

Operating, Servicing, and Safety Manual

Model # 100 Standard Hydraulic Tubing Notcher
Model #100-U Heavy Duty Hydraulic Tubing Notcher



Model # 100 Standard



Model #100-U Heavy Duty

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

SAFETY

The purpose of the safety section of this manual is to inform operators and maintenance personnel of the precautions to be taken while operating or servicing the machine. The following are a few basic guidelines to follow, but as with any type of machinery good judgment and a safe attitude should be applied at all times.

1. Always disconnect power, lock-out and tag-out machine per OSHA regulations before attempting to service this machine.
2. Always wear safety glasses or other approved eye protection while operating or servicing the machine.
3. Keep all body parts and any foreign objects away from moving parts. Do not reach into the machine without first disconnecting all power sources.
4. Do not attempt to override any safety device on the machine.
5. Do not operate the machine if it has been damaged or is not operating properly.
6. Do not wear jewelry (watches, rings, necklaces, etc.), or loose fitting clothing while operating or servicing the machine.
7. The machine should only be operated or serviced by properly trained, authorized personnel.
8. Replacement parts should have the same specification and operation as the original parts on the machine.
9. Before starting the machine be sure it is set up properly.
10. The machine and work area should be kept neat and clean.
11. Do not operate or service any machine while under the influence of drugs or alcohol.

NOTE: THESE SAFETY RULES ARE FOR YOUR BENEFIT TO HELP PREVENT INJURY TO YOURSELF AND/OR YOUR CO-WORKERS. REVIEW ALL SETUP AND OPERATING PROCEDURES, WHETHER COVERED OR NOT, IN THIS MANUAL TO HELP INSURE SAFE OPERATION OF THE MACHINE.

HYDRAULIC SAFETY PRECAUTIONS

WARNING

General Operation

- All WARNING statements must be carefully observed to help prevent personal injury.
- Before operating the pump, all hose connections must be tightened with the proper tools. Do not over tighten. Connections should only be tightened securely and leak-free. Over tightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold or heavy impact. Do not allow the hose to be altered or kink, twist, curl, crush, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these condition's can damage the hose and possibly result in personal injury.
- Do not use the hose to move attached equipment. Stress can damage hose and possibly cause personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Hose deterioration due to corrosive materials can result in personal injury. Never paint the couplers.
- Inspect machine for wear, damage, and correct function before each use. Do not use machinery that is not in proper working order, but repair or replace it as necessary.
- Replace worn or damaged safety decals.
- Modification of a product requires written Power Team authorization.
- Use only components with the same pressure rating when assembling a system or machine.

Pump

- Do not exceed the hydraulic pressure rating noted on the pump data plate or tamper with the internal high pressure relief valve. Creating pressure beyond the rated pressure can result in personal injury.
- Before replenishing the fluid level, retract the system to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure create when cylinders are retracted.

Air Supply

- Shut off and disconnect the air supply when the pump is not in use or before breaking any connections in the system.

PREPARATION & SET-UP

Air Supply Hook-Up

Remove the thread protector from the air inlet of the pump. Select and install the threaded fittings which are compatible with your air supply fittings. The air supply should be 20 CFM (.57 M3/min.) and 100 PSI (7 BAR) at the pump to obtain the rated hydraulic pressure. Air pressure should be regulated to a maximum of 140 PSI (9 BAR). Secure your pump fitting to the air supply.

WARNING: If improperly used, pressurized equipment can be potentially hazardous. Therefore:

- Hydraulic connections must be securely fastened before building pressure in the system.
- Release all system pressure before loosening any hydraulic connection in the system.

Venting the Reservoir

To improve hydraulic fluid delivery and increase useable hydraulic fluid capacity, remove shipping plug and install filler/vent cap before using the pump.

