

**I.T.S. by Tecnodue**

**ST 1000**

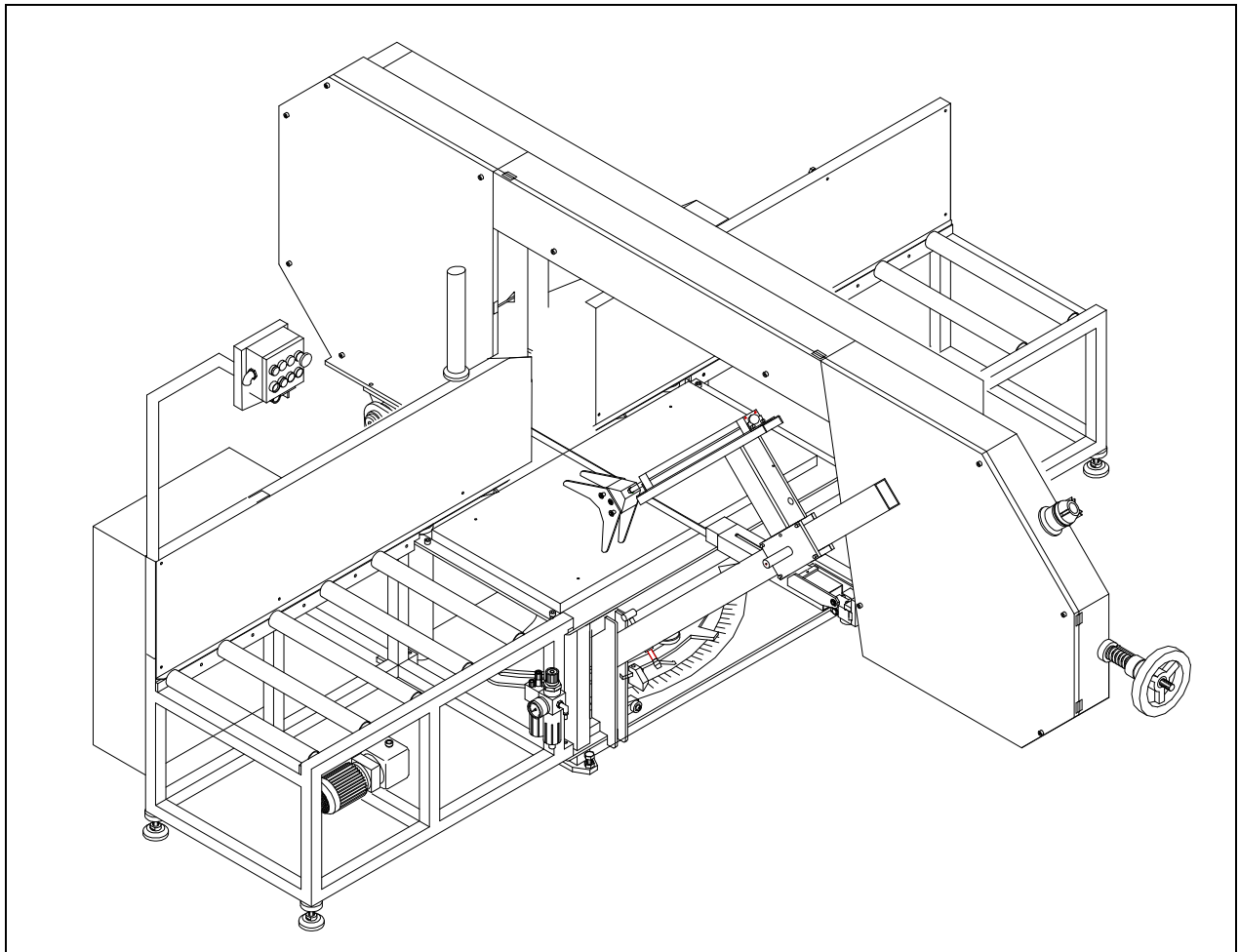
**Operating Manual**

**This manual includes technical information only.**

**I.T.S. Ital Trade Services srl has the right to make any modifications without any notice**

# ST 1000

Workshop hydraulic operated saw machine suitable for PE,PP,PVDF and other thermoplastic pipes



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# SAFETY RULES

( To be read carefully and apply while utilizing the ST 1000 )

Due to the specific use , this machine cannot be supplied with all kind of fix and removable protections suitable to avoid any risk of accident.

The machine, therefore, must be utilized, adjusted and keep in the perfect functioning conditions by skill operators.

## Warning - Rules – Obligations

The use of machines composed by electrical components and movable parts , it's always a potential danger. In order to avoid any kind of accident caused by electrical or mechanical sources it' strongly suggested to read and follow carefully the following safety rules before operating the machine.

### TRANSPORT

-Machine, Keep the maximum care while moving and it's compulsory to utilize mechanical aids.

All the accessories supplied with the machine must be moved with the maximum care and it's compulsory to utilize mechanical aids.

### ELECTRIC CONNECTIONS

The machine is operated by 400 Volts therefore be sure that the power supply plug is supplied with the safety devices according to the standard requirements , also check that the power supply is on the range of maximum 10% of the machine's nominal tension.

Check that the ground cable is properly connected and plugged to the ground.

Check regularly the cables and the plug and in case substitute by qualified personnel.

Before carry out a reparation or maintenance all the plugs must with plug out from the power supply

### ENVIRONMENTAL CONDITIONS

The working area must be clean and duly lighted.

It's very dangerous to utilize the machine in case of rain or in wheat conditions or even close to flammable liquids.

### CLOTHES

Keep the maximum care while utilizing the machine, it's strongly suggested to use suitable gloves.

Avoid long clothes and avoid bracelets , necklaces that might be hooked into the machine.

### CORRECT MACHINE'S OPERATION

Remember to check and read carefully the operating manual before utilizing the machine and The accessories.

Non lavorare mai con lame incrinata o con denti rotti.

Provvedere alla sostituzione immediata della lama usurata.

Arrestare completamente la macchina prima di pulire la zona di lavoro: utilizzare aria compressa, spazzolini o utensili appropriati. Mai utilizzare le mani nude.

Prima di effettuare qualunque intervento di manutenzione mettere sempre la macchina in sicurezza, cioè sconnettere la macchina sezionandola dalla corrente tramite l'interruttore generale.

### KEEP ALWAYS THE MAXIMUN ATTENTION

Be careful to the blades , it's strongly suggested to use suitable gloves.

During the cutting operation it's forbidden to take out the shavings

Avoid utilizing the machine after drinking or drugs use

Take care that all the people around the machine are at safety distance

### ACOUSTIC POLLUTION

The acoustic pollution of the drill engine is less than 85 dB ( value measured at 1 meter distance from the operator)

Due to some particular cases such as too much pressure during the facing the noise should be increased , therefore it's suggested to utilize acoustic protections.

### LASER BEAM (se presente sulla macchina)

It is very important to avoid any direct eye exposures to the laser beams mounted on the machine. It is strongly suggest to wear protective eyewear.

