Clarke®

METALWORKER

3 IN1 SHEET METAL MACHINE

Model No: SBR305B

PART NO: 6560001

OPERATION & MAINTENANCE INSTRUCTIONS

ORIGINAL INSTRUCTIONS

GC12/24

INTRODUCTION

Thank you for purchasing this CLARKE 3 in1 Sheet Metal Machine.

Before attempting to operate the machine it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you, and you can also look forward to the product giving you long and satisfactory service.

FEATURES

- Shear Table Front Guide
- Shear & Brake Adjustable Rear Stop
- Hardened Steel Brake Fingers
- Precision Ground Hardened Steel Shear Blade

SPECIFICATIONS

Clarke Part Number	6560001
Unpacked Weight	42 kg
Dimensions (W x D x H)	516 x 382 x 385 mm
Bench footprint dimensions	357 x 290 mm
Capacities	
Maximum Workpiece Width	305 mm
Maximum Workpiece Thickness	1 mm
Pan/Box Brake Minimum Reverse Bend	9 mm
Pan/Box Brake Maximum Side Height @ 90°	42 mm
Slip Roll Minimum Cylinder Diameter	38 mm
Slip Roll Wire Sizes (L to R)	2.5 mm, 5.0 mm, 6.0 mm 5.5 mm, 4.0 mm, 3.0 mm

NOTE: The details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

SAFETY INSTRUCTIONS FOR MACHINERY

1. **READ THE ENTIRE MANUAL BEFORE USE.** Machinery presents serious injury hazards to untrained users.
2. **WEAR PROPER APPAREL. DO NOT** wear loose clothing, gloves, neckties, rings, or jewellery that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
3. **NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when in use.
4. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and understood.
5. **KEEP CHILDREN AND VISITORS AWAY** from the work area.
6. **KEEP WORK AREA CLEAN AND WELL LIT.** Clutter and dark shadows may cause accidents.
7. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance.
8. **CHECK FOR DAMAGED PARTS.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.
9. **BODY POSITION.** To avoid injury due to slipping, **ALWAYS** maintain secure footing and a comfortable body position when using this machine. Maintain stability and balance at all times.
10. **OVERLOADING.** Attempting to overload this machine beyond the capacities specified in the "Specifications" on page 2 could cause personal injury or property damage. **DO NOT** extend the hand crank to apply additional force.
11. **METAL EDGES.** Sharp metal edges can cut your fingers. **ALWAYS** chamfer and de-burr sharp sheet metal edges before bending and after cutting the workpiece.
12. **PINCHING.** This machine represents severe pinching and amputation hazards. **ALWAYS** keep hands away from the rollers, brake fingers, clamping bar and shearing blades when operating.
13. **GOOD WORKING CONDITION.** To reduce the risk of personal injury, **ALWAYS** inspect the working parts of this machine for cracks, burrs, loose fasteners, or any other damage and resolve any issue before beginning operation.
14. **WORKBENCH MOUNTING.** Personal injury could occur if this machine should unexpectedly move during operation. **ALWAYS** make sure the machine is securely mounted to a stable workbench or stand that can support the weight and pressures of the operation.

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15. **ENTANGLEMENT HAZARDS**. The moving parts of this machine represent entanglement hazards. **DO NOT** wear jewellery or loose clothing and tie back long hair when using this machine.
16. **SHEARING BLADES/BRAKE FINGERS**. If not properly aligned, the shearing blades or brake fingers can cause machine parts or the workpiece to break up and fly towards the operator. **ALWAYS** keep these parts properly adjusted and in good working condition.

WARNING: LIKE ALL MACHINERY THERE IS POTENTIAL DANGER WHENOPERATING THIS MACHINE. ACCIDENTS ARE FREQUENTLY CAUSED BY LACK OF FAMILIARITY OR FAILURE TO PAY ATTENTION. USE THIS MACHINE WITH RESPECT AND CAUTION TO DECREASE THE RISK OF OPERATOR INJURY. IF NORMAL SAFETY PRECAUTIONS ARE OVERLOOKED OR IGNORED, SERIOUS PERSONAL INJURY MAY OCCUR.

CAUTION: NO LIST OF SAFETY GUIDELINES CAN BE COMPLETE. EVERY WORKSHOP ENVIRONMENT IS DIFFERENT. ALWAYS CONSIDER SAFETY FIRST, AS IT APPLIES TO YOUR INDIVIDUAL WORKING CONDITIONS. USE THIS AND OTHER MACHINERY WITH CAUTION AND RESPECT. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY, DAMAGE TO EQUIPMENT OR POOR WORK RESULTS.

WARNING LABELS

The following symbols may be displayed on the machine or its packaging.

	Read this instruction booklet carefully before use.		Do not expose to rain.
	Wear protective gloves		Keep fingers clear of break, dies, rollers and blade.

PARTS IDENTIFICATION

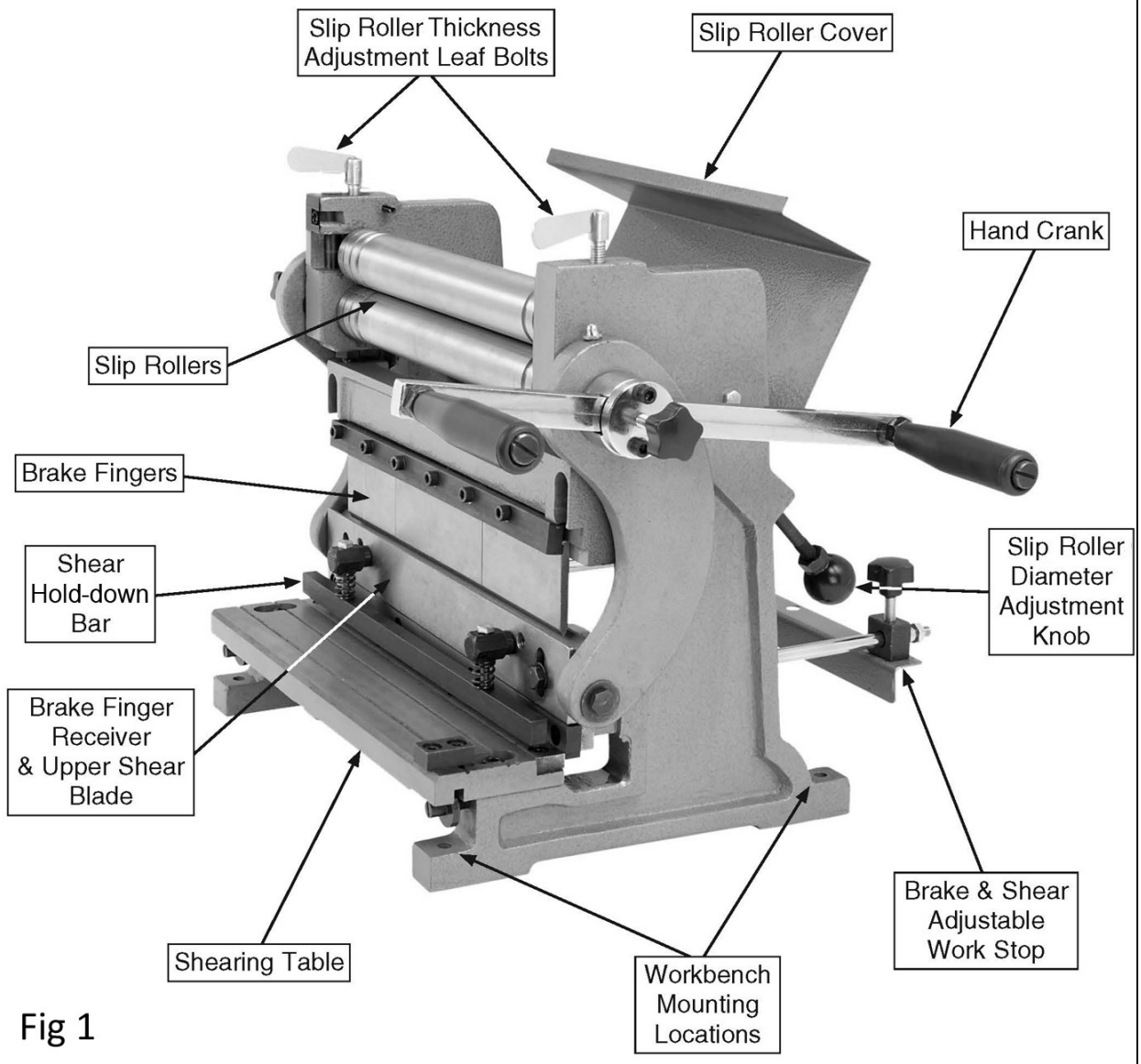

Fig 1

UNPACKING AND SETUP

Remove the packaging materials from around your machine and make sure that you have the following items. If you discover the machine is damaged in any way, please contact your Clarke dealer. You should receive:

- A. Sheet Metal Machine
- B. Shear & Brake Rear Work Stop
- C. Hand Crank
- D. Crank Handle Lock Knobs
- E. Hex Wrenches 5 & 6mm

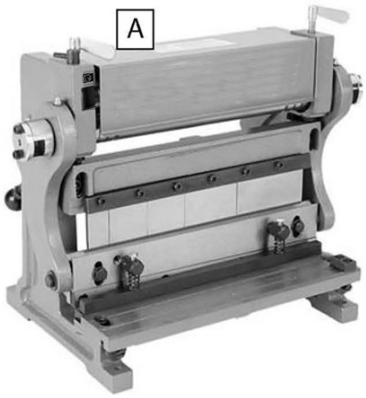

Fig 2

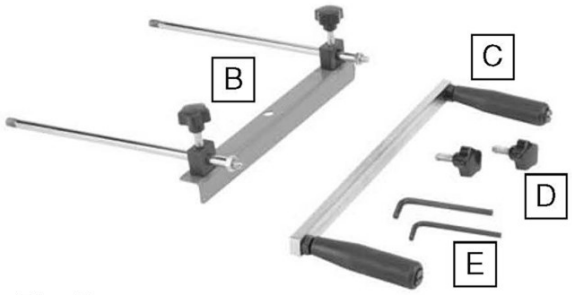

Fig 3

CLEAN UP

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or de-greaser.

For thorough cleaning some parts must be removed.

For optimum performance, clean all moving parts or sliding contact surfaces. Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces.

ALWAYS follow the manufacturer's instructions when using cleaning products.

