

Ironworker Uni-Hydro 42-14 (45 Ton)

Use for:

- Mild Steel Only: plate, bar, angle

Do Not Use for:

- Hardened steel, Stainless
- Aluminum, and other soft metals

Safety First Hazard Analysis

- Workpiece can unexpectedly snap.
Eye protection required.
- Don't pinch your fingers between the machine and the workpiece as the shears perform the cut.
- Cuts/ scrapes from sharp cut edges of work
- Pieces falling on your feet after the cut.



Operation Notes

- Machine has three sets of shears: for plate, for angle, and for removable dies to punch holes.
Never use more than one shear at a time.
- Remove all hole punch and dies from machine when punching operation is complete. (Reduces wear and tear, breakage.)
- Use hold-down clamps to secure work. (Also keeps workpiece level during cut.)
- **Maximum workpiece size is listed on the machine (yellow labels). Do not exceed the 42 ton rating.** Minimum work size is not clear.
- When punching holes, the hole must be larger in diameter than the thickness of the material – you can't punch a 1/4" hole in 1/4" bar
- Learn to use foot pedal to line up your cuts. (For steel plate and angle, lower shear position using the foot pedal.)
- When changing punch operation, always recheck die for misalignment.
- Small amounts of oil on the steel smooths punching operation, especially on harder steels.
- For production punching, apply oil to the punch and die after every 8 to 10 holes punched.



Basic Operation Instructions

Never perform more than one cut / punch at a time.

1. Perform a safety check prior to use

- Clear all cutting areas. Remove debris from prior cuts at backside of machine. If not using hole punch dies, remove them.
- Check to make sure your workpiece does not exceed machine's capacity.

For extra safety, turn machine on only when operating the foot pedal. Turn machine off when performing other adjustments.

2. Plug machine into a welding bay outlet.

3. Insert and secure the workpiece.

- Press the green button to turn the machine on. The cutting blades will automatically move to their highest point.
Optional: Using the foot pedal, adjust shear to a height appropriate for your alignment needs. (Especially useful when using the plate shear.)
- Turn the machine off.
- Insert workpiece and align with cutting blades.
Optional: Mark your pieces as needed to help with alignment. (Sharpie works well.)
- Secure workpiece. For plate, use the crank to tighten the Hold-Down Fence. For angle, flip the safety fence into place. For hole punching, keep the machine at its highest position, insert the stripper assembly correctly, and align the punch with the die. (See instructions on punch installation.)
- *Optional: Use Adjustable Stop on back of machine for repeat cuts.*



Adjustable Stop
(for repeat cuts)

Power Cord

4. Press the green “On” button to turn the machine on, then step on foot pedal to perform the cut / punch.

5. Turn machine off. Remove workpiece and clear cut debris from the machine.



Punch Release Handle



Stripper Assembly

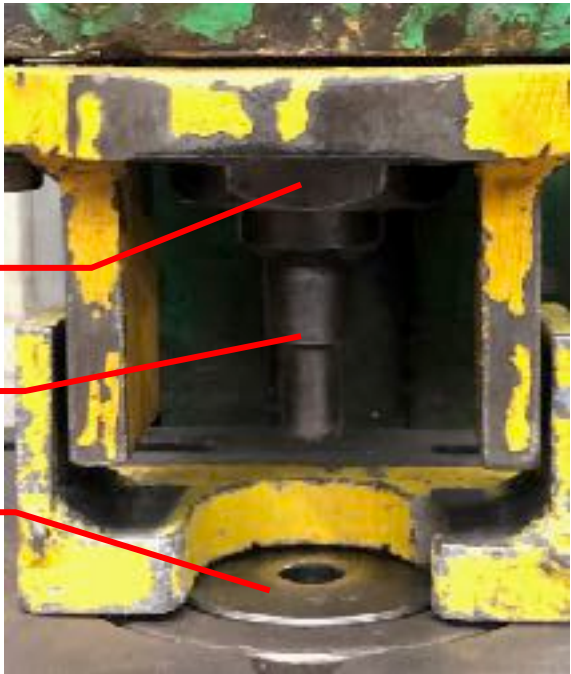
Punch Installed, with Punch Release handled lowered to check die alignment.

Normal Configuration (Punch Not in Use)

- Punch release handle is upright in locked position.
- No Dies inserted.
- Striper Assembly is taken apart



Ironworkers Accessories are stored in a yellow box in the shop.