### IMPORTANT !!!!

**Keep the maximum care reading and following the above Warning - Rules - Obligations the Ital Trade Services S.r.l. declines all responsibilities if are not followed totally**

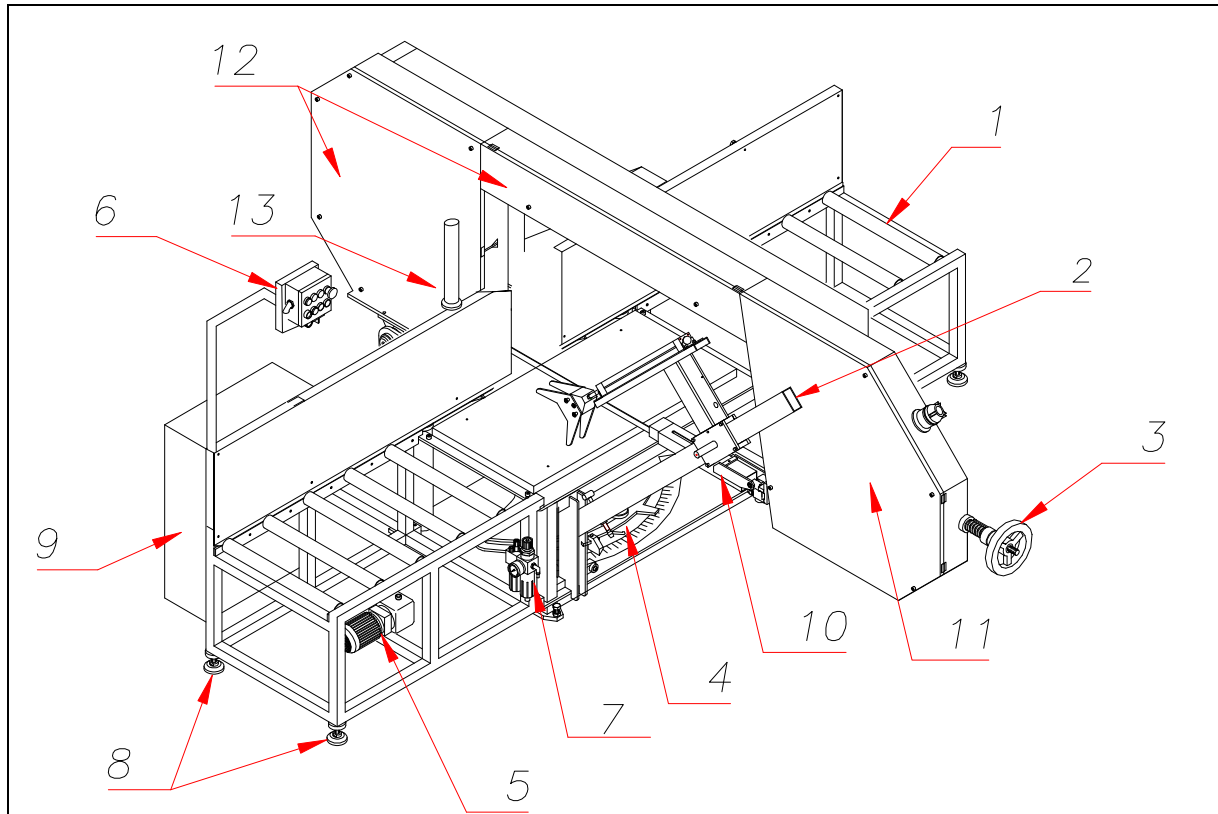
## Description

The ST1000 is designed and fabricated in order to cut pipes in different kind of thermoplastic materials such as: PP, PE, PVC, PVDF up to an outside diameter 1000 mm

E' assolutamente vietato utilizzare la macchina per tagliare materiali diversa da quelli elencati: es. metallo, carta, legno ecc.

The cutting angle could be changed from 22,5° by means of turning the arch to the left , and 67,5° by means of turning the arch to the right.

The special designed pneumatic clamps hold safely the pipe.



1. Pipe roller
2. Front pipe locking
3. Saw blade stretch adjustment handwheel
4. Adjusting angle cut lever
5. Hydraulic unit
6. Control board
7. Air connection
8. Level feet
9. Electric box
10. Blade's guide sliding
11. Right case with quick release hinges
12. Left case with quick release hinges
13. Support for rear pipe locking

<b>Electric Data</b>	
Voltage	400 V (3phases+Ground)
Frequency	60 Hz
Total Power Installed	2.7 kW 5.9A IP 54
Saw Blade Engine	IP 55 2,2 kW 1720 rpm 4.8 A
Hydraulic Unit	IP 55 0.44 kW 1640 rpm 1.1 A
<b>Hydraulic &amp; Pneumatic Data</b>	
Pump's Capacity	1,2 cc/giro
Hydraulic Oil	ISO 46
Oil Tank	1,5 l
Pneumatic pressure requirement	6 bar
<b>Mechanical data</b>	
Saw Blade Transmission System	Reducing Gear
Saw Blade Maximum Speed	320 m/min
<b>Working range</b>	
Pipe outside diameter <b>d.200-630</b>	
Maximum Cutting Left Angle	22,5°
Maximum Cutting Right Angle	67,5°
Pipe outside diameter <b>d.710-800</b>	
Maximum Cutting Left Angle	22,5°
Maximum Cutting Right Angle	22,5°
Pipe outside diameter <b>d.900-1000</b>	
Maximum Cutting Left Angle	11,25°
Maximum Cutting Right Angle	11,25°
Total saw blade length	Max 7850 mm Min 7780 mm
	Z 10 for hard material and small wall thickness
	Z 6 for medium wall thickness
	Z 2 for big wall thickness
	height 25 - 27 mm
	Blade thickness 0,9-1,2mm
<b>Dimensions &amp; Weight</b>	
Machine	3,30 x 3,55x 3,20h m , 1550 Kg.

## a. Machine's installation

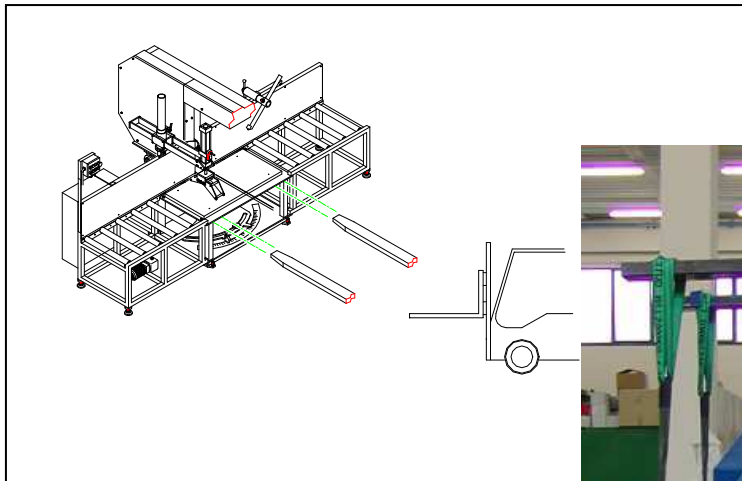
In order to avoid any problems and to achieve the best performances from the machine we strongly suggest you to follow the installation procedures:

1. Remove the packaging
2. Position the saw into a flat surface
3. Connect the machine's cable to the plug located into the electric box
4. Connect the two hydraulic hoses to the hydraulic unit by means of using the supplied quick couplings
5. Connect the cable to the power supply ,taking care that the black, blue wires and the brown are the phases and the yellow – green is the ground
6. Switch on the machine by means of acting the main switch
7. Double check the emergency push button located into the electric box and on the machine
8. Push the Reset push button
9. By acting on the selectors "Arch Up Stroke" and "Arch Down Stroke" , if the engine turn but the arch is not moving it's necessary invert the two phases on the control board power cable in order to change the engine rotation

### Important !

Avoid made the first test by acting of blade start button . In case the engine should rotate in wrong way the blade will be out from the pulleys and might be happen that the blade and pulleys will be damaged.

