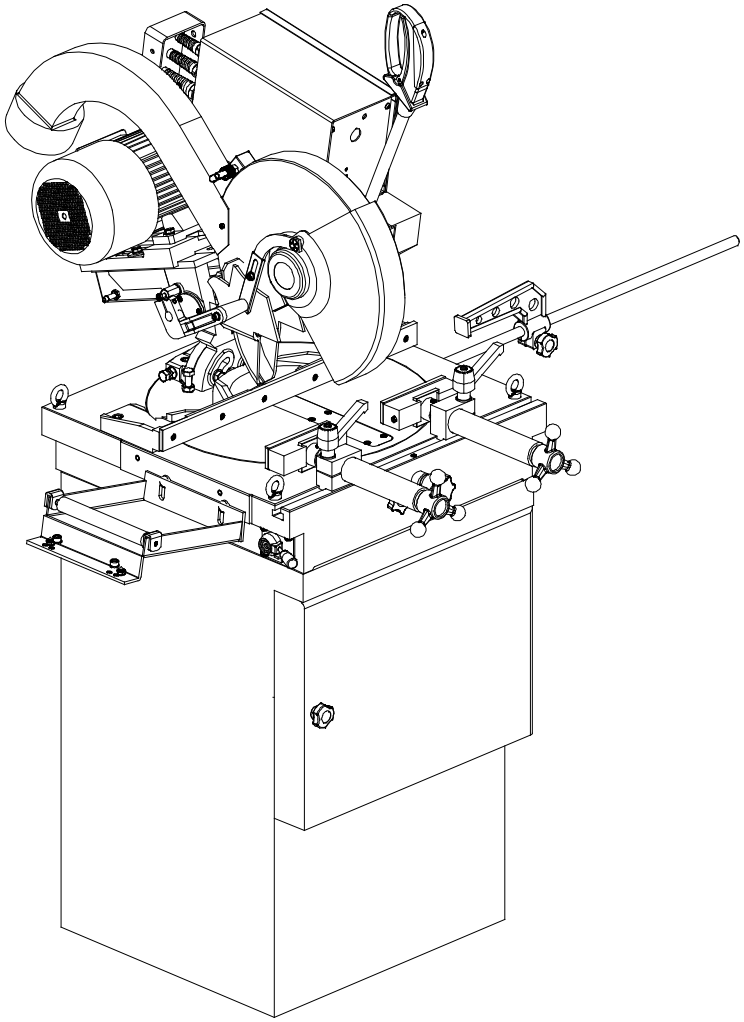


USE AND MAINTENANCE MANUAL

EN PNF350-2AV

YEAR OF MANUFACTURE: _____

EN

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

The manufacturer:

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

Hereby declares that the circular sawing machine:

Machine Type:	**SAWING MACH**
Machine model:	**PNF35 2AV**
Serial number:	
Year of manufacture:	

is in specification w ne following d es:

- **DIREC E EEC AC DIRECTIV 2006/42/CE**
- **DIR TIVE 2006/ CE VD**
- **DI CTIVE 4/10 E "EMC"**
- **Lgs. 17/2**

Resp ible of echnical File
(Walter Di ovan)

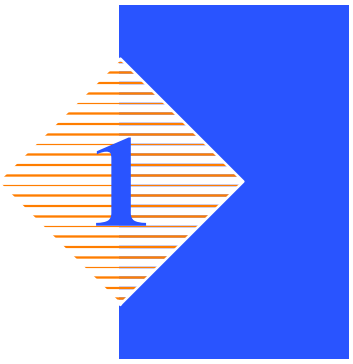
Managi Direc r
(illiam G ometti)

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

Pergola, lì _____

FAC SIMILE

Introduction and technical specifications



Foreword

We have decades of experience in the construction of the best metal- cutting machines. Our experience, our knowledge of our customers and constant technological development of design and production equipment allow us to offer a specific solution for every type of cutting need.

This work tool has been designed as a simple and reliable answer to the wide range of cutting needs of the modern workshop.

PNF350- 2AV is a disk sawing machine and can perform mitre cuts of 45° on the left and 45° on the right.
These features, together with its good cutting capabilities, make the PNF350AV a very versatile machine.

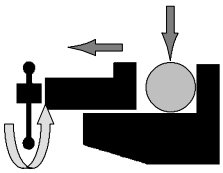
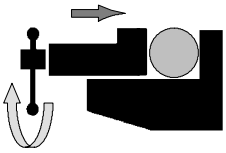
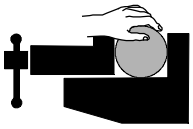
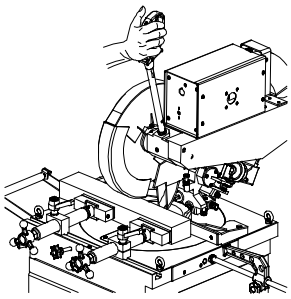
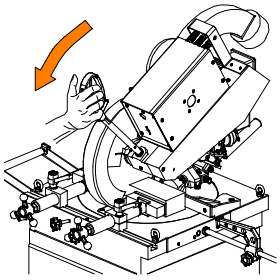
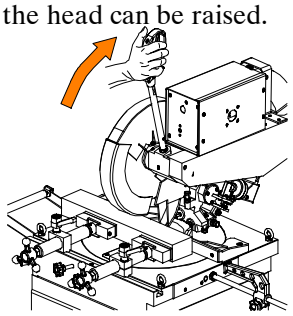
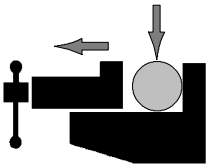
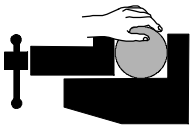
Congratulations for having chosen this product which, by following the instructions contained in this user and maintenance handbook, will guarantee you years of dependable service.

Warning This machine has been designed and manufactured specifically for cutting non- ferrous metals.

Machine presentation

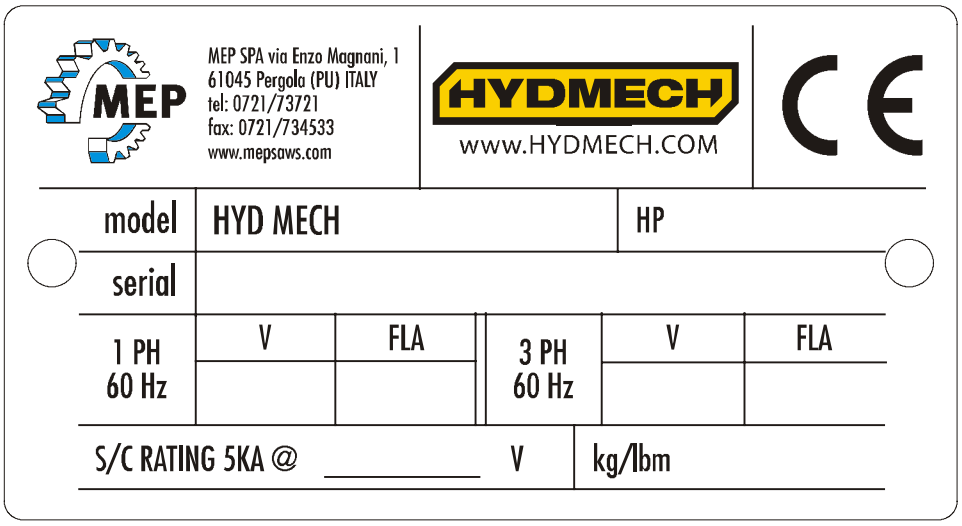
The machine is controlled manually: after having clamped the material in the vice, the operator grips the head control lever and presses the blade start- up microswitch. The downward movement of the lever controls the cutting of the material in accordance with the preset length. At the end of the cut, the cutting head moves upwards ready for another cutting cycle.

The MA version (automatic vice), a pneumatic cylinder clamps the workpiece between the jaws of the vice; the open/close command for the jaws is located on the base of the machine.

1. Position the material in the vice 	2. Close the vice 	3. Make sure the workpiece is securely clamped in the vice by trying to move it manually. 	4. Start the blade 
5. Cutting the material 	6. At the end of the cut, the head can be raised. 	7. Open the vice 	8. Feed the next part to be cut manually 

Machine specification

The anodised aluminium name plate is riveted on the side of the machine; the same data are reproduced on the declaration of conformity included with this use and maintenance 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		
Single- phase/three- phase machine 1 speed	rpm	3400
Three- phase machine 2 speeds	rpm	1700/3400

BLADE		
External disc diameter	mm	350
Internal hole diameter	mm	32
Blade thickness	mm	3,4

RATED ELECTRICAL POWER		
Single- phase/three- phase head spindle motor 1 speed	KW	3,5
Three- phase head spindle motor 2 speeds	KW	2,6/3,5
Max installed power	KW	3,5

WORKING PRESSURE		
Air consumption for vice (version MA)	Nl/min	1,37

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

LUBRICANT/COOLANT FLUID AND OIL		
Lubricant/coolant fluid (oil concentration 10 %)	capacità Lt.	1
Lubricant/coolant fluid MA (oil concentration 10 %)	capacità Lt.	10

VICE		
Vice max. opening	mm	180

SINGLE- PHASE MOTOR FEATURES 1 speed				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
2	230	13,8	2,2	2.800
Stator wound with enamelled copper wire, class H 200° C.				
Class F insulation (limit temperature TL 155° C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

THREE- PHASE MOTOR FEATURES 1 speed				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
2	230	9/5,2	2,2	2.840
Stator wound with enamelled copper wire, class H 200° C.				
Class F insulation (limit temperature TL 155° C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

THREE- PHASE MOTOR FEATURES 2 speed				
No.of poles	**Current (Volts)**	**Absorption (Amps)**	**Power (Kw)**	**rpm**
2	400 λ	5,26	2,2	2.840
4	400 Δ	3,68	1,5	1.410
Stator wound with enamelled copper wire, class H 200° C.				
Class F insulation (limit temperature TL 155° C).				
IP 54 protection rating (total against contact with live parts, water sprayed from all directions, with shaft oil seal).				
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.				

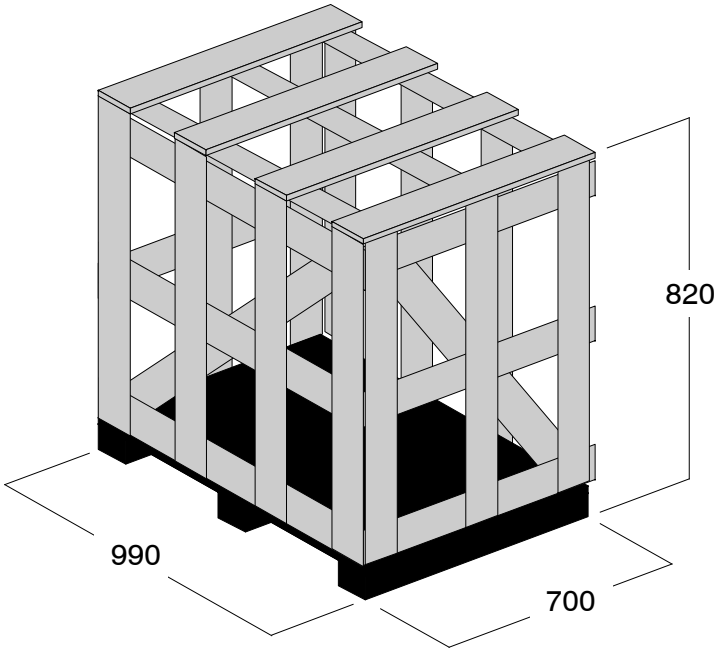
N.B. Example of class F insulation: in air- cooled machines at an ambient temperature of 40° C (according to CEI 2- 3 and IEC 85), the allowable overtemperature is 100° C (where 100° C represents the allowable ΔT).

EXTRACTOR MOTOR (Optional)			
Voltage (Volts)	**Absorption (Amps)**	**Power (Kw)**	**rpm**
230	1,8	75	2.820
400	3,1	75	2.820
Protection rating IP 55.			
Conforming to CEI norms, publication: IEC 34 of 01/07/1985.			

CUTTING CAPACITY				
Section	○	□	▭	■
0°	120	105	180 x 70	80
45° ◗	120	100	135 x 60	55
45° ◖	110	95	135 x 60	55

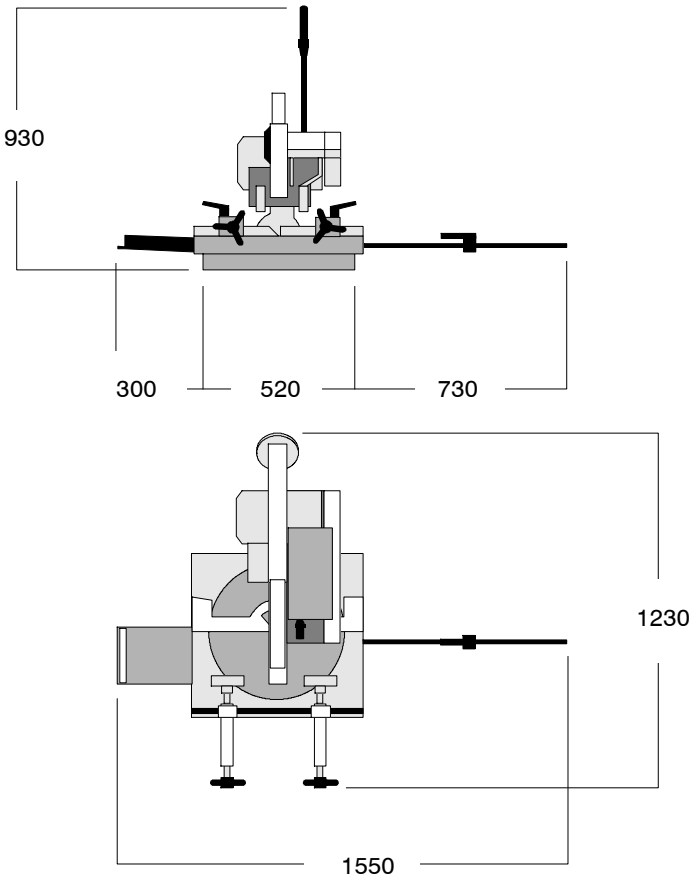
CUTTING CAPACITY With head placed on the left			
Section	●	■	▬
45° ◗	50	50	160 x 35

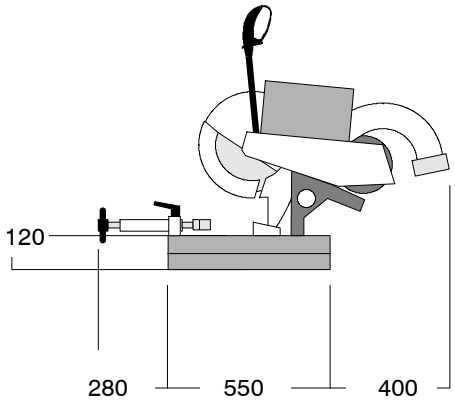
PACKED WEIGHT		
Wooden cage and pallet	Kg	
Wooden pallet	Kg	20



Dimensions

MACHINE INSTALLED		
Work table height (with base)	mm	920
Weight	Kg	160



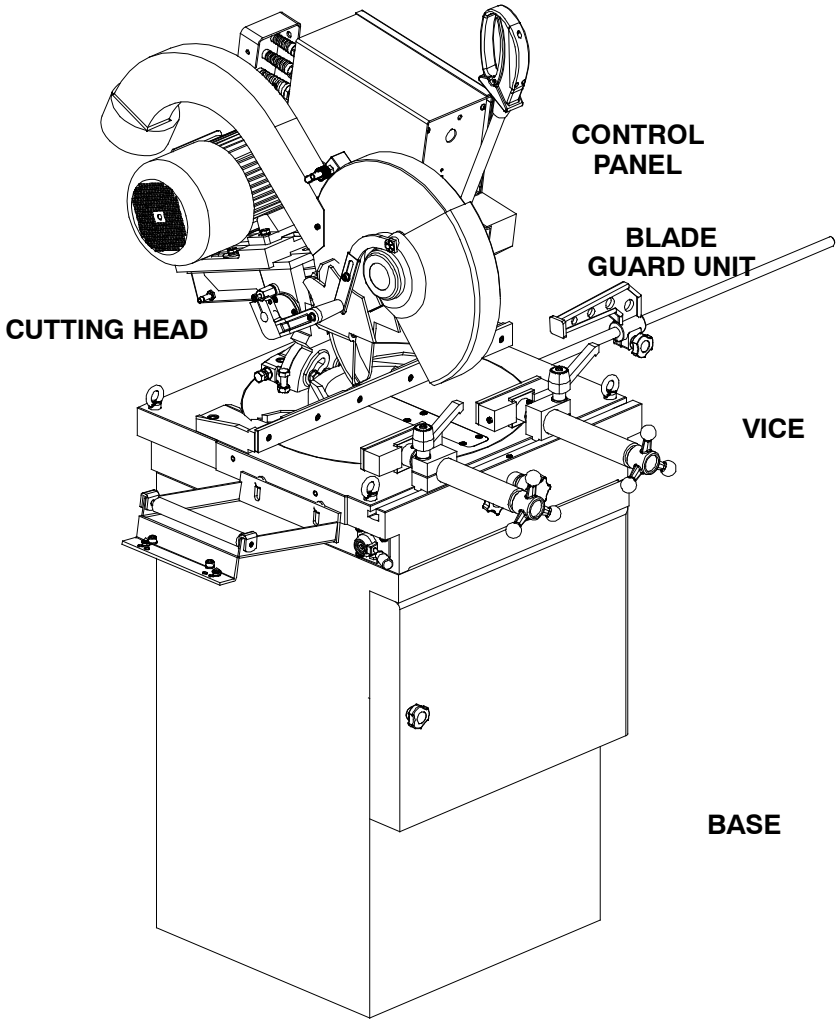


Functional parts

2

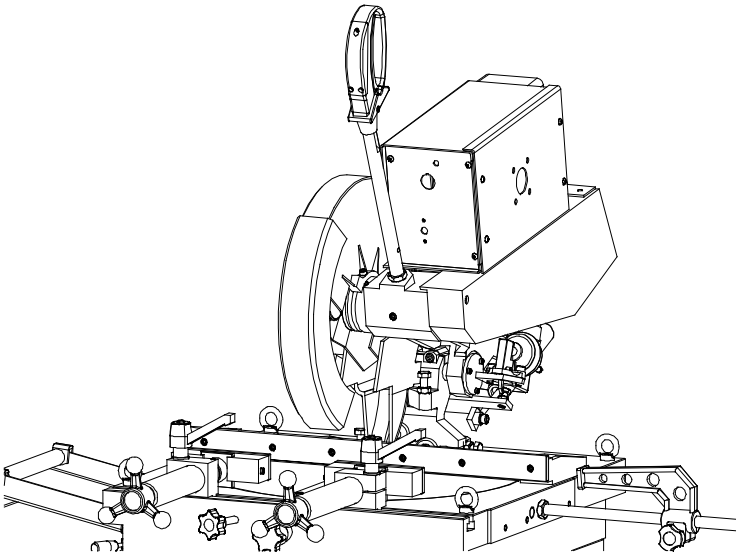
PNF350-2AV model

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.



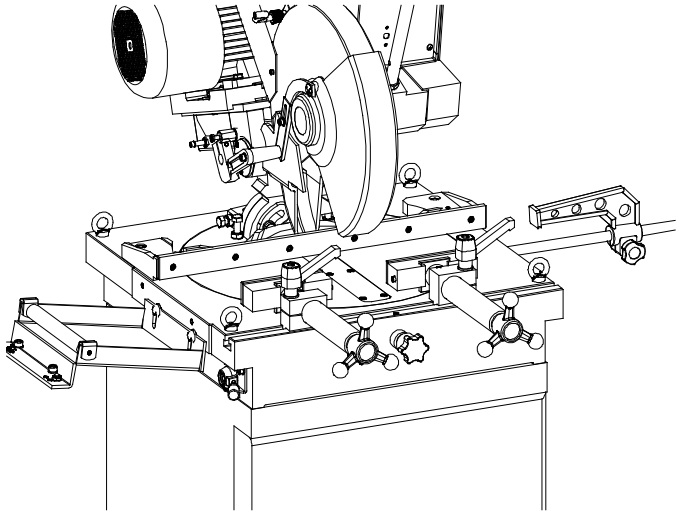
Cutting head

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 limited in its movements by the joint on the work table and performs a cutting travel delimited by fixed stops. The return of the head to its completely back position is ensured by a head return spring cylinder.



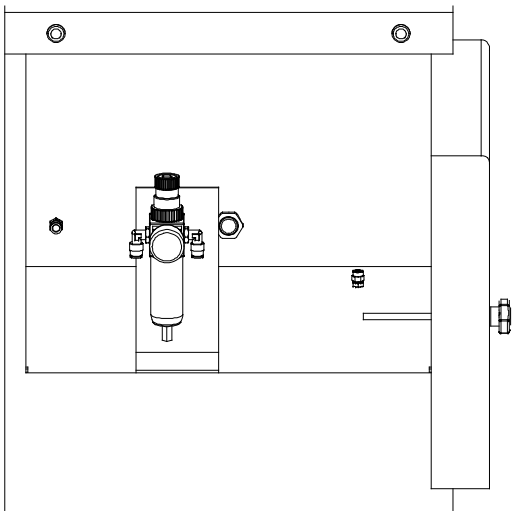
Shearing vice

Shearing vices are the components locking the material during the cut; they are made of fixed jaws, integral with the rotating platform and the sliding blocks with the movable jaws that can move on the dovetail guide. The MA version vices (optional automatic vice) are controlled vice opening and closing button on the base. The vice approaching movement is manual and the closing is operated by a pneumatic cylinder.



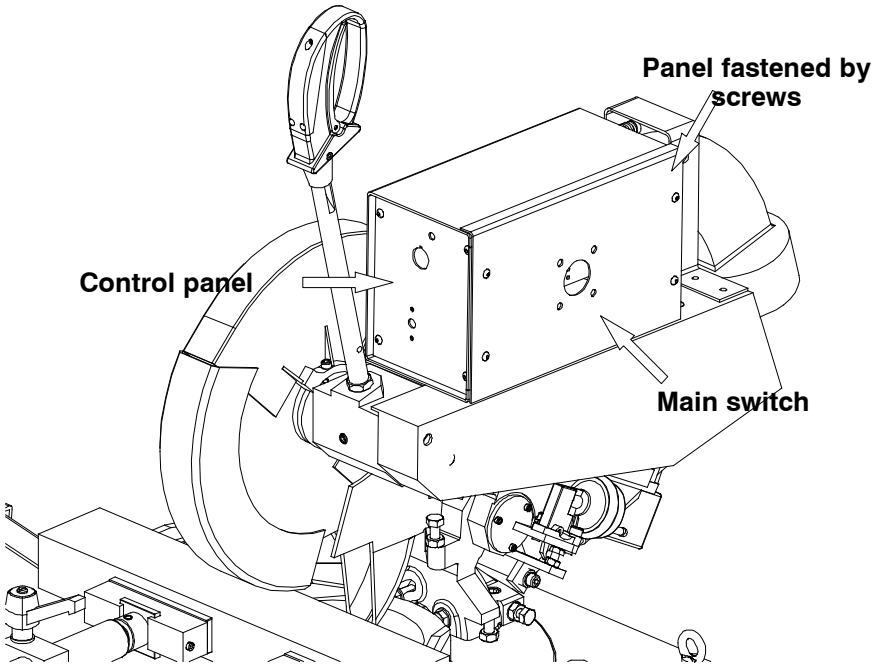
Air treatment unit for the automatic vice (version MA)

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



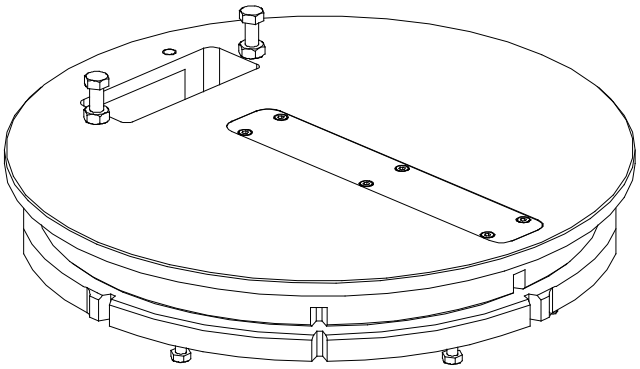
Control Panel

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



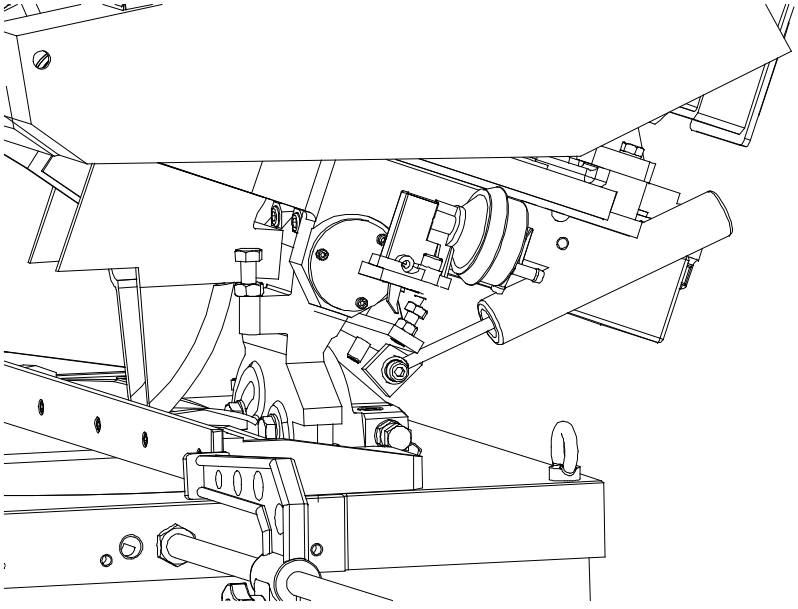
Turntable

Made in cast iron, it is the supporting plane for the material being processed and can rotate on the central pin together with the cutting head indicating the cutting angle by the etched grading. The cutting slot is made of two replaceable aluminum plates.

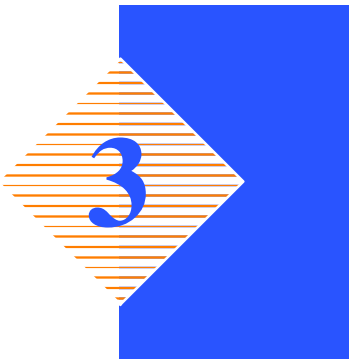


Lubrication system

This consists of a manual pump that receives an impulse from a mechanical stop located at the highest point of the head's travel. This means that lubricant is supplied to the blade with each movement of the head.



Safety and accident prevention



The **PNF350- 2AV** has been designed and produced in accordance with European standards. For the correct use of the machine we recommend that the instructions contained in this chapter are carefully followed.

Use of the machine

The disk vertical sawing machine **PNF350- 2AV** can be used only and exclusively for cutting profiles and solid parts in aluminum and light alloys.
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 98/37/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

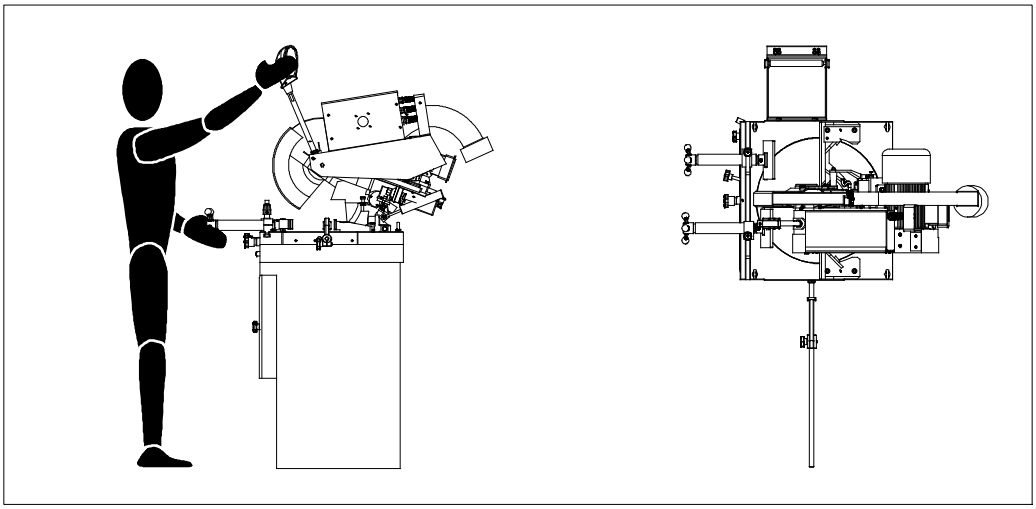
Check that the power supply cables and pneumatic feed systems comply with the maximum machine absorption values listed in the ”Machine Specification” tables; replace if necessary.

EARTHING

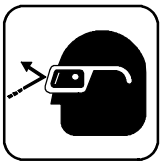
The installation of the earthing system must comply with the requirements set out in IEC STANDARD 204.

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.

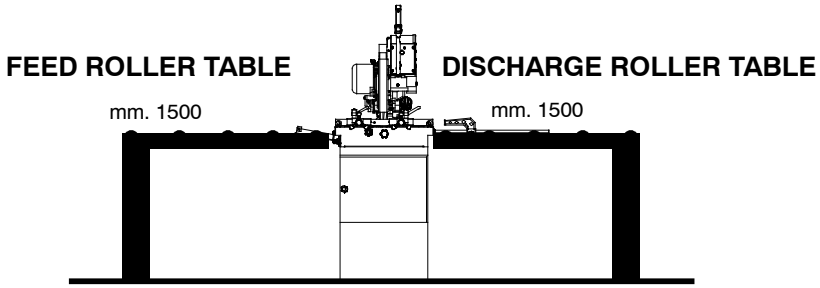
Do not use the machine without the guards in position. Replace the poly-carbonate windows , if subject to corrosion.

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

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

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

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



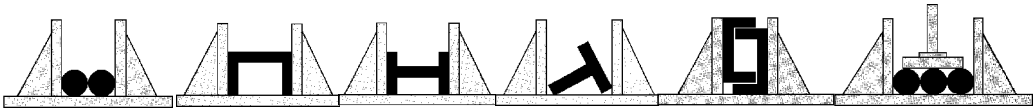
Any maintenance work on the hydraulic or pneumatic systems must be carried out only after the pressure in the system has been released.

