PROLINE

# MINI MAX
# OPERATION AND PARTS MANUAL


Van Sant Distributing, Inc. 75 Truman Rd, Pella, IA 50219 800-828-2043

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# INSTALLATION

If the optional stand is not purchased the machine frame must be securely bolted down to a structure that will support the machine, and prevent the machine from tipping over.

If the optional stand is purchased without the optional casters, the stand must be securely bolted down to a structure to support the machine and prevent the machine from tipping.

# MACHINE START AND STOP

**Before operating this machine read the operator's manual.**

Plug the machine's power cord into the power supply. The machine requires either 120V single phase or 240V single phase power source. Check which voltage you ordered.

**Single Speed Machine. Photo 2.** To start the power driven tool push the green pushbutton. To stop the power driven tool push the red pushbutton.

**Optional Variable Speed Machine with foot pedal speed control. Figure 1.** To apply power to the machine, turn the switch on the control panel to the ON position. A green LED light is turned on indication the power is on.

On each initial startup, allow the controller to warm up for 10-15 seconds before depressing the foot pedal speed control. This allows the VFC time to warm up. Proceed after this warm up. Depressing the foot speed control pedal before the 10-15 second allow for warm up could trip the VFC.

If the machine does not start when foot pedal speed control is depressed turn the switch to the OFF position and unplug the machine for about 15 seconds. Plug machine in and repeat the starting procedure.

With the power on, when the foot pedal speed control is depressed the machine begins to run. The farther the foot pedal is depressed the faster the machine runs. Releasing the foot pedal causes the machine to stop.

# MANUAL UPPER TOOL MOVEMENT.

**Figure 1.** With the drive motor turned off, the top tool is moved up and down by rotation red knob A. Total up and down travel is 0.180 inches. This is the same movement of the top tool when driven by the motor, do not touch this knob while motor is running and moving the top tool.

**Figure 1.** With the drive motor turned off, the top tool can be move up from its working position a total of 3/8 inch for removal of the work piece. To raise the top tool pull the spring operated knob B out, rotate the

knob 180 degrees clockwise and release knob B. Be sure spring operated knob B moves in and locks the arm in place. To lower the tool to the working position, reverse the above.

## TOOLING

**Figure 1.** The machine's top tool holder and bottom tool holder are for 165mm (0.625 inches) square shank tools. The tools are held in place by (2) set screws at 90 degrees in the both the top and bottom tool bolder. The set screws for the top tools are tightened to hold the tool in place The set screws for the bottom tool are set so the bottom tool can be moved up after each pass for multiple pass work without loosening the set screws. Before locking the top tool in place with the (2) set screws the top tool's shank must be inserted into the tool holder until it's shank bottoms in the tool holder. Seed options list for available standard 16 mm square shanks.

Adapters to use Proline standard planishing hammer dies are available. See Figure 2A.

## TOOLING ADJUSTMENT

**Figure 1.** The bottom tool holder is adjustable "in-out" and "side to side" relative to the top tool holder. To adjust the bottom tool holder "in-out", loosen the screw holding the adjuster lock plate in position. Loosen the screw holding the bottom post base and move it in and out as required. Check "side to side" alignment. After final position is obtained first lock the bottom post in position, then slide the adjuster lock plate in position against the bottom post base and lock in position.

Up and down adjustment of the tool holder is usually not changed from the factory setting. Factory furnished dies are cut to a standard length for the factory setting of the up/ down position.

When it is necessary to adjust the bottom tool up or down follow this procedure. Rotate handle G to move tool up or down as needed nylon top lock set screw "F" is adjusted so allow the bottom tool adjuster screw to be turned, but not shake loose during operations.

## BEADING DIE SET UP

**Figures 1 and 2D. Tool Alignment.** From the operator side of the machine the bead runs L to R, place the dies in the tool holders appropriately. For alignment use a straight edge. For checking the "in-out" alignment, place the straight edge against the diameters on front of the top tool and front of bottom tool. For checking the "side to side" alignment, place the straight edge 90 degrees from front face against the sides of the top tool and bottom. Adjust bottom tool to align with the top tool. The principal adjustment for the bottom die is "in-out" from the operator position. Minor adjustments in the "side to side" direction can be made. The dies should be aligned as close as possible "front to back" to avoid pinching the metal.

**Figure 1. Tool Up/down Adjustment.** Top tool's shank must bottom in the top tool Holder. Lock the top tool in position with (2) set screws. The bottom tool must rest against the bottom tool's adjuster screw. The set screws for the bottom tool are set so the bottom tool can be moved up after each pass for multiple pass work without loosening the set screws.

Before moving the top tool to its lowest position, knob "B" must be in the 9 o'clock position and locked. Move the top tool to its lowest position by rotation knob A.

Place a piece of the metal to be beaded between the top and bottom tools. Raise the bottom tool by rotation handle "G" until there is a slight clearance between the tools and the piece of metal. Retest to make sure there is only a slight clearance between the tools and the material and that you are not squeezing the metal.

Make sure there is clearance here to avoid stretching the metal while running the bead.

After the top tool and bottom tool are centered and adjusted "up-down", the work piece is fed in between the tools.

The operations carried out in one or more passes; the number of passes being decided by the plate thickness and quality of the material and the shape of the profile. After deciding how many passes to use, lower the bottom top using handle "G" an appropriated distance. After each pass raise the bottom tool and appropriate amount. On the initial pass you are only doing part of the full depth of the bead. The larger the head the more passes must be run to avoid putting stretch marks in the bead.

The striking motion of the tool is successively increased by raising the bottom tool after each pass. The bottom tool can be raised until the distance between the top and bottom is equal to the thickness of the plate being worked. The distance between the top and bottom tools MUST NEVER be less than the material thickness. This can cause serious damage.

For all the types of metal forming (beading, offsetting and shrinking) run the machine at maximum strokes per/minute.

It is good practice before doing beading to first planish the area that will be beaded.

With standard tools, the profile as shown in figure 3 is obtained in 16 GA. Mild steel. This tool can also be used for plate thinner than the 16 GA. Mild steel.

Special tools can be supplied for profiles with dimensions other than standard profiles.

A bead which extends to the edges of the plate is easier to form than one which is limited to the center of the plate. See figures 4A and 4B.

## OFFSETTING DIE SET UP

**Figures 1 and 2C. Tool Alignment.** From the operator side of the machine the offset runs L to R, place the dies in the tool holders appropriately. For alignment use a straight edge. For checking the " in-out" alignment place the straight edge against the faces on front of the top tool and front of bottom tool from checking the "side to side" alignment place the straight edge 90 degrees from front face against the side of the top die and bottom die. Adjust bottom tool to align with the top too. The principal adjustment for the bottom tool is "in-out" form the operator position. Minor adjustments in the "side to side" direction can be made. The dies should be within 0.010 inch alignment front to back.

**Figure 1. Tool Up/down Adjustment.** Top tool's shank must bottom in the top tool holder. Lock the top tool in position with (2) set screws. The bottom tool must rest against the bottom tool's adjuster screw. The set screws for the bottom tool are set so the bottom tool can be moved up after each pass for multiple pass work without loosening the set screws.

Before moving top tool holder to its lowest position, knob "B" must be in the 9 o'clock position and locked. Move the top tool holder to its lowest position by rotation knob "A".

Place a piece of the metal to be offset between the top and bottom tool. Raise the bottom tool by rotating handle "G" until there is a slight drag between the tools and the piece of metal. Retest to make sure there is only drag on the material and that you are not squeezing the metal.

After the top and bottom tools are centered and adjusted up/down, the work piece is fed in between the tools.

The operation is carried out in one or more passes; the number of passes being decided by the plate thickness and quality of the material and the shape of the profile. After deciding how many passes to use, lower the bottom top using handle "G" and appropriated distance. After each pass raise the bottom tool appropriate amount.

The striking motion of the tool is successively increased by raising the bottom tool after each pass. The bottom tool can be raised until the distance between the top and bottom is equal to the thickness of the plate being worked the distance between the top and bottom tools MUST NEVER be less than the material thickness. This can cause serious damage.

For all the types of metal forming (beading, offsetting and shrinking) run the machine at maximum strokes per/minute.

With standard tools, the profile as shown in figure 5 is obtained in 16 GA. Mild steel. This tool can also be used for plate thinner than 16 GA. Mild steel.

Special tools can be supplied for profiles with dimensions other than standard profiles.

## SHRINK DIE SET UP

From the operator side of the machine the shrinking work moves "in and out".

**Figures 1 and 2B. Tool Alignment.** Install the top die first, then install the bottom die. The top die has the recess in its face. The bottom die has the protrusion on its face.

Install the top tool so its shank bottoms in the top tool holder. Lock top tool in place with (2) set screws. The top tool must be installed with the widest point of the recess in its face farthest from the operator side and the recess runs in the "in and out" direction. Install the bottom tool so the protrusion on the face of the bottom tool aligns with the recess in the top tool's face. The bottom tool must rest against the bottom tool's adjuster screw. The set screws for the bottom tool are set sot the bottom too can be moved up after each pass for multiple pass work without loosening the set screws.

For alignment use a straight edge. For checking the front to rear alignment place the straight edge against the faces on front on the top tool and front of bottom tool. For checking the "side to side" alignment place the straight against the sides face of the top and bottom tools. The principal adjustment for the bottom tool is "in-out" from the operator position. Minor adjustments in the "side to side" direction can be made.

In the "in-out" direction adjust the bottom tool to extend 0.02/0.03 inches from the top tool toward the back of the machine for material thickness 0.04 inch. Increase tis distance for thicker materials. The tools should be within 0.010 inch misalignment side to side.

**Figure 1. Tool Up/Down Adjustment.** Top tool's shank must bottom in the top tool holder. Lock the top tool in position with (2) set screws. The bottom tool must rest against the bottom tool's adjuster screw.

Before moving top tool to its lowest position, knob B must be in the 9 o'clock position and locked. Move the top tool down to its lowest position by rotating knob A. adjust bottom tool up until you feel a slight drag on the material.

