Edwards Iron Worker

Machine Purpose:

Safety: **Must wear safety glasses while operating machine. Keep.** Beware of objects that dangle and could get caught in cutting tool. Beware of flying metal chips **This machine has no built-in safety system.**

Materials: Metals, Plastics

Machine Specs: See Further into guide

Limitations: 1” dia punch, 10” wide flat bar, 4x4 angle

Tooling: Variety of punches

Instruction Required: Yes, 1 on 1 help session

Operations:

Prior to using this machine there are 3/4 settings that must be adjusted

1. Grease cut/punch (for longer tool life)
2. Double check machine stock to machine capacities
3. Secure stock with material clamp/Secure guards
4. Install the proper size punch if necessary (it is the only changeable tool on the machine)

Grease Punch/Shear/Notcher

Applying grease to your shear/punch/notch will allow the tool to more easily slide through the material, extending the tool life and quality of the cut

Please apply grease or cutting oil to either the tool or where you intend to cut

Punch – Apply grease with brush provided

Shear/Notch – Apply grease or cutting fluid along the length of your cut

Double Check Thickness Cutting Capacities – Shears/Notcher

Trying to cut too thick in to wide of stock can lead to tool damage and a large repair bill. Always check the machine or insert tool can handle the thickness/width of stock you plan to cut.

Stock Size	Width
Flat Bar 10” wide	½”
Flat Bar 4” wide	¾”
Round	¾”
Square	¾”
Angle 4”x4”	¼”
Angle 3”x3”	3/8”
Notcher	5/16”

Double Check Thickness Cutting Capacities - Punch

Trying to cut too thick in to wide of stock can lead to tool damage and a large repair bill. Always check the machine or insert tool can handle the thickness/width of stock you plan to cut.

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

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

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*

Secure stock with material clamp/guards

Depending on which function you plan on using you will need to make sure the guard and or material clamp is set properly.

1. Angle Shear

When you slide your stock through the v groove make sure once in place to tighten the handle to lock your stock down. This will prevent your stock from lifting possibly miss cutting your stock.

2. Flat Shear

Once your material is in position to cut tighten the material clamp down on your stock so it that it wont lift while being sheared.

3. Notcher

Always use the guard/guide while using the shear. This is a safety device and should not be removed.

4. Hole Punch

Always use the guard while operating the hole punch, it is a safety device and should always be present. Additionally it acts as a stripping plate to help release your material after holes are puched.

Installing the proper punch

Improper Installation of a punch can cause costly tool damage

1. Always turn E stop the machine before changing tooling
2. Using the large wrench provided, lift the guard by loosening the 4 bolts (2 on either side) holding it in place
3. Again with the large wrench loosen the nut holding the punch in place
4. With an allen wrench loosen the die in the base
5. Replace die and punch with desired sets
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. *If 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*

Punch and Die Operating Clearances

Maintain the following clearance between punch and die.

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”*

Operation

To turn on the machine

1. Make sure all e stops are released, on both the machine and aux controls
2. Turn the Mains power to on
3. Press the Green Button

Select which system you intend to use

Ironworker – The machine itself

Accessories – Other tools such as the benders

To activate motion or cutting action place foot inside foot pedal and press down.

The foot pedal is a dual action pedal. A full depress will start the cutting action, if you lift your foot slightly you can feel a trigger release which will pause the cutting motion.

It is always suggested to a test cut first with scrape material

When turning off the machine always e-stop rather then turn the switch

Clean Up

- Always clean up and put in recycling scrap parts/stock
- Make sure guards are in place properly for the next person to use
- Never walk away from the machine while its running