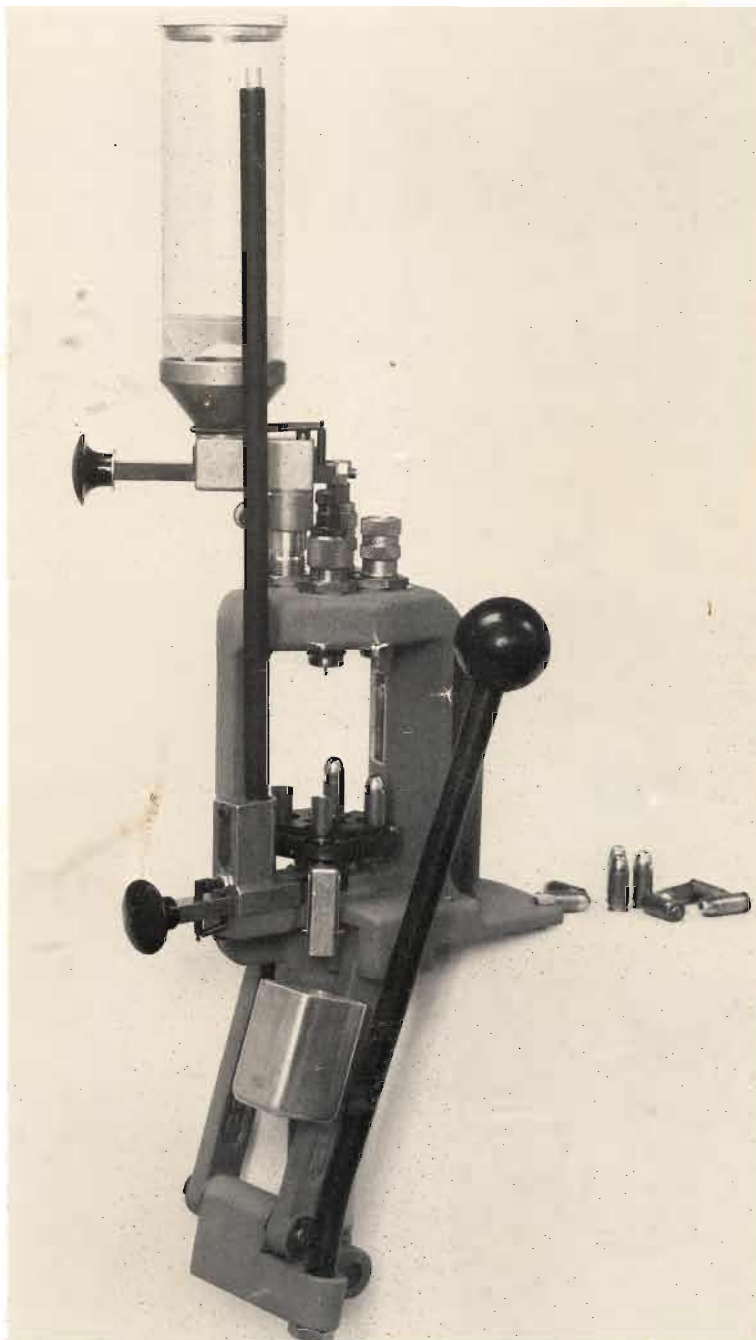




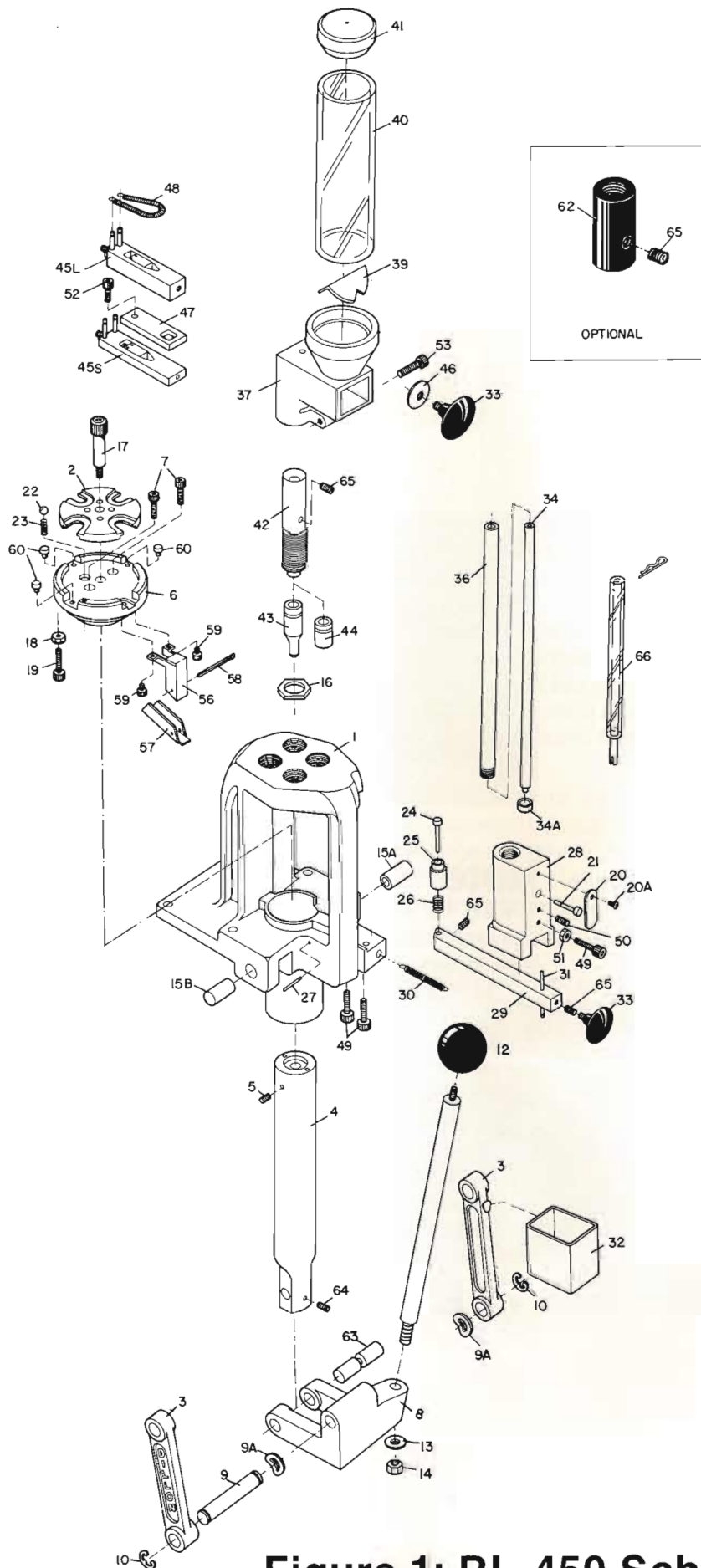
# OPERATING MANUAL

## Dillon RL-450

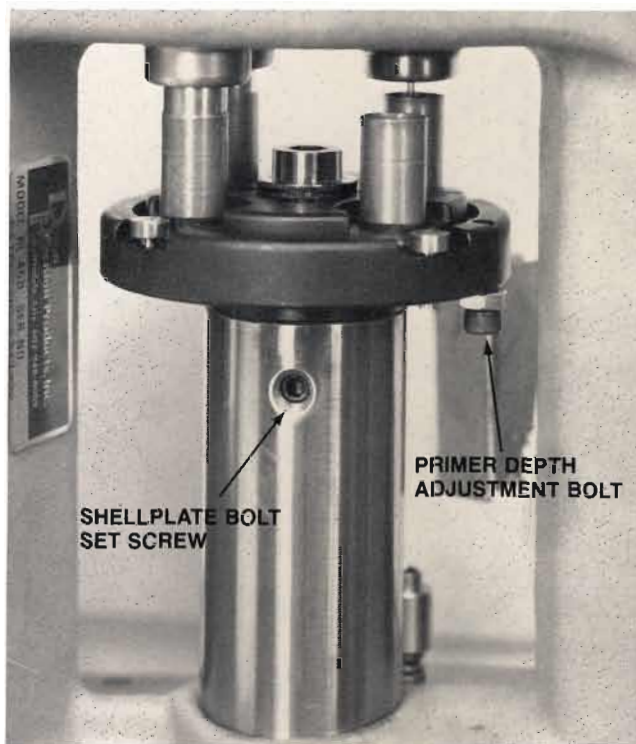


***“The reloading machine for shooters who HATE to reload.”***

- RL450-1 Frame
- RL450-2 Shellplate
- RL450-3 Link Arm
- RL450-4 Main Shaft
- RL450-5 Shellplate bolt set screw
- RL450-6 Shellplate platform
- RL450-7 Shellplate platform bolts
- RL450-8 Crank
- RL450-9 Crank Pivot Pin
- RL450-9A Spring Washer
- RL450-10 Pivot Pin Snap Ring
- RL450-11 Operating Handle
- RL450-12 Operating Handle Knob
- RL450-13 Operating Handle Washer
- RL450-14 Operating Handle nut
- RL450-15A Upperlink Arm Pin Right
- RL450-15B Upper Link Arm Pin Left
- RL450-16 Die Lock Ring
- RL450-17 Shellplate Bolt
- RL450-18 Primer Depth adjustment lock nut
- RL450-19 Primer depth adjustment bolt
- RL450-20 Primer feed stop spring
- RL450-20A Primer feed stop spring screw
- RL450-21 Primer feed stop pin
- RL450-22 Index ball
- RL450-23 Index ball Spring
- RL450-24L Primer seating punch Large
- RL450-24S Primer seating punch Small
- RL450-25L Primer searing cup Large
- RL450-25S Primer seating cup small
- RL450-26 Primer seating cup spring
- RL450-27 Primer slide return spring retainer
- RL450-28 Primer feed body
- RL450-29 Primer slide
- RL450-30 Primer slide return spring
- RL450-31 Primer slide return spring post
- RL450-32 Spent primer catcher cup
- RL450-33 Primer slide knob/Powder bar knob