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

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

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

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



Never move the machine while it is cutting.

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

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

When using the pneumatic vice (version MA) check that the jaws actually move right up to and effectively block the piece, as the maximum travel in only 8 mm, and check that the clamping pressure is correct.

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

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

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

Machine safety devices

This use and maintenance manual is not intended as purely a guide for the use of the machine in a strictly productive environment, it is instead an instrument providing information on how to use the machine correctly and safely. The following standards are those specified by the EEC Committee in the directives regarding safety of machinery, health and safety at work, personal protection and safeguarding of the environment. These standards have been applied to the **PNF350- 2AV** band saw.

Reference standards

MACHINE SAFETY

- EEC MACHINES DIRECTIVE 98/37/CE ;
- EEC Directive No. 73/23 known as ”Low voltage directive”.

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

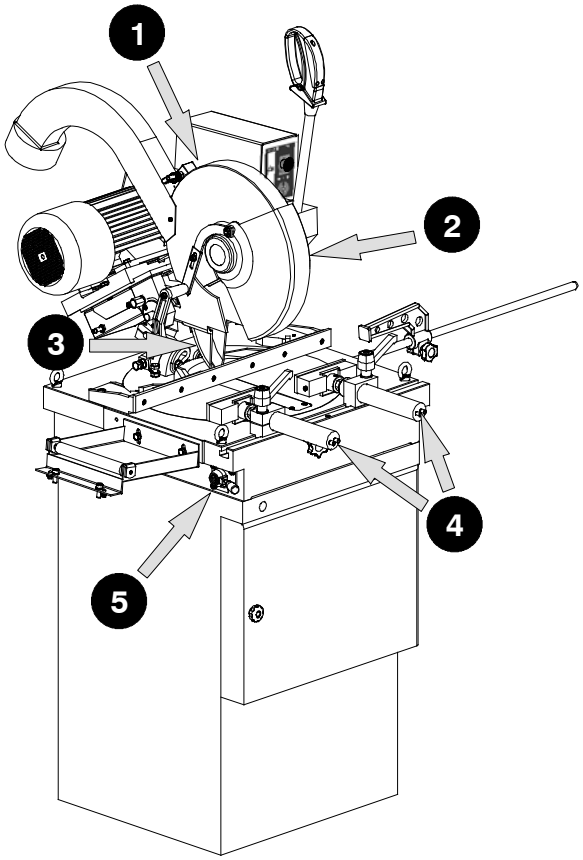
- EEC Directive No. 89/656 and No. 89/686 on the use of personal protection devices.

ENVIRONMENTAL PROTECTION

- EEC Directive No. 75/442 on waste disposal.
- EEC Directive No. 75/439 on the disposal of used oil.

Protection against accidental contact with the blade

1. Metal blade guard fixed firmly to the cutting head;
2. mobile protective blade cover fixed axially to the blade guard (operator side), forming an integral part of the working table so as to ensure that the only part of the blade exposed is that used for the actual cutting in accordance with DPR 547/55 art.108;
3. fixed lower blade protecting cover;
4. On the MA version, the cutting vice is pneumatically operated by a manual control or foot pedal and has a maximum travel of 8 mm. The jaw that performs the actual clamping must be moved to within 2÷3 mm from the workpiece.
5. the head release lever ensures the cutting head cannot move in idle position (all backwards): to start a machining cycle, the operator must necessarily use the left hand to rotate the release lever and the right hand to move the head by the handle.



Electrical equipment

In accordance with Italian standard CEI 60204- 1, April 1998, derived from European Standard EN 60204- 1 publication IEC 204- 1, 1997:

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

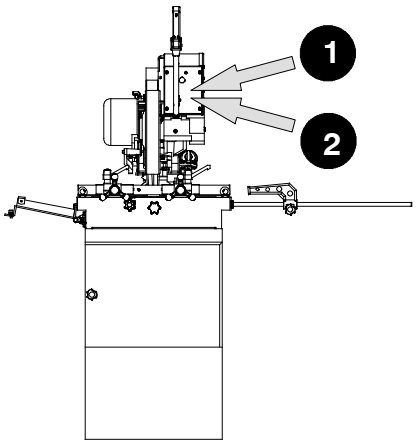
Emergency devices

In accordance with Standard CEI 204- 1:

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

...Emergency devices applicable to the PNF350- 2AV:

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. **Key operated safety switch:** the door on the base has a key operated safety switch that operates directly on the minimum voltage coil (BMT), shutting off the electricity supply to the machine every time the base door is opened.



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 98/37/CE** , we are listing the standards that specify noise levels for machine tools. This chapter also reports the noise levels produced by the **PNF350- 2AV** during its various operating phases and the methods used for measuring these levels. The Italian standard governing this aspect is D.M.n.277/91 drawn from EEC Directives 80/1107, 82/605, 83/477, 86/188, 88/642.

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	**PNF350- 2AV**
Reference standard	ISO 3746

Results		
Test 1st	**Description**	90x35 mm pipe in aluminium Disc blade HSS HM 350x32 Z 84 - With shaving vacuum on
	Results	**Mean sound level (Leq) 93.42 dB (A)** Environmental correction (K) 2.85 dB(A) Peak sound power (Lw) 103.71 dB(A)
Test 2nd	**Descriprion**	90x35 mm pipe in aluminium Disc blade HSS HM 350x32 Z 84 - With shaving vacuum off
	Results	**Mean sound level (Leq) 91.62 dB(A)** Environmental correction (K) 2.85 dB(A) Peak sound power (Lw) 101.91 dB(A)
Test 3rd	**Description**	Ø 35 mm solid tube in aluminium Disc blade HSS HM 350x32 Z 84 - With shaving vacuum off
	Results	**Mean sound level (Leq) 89.98 dB(A)** Environmental correction (K) 2.85 dB(A) Peak sound power (Lw) 98.91 dB(A)

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 89/336/EEC and 70/23/CEE and 98/37/CEE. 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 **PNF350- 2AV**;
Test report no. 011200061200.

Emissions

- CEI EN 61000- 6- 4 (2002) Electromagnetic Compatibility (EMC) - Generic standard regarding emissions. Part 6- 4: Industrial Environment.
- EN 55011 (1999) Industrial, scientific, and medical radio frequency appliances (ISM). Characteristics of radio frequency disturbance - Limits and methods of measurement.
- EN 55014- 1 (2002) Electromagnetic Compatibility - Prescriptions for domestic appliances, electric power tools, and similar equipment. Part 1: Standard Emission in relation to product family.

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

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	40	Complies
	230 - 1000	47	

Immunity

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

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

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

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

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

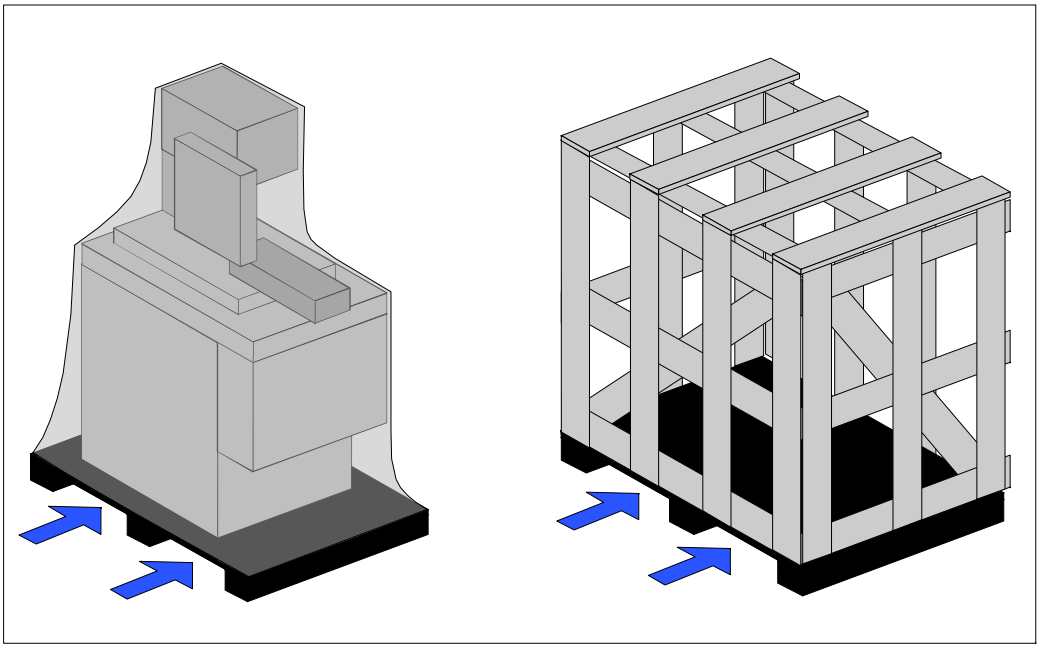
Machine installation

4

Packaging and storage

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

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

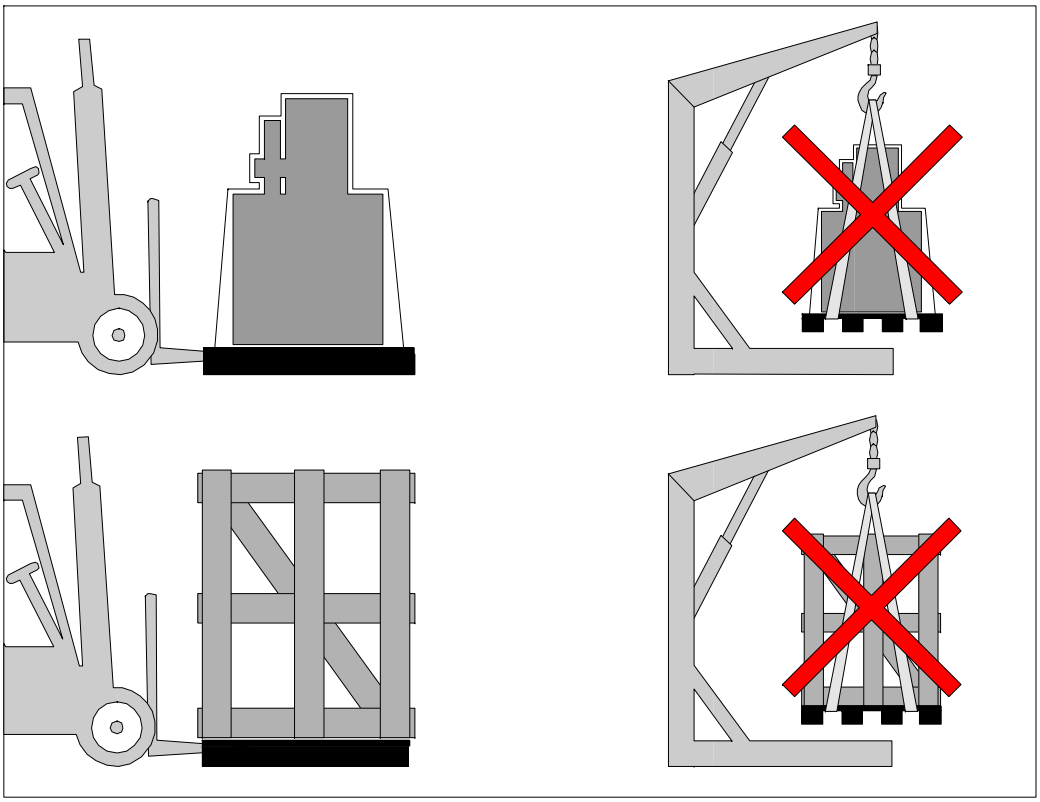


1. on a pallet with straps and heat- shrink plastic;
2. on a pallet with straps, heat- shrink plastic and a wooden crate.

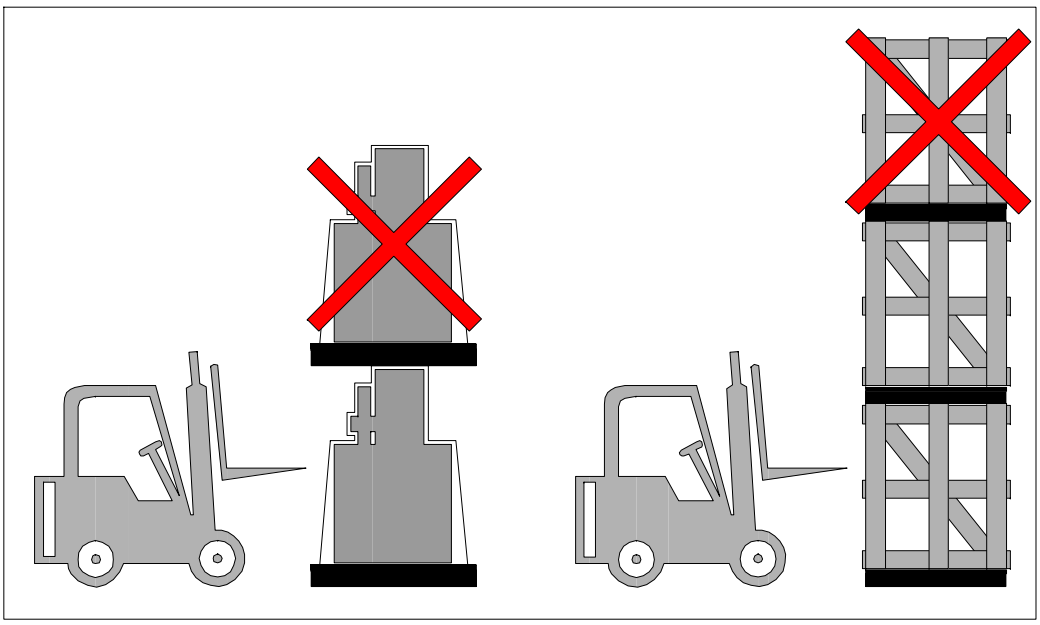
Warning In both cases, for correct balancing the machine must be handled using a fork- lift truck, inserting the tines at the points indicated by the arrows, using the reference marks on the crate itself.

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

Attention Do not handle the packed machine using slings.



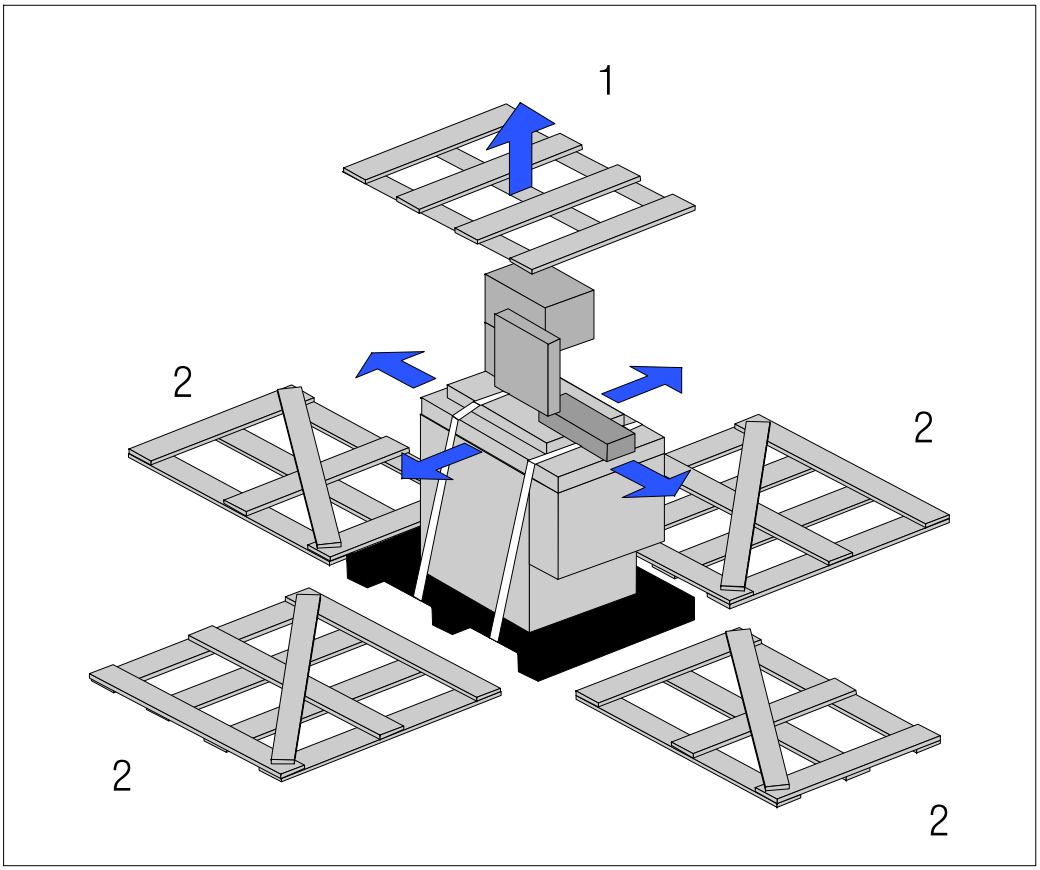
Attention When storing, machines palletized and shrink- wrapped must not be stacked two high, and machines pallettized and crated must not be stacked three high.



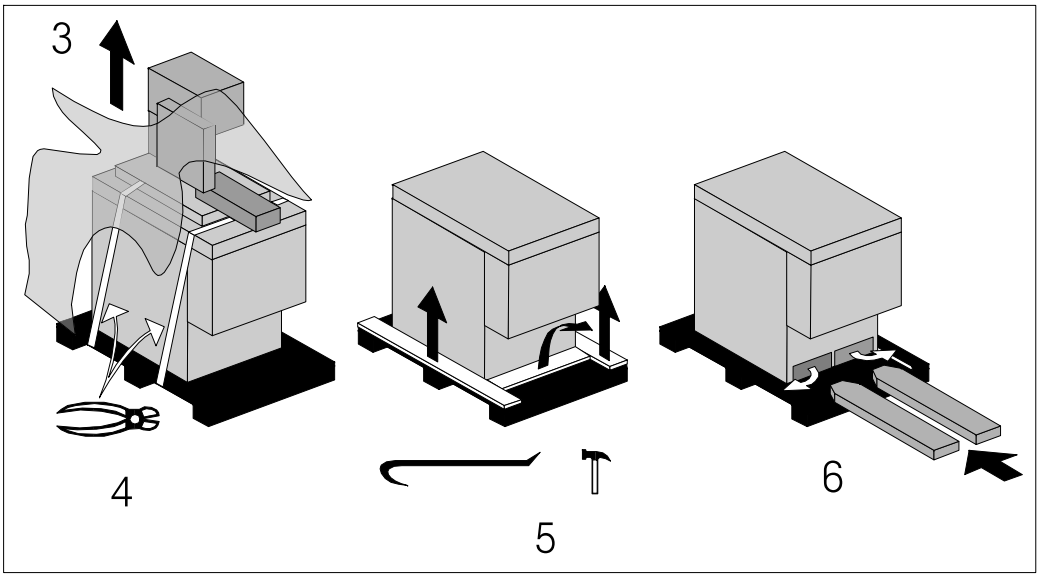
To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses; if necessary use pliers, a hammer and a cutter.
Open crate in the illustrated order:

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

2. remove nails and lower walls;



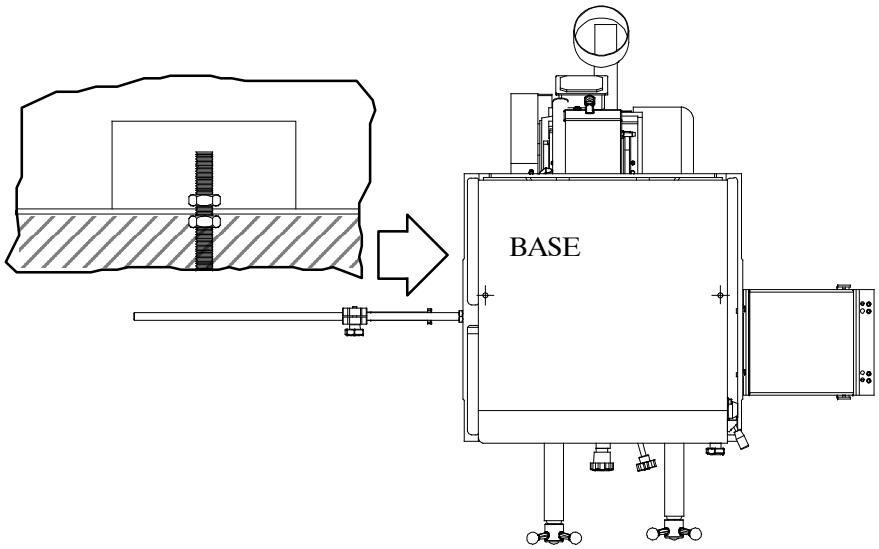
3. remove heat- shrink covering;
4. remove the straps;
5. remove nails from pallet securing planks and remove planks;
6. remove the front panel and insert fork tines.



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

Anchoring the machine

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



Minimum requirements

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

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

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

Check list

Before starting installation, check that all the accessories, whether standard or optional, supplied with the machine are present. The **PNF350- 2AV** sawing machine in the single- phase, three- phase with 1 or 2 speeds, with or without automatic vice, is supplied complete with:

CHARACTERISTICS	STANDARD	OPTIONAL
Sheet metal stand for the version MA only	✓	
Automatic band lubricating device	✓	
Aluminum movable jaws with vertical positioning adjustment	✓	
Possibility of cutting from 0° to 45° on the right and 45° on the left, tilting on the vertical for mitre head cuts from 0° to 45° on the left	✓	
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)	✓	
Adjustable stroke for cuts of the same size	✓	
HM toothed circular blade ø 350 x 32 x 3.4 mm, positive rake, balanced and silenced		✓
HM toothed circular blade ø 350 x 32 x 3.4 mm, negative rake		✓
Pneumatic vertical vice (only MA version)*		✓
Rotating platform installed on bearings for a precise and easy rotation	✓	
Machine preset for lifting	✓	
Adjustable mechanical strokes for the head fast positioning at 0° and 45° on the right and on the left	✓	
Screw locking system for positioning the head at any angle	✓	
Chip conveyor preset for suction system	✓	
Tightening system made of two front vices, that can be positioned along the piece longitudinal axis as wished	✓	
K35 roller table module for feed side, 1500 mm		✓
Feed side roller table support		✓
Discharge side roller table adapter		✓
K35 roller table for discharge side, 1500 mm		✓
K35 roller table for discharge side, 3000 mm		✓
K35 roller table for discharge side, 4500 mm		✓
K35 roller table for discharge side, 6000 mm		✓
5 l can of emulsible oil		✓
Head locking device	✓	
Bar- supporting arm complete with roller, preset for the loading plane application	✓	
Sheet metal stand for the version with manual vices only		✓
Suction system		✓
Device for customized cuts with steel millimeter rod		✓
Spray mist system		✓

***ACCESSORIES AVAILABLE ON REQUEST**

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

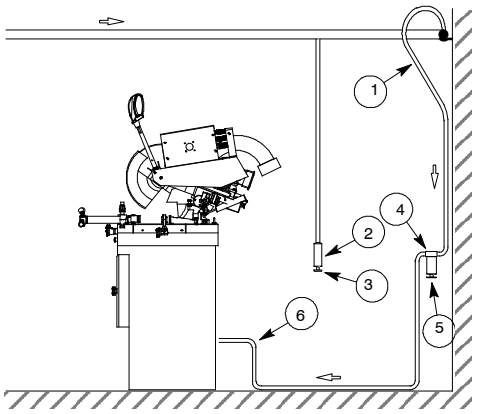
- 4, 5, 6, 8 mm Allen keys;
- 17, 36 mm double open- ended and box wrenches;

- 20 mm Ø rod for cuts to measure with an 8 mm Ø ratchet fork and lever + VCE M8x35 Allen grub screw;
- arm with roller on which the bars to be cut rest and for fitting the feed side roller tables;
- jaws for piece supporting shoulder, height mm 60;
- this Use and Maintenance Manual.

Connection to the compressed air supply for MA version

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

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



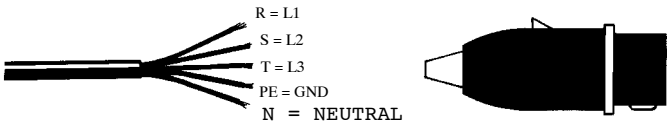
Connection to the power supply

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

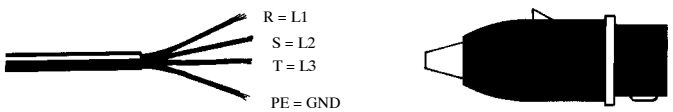
To connect the machine to the power supply, proceed as follows:

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

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

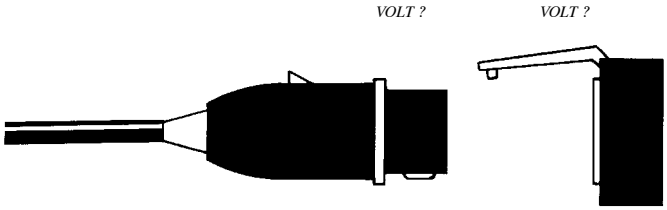


CONNECTION FOR **"4-CORE"** WIRE SYSTEMS WITH NEUTRAL

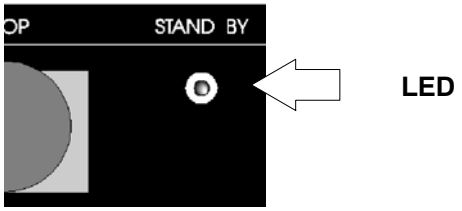


Attention When using systems with a neutral wire, special care must be taken when connecting the **blue** neutral wire, in that if it is connected to a phase wire it will discharge the **phase voltage** to the equipment connected for **voltage: phase-neutral.**

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

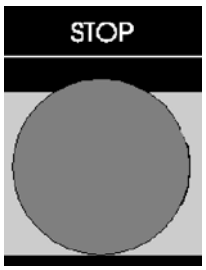


▶ Press the minimum voltage coil reset button alongside the red mushroom head emergency pushbutton.

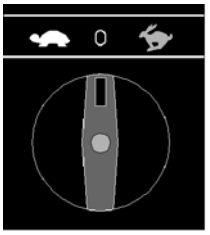


Check that the motor is rotating in the correct direction, as follows:

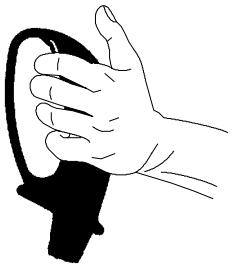
▶ make sure that the machine is not in an emergency condition (red mushroom- head pushbutton released);



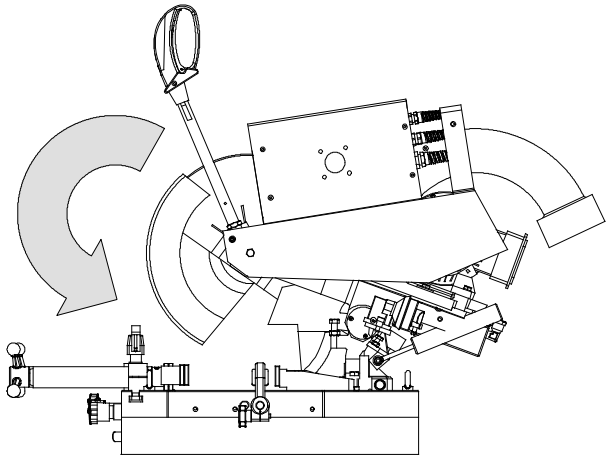
▶ select a cutting speed using the polarity change switch;



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



▶ If all the above operations have been carried out correctly, the disc motor will start up and the disc will start to turn.



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

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

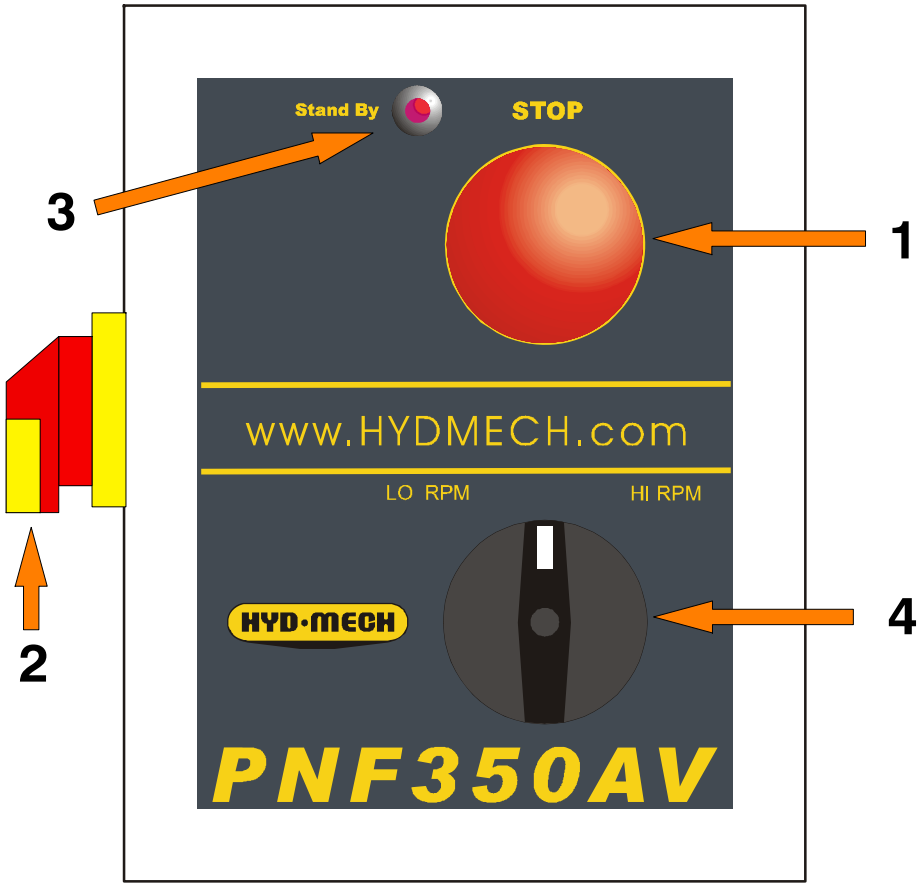
Description of machine operation

5

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

Description of the control panel

The components of the **PNF350- 2AV** control panel are shown in the diagram below. Each arrow has a number which corresponds to the descriptions that follow.



