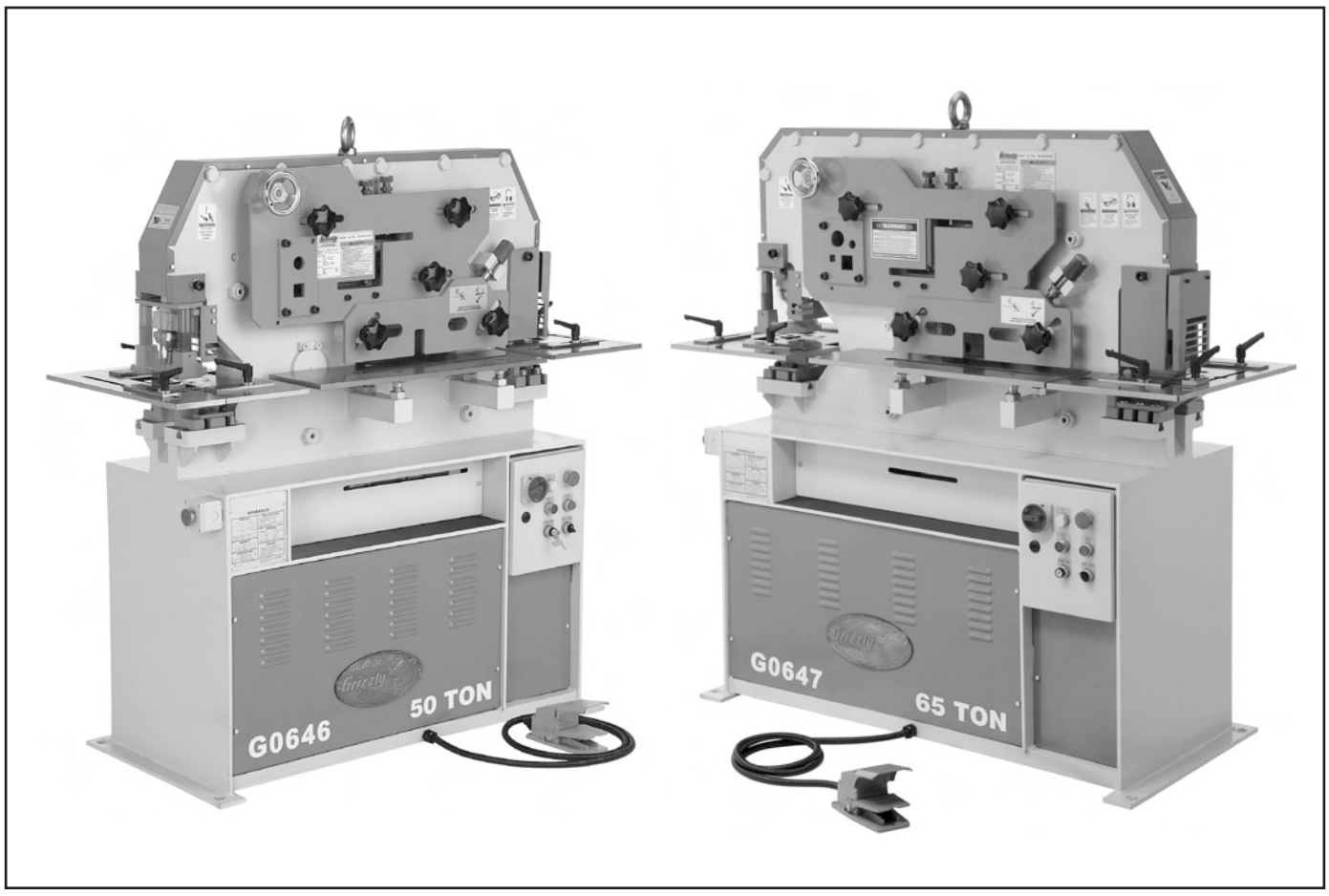
MODEL G0646/G0647
50/65 TON IRONWORKER
OWNER'S MANUAL



#TS10279 PRINTED IN TAIWAN

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.

Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.

The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

Table of Contents

INTRODUCTION

Foreword

We are proud to offer the Model G0646/G0647 50/65 Ton Ironworker. This machine is part of a growing Grizzly family of fine machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0646/G0647 when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete.

Contact Info

We stand behind our machines. If you have any service questions, parts requests or general questions about the machine, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

Functional Overview

The Model G0646/G0647 Ironworker is a versatile metal-cutting machine that cuts mild steel stock at five separate stations: 1) punching, 2) notching, 3) bar stock shearing, 4) angle iron shearing, and 5) flat stock shearing.

This machine uses a single, large beam that moves through an arc from side-to-side and is driven by the hydraulic ram (see **Figure 1**).

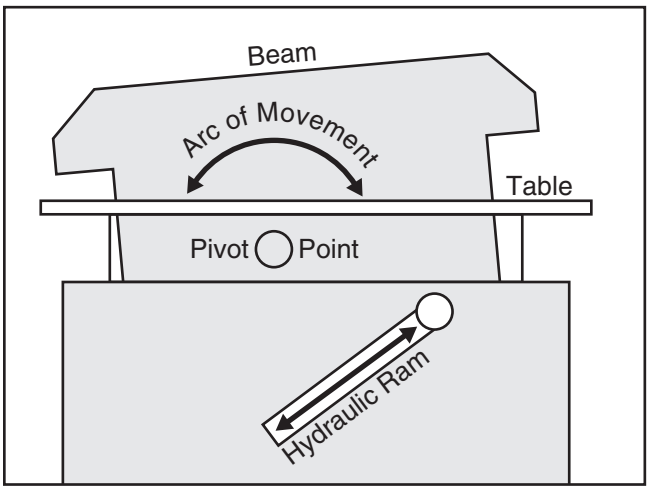


Figure 1. Movement of the beam.

The beam is mounted with the appropriate dies for each station. As the beam reaches the end of the arc, limit switches automatically reverse the hydraulic flow and move the beam back. A pressure relief valve protects the hydraulic system if the operation exceeds the capabilities of the machine.

The workpiece is held in place with hold-downs, table guides, or strippers that are designed specifically for each station. All stations accept a wide variety of punch and die configurations.

Exit panels on the rear of the machine allow for long workpieces to be processed at the shearing and cutting stations. In addition, an extension assembly mounts above the exit panels of the bar and angle iron shearing stations for measured repetitive work.

Identification

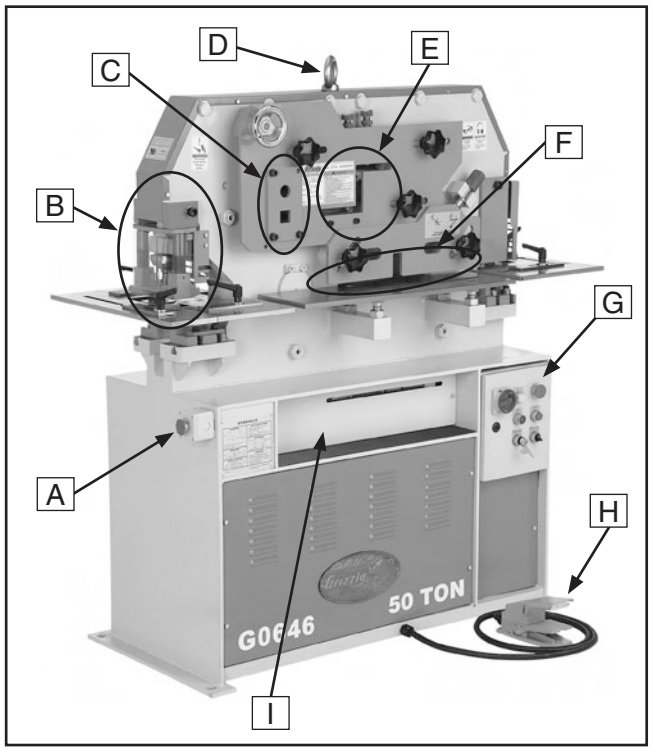


Figure 2. Front view identification.

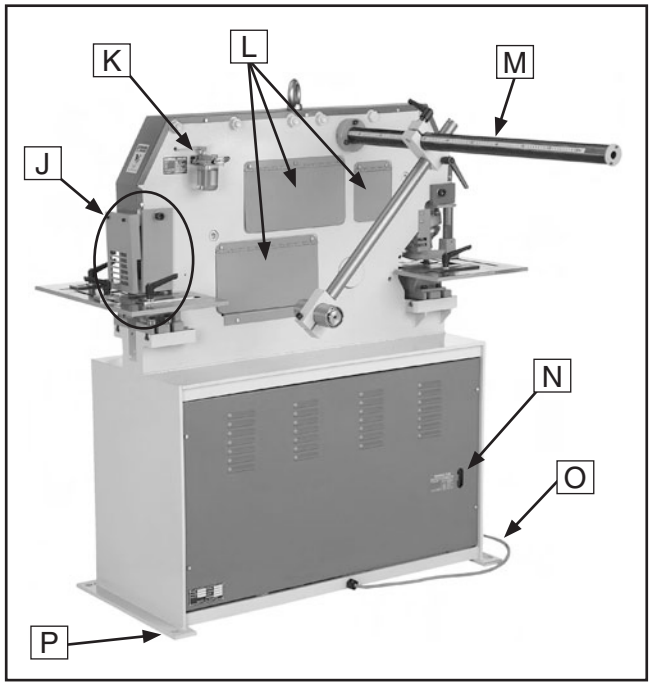


Figure 3. Rear view identification.

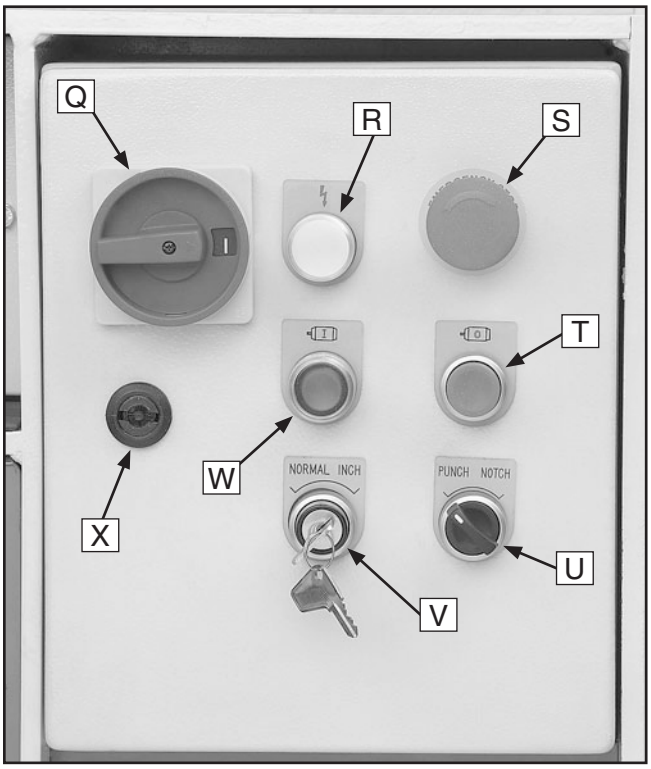


Figure 4. Control panel identification.

A. Punching Station Emergency Stop Button
B. Punching Station
C. Bar Stock Shearing Station
D. Lifting Eye Bolt
E. Angle Iron Shearing Station
F. Flat Stock Shearing Station
G. Control Panel
H. Foot Actuator
I. Limit Stop Access Panel
J. Notching Station
K. One-Shot Beam Lubricator
L. Flat Stock, Angle Iron, and Bar Stock Rear Exit Panels
M. Extension Bar
N. Hydraulic Reservoir Sight Glass and Thermometer
O. Power Cord
P. Mounting Flange
Q. Main Power Switch
R. Power Lamp
S. Emergency Stop Button
T. Motor Stop Button
U. Punch/Notch Switch
V. Normal/Inch Switch and Key
W. Motor Start Button
X. Electrical Panel Door Lock

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G0646
50-TON HYDRAULIC IRONWORKER

Product Dimensions:

Weight	2420 lbs.
Length/Width/Height w/Extension Bar	56" x 57" x 63"
Foot Print (Length/Width)	23" x 48½"

Shipping Dimensions:

Type	Wood Crate
Content	Machine
Weight	2640 lbs.
Length/Width/Height	60" x 31" x 68"

Electrical:

Switch	ON/OFF Buttons, Magnetic Contactor w/Thermal Overload Protector
Pre-Wired	220V
Recommended Circuit Size @ 220V	20A
Recommended Circuit Size @ 440V	15A
Recommended Power Connection @ 220V	NEMA 15-20 Plug/Receptacle
Recommended Power Connection @ 440V	Hardwired

Motor:

Type	TEFC Induction
Horsepower	5 HP
Voltage	220V/440V
Phase	3-Phase
Amps	14.5A @ 220V, 7.5A @ 440V
Speed	1725 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Direct Drive
Bearings	Sealed & Lubricated

Operational Information

Note: *All tooling capacities are based on processing mild steel material (45 kg/mm²)*

Rated Tonnage	50 Ton
Punch Throat	6⅞"
Maximum Stroke Length	2"
Maximum Hydraulic Pressure	3000 PSI
Maximum Punching Capacity (Diameter x Thickness)	⅞" x ⅝", 1½" x 5/16"
Cycle Speed	20 Cycles/Min. @ ¾" Travel
Maximum Flat Bar Shearing Capacity (Width x Thickness)	8" x ⅝", 12" x ½"
Maximum Angle Cutting Capacity @ 90° (Width x Thickness)	4" x ⅜"
Maximum Angle Cutting Capacity @ 45° (Width x Thickness)	2¾" x ¼"
Maximum Round Bar Cutting Capacity	1 3/16" Diameter
Maximum Square Bar Cutting Capacity	1 3/16" Square
Maximum Notching Capacity (Width x Depth x Thickness)	1⅜" x 3" x 5/16"

Table Information

Table Thickness	½"
Punching Table Size (Width x Depth)	22⅛" x 14⅜"
Punching Table Working Height	37½"
Shearing Table Size (Width x Depth)	28⅛" x 7⅞"
Shearing Table Working Height	37½"
Notching Table Size (Width x Depth)	22⅛" x 12½"
Notching Table Working Height	37½"
Section & Angle Cutting Working Height	44⅞"

Construction Information

Table	Precision Milled Steel
Headstock	Cast Iron
Cutting Blades	Heat-Treated Steel
Base	Cast Iron
Cabinet Panels	Formed Steel
Pump Bearings	Sealed & Lubricated
Paint.	Powder Coat

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Front
Customer Assembly & Set Up Time	60 minutes

Features:

Five Independent Stations for Punching, Flat Bar Shearing, Notching, Angle and Bar Stock Cutting
Safety Foot Pedal Actuator
Design Accepts Add-On Tooling for Increased Capabilities

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G0647
65-TON HYDRAULIC IRONWORKER

Product Dimensions:

Weight	2860 lbs.
Length/Width/Height w/Extension Bar	56" x 60¼" x 62"
Foot Print (Length/Width)	23" x 52¼"

Shipping Dimensions:

Type	Wood Crate
Content	Machine
Weight	3190 lbs.
Length/Width/Height	67¾" x 30¼" x 72½"

Electrical:

Switch	ON/OFF Buttons, Magnetic Contactor w/Thermal Overload Protector
Pre-Wired	220V
Recommended Circuit Size @ 220V	20A
Recommended Circuit Size @ 440V	15A
Recommended Power Connection @ 220V	NEMA 15-20 Plug/Receptacle
Recommended Power Connection @ 440V	Hardwired to Locking Disconnect Switch

Motor:

Type	TEFC Induction
Horsepower	5½ HP
Voltage	220V/440V
Phase	3-Phase
Amps	16A @ 220V, 8A @ 440V
Speed	1725 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Direct Drive
Bearings	Sealed & Lubricated

Operational Information

Note: *All tooling capacities are based on processing mild steel material (45 kg/mm²)*

Rated Tonnage	65 Ton
Punch Throat	8¾"
Maximum Stroke Length	2⅛"
Maximum Hydraulic Pressure	3000 PSI
Maximum Punching Capacity (Diameter x Thickness)	1 1/16" x ⅝", 1½" x 7/16"
Cycle Speed	26 Cycles/Min. @ ¾" Travel
Maximum Flat Bar Shearing Capacity (Width x Thickness)	8" x ¾", 12" x ⅝"
Maximum Angle Cutting Capacity @ 90° (Width x Thickness)	4¾" x ½"
Maximum Angle Cutting Capacity @ 45° (Width x Thickness)	3⅛" x 5/16"
Maximum Round Bar Cutting Capacity	1 9/16" Diameter
Maximum Square Bar Cutting Capacity	1⅜" Square
Maximum Notching Capacity (Width x Depth x Thickness)	1⅝" x 4" x ⅜"

Table Information

Table Thickness	½"
Punching Table Size (Width x Depth)	22⅛" x 16"
Punching Table Working Height	36¾"
Shearing Table Size (Width x Depth)	28⅛" x 7⅞"
Shearing Table Working Height	36¾"
Notching Table Size (Width x Depth)	22⅛" x 13½"
Notching Table Working Height	36¾"
Section & Angle Cutting Working Height	44⅞"

Construction Information

Table	Precision Milled Steel
Headstock	Cast Iron
Cutting Blades	Heat-Treated Steel
Base	Cast Iron
Cabinet Panels	Formed Steel
Pump Bearings	Sealed & Lubricated
Paint	Powder Coat

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Front
Customer Assembly & Set Up Time	60 minutes

Features:

Five Independent Stations for Punching, Flat Bar Shearing, Notching, Angle and Bar Stock Cutting
Safety Foot Pedal Actuator
Design Accepts Add-On Tooling for Increased Capabilities

SECTION 1: SAFETY

⚠WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

⚠WARNING

Safety Instructions for Machinery

1. **READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
2. **ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.
3. **ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.
4. **ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
5. **WEAR PROPER APPAREL.** DO NOT wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
6. **NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.

⚠WARNING
Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** 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.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Maintain stability and balance at all times.

23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.

⚠WARNING

Additional Safety Instructions for Ironworkers

1. **HYDRAULIC INJECTION INJURIES.** Be familiar with the hydraulic system of this machine and with the hydraulic safety section in this manual. *Until you have a clear understanding about hydraulic injection injuries, how they occur, and how to avoid them, DO NOT use this machine.*

2. **OPERATOR PROTECTION.** Processed workpieces can be hot and sharp. Wear heavy leather gloves when handling the workpieces. Metal chips or debris can be rapidly thrown toward the operator during operations. Always wear an ANSI approved full face shield, and heavy leather body, arm, and foot protection when using this machine.

3. **SINGLE OPERATOR.** When in operation, multiple stations are active at the same time but there is only one set of controls. This machine was designed for use by only one operator at a time.

4. **DISCONNECT POWER.** Unexpected activation of the machine while hands are near any processing station could cause serious personal injury. Disconnect the machine from power before making adjustments to tooling or performing setup, maintenance, or service to this machine.

5. **GUARDS AND PANELS.** The guards and access panels are designed to protect the operator from injury when the machine is in operation. Always keep all guards and access panels in place and secured before beginning operations.

6. **KEEP HANDS AND BODY CLEAR.** Each station of the Ironworker is designed to cut or shear metal, NOT body parts. Always keep your hands and body clear of the cutting operation when activating the machine with the foot actuator.

7. **IRONWORKER TOOLS.** The tremendous force this machine bears on each workpiece can break or shatter tooling if not properly setup. Make sure that all tooling, even in stations that are not currently in use, is properly mounted and secured before beginning operations.

8. **UNATTENDED OPERATION.** To avoid the risk of injury from unexpected movement of the beam and tooling, always turn the motor ***OFF*** before walking away from this machine. When leaving the machine for an extended period, disconnect it from power.

9. **SECURE WORKPIECE.** Workpieces that are not properly supported and secured can rapidly move toward the operator when force is applied. Always firmly secure the workpiece with the devices provided. Make sure workpieces are firmly supported on both sides of the punch/cut. For long stock, use additional support at both ends.

10. **EXPERIENCING DIFFICULTY.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support Department at (570) 546-9663.

⚠WARNING

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

⚠WARNING

Additional Safety Instructions for Hydraulics

1. **HYDRAULIC INJECTION INJURY.** Leaking hydraulic fluid may have enough pressure to penetrate the skin. Hydraulic fluid that is injected into the body represents a medical emergency that could cause infection, disability, amputation, or death.

2. **SEEK MEDICAL ATTENTION.** A hydraulic injection injury may be a small wound that has barely broken the skin. DO NOT be fooled by this type of injury. Get professional medical attention immediately! Minimizing the time between the injury and when the injected material is removed is critical to reducing the seriousness of the injury.

3. **SUSPECTED HYDRAULIC LEAKS.** Leaking hydraulic fluid may be under extreme pressure and hot. Use a piece of clean cardboard—not hands—to check for suspected hydraulic leaks.

4. **OPERATOR PROTECTION.** Always wear an ANSI approved face shield and heavy leather gloves and clothing when working around hydraulic leaks. The best way to protect yourself is to stay away from the leaks until you can depressurize the system.

5. **DEPRESSURIZE THE SYSTEM.** Working on a pressurized hydraulic system can cause a pressure explosion, resulting in serious personal injury. To reduce the risk of this hazard, stop the motor, disconnect the machine from power, and fully depressurize the hydraulic system before attempting to fix or service the system.

6. **CLEAN ENVIRONMENT.** To reduce the risk of hydraulic fluid contamination or damage to internal components, remove debris, grime, or water from the hydraulic hoses, connections, and openings before maintenance. Always use lint-free rags when wiping components.

7. **HOSES AND FITTINGS.** The hydraulic system is under extreme pressure—typically 3000 PSI. Always use high-pressure hydraulic hose and steel hydraulic fittings when replacing system components. Never use brass or aluminum.

8. **REGULAR INSPECTION.** A well-maintained hydraulic system will have much fewer problems and hazards than a neglected system. Regularly inspect the hydraulic system for contamination or leaks, and keep the reservoir filters clean.

⚠CAUTION

No list of safety guidelines can be complete. Every shop 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.

SECTION 2: CIRCUIT REQUIREMENTS

220/440V Operation

⚠WARNING

Serious personal injury could occur if you connect the machine to the power source before you have completed the setup process. DO NOT connect the machine to the power source until instructed after setup.

⚠WARNING

Electrocution or fire could result if this machine is not installed to code. You MUST ensure compliance by checking with a qualified electrician!

NOTICE

The Model G0646/G0647 is prewired for 220V operation. If you plan to use your machine at 440V, you MUST have a qualified electrician perform the 440V conversion described on *Page 13*.

Full Load Amp Draw

G0646 220V 3-Phase..... 14.5A
G0646 440V 3-Phase..... 7.5A

G0647 220V 3-Phase..... 16A
G0647 440V 3-Phase..... 8A

NOTICE

Phase Converter Precaution

The power from the manufactured leg of a phase converter may damage electrical components if connected to the wrong incoming power terminal on your machine. Only connect the manufactured leg to the T3 terminal of the main power switch (see *Page 53* for identification).

Power Supply Circuit Requirements

You MUST connect your machine to a grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes.

If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.

G0646/G0647 220V Minimum Circuit 20A
G0646/G0647 440V Minimum Circuit 15A

Power Connection Device

The power connection device depends on the type of installed or planned service. We recommend using one of the devices shown in **Figure 5**, depending on the model and voltage being used.

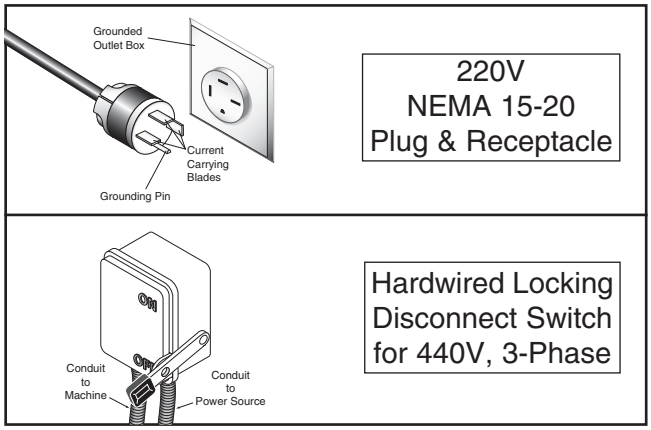


Figure 5. Recommended connection types.

NOTICE

Extension Cords (220V Only)

Using extension cords may reduce the life of the motor. Instead, place the machine near a power source. If you must use an extension cord:

- **Use at least a 12 gauge cord that does not exceed 50 feet in length.**
- **Ensure that the extension cord contains a ground wire and plug pin.**

440V Conversion

The Model G0646/G0647 can be converted for 440V operation. This conversion job consists of disconnecting the machine from the power source, changing the connections on the voltage transformer, replacing the overload relay, and rewiring the motor for 440V operation.

The necessary overload relay for this procedure can be purchased by calling Grizzly Customer Service at (800) 523-4777 and ordering Part Number P0646209-1.

All wiring changes must be inspected by a qualified electrician before the machine is connected to the power source. If, at any time during this procedure you need help, call Grizzly Tech Support at (570) 546-9663.

To rewire the Model G0646/G0647 for 440V operation:

1. DISCONNECT MACHINE FROM POWER!

2. Rotate the main power switch to **OFF** or "**0**" and the electrical cabinet door lock to the horizontal, then open the door to access the voltage transformer (see **Figure 6**).

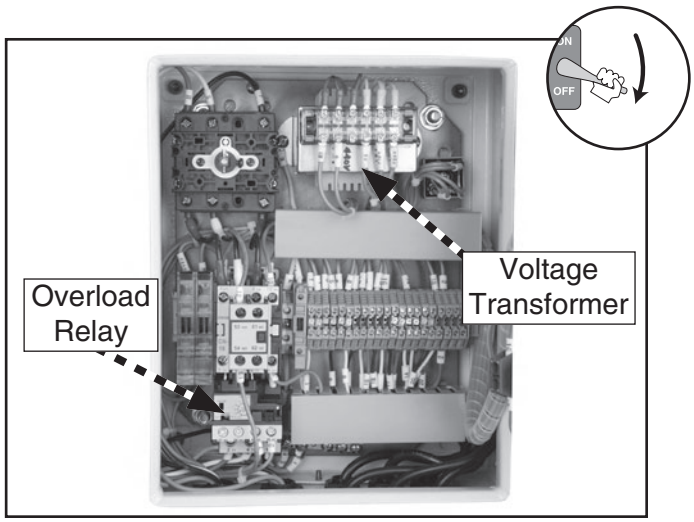


Figure 6. Voltage transformer and overload relay inside electrical cabinet.

Note: *It may be necessary to put pressure on the upper left corner of the electrical cabinet door to engage and turn the main power switch.*

3. At the voltage transformer, remove the wire labeled "S" that leads to the “220” terminal, and connect that wire to the “440” terminal (see **Figure 7**).