- RL450-34S Primer magazine Small
- RL450-34L Primer magazine Large
- RL450-34A Primer magazine lock ring
- RL450-36 Primer magazine shield
- RL450-37 Powder measure
- RL450-39 Powder measure baffle
- RL450-40 Powder measure tube
- RL459-41 Powder measure lid
- RL450-42 Powder die
- RL450-43 Powder funnel/pistol expander
- RL450-44 Rifle powder funnel
- RL450-45L Powder bar Large
- RL450-45S Powder bar Small
- RL450-46 Powder bar stop
- RL450-47 Powder bar spacer
- RL450-48 Powder bar spring
- RL450-49 10 by 24 by 3/4 inch cap screw
- RL450-50 10 by 24 by 3/8 inch set screw
- RL450-51 Primer slide stop nut
- RL450-52 10 by 24 by 5/8 cap screw
- RL450-53 Powder clamp bolt
- RL450-54
- RL450-56 Spent primer catcher bracket
- RL450-57 Spent primer catcher chute
- RL450-58 Spent primer catcher pin
- RL450-59 Spent primer catcher screws
- RL450-60 Locator buttons (3)
- RL450-61
- RL450-62 Powder measure adaptor
- RL450-63 Main shaft pivot pin
- RL450-64 Main shaft pivot pin retaining screw
- RL450-65 Primer slide/Powder die set screws (10-32 by 1/4")
- RL450-66L Primer pick up tube Large
- RL450-66S Primer pick up tube Small



**Figure 1: RL-450 Schematic**



## Note:

Many RL 450's are shipped without a shellplate, powder funnel or powder bar. Installation of these parts is as follows:

1. Remove the Shellplate Bolt (-17) from the shellplate platform (-6). Place the Index Ball and Spring (-22 and -23) into the appropriate hole in the shellplate platform. Place the proper shellplate (-2) on the shellplate platform and screw the shellplate bolt down tight enough to prevent the shellplate from rotating. Now loosen the shellplate bolt just enough to allow the shellplate to rotate. Install the shellplate bolt set screw (-5) in the left side of the Main Shaft (-4) (see figure 6). Install the three locator buttons at stations 2, 3, & 4.

The machine comes with the large primer punch and cup installed in the primer slide. If you wish to change the system to small, see page 4 & 5.

See pages 6 & 7 for installation and adjustment of the powder system.

# Instructions for the Dillon RL-450

## “The Reloading Machine for Shooters Who Hate to Reload:

The DILLON RL-450 comes equipped with the shellplate and powder funnel to load one caliber rifle or pistol cartridge. Dies and mounting bolts are not provided. These instructions are written to provide you with a step-by-step procedure for a good start and years of continued use.

The DILLON RL-450 is a heavy duty “O” frame, four station progressive loading machine which enables the user to obtain a completely loaded cartridge with each stroke of the handle.

## WARNING

The reloading of small arms ammunition involves the use of high explosive primers and powder. The handling of these materials is inherently dangerous. The operator should recognize this danger and take certain minimum precautions to lessen his exposure to injury.

