

# XL 650

## Instruction Manual

Version 6.1



**Dillon**  
**Precision**  
Products, Inc.  
Manufacturers of  
The World's Finest  
Loading Equipment

## On the cover...

The XL 650 is pictured with optional accessories:

Strong Mount (550/650)	#22051
<i>Strong Mount (650 only)</i>	#22052
Aluminum Roller Handle	#17950
Low Powder Sensor	#16306
Bullet Tray	#22214
Powdercheck System	#21044
Electric Casefeeder	(four sizes available)

Other accessories available for the XL 650 include:

Video Instruction Manual	#15064
Machine Cover	#10443
Maintenance Kit & Spare Parts Kit	#97017

The **Blue Press**, Dillon's monthly catalog, has a complete listing of accessories available for all machines.

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# MANDATORY SAFETY MEASURES

Reloading small arms ammunition involves the use of highly explosive primers and powder. Handling these materials is inherently dangerous. You should recognize this danger and take certain minimum precautions to lessen your exposure to injury.

Never operate the machine without ear and eye protection on. Call our customer service department at (800) 223-4570 for information on the wide variety of shooting/safety glasses and hearing protection that Dillon has to offer.

- **PAY ATTENTION:** 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. Watch the automatic systems operate and make sure they are functioning properly. 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.

- **SMOKING:** Do not smoke while reloading or allow anyone else to smoke in your reloading area. Do not allow open flames in reloading area.

- **SAFETY DEVICES:** Do not remove any safety devices from your machine or modify your machine in any way.

- **LEAD WARNING:** Be sure to have proper ventilation while handling lead components or when shooting lead bullets. Lead is known to cause birth defects, other reproductive harm and cancer. Wash your hands thoroughly after handling anything made of lead.

- **LOADS AND LENGTHS:** Avoid maximum loads and pressures at all times. Use only recommended loads from manuals and information supplied by reliable component manufacturers

and suppliers. Since Dillon Precision has no control over the components which may be used on their equipment, no responsibility is implied or assumed for results obtained through the use of any such components.

Seat bullets as close to maximum cartridge length as possible. Under some conditions, seating bullets excessively deep can raise pressures to unsafe levels. Refer to a reliable loading manual for overall length (OAL).

- **QUALITY CHECKS:** Every 50-100 rounds, perform periodic quality control checks on the ammunition being produced. Check the amount of powder being dropped and primer supply.

- **RELOADING AREA:** Keep your components safely stored. Clear your work area of loose powder, primers and other flammables before loading.

- **COMPONENTS:** Never have more than one type of powder in your reloading area at a time. The risk of a mix-up is too great. Keep powder containers closed.

Be sure to inspect brass prior to reloading for flaws, cracks, splits or defects. Throw these cases away.

Keep components and ammunition out of reach of children.

- **BLACK POWDER:** Do not use black powder or black powder substitutes in any Dillon powder measure. Loading black powder cartridges requires specialized loading equipment and techniques. Failure to do so can result in severe injury or death.

- **PRIMERS:** Never force primers. If they get stuck in the operation of the machine, disassemble it and gently remove the obstruction.

Never attempt to clear primers that are stuck in either the primer pickup tube or the primer magazine tube. Never, under any circumstances, insert any type of rod

to attempt to force stuck primers out of these tubes. Trying to force primers out of the tube will cause the primers to explode causing serious injury or even death.

If primers get stuck in a primer magazine or pickup tube flood the tube with a penetrating oil (WD-40), throw the tube in the garbage and call us for a free replacement.

Never attempt to deprime live primers – eventually one will go off. When it does it will detonate the others in the spent primer cup. Depriming live primers is the single most dangerous thing you can do in reloading and can cause grave injury or death.

- **LOADED AMMUNITION:** Properly label all of your loaded ammunition (Date, Type of Bullet, Primer, Powder, Powder Charge, etc.).

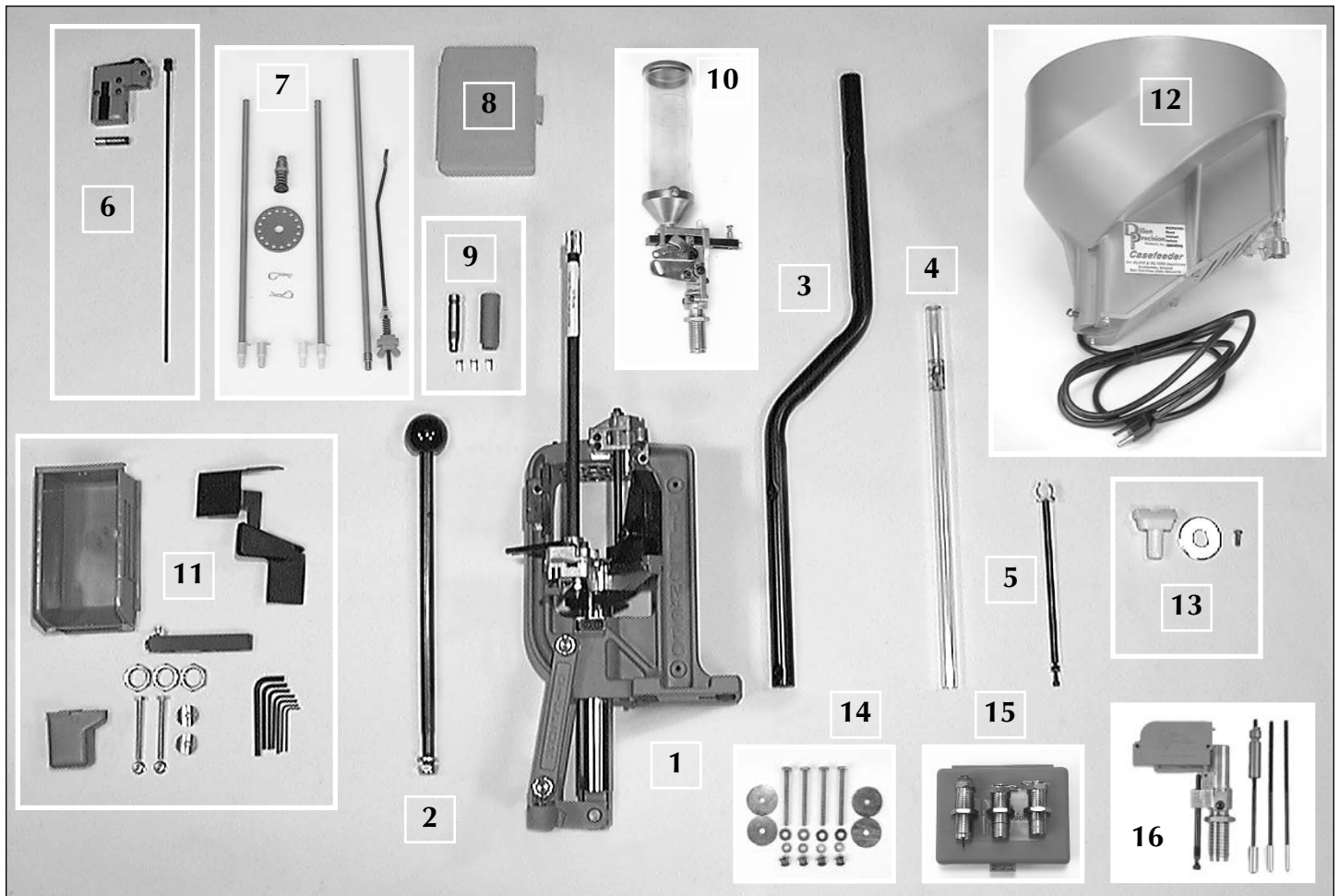
- **BE PATIENT:** Our loading equipment is conservatively rated and you should have no trouble achieving the published rates with a smooth, steady hand. If something doesn't seem right, stop, look and listen. If the problem or the solution isn't obvious, call us.

The reloading bench is no place to get into a hurry.

We have done everything we know how to make your machine as safe as possible. We cannot, however, guarantee your complete safety. To minimize your risk, use common sense when reloading and follow these basic rules.

- **REMEMBER:** If your machine does not perform to your expectations, or if you are having technical difficulties, give us a call. Technical Support (800) 223-4570

**ALL ELECTRICAL/ELECTRONIC COMPONENTS IN DILLON EQUIPMENT ARE COVERED BY A ONE-YEAR WARRANTY.**



## GETTING STARTED

### 1. Unboxing Your Machine:

After opening the box, check the contents against the list below. If any items are missing or damaged, call us right away so we can send out a replacement at no charge.

You should have the following:

1. Machine with toolhead and toolhead retaining pins installed
2. Operating handle assembly with washer and lock nut
3. Casefeeder mounting post
4. Casefeeder tube
5. Casefeeder support bracket
6. Primer Early Warning System bag containing:
  - a. Primer Early Warning System (with AAA battery included)
  - b. Primer follower rod (16" black plastic rod)
7. Primer system parts bag containing:
  - a. Powder Measure Failsafe assembly (10" black metal rod w/ hardware)
  - b. One small and one large primer pickup tube – 12" aluminum tube each with plastic tip - green tip (large), yellow tip (small)
8. Conversion kit box (empty)
9. Conversion kit includes caliber specific:
  - a. Powder funnel
  - b. Casefeeder adapter
  - c. Three locator buttons
  - d. Shellplate (installed)
  - e. Station 1 locator (installed)
  - f. Casefeeder arm bushing (installed)
  - g. Body bushing (installed)
10. Powder system with powder die
11. Accessory box containing:
  - a. Cartridge bin (blue plastic, approximately 3 x 4 x 7")
  - b. Ejected cartridge chute (black metal, wrapped in bubble pack)
  - c. Two 1/4" x 20 x 3": hex bolts and two 1/4" x 20 nuts
12. Casefeeder assembly (optional)
13. Casefeeder accessory bag containing:
  - a. Casefeeder funnel adapter (white)
  - b. Spacer washer
  - c. Casefeeder mounting post set screw
14. Mounting hardware kit (optional)
15. Three die set (optional)
16. Powder check system (optional)
  - d. Two Aluminum tube clamps
  - e. Spent primer cup (blue plastic)
  - f. Extra powder bar
  - g. Three die lockrings (7/8 x 14" thread)
  - h. Seven Allen wrenches (1/4", 3/16", 5/32", 9/64", 1/8", 3/32", 5/64")

## 2. Mounting your XL 650:

**A.** Locate a sturdy bench at least 24" wide and 14" deep, with 44" of overhead clearance. We suggest a minimum of 1" plywood or equivalent, secured to the back wall. The workbench should be tall enough to place your eye level about 18" above the bench.

**Note:** It is important that the leading edge of the bench has an overhang of at least 3/4". If the overhang is less than 3/4", the crank will interfere with the front of the bench when the operating handle is lowered. Unless you have Strong Mounts, then none of this is necessary.

### B. Tools Needed:

You will need the following to mount and set up your machine:

1. Electric drill
2. 17/64" drill bit preferred, 1/4" – 9/32" OK
3. Mounting Hardware Kit (#14355) or four 1/4" through bolts with nuts and washers

**Note:** The bolts should be at least 1 1/2" longer than the thickness of the mounting surface.

4. Two 7/16" wrenches if using kit

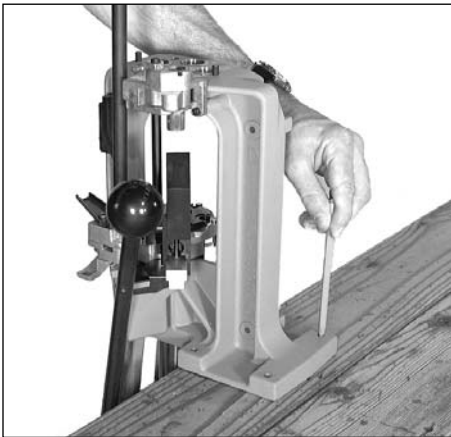


FIG 1

### C. Drill the mounting holes FIG 1:

1. Using the machine as a template, mark the four holes.
2. Using a 1/4" bit, drill the holes.



FIG 2

### D. Bolting the machine to the bench FIG 2:

**Note:** If you do not have a Mounting Hardware Kit, ensure that you use 1/4" or equivalent through bolts (with large area washers if mounting to wood). Do not use lag bolts or wood screws!



FIG 3

1. Mount the left side of the machine with the small washers on top and the large washers on the bottom FIG 3. Run the two left side nuts down finger tight.
2. Place the chute/bin bracket FIG 2 on the right side of the machine. As before, place the small washer on top and the large washers on the bottom and thread the nuts.

**Note:** The chute/bin mount goes under the two right hand mounting bolts so it must be installed as you are mounting the machine FIG 2. Check the fit of the chute/bin mount. The chute/bin mount should rest snugly against the frame. Also, make sure that the walls of the chute are parallel and

have not been bent during shipping or installation.

3. Using two 7/16" wrenches, tighten all four bolts down.

## 3. Initial Set Up

If you ordered your XL 650 for a specific caliber, it comes factory adjusted for that caliber (minus dies) with the appropriate "caliber specific" parts included. In fact, a Dillon technician runs casings and primers through the machine to check its function.

**Note:** As you assemble your machine, we recommend that you cross check caliber specific parts, included with your machine, with those specified in the caliber conversion chart (pages 42-44). The point being – if we sent you the wrong part, you'll want to know it before getting started. Reference page 35 for instructions on how to use the caliber conversion chart.

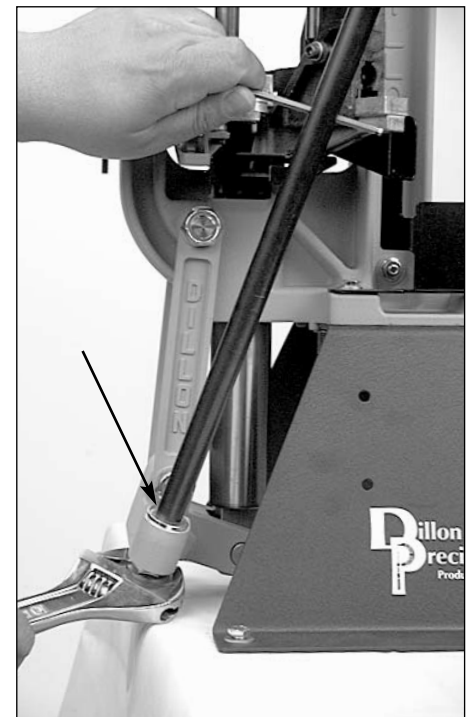
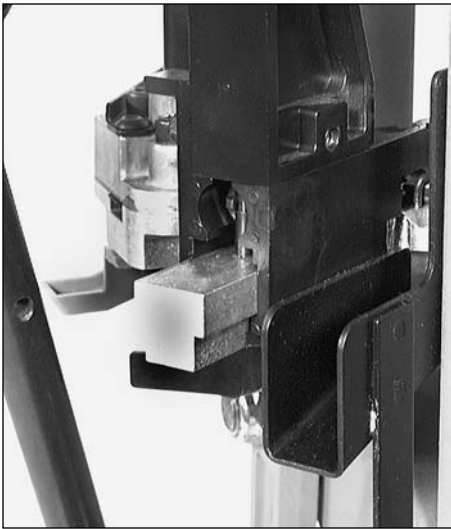


FIG 4

### A. Installation of the handle FIG 4:

1. Hold the washer (see arrow FIG 4) over the hole on the right side of the crank and insert the handle.
2. Place a 5/32" Allen wrench or screw driver through the hole in the handle to help your grip.
3. Tighten the nut using a 7/8" wrench.



**FIG 5**

Operate the handle slowly to ensure that the machine operates smoothly. Make sure that the handle and the crank completely clear the bench. Contact with the bench may hinder its range of movement. Observe the movement of the shellplate platform and verify that there is no interference or contact of the case insert slide and the chute/bin mount **FIG 5**.



**FIG 6**

**B. Installation of the Spent Primer Cup **FIG 7** and Cartridge Bin **FIG 6**:**

1. Raise the platform (i.e., lower the handle all the way).



**FIG 7**

2. Slide the spent primer cup onto the rails as shown. Make sure when installing the cup that it is on both rails.



**FIG 8**

3. Place the cartridge bin on the chute/bin bracket. Push the handle aft **FIG 8** while sliding the bin toward the handle as shown. With the handle pushed to its full aft position, there should be a space between the handle and bin.



**FIG 9**

**C. Installation of the Casefeed Post**

1. Remove the bolts, nuts and clamp from the spacer kit and assemble them as shown in **FIG 9**.



**FIG 10**



**FIG 11**

2. Install the casefeed post as shown in **FIG 10**. Make sure the bend in the post is facing away from you **FIG 11**.
3. Using two 7/16" wrenches, tighten the bolts.

**D. Installation of the Casefeed Tube Bracket **FIG 11**.**

Install as shown in **FIG 11**.

**Note:** If you ordered your machine with the optional casefeed assembly, you won't need to use the casefeed tube bracket. This is because the upper end of the casefeed tube is supported by the casefeed bowl.

## E. Installation of the Optional Casefeeder FIG 12:



FIG 12

1. Remove the casefeed parts bag from the casefeed bowl and remove the casefeed assembly from the box FIG 12.

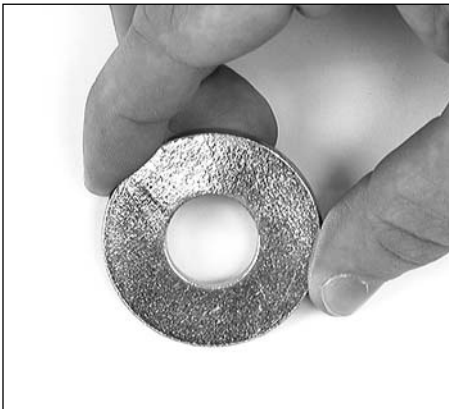


FIG 13

- a. **Spacer Washer FIG 13:** (see casefeeder schematic page 57)

Some calibers call for a spacer washer to be used under the casefeed plate. Installation of this washer raises the plate up a bit to make the feeder function properly with longer pistol cases (such as .357 Magnum, .44 Magnum and .30 M1 – this listing of calibers requiring the spacer is repeated in the caliber conversion chart on pages 46-48 of this manual).

**Note:** The spacer washer does not come factory installed.



FIG 14

### To Install the Spacer Washer:

- a.1. FIG 14 Remove the casefeed plate.
- a.2. With the casefeed plate removed, disassemble the clutch drive. To do so unscrew the two clutch screws.
- a.3. Install the spacer washer as illustrated in the casefeed schematic (page 57). **IMPORTANT:** The spacer washer goes between the lower clutch and the casefeed plate.
- a.4. Reassemble the clutch drive and reinstall the casefeed plate. (Note how the clutch drive engages the drive pin).



FIG 15

- b. **Clutch Adjustment FIG 15:**

**Note:** The clutch comes factory adjusted (if you don't have to install the spacer washer you shouldn't have to adjust the clutch drive).

The two socket-head machine screws (pt# 13732) should be just tight enough for the clutch to drive the casefeed plate under a normal load of brass. To check this, place the casefeed assembly in front of you on the bench. With the switch off, plug the casefeeder in. Turn the switch to the down (low) position and observe the movement of the plate. You should be able to cause the clutch to slip, using moderate finger pres-

sure, without stalling the motor. Alternately tighten and loosen the two machine screws evenly, observing the effect on the holding power of the clutch. The correct setting will stall the plate before stalling the motor, yet not slip when the casefeed bowl is about half full of brass.

**Note:** The casefeed bowl is not designed to be completely filled with brass. If it is fully loaded it will not function reliably. The rated capacity of the casefeeder is about 1/2 of the bowl's physical capacity.



FIG 16

- c. **Casefeed Funnel Adapter FIG 16:**

Some calibers call for the white plastic funnel adapter to be used, located in the casefeed accessory bag FIG 16. It is used for feeding 9mm, .38 Super, .32 H&R, and .380 ACP. (This listing of calibers is repeated in the caliber conversion chart on pages 46-48). Without this funnel adapter these calibers will occasionally hang up in the clear plastic funnel FIG 17 at the top of the casefeed tube.



FIG 17

**Note:** The casefeed funnel adapter does not come factory installed.



**To Install the casefeed funnel adapter**  
**FIG 18:**



**FIG 18**

Remove the screws that attach the clear casefeed funnel. Slide the front cover down a bit, and slip the white plastic funnel adapter into the funnel **FIG 18**. Reassemble.

**Note:** Do not loosen the two screws that are holding the microswitch (pt# 13779).

**Note:** Occasional jams will occur. To keep them to a minimum, be sure to use the spacer washer **FIG 13** or white casefeed funnel adapter **FIG 16** when called for. Use the low setting if it will keep up with your loading pace, and do not overload the casefeeder. The rated capacity of the casefeeder is about 1/2 of the bowl's physical capacity.

Before placing the casefeed bowl on the casefeed post, take a moment to look over and understand the casefeed assembly and how it works. If you like, you can run the casefeeder before placing it on top of the casefeed post. This will allow you to get a better idea of how it works. To do so, plug in the casefeeder and fill it with about 50 cases. Hold the casefeeder **FIG 19** so the funnel is vertical. Place the cartridge bin under the funnel and turn it on. Experiment using both the high and low settings.



**FIG 19**



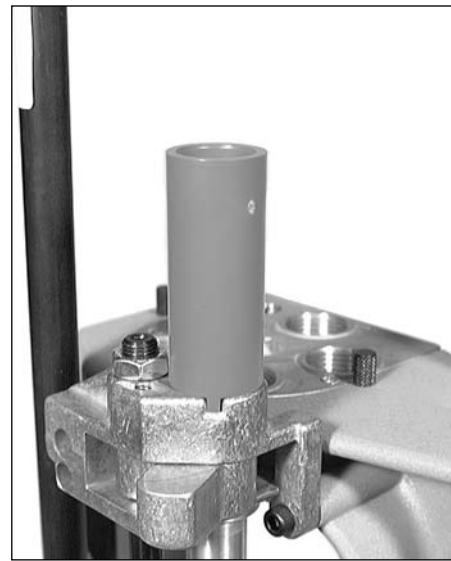
**FIG 20**

2. Remove the set screw from the accessory bag and thread it into the casefeed assembly **FIG 20**.



**FIG 21**

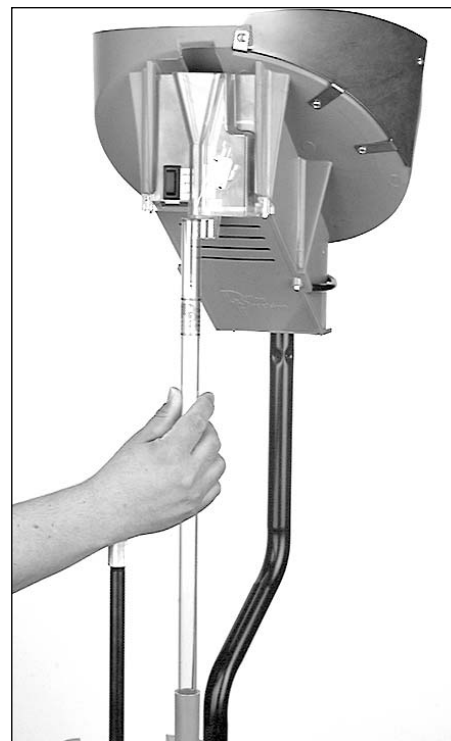
3. Place the casefeed bowl onto the casefeed post **FIG 21**.



**FIG 22**

4. Place the casefeed adapter on the casefeed body **FIG 22**. Note how the key fits into the notch on the casefeed body.

**Note:** Casefeed adapters are caliber specific. Crosscheck your casefeed adapter with the one listed in the caliber conversion chart (for the caliber you're loading) to ensure that you have the correct one installed in your machine.



**FIG 23**

5. Align the casefeed bowl so the spring clamp is directly over the casefeed adapter. Place the casefeed tube into the casefeed adapter then snap the tube into the clamp **FIG 23**.

**Note:** One end of the casefeed tube is beveled and one end is squared off. Insert the squared end of the tube (down) into the top of the casefeed adapter.



**FIG 24**

- Using A 5/32" Allen wrench, snug the machine screw against the casefeed mounting post **FIG 24** to prevent the casefeed bowl from rotating.

## 4. Toolhead Overview

You're now ready to install the toolhead and adjust the dies. But first, we'll give a brief overview of the location and function of each station, we'll then follow up with a detailed illustration.



**FIG 25**

### Station 1 - Sizing/Decapping

The stations on the toolhead are numbered 1-5. Station 1 is for the sizing/decapping die **FIG 25**. This die can be easily identified by the decapping pin sticking out the bottom as well as by its label. This die removes or "decaps" the old primer and resizes the case.

**Warning:** Never decap live primers! (See mandatory safety procedures.)

### Station 2 - Powder Measure



**FIG 26**

Station 2 is for the powder die, which comes attached to the powder measure **FIG 26**. Here several operations are conducted. The case is primed, straightwalled pistol cases are belled, and powder is dropped. The purpose of the bell at the mouth of the case is simply to help align the bullet and to keep the case from shaving lead during the seating process. **Note:** Only straight-walled cases receive a bell, bottle-necked cases (rifle cartridges) are not belled.



**FIG 27**

### Station 3 - Powder Check

Station 3 is used for the optional powder check system **FIG 27**. This system is located in a separate package and can be identified by the blue warning buzzer attached to a die. This system is designed to detect gross deviations in the powder charge, i.e. a double charge of powder or no powder at all.

### Station 4 - Bullet Seating

Station 4 is for the seating die **FIG 25**. This is where the bullet is pushed into the case.

### Station 5 - Crimp

Station 5 is for the crimp die **FIG 25**. This die not only removes the bell created at Station 2, but rolls the mouth of the case inward to insure proper feeding and to secure the bullet.

## LUBRICATING BRASS

To lubricate brass, use "Dillon Case Lubricant" (item# 13733).

**Pistol** – If you're using a carbide sizing die, you will not need to lubricate your cases (before sizing) when loading straight-walled cases. If you're not using a carbide sizing die, you must lube the brass before sizing. We do, however, recommend lubricating all brass.

**Rifle** – Lubricate **all** bottle-necked cases, even if you're using a carbide sizing die.

To lubricate your cases, start by ensuring that they are clean. Place your clean brass in a shallow box so the cases are laying on their side. Pump a couple of sprays of Dillon Case Lubricant over the cases. Shake the box so the cases will tumble and roll. Repeat this process again making sure that the lubricant is well distributed over the cases.

**Note:** When loading rifle cartridges, if your sizing die doesn't have a carbide case mouth expander, you may want to allow a little bit of lube to get inside the case mouth.

**Note:** When loading bottle-necked cartridges, if you get an excessive amount of lube on the shoulder of the case, it will leave oil dents. Regardless of whether you're lubricating pistol or rifle cases – do not drench the cases in lubricant. A light film of lubricant is sufficient.

### Toolhead Head Setup:

Pistol – go to page 12

Rifle – go to page 20

## PISTOL SECTION – Toolhead Set Up

To set up the toolhead you'll need to have empty brass, bullets, primers and powder on hand. (For your convenience Dillon Precision offers a wide variety of new primed and unprimed brass, bullets, primers and powder.) For easy access, place your brass in an open container. Dillon Precision also offers a variety of blue bin boxes which come in handy for this purpose.

### A. Station 1 – To install the size/decap die FIG 25:

**Warning:** Never attempt to de-prime live primers, an explosion may result in serious injury or even death.

1. Raise the platform, by lowering the handle all the way down.
2. Screw the sizing die into Station 1. Continue to screw the die down until it just touches the shellplate. Tighten the die locking finger tight. Now lower the platform by raising the handle to its upright position.
3. Place a case in the casefeed funnel. Here, the case drops to the casefeed arm bushing.
4. Raise the platform. The inserter cam pushes the feed arm bushing over the body, dropping the case onto the Station 1 locator.
5. Lower the platform. The case is inserted into Station 1.

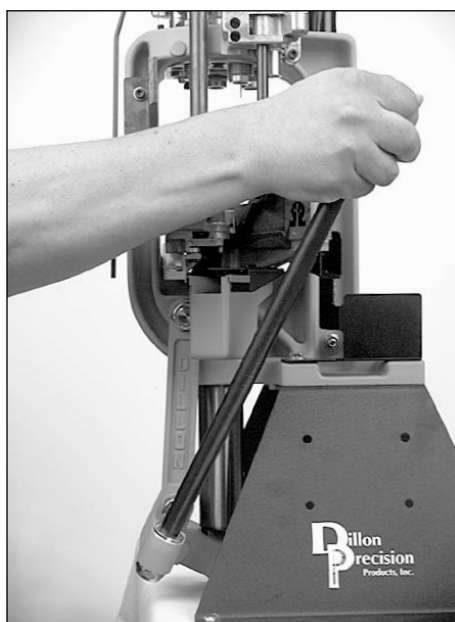


FIG 28

**Note:** After raising the handle, insure that you push the handle against its full aft stop FIG 28. This will insure that the case is fully inserted into Station 1.