WHEN NOTCHING 0.120" OR THICKER WALL THICKNESS PIPE OR TUBING

Install Additional 0.005" Thick Brass Shim

plus the standard 0.015" shim between female die & notcher frame =
0.020" total shim thickness

See item 20 (Drwg. 100) or item 21 (Drwg. 100-U)

#100-104 0.005" Thick Brass Shim - Qty. 2

Punch To Die Rule Of Thumb

Aluminum = 10% Material Thickness

Mild Steel = 10% Material Thickness

Stainless Steel = 15% Material Thickness

| <i>Blade Clearances For Mild Steel</i> | | |
|--|-------------------|--|
| Mittler Brothers Machine & Tool | | |
| Gauge or Thickness | Decimal Thickness | Overall Clearance To Add To Punch Size |
| 30 | .0120 | Slip Fit |
| 28 | .0149 | Slip Fit |
| 26 | .0179 | .002 |
| 24 | .0239 | .003 |
| 22 | .0299 | .003 |
| 20 | .0359 | .004 |
| 18 | .0478 | .005 |
| 16 | .0598 | .006 |
| 14 | .0747 | .007 |
| 13 | .0897 | .009 |
| 12 | .1046 | .010 |
| 11 | .1196 | .012 |
| 1/8 | .125 | .012 |
| 10 | .1345 | .013 |
| 9 | .156 | .015 |
| 8 | .164 | .017 |
| 7 | .1793 | .021 |
| 3/16 | .1875 | .023 |
| 1/4 | .250 | .037 |
| 5/16 | .3125 | .047 |
| 3/8 | .375 | .057 |
| 1/2 | .500 | .075 |
| 5/8 | .625 | .125 |
| 3/4 | .750 | .150 |

100 Hydraulic Tubing Notcher Set-Up

Female Die (#7) to Main Frame (#3):

1. Insert 3/8-16 x 2-1/2" Socket Head Cap Screws (qty. 4) (#13) through low frame holes.
2. Install 0.015" thick Brass Shims (#20) over thread on SHCS – one per side.