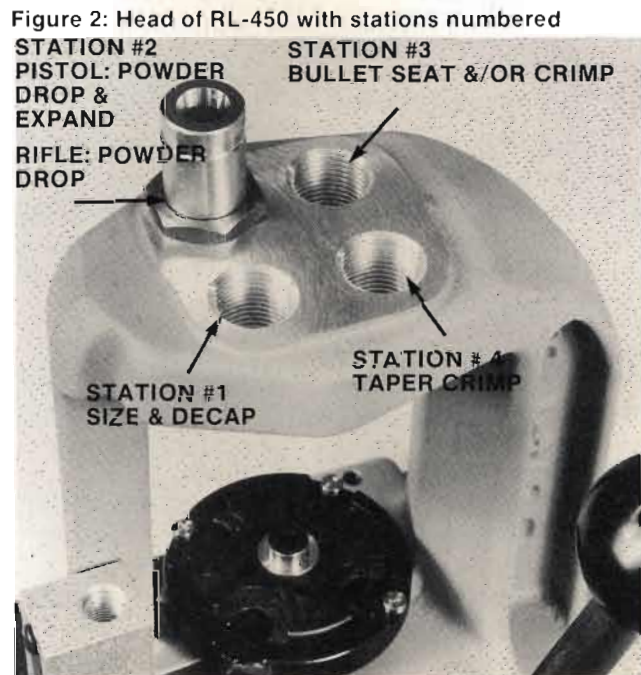
1. Always wear safety glasses.
2. Never smoke while operating the machine.
3. Use only recommended loads from manuals and information supplied by reliable component manufacturers and suppliers. Since Dillon Precision Products, Inc. has no control over the components which may be used on their equipment, no responsibility is implied or assumed for results obtained through use of any such components.
4. Avoid maximum loads and pressures at all times.
5. Perform periodic quality control checks on the ammunition being produced.
6. Keep the work area clear of loose powder or other flammable residue.
7. Never attempt to force primers through the magazine by pushing or tamping with the magazine follower, as an explosion may occur. The primer magazine (34) is covered by a shield (36). The purpose of this shield is to protect the operator from injury in case of a primer explosion. Do not operate the machine without this shield in place. **DO NOT ATTEMPT TO EXPAND THIS**

**MAGAZINE**, do not mount primer turrets on the RL-450. These devices do not save time and can be extremely dangerous. They place up to 1,000 primers in unprotected plastic tubes right in front of the operator's face.

8. Never attempt to force the primer slide forward. If the primer slide will not return by spring pressure, refer to the trouble shooting section of the manual. **DO NOT FORCE ANYTHING!** An explosion may occur.
9. Load only when you can give your complete attention to the loading process. Don't watch television or try to carry on a conversation and load at the same time.
10. Keep components and ammunition out of reach of children.
11. Keep powder containers closed.
12. If you are interrupted or must leave and come back to your loading, always inspect the cases at every station to insure that the proper operations have been accomplished.

The Dillon RL-450 is an incredibly simple machine to understand, set up and operate. A basic knowledge of metallic cartridge reloading is necessary. Each station is adjusted as though it were a single station press.

Die positions in frame as follows: Figure #2.



**Station 1-Right Front.** Pistol-size and decap (NOTE: All pistol sizing dies are threaded to accept a decap assembly. Decap assemblies are available from the die's manufacturer.

To get maximum production from your RL-450, when loading pistol calibers, choose a carbide sizing die that has a generous radius or lead-in on the mouth of the die. Fig. #3.

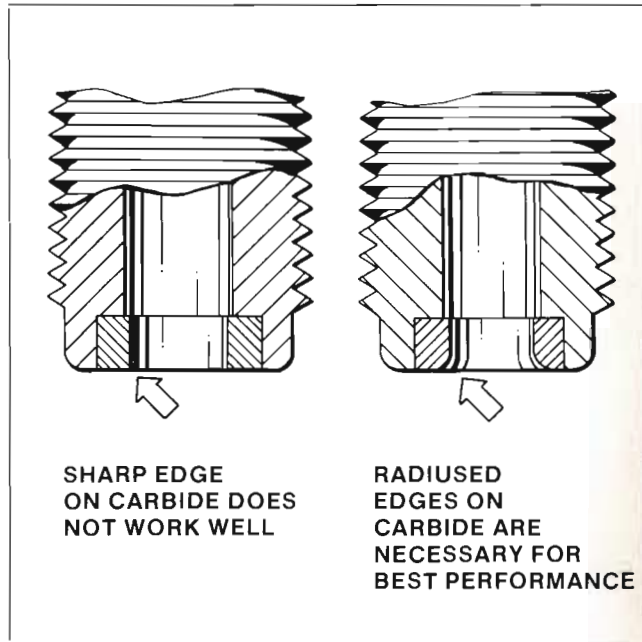


Figure 3: Cut-away of carbide size die

This eliminates the need to steer the case into the sizing die.

**Station 2-Left Front.** Pistol-Powder drop and expand. Rifle-Powder drop only.

**Station 3-Left Rear.** Seat bullets and crimp.

**Station 4-Right Rear.** Roll or taper crimp.

### Mounting the Dillon RL-450

Place the machine on the edge of a sturdy bench or table and, using the four holes in the frame as a template, mark the mounting surface. Drill holes for 1/4 inch mounting bolts of appropriate length (not provided). Securely fasten the RL-450 to your bench.

## Completion of subassemblies, final assembly and adjustments

### Operating Handle Subassembly.

Remove the nut from the operating handle. Insert the operating handle into the hole on the right side of the crank and position the angle so that the knob is as far away from the frame as it will go. Replace the nut and tighten. Make sure the knob is tight and that the handle does not contact the bench.

### Primer Seating Cup and Punch.

Make sure that the correct large or small primer seating punch (24) and cup (25) are installed for the size of the primer being used. To change the cup and punch use a hex wrench to loosen the set screw (65) on the side of the primer slide. (29) The cup, punch and spring may be removed. Assemble the correct size cup and punch.

