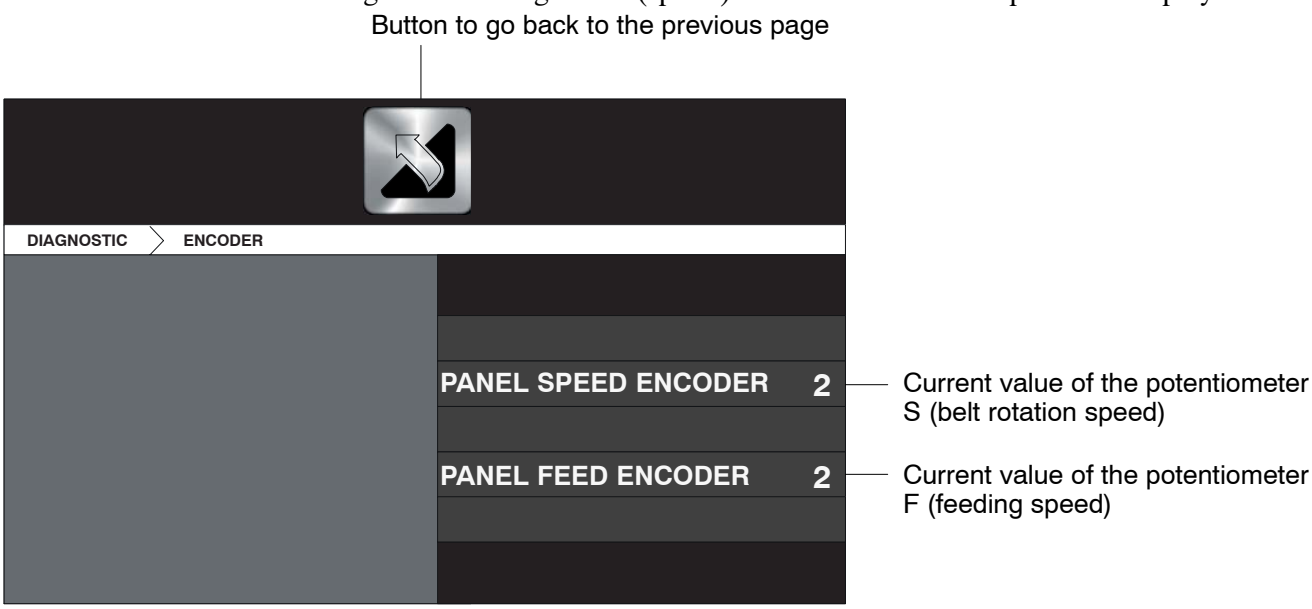
In this video page, and in the following ones that can be viewed by pressing the box with the arrow in the right bottom, you can choose the controller interface

language by pressing the corresponding flag. Immediately after selecting the language, the control proceeds autonomously to the reboot of the system.



