

How to Swage Bullets Using The **CORBIN** FRBO-5-S Die Set

The type -S dies fit the CSP-1 S-Press.

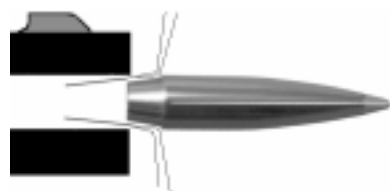
The set consists of a CORE SWAGE (CSW-1), a standard flat base CORE SEATER (CS-1), a BOAT-TAIL PREFORM (BT-1), a REBATED BOATTAIL internal punch for the CS-1, and a POINT FORM (PF-1) die with both RBT and FB external punches.



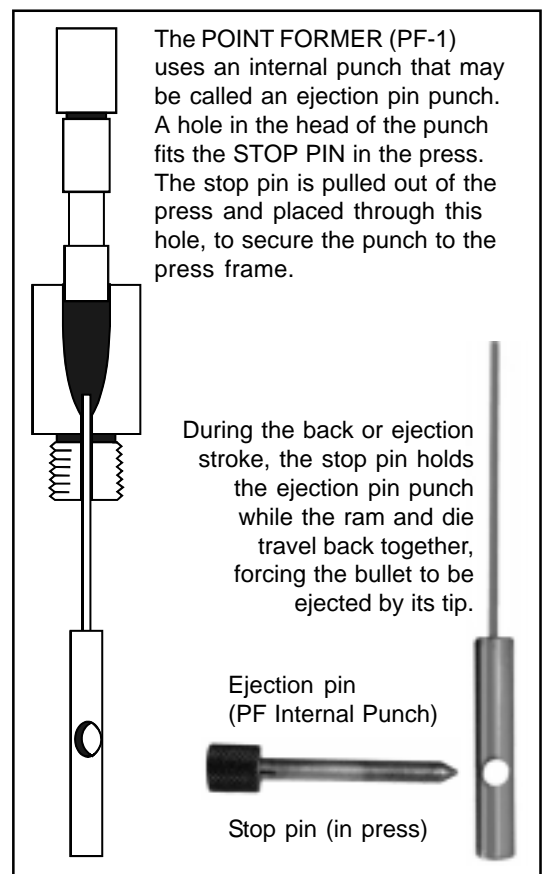
An EXTERNAL PUNCH is held in the FLOATING PUNCH HOLDER (FPH-1-S), which comes with the press and screws down into the top plate of the press. For punches under 3/8-inch caliber, a threaded bushing and steel ring are removed from the bottom of the punch holder, placed over the external punch, and then screwed back into the bottom of the punch holder to secure the punch. The punch holder screws into the press head, so the punch faces the ram. For punches from 3/8-inch up, the bushing and ring are part of the punch assembly. The external punch is sometimes called the top punch.

The die screws into the press ram, with its INTERNAL PUNCH inside the ram. For the point forming die (PF-1-S), a hole is machined through the head of the internal punch, which matches a removable pin with knurled head pushed into the front of the press. This is the STOP PIN. It presses on the tail of all internal punches except for the ejection pin punch, to cause ejection on the down stroke. Because the PF-1 die would form the bullet around this pin if the pin were allowed to remain in the die cavity during swaging, the stop pin must be used to keep the pin retracted from the cavity during swaging, holding it firmly during the down stroke to cause ejection of the bullet.

Never try to swage a component that will not go into the die by hand. The swaging operation depends on each component being slightly smaller than the die bore, and increases the bullet diameter a little with every step. The core seating die and point forming die are matched to each other for a given jacket and core material to within 0.0003 to .0010 inches with the core seater being smaller. Swaging increases diameter with each step, and drawing decreases it. Every step should be done with a thin film of Corbin Swage Lube applied to the outside surface of the part. Swage lube is designed to hold a film under very high pressure, whereas many common lubes will diesel or oxidize under swaging pressure and cause stuck components.



The RBT improves performance by deflecting muzzle gas instead of channeling it to the front of the bullet in a ball, as with conventional boattails. This can give up to 15% less dispersion at the target.



The first die is the CORE SWAGE (CSW-1). It is used to form a piece of lead to precise diameter, length and weight. There are three bleed holes through the sides of the die, and its punches are very close fits to the die bore. They are the smallest punches in the set and only fit this die properly. Always make sure the punch fits the die by hand before applying pressure to it with the press!

Make sure your hand press is in the SHORT STROKE (swaging) position: the CSP-1 has dual stroke pivot holes for the ram/toggle linkage and you cannot swage in the long or reloading stroke (it may break the stop pin to try). The ram should move about 2 inches from top to bottom of stroke, a full 180 degree handle movement. If it goes 4 inches, you are in the wrong mode!

