



Operating Instructions and Parts Manual

45 Ton Iron Worker

Model JIW-45T



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1.0 IMPORTANT SAFETY INSTRUCTIONS

WARNING – To reduce risk of injury:

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. This iron worker is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of an iron worker, do not use until proper training and knowledge have been obtained.
5. Do not use this iron worker for other than its intended use. If used for other purposes, JET disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear ANSI approved safety glasses/face shields while using this iron worker. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Wear protective hair covering to contain long hair. Non-slip footwear or anti-skid floor strips are recommended.
8. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
9. Do not exceed the rated capacity of this iron worker; use hand tools for small or narrow parts. Do not attempt to cut hardened materials.
10. Sheet metal stock has sharp edges. To prevent cuts, use leather work gloves when handling.
11. Keep hands and fingers clear of the moving areas of the iron worker.
12. Do not place your hands between material being machined and the worktable.
13. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately after maintenance is complete.
14. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
15. Provide for adequate space surrounding work area and non-glare, overhead lighting.
16. Keep the floor around the machine clean and free of scrap material, oil and grease.
17. Keep visitors a safe distance from the work area. **Keep children away.**
18. Make your workshop child proof with padlocks, master switches or by removing starter keys.
19. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
20. Maintain a balanced stance at all times so that you do not fall or lean against moving parts. Do not overreach or use excessive force to perform any machine operation.
21. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and more safely.
22. Use recommended accessories; improper accessories may be hazardous.
23. Maintain tools with care. Keep tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
24. Do not stand on the machine. Serious injury could occur if the machine tips over.
25. Unplug or lock out power to the machine when not in use.
26. Wear ear protectors (plugs or muffs) during extended periods of operation.

27. Make certain the switch is in the OFF position before connecting the machine to the power supply.
28. Make certain the machine is properly grounded.
29. Make all machine adjustments or maintenance with the machine unplugged from the power source.
30. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
31. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
32. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
33. Remove loose items and unnecessary work pieces from the area before starting the machine.
34. Don't use in dangerous environment. Don't use power tools in damp or wet location or expose them to rain. Keep work area well lighted.

 **WARNING:** This product can expose you to chemicals including lead which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <http://www.p65warnings.ca.gov>.

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

- lead from lead-based paint
- crystalline silica from bricks, cement and other masonry products
- arsenic and chromium from chemically treated lumber

Your risk of exposure 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 dust masks that are specifically designed to filter out microscopic particles. For more information go to <http://www.p65warnings.ca.gov/> and [http://www.p65warnings.ca.gov/ wood](http://www.p65warnings.ca.gov/wood).

Familiarize yourself with the following safety notices used in this manual:

CAUTION

This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

WARNING

This means that if precautions are not heeded, it may result in serious, or possibly even fatal, injury.

SAVE THESE INSTRUCTIONS

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4.0 About this manual

This manual is provided by JET, covering the safe operation and maintenance procedures for a JET Model JIW-45T Iron Worker. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

This manual is not intended to be an exhaustive guide to iron worker operational methods, usage or after-market accessories, choice of stock, etc. Additional knowledge can be obtained from experienced users or trade articles. Whatever accepted methods are used, always make personal safety a priority.

If there are questions or comments, please contact your local supplier or JET. JET can also be reached at our web site: www.jettools.com.

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.

 **WARNING Read and understand the entire contents of this manual before attempting assembly or operation! Failure to comply may cause serious injury!**

Register your product online -

<http://www.jettools.com/us/en/service-and-support/warranty/registration/>

5.0 Features

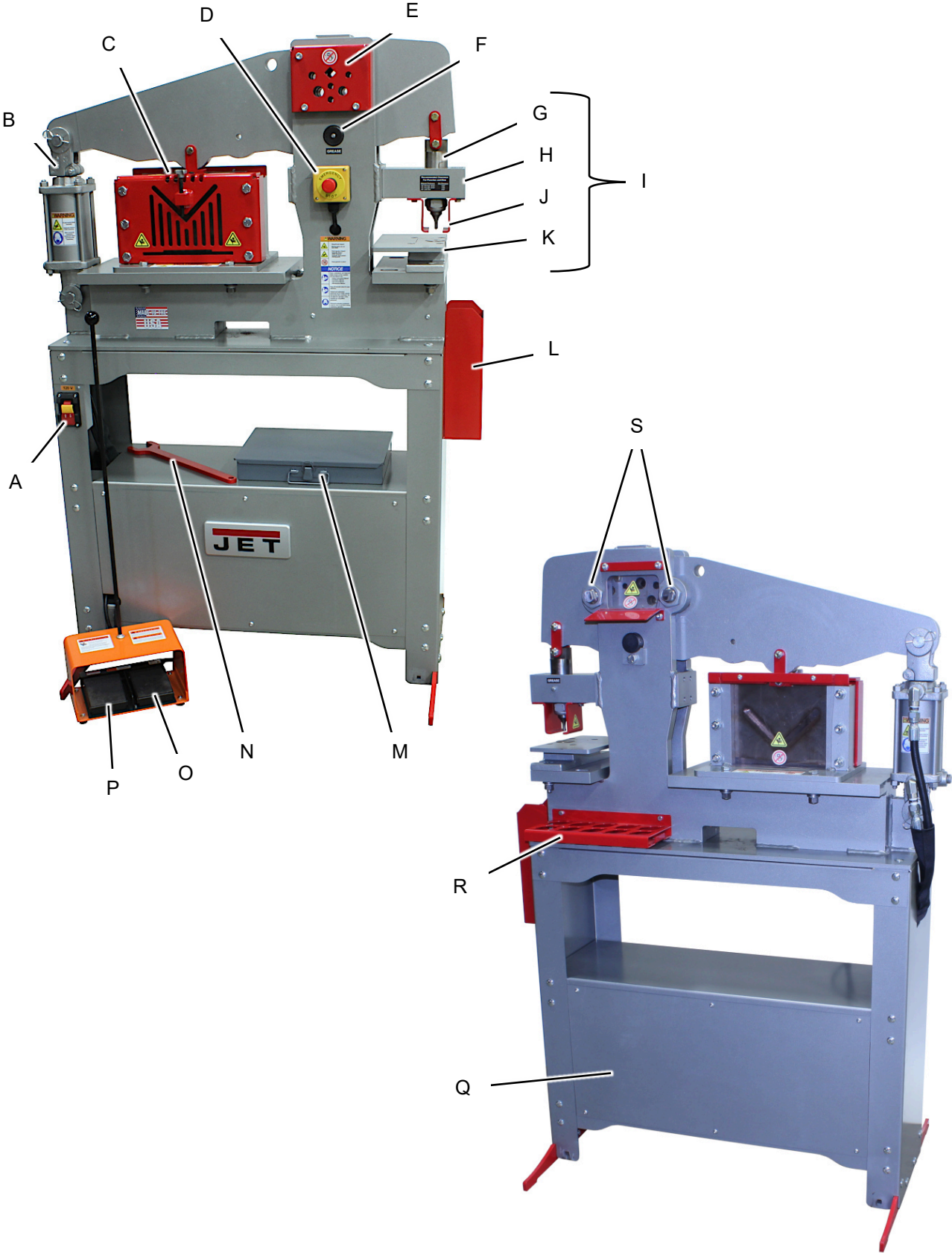


Figure 1

5.1 Feature descriptions

Item	Definition
A	Power Switch. When the yellow safety key is inserted into the red switch paddle, the paddle is lifted to start and run the hydraulic unit. Press the paddle in to stop the hydraulic unit.
B	Hydraulic Cylinder. The cylinder provides the force used to punch or shear the work material.
C	Flat/Angle Shear Station. (AKA Center Station) This is a two-station shear which is used to shear flat bar stock or angle iron. It may be removed to allow room for a second punching station. (See Optional Accessories)
D	Emergency Stop Switch. In the event of incorrect operation or dangerous condition, the machine can be stopped immediately by pressing the E-STOP button. Twist the emergency stop button clockwise (cw) to reset. Note: Resetting the E-Stop will not start the machine.
E	Rod Shear Station. This station has 6 round and 1 square shear stations. Retract the cylinder to fully open the rod shear opening. Extending the cylinder will then shear the material. ONLY use one opening at a time. NEVER use two openings at a time or insert multiple pieces of material into any one opening.
F	Pivot Pin. The fulcrum point for the rocker arm. Inspect and grease as indicated in the maintenance section.
G	Punch Ram. Lowers and raised the installed punch during operation.
H	Punch Ram Guide Block. The Punch Ram moves through this block during operation. Inspect and grease as indicated in the maintenance section.
I	Punch Station. (AKA Outboard Station) This station is used to punch holes (commonly round) into metals. Optional shape such as square and oblong are available.
J	Striper. These bracket stop the upward travel of the material when the punch is being withdrawn from the material. Thereby freeing the punch.
K	Punch Table. The punch table holds the die which is mated with the punch. The table

	also support the material during the punching operation.
L	Slug Receptacle. Catches the slugs from the punching operation.
M	Punch and Die Accessory Box with tooling. This is an optional accessory. Contact Jet Sales for more information.
N	Punch Nut Wrench. Fits the punch nut for installation and removal of the punch.
O	Cylinder Retract Foot Pedal. Pressing this pedal will retract the cylinder rod to lower the shear blade (flat and angle shearing operation) and lift the punch for the outboard punching operation.
P	Cylinder Extend Foot Pedal. Pressing this pedal will extend the cylinder rod to lift the shear blade and lower the punch for the outboard punching operation.
Q	Hydraulic Unit Housing. Housing the hydraulic power unit which consists of the motor, pump, reservoir, and directional valving.
R	Punch And Die Holder. Punch and Die sets used frequently may be stored in this holder for easy access. Punch and Die sets sold separately.
S	Gib Adjusters. These adjusters ride against the rocker arm for alignment.