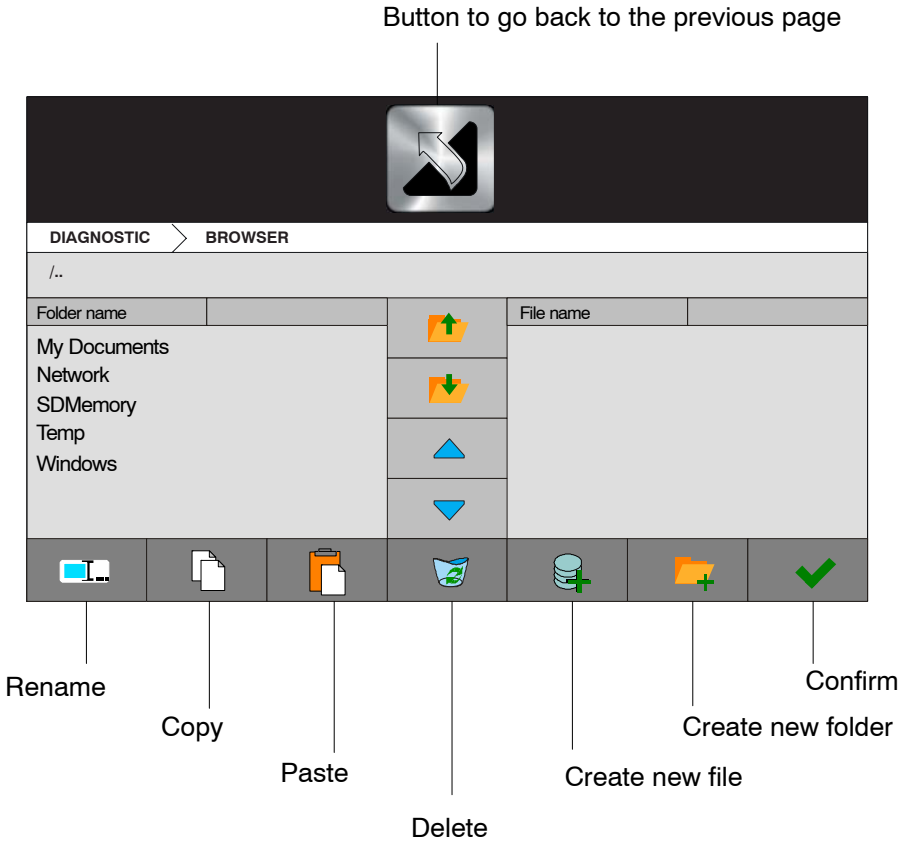
Encoder

In this video page the current values of the potentiometers F (feed) for the cutting head feeding and S (speed) for the belt rotation speed are displayed.



Browser

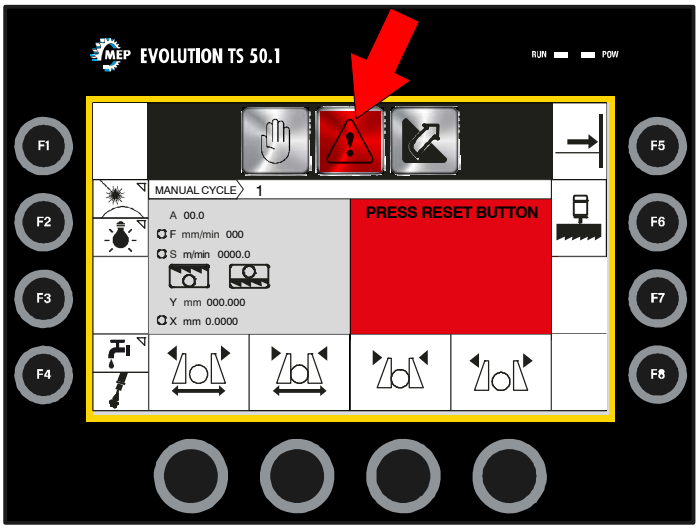
This function enables to display the resources of the control and of the peripherals connected through USB or network.



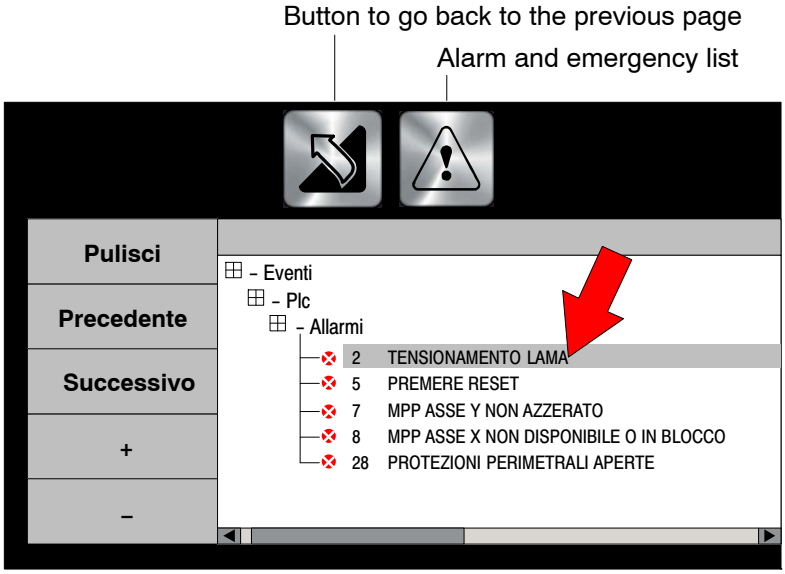
Machine alarms and warning messages

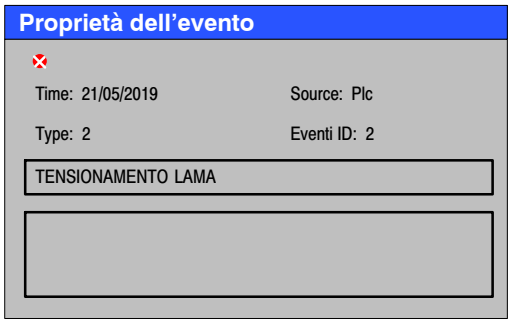
Alarms

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.