**Note:** Also, when priming, pushing the handle against its full aft stop, FIG 28, will insure that the primer is fully seated.

6. Again, raise the platform. The case is now sized. If the case has a spent primer, it will be deprimed. Leave the platform in the raised position with the case fully inserted in the die. This will ensure that the die remains in alignment when tightening the locking.

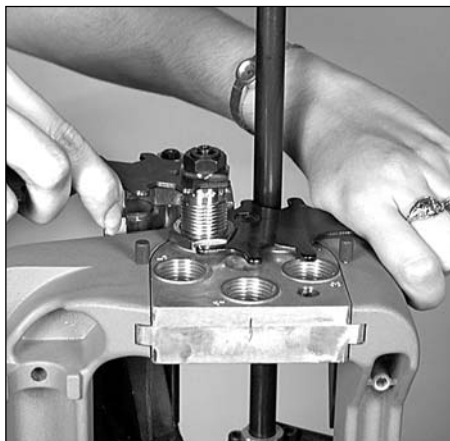


FIG 29

7. Using a 1-1/8" wrench to turn the locking and a 7/8" wrench to hold the die body, tighten the locking FIG 29.



FIG 30

### B. Station 1 – The decapping assembly FIG 30:

Dillon decapping assemblies are made with replaceable decap pins. One extra pin is included with each sizing die. To replace a bent or broken pin, simply:

1. Unscrew the decapping assembly from the top of the die FIG 30.

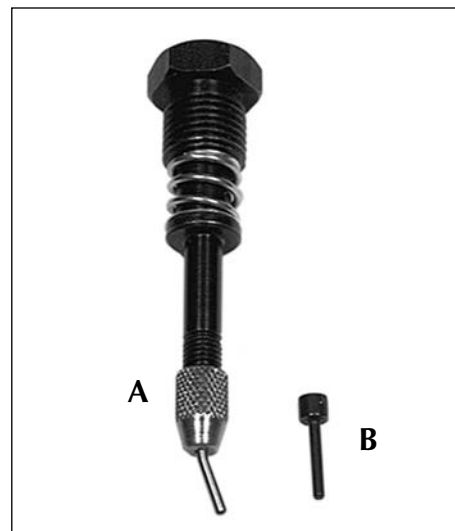


FIG 31

2. Unscrew the knurled retaining nut, see "A" FIG 31, remove the old pin and replace it with a new one, see "B" FIG 31.

3. Screw the decapping assembly back into the sizing die.

**Note:** The decapping assembly can be removed from the sizing die without affecting the adjustment of the sizing die or sizing operation.

**Note:** The decapping assembly must be removed when loading primed cases. (Tip: Check prices of components. You can often purchase primed cases for the price of the primers and new empty cases. Obviously, this is a good deal since you pay the same price and save time.)

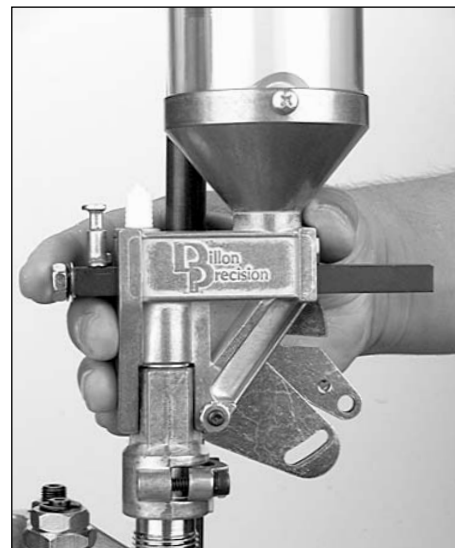
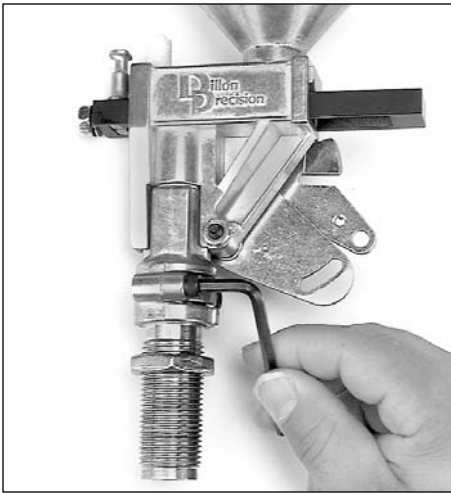


FIG 32

### C. Station 2 – Installation of powder measure assembly FIG 32:

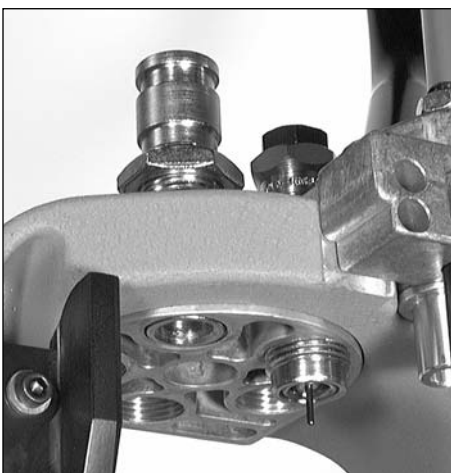


**FIG 33**



**FIG 34**

1. Use a 5/32" Allen wrench to loosen the two collar clamp screws and remove the powder die **FIG 33 & 34**.



**FIG 35**

2. Screw the powder die into Station 2. Stop when the die is flush with the bottom of the toolhead **FIG 35**.



**FIG 36**

3. Remove the powder funnel **FIG 36** from the bag containing the locator buttons.



**FIG 37**



**FIG 38**

**About Powder Funnels:**

In **FIG 37** are two examples of the many powder funnels available for the XL 650. On the left is a typical pistol caliber funnel. On the right, a rifle or bottle-necked

type. The bottom of the rifle-style funnel fits snugly over the neck of the case, allowing powder to drop in without spilling (the rifle-style powder funnel does not bell the mouth of the case). The bottom of the pistol funnel, on the other hand, fits inside and actually expands and bells as it guides the powder into the case. Powder funnels are caliber specific, so be sure you have the correct funnel by referring to the caliber conversion chart.

4. Insert the funnel into the die **FIG 38**. Make sure that you insert the funnel into the die with the grooved end up. The funnel should move up and down freely.



**FIG 39**

5. Remove the lid and the protective cardboard tube from the powder measure and place it onto the powder die **FIG 39**. Turn down the two clamp screws until they are snug. Then loosen them slightly. The measure should move freely atop the die.

**D. Station 2: About Powder Bars**

Dillon Precision manufactures four types of powder bars for the XL 650:

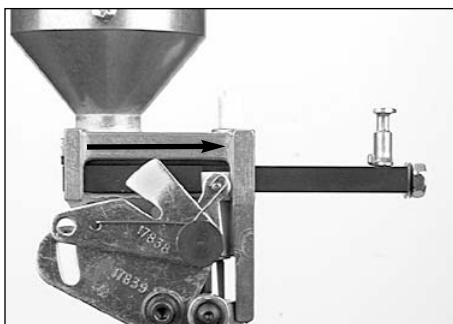
1. Extra Small – use for dropping less than 3 grains of powder.
2. Small – use for dropping 3 to 20 grains of powder.
3. Large – use for dropping 20 to approx. 45-50 grains of powder.
4. Magnum – use for dropping more than approx. 45-50 grains of powder.

The extra small powder bar is used when loading .32 Auto, .32 S&W and .32 SWL. Both the extra small powder bar and the magnum powder bar are non-standard items and are ordered separately. The large and small powder bar, on the other hand,

are standard equipment and are included with every XL 650. If you ordered your machine set up for a specific caliber, the proper size powder bar should already be installed. If you need to change the powder bar – refer to “**Powder Bar Adjustment**” in the Caliber Conversion Section on page 30.

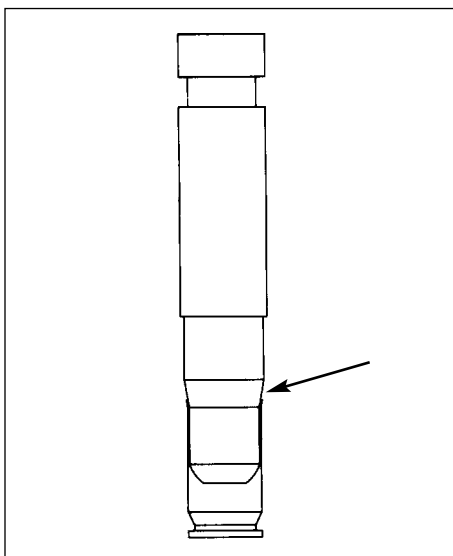
## E. Station 2 – Adjustment of Powder Die & Powder Funnel:

**Note:** Adjusting the powder die for a straight wall case is not the same as adjusting a powder die for a bottle-necked case. This is because straight wall cases are given a bell and bottle-necked cases are not given a bell. Adjusting the powder die for a bottle-necked case is covered in the rifle section.



**FIG 40**

For the powder bar to properly dispense a measured powder charge the powder bar must travel its full distance. To travel its full distance, the white cube must contact the powder measure body (see arrow FIG 40).



**FIG 41**

Also the belling process does not begin until after the powder bar has traveled its full distance. The angled portion on the bottom of

the powder funnel (see arrow FIG 41) is what bells the cartridge. Once the white cube has contacted the powder measure body the case is forced upward against the tapered portion of the powder funnel producing a bell. The more the powder die is adjusted down (clockwise) the more the case will be belled.

**Note:** If the powder die is not adjusted down far enough to cause the powder bar to travel its full distance the powder charge will be erratic and the case will not receive enough bell.

### To adjust the powder die/powder funnel:

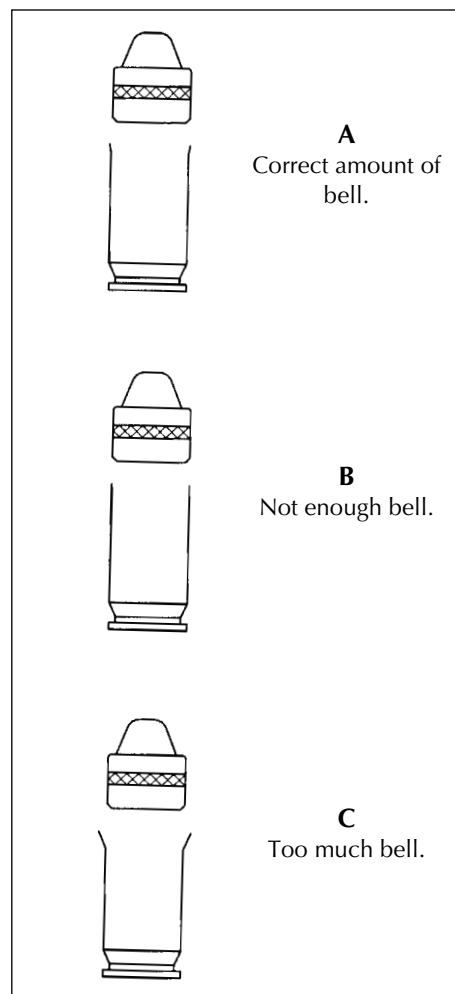
1. Drop a case into the casefeed funnel and cycle the handle. The case should now be in the shellplate at Station 1.
2. Raise the platform. Notice the resistance at the end of the downstroke. This is the resistance of the case in the sizing die. Lower the platform. The case will index to Station 2.
3. Raise the platform. Check to see how far the powder bar has traveled FIG 40.



**FIG 42**

4. If the white cube has not traveled its full distance, lower the platform just enough to pull the case off of the powder funnel (this will prevent the shellplate from indexing while you adjust the powder die). While holding the powder measure, turn the die down 1/8 of a turn FIG 42. Again raise the platform and observe the travel of the powder bar.

5. Repeat step four until the powder bar travels its full distance FIG 40.



**FIG 43**

Once the powder bar travels fully across you should continue to adjust the powder die for the desired amount of bell (turn the powder die 1/8 of a turn at a time). The desired amount bell is just enough to allow the bullet to sit on the case mouth without falling off and to keep the case from shaving lead during the seating process (see “A” FIG 43).

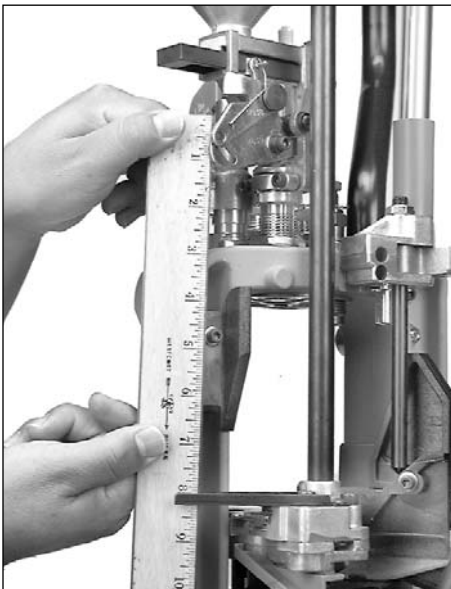
**Note:** If you screw the die down too far, the case will look like example “C” FIG 43. You must then discard this case, back the powder die off, by turning it counter-clockwise, and continue with a new sized case.

You’ll soon learn to judge the correct amount of bell by simply looking at it. In the meantime, you might want to use your dial calipers to check it. Twenty thousandths of an inch greater (at the mouth of the case) than its original diameter, should about do it.



**FIG 44**

6. Once you've achieved the desired amount of bell – with the case in Station 2, raise the platform. Run the locking down hand tight **FIG 44**.



**FIG 45**



**FIG 46**

7. Insure the bellcrank and the failsafe bracket **FIG 45** are aligned. Using a 5/32" Allen wrench, snug the collar clamp screws **FIG 46**.



**FIG 47**

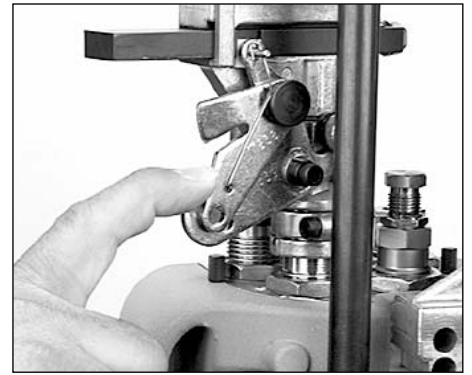
8. While holding the powder measure, snug the locking using a 1 1/8 wrench **FIG 47**. Now lower the platform.



**FIG 48**

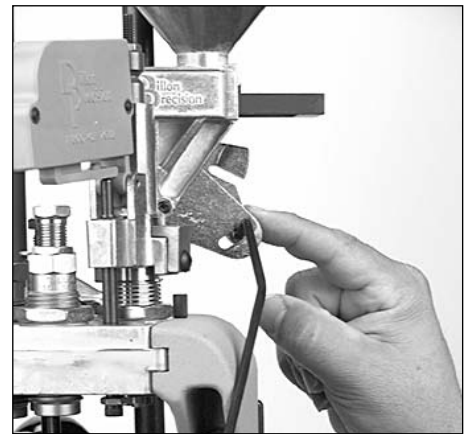
### F. Station 2 – Installation of the failsafe rod assembly **FIG 48**:

The purpose of the powder measure fail-safe rod is to return the powder bar to its recharge position.



**FIG 49**

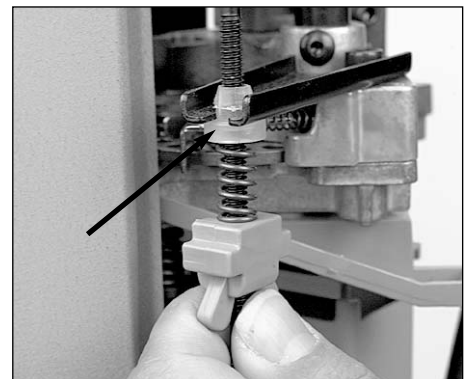
1. Using your forefinger, move the lock-link (#17838) down to align the hole with the slot on the Powder Measure bellcrank (#97034) **FIG 49**.



**FIG 50**

2. Insert the rod (#13629) through the holes **FIG 50**.

3. Loosen the blue plastic wing nut (#13799).



**FIG 51**

4. Slide the failsafe rod into the failsafe return bracket. Push the shoulder washer up into place (see arrow **FIG 51**) and tighten the blue plastic wing nut until the spring just touches the underside of the bracket.

**Note:** Do not fill the powder measure or adjust the powder bar until the rest of the dies are installed and adjusted.



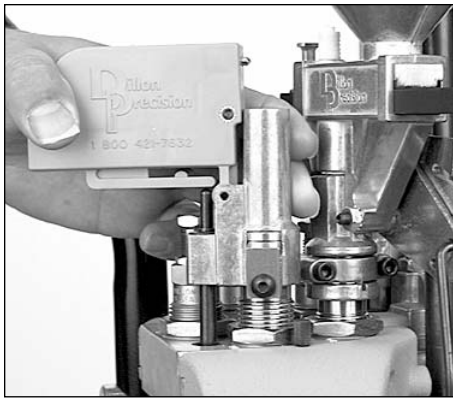


FIG 52

**G. Station 3 – Installation of the Powder Check System**  
**FIG 52:**

**Note:** The powder check system does not guarantee the accuracy of the powder charge. It is designed to warn you if the powder charge is grossly out of tolerance, i.e., no powder or a double charge.

**Warning:** A double-charged round (a loaded round with twice as much powder as it should have) can damage your gun as well as cause bodily injury.

**Warning:** A round loaded without powder can also damage your gun as well as cause bodily injury. If a round without powder is fired in your gun, the detonation of the primer will push the bullet part way down the barrel. If the lodged bullet is not removed before another round is fired, the gun will be damaged and bodily injury may occur.

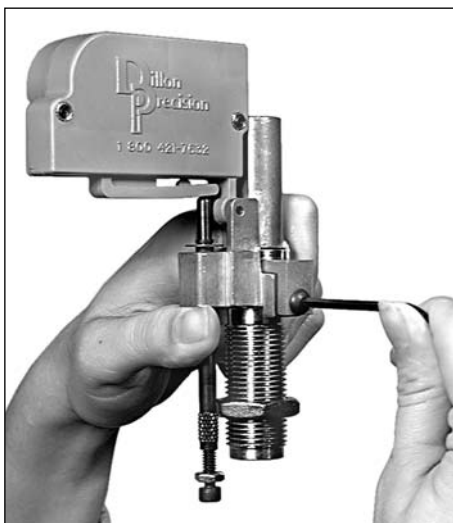


FIG 53

1. Loosen the die clamp screw **FIG 53** and remove the die.

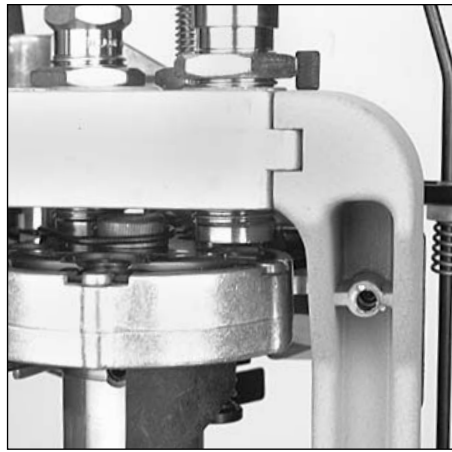


FIG 54

2. Raise the platform and screw the powder check die into Station 3. There should be a 1/8 to 1/4 inch space between the shellplate and the bottom of the die **FIG 54**.



FIG 55

3. Run the locking down. Using a 1 1/8" wrench snug the locking **FIG 55**.

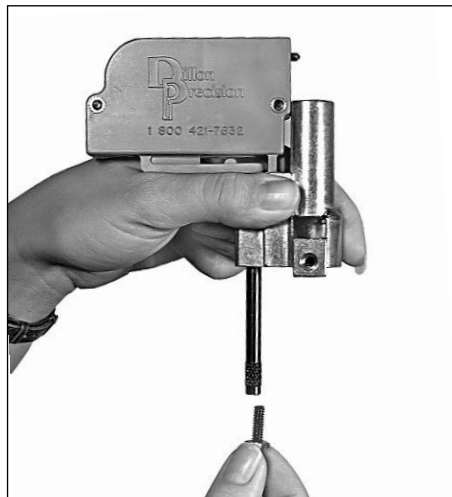


FIG 56

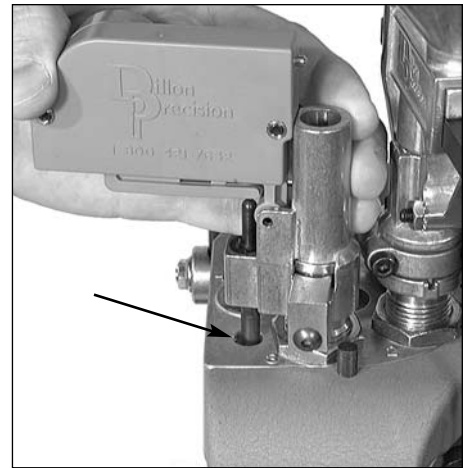


FIG 57

4. Remove the 10-24 screw and nut from the black push rod **FIG 56** and place the powder check system on the powder check die **FIG 57**. Center the black push rod (see arrow **FIG 57**) in the hole that is to the left of the die.

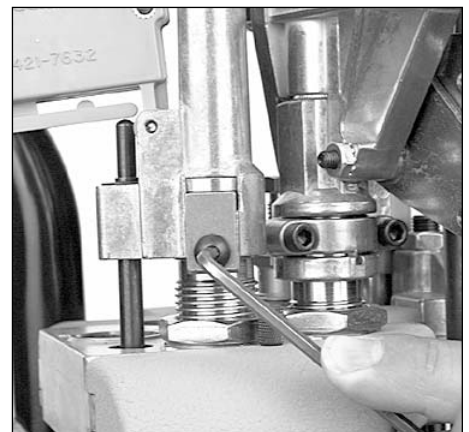


FIG 58

5. Reinstall and snug the die clamp screw **FIG 58**.

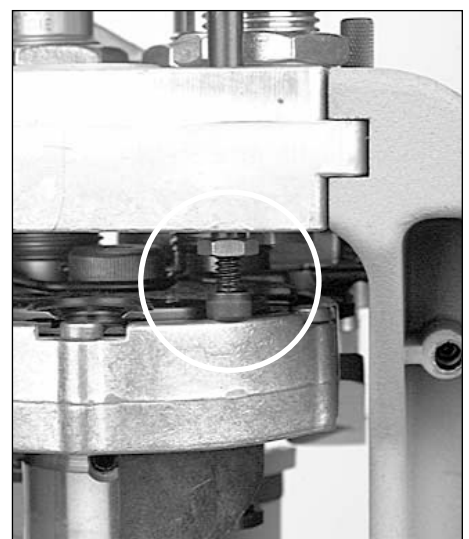
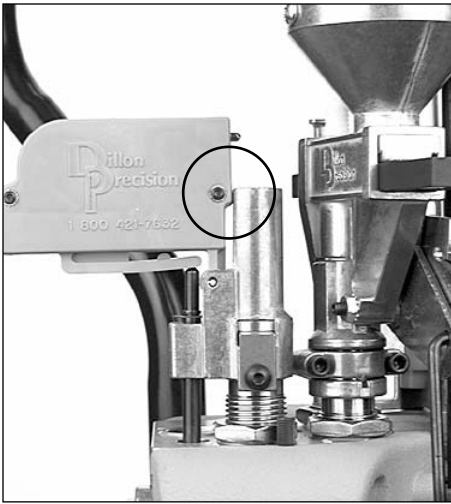
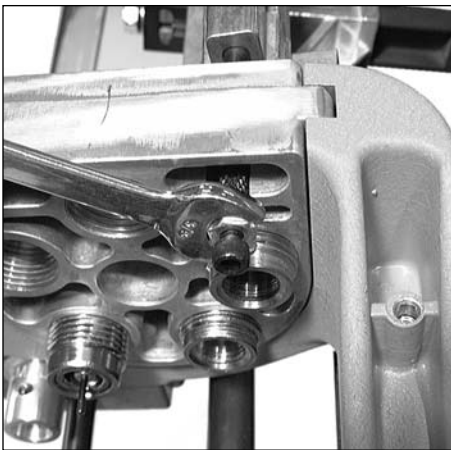


FIG 59



**FIG 60**

6. FIG 59 Screw the 10-24 screw and nut fully into the rod. Raise the platform. Unscrew the 10-24 screw until it contacts the edge of the platform FIG 59. Lower the platform part way and unscrew the screw (counter-clockwise) until raising the platform causes the buzzer housing to gently rock into the side of the die collar FIG 60.



**FIG 61**

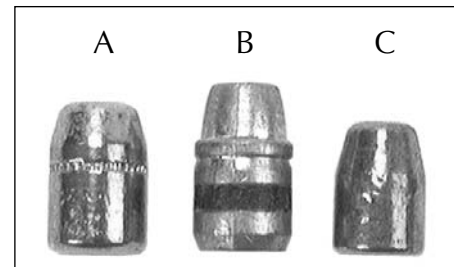
7. Secure the jam nut by holding the black push rod while tightening it using a 3/8" wrench FIG 61.

**Note:** Once you've adjusted the powder bar for the desired powder charge, adjustment of the powder check system can be completed.

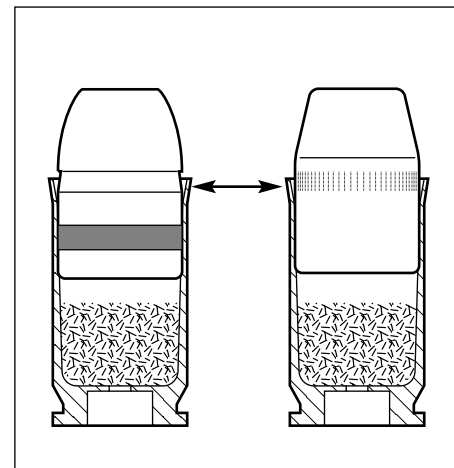
## H. Station 4 – General Information on Bullet Seating



**FIG 62**



**FIG 63**



**FIG 64**

The purpose of the seating die FIG 62 is to insert the bullet into the case and to push it down into the case the proper amount.

How far the bullet is pushed into the case will determine the overall length (OAL). Several factors go into determining the proper OAL – such as, the maximum recommended OAL, listed in the reloading manual, and the type of bullet being loaded. The type of bullet can determine the OAL in one of two ways. If the bullet has what is called a cannelure, or crimping groove (items A&B in FIG 63), this will determine the proper OAL. If the bullet

you're using doesn't have a cannelure or a crimping groove (item C in FIG 63), then you'll need to refer to your reloading manual for the suggested OAL. The purpose of the cannelure and crimping groove is to secure the bullet by giving the mouth of the case a place to go (without deforming the bullet) when being crimped. When the bullet is properly seated, the mouth of the cartridge case should be near the top of the cannelure/crimping groove FIG 64.

Refer to your reloading manual. Under the section specified for the caliber you're loading, you'll find a schematic of the cartridge. For example, .38 Special lists a maximum OAL of 1.55" (Lyman Reloading Handbook). If you're seating the bullet to the cannelure/crimping groove, the OAL should be well within the maximum OAL listed, however, use a set of dial calipers to check it. (Dial calipers are available from Dillon Precision). If the bullet you're using doesn't have a cannelure/crimping groove, refer to the specific type of bullet you're using in the reloading manual. For example – if you're loading a 158gr 38sp JHP and it doesn't have a cannelure/ crimping groove, use the suggested OAL of 1.480 (Lyman Reloading Handbook).





FIG 65

### I. Station 4 – Seating Stems for pistol FIG 65

All pistol seating dies come with interchangeable seating stems. The seating stem you should use will depend on the shape of the bullet you're loading. Three different types of seating stems may be available – wadcutter, semi-wadcutter and round nose. Check to make sure that the seating stem installed in your seating die matches the bullet you are loading.

Dillon seating dies, which are being used in this manual, are easily disassembled. Simply remove the hitch pin from the top and slide the seating stem out FIG 65. Replace the seating stem and reassemble the die.