WARNING: PETROL BASED PRODUCTS HAVE LOW FLASHPOINTS AND CAN EXPLODE OR CAUSE FIRE IF USED TO CLEAN MACHINERY. DO NOT USE THESE PRODUCTS TO CLEAN THE MACHINERY.

CAUTION: MANY CLEANING SOLVENTS ARE TOXIC IF INHALED. MINIMIZE YOUR RISK BY ONLY USING THESE PRODUCTS IN A WELL VENTILATED AREA.

SITE CONSIDERATIONS

FLOOR LOAD

Refer to the Specifications for the weight and footprint specifications of your machine. Some workbenches or stands may require additional reinforcement to support the machine and the forces applied during operation.

PLACEMENT LOCATION

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See Figure 4 for the minimum working clearances.

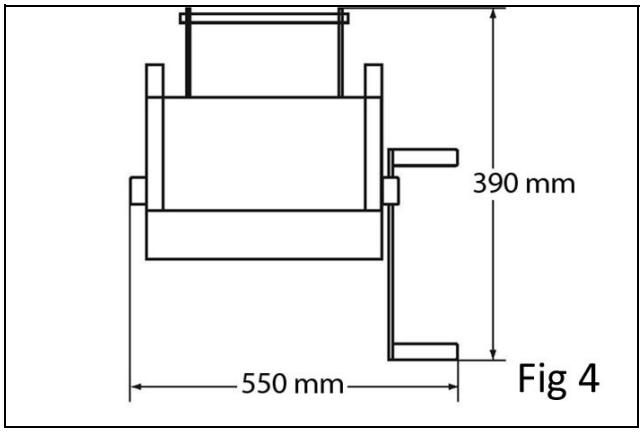

Fig 4

MOUNTING

The base of this machine has holes that allow it to be mounted to a workbench. For a safe and smooth operation of this machine, it MUST be securely mounted to an appropriate workbench or stand.

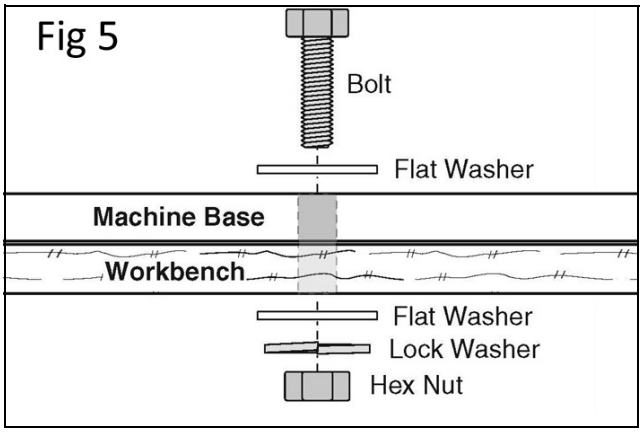

Fig 5

The strongest mounting option is a "Through Mount" (Figure 5) where holes are drilled all the way through the workbench, and hex bolts, washers, and hex nuts are used to secure the machine to the workbench.

Another option for mounting is a "Direct Mount" (Figure 6) where the machine is simply secured to the workbench with a lag screw.

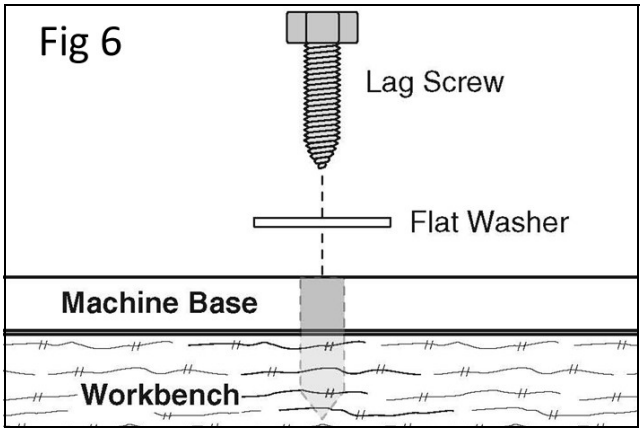

Fig 6

CAUTION: DUE TO THE CONSIDERABLE FORCES EXERTED ON THIS MACHINE WHEN IN OPERATION, YOU MUST SECURELY MOUNT TO A STABLE AND STURDY WORKBENCH OR STAND, OTHERWISE THE MACHINE COULD TIP OR FALL AND RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

PREPARATION

In addition to the assembly procedures below, some disassembly is required to remove storage grease and re-lubricate the cleaned parts.

ASSEMBLING THE MACHINE

1. Remove one of the cap screws on the hand crank hub, rotate the end cap out of the way, then insert the hand crank into the slot (see Figure 7).

   NOTE: It is your preference which side of the machine you install the hand crank.

2. Re-install the cap screw removed in Step 1, then thread and tighten a lock knob into the centre hole of the end cap to secure the hand crank in place.

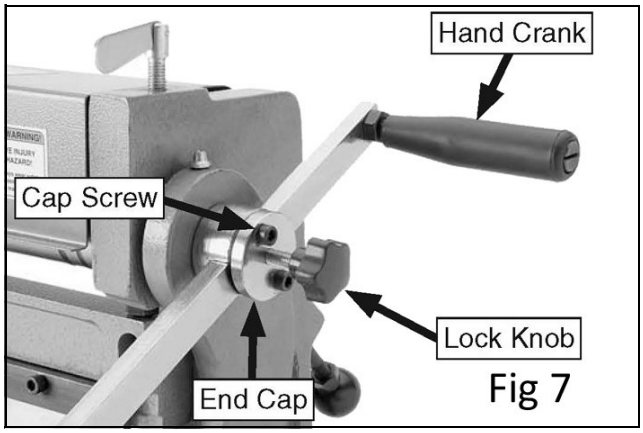

Fig 7

Tip: When needed, extend one end of the hand crank from the hub for greater leverage.

3. Thread the rods into either the upper or lower mounting holes, as shown in Figure 8. Only hand-tighten the rods.

   NOTE: Install the rods in the upper mounting holes to use the work stop with the brake or in the lower holes to use it with the shear.

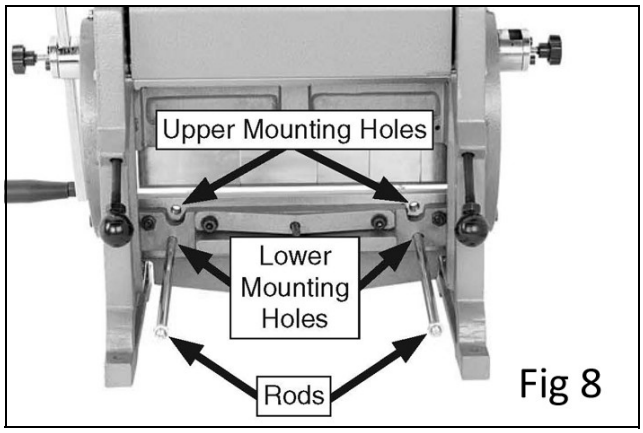

Fig 8

4. Remove the hex nuts from the ends of the rods, slide the stop bar onto the rods and position it for your operation, then tighten the lock knobs to secure it as shown in Figure 9.

5. Re-install the hex nuts.

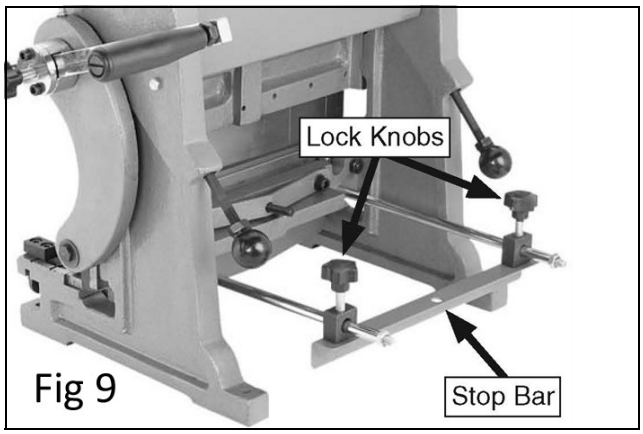

Fig 9

CLEANING THE MACHINE FINGERS

1. Loosen the two hex bolts securing the finger receiver/upper shear blade to the frame (see Figure 10).

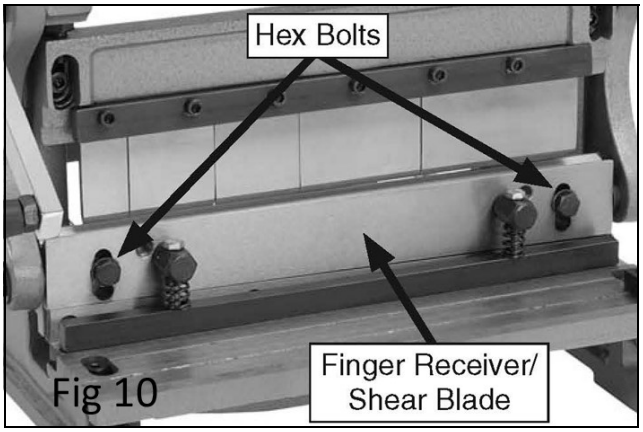

Fig 10

2. Move the table back until the upper shear blade can pass down behind the table blade by loosening the two cap screws securing the shear table to the frame and rotating the table adjustment screws counter-clockwise (see Figure 11).

   NOTE: Operational adjustment of the shearing blades is covered in the "Shearing Blade Gap Adjustment" on page 25.

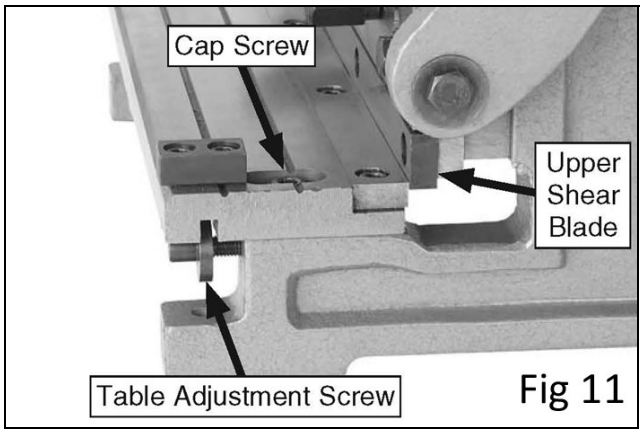

Fig 11

3. Make sure the finger receiver and upper shear blade move up and down smoothly, re-tighten the hex bolts just until they are snug, then back them off approximately ¼ turn.