The messages are catalogued with an ID number. Selecting the text of the message, or scrolling with the keys on the left of the video page, you can display its date, frequency, origin and cause of displaying.





EMERGENCY: ONE OR MORE ALARMS HAVE TRIPPED – PRESS THE RESET BUTTON	This appears in case of a generic emergency. A specific message follows
BLADE TENSIONING	It is displayed when a mechanical problem occurs in the blade tensioning
BLADE MOTOR OVERCURRENT	It is displayed during the cutting when the value of the motor absorption is too high

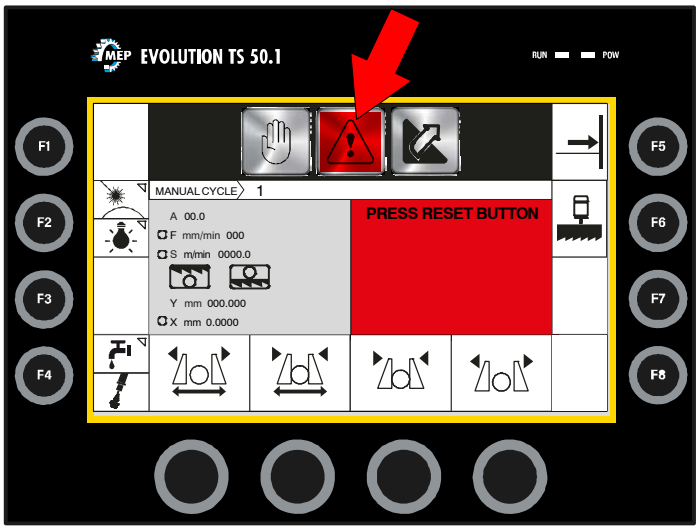
INSUFFICIENT BLADE REVOLUTION SPEED	This appears when the blade jams in the cut or breaks ▶ Check blade integrity ▶ Check cutting parameters
PRESS RESET	This appears in case of controller malfunction
EMERG. BUTTON PRESSED	It is displayed when the emergency mushroom button is pressed
Y AXIS ST. M. NOT ZEROED: CLOSE THE LOGO PAGE AND GO BACK TO THE OPERATIVE PAGE	This appears when the head descent speed adjustment valve is not reset
X AXIS ST. M. DRIVER LOCKED	It is displayed when a feeder shuttle position error occurs
Y AXIS ST. M. DRIVER LOCKED	This appears in case of head descent adjustment valve malfunction
X AXIS ST. M. DRIVER LOCKED	This appears when there is a head revolution drive malfunction
SPRAY MIST OIL LEVEL	It is displayed when the oil level in the min. lubrication system lowers. ▶ Top the oil up in the tray till restoring the level.
BLADE GUARD OPEN	This message is displayed if the blade guard is opened, for example, to change the blade. ▶ Make sure the blade guard is closed. ▶ Check the safety limit switch. ▶ Check the connections.
FEEDER JAMMED	This appears in case of head revolution problem
INVERTER LOCKED	This is shown when the blade motor inverter does not work correctly
LOADING MATERIAL WITH BLADE IN SAFETY ZONE	It is displayed when the set cutting dimension may cause an impact of the material with the cutting blade while feeding
RHLS FHLS NOT COHERENT	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.
PARAMETER LOADING FAILED: RESTART THE MACHINE	This appears when the parameter reading procedure is not successful