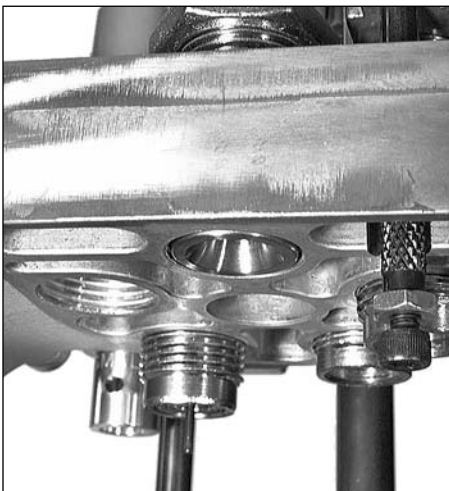


FIG 66

### J. Station 4 – Installation and Adjustment of the Seating Die:

1. Take the seating die from the die box and screw it into Station 4. Screw the die down until the bottom of the die is flush with the bottom of the toolhead FIG 66. Note: At this point the die will not be screwed down far enough to begin seating the bullet, but it will give you a place to start.
2. Place a case (with a belled case mouth) into Station 4.
3. Place a bullet on the belled case mouth and raise the platform. Then, lower the platform just enough to inspect the bullet without indexing the shellplate. If the bullet is not seated deep enough, screw the seating die down 1/2 turn at a time. As a guide, one full turn moves the die down about 70 thousandths of an inch, about the thickness of a nickel. Again, cycle the machine and inspect the seating depth. Repeat these steps as necessary until the correct overall length is achieved. Use a dial caliper or equivalent to measure the overall length of the cartridge. Check the overall length of the round against the information in your reloading manual.



FIG 67

4. Once you have obtained the proper OAL, replace the cartridge into Station 4 and raise the platform. Using a 1-1/8" wrench to turn the locking and a 7/8" wrench to hold the die body, snug the locking FIG 67.

**Note:** If you should happen to seat the bullet too deep, you can use a Dillon bullet puller to reclaim your components.

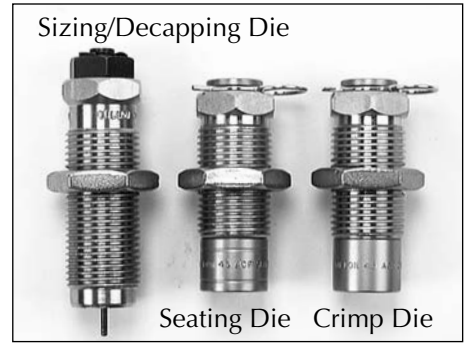


FIG 68

### K. Station 5 – Installation and adjustment of the Crimp Die FIG 68:

1. Screw the crimp die into Station 5. Screw it down until it is flush with the bottom of the toolhead. This is a good starting point for the crimp adjustment.
2. Place a cartridge with a properly seated bullet into Station 5.

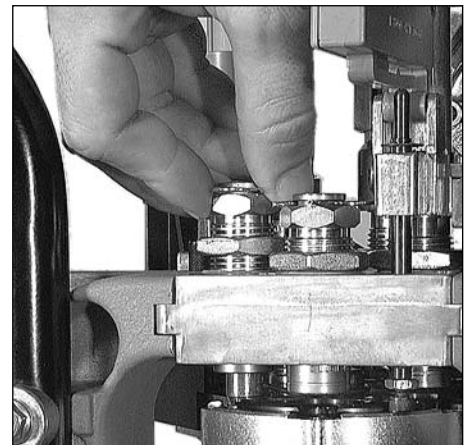
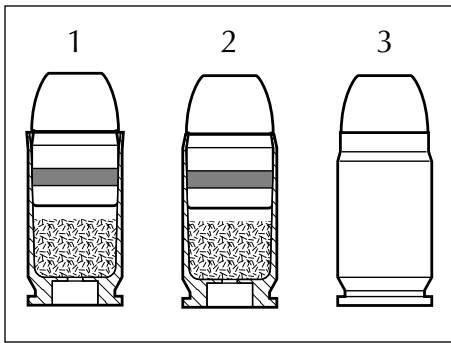


FIG 69

3. Raise the platform and continue to screw the die down until it touches the cartridge FIG 69.
4. Lower the platform and give the die an 1/8 turn down, again raise the platform.
5. Lower the platform halfway and inspect the cartridge. If the bell is still present, or the desired amount of crimp has not been achieved, give the die a 1/8 turn down and try again. Continue making small adjustments to your crimp die until the desired amount of crimp has been achieved.
6. Once the adjustment is complete, place the case back into Station 5 and raise the platform. Using a 1-1/8" wrench to turn the locking and a 7/8" wrench to hold the die body, snug the locking.



**FIG 70**

**Note: FIG 70** When adjusting the crimp die it is important to know what to look for. Check that the crimp: Looks OK, allows your firearm to function consistently and the bullet feels tight in the case.

The drawing of case #3 **FIG 70** is a depiction of a case that has been over crimped by adjusting the crimp die down (clockwise) too far. Note the defined line below the mouth of the case and the bulge below the line. This is not a proper crimp. This line is the direct result of the cartridge being over crimped. A line like this will only appear if the crimp die is adjusted down too far. *Warning: Over crimping .45ACP, .38 Super, 9mm, etc., can actually cause the bullet to be loose in the case.*

**Go to Loading Components  
Section – Page 30**

# RIFLE SECTION –

## Toolhead Set Up

To set up the toolhead you'll need to have your empty brass on hand. For your convenience Dillon Precision offers a wide variety of new primed and unprimed brass. For easy access, place your brass in an open container. Dillon Precision also offers a variety of blue bin boxes which come in handy for things like this.



FIG 71

### A. Station 1 – About the Case Gage FIG 71:

To install and adjust a sizing/decapping die you must have a case gage and know how to use it. The sizing die shapes the case. If the case doesn't have the proper shape it won't fit properly in the chamber of the rifle. The purpose of the case gage is to determine whether or not the case has the proper shape, which in turn will tell you if your sizing die is properly adjusted.

**Note:** Case gages are caliber specific.

### B. Station 1 – How to use the Case Gage:

The way the case gage works is this: Once you've made a preliminary adjustment to your sizing die drop the sized case all the way into the case gage FIG 72. Look at the base of the case.

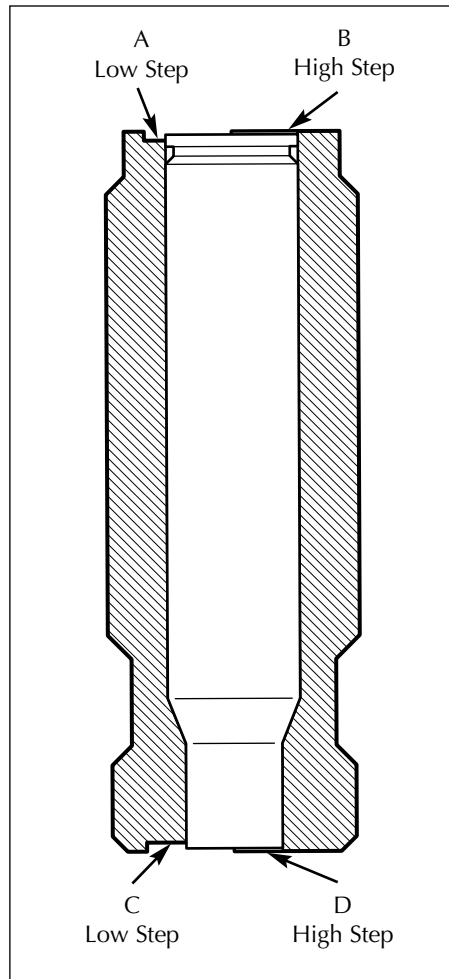


FIG 72

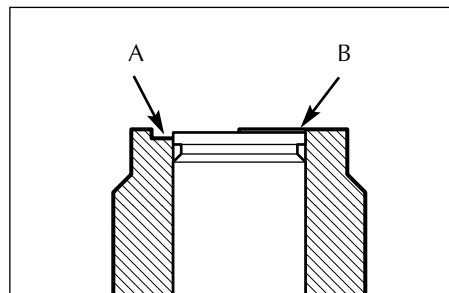


FIG 73

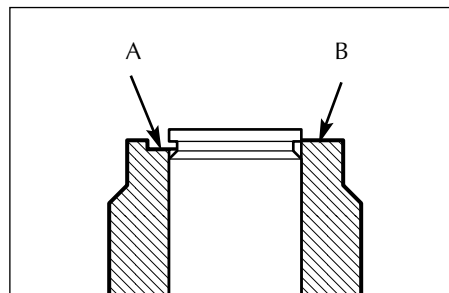


FIG 74

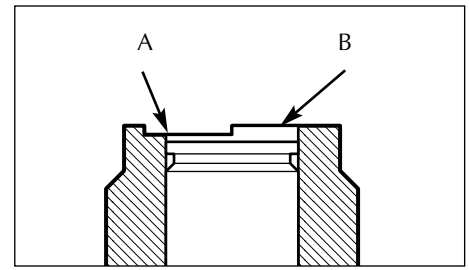


FIG 75

If the base of the case is below the high step (see "B" FIG 73) and above the low step (see "A" FIG 73) then the sizing die is properly adjusted. If the base of the case is above the high step FIG 74 then you will need to adjust the sizing die down by turning it clockwise.

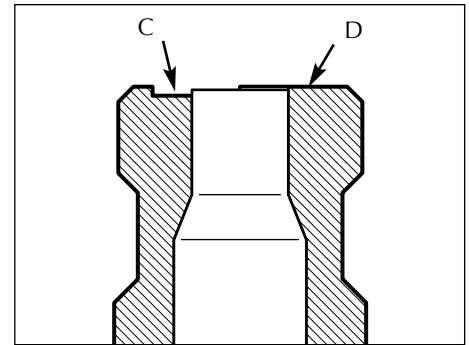


FIG 76

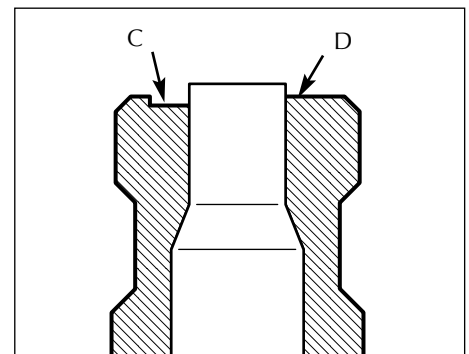


FIG 77

If the base at the case is below low step FIG 75 then the sizing die is adjusted down too far and needs to be backed out by turning it counter-clockwise (Note: this case should be thrown away). Once the sizing die is properly adjusted, drop the properly sized case back into the case gage and look at the mouth of the case FIG 76. If the case mouth is below the high step (see "C" FIG 76) and above the low step (see "D" FIG 76) then the case is the proper length and will not need to be trimmed. If the case mouth is above the high step FIG 77 then the case mouth needs to be trimmed in order to reduce the overall length of the case. If you find that your cases need to be trimmed, Dillon Precision offers two types of case trimmers.



FIG 78



FIG 79

**C. Station 1 – Installation and adjustment of the sizing/decapping die FIG 78:**

**Warning:** Never attempt to de-prime a live primer, an explosion may result causing serious injury or even death.

**Note:** Whenever sizing a bottle-necked case you must lubricate the case first, otherwise you will stick the case inside the sizing die. For more information refer to the section “Lubricating Your Brass” (page 11).

1. Raise the platform, by lowering the handle all the way.
2. Install the sizing die by screwing it into Station 1 FIG 79. Continue to screw the die down until the mouth of the die is about the thickness of a dime away from the shellplate. Lower the platform by raising the handle to its upright position.



FIG 80

3. Drop a lubricated case into the case-feed funnel FIG 80. Here the case drops to the casefeed arm bushing.
4. Raise the platform. The inserter cam pushes the feed arm bushing over the body, dropping the case onto the Station 1 locator.
5. Lower the platform. The case is inserted into Station 1.

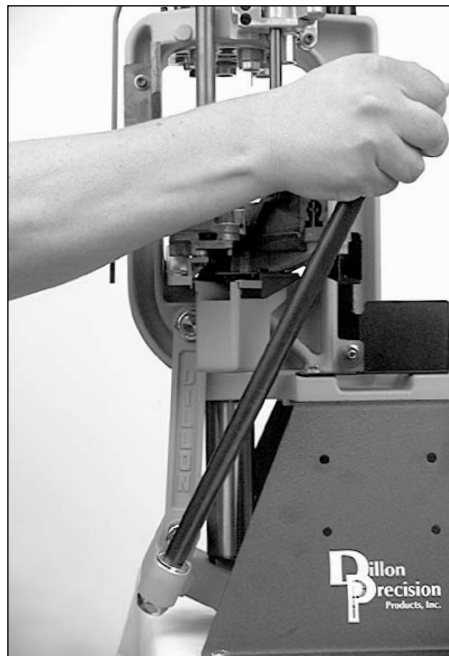


FIG 81

**Note:** After raising the handle, insure that you push the handle against its full aft stop FIG 81. This will insure that the case is fully inserted into Station 1.

**Note:** When priming, pushing the handle against its full aft stop will insure that the primer is fully seated.

6. Again raise the platform. The case is now sized. If the case has a spent primer, it will be deprimed. Notice the resistance at the end of the downstroke. This is the resistance of the case in the sizing die. Lower the platform. The case will index to Station 2.
7. Remove the case from Station 2 and place it in the case gage. From this point – follow the instructions provided under “Rifle Section B. Station 1 – How to use the Case Gage.”
8. Once the sizing die is properly adjusted, replace the case into Station 1 and raise the platform. Leave the platform in the raised position with the case fully inserted in the die. This will ensure that the die remains in position when tightening the locking.

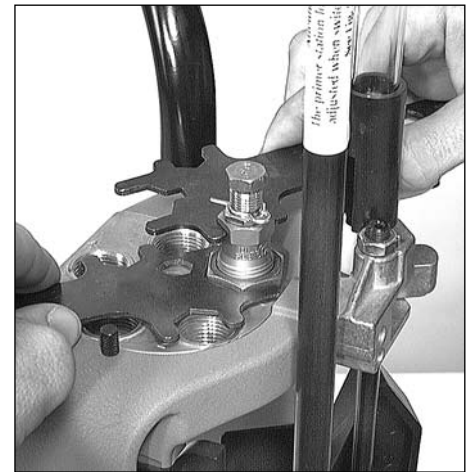


FIG 82

9. Run the locking down until it contacts the toolhead. Using a 1 1/8” wrench to turn the locking and a 3/4” wrench to hold the die body, snug the locking FIG 82.

## D. Station 1 – The decapping assembly FIG 78:

Dillon decapping assemblies are made with replaceable decap pins. One extra pin is included with each sizing die. To replace a bent or broken pin, simply:



**FIG 83**

1. Unscrew the decapping assembly from the top of the die **FIG 83**.



**FIG 84**

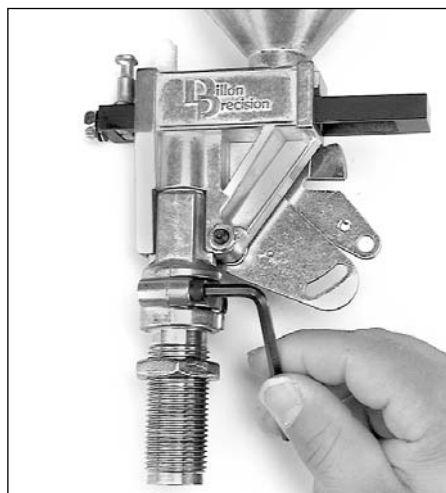
2. Unscrew the decapping pin (see **arrow FIG 84**), and replace it with a new one.
3. Screw the decapping assembly back into the sizing die.

**Note:** The decapping assembly can be removed from the sizing die without affecting the adjustment of the sizing die or sizing operation.

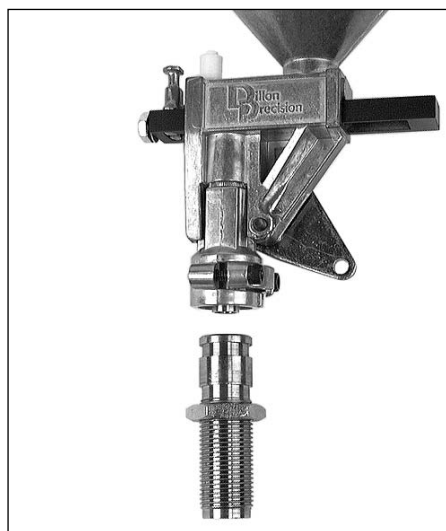
**Note:** The decapping assembly must be removed when loading primed cases.



**FIG 85**



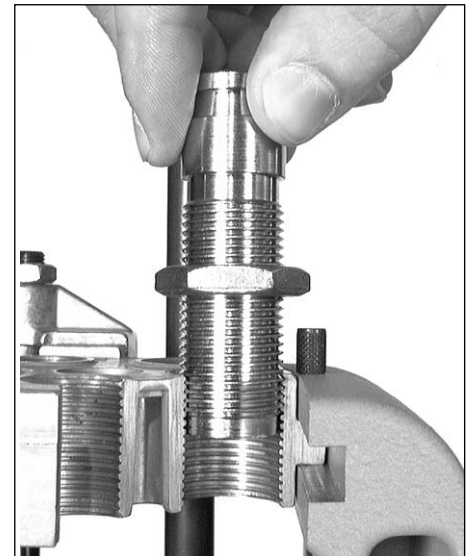
**FIG 86**



**FIG 87**

## E. Station 2 – Installation of powder measure assembly FIG 85:

1. Using a 5/32" Allen wrench, loosen the two collar clamp screws and remove the powder die **FIG 86 & 87**.



**FIG 88**

2. Thread the powder die into Station 2. Screw it down about halfway **FIG 88**.



**FIG 89**

3. Remove the powder funnel from the bag containing the brass locator buttons **FIG 89**.



FIG 90

In FIG 90 are two examples of the many powder funnels available for the XL 650. On the left is a typical pistol caliber funnel. On the right, a rifle or bottle-necked type. The bottom of the rifle style funnel fits snugly over the neck of the case allowing powder to drop in without spilling (the rifle style powder funnel does not bell the mouth of the case). The bottom of the pistol funnel, on the other hand, fits inside and actually expands the case mouth as it guides the powder into the case (the expansion of the case mouth is where the mouth of the case gets its bell). Powder funnels are caliber specific so be sure you have the correct funnel by referring to the caliber conversion chart.

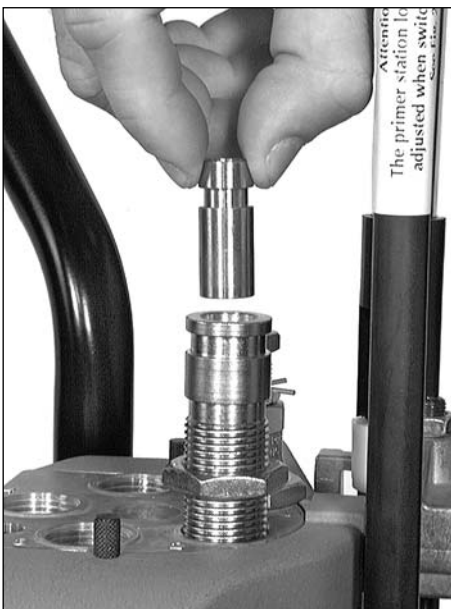


FIG 91

4. Insert the funnel into the die FIG 91. Regardless of whether you're using a rifle or pistol powder funnel, make sure that you insert the funnel into the die with the grooved end up. It should move up and down freely.



FIG 92

5. Remove the lid and the protective cardboard tube from the powder measure and place it onto the powder die FIG 92. Turn down the two clamp screws until they are snug. Then loosen them slightly. The measure should move freely atop the die.

### F. Station 2 – About powder bars:

Dillon Precision manufactures four types of powder bars for the XL 650:

1. Extra Small – use for dropping less than 3 grains of powder.
2. Small – use for dropping 3 to 10 grains of powder.
3. Large – use for dropping 10 to approx. 45-50 grains of powder.
4. Magnum – use for dropping more than approx. 45-50 grains of powder.

The extra small powder bar is used when loading .32 Auto, .32 S&W and .32 SWL. Both the extra small powder bar and the magnum powder bar are non-standard items and are ordered separately. The large and small powder bar, on the other hand, are standard equipment and are included with every XL 650. If you ordered your machine set up for a specific caliber, the proper size powder bar should already be installed. If you need to change out the powder bar – refer to “Powder Bar Adjustment” in the Caliber Conversion Section on page 30.

### G. Station 2 – Adjustment of Powder Die/Powder Funnel

**Important:** Adjusting the powder die for a bottle-necked case is **not** the same as adjusting the powder die for straight-walled cases. This is because bottle-necked cartridges are **not** given a bell – straight-walled cases are given a bell. For straight-walled cartridges refer to the pistol section.

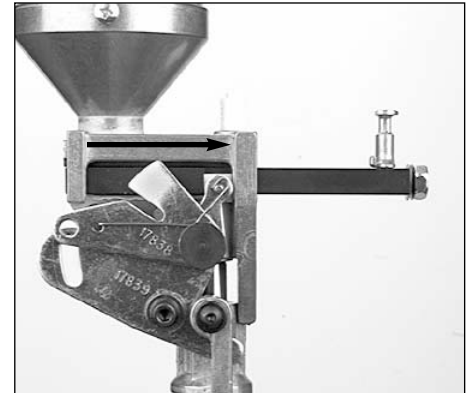


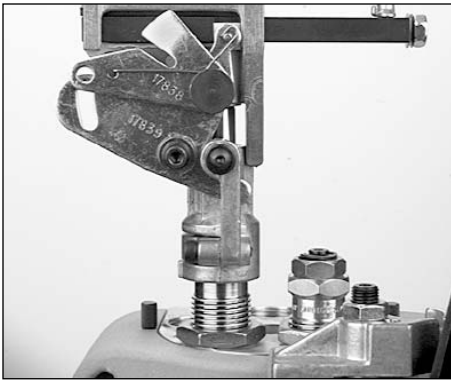
FIG 93

For the powder bar to properly dispense a measured powder charge, the powder bar must travel its full distance. To travel its full distance, the white cube must contact the powder measure body (see arrow FIG 93).

When adjusting the powder die for a bottle-necked cartridge, the objective is to adjust the powder die so that the powder bar just travels the full distance and no further (see arrow FIG 93). If you try to apply the procedures used for belling a straight walled case, as when loading pistol cartridges, you will crush the bottle-necked case and possibly damage the powder measure.

**Note:** If the powder die is not adjusted down far enough to cause the powder bar to travel its full distance the powder charge will be erratic.

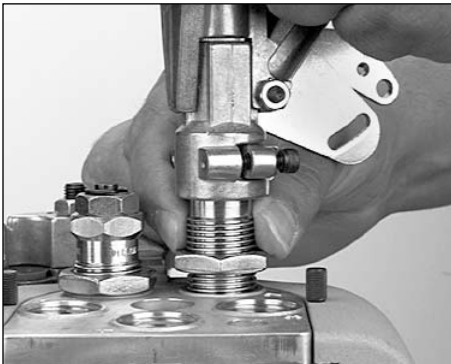
**Note:** Whenever sizing a bottle-necked case you must lubricate the case first, otherwise you will stick the case inside the sizing die. For more information refer to the section “Lubricating Your Brass” (page 11).



**FIG 94**

**To adjust the powder die/powder funnel:**

1. Drop a lubricated case into the case-feed funnel and cycle the handle. The case should now be in the shellplate at Station 1.
2. Raise the platform. Notice the resistance at the end of the downstroke. This is the resistance of the case in the sizing die. Lower the platform. The case will index to Station 2.
3. Raise the platform. Check to see how far the powder bar has traveled **FIG 94**.



**FIG 95**

4. If the white cube has not traveled its full distance, lower the platform just enough to pull the case off of the powder funnel (this will prevent the shellplate from indexing while you adjust the powder die). While holding the powder measure, turn the die down 1/8 of a turn **FIG 95**. Again raise the platform and observe the travel of the powder bar.
5. Repeat step four until the powder bar travels its full distance **FIG 94**.

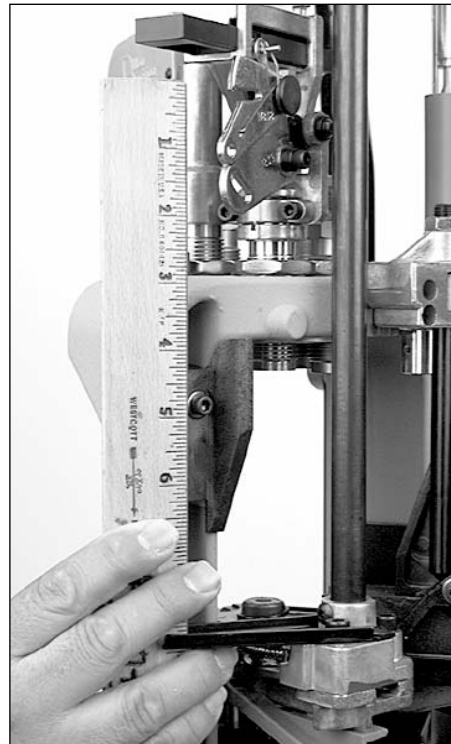
**Note:** If you screw the powder die down too far, the powder bar will travel its full distance before the handle is all the way down. If this happens – DO NOT FORCE THE HANDLE DOWN. Instead lower the platform and back the powder die out by

turning it counter-clockwise. If you force the handle, you will crush the case and possibly damage the powder measure.

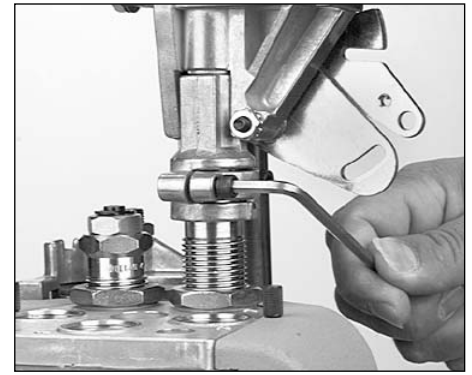


**FIG 96**

6. Once the powder bar is traveling its full distance – with the case in Station 2 – raise the platform. Run the locking down hand tight **FIG 96**.



**FIG 97**



**FIG 98**

7. Insure the bellcrank and the failsafe bracket are aligned, **FIG 97**. Using a 5/32" Allen wrench snug the collar clamp screws, **FIG 98**.



**FIG 99**

8. While holding the powder measure, snug the locking using a 1 1/8" wrench **FIG 99**. Now lower the platform.





FIG 100

### H. Station 2 – Installation of the failsafe rod assembly FIG 100:

The purpose of the powder measure fail-safe rod is to return the powder bar to its recharge position.

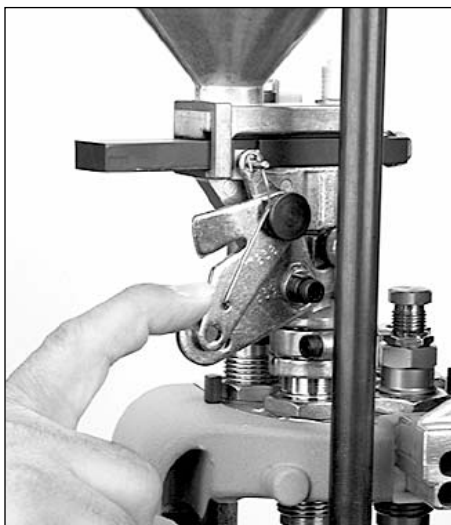


FIG 101

1. Using your forefinger, move the lock-link down to align the hole with the slot on the Powder Measure bellcrank FIG 101.