Reuse the spring and place it over the small end of the punch and inside the cup. Depressing the large end of the punch, insert the small end in the hole on the primer slide and tighten the set screw. Sufficient pressure must be exerted on the end of the punch so that when tightened, the punch is seated **all the way down in the slide**. The punch and cup will then slide into the opening in the back of the primer feed body (28) and the primer feed stop spring (20) will move.

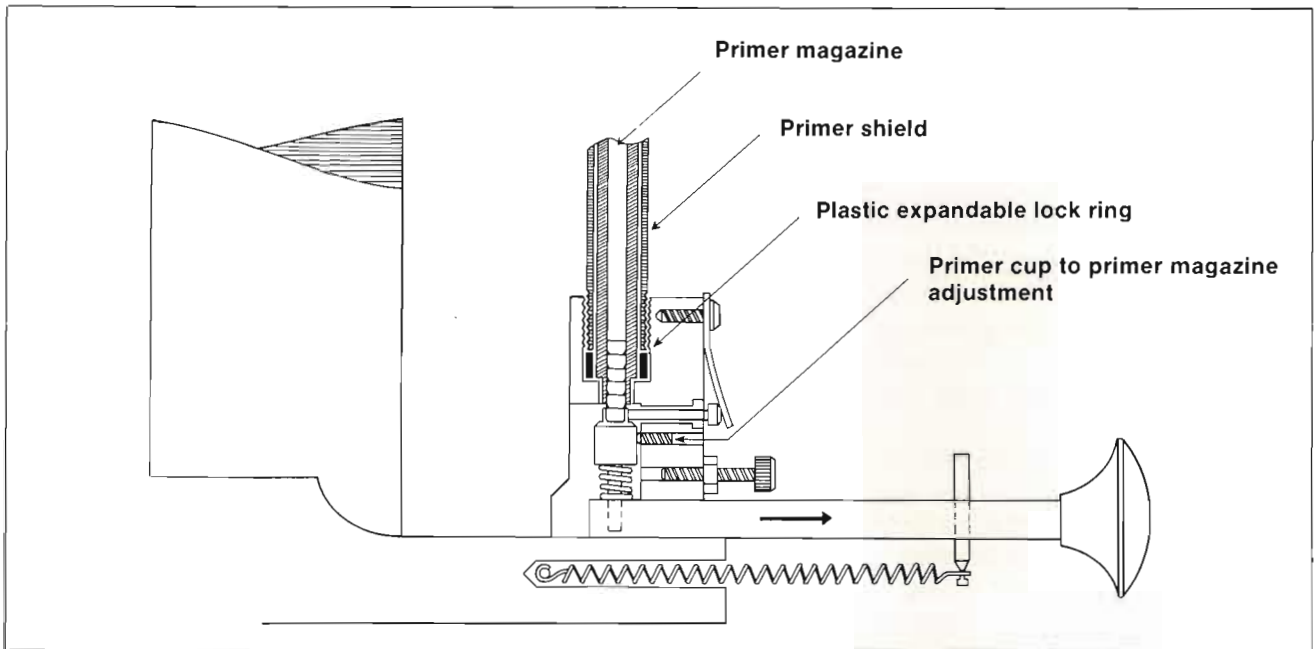
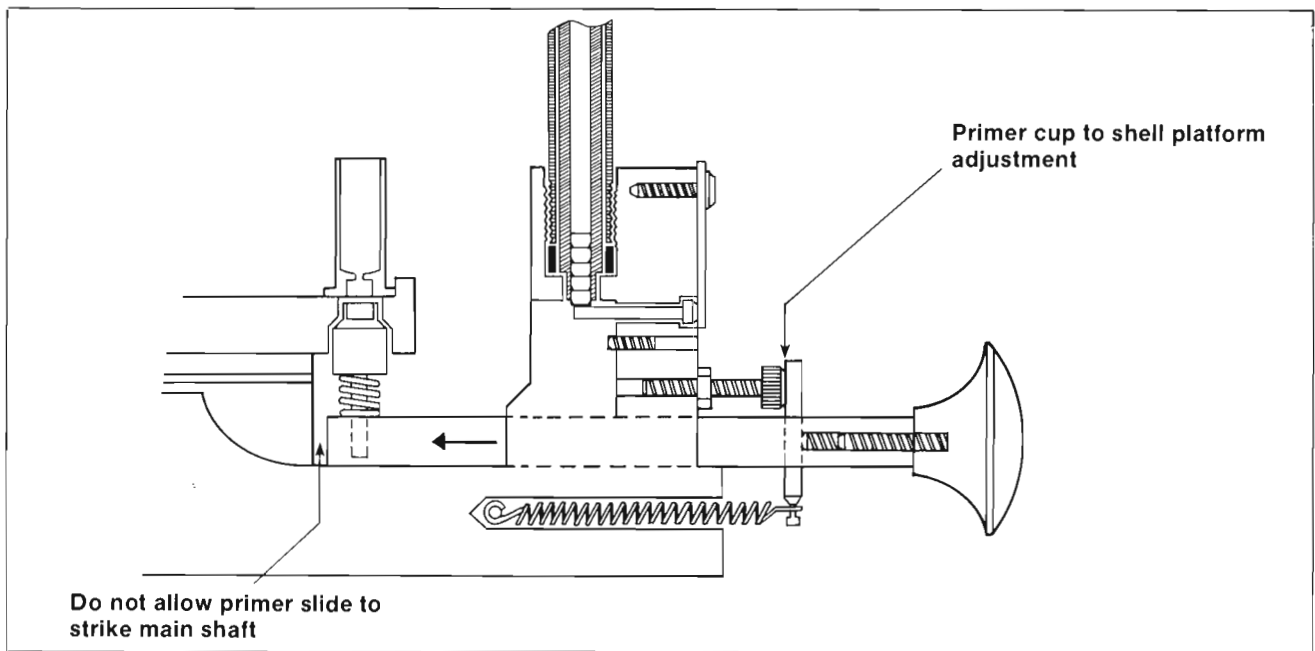
### Shellplate Adjustment

