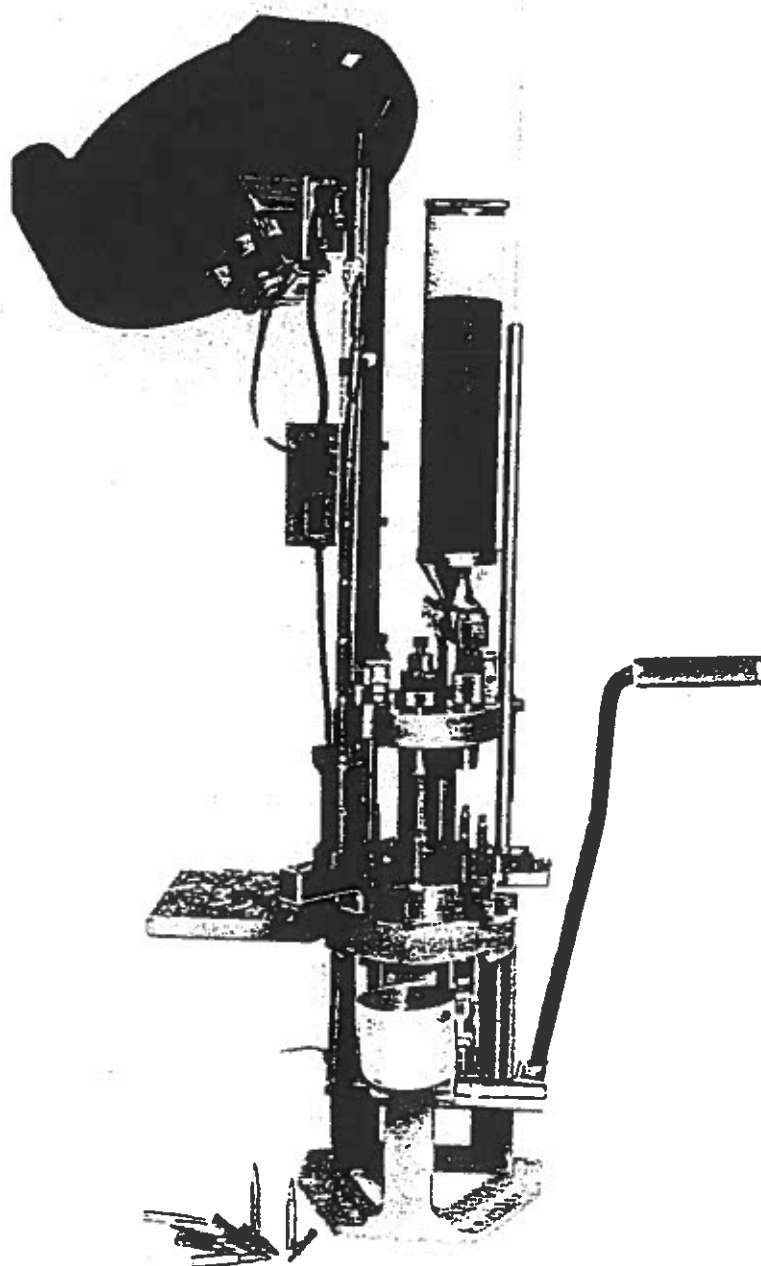




OPERATING MANUAL

Dillon Rapid-Load Model RL 1000



"The reloading machine for shooters who HATE to rel"

WARNING

The reloading of small arms ammunition involves the use of high explosive primers and gun powder. The handling of these materials is inherently dangerous. The operator should recognize this danger and take certain minimum precautions to lessen his exposure to injury. 1) Always wear safety glasses. 2) Never smoke while operating the machine. 3) Use only recommended loads from manuals and information supplied by reliable component manufacturers and suppliers. Since Dillon Precision Products, Inc. has no control over the components which may be used on their equipment, no responsibility is implied or assumed for results obtained through the use of any such components. Avoid maximum loads and pressures at all times. 4) The operator should perform periodic quality control checks on the ammunition he is producing. 5) Keep the work area clear of loose powder or other flammable residue. 6) Never attempt to force primers through the magazine by pushing or tamping with the magazine follower, as an explosion may occur. The primer magazine (PR18) is covered by a shield (PR17). The purpose of this shield is to protect the operator from injury in case of a primer explosion. **DO NOT ATTEMPT TO EXPAND THIS MAGAZINE.** Do not mount primer turrets on the RL 1000. These devices do not save time and can be extremely dangerous. They place up to 1,000 primers in unprotected plastic tubes right in front of the operator's face.

If the operator has any questions concerning the machine and its use, contact the factory.

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Written by Michael J. Dillon and Peter G. Kokalis

The Dillon Rapid-Load Model RL 1000 is guaranteed against any defect in material and workmanship under normal use. Our obligation under this warranty is limited to repair and/or replacement, provided the trouble is reported within one year of the date of sale. The guarantee will not apply to any tool which in our opinion has been subjected to abuse. THIS GUARANTEE IS VOID IF ANY ATTEMPT HAS BEEN MADE TO MOTORIZE, AUTOMATE, OR OTHERWISE MODIFY THE TOOL WITHOUT THE EXPRESS PRIOR WRITTEN CONSENT OF THE MANUFACTURER.

Dillon Precision Products, Inc. invites and welcomes your suggestions and comments concerning the Rapid-Load RL 1000 and any of their other products for the shooting industry.

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WARNING: DO NOT ATTEMPT TO OPERATE YOUR RL 1000 UNTIL YOU READ AND UNDERSTAND THE ENTIRE MANUAL. IF YOU HAVE ANY QUESTIONS, PLEASE CALL THE FACTORY AT 602-948-8009.

Introduction

Your RL 1000 Progressive Reloader has been set up and adjusted for the caliber in which it was ordered except for the following: The crank handle roller (LF10) and shaft (LF09) must be attached to the crank extension (LF07) using the crank handle lock screw (LF15).

The bullet tray (LF16) must be attached to the left side of the lower frame (LF01) using the cap screws provided.

The powder measure upper assembly (PM02, PM06, PM07, and PM08) must be attached to the powder measure base (PM01) using the cap screws provided.

The RL 1000 Reloader should be securely mounted to your bench not more than 1 1/4 inches from the front edge of the table, using four 1/4-inch bolts.

Powder measure must be adjusted for desired powder charge.

Operating Sequence

The operating sequence initiates at station 1 where the case inserter assembly (CF01 through CF14) is located and moves thence in a counterclockwise manner. Resizing and de-capping of the spent primer occurs at station 2. Swaging of military primer crimps, if necessary, is accomplished at station 3. Priming and inside neck expansion takes place at station 4. Stations 6, 7, and 8 take care of bullet seating and crimping. The loaded cartridge is ejected leaving station 8.

