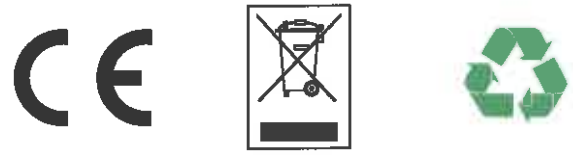
55 Ton Ironworker

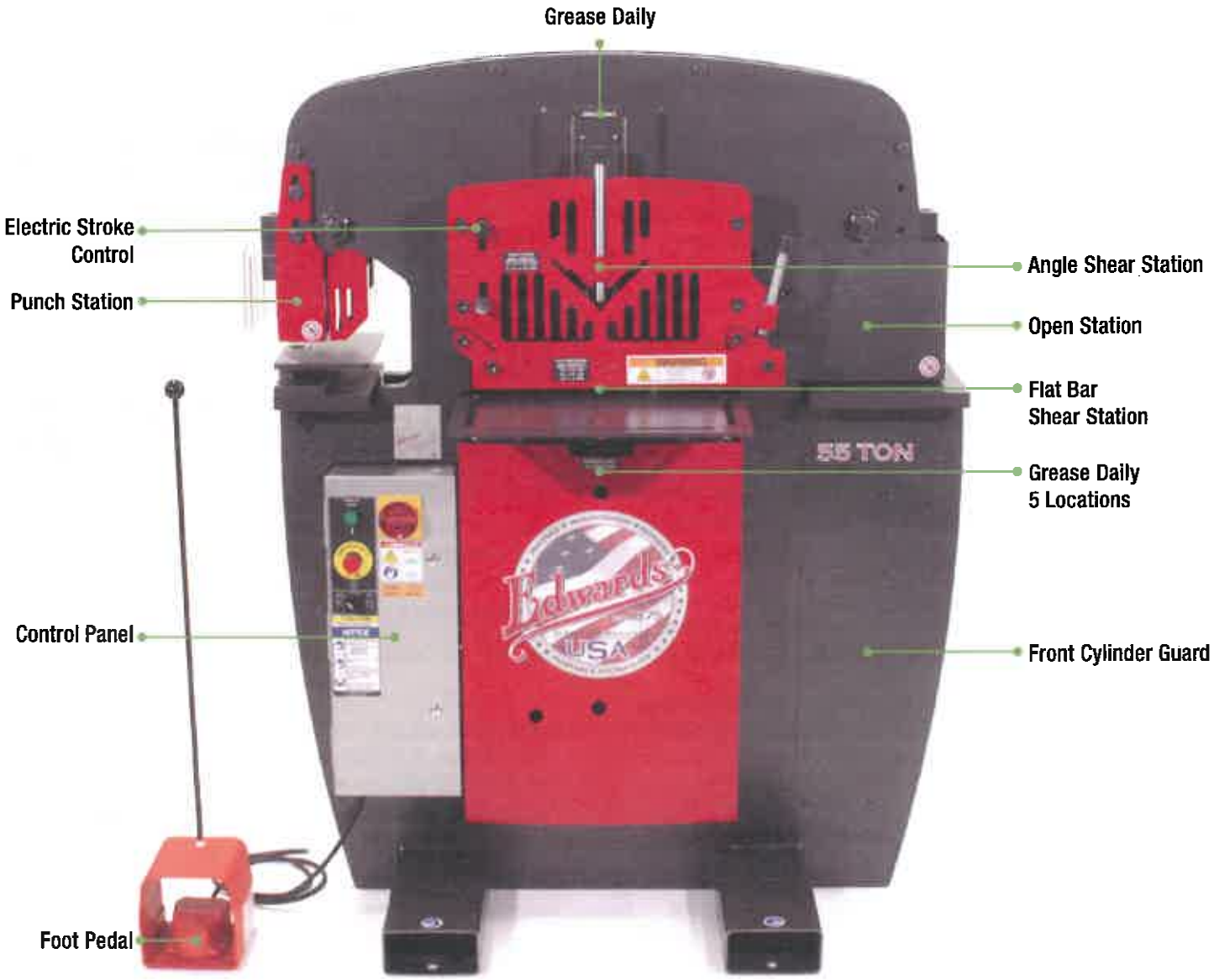
Operations Manual

Serial Number: 083291611W55



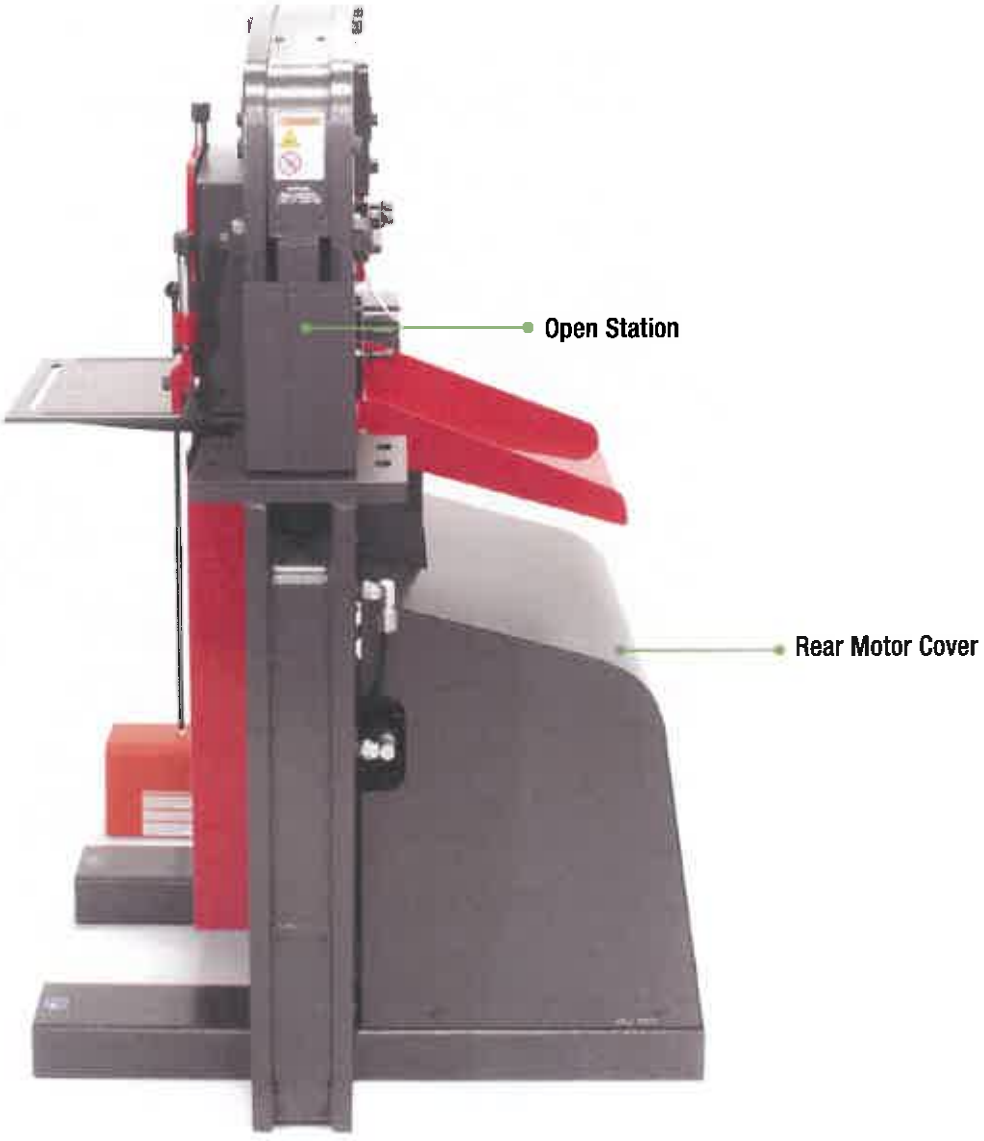
Original Instructions - IW5503

Operations Diagram • Machine Front

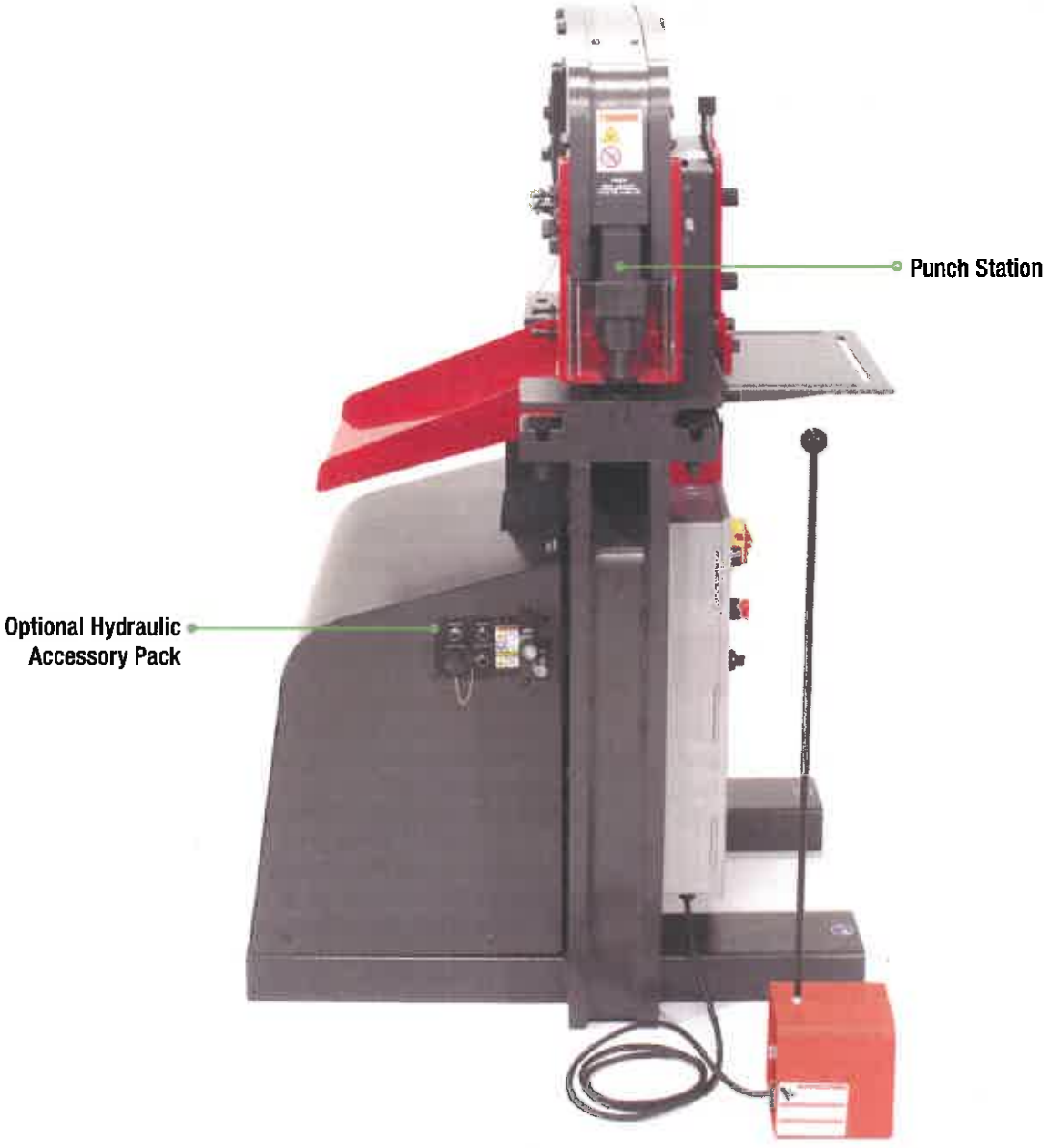


Operations Diagram • Machine Back

Operations Diagram • Machine Right



Operations Diagram • Machine Left



CONTROL PANEL

⚠DANGER

Edwards JAWS Ironworkers feature a centrally located, integrated Control Panel. **Hazardous voltage is present within the control panel.** The panel should only be opened and serviced by authorized personnel. An external power source enters this panel and is distributed to the various working components of the machine.

Push to Start

This button energizes the machine. When energized this recessed button is internally illuminated and will glow green. If the machine does not start when pressed an emergency palm stop button may have been previously pressed and will need to be reset to allow for the start button to energize the machine.

Emergency Palm Stop

This button de-energizes the machine and contains a manual, safety reset function. The projecting, red, palm stop style button is set within a safety yellow bezel and is pushed to de-energize the machinery. Once de-energized the machine requires the palm stop to be re-set prior to energizing the machine. Simply rotate the emergency palm stop button clockwise. The button will retract and the machine will be available for powered operation.

Operations Control

This three-position switch allows the ironworker operation to shuttle between Ironworker, hydraulic accessory or auto-cut mode.

Ironworker

Power the Ironworker by rotating the three position switch counterclockwise. This function allows for operations of the Ironworker only.

Accessory

Power your Edwards hydraulic accessory tools by rotating the three position switch to the vertical position. This function allows for operations of Edwards hydraulic accessories only. The four, female, M12 plug connections coordinate with accessory controls when power is shifted from the Ironworker operation to Hydraulic Accessory tool operation. An additional M12 connection allows for an optional, auxiliary light.

Auto-cut

Power the Auto-Cut operation by rotating the three position switch clockwise. This function allows for operations of the Auto-Cut function only.

