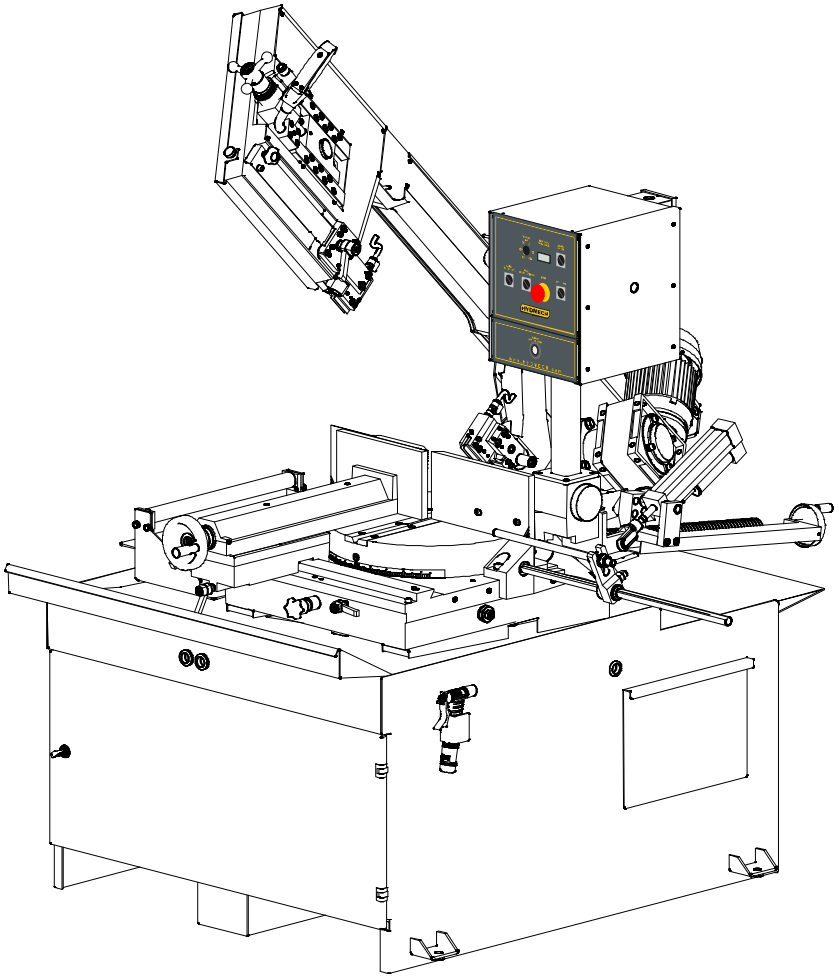


USE AND MAINTENANCE MANUAL

EN **DM–1215**

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.
Via Enzo Magnani, 1
61045 Pergola (PU) ITALIA
Tel. 072173721–Fax 0721734533

Hereby declares that the bandsawing machine:

Machine Type:	**SAWING MACHINE**
Machine model:	**DM– 1215**
Serial number:	
Year of manufacture:	

is in specification with the following directives:

- **EEC MACHINES DIRECTIVE 2006/42/CE**
  - **EN 16093:2017**
- **DIRECTIVE 2014/30/UE "EMC"**
  - **EN 50370–1:2005 Emission**
  - **EN 50370–2:2003 Immunity**

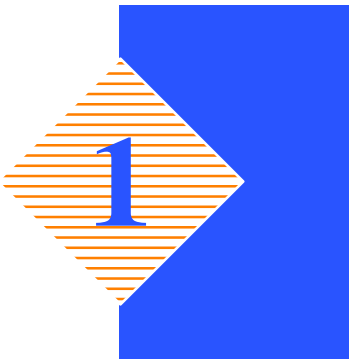
Responsible of a Technical File
(Walter Di Giovanni)

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

Managing Director
(William Giacometti)

Pergola, lì _____

Introduction and technical specifications



Foreword

Hydmech, in response to modern production techniques, has developed the new **DM–1215**.
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 **DM–1215** is structurally rigid, silent and safe: it produces a minimum of waste (1.2 mm) 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, combined with the possibility of making inclined cuts from 60° left to 45° right, 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 cutting machine has been designed and made specifically for cutting metallic materials.

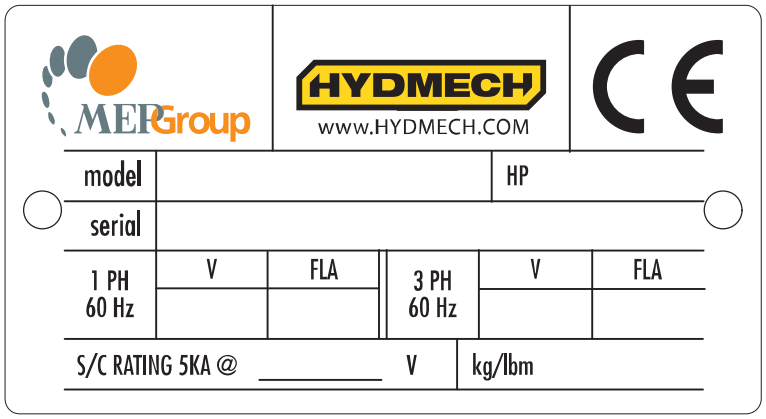
Machine presentation

Functioning is Manual / Gravity–feed. After having checked the material in the cutting vice, the operator must hold the cutting head control lever and press the micro–switch to start–up the belt. The belt starts to move and the cuttting head starts its descent. The speed is adjustable using the cutting head speed adjuster on the control board.
The head cuts the material; after the cut, a limit switch stops the cutting cycle, then the head lifts by the head lifting/lowering switch, and after having fed material again a new cutting cycle is started with the push button from the control board.
It is also equipped with MA (automatic vice), namely a pneumatic cylinder applied on the vice that locks the material between the jaws: the vice opening/closing button is on the control panel.

Machine specification

Name 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		
Speed	mt/min	15÷115

BAND SAW		
Rated size	mm	3440 x 27 x 0,9
Max/min blade length	mm	3420÷3460
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.

RATED ELECTRICAL POWER		
Head spindle motor	kW	2,2
Electric coolant pump motor	kW	0,15 x 2
Max installed power	kW	2,5

WORKING PRESSURE		
Working pressure blade tensioning/detensioning	kg	900/70

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

LUBRICANT/COOLANT FLUID AND OIL		
Oil for transmission box	capacità Kg	0,32
Oil for Cut Control System cylinder	capacità Lt	0,7
Lubricant/coolant fluid (oil concentration 5–6%)	capacità Lt	80

VICE		
Vice max. opening	mm	385

SPINDLE MOTOR					
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**	**Band saw speed**
4	139–240	14,8/8,6	2,20	1720	15/115 mt/min
Stator wound with enamelled copper wire, class H 200°C.					
Class F insulation (limit temperature TL 155°C).					
IP 55 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).					
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.					

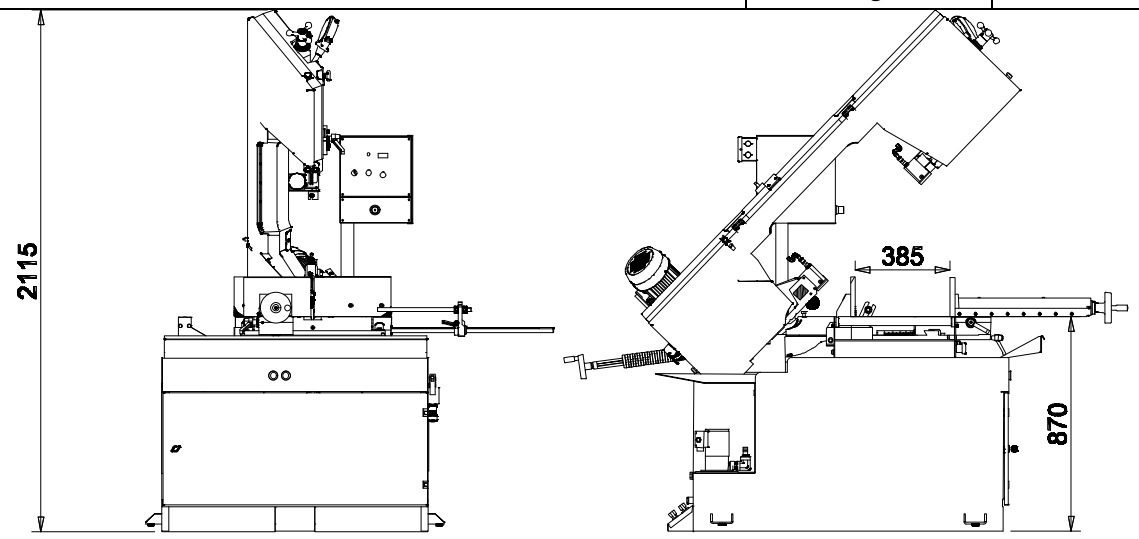
N.B. Example of class F insulation: in air–cooled machines at an ambient temperature of 40° C (according to CEI 2–3 and IEC 85), the allowable overtemperature is 100° C (where 100¿C represents the allowable DT).

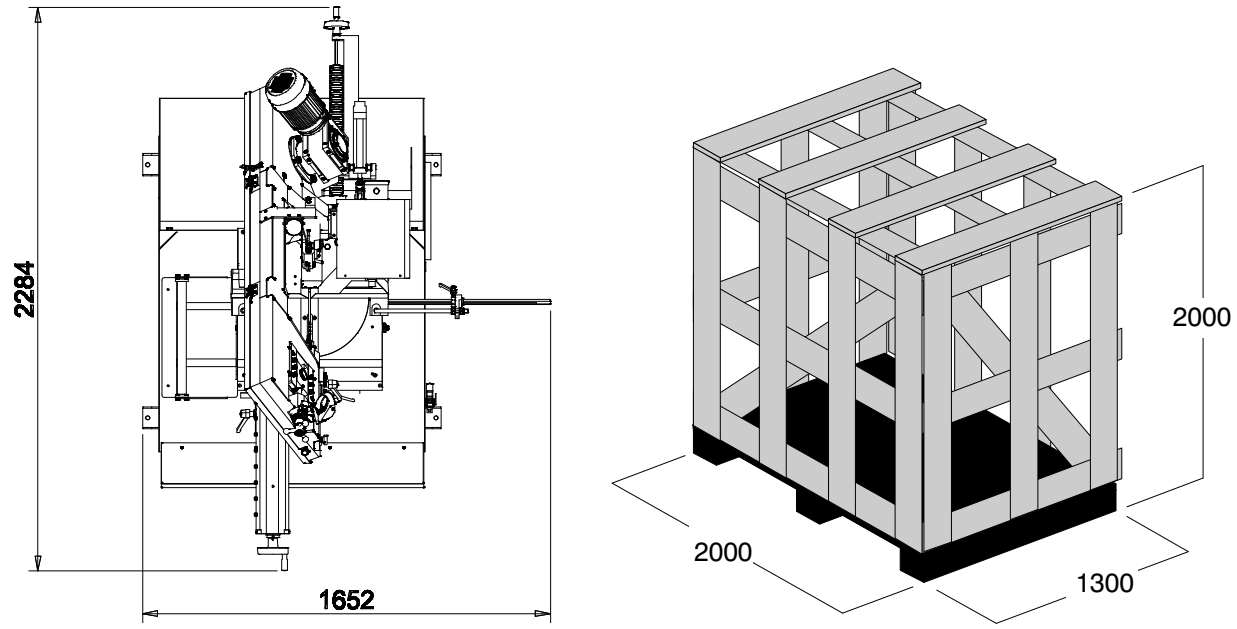
Warning The machine is supplied with a 2/4 pole three phase motor giving 2 band saw speeds:
– 1ª speed (4 poles) = 40 mt/min
– 2ª speed (2 poles)= 80 mt/min;
The OPTIONAL 4/8 pole motor gives speeds of 36/18 mt./min.

CUTTING CAPACITY			
Section			
0°	280	260	380 x 260
45° ◆	260	250	300 x 200
60° ◆	180	170	200 x 170
45° ◆	200	180	230 x 160

Dimensions

MACHINE INSTALLED		
Work table height	mm	870
Weight	Kg	695





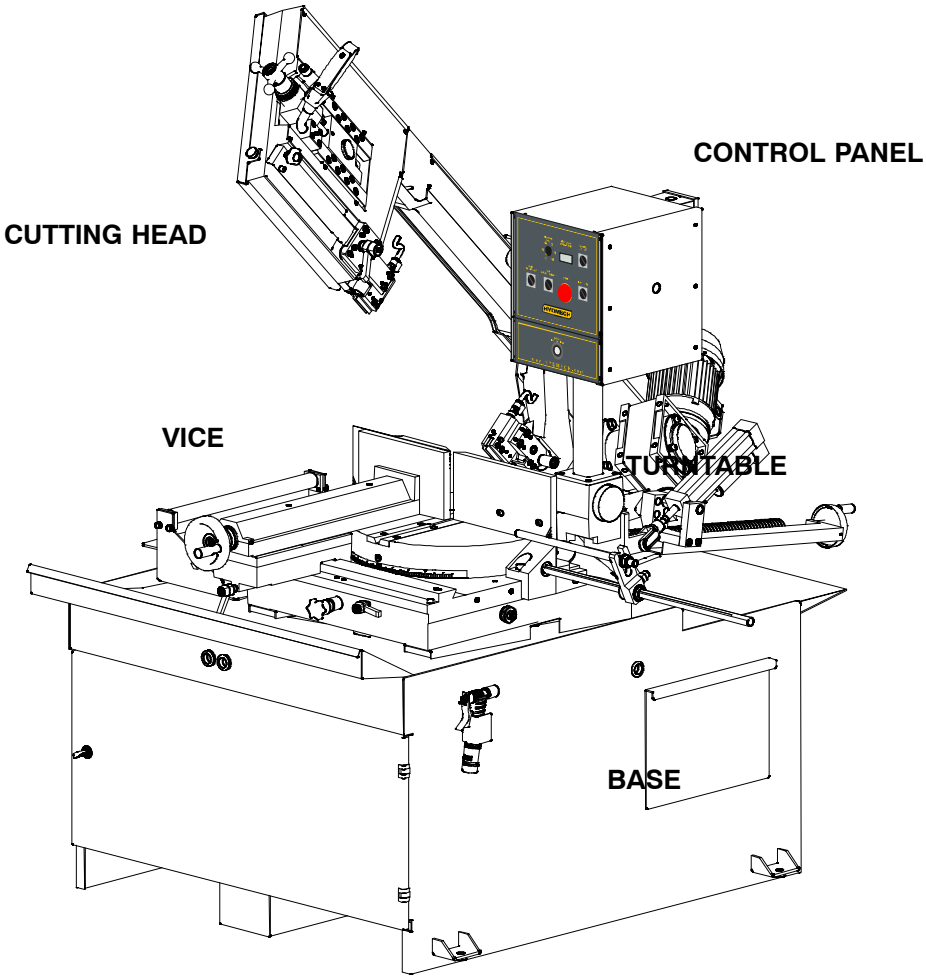
PACKED WEIGHT		
Wooden cage and pallet	Kg	100
Wooden pallet	Kg	30

Functional parts

2

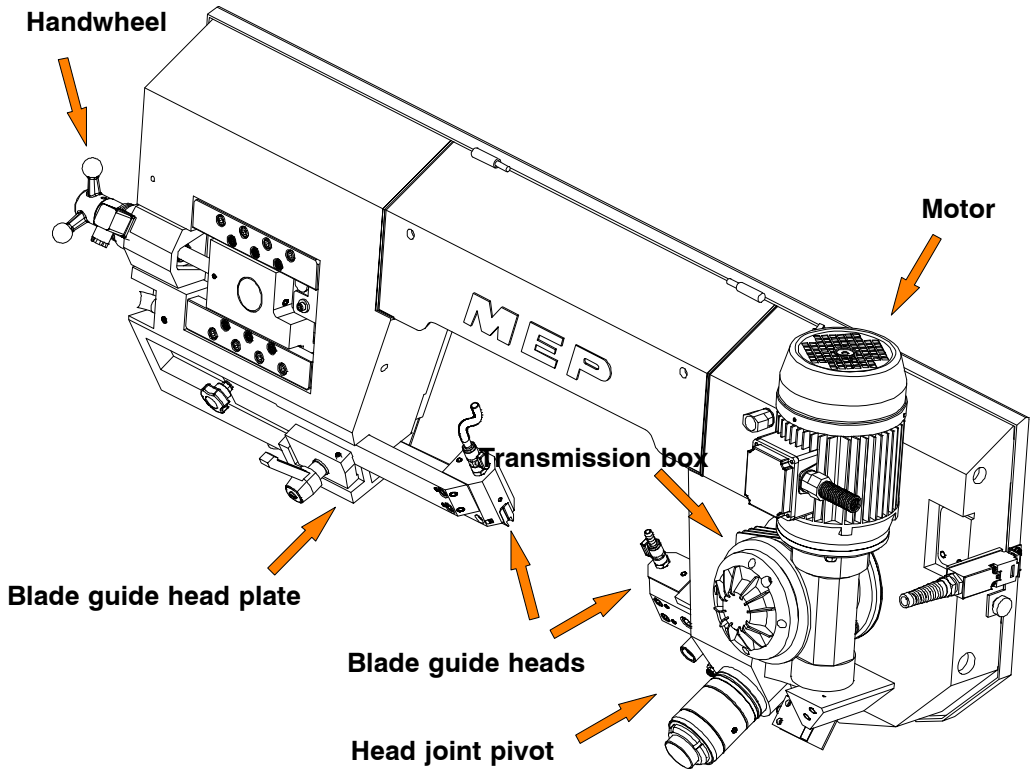
DM–1215 model

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



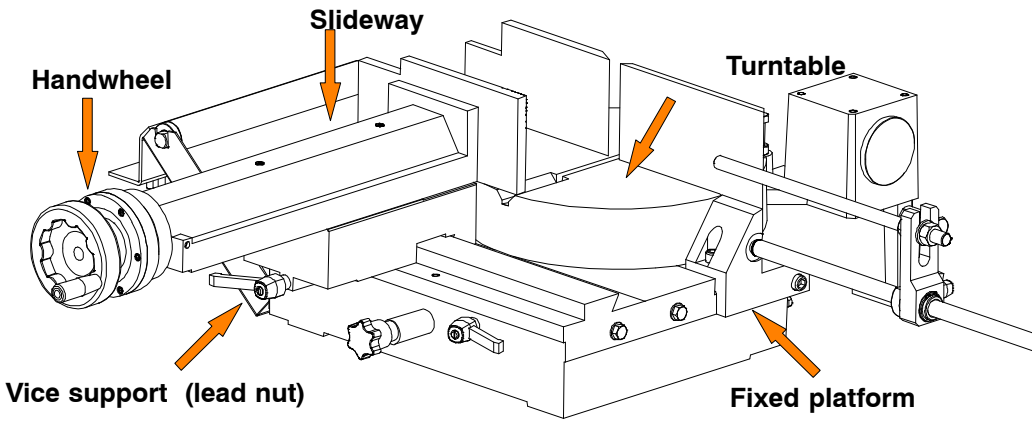
Cutting head

The cutting head is the unit that cuts the material. It consists of a cast iron head on which the following are mounted: the band saw, the blade guide components, the blade tensioner components, the transmission box and the spindle motor.
The cutting head is restrained in its movements by the articulated joint on the surface to be cut, and performs a cutting sequence controlled by the cutting head recall spring and the hydraulic brake.



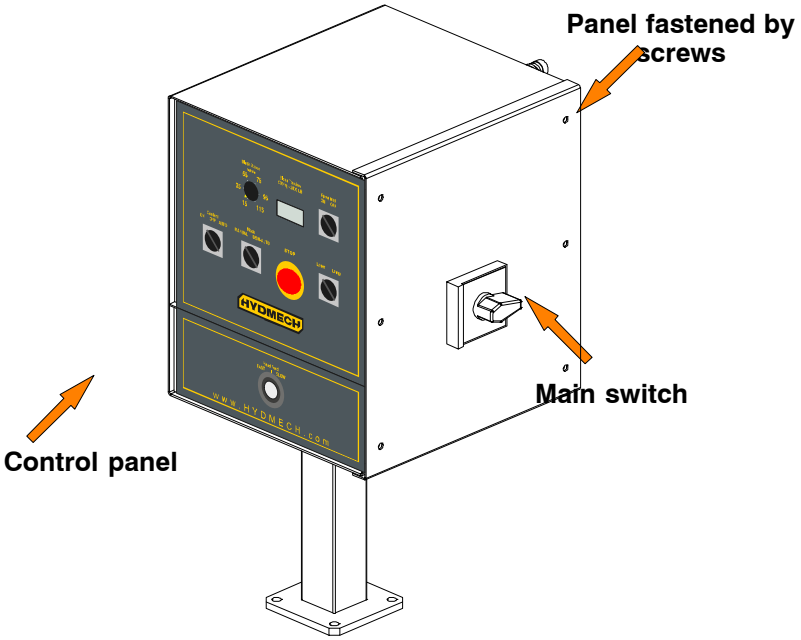
Vice

The vice is the unit that clamps the workpiece in place during cutting; it consists of a vice support, commonly known as a lead nut, fixed to the work table, and a lead screw with a slideway on which the mobile jaw is mounted.
The vice is approached to the cutting material manually by handwheel and the locking is by pneumatic cylinder.



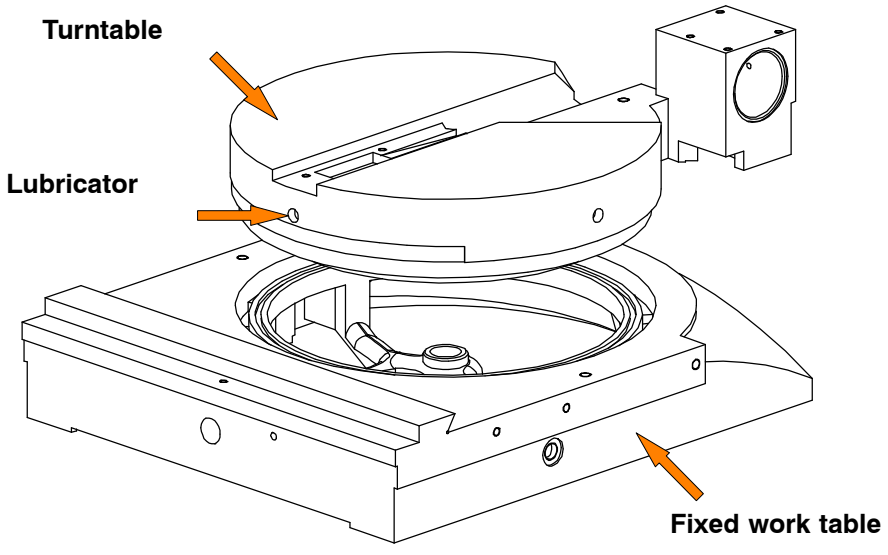
Control Panel

The control panel has a protection rating of IP 54 and contains the electrical equipment. Access is gained by removing the screws fastening a safety panel, while the operator's safety is guaranteed by a key−operated safety switch, designed to prevent any intentional interference with the unit. In order to remove the panel from its mounting, the main switch has to be shifted to 0 (OFF), which automatically cuts off the electrical supply.



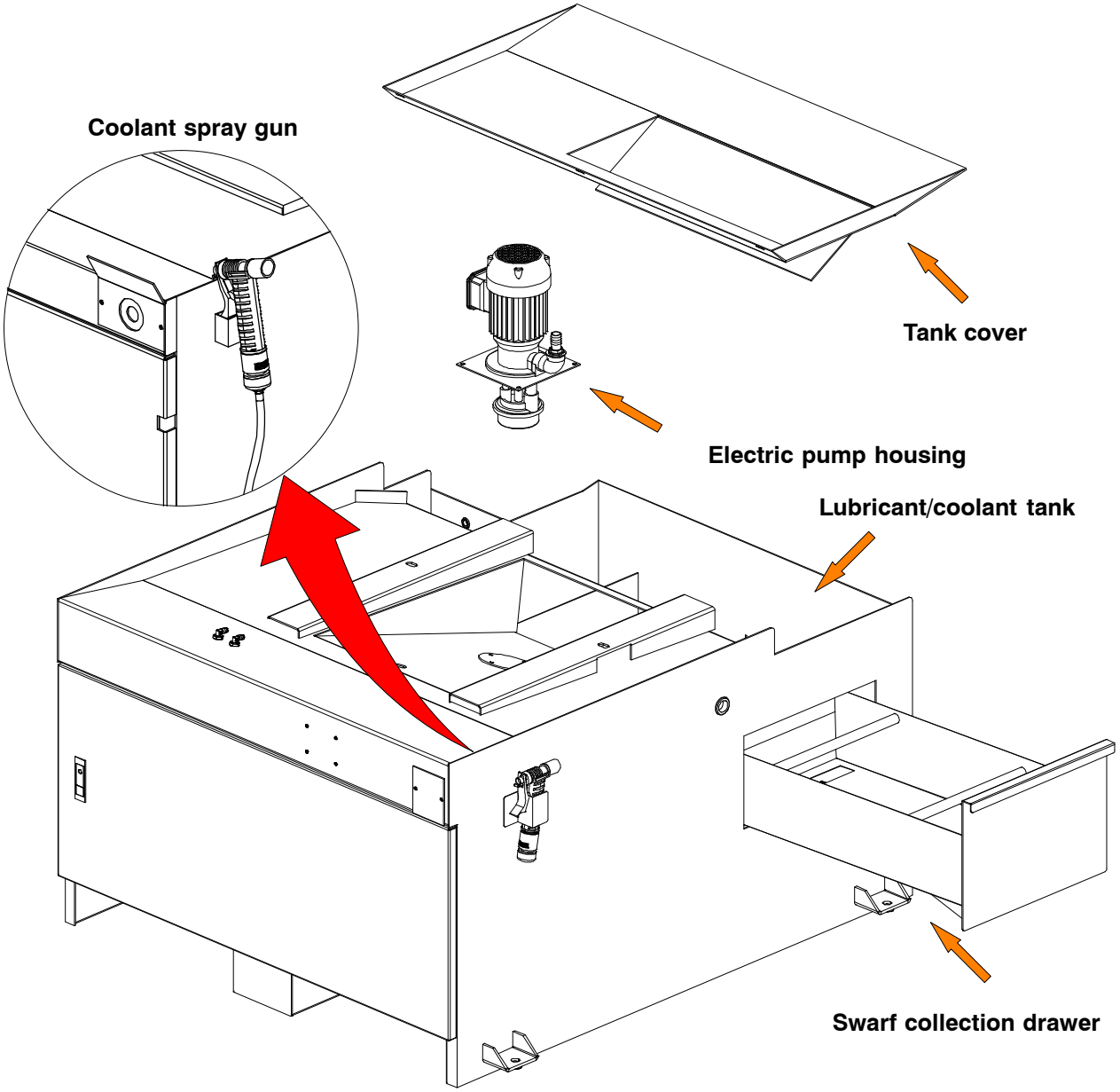
Fixed work table and turntable

Both the fixed work table and turntable are made from cast−iron. The turntable constitutes the fulcrum of the cutting head and the machine's cutting surface, while the fixed table supports the turntable by means of a 420 mm diameter roller bearing, preloaded with a thrust bearing. A lubrication circuit inside the bearing guarantees a long service life and facilitates rotation of the head from right to left for angled cuts.



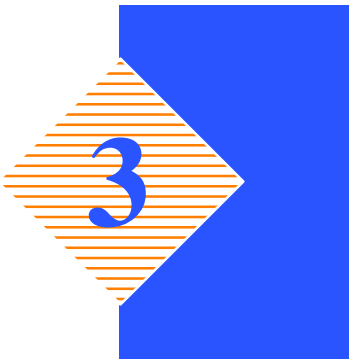
Base

This unit features a large coolant collection surface which conveys the coolant to a rear tank via the tank cover, and a swarf collection drawer. An electric pump is housed inside the tank which draws the clean fluid from the filter system.



On the right side there is the refrigerant fluid gun and the removable shaving collector drawer.

Safety and accident prevention



The **DM−1215** 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 **DM−1215** band saw cutting machine is intended exclusively for cutting metallic materials, ferrous or non−ferrous, in section or solid.
Other types of material and machining are not compatible with the specific characteristics of the saw.
The employer is responsible for instructing the personnel who, in turn, are obliged to inform the operator of any accident risks, safety devices, noise emission and accident prevention regulations provided for by international standards and national laws regarding the use of the machine. The operator must be perfectly aware of the position and function of all the machine's controls.The instructions, warnings and accident prevention standards in this manual must be respected without question by all those concerned.The following definitions are those provided for by **EEC MACHINES DIRECTIVE 2006/42/CE** :

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

Attention

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

General recommendations

LIGHTING

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

CONNECTIONS

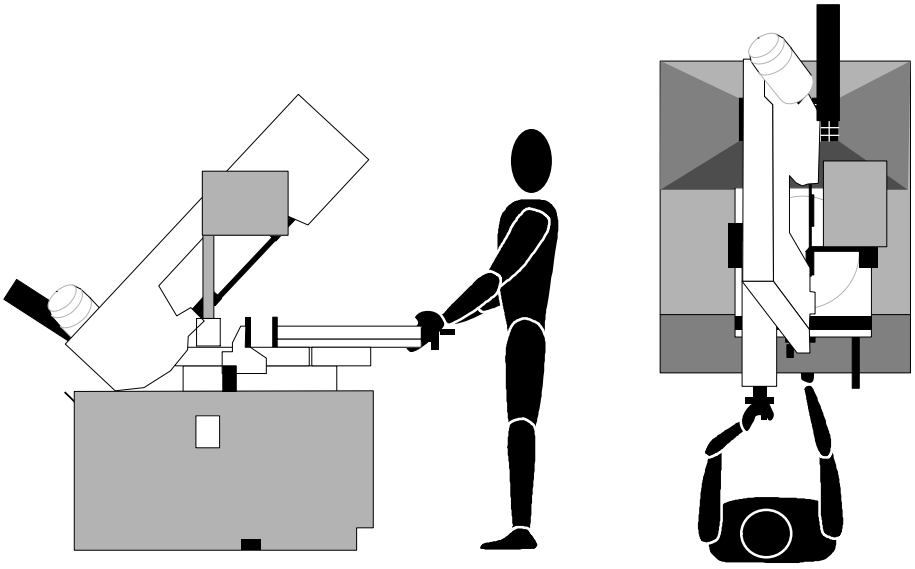
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the “Machine Specification” tables; replace if necessary.

EARTHING

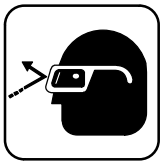
The installation of the earthing system must comply with the requirements set out in EN STANDARD 60204−1:2010.

OPERATOR POSITION

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



Recommendations to the operator



Always wear proper goggles or protective glasses.

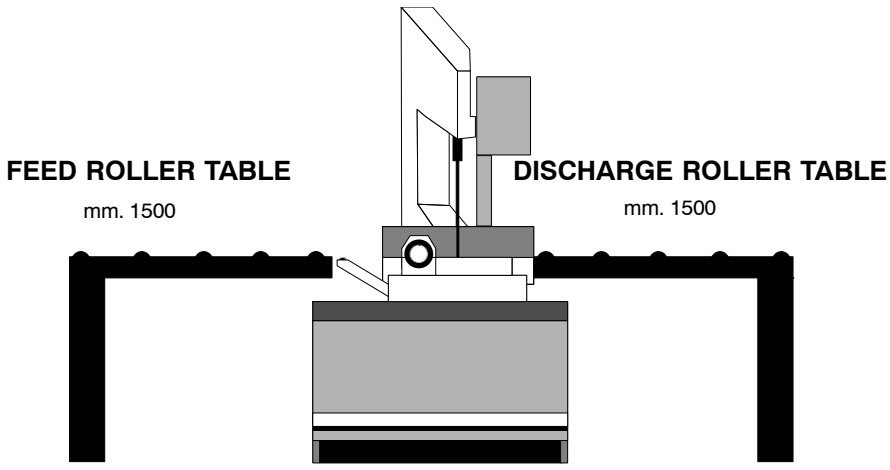
Do not use the machine without the guards in position. Replace the polycarbonate windows , if subject to corrosion

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

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

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

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

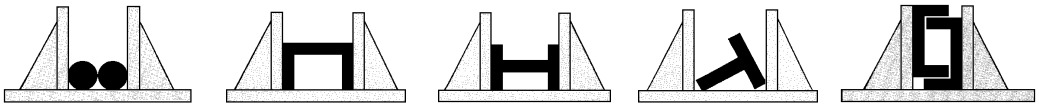


Any maintenance work on the hydraulic or pneumatic systems must be carried out only after the pressure in the system has been released.

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

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

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



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

Never move the machine while it is cutting.

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

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

When using the pneumatic vice check that the jaws move right up to and effectively clamp the workpiece, as the maximum travel is only 6 mm, and check that the clamping procedure is correct.

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 Hydmech 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 **DM−1215** band saw.

Reference standards

MACHINE SAFETY

- EEC MACHINES DIRECTIVE 2006/42/CE ;
- EEC directive no. 2014/30/EU “EMC – Electromagnetic Compatibility”;
- EEC Directive No. 2014/35/EU known as “Low voltage directive”.
- EN 13898:2003+A1:2009 Machine tools - Safety - Sawing machines for cold metal
- EN ISO 12100:2010 ”Safety of machinery - General principles for design - Risk assessment and risk reduction”.

HEALTH AND SAFETY AT WORK

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

PERSONAL PROTECTION

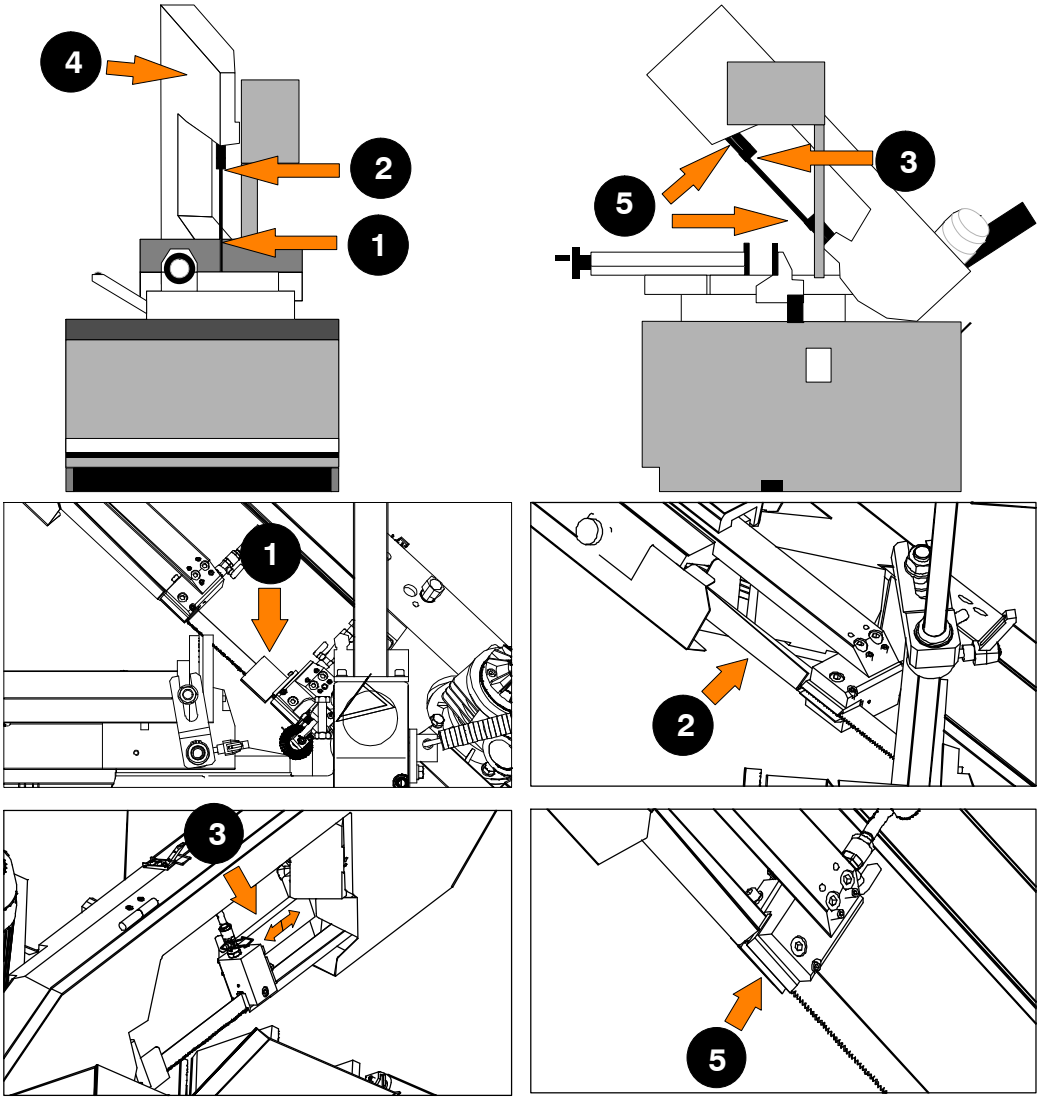
- EEC Directive No. 89/656 and No. 89/686 on the use of personal protection devices.

ENVIRONMENTAL PROTECTION

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

Protection against accidental contact with the blade

1. Metal guard screwed to the rear blade guide head (machine side);
2. metal guard screwed to the front blade guide head (operator side);
3. front head sliding support: when the head is at maximum aperture, the support ensures that the blade is covered, leaving free only the part of the blade engaged in the actual cutting, in accordance with Presidential Decree no. 547/55, art. 108;
4. hinged protective cover over blade, fitted with “removable” closing devices;
5. blade guide plates completely covering the blade teeth;



Electrical equipment

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

- Access to electrical control panel limited by screws and panel−lock device, allowing panel to be opened only after the electricity supply has been turned off;
- 24 Vac Control voltage for actuators, in accordance with chapter 6 or European Standard “Control and indication circuits”, paragraph 2 “Control Circuits” sub−section 1 “Preferential voltage values for control circuits”;

- plant short−circuit protection by means of rapid fuses, earthing of all plant parts connected with work as well as all foreseeable accidental contact; a thermal−magnetic overload cutout switch shuts down the motor;
- protection from accidental start−up by a minimum voltage relay in case of power failure.

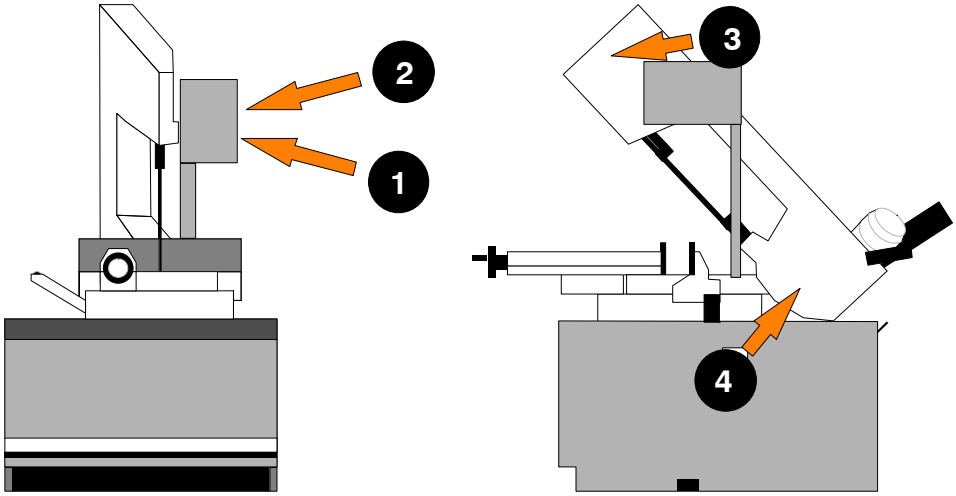
Emergency devices

In accordance with Standard EN 60204−1:2010:

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

...Emergency devices applicable to the DM−1215:

1. **Emergency stop**: a non−return mushroom−head pushbutton, colour red on yellow background, is located on the control panel of the machine. To release the pushbutton, the actuator must be rotated 45°. After the emergency situation has been resolved, the machine must be reset.
2. **Automatic thermal−magnetic cutout switch with thermal−magnetic relay:** the machine auto switch, located on the control panel, has two protection systems against voltage drops. In the case of a voltage drop, all electrical components are disengaged, the machine stops immediately, and automatic restart when the power supply returns is inhibited. Another function is that of resetting the thermal relay provided to protect against overcurrents.
3. **Pressure contact for monitoring blade tension:** the machine stops immediately if the blade breaks or if the tensioner cylinder pressure drops.
4. **Protective guard for blade:** a coded key microswitch is operated if the blade cover is accidentally or intentionally opened during the machine operating cycle, immediately shutting down all functions.



