Billon Precision Products, Inc.

BIG FIFTY RELOADER

Machine Manual

Introduction

The Dillon Big Fifty Reloader is our largest and most powerful machine – please use care and thought while setting up to avoid problems.

Suggested Minimum Equipment:

1) Loading Manual
2) Powder Scale
3) Safety Glasses
4) Dial Caliper
5) 50 BMG Headspace Gauge
6) 50 BMG Die Set, 1½ - 12 UNF Thread

Safety Points to Know Before you Begin

The reloading of ammunition involves the use of highly explosive primers and flammable powder which can be inherently dangerous. Accidents can and do occur, sometimes with disastrous results including, but not limited to, loss of vision, hearing or life. These accidents are nondiscriminatory, they can occur with both the novice and the experienced loader. You should recognize this danger and take certain minimum precautions to lessen your exposure to injury. We cannot guarantee your complete safety. In order to minimize your risk please use common sense when reloading and follow these following basic rules.

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

• **PAY ATTENTION:** Load only when you can give your complete attention to the loading process. Do not watch television or try to carry on a conversation and load at the same time. If you are interrupted or must leave and come back to your loading, always inspect the cases at every station to insure that the proper operations have been accomplished.

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

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

• **MODIFICATIONS**: Any modifications performed to your machine, or the addition of any unapproved equipment from other manufacturers **will void the warranty**.

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

• **LOADS AND LENGTHS**: Avoid maximum loads and pressures at all times. Use only recommended loads from manuals and information supplied by reliable component manufacturers and suppliers. Since Dillon Precision has no control over the components which may be used on their equipment, no responsibility is implied or assumed for results obtained through the use of any such components. Try to seat bullets as close to maximum cartridge length as possible. Under some conditions, seating bullets excessively deep can raise pressures to unsafe levels. Refer to a reliable loading manual for overall length (OAL).

• **QUALITY CHECKS**: Every 40-50 rounds perform periodic quality control checks on the ammunition being produced. Check the amount of powder being dropped and primer supply.

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

• **COMPONENTS**: Never have more than one type of powder in your reloading area at a time. The risk of a mix-up is too great. Keep powder containers closed. Be sure to inspect brass prior to reloading for flaws, cracks, splits or defects. Throw these cases away. Keep components and ammunition out of reach of children.

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

• **PRIMERS**: Never force primers. If they get stuck in the operation of the machine, disassemble it and gently remove the obstruction. Never attempt to clear primers that are stuck. Never, under any circumstances, insert any type of rod to attempt to force stuck primers out. Trying to force primers out may cause the primers to explode causing serious injury or even death. If primers get stuck in the primer seat die flood the die with penetrating oil (WD-40) before attempting to clear the unit. Never attempt to de-prime live primers – eventually one will go off. When it does it will detonate the others in the spent primer cup. De-priming live primers is the single most dangerous thing you can do in reloading and can cause grave injury or death.

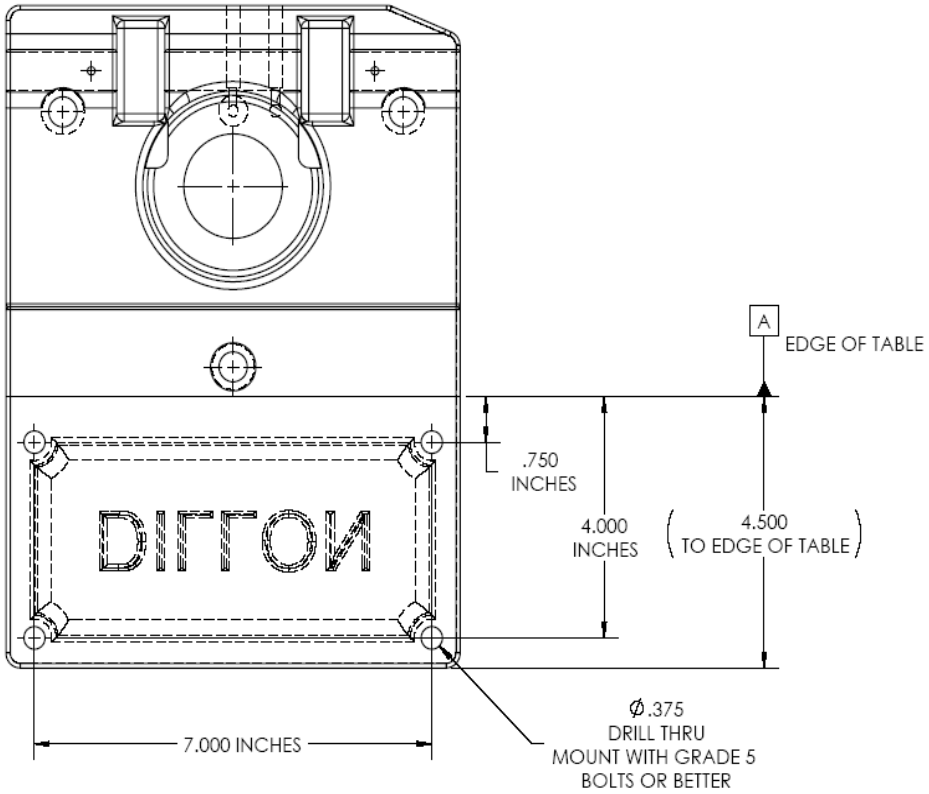
• **LOADED AMMUNITION**: Properly label all of your loaded ammunition (Date, Type of Bullet, Primer, Powder, Powder Charge, etc.).

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

reloading bench is no place to get into a hurry. We have done everything we know how to make your machine as safe as possible. We cannot, however, guarantee your complete safety. To minimize your risk, use common sense when reloading and follow these basic rules.

