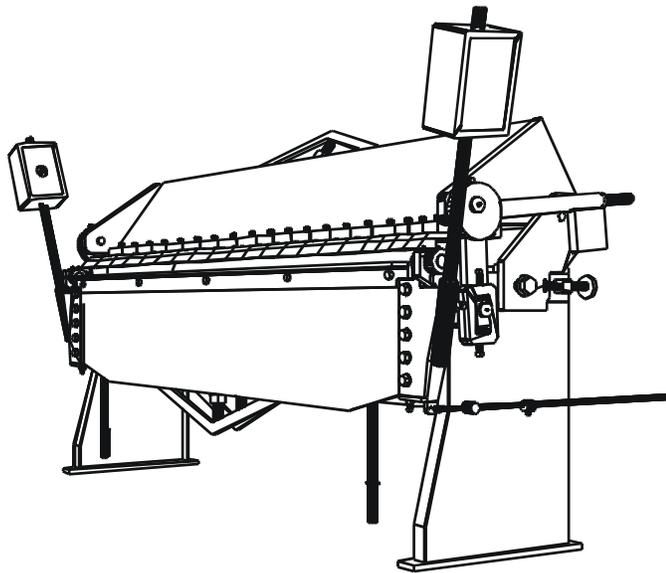




HAND OPERATED BENDING BRAKE

INSTRUCTIONS MANUAL

V.04/14/05



MODELS:

U-250-P (8' WITH FINGERS & STANDARD ANGLE – OPTIONAL DEEP BENDING ANGLE)

S-250-P (8' STRAIGHT BENDING BLADE & STANDARD ANGLE)

U-125 (4' WITH FINGERS)

CONTENTS

- 1. - IMPORTANT NOTATIONS**
 - 1.1 DETAILED BENDER INFORMATION.**
- 2. - PART DESCRIPTION**
- 3. - GENERAL INSTALLATION**
 - 3.1 TRUCK UNLOADING**
 - 3.2 ANCHORAGE**
 - 3.3 LEVELING**
 - 3.4 COUNTER WEIGHTS**
- 4. - LUBRICATION**
- 5. - SET UP**
- 6. - GENERAL ADJUSTMENT**
- 7. - BENDING LEAF & HOLD DOWN SYSTEM ADJUSTMENT.**
- 8. - THE USE OF TENSORS**
- 9. - FINGER INSTALLATION**
- 10. - SPECIAL DEEP BENDING ANGLE INSTALLATION**
- 11. - THE USE OF THE STANDARD ANGLE AS A REINFORCE**
- 12. - THE USE OF THE ANGLE TO BEND THIN PROFILES**
- 13. - THE USE OF THE STOP MECHANISM**
- 14. - WARNING**

1. **IMPORTANT NOTATIONS**

As long as instructions are correctly followed in this manual, you will enjoy a good performance from your bending brake for a very long time.

Important Notice: Bending brakes which have not been installed, leveled, anchored and used correctly within their capabilities, will not be covered by the manufacture's warranty. The manufacturer's warranty will not cover the machine if it has been structurally modified by the user.

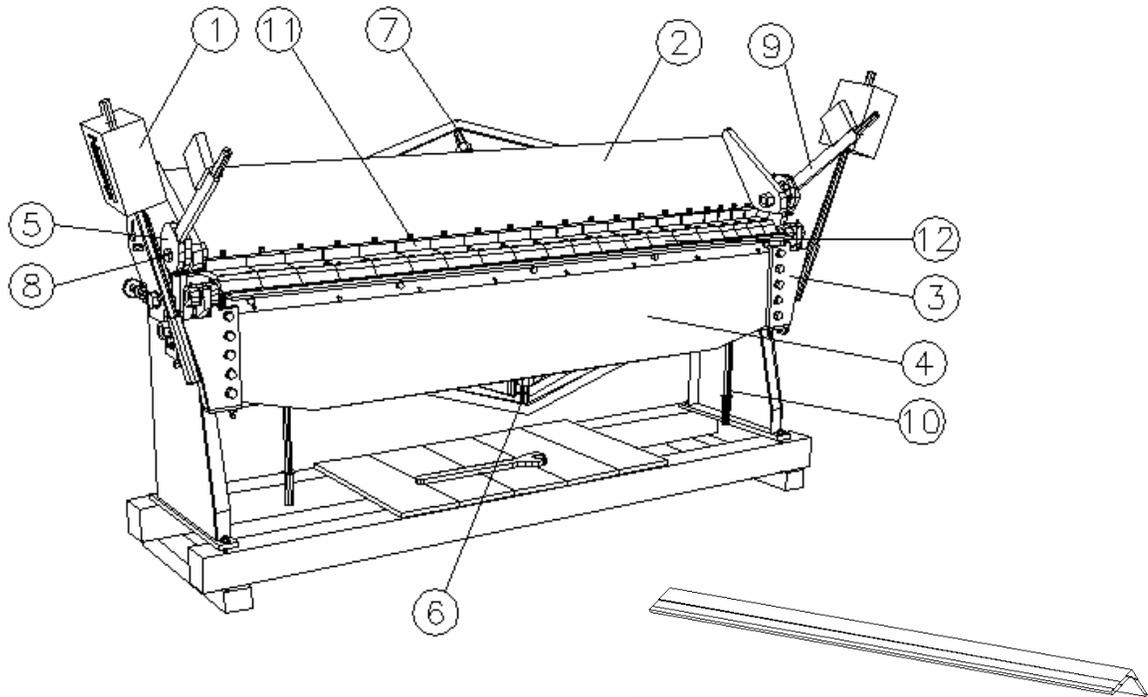
Use the appropriate tools to adjust or assemble the machine.