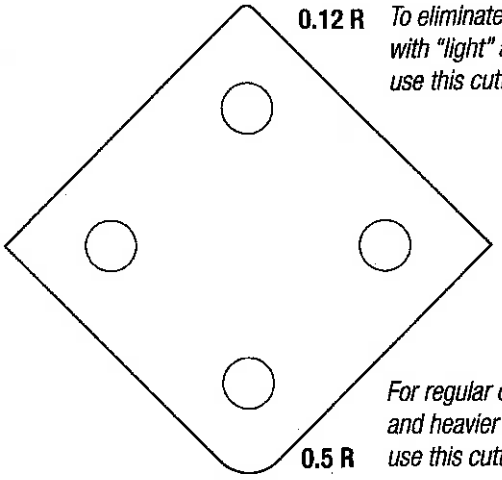
Lockout/Tagout

This round, safety red switch is set within a square, safety yellow housing. The switch allows for proper procedures to be followed when de-energizing, isolating, and ensuring the energy isolation of the Ironworker. The Lockout/Tagout switch is used, in conjunction with Owner safety and maintenance programs to ensure that equipment and machinery is de-energized and isolated from unexpected start-up by physically locking machinery in a state of zero energy.

To lockout the Ironworker turn the red switch counterclockwise until the black tagout bar is horizontal. Pull the black, spring-loaded tagout mechanism to install the maintenance/safety lock and tag provided by the Owner of the machinery. The machine is now de-energized and is available for authorized personnel to maintain and service the machinery.

To open the control panel for servicing, gently pull the 'hopper-style' hinged cover. The cover will not open fully until a safety yellow thumb slide located within the safety yellow housing is rotated clockwise. Reverse operation following service to resume Ironworking.

ANGLE SHEAR STATION



⚠WARNING

Your Ironworker may include an angle iron shear as a standard feature. The angle shear will provide a distortion and burr free shear cut to mild steel angle stock as listed in the Ironworker Specifications as well as described on the capacity labels positioned at the Angle Shearing Station. The Angle Shearing Station on the Edwards Ironworker allows for straight cutting applications. An oversized material hold down adjusts with a simple thumb crank to safely restrain the material being cut.

Integrated 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. Refer to Maintenance Manual for blade maintenance, removal and replacement.]

Safe Operation

Observe the following guidelines when operating the Angle Shear Station:

- *Never exceed the capacities of the machine or tooling as described in the Ironworker Specifications or listed at the tooling station.*
- *Check shear blade clearance at every tooling change or extended shear operation. Maintain proper operating clearance at bar shear and angle shear stations. Refer to Maintenance Manual for tolerance adjustment instructions. Failure to maintain clearance will damage shear blades and support brackets.*
- *Fully engage the material hold-down with the material being cut.*
- *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.*

Angle Shear Operation

1. Clear shear station of any tools or debris prior to powering the machine on.
2. Turn machine on. The shear blades will be in their neutral position. Place angle iron into the material hold-down and position your cut mark adjacent to the moving shear blade.
3. Secure the angle iron in the material hold-down by engaging the handscrew into the material.
4. Clear your hands from the working area and depress the foot pedal to activate the shear station.
5. When the cut is complete, release the foot pedal to automatically return the shear blades to their neutral position. If equipped with the hydraulic hold-down feature, the hold-down will retract when pressure on the foot pedal is released at the end of the cut cycle.
6. Reverse the thumb screw to raise the material hold-down and remove your material.

Bar Shear Station

⚠WARNING

Your Ironworker may include a bar shear as a standard feature. The bar shear will provide a distortion and burr free shear cut to mild steel bar stock as listed in the Ironworker Specifications as well as described on the capacity labels positioned at the Bar Shear Station. The Bar Shear allows for straight or angled cutting operations. The material hold down adjusts with a simple hand crank to safely restrain the material being cut.

Bar 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. Refer to the Maintenance Manual for blade maintenance, removal and replacement.

Safe Operation

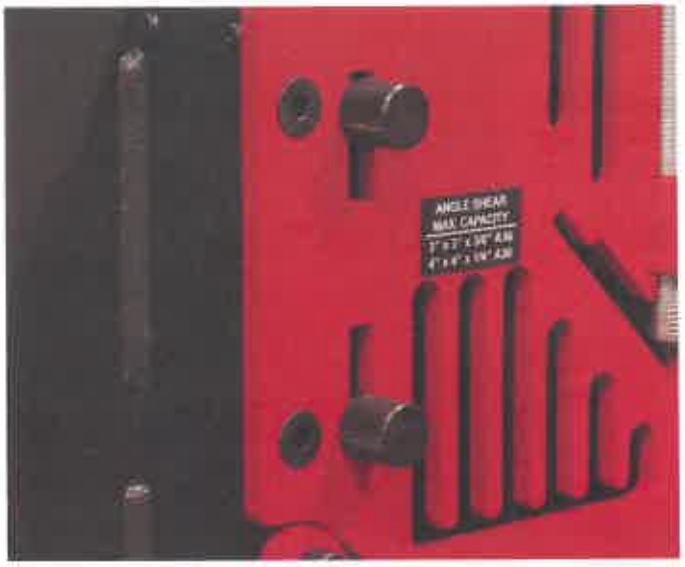
Observe the following guidelines when operating the Bar Shear Station:

- *Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.*
- *Maintain correct operating clearance at bar shear and angle shear stations. Refer to the Maintenance Manual for tolerance adjustment instructions. Failure to maintain proper blade clearance will damage shear blades and shear blade support.*
- *Fully engage the material hold-down with the material being cut.*
- *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.*
- *Use shearing aids when working with small items at the shear station.*

Bar Shear Operation

1. Clear bar shear station of any tools or debris prior to powering the machine on.
2. Turn machine on. The shear blades will be in their neutral position. Place bar stock on the feed table and push the material under the material hold-down. Position your desired cut mark adjacent to the moving shear blade.
3. Secure the bar stock in the material hold-down by engaging the handscrew into the material.
4. Clear your hands from the working area and depress the foot pedal to activate the shear station.
5. When the cut is complete, release the foot pedal to automatically return the shear blades to their neutral position. Reverse the hand screw to raise the manual material hold-down and remove your material.

ELECTRIC STROKE CONTROL



⚠WARNING

Electric stroke control is standard on all Ironworker models with the exception of the 25 Ton Ironworker. Stroke control enables the Ironworker operator to shorten up and down stroke with minor adjustment of two hand screws. Utilize stroke control for precision bending with your brake tooling, when using embossing or bump dies or to simply increase production from your punch, notch or shear stations.

Setup

Electric Stroke control is factory installed and arrives fully set up for immediate use.

Safe Operation

Observe the following guidelines when using and adjusting the electric stroke control function.

- *Read, understand and follow punching, notching and shearing tolerances as described in related chapters of this manual.*
- *Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.*
- *Keep limit switches free of dirt and grime.*
- *Never remove stroke retention nuts from factory setting.*
- *Never reverse stroke limit switches.*
- *Confirm that red light is illuminated. If not illuminated, machine cyle is not complete and potential heat build-up may occur.*

Electric Stroke Control Operation

Set upstroke for rapid cycling of your punching, shearing and notching stations.

1. Power machine on and use the jog function of your electric foot pedal to bring tooling down to rest just above the material being worked.
2. Turn machine off.
3. Adjust upper handle with tapered collar to engage limit switch.
4. Power machine on. Tooling will stay in set position. Top limit switch will be showing a red light.
5. Remove material from tooling station and cycle machine. Tooling should return to pre-set position. Red light will be on.
6. Place material in tooling station and cycle machine.

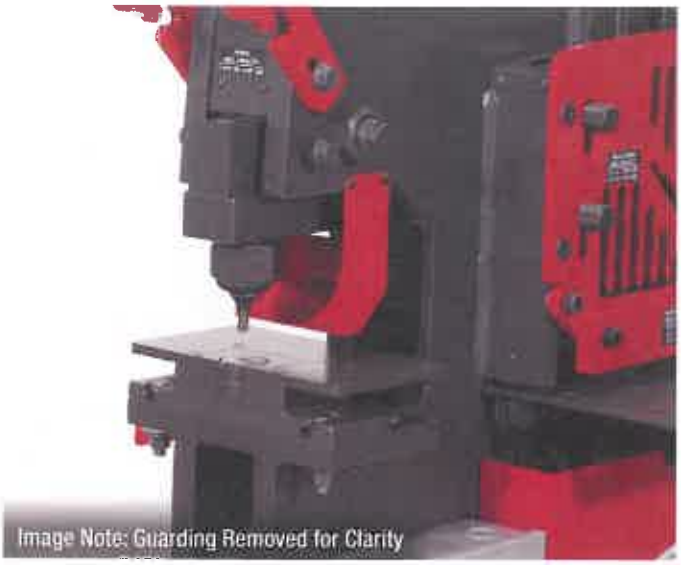
Set downstroke for bump die operation

1. Power machine on and use the jog function of your electric foot pedal to bring ram down to engage tooling. Jog ram to push bump die tooling to the specified depth.
2. Turn machine off.
3. Adjust lower handle with tapered collar to engage limit switch.
4. Power machine on. Ram will return to top of stroke.
5. Cycle machine to insure proper stroke depth.
6. Place material in tooling station and cycle machine.

Set downstroke for brake operation

1. Power machine on and use the jog function of your electric foot pedal to bring ram down to engage tooling with material.
2. Jog ram to push brake die tooling to the specified depth / brake angle.
3. Turn machine off.
4. Adjust lower handle with tapered collar to engage limit switch.
5. Power machine on. Ram will return to top of stroke. Red light will be on.
6. Place test material in tooling station and cycle machine to insure proper stroke depth and material brake.

