

*Eastwood*

DO THE JOB RIGHT.

Part #14156

# ENGLISH WHEEL INSTRUCTIONS



The **EASTWOOD KNOCK-DOWN ENGLISH WHEEL KIT** is a precision engineered tool designed using modern CAD technology and manufactured with high-quality materials. Featuring a full-size, bearing supported, 8" x 2" Wheel and 3.25" x 2" Anvil, time-honored English Wheeling skills can be applied to form intricately curved metal panels exactly like those created on machines costing \$1000's more. In addition, the unique design allows the user a choice to position the Wheel and Anvil in line with or 90° to the Frame centerline to provide conventional Wheeling access from the side or alternate access from the front to accommodate larger or deeper projects.

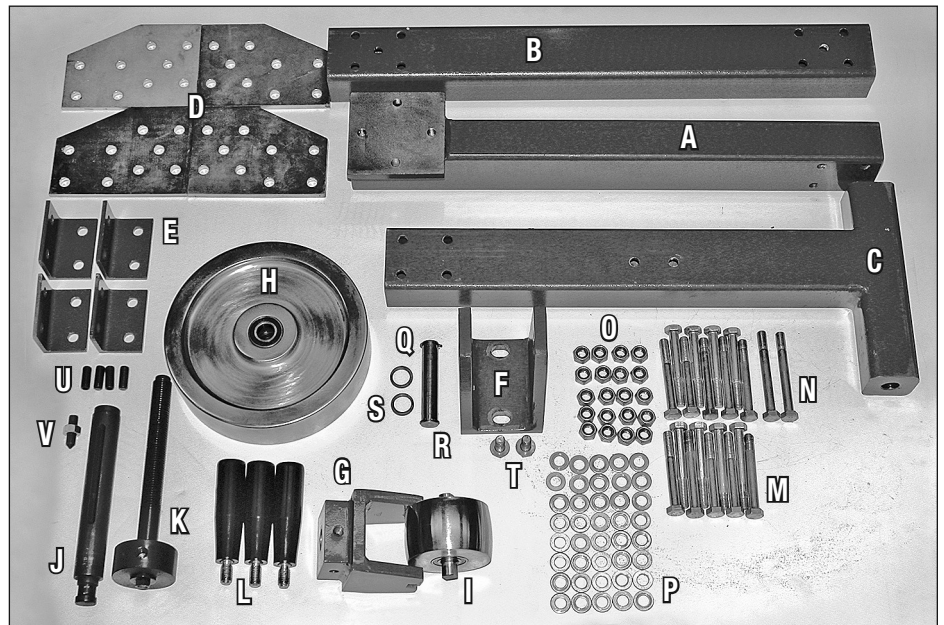
## ⚠ CAUTION

- To avoid possible personal injury or tool damage, make sure the frame is securely mounted to the work surface. 3/8" [10mm] through bolts or lag screws with washers should be used.
- Avoid catching fingers between wheel and metal as pinching and injury could occur.
- Wear protective gloves while handling sheet metal to prevent cuts and scrapes from sharp edges.
- Wear appropriate eye protection while operating the English Wheel.

## INCLUDES

### Parts

- A** (1) Upper Frame Bar
- B** (1) Rear Upright Bar
- C** (1) Lower Frame/Anvil Adjustment Bar
- D** (4) Joining Plates
- E** (4) Mounting Brackets
- F** (1) Wheel Mounting Yoke
- G** (1) Anvil Mounting Yoke
- H** (1) 8" x 2" Wheel with Bearings
- I** (1) 3.25" x 2" x 5" Radius Anvil with Bearings and Shaft
- J** (1) Anvil Pushrod
- K** (1) Anvil Jackscrew/Hub
- L** (3) Jackscrew Handles with Bolts



