



Operating, Servicing, and Safety Instruction Manual

**Model # 400-
S, S2, SADJ, U, UADJ / VS, VS2, VSADJ, VSU, VSUADJ
Ultimate Tube Notchers**



CAUTION: Read and Understand

These Operating, Servicing, and
Safety Instructions, Before Using
This Machine.

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CRATE CONTENTS

- 1ea. Ultimate Tubing Notcher Machine
- 1ea. ¼” “T” Handle Allen wrench.....#1100-504
- 1ea. ¾” Combination Wrench#1100-504
- 2ea. Aluminum Handle.....#400-021
- 2ea. Shoulder Bolts.....#750-SHLDRBOLT.5X3

REPLACEMENT SAFETY DECALS

- 1ea. “Do Not Operate Without Guard In Place...” Sticker #400-542
- 1ea. “Do Not Operate Without Safety Glasses...” Sticker #400-543
- 1ea. “Stop Machine Before...” Sticker #400-518
- 1ea. “Hand Hazard” #400-562

UNCRATE

Total Shipping Weights

MODEL #400-S = 300 lbs. MODEL #400-VS = 320 lbs. MODEL #400-VS2 = 450 lbs.

Use overhead crane/hoist or powered fork lift to remove machine from shipping platform.

1. Lifting with Overhead Crane/Hoist:
2. Position lifting slings (qty.2) under main table and lift from over top of machine.
- 3. Caution: Motor side will be the heaviest side to lift – test sling position to balance machine weight before lifting from shipping platform.**
4. Lifting with Forklift:
5. Position forks under main table.
- 6. Caution: Motor side will be the heaviest side to lift – test fork position to balance machine weight before lifting from shipping platform.**

SPECIFICATIONS

MODEL #400-S: Max Diameter = 2" OD Standard Vise, 2 3/8" OD Upgraded Vise
1 HP AC Motor, 115 Volts / 15 Amp, 1 Phase 60 Hertz

MODEL #400-VS: Max Diameter = 2" OD Standard Vise, 2 3/8" OD Upgraded Vise
1-1/2 HP AC Motor, 115, 208, 230, 240 Volts / 15 Amp, 1 Phase 50/60 Hertz

MODEL #400-VS2: Max Diameter = 2" OD Standard Vise, 2 1/2" OD Upgraded Vise
1-1/2 HP AC Motor, 115, 208, 230 Volts / 15 Amp, 1 Phase 50/60 Hertz

POWER SOURCE: Electric

ULTIMATE TUBING NOTCHER SAFETY

All supervisory and operating personnel should read these instructions to prevent injury and assure proper and safe operation of the machine.

Proper safety precautions are the responsibility of each and every machine operator. Conscientiously followed safety programs will help prevent injury to personnel and damage to equipment.

The following Basic Guidelines are a Minimum for Safe Operation

1. Wear safety glasses when operating.
2. Avoid loose fitting clothing around moving machinery.
3. Maintain machine in proper operating condition keep clean of chips and debris.
4. Always stop cutter before adjusting machine operation.

OPERATION

1. **Single Speed** machine operates on 110 Volt single (1) phase electric. **Variable Speed** machine operates on 208 / 220 / 230 / 240 Volt (1) phase electric.
2. **Variable Speed:** Use the **MASTER** on / off switch at bottom right of control box to turn off the machine for end of day or maintenance only. Use the **RUN / STOP** switch at the upper right for normal on / off between notches. Repeated use of the master switch can cause damage to the control unit. **CAUTION: HAVE QUALIFIED ELECTRICIAN INSTALL PLUG!**
- 3.
4. Tubing is clamped in V Block Vise leaving a minimum of overhanging material, past vise edge toward the cutter, for best operation. Be careful not to run cutter into vise.
5. Primary feed direction is in & out. Cut on O.D. (side not end) of cutter. Left to Right feed is to position material relative to the cutter. For best operation, position tubing as close to spindle as possible.
6. Material should be positioned & clamped in vise. Set swivel vise at desired angle and tighten down. Position table left to right as required for best cut. Be sure to position material as close to spindle as possible.
7. Use in & out feed to achieve proper depth of notch. A smooth constant feed will give best results. Back cutter away from work as soon as cut is completed.
8. Stop cutter before removing tubing from vise.
9. Lubrication is required at grease fittings on feed table. Use any general purpose grease as required for smooth operation. As with any machine keep as clean as possible for long life.

We hope this machine provides you with many years of productive use. If you have any questions please feel free to call us at anytime. Thank you, we appreciate your business!

MACHINE SET UP



#2 Unbolt from shipping crate.

1. Remove cardboard box and upper wood frame work from shipping crate.
2. Unbolt the Ultimate Tubing Notcher from the crate base by removing the four (4) bolts.
3. Remove the protective plastic film from the chip shield.
4. Install the Crank Handle Knobs using the supplied shoulder bolts.



#4 Shoulder Bolts

#4 Crank Handle Knobs

5. Lift the Ultimate Tubing Notcher from the crate using a hoist and slings positioned as shown below. **CAUTION MACHINE WEIGHS ALMOST 400 POUNDS.**



Using A Hoist

6. Place the machine on your bench, stand or the optional 400-A400 Roller stand. If mounting on your own bench or stand be sure to secure the unit with 3/8" diameter bolts being sure that the bench or stand can support 400 lbs. If you are using the optional roller stand follow the instructions on **page 21** of this manual.

OPERATION



#1, Standard Machine ON / OFF Switch



#1, Variable Speed Machine Run/Stop Switch

#1, Variable Speed Machine MASTER Switch

WEAR SAFETY GLASSES

1. Be sure your machine is turned off and is plugged into the proper power source.

[Both the **Single Speed** & **Variable Speed** machine operate on 110 Volt single (1) phase electric. Switch is on the left side of the main base plate for single speed and on the control box as shown above.

Variable Speed: Use the **MASTER** on / off switch at bottom right of control box to turn **ON** the machine for the day or off at the end of the day, or off for maintenance only.

Use the **RUN / STOP** switch at the center right for normal on / off between notches.

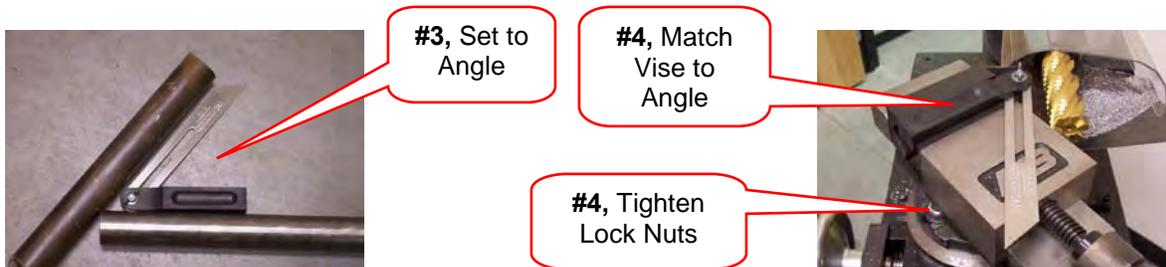
Pull Up & HOLD the **RUN / STOP** switch for a few seconds to start cutter rotating.

NOTE: Repeated use of the master switch for regular On/Off use can cause damage to the control unit.

2. Install a cutter into the spindle to match the size of tubing you are notching. If the cutter is 1-1/8" OD or smaller the appropriate reducer bushing is required, see page 23. Align the flat surfaces on the cutter shank with the setscrews and Tighten the two set screws with the supplied "T" handle wrench.



3. Calculate the angle of the notch. A sliding "T" Bevel, as shown, is one way of doing this. If you already know the notch angle go to **step #5**.



4. Set the vise to the correct angle required. Use the supplied 3/4" Combination Wrench to loosen the two vise swivel locknuts. Rotate the vise to the desired angle and lock down by tightening the two lock nuts.

5. If you already know the degree of notch, use the pointer on the scale to set the angle. If you used the sliding "T" bevel method from step 3 record the degree for future notches.



#5, Pointer & Degree Scale. This example is set to 75° or 15° from 90°

6. Clamp your tubing in the vise. Stick just enough tubing out the cutter side of the vise to complete the cut. **Be sure that there is enough tubing sticking out to avoid the cutter contacting the vise before notch is complete.** This will minimize deflection and give the best cut. Tighten the vise handle by hand. Over tightening will cause vise damage and may deform your tubing.

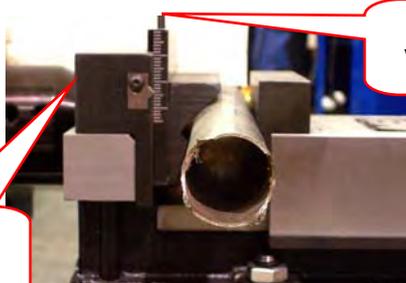


#6, Clamp in Vise and tighten Handle

#6, Minimum Overhang Out of Vise

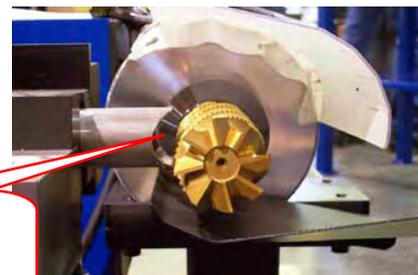


7. If you have the **ADJUSTABLE HEIGHT** vise, and need to make an **OFFSET** notch, you need to set the jaw height. This height is set by turning the adjustment screw in or out to get the correct position of the tube in relation to the cutter. The vise must have light pressure on the tube when making adjustments, just snug enough to center the tube in the jaws. Be sure to lock the adjustable jaws once the height is set, using the indicated screws. Once the height is set tighten the vise as usual.



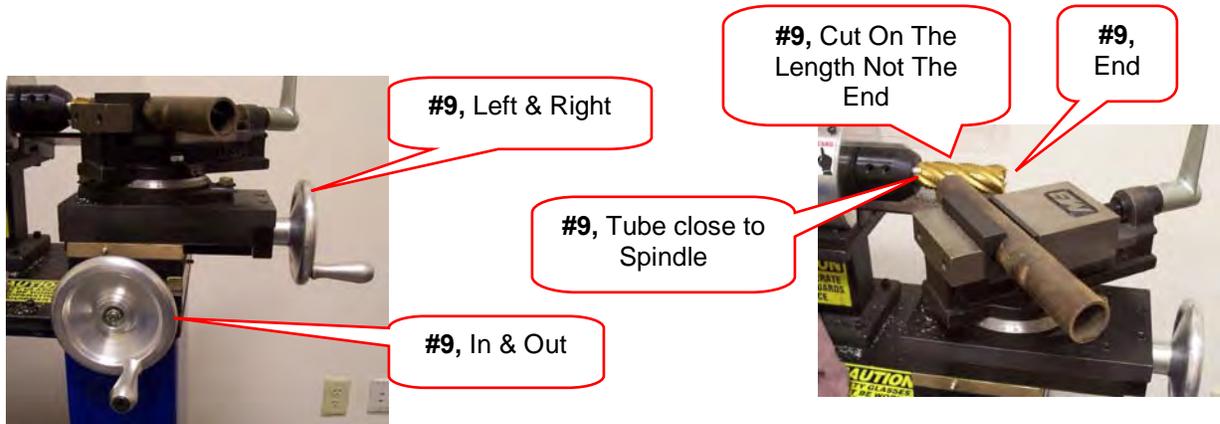
#7, Adjust Vise Height

#7, Locking Screws



#7, Tube Position in Relation to the Cutter

8. After setting your vise angle, jaw height and tightening everything down you are ready to make a notch.
9. The main feed direction for notches is In & Out. The Left to Right is used to position the tube in the best location on the cutter. All cutting is done on the length (side) of the cutter and not the end. Keep the tubing as close to the spindle as possible.