Start machine at maximum speed. Place a piece of the material to be formed between the tools. The tools will be barely forming the material. Slowly adjust the bottom tool up with handle "G". Remove the metal piece and inspect the formed area. Keep raising the bottom tool until the formed area on the metal piece is just noticeable. Lock bottom toolin place. is setting for the bottom tool will be used for all passes.

**Photo-C. See Pullmax Shrink Die Set Up Manual.** You are ready to shrink at this point. Start machine at maximum speed. Push metal in and pull back on the same path. As the metal is pushed in a pucker is pulled in the metal. As you pull out the pucker is flattened. If the dies are properly set, the metal will show signs of shrinking. It will also have some waves, as in the photograph. Try to keep it as smooth as possible. The panel will need to be planished for final smoothing.

**Photo-D. See Pullmax Shrink Die Set Up Manual.** When shrinking a panel, you have to run more passes on the outside than on the inside. #1 pass will require less shrink (less passes) than #2 and #2 pass will require less shrink (les passes) than #3 pass. The number of passes depends on the severity of the amount to be shrunk.

## STRAIGHT FENCE

**Figure 1.** Standard straight fence is a gage stop and support for straight edge work piece. It is adjusted "up-down" to support the work piece and "in-out" to top the work piece in relation to the tooling. The vertical adjustment should support the work piece without putting a bow in the work piece.

Vertical adjustment is made by loosening the screws on both side of the frame and moving the straight fence to desired position.

Horizontal adjustment is made by loosening the clamp handles on both sides of frame and moving straight fence in and out as required.

## CONTOUR FENCE

**Figure 1.** Standard contour fence is a gage stop for parts with a curved edge.

To change from straight fence to contour fence, remove the straight fence back stop from the support rods, and install the contour fence assembly, adjust the contour fence "up-down" so the center of the roller on the contour fence is on the centerline line o the tools. The "up-down" and "in-out" adjustments of the contour fence same as straight fence.

### Initial Lubrication Period

The length of operation for the first period of lubrication should ½ the time the normal period for lubrication. Use a multi-purpose NLGI #2 grease.

For the first lubrication period use the specified grease. Lubricate the following grease points within the following period. See operator's manual for the grease fitting locations.

**Photos 3 and 4.** There are (4) grease fittings that need attention.

Crank shaft roller bearing grease photo 3 fitting A-2. Note remove cover for access to this fitting. Lubricate with multi-purpose grease NLGI #2. Lubricate after the first 5-6 hours of operation.

Piston sleeve plain bearing Photo4 fitting A-4. Lubricate with multi-purpose grease NLGI #2. Lubricate after the first 4 hours of operation.

Lift eccentric shaft. Photo 3 fittings A-1 and A-3. Lubricate with multi-purpose grease NLGI #2. Lubricate after the first 2 weeks.

## LUBRICATION/MAINTENANCE.

**Photos 3 and 4.** There are (4) grease fittings that need attention.

Crank shaft roller bearing grease photo 3 fitting A-2. Note remove cover for access to this fitting. Lubricate with multi-purpose grease NLGI #2. Lubrication frequency after every 10-12 hours of operation.

Piston sleeve plain bearing. Photo 4 fitting A-4. Lubricate with multi-purpose grease NLGI #2. Lubrication frequency after every 8 hours of operation.

Lift eccentric shaft. Photo 3 fittings A-1 and A-3. Lubricate with multi-purpose grease NLGI #2. Lubrication frequency after every 8 hours of operation.

## DRIVE BELT

**Photos 4 and 5.** Power must be turned off. To check drive belt remove belt guard by removing the 3 arm knob. Note there is only (1) belt. The driven pulley has (2) grooves for fly wheel effect.

**Photo 6.** Power must be turned off. For belt adjustment or removal loosen mounting bolts under the drive motor and slide motor as required.

**MOTOR.**

See the U.S. Motors manufacture's installation, operation and maintenance manual and modular instruction manual provided.

## ADJUSTABLE SPEED DRIVE CONTROLLER START-UP GUIDE.

See the Square D/ Telemecanique ALTIVAR 11 manual provided.

See the sheet with Programming Acceleration and Deceleration Times provided for the Square D/ Telemecanique ALTIVAR 11 variable speed drive by Joe Dickey dated 01/19/09.

## FOOT SWITCH AND POTENTIOMETER CONTROLS (G700).

See The SSC Controls Company Foot Switch Safety Warning document provided.

See The SSC Controls Company Potentiometer foot Controls (G700) document provided.

Pose grease NLGI #2. Lubricate after the first 5-6 hours of operation.

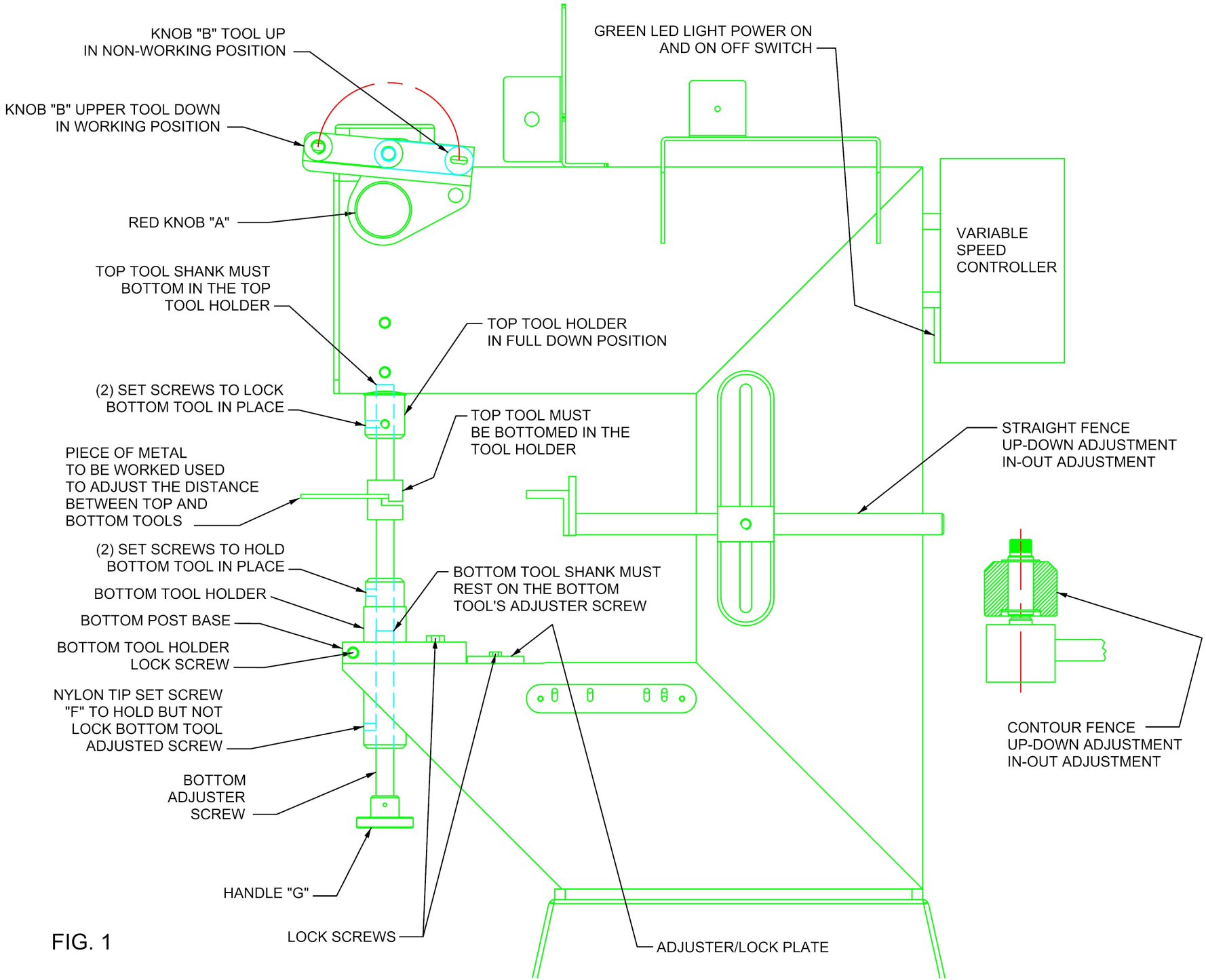

KNOB "B" TOOL UP
IN NON-WORKING POSITION
KNOB "B" UPPER TOOL DOWN
IN WORKING POSITION
RED KNOB "A"
TOP TOOL SHANK MUST
BOTTOM IN THE TOP
TOOL HOLDER
(2) SET SCREWS TO LOCK
BOTTOM TOOL IN PLACE
PIECE OF METAL
TO BE WORKED USED
TO ADJUST THE DISTANCE
BETWEEN TOP AND
BOTTOM TOOLS
(2) SET SCREWS TO HOLD
BOTTOM TOOL IN PLACE
BOTTOM TOOL HOLDER
BOTTOM POST BASE
BOTTOM TOOL HOLDER
LOCK SCREW
NYLON TIP SET SCREW
"F" TO HOLD BUT NOT
LOCK BOTTOM TOOL
ADJUSTED SCREW
BOTTOM
ADJUSTER
SCREW
HANDLE "G"
LOCK SCREWS
GREEN LED LIGHT POWER ON
AND ON OFF SWITCH
VARIABLE
SPEED
CONTROLLER
TOP TOOL HOLDER
IN FULL DOWN POSITION
TOP TOOL MUST
BE BOTTOMED IN THE
TOOL HOLDER
BOTTOM TOOL SHANK MUST
REST ON THE BOTTOM
TOOL'S ADJUSTER SCREW
STRAIGHT FENCE
UP-DOWN ADJUSTMENT
IN-OUT ADJUSTMENT
CONTOUR FENCE
UP-DOWN ADJUSTMENT
IN-OUT ADJUSTMENT
ADJUSTER/LOCK PLATE

