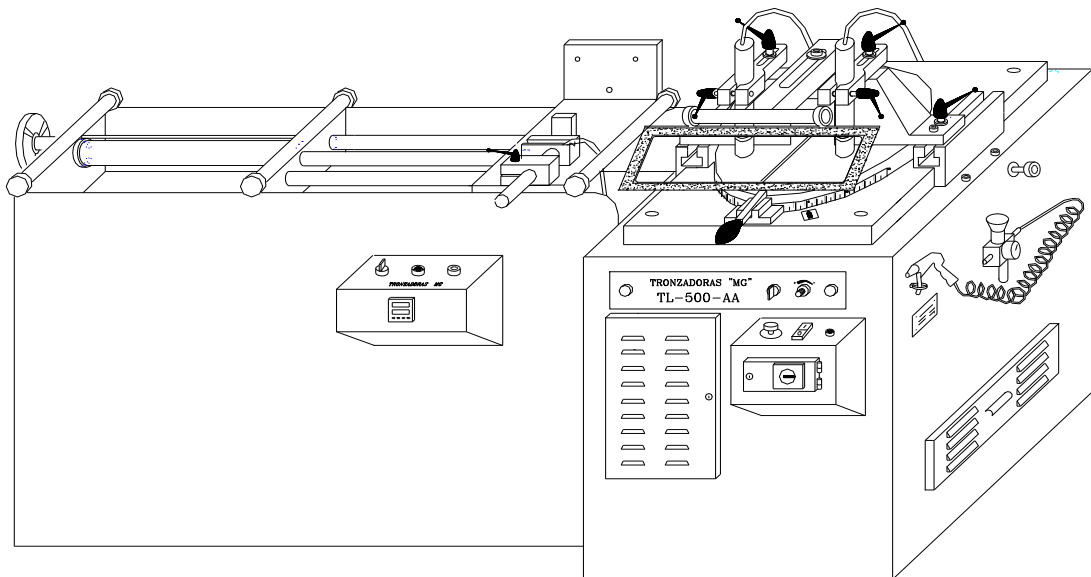


# **Huvema<sup>®</sup>**

## **Aluminium saw**

### **TL - 500 - AA**



# INSTRUCTION MANUAL

## 1.- Introduction.

## 2.- General data.

Brand name and machine type.

Set of standards applicable to the project and machine design.

## 3.- Technical data.

## 4.- Instructions concerning transport, maintenance and storage.

## 5- Installation and commissioning instructions.

- Installation instructions.
- Connection to power supply.
- Instructions regarding saw blade assembly.
- Cooling agent for sawing.
- Hydraulic oil.

## 6.- Operation Instructions.

- Proper and improper use.
- Function of the controls.
- Operating mode. Sequence of operation.
- Potential problems. Potential solutions.
- General operating standards and safety inspections.

## 7.- Recommendations and maintenance.

- Type and periodic overhaul intervals.
- Recommendations of the manufacturer.

## 8.- Drawings and diagrams.

- General diagram.
- Electric diagram.
- Pneumatic diagram.
- Disassembly and nomenclature.

## 1.- INTRODUCTION.

The current instruction manual has been realised in accordance with the requirements of the set of standards in compliance with the Machines 89/392/EEC guideline and the consecutive modifications.

The instruction manual constitutes an integral part of the machine and should be consulted before, during and after commissioning of the machine as well as every time you consider it necessary, honouring its contents concerning each and all the corresponding parts.

This is the exclusive way to obtain the fundamental objectives, which are laid down in the basis of this manual, such as avoiding accident risks and optimising the performance of the machine as much as possible.

This manual concentrates thoroughly on various aspects regarding safety and prevention of accidents at work while operating the machine, thereby emphasising the information that is of major importance to the user.

ATTENTION: READ THIS MANUAL CAREFULLY BEFORE INSTALLING THE MACHINE.

## 2.- GENERAL DATA

### Brand name and machine type.

Model : ----- **TL- 500 - AA**

Serial number :-----

Year of fabrication :-----

### 3 .- TECHNICAL DATA.

- Diameter of the saw blade 500 mm.
- Rotation setting of the table at 60° right and left-hand side.
- Pneumatic pressure cylinders.
- Working pressure 6 atm.
- Clamping pieces for rapid security by means of a handle.
- Motor III 220/380V II 220V of 4 **HP**.
- Sawing speed 52 m/sec.
- Built-in lubricating system.
- Maximum sawing height **180 mm**.
- Maximum feeding length 500 mm.
- Dimensions.

Length -----	2200 mm
Width -----	1100 mm
Height-----	1500 mm
Weight-----	500 Kg.

### 4.- INSTRUCTIONS REGARDING TRANSPORT AND STORAGE.

- In order to guarantee a safe movement and transport it is recommended to use a lift truck for internal transportation or a mobile crane.

Store in vertical position.

Do not stack up.

In case the machine is kept in storage for a long period, it should be greased periodically.

Do not store machine outdoors.

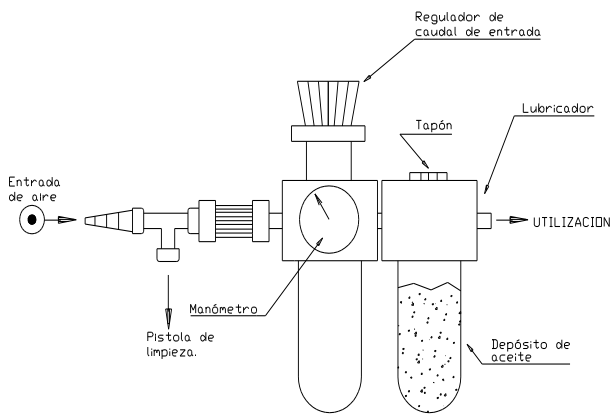
## 5.- INSTRUCTIONS FOR INSTALLATION AND COMMISSIONING.