These machines were designed only to bend sheet metal.

Do not bend rods, wire mesh, tubes, or any other material different from sheet metal since it will **DAMAGE THE FINGERS** (On models U-125 and U-250p), **THE BENDING LEAF, AND WILL MARK THE TABLE.**

When the machine is new, it is normal when adjusting it for a certain project, that it disarranges after a while. This happens because the steel from which it is built is in the process of arranging during the first hours of use. After the machine is used for a while and the material finds its point of internal equilibrium, it will not disarrange again.

2. PARTS DESCRIPTION



SPECIAL DEEP BENDING ANGLE
(OPTIONAL FOR U-250-P AND S-250-P MODELS)

1. COUNTER WEIGHT
2. UPPER BASE ASSEMBLY
3. BENDING LEAF HOLDER
4. BENDING LEAF ASSEMBLY
5. CONNECTING ROD
6. BENDING LEAF ADJUSTING TENSOR
7. UPPER BASE TENSOR
8. CONNECTING ROD SHAFT SCREW
9. CONNECTING ROD LEVER
10. BENDING LEAF LEVER
11. FINGER HOLDER
12. FINGER TIP

3. GENERAL INSTALLATION

3.1 UNLOADING:

Be careful when loading and unloading the brake since it may suffer from structural damage which may affect its normal performance. Never move the brake without its wooden base.

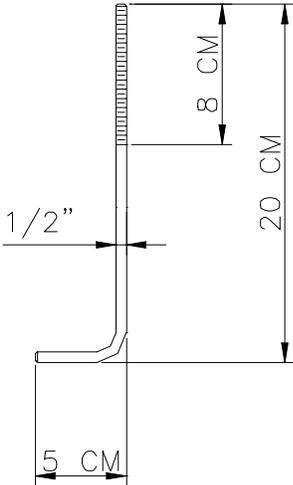
It is strongly suggested to load and unload these machines using a forklift. The best way is using two forklifts; the first forklift pulls out the machine partially and the second one supports it on one of its sides.

When the first fork lift rises the machine, the second one comes out and the truck may move out of the way. If there is only one forklift, a holding structure may be used to replace the second's function.

3.2 ANCHORAGE

It is very important to construct concrete foundations to fix and level the brake on them, since correct leveling is essential for good performance. Remove the wooden base used in transportation, anchor the machine on the concrete foundation, and then level it. Foundation work dimensions may be observed below.

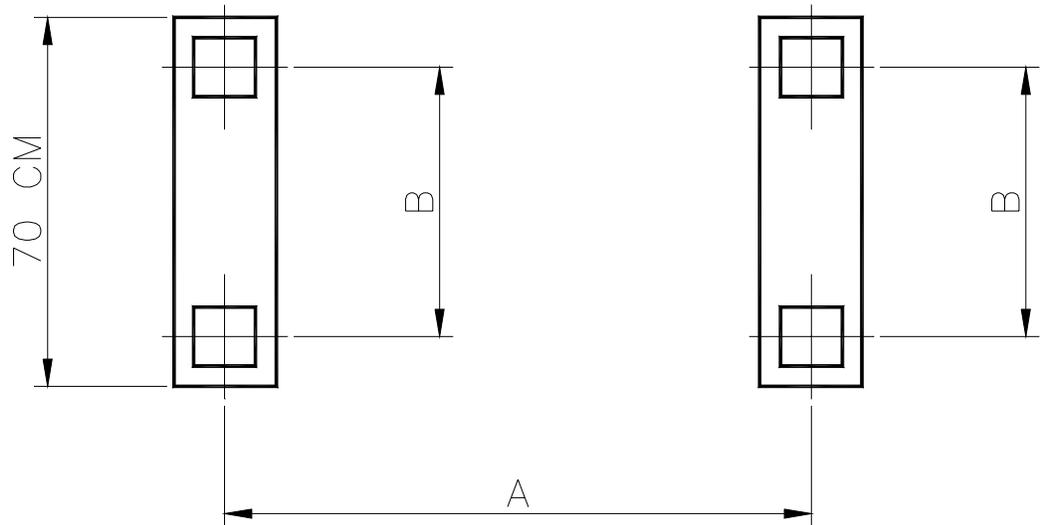
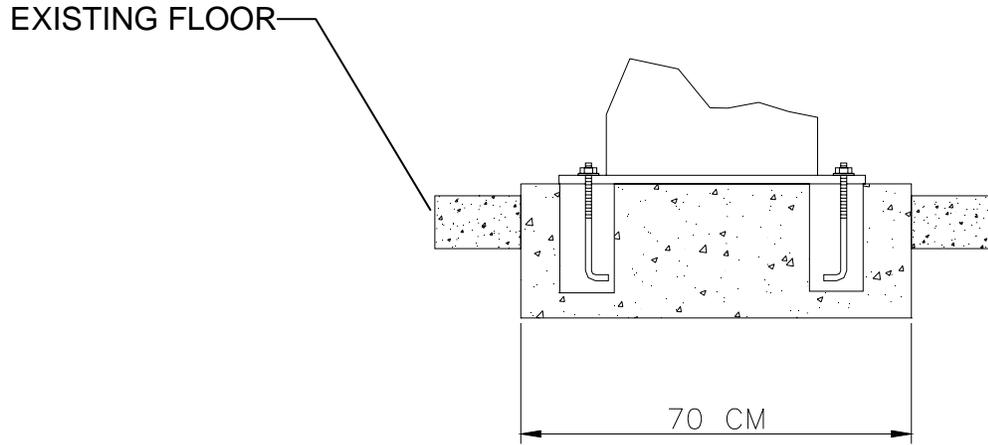
Drill the existing floor and cast foundations 25-cm. deep, 70 cm. long and 15 cm. wide. Cast concrete foundation leaving 4 holes of 8 x 8 x 15 cm. deep for 1/2" x 20 cm. long screws. Leave concrete to harden for 5 to 16 days.



