

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

**ST 800**

**Operating Manual**

# **I.T.S. Ital Trade Services S.r.l.**

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**This manual includes technical information only.**

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

# SAFETY RULES

( To be read carefully and apply while utilizing the ST 800 )

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 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 accessories.

### 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 (available as an accessory)

Do not stare into laser beam or view it directly with optical instruments



### IMPORTANT !!!!

Keep the maximum care reading and following the above Warning - Rules - Obligations

I.T.S. Itai Trade Services S.r.l. declines all responsibilities if are not followed totally

# ST 800

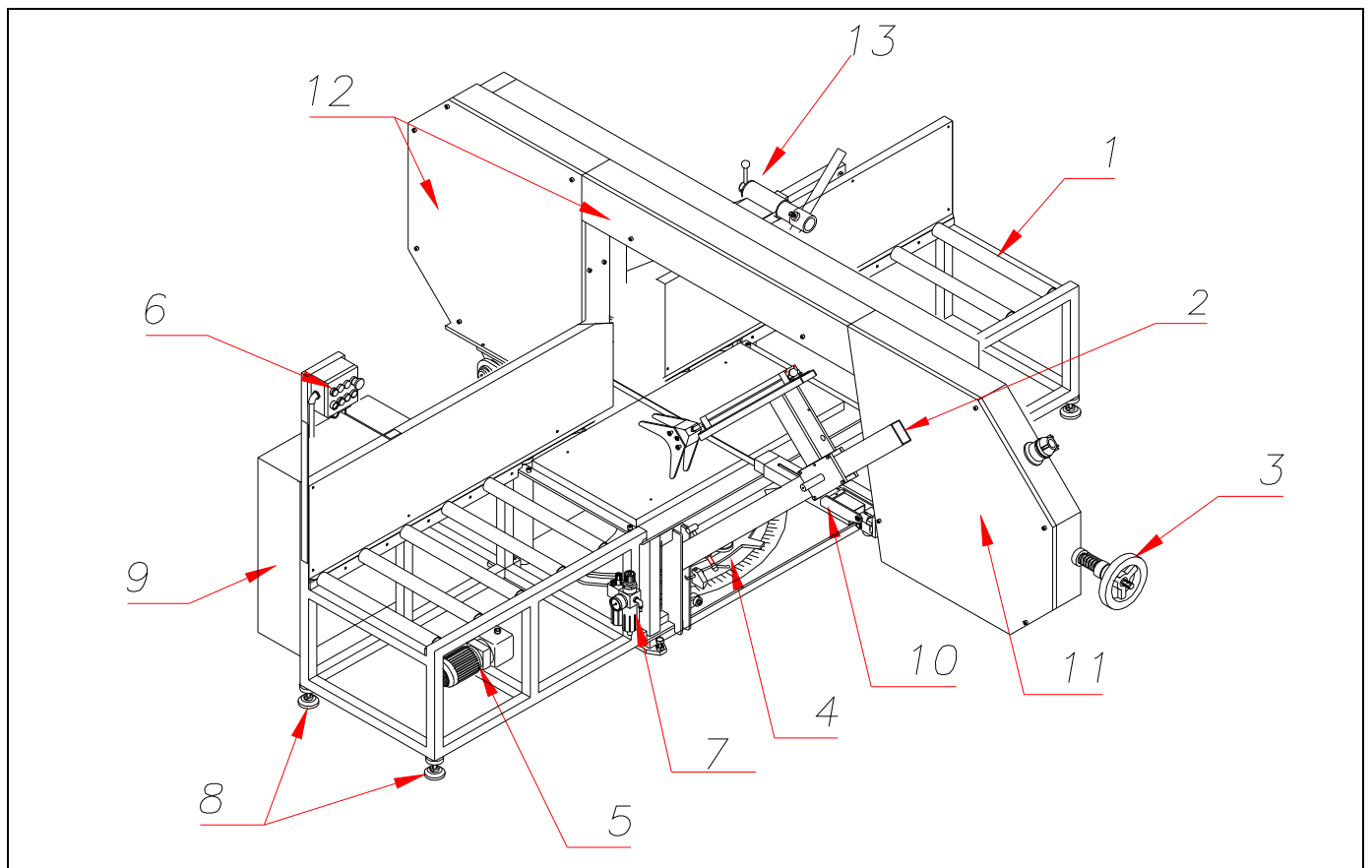
Workshop hydraulic operated saw machine suitable for PE,PP,PVDF and other thermoplastic pipes

## Description

The ST800 is designed and fabricated in order to cut pipes in different kind of thermoplastic materials such as: PP, PE, PVC, PVDF from outside diameter 200mm to 800mm.

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 in the range of pipes 200-630mm.

The special designed pneumatic clamps hold safely the pipe.



1. Pipe roller
2. Main pipe clamp
3. Saw blade stretch adjustment nut
4. Adjusting angle cut lever
5. Hydraulic unit
6. Control board
7. Air connection
8. Level feet
9. Electric box
10. Blade protection
11. Left carter
12. Right carter
13. Back pipe clamp

<b>Electric Data</b>	
Voltage	400 V (3phases+Ground)
Frequency	50 - 60 Hz
Total Power Installed	2,8 KW 7 A IP 54
Saw Blade Engine	IP 55 2,20 KW 1450 rpm
Hydraulic Unit	IP 55 0,40 KW
<b>Hydraulic &amp; Pneumatic Data</b>	
Pump's Capacity	1,2 l/min (1000 rpm)
Hydraulic Oil	ISO 46
Oil Tank	1,5 l
Pneumatic pressure requirement	6 bars
<b>Mechanical data</b>	
Saw Blade Transmission System	Reducing Gear
Saw Blade Maximum Speed	320 m/min
Maximum Cutting Left Angle range 200-630mm	22,5°
Maximum Cutting Right Angle range 200-630mm	67,5°
Maximum Cutting Left Angle range 710-800mm	22,5°
Maximum Cutting Right Angle range 710-800mm	22,5°
Total saw blade length	Maximum 7500mm Minimum 7400mm Z 10 for hard material and small wall thickness Z 6 for medium wall thickness Z 2 for big wall thickness height from 25 to 27mm Blade wall thickness 0,9-1,2 mm
<b>Dimensions &amp; Weight</b>	
Machine	3.15 x 3,35x 3,00m, 1.200 Kg.

## a. Machine's installation

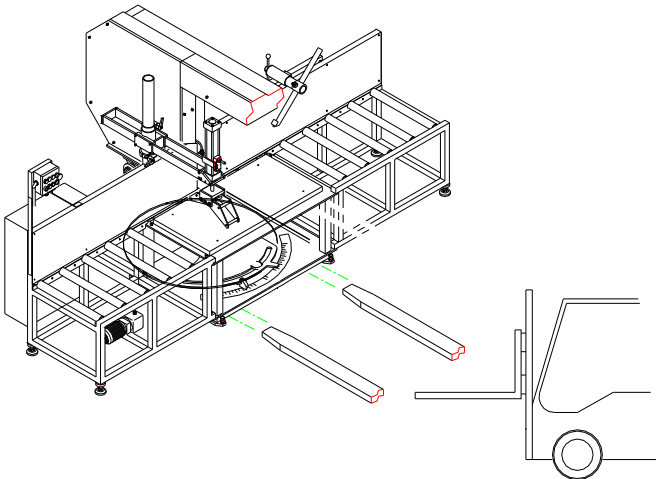
In order to avoid any problems and to achieve the best performances from the machine we strongly suggest you to follow the installation procedures:

1. Remove the packaging
2. Lift the machine only by using ropes and the fork extensions as shown in figures below.
3. Position the saw into a flat surface and adjust the level feet properly. Once you have reached the appropriate position, fix the level feet by the lock nut.
4. Connect the power supply cable to a plug taking care that the black, grey and the brown wires are the phases and the yellow – green wire is the ground. Before connecting the machine to the power supply check 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
5. Switch on the machine by means of acting the main switch
6. Double check the emergency push button located into the electric box and on the machine
7. Push the Reset push button
8. 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 two phases on the control board power cable in order to change the engine rotation