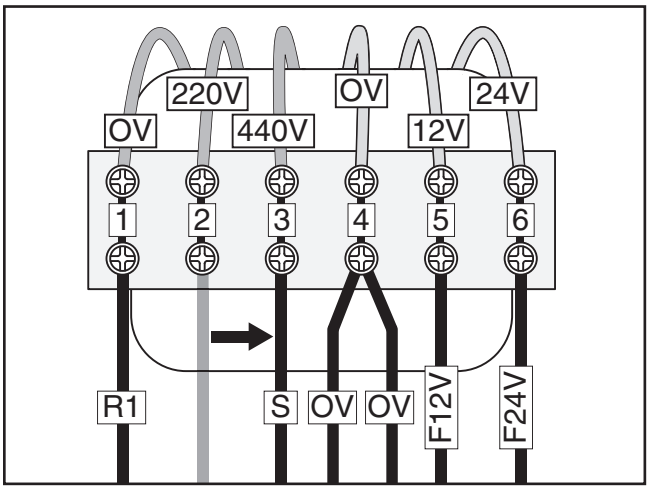


Figure 7. "S" wire connected to the 440V terminal of the voltage transformer.

4. Remove the overload relay and replace it with the 440V version (Part Number P0646209-1). Set the overload relay dial (see **Figure 6**) to the value for your model:

Model G0646.....7.5A
Model G0647.....8A

5. Open the junction box on the motor, and rewire the motor as shown on the diagram located inside the motor junction box.

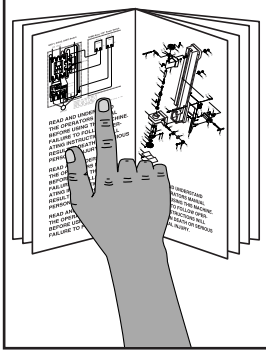
Note: *The reference motor wiring diagram on* ***Page 56*** *was current at the time of printing, but always use the wiring diagram provided inside the motor junction box, as it will reflect any changes to the motor shipped with your machine.*

NOTICE

For 440V connections, an electrician MUST hardwire the machine (using a metal conduit setup) directly to a locking disconnect switch, which is directly connected to the power source.

SECTION 3: SETUP

Setup Safety

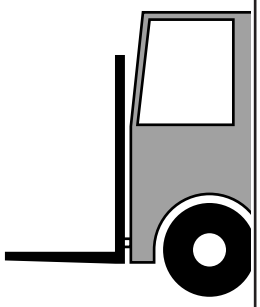


⚠WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!

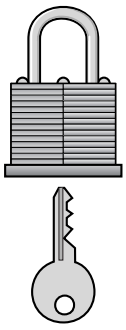
⚠WARNING

Wear safety glasses during the entire setup process!



⚠WARNING

The Model G0646/G0647 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for at least 3500 lbs. to move the shipping crate and remove the machine from the crate.



⚠CAUTION

Children and visitors may be seriously injured if unsupervised around this machine. Lock entrances to the shop or disable start switch or power connection to prevent unsupervised use.

Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

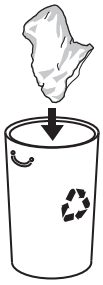
Description	Qty
• Assistants	At Least 2
• Safety Glasses (for each person)	1
• Lifting Chain and Safety Hook (rated for at least 3500 lbs.)	1
• Power Lifting Equipment (rated for at least 3500 lbs.)	1
• Floor Mounting Hardware	As Needed

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.



⚠WARNING

SUFFOCATION HAZARD!

Immediately discard all plastic bags and packing materials to eliminate choking/suffocation hazards for children and animals.

Inventory

The following is a description of the main components shipped with your machine. Lay the components out to inventory them.

Note: *If you can't find an item on this list, check the mounting location on the machine or examine the packaging materials carefully. Occasionally we pre-install certain components for shipping purposes.*

Inventory: (Figure 8)		Qty
A.	Ironworker (not shown)	1
B.	Guide Bar Assembly	1
C.	Extension Bar Assembly	1
D.	Toolbox	1
E.	Cap Screws M10-1.5 x 50 (Guide Bar)	3
F.	Lock Washers (Guide Bar)	3
G.	Punch Adapter 9036	1
H.	Punch Adapter 81031	1
I.	Punch Adapter 81029	1
J.	Spanner Wrench	1
K.	Adjustable Wrench	1
L.	Grease Gun	1
M.	Hex Wrench 17mm	1
N.	Hex Wrench 14mm	1
O.	Hex Wrench 12mm	1
P.	Hex Wrench Set 2.5–10mm	1

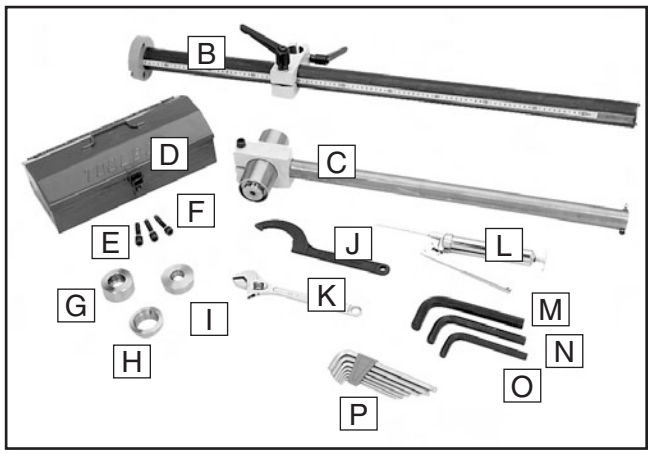


Figure 8. Model G0646/G0647 inventory.

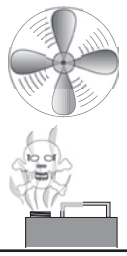
If any nonproprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

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 degreaser, such as shown in **Figure 9**. 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 any type of cleaning product.

⚠WARNING

Gasoline and petroleum products have low flash points 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.

G2544—Solvent Cleaner & Degreaser
A great product for removing the waxy shipping grease from your machine during clean up.

Figure 9. Cleaner/degreaser available from Grizzly.

Site Considerations

Floor Load

Refer to the **Machine Data Sheets** (beginning on **Page 4**) for the weight and footprint specifications of your machine. Some floors may require additional reinforcement to support both the machine and operator.

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 **Figures 10–11** for the minimum working clearances.

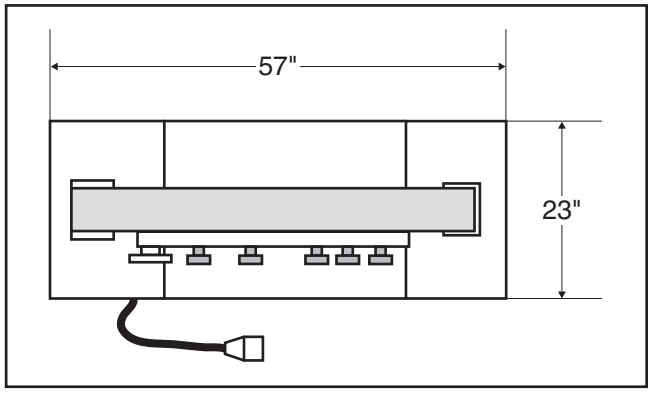


Figure 10. Model G0646 minimum working clearances.

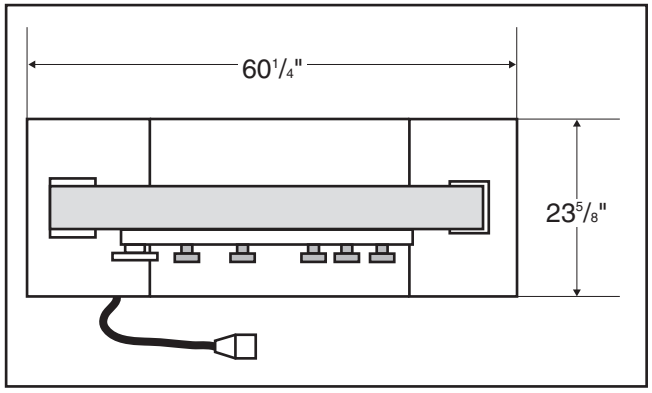
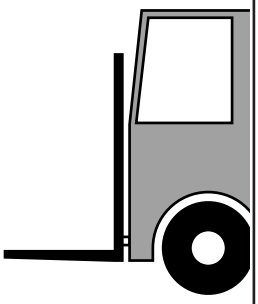


Figure 11. Model G0647 minimum working clearances.

Moving & Placing Base Unit



⚠WARNING

The Model G0646/G0647 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for at least 3500 lbs. to move the shipping crate and remove the machine from the crate.

To move the machine:

1. Remove the crating and plastic wrap, then unbolt the machine from the shipping pallet.

2. Attach the safety hook and lifting chain to the lifting eye bolt (see **Figure 12**).

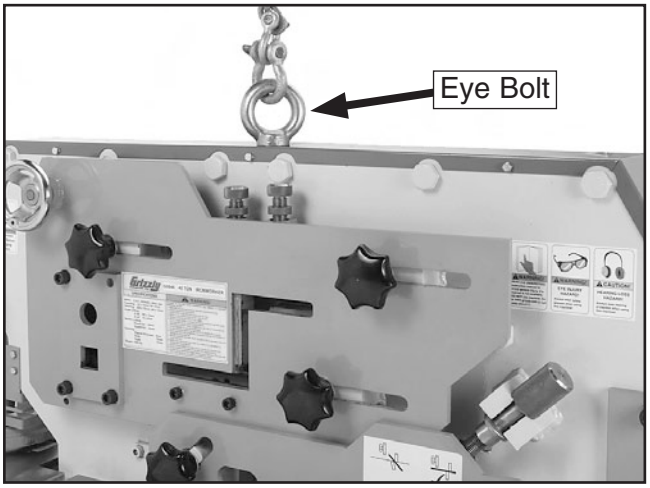


Figure 12. Safety hook and lifting chain attached to the eye bolt of the machine.

3. With assistance to steady the machine, carefully lift it enough to clear the pallet and floor obstacles, then move it to the prepared location.

Mounting to Shop Floor

Although not required, we recommend that you mount your new machine to the floor. Because this is an optional step and floor materials may vary, floor mounting hardware is not included. Generally, you can either bolt your machine to the floor or mount it on machine mounts. Both options are described below. Whichever option you choose, it is necessary to level your machine with a precision level.

Bolting to Concrete Floors

Lag shield anchors with lag bolts (**Figure 13**) and anchor studs are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.

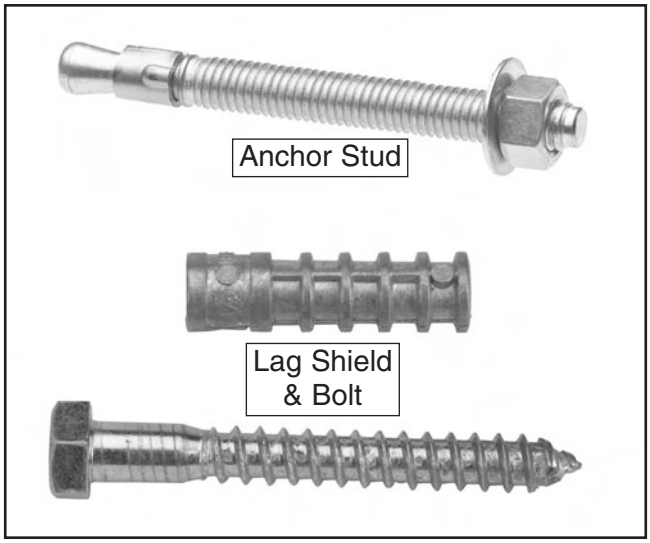


Figure 13. Typical fasteners for mounting to concrete floors.

Using Machine Mounts

Using machine mounts, shown in **Figure 14**, gives the advantage of fast leveling and vibration reduction. The large size of the foot pads distributes the weight of the machine to reduce strain on the floor.

Figure 14. Machine mount example.

NOTICE

We strongly recommend securing your machine to the floor if it is hardwired to the power source. Consult with your electrician to ensure compliance with local codes.

Test Run

Test run your machine to make sure it runs properly and is ready for regular operation.

The test run consists of verifying the following: 1) The motor powers up and runs correctly, 2) the motor turns the correct direction (machine is not wired out of phase), and 3) the emergency stop button safety feature works correctly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting** on **Page 43**.

If you still cannot remedy a problem, contact our Tech Support at (570) 546-9663 for assistance.

⚠WARNING

Before starting this machine, make sure you have read through the rest of the manual and are familiar with the various functions and safety features on this machine. Failure to follow this warning could result in serious personal injury or even death!

When the steps below are successful, your ironworker is ready for operation.

To test run the machine:

1. Make sure you understand the safety instructions at the beginning of the manual and that the machine is setup properly.

2. Make sure all tools and objects used during setup are cleared away from the machine.

3. Check the hydraulic fluid level in the reservoir and fill it if necessary (refer to **Hydraulic System** on **Page 40** for detailed instructions).

4. Lubricate the beam (refer to **Beam Lubrication** on **Page 34** for detailed instructions).

5. Understand the basic controls and how to use them (refer to **Basic Controls** on **Page 20** for detailed instructions).

6. Connect the machine to the power source.

7. There are two emergency stop buttons—on the front control panel and below the punching station on the left of the machine. One at a time, push the buttons in, then twist them clockwise so they pop out (see **Figure 15**). When both buttons pop out, the switches are reset and ready for operation.

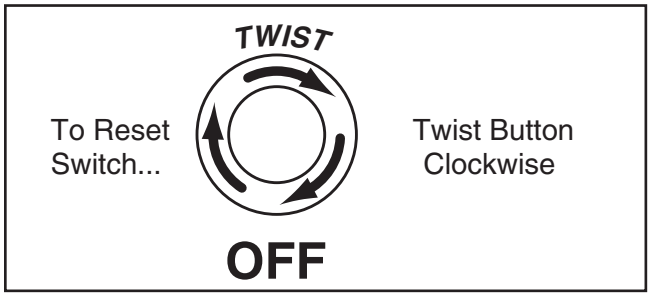


Figure 15. Resetting the Emergency Stop button.

8. Turn the main power switch to the ***ON*** or "**I**" position—the power lamp should light.

9. Set the controls to **Normal**, and press the motor start button to turn the machine ***ON***.

10. Verify that the machine is operating correctly by pressing the foot pedal actuator.

    —When operating correctly, the machine runs smoothly with little or no vibration or rubbing noises.

    —If the motor is running but the beam does not move, the power may be connected out of phase, and the motor will emit a loud, high-pitched whine. Stop the machine *IMMEDIATELY*, shut off the power source, then swap any two of the three power wires that connect to the motor (refer to **Page 56**). Repeat **Steps 5–9**.

    —Investigate and correct strange or unusual noises or vibrations before operating the machine further. Always stop the machine and disconnect it from power before investigating or correcting potential problems.

11. One at a time, perform the following steps for each of the emergency stop buttons.

a. Press the emergency stop button in to turn the machine ***OFF***.

b. WITHOUT resetting the button, press the motor start button. The motor should not start.

—If the motor does not start, the emergency stop button safety feature is working correctly.

—If the motor does start (with the emergency stop button pushed in), immediately disconnect power to the machine. The emergency stop button safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.

12. Reset both emergency stop buttons and press the motor start button to turn the motor ***ON***.

13. Set the controls to **Punch** and **Normal**, then press the foot actuator—the beam should come down on the punching station.

14. Set the controls to **Notch** and press the pedal actuator—the beam should come down on the notching station.

15. Set the controls to **Inch**, and repeat **Step 12** and **13**. Lift your foot from the actuator as the beam moves—it should stop and stay in that position.

Recommended Adjustments

For your convenience, the adjustments listed below have been performed at the factory.

However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine.

Step-by-step instructions for these adjustments can be found in the **SERVICE** section starting on **Page 43**.

Factory adjustments that should be verified:

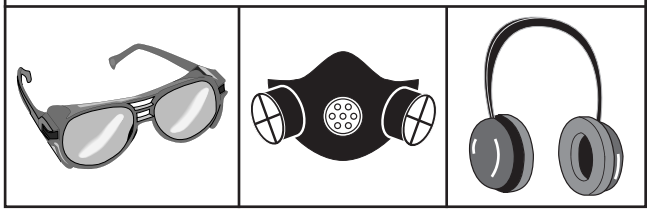
- Shearing die clearances (beginning on **Page 45**).
- Shearing table alignment (**Page 49**).
- Limit ring and stop positions (**Page 50**).
- Hydraulic fluid pressure (**Page 50**).

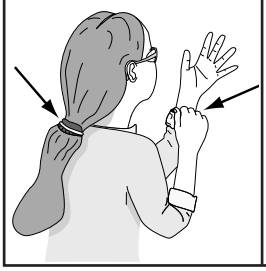
SECTION 4: OPERATIONS

Operation Safety

⚠WARNING

Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.





⚠WARNING

Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Basic Controls

Refer to **Figure 16** and the descriptions below to become familiar with the basic controls of your ironworker.

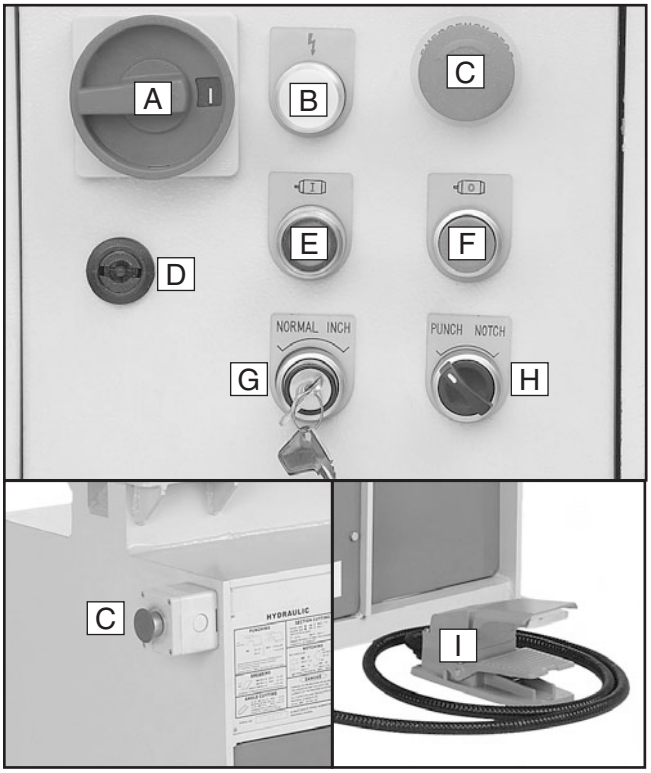


Figure 16. Basic controls.

A. Main Power Switch: Allows power to flow to the machine—"**I**" is ***ON***, and "**O**" is ***OFF***.

B. Power Lamp: Lights when power flows to the machine.

C. Emergency Stop Button: Turns power ***OFF*** to the machine, but does not disconnect the machine from power. There are two emergency stop buttons—on the main control panel and on the left side of the machine.

D. Electrical Cabinet Door Latch: Allows entry to the electrical cabinet when the main power switch is in the ***OFF*** position.

E. Motor Start Button: Turns the motor ***ON*** when there is power to the machine.

F. Motor Stop Button: Turns the motor ***OFF***.

G. Normal/Inch Switch: In **Normal** position, the beam moves to the end of the arc in the direction selected, then returns to the opposite end of the arc. In **Inch** position, the beam stops where it is when the foot actuator is released or it has reached the end of the arc—use this to "jog" the beam.

H. Punch/Notch Switch: Selects which direction the beam moves when the foot actuator is depressed.

I. Foot Actuator: Initiates the beam movement.

Operation Tips

- To produce quality cuts and avoid damage to your machine, stay within the operational capacities of your machine.
- Adjust the table guides, strippers, or hold-downs to keep the workpiece from unexpectedly moving up during the operation without restricting movement of the workpiece when required for the next cut.
- Use liberal lubrication on the dies and workpiece to reduce friction and wear on the tooling.
- The quality of the cut edges are an immediate indicator of the die condition. keep the dies clean of debris and mill scale. Sharp tooling cuts cleaner and with less wear on the machine.
- To avoid damage to the machine or tooling, cut completely through the workpiece unless you are using tooling designed for partial cutting.
- Dies are sharp! Always wear heavy leather gloves when handling the dies to protect your hands.

Punching

Use the punching station to perform general die work, bar bending, corner notching, and tube notching (additional tooling may be required for some processes). The punching table and guides accept a wide variety of workpiece shapes, and the front portion of the table is removable for flange punching. The limit stops are adjustable to set the most efficient stroke length for your operation (refer to **Page 33**).

Use the following formula to calculate the maximum punch diameter for the workpiece (all values are in millimeters):

$$\frac{\textbf{Machine Constant}}{\textbf{Workpiece Thickness}} = \textbf{Maximum Diameter of Punch}$$

The machine constants are:
Model G0646 330
Model G0647 420

Using the Punching Station

1. Set the controls to **Notch** and **Inch**, then raise the punching die up so that you can insert the workpiece.

2. Rotate both knurled stripper adjustment shafts together (see **Figure 17**) to raise the hold-down slightly higher than the thickness of the workpiece.

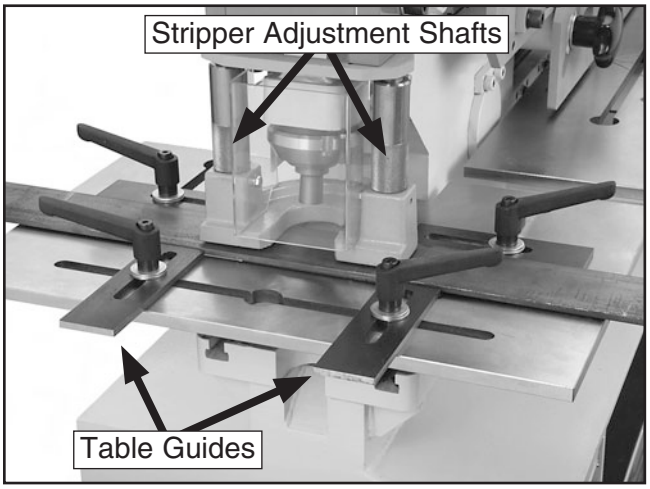


Figure 17. Typical punch station setup with a workpiece mounted on the table.

3. Brush one of the lubricants from **Figure 18** or an equivalent onto the punch, die, and both sides of the workpiece.

Brand	Type
B.P.	Servora 68
Castrol	Ilobroach 219
Duckhams	Adfornal EP7
Shell	Garia 927

Figure 18. Recommended cutting lubricants.

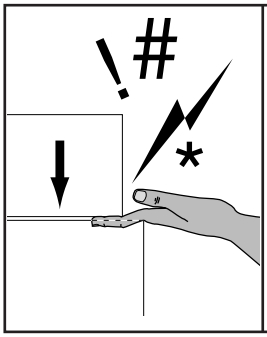
⚠WARNING

Poison Hazard! Use proper protection equipment when handling cutting fluid and only dispose by following federal, state, and fluid manufacturer requirements.

4. Position the workpiece under the punch and secure it in position with the table guides.

5. Set the controls to **Punch** and **Normal**, then use the foot actuator to punch the workpiece.

   Note: *When the punching operation is complete, the punch will automatically raise up out of the workpiece.*



⚠WARNING

The force of this ironworker can quickly smash or remove fingers or hands. Always keep clear of all cutting stations before using the foot actuator to begin the operation.

⚠WARNING

Tooling and workpiece could break apart under pressure, sending metal debris toward the operator at a high rate of speed. Always keep all safety guards and access panels in the correct position and secured when performing cutting operations to reduce the risk of this hazard.

Removing/Installing Punch Tooling

Tools Needed	Qty
Hex Wrench 6mm	1
Spanner Wrench (included)	1

To remove punch tooling:

1. Set the controls to **Notch** and **Inch**, use the foot actuator to raise the punch to the uppermost position, then stop the motor.

2. DISCONNECT MACHINE FROM POWER!

3. Loosen the knurled knob securing the right side of the stripper and safety guard assembly, then swing it away from the punch and die, as shown in **Figure 19**.

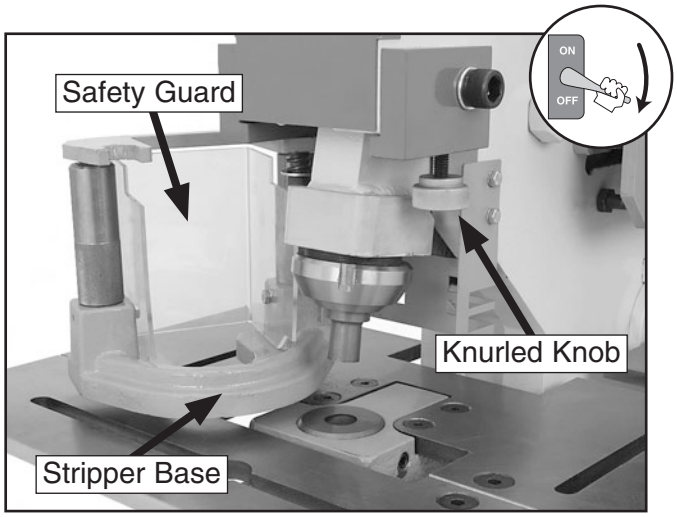


Figure 19. Punch stripper and safety guard assembly positioned away from the punch and die.

4. Loosen the die set screws on both sides of the punch bolster, then lift the die from below and remove it (see **Figure 20**).

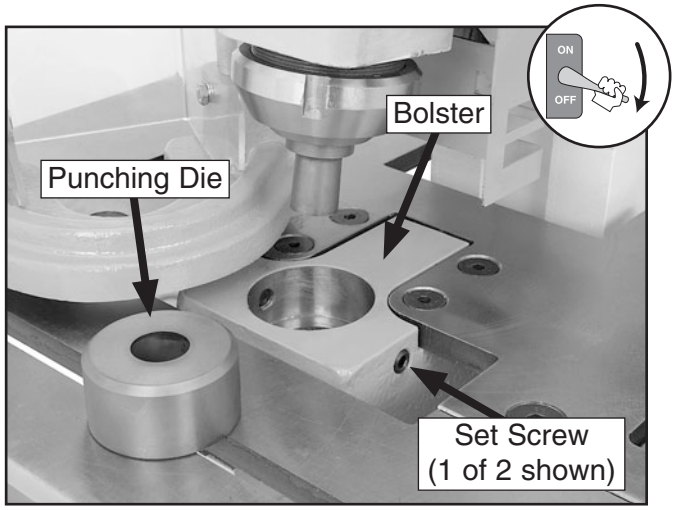


Figure 20. Punching die removed.

5. Use the spanner wrench to loosen and remove the punch retaining ring, then separate the punch adapter and die from the ring (see **Figure 21**).

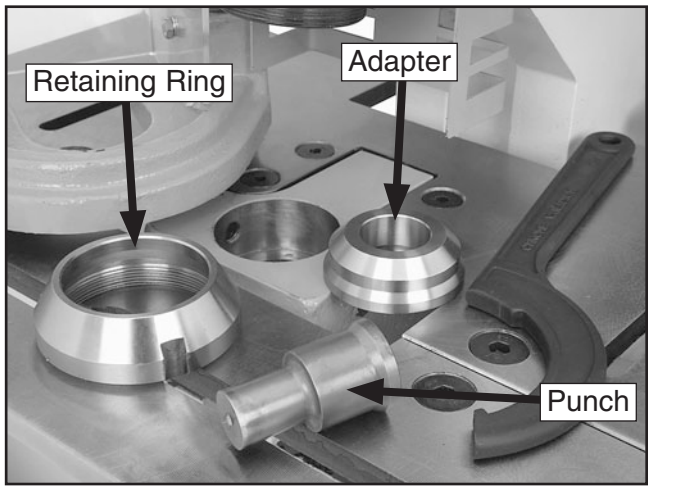


Figure 21. Punch assembly removed and separated.