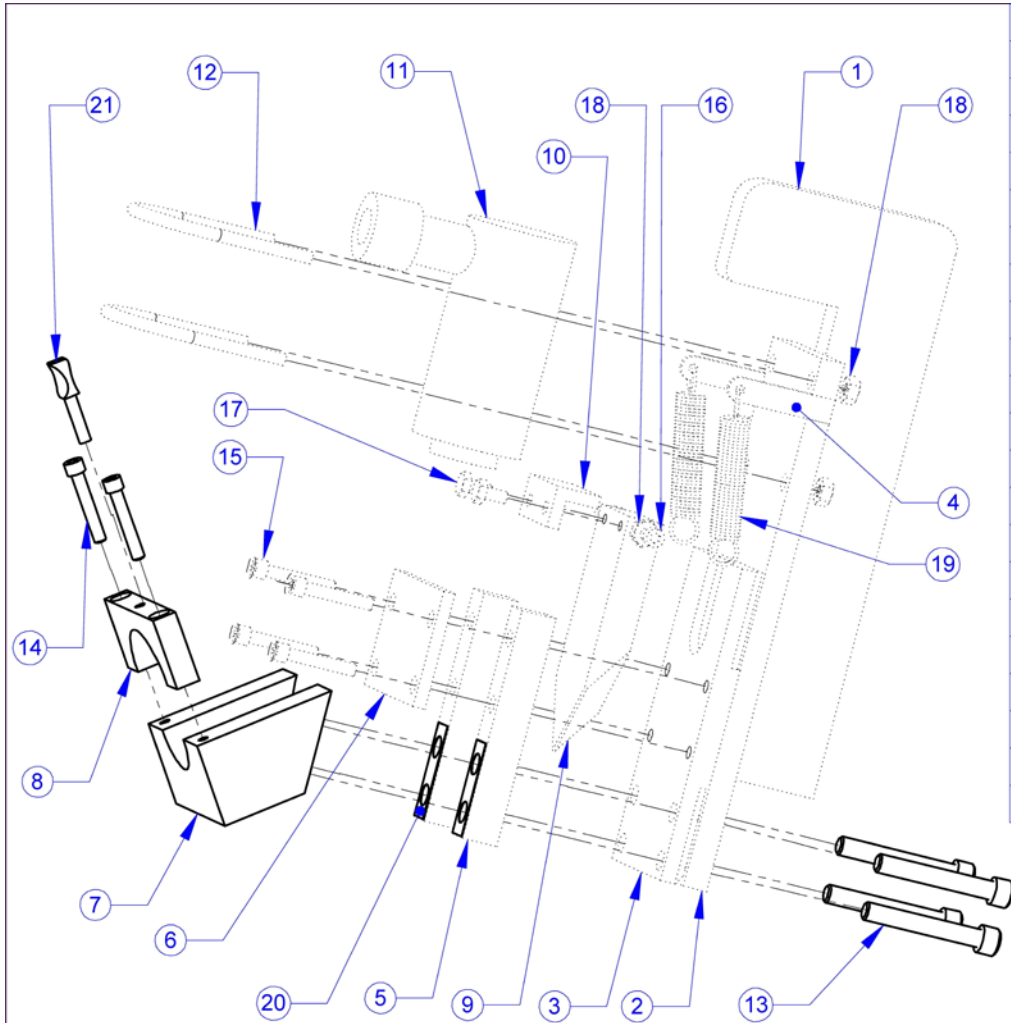
WHEN NOTCHING 0.120" OR THICKER WALL THICKNESS PIPE OR TUBING

Install Additional 0.005" Thick Brass Shim plus the standard 0.015" shim between female die & notcher frame = 0.020" total shim thickness

3. Thread SHCS into Female Die (#7).
4. Tighten SHCS.

Tube Hold Down Clamp Assembly:

1. Install 1/4-20 x 1-1/2" Socket Head Cap Screws (#14) (qty. 2) through Clamp Hoop (#8).
2. Thread SHCS (#14) into Female Die (#7).
3. Tighten SHCS.
4. Install 1/4-20 x 1" Thumb Screw (#21) into Clamp Hoop (#8).



| ITEM NO | PART NUMBER | DESCRIPTION | QTY. |
|---------|------------------|----------------------------|------|
| 1 | 100-008 | Back Brace | 1 |
| 2 | 100-006 | Base Plate | 1 |
| 3 | 100-007 | Mounting Plate | 1 |
| 4 | 100-009 | Spring Support Post | 2 |
| 5 | 100-001 | Side Rail | 2 |
| 6 | 100-004R1 | Top Plate | 1 |
| 7 | 100-010-1500 | Die Blank | 1 |
| 8 | 100-003 | Hoop | 1 |
| 9 | 100-005 | Punch | 1 |
| 10 | 100-015 | Punch Stop | 1 |
| 11 | 100-507 | Ram, 10 Ton, 2-1/8" Stroke | 1 |
| 12 | 100-509 | UBolt 2-1/4" | 2 |
| 13 | 3/8-16 x 2-1/2" | SHCS | 4 |
| 14 | 1/4-20 x 1-1/2" | SHCS | 2 |
| 15 | 5/16-18 x 1-7/8" | SHCS | 4 |
| 16 | 1/4-20 X 1" | SHCS | 2 |
| 17 | 1/4-20 x 1/2" | HHCS | 2 |
| 18 | 1/4-20 | Nut | 6 |
| 19 | 100-501 | Spring 5/8 x 1-1/2" | 2 |
| 20 | 100-103 | .015 Brass Shim | 2 |
| 21 | 100-504 | Thumb Screw 1/4-20 x 1" | 1 |

| REVISIONS | | | |
|-----------|----------------------|-----------|-----|
| REV. | DESCRIPTION | DATE | BY |
| A | ADDED ITEM NO. 18-21 | 4/15/2010 | BAB |

