Converting the Dillon SL-900 to load 12 Ga. 3″ Rounds

By John Jaeger

For those of you who are graced by the presence of a Dillon SL-900 on your loading bench, you know you are looking at one of the finest loading devices for the 12 Gauge round to come down the pike in many a moon. And for those of you who are in the process of considering the purchase of the SL-900, maybe this article will assist you in making that precious decision.

When I received my SL-900 for Christmas, you could have knocked me over with a feather. There are not enough words of thanks to my wife Gloria. I have been using a MEC Grabber for years and other than looking at the Dillon with envy, had not thought about the actual purchase. Ignorance is bliss. Although I must say, I am pretty familiar with the Dillon line of reloading presses as I have owned a Dillon 550 for a number of years before I started shooting IPSC, and one of their gorgeous Dillon 1050's after I started. The 550 just couldn't produce the number of rounds required with the ease of the 1050. And to add the Dillon "No BS", 100% guarantee on top of that, is a deal few should pass up. Enough of the promotional material and on with the gist of the matter.

I have a passion for waterfowl hunting and as of this year, with the introduction of Alliant's "Steel" powder, have been loading my own 3" Magnum rounds. These consist of a factory new Active 3" hull, 40 Grains of "Steel" powder, a Multi-Metal 1234 (Ballistic Products) wad holding 1 1/8 oz. of #4 steel shot. With a CCI 209M primer, these critters run consistently 1550 fps. over a chronograph from a 28" barrel Remington 870 and just over 1500 fps out of my 21" Benelli Super 90. This is an incredible duck load out to 45 yards on Mallards using an Improved Cylinder choke. For Goose loads, I substitute BBB's for the #4's. Quite frankly, after using 2 3/4" #2's for years, it took me a long time to realize that with the extra couple hundred fps, my lead could be decreased by 75-80%. Needless to say, I was very interested in seeing if the Dillon SL-900 could/would be capable of loading these fine waterfowl handloads.

A phone call to Dillon was made immediately to see what the possibility was. In talking to Mike Smith in customer service, it was determined that Dillon had not anticipated 3" rounds in the initial planning stages. But Mike thought I should be able to do it with some modifications and he would assist wherever possible.

The following is a list of items that must be contended with in loading the aforementioned 3" rounds.

1) Quantity of Powder. The powder measure is capable of throwing up to 50 Grains of most any powder. However, Alliant "Steel" is very fluffy and lacks weight for the volume it occupies. When set to maximum, it will throw right at 34 Grains of "Steel" powder. Not quite what is desired for these "Duck & Goose Hammer" loads.

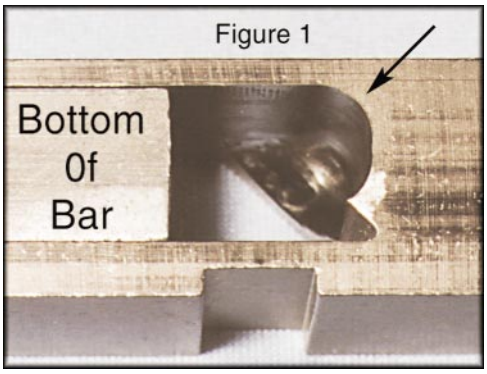
2) Quantity of shot. The Shot dispenser is designed to throw up to about an ounce and a quarter of lead shot. In terms of steel, the same volume produces just under an ounce. 424 Grains to be exact.

3) Clearance for 3" cases. The stroke of the SL-900 is more than adequate to handle the extra case length. You just have to figure out how to clear the nifty wad guide arm during the automatic rotation of the shell plate.

4) Depth of wad seating during shot charging. Since wads that are designed for steel shot are much deeper and with no cushion area between the shot cup and the over powder portion, depth has to be increased to gain shot clearance for the final crimp.

To address problem #1, Dillon offers a "Magnum" powder bar that may be purchased separately. This resolves the powder problem as the "Magnum" bar throws 57 Grains of Alliant "Steel" when set wide open. Again, 40 Grains is the target.