PUNCH STATION



⚠WARNING

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.

Setup

Your Edwards Ironworker has been shipped with a punch and die installed within the punch station. Punch and dies are wearing parts and will need to be maintained or replaced over time. Refer to the Maintenance Manual for removal and replacement instructions. When changing the punch and die during typical operation please observe the following steps.

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

1. *Swing Stripper Bar away by loosening 4 bolts (2 on either side of punch station) with a 3/4" wrench. After swinging Stripper Bar away, re-tighten one bolt to prevent it falling back on you.*
2. *Remove punch by loosening the punch nut assembly with factory supplied wrench.*
3. *Remove die by loosening the set screw at the side or front edge of the punch table and then lifting die from the die holder. If the die resists removal gently tap the die from the underside of the punch table to loosen the die for removal.*
4. *Install new die and tighten set screw. If loading a shaped die, align the whistle spot with the set screw and tighten.*
5. *Install new punch and tighten punch nut with wrench. If using a shaped punch, align the locating keystock of the punch with the corresponding slot within the punch stem assembly and tighten the punch nut with the wrench.*
6. *Check for punch and die alignment by powering up the machine and inching down the punch to meet the die with the foot pedal. Check to see that the punch is centered in the die.*
7. *In the event that the punch and die are not aligned, loosen the bolts under the table allowing the table to be moved to center the die. When aligned, tighten the table bolts to secure the table.*
8. *Loosen bolts and swing the stripper bar back in place. Adjust of stripper bar for minimal clearance between the top of the material and the bottom of the stripper.*

Safe Operation

Please observe the following guidelines when operating the Punch Station:

- *Follow manufacturers punch and die clearance recommendations. Follow punch tonnage requirements (Figure 1).*
- *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 Edwards Ironworker to allow for material positioning and material stripping.*
- *Do not stack material to punch in the punching station.*
- *Use one or two drops of oil at the punch to aid in stripping material from the punch as well as to extend the life of the punch tooling.*
- *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.*

Punch Operation

1. Clear the punch station of any tools or debris prior to powering the machine on.
2. Place the material to be punched between the punch and die. Check to see that your material is spanning the stripper plate and that adequate material is available to safely position the material.
3. Clear your hands from the working area and depress the foot pedal to move the punch through the material and into the die.
4. When the punch is complete, release the foot pedal to automatically strip the material from the punch and return the punch to its neutral position.

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"*

Punching 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.

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 x .25 x 80 = 7.5 tons

Punch Tonnage Requirement (Figure 1)

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 x 2.75) x .25 x 80 = 18.1 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*

Figure 1 - Punch Tonnage Requirements

Stock Thickness	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"
	Hole Diameter														
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

NOTCHER STATION 50/60/65/75/100DX/120 Ton Ironworkers

⚠WARNING

Your Ironworker includes a Notcher tool as a standard, integrated feature. Notcher tooling includes one moving, three sided top notcher blade and three, four sided bottom blades set into a base table assembly. Notcher tooling creates a two or three sided shear cut in mild steel by passing the top notcher blade through the bottom stationary blades.

The integrated notcher is factory tuned to proper clearances and is ready to begin notching operations. Notcher blades are wearing parts and will need to be maintained or replaced over time. Refer to the Maintenance Manual for blade maintenance, removal and replacement.

Safe Operation

Observe the following guidelines when operating the Notcher Station.

- *Never exceed the capacities of the machine or tooling as described in the Ironworker Specifications or listed at the tooling station.*
- *Check notcher blade clearance at every tooling change or extended notcher operation. Maintain .010 clearance between top and bottom notcher blades at all times. Failure to maintain clearance will damage blades and support pockets.*
- *Cut with a minimum two of three sides of the blade surfaces engaging the material being notched. Cutting on one blade surface may overload the blades and result in tooling damage or injury to the Operator. See Figures A, B and C.*
- *Do not stack material to cut in the notcher station.*
- *Perform complete notch operations only – partial notch cuts may jam the drop off side of the tooling and could result in tooling damage and operator injury.*
- *Use notching aids when working with small items at the notcher station.*

Notcher Operation

1. Clear the feed table of the notcher station of any tools or debris prior to powering the machine on.
2. Turn machine on. The top notcher blade will be in the neutral position. Push the material under the tooling guard and into the blade area. Position your material to the desired cut.
3. Clear your hands from the working area and depress the foot pedal to activate the notcher station. When the cut is complete, release the foot pedal to automatically return the top notcher blade to the neutral position.