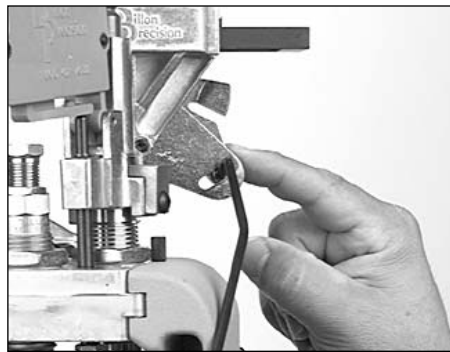


FIG 102

2. Insert the rod (#13629) through the holes FIG 102.
3. Loosen the blue plastic wing nut (#13799) FIG 102.

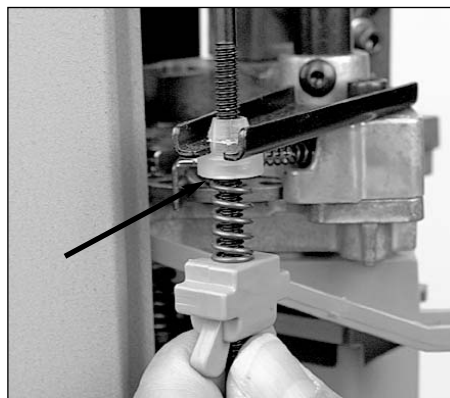


FIG 103

4. Slide the failsafe rod into the failsafe return bracket. Push the shoulder washer up into place (see arrow FIG 103) and tighten the blue plastic wing nut until the spring just touches the underside of the bracket.

**Note:** The powder measure is filled and the powder bar is adjusted after installing and adjusting the rest of the dies.

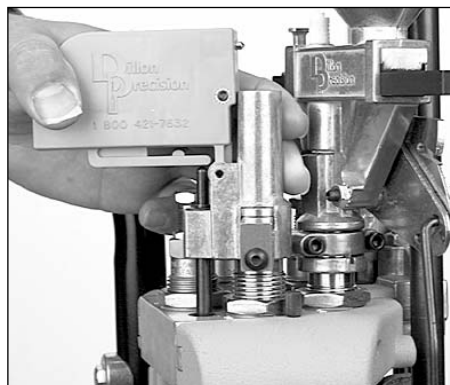


FIG 104

### I. Station 3 – Installation of the Powder Check System FIG 104:

**Note:** The powder check system does not guarantee the accuracy of the powder charge. It is designed to warn you if the powder charge is grossly out of tolerance, i.e., no powder or a double charge.

**Warning:** A double-charged round (a loaded round with twice as much powder as it should have) can damage your gun as well as cause bodily injury.

**Warning:** A round loaded without powder can also damage your gun as well as cause bodily injury. If a round without powder is fired in your gun, the detonation of the primer will push the bullet part way down the barrel. If the lodged bullet is not removed before another round is fired, the gun will be damaged.

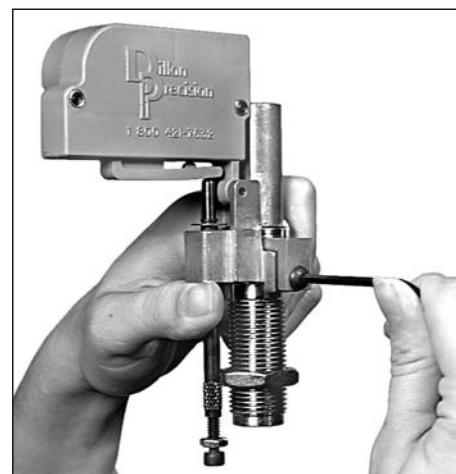


FIG 105

1. Loosen the die clamp screw FIG 105 and remove the die.

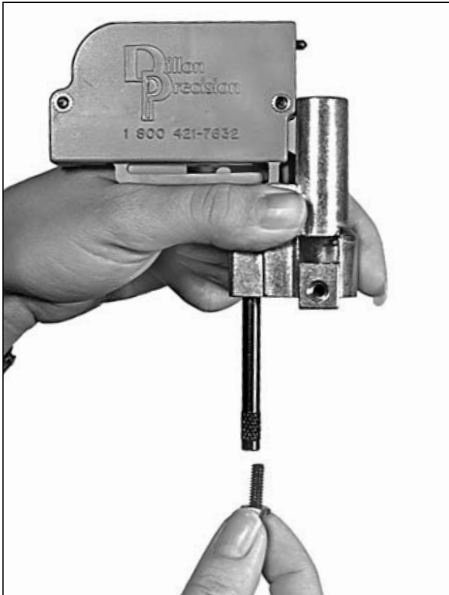


FIG 106

2. Raise the platform and screw the powder check die into Station 3 and raise the platform. There should be a 1/8 to 1/4 inch space between the shellplate and the bottom of the die FIG 106.



3. Run the locking down. Using a 1-1/8" wrench snug the locking.



**FIG 107**



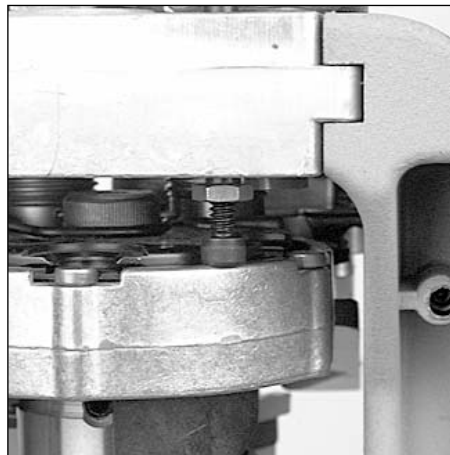
**FIG 108**

4. Remove the 10-24 screw and nut from the black push rod **FIG 107** and place the powder check system on the powder check die **FIG 108**. Center the black push rod (see arrow **FIG 108**) in the hole that is to the left of the die.

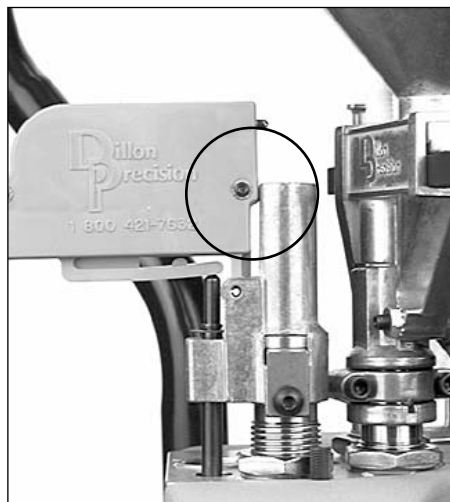


**FIG 109**

5. Reinstall and snug the die clamp screw **FIG 109**.



**FIG 110**



**FIG 111**

6. **FIG 110** Screw the 10-24 screw and nut fully into the rod. Raise the platform. Unscrew the 10-24 screw until it contacts the edge of the platform **FIG 110**. Lower the platform part way and unscrew the screw (counter-clockwise) until raising the

platform causes the buzzer housing to rock into the side of the die collar **FIG 111**.



**FIG 112**

7. Secure the jam nut by holding the black push rod while tightening it using a 3/8" wrench **FIG 112**.

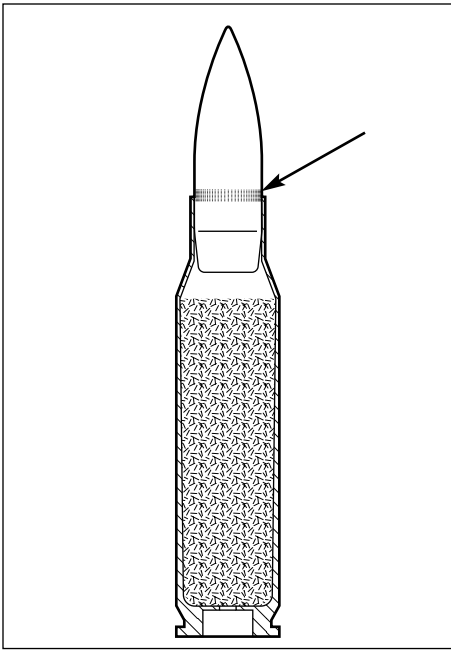
**Note:** Once you've adjusted the powder bar for the desired powder charge – installation and adjustment of the powder check system can be completed.

#### **J. Station 4 – How to determine the proper seating depth:**

Before installing and adjusting the seating die you'll need to know how to determine the proper seating depth. How far the bullet is seated into the case will determine the overall length (OAL). Several factors go into determining the proper OAL – such as, the maximum recommended OAL, listed in the reloading manual, and the type of bullet being loaded. The type of bullet can determine the OAL by one of two ways. If the bullet has what is called a cannelure, **FIG 113**, this will determine the proper OAL.



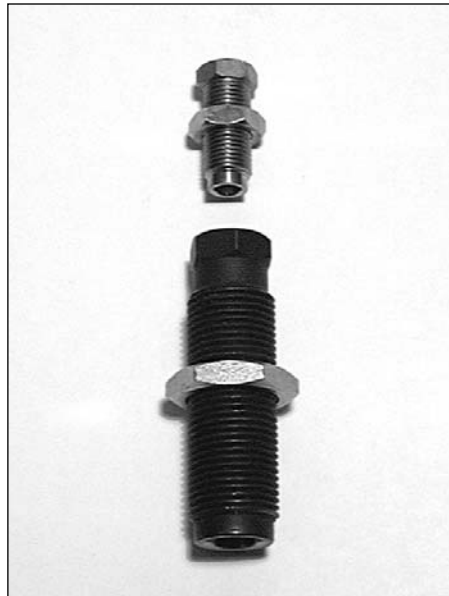
**FIG 113**



**FIG 114**

If the bullet you're using doesn't have a cannelure, then you'll need to refer to your reloading manual for the suggested OAL. The purpose of the cannelure is to secure the bullet by giving the mouth of the case something to dig into when being crimped. When the bullet is properly seated, the mouth of the cartridge case should be in the middle of the cannelure, see arrow **FIG 114**.

Refer to your reloading manual. Under the section specified for the caliber you're loading, you'll find a schematic of the cartridge. For example, .30-06 lists a maximum OAL of 3.340" (Lyman Reloading Handbook). If you're seating the bullet to the cannelure, the OAL should be well within the maximum OAL listed, however, use a set of dial calipers to check it. (Dial calipers are available from Dillon Precision). If the bullet you're using doesn't have a cannelure, refer to its specific type in the reloading manual. For example – if you're loading a .30-06 180 gr. JHPBT, and it doesn't have a cannelure, use the suggested OAL of 3.280 (Lyman Reloading Handbook).



**FIG 115**

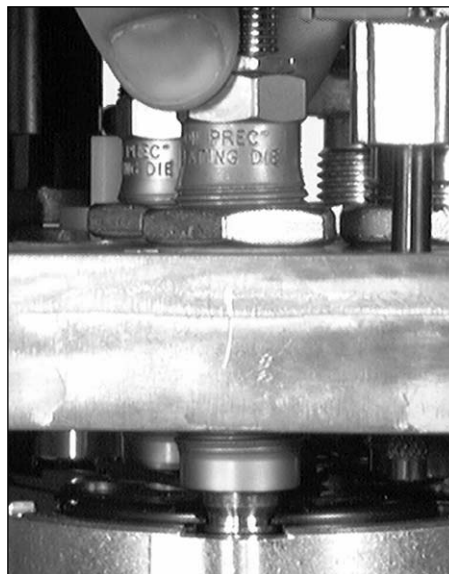
### **K. Station 4 – Seating Stem for rifle FIG 115:**

Unlike pistol seating dies, rifle seating dies come with only one type of seating stem.

Dillon seating dies, which are being used in this manual, are easily disassembled. Should you need to disassemble the rifle seating die – simply unscrew the seating stem from the top of the seating die **FIG 115**.

### **L. Station 4 – Installation and Adjustment of the Seating Die**

1. Place a lubricated sized case into Station 4 and raise the platform.

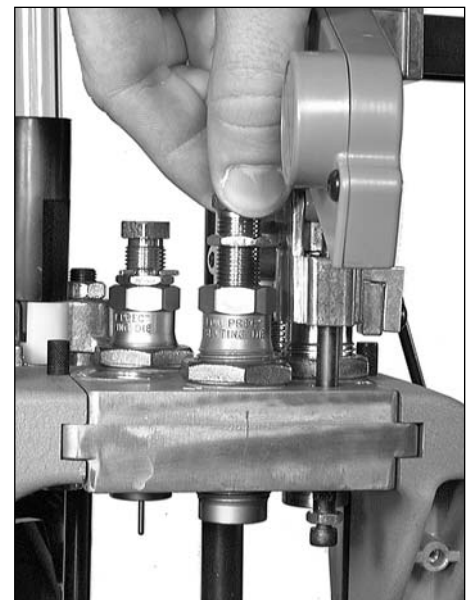


**FIG 116**

2. Thread the seating die into Station 4. Continue to screw it down until it contacts the case **FIG 116**. Once the die is in contact with the case back the die off (counter-clockwise) 1/4 of a turn. Using a 1 1/8" wrench snug the locking on the seating die.



**FIG 117**

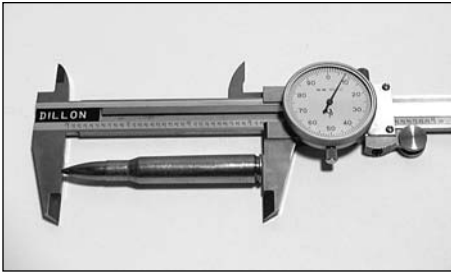


**FIG 118**

3. Lower the platform.
4. **FIG 117** Back the seating stem all the way out of the seating die. Now screw the seating stem back into the seating die two full turns **FIG 118**.
5. Place a bullet on the case mouth and raise the platform – then lower the platform just enough to inspect the bullet without indexing the shellplate.
  - a. If the bullet is not pushed down far enough – go to step 6.
  - b. If the bullet is pushed down too far:
    - b.1. Pull the bullet from the case using a Dillon bullet puller.
    - b.2. Back the seating stem out by

turning it counter clockwise and try again.

6. Screw the seating stem down 1/2 turn at a time **FIG 118**.



**FIG 119**

7. Repeat as necessary until the correct overall length is achieved. Use a dial caliper or equivalent to measure the overall length of the cartridge **FIG 119**. Check the overall length of the round against the information in your reloading manual.



**FIG 120**

8. Once you have obtained the proper OAL, replace the cartridge into Station 4, raise the platform and snug the lockring on the seating stem **FIG 120**.



**FIG 121**

## M. Station 5 – Installation and adjustment of the Crimp Die **FIG 121:**

1. Screw the crimp die into Station 5. Screw it down until it is flush with the bottom of the toolhead. This is a good starting point for the crimp adjustment.
2. Place a lubricated cartridge with a properly seated bullet into Station 5.
3. Raise the platform and continue to screw the die down until it stops.
4. Lower the platform and give the die a half turn down; again, raise the platform.
5. Lower the platform halfway and inspect the cartridge. If the desired amount of crimp has not been achieved, give the die a 1/4 turn down and try again. Continue making small adjustments to your crimp die until the desired amount of crimp has been achieved.
6. Once the adjustment is complete, place the case back into Station 5 and raise the platform. Using a 1 1/8" wrench to turn the lockring and a 7/8" wrench to hold the die body, snug the lockring.

## Go to Loading Components Section - Page 30

## Final Assembly



FIG 122



FIG 123

### 1. The Primer Magazine

The XL 650 comes equipped with an automatic primer system. The XL 650's automatic primer system is protected by a steel shield which is permanently secured to the primer feed body and must never be removed. The primer magazine is located inside of a steel shield FIG 122. Primer magazines come in two different sizes – large and small FIG 123. Your machine comes with both. One comes installed in the machine, the other is located in the primer accessory package. If you ordered your machine set up in a particular caliber, the magazine installed should be the proper one for the caliber you selected. However, you should check to make sure. By comparing the two magazines FIG 123 you will be able to determine which is large and which is small.



FIG 124

To change the primer magazine:

1. Remove the primer shield cap FIG 124.
2. Remove the primer magazine by pulling it straight up FIG 122.
3. Insert the new primer magazine FIG 125 and replace the primer shield cap.

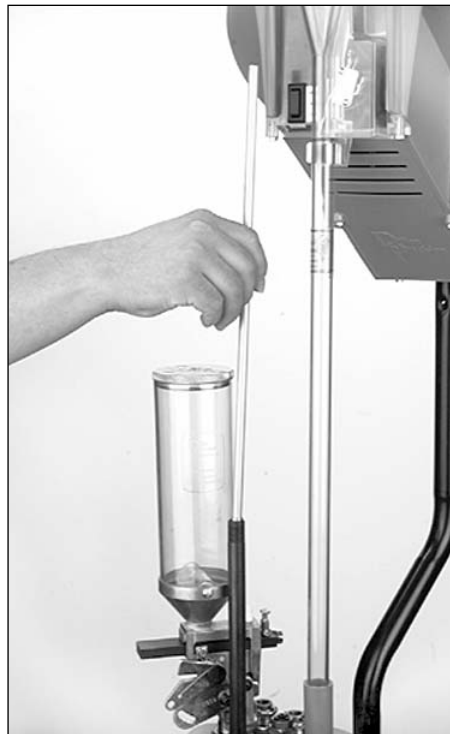


FIG 125



FIG 126

### 2. Installation of the Primer Early Warning System:

FIG 126 The purpose of the Primer Early Warning system is to warn you when the primer magazine is low on primers. When you hear the buzzer, it's time to reload the primer magazine tube.

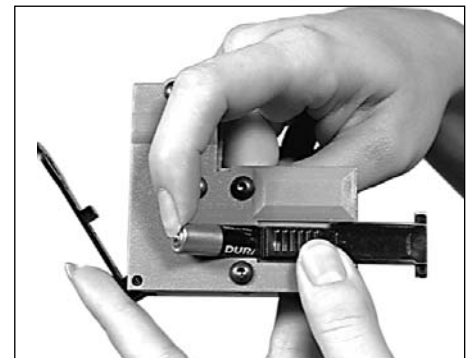


FIG 127

1. Insert the battery into its receptacle FIG 127 and push the black switch lever to insure the device is working properly.
2. Install the Primer Early Warning system on top of the primer magazine shield FIG 126. Lightly tighten the clamp screw with a 3/32" Allen wrench.



**FIG 128**

### 3. Installation of the Locator Buttons FIG 128:

Install the three brass locator pins in the shell platform at stations 3, 4 and 5. These pins retain the cases during loading while providing an easy way to remove a case from the shellplate at any stage without disturbing the other rounds. Note: The locator buttons are caliber specific and can be properly identified by referencing the caliber conversion chart on pages 42-44.

## LOADING COMPONENTS SECTION

### 1. The Rotary Primer System (how it works):

**Warning:** Wear safety glasses whenever working with live primers. Safety glasses are available from Dillon Precision Products.

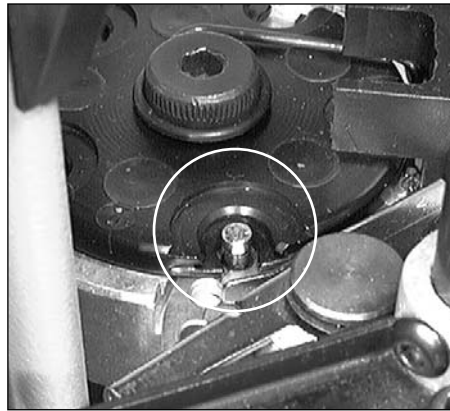
Observe how the rotary primer system works, how to charge it and how to seat a primer. To do so:

1. Put on your safety glasses.

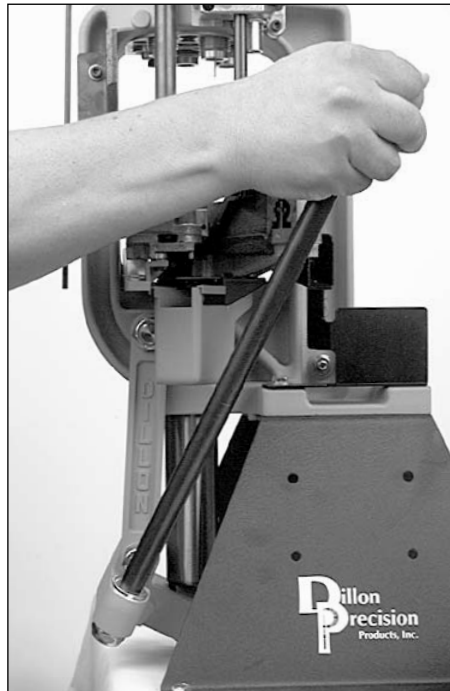


**FIG 129**

2. Place five or six primers into the primer magazine shiny side down FIG 129.
3. Cycle the machine until a primer appears in Station 2.



**FIG 130**



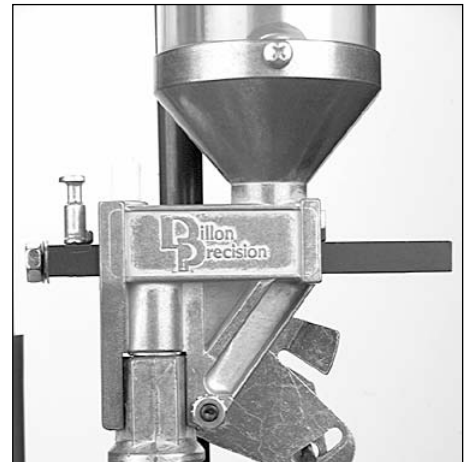
**FIG 131**

When you cycle the machine, the rotary primer disc rotates one notch, advancing another primer into position. When the handle is pushed to its full aft stop FIG 131, the primer seating punch pushes the primer up through the rotary primer disc FIG 130, fully inserting it onto the primer pocket of the case. If there is no case in Station 2 to receive the primer, the primer will return to the rotary disc and continue around until being dropped down a chute FIG 132 where it can be retrieved.



**FIG 132**

4. Drop an unprimed case into the case-feed funnel and cycle the machine twice. As the case is rotated into Station 2, complete the downstroke of the platform by firmly pushing the handle to its full aft stop FIG 131 – this will ensure that the primer is fully seated.
5. Set aside the primed case, it will be used later for adjusting the powder measure.



**FIG 133**

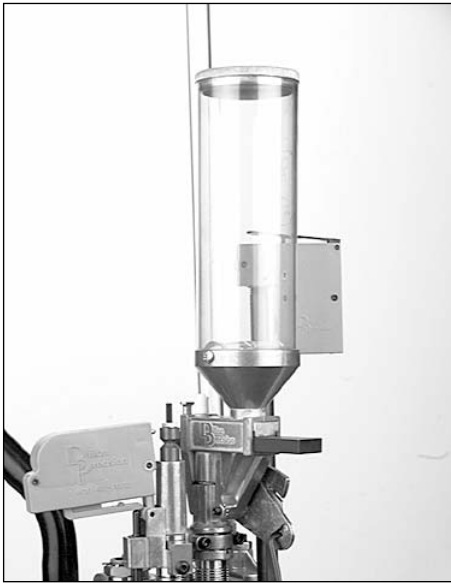
### 2. Powder Bar Adjustment FIG 133:



**FIG 134**

**Note:** Although a scale is not included with the machine, you'll need one to

properly adjust the powder bar. Dillon Precision Products offers two types of scales **FIG 134**. On the right, and electronic scale, and on the left, a balance beam scale.



**FIG 135**

You are now ready to fill the powder measure **FIG 135**, but first you'll need to refer to your reloading handbook. Under the section specified for the caliber you're loading you'll see a number of suitable powders. Also given are "suggested starting loads" and "maximum loads" (Lyman Reloading Handbook).

**Note:** We do not recommend using IMR stick powders (looks like pencil lead) when loading a caliber size less than 25 caliber. We do not recommend using maximum loads of powder.

**Warning:** Wear safety glasses whenever working with live primers. Safety glasses are available from Dillon Precision Products.

**Note:** Insure that you have the proper powder bar installed. To do so refer to "About Powder Bars" on page 13. For instructions on how to change the powder bar, refer to Step 19 in the Caliber Conversion Section, page 41.

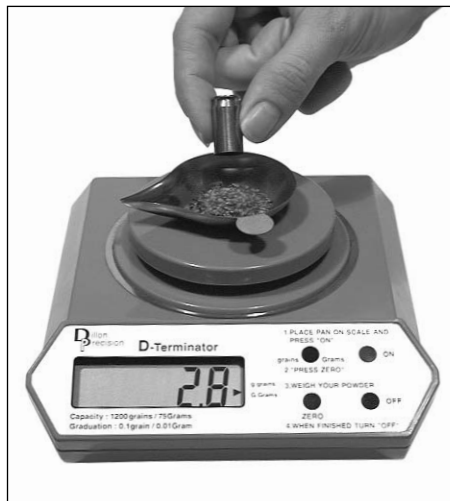
1. Put on your safety glasses.



**FIG 136**

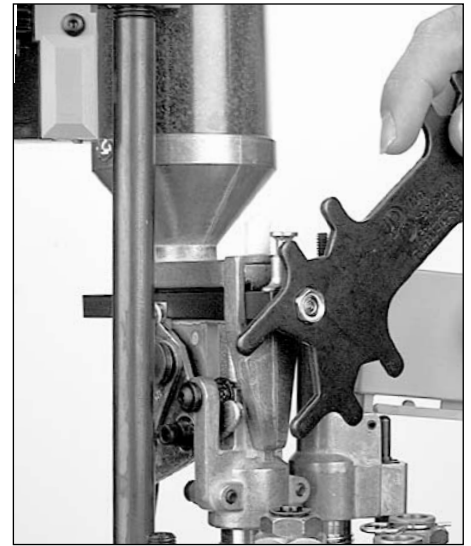
2. Fill the powder measure and replace the cap on both the powder measure and the powder container **FIG 136**.
3. Place a primed case into Station 2.

**Note:** Using a case with a primer in it will keep the powder from leaking out through the primer flash hole.



**FIG 137**

4. Cycle the machine to charge the case. Using your powder scale, weigh the powder charge **FIG 137**. (From this initial measurement, you will be able to determine whether you'll need to increase or decrease the powder charge.)



**FIG 138**

5. Using a 7/16" wrench, give the powder bar bolt a quarter of a turn clockwise or counter-clockwise as necessary to adjust the powder charge **FIG 138**. Clockwise will increase the powder charge and vice versa.

**Warning:** As always, be sure to replace the lid on the powder measure.

6. IMPORTANT! Before measuring the next load, charge the case then empty the powder back into the powder measure. This will allow the powder in the newly adjusted powder bar to settle and give an accurate reading.
7. Replace the cartridge into Station 2 and charge the case. Continue this process until the charge is reading correctly. Once you have achieved the desired powder charge weigh two more charges to insure the powder bar is throwing a consistent charge.

### 3. Powder Check System Adjustment:

Once the powder bar is throwing the desired charge, the powder check rod can be installed and adjusted.

**Warning:** A double-charged round (a loaded round with twice as much powder as it should have) can damage your gun as well as cause bodily injury.

**Warning:** A round loaded without powder can also damage your gun as well as cause bodily injury. If a round without powder is fired in your gun, the detonation of the primer will push the bullet part way down the barrel. If the lodged bullet is not removed before another round is fired, the gun will be damaged.





**FIG 139**

**A. Installation and adjustment of the powder check rods FIG 139:**

1. Remove the powder check rods from the bag **FIG 139**. The three rods fit different calibers. On the left .44-.45 caliber, center .30-.41 caliber and on the right .22-.29 caliber.



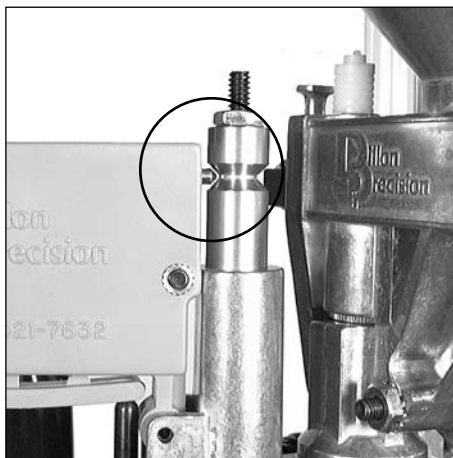
**FIG 140**

2. Choose the correct rod for the caliber you're loading. For example – if you're loading .38 Spl. you would use the .30-.41 caliber rod. If the rod you're using doesn't have the grooved sleeve on it, remove the grooved sleeve from the one you're not using and thread it onto the correct rod **FIG 140**.



**FIG 141**

3. Insert the rod into the powder check die **FIG 141**.
4. Put on your safety glasses.
5. Place a case with the proper powder charge into Station 3 and raise the platform. Leave the platform in the raised position.



**FIG 142**

6. Thread the grooved sleeve down so that the contact pin fits inside the groove as seen in **FIG 142**.



**FIG 143**

7. Snug the lock nut with a 3/8" wrench **FIG 143**.



**FIG 144**

**B. Powder Check System Demonstration:**

1. Place a primed but empty case (case with no powder) into Station 3 and raise the platform. The contact pin is above the groove **FIG 144** (the alarm sounds) indicating that the case has a low or no charge.
2. Lower the platform. Remove the empty case from Station 4 and place it in Station 2.
3. With the empty case in Station 2 give it a double charge.