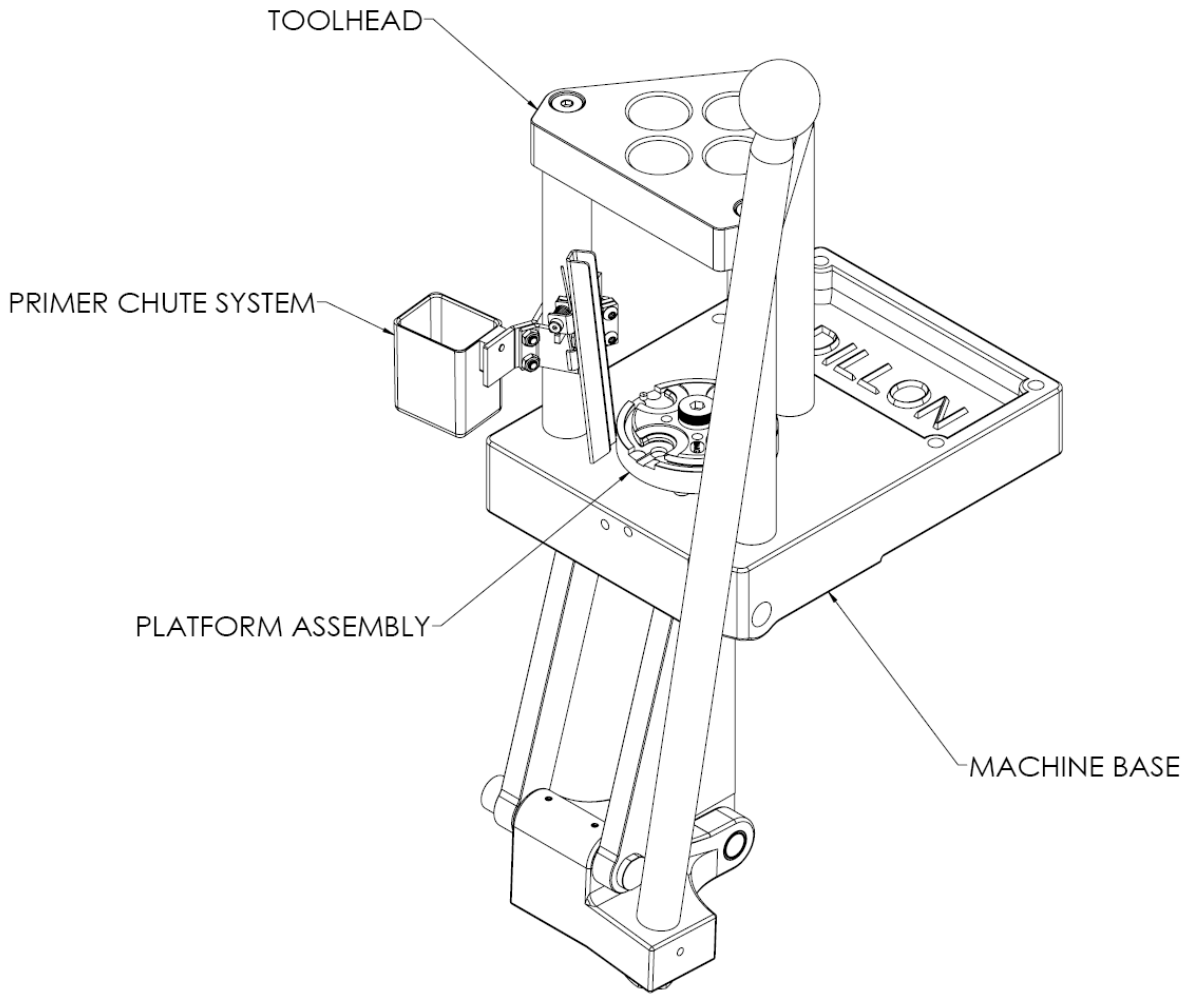
• **REMEMBER**: If your machine does not perform to your expectations, or if you are having technical difficulties, give us a call.

Mounting the DILLON BFR for use.



