

How to Swage Bullets Using The **CORBIN** FJFB-3-S Die Set

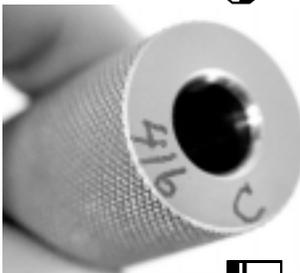
Caliber	Ogive
Jacket	Base



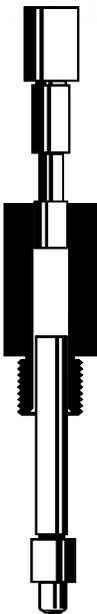
The CORE SWAGE (CSW-1) screws directly into the press ram, and adjusts the lead core weight. It has bleed holes around the circumference.



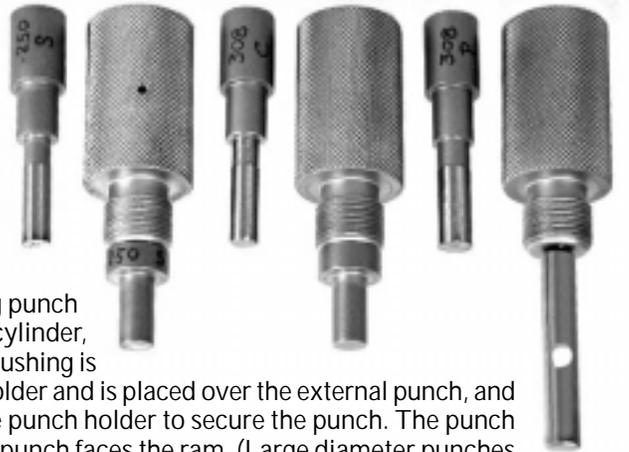
Internal punch



The CORE SEATER (CS-1) can be used with a variety of internal and external punch shapes for various base and nose configurations. With open tip bullets the external punch fits inside the jacket at the position where the lead core will be seated.



Type-S dies are 1-inch in diameter, with a 5/8-24 shank, and fit into the ram of the Corbin CSP-1 S-Press. The 3-die set consists of a CORE SWAGE (CSW-1), a CORE SEAT (CS-1), and a POINT FORM (PF-1) die, each with one internal and one external punch. This combination of dies is called the Full Jacket, Flat Base 3-die set, catalog number FJFB-3-S.



The external punch is held in the floating punch holder, a long, black, 7/8-14 threaded cylinder, which comes with the press. A threaded bushing is removed from the bottom of the punch holder and is 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. (Large diameter punches have their own captive threaded bushing; do not remove this from the punch.)

The die screws into the press ram, with its internal punch inside the ram. A stop pin in the front of the CSP-1 press contacts the tail of the internal punch during the back stroke, stopping the punch movement as the die continues back, thus ejecting the bullet from the die.

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 0.0002 inches with the core seater being smaller. Use a small amount of CORBIN SWAGE LUBE (CSL-2) on the cores and the jackets before each operation: moistening the fingertips with lube and handling the materials is generally sufficient.

The first die is the CORE SWAGE. It has three small bleed holes in the circumference. It is used to adjust the lead core weight precisely, and to size the cut or cast lead cores so they fit into the bullet jacket. The lead should fit easily by hand into the die before swaging. Adjust the punch holder closer to the die to make the core lighter, and adjust it away from the die to make a heavier core. To adjust core weight, first raise the ram as far as it will go up, and then adjust the punch holder down until you get the desired core weight. Precision weight control depends on always swaging at the end of the stroke, holding the pressure for a second before lowering the ram to eject the core.

Cut or cast your lead cores so they are within about 5-6 grains of the desired weight, but on the heavy side. To find out the correct weight, weight the jacket and cut lead cores to go with it so the combination gives you your final bullet weight plus about 5-6 grains. Then swage away the extra weight in the core swage die, for perfect cores. Clean the cores free of any lube BEFORE putting them into the jackets (hot water and detergent in a pan will clean them: spread them out to dry on a towel afterward).

The second die is the CORE SEATER. Seating the core means to press it into the jacket and expand the jacket to nearly finished diameter. Jackets are undersized as produced, and depend on core seating to achieve their proper diameter. The external punch for the core seater must fit the jacket, rather than the die, if you intend to make open tip bullets. If you intend to make lead tip bullets, the punch may fit inside but close to the end of the jacket at the point where the lead will be seated. Or for a large lead tip it may have to fit the die bore rather than inside the jacket. Core seating punches are designed for a given jacket wall thickness, taper, and length of core (weight) so you may need more than one to cover a variety of jackets and weights or styles.