### Important !

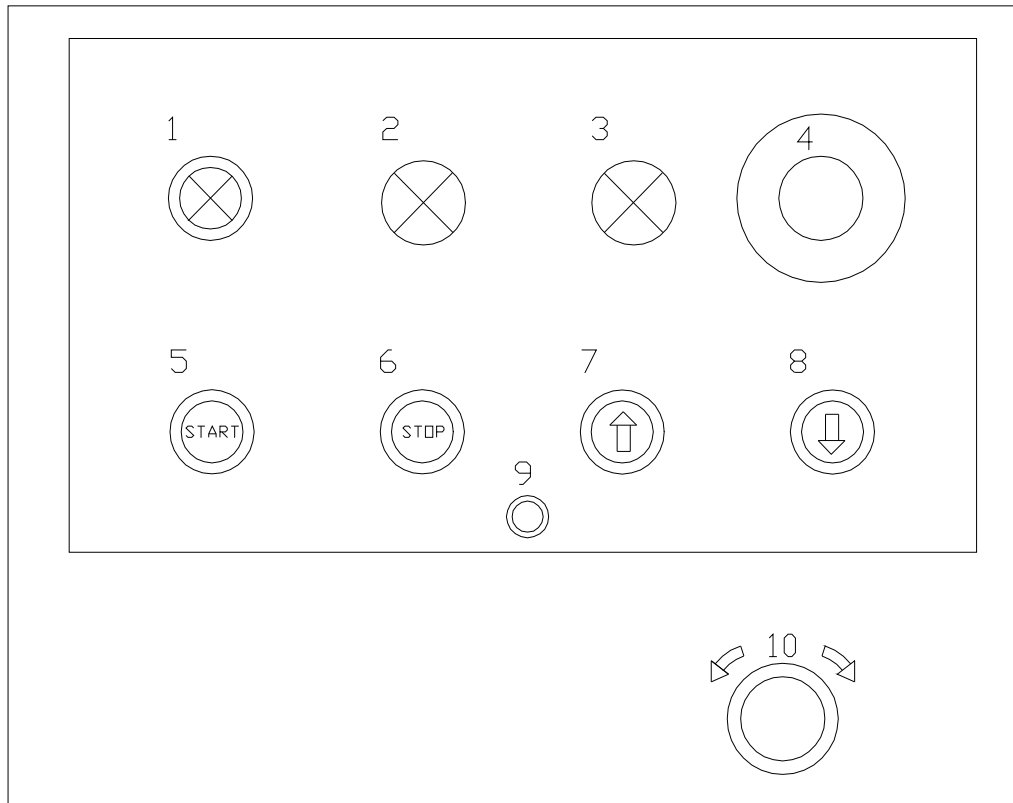
Avoid made the first test by acting of blade start button. In case the engine should rotate in wrong way the blade will be out from the pulleys and might be happen that the blade and pulleys will be damaged.

9. Connect the compressed air to the adaptor socket



## b. Controls description

All the controls are located on the control board

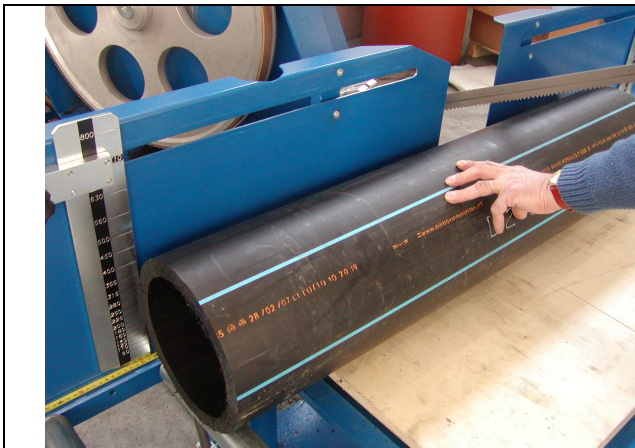


- |                                       |  |
|---------------------------------------|--|
| 1. <b>The White Light Push Button</b> | this button reset the machine  |
| 2. <b>The Orange Light</b>            | showing the hydraulic engine overload and the saw blade engine overload                  |
| 3. <b>The Green Light</b>             | showing that the saw blade is broken or too loosen , or the blade protection carter open |
| 4. <b>The Emergency Push Button</b>   | this button stop the machine   |
| 5. <b>The Green Light Push Button</b> | this button start the saw blade  |
| 6. <b>The Red Push Button</b>         | this button stop the saw blade   |
| 7. <b>The Blue Push Button</b>        | this button controlling the arch upstroke  |
| 8. <b>The Black Push Button</b>       | this button controlling the arch down stroke   |
| 9. <b>Small Black Button</b>          | this button starts the laser beam  |
| 10. <b>Hand wheel</b>                 | controlling the arch down stroke speed   |

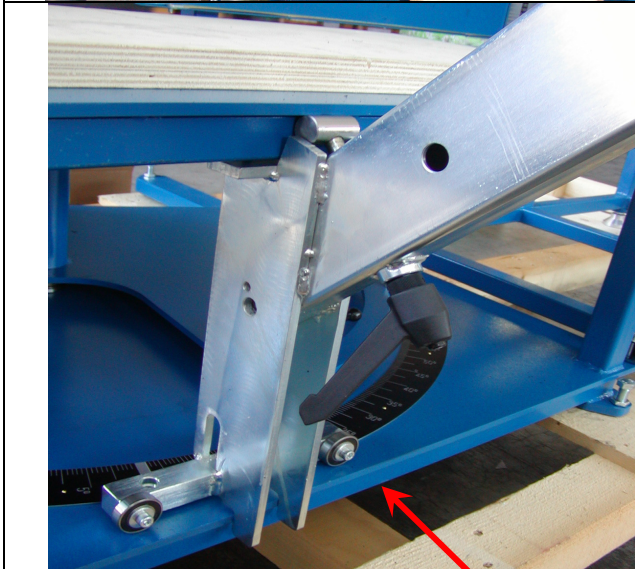
### c. Machine's operation

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

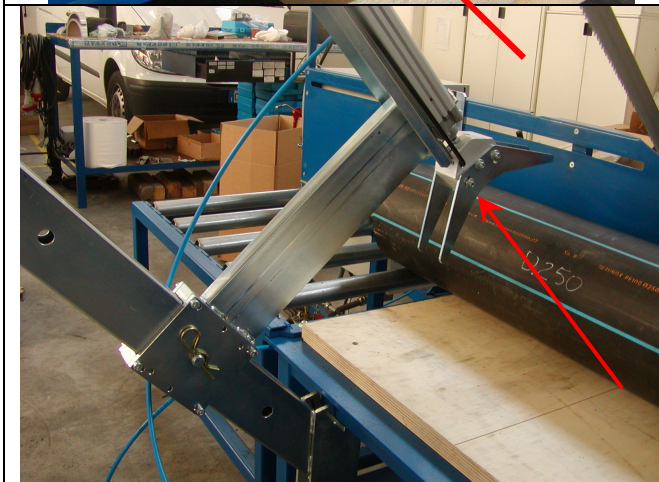
### c.2 How to use the clamp for pipe – cutting with different angles for building bends with different radius



Place the pipe on the left pipe roller

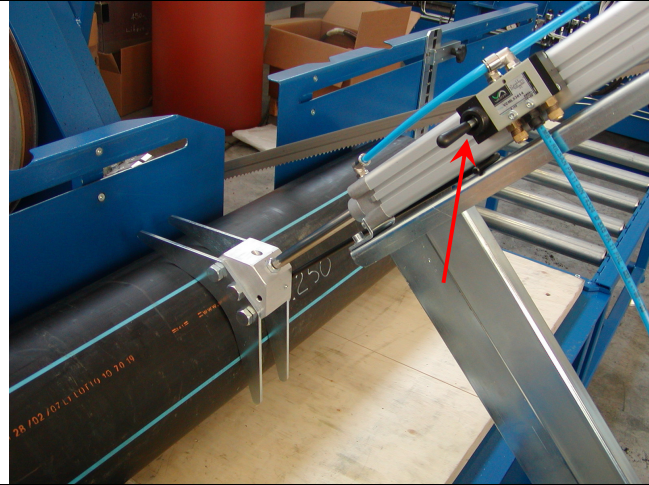


Check if the support of the pipe clamp is properly fixed by acting on the fixing lever shown in the picture