Noise level of the machine

Noise can cause hearing damage and represents one the problems faced by many countries who adopt their own standards. In accordance with the **EEC MACHINES DIRECTIVE 2006/42/CE** , we are listing the standards that specify noise levels for machine tools.
The following paragraph explains the modes and the detected sound power and pressure values released by the sawing machine.
These values comply with norm EN 13898:2003 + A1:2009, EN ISO 12100:2010 and EN ISO 4871:2009,concerning the rules for drawing and presenting a procedure for noise tests and the declaration and check of sound emission values by machines and equipment.

Noise level measurement

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

Noise level values

Identification	
Machine type	Band saw for metal applications
Model	**DM−1215**
Reference standard	ISO 3746

Results		
Test 1st	**Description**	C 40 steel cut − pipe 50x82 mm Bimetal band 3440x27x0,9 S.GLB Z 5/7
	Results	**Mean sound level (Leq) 72,45 dB (A)** Environmental correction (K) 3,84 dB(A) Peak sound power (Lw) 83,60 dB(A)
Test 2nd	**Descriprion**	C 40 steel cut − solid rod 150 mm dia. Ø Bimetal band 3440x27x0,9 M42 Z 3/4
	Results	**Mean sound level (Leq) 70,33 dB(A)** Environmental correction (K) 3,84 dB(A) Peak sound power (Lw) 81,48 dB(A)
Test 3rd	**Description**	80 mm diameter solid tube in chromed stainless steel Bimetal band 3440x27x0,9 S.GLB Z 10/14
	Results	**Mean sound level (Leq) 71,95 dB(A)** Environmental correction (K) 3,84 dB(A) Peak sound power (Lw) 83,11 dB(A)

Vibration emission

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

Electromagnetic compatibility

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

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

The following text contains a list of the applied standards and the results of the electromagnetic compatibility testing of machine model **DM–1215**; Test report no. 170201.

Emissions

- EN 61000–6–4 (2002) Electromagnetic Compatibility (EMC) – Generic standard regarding emissions. Part 6–4: Industrial Environment.
- EN 55011 (1999) Industrial, scientific, and medical radio frequency appliances (ISM). Characteristics of radio frequency disturbance – Limits and methods of measurement.
- EN 50370–1:2005 Electromagnetic compatibility (EMC) – Product family standard for machine tools – Part 1: Emission

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

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

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

Immunity

- EN 61000–6–2 (2000) Electromagnetic Compatibility (EMC) – Generic standard on immunity. Part 6–2: Industrial Environment.
- EN 50370–2:2003 Electromagnetic compatibility (EMC) – Product family standard for machine tools – Part 2: Immunity

The EUT is deemed to fulfil the immunity requirements without testing, because it contains no electonic control circuitry.

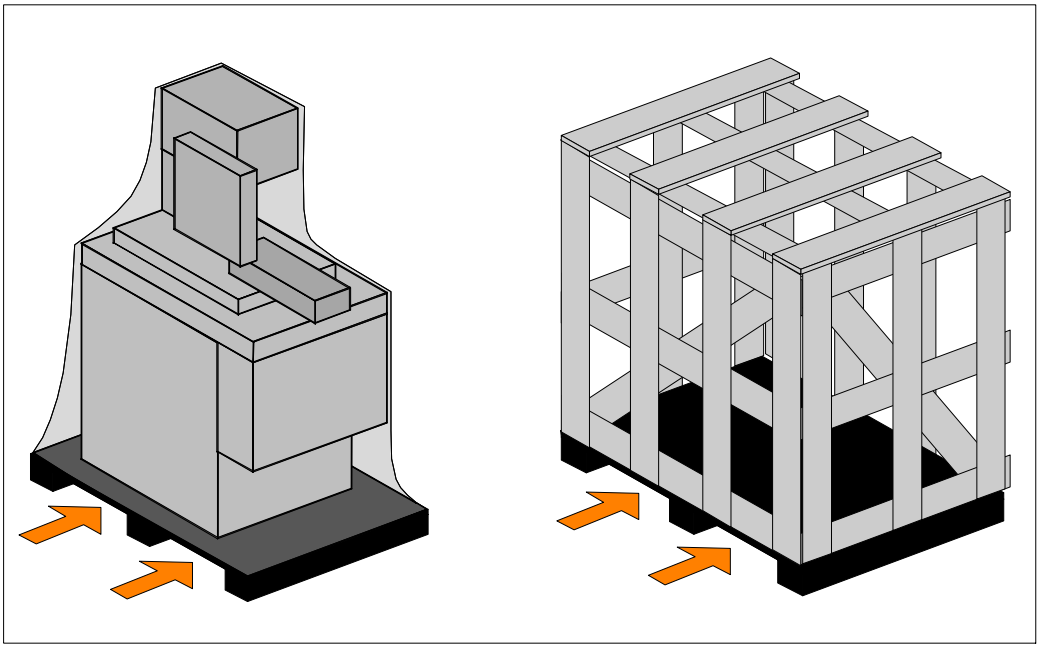
Machine installation

4

Packaging and storage

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

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

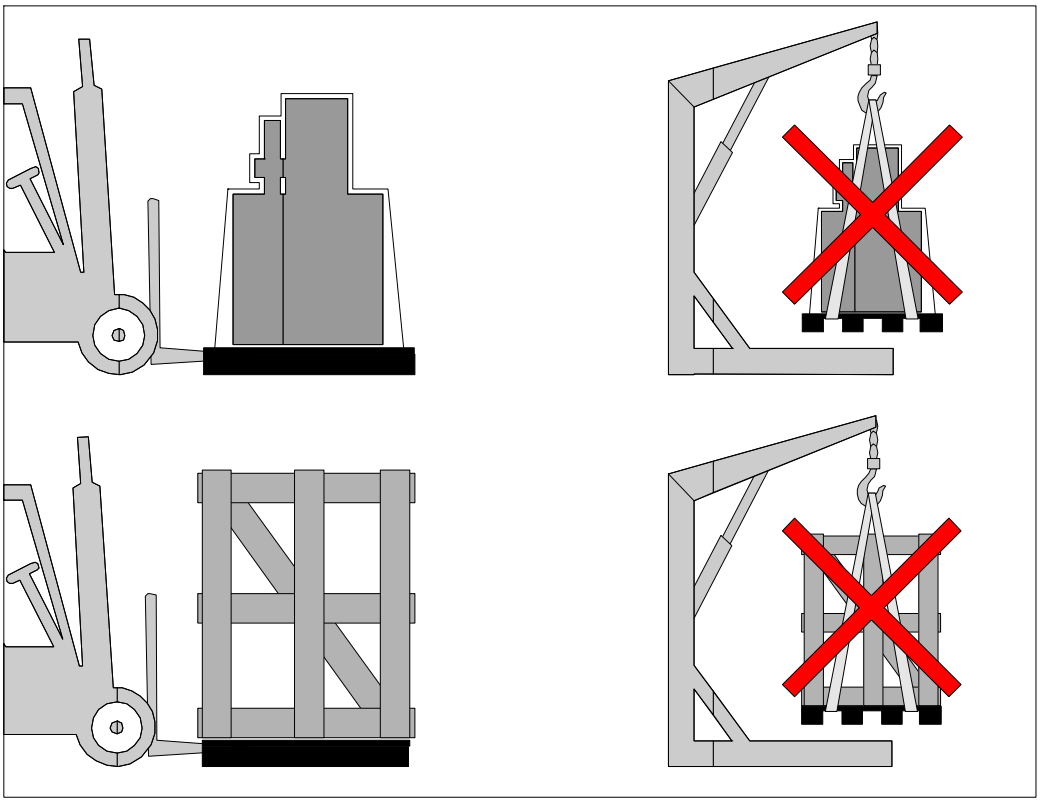


1. on a pallet with straps and heat−shrink plastic;
2. on a pallet with straps, heat−shrink plastic and a wooden crate.

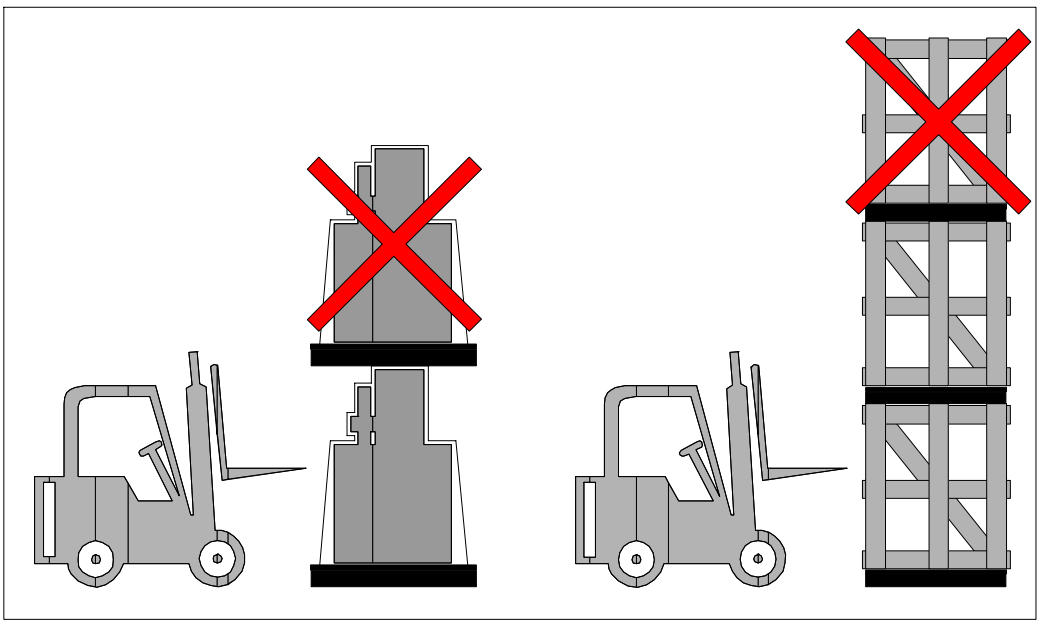
Warning In both cases, for correct balancing the machine must be handled using a fork−lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

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

Attention Do not handle the packed machine using slings.

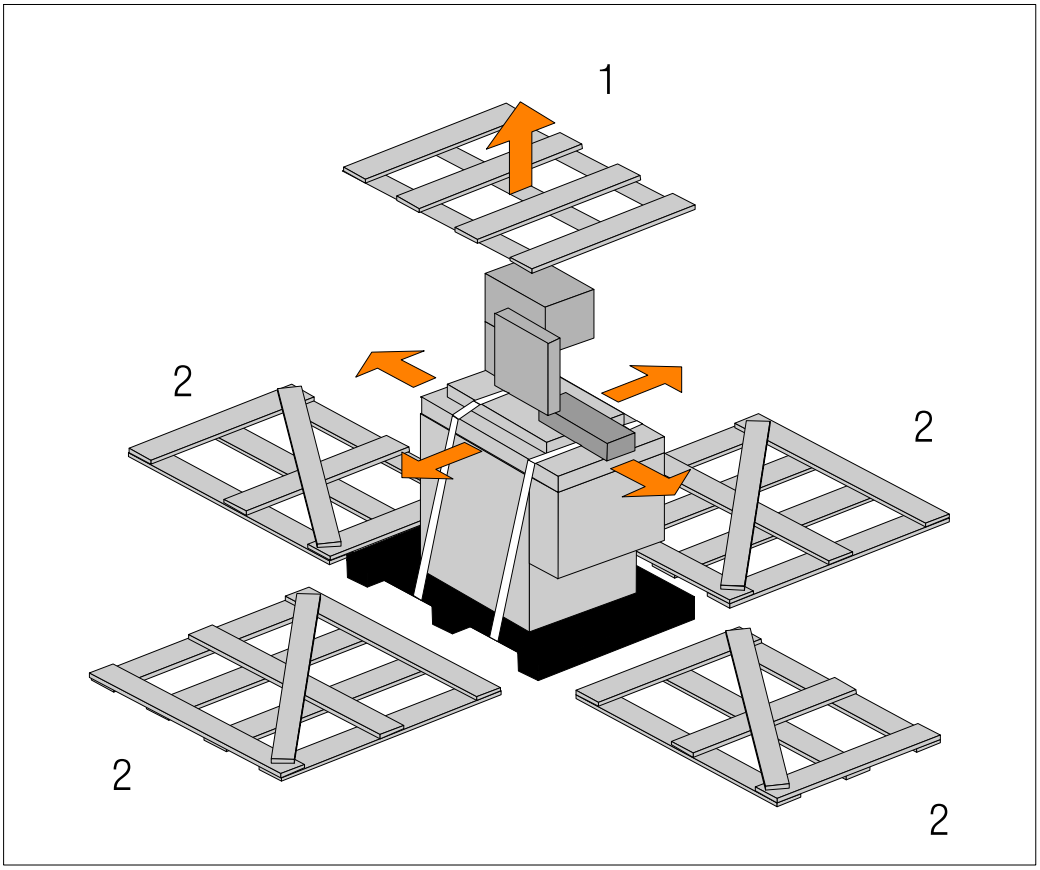


Attention When storing, machines palletized and shrink–wrapped must not be stacked two high, and machines pallettized and crated must not be stacked three high.

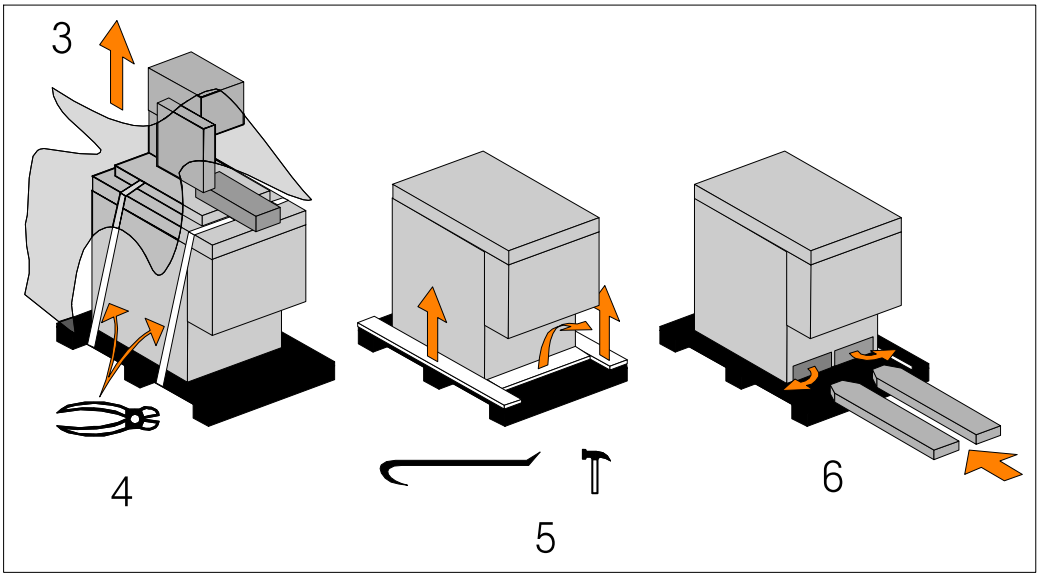


To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

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



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

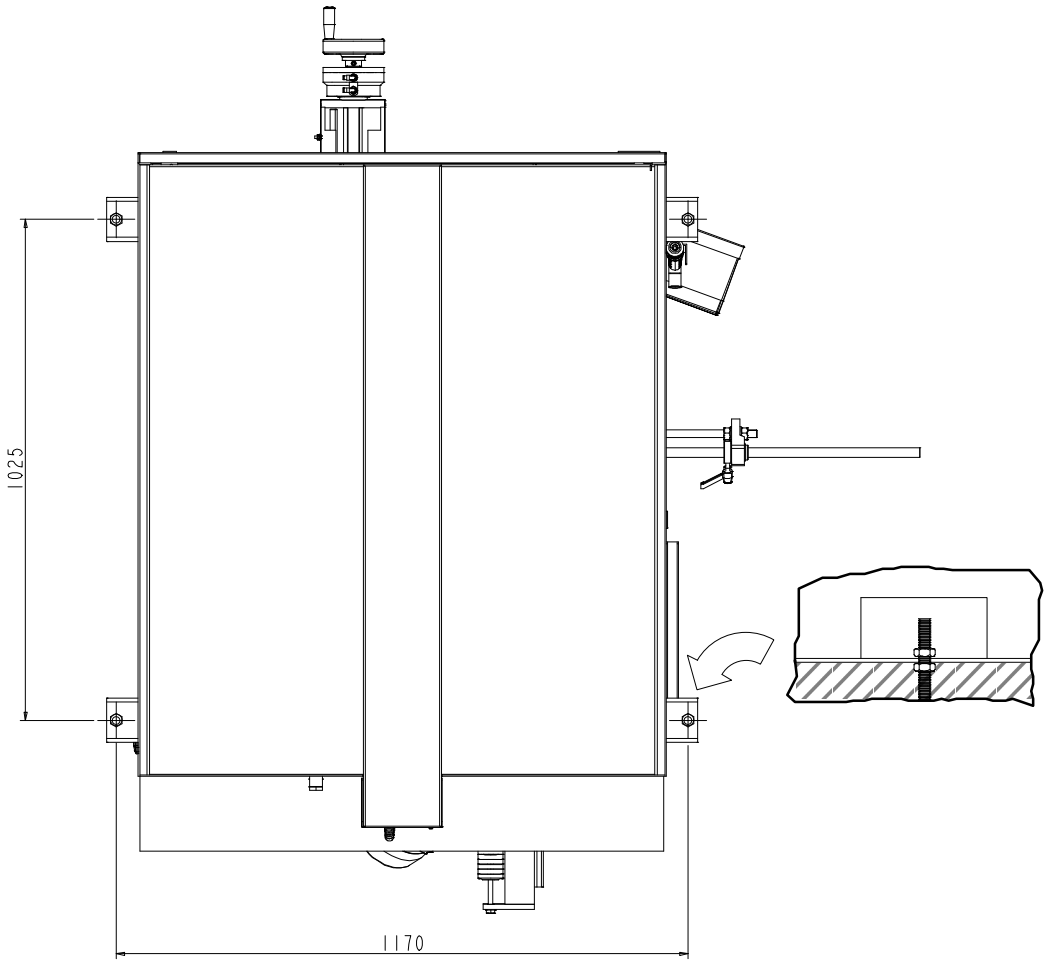


To locate the machine in the workplace, **the machine dimensions** and necessary operator working space, including **the spaces laid** down in safety standards, **must be taken into account.**

Anchoring the machine

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

BASE



Minimum requirements

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

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

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

Check list

Before starting installation, check that all the accessories, whether standard or optional, supplied with the machine are present. The basic version of the **DM−1215** 2−SPEED machine is supplied complete with:

CHARACTERISTICS	STANDARD	OPTIONAL
Ergonomic and functional pedestal that allows total recovery of the refrigerant liquid even during maximum slant cutting	✓	
3440 x 27 x 0,9 bimetal blade for solid and section materials	✓	
Blade cleaning brush	✓	
Designed for transpallet handling systems	✓	
Electric control panel (totally identifiable cabling, stand−by, main switch with lockable panel−closing device, speed switch, emergency device, thermal−magnetic overload cutout, minimum voltage relay, voltage drop protection, 24 V low−voltage plant)	✓	
Electronic transducer of the stretching of the band with display on the console	✓	
Blade protection behind and below blade guide heads	✓	
Precision stops for cuts at 0°, 45° , 60° left and 45° right	✓	
Accessory kit	✓	
Preset to be equipped with the blade minimal lubrication kit	✓	
Electronic speed control (inverter) 15 to 100 mt/min	✓	
Tank for the refrigerant liquid made in the pedestal, with a pair of electrical pumps for the refrigeration and lubrication of the belt and shavings drawer. This can be replaced by a motorised shavings evacuator. (optional)	✓	
Rotating top mounted on a roller bearing with a diameter of 420mm pre−loaded with a thrust bearing complete with replaceable steel plates on the work top	✓	
Gun for washing the work tops	✓	
K210 roller table on supply side − kit 1500 mm		✓
Discharge side roller table adapter with support		✓
K210 roller table for discharge side, 1500÷6000 mm.		✓
5 l can of emulsible oil		✓
3440 x 27 x 0,9 bimetal blade M42		✓
Laser pointer and work lamp*		✓

***ACCESSORIES AVAILABLE ON REQUEST**

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

- 3,4,5,6 and 10 mm Allen keys;
- 36 mm wrench;
- pipe wrench 10 mm;
- measuring rod for cuts−to−measure;
- arm with roller on which the bars to be cut rest and for fitting the feed side roller tables;
- manual pump for topping up the oil in the pneumatic cylinder;
- Use and Maintenance manual, including order form for parts in relevant user language.

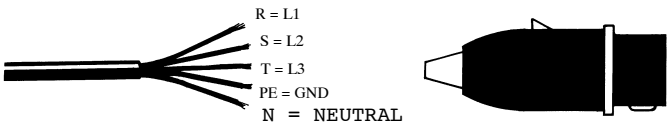
Connection to the power supply

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.

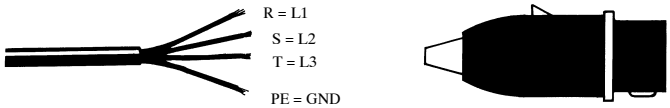
To connect the machine to the power supply, proceed as follows:

- 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

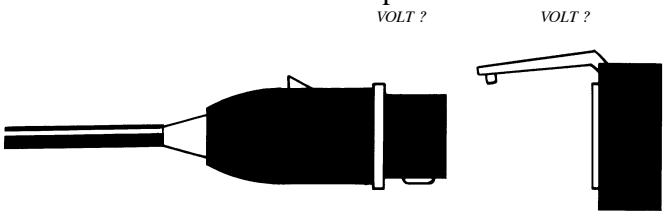


CONNECTION FOR **"4–CORE"** WIRE SYSTEMS WITH NEUTRAL

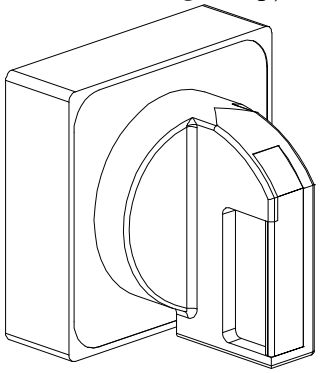


Attention When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase–neutral.**

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



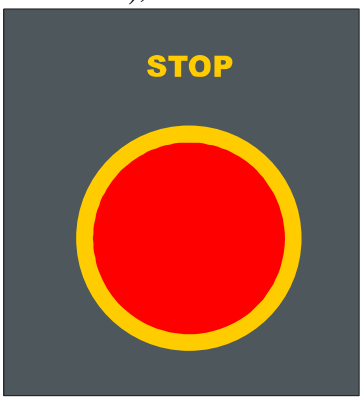
- Power up machine by rotating the main switch located on the right side of the control panel (The STAND BY LED lights up).



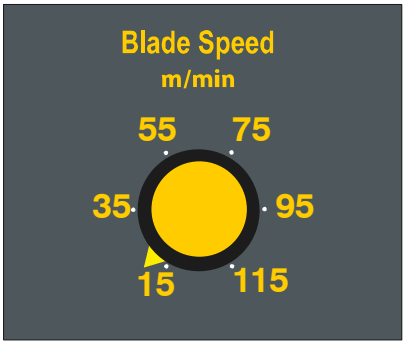
Check that the motor is rotating in the correct direction. For this check the following operations must be carried out:

- set the blade tension to 900 kg;
- make sure the cover is properly closed: at the back of the cutting head there is a bayonet limiter for correct cover closure;

▶ make sure that the machine is not in an emergency condition (red mushroom−head pushbutton released);



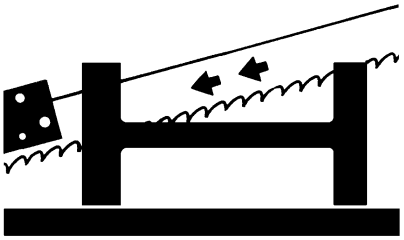
▶ select cutting speed using the inverter.



Warning Check that the cutting head descent speed adjuster is at zero.

▶ operate the jog button on the manual head control lever;

▶ if all the above operations have been carried out correctly, the blade motor will start up and the blade will start rotating.



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

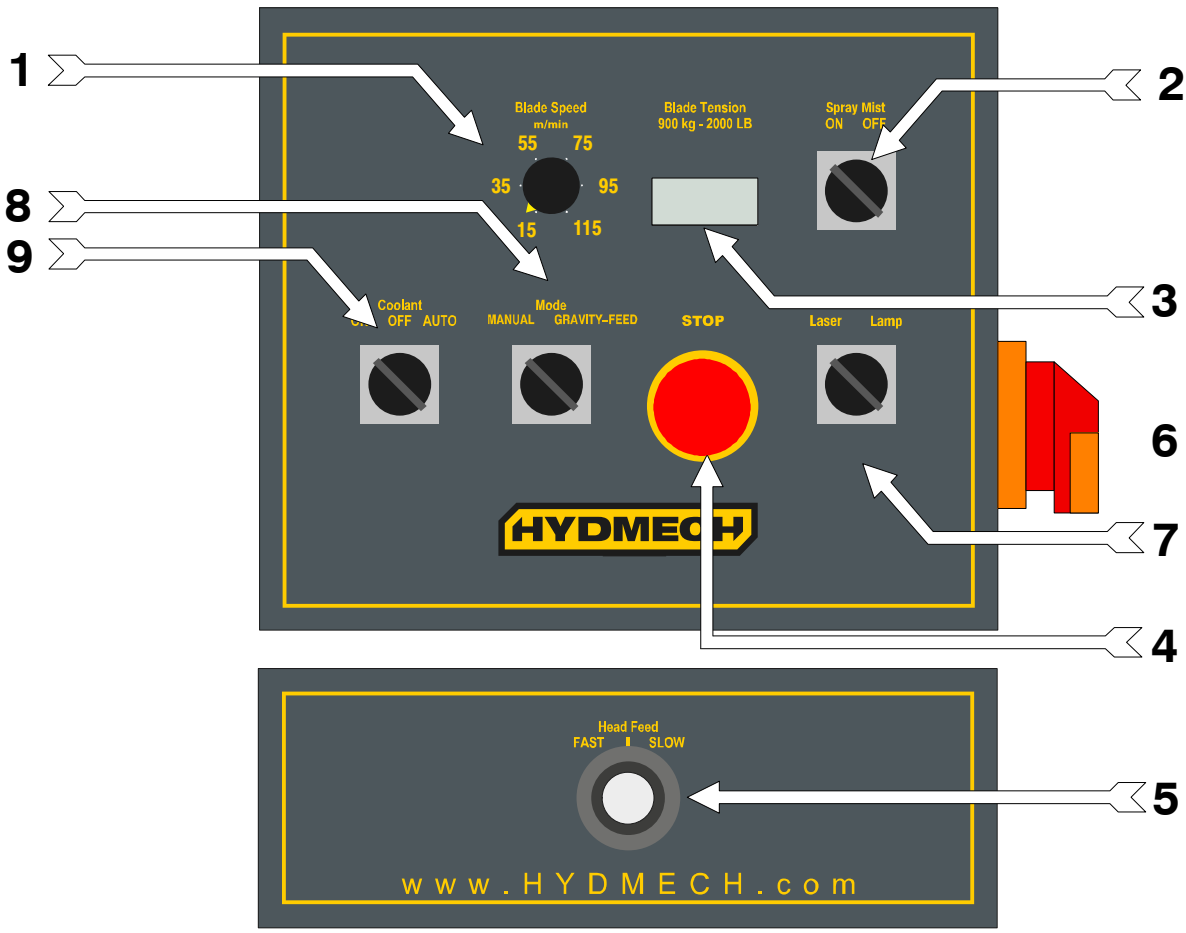
The sawing machine is now ready to start the work for which it was designed. Chapter 5 provides a detailed description of the various functions of the machine and its operating cycles.

Description of machine operation

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

Description of the control panel

The components of the **DM–1215** control panel are shown in the diagram below. Each arrow has a number which corresponds to the descriptions that follow.



1 – INVERTER

Select the cutting speed range of the blade: from 15 to 100 m/min.

2 – FLUID REFRIGERANT SELECTOR

Allows the selection of manual functioning with the gun, flow deactivation in zero position and automatic function, i.e. on starting−up of the belt motor the pump also starts−up.

3 – DISPLAY BELT TENSIONING

Visualises the tension of the belt in kg on the LCD display.

4 – EMERGENCY STOP MUSHROOM BUTTON

Pressing this button immediately stops machine operation. The emergency button, designed to conform to all safety standards, is positioned so that it is easily accessible at any time and is clearly visible − being a red button on a yellow background. To reset the emergency button, rotate actuator by 45°.

5 – CUTTING HEAD DESCENT SPEED ADJUSTER

Allows to adjust oil flow in the hydraulic cylinder to determine the cutting head descent speed.

6 – AUTOMATIC THERMAL–MAGNET CUTOUT WITH MINIMUM VOLTAGE RELAY AND HATCH LOCKING DEVICE

The machine is provided on the right of the control panel with a main switch with a locking device which, when set in the ON position (1), powers up the machine by resetting the minimum−voltage relay and the blade motor thermal magnet cutout. This device has three protection systems against power failure. When there is a power failure the electrical devices are all shut down, instantly shutting down the machine and preventing automatic restoring of power on power return. A further function is to reset the thermal relay, which protects against overcurrents.

7 – LASER / LAMP SELECTOR

Selector to activate the laser or the lamp for illumination of the cutting area.

8 – MANUAL OR GRAVITY–FEED CYCLE SELECTOR

Select manual or gravity−feed cutting cycle.

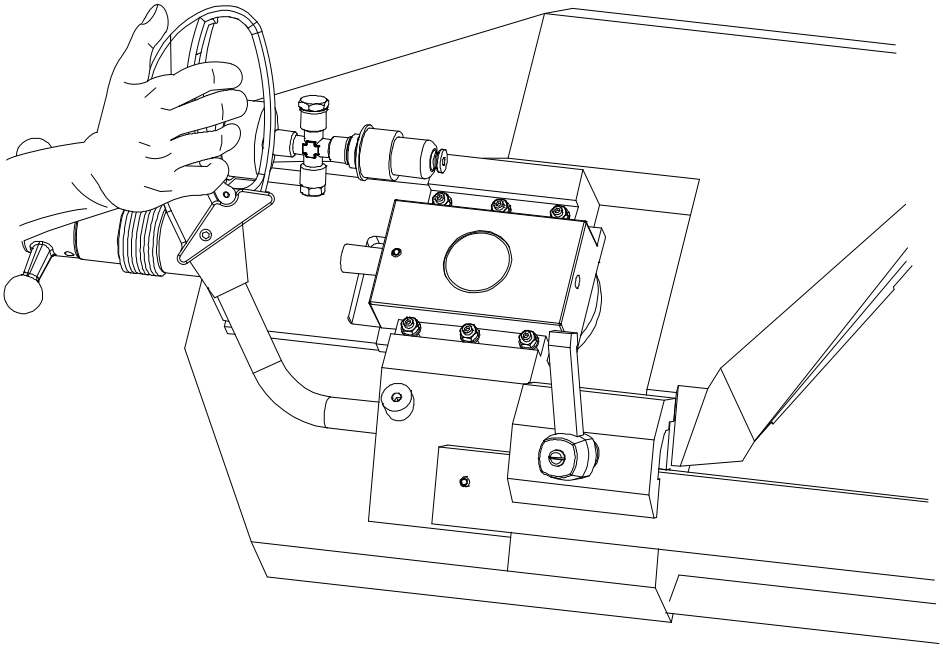
9 – SPRAY MIST BUTTON (OPTIONAL)

Activates or deactivates the band spray mist.

Basic instructions for carrying out a cutting operation cycle

Manoeuvring the cutting head

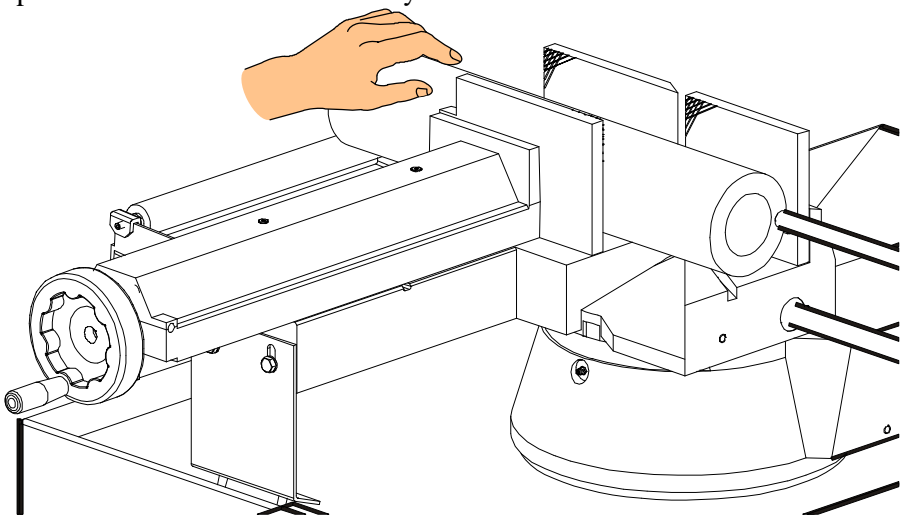
Cutting head movement is facilitated by perfect balancing of the head weight, thanks to the traction force exerted by the two return springs located at the back of the machine. Also, the grip on the head control lever enables the operator to achieve a firm grip in order to start up band saw rotation by pressing the microswitch start lever, located in the handle itself.



Clamping the work piece in the vice

In the basic version, the work piece is clamped in the vice by rotating the opening/closing handwheel (in a clockwise/anticlockwise direction), as shown:

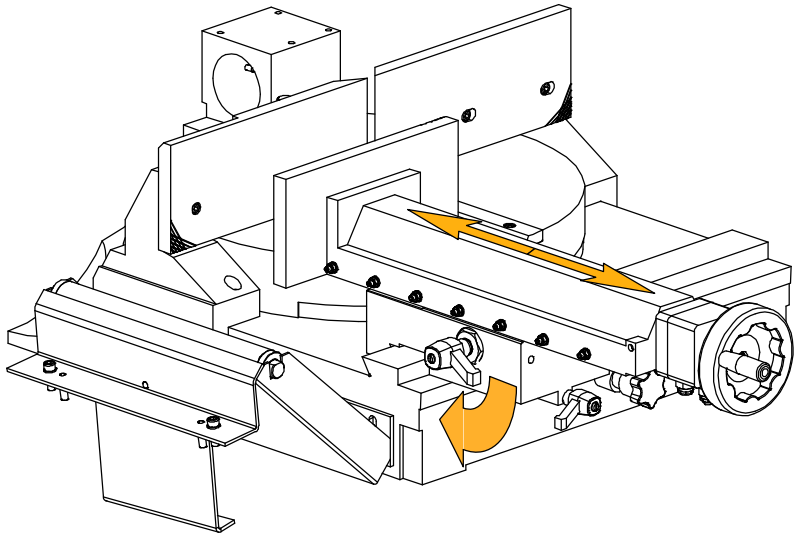
▶ each time the vice is closed make certain that the work piece is solidly clamped. This can be done manually.



Rapid vice positioning

By means of a simple device the vice can be slid back and forth to accelerate vice opening and closing operations.

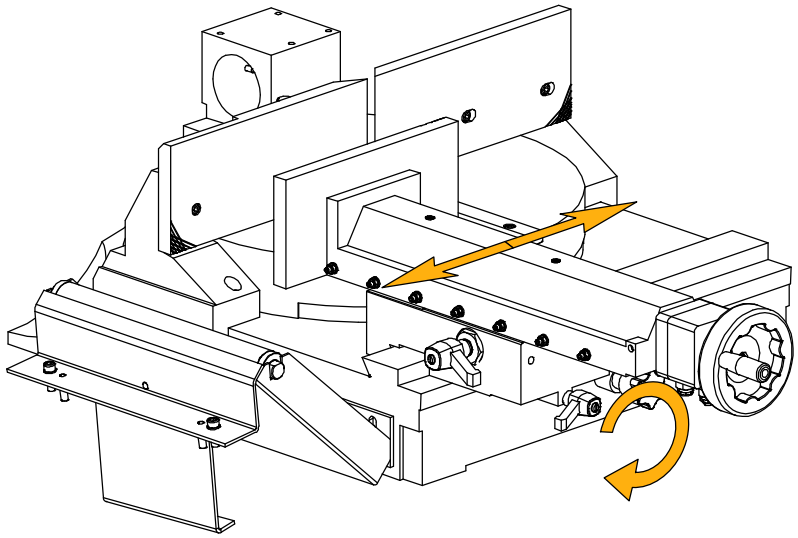
- ▶ Grip the lever illustrated in the figure below and rotate in a clockwise direction: the vice is now free to slide back and forth to the required position. Once positioned, release the lever to lock the vice in place.
- ▶ Finally, position the vice to within 2–3 mm of the workpiece using the handwheel.



Rapid vice translation

For angled cuts, the vice may be slid to the left or right along the prismatic guide.

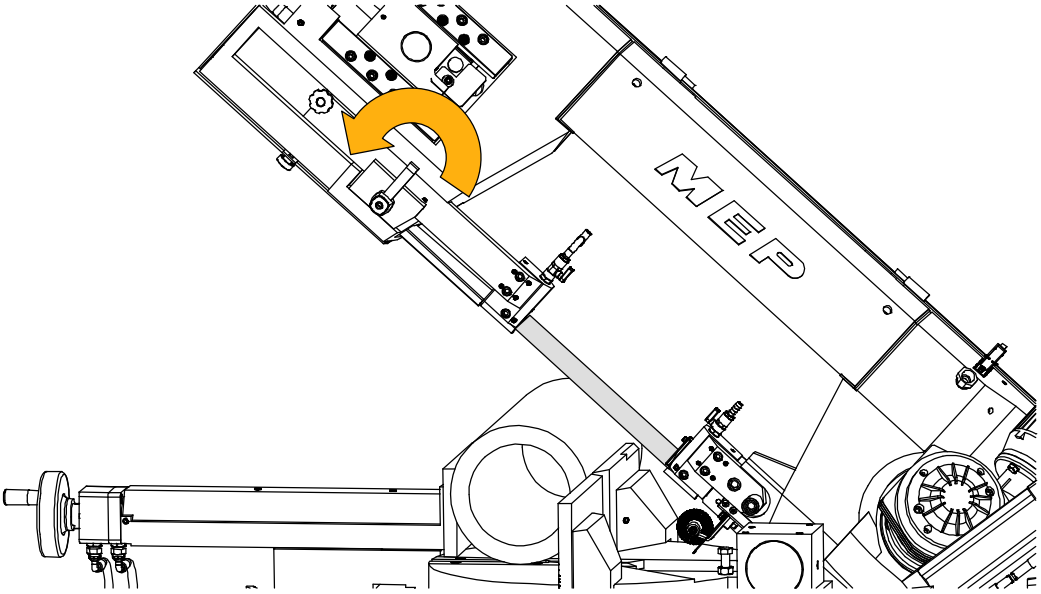
- ▶ Release the locking lever illustrated in the figure below.
- ▶ Position the vice to the right or left and lock the lever.



