

*Eastwood*®

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Item #21302

# 12" 3-IN-1 BRAKE, SHEAR, & SLIP ROLL INSTRUCTIONS



The **EASTWOOD 12" 3-IN-1 BRAKE, SHEAR, & SLIP ROLL** is three precision engineered metal working tools all rolled into one. It is designed to shear and produce accurate bends and shapes in mild, 20 gauge sheet steel and 18 gauge aluminum in widths up to 12". It allows creation of complex shapes such as channels, ribs, patch panels, cones, cylinders and much more, in sheetmetal, wire and tubing, all with one convenient bench mount tool.

## TOOLS REQUIRED (not included)

- 5mm Hex Key
- 6mm Hex Key
- 10mm Wrench
- 13mm Wrench
- 16mm Wrench
- Medium Screw Driver
- Feeler Gauge Set
- Angle Gauge or Protractor

## SAFETY INFORMATION

The following explanations are displayed in this manual, on the labeling, and on all other information provided with this product:

### **DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

### **WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

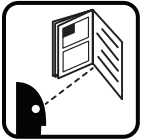
### **CAUTION**

CAUTION used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### **NOTICE**

NOTICE is used to address practices not related to personal injury.

# SAFETY INFORMATION



## **⚠ READ INSTRUCTIONS**

- Thoroughly read and understand this manual before using.
- Save for future reference.



## **⚠ WARNING PINCH AND CRUSH HAZARD!**

- The Eastwood 3-in-1 Brake, Shear, & Slip Roll consists of heavy metal components which can present a hand/finger pinch hazard and cause potentially serious injuries if dropped. Avoid pinching hands while handling. The use of safety shoes is strongly recommended. Keep fingers and hands away from moving parts when operating.



## **⚠ WARNING CUT HAZARD!**

- Handling sharp metal can cause serious cuts. Wear thick, well-fitting work gloves to prevent cuts from handling sharp metal.



## **⚠ WARNING EYE INJURY HAZARD!**

- Metal particles can be ejected from the tool when bending and cutting. Sheet metal edges and corners are sharp and can injure eyes. Always wear ANSI approved eye protection when operating this tool.



## **⚠ WARNING**

- Before beginning ANY work with this tool, it is absolutely necessary that it be securely bolted to a sturdy, workbench anchored to the floor or wall.

## **⚠ WARNING**

- Strenuous physical force may need to be applied to the 3-in-1 Brake, Shear, & Slip Roll during use. Failure to ensure proper footing can quickly result in a fall which could inflict serious personal injury or property damage. Always work in a clean, uncluttered environment.
- Be sure there is sufficient working room around the tool to allow for safe handling of various sizes of metal.

## **⚠ CAUTION**

- The Eastwood 3-in-1 Brake, Shear, & Slip Roll was specifically designed to be operated by one person only. Never have one person operate the Handle while another feeds the workpiece or serious injury could occur.

## **⚠ NOTICE**

- Excessive resistance while operating could indicate a defect with the workpiece material or broken or damaged 3-in-1 Brake, Shear, & Slip Roll components. To avoid injury, stop work immediately and inspect workpiece material for nicks, dents, welds, excessive scale or remaining coatings. Clean or repair as necessary or discard and begin with a new piece. Also inspect 3-in-1 Brake, Shear, & Slip Roll components for looseness or damage.

## SET-UP

- The Eastwood 3-in-1 Brake, Shear, & Slip Roll must be securely mounted on a heavy, solid workbench, stand, floor etc, capable of holding the static weight of the unit plus the stresses from operation.
- Place the 3-in-1 Brake, Shear, & Slip Roll over the chosen location, then mark mounting hole locations by tracing holes in the feet.