Operation

Preliminary check: Place two or three primers in the primer magazine. With no powder in the hopper, place one case in the case inserter and run this case through the entire sequence of stations 1 through 8. Operate the crank with a smooth, metered pace. Do not crash the crank down against the stops. Do not snatch the handle upward. Do not bang the handle up against the stops. It should take two or more seconds to move the handle from up to down to up again. Rough, insensitive cycling of the tool can lead to serious problems. Should the shell plate be blocked from indexing by an empty primer magazine, improperly seated primer, etc.; excessive forcing of the handle can bend the roller bolt (ID06) and cause incomplete indexing

Satisfy yourself that a) primer seating is to the required depth; b) bullet seating is to the desired depth; c) roll or taper crimping is as desired, and, in the instance of bottleneck cases that d) head space is correct. It is imperative that commercial loaders use an L. E. Wilson type case gauge to determine head space. Head space on rimless bottleneck cartridges (such as .223 REM, 30-06, 7.62mm NATO) is determined by the distance between the bottom of the case and the position of the shoulder, and can only be measured by use of a case gauge.

The design of the shell plate on the Dillon RL 1000 allows its user to compensate for die wear through adjustment. Therefore, if the sizing die is adjusted in the normal manner so as to bottom out on the shell plate, head space may be several thousandths below minimum.

Adjustment of the powder measure is accomplished by trial and error using an accurate scale and turning the allen screw on the powder measure bar (PM03) in or out; clockwise to decrease the charge and counterclockwise to increase the charge. When the proper charge weight has been obtained, tighten the hex jam nut on the allen screw securely.

Preliminary adjustments and checks have now been accomplished.

Every effort should be made to operate the machine with complete downward and upward strokes. A consistent rhythm must be established during operation of the RL 1000 (See Hints for Maximizing Production Rates at the end of the manual).

The following is a detailed explanation of the operation of the machine, possible malfunctions, and relief of same.

Station 1 — Case Insertion. With the hitch pin in place, load the case tube to capacity. Bottleneck cartridges must be lubricated. Insert the case tube into the case inserter block and remove the hitch pin. Should cases fail to feed into the shell plate correctly: a) check to see that the correct plunger (CI02), case insert adaptor (CI13), and/or case insert adaptor pins (CI16) are in place for the caliber you are reloading [four plungers are available (large, medium, small and .380 ACP); and four different adaptors (.223 REM, 30M1 Carbine, 9mm- and .380ACP)]. b) Check the case inserter body, which should be lightly lubricated and free of foreign matter and c) check the case inserter plunger roller (CI07) for free movement and lubrication.

Station 2 — Full-Length Resizing and Decapping.

In pistol calibers it is necessary to use a sizing die with a radiused lead-in on the carbide sizing ring. This helps to guide the case into the die.

In calibers 45 ACP and 9mm, Dillon Precision Products can supply a special "full length" carbide die that sizes the upper half (bullet holding portion) of the case slightly undersize. This guarantees a tight bullet regardless of what kind of brass you use.

Occasionally a hard crimped military primer will puncture. These can be removed from station 2 utilizing the punctured primer track incorporated into the main frame of the RL 1000 by simply pulling out and pivoting the locator tab (MF05). Always close the locator tab after removing a case from any station.

When using de-cap rods that have an integral expander ball, the expander ball must be reduced in diameter to prevent any neck expansion on the up stroke. Inside neck expansion must take place at station 4.

Station 3 — Primer Pocket Swaging. The swage mechanism comes adjusted from the factory so as to produce a properly dimensioned primer pocket. Any upward adjustment of the swage to produce increased swaging of the primer pocket should be made in small increments (no more than an $\frac{1}{8}$ of a turn at a time). Check the swage travel by opening the locator tab and observing the cartridge case as it is being swaged. If the swage forces the case off of the base and up against the shell plate, then it is adjusted too high or the swage backup rod is not adjusted down enough. Adjustment of the swage backup rod and die is as follows: 1) Remove the swage assembly (SW2/3/7) and link (SW05) by pulling the clip (SW08) and clevis pin (SW06). 2) Insert a cartridge case at station 3 and bring the tool head down. 3) The die body should be adjusted to just clear the shell plate. 4) Screw the swage backup rod down until it touches the inside bottom of the cartridge case and lock. 5) Replace the swage, link, and clevis. If the swage backup rod is adjusted too high, it will allow the swage to force the rim of the cartridge case against the lower side of the shell plate. This may result in bent rims, especially in caliber .223 REM. If this occurs, the bottom of the case assumes a "horseshoe-like" appearance and may cause incorrect headspace and difficult ejection at station 8.

Station 4 — Priming. The capacity of the primer magazine (PR18) is 120 primers. Utilizing the pickup tube supplied, primers should be loaded into the primer magazine anvil up. Pick-up tubes are available in two sizes to accommodate both large and small primers.

Insert the primer magazine follower (PR19) gently. Downward adjustment of the primer adjustment push rod (TH04) drives the primer deeper into the pocket. Upward adjustment of the push rod seats the primer less deeply into the pocket. Do not attempt to expand the primer magazine by the use of primer turrets. These devices do not save time and can be extremely dangerous. They place up to 1,000 primers in unprotected plastic tubes right in front of the operator's face.

Troubleshooting in the Primer System — The primer system must be correctly adjusted for proper operation of the tool. This is the most important single adjustment on the RL 1000. With the tool head in the down position, grasp the primer angle lever (PR03) and try to force it away from the pin on the primer slide (PR01). There should be almost no clearance. If clearance exists, adjust the angle lever adjustment screw (PR21) upward until the clearance is zero. Be careful when locking the jam nut that you do not adjust the angle lever adjustment screw (PR21) still higher, thereby putting everything in a bind. Undertravel of the angle lever will cause bad priming. Overadjustment of the angle lever will cause accelerated parts wear and can cause the pin on the primer slide to break or pull out.

The primer slide must be free for the shell plate to index to the next station. The following may prevent the primer slide from moving freely. First, and most common, is exhaustion of the primer magazine. The primer follower is designed in such a fashion as to block the free movement of the primer slide when the magazine is empty. This design feature prevents the indexing of unprimed cases.

Failure of the primer to drop fully and smartly into the primer slide will also block indexing. If the primer merely hesitates in its fall, this may be the result of the angle lever stop screw (PR20) being out of adjustment. The adjustment of this screw may be accomplished in the following manner. Remove all primers from the primer slide and magazine. With the tool head in the down position, insert an allen wrench in the angle lever stop screw and loosen the jam nut. Turn the angle lever stop screw $1\frac{1}{2}$ full turns clockwise and remove the allen wrench. Place one primer in the primer magazine and insert the primer follower. Raise the tool head to the full upward position. Re-insert the allen wrench. Grasp the magazine follower (PR19) and apply light downward pressure with one hand. Now, using the allen wrench, slowly back the stop screw off (counterclockwise) until you feel the primer drop fully into the slide. Back off one eighth turn further and lock with the jam nut.

Hesitation of the primers to fall may also be the result of primer cup shavings. These small, half-moon shaped chips should normally be expelled through the vent in

the primer track. If these chips occur with any degree of regularity, it is probably an indication of an inadequately swaged primer pocket or that the angle lever adjustment screw (PR21) is not correctly adjusted.