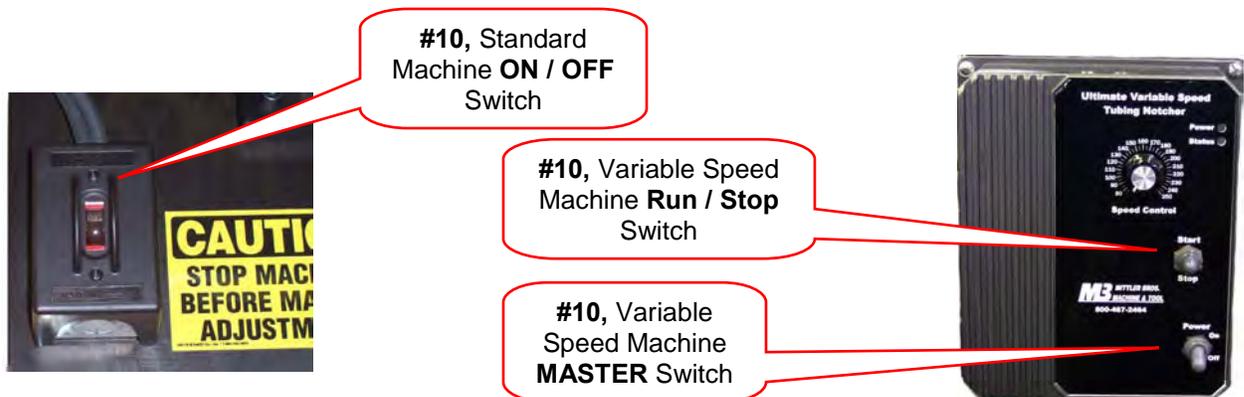


WEAR SAFETY GLASSES

STAY CLEAR OF ROTATING CUTTER

10. **SINGLE SPEED;** Be sure the tube is not touching the cutter and then turn the machine on. Use the switch on the left end of the base plate. Use the IN /OUT crank wheel to feed the tube into the cutter and create the notch. Using a smooth steady feed will create the best cut. A little practice and you will “feel” the best feed rate.

VARIABLE SPEED; Be sure the tube is not touching the cutter and then turn the machine on. You will need to turn the **MASTER** switch to **ON** position and then turn the **RUN** switch to the **RUN** position. Use the IN /OUT crank wheel to feed the tube into the cutter and create the notch. Using a smooth steady feed will create the best cut. Start out with the **SPEED CONTROL** in the middle. Begin feeding your tube into the cutter and change the speed up and down. As you feed the tube and adjust the speed you will “feel” where the best combination of cutter speed and feed speed are. Generally the thinner the tubing wall the faster you will cut and the thicker the tube wall the slower the cutter speed. Use the RUN / STOP switch for normal on / off between notches. Repeated use of the MASTER switch can cause damage to the control unit. **When Turning the MASTER SWITCH ON there may be a 3 to 5 second delay before the machine will power up.**



11. Be sure the machine is **TURNED OFF AND THE CUTTER HAS STOPPED ROTATING** before removing the tube from the vise.

TWO SIDED NOTCH OPERATION

Requires Model #400-S2 or Model #400-VS2



Front Side Notch



Cluster Joint



Back Side Notch

Front Side Notch – Follow Instructions on Pages 5 – 7.

Back Side Notch -

1. Turn In/Out Handwheel counterclockwise to move tube away from cutter.
2. Adjust cutter speed to slowest speed.
NOTE: Allows cutter holding setscrews to be properly positioned to remove cutter.
3. Turn OFF Cutter switch.
4. Remove Cutter for clearance to move vise to back side
NOTE: Tube can remain clamped in vise to hold proper 2-side notch alignment.
5. Turn In/Out Handwheel clockwise to move vise assembly to Back Side.
6. Install Cutter & Tighten Cutter Holding Setscrews.
7. Rotate Vise to proper angle for desired notch and tighten vise holding nuts.
8. Relocate Chip Tray so positioned under Cutter – see picture below.
9. Place tubing in vise and tighten vise jaws to hold tubing – if tube was removed.
10. Turn ON Cutter switch.
11. Adjust Cutter Speed to proper speed for tubing thickness to be notched.
12. Turn **Back Side** In/Out Handwheel clockwise to make desired notch.



Chip Tray

Chip Tray Mount

GENERAL MAINTANANCE

SAFETY FIRST / BE SURE MACHINE IS UNPLUGGED BEFORE ANY MAINTAINCE IS PERFORMED

1. Lubrication is required at the grease fittings on the feed table 3 times per year. Use any general purpose grease as required for smooth operation.
2. Keep as clean as possible at all times for long life. Be sure the Cooling slots for the motor fan are kept clean as well as the cooling louvers on the Variable speed control box.
3. The Gear Box and spindle assembly come pre-lubed from the factory and need no further attention. If you see grease or oil coming from either area please contact the factory for service information.

GIB ADJUSTMENTS Left to Right Slide Assembly

1. Clean machine of all chips.
2. Remove the vise assembly from the slide assembly by removing the two swivel base mounting bolts.



#2, Remove Swivel Base Bolts

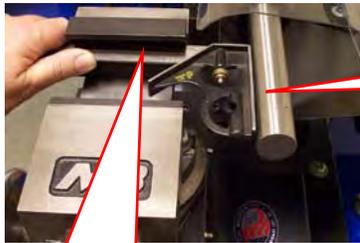


#3, Loosen Gib Mounting Bolts Then **Snug** Up

3. Loosen the five gib mounting bolts, on the operator side of the vise mounting plate. Snug these bolts back up but **DO NOT TIGHTEN**.
4. Turn clockwise each Gib adjusting screw, on the back side of the vise mounting plate, this will "spread & tighten" the gibs. **Make very small adjustments at a time!** After making an adjustment turn the hand wheel and run through the entire range of travel feeling for smooth and snug movement. If it seems too tight, back the adjusting screws off a very small amount and then use a soft head hammer and tap the gib opposite the adjusting screws and repeat the process.

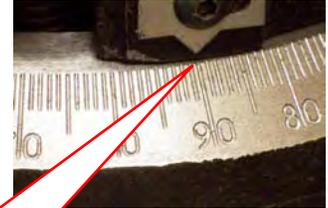


5. Once you are satisfied with the adjustments tighten the five gib mounting bolts and recheck your adjustments. This procedure may take a few tries. You can now remount the vise to the mounting plate.
6. You will need to realign the vise to be square with the cutter. Insert a piece of 1-1/4" OD tubing or shaft into the spindle and lightly tighten the set screws. Hold a combination square or machinist square tight in the groove of the V jaw as shown. Loosen the adjusting jam nuts and rotate the vise until the square and the tube / shaft in the spindle are at 90° to each other. Use a wrench and tighten the adjusting jam nuts. Check the degree pointer. If it does not read 90° you will need to loosen the screw and set it back to 90°.



#6, Square in Bottom of V Jaw

#6, Square & Shaft at 90° to Each Other.



#6, Re-adjust Pointer to 90°

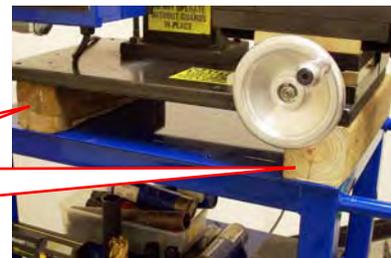
7. If the hand wheels feel loose or tight you will need to adjust the Nylock nut in the center of each hand wheel to set the tension.
8. If you have any questions please call 1-800-467-2464 for technical support.

In & Out Slide Assembly

1. Clean machine of all chips.
2. Remove the 4 mounting bolts that hold the unit to the stand or bench.



#2, Remove 4 Base Mounting Bolts



#3, Place 4 x 4's Under Ends of Base Plate.

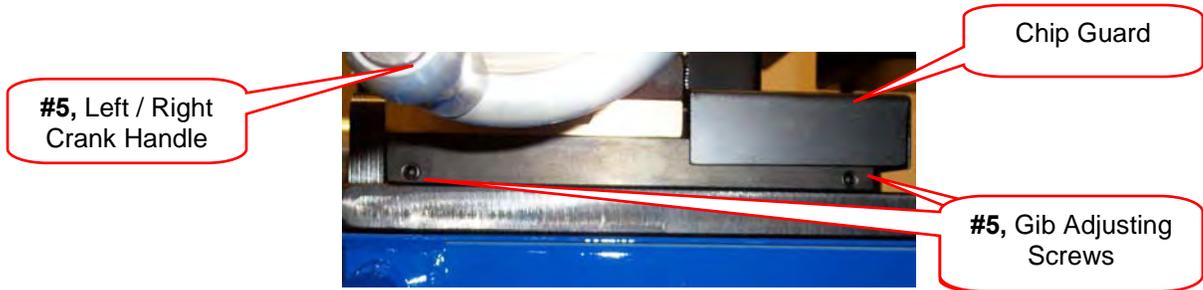
3. Raise the machine as shown on **Page 4 Step #5** and place a 4x4 block under each end. Be sure that the 4x4 block on the vise end is even with the edge of the base plate as shown above. Use a C clamp at each end to secure the machine to your work table.

4. Loosen the five gib mounting bolts, on the bottom of the plate, shown at right. Snug these bolts back up but **DO NOT TIGHTEN**.

#4, 5 Gib Mounting Bolts

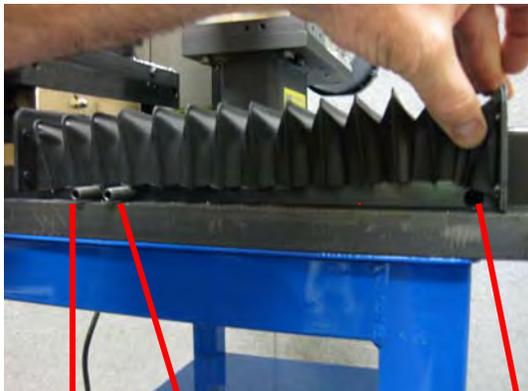


5. Turn clockwise each Gib adjusting screw, on the back side of the vise mounting plate, this will “spread & tighten” the gibs. **Make very small adjustments at a time!** After making an adjustment turn the hand wheel and run through the entire range of travel feeling for smooth and snug movement. If it seems too tight, back the adjusting screws off a very small amount and then use a soft head hammer and tap the gib opposite the adjusting screws and repeat the process.



6. Once you are satisfied with the adjustments tighten the five gib mounting bolts and recheck your adjustments. This procedure may take a few tries.
7. Remove the C clamps and position the lift slings as shown on **Page 4 Step #5**. Lift the machine and remove the 4x4 blocks. Set the machine down on your stand / table and bolt down using the previously removed bolts.

TWO SIDED MACHINE IN/OUT GIB ADJUSTMENT



#1

#2

Back Side In/Out Gib Adjustment Screw

Storage Location for Centered In/Out Gib Adjustment Screws

Centered In/Out Gib Adjustment Screws

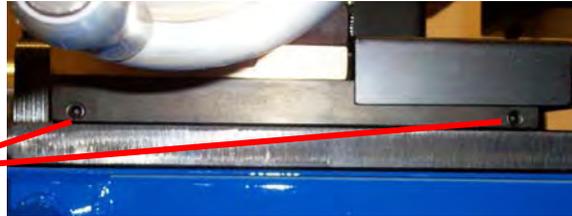
1. Follow Steps 1 through 3 on Page 9.
2. Loosen ten (10) gib mounting bolts, on the base plate bottom. Snug these bolts back up but **DO NOT TIGHTEN**.

Gib Mounting Bolts



3. Turn In/Out Handwheel counterclockwise to move vise assembly to front side (Left side).
4. Install #1 Center Gib Adjustment Screw. NOTE: Center Adjustment Screws MUST be removed for proper operation to move vise assembly through entire travel.
5. Turn clockwise each Front Side Gib Adjusting Screw (qty. 2) to move the opposite side gib. This will “spread & tighten” the gibs. **Make very small adjustments at a time!** After making an adjustment turn the hand wheel and run through the entire range of travel feeling for smooth and snug movement. If it seems too tight, back the adjusting screws off a very small amount and tap gib opposite the adjusting screws with a soft head hammer and repeat the process.

Gib Adjustment Screws



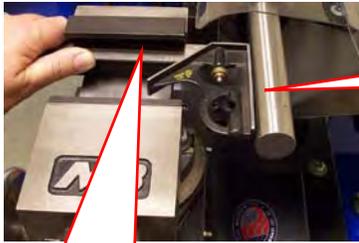
6. Remove #1 Center Gib Adjustment Screw, when vise assembly travels with smooth, snug pressure.
7. Turn In/Out Handwheel clockwise to move vise assembly to Back Side (Right side).
8. Install #2 Center Gib Adjustment Screw. NOTE: Center Adjustment Screws MUST be removed for proper operation to move vise assembly to Back Side.
9. Turn clockwise each Gib adjusting screw (qty. 2) to move the opposite side gib. This will “spread & tighten” the gibs. **Make very small adjustments at a time!** After making an adjustment turn the hand wheel and run through the entire range of travel feeling for smooth and snug movement. If it seems too tight, back the adjusting screws off a very small amount and tap gib opposite the adjusting screws with a soft head hammer and repeat the process.
10. Remove #2 Center Gib Adjustment Screw, when vise assembly travels with smooth, snug pressure.
11. Turn In/Out Handwheel counterclockwise and clockwise to insure smooth, snug travel through entire front to back movement.
12. Once you are satisfied with the adjustments tighten the ten gib mounting bolts and recheck your adjustments. This procedure may take a few tries.
13. Position the lift slings as shown on **Page 4 Step #5** & remove the C clamps. Lift the machine and remove the 4x4 blocks. Set the machine down on your stand / table and bolt down using the previously removed bolts.

