INSTRUCTIONS FOR USING LBT
PUSH THROUGH AND RIFLE THROAT SLUGS

NOTICE: When making rifle throat slugs or using push through slugs the bore should be thoroughly cleaned and lubricated, preferably with a Teflon type lubricant such as Break Free or Tri Flow, or the ultimate lube, especially when making throat slugs, is S&W Friction Block. A dry bore makes pushing the slug more difficult, while any lead or jacket fouling will give a falsely small diameter. - Exception: When checking muzzle diameter only with push through slugs during the lapping procedure, thorough cleaning is unimportant.

PUSHTHROUGHSLUGS are used for slugging barrels on any type gun and for revolver cylinder throats. They are designed both for taking precision measurements, and to give the operator a feel of what a bullet feels.

The tail is to be slipped into the end of a cleaning rod, to allow insertion into the bore through actions and chambers. The slug is best started into the bore by bumping the handle end of the cleaning rod with the heel of the hand, For best feel, the gun should be held firmly by another person or clamped to a solid support. When slugging barrels full length, work from chamber end whenever possible, so you feel what the bullet feels in traversing the bore. For optimum accuracy the slug should slide smoothly from breech to muzzle, and be tight when it exits the muzzle. A properly lapped barrel will produce this feel, but very few unlapped bores will, even premium target barrels.

If the guns action type does not allow pushing from the chamber end, or if only the muzzle end is to be slugged, use either an empty cartridge case or short pistol cleaning rod, and drive the slug in just enough to engrave the large band on the slug, then pull the slug with pliers. This slug can be measured, then reinserted with the exact same orientation to the rifling and push through with a cleaning rod, again paying attention to how it feels when traversing the bore. This feel will reveal any areas in the bore which are tighter than the muzzle, while a second measurement will disclose exactly the degree of constriction. - Expect either a tight or loose spot at any point where the barrel was machined or has something attached on the outside. If the bore has fouling accumulation, the slug will tell where and how much, and the engraved part of the slug will show scuff marks rather than shiny surfaces produced by a smooth clean bore.

REVOLVERS- The requirements for ULTIMATE accuracy are: 1. A straight smooth bore. 2. Bullets at least as large as the barrels groove diameter. 3. Cylinder throats which fit closely enough to bullets to guide them into the bore with perfect alignment, and 4. Perfect cylinder throat to barrel alignment, though this latter is more desirable than critical. Given the normal looseness in most revolvers, a strong, long bearing surface bullet design can forgive considerable misalignment, by forcing the cylinder to align with the bore.

A revolver barrel cannot be properly fire lapped if cylinder throats are smaller in diameter than groove diameter of the barrel, a problem we've come to consider standard in Freedom Arms revolvers, and common though not normal with other manufactures.

The correct procedure whether ordering a mold or attempting to lap a revolver is: Slug the bore as outlined above. Use the largest slug as a gauge. If it will slip into all cylinder throats easily, the bore can be lapped satisfactorily without modifying cylinder throats. If fitting up for cast bullets, simply fit bullets to throats, lap barrel if necessary, and the gun should shoot right. If the barrel slug will not slip through cylinder throats loosely, throats must be opened (per lap kit instructions) to slightly larger than groove diameter for cast to work properly, or to lap the bore properly.

If the gun will be used exclusively with jacketed bullets, and if cylinder throats are smaller than barrel groove diameter. - Enlarge cylinder throats only **if** smaller than jacketed bullets, and then, only enough so jacketed bullets will slide snugly through with fingers. Push through slugs will not be worth much for checking lapping progress on this type gun. Catch your lap bullets in a large cardboard box filled with rags. When the fired lap bullets are large enough for a snug fit to cylinder throats, stop lapping. Most revolvers will have cylinder throats considerably larger than standard jacketed bullet diameter, and the more oversize throats are, the more poorly it will shoot short bullets. The heavier weights will be most forgiving. -For the ultimate in accuracy with any bullet weight in this type gun, re-swage to proper diameter for a snug fit to cylinder throats. This will require a custom swage die, which makes it less practical for most shooters than switching to cast.