The shellplate (2) can be adjusted by loosening the set screw (5) (See figure #6) in the side of the mainshaft (4) under the shellplate platform (6). Tighten the shellplate bolt (17) all the way down and backoff just enough to allow the shellplate to turn freely. (About 1/12 of a turn should be enough.) Check this adjustment with cases in all four stations. Re-tighten the set screw (5).

To change the shellplate, remove shellplate bolt (17). Remove and replace shellplate, making sure that the ball (22) and spring (23) are in place. It is important that there be no powder or residue under the shellplate. Adjust shellplate and tighten set screw.

### Installation and Filling Primer Magazine and Primer System Adjustments.

Install the soft plastic primer magazine lock sleeve (34A) in the bottom of the threaded hole in the top of the primer feed body. Select the large or small primer magazine and center the small end in the lock sleeve. Be sure that the primer magazine (34) is seated all the way down against the primer feed block. (28) Fig. #4 Place the primer magazine shield over the magazine and hand tighten the shield while pushing down on the end of the magazine. Rotate the magazine to determine tightness and continue to tighten the shield until the magazine is locked firmly in place. Fill the appropriate primer pick up tube by placing the split end over loose primers and pressing down, forcing each upward into the tube. Fig. #5 The hitch pin (52) should be placed through the hole in the pick up tube to prevent spilling. A primer flipping tray is necessary to turn the primers anvil down. Fill the pick up tube. Place the tube at the end of the magazine, remove the



**Figure 4: Drawing of primer slide/block/punch (cut-away)**

clip and allow the primers to flow into the magazine. Remove the primer pick up tube. The pick up tube may be refilled.

Try the primer feed by pulling the primer slide back to make sure a primer drops into the primer seating cup and by moving the operating handle with the primer slide in to check alignment of the cup with the hole in the shellplate platform. Use a hex wrench to adjust the cup to magazine alignment set screw (50) which is located in a hole below the primer feed stop spring. Fig #4 This is a fine adjustment and should be made in increments of 1/16 of a turn. Use a hex wrench to adjust the cup to the shellplate platform hole alignment screw (49)

which is located *above* the primer slide and protrudes from the primer feed body. Fig #5 This screw also prevents the primer slide from striking the main shaft. Install the spent primer catcher cup on the right hand link arm.

#### **Adjusting Dies at Stations 1 and 2**

Use one cartridge case to completely adjust the RL-450. Move the operating handle up and place a clean, trimmed and lubricated case in the shellplate at station 1. Lubrication may be omitted if using carbide dies. (Pistol only) Adjust the die for satisfactory sizing and decapping. Tighten the lock ring.

