

SHOTSHELL RELOADING WITH THE

MEC 600 jr.

The Plastic Master Precision Engineered

Mayville Engineering Company, foremost manufacturer of reloading equipment in America, is widely respected for its continuing dedication to precision engineering.

This precision is incorporated into every one of MEC's "New Generation" reloaders, rendering truly innovative and efficient engineering designs.

The MEC 600 Jr. is no exception. The 600 Jr. offers the convenience of simple, single-stage operation at an affordable price.

The 600 Jr. is remarkable in that it performs each of the basic reloading steps with a mere pull on the handle—depriming, priming, resizing the metal base, measuring the correct amount of powder, firmly seating the wad column, measuring the precise amount of shot and forming a tightly sealed crimp.

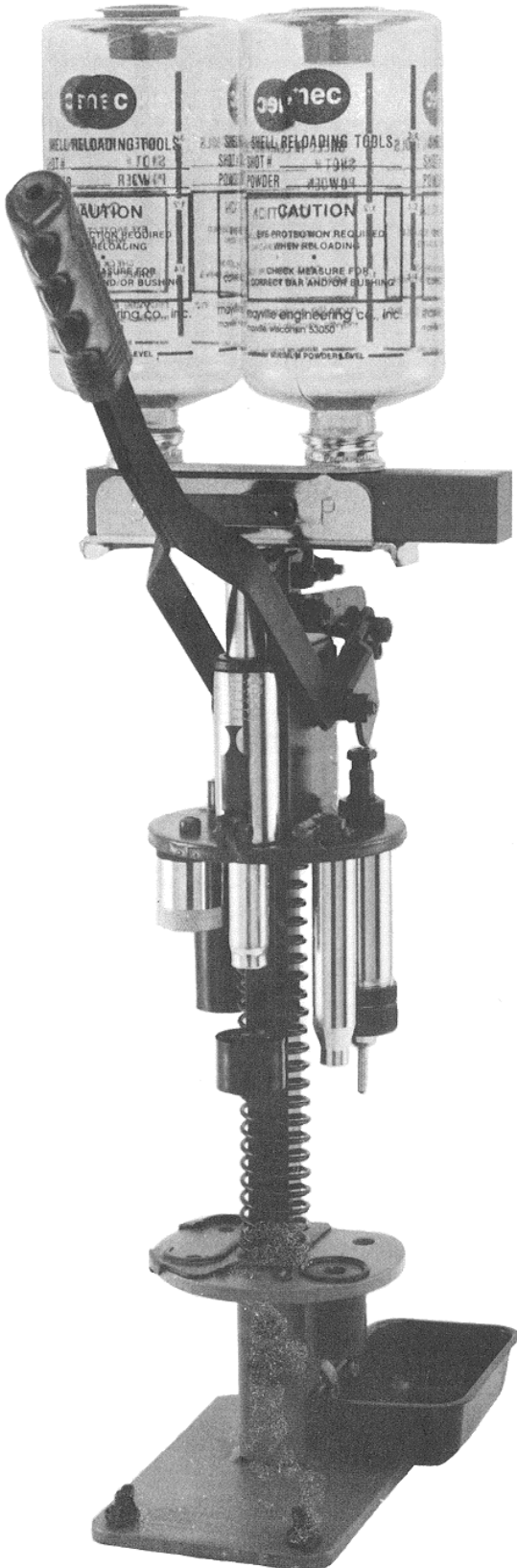
Every step of the reloading sequence is performed with a minimum of motion. An exclusive shell holder positions the shell at each station. No transfer die is required, and resizing dies at reconditioning and crimping stations give your shell its proper form.

Several features make the MEC 600 Jr. today's best buy, such as the cam-actuated reconditioning station with positive ejection; the Adjusta-Guide wad feed device with vertical adjustment to permit rapid wad insertion; and the Spindex crimp starter with swivel action to correctly align with the original shell creases.

Best of all, the crimp die is now manufactured from a revolutionary new material called "Dupont Zytel" which makes maintenance a breeze. The glass-reinforced strength of Dupont Zytel far exceeds any requirements, is absolutely rustfree, and actively resists the build-up of residue carried into the die on fired shells. Thus, the die slides effortlessly over the casing, making a perfect crimp every time.

This reloader will load steel shot shells. To convert to steel shot, kit #8433 is necessary. Do not use components designed for use with lead shot when loading steel shot shells.

A special steel shot charge bar must be used when loading steel shot. Do not use charge bars designed for lead shot when loading steel shot shells.



LET'S LOOK INSIDE A SHOTSHELL...