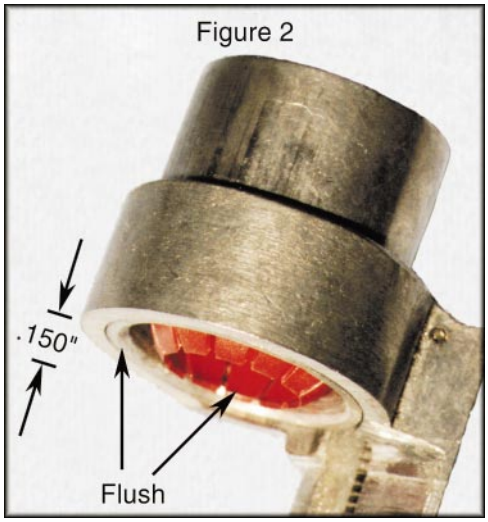
Problem #2 is a little more difficult. I took my shot measure to a local gun shop with a good machinist and had him undercut the cavity in the shot bar. See Figure 1. Dillon has a nifty "high shear angle" milled into their shot bar. This angle on the top of the bar is not to be disturbed as it is the key ingredient to the silky smooth operation of the shot dispenser bar. Even with steel shot there is no binding while sliding the shot bar in either direction! To some of you who have worked with other brands of loading devices, this may seem as an exaggeration. But it is totally true. You may slide the bar by hand with a full load of shot in the hopper and it is as smooth as silk with either steel or lead shot.



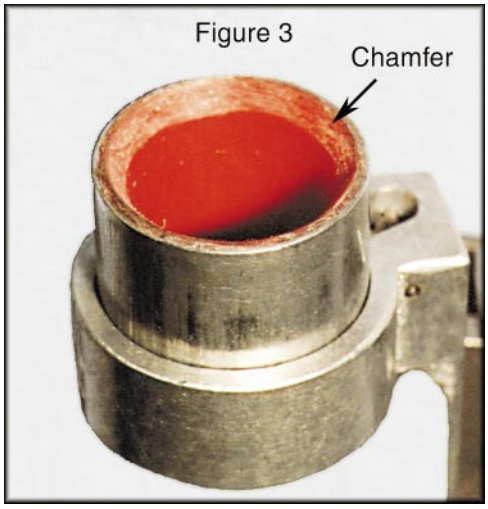
With a moderate undercut on the shot bar, it now throws about 510 grains of #4 steel shot when set to maximum. 492 grains are required to equate to 1 1/8 oz.

Problem #3 is resolved with a tad bit more time and effort. You need to remove .150" from the bottom of the wad arm. See Figure 2. To do this, remove the wad arm assembly. Remove the sliding wad carrier. Also remove the plastic wad fingers inside the sliding wad carrier. Mill off the required .150" off the underside of the wad guide arm and then remove enough material from the underside of the wad guide carrier so that when in the rest position (up) that it is flush with the milling of the bottom of the carrier arm. See Figure 2.

Now, if you turn the wad finger carrier upside down and look inside, you will notice a ridge about .010" long and about

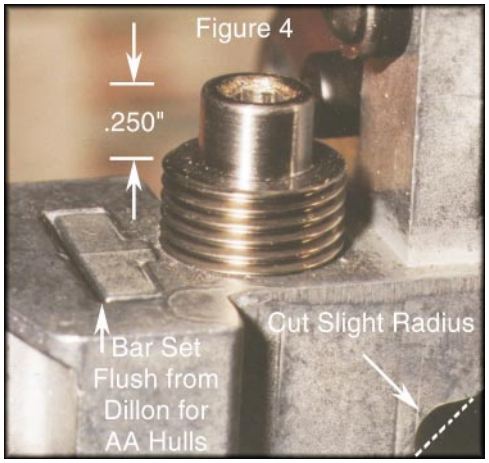


.050" thick. Remove this ridge so that the wad carrier is a smooth cylinder from top to bottom. Chamfer this bottom edge slightly. Using hot glue, replace the plastic wad fingers in the carrier so that the bottom of the fingers are flush, or just above the bottom of the carrier. We used hot glue so that if the fingers ever wear or break, heating the carrier will allow easy replacement of the plastic fingers. See Figure 2.