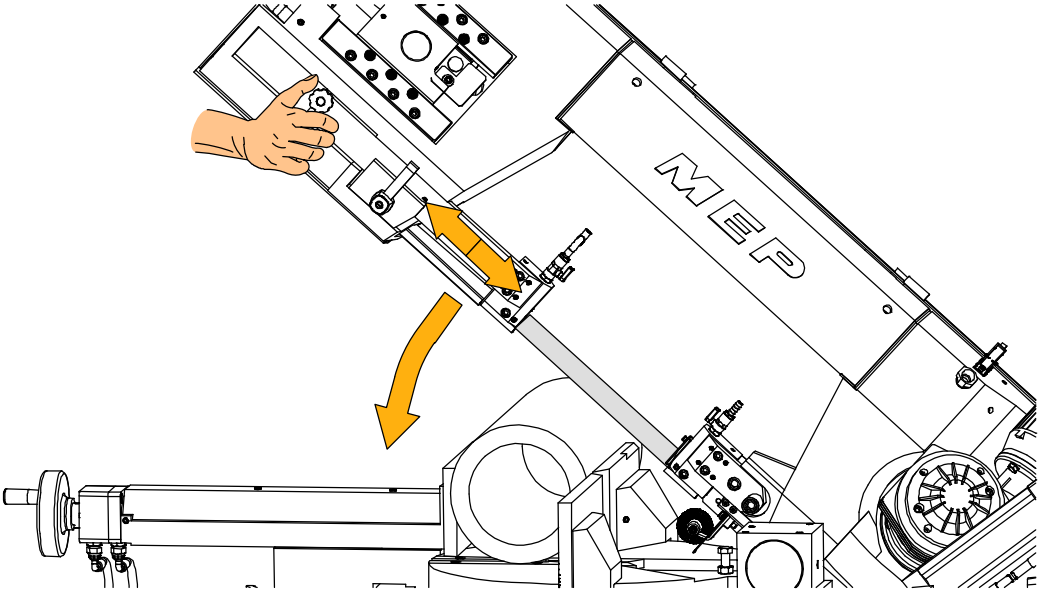
Width of cut

The machine is fitted with protections which protect the entire blade stroke, leaving exposed only the part of the blade required to make the cut itself as specified by current standards. The width of the cut is determined by the longitudinal section of the workpiece, so that only the part of the blade required to make the cut is actually exposed.

- Position the workpiece on the work table in proximity to the blade down-stroke trajectory and clamp it in the vice;
- Slacken the ratchet lever on the sliding shaft of the front blade guide head.



- Position the mobile front guide head near the workpiece so that the down-stroke trajectory exceeds the mobile vice jaw.



- Tighten the ratchet lever to lock the head slide.

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:

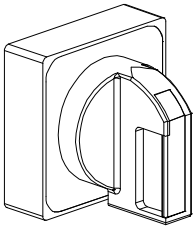
- blade tension;
- that the blade guide head bracket is locked in the correct position;
- that the cutting angle is correct and that the surface to be cut is blocked;
- that the work piece is properly clamped in place;
- that the blade teeth are correct for the job to be begun;
- that the speed selected is right for the kind of piece to be cut;
- that 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 the cutting pressure are correct.

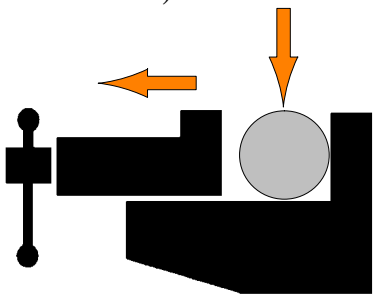
Manual operating cycle

Sequence of the cutting operations:

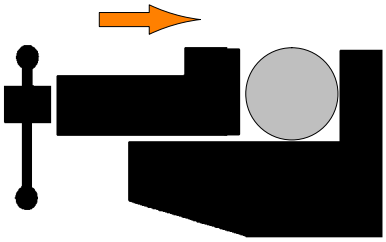
- ▶ power up the machine by turning the main switch;



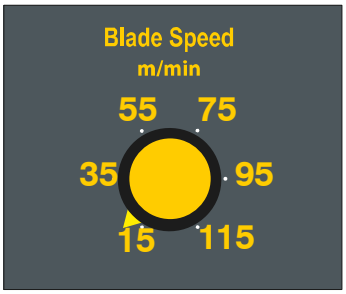
- ▶ Position the workpiece in the vice and calculate the length of cut (using the measuring rod for cuts to measure).



- ▶ Clamp the workpiece in the vice.

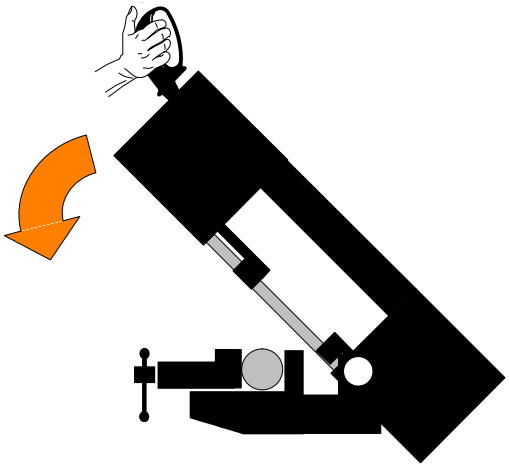


- ▶ Select the cut using the Inverter.

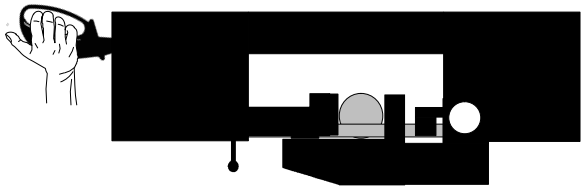


- ▶ Grip the head control lever and start the blade rotating by pressing the mi-

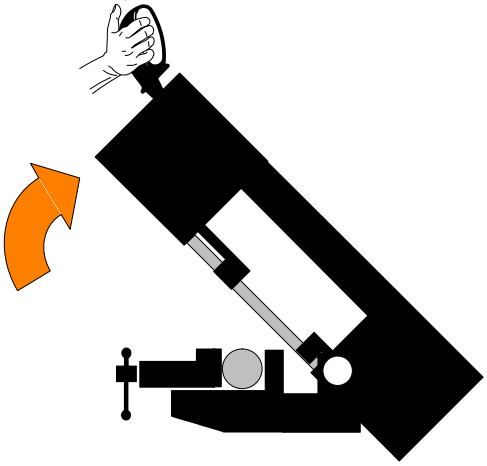
croswitch on the handgrip; the downstroke speed of the head is manually controlled by the operator.



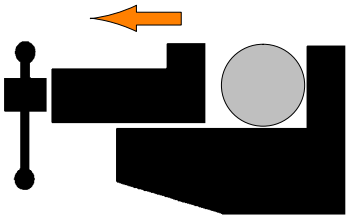
▶ The motor starts up and sets the blade in rotary motion; the lubricant/coolant pump starts up at the same time.



▶ At the end of the cutting operation, the head can be raised.



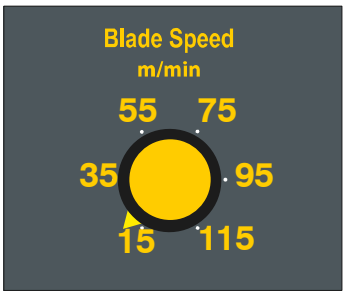
▶ Remove the piece from the vice.



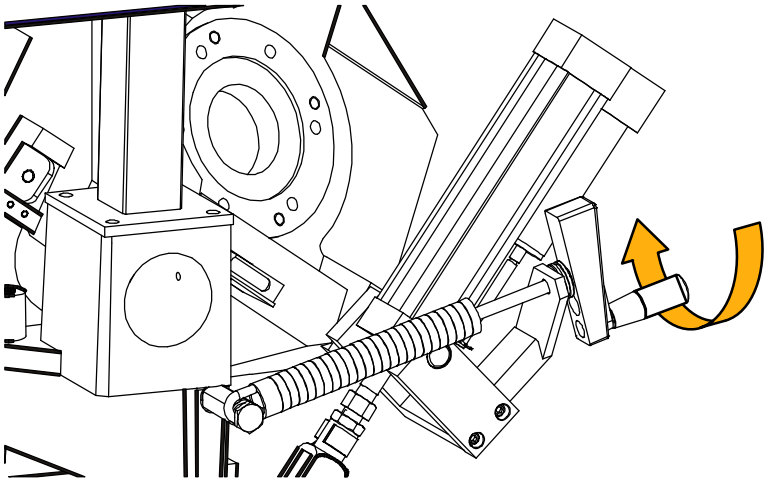
Gravity–feed functioning cycle

The Gravity–feed work cycle to be performed. Sequence of operations for carrying out a cut in semiautomatic mode:

- power up the machine by turning the main switch;
- Position the material in the vice and calculate the cut lengths (using the measuring rod).
- Clamp the piece in the vice.
- Select the cut speed using the Inverter.



- Set the tension on the head return spring using the appropriate crank so that the first turn is aligned with the Semi.automatic/Dynamic cycle notch.



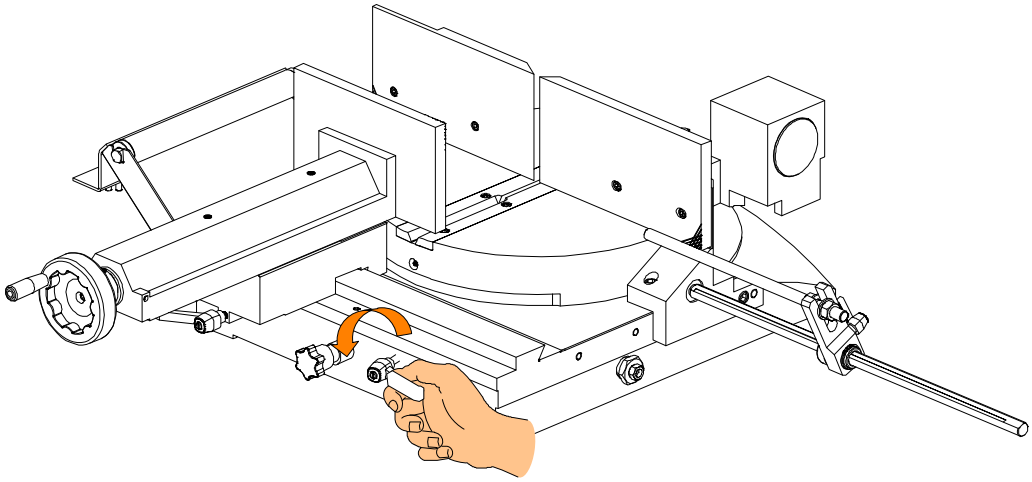
- Set the head downstroke speed on the hydraulic panel. located below the machine control panel, according to the characteristics of the material to be cut.
- Grip the head control lever and move the blade in the proximity of the material to be cut: when you reach a distance of approx. 10 mm select function type: Gravity–feed and then press microswitch on the handgrip to start up blade rotation.
- The operating head will now perform cutting until it reaches HDL (Head Downstroke Limit) at which point the motor will stop.

Angled cuts

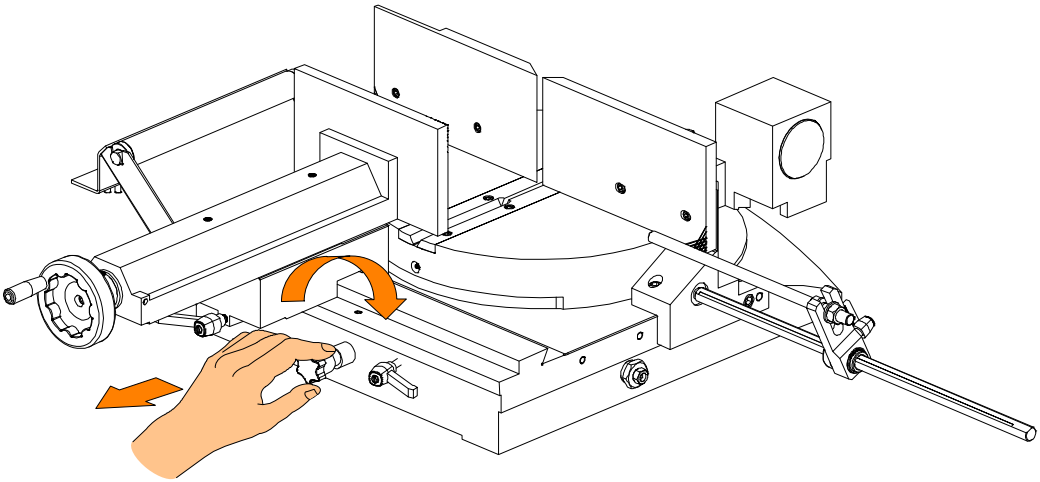
The machine can make angled cuts from 60° left to 45° right. Reference stops are mounted on the sides of the turntable to facilitate rapid 0°, 45° and 60° cuts to the left and 45° cuts to the right.

Angled cuts 45° to the left

- ▶ Make sure the vice is positioned to the left of the 0° cutting slot;
- ▶ slacken the turntable lock/release lever.



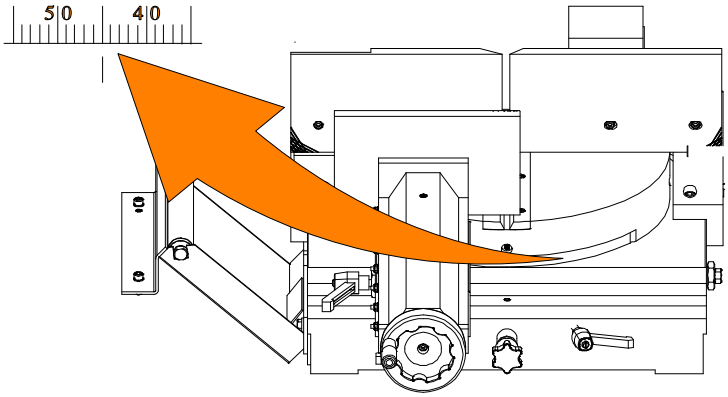
- ▶ Pull the eccentric pin knob towards you (0° reference stop) and rotate slightly to raise it.



Warning

The 0, 45 and 60° reference stops for cuts to the left and the 45° reference stop for cuts to the right facilitate rapid head positioning during turntable rotation. However, the eccentric pin is only correctly positioned if the initial rotation of the turntable when released is corrected.

▶ Swing the head from left to right until it is positioned at the required angle, as indicated by the graduated scale on the turntable.



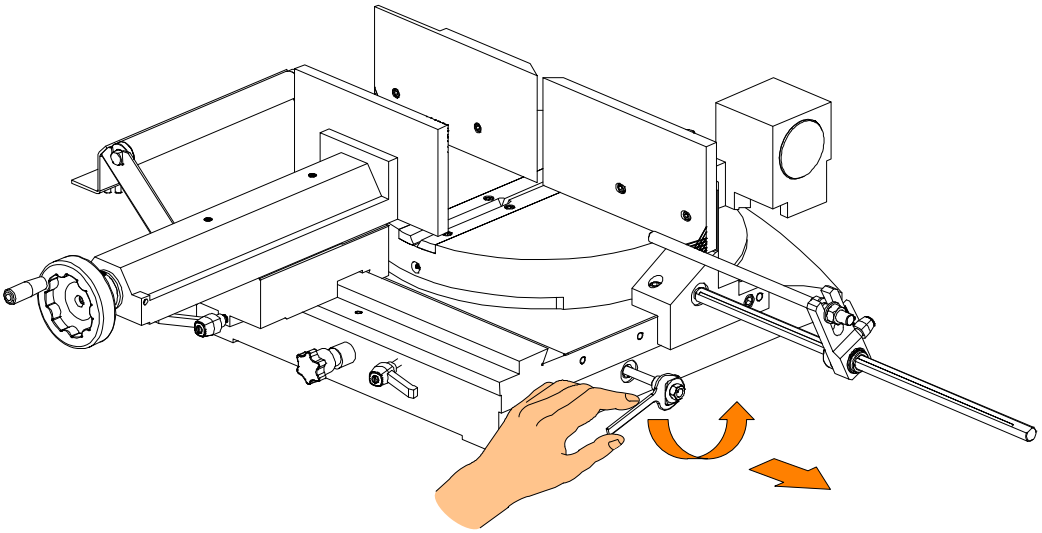
Attention Always rotate the head when it is in the upper position to avoid blade collision with the moving jaw on the clamp.

▶ Relock the turntable lock/release lever.

▶ Make the cut in the required operating mode, following the preliminary safety instructions set out in this chapter.

Angled cuts 60° to the left

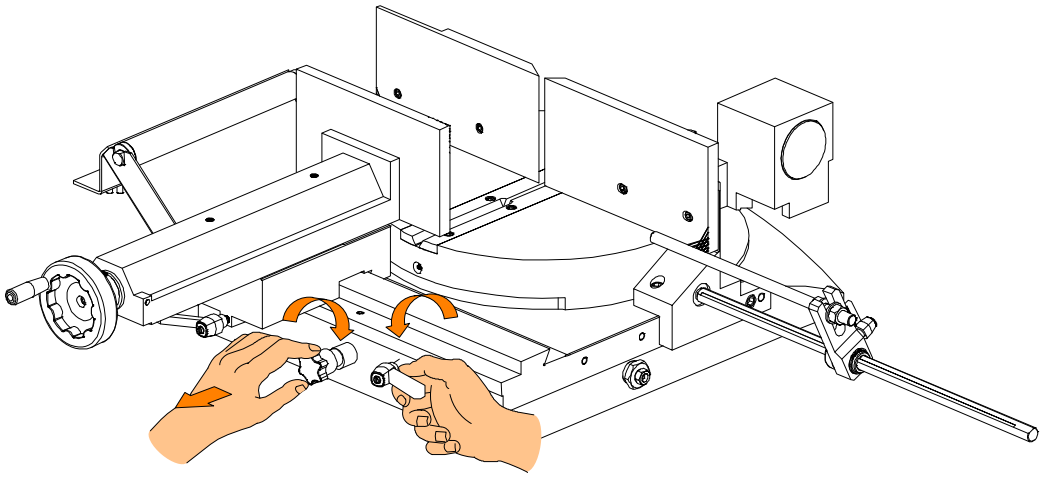
▶ Undo the bush on the 45° left reference stop, as illustrated in the figure below, using a 36 mm wrench;



▶ Remove the 45°reference stop;

▶ slacken the turntable lock/release lever;

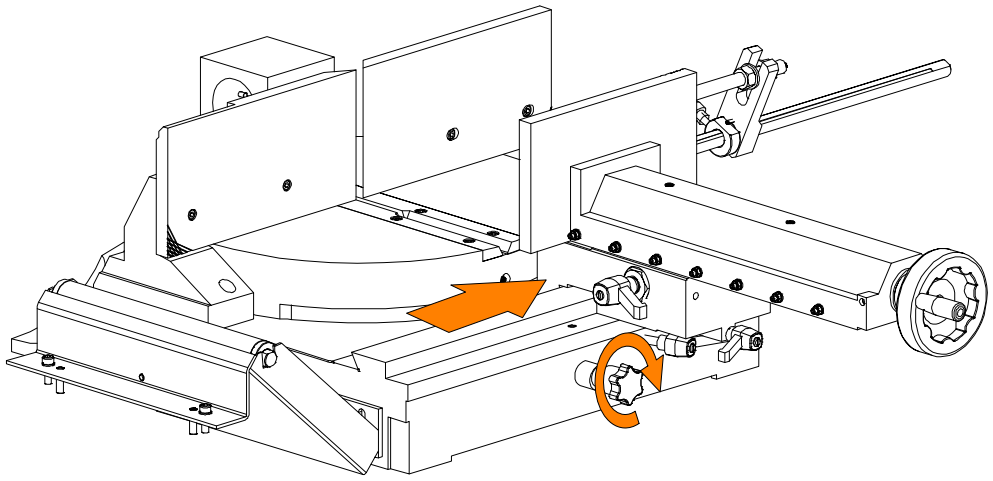
- pull the eccentric pin knob towards you (0° reference stop) and rotate slightly to raise it;



- swing the head from left to right until it is positioned at the required angle, as indicated by the graduated scale on the turntable;
- relock the turntable lock/release lever.
- Before cutting, remove the lever from the front head support and replace it with the grub screw in the accessory pack.
- Make the cut in the required operating mode, following the preliminary safety instructions set out in this chapter.

Angled cuts 45° to the right

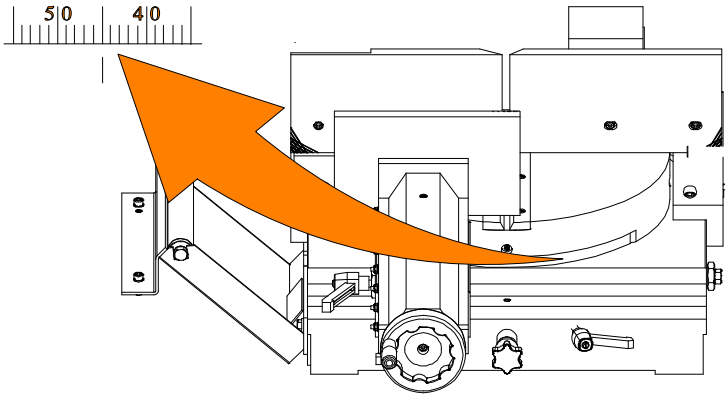
- ▶ Make sure the vice is positioned to the right of the 0° cutting slot.
- ▶ slacken the locking lever as shown in the figure below;
- ▶ position the vice to the right and lock the lever.



Attention When positioning the vice to the left or right, make sure the moving jaw is beyond the 0° cutting slot to avoid any risk of collision with the blade downstroke.

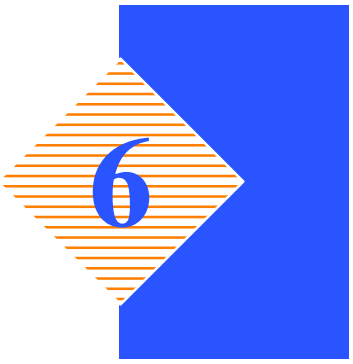
Following the same procedure described above for 45° cuts to the left, now position the head for 45° cuts to the right:

- ▶ slacken the turntable lock/release lever;
- ▶ pull the eccentric pin knob towards you (0° reference stop) and rotate slightly to raise it;



- ▶ rotate the head from right to left, till reaching the wished cant which is displayed by the grading on the rotating platform.
- ▶ Relock the turntable lock/release lever;
- ▶ make the cut in the required operating mode, following the preliminary safety instructions set out in this chapter.

Diagrams, exploded views and replace–ment parts



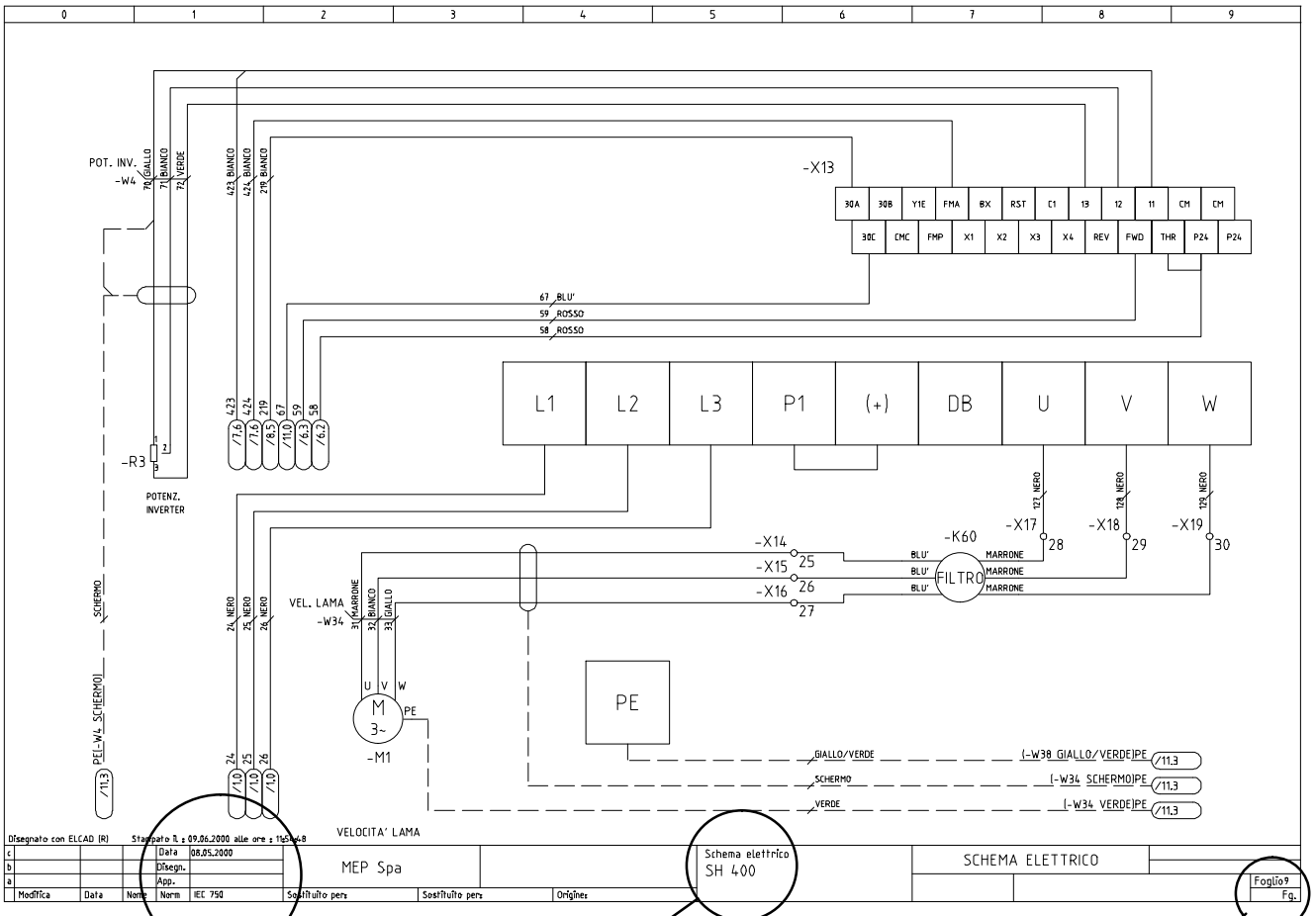
This chapter contains functional diagrams and exploded views of the **DM–1215**. This document is intended to help in identifying the location of the various components making up the machine, giving information useful in carrying out repair and maintenance operations; This chapter will also enable the user to order replacement parts with no risk of misunderstanding, as all parts are given codes.

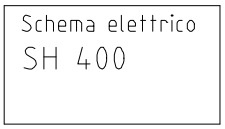
How to read the wiring diagrams

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





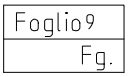
Indications of the model of machine

Data	08.05.2000
Disegn.	MARIO ROSSI
App.	
Norm	IEC 750

Indications of the date production started

Identification of the designer

Identification of the Reference Standard

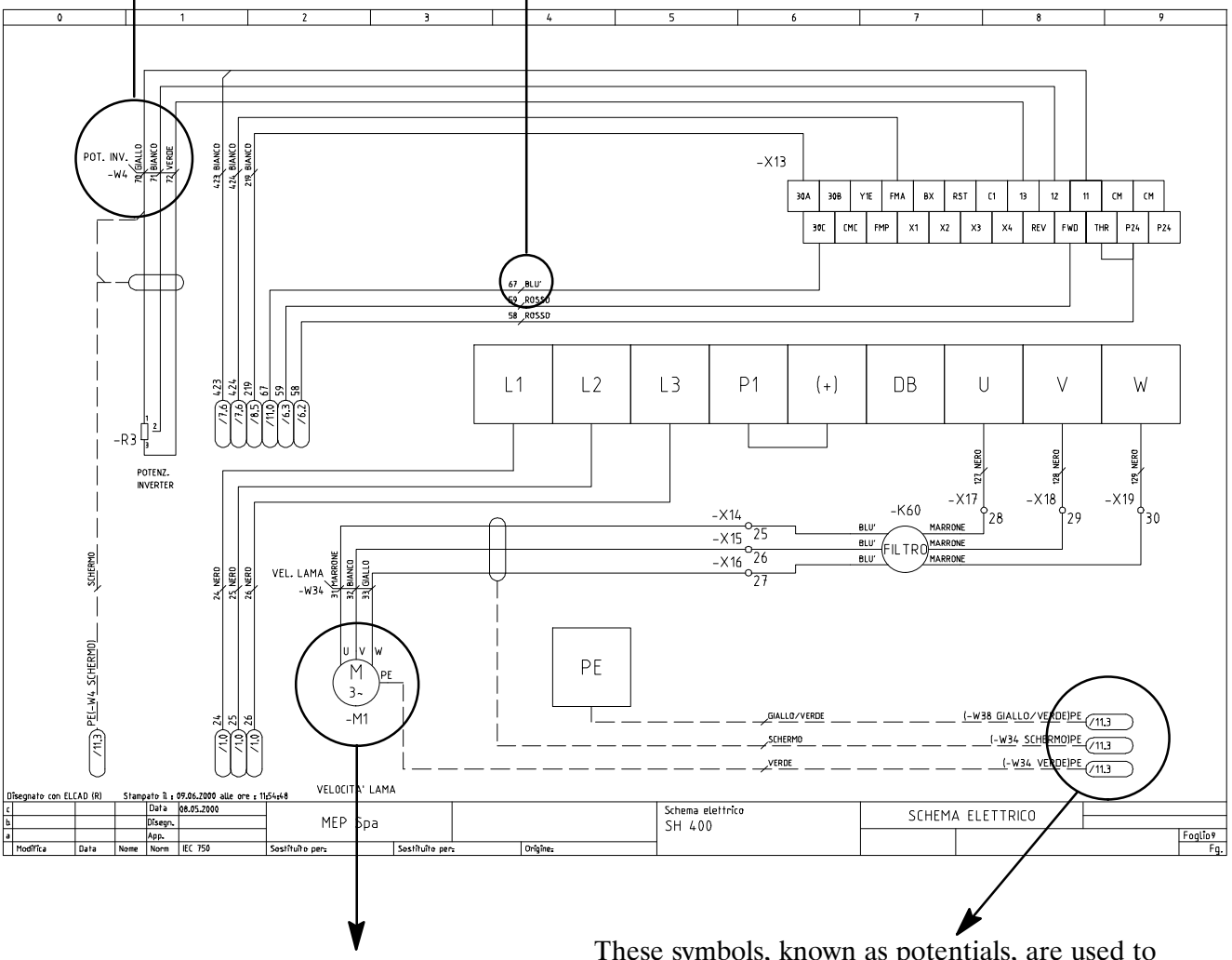


Indication of the page number

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	I
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	LEGENDA SIMBOLI										
	SYMBOL KEY										
3	ALIMENTAZIONE 480V/60Hz										
	POWER SUPPLY 480V/60Hz										
4	ALIMENTAZIONE MOTORI 480V/60Hz										
	MOTOR POWER SUPPLY 480V/60Hz										
5	ALIMENTAZIONE TRASFORMATORI										
	TRANSFORMER POWER SUPPLY										
6	AUSILIARI 24VAC										
	AUXILIARY 24VAC										
7	AUSILIARI INVERTER										
	Inverter Auxiliary Circuits										
8	OPTIONAL LASER/LAMPADA										
	OPTIONAL LASER/WORK ZONE LAMP										
9	MORSETTIERA										
	TERMINAL STRIP										
10	INTERNO QUADRO										
	BOARD INSIDE LAYOUT										
11	LAYOUT INTERNO QUADRO										
	BOARD INSIDE										
12	GUAINE E ACCESSORI										
	SHEATHS AND ACCESSORIES										
13	GUAINE E ACCESSORI										
	SHEATHS AND ACCESSORIES										

Foglio Sheet	Descrizione Description	Revisione \ Revision 0	1	2	3	4	5	6	7	8	9
14	RIASSUNTIVO CAVI										
	CABLE SUMMARY										
15	DISTINTA MATERIALI										
	MATERIAL LIST										
16	DISTINTA MATERIALI										
	MATERIAL LIST										
17	DISTINTA MATERIALI										
	MATERIAL LIST										
18	DISTINTA MATERIALI										
	MATERIAL LIST										

Note :

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant: DM 12-15 480V.60Hz
Denominazione/Title: INDICE CONTENUTI / CONTENT INDEX
Ordine/Requisition:
Commessa/Order: DM12-15
Esecutore/Executor:

MEP

Foglio/Page 1
Segue/Follow 2
Ultimo/Last 18

Sim.\Sym.	File	Descrizione\Description
	H12	LED con resistenza *LED WITH RESISTOR*
	M2	Motore asincrono trifase *THREE PHASE INDUCTION MOTOR*
	Q1360	Int. automatico magnetotermico sezionatore tripolare *THREE PHASE AUTOMATIC SWITCH*
	S2	Comando a Pulsante NO *PUSH BUTTON NO*
	S4C	Pulsante di emergenza NC *EMERGENCY PUSH BUTTON NC*
	S8	Pressostato NO *PRESSURE SWITCH NO*
	S13C	Fine corsa NC *LIMIT SWITCH NC*
	S104C	Selettore a due posizioni stabili NC *SELECTOR TWO STABLE POSITION*
	Y1	Elettrovalvola *SOLENOID VALVE*
	KA1	Bobina rele' Aux *AUXILIARY RELAY COIL*
	KM1	Bobina contattore *CONTACTOR COIL*

Sim.\Sym.	File	Descrizione\Description
	BLK5	Motore asincrono trifase 6 poli *SIX PHASE INDUCTION MOTOR*
	BLK10	Trasformatore per ausiliari *TRANSFORMER FOR AUXILIARY*
	SEL_VEL	Selettore a tre posizioni stabili NO riposo 0 *SELECTOR THREE STABLE ZERO CENTRAL POSITION*
	BLK41	Raccordo SX *CONNECTOR SX*
	BLK42	Raccordo DX *CONNECTOR DX*
	BLK43	Tubo corrugato *CORRUGATED PIPE*
	BLK45	Riduzione PG *PG ADAPTER*
	BLK49	Pressacordone *FAIRLEAD*
	BLK51	Dado PG *NUT PG*
	BLK56	Capicorda a puntale *TERMINAL*
	BLK57	Filo unipolare *WIRE*

Sim.\Sym.	File	Descrizione\Description
	BLK58	Fascette plastiche di fissaggio *CLAMP*
	BLK60	Capicorda a occhiello *TERMINAL*
	BLK66	Sacchetto portafusibile *BAG FUSE*

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

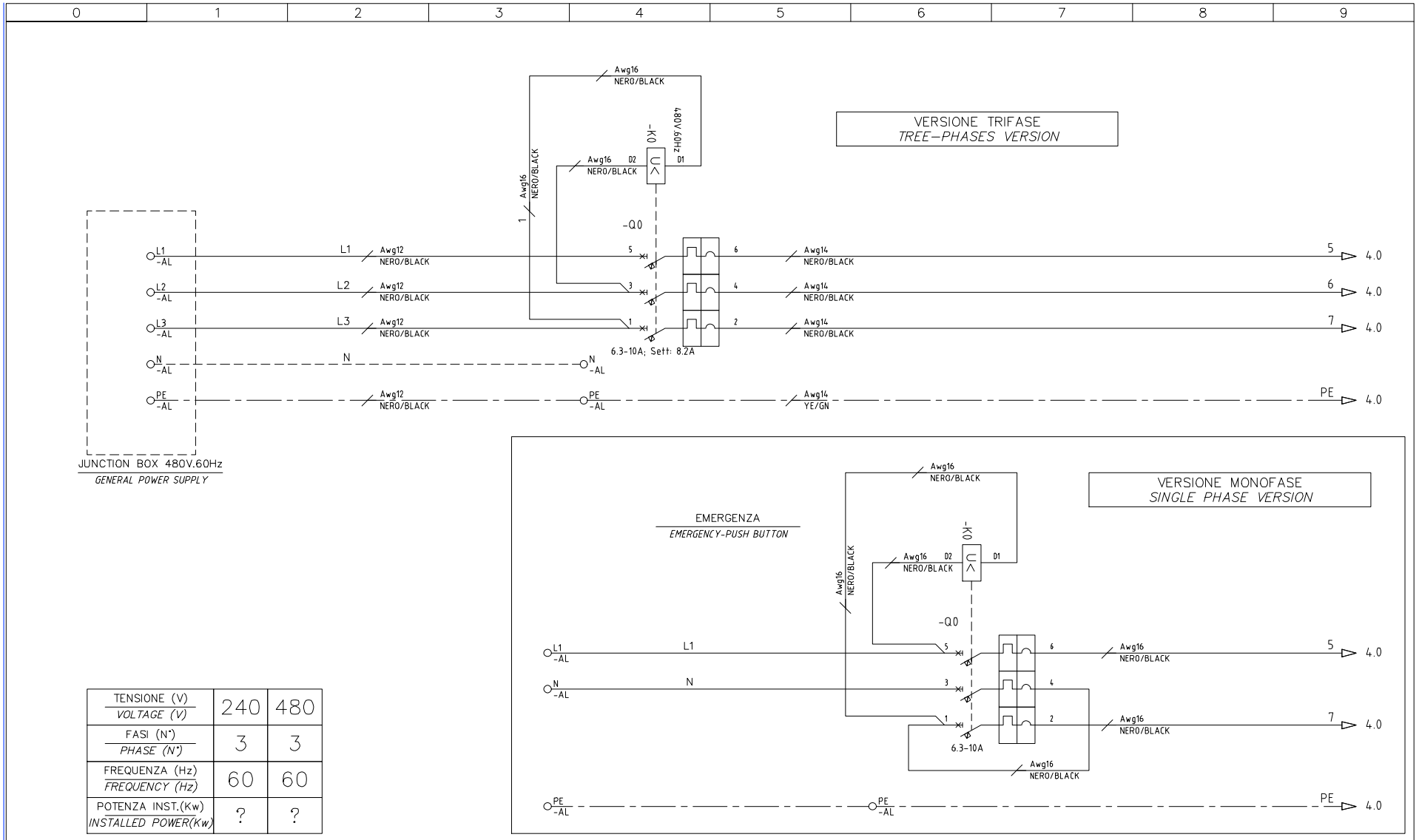
Impianto/Plant: *DM 12-15 480V.60Hz*

Denominazione/Title: LEGENDA SIMBOLI
SYMBOL KEY

Ordine/Requisition
Commessa/Order: DM12-15
Esecutore/Executor

MEP

Foglio/Page: 2
Segue/Follow: 3
Ultimo/Last: 18



TENSIONE (V) / VOLTAGE (V)	240	480
FASI (N°) / PHASE (N°)	3	3
FREQUENZA (Hz) / FREQUENCY (Hz)	60	60
POTENZA INST.(Kw) / INSTALLED POWER(Kw)	?	?