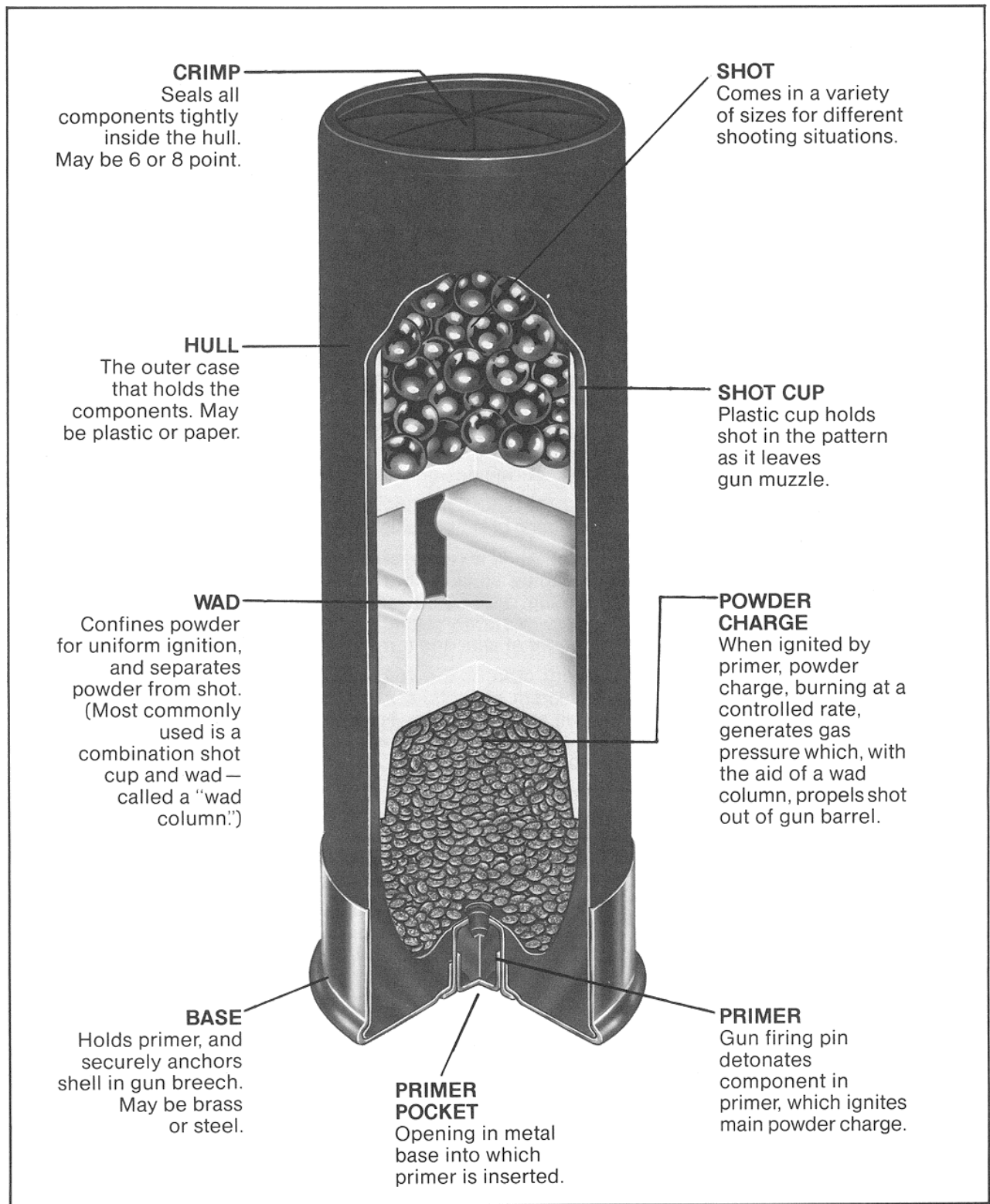


Photo No. 1

HOW TO SELECT COMPONENTS

As we saw on the previous page, a shotshell is made up of several different components. There are many different variations of each component.

Packed with every MEC reloader are brochures supplied by leading component manufacturers. A study of this literature will show you numerous combinations of primer, powder charge, wad and shot you should use with each empty hull, for waterfowl, small game, or trap and skeet. Each combination of components has been carefully tested by ballistics experts for maximum effectiveness and safety. *Experimenting with combinations not recommended by a component manufacturer is foolhardy and dangerous!*

Choosing the Hull.

Proper choice of empty hulls is one of the most important choices you must make to keep your reloading simple.

The problems encountered by trying to use any and all of the hulls you may find are usually quite discouraging. Not all hulls have the same capacity. Not all hulls have the same crimp. Each time that you use a hull with a different capacity (usually caused by different base wad height) you must assemble a different set of components to properly fill this case.

We are not recommending that you throw away all the nonstandard hulls that you have but are advising you to keep it simple until you have gained the experience necessary to assemble the different components.

Selecting the Right Wad.

The wad is that part of the shotshell between the powder and the shot. A tight seal permits the expanding gas from the burning powder to push the shot column out of the gun barrel with maximum velocity.

Modern "wad columns" combine both the shot cup and the wad in one piece. These one-piece wad columns are the easiest to use, and therefore are most popular — especially with beginning reloaders. There are many different kinds. Use only the specific wad column recommended for the other components you are using.

The Shot.

There are two kinds of shot — lead and steel. **Lead and steel shot are not interchangeable.** Reloading with steel shot requires special wads. Using wads designed for lead shot will not only ruin your gun, but could cause high pressures that could burst the gun causing injury or death to the shooter or bystander.

When loading with steel shot, it is imperative that steel shot components be used and the instructions for these components be followed to the letter. MEC does not design, manufacture or approve any reloading component. It is the responsibility of the individual to select components that they feel are suited for steel shot reloading.

As the size of the shot increases, fewer pellets can be loaded into the hull. The smaller sizes are used for trap and skeet, doves, varmints, small game, etc. The larger shot sizes are for heavier game — ducks, geese, turkeys, etc.

Lead Shot		Buckshot	
No.	Dia.		
9	● .08"	4	● .24"
8½	● .085"		
8	● .09"	3	● .25"
7½	● .095"		
7	● .10"	1	● .30"
6	● .11"		
5	● .12"	0	● .32"
4	● .13"		
2	● .15"	00	● .33"
Air			
Rifle	● .175"		
BB	● .18"		

All Powder Is Not Alike.

Different powders have different burning speeds, which make them useful for different jobs. The heavier the shot load, the slower the powder must burn. It takes longer to accelerate a heavy shot load than it does a light one.

A fast-burning powder ignited behind a heavy shot load could cause excessive "breech pressure" which might cause damage to the gun and even injury to the shooter or bystander. (Breech pressure is the pressure of the gas which is created by the burning powder. It is this breech pressure which forces the shot through the barrel.)

On the other hand, using a slow-burning powder to propel a light load of shot will not work effectively. Without the proper pressure buildup, many powders will not burn uniformly and impart sufficient velocity to the shot.

Which Primer to Use?

The primer ignites the powder. When you pull the trigger, the hammer falls on the firing pin, denting the primer cup. This causes the component in the primer to detonate, igniting the main powder charge.

Different primers have different characteristics depending on their purpose. Use only the primer that is recommended by the component manufacturer for the hull, powder, wad, and shot load you are using.

A WORD ABOUT SAFETY

To make reloading safe, all it takes is common sense and the ability to read and follow the directions of the various component manufacturers.

When you purchase your powder, get a copy of the "SAAMI" (Sporting Arms and Manufacturers Institute) pamphlet on the properties and storage of smokeless powder. Read this literature and abide by it. Generally speaking, powder is safer than gasoline, because unlike gasoline, it does not give off explosive fumes. If ignited, powder will burn until it consumes itself. Modern smokeless powders must be confined to cause an explosion. The containers that powder is purchased in are designed to burst without causing an explosion if the powder is accidentally ignited. Your powder should be kept in these containers until it is used up. It is unsafe to put powder in a glass jar or bottle or any other container which could cause pressure buildup. Store your powder where there is no chance of sparks, fire or flame, where it is cool and dry, and where children cannot reach it.