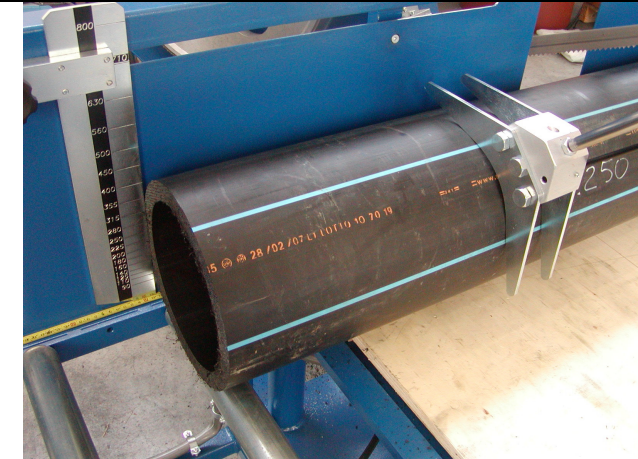


Depending on the pipe diameter adjust the arm height by inserting the pivot (with split pin) in the appropriate hole. Together with the machine we have supplied two different kinds of brackets. The smallest one must be used with pipe with a maximum outside diameter up to 200mm

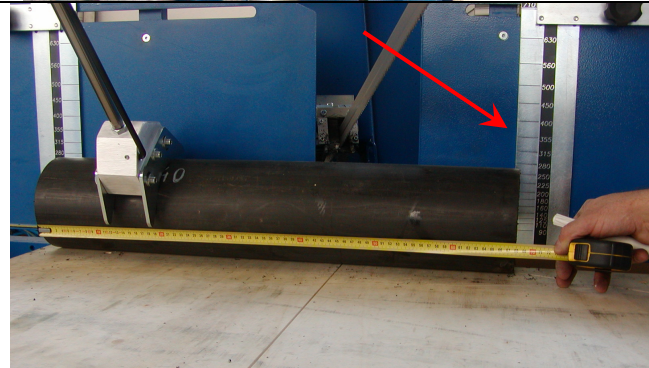




By acting on this lever you will move forward/backward the bracket

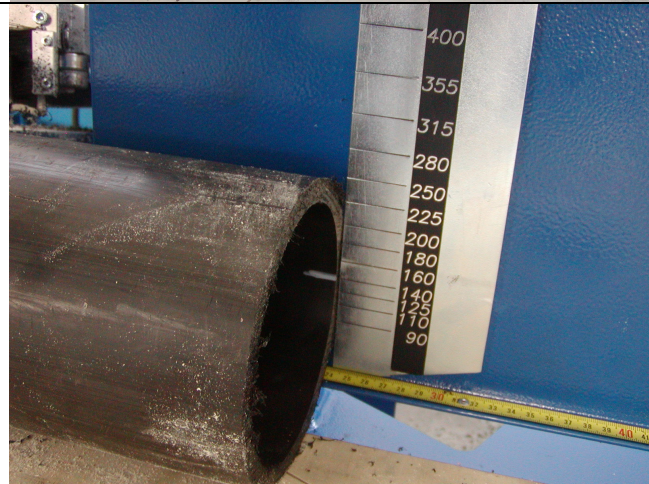


If you cut the pipe with a  $0^\circ$  angle, place the pipe accordingly with the length of the segments that you need. On the left and right pipe roller you will find metric indexes that can help you in this operation (please consider the blade position is the starting position = 0) .



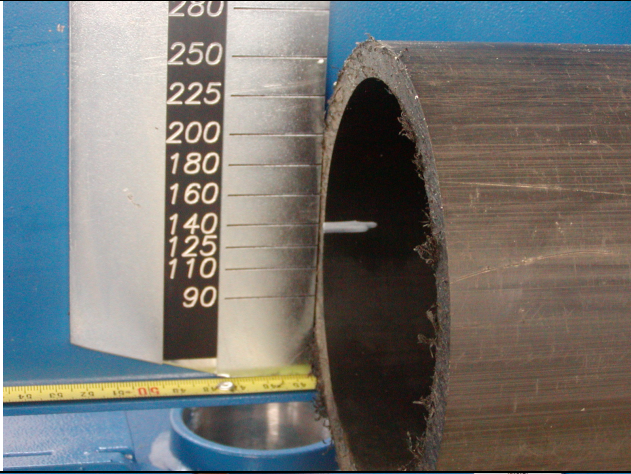
**In case you want to prepare a bend  $45^\circ$  consider (schema A):**

- Position the arch to right at  $22,5^\circ$
- Calculate the total length of pipe required to obtain three pieces composing the bend (R+S+R).
- 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.
- Place the right stopper against the pipe

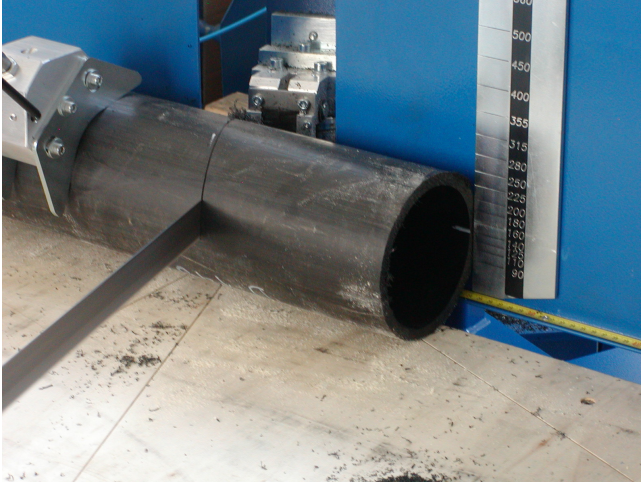


8) By using the vertical index of the right stopper, mark a line in the inner part of pipe corresponding to the outside diameter of pipe.

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

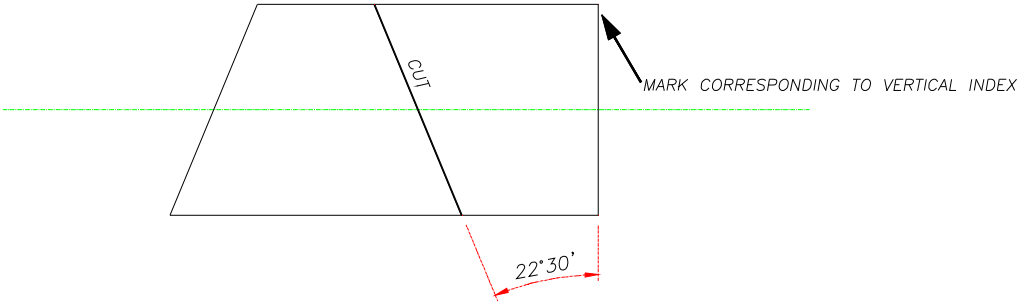
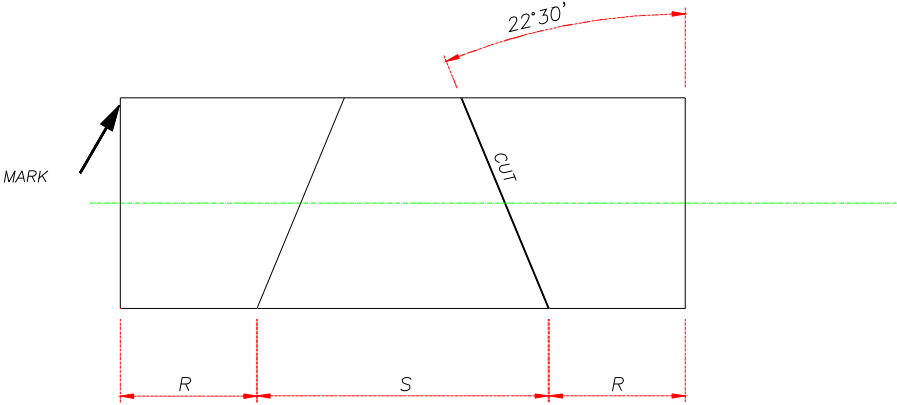
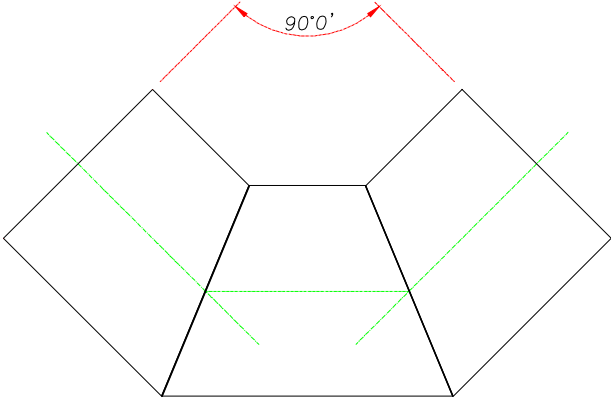


