

# INTRODUCTION

This publication has been developed to provide you with complete instructions for each piece of Lyman equipment listed on the cover. It will guide you, step by step, through the assembly process for each component and will help you become a knowledgeable reloader in a short time.

## **CAUTION**

**Reloading and bullet casting can be hazardous if not done properly. Follow instructions exactly in all cases.**

### **Non-Cataloged/Obsolete Products**

If you have an interest in any product not currently shown in our most recent catalog, it is unlikely that you will find it at a local dealer's store or be able to obtain it from Lyman. However, you may write Lyman fully describing the product you desire. We will, via post card, inform you whether or not the product is available and its price. Remember, as a general rule, if it is not shown in our current catalog, it is most likely unavailable.

### **Service on Non-Cataloged Products**

Many obsolete and non cataloged products can no longer be serviced at Lyman because our inventory of replacement parts has long ago run out due to the age of the product. If you have a non-cataloged or obsolete product requiring service, do not send the product back to Lyman. Write Customer Service with a complete description of the problem and product. Lyman will, via postcard, notify you if the product can be repaired or not. Although Lyman can no longer offer parts for many older obsolete products it may be possible for the individual customer to have a part fixed or remade locally if he desires. By writing the factory first, we can eliminate unnecessary time loss and postage spent by our customers.

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# GETTING STARTED IN RELOADING

In view of your present interest in the reloading subject, it is safe to assume that you have already had considerable shooting experience. Certainly, you have purchased, and fired, a good many rounds of factory loaded ammunition. Hence you are equipped with a working knowledge of the various caliber designations and cartridge shapes, and you recognize the correct cartridge for your particular gun. Probably many readers will have an overall understanding of shooting that extends beyond these simple basics. However, for the benefit of the uninitiated, we'll begin at this point.

Each factory loaded cartridge we purchase and fire represents extensive thought and care on the part of its manufacturer. If we are to reload a fired cartridge and duplicate, if possible, the original factory loading, we must first learn to appreciate some of the intricacies of ammunition design. For instance, the fired cartridge case is the most important reloading component.

## Equipment Selection

You'll need to equip a reloading bench. While there are much less sophisticated reloading systems on the market, starting with the best gear you can afford quickly pays for itself by turning out excellent reloads on a volume basis.

We've listed our thoughts on basic equipment below and, for reloaders needing complete sets of matched equipment, Lyman provides reloading kits which contain all needed items.

### Equipment List:

- Reloading Press
- Shell Holder\*
- Priming Arm
- Reloading Die Set\*
- Scale
- Powder Measure
- Powder Funnel
- Case Lubricant with Pad
- Case Trimmer
- Deburring Tool
- Vernier Caliper or Case Length Gauge\*
- Reloading Data
- Primer Tray

### Optional Equipment:

- Automatic Primer Feed
- Case Neck Brush
- Inside Neck Reamers\*\*
- Outside Neck Turner\*
- Drop Tube Funnel
- Primer Pocket Cleaner
- Primer Pocket Reamer
- Powder Dribbler
- Bullet Puller
- Loading Block

\*Not included in All-American 8 Kit.

\*\*Not available from Lyman.

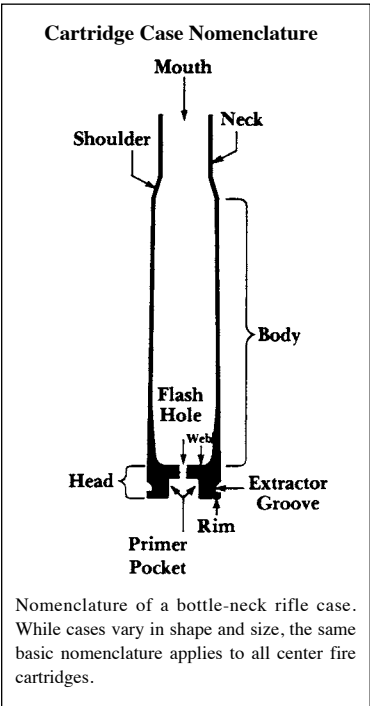
### Lyman's All-American 8 Reloading Kit



# CARTRIDGE CASES

The chief function of a cartridge case is to seal off the breech at the time of firing. To accomplish this, the case walls must expand freely so that they are tight against the sides of the chamber. This sealing action prevents the hot powder gases from leaking back around the cartridge and out through the action. Along with this, the cartridge case must withstand the chamber pressure built up during firing. To achieve this, the case requires a structural strength of its own - plus the additional supporting strength supplied by the bolt face and chamber wall. In essence, the case functions as an intrinsic part of the gun. **A gun is no stronger than the case that is used in it - nor is the case stronger than the gun.**

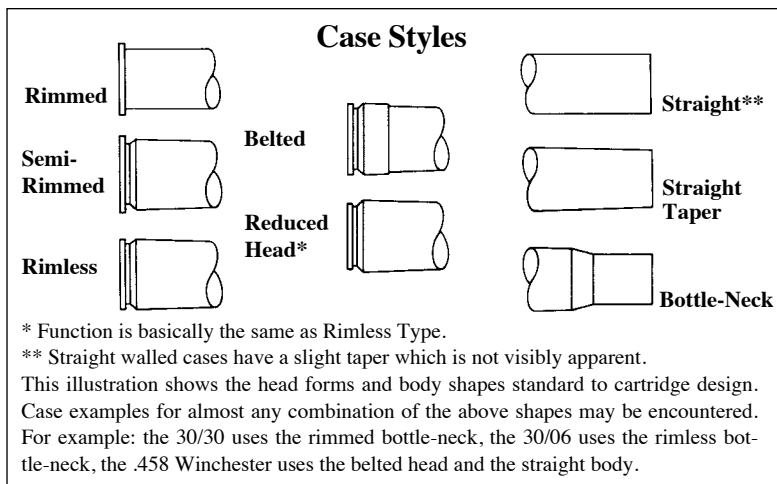
Cartridge brass is carefully tempered in its final manufacture. The head of the case is thick and tough which gives it the strength and rigidity necessary to resist the force of the chamber pressure. The forward section of the case (neck, shoulder and body) is considerably thinner than the head section. In manufacture, these portions are given an anneal which leaves them soft and ductile. The obvious advantage is that the case walls and neck will now expand freely to release the bullet and seal the chamber while the cartridge is fired.



As shooters, we may have been rather casual in our regard for empty brass cases, but as reloaders we soon come to think differently. Without a quantity of strong and serviceable cases, we would not get far in reloading ammunition. The most usual way for a reloader to obtain serviceable cases is to purchase factory loaded ammunition. After this “store bought” ammo has been fired, the empty cases are retained for reloading. The reloader may also purchase new cases from his component dealer.

**To make sure your cases are in prime condition, start with either new or once fired cases. Never use brass of unknown origin such as that found on a shooting range.**

Each firing and resizing has an influence on the serviceability of the case. The battering of chamber pressure and the forces applied by the resizing die eventually work-harden the forward portion of the case and destroy its usefulness.



**Carefully inspect your cases before each reloading.** If your cases are new, or once fired, they will not reveal fatigue at the first reloading. However, fatigue signs will show up in subsequent loading, so you must learn to look for them. **Check your cases for splits or cracks in the neck, shoulder or body.** Reject all cases that show signs of defects, but flatten them with a pair of pliers before discarding to prevent their reuse. We suggest you separate your cartridge cases into lots and keep a record of their history.

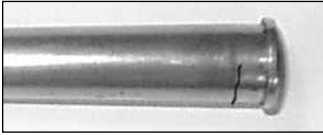
**Trimming** is necessary when your cases have lengthened after numerous firings. Check your cases after resizing and never allow them to exceed the maximum listed measurement. How often you will need to trim the cases depends largely on the type of case you are using and the pressure of the load. Bottle-neck cases take more abuse from pressure than straight-sided cases and require trimming more often. The trimming of any case more than four times is not recommended. After this amount of trimming, it may be assumed that the case walls are now too thin, and the case should be discarded.

### Case Diagnosis:



**Condition "A"  
Case Fatigue**

The condition pictured here illustrates case fatigue. Note how the cracks run lengthwise. Sometimes only pin hole cracks are noticeable, but such cases must also be discarded. Pistol cases show similar cracks.

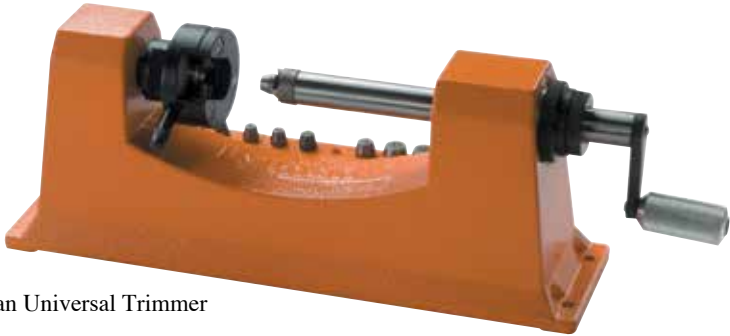


### Condition “B” Excessive Headspace

The condition pictured in this example is quite different from case fatigue. This crack runs around the circumference of the case and indicates an excessive headspace condition. Never use any rifle which shows signs of excessive headspace.

To properly check the length of your cases, you will need a good vernier caliper available at most hardware stores.

In addition, the reloader needs an accurate means of case trimming. The Lyman Universal Trimmer is actually a miniature lathe featuring a unique chuck head which accepts all metallic cartridge cases, rifle or pistol. The tool is supplied with complete instructions and does the trimming operation quickly and easily.



Lyman Universal Trimmer

When loading new or once-fired cases, it is necessary to remove the sharp inside edges of the case mouth. This operation is called **chamfering** and its purpose is to ease insertion of the new bullet. **Chamfering** is required only for the first reloading of a new or once-fired case. The inexpensive hand reamer which is available at most dealers chamfers a case easily and uniformly. Hold the case in one hand while you lightly turn the reamer in the case mouth with the other hand. Remove very little material and do not cut a sharp knife edge on the case.



When chamfering turn the reamer lightly, removing very little case material.

# CASE CLEANING

Reloaders should clean their cartridge cases twice in the process of reloading them. The first time is after firing and before resizing. The second time is after resizing but before firing the completed reload. Here's why.

When a cartridge is fired, the process of combustion always leaves a bit of residue on the walls of the chamber as well as on the inside and outside of the brass cartridge case. The amount of residue - or fouling - will vary with the type of propellant and intensity of the load. Often, spent cases which held light loads will be dirtier than those loaded to maximum. The reason is that the reduced loading did not expand the cartridge case enough to effect a complete gas seal.

In any event, the fired cartridge case is both dirty and tarnished and should be cleaned before reloaded. Cases which go, uncleaned, from reloading to reloading will quickly become scratched and may well cause permanent scratches to develop in the highly polished walls of your expensive resizing die.

The cartridge case will need cleaning one more time during the process of reloading; before the finished cartridge is fired. This cleaning removes resizing lubricant applied to the case before the resizing operation. The only exception to this second cleaning operation would be those pistol cases resized in a tungsten carbide die. No lube is required, because of the superslick T/C ring, so there is none to be removed.

Reloaded cartridges which do not have the resizing lubricant removed will generate increased thrust on the breech/bolt face of your gun. This might cause malfunctions or, in extreme cases, damage your gun.

At best, shooting these uncleaned slippery cases is bad reloading practice because the case and chamber are not allowed to interact properly. During the firing process the walls of the brass cartridge case are intended to expand as pressure quickly builds. This expansion is stopped by the walls of the gun's chamber and the case is pressed firmly against the chamber walls, gripping them and resisting the rearward thrust of chamber pressure. The presence of resizing lubricant on the cartridge denies the cartridge case its "grip" and causes an unusual amount of pressure to be transferred to the breech/bolt face.



## Removing Resizing Lubricant

Resizing lubricant can be removed by cleaning the cases with solvent, soapy hot water or tumbling in a suitable dry media.

If the cases are washed in hot soapy, water, they must be rinsed and thoroughly dried before reloading. The drying process may be hastened by placing the wet cases on a cookie sheet and heating them in your oven, at about 200°F, for about two hours. The hot soapy water, followed by a hot water rinse, will remove both petroleum and wax-base lubricants.

Lubricants with a petroleum base may also be removed with a suitable solvent. One which evaporates quickly is best and proper ventilation is essential.

Finally, resizing lubricant of any sort may be removed by simply returning the cartridge cases to the standard media and tumbling them for another hour or two. The Lyman media will absorb the lubricant. This technique would shorten the life of your media somewhat - perhaps to an unnoticeable degree - and, with repeated cleansing of lubed cases, you would be faced with either reactivating or replacing your media charge a bit earlier.

The advantages of cleansing in the media are that there is no problem with fumes or extended drying periods. When the cases come out of the tumbler, they are ready for the final steps of reloading. Be sure to inspect all the primer pockets for bits of media clogging flash holes before you recap.

The best time to remove the resizing lubricant with your Lyman tumbler is after resizing/decapping and before recapping. If your cartridges are already loaded and ready to fire, the lubricant should be removed by hand using a rag wet with a suitable solvent. **Never tumble loaded rounds.**

## POWDER

Many people are concerned with the dangers of handling and loading modern smokeless powders. To the uninitiated, gun powder is often regarded as “explosive” - something to be feared as much as dynamite. This is a natural but erroneous presumption.

The various modern powders used in reloading are classified as propellants, which means they are chemical mixtures designed to burn under controlled conditions, and to propel a shot charge or projectile. A high explosive, on the other hand, is a completely different breed of cat. These mixtures are quite dangerous because they are designed to detonate. When a substance such as dynamite or blasting gelatin is detonated, it produces intense heat and violent shock waves. These shock waves exert tremendous pressure on anything they contact, which makes it almost impossible to vent away the effects of detonation involving any appreciable quantity of explosive material.

While not to be compared to explosives, modern reloading powders are nonetheless highly flammable. They not only burn, they burn vigorously. In case of accidental ignition, a great amount of high temperature gas will be formed. If the powder is stored in its original factory canister, as it should be, this gas will create a pressure on the relatively fragile sides of the can. The pressure will split open the seams of the container, or pop off the lid. In such an event, the pressure remains at a low level if sufficient space is provided to accommodate the escaping gas and vent it away.



For safe reloading, large quantities of reloading powder should never be stockpiled. The few cans that you do store must be handled with the care and caution due a flammable substance. In this way you control the situation so that it cannot get out of hand. Even in the case of a total house fire arising from other sources, smokeless powders will not produce the effect of an explosion if the proper precautions have been taken.

The burning characteristics of smokeless powders are complex in nature and, depending on the application of the powder, their burning rate can change drastically. While the chemical composition of a powder, the shape and size of its particles and the density or porosity of the powder composition tend to control burning rate, the application of each powder must be carefully considered. Other conditions such as the degree of confinement, heat of ignition, temperature of the combustion chamber, chamber pressure and the density of loading all affect the burning rate, yet such vital factors cannot possibly be included in the so-called burning rate charts.

All reloading powders are manufactured to an exacting set of specifications. They are sold in factory-sealed canisters with the name, or number, of each specific powder clearly printed on the label. When you purchase a reloading powder, you can be sure of obtaining the exact powder specified, and that the contents of the can have not been tampered with.

When weighing a powder charge, you depend on the accuracy of your powder scale and, of course, care must be taken. Reloading scales, such as the Lyman M-500 or M- 1000 Scale, are designed specifically for the weighing of powders. These scales have a guaranteed accuracy of one-tenth of a grain, which is more than adequate for the most demanding reloading requirement.

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# PRIMERS

NOTE: This chapter refers only to rifle and pistol cartridge primers. For information pertaining to shotshell, see the current edition of the Lyman SHOTSHELL HANDBOOK.

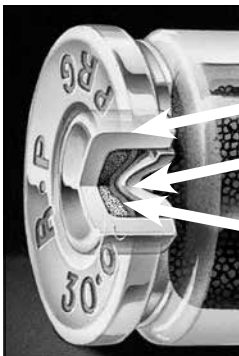
For a cartridge to function properly, the successful operation of each component is required. Primarily from a safety standpoint, we have stated that the cartridge case is the most important component. However, if a primer does not ignite, we will have a misfire and all of our concern for case inspection, powder selection, etc., will be for naught. Therefore, every component, including the primer, is critical to the performance of the load.

Actually, the primer is responsible for only a small percentage of the accuracy of a given load, but its burning characteristics will add or detract from the overall pressure. How much these burning characteristics affect pressure is relative. It depends primarily upon the application of a specific primer to a specific set of conditions. Generally, the primer's influence on pressure is minimal when compared to the possible effects of other conditions and components. This influence, however, is not so slight that it can be overlooked.

In testing metallic cartridges we have noted pressure variations (due to primer change) of approximately 2,000 C.U.P. Further testing could indicate still greater variation. The point is that while metallic cartridge primers do not seem to vary greatly, enough variation exists to require us to re-work a load when changing primer type or brand. The reloader should stick with the same brand and type of primer when working up and using a load. If he changes the primer brand or type, he must then go back to the "starting load" and begin again.

If you examine a "Boxer-Type" primer carefully, you will note that the anvil protrudes slightly beyond the end of the primer cup. This is not an oversight in manufacture! The anvil is supposed to protrude so that it will seat solidly against the bottom of the primer pocket and firmly resist the force of the firing pin blow. If the primer is seated incorrectly (leaving space between anvil and bottom of pocket) then the entire primer will move forward when struck by the firing pin. Such a condition retards the blow of the firing pin and causes inconsistent ignition.

When seating primers, make sure that the primer bottoms in the primer pocket. However, the primer should not be crushed. Normally, when a primer is seated correctly, it will be flush with the head of the case, or perhaps a few thousandths below. Be sure to check individual



**PRIMING CUP**  
**ANVIL**  
**PRIMING MIXTURE**

## Nomenclature of "Boxer-Type" Primer

The boxer type primer is used in all American metallic cartridges. The battery cup primer used in shotshells is of the same basic design, but contains an extra cup to facilitate its use in the less rigid shotshell case. The antique Berdan type primer functions in the same manner as the Boxer type, but with this primer the anvil is actually part of the case.

primer specifications. Under no circumstances should the primer stick out beyond the case head. Such a condition can prove dangerous, particularly in auto loading firearms, for the primer is in an exposed position. If such an improperly seated primer were to receive a blow from the bolt face, it could fire before the round was safely chambered.

Before seating a primer, examine it to make sure the anvil is not missing. Although this rarely occurs, the resultant misfire could be embarrassing if it should come at the wrong moment (such as when that trophy buck shows himself from behind the hemlocks).

### **Handling Primers**

A word of caution on handling primers. Primers are detonated by percussion (a sharp blow). As packaged by the manufacturer, primers are quite safe, but they should not be tossed about or handled in a careless manner. Keep your primers in the factory container until they are to be used. Never store primers in a makeshift container. An old glass jar of primers could become lethal if dropped or accidentally knocked onto the floor.

### **Crimped Primers**

Some military cases are loaded in a manner which employs a slight crimp over the primer to hold it snugly in place. These cases can be decapped without difficulty, but the crimp must be removed before the case can be primed again. Various commercial tools, which include the Lyman primer pocket reamer, are available to do this job. Primer pocket reamers come in two sizes, large and small.

One last thought - never decap live primers. If for some reason live ammunition must be disassembled, pull the bullet, pour out the powder, chamber the primed case in the firearm and snap the primer before decapping.

# PROJECTILES

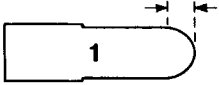
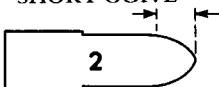
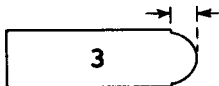
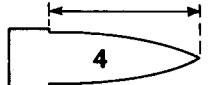
Never before have metallic cartridge reloaders had such an array of jacketed and cast bullets from which to choose. Until fairly recently most reloaders used jacketed bullets in their guns. That is still the case, but cast bullets are once again working their way back into the shooter's reloading repertoire.

## Why?

Because properly made cast bullets can do many things the jacketed bullet can do. Reloaders, aware of the increasing cost of jacketed bullets, have found that cast bullets are good to use for recreational shooting - and even for hunting in .30 caliber and above. Besides, a cast bullet will cost approximately one-fifth as much as a corresponding jacketed bullet - and not a premium bullet, either!

There are several factors to consider when selecting a bullet besides having carefully tested load data for a given projectile weight:

1. Weight - For optimum potential accuracy the bullet must fall within a range peculiar to a given caliber. Also, the velocity at which that bullet will be driven is a factor. The whole idea is to properly blend the three (weight, rate of twist and velocity) to produce the results satisfying you, the reloader. Weight is important to the target shooters for its effect upon sectional density; hunters are concerned with weight for its implications to penetration potential on game.

