



FORGING PRESS MANUAL

READ BEFORE OPERATING

For all models of Coal Iron Works Forging Presses

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COAL
IRON
WORKS

PINCH
POINTS

STOP

STOP



Andy Davis & Nate Brandt had an idea; to build a quality c-frame forging press that would fit in their residential shop. From junkyard scraps they welded their first frame together, and through trial and error they assembled a functional press. Through that successful build Coal Iron Works was born...

INITIAL INSPECTION

Checking your pallet

Make sure the pallet is intact and shows no signs of alteration by the shipping company.

Remove the plastic wrapping from your pallet and check for signs of damage that the packaging may have hidden. Note that it is common for residual oil to be present on the machines. It is not common or expected for puddling or dripping to be present.

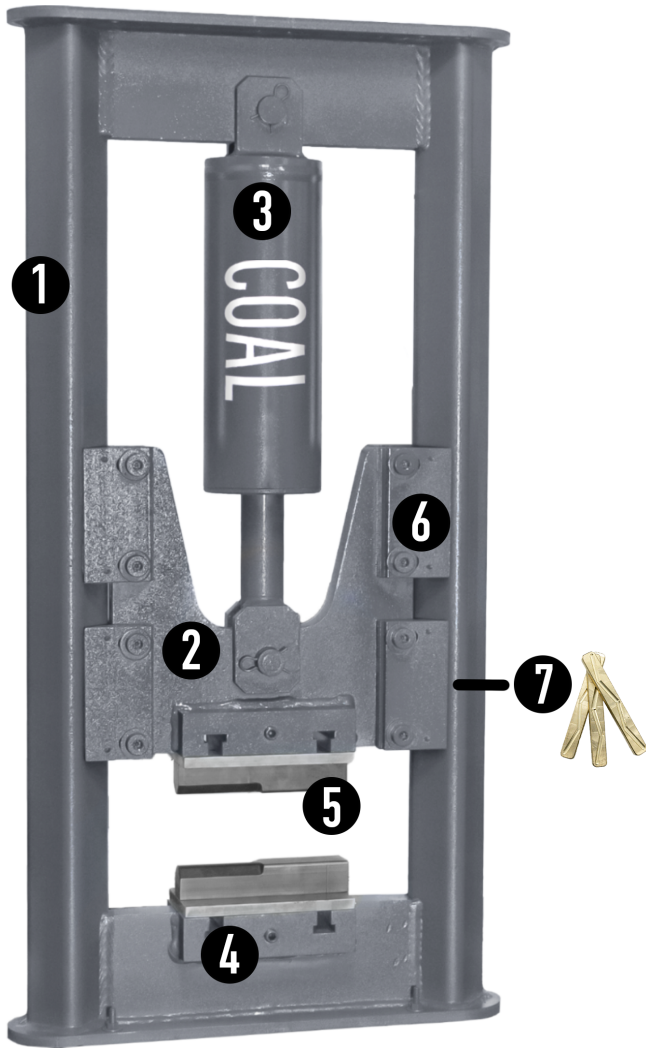
Check the machine for signs of damage. Bent components, scraped paint, etc.

Check contents of any packaging for damage and order accuracy.

You must note damage to the driver before signing for the machine. If the damage is not noted before the truck leaves we cannot make a claim for the repair or replacement and you may be liable for costs.