Primers also require care in handling. Never take primers from the container that they come in until ready for use. Storage of primers in anything but

the container that they were purchased in is unsafe. Exposing a primer to excessive heat, or to fire, flame or rough handling will cause it to explode. Do not store primers near your powder or where children can get at them.

When a manufacturer tells you to use a particular set of components in a shell it means precisely that. You cannot indiscriminately experiment with or substitute components without experiencing problems. At best, you will get a shell which fails to give the performance you expect. At worst, you may inflict serious injury upon yourself or someone else who fires your reloaded shells. The manufacturer has extensively tested recommended loads and knows how they perform. Always follow these recommendations exactly.

It is also highly recommended that safety glasses be worn when reloading.

When finished reloading, remove the containers from your machine and seal them with caps and put them in a safe place. Also return all primers to their original container and store them in a safe place. It is important that these materials are kept out of the reach of children and other unauthorized persons.

SHOTSHELL RELOADING WITH THE 600 Jr

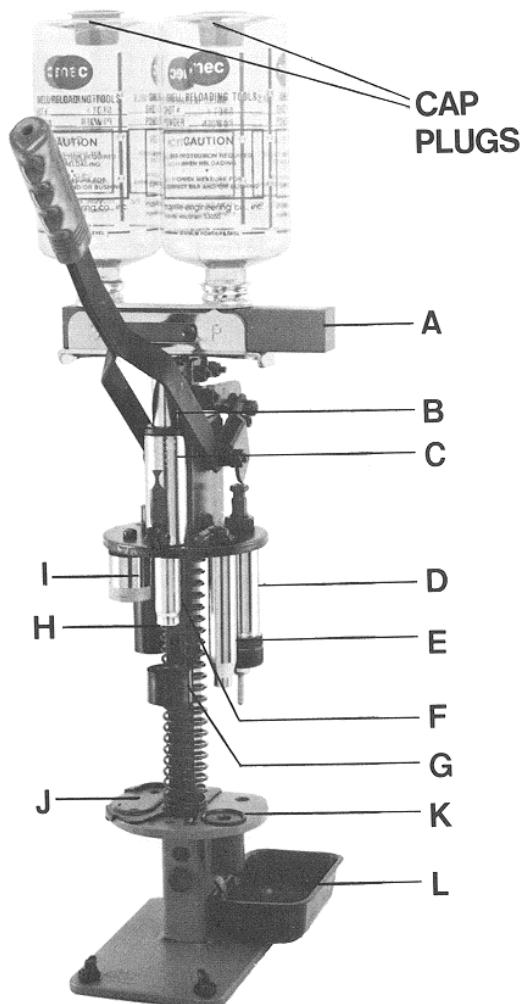


Photo No. 2

After removing your new reloader from its carton, inspect it carefully for damage. In addition to the reloader itself, you should have these additional parts shown in photo #3.

Before you actually try reloading, we recommend that you look over your loader and compare it with this diagram identifying all the parts and dies you'll be using.

a. The CHARGING BAR is located just under the powder and shot containers. Moving the bar to the left charges the powder. Moving the bar to the right charges the shot. Make sure shot and powder containers are placed correctly.

b. WAD HEIGHT INDICATOR used to disclose improper wadding.

c. WAD PRESSURE INDICATOR gives the exact amount of pressure actually being applied to wad column at bottom of handle stroke.

Now going from right to left, the dies and their functions are as follows:

d. RECONDITIONING DIE—The spent primer is ejected, the shell mouth is ironed and the metal base is resized with one stroke of the handle.

e. REPRIMING PUNCH—seats new primer into shell from PRIMER SEATING ASSEMBLY (k.)

f. RAMMER TUBE—through which powder and shot are dropped into the shell. This tube is used also to seat the wad column.

g. ADJUST-A-GUIDE WAD FEED—permits quick and accurate seating of wad column.

h. CRIMPING STATION—containing the exclusive cam-operated two-stage crimping apparatus. Die is completely adjustable for depth of crimp.

i. CRIMP STARTER—8-point, 6-point, (smooth cone optional for paper shells).

j. SHELL HOLDER—holds shell down on handle upstroke.

l. PRIMER CATCHER—secure in position by tilting so that notched edge slips under the tab provided in the base.

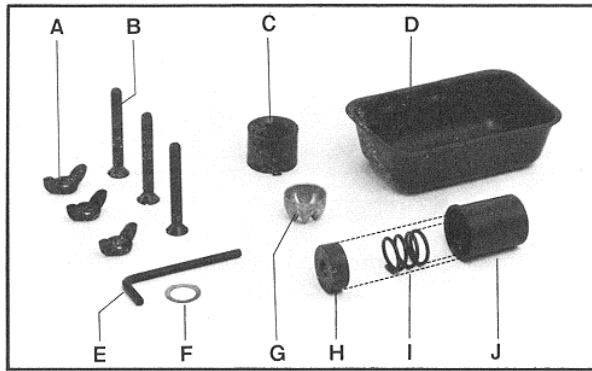


Photo No. 3

Contents of Parts Bag

- A. Wing Nuts (3)
- B. 1/4 20 Countersunk Screws (3)
- C. Extra Wad Guide
- D. Primer Catcher
- E. Hex Wrench
- F. Brass Washer
- G. 6 Point Star Crimp
- H. Primer Pad
- I. Primer Seating Spring
- J. Primer Cup

(H, I, J,) Assemble as shown (F.) Brass washer is used on fine grained powders (Winchester) to prevent leaking. Install on the powder side of the measure by removing the grommet Photo # 6 . Place the smooth side of this washer on the charge bar and replace grommet.

MOUNTING YOUR RELOADER

Although it is desirable to have your reloader mounted permanently to a bench, it is not a necessity. If you cannot mount your reloader permanently to a bench, we recommend placing your reloader on a piece of 3/4 x 12 x 18" plywood. Photo #4 shows the ideal location for your loader on a piece of plywood. Install your reloader by placing it in the proper location, marking through the holes with a pencil, then remove your reloader and drill a 9/32 hole at these locations. Put the reloader back in position and fasten securely with the 1/4 x 20 x 2" counter sunk stove bolts with wing nuts. Place the bolts in from the bottom up and draw them up tight enough so the heads are slightly depressed so that they will not scratch the bench or table.