If lead spurts around the punch, or if the punch digs into the jacket wall, your bullets will probably be undersized because the pressure will not build sufficiently to expand the jacket. The solution is to change jackets, use a different core length and bullet weight, add a polymer bullet ball to move the lead forward, or get a punch to fit the jacket and core length combination correctly.

Instructions for the FJFB-3-S, Page 2

The core seating die (CS-1-H) is NOT used when making rebated boattail bullets: instead, a pair of RBT dies is used in sequence to seat the core. The external punch can also have a projecting cone on the end to make hollow points. The internal punch can be flat, domed or have a conical projection to form the mirror image of that shape in the bullet base.

Place the clean core into the jacket, and put both into the core seating die with the jacket mouth (open end) facing the die mouth. Move the ram gently forward and align the external punch with the jacket mouth, then adjust the external punch so that the core will just be expanded to the maximum allowed by the die as the press reaches the end of the stroke. The force should be quite gentle, never enough to crack the die or bend the punches. If the jacket and core stay together in the die when the ram is moved back, rather than coming out with the external punch, it means that they have been expanded enough to grip the die walls. If the jacket sticks on the external punch, it may be removed by holding the pressure for a count of five and then ejecting, or by removing the punch and tapping on the jacket mouth with a brass hammer while rotating the punch several times (this expands the jacket and it falls off by itself). Sticking can be caused by improper fit of punch to jacket, or not enough lube on the punch tip.

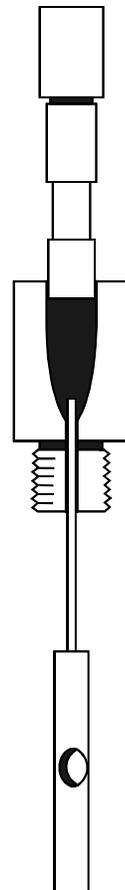
The seated core and jacket should be just slightly under finished diameter. For example, a .308 bullet should have a seated core and jacket of about .3078 to .3079 inch diameter. About .0002 inches is a reasonable amount to expand in the final point forming operation, which is next.

After seating all the cores in the jacket, remove the core seating die and punch, and install the POINT FORMER (PF-1). This die has the ogive or nose curve machined into the die cavity itself. It does not form the nose using a punch. The internal punch is an ejection pin, and is retracted out of the die cavity during swaging so it plays no part in the shaping of the bullet. The ejection pin has a long head with a cross hole. The stop pin in the press frame must be removed and then inserted into the hole, so it secures the internal punch to the press frame. If you fail to secure the ejection pin punch this way, it may be destroyed when you try to eject the bullet. Push the seated core and jacket into the point forming die using an external punch that matches the base shape. (If you change base shapes in the core seating operation, you will need a matching external punch for the point former).

A point forming die is made to use a certain kind of material and lead hardness. While it may work with other materials and hardnesses, the diameter of the resulting bullet may change slightly. For best results, use the same jacket and lead materials that were used to develop and adjust the dies. For instance, a die set developed for using copper tubing jackets may work with standard commercial jackets, but the diameter may be as much as .0005 to .001 inches different because of material spring-back and pressure. The difference in diameter can only be determined by testing with a given set of dies and materials.

Push the bullet only far enough so that you achieve the desired tip closure or until you reach the diameter of the ejection pin itself, whichever comes first. Pushing material into the ejection pin hole can break the die by concentrating tons of force in a tiny area. If you need a smaller tip, use the LEAD TIP FORMER (LT-1) to gently push the end of the jacket more tightly closed, or add a lead tip for a smooth supersonic outline. A small hard lead shot dropped into the tip of the bullet before finishing the ogive can be used to form a strong lead tip in the final operation. Lead tip bullets require a much larger opening and a "blob" of extruded lead from the point forming stage, in order to have material to reshape and a "stem" attaching the tip to the core.

Adding the LT-1-S die to the package makes it a four die set, which is called the LTFB-4-S (Lead tip flat base 4-die set). Adding the RBT-2-S rebated boattail add-on set makes it the FRBO-5-S (Flat or Rebated Boattail Open tip 5-die set). Leaving out the flat base core seater changes this into a RBTO-4-S (Rebated Boattail Open tip 4-die set). Adding the LT-1-S and the RBT-2-S dies to the 3-die set creates a 6-die set called the FRBL-6-S (Flat or Rebated Boattail Lead tip 6-die set), also known as the "all-style package" since it makes all of the basic types of bullets.



The POINT FORMER (PF-1) uses an internal punch that may be called an ejection pin punch. A hole in the head of the punch fits the STOP PIN in the press. The stop pin is pulled out of the press and placed through this hole, to secure the punch to the press frame.

During the back or ejection stroke, the stop pin holds the ejection pin punch while the ram and die travel back together, forcing the bullet to be ejected by its tip.

Ejection pin
(PF Internal Punch)

Stop pin (in press)