GIB REPLACEMENT

1. Mount right side lower steel gib with 5/16" x 18 x 1" long socket head screws (steel gib with holes drilled on bottom, plus 2 holes on side). NOTE: Cap screws enter from under base plate.
2. Insert 2 steel dowel pins into right lower gib and drive pins into gib and base plate.
3. Tighten 5/16" x 18 x 1" socket head screws on right lower gib.
4. Install Left side lower steel gib with 5/16" x 18 x 1" long socket head screws – DO NOT TIGHTEN.
5. Slide on 6" x 6" plate with bronze gibs attached – Note: Locate 2 holes on 6"x 6" block to the back of the unit for gib guard.
6. Thread **right-hand** acme screw into upper bronze nut for left-to-right movement.
7. Thread **left-hand** acme screw into lower bronze nut for in-to-out movement.
8. Install front bushing block onto bronze bushing of lower acme screw - bolt onto 1" thick base plate.
9. Install front bushing block onto upper bronze nut of upper acme screw and bolt onto underside of base plate.
10. Install bronze thrust washer on acme screw shafts.
11. Install key stock into slot on shafts.
12. Install round hand wheel on upper and lower acme screws and tighten Nylok nut until it bottoms, then back off ¼ turn.
13. Install 3/8" x 16 x 3" long set screws (2) into right side of lower steel gib.
14. Snug up Left side lower steel gib 5/16" x 18 x 1" socket head screws.
15. Turn clockwise each adjusting screw, on the back side of the vise mounting plate, this will "spread & tighten" the gibs. ***Make very small adjustments at a time!*** After making an adjustment turn the hand wheel and run through the entire range of travel feeling for smooth and snug movement. If it seems too tight, back the adjusting screws off a very small amount and tap the gib opposite the adjusting screws with a soft head hammer and repeat the process.

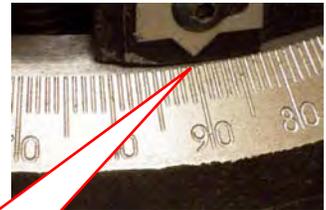


16. Once you are satisfied with the adjustments tighten the five gib mounting bolts and recheck your adjustments. This procedure may take a few tries. You can now remount the vise to the mounting plate.
17. You will need to realign the vise to be square with the cutter. Insert a piece of 1-1/4" OD tubing or shaft into the spindle and lightly tighten the set screws. Hold a combination square or machinist square tight in the groove of the V jaw as shown. Loosen the adjusting jam nuts and rotate the vise until the square and the tube / shaft in the spindle are at 90° to each other. Use a wrench and tighten the adjusting jam nuts. Check the degree pointer. If it does not read 90° you will need to loosen the screw and set it back to 90°.



#6, Square in Bottom of V Jaw

#6, Square & Shaft at 90° to Each Other.



#6, Re-adjust Pointer to 90°

18. If the hand wheels feel loose or tight you will need to adjust the Nylock nut in the center to adjust the hand wheel.
19. Reinstall the gib guard.
20. If you have any questions please call 1-800-467-2464 for technical support.

HAND WHEEL SHAFT REPLACEMENT

1. Remove bolts holding vise base to compound feed table – remove vise. (see page 9 steps 1 & 2)

Upper Adjustment Screw Replacement – Left-to-Right Movement:

2. Remove upper slider block adjustment screws using 3/16" Allen wrench – located on backside of upper slide gib assembly.
3. Loosen (Do Not Remove) 5 gib mounting 5/16" socket head cap screws on vise mounting plate to allow front gib clearance.
4. Turn upper hand wheel clockwise (left-to-right movement) to remove vise mounting plate and upper gibs from bronze gibs to expose bronze adjusting nut. Place vise mounting plate on bench. **CAUTION: Proceed with care – Do Not Drop.**
5. Remove setscrew in upper bronze nut mounting block – use 1/8" Allen wrench.
6. Remove snap ring on each side of bronze nut.
7. Remove bronze nut from housing and discard.
8. Install new bronze nut (right hand thread) in upper mounting block.
9. Install new snap ring on each side of bronze nut.
10. Use 1/8" drill bit and drill point the bronze nut through the set screw hole in mounting block – Do Not drill through bronze bushing.
11. Install/Tighten set screw – use 1/8" Allen wrench.
12. Remove Nylok nut from hand wheel – use 3/4" socket.
13. Remove hand wheel from shaft.
14. Remove acme screw from bronze bushing and mounting block.
15. Replace bronze bushing in mounting block – shoulder to the inside of mounting block.
16. Install new acme screw in bronze bushing (right hand thread).
17. Install new bronze washer over shaft on outside of mounting block.
18. Install hand wheel and Nylok nut – Tighten until clearance between hand wheel and block is removed – DO Not over tighten.

Lower Adjustment Screw Replacement – In-to-Out Movement:

19. Remove lower slider block adjustment screws using 3/16" Allen wrench – located on right side of lower slide gib assembly.
20. Loosen (Do Not Remove) 5 gib mounting 5/16" socket head cap screws on underside of base plate to allow left gib clearance.
21. Turn lower hand wheel clockwise (in-to-out movement) to remove bronze gib block from lower slide gibs to expose bronze adjusting nut. Place bronze gib block on bench. **CAUTION: Proceed with care – Do Not Drop**
22. Remove setscrew in lower bronze nut mounting block – use 1/8" Allen wrench.

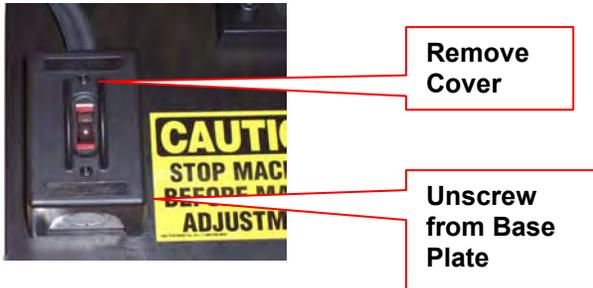
- 23.** Remove snap ring on each side of lower bronze nut.
- 24.** Remove bronze nut from housing and discard.
- 25.** Install new bronze nut (left hand thread) in lower mounting block.
- 26.** Install new snap ring on each side of bronze nut.
- 27.** Use 1/8" drill bit and drill point the bronze nut through the set screw hole in mounting block – Do Not drill through bronze bushing.
- 28.** Install/Tighten set screw – use 1/8" Allen wrench.
- 29.** Remove Nylok nut from lower hand wheel – use 3/4" socket.
- 30.** Remove hand wheel from shaft.
- 31.** Remove acme screw from bronze bushing and mounting block.
- 32.** Replace bronze bushing in lower mounting block – shoulder to the inside of mounting block.
- 33.** Install new acme screw in bronze bushing (left hand thread).
- 34.** Install new bronze washer over shaft on outside of mounting block.
- 35.** Install hand wheel and Nylok nut – Tighten until clearance between hand wheel and block is removed – DO NOT over tighten
- 36.** Install slide gib block onto lower gibs on base plate – NOTE: Left hand thread bronze nut to be on bottom for in-to-out movement.
- 37.** Thread lower acme screw into bronze nut – turn counterclockwise until seated against front bushing block.
- 38.** Install and adjust lower slide block screws (2) on right hand side until smooth in-to-out movement of table is achieved – CAUTION DO NOT over tighten - Adjust so have slight drag on slide blocks.
(page 9 step 4)
- 39.** Tighten 5 left gib 5/16" socket head cap screws on underside of base plate.
- 40.** Install vise-mounting plate onto bronze gib block.
- 41.** Thread upper acme screw into bronze nut – turn counterclockwise until seated against bushing block on right side.
- 42.** Install and adjust upper slide block screws (2) on back side until smooth movement of table is achieved – CAUTION DO NOT over tighten - Adjust so have slight drag on slide blocks.
(page 9 step 4)
- 43.** Tighten 5 gib mounting 5/16" socket head cap screws on front of vise mounting plate.
- 44.** Install 6" x 6" bronze gib block guard on backside.
- 45.** Install vise, tighten bolts and adjust vise. (page 13 step 17)

400 Single Speed to Variable Speed Conversion

#400-202

See kit contents on page 22

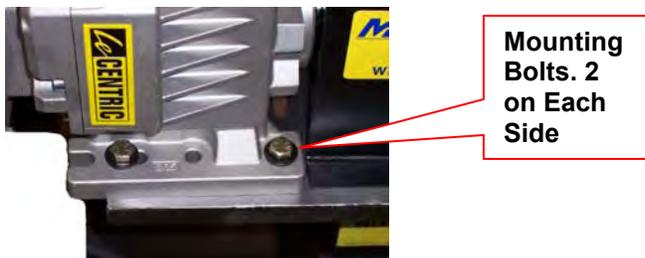
1. Unpack the boxes and be sure all the parts are included. See the list at the end of these instructions.
2. Unplug the machine from any power source. Remove the switch box from the base plate by removing the cover and unscrewing from the base plate.



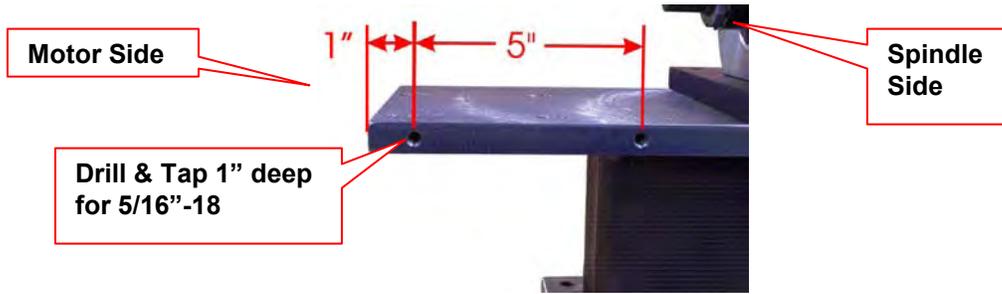
3. Remove the Love Joy Cover by removing the two screws. Then loosen the set screws on each half of the Love Joy coupling.



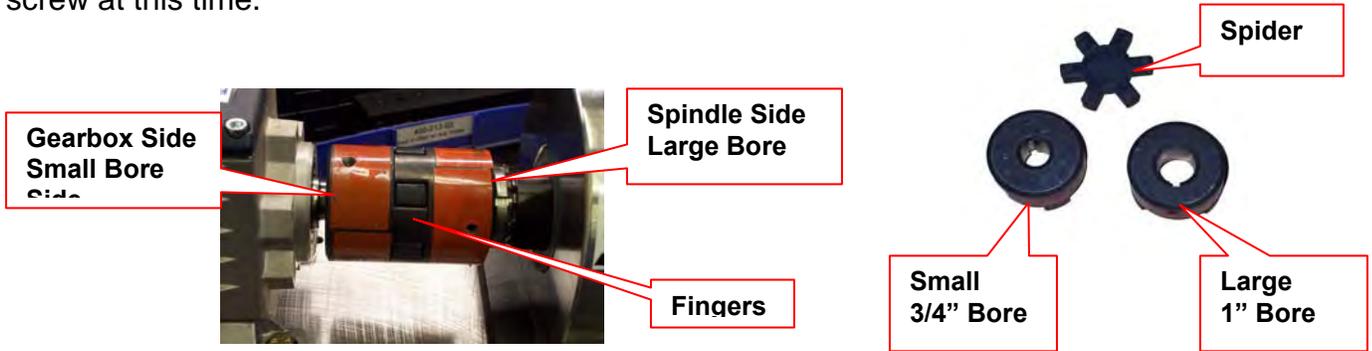
4. With someone holding up the end of the motor remove the four (4) bolts holding the motor / gearbox assembly to the mounting plate. Remove the complete motor, gearbox, cord & switch assembly from the machine. Save the mounting bolts to remount the motor / gearbox.



