



R-CNC80



User Guide CNC Models

Software



THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

Inspection & Acceptance. Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any goods to Seller. Goods returned without a RGA will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

Specifications. Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 30 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.



Force Majeure. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightning, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator's manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

Remedies. Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

Attorney's Fees. In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorneys' fees and costs.

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

Summary of Return Policy.

- 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
- You must obtain a Baileigh issued RGA number PRIOR to returning any materials.
- Returned materials must be received at Baileigh in new condition and in original packaging.
- Altered items are not eligible for return.
- Buyer is responsible for all shipping charges.
- A 30% re-stocking fee applies to all returns.

Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

For Customer Service & Technical Support:

Please contact one of our knowledgeable Sales and Service team members at: (920) 684-4990 or e-mail us at sales@baileighindustrial.com



INTRODUCTION

The quality and reliability of the components assembled on a Baileigh Industrial machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.

Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find: (when applicable)

- Safety procedures
- Correct installation guidelines
- Description of the functional parts of the machine
- Capacity charts
- Set-up and start-up instructions
- Machine operation
- Scheduled maintenance
- Parts lists

GENERAL NOTES

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any unauthorized modifications.



Note: This symbol refers to useful information throughout the manual.



IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.



SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death.**

Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.

General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.



DANGER



WARNING



CAUTION

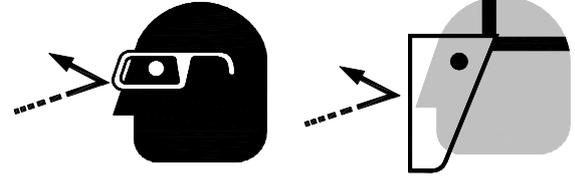


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



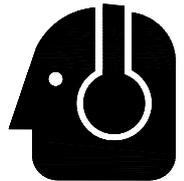
HYDRAULIC HOSE FAILURE

Exercise **CAUTION** around hydraulic hoses in case of a hose or fitting failure.



PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.



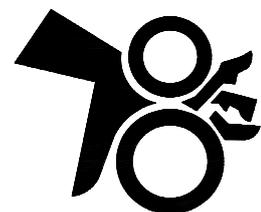
KEEP CLEAR OF MOVING OBJECTS

Always be aware of the position of the clamp handle and the counterweight. They are heavy and can swing back suddenly causing serious body or head injuries.



BEWARE OF PINCH POINTS

Keep hands and fingers away from the rolls when the machine is in operation.

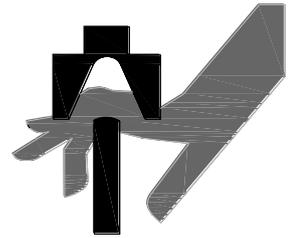




BEWARE OF PINCH POINTS AND CRUSH HAZARD

Keep hands and fingers from between the roller and die when bending materials to avoid possible injury.

NEVER place your hands, fingers, or any part of your body in the die area of this machine.



EMERGENCY STOP BUTTON

In the event of incorrect operation or dangerous conditions, the machine can be stopped immediately by pressing the **E-STOP** button. Twist the emergency stop button clockwise (cw) to reset. Note: Resetting the E-Stop will not start the machine.



SAFETY PRECAUTIONS



Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

REMEMBER: Your personal safety is your responsibility.



WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

Only trained and qualified personnel can operate this machine.

Make sure guards are in place and in proper working order before operating machinery.

Remove any adjusting tools. Before operating the machine, make sure any adjusting tools have been removed.

Keep work area clean. Cluttered areas invite injuries.



Overloading machine. By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.

Dressing material edges. Always chamfer and deburr all sharp edges.

Do not force tool. Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.

Use the right tool for the job. **DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.

Dress appropriate. **DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.

Use eye and ear protection. Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.

Do not overreach. Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.

Stay alert. Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.

Check for damaged parts. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.

Observe work area conditions. **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.

Keep children away. Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.

Store idle equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.

DO NOT operate machine if under the influence of alcohol or drugs. Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.

DO NOT touch live electrical components or parts. **Turn off** power before checking, cleaning, or replacing any parts.

Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.

Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill!**

DO NOT bypass or defeat any safety interlock systems.

Keep visitors a safe distance from the work area.



TECHNICAL SPECIFICATIONS

Driven Rolls	3
Roll Adjustment	Hydraulic
Shaft Diameter	2.55"
Shaft Center Distance	Adj. (lower rolls)
Upper Roll Dia.	6.693"
Lower Roll Dia.	6.693"
Motor	7.4hp
Pinch	Single with Interchangeable Bottom Rolls
Digital Readout	Yes
Power	220V, 60hz, 3ph
Shipping Weight	2500 lbs.

*Optional Tooling
Some applications may require optional tooling. Please contact a Technical Sales Specialist at Baileigh Industrial with specific application details.

Dimensions L x W x H 59" x 40" x 66"

Capacity Size/Min Diameter

Pipe



3" (Sch. 40) DIA. 64"

Round Tube



4.0" (.075") DIA. 68"

Square Tube



3.15" (.157") DIA. 158"

Angle Iron



2.75" (.375") DIA 36"

Solid Square



2.0" DIA. 40"

Solid Round



2.0" DIA. 40"

Flat Bar Easy Way



5"(.75") DIA. 38"

Flat Bar Hard Way



4.5" (.50") DIA. 42"

PLEASE NOTE—MINIMUM RADII SHOWN MAY REQUIRE MULTI- PASS
All Specs based of 60,000 PSI (42 kg/mm²) Tensile Strength - Mild Steel



TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: sales@baileighindustrial.com, Phone: 920.684.4990, or Fax: 920.684.3944.



Note: *The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*



Note: *The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.*



UNPACKING AND CHECKING CONTENTS

Your Baileigh machine is shipped complete in one crate. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

⚠ WARNING: SUFFOCATION HAZARD! Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.
If any parts are missing, do not plug in the power cable, or turn the power switch on until the missing parts are obtained and installed correctly.

Cleaning

⚠ WARNING: DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

⚠ CAUTION: When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.

Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces. Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.



Important: This waxy coating is **NOT** a lubricant and will cause the machine to stick and lose performance as the coating continues to dry

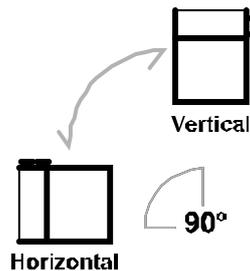




TRANSPORTATION AND PLACEMENT OF THE MACHINE

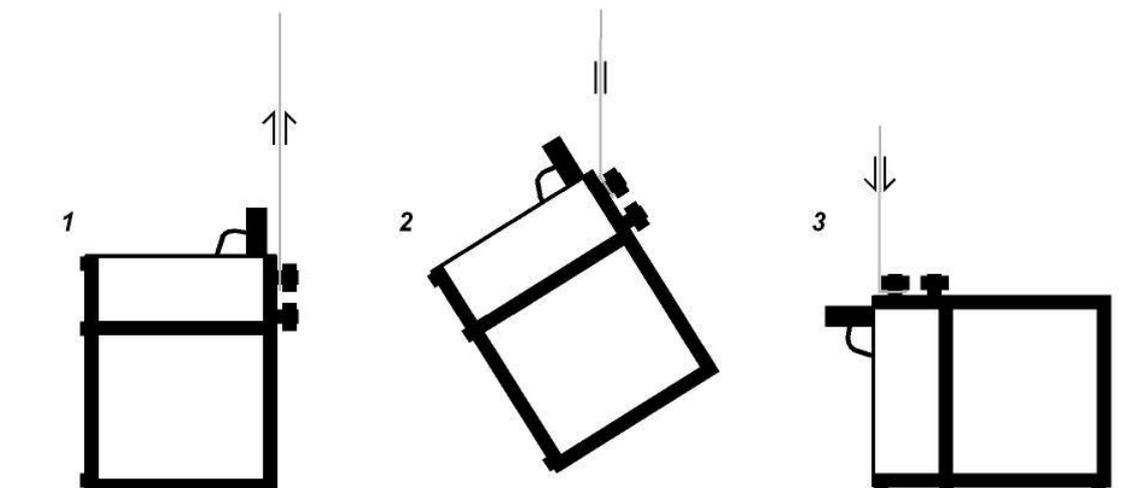
The lifting and movement of the machine should always be done with the help of cables (compatible with the machine's weight) placed on the existing lifting eyebolt mounted on the upper part of your machine: all the weight lays on the bottom of the machine's structure.

All MAH Series model between R-55H and R-150H, were conceived to operate either on the horizontal or vertical position.



If you want to change the position of the machine (Vertical to Horizontal) The movement should be performed as follows:

1. Lift the machine using cables (using a crane, a bridge crane or other lifting apparatus);
2. The machine will stand suspended on air;
3. After coming to a complete stop, it can be loaded down again to its position.





INSTALLATION

IMPORTANT:

Consider the following when looking for a suitable location to place the machine:

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.