Leveling screws are not included with the machine.

TOP VIEW, ANCHORAGE POSITION

Model	A (cm)	B (cm)
U-125	129	52
S-250P	257	61.5
U-250P	257	61.5



3.3 LEVELING

Since the machine, during its fabrication process, has been machined and assembled considering a precise level, it is necessary, for optimum results, to LEVEL THE MACHINE BEFORE WORKING ON IT. PERFECT LEVELING IS ESSENTIAL.

To confirm that the machine is correctly leveled it is necessary to follow the following steps:

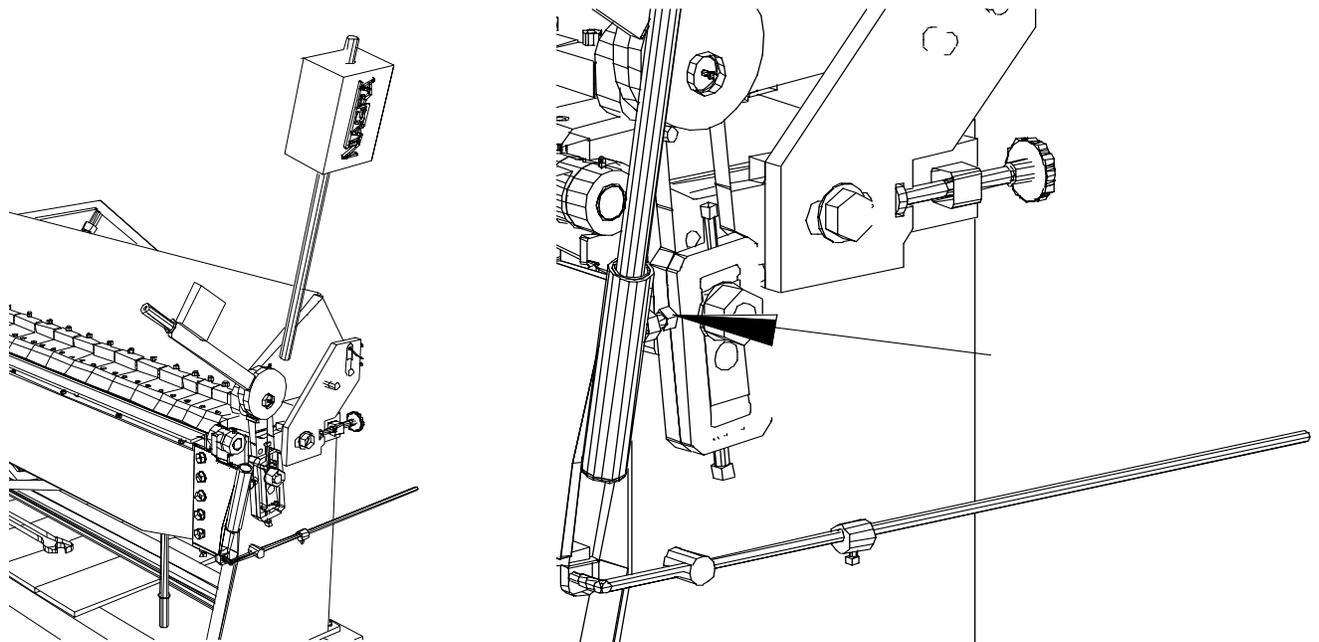
1. Place a level over the brake's table (machined part) lined up with the long side the machine and then level the machine on this plane.
2. Once the machine is leveled at its long side, rotate the level 90 degrees on the horizontal plane then position it over the same table but on the far-left side. Level the machine.
3. With out rotating the level, slide it over the table to the far right side. Level the machine.

With these three (3) steps it is assured the machine is correctly leveled. If the last two steps are not followed the machine may be leveled on its longer side but may be twisted.

3.4 MOUNTING THE COUNTER WEIGHTS

The machine is shipped with out the counter weights on, so it is necessary to mount the on its site. The following drawing shows the procedure. Fix each counterweight at the appropriate position. Adjust the adjusting screw on the counter weight holder rod, and the screw, which secures the counter weight on the rod. Usually the counterweight's height is determined at the production line but if the user feels the need, the weight can be positioned as desired along the counter weight holder rod. The higher the counterweight is positioned on the rod, the easier it is to bring the bending leaf up.

