Modifying a LEE Carbide Factory Crimp Die for use with the UniqueTek Loaded Round Counter

The LEE Carbide Factory Crimp Die is very popular among competitive shooters. It combines a taper crimp die with a full-length carbide size die. Since each cartridge receives a final sizing, every round will positively chamber freely and with "factory like" dependability. Unlike a conventional crimp die, the crimp adjustment is made using an adjusting knob on top of the die body. Since this knob is closed on top, it prevents mounting the Sensor Module of the UniqueTek Loaded Round Counter.

Below are two methods to modify the Lee Factory Crimp Die for use with the UniqueTek Loaded Round Counter. I recommend that you read through both procedures carefully before attempting either modification.

Method A:

1) Remove the aluminum Crimp Adjustment Knob from the top of the die body.
2) Using a 23/64" drill bit, drill through the top of the adjustment knob. Drill up from the bottom, as this will ensure that you are drilling exactly on center (see photo at right).
   Note: There is some variability in the ID of the adjustment knobs so a 3/8" drill bit may work too. Even if the 3/8" bit removes a bit of extra metal from the ID of the adjustment knob, it will not create any problem.
3) Clean up the top of the adjustment knob using fine grit (200 to 400 grit) sand paper to clean up any burrs and ensure a clean flat surface.
4) Attach a 3/16" USS Steel Flat Washer on top of the adjustment knob. Super Glue will work just fine but you can use any adhesive that is capable of bonding metal to metal. This flat washer will provide a steel surface for the LRC Sensor Module to attach magnetically. Make sure the washer is centered and level.
5) Once the adhesive is completely cured, reinstall the adjustment knob into the die body and adjust the crimp setting as desired.
6) When you are confident that you have the crimp adjusted, place the LRC Sensor Module on top of the die.

Advantage: This method is simpler, quicker and less expensive than Method B.
Disadvantage: Because the LRC Sensor Module will be mounted higher than the top of the die body, the Sensor Rod will be too short to sense cartridges shorter than about 38 Special. If you are loading shorter cartridges (e.g. 9mm) you must either;

A) Lengthen the Sensor Rod by installing a #6-32x1" truss head screw (available at Ace Hardware, etc.) in the bottom end of the rod. Note: Apply blue Loctite to ensure that the screw does not loosen during press operation, while allowing it to be easily adjusted or removed if needed.
B) Use Method B (below) to modify a Lee Factory Crimp Die.

Method B:

1) Remove the aluminum Crimp Adjustment Knob from the die body. (You do not need to remove die body from your press.)
2) Using a 23/64" drill bit, drill through the top of the adjustment knob. Drill up from the bottom, as this will ensure that you are drilling exactly on center. Do not substitute a 3/8" drill bit, as it will remove too much metal from the ID of the adjustment knob and not leave enough metal to hold the threads you will tap in Step 3 below.
3) Using a M10-1.5 thread tap, cut threads into the inside of the adjustment knob. Be careful when clamping the adjustment knob in a vice so as not to crush it or damage the existing threads. Tap threads only from the top of the knob. Do not tap threads all the way through. Stop tapping just before the tap starts cutting threads where to O-ring is positioned. I you tap all the way through, you risk cutting through the thin section beneath the O-ring.
4) Cut off the top of the adjustment knob using a hacksaw. Cut immediately above the threaded section. Take care to cut as squarely as possible.
5) Clean up the top of the adjustment knob using 200 grit or finer sand paper to clean up any cut marks or burrs.
6) Screw a 10M-1.5 Socket Jam Screw into the top of the adjustment knob until it is dead flush with the top. If the threads cut in Step 5 are not deep enough, use the 10M-1.5 thread tap to cut them deeper. But only extend them just enough to get the Socket Jam Screw dead flush with the top of the adjustment knob.
   NOTE: The photo at right shows an unmodified adjustment knob (right) next to a modified adjustment knob (bottom left) and a Socket Jam Screw (upper left).

7) Apply Super Glue to the threads to ensure that the Socket Jam Screw is fixed solidly into the adjustment knob.
   Note: Loctite will not work well because the adjustment knob is aluminum not steel.
8) Once the adhesive is completely cured, install the modified adjustment knob into the die body and adjust the crimp

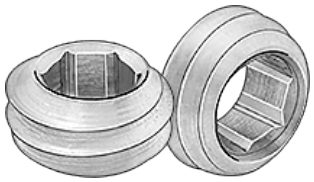
setting as desired. Use a 5mm Hex Wrench to make the adjustment.