ELECTRICAL

⚠ WARNING: Baileigh Industrial is not responsible for any damage caused by wiring up to an alternative 3-phase power source other than direct 3-phase. If you are using an alternate power source, consult a certified electrician or contact Baileigh Industrial prior to energizing the machine.

⚠ CAUTION: HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!
Check if the available power supply is the same as listed on the machine

⚠ WARNING: Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

Motor Specifications

Your tool is wired for 220 volt, 60Hz alternating current. Before connecting the tool to the power source, make sure the machine is cut off from power source.

Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. Before connecting the motor to the power line, make sure the switch is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the tool.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

⚠ WARNING: In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.



- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cord immediately.

Power cord connection:

1. Unlock and open the electrical enclosure door.
2. Route a power cord which connects to the terminal strip at locations **E**, **L1**, **L2**, and **L3**. Insert a fitting into an open hole to grip the power cord (supplied by customer).
3. Connect the three power wires terminals **L1**, **L2**, & **L3**. Connect the ground wire (typically green) to the **E** terminal.
4. Check that the power cord has not been damaged during installation.

Check for correct rotation of the motor

1. Close the electrical enclosure door.
2. With power connected and the main disconnect turned ON, the power light (**E**) on the control panel will be lit.
3. Push the spindle forward start button (**F**) to start the spindle. The spindle should rotate in a clockwise direction as looking down on the spindle from and overhead position.
4. If not, disconnect power to the machine, and switch the L1 and L3 wires. DO NOT move the ground wire.

MODELO/MODEL PERFIL/PROFILE	40/3 MAH Dim. (mm) Ø Min. (mm)	60/3 MAH Dim. (mm) Ø Min. (mm)	80/3 MAH Dim. (mm) Ø Min. (mm)	120/3 MAH Dim. (mm) Ø Min. (mm)	150/3 MAH Dim. (mm) Ø Min. (mm)
1	80 x 10 Ø800	90 x 12 Ø900	120 X 12 Ø1000	130 X 20 Ø1200	140 X 20 Ø1500
2	90 x 15 Ø800	100 x 20 Ø900	130 X 20 Ø1000	140 X 30 Ø1100	160 X 40 Ø1200
3	40x40 Ø1000	45x45 Ø1000	50 X 50 Ø1000	60 X 60 Ø1100	80 X 80 Ø1300
4	Ø40 Ø900	Ø45 Ø1000	Ø50 Ø1000	Ø60 Ø1100	Ø80 Ø1300
5	Ø63x3 Ø1500	Ø70x3 Ø1500	Ø100X2 Ø1700	Ø120X2,5 Ø2000	Ø150X3 Ø2600
6	Ø60,3x3,2 Ø1200	Ø76,1x3,2 Ø1500	Ø88,9X3,6 Ø1600	Ø114,3X3,6 Ø1800	Ø139,7X5 Ø2000
7	60x40x3	70x40x3	100X40X6 Ø3500	120X60X4 Ø4000	140X80X5 Ø5000
8	50x50x3	60x60x4	80X80X4 Ø4000	100X100X5 Ø5000	120X120X6 Ø6000
9	50x50x5 Ø600	60x60x6 Ø700	70x70x10 Ø900	80x80x10 Ø1000	100x100x12 Ø1400
10	50x50x5 Ø750	60x60x6 Ø750	70x70x10 Ø950	80x80x10 Ø1100	100x100x12 Ø1600
11	60x60x7 Ø700	70x70x8 Ø800	80X80X9 Ø1000	100X100X10 Ø1200	120X120X12 Ø1400
12	60x60x7 Ø900	70x70x8 Ø900	80X80X9 Ø1000	100X100X10 Ø1200	120X120X12 Ø1400
13	60x60x7 Ø800	70x70x8 Ø900	80X80X9 Ø1000	100X100X10 Ø1200	120X120X12 Ø1400
14	UPN80 Ø750	UPN100 Ø1000	UPN140 Ø1000	UPN160 Ø1200	UPN180 Ø1400
15	UPN80 Ø1200	UPN100 Ø1000	UPN140 Ø1000	UPN160 Ø1200	UPN180 Ø1400
16	—	—	IPN80 Ø1000	IPN100 Ø1200	IPN160 Ø1400
17	—	—	—	HEB100 Ø3000	HEB140 Ø5600
18	—	—	—	UPN100 Ø3000	UPN140 Ø5600
19	—	—	—	IPN100 Ø3000	IPN140 Ø5600
20	—	—	—	HEB100 Ø3000	HEB140 Ø5600

- Rolos Standard / Standard Rolls / Rodillos Standard
- Rolos Especiais / Special Rolls / Rodillos especiales
- Rolos Especiais para perfis de parede fina / Special Rolls for thin wall profiles / Rodillos especiales para perfiles con pared de bajo espesor
- Um jogo de ferramentas para cada diâmetro / One set of rolls is required per each tube diameter / Un juego de utillajes para cada diámetro

40/3	
Potência instalada (Kw) Power (Kw) Potência instalada (Kw)	3,7
Pressão de trabalho Working pressure Presión trabajo	200 Bar
RPM	12
Ø Rolos (mm) Rolls Ø (mm) ØRodillos (mm)	148
Ø Veios de Solda (mm) Outside shaft Ø (mm) ØEjes de salida (mm)	45
Peso (Kg) Weight (Kg) Peso (Kg)	540
Dimensões (C x L x A) Dimensions (L x W x H) Dimensiones (L x A x A)	1200x770x1450

60/3	
Potência instalada (Kw) Power (Kw) Potência instalada (Kw)	5,5
Pressão de trabalho Working pressure Presión trabajo	200 Bar
RPM	11
Ø Rolos (mm) Rolls Ø (mm) ØRodillos (mm)	170
Ø Veios de Solda (mm) Outside shaft Ø (mm) ØEjes de salida (mm)	55
Peso (Kg) Weight (Kg) Peso (Kg)	740
Dimensões (C x L x A) Dimensions (L x W x H) Dimensiones (L x A x A)	1300x890x1570

80/3	
Potência instalada (Kw) Power (Kw) Potência instalada (Kw)	5,5
Pressão de trabalho Working pressure Presión trabajo	200 Bar
RPM	10
Ø Rolos (mm) Rolls Ø (mm) ØRodillos (mm)	195
Ø Veios de Solda (mm) Outside shaft Ø (mm) ØEjes de salida (mm)	65
Peso (Kg) Weight (Kg) Peso (Kg)	1050
Dimensões (C x L x A) Dimensions (L x W x H) Dimensiones (L x A x A)	1500x1000x1660

120/3	
Potência instalada (Kw) Power (Kw) Potência instalada (Kw)	7
Pressão de trabalho Working pressure Presión trabajo	200 Bar
RPM	8
Ø Rolos (mm) Rolls Ø (mm) ØRodillos (mm)	247
Ø Veios de Solda (mm) Outside shaft Ø (mm) ØEjes de salida (mm)	80
Peso (Kg) Weight (Kg) Peso (Kg)	1450
Dimensões (C x L x A) Dimensions (L x W x H) Dimensiones (L x A x A)	1620x1250x1660

150/3	
Potência instalada (Kw) Power (Kw) Potência instalada (Kw)	9,7
Pressão de trabalho Working pressure Presión trabajo	200 Bar
RPM	0 - 7
Ø Rolos (mm) Rolls Ø (mm) ØRodillos (mm)	300
Ø Veios de Solda (mm) Outside shaft Ø (mm) ØEjes de salida (mm)	100
Peso (Kg) Weight (Kg) Peso (Kg)	2750
Dimensões (C x L x A) Dimensions (L x W x H) Dimensiones (L x A x A)	1900x1400x1900



CHOOSING OF BARS TO BEND

All kinds of profiles and tubes are compatibles to be bent on our machines; of course, the result of bending depends always on the quality of the material used.

If the profile has a steel compound, a spring effect is to be obtained due to the elasticity of the material: in this case a change on the diameter of the bend should be taken into account. This does not happen when using mild steel.

The tubing tends to ovalize, depending on:

- a) Tube Diameter;
- b) Material Thickness;
- c) Bending Radius;

When working with short bending radius it is necessary to choose a material with larger wall thickness, which should be proportional to the tube diameter.

To avoid ovalization, the tube can be filled with sand and its ends covered with silicone or with a simple cork.

Square and rectangular tubes tend to flatten. To avoid this, the choice of the correct material should be done according to the previous suggestions.

If the section of the profile is not constant (with a slight difference of 1/10) some irregularities may occur on the bending diameter.