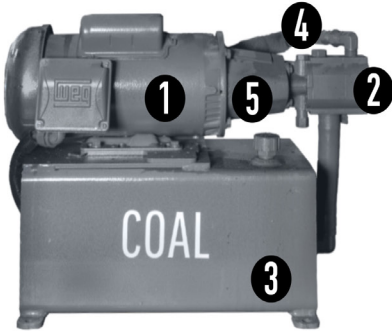


H-FRAME PRESS OVERVIEW



- 1 - FRAME: HOUSES THE CYLINDER AND SLIDE ASSEMBLY, AND DIE RECEIVER
- 2 - SLIDE: CONSISTS OF THE SLIDE CARRIAGE AND TOP DIE RECEIVER
- 3 - CYLINDER: CARRIES THE SLIDE ASSEMBLY
- 4 - DIE RECEIVER: HOLDS DIES LOCATED ON THE SLIDE CARRIAGE AND FRAME
- 5 - DIES: INTERCHANGEABLE FORGING TOOLS
- 6 - SLIDE GIBS: HOLDS SLIDE BRONZE AND MAINTAINS SLIDE ALIGNMENT
- 7 - SLIDE BRONZE: REDUCES FRICTION AND MAINTAINS DIE ALIGNMENT

POWER PACK OVERVIEW



2HP

- 1 - MOTOR: POWERS THE HYDRAULIC PUMP
- 2 - PUMP: CYCLES THE HYDRAULIC FLUID THROUGH THE MACHINE
- 3 - RESERVOIR: HOLDS HYDRAULIC FLUID AND DAMPENS SOUND
- 4 - HIGH PRESSURE HOSES CONNECTS THE PUMP, VALVE, AND CYLINDER
- 5 - BELL HOUSING/COUPLER: ATTACHES THE PUMP TO THE MOTOR.

- 1 - MOTOR: POWERS THE HYDRAULIC PUMP
- 2 - RESERVOIR: HOLDS HYDRAULIC FLUID AND DAMPENS PUMP NOISE
- 3 - MAG STARTER: STARTS AND STOPS THE MOTOR
- 4 - CASTER CART: HOLDS POWER PACK AND OVER MANEUVERABILITY
- *PUMP: CYCLES THE FLUID THROUGH THE MACHINE (SUBMERGED)
- *BELL HOUSING/COUPLERS CONNECT THE PUMP TO THE MOTOR (SUBMERGED)