### ⚠ CAUTION

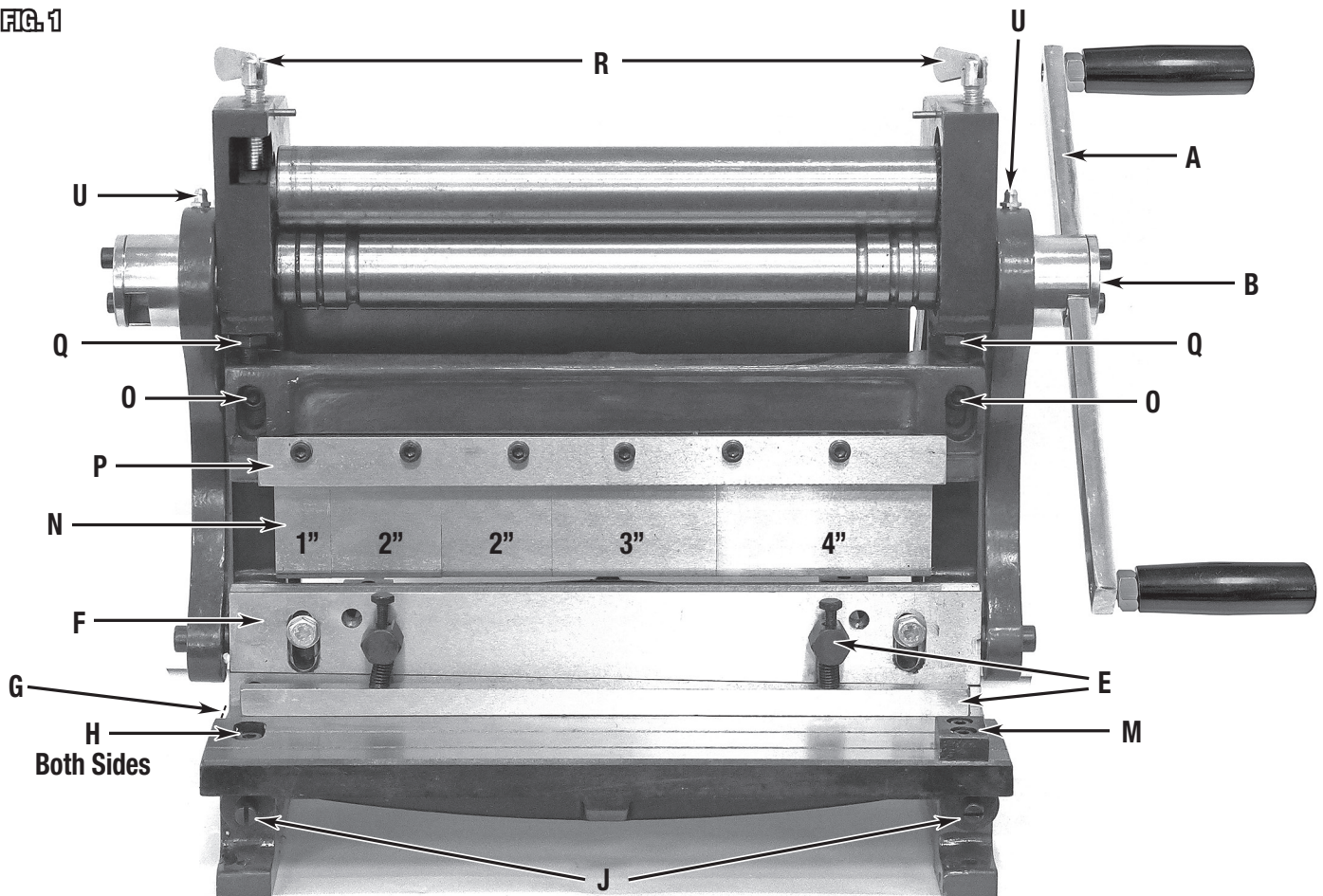
Check for the presence of electrical, air or other utility lines under the mounting surface before drilling mounting holes.

- The use of 5/16" through bolts & nuts or longer lag screws with substantial washers and attachment to a structural member is absolutely necessary.

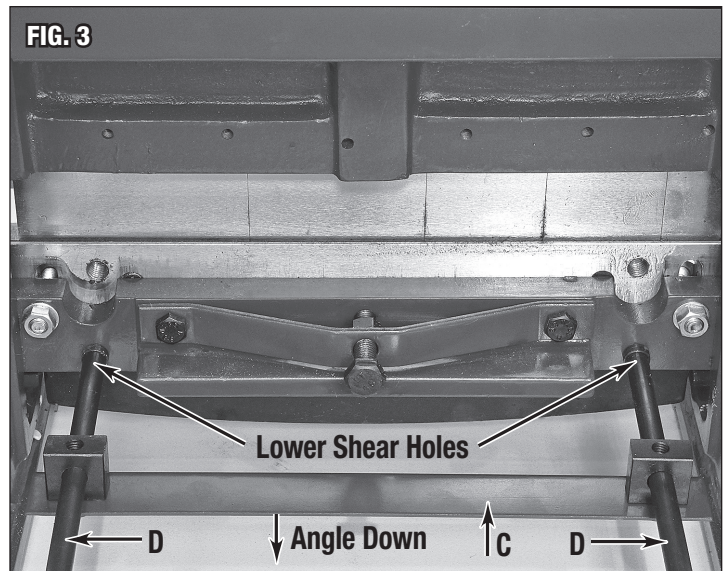
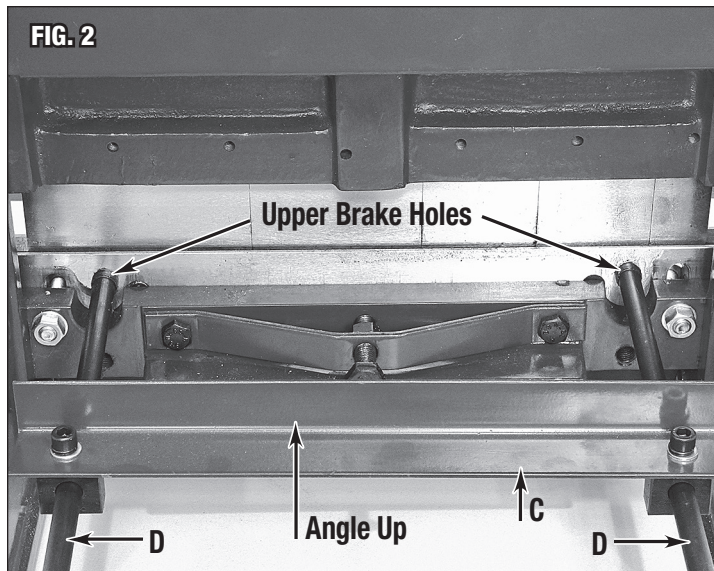
## ASSEMBLY