1 - EMERGENCY STOP PUSHBUTTON

Pressing this pushbutton stops the machining operations immediately and stops any blade movement. The emergency pushbutton, designed in accordance with all relevant safety standards, is installed in a position that makes it easily accessible at any moment of potential danger. Its red colour on a yellow background makes it extremely visible. To reset the pushbutton, rotate it 45°.

2 - MAIN MAGNETO-THERMAL SWITCH

On the left hand side of the control panel is a main switch with a door locking device. When turned to position 1 it switches on the power to the machine through the MINIMUM VOLTAGE COIL RESET and the DISC MOTOR MAGNETO- THERMAL RESET. This device has three systems for protecting against voltage drops. In fact, in the event of a voltage drop, all the electrical components are disengaged, the machine stops immediately and is prevented from restarting automatically when the power supply returns. Another function is that of resetting the thermal relay provided to protect against current overloads.

3 - STAND BY LED

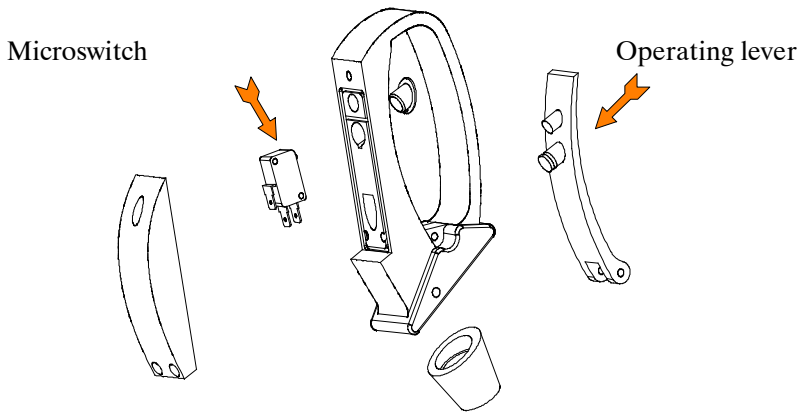
This either confirms machine start up or indicates an emergency state to the operator.

4 - POLARITY CHANGE SWITCH

Determines cutter blade rotation speed.

HEAD CONTROL LEVER MICROSWITCH

The top of the manual head control lever incorporates a microswitch for controlling the blade motor.



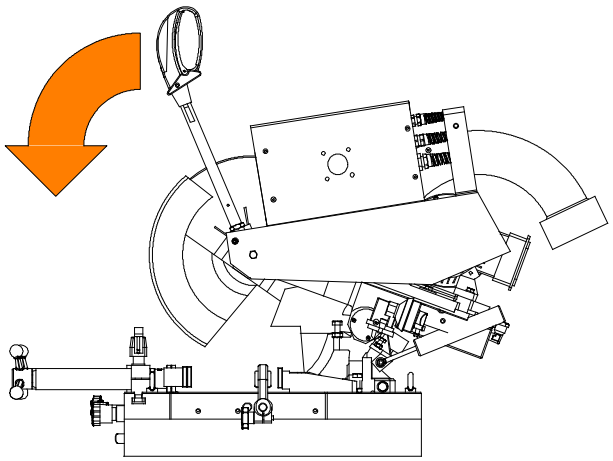
This microswitch is enabled when the machine is not in emergency condition. In accordance with the relevant standards in force, the voltage is 24V and the microswitch is installed in a housing (blue knob) sealed against external agents such as dust or moisture with a protection rating of IP 55.

Basic instructions for carrying out a cutting operation cycle

Manoeuvring the cutting head

The hand grip on the cutting head control lever, gives the operator a solid grip. He can start the blade rotating by pressing the activating lever on the micro-

switch, built in to the hand grip itself. The head must be previously released by the lever on the machine left side.



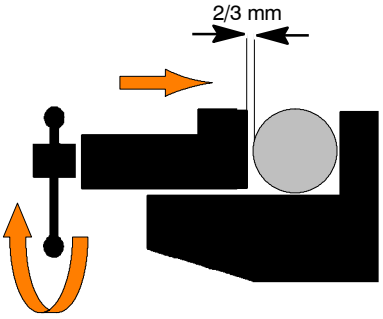
Clamping the work piece in the vice

The vice opens and close through handwheels; the closing is automatic in the version MA, namely the vice closes when the head is lowered.
In any case, the part to be processed should always be clamped following this procedure:

- Make sure that the material dimensions are within the machine's cut capacity specified by the manufacturer

N.B. To cut with sections over 80 mm use the additional jaws in the accessory pack, with height of 60 mm.

- switch on the machine at the reset switch;
- position the material in the vice and calculate the length of cut (using the rods for cuts to measure);
- close the vice manually up to the workpiece to cut, leaving a minimum distance of 2÷3 mm in the MA version;



- release the head by the suitable lever and manually lower the head without pressing the micro- switch of the handle: the vices close;
- make sure the workpiece is securely clamped in the vice by trying to move it manually.

N.B. If the piece is not tightened, the jaws of the vices must be further approached to the material being processed, always considering that the pneumatic piston stroke is about 8 mm.

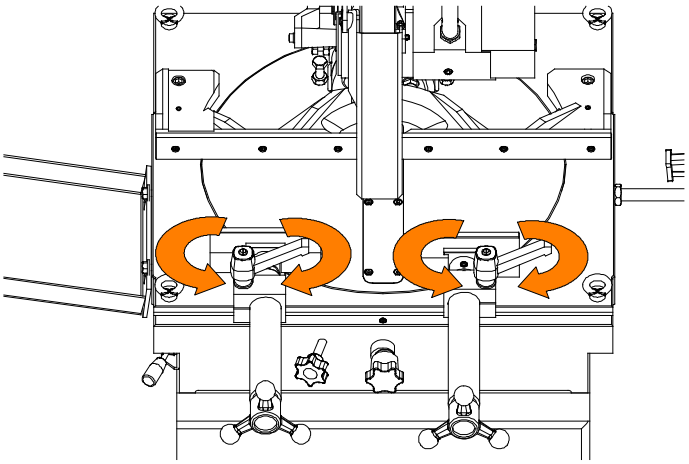
Width of cut

The machine is fitted with barriers which adjust to suit to the workpiece.

Vice cross positioning

Positioning the shearing vices as close as possible to the cutting area, vibrations are decreased and the cutting area is covered better. For the cross movement of the vice body:

- loosen the release triggers tightening the body of the vice cylinder;
- move the vice body along the groove cut into the fixed table until it is in the desired position;
- tighten the release triggers.



Preliminary check list for cutting operation

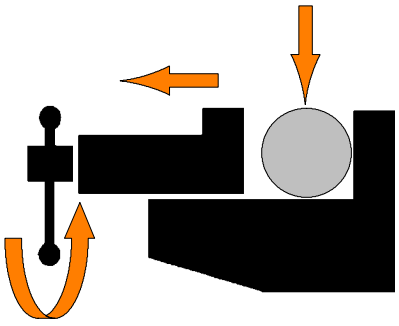
To guarantee complete safety during cutting cycles, the operator should work through a check list of the entire apparatus, checking:

- that the disk guard can move freely;
- that the right cut angle has been set and the turntable is locked in position;
- that the work piece is properly clamped in place;
- that the blade teeth are suitable for the material to be cut;
- that the speed selected is right for the kind of piece to be cut;
- that all protections are in place and correctly locked.

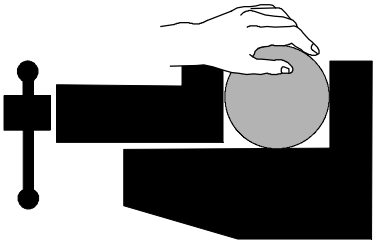
Manual operating cycle

Sequence of operations for performing a cut:

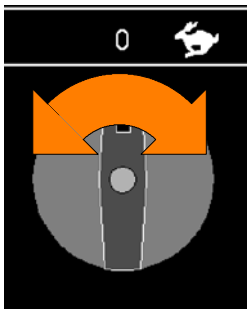
- power up the machine by pressing the reset button;
- position the workpiece in the vice and calculate the length of cut (using the measuring rod for cuts to measure).



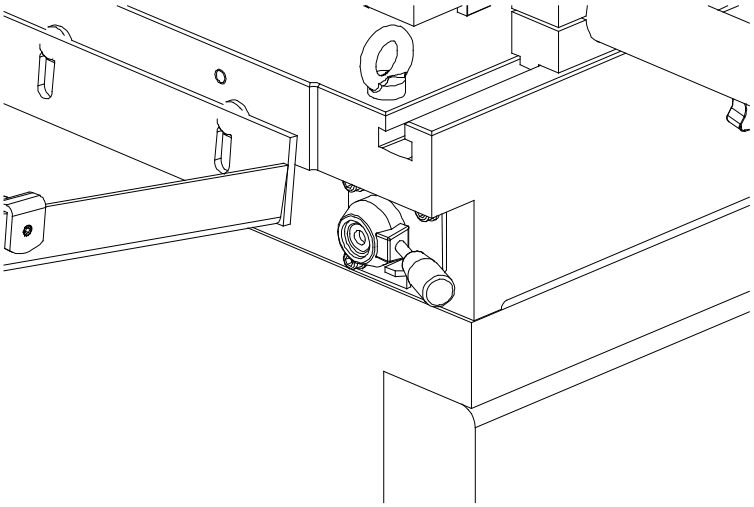
- Close the vice manually up to the workpiece to cut, leaving a minimum distance of 2÷3 mm. In the MA version;
- release the head by the suitable lever and manually lower the head without pressing the micro- switch of the handle: the vices close;
- Make sure the workpiece is securely clamped in the vice by trying to move it manually.



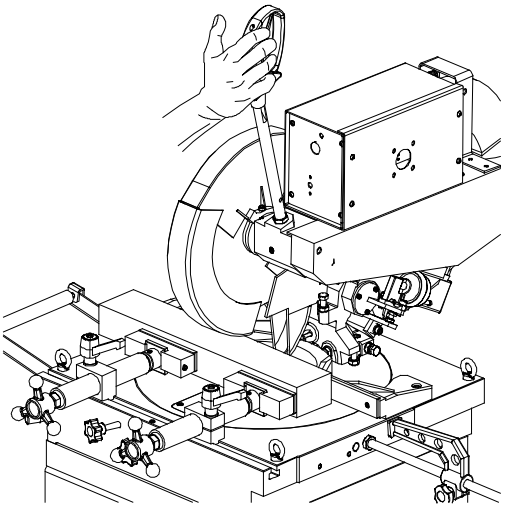
- Select the cutting speed on the “Polarity change switch” in accordance with the type of material to cut (shape, thickness, hardness, etc.).



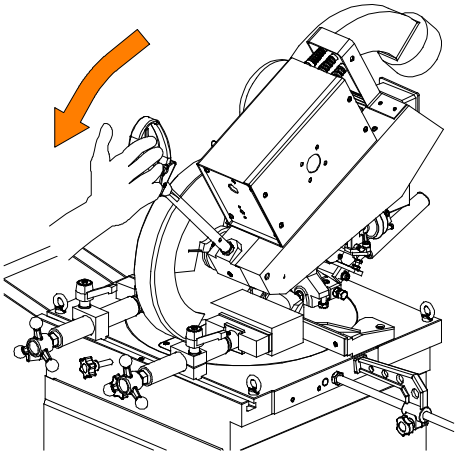
- release the cutting head by the left hand, rotating the safety lever on the base left side downwards, and grasp the head control lever with the right hand to start the cutting stroke.



- Grip the head control lever and start the blade by pressing the microswitch on the handgrip. The descent speed of the head is controlled manually by the operator.



- The motor starts up and starts the blade moving, at the same time, the nebulizer delivers the lubricating coolant;
- adjust the lubricating jet using the suitable cock;



- at the end of the cut, the head can be raised;
- Release the piece from the vices.

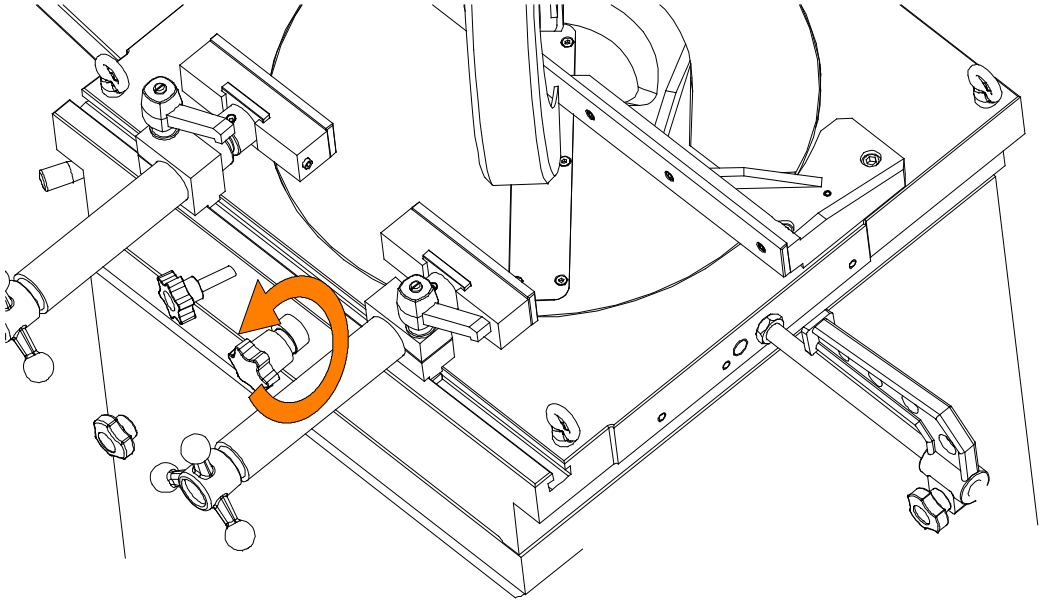
Angled cuts

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

Angled cuts 45° to the left

- ▶ Loosen the fastening knob on the fixed platform;
- ▶ pull the knob of the fixed point outwards and rotate it by 45 degrees, rotate the head till reaching the wished grading and lock again the tightening knob;

N.B. To use the preset strokes at 0 and 45 on the left and on the right, restore the initial position of the fixed point pin.



Angled cuts 45° to the right

- ▶ Pull the pin of the fixed point outwards and rotate it by 45 degrees, rotate the head till reaching the wished grading and lock again the tightening knob;
- ▶ adjust the vice position.

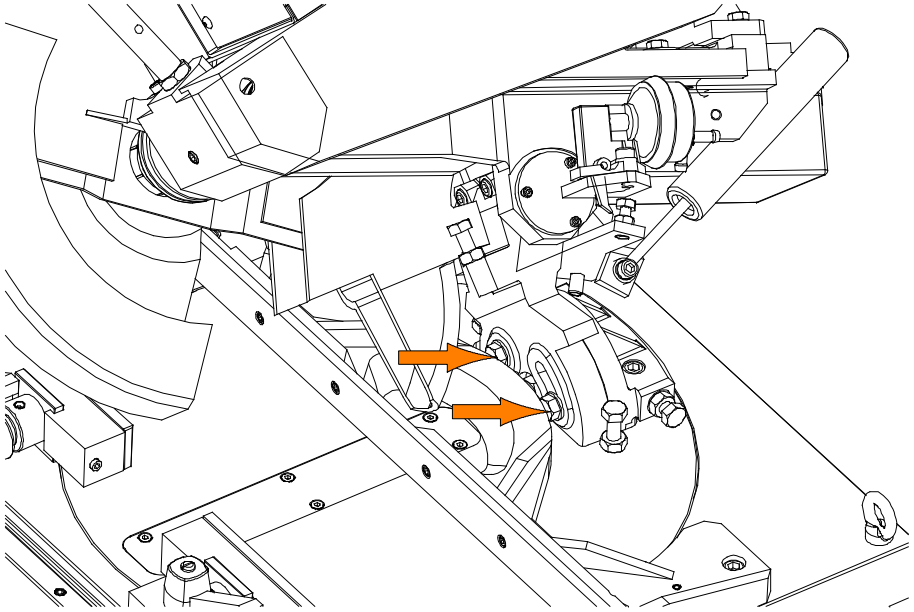
N.B. To use the preset strokes at 0 and 45 on the left and on the right, restore the initial position of the fixed point pin.

Mitre head cut

It is a special machining as it can make mitre cuts to the orthogonal line of the working plane.

Attention When making the first mitre head cut, also the left jaws of the piece- supporting shoulder must be inevitably cut.

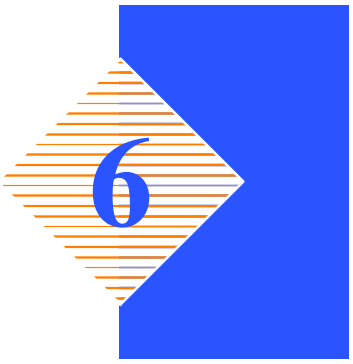
▶ Loosen the HH screws on the head rocker arm;



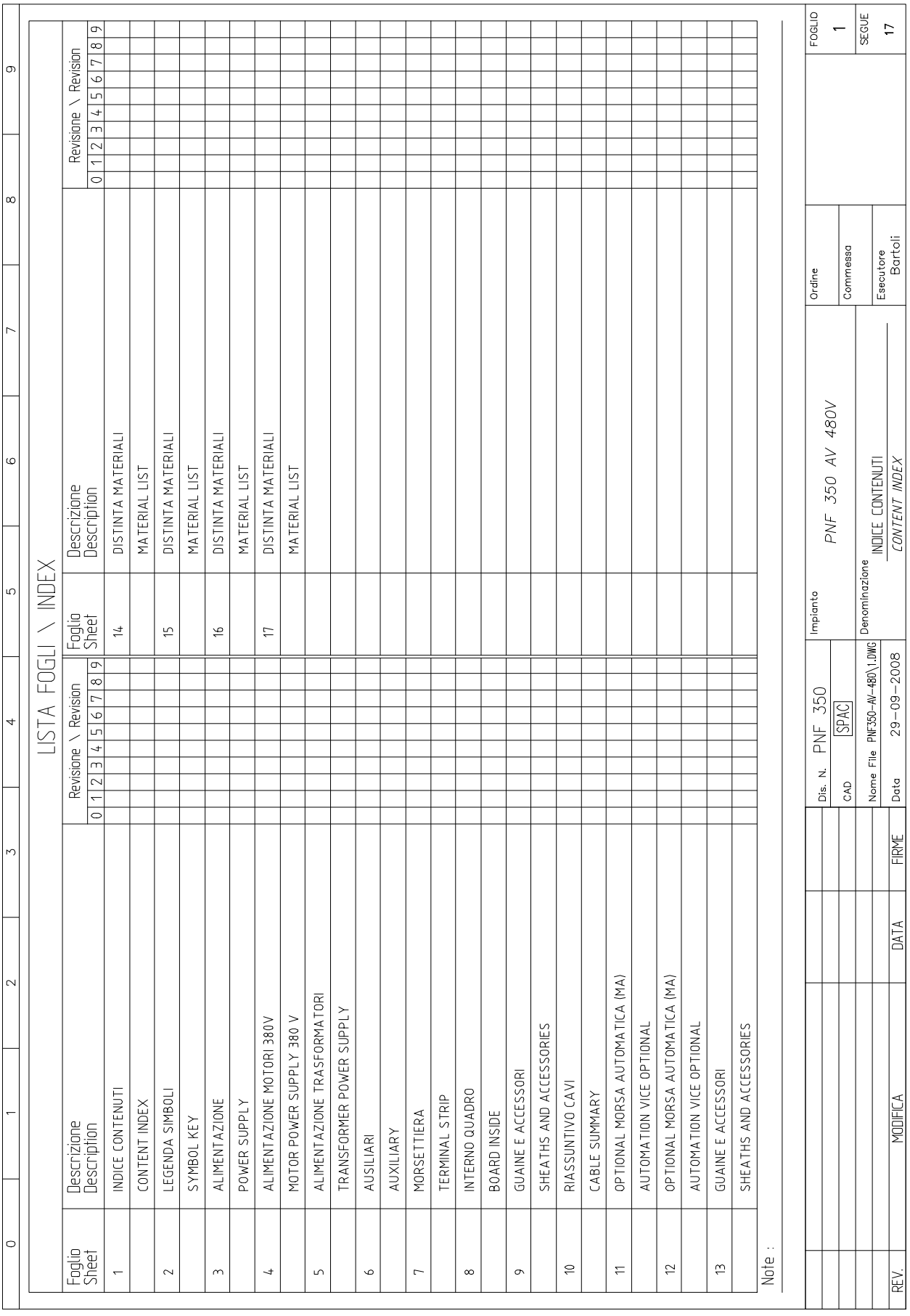
▶ bend the head leftwards will reaching the indicated sloping on the rocker arm support;

▶ tighten the HH screws and cut.

Diagrams, exploded views and replacement parts



This chapter contains functional diagrams and exploded views of the **PNF350- 2AV**. 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. See the cd- rom eclosed.



LISTA FOGLI \ INDEX

Foglio Sheet	Descrizione Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9	Foglio Sheet	Descrizione Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9
1	INDICE CONTENUTI		14	DISTINTA MATERIALI	
	CONTENT INDEX			MATERIAL LIST	
2	LEGENDA SIMBOLI		15	DISTINTA MATERIALI	
	SYMBOL KEY			MATERIAL LIST	
3	ALIMENTAZIONE		16	DISTINTA MATERIALI	
	POWER SUPPLY			MATERIAL LIST	
4	ALIMENTAZIONE MOTORI 380V		17	DISTINTA MATERIALI	
	MOTOR POWER SUPPLY 380 V			MATERIAL LIST	
5	ALIMENTAZIONE TRASFORMATORI				
	TRANSFORMER POWER SUPPLY				
6	AUSILIARI				
	AUXILIARY				
7	MORSETTIERA				
	TERMINAL STRIP				
8	INTERNO QUADRO				
	BOARD INSIDE				
9	GUAINE E ACCESSORI				
	SHEATHS AND ACCESSORIES				
10	RIASSUNTIVO CAVI				
	CABLE SUMMARY				
11	OPTIONAL MORSA AUTOMATICA (MA)				
	AUTOMATION VICE OPTIONAL				
12	OPTIONAL MORSA AUTOMATICA (MA)				
	AUTOMATION VICE OPTIONAL				
13	GUAINE E ACCESSORI				
	SHEATHS AND ACCESSORIES				

Note :

REV.	MODIFICA	DATA	FIRME

Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008

Impianto PNF 350 AV 480V
Denominazione INDICE CONTENUTI
CONTENT INDEX

Ordine
Commessa
Esecutore Bartoli

FOGLIO 1
SEGUE 17

Sim.\Sym.	File	Descrizione\Description
	H12	LED con resistenza *LED WITH RESISTOR*
	M2	Motore asincrono trifase *THREE PHASE INDUCTION MOTOR*
	M110	Motore asincrono trifase 6 poli *SIX 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*
	KA1	Bobina rele' Aux *AUXILIARY RELAY COIL*
	KM1	Bobina contattore *CONTACTOR COIL*
	BLK10	Trasformatore per ausiliari *TRANSFORMER FOR AUXILIARY*
	BLK41	Raccordo SX *CONNECTOR SX*
	BLK42	Raccordo DX *CONNECTOR DX*

Sim.\Sym.	File	Descrizione\Description
	BLK43	Tubo corrugato *CORRUGATED PIPE*
	BLK44	Riduzione PG *PG ADAPTER*
	BLK47	Pressa-cavo PG *PG STOP CABLE*
	BLK49	Pressa-cordone PG *PG FLEXIBLE CORD STOP*
	BLK51	Dado PG *PG NUT*
	BLK56	Terminale a puntale *TERMINAL*
	BLK57	Filo unipolare *WIRE*
	BLK58	Fascette plastiche di fissaggio *PLASTIC CLAMP*
	BLK60	Terminale a occhiello *TERMINAL*
	BLK66	Sacchetto portafusibile *BAG FUSE*
	SEL__VEL	Selettore a tre posizioni stabili 0 centrale *SELECTOR THREE STABLE ZERO CENTRAL POSITIONS*

Sim.\Sym.	File	Descrizione\Description
	BLK106	Raccordo tubo *PIPE FITTING*
	FFLP40	Valvola di esclusione *ON-OFF VALVE*
	FFLP51	Silenziatore *SILENCER*
	FFLP78B	Cilindro a doppio effetto *DOUBLE ACTING CYLINDER*
	FFLP155	Valvola ***VALVE***
	FFLP176	Riduttore di pressione con manometro *PRESSURE REDUCING VALVE WHITE MANOMETER*

REV.	MODIFICA	DATA	FIRME

Dis. N. PNF 350
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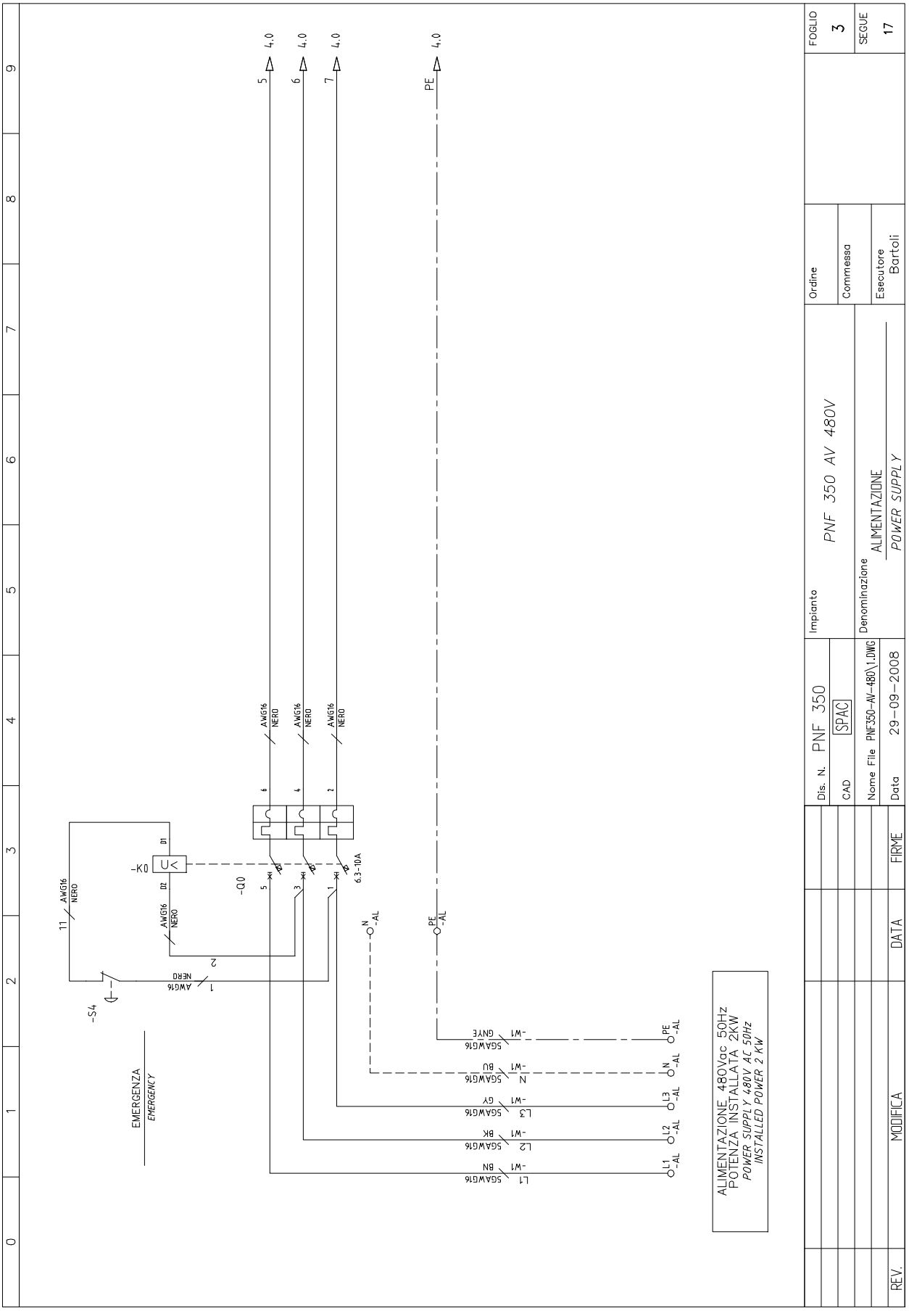
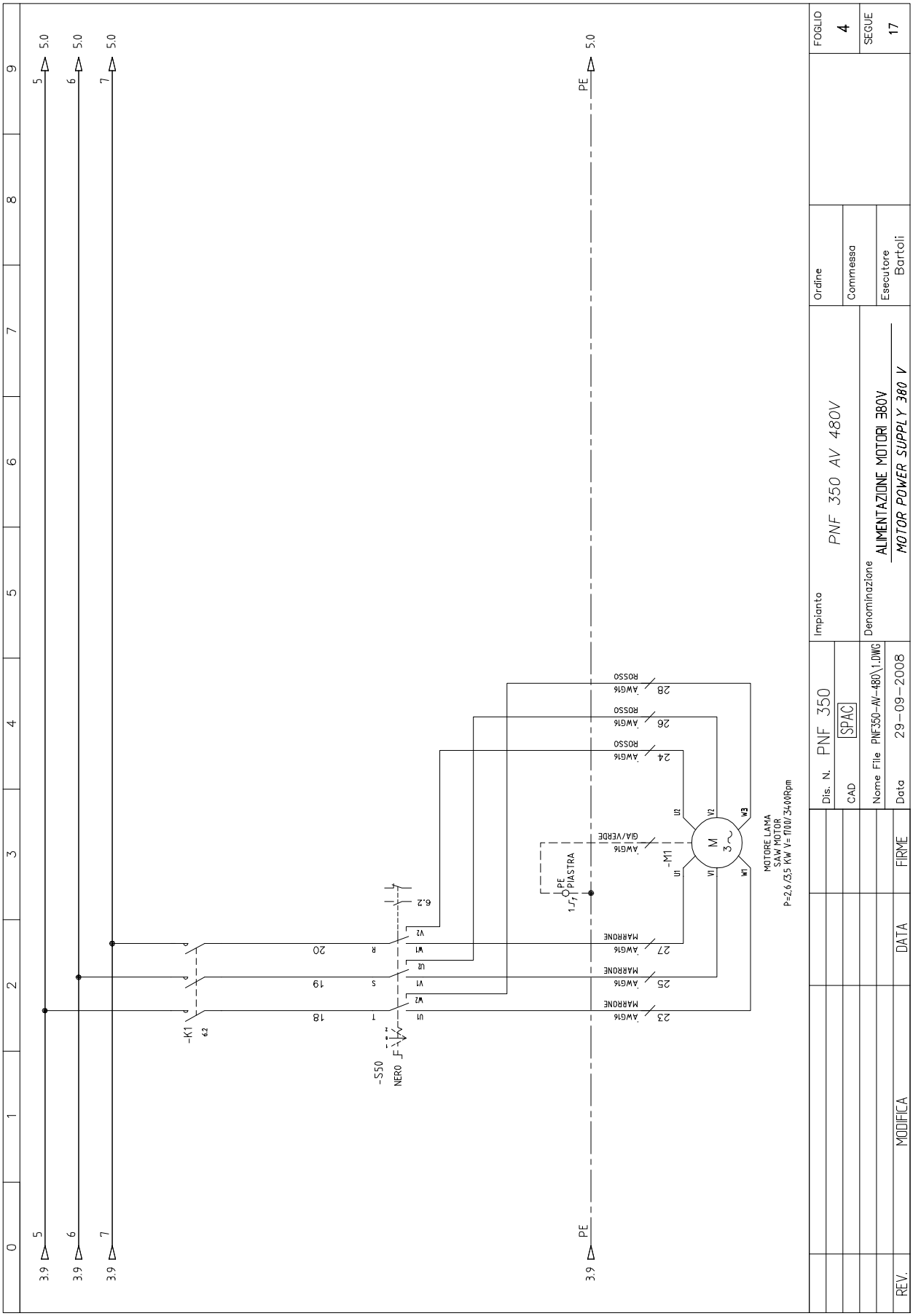
Impianto
PNF 350 AV 480V