5HP

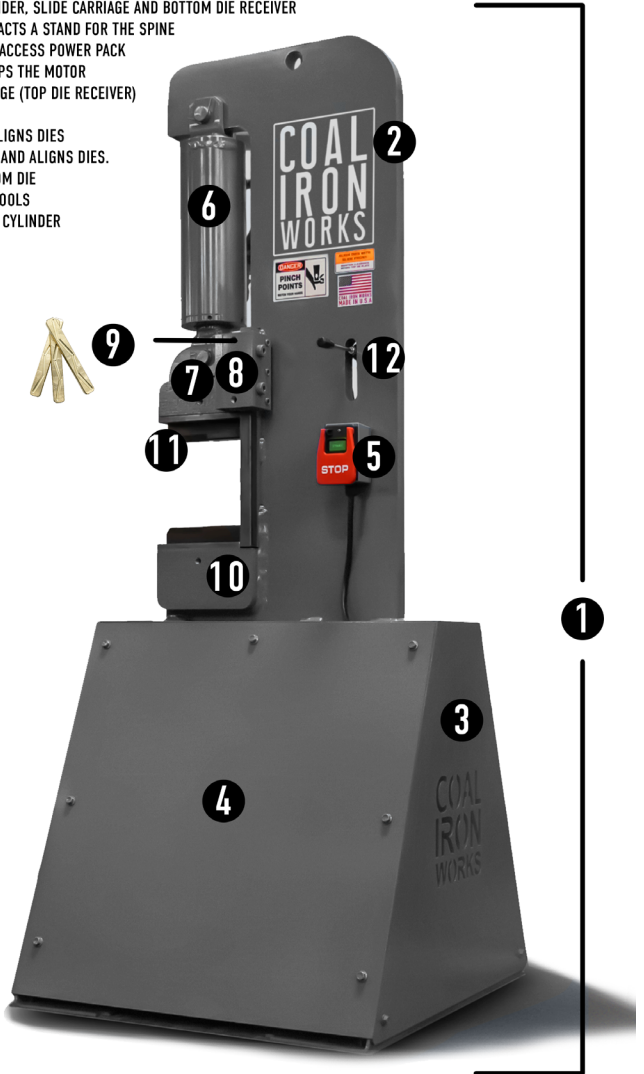


10HP



C-FRAME PRESS OVERVIEW

- 1 - FRAME: COMPOSED OF THE BASE AND THE SPINE, HOLDS ALL COMPONENTS
- 2 - SPINE: HOLDS VALVE ASSEMBLY, CYLINDER, SLIDE CARRIAGE AND BOTTOM DIE RECEIVER
- 3 - BASE: HOUSES THE POWER PACK AND ACTS A STAND FOR THE SPINE
- 4 - FRONT PLATE: REMOVABLE SHIELD TO ACCESS POWER PACK
- 5 - START STOP SWITCH: STARTS AND STOPS THE MOTOR
- 6 - CYLINDER: CARRIES THE SLIDE CARRIAGE (TOP DIE RECEIVER)
- 7 - SLIDE CARRIAGE: HOLDS TOP DIE
- 8 - SLIDE GIBS: REDUCES FRICTION AND ALIGNS DIES
- 9 - SLIDE BRONZE: HOLDS SLIDE BRONZE AND ALIGNS DIES.
- 10 - BOTTOM DIE RECEIVER: HOLDS BOTTOM DIE
- 11 - DIES: INTERCHANGEABLE FORGING TOOLS
- 12 - VALVE/VALVE HANDLE: ACTUATES THE CYLINDER



PRESS SAFETY

Safety Information

Never operate without reading the owner's manual

Always maintain full use of vision and hearing PPE (close fitting natural fiber or flame retardant clothing and close toed shoes are also STRONGLY encouraged any time you are near forges or furnaces)

Machine must be OFF and unplugged before changing dies.

Never put limbs near dies or tooling while the machine is running.

Ensure fingers/limbs are not between tongs/reins while forging

If a leak or damage is suspected, turn the machine OFF and do not use it until the issue is confirmed as repaired or replaced.



WARNING:

**Exchange plug
to suit outlet.
Wired 220V 10A 1PH**

**ALIGN DIES WITH
SLIDE FRONT**

**MAINTAIN CLEARANCE
BEHIND TOP DIE PLATE**

GENERAL SET UP

Check to make sure you have the appropriate receptacle for the machine plug without the use of an extension cord. (2hp=110v 20 amp standard plug, 5hp and up=220v 30 amp NEMA 6-50)

Install on a flat surface able to maintain the weight of the machine over time.

Ensure you have proper PPE and working space in the area of installation

PRESS MAINTENANCE

When you first receive your press it will take a few sessions of forging for your slide bronze to adjust and seat. Make sure that you are keeping an eye on alignment and realign your slide as necessary.

Always ensure that your dies are aligned and you are working within the space of the die receivers to the best of your ability. Misaligned contact points and off center loading will lead to faster breakdown of your machine.

Movement of the slide carriage in any direction indicates loose slide bronze and should be realigned immediately.

Lube your slides/ways. Anywhere where bronze makes contact with your machine should be lubricated with Way Oil generously, especially during first uses. The more build up the better results you'll get.

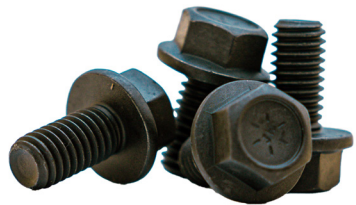
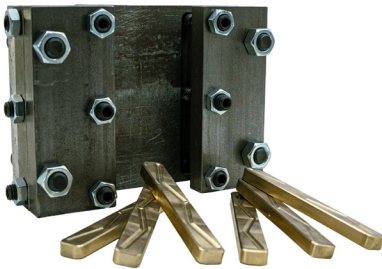
Periodically check slide ways for signs of wear, damage or debris. this can include scraping gouging, or build up on the slide of anything other than way oil.