6.0 Specifications

Table 1

Model number	JIW-45T
Stock numbers	756100
Motor and Electrical	
Power Supply	115VAC, 1ph, 60hz
Motor type	totally enclosed fan cooled
Horsepower	1.5HP (1.1kW)
Phase	Single
Voltage	115V
Cycle	60Hz
Listed FLA (full load amps)	14A
Motor speed	3500 RPM
Hydraulic Pump Flow	1.0 GPM (4.54LPM)
Hydraulic Pump Pressure	2800 PSI (193)
Hydraulic Reservoir Capacity	3 – 3.2 QTS (2.8 – 3L)
Hydraulic Oil Type	ISO 46
On/off switch	Toggle w/Safety Key
Power cord	14AWG x 3C, SJT, 6 ft.
Power plug	5-15P
Recommended minimum circuit size ¹	20 A
Capacities	
PUNCH	
Punch Station Rating (U.S. Tons)	45T
Punch Station Maximum Capacity	Ø1" x 1/2" thick mild steel (Ø25.4 x 12.7mm)
Punch Station Work Height	41" (1041.4mm)
Punch Station Throat Depth	5-3/4" (146mm)
Punch Station Stroke	1-1/2" (38.1mm)
FLAT BAR SHEAR	
Flat Bar Shear Maximum Capacity	1/4" x 8" mild steel (6.35 x 203.2mm)
	3/8" x 4" mild steel (9.5 x 101.6mm)
Flat Bar Shear Work Height	40" (1016mm)
ANGLE SHEAR	
Angle Shear Maximum Capacity	3 x 3 x 1/4" mild steel (76.2 x 76.2 x 6.35mm)
Angle Shear Work Height	43" (1092.2mm)
ROD SHEAR	
Rod Shear Stations	7 @ 6 Round and 1 Square
Rod Shear Round Maximum Capacity	3/4" (19.05mm)
Rod Shear Square Maximum Capacity	5/8" (15.875mm)
Rod Shear Round Sizes	1/4", 5/16", 3/8", 1/2", 5/8", and 3/4" (6.35, 7.93, 9.52, 12.7, 15.87, 19.05mm)
Rod Shear Work Height	55" (1397mm)
Body Construction	
Frame	steel plate
Stand/cabinet	sheet metal
Paint finish	powder coat
Dimensions	
Overall dimensions, assembled (LxWxH)	40 x 24 x 58 in. (1016 x 610 x 1473 mm)
Shipping dimensions (LxWxH)	51 x 45 x 64 in. (1296 x 1143 x 1626 mm)
Weights	
Net weight, full assembled	698 lbs. (316.6 kgs)
Shipping weight	802 lbs. (363.8 kgs)

¹ *Subject to local/national electrical codes. Recommendation based upon dedicated circuit.*

² *The specified values are emission levels and are not necessarily to be seen as safe operating levels. As workplace conditions vary, this information is intended to allow the user to make a better estimation of the hazards and risks involved only.*

³ *Test condition: 8-in. inlet with standard canister filter installed.*

L = length, W = width, H = height

n/a = not applicable

The specifications in this manual were current at time of publication, but because of our policy of continuous improvement, JET reserves the right to change specifications at any time and without prior notice, without incurring obligations.

⚠WARNING

Read and understand the entire contents of this manual before attempting assembly or operation. Failure to comply may cause serious injury.

7.0 Setup and assembly

7.1 Shipping contents

Contents

- 1 Angle/Flat Shear Station (installed)
- 1 Punch and Die Holder Station (installed)
- 1 1/2" Punch and Die Set
- 1 Punch Station Slug Receptacle
- 1 Punch Nut Wrench

⚠WARNING

Read and understand all assembly instructions before attempting assembly. Failure to comply may cause serious injury.

7.2 Unpacking and cleanup

1. This Ironworking machinery is fully assembled and is shipped either by palletized custom wooden crate or by shrink-wrapped wooden pallet for ease of transport and receiving.
2. Inspect the packaging for damage. Report damage, if any, to your distributor. Follow shipping/receiving instructions as listed on the packaging prior to receiving the Ironworker into your facility.
3. When receiving your Ironworker, be prepared to safely move your machinery with a fork-lift rated for the equipment weight.
4. Do not discard carton or packing material until the ironworker is installed and running satisfactorily.
5. Compare contents of shipping carton with the contents list in this manual. Report shortages, if any, to your distributor.

7.3 Anchoring the Machine

Once positioned, anchor the machine to the floor, as shown in the diagram. Use bolts and expansion plugs or sunken tie rods that connect through and are sized for the holes in the base of the stand.

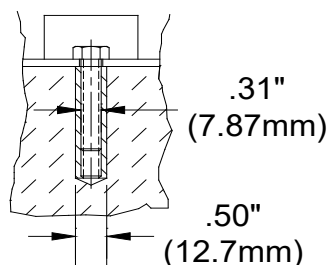


Figure 2

This machine requires a solid floor such as concrete at a minimum of 4" (102mm) thick. 6" (153mm) minimum is preferred.

7.4 Checking hydraulic fluid

The hydraulic oil is the primary medium for transmitting pressure and lubricating the running parts of the pump.

1. After installation of the machine and before machine startup, bring the oil level to within operating range.
2. Verify that the cylinder ram is in the retracted position to prevent overfilling of the tank.
3. Remove the rear cabinet panel to access the hydraulic system.
4. Verify that the oil level is between the Min. and Full marks.
5. Add ISO 46 hydraulic oil if needed to bring the oil level to the proper level.
6. Recheck the oil level after the first few hours of operation and again after the first full week of operation.

A shortage of hydraulic oil can cause hydraulic system breakdown and damage to major mechanical parts due to overheating.

8.0 Electrical connections

The JIW-45T ironworker is rated at and wired for 115V power. The ironworker comes with a plug designed for use on a circuit with a *grounded outlet* that looks like the one pictured in **A**, Figure 20.

Before connecting to power source, be sure switch is in *off* position.

It is recommended that the ironworker be connected to a dedicated 20 amp circuit with a 20 amp circuit breaker or time-delay fuse marked "D".

Local codes take precedence over recommendations.

8.1 GROUNDING INSTRUCTIONS

1. All Grounded, Cord-connected Tools:

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

⚠ WARNING Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded. Failure to comply may cause serious or fatal injury.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn cord immediately.

2. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in **A**, Figure 3. An adapter, shown in **B** and **C**, may be used to connect this plug to a 2-pole receptacle as shown in **B** if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. *This adapter is not permitted in Canada.* The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

3. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating between 150 - 250 volts, inclusive:

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in **D**, Figure 3. The tool has a grounding plug that looks like the plug illustrated in **D**. Make sure the tool is connected to an outlet having the same configuration as the plug. No adapter is available or should be used with this tool. If the tool must be reconnected for use on

a different type of electric circuit, the reconnection should be made by qualified service personnel; and after reconnection, the tool should comply with all local codes and ordinances.

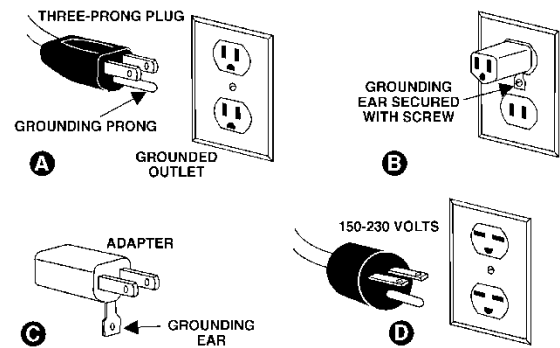


Figure 3

8.2 Extension cords

The use of extension cords is discouraged; try to position equipment within reach of the power source. If an extension cord becomes necessary, be sure it is heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.

Table 2 shows recommended size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

Ampere Rating		Volts	Total length of cord in feet			
More Than	Not More Than		25	50	100	150
		120	25	50	100	150
		240	50	100	200	300
			AWG			
00	06		18	16	16	14
06	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

Extension Cord Recommendations
Table 2

9.0 Setup and Adjustments

⚠WARNING Disconnect ironworker from power source before making adjustments.

9.1 Punch and Die changes

Referring to Figures 4 - 7:

1. Run the ironworker to fully retract the cylinder thereby lifting the punch fully open/up position.
2. Stop the motor and disconnect the ironworker from the power supply.
3. Using a 1/2" wrench, loosen the hex head screws (Fig. 4, A) that secure the strippers to the punch block.

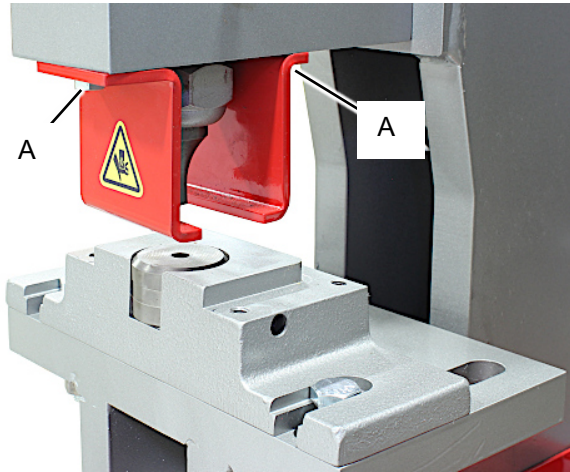


Figure 4

(Punch table removed to expose the die set screw. Do not operate the punch with the table removed.)

4. Using the punch nut wrench, loosen the punch retaining nut (Fig. 5, B). Continue to unscrew the nut from the punch ram and remove the punch from the nut.
5. Using a 3/16" hex key, loosen the set screw (Fig. 5, C) securing the die to the table.