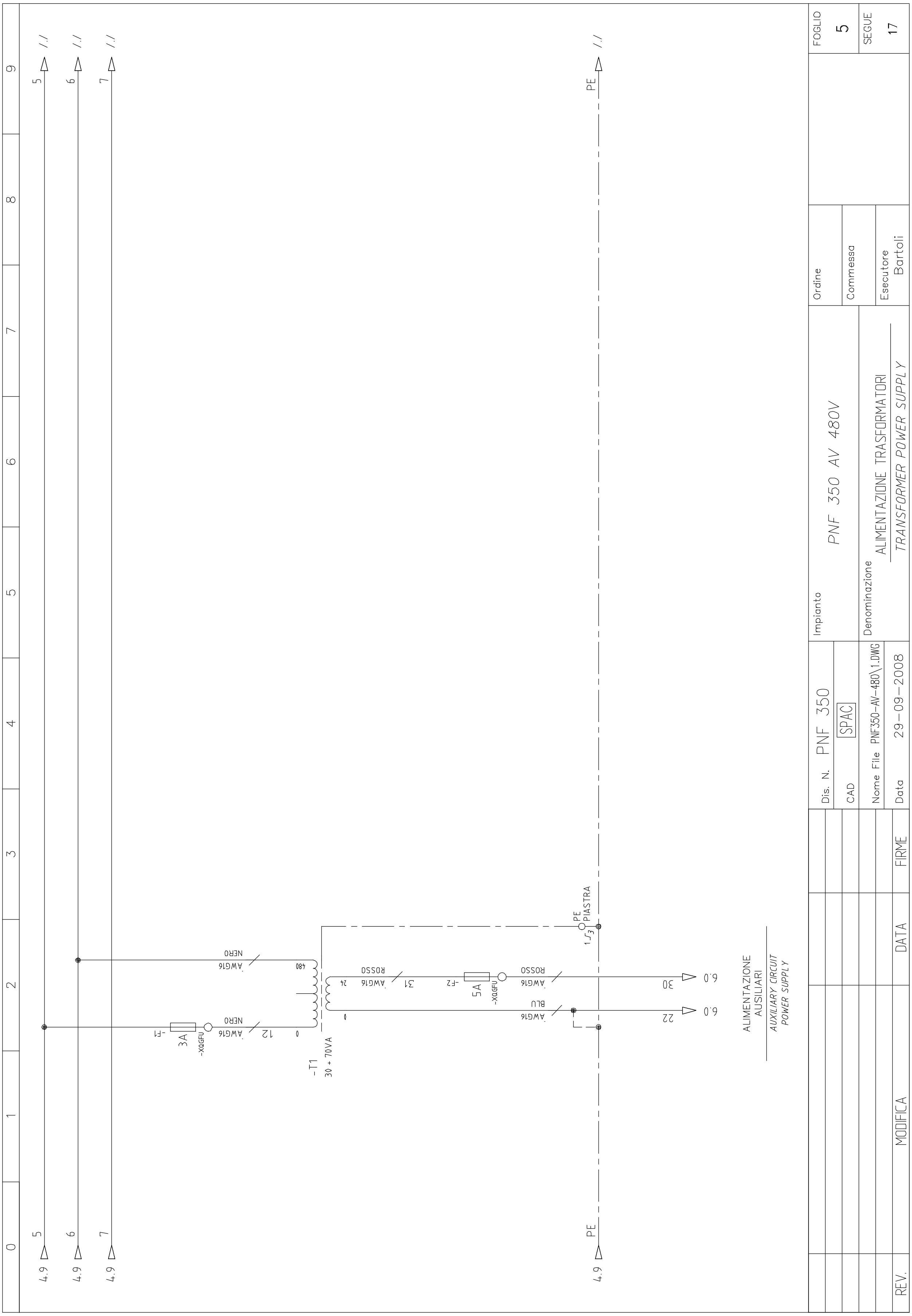
Denominazione
LEGENDA SIMBOLI
SYMBOL KEY

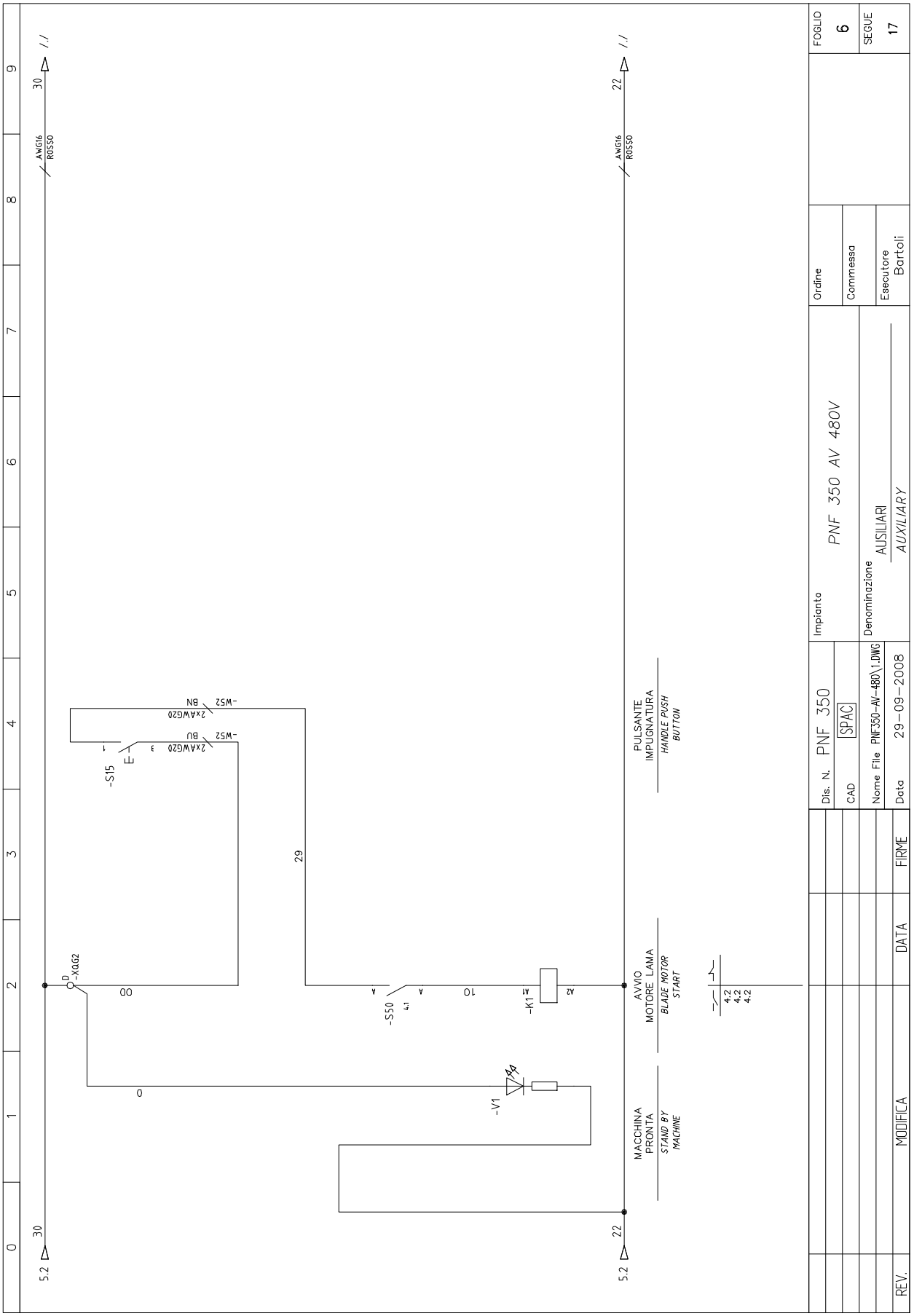
Ordine
Commessa
Esecutore
Bartoli

FOGLIO 2
SEGUE 17


ALIMENTAZIONE 480Vac 50Hz
POTENZA INSTALLATA 2KW
POWER SUPPLY 480V AC 50Hz
INSTALLED POWER 2 KW
EMERGENZA
EMERGENCY
-S4
-K0
-Q0
6.3-10A
AWG16 NERO
SGAWG16 BN
SGAWG16 BK
SGAWG16 GY
SGAWG16 BU
SGAWG16 GNYE
L1 -AL
L2 -AL
L3 -AL
N -AL
PE -AL
4.0
PNF 350 AV 480V
ALIMENTAZIONE
POWER SUPPLY
Esecutore Bartoli
Commessa
Ordine
Impianto
Denominazione
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
Dis. N. PNF 350
CAD SPAC
FOGLIO 3
SEGUE 17
REV.
MODIFICA
DATA
FIRME


FOGLIO 4
SEGUE 17
Ordine
Commessa
Esecutore Bartoli
Impianto PNF 350 AV 480V
Denominazione ALIMENTAZIONE MOTORI 380V
MOTOR POWER SUPPLY 380 V
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
REV. MODIFICA DATA FIRME
-K1
-M1
-S50
PE PIASTRA
MOTORE LAMA
SAW MOTOR
P=2,6/3,5 KW V= 1700/3400Rpm
MARRONE
ROSSO
GIA/VERDE
NERO


ALIMENTAZIONE AUSILIARI
AUXILIARY CIRCUIT POWER SUPPLY
-T1
30 ÷ 70VA
PE PIASTRA
FOGLIO 5
SEGUE 17
Ordine
Commessa
Esecutore Bartoli
Impianto
PNF 350 AV 480V
Denominazione
ALIMENTAZIONE TRASFORMATORI
TRANSFORMER POWER SUPPLY
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
REV.
MODIFICA
DATA
FIRME


0 1 2 3 4 5 6 7 8 9
5.2 30
5.2 22
AWG16 ROSSO
AWG16 ROSSO
-XAG2
-S15
2xAWG20 BU
2xAWG20 BN
-W52
-W52
29
0
-S50
-K1
-V1
PULSANTE IMPUGNATURA
HANDLE PUSH BUTTON
AVVIO MOTORE LAMA
BLADE MOTOR START
MACCHINA PRONTA
STAND BY MACHINE
4.2
4.2
4.2
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
Impianto
PNF 350 AV 480V
Denominazione
AUSILIARI
AUXILIARY
Ordine
Commessa
Esecutore Bartoli
FOGLIO 6
SEGUE 17
REV.
MODIFICA
DATA
FIRME

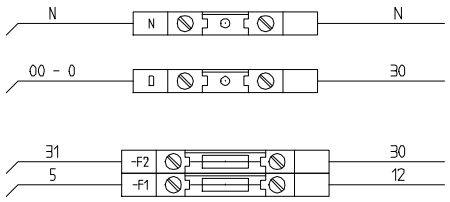
0	1	2	3	4	5	6	7	8	9

=QgCv - -AL

=QgCv - -XQG2

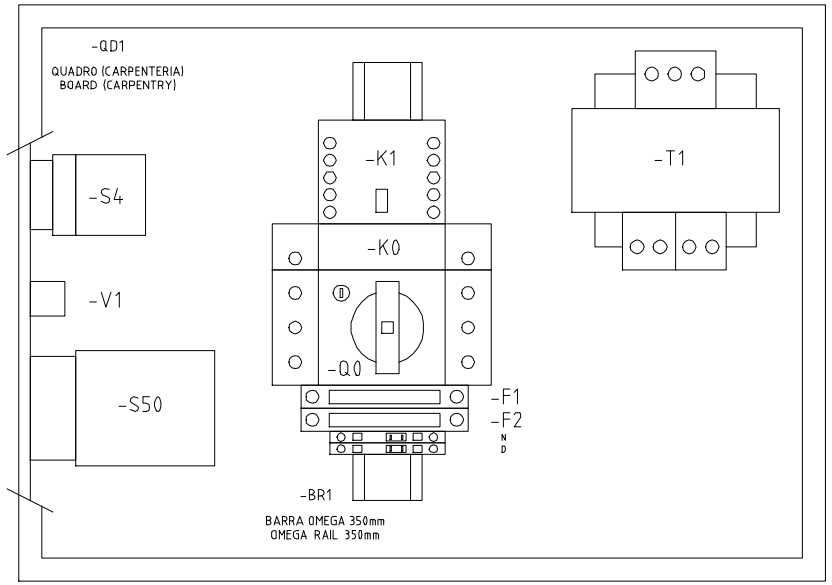
=QgCv - -XQGFU

MORSETTIERA FUSIBILI
TERMINAL FUSES



				Dis. N. PNF 350	Impianto *PNF 350 AV 480V*	Ordine		FOGLIO 7
				CAD SPAC		Commessa		SEGUE 17
				Nome File PNF350-AV-480\1.DWG	Denominazione MORSETTIERA	Esecutore Bartoli		
REV.	MODIFICA	DATA	FIRME	Data 29-09-2008	*TERMINAL STRIP*			

0	1	2	3	4	5	6	7	8	9



-FL1 0,5 FILO AWG20 / WIRE AWG20

-FL2 1,5 FILO AWG16 / WIRE AWG16

-PT1 0,5 PUNTALINO AWG20 / TERMINAL AWG20

-PT3 1,5 PUNTALINO AWG16 / TERMINAL AWG16

-CC1 S 1,5 CAPICORDA AWG16 / TERMINAL AWG16

-CC2 S 2,5 CAPICORDA AWG14 / TERMINAL AWG14

-NM1 X NUMERAZIONE FILI / WIRE NUMERATION

-NM2 X NUMERAZIONE MORSETTI / TERMINAL NUMERATION

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

-SF1 F SACCHETTO PORTAFUSIBILI / BAG FUSE

-TF1 F TARGA SOSTITUZIONE FUSIBILI / PLATE SUBSTITUTION FUSES

-TF2 GU GUARNIZIONE AERSTOP / SEAL AERSTOP

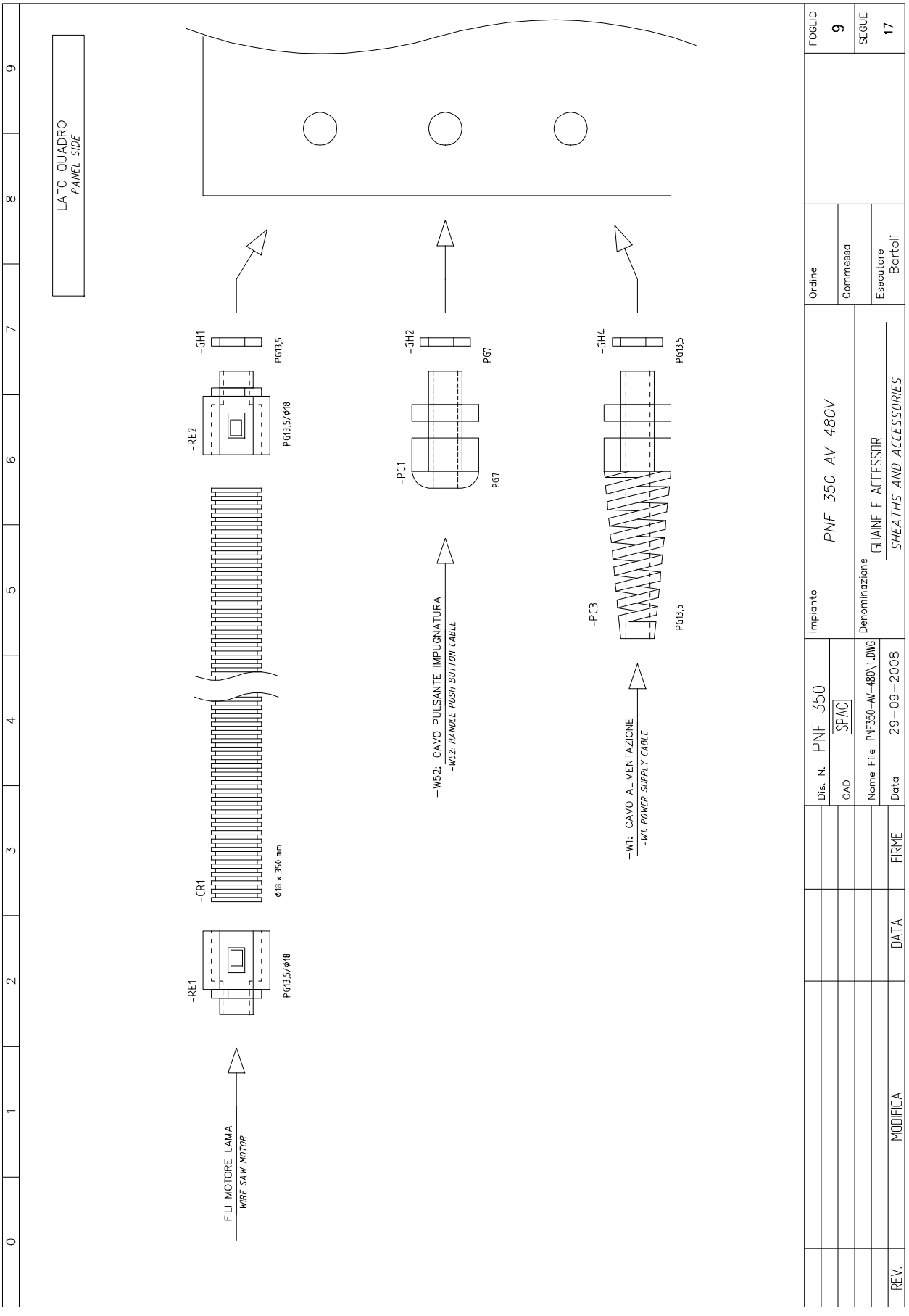
REV.	MODIFICA	DATA	FIRME

Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008

Impianto: PNF 350 AV 480V
Denominazione: INTERNO QUADRO / BOARD INSIDE

Ordine
Commessa
Esecutore: Bartoli

FOGLIO 8
SEGUE 17


LATO QUADRO
PANEL SIDE
-GH1
PG13,5
-RE2
PG13,5/ø18
-GH2
PG7
-PC1
PG7
-GH4
PG13,5
-PC3
PG13,5
-CR1
ø18 x 350 mm
-RE1
PG13,5/ø18
FILI MOTORE LAMA
WIRE SAW MOTOR
-WS2: CAVO PULSANTE IMPUGNATURA
-WS2: HANDLE PUSH BUTTON CABLE
-W1: CAVO ALIMENTAZIONE
-W1: POWER SUPPLY CABLE
FOGLIO 9
SEGUE 17
Ordine
Commessa
Esecutore Bartoli
Impianto PNF 350 AV 480V
Denominazione GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
REV.
MODIFICA
DATA
FIRME

0	1	2	3	4	5	6	7	8	9

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
			L1	BN				BN	L1			
=QgCv -AL	3/1	L1 O	L2	BK				BK	L2	5	3/3	=QgCv -Q0
=QgCv -AL	3/1	L2 O	N	BU	-W1 022.0158 5GAWG16	3,00		BU	N	3	3/3	=QgCv -Q0
=QgCv -AL	3/1	N O	L3	GY	Cavo alimentazione			GY	L3	O N	3/2	=QgCv -AL
=QgCv -AL	3/1	L3 O	PE	GNYE				GNYE	PE	1	3/3	=QgCv -Q0
=QgCv -AL	3/2	PE O								O PE	3/2	=QgCv -AL
			29	BN	-W52 022.0160 2xAWG20	1,50		BN	29	1	6/4	=QgCv -S15
=QgCv -S50	6/2	A	00	BU	Colleg. pulsante impugnatura			BU	00	3	6/4	=QgCv -S15
=QgCv -XQG2	6/2	D O										

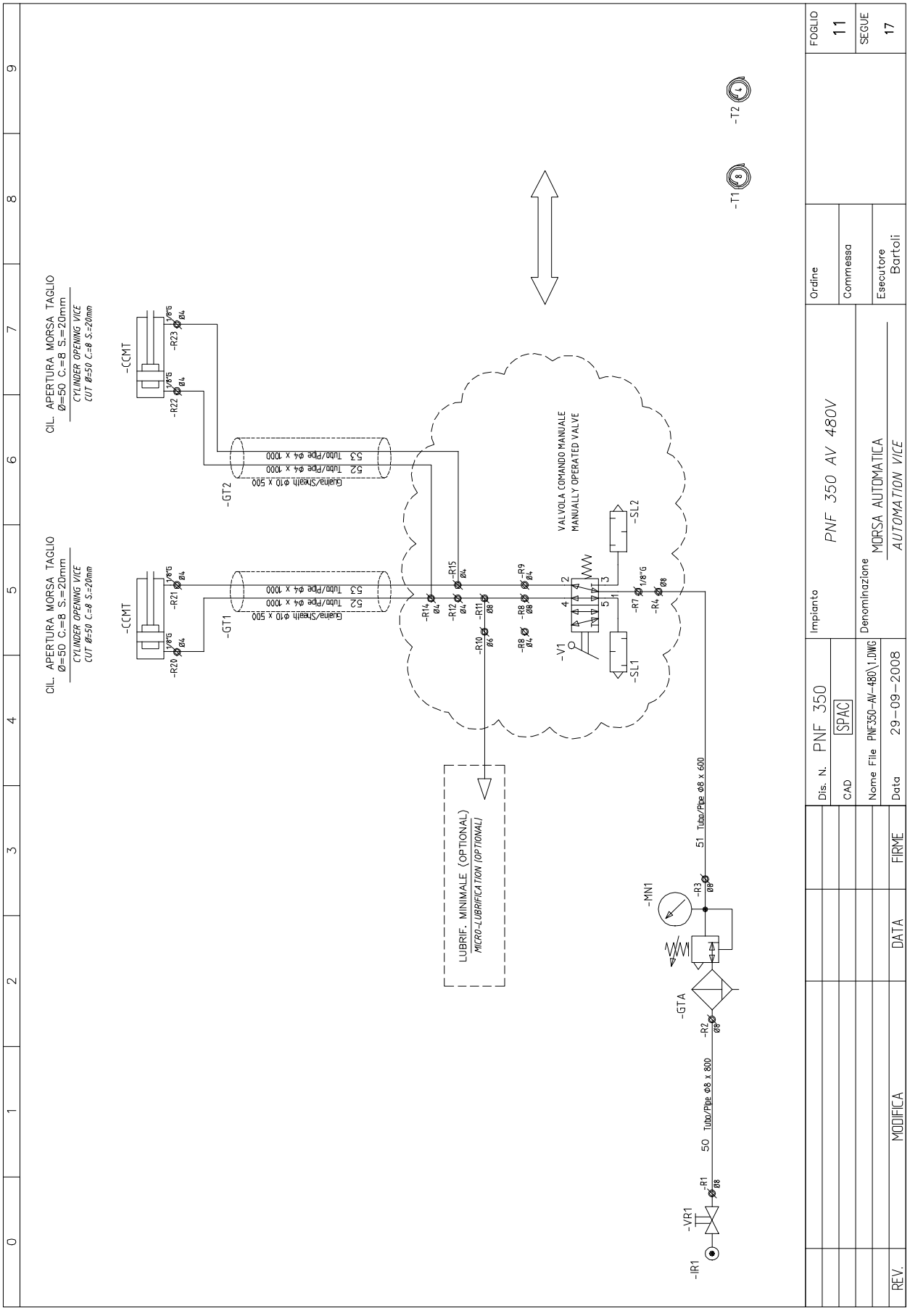
REV.	MODIFICA	DATA	FIRME

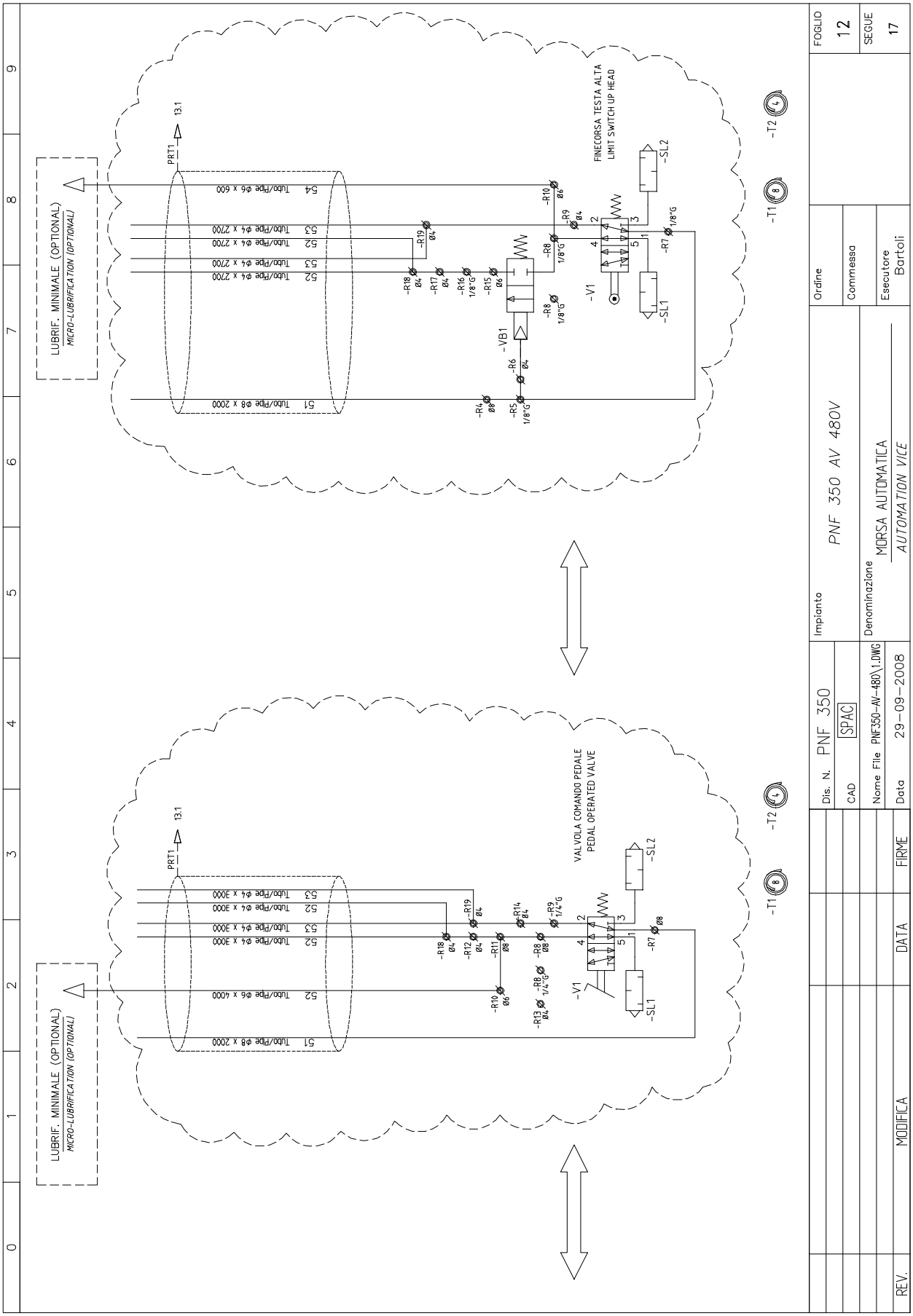
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008