- Install Handle Assembly (A) to left or right hand side by removing the Socket Head Cap Screws using a 5mm Hex Key (Not Included) from the Cap (B) on the Handle Hub. Place the bar of the Handle Assembly into the slot then replace Cap and reinstall screws (FIG 1).
- Add the Stop Bar (C) to the rear of the 3-in-1 Brake, Shear, & Slip Roll by threading the ends of the Side Rods into either set of threaded holes in the rear of the Frame. **NOTE:** There are 2 possible positions for the Stop Bar:
  - **For Bending:** Install the Rods (D) into the upper set of holes with the Stop Bar (C) angle edge up (FIG 2).
  - **For Shearing:** Install the Rods (D) into the lower set of holes with the Stop Bar (C) angle edge down (FIG 3).
- Tighten Side Rods in place by gripping flats with an 8mm Wrench (not Included).
- Place Clamp Bar (E) pins into 2 holes in front face of the Moving Blade/Brake Bar (F) (FIG 1).

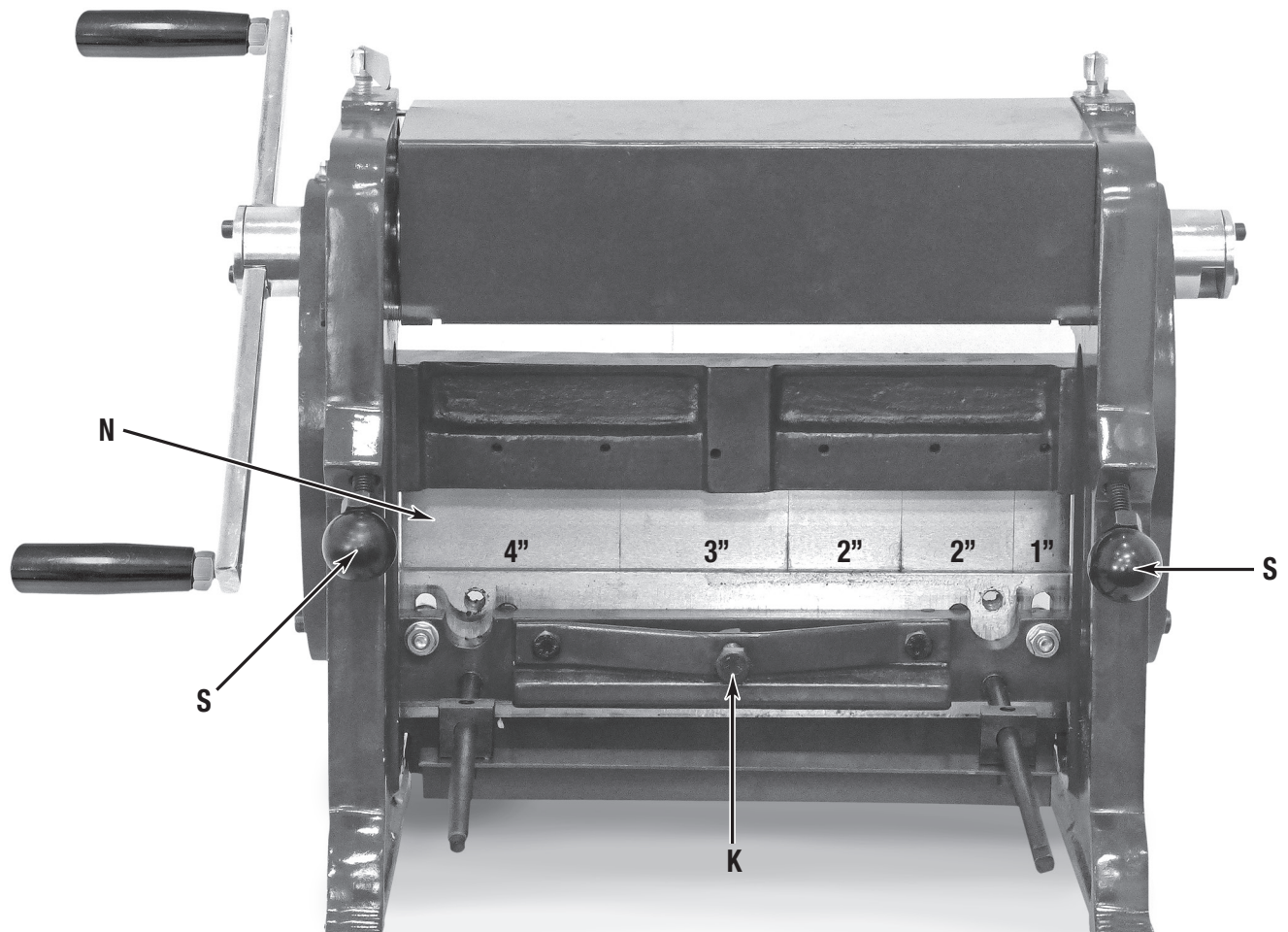
FIG. 1







**FIG. 4**



# OPERATION

The Eastwood 3-in-1 Brake, Shear, & Slip Roll has 3 major metalworking tools designed into one frame. For the purpose of providing the most accurate instructions possible, the 3 major tool functions of Metal Shear, Bending Brake and Slip Roll, with all required adjustments, are described independently as follows:

## METAL SHEAR

### Adjustments

For proper shearing action, the blades must be just barely making contact and maintain an even relationship across their entire surface.

There are two adjustments that may be required. They are Blade alignment and Blade Bow.

- To adjust blade Alignment:
  - Rotate Handle downward to bring the face of the Moving Blade/Brake Bar **(F)** below the surface of the Stationary Blade **(G)** (**FIG 1**).
  - While holding the blade face of the Moving Blade/Brake Bar **(F)** below the edge of the Stationary Blade **(G)**, using a 6mm Hex Key (not Included), loosen the two Socket Head Cap Screws **(H)** in the slotted recesses of the Lower Ledge (**FIG 1**).
  - Using a Straight Blade Screwdriver, turn the Adjusting Screws **(J)** in or out as required to achieve even Lower Fixed Blade to Moving Blade contact then re-tighten the Socket Head Cap Screws **(H)**.

#### NOTICE

**Do not adjust the blades too tight or allow the Upper Moving Blade to make solid contact with the Lower Fixed Blade or chipping and other serious damage can result.**

- To adjust blade Bow:
  - Rotate handle downward to bring the face of the Moving Blade/Brake Bar **(F)** below the surface of the Lower Fixed Blade **(G)** (**FIG 1**).
  - Observe the relationship between the Moving Blade/Brake Bar **(F)** the Lower Fixed Blade surfaces. If a “bow” exists curving the center of the blade outward in the center, loosen the single bolt in the Blade Support Bar **(K)** (**FIG 4**) slightly with a 15mm wrench (not Included). If the blade exhibits a slight curve producing a gap in the center with the ends making contact, tighten the Blade Support Bar bolt slightly.

#### NOTICE

**Overtightening can damage the blade permanently.**

## SHEARING OPERATION

- Measure and mark a cut line on the material to be cut.
- With the Press Bar **(E)** in place, slip the material to be cut under it and through the blades allowing it to hold the piece to be cut in place (**FIG 1**).

#### WARNING

**Do not use hands or fingers to hold piece to be cut in place while cutting.**

- With the Moving Blade/Brake Bar **(F)** (**FIG 1**) in the “Up” position, slide the material to be cut over the Lower Ledge and Fixed Blade. The Material Guide **(M)** located on the right side of the Ledge and the Stop Bar behind the blades may be used to assist in locating material (**FIG 1**).
- Rotate the Handle downward firmly in one smooth motion to shear the metal.
- Raise Handle fully then retrieve cut piece from rear of unit.



## BENDING BRAKE

### Set-Up

With careful planning, measuring and cutting, many complex sheet metal forms such as boxes, pans, channels and ribs can be created with the Eastwood 3-in-1 unit. **NOTE:** The factory installed Finger array consists of 1 x 1", 2 x 2", 1 x 3" & 1 x 4". In all they total 12". To configure the Brake:

- Select the Finger width or combination of Fingers (**N**) required to bend the desired width of Sheetmetal.
- Add or delete Fingers as required by loosening the 6mm Socket Head Cap Screws to remove Fingers (**FIG 5**).
- To add Fingers back in to achieve a desired width, set in place and secure with a Socket Head Cap Screw and securely tighten with a 6mm Hex Key (not Included).

### Adjustments

Note: Several adjustments must be made prior to bending metal.