### - Installation instructions.

Prior to installation, initially check that no damage was inflicted to the machine during transportation. In the event of any damage, however, it must be brought to the manufacturer's notice immediately.

The machine must be set up on a stable foundation and as much as possible on a horizontally flat surface in order to reduce the vibrations during operation and functions as per the parameters adjusted beforehand.

### - Connection to the power supply.

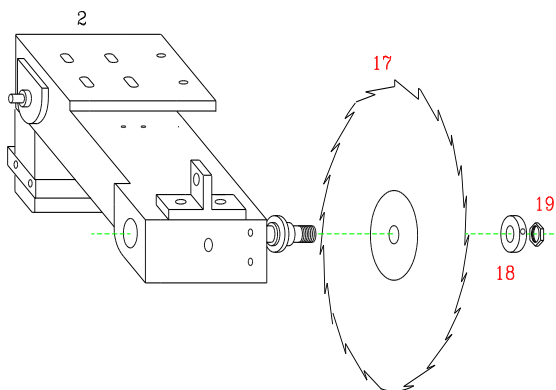


Determine if the voltage supply corresponds to the designation on the motor plate. Connect the cable to the line by means of a plug adapted to the characteristics, take into consideration the colour codes of each of the cables, pay special attention to the grounding of the cable.

Once the machine has been connected, please check that the direction of rotation of the saw blade corresponds to the direction of the arrow situated on the left-hand side of the machine.

Check that the **air pressure** is appropriate ( **6 atm.** ) for which purpose the pressure gauge of the machine may be used.

### - Instructions concerning the saw blade assembly.



In order to mount the saw blade, the operating switch should be turned off, access the inner part of the machine through the front door, fix it on the shaft of the tipping gear (nº2), place the washer nº18 and centre it by means of a rod, press the nut (nº 19) as indicated on the drawing. Make sure that the direction of the teeth of the saw coincide with the direction of rotation of the motor. Bear in mind that the maximum diameter of the saw blade is 500 mm.

**- Cooling agent for sawing.**

In order to fill the cooling agent for sawing purposes, you should turn off the operating switch and fill with **PURE CUTTING OIL NOT EMULSIFIABLE IN WATER WITH VISCOSITY OF ISO VG 10-16.**

**- Oil atomiser for pneumatic components and filter.**

The pneumatic oil tank should be filled by means of a lateral screw on the tank and fill it with PNEUMATIC OIL OF A VISCOSITY OF ISO VG 16 or similar. Use the same oil for the lubricating device situated in the group of pneumatic components.

**6.- OPERATION INSTRUCTIONS.**

**- Proper and improper use.**

Manual cross-cut saw for cutting aluminium, brass, copper, bronze, etc.

It is prohibited to saw other materials with this machine; if this is done regardless, it may cause damage to the machine and jeopardise the safety and health of the operator.

We cannot be held liable for damages or accidents associated with improper use of the machine.

-

**Function of the controls.**

**FRONT SIDE OF THE MACHINE**



Pilot lamp of the main switch. Green colour.



Push button switch to start/stop the saw blade. Start, green colour symbol "I" button; stop, red colour "O" button.



Self-blocking emergency stop. Stops the machine completely, keeping the material clamped by the pressing cylinders.



Drive of pressing cylinders. Only MANUALLY.



Two green push buttons to raise the saw blade. Only MANUALLY, and with the pressing cylinders lowered



Speed regulator for raising saw blade.

**FEED GUIDE**



Selector switch for mode of operation:

O - MANUALLY

I - AUTOMATIC

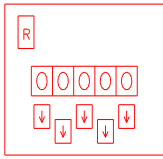


Green push button to start the material feed.




Red push button to stop material feed.

Material parts counter with pre-selection.



Reset button to return to the chosen number of cuts.

In order to change the selection it is necessary to keep the reset button pressed and at the  same time press the push button of the desired digit.

### - Operating mode. Sequence of operation.

With the switch of the operation modes in MANUAL POSITION, the pressing cylinders and the saw blade may be operated by means of the push buttons at the front side of the machine. It is recommended not to use materials with a too high feeding speed of the saw blade, because this reduces the longevity of the saw blade and the cutting quality enormously. The machine in MANUAL POSITION also counts the number of cuts, although it does not stop the saw blade when reaching the zero digit.

In order to operate the feeder, the following procedures must be complied with:

1. Adjust the desired sawing height by means of the limit switch located in the inner part of the machine, always with the operating switch turned off.
2. Adjust the feeding length with the guiding wheel of the feeder. The read-out appears on the counter located in the spindle.
3. Adjust the pressing cylinders of the machine and those of the clamping device of the feeder to the material, so that a space of no more than 5 mm is realised. **It is important that the microswitch of the present material (placed in the clamping device of the feeder) is pressed, and that the piece counter does not indicate zero. In contrast, it will not be possible to either have the saw blade turn or to put the feeder in operation.**
4. Place the rod on the feeder, so that it passes at a distance of approximately 10 mm from the groove of the saw blade.
5. Assemble the operating switch.
6. Start operating the saw blade.
7. Choose the operating procedure, AUTOMATIC.
8. Start the operating cycle by pressing the start button of the feeder.