INCONGRUENT HEAD LOWERING SPEED	This appears when the potentiometer is broken or sends a message which is not compatible with the machine
NO PROGRAM SELECTED	It is displayed when no program of the list has been activated during the automatic cycle.
STOCK ALARM	Available
OUT OF STOCK	It is displayed when the cutting material being fed runs out
SOFTWARE ERROR: LENGTH CALCULATION ERROR	It is displayed when a calculation error of the length to be fed occurs
SW ERROR: X AXIS NOT ZEROED	It is displayed when a feeder shuttle position error occurs
BLADE BROKEN	It is displayed when the blade breaks
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)
BLADE DEVIATION MAX	It is displayed when an excessive blade deviation occurs while machining
BLADE DEVIATION MIN	It is displayed when a limited blade deviation occurs while machining
PERIMETRAL PROTECTION OPEN	It is displayed when opening any perimeter guard
AIR PRESSURE	It is displayed when the working pressure is below the min. operating threshold
HEAD JAMMED	It is displayed when the cutting head locks ▶ Check the cause for the head lock.
CLOSE BOTH VISES AND ADJUST THE END OF STOCK MICRO	It is displayed when the bar passage limit switch on the feeder is not operated anymore. ▶ Check the electric limit switch and the digital input of the controller

LOCKED SHUTTLE	It is displayed when the machine control is prevented from moving the X axis. ▶ Open the feeding and cutting vices
MICRO ERROR DURING HOMING PROCEDURE	It is displayed when the feeder carriage does not activate the zero−setting limit switch anymore. ▶ Check the electric limit switch and the digital input of the controller

Warning messages

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



ENABLE BLADE MOTOR	It is displayed when trying to start the cycle without having enabled the blade motor before
START FROM HANDLE	It is displayed when the cutting cycle is started with the grip during a semi–automatic cycle.
STOCK WARNING	Available
SPRAY MIST OIL LEVEL	This appears when there is no oil for minimum lubrication
RHLS FHLS NOT COHERENT	This appears when the RHLS and RHLS are not coherent
STOCK WARNING	Available
CLEAR PIECES	It is displayed when: the number of cut pieces must be zeroed;
HEAD LOWERING SPEED ADJUSTMENT ACTIVE	This appears when the blade motor current exceeds the setting and correction is applied
F A 0 ENCODER	This appears when the blade setting is too low

THERMAL SWITCHES TRIPPED	This appears when a thermal switch trips in the control panel
CHIP CONVEYOR BLOCKED	This appears when the chip ejector is blocked
X AXIS NOT ZEROED	It is displayed when the x axis must be zeroed.
AWAITING CORRECT BLADE SPEED	This appears when the blade setting is too low
END OF CUTS	It is displayed at the end of the programmed cuts
BLADE DEVIATION WARNING LEVEL	It is displayed when the blade deviation value has reached the caution level
ERROR DURING QUEUE UPDATING	Available
INHIBITED COMMAND	This appears when an incorrect operation is attempted
PRESS START BUTTON WITH PEDAL ACTIVE	It is displayed when the cutting cycle is started from the control board, but with the setting starting from the pedal board
PEDAL PRESSED WITH BUTTON MODE ACTIVE	It is displayed when the cutting cycle is started from the control pedal, but with the setting starting from the control board
CYCLE STOPPED. PRESS START	It is displayed when the cutting cycle is paused from the control board
SINGLE CYCLE STOPPED. PRESS START	It is displayed when the cutting cycle is paused from the control board
STEP: PRESS START	It is displayed during the automatic cutting cycle, with the step function set, for the next cut
X AXIS ST. M. DRIVER LOCKED	It is displayed when the feeder cannot move forwards or backwards due to a mechanical or electro–mechanical obstacle.

QUEUE UPDATING ATTEMPT FROM REMOTE DURING CYCLE	It is displayed when you try to access the resources during a working cycle
FILES IN USE BY MES, WAIT FOR RELEASE	It is displayed when you try to access the resources during a working cycle
IOMASK INSERTED OR DELETED. PLEASE REBOOT THE MACHINE	It is displayed when a hardware error occurs. Restart the machine.
ERROR DURING COPING OR DELETING OF IOMASK FILE	It is displayed when a hardware error occurs. Restart the machine.
ENABLE BLADE MOTOR	It is displayed when you try to start the working cycle before having enabled the blade motor.
LENGTH > 0	It is displayed when the set cutting length is zero.