10. Connect the compressed air to the adaptor socket

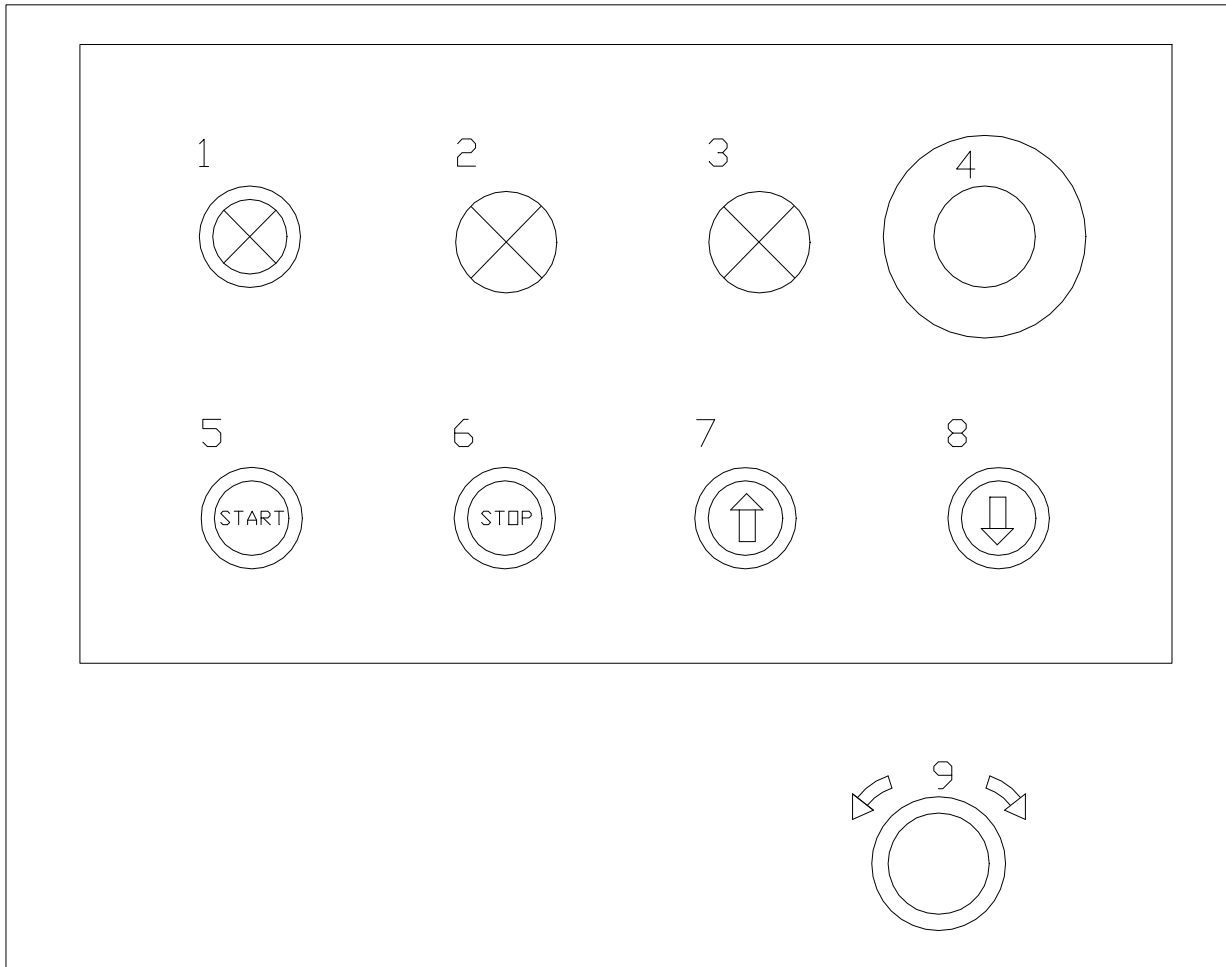


The drawing and picture show how to lift the machine. If you lift the machine using ropes please hook the machine as shown in picture. If you use a fork lift, place the forks as per drawing above. Be always carefull and strictly follow this instructions each time you lift the machine.



## b. Controls description

All the controls are located on the control board



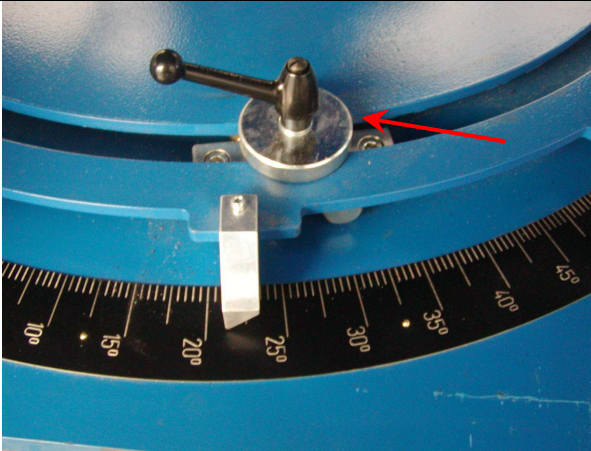
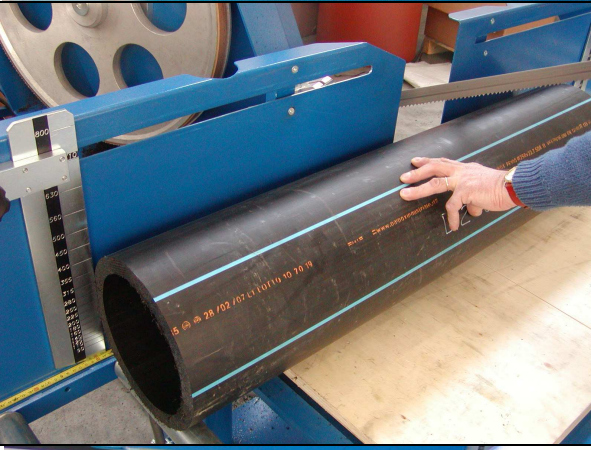
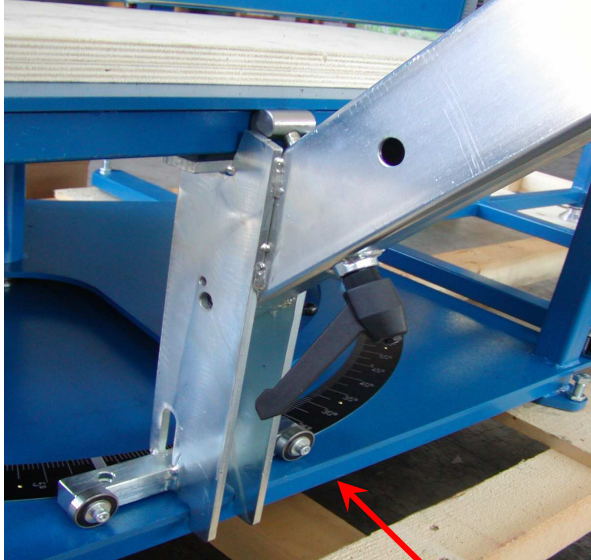
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|--|---|
| <p>1. <b>The White Light Push Button</b></p> | <p>this button reset the machine</p>  |
| <p>2. <b>The Orange Light</b></p>            | <p>showing the hydraulic engine overload and the saw blade engine overload</p>                  |
| <p>3. <b>The Green Light</b></p>             | <p>showing that the saw blade is broken or too loosen , or the blade protection carter open</p> |
| <p>4. <b>The Emergency Push Button</b></p>   | <p>this button stop the machine</p>   |
| <p>5. <b>The Green Light Push Button</b></p> | <p>this button start the saw blade</p>  |
| <p>6. <b>The Red Push Button</b></p>         | <p>this button stop the saw blade</p>   |
| <p>7. <b>The Blue Push Button</b></p>        | <p>this button controlling the arch upstroke</p>  |
| <p>8. <b>The Black Push Button</b></p>       | <p>this button controlling the arch down stroke</p>   |
| <p>9. <b>Hand wheel</b></p>                  | <p>controlling the arch down stroke speed</p>   |