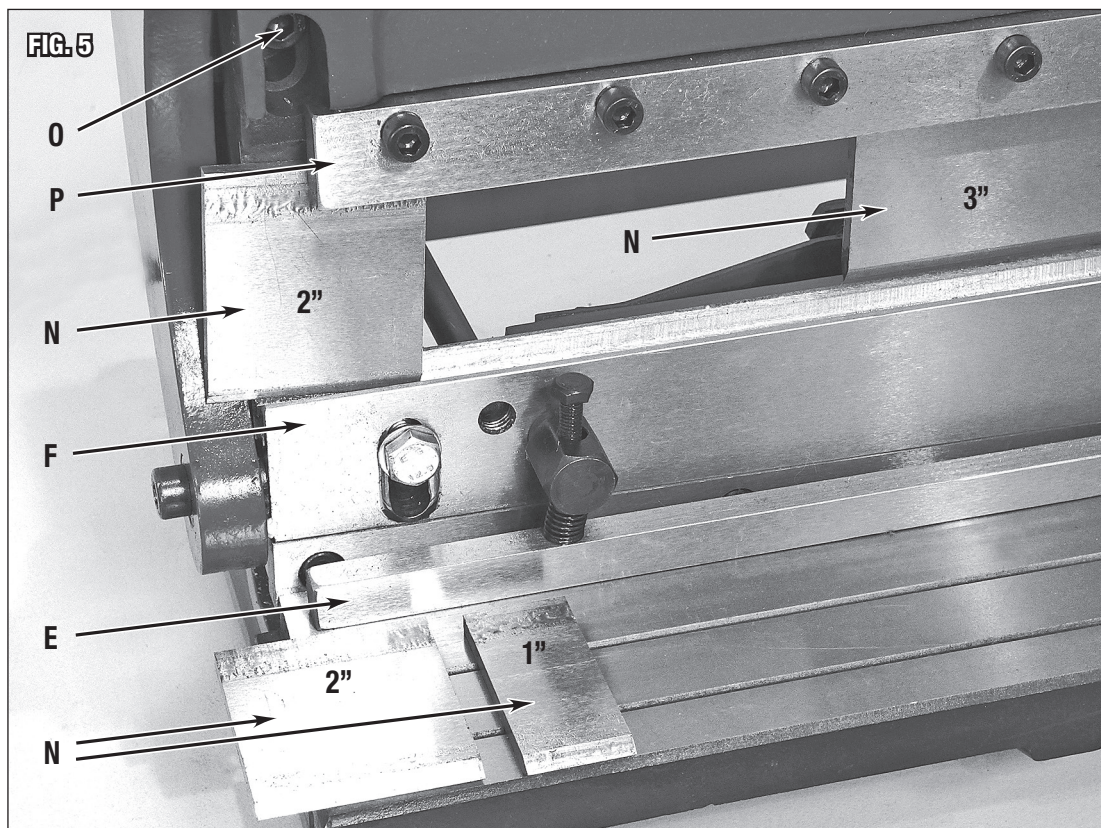
- Adjust Finger Alignment – The Fingers need to be aligned squarely to one another and the lower machined edge of the Finger Bar (**P**).
  - To adjust, loosen the socket head cap screws retaining the Fingers with a 6mm Hex Key (not Included).
  - Move Fingers so the top edges are square to the Finger Bar (**P**) and the sides are square to adjoining Fingers (**FIG 5**).

**A word about Bend Radius:** Every gauge and type of sheetmetal has a minimum Bend Radius. If an attempt is made to bend that metal sharper than the allowable Bend Radius, it will fatigue and crack. It is best to consult an online table or a Machinery's Handbook for the proper Bend Radius, however, a good "rule-of-thumb" to employ is never set the distance of the Knife-edge of the Fingers any less than 1-1/2x the thickness of the metal being bent.

- Adjust Finger Bar for Metal Thickness – The Finger Bar (**P**) needs to raise or lower the attached Fingers as needed to accommodate the thickness of the selected sheetmetal.
  - To adjust using a 6mm Hex Key (not Included), loosen the two Socket Head Cap Screws (**O**) in the slotted recesses of the Side Frame (**FIGS 1 & 5**).
  - Using a 16mm wrench (not Included) rotate the Adjustment Screws (**Q**) Counter-Clockwise to raise the Finger Bar (**P**) (for thicker material) or rotate it Clockwise to lower it (for thinner material) (**FIG 5**).

**NOTE:** Be sure to count the required turns to raise/lower the Adjustment Screws (**Q**) an equal amount on the opposite side.

- When done, use a feeler gauge at several locations between the knife-edge of the Fingers and the Moving Blade/Brake Bar (**F**) to verify metal gauge adjustments. **NOTE:** The proper gap will clamp the Sheetmetal just tight enough to prevent movement when bending, yet not so tight as to generate excess effort in the Handle.