### Hardware

- M** (18) 10mm x 1.5 x 80mm Frame Bolts
- N** (2) 10mm x 1.5 x 90mm Lower Frame Corner/Mounting Feet Bolts
- O** (20) 10mm x 1.5 Lock-Nuts
- P** (40) 10mm Washers
- Q** (1) Wheel Shaft
- R** (2) Wheel Shaft Snap-Rings
- S** (2) Wheel Shaft Bushings
- T** (2) 10mm x 1.5 x 25mm Wheel Yoke Bolts
- U** (4) 10mm x 1.5 x 25mm Socket-Head Set-Screws
- V** (1) 10mm x 1.5 Pushrod Set-Screw and Locknut

## TOOLS REQUIRED

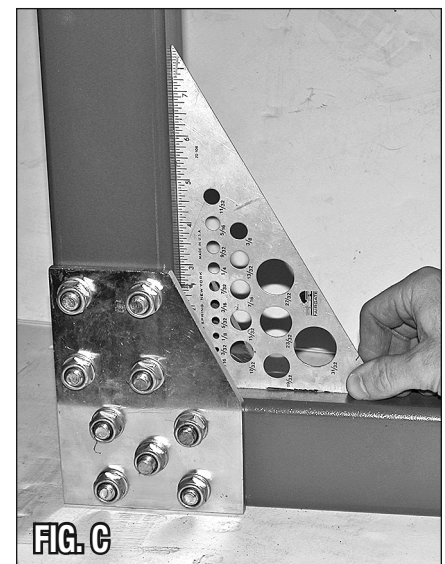
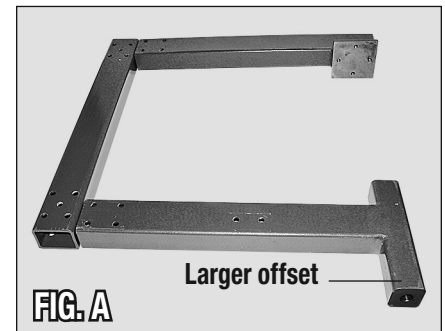
- 14mm wrench or socket
- 16mm wrench
- 5mm Hex key
- 6mm Hex key
- Soft-faced or dead-blow hammer
- Precision metal-working square (10"-12" preferred)
- Torque wrench with accurate 45 lbs/ft capability.
- $\text{Ø}1/2$ "-  $\text{Ø}5/8$ " x 6" [ $\text{Ø}12$ -16mm x 150mm] long bar, dowel or drift
- Medium, external expanding snap-ring pliers
- Precision metal-working, 12" straightedge graduated in 32nds
- A clean, firm and level work surface

## ASSEMBLY

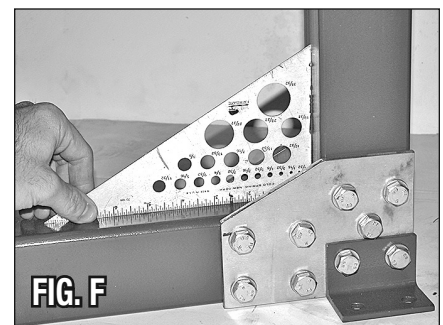
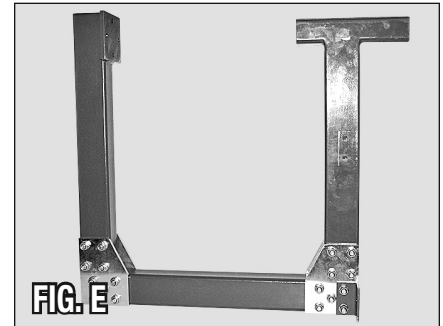
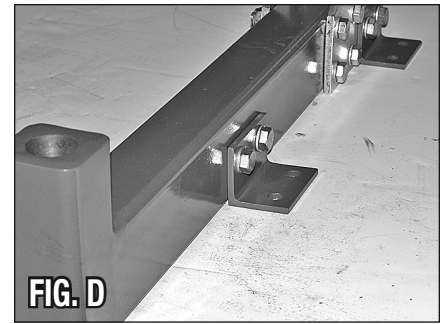
**NOTE:** Some components of this assembly are somewhat heavy and require great care in handling. Other parts are manufactured to tight tolerances and may require additional effort to fit together. It is strongly recommended to have the help of an assistant available while assembling this English Wheel.