## c. Machine's operation

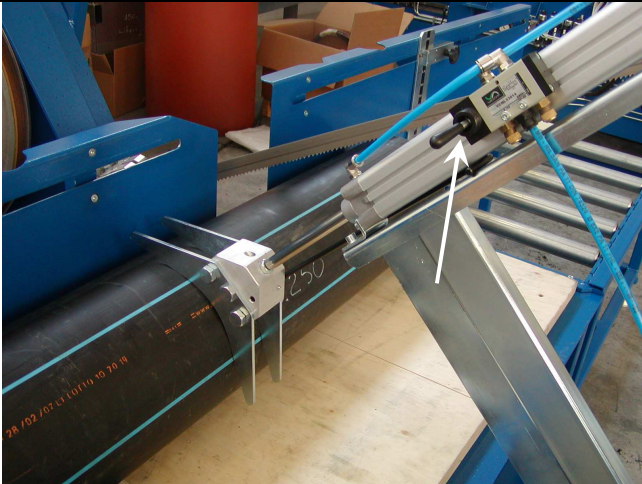
01. Insert the pipe into the rollers stand and fix as per procedure described in chapter c.2
02. Move the arch by acting with the maximum care in the cutting position taking care to stop it at 10 cm from the upper surface of the pipe by acting on the black button for the down stroke of the arch.
03. Adjust the blade's guide
04. Push the green light button to start the blade rotation
05. Move the arch down by acting on the appropriate button (black)
06. By acting on the appropriate handwheel adjust the arch down stroke speed
07. The machine automatically stops the blade rotation as the arch reach the down stroke
08. Remove the cut piece
09. Lift the arch by keep on pushing the blue button

### c.2 How to use the clamp for pipe – cutting with different angles for building bends with different radius

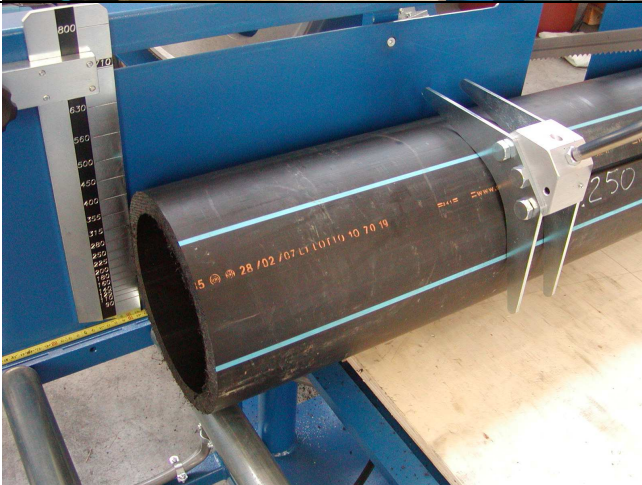
	<ol style="list-style-type: none"> <li>1. To set the cutting angle act on the lever shown in the picture</li> <li>2. Select the cutting angle by turning the lower circle Once reached the desired angle on the scale fix again the lever.</li> </ol>
	<ol style="list-style-type: none"> <li>2) Place the pipe on the left pipe roller</li> </ol>
	<ol style="list-style-type: none"> <li>3) Check if the support of the pipe clamp is properly fixed by acting on the fixing lever shown in the picture</li> </ol>



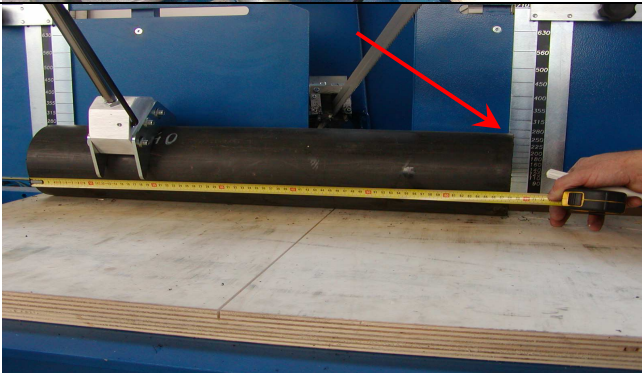
4) Depending on the pipe diameter adjust the arm height by inserting the pivot (with split pin) in the appropriate hole. Together with the machine we have supplied two different kind of brackets. The smallest one must be used with pipe with a maximum outside diameter up to 200mm



5) By acting on this lever you will move forward/backward the bracket



6) If you cut the pipe with a  $0^\circ$  angle, place the pipe accordingly with the length of the segments that you need. On the left and right pipe roller you will find metric indexes that can help you in this operation (please consider the blade position is the starting position = 0) .



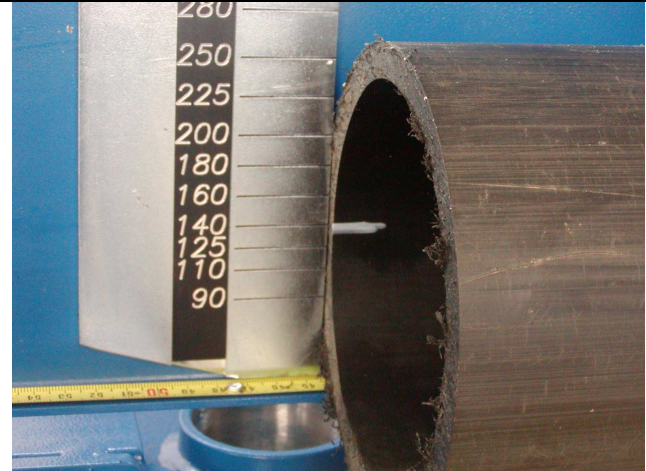
7) **In case you want to prepare a bend  $45^\circ$  consider (schema A):**

- a) Position the arch to right at  $22,5^\circ$
- b) Calculate the total length of pipe required to obtain three pieces composing the bend ( $R+S+R$ ).
- c) Position the left stopper to a distance (from the rotating axis) corresponding to the length of the smallest segment composing the bend ( $R$ ). Place the pipe against the stopper and clamp it.
- d) Place the right stopper against the pipe

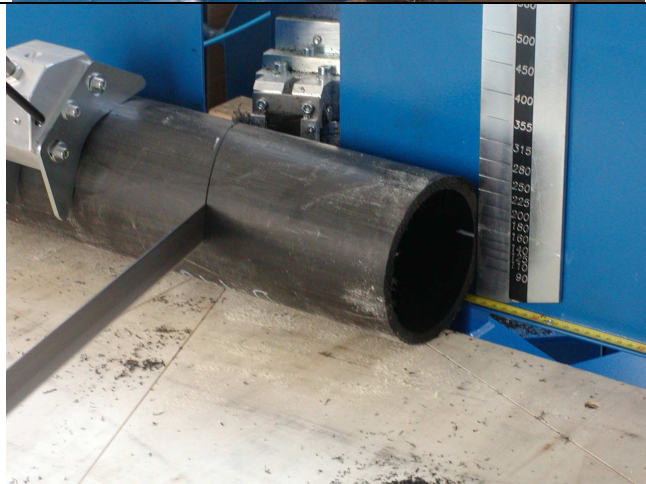


8) By using the vertical index of the right stopper, mark a line in the inner part of pipe corresponding to the outside diameter of pipe.