6. Thoroughly clean any metal debris or grime off the punch, die, pressure plate, and bolster.

   Note: *If you are storing the punch and die, protect them with a light coat of an anti-rust product like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see* ***Section 5: Accessories*** *on* ***Page 35*** *for more details).*

To install punch tooling:

1. Set the controls to **Notch** and **Inch**, use the foot actuator to raise the punch to the uppermost position, then stop the motor.

2. DISCONNECT MACHINE FROM POWER!

3. Move the stripper and safety guard assembly out of the way.

4. Thoroughly clean the punch, die, pressure plate, and bolster, then re-lubricate them to prevent rust.

5. Place the adapter into the retaining ring, then the punch into the adapter (see **Figure 21**).

6. Center the assembly up against the punch pressure plate, then hand-tighten the retaining ring to secure it in place (see **Figure 22**).

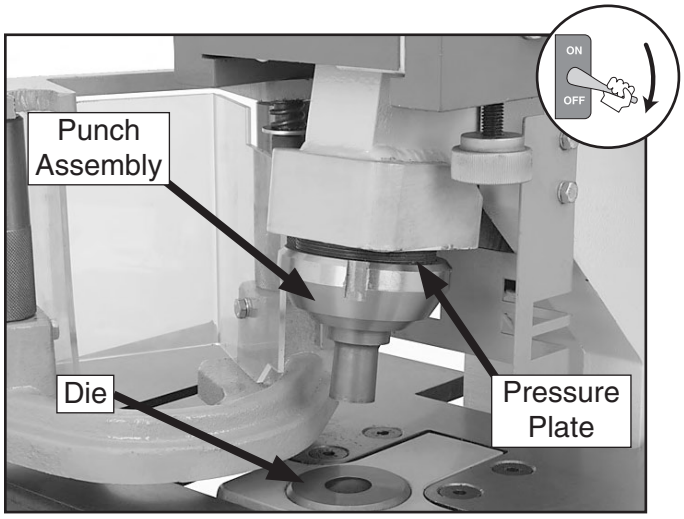


Figure 22. Punch, adapter, retaining ring, and die installed.

NOTICE

To reduce the risk of tooling breakage, the recommended side clearance between the punch and die is approximately 10% of the material thickness.

7. Use the spanner wrench to fully tighten the punch assembly onto the pressure plate.

8. Insert the die into the punch bolster with the larger opening down, but do not tighten the set screws (see **Figure 22**).

9. Set the controls to **Punch** and **Inch**, then reconnect the machine to power.

10. Turn the machine ***ON***, press the foot actuator to bring the punch near—but not into—the die, then stop the motor.

11. Press the emergency stop button to avoid unexpected movement of the tooling.

12. Align the die with the punch, then tighten the set screws on both sides of the punch bolster to hold the die in place.

    Note: *If you have difficulty aligning the punch with the die, you may have to reposition the punch bolster. Use a 19mm wrench to loosen the bolster mounting hex bolts (see **Figure 23**), move the bolster and die into alignment with the punch, then re-tighten the hex bolts.*

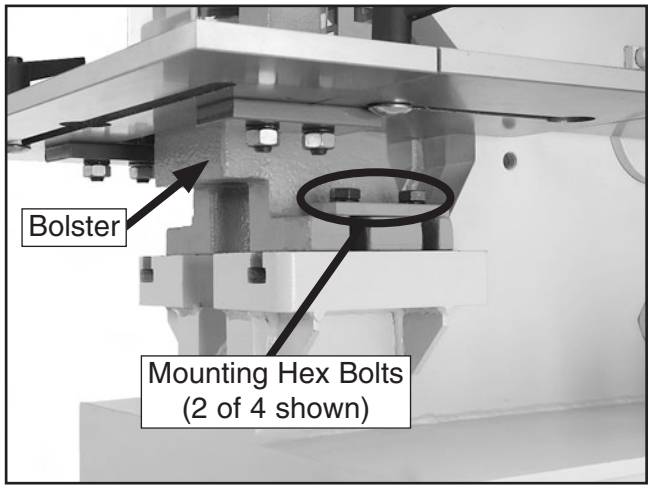


Figure 23. Punching bolster mounting hex bolts.

13. Properly re-position the stripper and safety guard assembly, reset the emergency stop button, then continue to jog the punch toward the die.

    Note: *Be prepared to quickly lift your foot from the pedal actuator to stop the punch if you suspect a mis-alignment or other problem.*

14. Set the controls to **Normal**, then move the punch in and out of the die several times to ensure proper operation of the tooling before mounting a workpiece onto the table.

⚠WARNING

To avoid tooling or workpiece breakage and the risk of possible injury to the operator, never attempt to cut a workpiece that is not adequately supported and held in place. Never attempt a cutting operation that is beyond the capacity of your machine.

Notching

The notching station sets up to make notches of varying sizes and shapes in flat bar mild steel stock. The limit stops are adjustable to set the most efficient stroke length for your operation (refer to **Page 33**).

Stay within the following notching capacities for your machine:

Model G0646
Maximum Thickness..... 5/16" (8mm)
Maximum Notch Width ..... 1 3/8" (35mm)
Maximum Notch Depth..... 3" (75mm)

Model G0647
Maximum Thickness..... 3/8" (10mm)
Maximum Notch Width ..... 1 5/8" (42mm)
Maximum Notch Depth..... 4" (100mm)

Using the Notching Station

1. Set the controls to **Punch** and **Inch**, then raise the notching die so that you can insert the workpiece.

2. Brush one of the lubricants from **Figure 18** on **Page 22** or an equivalent onto both sides of the workpiece.

3. Position the workpiece on the table and under the tooling, then use the table guides and other devices to support the workpiece (see **Figure 24**).

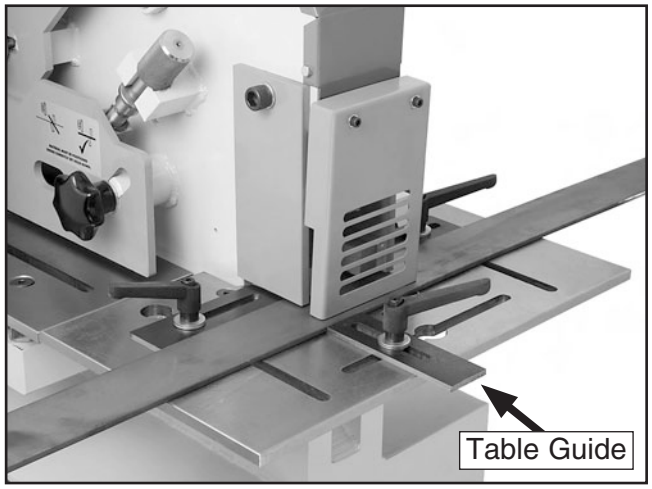


Figure 24. Typical workpiece positioning for the notching station.

4. Set the controls to **Notch** and **Normal,** then turn the motor ***ON***.

5. Stand clear of the machine and use the pedal actuator to perform the notching operation.

   Note: *When the notching operation is complete, the die will automatically raise up out of the workpiece.*

Removing & Installing Notch Dies

Tools Needed	Qty
Hex Wrenches 4, 5, 6, 8, 14mm	1 Each
Wrench 19mm	1
Feeler Gauges 1mm, 3mm	1 Each

To remove the notch dies:

1. Set the controls to **Punch** and **Inch**, raise the die to its uppermost position above the notching station, then turn the motor ***OFF***.

2. DISCONNECT MACHINE FROM POWER!

3. Remove the stripper plates from both sides of the notching station and the front safety guard (see **Figure 25**).

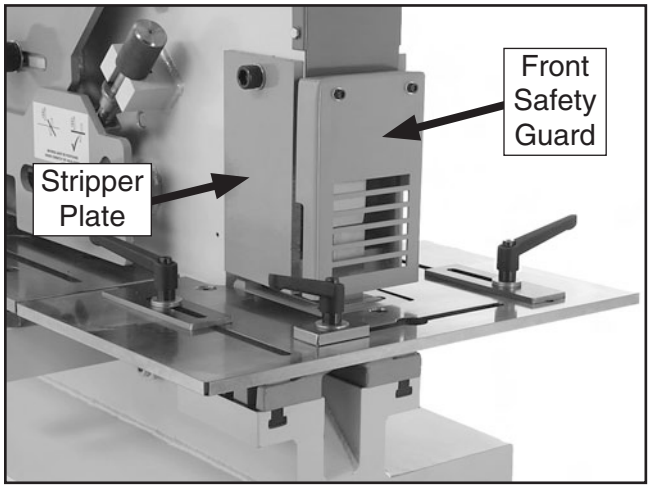


Figure 25. Notching station stripper plate and front safety guard.

⚠CAUTION

The edges of ironworker tooling are very sharp and can quickly cut fingers and hands. Always wear heavy leather gloves when handling tooling to avoid injury.

4. Remove the table guides, unthread the three flat head cap screws securing the notching table (see **Figure 26**), then remove the table.

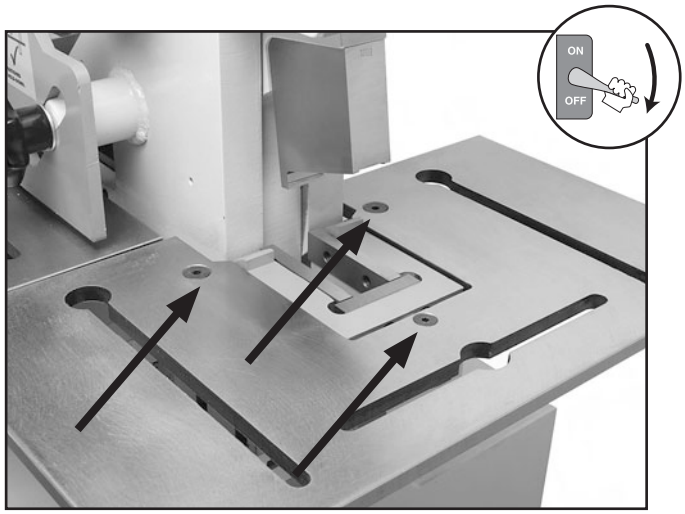


Figure 26. Flat head cap screws that secure the notching table.

5. Put on heavy leather gloves, hold the bottom dies (two side and one front) as you remove the cap screws that secure them to the bolster, then remove the dies (see **Figure 27**).

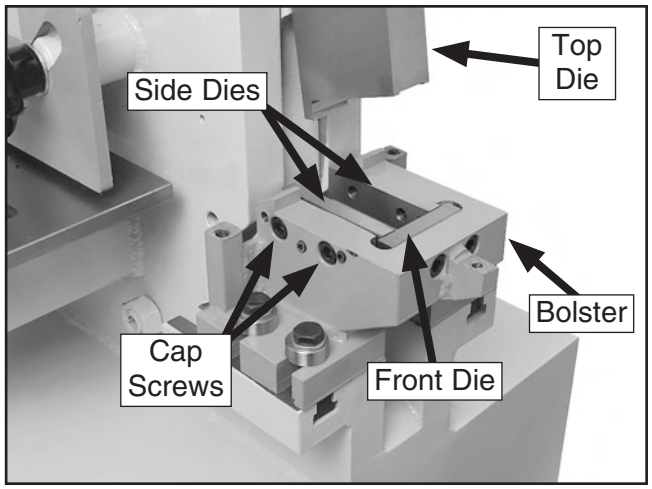


Figure 27. Notching dies.

6. Support the top die as you remove the two cap screws that secure it from the underside of the die.

7. Thoroughly clean any metal debris or grime off the dies and bolster.

   Note: *Before storing the punch and dies, protect them with a light coat of an anti-rust product like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see Section **5: Accessories** on **Page 35** for more details).*

Notch Die Clearances
Bottom Front Die and Top Die 3mm
Bottom Side Dies and Top Die..... 1mm

To install the notch dies:

1. Set the controls to **Punch** and **Inch**, raise the top die to its uppermost position above the notching station, then turn the motor ***OFF***.

2. DISCONNECT MACHINE FROM POWER!

3. Remove the stripper plates, front safety guard, and table, as described in the previous subsection.

4. Put on heavy leather gloves, support the top die up against the beam, then secure it with the two cap screws.

   Note: *Make sure the bottom flange (see **Figure 28**) of the included top die is positioned to the back and next to the beam.*

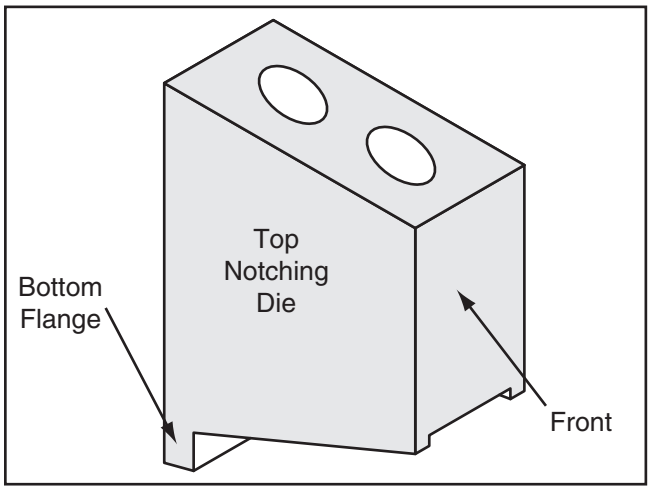


Figure 28. Top notching die orientation.

5. Install the front die into the bolster and fully secure it with the two cap screws.

6. Thread the side die adjustment set screws on both sides out 2–3 turns (see **Figure 29**), position the side dies into the bolster, then thread and fully tighten the cap screws through the bolster and into the die to hold them firmly against the bolster.

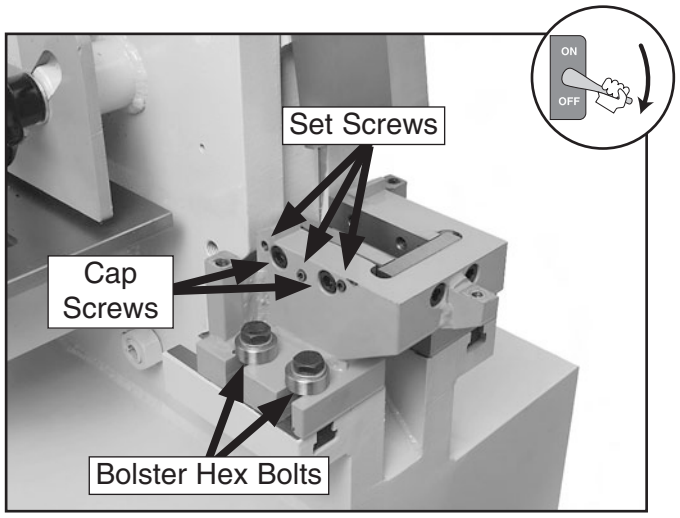


Figure 29. Notching side die set screw, cap screws, and bolster hex bolts.

7. Set the controls to **Notch** and **Inch**, then reconnect the machine to power.

   Note: *The goal of the next set of procedures is to bring the top die down through the bottom dies so that the clearance between them can be adjusted. It may be necessary to move the bolster forward, as described in* ***Step 10*** *below, so that the punch can clear the front die.*

8. Turn the machine ***ON***, then use the foot actuator to bring the top die down into the bottom dies.

   Note: *When in the* ***Inch*** *mode, lifting your foot from the foot actuator will stop the beam and hold it in that position.*

9. Press the emergency stop button to avoid unexpected movement of the tooling.

10. Loosen the bolster hex bolts (see **Figure 29**), adjust the bolster so that there is a clearance of 3mm between the top and front dies, then re-tighten the bolster hex bolts.

    Note: *During this step, attempt to evenly distribute the gaps on the sides.*

11. Alternately loosen the side die cap screws and adjustment set screws until there is a 1mm gap evenly between the top and side dies (see **Figure 30**).

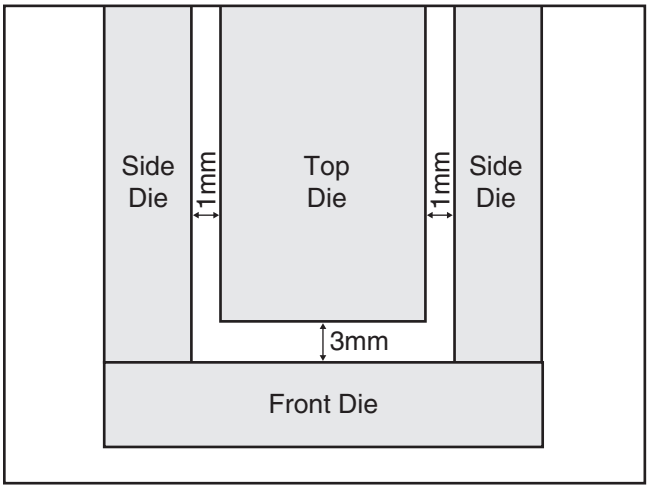


Figure 30. Notching die clearances.

12. Fully tighten the side die cap screws, then recheck all clearances.

13. Re-install the table, front safety guard, and the side stripper plates.

14. Set the controls to **Normal**, then move the top die in and out of the bottom dies several times to check for correct positioning before continuing with operations.

Flat Stock Shearing

The flat stock shearing station is designed to straight or angle cut flat stock or cut one flange of angle iron stock. Use the adjustable hold-down and table guides for safe and accurate cuts.

Stay within the following flat stock shearing capacities for your machine:

Model G0646
Maximum Thickness w/8" (200mm)
Workpiece Width ..... 5/8" (15mm)
Maximum Thickness w/12" (300mm)
Workpiece Width ..... 1/2" (12mm)
Maximum Thickness for Single Flange
Cut w/3" x 3" (80mm x 80mm)
Angle Iron ..... 3/8" (10mm)

Model G0647
Maximum Shearing
Thickness w/8" (200mm)
Workpiece Width ..... 3/4" (20mm)
Maximum Shearing
Thickness w/12" (300mm)
Workpiece Width ..... 5/8" (15mm)
Maximum Thickness for Single Flange
Cut w/ 3" x 3" (80mm x 80mm)
Angle Iron ..... 3/8" (10mm)

⚠WARNING

To avoid tooling or workpiece breakage and the risk of possible injury to the operator, never attempt to cut a workpiece that is not adequately supported and held in place. Never attempt a cutting operation that is beyond the capacity of your machine.

The workpiece MUST extend through the hold-down and through the dies, as shown in **Figure 31**, to avoid sudden unexpected upward movement of the workpiece during the cutting operation.

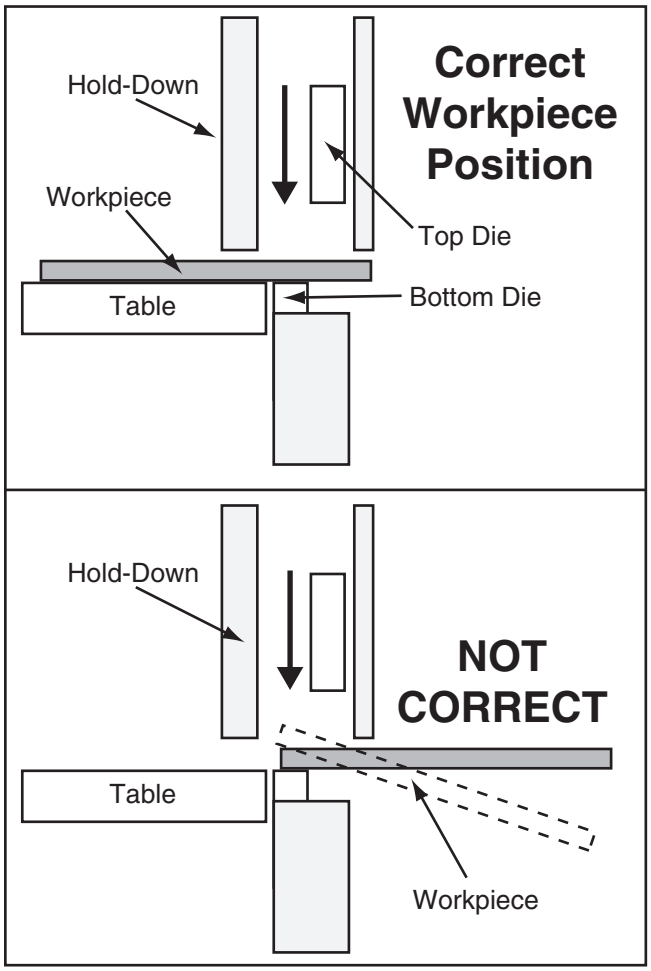


Figure 31. Flat stock shearing workpiece position.

NOTICE

To make accurate and safe flat stock cuts, be sure the table and bottom shearing die are level and even with each other (refer to *Shearing Table Alignment* on *Page 49*).

To shear flat stock:

1. Set the controls for **Punch** and **Inch**, use the foot actuator to raise the top shearing die and make room for the workpiece, then turn the motor ***OFF***.

2. Brush one of the lubricants from **Figure 18** on **Page 22** or an equivalent onto both sides of the workpiece.

3. Loosen the lock knobs on the flat stock hold-down (see **Figure 32**), then rotate the shearing hold-down adjustment rod to lift the hold-down up enough to clear the workpiece.

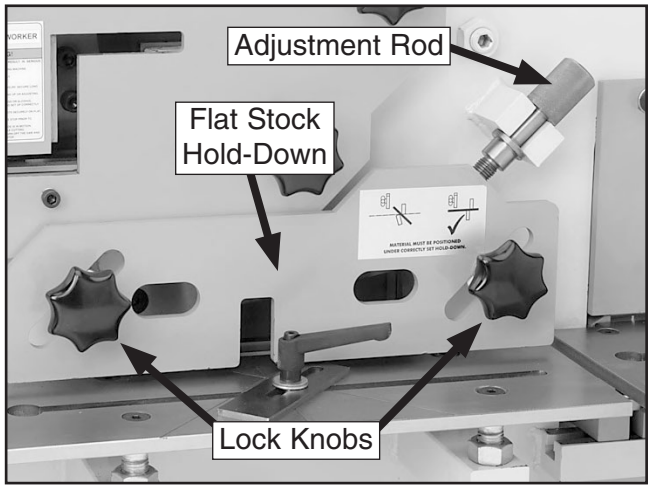


Figure 32. Flat stock hold-down, lock knobs, and adjustment rod.

4. Position the workpiece under the hold-down and beyond the shearing dies (refer to **Figure 31** on **Page 28**).

5. Tighten the adjustment rod so that the hold-down clamps the workpiece against the shearing table, then re-tighten the lock knobs (see **Figure 33**).

   Note: *Use the scored lines in the table to align the workpiece.*

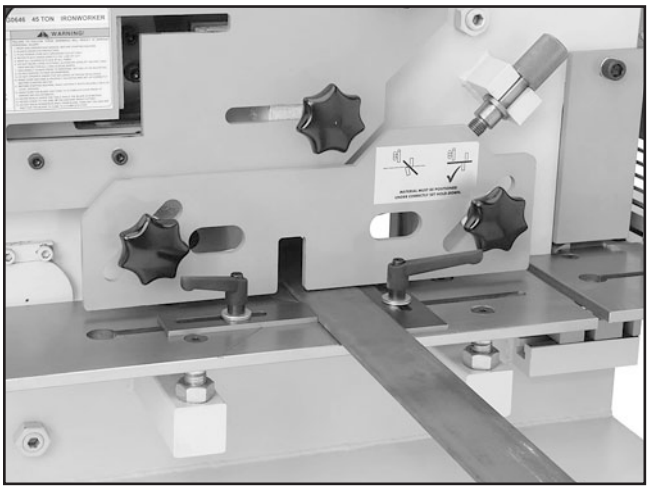


Figure 33. Example of flat bar shearing setup.

6. Set the controls for **Normal** and **Notch**, start the motor, then use the foot actuator to shear the workpiece.

   Note: *Make sure the cut piece falls through the rear exit panel and away from the dies so that it does not interfere with the next operation.*

⚠WARNING

Tooling and workpiece could break apart under pressure, sending metal debris toward the operator at a high rate of speed. Always keep all safety guards and access panels in the correct position and secured when performing cutting operations to reduce the risk of this hazard.

Bar Stock Shearing

Use the bar stock shearing station to cut solid, mild steel round, square, and rectangular bar material.

Stay within the following bar stock shearing capacities for your machine:

Model G0646
Maximum Round Bar Diameter..... 1 3/16" (30mm)
Maximum Square Bar
Dimensions.....1 3/16" x 1 3/16" (25mm x 25mm)

Model G0647
Maximum Round Bar Diameter..... 1 9/16" (40mm)
Maximum Square Bar
Dimensions..... 1 3/8" x 1 3/8" (35mm x 35mm)

To shear bar stock:

1. Set the controls for **Punch** and **Inch**, use the foot actuator to raise the top shearing die and make room for the workpiece, then turn the motor ***OFF***.

2. Brush one of the lubricants from **Figure 18** on **Page 22** or an equivalent onto both sides of the workpiece.

3. Loosen the three lock knobs of the shearing support frame (see **Figure 34**).

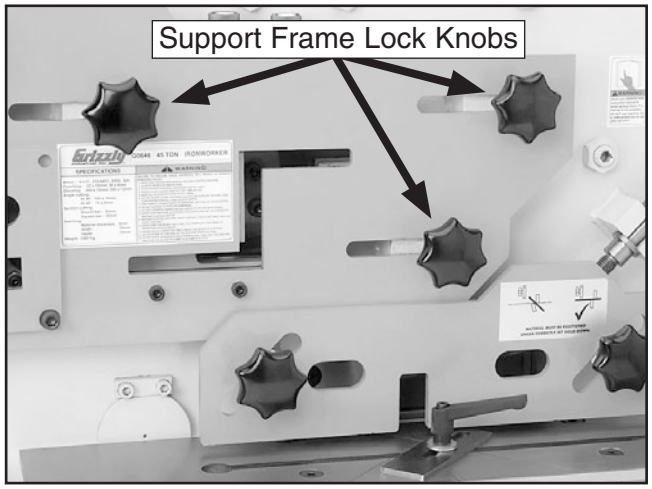


Figure 34. Front support frame lock knobs.

4. Rotate the support frame handwheel to align the bar stock openings in the support frame with the openings in the dies (see **Figure 35**), then re-tighten the lock knobs.

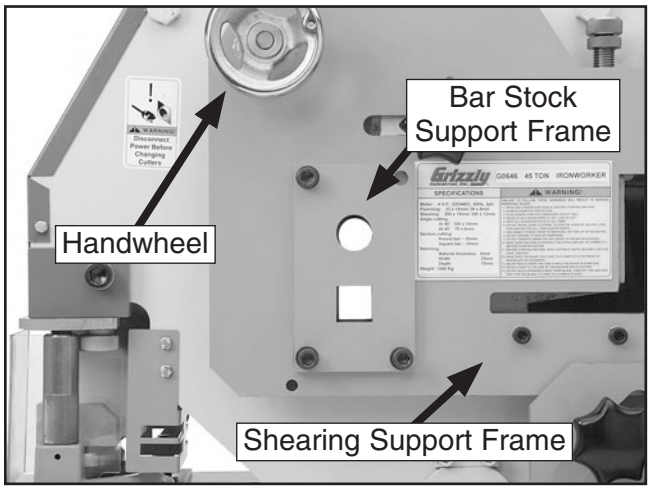


Figure 35. Bar stock support frame openings aligned with die openings.