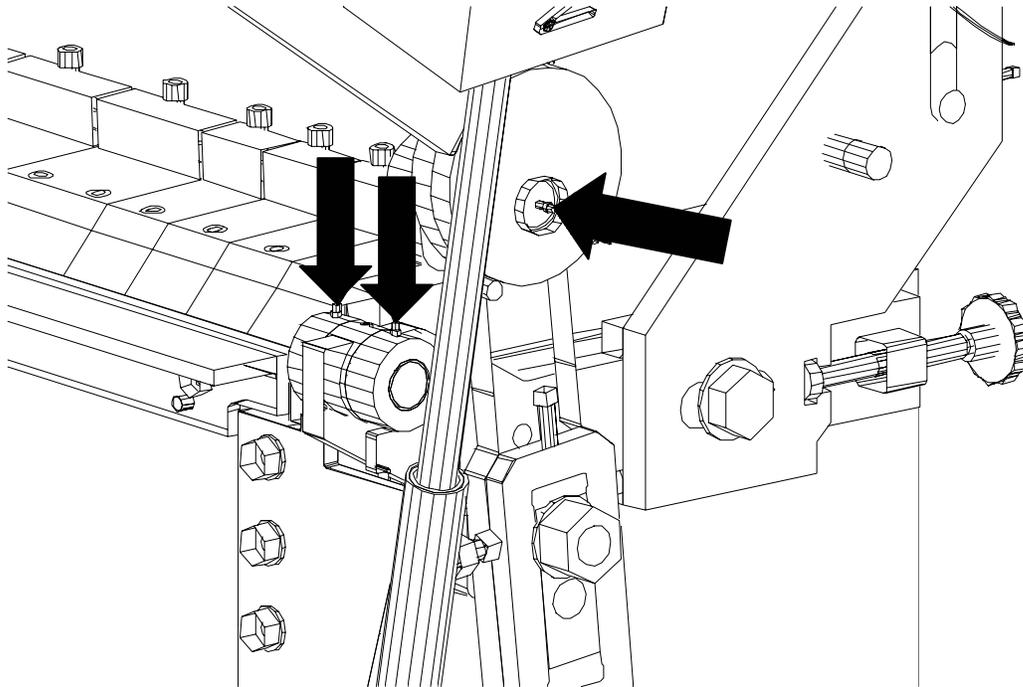
The purpose of the counter weights, besides from providing inertia when bending, is to counteract the bending leaf's weight.



The arrow shows the position of the adjusting screw on the counter weight holder rod.

4. LUBRICATION

It is necessary to grease the bearings on the bending leaf and connecting rods, (arrows indicate greasing points on the following drawing) with sufficient heavy duty yellow grease (applied with pressure) on a daily basis. Grease all other indicated places on a weekly basis. It is highly recommended to lubricate the machine various times a day if the machine is used constantly throughout the day. It is very important to lubricate the machine constantly.

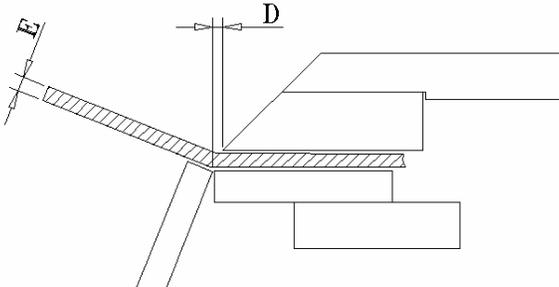


5. START OFF

It is recommended, to work the machine empty (without any material to bend). Use thin gauge sheet metal during the first weeks. A settling period should be considered before working heavily on the new machine.

6. ADJUSTING

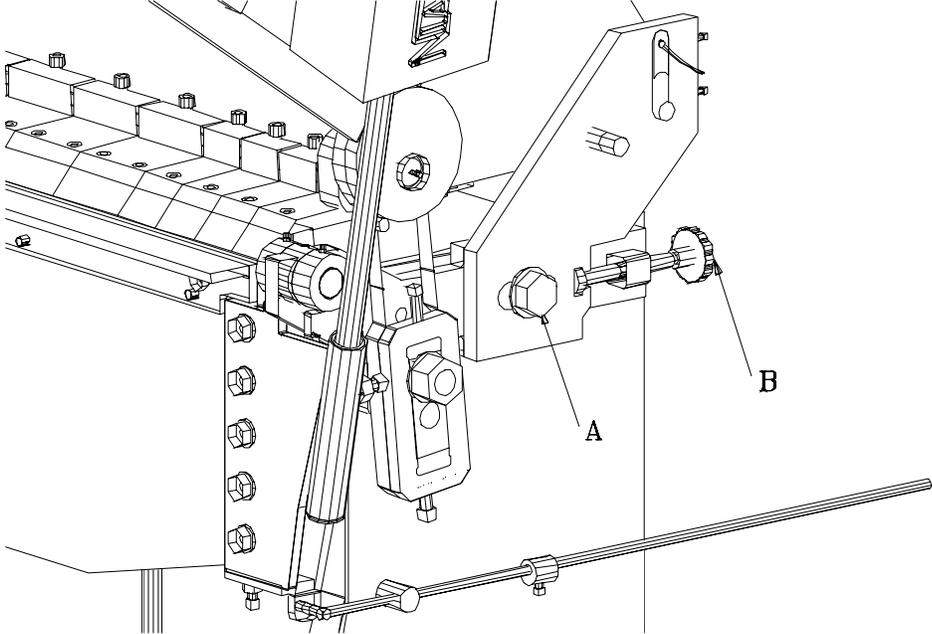
The distance between the blade (Model S-250P) or fingers (Models U-250-P and U-125) and the bending leaf, which is very important, and it is indicated in the following drawing.