Periodically check fluid levels (once a year for light use, every 6 months for heavy use, monthly for severe duty or heavily contaminated environments). On 2hp motors the oil will settle 1-1.5 inches below the fill port to check you can insert a ruler to a depth of 6" and the oil line should be no lower than 4.5 inches. For 5hp motors and above the fill/temperature gauge should be filled to the top.

Hydraulic fluid has a working life inside our presses of 10,000 hours. This is counted as any time the machine is running and cycling oil. Once you're ready for an oil replacement check the faqs trouble-shooting page for instructions.

The temperature range of ISO 46 hydraulic fluid is around 20 degrees Fahrenheit and 150 degrees Fahrenheit if you are experiencing temperatures below or above this check the FAQ's page.

Inspect hoses regularly and check for signs of wear or damage. If you suspect a hose or fitting to be worn or damaged immediately unplug the machine and stop. Contact service@coaliron.com with any questions or concerns.



H-FRAME PRESS SET UP

Remove 4 bolts from the bottom of the press connecting it to the pallet.

Remove banding from the power pack.

Using lifting straps or other lift assisting devices place and mount the frame in the desired location.

If utilizing the caster cart, attach casters

Using lifting straps or other lift assisting devices place the power pack into the cart and move the power pack in the desired location.

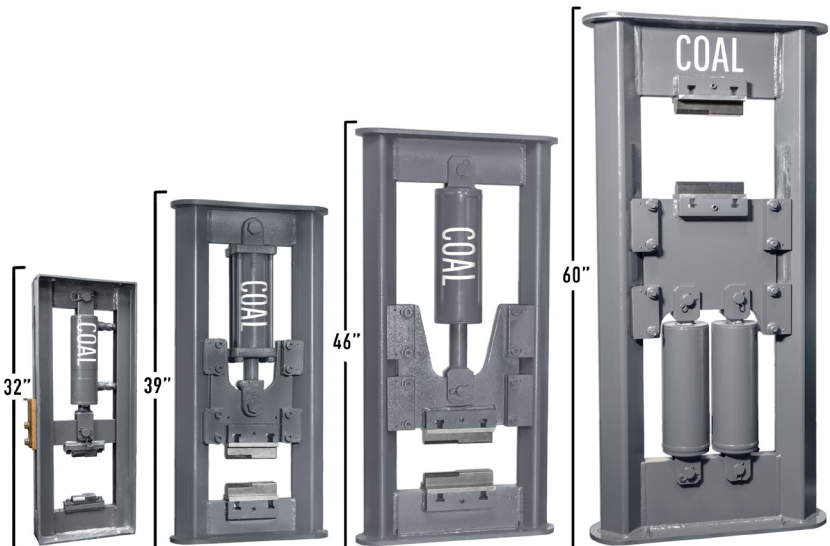
Check for any signs of weak or loose fittings and tighten

Attach the start stop switch to a place that is easily accessible for both start up and stop.

Plug in the machine no more than 20 feet from the receptacle to the appropriate breaker.

If attaching foot treadle follow foot treadle installation instructions

Make sure dies are tight to the die receiver and run the machine



C-FRAME PRESS SET UP

Remove 4 bolts from the underside of the pallet that keep the press attached to the pallet (9/16th socket)

Use the lifting eye to raise the press and install casters to base. Caster bolts should be tightened to roughly 40 ft/lbs

If you do not have access to a lifting device, slide the press to the edge of the pallet and install the casters one at a time moving just one corner of the base off the edge of the pallet at time. Always ensure that the press is stable. Instructional video available on youtube.