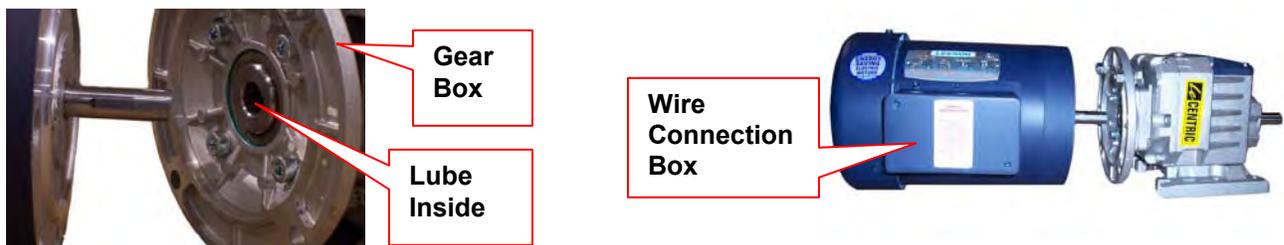
5. Remove the Love Joy coupling half from the spindle shaft if it did not slide off in step 4.
6. Drill and tap two (2) holes, 5/16"-18, in the motor mounting plate as shown below. The holes should be drilled 1" deep and then counter sunk a small amount to allow for the bolt heads.



- Slide the large bore (1") Love Joy coupler half onto the spindle. Be sure the "fingers" are pointing toward the motor location and that the key is installed in the key way. Do not tighten down set screw at this time.

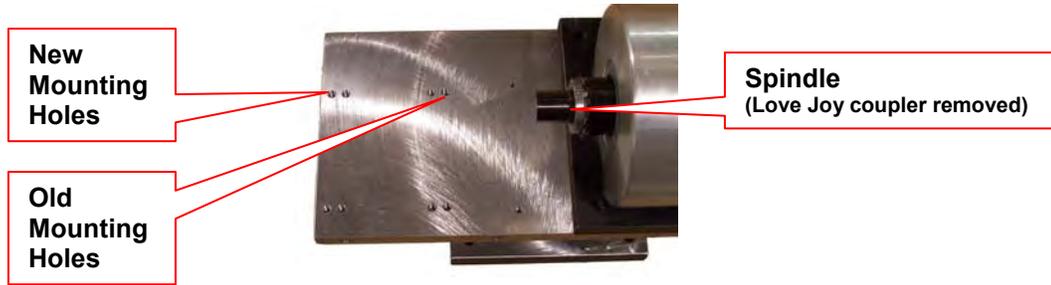


- Assemble the motor to the gear box. Use supplied anti-seize from the gear box container and lube the inside of the gearbox shaft where the motor slips in. Be sure the motor to gearbox mounting flange on the gearbox has no bolts in it. Be sure the supplied key is in the motor shaft and slide the motor and gearbox together. Make sure the motor is rotated so that the wire connection box is on the side as shown. Install the four (4) bolts and lock washers by hand and then tighten once you are sure that everything is lined up.

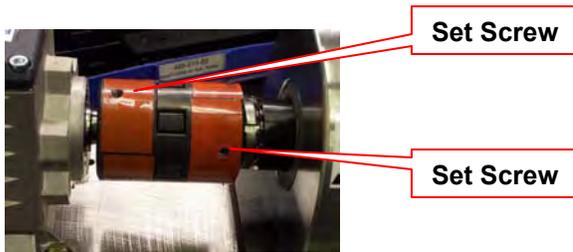


- Slide the small bore (3/4") Love Joy coupler half onto the gearbox shaft. Be sure the "fingers" are pointing away from the gearbox and that the key is installed in the key way. Do not tighten down set screw at this time. Slip the "spider" into the fingers of the coupler.

10. Set the motor / gearbox assembly onto the mounting plate. While someone is holding the motor end up install the mounting bolts finger tight. Use mounting holes farthest from the spindle as shown below.



11. Slip the two Love Joy coupler halves together with your fingers, being sure the spider is still locked in the "fingers". Tighten the set screws and snug up the motor / gearbox mounting bolts.

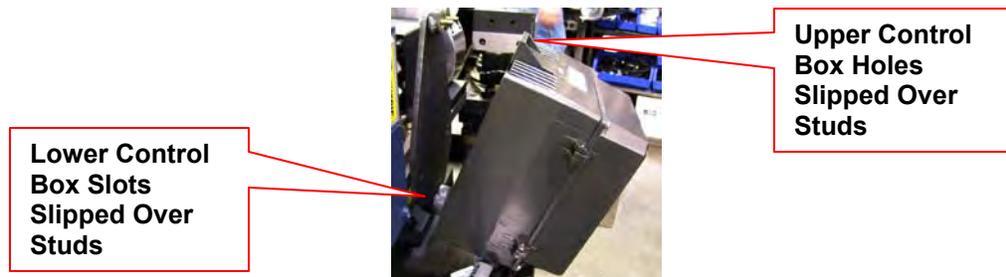


12. Install the new Love Joy cover using the old screws.

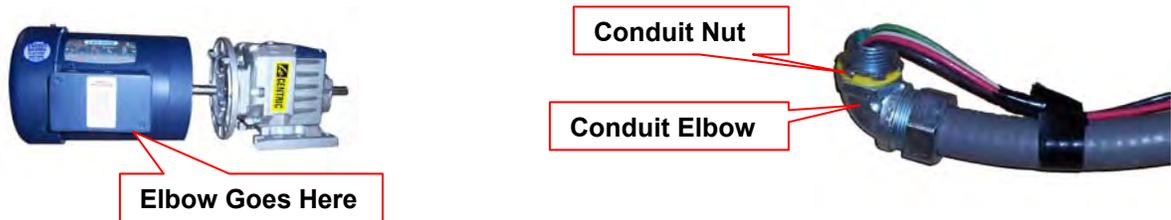
13. Bolt the control box mounting plate to the motor / gearbox mounting plate using the holes you drilled earlier and the 5/16"-18 x 3/4" FHCS. Put a drop of locktite on the bolt threads. Be sure the long end of the plate is at the top.



14. Mount the Speed Control box to the mounting plate by slipping the slots in the bottom of the Control Box over the studs on the rubber mounts at the bottom of the plate. Then push the top mounting holes over the studs on the upper rubber mounts and then install and tighten the supplied nuts.



15. Attach the conduit elbow to the bottom of box by removing the nut, slipping the fitting through and then installing and tightening the nut.



16. Wire the control box to the motor as shown by the included wiring diagram. Use the supplied wire nuts and then use electrical tape for added safety.
17. Wire the input cord correctly for the style and voltage you are using, refer to enclosed wiring diagram.
18. Check all bolts for tightness and all electrical connections. Once you are sure everything is tight and correct set the master switch to **OFF** and the run switch to **STOP**. Plug the power cord into the receptacle.



19. Turn the **MASTER** switch on and then turn the **RUN** switch on. Turn the speed control knob up and down to cycle the motor. Listen for and clicking or odd sounds. If you hear a clicking sound you will need to loosen the spindle housing bolts and then retighten while the motor is running. This will usually align the Love Joy and quiet the clicking.

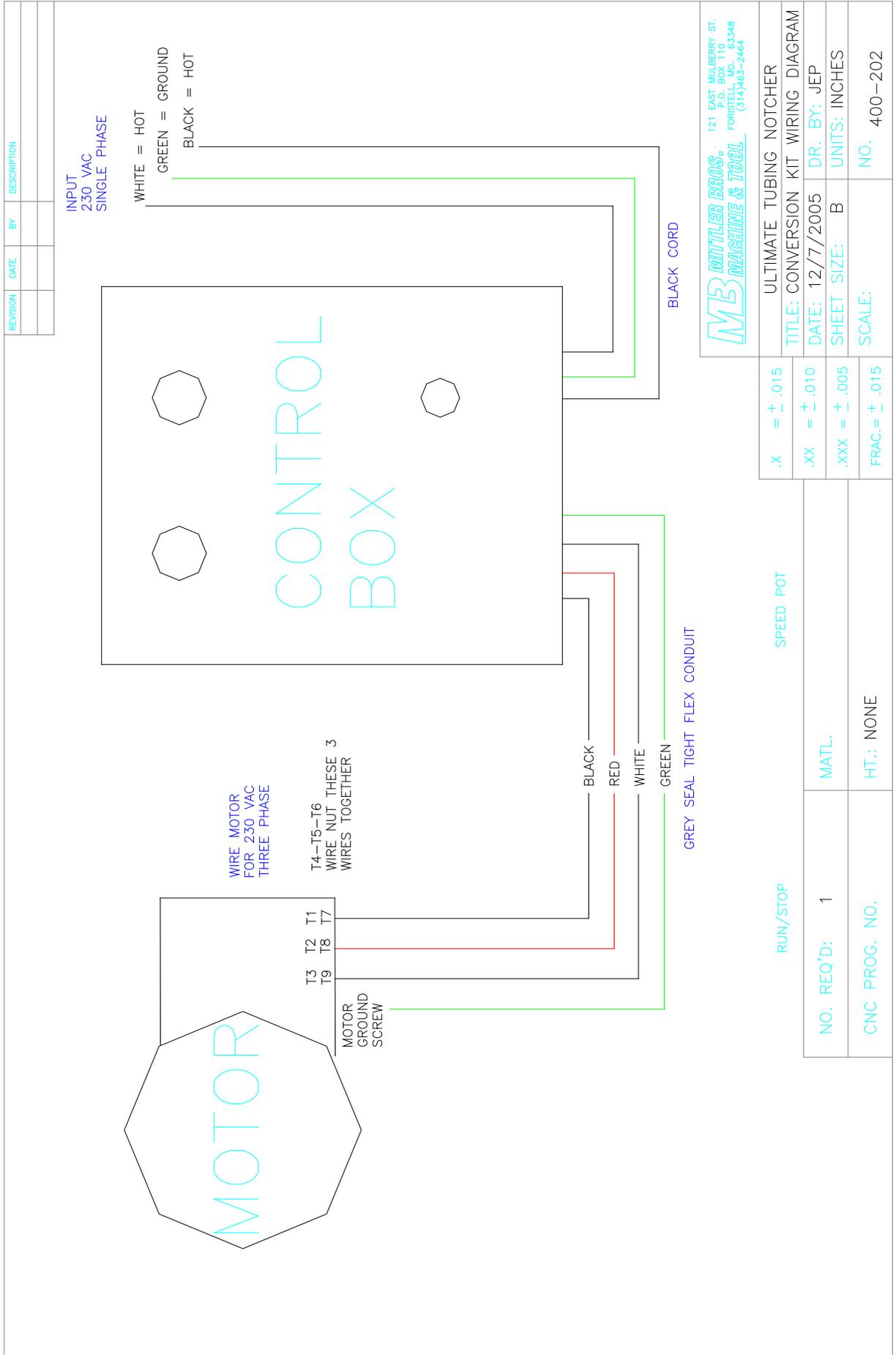
KIT CONTENTS:

- 1ea. 400-503-M Motor
- 1ea. 400-503-G Gear Box
- 1ea. 400-035 Large Love Joy Coupling Cover (guard)
- 1ea. 400-507 Love Joy Coupler Half 3/4" ID
- 1ea. 400-508 Love Joy Coupler Half 1" ID
- 1ea. 400-509 Love Joy Coupler Spider
- 1ea. 400-039 Control Box Mounting Plate
- 1ea. Pre Wired Speed Control Box
- 2ea. 5/16"-18 x 3/4" FHCS
- 4ea. 1/4"-20 x 1/2" SHCS
- 1ea. Wire Diagram
- 1ea. Instruction Sheet Set

We appreciate your business and hope that you enjoy your new Mittler Bros. Product.

If you have any questions or concerns please feel free to call us at 1-800-467-2464 for help.