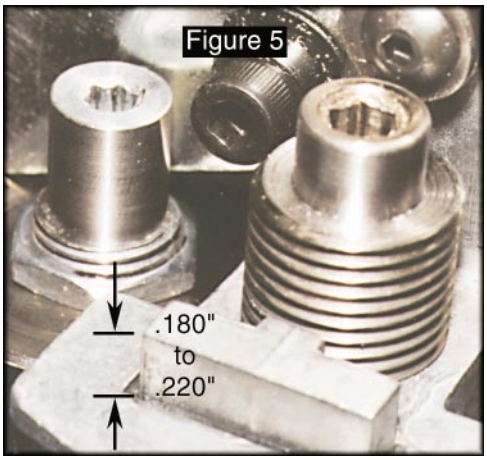


Now you will notice that the top of the plastic insert is well above the top of the sliding wad carrier. Using a razor blade or utility knife, cut the plastic flush with the top of the sliding carrier. Chamfer this edge also once the glue has dried. See Figure 3. Reassemble the entire wad guide arm and install back in it's normal position on the press. You should now be able to put a 3" hull in station 1 and rotate the shell carrier in a clockwise direction through all positions with out dragging the hull on the wad arm assembly while passing under it.

Item number 4 requires turning down .250" of the shot dispenser adjustment screw to a diameter of .385" with a lathe. This is so you can move the shot tube (which is the wad seater) down the required .220" to gain the extra depth required. See Figure 4. If you do not do this, while you are adjusting the screw moving the tube down, the screw will come in contact with another screw on the shot dispenser bell crank assembly. This will be enough to clear that screw on the bell crank.



As the press comes from the factory ready to load Winchester AA hulls, the vertical sliding assembly that is part of the shot measure was set flush with the mating bar that it slides on. See Figure 4. I found that I needed to lower the shot dispenser/wad seater .180" for #4 or #2 steel shot and .220" for BBB's using the Ballistic Products Multi-Metal #1234 wad to achieve the proper shot column for an excellent final crimp. See Figure 5.



When these adjustments are made, you will have to remove a very small amount of metal from the powder measure support to clear the top of the wad carrier assembly. Refer to Figure 4. To locate this area, look closely at the top of the wad carrier arm as you slowly raise the shell plate. You'll notice where there is an angle on the support of the shot measure, just under the measure itself, that if not slightly notched with a file or Dremmel tool, the wad carrier arm will strike this support. This will not change the structural integrity of this support enough to be concerned over.

You are now most of the way complete to loading your favorite 3" recipes.

· · · System Adjustments · · ·

The following will assume you are reloading fired factory rounds. I will get to new hulls toward the end. All of the Dillon Dies have enough adjustment to handle the 3" cases. No adjustment is necessary to the Sizing/Decaping die. The powder Die will need to be raised by approximately 1/4". Before starting to adjust the powder measure, remove the shot dispenser from the tool head. Once raised the initial 1/4", adjust as you would from the manual to acquire a complete stroke from the powder measure bar with the press handle in the full down position. While you are making this adjustment, set your powder measure to throw whatever charge of powder is required for your particular recipe. Once you have set the powder measure, throw a charge of powder into a case with a fired (inert) primer and set it safely aside for the moment. Then install the shot measure on the tool head.

This raises one other issue that with my limited resources, I cannot correct. When lowering the wad seater assembly, you reduce the clearance between the powder measure and the shot measure reservoir. This is no concern while processing hulls in the normal progressive mode of operation as the powder measure and the shot measure both travel up at the same time. The only time you have a conflict is either when you load one at a time, or start the progressive process and the first case reaches the powder measure with out a hull under the shot measure. They will rub more than just a little under these circumstances. Hence the reason for the hull with an inert primer and powder. Use this hull after getting the correct wad depth adjustment and seat a wad on the powder with no shot. Then when starting to reload a

series of hulls, when the first hull reaches the powder measure, insert the dummy hull under the shot dispenser so it will raise the shot dispenser with the hull receiving powder. You can then dump the shot charge back into the shot reservoir, set this hull aside and keep reloading rounds.