By this time you should have made your choice of components. Photo # 5 shows how these components should be placed for the most efficient operation of your 600 Jr.

As you face the loader you will see the measure Photo # 2 . On this measure you will see a large S (shot) on the left and a P (powder) on the right. Remove charge bar by removing screw #A in photo # 5 . Move charge bar to the right and remove the disk covering the powder bushing hole. Now place the proper bushing into the charge bar, move the bar to the left and replace screw #A. After making sure that the neoprene grommets Part #304G are in place in the measure Photo #6 you may turn a plastic container into each of the threaded cups. Now move the charging bar to the extreme right and after removing the cap plug in each bottle fill with the proper powder and shot (S for shot, P for powder). Replace the cap plugs and you are ready to load. You will note that the measure will tilt to the rear for easy removal of your shot and powder Photo #8 . Note the #10/24 screw on which the measure pivots should be kept tight enough so that some resistance is felt when tilting the measure. Over-tightening will crush the bracket.

Common sense precautions are advised. Careless handling of flammables and explosives can result in serious injury. We endorse checking charges with a reliable scale which will disclose variations in powder weights. Adhering to loads recommended by the powder manufacturer is a must and the use of safety glasses is strongly encouraged. We disclaim any liability for damage or injury resulting from reloading shot shells.

We disclaim any liability resulting from the use of any parts or accessories not manufactured or recommended by MEC.

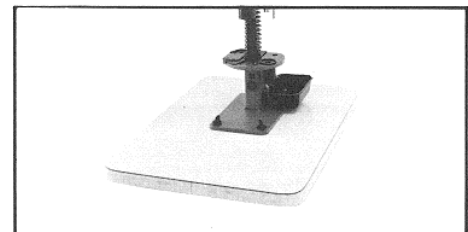


Photo No. 4

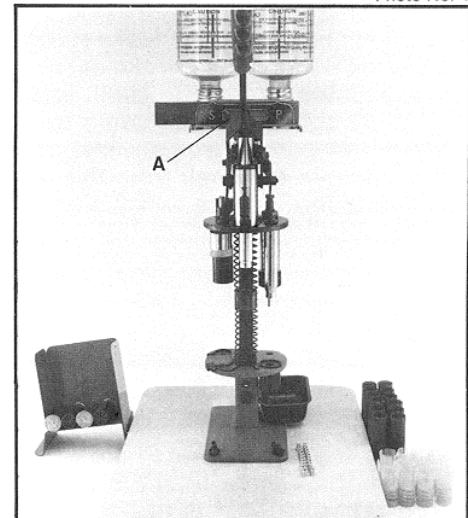


Photo No. 5

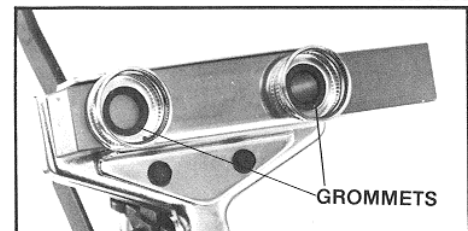


Photo No. 6

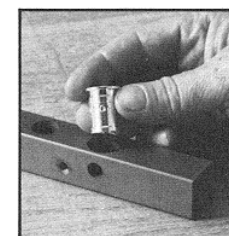


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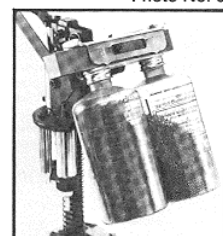


Photo No. 8

LET'S START RELOADING

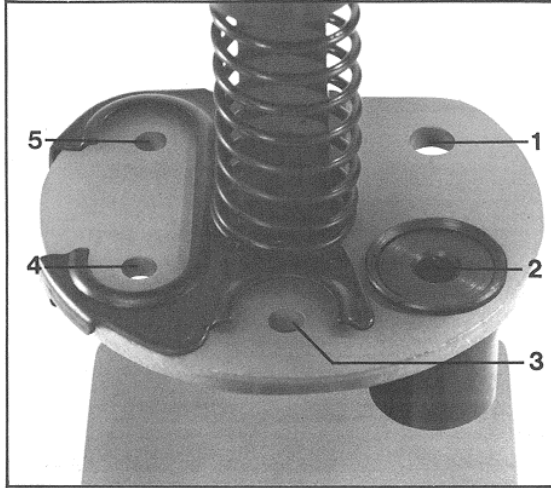


Photo No. 9

You will note that your shells are processed in a clockwise rotation starting at the resize deprime station Photo #9 position #1 moving to the reprime station #2 to the powder wad and shot station #3 then moving to the crimp start station #4 and final crimp in station #5.

STEP ONE

Take an empty shell in your right hand and place it into the deprime resize station Photo #10. With your left hand depress the handle to the bottom of its stroke. You will feel resistance as the resize ring starts resizing the brass, also you may feel the primer being ejected. Make sure that the handle is depressed to the full bottom of its stroke or you will not remove the primer or completely resize the shell. Now lift the handle to the full top of its stroke. As you come up you will feel resistance as the shell is pushed from the resize ring. Again with your right hand remove the shell from the resize station and place this shell onto the reprime punch. Photo #11.

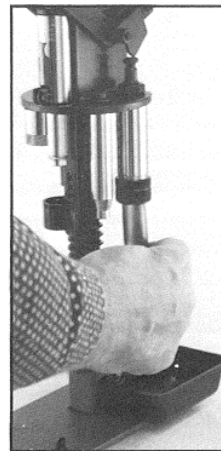


Photo No. 10

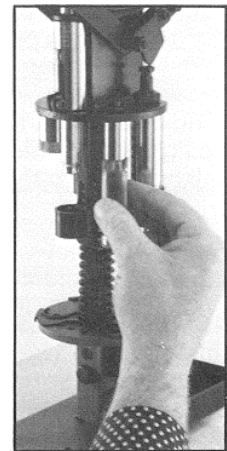


Photo No. 11

STEP TWO

At this time take a primer with your right hand and place it into the reprime pocket Photo #12. Again with your left hand depress the handle until the primer is firmly seated. Use no more pressure than is needed to seat the primer level with the bottom of the shell.

While raising the handle with your left hand remove the reprimed shell from the reprime punch with your right hand and place it into the shell holder at station #3 Photo #13.