### Frame

- Arrange the three Frame Members on the work surface to become familiar with the orientation of the pieces. Note that the longer offset of the Lower Frame/Anvil Adjustment Bar is arranged toward the bottom or "outside" while the Wheel Yoke Mounting Flange is oriented downward or toward the "inside" (FIG. A).
- Place a washer on each of the 10mm x 80 & 90mm bolts.
- Stand the Rear Upright Bar on its end then place 2 of the Joining Plates along the Rear Upright Bar with the angled edges upward toward the center of the bar and line up the 5 through holes (FIG. B).
- Place 2 of the Mounting Brackets alongside the Joining Plates then insert the 2 longer, 10mm x 90mm bolts through the Mounting Feet, Joining Plates and Rear Upright Bar (FIG. B).
- Slide the Lower Frame/Anvil Adjustment Bar in place then insert the additional 7, 10mm x 80mm bolts through the Joining Plates, Rear Upright Bar and Lower Frame/Anvil Adjustment Bar (FIG. B). **NOTE:** The use of a soft-faced hammer may be required to seat the bolts due to tight hole tolerances.
- Place washers and nuts over the bolts and thread them on with 14mm & 16mm wrenches. **NOTE:** Do not fully tighten at this time.
- Place a metal-working square into the corner formed by the Lower Frame/Anvil Adjustment Bar and Rear Upright Bar and check for a true 90° angle (FIG. C). **IMPORTANT:** This is a highly critical measurement. Slight tapping with a Soft-Faced hammer may be required to achieve a true 90° angle.
- After a true 90° angle is achieved, tighten nuts and bolts fully with 14mm & 16mm wrenches then recheck for a true 90° angle. If any movement has occurred, loosen bolts, re-adjust, re-tighten and re-check angle. **NOTE:** Final bolt torque is 45 lbs/ft.



- Attach the remaining 2 Mounting Feet to the Lower Frame/Anvil Adjustment Bar with 2 of the 10mm x 80mm bolts (FIG. D).
- Flip the partially constructed frame back on the Rear Upright Bar and place the remaining 2 of the Joining Plates along the Rear Upright Bar with the angled edges inward toward the center of the bar and line up the 5 through holes (FIG. E).
- Slide the Upper Wheel Bar in place then insert the 9 remaining, 10mm x 80mm bolts through the Joining Plates, Rear Upright Bar and Upper Wheel Bar (FIG. E).  
**NOTE:** The use of a soft-faced hammer may be required to seat the bolts due to tight hole tolerances.
- Place washers and nuts over the bolts and thread them on with 14mm & 16mm wrenches. **NOTE:** Do not fully tighten at this time.
- Place a metal-working square into the corner formed by the Lower Frame/Anvil Adjustment Bar and Rear Upright Bar and check for a true 90° angle (FIG. F).  
**IMPORTANT:** This is a highly critical measurement. Slight tapping with a Soft-Faced Hammer may be required to achieve a true 90° angle.
- After a true 90° is achieved, tighten nuts and bolts fully with 14mm & 16mm wrenches then recheck for a true 90° angle. If any movement has occurred, loosen bolts, re-adjust, re-tighten and re-check angle. **NOTE:** Final bolt torque is 45 lbs/ft.
- At this point, the frame assembly has been completed and ready for installation of the English Wheel components. To avoid possible personal injury or tool damage, it is strongly recommended to mount the frame securely to the work surface before moving forward. 3/8" [10mm] through bolts or lag screws with washers should be used.



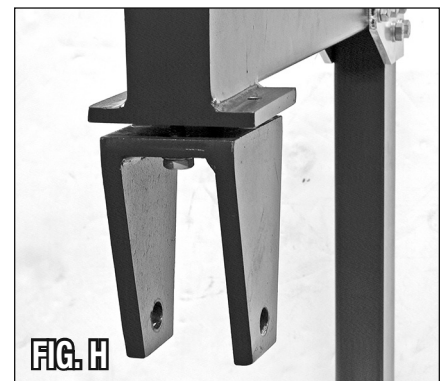
### Wheel Installation

**NOTE:** This design allows the user a choice to position the Wheel and Anvil in line with 90° to the Frame centerline to provide conventional Wheeling access from the side (FIG. G) or alternate access from the front (FIG. H) to accommodate larger or more deeply formed projects. The Wheel/Anvil orientation is easily reconfigurable.