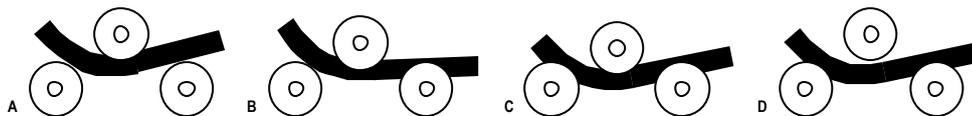
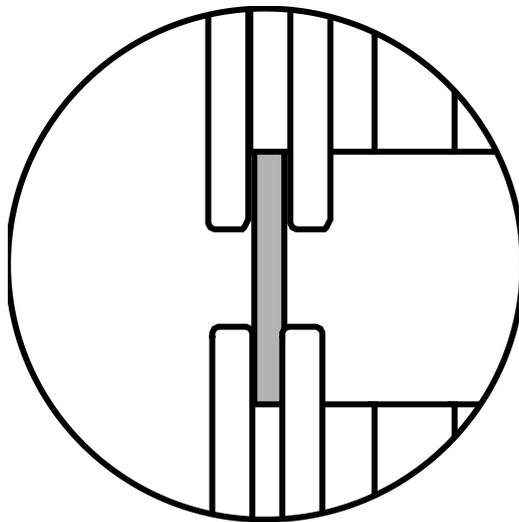
We strongly recommend to bend the profiles prior to any surface treatment since the compression of the material on the interior of the curve may produce some damage on the surface. Also the profiles should be, if possible, cleaned and completely dried.



PREVIOUS MOUNTING OF THE ROLLS

It is necessary to place the rolls correctly according to the type of the profile to bend and before starting the bending operation: this will save extra efforts to the machine and possible defects on the profile: if a perfect bending is to be obtained, first introduce a wedge of precise thickness and diameter between the two half rolls in order to stand the curved flange.

The profile should move a little bit tightened and during its bending the groove of the upper roll must be 2, 3 or 4 mm larger than the thickness of the material.



BEING SO:

Picture a): valid only for thick iron or with an almost rectangular shape;

Picture b): valid only for flat, tall and thin bars;

Picture c): position of the rolls to obtain bents with short circles;

Picture d): this position is to be avoided since the peripheral speeds of the rolls, when making contact with the profiles, have different values:



CENTER DISTANCES OF THE LOWER ROLLS

(only for machines with adjustable lower rolls)

This model offers the possibility of center distances of the lower rolls- the setting is done acting on the side screws, turning right or left in order to position the central roll of the machine near or far- thanks to the described operation it is possible to obtain the best bending results over each.

EXAMPLE:

Long Centre Distances

- Used when bending maximum capacities of the profile;
- Square or rectangular tubing;
- Steel profiles, closed and bigger section.

Medium Centre Distances

- Rounded tubes;
- Profiles iron in "T" and "U" shapes;
- Steel profiles closed or open section of medium sizes.

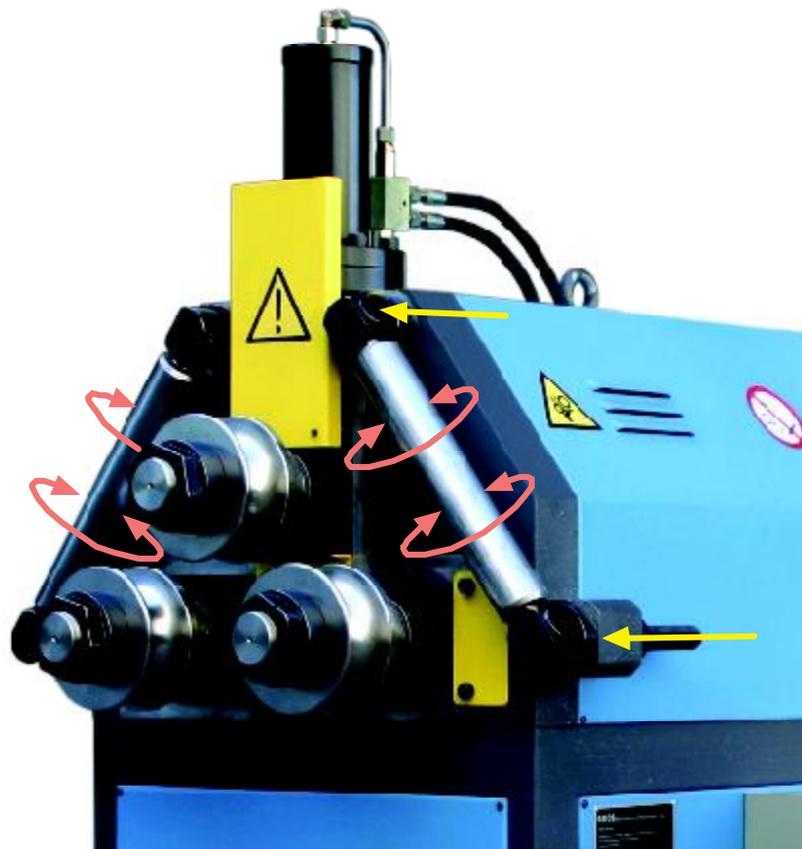
Short Centre Distances

- Short bending radius with short material size



FUNCTIONING OF THE CORRECTION GUIDE ROLLS

Placed on the front of the machine there are two correction guide rolls. In fact, during the bending process a deformation of the material may occur affecting the result of the final product. To avoid these two rolls were mounted on the machine, which can be also adjusted. The adjustment can be done turning the screws placed behind these correction guide rolls.





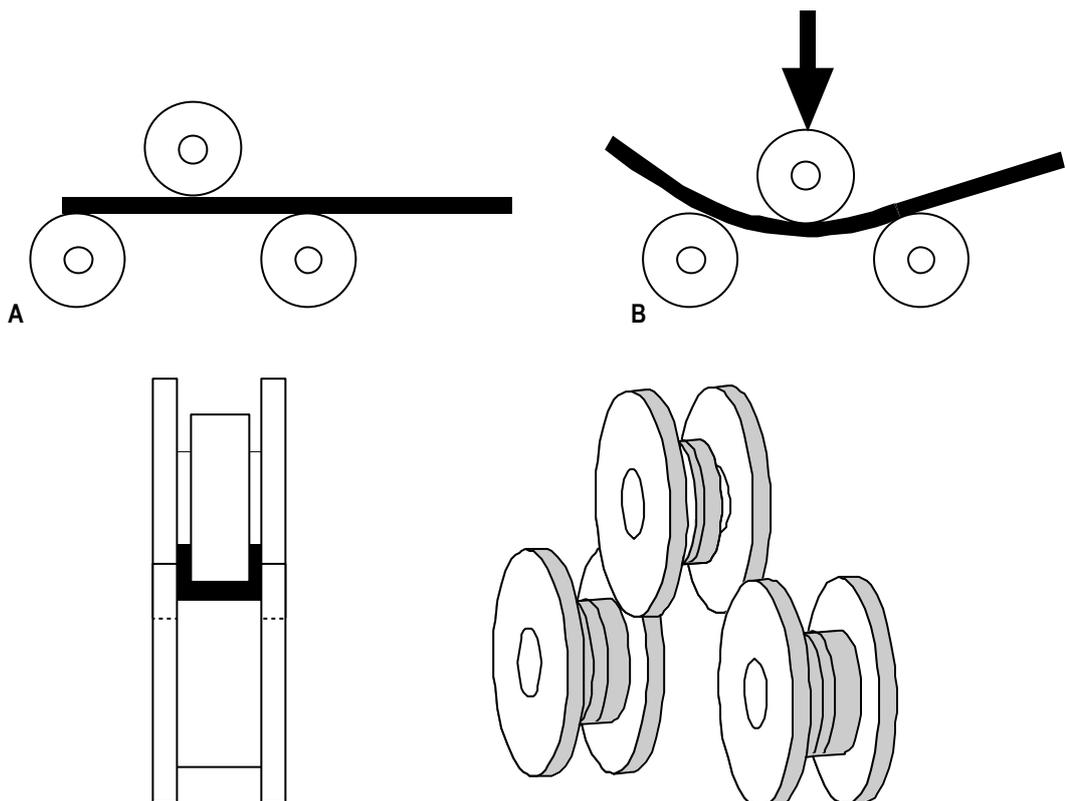
GENERAL BENDING PROCEDURES

Introduce the profile between the left lower roll and the upper roll until a tangential position of the profile relatively to the three rolls is obtained.

Extract the profile and low the upper roll in order to obtain the desired bending position.

Press the foot pedal; the profile will be displaced and bent according to the position of the upper roll.

WARNING: The upper roll position of a given bending diameter is different when passing the profile several times than the one obtained with a single passing.





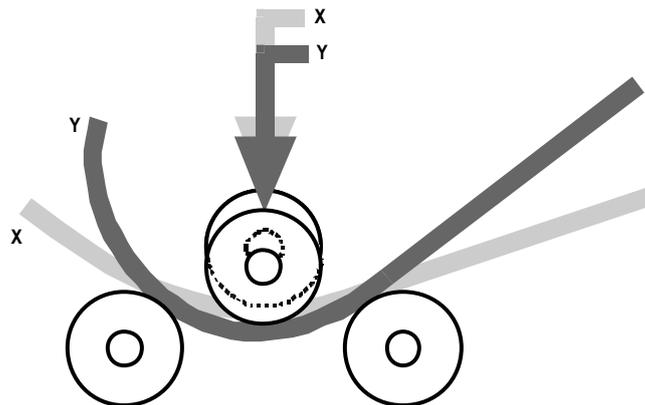
HOW TO GET THE DESIRED DIAMETER

Prepare three or four pieces of the material to be bent, of 60/80 cm. Introduce a selected piece between the rolls and perform a bending test. (conventional machines only) – for CNC machines see: User Guide – Software Manual

The results can be two:

- a) The obtained diameter is the desired one: proceed with the work;
- b) The obtained diameter is too large or else too short: correct the right lower roll and introducing a second piece of material repeat the procedure until the desired diameter is achieved.