On occasion, one of these primer chips can prevent the primer from entering the primer slide more than half-way, thus blocking the primer slide in the retracted position. Though it is tempting, do not attempt to use the primer magazine follower to force the primer into the slide. Instead, first remove the case from the swaging station. Loosen the two screws that secure the primer magazine socket (PR14) three full turns, lift the primer magazine upward against the loosened screws, and index the shell plate. Push the primer slide inward, remove the jammed primer, and clear the primer slide cavity of any foreign matter. Retighten the primer socket screws.

The most serious of all priming malfunctions occurs when the operator attempts to seat a primer on top of a ringed primer. A ringed primer occurs occasionally with military crimped cases when the roof of the primer separates from the wall, leaving a ring inside the primer pocket. The alert operator can identify and eliminate ringed primers at the swage station. When the swage is forced into a ringed primer pocket, it results in a spongy bounce-back of the operating handle at the bottom of the stroke. This case can be eliminated prior to indexing by pausing mid-way in the upstroke of the handle and removing the case from station 3.

Station 4 — Inside Neck Expansion. With pistol cases, the expander should be adjusted to achieve the desired degree of case mouth bellling. Expander plugs for bottleneck rifle cases are equipped with two steps. The upper, or larger diameter, step will expand the case neck approximately two thousandths larger than bullet diameter and give the operator the option of opening the case mouth slightly to prevent the stripping of metal from jacketed or lead bullets. If this larger step is pushed too deeply into the case mouth, it may result in loose bullets.

Station 5 — Powder Charging. If, for some reason, the operator is unable to complete the downward stroke, the handle should not be raised so high as to double index the shell plate, as this will advance all cases one station without the respective operations (decapping, swaging, priming, powder charging, etc.) taking place. If the operator is sure that no powder has fallen and priming has not taken place, the double index may be corrected by backing the shell plate up one station. This may be accomplished by applying pressure against the shell plate in a clockwise manner. As the operator begins his downward stroke the shell plate will then be free to back up one station. However,

if, in this situation, the operator has made a significant partial downward stroke, such that, he believes some powder has entered the case, the powder level in this case should be visually inspected prior to seating a bullet. If there is any question concerning the powder charge in this case, then it should be rejected. Every effort should be made to operate the tool with smooth, consistent, full strokes.

Though the RL 1000 has a rather large powder capacity, care should be taken not to totally exhaust the powder magazine and therefore load an uncharged round.

The operator should periodically check the adjustable powder measure bar (PM03) to ascertain that no powder is adhering to the walls of the metering cavity. Acetone should be used to keep the cavity clean. Use only slight graphite lubrication.

Stations 6 Through 8 — Bullet Seating and Crimping. In most instances, station 6 will not be utilized. However, it is available for special bullet seating/crimping techniques. Station 7 is normally used for bullet seating. The most common problem likely to occur at the bullet seating station results from the buildup of bullet shaving residue. This residue can cause erratic seating and/or crimping in pistol cartridges and bulged shoulders in bottleneck rifle cases. This situation can usually be avoided by: a) separating the seating and crimping operations; and b) raising the seating die to provide generous clearance between the case mouth and the crimping step in the die body. In addition, periodic cleaning of the seating die may be necessary. Proper adjustment of the expander plug (see notes under inside neck expansion) can totally eliminate or at least reduce the occurrence of this problem.

Difficult ejection at station 8 is commonly the result of high primers or bent rims from incorrect adjustment of the swage backup rod.

Excessive buildup of bullet lubricant can cause the bullet to stick in the seating die. Use of a vented seating plug will prevent this

Crimping of Bottleneck Cartridges at Station 8. A full length resizing die (body only) can be used in the following manner to crimp bottleneck cartridges. Do not attempt to full length resize the loaded round, as this in itself can sometimes cause loose bullets. Instead, only push the cartridge far enough into the die so that the mouth of the cartridge just begins to enter the neck portion of the die. In this manner, you are using the resizing die much as you would a taper crimp die. This die adjustment can be more easily accomplished by using a fired, unsized cartridge case.

A Few Hints for Maximizing Production Rates.

It generally takes two to three seconds to pick up a bullet from the tray and orient it in one hand in preparation for seating. The operator should therefore use this entire time interval to cycle the operating handle through its down and up stroke. This will produce a smooth, easy to maintain rhythm, avoiding the common tendency to slam the handle against the up stop.

Lubrication of Bottleneck Cases can be achieved easily and quickly using a tumbler. Lightly saturate a shop towel with the case lubricant. Experimentation will demonstrate the correct amount. Tumble the cases with the saturated towel for a few minutes. Hydrous lanolin is recommended for this purpose as only a very small amount is required.

Changing Calibers — With the tool head in the up position, loosen the locking bolt (MS06) on the tool head nut (MS03). Using a $\frac{3}{4}$ -inch wrench, remove the tool head nut. Remove the tool head (TH01). Remove the shell plate nut (MF03). Remove the shell plate (MF02).

If a change in primer size is necessary, proceed as follows. Remove the primer slide (PR01) by removing the angle lever bolt (PR04). Using the special driver, supplied with the tool, remove the primer punch bushing (PR07). Remove the primer punch (PR05) and spring (PR06). Place the spring (PR06) on the new primer punch and reinstall. Install new primer slide. Change the primer magazine by loosening the primer magazine lock screw (PR16) and removing the primer magazine shield (PM17). Insert the new primer magazine and lock in place by lightly tightening the primer magazine lock screw (PR16).

Install the new shell plate. Tighten the shell plate nut securely and back off $\frac{1}{8}$ of a turn. The locator tabs (MF05) should be adjusted, by means of the adjustment screw (MF12), so as to contain the case fully in the shell plate, but should not put pressure against the rim of the cartridge case.

Relubricate the center bore of the tool with light grease, and reinstall the tool head on the main shaft. Relubricate the bottom of the tool head nut, reinstall, and tighten lightly with the $\frac{3}{4}$ -inch wrench. Now tighten the locking bolt. (Note: after the locking bolt is tightened, you should be able to rotate the tool head on the main shaft.) It is important that the tool head not be locked firmly to the main shaft.

Install the new sizing die, inside neck expander, seating die, and primer pocket swage (if required). Refer to the appropriate earlier sections of the manual for adjustment procedures. Adjust the primer seating depth, if necessary.

Assembly of the Powder Measure System

All pistol calibers use a fixed powder funnel (PM15). Rifle calibers employ a sliding powder funnel (PM13), funnel holder (PM14), and spring (PM12). Different sliding funnels are used for various rifle calibers, depending on the length and caliber of the cartridge. See figure 3 for assembly of the funnel systems.

Both a large and a small adjustable powder measure bar are available. The small powder measure bar requires use of the powder measure spacer (PM05). See figure 3 for assembly of the powder measure bar system.

Emptying the Powder Magazine — The powder measure hopper can be easily emptied by removing the forward upper assembly screw (PM09), loosening the rear upper assembly screw (also PM09), and pivoting the entire upper assembly to the right. Allow the hopper to empty completely and then remove it. Cycle the bar until it is empty.