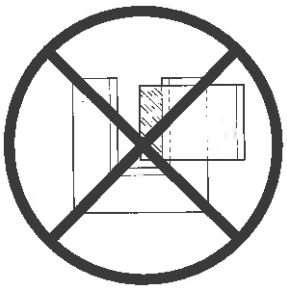


Figure A

Incorrect use - material supported on one blade

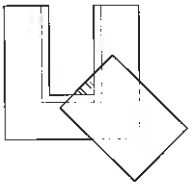


Figure B

Correct use - material supported by two blades

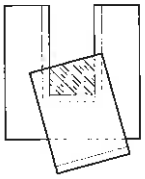


Figure C

Correct use - material supported by three blades

Optional Tooling - Angle Notcher

Image Note: Guarding Removed for Clarity

⚠WARNING

Optional Angle Notcher tooling will provide a distortion and burr free, two-sided, 92 degree shear cut to mild steel bar, plate or angle stock. Common use of this tooling is in the fabrication of angle iron frames. Please review capacity labels positioned at the Angle Notching Station.

Setup

Optional tooling and accessories fit within the open station of the machine. Your Angle Notcher is equipped with one, two-sided top notcher blade and two, four-sided bottom blades. The top blade is mounted on guide pins and return springs of the tooling base. The moving "center" of the Ironworker, pushes on the top Angle Notch blade via the accessory push block. If ordered as a factory installed option, your Angle Notcher assembly is setup for immediate operation. If ordered as an option, the punch station of the machine must be cleared of any existing tooling, material or debris prior to tooling installation. Notcher blades are wearing parts and will need to be maintained or replaced over time. Refer to the Maintenance Manual for blade maintenance, removal and replacement. To setup your Angle Notching station please observe the following steps.

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

Install the push block:

1. *Install the push block to the moving center. The V-shaped end of the push block should be pointing away from the machine. Secure the push block with bolts provided.*

Install the V- Notcher assembly:

1. *Place the Angle Notcher assembly on the Ironworker support table with the V pointing away from the machine.*
2. *Loosely secure the table from the underside of the base with four 1/2" bolts and washers (provided).*
3. *Check for push block and top blade alignment by powering on the machine and slowly inching down the push block to meet the top blade with the foot pedal. Power the machine off.*
4. *In the event that the push block and top blade are not aligned, simply loosen the bolts under the table allowing the table to be moved to center the push block centerline to the top blade. When aligned, tighten the table bolts to secure the table.*
5. *Install the Angle Notcher guard with the bolts provided.*

Safe Operation

Observe the following guidelines when operating the Angle Notcher Station.

- *Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.*
- *Check Angle Notcher blade clearance at every tooling change or extended notcher operation. Maintain .010 clearance between top and bottom notcher blades at all times. Failure to maintain clearance will damage blades and support pockets.*
- *Cut with a minimum of two sides of the blade surfaces engaging the material being notched. Cutting on one blade surface may overload the blades and result in tooling damage or injury to the Operator.*
- *Do not stack material to cut in the Angle Notcher station.*
- *Perform complete notch operations only – partial notch cuts may jam the drop off side of the tooling and could result in breakage and operator injury.*
- *Use notching aids when working with small items at the notcher station.*

Angle Notcher Operation

1. Clear the feed table of the notcher station of any tools or debris prior to powering the machine on.
2. Turn machine on. The top notcher blade will be in the neutral position. Push the material under the tooling guard and into the blade area. Position your material to the desired cut.
3. Clear your hands from the working area and depress the foot pedal to activate the notcher station. When the cut is complete, release the foot pedal to automatically return the top notcher blade to the neutral position.

Optional Tooling - Auto-Cut

⚠WARNING

Auto-Cut tooling is a very useful accessory when production cutting long lengths of material to repeatable lengths. Compatible with most late model Edwards Ironworkers, this tooling features a rugged solid-steel spring loaded switch housing, guarding snoot, 1" x 48" machined back-gauge rod and electrical controls. The accessory actuates the cutting operation when the plunger switch is activated.

Setup

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

Install an Edwards Auto-Cut Tool:

1. *Locate the operations control box on the feed side of the machine.*
2. *Thread the back gauge rod into the threaded 1" hole in the back of the machine.*
3. *Install the cross block and actuator rod to the back gauge rod.*
4. *Adjust the actuator rod towards the back of the machine and align so that the material being sheared will activate the actuator plunger. Adjust the guarding snoot to be clear of the material being sheared.*
5. *Attach the Auto-Cut tool M12 male control cable to the 4-pin female Auto-Cut port. Assure your M12 connections are seated properly. Align M12 male and female fittings so that keyed surfaces align. Misalignment of surfaces will prohibit correct operation.*
6. *Turn machine ON and turn the power selection at the operations control box to Auto-cut. The power selection switches power and control from the Ironworker foot-pedal to the Auto-cut tool.*
7. *With the shear stations clear of tools and debris, test the auto-cut operation by depressing the actuator plunger. The machine should perform a full cut cycle and return to the neutral position.*