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| | NAME | DATE |
|-----------|------|----------|
| DRAWN | RAJ | 06-04-08 |
| CHECKED | | |
| ENG APPR. | | |
| MFG APPR. | | |
| Q.A. | | |

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

TITLE:
Std. Hyd. Tubing Notcher

| COMMENTS | SIZE | DWG. NO. | REV |
|----------|------------|----------------|--------------|
| | A | 100 | A |
| | SCALE: 1:5 | WEIGHT: 28.177 | SHEET 1 OF 1 |

100-U Heavy Duty Hydraulic Tubing Notcher Set-Up

Female Die (#5) to Main Frame (#3):

1. Insert 3/8-16 x 2-1/2" Socket Head Cap Screws (qty. 4) (#12) through low frame holes.
2. Install 0.015" thick Brass Shims (#21) over thread on SHCS – one per side.

WHEN NOTCHING 0.120" OR THICKER WALL THICKNESS PIPE OR TUBING

Install Additional 0.005" Thick Brass Shim plus the standard 0.015" shim between female die & notcher frame = 0.020" total shim thickness

3. Thread SHCS into Female Die (#5).
4. Tighten SHCS.

Tube Hold Down Clamp Assembly:

1. Install 1/4-20 x 1-1/2" Socket Head Cap Screws (#15) (qty. 2) through Clamp Hoop (#9).
2. Thread SHCS (#15) into Female Die (#5).
3. Tighten SHCS.
4. Install 1/4-20 x 1" Thumb Screw (#20) into Clamp Hoop (#9).

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------------|--------------------------|------|
| 1 | 100-107 | HD Back Brace | 1 |
| 2 | 100-018 | HD Base Plate | 1 |
| 3 | 100-027 | HD Mounting Plate | 1 |
| 4 | 100-019 | HD Side Rail | 2 |
| 5 | 100-030-1500 | Die Blank | 1 |
| 6 | 100-022 | HD Top Plate | 1 |
| 7 | 100-023 | HD Punch | 1 |
| 8 | 100-021 | HD Punch Stop | 1 |
| 9 | 100-024 | HD Clamp | 1 |
| 10 | 100-026 | Cylinder Clamp | 1 |
| 11 | 100-507 | Ram, 10 Ton - C102C | 1 |
| 12 | 1/2-13x3 | SHCS | 4 |
| 13 | 1/2-13x2 | SHCS | 4 |
| 14 | 5/16-18x1 | SHCS | 2 |
| 15 | 1/4-20 x 2-1/2 | SHCS | 4 |
| 16 | 5/16-18 x 3 | SHCS | 4 |
| 17 | 1/4-20 x 1 | SHCS | 2 |
| 18 | 3/8 x 1-3/4 | Dowel Pin | 4 |
| 19 | 100-501 | Spring | 2 |
| 20 | 100-504 | Thumb Screw, 1/2-20 x 1" | 1 |
| 21 | 100-103 | .015 Brass Shim | 2 |
| 22 | 1/4 - 20 | Nut | 4 |

| REVISIONS | | | |
|-----------|-------------------------|------------|-----|
| REV. | DESCRIPTION | DATE | BY |
| A | Added Items 19-22 | 5/6/2010 | BAB |
| B | Bolts (item 16) revised | 10/12/2010 | BAB |

| NAME | DATE |
|-----------|----------|
| DRAWN RAJ | 07/02/08 |
| CHECKED | |
| ENG APPR. | |
| MFG APPR. | |
| Q.A. | |