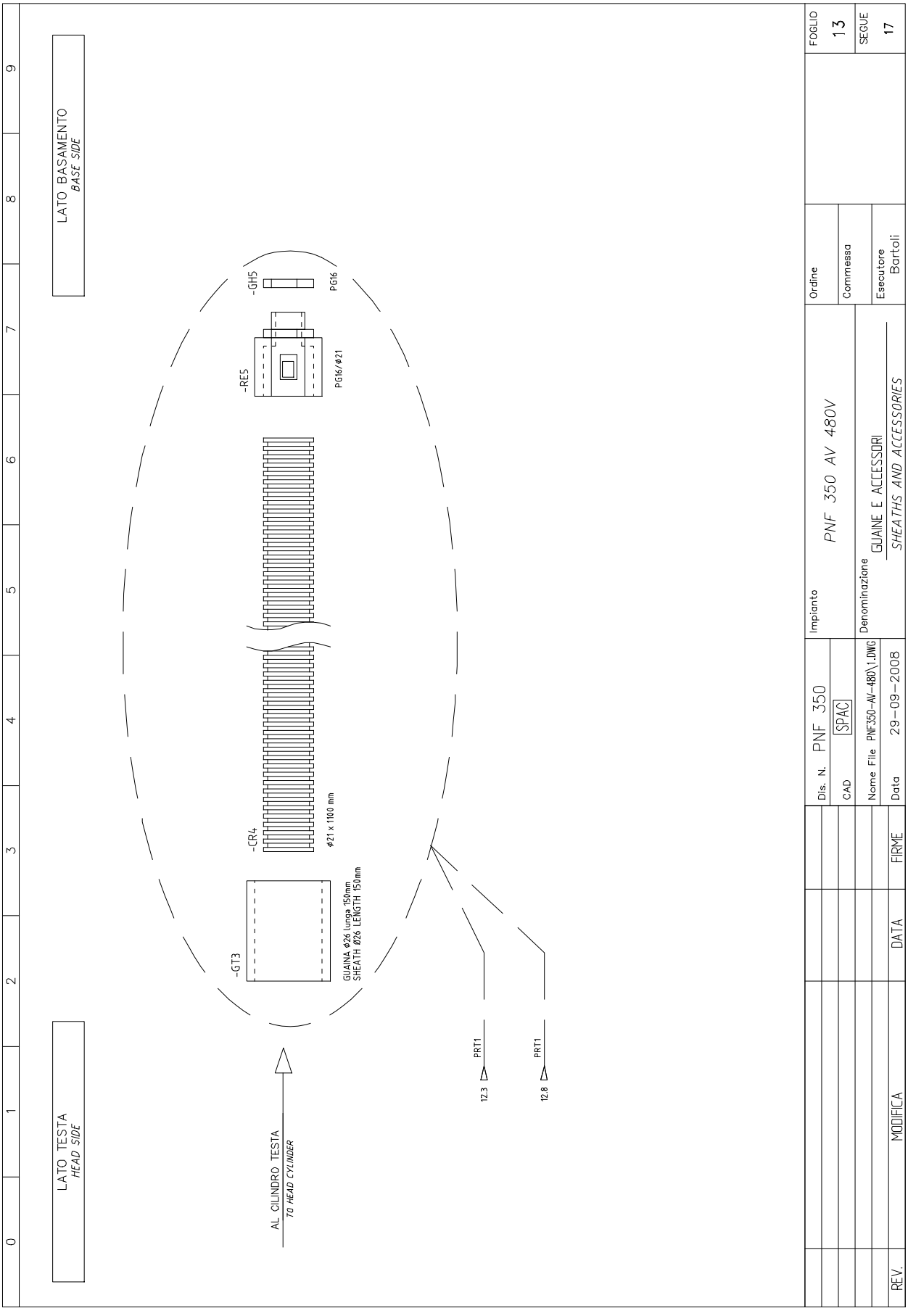
Impianto: *PNF 350 AV 480V*
Denominazione: RIASSUNTIVO CAVI / *CABLE SUMMARY*

Ordine
Commessa
Esecutore: Bartoli

FOGLIO 10
SEGUE 17


CIL. APERTURA MORSA TAGLIO
Ø=50 C.=8 S.=20mm
CYLINDER OPENING VICE
CUT Ø=50 C.=8 S.=20mm
-CCMT
-R23
-R22
-GT2
S3 Tubo/Pipe ø4 x 1000
S2 Tubo/Pipe ø4 x 1000
Guaina/Sheath ø10 x 500
-R21
-R20
-GT1
-R15
-R14
-R12
-R11
-R10
-R9
-R8
-V1
VALVOLA COMANDO MANUALE
MANUALLY OPERATED VALVE
-SL2
-SL1
-R7
-R4
-T2
-T1
LUBRIF. MINIMALE (OPTIONAL)
MICRO-LUBRIFICATION (OPTIONAL)
-MN1
-R3
S1 Tubo/Pipe ø8 x 600
-GTA
-R2
S0 Tubo/Pipe ø8 x 800
-R1
-VR1
-IR1
Dis. N. PNF 350
CAD SPAC
Impianto
PNF 350 AV 480V
Denominazione
MORSA AUTOMATICA
AUTOMATION VICE
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
Ordine
Commessa
Esecutore Bartoli
FOGLIO 11
SEGUE 17
REV.
MODIFICA
DATA
FIRME


LUBRIF. MINIMALE (OPTIONAL)
MICRO-LUBRIFICATION (OPTIONAL)
PRT1
13.1
S4 Tubo/Pipe ø6 x 600
S3 Tubo/Pipe ø4 x 2700
S2 Tubo/Pipe ø4 x 2700
S3 Tubo/Pipe ø4 x 2700
S2 Tubo/Pipe ø4 x 2700
S1 Tubo/Pipe ø8 x 2000
-R19 ø4
-R18 ø4
-R17 ø4
-R16 1/8"G
-R15 ø6
-R10 ø6
-R9 ø4
-R8 1/8"G
-R8 1/8"G
-R7 1/8"G
-R6 ø4
-R5 1/8"G
-R4 ø8
-VB1
-V1
-SL1
-SL2
FINECORSA TESTA ALTA
LIMIT SWITCH UP HEAD
-T1
-T2
LUBRIF. MINIMALE (OPTIONAL)
MICRO-LUBRIFICATION (OPTIONAL)
PRT1
13.1
S3 Tubo/Pipe ø4 x 3000
S2 Tubo/Pipe ø4 x 3000
S3 Tubo/Pipe ø4 x 3000
S2 Tubo/Pipe ø4 x 3000
S2 Tubo/Pipe ø6 x 4000
S1 Tubo/Pipe ø8 x 2000
-R19 ø4
-R18 ø4
-R14 ø4
-R12 ø4
-R11 ø8
-R10 ø6
-R9 1/4"G
-R8 ø8
-R8 1/4"G
-R13 ø4
-R7 ø8
-V1
-SL1
-SL2
VALVOLA COMANDO PEDALE
PEDAL OPERATED VALVE
-T1
-T2
0 1 2 3 4 5 6 7 8 9
REV.
MODIFICA
DATA
FIRME
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
Impianto
PNF 350 AV 480V
Denominazione
MORSA AUTOMATICA
AUTOMATION VICE
Ordine
Commessa
Esecutore Bartoli
FOGLIO 12
SEGUE 17


LATO BASAMENTO
BASE SIDE
LATO TESTA
HEAD SIDE
-GH5
PG16
-RE5
PG16/Ø21
-CR4
Ø21 x 1100 mm
GUAINA Ø26 lunga 150mm
SHEATH Ø26 LENGTH 150mm
-GT3
AL CILINDRO TESTA
TO HEAD CYLINDER
PRT1
12.3
PRT1
12.8
Dis. N. PNF 350
CAD SPAC
Nome File PNF350-AV-480\1.DWG
Data 29-09-2008
Impianto
PNF 350 AV 480V
Denominazione
GUAINE E ACCESSORI
SHEATHS AND ACCESSORIES
Ordine
Commessa
Esecutore Bartoli
FOGLIO 13
SEGUE 17
REV.
MODIFICA
DATA
FIRME

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-RE2	'022.0211	Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	9	1
'-RE1		Raccordo rapido dritto SEM PG13,5/Ø19	'=BmCv	9	1
'-PC3	'022.0234	Pressacordone 3246 nero PG13,5	'=BmCv	9	1
'-PC1	'022.0238	Pressacavo PG7 BS01	'=BmCv	9	1
'-GH1	'022.0244	Dado grigio PG13,5	'=BmCv	9	1
'-GH4		Dado grigio PG13,5	'=BmCv	9	1
'-CR1	'022.2602	Guaina POLIFLEX NW 14-1200143 (corrugato diam. 18)	'=BmCv	9	0.35
'-GH2	'022.2702	Dado BL01 PG7	'=BmCv	9	1
'-R10	'043.0184	Raccordo diritto da 1/8"G a Ø6mm	'=BmLmCaMep	12	1
'-R8	'043.5605	Raccordo a "T" MFF da 1/8"G	'=BmLmCaMep	12	1
'-R8	'043.0202	Raccordo diritto da 1/8"G a Ø8mm	'=BmLmCmMep	11	1
'-R11	'043.0215	Giunto a "T" Ø8mm	'=BmLmCmMep	11	1
'-R12	'043.0225	Riduzione M/F da tubo Ø8/Ø4mm	'=BmLmCmMep	11	1
'-R10	'043.0226	Riduzione M/F da tubo Ø8/Ø6mm	'=BmLmCmMep	11	1
'-R8	'043.0195	Raccordo diritto da 1/4"G a Ø8mm CL1050	'=BmLmCpMep	12	1
'-R11	'043.0215	Giunto a "T" Ø8mm	'=BmLmCpMep	12	1
'-R12	'043.0225	Riduzione M/F da tubo Ø8/Ø4mm	'=BmLmCpMep	12	1
'-R10	'043.0226	Riduzione M/F da tubo Ø8/Ø6mm	'=BmLmCpMep	12	1
'-R15	'043.0184	Raccordo diritto da 1/8"G a Ø6mm	'=BmMaCa	12	1
'-R6	'043.0206	Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCa	12	1
'-R9		Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCa	12	1
'-R17		Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCa	12	1
'-R4	'043.0208	Raccordo a gomito da 1/8"G a Ø8mm	'=BmMaCa	12	1
'-R19	'043.0235	Giunto a "Y" Ø4mm	'=BmMaCa	12	1
'-R18		Giunto a "Y" Ø4mm	'=BmMaCa	12	1
'-R7	'043.0251	Riduzione gomito M/F da 1/8"G	'=BmMaCa	12	1
'-R8	'043.0276	Nipplo da 1/8"G	'=BmMaCa	12	1
'-R16	'043.0281	Manicotto da 1/8"G	'=BmMaCa	12	1
'-T1	'043.0301	Tubo rilsan 8X6 NERO COD.17257181	'=BmMaCa	12	2.80
'-T2	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=BmMaCa	12	10.80
'-SL2	'043.0473	Silenziatore da 1/8"G in ottone	'=BmMaCa	12	1
'-SL1		Silenziatore da 1/8"G in ottone	'=BmMaCa	12	1
'-V1	'043.0603	Valvola 5/3 da 1/8"G comando a ruotella 358-955 Camozzi	'=BmMaCa	12	1
'-VB1	'043.0619	Valvola di blocco 1/4"G - Ø6 - Ø4	'=BmMaCa	12	1
'-R5	'043.5605	Raccordo a "T" MFF da 1/8"G	'=BmMaCa	12	1
'-R9	'043.0206	Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCm	11	1

REV.	MODIFICA	DATA	FIRME

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Denominazione: DISTINTA MATERIALI / MATERIAL LIST

Ordine
Commessa
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FOGLIO 14
SEGUE 17

0	1	2	3	4	5	6	7	8	9

NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-R8		Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCm	11	1
'-R4	'043.0208	Raccordo a gomito da 1/8"G a Ø8mm	'=BmMaCm	11	1
'-R7	'043.0231	Riduzione diritta M/F da 1/8"G	'=BmMaCm	11	1
'-R14	'043.0235	Giunto a "Y" Ø4mm	'=BmMaCm	11	1
'-R15		Giunto a "Y" Ø4mm	'=BmMaCm	11	1
'-T1	'043.0301	Tubo rilsan 8X6 NERO COD.17257181	'=BmMaCm	11	1.30
'-T2	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=BmMaCm	11	4.00
'-SL1	'043.0473	Silenziatore da 1/8"G in ottone	'=BmMaCm	11	1
'-SL2		Silenziatore da 1/8"G in ottone	'=BmMaCm	11	1
'-V1	'043.0604	Valvola 5/3 comando manuale 358/990 Camozzi	'=BmMaCm	11	1
'-R7	'043.0195	Raccordo diritto da 1/4"G a Ø8mm CL1050	'=BmMaCp	12	1
'-R14	'043.0206	Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCp	12	1
'-R13		Raccordo diritto da 1/8"G a Ø4mm	'=BmMaCp	12	1
'-R8	'043.0228	Riduzione M/F da 1/4-1/8"G	'=BmMaCp	12	1
'-R9		Riduzione M/F da 1/4-1/8"G	'=BmMaCp	12	1
'-R19	'043.0235	Giunto a "Y" Ø4mm	'=BmMaCp	12	1
'-R18		Giunto a "Y" Ø4mm	'=BmMaCp	12	1
'-T1	'043.0301	Tubo rilsan 8X6 NERO COD.17257181	'=BmMaCp	12	2.80
'-T2	'043.0302	Tubo rilsan 4X2.7 NERO C.17257162	'=BmMaCp	12	12.00
'-SL2	'043.0474	Silenziatore da 1/4"G in ottone	'=BmMaCp	12	1
'-SL1		Silenziatore da 1/4"G in ottone	'=BmMaCp	12	1
'-V1	'043.0503	Pedaliera 5/3 354-925 Camozzi	'=BmMaCp	12	1
'-GT3	'022.0180	Guaina termoretraibile 26mm	'=BmMaMep	13	0.15
'-GT1	'022.0181	Guaina termoretraibile 10mm	'=BmMaMep	11	0.50
'-GT2		Guaina termoretraibile 10mm	'=BmMaMep	11	0.50
'-RE5	'022.0212	Raccordo rapido dritto SEM PG16/Ø21	'=BmMaMep	13	1
'-GH5	'022.0239	Dado nero PG16	'=BmMaMep	13	1
'-CR4	'022.2603	Guaina POLIFLEX NW 17-1200178 (corrugato diam. 21)	'=BmMaMep	13	1.10
'-R21	'043.0199	Raccordo a gomito da 1/8"G a Ø4mm	'=BmMaMep	11	1
'-R20		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMaMep	11	1
'-R23		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMaMep	11	1
'-R22		Raccordo a gomito da 1/8"G a Ø4mm	'=BmMaMep	11	1
'-M1	'019.0852	Motore 3,5/4,8HP 2/4P B3 C100L V480.60 S6/60%	'=BmMep	4	1
'-R2	'043.0204	Raccordo a gomito da 1/4"G a Ø8mm	'=PpCv	11	1
'-R3		Raccordo a gomito da 1/4"G a Ø8mm	'=PpCv	11	1
'-MN1	'043.0552	Manometro Ø40 con attacco assiale da 1/8"G	'=PpCv	11	1

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FOGLIO 15
SEGUE 17

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NOME/ITEM	TIPO/TYPE	DESCRIZIONE/DESCRIPTION	QUADRO/BOARD	FG/SH	Q.TA/Q.TY
'-GTA	'043.0564	Regolatore di pressione da 1/4"G FR042	'=PpCv	11	1
'-R1	'043.0195	Raccordo diritto da 1/4"G a Ø8mm CL1050	'=PpMep	11	1
'-IR1	'043.0294	Innesto rapido ghiotto 1/4"G PB12	'=PpMep	11	1
'-VR1	'043.0601	Valvola VMS 114-1/4 08	'=PpMep	11	1
'-S15	'010.0928	Molla per impugnatura MEP dis.1189559	'=QgCv	6	1
'-QD1	'016.0705	Quadro comandi TI 300-350 LVD	'=QgCv	8	1
'-FS1	'019.5353	Fascetta in plastica 135x2,5	'=QgCv	8	30
'-Q0	'022.0118	Blocco porta luch. EP898 9-0HY2AJM +E0 0714-0XS5X85+EP 894 8 - ADAT ABB	'=QgCv	3	1
'-FL1	'022.0171	Cordicella unipolare 1 X AWG20	'=QgCv	8	1.45
'-FL2	'022.0172	Cordicella unipolare 1xAWG16	'=QgCv	8	25.60
'-NM1	'022.0290	Etichetta segnafilo	'=QgCv	8	90
'-NM2		Etichetta segnafilo	'=QgCv	8	7
'-CC2	'022.0296	Terminale a occhiello Ø5 da AWG14 (Blu)	'=QgCv	8	1
'-CC1	'022.0308	Terminale a occhiello Ø5 da AWG16 (Rosso)	'=QgCv	8	4
'-PT1	'022.0311	Terminale a puntale da AWG20 (Bianco)	'=QgCv	8	10
'-PT3	'022.0312	Terminale a puntale da AWG16 (Nero)	'=QgCv	8	44
'-T1	'022.0431	Trasformatore 30 + 70VA V.0-480 CSA S0.24 60Hz	'=QgCv	5	1
'-S15	'022.0515	Microinteruttore V-21-1C6	'=QgCv	6	1
'-K0	'022.0627	Bobina di minima V415.50 /480.60 1SAM201904R1007 ABB	'=QgCv	3	1
'-V1	'022.0862	Scheda mono led 24V Ø8	'=QgCv	6	1
'-BR1	'022.0900	Barra omega	'=QgCv	8	0.20
'-SF1	'022.1133	Microfusibile T 1AMP. 250V	'=QgCv	8	1
'-S4	'022.1245	Emergenza M22-PVT cod.263467 + M22-A 216374 + M22-K01 216378	'=QgCv	3	1
'-Q0	'022.1264	Magnetotermico 6,3-10A MS116-10 ABB	'=QgCv	3	1
'-AL	'022.2256	Morsetto da 2.5 mm singolo per 2 fili a molla 56.703.0055.0	'=QgCv	3	1
'-XQGFU	022.2256 + 022.1136 + 022.1136	Morsetto portafusibile a molla + N° 2 fusibili da 500V 5A	'=QgCv	5	1
'-XQGFU	022.2253 + 022.0140	Morsetto portafusibile PCH10.3x38 + fusibilE da 3A	'=QgCv	5	1
'-XQG2	'022.2257	Morsetto da 2.5 mm singolo per 3 fili a molla 56.703.5055.0	'=QgCv	6	1
PIASTRA	'022.2321	Barra da 15x15mm con 10 fori 6mm	'=QgCv	5	1
'-K1	'022.3002	Contattore DILM9-10 (24 V. 50.60 HZ) cod.276694	'=QgCv	6	1
'-S50	'022.3054	Selettore 2 velocita 20A T0-5-70331 GB/E	'=QgCv	4	1
'-TF2	'025.0604	Guarnizione aerstop	'=QgCv	8	2.00
'-S15	'025.0691	Serie guernizioni per impugnatura	'=QgCv	6	1
'-TF1	'031.2622	Targa sostituzione fusibili	'=QgCv	8	1
'-S15	'034.1221	Impugnatura MEP	'=QgCv	6	1
'-SF1	'047.0182	Sacchetto portafusibili	'=QgCv	8	1

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FOGLIO 16
SEGUE 17

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Tipo/Type	Formaz./Format.	Descrizione/Description	Lungh./Lenght
022.0158	5GAWG16	Cavo 5xAWG16	3.00
022.0160	2xAWG20	Cavo 2xAWG20	1.00

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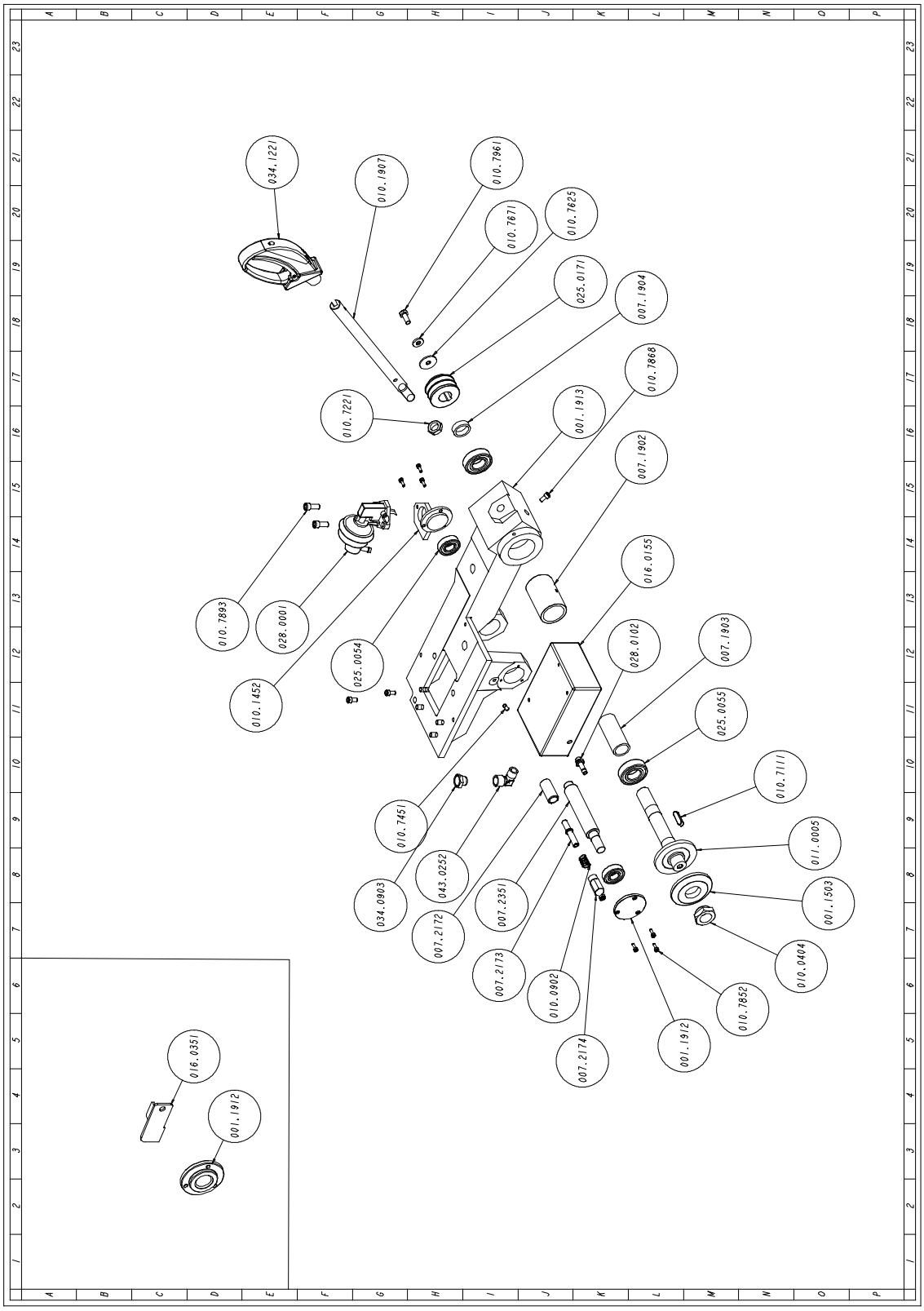
FOGLIO
17
SEGUE
17

Exploded views

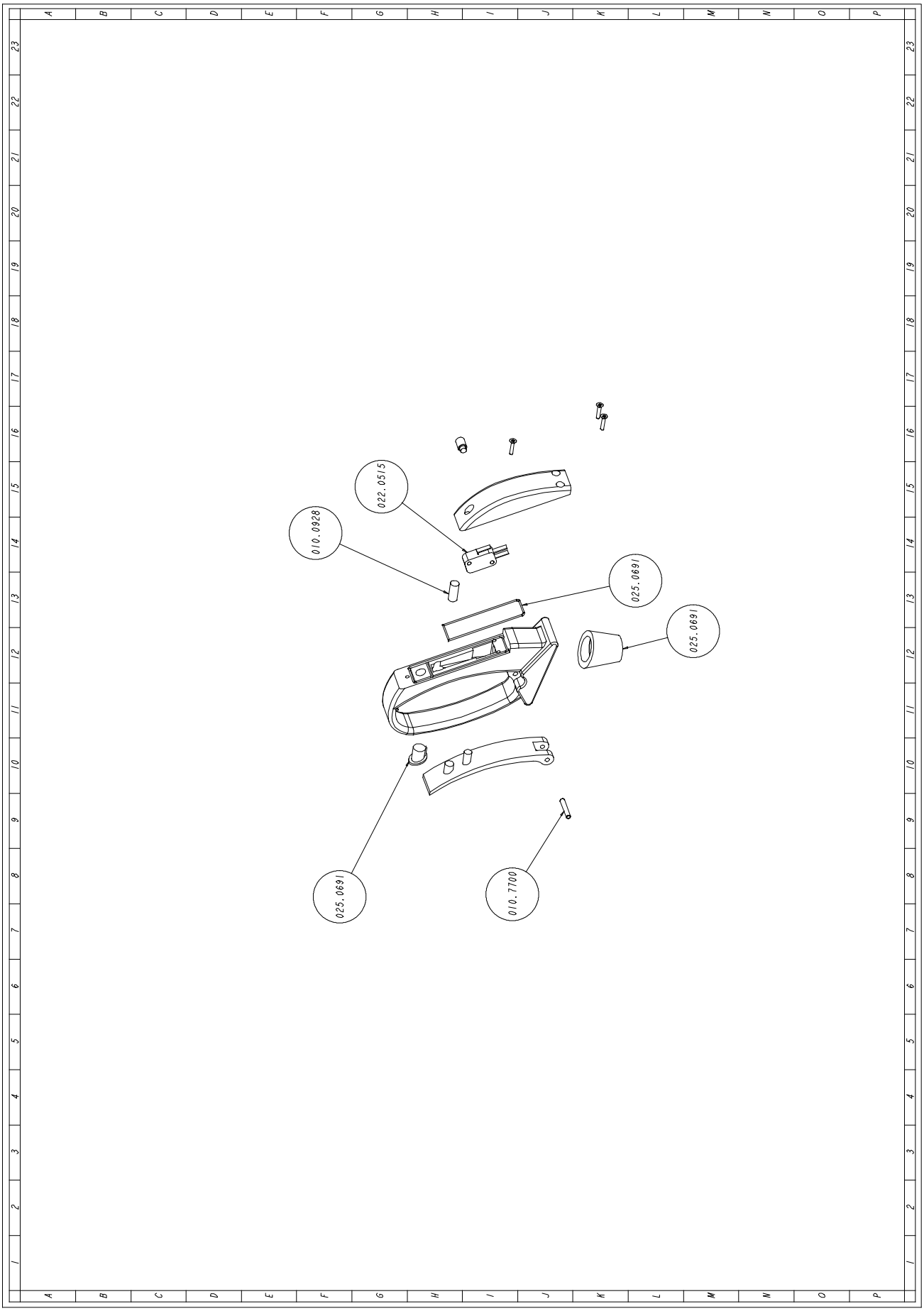
This part of the manual contains detailed exploded views of the machine which can help to gain a deeper knowledge of how it is made.

Head unit



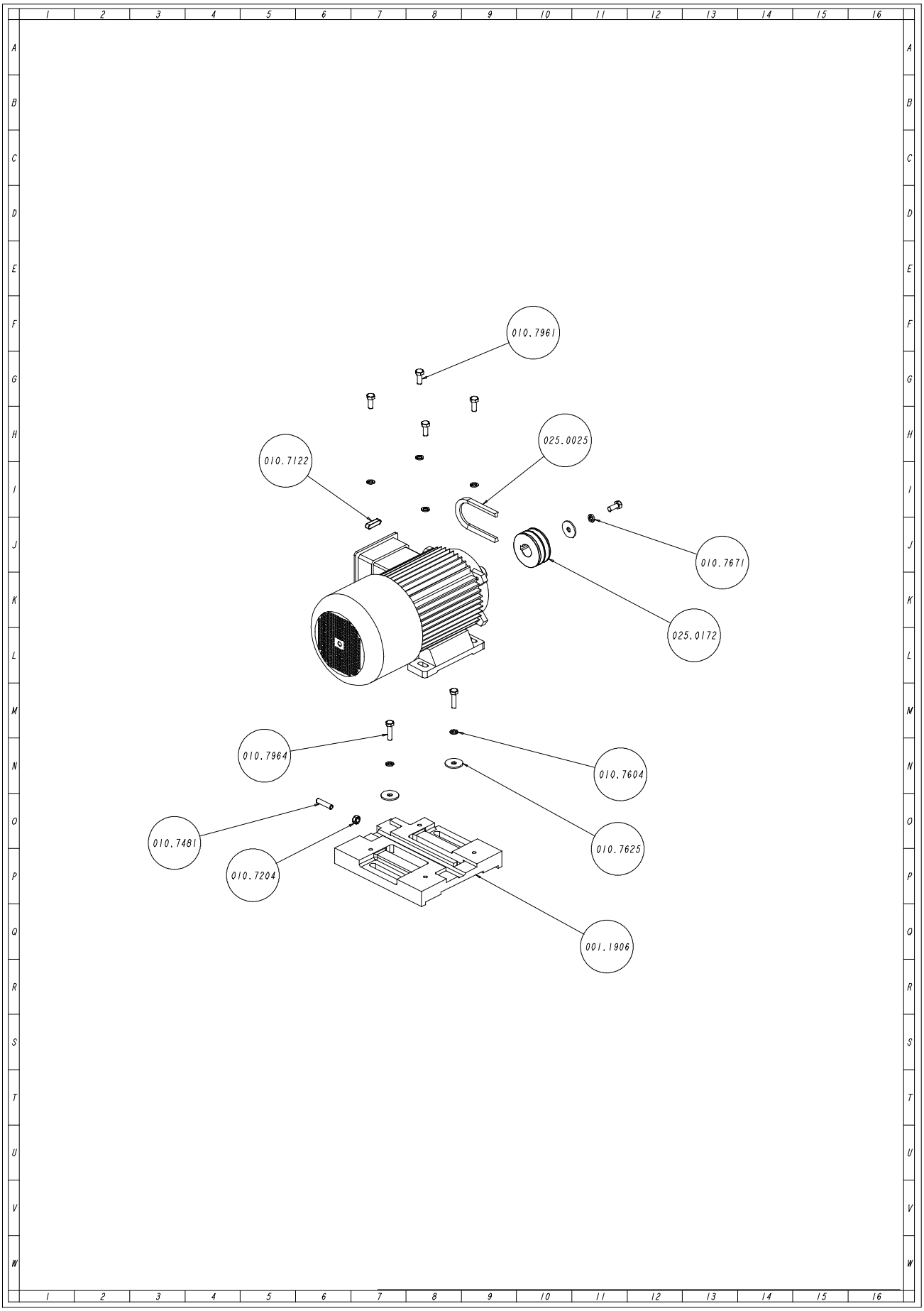
Code	Description	U. of M.	Quantity
001.1503	OUTER FLANGE CB 350 MOD.253	NR	1,000
001.1912	COVER CB 350 MOD.311	NR	2,000
001.1913	PLATFORM CB 350 MOD.312	NR	1,000
007.1902	EXT.BEARING SPACER CB 300/349/350	NR	1,000
007.1903	INT. BEARING SPACER CB 300/349/350	NR	1,000
007.1904	WHEEL SPACER CB 300/349/350	NR	1,000
007.2172	BUSHING CB 349- 350 D	NR	1,000
007.2173	LOCKING PIN CB 349/350 D	NR	1,000
007.2174	RING NUT CB 349/350 D	NR	1,000
007.2351	HEAD PIVOT SUPPORT PIN CB 350	NR	1,000
010.0404	M M.25 P.HEX NUT 2 RA- CB 350	NR	1,000
010.0902	HEAD FIXED POINT SPRING	NR	1,000
010.1452	PUMP FIXING COVER CB 350	NR	1,000
010.1907	BT/NOT- AUS LEVER SC- CB- RA- TI	NR	1,000
010.7111	8 X 7 X 32 KEY	NR	1,000
010.7221	M16 LOW SCREW NUT	NR	1,000
010.7451	6 X 12 CONICAL POINT VCE GRUB SCREW	NR	1,000
010.7625	0 8 X 32 WASHER	NR	1,000
010.7671	THICKNESS WASHER DIAM. 8 X 3	NR	1,000
010.7852	TCEI 4 X 12 SCREW	NR	6,000
010.7868	TCEI 6 X 12 SCREW	NR	3,000
010.7893	TCEI 8 X 20 SCREW	NR	2,000
010.7961	TE 8 X 20 SCREW	NR	2,000
011.0005	BLADE SHAFT CB 349/350	NR	1,000
016.0155	TANK CB 350	NR	1,000
016.0351	VALVE CONTROL PLATE	NR	1,000
025.0054	BEARING 62.03 2Z	NR	2,000
025.0055	BEARING 62.05 2Z C3	NR	2,000
025.0171	WHEEL 50X2 SPZ HOLE 24	NR	1,000
028.0001	ALUMINIUM PUMP	NR	1,000
028.0102	JOINT WITH WASHER	NR	1,000
034.0903	3/8” GAS OIL LEVEL CAP	NR	1,000
043.0252	MF 3/8 CL 2020 ELBOW	NR	1,000
090.0271	COMPLETE MEP HANDLE	NR	1,000