Design Features of Cast Bullets	
<p><b>These four shapes are basic to cast bullet design. Actual bullets may vary to some extent, but, generally, they fall into one of these four categories.</b></p>  <p><b>1</b> SHORT OGIIVE</p>	
 <p><b>2</b> SHORT OGIIVE</p>	<p>(IDEAL DESIGNS) Bullets that conformed to either of these general shapes performed very well in our testing. Due to their short ogive, the greatest weight mass bears on some portion of the rifling. The driving bands bear directly on the groove, while the nose acts as a pilot to align the bullet in the throat and bore.</p>
 <p><b>3</b> SHORT OGIIVE</p>	<p>(LOVERIN DESIGN) Bullets having this general shape performed extremely well in all of our testing. Due to their short ogive, the greatest weight mass bears directly on the groove. While the design does not always provide for a section of the bullet to bear on the lands, the many driving bands of groove diameter keep them well aligned.</p>
 <p><b>4</b> LONG OGIIVE</p>	<p>Bullets of this general shape proved to be the worst performers in our testing. Their long flowing ogives leave a portion of the bullet unsupported by the rifling. Cast bullets of this general shape can easily misalign themselves as they enter the throat and bore.</p>

2. Base Design - There are two types: flat base and boat tail. Of the two, the boat tail has the most potential for accuracy in that the base can be more precisely made. Also, the boat tail will produce less aerodynamic drag than will an otherwise identical projectile with a flat base. This means the boat tail design will shoot flatter at extended range than will a flat base; all other variables being equal.

3. Point Design - There are various configurations within a given caliber ranging from aerodynamically sleek spitzer points for minimum drag to round noses particularly suited for short range hunting loads. These point shapes can also incorporate an exposed lead nose, hollow point or full coverage jacket.

The one firm rule for a cast bullet is that it must fit the bore of the gun in which it will be used. These lead alloy bullets, even the harder ones of Linotype or heat-treated wheel weights, are much easier to damage in firing than their jacketed descendants. They must fit precisely or they cannot perform at their best.

There is, even now, detectable variation in the bore and groove measurements of modern centerfire firearms. Cast bullets which do not fit properly are inaccurate and contribute to leading.

One last thing to remember about jacketed bullets is that the actual jacket material and projectile bearing surface will vary between manufacturers for bullets of identical weight and similar design.

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# MAKING CARTRIDGES

Now, if you have properly inspected your cases, selected a load, and purchased the necessary components (primers, powder and bullets), you are ready to begin. Your reloading press should be assembled and mounted according to the instructions supplied with the tool. Many reloading presses may be assembled to function either on the up-stroke or on the down-stroke of the handle.

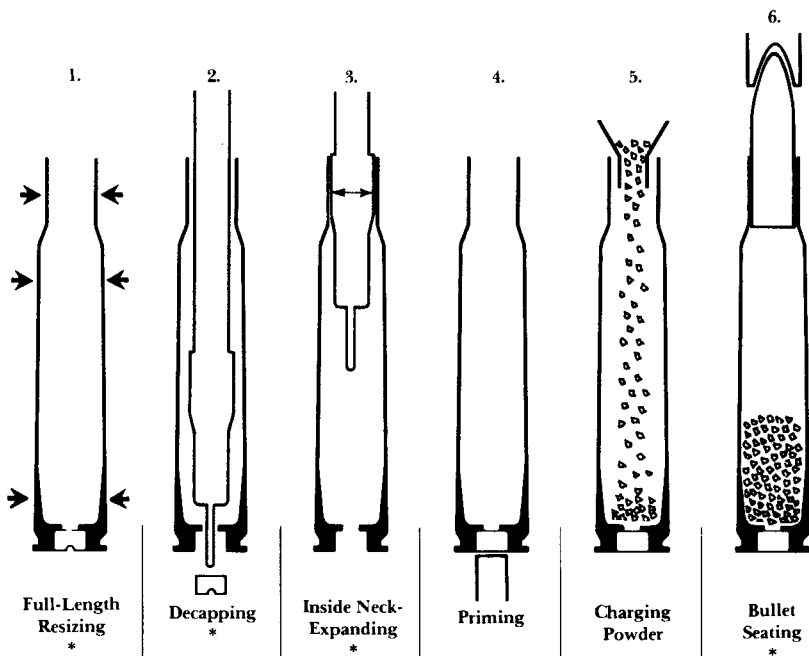
First, lubricate your cases by wiping them with a cloth sparingly wet with Lyman Resizing Lubricant. Be frugal, for too much lubricant will trap air in the die and cause “lube dents”. Cases dented in this manner may be used for reloading, for the dent will be ironed out in firing. It is not considered good reloading practice, however, and care should be exercised. Screw the Full-Length Resizing Die into the head of your press and adjust it according to the instructions supplied with the die.

## Reloading Operations

There are only six basic mechanical operations required to reload a cartridge. Four of them are performed by the reloading dies. As you read through the text and take note of the illustrations, you will see how a set of only two reloading dies can accomplish all four of these operations.

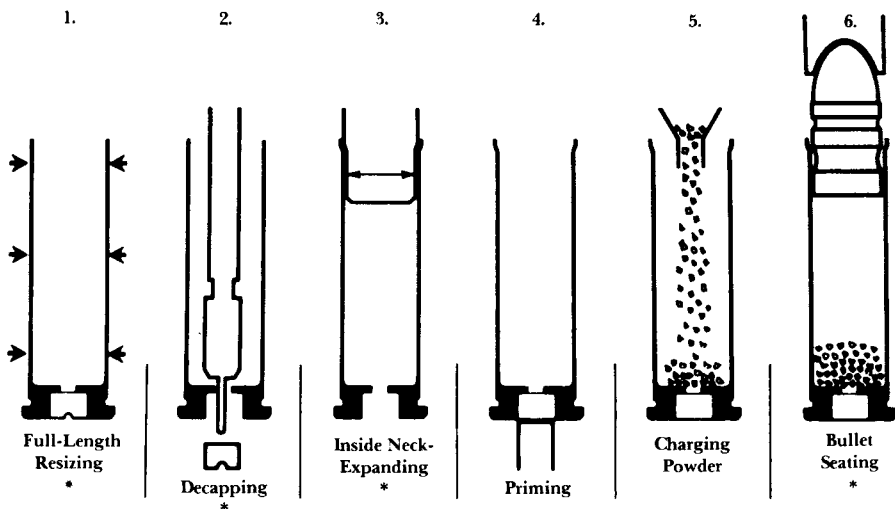
1. Full-Length Resizing: When a cartridge is fired, the neck, shoulder and body of the case expand to seal the chamber, releasing the bullet. Since all chambers are not identical, cases fired in one rifle may not chamber in another unless their walls are reduced to a standard diameter that is acceptable to all rifles. This operation is called resizing.
2. Decapping: This operation consists simply of removing the old primer.
3. Inside Neck-Expanding: After a case has been resized, the inside diameter of its neck will be too small to accept the new bullet. Inside neck expanding enlarges the diameter of the neck to a size that will receive and hold the bullet securely. For pistol cases, a two-step expanding plug is used to open up the inside of the case neck. The first step on this plug is slightly smaller than bullet diameter, while the second step is a few thousandths larger. The idea behind this is to allow the bullet to enter the case freely without shaving lead. The actual difference between the two steps is not visually apparent.
4. Priming: This operation consists of inserting a new primer into the primer pocket.
5. Charging Powder: This operation consists of carefully weighing out and pouring the appropriate powder charge into the case.
6. Bullet Seating: The last operation in the reloading process is the seating of a bullet, into the case.

## RELOADING THE BOTTLE-NECK RIFLE CASE



\* Operations 1, 2, 3 and 6 are performed by reloading dies

## RELOADING THE STRAIGHT-WALL PISTOL CASE



\* Operations 1, 2, 3 and 6 are performed by reloading dies

# RELOADING OPERATIONS

## Step One (Full-Length Resizing and Decapping)

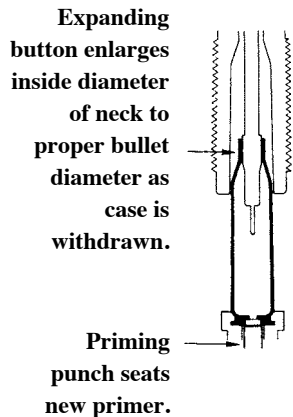
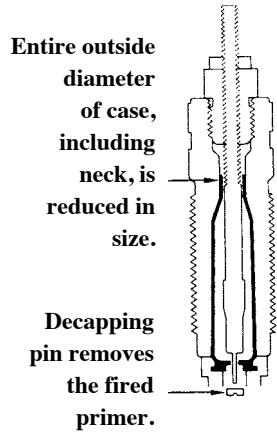
Slide the head of your cartridge case into the shell holder and pull the press handle down all the way. If the die is adjusted properly, the entire cartridge case will enter the die flush to the shell holder\*. Note in the cutaway drawing how two of the original six reloading operations (full-length resizing and decapping) are accomplished by this step.

\* See instructions supplied with your die set.

## Step Two (Inside Neck-Expanding and Priming)

As your case is withdrawn from the resizing die, two further operations are done. The expanding button will automatically enlarge the neck, as shown in the cutaway drawing, and the priming punch will seat the new primer. As the expanding action of the button is automatic, you need not be concerned with it. You must, however, place the new primer (cup side up) into the priming punch sleeve. Push the priming arm forward (toward the press) and pull up on the press handle. As the ram is lowered, the priming arm will enter the slot in the side of the ram and seat the primer.

**Seating Primers:** Primers are seated mainly by feel. The bottom of the anvil **must bottom** in the primer pocket. Use care and do not crush the primer. Crushed primers give erratic ignition, or fail to fire.



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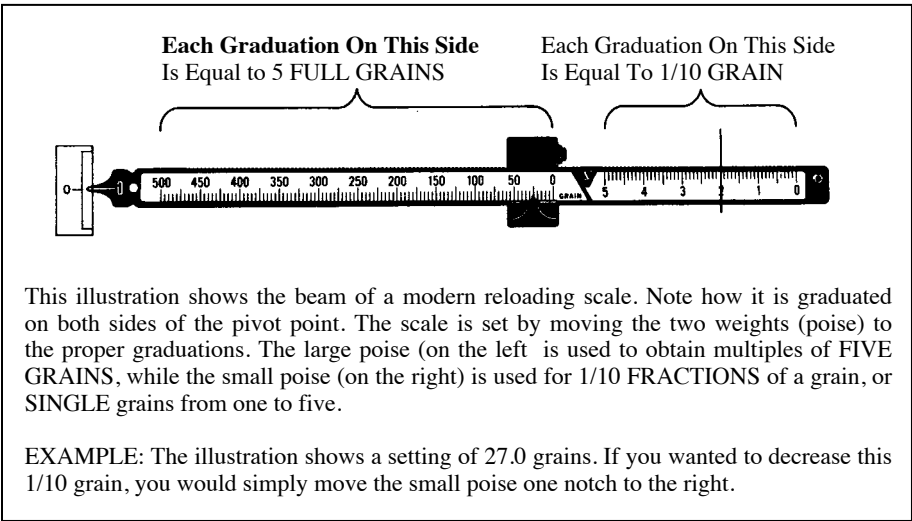


### Step Three (Charging Powder)

You will need an accurate powder scale such as a Lyman Electronic or Mechanical scale. The Reloading Handbook data section specifies the powders appropriate for your particular cartridge. It also lists a suggested weight of the powder charge in grains and in fractions of grains. For example, 9.5 grains would read as NINE and FIVE TENTHS grains. 10.0 grains would be read as TEN grains. We recommend the novice restrict himself to the suggested starting load. Carefully set up the powder scale as explained in the scale instructions and set it to weigh your required charge.

For mechanical scales, slowly sprinkle small amounts of powder into the scale pan until the beam comes into balance. The beam is in balance when the pointed end (extreme left) is exactly on the zero mark. For electronic scales, follow the instructions for your model.

Carefully remove the pan and pour its contents into the cartridge case. Use a powder funnel to make sure all the powder enters the case. To avoid the possibility of accidentally “Double Charging” a cartridge, you should develop a foolproof system of loading. A suggested method is to place all the uncharged cases on your left. As you pick up each case for charging, turn it upside-down and shake it. This will insure that the case is empty. Turn the case right-side-up, charge it and place it carefully on your right. Take care when removing or replacing the scale pan that the poise are not accidentally moved.



**CAUTION:** Technicians in the Lyman Lab have observed a potentially serious phenomena involving powder scales and plastic, loading blocks and/or Styrofoam packaging. It seems these substances sometimes retain a certain amount of static electricity, enough to create an electro-static field of varying radius. This electro-static field has proven capable of radical deflection of uncharged and “zeroed” scales of all brands (available to us at the time). Of course, powder in the pan will tend to dampen the deflection but some still occurs depending on the charging level. Generally, the heavier the charge the less error, assuming the scale was first “zeroed” correctly.

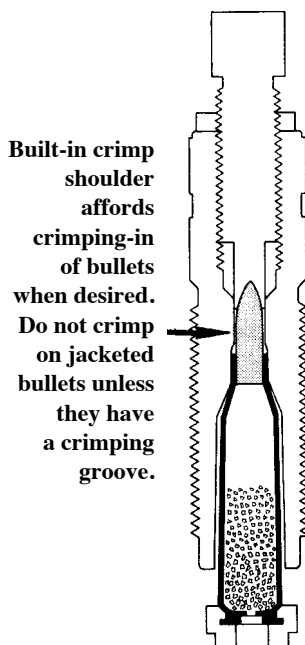
We suggest you clear the surface of your reloading bench and make very sure the scale is set up accurately. Then move your equipment back piece by piece, paying particular attention to the plastic or Styrofoam mentioned earlier. Please note this caution applies to all forms of reloading, not just metallic cartridges.

## Step Four (Bullet Seating)

The last step in reloading a cartridge is seating the new bullet. Make certain that the overall length of the finished round is not longer than the maximum overall length listed in the data section of the Reloading Handbook.

This illustration shows how a bullet is seated. Screw the bullet seating die into the head of the press and adjust it according to the instructions supplied with the die. Place a primed, charged cartridge case in the shell holder and a bullet on the mouth of the case. Hold the bullet in place as you press the handle all the way down. As the case enters the die, the bullet will be pushed firmly into the neck of the case. Adjusting the seating screw controls the depth to which the bullet is seated. Adjusting the die body controls the crimp.

Crimping is a matter of choice and the seating die may be adjusted to crimp, or not to crimp, as you desire. If you are preparing hunting loads that will see hard usage in the magazine, it is wise to crimp-in the bullet. This prevents the bullets from unseating when the rifle is under recoil. Best accuracy, however, is usually obtained by not crimping-in the bullet. Target, or varmint loads, are best left uncrimped.



## GETTING STARTED IN CASTING

Making the move into bullet casting is rather easy and not all that expensive considering that you'll be deriving additional enjoyment of your hobby - plus increased per-shot economy which quickly defrays equipment cost. If you are a muzzleloader, your start-up costs will be greatly reduced by the elimination of sizing and lubricating equipment.

The key to an easy introduction is starting out with the proper equipment. We feel that the beginning caster needs the following basic casting equipment to obtain good initial results: mould and handles, melting pot, pouring ladle, casting mallet, ingot mould and a lubricator/sizer fitted with appropriate top punch and sizing die. Muzzleloaders excused on the last item, as noted.

1. We feel our mould and handles offer the best investment to bullet casters. It is quite common to hear of Ideal/Lyman moulds which have been going strong for years. Some of our competitors offer less expensive moulds, but consideration of their rather short service life makes their purchase a questionable economy.
2. The melting pot is an item on which you can economize if you wish. Lyman offers two electric casting furnaces. These include the 20 pound capacity Mag 20 and the 8 pound capacity Mini-Mag Furnace. Also offered is a simple pot, holding about 8 pounds of alloy which can be used on the kitchen stove or a camp stove out back or in the garage.

The mobility and versatility of the small pot can be a real blessing. The Lyman electric pots offer a great deal more capacity and sophistication. A major feature of the Mag 20 is the option of dipping bullet metal with a ladle or valve system. Additionally, the thermostat on this pot is calibrated with the scale on the control dial, permitting temperature settings to be noted for future use.

The Mag 20 is equipped with a “mould guide.” This device is attached to the furnace legs and serves to align and support mould blocks while casting from the bottom pour valve. If you are using the kitchen stove, exercise caution to avoid contaminating food and utensils with lead spatters or dust.

3. The pouring ladle, or dipper, is a good inexpensive buy. These are offered by several firms including Lyman. You should have one of these even if you buy one of the bottom-pour electric furnaces. Put ten bullet casters in a room, return in an hour, and you’ll find two distinct groups: one in favor of bottom-pour; the other praising the dipper.
4. A casting mallet of some sort is needed with which to strike the mould’s sprue plate to cut off the bullet’s sprue. A hammer handle will do, as will a number of other implements which have non-marring faces. You cannot use any object which will mar or dent the mould.
5. The ingot mould, like the dipper and iron pot, should be a basic item in your initial investment. This mould allows you to empty your pot or furnace at the end of a casting session and produce easily-managed one pound ingots which can be marked as to metal type and stored. These small ingots fit into all lead pots and furnaces without any problems.
6. The sizer/lubricator is, we feel, essential to the bullet caster reloading centerfire bullets. The Lyman #4500 not only sizes the cast bullet to the proper diameter, but also applies a gas check (if needed) and cleanly lubricates from its ample reservoir. Ours is a sturdy tool, designed for bench-mounting, which has proved itself over years of use. Thanks to the interchangeability of sizing dies and top punches the #4500 will handle just about any sizing situation producing clean, concentric cast bullets ready for loading.

Additionally, every caster should wear basic safety garb. We recommend that no casting be done unless the caster is protected by sturdy gloves and safety glasses. An accident with molten lead can have serious consequences.

Never allow moisture near molten lead. When moisture is introduced to molten lead, a terrific steam explosion occurs and molten metal is sprayed not only over the immediate area but also over the bullet caster. This moisture could be introduced by a wet ladle or dipper.

One last item for riflemen, essential to successful initial efforts, is the Lyman “M” Die which flares the case mouth just a bit. This makes seating the cast bullet undamaged that much easier. Lyman pistol die sets already include this type of expander.

Bullets can be cast and processed in the same area in which you reload. All primers and propellant should be cleaned up, containers sealed and put away.

There are no special fixtures needed, a folded towel will cushion the bullets as they fall from the mould. Surely there’s an old box that will serve to catch sprue and rejects.

Venturing into bullet casting is really a rather simple task. Sure, there are plenty of variables with which to wrestle, but excellent results can be had right from the first by choosing good equipment and following the instructions for its use.

## Melting and Fluxing Bullet Metal

When working with bullet metal, one of the first requirements is a suitable heat source capable of heating the metal to about 750° or 800° Fahrenheit. A simple cast iron pot to hold the metal and most any heat source (kitchen stove, etc.) will suffice. Improved equipment, such as the Lyman Electric Furnace, is more desirable. The electric furnace is cleaner, safer and more convenient. Its adjustable thermostat allows best control of the melt temperature. Whether you are blending the various metals into an alloy or actually casting bullets, the same melting and fluxing procedure is followed.

Heat the metal for about twenty minutes until it becomes a free-flowing liquid. It is then ready for fluxing.

To flux the metal merely drop a small bit of tallow, beeswax or bullet lubricant into the mixture. A smoky gas will rise from the top of the pot and should be immediately ignited with a match to eliminate the smoke.

A more modern-and much more pleasant- fluxing procedure is to use a dry substance, such as the product called MARVELUX. Smoke and greasy fumes are eliminated - an important benefit to those casters with wives and/or mothers in residence - and a good flux is obtained. This method is much preferable to the foregoing traditional technique.

Whichever flux substance you choose, be sure to stir the mixture with the dipper. As you stir, hold the dipper so the cup side is down and raise it out of the metal with each stirring stroke. This seems to help the flux.

Metal that has been properly fluxed will leave the surface almost mirror-bright and flecked with small particles of black and brown impurities. Skim off and discard these impurities. Flux the metal whenever, by its appearance, it seems to need it. While the dipper is not in use, it should be left in the molten metal to keep it hot.

## Casting Bullets

After the metal has been fluxed and is hot enough to pour through the dipper, it is ready for casting. In addition to the mould, you should have on hand a hardwood stick (about 10" long) to be used for opening the mould. Also, pad a small area of your bench with an old piece of cloth or carpet. This will soften the fall of the hot bullets as they drop from the mould and prevent them from being damaged.

While there is no one set way to dipper-cast good bullets, we do offer the following as a suggested method. Fill the dipper with metal and place the spout of the dipper against the pouring hole in the mould's sprue plate. Holding the mould and dipper together, slowly turn them to a vertical position with the dipper above the mould.

Casting via the bottom pour valve on your electric furnace may require a slightly different technique. Instead of holding the mould tight against the external bottom pour valve and lifting the operating lever to release molten lead, it is often better to leave a little space between the mould and the bottom- pour valve - no more than an inch.