## BENDING BRAKE OPERATION

With all the Fingers in place, bends up to 90° can be made in 20 gauge mild steel panels up to 12" wide metal. To do so;

- Measure and mark the desired bend line on your sheetmetal panel.
- Raise the Fingers by rotating the Handle upward.
- Slide panel under the Fingers lining up your pre-marked bend line with the lower, knife-edge of the Fingers.
- Rotate the Handle downward to clamp the Fingers against the Sheetmetal panel.
- Grasping the Handle once again, lift upward, bending your panel until the desired bend angle is achieved.  
**NOTE:** The use of an angle gauge or protractor (not Included) is recommended to verify bend angle.
- Depending on the particular alloy being bent, it may be necessary to rotate the Handle slightly beyond the desired angle to allow for "springback". Some trial and error is suggested in scrap material before making final bends.

## SLIP ROLLER

### Adjustments

It is not possible to preset the Slip Roll to a pre-determined, measured radius, so it will require some trial and error to achieve the correct radius.

**NOTE:** It is important to remember that you can always pass the metal through the machine multiple times, increasing the radius with each pass. Before making an actual piece for your project, work with some scrap pieces of the same size and thickness to practice on and to dial in the desired radius. The more often you use the Slip Roll, the more familiar you will get with the adjustments required to make a specific radius.

**NOTE:** Two of the three Rollers (Upper and Rear) are adjustable/moveable while the Lower Roller is the driving Roller and is fixed in place.

- Adjust Rollers to parallel – Turn the Thickness Adjustment Screws **(R) (FIG 1)** up or down as required, to be sure that the Upper and Lower Rollers are parallel. The use of calipers to check the gap, side to side, between the Rollers is strongly recommended.
- Adjust for thickness – Slip a piece of metal, the same thickness as your planned project piece, between the Upper and Lower Rollers.  
**NOTE:** Once the Rollers are set parallel to one another, turn both Thickness Adjustment Screws an equal amount when adjusting for metal thickness to maintain parallelism. Turn the Screws downward until some light pressure is being exerted on the metal.
- Adjust for Metal Radius – Adjusting the Rear Roller Knobs **(S) (FIG 4)** sets the radius of the piece. The more this Roller is raised, the smaller the radius of the part will be. Be sure to adjust the Knobs equally on both sides to avoid creating a conical shape.

### Rolling Operation

- With the piece of sheet metal you will be rolling inserted between the Top and Bottom front Rollers, gradually rotate the Hand Crank **(A)** (Clockwise as viewed from the right side) to begin forming the metal into the rollers until the piece is directly above the Rear Roller. Make sure it is tracking evenly before continuing and readjust if necessary.
- Rotate the Hand Crank (Clockwise as viewed from the right side) to form the piece. Continue rotating the Hand Crank until the entire piece exits the Rollers. **NOTE:** If a tighter radius is desired, the piece may be re-run through the Rollers with the Rear Roller raised as needed.



## CREATING CYLINDERS

The Slip Roll feature can not only create bends but can also be used to form cylinders. Determine the diameter of the cylinder you want to form and calculate the circumference by using the formula below:

**Circumference = 3.14 x Diameter**

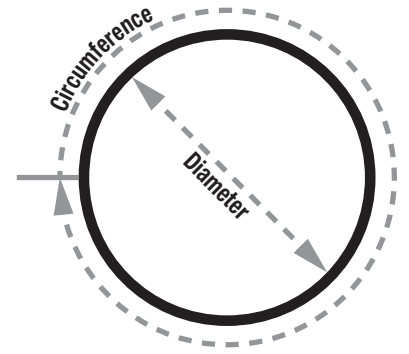
- Turn the Thickness Adjustment Screws (**R**) up/down as required to be sure that the Upper and Lower Rollers are parallel.
- Adjust the Rear Roller Knobs (**S**) (Counter-Clockwise) so that the Rear Roller is all the way down.
- Place the piece of sheet metal to be formed between the Upper and Lower front Rollers and gradually turn in (Clockwise) the Thickness Adjustment Screws (**R**) until the Upper Roller is exerting pressure on the piece of sheet metal.

**IMPORTANT NOTE:** Be sure when making this adjustment that both sides of the Upper Roller are lowered equally so that the same amount of pressure is being exerted across the entire length of the piece and the Upper and Lower Rollers are completely parallel.

- Rotate the Handle (**A**) (Clockwise as viewed from the right side) to begin feeding the metal into the Rollers until the piece is directly above the Rear Roller.
- Adjust the Rear Roller Knobs (**S**) to set the diameter of the piece. The more this roll is raised, the smaller the diameter of the part will be. Be sure to adjust the Knobs equally on both sides to avoid making a conical shape.