On these tests use the original pieces and never the previous bent or straightened ones since the result would be different.



On these tests use the original pieces and never the previous bent or straightened ones since the result would be different.



HYDRAULIC ADJUSTMENT

This model is equipped with a hydraulic group which controls the upper roll: this group is composed for a hydraulic station with components and spares.

To access to the station open the front door.

LUBRIFICATION AND MAINTENANCE

For a High performance and durability of the machine, please respect the follow steps of maintenance

Two times per week (or every 20h of work), Clean and lubricate the moving elements of the machine.

Every month:

Check the level of the hydraulic oil and see if there are leakage of oil on the hydraulic circuit;

Check the screws on the body of the machine, the correct functioning of the two-sided rolls and the toothed wells inside the machine.

Annually (or every 1500 h of work), change the hydraulic oil and filter.

The access to all this elements is made by removing the lateral panels.

NOTE:

- LUBRIFICATING OIL- NUTO 46
- HYDRAULIC OIL- GALP HIDROLEP 46
- GREASE- ESSO TL

Electrical maintenance

Every 6 months, the electric box components should be cleaned by compressed air or with a dry brush.

The electric connections should be revised and fixed.

ATTENTION! : Before opening the door, make sure that the machine is turned off.



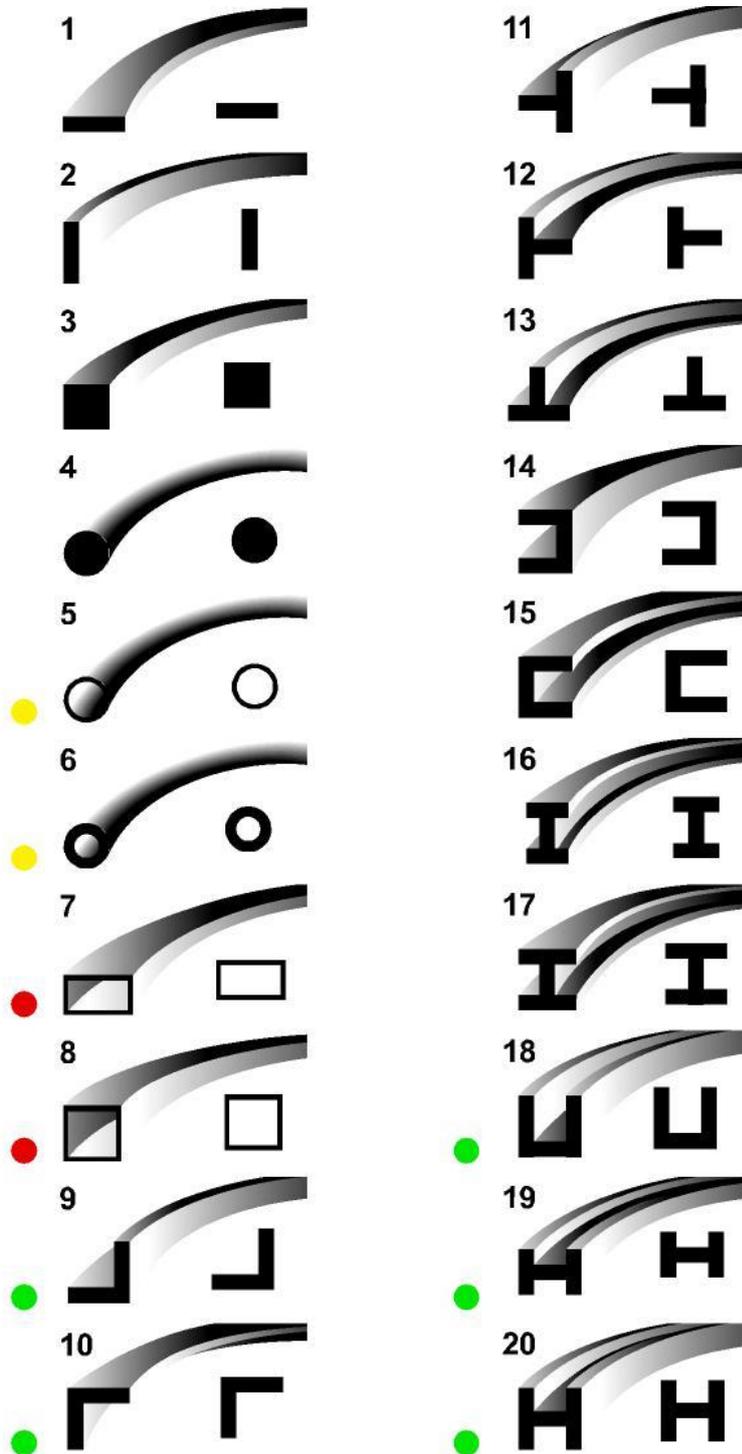
SAFETY PROCEDURES

In order to operate this machine according to safety and health essential rules operators, people responsible for installation, operation, maintenance and service of the machine should read and follow the procedures below mentioned In order to protect the personnel and the equipment from injury or damage.

1. Make sure you understand the instructions and program manuals.
2. Cleaning the movable components of the machine, as well as its maintenance, should be performed always with the machine unplugged from its power supply;
3. Do not open the electric switchboard with the machine turn on; turn off the main switch before cleaning the machine and its accessories;
4. Operators should keep their hands away from the rollers when the machine is operating;
5. For better safety conditions special shoes are to be used (steel toe cap);
6. Do not touch electric high voltage connections, such as transformers, motors, junction boxes nor switches or electric contacts with wet hands;
7. In the event of a power failure, turn the main switch off immediately;
8. The position of the emergency stop buttons should be so well known that it can be activated without looking at it;
9. Make sure it is possible to move freely around the machine and associated equipment - the floor around it should also be kept dry and clean and the surrounding area well illuminated in such a way that work can be performed safely;
10. Personnel, tools or materials must not be present or placed in the sweep area of the tube, considered the cutting length of tube +1 meter in bending, rotating and longitudinal-feed movements;
11. Do not change the parameters or other pneumatic, electrical or hydraulic settings;
12. All electrical cables must be well protected from becoming damaged. Always check their insulation. Do not dirty, scratch or remove the warning signs;
13. Check safety equipment, such as safety covers, emergency stop button, safety mats, railing, light booms and ramps, warning signs, hydraulic hoses and connections against damage and abrasion or leakage of oil.

⚠ CAUTION: Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges. When handling large heavy material make sure they are properly supported.

PROFILES, TYPES AND SHAPES



Rolos Standard / Standard Rolls / Standardwalzensatz

Um jogo de ferramentas para cada diâmetro / One set of rolls is required per each tube diameter / Für jeden Rohrdurchmesser, wird 1 satz spezialwalzen benötigt

Rolos Especiais / Special Rolls / Spezialwalzen

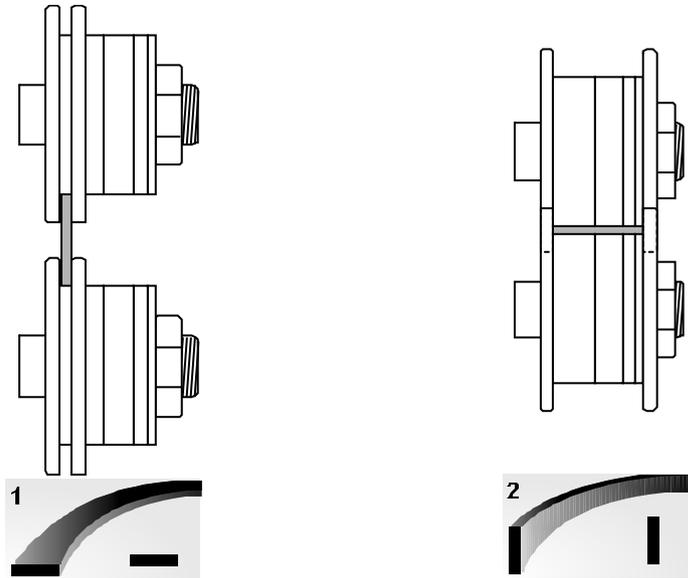
Rolos Especiais para perfis de parede fina / Special Rolls for thin wall profiles / Für dünn wandige Profile werden spezielle modülwalzen verwendet

Informação técnica aproximada. As especificações dos modelos fotografados podem variar dos modelos standard de País para País. As especificações e o design podem ser modificados sem aviso prévio.
All data are approximate. Specifications of models pictured may vary from standard ones from country to country. Design and specifications subject to change without notice.