The machine will stop automatically when the material is finished when pressing the stop button, the emergency stop, the piece counter reaching the number zero, changing to MANUAL PROCEDURE, or raising the protection hood.

When working with the feeder it is very important to regulate the operating speed in order to avoid shocks at the end of the operating procedure, and that no sliding of the material will occur, due to brusque movements. For this it is necessary to get access to the electric valves through the backdoor of the feeder, and adjust the connecting pieces of the electric valve nº4 . By setting the nearest connecting piece at the electric connector, the advancing speed of the material is reduced, and by setting the other one, the reversing speed is reduced.

**While the feeder is in operation, always keep the protection hood lowered**

**- Potential problems. Potential solutions.**

PROBLEM	POTENTIAL SOLUTION
The machine does not function at all.	Check that there is tension at the inlet and outlet of the operating switch  Check the fuse of the electrical circuit 2A  Check the condition of transformer and automation switch and feeding 24Vdc
The feeder does not operate properly.	Check the condition of all the end switches, and position of said switches Status of the electric valves Status of the feeder encasing and tension on the line of said feeder encasing ( 24 V dc)  Pressure on the regulator ( 6 ato ) air leaks
The disc does not rise properly.	Oil level in the hydraulic-pneumatic converter Pressure on the filter - regulator  Advancement too high  Rising push buttons
The feeder operates occasionally.	Pressure on the filter - regulator  Feeder levelling. It has two intermediate supports for its adjustment  Status of the advancing cylinder. Release it from the cart and check if it operates smoothly.

**- General operating standards and safety checks.**

- Prior to using the machine, check that all the safety devices function properly and check that the movable parts of the machine are free to move, that there are no damaged parts and that all the parts of the machine are properly secured enabling the machine to function perfectly.
- Do not leave the keys of the doors in the machine.
- The use of gloves and protective goggles is recommended.
- Use appropriate working clothes, which is fully buttoned.
- Before starting operation, the operator must make sure that he has removed the tools or keys used for maintenance or adjustment.
- In case of fire, the power supply should be switched off immediately and a dry chemical fire extinguisher should be used.

***NOTE : OPENING OR LEAVING THE PROTECTION HOOD OPEN WHILE OPERATING THE MACHINE IS STRICTLY PROHIBITED AS WELL AS DEACTIVATING THE SAFETY SYSTEMS.***

**7.- RECOMMENDATIONS AND MAINTENANCE.**

**- Type and periodical overhaul.**

- A thorough acquaintance with the machine by the operator ensures the best possible inspection of the machine. If any problem or defect is discovered, the work should be stopped and the problem must be brought to the immediate attention of and solved by qualified personnel.

*LUBRICATION CHART*

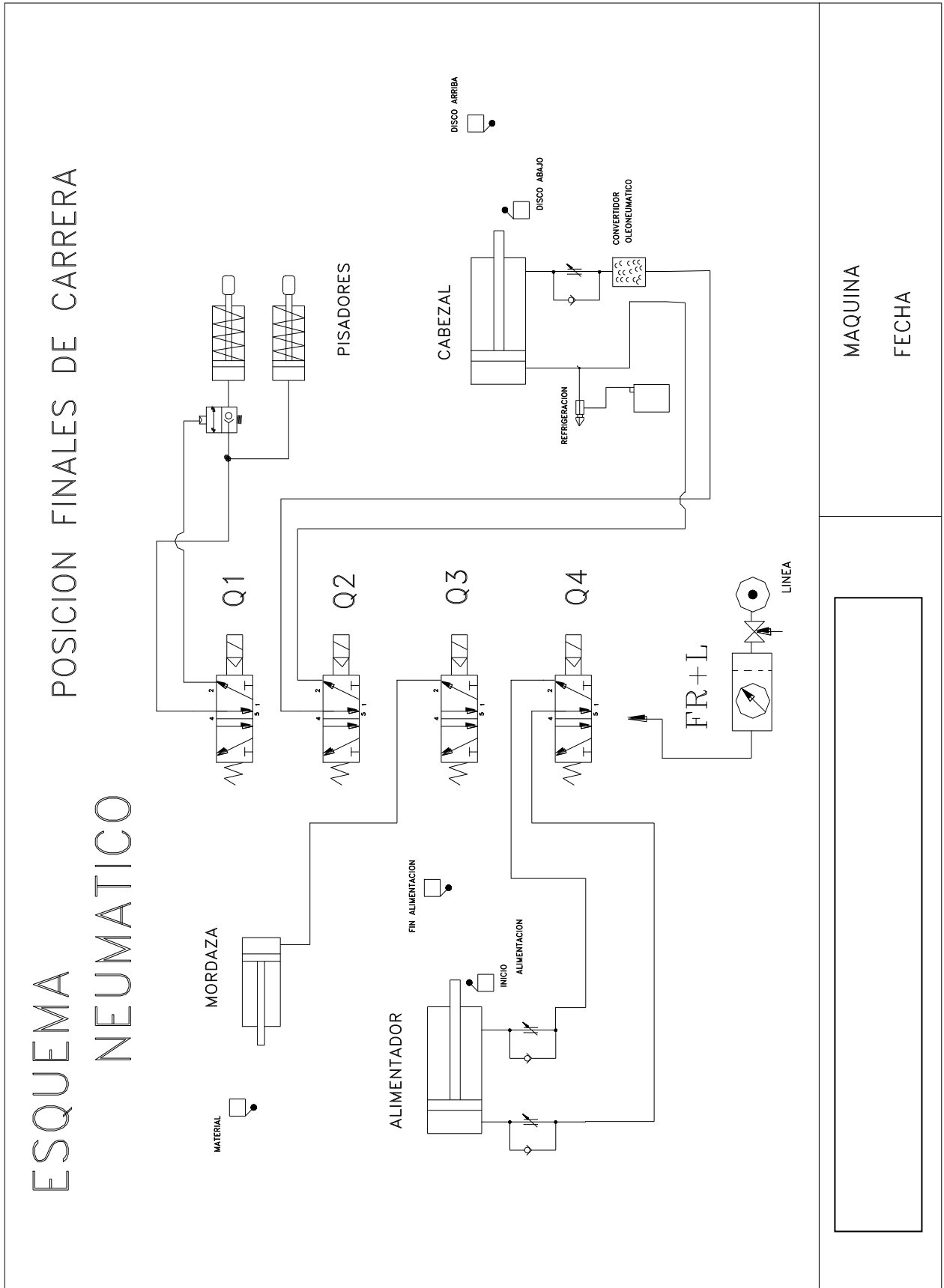
LUBRICATION POINTS	TYPE OF GREASE/ OIL	INTERVAL
Slide guides	OIL SAE 30	WEEKLY
Rotary disc n° 16 Fig (8.4)	OIL SAE 30	WEEKLY
Bearings n° 14 Fig (8.5)	BEARINGS GREASE	YEARLY
Feeder rods movement	OIL SAE 30	WEEKLY