9) To give the LRC Sensor Module some additional steel surface to attach securely, glue a 5/16" USS steel flat washer on top of the die body. Do not use a permanent adhesive like JB Weld in case you ever need take the die apart for cleaning. Three or four tiny drops of Super Glue, spaced out around the top of the die body, will be more than adequate to hold it securely in place while allowing you to break it free should ever need to service the crimp sleeve.
   The photo at right shows a die with the completed modifications. Note the flat washer on top.
10) Once you are confident that you have the crimp adjusted, place the LRC Sensor Module on top of the die.

Advantage: This method will work with a Lee Carbide Factory Crimp Die for any pistol cartridge 9mm or longer.
Disadvantage: This method is MUCH more complicated and a bit more expensive than Method B.

Socket Jam Screws

After an extensive search I discovered that Metric Socket Jam Set Screws (aka. Hollow-Lock Set Screw) are impossible to find in the US. So I made one by purchasing a 10mm set screw and cutting off the top. But set screws are hardened and very difficult to cut with a hacksaw!!! To remove the hardness, I heated it with my bottle gas torch until it was cherry red and then let it air cool … thus removing the hardness. It was then easy to cut with a hacksaw and clean up with a flat file.



NOTE: You CANNOT substitute a 3/8" Socket Jam Set Screw! I tried this whole process first with a 3/8" set screw but the diameter was just enough larger that I had to overbore that ID of the adjustment knob to get the thread tap started, and then ended up cutting through the O-ring retention groove when tapping the threads! ☹ It probably could be done but much care would be needed when taping the threads to only tap just deeply enough to get the Socket Jam Screw to go in flush to the top of the adjustment knob. Regardless, the modification was MUCH easier when using a 10mm set screw.

Installing And Using the Modified Lee Factory Crimp Die with the UniqueTek Loaded Round Counter

1) Install and set up the Lee Factory Crimp Die as per the instructions included with the die.
   A) If you used Method A to modify the die, installation and set up are normal. Crimp adjustment will be done normally using the knurled adjustment knob … just as described in the Lee instructions.
   B) If you used Method B to modify the die, crimp adjustment will be done using a 5mm hex wrench. Other than that, die installation and use is normal.
2) Install the UniqueTek Loaded Round Counter as described in the instructions. The modifications to the Lee Factory Crimp Die (using either Method A or Method B) have prepared the die to accept mounting of the Sensor Module. Simply set the Senor Module on top of the die and it will attach magnetically to the steel washer you installed during die modification.
3) Insert the Pistol Sensor Rod (the long rod) as described in the LRC installation instructions.
   a) If you modified the Lee Factory Crimp Die using Method B, you will need to take no further actions. The Sensor Rod will be long enough to "sense" all cartridges 9mm or longer. This is the major advantage of using Method B to modify the die.
   b) If you modified the Lee Factory Crimp Die using Method A, the Sensor Rod will be too short to "sense" all cartridges shorter than about .38 Special. To lengthen the Sensor Rod to work with shorter cartridges, install a #6-32x1" Truss Head Screw (available at Ace Hardware, etc.) in the bottom end of the Sensor Rod. Adjust the screw such that the Sensor Rod raises enough to reliably trigger a count (at least 3/16") with the shortest cartridge you load. Apply blue Loctite to ensure that the screw does not come loose during press operation, while allowing it to be easily adjusted or removed if needed. If you ever set up to load a shorter cartridge in the future, the screw can easily be adjusted to lengthen the Sensor Rod as needed.

What if I Ever Need to Service the Modified Lee Factory Crimp Die?

If you modified the Lee Factory Crimp Die using Method A, servicing the die is done simply by lifting off the LRC Sensor Module and Unscrewing the Crimp Adjustment Screw via the knurled knob. If you modified the Lee Factory Crimp Die using Method B, servicing the die is done by lifting off the LRC Sensor Module, removing the 5/16" USS steel flat washer on top of the die body, and then removing the Crimp Adjustment Screw using a 5mm hex wrench. Once the die has been serviced, the 5/16" USS steel flat washer must again be glued on top of the die body using just a few tiny drops of Super Glue.

Disclaimers:
Make this modification at your own risk. I you mess up the adjusting knob do not ask for a free replacement from either Lee or from UniqueTek, Inc.

UniqueTek, Inc. is not liable for damages or personal injury that may be incurred as a result of making this modification. It is your responsibility to ensure that your reloading equipment is properly assembled, is maintained in proper working condition, and is used according to the manufacturer's instructions and safe reloading practices.