When bending high gauge (Close to the machine's capacity) sheet metal, the following formula must be applied: $D = 2 E$. (“D” = DISTANCE “E” = SHEET METAL GAUGE).

In order to obtain a small radius bend on thin sheet metal, use up to $D = 1 E$. Do not set the machine under any circumstances bellow $D = 1 E$ since it forces the close system and may causes premature wear. It is preferable to leave a generous distance (D).

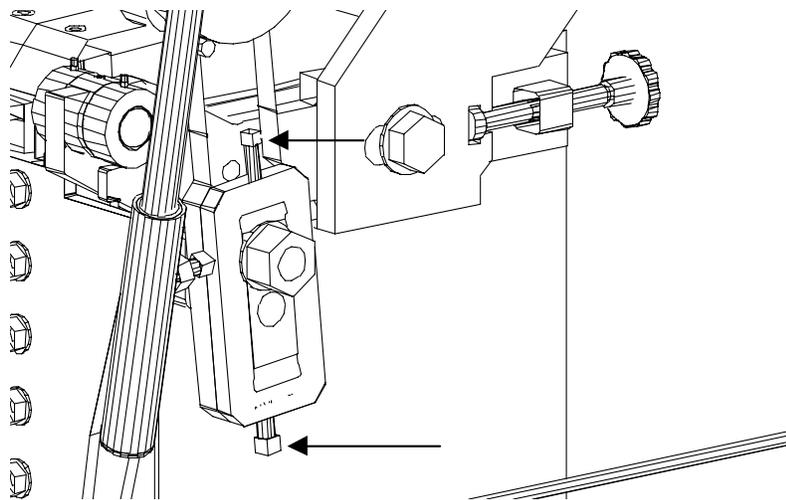
The correct procedure to adjust this distance is indicated in the following drawing. Loose screw (A) and adjust knob (B) until the correct distance is obtained. Note that the longer the distance the less force is applied on the closing system, but rounder (High radius bends) bends may be obtained. When bending high gauge sheet metal (Maximum machine capacity) it is essential to obtain rounder bends (High radius bends), to prevent forcing the machine.



There is no need to apply great force on sheet metal when using the fingers. The appropriate pressure is enough to prevent the sheet metal from moving around while bending. It is necessary to adjust the distance ratio between the fingers and the table on the bending brake for each sheet metal thickness. If the same ratio used on 22 gauge is used to bend 18 gauge, the machine is exposed to high stress forces, which may damage the fingers, and the bending leaf.

One other important adjustment, which must be considered, is the pressure exerted by the hold down system. This pressure should be very light, only the one needed prevent the sheet metal from moving around while bending. Higher pressures wear off the closing mechanism and may damage the bearings at the connecting rods and eccentrics. Arrows show the hold down system adjusting screws on the following drawing.

Note that this is a BENDER and was not designed to press, crush or flatten out sheet metal. This may wear off prematurely the connecting rods and the closing system.



7. HOLD DOWN SYSTEM AND BENDING LEAF ADJUSTMENT

It is possible that after weeks of work on the new brake the reinforcing tensors require proper adjusting. The tensor rods located on the upper base assembly are used to correct the machine's geometry. Use the tool given with the machine to adjust the nut and apply the necessary force as the problem is corrected and the machine's geometry is back to normal.

8. THE USE OF TENSORS

The bending brake has been designed with a tensor system, which allows adjusting the machine's structure in order to improve the quality of the bend.

Test the machine with different adjustments, note the effect when the tensors are tight and when they are loose. It is possible that adjustments that were made while using a specific material change when using a totally different material (The machine has to apply force in a different way for each type of material or project).

Patience and a complete understanding of the tensor effect over sheet metal bends are required to adjust the bending brake correctly.

9. FINGER INSTALLATION (Models U-250-P and U-125)

The fingers must be installed under their numeric sequence (fingers are marked). If certain fingers have to be removed for a specific bend, make sure that the remaining ones have their numeric sequence.

If only three (3) fingers are used: USE ANY THREE FINGERS BUT IN A NUMERIC SEQUENCE. For example use fingers 7, 8 and 9 or 14, 15 and 16 but do not use 3, 12 and 19.

It is important to consider that when certain fingers are used more than others, these may diminish their height (This is normal with new fingers until they are internally settled) and may end up slightly higher than the others when the complete set of fingers is arranged again on the machine. The difference in height may be easily corrected using a hydraulic press.