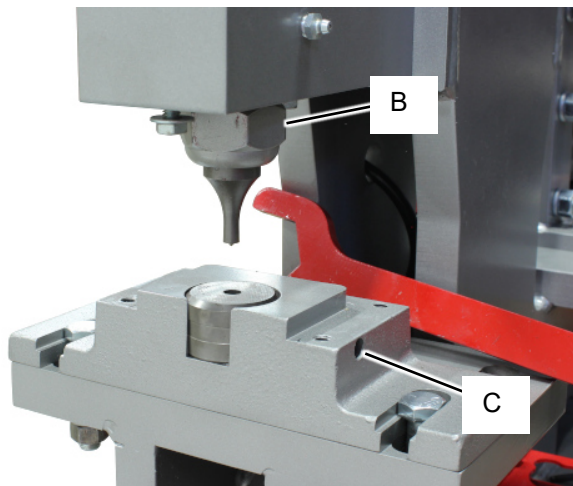


Figure 5

6. Lift the die out of the table cavity and place in storage with the matting punch.

Always keep the punch and dies together as a set to maintain the proper punch to die clearance.

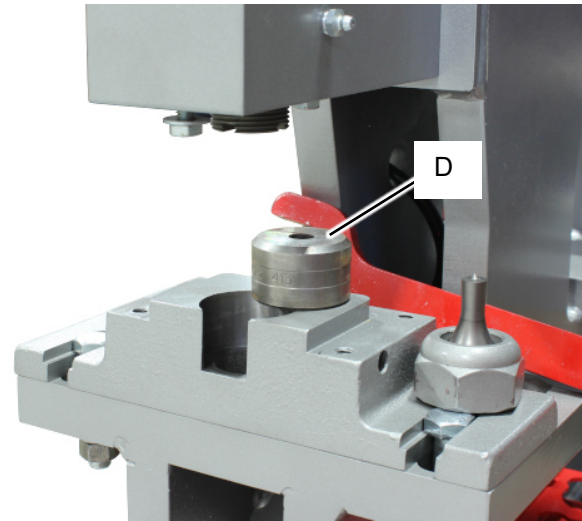


Figure 6

7. Insert the die into the table with the flat surface (Fig. 6, D) up and firmly tighten the set screw (Fig. 5, C). Do not overtighten the set screw.
8. Place the punch into the punch nut.
9. Thread the punch nut and punch assembly onto the punch ram. Be sure that the punch sits flat against the ram and is not cocked within the nut.
10. Firmly tighten the punch nut. Do not overtighten.

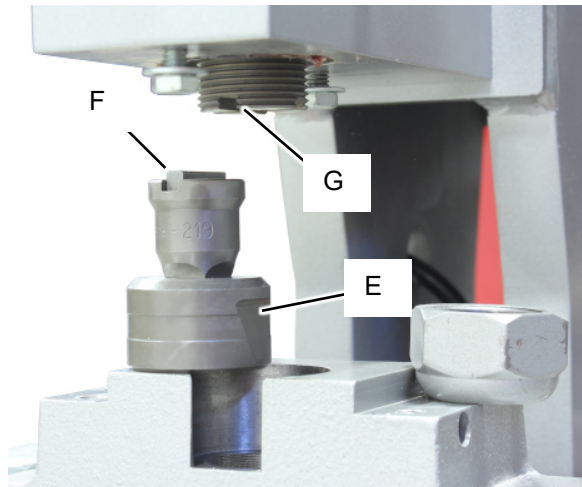


Figure 7

When installing directional punches such as square or oblong punches. The direction of the punch must match the direction of the die. Start with the die and then install the punch.

11. Install the die into the table with the table cavity with the flat surface (Fig. 6, D) up and the flat side (Fig. 7, E) toward the set screw. Lightly snug the set screw to cause the die to rotate into alignment.

12. Install the punch into the punch nut.
13. Place the square key (Fig. 7, F) into the groove on the top of the punch and engage the punch and key assembly into the groove on the punch ram (Fig. 7, G).
14. Hold the punch and key in position and secure with the punch nut. Verify that the key has remained in place and firmly tighten the punch nut. Do not overtighten.
15. Install the strippers onto the punch block and tighten in place. (Fig. 4, A)
16. Start hydraulics and slowly, using a press and release of the foot pedal, lower the punch into the die to verify engagement. DO NOT allow the punch to contact the die in any way. If this happen, verify that the correct punch and die are matched together or that the punch and die are aligned. Square and Oblong set especially.
17. Once the punch and die have been verified in alignment and secured, the ironworker may be returned to service.

9.2 Center station change

Referring to Figures 8 - 11:

Tools required for assembly:

- 5/8" open-end wrench
- 3/4" open-end wrench
- 9/16" socket wrench with extension

The center station is fitted with the flat/angle shear station as standard. An optional punch station may be installed in place of the shear station.

⚠WARNING This procedure will require the ironworker to be powered on to change the position of the rocker arm. ALWAYS disconnect power to the machine before performing the steps when the rocker arm is to be stationary. Failure to do this may result in serious personal injury.

1. The cylinder should be in the retracted position. If not, power the ironworker On and press the cylinder retract pedal to fully retract the cylinder.
2. Disconnect the ironworker from the power supply.
3. Remove the blade to rock arm pivot bolt (Fig. 8, A).
4. Remove and retain the four bolts bolt (Fig. 8, B) mounting the shear station to the frame table.
5. Power the ironworker On and press the cylinder extend pedal to raise the rocker arm away from the shear blade.
6. Disconnect the ironworker from the power supply.

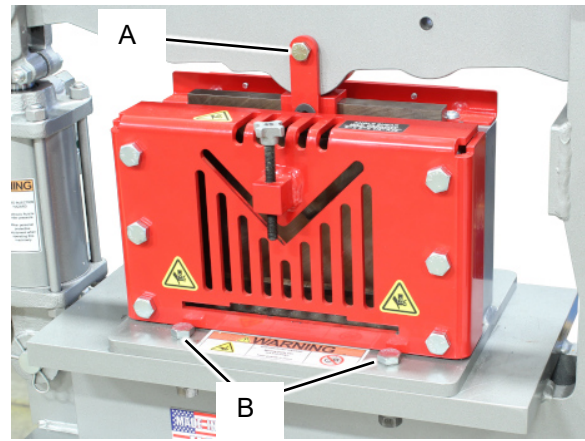


Figure 8

7. Remove and store the shear station until needed again.

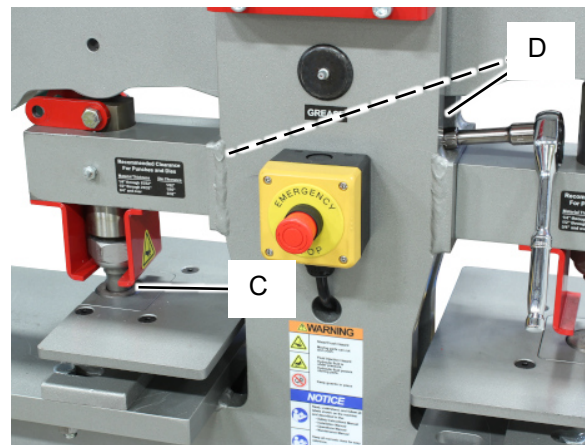


Figure 9

8. Place the punch table and the punch block on the frame table. Allow the punch to engage the die and assist in alignment. It is recommended to use the 1" punch and die set. (Fig. 9, C)
9. Install the four hex head screws and using the 9/16" socket wrench with extension to install and tighten the cap screws. (Fig. 9, D)

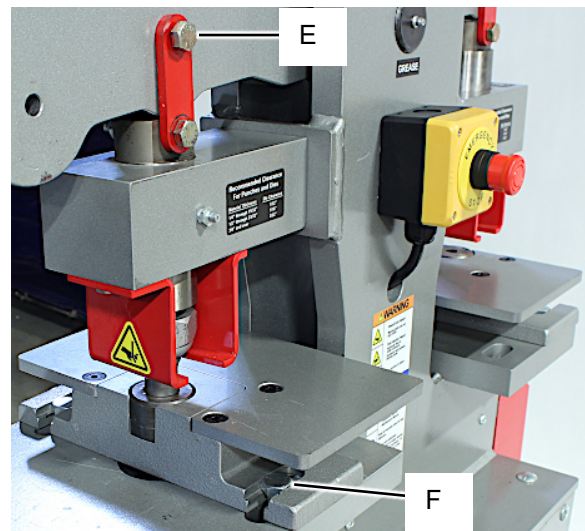


Figure 10

10. Raise the connector plates and install the rocker arm pivot bolt. (Fig. 10, E)
11. Install the table retaining bolts, flat washers, heavy washers, and nuts. Center the bolts within the slots so that the bolts form a straight line from each bolt through the center of the die. (Fig. 10, F).

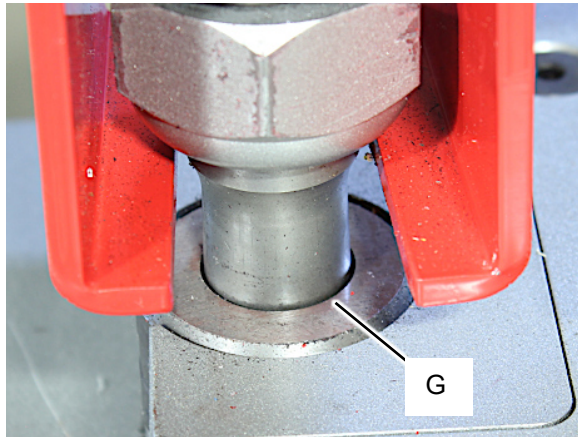


Figure 11

12. Verify that the punch to die gap is even and equal all the way around the punch. (Fig. 11, G)
13. Hold the table and bolts in this position and tighten securely. (Fig. 10, F).
14. Start hydraulics and slowly, using a press and release of the foot pedal, lower the punch into the die to verify engagement. DO NOT allow the punch to contact the die in any way. If this happen, verify that the correct punch and die are matched together or that the punch and die are aligned. Square and Oblong set especially.