To do so:

- a. Raise the platform all the way to charge the case.
- b. Lower the platform halfway (enough for the powder bar to return to its starting point without indexing the case to Station 3 and releasing the locklink).
- c. Again, raise the platform to give the case a second charge of powder.
- d. Index the case to Station 3 by lowering the platform all the way. (The case is now double charged and ready to be checked by the Powder Check System.)



**FIG 145**

4. Raise the platform **FIG 145**. The contact pin is below the groove (the alarm sounds) indicating that the powder charge is double or more.

**Note:** If the buzzer to the powder check system goes off, stop loading and check the powder's weight with the scale. The primer warning buzzer and the powder check system have different pitch buzzers to distinguish the two. The primer system is a deep buzz and the powder check is a high pitched tone.

#### 4. Filling the Primer System:

**Warning:** Wear safety glasses whenever working with live primers. Safety glasses are available from Dillon Precision Products.



**FIG 146**

Now it's time to fill the primer magazine. To begin, you'll need the proper size primer pickup tube. Primer pickup tubes come in either large or small. In **FIG 146** are the two primer pickup tubes included with your XL 650.



**FIG 147**

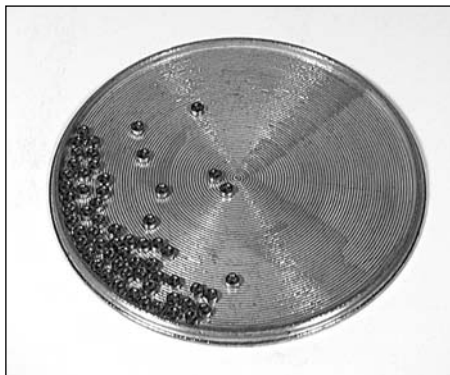


**FIG 148**

On the left is the large pickup tube (with a green tip), on the right is the small pickup tube (with a yellow tip). Make sure the

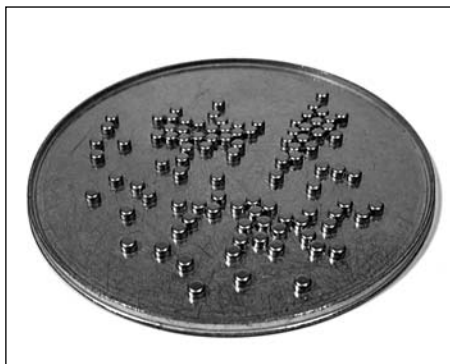
retaining clip **FIG 147** is always in place before using either tube. You'll need the proper size primers and we suggest using this optional Dillon Primer Flip Tray **FIG 148**. It will make this task quite a bit easier.

1. Put on your safety glasses.
2. Separate the two halves of the primer flip tray.
3. Place the primers onto the grooved surface of the primer flip tray.



**FIG 149**

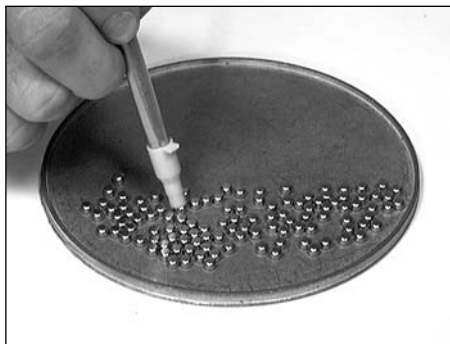
4. Slowly shake the flip tray until all the primers rest shiny side down **FIG 149**.



**FIG 150**

5. Place the smooth lid on top, and flip the entire tray. Remove the grooved lid.

Now all the primers should be shiny side up on the smooth side of the primer flip tray. **FIG 150**.



**FIG 151**

6. **FIG 151** Collect the primers using the plastic tip end of the primer pickup tube. Make sure all primers are shiny side up, and fill the tube.



**FIG 152**

7. When the primer pickup tube is full, pivot the black switch lever away from the primer magazine shield. Rotate the tube upside down over the primer magazine shield and remove the retaining clip **FIG 152**. After filling the primer magazine return the switch lever to its normal position.



**FIG 153**

8. Slide the follower rod through the hole in the switch lever until it touches the primers **FIG 153**. When the machine is nearly out of primers the rod will activate the buzzer.



# Now its Time to Start Loading

## Station Orientation and Loading Functions

Add some empty cases to your casefeeder and turn the unit "on". The motor will run until the clear casefeed tube fills and then it will automatically shut off.

The reloading process on an XL 650 begins with one complete stroke or cycle of the handle, which causes the first case to be cycled through the casefeed system and fed into the shellplate.

### Station One



The first case is at station one of the machine and a new primer is ready at station 2. Move the handle down, the sizing die reforms and also deprimers the first case. Return the handle to its rest position. Using a smooth, fluid motion, move the handle up to its full aft stop to seat the new primer into the case and release the handle. At the same time, another case has been fed into the shellplate.

### Station Two

Again, cycle the handle completely. The first case now gets a charge of powder, the second case is resized and deprimed, then they both advance to the next stations. Using a smooth, fluid motion, move the handle up to its full aft stop to seat the new primer into the case. Return the handle to its rest position. Now three cases are in the shellplate.

### Station Three

Cycle the handle. The first case enters the powder checker, the second case is charged with powder and the third case is resized and deprimed. Again, return the handle to its rest position and all the cases advance to their next stations and the fourth case is inserted into the shellplate.

### Station Four



It is now time to begin placing a bullet on the case at station four. Cycle the handle down and then back up to its rest position. The first case now has a bullet seated into it and has advanced to station five. At this point the shellplate is full.

Seat a primer into a case at the full aft stroke of the handle and a case is inserted into the shellplate automatically.

### Station Five



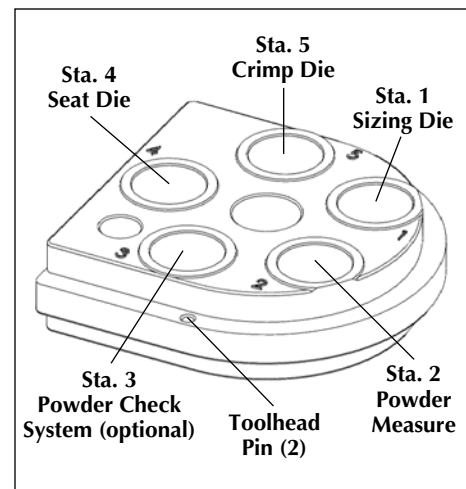
Using your left hand, place a bullet on the case at station four. Cycle the handle and the first case is crimped at station five and then ejected out at the right rear of the machine into the collection bin. Repeat the process by placing a bullet into the case at station four and seating the primer into the case at station two.

At this point a completed round is ejected from the machine with every complete stroke of the handle.

When operating the handle, pay close attention to the cases, noting the changes that take place as they go through the machine.

Pace yourself when operating the machine. Do not crash the handle down against its stop and do not snatch the handle upward. It should take two or more seconds to move the handle from its rest position, down and then back up to its rest position.

### Station/Toolhead Orientation



# Caliber Conversion Section

**FIG 154 – Caliber Conversion Chart Sample**

Caliber	Complete Conversion	Shellplate Number	Locator Button	Funnel	Station 1 Locator	Casefeed Adapter	Arm Bushing	Body Bushing	Casefeed Disc	Primer System	Powder Check Rod
.38 Spl	21098	(2) 13430	(2) 14062	(D) 13599	13563	(Orange) 13386	(Red) 13403	(Sm38) 13384	(LP) 21072	Sm	Med
.30-06	21094	(1) 13204	(1) 13930	(B) 13587	(1) 13595	(Black) 13541	(White) 13661	(Med) 13604	(LR) 21075	Lg	Med

## 1. How to use the Caliber Conversion Chart:

To explain the Caliber Conversion Chart we are going to compare the pistol caliber of .38 Spl. to the rifle caliber of .30-06 **FIG 154**.

By comparing the two columns, you can see which parts need to be changed. In this comparison, .38 Spl. vs. .30-06, you can see that none of the part numbers match up, therefore, all of those parts would need to be changed. This, however, is not always the case. If you compare .30-06 to .308/7.62 Nato, you'll find that they are exactly the same. Another example would be .38 Spl. vs. .357 Magnum. As you can see, they too are identical. Some caliber comparisons will show that only a couple of parts are different – in this case, instead of ordering an entirely new caliber conversion kit, you have the option of ordering only those parts needed to complete your caliber conversion.

## 2. Conducting the Caliber Conversion

(The following steps are in the sequential order in which the caliber conversion is to be conducted):

**Note:** Included in the following is a complete list of all the items that need to be considered when conducting a caliber conversion. This is not a list of all the items that **will** need to be changed or readjusted – this is a complete list of all the items that **may** need to be changed or readjusted. The items that need to be changed or readjusted will depend on the caliber your XL 650 is currently set up to load and the caliber you're changing to.

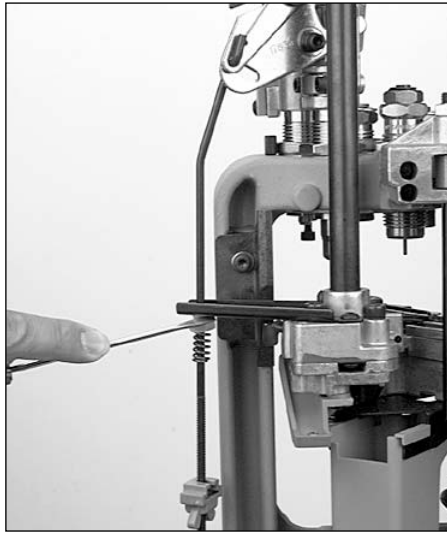
**Step 1)** Remove the cases from the machine:

1. Turn off the casefeed system
2. Remove the remaining cases from the casefeed tube and the casefeed bowl.

**Step 2)** Remove the powder from the powder measure:

Depending on the caliber change, you

may have to change powders and/or the powder bar. If so, you'll need to empty the powder from the powder measure.



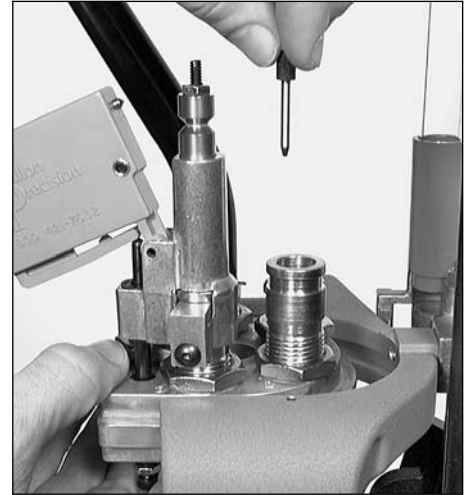
**FIG 155**

1. Disconnect the failsafe rod **FIG 155**.



**FIG 156**

2. Loosen the two powder measure clamp screws **FIG 156**.
3. Remove the powder measure and empty the powder back into the powder can.
4. Manually cycle the powder bar to ensure the powder measure is empty.
5. If you need to change powder bars refer to Step 19.



**FIG 157**

**Step 3)** Remove the toolhead **FIG 157**:

1. Disconnect the failsafe rod **FIG 155**.
2. Remove the toolhead pins and slide the toolhead out.

**Step 4)** Remove the shellplate:

Remove the shellplate only if you need to either, change the shellplate for a different caliber shellplate, or if you need to remove the primer system (such as when emptying the primers from the primer system).



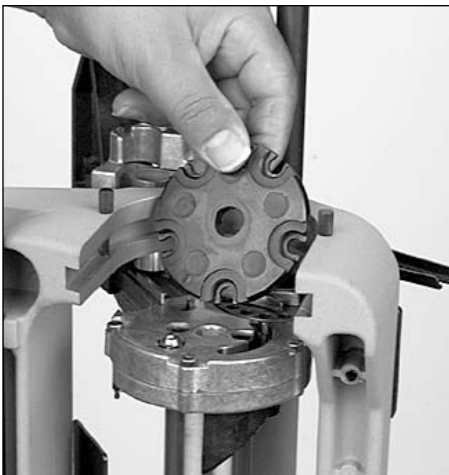
**FIG 158**

1. Using a 1/8" Allen wrench loosen the shellplate set screw **FIG 158**. The shellplate set screw is located on the left side of the mainshaft just below the shellplate platform. Do not remove the screw, just loosen it about a half turn.



**FIG 159**

2. Using a 1/4" Allen wrench remove the shellplate bolt **FIG 159**.



**FIG 160**

3. Swing the ejector wire out of the way and remove the shellplate. Be sure that index ball and index pawl remain in place **FIG 160**.



**FIG 161**

4. Remove the locator buttons **FIG 161**.



**FIG 162**

**Step 5)** Remove the primers:

Remove the primers only if you need to change to a different size or type of primer.

1. Remove the shellplate (ref. [Step 4](#)).
2. Loosen and remove the two primer system bolts **FIG 162**.



**FIG 163**

3. Carefully lift the primer assembly away from the machine **FIG 163**.



**FIG 164**

4. **FIG 164** Empty the remaining primers by placing a finger over the primer shield cap, inverting the magazine and carefully pouring the primers onto the primer flip tray. Put the primers back into their original box.

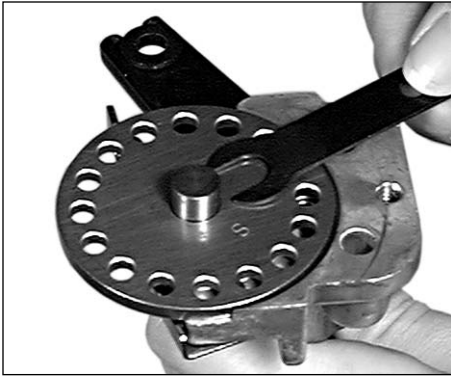
5. If any primers remain in the primer area (on the machine) carefully remove them.
6. If you need to change the rotary primer disc go to Step 6. If you only to need empty the primer magazine, reinstall the primer system at this time.

**Note:** About **Steps 6, 7 and 8**. If you're changing from a large rifle/pistol primer to a small rifle/pistol primer or vice versa, the rotary primer disc, primer magazine, and primer punch will have to be changed. This is because each of these three items are designed specifically for either large rifle/pistol primers or small rifle/pistol primers.

**Step 6)** Change the rotary primer disc (see note above):

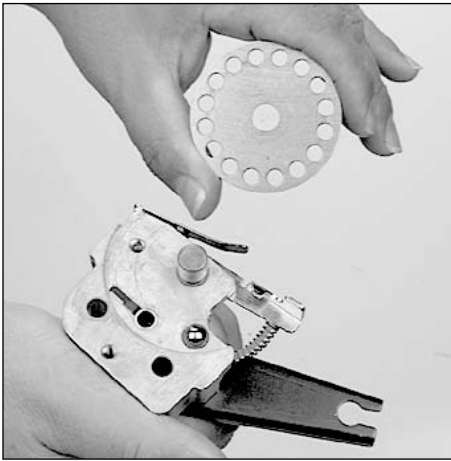
**Note:** The two different size rotary primer discs are labeled L (large) and S (small).

1. Remove the shellplate (ref. [Step 4](#)).
2. Remove the primer system and empty the primer magazine (ref. [Step 5](#)).



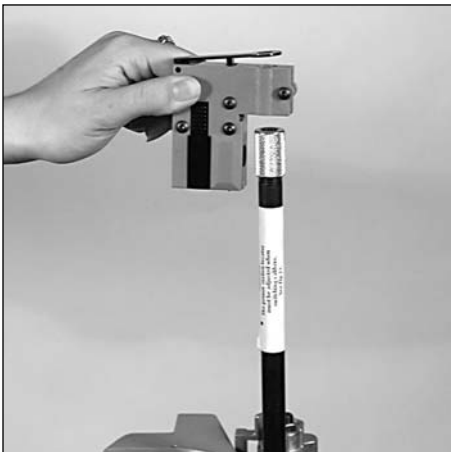
**FIG 165**

3. Rotate the primer system upside down. Using an 1/8" Allen wrench unscrew the primer support shim screw and remove the primer support shim **FIG 165**.



**FIG 166**

4. Remove the rotary primer disc **FIG 166**. Make sure the detent ball remains in place.
5. Place the other rotary primer disc onto the disc pin.
6. Slip the primer support shim back into place and snug the screw.
7. Reinstall the primer system.



**FIG 167**

**Step 7)** Change the primer magazine (see note just above **Step 6)**:

1. Remove the Primer Early Warning System **FIG 167**.



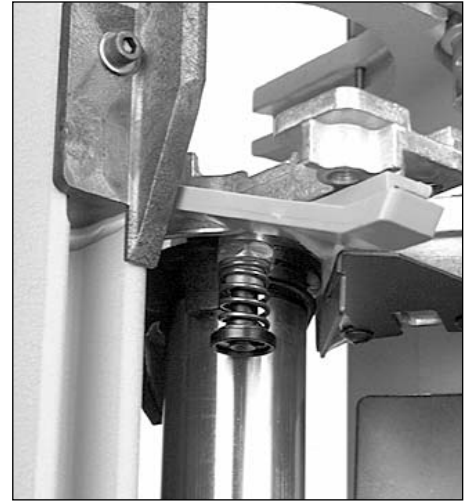
**FIG 168**

2. Remove the primer shield cap **FIG 168**.



**FIG 169**

3. Remove the primer magazine by pulling it straight up **FIG 169**.
4. Insert the new primer magazine.
5. Replace the primer shield cap and Primer Early Warning System.



**FIG 170**

**Step 8)** Change the primer punch (see note just above **Step 6)**:

The primer punch is attached to the underside of the platform on the right side **FIG 170**.



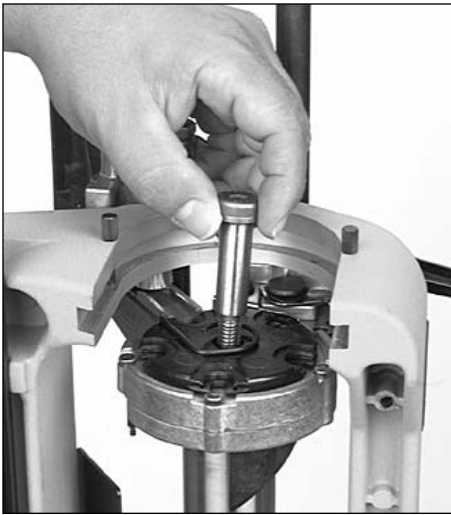
**FIG 171**

1. Raise the platform.
2. Using a 9/16" wrench loosen and remove the primer punch **FIG 171**.
3. Remove the other size primer punch from the primer accessory package. Screw it in and snug it down.
4. Lower the platform.

**Step 9)** Install the new shellplate:

This is located in your caliber conversion kit.

1. Remove the shellplate (ref. **Step 4)**.
2. Place the new shellplate onto the shellplate platform. The number side of the shellplate should be face up. Rotate the shellplate until it seats itself on the index ball.



**FIG 172**

3. Swing the ejector wire back to its original position over the shellplate and insert the shellplate bolt **FIG 172**.
4. Using a 1/4" Allen wrench run the shellplate bolt down until it stops then loosen it slightly. Loosen it just enough to allow the shellplate to index freely.



**FIG 173**

5. Snug the shellplate set screw **FIG 173**.

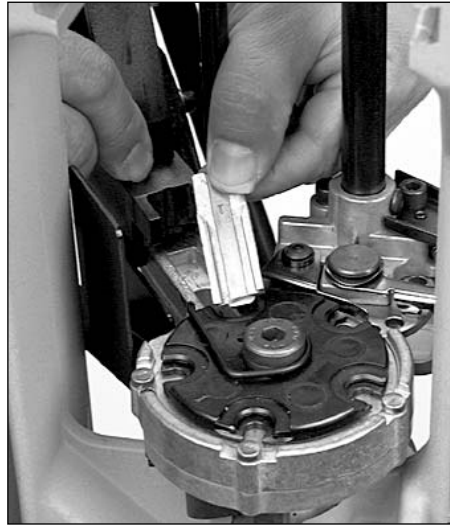


**FIG 174**

**Step 10) Install new locator pins **FIG 174**:**

The new locator pins are located in your caliber conversion kit.

1. Install as depicted



**FIG 175**

**Step 11) Install the new Station 1 locator **FIG 175**:**

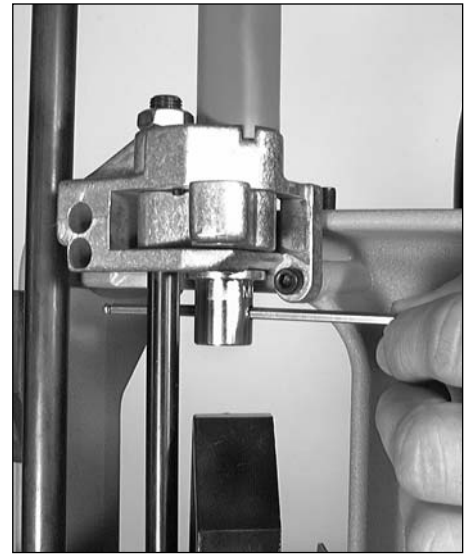
The Station 1 locator is located in your caliber conversion kit.



**FIG 176**

**Step 12) Change the Body Bushing **FIG 176**:**

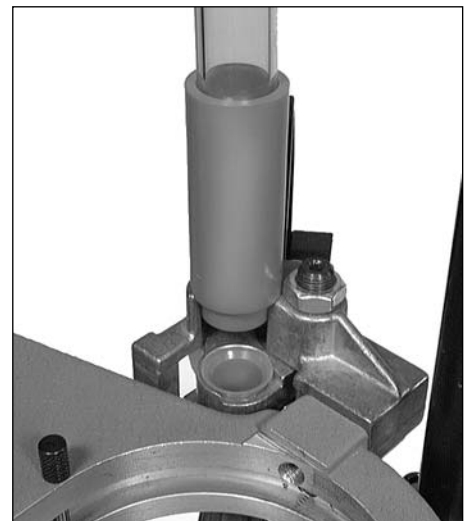
The new body bushing is located in the caliber conversion kit.



**FIG 177**

1. The body bushing is located on the right side just above Station 1 **FIG 177**. Remove the body bushing by slipping an Allen wrench through the cross hole and twisting it counter-clockwise.

2. Install the new body bushing.



**FIG 178**

**Step 13) Replace the casefeed arm bushing and casefeed adapter **FIG 178**:**

The new casefeed adapter and casefeed arm bushing are located in your caliber conversion kit.



**FIG 179**

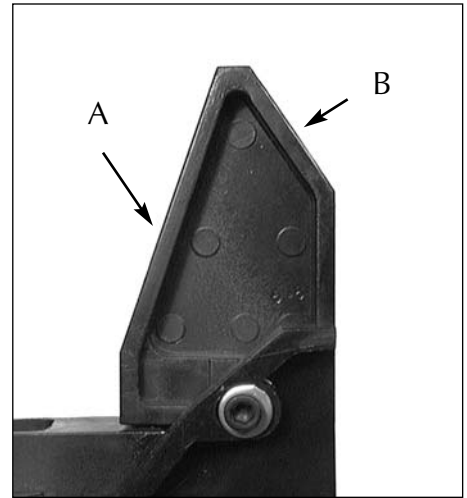
1. Remove the casefeed tube **FIG 179**.



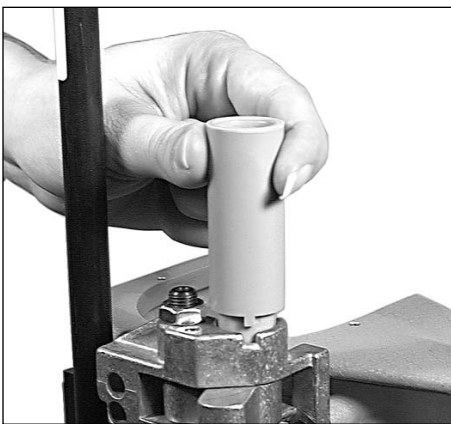
**FIG 182**

5. Reinstall the casefeed tube by placing the casefeed tube into the casefeed adapter and snapping it into the metal clamp **FIG 182**.

**Note:** One end of the casefeed tube is beveled and one end is squared off. Insert the squared end of the tube (down) into the top of the casefeed adapter.



**FIG 184**



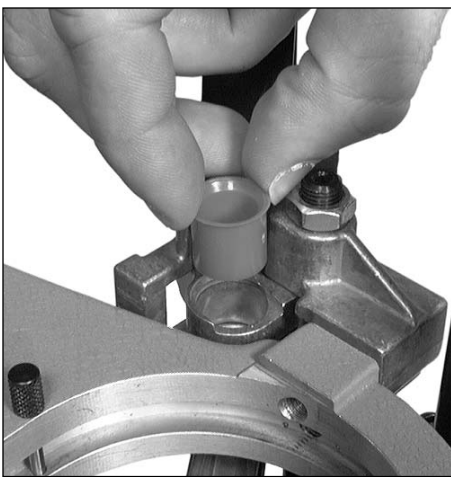
**FIG 180**

2. Remove the casefeed adapter **FIG 180**.



**FIG 185**

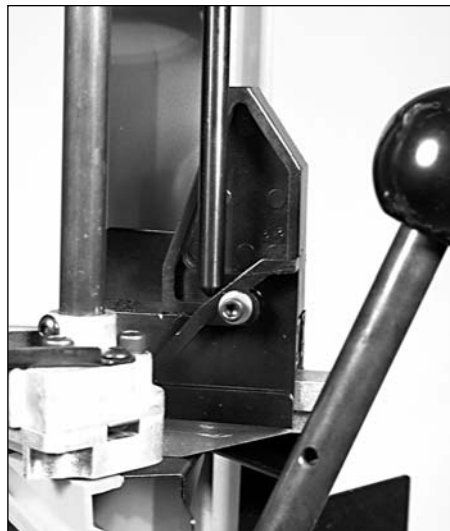
1. Using a 5/32" Allen wrench, remove the cam screw **FIG 185** and reverse the case insert slide.



**FIG 181**

3. To replace the casefeed arm bushing first raise the platform. Remove the casefeed arm bushing (currently installed in your machine) and replace it with the new one **FIG 181**.

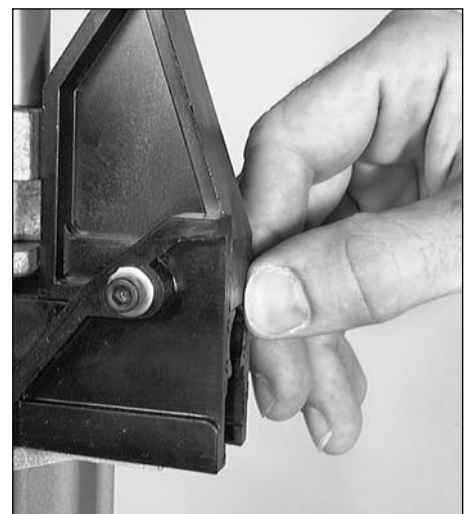
4. After installing the new casefeed arm bushing, install the new casefeed adapter.



**FIG 183**

**Step 14)** Case insert slide cam – turn around **FIG 183**:

The case insert slide is reversible. The long side of the cam (see arrow "A" **FIG 184**) is for pistol and the short side of the cam (see arrow "B" **FIG 184**) is for rifle. As a reference, any case as long or longer than .223 Rem. will require that the short (rifle) side of the cam be used. Reverse the case insert slide cam only if your caliber conversion requires it.



**FIG 186**

2. **FIG 186** Insure that the back side of the cam is flush with the cam slide.

3. Replace the cam screw and snug it.





**FIG 187**

**Step 15)** Change out the casefeed disc **FIG 187**:

Change the casefeed disc only if your caliber conversion requires it.

1. Grip the casefeed plate clutch drive **FIG 187** and pull upward. The casefeed disc will slip off the motor drive shaft.
2. To install the new casefeed plate – place the casefeed plate clutch drive on the motor driveshaft. Slowly rotate the disc until the groove on the drive shaft aligns with the notch in the plate. The casefeed plate will then slip down onto the motor shaft and into place.