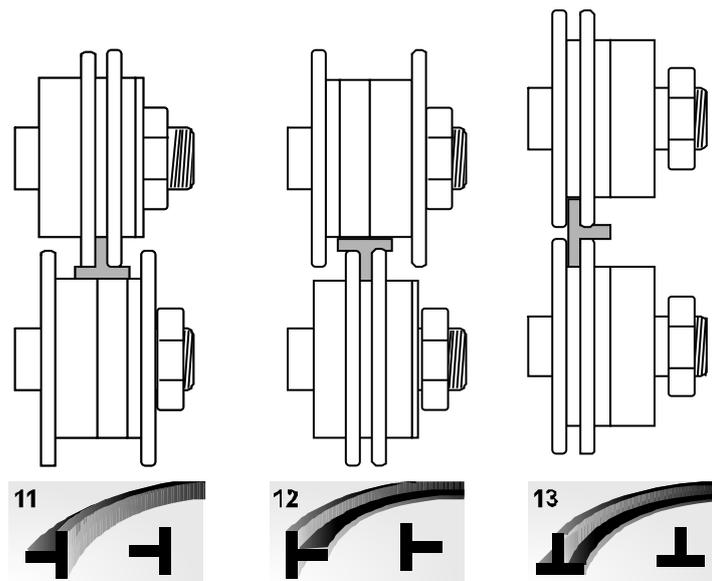
“BAR” POSITION 1 and 2

This profile can be bent in normal position, that is, the rolls must be as close as possible to each other.



PROFILE IN “T” SHAPE POSITION 11 / 12 /13

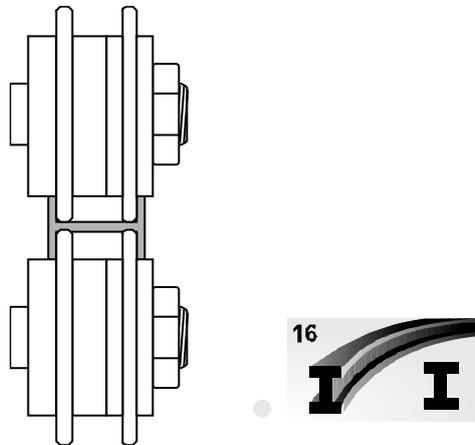
It is possible to bend this curves with standard rolls, no matter what the position is in order to avoid an excessive flexion of the shafts with subsequent swinging of the bar, stiffening tie rods be used: please contact us for further details on this device.





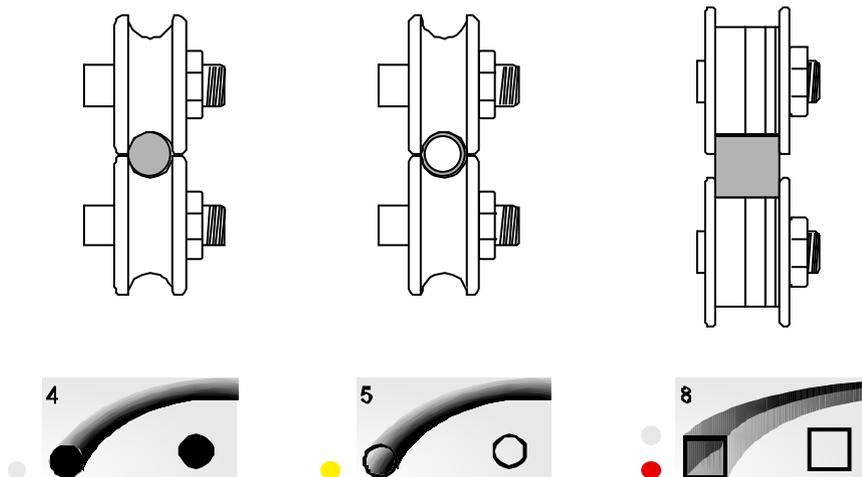
PROFILE IN "I" SHAPE - POSITION 16

It is necessary to equip the machine with roles with the correct groove size, as shown in the picture below.



TUBULAR AND ROUND TUBES

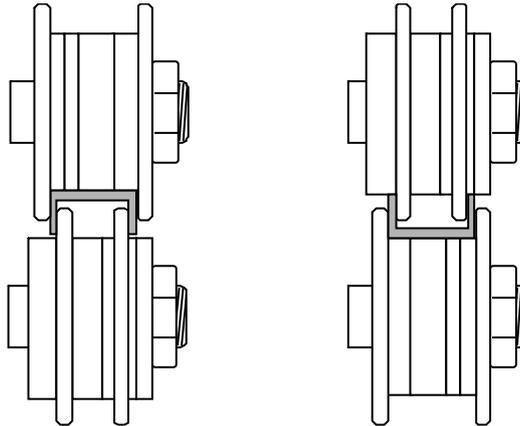
No specific difficulty when doing this work should arise: anyway, it is necessary to mount on the machine rolls similar to the bending tube; it is also possible make coils which can be determined by the lower right roll.





IRON PROFILE IN "U" SHAPE - POSITION 14 / 15

To work with this shapes it is necessary to mount special rolls on the shafts, depending on the size of the profile- for occasional works it is also possible to use standard rolls. Bending external wings requires more power. The supplied rolls are mounted in such a way that the male rolls stay close to the machine. The bottom of the bent profile in "U" shape should lay the on the male roll: the female roll should have its back turned towards the wings of the profile and will work as a guide.



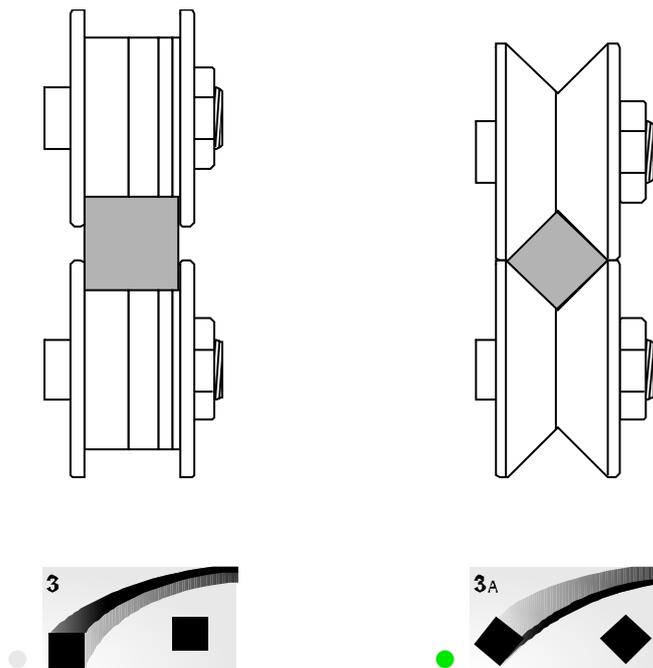


SQUARE TUBE - POSITION 3 / 3A

The rolls should be positioned as in the previous example, if the bending operation is to be continuous, it is recommended to equip the machine with rolls having a groove as large and deep as the bending profile.

While performing this operation some vibration may occur, since the peripheral speed of the rolls, do not match the inner and outer circles of the bent, to avoid this situation, remove the key from one of the three rolls, preferably from the lower right roller or install a upper roll with a smaller diameter.

For the shortest bending radius, we advice an upper roll with a groove of 2 - 3 – 4 mm wider than the material thickness.





R-CNC80

User Guide CNC Models
Software



Installation and Electric Security

Should not be done any alterations to any mechanical or electrical part of the equipment

The machine was conceived to work in dry and temperate places, therefore it should not be subject to excessive humidity or extremes temperatures (high or very low)

The system must be fed through the normal electric net, being necessary a three-phase installation with neutral and land. This must have a dedicated electric protection, in the format of a three-phase breaker with a neutral dimensioned cut for 16 A. The sizing of the feeding handles must have in account the largeness of the before definite protection and must respect the norms of electric security in force

ATTENTION:

- ▶ Do never turn ON/OFF handles or wires inside or outside the system with the feeding On!
- ▶ Do never open the door of the command board without first turning the system OFF!
- ▶ Before performing any intervention make sure that the system is completely turned off from the electric energy (Breaker of external protection turned off!)

The system must be installed in a space where it can without risk of danger effect its movements of collision with other elements of the plant manufacture. Thus it is important not to lean anything to the lateral of the system; the normal processing of the profiles does not enter in collision with people or equipment thus causing bodily injuries and material. It is also important to have in attention the size of the pipes to process and its form after bending. Do not place objects nor to remain in the area of manipulation of the pipe during its processing





Start of the machine

Before binding the machine to the electric chain please certify that the general interrupter it is turned OFF. After to bind to the power plant, places the switch in position ON. The machine goes to turn on, and after a few instants it will appear in the console a message, **Active Emergency**, make sure that the button of the emergency is not activated, and press the **button of restart**.

- Beginning of Functioning of the Software Control

From the main menu it is possible to accede to all the functionalities of the machine.