FIG. 1

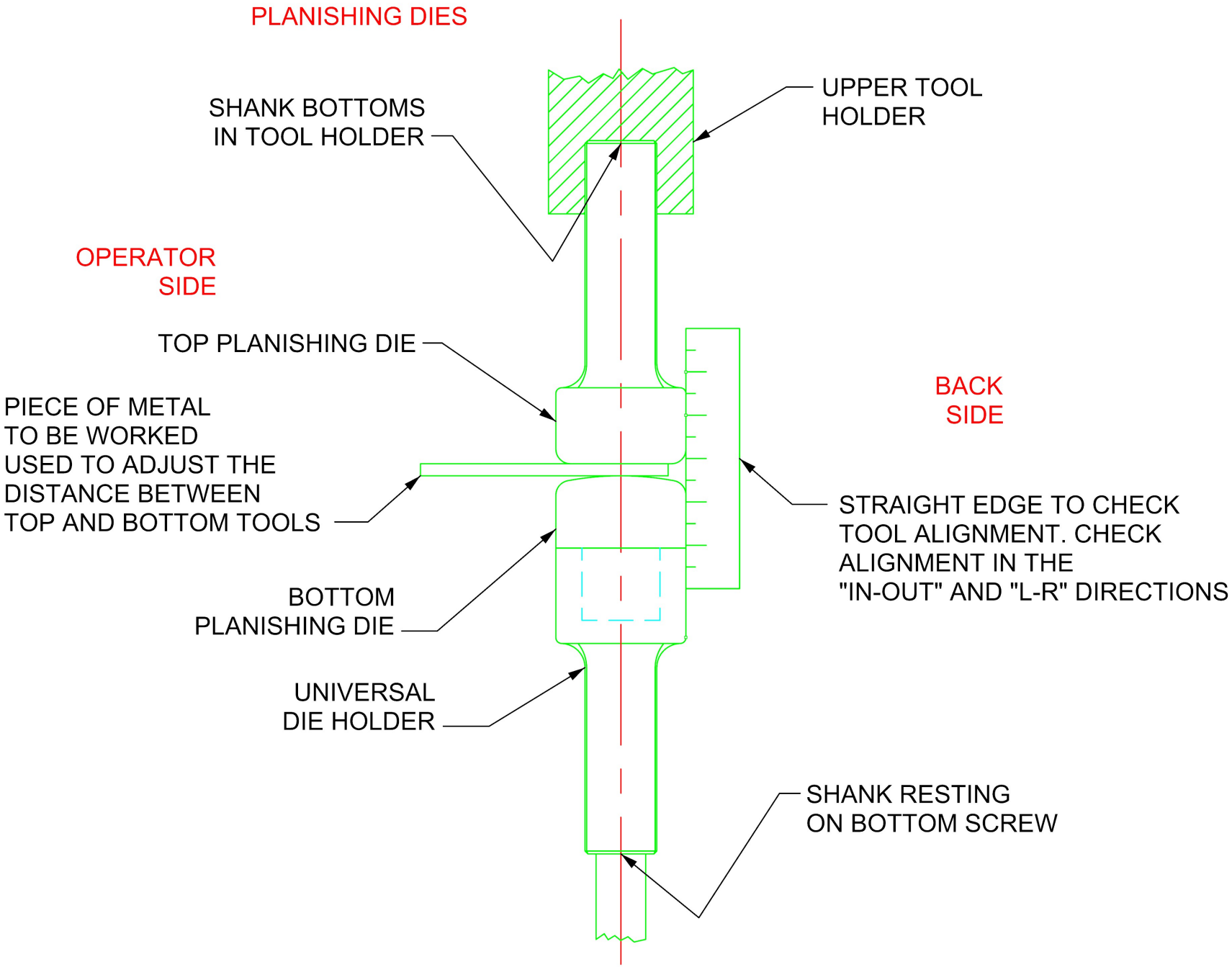

PLANISHING DIES
SHANK BOTTOMS
IN TOOL HOLDER
UPPER TOOL
HOLDER
OPERATOR
SIDE
TOP PLANISHING DIE
BACK
SIDE
PIECE OF METAL
TO BE WORKED
USED TO ADJUST THE
DISTANCE BETWEEN
TOP AND BOTTOM TOOLS
STRAIGHT EDGE TO CHECK
TOOL ALIGNMENT. CHECK
ALIGNMENT IN THE
"IN-OUT" AND "L-R" DIRECTIONS
BOTTOM
PLANISHING DIE
UNIVERSAL
DIE HOLDER
SHANK RESTING
ON BOTTOM SCREW
SIDE VIEW

FIG. 2-A

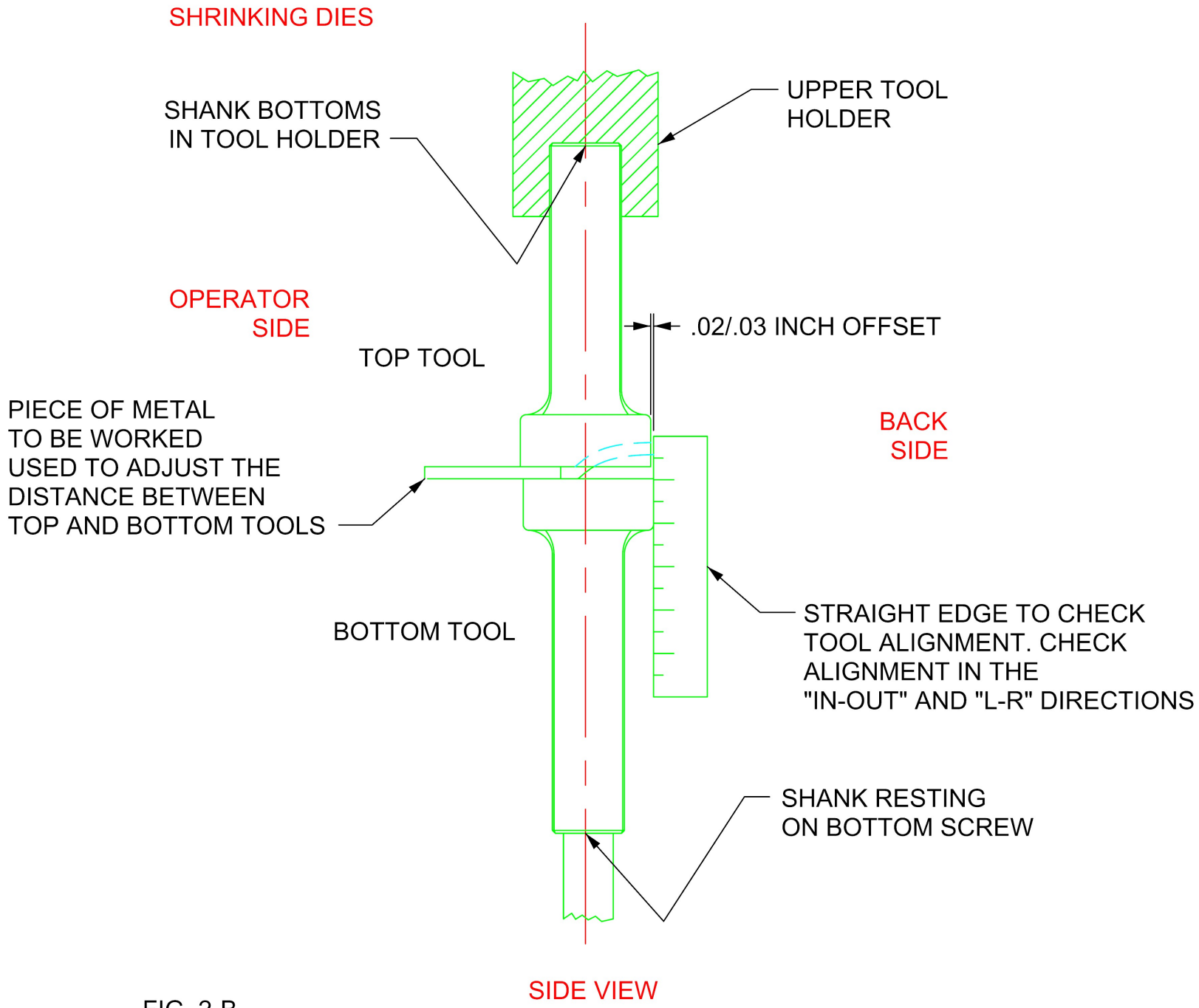

SHRINKING DIES
SHANK BOTTOMS
IN TOOL HOLDER
UPPER TOOL
HOLDER
OPERATOR
SIDE
.02/.03 INCH OFFSET
TOP TOOL
PIECE OF METAL
TO BE WORKED
USED TO ADJUST THE
DISTANCE BETWEEN
TOP AND BOTTOM TOOLS
BACK
SIDE
BOTTOM TOOL
STRAIGHT EDGE TO CHECK
TOOL ALIGNMENT. CHECK
ALIGNMENT IN THE
"IN-OUT" AND "L-R" DIRECTIONS
SHANK RESTING
ON BOTTOM SCREW
SIDE VIEW