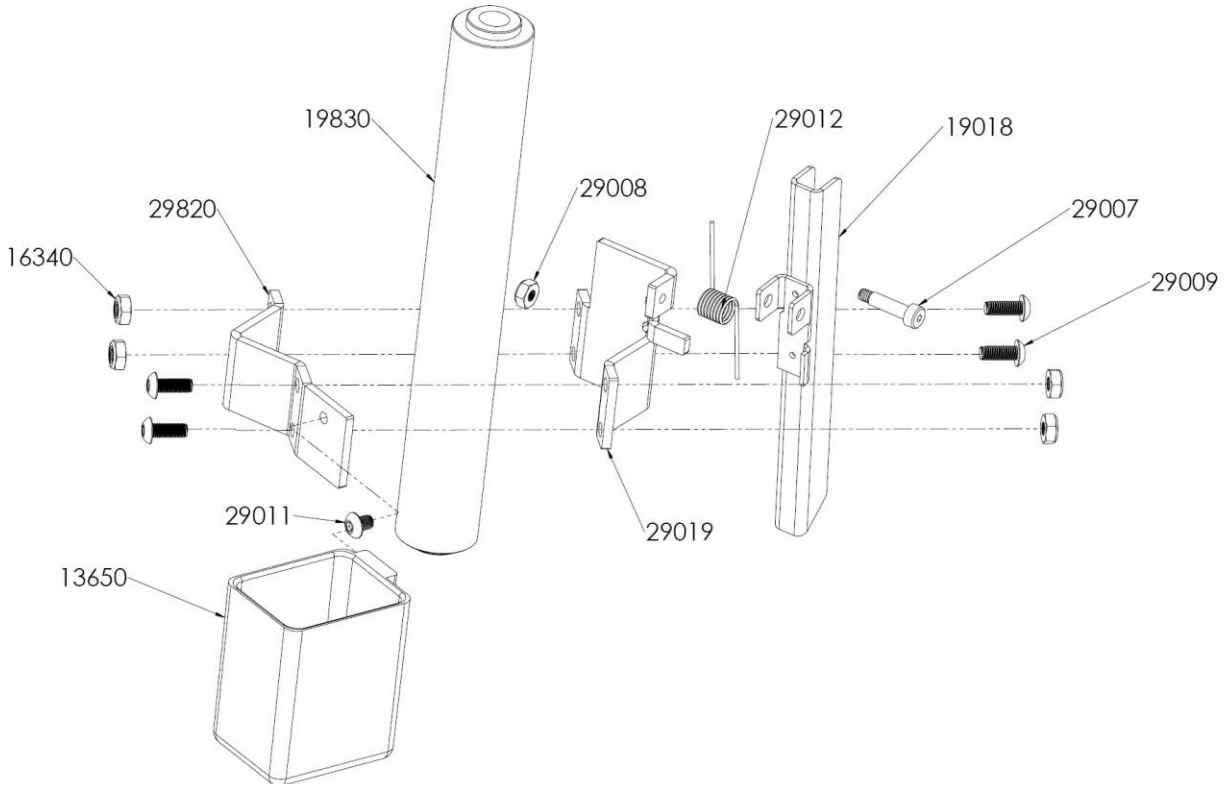
A fully equipped Dillon BFR can weigh on the order of 90 pounds. At full stroke could very well provide 600 foot pounds of torque wanting to break your bench. We suggest a heavy hardwood bench, or our optional steel pedestal. The Dillon BFR was designed to be operated while standing. With the machine handle cycled all the way down, the handle ball should be in hand with the operators' arms comfortably resting full length at their side. Thus, the bench top should be **18 inches higher** than the center of the palm, with arms resting at full length. Keep in mind to provide about 12 inches of work space on each side of the machine for various loading peripherals and components. Place the base of the machine, with the lip resting flush with the edge of the mount. Using the machine itself as a template, mark and drill four 3/8 inch holes in your bench for your Dillon BFR. Use **GRADE 5** or better, 3/8 inch bolts to mount your machine. If you are unsure of the bolts you are using please consult a local hardware store or call our experts at Dillon for a 50 BMG Mounting Hardware Kit Part# 50140.

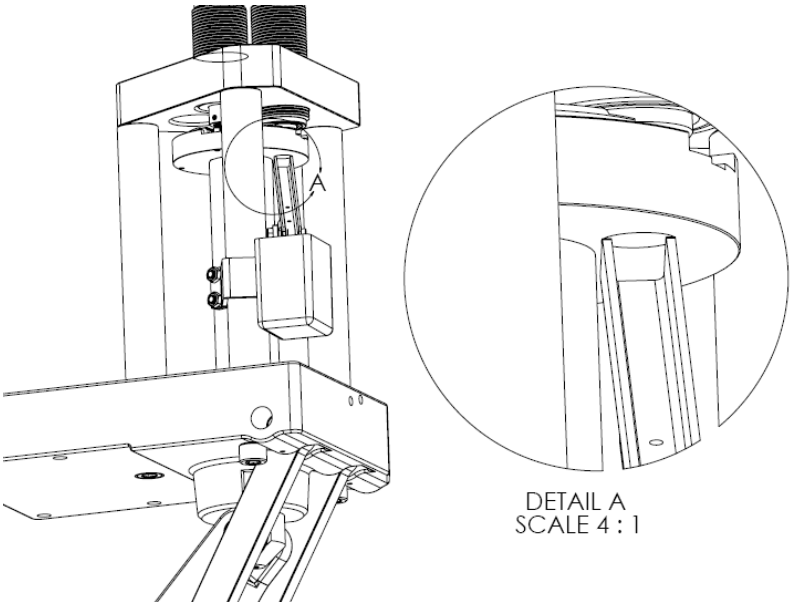
PARTS DIAGRAM



This is the basic layout of the machine. Noted above are the primary sub assemblies which are detailed in the following pages. Once your machine is mounted you will need to install the "Spent Primer Catch System" on to your machine. Start by removing the four mounting screws and nuts from the assembly (Part# 29009 and 16340). Assemble it onto the front left side post on the machine as shown in the diagrams below.

PRIMER CHUTE ASSEMBLY





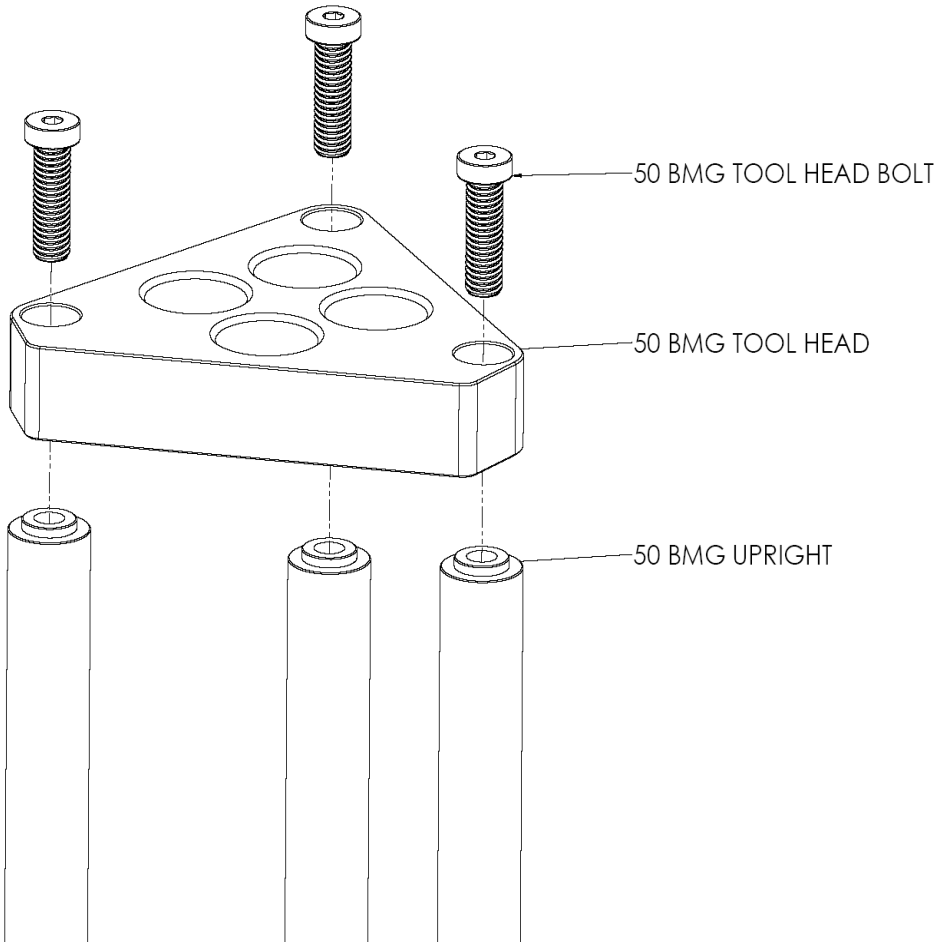
NOTE:

When adjusting the primer chute assembly, with the platform at the top of its stroke, the chute should be in line with the spent primer hole of the platform as shown at right in "DETAIL A"

The chute should only make contact with the platform and never touch the main shaft (PN: 19827) at any position.

TO BEGIN RELOADING

The Dillon "Big Fifty Reloader" or "BFR" is semi-progressive four-station press. The press can either be set up to rotate in a clockwise or counter-clockwise direction allowing the user some flexibility in their reloading process. As offered by the entire line of Dillon products, the machine has the capability of interchangeable tool heads to allow the user to have multiple setups for the machine.



Changing the Toolhead will require the removal of the three Toolhead Bolts, then lift the Toolhead straight up and off of the three Uprights. To replace the Toolhead simply place it back on the three Uprights aligning the pockets on the bottom of the Toolhead and the steps on the top of the Uprights. It may be necessary to loosen the lower right front Upright mounting bolt to get the Toolhead to seat fully. Replace and tighten the Toolhead Bolts (35-40 ft/lbs torque).

Choosing your dies

The Dillon BFR will perform well with any manufacturer's standard 1½"-12 UNF threaded dies. Be ware that many 50 BMG dies currently available are for use in single-stage presses, and may have a sharp lead in, which may not be very forgiving in a progressive press.

The Dillon 50 BMG full length carbide sizing/de-priming die is manufactured to minimum tolerances. ***DO NOT*** run this die down to the shellplate and size your brass, it will undersize the case beyond the specified minimum dimensions. We ***strongly*** suggest that a headspace case gage be used to correctly adjust the size die. You ***MUST CLEAN AND LUBE*** your 50 BMG cases before attempting to size with the 50 BMG carbide sizing/de-priming die.

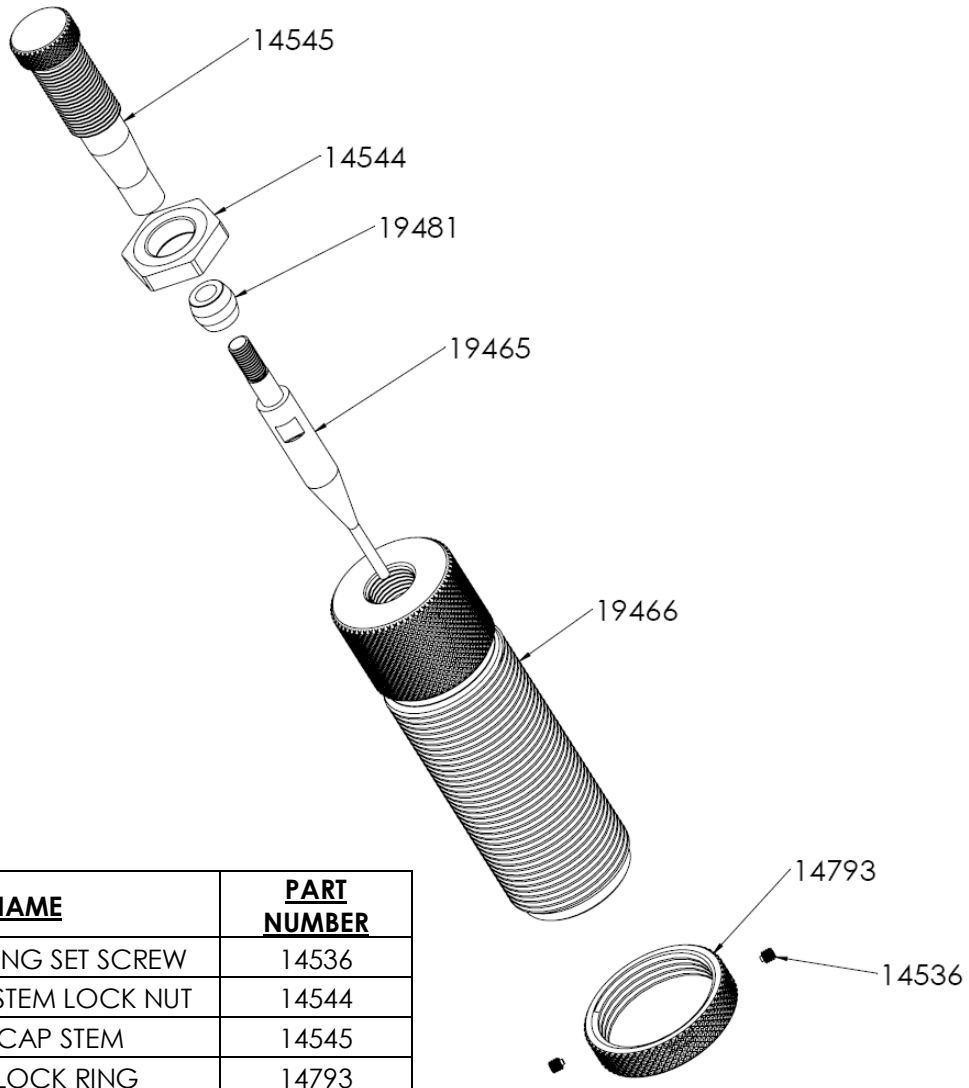
To adjust:

1. Move the handle down to raise the platform.
2. Screw the sizing/de-priming die into station one of your reloader.
3. The 50 BMG sizing/de-priming carbide should not touch the shellplate. It will undersize the case beyond the specified minimum dimensions if screwed down to the shellplate. Once you screw it in and touches the shellplate then back the die up 1¾ to 2½ turns. This will give you a good starting point for determining case dimension. The die was designed to allow for a very wide margin of adjustment for the shoulder setback.
4. Using one lubed, boxer primed, case to test your sizing and headspace adjust the die as needed to achieve proper headspace. (Wipe the case clean of lube before inserting it into the case gage. Lube will cause grit and dust to cling to the inner surface and cause the gage to give false readings. The base of the sized case should fall between the high and low steps on the base of the case gage. If it does not, adjust your die and resize the case. It may be necessary to use another case for this step. Repeat this process until the case falls between the high and low steps on the **base** of the case gage.)
5. When properly adjusted, with a case in the die, snug the lock ring and its set screws to set the desired position.

The de-priming assembly

The Dillon de-priming assembly includes a carbide expander ball for neck expansion. With the handle pulled all the way down and a case inside of the die adjust the de-priming stem down until it stops and then back it up 1½ to 2 turns. Once adjusted, tighten the nut to lock the assembly in place. The number one danger in reloading is attempting to de-prime a live primer. Under no circumstances should you ever attempt to de-prime a live primer.

THE DILLON 50 BMG SIZING/DE-PRIMING DIE



PART NAME	PART NUMBER
50 BMG LOCK RING SET SCREW	14536
50 BMG DECAP STEM LOCK NUT	14544
50 BMG DECAP STEM	14545
50 BMG DIE LOCK RING	14793
50 BMG DECAP PIN	19465
50 BMG SIZE DIE BODY	19466
50 BMG CARBIDE EXPANDER BALL	19481

PRIMING

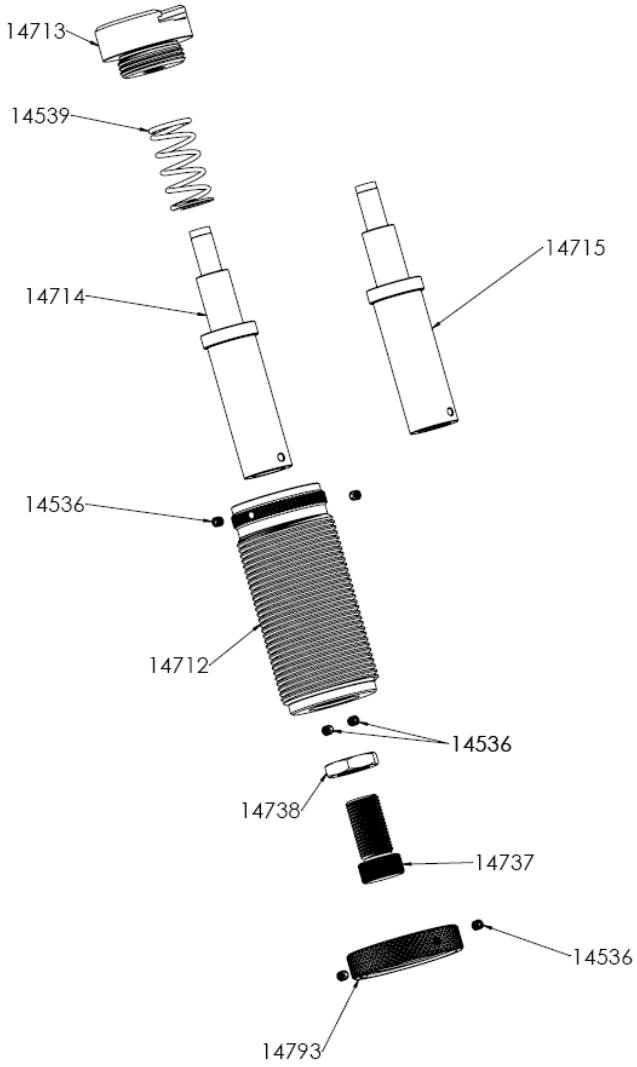
The 50 BMG priming system is a departure from typical Dillon priming systems. It has been our experience that a magazine of No. 35 primers is a very dangerous prospect due to the comparatively massive amount of explosive contained therein. So we are introducing our 50 BMG "Top of Toolhead" primer seater. This configuration allows for easy access for manual "one at a time" loading of primers, while taking full advantage of the final cam portion of the stroke to seat the primer.

Primer Punch options
Included with your priming system are two styles of primer seat punches, a concave and flat-surfaced punch. The concave punch is used for the majority of 50 BMG applications providing excellent seating and support of the primer cup, while preventing any "pre-crush" on the primer anvil. In high-accuracy or bench-rest style applications, a flat punch may be used, with increased caution, where you may find having "pre-crush" is desirable for decreasing lock time for match type applications.