The latter method allows a good sprue puddle to form and, in some circumstances, may enhance the escape of air from the mould as the molten lead pours in.

If you find the lead is solidifying in the bottom pour valve, increase the pot temperature. Keep an ingot mould handy to catch drips.

The extra metal that runs over the top of the mould is called sprue. When it hardens, which

takes several seconds, pick up the hardwood stick and tap the sprue cutter sharply. This will separate the sprue from the base of the bullet. Drop the sprue into a cardboard box, or other receptacle. Open the mould and let the bullet fall to the pad. If the bullet does not drop out readily, use the stick to rap the hinge pivot of the mould handles sharply. Use only wood for this purpose and never strike the mould blocks themselves.

It is very important to pour a generous sprue and allow it to harden. As the bullet cools, it draws down metal from the molten sprue. If it cannot (i.e. the sprue has already hardened or is of insufficient size), then internal voids will form.

Further, cutting a still-molten sprue damages the bullet's base and often creates a buildup of smeared alloy between the cut-off plate and mould blocks.

As the mould will be cool, your first bullets will be imperfect. Casting bullets, one after the other, will bring the mould to the proper temperature. If you wish, the mould can be preheated by placing it on the rim of your furnace, or along side your lead pot on the stove. Never, under any circumstances, dunk the mould in the molten metal or subject it to direct flame.

Wrinkled bullets indicate that the mould, and/or metal, is too cool. Frosted bullets indicate that the mould, and/or metal, is too hot. Good bullets should be clean, sharp and fill the mould. Imperfect bullets should be collected and, along with the sprue, returned to the pot.

Bullets selected for accuracy shooting should be carefully weighed on the reloading scale. This reveals air pockets that may have formed in the bullet, lightening or unbalancing it. The actual weight of your bullets will depend pretty much on the composition of your bullet metal, which may vary slightly from lot to lot. Rejected bullets may be saved and recast.

## **Sizing and Lubrication**

The sizing process is merely a method of swaging cast bullets to a diameter that corresponds to, or slightly exceeds, the groove diameter of your gun. Bullet sizing also ensures that the bearing bands of each and every bullet in the group are made perfectly round. As no metal is removed from the bullet (bullet is swaged to shape and size), sizing does not alter the bullet's as-cast weight.

Generally speaking, the less a bullet must be sized, the more accurately it will shoot. Some cast bullet shooters feel that .002" is the most a bullet can be sized and retain the ability to perform accurately.

Whether .002" is, indeed, the magic number is only part of the overall question. The real questions are the true dimensions of your gun. Rifles should be measured both at the muzzle and just past the chamber mouth. Handguns should receive the same bore measurements while revolvers should have each chamber mouth measured. The results of these tests should show you where to start.

To obtain these measurements you must drive a pure lead slug into the barrel or chamber mouth. Revolver owners should use a separate one for each chamber in a revolver's cylinder and identify them with the cylinder from which they came.

Normally, you define your initial "size to" diameter as one which will match, or slightly exceed, the groove diameter just ahead of the chamber. Sometimes revolver shooters have the matter confused by having a groove diameter larger than that of their chamber mouths. They should select their first sizing die on the basis of barrel, not chamber, dimensions.

Bullet casters should expect to experiment with several sizing diameters, just as they'll use

several types of propellant, in a given load development program. Normally, these other diameters will be greater than the groove diameter as discussed above. To shoot an undersized cast bullet is to invite almost certain leading and inaccuracy.

Lyman plans the “as-cast” diameter of each caliber grouping to permit maximum utility within reasonable sizing ranges. We do not claim our moulds will cast to a single guaranteed diameter or that said cast bullets will be perfectly round. Instead, we state that we manufacture each of our moulds to cast a specified size in #2 Alloy with a manufacturing tolerance for both diameter variation and out-of-roundness. Each run of blocks is inspected at random both by dial indicator systems and actual casting and measurement of bullets.

The production of moulds to a customer’s specification is the domain of the custom mould maker - and even then there are few (if any) who will guarantee a perfectly round cast bullet from their mould. And, of course, the cost of such a custom mould is much greater than those produced for general consumption.

So the bullet which drops from a Lyman mould is intended to be reduced in diameter and trued up by the sizing process.

Sizing the cast bullet has been done a number of ways over the years. Today all sizing dies feature tapered leads which allows excess metal to be swaged, rather than shaved, into dimensional conformity.

During the recent Lyman review of specifications (which included the sizing dies as well), care was taken to maintain a satisfactory relationship between maximum as-cast diameter and minimum sizing diameter commonly used in a given caliber. Again, the standard bullet metal is #2 Alloy.

Lyman sizing dies, like the moulds, are made within certain size and manufacturing tolerances.

Lubricant, applied to the grooved body of a given bullet design, provides a film between the bullet metal and the walls of the bore. This film greatly reduces friction as the bullet travels down the barrel and either eliminates or minimizes leading.

It should also be noted that muzzle loading bullets should be cast in pure lead and shot “as-cast.” Lubricant is then applied by hand.

**Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)**

## Predicted Physical Characteristics Of Bullets Cast In Various Lead Alloys

Caliber	Predicted As-Cast Characteristics										H&I Sizing Die			Predicted Dimensions—Sized		
	Bullet Example	Lead		Wheel weights		#2 Alloy		Linotype		H&I Sizing Die	Lead	Wheel Weights	#2 Alloy	Lino Type		
		Wt. grs.	Dia.	Wt. grs.	Dia.	Wt. grs.	Dia.	Wt. grs.	Dia.							
<b>Rifle</b>																
.22	#225415	47	.2246"	46	.2246"	45	.2250"	44	.2252"	.224	.2237"	.2240"	.2240"	.2240"		
.243, 6mm	#245496	87	.2437"	85	.2441"	83	.2445"	81	.2447"	.243	.2427"	.2430"	.2430"	.2430"		
.25	#257420	68	.2576"	67	.2581"	65	.2585"	64	.2588"	.257	.2567"	.2570"	.2570"	.2570"		
.270	#280642	157	.2776"	154	.2781"	150	.2785"	147	.2788"	.277	.2765"	.2770"	.2770"	.2773"		
.280, 7mm	#287346	142	.2846"	139	.2850"	135	.2855"	133	.2858"	.284	.2836"	.2840"	.2840"	.2844"		
.30	#311291	176	.3095"	173	.3100"	168	.3105"	163	.3108"	.308	.3076"	.3080"	.3080"	.3081"		
8mm	#323470	167	.3234"	165	.3240"	160	.3245"	155	.3248"	.323	.3226"	.3230"	.3230"	.3233"		
.35	#358315	215	.3578"	212	.3584"	206	.3590"	200	.3594"	.357	.3566"	.3570"	.3570"	.3573"		
.375	#375449	276	.3773"	272	.3779"	264	.3785"	256	.3789"	.376	.3756"	.3760"	.3760"	.3763"		
.45/70, 458	#457193	439	.4575"	433	.4583"	420	.4590"	407	.4595"	.457	.4566"	.4570"	.4570"	.4574"		
<b>Pistol</b>																
.25	#252435	53	.2522"	53	.2526"	51	.2530"	49	.2533"	.251	.2507"	.2510"	.2510"	.2510"		
.32	#311252	80	.3125"	79	.3130"	77	.3135"	75	.3138"	.309	.3086"	.3090"	.3090"	.3100"		
9mm	#356242	96	.3558"	95	.3564"	92	.3570"	89	.3574"	.356	.3556"	.3560"	.3560"	.3563"		
.38/357	#358156	156	.3578"	153	.3580"	149	.3590"	144	.3594"	.357	.3566"	.3570"	.3570"	.3573"		
.41	#410610	225	.4101"	221	.4108"	215	.4115"	209	.4119"	.410	.4096..	.4100"	.4100"	.4103"		
.44	#429421	256	.4296"	252	.4303"	245	.4310"	238	.4314"	.429	.4286"	.4290"	.4290"	.4294"		
.45	#452374	235	.4515"	232	.4523"	225	.4530"	218	.4535"	.451	.4506"	.4510"	.4510"	.4514"		

# LYMAN IDEAL PRESS

## Unpacking and Assembly

1. Remove press from packaging, ensure all parts are present;
  - Press body (1)
  - Ram, toggle, linkage assembly (1)
  - Shoulder bolts (4)
  - Handle (1)
  - Spent Primer Cup (1)
  - 5/16ths Hex Wrench (1)
  - Instruction manual (1)
  - Packet of Thread Lock (1)
2. Place press body on reloading bench or other flat surface to make assembly easier.
3. Insert ram through bottom of press body. (photo 1)
4. Place a small drop of the supplied thread lock onto the two shoulder bolt threads. Insert top two shoulder bolts through links and thread into mounting holes on the press body. NOTE: You will need to hold the ram in place until at least one shoulder bolt is fully installed. Tighten shoulder bolts until snug. (photo 2)
5. Thread handle into toggle and tighten jam nut. (photo 3)
6. Place primer catcher onto press. (photo 4)



## Set Up and Use

1. Bolt press firmly to bench. The press body can be used as a template for the bolt pattern and spacing.
  2. Insert shell holder into ram
  3. Die set up; Follow your die manufactures set up instructions for your particular die or die set.
- Your Lyman Ideal Reloading Press is now ready for use.

## Maintenance and Trouble Shooting

Before using your press, apply a light film of powdered graphite to the bearing surfaces of all moving parts. Pay particular attention to the sides of the ram. Thin oil can also be used for this purpose but powdered graphite is recommended.





To clean your press, use a lightly dampened cloth and wipe the press free of dirt, and contamination from the press after every use. Your Lyman Ideal Press has been designed for years of trouble free use.

Here are some simple troubleshooting tips.

• **Shell holder loose or falling out.**

Make sure shell holder clip is installed on ram.

• **Handle loose.**

Make sure handle is threaded completely into toggle and silver jam nut is tight against toggle.

• **Sticky or Tight Ram**

Make sure ram is free of dirt. Use damp cloth to wipe ram, then dry ram and add a thin film of powdered graphite to the ram.

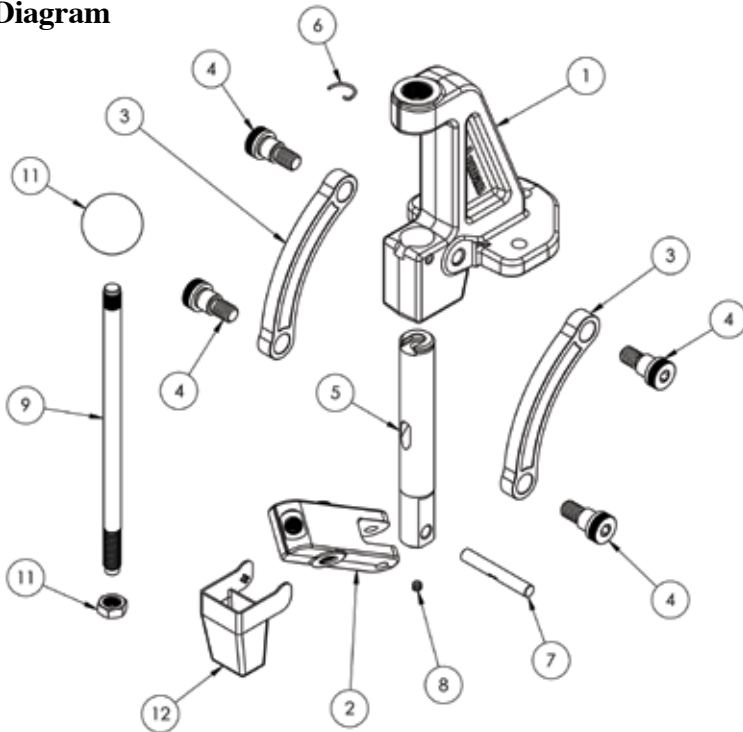
Inspect ram to insure no spent primers are jammed between ram and press body or linkage.

Remove any spent primers from linkage.

• **Excessive side to side play on handle;**

Inspect and re-tighten any of the four shoulder bolts on linkage. Tighten shoulder bolts snugly, if problem continues add a small amount of blue (non-permanent) thread locker to the shoulder bolt threads and tighten shoulder bolts.

**Parts Diagram**



1	Body . . . . .	7726450	7	Ram Pin . . . . .	7726462
2	Toggle . . . . .	7726452	8	Set Screw . . . . .	7726464
3	Link, Curved . . . . .	7726454P	9	Handle . . . . .	7726461
4	Shoulder Screw . . . . .	7726456P	10	Handle Jam Nut . . . . .	7726466
5	Ram . . . . .	7726458	11	Primer Catcher . . . . .	7726468
6	Shell-Holder Clip . . . . .	7726109			

# LYMAN VICTORY PRESS

## Unpacking and Assembly

1. Remove press from packaging, ensure all parts are present.

- Assembled Victory Press (1)
- Handle with knob and jam nut (1)
- Primer Catcher (1)
- Primer Feed body (1)
- 10-32 mounting screws (3)
- Large Brass Primer Tube with Cotter Pin (1)
- Small Brass Primer Tube with Cotter Pin (1)
- Steel Blast Shield (1)
- Primer Tube Follower (1)
- Small Primer Sleeve/Punch with spring.  
This is installed in primer feed body from the factory (1)
- Large Primer Sleeve/Punch with spring (1)
- 5/32nd Hex wrench (1)
- 1/16th Hex Wrench (1)
- Instruction Manual (1)



2. Place press on reloading bench or other flat surface to make assembly easier.

3. Thread handle in toggle and tighten jam nut.

## Press set up and use

1. Bolt press firmly to bench.
2. Insert shell holder into the slot at the top of the ram. It will snap into place. To change shellholder with primer feed installed, raise the ram above the primer feed body, and slide the blast shield off.
3. Die set up; Follow your die manufacturers set up instructions for your particular die set.

## Straight Line Primer Feed set up Instructions

1. Locate Primer Feed Body and three mounting screws. (photo 1)
2. The primer feed body comes with the small primer punch installed at the factory. If you wish to install the large primer punch prior to mounting the primer feed body to the press, you have to unthread the knurled knob, remove spring and pull the priming arm out of housing. Loosen the small set screw at the bottom of the punch and remove small primer punch and install the large primer punch.
3. Reinstall arm through the primer feed body, slide on spring and thread on knurled knob.
4. Place primer feed onto the press body and install the three mounting screws.
5. To load primers into the large or small brass primer tubes follow these steps; all primers to be loaded into tube must be positioned with the anvil side down and smooth side up.
6. Make sure the cotter pin is installed into the brass primer tube. Take the split end of the primer tube and place it over a primer and gently push down, the primer will snap into the tube and hold there. Continue to press primers into the tube until full, approximately 50 primers.
7. Place the end of the tube nearest to the cotter pin into the top of the blast shield adapter and press firmly to seat tube. (photo 2)
8. Remove cotter pin and primers will be ready to feed. (photo 3) Place blast shield over brass tube and seat into primer feed body. (photo 4)
9. Place spent primer catcher onto press (photo 5)



## Primer Tube Follower Instructions

The enclosed primer follower is used to prevent primers from rotating inside of the primer feed tube due to normal vibrations created in the reloading process. To use the follower, first fill the primer tube with primers and install it on the primer feed assembly along with the primer blast shield as described in the press instruction. Then simply slide the small end of the follower inside the primer tube on top of the primers. The weight of the follower will keep the primers in their proper position during loading operation. When the primer tube is empty, the follower will drop into the primer cup and prevent the arm from being pushed forward, signaling that the primer tube is empty.



## Using the Straight Line Primer Feed

1. Before you can prime the first case, you will need to load a primer into the primer punch/cup. Pull back on the knurled knob approximately 3/16ths of an inch, this will drop a primer into the cup.

NOTE: Primer Stop Plunger (See diagram on pg 32, #18) may require minor adjustment to center primer punch sleeve with the feed tube.

Once this is set, it does not need to be changed. The setting remains the same for both large and small primers.

2. Lower the press ram until the slot in the ram (just below the shell holder) is directly in front of the priming arm. Push the priming arm forward and into the slot. Hold it in this position.
3. Push the press handle forward to lower the ram and seat the primer, then raise the ram slightly and release the priming arm. Remove primed shell.
4. You will need to pull the knurled knob back approximately 3/16ths of an inch each time in order to drop a primer into the primer punch/cup.

NOTE: The priming arm can be used either with the spring assist or without it.

## Maintenance and Troubleshooting

Your Lyman Victory Press has been designed to give you years of trouble free service, but some preventive maintenance is required.

Before using your press, apply a light film of powdered graphite to the bearing surfaces of all moving parts. Pay particular attention to the sides of the ram. Thin oil can also be used for this purpose but powdered graphite is recommended. To clean your press, use a lightly dampened cloth and wipe the press free of dirt, and contamination from the press after every use.

## Trouble Shooting

Here are some simple troubleshooting tips.

### • Shell holder loose or falling out.

Make sure shell holder clip is installed on ram.

### • Handle loose

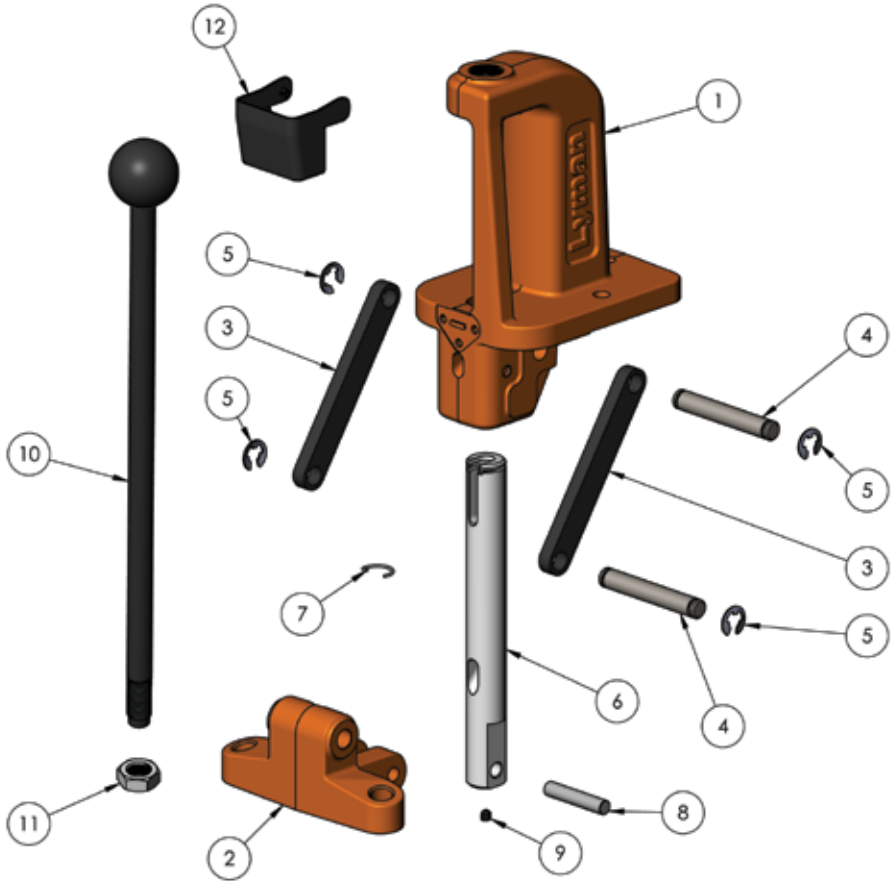
Make sure handle is threaded completely into toggle and silver jam nut is tight against toggle.

### Sticky or Tight Ram

• Make sure ram is free of dirt. Use damp cloth to wipe ram, then dry ram and add a thin film of powdered graphite to the ram. Inspect ram to insure no spent primers are jammed between ram and press body or linkage. Remove any spent primers from linkage.

# VICTORY RELOADING PRESS

## Parts Diagram



- |   |                     |          |    |                        |         |
|---|---------------------|----------|----|------------------------|---------|
| 1 | Body.....           | 7726200  | 7  | Shell-Holder Clip..... | 7726109 |
| 2 | Toggle .....        | 7726225  | 8  | Ram Pin .....          | 7726232 |
| 3 | Link, Straight..... | 7991470  | 9  | Set Screw .....        | 7726464 |
| 4 | Link Pin .....      | 7726215  | 10 | Handle .....           | 7726114 |
| 5 | Link Pin Clip ..... | 7726220P | 11 | Handle Jam Nut .....   | 7726218 |
| 6 | Ram .....           | 7726230  | 12 | Primer Catcher.....    | 7726219 |

# LYMAN ALL-AMERICAN 8 TURRET PRESS

## Unpacking and Assembly

1. Remove press from packaging, ensure all parts are present.

- Assembled All- American 8 Press (1)
- Handle with knob and jam nut (1)
- Primer Catcher (1)
- Primer Feed body (1)
- 10-32 mounting screws (3)
- Large Brass Primer Tuber with Cotter Pin (1)
- Small Brass Primer Tube with Cotter Pin (1)
- Small Primer Sleeve/Punch with spring.  
This is installed in primer feed body from the factory
- Large Primer Sleeve/Punch with spring (1)
- Steel Blast Shield (1)
- Primer Tube Follower (1)
- 5/32nd Hex wrench (1)
- 1/16th Hex Wrench (1)
- Instruction Manual (1)
- Turret Handle (1)



2. Place press on reloading bench or other flat surface to make assembly easier.

3. Thread handle in toggle and tighten jam nut.

## Press set up and use

1. Bolt press firmly to bench.
2. Insert shell holder into the slot at the top of the ram. It will snap into place. To change shellholder with primer feed installed, raise the ram above the primer feed body, and slide the blast shield off.
3. Die set up; Follow your die manufacturers set up instructions for your particular die set.
4. To remove turret use a 7/8th socket or insert a screwdriver through hole in turret bolt.