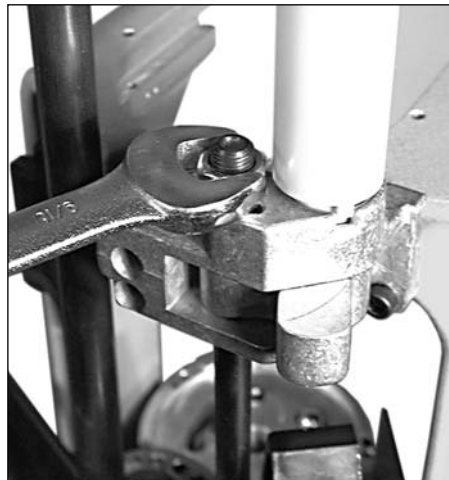
**Note:** About Steps 16 and 17. Both the camming pin and Station 2 locator tab do not require removal or replacement. Instead, depending on the caliber change, they may need to be readjusted. Whether or not these two items need to be adjusted depends on the diameter of the base of the case and nothing else. If, for example, you are converting from 9mm to .45 ACP, because the diameter of the two cases are different, both the camming pin and Station 2 locator will need to be readjusted. If, on the other hand, you are converting from, say, .45 ACP to .30-06 or .308, you will not have to readjust these two items – the diameters at the base of these cases are the same.



**FIG 188**

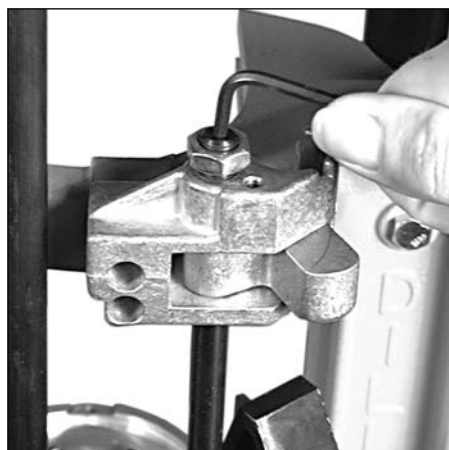
**Step 16)** Adjusting the camming pin **FIG 188** (see previous note):

1. Place a case in both Station 1 and Station 2. The case in Station 2 must have a primer – the primer can be spent or new.

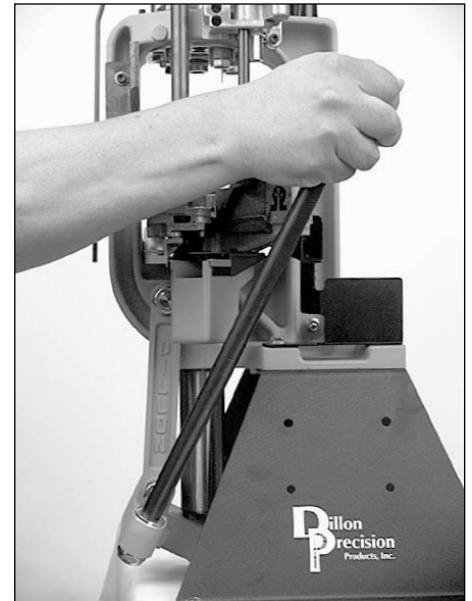


**FIG 189**

2. Using a 9/16" wrench, loosen the lock nut **FIG 189** on the camming pin.



**FIG 190**

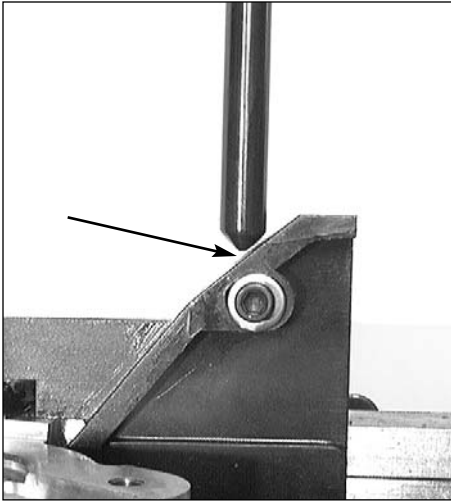


**FIG 191**



**FIG 192**

3. Using a 1/8" Allen wrench, turn the camming pin clockwise **FIG 190** four or five turns – or enough so that when you push the handle to the full aft stop **FIG 191**, the case insert slide (see arrow **FIG 192**) does not push the case fully into Station 1 **FIG 192** – this will give you a place to start the adjustment.
4. With the handle pushed against its full aft stop, start backing the camming pin out by turning it counter clockwise **FIG 190**. Continue to back the camming out until the case stops its forward movement into the shellplate. Once the case becomes fully inserted into Station 1, stop turning the camming pin.



**FIG 193**

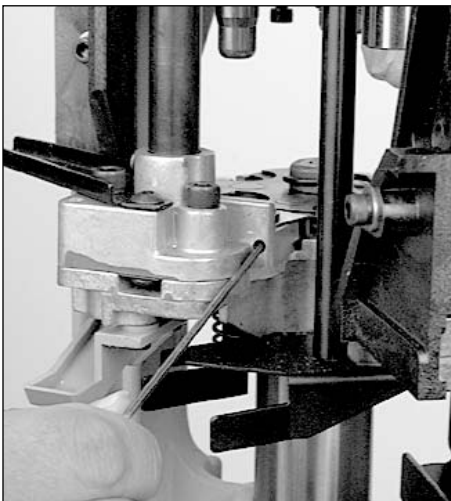
**Note:** The objective here is that – at the point the case becomes fully inserted into shellplate (with the handle against its full aft stop) – the camming pin is still in contact with the case insert slide cam – or at least within a 1/16” of the case insert slide cam (see arrow FIG 193).

5. Once properly adjusted, tighten the lock nut.

**Step 17)** Adjusting the Station 2 Locator Tab (see note just above Step 16):

The adjustment of the Station 2 locator tab is best accomplished with the toolhead removed.

1. Place a case in Station 2.



**FIG 194**

2. Using a 5/64” Allen wrench, insert it into the side of the primer feed body FIG 194. Turn the screw to adjust the locator tab. A turn clockwise will move the tab back away from the shellplate and a turn counter clockwise will adjust it closer to the shellplate.



**FIG 195**

3. Adjust the locator tab so that the tab just clears the case FIG 195. The objective here is, with the case fully inserted into the shellplate, the locator tab should not come into contact with the case. However, the tab should be close enough so as to not allow the case to lose its position in the shellplate. The distance between the locator tab and the case should be about .010” or about the thickness of a business card.

**Step 18)** Refer to the Rifle Section or Pistol Section to set up the tool head.

**Step 19)** Station 2 – Changing out the powder bar:

Refer to “About Powder Bars” under the Rifle or Pistol Section or refer to the Caliber Conversion Chart (pages 46-48) to determine whether or not you’ll need to change the powder bar.

To change the powder bar:

1. Remove the powder from the powder measure (ref. Step 2).
2. Hold the powder measure over a powder container and cycle the powder bar with your thumb to empty all remaining powder.



**FIG 196**

3. Using a 5/32” Allen wrench, loosen the bellcrank screw just enough to remove the white cube from the side of the powder bar FIG 196.



**FIG 197**

4. Remove the white plastic retaining plug. (FIG 197)



**FIG 198**

5. a) If the large powder bar is currently installed – remove the large powder bar.  
b) If the small powder bar is currently installed – remove both the small powder bar and small powder bar spacer FIG 198. Note: The purpose of the spacer is simply to make up for the room allowed for the large powder bar.



6. a) Installation of the **large powder bar** – slide the large powder bar into the powder measure body.  
 b) Installation of the **small powder bar** – slide both the small powder bar and small powder bar spacer into the powder measure body **FIG 199**.  
 Note: The groove along the edge of the spacer (**see arrow FIG 199**) is to be installed face down. The hole in the spacer is to be aligned with the hole in the top of the powder measure body **FIG 199**.



**FIG 199**



**FIG 200**

7. Seat the white bellcrank cube into the notch on the side of the powder bar. Using a 5/32" Allen wrench snug the bellcrank screw **FIG 200**.  
 8. Re-install the white plastic retaining plug **FIG 201**:



**FIG 201**

- a) Large powder bar – **FIG 201** The retaining plug has a short end and a long end. If the large powder bar is installed, insert the short end of the retaining plug into the hole in the top of the powder measure body. Note: The short end is used to hold the plug for safe keeping.



**FIG 202**

- b) Small powder bar – **FIG 202** The retaining plug has a short end and a long end. If the small powder bar is installed:  
 1) Align the hole in the powder bar spacer with the hole in the top of powder measure body.  
 2) Insert the long end of the retaining plug into both the top of the powder measure body and the powder bar spacer. Note: The long end of the retaining plug is designed to anchor the spacer that accompanies the small powder bar.

**Step 20)** Load the components.

## Trouble Shooting

### Dies Too Short

- A. Need Dillon die lockrings (14067).
  1. Three extra come with the machine.
  2. Threadaphobia (fear of too few threads) can strike anyone-anytime. It is a common but curable disease. You only need one thread showing above the toolhead to hold the die locking.

### Cartridge won't feed into chamber

1. Overall length too long. See loading manual for dimensions.
2. Improper headspace. See loading manual for dimensions. Use headspace case gage.
3. Too much bell left on case. (Not enough crimp.)
4. Case buckled.
  - a. Too much crimp.
5. Using brass that you picked-up at the range that has been fired in an over-size chamber.
6. Gun operation problems.

### Hard or Incomplete Indexing

- A. Shellplate not indexing smoothly.
  1. Shellplate bolt adjusted too tight. Readjust 1/8 turn maximum.
  2. Shellplate bolt tightens when shellplate turns.
    - a. Brass tipped set screw loose or missing.
  3. Wrong size locator buttons.
  4. Index pawl bent, worn or in backwards.
  5. Dirt under shellplate.
    - a. Keep shellplate clean.
    - b. When replacing shellplate, bolt (13418) must be lubed with a little all purpose grease.
  6. Bent or broken shellplate.
  7. Index ball (13891) and/or spring (14118) stuck, missing or broken. Can also cause shellplate to turn backwards after indexing.
  8. Not taking full stroke on the handle.
  9. Ring indexer (13677) worn or indexer block (16671) needs adjusted. Return spring damaged or missing.
  10. Improper type of locator button for caliber.
- B. Handle movement difficult
  1. Powder or other debris causing jamming of moving parts.
  2. Link arm pins (13700) galled.
  3. Main shaft (13485) dirty or dry.
    - a. Clean and lubricate with 30 wt oil.
  4. Camming pin on black casefeed slide not lubed.
  5. Primer cam worn causing primer indexing arm to drag and stick.
  6. Incorrect lubricant used. Do not use solvent blended lubes.

### Casefeeding

- A. Casefeeder is on but will not rotate.
  1. Brass caught under casefeed plate.
  2. Casefeed is too full.
  3. Bad micro-switch.
- B. Cases are falling down tube upside down jamming in the top tube, etc.
  1. Using the wrong casefeed plate for that caliber.
  2. Casefeed baffle (13688) not in place (see conversion chart for which cal. require use of the casefeed baffle)
  3. Casefeed is too full.
  4. The machine is not secured to a sturdy enough bench.
- C. Casefeed tube (13099 or 13101) appears too short.
  1. Casefeed is not pushed down all the way on the casefeed mounting post (17123).
- D. Cases hanging up at micro-switch or micro-switch inoperative.
  1. Check the angle of the switch lever and adjust as necessary.
    - a. Too sharp an angle will cause cases to hang up.
    - b. Too shallow an angle will cause incomplete shutoff.
- E. Cases jamming at the casefeed arm (13716).
  1. Wrong size or loose body bushing for caliber being loaded.
  2. Operating machine too fast.
  3. Short stroking the machine.
  4. Dented or squashed cases.

### Case Insertion

- A. Case not getting to shellplate.
  1. Wrong size Station 1 locator.
  2. Wrong size casefeed adapter.
  3. Shellplate bolt is too loose.
  4. Dirt in shellplate pockets or damaged shellplate.
  5. Handle being moved too rapidly on upstroke.
  6. Dirt or media in casefeed track.
- B. Case doesn't drop onto platform.
  1. Using the wrong arm or body bushing.
- C. Cases not fitting in shellplate or staying centered.
  1. Locator buttons missing or wrong size for that caliber.
  2. Primer Station locator tab (13242) needs to be readjusted.
  3. Wrong shellplate caliber being loaded.
  4. Wrong cases for caliber being loaded.
  5. Debris in pockets of shellplate.
  6. Rim of case damaged or shot in open bolt gun. i.e. 9mm sub gun.
  7. Cases out of spec.
  8. Worn out brass from over use or hot loads.
  9. Shellplate damaged from decap pin.

### Station 1 - Resizing and Decapping

- A. Crushing cases.
  1. Incomplete case insertion.
  2. Not enough radius on die. Use Dillon dies where available.
  3. Unstable bench causes case to move and hit edge of die.
- B. Bending or breaking decapping pins.
  1. Smaller caliber brass stuck inside of case or on decapping stem.
  2. Berdan primed cases.
  3. Media and polish has formed a hard mix in bottom of case.
  4. Handle being moved too rapidly on the down stroke.
  5. Rocks or other foreign objects in cases.
- C. Cases are not being pushed all the way into the shellplate by the case insert slide (97082).
  1. Not pushing forward enough (or at all) on the handle.
  2. Camming pin (13371) needs to be adjusted.
  3. Debris or media in shellplate or under Station 1 locator.
  4. Bent rail on Station 1 locator.
- D. Case insert slide (97082) jams on station 1 locator.
  1. Be sure there is lubrication on the case insert slide.
  2. Debris under Station 1 locator.
- E. Sizing die marking cases.
  1. Wrong sizing die for that caliber.
  2. Dirty brass.
  3. Scratched die.
  4. Case shot in large chamber and base is excessively expanded.
  5. Brass/nickel adhering to carbide insert.
    - a. Lube cases properly to prevent this.
    - b. Clean insert with 600 grit to remove build up.
    - c. Use Sweets 7.62 Solvent to clean insert.
  6. New brass (Sharp edges at case mouth.)
  7. Die lockring not tightened with a case in the die.
- F. Oil dent in shoulder of case or neck appears wrinkled.
  1. Using too much case lubricant.
- G. Case sticking in sizing die.
  1. Insufficient case lube.
  2. Alcohol not yet evaporated from spray-on case lube.
    - a. Allow five minutes for alcohol to evaporate before sizing cases.
- H. Decap pin not decapping.
  1. Sizing die not screwed down far enough.
  2. Decapping assembly not screwed down all the way.
  3. Decapping pin bent, broken or missing.

4. Point of decap pin is squared off not rounded (pin gets stuck in anvil and pulls primer back into primer pocket).
5. Berdan primed brass.
  - a. Berdan primed brass has two flash holes and should not be reloaded.
- I. Case not properly sized.
  1. Size die not properly adjusted.
  2. Handle not cycled all the way down to stops.
  3. Case was shot in an unsupported chamber and base is excessively expanded.
    - a. Hot loads.
    - b. Consult a gunsmith about chamber.
- J. Spent primers dropping on floor.
  1. Spent primer cup bracket (16209) broken or missing.
  2. Spent primer cup (16211) broken or missing.
- K. Spent primers bouncing out of empty spent primer cup.
  1. Place a piece of thin foam to the bottom of the spent primer cup.

### **Station 2 - Priming**

- A. Primers not feeding properly.
  1. Magazine tube is empty.
  2. Stuck primer in tube.
    - a. Tube must be thrown away.
  3. Damaged brass tip or tube.
    - a. Tube must be thrown away.
- B. Crushed primers.
  1. Dirt or debris in shellplate pockets.
  2. Ringed primer. When a spent primer has been pierced by the decapping pin leaving a ring of metal from the primer in the pocket.
  3. Chipped or worn primer punch.
  4. Hot loaded ammo that has been fired several times and the base of the case has been flattened. Such cases being reloaded need primer pockets swaged – i.e., radiused edges on the primer pocket.
  5. Be sure the loading bench is not shaking or rocking. To keep the bench from moving bolt it to the wall. If the bench is not solid the primers will tip and jam.
  6. Be sure the primer Station locator tab is adjusted correctly. It should be adjusted so it is approximately 10 thousandths from the case rim (the thickness of a business card).
  7. Wrong size/type primer for that caliber.
  8. Pushing forward on the handle too hard.
  9. Cycle the machine using a smooth continuous motion. Do not make erratic movements.
- C. High Primers.
  1. Shellplate too loose. Be sure the shellplate is tightened down correctly. This is done by turning the shellplate bolt down until it is tight, then backing

- it off 1/8 of a turn. Don't forget to loosen the shellplate bolt set screw, on the left side of the mainshaft, before adjusting the shellplate bolt. Tighten the set screw when finished.
2. Erratic handle motion.
3. Push handle forward fully to seat the primer.
4. Handle crank broken or cracked.
  - a. Push forward on the handle and look for hairline cracks.
- D. Primer early warning system inoperative.
  1. Battery dead, missing or backwards.
  2. Follower rod (13707) not in or warped.
  3. Buzzer defective.
  4. Primers stuck in magazine tube.
- E. Rotary primer disc not indexing/jammed.
  1. Check indexing lever and replace if bent.
  2. Inspect primer cam (13670).
    - a. Missing.
    - b. Worn camming surface.
  3. Powder debris on platform.
  4. Stuck primer catching on shim (14117) and platform body.
- F. Primers going in upside down.
  1. Primer punch is not properly aligned with the indexing shellplate.
    - a. Using old index cam (if purchased machine prior to March 95).

### **Station 2 - Powder Charging and Case Mouth Belling**

- A. Crushing cases.
  1. Locator tab is misadjusted. Adjust tab until there is a small amount of light showing between the case and the locator tab. Approximately 10 thousandths of an inch.
- B. Spilling powder.
  1. Slamming or going too fast with the operating handle. Common with .380 and 9mm cases which are filled to the top of the case. Slow down and pace yourself.
  2. Stick or pencil lead type powders bridging on the case mouth in the powder funnel.
  3. Check powder bar adjustment.
  4. Machine not secured properly or bench not stable.
  5. Small powder bar spacer plug (13921) missing.
  6. No primer in case.
- C. Erratic belling (too much or too little).
  1. Variation in case length. Note: separate cases by brand.
  2. Handle not moving all the way down on each cycle.
  3. No funnel.
  4. Wrong funnel for that caliber.
  5. Improper powder die adjustment.
  6. Powder measure loose on powder die (screws not tightened down).
- D. Erratic powder charges.
  1. Powder bar not moving the full length

- of its travel. Turn the powder die down until it does.
2. Failsafe rod missing.
3. Powder not settled in hopper.
  - a. After a powder bar has been re-adjusted – cycle five cases through the machine dropping powder in each one. Check the powder weight of the fifth case.
4. Not cycling the handle through its full travel.
5. Machine not secured properly or bench not stable.
6. Wrong size bar for requirements.
  - a. Switch to the large bar over 7 grains.
7. Powder funnel or drop tube dirty or clogged.
8. Crack in powder measure body.
  - a. Usually present where bellcrank bolt (13904) enters powder measure body (21274).
9. Small powder bar spacer plug (13921) missing.
10. Erratic handle movement.
11. Using pencil lead/stick type powder.
- E. Powder bar sticking
  1. Powder bar dirty.
    - a. Clean with acetone or finger nail polish remover. Keep very clean. Do not lubricate.
    - b. Do not use sandpaper, file or anything abrasive.
  2. Powder bar, powder bar spacer or powder measure body galled. Appearance of a long streak of metal on the bar or spacer.
    - a. Wipe off with soft cloth soaked in acetone, lighter fluid or rubbing alcohol.
  3. Failsafe assembly not installed or broken.
  4. Using fine-grained spherical powder.
    - a. Win 296, H110 and Accurate Arms powder have been known to get between the powder bar, spacer and/or the powder measure body and bind movement.
  5. Powder bar insert/powder bar adjustment bolt adjusted full open against the stop.
    - a. This can bind the powder bar insert causing the powder bar to drag.
- F. Case sticking to powder funnel.
  1. New, extremely clean or liquid cleaned brass.
    - a. Do not clean cases more than 1 1/2 hours.
    - b. Worn powder funnel. Streaks on funnel tip. Repolish to high luster.

### **Station 3 - Powder Check**

- A. Powder check die inoperative.
  1. Check battery.
  2. Check adjustments.

#### **Station 4 - Bullet Seating**

- A. Erratic seating depth of the bullet.
  - 1. Variations of less than 20 thousandths of an inch are due to variations in cases and bullets. This is not a problem.
  - 2. Build up of lead shavings and/or lube in the seater or crimp dies.
  - 3. Bullets having erratic dimension (length and/or the ogive).
  - 4. Use of improper seating plug for the type of bullet being used.
  - 5. Variations in case types and/or lots (sort your brass).
  - 6. Refer to loading manual for dimensions.
- B. Shaving brass when bullet is seated or crescent shaped brass falling on shellplate.
  - 1. New brass.
  - 2. Too much flare.
- C. Shaving lead/lube when bullet is seated.
  - 1. Case not belled enough with funnel.
  - 2. Case was cleaned too long. Case mouth must be deburred.
  - 3. Wrong bullet diameter for caliber.
- D. Bullet loose in brass.
  - 1. Bullet is under sized.
    - a. Measure diameter of bullets.
  - 2. Incorrect powder funnel, i.e., if the funnel is too big it will make the mouth of the case oversized.
- E. Bullet tilted after seating.
  - 1. Case not belled enough.
  - 2. Wrong seating stem or die for bullet style or caliber.
  - 3. Missing or wrong locator buttons, i.e., case not centered below the die.
  - 4. Uneven casemouth opening.
  - 5. Using a nominally incorrect bullet. i.e., .38/357 bullet in .38 Super.
  - 6. Die and stem not square to shellplate.
    - a. Snug locking with case and bullet in die.
- F. Seating die deforming top of bullet.
  - 1. Seating stem not matching that style of bullet.
  - 2. Soft lead.
  - 3. Lead and/or wax build-up in die.
  - 4. Case not belled enough.

#### **Station 5 - Crimp**

- A. Erratic crimping.
  - 1. Variation in case length. Probably due to mixed brands of brass.
  - 2. Dirty or worn out crimp die. Use Dillon dies where available.
- B. Loose bullet.
  - 1. Too much taper crimp. This condition can also affect accuracy.
  - 2. Wrong expander.
  - 3. Thin cases. (Use Dillon dies and this won't be a problem.)
  - 4. Wrong crimp die.
- C. Too much or too little crimp on completed round.
  - 1. Crimp die adjusted too low or too

- high. See manual for maximum crimp dimensions. If not available, crimp to 20 thousandths below case diameter.
- 2. Using wrong crimp die for that case.
- 3. Not using full stroke of handle.
- 4. Over flared case.
- 5. Variations in case length.

#### **Ejecting Finished Cartridges**

- A. Rounds not ejecting after Station 5.
  - 1. Ejector wire (13298) bent, broken or missing.
  - 2. Wrong locator buttons.
  - 3. Shellplate damaged from decap pin.
- B. Finished cartridges do not make it into the catch bin.
  - 1. Operating handle too fast.
  - 2. Chute/bin mount is bent.
  - 3. Bin is missing or improperly located.

#### **Maintenance**

Lubrication: Operating circumstances will dictate the frequency of required lubrication. It is highly recommended that the XL 650 be cleaned and lubed after every 3000 rounds of operation. Use oil or wheel bearing grease. Never use penetrating lubricants, aerosol sprays, or solvent type lubes, such as WD-40 or Break Free.

#### **Lubrication Points:**

Shellplate bolt – Grease.

Main Shaft Lubrication –

Use only 30 wt. motor oil. Once again, do not use penetrating lubricants, aerosol sprays, or solvent type lubricants.

## 650 Caliber Conversion Chart - **Pistol**

To order a complete conversion use the 5 digit number to the right of the caliber listing.

To order individual parts use the 5 digit number below the description.

**Casefeed discs are not included in caliber conversion kits.**

Caliber	Complete Conversion	Shellplate Number	Locator Button	Funnel	Station 1 Locator	Casefeed Adapter	Arm Bushing	Body Bushing	Casefeed Disc	Primer System	Powder Check Rod
7TCU	21103	(3) 13345	(3) 14060	(N) 13014	13614	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
(1) .30 Luger	21107	(5) 13509	(3) 14060	(C) 13564	13546	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) .30 Mauser	21107	(5) 13509	(3) 14060	(C) 13564	13546	(Red) 13143	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) .32 ACP (7.65MM)	21114	(8) 12779	(8) 14048	(S) 12845	11936	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) .32 Colt Short	21114	(8) 12779	(8) 14048	(S) 12845	11936	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) .32 S&W Long	21122	(D) 12879	(3) 14060	(SW) 13171	11619	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) .32 H&R Mag	21122	(D) 12879	(3) 14060	(SW) 13171	11619	(Blue) 13075	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) 9MM/9 X 21 .38 Super	21109	(5) 13509	(3) 14060	(F) 13806	13546	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
(1) 9 X 25	21527	(W) 13310	(2) 14062	(F) 13806	13267	(Red) 13143	(Red) 13403	(Med) 13604	(LP) 21072	Sm	Med
(1) .380 Auto	21104	(3) 13345	(3) 14060	(F) 13806	13614	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
.38	21098	(2) 13430	(2) 14062	(D) 13599	13563	(Orange) 13386	(Red) 13403	(Sm38) 13384	(LP) 21072	Sm	Med
(2) .357	21098	(2) 13430	(2) 14062	(D) 13599	13563	(Orange) 13386	(Red) 13403	(Sm38) 13384	(LP) 21072	Sm	Med
10MM	21120	(W) 13310	(2) 14062	(W) 13600	13267	(Red) 13143	(Red) 13403	(Med) 13604	(LP) 21072	Lg	Med
.40 S&W	21120	(W) 13310	(2) 14062	(W) 13600	13267	(Purple) 18076	(Red) 13403	(Med) 13604	(LP) 21072	Sm	Med
(2) .41 Mag	21111	(6) 13121	(1) 13930	(H) 13240	13118	(Yellow) 13442	(Red) 13403	(Med) 13604	(LP) 21072	Lg	Med
(2) .44 Spl/Mag	21105	(4) 13185	(4) 14047	(G) 13427	13340	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Lg	Lg
.45 ACP	21071	(1) 13204	(1) 13930	(E) 13782	13595	(Red) 13143	(Red) 13403	(Med) 13604	(LP) 21072	Lg	Lg
.45 Auto Rim	21445	(H) 10297	(4) 14047	(E) 13782	16263	(Red) 13143	(Red) 13403	(Lg) 13639	(LP) 21072	Lg	Lg
(2) .45 Long Colt	21118	(C) 12986	(4) 14047	(E) 13782	12817	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Lg	Lg
.454 Casull	21118	(C) 12986	(4) 14047	(E) 13782	12817	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Sm	Lg
.45 Win Mag	21423	(L) 10295	(1) 13930	(E) 13782	13595	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Lg	Lg
9x18 Makarov	21657	(5) 13509	(3) 14060	(9) 14980	13614	(Green) 13450	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med

(1) Requires casefeed adapter funnel (#13688), see manual for installation instructions.

(2) Requires casefeed spacer washer, see manual for installation instructions.

**About Powder Bars:** Dillon Precision manufactures four types of powder bars for the XL 650:

1. Extra Small – use for dropping less than 3 grains of powder
2. Small – use for dropping 3 to 20 grains of powder
3. Large – use for dropping 20 to approximately 45 to 50 grains of powder
4. Magnum – use for dropping 50 or more grains of powder

The extra small powder bar is used when loading 32 Auto, 32 S&W and 32 SWL. Both the extra small powder bar and the magnum powder bar are non-standard items and are ordered separately. The large and small powder bar, on the other hand, are standard equipment and are included with every XL 650.

## 650 Caliber Conversion Chart - Rifle

To order a complete conversion use the 5 digit number to the right of the caliber listing.

To order individual parts use the 5 digit number below the description.