Cleaning & Maintenance — (Perform after approximately every 1,000 rds.): The primer swage (SW02) should be removed, cleaned, and relubricated. The locator dowel (TH03) should also be wiped clean and relubricated. An excellent lubricant for this purpose is light bearing grease. The main shaft (MS01) should also be cleaned and relubricated with 30W oil. Movement of the primer slide (PR01) can be improved by the sparing use of powdered graphite. At this time the die locking set screws should all be inspected for tightness. Don't forget to check the set screw on the primer adjustment push rod (TH04) also. If they are loosening up, retighten using Loctite 242. The powder sliding funnel (PM13), the primer swage guide (SW01), and the inside of all the die bodies should be cleaned using a Q-tip and/or cleaning swab saturated in acetone or lacquer thinner.

WARNING: In loading .223, due to the restricted size of the powder funnel, it is absolutely imperative to use ball powders or extremely short extruded powders (such as H322). The use of long grained (pencil lead-like) extruded powders (such as 4895) will cause bridging or jamming of powder in the funnel, which, in turn, will lead to erratic under- or overcharging and spilled powder. The same phenomenon has sometimes been observed in the loading of .30 caliber ammunition. Whenever possible, the use of ball powders will yield the most satisfactory results in production reloading systems.

Disassembly for Lubrication of the Lower Assembly

Remove all powder from the reservoir. Remove the entire swage assembly, including the bracket (SW04). Remove the left and right hand balance springs (LF02 and LF04). Remove the left and right lower pring posts. Remove the crank handle extension (LF07). Then remove the front and rear frame mating bolts (LF13 and LF14). The operator may now remove the entire upper assembly from the lower frame.

Using snap ring pliers remove the left and right link arms (LF06) and main shaft pivot pin (MS02). Clean all parts, lubricate with light grease, and reassemble.

Lubrication of the lower assembly should be performed at least after every 50,000 rounds, or more frequently, if necessary. Maintenance of the tool can be facilitated by use of a special tool and spare parts kit available from Dillon Precision Products.

DO NOT ATTEMPT TO DUPLICATE SO-CALLED "FACTORY BALLISTICS." ONE SHOULD BE AWARE THAT THESE FIGURES ARE LARGELY THEORETICAL, ARE SHOT OUT OF LONG BARRELED TEST GUNS, AND ARE MOST OFTEN TEMPERED WITH A VERY LARGE DOSAGE OF ADVERTISING HYPE.

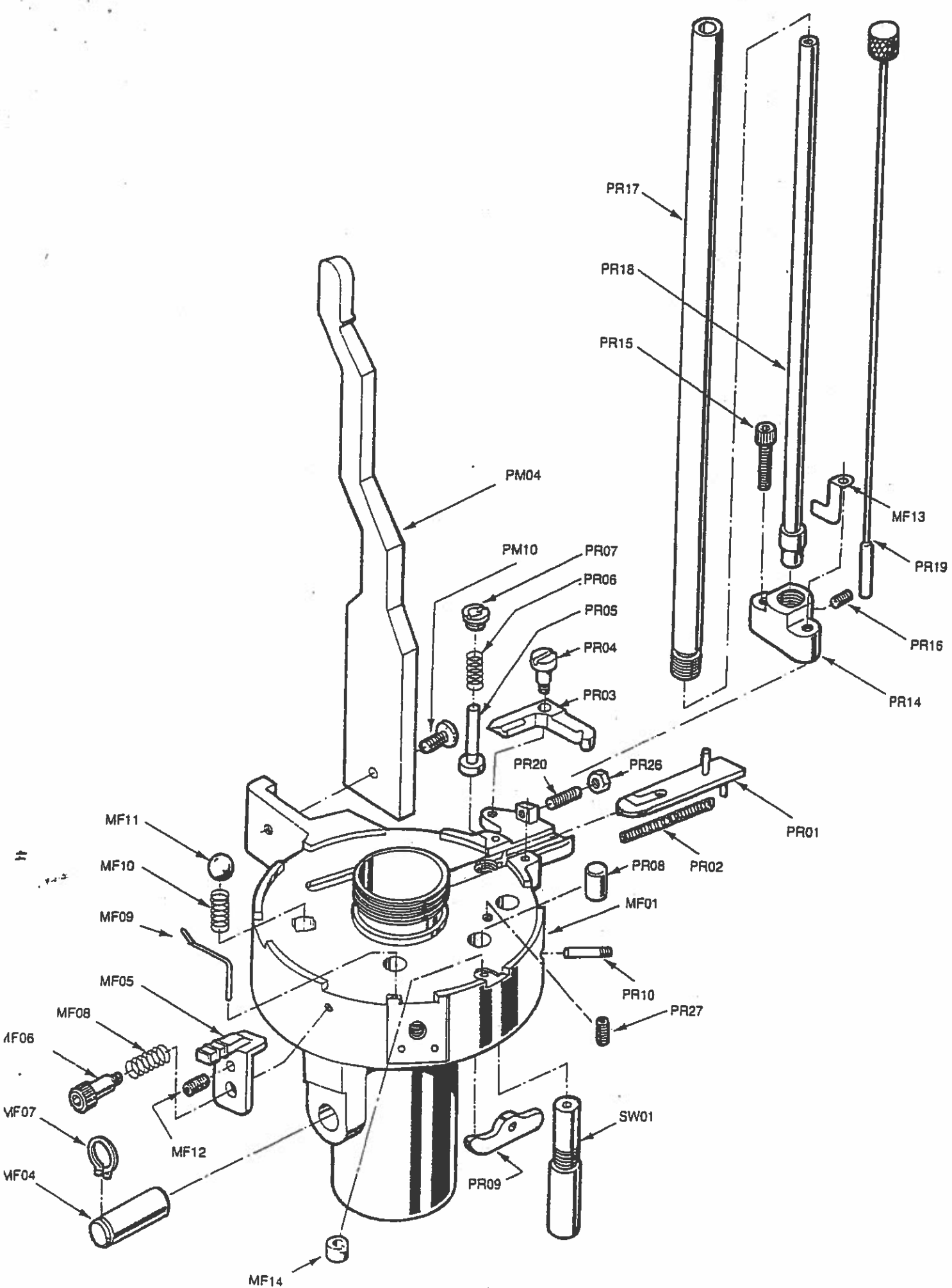
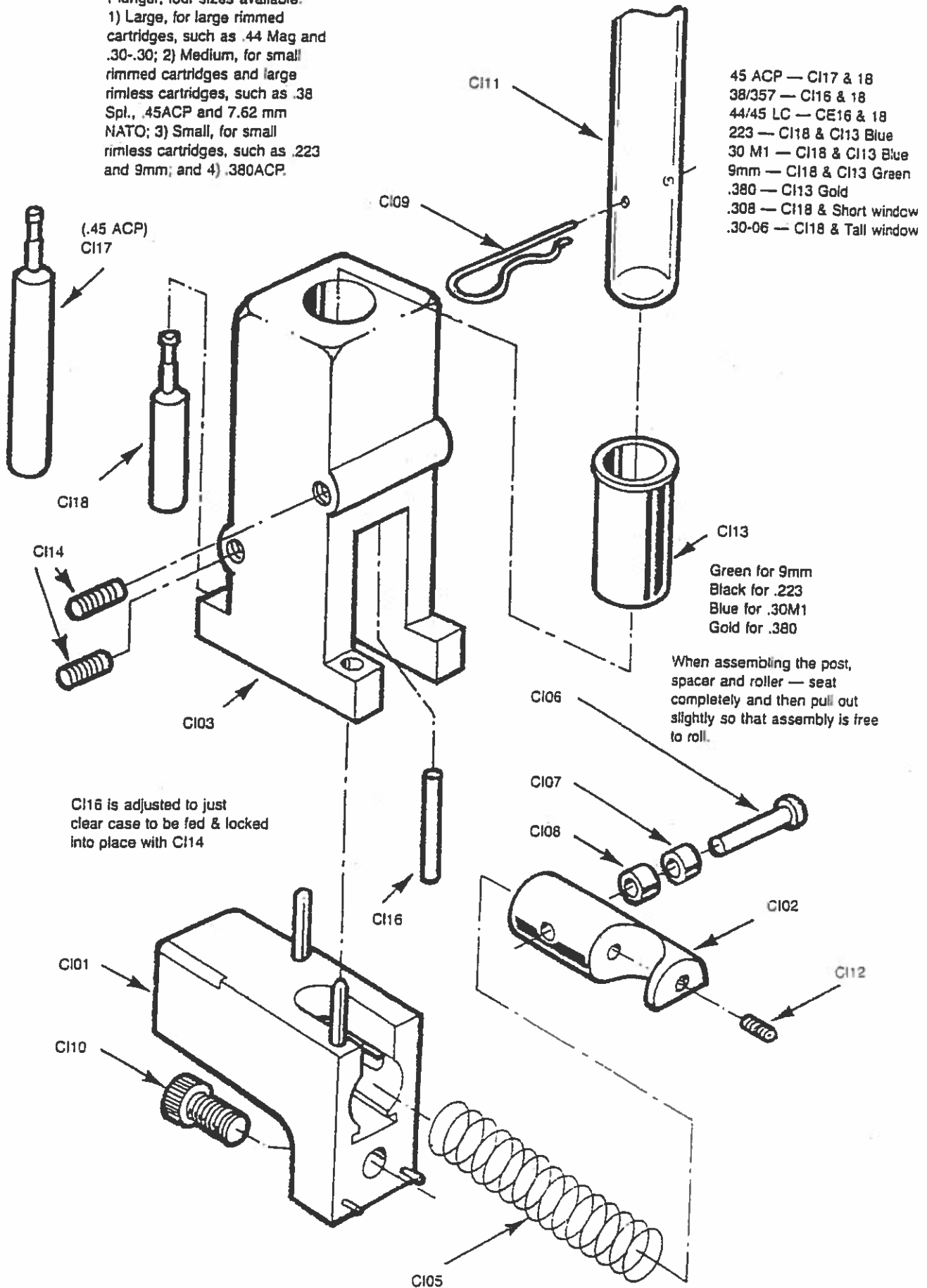