FIG. 2-B

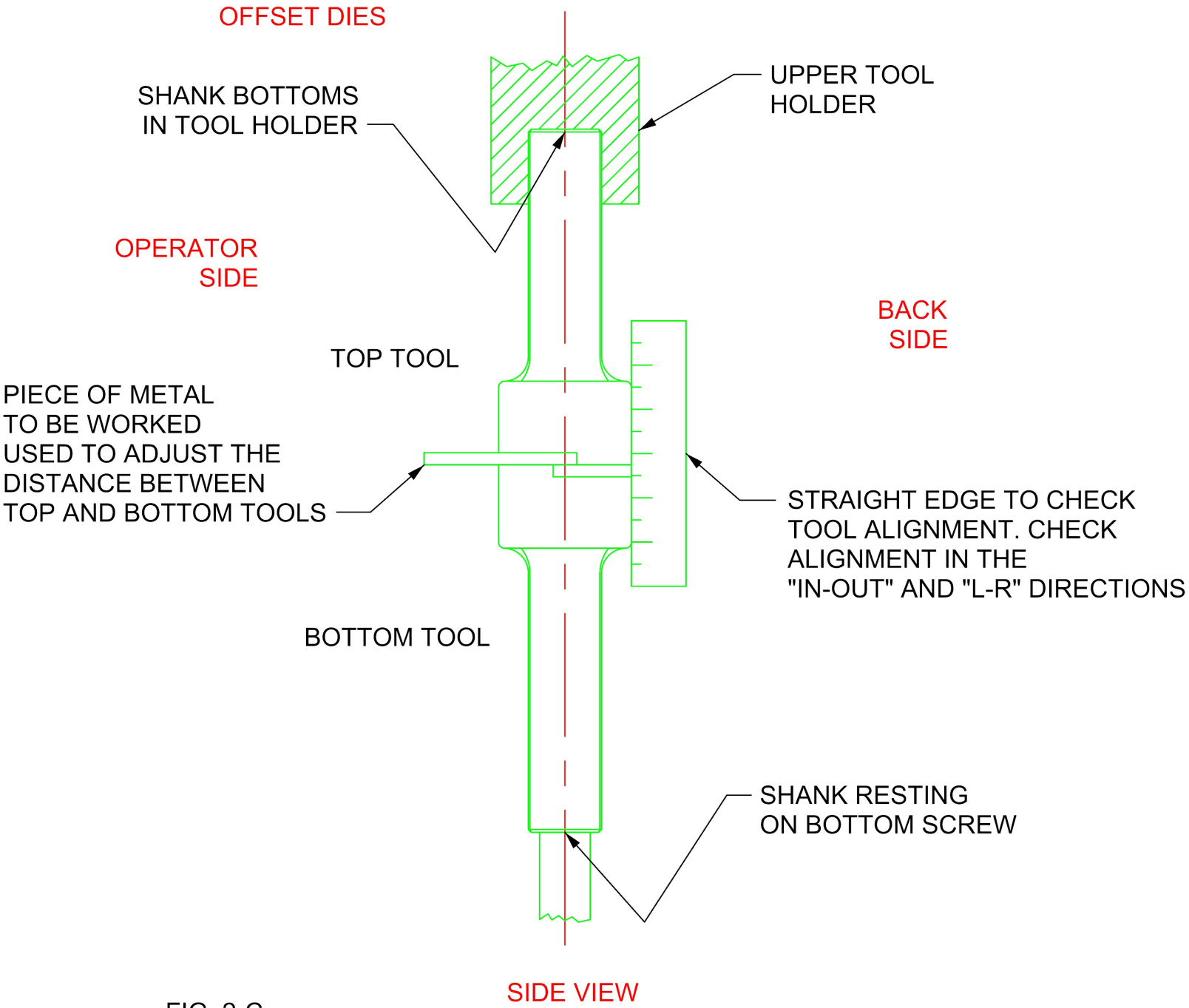

OFFSET DIES
SHANK BOTTOMS
IN TOOL HOLDER
UPPER TOOL
HOLDER
OPERATOR
SIDE
BACK
SIDE
TOP TOOL
PIECE OF METAL
TO BE WORKED
USED TO ADJUST THE
DISTANCE BETWEEN
TOP AND BOTTOM TOOLS
STRAIGHT EDGE TO CHECK
TOOL ALIGNMENT. CHECK
ALIGNMENT IN THE
"IN-OUT" AND "L-R" DIRECTIONS
BOTTOM TOOL
SHANK RESTING
ON BOTTOM SCREW
SIDE VIEW

FIG. 2-C

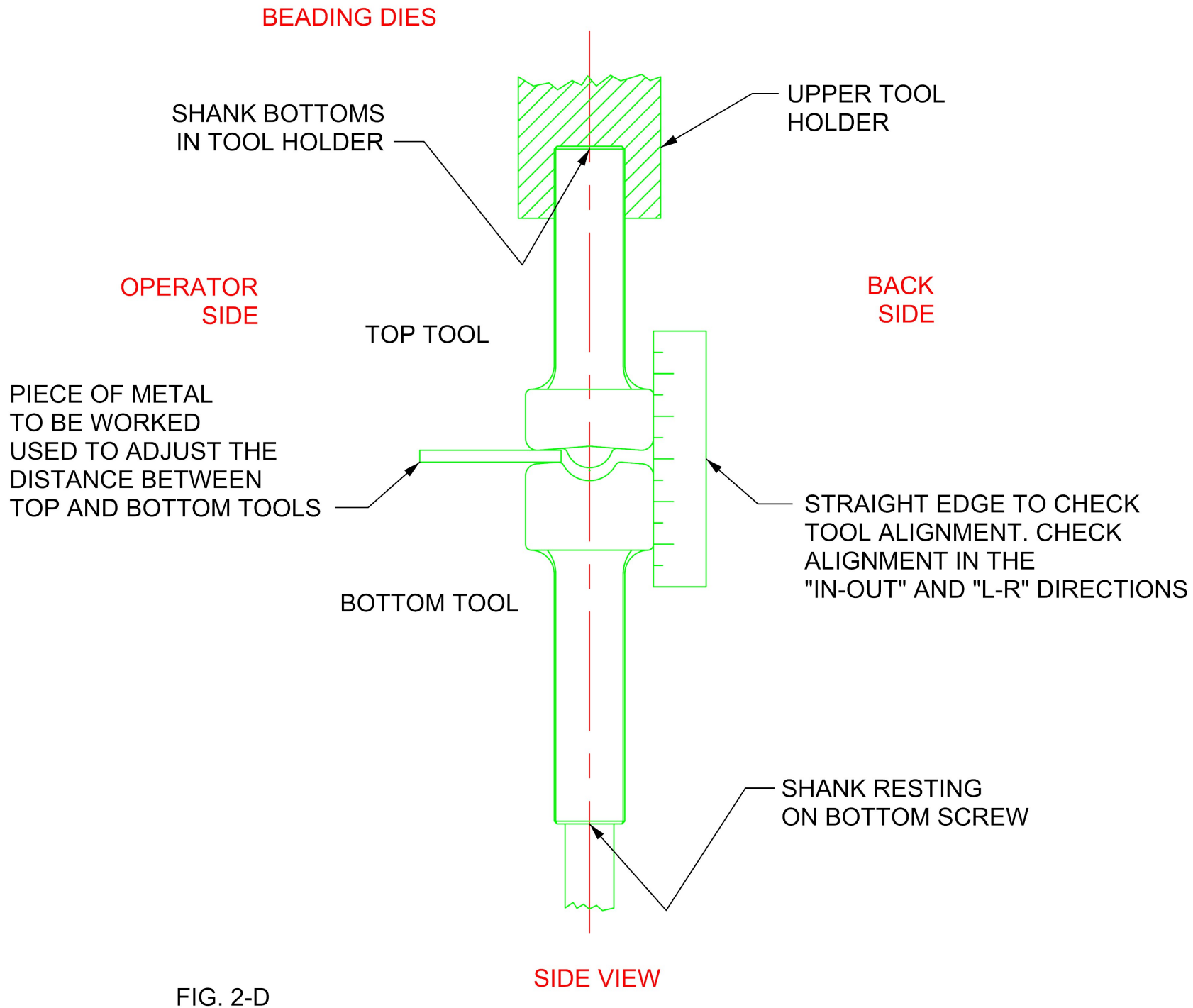

BEADING DIES
SHANK BOTTOMS
IN TOOL HOLDER
UPPER TOOL
HOLDER
OPERATOR
SIDE
BACK
SIDE
TOP TOOL
PIECE OF METAL
TO BE WORKED
USED TO ADJUST THE
DISTANCE BETWEEN
TOP AND BOTTOM TOOLS
STRAIGHT EDGE TO CHECK
TOOL ALIGNMENT. CHECK
ALIGNMENT IN THE
"IN-OUT" AND "L-R" DIRECTIONS
BOTTOM TOOL
SHANK RESTING
ON BOTTOM SCREW
SIDE VIEW