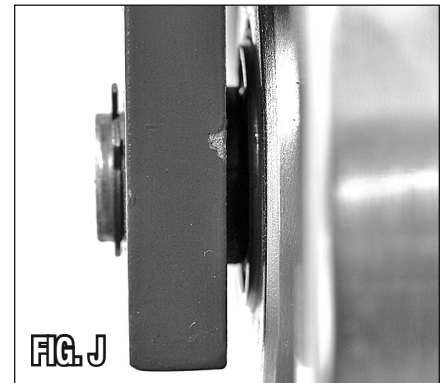
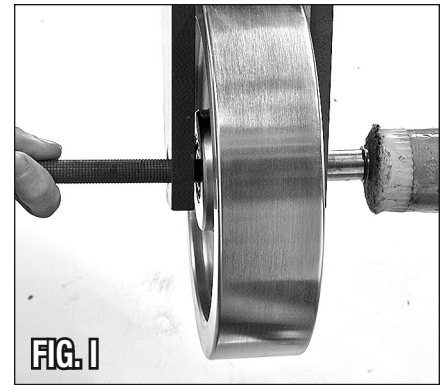
- Attach the Upper Frame Wheel Yoke with 2, 10mm x 1.5 x 25mm bolts with washers using a 14mm wrench. **NOTE:** Do not fully tighten at this time.

### ⚠ CAUTION

The Wheel weighs over 22 lbs. [10kg]! Use extreme care when handling. It is strongly recommended to have the help of an assistant available while installing the Wheel.



- Using a  $\text{\O}1/2''$ -  $\text{\O}5/8''$  x 6" [ $\text{\O}12$ -16mm x 150mm] long bar, dowel or drift, slide it through one of the Wheel Shaft holes in the Wheel Yoke, bring the Wheel up into place between the ears of the Wheel Yoke and stack a Bushing, the Wheel and the second Bushing over the shaft. Pass the drift through the opposite Wheel Shaft hole and allow the Wheel to rest in place (Fig. I).
- Install a snap-ring in the groove on one end of the Wheel Shaft and while beginning to slide the drift out of one side of the Wheel Yoke, begin to slide the Wheel Shaft into the hole in the Wheel Yoke, through both Bushings, the Wheel and finally, the opposite Wheel Yoke hole. **NOTE:** The use of a soft-faced hammer may be required to seat the shaft due to tight hole tolerances in this area.
- Install the second Snap Ring.

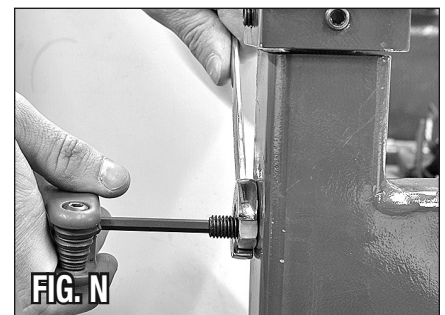
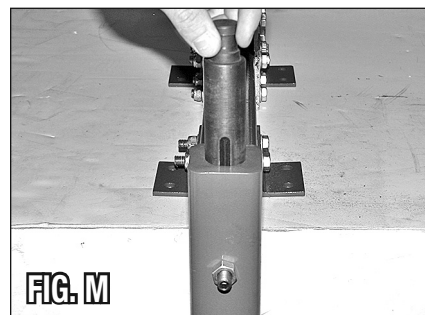