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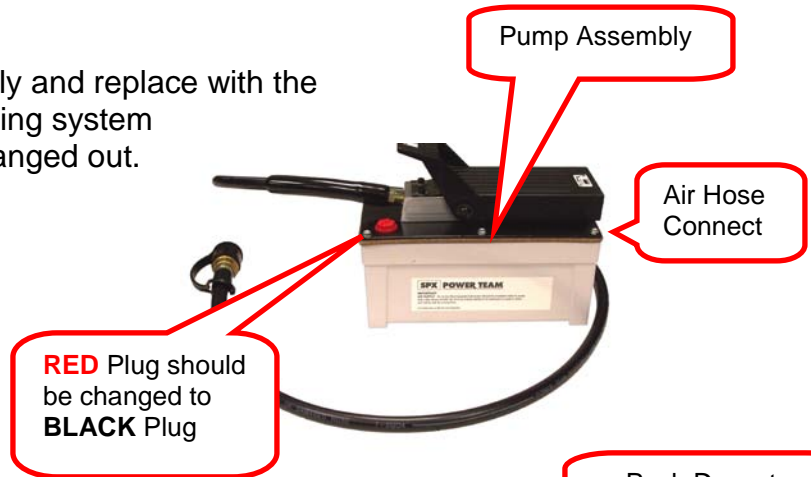
TITLE: HD Hyd. Tubing Notcher

| | | |
|------|----------|-----|
| SIZE | DWG. NO. | REV |
| A | 100-U | B |

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

HYDRAULIC SYSTEM

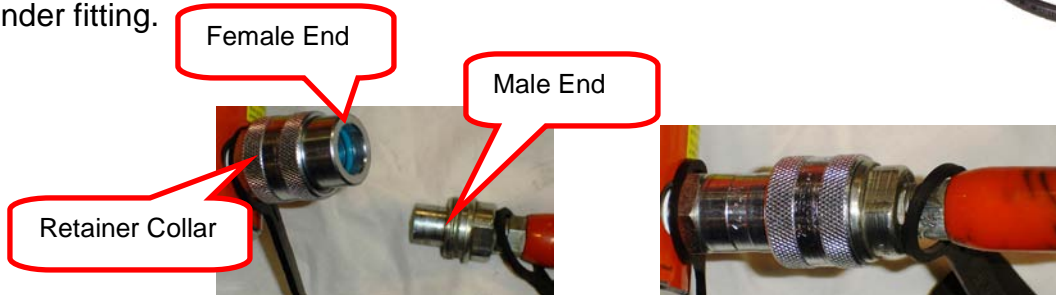
1. Remove the **RED Plug** in the pump assembly and replace with the supplied **BLACK plug**. This is the reservoir venting system and damage or inoperability may result if not changed out.



2. Attach the hydraulic hose to the pump. Be sure to use a quality thread sealer on both connections
3. Attach an air line fitting for your shop air to other end of the pump.



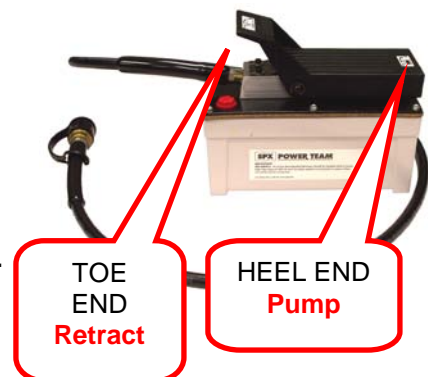
4. Push the pump foot pedal to the release position (TOE END) to relieve all internal pressure.
5. Push the MALE hose end, from the pump, into the FEMALE Cylinder fitting.



6. Thread the retainer collar hand tight. **NOTE:** This procedure will insure that the male & female fittings positively seat against each other, eliminating any possibility of air locking. **CAUTION** Failing to follow this procedure may cause the cylinder to not retract and / or leak.