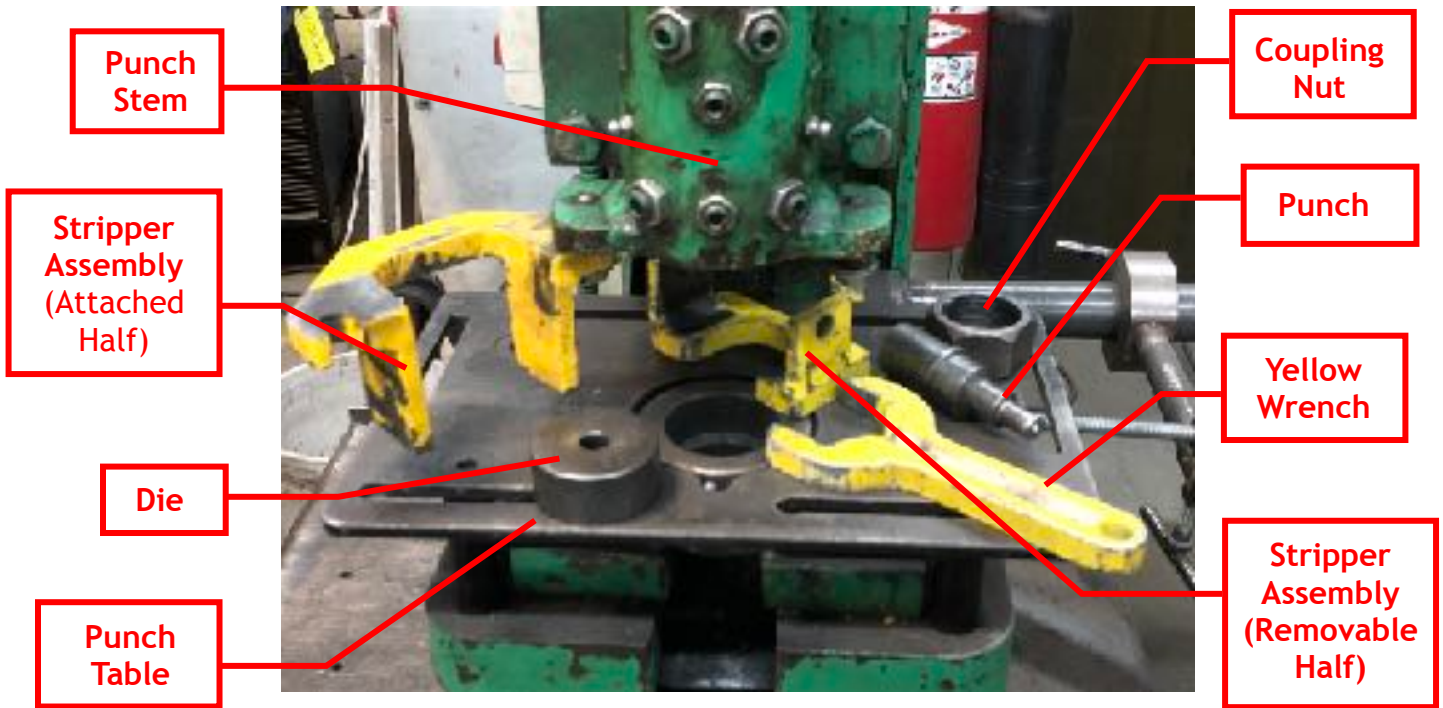


Coupling Nut

Punch

Die

Punch Closeup



Punch Installation / Basic Operation

1. **Check size markings on the punch and die to verify that they match.**
Punches can break if mismatched or abused.
2. **Place the Punch into the Coupling Nut and secure to the punch stem using the yellow wrench.**
3. **Insert the Die into the round hole in Punch Table.** Wider side of hole in die faces down, allowing the slug to fall to the floor during the punch operation.
4. **Test for punch alignment by lowering the Punch Release Handle.** Return the Punch Release Handle to the upright (locked) position when done.

The punch should be aligned with the die. If not, use a wrench to lose the bolts below the punch table, adjust, and retighten.



5. **Place workpiece on table.** Use Punch Release Handle for alignment.

- Insert and align the removable half of the stripper assembly.** Double check to make sure the two halves of the Stripper Assembly align properly, both with each other and also with the workpiece.
 - ** When aligned properly, the Stripper assembly will remove the punch from the workpiece on the machine's upward stroke. The removable half of the stripper assembly locks with the attached half of the assembly to hold the workpiece down as the machine extracts the punch from the hole.*
 - ** Make sure to understand the above mechanics. It's no fun when a punch gets stuck the workpiece.*
- Turn the machine on and use the foot pedal to perform the punch.**
- Turn the machine off. Remove workpiece. When done, remove the punch and, and disassemble the Stripper Assembly