FIG. 2-D

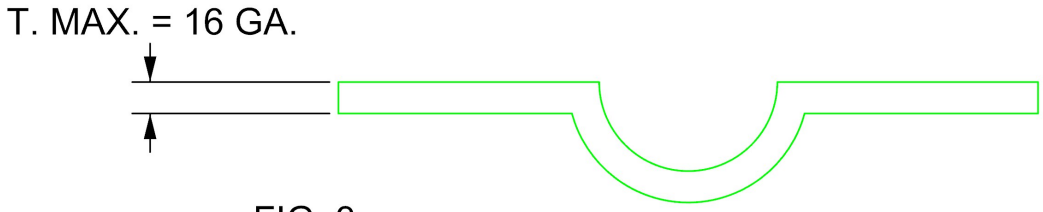



FIG. 3

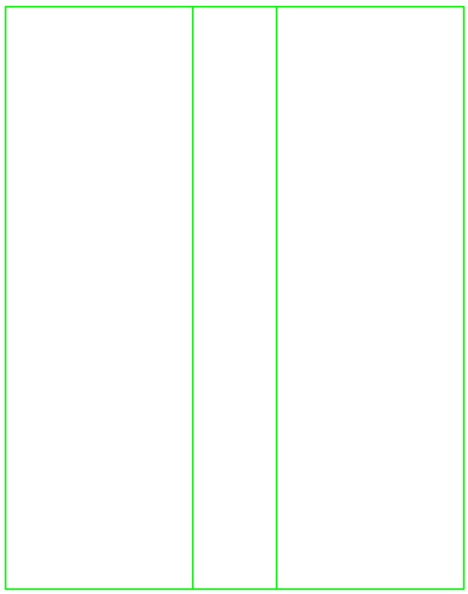


FIG. 4A

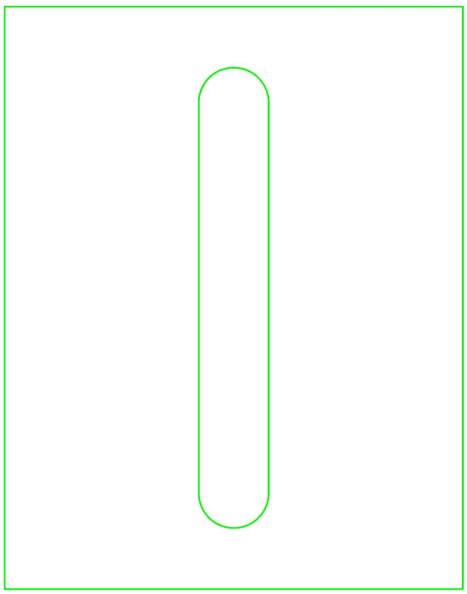


FIG. 4B

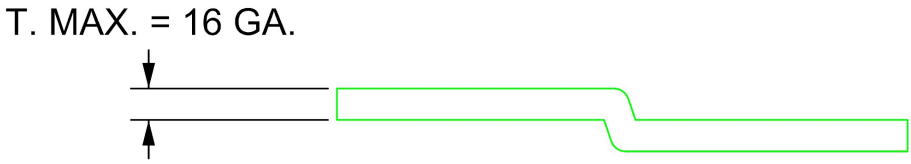


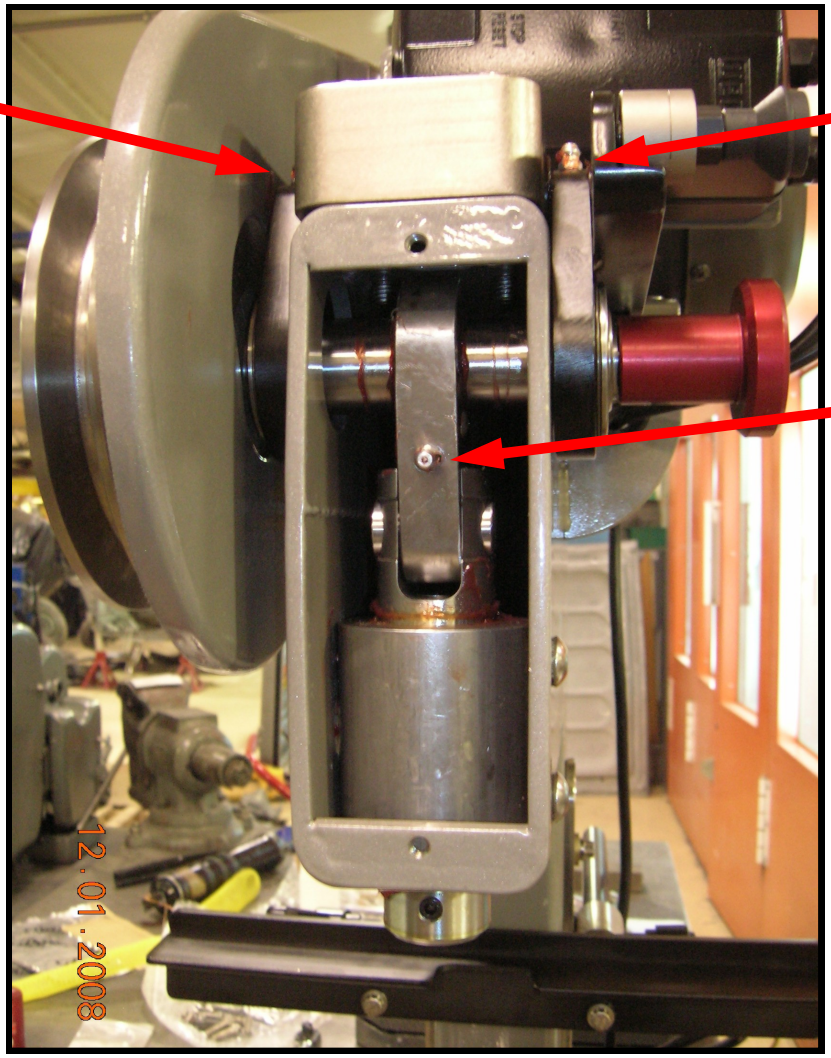

FIG. 5

**PHOTO STRAIGHT FENCE**

**PHOTO 2 CONTOUR FENCE**

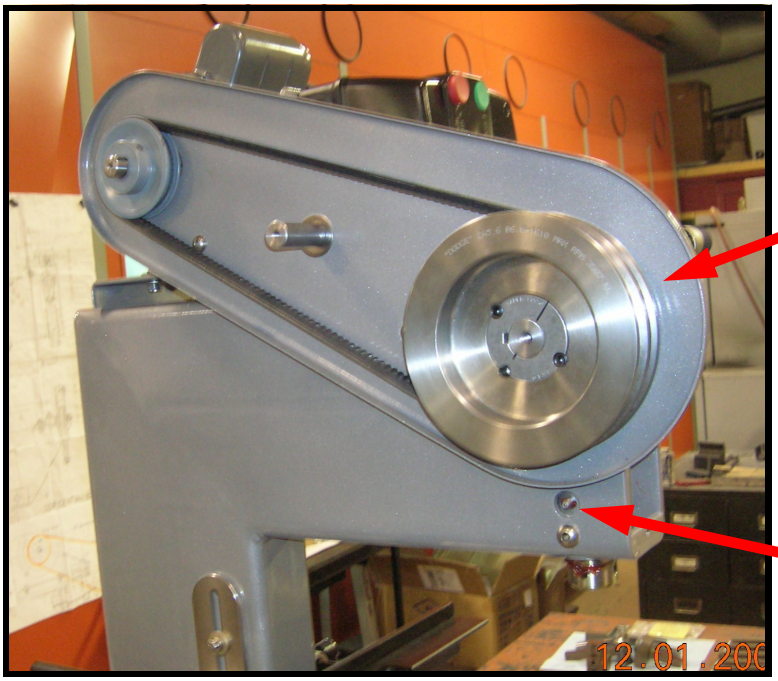
A-3

A-1




A-2

PHOTO 3




B-2

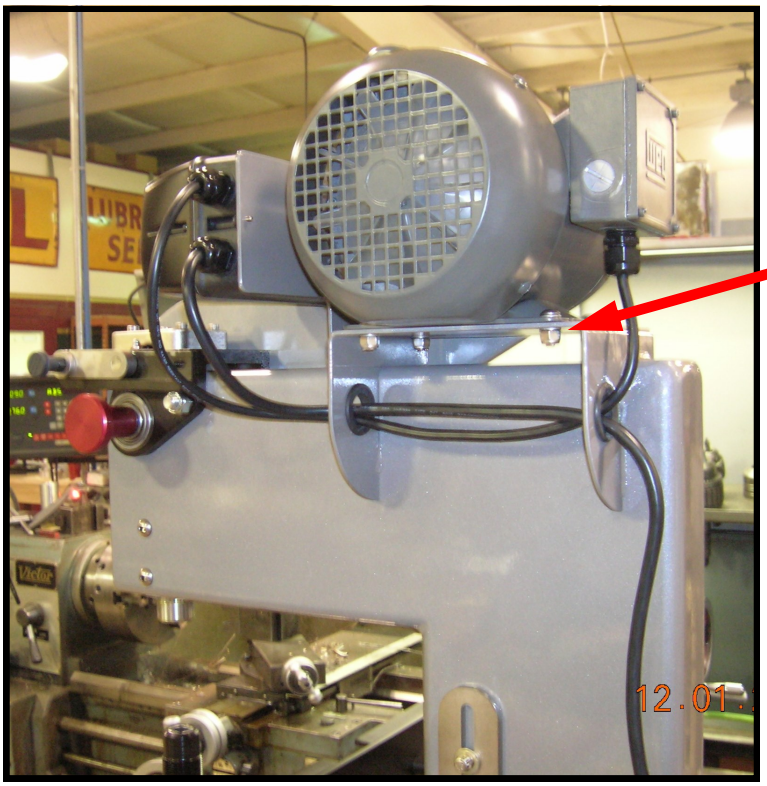
PHOTO 4

A-4

PHOTO 5


B-1

PHOTO 6




B-3

## 18" MINI MAX PARTS LIST

| ITEM NO. | QTY. | PART NO. | DESCRIPTION | DWG. NO. |
|---|---|---|---|---|
| 1 | 1 | 006104 | 1/4" LOCK WASHERS | NONE |
| 2 | 1 | 030140 | PULLMAX TOOL HOLDER | 030140 |
| 3 | 6 | 050008 | 3/8-16 X 1" 12 PT. BOLT STAINLESS STEEL | 050008 |
| 4 | 2 | 060085 | 8-32 X 1/2 BUTTON SOCKET HEAD SCREW | N/A |
| 5 | 2 | 060109 | Side-Mount External Retaining Ring (E-Style) Zinc and Yellow Chromate Pltd, for 78 Shaft Dia | N/A |
| 6 | 1 | 060111 | CONTOUR FENCE ROLLER | 060110 |
| 7 | 1 | 060112 | CONTOUR FENCE PIN | 060110 |
| 8 | 1 | 080038 | CARRIER WELDMENT | 080038 |
| 9 | 1 | 080039 | CRANK LINK | 080039 |
| 10 | 1 | 080042 | MINI MAX PISTON | 080042 |
| 11 | 1 | 080043 | CRANK SHAFT | 080043 |
| 12 | 1 | 080044 | CONNECTOR PIN | 080044 |
| 13 | 2 | 080045 | BEARING #7516-DSG | 080045 |
| 14 | 1 | 080046 | BOTTOM POST BASE | 080046 |
| 15 | 1 | 080047 | SPACER | 080047 |
| 16 | 1 | 080048 | BOTTOM POST | 080048 |
| 17 | 1 | 080050 | STEEL BACKED TEFLON COMPOSITE BEARING | 080050 |
| 18 | 1 | 080054 | LIFT ECCENTRIC SHAFT | 080054 |
| 19 | 1 | 080057 | ADJUSTER | 080057 |
| 20 | 1 | 080059 | LIFT ARM | 080059 |
| 21 | 1 | 080061 | TOP SLIDE PLATE | 080061 |
| 22 | 2 | 080074 | MINU MAX, BACK STOP SUPPORT WELDMENT | 080074 |
| 23 | 1 | 080079 | FRONT BELT GUARD WELDMENT | 080079 |
| 24 | 1 | 080088 | CRANKSHAFT KNOB | 080088 |
| 25 | 1 | 080096 | BACK BELT GUARD WELDMENT | 080096 |
| 26 | 5 | 080101 | 12 Point Flange Head Cap Screw Type 450 SS, 3/8"-16 Thread, 2" Length | N/A |
| 27 | 1 | 080103` | 1/2-13 X 1-1/2 12 POINT BOLT | N/A |
| 28 | 1 | 080104 | 1/2-13 X 1" STAINLESS STEEL 12 POINT BOLT | N/A |
| 29 | 4 | 080106 | 5/16-18 BUTTON HEAD SOCKET HEAD SS SCREW | N/A |
| 30 | 1 | 080107 | 1/4-20 X 1-1/2 SOCKET HEAD BUTTON HEAD SS SCREW | N/A |
| 31 | 6 | 080108 | 1/4-20 X 5/8" SOCKET HEAD BUTTON HEAD SCREW | N/A |
| 32 | 4 | 080110 | 3/8" HEAVY WASHER | N/A |
| 33 | 2 | 080111 | 1/2" HEAVY WASHER | N/A |
| 34 | 3 | 080115 | 18-8 SS General Purpose Flat Washer 1/4" Screw Size, 5/8" OD, .04"-.06" Thick | N/A |
| 35 | 5 | 080119 | 18-8 Stainless Steel Button-Head Socket Cap Screw, 10-32 Thread, 1/2" Length | N/A |
| 36 | 1 | 080120 | 5/16-18 X 1/4 SET SCREW | N/A |
| 37 | 4 | 080121 | 1/4-28 STRAIGHT GREESE FITTING | N/A |
| 38 | 4 | 080122 | Alloy Steel Flat Point Socket Set Screw 5/16"-18 Thread, 3/8" Length | N/A |
| 39 | 1 | 080124 | Steel Woodruff Key, Key #91, 1/4" Wide x 3/4" Full Diameter | N/A |