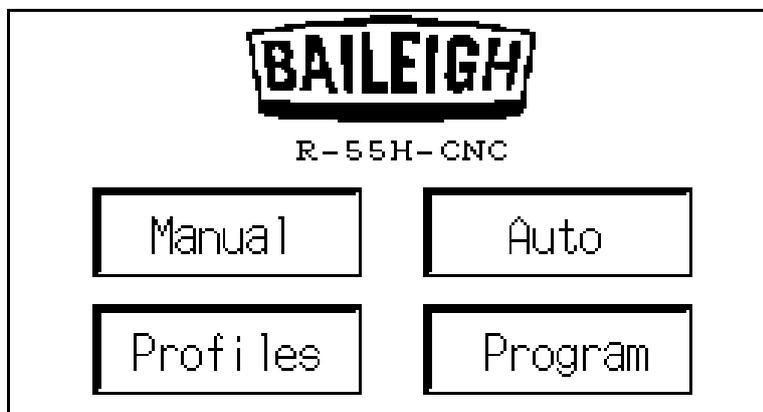


Fig. 1 – Main menu

The access to the manual way is done by pressing the **Manual** Key.
See page 5 for more information about manual mode.

To execute a program memorized in the machine the key must be pressed.
Automatic
See page 6 for more information on as to execute a program.

To create, to modify or to visualize a program it must be used the **Program** Key.
See page 9 for more information on creating programs.

The calibration of a profile must be realized following the **Profiles** menu.



MANUAL MODE

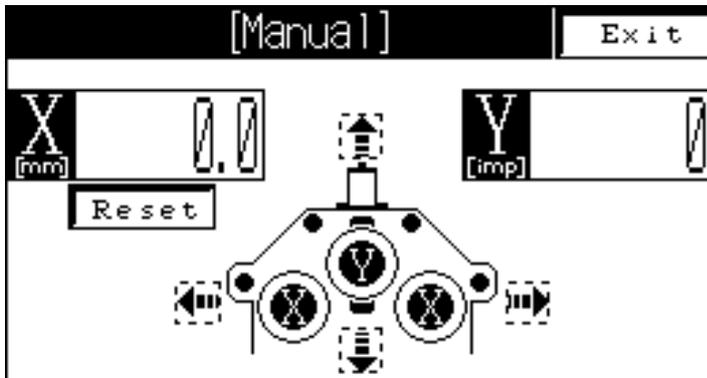


Fig. 2 Manual mode

The keyboard keys \uparrow and \downarrow go up and sink the central coil respectively. The deeper the coil is, smaller will be the radius in the profile to hoop.

The Keyboard keys \leftarrow and \rightarrow will move the pipe, in the jib and advance direction respectively. The direction for them indicated is valid when we are located in front of the machine with the command's foot located to our front.

When pressuring any of the movement keys, this will start on its slow speed, increased later after a certain time. Thus it is possible to make small adjustments in that position

The Field Y corresponds to the sinking of the central coil. Field X gives relative information to the position of the profile.

To leave the manual way, you must press the **Leave** key.



EXECUTING A PROGRAM

The program to execute must be chosen in the screen below as it is presented.

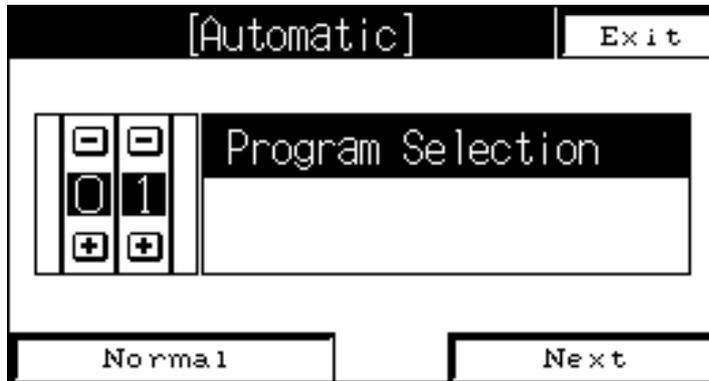


Fig. 3 Selection of the program to execute

The program to execute must be chosen using the selector. Can be selected programs between 1 and 99. The two numbers of the selector work independently, however is not possible to select values out from the mentioned interval.

For example:

→ The program 49 is selected and you intend to select the program 50.

Should place in zero the units digit (9 must pass the 0). Then you visualize 40. Only after that, it should pass to 5 the tens digit.

When trying to pass to 5 the digit of tens with a different figure from zero in the units, it will be obtained a value larger than 50 in the set. This value is invalid and as such the selector does not allow its selection. Thus the final value to get must always be had in account before initiating any alteration. The same it is transferred for example with value 10. If you intend to choose an inferior value than 10, must in first place select the value of the units intended and only after place to zero the value of tens.

→ Current program 10, intended program 7!

When 10 is being visualized, if you try to pass the zero the number of tens (1) the selector does not allow it. Thus the correct form is:



Place in the units the number 7. Then, 17 is visualized. After selecting the program to be executed, is only needed to press the automatic key. Verify the profile data, that are presented in a screen of information, confirm the data and proceed.

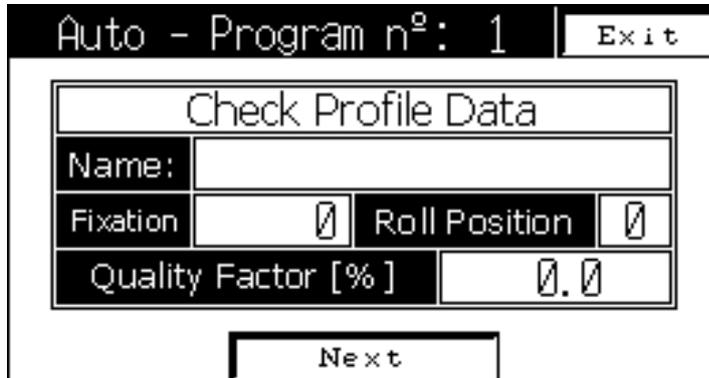


Fig. 4 Verification of the profile data.

In automatic way, it is enough to place the profile in the coils in the bottom, to press the pedal from the machine and it will initiate the production of the piece, according to the parameters inserted in the program by the operator.

When the selected program do not contain valid data (for example when is not programmed) it appears the following message underneath "**Invalid Data**" and software will not its execution.

The button **Leave** allows to return to the initial menu.

Automatic Mode

In automatic way this is the screen visualized

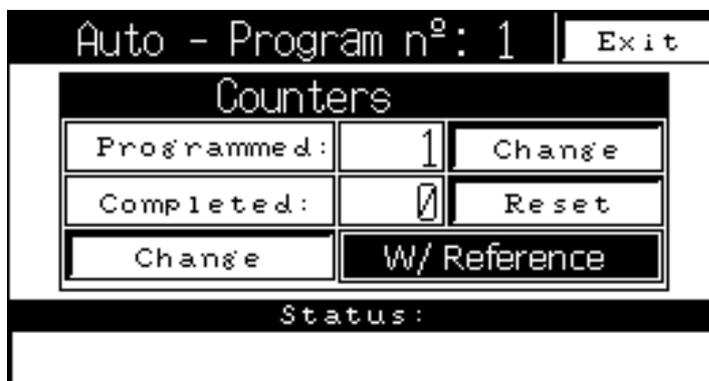


Fig. 5a- Automatic mode activated



In this screen the accountants of parts are visualized.

To Produce- it is the amount that is intended the machine to produce with this program. The **CHANGE** key allows to configure this value, are valid values in between [1 the 9999].

Produced - it is the amount of produced parts since this program was last initiated the last time. Every time that the program is changed this value will go to zero. The operator can also clean by pressing the key **To clean**.

The state information, allows the operator to know what the machine is to execute or waiting for the operator to realize.

To modify, To create, To visualize or To erase Programs

From this screen is possible to create a New Program, to see or to modify a program that already exists, to erase a program that already is not useful.

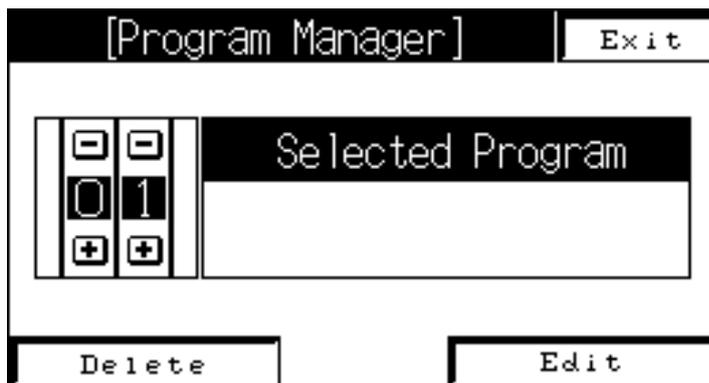


Fig. 6 Management of Programs

The Selector of program functions in the same way that before explained. See page 6. In case that the selected program is empty, it appears the free message. In case the program is busy with valid data nothing will appear.



Cleaning a Program

When pressing the key CLEAN goes to give order to the system to clean from the memory the selected program. Before eliminating definitively the software will ask for its confirmation.