10) Clamp the pipe and execute the second cut

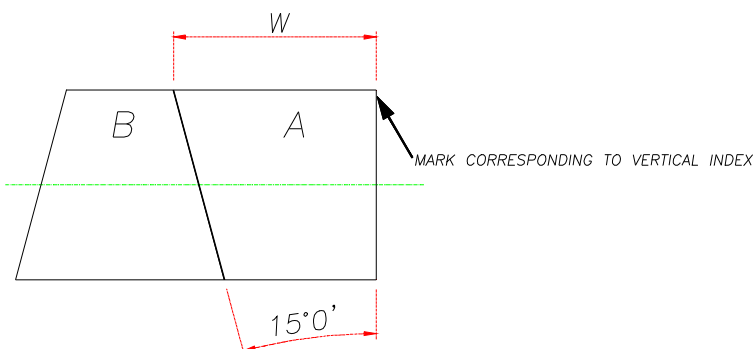
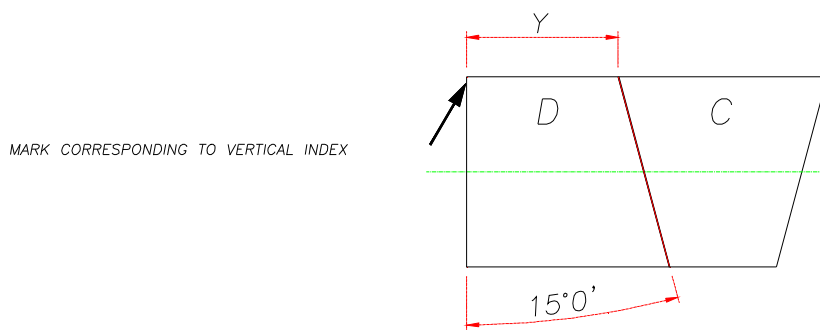
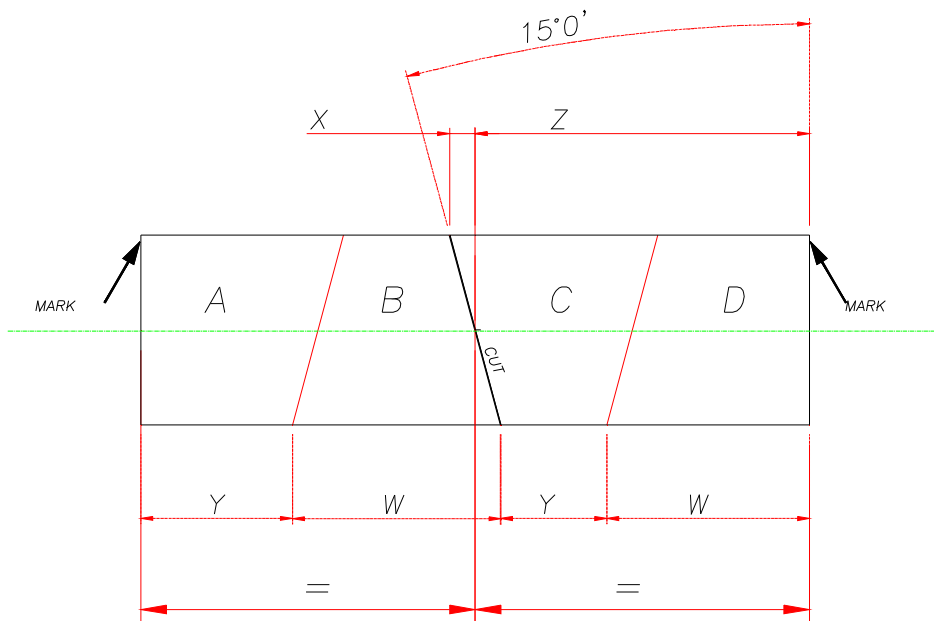
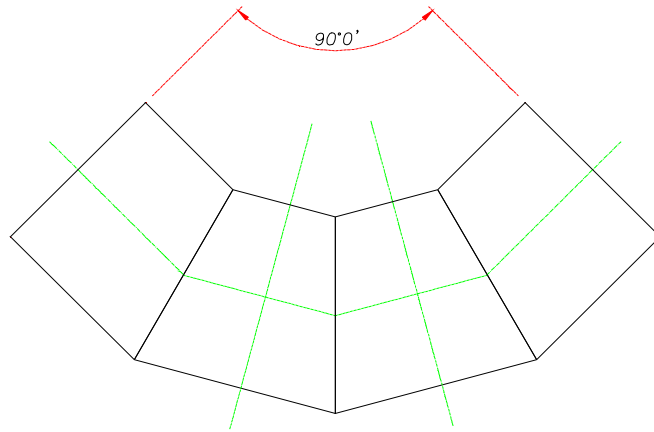
7) In case you want to prepare a bend  $45^\circ$  consider (schema B):