Adjusting your primer seater
The primer seat is threaded 1½"-12 UNF to function as a die in the tool head. It operated by making contact with the shellplate platform, to seat the primer, and resetting with the spring-loaded punch.

To adjust:
1. Move the handle down to raise the platform.
2. Screw the Primer seater die into the desired station of your reloader. Continue screwing in, after it has made contact with the platform, until the punch face is flush with the floor primer seater shell holder.
3. Adjust the orientation of the shell holder slot as desired, and then snug the lock ring and its set screws to set this position.
4. Once set, use the fine adjustment knob that contacts the platform, to set the final depth of the primer punch.
5. Tighten the two set screws and the jam nut to lock the adjustment screw.

DILLON BFR PRIMING SYSTEM



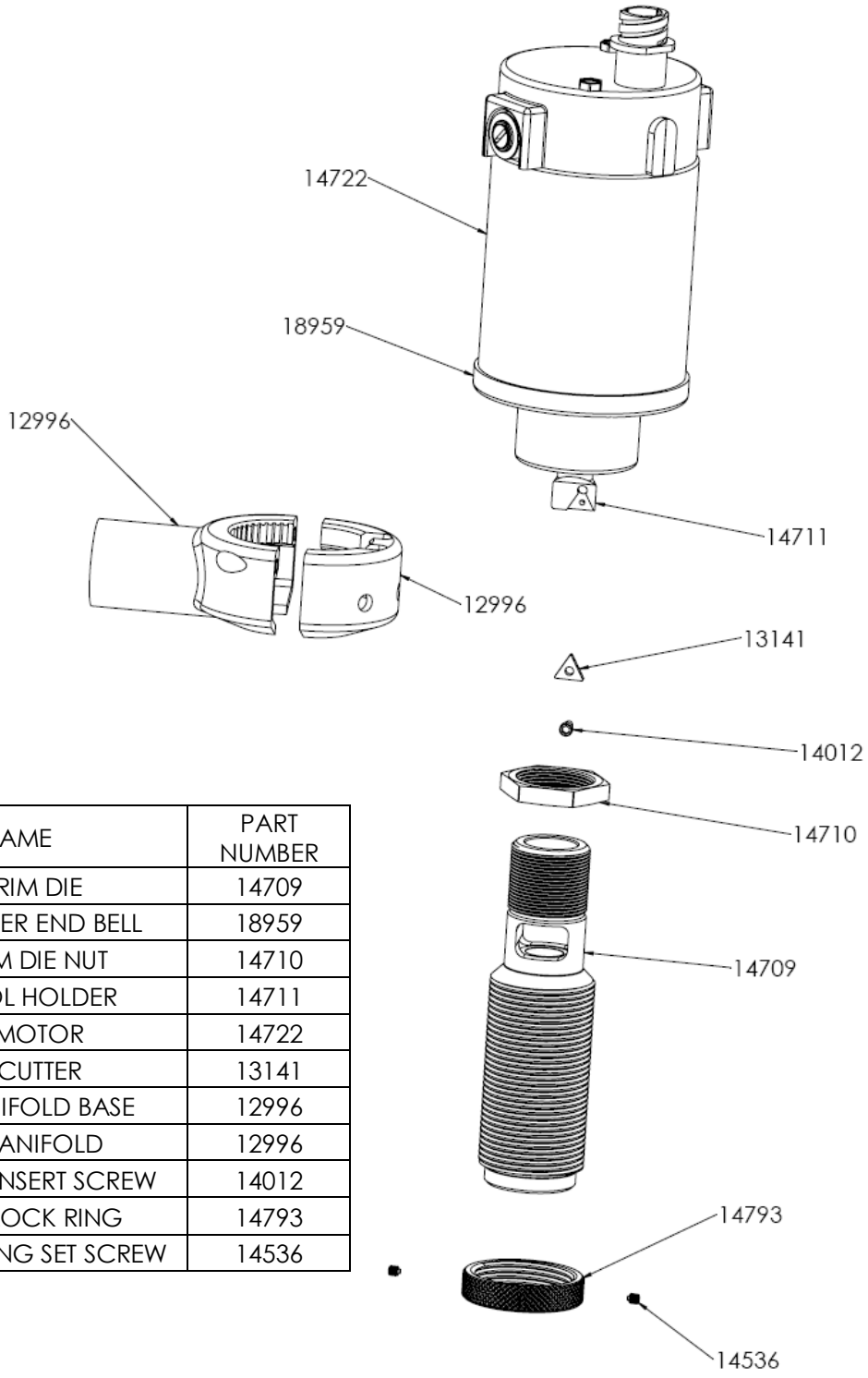
PART NAME	PART NUMBER
50 BMG LOCK RING SET SCREW	14536
50 BMG PRIMER SYSTEM RETURN SPRING	14539
PRIMER SEAT DIE BODY	14712
PRIMER SEAT DIE SHELL HOLDER	14713
50 BMG PRIMER (CONCAVE) SEAT DIE PUNCH	14714
50 BMG PRIMER SEAT (FLAT) DIE PUNCH	14715
50 BMG PRIMER SEAT DIE ADJUSTMENT BOLT	14737
50 BMG PRIMER SEAT DIE ADJUSTMENT NUT	14738
50 BMG DIE LOCK RING	14793