Figure 1

Figure 2. Note: CI02 Case Insert

Plunger, four sizes available:

- 1) Large, for large rimmed cartridges, such as .44 Mag and .30-.30;
- 2) Medium, for small rimmed cartridges and large rimless cartridges, such as .38 Spl., .45ACP and 7.62 mm NATO;
- 3) Small, for small rimless cartridges, such as .223 and 9mm; and
- 4) .380ACP.



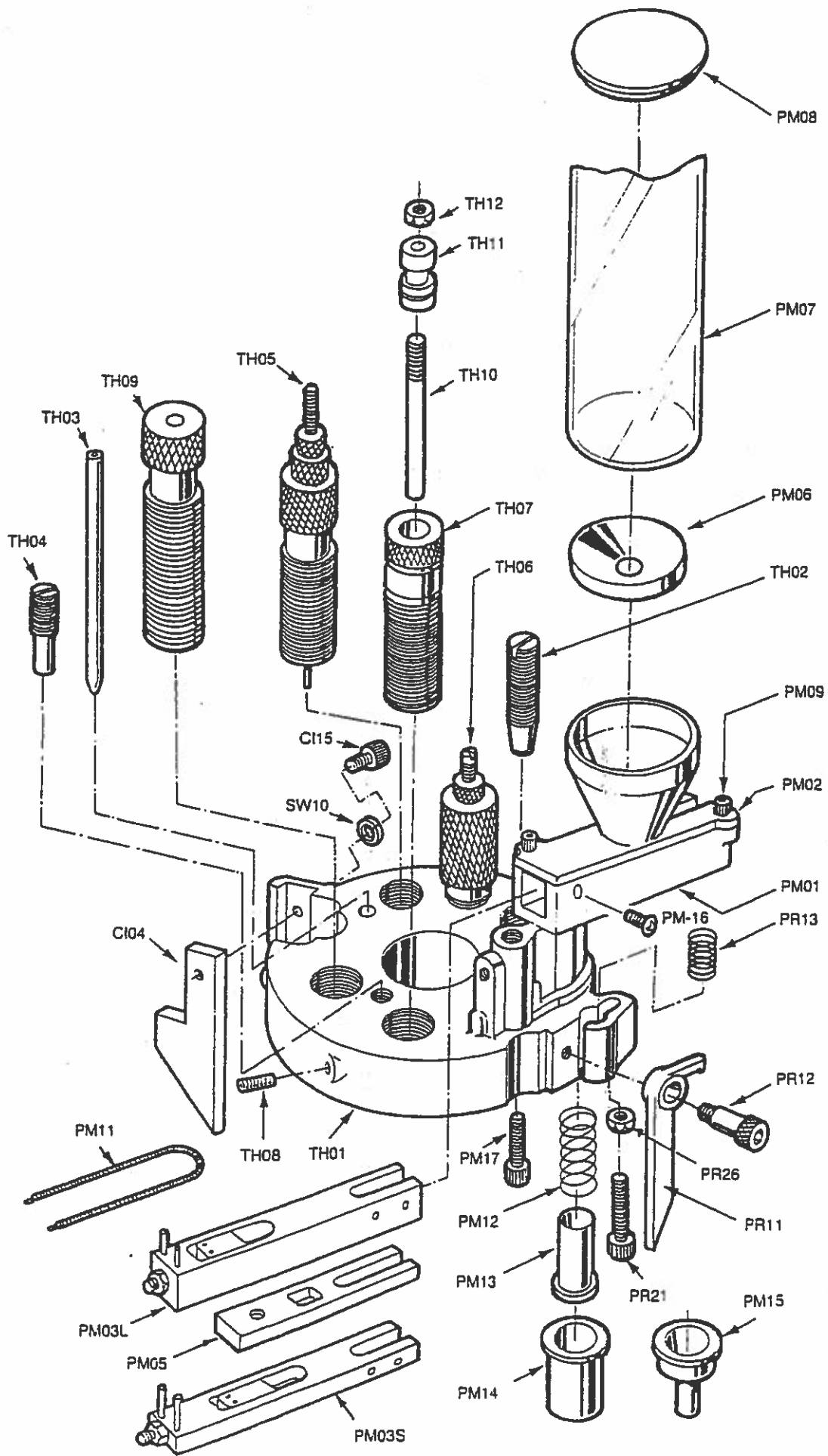
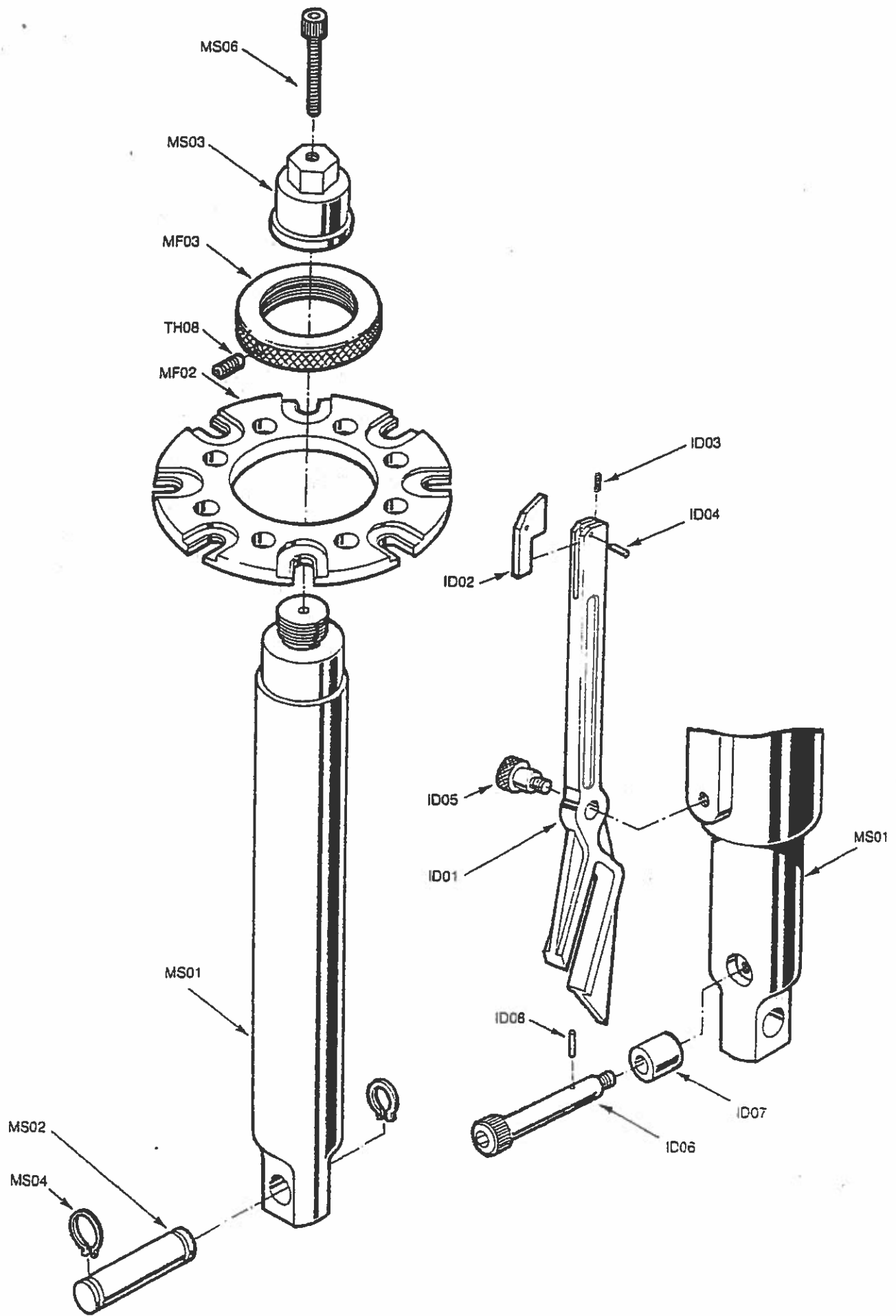