10.0 Operations

10.0 Controls

Start / Stop Paddle Switch:

Referring to Figure 12:

1. Insert the yellow safety lockout key and lift up on the paddle to start the ironworker.
2. Push down on the paddle to stop the ironworker.
3. If leaving the ironworker unattended, remove the yellow safety lockout key to prevent unauthorized usage. Store the lockout key in a safe location for authorized persons only.



Figure 12

10.2 Bar and Angle Shearing

Your Ironworker includes a bar and a angle iron shear as a standard feature. These shear stations will provide a distortion and burr free shear cut to mild steel stock as listed in the Ironworker Specifications as well as described on the capacity labels positioned at the Shearing Station.

The Bar Shear allows for straight or angled cutting operations.

The Angle Shear allows for straight cutting operations. A material hold down adjusts with a simple thumb crank to safely restrain the material being cut.

The bar and angle shears are factory tuned to proper clearances and are ready to begin shearing operations. [Shear blades are wearing parts and will need to be maintained or replaced over time.

Shearing Safe Operation

Observe the following guidelines when operating the Shear Station:

- Never exceed the capacities of the machine or tooling as described in the Ironworker Specifications or listed at the tooling station.
- Do not stack material to cut in the shear station.

- Perform complete shear operations only. Partial shear cuts may jam the drop off side of the frame and could result in breakage and operator injury.
- Do not shear angle smaller than the hold-down will accommodate.

10.2.1 Bar Shear Operation

Referring to Figures 13:

1. Clear shear station of any tools or debris prior to powering the machine on.
2. Turn machine on.
3. Press the foot pedal to extend the cylinder to raise the angle shear blade.
4. Mark the material for the length needed. Example: 10" length wanted. Marked at 13" for alignment.

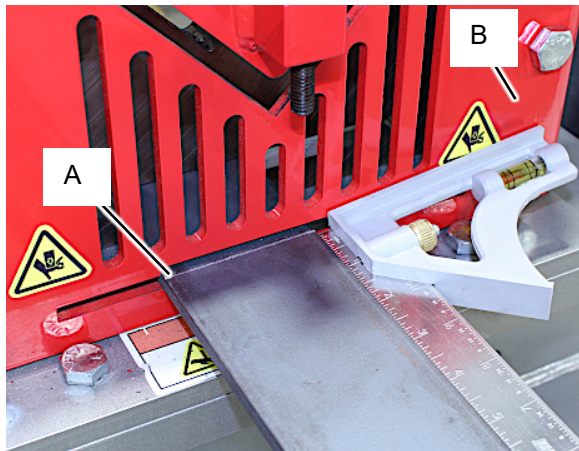


Figure 13

5. Place bar stock into the material hold-down and position your cut mark adjacent to the front surface of the hold down. (Fig. 13, A)
6. Use a square as needed to square the material to be cut.
7. Use one or two drops of SAE#30 oil at the shear blade slides and between the blades to extend the life of the blades.
8. Clear your hands from the working area and press the foot cylinder retract pedal to activate the shear station.
9. When the cut is complete, release the retract foot pedal and press the extend foot pedal to open the shear station for the next cut.

10.2.2 Angle Shear Operation

Referring to Figures 14 – 15:

1. Clear shear station of any tools or debris prior to powering the machine on.
2. Turn machine on.
3. Press the foot pedal to extend the cylinder to raise the angle shear blade.
4. Mark the material for the length needed. Example: 10" length wanted (Fig. 14, A). Marked at 13" for alignment (Fig. 14, B)

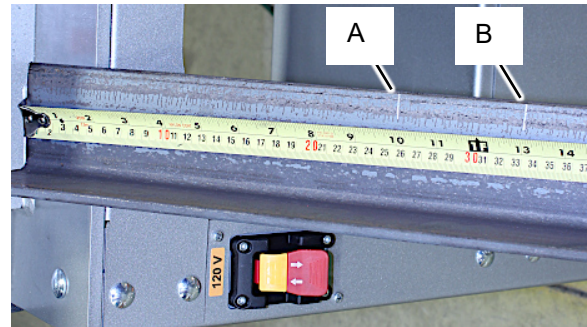


Figure 14

5. Place angle iron into the material hold-down and position your cut mark adjacent to the front surface of the hold down. (Fig. 15, C)



Figure 15

6. Hold the material perpendicular to the shear guard and adjust the material hold-down hand screw to lightly contact the material and prevent the material from lifting during the actual shearing process.
7. Use one or two drops of SAE#30 oil at the shear blade slides and between the blades to extend the life of the blades.
8. Clear your hands from the working area and press the foot cylinder retract pedal to activate the shear station.
9. When the cut is complete, release the retract foot pedal and press the extend foot pedal to open the shear station for the next cut.

10.3 Punch Operation

Your Ironworker is capable of punching materials as listed in the Ironworker Specifications as well as described on the capacity labels positioned adjacent to the Punch station.

Punching Safe Operation

Please observe the following guidelines when operating the Punch Station:

- Follow manufacturers punch and die clearance recommendations. Follow punch tonnage requirements.
- Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.
- The thickness of the material you are punching should not exceed the diameter of the punch being used.
- Check punch and die alignment after every tooling change or extended punch operation.
- Adjust the punch stripper supplied with your Ironworker to allow for material positioning and material stripping.
- Do not stack material to punch in the punching station.
- Punch complete holes only – partial holes will side load the punch tooling and could result in punch breakage and operator injury.
- Use punching aids when working with small items at the punch station.

10.3.1 Punch Operation

1. Clear the punch station of any tools or debris prior to powering the machine on.
2. Layout the location for the hole to be punched. Center punching the location will assist in alignment.
3. Place the material to be punched between the punch and die centering the hole location under the punch point. Check to see that the stripper will contact the material evenly during punch retraction.
4. Use one or two drops of SAE#30 oil at the punch to aid in stripping material from the punch as well as to extend the life of the punch tooling.
5. Clear your hands from the working area and press the foot pedal to move the punch through the material and into the die.
6. When the cut is complete, release the extend foot pedal and press the retract foot pedal to open the punch station for the next cut.

Note: When using the optional center punch station, the foot pedal operation will be reversed.

10.3.2 Punch and Die Operating Clearances

Maintain the following clearance between punch and die.

Material Thickness	Total Clearance
16 gauge and lighter	.006"
15 gauge - 13 gauge	.010"
3/32" - 5/32"	1/64"
3/16" - 15/32"	1/32"
1/2" - 23/32"	1/16"
3/4" and heavier	3/32"

Table 3

Punch Capacities

You can determine the tonnage required to punch A36 mild steel (yield strength 36,300 psi, 65,000 psi tensile) by applying the following formulas for round or shaped holes. For materials other than mild steel please refer to the multiplier table.

Figure 1 - Punch Tonnage Requirements

Round Holes

Punch Dia. x Material Thickness x 80 = Tons of pressure required

Example: How many tons of force do I need to punch a 3/8" hole in 1/4" mild steel?

$$.375 \times .25 \times 80 = 7.5 \text{ tons}$$

Shaped Holes

1/3 Punch Perimeter x Material thickness x 80 = Tons of pressure required

Example: How much force do I need to punch a 3/8" x 1" rectangular hole in 1/4" mild steel?

$$(.33 \times 2.75) \times .25 \times 80 = 18.1 \text{ tons}$$

Material Multiplier

When punching materials other than mild steel first calculate tonnage as shown above then apply the multiplier for the listed material.

Aluminum (2024-0)	0.36
Brass (1/4 hard)	0.70
Copper (1/2 hard)	0.52
Steel (50% carbon)	1.60
Steel (cold rolled) (1018)	1.24
Stainless Steel (303)	1.50

Table 4

10.3.3 Punch Tonnage Requirement

Stock Thickness	Hole Diameter														
	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	7/8"	15/16"	1"
26 ga. (.0179)	0.18	0.27	0.36	0.45	0.54	0.63	0.72	0.81	0.90	0.99	1.07	1.16	1.25	1.34	1.43
24 ga. (.0239)	0.24	0.36	0.48	0.60	0.72	0.84	0.96	1.08	1.20	1.31	1.43	1.50	1.67	1.89	1.91
22 ga. (.0299)	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.24	2.39
20 ga. (.0359)	0.36	0.54	0.72	0.90	1.08	1.26	1.44	1.62	1.80	1.98	2.15	2.33	2.51	2.69	2.87
18 ga. (.0478)	0.48	0.72	0.96	1.20	1.43	1.67	1.91	2.15	2.39	2.63	2.87	3.11	3.34	3.58	3.82
16 ga. (.0598)	0.60	0.90	1.20	1.50	1.79	2.09	2.39	2.69	2.99	3.29	3.59	3.89	4.19	4.49	4.78
14 ga. (.0747)	0.75	1.12	1.49	1.87	2.24	2.61	2.99	3.36	3.73	4.11	4.48	4.86	5.23	5.60	5.97
12 ga. (.1046)	1.05	1.57	2.09	2.62	3.14	3.66	4.18	4.71	5.23	5.75	6.28	6.80	7.32	7.85	8.57
10 ga. (.1345)		2.02	2.69	3.36	4.04	4.71	5.38	6.05	6.73	7.40	8.07	8.74	9.42	10.09	10.76
3/16 (.187)		2.81	3.74	4.68	5.61	6.50	7.48	8.42	9.35	10.29	11.22	12.16	13.09	14.03	14.96
1/4 (.250)			5.00	6.25	7.50	8.75	10.00	11.25	12.50	13.75	15.00	16.25	17.50	18.75	20.00
3/8 (.375)					11.25	13.13	15.00	16.88	18.75	20.63	22.50	24.38	26.25	28.13	30.00
1/2 (.500)							20.00	22.50	25.00	27.50	30.00	32.50	35.00	37.50	40.00
5/8 (.625)									31.25	34.38	37.50	40.63	43.75	46.88	50.00
3/4 (.750)											45.00	48.75	52.50	56.25	60.00
7/8 (.875)													61.25	65.63	70.00
1" (1.000)	80.00														

Punch Tonnage Requirement Table 5

10.4 Rod Shear Operation

Rod Shear will provide distortion and burr free cuts to mild steel rod and square bar stock as listed in the Ironworker specification.