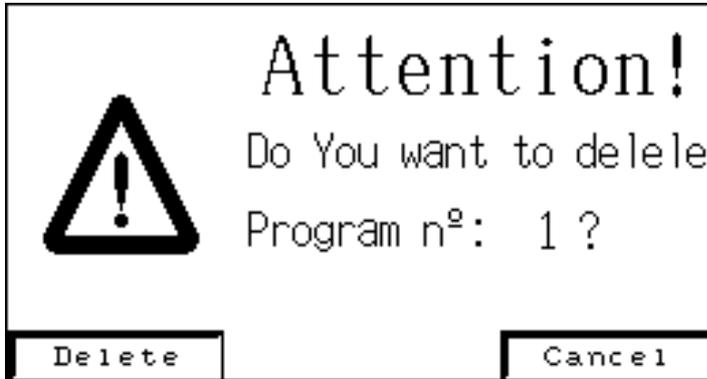


Fig. 7- Confirmation to delete program.

To create a New program, To visualize or To modify an existing program

In the screen of figure 6 press the **See/Change** Ver/Alterar key. The program to process will be what it was selected in the selector program.

It appears later the following screen:

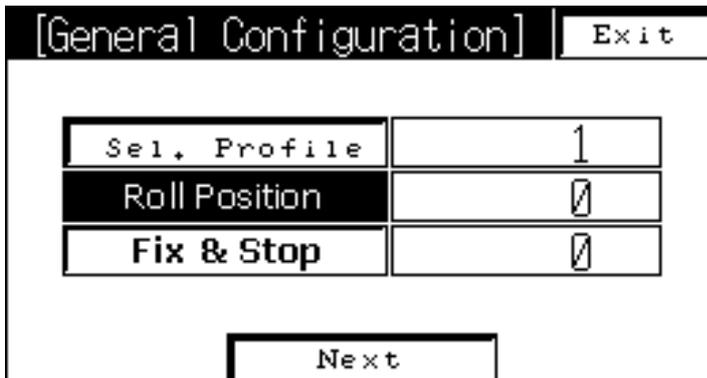


Fig. 8- General Configuration of the program

This screen allows configuring the machine in function of the profile to use and the placed tool. The fields Position Coils and Setting are automatically filled with the choice of the profile to use. When concluded the configurations of this screen pass to the following one pressing the key To Continue. To come back behind without effecting alterations only press the key To leave.



Program segments

← Segment nº: 1 de 1 →			
Length [X]		Radius	
[mm]	0.0	[mm]	0.0
Vel.	0	Vel.	0
		Type	Immediate
Insert		Delete	
		Exit	

Fig. 9 – Screen of insertion of data from program

Is in this screen that the data is introduced and that after will define the pieces to be produced. In this screen are visible the following information:

In the top, the dark one appears the message: Segment nº: 1 of 1

This information has the format: Segment nº: A of T

Where: **A** represents the visible segment.
T represents the total number of segments.

In the presented case the program will count only one segment, the one that is visible.

An example:

It is visualized the message:

Segment nº: 2 of 6 → this means that segment 2 of a total of 6 in the program would be visible.

The lateral arrows to the message allow "to sail" in the available segments.

More below they appear 2 fields of data and the respective buttons, being these the following ones:

Displacement [X]

- [**mm**] - Represents the length in millimeters for the displacement of X
- [**Vel.**] – Represents the speed that is intended to the displacement be realized



Radius Arc

- [**mm**] – represents the value intended for the radius in millimeters.
- [**Vel.**] – represents the speed of sinking of the coil for the position that theoretically produces the radius programmed.
- [**Type**] – define the type of sinking to effect (immediate or Gradual).

In the case of the immediate sinking, the profile stops the advance of the coils of displacement to effect the sinking of the bending coil. It sinks with the motionless profile. In the case of the gradual sinking, the movement of the coils is kept so that the bending coil sinks in one definitive space of profile. In this in case, the bigger the speed of sinking, the smaller the space spent to sink.

Finally below in the screen appear the following the 3 buttons:

To insert - It allows to insert a new segment in the program. This button inserts a segment in the position to follow to the currently visible segment.

To erase - It erases the data the segment currently visualized.

To leave - It allows to leave the programming way. Before, it should ask for a confirmation.

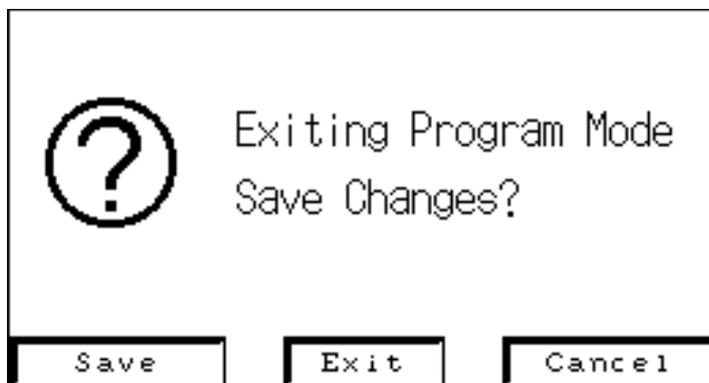


Fig 10 – Confirming to get out way of programming.

If **To keep** is pressed, the machine verifies the inserted data, informs in case that errors of programming exist, and keeps the program.

If **To leave** is pressed, the programming way is abandoned without keeping data.

If **Cancel** is pressed, comes back to the programming menu.



I- Profile Calibration

The way of calibration profiles, allows the machine to "learn" the characteristics of the material that it must work with. After inserted the calibration of the machine for some discrete points of radius and sinking, using mathematical algorithms of calculation, the processor surpasses the values of sinking for the inserted radius in the program.

Thus it is very important to execute the calibration with much attention in a way of not putting errors of measurement in the data, once that later all the executed parts will be based on wrong data.

The sequence of calibration of a profile has two distinct phases:

- i) The acquisition of data.
- ii) The insertion of the data in the machine.

For each one of the phases exist adequate menus. Below it is presented a sequence of acquisition of data.

In the main menu, press the key **Profiles**. It is visualized the following screen:

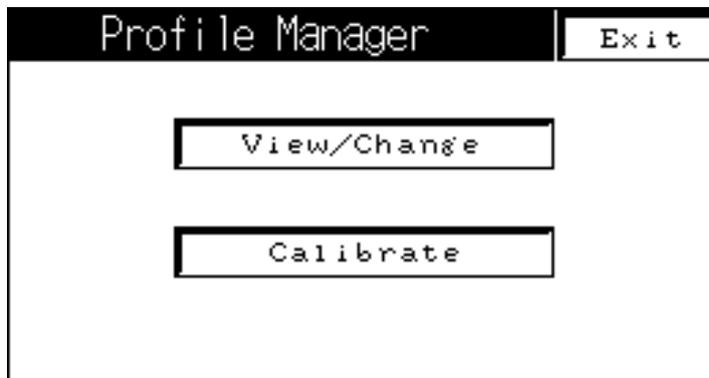


Fig. 11 – Option of a Profile.

The acquisition of data is done in the sequence that is initiated with the keyboard key **To calibrate**.

To insert the data in the memory of the machine the **SEE/CHANGE** button must be used.



The keyboard key **To leave**, comes back to the main menu. The process of acquisition of the calibration data describes after that.

II- Acquisition of Calibration Data

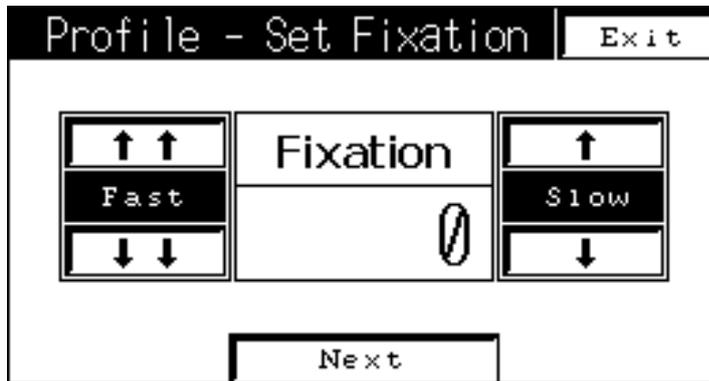


Fig. 12 – Define Fixation of Profile.

● Fixation of Profile

A profile part must be placed in the tool to process. The used tool in this phase must be the one that goes to work the profile. This also must be equal to that later will be intended to work and the lateral coils must be in the intended position of work. After its rank in the tool the functions presented in the screen above to fix the profile must be used.

The Keyboard keys allow the effect of fast movements and slow movements. Thus the use of the fast keyboard keys for the initial adjustment is recommended, and later that it makes with much attention the adjustment of precision with the slow movement.

It is very important to make a the correct fixation of the profile. This should not be deformed with the setting, but also it cannot be untied. The tool must arrest the profile in the perfection. **Pay very much attention to this phase. All the precision of the machine depends on a correct fixation of the material.**

After getting a correct fixation, you must record the value of the fixation so that later it can insert in the right field during the process of registering of data in the machine.