## Straight Line Primer Feed set up Instructions

1. Locate Primer Feed Body and three mounting screws. (photo 1)
2. The primer feed body comes with the small primer punch installed at the factory. If you wish to install the large primer punch prior to mounting the primer feed body to the press, you have to unthread the knurled knob, remove spring and pull the priming arm out of housing. Loosen the small set screw at the bottom of the punch and remove small primer punch and install the large primer punch.
3. Reinstall arm through the primer feed body, slide on spring and thread on knurled knob.
4. Place primer feed onto the press body and install the three mounting screws.
5. To load primers into the large or small brass primer tubes follow these steps; all primers to be loaded into tube must be positioned with the anvil side down and smooth side up.
6. Make sure the cotter pin is installed into the brass primer tube. Take the split end of the primer tube and place it over a primer and gently push down, the primer will snap into the tube and hold there. Continue to press primers into the tube until full, approximately 50 primers.
7. Place the end of the tube nearest to the cotter pin into the top of the blast shield adapter and press firmly to seat tube. (photo 2 - next page)
8. Remove cotter pin and primers will be ready to feed. (photo 3) Place blast shield over brass tube and seat into primer feed body. (photo 4)
9. Place spent primer catcher onto press (photo 5)

## Primer Tube Follower Instructions

The enclosed primer follower is used to prevent primers from rotating inside of the primer feed tube due to normal vibrations created in the reloading process. To use the follower, first fill the primer tube with primers and install it on the primer feed assembly along with the primer blast shield as described in the press instruction. Then simply slide the small end of the follower inside the primer tube on top of the primers. The weight of the follower will keep the primers in their proper position during loading operation. When the primer tube is empty, the follower will drop into the primer cup and prevent the arm from being pushed forward, signaling that the primer tube is empty.



## Using the Straight Line Primer Feed

1. Before you can prime the first case, you will need to load a primer into the primer punch/cup. Pull back on the knurled knob approximately 3/16ths of an inch, this will drop a primer into the cup.

NOTE: Primer Stop Plunger (See diagram on pg 32, #18) may require minor adjustment to center primer punch sleeve with the feed tube.

Once this is set, it does not need to be changed. The setting remains the same for both large and small primers.

2. Lower the press ram until the slot in the ram (just below the shell holder) is directly in front of the priming arm. Push the priming arm forward and into the slot. Hold it in this position.
3. Push the press handle forward to lower the ram and seat the primer, then raise the ram slightly and release the priming arm. Remove primed shell.
4. You will need to pull the knurled knob back approximately 3/16ths of an inch each time in order to drop a primer into the primer punch/cup.

NOTE: The priming arm can be used either with the spring assist or without it.

## Maintenance and Troubleshooting

Your Lyman Victory Press has been designed to give you years of trouble free service, but some preventive maintenance is required.

Before using your press, apply a light film of powdered graphite to the bearing surfaces of all moving parts. Pay particular attention to the sides of the ram. Thin oil can also be used for this purpose but powdered graphite is recommended. To clean your press, use a lightly dampened cloth and wipe the press free of dirt, and contamination from the press after every use.

## Trouble Shooting

Here are some simple troubleshooting tips.

- **Shell holder loose or falling out.**

Make sure shell holder clip is installed on ram.

- **Handle loose**

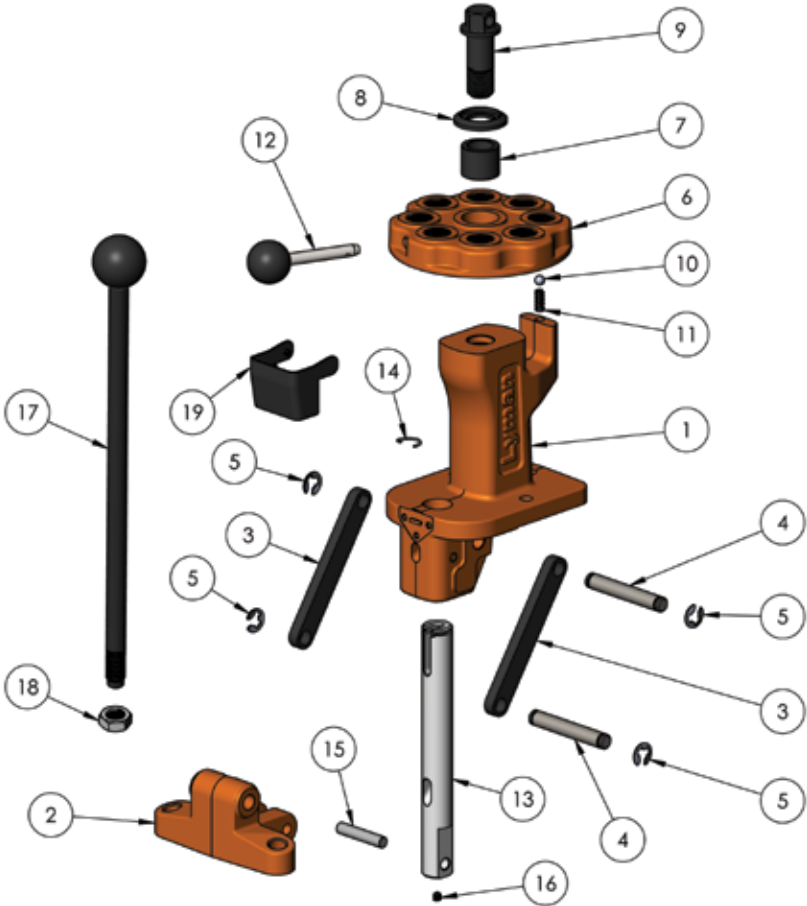
Make sure handle is threaded completely into toggle and silver jam nut is tight against toggle.

- **Sticky or Tight Ram**

Make sure ram is free of dirt. Use damp cloth to wipe ram, then dry ram and add a thin film of powdered graphite to the ram. Inspect ram to insure no spent primers are jammed between ram and press body or linkage. Remove any spent primers from linkage.

# ALL-AMERICAN 8 RELOADING PRESS

## Parts Diagram

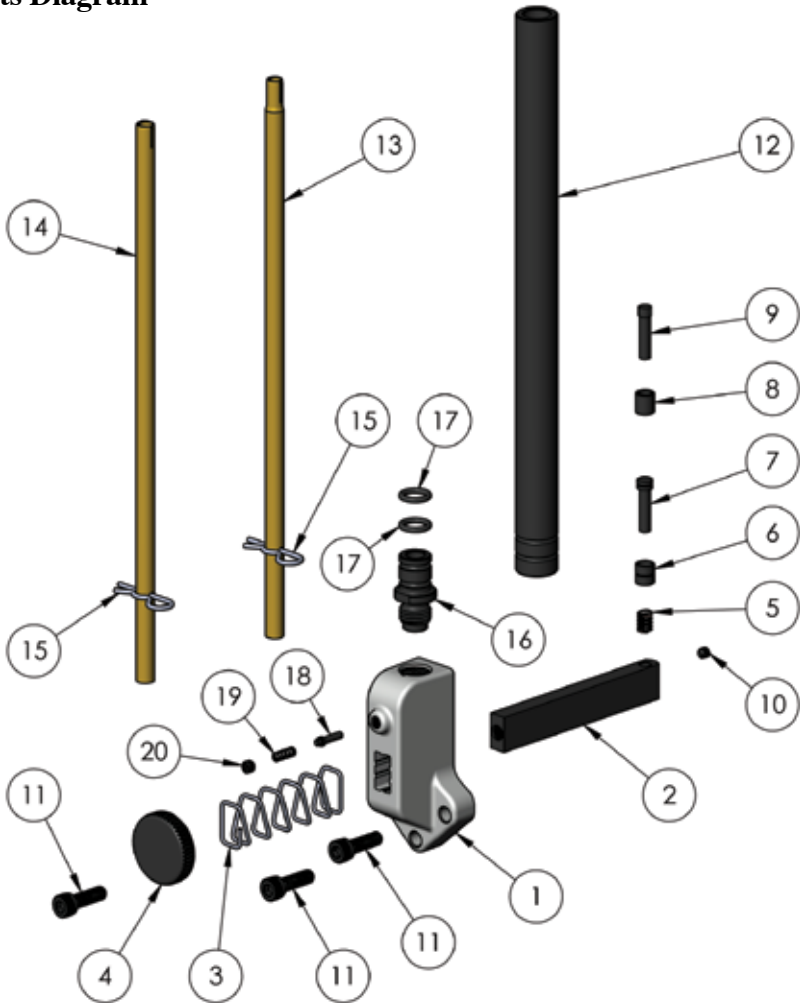


1	Body . . . . .	7990510	11	Turret Ball Detente Spring . . . . .	2990738
2	Toggle . . . . .	7726225	12	Turret Handle . . . . .	7991465
3	Link, Straight . . . . .	7991470	13	Ram . . . . .	7726230
4	Link Pin . . . . .	7726215	14	Shell-Holder Clip . . . . .	7726109
5	Link Pin Clip . . . . .	7726220P	15	Ram Pin . . . . .	7726232
6	Turret . . . . .	7726160	16	Set Screw . . . . .	7726464
7	Turret Bushing . . . . .	7991452	17	Handle . . . . .	7726114
8	Turret Bolt Washer . . . . .	7991451	18	Handle Jam Nut . . . . .	7726218
9	Turret Bolt . . . . .	7991450	19	Primer Catcher . . . . .	7726219
10	Turret Ball Detente . . . . .	2990730			

# BRASS SMITH PRIMER FEED

(Included on Victory and All-American 8 Presses)

## Parts Diagram



- 1 Primer Feed Body . . . . . 7726135
- 2 Primer Feed Arm . . . . . 7726139
- 3 Arm Return Spring . . . . . 7726141
- 4 Arm Push Knob . . . . . 7726140
- 5 Punch Sleeve Spring . . . . . 7992920
- 6 Large Punch Sleeve . . . . . 7992918
- 7 Large Primer Punch . . . . . 7726130
- 8 Small Punch Sleeve . . . . . 7992919
- 9 Small Primer Punch . . . . . 7726131
- 10 Punch Set Screw . . . . . 7726148

- 11 Mounting Screw . . . . . 7726147
- 12 Blast Shield . . . . . 7726138
- 13 Primer Tube, Small . . . . . 7726142
- 14 Primer Tube, Large . . . . . 7726143
- 15 Primer Tube Clip . . . . . 7726144
- 16 Blast Shield Adapter . . . . . 7726136
- 17 Adapter O-Ring . . . . . 7726137
- 18 Primer Stop Plunger . . . . . 7726146
- 19 Plunger Spring . . . . . 7726145
- 20 Plunger Set-Screw . . . . . 7994418

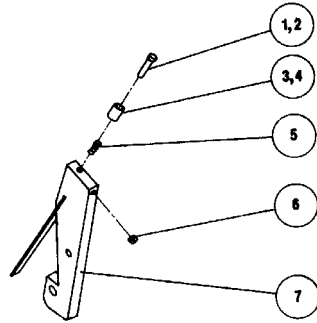


# UNIVERSAL PRIMER ARM AND AUTO-PRIMER FEED ASSEMBLIES (For Crusher and T-Mag Presses)

## Parts Lists

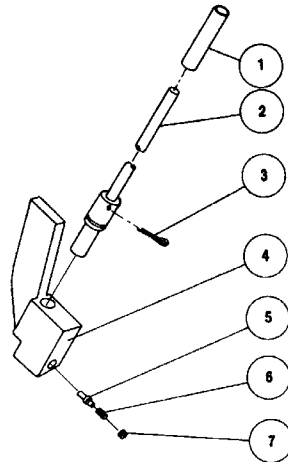
### Universal Primer Arm

Key	Part Description	Part #
1	Large Primer Punch	7992922
2	Small Primer Punch	7992924
3	Large Primer Sleeve	7992918
4	Small Primer Sleeve	7992919
5	Primer Sleeve Spring	7992920
6	Set Screw	7992932
7	Primer Arm Complete	7728036



### Crusher/T-Mag Auto Primer Feed

Key	Part Description	Part #
1	Large Primer Feed Tube	7412053
2	Small Primer Feed Tube	7412052
3	Cotter Pins (2)	7990050
4	Primer Feed Body	7726128
5	Primer Punch Stop	7992900
6	Compression Spring	7992927
7	Set Screw	2992929
	Primer Feed Complete	7729050



**Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)**

# THE UNIVERSAL CASE TRIMMER

A metallic cartridge case will stretch after a number of firings and it then becomes necessary to trim it back to its proper length so it will chamber properly. The Lyman Universal Case Trimmer accepts all U.S. metallic cases. To convert to another caliber you need only change the pilot. Also included is an Allen wrench, which fits the lock screws in the adjustment rings and cutter head.



## Mounting

The base casting is drilled so the trimmer may be fastened directly to the top of your reloading bench. This is the recommended method of mounting. Some reloaders prefer to clamp their trimmer in a vise when using it. If the trimmer is to be used in this manner, Lyman recommends that it be fastened to a block of wood. The wooden block can then be held firmly in the vise jaws without damaging the base casting.

## Installing the Pilot

Loosen the lock screw on the case trimmer's cutter head, open the package containing the Universal Trimmer pilot and insert it all the way into the cutter head (see **Figure 13**). Now tighten the lock screw.



Insert pilot into cutter head and lock in place with Allen wrench.

**Figure 13.**

## Preparing the Cases

Before trimming, cases must be full-length or neck-resized and deprimed. Pilots are designed to be used only with sized necks.

## Measuring the Cases

You will need an accurate means of measuring case length. We recommend that a good vernier caliper be used. When your cases have lengthened to the point where they exceed the maximum case length allowable for your cartridge, they must be trimmed. For a list of "Maximum Case Lengths" and suggested "Trim-To Lengths" see your Lyman Handbook.

## Locking the Case in Place

Place the chuck lever in "open" position and slip the head of your unprimed cartridge case into the chuck head as pictured in **Figure 14** (pg 35). By pressing the rim of the case against

the side of the steel alignment ball, the case will snap into position with the cams engaged in the extractor groove. Be certain the case is straight and that both cams are engaging evenly.

*Slide the cutter shaft in so the pilot enters the neck of the case and cutter face is touching the case mouth. Then, rotate the check lever to “lock” position. Do not use excessive force when locking the chuck. Slight thumb pressure on the lever is sufficient to hold the case firmly. Leave the pilot and cutter in this position as you proceed to adjust the trimmer.*

### Adjusting the Cut

Two knurled adjustment rings, located on the cutter shaft (see **Figure 15**), provide for both fine and coarse adjustments. Before making any adjustments, hold the large ring with your finger and turn the small ring counterclockwise, four full turns. This will leave about 3/32” space between the rings and allow room for fine adjustment. Make certain the cutter face is still positioned against the case mouth and slide the adjustment rings in tight against the side of the base casting. Tighten the lock screws in the small ring.

Later models have a series of indicators each representing .001 inch of travel on the shaft. Used as reference marks, they enable the user to return to an approximate setting for various cases without time consuming trial and error testing.

Adjust the cut a little at a time, checking your case length with the vernier caliper after each cut. When the correct “Trim-To Length” has been reached, tighten the lock screw in the large ring.

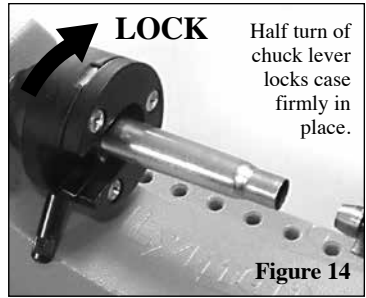
### Processing Your Cases

Once the trimmer is in adjustment, your entire lot of cases may be processed to bring them all to the correct length. As you turn the crank handle, keep an inward pressure on the cutter so that it is always bearing against the case mouth, but do not force it. Variations in finished case length would likely be caused by inconsistent pressure applied against the cutter head during the trimming process. If the case mouth sticks against the cutter head after trimming either too much pressure is being used or the pilot is not installed firmly against the cutter head. After trimming, small burrs will be present on the case mouth. These can be easily removed from both inside and outside the case mouth with your Lyman Deburring Tool.

### Keep a Master Case

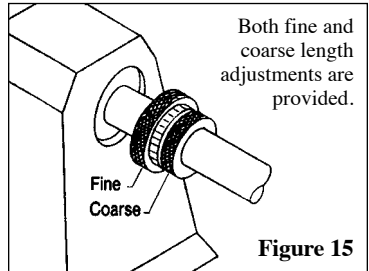
When a reloader is working with several different calibers, it is wise to retain a master case of the correct length for each cartridge.

This reduces adjustment time since the master case can be snapped into the chuck and the cutter quickly brought into adjustment against its mouth.



Half turn of chuck lever locks case firmly in place.

**Figure 14**



Both fine and coarse length adjustments are provided.

**Figure 15**

## Maintaining the Trimmer

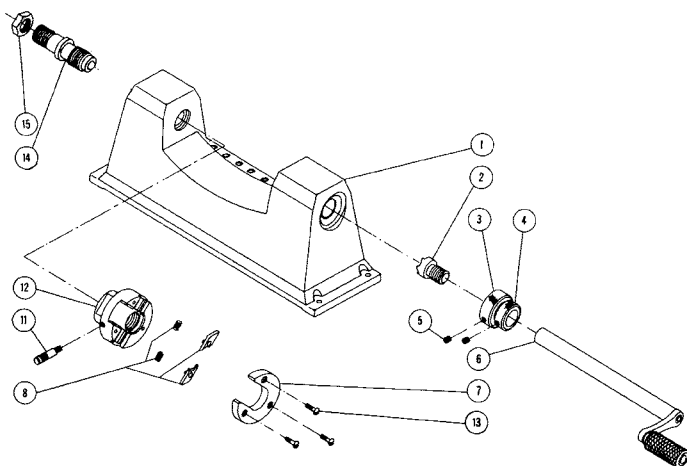
Powdered graphite or light oil on the cutting shaft will provide proper lubrication for smooth operation. A light film of oil or grease will protect steel parts against rust.

## Power Adapter Instructions

An optional adapter is available to quickly and simply convert your Universal Case Trimmer to a power trimmer (Item #7862001). To install, first securely mount the case trimmer on a bench or table. Unscrew the cutter head from the Universal Trimmer shaft and slide it out of the trimmer body. Next, remove the cutter head from the Power Adapter and slide the Power Adapter shaft into the trimmer body. Reattach the cutter head to the Power Adapter shaft. Insert the hex shaft into the chuck of a hand drill or power screwdriver and tighten securely. Make sure your power source is in line with the trimmer shaft. Install the proper pilot and adjust the stop collars to the desired lengths.

## Caution

1. Always wear proper eye protection during reloading.
2. Only use the trimmer adapter with electric hand drills or power screwdrivers operating between 140 and 1000 RPM. Do not use with a drill press.
3. The power source should be supported during use so that the trimmer shaft is not bearing the full weight.
4. Power use will cause more wear to the trimmer shaft and bearing than hand operation. Occasionally lubricate the trimmer shaft with light machine oil.
5. Read and follow all safety and operating instructions supplied with your electric drill and Lyman Universal Case Trimmer.



Key	Part Description	Part #	Key	Part Description	Part #
1	Trimmer Body	7994433	8	Retaining Cam Set*	7994438
2	Cutter Head Assembly**	7822011		Includes compression springs (2)	
3	Stop Collar, Fine	7994416	11	Chuck Head Knob*	7994421
4	Stop Collar, Coarse	7994417	12	Chuck Head Base Only*	7994403
5	Set Screw 8-32 x 1/8" (2)	7994418	13	Pan Head Screw#6-32*(3)	7994428
6	Shaft Assembly	7994432	14	Head Shaft Assembly	7994430
7	Chuck Head Cap*	7994404	15	Hex Nut 9/16"-18	7125559

\* These items may be ordered from Lyman as a complete Chuck Head Assembly 7994434

\*\* Replacements available in a two-pack 7822203

# LYMAN ACCUTRIMMER



A metallic cartridge case will stretch after a number of firings and it then becomes necessary to trim it back to its proper length so it will chamber properly. The Lyman AccuTrimmer will accept most popular cases.