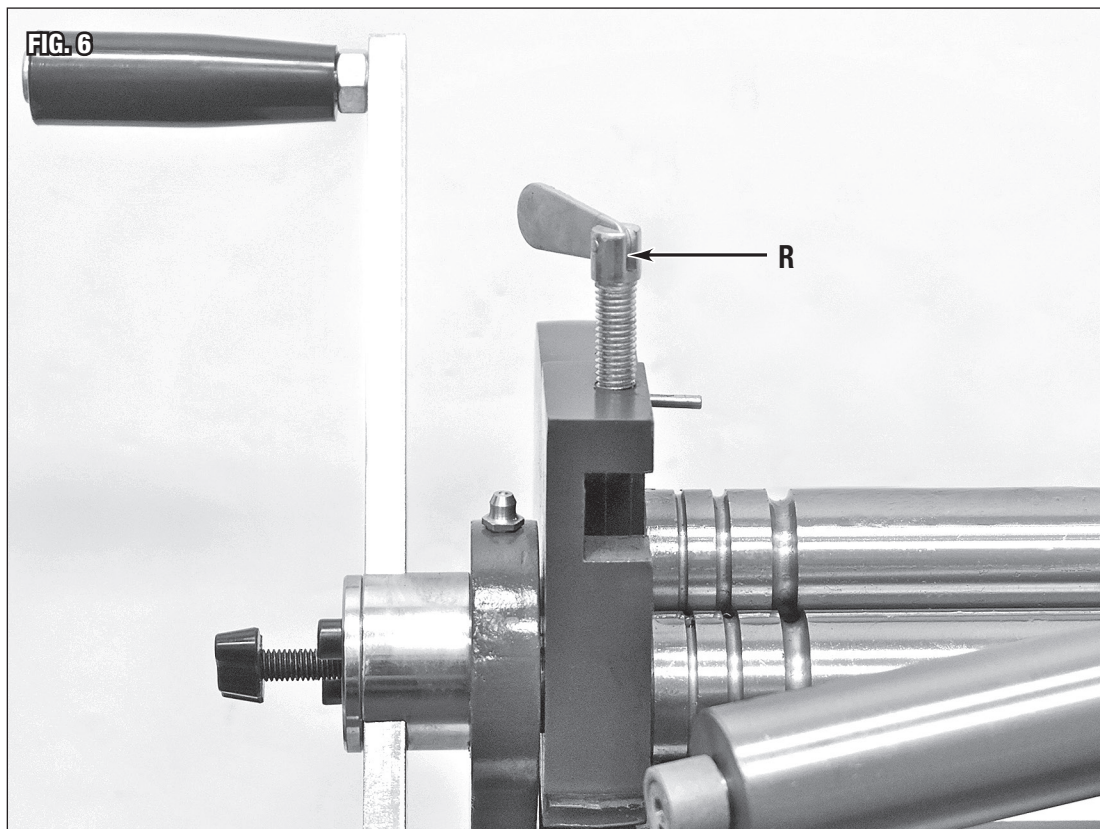
**IMPORTANT NOTE:** It is better to make the initial forming too large of a diameter rather than too small, as a diameter that is formed too large can be reformed to a smaller diameter. If the diameter is made too small initially, it cannot be reformed and must be scrapped.

- At this point you will have formed a complete cylinder. If the piece is not a complete cylinder and the ends do not touch, raise the Rear Roller slightly at both ends equally and rotate the Handle until the entire piece has been rolled again. Continue making tightening adjustments to the Rear Roller if necessary to get the ends of the cylinder to come together to form a complete cylinder.



Once the cylinder has been formed, it will need to be removed from the top of the Slip Roller with the following steps:

- Loosen both Rear Roller Knobs (**S**) equally.
- Loosen the Thickness Adjustment Screw (**R**) located at the left upper corner of the Frame until it completely disengages the Upper Roller bearing in order to release it (**FIG 6**).
- Swing the left side of the Upper Roller outward and on an angle but do not try and remove the Roller. Simply slide the work piece off the Roller
- Replace the Upper Roller back under the Thickness Adjustment Screw (**R**).



## CREATING CONICAL FORMS

When fabricating sheet metal, sometimes the need for a cone shape will arise. The Eastwood 3-in-1 can also achieve this type of form.

- Follow all previous steps for **Creating a Cylinder** with the exception that both Rear Roller Knobs (**S**) will be turned in different amounts to adjust for the smaller and larger diameter ends of the conical piece. The tighter the Rear Roller is against the piece, the smaller the radius will be. The looser the Rear Roller is against the piece, the larger the radius will be. Adjust each of the Rear Roller Knobs so that each end has its set radius.
- Rotate the Handle (**A**) (Clockwise as viewed from the right side) to form the piece. Continue rotating the Handle until the entire conical piece is satisfactorily formed.