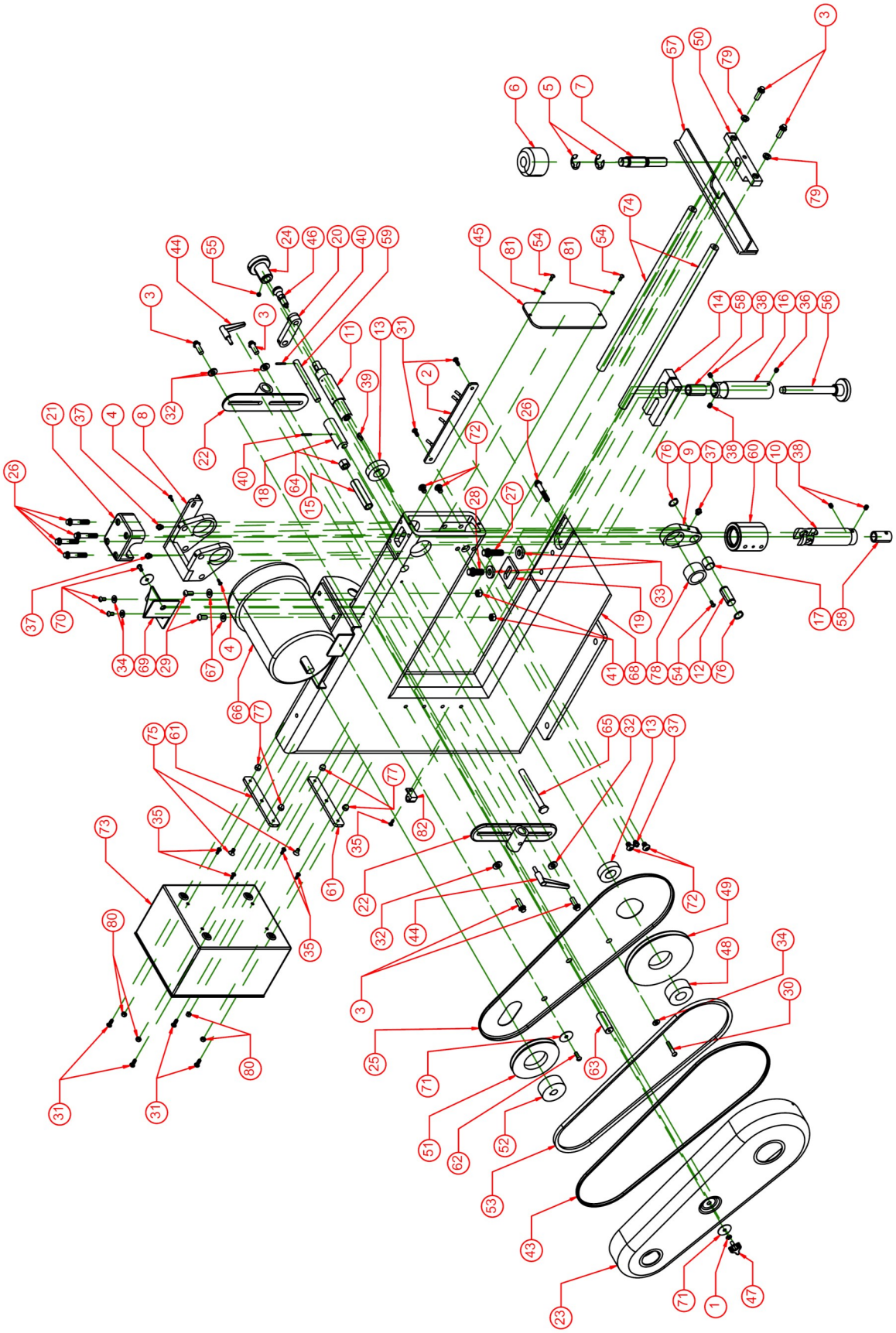
SEE PAGE 21 FOR EXPLODED VIEW AND PART LOCATION