Execute the first cut with the arch turned right  $22,5^\circ$



9) Place the cut pipe with the inner mark against the left stopper, taking care that the inner mark of pipe will correspond to the correct diameter



10) Clamp the pipe and execute the second cut

7) In case you want to prepare a bend  $45^\circ$  consider (schema B):

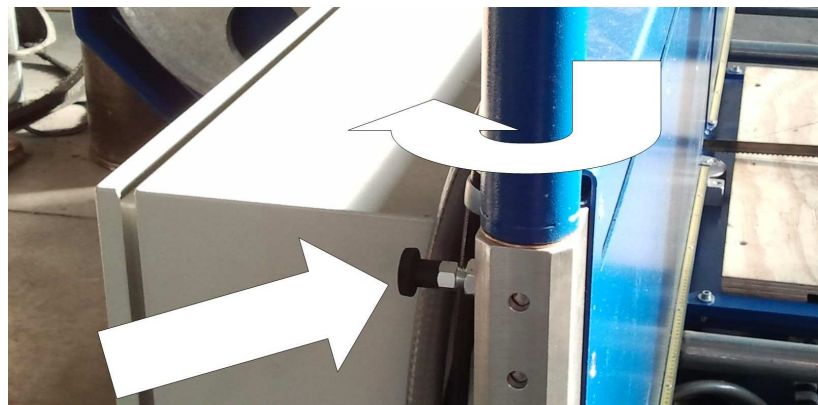
- Position the arch to right at  $15^\circ$
- Calculate the total length of pipe required to obtain four pieces composing the bend  $(Y+W+Y+W)$ .
- Position the pipe as per SCHEMA B in view to cut pipe in two even segments  $(Y+W)$
- Clamp the
- Mark the inner part of pipe's ends and proceed as described with three segment bends

How to load the pipes to be cut

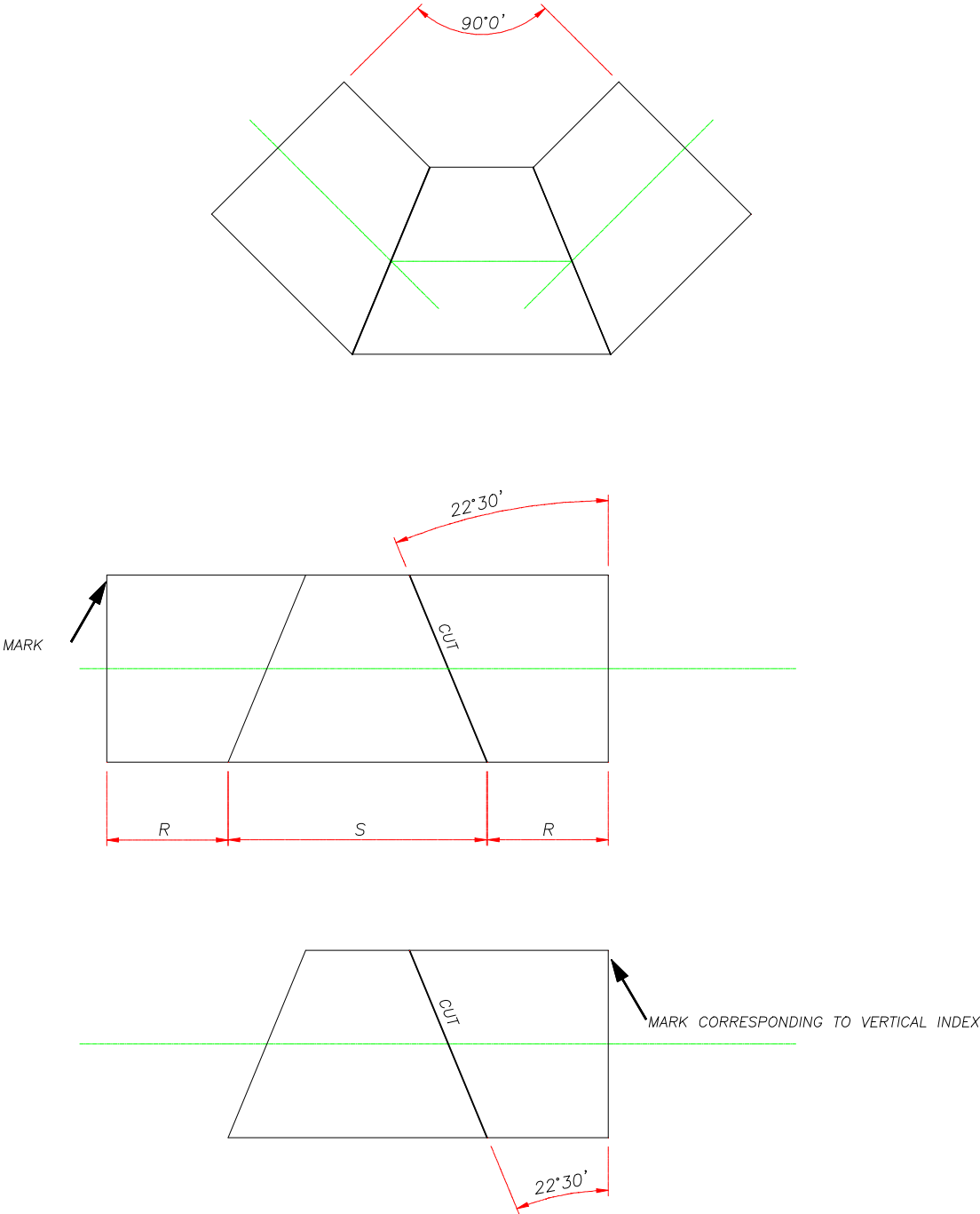
To ease the loading of pipes you can turn the control panel.



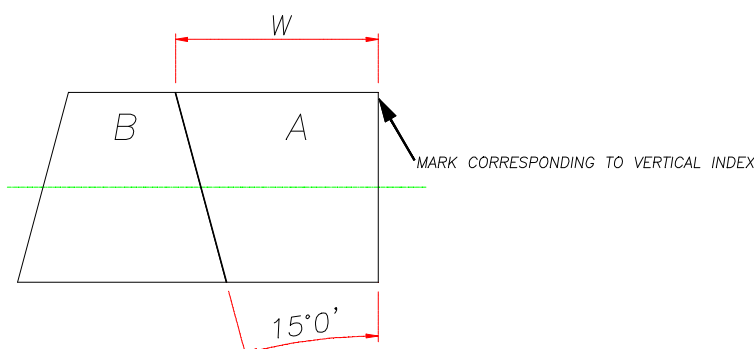
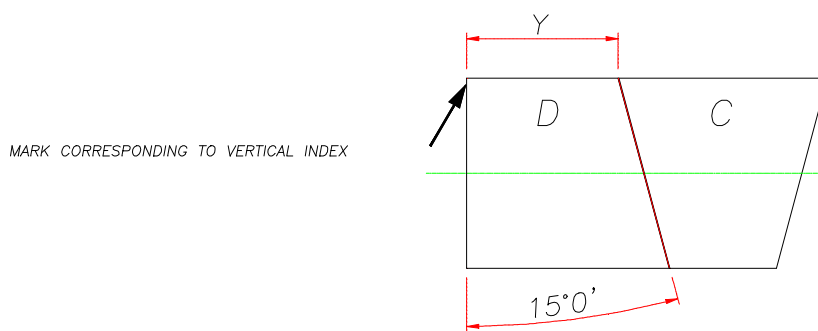
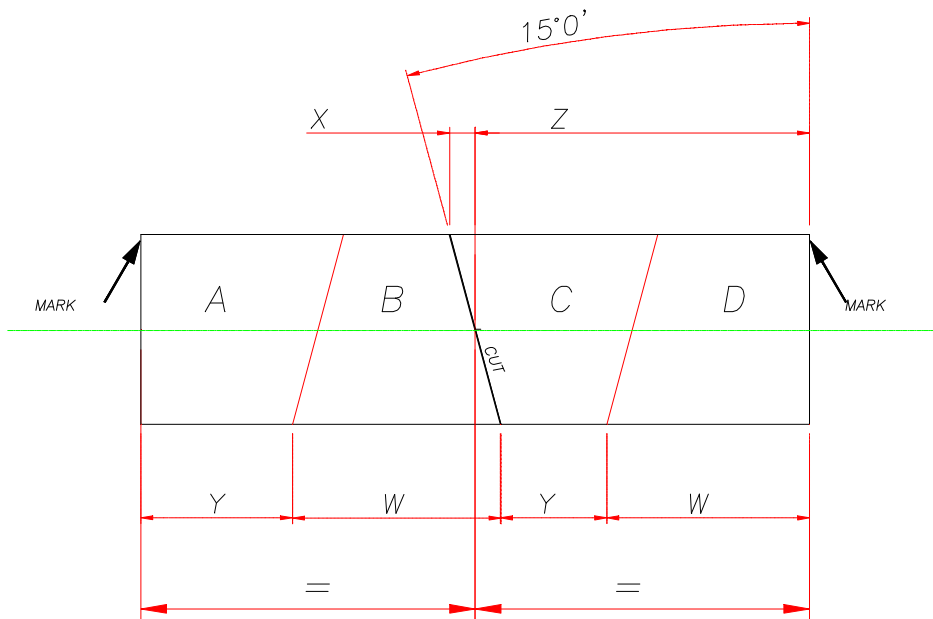
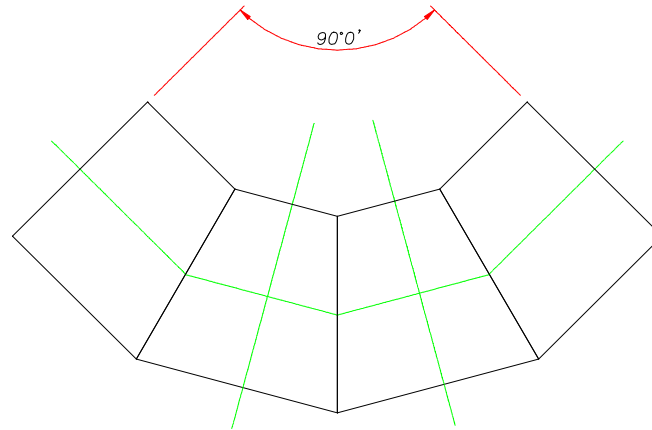
You can lock the control panel in the two possible position by using the know indicated by the arrow.