Variable Speed Conversion Kit Wiring Diagram



REVISION	DATE	BY	DESCRIPTION

MB MITTLER BROS. MACHINE & TOOL
 121 EAST MULBERRY ST.
 P.O. BOX 110
 FORISTELL, MO. 63348
 (314)463-2464

.X = ± .015	ULTIMATE TUBING NOTCHER
.XX = ± .010	TITLE: CONVERSION KIT WIRING DIAGRAM
.XXX = ± .005	DATE: 12/7/2005 DR. BY: JEP
FRAC. = ± .015	SHEET SIZE: B UNITS: INCHES
	SCALE: NO. 400-202

TROUBLESHOOTING

PROBLEM:	CAUSE / SOLUTION:
Machine does not turn on.	<ol style="list-style-type: none"> 1. Check plug & power cord. 2. Check circuit breaker and panel. 3. Check machine switch / switches. 4. Check fuses in speed control box. (VS only)
Machine stops working.	<ol style="list-style-type: none"> 1. Machine overload or power cord. 2. Check plug & power cord. 3. Check circuit breaker and panel. 4. Check machine switch / switches. 5. Check fuses in speed control box. (VS only)
"HOOKING" .Top of tube gets caught by cutter & bent down.	<ol style="list-style-type: none"> 1. Slow hand wheel feed speed. 2. Go to "HIGH HELIX" cutter if available. 3. Tubing sticking out of vise to far on cutter side. 4. Speed up cutter speed. (VS only) 5. Use a cutter with more flutes.
Hand wheel is hard to turn	<ol style="list-style-type: none"> 1. Cutter is dull, send in for resharpening or replace. 2. Gibs are adjusted too tight. Adjust according to manual.
Excessive Chattering or Vibration of Vise assembly.	<ol style="list-style-type: none"> 1. Tubing sticking out of vise to far on cutter side. 2. Gibs are loose. Adjust according to manual. 3. Hand wheel screw shafts are worn. Replace with kit # 400-300 Both sets, #400-301 In / Out, #400-302 Left / Right.
"CLICKING" sound when motor is running but not cutting.	<ol style="list-style-type: none"> 1. Check the Love Joy shaft connector between gear box and spindle assembly. Replace if "spider" excessively worn, #400-509.
Excessive spindle "wobble" or run-out.	<ol style="list-style-type: none"> 1. Spindle nut on gear-box end is loose, tighten. 2. Spindle nut lock washer tang is broken off, replace lock washer. 3. Bearings are worn. Call factory for set-up procedure.

If the items above do not solve your problems please call the factory for further support, 1-800-467-2464.

Optional Ultimate Tube Notcher Accessories

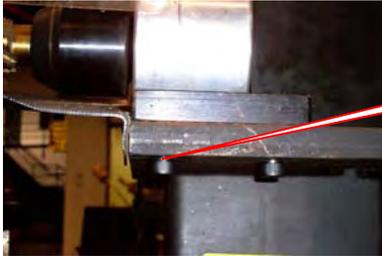
400-100 Chip Tray Installation Instructions

Kit Contents:

- 1ea. Tray
- 2ea. 3/8-16 x 2" SHCS
- 2ea. Nuts
- 1ea. Instruction Sheet

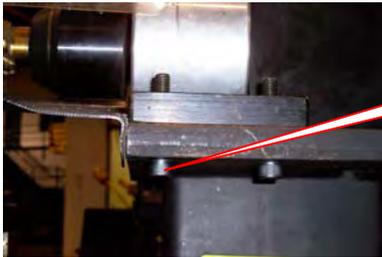


1. Loosen and remove one of the Spindle Bearing Block mounting bolts as shown. Be sure to remove only one bolt.



Remove one bolt

2. Replace the removed bolt with one of the supplied 2" long SHCS as shown below. Tighten the bolt.



Replace with 2" SHCS

3. Repeat steps 1 & 2 above for the remaining bolt.
4. Slip the Chip Tray over the protruding threads and secure with the supplied nuts



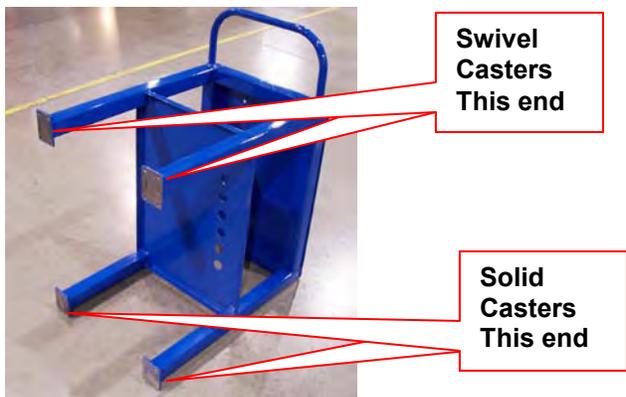
Nuts

400-A400 Ultimate Roller Stand Assembly Instructions

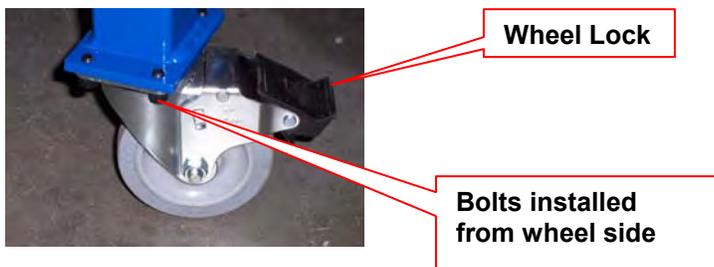
Kit Contents:

- 16ea. 5/16-18x1/2 HHCS
- 2ea. 3/8-16x4 HHCS,
- 2ea. 3/8-16x1-3/4 HHCS
- 4ea. 3/8 Flat Washers
- 4ea. 3/8 Lock Washers
- 4ea. 3/8-16 Nuts
- 2ea. Swivel Casters, Locking
- 2ea. Solid Casters
- 1ea. Instruction Sheet

1. Uncrate the stand. Tip the stand up onto its end by lifting the round tube handle.



2. Using the 5/16" X 1/2" Long Hex Bolts attach the Swivel Casters to the legs on the same end as the handle. Install the bolts from the wheel side and thread into the threaded mounting plate. Attach the solid caster to the opposite legs as shown above. These bolts also thread into the mounting plate from the wheel side. Tighten all bolts.

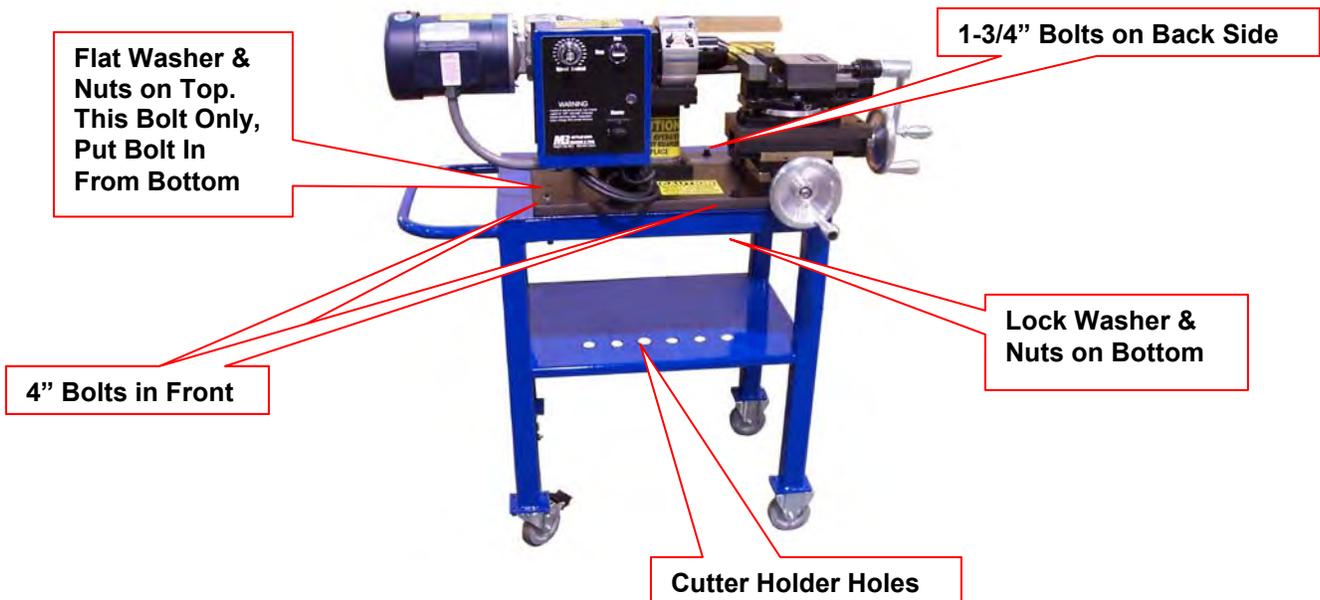


3. Turn the stand upright and check caster movement. Be sure the wheel locks work correctly. [These casters, when locked, stop the wheel from rolling as well as the locking the swivel.](#)

4. Set the Ultimate notcher onto the stand using a hoist and a pair of slings as outlined below. The On / Off switch and / or control panel should be on the same side of the stand as the cutter holder holes on the middle shelf.
- BE EXTREMELY CAREFULL WHEN MOVING THE NOTCHER ASSEMBLY, UNIT WEIGHS ALMOST 400 LBS.**



5. Once the notcher is setting on the stand line up the mounting holes in the machine base plate with the holes in the stand. Use the 3/8" x 4" hex bolts on the front side and the 3/8" x 1-3/4" hex bolts on the back side. Use the supplied washers under the bolt heads and use the lockwashers on the nut side.



Thank You for Your Purchase.
We appreciate your business.

CUTTER PART NUMBERS

Tube OD	Part#	Pipe Size	Cut Length	Bushing #
2-3/8"	400-525	2"	4"	
2"	400-526		4"	
1.90"	400-527	1-1/2"	4"	
1-3/4"	400-528		4"	
1.66"	400-529	1-1/4"	4"	
1-5/8"	400-530		4"	
1-1/2"	400-531		4"	
1-3/8"	400-532		4"	
1-1/4"	400-533	1"	4"	
1-1/8"	400-534		4"	400-019-1
1"	400-535		4"	400-019-1
1"	400-555	High Helix	2"	400-019-1
7/8"	400-536		3-1/2"	400-019-875
7/8"	400-556	High Helix	1-3/4"	400-019-75
3/4"	400-537		3"	400-019-75
3/4"	400-557	High Helix	1-3/4"	400-019-75
5/8"	400-558	High Helix	1-3/4"	400-019-625 &1100-100 Shim
1/2"	400-538		2"	400-019-625 &1100-100 Shim
1/2"	400-559	High Helix	1-1/4"	400-019-625 &1100-100 Shim

Optional Vise Accessories

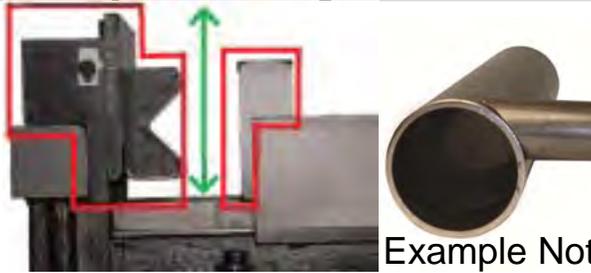
Vise Jaw Shim



[1100-100](#)

Vise Jaw Shim required for 1/2" & 5/8" OD Tubing

Adjustable Height Vise Kits



Make Accurate Offset Notches
Add to your existing vise to make it height adjustable

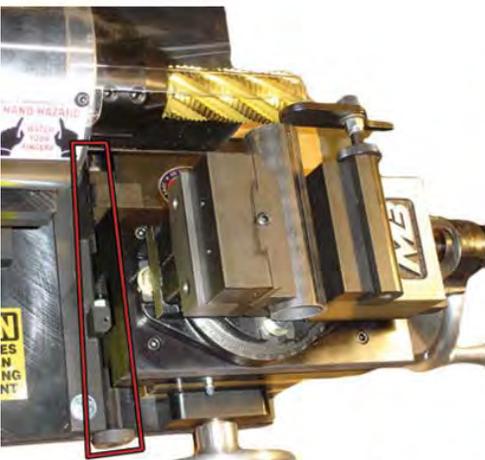
[1100-ASU](#)

Jaw Kit for Standard Vise

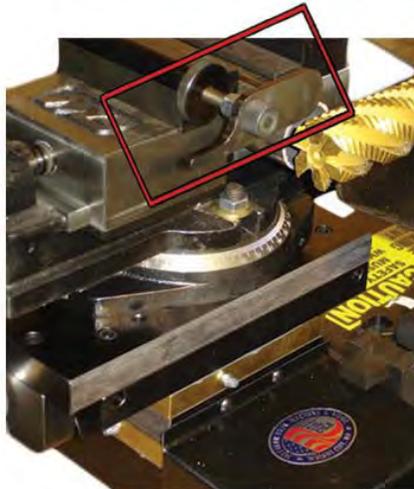
[1100-AUU](#)

Jaw Kit for Upgraded Vise

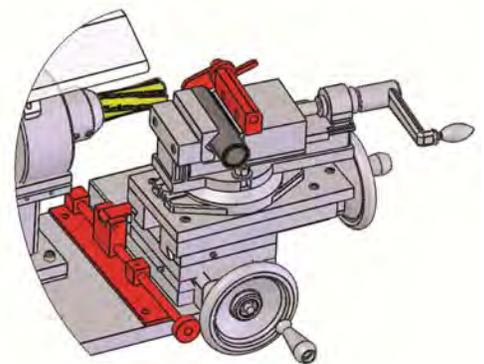
Vise Stop Assembly



Lower Vise Stop Assembly stops vise table forward movement at preset adjustable vise stop position for proper depth of tube notch.