### Anvil Installation

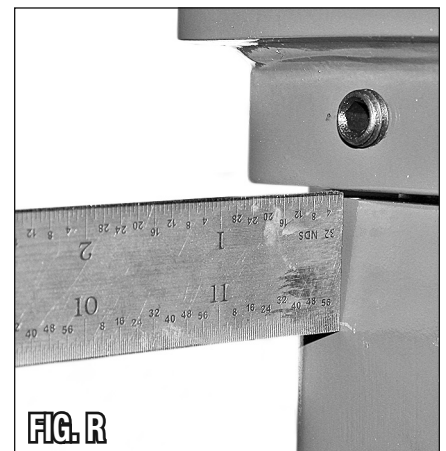
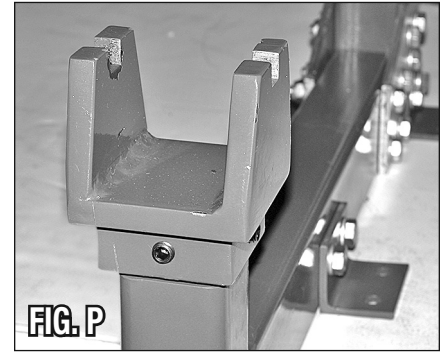
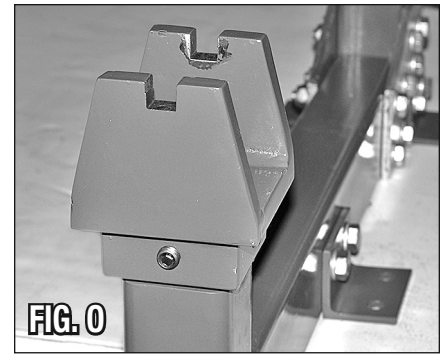
- Assemble the Jackscrew by threading the three handle bolts into the Hub (Fig K).
- Thread the Jackscrew assembly into the Anvil Support Bar from the underside (Fig L). Thread it in several inches. **NOTE:** The addition of a small amount anti-seize lubricant or grease on the threads and upper end of the Jackscrew will offer smoother operation.
- Place the Pushrod down into the upper end of the bore of the Anvil Support Bar making sure that the machined slot faces forward and the turned end is up (Fig M). **NOTE:** The addition of a small amount anti-seize lubricant or grease on sides of the Pushrod, machined slot and lower end will offer smoother operation.
- Thread the 10mm x 1.5 Conical Point Pushrod Set-Screw and Locknut into the threaded hole in the front face of the Anvil Support Bar (Fig N).



**IMPORTANT NOTE:** The tip of the Pushrod Set-Screw must be seated in the Pushrod Groove sufficiently to prevent the Pushrod from rotating but not too tight, which would prevent free vertical movement.



- Place the Anvil Yoke over the end of the Pushrod. **NOTE:** Raise Push Rod by turning Jackscrew to allow Yoke to fully set.
- Align the Yoke & Anvil with the previously chosen Wheel orientation (Figs O, P).
- Thread the four 10mm x 1.5 x 25mm Socket-Head Set-Screws into the threaded holes on the four faces of the Anvil Yoke. Run them in sufficiently to seat them within the turned groove of the Pushrod using a 5mm hex key but do not tighten fully at this time.
- Drop the square ends of the Anvil Shaft into the square slots in the Anvil Yoke (Fig Q).