If returning revolver slugs to LBT for a mold order, remember the $6 measuring fee per gun. Wrap your slugs in tissue or rag so they are separated. It saves me a lot of inconvenience if all are rolled into one bundle and the bundle fastened with a rubber band rather than tape. In fact a roll will not unwind if placed in a small plastic sandwich bag and simply slipped into a padded envelope. Pack in a padded envelope or other strong container. DO NOT PUT TAPE ON THE SLUGS because the goo left makes accurate measuring impossible. DO NOT mail in single layer paper envelopes, because MOST WILL be torn with slugs lost when it arrives here. Also, do not force a barrel slug into cylinder throats then send it for measuring, as doing so will size it undersize and result in a false reading.

RIFLETHROATSLUGS. A filled cartridge case is needed. Cracked or very used brass works fine, but length MUST be the same as used for loaded ammo if ordering a mold and a crimp groove is wanted. It can be filled either with hard lead, or stand a piece of the swage rod inside the cartridge case. With either, the filler should come just short of the case mouth. Chamber this filled cartridge and lock the action. Lubricate the throat slug with S&W Friction Block or oil containing Teflon, and then drop it down the muzzle.
Insert a cold rolled steel swage rod (see note at bottom for source), which fits the bore closely as practical, and is cut to extend approximately 2 inches past the muzzle. Use a large hammer *(3* to 6 pound) with short gentle blows until a solid impact indicates the throat is filled completely, and then test the action for opening resistance. It should open with noticeable resistance similar to extracting a high-pressure load. Bump the slug out, again with gentle blows and big hammer. - If the throat is not thoroughly cleaned, and if a very high-pressure lubricant is not used on the slug you will have two potential problems. 1. The lead slug will not slip in the bore easily enough to form a sharp impression. 2. It can lock so tightly to the bore that opening the action may require a gunsmith's skills. This isn't to scare you, but to initiate caution. There will be no problems if the above instructions are followed and the action is checked after every couple blows of the hammer. When it begins to open with difficulty, quit pouncing and remove the slug. - Send this slug and the filled cartridge it was formed over to LBT when ordering a fitted mold, or use it as a reference when loading jacketed or cast bullets. i.e. Compare seating depth of loaded rounds, determine most suitable bullets to use for the throat, make a new slug occasionally to compare and monitor throat wear, etc.

JACKETEDSHOOTERS: With throats, which are worn enough that the bullet has a considerable jump to the rifling, and especially if very large in diameter so the bullet isn't well supported during takeoff, accuracy with lightweight bullets will probably, be very unsatisfactory, with long bearing heavyweight bullets being the solution. When probing for a poor accuracy problem, look for an eccentric throat/chamber by studying the rifling origin closely to see if the rifling comes back farther on one side of the slug. If there is a visible difference, my experience indicates there will be at least a .003-inch run out problem. If re-chambering is out of the question, accuracy will never be what a concentric throat would produce, but best accuracy will probably be obtained with below max charges of the slowest burning powders suited to the cartridge, non magnum primers if they will ignite the powder well, and bullets with strong jackets, and, or, long bearing surface. If using cast bullets in an eccentric throat, use the hardest alloy possible, with bullets sized to exact groove diameter, and 'gentle them into the rifling' with moderate pressure slow burning powder charges as prescribed above but more so. If you order a mold from LBT, I normally catch this problem and design the bullet with very strong bearing bands to withstand the battering. This limits maximum velocity potential compared to a concentric throat, but produces the optimum accuracy/velocity potential for the condition. If using a bore ride nose in this type throat, the only hope is to size the body to exact groove diameter and seat out far as possible, with the first body diameter driving band in contact with the forcing cone.

* Round cold rolled steel rod is available in most hardware stores in three-foot lengths. Select the diameter, which fits your bore closest but slips in easy. It will not scratch or dent modern barrel steel, which is much harder. If using on an antique with soft steel barrel, wrap the rod with plastic electrical tape to prevent any damage to the bore.