The Rod Shearing blades have 6 round and 1 square shearing cavities built into the rocker arm and frame as a standard station of this ironworker.

The stationary blade is mounted to the vertical frame plate and the pivoting blade is mounted to the rocker arm.

Safe Operation

Observe the following guidelines when operating the Rod Shear.

- Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.
- Keep the tooling clean.
- Do not stack cut material.
- Perform complete shearing operations only – partial cuts may jam the tooling and could result in breakage and operator injury.
- Use shearing aids when working with small items at the Rod Shear station.

10.4.1 Rod Shear Operation

Referring to Figures 16:

1. Clear shear station of any tools or debris prior to powering the machine on.
2. Turn machine on.
3. Press the foot pedal to retract the cylinder to open the rod cavities.
4. Mark the material for the length needed. Example: 10" length wanted. Marked at 12.75" for alignment.



Figure 16

5. Place rod stock into the tooling guard and position your cut mark adjacent to the front surface of the tooling guard. (Fig. 16, A)

6. Use one or two drops of SAE#30 oil between the shear blades to extend the life of the blades.
7. Clear your hands from the working area and press the foot cylinder extend pedal to activate the rod shear station.
8. When the cut is complete, release the extend foot pedal and press the retract foot pedal to open the rod shear station for the next cut.

11.0 User-maintenance

⚠WARNING Always disconnect power to the machine before performing maintenance.

Failure to do this may result in serious personal injury.

Change hydraulic oil and clean the suction screen after first 3,000 hours of operation. Then change after every 5,000 hours of operation. Follow local regulations for disposal of used oil.

Keep table and dies and blades clean and free of rust. Periodically apply a light coat of SAE30 oil or equivalent to exposed metal surfaces, such as table, fences and blades.

Keep blade area free of deposits or shavings, which can impede cut quality and hasten blade wear. Inspect blades and punch and dies before each use for chips, cracks, or other defects which could cause metal to break off during operation.

When blades become dull, they can be removed and sharpened.

Weekly grease the rocker arm pivot and the punch ram slide using NLGI#2 grease.

11.1 Blade Inspection

⚠WARNING Always disconnect power to the machine before performing maintenance.

Failure to do this may result in serious personal injury.

⚠WARNING Blades are sharp! Always wear leather gloves and use caution when working with the blades.

Failure to do this may result in serious personal injury.

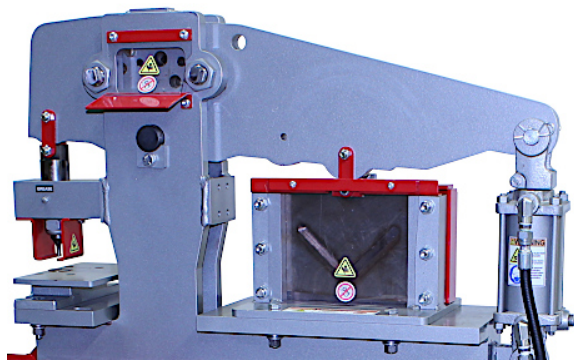


Figure 18

Shear blades are wearing parts and need to be maintained or replaced over time. When worn or chipped, shear blades must be replaced.

Observe the following procedure when maintaining the Ironworker shear station.

Turn off power to machine by pressing the red stop/off button and lockout upstream power at the main electrical panel.

At the back (output side) visually inspect the blades for defects. If any physical defects are found, the blades must be replaced.

The blades may be disassembled from the station and sharpened when cut quality is reduced as the blades become dull.

Maintain 0.010 clearance between fixed and movable shear blades at all times. Replace the blades if the when the gap becomes too large.

11.2 Hydraulic Oil

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

Use hydraulic oil #46 SHELL BRAND or an equivalent with similar specifications.

Keep hydraulic reservoir filled between the Full and Min marks on the reservoir.

Remove the oil fill cap to check the oil level. The level should be between 1" (25.4mm) and 1/2" (12.7mm) from bottom of filler neck (C).

A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.

Every 5000 hours drain the hydraulic oil and fill with 3.0 – 3.2qts. of hydraulic oil. Used oil products must be disposed of in a proper manner following your local regulations.

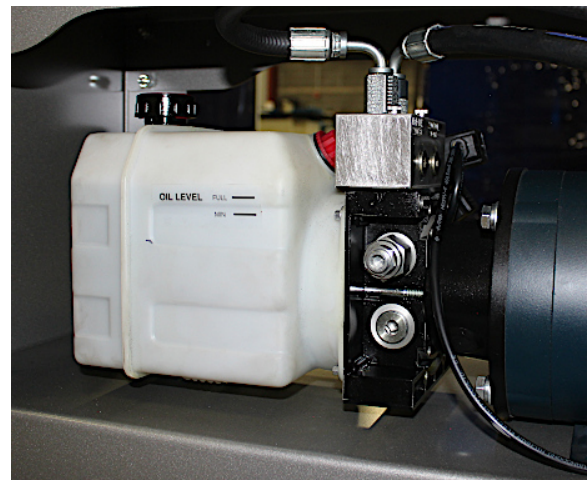


Figure 19

11.3 Oil Disposal

Used oil products must be disposed of in a proper manner following your local regulations.

12.0 Troubleshooting

Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	Power switch turned off/faulty.	Toggle Main Power switch to ON/replace.
	Emergency Stop push-button is engaged/faulty.	Rotate clockwise slightly until it pops out/replace it.
	Plug/receptacle is at fault or wired incorrectly.	Test for good contacts; correct the wiring.
	Wall fuse/circuit breaker is blown/tripped.	Ensure circuit size is suitable for this machine; replace weak breaker.
Machine stalls or is overloaded.	Motor is at fault.	Test/repair/replace.
	Wrong workpiece material.	Use only metal that is within capacities of machine.
	Plug/receptacle is at fault.	Test for good contacts; correct the wiring.
	Motor bearings are at fault.	Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	Machine is undersized for the task.	Use sharp tooling; keep workpiece within the capacities of machine; use cutting lubricant.
	Motor has overheated.	Clean off motor, let cool, and reduce workload.
	Motor is at fault.	Test/repair/replace.
	Hydraulic fluid low in reservoir.	Fill hydraulic reservoir.
Machine has vibration or noisy operation.	Hydraulic fluid pressure too low; hydraulic pump at fault.	Test/adjust for correct hydraulic fluid pressure, replace pump if necessary.
	Hydraulic system has leaks or valves at fault.	Check/repair/replace hydraulic hoses, connections, and valves.
	Motor mount loose/broken.	Tighten/replace.
	Motor or component is loose.	Inspect/replace stripped or damaged bolts/nuts and re-tighten with thread locking fluid.
Machine has vibration or noisy operation.	Motor fan is rubbing on fan cover.	Tighten/Repair/Replace fan cover.
	Motor bearings are at fault.	Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.

*Warning: Some corrections may require a qualified electrician.

Operations

Symptom	Possible Cause	Possible Solution
Cuts are excessively ragged or not accurate.	Tooling damaged or dull.	Check/sharpen/replace tooling.
	Not using proper station.	Use the appropriate ironworker station for your operation
	Tooling not installed properly.	Check/repair tooling installation and clearances.
	Cutting stroke not continuous through the workpiece.	Keep pressure on pedal actuator until workpiece is cut completely through.
	Workpiece moves away from tooling during operation.	Use hold-downs, table guides, and other devices to ensure workpiece is secure before cutting.
Tooling not cutting completely through workpiece.	Workpiece dimensions not within capacity of machine.	Make sure workpiece dimensions are within machine/station capacity; use cutting lubricant.
	Tooling is damaged or dull.	Check/sharpen/replace tooling.
	Hydraulic pump at fault.	Test/adjust correct hydraulic fluid pressure; replace pump if necessary.
Hydraulic fluid temperature at/over 160°F (70°C).	Hydraulic system has leaks or valves at fault.	Check/repair/replace hydraulic hoses, connections, and valves.
	Machine cutting at/beyond capacity.	Turn machine OFF and allow hydraulic fluid to cool; make cuts only with the capacity of your machine.
	Hydraulic fluid pressure set to high.	Reduce hydraulic fluid relief pressure to 2800 PSI.
	Incorrect hydraulic fluid type.	Use only one of recommended hydraulic fluids.
	Hydraulic system at fault.	Have a qualified hydraulic service technician service/repair the hydraulic system.

13.0 Optional accessories

These accessory items, purchased separately, can enhance the functionality of your table saw. Contact your dealer to order, or call JET at the phone number on the cover.

Punch and Die Sets

Several Punch and Die sets are available from 8 piece, 12 piece, and 32 piece sets.

Punch Station

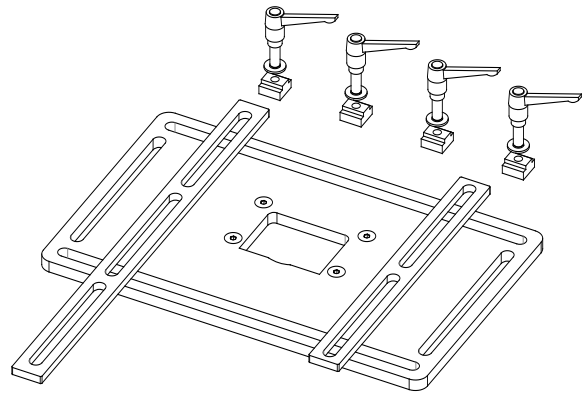
756105 – Punch Assembly for secondary punch station

An additional punch station (duplicate of the standard punch station) which may be installed in the center table area in place of the bar and angle shear station. This provides two dedicated punch stations, or one dedicated and one changeable, or both stations changing as needed.