5. Feed the workpiece through the appropriate opening (see **Figures 36–37**).

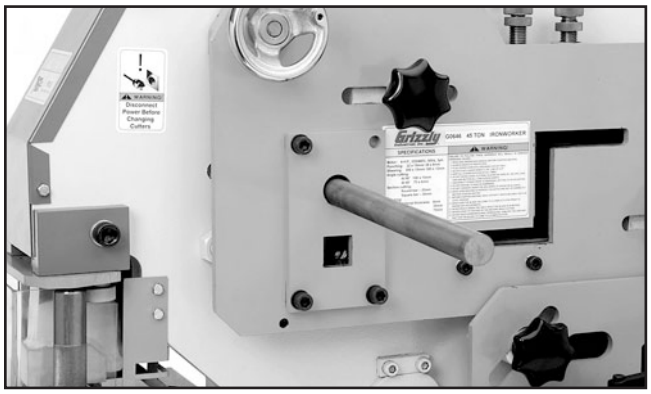


Figure 36. Example of round bar shearing setup.

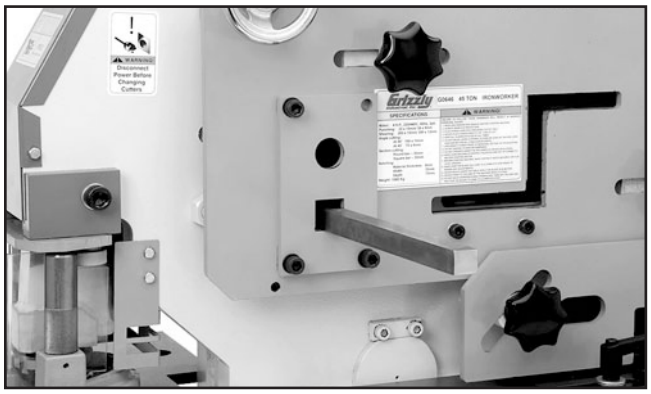


Figure 37. Example of square bar shearing setup.

6. Set the controls for **Notch** and **Normal**, then use the pedal actuator to perform the shearing operation.

   Note: *Make sure the cut piece falls through the rear exit panel and away from the dies so that it does not interfere with the next operation.*

⚠CAUTION

The workpiece MUST extend through the support frame and beyond the dies to avoid sudden unexpected movement of the workpiece when cutting (refer to the illustration in *Figure 31* on *Page 28*). Fully support and flag long workpieces to reduce the risk of hazards.

Extension Bar

The included extension bar assembly mounts on the rear of the machine above the bar stock exit panel (see **Figure 38**), and provides a method of repetitive measure production bar stock cutting. The guide bar and extension bar pivot and adjust to accommodate various lengths of bar stock. The support shaft receives the end of the bar stack as it is fed through the front and beyond the rear exit panel.

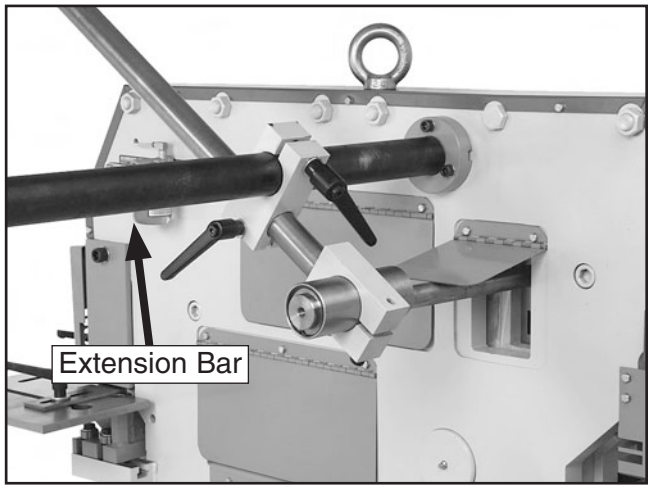


Figure 38. Example of bar stock setup with the extension bar.

Angle Iron Shearing

Use the angle iron shearing station to make 45°–90° cuts in mild steel angle iron.

Stay within the following bar stock shearing capacities for your machine:

Model G0646
90° Cut:
Maximum Width..... 4" (100mm)
Maximum Thickness..... 3/8" (10mm)
45° Cut:
Maximum Width..... 2 3/4" (70mm)
Maximum Thickness..... 1/4" (6mm)

Model G0647
90° Cut:
Maximum Width..... 4 3/4" (120mm)
Maximum Thickness..... 1/2" (12mm)
45° Cut:
Maximum Width..... 3 1/8" (80mm)
Maximum Thickness..... 5/16" (8mm)

Making a 90° Cut

1. Set the controls for **Punch** and **Inch**, use the foot actuator to raise the top shearing die and make room for the workpiece, then turn the motor ***OFF***.

2. Brush one of the lubricants from **Figure 18** on **Page 22** or an equivalent onto both sides of the workpiece.

Continued on next page ⟶

3. Loosen the three lock knobs of the shearing support frame (see **Figure 39**).

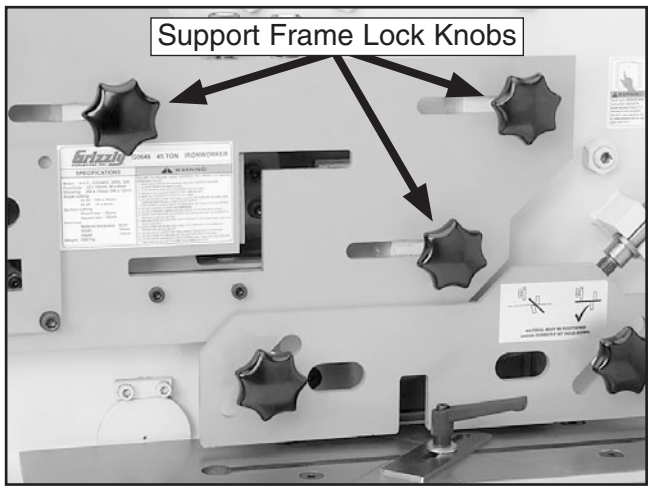


Figure 39. Front support frame lock knobs.

4. Rotate the support frame handwheel to align the angle iron opening in the frame with the opening in the dies, then re-tighten the lock knobs.

5. Thread the appropriate hold-down screw up, then feed the workpiece through the front of the support frame and beyond the dies (see **Figure 40**).

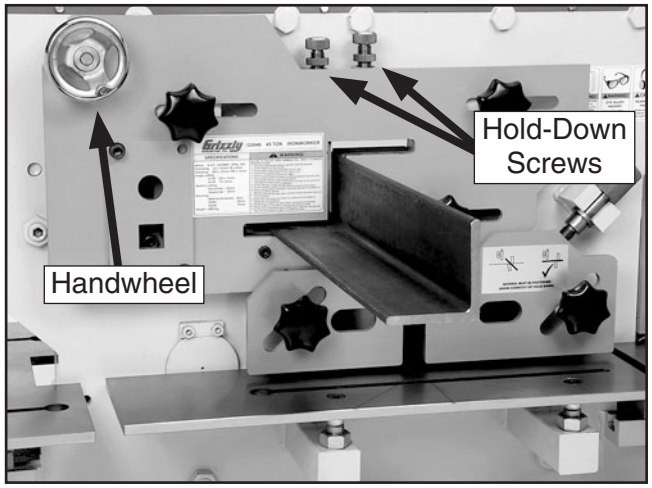


Figure 40. Example of angle iron shearing setup to make a 90° cut.

6. Tighten the hold-down screw close enough to the workpiece so that it will not move up during the shearing operation.

7. Set the controls to **Notch** and **Normal**, then use the foot actuator to perform the shearing operation.

   Note: *Make sure the cut piece falls through the rear exit panel and away from the dies so that it does not interfere with the next operation.*

Making a Less Than 90° Cut

Follow the same steps for making a 90° cut in angle iron except position the workpiece at an angle to the dies. To accomplish this, insert the workpiece and move the support frame until the workpiece reaches the desired angle, as shown in **Figure 41**, then tighten the hold-down screw.

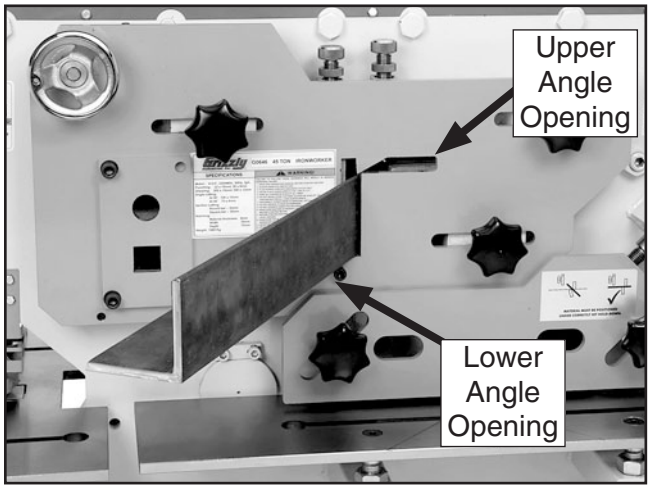


Figure 41. Example of angle iron setup to make an inner 45° cut.

Note: *To make an inner angled cut, use the bottom angle opening (see **Figure 41**). Conversely, to make an outer angled cut, use the upper angle opening.*

Adjusting Stroke Length

The stroke length of the beam and attached tooling is adjusted by moving the position of the limit stops. The typical benefit of adjusting the stroke length is to shorten the distance the tooling moves away from the workpiece to decrease the amount of cycle time needed between cuts.

Keep in mind that most tooling requires that the die or punch passes entirely through the workpiece.

Turn the machine off, then use a 10mm wrench to remove the hex bolts and the access panel to the limit stop assembly. Become familiar with the different parts of the assembly, as shown in **Figure 42**, and their descriptions listed below.

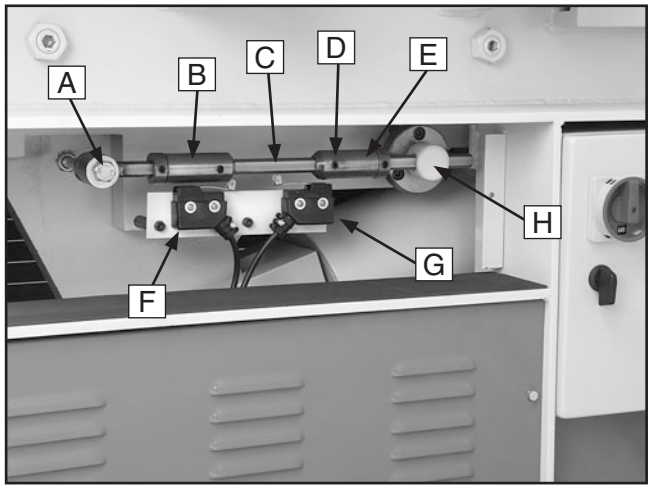


Figure 42. Limit stop assembly.

A. Beam Attachment: Moves the limit bar and limit stops from side-to-side with the movement of the beam.

B. Limit Ring: Stops the limit stop from moving past the maximum outbound setting. The limit ring is set at the factory and should not be moved.

NOTICE

Damage to the machine, tooling, or stock that is a result of incorrect settings made to the limit stops will not be covered under warranty. DO NOT change the factory settings of the limit rings.

C. Limit Bar: Moves with the beam and enables the limit stops to engage the limit switches.

D. Limit Stop Set Screw: When loosened, allows the limit stop to be re-positioned.

E. Limit Stop: Engages the limit switch as the limit bar moves with the beam.

F. Punch Limit Switch: When engaged by the left limit stop, reverses the beam movement and lifts the punch up and away from the punching station (in **Punch** mode), or stops the beam (in **Notch** mode).

G. Notch Limit Switch: When activated by the right limit stop, reverses the beam movement and lifts the top die up and away from the notching station (in **Notch** mode), or stops the beam (in **Punch** mode).

H. Limit Bar Support Bracket: Provides support for the limit bar as it moves from side to side.

Tools Needed	**Qty**
Hex Wrench 4mm	1
Wrench 10mm	1

To adjust the stroke length:

1. Turn the motor ***OFF***, and press the emergency stop button to prevent unexpected movement of the beam.

2. Remove the limit stop assembly access panel from the front of the machine.

3. Loosen the limit stop set screw, move the limit stop along the limit bar, then re-tighten the set screw.

   Note: *A small adjustment to the limit stop position makes a large difference in the stroke length. Make small adjustments, then test the results.*

4. Set the controls to **Inch** and in the desired direction, reset the emergency stop button, then turn the machine ***ON***.

5. Keep clear of the machine and use the pedal actuator to test the adjustment.

   Note: *Be ready to immediately lift your foot from the pedal actuator to stop the beam in the case of a problem.*

6. When you are satisfied with the adjustment and results, re-install the limit stop assembly access panel.

⚠WARNING

Tooling and workpiece could break apart under pressure, sending metal debris toward the operator at a high rate of speed. Always keep all safety guards and access panels in the correct position and secured when performing cutting operations to reduce the risk of this hazard.

Beam Lubrication

To keep the beam movement smooth, use the one-shot beam oiler (see **Figure 43**) before beginning operation and at least once every 4-hours of operation.

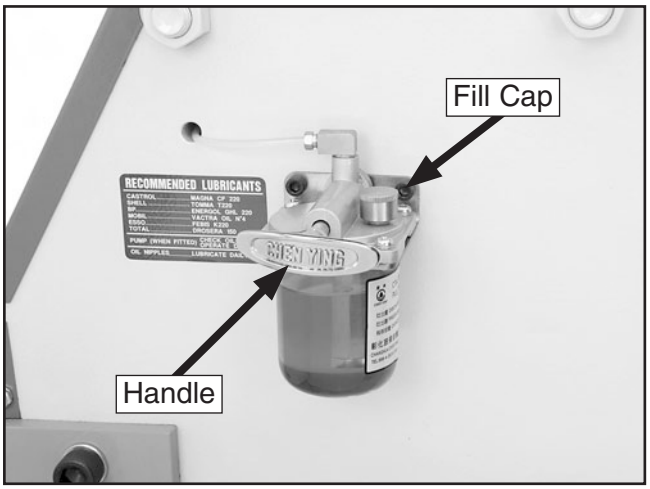


Figure 43. One-shot beam oiler on the rear panel.

Merely pull the handle of the oiler out, then let it go. The oiler will force the lubricant through the oil lines to points between the beam and the front/rear panels that are subject to friction.

Fill the oiler with one of the lubricants from **Figure 44** or an equivalent.

Brand	Type
B. P.	Energol GHL 220
Castrol	Magna CF 220
Esso	Febis K220
Mobil	Vactra Oil #4
Shell	Tonna S2 M
Total	Drosera 150

Figure 44. Recommended beam one-shot oiler lubricants.

SECTION 5: ACCESSORIES

G5562—SLIPIT® 1 Qt. Gel
G5563—SLIPIT® 12 oz Spray
G2871—Boeshield® T-9 12 oz Spray
G2870—Boeshield® T-9 4 oz Spray
H3788—G96® Gun Treatment 12 oz Spray
H3789—G96® Gun Treatment 4.5 oz Spray

Figure 45. Recommended products for protecting unpainted cast iron/steel part on machinery.

T20501—Face Shield, 4" Crown, Clear
T20502—Face Shield, 7" Crown, Clear
T20448—Economy Clear Safety Glasses
T20452—"Kirova" Anti-Reflective Glasses
T20456—"Dakura" Clear Safety Glasses
H0736—Shop Fox® Safety Glasses
These glasses meet ANSI Z87.1-2003 specifications. Buy extras for visitors or employees. You can't be too careful with shop safety!

Figure 46. Our most popular eye protection.

G5330—Cobra™ Fluid Dispensing System
Step into the future of hands-free lubrication with the Cobra™ Fluid Dispensing System. This fully adjustable, foot controlled system holds a pint of lubricating fluid and requires no compressed air or electricity. Perfect for milling, drilling, tapping, or cutting, this portable system features a 7-foot supply line, flexible magnetic base needle dispenser, and five replaceable nozzle tips.

Figure 47. Cobra™ Fluid Dispensing System.

H7379—Tapmatic® #1 Gold 16 oz.
H7380—Tapmatic® #1 Gold 1 Gal.
This superb cutting fluid is great for both steel and aluminum, is excellent for low speed, high pressure applications, minimizes torque increases, does not contain chlorinated paraffins, water, solvents or inactive fillers.

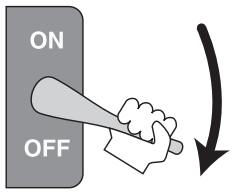
Figure 48. Tapmatic® #1 Gold cutting fluid.

Call 1-800-523-4777 To Order

Available Tooling

T20571—5/16” Round Punch
T20572—3/8” Round Punch
T20573—7/16” Round Punch
T20574—1/2” Round Punch
T20575—5/8” Round Punch
T20576—23/32” Round Punch
T20577—3/4” Round Punch
T20578—7/8” Round Punch
T20579—1” Round Punch
T20580—11/32” Round Die
T20581—13/32” Round Die
T20582—15/32” Round Die
T20583—17/32” Round Die
T20584—21/32” Round Die
T20585—3/4” Round Die
T20586—25/32” Round Die
T20587—29/32” Round Die
T20588—1-1/32” Round Die
T20589—8mm Round Punch
T20590—10mm Round Punch
T20591—12mm Round Punch
T20592—15mm Round Punch
T20593—19mm Round Punch
T20594—22mm Round Punch
T20595—26mm Round Punch
T20596—8.8mm Round Die
T20597—10.8mm Round Die
T20598—12.8mm Round Die
T20599—15.8mm Round Die
T20600—19.8mm Round Die
T20601—22.8mm Round Die
T20634—26.8mm Square Die
T20602—26.8mm Round Die
T20603—5/16” Square Punch
T20604—3/8” Square Punch
T20605—7/16” Square Punch
T20606—1/2” Square Punch
T20607—5/8” Square Punch
T20608—23/32” Square Punch
T20609—3/4” Square Punch
T20610—7/8” Square Punch
T20611—1” Square Punch
T20612—11/32” Square Die
T20613—13/32” Square Die
T20614—15/32” Square Die
T20615—17/32” Square Die
T20616—21/32” Square Die
T20617—3/4” Square Die
T20618—25/32” Square Die
T20619—29/32” Square Die
T20620—1-1/32” Square Die
T20621—8mm Square Punch
T20622—10mm Square Punch
T20623—12mm Square Punch
T20624—15mm Square Punch
T20625—19mm Square Punch
T20626—22mm Square Punch
T20627—26mm Square Punch
T20628—8.8mm Square Die
T20629—10.8mm Square Die
T20630—12.8mm Square Die
T20631—15.8mm Square Die
T20632—19.8mm Square Die
T20633—22.8mm Square Die

SECTION 6: MAINTENANCE



⚠WARNING
Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

Schedule

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

Daily Check:
- Loose mounting bolts.
- Damaged tooling.
- Worn or damaged wires.
- Operating temperature of hydraulic fluid.
- Any other unsafe condition.

Daily Maintenance:
- Check/fill hydraulic reservoir level.
- Check/fill lubricant in beam one-shot oiler.
- Clean and protect all unpainted surfaces and tooling.

Monthly Maintenance:
- Lubricate as necessary (refer to **Lubrication** on **Page 38**).
- Clean built-up grime and debris from inside cabinet and off motor.

Quarterly Maintenance:
- Check/adjust beam alignment.

Annual Maintenance:
- Drain, clean, and re-fill hydraulic system.

Cleaning & Protecting

Wipe away built-up grime and debris from all stations, tables, and tooling. Clean away any remaining material with a solvent or mineral spirits product such as the cleaner/degreaser from Grizzly shown in **Figure 9** on **Page 15**.

When thoroughly clean and dry, protect the unpainted metal surfaces with an application of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 35** for more details).

At least once a month, open the bottom access panels and clean off debris and grime from the motor, pump, ram assembly, reservoir, and limit stop assemblies.

Lubrication

There are four points on the ironworker that require at least monthly lubrication: 1) The beam pivot shaft, 2) the shearing hold-down adjustment rod, 3) the angle iron hold-down screws, and 4) the shearing support frame leadscrew and beveled gears.

Before lubrication, wipe debris and built-up grime from all threaded parts and gearing. Clean away any remaining material with a solvent or mineral spirits product such as the cleaner/degreaser from Grizzly shown in **Figure 9** on **Page 15**.

Beam Pivot Shaft

Use a grease gun to add 1–2 pumps of multi-purpose automotive-grade grease to the beam pivot shaft grease fitting on the rear of the machine (see **Figure 49**).

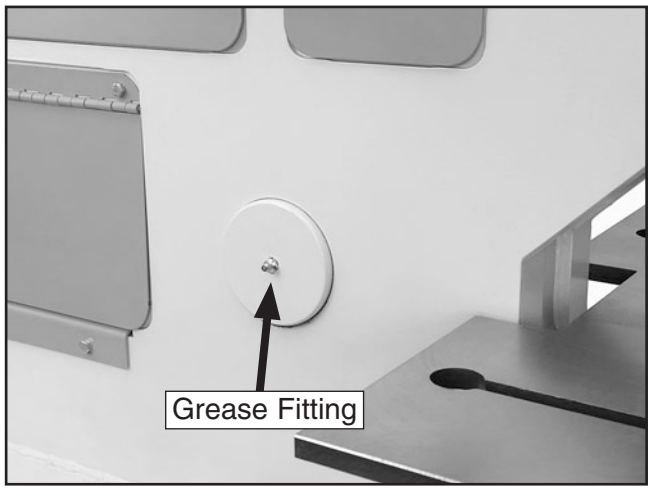


Figure 49. Beam pivot shaft grease fitting on the rear panel.

NOTICE

Failure to perform proper lubrication maintenance on this machine will lead to premature wear of the moving parts and will void the warranty.

Shearing Hold-Down Adjustment Rod

1. DISCONNECT MACHINE FROM POWER!

2. Remove the two lock knobs and the shearing hold-down from the machine.

3. Turn the hold-down over and unscrew the adjustment rod from the hold-down, then thoroughly clean the threads of the rod and the nut (see **Figure 50**).

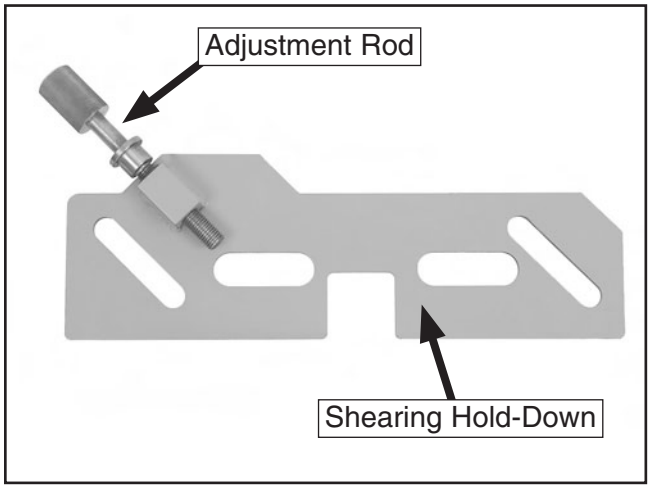


Figure 50. Back side of shearing hold-down and adjustment rod.

4. Brush a light coat of multi-purpose automotive-grade grease onto the threads and the contact points with the shearing hold-down, then re-install the adjustment rod and hold-down.

Support Frame Lubrication

1. DISCONNECT MACHINE FROM POWER!

2. Remove the three lock knobs and shearing support frame from the machine.

3. Turn the support frame over, remove the two hold-down screws, then thoroughly clean the threads of the screws, lock rings, and nuts (see **Figure 51**).

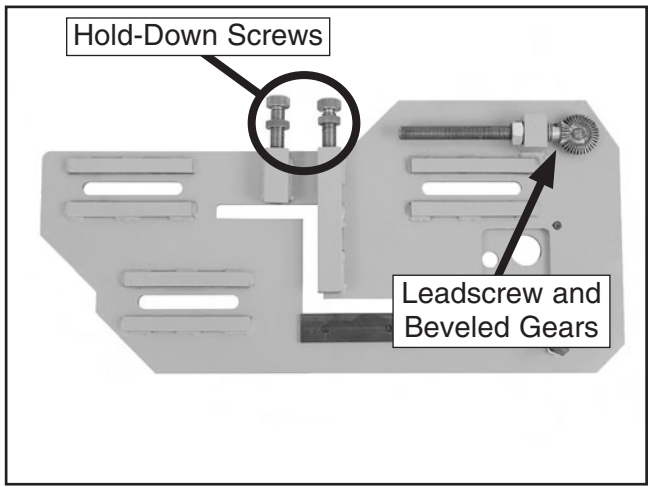


Figure 51. Back side of shearing support frame.

4. Brush a light coat of multi-purpose automotive-grade grease onto the threads, then re-install the hold-down screws.

5. Thoroughly clean the threads of the leadscrew, beveled gears, and leadscrew nut (see **Figures 51–52**).

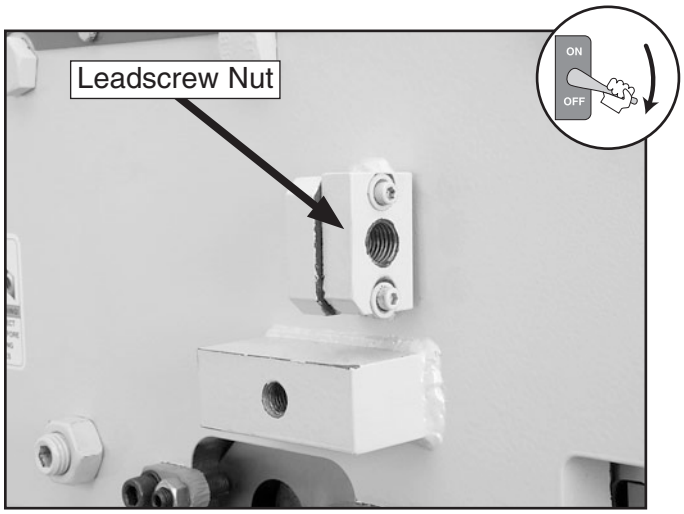


Figure 52. Shearing support frame leadscrew nut.

6. Brush a light coat of multi-purpose automotive-grade grease onto the threads and gears, then re-install the support frame on the machine.

Hydraulic System

Fluid Capacity
Hydraulic Reservoir ..... Approx. 15 gal. (60 L.)

The hydraulic system must be maintained on a regular basis and kept in good operating condition so that the ironworker can perform safely and at the rated capacity.

If you have never maintained a hydraulic system before, WE STRONGLY RECOMMEND that you read books, get formal training, or seek the help of a qualified hydraulic service technician.

NOTICE

Failure to perform regular and proper hydraulic system maintenance and to keep the hydraulic system in good operating condition will lead to premature wear of the moving parts, hoses, and valves, and will void the warranty.

Use the sight glass mounted on the rear of the hydraulic reservoir (see **Figure 53**) to check the fluid level and temperature. Maintain the fluid level above the red line on the sight glass.

Figure 53. Hydraulic fluid reservoir sight glass (rear access panel removed for photo clarity).