4. Use the hand crank to position the brake finger receiver close to the brake fingers, as shown in Figure 12.

5. Loosen the cap screws to release the fingers, then remove the fingers from the side of the finger receiver, as shown in Figure 12.

6. Use a cloth and de-greaser to remove the storage grease from the fingers, screws and receiver. Thoroughly dry the parts, then apply a thin coat of an anti-rust lubricant.

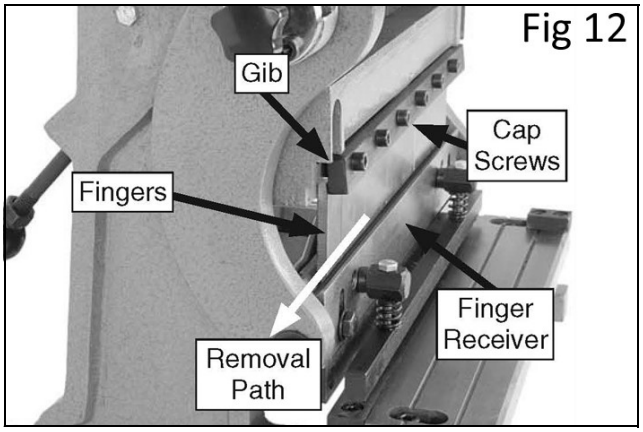

Fig 12

7. Place a thin piece of wood on the finger receiver, as shown in Figure 13, then reinstall the fingers so that they rest on the wood. Make sure the tops of the fingers are between the screw and the casting.

   NOTE: Install the widest finger to the right, then repeat with each smaller finger.

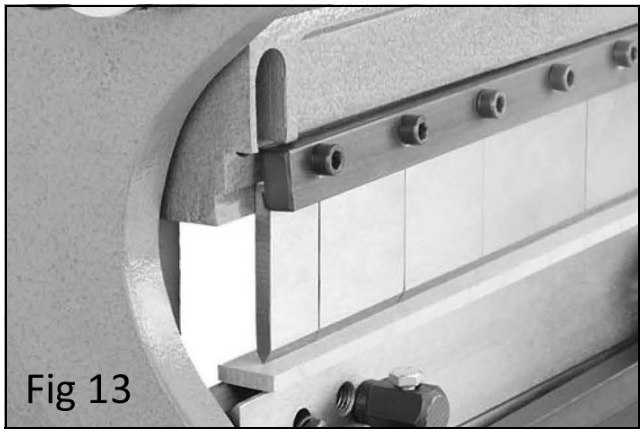
Fig 13

8. Make sure the fingers are slightly loose between the screw and the casting, then use the hand crank to raise the receiver to fully seat the fingers up against the casting behind the screw, as shown in Figure 14.
9. Re-tighten all of the cap screws.

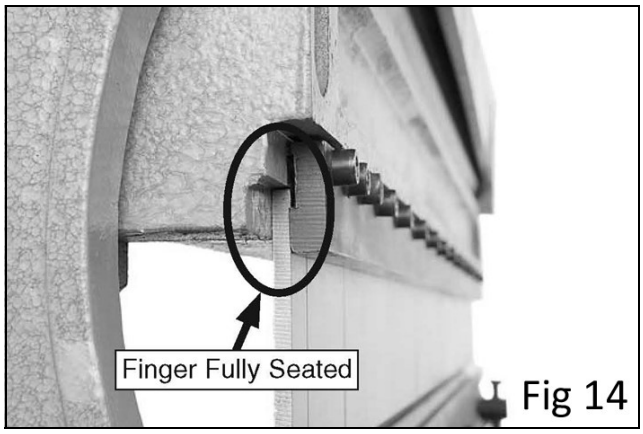

Fig 14

OPERATION - USING THE SLIP ROLLERS

CAUTION: THE ROLLERS OF THIS MACHINE PRESENT A PINCHING HAZARD. MAKE SURE NO BODY PART OR CLOTHING IS NEAR THE ROLLERS DURING OPERATION. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN FINGERS, HAIR, OR CLOTHING BEING PULLED INTO THE MACHINE, CAUSING PERSONAL INJURY.

SLIP ROLLER OVERVIEW

The slip roller is used to form cylinders, cones, and arcs in sheet metal up to 1 mm in thickness and 305 mm wide, as well as wires and rods. Three steel rollers are configured to draw the workpiece through a path that will produce the desired results (see Figures 15-16).

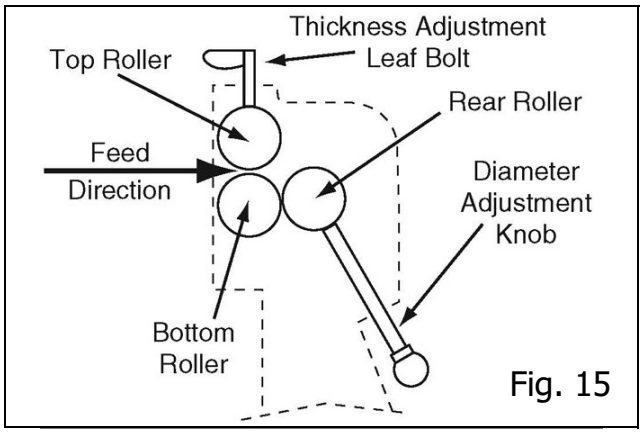

Fig. 15

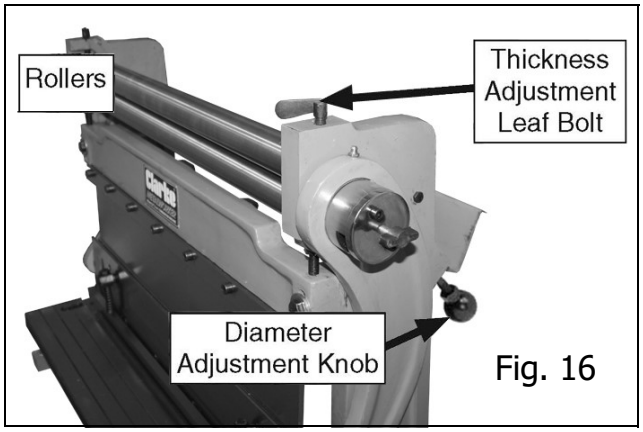

Fig. 16

SLIP ROLLING TIPS

- Due to the many variables of different sheet metal types, no single configuration of the rollers will create the same curve on all materials. Rolling sheet metal to achieve an exact radius is a trial-and-error process.
- Performing multiple passes through the machine with gradual reductions in the curve radius produces better results than trying to make the curve in one pass.
- To avoid pitted workpieces and damage to the roller surfaces, always make sure the workpiece and the rollers are free of grit and any foreign material before every use.
- Unless the operation requires a cone-type curve, always keep the rear roller parallel to the front rollers by rotating the diameter adjustment knobs the same amount.

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CREATING CURVES

Your sheet metal machine can easily create constant radius curves in sheet metal up to 1 mm thick.

The method of creating a specific radius is a trial and error process. Due to the many variations among metal workpieces, no single configuration of the rollers will reproduce the same curve in all materials. We recommend testing your roller configurations on scrap pieces that are the same dimension and material as your final workpiece.

TO CREATE A CURVE IN TH5E WORKPIECE

1. Use the diameter adjustment knobs to fully lower the rear roller below the level of the bottom roller, then rotate the thickness adjustment leaf bolts counter-clockwise until the upper roller can be lifted with enough clearance for the workpiece.

   NOTE: Performing multiple passes through the machine with gradual reductions in the curve radius produces better results than trying to make the curve in one or two passes.

2. Insert the workpiece between the upper and lower rollers and just over the rear roller, as illustrated in Figure 17, then snug the thickness adjustment leaf bolts down to hold the workpiece securely. Make sure you tighten the leaf bolts exactly the same amount.

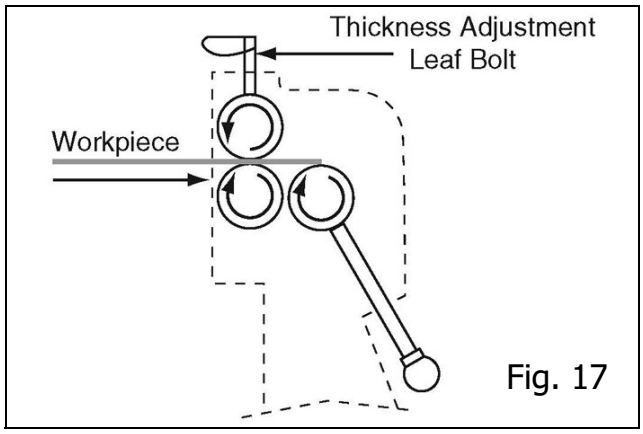

Fig. 17

3. Use the diameter adjustment knobs to raise the rear roller, then use the hand crank to pass the workpiece through the machine (see the illustrations in Figure 18-19).

   NOTE: For good results, make the first bend less than the final radius, then slightly decrease the bend with each successive pass until the final radius has been reached.

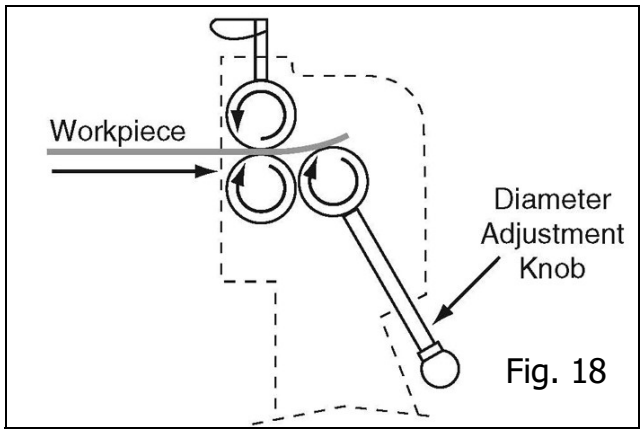

Fig. 18

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NOTE: If your workpiece has an undesired initial flat, as illustrated in Figure 19, you can remove it by flipping the workpiece around and pass it through the front of the machine so that the initial flat enters last.