To convert to another caliber, you need only change to the proper size shellholder and pilot. Lyman offers a complete line of shellholders and pilots.

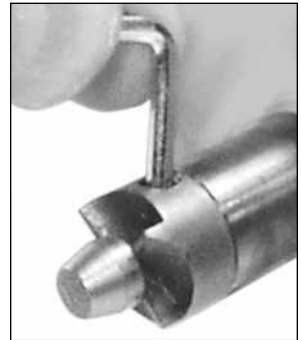
## Mounting

The base of your trimmer is drilled with offset holes for mounting directly to the top of your reloading bench without splitting the wood. This is the recommended method of mounting. Some reloaders prefer to clamp their trimmer in a vise when using it. If the trimmer is to be used in this manner, Lyman recommends that it be fastened to a block of wood. The wooden block can then be held firmly in the vise jaws without damaging the base.

## Installing The Cutter And Pilot

Thread the cutter onto the AccuTrimmer shaft until tight to the shaft. An easy method we use to ensure is to finger tighten the cutter to the shaft. Insert the hex head wrench into the pilot set screw and apply clockwise pressure on the handle while holding the wrench firmly. When tight, the cutter is secure and ready to use.

The pilot is inserted into the hole at the center of the cutter. Loosen the set screw with the wrench provided until the pilot sits flush to the cutter. Tighten the set screw. Use caution, as the cutter edges are extremely sharp. **IMPORTANT:** Use the proper pilot as specified for use with your cartridge case.



## Preparing The Cases

Before trimming, cases must be full-length or neck resized and deprimed. Pilots are designed to be used with sized necks only.

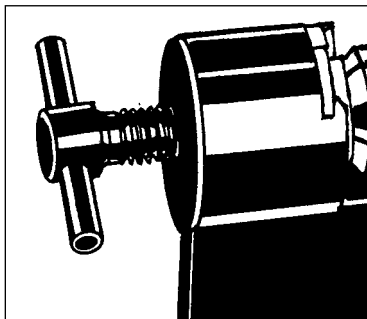
## Measuring The Cases

You will need an accurate means of measuring case length. We recommend Lyman precision calipers. When your cases have lengthened to the point where they exceed the maximum case length allowable for your cartridge, they must be trimmed. For a list of “maximum case lengths” and suggested “trim to lengths” see your Lyman handbook.

## Locking The Case In Place

Place the appropriate shellholder into the shellholder retainer slot.

Place your case into the shellholder. Slide the cutter shaft assembly, with the pilot installed in the cutter head, towards the case until the pilot enters the case mouth and push it in flush to the cutter head. Now, exerting slight pressure on the shaft, from the handle, tighten the case in place by turning the “T” handle clockwise until the case is tight. NOTE: Excessive pressure is not required. You are now ready to trim your case.



## Adjusting The Cut

A knurled lock ring with a set screw through the side provide for both fine and coarse adjustments.

Advance the lock ring until it is close to the shaft bearing and tighten the set screw against the shaft with your hex wrench.

To adjust the fine cutting attachment, take your hex wrench and advance or retract the side set screw until you reach the trimming amount.

## Hints

Adjust the cut a little at a time, checking your case length with your caliper after each cut. When the correct “trim to length” has been reached, you are now ready to begin processing all your cases.

## Processing Your Cases

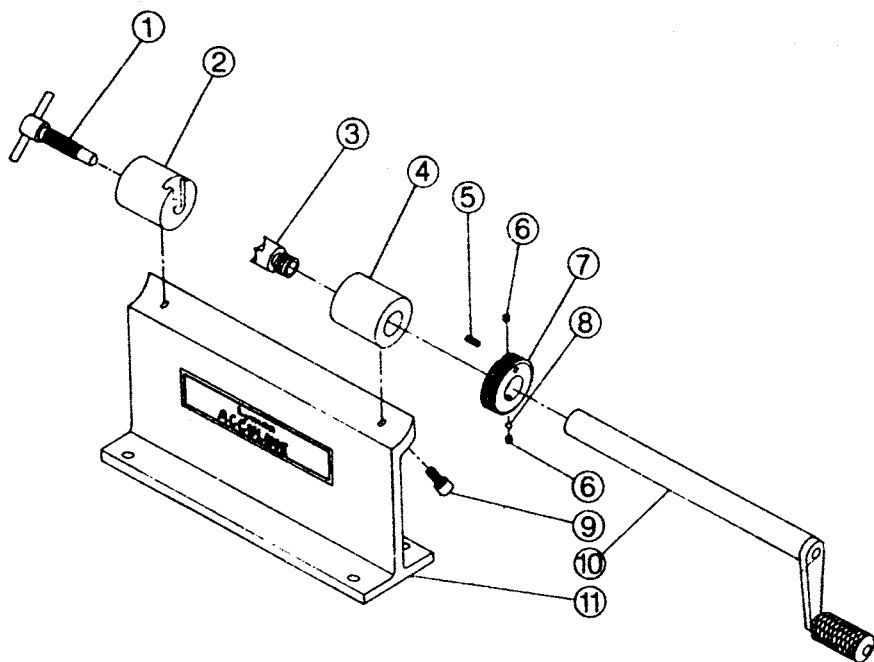
Once your AccuTrimmer is in adjustment, your entire lot of cases may be processed to bring them all to the correct length. As you turn the crank handle, keep an inward pressure on the cutter so that it is always bearing against the case mouth, but do not force it. After trimming, small burrs will be present on the case mouth. These can be easily removed from both inside and outside the case mouth with Lyman Deburring tools.

## Keep a master case

When a reloader is working with several different calibers, it is wise to retain a master case of the correct length for each cartridge.

This reduces adjustment time since the master case can be snapped into the shellholder and the cutter quickly brought into adjustment against its mouth.

# LYMAN ACCUTRIMMER



Key	Part Description	Part #
1	T-Handle Assembly	7993013
2	Shell Holder Retainer	7993003
3	Cutter Head Assembly	7822011
4	Cutter Shaft Boss	7993005
5	8-32 x 3/8 Set Screw	7993008
6	8-32 x 1/8 Set Screw (2)	7994418
7	Adjustable Stop Collar	7993020
8	Nylon Ball	7990076
9	10-32 Socket Head Cap Screw (2)	7993006
10	Cutter Shaft Assembly	7994432
11	AccuTrimmer Base	7993018

**Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)**

# BRASS SMITH 500 RELOADING SCALE

The Lyman Brass Smith Scale sets up quickly and easily. First remove the base from the carton. Note that the scale can be set-up for either right hand or left hand use.

Place the scale beam onto the scale body by slipping the magnetic damper plate (copper colored) into the opening by the zero indicator and by placing the pivot pin onto the two "V" blocks. Next, remove the lower pan from the carton and hook it to the pan hook wire on the small poise end of the beam. The pan arm's "elbow" should face inward, towards the scale base. The final step in assembly is placing the dump pan on the lower pan. The scale is now ready to "zero". Note that the scale beam is double sided, so it can be positioned for right or left hand use.

## Zeroing (Calibrating)

Set the assembled scale on a secure level surface, free from drafts or vibration. Move both poise (balance weights) to the "zero" position and adjust the leveling screw under the end of the base until the beam pointer lines are centered with the zero indicator arrows. Re-zero the scale every time you use or move it.

## Weighing

To weigh a bullet, shot or powder charge, place the weight in the dump pan, making certain the dump pan is sitting properly on the lower pan. Slowly move the large poise up the beam to the first notch which causes the beam pointer to drop below zero, then move the large poise back one notch. Now move the small poise up the beam until the beam pointer indicates zero. This is your reading.

## Weight Measurement Specifications

The Brass Smith 500 Scale has a capacity of 505 grains, 500 from the large poise scale and five (5) from the small poise scale. It is accurate to plus or minus 1/10 of a grain and has been carefully calibrated at the factory. Measurements on the small poise run from 0-5 grains marked in 10th grain increments.

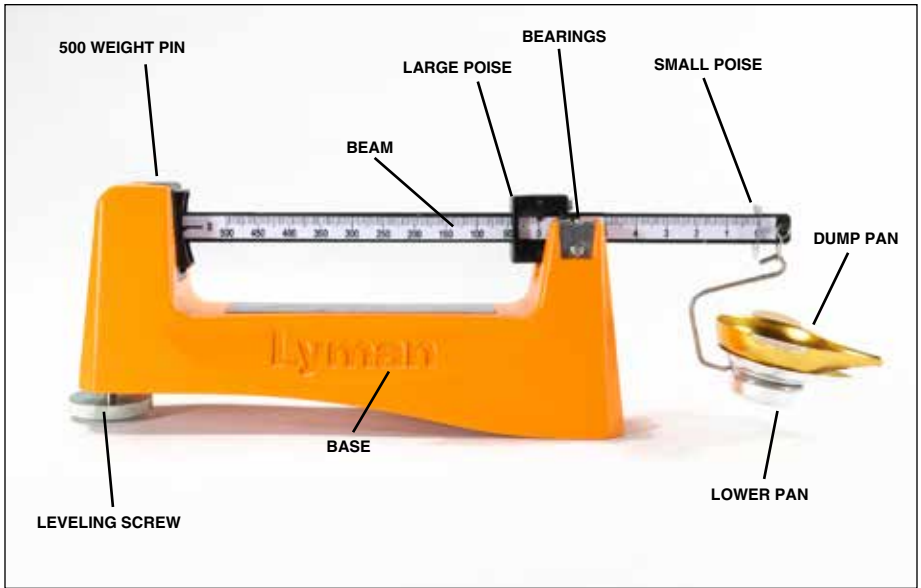
## Reading the Measurements

To read the measurement, first look at the large poise scale. If, for instance, the pointer is directly over the 100 mark, you will know that it is reading 100 grains. If it is one scribe mark to the left, the reading will be 105 grains; two scribe marks to left, and the reading will be 110 grains, etc. To this measurement you must add the reading from the small poise scale. If, for instance, the small poise is positioned over the one and the large poise is over 100, the reading will be 101 (add the small poise scale reading to the large poise scale reading for your total measurement). If the large poise scale reads 105 grains and the small poise scale reads 2.2 grains, you know the total measurement is 107.2 grains.



Photo above shows a setting of 27.0 grains. If you wanted to decrease this 1/10 grain, you would simply move the small poise one notch to the right.





## Useful Scale Information

For precise powder measurements, use a Lyman powder measure and powder trickler in conjunction with your scale as follows:

Adjust the powder measure to throw a slightly low charge of powder into the dump pan of your Lyman scale. Return the charged dump pan to your scale, then use the powder trickler to add the final granules of powder to meet your desired preset weight.

## Care of Your Lyman Scale

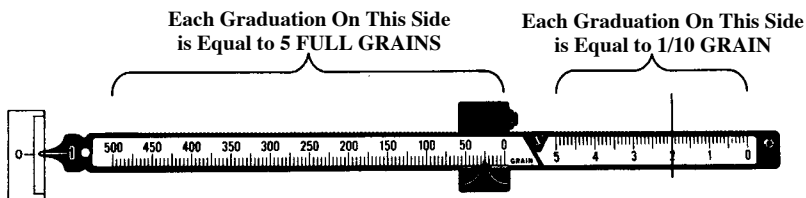
Move the large poise about halfway down the beam when transporting or storing the scale to avoid possible damage to the bearings.

Cover the scale when not in use, to prevent accumulation of dust on the bearings. **DO NOT** allow any oil to accumulate on the bearings as this will affect accuracy and sensitivity of the scale.

## CAUTION

Static electricity will affect the accuracy of reloading scales. **DO NOT** place Styrofoam packing materials closer than 6" to the scale and periodically re-check zero calibration during use.

**DO NOT** remove, sell, or exchange any part of the "balance unit" as it is not safe to assume that these parts are interchangeable with any other scale. These parts are calibrated to work together. If any are misplaced or broken, return to Lyman complete, and we will replace the part and re-balance the scale for a minimal charge.



**Figure 16**

Figure 16 shows a setting of 27.0 grains. If you wanted to decrease this 1/10 grain, you would simply move the small poise one notch to the right.

## Care of Your Lyman Scale

Move the large poise about halfway down the beam when transporting or storing the scale to avoid possible damage to the bearings.

Cover the scale when not in use, to prevent accumulation of dust on the bearings. **DO NOT** allow any oil to accumulate on the bearings as this will affect accuracy and sensitivity of the scale.

### CAUTION

Static electricity will affect the accuracy of reloading scales. **DO NOT** place Styrofoam packing materials closer than 6" to the scale and periodically re-check Zero calibration during use.

**DO NOT** remove, sell, or exchange any part of the "balance unit" as it is not safe to assume that these parts are interchangeable with any other scale. These parts are balanced-in together. If any are misplaced or broken, return to Lyman complete, and we will replace the part and re-balance the scale with a minimal charge.

## Conversion Table Ounces to Grains

OUNCES	GRAINS	OUNCES	GRAINS	OUNCES	GRAINS
$\frac{1}{2}$	218.8	$1-\frac{1}{8}$	492.2	$1-\frac{3}{4}$	765.6
$\frac{5}{16}$	246.1	$1-\frac{3}{16}$	519.5	$1-\frac{13}{16}$	793.0
$\frac{3}{8}$	273.4	$1-\frac{1}{4}$	546.9	$1-\frac{7}{8}$	820.3
$1\frac{1}{16}$	300.8	$1-\frac{5}{16}$	574.2	$1-\frac{15}{16}$	847.7
$\frac{3}{4}$	328.1	$1-\frac{3}{8}$	601.6	2	875.0
$1\frac{3}{16}$	355.5	$1-\frac{7}{16}$	628.9	$2-\frac{1}{16}$	902.3
$\frac{7}{8}$	382.8	$1-\frac{1}{2}$	656.3	$2-\frac{1}{8}$	929.7
$1\frac{5}{16}$	410.2	$1-\frac{9}{16}$	683.6	$2-\frac{3}{16}$	957.0
1	437.5	$1-\frac{5}{8}$	710.9	$2-\frac{1}{4}$	984.4
$1\frac{1}{16}$	464.8	$1-\frac{11}{16}$	738.3		

# BRASS SMITH POWDER MEASURE

## Overview

Lyman's Brass Smith Powder Measure is unmatched for value, features and performance! Whether dropping charges for small pistol cases or large rifle cases, this measure gives consistent and accurate performance. The CNC machined steel metering cylinder features a micrometer adjustable thimble with reference lines so resetting the measure is easy. The reservoir is equipped with a powder baffle which maintains a consistent powder level for top accuracy. The cylinder also allows for the handle to be positioned on either side for true ambidextrous use, plus it can be positioned at different angles for maximum user comfort. The measure body is machine with a 7/8"x14 thread to fit all standard presses and stands. It also includes two drop tubes to cover the full range of calibers.



1 Body.....	7767720	11 Rotor Arm Screws.....	7994387
2 Rotor.....	7767721	12 Drop Tube Adapter.....	7767729
3 Meter Tube.....	7767722	13 Hex Lock Ring with Set Screw	7990119P
4 Plunger O-Ring.....	7767732	14 Drop Tube Lock Screw.....	7767728
5 Plunger.....	7767724	15 Case Adapter, Large.....	7767731
6 Meter Knob.....	7767723	16 Case Adapter, Small.....	7767730
7 Coarse Adjustment Lock Screw	7767733	17 Reservoir cap.....	7990294
8 Rotor Arm.....	7767725	18 Reservoir Tube.....	7998298P
9 Handle Screw.....	7767726	19 Powder Baffle.....	7990263
10 Handle Knob.....	7767727		

## Cleaning the Measure

After unpacking the Brass Smith Powder Measure, the entire unit should be thoroughly cleaned to remove any oil or preservatives that cause powder to stick. We recommend the use of alcohol on patches or soft cloths. It is recommended to disassemble the metering cylinder by loosening the brass thumb screw and removing the outer knurled sleeve by unthreading it fully. Next pull the center plunger out of the unit. This will allow access to the inside of the metering cylinder. A patch on a cleaning rod would work well to clean inside this cylinder. Reassemble the metering cylinder by pushing the plunger back up inside the cylinder and position the flat side with reference lines facing up. Then screw the knurled sleeve back onto the metering cylinder. Gently try to rotate the metering cylinder. If it does not turn easily, the plunger is in too deep. Pull it downwards slightly to correct this.



## Setting up the Measure

Attach the handle to the powder drum with the two supplied screws. Note that the handle can be positioned for either right or left hand operation, as well as at several different angles. Most users will find that positioning the handle so that it is in line with the metering cylinder will provide the most comfortable operation. Next, select the drop tube adapter for the caliber that you are loading. Two are supplied, one small and one large. The small adapter will work with 204 to 25 caliber cases. Above that, use the large adapter. Thread it into the bottom of the 7/8"x14 drop tube and thread the drop tube into your press or powder measure stand. Place the body of the measure onto the drop tube and lock it in place with the large thumb screw. Note that there are dimples around the outside of the drop. Make sure that the thumb screw enters one of the dimples when it is tightened.

**Warning: This powder measure is NOT designed or recommended for use with black powder. Only smokeless powder should be used!**

## Setting the Charge Weight

The measure can be adjusted for charges of approximately 1.0 grains up to around 130 grains. To adjust the metering cylinder for most pistol loads, make sure the brass thumb screw is tight and slowly unthread the outer sleeve. Drop charges at various points and check them on a scale. Adjust the sleeve in or out as needed to bring your charge to the desired weight. For rifle charges, the center plunger will need to be pulled downwards in the metering cylinder. Note that there are reference lines on the plunger. Loosen the brass thumb screw and pull the

plunger down one line at a time, then re-tighten the thumb screw. Drop charges and check them on a scale. Fine tune the charge weight by threading the outer sleeve in and out. If the proper charge weight cannot be reached by adjusting the outer sleeve, loosen the thumb screw and pull the plunger down another line. Then re-tighten the thumb screw. Please note that the plunger is only a coarse adjustment. All fine tuning of your charges will be done with the outer sleeve. Always verify charges with a scale after making any adjustments! We recommend dropping and weighing 10 charges to verify the proper charge weight is being dropped before loading cases.

## **Charging the Shell**

Once your charge weight is set, place a case against the funnel mouth of the drop tube adapter and work the handle of the measure. Note that the charge drops when the handle is in the up position. When working the handle, it is important to move the handle fully up and down so that the metering cylinder makes firm contact with its stop points. Do not short stroke the handle! Making contact with the stop points each time will produce consistent powder drops.

## **Notes on Powder Measure Usage**

All powder measures are of a basic design and the operator must acquire the knack of using one for best results. You will notice that fine-grained powders will measure easily and accurately, while coarse grained powders can be more difficult to drop accurately. This is because the coarse grain powder will often get caught between the edge of the metering cylinder and the measure's body, and will cause considerable resistance as the granules are cut. Remember, the handle must be moved uniformly and consistently each time to achieve accurate charges.

**WARNING:** Use caution when dropping charges of stick powder with the small drop tube adapter as it is possible for powder to “bridge” and cause some of the charge to remain in the tube. This could produce a squib load. Also, if another charge is then dropped, the powder that remained in the tube, as well as the additional charge may all go into the case causing an overcharge.

**VISIBLY VERIFY THAT ALL CHARGES ARE THE SAME HEIGHT  
IN THE CASES BEFORE SEATING BULLETS!**

## #55 POWDER MEASURE

### Cleaning the Measure

After unpacking the #55 measure the entire unit should be thoroughly cleaned with a solvent (such as alcohol) to remove any oil or preservative that might lead to charging errors.

### Setting the Measure

Always make sure the #55 measure is clean and free from any loose powder grains before attempting to use it. If the slides cannot be pushed in to register zero when the unit is empty, the slides and cavity should be cleaned. The zero line should be even with the right hand edge of the brass sleeve and all settings of the measure should be made with reference to this point. Verify all settings on a scale. Never charge cases without scale verification.

### Optional Installation Method for Powder Measure

Many reloaders prefer to mount the #55 measure on their bench top or a simple stand by using the clamping device on the back of the measure. This prevents spilled powder from dirtying the press, and keeps powder charging operations from the other reloading steps.

### Turret Installation

Lyman's #55 measure may be mounted on a powder measure stand or the press's top by first screwing the 7/8" x 14 adapter bushing (Key 17) in the threaded die station. The #55 measure comes with two drop tubes, one with a smaller hole for case mouths under .270 Win diameter, the other for larger diameter case mouths. Attach the included locking ring (Key 9) to the appropriate drop tube and screw it into the adapter bushing. Place a case into the shell-holder and raise the ram to its highest position. Lower the drop tube until it comes into contact with the case. Tighten the set screw in the lock ring (Key 9) to keep from loosening. Mount the powder measure to the drop tube tightening with the lock screw (Key 7).