Head control lever



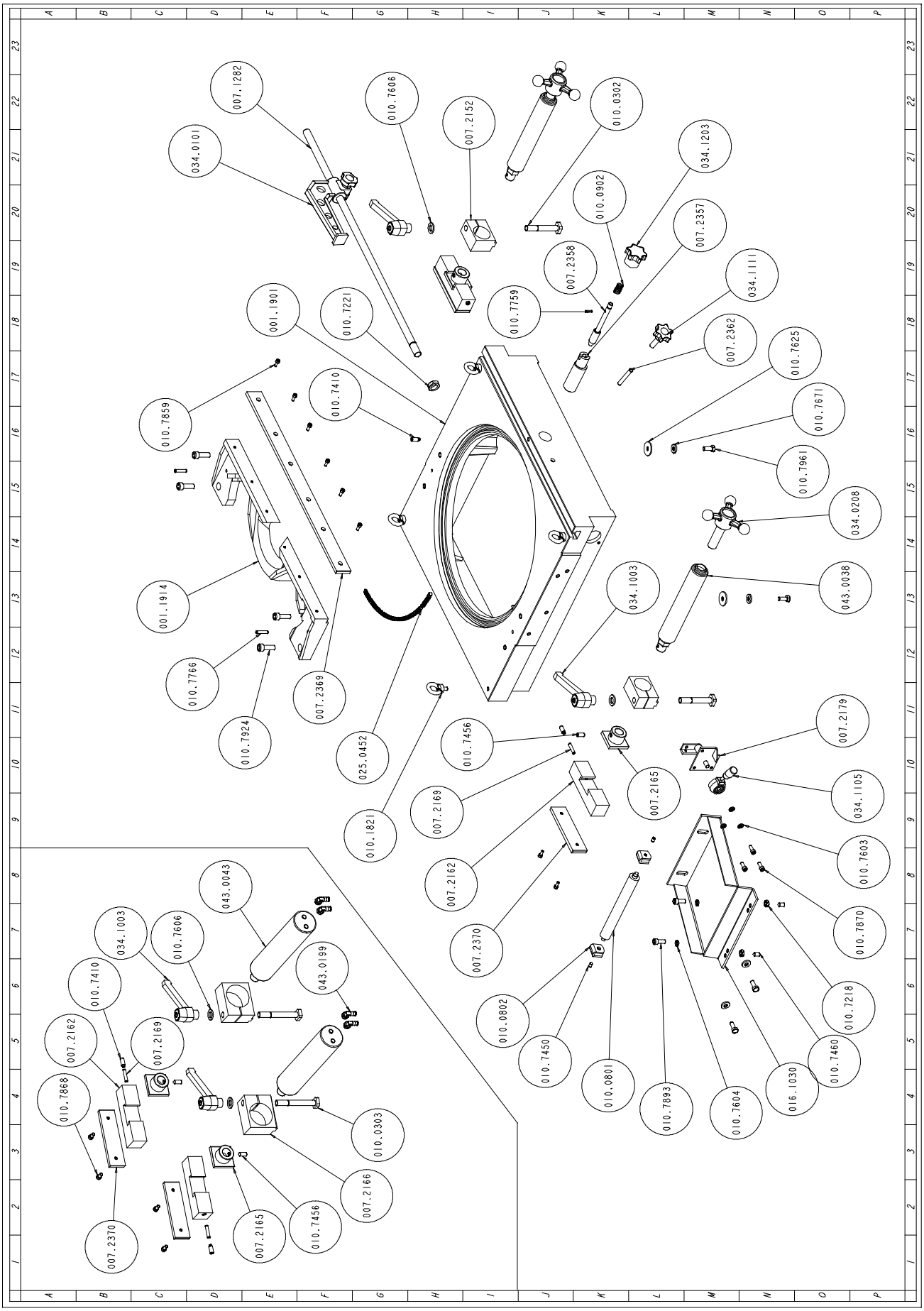
Code	Description	U. of M.	Quantity
010.0928	MEP HANDLE SPRING	NR	1,000
010.7409	8 X 10 CYLIND.POINT VCE GRUB SCREW	NR	1,000
010.7700	CYLINDRICAL PIN DIAM. 4 X 24	NR	1,000
010.7800	2,9 X 15 SELF- THREADING SCREW	NR	3,000
022.0515	MICROSWITCH V- 21- 1C6	NR	1,000
025.0691	GASKETS FOR MEP HANDLE	NR	1,000
034.1221	MEP HANDLE	NR	1,000

Motor unit


010.7961
025.0025
010.7122
010.7671
025.0172
010.7964
010.7604
010.7481
010.7625
010.7204
001.1906

Code	Description	U. of M.	Quantity
001.1906	MOTOR PLANE CB 350 MOD.306	NR	1,000
010.7122	8 X 8 X 32 KEY	NR	1,000
010.7204	M8 SCREW NUT	NR	1,000
010.7481	8 X 35 FLAT POINT VCE GRUB SCREW	NR	1,000
010.7604	0 8 WASHER	NR	6,000
010.7625	0 8 X 32 WASHER	NR	3,000
010.7671	THICKNESS WASHER DIAM. 8 X 3	NR	1,000
010.7961	TE 8 X 20 SCREW	NR	5,000
010.7964	TE 8 X 30 SCREW	NR	2,000
025.0025	BELT SPZ 900 S.TX	NR	2,000
025.0172	WHEEL 60X2 SPZ HOLE 24	NR	1,000
001.1902	ROTATING TABLE CB 350 MOD.302	NR	1,000
001.1903	ROTATING TABLE RING CB 350	NR	1,000
007.2366	ROTATING TABLE PLATE CB 350	NR	1,000
010.7205	M10 SCREW NUT	NR	2,000
010.7604	0 8 WASHER	NR	6,000
010.7767	ELASTIC PIN DIAM. 6 X 35	NR	2,000
010.7964	TE 8 X 30 SCREW	NR	6,000
010.7976	TE 10 X 30 SCREW	NR	2,000
010.7993	TSPEI 5 X 12 SCREW	NR	6,000

Vice


007.1282
034.0101
010.7606
007.2152
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034.1203
010.0902
007.2357
007.2358
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001.1901
010.7221
007.2362
010.7625
010.7859
010.7410
010.7671
010.7961
034.0208
034.1003
043.0038
001.1914
010.7766
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025.0452
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010.7456
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007.2162
007.2370
007.2165
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010.1030
010.7604
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010.0802
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034.1003
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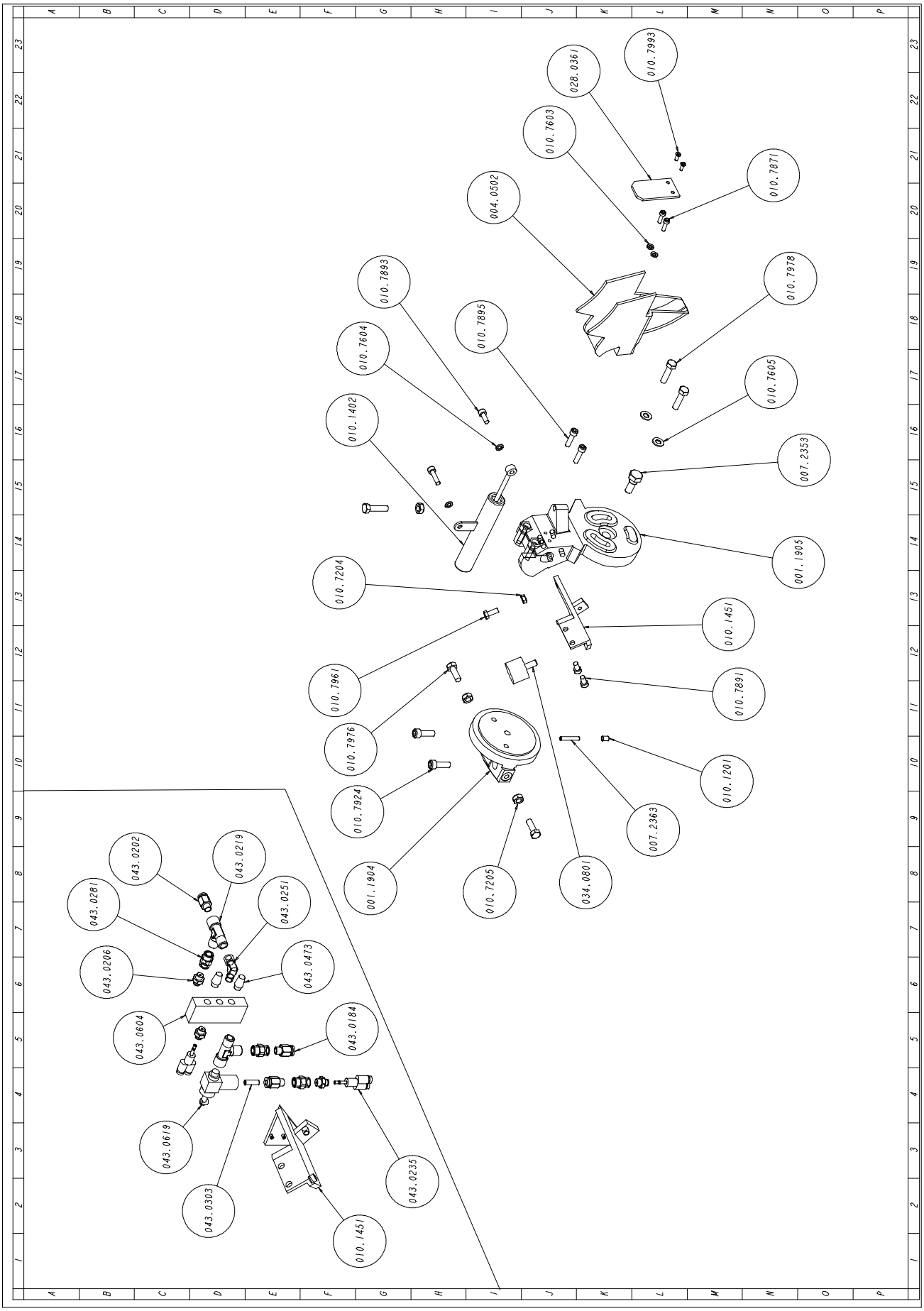
010.7410
007.2162
007.2169
010.7868
043.0199
010.0303
007.2166
007.2165
010.7456
007.2370

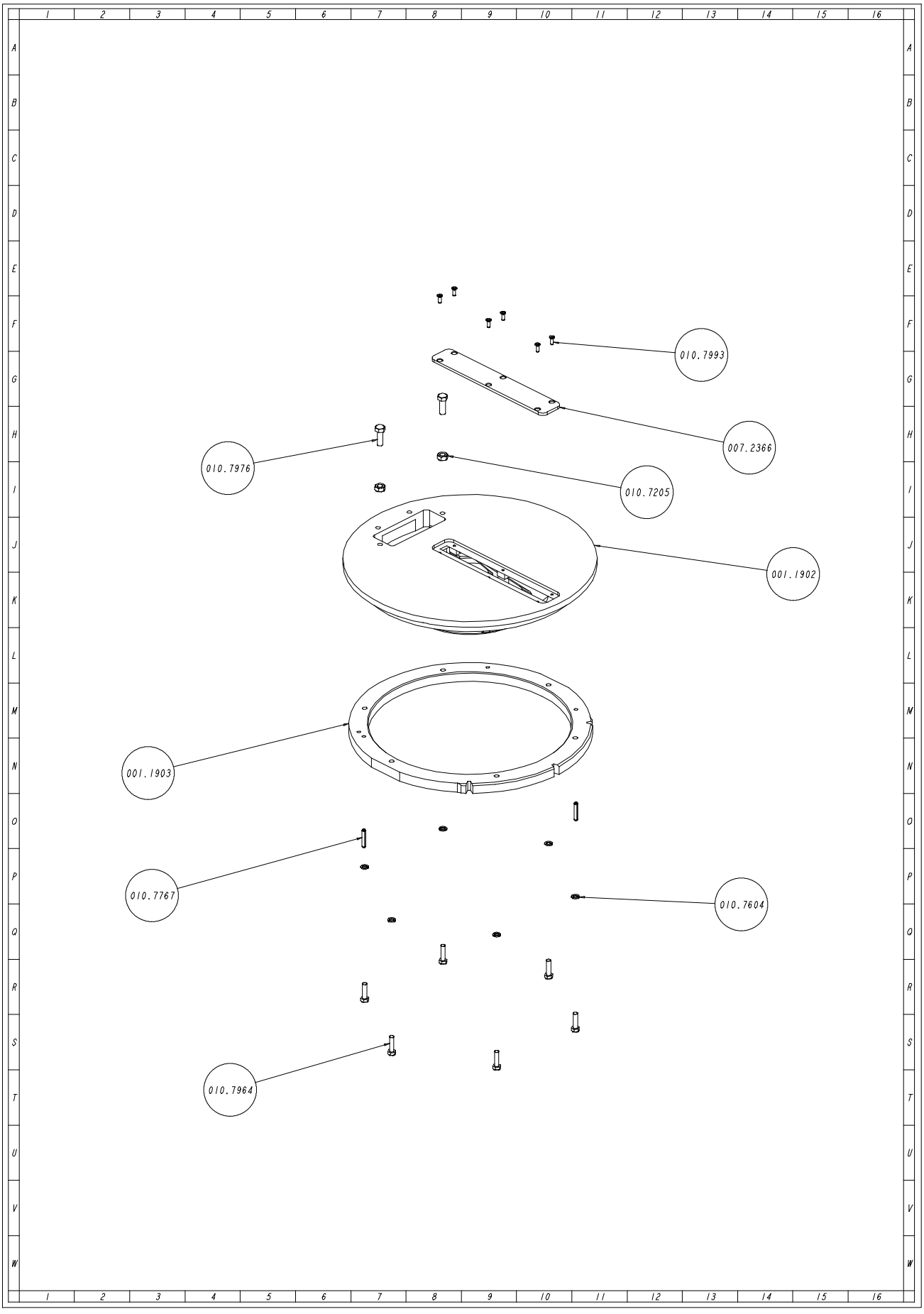
Code	Description	U. of M.	Quantity
001.1901	BASE CB 350 MOD.301	NR	1,000
001.1914	VICE BACK STOP CB 350 MOD.313	NR	1,000
007.1282	CUT TO MEASURE ROD FC- CB- SH 200	NR	1,000
007.2152	VICE SLEEVE SUPPORT CB 349/350	NR	2,000
007.2162	VICE JAW CB 349/350	NR	2,000
007.2165	VICE JAW SUPPORT CB 349/350	NR	2,000
007.2166	VICE SLEEVE SUPPORT CB SX- AX- CNC	NR	2,000
007.2169	JAW LOCKING PIN CB 349/350	NR	2,000
007.2179	HEAD LOCKING SYSTEM CB 350 D	NR	1,000
007.2357	ECCENTRIC CB 350	NR	1,000
007.2358	PIN CB 350	NR	1,000
007.2362	LOCKING PIN CB 350	NR	1,000
007.2369	38X8 ADDITIONAL FIXED JAW CB 350	NR	1,000
007.2370	38X8 ADDITIONAL MOBILE JAW CB 350	NR	2,000
007.2371	50X8 ADDITIONAL FIXED JAW CB 350	NR	1,000
007.2372	50X8 ADDITIONAL MOBILE JAW CB 350	NR	2,000
010.0302	SCREW 22X22 M12X80 CB 349- 350	NR	2,000
010.0303	SCREW 22X22 M12X95 CB 350 AX- CNCFE	NR	2,000
010.0801	ROLLER 304011 0 24 CB- TI- FC	NR	1,000
010.0802	ROLLER SUPPORT CB- TI- FC	NR	2,000
010.0902	HEAD FIXED POINT SPRING	NR	1,000
010.1821	ZINC MALE BOLT M 8 FC- CB	NR	4,000
010.7218	M8 LOW SCREW NUT	NR	2,000
010.7221	M16 LOW SCREW NUT	NR	1,000
010.7410	8 X 16 CYLIND.POINT VCE GRUB SCREW	NR	3,000
010.7450	6 X 6 CYLINDRICAL POINT VCE GRUB	NR	2,000
010.7456	8 X 16 CONICAL POINT VCE GRUB SCREW	NR	2,000
010.7460	8 X 12 CONICAL POINT VCE GRUB SCREW	NR	2,000
010.7603	0 6 WASHER	NR	3,000
010.7604	0 8 WASHER	NR	2,000
010.7605	0 10 WASHER	NR	2,000
010.7625	0 8 X 32 WASHER	NR	2,000
010.7671	THICKNESS WASHER DIAM. 8 X 3	NR	4,000
010.7759	ELASTIC PIN DIAM. 3 X 16	NR	1,000
010.7766	ELASTIC PIN DIAM. 6 X 30	NR	2,000
010.7859	TCEI 5 X 12 SCREW	NR	10,000
010.7870	TCEI 6 X 16 SCREW	NR	3,000
010.7893	TCEI 8 X 20 SCREW	NR	2,000
010.7924	TCEI 10 X 30 SCREW	NR	4,000
010.7961	TE 8 X 20 SCREW	NR	4,000
016.1030	BAR SUPPORT ARM SC 315- CB	NR	1,000
025.0452	ROLLERS 6X6 AISI 420	NR	219,000
034.0101	LARGE CUT TO MEASURE STOP	NR	1,000
034.0208	M20X70 SMALL VICE HANDWHEEL CB350- 450	NR	2,000
034.1003	LEVER 12 MA	NR	2,000
034.1105	HANDWHEEL CB 350	NR	1,000
034.1111	O 30 M10 X 40 HANDWHEEL	NR	1,000
034.1203	MEP MADE HANDWHEEL M10	NR	1,000
043.0038	CYLINDER 20 M CB 330- 350- 450	NR	2,000
043.0043	VICE CYLINDER 0 50 CB AX- CNC	NR	2,000
043.0199	4X1/8 TURNING ELBOW JOINT	NR	4,000

Head pivot support



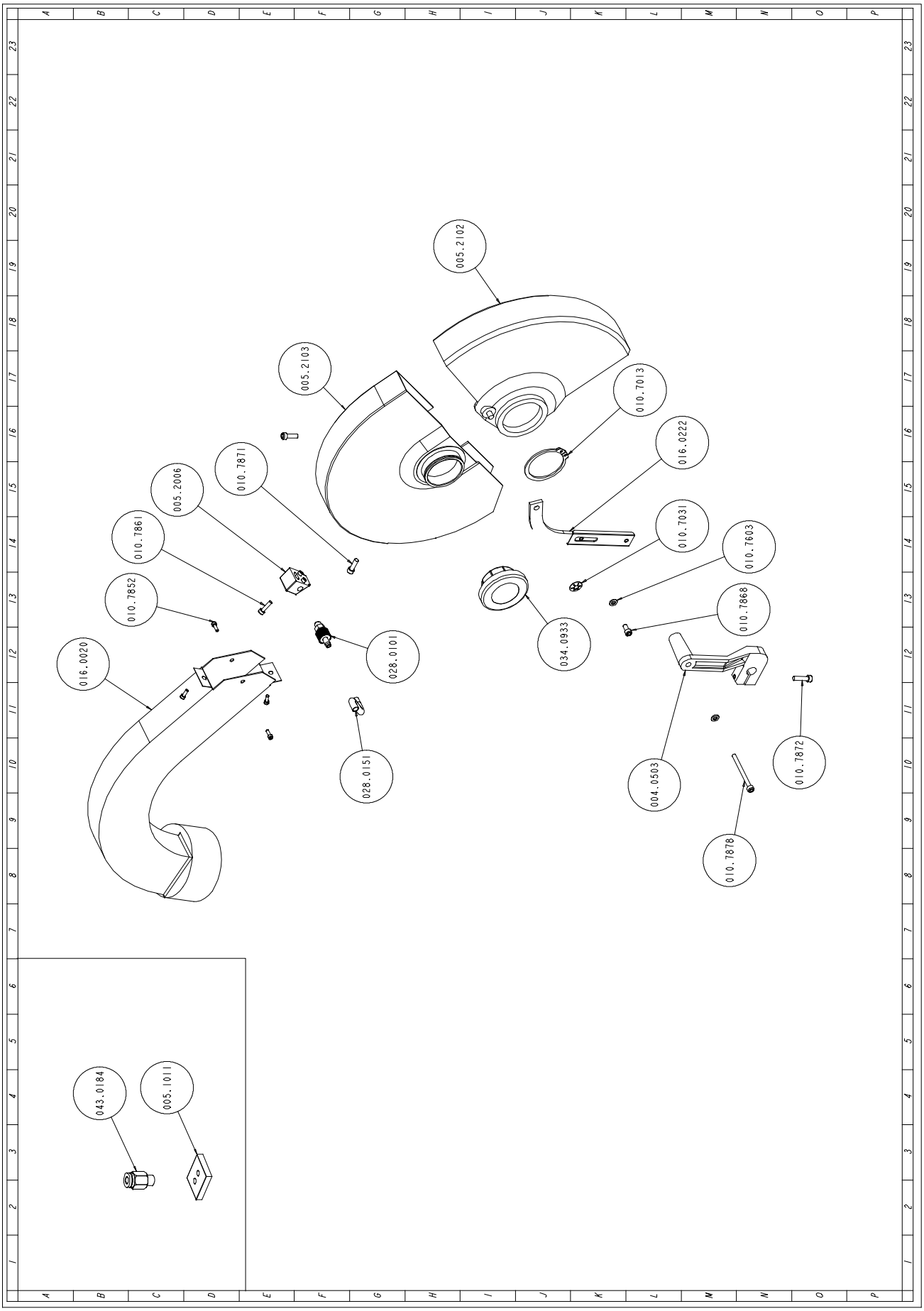
Code	Description	U. of M.	Quantity
001.1904	SUPPORT CB 350 MOD.304	NR	1,000
001.1905	SUPPORT CB 350 MOD.305	NR	1,000
004.0502	FIXED PROTECTION CB 350 N.S.	NR	1,000
007.2353	HEX. SCREW CB 350	NR	1,000
007.2363	PIN CB 350	NR	1,000
010.1402	HEAD RETURN SPRING CB 350	NR	1,000
010.1451	PUMP BRACKET CB 350	NR	1,000
010.7204	M8 SCREW NUT	NR	1,000
010.7205	M10 SCREW NUT	NR	3,000
010.7402	6 X 12 CYLIND.POINT VCE GRUB SCREW	NR	1,000
010.7603	0 6 WASHER	NR	2,000
010.7604	0 8 WASHER	NR	2,000
010.7605	0 10 WASHER	NR	2,000
010.7871	TCEI 6 X 20 SCREW	NR	2,000
010.7891	TCEI 8 X 16 SCREW	NR	2,000
010.7893	TCEI 8 X 20 SCREW	NR	1,000
010.7895	TCEI 8 X 30 SCREW	NR	3,000
010.7924	TCEI 10 X 30 SCREW	NR	2,000
010.7961	TE 8 X 20 SCREW	NR	1,000
010.7976	TE 10 X 30 SCREW	NR	2,000
010.7978	TE 10 X 40 SCREW	NR	3,000
010.7993	TSPEI 5 X 12 SCREW	NR	2,000
028.0361	BLADE COVER RUBBER JOINT CB 350	NR	1,000
034.0801	ELASTIC STOP P 40/30 CB- RA350 SH 260- 270	NR	1,000
043.0206	HEXAGONAL COUPLING 4X1/8	NR	3,000
043.0184	HEXAGONAL COUPLING 6X1/8	NR	2,000
043.0202	HEXAGONAL COUPLING 8X1/8	NR	1,000
043.0235	Y BRANCHING 4 MM PIPE	NR	2,000
043.0251	M.F. ELBOW 1/8	NR	1,000
043.0281	1/8 M 8/8 SLEEVE	NR	3,000
043.0218	MFF T JOINT	NR	2,000
043.0473	1/8 SILENCER	NR	2,000
016.0354	VALVE FIXING BRACKET	NR	1,000
043.0303	RILSAN HOSE 6X4	NR	1,000
043.0604	358 990 VALVE	NR	1,000
043.0619	PWBA 1468 BLOCK INTERCEPTOR	NR	1,000

Tourntable


010.7993
007.2366
010.7976
010.7205
001.1902
001.1903
010.7767
010.7604
010.7964

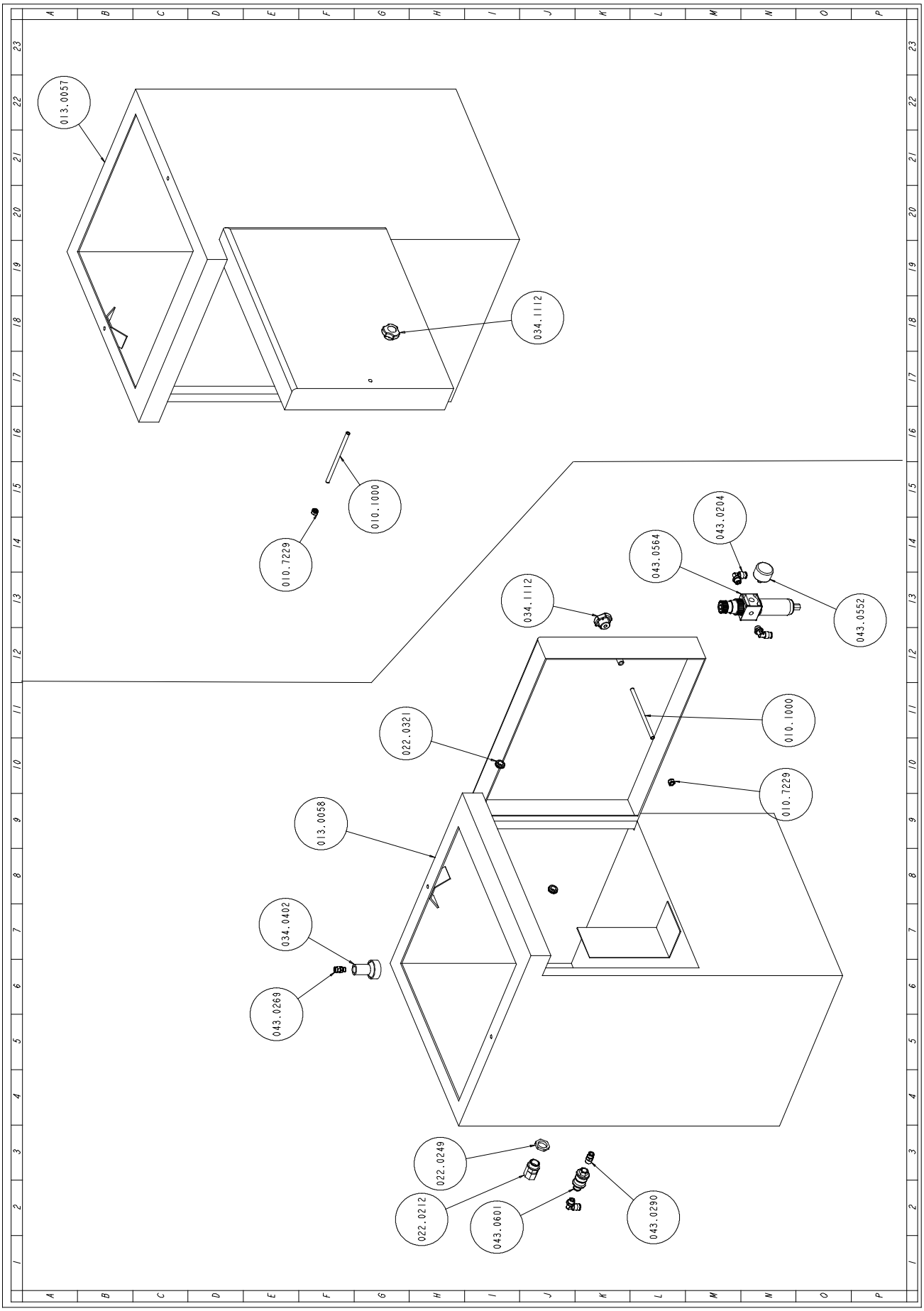
Code	Description	U. of M.	Quantity
001.1902	ROTATING TABLE CB 350 MOD.302	NR	1,000
001.1903	ROTATING TABLE RING CB 350	NR	1,000
007.2366	ROTATING TABLE PLATE CB 350	NR	1,000
010.7205	M10 SCREW NUT	NR	2,000
010.7604	0 8 WASHER	NR	6,000
010.7767	ELASTIC PIN DIAM. 6 X 35	NR	2,000
010.7964	TE 8 X 30 SCREW	NR	6,000
010.7976	TE 10 X 30 SCREW	NR	2,000
010.7993	TSPEI 5 X 12 SCREW	NR	6,000