### Wheel & Anvil Alignment

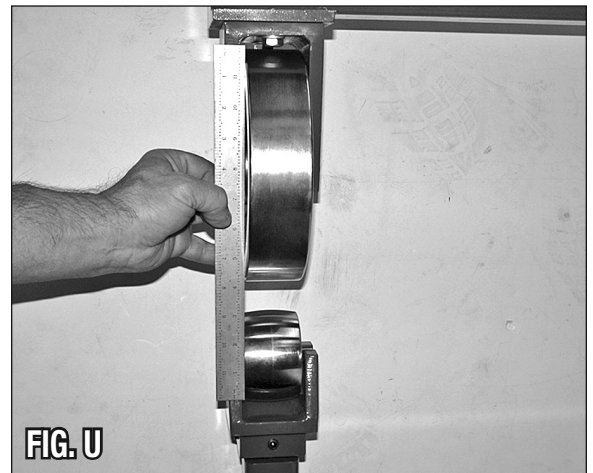
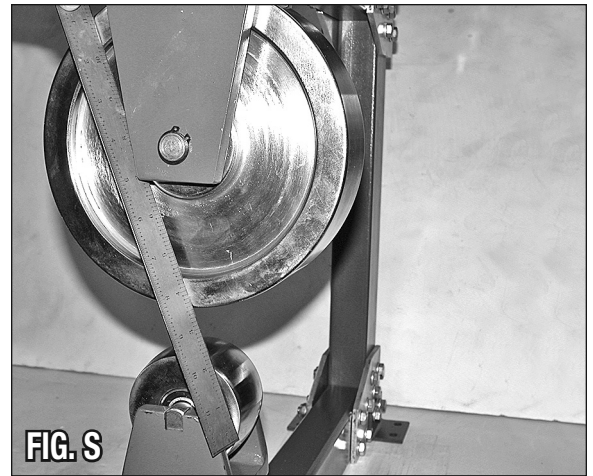
For best results and proper English Wheeling, the axis of the Wheel and Anvil must be parallel in both vertical and horizontal planes. The unique Eastwood English Wheel design provides adjustments to optimize these relationships. The alignment procedures are as follows;

#### Square Anvil to Frame

- Lower Jackscrew to allow the Anvil Yoke to rest at its lowest setting (the underside of the Anvil Yoke should contact the top of the Anvil Support Bar) (Fig R).
- Using a precision metalworking straightedge with 1/32nd graduations, take measurements of the amount of overhang between the front-facing underside of the Anvil Yoke and front face of the Anvil Support Bar at 2 or more places (Fig R). Rotate the Anvil Yoke slightly as needed to achieve equal measurements along the face. (In the photographed example, the equalized dimension is 5/32" [3.9mm]).
- Once the dimensions are equalized, fully tighten the four locking set-screws on the Anvil Yoke with a 5mm hex-key then recheck dimensions. The Anvil is now square to the frame.

## Square Wheel to Anvil

- Raise the Jackscrew to allow the Anvil to just make contact with the Wheel surface. **NOTE: Do Not** exert pressure on the Anvil and Wheel or permanent damage will result.
- Draw the Wheel Yoke bolts up with a 16mm wrench but **DO NOT** fully tighten.
- Place the edge of the 12" precision metal working straightedge along the front face of the Wheel (touching at 2 places) at a diagonal from upper left to lower right and also along the front face of the Anvil (Fig S).
- Repeat the above step only, angle the straightedge the opposite direction from upper right to lower left across the face of the Wheel and Anvil (Fig T).
- If space is visible between the straightedge and Anvil face, move the Wheel Yoke backward slightly. Conversely, if a space is visible between the face of the Wheel and straightedge, move the Wheel Yoke slightly forward. **NOTE:** The use of the soft-faced hammer may be helpful in making these adjustments. This procedure may require repeated forward-back, side to side adjustments (Fig U).
- Once the adjustments are made, there should be no space visible between the straightedge and the faces of the Wheel and Anvil. Tighten Wheel Yoke bolts fully and re-check alignment for movement.
- The Eastwood English Wheel is now fully assembled, set-up and ready for some English Wheelin'.



## CARE AND MAINTENANCE

- Before each use, be sure the surfaces of the Wheel and Anvil are completely clean and free of any dirt, grit, grease or metal chips as the precision-finished surface can be easily damaged.
- Never allow the Anvil and Wheel to roll together making full contact and no metal in between as marring of the precision-finished surfaces can occur.
- Always cover the English Wheel when not in use to help keep it clean and prevent rust from forming on the precision machined surfaces. If surface rust should occur, rub surfaces with a light machine or penetrating oil and a soft cloth. Avoid using abrasives on the Wheel and Anvil surfaces. If abrasion is needed to remove surface rust, use only a “red”, mid-grade nylon scuff pad.
- If the English Wheel is going to remain unused for an extended period, coat all exposed machined surfaces with a light machine or penetrating oil and completely cover the unit.
- **Periodically check all fasteners, set-screws and mounting bolts for tightness, especially with frequent use.**
- Periodically check Frame squareness and Wheel/Anvil alignment and adjust using procedures described in the assembly section of these instructions.
- If the Frame or any components should be bumped, struck or falls over, stop use and check Frame squareness and Wheel/Anvil alignment then re-adjust using procedures described in the assembly section of these instructions.