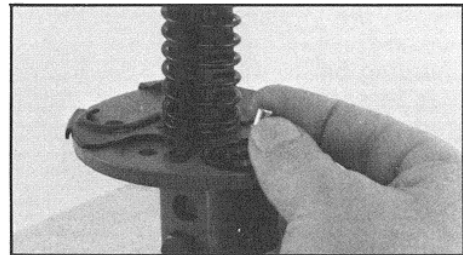


Photo No. 12

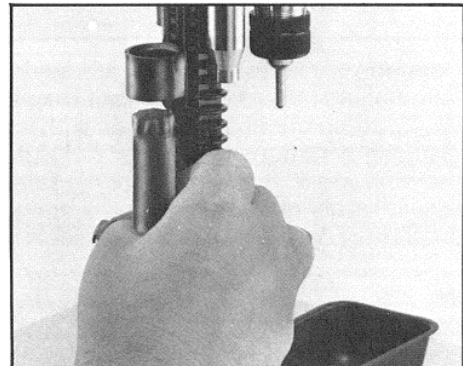


Photo No. 13

STEP THREE

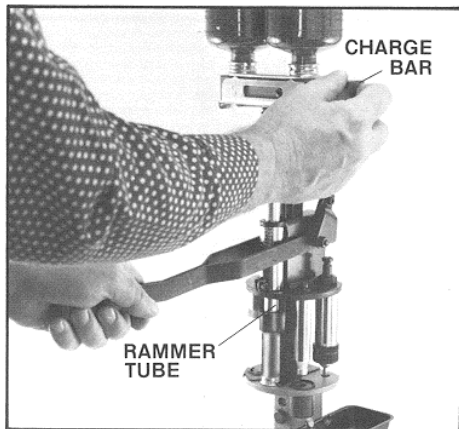


Photo No. 14

Now depress the handle with your left hand. It is only necessary to depress the handle until the rammer tube #505B in Photo #14 enters the shell. Hold the handle in this position and with your right hand move the charging bar #302 in Photo #14 to the left thus charging with powder.

STEP FOUR

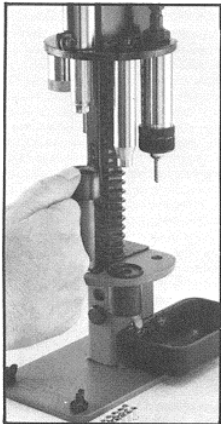


Photo No. 15



Photo No. 16

Now with your left hand lift the handle to the top of its stroke. With your right hand push the wad guide down to the bottom of its travel so the fingers enter the shell. Now place a wad on the rammer tube Photo #16. With your left hand again depress the handle to the bottom of its stroke.

STEP FIVE

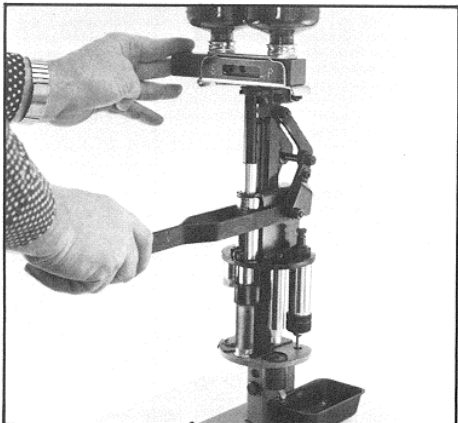


Photo No. 17

At this point change from your left hand to your right hand and lift the handle so the reprime tube is still in the shell as in Photo #17. Now with your left hand move the charging bar #302 in Photo #17 to its full right position, thus charging with shot.

STEP SIX

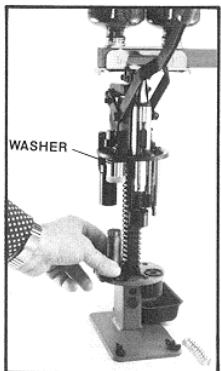


Photo No. 18



Photo No. 19

Now lift the handle to the top of its stroke and with your left hand place the shell into the crimp start station #4 Photo #18. With your right hand again depress the handle to its full bottom position starting the crimp. Note this crimp starter should be shimmed up or down by adding or removing a washer at position #4 Photo #18 so that the crimp looks like Photo #19. The adjustment as it came from the factory should be correct for most shells. Most skeet and trap loads except for 28 gauge and .410 are 8 point crimp. Many field loads may be 6 point. It is important that shells are crimped with the same crimp as original. Paper shells are best crimped with a smooth cone.

STEP SEVEN

Again with your right hand raise the handle until the shell can be moved to the crimp station #5 Photo #20. With a smooth motion bring the handle down to the bottom of its stroke closing the shell. Raise the handle to remove the shell.

By following these instructions exactly you will develop the correct hand movement and with practice should load 6 to 10 boxes of shells per hour.