Optional

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

Optional

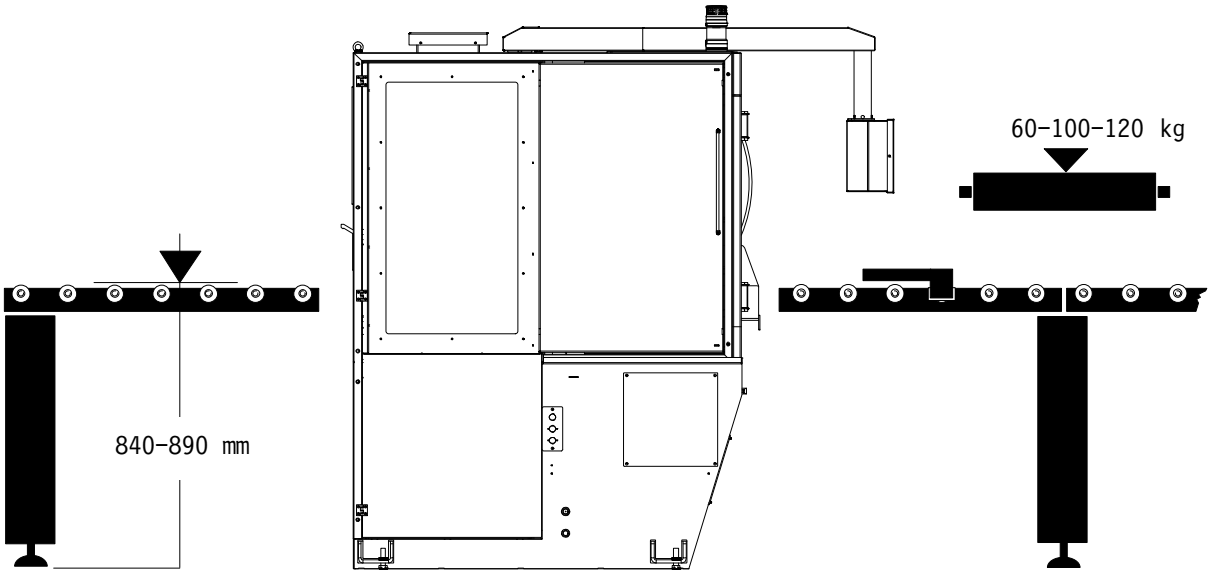
Blade

The blades that can be used on this machine include:

- 2950 x 27 x 0,9 bimetal blade for solid and section materials;

Roller table

- K110/K110HD roller table module for feed side, 1500 mm;



- K110/R1/R2/R3 roller table for discharge side, 1500÷6000 mm;

Can of emulsible oil

5 l can of emulsible oil.

Minimal lubrication system

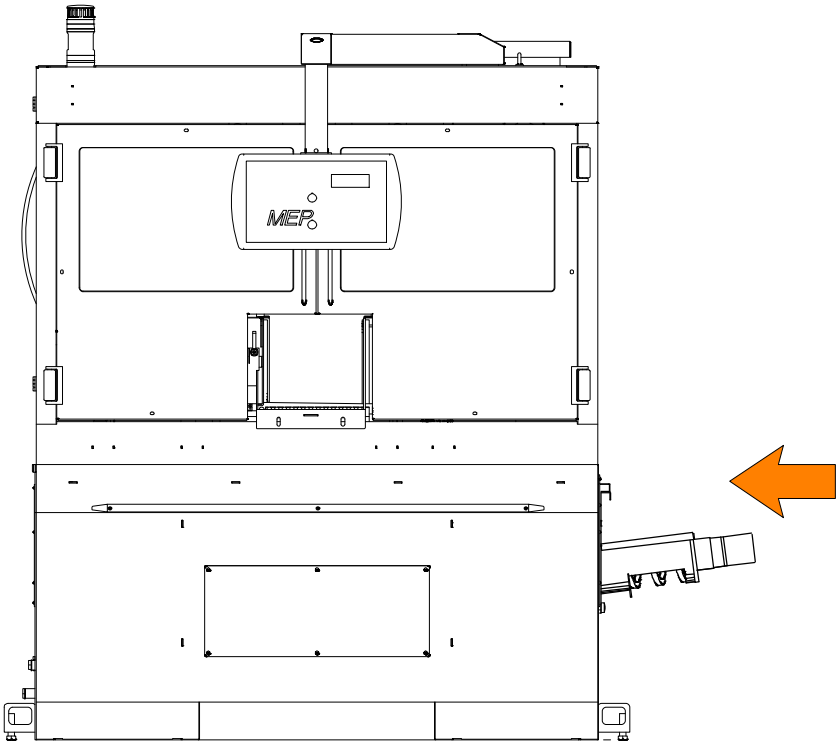
This device was designed to improve lubrication of the tool during cutting.