TONNAGE CHART
APPROXIMATE PRESSURE FOR PUNCHING ROUND HOLE IN MILD STEEL

HOLE DIAMETER	1/8" .125	3/16" .1875	1/4" .250	5/16" .3125	3/8" .375	7/16" .4375	1/2" .500	9/16" .5625	5/8" .625	11/16" .6875	3/4" .750	13/16" .8125	7/8" .875	15/16" .9375	1" 1.000
	PRESSURE IN TONS														
28 1.05	2	3	3	4	4	5	6	7	7	8	9	10	11	12	13
32 1.21	2	3	4	4	5	6	7	8	9	10	11	12	13	14	15
36 1.37	2	3	4	5	6	7	8	9	11	12	13	14	15	16	18
40 1.53	2	3	4	5	6	7	9	10	11	12	13	15	16	18	21
44 1.69	2	3	4	5	6	7	9	10	12	13	15	16	18	21	24
48 1.85	2	3	4	5	6	7	9	10	12	14	15	18	19	22	26
52 2.01	2	3	4	5	6	7	9	10	12	14	16	18	20	24	28
56 2.17	2	3	4	5	6	7	9	10	12	14	16	19	21	25	30
60 2.33	2	3	4	5	6	7	9	10	12	14	17	19	23	27	33
64 2.49	2	3	4	5	6	7	9	10	12	14	18	20	25	30	36
68 2.65	2	3	4	5	6	7	9	10	12	14	19	22	27	32	39
72 2.81	2	3	4	5	6	7	9	10	12	14	20	24	29	35	42
76 2.97	2	3	4	5	6	7	9	10	12	14	21	25	31	38	45
80 3.13	2	3	4	5	6	7	9	10	12	14	22	27	33	40	48
84 3.29	2	3	4	5	6	7	9	10	12	14	23	28	35	42	51
88 3.45	2	3	4	5	6	7	9	10	12	14	24	29	36	44	53
92 3.61	2	3	4	5	6	7	9	10	12	14	25	30	38	46	55
96 3.77	2	3	4	5	6	7	9	10	12	14	26	31	39	48	57
100 3.93	2	3	4	5	6	7	9	10	12	14	27	32	40	50	60
104 4.09	2	3	4	5	6	7	9	10	12	14	28	33	41	51	61
108 4.25	2	3	4	5	6	7	9	10	12	14	29	34	42	52	62
112 4.41	2	3	4	5	6	7	9	10	12	14	30	35	43	53	63
116 4.57	2	3	4	5	6	7	9	10	12	14	31	36	44	54	64
120 4.73	2	3	4	5	6	7	9	10	12	14	32	37	45	55	65
124 4.89	2	3	4	5	6	7	9	10	12	14	33	38	46	56	66
128 5.05	2	3	4	5	6	7	9	10	12	14	34	39	47	57	67
132 5.21	2	3	4	5	6	7	9	10	12	14	35	40	48	58	68
136 5.37	2	3	4	5	6	7	9	10	12	14	36	41	49	59	69
140 5.53	2	3	4	5	6	7	9	10	12	14	37	42	50	60	70
144 5.69	2	3	4	5	6	7	9	10	12	14	38	43	51	61	71
148 5.85	2	3	4	5	6	7	9	10	12	14	39	44	52	62	72
152 6.01	2	3	4	5	6	7	9	10	12	14	40	45	53	63	73
156 6.17	2	3	4	5	6	7	9	10	12	14	41	46	54	64	74
160 6.33	2	3	4	5	6	7	9	10	12	14	42	47	55	65	75
164 6.49	2	3	4	5	6	7	9	10	12	14	43	48	56	66	76
168 6.65	2	3	4	5	6	7	9	10	12	14	44	49	57	67	77
172 6.81	2	3	4	5	6	7	9	10	12	14	45	50	58	68	78
176 6.97	2	3	4	5	6	7	9	10	12	14	46	51	59	69	79
180 7.13	2	3	4	5	6	7	9	10	12	14	47	52	60	70	80

Do Not Exceed 42 Ton Rating

MILD STEEL ONLY
MAXIMUM CUT ANGLE
3" x 3" x 5/16"
MAXIMUM FLAT BAR
3/8" x 14" 1/2" x 10" & 5/8" x 6"
MAXIMUM PUNCH CAPACITY
42 TON
(65,000 PSI TENSILE)
TONNAGE CHART
 APPROXIMATE PRESSURE FOR PUNCHING...

Bill
 Call Phone: 808-350-0999
 PO Box 1148
 Channing City, NM 87408

THE PROPER CARE OF PUNCHES AND DIES

PLEASE NOTE: Too often the failure of a punch is attributed to poor material or workmanship, when in reality the cause in most cases is due to the following:

LINING UP PUNCH AND DIE

It is of the utmost importance that the punch be aligned correctly with the die. This is easy to accomplish; at regular intervals during the day the punch can be lowered by hand to check if it is centered with the hole in the die. If this is not centered with the die, this needs to be corrected. The constant jarring and vibration of continuous punching is sufficient to cause a slight shift in either the punch holder or die socket. This is the **MOST** prevalent cause of all punch and die failure.

LOOSE NUTS AND STEMS

Special attention needs to be given to the fit of the coupling nut. If it is too free on the plunger it will not grip sufficiently and will work loose. In this case the punch will also be loose and is liable to strike the material in a cocked position. This is a dangerous situation and may result in snapping the punch. Punch plungers need to be given periodic inspections.

LUBRICATION

One of the main causes of punch flaking off is due to dry stripping. Dry stripping is when dry particles of punched material adhere or cling to the surface of the punch. These particles build up on the surface of the punch which then causes the punch to strip hard and finally break.

It is necessary to lubricate or “swab” the punch. This facilitates easy punching and stripping and prolongs the life of the punch.

STRIPPING

Strippers that are rough and uneven on the bottom, or cocked, so that the stripping surface is not parallel with the plates, are the cause of a large percentage of premature punch failure. Very often the stripper is set too far back from the punch, which will cause the material to cock and also result in the destruction of the punch.