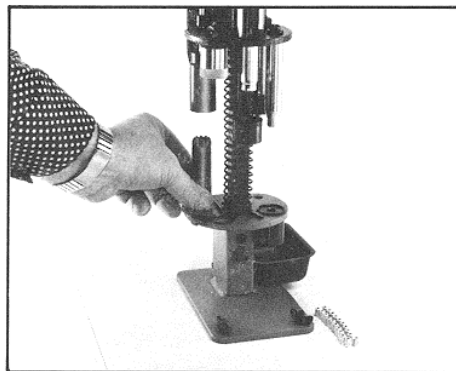


Photo No. 20

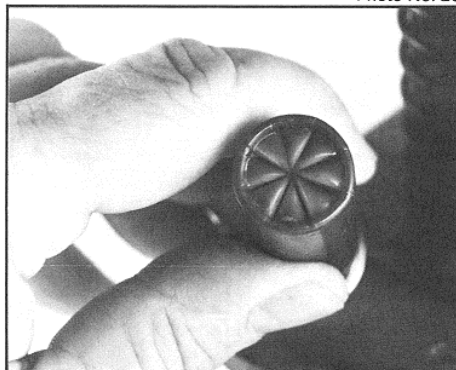


Photo No. 21

LOADER ADJUSTMENTS

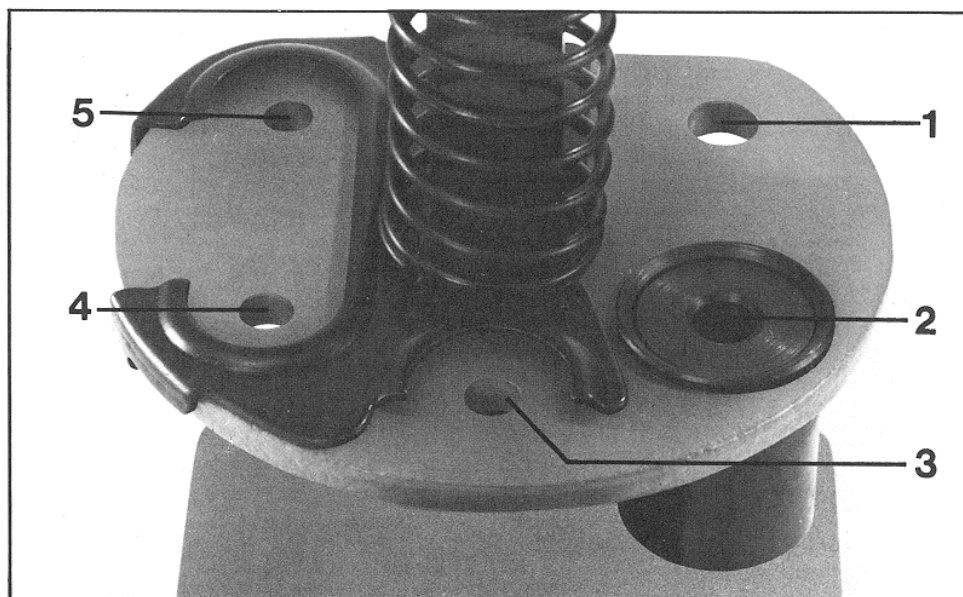


Photo No. 22

Station #1, Photo #22. Resize Deprime Station

For most shells this station will require no adjustment. The only reasons for adjustment at this station are these:

1. Very low base wad.
2. Very high base wad.
3. Very high brass.

The following illustrations should help you to understand the adjustments needed for each of the conditions.

When a shell cannot be removed from the resize

ring the (3" eject bolt) punch must be turned so that it increases its length. Photo # 33.

Also furnished with each reloader is a longer eject bolt which is necessary for some high brass shells.

When the machine "bottoms" before the resizing is complete, the punch must be shortened, Photo #33. We have run into some cases with some very high brass (foreign) where our eject stroke is not long enough. Here it would be necessary to change to a Versa-MEC resize unit #73 KIT to give the additional stroke required.

Station #2, Photo #22. Reprime Station

There are no adjustments on this station. A word of caution however: If too much pressure is used after the primer is seated, it is possible to bulge the case.

Station #3, Photo #22. Powder Wad and Shot

There is one important adjustment to be made at this station and that is the wad height or wad pressure adjustment. Photo #23 shows the wad pressure indicator, the adjusting screw and the wad height indicator. With the modern plastic wads it has become unnecessary to put pressure on the wad. All that is required is that the wad is seated firmly against the powder. It is not necessary for the indicator Photo #23 to move when seating the wad.

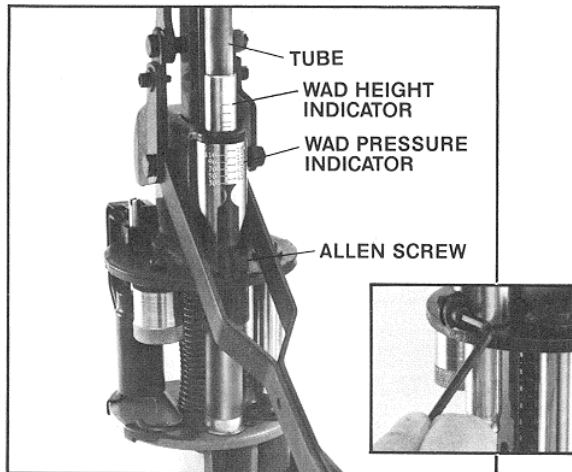


Photo No. 23

The wad height indicator marks Photo #23 are for reference only. This adjustment is used to compensate for different shot loads and different wad pressure when needed... To make the adjustment, loosen the allen screw in Photo #23. Now the tube in photo #23 is free to move up or down. In all cases the adjustment should be placed so that the correct wad height or wad pressure is obtained at the full bottom of the handle stroke. Moving the tube down decreases wad height and increases wad pressure. Raising the tube increases wad height and decreases wad pressure. Many times a poor crimp (one which is caused by the wad being too high or too low) can be improved by raising or lowering the wad height indicator. The wad guide if damaged is changed by forcing it up in the slot which supports it. Put a new one in the slot and force it down. Photo #24.

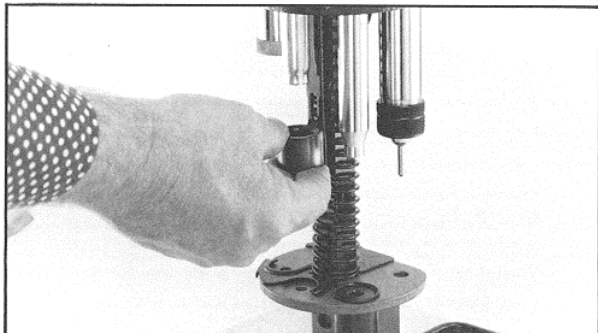


Photo No. 24

Station #4, Photo #22. Crimp Starter

Included with your 600 Jr. are a six point and an eight point spinner for your star crimp. The eight point which is the most popular, will be in the spindex on the machine while the six point will be with the parts bag. Photo #19 shows how a crimp should look after starting. If you should have more or less taper than shown, you may shim the spindex up or down by removing screw #A in Photo #5 and shimming the head up or down by adding or removing a washer.

The six point star is used for crimping 6 point plastic cases or new paper cases. You will note that when the eight spinner is properly installed as in Photo #25 it remains loose and free to turn and find the original folds in a previously crimped shell. When using the six point star you will find that it does not spin freely. When using the six point starter, put a mark on the outside of the housing that lines up with a point of the star. Here you must index each shell to line up with the previous folds. We do offer a smooth cone which is used for crimping used paper shells and works well with some 6 point plastics.