### Examine the Slides

The #55 measure has three slides for adjusting the powder charge cavity. The top slide is graduated on both edges. The graduations at the front apply to this slide when used alone, while those at the rear apply to the top and middle slide when used together. The bottom slide is graduated on the underside. These lower marks should be regarded only as reference points for using the entire cylinder with slides 1, 2 and 3 together.

### Setting the Charges

Proper adjustment is achieved by trial and error with verifying each setting with a scale. For best results, we suggest the slides be used as follows:

- Top slide only for light pistol use.
- Top two slides for rifles.
- All three slides for heavy rifle



## **Adjusting Top Slide**

For light pistol loads, loosen the large diameter knurled locking screw (Key 15). Turn the top knurled adjusting screw counterclockwise to form an opening within the metering cylinder assembly. Be sure to tighten the locking screw (Key 15) to maintain the selected setting. Lift and drop the knocker assembly (Key 6) to uniformly fill the metering assembly. Rotate the handle and drop the charge into a scale pan and verify the weight on a scale. Adjust the slide accordingly to achieve the desired charge. Always verify with a scale after any adjustments are made.

## **Adjusting Top and Middle Slides**

For heavy pistol and rifle loads, both the top and middle slides should be used. These should be adjusted together to achieve proper uniformity. To do this, first close the slides completely and loosen the top knurled locking screw (Key 15). Turn the lower knurled adjusting screw counterclockwise to form an opening within the metering assembly. By adjusting the lower screw, both the top and middle slides will move simultaneously. Tighten the lock screw (Key 15) to maintain the selected setting. Lift and drop the knocker assembly (Key 6) to uniformly fill the opening in the metering assembly. Rotate the handle and drop the charge into a scale pan and verify the weight on a scale. Adjust the slides accordingly to achieve the desired charge. Always verify with a scale after any adjustments are made.

## **Adjusting Top, Middle and Bottom Slides**

For heavy rifle charges, it may be necessary to use all three slides. First, close the slides completely and be sure they are even with each other. Loosen both locking screws (Keys 12 and 15) and pull out the three slides together. Re-tighten the locking screws to maintain the selected setting. Lift and drop the knocker assembly (Key 6) to uniformly fill the metering assembly. Rotate the handle and drop the charge into a scale pan and verify the weight on the scale. Adjust the slides accordingly to achieve the desired charge. Always verify with a scale after any adjustments are made.

## **Charging the Shell**

When the powder measure has been adjusted, flip the knocker several times to settle the powder in the reservoir. Place a cartridge case in contact with the drop tube, raise the measure handle against its stop without jarring the measure unnecessarily and return the handle to its downward position. Flip the knocker so all of the charge will be jarred down into the case.

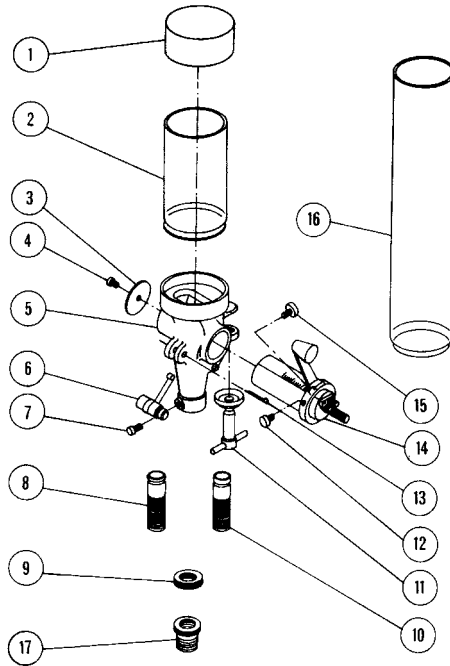
## **Notes on Powder Measure Usage**

All powder measures are of a basic design and the operator must acquire the knack of using one for best results. As you may notice, fine-grained powders will measure easily and accurately and it is the coarse-grained ones that usually give the most trouble because the coarse grains will be caught between the edge of the rotor (or cylinder) and the body of the measure, causing considerable resistance as the granules are cut.

Remember - all movements must be uniform-with the knocker operated the same number of times-when throwing each charge. Do not tighten the clamp screw too much because it can distort the frame and cause the cylinder to bind. Always keep the handle in the down position except when throwing a powder charge.

**\* Do not use with black powder due to static electricity.**

# #55 POWDER MEASURE



Key	Part Description	Part #
1	Reservoir Cap	7990294
2	Reservoir	7998298
3	Slide End Plate	7990291
4	Slide End Plate Screw	7990293
5	Powder Measure Body*	7990272
6	Knocker Assembly	7990267
7	Drop Tube Lock Screw	2990744
8	Large Drop Tube	7837797
9	Lock Ring	7990265
10	Small Drop Tube	7837796
11	Bench Clamp	7990268
12	Locking Screw, Micro Body	7990290
13	Knocker Cotter Pin	7990275
14	Metering Cylinder Assembly*	7990274
15	Locking Screw, Micro Slide	7990767
16	Reservoir Tube 7000 gr.**	7998299
17	7/8" x 14 Adapter	7392036

\*Factory assembled & fitted

\*\*Optional Item

Please Note: Some parts are not interchangeable with the #55 Classic Black Powder Measure. Do not attempt to convert to black powder usage.



## #55 CLASSIC BLACK POWDER MEASURE

The #55 Classic Black Powder Measure has been designed to safely throw charges of either black powder, Pyrodex, or smokeless powder. The measure is equipped with an aluminum powder reservoir and a metering cylinder enclosed in a brass housing. This eliminates the possibility of sparks and static electricity. The #55 Classic is equipped with a powder baffle for accurate, consistent charges. Certain models include an additional 24" long drop tube, which provides up to 7% greater black powder compression. If your #55 Classic model does not include drop tubes, they may be purchased from Lyman as an optional accessory (part no. 7767764).

Note: Please read the previous section on the #55 Powder Measure for set up instructions. The #55 Classic functions the same as the standard #55 Powder Measure and the same instructions will apply. Additional black powder information follows.

### For Use With Black Powder or Pyrodex:

If charging rifle cases, it is recommended that the 24" two piece drop tube be used. Assemble the drop tube by threading the ends of the two tubes into the knurled connector. Then thread the 24" assembled tube onto the large drop tube equipped with a lock ring and install the assembly into the bottom of the measure. Cases will be charged by holding them against the bottom of the drop tube and working the measure. The bottom of the drop tube is equipped with a tapered funnel, which will accept cases from 38 cal. up to 50 cal.

For best results, use the built-in clamp on the back of the measure to lock it into a shelf at a convenient height. You will want to find a height that will allow you to easily work the measure, while also holding a case against the bottom of the drop tube.

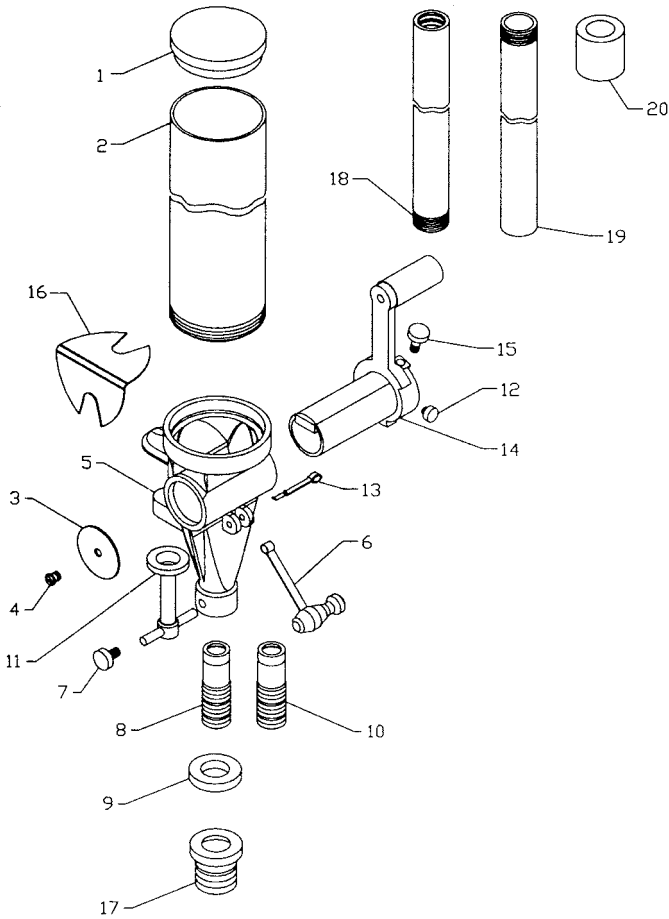
For most black powder rifle cases, you will need to use the top, middle, and bottom slides together.

**CAUTION:** Black powder residue will be found on the powder measure body and metering cylinder after use. This residue can cause rust to form on the cast iron powder measure body, particularly in humid conditions. Lyman recommends that the metering cylinder be removed from the empty powder measure (this is done by removing the slide end plate screw and pulling the metering cylinder out of the body--see parts breakdown) and that the inside of the powder measure body and outside of the metering cylinder be cleaned. They should be wiped off with a damp cloth and dried with a clean cloth. Do not oil the parts. Cleaning should be done after several uses or before storage.



Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)

# #55 CLASSIC BLACK POWDER MEASURE



Key	Part Description	Part #	Key	Part Description	Part #
1	Reservoir Cap	7990261	14	Metering Cylinder Assembly*	7990274
2	Reservoir	7990262	15	Locking Screw, Micro Slide	7990767
3	Slide End Plate	7990291	16	Black Powder Baffle	7767758
4	Slide End Plate Screw	7990293	17	7/8" x 14 Adapter	7392036
5	Powder Measure Body	7990256*	18	Powder Measure	
6	Knocker Assembly	7990267		Drop Tube (Upper)***	7990264
7	Drop Tube Lock Screw	2990744	19	Powder Measure	
8	Large Drop Tube	7837797		Drop Tube (Bottom)***	7990257
9	Lock Ring	7990265	20	Tube Coupler***	7990259
10	Small Drop Tube	7837796			
11	Bench Clamp	7990268			
12	Locking Screw, Micro Body	7990290			
13	Knocker Cotter Pin	7990275			

\*Factory assembled & fitted

\*\*Optional Item

\*\*\*Complete Drop Tube Assembly 7767764

# TURBO TUMBLERS: 1200, 2200 & 2500 PRO MAGNUM



By purchasing one of Lyman’s Turbo Tumblers you have invested in the finest and fastest cartridge case polishing system available. The Turbo 1200, 2200 or the 2500 Pro Magnum will let you reload with a “factory finish” when you use Lyman Turbo Tumbler Media. Our Turbo Tumblers are easy to use and make reloading and shooting more enjoyable.

## Assembly Instructions for 1200, 2200 and 2500 Pro Magnum

1. Remove the main post from the parts bag and install the hex nut. Thread it approx. 1” onto either end of the main post.
2. Install a flat washer on to the main post under the hex nut.
3. Install the main post assembly into the threaded insert which is in the center of the motor plate. Turn the main post clockwise by hand until it stops, approx. 5 turns. Using a wrench, turn the hex nut clockwise to tighten the main post to the motor plate. (Note: there are two thread sizes in the threaded insert. The bottom section is ¼” and the top section is 5/16”. 1200 models use a ¼” post, nut and washer requiring a 7/16” wrench. 2200 and 2500 models use a 5/16” post, nut and washer requiring a ½” wrench.) Your tumbler will come with the appropriate post and hardware for your model.
4. **1200** – Install the bowl by lining up the center hole over the main post. Install the rubber well nut to secure it to the motor plate.  
**1200 Auto Flo** – Install the separating chamber and bowl by lining up the center holes over the main post. Install a washer and wing nut and turn the wing nut clockwise to tighten the separating chamber and bowl to the motor plate.  
**2200 Auto Flo** - Install the separating chamber and bowl by lining up the center holes over the main post. Install the large washer with the rubber side facing down. Install a hex nut and tighten with a wrench to secure the separating chamber and bowl to the motor plate.  
**2500** - Install the bowl by lining up the center hole over the main post. Install a washer and wing nut to secure it to the motor plate.
5. **1200 and 1200 Auto Flo** - Install the lid by lining up the center hole over the main post. Install a rubber well nut to secure the cover to the bowl.  
**2200** - Install the lid by lining up the center hole over the main post. Install the large washer with rubber on both sides and a wing nut to secure the cover to the bowl.  
**2500** - Install the lid by lining up the center hole over the main post. Install a washer and a wing nut to secure the cover to the bowl.

**Cover and Bowl Removal:** Reserve the above steps to remove either the cover or bowl from the tumbler.

**Note:** It is essential that the nut holding the bowl down be snug enough to tightly hold the bowl (and separating chamber if so equipped) against the motor plate. If the bowl becomes loose, polishing action will be reduced and vibration of the unit will be increased. Prolonged use with a loose bowl could damage the bowl or tumbler.

## Operating Procedure for Turbo Tumblers

Your new Turbo Tumbler requires no break-in. Never turn the Tumbler on without the bowl installed. The Turbo Tumbler has been designed so that it will not walk during normal operation if the bowl is securely locked in place. If, however, the bowl vibrates loose, the machine may “walk” or travel around during operation. We recommend that the Tumbler be placed on a solid surface away from any combustible materials when running. If the Tumbler is to be used on a bench, it is a good idea to place it in a position where it cannot fall off the bench if some movement occurs.

## Important Safety Information

1. Under no circumstances should live ammo or primed cases be tumbled.
2. Your Turbo Tumbler, or any other electrical device, should not be operated in a wet atmosphere or around water.
3. Be certain to always use a grounded three-prong outlet to prevent possible electric shock.
4. Never cover the Tumbler with anything to insulate the noise (blanket, box, etc.). Do not obstruct air flow around or under unit. Operate unit on a smooth hard surface. Do not operate on soft materials such as a carpet, tablecloth, cardboard, newspaper etc. as it could overheat and be a fire hazard.

## Polishing

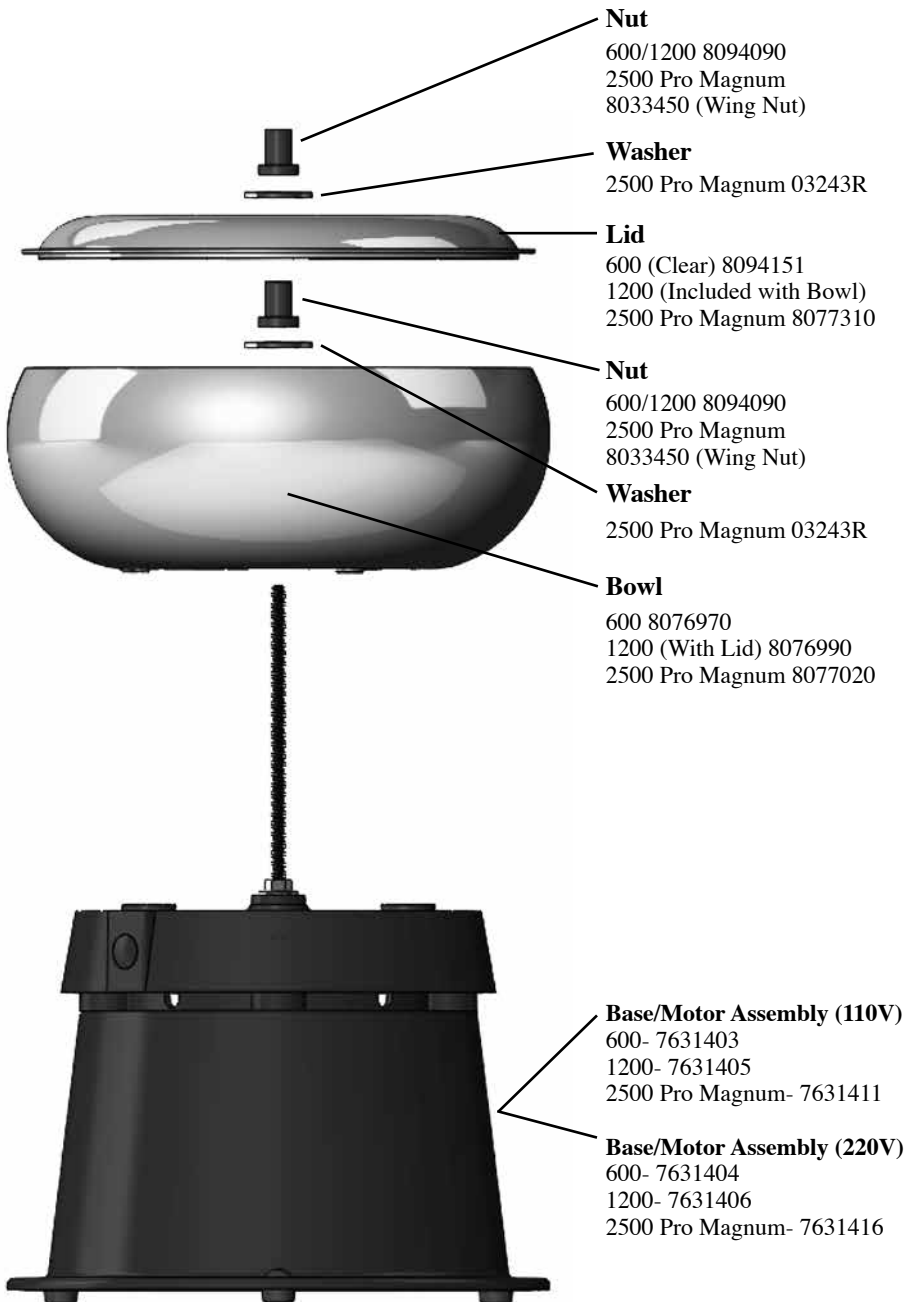
Add media to the Tumbler bowl until it is half to three-quarters full. See capacity chart on page 54 for specific load. Add the cases to be polished and turn on the machine, using the black and red rocker switch located on the tumbler base perimeter. The cases will settle into the media and begin to move through the media. Polishing has commenced.

Check the cases from time to time for the level of polish desired. In most cases, two to four hours is all that is required, unless the brass is particularly badly tarnished.

Once the cartridge cases have the desired polish on them, they may be removed from the Tumbler. There are several ways to go about this: Turn unit off using the black and red rocker switch located on the tumbler base perimeter. Pour the cases and media into a Lyman Super Sifter, and shake the media into a bucket or some sort of receptacle. A faster method is to use a Lyman Case/Media Separator which separates cases from media with a few turns of a handle. Once the bulk of the media has been cleared away, take each case and tap it lightly, mouth down, to remove any remaining media.

It is important to be sure all of the media has been removed from the cases. This is particularly true of bottleneck cases, but is easily accomplished with one of the two systems above. Be sure to check the flash holes of unprimed cases and remove any media which may have become lodged in the hole.

# STANDARD TURBO TUMBLERS



## Turbo-1200 Accessory Bowl

Serves as an alternate bowl for the 1200 Turbo Tumbler when more than one type of media is used. Grid top serves as a handy sifter when separating media from brass. The accessory bowl has the same capacity as the Model 1200. Item #7631323

## Turbo-Liquid System 600 Accessory Bowl

Convert your 1200 Turbo™ Tumbler for liquid use. Includes standard 600 bowl with solid, durable lid for clean, safe use of wet or dry media. Comes with necessary hardware for conversion. Item #7631399

## Operating Instructions: Auto Flo Models 1200, 2200, 2500 Pro Mag

The 1200, 2200, and 2500 Pro Mag are special models in the Lyman Turbo Tumbler family. The Auto-Flo models allow easy and convenient separation of your cases from the dry polishing media. After polishing, it takes just a couple of minutes to drain the media from the specially designed bowl (patented), leaving the cases clean for reloading.

## Separating Instructions

The Auto-Flo models have a special feature which allows the media to be separated from the cases quickly and easily. When the polishing cycle is finished, simply position the media drain pan under the Auto - Flo exit port, remove the plug and turn on the tumbler. Even though the media will drain out of the bowl very quickly, it will be necessary to reach into the bowl and “mix up” the cases a few times to allow the media caught inside the cases to empty. Allowing the empty cases to vibrate in the bowl for a few seconds after the media is drained will also help to remove the media in the case flash hole. This entire process will only take a few minutes. When the separation is complete, remove the cases from the bowl, replace the plug and pour the media back into the tumbler. Your Auto-Flo Turbo Tumbler is now ready for the next load of cases.

NOTE: It is important to be sure all of the media has been removed from the cases. This is particularly true of bottleneck cases. Also, be sure to check the flash holes of unprimed cases and remove any media which may have become lodged in the hole with the Lyman Flash Hole Cleaning Tool, sold separately.