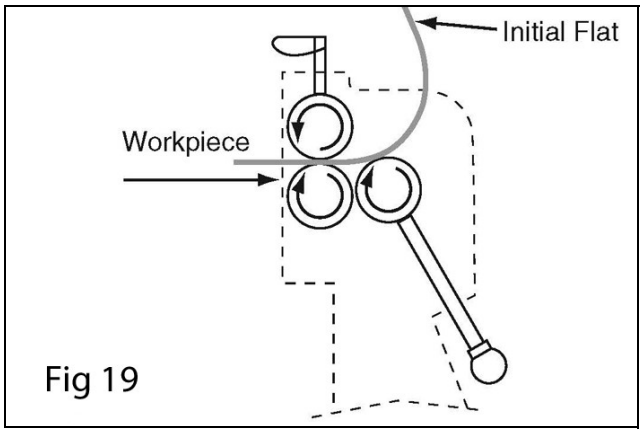

Fig 19

4. Slightly tighten the diameter adjustment knobs the same amount, then pass the workpiece through the rollers again.

   NOTE: To make a cone, tighten one adjustment knob more than the other.

5. Repeat Step 4 until you have produced the desired curve.

CREATING CYLINDERS

If you know the diameter of the cylinder you want to create, use the formula below to calculate the length of material needed.

$$C = \pi D$$

C = Circumference (Length of Material Needed)

π = Pi (Approximately 3.142)

D = Diameter

Example: Suppose you want to create a 150 mm diameter cylinder.

You would use the above formula as follows:

C = πD

C = (3.142) x 150 mm

C = 471.3 mm

The result of 471.3 mm indicates that you need to start with a piece of sheet metal that is approximately 471.3 mm in length in order to create a 150 mm diameter cylinder.

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You can use the slip roll to create a bend with the correct radius so that the two ends meet, forming a 150 mm diameter cylinder (Figure 20).

NOTE: Performing multiple passes through the machine with gradual reductions in the curve radius produces better results than trying to make the curve in one or two passes.

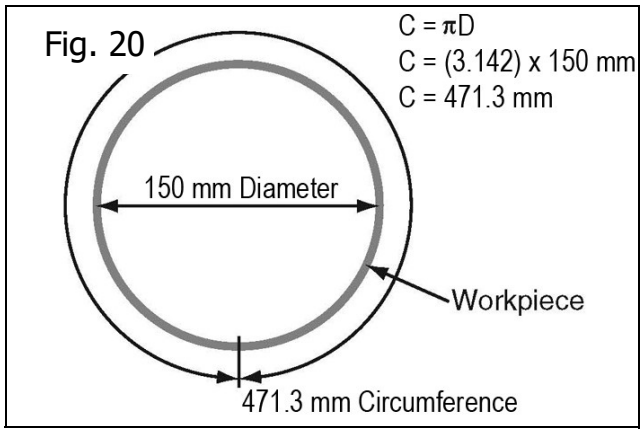


Fig. 20

TO CREATE A CYLINDER

1. Use the diameter adjustment knobs to fully lower the rear roller below the level of the bottom roller, then rotate the thickness adjustment leaf bolts counter-clockwise until the upper roller can be lifted with enough clearance for the workpiece.
2. Insert the workpiece between the upper and lower rollers and just over the rear roller, as illustrated in Figure 21, then snug the thickness adjustment leaf bolts down to secure the workpiece. Make sure you tighten the leaf bolts the same amount.
3. Turn the hand crank clockwise to feed the workpiece through the machine until it is approximately half way through the upper and lower rollers.

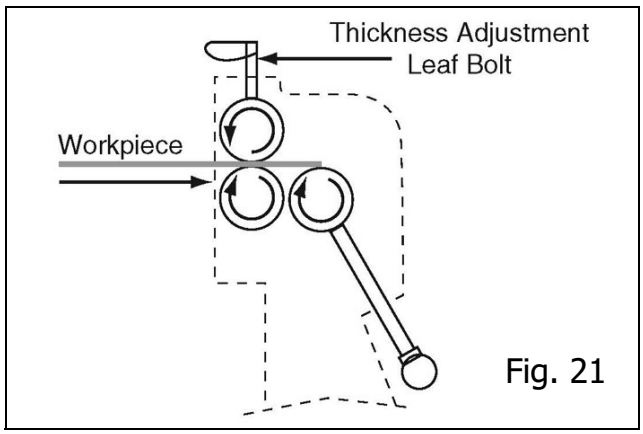


Fig. 21

4. Turn the diameter adjustment knobs clockwise knobs to lift the rear roller until the desired radius bend is reached, as illustrated in Figure 22. Make sure to turn the knobs equal amounts so the rear roller is always parallel with the other rollers. Failure to do so will create a larger radius on one end than the other, resulting in a cone shape.

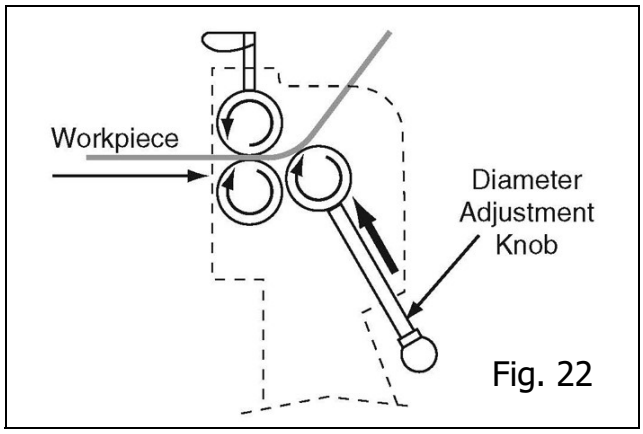
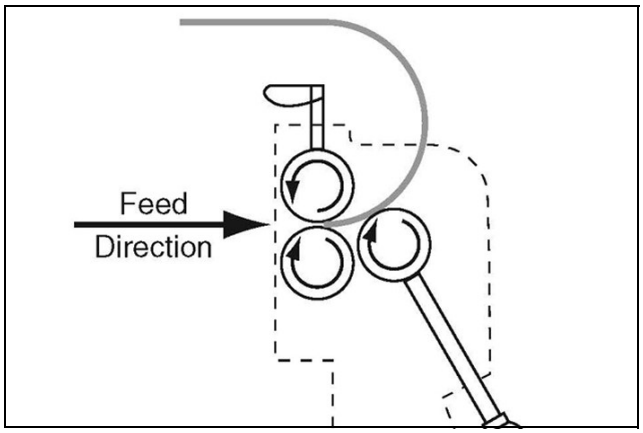


Fig. 22

NOTE: Always err on the side of making the radius too large rather than too small. It is easy to decrease the radius but very difficult to increase the radius later.

5. Turn the hand crank to process the material through the slip rollers. Continue turning until the workpiece is completely through the upper and lower rollers as illustrated in Figure 23.



6. Rotate the workpiece 180°, insert the curved end into the rollers, then process it through the machine, as illustrated in Figure 24.
7. Reduce the radius of the curve by raising the rear roller, then repeat Steps 4-7 until you have produced the desired cylinder (see the illustration in Figure 25).

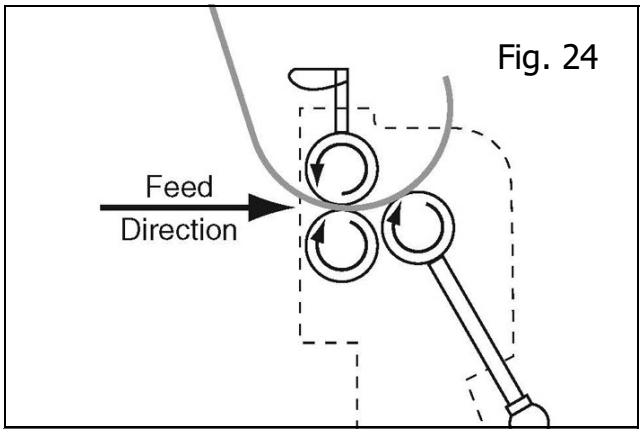


Fig. 24

- If the ends of the cylinder do not meet, lift the rear roller equally at both ends, then process the entire cylinder through the slip roller again. Repeat as necessary.
- If the ends of the cylinder overlap, remove the cylinder as described in "Removing the workpiece from the rollers" on page 16. Then, either attempt to increase the radius by manually bending it, or scrap the workpiece and start this procedure again with a new blank.

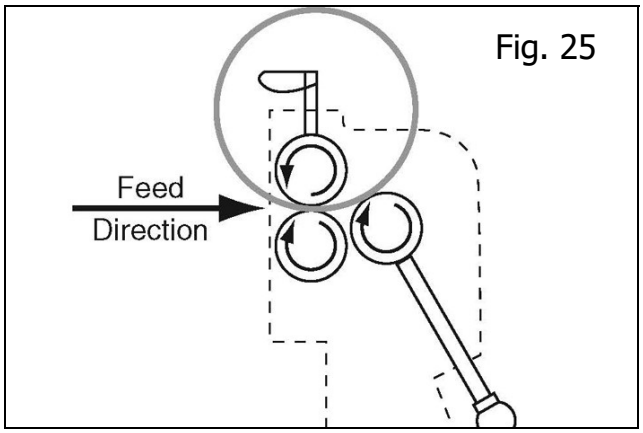


Fig. 25

8. When the cylinder is complete, refer to "Removing the Workpiece from the Rollers" on page 16 for detailed instructions on removing the cylinder from the top roller.

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REMOVING THE WORKPIECE FROM THE ROLLERS

CAUTION: THE SHARP EDGES OF SHEET METAL CAN QUICKLY CUT YOUR HANDS. ALWAYS USE CAUTION AND HEAVY LEATHER GLOVES WHEN HANDLING SHEET METAL.

1. Insert the supplied hexagon key into the retainer pin and rotate the retainer pin until the flat portion of the pin is facing toward the roller or to the right, as shown in Figure 26.
2. Rotate the thickness leaf bolts anticlockwise until they no longer apply pressure to the top roller.

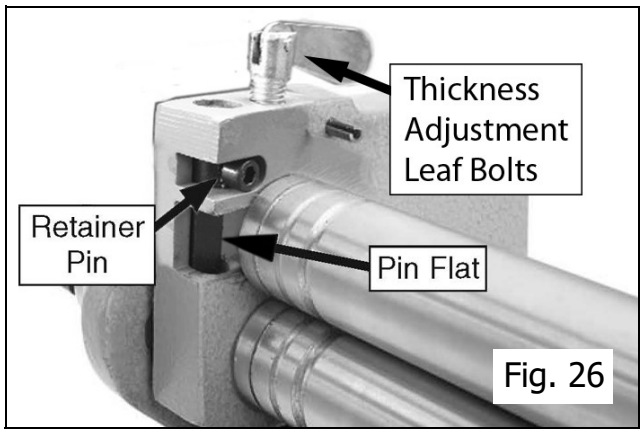


Fig. 26

3. Protect your hands from the sharp edges of the workpiece, then grasp the top roller and use moderate force to pull it forward, as shown in Figure 27.
4. Remove the workpiece, slide the top roller back into place, then secure the roller by rotating the retainer pin until the flat side is no longer visible.