The operating temperature of the hydraulic fluid should not exceed 160°F (70°C) with an optimum operating temperature window of 50–95°F (10–35°C). If the fluid temperature rises above 160°F, stop the machine immediately and allow the fluid to cool down.

If this condition continues during operation, stop using the machine immediately, then review **Troubleshooting** on **Page 43**. If you still cannot remedy the problem, contact a qualified hyraulic service technician or our Tech Support at (570) 546-9663 for assistance.

Filling Hydraulic Reservoir

Tools Needed **Qty**
Wrench 10mm 1

1. DISCONNECT MACHINE FROM POWER!
2. Remove the rear access panel.
3. Remove the filler cap and add one of the recommended hydraulic fluids from **Figure 54** or an equivalent to bring the fluid level in the sight glass above the red line.

Brand	Type
B.P.	Energol HLP 32
Castrol	Hyspin AWS 82-6018
Esso	Nuto H32
Mobil	DTE 24
Shell	Tellus 32
Total	Azolla ZS 32

Figure 54. Recommended hydraulic fluids.

⚠WARNING

BIOLOGICAL AND POISON HAZARD!
Use proper personal protection equipment when handling hydraulic fluid, and follow federal, state, and fluid manufacturer requirements to properly dispose of hydraulic fluid.

Draining & Re-Filling Hydraulic Reservoir

Tools Needed	Qty
Wrench 10mm	1
Large Adjustable Wrench	1
Oil Catch Pan	1

To drain and re-fill the hydraulic reservoir:

1. DISCONNECT MACHINE FROM POWER!

2. Remove the rear access panel.

3. Unscrew the filler cap, and take out the filter from the filler neck (see **Figure 55**).

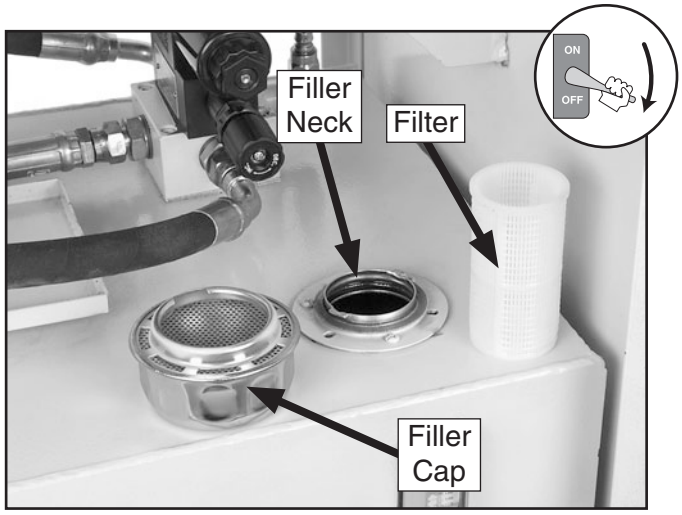


Figure 55. Hydraulic reservoir filler components.

⚠WARNING

HYDRAULIC INJECTION HAZARD.

Hydraulic oil leaks can be under sufficient pressure to penetrate your skin and enter your bloodstream. If oil is injected into any part of your body, it is a medical emergency and may, if not treated immediately, result in severe infection, permanent disability, or even death.

4. Remove the drip pan and reservoir access plate from the top of the reservoir (see **Figure 56**).

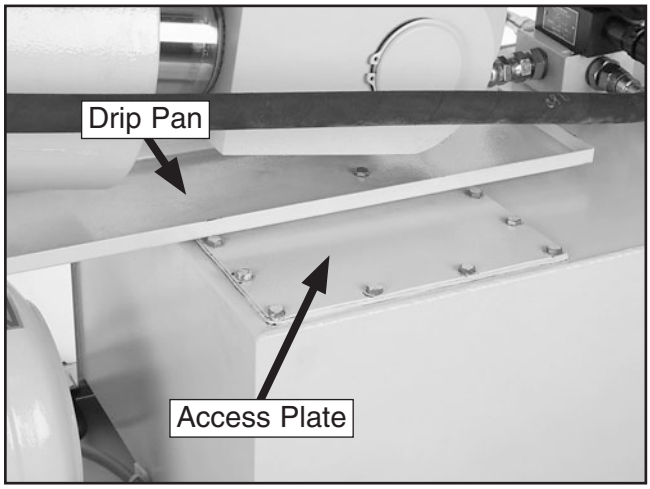


Figure 56. Top of hydraulic reservoir.

5. Position an oil catch pan under the outlet connection (see **Figure 57**) of the reservoir, and carefully remove the outlet hose to drain the contents of the reservoir.

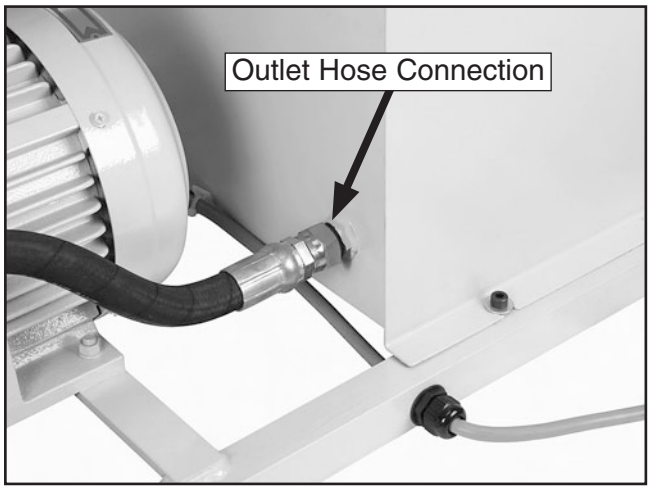


Figure 57. Hydraulic reservoir outlet hose connection.

6. Reach through the opening in the top of the reservoir left by the access plate and remove the outlet filter from the reservoir.

7. Thoroughly clean the filler cap, both filters, and the inside of the reservoir with solvent or mineral spirits. Make sure to wipe and dry all fluid residue from the parts, inside the reservoir, and the surrounding area.

NOTICE

If fluid contamination is severe or there has been a component failure, have a qualified hydraulic technician thoroughly flush the system. Failure to follow this instruction could lead to premature wear of the hydraulic system and will void the warranty.

8. When all parts are clean and dry, re-assemble them and fill the reservoir with one of the recommended hydraulic fluids from **Figure 54** or an equivalent.

9. With the front and rear access panels removed from the machine, re-connect the machine to power and turn it ***ON***.

10. Carefully check all hoses and connections for leaks, then stand clear of the machine and move the beam back and forth to verify proper operation of the hydraulic system.

    Note: *Use a clean piece of cardboard to check for leaks—NOT your hands.*

11. Turn the machine ***OFF***, then re-install the front and rear access panels.

Beam Alignment

As the beam slides back and forth between the front and rear panels, four bronze pressure pads keep the beam and the attached tooling properly aligned for safe and smooth operation. These pressure pads wear under normal conditions and require adjustment.

The tooling randomly being in and out of alignment is a strong indicator that the beam may need alignment.

Tools Needed	**Qty**
Hex Wrench 8mm	1
Hex Wrench 12mm	1
Adjustable Wrench	1

To align the beam:

1. DISCONNECT MACHINE FROM POWER!

2. Remove the shearing hold-down, shearing support frame, and shearing table from the machine.

3. Identify the four beam adjustment lock nuts and set screws on the front of the machine, as shown in **Figure 58**.

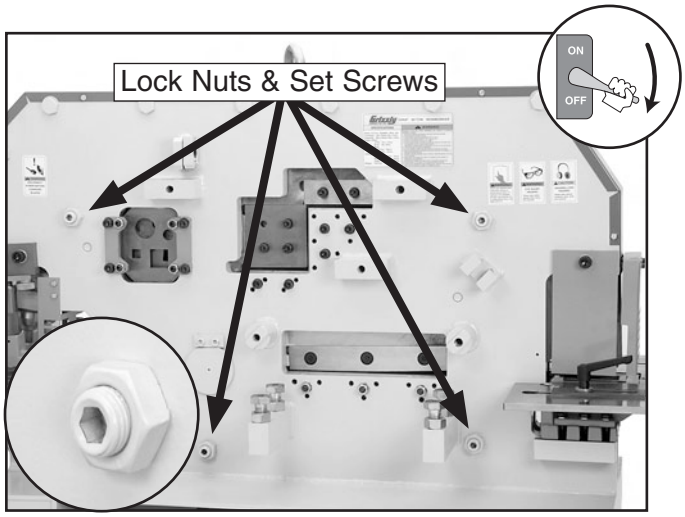


Figure 58. Beam adjustment lock nuts and set screws.

4. Back off the lock nut, then loosen the set screw (see the inset of **Figure 58**).

5. With very light pressure, re-tighten the set screw until you feel a slight drag.

6. While holding the set screw in place, re-tighten the lock nut.

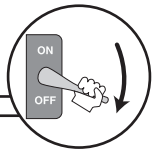
7. Repeat **Steps 5–6** for the rest of the beam adjustment lock nuts and set screws.

8. Re-install the shearing table, shearing support frame, and shearing hold-down.

SECTION 7: SERVICE

Review the troubleshooting and procedures in this section to fix or adjust your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

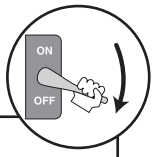
Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	1. Main Power switch turned off.	1. Rotate Main Power switch to ***ON*** or ***1***.
	2. Emergency Stop push-button is engaged/faulty.	2. Rotate clockwise slightly until it pops out/replace it.
	3. Plug/receptacle is at fault or wired incorrectly.	3. Test for good contacts; correct the wiring.
	4. Motor connection wired incorrectly.	4. Correct motor wiring connections (**Page 56**).
	5. Wall fuse/circuit breaker is blown/tripped.	5. Ensure circuit size is suitable for this machine; replace weak breaker.
	6. Thermal overload relay has tripped.	6. Turn cut-out dial to increase working amps and push the reset pin. Replace if tripped multiple times (weak relay).
	7. Contactor not getting energized/has burnt contacts.	7. Test for power on all legs and contactor operation. Replace unit if faulty.
	8. Power supply switched OFF or is at fault.	8. Ensure power supply is switched on; ensure power supply has the correct voltage.
	9. Wiring is open/has high resistance.	9. Check for broken wires or disconnected/corroded connections, and repair/replace as necessary.
	10. Motor Start button or Main Power switch is at fault.	10. Replace faulty Start button or Main Power switch.
	11. Motor is at fault.	11. Test/repair/replace.
Machine stalls or is overloaded.	1. Wrong workpiece material.	1. Use only metal with a hardness of 45 kg/mm^2 or less and is within capacities of machine.
	2. Motor connection is wired incorrectly.	2. Correct motor wiring connections (**Page 56**).
	3. Plug/receptacle is at fault.	3. Test for good contacts; correct the wiring.
	4. Motor bearings are at fault.	4. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	5. Machine is undersized for the task.	5. Use sharp tooling; keep workpiece within the capacities of machine; use cutting lubricant.
	6. Motor has overheated.	6. Clean off motor, let cool, and reduce workload.
	7. Contactor not getting energized or has poor contacts.	7. Test for power on all legs and contactor operation. Replace if faulty.
	8. Motor is at fault.	8. Test/repair/replace.
	9. Hydraulic fluid low in reservoir.	9. Fill hydraulic reservoir (**Page 40**).
	10. Hydraulic fluid pressure too low; hydraulic pump at fault.	10. Test/adjust for correct hydraulic fluid pressure (**Page 50**), replace pump if necessary.
	11. Hydraulic system has leaks or valves at fault.	11. Check/repair/replace hydraulic hoses, connections, and valves.

Motor & Electrical



Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	1. Motor wired out of phase.	1. Swap any to incoming power wires at the motor (**Page 56**).
	2. Motor or component is loose.	2. Inspect/replace stripped or damaged bolts/nuts, and re-tighten with thread locking fluid.
	3. Motor mount loose/broken.	3. Tighten/replace.
	4. Machine is incorrectly mounted or sits unevenly.	4. Tighten/replace anchor studs in floor; relocate/shim machine.
	5. Motor fan is rubbing on fan cover.	5. Replace dented fan cover; replace loose/damaged fan.
	6. Motor bearings are at fault.	6. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.

Operations

Symptom	Possible Cause	Possible Solution
Cuts are excessively ragged or not accurate.	1. Tooling damaged or dull.	1. Check/sharpen/replace tooling.
	2. Not using proper station.	2. Use the appropriate ironworker station for your operation
	3. Tooling not installed properly.	3. Check/repair tooling installation and clearances.
	4. Cutting stroke not continuous through the workpiece.	4. Keep the Normal/Inch switch in **Normal** position and pressure on pedal actuator until workpiece is cut completely through.
	5. Workpiece moves away from tooling during operation.	5. Use hold-downs, table guides, and other devices to ensure workpiece is secure before cutting.
Tooling not cutting completely through workpiece.	1. Workpiece dimensions not within capacity of machine.	1. Make sure workpiece dimensions are within machine/station capacity; use cutting lubricant.
	2. Tooling is damaged or dull.	2. Check/sharpen/replace tooling.
	3. Hydraulic pump at fault.	3. Test/adjust correct hydraulic fluid pressure (**Page 50**); replace pump if necessary.
	4. Hydraulic system has leaks or valves at fault.	4. Check/repair/replace hydraulic hoses, connections, and valves.
Loud unusual noise when beam reverses direction.	1. Limit stops not properly set.	1. Set limit rings and stops to factory settings (**Page 50**).
Hydraulic fluid temperature at/over 160°F (70°C).	1. Machine cutting at/beyond capacity.	1. Turn machine ***OFF*** and allow hydraulic fluid to cool; make cuts only with the capacity of your machine.
	2. Hydraulic fluid pressure set to high.	2. Reduce hyrdaulic fluid relief pressure to 3000 PSI (**Page 50**).
	3. Incorrect hydraulic fluid type.	3. Use only one of recommended hydraulic fluids from **Figure 54** on **Page 40**.
	4. Hydraulic system at fault.	4. Have a qualified hydraulic service technician service/repair the hydraulic system.

Flat Stock Shearing Dies

The bottom die for the flat stock shearing station has four cutting edges that can be used by mounting it in different positions. The top die has one mounting position and one cutting edge. Both dies can be face ground to sharpen the cutting edges if necessary.

Note: *The cutting edges of the dies must remain flat and parallel in relation to one another. DO NOT grind the top or bottom of either die.*

Tools Needed	**Qty**
Hex Wrench 5mm	1
Hex Wrench 8mm	1
Wrench 19mm	1
Feeler Gauge 0.004" (0.1mm)	1

To remove and replace the flat stock shearing dies:

1. Turn the motor ***OFF***, and press the emergency stop button to avoid unexpected tooling movement.

2. Remove the shearing hold-down, shearing support frame, and shearing table.

3. Set the controls to **Notch** and **Inch**, reset the emergency stop button, then turn the machine ***ON***.

⚠CAUTION

The edges of ironworker tooling are very sharp and can quickly cut fingers and hands. Always wear heavy leather gloves when handling tooling to avoid injury.

4. Use the foot actuator to pivot the beam to the right so that the flat head cap screws of the top die are accessible, then release the pedal actuator to hold it in that position (see **Figures 59–60**).

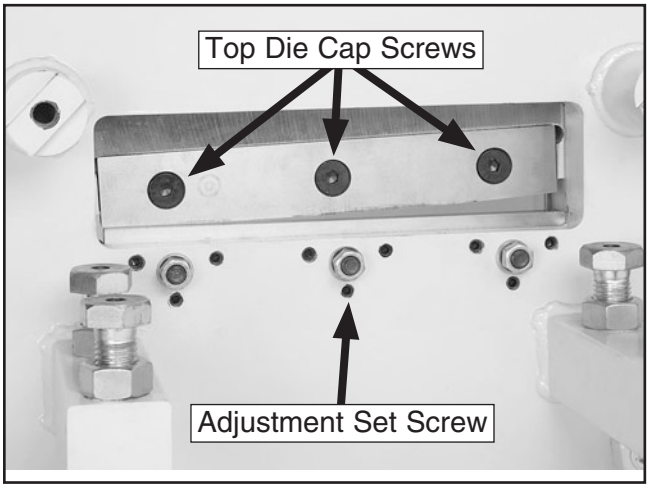


Figure 59. Flat stock shearing dies (front view).

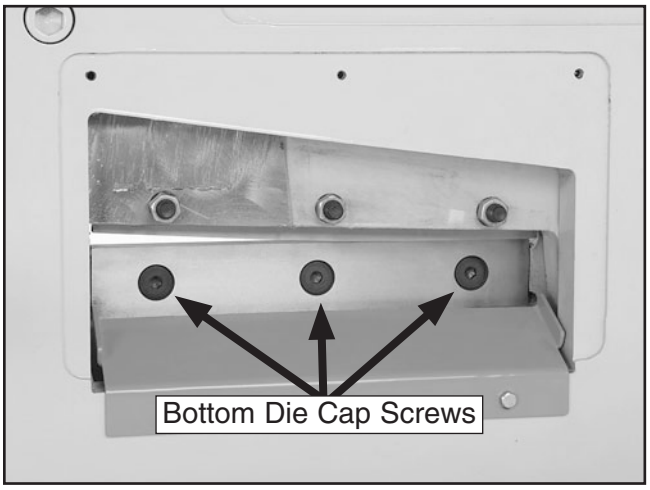


Figure 60. Flat stock shearing dies (rear view).

5. DISCONNECT MACHINE FROM POWER!

6. Have an assistant hold the dies as you remove the flat head cap screws, then remove both dies from the machine.

   Note: *To aid in re-installation, record the orientation of each die as your remove it.*

7. Thoroughly clean the dies and mounting area with a solvent or mineral spirits to remove debris, mill flash, and built-up grime.

   Note: *If you will be storing the dies, protect them with a light coat of an anti-rust product like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see* ***Section 5: Accessories*** *on* ***Page 35*** *for more details).*

8. Make sure the beam is in proper alignment with the panels (**Page 42**).

9. Back the bottom die adjustment screws (see **Figure 59**) out until they no longer protrude from the inside face of the front panel.

10. Wipe a light coat of lubricant on all surfaces of the dies (refer to **Figure 18** on **Page 22**).

11. Install the bottom die and fully tighten the flat head cap screws to secure the die tight to the front panel.

12. Install the top die and fully tighten the cap screws to secure it in place.

13. Reconnect the machine to power, and turn it ***ON***.

14. Set the controls to **Notch** and **Inch**, bring the top die down and behind the bottom die.

15. Turn the motor ***OFF***, and press the emergency stop button to avoid unexpected movement of the tooling.

16. Loosen the bottom die cap screws 2–3 turns.

17. Use the feeler gauge and adjust the bottom die set screws until the clearance between the top and bottom dies is 0.004" (0.1mm) along their full length.

18. When you are satisfied with the clearance adjustment, fully tighten the bottom die cap screws, and re-check the clearances.

19. Re-install the shearing table and check its alignment with the bottom die (**Page 49**).

20. Re-install the shearing support frame and shearing hold-down.

Angle Iron Shearing Dies

Each of the dies at the angle iron shearing station have four different mounting positions to use a different set of cutting edges.

Because of the critical positioning in relation to each other, these dies cannot be sharpened. When they become damaged or dull, call Grizzly Tech Support at (570) 546-9663 to order new ones.

To re-install the angle iron shearing dies, use the same tools, clearance specification, and procedures used in re-installing the flat stock shearing dies (refer to **Page 45**).

Tools Needed	**Qty**
Hex Wrench 8mm	1
Hex Wrench 10mm	1

To remove the angle iron shearing dies:

1. Turn the motor ***OFF***, and press the emergency stop button to avoid unexpected tooling movement.

2. Remove the shearing hold-down, shearing support frame, and shearing table.

3. Set the controls to **Notch** and **Inch**, reset the emergency stop button, then turn the machine ***ON***.

4. Use the foot actuator to pivot the beam so that the cap screws of the top dies are accessible, as shown in **Figure 61**, then release the pedal actuator to hold it in that position.

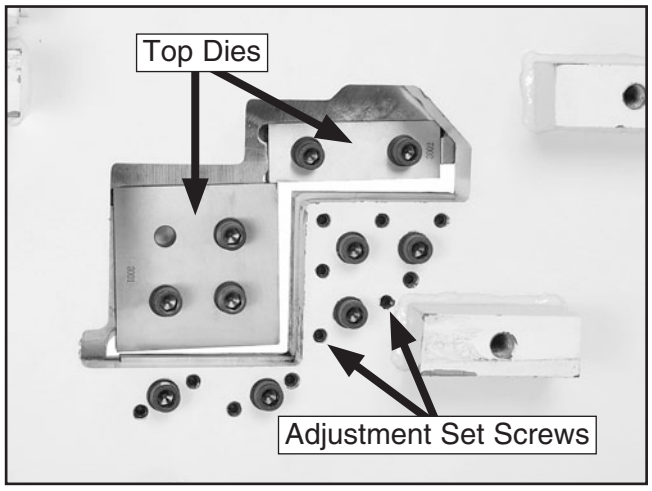


Figure 61. Angle iron shearing station dies (front view)

5. DISCONNECT MACHINE FROM POWER!

6. Have an assistant hold the dies as you remove the cap screws, then remove all of the dies from the machine.

   Note: *To aid in re-installation, record the orientation of each die as your remove it.*

7. Thoroughly clean the dies and mounting area with a solvent or mineral spirits to remove debris, mill flash, and built-up grime.

   Note: *If you will be storing the dies, protect them with a light coat of an anti-rust product like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 35** for more details).*

Bar Stock Shearing Dies

The orientation, position, and tolerances of the bar stock shearing dies do not allow for flipping them to use another cutting edge—neither can they be ground or sharpened. When they become damaged or dull, call Grizzly Tech Support at (570) 546-9663 to order new ones.

Tools Needed	Qty
Hex Wrench 8mm	1
Hex Wrench 10mm	1
Wrench 19mm	1

To remove and replace the bar stock shearing dies:

1. Turn the motor ***OFF***, and press the emergency stop button to avoid unexpected tooling movement.

2. Remove the shearing hold-down, shearing support frame, and shearing table.

3. Set the controls to **Notch** and **Inch**, reset the emergency stop button, then turn the machine ***ON***.

4. Use the foot actuator to pivot the beam so that the cutting holes of the dies line up, then release the pedal actuator to hold it in that position (see **Figure 62**).

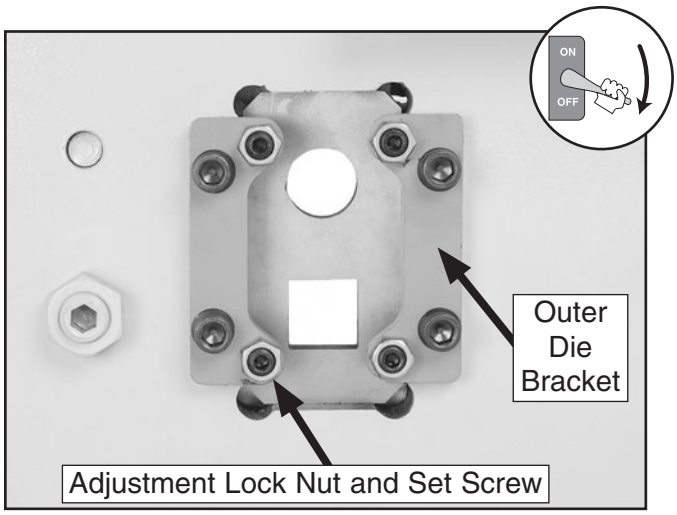


Figure 62. Angle iron shearing station die assembly.

5. DISCONNECT MACHINE FROM POWER!

6. Remove the two outer die brackets, then both dies.

   Note: *The inner die has a cutout on the top edge that fits over a cap screw in the beam and must be re-installed in the same position (see **Figure 63**). To aid in re-installation, record the orientation of the dies as your remove them.*

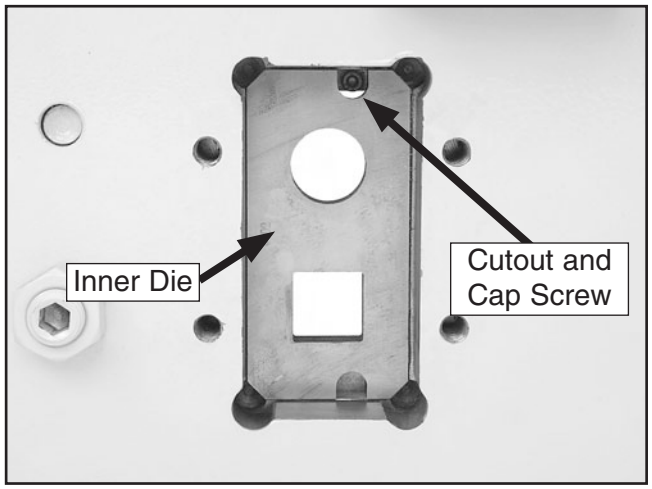


Figure 63. Bar stock inner shearing die orientation.

7. Thoroughly clean the dies and mounting area with a solvent or mineral spirits to remove debris, mill flash, and built-up grime.

   Note: *If you will be storing the dies, protect them with a light coat of an anti-rust product like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 35** for more details).*

8. Wipe a light coat of lubricant on all surfaces of the dies (refer to **Figure 18** on **Page 22**).

9. Insert the inner die so that the cutout on the edge fits over the cap screw in the beam (see **Figure 63**).

10. Insert the outer die, taking care to properly orient the cutting holes with the inner die.

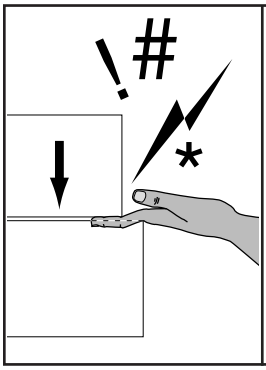
11. Loosen the adjustment lock nuts on the outer die brackets (see **Figure 62**), then back out the set screws 2–3 turns.

12. Secure the outer die brackets to the machine so that the dies are held in place.

13. Thread all set screws in until they are snug against the outer die, then back each one out ¼ of a turn.

14. Re-tighten the adjustment lock nuts, making sure the set screws stay in position.

15. Re-install the shearing support frame and shearing hold-down.



⚠WARNING

The force of this ironworker can quickly smash or remove fingers or hands. Always keep clear of all cutting stations before using the foot pedal actuator to begin the operation.

Shearing Table Alignment

The shearing table must be level along the entire length with the bottom flat stock shearing die for accurate cuts.

Tools Needed	Qty
Straightedge	1
Hex Wrench 8mm	1
Adjustable Wrench	1

To adjust the shearing table to the bottom flat stock shearing die:

1. DISCONNECT MACHINE FROM POWER!

2. Place a straightedge across the shearing table and the top of the bottom die in multiple locations (see **Figure 64**).

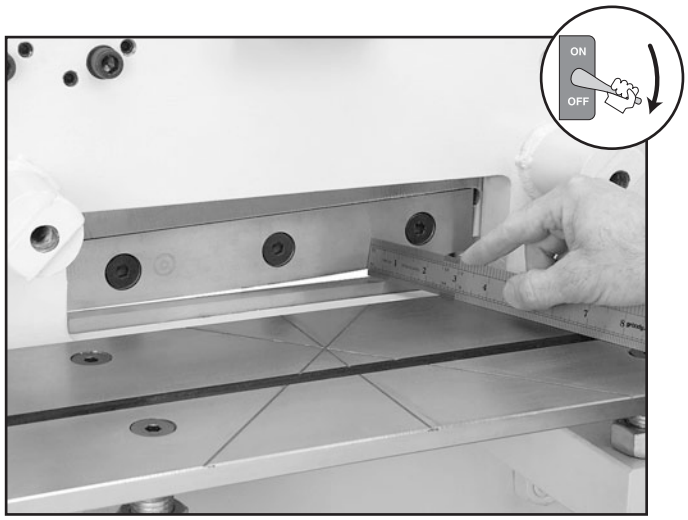


Figure 64. Straightedge on shearing table and die.