Upper Tube Depth Assembly allows adjustable paddle on magnetic mount to preset tube depth in vise & rotate for cutter clearance.

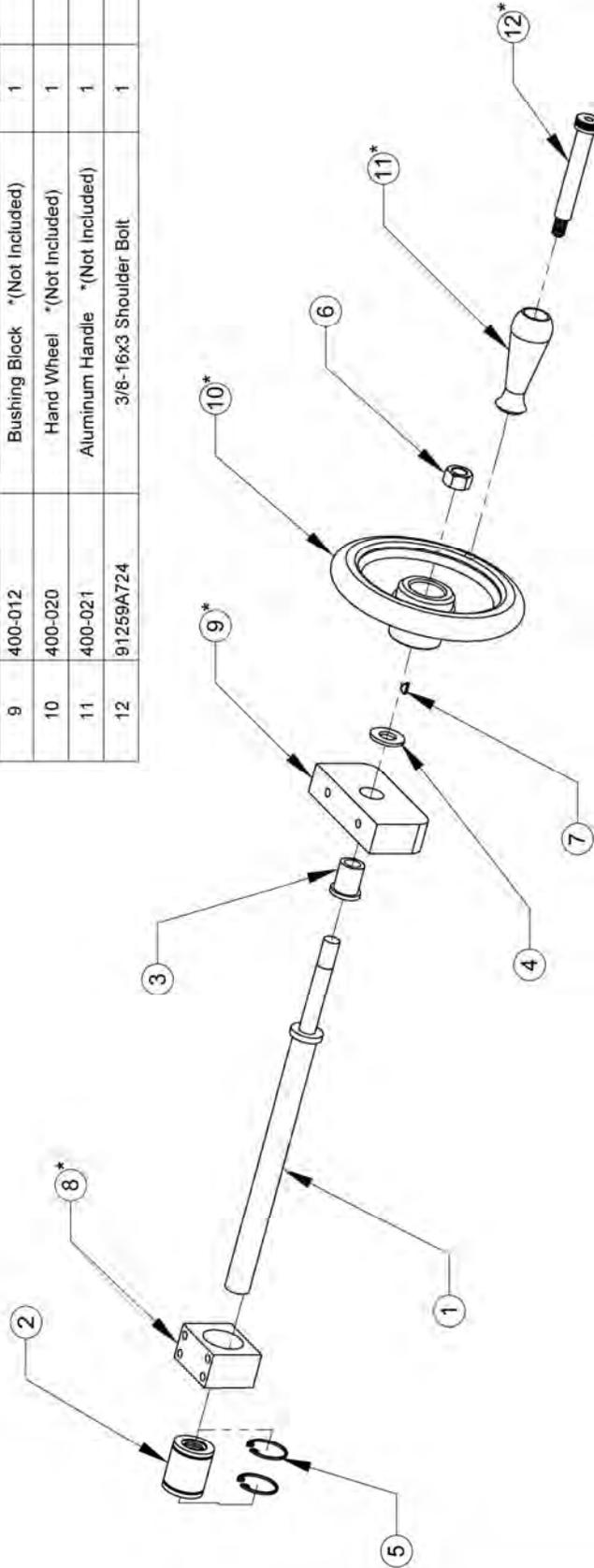


[400-401](#)

Vise Stop Assembly

In & Out Repair Kit

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	PRICE
1	400-005-LH	Left Hand Roton Screw	1	
2	400-009-LH	Left Hand Bronze Roton Nut	1	
3	400-512	Bronze Bushing	1	
4	400-513	Thrust Washer	1	
5	400-514	1.25 external snap ring	2	
6	400-515	1/2" Nylock Nut	1	
7	400-565	1/8" Woodruff Key	1	
8	400-011	Bronze Nut Block *(Not Included)	1	
9	400-012	Bushing Block *(Not Included)	1	
10	400-020	Hand Wheel *(Not Included)	1	
11	400-021	Aluminum Handle *(Not Included)	1	
12	91259A724	3/8-16x3 Shoulder Bolt	1	



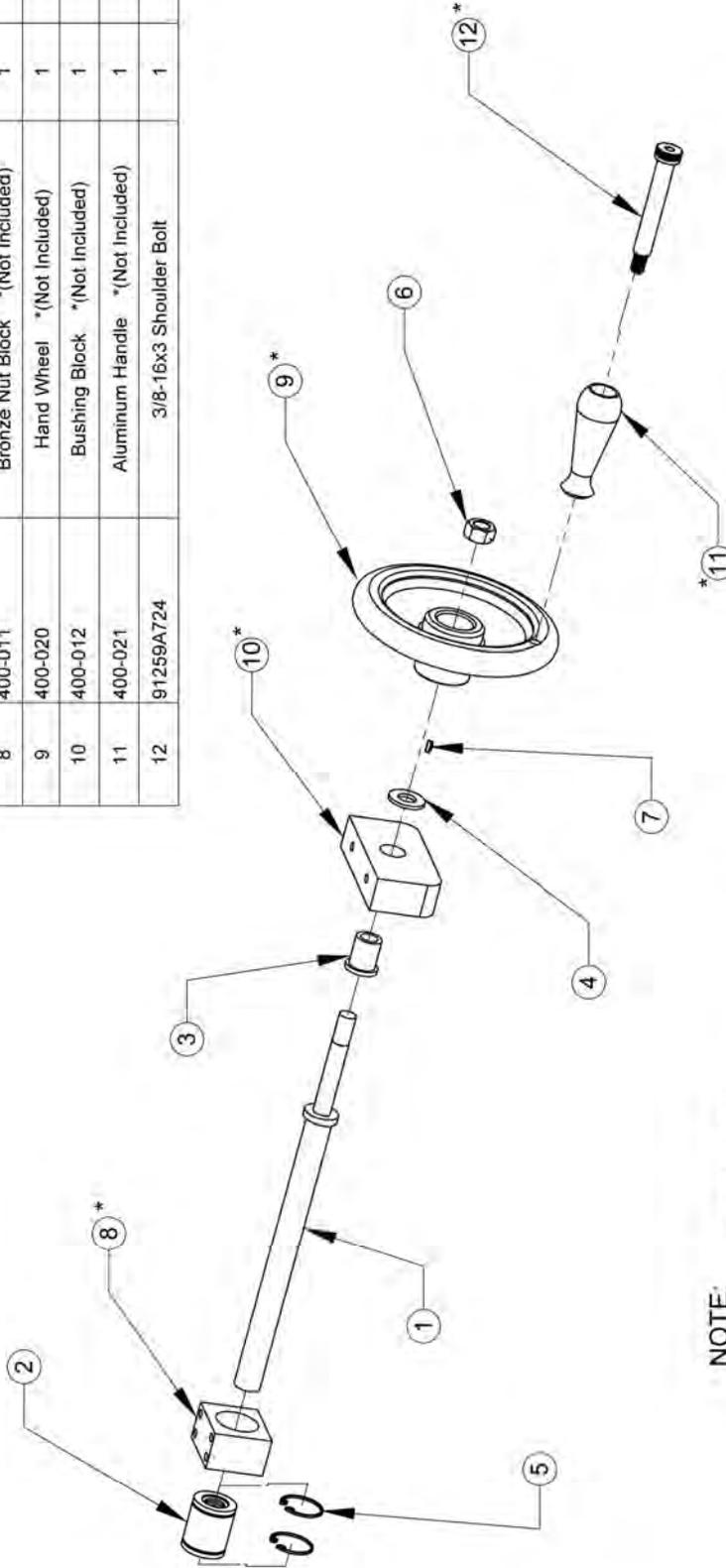
NOTE:
IN & OUT AJUST

M3 MITTLER BROS. MACHINE & TOOL 10 Cooperative Way, Wright City, MO. 63390 (636)745-7757 Fax (636)745-2874 TITLE: Repair Kit		NAME: _____ DATE: 3/7/07
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES FRACTIONAL TOLERANCES: FRACTIONAL ±.015 DECIMAL ±.010 TWO PLACE DECIMAL ±.005 THREE PLACE DECIMAL ±.002 ANGULAR ±1°	DRAWN: _____ CHECKED: _____ ENG. APPR.: _____ MFG. APPR.: _____ G.A.: _____	COMMENTS: QUANTITY: _____ MATERIAL: _____ FINISH: _____ VVVY: _____
NEXT ASSY: _____ USED ON: _____	APPLICATION: _____	REV: _____ SCALE: 1:5 WEIGHT: 6.888 SHEET 1 OF 1

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Left & Right Repair Kit

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	PRICE
1	400-005	Right Hand Roton Screw	1	
2	400-009	Right Hand Bronze Roton Nut	1	
3	400-512	Bronze Bushing	1	
4	400-513	Thrust Washer	1	
5	400-514	1.25 external snap ring	2	
6	400-515	1/2" Nylock Nut	1	
7	400-565	1/8" Woodruff Key	1	
8	400-011	Bronze Nut Block *(Not Included)	1	
9	400-020	Hand Wheel *(Not Included)	1	
10	400-012	Bushing Block *(Not Included)	1	
11	400-021	Aluminum Handle *(Not Included)	1	
12	91259A724	3/8-16x3 Shoulder Bolt	1	

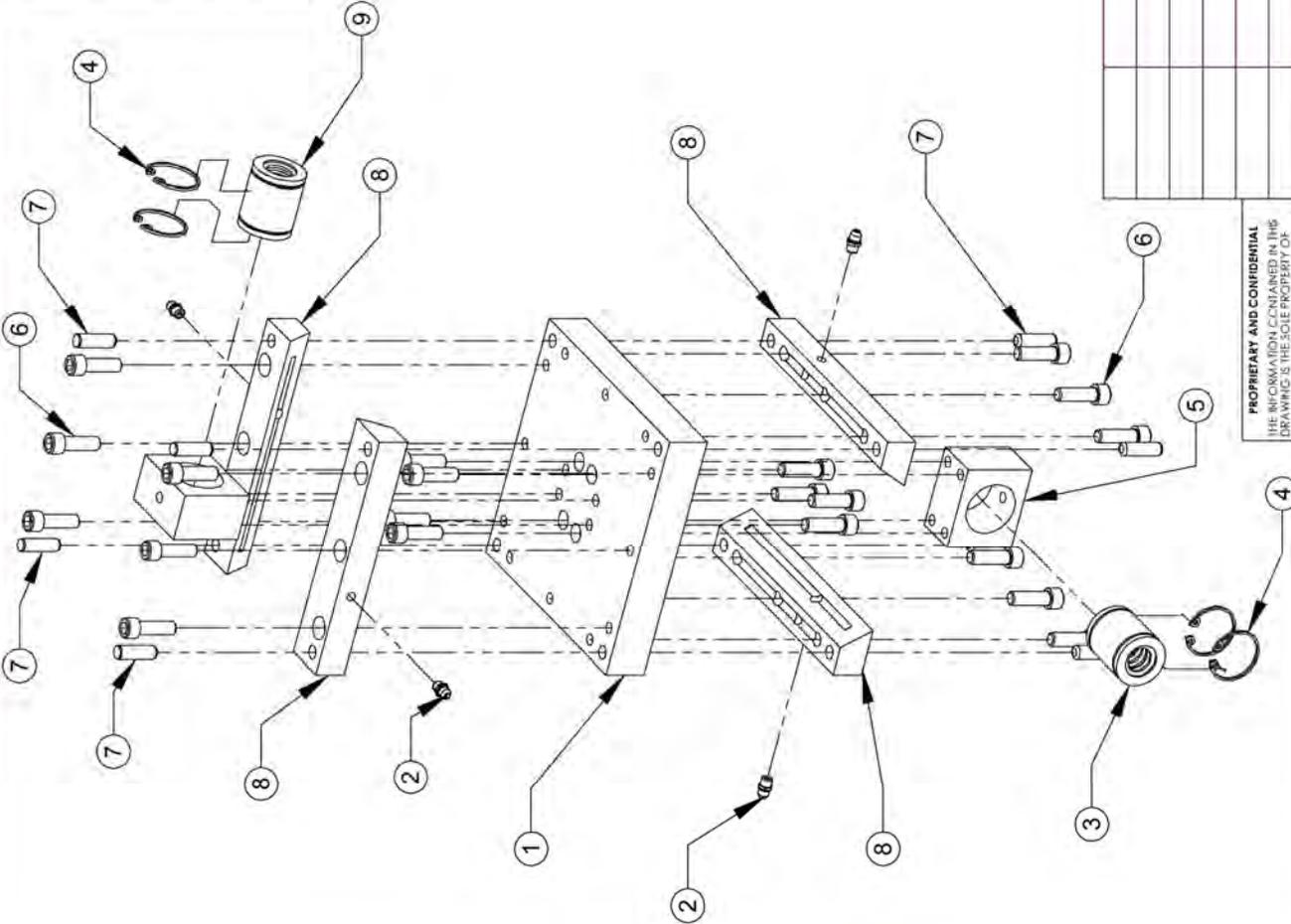


NOTE:
RIGHT & LEFT AJUST

		NAME: _____ DATE: 3/7/07
10 Cooperative Way, Wright City, MO 63390 (636)745-7757 Fax (636)745-2874		TITLE: Repair Kit
SIZE DWG. NO. A 400-302		REV _____
SCALE: 1:5 WEIGHT: 6.888 SHEET 1 OF 1		COMMENTS _____
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±0/15 ONE PLACE DECIMAL ±0/10 TWO PLACE DECIMAL ±0/10 ANGULAR ±1°	DRAWN: _____ CHECKED: _____ ENG. APPR.: _____ MFG. APPR.: _____ G.A.: _____	QUANTITY _____ MATERIAL _____ FINISH _____ USED ON _____ APPLICATION _____
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L-Gib Assembly