Gauging Table Kit

756106 – Gauging Table Kit for punch station

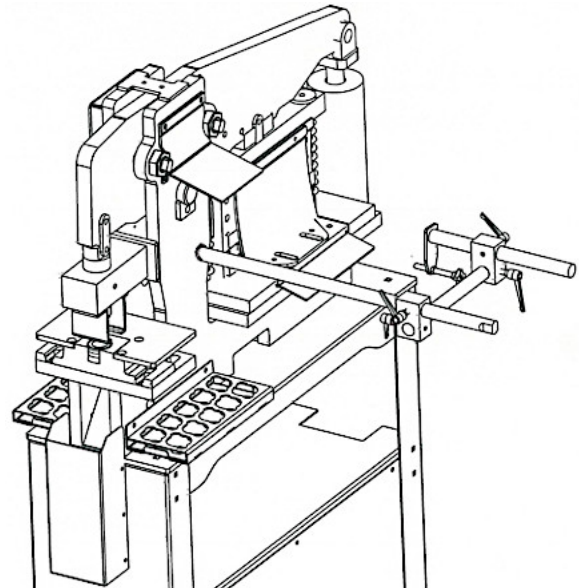
The gauging table will allow for setting of specific distance setting for the edge of the fence to the center of the punch for repeatable hole placement.



Material Stop

756107 – Material Stop

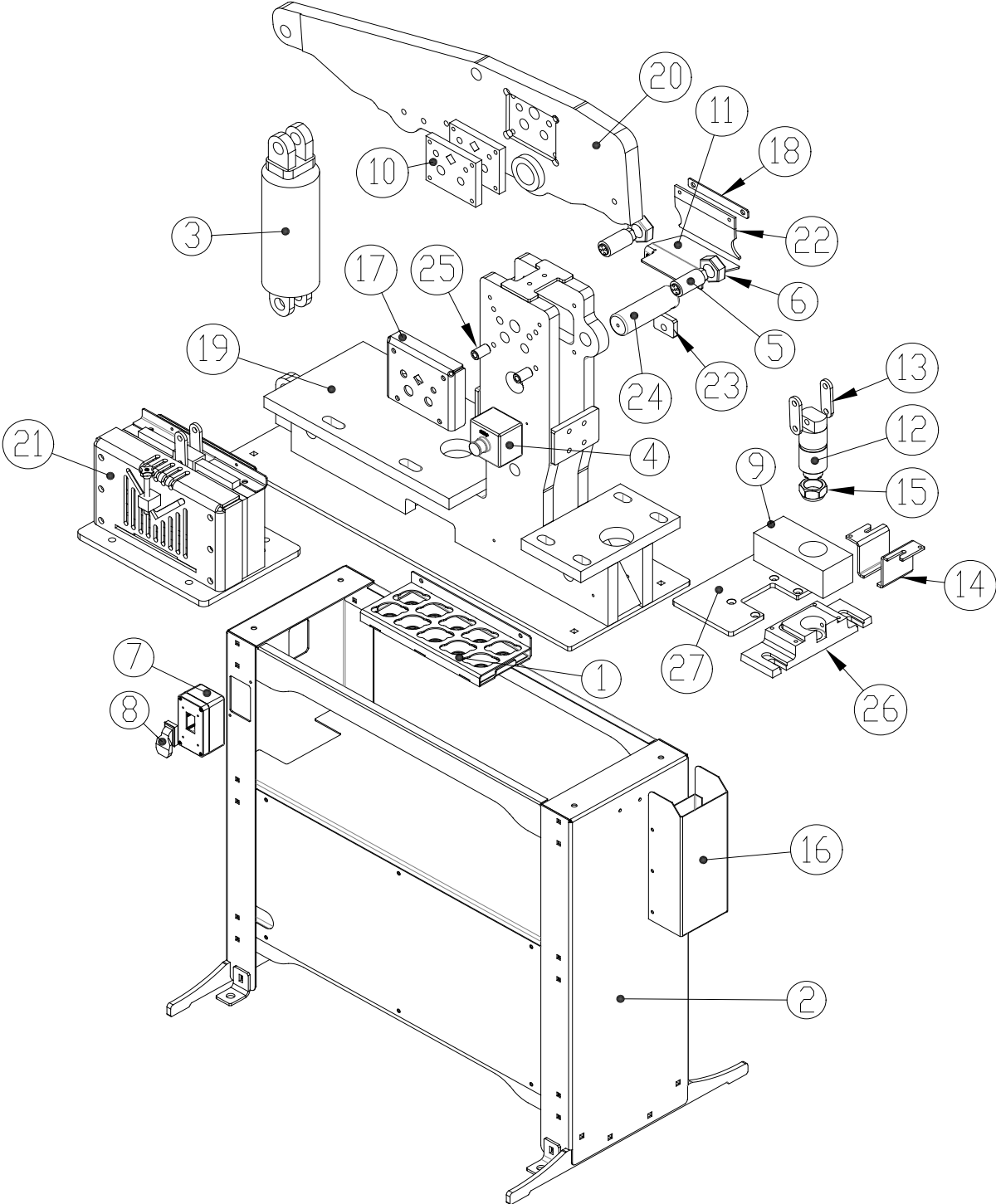
Adjustable stop for repeatable cut lengths.



14.0 Replacement Parts

Replacement parts are listed on the following pages. To order parts or reach our service department, call 1-800-274-6848 Monday through Friday, 8:00 a.m. to 5:00 p.m. CST. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

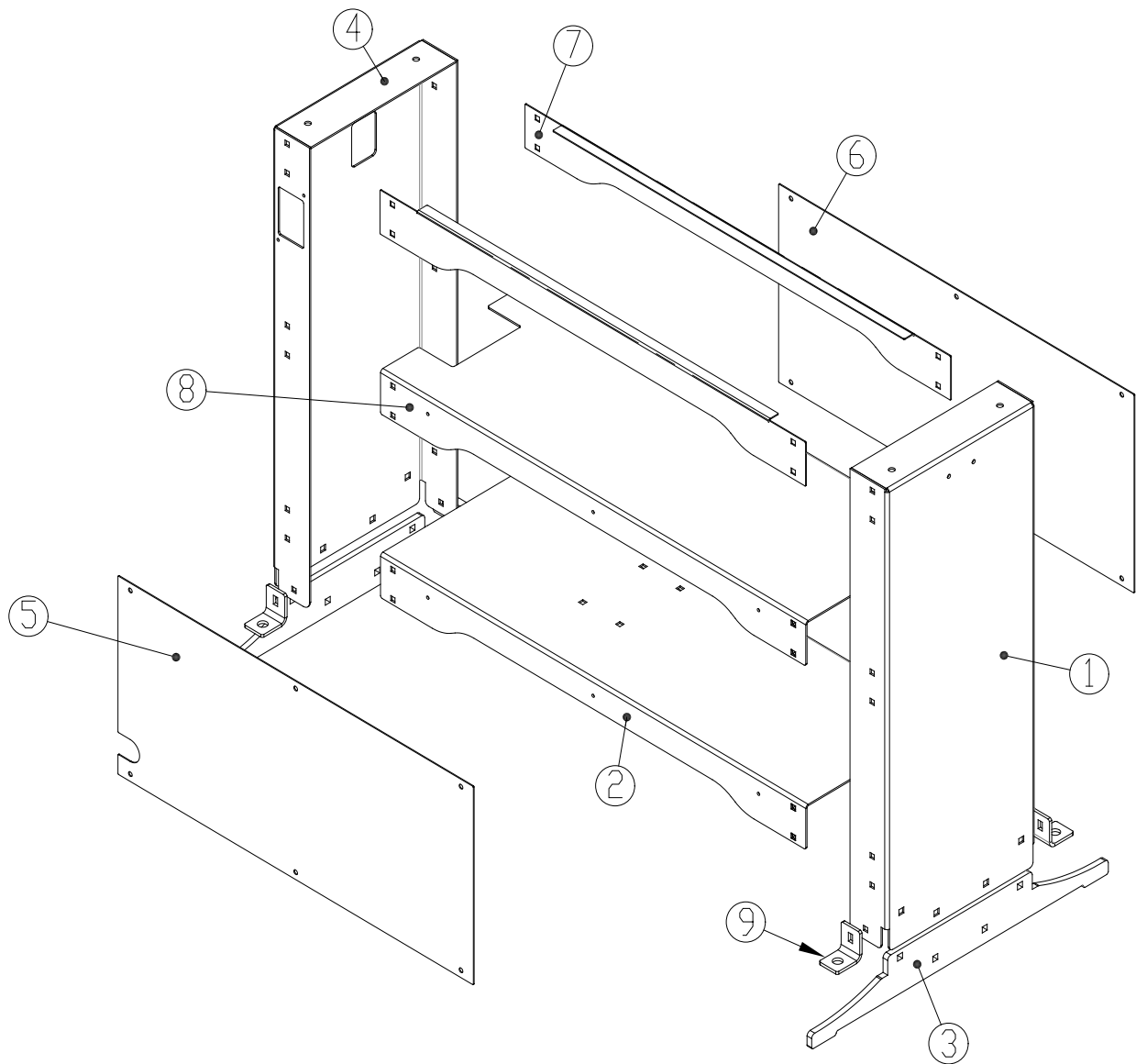
14.1.1 45T Iron Worker – Exploded View



14.1.2 45T Iron Worker – Parts List

Index No	Part No	Description	Size	Qty
1	AC1920	Punch & Die Holder		1
2	Base Assy	JIW-45T Base Assembly – JIW-45T		1
3	CY4500	Cylinder	3.5" Bore x 4" Stroke	1
4	E-Stop	Emergency Stop		1
5	GIB0128-04GL Assy	Gib Assembly Grease Less		2
6	GIB10015-04761	Nut – Gib Pin	50-120T	2
7	HS152	Switch Box		1
8	HS153	Electrical Switch		1
9	JIW1011	Punch Head Guide – JIW-45T		1
10	JIW1132	Blade Rod Shear – JIW-45T		2
11	JIW1136	Drop Table – JIW-45T		1
12	JIW1143	Punch Head – JIW-45T		1
13	JIW1146	Punch Link – JIW-45T		2
14	JIW1154	Stripper – JIW-45T		2
15	JIW1168	Punch Nut – JIW-45T		1
16	JIW1175	Slug Receptacle – JIW-45T		1
17	JIW1176	Rod Shear Guard – JIW-45T		1
18	JIW1177	Guard Strip – JIW-45T		1
19	JIW1190	Frame – JIW-45T		1
20	JIW1191	Center Assembly – JIW-45T		1
21	JIW1192	Shear Assembly – JIW-45T		1
22	JIW1194	Drop Guard. Rod Shear – JIW-45T		1
23	LI50-921-02	RET Block Whale Pin	25T (50T SERV)	1
24	PH124-01	Pin - Whale Pivot	25T	1
25	RD1178	Standoff Rod Shear – JIW-45T		2
26	TA314	Pedestal Die Table – Base		1
27	TA903-2	Pedestal Die Table – Top		1