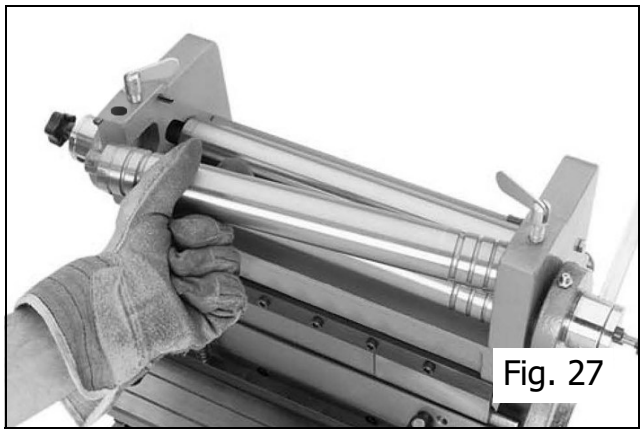


Fig. 27

BENDING WIRE

Your sheet metal machine can bend wires, rods, and small-diameter tubing between the diameters of $^{1}/_{8}$" and $^{13}/_{64}$" (see Figure 28).

To ensure even pressure on the material, place the workpiece in the smallest possible groove on either side of the rollers. Although a $^{7}/_{64}$" rod would fit into any of the wire grooves, you would use the $^{1}/_{8}$" groove since it is the smallest possible groove the rod will fit into.

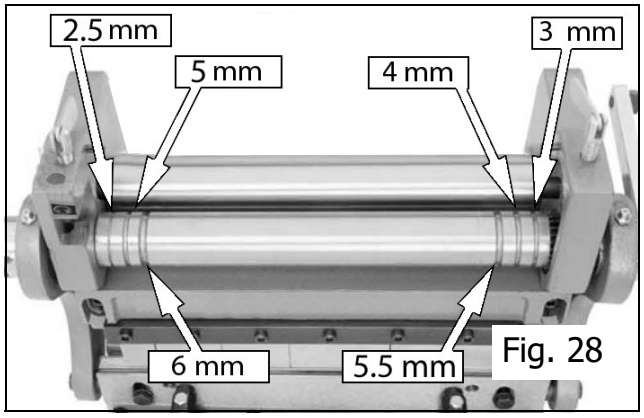


Fig. 28

Process the material through the machine in the same manner described on the previous pages for sheet metal.

NOTE: The wire grooves can also be used when rolling sheet metal that has a wire bead on the side.

OPERATION - ANGLE BENDING

BENDING BRAKE OVERVIEW

The brake of the SBR305B is used to make bends of 0°-90° in sheet metal up to 1 mm in thickness and 305 mm in width. When you use the hand crank, the brake fingers force the workpiece into the groove of the finger receiver to make the desired bend (see Figures 29-30).

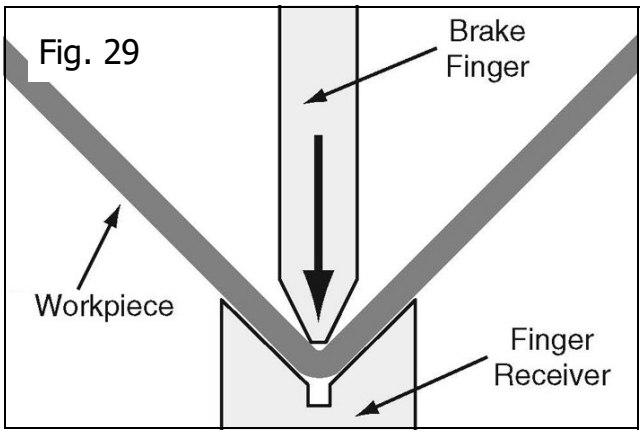


Fig. 29

BEND ALLOWANCE

When metal is bent, the outside overall dimension increases from its original length-this amount is called the bend allowance. A typical bend allowance for a 90° bend in a 1 mm mild steel workpiece is approximately 1.27 mm. That means you need to start with a workpiece that is approximately 1.27 mm shorter than the desired outside length of the finished workpiece, as illustrated in the example of Figure 31.

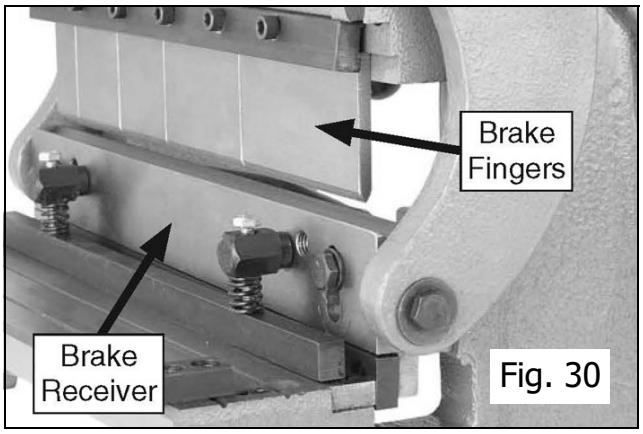


Fig. 30

Calculating the bend allowance for your operation requires many variables, such as metal thickness, type of material, radius of the bend, etc. Detailed information for calculating the bend allowance can be found in metalworking handbooks and on the internet.

An easy way to find the correct dimension of your initial blank is to measure a piece of scrap of the same material as the workpiece, make the bend, then measure the piece again. The difference between the two measurements is the bend allowance, which you subtract from the dimension of the workpiece blank before the bend.

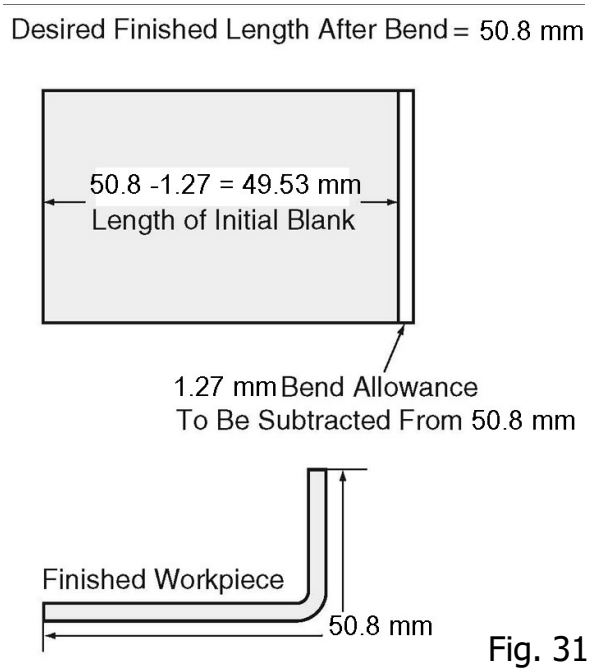


Fig. 31

BENDING SHEET METAL

Tip: To reduce the chance of scoring your workpiece when using the brake, always keep the fingers and receivers clean and lubricated (refer to Steps 1-9 beginning on pages 9 & 10 for detailed instructions), and free of burrs or other blemishes. Also, apply a strip of sturdy tape along the top and bottom of the bend line.

WARNING: THE BRAKE FINGERS ON THIS MACHINE PRESENTS A PINCHING HAZARD. MAKE SURE NO BODY PART OR CLOTHING IS NEAR THE AREA WHERE METAL BENDING OCCURS. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN SEVERE PERSONAL INJURY.

1. Mark a line along the width of the workpiece where the bend is to take place.
2. Use the hand crank to lower the finger receiver until you can position the workpiece underneath the fingers with the bend line aligned with the tips, as shown in Figure 32.

   NOTE: When performing the same bending operation on multiple parts, use the rear work stop to save time positioning the workpieces.

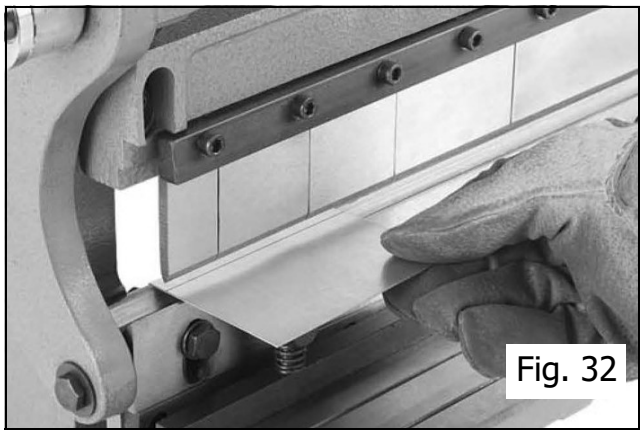


Fig. 32

3. While holding the workpiece steady, use the hand crank to raise the finger receiver to perform the desired bend (see Figure 33 for an example), then lower the receiver and remove the workpiece.
4. If a reverse bend is required, re-install the workpiece upside-down, as shown in Figure 34, and repeat Steps 2-3.

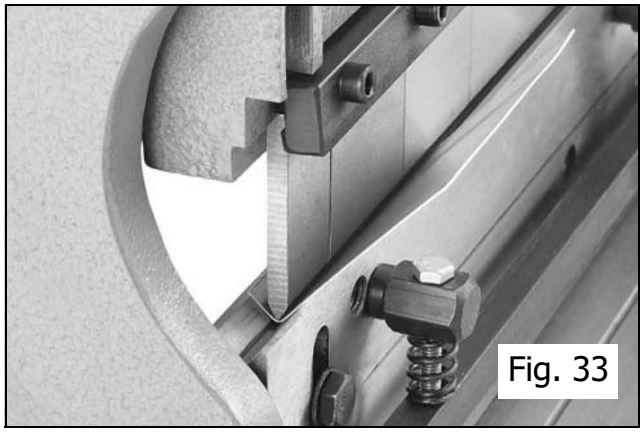


Fig. 33

5. The minimum reverse bend possible is 9 mm.

   NOTE: When performing a pan and box bending operation, loosen the cap screws on the brake finger gib and configure the fingers for your operation. Remove the fingers you do not need.