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

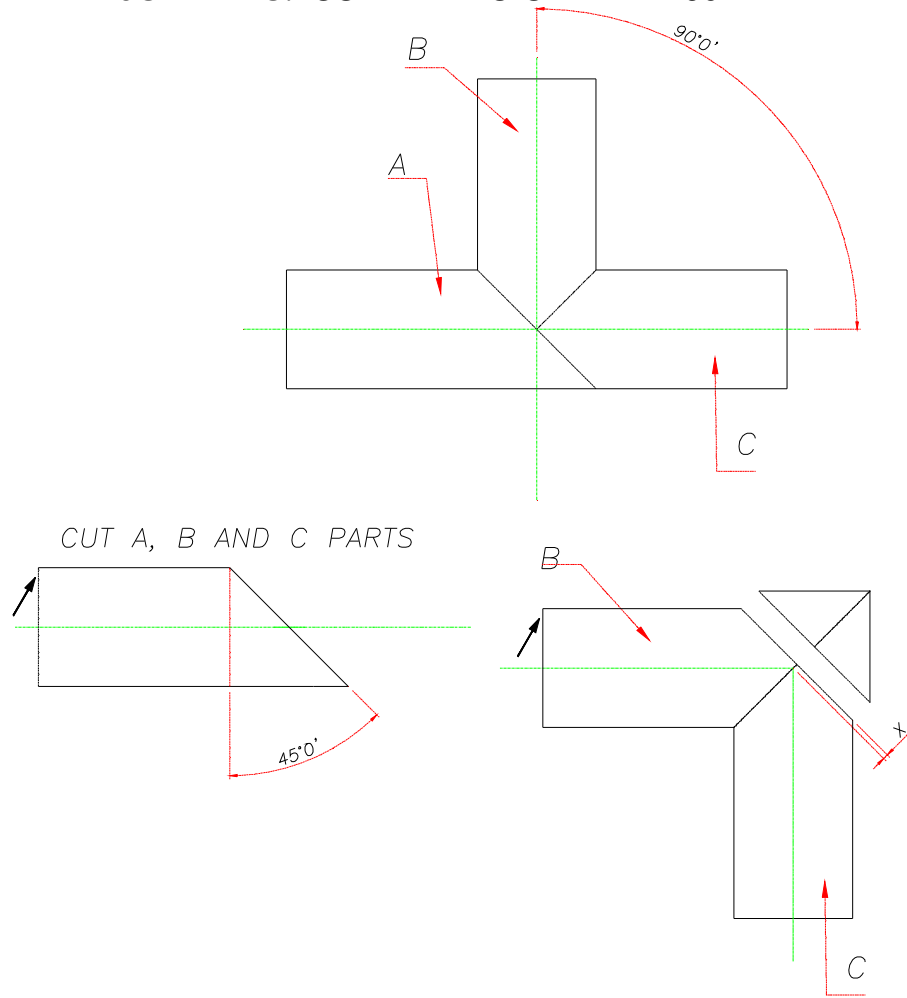
**SCHEMA A: CUT PIPE TO OBTAIN A 90° BEND COMPOSED BY THREE SEGMENTS**



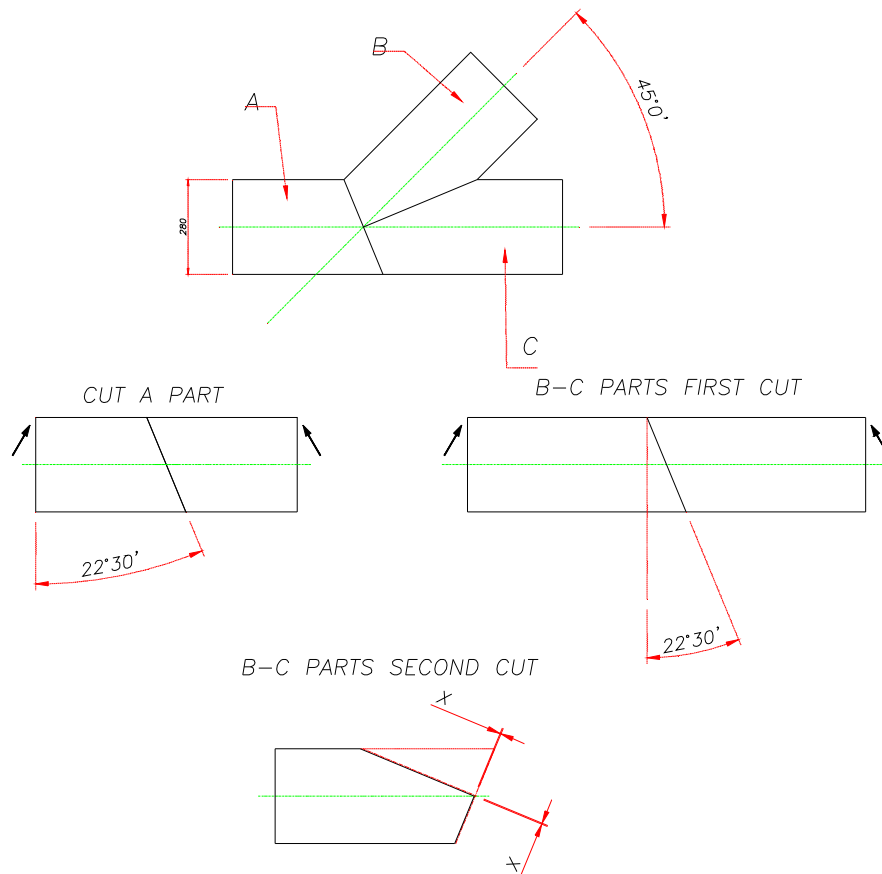
**SCHEMA B: CUT PIPE TO OBTAIN A 90° BEND COMPOSED BY FOUR SEGMENTS**



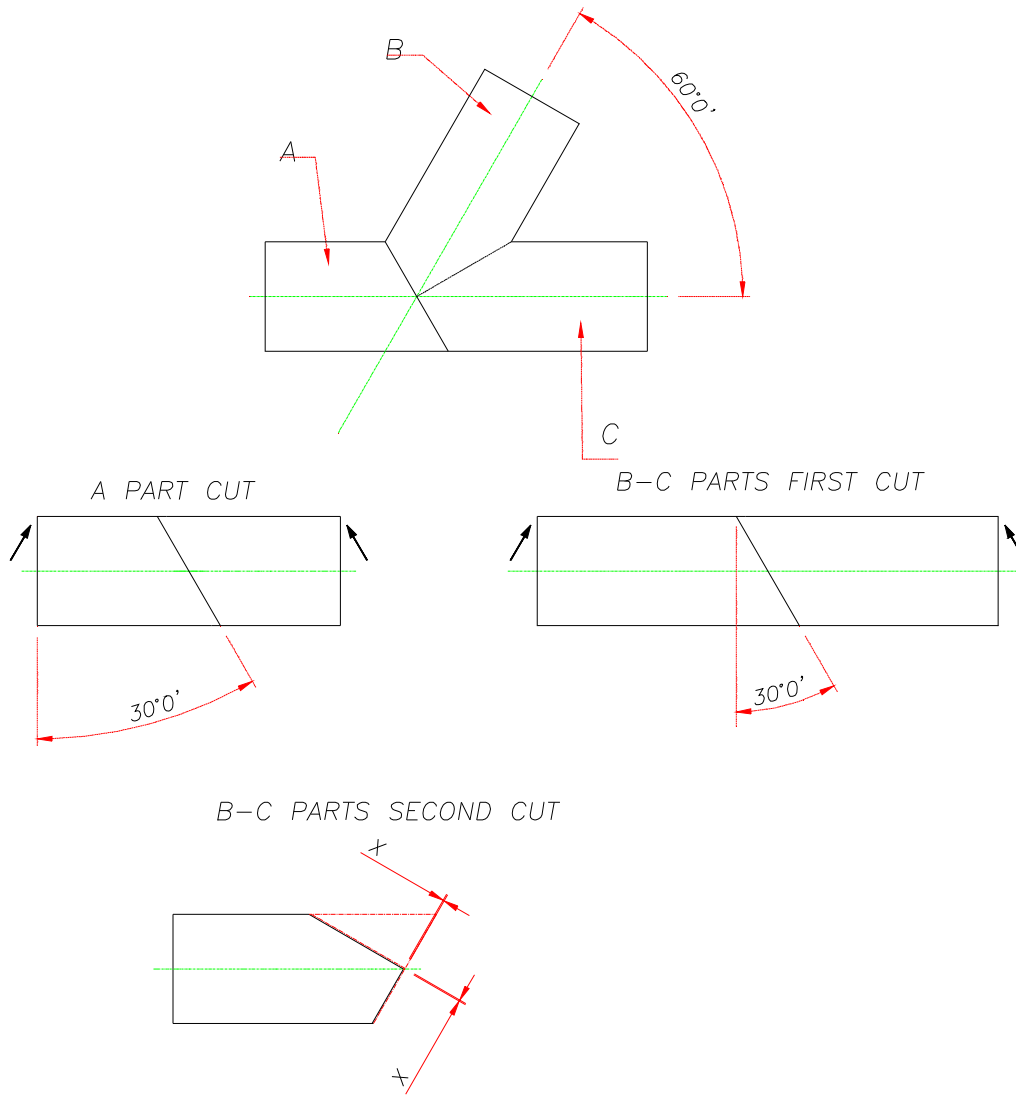
**SCHEMA C: CUT PIPE TO OBTAIN A 90° TEE**