With the handle down, feed a primer into the

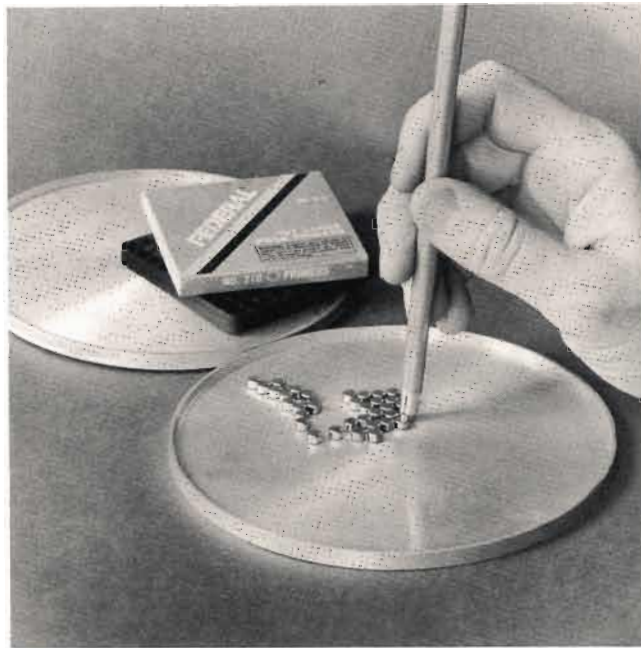


Figure 5: Close-up of primer pick up tube picking up primers

primer cup. Bring the handle to the top of its stroke and push firmly aft to seat the primer. Remove the case and check for the correct primer seating depth. Regulate depth with the primer depth adjusting bolt (19) located under the shellplate platform. Fig. #6 Rotate the shellplate clockwise to station 2.

#### Installing and Adjusting Powder Measure Die

Using a hex wrench, loosen the set screw (65) in the powder die body (42) and insert the pistol powder funnel/expander (43) or rifle powder funnel (44) with the groove toward the top of the die. Tighten the set screw. These funnels must be for the caliber being loaded. Adjust the powder die so that pistol cases are satisfactorily expanded and the mouths flared. For rifle cases adjust the powder funnel so that it nearly touches the mouth of the case. This can be accomplished by moving the handle to the bottom of the stroke and adjusting the die to lightly touch the case mouth. Then back-off the die 1/8 turn and tighten the lock ring.

#### Powder Measure Assembly and Installation Rifle Cartridge Loading

Insert the large powder bar (45L) from the rear of the powder base (37) with the spring mounting studs on top. Place the powder bar stop washer (46) over the knob screw and install the knob (33) on the front of the powder bar. Install the powder bar spring (48) on the mounting studs and around the narrow part of the measure top. (Fig. #7) Install the lid (41) on the tube (40).

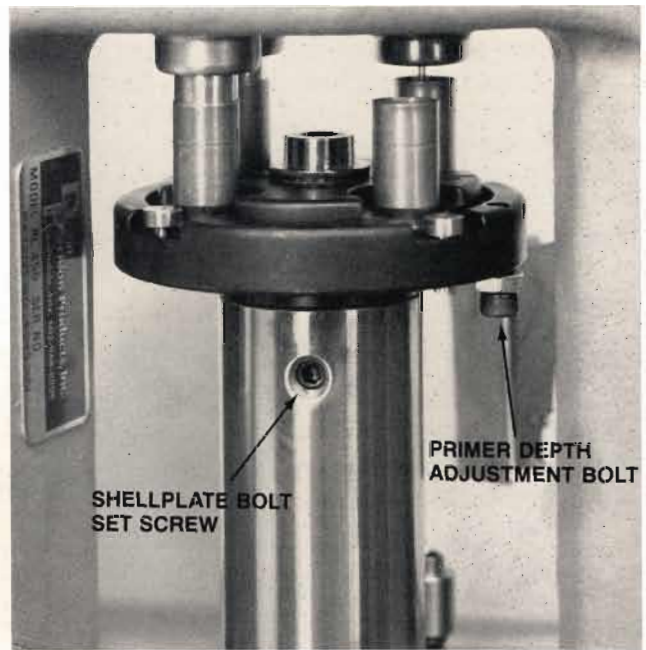


Figure 6: Close-up pictures of primer depth adjustment bolt



Figure 7: Close-up picture of Powder Measure with large powder measure bar

#### Pistol Cartridge Loading

Insert the small powder bar (45S) and powder bar spacer (47) from the rear on the powder measure base. The spacer goes on top of the powder bar. Secure the spacer (47) with the 10-32 cap screw (52). Install the powder bar stop (46) and powder bar knob (33). Install the powder bar spring (48) as shown in Fig. #8.

Place the powder measure base (37) over the powder die and position so that the powder bar will pass between the dies at stations 3 and 4.



Figure 8: Close-up picture of powder measure with small bar and spacer

Fig. #9. (Clamp forward) Use a hex wrench to tighten the clamp bolt to secure the powder measure. Loosen the powder bar adjustment nut. Fill the tube 2/3 to 3/4 with the powder to be used. See WARNINGS. Turn powder bar adjusting screw with a hex wrench. Full range of the rifle bar adjusting screw is approximately 11 turns. Maximum powder charge of the large bar is approximately 55 gr. Larger charges can be thrown by (1) setting the powder bar for 1/2 of the desired charge and pushing the bar twice or (2) use the powder measure adaptor (Part #450-62) and install a larger powder measure. Full range of the pistol bar adjusting screw is approximately 13 turns. Maximum powder charge is about 20-25 grs. With the operating handle up, use an accurate powder scale to determine the proper setting of the adjustment screw. Drop charges by pushing the powder bar knob straight in and permitting it to return. **do not** allow the powder bar to **slam** back as this will cause erratic powder charges. Weigh several charges to determine that none exceeds load desired. Tighten the locknut while holding the adjusting screw.