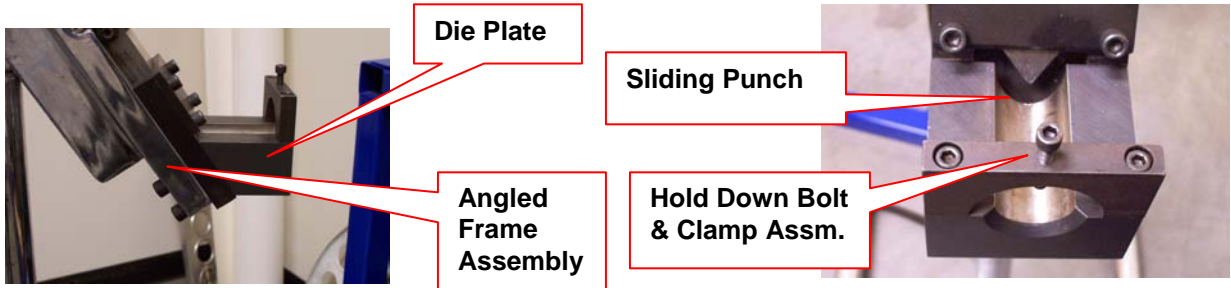
BLEED THE CYLINDER

7. Connect a compressed air supply (90PSI) to the pump.
8. Elevate the pump and hose above the cylinder.
9. Push the hydraulic pump pedal **HEEL END** to actuate the cylinder. Run the cylinder out about half way. Release the pump by pressing on the **TOE END** of the pedal. Repeat this process three or four times or until the ram cylinder movement is smooth.

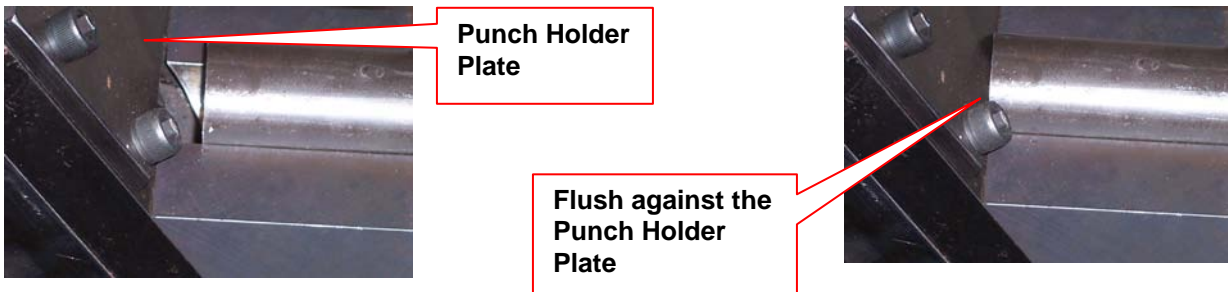


#100 Hydraulic Tubing Notcher Operations

1. The #100 Hydraulic Tubing Notcher is designed to notch tubing by cutting one side of the notch at a time. This is accomplished by having a pointed **SLIDING PUNCH** entering the end of the tube at an angle to the **DIE PLATE**.

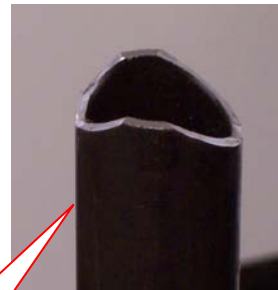
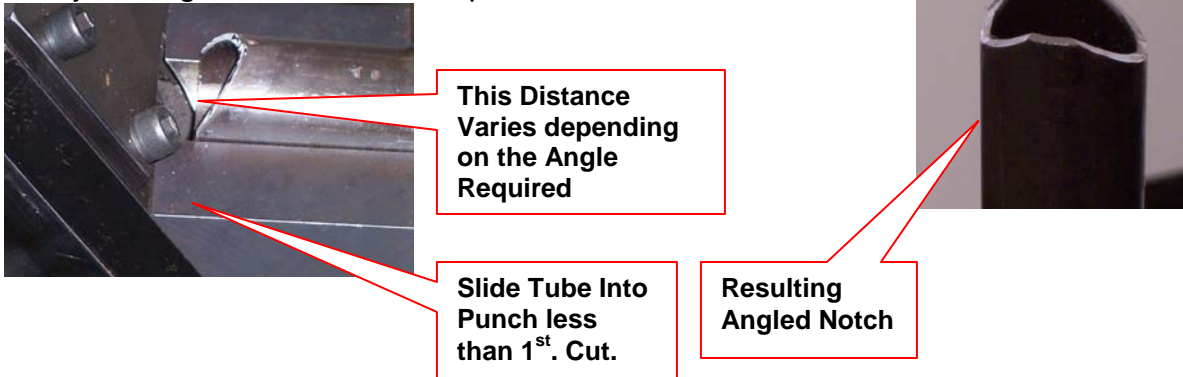