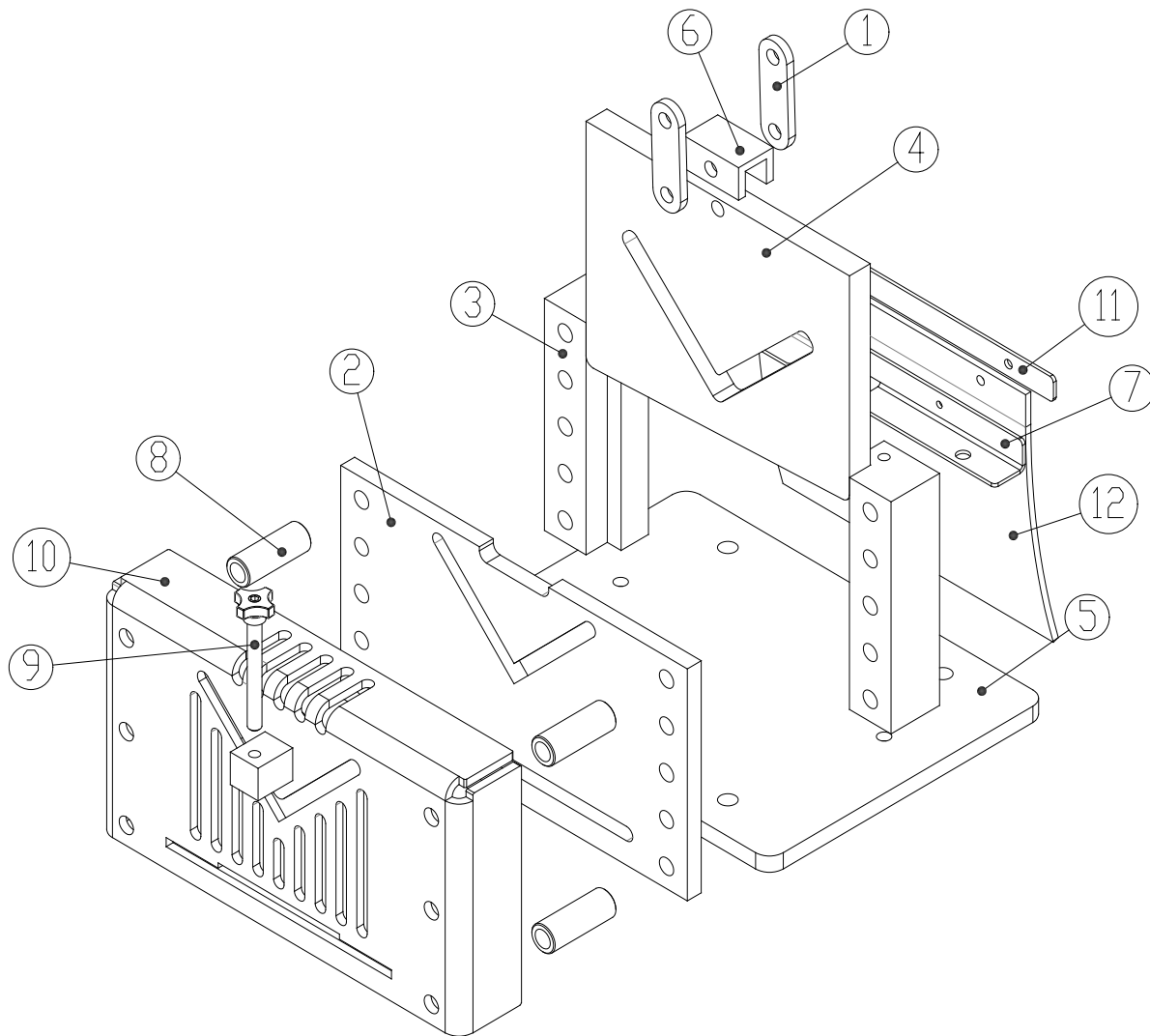
14.2.1 Base Assembly – Exploded View



14.2.2 Base Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	JIW1152	Base Right Side – JIW-45T		1
2	JIW1153	Base Motor Shelf – JIW-45T		1
3	JIW1169	Base Leg – JIW45T		2
4	JIW1170	Base Left Side – JIW-45T		1
5	JIW1171	Front Cover – JIW-45T		1
6	JIW1172	Back Cover – JIW-45T		1
7	JIW1182	Valance Cover – JIW-45T		2
8	JIW1183	Base Shelf – JIW-45T		1
9	JIW1185	Tie Down – JIW-45T		4

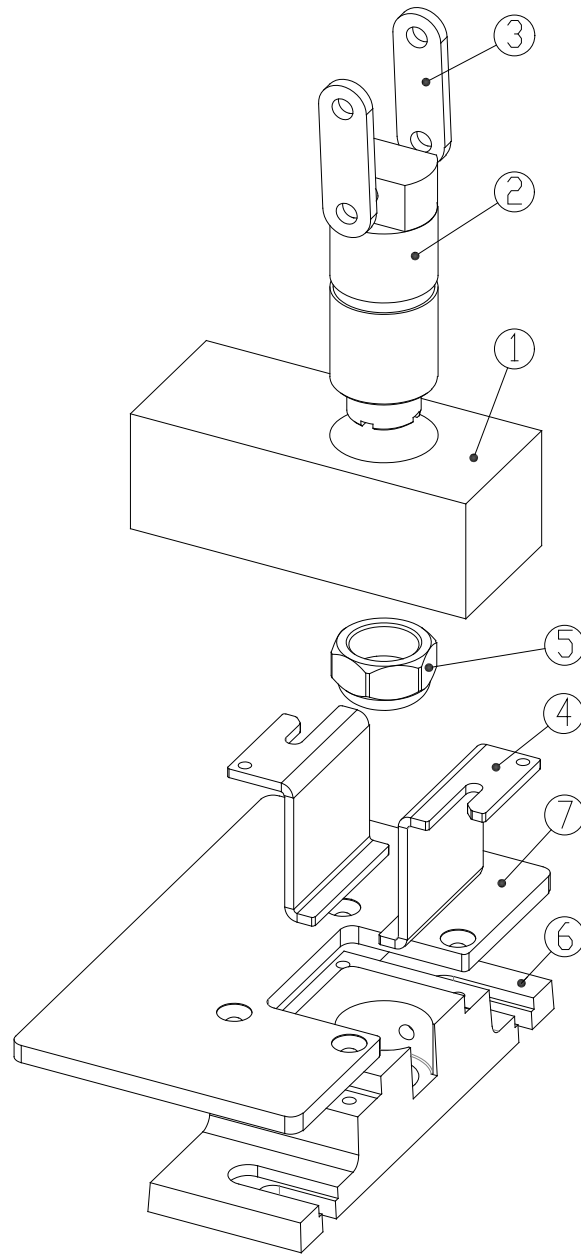
14.3.1 Shear Station – Exploded View



14.3.2 Shear Station – Parts List

Index No	Part No	Description	Size	Qty
1	JIW1146	Punch Link – JIW-45T		2
2	JIW1157	Blade Fixed – JIW-45J		1
3	JIW1158	Blade Guide – JIW-45		2
4	JIW1159	Blade Movable – JIW-45T		1
5	JIW1160	Base Plate – JIW-45		1
6	JIW1161	Push Block – JIW-45T		1
7	JIW1179	Shear Back Guard Mount – JIW-45T		1
8	JIW1180	Shear Standoff – JIW-45T		4
9	JIW1181	Angle Hold Down Adjuster – JIW-45T		1
10	JIW1186	Multi-Shear Guard Assembly – JIW-45T		1
11	JIW1187	Guard Strip – JIW-45T		1
12	JIW1193	Drop Guard, Flat/Angle – JIW-45T		1