Safe Operation

Observe the following guidelines when operating the Auto-Cut Tool:

- *Never exceed the capacities of the machine or tooling as described in the Ironworker Specifications or listed at the tooling station.*
- *Check shear blade clearance at every tooling change or extended shear operation. Maintain proper operating clearance at bar shear and angle shear stations. Failure to maintain clearance will damage shear blades and support brackets.*
- *Fully engage the material hold-down with the material being cut.*
- *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 or flat stock smaller than the hold-down will accommodate.*

Auto-Cut Operation

1. Clear shear station of any tools or debris prior to powering the machine on.
2. Place iron into the material hold-down and position your cut mark adjacent to the moving shear blade.
3. Secure the iron in the material hold-down by engaging the hand-screw or flat bar hold-down into the material.
4. Slide the auto-cut actuator to meet the leading edge of the material projecting through the shear station.
5. With the power off, activate the plunger by pushing the actuator into the material. Tighten the actuator rod to the back gauge rod.
6. Test cut by turning the machine on.
7. Release hold-down pressure slightly to allow material to be pushed through the shear station.
8. Push the material through the shear station to engage the actuator plunger.
9. The machine will cycle and shear the specified material.
10. Check the cut material dimension and adjust as necessary for production cutting.

Optional Tooling - Brake

Image Note: Guarding Removed for Clarity

⚠WARNING

Brake tooling is available in 7", 8", 10" and 12" assemblies for your Edwards Ironworker. Brake tooling will allow for the graduated bending of 1/16", 3/16", 1/8" and 1/4" flat stock up to 90 degrees. This tooling is most effective when operated with the factory installed Electric Stroke Control feature.

Setup

Brake tooling can be accommodated in either the open or punch station of the machine. Brake tooling includes one mounting bracket to secure the "punch" to the center of the machine, one "punch", one "4-way die", and two bottom brackets that secure the "die" to the base table. The moving "center" of the Ironworker, pushes the top punch into the shaped die to bend the specified material. If ordered as a factory installed option, your Brake assembly is setup for immediate operation. If ordered as an option, the open or punch station must be cleared of any existing tooling, material or debris prior to tooling installation. To setup your Brake, please observe the following steps.

Install the punch holder:

1. *Remove all tooling and guarding from the open or punch station.*
2. *Secure the punch holder to the moving "center" with bolts provided. The 1/2" tapped hole is positioned to the outside of the machine.*
3. *Position punch in the holder so that the milled relief in the keyway slips over the holder bolt. Tighten set screws in the holder to secure the punch.*

Install the 4-way die:

1. *Place the die assembly on the Ironworker support table.*
2. *Loosely secure the two support brackets to the support table from the underside of the base with four 1/2" bolts, nuts and washers (provided).*
3. *Check for punch and die alignment by powering on the machine and slowly inching down the punch to meet the bottom die with the foot pedal. Power the machine off.*
4. *In the event that the punch and die are not aligned, simply loosen the bolts under the table allowing the die block to be moved to center the punch. When aligned, tighten the table bolts to secure the table.*
5. *Select 1/16", 3/16", 1/8" or 1/4" test material for bending. Rotate your four-way die to your selected material thickness. Power the machine on and jog the center down till the punch pushes the sample material into the die. If the punch stops before the material has been formed to a 90 degree angle, a small steel shim must be placed between the die and support table.*
6. *Re-install all guarding to the machine prior to machine use.*

Safe Operation

Observe the following guidelines when operating the Brake Station.

- *Never exceed the capacities of the machine or tooling as described in the Ironworker specifications or listed at the tooling station.*
- *Keep the brake tooling clean.*
- *Check Brake clearance and alignment at every tooling change, maintenance cycle or extended Brake operation. Failure to maintain proper clearance may damage punch, die and support brackets or adjacent tooling.*
- *Brake material towards the center of the brake length.*
- *Do not stack material in the Brake station.*
- *Use Brake aids when working with small items at the Brake station.*
- *When not in use, remove the Brake die from the holder.*

Brake Operation

1. Clear the station of any tools or debris prior to powering the machine on.
2. Turn the Ironworker on and place the material to be "broken" on top of the bottom die.
3. Center your material within the length of the bottom die. Bending material to the front or back of the brake die may damage your Ironworker.
4. Position your material for the desired brake. Clear your hands from the working area and depress the foot pedal to activate the brake station. When the brake operation is complete, release the foot pedal to return the punch to the neutral position.