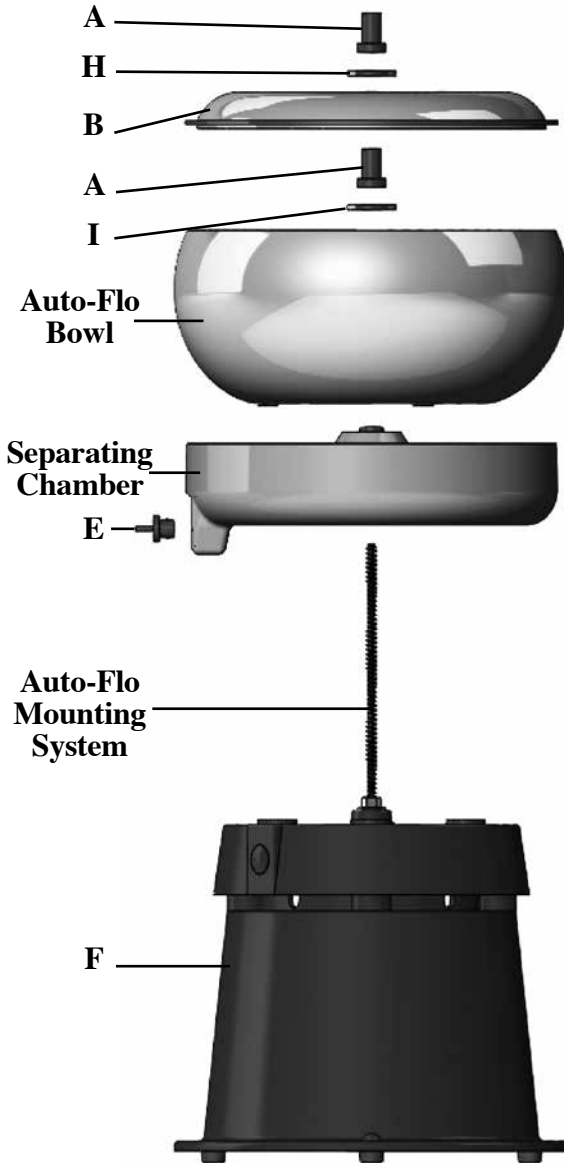
### TURBO TUMBLER CAPACITIES\*\*

Model #	# of .38 Special	# of 30-06	Media Charge
Model 1200	350	125	2 lbs.
Model 1200 Auto Flo	350	125	3 lbs.
Model 2200 Auto Flo	750	250	5 lbs.
Model 2500 Pro Magnum	1000	315	6 lbs.
Model 2500 Pro Mag Auto Flo	1000	315	6.5 lbs.

\*\*Nominal – can vary based on individual user’s needs.

**WARNING:** This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.  
Children should be supervised to ensure they do not play with the appliance.  
The supply cord cannot be replaced. If the cord is damaged, the appliance should be scrapped.

# AUTO-FLO TURBO TUMBLERS



**A**  
**Lid Nut**  
 1200 Rubber Nut\* 8094090  
 2500/2200 Wing Nut 8033450

**B**  
**Lid\***  
 1200 (Solid) 8077270  
 2200 (Clear) 8094920  
 2500 (Black) 8077310

**C**  
**Bowl Nut**  
 1200 Wing Nut \*03333R  
 2200 Hex Nut 8033900  
 2500 Wing Nut 8033450

**E**  
**Export Plug/Drain Plug**  
 All Models 8075970

**F**  
**Base/Motor Assembly**  
 1200 110 Volt 7631405  
 1200 220 Volt 7631406  
 2200 110 Volt 7631409  
 2200 220 Volt 7631410  
 2500 110 Volt 7631411  
 2500 220 Volt 7631416

**H**  
**Lid Washer**  
 2200 Model only 8077280  
 2500 Model only 03243R

**I**  
**Bowl Washer**  
 1200 03238R  
 2500 03243R  
 2200 8077300  
 (Rubber Side Face Down)

**G**  
**Media Drain Pan (Not Shown)\***  
 1200/2200/2500 8047370

Please note: Auto Flo bowls and separating chambers may not be purchased separately except for the model 2500. They must be purchased as a set for proper fit.

\*These components are available as a complete Auto-Flo separating system.

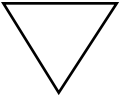
7631636 Fits 1200 & 600 Tumbler Base

7631644 Fits 3200 Tumbler base

7631640 Fits 2200 Tumbler Base

**Note:** Some Auto-Flo models have a clear see-through lid. To protect in shipping these lids are covered with a peel off paper to be removed before use.

# MAG 25 FURNACE



**WARNING:** This product can expose you to lead, which is known to the state of California to cause cancer, birth defects, or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

## REDUCING EXPOSURE:

*Lead contamination in the air, in dust, and on your skin is invisible.*

**Keep children and pregnant women away during use and until cleanup is complete.**

*Risk can be reduced — but not eliminated — with strong ventilation; washing hands immediately after use of these products before eating or smoking; and careful cleaning of surfaces and floors with disposable wipes, after lead dust has had a chance to settle.*

*Use a lead specific cleaner with EDTA, or a high-phosphate detergent (like most detergents sold for electric dishwashers), and bag used wipes for disposal.*

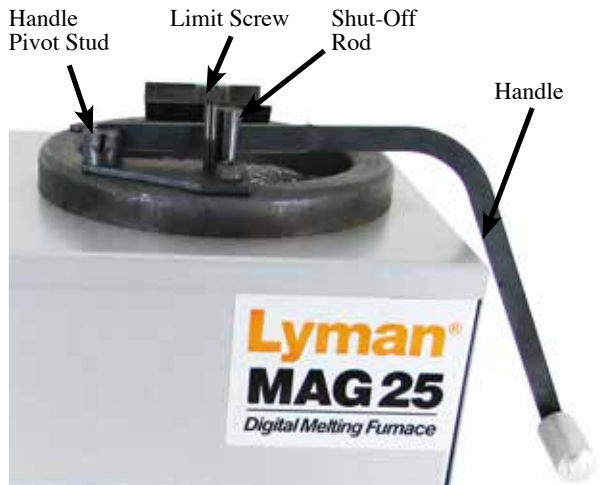
## Assembly

The main body of the furnace is fully assembled and factory tested. To facilitate packaging, the shut-off rod and operating handle have not been installed and you must do so prior to using the furnace.

To attach the handle: slide the shut-off rod through the hole in the alignment plate and down into the valve in the bottom of the pot. Next remove the screw from the handle pivot stud. Then slide the handle with its tension spring through the slot in the shut-off rod. Slide it in until the end of the shut-off rod slips into the slot in the handle pivot stud and the hole in the shut-off rod aligns with the hole in the pivot stud. Tighten the supplied screw through the handle and into the opposite side of stud. See Figure 1. Thread the supplied shut-off rod limit screw (with its lock nut) into the threaded hole in the alignment plate. Your furnace is now ready to be used.



**Figure 1**





## Handling Lead

Lead, a substance known to cause birth defects, reproductive harm and other severe physical injury, must be handled with extreme care. Handle lead bullets or lead shot only in well ventilated areas and ALWAYS wash hands after handling lead and before eating or smoking. Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition, also may result in exposure to lead. Have adequate ventilation at all times.

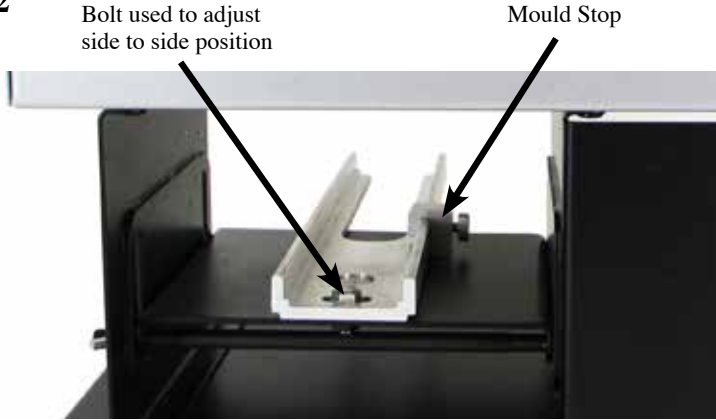
## Safety Precautions

1. No casting should be done without basic safety garb. This would include long pants and long sleeves, sturdy gloves, eye protection and closed top shoes.
2. Keep all flammable items away from casting area. Do not operate unit on flammable materials such as paper, wood or carpeting.
3. Casting should be done in a well-ventilated area. Avoid breathing fumes and dust from furnace.
4. Never allow moisture near molten lead. When moisture is introduced to molten lead, a terrific steam explosion occurs and molten metal is sprayed not only over the immediate area but also over the bullet caster. This moisture could be introduced by a wet ladle or dipper, over-head pipes, or additional lead being added to the pot.
5. Keep children away from casting and reloading areas.
6. Never pick up or tip the furnace when it is hot.
7. Do not cast when distracted.
8. Do not smoke or eat while handling lead.
9. Do not run the furnace without lead. (Except for initial warm-up period.)
10. Only plug the furnace into a circuit that can handle an additional 7 amp draw.
11. Wash hands after handling lead.
12. Use caution when adding bullet metal to the furnace containing molten metal to avoid splashing.

## How to Use the Warming Shelf

The warming shelf is located on the rear rim of the pot and allows you to pre-heat your mould blocks while the furnace is bringing your bullet metal up to casting temperature. Single and double cavity moulds are best stood on end with the handles straight up. Four cavity blocks are best positioned horizontally on the warming shelf. The use of the warning shelf will help reduce the time needed for a mould to be producing good wrinkle free bullets.

**Figure 2**



## **Mould Guide – Alignment and Use**

The Mag 25 mould guide is designed to accept moulds made by Lyman, RCBS, Saeco and Lee. There are two steps on the mould guide rails which will fit these various moulds. Note: It is recommended that the mould guide be adjusted when the furnace is cool and not in use.

To adjust the mould guide, loosen the two wing nuts on the right hand side of the furnace. Place your mould on the guide rails and position it below the drain spout. Slide the mould guide up or down as needed to leave about  $\frac{1}{4}$ " space between the spout and the top of the mould. Tighten the wing nuts to lock it in place. Next, the side to side position of the guide can be adjusted if needed. See Fig. 2.

Loosen the bolt at the back of the mould guide with the supplied wrench and move the mould guide side to side so that the drain spout aligns with the mould sprue plate hole.

To stop the mould in the correct position under the drain spout, the mould guide is also equipped with an adjustable mould stop. Loosen the thumb screw on the side of the mould stop, and position it so that it will stop the mould when the last sprue hole in the mould is centered under the drain spout. When it is in the correct position, lock it in place with the thumb screw.

When using the mould guide with a multiple cavity mould, the mould is set onto the guide rails and slid forward until it touches the mould stop. The cavity closest to the operator is filled first. The remaining cavities require visual alignment with the drain spout and are filled (each in order) as the mould is slowly drawn towards the operator. When all cavities are filled, allow the mould to rest on the guide for several seconds until the sprue solidifies.

## **Operating Your Furnace**

Plug in your furnace to turn it on. (Unplugging it will turn it off.) Up to 25 pounds of cold bullet metal can be added to the pot. Note: before using your new furnace for the first time, we suggest you turn it on when empty and set the furnace for the desired temperature. Then allow it to run for 10 to 15 minutes in a well-ventilated area (better yet, outdoors) to burn off protective oil. The unit usually smokes a bit at first which could be a problem inside your house.

**Figure 3**

**Process Value:**

Actual temperature of lead

**Set Value:**

Temperature that the furnace is set for.

These buttons are not used



Down Reduces Temperature

Up Increases Temperature

The Mag 25 furnace is equipped with a multi-function digital temperature controller. The controller has two temperature displays. The lower display marked “SV” (set value) is the temperature that the furnace is programmed to run at.

The upper display marked “PV” (process value) is the actual temperature of the metal (+ or – approximately 10 degrees F. Please note that this temperature tolerance is for a typical volume of lead. If filled right to the top or drained close to empty, the temperature tolerance can be a little greater.)

The furnace is factory set for a maximum temperature of 850 degrees F. While the controller is capable of multiple functions, the caster will only need to be concerned with basic temperature changes and other functions are locked. To change the temperature setting, tap the Up or Down button. (See Figure 3 for identification of keys.) The set temperature in the “SV” display will flash. Move the temperature up or down with the appropriate button. The temperature will change in 10 degree increments. Once the desired temperature is selected, wait a few seconds and the display will stop flashing, showing that the temperature has been changed.

From this point on the furnace will automatically cycle on and off to maintain the set temperature. When heating or attempting to keep the temperature within its tolerance range, the “OUT” (output) light will be on. It will blink as the actual temperature reaches the set temperature. If the light is off, the furnace is not heating. If the actual temperature raises approximately 20° above the set temperature, the heater will cycle off automatically, dropping the temperature back down to the set level. When the controller is not attempting to adjust the temperature, no indicator lights will be on.

**If the unit temperature reaches or exceeds 950°, the PV reading will show “Err” and the AL light will come on. If this happens, unplug the unit and contact Lyman Customer Service.**

You may see some movement up or down in the actual temperature reading as the heat is cycled on and off. You may need to experiment with different temperature settings to find what works best with a particular mould. When adding additional lead to the pot, you will see the temperature drop on the “PV” display, as the new cold lead will lower the temperature of the existing lead. The furnace will automatically heat until the molten lead is back up to the set temperature.

# Bottom Pour System

The bottom pour spout valve system of the furnace has been designed to provide efficient trouble-free casting. The system consists of the drain spout, shutoff rod and limit screw. The shutoff rod limit screw is used to control how high the shutoff rod can be lifted, which in turn, controls the flow rate of the lead. Determine the best flow rate of lead from the spout for the particular mould you are using and adjust the limit screw to stop the shutoff rod at this point. **CAUTION! Limit screw will be hot during adjustment!**

Dripping from the valve can occur at times if dirt or grit suspended in the molten lead gets caught in the shut-off valve. Fully opening the valve will usually clear such debris. When this does not work, drain the furnace and allow it to cool. Then remove and clean the shutoff rod. If the drain spout is seriously clogged, heat the furnace to the melting temperature. Hold an unbent paperclip with pliers and feed the wire up through the drain spout to dislodge any obstruction. Be careful to wear heat resistant gloves and eye protection whenever working with molten lead.

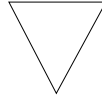
### Parts List

- 1) Power Cord, 115 Volt . . . . . Item # 2800400
- 2) Power Cord, 230 Volt (Euro) . . . . . Item # 2800401
- 3) Power Cord, 230 Volt (Australian) . . . . . Item # 2800402
- 4) Shut-off Rod . . . . . Item # 2800403
- 5) Shut-off Rod Limit Screw . . . . . Item # 2800404
- 6) Limit Screw Lock Nut . . . . . Item # 2800405
- 7) Handle Assembly . . . . . Item # 2800406
- 8) Housing Screws . . . . . Item # 2800407
- 9) Mould Guide Assembly . . . . . Item # 2800408
- 10) Mould Guide Wing Nuts . . . . . Item # 2800409
- 11) Mould Guide Support Screw . . . . . Item # 2800410
- 12) Mould Stop Assembly . . . . . Item # 2800411
- 13) Mould Stop Thumb Screw . . . . . Item # 2800412

# BIG DIPPER FURNACE

(2800350)-Furnace Only (110V)

(2800355)-Furnace Only (220V)



***WARNING! See Safety Instructions Page 56***

## Operating Instructions

### Cautions

- Never allow moisture near molten lead as when introduced to lead, a volatile steam explosion occurs and molten lead is sprayed not only out over immediate area but also all over bullet caster. This moisture could be introduced by a wet ladle or dipper, wet lead added to pot, condensation from over head pipes, perspiration from bullet caster or many other ways.
- Never attempt to touch any of the furnaces surfaces as all are extremely hot.
- Always be sure unit is plugged into a properly grounded outlet.
- No casting should be done without proper safety wear. This includes: long pants, long sleeve shirt, heat resistant gloves, eye protection, closed toe shoes.
- Keep all flammable materials away from casting area and do not operate on flammable materials such as wood, paper or carpeting.
- Casting should be done in a well ventilated area. Avoid breathing in fumes or dust that comes from the furnace.
- Keep children away from casting and reloading areas.
- Do not cast or reload if distracted.
- Do not smoke, eat or drink near or during the casting processes.
- Do not run dry without lead (except for initial warm-up period)
- Always wash hands after handling lead.
- Use caution when adding bullet metal to furnace or pot containing molten metal to avoid splashing.

### Furnace Set Up

Before using your new furnace for the first time, we suggest you plug it into an appropriate wall socket, turn knob to max and run empty for 10-15 minutes in a well ventilated area to burn off preservatives. The unit will smoke a bit and would be ideal in an outdoor area. The temperature of the furnace is controlled by a precision rheostat. The furnace face plate is marked with graduations, when the ideal casting temperature is found you can note the graduation mark for future reference.

The Lyman casting thermometer is particularly useful here. The furnace is equipped with a heating indicator light near the temperature control knob. When the light comes on, the furnace is heating up. When the light goes off, the furnace has reached the set temperature and is no longer heating. The light will cycle on and off during use.

### Melting Cold Bullet Metal

Once the preservatives have been heated out of the furnace, load furnace with up to 10 pounds of bullet metal. The pot contents will reach the designated temperature in approximately 15 minutes. Once up to temperature, the heating system can be controlled to give various temp settings. The marks on the face plate are for reference and do not relate to a specific temperature. You will need to experiment with different settings in order to find the temperature that works best with your bullet metal and mould combination. If you have a casting thermometer,

700 degrees F is a good starting point. Once you find your best temperature make note of the reference mark so you can return to it for future casting sessions.

When replenishing a near-empty pot, there is no need to adjust the control knob.

Add bullet material and allow pot 5 minutes to reach set temp and return to casting.

### Operating your Furnace

The Big Dipper furnace is designed for dipper casting. For best results, fill the dipper with lead alloy and place the spout of the dipper against the pouring hole in the mould's sprue plate. Holding the mould and dipper together, slowly rotate them to a vertical position with the dipper above the mould. This sequence will give the most consistent castings.

### Preserving your Furnace

To realize the longest possible life from your furnace, follow these precautions:

1. Disconnect your furnace when it is not in use.
2. Do not operate furnace above rated voltage (115 Volts, AC or 230 Volts, AC)
3. For maximum life, run the furnace at the lowest temperature that provides satisfactory casting. Establish appropriate temperatures by trial for each type of bullet metal. Normally a 650-720 degrees F temperature range proves adequate for most bullet casting.

<b>Part Description</b>	<b>Part #</b>
Heating Coil	2800351
Rheostat	2800352
Pot	2800353
Knob	2800354

All parts factory serviced only.



# #4500 BULLET SIZER & LUBRICATOR

## Assembly

Your new #4500 Bullet Sizer and Lubricator has been fully assembled at the factory. However, to facilitate packaging and shipping, the handle has been dismounted. Installation of the handle is quick and easy - simply align the handle with the link (**Figure 21**) and turn in the handle until it stops. No other assembly steps are required.

NOTE: Lyman's #4500 is intended only for the sizing and lubrication of bullets cast of lead - tin - antimony alloy and the installation of gas checks where required.



## Bench Mounting

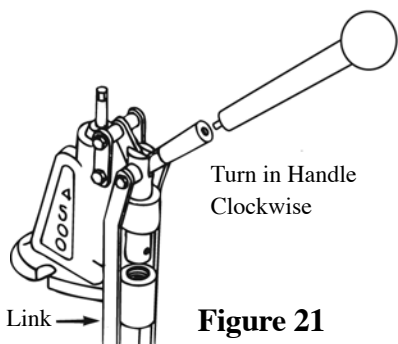
Full benefit of your #4500's leverage cannot be realized unless your bench is both strong and stable. Position your #4500 over the edge of the bench. Two 3/8" bolts, with washers and nuts, firmly anchor the machine. (Mounting bolts not included.)

## Installing the Top Punch

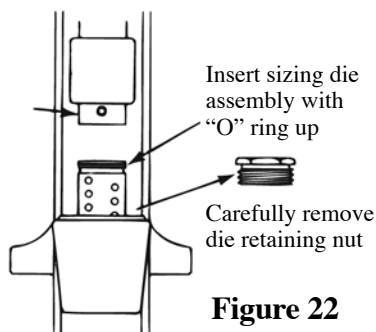
Use the supplied Allen wrench to loosen the set-screw in the front of the lower end of the ram. Press the smaller upper (numbered) end of the top punch into the hole in the ram and tighten the set-screw. The top punch should closely match the nose shape of the bullet to be sized.

## Installing the Sizing Die Assembly

Remove the die retaining nut (**Figure 22**) and insert the sizing die assembly into the recess in the base of the casting as shown. Be certain the end of the sizing die which contains the rubber "O" ring is up. Carefully replace the die retaining nut. Screw it in with your fingers to prevent cross-threading. When the retaining nut is finger-tight, use the flat box wrench to tighten it more securely. Caution - Do not over-tighten this nut.