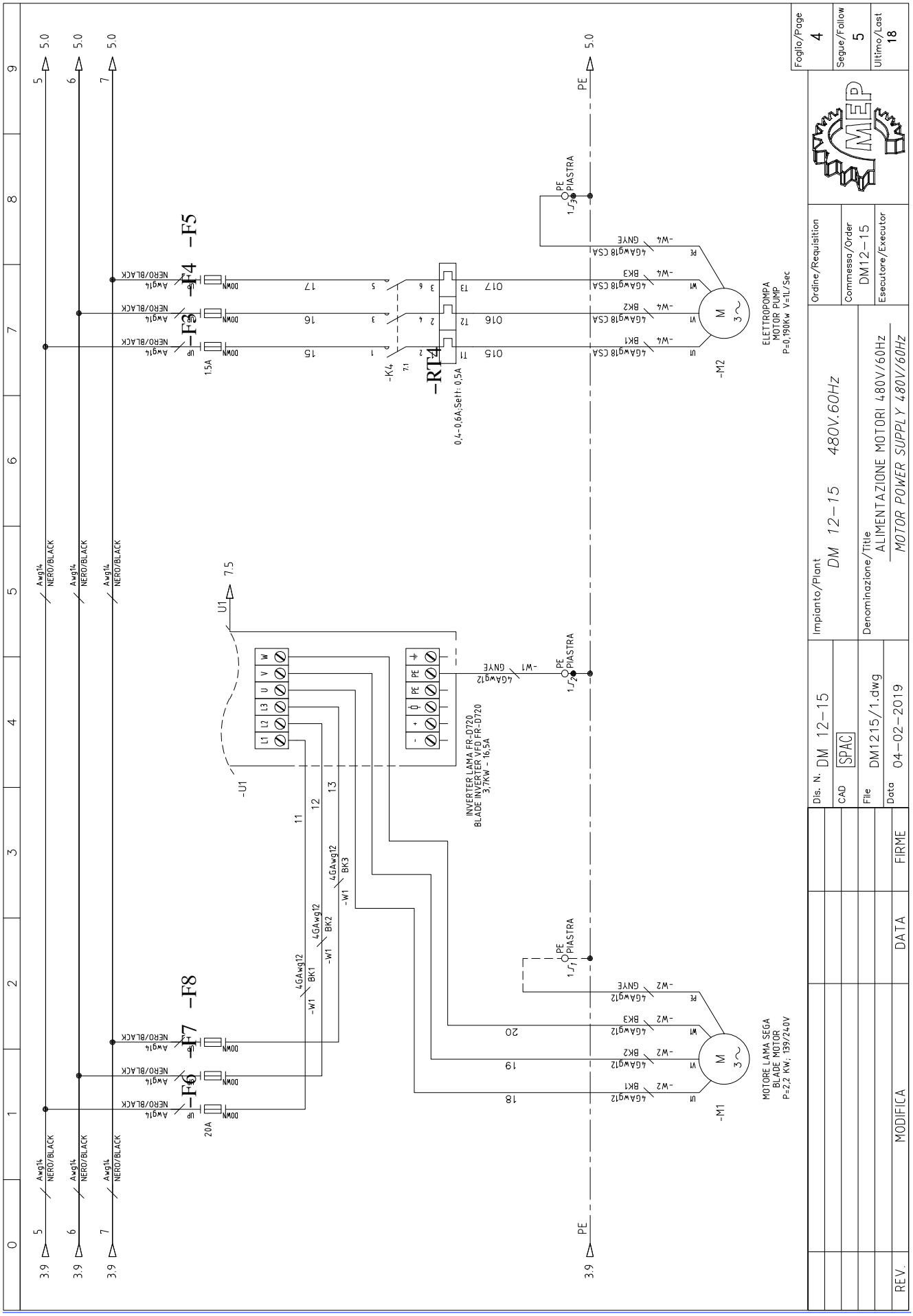
REV.	MODIFICA	DATA	FIRME

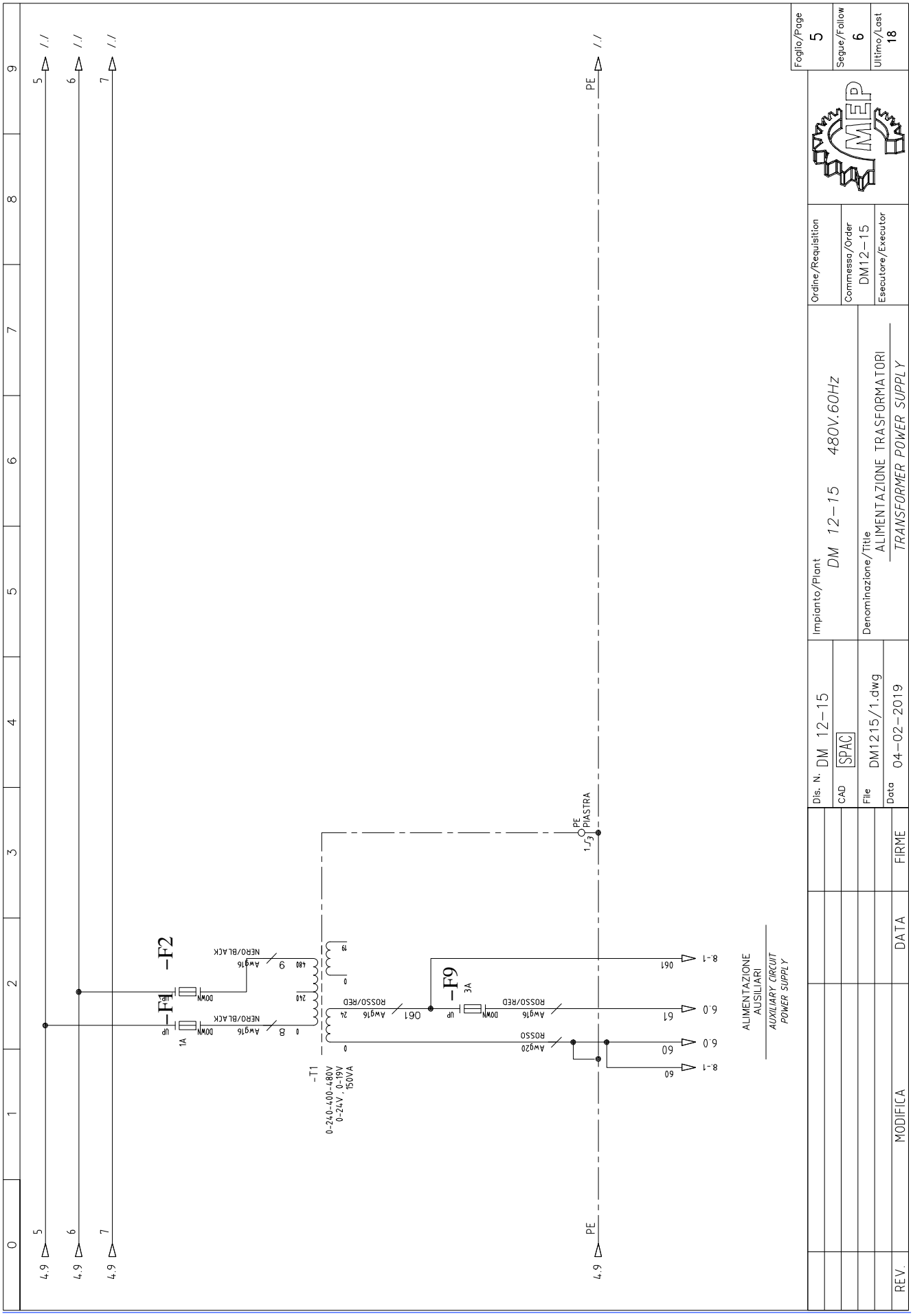
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

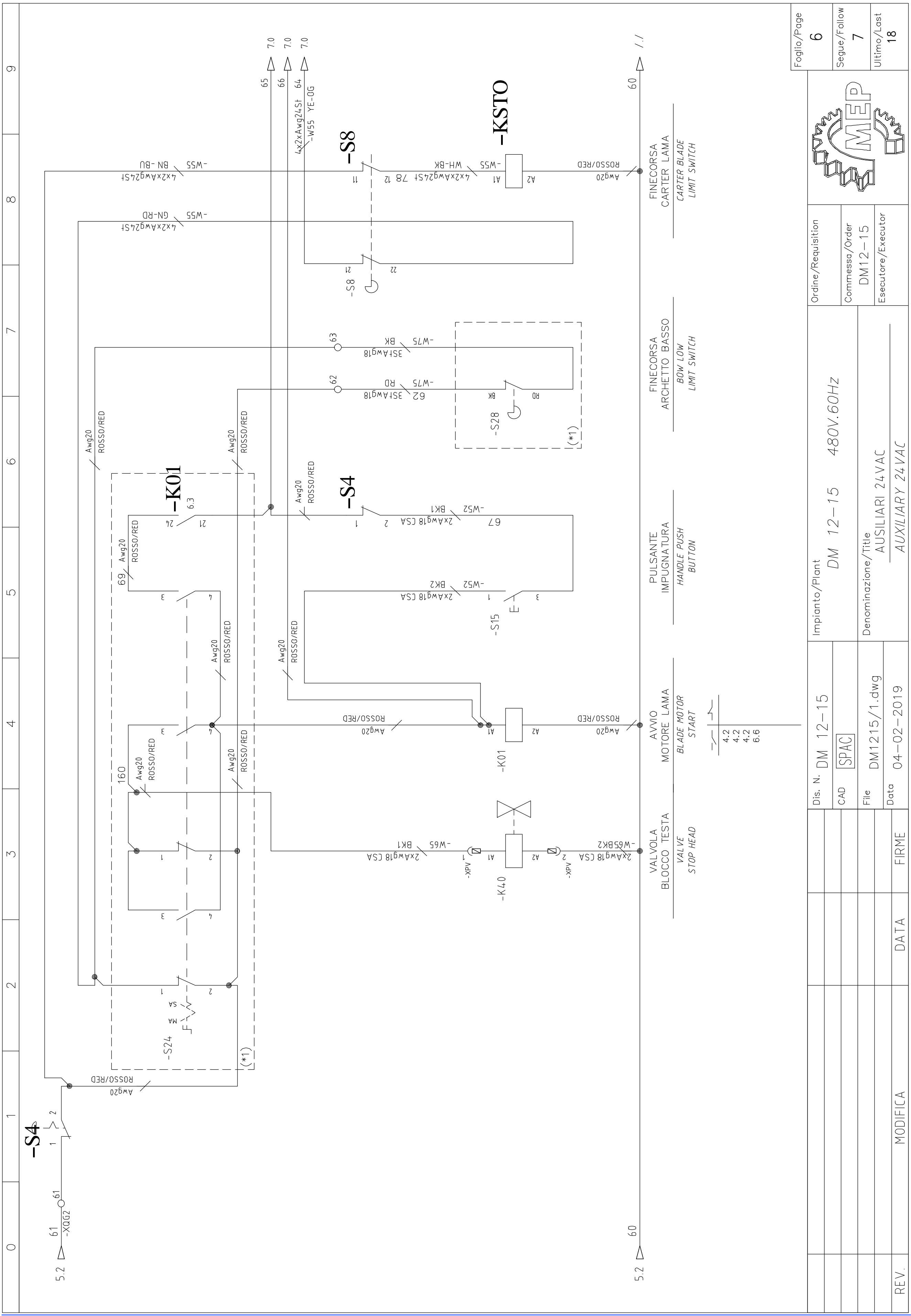
Impianto/Plant: DM 12-15 480V.60Hz
Denominazione/Title: ALIMENTAZIONE 480V/60Hz / POWER SUPPLY 480V/60Hz
Ordine/Requisition:
Commessa/Order: DM12-15
Esecutore/Executor:

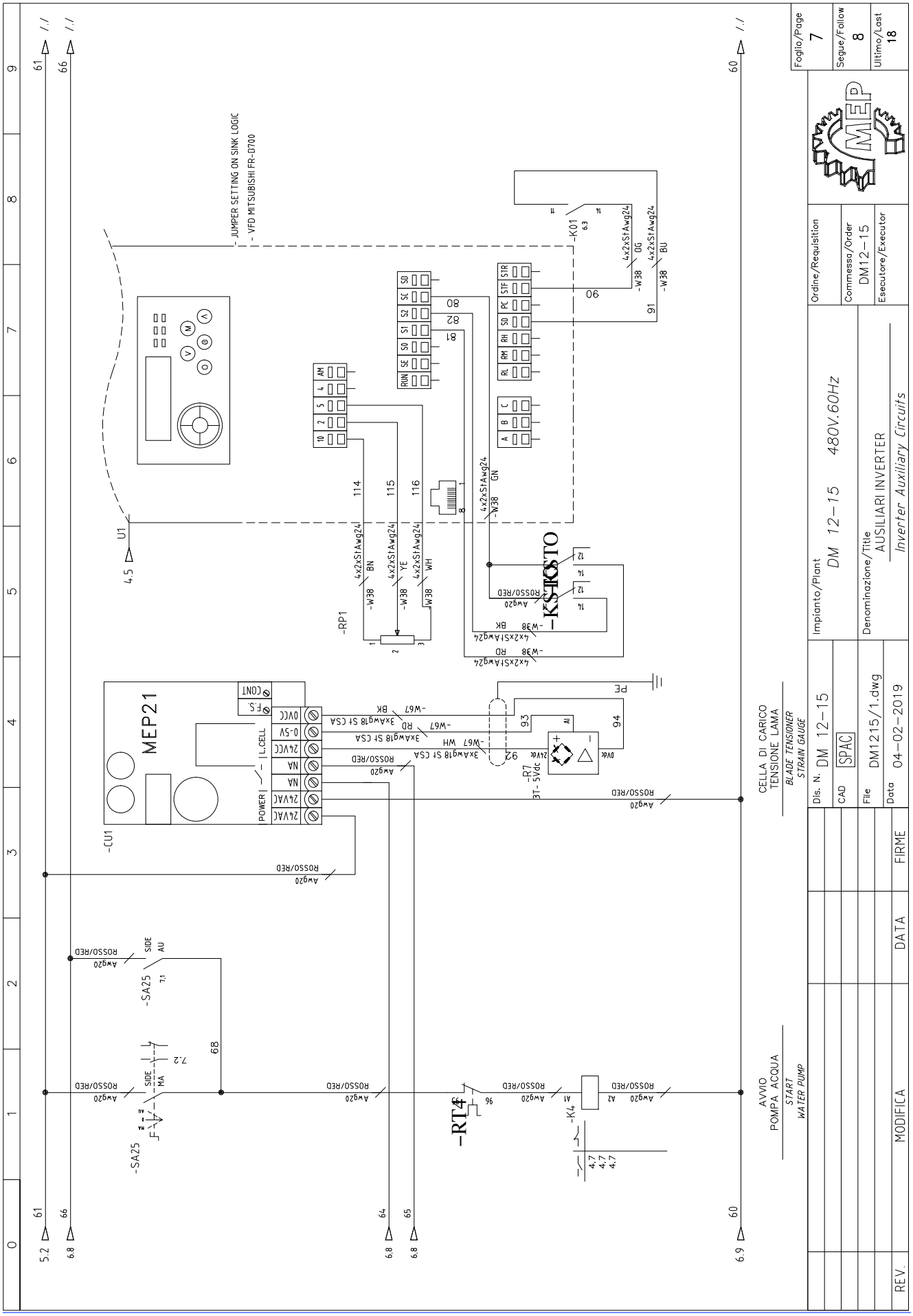
MEP

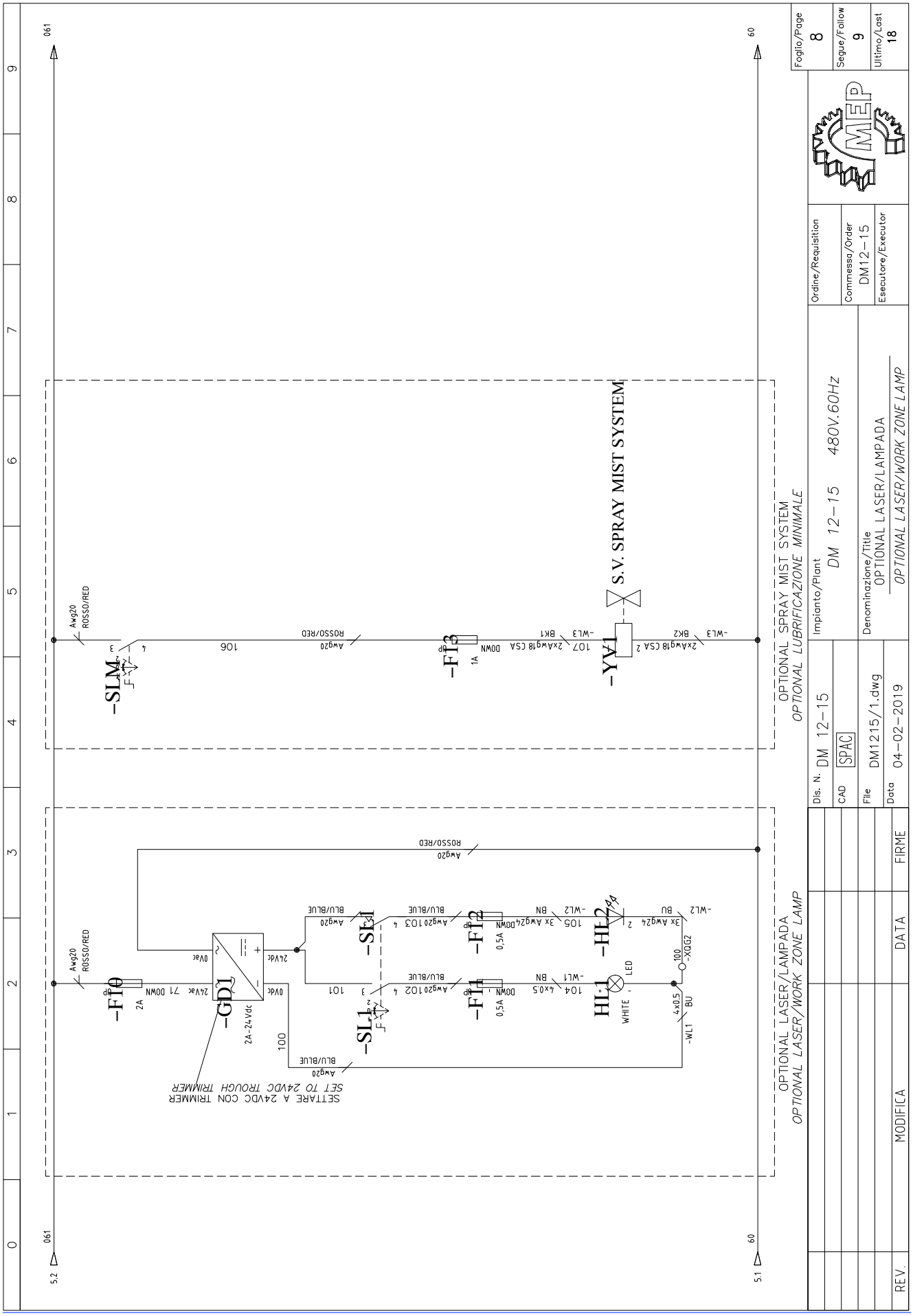
Foglio/Page: 3
Segue/Follow: 4
Ultimo/Last: 18


Foglio/Page 4
Segue/Follow 5
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title ALIMENTAZIONE MOTORI 480V/60Hz
MOTOR POWER SUPPLY 480V/60Hz
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME
-F1 -F3 -F4 -F5 -F6 -F7 -F8
-RT1
-K4
-U1
-M1
-M2
INVERTER LAMA FR-D720
BLADE INVERTER VFD FR-D720
3,7KW - 16,5A
MOTORE LAMA SEGA
BLADE MOTOR
P=2,2 KW, 139/240V
ELETTROPOMPA
MOTOR PUMP
P=0,190Kw V=1L/Sec
0,4-0,6A;Set: 0,5A
NERO/BLACK
Awg14
4GAwg12
4GAwg18 CSA
GNYE
PE PIASTRA

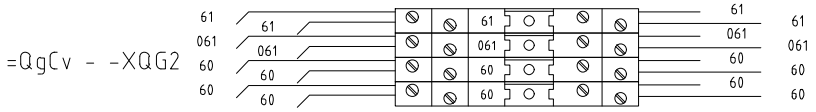

Foglio/Page 5
Segue/Follow 6
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title ALIMENTAZIONE TRASFORMATORI
TRANSFORMER POWER SUPPLY
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME
-F2
-F1
-F9
-T1
0-240-400-480V
0-24V ; 0-19V
150VA
ALIMENTAZIONE AUSILIARI
AUXILIARY CIRCUIT POWER SUPPLY
PE PIASTRA
NERO/BLACK
ROSSO/RED
ROSSO
DOWN
UP


-S8
-KSTO
-K01
-S4
FINECORSA CARTER LAMA
CARTER BLADE LIMIT SWITCH
FINECORSA ARCHETTO BASSO
BOW LOW LIMIT SWITCH
PULSANTE IMPUGNATURA
HANDLE PUSH BUTTON
AVVIO MOTORE LAMA
BLADE MOTOR START
VALVOLA BLOCCO TESTA
VALVE STOP HEAD
Foglio/Page 6
Segue/Follow 7
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title AUSILIARI 24VAC
AUXILIARY 24VAC
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV.
MODIFICA
DATA
FIRME


JUMPER SETTING ON SINK LOGIC
- VFD MITSUBISHI FR-D700
MEP21
-CU1
-RP1
-KSTOP
-RT4
-K4
-K01
-R7
-SA25
CELLA DI CARICO
TENSIONE LAMA
BLADE TENSIONER
STRAIN GAUGE
AVVIO
POMPA ACQUA
START
WATER PUMP
Foglio/Page 7
Segue/Follow 8
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title AUSILIARI INVERTER
Inverter Auxiliary Circuits
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME


OPTIONAL SPRAY MIST SYSTEM
OPTIONAL LUBRIFICAZIONE MINIMALE
S.V. SPRAY MIST SYSTEM
-SLM
-FT3
-YV1
-FT0
-GD1
-SL1
-SE1
-FT2
-FT1
-HL2
HL1
-XQG2
-WL1
SETTARE A 24VDC CON TRIMMER
SET TO 24VDC TROUGH TRIMMER
OPTIONAL LASER/LAMPADA
OPTIONAL LASER/WORK ZONE LAMP
Foglio/Page 8
Segue/Follow 9
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title OPTIONAL LASER/LAMPADA
OPTIONAL LASER/WORK ZONE LAMP
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME

0	1	2	3	4	5	6	7	8	9



REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant
DM 12-15 480V.60Hz

Denominazione/Title
MORSETTIERA
TERMINAL STRIP

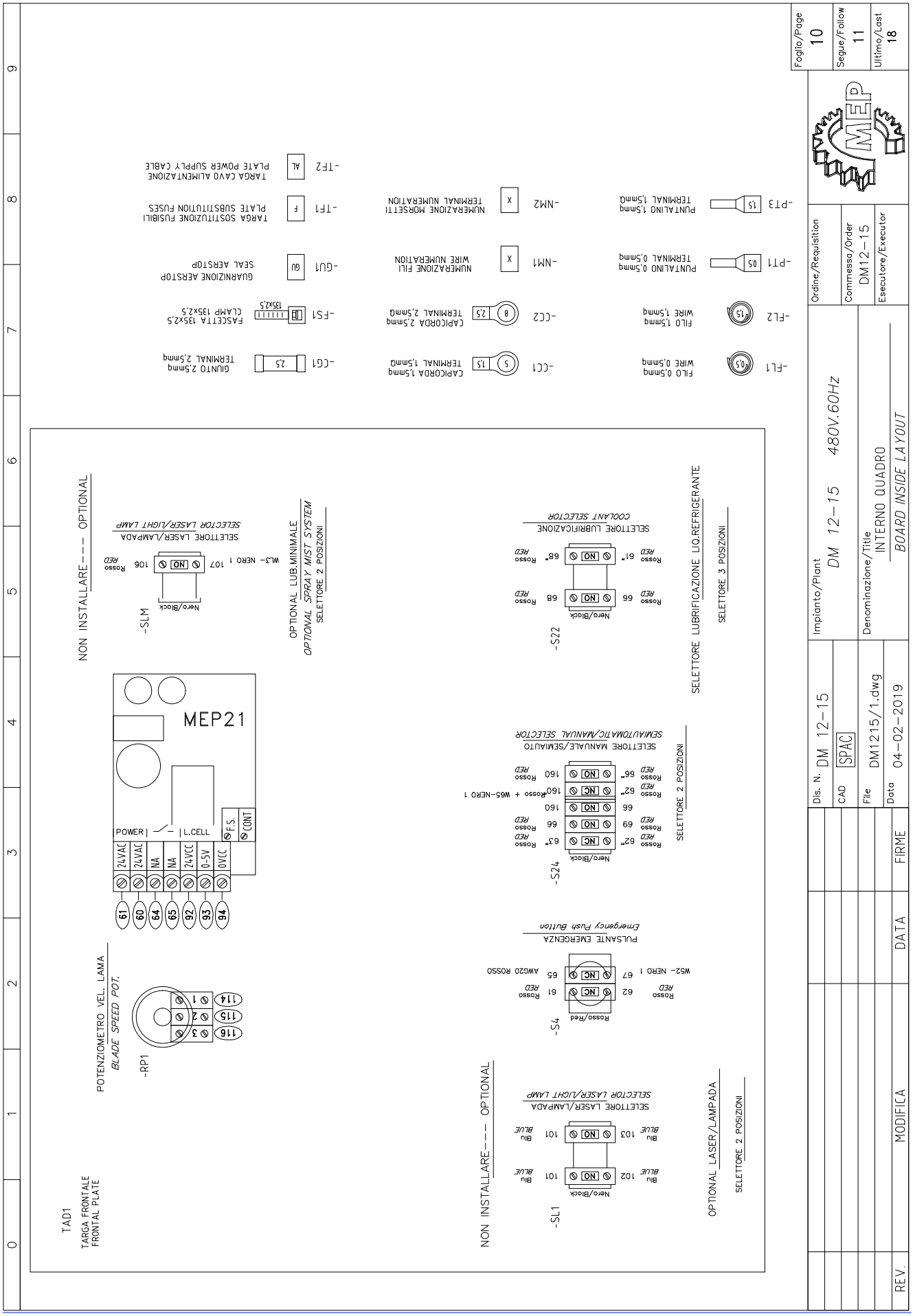
Ordine/Requisition

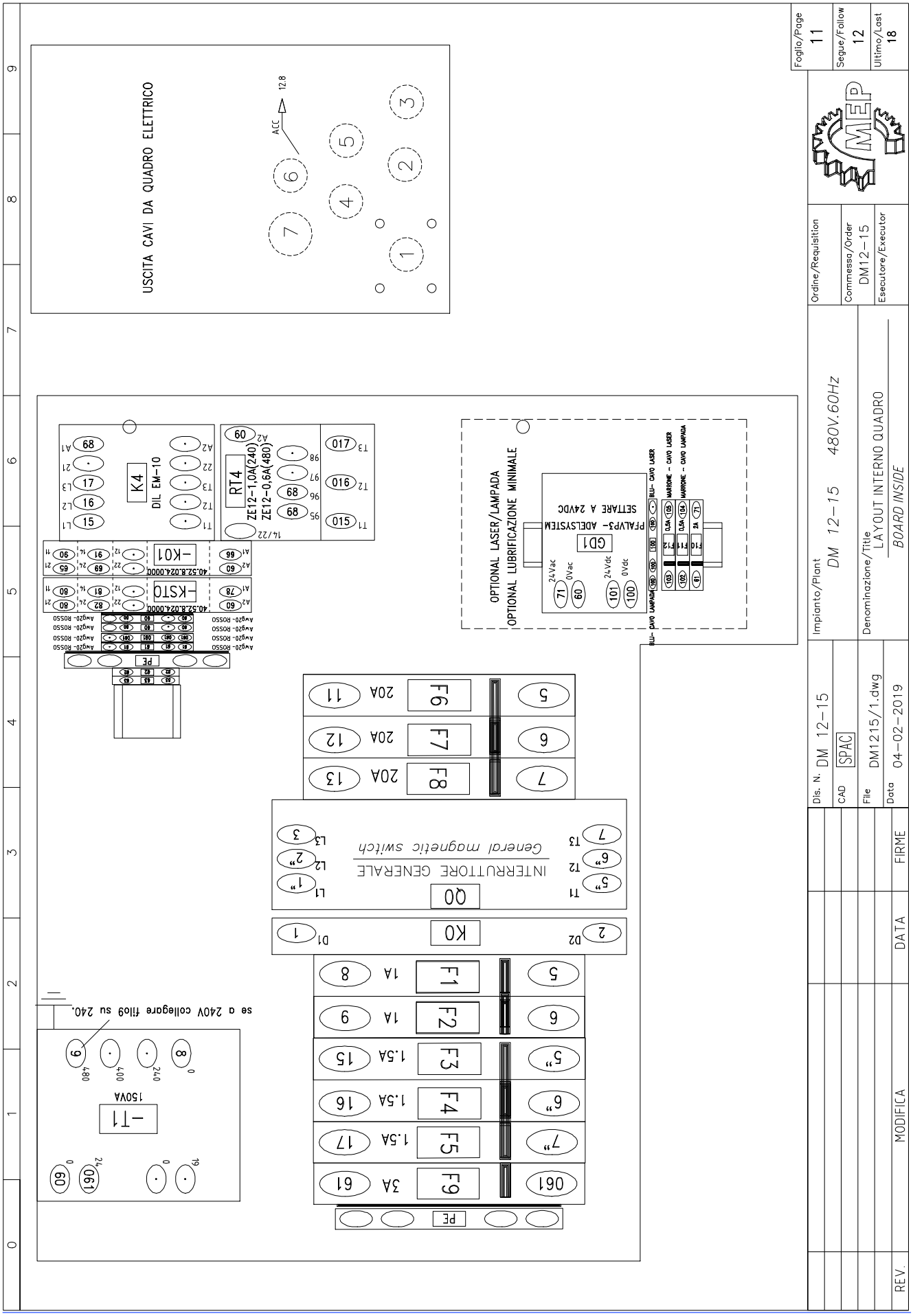
Commessa/Order
DM12-15

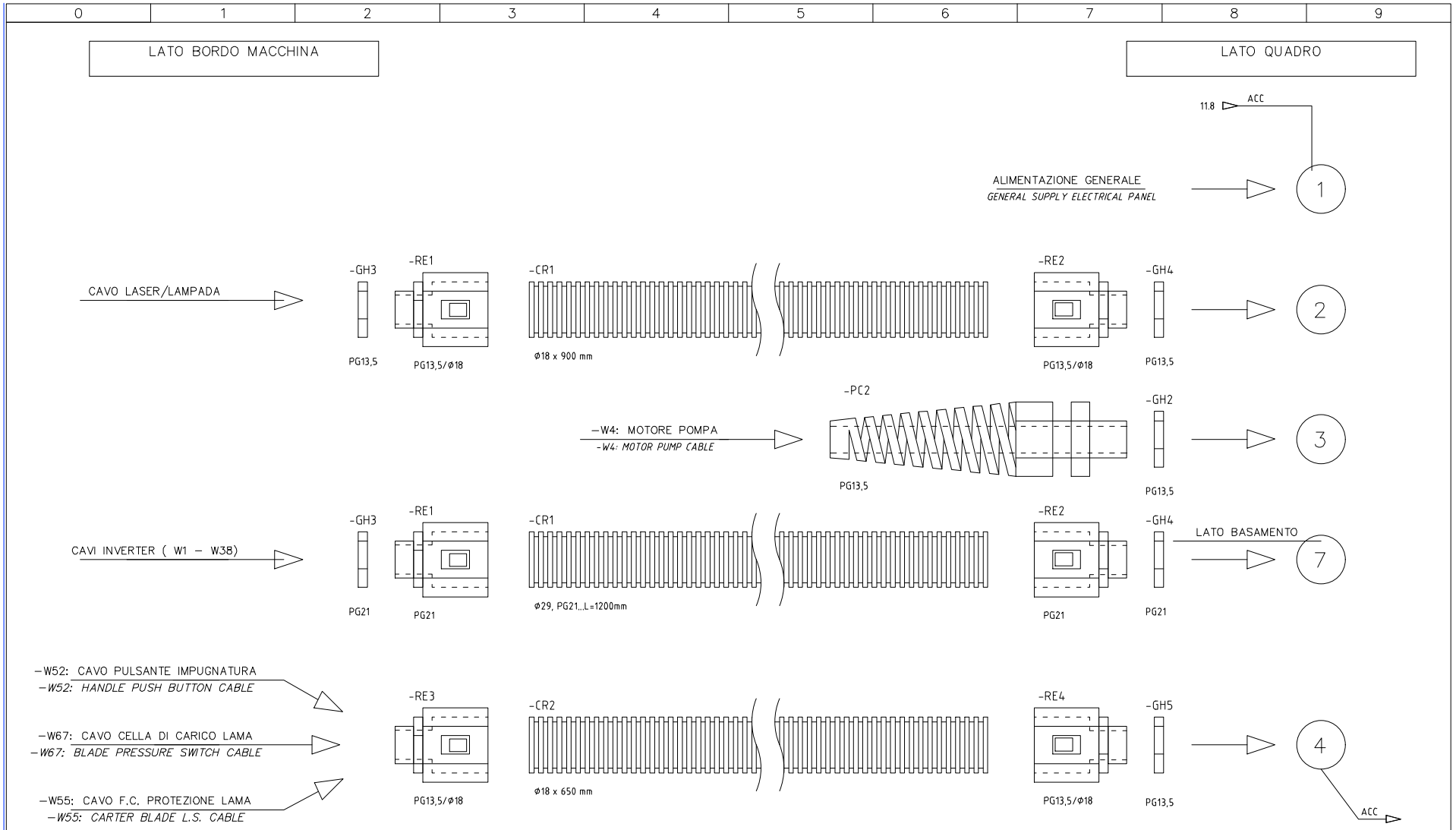
Esecutore/Executor

MEP

Foglio/Page 9
Segue/Follow 10
Ultimo/Last 18


Foglio/Page 10
Segue/Follow 11
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title INTERNO QUADRO
BOARD INSIDE LAYOUT
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME
-FL1 FILO 0,5mm² WIRE 0,5mm²
-FL2 FILO 1,5mm² WIRE 1,5mm²
-PT1 PUNTALINO 0,5mm² TERMINAL 0,5mm²
-PT3 PUNTALINO 1,5mm² TERMINAL 1,5mm²
-CC1 CAPICORDA 1,5mm² TERMINAL 1,5mm²
-CC2 CAPICORDA 2,5mm² TERMINAL 2,5mm²
-NM1 NUMERAZIONE FILI WIRE NUMERATION
-NM2 NUMERAZIONE MORSETTI TERMINAL NUMERATION
-CG1 GIUNTO 2,5mm² TERMINAL 2,5mm²
-FS1 FASCETTA 13SX2,5 CLAMP 13SX2,5
-GU1 GUARNIZIONE AERSTOP SEAL AERSTOP
-TF1 TARGA SOSTITUZIONE FUSIBILI PLATE SUBSTITUTION FUSES
-TF2 TARGA CAVO ALIMENTAZIONE PLATE POWER SUPPLY CABLE
TAD1
TARGA FRONTALE
FRONTAL PLATE
NON INSTALLARE--- OPTIONAL
POTENZIOMETRO VEL. LAMA
BLADE SPEED POT.
-RP1
MEP21
POWER
L.CELL
F.S.
CONT
24VAC
24VAC
NA
NA
24VCC
0-5V
0VCC
61
60
64
65
92
93
94
NON INSTALLARE--- OPTIONAL
SELETTORE LASER/LAMPADA
SELECTOR LASER/LIGHT LAMP
-SL1
OPTIONAL LASER/LAMPADA
SELETTORE 2 POSIZIONI
PULSANTE EMERGENZA
Emergency Push Button
-S4
SELETTORE MANUALE/SEMIAUTO
SEMIAUTOMATIC/MANUAL SELECTOR
-S24
SELETTORE 2 POSIZIONI
SELETTORE LUBRIFICAZIONE LIQ.REFRIGERANTE
SELETTORE 3 POSIZIONI
-S22
OPTIONAL LUB.MINIMALE
OPTIONAL SPRAY MIST SYSTEM
SELETTORE 2 POSIZIONI
-SLM


USCITA CAVI DA QUADRO ELETTRICO
ACC
12.8
OPTIONAL LASER/LAMPADA
OPTIONAL LUBRIFICAZIONE MINIMALE
SETTARE A 24VDC
PFALVP3- ADELSYSTEM
GD1
BLU- CAVO LAMPADA
BLU- CAVO LASER
MARRONE - CAVO LASER
MARRONE - CAVO LAMPADA
K4
DIL EM-10
RT4
ZE12-1,0A(240)
ZE12-0,6A(480)
-K01
-K5T0
-T1
150VA
se a 240V collegare filo9 su 240.
F1 1A
F2 1A
F3 1.5A
F4 1.5A
F5 1.5A
F6 20A
F7 20A
F8 20A
F9 3A
K0
Q0
INTERRUTTORE GENERALE
General magnetic switch
PE
Foglio/Page 11
Segue/Follow 12
Ultimo/Last 18
Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor
Impianto/Plant DM 12-15 480V.60Hz
Denominazione/Title LAYOUT INTERNO QUADRO
BOARD INSIDE
Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019
REV. MODIFICA DATA FIRME



REV.	MODIFICA	DATA	FIRME

Dis. N.	DM 12-15
CAD	SPAC
File	DM1215/1.dwg
Data	04-02-2019

Impianto/Plant: *DM 12-15 480V.60Hz*

Denominazione/Title: GUAINE E ACCESSORI / *SHEATHS AND ACCESSORIES*

Ordine/Requisition:

Commessa/Order: DM12-15

Esecutore/Executor:

MEP

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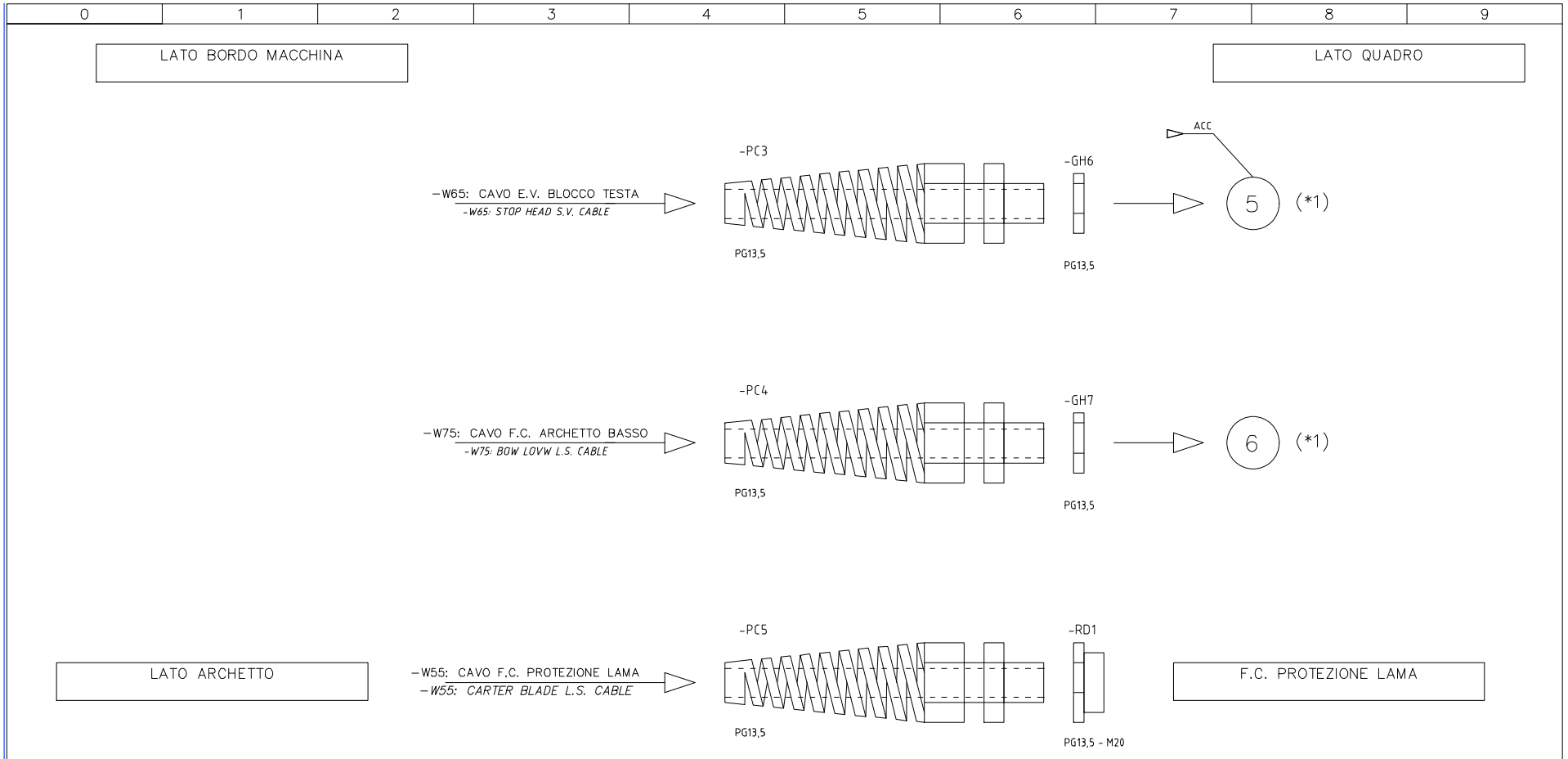