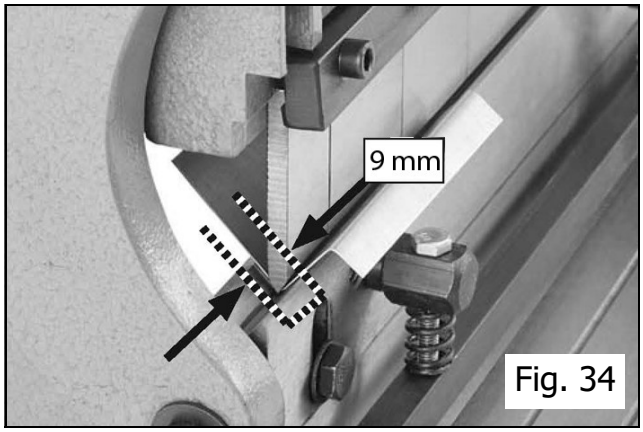


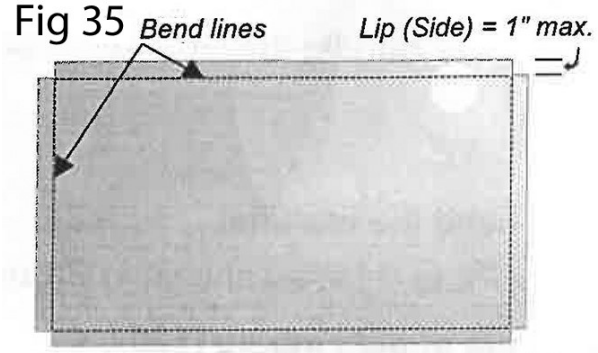
Fig. 34

PAN FORMING

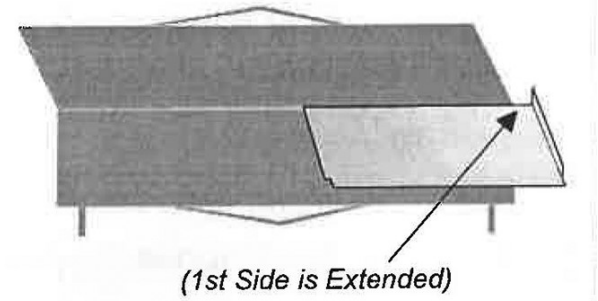
The hand brake roller can be used to make various sizes of pans. The maximum lip (side) height supported by this tool is 1".

To form a pan;

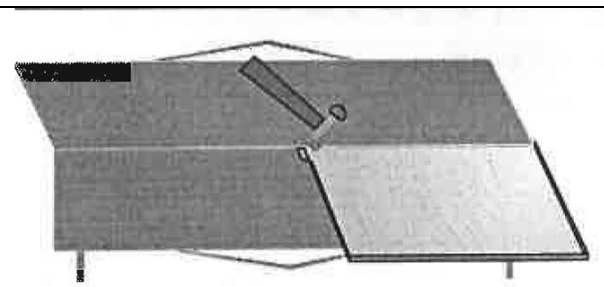
1. Pre-measure and cut your material before bending. Notch the corners according to the desired lip height as shown in Fig 35.
2. Insert material between the fingers and the moving cutter plate. Bend the material until a 90 degree angle has been formed.
3. Rotate the material 90 degrees counter-clockwise. Allow the completed side to extend just beyond the dies. Bend the second side.
4. Repeat step 3 for the 3rd side.
5. Rotate to the final side and insert the workpiece between your dies. Your formed sides will be on the outside of the dies.
6. Before bending, tap one corner nearer to the middle of the machine. This will allow the material to clear the fingers when raised.
7. Bend the fourth side.
8. Using a block or piece of wood, tap the corner of the material back into place.

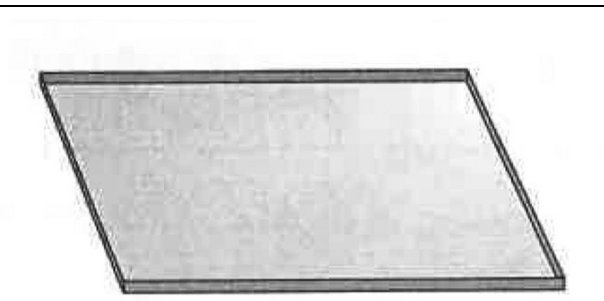


Step 1: Mark Bend lines & Notch Metal



Step 2: Bend Second Side


Tap the corner


Completed pan

OPERATION - SHEARING SHEET METAL

SHEARING OVERVIEW

The SBR305B has a set of reversible blades that shear mild steel up to 1 mm in thickness and 305 mm in width. When you use the hand crank to perform a shear, the upper movable blade is lowered past the fixed table blade, creating a shearing action (see Figures 39-41). For repetitive cuts, use the adjustable rear work stop.

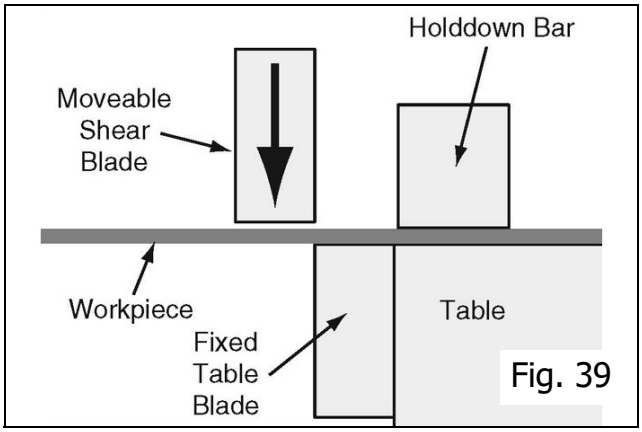


Fig. 39

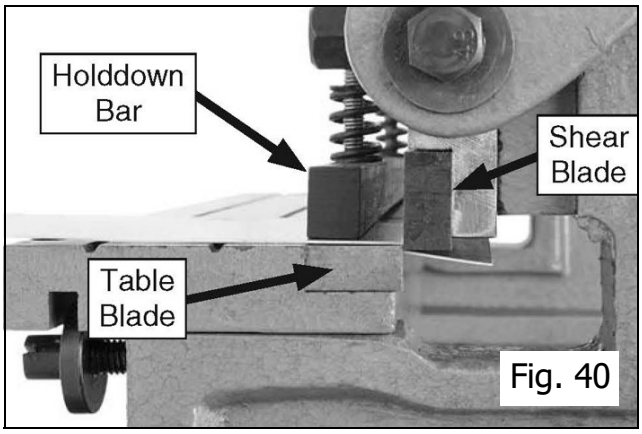


Fig. 40

CUTTING SHEET METAL

WARNING: THE SHEARING BLADES ON THIS MACHINE PRESENT A HAZARD. KEEP BODY PARTS OR CLOTHING AWAY FROM THE AREA WHERE METAL SHEARING OCCURS. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN SEVERE PERSONAL INJURY.

TO CUT SHEET METAL

1. Mark the cut line across the width of the workpiece.
2. Make sure the gap between the shearing blades is correct for the workpiece material (refer to "Shearing Blade Gap Adjustment" on page 25 for detailed instructions).

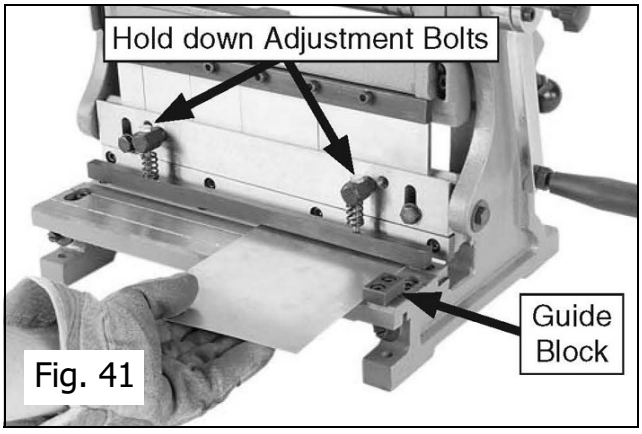


Fig. 41

3. Position the workpiece up against the guide block on the right side of the table, then align the cut mark with the upper shear blade, as shown in Figure 41.

   NOTE: The shearing action begins on the right side of the workpiece and moves to the left.

   NOTE: If you need to adjust the gap between the shearing blades to accommodate your workpiece, refer to the "Shearing Blade Gap Adjustment" on page 25 for detailed instructions.

   NOTE: If you are using the rear work stop, adjust the stop so that at least one square edge of the workpiece is against it.

4. Use the hold down adjustment bolts to adjust the hold-down bar so that it firmly holds the workpiece in place without marking or denting it.

5. Keeping all body parts away from the blades, rotate the hand crank with an even and steady pressure to complete the cut.

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MAINTENANCE

SCHEDULE

For optimum performance from your machine, follow this maintenance schedule if in regular use and refer to any specific instructions given in this section.

DAILY MAINTENANCE

- Clean the machine.
- Tighten any loose mounting bolts.
- Check/replace any damaged rollers.
- Check/replace any cracked or damaged brake fingers or receiver.
- Sharpen/replace any dull or nicked shearing blades.
- Address any other unsatisfactory condition.

MONTHLY MAINTENANCE

- • Lubricate the gears and hand crank bushes.

6-MONTHLY MAINTENANCE

- Lubricate the roller bushes.

CLEANING & PROTECTING

Cleaning the SBR305B is relatively easy. Use a cloth and de-greasing spirit if required to wipe down the machine.

LUBRICATION

Keep your SBR305B properly lubricated to help ensure long life and smooth operation of the machine.

GEARS

Clean away grease and any built-up grime from the top and bottom roller gear teeth as shown in Figure 42, with a stiff brush and de-greasing spirit.

When dry, apply a small amount of grease to the teeth, then use the hand crank to rotate the rollers and distribute the lubricant.

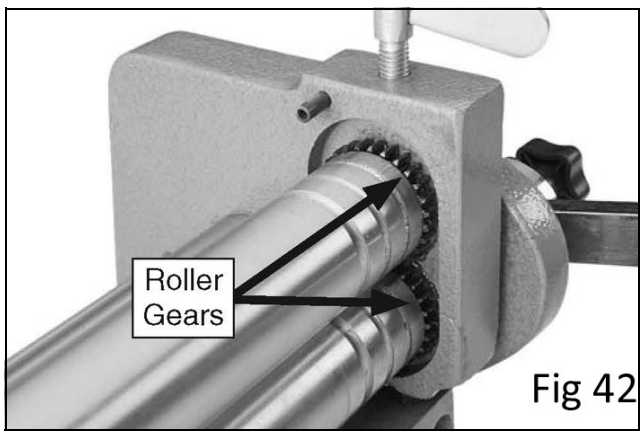


Fig 42

HAND CRANK BUSHES

Wipe off the grease fittings next to each hand crank hub (see Figure 43), then use a grease gun to add a small amount of multi-purpose grease to the hand crank bushes.