Figure 3



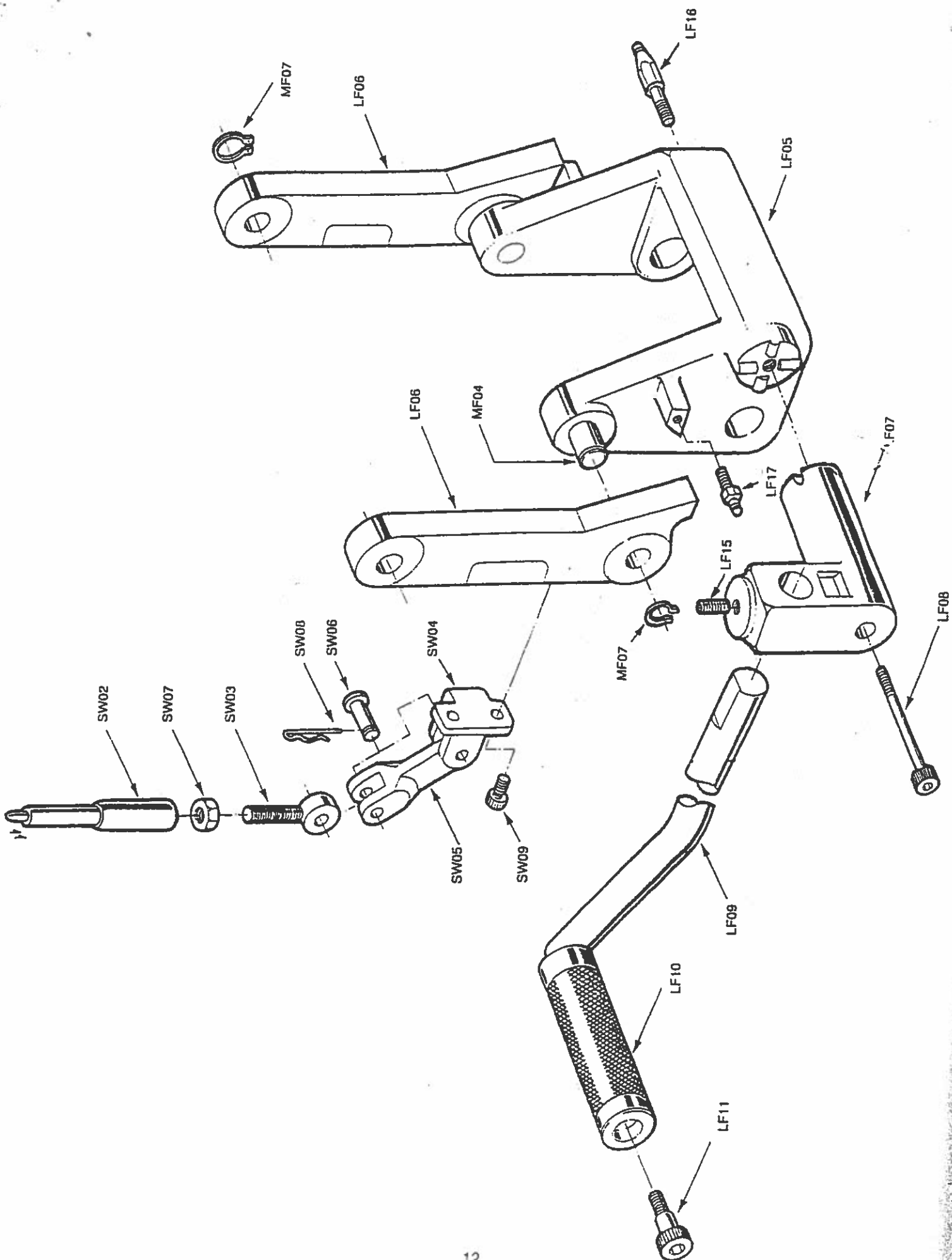
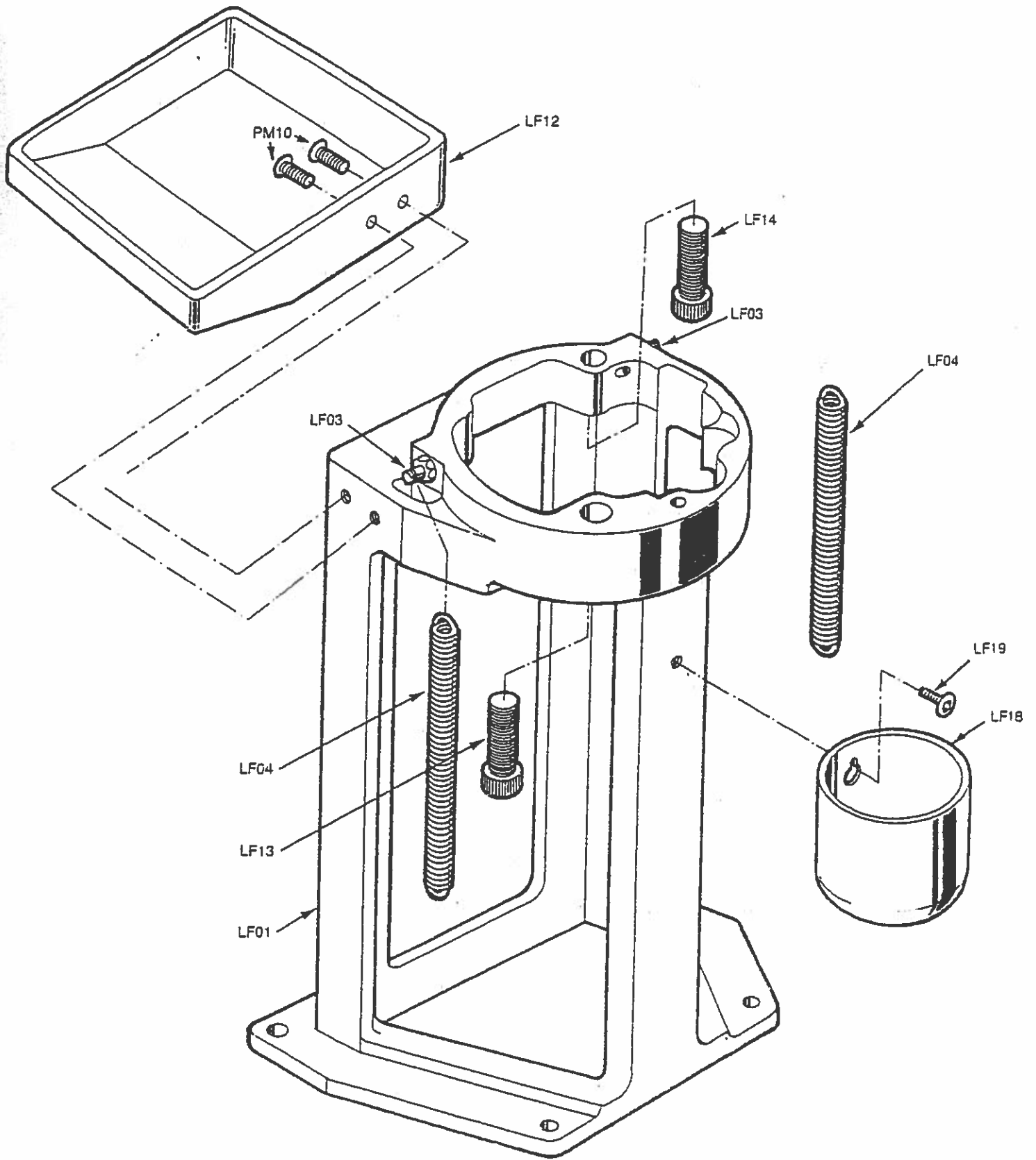


Figure 5



Parts List

Dillon Rapid-Load Model RL 1000

CI101	Case Insert Body	MF02	Shell Plate (Specify caliber)
CI02	Case Insert Plunger	MF03	Shell Plate Nut
CI03	Case Insert Block (Specify caliber)	MF04	Pivot Pin
CI04	Case Insert Cam	MF05	Locator Tab
CI05	Case Insert Plunger Spring	MF06	Locator Tab Bolt
CI06	Plunger Roller Post	MF07	Pivot Pin Snap Ring
CI07	Plunger Roller	MF08	Locator Tab Spring
CI08	Plunger Roller Spacer	MF09	Loaded Cartridge Ejector
CI09	Case Insert Hitch Pin	MF10	Index Ball Spring
CI10	Case Insert Body Attach Bolt	MF11	Index Ball
CI11	Case Insert Tube	MF12	Locator Tab Adjustment Screw
CI12	Plunger Lock Screw	MF13	Primer Station Locator Tab
CI13	Case Insert Adaptor	MF14	Sizing Station Bushing
	.223 (black)		
	9mm-9mmP (green)	MS01	Main Shaft
	.30 Carbine (blue)	MS02	Main Shaft Pivot Pin
	.380K (gold)	MS03	Tool Head Nut
CI14	Case Insert Block Screw	MS04	Pivot Pin Snap Ring
CI15	Case Insert Cam Bolt and Washer	MS06	Tool Head Lock Bolt
CI16	Case Insert Dowel Pin, Short		
CI17	Case Inert Dowel Pin w/sleeve (.45 ACP)	PM01	Powder Measure Base
CI18	Case Insert Dowel Pin, Long	PM02	Powder Measure Top
		PM03L	Powder Measure Bar, Large
ID01	Indexer Lever	PM03S	Powder Measure Bar, Small
ID02	Indexer Pawl	PM04	Powder Measure Cam