(*1) SOLO CON OPTIONAL CCS
ONLY WITH OPTIONAL CCS

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant
DM 12-15 480V.60Hz

Denominazione/Title
GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES

Ordine/Requisition

Commessa/Order
DM12-15

Esecutore/Executor

MEP

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -F6 -F7 -F8	4/1	DOWN	11	BK1				BK1	11			
=QgCv -F6 -F7 -F8	4/1	DOWN	12	BK2				BK2	12	L1	4/3	=QgCvInv -U1
=QgCv -F6 -F7 -F8	4/1	DOWN	13	BK3	-W1 022.1983	3,50 mt		BK3	13	L2	4/3	=QgCvInv -U1
=QgCv PIASTRA	4/4	1_2 ○	7	GNYE	Cavo alimentazione inverter			GNYE	7	L3	4/4	=QgCvInv -U1
				Sch				Sch		PE	4/4	=QgCvInv -U1
=BmMep -M1	4/1	U1	18	BK1				BK1	18			
=BmMep -M1	4/1	V1	19	BK2				BK2	19	U	4/4	=QgCvInv -U1
=BmMep -M1	4/1	W1	20	BK3	-W2 022.1983	3.50 mt		BK3	20	V	4/4	=QgCvInv -U1
=BmMep -M1	4/1	PE	PE	GNYE	Blade motor cable			GNYE	PE	W	4/4	=QgCvInv -U1
				Sch				Sch		○ 1_1	4/2	=BmCv PIASTRA
=QgCv -RT4	4/6	T1	18	BK1				BK1	18			
=QgCv -RT4	4/7	T2	19	BK2				BK2	19	U1	4/6	=BmMep -M2
=QgCv -RT4	4/7	T3	20	BK3	-W4 022.1984	4,00mt		BK3	20	V1	4/7	=BmMep -M2
=QgCv PIASTRA	4/8	1_3 ○	7	GNYE	Coolant pump motor cable			GNYE	7	W1	4/7	=BmMep -M2
										PE	4/7	=BmMep -M2
=QgCv -XQG2	6/6	63 ○	63	BK				BK	63			
				WH	-W75 022.0224	2.00 mt		WH		RD	6/6	=BmCvCcs -S28
=QgCv -XQG2	6/6	62 ○	62	RD	Colleg. FCTA Head Down L.SW.			RD	62			
										BK	6/6	=BmCvCcs -S28
=QgCv -S4	6/5	2	67	BK1	-W52 022.1980	5.50 mt		BK1	67	3	6/4	=BmMep -S15
=QgCv -K01	6/3	A1	66	BK2	Micro switch Blade start			BK2	66	1	6/4	=BmMep -S15
=BmMep -S8	6/7	22	63	GN-RD				GN-RD	63	1	6/1	=QgCvCcs -S24
=BmMep -S8	6/8	11	62	BN -BU				BN -BU	62	2	6/1	=QgCvCcs -S24
=BmMep -S8	6/8	12	78	WH-BK	-W55 022..1905	5,0 mt		WH-BK	78	A1	6/8	=QgCv -KSTO
=BmMep -S8	6/7	21	64	YE-OG	Blade guard L.SW.			YE-OG	64	NA	7/3	=QgCv -CU1
				Sch				Sch				
=BmCv -XPV	6/3	1 ⊂	42	BK1	-W65 022.1980	4,0 mt		BK1	42	2	6/3	
=QgCv -T1	5/1	0	60	BK2	Head unlock valve			BK2	60	⊂ 2	6/3	=BmCv -XPV

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant: DM 12-15 480V.60Hz
Denominazione/Title: RIASSUNTIVO CAVI / CABLE SUMMARY

Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor

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CAVI ESTERNI \ EXTERNAL CABLES

QUADRO \ BOARD								DESTINAZIONE \ LOCATION			
QUADRO BOARD	FOGLIO SHEET	NR. MORSETTO TERMINAL NO.	NR. FILO CONDUCTOR NO.	ID SUL CAVO ID IN CABLE	CAVO CABLE	LUNGHEZZA LENGHT [mt]	DISTURBO NOISE LEVEL	ID SUL CAVO ID IN CABLE	NR. FILO CONDUCTOR NO.	NR. MORSETTO TERMINAL NO.	FOGLIO SHEET	QUADRO BOARD
=QgCv -CU1	7/3	0-5V	93	RD	-W67 022.1981	6.0 mt		RD	93	AI	7/4	=BmMep -R7
=QgCv -CU1	7/4	0VCC	94	BK	Strain gauge sensor cable			BK	94	0Vdc	7/3	=BmMep -R7
=QgCv -CU1	7/3	24VCC	92	WH				WH	92	24Vdc	7/3	=BmMep -R7
				Sch				Sch				
	7/6	10	114	BN				BN	114	1	7/4	=QgCvInv -RP1
	7/7	S2	82	BK				BK	82	14	7/5	=QgCv -KSTO
	7/7	SD	91	BU				BU	91	11	7/8	=QgCv -K01
	7/7	SC	80	GN				GN	80	11	7/5	=QgCv -KSTO
	7/7	S1	81	RD	-W38 022.1905	6.0 mt		RD	81	14	7/5	=QgCv -KSTO
	7/6	2	115	YE	VFD auxiliary cable			YE	115	2	7/5	=QgCvInv -RP1
	7/6	5	116	WH				WH	116	3	7/4	=QgCvInv -RP1
	7/7	STF	90	OG				OG	90	14	7/8	=QgCv -K01
				Sch				Sch				
=LuTrMep -SL1	8/1	4	104	BN				BN	104	+	8/1	=LuTrMep HL1
				BK	-WL1 022.0424	L=2.0 mt		BK				
=QgCv -GD1	8/1	0Vdc	100	BU	Lamp light Cable			BU	100	-	8/1	=LuTrMep HL1
				WH				WH				
=LuTrMep -SL1	8/2	4	105	BN				BN	105	1	8/2	=LuTrMep -HL2
				BK	-WL2 022.0355	L=2.0 mt		BK				
=QgCv -XQG2	8/2	100	100	BU	Laser light Cable			BU	100	2	8/2	=LuTrMep -HL2

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant
DM 12-15 480V.60Hz

Denominazione/Title
DISTINTA MATERIALI
MATERIAL LIST

Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor

MEP

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Nome/Item	Mep Code	Descrizione/Description	Descrizione EN	Codice Interno	Fg/Sh	Q.ta/Q.ty
-RE1	022.0211	Raccordo rapido dritto SEM PG13,5/Ø19	Rapid straight joint SEM PG13,5/Ø19	SEM PG13,5/Ø19	12	2
-RE2					12	2
-RE3					12	1
-RE4					12	1
-PC2	022.0234	Pressacordone 3246 nero PG13,5	Cable Gland Strain Relief	3246 nero PG13,5	12	1
-PC5		Pressacordone 3246 nero PG13,5	Cable Gland Strain Relief	3246 nero PG13,5	13	1
-PC3		Pressacordone 3246 nero PG13,5	Cable Gland Strain Relief	3246 nero PG13,5	13	1
-PC4					13	1
-GH2	022.0244	Dado grigio PG13,5	Nut Pg 13,5	PG13.5	12	1
-GH3					12	2
-GH4					12	2
-GH5					12	1
-GH6		Dado grigio PG13,5	Nut Pg 13,5	PG13.5	13	1
-GH7					13	1
-XPV	022.0369	Connettore 3 poli per tensionatore elettronico	Connector 3-poles for strain gauge	022.0369		1
PIASTRA	022.0377	Morsetto PE da 2.5 mm singolo per 2 fili a molla WK4 SLU	Terminal 4(6)mmq for 2 wires_PE_PHOENIX	USLKG5		1
-CR1	022.2602	Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	Poliflex Covering Ø18	NW 14-1200143	12	2
-CR2					12	1
-S28	022.0506	Finecorsa D4C-1901 2M ALIM. AX-AXI	Limit Switch for Ax-Axi	D4C-1901 2M OMRON	6	1
-K40	V.d.P.	Vedi distinta pneumatica	See pneumatic list	V.d.P.	6	1
-S15	010.0928	Molla per impugnatura MEP dis.1189559		010.0928	6	1
-M1	019.3627	Motore KW 2,2 M90L4P.B14 V139/240.60 14,8/8,60A	Motor KW 2,2 M90L4P.B14 V139/240.60 14,8/8,60A	019.3627	4	1
-RD1	022.0349	Riduzione M/F M20/PG13,5	Joint Reduction	M/F M20/PG13,5	13	1
-S15	022.0515	Microinteruttore V-21-1C6	Micro Switch	V-21-1C6	6	1
-S8	022.0544	Finecorsa a chiave 2 NC	Limit Switch with fork 2NC	FR 993-D10 PIZZATO	6	1
-R7	022.2152	Tensionatore elettronico 3T	Electronic tensioner 3T	TR-S-A/3T 1,5V- 900Kg Deltateck	7	1
-F13	022.2252	Morsetto portafusibile 6,3x32	Fuse holding terminal 6,3x32	ZFK 4-HESI	8	1
-F11		Morsetto portafusibile 6,3x32	Fuse holding terminal 6,3x32	ZFK 4-HESI	8	1
-F12					8	1
-S15	025.0691	Serie guernizioni per impugnatura	Gasket for Mep handle		6	1
-M2	028.0260	Elettropompa V.220-254/380-440.50-60 HZ 150W SPV33 o 4C0A6-12HP1	Electropump V.220-240/380-415.50-60 HZ 150W	SPV33 o 4C0A6-12HP1	4	1
-S15	034.1221	Impugnatura MEP		034.1221	6	1
-F10		Fusibile unipolare			8	1
TAD1					10	1
-U1	022.0771	INVERTER TRIFASE 200-240V 3,7KW IN=16,5A	INVERTER THREE-PHASES 200-240V 3,7KW IN=16,5A	FR-D720-165-NA	4	1
-SL1	022.0937	Contatto pulsantiera NA	Normally open contact	M22-K10 cod. 216376 Moeller	8	2
-SLM					8	1
-SA25		Contatto pulsantiera NA M22-K10 cod. 216376	Normally open contact	M22-K10 cod. 216376 Moeller	7	2
-S24		Blocchetto NA M22-K10 cod. 216376	Normally open contact	M22-K10 cod. 216376 Moeller	6	2
-HL2	022.1191	Traguardatore laser a riga 12x70 24Vcc 635nm 5mW e conn. M8	Laser Line Sign	MOD 50EM 24V e connettore - RLI	8	1
-SL1	022.1226	Selettore stabile 2 pos.	2 position stable selector	M22-WKV cod.216874 - Moeller	8	1
-SLM					8	1
-S24		Selettore stabile 2 pos. M22-WKV cod.216874 + portacontatti M22-A cod 216374	2 position stable selector	M22-WKV cod.216874 - Moeller	6	1
HL1	022.3255	Faro Led 4,2W 16/36 VCC 330LM	LED LIGHT 4,2W 16/36 VCC 330LM		8	1
-YV1	090.1601	Gruppo lubrificazione minimale SHARK in AC	Spray mist oil system for Shark AC voltage		8	1

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant: DM 12-15 480V.60Hz
Denominazione/Title: DISTINTA MATERIALI / MATERIAL LIST

Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor

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Nome/Item	Mep Code	Descrizione/Description	Descrizione EN	Codice Interno	Fg/Sh	Q.ta/Q.ty
-FS1	019.5353	Fascetta in plastica 135x2,5	Plastic clamp 140x3,5	32031 Legrand	10	1
-FL1	022.0171	Cordicella unipolare 1 X 0,5	Single wire 0.5mmq		10	1
-FL2	022.0172	Cordicella unipolare 1x1,50	Single wire 1,50mmq		10	1
-Q0	022.0266	COMANDO BLOCCOPORTA MSHD-LY + ADATTATORE	MSHD-LY	MSHD-LY + ADATTATORE	3	1
-NM1	022.0290	Etichetta segnafilo	Cable maker and wire		10	1
-NM2					10	1
-CG1	022.0297	Terminale a giunto da 2,5mmq (Blu)	Wire Terminal Connection Blue	2,5mmq F2617 M4	10	1
-CC2	022.0303	Terminale a occhiello Ø8 da 2,5mmq (Blu)	Wire Terminal Connection Blue	Ø8 da 2,5mmq BM00237	10	1
-CC1	022.0308	Terminale a occhiello Ø5 da 1,5mmq (Rosso)			10	1
-PT1	022.0311	Terminale a puntale da 0,5mmq (Bianco)	Wire Terminal Connection White	0,5mmq DZ5CE005	10	1
-PT3	022.0312	Terminale a puntale da 1,5mmq (Nero)	Wire Terminal Connection Black	1,5mmq DZ5CE015	10	1
-K0	022.0573	Bobina di minima	Releaser	V230.50 /240.60 1SAM201904R1003 ABB	3	1
-CU1	022.0887	Display LCD MEP21 per tensionatore lama	Mep21 Board visualizer TL	MEP21	7	1
-GD1	022.0909	Alimentatore Lineare Vi 4-28Vac/dc Vu 1,2-24Vdc 2A	Linear power supply Vi 4-28Vac/dc Vu 1,2-24Vdc 2A	PFALVP3 AdelSystem	8	1
-S4	022.0936	Contatto pulsantiera NC	Normally close contact	M22-K01 cod. 216678 - Moeller	6	2
-S24		Blocchetto NC M22-K01 cod. 216678	Normally close contact	M22-K01 cod. 216678 - Moeller	6	2
-K01	022.0994 + 022.2391	Rele 24VAC - 2 contatti scambio + zoccolo	Relay 24 VAC - 2 exchange contacts + base	40.52.8.024.0000 + 95.05.SPA - FINDER	6	1
-KST0					6	1
-SA25	022.1225	Selettore stabile 3 pos. M22-WRK3 cod 216872+ portacontatti M22-A COD.216374	3 position selector	M22-WRK3 cod 216872 - Moeller	7	1
-S4	022.1245	Fungo emergenza	Emergency push button	M22-PVT cod.263467	6	1
-Q0	022.1265	Magnetotermico 10-16A	Magneto-termal overload 10-16A	MS116-16 ABB	3	1
-T2	022.1601	Trasformatore 500 0-230-400 V.0-60/0-220	Transformer	500 0-230-400 V.0-60/0-220	5	1
-T1	022.1639	Trasformatore 150VA UL/CSA	Transformer 150VA UL/CSA	150VA P(-5) 0 (+5)-240-400-480 5.0-19 (40VA)/0-24 (110VA) 50/60Hz UL/Csa	5	1
-T1	022.1661	Trasformatore 250VA V.230-400 S0.24 S0.19	Transformer	250VA V.230-400 S0.24 S0.19	5	1
-F3 -F4 -F5	022.2239	Portafusibile 3 x (10,3x38) - 690V 32A	Fuse holding terminal 3 x (10,3x38) 690V 32A	2033038 BCH 32A ItalWeber	4	1
-F6 -F7 -F8					4	1
-F1 -F2	022.2240	Portafusibile 2 x (10,3x38) - 690V 32A	Fuse holding terminal 2 x (10,3x38) 690V 32A	2032038 BCH 32A ItalWeber	5	1
	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		2
-XQG2						1
-F9	022.2253	Portafusibile 1 x (10,3x38) - 690V 32A	Fuse holding terminal 1 x (10,3x38) 690V 32A	2031038 BCH 32A ItalWeber	5	1
-AL	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		1
-XQG2	022.2258	Morsetto da 2.5 mm singolo per 4 fili a molla	Quadruple pole spring terminal 2,5mmq	56.703.5155.0		1
-XQG2	022.2287	Piastra di chiusura x morsetto a 3 fili	Closing plate	07.312.6955.0		1
-XQG2	022.2288	Piastra di chiusura x morsetto a 4 fili	Closing plate	07.312.7155.0		1
PIASTRA	022.2321	Barra da 15x15mm con 10 fori 6mm				1
-K4	022.3004	Contattore mini 4KW 9 AMP. - (24V.50.60 HZ)	Contactor mini 4KW 9 AMP. - (24V.50.60 HZ)	DILEM-10 cod. 21417 Moeller	7	1
-RT4	022.3807	Rele termico 0.4- 0,6A	Termal overload 0,4 -0,6A	ZE-0,6 A cod. 014376 Moeller	4	1
-GU1	025.0604	Guarnizione aerstop	Control panel gasket		10	1
-TF1	031.2622	Targa sostituzione fusibili			10	1
-TF2	031.2622				10	1
-TF2	031.2648	Targa cavo alimentazione 5 fili	Adhesive plate power supply cable		10	1
-F9	054.4661	Fusibile Ritardato 10.3x38 - 3A UL/CSA	Fuse Time delay 10.3x38 - 3A UL/CSA	3A 600V ATDR3	5	1
-F1 -F2	054.4673	Fusibile Ritardato 10.3x38 - 1A UL/CSA	Fuse Time delay 10.3x38- 1A UL/CSA	1A 600V ATDR1	5	2
-F3 -F4 -F5	054.4674	Fusibile Ritardato 10.3x38 - 1.5A UL/CSA	Fuse Time delay 10.3x38- 1.5A UL/CSA	1.5A 600V ATDR1-1/2	4	3
-F6 -F7 -F8	054.4677	Fusibile Ritardato 10.3x38 - 20A UL/CSA	Fuse Time delay 10.3x38 - 20A UL/CSA	20A 600V ATDR20	4	3

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
File DM1215/1.dwg
Data 04-02-2019

Impianto/Plant: DM 12-15 480V.60Hz
Denominazione/Title: DISTINTA MATERIALI / MATERIAL LIST
Ordine/Requisition:
Commessa/Order: DM12-15
Esecutore/Executor:

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Nome/Item	Mep Code	Descrizione/Description	Descrizione EN	Codice Interno	Fg/Sh	Q.ta/Q.ty
-RP1	022.0045	Potenziometro 10K	Potentiometer 10K single turn	91A1AB28B15L - Mexico	7	1
-RP1	034.1166	Manopola per comando potenziometro 22mm	Knob	22mm Ø6	7	1

REV.	MODIFICA	DATA	FIRME

Dis. N. DM 12-15
CAD SPAC
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Impianto/Plant
DM 12-15 480V.60Hz

Denominazione/Title

Ordine/Requisition
Commessa/Order DM12-15
Esecutore/Executor

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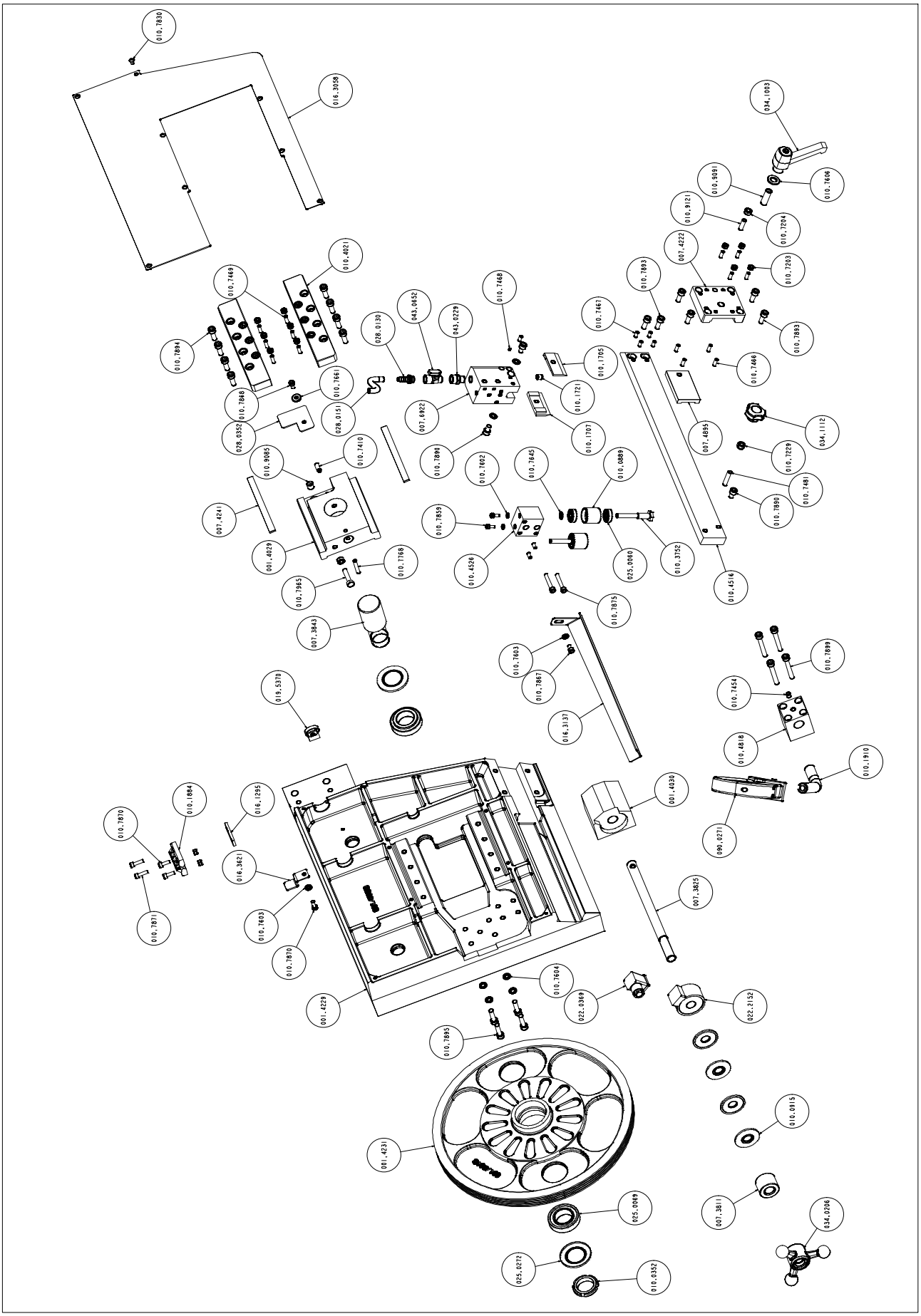
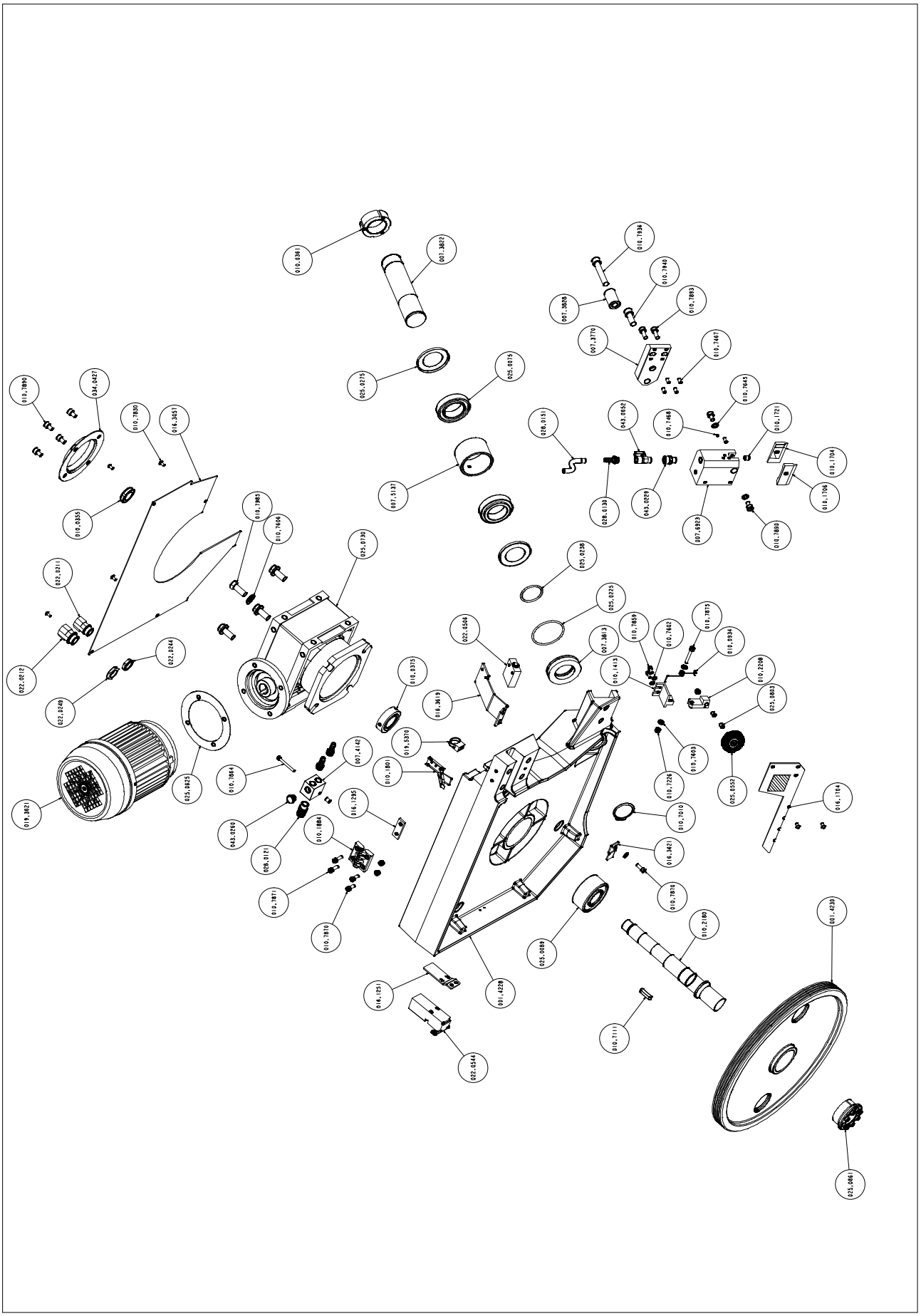
Front flywheel assembly



Code	Description	Description	Quantity
001.4029	SLITTA TENDILAMA ARCHETTO SH320–330 332MOD. 1226	SLIDE SH 320–330 MOD. 1226	1,000
001.4030	SUPPORTO TENSIONAMENTO LAMA ELETT. SH330CNCFE–SH–282–292–332 MOD.1403	SUPPORT SH 330 CNC FE MOD.1403	1,000
001.4229	ARCHETTO SEZIONE PULEGGIA FOLLE SH 332”15” MOD. 1421	IDLER WHEEL BOW SH 332 ”15”	1,000
001.4231	PULEGGIA FOLLE ARCHETTO SH 332 ”15”MOD. 1423	BOW IDLER WHEEL SH 332 ”15”	1,000
007.3811	DISTANZIALE VOLANTINO SH	WHEEL SPACER SH	1,000
007.3825	PERNO REGISTRO TENSIONAMENTO LAMASH	BAND TENSION REGISTER PIN SHARK	1,000
007.3843	ALBERO VOLANO LIBERO SH N.T.	IDLER WHEEL SHAFT SH N.S.	1,000
007.4222	STAFFA BLOCCAGGIO GUIDA TESTINA	LOCKING BRACKET SH 332	1,000
007.4241	LARDONE SLITTA TENDILAMA SH 320–330	BAND GUIDE SLIDE GIB SH 320–330	2,000
007.4895	LARDONE TESTINA SH 332	GIB HEAD	1,000
007.6922	TESTINA GUIDALAMA ANTERIORE SH 332	FRONT HEAD GUIDING BLADE SH 332	1,000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5 CN–TI– SH–FC	SELF–LOCKING RING NUT 35X1,5 CN–TI–SH–FC	1,000
010.0889	RULLO PREMILAMA SH 230 NC HS	BAND PUSHER ROLLER SH 230 NC HS	4,000
010.0915	MOLLA A TAZZA 50X18,4X3 SH	BELLEVILLE SPRING WASHERS 50X18,4X3 SH	4,000
010.1705	GUIDALAMA 1 INSERTO ANTERIORE SH N.T.	1 INSERT FRONT BAND GUIDE SH N.S.	1,000
010.1707	GUIDALAMA 2 INSERTI ANTERIORE SH N.T.	2 INSERTS FRONT BAND GUIDE SH N.S.	1,000
010.1721	PREMILAMA SHARK	TOP CARBIDE SHARK	1,000
010.1884	CERNIERA X PROTEZIONE VW–18CFA–49 CH5	PROTEC.HINGE VW–18CFA–49 CH5	6,000
010.1910	LEVA COMANDO TESTA BT SH 320–332	BT LEVER SH 320	6,000
010.3752	PERNO ECCENTRICO CUSCINETTI PRE-MILAMASH 230 NC HS	BLADEPUSHER BEARING ECCENTRIC PIN SH230	6,000
010.4021	PIASTRA REGOLAZIONE SLITTA LARDO-NE SH 320–330–332–H–14A	GIB SLIDE ADJUSTMENT PLATE SH 320–330–	2,000
010.4516	SUPPORTO TESTINA ANTERIORE	FRONT HEAD SUPPORT	6,000
010.4526	SUPPORTO RULLI TESTINA GUIDALAMA MOBILE	ROLLER SUPPORT GUIDALAMA MOBILE HEAD	6,000
010.4818	SUPPORTO LEVA COMANDO TESTA	HEAD CONTROL LEVER SUPPORT	6,000
010.7203	DADO M6 (010.7203)	M6 SCREW NUT (010.7203)	1,000
010.7204	DADO M8 (010.7204)	M8 SCREW NUT (010.7204)	1,000
010.7229	DADO AUTOBLOCCANTE M8 (010.7229)	M8 SELF–LOCKING SCREW NUT	1,000
010.7410	GRANO VCE PUNTA CILINDRICA 8X16	8 X 16 CYLIND.POINT VCE GRUB SCREW	1,000
010.7454	GRANO VCE PUNTA CONICA 8 X 8	8 X 8 CONICAL POINT VCE GRUB SCREW	1,000
010.7466	GRANO VCE PUNTA PIANA 6 X 16	6 X 16 FLAT POINT VCE GRUB SCREW	1,000
010.7467	GRANO VCE PUNTA PIANA 6 X 12	6 X 12 FLAT POINT VCE GRUB SCREW	1,000
010.7468	GRANO VCE PUNTA PIANA 4 X 4	4X4 FLAT POINT VCE GRUB SCREW	1,000
010.7469	GRANO VCE PUNTA PIANA 6 X 20	6 X 20 FLAT POINT VCE GRUB SCREW	1,000
010.7481	GRANO VCE PUNTA PIANA 8 X 35	8X35 FLAT POINT VCE GRUB SCREW	1,000
010.7602	RONDELLA 0 5	0 5 WASHER	1,000
010.7603	RONDELLA 0 6 (010.7603)	0 6 WASHER (010.7603)	2,000
010.7604	RONDELLA 0 8 (010.7604)	0 8 WASHER (010.7604)	1,000
010.7606	RONDELLA 0 12 (010.7606)	0 12 WASHER (010.7606)	1,000
010.7645	RONDELLA GROOVER M8	M8 SPRING WASHER	1,000
010.7661	RONDELLA SPESSORE DIAM. 6X3	THICKNESS WASHER DIAM. 6X3	1,000
010.7768	SPINA ELASTICA DIAM. 6 X 40 (010.7768)	ELASTIC PIN DIAM. 6 X 40	1,000
010.7830	VITE BUTON 5 X 10 (010.7830)	5 X 10 BUTON SCREW (010.7830)	1,000
010.7859	VITE TCEI 5 X 12 (010.7859)	TCEI 5 X 12 SCREW (010.7859)	1,000
010.7867	VITE TCEI 6 X 10 (010.7867)	TCEI 6 X 10 SCREW (010.7867)	1,000
010.7868	VITE TCEI 6 X 12 (010.7868)	TCEI 6 X 12 SCREW	1,000
010.7870	VITE TCEI 6 X 16 (010.7870)	TCEI 6 X 16 SCREW (010.7870)	2,000

Code	Description	Description	Quantity
010.7871	VITE TCEI 6 X 20 (010.7871)	TCEI 6 X 20 SCREW (010.7871)	1,000
010.7875	VITE TCEI 6 X 40 (010.7875)	TCEI 6 X 40 SCREW (010.7875)	1,000
010.7890	VITE TCEI 8 X 12 (010.7890)	TCEI 8 X 12 SCREW (010.7890)	2,000
010.7893	VITE TCEI 8 X 20 (010.7893)	TCEI 8 X 20 SCREW (010.7893)	1,000
010.7893	VITE TCEI 8 X 20 (010.7893)	TCEI 8 X 20 SCREW (010.7893)	1,000
010.7894	VITE TCEI 8 X 25 (010.7894)	TCEI 8 X 25 SCREW (010.7894)	1,000
010.7895	VITE TCEI 8 X 30	TCEI 8 X 30 SCREW	1,000
010.7899	VITE TCEI 8 X 60	TCEI 8 X 60 SCREW	1,000
010.7965	VITE TE 8 X 35 (010.7965)	TE 8 X 35 SCREW (010.7965)	1,000
010.9085	GRANO VCE PUNTA PIANA 12 X 12	12 X 12 FLAT POINT GRUB SCREW	1,000
010.9091	GRANO VCE PUNTA PIANA 12 X 35	12 X 35 FLAT POINT GRUB SCREW	6,000
010.9121	GRANO VCE PUNTA PIANA 8 X 25	8X25 FLAT POINT GRUB SCREW	6,000
016.1295	PIASTRINO SPESSORE CERNIERA SPM	HINGE THICKNESS PLATE	1,000
016.3058	CARTER POSTERIORE SPF SH 332	REAR CARTER	1,000
016.3137	PROTEZIONE LAMA ANTERIORE	FRONT BAND GUARD	1,000
016.3621	STAFFA DI FERMO SH 332–382	LOCKING BRACKET SH 332–382	1,000
019.5370	FASCETTA LEGRAND ART.31900	LEGRAND CLAMP ART.31900	1,000
022.0369	CONNETTORE PER BOBINA U2 E TENSIONATORETRSA/3T.00 SH 420–282–292–332	CONNECTOR F.U2 COIL AND TENSIONER	1,000
022.2152	TENSIONATORE ELETTRONICO TRSA/3T.00	ELECTRONIC TENSIONER TRSA/3T.00	1,000
025.0060	CUSCINETTO 6000 2Z	BEARING 6000 2Z	2,000
025.0069	CUSCINETTO 32007X	BEARING 32007X	2,000
025.0272	ANELLO DI PROTEZIONE NILOS 32007	NILOS SEAL RING 32007	2,000
028.0130	RACCORDO 1/4–9 CL 2601	JOINT 1/4–9 CL 2601	1,000
028.0151	TUBO PLASTIFICATO 07–11	PLASTIC HOSE 07–11	1,000
028.0352	PROTEZIONE GOMMA SLITTA TENDILAMA SHARK320–332	RUBBER GUARD SHARK 320	1,000
034.0206	VOLANTINO TENSIONAMENTO LAMA SH	BAND TENSIONING HANDWHEEL SH	1,000
034.1003	LEVA A SCATTO 12 MA	LEVER 12 MA	1,000
034.1112	VOLANTINO O 40M8 X PIEDISTALLO SH–CB 330	O 40 M8 HANDWHEEL X STEEL BASE SH	1,000
043.0229	RIDUZIONE MF 1/4 – CL 2520	MF 1/4 – CL 2520 REDUCTION	1,000
043.0652	RUBINETTO 1/4 F.M.	1/4 F. M. TAP	1,000
090.0271	IMPUGNATURA COMPLETA TIPO MEP	COMPLETE MEP HANDLE	1,000