3. Loosen the shearing table mounting cap screws 1–2 turns.

4. Reach under the table and loosen the adjustment lock nuts (see **Figure 65**).

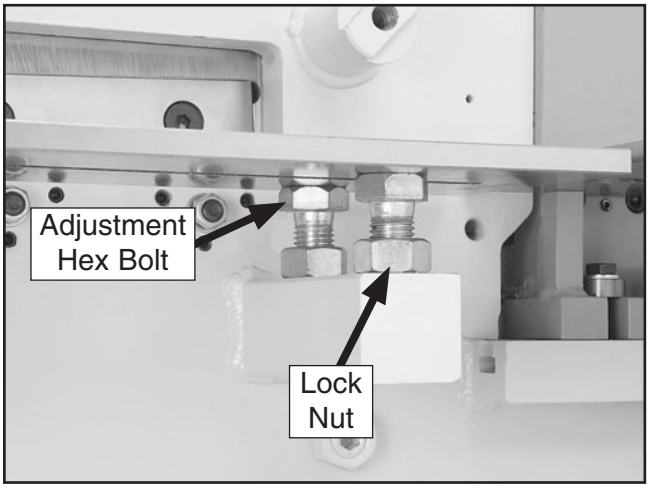


Figure 65. Shearing table adjustment lock nuts and hex bolts.

5. Rotate the adjustment hex bolts to make the table level with the top of the bottom die along its entire length.

6. When you are satisfied with the adjustments, re-tighten the lock nuts and the table mounting cap screws.

Limit Rings

When the limit stops are secured up against the limit rings, the ram and beam move at their maximum safe lengths to either side. The position of the limit rings (refer to **Page 33**) have been set at the factory and should not be moved.

However, if the machine makes a noticeable unexpected noise just before the beam reverses direction, the limit rings and stops may be positioned beyond the maximum safe position and will need to be reset. This process is one of trial-and-error and will require time and patience to successfully complete.

Tools Needed	**Qty**
Hex Wrench 4mm	1
Wrench 10mm	1

To reset the position of the limit rings:

1. Press the emergency stop button in to prevent unexpected movement of the beam.

2. Remove the limit stop assembly access panel from the front of the machine.

3. Loosen the set screws on the limit rings, then move and secure them all the way to the outer edges of the limit bar.

4. Center the limit stops on the limit bar and separate them approximately 2", then secure them in place.

5. Set the controls to **Normal**, stand clear of the machine, reset the emergency stop button, then use the pedal actuator to test the limit stop settings in both directions (**Punch** and **Notch)**.

   —If there are no unexpected noises or problems as the beam moves through the stroke and stops, then the setting is operational. Continue to **Step 6**.

   —If there is an unexpected noise as the beam reverses direction, the position of the limit stop is not correct. Move the limit stop slightly toward the center, then repeat this step.

6. After successful tests in each direction, move the limit stops just slightly further apart, and repeat **Step 5** until the tests are no longer successful.

7. Move the limit stops to the last successful positions—this is the safe outside setting for the limit stops.

8. Fully secure the limit stops, move the limit rings up to the stops, then secure the limit rings in place.

9. Re-install the limit stop access panel before beginning operations.

Hydraulic Fluid Pressure

If the hydraulic fluid reaches beyond 3000 PSI, the pressure relief valve protects the hydraulic system by redirecting the fluid from the cylinder back into the reservoir. Generally the only time this should occur is when attempting a cutting operation that is beyond the capacity of your machine.

The pressure relief valve is calibrated at the factory and should not require change. However, if necessary, contact a qualified hydraulic service technician to load test the hydraulic system and re-calibrate the pressure relief valve (see **Figure 66**).

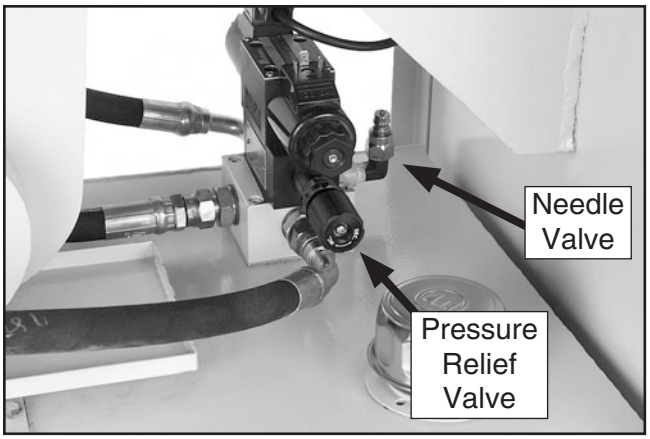


Figure 66. Hydraulic pressure relief and needle valves.

Electrical Panel Wiring

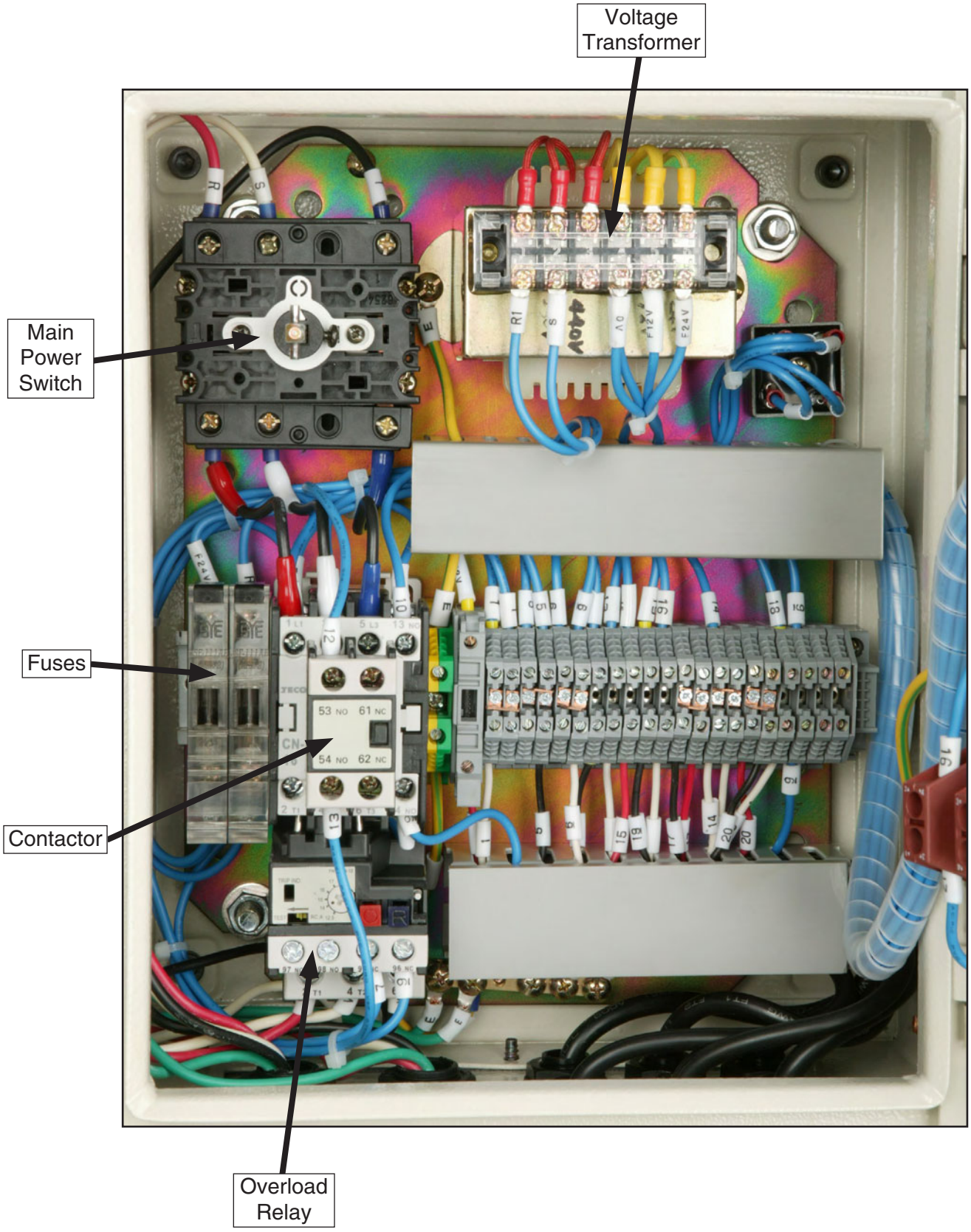


Figure 67. Electrical panel wiring (see Wiring Diagram on **Page 53**)

Control Panel Wiring

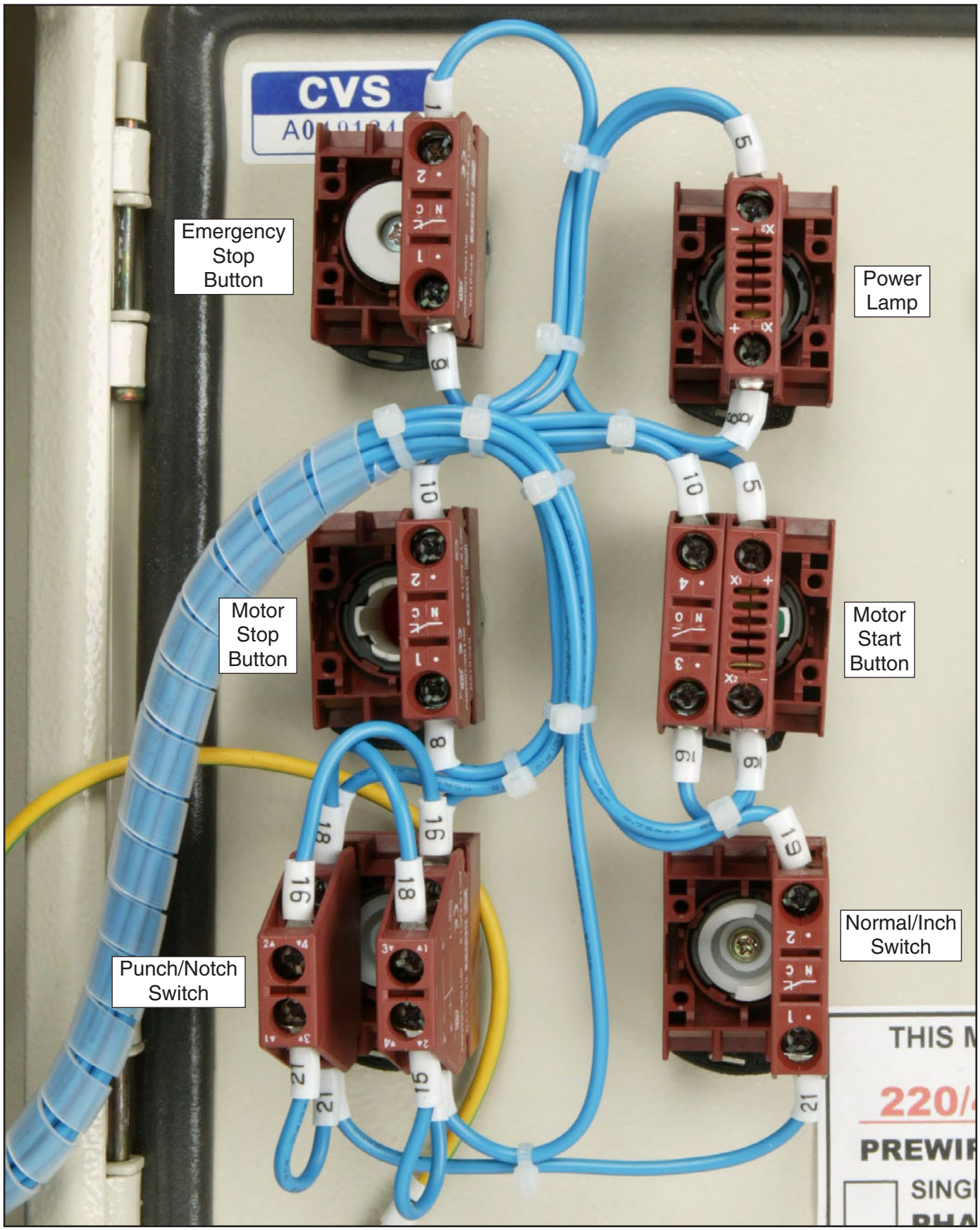
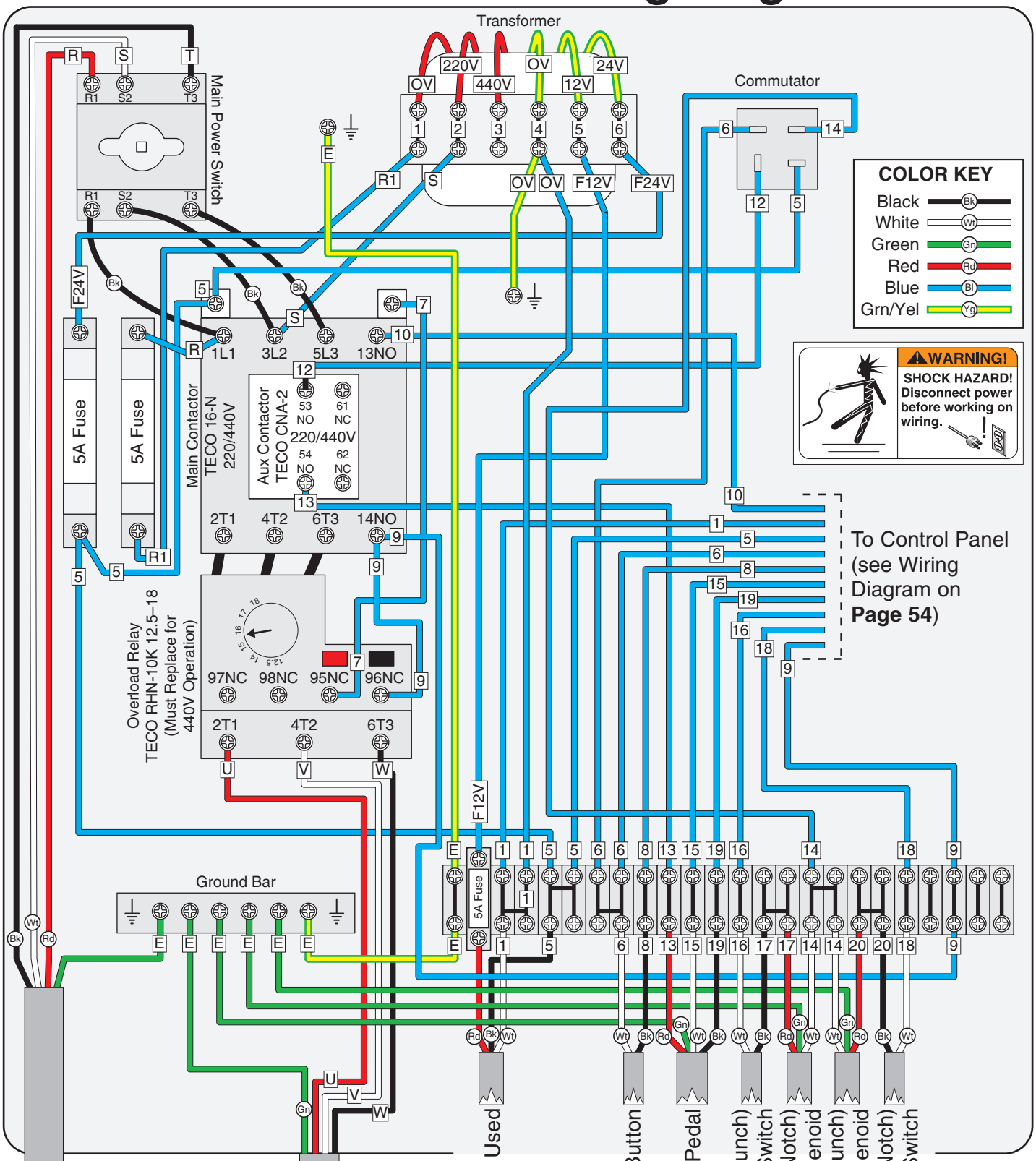


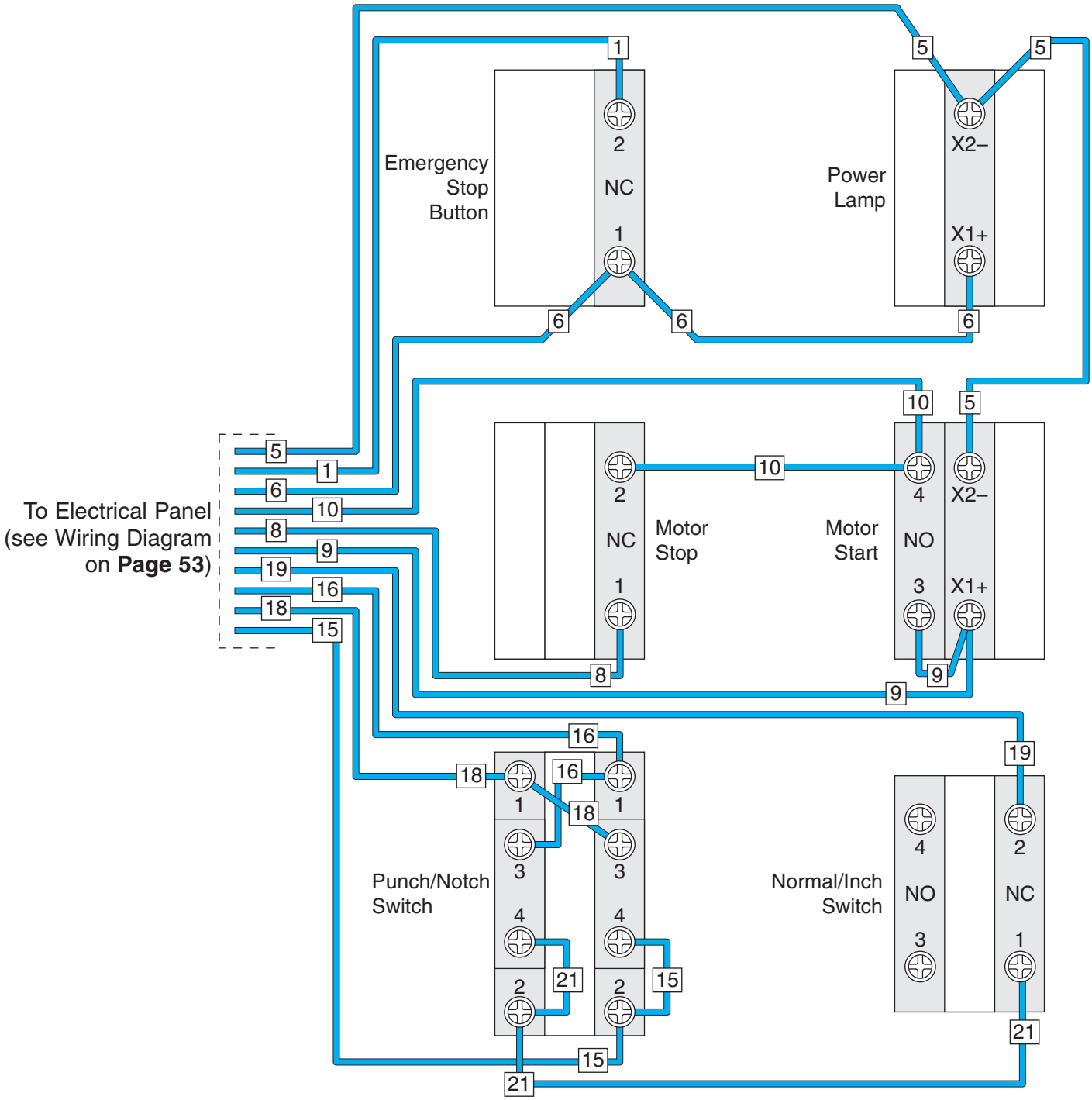
Figure 68. Control panel wiring (see Wiring Diagram on **Page 54**)

Electrical Panel Wiring Diagram



Control Panel Wiring Diagram

View this page in color at *www.grizzly.com.*



Electrical Components Wiring Diagram

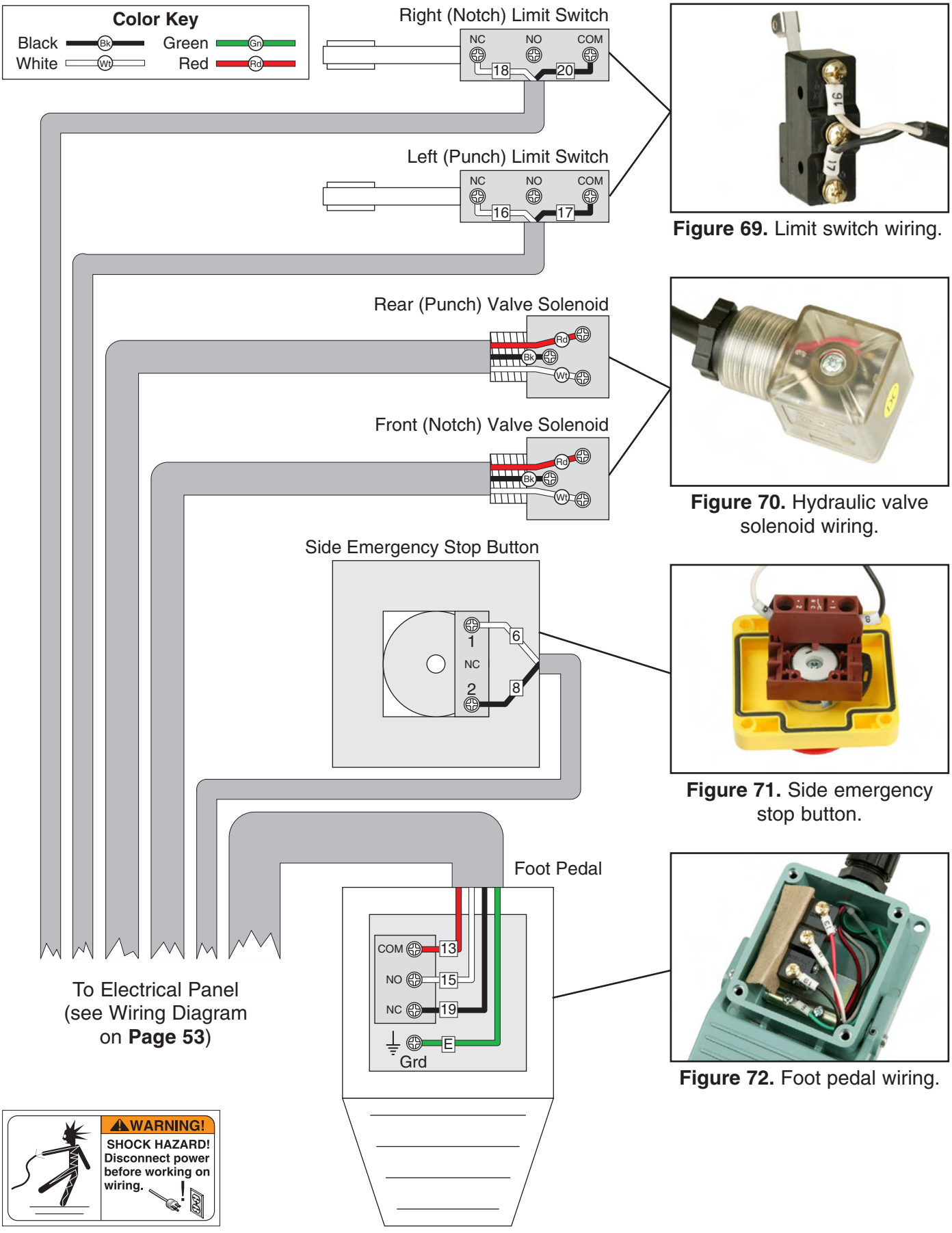


Figure 69. Limit switch wiring.

Figure 70. Hydraulic valve solenoid wiring.

Figure 71. Side emergency stop button.

Figure 72. Foot pedal wiring.

Motor Wiring Diagram

Figure 73. 220V motor wiring.

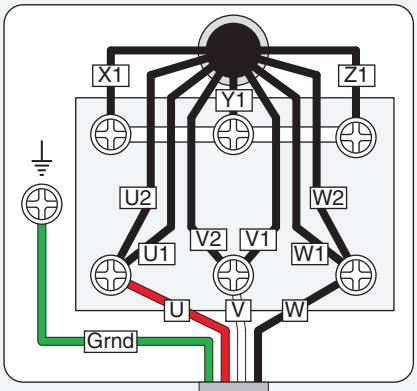
Color Key

Black	Bk	Green	Gn
White	Wt	Red	Rd

To Electrical Panel
(see Wiring Diagram
on **Page 53**)

WARNING!
SHOCK HAZARD!
Disconnect power before working on wiring.