● Calibration Sinking

Finished the Profile Fixation, press the keyboard key **To continue**. In the following menu they must be done sinking with diverse values and chosen by the operator in order to obtain radius of bending spaced in the most uniform form as possible and between the limits if intended to use the machine for that kind of profile.

Example: If is intend to bend one definitive profile with radius between 200 mm and 1500 mm must effect the calibration with sinking that generate radius of such greatness, that the two mentioned above values are met between the minimum values and maximum of radius obtained.

An acceptable calibration would be for example:

Obtained radius
180 mm
630 mm
1150 mm
1650 mm

The minimum number of points of a calibration is 3 points, being the maximum 10 points. The factor of quality of the calibration depends directly from the numbers inserted. With a calibration of the same type from the one presented it would be reached a quality factor of the order of 95%, which is a factor of reasonable quality. The space in between the radius must round 750 mm in the maximum and 400 at the very least. Points very moved away or very closed are not good pointers for the algorithm of internal calculation.

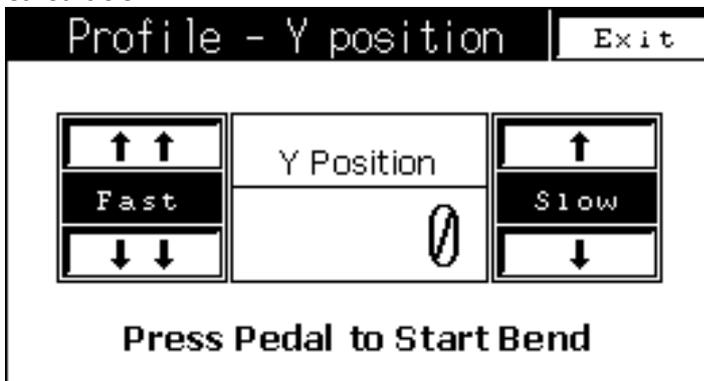


Fig. 13 – Define sinking to achieve the calibration arc

To perform a certain sinking of calibration, it must be done a stopped profile, using in the screen above the destined keyboard keys to this end. When the intended sinking is reached, press the pedal to hoop the profile.



The way to hoop appears thus that the pedal is pressed. In this screen can be visualized the profile length total that was hopped with the selected sinking. It must be hopped such length that will allow the performance of at least 3 measurements in the same segment of the calibration, which would eventually foil possible errors when taking the measures.

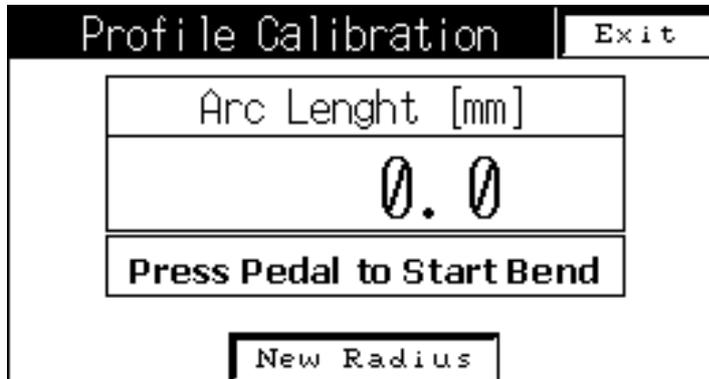


Fig. 14 – Way to Bind Calibration

When is obtained the necessary length of hopped profile, press the **New Radius** keyboard key to transfer itself to the following phase and to obtain new sinking and as such to get new data of calibration.

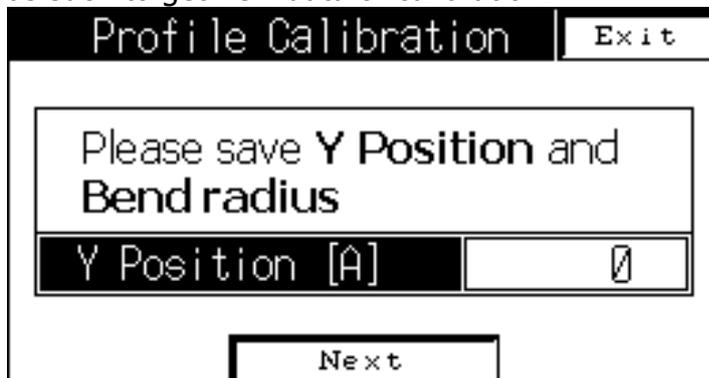


Fig. 15 –To register the Sinking

The previous screen informs the operator of the value of sinking to be kept for later to insert in the machine. Thus the operator must register something similar to, Sinking – Radius Obtained for each of the calibration points.

After registered the value, the key to continue takes the operator in return to the menu of figure 12, and there can initiate the calibration of a new sinking.



They can be performed the number of calibrations that is intend, but are necessary at least 3 and in maximum 10. To leave at any time it is enough to press the keyboard key **To leave**.

- Inserting calibration data.

In this way of the machine the data of calibration obtained in the previous way can be inserted in the system so that later the machine can use them when working.



Fig. 16 – Managing the profiles

In this menu, such as in the menu of programs can be performed operations to the selected profile, such as to clean the data of the memory, to visualize the inserted data in the profile, to modify or to insert new data. When pressing to see/to change, it passes to screen where it must insert the position of the coils with which it performed the calibration and the value of the position of fixation for the profile in question.

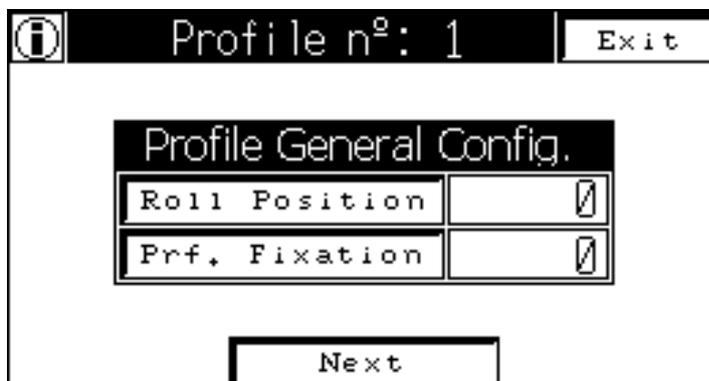


Fig 17 – Calibration screen 1



After inserting the values mentioned above, pass to following screen with the key **to continue**.

A screenshot of a terminal-style interface. At the top, a black bar contains a white information icon, the text "Profile Cal. n°: 1", and an "Exit" button. Below this, a central box titled "Calibration Point n° 0" contains two input fields: "Y Position" and "Radius [mm]". The "Y Position" field has a single digit "0" entered. The "Radius [mm]" field has "0.0" entered. At the bottom of the screen, there are three buttons: a left arrow, a "Validate" button, and a right arrow.

Fig. 18 –Screen configuration 2

In this screen the values obtained in the calibration must be inserted. The values must be inserted in a decreasing rank of the radius, that is, the calibration point n° 1 must have the biggest radius the point n° 2 must have a smaller radius and thus successively until the last point of calibration that must have the smallest of the radius obtained during the calibration. It should be inserted at least 3 points of calibration, and in the maximum 10 points of calibration.

It is very important to have in attention that the precision of the functioning of the machine depends essentially on the quality of the performed calibration. With 5 points of calibration, it can be obtained very good results in terms of functioning of the machine. A calibration with 10 points can be more deficient than a calibration with only 3 points, is enough for that to happen that wrong data is inserted in the calibration of 10 or have been used profiles in different conditions in the calibration.

After inserted the calibration in the machine, it must be used the button **To validate**, so that the system can verify the inserted data and keeps them in the memory.

After verified the data a name must be inserted that the operator allows identifying of simple form the type of calibrated profile and the position of the coils where he was calibrated. A calibration is only valid when is bent the calibrated profile exactly in the same conditions that the calibration was performed



Profile nº: 1		Exit
Name:		
Change Name	Save	

Fig 19 – Profile's Name.

To insert the name of the profile press the key To Change Name. There are two keys, one of characters, visualized in the figure of below, and another numerical to which the person has access when using the **Numerical** key.

A	B	C	Profile Name			Exit			
G	H	I	▶			←			
M	N	O	A	B	C	D	E	F	Num
S	T	U	G	H	I	J	K	L	
Y	Z	_	M	N	O	P	Q	R	
			S	T	U	V	W	X	
			Y	Z	_	Esc	Del		

Fig. 20 – Character Keys

In the numerical keyboard, to obtain again the character's keyboard you must use **Chr.**

After inserting the intended name, use the keyboard key with the symbol ↵ to accept the name written. When accepting the name or pressing the keyboard key **To leave**, comes back to the screen of figure 18, with the difference that in the last case the name is not modified.

In then screen of figure 19 it can selected, if intended to keep the profile in the memory or if it intends to leave from the way of calibration without keeping. It must be kept the calibration only if you have had inserted new figures, in the case of only being visualizing do never do any recordings.



NOTES



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