

Why is there a LEAD Bullet with my Point Forming Die?

The shiny lead bullet with your die set is a proof test for the surface finish, shape, and diameter of your point forming die. Lead is an excellent material for picking up the most minute defects, so the diemakers form a lead bullet in your die as a final test. The finish of the lead bullet is a mirror image of the finish of the inside of the diamond-lapped point forming die.

Since lead is what we call a "dead" metal (meaning, it has little or no spring back when you apply and then release pressure), it is also a very good way to get a reading of the exact diameter of the die. The diameter, shape, and finish can be instantly examined with this lead bullet. Sometimes the bullet will be a different base shape than the jacketed bullet you wish to make, but this is only because a flat base punch might have been used to pressurize the die, rather than the RBT base punch. It has no effect on the transfer of dimensions to the lead slug.

The lead slug may also have a parallel "pipe" sticking out of the nose. This is because the lead is pushed into the ejection pin hole, giving a measurement for the hole diameter and position at the centerline of the bullet. You would normally adjust the punch so that your "real" bullet is not pushed that far into the die, eliminating the "pipe". But for test purposes, it is good to have it on the sample slug. You can see that the hole is exactly centered, and you can tell the diameter is what the die is marked in decimal inches (such as .061 or .082, etc. on the end of the die).

The lead test slug tells you far more about the die than the bullet you will be making in it, due to the obscuring effect of the jacket on small imperfections in the die surface. A jacketed bullet also will "come out" different sizes depending on how much pressure you use to seat the core, in the previous stages, whereas the lead slug will flow until it touches the die walls and stop without any "memory" of prior stress causing spring back to different degrees. These are tiny differences, but the tolerances we are holding are so close that even differences too small to have any practical effect in accuracy, pressure or target results need to be documented and proven.

New bullet makers sometimes ask why we don't send a specific example of a given weight of bullet that they mentioned as being desired. You can make virtually any bullet weight in the die set, in most cases, simply by adjusting the punch holder up and down for different amounts of core length. After the range of weights for a given jacket length is exceeded, you can trim the jacket shorter or use a longer jacket up to the limit of the die set capacity.

Weight is easy to adjust. The important consideration is the shape, finish, and diameter of the dies, which is best discovered with the lead slug and not easily determined by making any given weight of bullet. In addition, it can take considerable die-maker time to discover the exact jacket and core combination for a given weight and style, all of which is part of the fun of bullet making and is best left to the bullet maker, rather than adding unnecessary labor cost to the die set.

Each die set has a maximum and minimum weight possible, with some latitude gained by making the punch heads a different length (to open more or less space within the core swage and core seat dies). The length of bullet possible depends on the kind of die (with -S dies the system limit is 1.3 inches, and with -H dies the die length and punch head length can be different for extended ranges either heavy or lighter than normal). Generally a close-to-maximum weight lead slug is used in the point forming die to give a good idea of the entire working surface finish within it.