**- Recommendations of the manufacturer.**

- ⇒ Clean the machine periodically, and especially the feeder. It is the only way to ensure a proper operation of the machine .
- ⇒ Before carrying out any intervention on the electric equipment, disconnect the feeding plug.
- ⇒ When using extension cords, make sure that the used cable is from the appropriate section ( 4 x 1'5 ).
- ⇒ Whenever you need to change any parts, use original ones and try to use the oil recommended by the manufacturer.

**In the event of questions or any doubts, do not hesitate to consult the manufacturer**

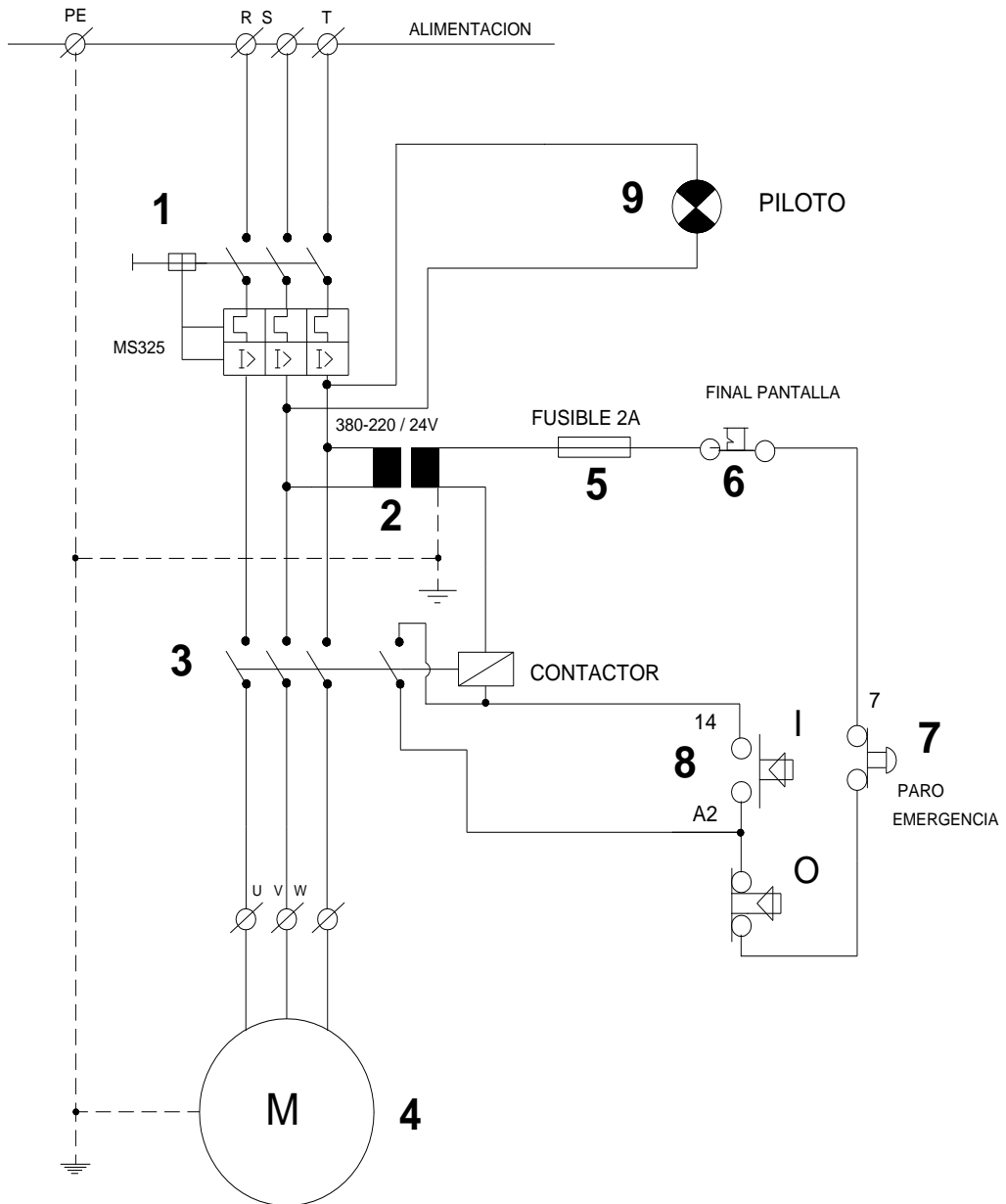
8.0 PNEUMATIC DIAGRAM



8.1 – Electrical diagram.