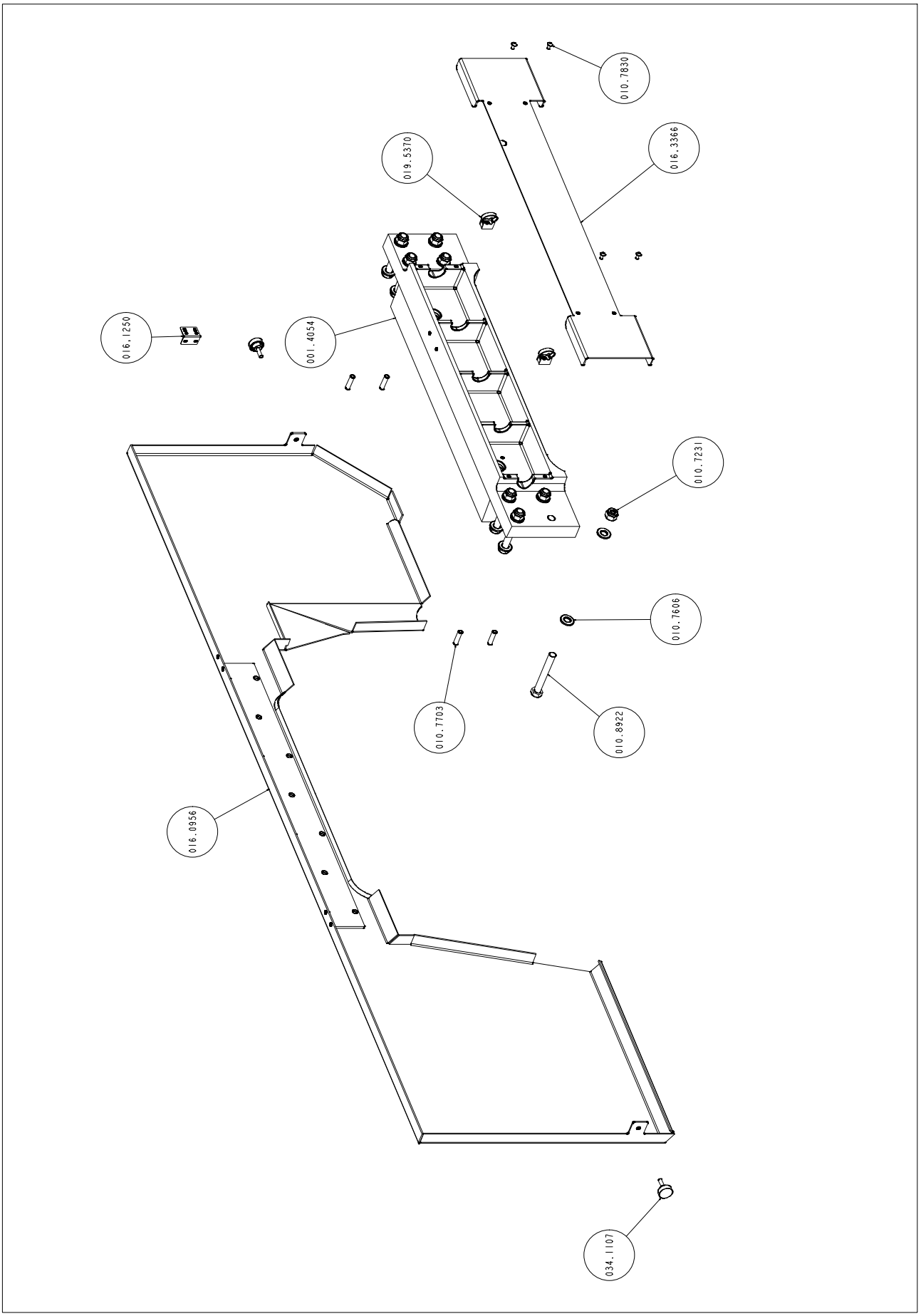
Motor flywheel assembly



Code	Description	Description	Quantity
001.4228	ARCHETTO SEZIONE PULEGGIA MOTRICESH 332 ”15” MOD.1420	BOW SH 320/330 WITHOUT REDUCER	1.000
001.4230	PULEGGIA MOTRICE SH 332 ”15” MOD.1422	MOTOR WHEEL SH 332 ”15”	1.000
007.3770	SUPPORTO TESTINA POSTERIORE SH 320 60¿–SH 332	REAR HEAD SUPPORT SH 320 60¿	1.000
007.3813	DISTANZIALE ARCHETTO SH	BOW SPACER SH	1.000
007.3822	PERNO SUPPORTO SNODO TESTA SH 260–280–282–292–320–332	HEAD PIVOT SUPPORT PIN SH 260–280–320	1.000
007.3828	BOCCOLA BATTUTA FINECORSA SH320–332	LIMIT STROKE BUSHING SH 320	1.000
007.4142	SQUADRETTO PER LIQUIDO SH 282–292– 320–330–332–H–14A	PLATE SH 320–330–H–14A	1.000
007.5137	DISTANZIALE CUSCINETTO SNODO TESTA	SPACER BEARING JOINT OF THE HEAD	1.000
007.6923	TESTINA GUIDALAMA POSTERIORE SH 332	REAR HEAD GUIDING BLADE SH 332	1.000
010.0355	GHIERA AUTOBLOCCANTE 25X1,5 TI SH 260–FC	SELF–LOCKING RING NUT 25X1,5 TI–SH260–FC	1.000
010.0361	GHIERA DI PRECISIONE 45X1,5	PRECISION RING NUT 45X1,5	1.000
010.0375	GHIERA ALBERO RIDUTTORE SH 332–330	LOCKNUT FOR DRIVE SHAFT SH 332–330	1.000
010.0934	MOLLA X PULILAMA SH N.T.	BAND BRUSHES SPRING SH N.T.	1.000
010.1413	STAFFA FISSAGGIO SPAZZOLA PULILAMA	PULILAM BRUSH FIXING BRACKET	1.000
010.1704	GUIDALAMA 1 INSERTO POSTERIORE SH N.T.	1 INSERT REAR BAND GUIDE SH N.S.	1.000
010.1706	GUIDALAMA 2 INSERTI POSTERIORE SH N.T.	2 INSERTS RAER BAND GUIDE SH N.S.	1.000
010.1721	PREMILAMA SHARK	TOP CARBIDE SHARK	1.000
010.1801	CHIUSURA LEVA –D– ZINCATA SH	–D– ZINC LEVER CLOSURE SH	1.000
010.1884	CERNIERA X PROTEZIONE VW–18CFA–49 CH5	PROTEC.HINGE VW–18CFA–49 CH5	1.000
010.2180	ALBERO RIDUTTORE TAGLIA 75 SH 332	DRIVE SHAFT	1.000
010.2208	PORTASPAZZOLA PULILAMA SH 260–282– 320–SH 332	BAND BRUSH HOLDER	1.000
010.7010	ANELLO SEEGER 0 45 (010.7010)	0 45 SEEGER RING	1.000
010.7111	CHIAVETTA 8 X 7 X 32 (010.7111)	8 X 7 X 32 KEY	1.000
010.7226	DADO AUTOBLOCCANTE M6 (010.7226)	M6 SELF–LOCKING SCREW NUT	1.000
010.7467	GRANO VCE PUNTA PIANA 6 X 12 (010.7467)	6 X 12 FLAT POINT VCE GRUB SCREW	1.000
010.7468	GRANO VCE PUNTA PIANA 4 X 4 (010.7468)	4X4 FLAT POINT VCE GRUB SCREW (010.7468)	1.000
010.7602	RONDELLA 0 5	0 5 WASHER	1.000
010.7603	RONDELLA 0 6 (010.7603)	0 6 WASHER (010.7603)	1.000
010.7606	RONDELLA 0 12 (010.7606)	0 12 WASHER (010.7606)	1.000
010.7645	RONDELLA GROOVER M8	M8 SPRING WASHER	1.000
010.7830	VITE BUTON 5 X 10 (010.7830)	5 X 10 BUTON SCREW (010.7830)	4.000
010.7859	VITE TCEI 5 X 12 (010.7859)	TCEI 5 X 12 SCREW (010.7859)	1.000
010.7864	VITE TCEI 5 X 45 (010.7864)	TCEI 5 X 45 SCREW (010.7864)	1.000
010.7870	VITE TCEI 6 X 16 (010.7870)	TCEI 6 X 16 SCREW (010.7870)	2.000
010.7871	VITE TCEI 6 X 20 (010.7871)	TCEI 6 X 20 SCREW (010.7871)	1.000
010.7875	VITE TCEI 6 X 40 (010.7875)	TCEI 6 X 40 SCREW (010.7875)	1.000
010.7890	VITE TCEI 8 X 12 (010.7890)	TCEI 8 X 12 SCREW (010.7890)	2.000
010.7893	VITE TCEI 8 X 20 (010.7893)	TCEI 8 X 20 SCREW (010.7893)	1.000
010.7936	VITE TCEI 12 X 65	TCEI 12 X 65 SCREW	1.000
010.7940	VITE TCEI 12 X 30	TCEI 12 X 30 SCREW	1.000
010.7985	VITE TE 12 X 30	TE 12 X 30 SCREW	1.000
016.1251	PIASTRA ATTACCO F.C. CHIUSURA COPERCHIOARCHETTO SH N.T.	PLATE FIXING SAFETY SWITCH	1.000
016.1295	PIASTRINO SPESSORE CERNIERA SPM SH 332	HINGE THICKNESS PLATE	1.000

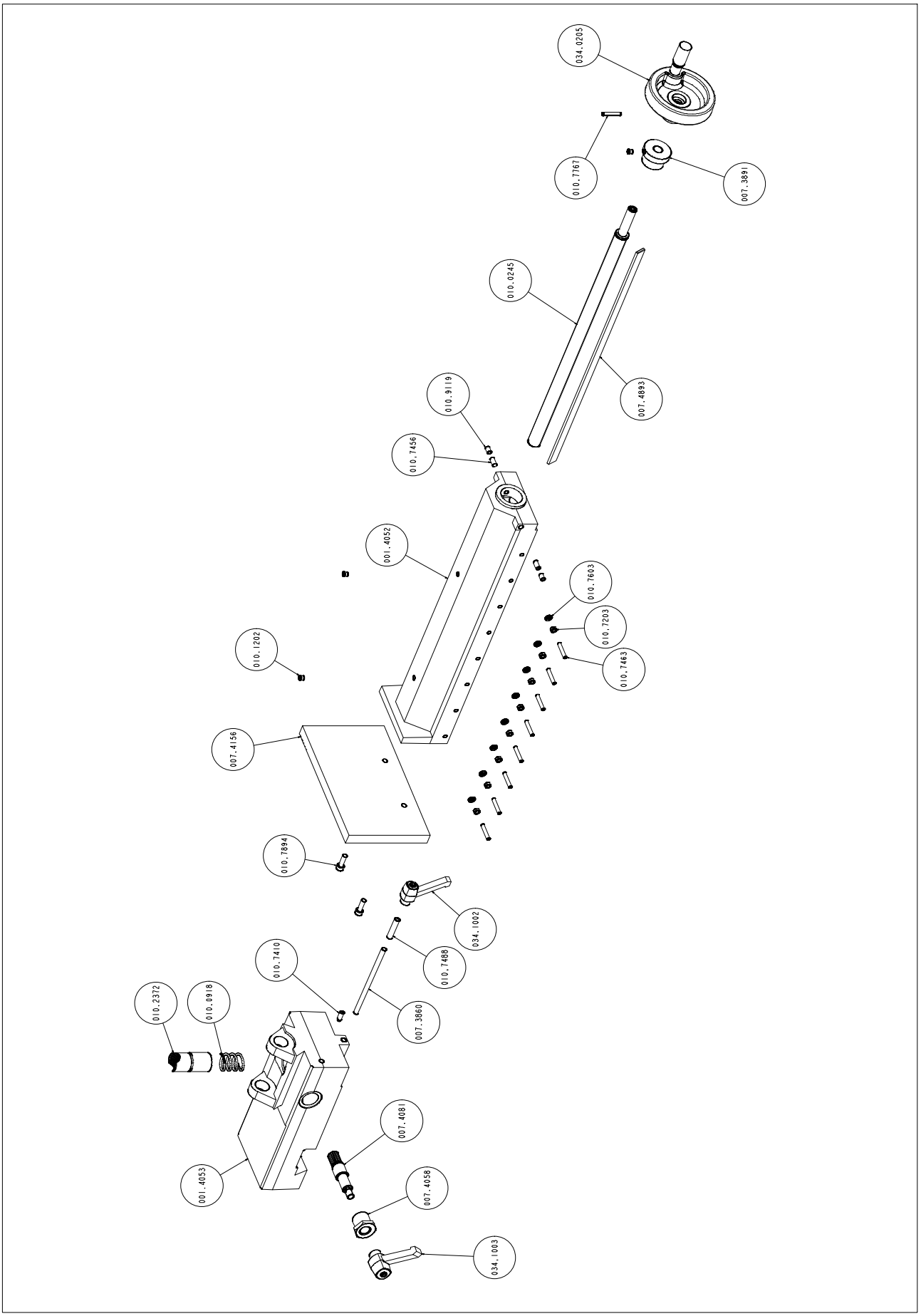
Code	Description	Description	Quantity
016.1704	PROTEZIONE LAMA POST.SH 320–330–331–332	REAR BAND GUARD SH 320–330–331–332	1.000
016.3057	CARTER POSTERIORE SPM SH 332	REAR CARTER	1.000
016.3619	STAFFA FINECORSA TESTA SH 332–382 CCS	HEAD LIMIT SWITCH	1.000
016.3621	STAFFA DI FERMO SH 332–382	LOCKING BRACKET SH 332–382	1.000
019.3621	KW 2,2 M90L4P.B14V.230–400.50/255–440.60S6 60% SH 420–452–652 – SH NC	KW 2,2 M90L4P.B14V.230–400.50/255–440.60	1.000
019.5370	FASCETTA LEGRAND ART.31900	LEGRAND CLAMP ART.31900	1.000
022.0211	RACCORDO RAPIDO SEM PG 13,5	RAPID JOINT SEM PG 13,5	1.000
022.0212	RACCORDO RAPIDO SEM PG 16	RAPID JOINT SEM PG 16	1.000
022.0244	CONTRODADO 3217B GRIGIO PG 13,5	LOCK NUT 3217B GREY PG 13,5	1.000
022.0249	DADO POLIAMIDE HUMMEL DIAM. 16	POLYAMIDE HUMMEL NUT 0 16	1.000
022.0506	FINECORSA D4C–1201 2M ALIMEN.AX–AXI	LIMIT SWITCH F.FEEDER AX–AXI	1.000
022.0544	INTERRUTTORE DI SICUREZZA CON CHIAVEFR993–D10 SH 230 NC–HS	SAFETY SWITCH FR993–D10 SH 230 NC–HS	1.000
025.0075	CUSCINETTO 32009X	BEARING 32009X	2.000
025.0089	CUSCINETTO 3307 A2RS	BEARING 3307 A2RS	1.000
025.0225	ANELLO TENUTA OR 171–68,26	O RING 171–68,26	1.000
025.0238	ANELLO DI TENUTA OR 149–44,45X3,53	O RING 149–44,45X3,53	1.000
025.0275	ANELLO DI PROTEZIONE NILOS 32009X	NILOS GUARD RING 32009X	2.000
025.0552	SPAZZOLA PULILAMA SHARK 6X25X50	BAND BRUSH 6X25 030 SHARK	1.000
025.0625	GUARNIZIONE MOTORE SH 310–320–330	MOTOR GASKET SH 310–320–330	1.000
025.0730	RIDUTTORE FCNDKO75/RATIO=40:1,90 B14	GEARBOX FCNDKO75/RATIO=40:1,90 B14	1.000
025.0803	BOCCOLA GRAFITATA L. 10 DIAM. 6	GRAPHITIZED BUSHING L. 10 DIA M. 6	2.000
025.0861	CALETTATORE 0 35X60	CONNECTOR 0 35X60	1.000
028.0120	RACCORDO 3/8 – 9 CL 2601	JOINT 3/8 – 9 CL 2601	1.000
028.0130	RACCORDO 1/4–9 CL 2601	JOINT 1/4–9 CL 2601	3.000
028.0151	TUBO PLASTIFICATO 07–11	PLASTIC HOSE 07–11	1.000
034.0427	COPERCHIO RIDUTTORE FCNDKO75	FCNDKO75 SAFETY CAP	1.000
043.0229	RIDUZIONE MF 1/4 – CL 2520	MF 1/4 – CL 2520 REDUCTION	1.000
043.0260	TAPPO TTE4 1/4 – CL 2611	1/4 TAP TTE4	1.000
043.0652	RUBINETTO 1/4 F.M.	1/4 F. M. TAP	1.000

Cutting head cover



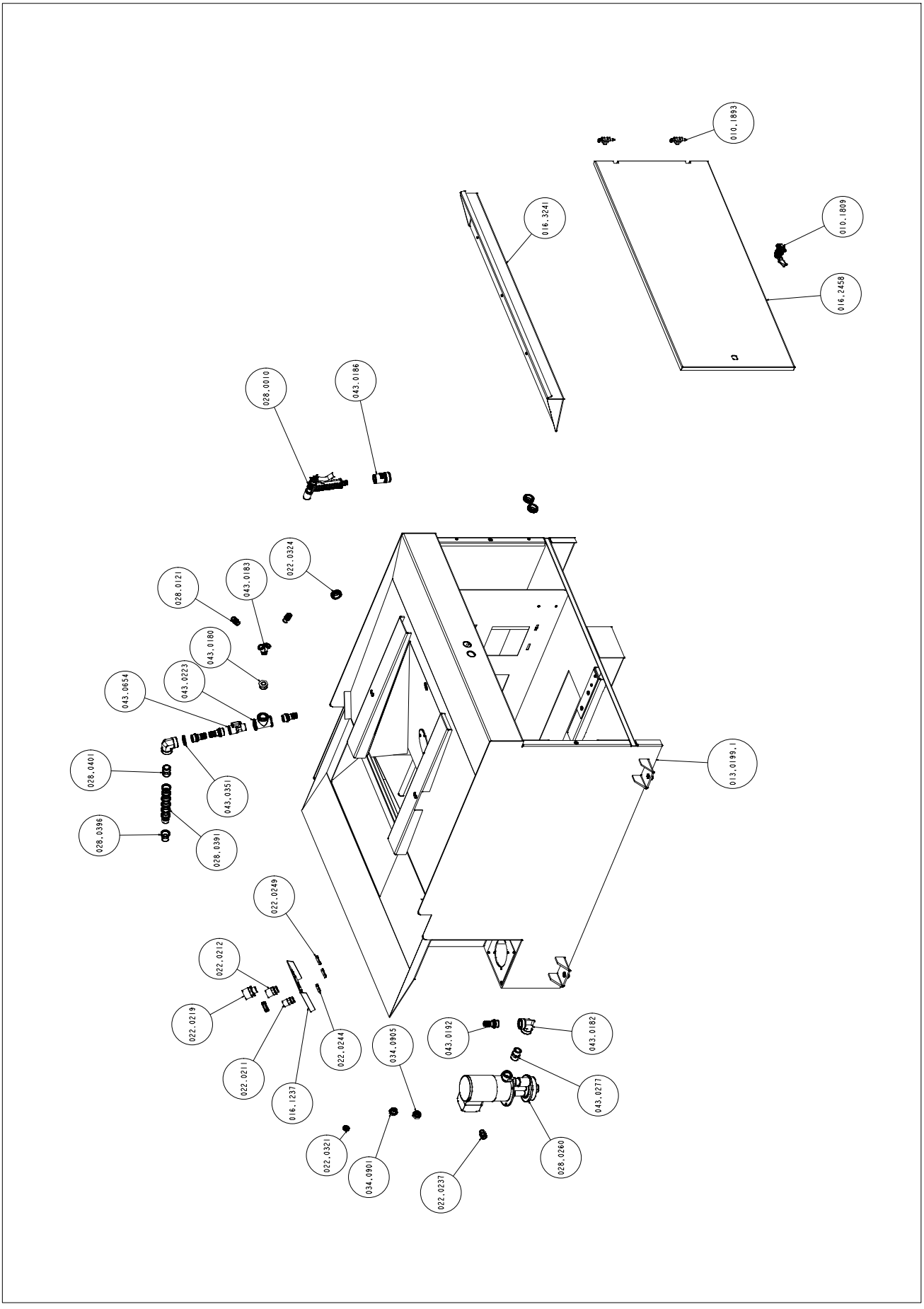
Code	Description	Description	Quantity
001.4054	TRAVE ARCHETTO SH 382 N.T. MOD.	BOW BEAM SH 382 N.T. MOD.	1.000
010.7231	DADO AUTOBLOCCANTE M12	M12 SELF–LOCKING SCREW NUT	2.000
010.7606	RONDELLA 0 12	0 12 WASHER	2.000
010.7703	SPINA CILINDRICA DIAM. 8 X 30	CYLINDRICAL PIN DIAM. 8 X 30	2.000
010.7830	VITE BUTON 5 X 10	5 X 10 BUTON SCREW	2.000
010.8922	VITE TE 12 X 90	12 X90 TE SCREW	2.000
016.0956	COPERCHIO ARCHETTO N.T. SH 382	BOW COVER SH 382	2.000
016.1250	PIASTRINO FIX INTERRUTTORE COPERCHIO	PLATE FIXING BOW COVER SAFETY SWITCH	2.000
016.3366	CARTER POSTERIORE TRAVE SH 382	REAR CARTER	2.000
019.5370	FASCETTA LEGRAND ART.31900	LEGRAND CLAMP ART.31900	2.000
034.1107	VOLANTINO O 30 M6 X 20	O 30 M6 X 20 HANDWHEEL	2.000

Vice assembly



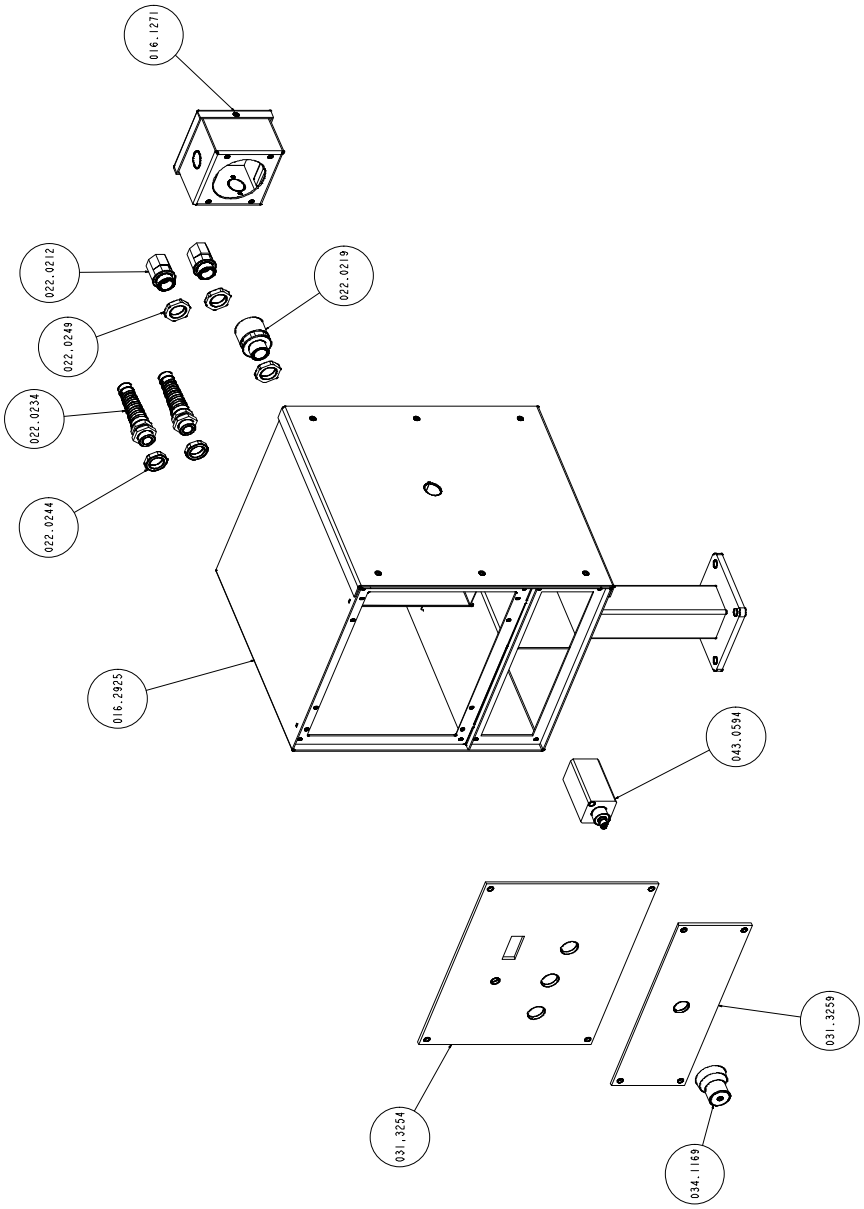
Code	Description	Description	Quantity
001.4052	SCORREVOLE MORSA SH 382 MOD.1418	UPPER VICE SH 382	1.000
001.4053	SUPPORTO MORSA SH 382 MOD.1419	VICE SUPPORT SH 382	1.000
007.3860	PERNO BLOCCAGGIO MORSA SER-RAGGIO RAPIDOSH 382	LOCKING PIN SH 382	1.000
007.3891	BOCCOLA VITE MORSA SH 260–280–282– 292–320–332	VICE SCREW BUSHING SH 260–280–320	1.000
007.4058	BOCCOLA ECCENTRICA SH 260–280–282–292–320–332	ECCENTRIC BUSHING SH 260–280–320	1.000
007.4081	PIGNONE SBLOCCAGGIO SCOR-REVOLE SH 260–280–282–292–320–332	UNLOCKING LOWER VICE PINION	1.000
007.4156	GANASCIA MORSA MOBILE SH 332	MOVING VICE JAW SH 332	1.000
007.4893	LARDONE MORSA SH 382	GIB VICE	1.000
010.0245	VITE MORSA 586X24 DM–1215	VICE SCREW 586X24 DM–1215	1.000
010.0918	MOLLA RICHIAMO CHIOCCIOLA VITE MORSA SH	VICE SCREW NUT RETURN SPRING SH	1.000
010.1202	OLIATORE A SFERA DIAM. 8	OIL FILLER DIAM.8	2.000
010.2372	CHIOCCIOLA BRONZO 45 SH 260–270–280–281 282–292–320–332–422–452	SCREW NUT 45	1.000
010.7203	DADO M6 (010.7203)	M6 SCREW NUT (010.7203)	7.000
010.7410	GRANO VCE PUNTA CILINDRICA 8X16	8X16 CYLIND.POINT VCE GRUB SC-REW	1.000
010.7456	GRANO VCE PUNTA CONICA 8 X 16 (010.7456)	8 X 16 CONICAL POINT VCE GRUB SC-REW	5.000
010.7463	GRANO VCE PUNTA CONICA 6 X 35 (010.7463)	6 X 35 CONICAL POINT VCE GRUB SC-REW	7.000
010.7488	GRANO VCE PUNTA PIANA 10 X 45	10 X 45 FLAT POINT VCE GRUB SCREW	1.000
010.7603	RONDELLA 0 6 (010.7603)	0 6 WASHER (010.7603)	7.000
010.7767	SPINA ELASTICA DIAM.6X35 A SPIRALE	ELASTIC PIN DIAM. 6 X 35	1.000
010.7893	VITE TCEI 8 X 20 (010.7893)	TCEI 8 X 20 SCREW (010.7893)	1.000
010.7894	VITE TCEI 8 X 25 (010.7894)	TCEI 8 X 25 SCREW (010.7894)	2.000
010.9119	GRANO VCE PUNTA PIANA 8 X 12	8X12 FLAT POINT GRUB SCREW	1.000
034.0205	VOLANTINO VPRA/125 MR SH 282–292–320–330PH 211–1/261–1	VPRA/125 HANDWHEEL SH + PH	1.000
034.1002	LEVA A SCATTO 10 MA	LEVER 10 MA	1.000
034.1003	LEVA A SCATTO 12 MA	LEVER 12 MA	1.000

Base assembly



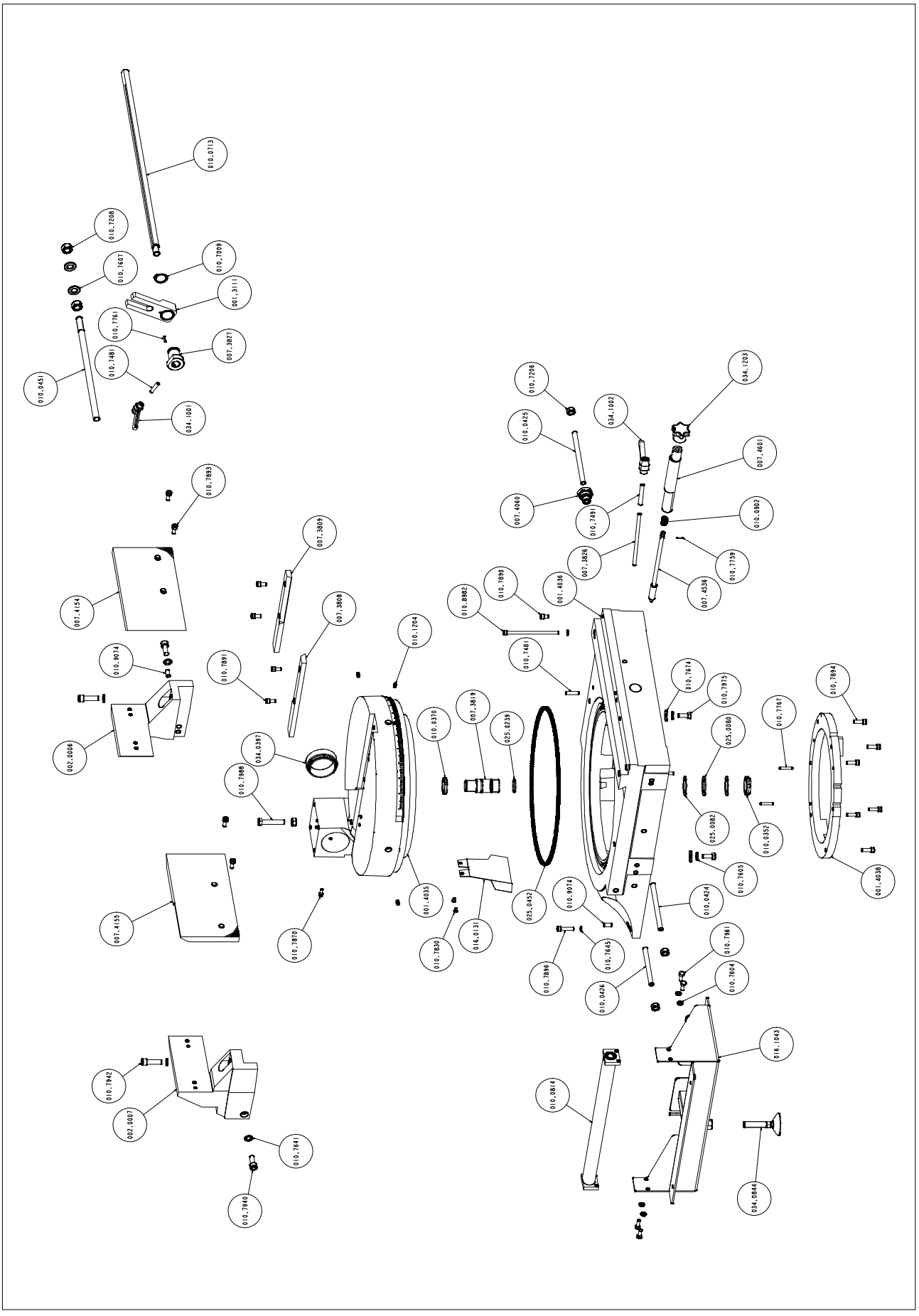
Code	Description	Description	Quantity
010.1809	CHIUSURA SPORTELLO	DOOR LOCKING WIT KEY	1.000
010.1893	CERNIERA SPORTELLO PIEDISTALLO N.T.	PROTECTION DOOR HINGE N.T.	1.000
013.0199.1	PIEDISTALLO	STEEL BASE	1.000
016.1237	PIASTRA PASSACAVI POSTERIORE SH 452 SXI	BACK FAIRLEAD P LATE SH 452 SXI	1.000
016.2458	SPORTELLO PIEDISTALLO	STEEL BASE DOOR SH 332 – 382	1.000
016.3241	SCIVOLO RACCOLTA LIQUIDO ANT.	SLIDE COLLECT FRONT LIQUID	1.000
022.0211	RACCORDO RAPIDO SEM PG 13,5	RAPID JOINT SEM PG 13,5	2.000
022.0212	RACCORDO RAPIDO SEM PG 16	RAPID JOINT SEM PG 16	1.000
022.0219	RACCORDO QUICK RQG1–P16 AD28,5 PG16	QUICK JOINT	1.000
022.0234	PRESSACORDONE 3246 NERO PG 13,5	CORD PRESSER	1.000
022.0237	PRESSACAVO PG 11 BS03	CABLE PRESSER PG 11 BS03	1.000
022.0244	CONTRODADO 3217B GRIGIO PG 13,5	LOCK NUT 3217B GREY PG 13,5	3.000
022.0249	DADO POLIAMIDE HUMMEL DIAM. 16	POLYAMIDE HUMMEL NUT 0 16	1.000
022.0321	PASSACAVI 12 INC.MM.2	FAIRLEADS 12 INC.M M.2	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	2.000
028.0260	ELETTROPOMPA V.220–240/380–415.50HZSPV33	ELECTROPUMP 230–400.50 HZ SPV33	1.000
028.0391	TUBO LOOC LINE SPD ART.69540 3/4	LOOC LINE HOSE SPD ART.69540 3/4	1.000
028.0396	UGELLO 0 20 SPD FP50.11B50	NOZZLE 0 20 SPD FP50.11B50	1.000
028.0401	RACCORDO 3/4 SPD FP50.17A20	FITTING 3/4 SPD FP50.17A20	1.000
034.0901	TAPPO LIVELLO OLIO 1/2 'GAS.	1/2" GAS. OIL LEVEL CAP	1.000
034.0905	TAPPO OLIO TAO– 3 1/2 POL. NERO	TAO/3 1/2" BLACK OIL CAP	1.000
043.0180	RIDUZIONE M 3/4–F 3/8	REDUCTION M 3/4–F 3/8	1.000
043.0182	RACCORDO A GOMITO FF ZINCATO 3/4	3/4 ELBOW ZINKED JOINT	2.000
043.0183	RACCORDO A Y 90 MASCHIO 3/8	Y MALE JOINT 3/8	1.000
043.0186	RACCORDO FEMMINA 1/2 ACQUASTOP	1/2 WATERASTOP FEMALE JOINT	1.000
043.0192	RACCORDO RB 9889 3/4X20	RB 9889 JOINT 3/4X20	4.000
043.0223	RACCORDO TE FFF ZINCATO 3/4	TE FFF GALVANISED 3/4 JOINT	1.000
043.0277	NIPPLO CONICO ZINCATO 3/4	GALVANISED 3/4 CONICAL NIPPLE	1.000
043.0351	GUARNIZIONE 3/4	3/4 GASKET	1.000
043.0654	RUBINETTO M/F 3/4 CL 6310	M/F 3/4 CL 6310 TAP	1.000

Control panel



Code	Description	Description	U. of M.	Quantity
016.1271	SCATOLA DI GIUNZIONE PICCOLA 95X95X70	JUNCTION BOX 95X95X70	PZ	1.000
016.2925	QUADRO COMANDI DM–12/DM–1215	CONTROL PANEL DM–12/DM–1215	PZ	1.000
022.0212	RACCORDO RAPIDO SEM PG 16	RAPID JOINT SEM PG 16	PZ	1.000
022.0219	RACCORDO QUICK RQG1–P16 AD28,5 PG16	QUICK JOINT	PZ	1.000
022.0234	PRESSACORDONE 3246 NERO PG 13,5	CORD PRESSER	PZ	1.000
022.0244	CONTRODADO 3217B GRIGIO PG 13,5	LOCK NUT 3217B GREY PG 13,5	PZ	1.000
022.0249	DADO POLIAMIDE HUMMEL DIAM. 16	POLYAMIDE HUMMEL NUT 0 16	PZ	1.000
031.3254	PANNELLO COMANDI SUPERIORE DM 12/15	UPPER CUTTING CONTROL PANEL DM 12/15	PZ	1.000
031.3259	PANNELLO COMANDI INFERIORE DM 12	LOWER CONTROL PANEL DM 12	PZ	1.000
034.1169	MANOPOLA REGOLAZIONE MONOGIRO	FEED RATE KNOB (W/ SEMICIRCLE HOLE)	PZ	1.000
043.0594	REGOLATORE IDRAULICO MONOGIROUNIDIREZIONALE SH CB–TI (BAFFO A)	HYDRAULIC REGULATOR SH–CB–TI	PZ	1.000

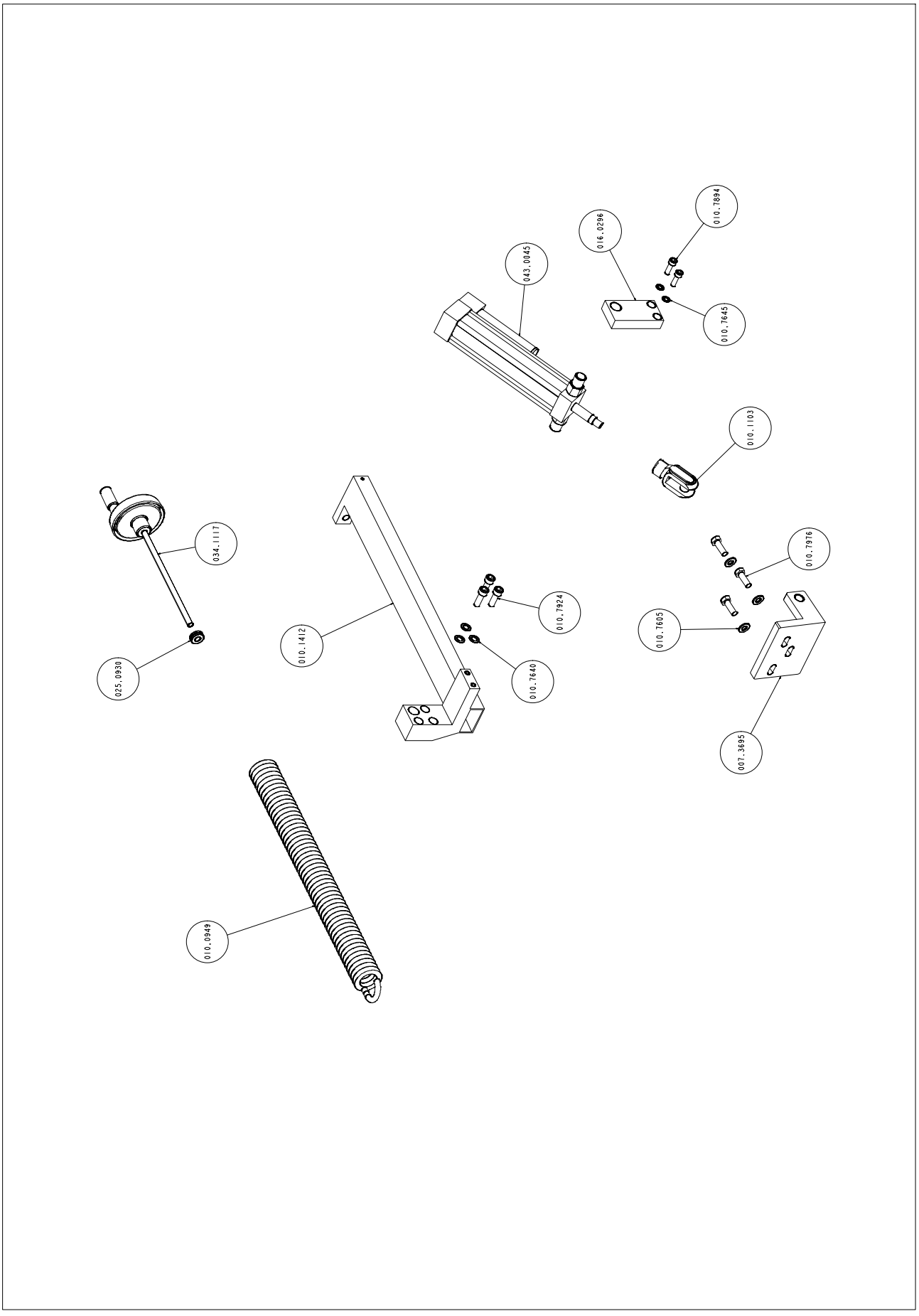
Fixed work table and turntable



Code	Description	Description	Quantity
001.3111	DISTANZIALE BATTUTA TI–CN 350–SH MOD. 7	STOP SPACER TI–CN 350–SH	1.000
001.4035	PIANO GIREVOLE SH 320 60¿– SH 332 MOD. 1229	ROTATING TABLE SH 320 60¿ MOD.1229	1.000
001.4036	PIATTAFORMA FISSA SH 320 60¿–SH 332 M1201	FIXED PLATFORM SH 320 60¿ MOD.1201	1.000
001.4038	ANELLO PIANO GIREVOLE SH320–SH332 M1216	ROTATING TABLE RING SH 320 M.1216	1.000
002.0006	SQUADRO MORSA DESTRO SH 332 MOD.1204	RIGHT VICE BACK STOP SH 332 MOD.1204	1.000
002.0007	SQUADRO MORSA SX SH 332 MOD.1205	LEFT VICE BAK STOP SH 332	1.000
007.3808	PIASTRA APPOGGIA PEZZI SINISTRA SH 32060¿– SH 332	LEFT STOCK SUPPORT PLATE SH 320 60¿	1.000
007.3809	PIASTRA APPOGGIA PEZZI DESTRA SH 320 60¿– SH 332	RIGHT STOCK SUPPORT SH 320 60¿	1.000
007.3819	PERNO DI CENTRO SH 320 60¿–282–332	CENTRE PIN SH 320 60¿	1.000
007.3826	PERNO BLOCCAGGIO PIANO GIREVO-LE SH 32060¿– SH 332	ROTATING TABLE LOCKING PIN SH 320 60¿	1.000
007.3827	BOCCOLA PER BATTUTA SH 260–280–282– 292–320–332	STOP BUSHING SH 260–280–320	1.000
007.4060	BOCCOLA BATTUTA 45¿ DX SH 320 60¿SH 332	BUSHING F.STOP AT 45¿ RIGHT SH 320 60¿	1.000
007.4154	GANASCIA MORSA DESTRA SH 332	RIGHT VICE JAW SH 332	1.000
007.4155	GANASCIA MORSA SINISTRA SH 332	LEFT VICE JAW SH 332	1.000
007.4536	PERNO PUNTO FISSO SH 200–282–332	PIN SH 200	1.000
007.4601	CILINDR.PUNTO FISSO SH 200–282–332	FIXED POINT CYLINDER SH 200	1.000
010.0352	GHIERA AUTOBLOCCANTE 35X1,5 CN–TI– SH–FC	SELF–LOCKING RING NUT 35X1,5 CN–TI–SH–FC	1.000
010.0370	GHIERA 5S 30X1,5 SH 200–260–280–282 292–332	RING NUT 5S 30X1,5 SH200–260–280	1.000
010.0424	GRANO PUNTA PIANA 12X170 SH 320–332	GRUB SCREW 12X170 SH 320	1.000
010.0425	GRANO PUNTA PIANA 12X190 SH 320–332	GRUB SCREW 12X190 SH 320	1.000
010.0426	GRANO PUNTA PIANA 12X135 SH 320–332	GRUB SCREW 12X135 SH 320	1.000
010.0451	TIRANTE BATTUTA TAGLI A MISURA TI–CN–SH	CUT TO MEASURE STOP TIE ROD TI–CN–SH	1.000
010.0713	ASTA MILLIMETRATA CROMATA MM.600 0 20FIL. M16 SH	MM SCALE 600 0 20 SH	1.000
010.0814	RULLO 0 35 COMPLETO X K 210 L.460	COMPLETE RULLER 0 35 FOR K 210	1.000
010.0902	MOLLA PUNTO FISSO TESTA MOD. 95	HEAD FIXED POINT SPRING	1.000
010.1204	INGRASSATORE M 6	M 6 LUBRICATOR	3.000
010.7009	ANELLO SEEGER 0 30 (010.7009)	0 30 SEEGER RING (010.7009)	1.000
010.7206	DADO M12 (010.7206)	M12 SCREW NUT (010.7206)	4.000
010.7208	DADO M16 (010.7208)	M16 SCREW NUT (010.7208)	2.000
010.7481	GRANO VCE PUNTA PIANA 8 X 35 (010.7481)	8X35 FLAT POINT VCE GRUB SCREW (010.7481	2.000
010.7491	GRANO VCE PUNTA PIANA 10 X 60 (010.7491)	10 X 60 FLAT POINT VCE GRUB SCREW	1.000
010.7604	RONDELLA 0 8 (010.7604)	0 8 WASHER (010.7604)	3.000
010.7605	RONDELLA 0 10 (010.7605)	0 10 WASHER (010.7605)	1.000
010.7607	RONDELLA 0 16 (010.7607)	0 16 WASHER (010.7607)	2.000
010.7641	RONDELLA GROOVER M12	GROOVER WASHER M12	1.000
010.7645	RONDELLA GROOVER M8	M8 SPRING WASHER	1.000
010.7674	RONDELLA SPESSORE DIAM.10,5X30(010.7674)	THICKNESS WASHER DIAM. 10,5 X 30	1.000
010.7759	SPINA ELASTICA DIAM. 3 X 16 (010.7759)	ELASTIC PIN DIAM. 3 X 16 (010.7759)	1.000