220V Motor Wiring

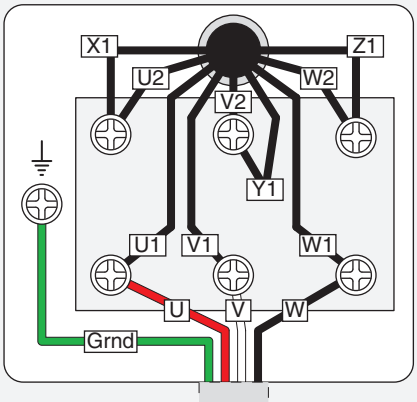


NOTICE
The motor wiring shown here is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

220V 3-Phase

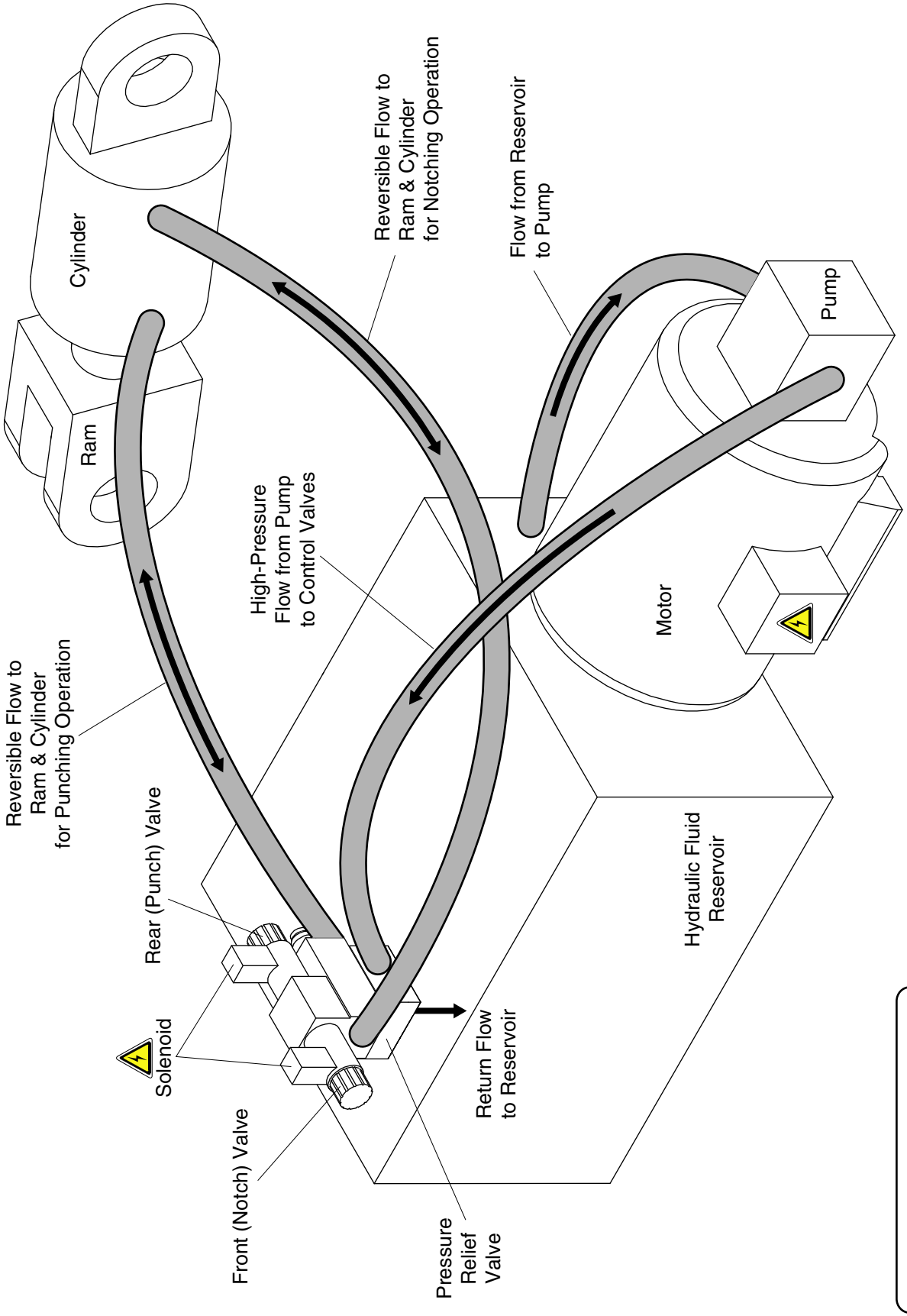
MOTOR DIRECTION
NOTICE
If motor rotates in opposite direction, swap any two power source wires at the incoming terminals.

440V Motor Wiring



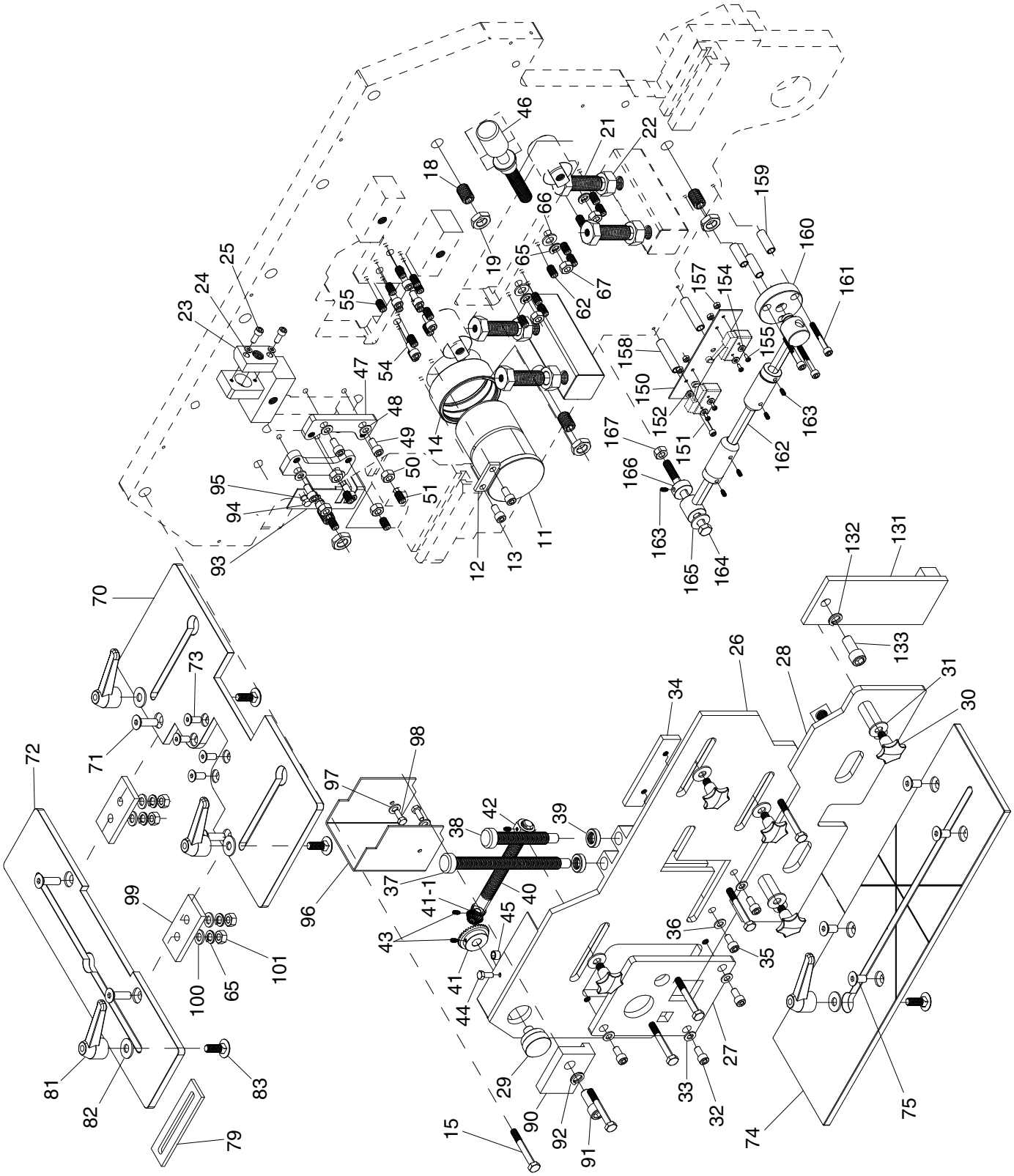
440V 3-Phase

Hydraulic System Overview



SECTION 8: PARTS

Upper Front-Half



G0646 Upper Front-Half Parts List

REF	PART #	DESCRIPTION
11	P0646011	PIVOT SHAFT
12	P0646012	LOCK PLATE
13	PSB61M	CAP SCREW M10-1.5 X 20
14	P0646014	PIVOT SHAFT BUSHING
15	P0646015	HEX BOLT M20-2.5 X 140
18	P0646018	SET SCREW M24-3 X 50
19	PN44M	HEX NUT M24-3
21	P0646021	HEX BOLT M24-3 X 65
22	PN44M	HEX NUT M24-3
23	P0646023	LEAD SCREW NUT
24	PW03M	FLAT WASHER 6MM
25	PSB07M	CAP SCREW M6-1 X 30
26	P0646026	HOLD-DOWN UPPER
27	P0646027	SECTION FRAME
28	P0646028	HOLD-DOWN LOWER
29	P0646029	HANDWHEEL
30	P0646030	STAR KNOB M16-2 X 30
31	PW08M	FLAT WASHER 16MM
32	PSB36M	CAP SCREW M12-1.75 X 25
33	PW06M	FLAT WASHER 12MM
34	P0646034	SUPPORT PLATE
35	PSB61M	CAP SCREW M10-1.5 X 20
36	PW04M	FLAT WASHER 10MM
37	P0646037	ANGLE HOLD-DOWN BOLT LONG
38	P0646038	ANGLE HOLD-DOWN BOLT SHORT
39	P0646039	KNURLED LOCK RING
40	P0646040	UPPER HOLD-DOWN LEAD SCREW
41	P0646041	BEVEL GEAR LARGE
41-1	P0646041-1	BEVEL GEAR SMALL
42	P0646042	SPECIAL HEX NUT
43	PSS01M	SET SCREW M6-1 X 10
44	PB47M	HEX BOLT M6-1 X 40
45	P0646045	BUSHING
46	P0646046	LOWER HOLD-DOWN ADJUST ROD
47	P0646047	SECTION BLADE CLAMP
48	PLW05M	LOCK WASHER 12MM
49	PSB77M	CAP SCREW M12-1.75 X 30
50	PN09M	HEX NUT M12-1.75
51	PSS104M	SET SCREW M12-1.75 X 45
54	PSB111M	CAP SCREW M12-1.75 X 35
55	PSS10M	SET SCREW M10-1.5 X 20
62	PSS10M	SET SCREW M10-1.5 X 20
65	PLW05M	LOCK WASHER 12MM

REF	PART #	DESCRIPTION
66	PW06M	FLAT WASHER 12MM
67	PN09M	HEX NUT M12-1.75
70	P0646070	PUNCH TABLE
71	PFH61M	FLAT HD CAP SCR M12-1.75 X 35
72	P0646072	PUNCH TABLE EXTENSION
73	PFH62M	FLAT HD CAP SCR M12-1.75 X 20
74	P0646074	SHEAR TABLE
75	PFH63M	FLAT HD CAP SCR M12-1.75 X 25
79	P0646079	TABLE GUIDE
81	P0646081	LOCK HANDLE 1/2-13
82	PW01	FLAT WASHER 1/2
83	PCB32M	CARRIAGE BOLT 1/2-13 X 1-3/4
90	P0646090	MOUNTING BLOCK
91	PSB54M	CAP SCREW M16-2 X 40
92	PLW10M	LOCK WASHER 16MM
93	P0646093	PUNCH SIDE GUARD
94	PB04M	HEX BOLT M6-1 X 10
95	PW03M	FLAT WASHER 6MM
96	P0646096	PUNCH GUARD PLEXIGLASS
97	PW03M	FLAT WASHER 6MM
98	PB04M	HEX BOLT M6-1 X 10
99	P0646099	PUNCH TABLE CONNECTING PLATE
100	PW06M	FLAT WASHER 12MM
101	PN09M	HEX NUT M12-1.75
131	P0646131	NOTCH STRIPPER PLATE
132	PLW10M	LOCK WASHER 16MM
133	PSB166M	CAP SCREW M16-2 X 30
150	P0646150	MOUNTING PLATE
151	PSB167M	CAP SCREW M6-1 X 70
152	PW03M	FLAT WASHER 6MM
154	PW05M	FLAT WASHER 4MM
155	PS51M	PHLP HD SCR M4-.7 X 30
157	PN04M	HEX NUT M4-.7
158	P0646158	SPACER 6MM
159	P0646159	SPACER 8MM
160	P0646160	LIMIT STOP BRACKET
161	PSB60M	CAP SCREW M8-1.25 X 55
162	P0646162	LIMIT STOP ASSEMBLY
163	PSS16M	SET SCREW M8-1.25 X 10
164	P0646164	HEX BOLT M12-1.75 X 150
165	PW06M	FLAT WASHER 12MM
166	P0646166	LOCK COLLAR
167	PN09M	HEX NUT M12-1.75

G0647 Upper Front-Half Parts List

REF	PART #	DESCRIPTION
11	P0647011	PIVOT SHAFT
12	P0647012	LOCK PLATE
13	PSB61M	CAP SCREW M10-1.5 X 20
14	P0647014	PIVOT SHAFT BUSHING
15	P0646015	HEX BOLT M20-2.5 X 140
18	P0646018	SET SCREW M24-3 X 50
19	PN44M	HEX NUT M24-3
21	P0646021	HEX BOLT M24-3 X 65
22	PN44M	HEX NUT M24-3
23	P0647023	LEAD SCREW NUT
24	PW03M	FLAT WASHER 6MM
25	PSB07M	CAP SCREW M6-1 X 30
26	P0647026	HOLD-DOWN UPPER
27	P0647027	SECTION FRAME
28	P0647028	HOLD-DOWN LOWER
29	P0647029	HANDWHEEL
30	P0646030	STAR KNOB M16-2 X 30
31	PW08M	FLAT WASHER 16MM
32	PSB36M	CAP SCREW M12-1.75 X 25
33	PW06M	FLAT WASHER 12MM
34	P0647034	SUPPORT PLATE
35	PSB61M	CAP SCREW M10-1.5 X 20
36	PW04M	FLAT WASHER 10MM
37	P0647037	ANGLE HOLD-DOWN BOLT LONG
38	P0647038	ANGLE HOLD-DOWN BOLT SHORT
39	P0647039	KNURLED LOCK RING
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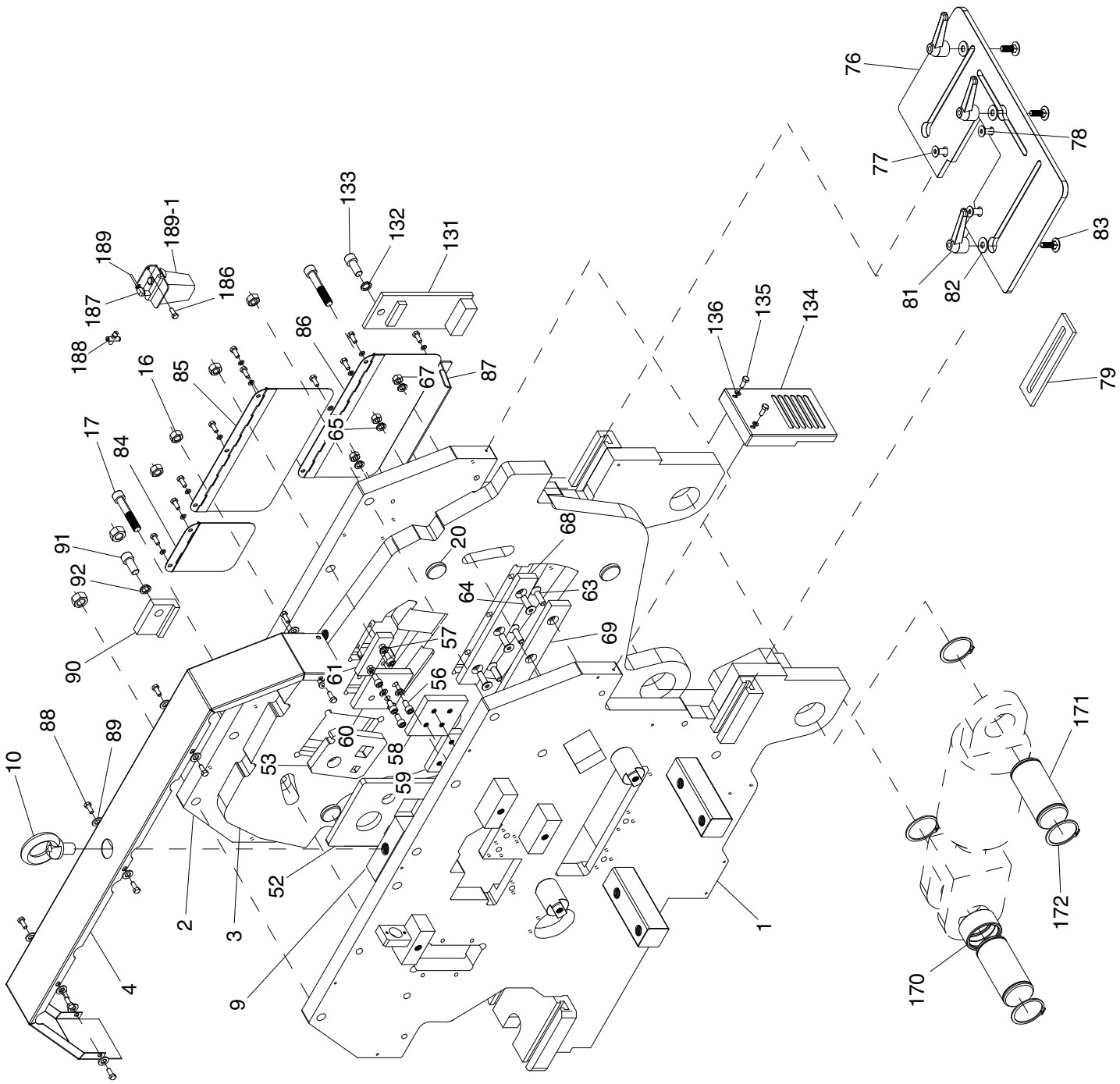
41	P0647041	BEVEL GEAR LARGE
41-1	P0647041-1	BEVEL GEAR SMALL
42	P0647042	SPECIAL HEX NUT
43	PSS01M	SET SCREW M6-1 X 10
44	PB47M	HEX BOLT M6-1 X 40
45	P0647045	BUSHING
46	P0647046	LOWER HOLD-DOWN ADJUST ROD
47	P0647047	SECTION BLADE CLAMP
48	PLW05M	LOCK WASHER 12MM
49	PSB77M	CAP SCREW M12-1.75 X 30
50	PN09M	HEX NUT M12-1.75
51	PSS104M	SET SCREW M12-1.75 X 45
54	PSB111M	CAP SCREW M12-1.75 X 35
55	PSS10M	SET SCREW M10-1.5 X 20
62	PSS10M	SET SCREW M10-1.5 X 20
65	PLW05M	LOCK WASHER 12MM

REF	PART #	DESCRIPTION
66	PW06M	FLAT WASHER 12MM
67	PN09M	HEX NUT M12-1.75
70	P0647070	PUNCH TABLE
71	PFH61M	FLAT HD CAP SCR M12-1.75 X 35
72	P0647072	PUNCH TABLE EXTENSION
73	PFH62M	FLAT HD CAP SCR M12-1.75 X 20
74	P0647074	SHEAR TABLE
75	PFH63M	FLAT HD CAP SCR M12-1.75 X 25
79	P0647079	TABLE GUIDE
81	P0647081	LOCK HANDLE 1/2-13
82	PW01	FLAT WASHER 1/2
83	PCB32M	CARRIAGE BOLT 1/2-13 X 1-3/4
90	P0647090	MOUNTING BLOCK
91	PSB54M	CAP SCREW M16-2 X 40
92	PLW10M	LOCK WASHER 16MM
93	P0647093	PUNCH SIDE GUARD
94	PB04M	HEX BOLT M6-1 X 10
95	PW03M	FLAT WASHER 6MM
96	P0647096	PUNCH GUARD PLEXIGLASS
97	PW03M	FLAT WASHER 6MM
98	PB04M	HEX BOLT M6-1 X 10
99	P0647099	PUNCH TABLE CONNECTING PLATE
100	PW06M	FLAT WASHER 12MM
101	PN09M	HEX NUT M12-1.75
131	P0647131	NOTCH STRIPPER PLATE
132	PLW10M	LOCK WASHER 16MM
133	PSB166M	CAP SCREW M16-2 X 30
150	P0647150	MOUNTING PLATE
151	PSB167M	CAP SCREW M6-1 X 70
152	PW03M	FLAT WASHER 6MM
154	PW05M	FLAT WASHER 4MM
155	PS51M	PHLP HD SCR M4-.7 X 30
157	PN04M	HEX NUT M4-.7
158	P0647158	SPACER 6MM
159	P0647159	SPACER 8MM
160	P0647160	LIMIT STOP BRACKET
161	PSB60M	CAP SCREW M8-1.25 X 55
162	P0647162	LIMIT STOP ASSEMBLY
163	PSS16M	SET SCREW M8-1.25 X 10
164	P0646164	HEX BOLT M12-1.75 X 150
165	PW06M	FLAT WASHER 12MM
166	P0647166	LOCK COLLAR
167	PN09M	HEX NUT M12-1.75

Upper Rear-Half



G0646 Upper Rear-Half Parts List

REF	PART #	DESCRIPTION
1	P0646001	TOP PANEL FRONT
2	P0646002	TOP PANEL REAR
3	P0646003	HANGER FRAME
4	P0646004	TOP COVER
9	P0646009	LIFTING EYE BOLT MOUNT
10	P0646010	LIFTING EYE BOLT
16	PN28M	HEX NUT M20-2.5
17	P0646017	HEX BOLT M20-2.5 X 125
20	P0646020	PRESSURE PAD
52	P0646052	SECTION BLADE ARM
53	P0646053	SECTION BLADE BODY
56	PSB92M	CAP SCREW M12-1.75 X 40
57	PLW05M	LOCK WASHER 12MM
58	P0646058	ANGLE BLADE BODY UPPER
59	P0646059	ANGLE BLADE BODY LOWER
60	P0646060	ANGLE BLADE ARM LOWER
61	P0646061	ANGLE BLADE ARM UPPER
63	PFH64M	FLAT HD CAP SCR M10-1.5 X 60
64	PFH65M	FLAT HD CAP SCR M10-1.5 X 55
65	PLW05M	LOCK WASHER 12MM
67	PN09M	HEX NUT M12-1.75
68	P0646068	SHEAR BLADE ARM
69	P0646069	SHEAR BLADE BODY
76	P0646076	NOTCH TABLE
77	PFH66M	FLAT HD CAP SCR M10-1.5 X 30
78	PFH67M	FLAT HD CAP SCR M8-1.25 X 25
79	P0646079	TABLE GUIDE

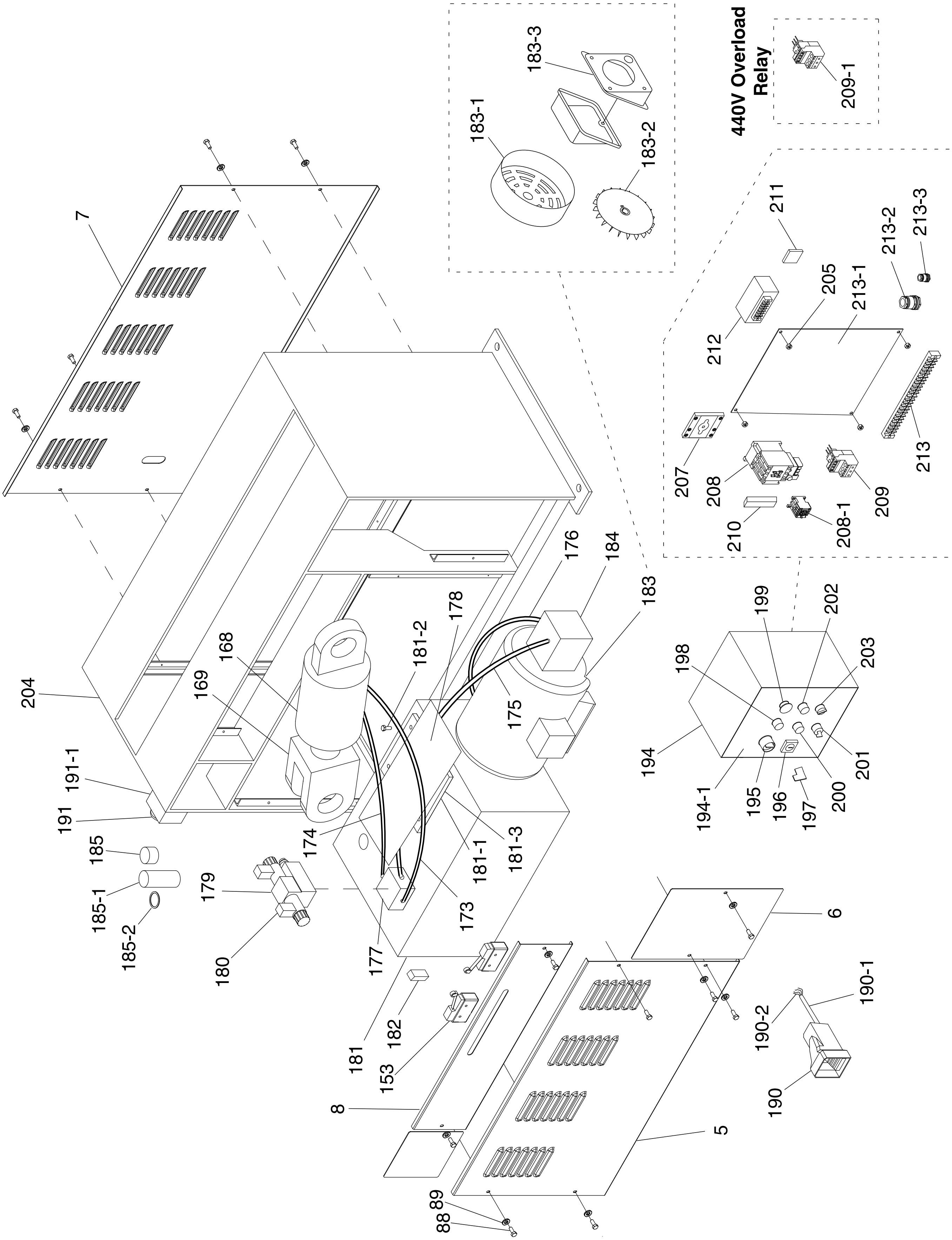
REF	PART #	DESCRIPTION
81	P0646081	LOCK HANDLE 1/2-13
82	PW01	FLAT WASHER 1/2
83	PCB32M	CARRIAGE BOLT 1/2-13 X 1-3/4
84	P0646084	SECTION REAR COVER
85	P0646085	ANGLE REAR COVER
86	P0646086	SHEAR REAR COVER
87	P0646087	SHEAR BOTTOM COVER
88	PB04M	HEX BOLT M6-1 X 10
89	PW03M	FLAT WASHER 6MM
90	P0646090	MOUNTING BLOCK
91	PSB54M	CAP SCREW M16-2 X 40
92	PLW10M	LOCK WASHER 16MM
131	P0646131	NOTCH SIDE PLATE
132	PLW10M	LOCK WASHER 16MM
133	PSB166M	CAP SCREW M16-2 X 30
134	P0646134	NOTCH END GUARD
135	PB04M	HEX BOLT M6-1 X 10
136	PW03M	FLAT WASHER 6MM
170	P0646170	BUSHING
171	P0646171	CYLINDER AXLE
172	P0646172	SPECIAL EXT RETAINING RING
186	PSB50M	CAP SCREW M5-.8 X 10
187	P0646187	OIL LINE ELBOW CONNECTOR 4MM
188	P0646188	OIL LINE 4-WAY CONNECTOR 4MM
189	P0646189	OIL LINE 4MM
189-1	P0646189-1	ONE-SHOT OILER

G0647 Upper Rear-Half Parts List

REF	PART #	DESCRIPTION
1	P0647001	TOP PANEL FRONT
2	P0647002	TOP PANEL REAR
3	P0647003	HANGER FRAME
4	P0647004	TOP COVER
9	P0647009	LIFTING EYE BOLT MOUNT
10	P0646010	LIFTING EYE BOLT
16	PN28M	HEX NUT M20-2.5
17	P0646017	HEX BOLT M20-2.5 X 125
20	P0647020	PRESSURE PAD
52	P0647052	SECTION BLADE ARM
53	P0647053	SECTION BLADE BODY
56	PSB92M	CAP SCREW M12-1.75 X 40
57	PLW05M	LOCK WASHER 12MM
58	P0647058	ANGLE BLADE BODY UPPER
59	P0647059	ANGLE BLADE BODY LOWER
60	P0647060	ANGLE BLADE ARM LOWER
61	P0647061	ANGLE BLADE ARM UPPER
63	PFH64M	FLAT HD CAP SCR M10-1.5 X 60
64	PFH65M	FLAT HD CAP SCR M10-1.5 X 55
65	PLW05M	LOCK WASHER 12MM
67	PN09M	HEX NUT M12-1.75
68	P0647068	SHEAR BLADE ARM
69	P0647069	SHEAR BLADE BODY
76	P0647076	NOTCH TABLE
77	PFH66M	FLAT HD CAP SCR M10-1.5 X 30
78	PFH67M	FLAT HD CAP SCR M8-1.25 X 25
79	P0647079	TABLE GUIDE