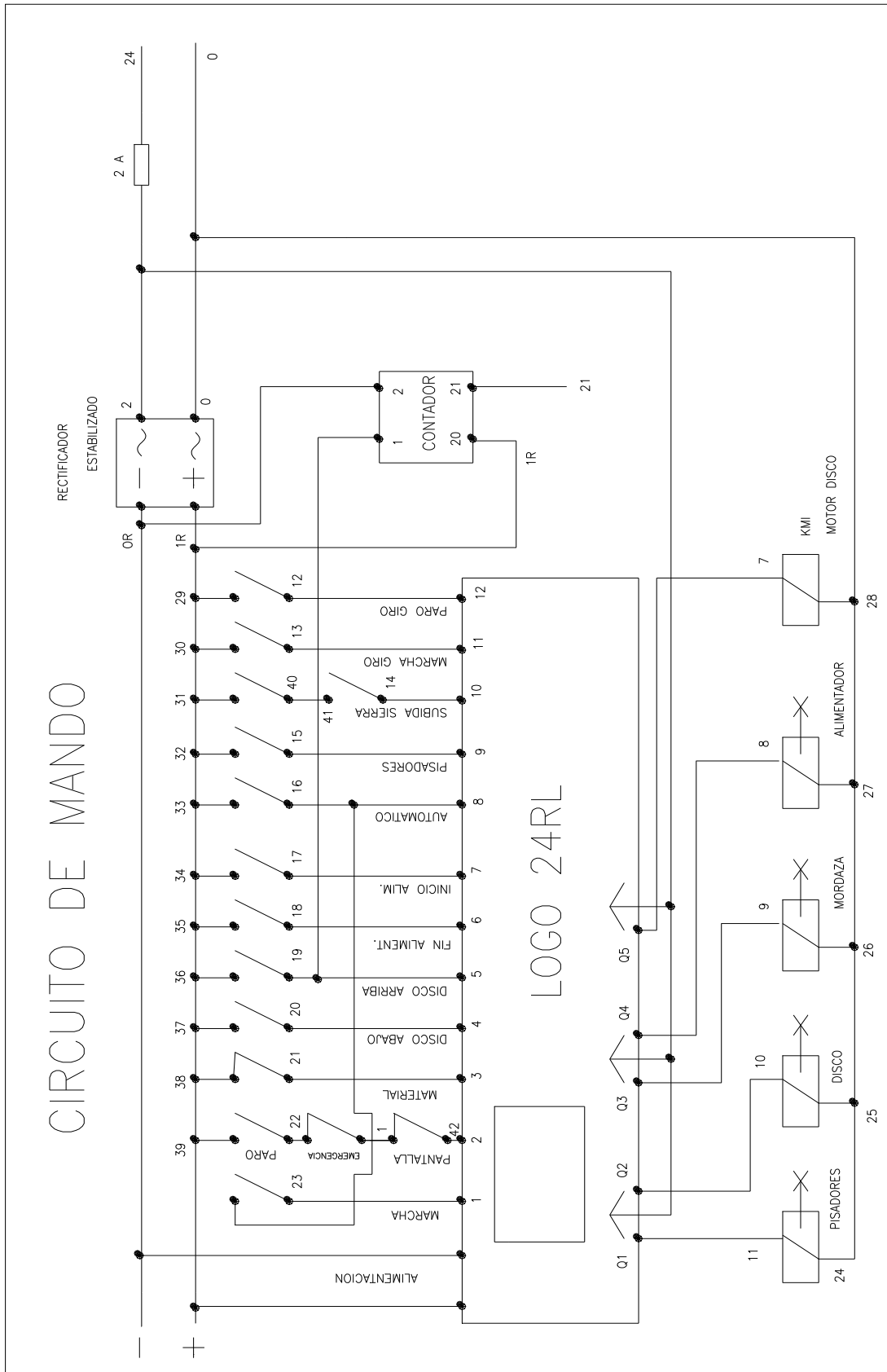
THREE-PHASE

TRIFASICO



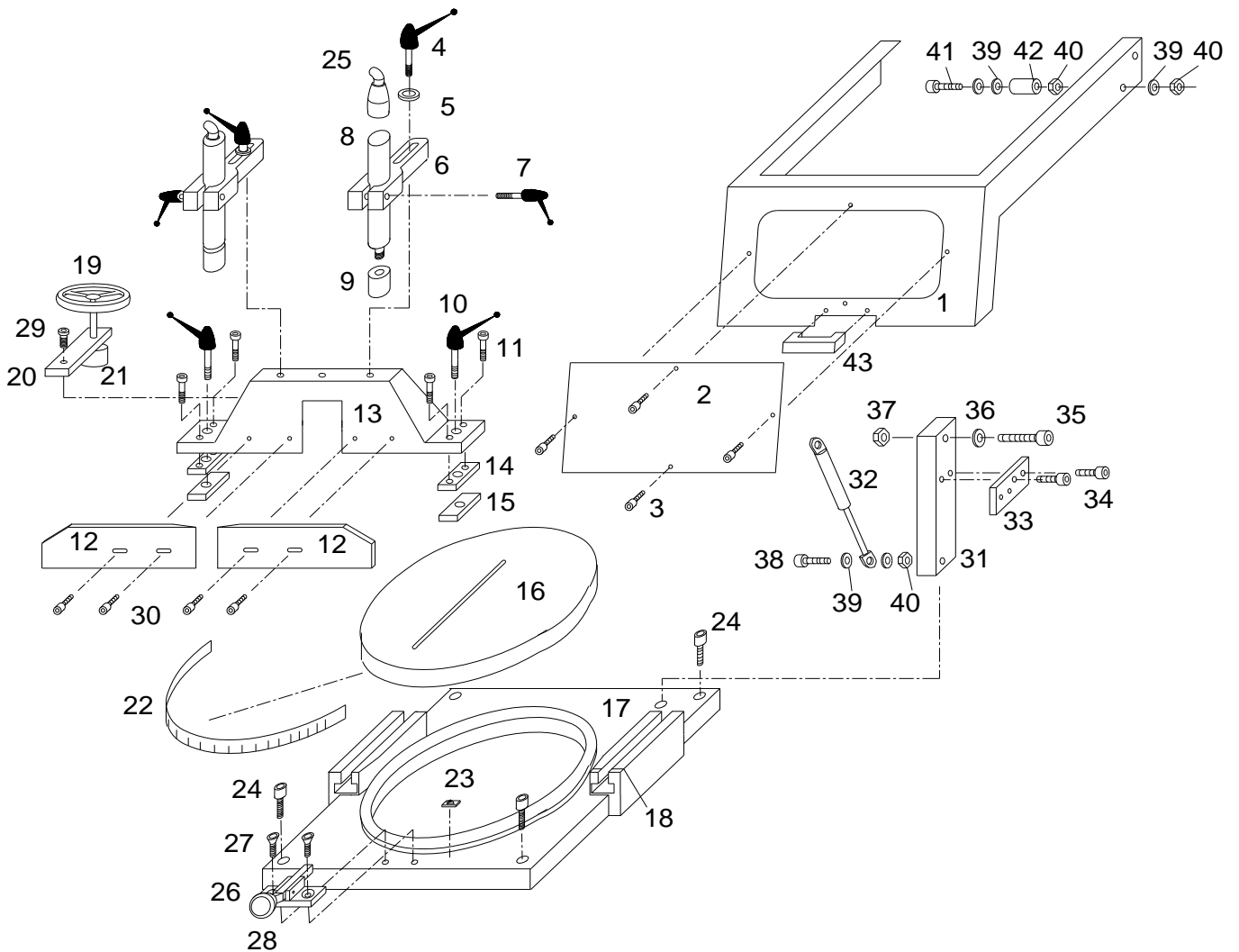
Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE
1	MOTOR SAFETY SWITCH 16A	E0000005	6	HOOD LIMIT SWITCH	E0000025
2	TRANSFORMER 40 VA 24V	E0000014	7	EMERGENCY STOP	E0000010