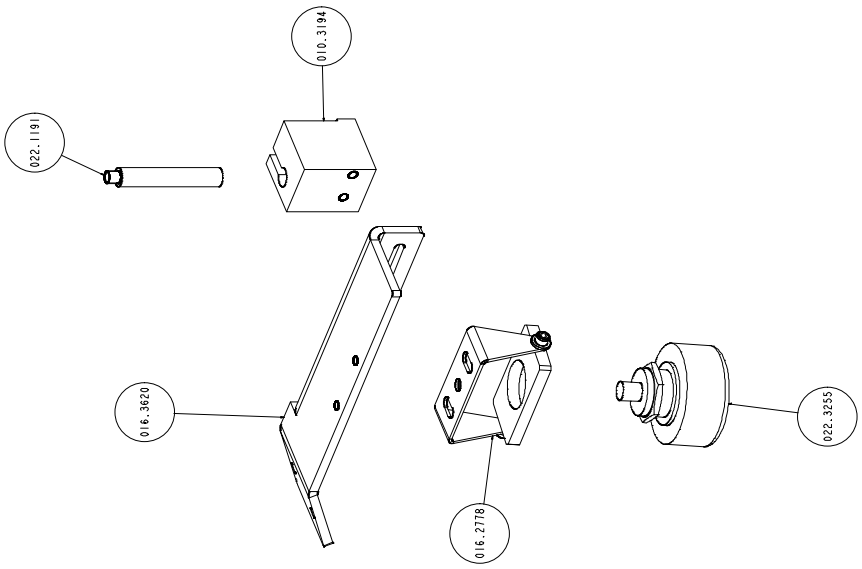
Code	Description	Description	Quantity
010.7761	SPINA ELASTICA DIAM. 4 X 20 (010.7761)	ELASTIC PIN DIAM. 4 X 20 (010.7761)	1.000
010.7767	SPINA ELASTICA DIAM. 6 X 35 A SPIRALE	ELASTIC PIN DIAM. 6 X 35	2.000
010.7830	VITE BUTON 5 X 10 (010.7830)	5 X 10 BUTON SCREW (010.7830)	1.000
010.7870	VITE TCEI 6 X 16 (010.7870)	TCEI 6 X 16 SCREW (010.7870)	1.000
010.7890	VITE TCEI 8 X 12 (010.7890)	TCEI 8 X 12 SCREW (010.7890)	1.000
010.7891	VITE TCEI 8 X 16 (010.7891)	TCEI 8 X 16 SCREW (010.7891)	4.000
010.7893	VITE TCEI 8 X 20 (010.7893)	TCEI 8 X 20 SCREW (010.7893)	10.000
010.7894	VITE TCEI 8 X 25 (010.7894)	TCEI 8 X 25 SCREW (010.7894)	1.000
010.7896	VITE TCEI 8 X 35	TCEI 8 X 35 SCREW	1.000
010.7940	VITE TCEI 12 X 30	TCEI 12 X 30 SCREW	1.000
010.7942	VITE TCEI 12 X 40 (010.7942)	TCEI 12 X 40 SCREW	4.000
010.7961	VITE TE 8 X 20 (010.7961)	TE 8 X 20 SCREW (010.7961)	1.000
010.7975	VITE TE 10 X 25 (010.7975)	TE 10 X 25 SCREW (010.7975)	1.000
010.7988	VITE TE 12 X 60	TE 12 X 60 SCREW	1.000
010.8982	VITE TCEI M8 X 140	TCEI 8 X 140 SCREW	1.000
010.9074	GRANO VCE PUNTA PIANA 10 X 20	10X20 FLAT POINT GRUB SCREW	1.000
010.9074	GRANO VCE PUNTA PIANA 10 X 20	10X20 FLAT POINT GRUB SCREW	1.000
016.0131	CARTER TRUCIOLI PER PIANO GIREVOLESH 320–332	ROTATING TABLE SWARF COVER SH 320	1.000
016.1043	BRACCETTO APPOGGIA BARRA SH 382	BAR SUPPORT ARM SH 382	1.000
025.0080	GABBIA ASSIALE A RULLINI AXK 3552	AXIAL CAGE WITH ROLLERS AXK 3552	1.000
025.0082	RALLA AS 3552	CENTER PLATE AS 3552	2.000
025.0239	ANELLO DI TENUTA OR 4112	O RING 4112	1.000
025.0452	RULLI 6X6 AISI 420	ROLLERS 6X6 AISI 420	219.000
034.0397	COPERCHIO SNODO TESTA SH MM.30	HEAD PIVOT COVER SH N.S.	1.000
034.0844	PIEDINO COMPLETO DI DADO X PIANALE K 60IR – K 110	FOOT WITH NUT FOR K 60 IR	1.000
034.1001	LEVA A SCATTO 8 MA PK55	LEVER 8 MA PK55	1.000
034.1002	LEVA A SCATTO 10 MA	LEVER 10 MA	1.000
034.1203	IMPUGNATURA NS. DISEGNO M10	MEP MADE HANDWHEEL M10	1.000

Cylinder unit



Code	Description	Description	Quantity
007.3695	STAFFA AGGANCIO MOLLA E CILINDRO SH 332	SPRING AND CYLINDER SHANK BRACKET SH 332	1.000
010.0949	MOLLA RICHIAMO TESTA SH 320–332 CCS	HEAD RETURN SPRING	1.000
010.1103	FORCELLA 16 X 1,5	16 X 1,5 FORK	1.000
010.1412	STAFFA SUPPORTO CILINDRO SH 332 CCS	CYLINDER SUPPORT BRACKET SH 332 CCS	1.000
010.7605	RONDELLA 0 10 (010.7605)	0 10 WASHER (010.7605)	1.000
010.7640	RONDELLA GROOVER M10	WASHER GROOVER M10	1.000
010.7645	RONDELLA GROOVER M8	M8 SPRING WASHER	1.000
010.7894	VITE TCEI 8 X 25 (010.7894)	TCEI 8 X 25 SCREW (010.7894)	1.000
010.7924	VITE TCEI 10 X 30 (010.7924)	TCEI 10 X 30 SCREW (010.7924)	1.000
010.7976	VITE TE 10 X 30 (010.7976)	TE 10 X 30 SCREW (010.7976)	1.000
016.0296	STAFFA ESTERNA CILINDRO SH	OUTER CYLINDER BRACKET SH	1.000
025.0930	CUSCINETTO 51100	BEARING 51100	1.000
034.1117	VOLANTINO DSH D.100+MANIGLIA RIBALT. +BARRA FILETT.M10X235 X CCS	HANDWHEEL DSH M10X235 CCS	1.000
043.0045	CILINDRO REGOLATORE DISCESA TESTA SH 260–280–282–292–332 CCS	HEAD DOWN STROKE CYLINDER SH260–280	1.000

Laser and lamp group



Code	Description	Description	Quantity
010.3194	SOSTEGNO LASER LUCE N.T.	LIGHT AND LASER SUPPORTING N.T.	1.000
016.2778	STAFFA LAMPADA LED	BRACKET LED LAMP	1.000
016.3620	STAFFA SUPPORTO LASER/LAMPADA DM-1215	LASER / LAMP SUPPORT BRACKET	1.000
022.1191	LASER MOD.5OEM 24V OTTICA ARIGA CON M8 MASCHIO PANNELLO SENZA CAVO	LASER MOD.5OEM 24V	1.000
022.3255	FARO LED 4,2W 16/36 VCC 330LM	LED LIGHT 4,2W 16/36 VCC 330LM	1.000

Adjustments

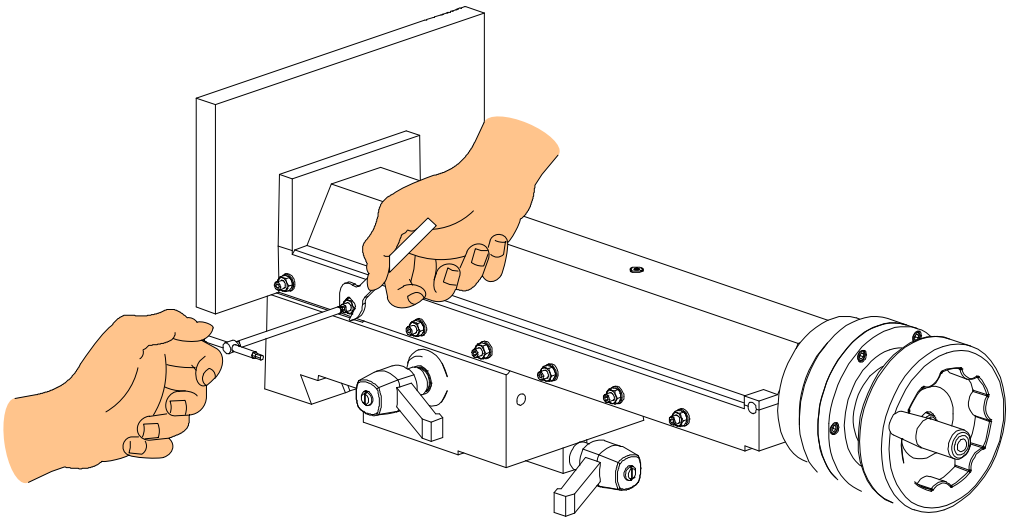
The adjustment operations for correct use of the **DM–1215** mechanical, pneumatic and hydraulic systems are described in this chapter.
These instructions will enable you to “customise” your machine to suit the type of cuts you want, optimising the time required to complete them.

Vice

Vice play adjustment

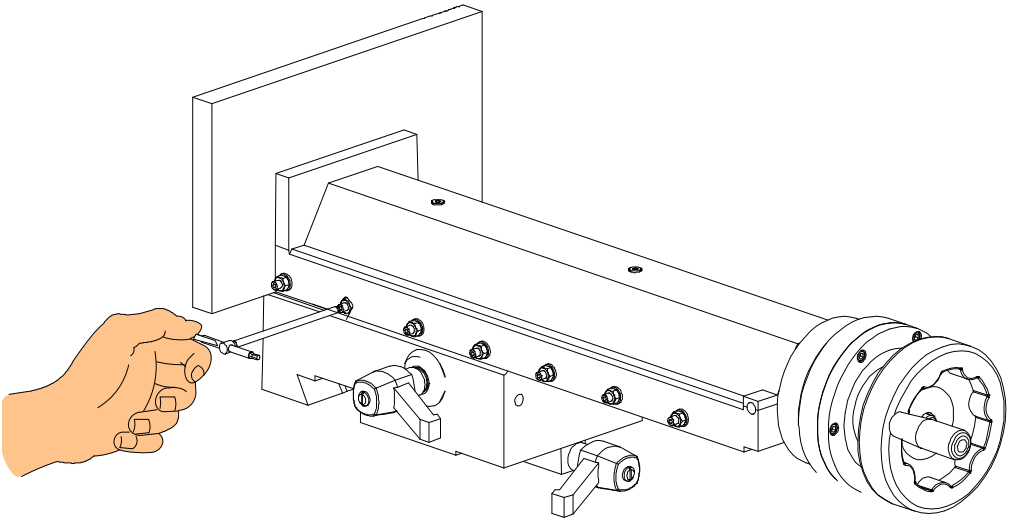
Any play that develops between the slideway and the slide gib on the vice must be compensated by adjusting the grub screws regulating the distance between the gib and the lead screw, proceeding as follows:

- slacken all the locknuts on the grub screws, using a hexagonal key to hold the screws still;
- open the vice to its full extension;

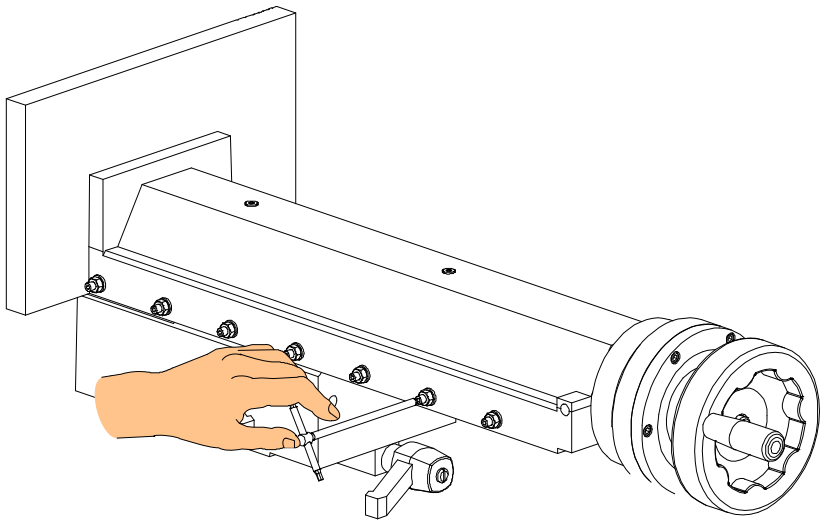


- adjust the slight pressure exerted by the grub screws on the gib, starting with the first two in contact with the lead screw;

- after adjusting the two grub screws, tighten the locknut, holding the grub screws with the hexagonal key;



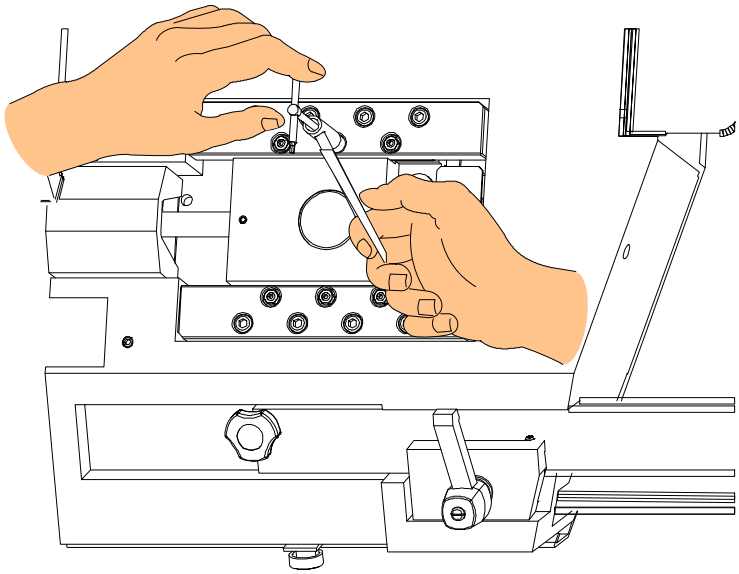
- close the vice until two more grub screws are in the same position as the first two previously;
- repeat the operation on the gib grub screws on all the slideway grub screws;
- at the end of the operation, use the handwheel to move the slideway back and forth, identifying the zones where the grub screws exert greater pressure on the gib.



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:

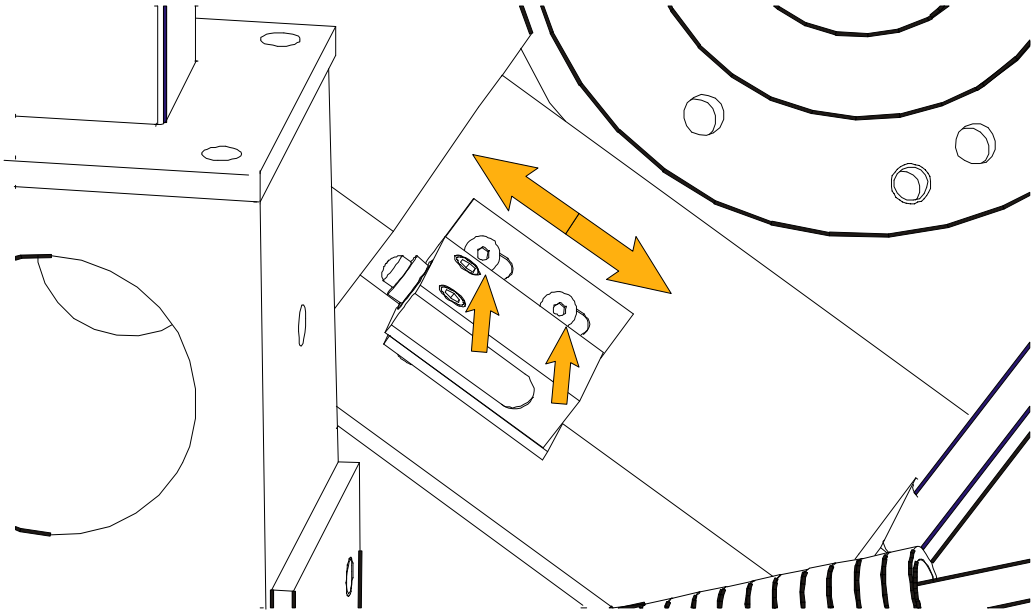


- remove the blade from the flywheels;
- move the slide backwards and forwards to locate any friction or play;
- slacken the nuts, holding the grub screws with a hexagonal pipe wrench;
- if there is play, tighten the grub screws; if there is friction rubbing, loosen the grub screws.

Adjusting operating head travel

The cutting head sequence, during the cutting cycle, is conditioned by FTCI (End Run Cutting Head Backwards) points and FCTA (End Run Cutting Head Forwards). It is possible to set the end cut (FCTA) point as illustrated:

- Loosen the end run support screw fasteners and move it forward and backward in the slots to near it or distance it from the contact point.
- Tighten the screws when the optimal position has been obtained.



Blade guide parts

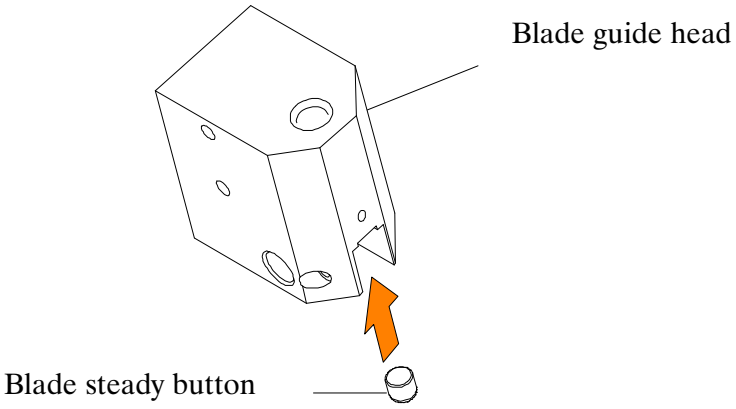
Band saw blades offer enormous advantages to cutting applications, without requiring any special skills by the operator. A description follows of the blade guide adjustments required to ensure correct operation of the saw.

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.

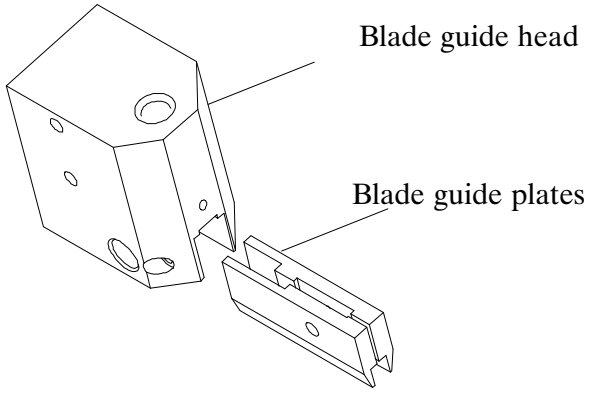
Blade steady buttons

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

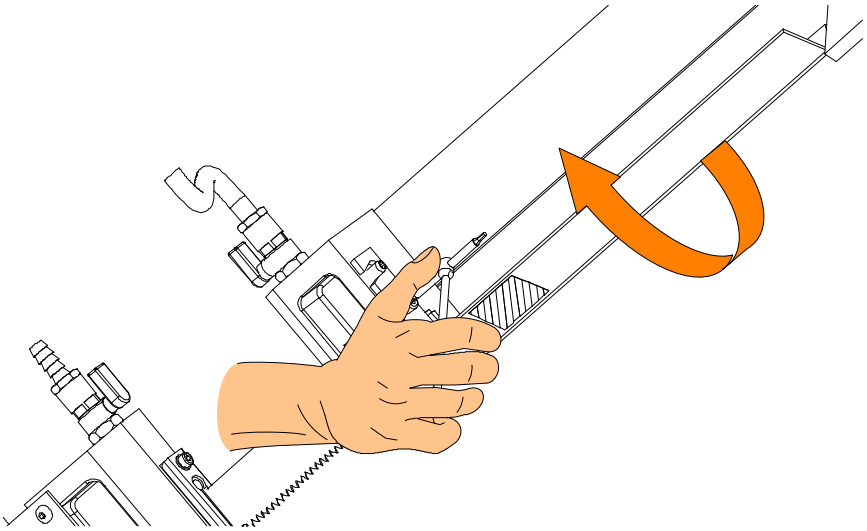
The plate contact points feature widia inserts which guide the blade longitudinally. A small amount of play must exist between the plates and blade to ensure that the blade runs smoothly and perpendicular to the work table.



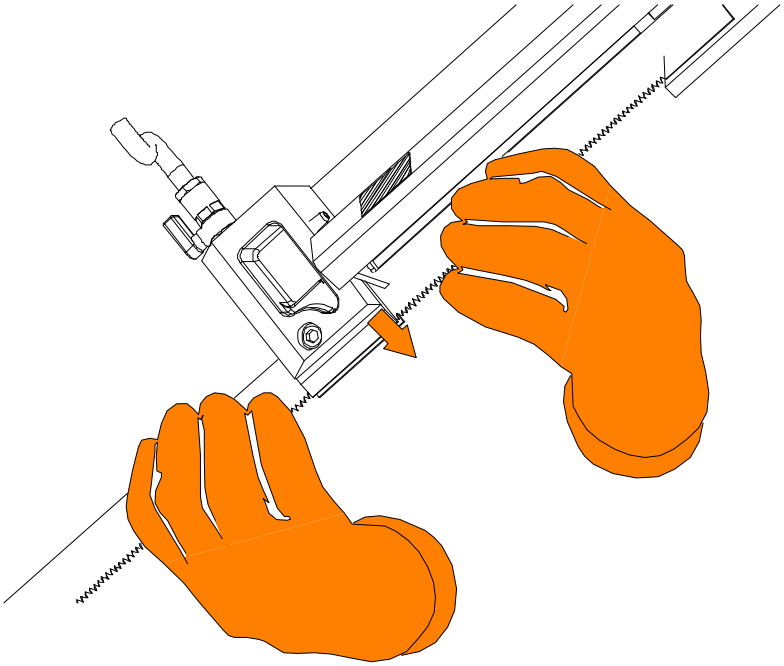
Thanks to the widia inserts, the working life of the guide plates is practically the same as that of the machine itself. However, if due to wear or the assembly of a new blade with a different thickness, the amount of play between the plates and blade changes, the plates must be adjusted as follows:

▶ disconnect the machine from the power supply;

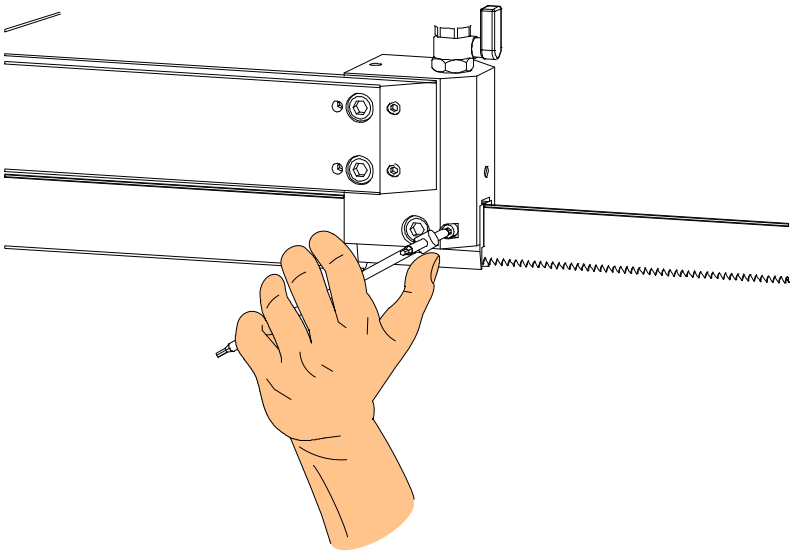
- slacken the blade tension using the handwheel;
- open the front blade guard by undoing the fixing screw and rotating it as illustrated in the figure below;



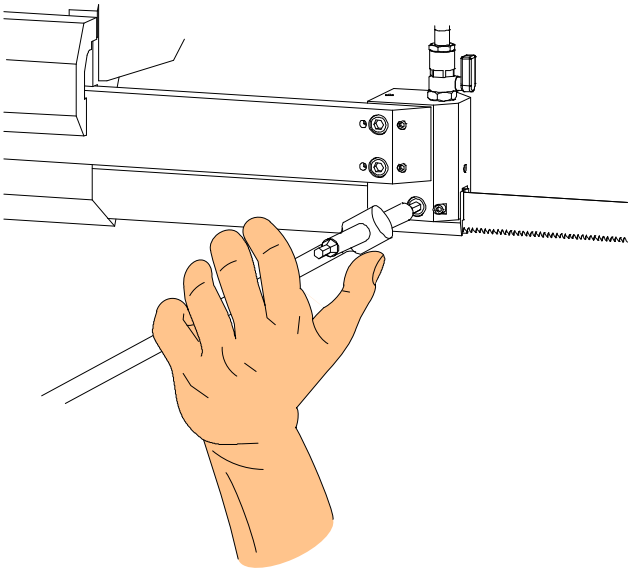
- wear protective gloves when making this adjustment;
- make sure there is a small amount of play between the blade and guide plate inserts;



- 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.

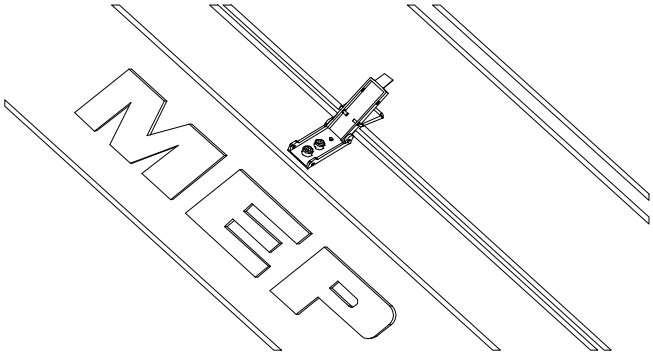
Blade

The adjustments required to ensure correct operation of the blade are described below. For further information about band saw blades, refer to Chapter NO TAG which provides a more detailed description of the different types of blade.

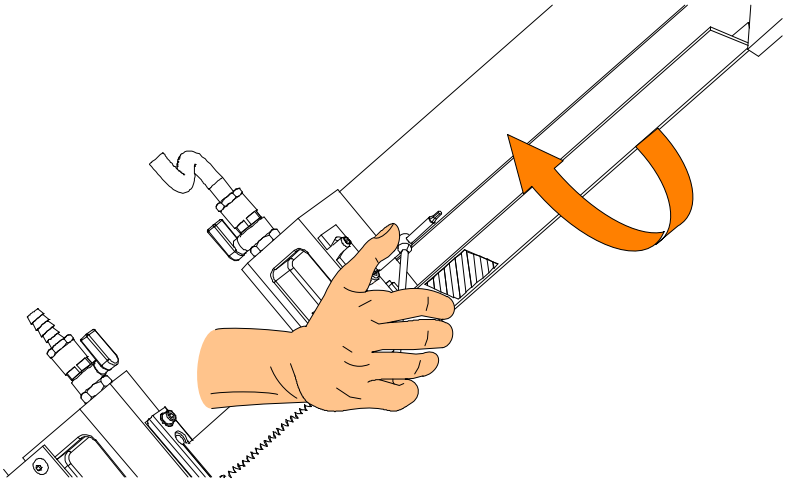
Tool change

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:

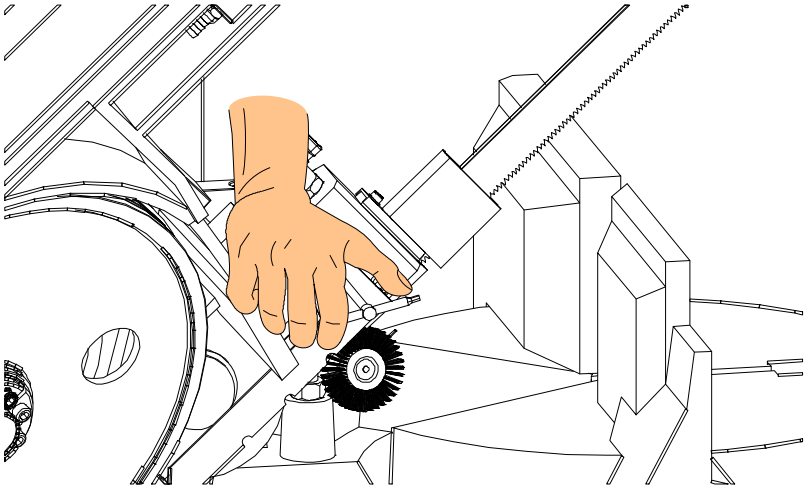
- disconnect the machine from the power supply;
- slacken the blade tension using the handwheel;
- open the cutting head cover by unscrewing the two knobs and hooking it onto the galvanised lever on the back of the head;



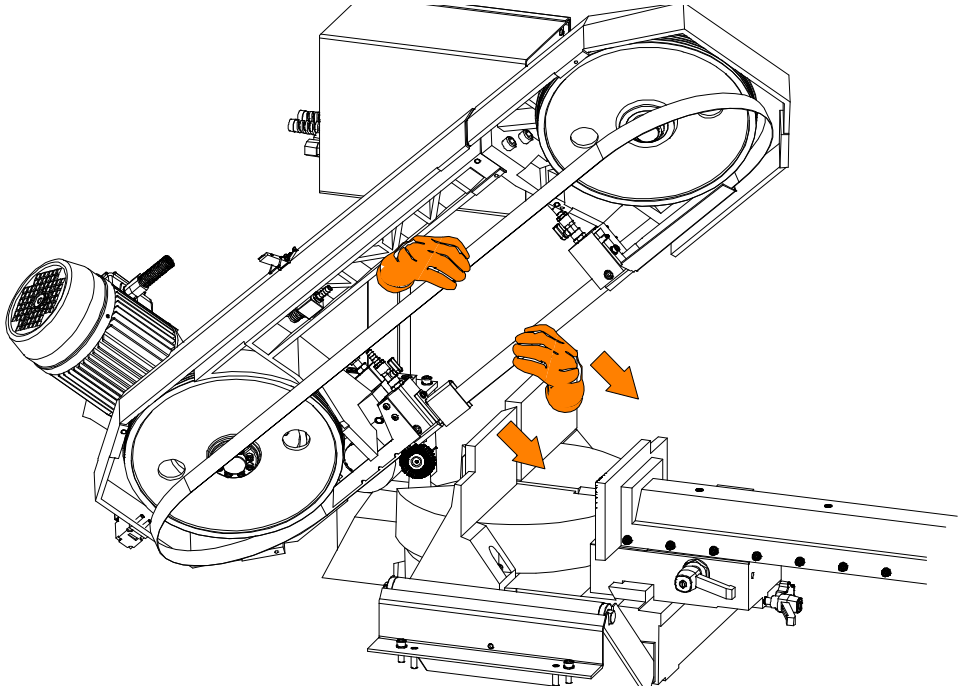
- open the front blade guard by undoing the fixing screw and rotating it as illustrated in the figure below;



- 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;

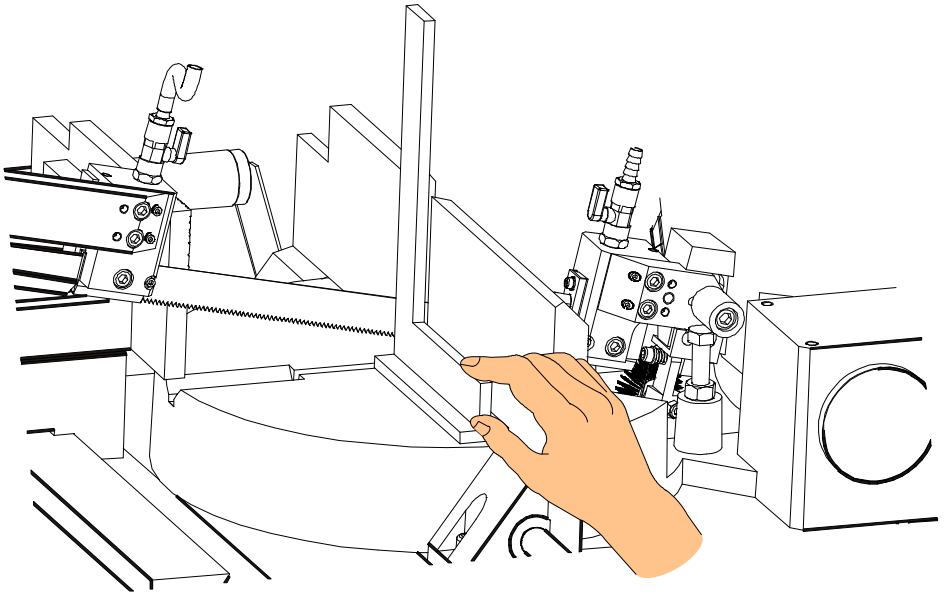


- repeat the above sequence of steps on the rear blade guide head;
- fit the blade on the flywheels and remount the front and rear blade guards;
- close the cutting head cover, correctly tension the blade and power up the machine.

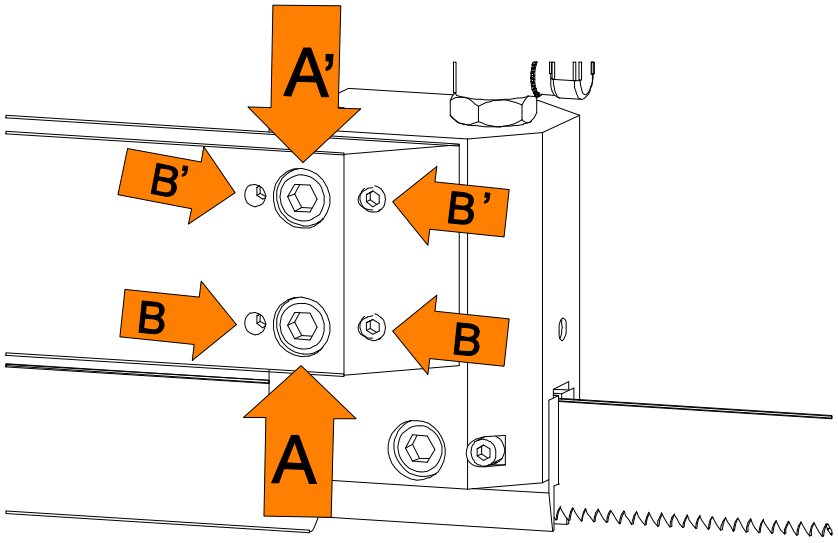
Blade perpendicularity

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.

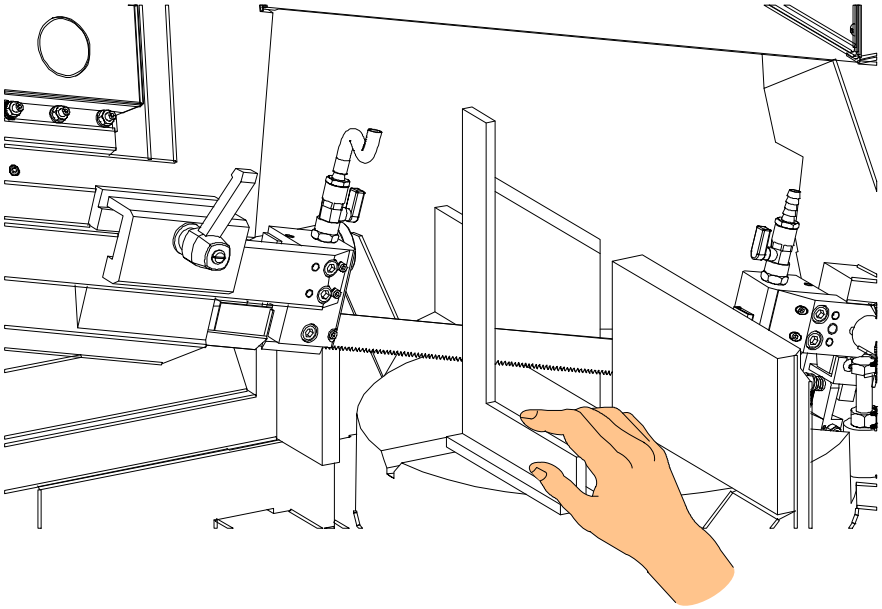
▶ Position the square on the cleaned work surface and rest it against the blade, close to the right vice jaw at a point where the blade teeth do not prevent contact.



▶ 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.