**SCHEMA D: CUT PIPE TO OBTAIN A 45° TEE**

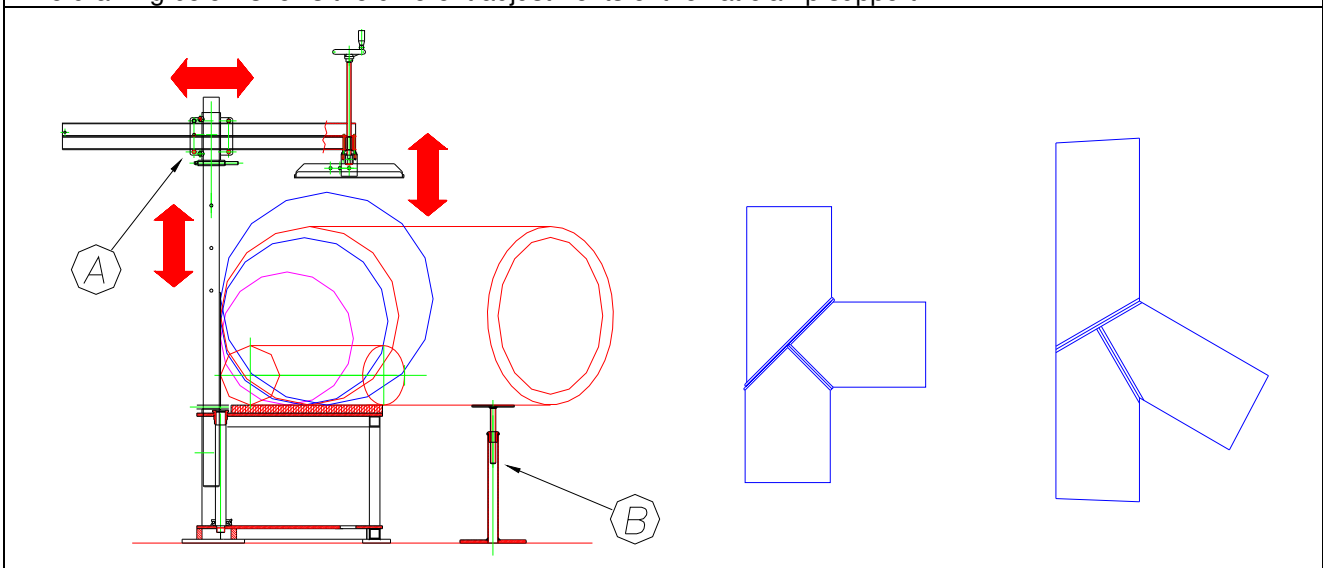


**SCHEMA E: CUT PIPE TO OBTAIN A 60° TEE**



**Additional flat clamp**

To help during the cut operation for segmented tee, you can use the supplied adjustable outer support. The drawing below shows the different adjustments of the flat clamp support.





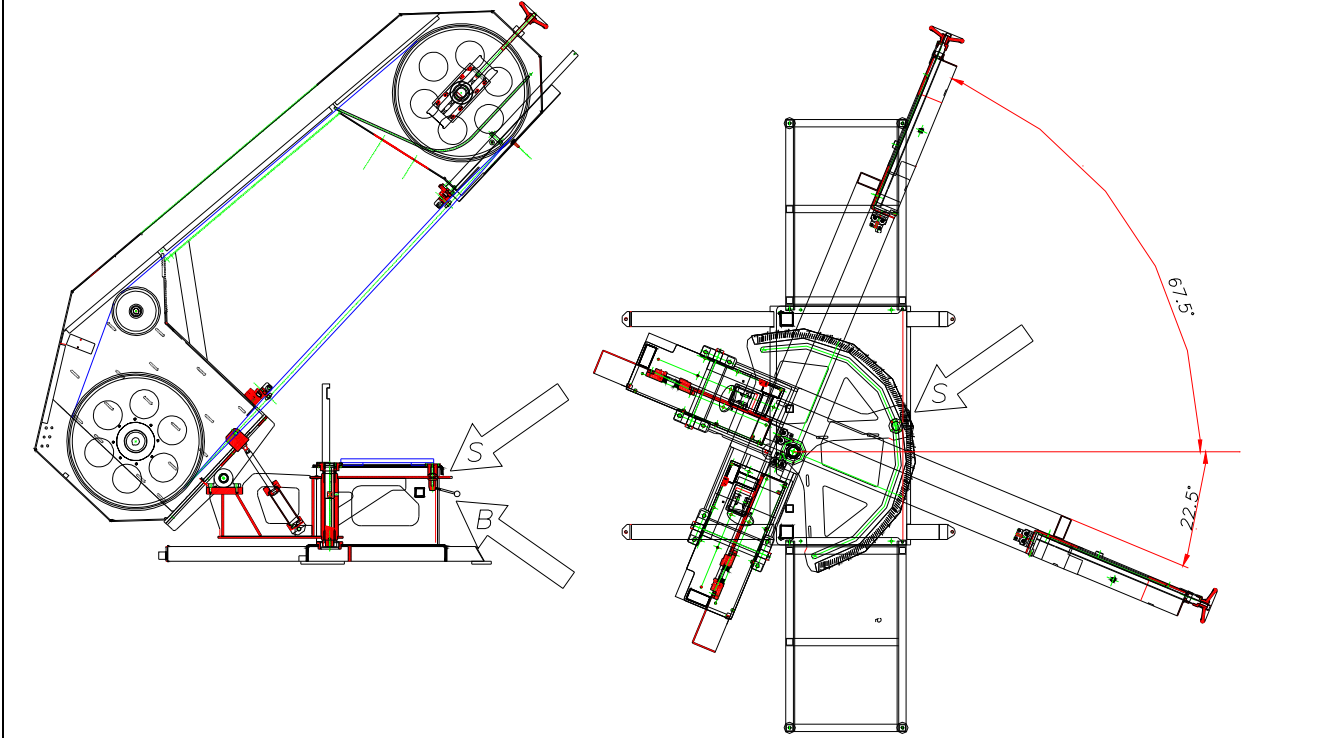
**d. Laser beam (available as an accessory)**

In case you need to precisely cut, you must use the laser beam (supplied as accessory) installed on the arch of the machine. The laser beam shows you the path of the blade. In case of problem you can adjust the position of the laser beam by acting on the bracket support. When you start the blade the machine switch of the laser beam

## e. Machine's adjustment

### 1. How to adjust the cutting angle

To set up the cutting angle, act on lever B to release the arch movement  
Turn the arch to the corresponding cutting angle on the index S. Act on lever B to lock again the arch position.



### 2. 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, or the deformation of the pipe.





### 3. Saw Blade Stretch Adjustment

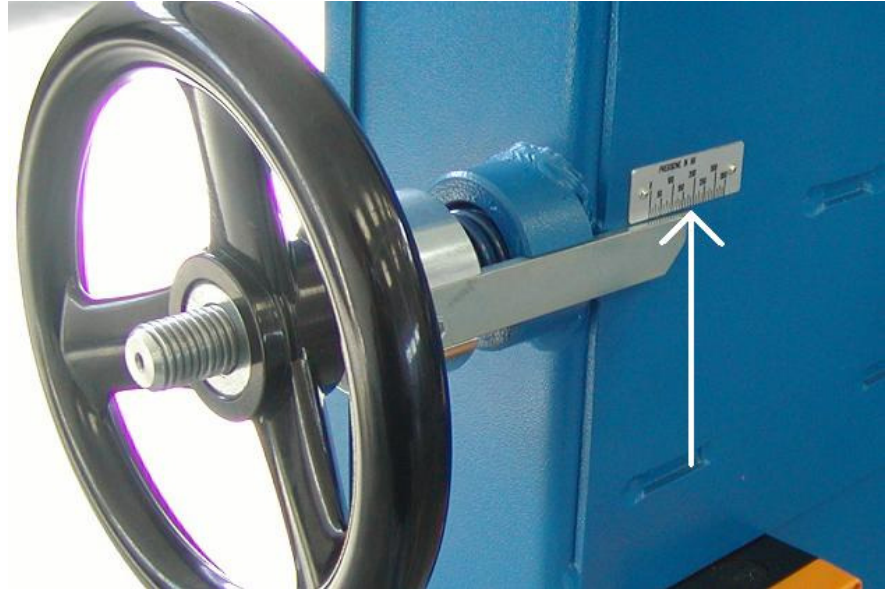
In order to stretch the saw blade it's necessary to act on the nut located on the left side of the arch ( see photo).