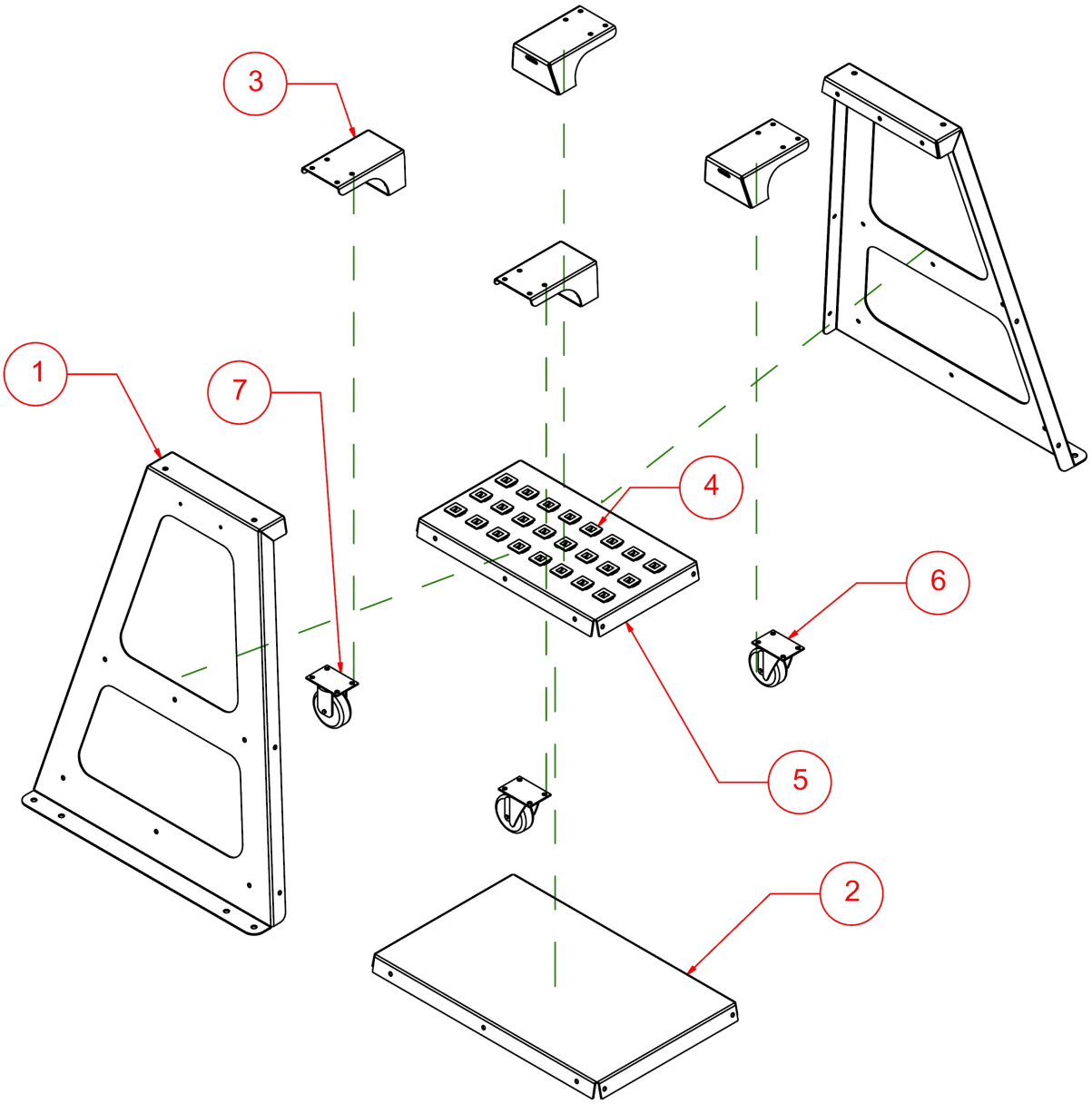
## 18" MINI MAX PARTS LIST

| ITEM NO. | QTY. | PART NO. | DESCRIPTION | DWG. NO. |
|---|---|---|---|---|
| 40 | 2 | 080125 | 1/8 X 1' LONG SS SPRING PIN | 080125 |
| 41 | 4 | 080126 | Znc-Pltd Grade 5 STL Nylon-Insert Hex Locknut 5/16"-18 Thread Size, 1/2" Width,11/32" Height | N/A |
| 42 | 1 | 080128 | Znc-Pltd Grade 5 STL Nylon-Insert Hex Locknut 1/4"-20 Thread Size, 7/16" Width, 5/16" HeightT | N/A |
| 43 | 1 | 080134 | RUBBER EDGE TRIM | N/A |
| 44 | 2 | 080135 | ADJUSTABLE HANDLE | N/A |
| 45 | 1 | 080140.500 | MINI MAX MAIN FRAME COVER PLATE | 080140.500 |
| 46 | 1 | 080144 | 1/2-13 THREAD INDEXING PLUNGER | N/A |
| 47 | 1 | 080148 | KNOB WITH 1/4-20 THREADED STUD | N/A |
| 48 | 1 | 080149 | 1610X1KW TAPER LOCK BUSHING | N/A |
| 49 | 1 | 080150 | VARIABLE SPEED LARGE PULLEY | N/A |
| 50 | 1 | 080153 | CONTOUR FENCE BRACKET | 080153 |
| 51 | 1 | 080160 | VARIABLE SPEED SMALL PULLEY | N/A |
| 52 | 1 | 080161 | 5/8" BORE TAPER LOCK BUSHING MFG PART# 1610X5/8KW, SKU#2050301 ITEM#100791771 | N/A |
| 53 | 1 | 080162 | V-BELT | N/A |
| 54 | 4 | 080163 | 10-24 X 1/2 SOCKET HEAD BUTTON HEAD SCREW | N/A |
| 55 | 1 | 080164 | 5/16-18 X 1/4 SOCKET HEAD SET SCREW | N/A |
| 56 | 1 | 080168 | ADJUSTABLE KNOB | 080168 |
| 57 | 1 | 080172 | STRAIGHT FENCE WELDMENT | 080172 |
| 58 | 2 | 080173 | DIE HOLDER INSERT | 080173 |
| 59 | 1 | 080174 | LIFT ECCENTRIC SHAFT SUPPORT | 080174 |
| 60 | 1 | 090026 | MINI MAX, CYLINDER SUB-ASSY | 090026 |
| 61 | 2 | 090206 | VARAIBLE SPEED CONTROL BOX BRACKET | 090206 |
| 62 | 1 | 090213 | 1/4-20 X 3/4 SOCKET HEAD BUTTON HEAD SS SCREW | N/A |
| 63 | 1 | 090214 | BELT GUARD ASSEMBLY SPACER | 090214 |
| 64 | 1 | 090219 | 1/2-20 NYLON LOCK NUT | N/A |
| 65 | 1 | 090220 | 1/2-20 4-23/32 LONG X 3-15/16 GRIP HEX HEAD BOLT (AN8-45) | N/A |
| 66 | 1 | 090283 | MINI MAX VARIBLE SPEED MOTOR | N/A |
| 67 | 8 | 090303 | 18-8 SS General Purpose Flat Washer 5/16" Screw Size, 3/4" OD, .04"-.06" Thick | N/A |
| 68 | 1 | 090305.500 | 18" MINI MAX MAIN FRAME WELDMENT | 090305.500 |
| 69 | 1 | 090312 | VARIABLE SPEED BELT GUARD SUPPORT | 090312 |
| 70 | 3 | 100001 | 1/4-20 X 1/2" SS SOCKET BUTTON HEAD CAP SCREW | N/A |
| 71 | 3 | 100002 | 1/4" FENDER WASHER | N/A |
| 72 | 4 | 100003 | 3/8-16 X 1/2 SOCKET HEAD BUTTON HEAD CAP SCREW | N/A |
| 73 | 1 | 100008 | VARIABLE SPEED ELECTRIC PANEL CONTROL BOX ASSEMBLY | 100008 |
| 74 | 2 | 100036 | 18 INCH BACK STOP ROD | 100036 |
| 75 | 2 | 100067 | 1/4-20 X 1/2 FLAT HEAD SOCKET HEAD SCREW | N/A |
| 76 | 2 | 100213 | External Retaining Ring | N/A |
| 77 | 4 | 100214 | 1/4-20 ACORN NUT | N/A |
| 78 | 1 | 120079 | PRECISION STEEL NEEDLE ROLLER BEARING | N/A |
| 79 | 2 | 130012 | 3/8" LOCK WASHER | N/A |
| 80 | 4 | 140020 | Zinc-Plated Grade 2 Steel Nylon-Insert Hex Locknut, 10-32 Thread Size, 3/8" Width, 15/64" Height | N/A |
| 81 | 2 | 140065 | #10 LOCK WASHER | N/A |
| 82 | 1 | 150013 | CUSHENED LOOP CLAMP | N/A |

SEE PAGE 21 FOR EXPLODED VIEW AND PART LOCATION

STANDARD MAIN PARTS EXPLODED VIEW





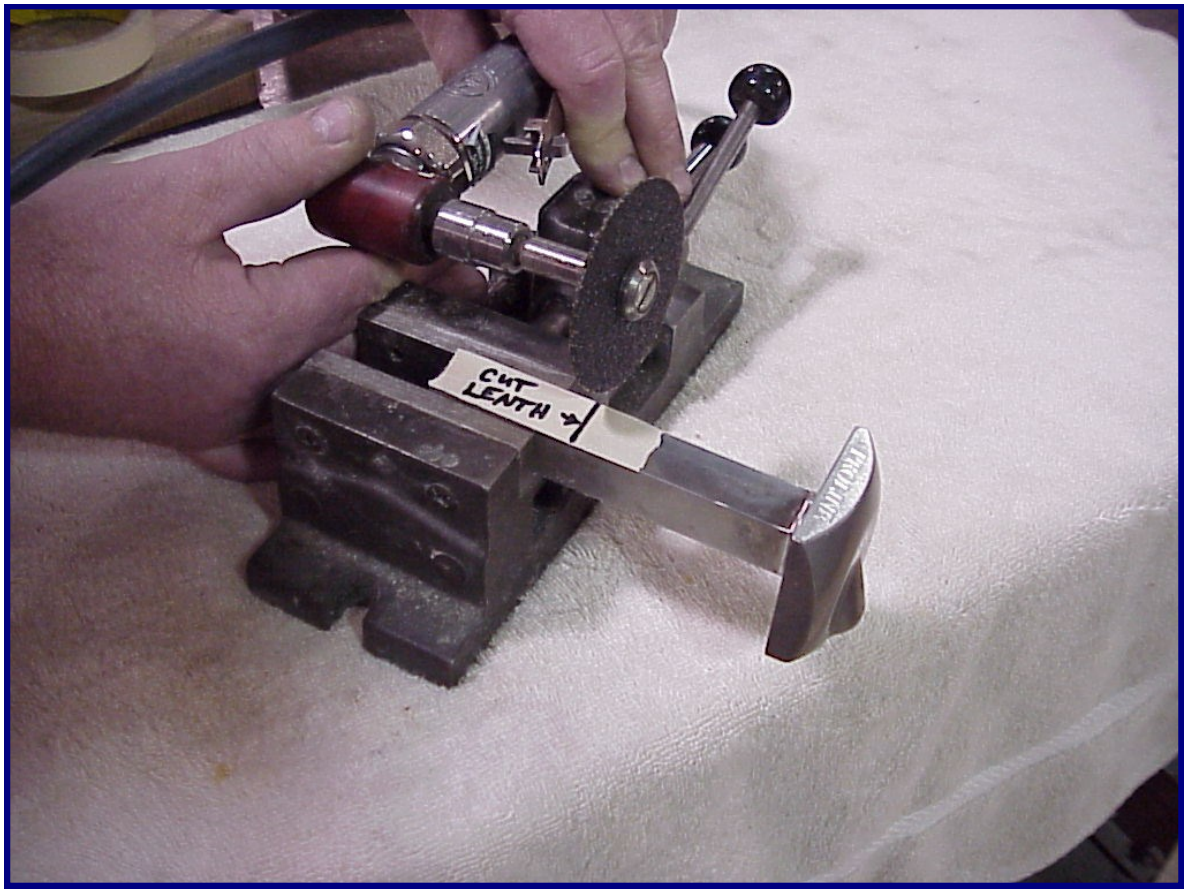

## STAND PARTS LIST
## OPTIONAL STAND WITH OPTIONAL CASTERS AND CASTER BRACKETS
## NOTE: SCREWS, NUTS, BOLTS, WASHERS AND OTHER SMALL HARDWARE NOT SHOWN

| Item # | Quantity | Part Number | Description |
|---|---|---|---|
| 1 | 2 | 080081 | MINI MAX STAND SIDE LEGS |
| 2 | 1 | 080082 | MINI MAX STAND BOTTOM SHELF |
| 3 | 4 | 080099 | CASTER BRACKETS |
| 4 | 24 | 090029 | MINI MAX DIE HOLDER PLUG |
| 5 | 1 | 090188 | TOOL HOLDER SHELF |
| 6 | 2 | 090195 | Urethane on Polypro Wheel Cart-King Caster Swivel/Total Lock, 3-1/2" X 1-1/8" Wheel, 240#Cap |
| 7 | 2 | 090196 | Urethane on Polypro Wheel Cart-King Caster Rigid, 3-1/2" X 1-1/8" Wheel, 250#Cap, Ball Brng |