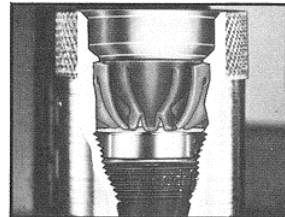


Photo No. 25

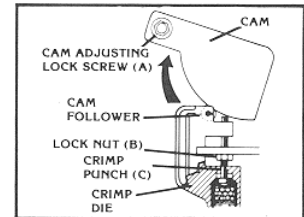


Photo No. 26

Station #5, Photo #22. Final Crimp

As your loader comes from the factory the adjustment should be correct for most shells. There are two adjustments that can be made in the final crimp station. They are the cam adjustment Photo #26 and the punch adjustment Photo #26. Four of the common problems which can be corrected by crimp station adjustments. Photos #27-30.

Shell #1 — crimp punch not deep enough. Correct by loosening lock nut #461A and turn punch deeper.

Shell #2 — crimp punch too deep. Correct by loosening lock nut #461A and raise crimp punch.

Shell #3 — Opening in center of shell. Correct by loosening cam adjustment bolt #507A and moving cam down about 1/32 of an inch and try again.

Shell #4 — Shell has a swirl in the crimp. Adjust by loosening cam adjust screw #507A and move the cam up or clockwise. Move about 1/32 and try again.

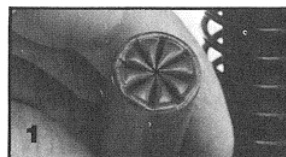


Photo No. 27

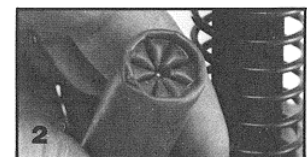


Photo No. 28

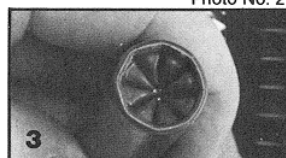


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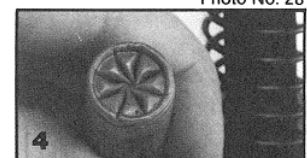


Photo No. 30

Shown in Photo #31 are the lubrication points on the reloader. The loader should be lubricated about every 1000 rounds reloaded. Lubricate sparingly using heavy oil. (EP90 is ideal.) We *do not* like to see spray cans used to lube your loader. These sprays cause a buildup of residue over the entire loader.

Occasionally feel the inside of your crimp die, if you should notice any buildup of dirt or residue, it can be removed using a swab using any household cleaner.

Do not use any wet lubricants on any part of the machine that comes in contact with powder.

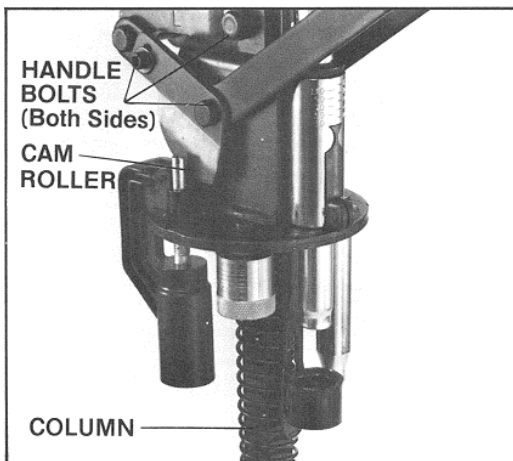


Photo No. 31

3 INCH SHELLS

It is not necessary to have any extra equipment to process 3" shells. Start by installing the correct charge bar and bushing. Then deprime and resize and after repriming set the cases aside. After all your cases have been processed this far, remove the column bolt #611A. Raise the column 1/4 inch and now place the bolt into the top hole in the base and the top hole in the column. Tighten the bolt making sure that the column is square to the base of the machine. Now continue the loading sequence to finish your shells.

If you are going to load large quantities of 3" shells, we offer a number 63 kit which will extend the deprime resize and also the reprime so that shells may be completed in the standard sequence of operation.

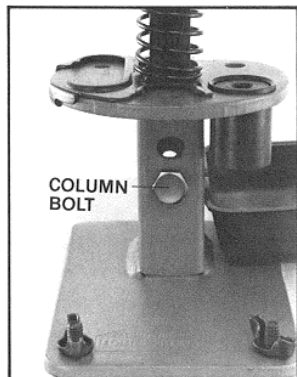


Photo No. 32

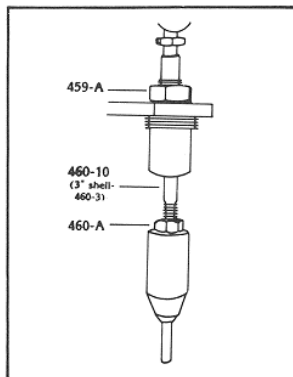


Photo No. 33

1. Oversize shells

A shell that goes into your gun hard but comes out easy is caused by oversize plastic or paper.

In the case of plastic shells, overfilling is almost always the cause. To correct you need:

1. A case with more capacity
2. A shorter wad
3. Less shot
4. A more dense powder
5. Sometimes using more wad pressure will give more room in the case.

Over or under filling is most often corrected by using the proper size wad.

If using paper shells, any of the above can be the cause but the most common cause with paper shells is to swell up by absorbing moisture. The only way to remedy this is to dry the cases before reloading, never attempt to dry loaded cases. Putting them in the oven at about 200° for 30 minutes will usually dry them. Don't even attempt to load paper cases during hot humid weather.

A shell that goes into your gun hard and comes out hard is caused by oversize brass. To correct:

1. Make sure sizing ring is resizing down to the rim of the shell.
2. Replace resize ring because of wear.
3. Make sure that your gun chamber does not have a buildup of dirt and rust.

Shells that will not go into the magazine tube on a pump or automatic are caused by:

1. Excessive resizing. Resizing shells often that have been fired in a gun with a large chamber tends to push material into the rim of the shell causing it to be oversize.
2. Adjusting the resize ring down to where it flattens the rim of the shell will cause the rim to be oversize.

Case bulges above the brass:

When a case bulges above the brass, it is usually caused by overfilling the case. To correct:

1. Use a case with more capacity
2. Use a shorter wad
3. Use less shot
4. Use a denser powder
5. Use more wad pressure (40# is usually sufficient).

Can also be caused by cam adjustment or punch adjustment being too low (refer to adjustment instruction #5 for correction).