The blade stretch must be set up between:

300 and 350 Kg. for common steels

( value are indicated into index label as shown by the white arrow)

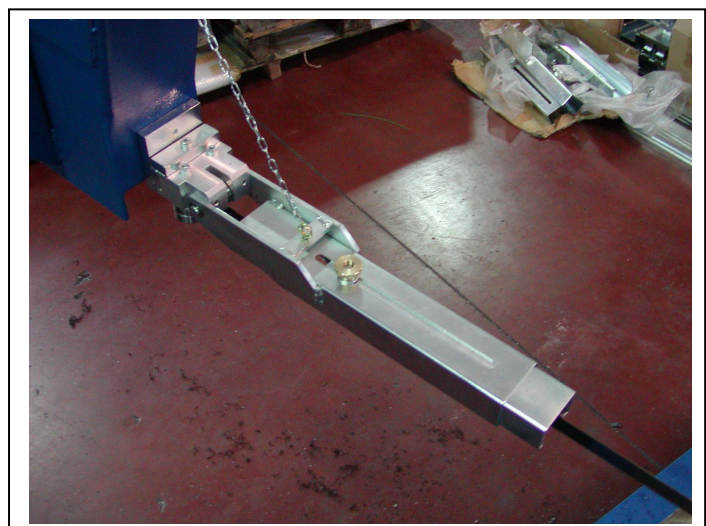
150-160 kg for widia blade [you have to replace the blue spring with yellow spring (supplied as optional)]



### 4. Blade's Guide Adjustment

In order to maintain the saw blade 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 to adjust should:

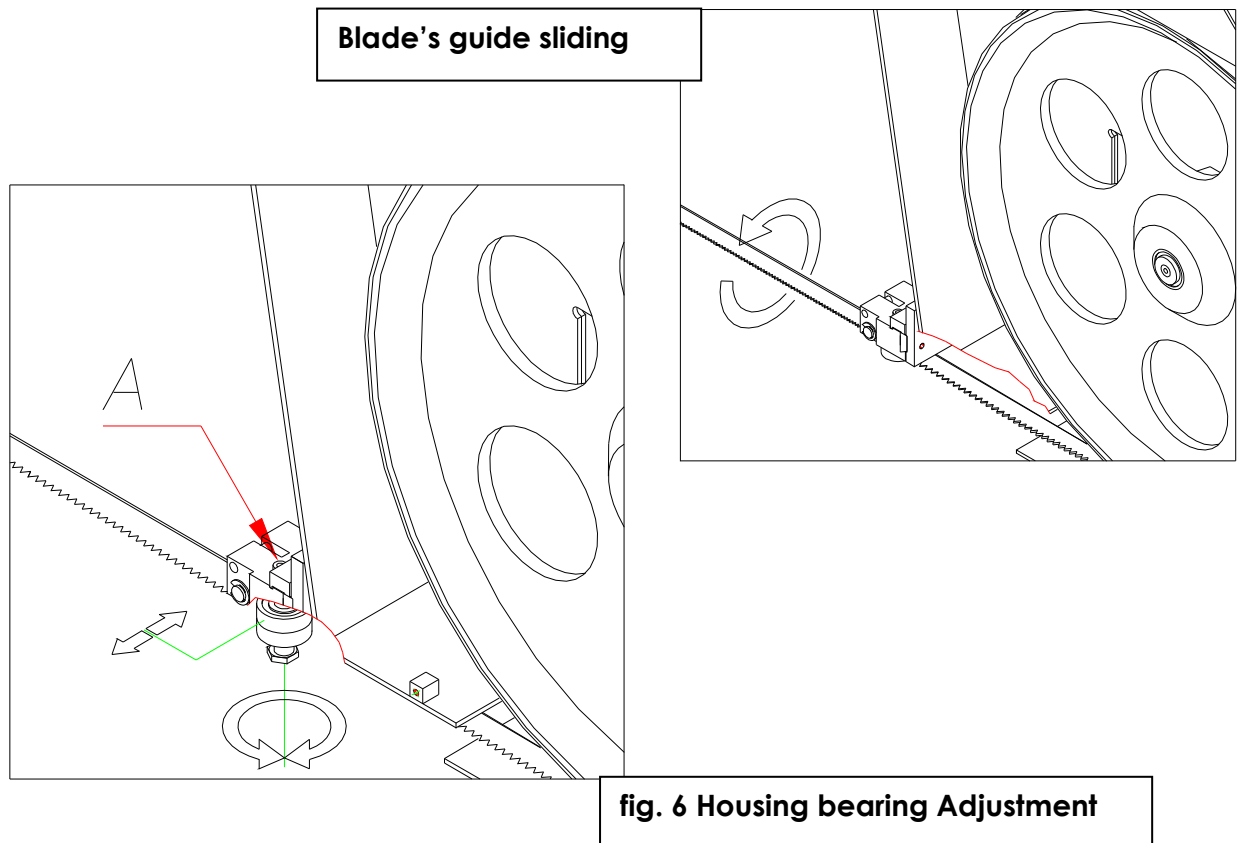
- Enlighth the lever
- Adjust the blade's guide by sliding forward or backward according to the pipe's diameter. (see picture)
- Block the lever



## 5. Blade Replacement

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

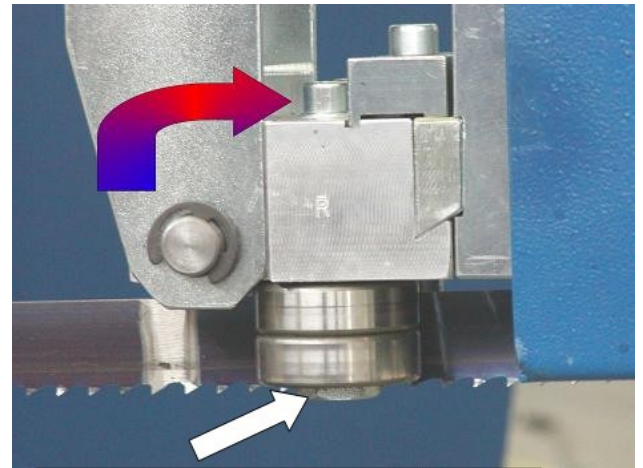
- Disconnect the machine from the power supply
- Open the carters
- Remove the old blade by means of releasing the stretch regulating nut and pull out the blade from the housings
- Mount the blade into the pulleys
- Rotate the blade and insert it into the blade housing
- In case of different wall thickness of the blade, adjust the housing marked with the letter caps R bearing as per fig. 6
- 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



**Warning:** In order to preserve the longevity of blade we suggest slacking the stretch on the blade at the end of working time.

### 6. Adjusting the bearings

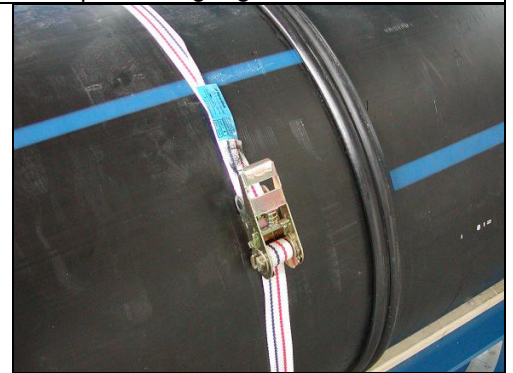
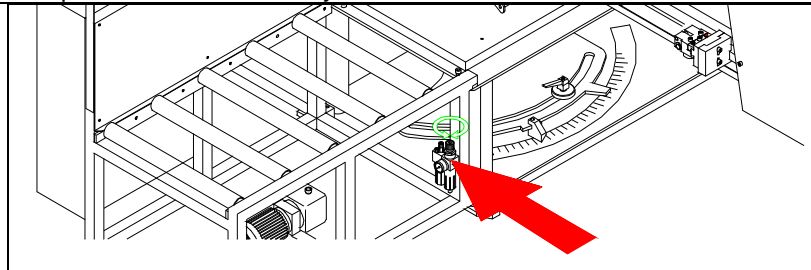
Please check if the blade is adhering to the bearings. To adjust this parameter, please slack the screw (upper arrow) shown in Figure and turn the pivot (lower arrow) in the required position. Once adjusted the position tight again the fixing screw.



**Bearings adjustment**

### 7. Blocking Clamp pressure regulation

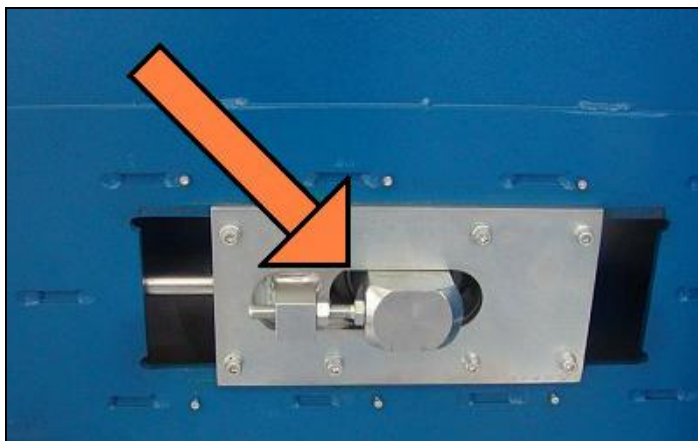
If necessary the blocking clamp's pressure could be modified . By acting on the pressure regulator it's possible to modify the clamping force during the cutting operation. The pressure should be adjusted between 2 and 8 bars as indicated on the pressure gauge.