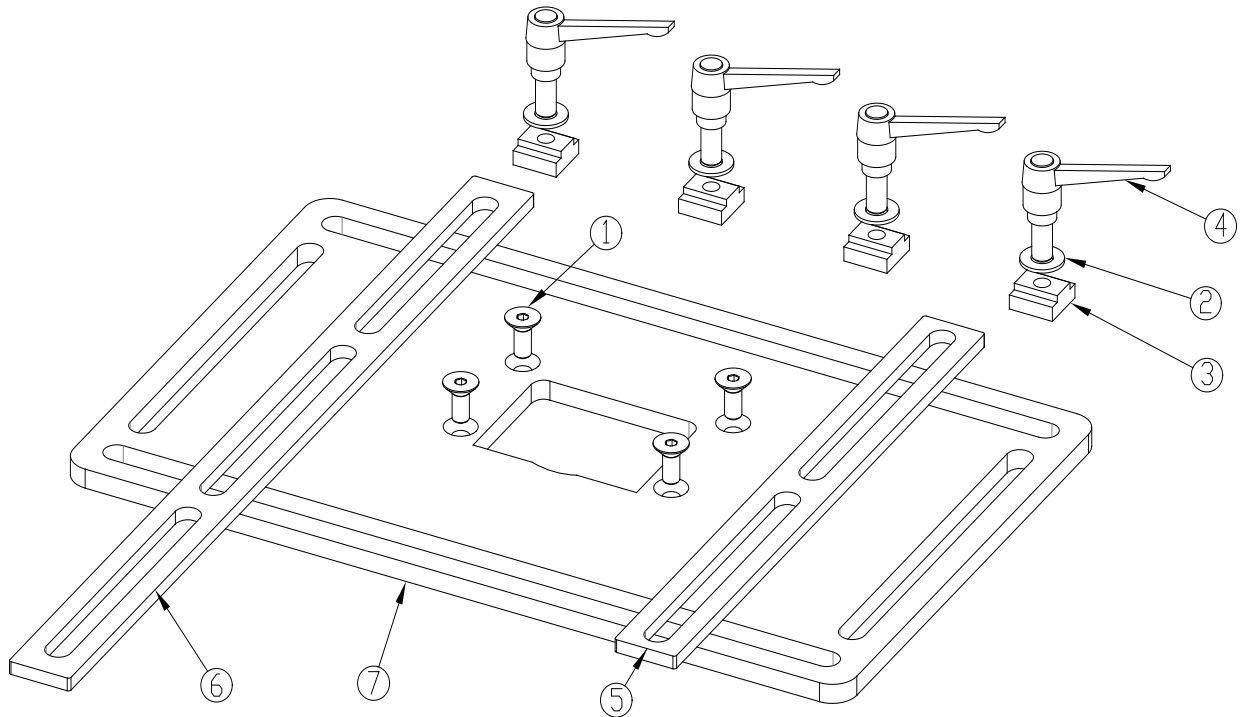
14.4.1 Punch Station (Standard and Optional) – Exploded View



14.4.2 Punch Station (Standard and Optional) – Parts List

Index No	Part No	Description	Size	Qty
	756105	Full Punch Station, Replacement or for Center Station		1
1	JIW1011	Punch Head Guide – JIW-45T		1
2	JIW1143	Punch Head – JIW-45T		1
3	JIW1146	Punch Link – JIW-45T		2
4	JIW1154	Stripper – JIW-45T		2
5	JIW1168	Punch Nut – JIW-45T		1
6	TA314	Pedestal Die Table – Base		1
7	TA903-2	Pedestal Die Table – Top		1

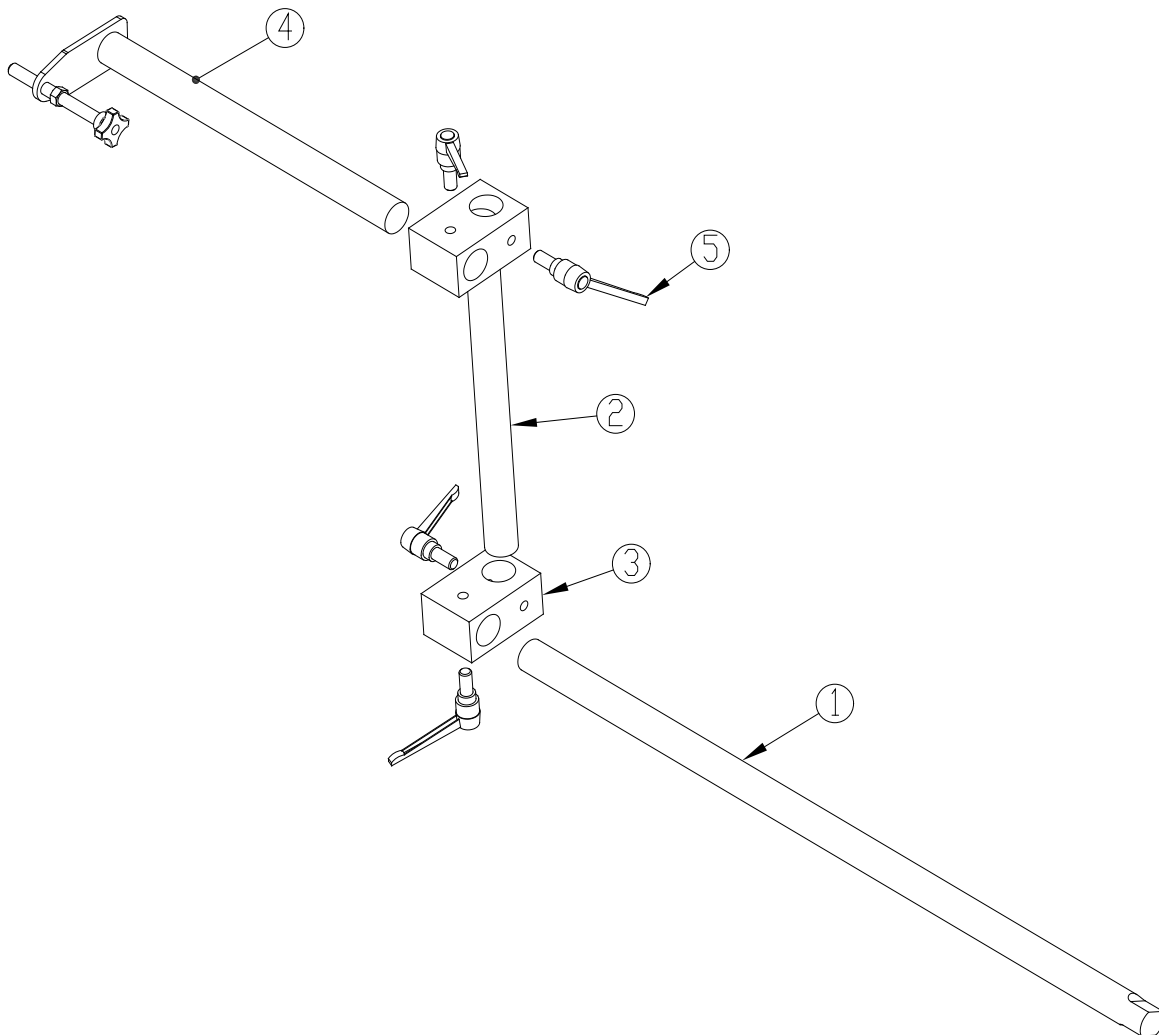
14.5.1 Gauging Table Kit (Optional) – Exploded View



14.5.2 Gauging Table Kit (Optional) – Parts List

Index No	Part No	Description	Size	Qty
	756106	Gauging Table Kit – JIW-45T Option		1
1	24254	Flat Head Socket Cap Screw	5/16"-18x3/4"	4
2	33082	Flat Washer	3/8"	4
3	HM-3163955	T Nut	3/8"	4
4	HM-MA38161	Handle Adjustable	3/8"-16x1"	4
5	HM900-01	Fence – Short		1
6	HM900-02	Fence – Long		1
7	TA277-R1	Pedestal Gauging Table 25T on Center		1

14.6.1 Material Stop (Optional) – Exploded View



14.6.2 Material Stop (Optional) – Parts List

Index No	Part No	Description	Size	Qty
	756107	Material Stop Option		1
1	HM667	Back Gauge Rod	1" x 26"	1
2	HM5207-01	Auto Cut Short Slide Bar	12"	1
3	HM5192	Auto Cut Cross Clamp		2
4	HB186	Stop Arm Assembly		1
5	HM-MA38161	Handle, Adjustable	3/8"-16x1"	4

15.0 Warranty and service

JET warrants every product it sells against manufacturers' defects. If one of our tools needs service or repair, please contact Technical Service by calling 1-800-274-6846, 8AM to 5PM CST, Monday through Friday.

Warranty Period

The general warranty lasts for the time period specified in the literature included with your product or on the official JET branded website.

- JET products carry a limited warranty which varies in duration based upon the product. (See chart below)
- Accessories carry a limited warranty of one year from the date of receipt.
- Consumable items are defined as expendable parts or accessories expected to become inoperable within a reasonable amount of use and are covered by a 90 day limited warranty against manufacturer's defects.

Who is Covered

This warranty covers only the initial purchaser of the product from the date of delivery.

What is Covered

This warranty covers any defects in workmanship or materials subject to the limitations stated below. This warranty does not cover failures due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair, alterations or lack of maintenance. JET woodworking machinery is designed to be used with Wood. Use of these machines in the processing of metal, plastics, or other materials outside recommended guidelines may void the warranty. The exceptions are acrylics and other natural items that are made specifically for wood turning.

Warranty Limitations

Woodworking products with a Five Year Warranty that are used for commercial or industrial purposes default to a Two Year Warranty. Please contact Technical Service at 1-800-274-6846 for further clarification.

How to Get Technical Support

Please contact Technical Service by calling 1-800-274-6846. **Please note that you will be asked to provide proof of initial purchase when calling.** If a product requires further inspection, the Technical Service representative will explain and assist with any additional action needed. JET has Authorized Service Centers located throughout the United States. For the name of an Authorized Service Center in your area call 1-800-274-6846 or use the Service Center Locator on the JET website.

More Information

JET is constantly adding new products. For complete, up-to-date product information, check with your local distributor or visit the JET website.

How State Law Applies

This warranty gives you specific legal rights, subject to applicable state law.

Limitations on This Warranty

JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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Product Listing with Warranty Period

90 Days – Parts; Consumable items
1 Year – Motors; Machine Accessories
2 Year – Metalworking Machinery; Electric Hoists, Electric Hoist Accessories; Woodworking Machinery used for industrial or commercial purposes
5 Year – Woodworking Machinery
Limited Lifetime – JET Parallel clamps; VOLT Series Electric Hoists; Manual Hoists; Manual Hoist Accessories; Shop Tools; Warehouse & Dock products; Hand Tools; Air Tools

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