REF	PART #	DESCRIPTION
81	P0647081	LOCK HANDLE 1/2-13
82	PW01	FLAT WASHER 1/2
83	PCB32M	CARRIAGE BOLT 1/2-13 X 1-3/4
84	P0647084	SECTION REAR COVER
85	P0647085	ANGLE REAR COVER
86	P0647086	SHEAR REAR COVER
87	P0647087	SHEAR BOTTOM COVER
88	PB04M	HEX BOLT M6-1 X 10
89	PW03M	FLAT WASHER 6MM
90	P0647090	MOUNTING BLOCK
91	PSB54M	CAP SCREW M16-2 X 40
92	PLW10M	LOCK WASHER 16MM
131	P0647131	NOTCH SIDE PLATE
132	PLW10M	LOCK WASHER 16MM
133	PSB166M	CAP SCREW M16-2 X 30
134	P0647134	NOTCH END GUARD
135	PB04M	HEX BOLT M6-1 X 10
136	PW03M	FLAT WASHER 6MM
170	P0647170	BUSHING
171	P0647171	CYLINDER AXLE
172	P0647172	SPECIAL EXT RETAINING RING
186	PSB50M	CAP SCREW M5-.8 X 10
187	P0646187	OIL LINE ELBOW CONNECTOR 4MM
188	P0646188	OIL LINE 4-WAY CONNECTOR 4MM
189	P0646189	OIL LINE 4MM
189-1	P0646189-1	ONE-SHOT OILER

Cabinet


440V Overload Relay
209-1
183-3
183-1
183-2
211
213-2
213-3
205
213-1
212
213
207
208
209
210
208-1
7
176
184
183
178
181-2
168
169
199
202
203
198
204
175
194
191-1
191
194-1
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197
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201
174
181-1
181-3
185
185-1
185-2
179
173
180
177
6
190-1
190-2
182
181
153
190
8
5
89
88

G0646 Cabinet

REF	PART #	DESCRIPTION
5	P0646005	FRONT ACCESS PANEL
6	P0646006	SUB-PANEL
7	P0646007	REAR ACCESS PANEL
8	P0646008	LIMIT SWITCH ACCESS PANEL
88	PB04M	HEX BOLT M6-1 X 10
89	PW03M	FLAT WASHER 6MM
153	P0646153	RAM LIMIT SWITCH
168	P0646168	HYDRAULIC CYLINDER
169	P0646169	RAM
173	P0646173	HYD. LINE MANIFOLD-CYLINDER
174	P0646174	HYD. LINE MANIFOLD-CYLINDER
175	P0646175	HYD. LINE PUMP-MANIFOLD
176	P0646176	HYD. LINE TANK-PUMP
177	P0646177	HYDRAULIC MANIFOLD
178	P0646178	OIL CATCH PAN
179	P0646179	HYDRAULIC CONTROL VALVE ASSY
180	P0646180	HYDRAULIC VALVE SOLENOID
181	P0646181	HYDRAULIC RESERVOIR
181-1	P0646181-1	RESERVOIR ACCESS PANEL
181-2	PB04M	HEX BOLT M6-1 X 10
181-3	P0646181-3	RES. ACCESS PANEL GASKET
182	P0646182	OIL SIGHT GLASS & THERMOMETER
183	P0646183	MOTOR 5HP 220/440V 3-PH
183-1	P0646183-1	MOTOR FAN COVER
183-2	P0646183-2	MOTOR FAN
183-3	P0646183-3	MOTOR JUNCTION BOX
184	P0646184	HYDRAULIC PUMP
185	P0646185	FILLER CAP
185-1	P0646185-1	FILLER SCREEN
185-2	P0646185-2	FILLER CAP GASKET

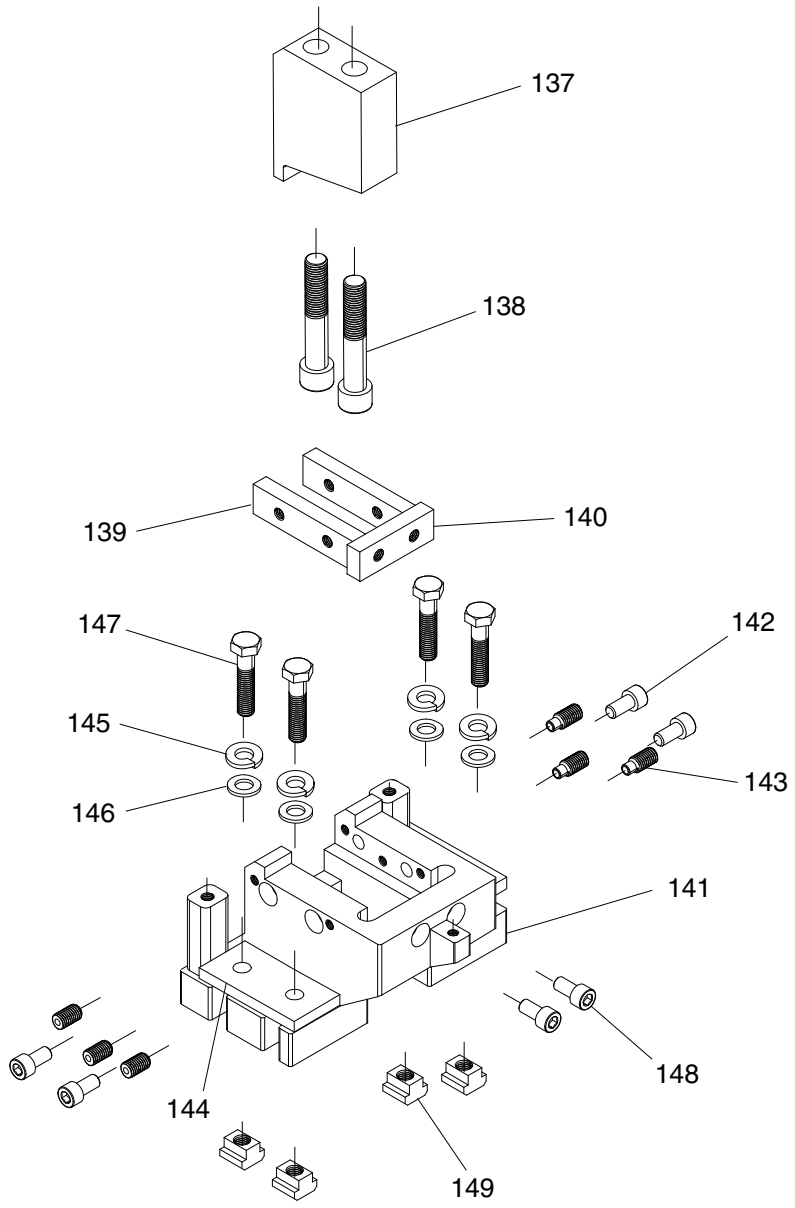
REF	PART #	DESCRIPTION
190	P0646190	FOOT PEDAL
190-1	P0646190-1	FOOT PEDAL FLEXIBLE CONDUIT
190-2	P0646190-2	FOOT PEDAL ELECTRICAL CABLE
191	P0646191	EMERGENCY STOP BUTTON
191-1	P0646191-1	EMERGENCY STOP BUTTON BOX
194	P0646194	ELECTRICAL CABINET
194-1	P0646194-1	CABINET DOOR
195	P0646195	ROTARY SWITCH
196	P0646196	DOOR LOCK
197	P0646197	DOOR LOCK KEY PLASTIC
198	P0646198	POWER LAMP
199	P0646199	EMERGENCY STOP BUTTON
200	P0646200	MOTOR START BUTTON
201	P0646201	NORMAL/INCH SWITCH
202	P0646202	MOTOR STOP BUTTON
203	P0646203	PUNCH/NOTCH SWITCH
204	P0646204	BASE
205	PN01M	HEX NUT M6-1
207	P0646207	MAIN POWER SWITCH
208	P0646208	CONTACTOR TECO 16-N 220/440V
208-1	P0646208-1	CONTACTOR TECO CNA-2 220/440V
209	P0646209	OL RELAY TECO RHN-10K 12.5-18
209-1	P0646209-1	OL RELAY TECO RHN10K 7-11
210	P0646210	FUSE ASSEMBLY 5A
211	P0646211	ELECTRICAL COMMUTATOR
212	P0646212	TRANSFORMER
213	P0646213	TERMINAL BLOCK
213-1	P0646213-1	ELECTRICAL PANEL
213-2	P0646213-2	STRAIN RELIEF LARGE
213-3	P0646213-3	STRAIN RELIEF SMALL

G0647 Cabinet

REF	PART #	DESCRIPTION
5	P0647005	FRONT ACCESS PANEL
6	P0647006	SUB-PANEL
7	P0647007	REAR ACCESS PANEL
8	P0647008	LIMIT SWITCH ACCESS PANEL
88	PB04M	HEX BOLT M6-1 X 10
89	PW03M	FLAT WASHER 6MM
153	P0646153	RAM LIMIT SWITCH
168	P0647168	HYDRAULIC CYLINDER
169	P0647169	RAM
173	P0646173	HYD. LINE MANIFOLD-CYLINDER
174	P0646174	HYD. LINE MANIFOLD-CYLINDER
175	P0646175	HYD. LINE PUMP-MANIFOLD
176	P0646176	HYD. LINE TANK-PUMP
177	P0646177	HYDRAULIC MANIFOLD
178	P0646178	OIL CATCH PAN
179	P0646179	HYDRAULIC CONTROL VALVE ASSY
180	P0646180	HYDRAULIC VALVE SOLENOID
181	P0646181	HYDRAULIC RESERVOIR
181-1	P0646181-1	RESERVOIR ACCESS PANEL
181-2	PB04M	HEX BOLT M6-1 X 10
181-3	P0646181-3	RES. ACCESS PANEL GASKET
182	P0646182	OIL SIGHT GLASS & THERMOMETER
183	P0647183	MOTOR 5HP 220/440V 3-PH
183-1	P0647183-1	MOTOR FAN COVER
183-2	P0647183-2	MOTOR FAN
183-3	P0647183-3	MOTOR JUNCTION BOX
184	P0647184	HYDRAULIC PUMP
185	P0646185	FILLER CAP
185-1	P0646185-1	FILLER SCREEN
185-2	P0646185-2	FILLER CAP GASKET

REF	PART #	DESCRIPTION
190	P0646190	FOOT PEDAL
190-1	P0646190-1	FOOT PEDAL FLEXIBLE CONDUIT
190-2	P0646190-2	FOOT PEDAL ELECTRICAL CABLE
191	P0646191	SIDE EMERGENCY STOP BUTTON
191-1	P0646191-1	EMERGENCY STOP BUTTON BOX
194	P0646194	ELECTRICAL CABINET
194-1	P0646194-1	CABINET DOOR
195	P0646195	ROTARY SWITCH
196	P0646196	DOOR LOCK
197	P0646197	DOOR LOCK KEY PLASTIC
198	P0646198	POWER LAMP
199	P0646199	EMERGENCY STOP BUTTON
200	P0646200	MOTOR START BUTTON
201	P0646201	NORMAL/INCH SWITCH
202	P0646202	MOTOR STOP BUTTON
203	P0646203	PUNCH/NOTCH SWITCH
204	P0647204	BASE
205	PN01M	HEX NUT M6-1
207	P0646207	MAIN POWER SWITCH
208	P0646208	CONTACTOR TECO 16-N 220/440V
208-1	P0646208-1	CONTACTOR TECO CNA-2 220/440V
209	P0646209	OL RELAY TECO RHN-10K 12.5-18
209-1	P0646209-1	OL RELAY TECO RHN10K 7-11
210	P0646210	FUSE ASSEMBLY 5A
211	P0646211	ELECTRICAL COMMUTATOR
212	P0646212	TRANSFORMER
213	P0646213	TERMINAL BLOCK
213-1	P0646213-1	ELECTRICAL PANEL
213-2	P0646213-2	STRAIN RELIEF LARGE
213-3	P0646213-3	STRAIN RELIEF SMALL

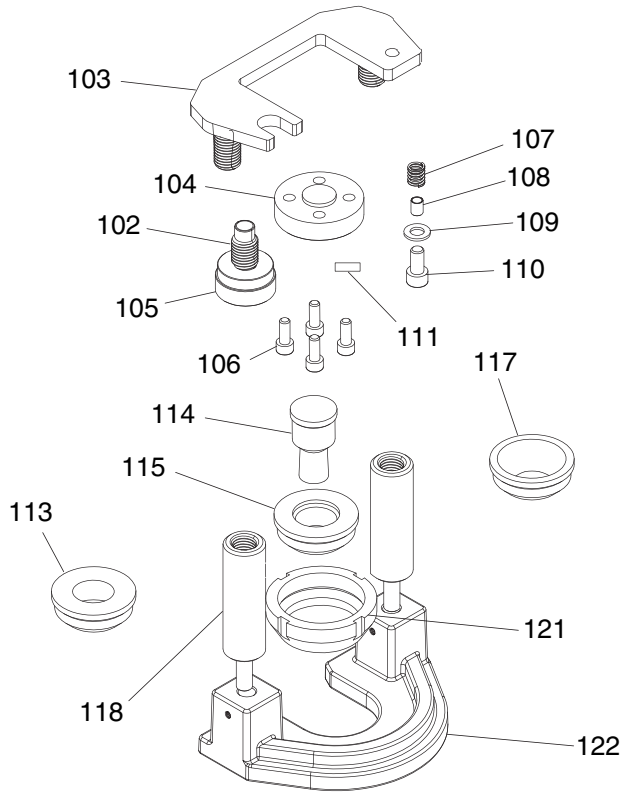
Notching Station

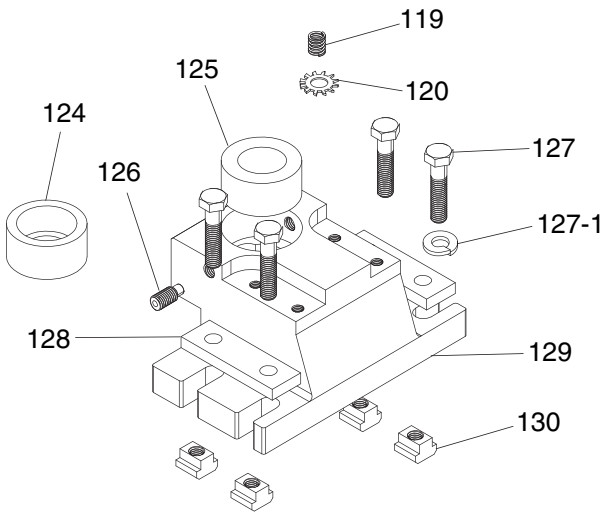


REF	PART #	DESCRIPTION
137	P0646137	NOTCH PUNCH
138	P0646138	CAP SCREW M20-2.5 X 90
139	P0646139	NOTCH SIDE DIE
140	P0646140	NOTCH END DIE
141	P0646141	NOTCH BOLSTER
142	PSB64M	CAP SCREW M10-1.5 X 25
143	PSS21M	SET SCREW M8-1.25 X 25

REF	PART #	DESCRIPTION
144	P0646144	NOTCH BOLSTER CLAMP
145	PLW05M	LOCK WASHER 12MM
146	PW06M	FLAT WASHER 12MM
147	PB12M	HEX BOLT M12-1.75 X 55
148	PSB64M	CAP SCREW M10-1.5 X 25
149	P0646149	TEE NUT M12-1.75

Punching Station

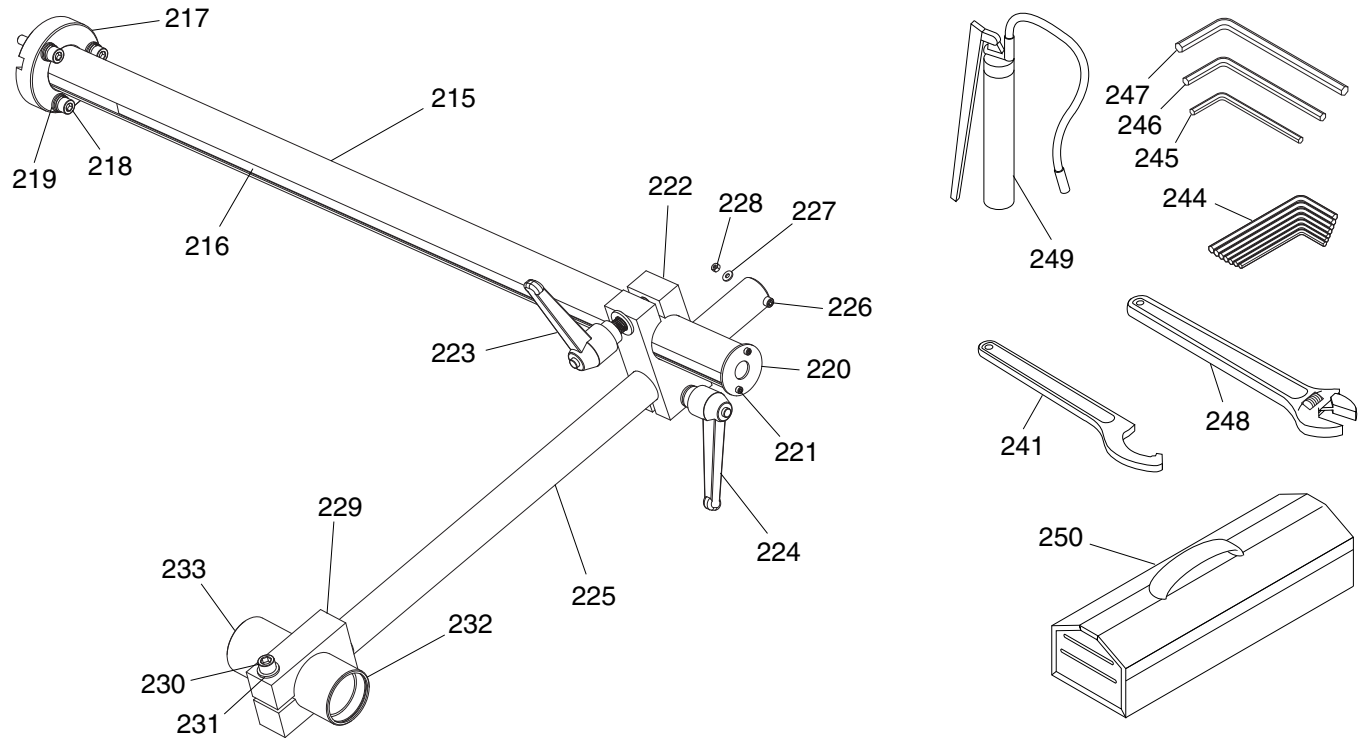




REF	PART #	DESCRIPTION
102	P0646102	SPECIAL SET SCREW
103	P0646103	PUNCH STRIPPER TOP PLATE
104	P0646104	PUNCH PRESSURE PLATE
105	P0646105	KNURLED KNOB
106	PSB31M	CAP SCREW M8-1.25 X 25
107	P0646107	COMPRESSION SPRING
108	P0646108	BUSHING
109	PW04M	FLAT WASHER 10MM
110	PSB47M	CAP SCREW M10-1.5 X 40
111	P0646111	PUNCH LOCATION KEY
113	P0646113	PUNCH ADAPTER 81031 3-19MM
114	P0646114	ROUND PUNCH 22MM
115	P0646115	ROUND PUNCH ADAPTER 5-29MM
117	P0646117	PUNCH ADAPTER 9036 13-38MM

REF	PART #	DESCRIPTION
118	P0646118	STRIPPER ADJUSTMENT SHAFT
119	P0646119	COMPRESSION SPRING
120	PTLW12M	EXT TOOTH WASHER 12MM
121	P0646121	PUNCH RETAINING RING
122	P0646122	PUNCH STRIPPER BASE
124	P0646124	ROUND DIE SHOE
125	P0646125	ROUND DIE 5-29MM
126	PSS106M	SET SCREW M12-1.75 X 55
127	PB12M	HEX BOLT M12-1.75 X 55
127-1	PLW05M	LOCK WASHER 12MM
128	P0646128	PUNCH BOLSTER CLAMP
129	P0646129	PUNCH BOLSTER
130	P0646130	TEE NUT M12-1.75

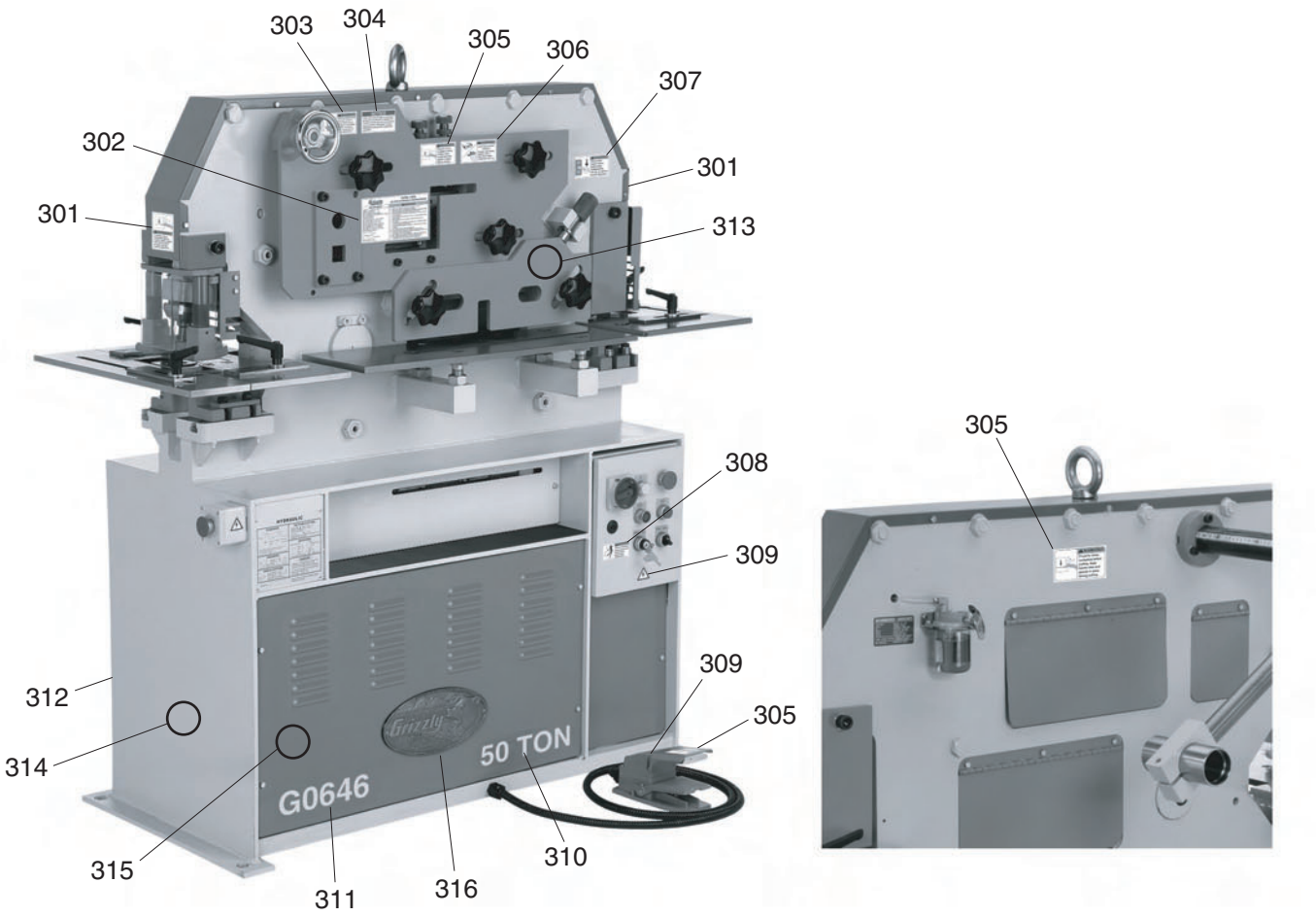
Extension Bar & Tools



REF	PART #	DESCRIPTION
215	P0646215	GUIDE BAR
216	P0646216	SCALE 1M
217	P0646217	MOUNTING BRACKET
218	PSB70M	CAP SCREW M10-1.5 X 45
219	PLW06M	LOCK WASHER 10MM
220	P0646220	END CAP
221	PSB17M	CAP SCREW M4-.7 X 10
222	P0646222	PIVOT CLAMP
223	P0646223	LOCK LEVER M12-1.75 X 40
224	P0646224	LOCK LEVER M16-2 X 45
225	P0646225	EXTENSION BAR
226	PSB83M	CAP SCREW M6-1 X 55
227	PW03M	FLAT WASHER 6MM
228	PN01M	HEX NUT M6-1

REF	PART #	DESCRIPTION
229	P0646229	CLAMP
230	PSB169M	CAP SCREW M12-1.75 X 75
231	PW06M	FLAT WASHER 12MM
232	P0646232	SUPPORT SHAFT
233	P0646233	SENSOR MOUNT END CAP
241	P0646241	SPANNER WRENCH
244	P0646244	HEX WRENCH KIT 2.5-10MM
245	PAW12M	HEX WRENCH 12MM
246	PAW14M	HEX WRENCH 14MM
247	PAW17M	HEX WRENCH 17MM
248	P0646248	ADJUSTABLE WRENCH
249	P0646249	GREASE GUN
250	P0646250	TOOL BOX

Label Placement



REF	PART #	DESCRIPTION
301	P0646301	CLAMP WARNING LABEL VERT.
302	P0646302	MACHINE ID LABEL (G0646)
302	P0647302	MACHINE ID LABEL (G0647)
303	PLABEL-12B	READ MANUAL LABEL HORZ.
304	P0646304	SAFE OPERATION NOTICE LABEL
305	P0646305	CLAMP WARNING LABEL HORZ.
306	P0646306	EYE/FACE HAZARD LABEL HORZ.
307	P0646307	DISCONNECT POWER LABEL HORZ.
308	P0646308	SHOCK HAZARD LABEL HORZ.
309	PLABEL-14	ELECTRICITY LABEL

REF	PART #	DESCRIPTION
310	P0646310	TONNAGE LABEL (G0646)
310	P0647310	TONNAGE LABEL (G0647)
311	P0646311	MODEL NUMBER LABEL (G0646)
311	P0647311	MODEL NUMBER LABEL (G0647)
312	PLABEL-34	PREWIRED 220V LABEL
313	P0646313	ORANGE TOUCH UP PAINT
314	PPAINT-11	GRIZZLY PUTTY TOUCH UP PAINT
315	PPAINT-1	GRIZZLY GREEN TOUCH UP PAINT
316	G8588	GRIZZLY OVAL NAMEPLATE

⚠WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinet Maker
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Modeltec
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Practical Homeowner
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____ Yes _____ No

8. Would you recommend Grizzly Industrial to a friend? _____ Yes _____ No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____ Yes _____ No

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number,'' which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.