**Casefeed discs are not included in caliber conversion kits.**

Caliber	Complete Conversion	Shellplate Number	Locator Button	Funnel	Station 1 Locator	Casefeed Adapter	Arm Bushing	Body Bushing	Casefeed Disc	Primer System	Powder Check Rod
.17 Rem	21099	(3) 13345	(3) 14060	(O) 12921	(3) 13614	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
.22 Hornet	21697	(E) 10300	(8) 14048	(A) 13426	(E) 14859	(BlueMod) 15186	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Sm
.22 Rem Jet	21096	(2) 13430	(2) 14062	(A) 13426	13563	(Orange) 13386	(Red) 13403	(Sm38) 13384	(LP) 21072	Sm	Sm
.218 Bee	21618	(O) 10294	(3) 14060	(A) 13426	(W) 13600	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
.220 Swift	21429	(L) 10295	(1) 13930	(A) 13426	(6) 13118	(Orange220) 14851	(White) 13661	(Med) 13604	(LR) 21075	Lg	Sm
.221 Rem Fire Ball	21102	(3) 13345	(3) 14060	(A) 13426	(3) 13614	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
.222 Rem/Rem Mag	21101	(3) 13345	(3) 14060	(A) 13426	(3) 13614	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
.223 (5.56MM)	21101	(3) 13345	(3) 14060	(A) 13426	(3) 13614	(White) 13575	(Green) 13412	(Sm) 13513	(SR) 21074	Sm	Sm
.224 Wby Mag	21116	(A) 12529	(2) 14062	(A) 13426	(A) 12339	(Black) 13541	(White) 13661	(Med) 13604	(LR) 21075	Lg	Sm
.22-250	21088	(1) 13204	(1) 13930	(A) 13426	(1) 13595	(OrangeMod) 14313	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.243 Win/6mm Rem	21089	(1) 13204	(1) 13930	(I) 13305	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.25-20	21619	(O) 10294	(3) 14060	(R) 13243	(W) 13600	(Blue) 13075	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Sm
.25-06	21090	(1) 13204	(1) 13930	(K) 13216	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.256 Win Mag	21097	(2) 13430	(2) 14062	(R) 13243	13563	(Orange) 13386	(Red) 13403	(Sm38) 13384	(LP) 21072	Sm	Sm
.257 Roberts	21090	(1) 13204	(1) 13930	(K) 13216	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.257 Ack Imp	21090	(1) 13204	(1) 13930	(K) 13216	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.257 WBY Mag	21431	(B) 12903	(4) 14047	(K) 13216	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
6.5 Rem Mag	21437	(B) 12903	(4) 14047	(Y) 12870	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
6.5 x 55 Mauser	21476	16545	(1) 13930	(Y) 12870	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
.264 Win Mag	21437	(B) 12903	(4) 14047	(Y) 12870	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
.270 WBY Mag	21438	(B) 12903	(4) 14047	(J) 13456	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
.270 Win	21093	(1) 13204	(1) 13930	(J) 13456	(1) 13595	(Black) 13541	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Sm
7mm Rem Mag	21438	(B) 12903	(4) 14047	(J) 13456	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
7mm Wby Mag	21438	(B) 12903	(4) 14047	(J) 13456	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Sm
(3) 7.62x54	21699	(G) 10298	(7) 13436	(B) 13587	(G) 14331	(BlackModS) 14395	(Nickel) 14397	(XL) 14396	(LR) 21075	Lg	Med
.30-338 Win Mag	21439	(B) 12903	(4) 14047	(B) 13587	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
.300 H&H Mag	21439	(B) 12903	(4) 14047	(B) 13587	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
.300 Win Mag	21439	(B) 12903	(4) 14047	(B) 13587	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
.300 WBY Mag	21439	(B) 12903	(4) 14047	(B) 13587	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
(2) .30 M1 Carbine	21113	(8) 12779	(8) 14048	(C) 13564	(8) 11936	(Blue) 13075	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
.308 Norma Mag	21439	(B) 12903	(4) 14047	(B) 13587	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
.308 Win (7.62mm) .30-06	21094	(1) 13204	(1) 13930	(B) 13587	(1) 13595	(Black) 13541	(White) 13661	(Med) 13604	(LR) 21075	Lg	Med
.303 British	21106	(N) 10296	(4) 14047	(B) 13587	(N) 14237	(Black) 13541	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med

## 650 Caliber Conversion Chart - Rifle

To order a complete conversion use the 5 digit number to the right of the caliber listing.

To order individual parts use the 5 digit number below the description.

**Casefeed discs are not included in caliber conversion kits.**

Caliber	Complete Conversion	Shellplate Number	Locator Button	Funnel	Station 1 Locator	Casefeed Adapter	Arm Bushing	Body Bushing	Casefeed Disc	Primer System	Powder Check Rod
.30-30 Win	21112	(7) 13300	(4) 14047	(B) 13587	(7) 13176	(Orange220) 14851	(White) 13661	(Med) 13604	(LR) 21075	Lg	Med
(4) 7.62 X 39 Russian	21117	(A) 12529	(2) 14062	(AK)13015	(A) 12339	(OrangeMod) 14313	(Red) 13403	(Med) 13604	(LP) 21072	**	Med
.32-20	21620	(O) 10294	(3) 14060	(S) 12845	(W) 13600	(Blue) 13075	(Green) 13412	(Sm) 13513	(SP) 21073	Sm	Med
.338 Win Mag	21441	(B) 12903	(4) 14047	(Q) 13406	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
.340 WBY Mag	21442	(B) 12903	(4) 14047	(P) 13187	(B) 13156	(BlackModT) 14394	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Med
.350 Rem Mag	21442	(B) 12903	(4) 14047	(P) 13187	(B) 13156	(BlackModS) 14395	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Med
.38-40 Win	21492	(N) 10296	(4) 14047	(W) 13600	(N) 14237	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Lg	Med
.375 H&H Mag	21443	(B) 12903	(4) 14047	(R) 13531	(B) 13156	(BlackModT) 14394	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Med
8MM REM MAG	21442	(B) 12903	(4) 14047	(P) 13187	(B) 13156	(BlackModT) 14394	(White) 13661	(Lg) 13639	(LR) 21075	Lg	Med
.44-40 Win	21493	(N) 10296	(4) 14047	(4) 13474	(N) 14237	(Yellow) 13442	(Yellow) 13619	(Lg) 13639	(LP) 21072	Lg	Lg
.444 Marlin	21491	(N) 10296	(4) 14047	(X) 12920	(N) 14237	(Black) 13541	(Yellow) 13619	(Lg)13639	(LR) 21075	Lg	Lg
(3) .45-70 Gov't	21422	(G) 10298	(7) 13436	(T) 13407	(G) 14331	(BlackModS) 14395	(Nickel) 14397	(XL) 14396	(LR) 21075	Lg	Lg
.458 Win Mag	21444	(B) 12903	(4) 14047	(T) 13407	(B) 13156	(BlackModS) 14395	(Yellow) 13619	(Lg) 13639	(LR) 21075	Lg	Lg

(3) These caliber conversions come with an oversized casefeed tube, casefeed funnel, and complete casefeed body assembly.

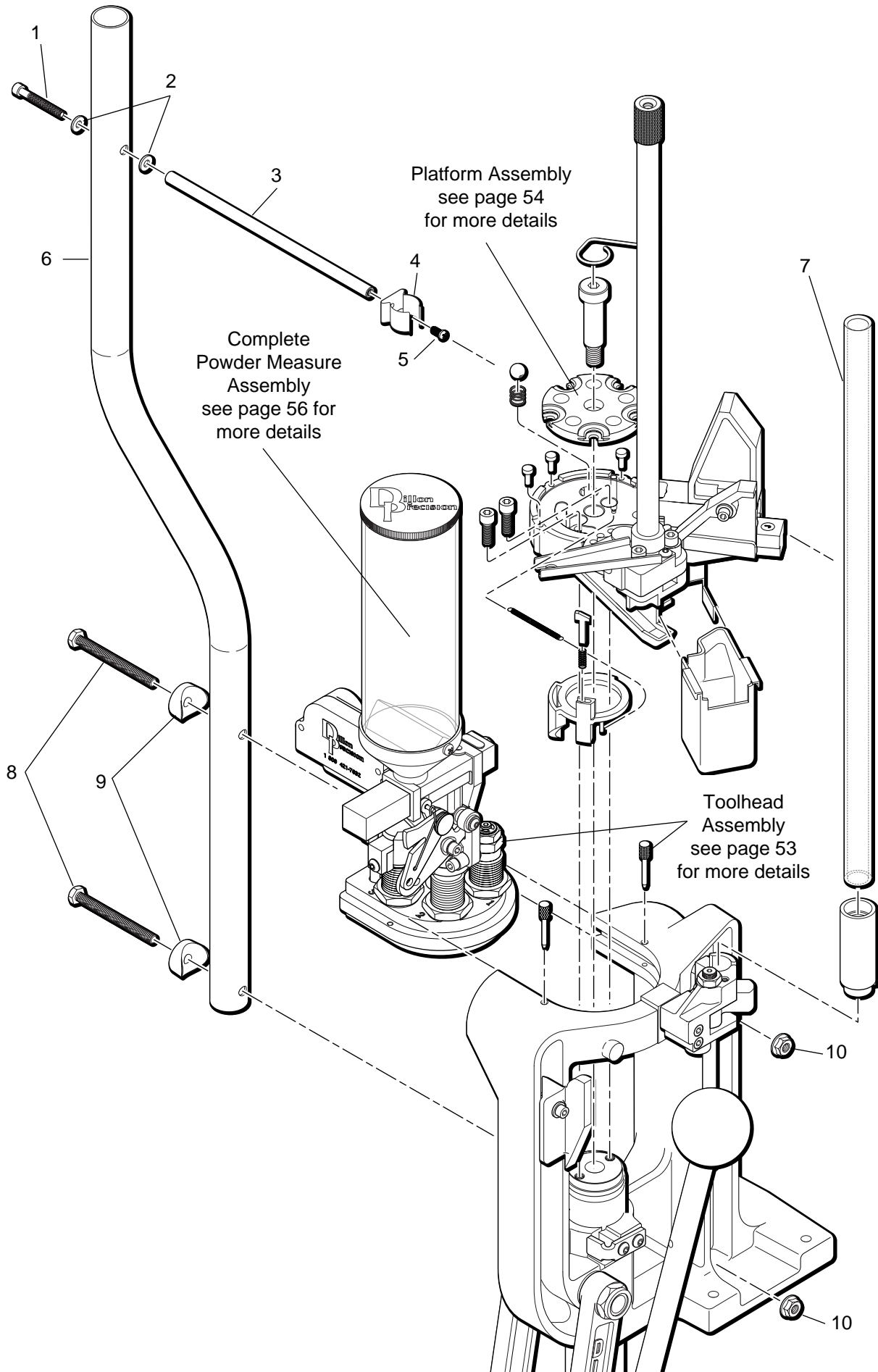
(4) For 7.62x39 primer systems, Remington made brass requires the small primer system, all others require the large primer system.

**About Powder Bars:** Dillon Precision manufactures four types of powder bars for the XL 650:

1. Extra Small – use for dropping less than 3 grains of powder
2. Small – use for dropping 3 to 20 grains of powder
3. Large – use for dropping 20 to approximately 45 to 50 grains of powder
4. Magnum – use for dropping 50 or more grains of powder

The extra small powder bar is used when loading 32 Auto, 32 S&W and 32 SWL. Both the extra small powder bar and the magnum powder bar are non-standard items and are ordered separately. The large and small powder bar, on the other hand, are standard equipment and are included with every XL 650.

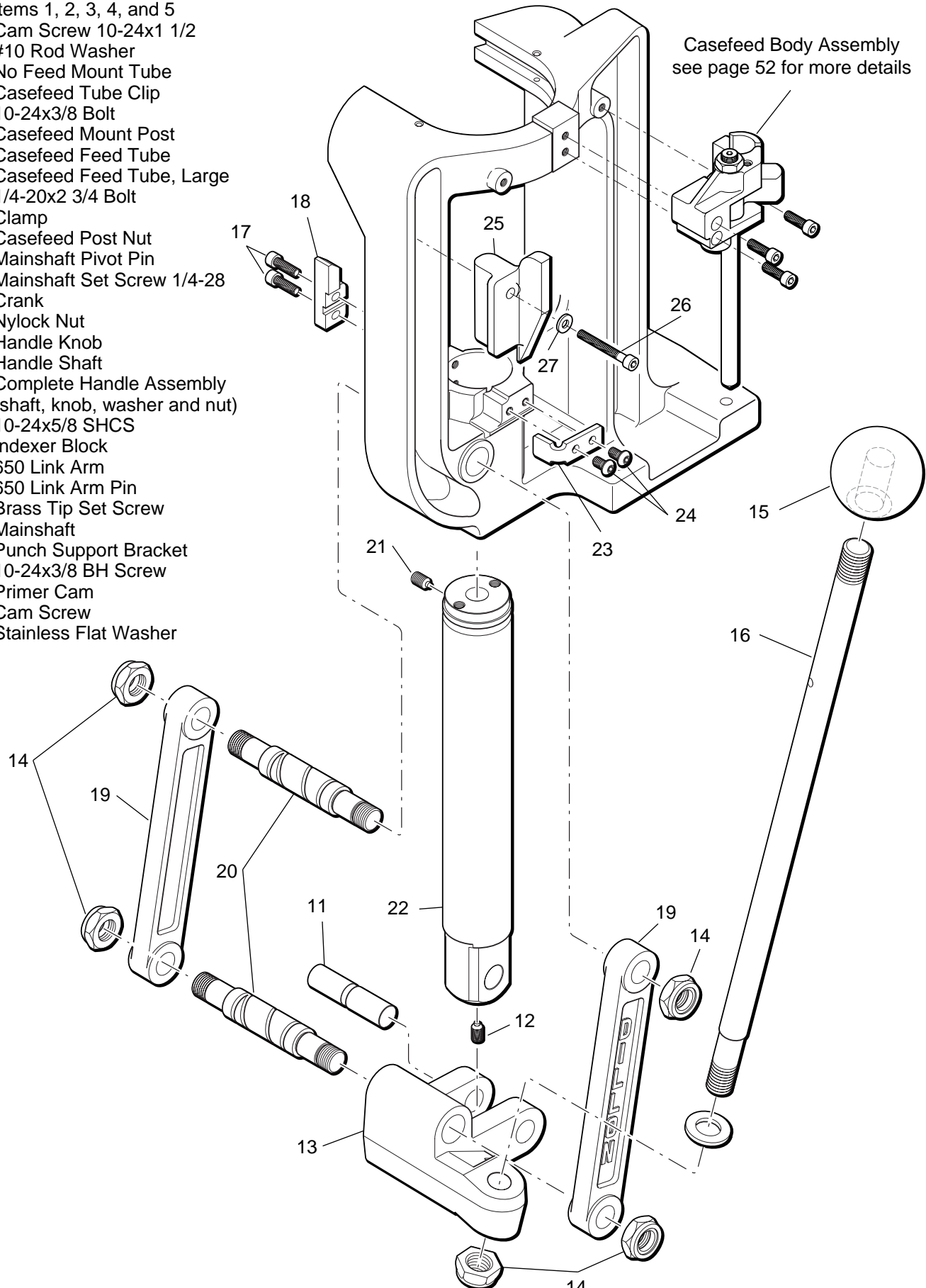




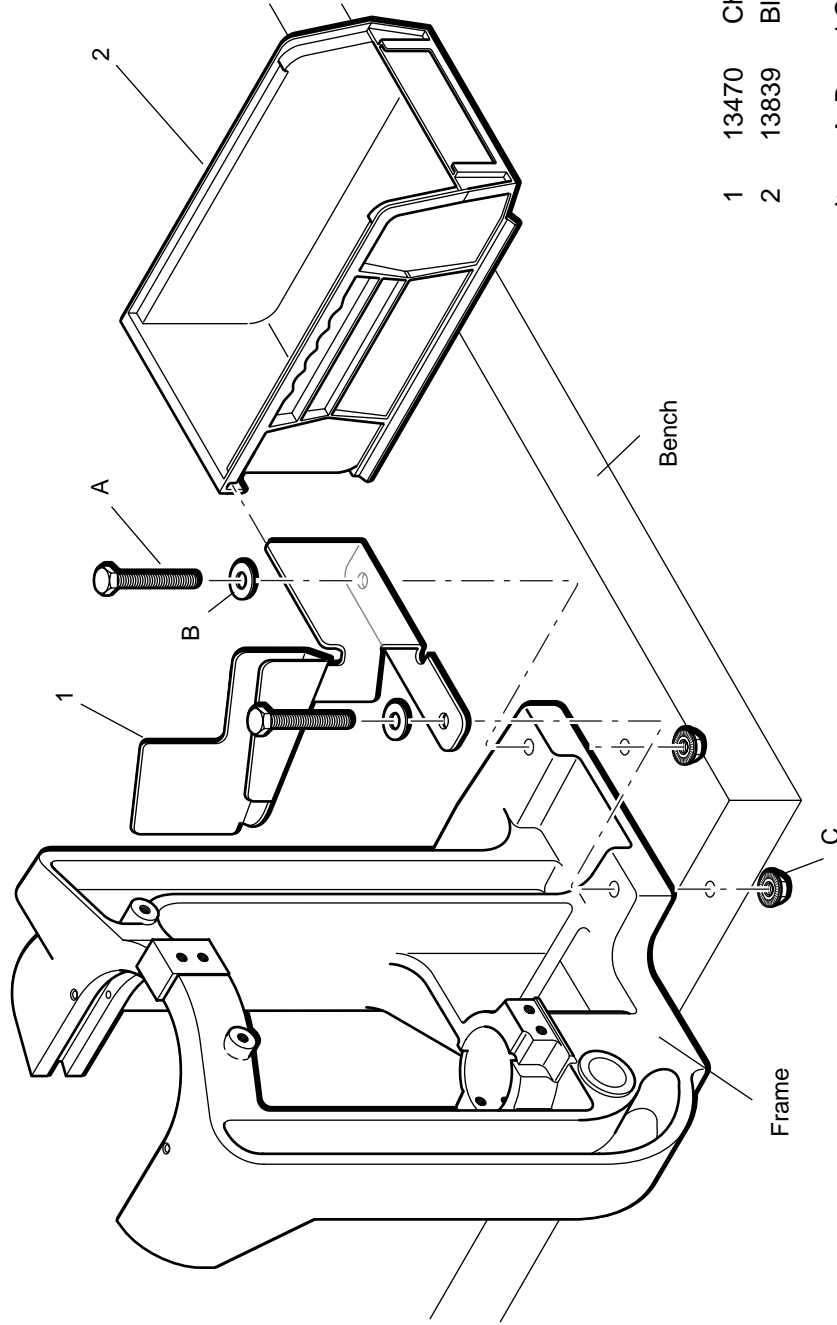
# Machine Assembly

21326 No feed Mounting Kit includes items 1, 2, 3, 4, and 5

- 1 13905 Cam Screw 10-24x1 1/2
- 2 13738 #10 Rod Washer
- 3 12831 No Feed Mount Tube
- 4 13859 Casefeed Tube Clip
- 5 13895 10-24x3/8 Bolt
- 6 17123 Casefeed Mount Post
- 7 13099 Casefeed Feed Tube
- 8 13101 Casefeed Feed Tube, Large
- 9 13911 1/4-20x2 3/4 Bolt
- 10 13613 Clamp
- 11 13988 Casefeed Post Nut
- 12 13830 Mainshaft Pivot Pin
- 13 13789 Mainshaft Set Screw 1/4-28
- 14 13674 Crank
- 15 13841 Nylock Nut
- 16 13855 Handle Shaft
- 17 20636 Complete Handle Assembly (shaft, knob, washer and nut)
- 18 13989 10-24x5/8 SHCS
- 19 16671 Indexer Block
- 20 14922 650 Link Arm
- 21 13700 650 Link Arm Pin
- 22 13923 Brass Tip Set Screw
- 23 13485 Mainshaft
- 24 13488 Punch Support Bracket
- 25 13895 10-24x3/8 BH Screw
- 26 13670 Primer Cam
- 27 14037 Cam Screw
- 28 13738 Stainless Flat Washer



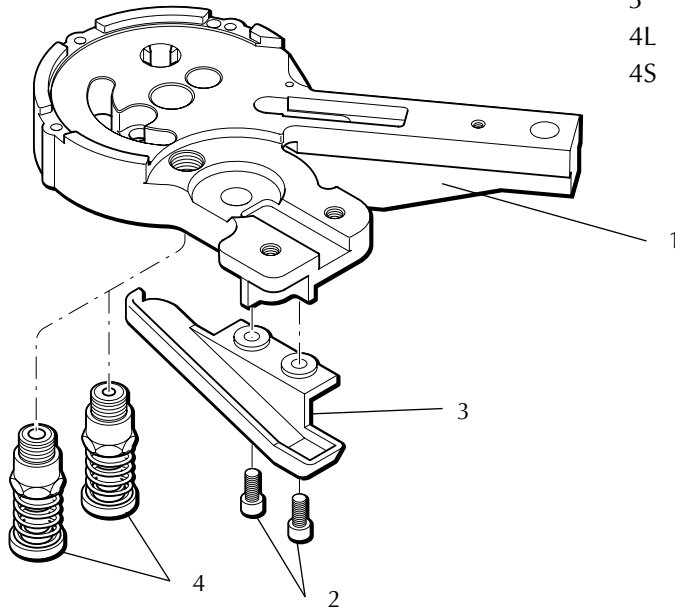
# Lower Machine Assembly



- 1 13470 Chute/Bin Mount
- 2 13839 Blue Cartridge Bin

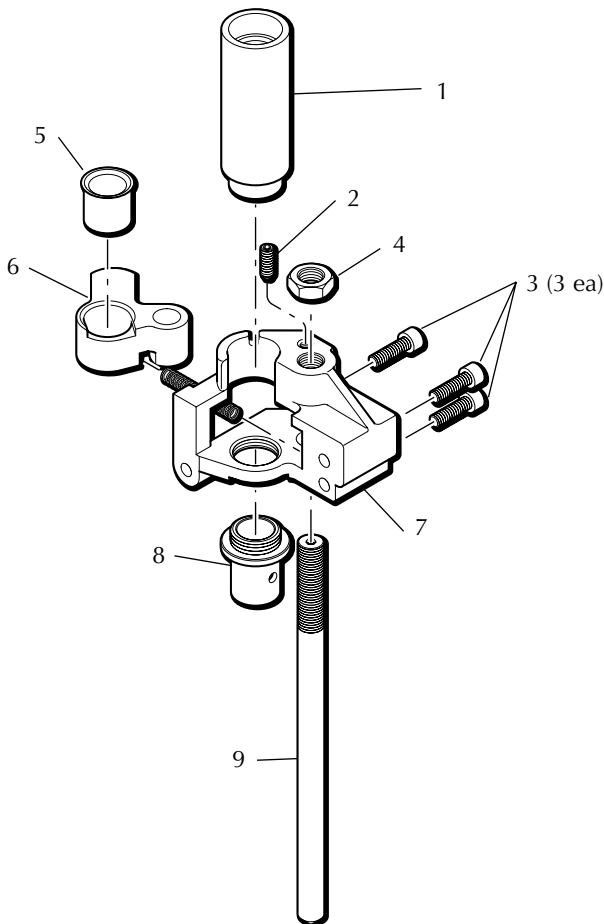
Items A, B, and C included in optional Hardware Mounting Kit, #16600.

# Primer Punch Assembly



- 1 16652 Platform
- 2 14013 8-32x3/8 Cap Screw
- 3 16210 Primer Chute
- 4L 21380 Rev B Seater Assembly, Large
- 4S 21381 Rev B Seater Assembly, Small

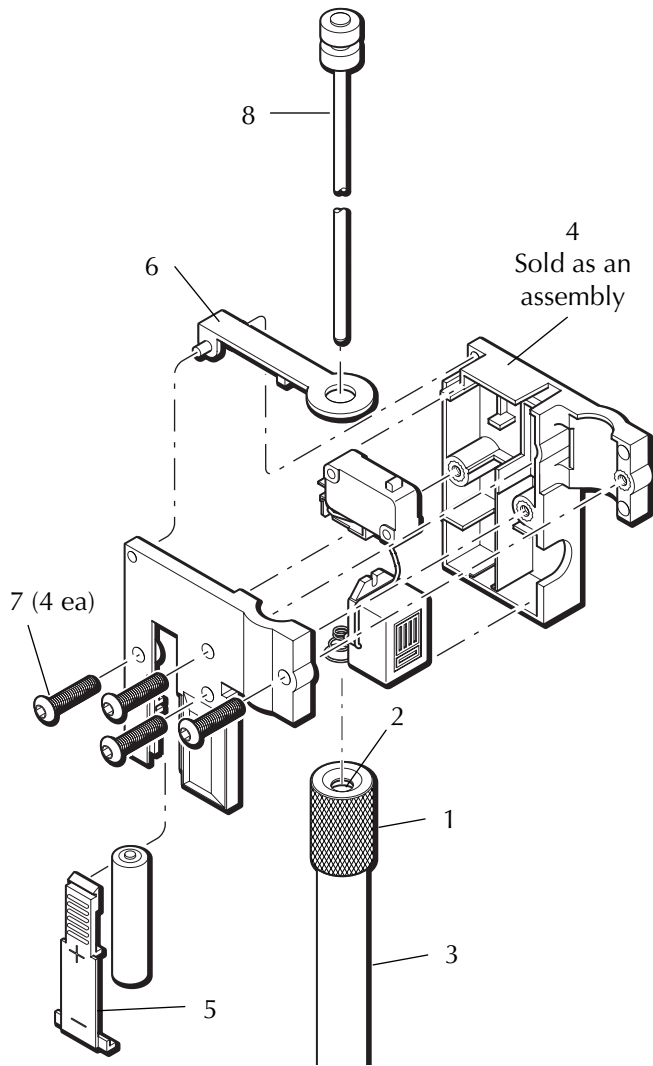
# Casefeed Body Assembly



- \*1 13541 Casefeed Adapter (Black)
- 14394 Casefeed Adapter (BlackModT)
- 14395 Casefeed Adapter (BlackModS)
- 13450 Casefeed Adapter (Green)
- 13386 Casefeed Adapter (Orange)
- 14313 Casefeed Adapter (OrangeMod)
- 14851 Casefeed Adapter (Orange220)
- 13143 Casefeed Adapter (Red)
- 13575 Casefeed Adapter (White)
- 13442 Casefeed Adapter (Yellow)
- 13075 Casefeed Adapter (Blue)
- 15186 Casefeed Adapter (BlueMod)
- 2 14326 Casefeed Arm Stop Pin
- 3 13989 Casefeed Body Screws
- 4 13901 Cam Pin Jam Nut 3/8-24
- \*5 13412 Casefeed Arm Bushing (Green) Small Pistol
- 13403 Casefeed Arm Bushing (Red) Medium Pistol
- 13661 Casefeed Arm Bushing (White) Rifle
- 13619 Casefeed Arm Bushing (Yellow) Large Pistol
- 14397 Casefeed Arm Bushing (Nickel) Large  
Magnum Calibers
- 6 13716 Casefeed Arm
- 7 13558 Casefeed Body (Standard)
- 14979 Casefeed Body (Extra Large/Magnum)
- \*8 13639 Casefeed Body Bushing, Large
- 13604 Casefeed Body Bushing, Medium
- 13513 Casefeed Body Bushing, Small
- 13384 Casefeed Body Bushing, 38
- 9 13371 Camming Pin
- 10 13936 Casefeed Arm Return Spring

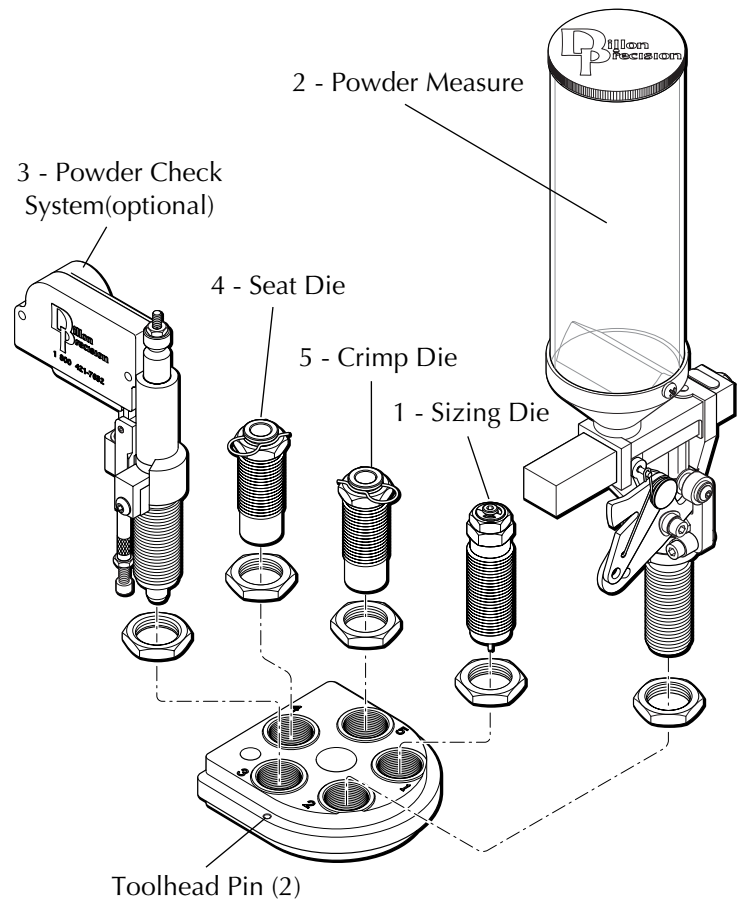
\* Indicates items included in caliber conversion kits.

