



1. Retainer Bushing
2. LED-D Extruder Die Insert
3. Extruder Body
4. Extruder Punch

Make certain that the extruder's punch is correctly aligned with the bore of the die before applying pressure. The punch must be securely screwed into its threaded base, which in turn screws into the top of the press ram.

The punch must be able to move at least one inch into the die cavity before any pressure is generated. Otherwise, the punch may dig into the die walls and destroy the tool. The LED-1 is designed to extrude soft lead only (Bhn 5.0). To extrude harder alloys requires a custom made press, such as the Corbin X-Press, or a smaller bore on the extruder.

Always make sure the retainer bushing is securely threaded into the top of the extruder before applying pressure, to avoid tearing threads off the bushing or from the top of the extruder. Pressures used in this operation are tremendous: follow instructions to avoid damage to the tool or injury to yourself!

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**CORBIN**

## LED-1 Lead Extruder Die

for use in Corbin Hydro-press



The Corbin LED-1 Lead Extruder Die is used in the Corbin CHP-1 Hydro-press or the Corbin CSP-2H Hydraulic Mega-Mite press, to produce lead wire from soft lead.

The kit consists of a billet moulding set (two billet mould tubes approximately 4 inches long with a 0.785-inch bore and a mounting base, which supports a tube while it is being filled with hot lead), and the extruder itself, which consists of a die body with 0.825 inch bore, a threaded retained that screws into the top of the body to hold the die in place, one or more LED-D extruder dies for each diameter of wire desired (four are provided with the kit), a locking nut for the extruder body, and a two-part punch and base, which screws into the press ram.

To make lead wire, pure soft lead is first melted and poured into the billet tubes to form lead cylinders (or billets) about 4-inches long. There are two tubes and one base. The base is normally mounted to your bench top with two long screws, provided, or fastened to a piece of two by four lumber which can then be clamped in a vise. The tubes slip over a plug on this base, which seals the lead and holds the tube upright during pouring.

Wearing heat-resistant gloves, you can remove the tube within seconds of pouring the lead, set it aside, and slip another tube over the base. Pour the second tube full of lead, and then give the first tube a sharp down and up shake to dislodge the lead billet. Switch tubes, and continue making billets in this manner.

Always wear eye protection and follow standard precautions involving the use of hot lead to avoid burns and health risks. Make the billets in a well-ventilated area. Do not eat or smoke while performing this operation. Make certain no rain or other water droplets can fall into the molten lead, which may cause an explosion from the expanding steam.

As the lead cools in the tube, it will tend to shrink at the center and form a deep hole. You can either ignore this, or fill it with more hot lead before removing the billet tube from the base. The hole will tend to make folds or breaks in the lead wire if you extrude this portion through the die. You can either cut off the end of the billet, or just cut off the bad wire that will be formed. Do not make the lead billets longer than 4 inches, to allow proper alignment of the punch in the extruder body.

After the billets have cooled, lubricate them generously with a film of Corbin Swage Lube. Make sure the billets are kept very clean: grit or dust on the surface will scratch the extruder walls.

Remove the knock-out bar and ejection pin from the ram of the Hydro-press. Adjust the bottom sensor position so that the ram will go down as far as possible without crushing the spring. Make sure the spring is not compressed to the point where the coils touch each other, or it may be broken.

Screw the extruder base and punch into the Hydro-press ram. Screw the extruder body into the press head. Remove the retainer bushing from the top of the die, and adjust the position of the extruder body so that the punch enters the mouth of the extruder at least one diameter or about an inch. Push one of the lubricated lead billets down into the top of the extruder until it rests on the punch. Then set the desired size of extruder die insert into the top of the extruder body, resting on top of the lead.

The extruder die inserts (LED-D) have one recessed side, and one smooth, curved side. The smooth, curved side goes against the lead. The deep recessed hole points up, toward the top of the extruder body. Screw the retainer bushing into the top of the extruder body.

Turn on the press. Turn off the pressure reverse, load position, and position reverse switches. Before running the ram up, be sure to read and understand the following precautions:

## **CAUTION:**

Trapped air, compressed in the die, can cause a piece of lead to break off the last part of the extruded lead wire and shoot it with lethal force from the top of the extruder under some rare circumstances. Therefore, *never place any part of your body over the top of the die while extruding lead wire!*

It is highly recommended that you arrange a metal pipe or tube to guide the lead above the height where a person could lean over the extruder top or even reach over it, and to mount a thick piece of wood on the ceiling over the extruder so that if a piece of lead should ever be expelled at high speed, it would not penetrate the ceiling!

The velocity at which lead is extruded depends on the ratio of diameters between the billet, and the wire. Small diameter wires will shoot rapidly from the die. Friction generated by extrusion will cause the lead to become heated, possibly enough to cause serious burns. Therefore, handle the lead only with thick gloves when it first extrudes from the die.

Start the ram moving up, and increase the drive pressure until lead extrudes from the top of the die. Once lead begins extruding, it usually moves very fast as the die heats up. The extrusion pressure on the gauge may be as high as 1,950 psi with small diameter wires. The lead should extrude completely in a few seconds. There will be a small amount of lead still in the die insert, which holds it to the top of the extrusion chamber. Lower the ram, and unscrew the punch from the punch base to insert another lubricated billet of lead (lubrication can cut the force by as much as half - be sure to do it). The individual lead billets probably will not "weld" together in the wire, but will leave a section of wire that has an over-lapping joint, not mechanically sound. You may wish to snip off the ends of the wire to get rid of this defective segment at the start of each following extrusion.

To remove the die insert, unscrew the retainer bushing and use the punch to push the die out the top of the extruder body. (Lead may hold it too firmly in place to move by hand).