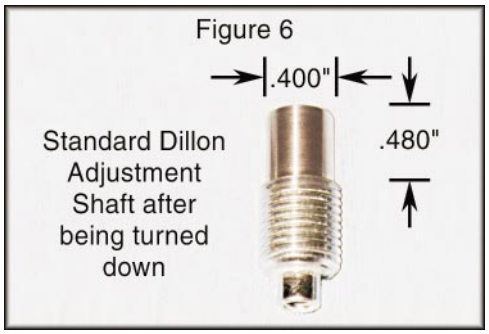
In this 3" configuration, if you make adjustments to the powder measure, either remove the shot dispenser or use the dummy hull to actuate the shot dispenser to prevent the two measures from conflicting with each other. It really sounds more complicated then it is and once you have set everything up, you will realize this is not a major item to contend with.

When you use 3" cases and steel wads, the wads are very deep. You will not be able to drop a wad in the wad guide and pull the handle like you could with 2 3/4 cases before modifying the wad guide assembly. When placing a wad in a 3" case, take the wad in the left hand and with your right hand, push the press handle all the way to the rear as in seating a primer. Reach in and place the wad over the seating tube as far as it will go and allow the handle to return to rest while holding one finger on the wad against the shot tube. This will allow the wad guide assembly to move back under the shot tube holding the wad. If you chamfered the top of the plastic wad finger assembly after trimming it off, (Figure 3) the wad will fall nicely into the center of the plastic wad fingers. Pull the press handle down and the wad will slip right into the case just as it did with 2 3/4" hulls.

Setting up the initial crimp station is relatively easy. Once you have a hull with powder, shot and wad, run the adjustment screw all the way up and then while running the hull up and down with short strokes, turn the adjustment screw down to effect the 60-70% closure recommended by Dillon. You may notice that the adjustment screw will rub slightly on the shot dispenser bell crank. I did not find this objectionable, but since I had a lathe available, once I found this correct setting, I turned down the threads that rub to a diameter of .400" for a distance of .480" from the top of the screw. See Figure 6.

If you plan on reloading 2 3/4" (most folks will), you will want to purchase a couple extra adjustment screws if you turn down the threads to clear the bell crank.

Figure 6



To set the final crimp stage, measure the top of the black outer housing in relation to the top of the tool head. Write this down and add .250" to the measurement. Move the final crimp die up to this new figure and it will be close to what you need. If in the final crimp, you get bulged or ringed cases, either you haven't seated the wad deep enough, or the final crimp die needs adjusting upwards a small amount.

After making these adjustments, try several hulls before throwing a bunch of empties into the case feeder. There is so much leverage in the loading press, it takes very little effort to crush a case if the final crimp/wad depth adjustments are bordering on the tight side.

If you follow these recommendations, you will have many hours of enjoyment loading 3" 12 Gauge rounds.

To reset the press for 2 3/4" hulls, you will wish to purchase a complete wad guide arm assembly as modifying the original one to 3" rounds precludes the use of the initial design of placing a wad in the guide while seating the primers. See appendix A for a parts list.

Personally, I purchased a complete extra tool head and die assembly and a complete wad guide for use with 2 3/4" hulls just to alleviate having to take the time to reset all the dies.

If you choose not to expend the funds for an extra tool head, move the final crimp stage die down to the original measurement that you wrote down. Move the powder die down 1/4" and recheck for complete throw of the bell crank. Reset the initial crimp die for the 60-70% case mouth closure. Put in the new, unmodified wad guide assembly, reset the shot measure height to have the top of the guide slot and vertical guide rail flush and you are off and running with 2 3/4" hulls.

· · · New Empty Hulls · · ·

If you are considering purchasing new unfired empty hulls, there is one other item to take into consideration. That is, starting the initial crimp on a new skived or non-skived hull.

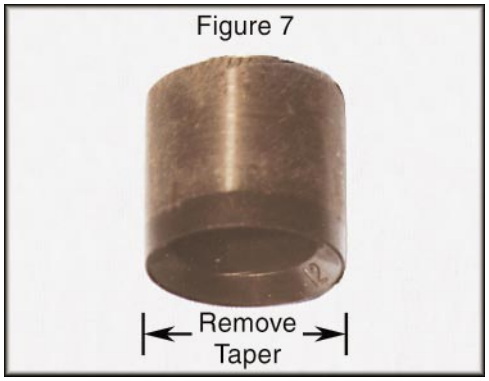
I did not have large success in creating new crimp folds in the 3" Active (or the 2 3/4" Active) hulls using the Dillon supplied crimp starters. These are nice hulls that are all plastic except for a steel plate molded in the base supporting the extractor ring. There is no steel base exposed to rust if you use these hulls in a wet environment. If you hunt waterfowl, there is usually plenty of water and/or snow waiting to catch your cases as they are ejected from the shotgun. So the all plastic case is a definite advantage.