ID03	Indexer Spring	PM05	Powder Measure Spacer
ID04	Indexer Pin	PM06	Powder Measure Baffle
ID05	Indexer Pivot Bolt	PM07	Powder Measure Hopper Tube
ID06	Indexer Roller Bolt	PM08	Powder Measure Hopper Lid
ID07	Indexer Roller	PM09	Powder Measure Top Screw
ID08	Retainer Pin	PM10	Cam Bolt
		PM11	Powder Bar Return Spring
LF01	Lower Frame	PM12	Powder Measure Sliding Funnel Spring
LF03	Balance Spring Post	PM13	Powder Measure Sliding
LF04	Balance Spring, Right and Left		Funnel (Specify caliber)
LF05	Crank	PM14	Powder Measure Sliding Funnel Holder
LF06	Link Arm	PM15	Powder Measure Funnel, Pistol
LF07	Crank Extension	PM16	Powder Measure Spacer Screw
LF08	Crank Extension Bolt		
LF09	Crank Handle Shaft	PR01L	Primer Slide, Large
LF10	Crank Handle Roller	PR01S	Primer Slide, Small
LF11	Crank Handle Roller Bolt	PR02	Primer Slide Return Spring
LF12	Bullet Tray	PR03	Primer Angle Lever
LF13	Frame Mating Bolt, Front	PR04	Primer Angle Lever Bolt
LF14	Frame Mating Bolt, Rear	PR05L	Primer Seating Punch, Large
LF15	Crank Handle Lock Screw	PR05S	Primer Seating Punch, Small
LF16	Spring Post, Lower Left	PR06	Primer Punch Spring
LF17	Spring Post, Lower Right	PR07L	Primer Punch Bushing, Large
LF18	Spent Primer Cup	PR07S	Primer Punch Bushing, Small
LF19	Spent Primer Cup Screw	PR08	Primer Tappet
		PR09	Primer Rocket Arm
MF01	Main Frame	PR10	Primer Rocket Pivot Bolt