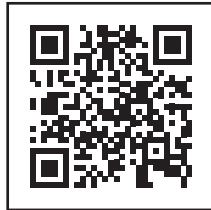
Check for signs of any weak or loose fitting and tighten

Attach the start stop switch to a place that is easily accessible for both start up and stop

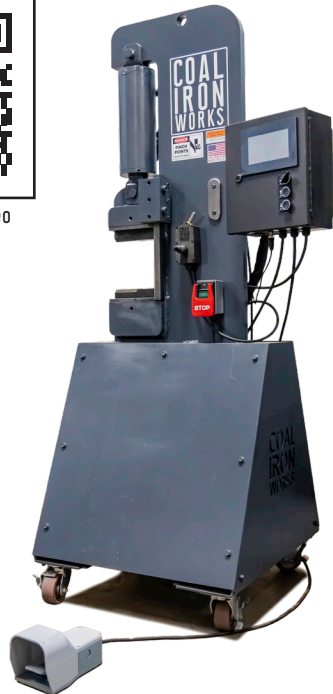
If attaching a foot treadle follow foot treadle installation instructions. Instructional video available on youtube (see Pg. 10 for link).

Plug in the machine no more than 20 feet from the receptacle to the appropriate breaker.

Make sure dies are tight to the die receiver and run the machine.



Caster Install Video



DIE ALIGNMENT

C -Frame

Remove dies and check for debris or burrs in the die receivers, clean anything that may cause dies to not seat flat.

Install matching dies, flat dies work best but any die that is matching shape top and bottom will work.

Lower carriage assembly to dies almost touching

Loosen set screws to contact only. They should be making contact with the bronze but not controlling its placement yet. (Shorter set screws are front and back, longer set screws are sides)

Tighten and loosen set screws to adjust square until dies align. (Once the dies look aligned run the cylinder through a couple cycles to allow the clevis to adjust its placement and realign)

Remove a single set screw and apply loctite 290 or similar thread lock then reinstall to position.

Repeat step 4 for each set screw.

Allow 2-3 mins for loctite to wick.

Check alignment after first forging session to confirm alignment remains

H -Frame

Remove dies and check for debris or burrs in the die receivers, clean anything that may cause dies to not seat flat.

Install matching dies, flat dies work best but any die that is a matching shape top and bottom will work.

Lower carriage assembly to dies almost touching

Loosen gib bolts. Gibs should be able to be moved easily by hand.

Tighten and loosen gib bolts to adjust square until dies align. (once the dies look aligned run the cylinder through a couple cycles to allow the clevis to adjust its placement and realign)

Once aligned tighten gib bolts to half a turn past hand tight (roughly 120 ft-lbs)

Check alignment after first forging session to confirm alignment remains

FOOT TREADLE

Install the new Valve Handle with the tab connection oriented down (tab may be factory installed if purchased with the press)

Install cable mount bracket on the valve mount bracket (H Frame and double sided) or around the spine (C Frame)

FOR C FRAMES ONLY You can choose to either leave the foot treadle cable loose or run the cable through the machine. This gives a cleaner look but affects the overall maneuverability of the foot treadle. It has no impact on functionality outside of treadle placement.

Remove the top nut and washer from either side of the treadle cable and feed it through the cable mount bracket

Loosely install the top washer and nut back onto the cable mount bracket. Leaving it loose will allow for throw adjustment before final tightening.

Install the swivel tip adapter to the top of the cable, and attach cable to the valve tab using hardware supplied.

Run the bottom end of the cable thread through the top of the foot treadle

Loosely install the nut and washer to the bottom end of the cable. Keeping it loose will allow for throw adjustment before final tightening.

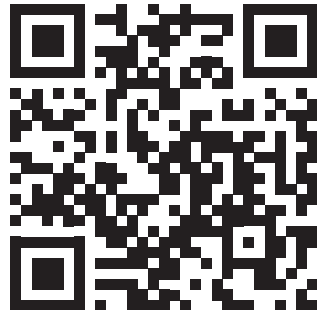
Install swivel tip adapter and attach to the treadle using hardware provided.

Position foot treadle with a slight incline towards the toe side being raised.

Tighten nuts on the cable mount brackets once the cable is at rest and the valve handle is in a neutral position to lock the treadle in place.