As I mentioned in the beginning of this article, I have been using a MEC Grabber for years. I have also used the MEC with great success in starting and crimping these Active cases. What was the difference?

The only real difference is the Spindex® crimp starter used on the MEC. So being the inquisitive person I am, I wondered if the Spindex® crimp starter on the MEC could be used on the Dillon SL-900. It turns out that with a little more effort, they could. Here's how!

The Spindex® crimp starter is very similar to the Dillon starter. It has the same case entry outside diameter as the Dillon starter. It just has an outside dimension that tapers out some few thousandths. Easy fix. Use a lathe or a disk/belt sander to remove the taper and match the outside diameter on the case mouth insertion end. It will then slide right into the outer shell on the tool head that holds the starter crimp. See Figure 7.

The next item is the process of holding the crimp starter to the adjustment screw. My first try was to drill out the small hole in the Spindex® starter to fit the sleeve on the Dillon adjustment shaft and counter bore the inside of the crimp starter to accept the original screw that



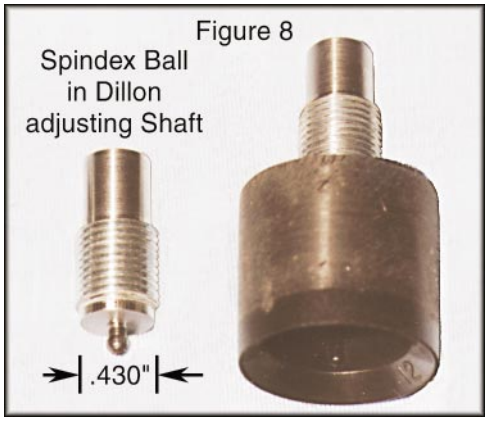
holds the factory original in place. Wrong move. In doing that, there is not enough room for the case to almost completely close (required to start new cases - 90 to 95% closure) without the tops of the folds contacting the screw head and getting a slight bend in the tips. This distortion on the extreme tips is enough to cause a poor looking crimp. Back to the drawing board.

The only other way to approach this was to use the original MEC Spindex® mounting system which is a little ball and shoulder on the end of a 1/4-20 threaded shaft. The next try was using a lathe to turn off the sleeve portion of the Dillon threaded adjustment shaft, re-drill and tap the existing screw hole to accept the 1/4-20 threads on the MEC Spindex® mounting stud.

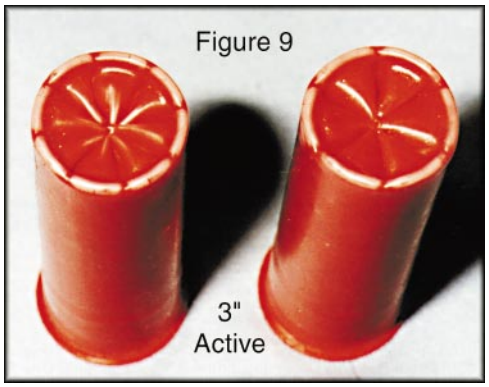
Then cut off the stud to about 1/4 inch and screw it into the new threads. This would work fine if you could tap the hole exactly straight. I could not. Any tilt on the face of the shoulder that has the mounting ball, and you could tell immediately by looking at the crimps. They were good, but off center. One more time back to the drawing board.