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

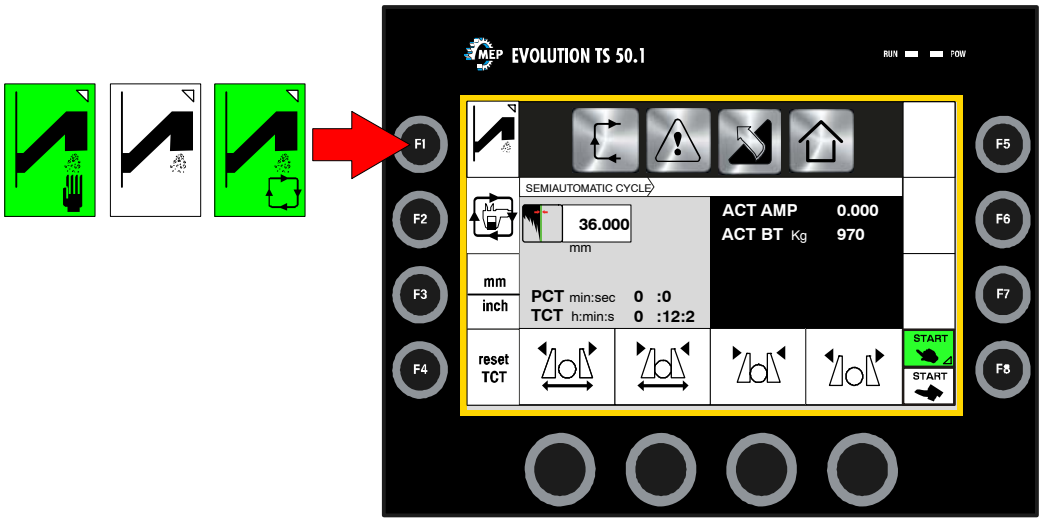
Motor–driven auger chip ejector

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.



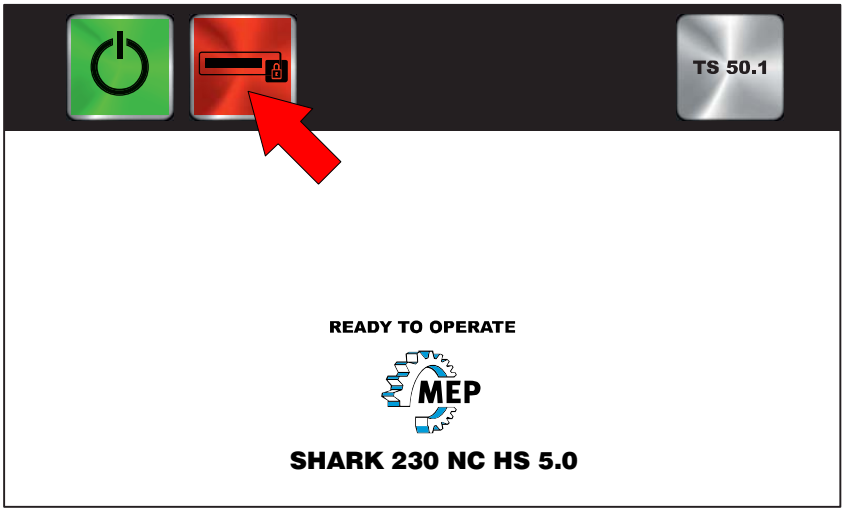
Accessories available on request

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:

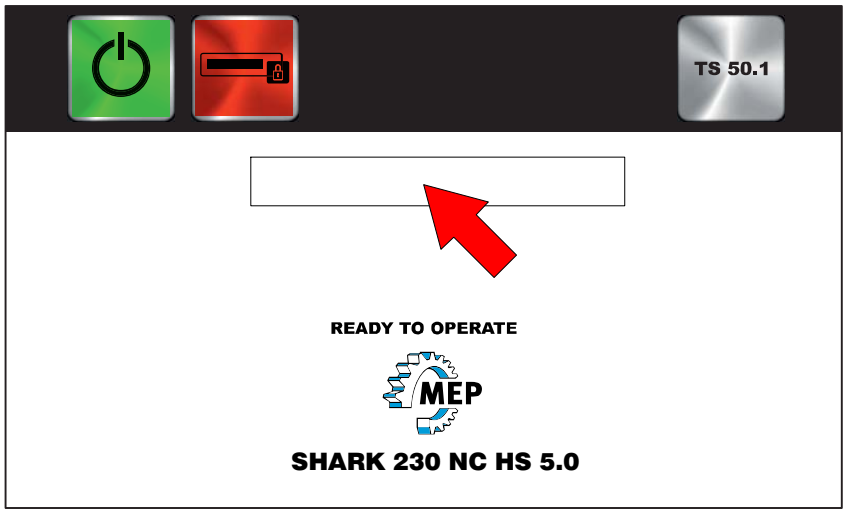
- laser beam pointer and working lamp;
- vertical hydraulic vices for cutting bundles (230 x 230 mm);
- system for the automatic backing of the feeder vice rear jaws.

Software setting for the options

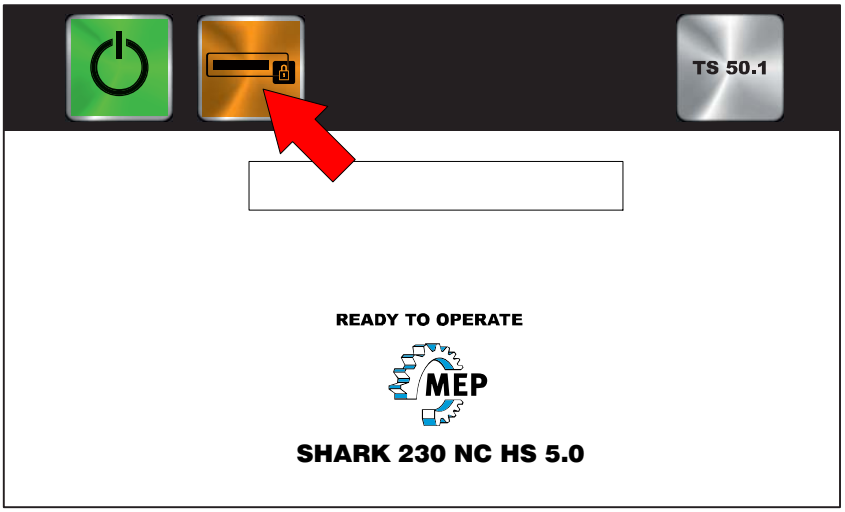
To access the options page of the software program, press the box shown in the figure:



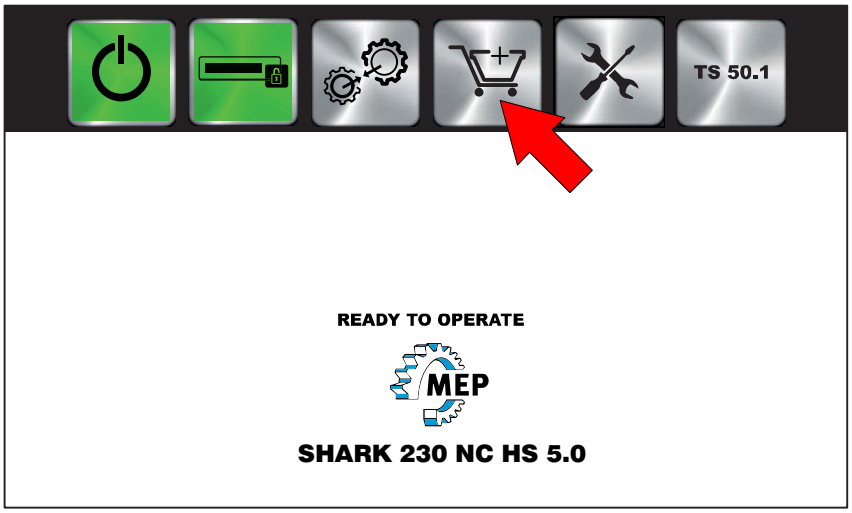
▶ The password entry box will open. Tap the box to open the keypad. Enter 734533.



▶ Tap on the box shown in the figure.



▶ Tap on the box shown in the figure.