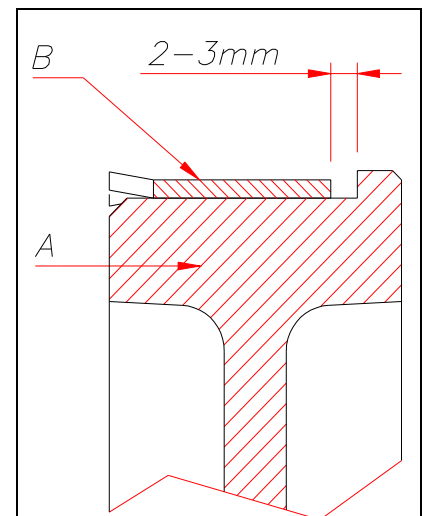
You can use the belt for a better fixing the pipe

### 8. Adjusting the inclination of the main pulley

In view to avoid the exit of the blade from its housing you can adjust the inclination of the main pulley by acting on the screw shown in the figure 10. Please carefully check the space between the border of the pulley and the blade is at least 2-3mm as shown in the figure 11. If this space is lesser than 2mm the blade could break

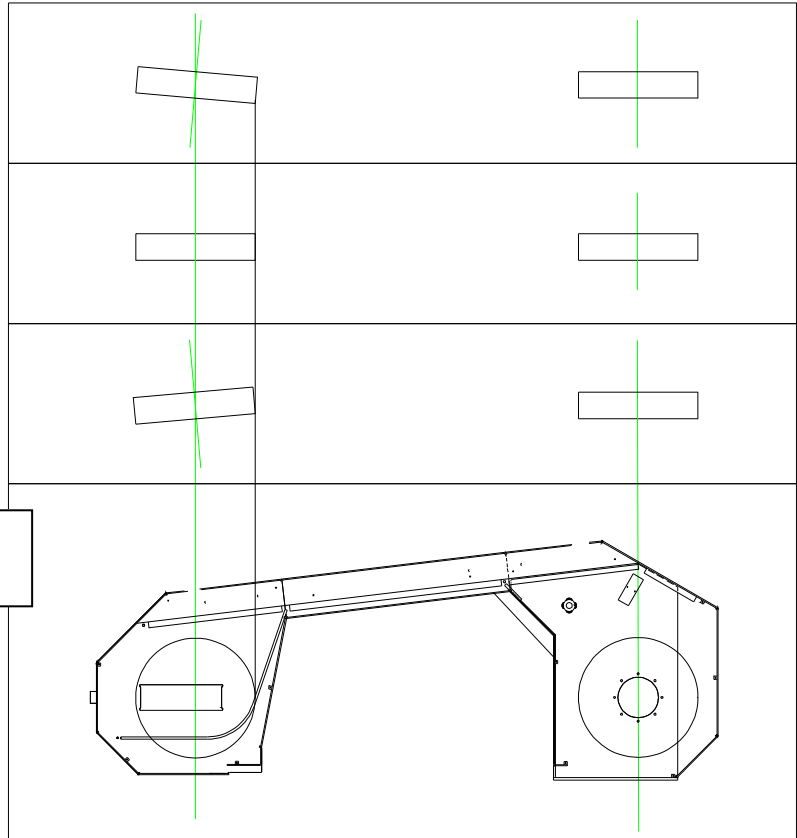


**fig. 10 Main pulley adjusting screw**



**fig. 11 Blade position on the pulley**

To clarify how the main pulley inclination could be adjusted you can check the figure 12.  
The adjusting screw has been fixed by a nut.



**fig. 12 Different main pulley inclination**

## f. 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.

Check the oil level of the lubricating system or the pneumatic circuit.

Keep the hydraulic unit clean

### GENERAL CONTROL

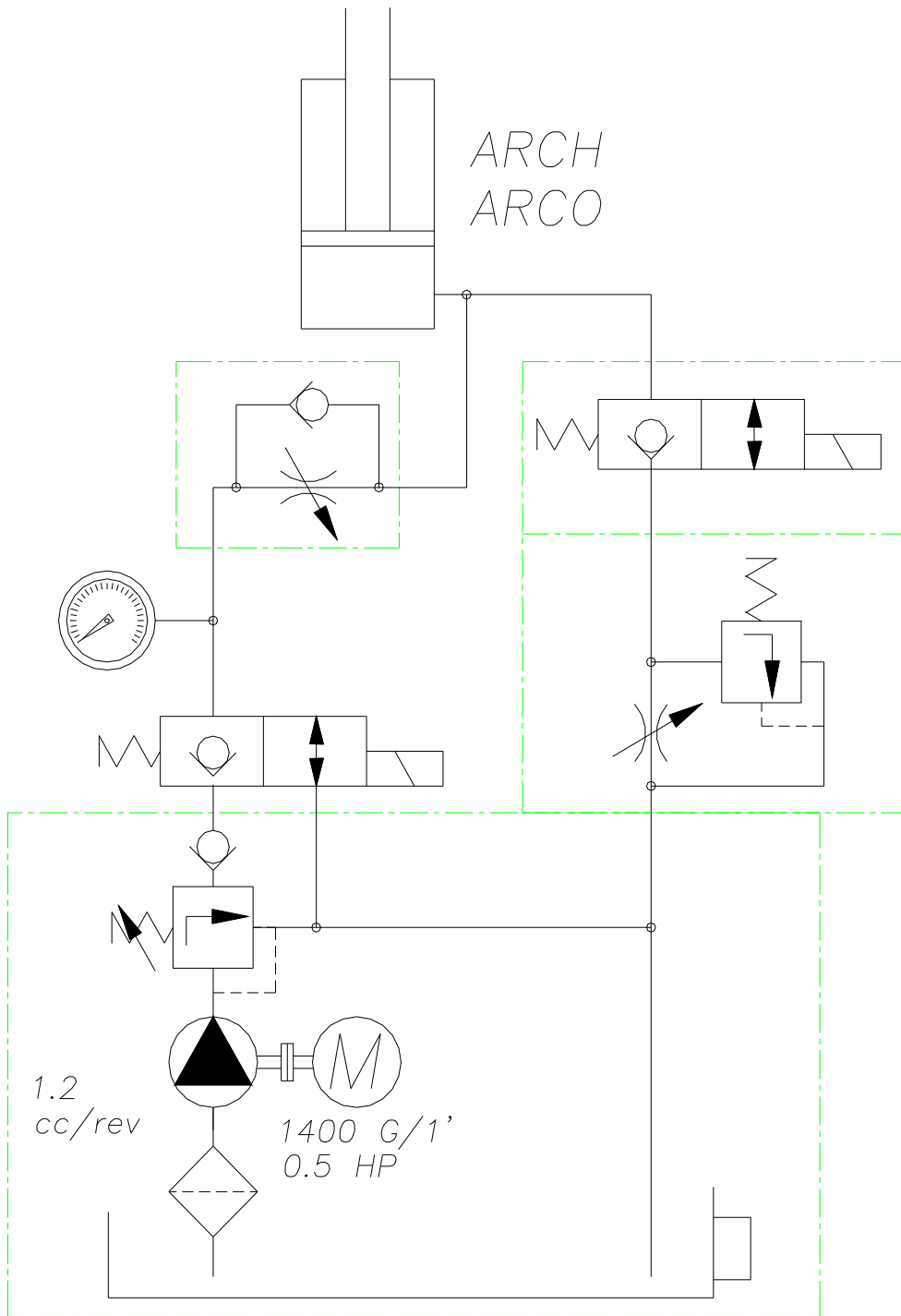
In case something will happen on the machine or in one component, kindly contact our technical assistance department.

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

## g. Troubleshooting

- The machine does not switch on
  - Verify the thermal switch 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 carter 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



HYDRAULIC DRAWINGS  
ST 800/2004