3	RELAY SWITCH 24 V 50/60 HZ	E0000034	8	STOP-START PUSH BUTTON	E0000011
4	TRI-PHASE MOTOR 4 HP 220V/380V	20500022	9	GREEN PILOT LAMP 380 V	E0000017
5	FUSE 2A	E0000024			

### 8.2 ELECTRIC DIAGRAM



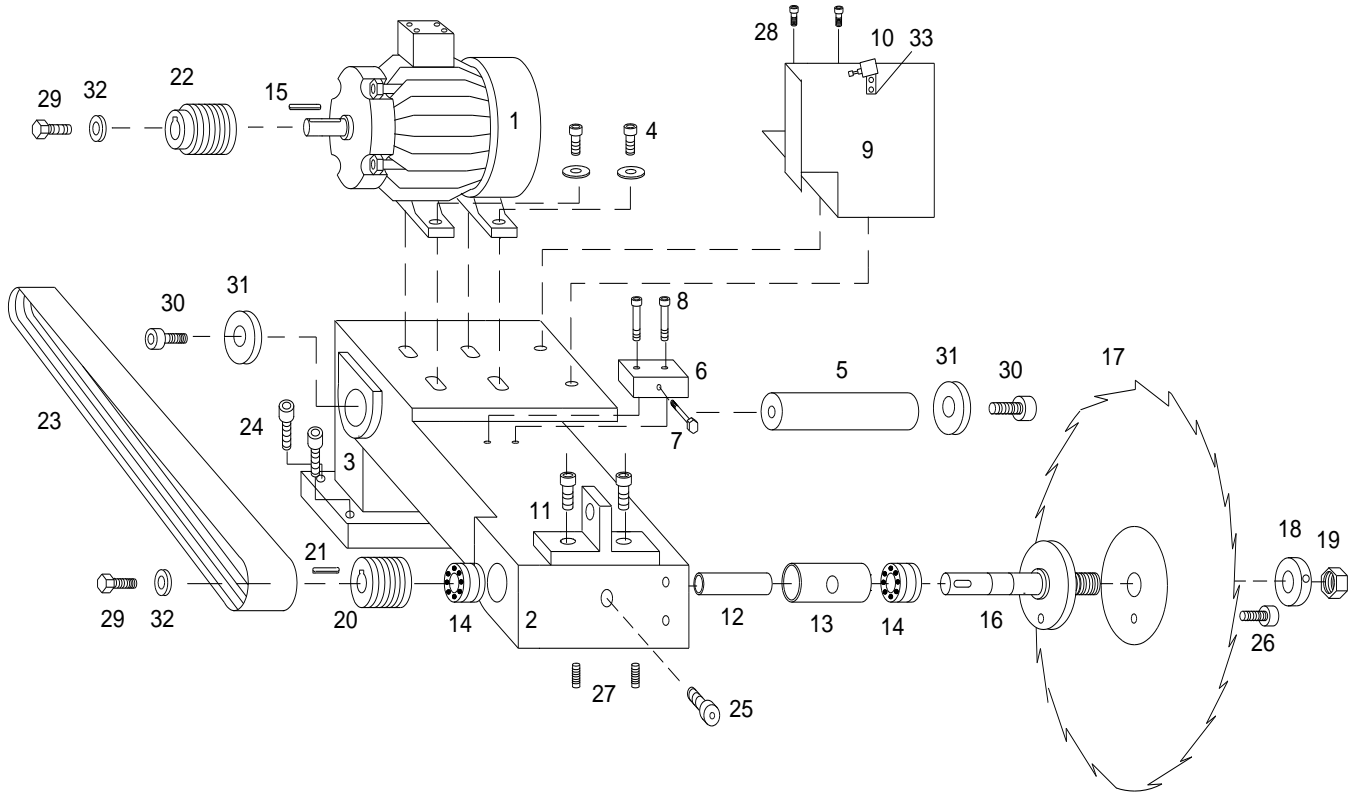
	MAQUINA FECHA
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### 8.3 – DISASSEMBLING CLAMPING DEVICES.



Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE
1	PROTECTION HOOD	20500412	16	CAST-IRON DISC		31	COLUMN	
2	METACRYLATE SCREW	20500362	17	CAST-IRON PANEL		32	DAMPER	20600191
3	SCREW M-4x10 DIN 912		18	ZERO POSITION		33	SUPPORT LIMIT SWITCH	
4	HANDLE 12 x 70	B0000008x	19	STEERING WHEEL Ø100	20400202	34	SCREW M-8x15 DIN 912	
5	RING		20	SUPPORT DISC BRAKE		35	SCREW M-10x40 DIN 912	
6	ALUMINUNIUM BAR Ø45	20500052	21	NYLON PLUG		36	RING Ø10	
7	HANDLE M10x70	B0000006x	22	MARKING STRIP		37	NUT M-10	
8	PRESS CYLIND. Ø <sub>EXT</sub> = 45	20500202	23	MARKING BELT		38	SCREW M-8x30 DIN 912	
9	NYLON BUSHING	20500172	24	SCREW M10x60 DIN912		39	RING Ø8	
10	HANDLE M10x40	B0000006x	25	SAFETY VALVE	N0000015	40	NUT M-8	
11	SCREWS M8x20 DIN912		26	BLOCKAGE		41	SCREW M-8x50 DIN 912	
12	ALUMINIUM PLATE	20500102	27	SCREW M8x20 DIN7991		42	SEPARATOR Ø20-10-28	
13	FOUNDATION GUIDE	20500192	28	GRIP M8	B0000014	43	GRIP M-6	B0000017
14	GUIDING DEVICE	20400402						
15	BLOCKAGE SET-LINE	20400392	30	SCREW M.6x20 DIN 7984				

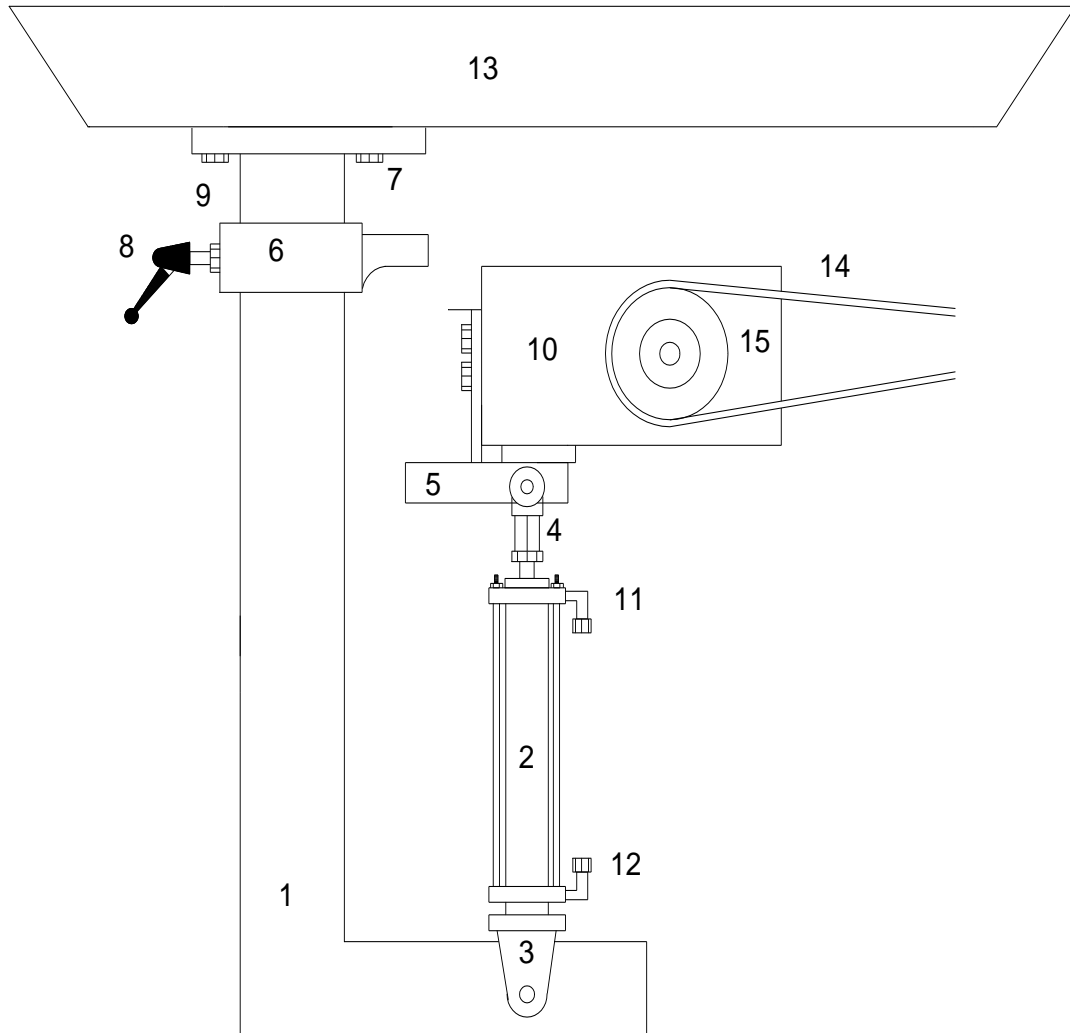
### 8.4 – Disassembling the tilting mechanism ( 1 ).



Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE
1	MOTOR 4 CV III I	20500022	12	SEPARATOR Ø 60		23	BELT POLY V 965 J12	2050001
2	TILTING DEVICE		13	SEPARATOR Ø 36		24	SCREWS M12x50 DIN912	
3	TILTING SUPPORT		14	BEARING 4206	2050016	25	LUBRICATION NIPPLE 1/8 "	
4	SCREW 10x50 DIN931		15	MOTOR PIN		26	SCREW M8x12 DIN 912	
5	BOLT 30x139	20500062	16	SHAFT Ø 30	2050009	27	TAP BOLT M8x15 DIN 913	
6	BELT TENSIONER		17	SAW BLADE A Ø 500		28	SCREW M6x10 DIN 912	
7	SCREW TENSIONER		18	SAW BLADE RING	2050003	29	SCREW M8x25 DIN 933	
8	SCREW M8x30 DIN 912		19	SAW BLADE NUT	2040023	30	SCREW M12x25 DIN912	
9	SAW BLADE PROTECTOR	20500152	20	SHAFT PULLEY	2050013	31	BOLT RING Ø12	
10	ATOMIZER VENTURI	N0000036	21	PIN 8x7x40		32	RING Ø8	
11	FASTENING CYLINDER		22	MOTOR PULLEY	2050014	33	INDICATOR VENTURI	



**8.4 – Disassembling the tilting device ( 2 ).**



Nº	DESCRIPTION	CODE	Nº	DESCRIPTION	CODE
1	COLUMN		9	HANDLE SUPPORT	
2	CYLINDER 50x225	N0000026	10	TILTLING DEVICE	
3	CYLINDRICAL FORK ISO 50/63		11	ELBOW MALE SCREW THREAD	
4	FEMAL HINGE ISO 50		12	ELBOW SIMPLE MALE SCREW THREAD	
5	FASTENING CYLINDER		13	CAST-IRON DISC	
6	RISING BUFFER		14	BELT V 965 J12	20500012
7	SCREW M8x15 DIN912		15	SHAFT PULLEY	20500132
8	HANDLE M8x20	B0000014x20			

## ***Page 5 - Translation of Spanish terms into English***

### ***Figure of connection to the power supply***

Regulador de caudal de entrada – Water flow entry control

Lubricador – Grease nipple

Tapon - Plug

Entrada de aire – Air intake

UTILIZACION – USE

Manometro – Pressure gauge

Pistola de limpieza – Blow pistol

Deposito de aceite – Oil tank

## ***Page 12 – Translation of Spanish terms into English***

### ***Circuito neumatico – pneumatic diagram***

ESQUEMA NEUMATICO - PNEUMATIC DIAGRAM

POSICION FINALES DE CARRERA – POSITION OF LIMIT SWITCHES

material – material

MORDAZA – CLAMPING DEVICE

PISADORES – PRESSING DEVICE

ALIMENTADOR – FEEDER

fin alimentacion – end feeding

inicio alimentacion – feeding start

CABEZAL – HEAD

disco arriba – saw blade up

disco abajo – saw blade down

refrigeracion – cooling agent

convertidor oleoneumatico – hydraulic-pneumatic converter

linea – line

MAQUINA – MACHINE

FECHA – DATE

**Page 14 - Translation of Spanish terms into English**

***Circuito de mando – electric diagram***

RECTIFICADOR – RECTIFIER

ESTABILIZADO – STABILIZED

ALIMENTACION – FEEDING

MARCHA – START

PANTALIA – SCREEN (HOOD)

EMERGENCIA – EMERGENCY

PARO – STOP

MATERIAL – MATERIAL

DISCO ABAJO – SAW BLADE DOWN

DISCO ARRIBA – SAW BLADE UP

FIN ALIMENT. – END FEEDING

INICIA ALIM. – START

AUTOMATICO – AUTOMATIC

PISADORES – PRESSING CYLINDERS

SUBIDA SIERRA – RAISE SAW

MARCHA GIRO – START OPERATION

PARO GIRO – STOP OPERATION

CONTADOR – COUNTER

PISADORES – PRESSING CYLINDERS

DISCO – DISC (SAW BLADE)

MORDAZA – CLAMPING DEVICE

ALIMENTADOR – FEEDER

MOTOR DISCO – MOTOR DISC

MAQUINA – MACHINE

FECHA – DATE