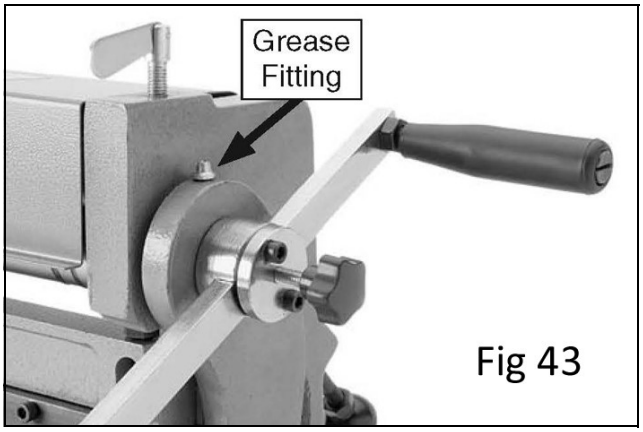
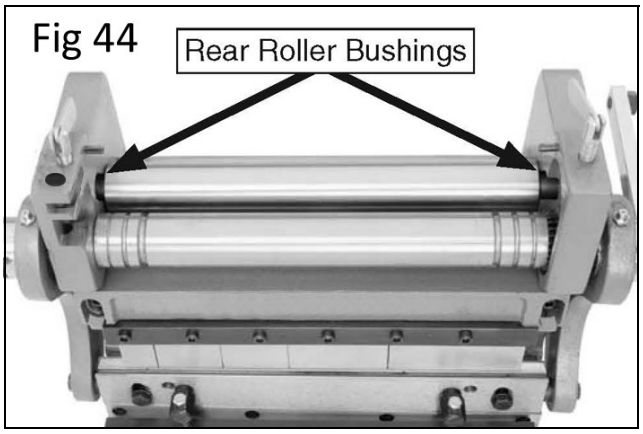


Fig 43

ROLLER BUSHES

Remove the top roller from the machine, then remove the bushes from the ends of the roller (see Figure 44). Use a cloth and de-greasing spirit to clean the bushes and the ends of the roller, then apply a thin coat of multi-purpose grease to the roller ends and re-install the bushes.

Fig 44



Use a stiff brush and degreasing spirits to clean the rear roller bushes, then apply a small amount of multi-purpose grease to them. Reinstall the top roller and close the cover.

SERVICING

SHEARING BLADE REVERSAL/REPLACEMENT

The shearing blades are reversible, so when the first cutting edge becomes dull, the blades can be rotated to use the second cutting edge.

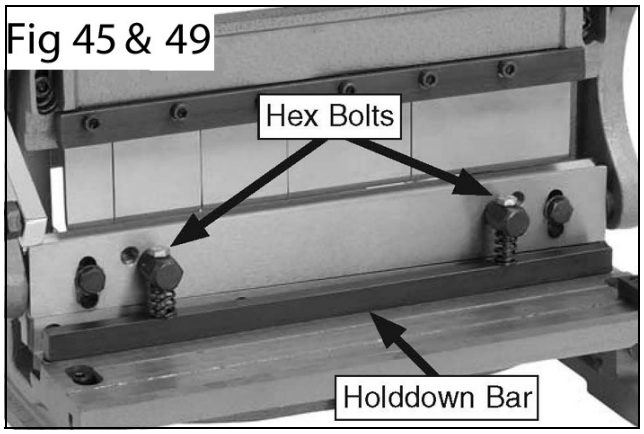
When both cutting edges of the blade become dull, use wet grinding techniques for SK-4 metal or better to sharpen the cutting face of the blade.

The upper shearing blade uses a 5° relief edge and the lower table blade does not. However, if you are not comfortable performing the sharpening procedure or do not have access to a professional sharpening service, replacement blades are available through the Clarke spares department.

TO REVERSE OR REPLACE THE SHEARING BLADES:

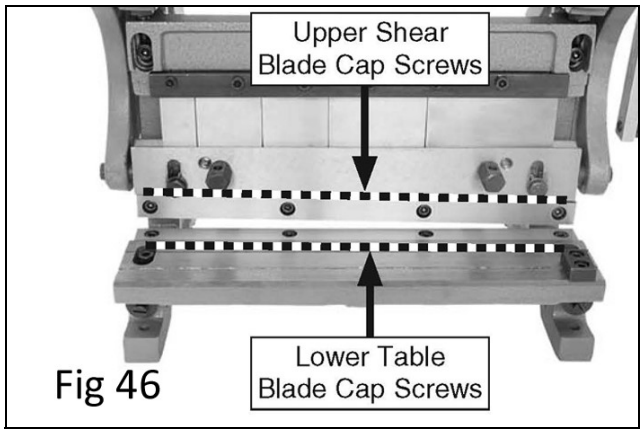
CAUTION: THE SHEARING BLADES ARE SHARP AND CANQUICKLY CUT YOUR HANDS. ALWAYS WEAR HEAVY LEATHER GLOVES WHEN HANDLING THE SHEARING BLADES TO AVOID THIS CUTTING HAZARD.

1. Remove the hex bolts and springs that secure the shear hold-down bar (see Figure 45).



2. Remove the four cap screws that secure the blade, then carefully remove it from the machine (see Figure 46).

Tip: When removing or installing the upper shear blade, remove the cap screw at one end, then insert a small hex wrench or similar tool through the hole to keep the blade in place as you remove the rest of the cap screws.



3. Inspect the blade cutting edge that was in use, for wear, nicks, or burrs.

- If the cutting edge shows wear or nicks and the other cutting edge has not been used, rotate the blade and re-install it.
- If both cutting edges are worn or nicked, either properly sharpen the cutting face or replace the blade.

4. Re-install the hold-down bar, then check that the shearing blade gap adjustment is correct as instructed in "Shearing Blade Gap Adjustment" below.

SHEARING BLADE GAP ADJUSTMENT

The shearing blade gap adjustment determines the accuracy of the cut.

Follow the procedures below to make sure this adjustment is correct for the workpiece material being processed.

PERFORMING THE SHEAR TEST

1. While keeping your fingers clear of the shear blades, shear a piece of scrap material that is the same as your workpiece along the full length of the blade, as shown in Figure 47, then inspect the cut.

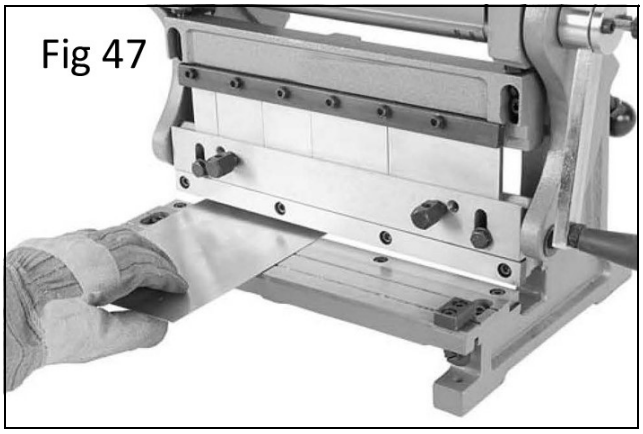


Fig 47

- If the machine correctly cuts to your satisfaction along the length of the blades no adjustments are needed.
- If the cut is clean at one end and not the other, perform the following **ADJUSTING THE SHEAR TABLE** procedure that follows.
- If the condition of the cut on the ends is different from the cut in the middle, perform the following "Adjusting the Blade Bow" on page 26.

ADJUSTING THE SHEAR TABLE

1. Loosen the cap screws on either end of the shear table that secure it to the machine (see Figure 48).
2. Evenly rotate the table adjustment screws to adjust the position of the shearing table until the blade gap is even, then re-tighten the cap screws to secure the table in place.

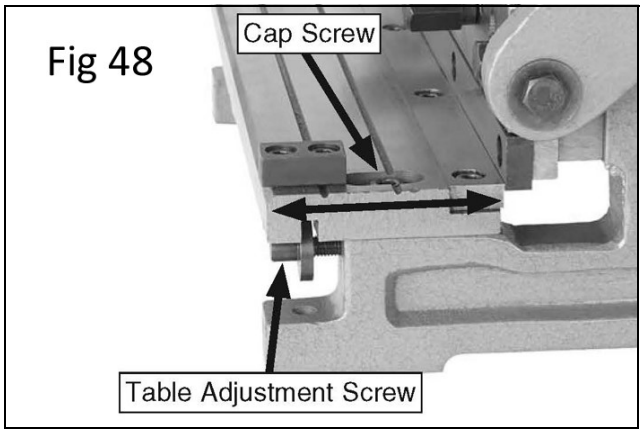


Fig 48

NOTE: Rotating the table adjustment screws clockwise moves the table toward the upper shear blade.

3. Perform the previous shear test.

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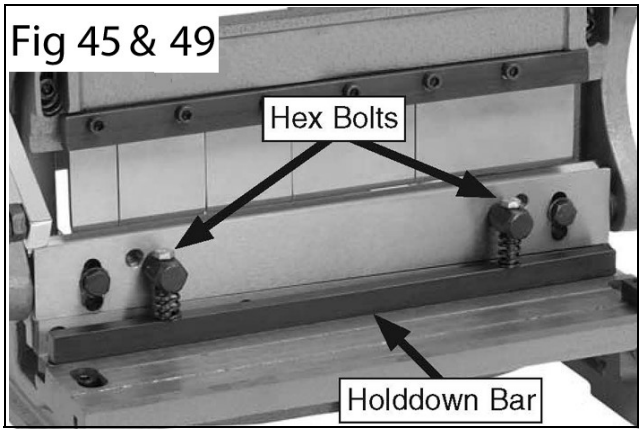
4. If necessary, repeat Steps 1-3 until you are satisfied with the shear test cut.

ADJUSTING THE BLADE BOW

The adjustment bolt of the blade bow is used to remove any slight bow in the cast iron cross beam that the brake finger receiver and upper shear blade are attached to (see Figure 49).



TO ADJUST THE BLADE GAP WITH THE BLADE BOW

1. Hold the adjustment bolt still, then turn the jam nut to adjust the centre of the cross beam in or out (see Figure 49).