Poor Crimps

1. Hole in crimp
Refer to punch and cam adjustment
2. Misfolded crimps
Using wrong crimp starter 6 or 8 point. When using a six point starter put a mark on your star crimp housing and align the old folds with it.
3. Swirl in crimp
Caused by cam adjusted down too far, refer to cam adjustment #5 .

Measure sticks when dropping shot. Some of the causes are:

1. Large shot sizes (larger than #6)
2. Grommets worn
3. Reclaimed shot (contains small stones and no graphite lube)

When using large shot sizes, it usually works better to remove the grommet from the shot side of the measure. Moving the bar gently and reversing the action when resistance is noted usually works.

Shot lodges in tubes and will not drop into shell.

This can be annoying particularly in the small gauges because of the small tube diameters when using heavy shot.

It is best prevented by raising the handle to the point where the rammer tube is just in the shell and moving the charge bar across very slowly so the shot does not all drop at one time which usually causes bridging.

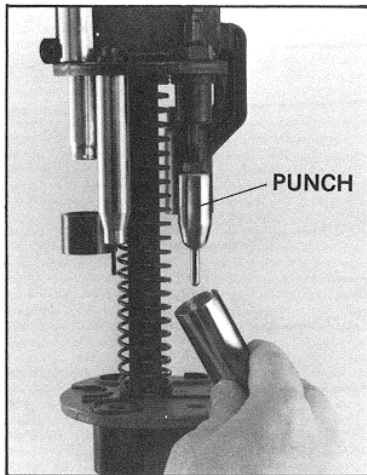


Photo No. 34

Powder Leaks From Measure

Usually caused by not having brass washer in place when using Winchester Powder. Install per instructions at Photo #6, Page# 5 .

This washer is placed under the grommet with the smooth side down.

Steel Shot.

This reloader will load steel shot.

Lead and steel are not interchangeable.

Kit #8433 is necessary to convert to steel shot. Do not use components designed for lead shot.

Do not use charge bars designed for lead shot. A special bar is necessary for steel shot.

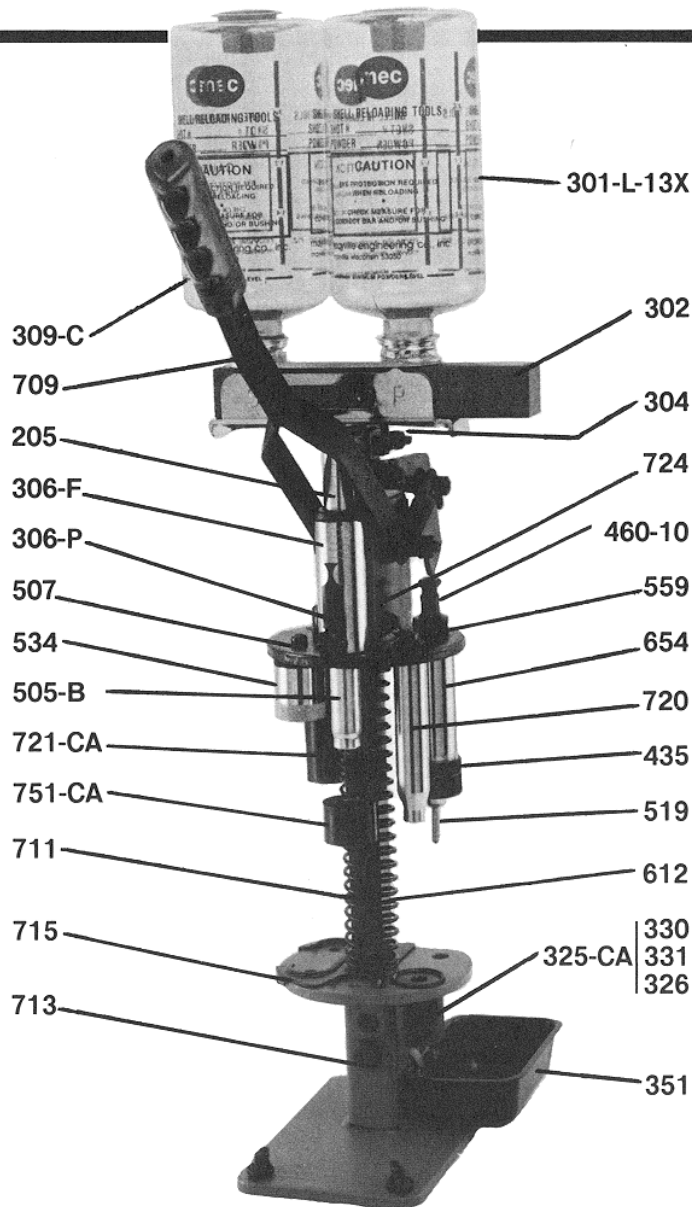
MEC 600 JUNIOR PARTS LIST

Part No.	Part Description
205	Drop Tube
301L-13x	Container W/Cap
302	Charging Bar
303	Stop Screw
304	Measure Only
304CA	Measure W/Bar & Containers
304D	Measure Pivot Screw
304J	Measure Stop Nut
304G	Grommet
306F	Pressure Ind. Face
306P	Pointer
306T	Pressure Spring
309C	Handle Grip
720*	Reprime Punch
325CA	Primer Seating Assembly
330	Spring
331	Spring Pad
354	Support Tube
435*	Resize Ring
453*	Fingers
459A	Lock Nut
505B*	Rammer Tube
507A	Screw
507B	Hex Wrench
309E	Stop Nut
519*	Deprime Punch
534CA*	Star Crimp
559*	K.O. Bushing
709	Handle
610	LH & RH Link PR
612	Column Spring
623	Crimp Die Cam
623A	Cam Roller Bolt
623B	Cam Roller
704C	Measure Mt'g. Bracket
708	Turret Frame Assembly
711	Column
711B	Roll Pin
713	Base Assembly
715*	Shell Holder
721*	Cam Crimp Housing
721B*	Cam Crimp Punch
723	Eject Cam
751A	Wad Guide Bracket Assembly
751CA	Wad Guide Assembly
751D	Wad Guide Spring

600 Junior Accessory Equipment

63 Kit	12 & 20 Gauge For 3" Shells,
741P-10-12-	Die Set
16-20-28-410	

*Specify gauge.



MAYVILLE ENGINEERING COMPANY, INC.
Mayville, WI 53050

Part No. 8284