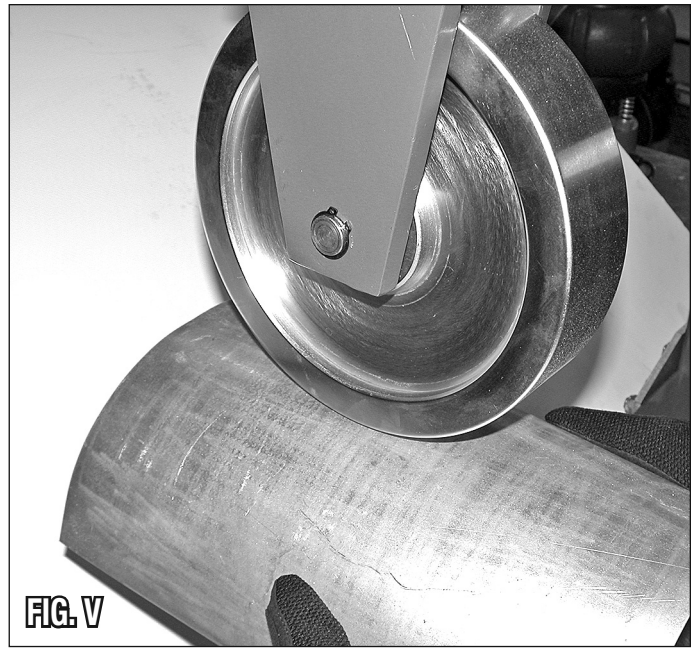


## USING THE ENGLISH WHEEL

English Wheeling is an age-old metal-working skill that many metal workers consider an art. Some amazing forms can be created in a piece of metal when in the hands of an experienced wheeler. Keep in mind that there are differing methods of operation which vary among professional wheelers. None are absolutely fixed in stone as the “correct” way and none are wrong. It is simply a matter of choosing which method you find most comfortable as it is the final results that matter most. The best method for learning is to obtain several metal-working books and videos containing material on English Wheeling by different well-known metal workers then determine which methods appeal most to you.

The #1 most important rule in becoming an expert in the time-honored art of English Wheeling is Practice, Practice, Practice. The following are several basic elements crucial to English Wheeling that will get you started:

- Obtain a stack of 12” x 12”, 20 gauge aluminum and steel panels to use as practice pieces.
- Leaving a gap between the Wheel and Anvil, place a practice piece of aluminum between them then raise the Jackscrew until the anvil just contacts the metal and the metal contacts the Wheel allowing easy rolling between the Anvil and Wheel. **IMPORTANT NOTE: Do Not** overtighten the Jackscrew and Anvil! Overtightening will quickly crease and harden the metal, create unnecessary effort and will damage the surface of the Anvil.
- Keep in mind that the metal forming is done by passing the metal over the anvil while pulling it down and shaping it. The Wheel functions as a guide.
- It is normal to constantly adjust the anvil tension as you work. The goal is to have it “not too tight yet not too loose”.
- Grasp the edges of the metal and continue to exert a gentle but firm downward force while rolling it. You will begin to see a curvature appear in the metal (Fig V).
- Try not to repeatedly pass over the same point in the metal which can work-harden it but keep it moving in a long, sweeping “W” or “X” pattern over the Anvil for best results (Fig W). Note that the “W” pattern will produce a curve in one direction while the “X” will produce a compound curve or “bowl” effect. Also note that closer passes will produce tighter curves in the metal while wider spaces create gentler curves.
- You are well on the way to becoming an expert English Wheeler! Continue practicing and you will be proud to have mastered a nearly forgotten metalworking skill that few in the world possess!



# NOTES

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

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