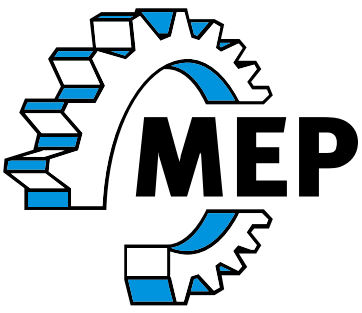


The machine displays the list of options that can be installed and the parameters to be set:

OPTIONAL:		
Quantity	**Parameter / Description**	**Value**
OPT.1	**CLEAN CUT ENABLEMENT(1=YES \; 0=NO)** **Enables or disables the clean cut function.**	0.0000
OPT.2	**VICE STOPPING IN CYCLE (1=FWD.\; 0=BCKW.)** **Sets the vice stopping during the cycle in forward or rear position.**	0.0000
OPT.3	**PEDAL PRESENT (0=No\; 1=Yes)** **Sets the presence of the pedal board.**	0.0000
OPT.4	**LAMP AND LASER PRESENT (0=No\; 1=Yes)** **Sets the presence of the lamp and of the cutting laser.**	0.0000
OPT.5	**SPRAY MIST ENABLEMENT (ENABLED=1)** **Enables or disables the blade mist lubrication while cutting.**	0.0000
OPT.6	**Y RAISING IN MANUAL CYCLE (1=ENABLED)** **Enables or disables the head rising function during the manual working cycle.**	1.0000

OPTIONAL:		
OPT.7	**BLADE SPEED PROXY ENABLEMENT (1=ENABLED)** **Enables or disables the blade current speed control.**	1.0000
OPT.8	**CHIP EJECTOR ENABLEMENT (1=ENABLED)** **Enables or disables the chip evacuator.**	0.0000
OPT.9	**BLADE DEVIATION ENABLEMENT (1=ENABLED)** **Enables or disables the blade deviation function.**	0.0000
OPT.10	**EXTERNAL X ROTATION ENABLEMENT (1=ENABLED)** **Enables or disables the control on the cutting table rotation.**	0.0000
OPT.11	**BLADE TENSION TYPE (1=HYDRAULIC\; 0=MANUAL)** **Sets the blade tensioning type.**	0.0000
OPT.12	**CUTTING VICE OPENING (1=RHLS\; 2=FHLS\; 0=NEVER)** **Enables to open the vice when the head is in RHLS, FHLS or NEVER.**	1.0000
OPT.13	**ANGLE TYPE (0=MINUTE OF ARC\; 1=GRADIAN)** **Sets the cutting angle dimension in sessagesimals or centesimals.**	0.0000
OPT.14	**BLADE STOP (0=ON RHLS\; 1=ON FHLS\; 2=NEVER)** **Enables the blade stop when the head is in RHLS, FHLS or NEVER.**	1.0000
OPT.15	**CHIP EJECTOR TYPE (0=MICRO\;1=TOOTHED WHEEL)** **Sets the control on the chip evacuator operation.**	0.0000
OPT.16	**BLADE TENSIONING CONTROL ENABLEMENT** **Enables the blade tensioning control.**	1.0000
OPT.17	**FEEDER VICE CLOSING TIME (SEC)** **Sets the closing time of the feeder vices.**	2.0000
OPT.18	**FEEDER VICE OPENING TIME (SEC)** **Sets the opening time of the feeder vices.**	2.0000
OPT.19	**CUTTING VICE CLOSING TIME (SEC)** **Sets the closing time of the cutting vices.**	2.0000
OPT.20	**CUTTING VICE OPENING TIME (SEC)** **Sets the opening time of the cutting vices.**	2.0000
OPT.21	**VICE OPENING TIME WITH MANUAL PULSE CONTROL (SEC)** **Sets the opening time of the vices with manual control from control board.**	3.0000
OPT.22	**FEED. VICE TIME AT OUT OF STOCK FOR CLEAN CUT (SEC)** **Sets the opening and closing time of the feeding vice during the cycle with clean cut function.**	0.0000
OPT.23	**CHIP EJECTOR ON TIME IN AUTO (MIN)** **Sets the operation interval time of the chip evacuator.**	0.5000
OPT.24	**CHIP EJECTOR OFF TIME IN AUTO (MIN)** **Sets the non−operation interval time of the chip evacuator.**	0.5000
OPT.25	**ANGLE DISPLAY (1=90 DEGREES\;0=0 DEGREES)** **Sets the angle reading of the metric system or MKS.**	0.0000
OPT.26		0.0000

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


MEP