You can use cut lead wire, or a cast lead core. Apply a small amount of Corbin Swage Lube to the cores as you handle them. Set the floating punch holder so the desired amount of lead is left in the die when it reaches the top of the stroke. Do all swaging at the end of the stroke! Always extrude at least 1-2 grains from each core, or else you will not achieve consistent weight control. But do not extrude more than about 10 grains, as this only wastes time and raises the swaging pressure unnecessarily.

After making the desired number of cores, clean them in hot water to remove the swage lube, then let them dry and insert them into bullet jackets (if jackets are used).

The CS-1 Core Seater is the second die, if you are making flat base bullets. Otherwise, it is the BT-1 Boattail Preformer. It will accept the jacket easily but closely, and has no bleed holes. The bore size of the BT-1 is slightly smaller than that of the BT-2. The internal punch for the BT-1 die is a loose fit in the die; it serves ONLY to push the bullet out, and plays no part in forming the base.

Select a diameter of external punch that fits the jacket ID at the point where you want the core to be after seating. Thicker jackets, and lighter cores in tapered jackets, both require a larger diameter external punch than thinner jackets or heavier bullets with a tapered commercial jacket. (See Corbin Handbook for discussion of proper core/jacket/punch fitting).

Apply a small amount of swaging lube to the outside of each jacket as you pick it up to insert in the die; the amount that you get by rolling a drop between finger and thumb is sufficient in most cases. Lubricant should not be allowed inside the jacket. Use only enough pressure so the jacket expands and stays in the die. Adjust the punch holder so that this takes place at the end of the stroke. Too much force can break the die and is unnecessary. Once the jacket expands to meet the die walls, you have done all that is needed.

The third die for RBT bullets is the REBATED BOATTAIL FINISHER (BT-2). For FLAT BASE BULLETS, go from core swage to CS-1, skipping the BT-1 die. **The combination of the BT-1, BT-2, and the external RBT punch for the PF-1 die is also available as the RBT-2 ADD-ON SET, for adding the RBT design to existing flat base die sets.** Use the same external punch (core seating) that you used with the previous step. Push the bullet base first into the die, and apply enough pressure so that a shoulder is formed clearly at the junction of the boattail and the bullet shank (full diameter portion). The shoulder formed in this die must match the cavity of the ex-

ternal point form punch. If it is too long or short, a double shoulder may be created in the final step.

Note that the shoulder, at this stage, may not be as sharp as in the finished bullet. Do not keep pressing to try to make the shoulder sharper, once the bullet expands enough to stay in the die and not come out with the punch. The bullet should be a few ten thousandths (.0002 to .0003) inches smaller than final bullet diameter. If the jacket material wants to separate or stretch and become longer in this stage, you may need a shouldered or adjustable shouldered punch (which presses on the end of the jacket to keep it from flowing forward). This is more likely with copper tubing or soft jacket materials.

The fourth die for RBT bullets or third (and final) die for flat base bullets is the POINT FORMER (PF-1). It shapes the ogive curve on the bullet and gives the bullet its final diameter. This die has a bullet-shaped hole. The diameter of the point form die itself is usually NOT the same as the bullet, and is designed to match the core seater, the jacket material and thickness, and the lead hardness. Using materials other than those for which the set was designed can change the bullet diameter and may cause the bullet to stick or become hard to eject.

The external punch has a cavity matching the boattail angle and shoulder depth. Use this punch ONLY on the base of RBT bullets, not with flat base bullets. Make sure that the bullet is short enough so that the entire punch tip is well within the die cavity before any pressure is created. If the punch walls are not supported fully by the die, the punch will crack when pressure is applied. Making too heavy a bullet for the length of the PF-1 die cavity may break the external punch.

For Flat Base (FB) bullets, use the flat base punch. Never use the RBT external punch for any other purpose than pushing RBT bullets into the PF die.

When installing the internal punch (or ejector punch), make absolutely sure that the internal ejection pin punch is held by the stop pin passing through the hole in the punch head. Otherwise the pin may fall out of the die hole and be collapsed by the end of the die when the ram goes down, rolling it like a pretzel inside the ram. Shape the bullet by carefully raising the ram and pushing the nose end of the bullet down into the die.

Eject, examine, and re-adjust until the tip is formed to the desired amount of closure, but do not try to close it smaller than the size of the ejection pin! Never force jacket material up into the ejection pin hole: doing so will concentrate force in such a small area that it can crack the die. Remember, we are dealing with rifle chamber pressures in these swaging dies, when the press goes "over center".

If you need a smaller tip than is possible with the point forming die, you can use a special LT-1-SC tip closing die, which will nudge the open jacket ends closer together than could be done with an ejection pin. This is a standard LT-1-S lead tip die equipped with a special internal punch designed for closing open tip bullets. It can also make lead tips. The standard lead tip die and punch is not designed for the pressures involved in forming jacket tips, but only for reshaping lead tips. Adding the LT-1 die to this set makes a six-die set, the FRBL-6-S.