Dillon 50 BMG Case Trimmer

TO OPERATE: You will need a pair of calipers to set the trim die properly. **THIS DIE IS NOT DESIGNED TO SIZE THE CASE AS IT HOLDS THE CASE NECK ONLY.** For best results you need to clean, size, and lube your brass before trimming. Place a clean, sized, and lubed case into the station for the trimmer and raise the platform. Install the trim die (without the trim motor) into the Toolhead on your reloading machine. Adjust it down until it is in full contact with the case. If you screw the die down too far or all the way, without checking, **YOU MAY INADVERTENTLY PUSH THE CASE SHOULDER BACK**. Once the trim die is adjusted correctly, tighten the size/trim die lock nut. You should always have a case in the trim die before beginning trim adjustments. You need to do this to avoid screwing the motor assembly down too far causing the carbide cutter to contact the bottom of the port window of the size/trim die. This will cause the carbide cutter to shatter, possibly causing injury to nearby persons or damage to the unit. So with a case in the die, thread the trim motor onto the size/trim die until the cutter makes contact with the case mouth. Then lower the platform and turn the cutter motor down another 1/8 turn. Lock motor jam nut. Connect the power cords and turn the motor on. Trim a case and check it for overall length using a pair of calipers. To check for overall length, set the case firmly into the case gage and set the gage on a clean, flat surface. The case mouth should be between the high and low step of the case gage. Adjust the motor up or down and repeat these steps until the right overall length is achieved. Once the right length is reached, lock the motor jam nut. Before turning the unit on, **always** retighten the motor jam nut.

NOTE: The vacuum assembly clamps around the lower bell of the trimmer motor assembly. It should surround the chip exhaust port on the trim die. The vacuum attachment may need to be modified to fit your vacuum cleaner model.

Dillon 50 BMG Case Trimmer



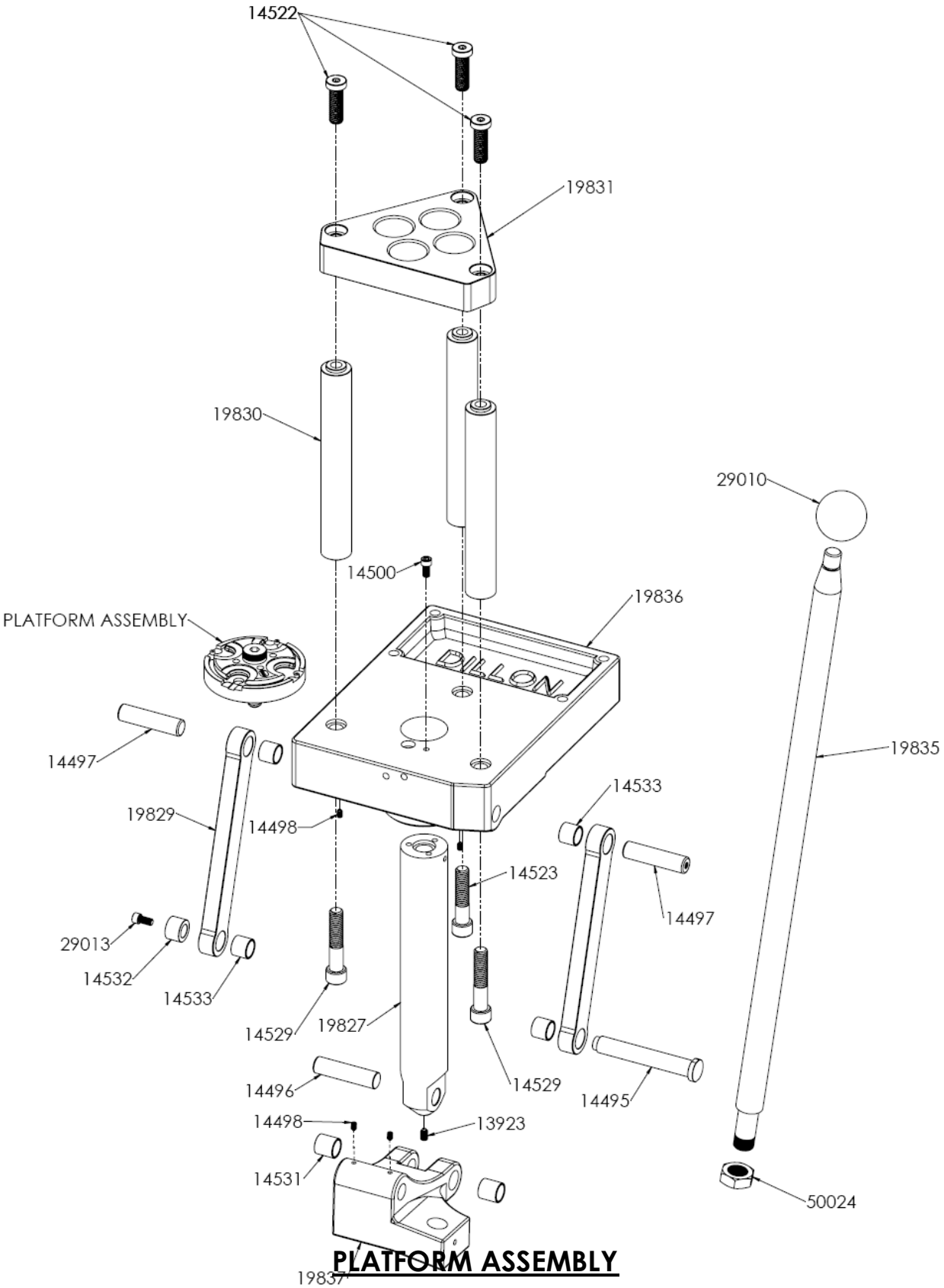
PART NAME	PART NUMBER
50 BMG TRIM DIE	14709
50 BMG TRIMMER END BELL	18959
50 BMG TRIM DIE NUT	14710
50 BMG TOOL HOLDER	14711
TRIMMER MOTOR	14722
CARBIDE CUTTER	13141
TRIMMER MANIFOLD BASE	12996
TRIMMER MANIFOLD	12996
CASE TRIMMER INSERT SCREW	14012
50 BMG DIE LOCK RING	14793
50 BMG LOCK RING SET SCREW	14536