**Figure 21**



**Figure 22**

## Removing the Sizing Die

If you wish to remove the sizing die, unscrew the die retaining nut. Place your flat box wrench (on its edge) under the push rod and on top of the knockout link. Holding the wrench in this position as you pull up on the operating handle will eject the sizing die.

**WARNING:** Lyman recommends the use of the N.R.A. formula Alox Bullet Lube or the Lyman Ideal Bullet Lube for use with the 4500 Lube Sizer. Hard bullet lubes, if used, must be heated before use. Failure to do so, may damage your lubricator and void the warranty.

The first bullet you run into a new sizing die should always be lightly lubricated to prevent sticking. Using your fingers, remove a small amount of lubricant from your stick of lube. Then take one of the bullets that you will be sizing and lubricating and lightly coat the outside of the bullet rings only. Do not fill the grooves with lubricant.

## Inserting Lubricant

Lyman Bullet Lubricant is recommended for use in your new Sizer and Lubricator. The lubricant is supplied specifically moulded to fit the reservoir of the #4500 tool.

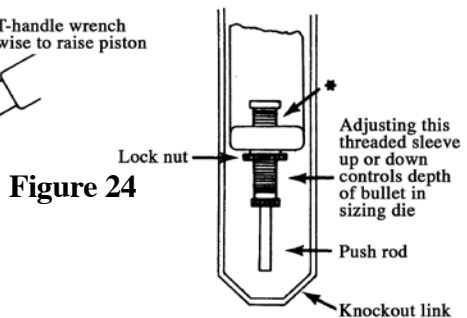
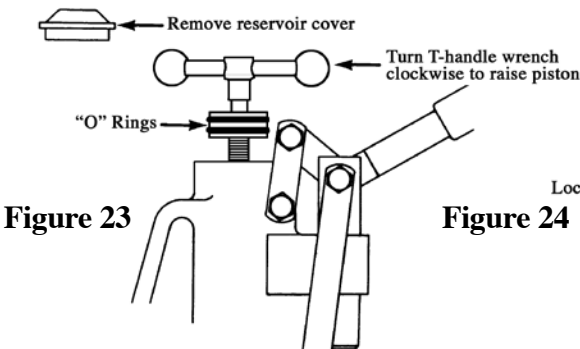
**Figure 23** shows how to insert a stick of bullet lubricant into your machine. Remove the reservoir cap and place the T-handle wrench on the pressure screw as shown. Turn the wrench clockwise until the pressure piston is free from the threaded portion of the screw.

Remove this piston and slide a stick of bullet lubricant (removed from plastic) over the pressure screw and down into the reservoir. Replace the piston on the pressure screw and press down until it engages the threaded portion of the screw. Turn the T-handle wrench counterclockwise until the pressure piston is within the reservoir and then replace the reservoir cap.

**NOTE:** The Nylon Piston Stop Collar is used as a stop for the pressure nut at the bottom of the pressure screw threads. If this stop has moved during shipment, simply slide it down to the bottom of the pressure screw. The lube will be compressed over it in use.

## Operating Your #4500 Sizer Lubricator

Place a cast bullet (base down) in position in the center of the sizing die, on top of the bottom punch. The first bullet you run into a new bullet sizer die should be lightly lubricated by hand to prevent sticking. Pull the operating handle down so the bullet is forced down into the sizing die. Hold down firmly on the operating handle while you turn the T-handle wrench counterclockwise to force lubricant into the bullet grooves. If the tool's frame is entirely empty of lubricant, grease must fill this space before it will reach the bullet. Turn the wrench until pressure is built up. When this space is filled, the increased pressure will make the wrench hard to turn and thus be felt by the operator.





Raise your handle and remove your bullet for inspection. If the top grooves are not receiving grease, lower the threaded push rod adjustment screw shown in **Figure 24**. Repeat the adjustment, a little at a time, until the driving bands are sized and all the grooves between them are properly filled with lubricant.

Care should be used when adjusting depth to insure that the lube does not run over onto the nose of the bullet. When the setting is correct, tighten the adjusting screw lock nut and proceed with your sizing and lubricating.

**Note:** Do not operate in cold weather or until lubricant has been allowed to reach room temperature of approximately 70 degrees.

### Attaching Gas Checks

You may attach gas checks to your bullets while sizing and lubricating. Simply set the gas check (cup end up) in the center of the sizing die and place your bullet over it as you pull down the operating handle. Firm pressure at the bottom of the stroke will usually seat your gas check firmly and evenly.

However, if the gas check will not fully seat on the bullet using only finger pressure, the Lyman Gas check Seater should be employed for best results.

To install, raise the #4500's push rod until its top bears against the bottom of the sizing die. Then slip the Gas check Seater around the threaded push rod adjusting screw so that the push rod is held at the base of the sizing die.

Next, a gas check is set, cup-side up, in the center of the sizing die and a bullet guided into it as you pull down on the operating handle. Use only enough force to fully seat the gas check. After all the gas checks have been installed, remove the Seater and size and lubricate normally.

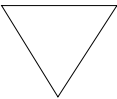
Use of the Gas check Seater ensures the squarest-possible bullet base regardless of the type of gas checks used. A good square bullet base translates into improved accuracy.

The Lyman #4500 Lubricator/Sizer utilizes an 110V or 220V 20 watt heating element to allow easy use of "hard" lubes such as Lyman's Orange Magic. The element is inserted in the bottom, rear portion of the #4500 (see **Figure #25**) and is secured with a 10-32 size Allen screw.

**Caution:** Do not over tighten the Allen screw. Do not operate heater if not installed into the lubricator/sizer and securely locked in place. Burns can result if operated out of the unit.

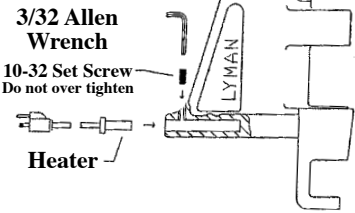
Once secured in place, plug in element to a properly grounded outlet for 20-30 minutes before beginning to size bullets. The body of the #4500 should be warm to touch when at proper operating temperatures. Should the bullet lube become too soft, the unit can be unplugged. Once unplugged, the cast iron body of the #4500 will retain its heat for a period of approximately one hour.

**Caution:**  
**Do not leave unattended while plugged in.**

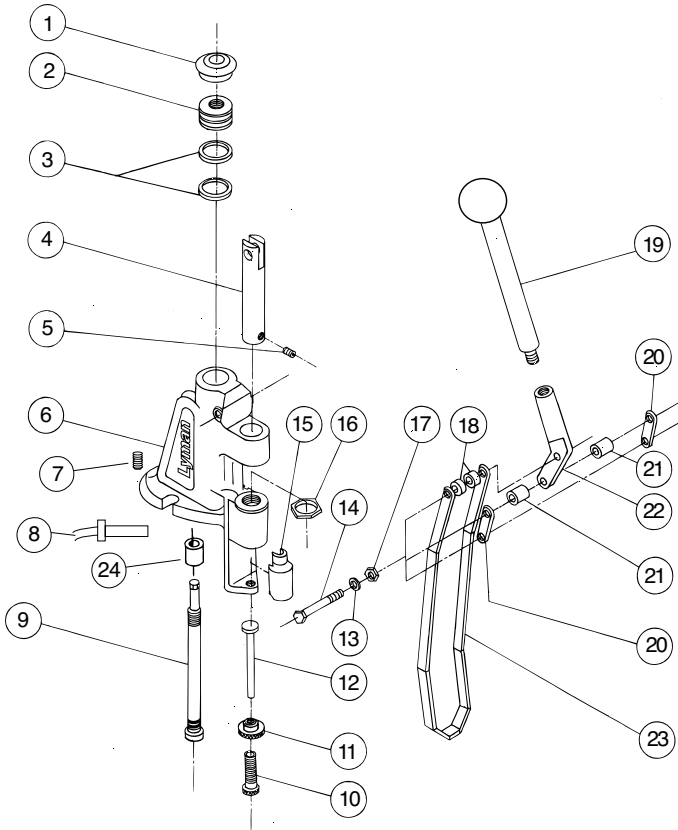


**WARNING! See Safety Instructions Page 56**

**Figure 25**



# #4500 LUBRICATOR/SIZER



Key	Part Description	Part #
1	Lubricant Reservoir Cover	2990598
2	Pressure Nut w/O-rings	2990708
3	O-Ring (2)	2990689
4	Ram	2745818
5	Set Screw	2990622
6	Body Casting	2990594
7	Retaining Screw for Heater	7990121
8	Lubricant Heater 110V*	2745896
8	Lubricant Heater 220V*	2745898
9	Pressure Screw	2990559
10	Adjusting Screw	2745807
11	Adjusting Screw Locknut	2745808
12	Push Out Rod	2990306
13	Spring Washer (3)	2990202
14	Hex Head Bolt (3)	2990620P
15	Gas Check Seater	2745881

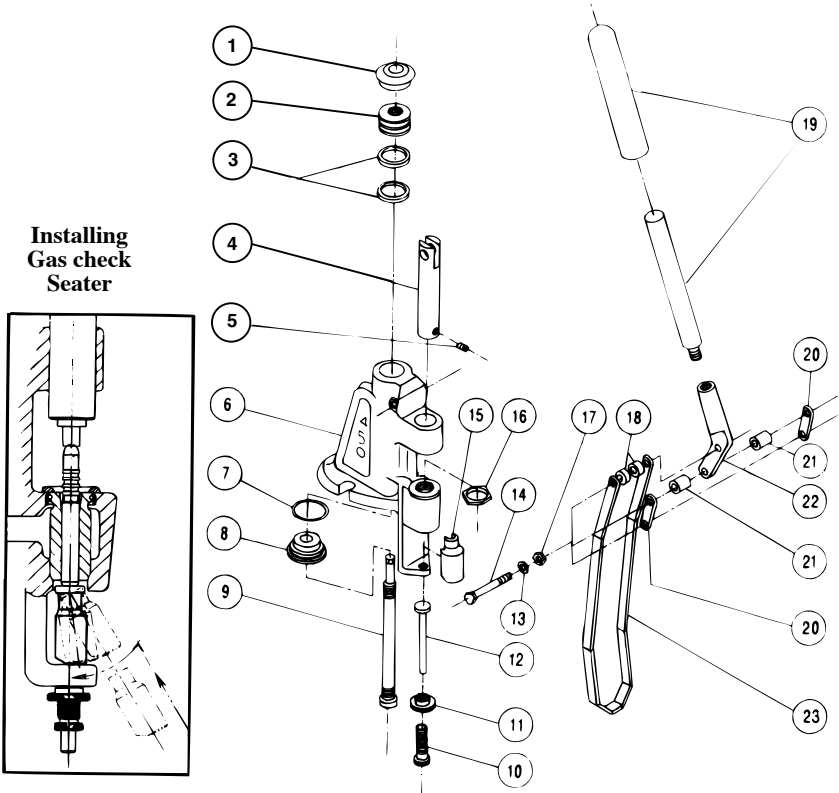
Key	Part Description	Part #
16	Sizing Die Retaining Nut	2990601
17	Centerlock Nut (3)	2745816P
18	Spacer, Short (2)	2745809
19	Handle Assembly	2745806
20	Connecting Link (2)	2745811
21	Spacer, Long (2)	2745810
22	Link	2745815
23	Bullet Knockout Link	2990604
24	Nylon Piston Stop Collar	2745820

**Not Shown:**

T-Handle Wrench	2745821
Combo Wrench	2990520
Hex Wrench	2998880

\*Optional item

# #450 LUBRICATOR/SIZER



Key	Part Description	Part #
1	Lubricant Reservoir Cover*	2990598
2	Pressure Nut w/O-rings*	2990708
3	O-Ring (2)*	2990689
4	Ram	2990593
5	Set Screw	2990622
6	Body Casting	2990594
7	Seal Plug O-Ring*	2990623
8	Seal Plug*	2990546
9	Pressure Screw*	2990559
10	Adjusting Screw	2745807
11	Adjusting Screw Locknut	2745808
12	Push Out Rod	2990306
13	Spring Washer (3)	2990202
14	Hex Head Bolt (3)	2990620P
15	Gas Check Seater	2745881
16	Sizing Die Retaining Nut	2990601

Key	Part Description	Part #
17	Centerlock Nut (3)	2745816P
18	Spacer, Short (2)	2745809
19	Handle with Grip	2745813
20	Connecting Link (2)	2745811
21	Spacer, Long (2)	2745810
22	Link	2745815
23	Bullet Knockout Link	2990604

Not Shown:

T-Handle Wrench	2745821
Combo Wrench	2990520
Hex Wrench	2998880

\*These items may be ordered as a complete assembly 2745817

Apply no more pressure on lubricant than is required to “just fill the grooves”. If too much pressure is built up, the lube will accumulate between the base of the bullet and the bottom punch. This condition may also be caused by not holding down firmly on the handle when you apply lubricant pressure. The very least pressure that will fill the grooves is best.

At times there will be portions of the grooves which do not readily fill with lubricant. This is due to trapped air. If those bullets are again cycled through the die, without increasing lubricant pressure, they will fill properly.

Many prefer to work with the lightest lube pressure and raise and lower the bullet twice; the second time without any extra pressure. This produces a perfect job every time.

Never increase lube pressure when the lubricant reservoir is empty or almost empty. If you force the pressure piston down so that it contacts the bottom of the reservoir, you will damage both the pressure screw and the pressure piston.

## Mould Blocks Parts List

Your bullet mould is a piece of precision equipment which, with a little care and common sense, can easily last your lifetime. Before using a new mould, it must be cleaned in alcohol, or other suitable solvent, to remove the protective film of oil. Never cast bullets with oil still in the mould as the oil will vaporize, leaving an undesirable residue.



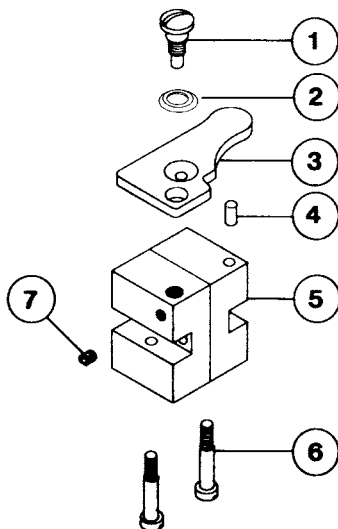
Detachable mould handles are available in two sizes to fit single and double, or four cavity moulds. A shooter may interchange the blocks in his handles as he wishes, provided he uses that size block for which the handles are intended. It should be noted that in current single cavity moulds, a double cavity-size block is used to make a single cavity mould.

### Single Cavity Mould Block Parts

1	Cutter Screw	2998292
2	Spring Washer	2990202
3	Sprue Cutter	2990205
4	Stop Pin*	2990206
5	Large Single Block Assembly*	2990206
6	Handle Screw (2)	2990200
7	Set Screw #10-32	2990751

\*Not sold separately

Mould Rebuild Kit – Contains complete set of replacement screws, washer and sprue cutter.  
Single cavity - 2680100



# MOULD BLOCKS

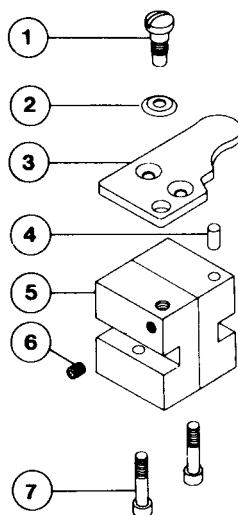
## Double Cavity Mould Block Parts

1	Cutter Screw	2998292
2	Spring Washer	2990202
3	Sprue Cutter	2998291
4	Stop Pin*	2990206
5	Large Single Block Assembly*	2990222
6	Set Screw #10-32	2990751
7	Handle Screw (2)	2990200

\*Not sold separately

Mould Rebuild Kit – Contains complete set of replacement screws, washer and sprue cutter.

Double cavity - 2680102



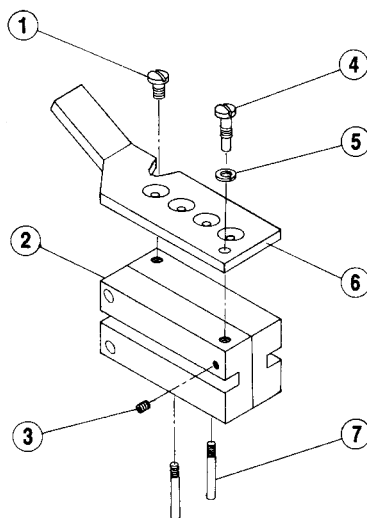
## Four Cavity Mould Block Parts

1	Hold Down Screw	2990102
2	Four Cavity Block Assembly*	2990226
3	Set Screw #10-32	2990751
4,5	Hinge Screw w/Lock Washer	2990249
6	Sprue Cutter	2998294
7	Handle Screw (2)	2990103

\*Not sold separately

Mould Rebuild Kit – Contains complete set of replacement screws, washer and sprue cutter.

Four cavity - 2680104



**Visit our complete Lyman website at  
[www.lymanproducts.com](http://www.lymanproducts.com)**

# LYMAN PRODUCTS WARRANTY

This warranty covers all products manufactured and supplied by Lyman Products as well as all its associated brands. Your Lyman Product has been produced under rigid standards of manufacture and inspection and are warranted against material defects and workmanship.

Products which are manufactured by Lyman Products are covered by a LIMITED LIFETIME WARRANTY. This warranty is extended only to the original consumer purchaser. All Lyman products are intended for non-commercial use by hobbyists. Any other use of these products will void the warranty. Should you believe that your product is defective in material or workmanship you must return the product to Lyman Products Corporation postage paid for evaluation. (See Return Policy) If the returning defective product meets the criteria of this warranty the product will be repaired or replaced at Lyman Products' option at no charge, parts and labor are included.

Lyman reloading tools and accessories are warranted against defective materials and workmanship only. This warranty is void if the product:

1. has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in material or workmanship;
2. has been altered or repairs have been made or attempted by someone other than authorized factory personnel
3. is used commercially
4. has been altered or defaced in any way.

THE LIMITED LIFETIME WARRANTY DOES NOT COVER DEFECTS OR DAMAGE RESULTING FROM: COMMERCIAL USE, ABUSE, IMPROPER INSTALLATION, MODIFICATION, LACK OF CARE, MISUSE OR NORMAL WEAR AND TEAR. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THIS LIMITED LIFETIME WARRANTY. LYMAN PRODUCTS CORPORATION IS NOT LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT AND UNDER NO CIRCUMSTANCES SHALL LYMAN PRODUCTS CORPORATION BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. HOWEVER, SOME STATES DO NOT ALLOW LIMITATIONS ON INCIDENTAL, OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Lyman Products is proud of our workmanship and quality that we build into our products. While our products are warranted against defective materials and workmanship we cannot warranty;

- Product sales to government or local law enforcement institutions or agencies
- Rust or corrosion
- Obstructions in barrels
- Finishes or Slides
- Sales of the product to second or subsequent owners
- Items purchased second hand
- Ammunition

Lyman Products will replace any missing hardware free of charge even if you lose it.

Lyman Products is so confident you will be happy with your purchase that if for any reason you are not we will take back the product for a full refund within 30 calendar days of your original purchase. Receipt must be provided. Please contact Customer Service at 800-225-9626.

# WARRANTY REPAIR NOTICE

Detach this page and mail to:

Lyman Products Corp./ Warranty Record Dept.  
475 Smith Street  
Middletown, CT 06457

Product \_\_\_\_\_ Dealer Name \_\_\_\_\_

Model No. \_\_\_\_\_ Dealer Address \_\_\_\_\_

Date of Purchase \_\_\_\_\_

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## IN WHAT TYPE OF STORE WAS THIS PRODUCT PURCHASED?

Department     Gun Shop     Hardware Store     Mail Order     Sporting Goods     Discount Store

## HOW LONG HAVE YOU BEEN RELOADING?

First Time     Under 1 yr     1 - 5 years     6 -10 years     Over 10 years

## WHAT FIRST INTERESTED YOU IN RELOADING?

Family/Friends     Advertising     Magazine Article     Dealer     Store Display     Other

## WHAT IS THE PRIMARY REASON THAT YOU RELOAD?

Economy     Family Activity     Friends     Store Display     More accurate Loads

## WHAT INTERESTED YOU IN LYMAN?

Advertising     Store Display     Magazine Article     Reputation     Other     Sales Recommendation

## WHY DID YOU SELECT THIS LYMAN PRODUCT?

Reputation     Availability     Price     Special Feature     Other     Sales Recommendation

## WHAT IS YOUR PRINCIPLE USE OF RELOADED AMMO?

Hunting     Trap or Skeet     Target Shooting     Plinking

## APPROXIMATELY HOW MANY ROUNDS OF AMMO DO YOU RELOAD PER YEAR?

None     100-499     500-999     1000-1500     Over 1500 Rounds

## WHAT TYPE OF AMMO DO YOU RELOAD? (Check one or more)

Rifle     Muzzle Loader     Pistol     Shot Shell



