2. To make a **90° Notch**, slide the tube into the die plate and up against the **PUNCH HOLDER PLATE**. Tighten down the **HOLD DOWN BOLT**. Run the hydraulics until you hear the punch complete the cut. Release the hydraulics, loosen the hold down bolt & rotate the tube 180° and then repeat the process, be sure to retighten the hold down bolt.



3. To make an **Angled Notch**, follow step the notch. For the second half of the from the **PUNCH HOLDER PLATE**. The determined by the angle required and the size of the tube. You may need to make some sample notches to get the ideal distance back that your angle and tube size requires.

2 above for the first half of notch, hold the tube back exact distance will be



Optional Parts

#100-200 Hydraulic Tubing Notcher Mount

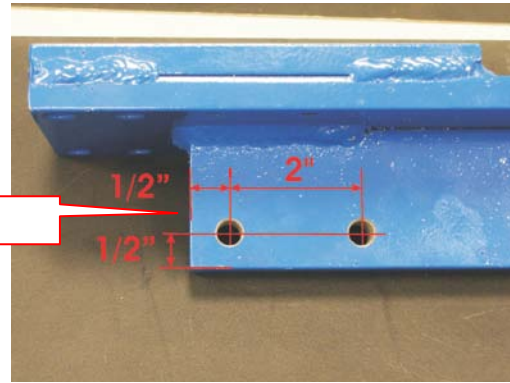
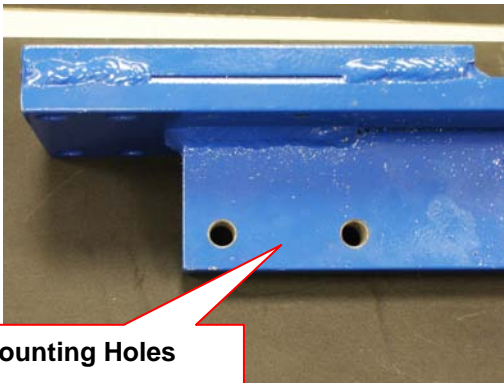
Kit Includes:

- 1 ea. Mounting Bracket
- 14 ea. 5/16" Flat washers
- 2 ea. 5/16-18 x 2" Bolts
- 3 ea. 5/16" -18 x1" Bolts
- 5 ea. 5/16" Lock washers
- 5 ea. 5/16 -18 Nuts



Bench Mounting Bracket
(fits either unit)
Model 100-200

1. If your notcher does not have the mounting holes on the lower end of the unit, as shown below, you will have to drill two 3/8" diameter holes located as shown. This would be best accomplished using a drill press to obtain straight and square holes.



2. Use the supplied 5/16" flat washers to shim the mount to match the thickness of your notcher.
3. Use the 5/16" x 1" bolts to mount to our Universal stand, #3100-100. Be sure to use a flat washer under the head and under the nut when bolting the mount to the stand. If you are mounting to your own stand be sure to use a flat washer under the bolt head.

Hydraulic Pumps



Air Hydraulic Pump, Hose & Fitting
Model 900-504-6



Electric Hydraulic Pump, Hose & Fitting
Model 900-508-6

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