ITEM NO.	PART NUMBER	Description	QTY.	PRICE
1	400-004	V-Gib Mounting Plate	1	
2	zerk fitting	Zerk Fitting	4	
3	400-009-LH	Left Hand Bronze Roton Nut	1	
4	400-514	1.25 external snap ring	4	
5	400-011	Bronze Nut Block	2	
6	HX-SHCS 0.3125-18x1-N	5/16"-18 x 1" SHCS	20	
7	DPM 0.3125x1	5-16" x 1" Dowel Pin	8	
8	400-023	Bronze V-Gib	4	
9	400-009	Right Hand Bronze Roton Nut	1	



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 PROHIBITED.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		RKH	4/11/07
FRACTIONAL	±.015		
ONE PLACE DECIMAL	±.010		
TWO PLACE DECIMAL	±.005		
THREE PLACE DECIMAL	±.002		
ANGULAR	±1'		
QUANTITY			
MATERIAL			
FINISH			
DO NOT SCALE DRAWING			

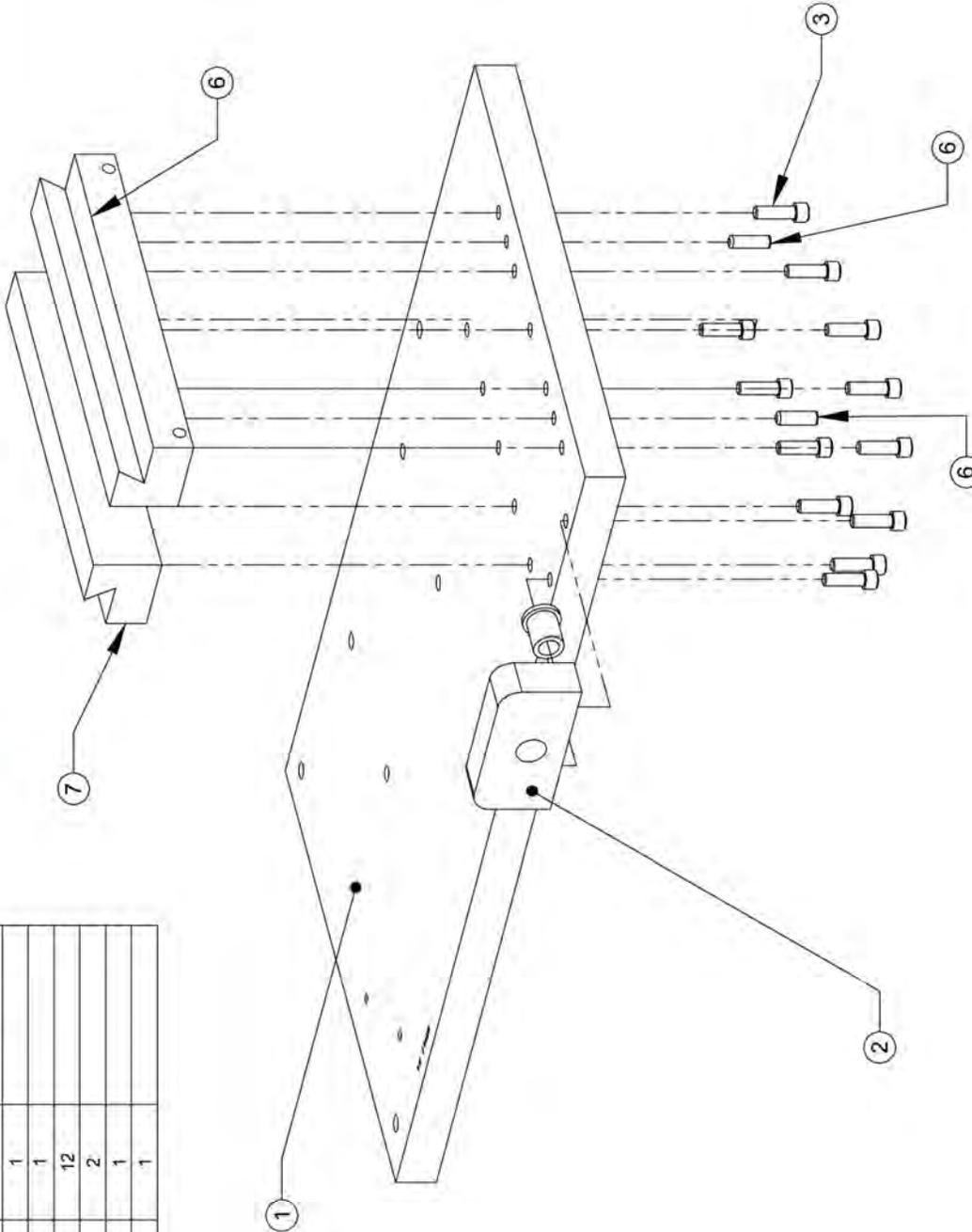
DRAWN	CHECKED	ENG. APPR.	MFG. APPR.	G.A.	COMMENTS

M3 MITTLER BROS. MACHINE & TOOL	
10 Cooperative Way, Wright City, MO, 63390	
(636)745-7757 Fax (636)745-2874	
TITLE: L-Gib Assembly	
SIZE DWG. NO.	REV
A 400-A02-E	
SCALE: 1:4	WEIGHT: SHEET 1 OF 1

1 2 3 4 5

Base Assembly

ITEM NO.	PART NUMBER	QTY.	PRICE
1	400-016 Base Block	1	
2	400-012 Bushing Block	1	
3	HX-SHCS 0.3125-18x1x1-N	12	
6	DPM 0.3125x1	2	
6	400-013-01	1	
7	400-013-01	1	



MB MITTLER BROS. MACHINE & TOOL
 10 Cooperative Way, Wright City, MO. 63390
 (636)745-7757 Fax (636)745-2874

TITLE: **Base Assembly**

SIZE DWG. NO. **A 400-A01-E**

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

NAME	DATE	DESCRIPTION
RAJ	06/25/08	
DRAWN		
CHECKED		
ENG. APPR.		
MFG. APPR.		
Q.A.		

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONS ±.015
 DECIMALS ±.010
 ONE PLACE DECIMAL ±.010
 TWO PLACE DECIMAL ±.005
 THREE PLACE DECIMAL ±.0025
 ANGULAR ±1°

QUANTITY	MATERIAL	FINISH

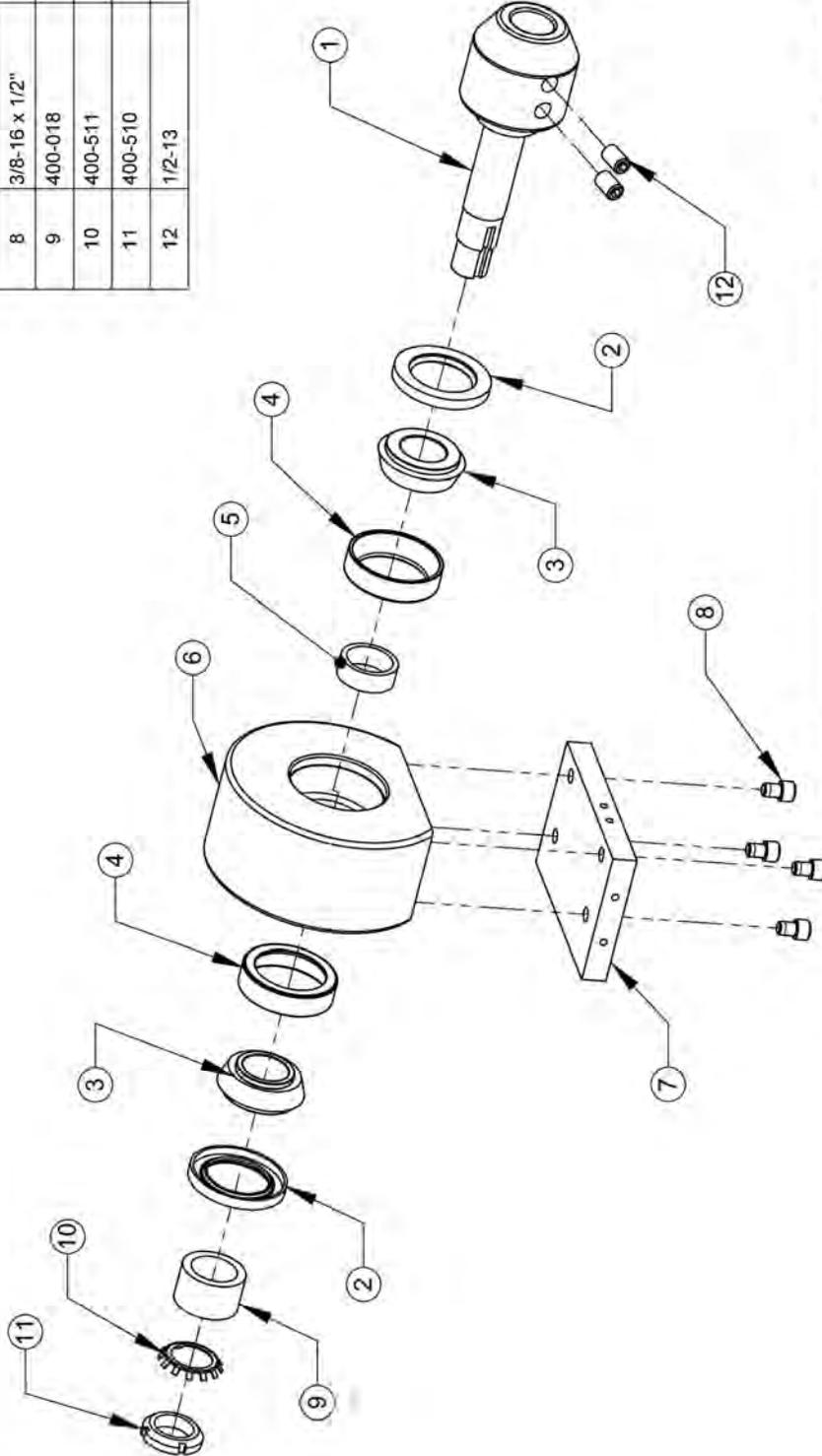
COMMENTS

DO NOT SCALE DRAWING

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Spindle Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	400-002	Spindle	1
2	400-552	Seal	2
3	400-550	Timken Bearing	2
4	400-551	Inner Race	2
5	400-017	Bearing Spacer	1
6	400-008	Spindle Housing	1
7	400-007	Adapter Plate	1
8	3/8-16 x 1/2"	SHCS	4
9	400-018	Seal Spacer	1
10	400-511	Tang Washer	1
11	400-510	Spindle Nut	1
12	1/2-13	Set Screw	2