**SCHEMA A: CUT PIPE TO OBTAIN A 90° BEND COMPOSED BY THREE SEGMENTS**



**SCHEMA B: CUT PIPE TO OBTAIN A 90° BEND COMPOSED BY FOUR SEGMENTS**



## d. Adjustments

### 1. Arch Down Stroke Speed Adjustment

the arch down stroke speed can be regulated by means of operating the hand wheel (see the photo) according to the wall thickness and the type of material to be cut.

A high arch down stroke speed might be caused the blade broken, therefore:

**MAXIMUM DOWN STROKE SPEED SUGGESTED** = 7,0 of the first turn

**SUGGESTED DOWN STROKE SPEED** = 6,5 of the first turn

**In case of corrugated pipes cutting use low speed to obtain the best result**



### 2. Saw Blade Stretch Adjustment

In order to stretch the saw blade it's necessary to act on the handwheel located on the left side of the arch (see part no. 3 at page 5).

The blade stretch must be set up between:

180 and 220 Kg. Standard Blades

250 and 300 Kg. Alloy Blades

300 and 350 Kg. Bi-metallic Blades

(value are indicated into index label as per fig. 3)

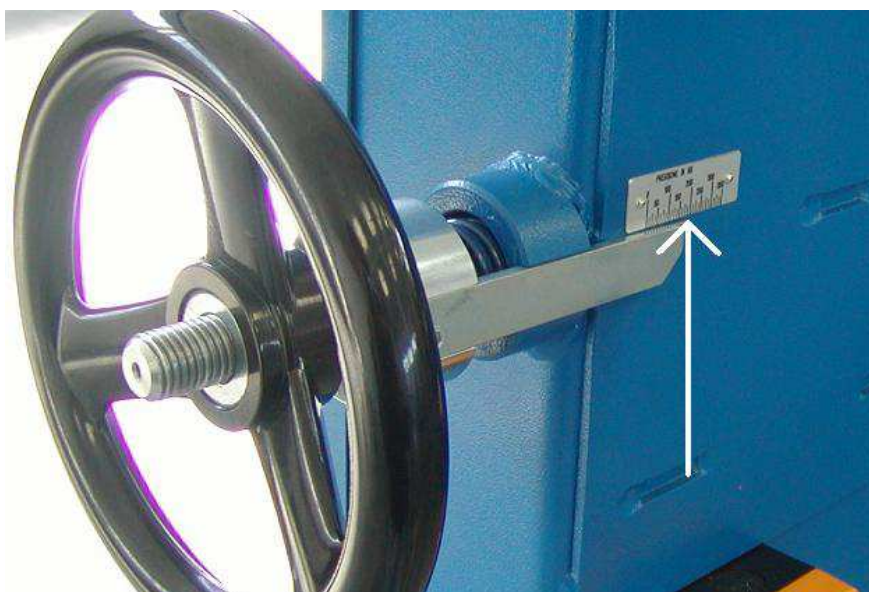
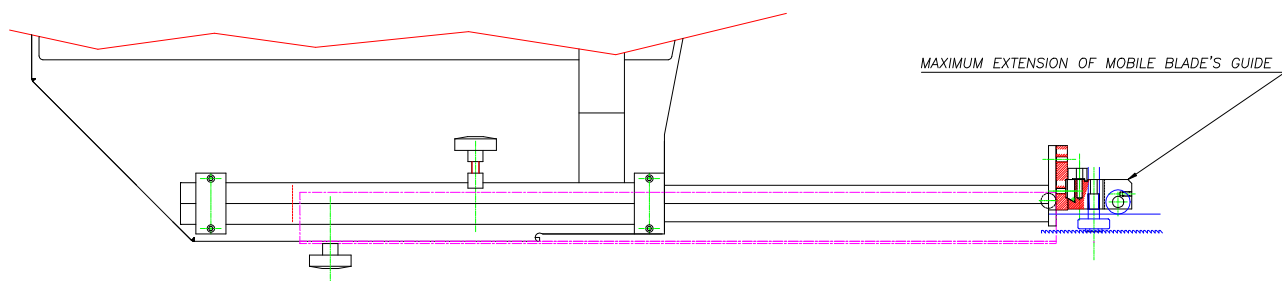
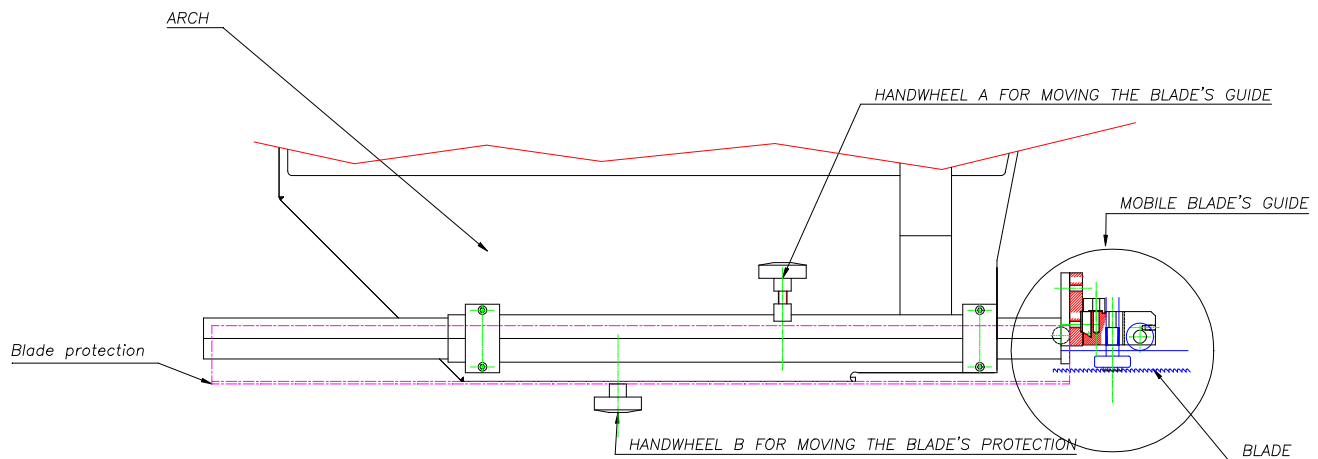


fig. 3 Blade stretch adjustment

### 3. Blade's guide Adjustment

In order to protect the saw blade, you must move the mobile blade's guide into the correct position during the cutting. It's necessary that the blade's guide is adjusted according to the pipe's diameter to be cut (blade the minimum required length), therefore the operator for this adjustment must proceed as follows:

- Loosen the handwheel A and B (see fig. 4)
- Adjust the blade's guide and the blade's protection by sliding forward or backward according to the pipe's diameter. (see fig. 4)
- Tighten again the handwheel A and B. (see fig. 4)

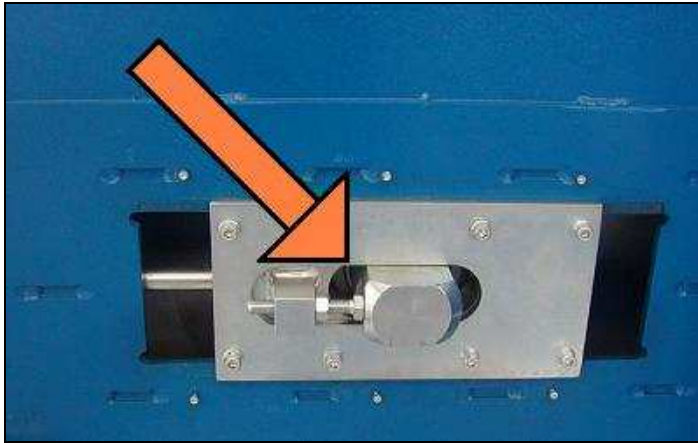


**fig. 4 Blade's protection adjustment**

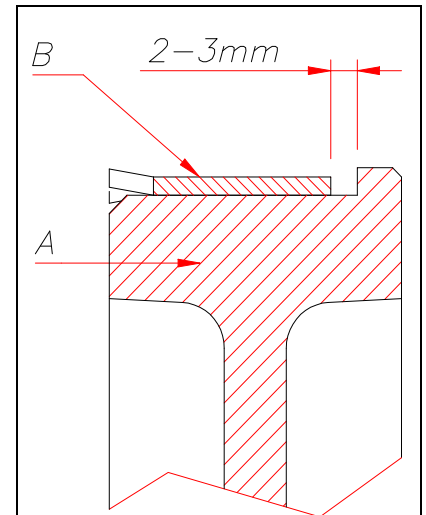


On the machine there are 3 pulleys: the tractor pulleys (close to engine), the driven pulley and the tensioner pulley. To let the saw blade works properly in its natural siege you can adjust the inclination of the tractor pulley by acting on the screw shown by the orange arrow.

It is really important that blade remains 2-3 mm away from the border of the tractor pulley as per drawing on the right.

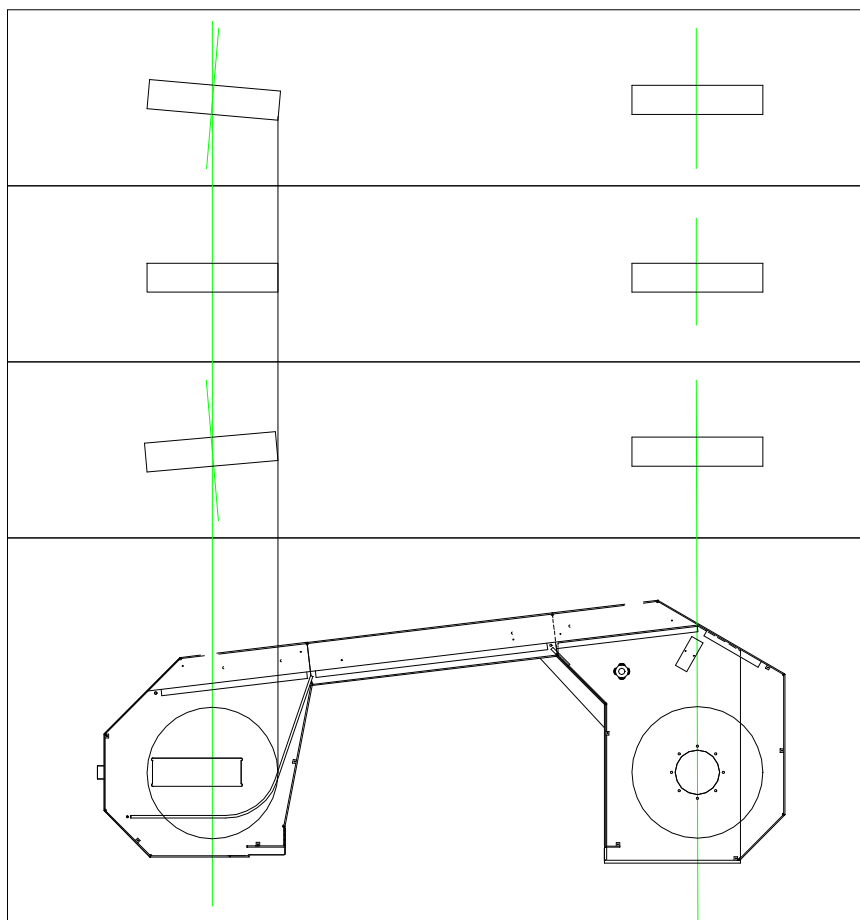


Screw to adjust the tractor pulley



Right position of the saw blade on the pulley

By acting on the screw marked by the orange arrow of the previous page, you can adjust the inclination of the axis of the driven pulley. The screw has a fixing nut to maintain the right position



Examples of different inclinations of the driven pulley

In order to replace the blade , the following operations must be carry out:

- Disconnect the machine from the power supply
- Open the carters
- Remove the old blade by means of releasing the stretch regulating nut and pull out the blade from the housings
- Mount the blade into the pulleys
- Rotate the blade and insert it into the blade housing
- In case of different wall thickness of the blade , adjust the housing bearing as per chapter 4.1.
- Adjust the blade stretch
- Close the carters
- If the safety green light is light on , verify that the saw blade is too loosen and/or the carter open

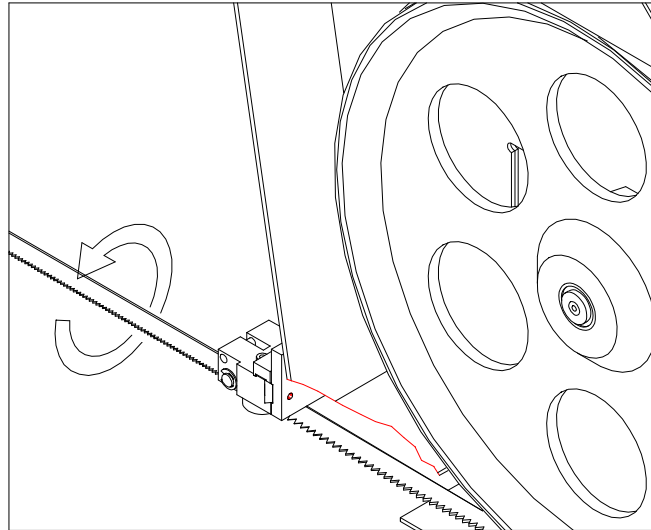


fig. 5 Blade replacement

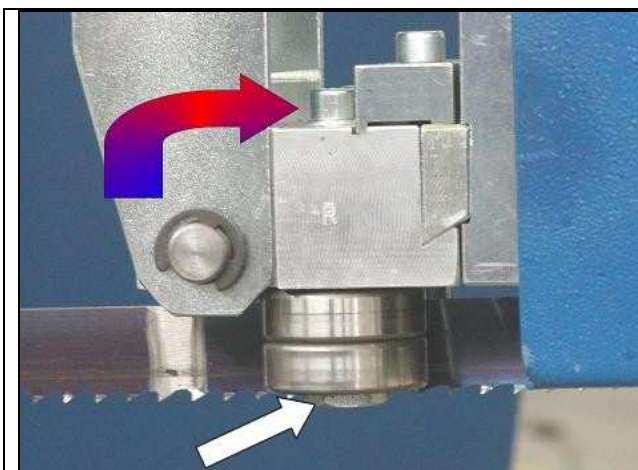
#### 4.1. Housing bearing Adjustment

On each blade housing the ball bearing must adhere to the blade ( with a maximum clearance of 2-3 tenth of millimetre)