## WIRE AND TUBE ROLLING

- The Eastwood 3-in-1 features 3 grooves in the left and right ends of the Lower and Rear Rollers. These are for forming bends into solid wire and tubing. The three sizes of wire and tubing that this tool can be used to form are: 3/16", 1/8", and 1/4" [2.2mm, 3.3mm, and 6.3mm].
- Turn the Thickness Adjustment Knobs (**R**) to raise or lower Upper Roller and accommodate the wire or tube size being formed.
- Loosen the Rear Roller Knobs (**S**) to lower the Rear Roller.
- Place the piece of wire or tubing to be formed between the Upper and Lower front Rollers and tighten the Thickness Knobs (**R**) until it is exerting pressure on the piece of wire or tubing. Be sure when making this adjustment that both sides of the Roller are tightened the same amount
- Rotate the Handle (**A**) clockwise (when viewed from the right side) to begin feeding the piece into the Rollers until the end of the wire is directly above the Rear Roller.
- Adjust the Rear Roller Knobs (**S**) to set the radius of the piece. The more this Roller is raised, the smaller the radius of the wire/tubing will be. Be sure to adjust the Knobs equally on both sides.
- Rotate the Handle (clockwise as viewed from the right side) to form the piece. Continue rotating the Handle until the entire piece exits the Rollers.

## MAINTENANCE

- Provide several drops of a good quality motor oil to all pivot points and rotating parts periodically to prevent binding.
- Add a good quality automotive chassis grease to the Zerk Fittings (**U**) (**FIG 1**) located at the top of each Side Arm pivot and to the Roller drive gears.
- Keep all areas of the tool clean, particularly those surfaces that contact sheetmetal workpieces. Dirt and metal chips can cause uneven clamping and inaccurate bends.
- Store in a clean & dry environment when not in use. Coat all machined surfaces with a light film of oil or suitable protectant to prevent rust formation.

# TROUBLESHOOTING

## SHEAR FEATURE

PROBLEM	CAUSE	CORRECTION
<b>Upper Blade/ Finger Bar Stops at Lower Blade</b>	Blades Adjusted Too Closely	Stop all action to avoid serious damage and follow Metal Shear Adjustment instructions.
	Metal Workpiece Too Thick or Too Hard	Stop all action to avoid serious damage. Do not exceed 18 gauge aluminum, 20 gauge mild steel, or 22 gauge stainless steel.
<b>Upper Blade/ Finger Bar Binding at Release with Lower Blade</b>	Blades Adjusted Too Closely	Stop all action to avoid serious damage and follow Metal Shear Adjustment instructions.
	Metal Workpiece Too Thick or Too Hard	Stop all action to avoid serious damage. Do not exceed 18 gauge aluminum, 20 gauge mild steel, or 22 gauge stainless steel.
<b>Blades Will Not Shear Metal</b>	Blades Adjusted Too Far Apart	Follow Blade Adjustment Instructions.
	Metal Workpiece Too Thick or Too Hard	Stop all action to avoid serious damage. Do not exceed 18 gauge aluminum, 20 gauge mild steel, or 22 gauge stainless steel.

## BENDING BRAKE FEATURE

PROBLEM	CAUSE	CORRECTION
<b>Handle Will Not Rotate A Full 360°</b>	Machine Improperly Adjusted	Stop all action to avoid serious damage and follow Bending Brake Adjustment instructions.
	Metal Workpiece Too Thick or Too Hard	Stop all action to avoid serious damage. Do not exceed 18 gauge aluminum, 20 gauge mild steel, or 22 gauge stainless steel.

## SLIP ROLLER FEATURE

PROBLEM	CAUSE	CORRECTION
<b>Handle Will Not Rotate A Full 360°</b>	Upper or Rear Rollers Too Tight and Binding	Stop all action to avoid serious damage and follow Roller Adjustment instructions.
	Metal Workpiece Too Thick or Too Hard	Stop all action to avoid serious damage. Do not exceed 18 gauge aluminum, 20 gauge mild steel, or 22 gauge stainless steel.
<b>Rollers Slipping/Will Not Feed Metal Through When Handle is Turned</b>	Upper or Rear Rollers Adjusted Too Loosely and Slipping	Follow Roller Adjustment instructions.



## ADDITIONAL ITEMS

- #28038 Sheet Metal Gauge
- #13475 Electric Metal Cutting Shears
- #28187 Bead Roller Kit
- #51088 Shrinker/Stretch Set

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**If you have any questions about the use of this product, please contact**

The Eastwood Technical Assistance Service Department: 800.343.9353 >> email: [tech@eastwood.com](mailto:tech@eastwood.com)

PDF version of this manual is available at [eastwood.com](http://eastwood.com)

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