PARTS LIST

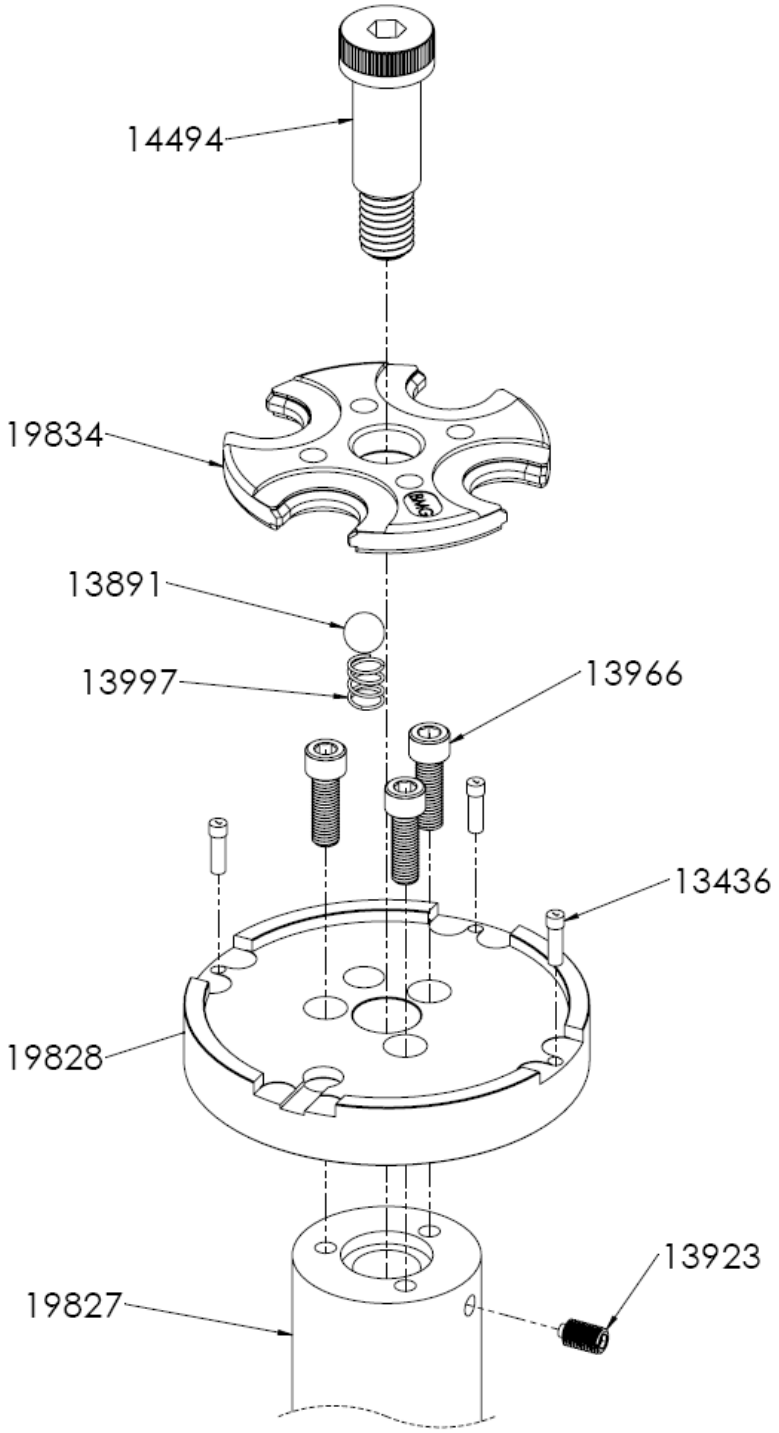
PART NAME	PART NUMBER
#7 LOCATOR PIN	13436
3/8" DIA. INDEX BALL	13891
MAIN SHAFT BOTTOM SET SCREW	13923
PLATFORM BOLT	13966
550 INDEX BALL SPRING	13997
50 BMG SHELLPLATE BOLT	14494
50 BMG CRANK PIN	14495
50 BMG LOWER CRANK PIN	14496
50 BMG UPPER LINK ARM PIN	14497
50 BMG BRASS TIP SET SCREW	14498
50 BMG PLATFORM STOP	14500
50 BMG TOOL HEAD BOLT	14522
50 BMG REAR UPRIGHT BOLT 2.5"	14523
50 BMG FRONT UPRIGHT BOLT 2.5"	14529
50 BMG LOWER CRANK BEARING*	14531
50 BMG CRANK PIN CAP	14532
50 BMG LINK ARM BEARING*	14533
50 BMG MAIN SHAFT	19827
50 BMG PLATFORM	19828
50 BMG LINK ARM	19829
50 BMG UPRIGHT	19830
50 BMG TOOL HEAD	19831
50 BMG SHELLPLATE	19834
50 BMG HANDLE	19835
50 BMG BASE	19836
50 BMG CRANK	19837
50 BMG BRASS BALL KNOB	29010
50 BMG CRANK PIN CAP BOLT	29013
50 BMG HANDLE NUT	50024

* INDICATES NON-REMOVABLE PRESSED PARTS

DILLON BFR SCHEMATIC



PLATFORM ASSEMBLY



NOTE: Before attempting to remove the shellplate bolt (PN: 14494) be sure that the shellplate bolt set screw (PN: 13923) is removed.
The shellplate bolt (PN: 14494) should be tightened only as far as needed for smooth operation of the shellplate. IT CAN BE OVER TIGHTENED.

Dillon Precision Products, Inc.

8009 E. Dillon's Way
Scottsdale, AZ 85260
(480) 948-8009
FAX (480) 998-2786

Web Site: www.dillonprecision.com
Technical Support E-mail: dillon@dillonprecision.com
See our Troubleshooting Section online at www.dillonprecision.com
Technical Support & Customer Service
(800) 223-4570