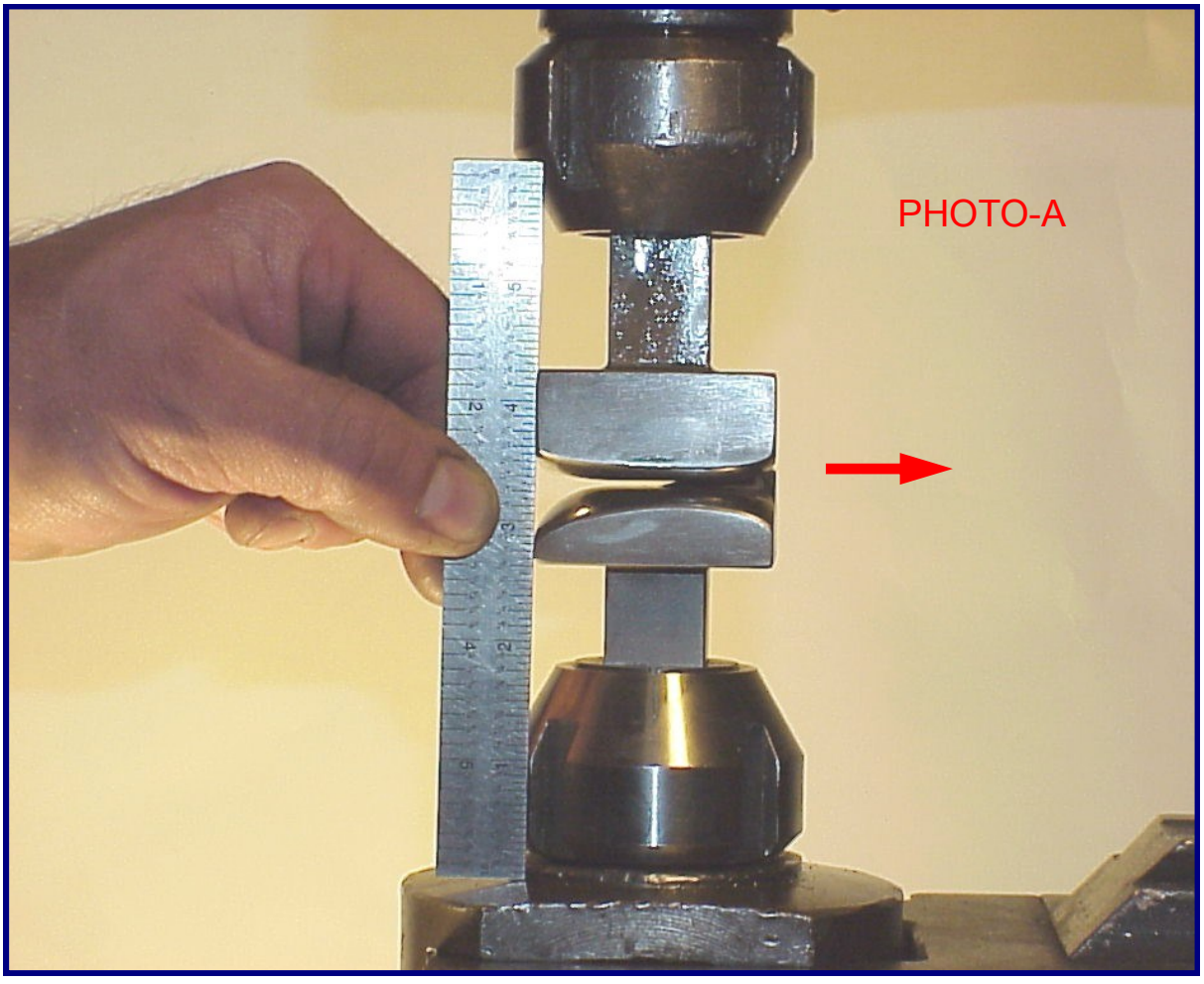
APPENDIX 1

# PULLMAX SHRINK DIE SET UP MANUAL

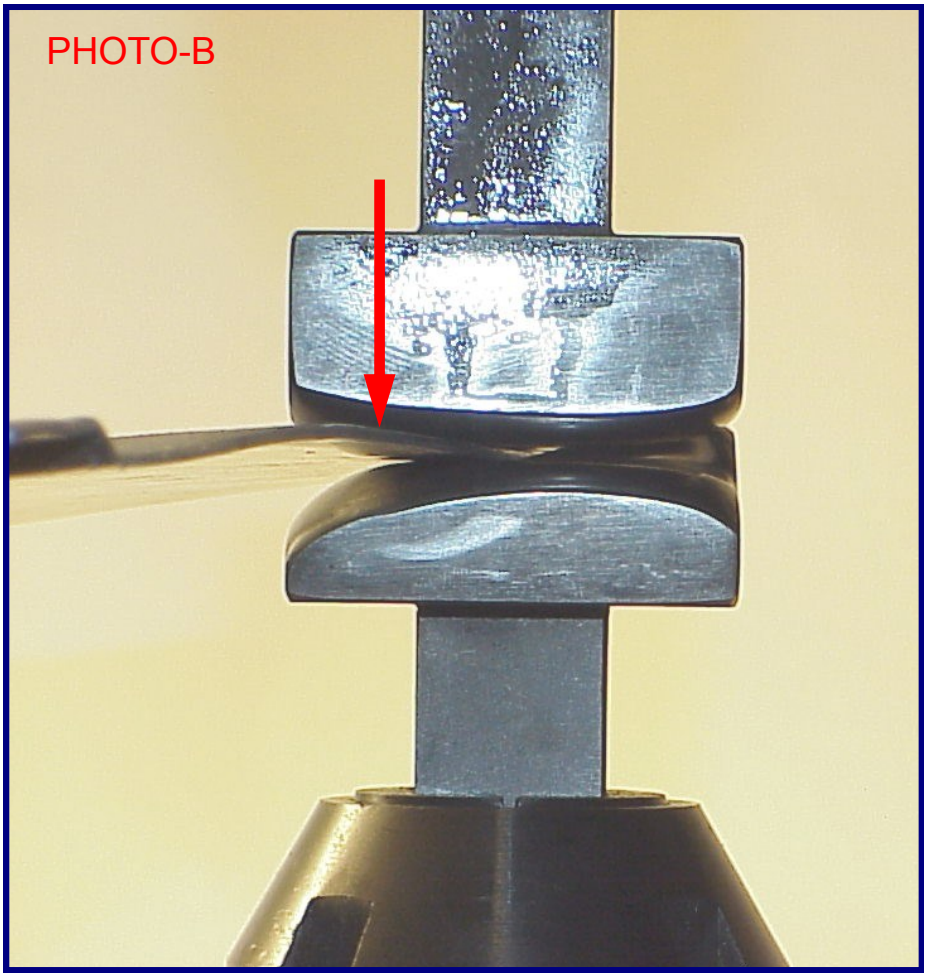
**STEP A.** Measure shaft length needed for your die block. Mark your cut length with a piece of masking tape. Clamp shaft and cut off excess shaft with a cut-off or “whiz” wheel. The material is hardened, so a saw blade will not work. Chamfer edges of cut.



**STEP B.** Install upper die first, then install lower die. Check front to rear alignment with straight edge. If there is any misalignment, the bottom die should be towards the rear of the machine, not more than .03. Check side to side alignment with a straight edge. Dies should be within .010 misalignment side to side. (SEE PHOTO-A)



**STEP C.** Set adjustment by placing a piece of the material you plan to shrink between the upper and lower dies, at the base of the slope of the lower die. Rotate the machine by hand to the bottom of its stroke; adjust the bottom die up until you feel a slight drag on the material. Lock in place and retest to make sure there is only drag on the metal and that you are not squeezing the metal. If the machine is set up too tightly, you will not shrink the metal, but stretch it instead. Small adjustments will produce big changes. Make sure screw does not loosen while you are shrinking. (SEE PHOTO-B)



**STEP D.** You are ready to shrink, at this point. Start machine on low speed. Push metal in and pull back out using the same path. As the metal is pushed in, a pucker is pulled in the metal. As you pull the metal out, the pucker is flattened. If the dies are set properly, the metal will show signs of shrinking. It will also have some waves, as in the photograph. Try to keep it as smooth as possible. The panel will need to be planished for final smoothing. (SEE PHOTO-C)

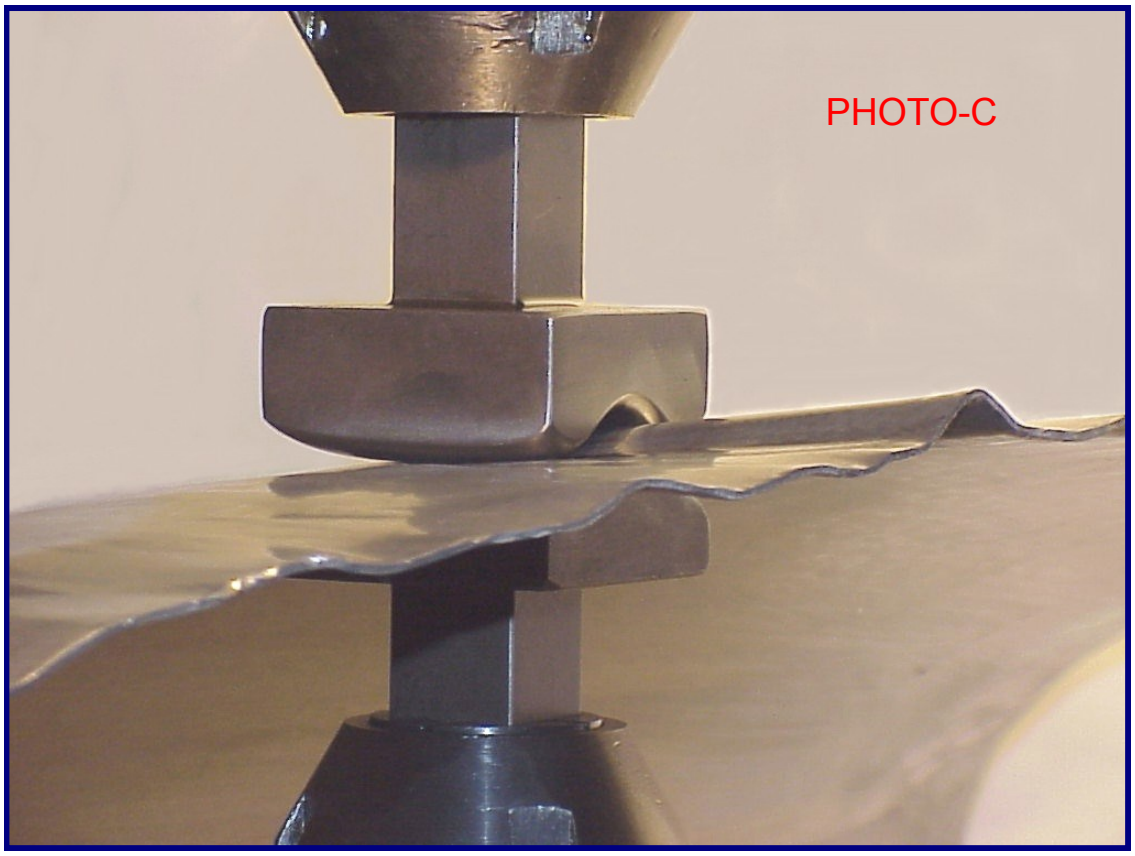


PHOTO-C

**STEP E.** When shrinking a panel, you have to run more passes on the outside than you do on the inside. #1 will require fewer shrinks than #2 and #2 will require less than #3. The number will depend on the severity of the amount to be shrunk. (SEE PHOTO-D)