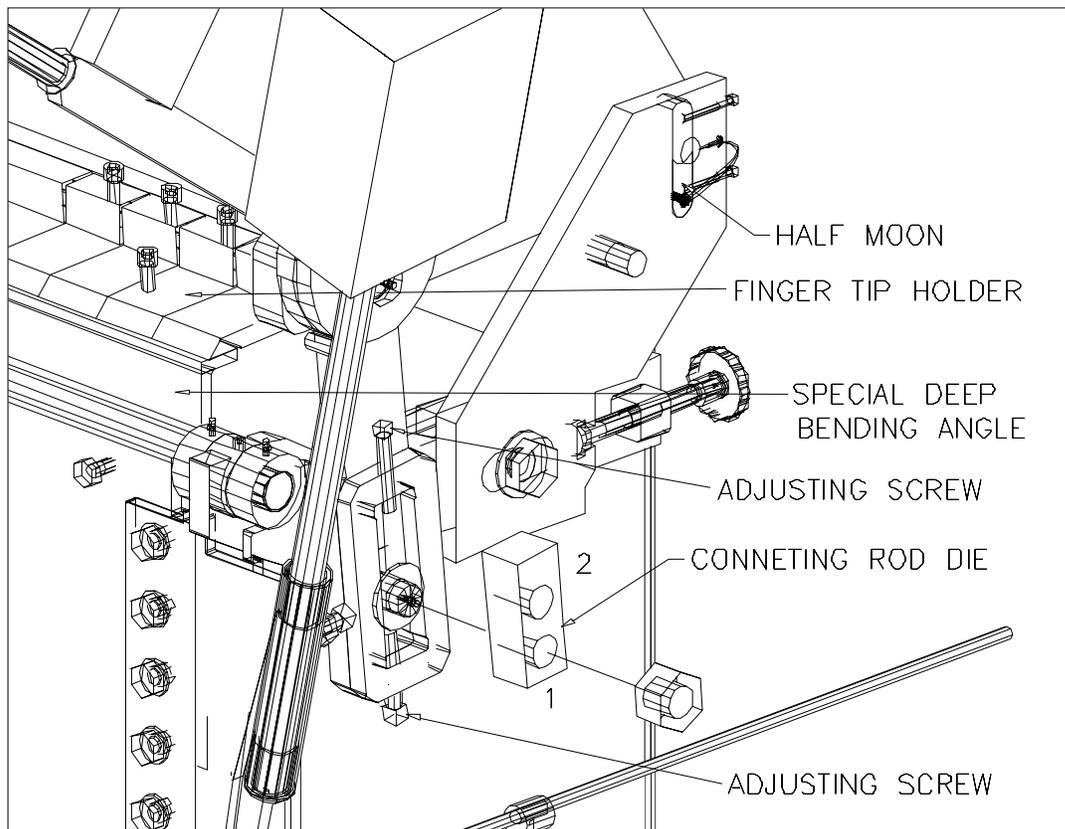
Do not use a lever to adjust the Bristol screws on the fingers (Models U-250-P and U-125), only apply the necessary force to prevent fingers from moving around while bending sheet metal.

10. SPECIAL DEEP BENDING ANGLE INSTALLATION (MODELS U-250-P, S-205-P AND S-305-P)

SPECIAL ANGLE INSTALLATION WHEN THE FINGERS (OR STANDARD ANGLE) ARE INSTALLED

The installation of the special deep bending angle when the standard angle is installed is explained through the following steps:

- Remove the finger tips from the finger tip holders (standard angle if it is installed).
- Move the connecting rod levers to the back of the machine (Opening the gap between the table and the upper assembly).
- Locate the half moon underneath (Observe drawing).
- Loose the adjusting screws.
- The connecting rod die must be positioned with hole No.1 at the bottom and hole No.2 at the top.
- Fasten the nut after the die is placed inside the connecting rod as shown in the picture.
- Install the special deep bending angle where its holes match and fasten it in place.



CONNECTING ROD DIE:

Hole No.1 is the one closest to the edge.

Hole No.2 is the one furthest from the edge.

Note that when the standard angle is installed the connecting rod die must be aligned with hole No. 2 no matter what position. When the fingers are installed the connecting rod die must be aligned with hole No.1 and positioned at the bottom.

11. THE USE OF THE STANDARD ANGLE TO BEND HIGH GAUGE SHEET METAL

It is essential to use the standard angle as a BENDING LEAF REINFORCEMENT, when using the machine to bend high gauge sheet metal, which limits the machine's capacity. Apart from this a wide flange (1" minimum) is necessary to bend high gauges on sheet metal.

The machine is capable to bend up to 18 gauge (Cold rolled sheet metal) with the standard angle attached to the bending leaf. However, when bending "COLD ROLLED" sheet metal with a higher thickness than 20 gauge it is normal that the machine is not capable to bend as well as it does at it's sides since, the bending leaf is slightly deflected at it's center. This happens with all bending breaks which are fabricated with sheet metal (The bending leaf, like any other long and thin object, slightly deforms when force is applied).