Blade guard unit



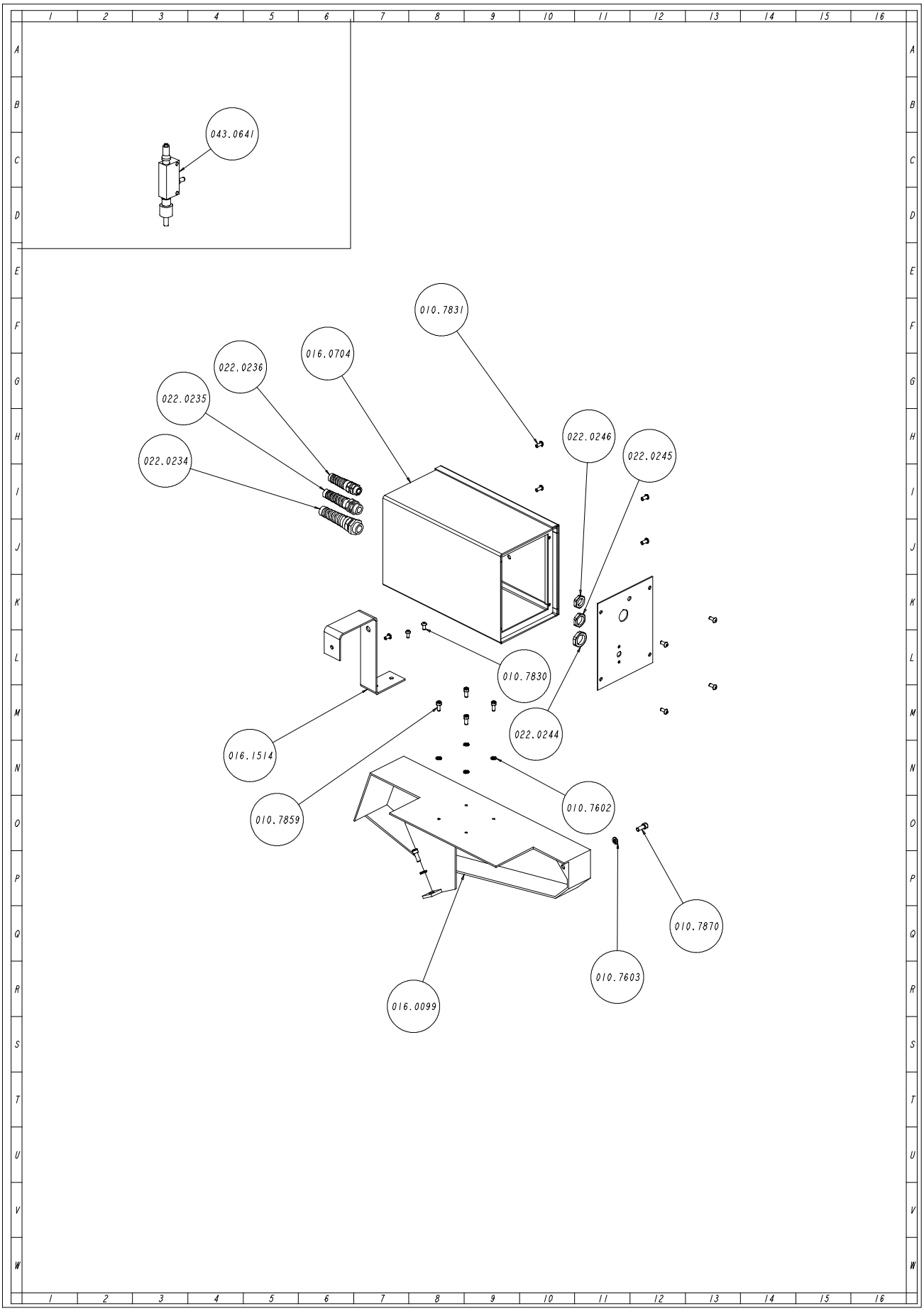
Code	Description	U. of M.	Quantity
004.0503	PROTECTION ROD SUPPORT CB 350	NR	1,000
005.2006	TAP SPRAYER CB 350	NR	1,000
005.2102	BLADE PROTECTION 0 350	NR	1,000
005.2103	BLADE COVER CB 350	NR	1,000
010.7013	0 62 SEEGER RING	NR	1,000
010.7031	SK 0 8 SEEGER RING	NR	1,000
010.7603	0 6 WASHER	NR	2,000
010.7852	TCEI 4 X 12 SCREW	NR	4,000
010.7861	TCEI 5 X 20 SCREW	NR	1,000
010.7868	TCEI 6 X 12 SCREW	NR	1,000
010.7871	TCEI 6 X 20 SCREW	NR	2,000
010.7872	TCEI 6 X 25 SCREW	NR	1,000
010.7878	TCEI 6 X 70 SCREW	NR	1,000
016.0020	SWARF CONVEYOR CB 350	NR	1,000
016.0222	GUARD BRACKET CB 350 N.S.	NR	1,000
028.0101	TAP REGULATOR 8 X 1/4	NR	1,000
028.0151	PLASTIC HOSE 07- 11	KG	0,120
034.0933	BLADE COVER TAP	NR	1,000

Base vice


013.0057
034.1112
010.1000
010.7229
043.0204
043.0564
034.1112
043.0552
022.0321
010.1000
010.7229
013.0058
034.0402
043.0269
022.0249
022.0212
043.0601
043.0290

Code	Description	U. of M.	Quantity
010.1000	8 MA THREADED BAR	MT	1,000
010.7229	M8 SELF- LOCKING SCREW NUT	NR	1,000
013.0057	STEEL BASE CB 350	NR	1,000
013.0058	STEEL BASE CB 350 MA	NR	1,000
016.0354	VALVE FIXING BRACKET CB 350 MA	NR	1,000
022.0212	RAPID JOINT SEM PG 16	NR	1,000
022.0249	POLYAMIDE HUMMEL NUT 1.262.1600.11	NR	1,000
022.0321	FAIRLEADS 12 INC.M M.2	NR	2,000
034.0402	FOOT VALVE	NR	1,000
034.1112	O 40 M8 HANDWHEEL X STEEL BASE SH	NR	1,000
043.0204	8X1/4 - CL 6521 ELBOW COUPLING	NR	3,000
043.0269	CL 1500 6/4 1/8 STRAIGHT JOINT	NR	1,000
043.0290	1/4 QUICK COUPLING	NR	1,000
043.0552	MANOMETER 0 40	NR	1,000
043.0564	FR 1/4 20- 08	NR	1,000
043.0601	VMS 114- 1/4 08 VALVE	NR	1,000

Control panel unit



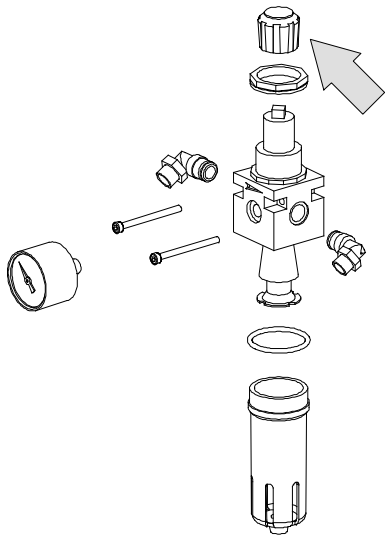
Code	Description	U. of M.	Quantity
010.7602	0 5 WASHER	NR	4,000
010.7603	0 6 WASHER	NR	2,000
010.7830	5 X 10 BUTON SCREW	NR	3,000
010.7831	5 X 12 BUTON SCREW	NR	8,000
010.7859	TCEI 5 X 12 SCREW	NR	4,000
010.7870	TCEI 6 X 16 SCREW	NR	2,000
016.0099	BELT COVER CB 350	NR	1,000
016.1514	SWARF CONVEYOR FIX BRACKET CB 350	NR	1,000
022.0234	CORD PRESSER	NR	1,000
022.0235	CORD PRESSER	NR	1,000
022.0236	CORD PRESSER	NR	1,000
022.0244	LOCK NUT 3217B GREY PG 13,5	NR	1,000
022.0245	LOCK NUT 3213B GREY PG 11	NR	1,000
022.0246	LOCK NUT 3210B GREY PG 9	NR	1,000
031.3299	SWITCH PLATE CB 350	NR	1,000
043.0641	T.7240201 COOLANT SPRAYER	NR	1,000

Adjustments

This chapter describes the operations needed to adjust the mechanical and pneumatic (MA version) systems enabling the **PNF350- 2AV** to be used properly. These instructions will enable you to ”customise” your machine to suit the type of cuts being carried out, optimising the time required to complete them.

Air treatment system (MA version)

On the MA version of the **PNF350- 2AV**, the machine’s pneumatic circuit moves the cutting vice using a pneumatic cylinder. The compressed air is treated and purified at the inlet to the system by an air treatment unit. This unit stabilises the pressure at 6 Bar, irrespective of the pressure in the factory circuit.
Nevertheless, the pressure can be preset if the material in the vice is deformed or not clamped properly during the cutting cycle. The mobile jaw of the vice must be positioned manually at 2 ÷ 3 mm from the workpiece before final clamping. This version of the machine requires the user to provide a compressed air system complying with the characteristics reported on chapter 4.
The diagram below shows an exploded view of the air treatment unit: rotating the arrowed knob alters the working pressure of the vice which is displayed by the pressure gauge.



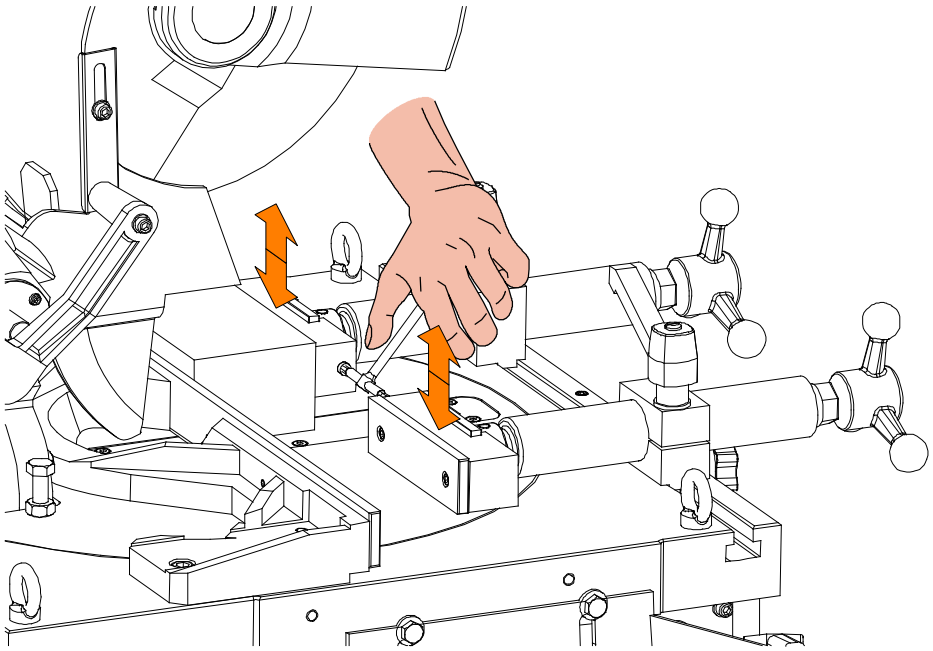
Shearing vices

The machine can be equipped with mechanical or pneumatic vices. Both in the manual and MA versions the vices can move in longitudinal and cross direction, as they are installed on movable supports sliding on the prismatic guide of the fixed platform.

Jaws replacement and height adjustment

When cutting material with section equal to the machine max. capacity, it is necessary:

- ▶ to remove the standard jaws from the piece- supporting shoulder;
- ▶ install the jaws supplied with the accessory pack (see inside instructions);
- ▶ loosen the lock dowel of the movable jaws positioned outside the jaws supporting block;
- ▶ lift the block till getting the clearance necessary for tightening the material, then lock the obtained position tightening the two dowels.



Disc

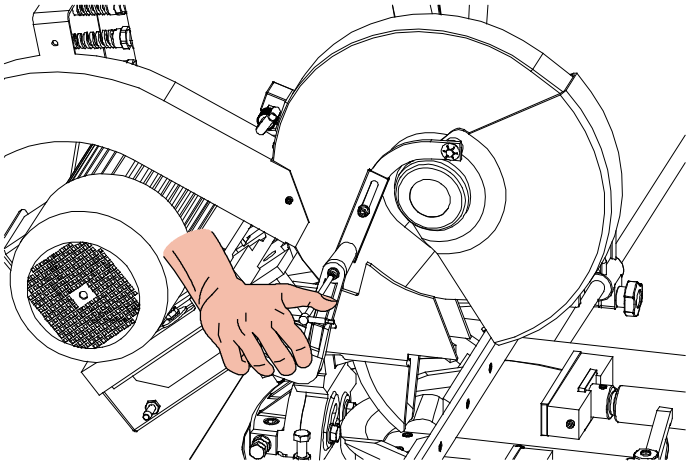
Circular saws with hard metal teeth for cutting non- ferrous metals offer all the advantages provided by metal carbides used as cutting tools. Their enormous wear resistance allows for high cutting speeds and a long lifetime. This leads to a big increase in the quantity of swarf removed per unit time and a consequent increase in efficiency. This is of great economic importance if you need to cut large quantities of material or highly resistant materials which would be difficult to cut in any other way.

Changing the blade

To change the blade proceed as follows:

- ▶ switch off the machine;

▶ release the mobile disc guard;

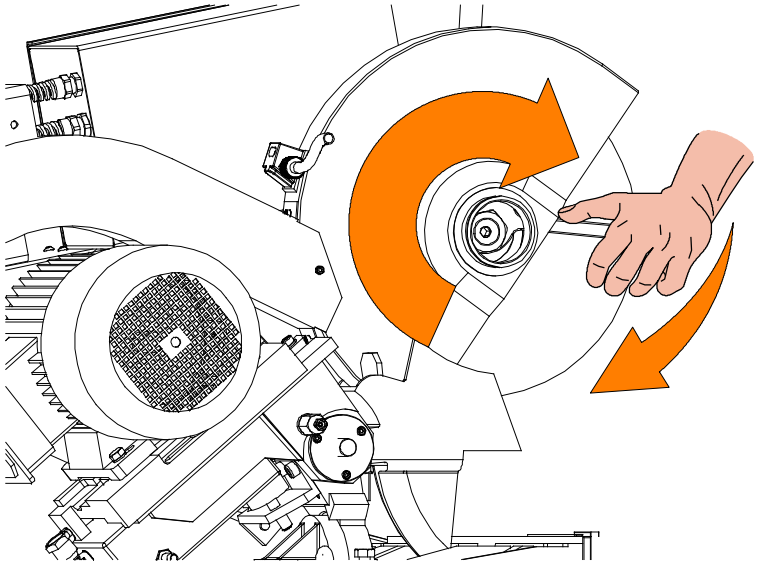


▶ move the mobile guard upwards;

▶ take off the cap located at the central part of the guard and slacken the nut that locks the blade using a 36 mm wrench while holding the internal hexagonal screw steady;

N.B. The lock nut is always loosened in the same direction as the disk rotating one.

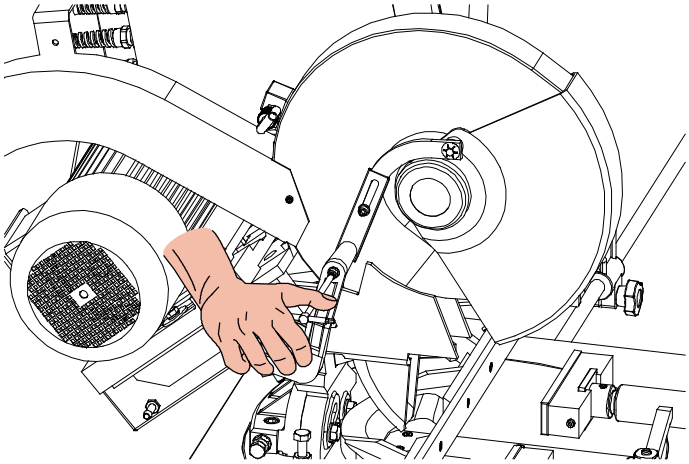
▶ now remove the broken or worn blade and replace it with a new one.



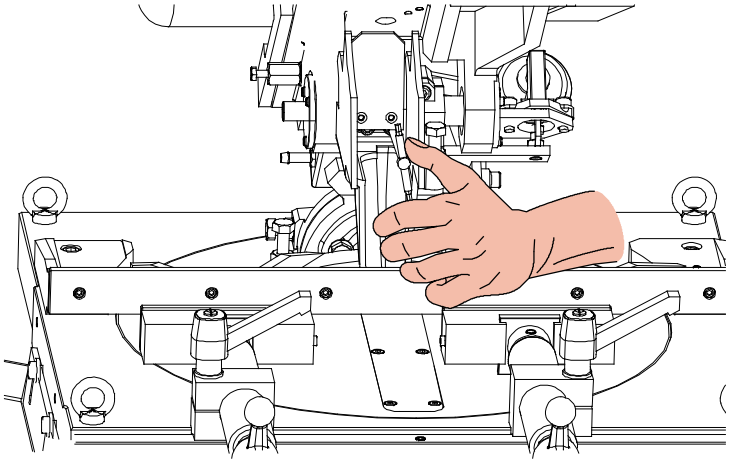
Adjustment of the squareness to the piece-supporting shoulder

The procedures for correcting and adjusting the blade at 0° and 45° to make cuts at right angles to the fixed vice jaw are described below. To carry out the right angle adjustment at 0°, use a workshop goniometer or a simple 90° square.

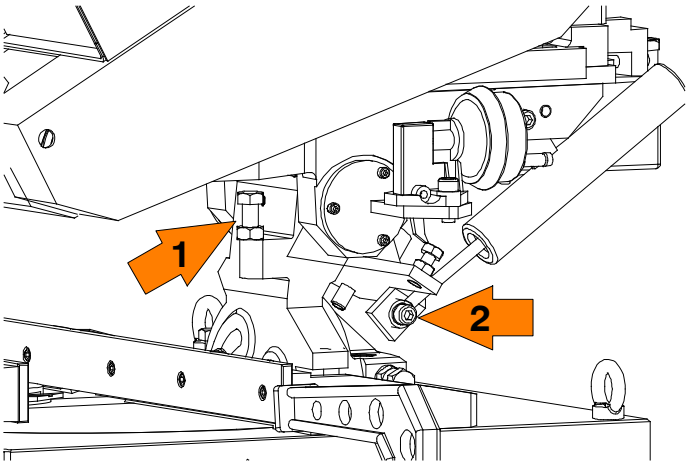
▶ release the mobile cover control rod and remove the two screws that lock the blade guard and the swarf conveyor;



▶ remove the cutting disc and the lower fixed guard: note that it is fixed by two screws located underneath the rubber fabric;

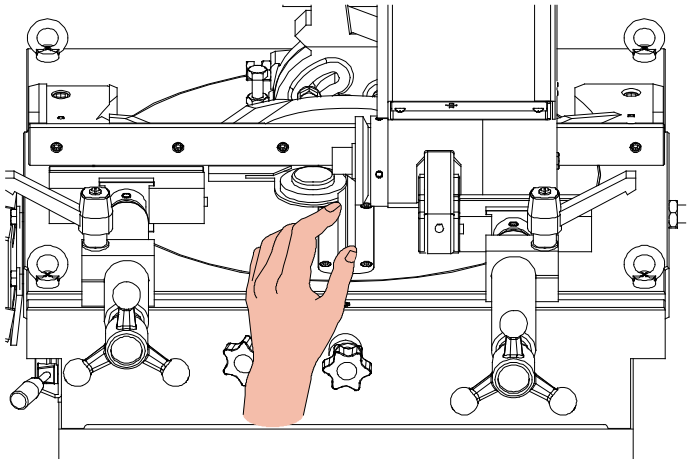


▶ take out the screw that functions as a pin for the head return cylinder (arrow no. 2) and the adjustable head lowering stop (arrow no. 1), so that it is possible to lower the head completely and rest the disc shaft flange on the working table;

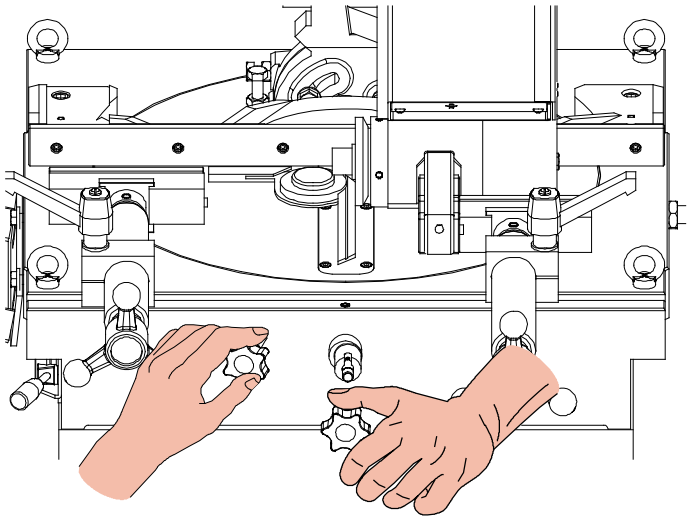


▶ position the goniometer or the square against the fixed vice jaw adjacent to

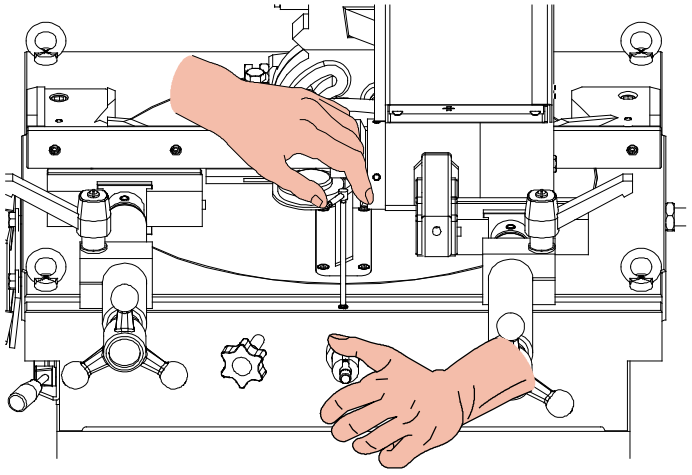
the disc shaft flange;



▶ loosen the turntable locking handwheel M10;
▶ remove the eccentric locking pin knob;



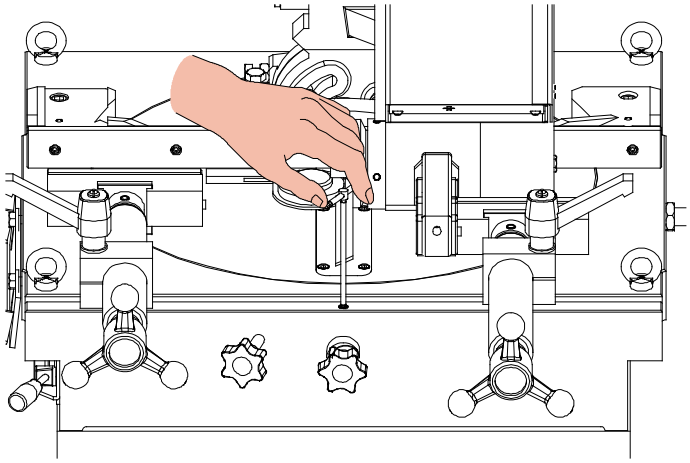
▶ slacken the grub screw.



If the right angle error is now small (about 1 degree), turn the eccentric pin until the error is corrected. If instead the error is greater than 1 degree proceed as follows:

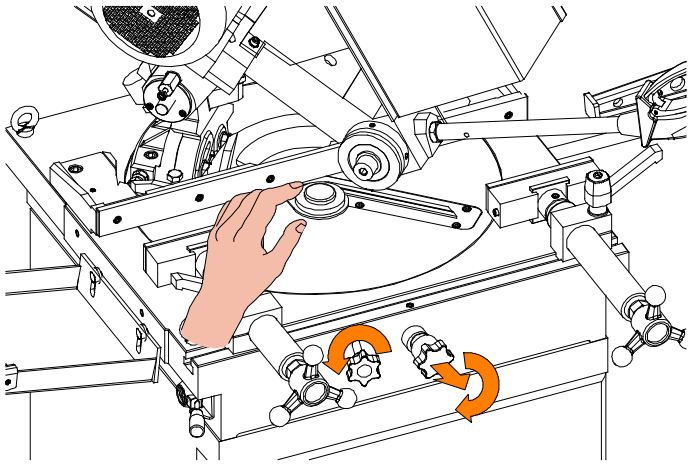
▶ remove the eccentric pin;

- turn the head until the error is corrected;
- re- insert the eccentric pin;
- lock the grub screw and remount the knob.

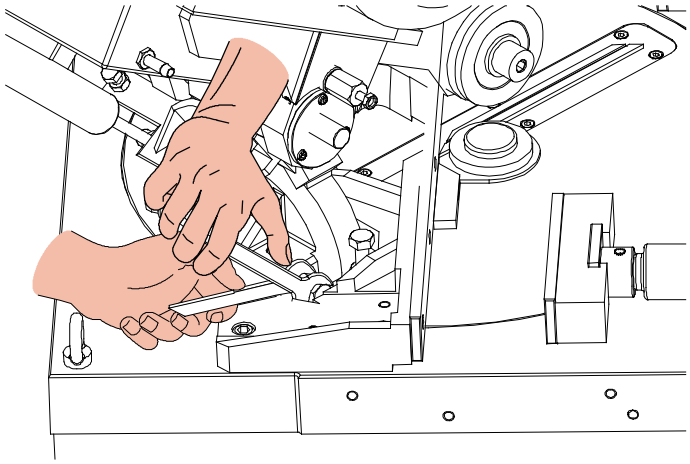


To adjust the 45° fixed point you will need a workshop goniometer or an instrument that can measure the exact angle of the disc shaft flange.

- loosen the handwheel M10 that locks the turntable;
- position the head at 45° (pull out the knob and turn it by half a turn to release the turntable);
- position the goniometer (or the graduated square) against the fixed vice jaw, adjacent to the disc shaft flange;



- slacken the nut, while holding the screw steady with an open- end wrench;
- in this position you can adjust the depth of the screw that acts as a stop for the turntable until the angle error is corrected;
- tighten the nut, while keeping the stop screw steady.

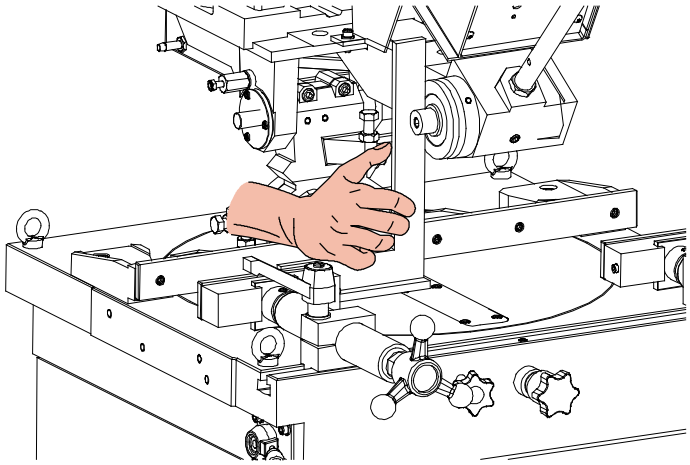


Repeat the operations for both the 45° right and the 45° left positions. Now check the values given on the graduated scale engraved on the turntable at the positions 0° and 45° right and left.

Adjustment of the perpendicularity to the cutting plane

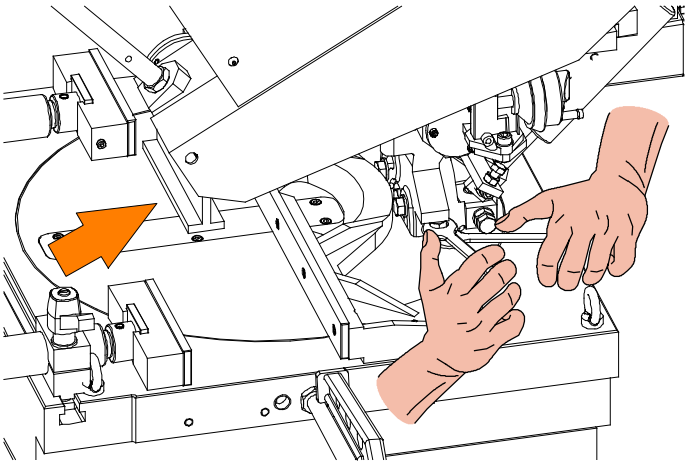
The perpendicularity of the blade to the work surface is of fundamental importance in obtaining straight cuts. This adjustment is carried out with the help of a workshop square, which should be placed adjacent to the fixed disc stop resting on the work surface.

- remove the blade so that the square can be rested against the disc shaft flange, position the square on the working table (which should be thoroughly cleaned beforehand) and rest it against the side of the disc next to the fixed vice jaw;

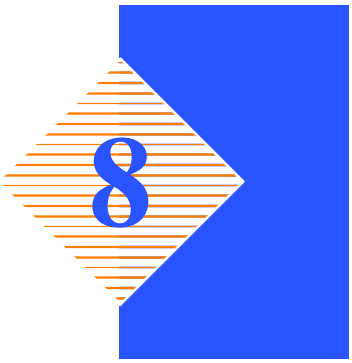


- by slackening the lock nuts on the adjustable stops located at the base of the head joint, you can tighten or loosen the stop nuts so as to adjust the perpendicularity of the disc with respect to the work table;

▶ as soon as the blade is perpendicular to the work table, tighten the two lock nuts; lastly check that the fixed disc- pressing flange is perpendicular to the square.



Maintenance and choice of consumables



PNF350- 2AV 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 originals.
- On completion of maintenance works, ensure that the replaced parts or any tools used have been removed from the machine before starting it up.

- Any behaviour not in accordance with the instructions for using the machine may create risks for the operator.
- Therefore, read and follow all the instructions for use and maintenance of the machine and those on the product itself.

General maintenance

Daily

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

▶ remove all swarf from the machine (Do not use compressed air or fluffy rags);

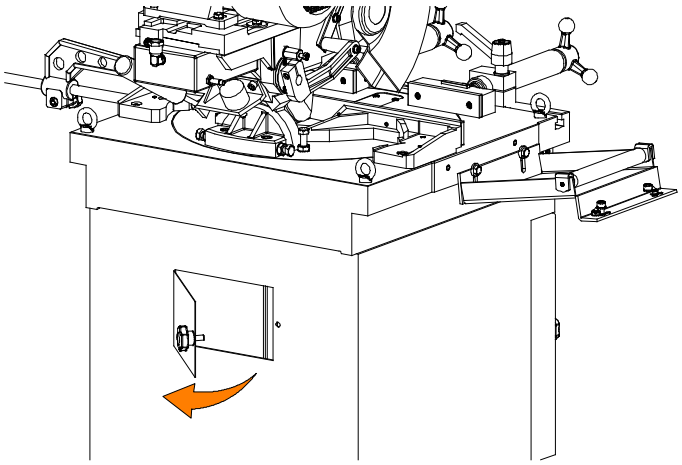
▶ top up the lubricant/coolant fluid level;

▶ check the wear of the blade and change if necessary.