- If the shear test cut was clean on the ends of the shear table but not in the middle, turn the jam nut counter-clockwise to force the adjustment bolt against the cross beam, moving it in toward the front.
- If the shear test cut was clean in the middle but not on the ends, rotate the jam nut clockwise to allow the cross beam to move back.

2. Perform the previous shear test.
3. If necessary, repeat Steps 1-2 until you are satisfied with the shear test cut.

BRAKE ALIGNMENT

CAUTION: OPERATING THE BRAKE WITH CRACKED OR DAMAGED BRAKE FINGERS OR RECEIVER COULD CAUSE THESE PARTS TO SHATTER AND FLY APART, WHICH COULD RESULT IN PERSONAL INJURY.

During the life of your machine, you may need to align the brake fingers with the finger receiver from side-to-side.

TO ALIGN THE BRAKE

1. Remove, clean, and de-burr all of the finger tips and the receiver groove, then inspect the fingers and receiver for any cracks or damage.

- If any of the brake fingers or the receiver are damaged in any way, **DO NOT** use the brake until you have replaced these parts with new ones.

2. Replace the fingers, follow the procedure on page 9 (Cleaning the Machine Fingers).

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3. Place a piece of heavy flat bar stock or a heavy metal ruler approximately 12" long across the finger receiver, as shown in Figure 50.
4. Lower the brake fingers until one just rests on the metal bar, as shown.
5. Starting at one end, visually check the gap between the brake fingers and the metal bar.

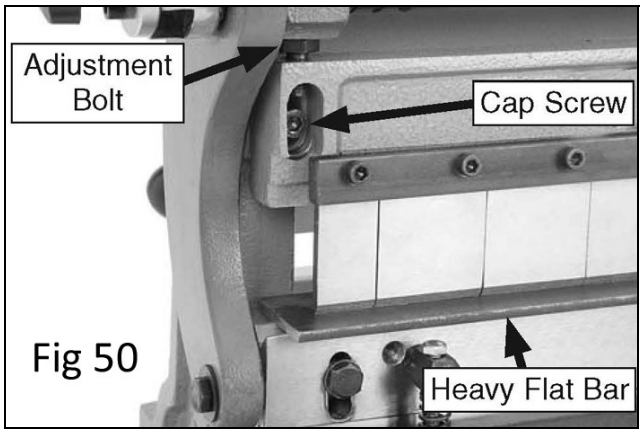

Fig 50

6. If you find a gap at one end of the brake, loosen the cap screw shown in Figure 50 on that end, then turn the adjustment bolt counter-clockwise until the gap disappears.
7. Re-tighten the cap screw, remove the metal bar and use the hand crank to cycle the machine 2-3 times.
8. Repeat Steps 3-7 until the brake fingers rest evenly on the metal bar along its entire length.

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TROUBLESHOOTING

SLIP ROLLER OPERATION.

PROBLEM	CAUSES	SUGGESTIONS
Slip roller creates cones when trying to make a cylinder.	Top and rear rollers not parallel.	Use the diameter adjustment knobs to make the rollers parallel.
Creases or wrinkles in the workpiece.	Excessive pressure applied when rolling.	Reduce the radius and perform the bend in several light passes.
Workpiece is pitted or scratched.	Workpiece or rollers are dirty or damaged.	Thoroughly clean the workpiece and rollers. Polish out any nicks/ burrs in the rollers, or replace them.

BENDING BRAKE OPERATION

PROBLEM	CAUSES	SUGGESTIONS
Heavy resistance during bending	Machine capacities are exceeded.	Operate within the listed capacities of the machine.
Bend radius is not consistent across workpiece.	Machine capacities are exceeded	Operate within the listed capacities of the machine
	Fingers and receiver not aligned.	Properly align the fingers and receiver
Tips of brake fingers are chipping or rolling	Fingers and receiver not aligned.	Properly align the fingers and receiver
	Workpiece is too thick.	Operate within the listed capacities of the machine
Workpiece has scoring marks	Fingers or receiver scratched	Polish out scratches, and apply tape at the bend locations for further protection

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SHEAR BLADE OPERATION

PROBLEM	CAUSES	SUGGESTIONS
Machine will not cut workpiece.	Cut exceeds machine capacities.	Operate within the listed capacities of the machine
	Not enough gap between blades.	Increase blade gap.
Cuts are not square	Uneven contact with guide or work stop	Maintain proper contact with guide and work stop
	Blade gap unequal across length	Properly adjust blade gap for material
	Too much bow in blade	Properly adjust blade bow
	Inadequate hold-down pressure	Properly adjust hold-down pressure
Poor quality of cuts with ripping or tearing	Dull blades	Reverse/sharpen/replace blades
	Incorrect blade gap setup	Properly adjust blade gap for material
	Loose blades	Remove blades, clean thoroughly and re-install

GUARANTEE

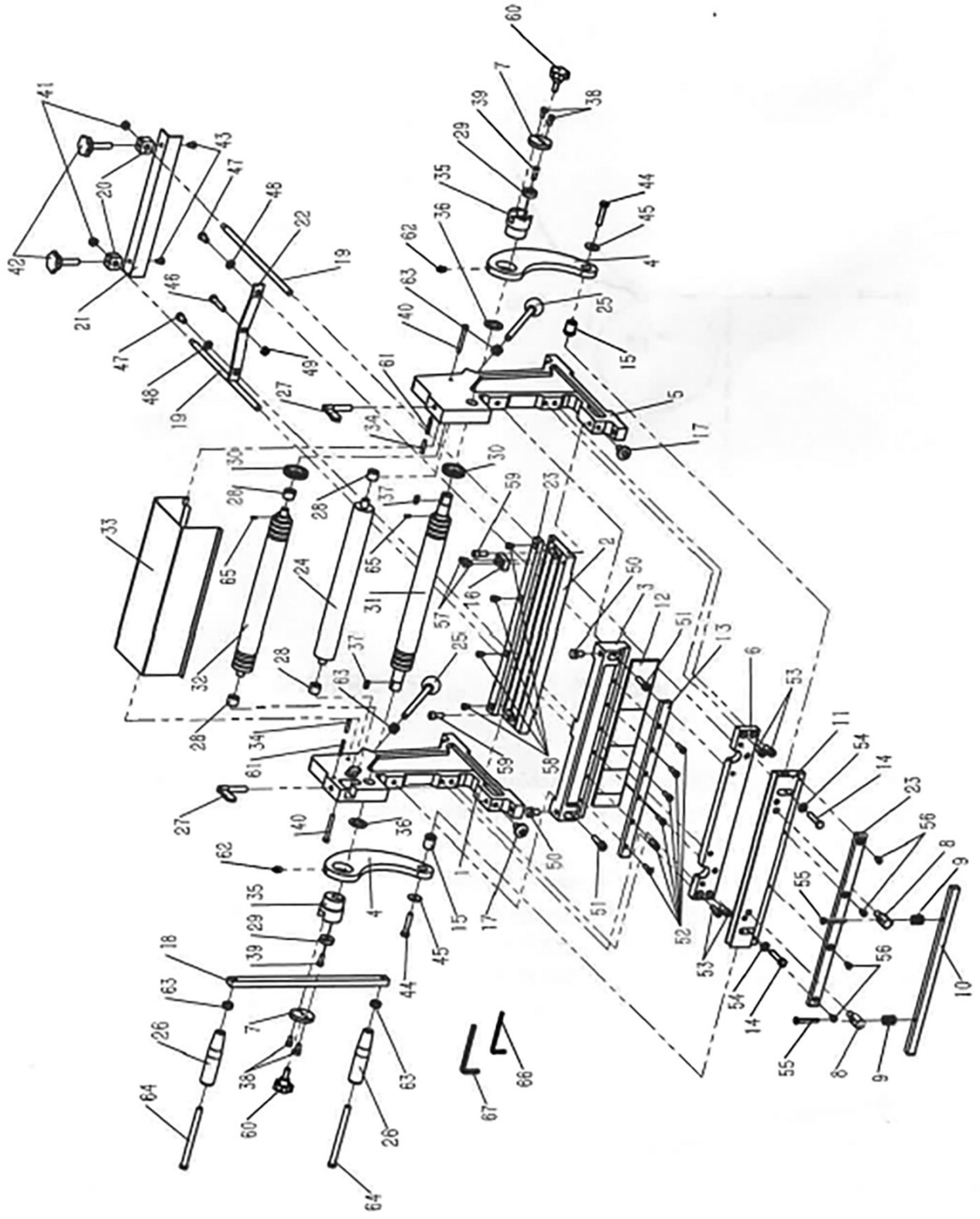
This product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt which will be required as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

COMPONENT PARTS DIAGRAM



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COMPONENT PARTS LIST

No	Description	No	Description	No	Description
1	Left wall	24	Back pressure roller	47	Bolt M8 x 16
2	Workbench	25	Roller adjustment knob	48	Washer 8mm
3	Cross beam	26	Handle knob	49	Nut M8
4	Crank arm	27	Adjustable screw	50	Bolt M10 x 16
5	Right wall	28	Roller bushing	51	Screw M8 x 30
6	Bare frame	29	Washer	52	Screw M6 x 25
7	Cover	30	Gear	53	Screw M8 x 20
8	Press plate bracket	31	Lower pressure roller	54	Washer 8mm
9	Spring	32	Upper pressure roller	55	Screw M6 x 45
10	Pressing plate	33	Cover	56	Screw M6 x 8
11	Moving cutter plate	34	PVC hose	57	Screw M6 x 10
12	Fingers	35	Eccentric shaft	58	Screw M6 x 8
13	Pressing plate	36	Washer	59	Screw M8 x 20
14	Bolt M8x40	37	Key	60	Clamp bolt
15	Rolling wheel	38	Screw M6 x 12	61	Stop stick
16	Guide	39	Screw M6 x 16	62	Grease cap
17	Adjustable bolt	40	Bolt M6x50	63	Nut M10
18	Handle	41	Nut M8	64	Bolt M10 x 125
19	Positioning bar	42	Adjustable bolt	65	Stop Stick
20	Positioner	43	Screw M6 x 8	66	Hex key wrench 5mm
21	Positioning plate	44	Screw M8 x 40	67	Hex key wrench 6mm
22	Support plate	45	Washer 8 mm		
23	Blade	46	Bolt M8 x 40		

FINGERS

- 25mm/1” Finger
- 50mm/2” Finger
- 76mm/3” Finger
- 102mm/4” Finger

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