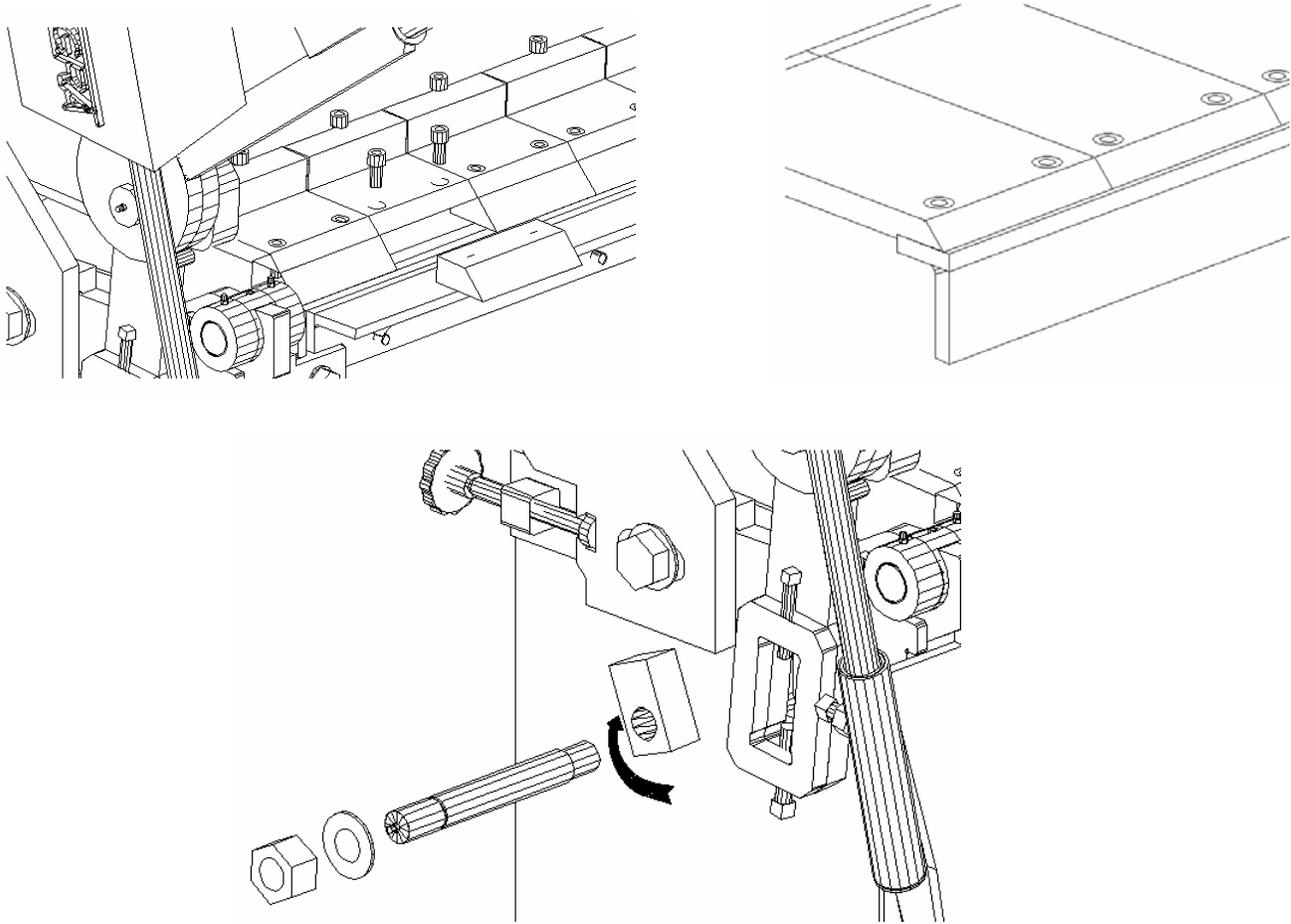
When the standard angle is installed on the bending leaf its rigidity is increased therefore the bend will be more consistent. When bending gauge 20 sheet metal or thicker it is essential to use the standard angle in order to obtain good results.

12. THE USE OF THE ANGLE TO BEND THIN PROFILES

This machine is designed to bend minimum 15 mm. Wide flanges. Trying to bend thinner flanges may prematurely wear off the bending leaf's surface (Part on the bending leaf, which makes the bend); especially if it is stainless steel since, it is a harder material than that used on the bending leaf. The wear caused on the bending leaf will mark the material after the bend. Especially if it is stainless steel.

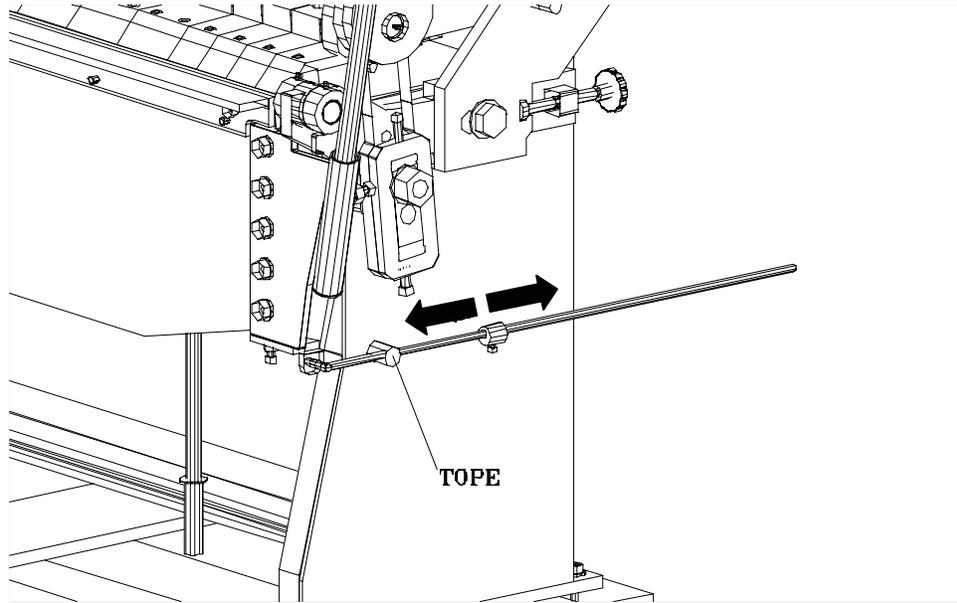
Please note that when the gauge on the material is very thin (22-24 gauge) the weight of the machine will slightly mark the sheet metal. It is important to consider the direction of fibers on some stainless steel sheet metal. This is determined by looking at the lines or fibers on the material's surface. The relation between the sheet metal's fibers and the fingers on the break may affect the quality of the bend. If stainless steel shows small marks along the bend rotate the material 90 degrees and bend. This may help.