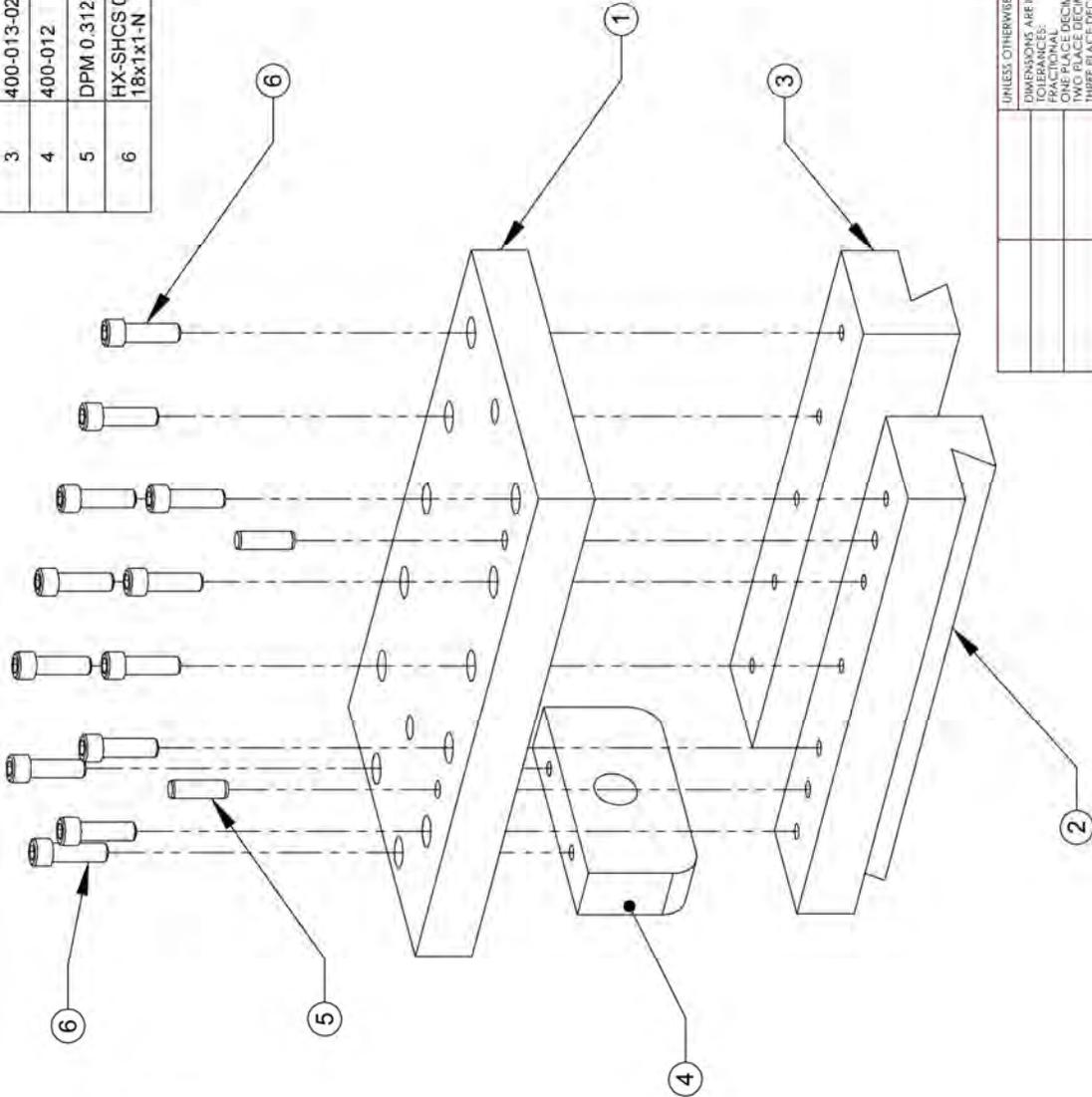
REVISIONS			
REV.	DESCRIPTION	DATE	BY
A	Added item #12. Set Screws Update part numbers for items #10 and #11	4/1/2010	BAB

		NAME	DATE
10 Cooperative Way, Wright City, MO. 63390 (636)745-7757 Fax (636)745-2874		RAJ	06/25/08
TITLE: Spindle Assembly		DRAWN	
SIZE	DWG. NO.	CHECKED	
A	400-A04	ENG. APPR.	
SCALE: 1:5	WEIGHT: 26.182	MFG. APPR.	
SHEET 1 OF 1		Q.A.	
COMMENTS		QUANTITY	
		MATERIAL	
		FINISH	
		USED ON	
		APPLICATION	
		DO NOT SCALE DRAWING	

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Vise Base Assembly

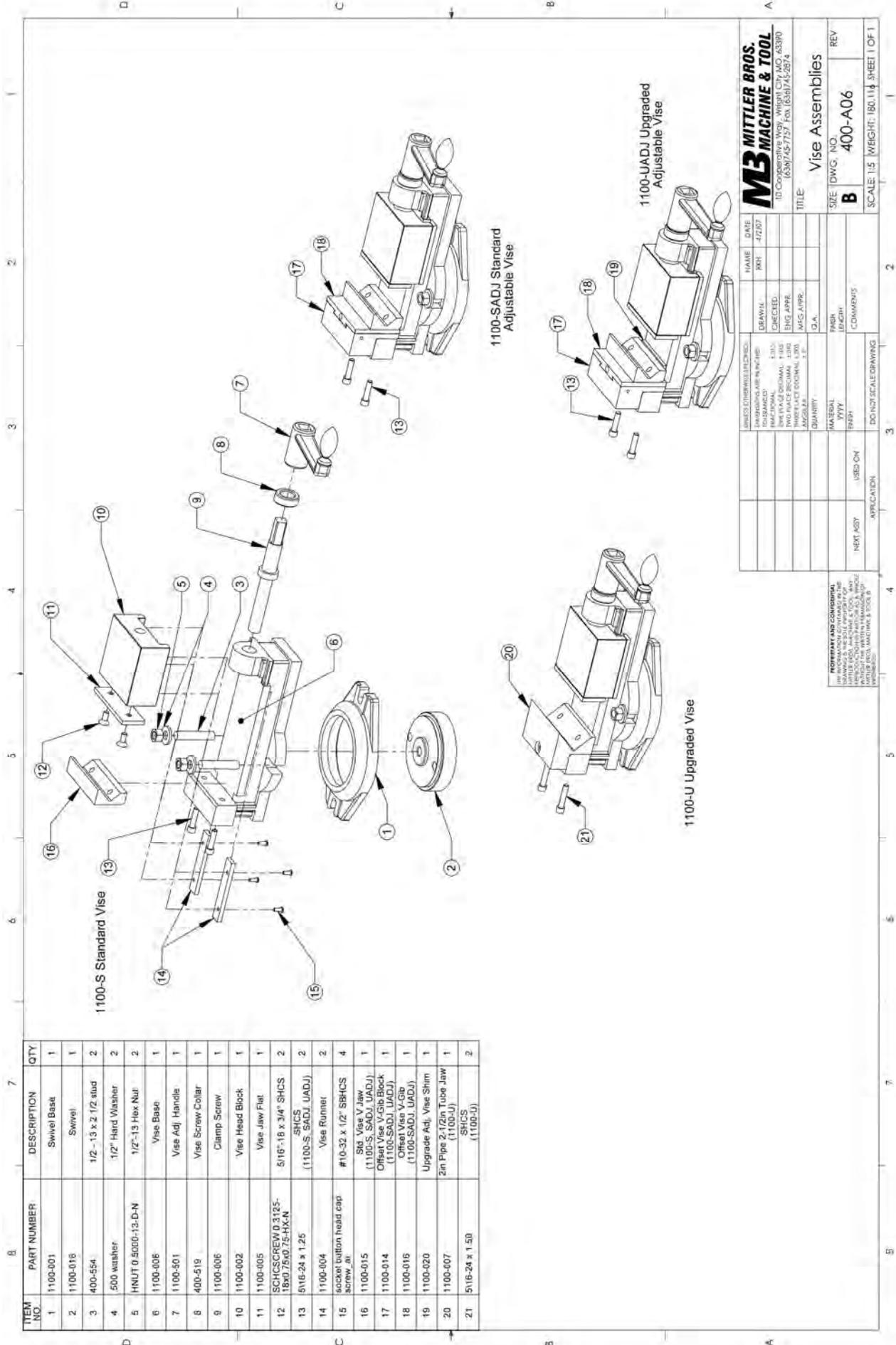
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	PRICE
1	400-006	Vise Mounting Plate	1	
2	400-013-01	Steel V-Gib	1	
3	400-013-02	Steel V-Gib	1	
4	400-012	Bushing Block	1	
5	DPM 0.3125x1	Dowel Pin	2	
6	HX-SHCS 0.3125-18x1x1-N	5/16"-18 x 1" SHCS	12	



M3 MITTLER BROS. MACHINE & TOOL 10 Cooperative Way, Wright City, MO. 63390 (636)745-7757 Fax (636)745-2874 TITLE: Vise Base Assembly		NAME: _____ RKH: _____ DATE: 3/7/07
DRAWN: _____ CHECKED: _____ ENG. APPR.: _____ MFG. APPR.: _____ Q.A.: _____	COMMENTS: _____ QUANTITY: _____ MATERIAL: _____ FINISH: _____	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ±0.15 DECIMALS ±0.10 ONE PLACE DECIMAL ±0.10 TWO PLACE DECIMAL ±0.010 THREE PLACE DECIMAL ±0.005 ANGULAR ±1°
NEXT ASSY: _____ USED ON: _____ APPLICATION: _____	SCALE: 1:3 WEIGHT: _____ SHEET 1 OF 1	DWG. NO.: A 400-A05 REV: _____

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Vise Assemblies



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1100-001	Swivel Base	1
2	1100-018	Swivel	1
3	400-554	1/2 - 13 x 2 1/2 Stud	2
4	500 washer	1/2" Hand Washer	2
5	HNUT 0 5000-13-D-N	1/2"-13 Hex Nut	2
6	1100-008	Vise Base	1
7	1100-501	Vise Adj. Handle	1
8	400-519	Vise Screw Collar	1
9	1100-006	Clamp Screw	1
10	1100-002	Vise Head Block	1
11	1100-005	Vise Jaw Flat	1
12	SCHSCREW 0 3125-18x0.75x0.75-HX-N	5/16" - 18 x 3/4" SHCS	2
13	5/16-24 x 1.25 SHCS	(1100-S SADJ, UADJ)	2
14	1100-004	Vise Runner	2
15	secret button head cap screw, 20	#10-32 x 1/2" SBHCS	4
16	1100-015	S&K Vise V Jaw (1100-S, SADJ, UADJ)	1
17	1100-014	Offset Vise V-516 Block (1100-SADJ, UADJ)	1
18	1100-016	Offset Vise V-Glb (1100-SADJ, UADJ)	1
19	1100-020	Upgrade Adj. Vise Shim	1
20	1100-007	Zn Pipe 2-1/2in Tube Jaw (1100-U)	1
21	5/16-24 x 1.50 SHCS	(1100-U)	2

DESIGN APPROVED:	DATE:	DATE:
DESIGNED BY:	DATE:	DATE:
CHECKED BY:	DATE:	DATE:
ENG. APPR.:	DATE:	DATE:
MFG. APPR.:	DATE:	DATE:
Q.A.:	DATE:	DATE:
QUANTITY:	DATE:	DATE:
MATERIAL:	DATE:	DATE:
WYTY:	DATE:	DATE:
REVISIONS:	DATE:	DATE:
USED ON:	DATE:	DATE:
NEXT ASST:	DATE:	DATE:
APPLICATION:	DATE:	DATE:
DO NOT SCALE DRAWING	DATE:	DATE:
SCALE: 1:5	DATE:	DATE:
SHEET 1 OF 1	DATE:	DATE:

NOTIFY AND CONSULT
 IF YOU HAVE ANY QUESTIONS OR
 NEEDS, CONTACT THE SALES DEPARTMENT
 AT 1-800-451-7157. WE WILL BE
 HAPPY TO ASSIST YOU IN ANY WAY
 POSSIBLE. THANK YOU FOR YOUR
 BUSINESS.

M3 MITTLER BROS. MACHINE & TOOL
 10 CORPORATE WAY, WRIGHT CITY, MO. 63390
 (636) 745-7157 Fax: (636) 745-2974

Vise Assemblies
 SIZE DWG. NO. **400-A06** REV
B

SCALE: 1:5 (RIGHT: 10:1) SHEET 1 OF 1

CAUTION: Read and Understand

These Operating, Servicing, and
Safety Instructions, Before Using
This Machine.

1-800-467-2464

10 Cooperative Way Wright City, MO 63390

P.O. Box 110 Foristell, MO 63348

1-636-745-7757 Fax 1-636-745-2874

www.mittlerbros.com