Weekly

The weekly maintenance operations are as follows:

▶ remove all swarf from the machine, including chips that have fallen into the area underneath the turntable;



▶ clean the vice and lubricate all the joints and sliding surfaces using a good quality oil.

Monthly

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

▶ check that the blade is perpendicular to the work surface; if necessary, adjust as described in cap. 7;

▶ check that the blade is at right angles to the workpiece rest shoulder; if necessary, adjust as described in cap. 7;

▶ check that the 0° notch on the fixed work table is in line with the graduation on the turntable. If not, adjust using the eccentric pin, then re- check that the blade is perpendicular to the work surface and at right angles to the shoulder.

- check the precision of the 45° right and 45° left stops. If they are adjusted incorrectly, follow the procedure described in cap. 7;
- check the tension and wear of the transmission belts.

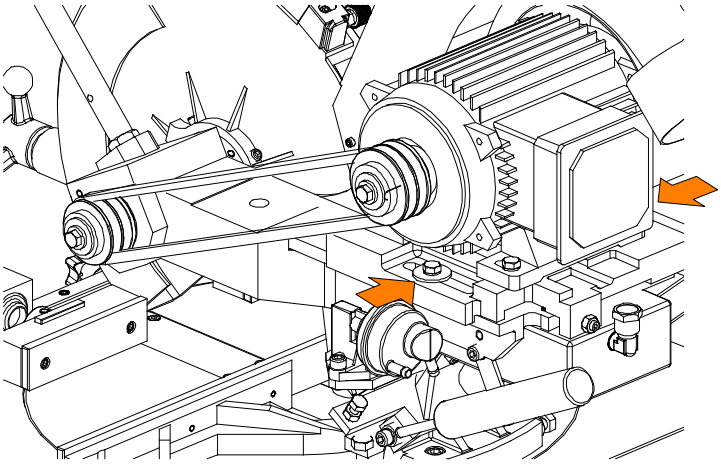
Maintenance of working parts

During maintenance work on the **PNF350- 2AV**, special attention should be paid to operating units such as the transmission belts.

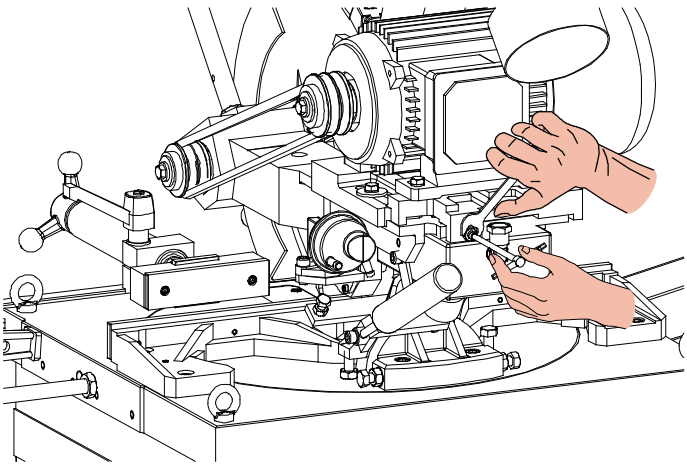
Transmission belts

Tightening the belts:

- after the first 100 working hours, remove the transmission belt protective cover and check the tension and wear of the belts. Repeat the operation after every 500 working hours of the machine.
- To tighten the transmission belts: first remove the transmission belt protective cover, slacken the nut shown in the diagram and the one opposite to it which is not in view;



- then loosen the nut located below the motor and adjust the grub screw to tighten the belts; finally tighten up the locking nut and the two previously slackened bolts located at the side of the motor.



Consumable materials

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

Oils for lubrication/coolant liquid

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

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

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

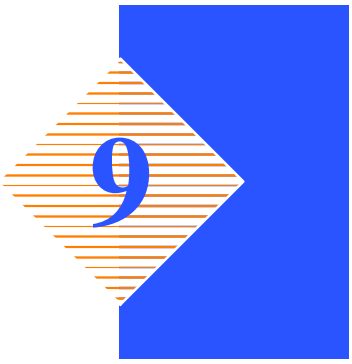
Oils for spray mist system (optional)

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

UNIST Coolube 2210 - FUCHS Plantocut Micro Plus 27

- tank capacity Lt. 1

Cutting speed and choice of tools



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

Cutting speed

PNF350-2AV and PNF350-2AV MA single-phase/three-phase with one speed

The basic version with 2- pole motor, enables this cutting speed:

- 1st speed = 3400 rpm

PNF350-2AV and PNF350-2AV MA three-phase with two speeds

The basic version with 2/4- pole motor, enables these cutting speeds:

- 1st speed = 1700 rpm
- 2nd speed = 3400 rpm

Choice of blade

The different types of cutter disks that the **PNF350- 2AV** can mount must, however, have the following main characteristics.

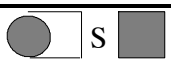
- Fine tooth pitch: for thin wall materials such as sheet steel, tubes and profiles;
- Coarse tooth pitch: for large cross-sections; for soft materials (aluminium alloys and soft alloys in general).

Tooth pitch

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

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

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

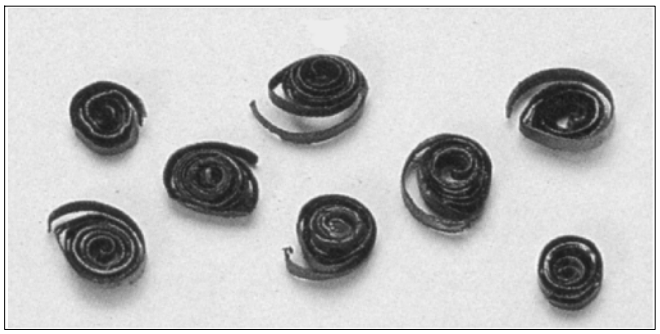
Choice of tooth pitch T as a function of cross- section to be cut for light alloy solid pieces and profiles			
			
S in mm.	Pitch T	S and sp in mm.	Pitch T
10	4	10 sp = 0,5	3
30	6	30 sp = 1,5	4 - 5
50	8	50 sp = 2,5	5 - 6
70	10	70 sp = 3,5	6- 7
90	12	90 sp = 4,5	7 - 8
130	16	130 sp = 6,5	8

KEY:
S = diameter or width of the solid piece to be cut in mm;
sp = thickness of the wall to be cut in mm;
T = tooth pitch in mm.
A larger pitch should be chosen when, as a result of the shape of the piece to be cut, the cross- section at any given point exceeds the average cross- section given above.

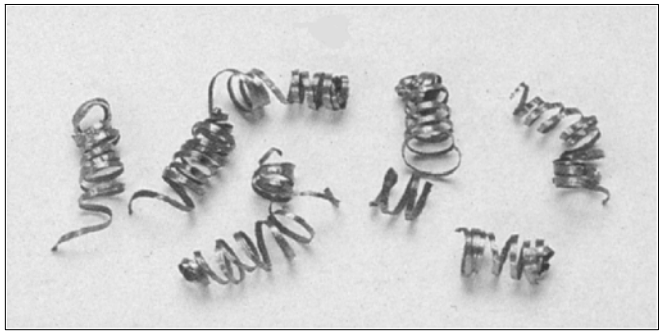
Types of swarf:

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

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



- Long coils of swarf indicate ideal cutting conditions.



Cutting and feeding speed

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

Lubricant/coolant

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

Blade structure

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

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

BLADE BODY	*C*	*Cr*	*W*	*Mo*	*V*	*Co*	*HRC*
71 Cr1	0,71 - 0,78	0,20 - 0,30	0,40 - 0,70				43+/- 1

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

Types of blades

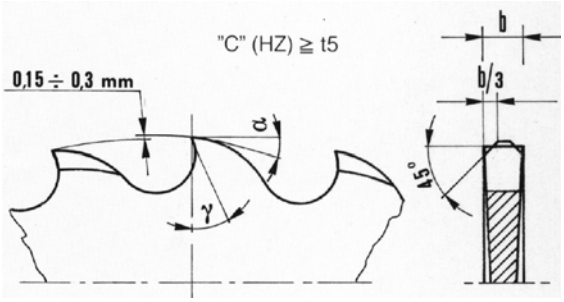
The blades fitted to the **PNF350- 2AV** have dimensions 350 x 32 x 3.4 mm and are of HM hard steel type since the machine is to be used for cutting non- ferrous materials. In addition to the size and pitch of the teeth, however, the blades also have different geometric characteristics in accordance with their particular use:

- tooth cutting angle, which may be negative or positive;
- tooth sharpening, which in this case may be BW with an alternate raked tooth or C with a roughing tooth raked on both sides and a non-raked finishing tooth;

- tooth pitch, the distance between the crest of one tooth and the crest of the next tooth (tooth pitch = T).

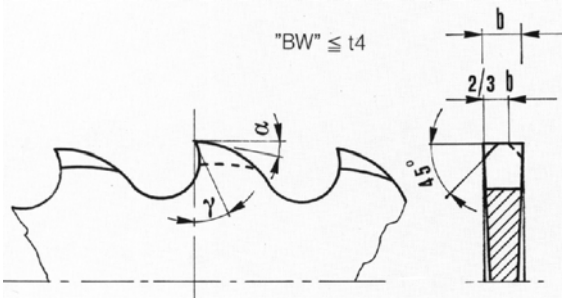
Tooth shape

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



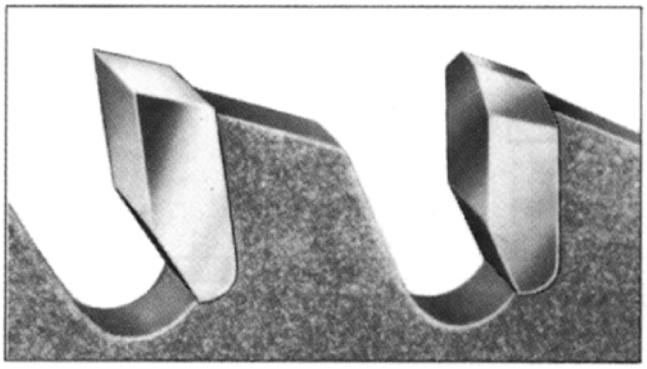
Coarse toothing with roughing tooth and finishing tooth. Used in saws with pitch greater than or equal to 5 mm for cutting ferrous and non- ferrous materials with solid or solid- profiled sections.

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



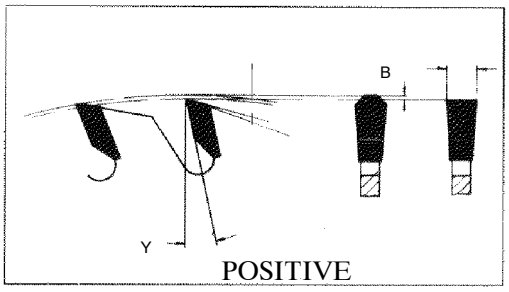
Toothing generally used on cutting- off machines for cutting ferrous and alloy materials with tubular and profiled sections.

POSITIVE AND NEGATIVE CUTTING ANGLES
The cutting angle ϒ may vary from positive to negative depending on the cutting speed, the profile and the type of material to be cut.



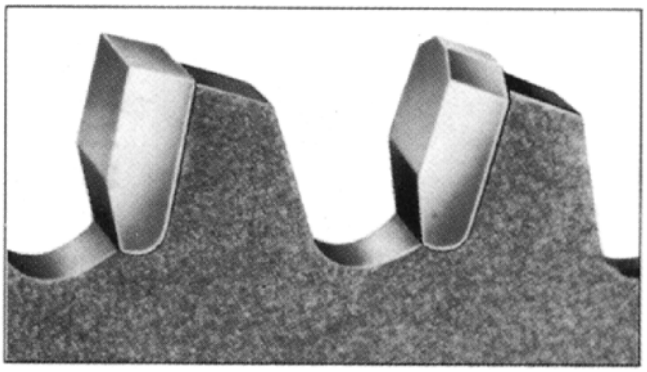
A positive angle γ determines better penetration of the tool and hence lower shear stress and greater ease of sliding for the swarf over the cutting edge. On the other hand, the cutting edge has lower mechanical resistance, so as the breaking load of the material to be cut increases, the cutting angle decreases from positive

until it becomes negative so as to offer a cutting edge with a larger resistant section.

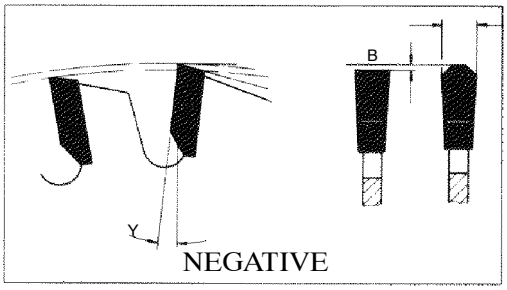


POSITIVE

Short swarf material such as brass, bronze, aluminium and hard cast iron require smaller cutting angles because the swarf becomes crushed immediately and the rake angle has little effect during the cutting stage.



The **PNF350- 2AV** uses discs with positive cutting angles for cutting solid materials and with negative cutting angles for cutting hollow profiles. This is because, as a result of the high cutting speeds (3400 rpm), even with non- ferrous materials the tool ”strikes” against the wall of the profile to be cut several times, thus requiring a cutting edge with a larger resistant section.

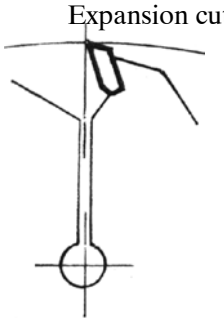


NEGATIVE

Circular saws can also be characterised by other parameters such as the whine reduction feature, which cuts down noise at high speeds, or expansion, which compensates for the pushing of swarf inside the cutting edge, thus reducing the thrust on the walls of the material to be cut.

Whine reduction feature

Expansion cut



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

Hollow section D S					Solid section S				
D	D 300	D 350	D 400	D 450	S	D 300	D 350	D 400	D 450
10	84				10	27			
20	84				20	27			
30	84	96			30	27	84		
40	84	96			40	27	84		
50	96	96	120	112	50	84	84	96	96
60	96	96	120	112	60	84	84	96	96
70	96	96	120	112	70	84	96	96	96
80	96	112	120	112	80	84	96	96	96
90	96	112	120	112	90	84	96	96	96
100		112	120	112	100		96	96	96
110		112	120	112	110			96	96
120		112	120	112	120				96
130			120	112	130				96
140				112	140				96

Blade selection table with respect to cutting speed and downstroke speed

RECOMMENDED CUTTING PARAMETERS	CUTTING ANGLE α	CUTTING ANGLE γ	Cutting section (in mm)																	
				10-20			20-40			40-60			60-90			90-110			110-130			130-150	
			T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'	T mm	Vt m/1'	Av mm/1'
Aluminium and alloys R = 200- 400 N/mmq	22	10	6	1100	1800	8	1000	1700	12	900	1600	16	800	1400	18	700	1300	20	600	1100	20	500	900
Aluminium and alloys R = 300- 500 N/mmq	20	8	5	200	400	7	180	400	10	160	350	12	160	300	14	140	300	16	130	250	16	130	250
Copper R = 200- 350 N/mmq	20	10	6	400	600	8	350	600	11	300	550	14	250	500	17	200	500	18	150	500	20	120	400
Hard bronze R = 600- 900 N/mmq	15	8	5	400	800	7	400	700	10	350	700	12	300	600	14	250	600	16	200	500	18	150	400
Phosphor bronze R = 400- 600 N/mmq	12	8	4	120	160	8	110	150	8	100	140	10	90	130	12	70	110	14	60	100	16	50	90
Brass R = 200- 400 N/mmq	16	16	5	600	1100	6	600	1100	8	550	1000	12	550	900	16	500	900	18	500	800	18	450	800
Alloyed brass R = 400- 700 N/mmq	12	16	5	500	700	7	400	600	10	350	600	12	350	500	16	300	500	18	300	400	18	200	400

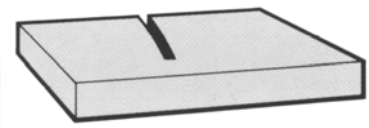
Recommended lubrificants — Emulsion - cut- — Cutting oil

Troubleshooting

10

This chapter describes the inspection and troubleshooting procedures for the **PNF350- 2AV**. 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 TROUBLE-SHOOTING BLADE AND CUTTING PROBLEMS, while the second TROUBLESHOOTING section concerns troubleshooting general machine operating faults. Taken together they form a comprehensive troubleshooting guide which will enable you to follow a methodical procedure for solving any problem.

Troubleshooting blade and cutting problems

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

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

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

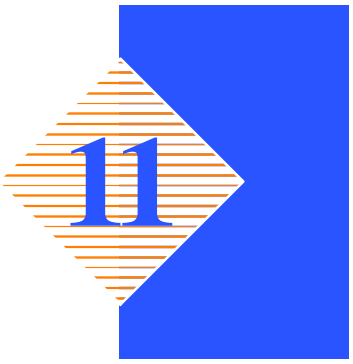
PROBLEM	PROBABLE CAUSE	SOLUTION
Rapid tooth wear 	◗ Material defective	☞The materials may present altered zones either on the surface, such as oxides or sand, or in section, such as under- cooled inclusions. These zones, which are much harder than the blade, cause the teeth to break: discard or clean these materials.
Broken blade 	◗ Head speed too high	☞Reduce head speed.
	◗ Teeth in contact with material before starting the cut	☞Always check the position of the blade before starting a new job.
	◗ Insufficient coolant	☞Check the coolant level and clean piping and nozzles.
	◗ Vibrations	☞Workpiece vibrates in the vice: check that the slide is regulated correctly; check the clamping pressure and if necessary increase.

Troubleshooting machine faults

PROBLEM	PROBABLE CAUSE	SOLUTION
For version MA: Cutting vice will not close or will not open	◗ VM: Cutting Vice Valve	☞Make sure the valve is operating correctly, replace if necessary.
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.
For version MA: Cutting vice will not close or will not open	◗ 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.

PROBLEM	PROBABLE CAUSE	SOLUTION
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.
	◗ Key operated safety switch	☞Check that the phases are present both on the input and output. Otherwise replace.
	◗ Contactor	☞Check that the phases in it are present both on the input and output, that it is not jammed, that it closes when powered and that it is not causing short circuits. Change if any of these problems are found.
	◗ Thermal relay	☞Make sure it is closed, ie check that the phases are present in input and output, that it is not causing short circuits and responds when the reset coil is closed. If it has tripped to protect the motor, check that the absorption values are balanced and do not exceed the motor's rated values. Change if necessary.
	◗ Motor	☞Check that it has not burnt out, that it turns freely and that there is no moisture in the connection terminal board box. The winding can be rewound or replaced.

Accessory Installation

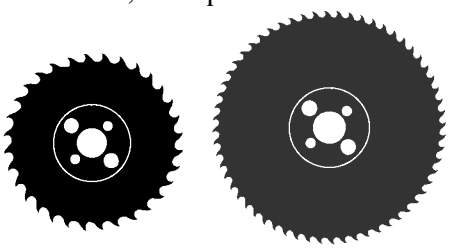


This chapter provides a list of the available accessories that can be fitted to this machine, along with assembly instructions.

Circular blade

The machine fits:

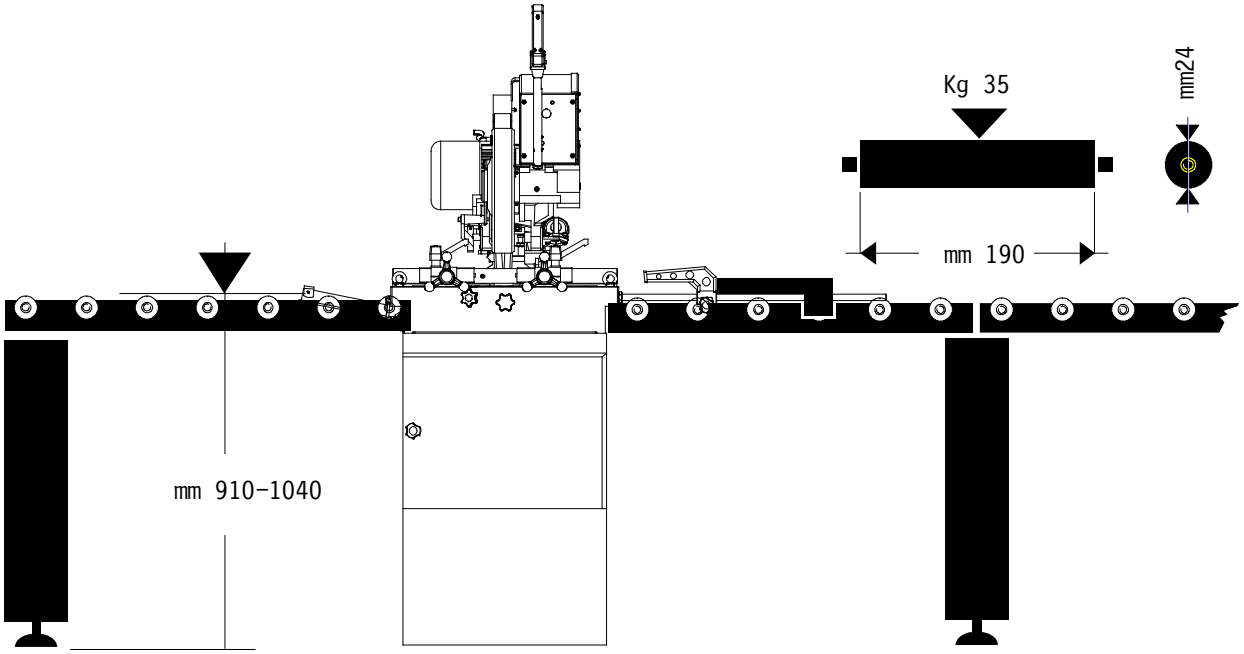
- circular blade HM Ø 350x32x3,4 for profiles.



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

Roller table

- K35 roller table module for feed side, 1500 mm;
- K35 roller table for discharge side, 1500 mm;



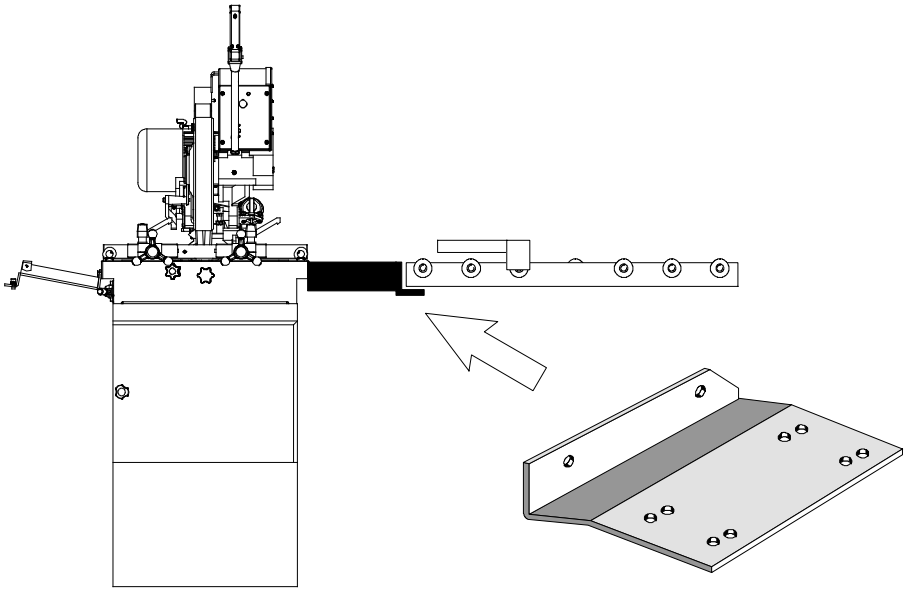
- K35 roller table for discharge side, 3000 mm;
- K35 roller table for discharge side, 4500 mm;
- K35 roller table for discharge side, 6000 mm.
- To fit the roller loading platform on the loading side, the machine has a bar-support arm that one end of the roller-way can be positioned on and then screwed in place.
- To install the roller loading platform on the discharge side an adapter must be used, with or without a support, as explained in the paragraphs that follow.

Adattatore pianale a rulli lato scarico

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

▶ remove the two TE screws from the right side of the slideway;

▶ attach the adapter and secure it in place with the screws removed previously.

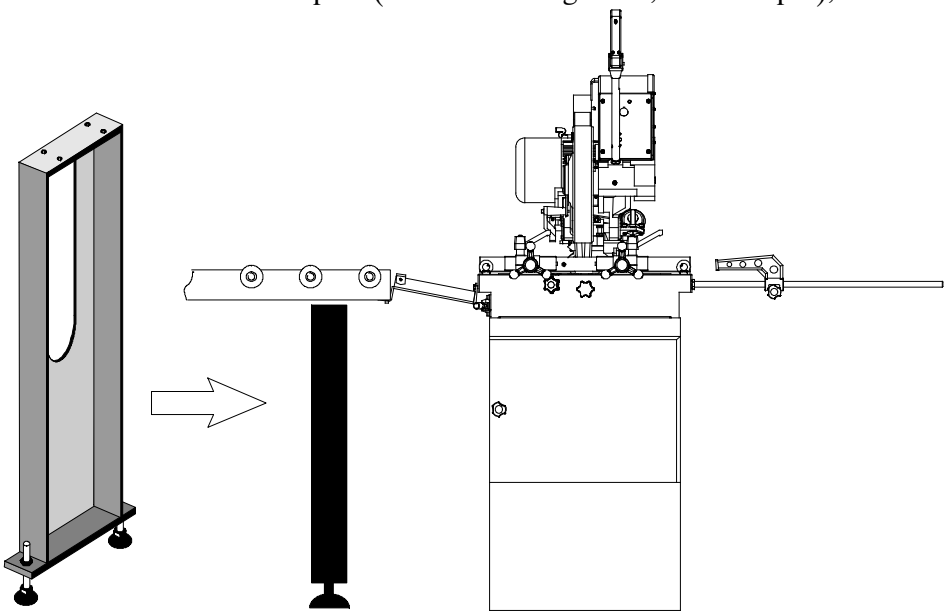


▶ Attach the outfeed rolling deck by fixing it with the screws supplied.

Feed side roller table support

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

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

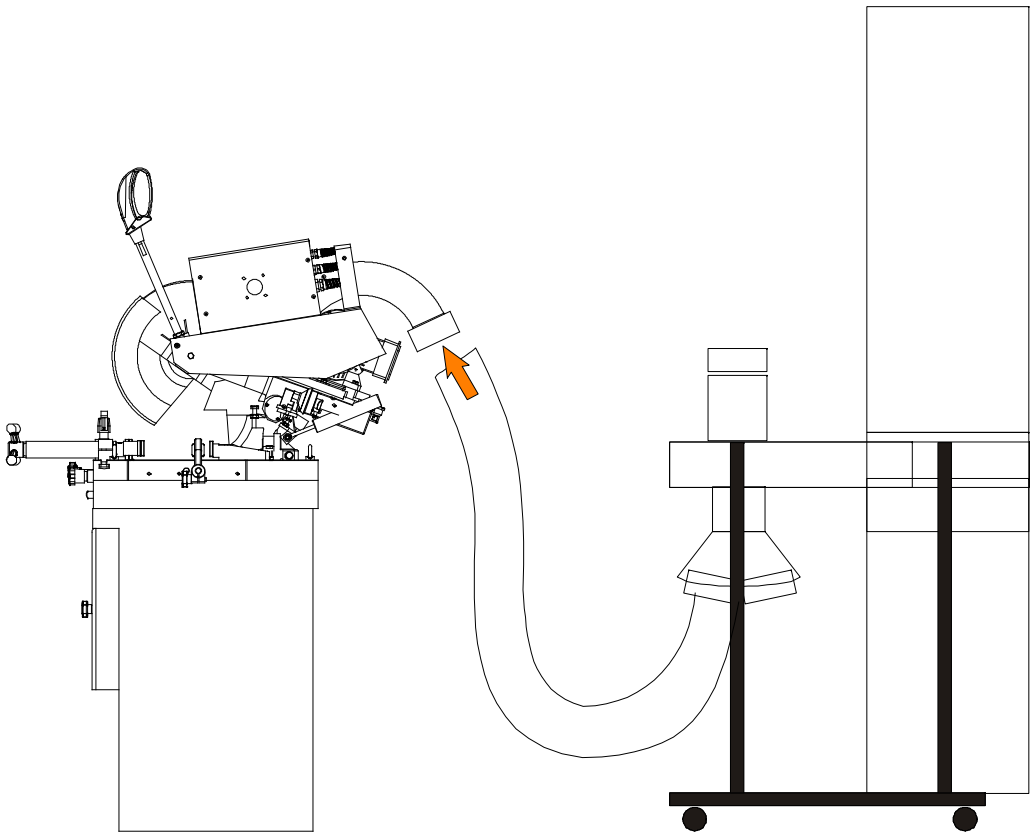


▶ position the support to correspond with the holes on the base of the trailer and reconnect to the adapter.

Chip aspirator

This device is used to aspirate and filter aluminum chips from the sawing machine. The operations needed for the assembly are the following:

- ▶ assemble the aspirator as described in the documentation enclosed to the aspirator;
- ▶ connect the aspirator hose to the chip conveyor projecting from the band cover fastening it with a metal strip;



- ▶ to use it while cutting, switch it on before starting the machining.

Warranty

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

This warranty, in its entirety, does not cover maintenaince items, including but not limited to lubricating grease and oils, filters, V- belts, saw blades, etc, nor any items herein which show sign of neglect, overloading, abuse, accident, inadequate maintenance or unauthorized altering.

Liability or obligation on the part of Hyd- Mech for damages, whether general, special or for negligence and expressly including any incidental and consequential damages is hereby disclaimed. Hyd- Mech's obligation to repair or replace shall be the limit of its liability under this warranty and the sole and exclusive right and remedy of the user.

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