The standard angle installation and some of its uses is explained on the following drawing. Note that each user has different necessities from each other but the original machine usually may attend the majority of their projects.



13. USE OF THE STOP MECHANISM

An adjustable stop mechanism is located on the right hand side of the machine. This mechanism is used to make repetitive bends of the same angle. Note that the bend has to be done very carefully when using this mechanism since unnecessary force may move the stop mechanism out of place.



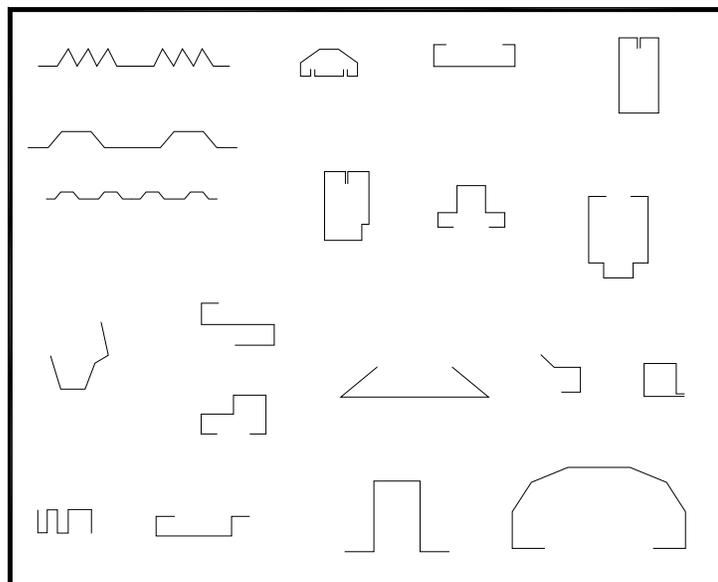
Usually, different types of stop systems are installed inside the machine in order to work on projects that may require serial production. These systems may be simple sheet metal strips fixed with **staples** or screws that may replace markings on each sheet. Using these types of stop systems along with the machine's stop mechanism makes good production easy.

14. WARNING

It is important that the connecting rod levers remain either totally activated holding down the sheet of metal or, totally opened due to the way in which the eccentrics work. If the levers are left somewhere in the middle and the machine is operated, it is possible that they fall down causing serious injury to the operator.

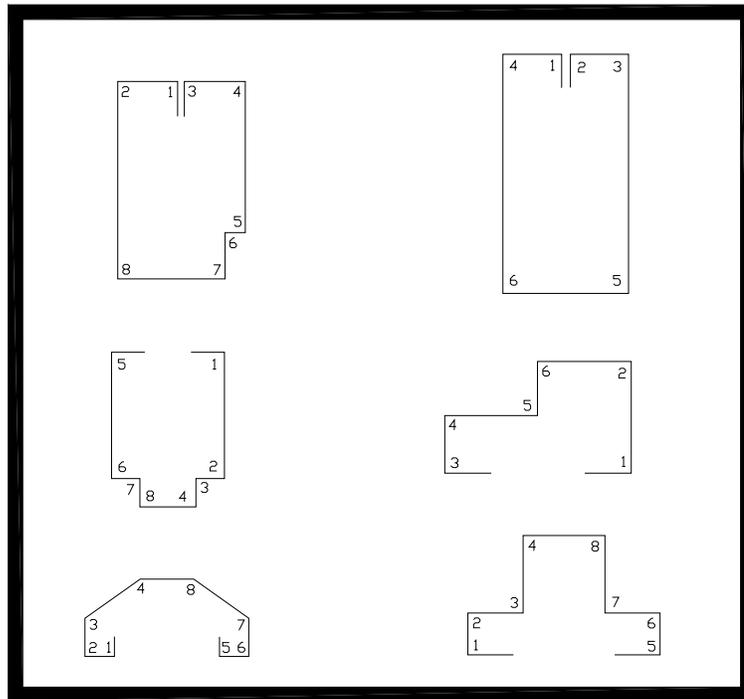
MAKE SURE THAT THE CONNECTING ROD LEVERS REMAIN TOTALLY ACTIVATED OR TOTALLY OPENED... A HALF WAY POSITION MAY BE DANGEROUS.

PROFILE EXAMPLES THAT MAY BE BENT:



(DEPENDING ON THE MACHINE MODEL, SOME OF THE PROFILES SHOWN MAY NOT APPLY)

TO MAKE THE PROFILES ON THE FOLLOWING DRAWING, FOLLOW THE NUMERICAL SEQUENCE ON EACH ONE:



METAL FABRICATION EQUIPMENT

Web Site: www.fablamp.com E-mail: fablamp@fablamp.com

5849 OKEECHOBEE BLVD. SUITE 201

WEST PALM BEACH, FL 33417

TEL: (305) 957-1503 FAX: (305) 957-1516