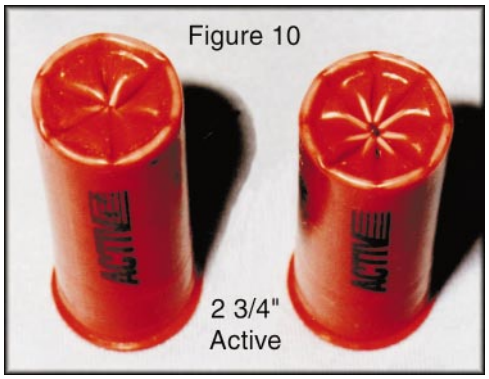
This time I re-drilled the holes to exactly 1/4" and removed the existing threads from the ball/shaft unit. This allowed the back of the shoulder on the ball unit to ride flat against the face of the threaded adjustment shaft even if the hole was not absolutely straight in the adjustment shaft. I used JB weld epoxy to affix the stud inside the adjustment shaft with the shoulder flat against the face in the center of the threaded shaft. Success at last! Once the epoxy has cured, snap the Spindex® Starter on the ball and insert from the bottom of the tool head inside the outer floating shell and you will do perfect crimps on new and old hulls every time!

Since I had a lathe available, I turned down the shoulder holding the ball to a diameter of .430". When I wish to change from 6 pt. to 8 pt., or vice versa, I screw the adjustment shaft up until the starter crimp pops off the ball, and screw it down a few turns and reach up with the other starter and snap it right onto the ball. This only saves having to screw the shaft all the way out to change starters for different points. You do not have to turn the shoulder down unless you desire this convenience. See Figure 8.



These are new unfired Active hulls showing 2 3/4" and 3" in both 6 pt. & 8 pt. crimps.





With all these modifications in place, I can load new uncrimped hulls to my hearts content and expect perfect results with every round that falls into the blue Dillon shell bucket.

I am very impressed with the results and I am glad I had, and took the time to research the changes necessary to complete this project.

· · · Credits & Thanks · · ·

I am in debt to Mike Smith with Dillon Precision, because he didn't blow me off as would many other companies that have equipment and wouldn't want customers modifying their design features.

My thanks to Andy Adams, my hunting partner for years, for his assistance in working out some of the details of the Wad Guide Assembly.

Also, thanks to Larry Allred who assisted in this project with the lathe work.

Many, many thanks to all...

If you desire assistance or wish to ask questions, do not hesitate to call me at (406) 248-3552 or Email john@jjgb.com A complete version of this story will be located on my web site at: www.jjgb.com/graphicaldesigns. It is posted in Adobe Acrobat PDF format complete with pictures. If you do not have the Acrobat Reader version 3.0, there is a link to Adobe to acquire it FREE of charge.

Apendix A

Parts List

Dillon

Crimp Starter Adjustment Stud	17899
Crimp Starter Retaining Screw	13895
Magnum Powder Bar	21353

Standard Shot Metering Bar

No complete part number available yet. Recommended if you wish to throw smaller weights of lead shot after modifying the original bar.

Bar	16738
Plunger	16739
Set Screw	16740
Adjustment Screw	13943
Washer (plain)	13958
Washer (tension)	14041

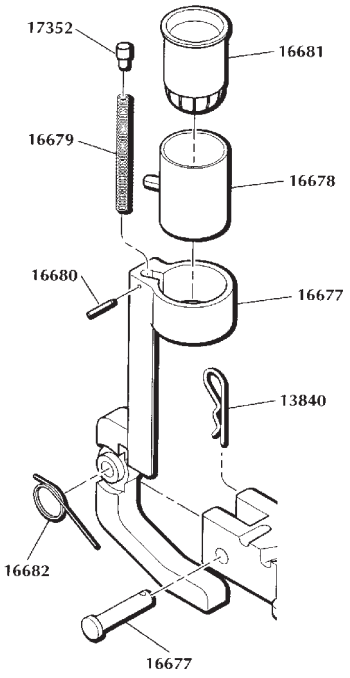
Wad Guide Arm Assembly

No complete part number available yet. Recommended to have on hand to load 2 3/4' rounds after modifying the original Wad Guide Assy.

Wad Guide Arm	16677
Plastic wad Guide Fingers	16681
Sliding Sleeve	16678
Retaining pin	16680
Spring (Sliding Sleeve)	16679
Nylon Button	17352

Phone Number: (800) 223-4570

Wad Guide Arm Assembly



MEC

Spindex® Star Crimp Assy. 8439 - 12 Ga.

Includes 1 ea. of the 6 pt. & 8 pt. starter and one mounting stud with ball.

Extra Mounting Stud With ball 8419

Phone Number: (920) 387-4500

MEC Spindex Starter #8439 - 12 Ga.