#### Adjusting Dies at Stations 3 and 4

Rotate the shellplate with the sized, primed and charged case clockwise to station 3. Place a bullet in the neck of the case and adjust the die for satisfactory bullet seating and crimp, if needed. Tighten the lock ring. Rotate the case clockwise to station 4. Using a separate roll or taper crimp die, adjust the die for a satisfactory crimp and tighten the lock ring.



Figure 9: Top view of press with powder bar pushed in

#### Indexing the Shellplate

The simple act of removing the loaded round from the 4th station of the RL-450 will index the shellplate. Simply grasp the loaded round with your right thumb and fingers and pull the round forward and out of the first station. This one act removes the loaded round and indexes the shellplate. You may desire to smooth out this indexing by assisting the rotary motion of the shellplate by pushing rearward on the left side of the shellplate with your left thumb. You are now ready to load cartridges.

#### Lubrication

Use a light oil on the main shaft and pivot pins. **Do not** use any oil, grease or spray type lube on the powder bar. Graphite may be used on the powder bar if desired.



# Trouble Shooting the DILLON RL-450

**Problem 1:** Primers won't feed or primer slide (29) jams in the "out" position.

**Cause A:** If the primer cup (25) does not stop directly under the primer magazine (34) the primer will not fall completely into the primer cup. This will leave the primer halfway in the magazine and halfway in the cup thereby jamming the primer slide. DO NOT ATTEMPT TO FORCE THE SLIDE FORWARD! AN EXPLOSION MAY OCCUR.

**Cure A:** First, try pulling out on the slide and shaking it side to side gently. If this does not clear the jam, then remove the primer feed block and pour the primers out the top of the magazine. Reinstall and adjust the "out" travel by using a hex wrench to adjust the set screw (50) in the feed block that limits the outward travel of the primer cup (See Fig #4).

**Cause B:** Powder or other residue in the primer cup will also prevent the primer from fully clearing the primer magazine.

**Cure B:** Clear the jam (as in Cure 1A) and keep primer cup clean.

**Cause C:** If the primer magazine (34) is not seated all the way down against the primer feed block (28) the primers will bunch up under the magazine and cause a jam.

**Cure C:** Clear the jam (as in Cure 1A) and seat the magazine all the way down.

**Cause D:** If the primer punch (24) is not seated all the way down in the hole in the primer slide (29) it will not allow the primer to fully clear the primer magazine (34).

**Cure D:** Clear jam as in (1A), and reseat the punch all the way down and tighten set screw (65).

**Problem 2:** Erratic or inconsistent powder charges

**Cause A:** Stroking the powder bar inconsistently will produce inconsistent results.

**Cure A:** Stroke the powder the same way each time.

**Cause B:** Stoking the powder too fast may not give the powder time to empty out of the powder bar.

**Cure B:** Hesitate in the full "in" position before allowing the powder to return to the "out" or charge position.

**Cause C:** Allowing the powder bar to slam back will cause charges to vary on the light side.

**Cure C:** Don't slip your hand off the powder bar, instead let the bar follow your hand as it returns to the "out" or charge position.

**Cause D:** A shaky workbench can cause excessive vibration of the powder in the measure. This can cause erratic powder charges.

**Cure D:** Use a sturdy workbench.

**Problem 3:** Crushing cases at Station 1.

**Cause A:** If your carbide die (pistol only) does not have a radiused lead in (See Fig. #3) you have to "steer" the case into the die.

**Cure A:** Replace the size die with one that has the proper radius (Most manufacturers will rework their dies if you send them back to the factory.)

**Problem 4:** Primers won't seat properly.

**Cause A:** Adjustment screw (19) not adjusted correctly.

**Cure A:** Readjust screw (19) for proper seating depth.

**Cause B:** Foreign material under shell platform is restricting downward trouble.

- Cure B:** Clean under platform.
- Cause C:** Crimp in military brass will cause hard priming.
- Cure C:** Swage or chamfer primer pocket on military brass before priming.
- Cause D:** Handle is hitting table and restricting downward travel of shell platform.

- Cure D:** Twist handle for more clearance and re-tighten.
- Cause E:** Trying to seat large rifle primers into pistol cases will result in high primers. Large rifle primers are .013 of an inch thicker than large pistol primers.
- Cure E:** Use proper primers for the case being loaded.

If operator has any questions concerning the RL-450 and its use, contact the factory.