Foot Treadle Install Video



FAQ'S GENERAL

My Machine is changing sounds?: As the pump and valves break in they will change sound, this is completely normal as long as you are not experiencing any loss in performance. If you find a drop in performance email service@coaliron.com immediately with a video and description of the problem.

It's cold and my machine is sluggish: In cold weather it's best to leave the press running during your forging session instead of turning it off and on as you need it. This helps circulate the fluid and keep it warm. If you are experiencing temperatures below 20°F you may need to attach a small tank heater to warm the fluid before starting.

Can my 2hp motor be rewired for 220v?: All of our 2hp motors are able to be ran on 110v or 220v. Keep in mind you will have to rewire the motor, start/stop switch, and the plug. Contact service@coaliron.com if the diagram for high voltage wiring is not on the inside of your motor wiring box.

Additional Resources: The Coal Iron Works website coaliron.com has links to many great resources to learn new tips and tricks to try out on your new machine. Also follow us at [instagram.com/coaliron-works](https://www.instagram.com/coaliron-works) or www.youtube.com/@CoallronWorks for daily insight on what we're up to as a company and what makers in your community are doing.

Local Resources: We strongly encourage you to join and stay involved with local blacksmithing or metalworking communities such as Artist Blacksmith Association of North America (ABANA), American Bladesmithing Society (ABS), The Indiana Blacksmithing Association (IBA), or other National and Local groups who specialize in your area of interest.

FAQ'S TROUBLESHOOTING

I press the start button and nothing happens: All of our presses are built with a start stop switch that includes a built in safety feature. To ensure the start up is intentional the button is very resistant. When pressing the button you will have to press past the resistance until you hear and feel a click in the button. If this still doesn't start your machine, make sure your pigtail is connected to the motor from the start stop switch.

My dies do not align: Check page 9 for instructions on die alignment. If your dies still do not align, remove your dies and check for burrs on the tenons, clean inside the die receivers to remove any possible scale or other debris which will keep the dies from being properly installed.

My press bogs down at full stroke: This is most likely caused by current drop. Check your machine on the closest outlet possible to the breaker. Presses should be on a dedicated circuit no farther than 20 feet from the breaker. If using an extension cord make sure you are using 8 gauge or larger.

My press only has one speed/won't engage into second stage: Check to make sure there is no obstruction to the handle including the foot treadle mount bracket. The press will only engage into second stage upon resistance while the handle is fully depressed.

FAQ'S MAINTENANCE

What kind of lube do I use on my slide?: We offer Way Lube in 8 ounce bottles that is specially designed with high amounts of tackifier to keep the lubricant in place on vertical surfaces. Any high tackifier oil will perform well.

How often should I lube my slides?: There is no "correct" answer for this. Based on case to case scenarios you will have to apply way lube liberally in varying intervals. The best way to maintain your slide is to make sure you over lube during the first few forging sessions until there is a thick build up on the slide that remains after use.

How often should I change my hydraulic fluid?: We use ISO 46 in all of our presses which is great at operating within a huge temperature window. Your oil will be good to use for 10,000 working hours as long as your tank temperature maintains below 140°F. When you're ready to refill we suggest ISO46(AW) in the following quantities. 2hp - 4.5 gallon, 5hp - 9.3 gallons, 10hp 26 gallons (a little more than the sight glass being full). An easy test on any of the power packs is to put your finger into the fill port and if you can feel oil you've got enough oil to run.

I developed a leak in my press.: Overtime the fittings can rattle loose from the vibration of the motor and pump. Simply clean and tighten the fittings and leave it running for 10-15 to monitor if the fitting needs replaced.

WARRANTY

All Coal Iron Works products come with a standard 1 year warranty that covers parts and labor, that covers defects exposed through normal wear and tear. This includes all parts manufactured or re-sourced by Coal Iron Works. After one year Coal Iron Works will offer lifetime service on all manufactured products through quotes including parts, labor, and shipping. Email service@coaliron.com or call **317.203.9635** for more information or service requests.



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