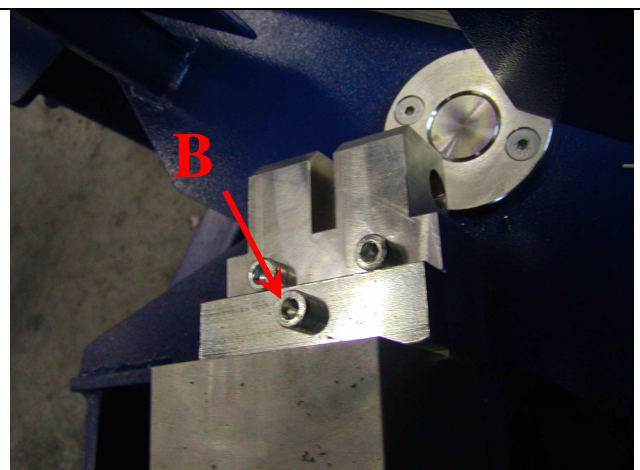
Each blade housing is equipped with a special ball bearing with eccentric pivot.

To adjust ball bearings it is necessary to slack the upper allen screw, and with the appropriate tool adjust the distance between ball bearings acting on the hexagonal nut below them (eccentric pivot)).

You can adjust the horizontal position of fixed blade's guide too. By acting on screw B indicated by red arrow you can move horizontally the blade housings. Inside the carter you will find some screw that will let you adjust the height of the fixed blade housings. Concerning the mobile blade's guide you must slack the fixing screw of telescopic support pipe



The red-violet arrow shows the fixing allen screw, the white arrow shows the eccentric pivot for adjusting the distance between ball bearings.



By slacking the screw B you can move horizontally the the fixed blade's guide. The screw to adjust the height of fixed blade's guide are inside the arch. The screw fixing the support pipe of the mobile blade's guide can be loosen to adjust the vertical position

**Warning: We strongly suggest to slack tension of the blade at the end of each working cycle or at least at the end of working day!**

## 5. Blocking Clamp pressure adjustment

If necessary the blocking clamp's pressure could be modified .

By acting on the green hand wheel pressure regulator it's possible to modify the clamping force during the cutting operation.

The standard pressure should be adjusted between 5 and 6 bar as indicated on the pressure gauge.



**fig. 6 Blocking Clamp adjustemen**

## e. Maintenance

### BASIC MACHINE

Keep always clean the machine by using compressed air in order to remove material shavings

### HYDRAULIC UNIT

Check periodically the oil level and in case add by using oil type: ISO 46.

Periodically check the lubricating oil level inside the filter of the pneumatic circuit

Keep the hydraulic unit clean

### GENERAL CONTROL

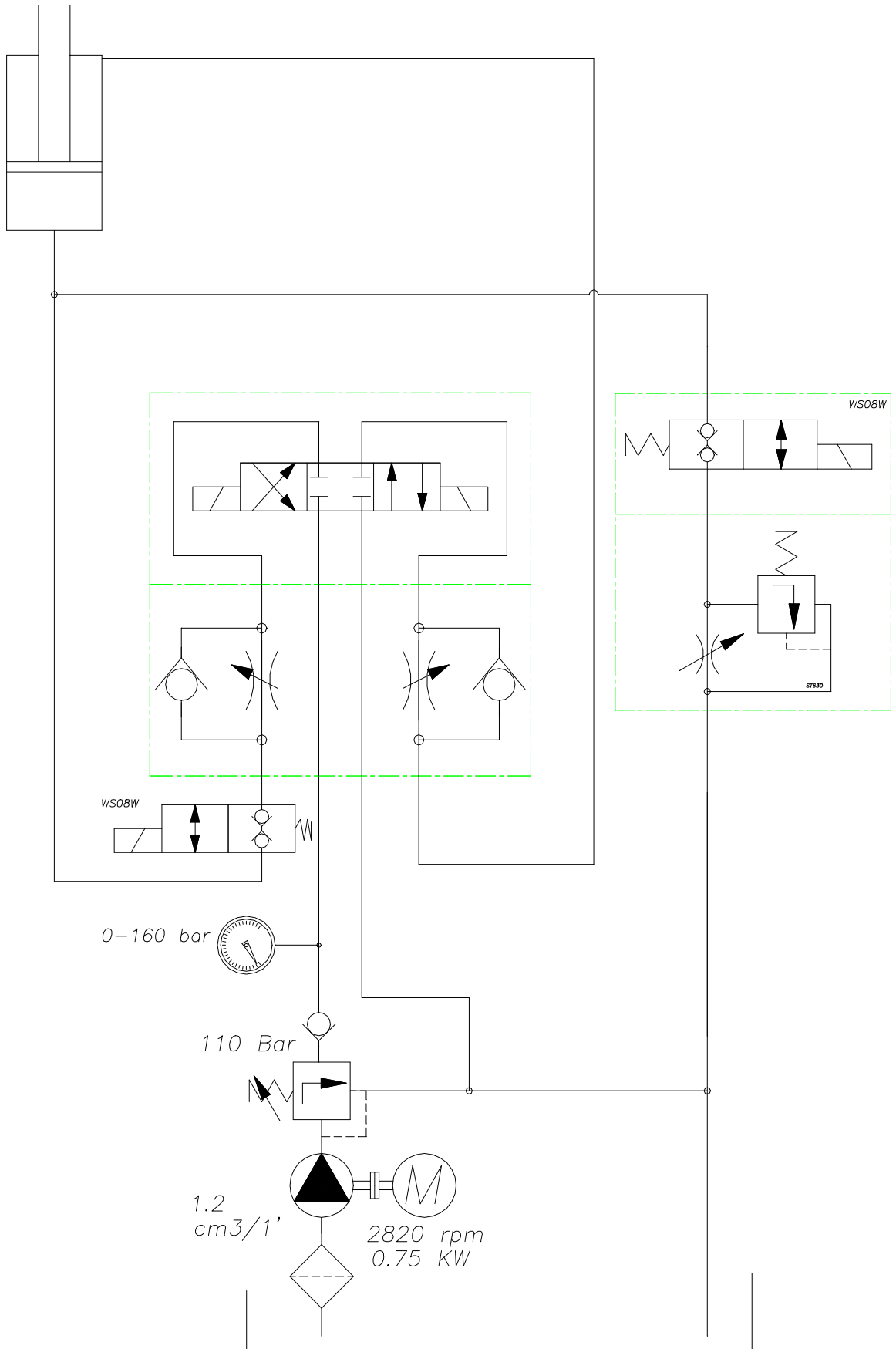
In case something will happen on the machine or in one component, kindly contact our technical assistance department.

However we strongly suggest carrying on a complete general control of the machine every two years

## f. Troubleshooting

- The machine does not switch on
  - Verify the Residual Current Breaker with Overload inside the control board (**D1**)
  - Open the electric box and verify the fuses **2Q1** and **2Q2**
- The orange lamp showing the engine overload is on
  - It's necessary to open the electric box and reset the relative relay **Q1** and/or **Q2**
- The green lamp showing the safety features is on
  - Check if the cases are properly closed
  - Check if the blade is correctly stretch
- The machine is switch on , but the arch is not moving
  - Open the electric box and verify the fuses **5Q1**

# Hydraulic Plan



**This manual has been printed on April 2014**