# Primer Early Warning Buzzer Assembly #20302



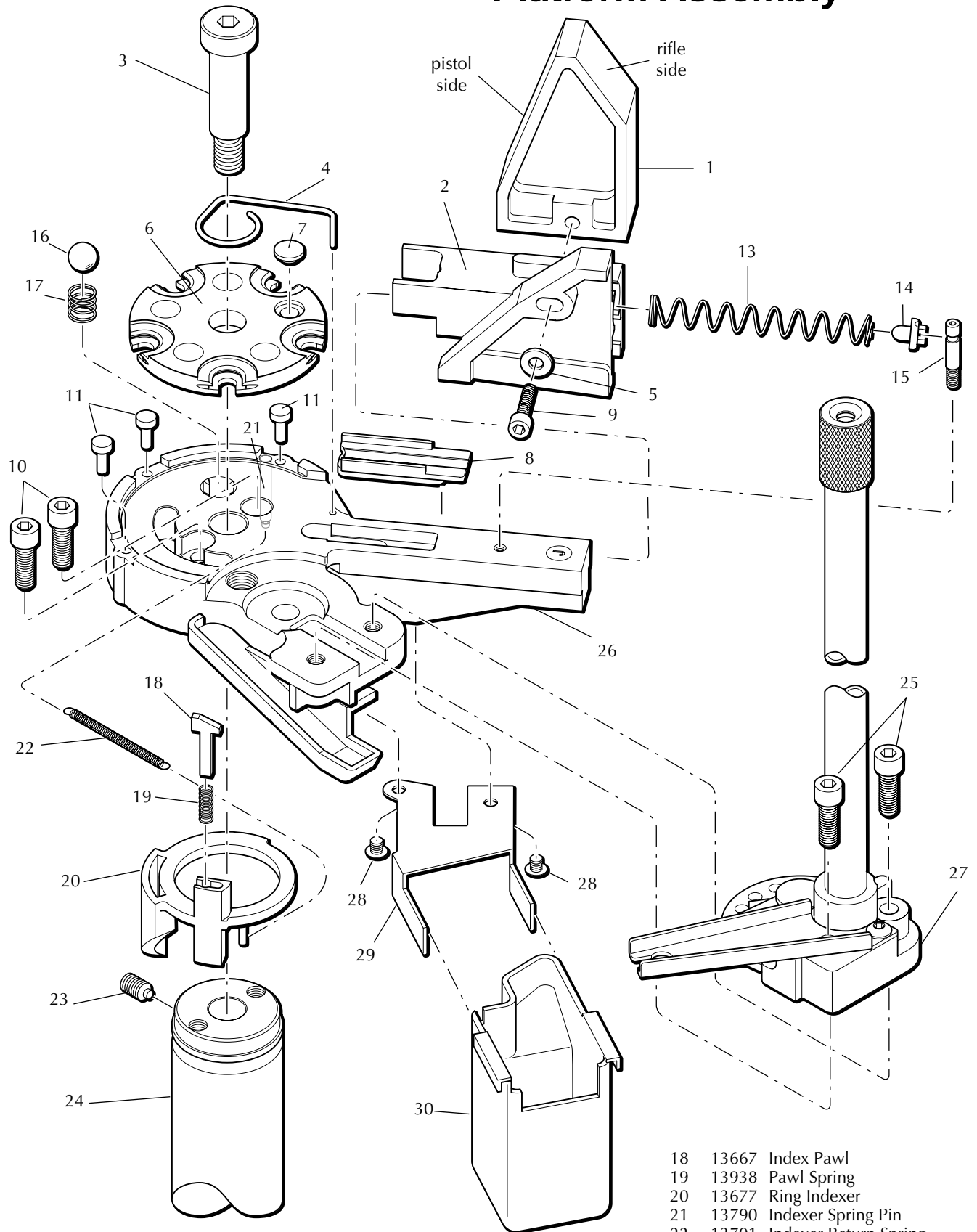
- |    |       |                          |
|----|-------|--------------------------|
| 1  | 13957 | Magazine Shield Cap      |
| 2L | 22033 | Primer Magazine, Large   |
| 2S | 22032 | Primer Magazine, Small   |
| 3  | 21279 | Primer Feed Body Housing |
| 4  | 20302 | Early Warning Buzzer     |
| 5  | 13857 | Battery Cover            |
| 6  | 13864 | Switch Lever             |
| 7  | 14023 | Buzzer Housing Screw     |
| 8  | 13707 | Follower Rod             |

# Toolhead Assembly & Orientation #13863 - XL650 Toolhead



- |           |                       |
|-----------|-----------------------|
| Station 1 | Sizing Die            |
| Station 2 | Powder Measure System |
| Station 3 | Powder Check System   |
| Station 4 | Seat Die              |
| Station 5 | Crimp Die             |

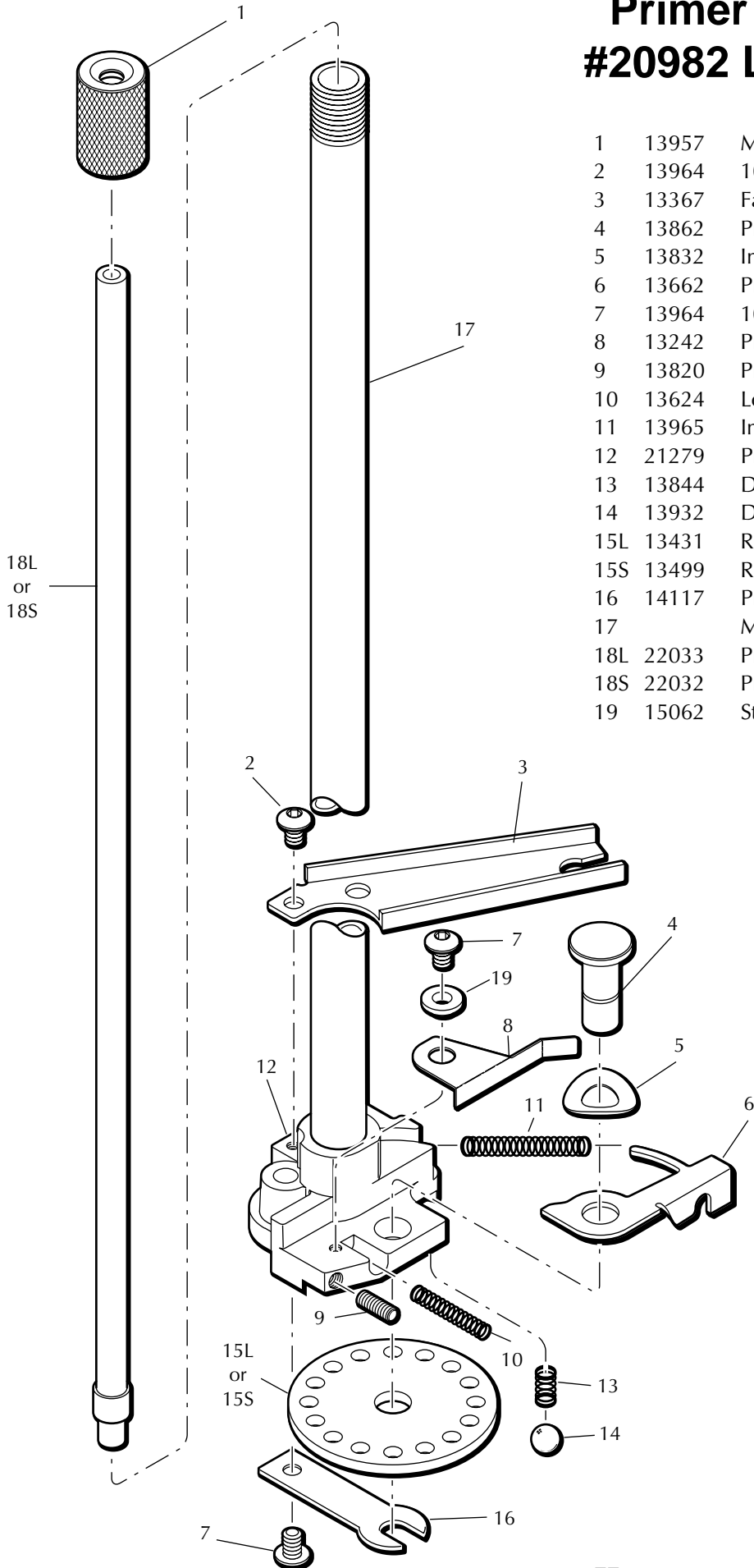
# Platform Assembly



1, 2	97082	Case Insert Slide & Slide Cam (1)	10	13966	Platform Mount Bolt	18	13667	Index Pawl
3	13418	Shellplate Bolt	11		Locator Pins - caliber specific	19	13938	Pawl Spring
4	13298	Ejector Wire	12	13874	Station 1 Locator Tab Spring	20	13677	Ring Indexer
5	13738	Stainless Flat Washer	13	13937	Case Insert Slide Spring	21	13790	Indexer Spring Pin
6		Shellplate - caliber specific	14	14574	Insert Slide Spring Cap	22	13791	Indexer Return Spring
7	14050	Shellplate Cap	15	13311	Slide Spring Pin	23	13923	Brass Tip Set Screw
8		Station 1 Locator - caliber specific	16	13891	Index Ball	24	13485	Mainshaft
9	14037	Cam Screw	17	14118	Index Ball Spring	25	14138	Primer System Mounting Bolts
						26	22060	Platform
						27	21279	Primer Feedbody Housing
						28	14689	Primer Cup Bracket Screw
						29	16209	Spent Primer Cup Bracket
						30	16211	Spent Primer Cup

# Primer System Assembly

## #20982 Large, #21065 Small



- |     |       |  |
|-----|-------|--|
| 1   | 13957 | Magazine Shield Cap                            |
| 2   | 13964 | 10/24x1/4 BH Screw                             |
| 3   | 13367 | Failsafe Bracket                               |
| 4   | 13862 | Primer Disc Pin                                |
| 5   | 13832 | Index Arm Bowed Washer                         |
| 6   | 13662 | Primer Indexing Arm                            |
| 7   | 13964 | 10/24x1/4 BH Screw                             |
| 8   | 13242 | Primer Station Locator Tab                     |
| 9   | 13820 | Primer Station Locator Tab Set Screw 8-32 Thd. |
| 10  | 13624 | Locator Tab Spring                             |
| 11  | 13965 | Indexing Arm Spring                            |
| 12  | 21279 | Primer Feedbody Housing                        |
| 13  | 13844 | Disc Detent Spring                             |
| 14  | 13932 | Disc Detent Ball                               |
| 15L | 13431 | Rotary Primer Disc, Large                      |
| 15S | 13499 | Rotary Primer Disc, Small                      |
| 16  | 14117 | Primer Support Shim                            |
| 17  |       | Magazine Shield (not sold separately)          |
| 18L | 22033 | Primer Magazine, Large                         |
| 18S | 22032 | Primer Magazine, Small                         |
| 19  | 15062 | Station 2 Locator Tab Bushing                  |



# Complete Powder Measure Assembly #20785

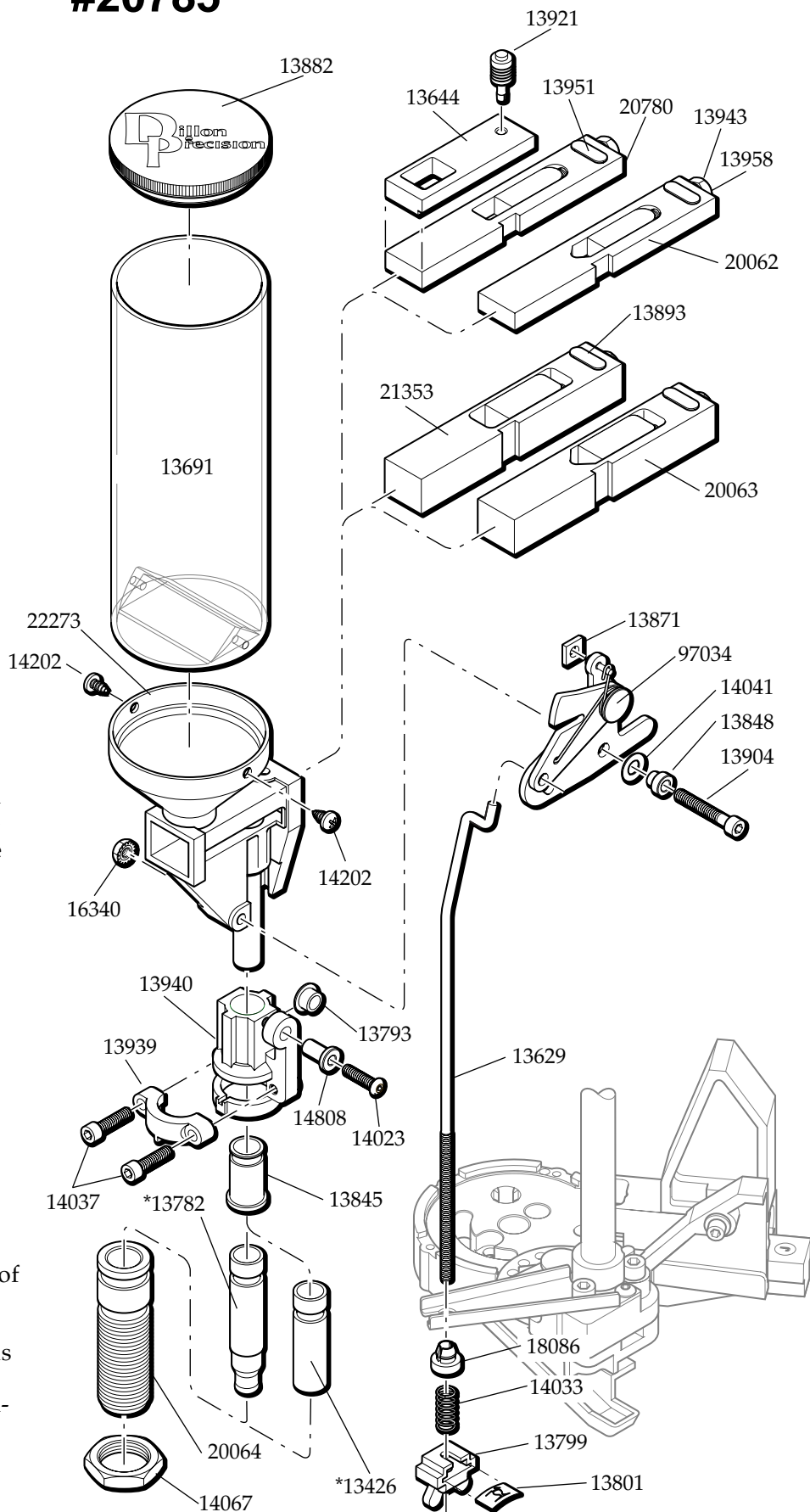
- 13426 \* Powder Funnel, .22 cal rifle
- 13644 Powder Bar Spacer
- 13691 Powder Measure Tube Only
- 13782 \* Powder Funnel, .45 cal pistol
- 13793 Roller
- 13845 Collar Sleeve
- 13848 Bellcrank Bushing
- 13871 Bellcrank Cube
- 13882 Powder Measure Lid
- 13893 Powder Bar Post, Large
- 13904 Bellcrank Screw
- 13921 Plastic Plug
- 13939 Body Collar Clamp
- 13940 Body Collar - Part
- 13943 Powder Bar Bolt
- 13951 Powder Bar Post, Small
- 13958 Powder Bar Bolt Washer
- 14023 8-32 x 3/4 BH Screw
- 14037 Clamp/Bracket Screw
- 14041 Bowed Washer
- 14067 Die Lock Ring
- 14202 Powder Measure Tube Screws
- 14808 Collar Roller Bushing
- 16340 10-32 Nylon Lock Nut
- 20062 Powder Bar Assembly, Small
- 20063 Powder Bar Assembly, Large
- 20064 Powder Die
- 20780 Powder Bar Assembly, Extra Small
- 21275 Connector Body Collar - Complete
- 21353 Powder Bar Assembly, Extra Large
- 22273 Powder Measure, Part
- 97034 Slotted Bellcrank
- 22172 Powder Measure Failsafe Kit**
- 13629 Failsafe Rod
- 13799 Stripper Wing Nut
- 13801 Tinnerman Nut Insert
- 14033 Rod Spring
- 18086 Shoulder Washer

**NOTE:** \* Indicates caliber specific parts – see the caliber conversion chart for the correct part number for the caliber you are loading for.

## **WARNING**

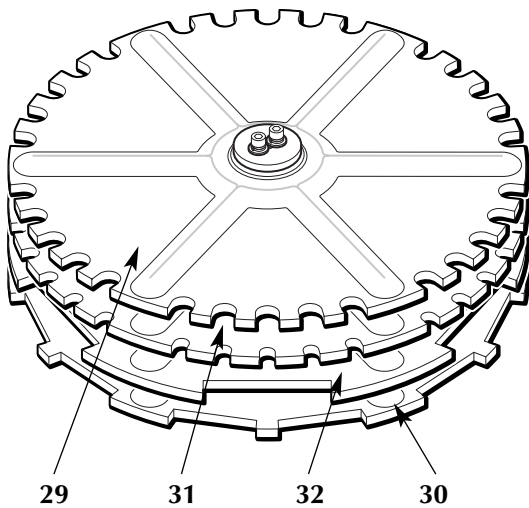
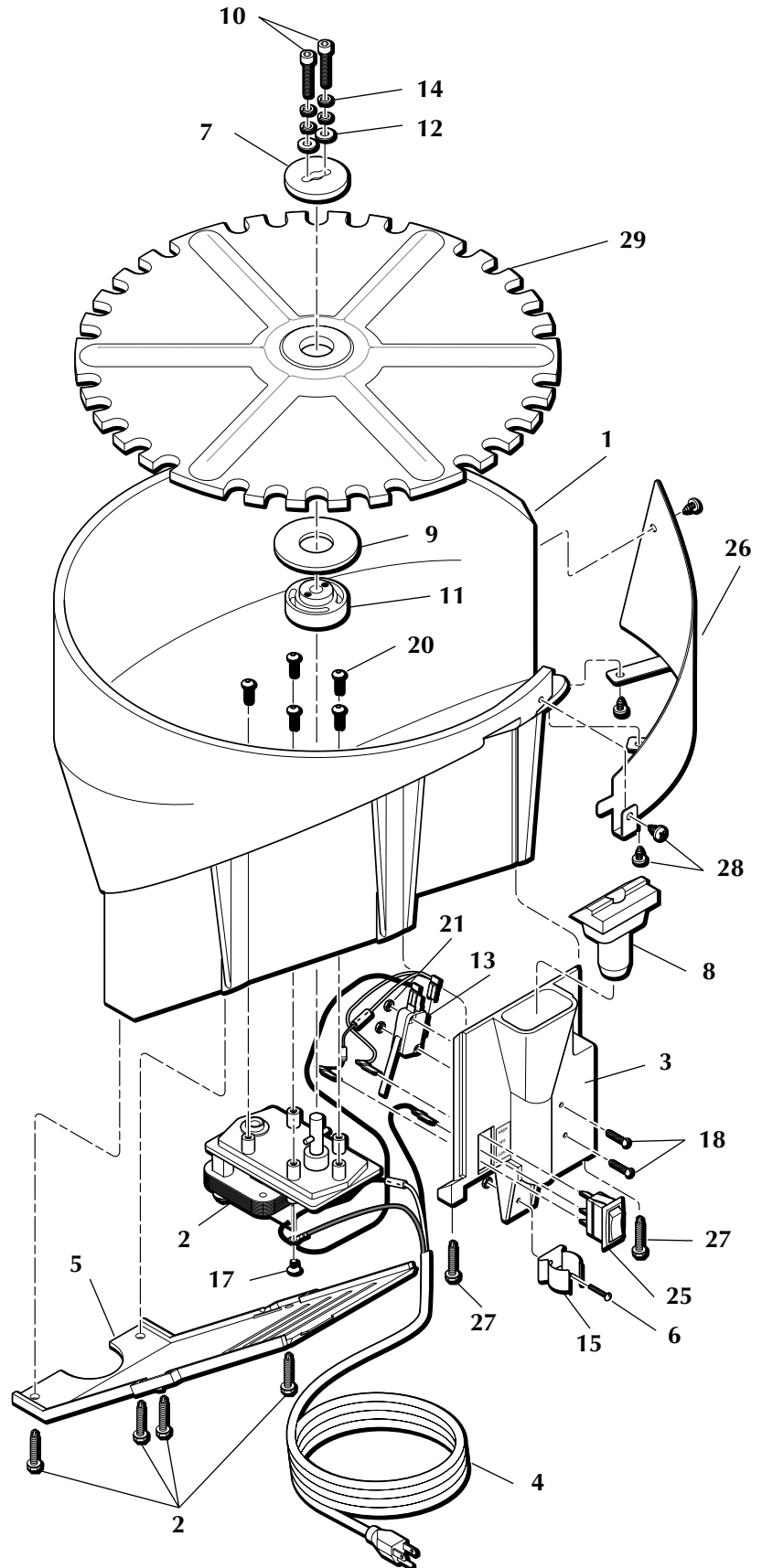
This powder measure drops a full charge of powder each time the operating handle is cycled. If, for any reason, you believe that more than a single measure of powder was dropped or you think that you may have cycled the handle more than once on a single case, you need to empty the case and start over.

A double charged case can result in bodily injury or a damaged firearm.

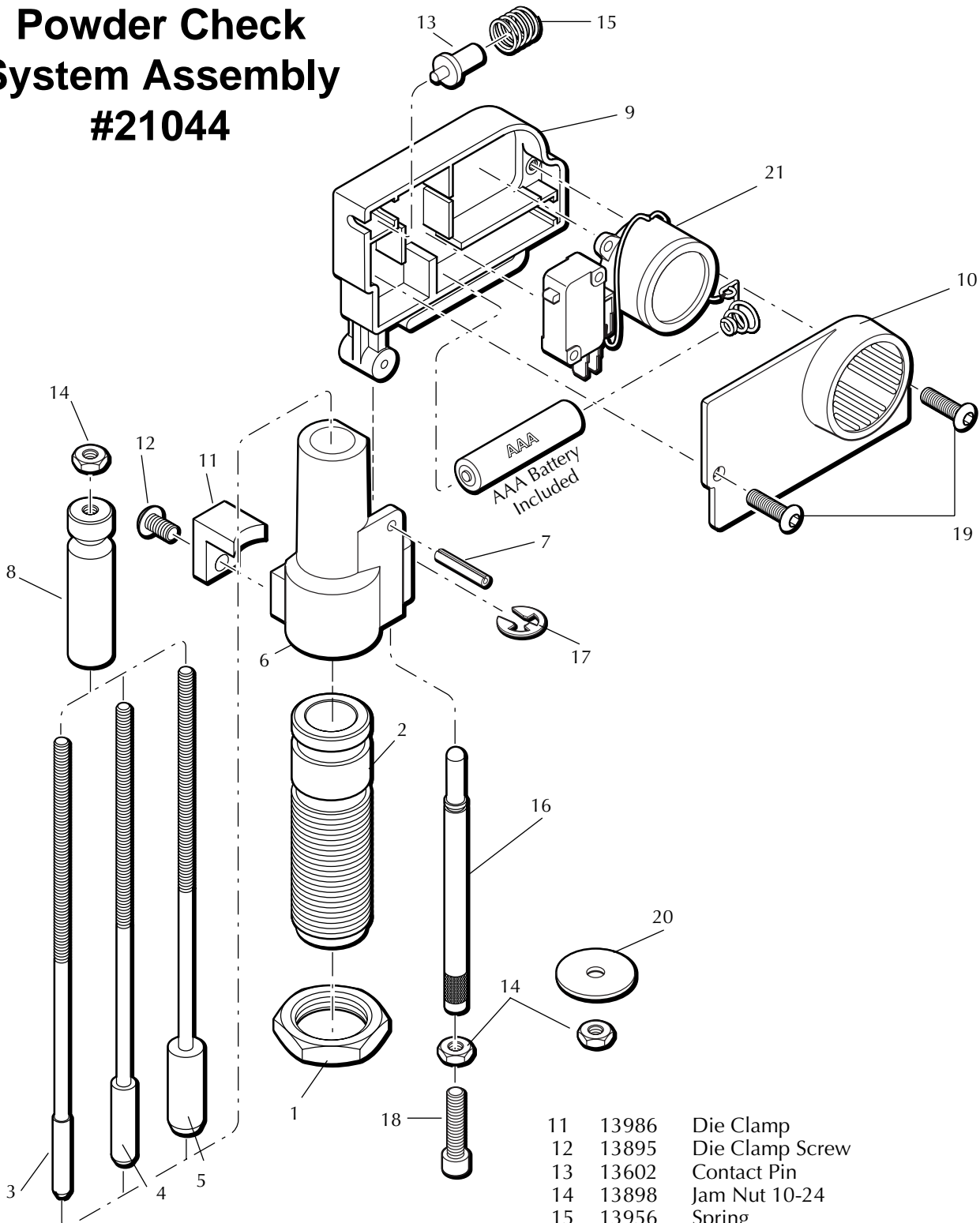


# Casefeed Assembly

- 1 13400 Casefeed Bowl
- 2 13473 Motor
- 3 13494 Casefeed Funnel, Small
- 4 13539 Power Cord
- 5 13540 Motor Cover
- 6 13623 1/4-20x5/8 Casefeed Post Set Screw
- 7 13632 Upper Clutch
- 8 13688 Adapter Funnel
- 9 13703 Washer
- 10 13732 Clutch Screws (2)
- 11 13736 Lower Clutch
- 12 13738 Flat Washer (2 - #10 Stainless Washers)
- 13 13779 Micro Switch
- 14 13813 Lock Washer (4)
- 15 13859 Tube Spring Clamp
- 16 13602 Zener Diode (not shown)
- 17 13912 Cover Screw
- 18 13954 Micro Switch Screws (2)
- 19 14025 Drive Pin (1/8 Roll Pin) Not Shown
- 20 14026 Motor Mount Screw (5)
- 21 14038 Micro Switch & Bracket Nut
- 22 14137 8 x 1 Cover Screw (4) (not shown)
- 23 14393 Casefeed Funnel, Large
- 24 15433 Casefeed Port Cuff (not shown)
- 25 13812 Lighted Rocker Switch
- 26 17808 Casefeed Bowl Insert
- 27 17586 8 x 1 1/4 Funnel Screw (2)
- 28 17587 8 x 1/4 Phl. Pn. Screw (4)
- 29 21072 Large Pistol Plate
- 30 21073 Small Pistol Plate
- 31 21074 Small Rifle Plate
- 32 21075 Large Rifle Plate



# Powder Check System Assembly #21044



- 1 14067 Die locking
- 2 13990 Powder Die
- 3 21372 Powder Check Rod .22-.29 Cal.
- 4 21373 Powder Check Rod .30-.41 Cal.
- 5 21374 Powder Check Rod .44-.45 Cal.
- 6 10552 Die Collar
- 7 14025 Collar Roll Pin
- 8 12685 Check Rod Sleeve
- 9 13538 Buzzer Housing
- 10 13537 Buzzer Housing Cover

- 11 13986 Die Clamp
- 12 13895 Die Clamp Screw
- 13 13602 Contact Pin
- 14 13898 Jam Nut 10-24
- 15 13956 Spring
- 16 13603 Die Push Rod
- 17 13837 Die E Clip
- 18 14037 Push Rod Screw (10-24x3/4)
- 19 13983 Cover Screw (8/32x5/8)
- 20 14157 Washer
- 21 21382 Includes Housing (#13538), Buzzer, Microswitch and Pin

Extra Powder Check Rods can be purchased complete with sleeve (12685) and jam nut (13898).

- 21372 Powder Check Rod Assembly .22-.29 Cal.
- 21373 Powder Check Rod Assembly .30-.41 Cal.
- 21374 Powder Check Rod Assembly .44-.45 Cal.