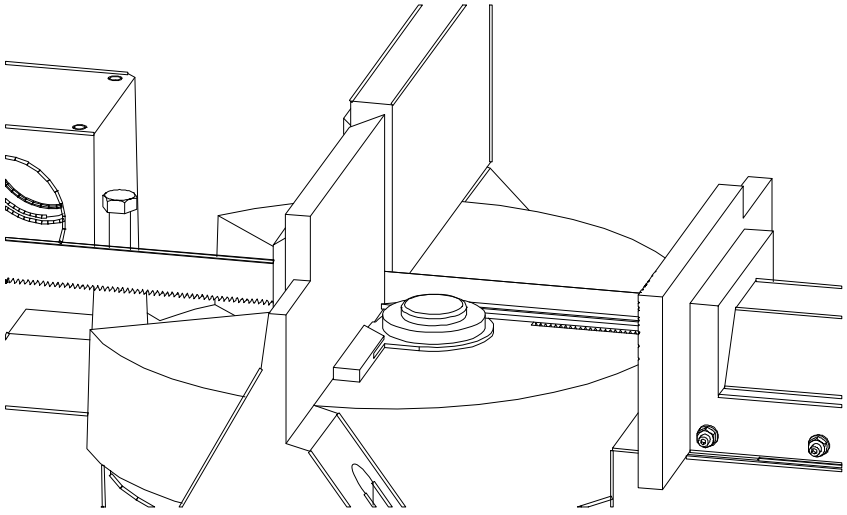


▶ Repeat the squaring operations as for the rear head.

Orthogonality of the blade

The procedure for correcting and adjusting the blade to 0°and 45° right and 45° and 60° left in order to make cuts at right angles to the fixed vice jaw is described below.
To make orthogonal adjustments at 0°, use a workshop goniometer or a simple 90° square. Operation sequence:

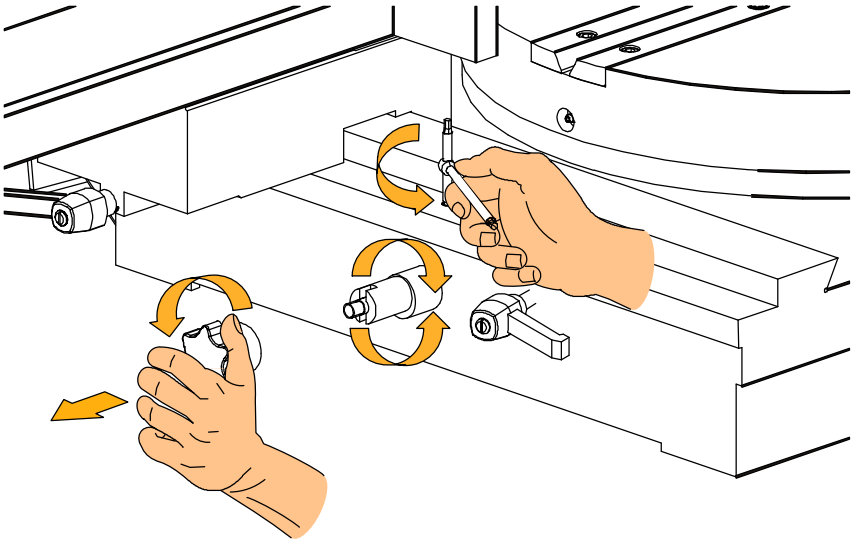
▶ lower the head;
▶ position the goniometer or square, resting it on the fixed vice jaw adjacent to the blade;



▶ slacken the turntable lock lever;
▶ remove the knob illustrated in the figure below controlling the eccentric lock pin;

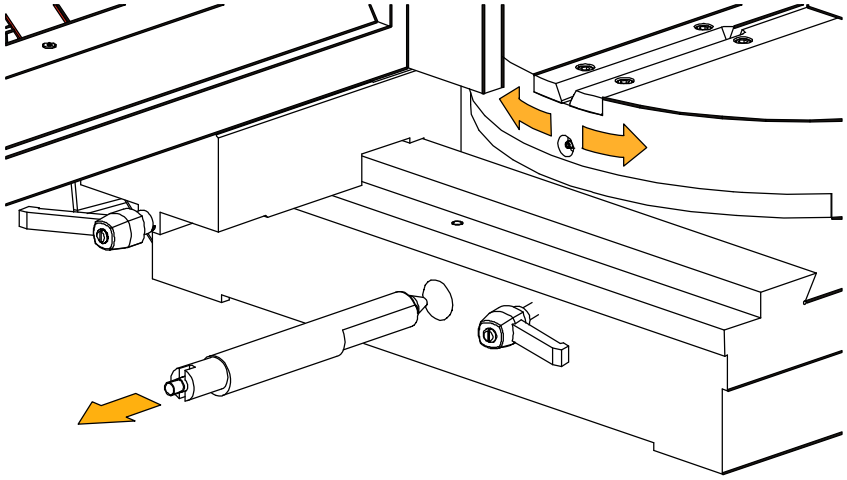
If the degree of error read on the goniometer is equal to or less than 1 degree, proceed as follows:

- using an Allen key, slacken the eccentric pin grub screw and rotate it until the error is corrected;



If instead, the degree of error read on the goniometer is greater than 1 degree, proceed as follows:

- remove the eccentric pin completely;
- turn the head until the error is corrected;



- refit the eccentric pin, tighten down the grub screw and remount the knob;
- lock the turntable using the lever.

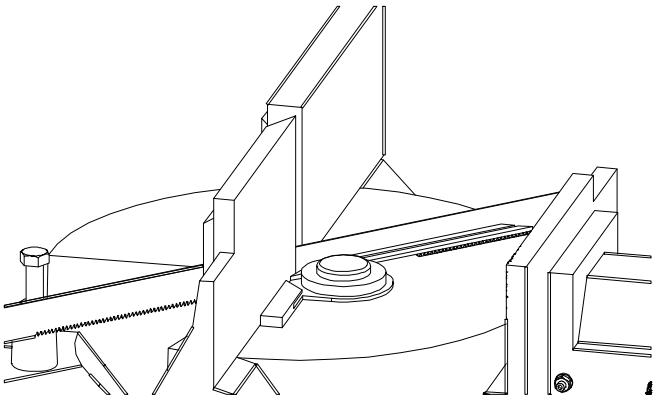
Warning

To adjust the 45° and 60° fixed points, you will need a workshop goniometer or an instrument that can measure the exact angle of the blade. This operation can also be performed to adjust the blade to 45° right, since a head angle control pin is also mounted on the left hand side of the work table.

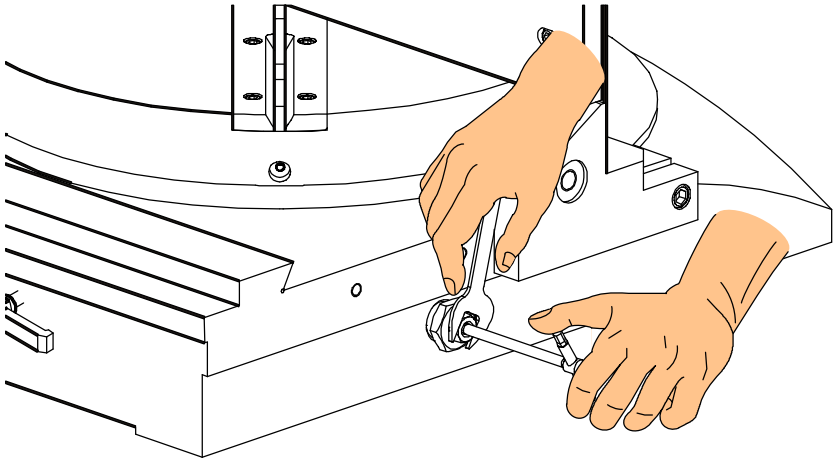
Operation sequence for blade adjustment to 45 degrees:

- slacken the turntable lock/release lever;
- turn the head to 45 degrees (left or right);

- position the goniometer on the work table and measure the angle between the vice jaw and blade;



- once you have identified the degree of error, adjust the pins by gripping the pin with an Allen key and slackening the lock nut with a normal wrench;
- this done, adjust the depth of the pin inside the turntable until the error is corrected;

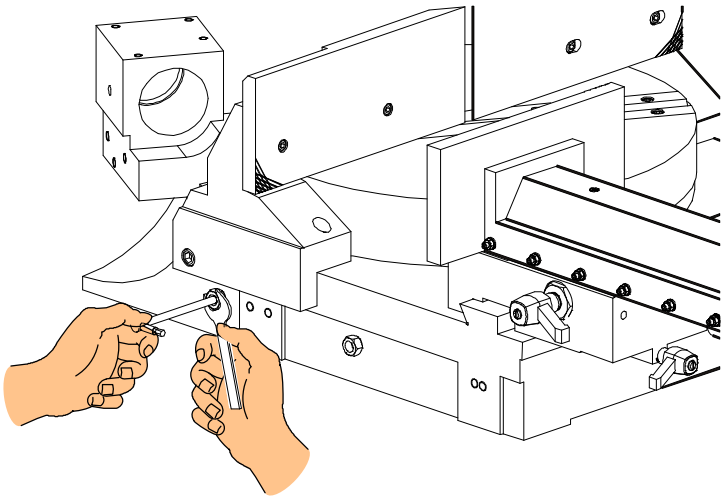


- relock the nut, while gripping the grub screw.

Warning

If the machine is equipped with optional cutting angle display check that the mechanical zero corresponds to the displayed zero; if not, contact our technical service.

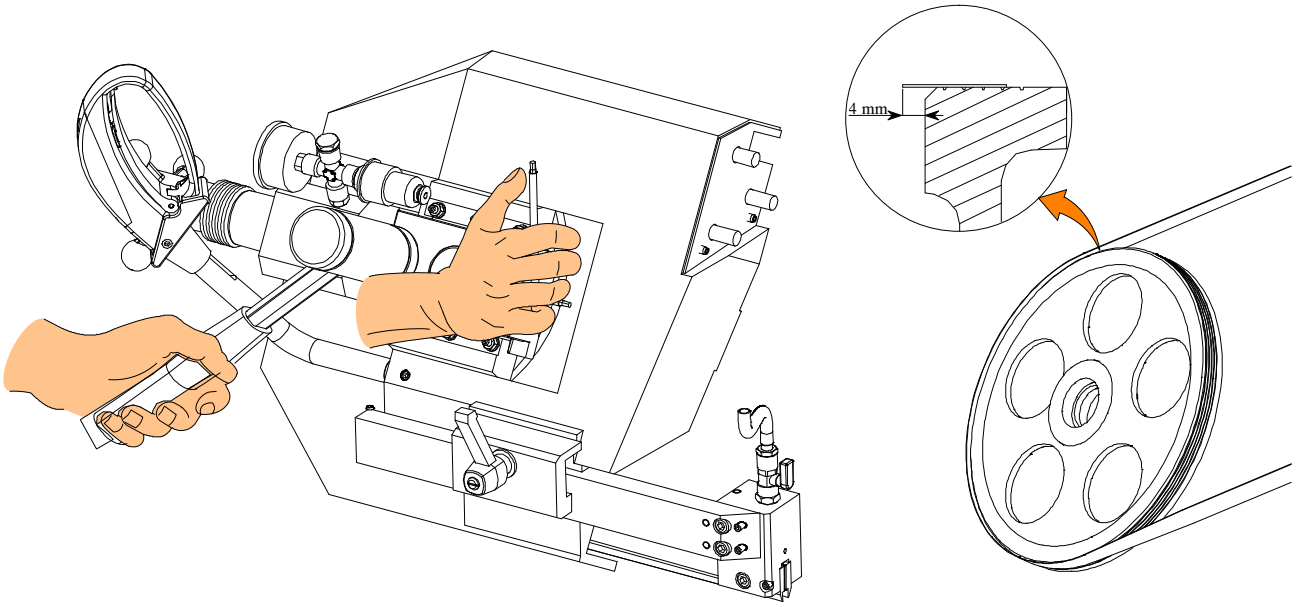
To adjust the blade to **60 degrees left**, proceed as described above for a 45 degree angle, this time however, adjusting the stop indicated in the drawing below.



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.

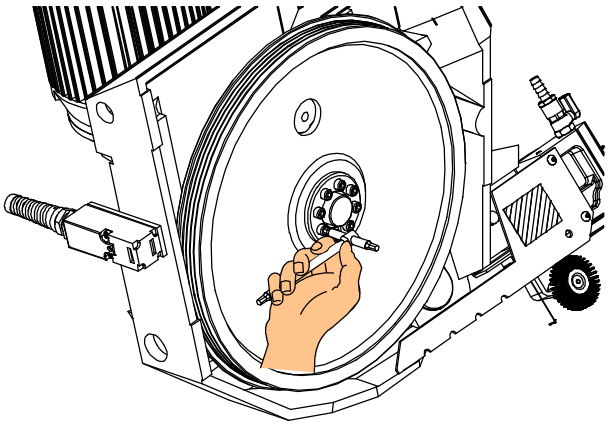
- ▶ Slacken the blade tension and open the cutting head cover;
- ▶ slacken the grub screw and, using a mallet, tap the shaft in or out;
- ▶ finally, close the cover and set the blade in motion;
- ▶ check the distance, as shown in the picture;



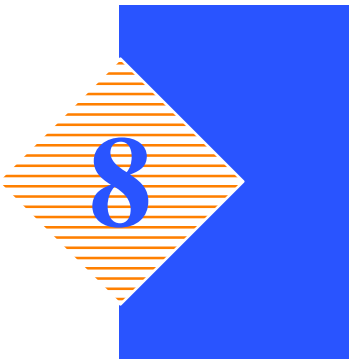
- ▶ if necessary, repeat the operation till getting the correct position.

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.



Maintenance and choice of consumables



DM–1215 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 Hydmech 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;

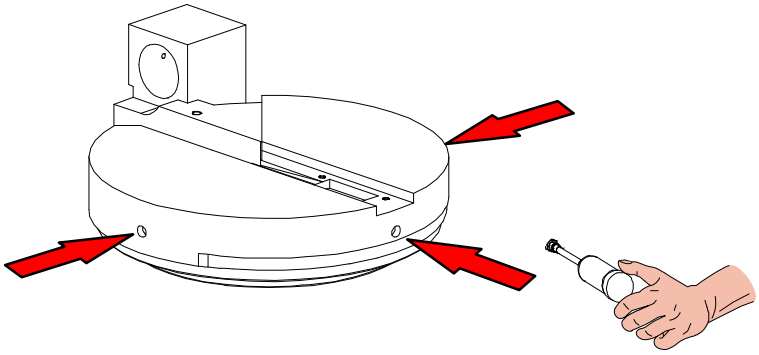
- check state of blade wear and replace if necessary;
- check the blade cleaning brush, clean and relocate; if worn, replace;
- at the end of the working day, slacken the blade to 5 Bar (70 Kg) tension to prevent unnecessary and damaging stress on the machine.

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;
- check vice sliding; if it is not precise and has transversal play, adjust as instructed in Chapter 7.

- apply lubricating oil to the rotating platform's internal circuit using ball valve oiler situated in the rear part of the fixed platform.



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 on blade orthogonality with respect to the workpiece rest shoulder; if adjustment is necessary, proceed as instructed in Chapter 7;
- check that the 0° notch on the work table is in line with the graduation on the turntable; if not, readjust by regulating the 0° stop; then re−check that the blade is perpendicular and orthogonal;
- check the precision of the 45° and 60° left stops and the 45° right stop; if out−of−set, adjust following the steps indicated 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;
- controls the hydraulic brake oil level.

Maintenance of working parts

DM−1215 maintenance engineers must pay particular attention to functioning elements such as the blade tensioning cylinder (already considered in chapter 7), loading, the air treatment unit, the pneumatic vice (if AUTOMATIC VICE version) and the hydraulic brake.
The transmission box equipping the machine needs no maintenance.

Consumable materials

Only specified oils must be used for the hydraulic and pneumatic and for lubricant/coolant devices. Below is a list of compatible oils for each of these circuits.

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

Oil for lubricant/coolant fluid

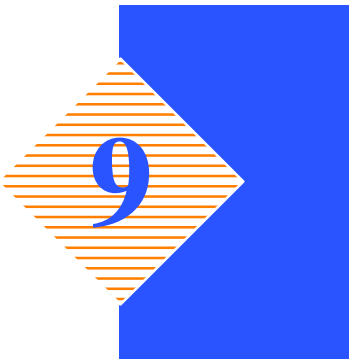
The oil used for the machine lubricant/coolant fluid is CASTROL Syntolin TFX. Though there are no specific standards for these types of oils, MEP considers that the above product has the best price/quality rapport. The following oils can also be said to have similar characteristics and are therefore 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. 62
− oil concentration 5−6 %

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 **DM–1215**, 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 basic version with 4 pole motor, is provided with the following range of cutting speeds:

- Speed = 15÷115 m/min.

These speeds are selected using the inverter situated on the control panel.

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	0,5 320 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.
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.

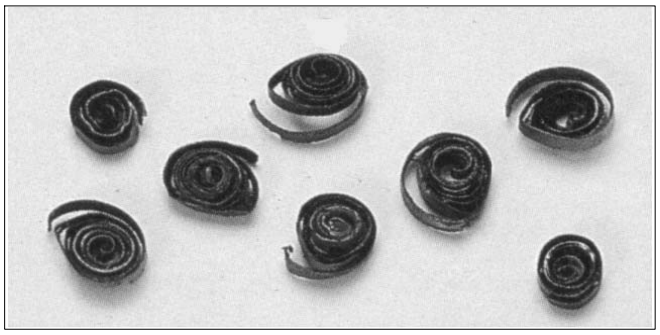
The cutting speed depends, as indicated above, on the tensile strength of the material (kg/mm^2), its hardness (HRB) and the thickness of largest sections. The downstroke speed depends on the material thickness. Therefore, large−section, solid or thick−walled materials (s > 5 mm), can be cut at high 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.

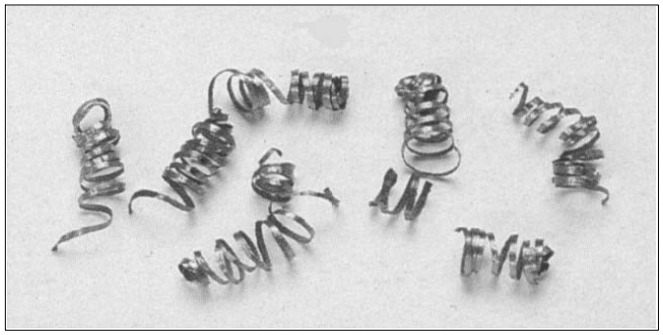
Types of swarf:

- 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.

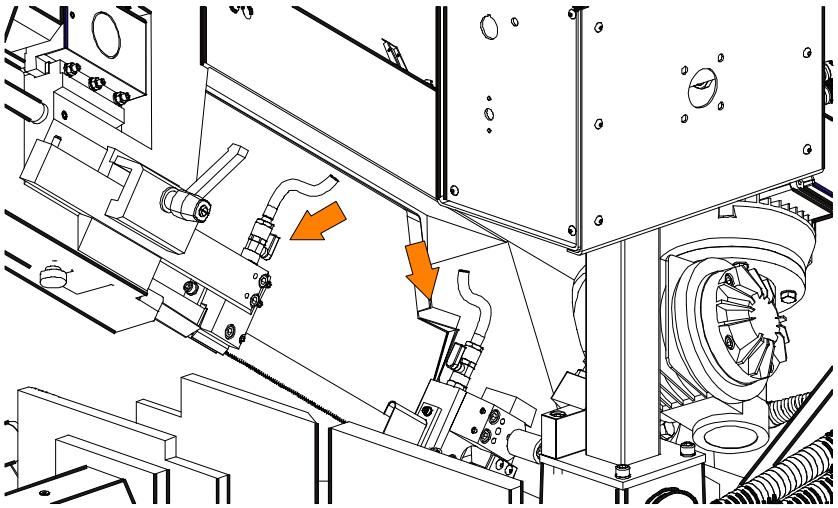


- Long coils of swarf indicate ideal cutting conditions.



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).

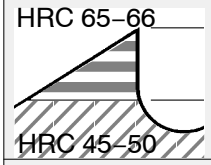
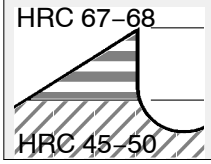


Blade structure

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	Molybde-num	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 	0,85	0,25	0,30	4,15	6,37	5,00	1,92				64–66
HSS M42 	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.

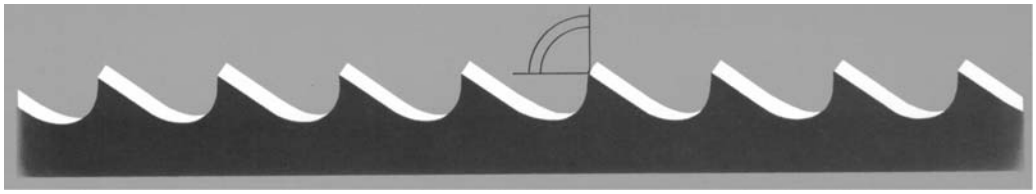
Blade types

The blades mounted on the **DM−1215** are 3.440 x 27 x 0,9 mm.; the length can vary between 3.420 mm. and 3.460 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

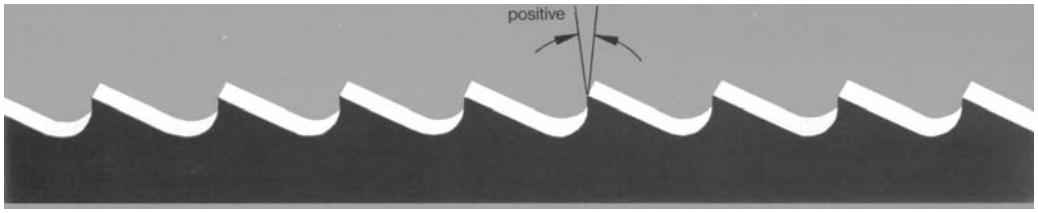
Cutting angle 0°, constant pitch.



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

Positive rake

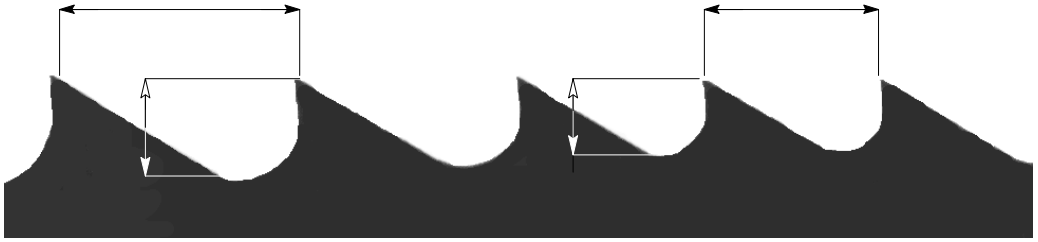
Positive cutting angle 9–10°, constant pitch.



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

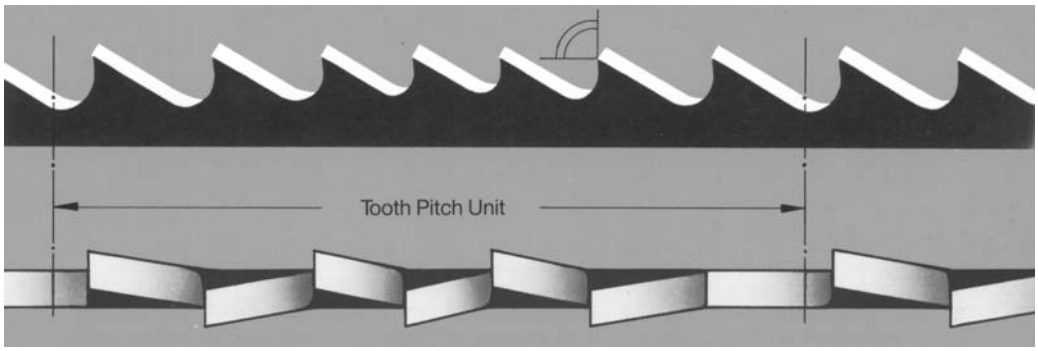
These blades have groups of teeth having different pitches and, as a consequence, have various tooth dimensions and differing relief angles. These are also available in M2 and M42 types with zero and positive rakes. The alternation of the different types of teeth helps to prevent vibration and noise.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

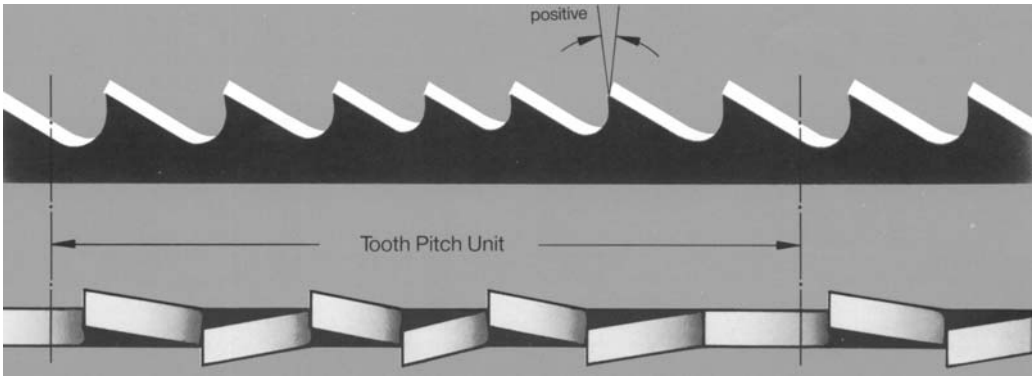
This type of tooth formation is ideal for cutting single pipes or medium size bundles, in accordance with the capacity of the machine.



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.

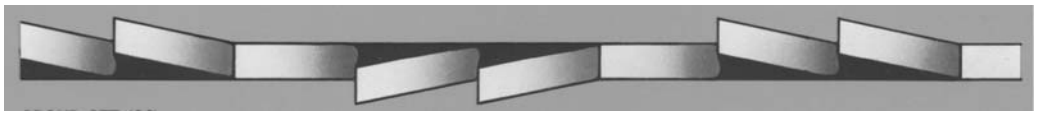
Undulated set

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

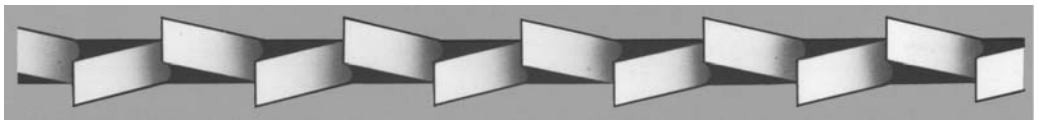
These are groups of teeth angled to the right, one straight tooth, then a further group angled to the left.



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

Classification of steels

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

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

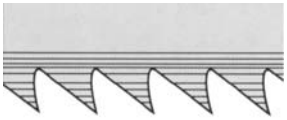
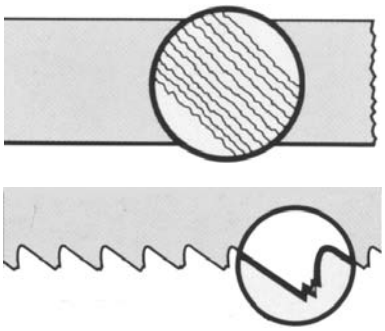
Material	SS Svezia	AISI U.S.A.	DIN Germania	BS Inghilterra	UNI Italia	AFNOR Francia
Carbon steels	1311 1572	1015 – 1035	C 22 – C 35 20 Mn 5 – 28 Mn 6 CK 22 – CK 50	050 A 20 080 M 46 – 50 120 M 19 150 M 28	C 15 – C 35 C 22 Mn C 28 Mn	XC 18 XC 38 H 1 20 M 5
Carbon steels	1650 1880	1040 – 1064 1770 – 1880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

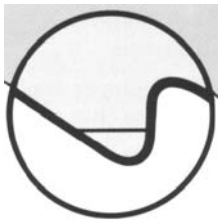
Troubleshooting

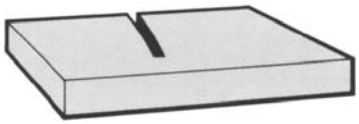
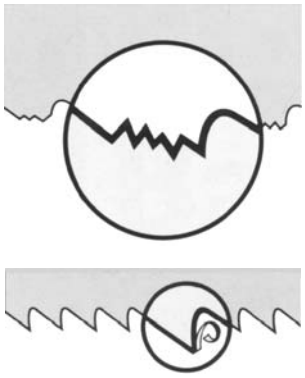
10

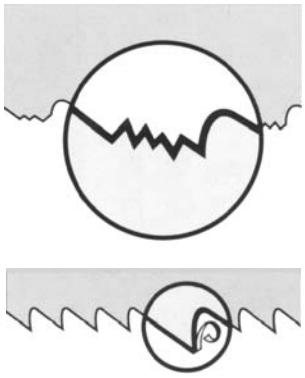
This chapter describes the inspection and troubleshooting procedures for the **DM–1215**. Regular inspections and efficient maintenance are essential to ensure your machine gives you a long, trouble–free service life. The chapter is divided into two sections: the first being dedicated specifically to TROUBLESHOOTING BLADE AND CUTTING PROBLEMS, while the second TROUBLESHOOTING section concerns troubleshooting general machine operating faults. Taken together they form a comprehensive troubleshooting guide which will enable you to follow a methodical procedure for solving any problem.

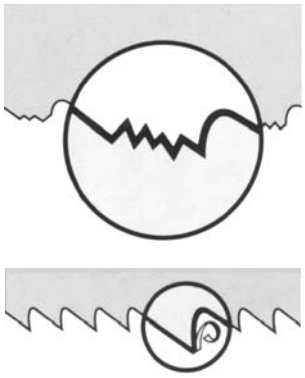
Troubleshooting blade and cutting problems

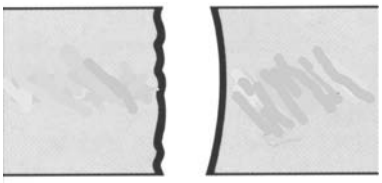
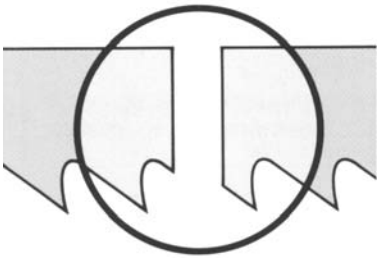
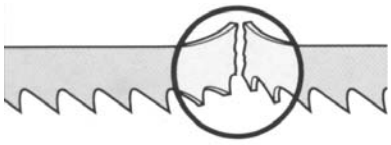
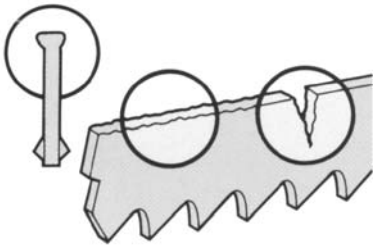
PROBLEM	PROBABLE CAUSE	SOLUTION
Blade scored or scratched 	◗ Widia inserts chipped or worn	☞Replace
	◗ Widia inserts loose or tight	☞Adjust
	◗ Widia inserts dirty	☞Clean and re–adjust correctly
Cutting surfaces scored 	◗ Blade teeth worn	☞Replace blade
	◗ Head downstroke speed too fast	☞Reduce downstroke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

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

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

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

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

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

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

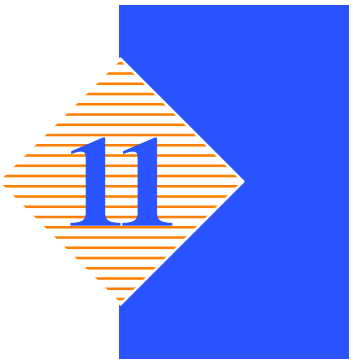
Troubleshooting machine faults

PROBLEM	PROBABLE CAUSE	SOLUTION
The main switch does not work	◗ Electrical supply	☞Check: phases, cables, plug, socket.
	◗ Minimum voltage relay	☞Check that it is correctly supplied and not burnt out.
Spindle motor will not turn	◗ Electrical power supply	☞Check: the phases; the cables; the plug; the socket. Also check that the motor connections are in place.
	◗ Motor contactor	☞Check input and output phases and check whether when supplying A1 and A2 relay the contactor closes.
	◗ Polarity change switch	☞Check input and output phases
	◗ Head control lever microswitch	☞Check that it is functioning; if broken, replace
	◗ Blade tensioning	☞If the blade is not correctly tensioned to 60 Bar, the pressure contact does not close and the machine is in EMERGENCY state
	◗ Blade protection cover	☞Check that the closure is correct and the limit stop pressed
	◗ Current drop	☞Check connections on the handgrip switch, the blade protection limiter and the pressure gauge on the blade tensioner group
BMT not energised (Minimum Tension Coil)	◗ Electrical power supply	☞Check: the phases; the cables; the plug; the socket.
	◗ BMT Reset switch	☞Make sure that the minimum tension coil is energised when switch is turned from 0 to 1. If it is not, replace the switch.
	◗ Emergency stop pushbutton in	☞Make sure the emergency stop button is released: turn it clockwise through 1/4 of a turn to release it.
Electropump is not working	◗ Electrical supply	☞Check: phases, cables, plug, socket and fuse no. 5 in the electrical plant
	◗ No–return valve	☞Clean, if blocked replace
	◗ Filter	☞Clean

PROBLEM	PROBABLE CAUSE	SOLUTION
Cutting vice will not close or will not open (MA version)	◗ VM: Cutting Vice Valve	☞Make sure the valve is operating correctly, replace if necessary.
	◗ Vice cylinder	☞Check that air is not leaking through the cylinder seals, by removing the hose (from the quick connector), where there is no pressurized air, and checking whether air escapes from the joint. If air is escaping, replace the seals or the entire cylinder.
	◗ Compressed air supply hose	☞Check the hose is not kinked or blocked. Remove the obstruction.
	◗ Air treatment unit	☞Check that the air treatment group is supplying the pressure shown on the gauge.

The CCS optional is not working	◗ Minimum voltage relay	☞Check that it is correctly supplied and not burnt out
	◗ Selector switch	☞Check connections. Replace if defective
	◗ Lock valve	☞Check for impurities preventing correct functioning. Replace if defective.
	◗ Regulator	☞Check that input and output pipes are free of kinks and obstructions.
	◗ Spring	☞Check that the spring is correctly tensioned
	◗ Cylinder	☞Check that hydraulic circuit oil level is sufficient.
	◗ Limiter	☞Check connections and functioning
	◗ Head control lever microswitch	☞Check connections and functioning

Accessory Installation



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

Blade

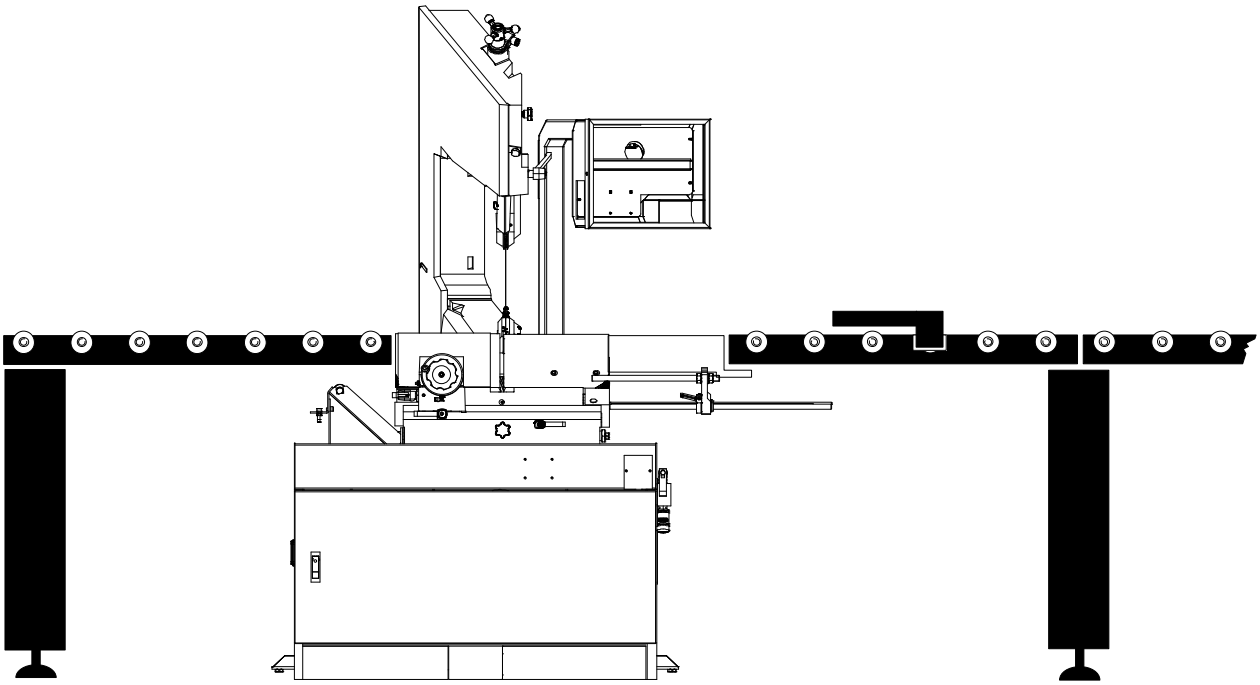
The blades that can be used on this machine include:

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

See chapter 7 of this manual for belt installation instructions.

Roller table

- K210 roller table module for feed side, 1500 mm;

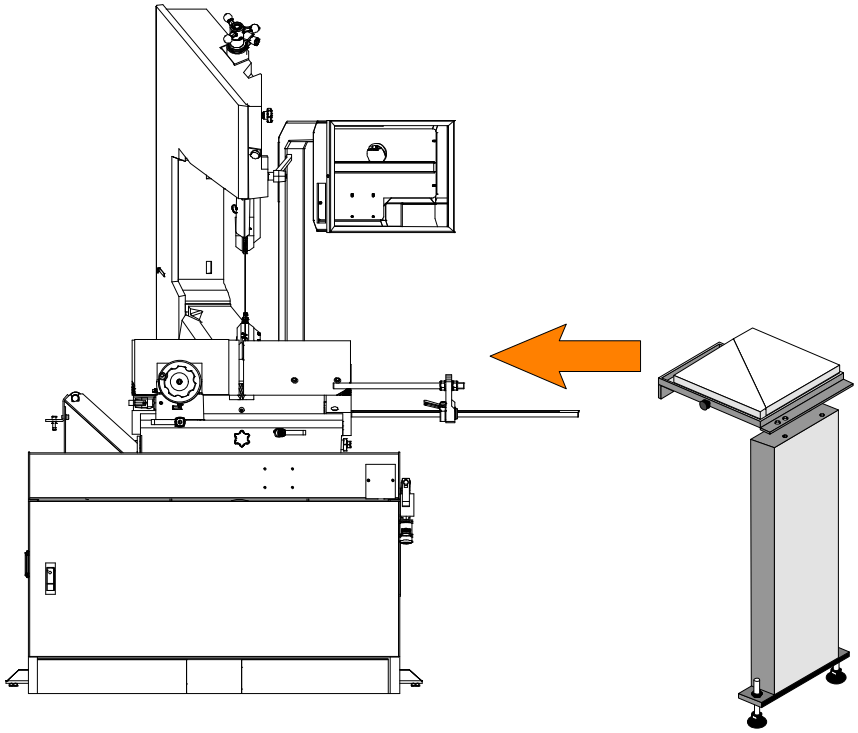


- K210 roller table for discharge side, 1500÷6000 mm;
- K210R roller table for discharge side, 1500÷6000 mm;
- To fit the roller loading platform on the loading side, the machine has a bar–support arm that one end of the roller–way can be positioned on and then screwed in place.
- To install the roller loading platform on the discharge side an adapter must be used, with or without a support, as explained in the paragraphs that follow.

Discharge side roller table adapter with support

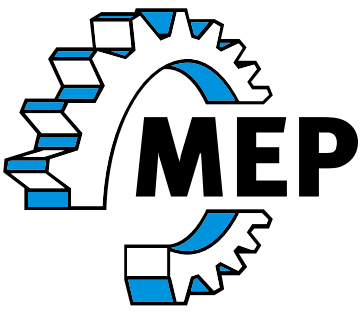
The installation operations are given below:

- ▶ remove the two TE screws from the right side of the slideway;
- ▶ install adaptor, fixing the plate to the fixed platform after having removed the bolts, and fit the support to the end of the plate, using two of the four holes in the upper part of the support, leaving the other two free for attaching the roller−way.



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

Hydmech 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