PR11 Primer Cam
 PR12 Primer Cam Bolt
 PR13 Primer Cam Spring
 PR14 Primer Magazine Socket
 PR15 Primer Magazine Socket Bolt
 PR16 Primer Magazine Lock Screw
 PR17 Primer Magazine Shield
 PR18L Primer Magazine, Large
 PR18S Primer Magazine, Small

PR19 Primer Magazine Follower
 PR20 Angle Lever Stop Screw and Nut
 PR21 Angle Lever Tension Screw
 PR23L Primer Pick-Up Tube, Large
 PR23S Primer Pick-Up Tube, Small
 PR24 Primer Punch Retaining Screw
 PR25 Primer Punch Retaining Washer
 PR26 Jam Nut
 PR27 Primer Punch Static Height Adjustment Screw

Shellplates

7MF021
 7MF022
 7MF023
 7MF024
 7MF025
 7MF026
 7MF027
 7MF028
 7MF02A
 7MF02B
 7MF02C
 7MF02D
 7MF02G

Caliber

45ACP
 38/357
 223
 44MAG
 9mm
 41MAG
 30-30
 30M1 Carb.
 7.62x39
 7mm/300MAG
 45LC
 32S&W
 45-70

Dillon RL-1000 Troubleshooting

Hard or Incomplete Indexing

1. Swage not cleaned and/or not lubed properly
2. Dirty: powder measure bar (PM03)
powder measure base (PM01)
powder measure bar rollers (and/or worn)
powder measure cam (PM04)
3. Dirty primer slide (PR01) and/or dirty main frame primer slide track
4. Primer bushing (PM07), punch (PR05), and slide (PR01) not adjusted properly
5. Primer push rod (TH04) not adjusted properly, causing primers to not be seated deep enough thereby resulting in dragging
6. Case insert plunger (CI02) not going all the way forward
7. Ringed or torn primer dragging
8. Locator tab (any station) not adjusted properly
9. Index roller bolt (ID06) bent
10. Shellplate (MF02) adjusted too tight
11. Rim variance on certain calibers of brass

A Review of Problems Station by Station

Station 1 — Case Insertion

1. Problems:
 - a. Case insert plunger size (CI02) not correct for caliber used
 - b. Wrong case insert adaptor (CI13) for caliber used
 - c. Case insert dowel pins (CI16, 17, 18) not correct for caliber or not adjusted properly
 - d. Shellplate (MF02) not adjusted properly — either too tight or too loose
 - e. Jamming or hard indexing could be caused by high primer or case insert plunger (CI-02) not going all the way forward.

Station 2 — Full Length Resizing

1. Crushing cases:
 - a. Shellplate (MF02) not adjusted properly — too loose or too tight
 - b. Not enough radius on resizing die (Pistol carbide only)
 - c. Locator tab (MF05) not adjusted properly (usually too tight)
 - d. Rim variance on certain calibers of brass

2. Bending or pulling decapping pin out of decapping assembly:
 - a. Wrong shellplate (MF02) for particular caliber (especially in 223, 9mm, 380)
 - b. Decapping assembly could be slightly bent
 - c. Wrong size decapping pin

Helpful Hints: (1) Loctite decapping pin in place with Loctite #242 (Blue)
(2) Shorten decap pin about 1/3"

3. Shellplate (MF02) dragging, jamming or hard indexing:
 - a. Decapping assembly not adjusted properly. Not deep enough could leave primer halfway in pocket. Use flat decapping pins as pointed decapping pins will spear the primer and then pull the primer partially back into the pocket.
 - b. Ringed primer — once in a great while the decap pin will tear the roof out of a primer and bend it down but leave the sides of the primer in place. You can pull the cases out of the size station with a pair of pliers.

Station 3 — Primer Pocket Swaging

1. Hard Indexing:
 - a. Swage not cleaned
Warning: If the swage (SW-02) becomes excessively dirty, it will compress the carbon and brass debris into a solid mass inside the swage guide (SW-01). This will prevent the swage from reaching the primer pocket.
2. Primer smearing or shaving (at Station 4):
 - a. Not swaging properly at Station 3

Station 4 — Priming

1. Marking primers:

If the top of the primer punch (PR-05) is below the top of the primer punch bushing (PR-07) it creates a pocket which can trap a primer chip and mark successive primers. RL-1000's with a Serial # above 400 have an adjustment (PR-27) for the static height of the primer punch (PR-05). This hex screw is located just to the right of the primer tappet (PR-08) in the main frame (MF-01). It can be seen only when the shellplate (MF-02) is removed. Turning the PR-27 clockwise (down) will raise the primer punch (PR-05). The primer punch should be adjusted so that it is just even with the top edge of the primer bushing (PR-07).

NOTE: The primer bushing (PR07) should not necessarily be screwed all the way down. Instead, a small amount of Loctite #242

(Blue) should be applied to the threads. Then the PR-07 should be screwed down until it is just even with the bottom of the primer track. The primer seating punch (PR-05) adjustment should be adjusted flush to the primer punch bushing (PR-07). Both of these adjustments are made by putting the primer slide (PR-01) in its track and pushing it toward center of machine with downward pressure so that it just clears both the bushing (PR-07) and the punch (PR-05). Either or both of these adjusted too high will cause the primer slide (PR-01) to drag on the shellplate (MF-02) resulting in hard indexing.

2. Smearing primers can be caused by:
 - a. Primer slide (PR-01) not adjusted properly — primer cam (PR-11) for forward adjustment travel; primer lever (PR-03) for outward adjustment travel. See pages 5 and 6 for adjustments.
 - b. Not swaging enough at Station 3 or a worn out primer swage (SW-02) will cause smearing or shaving at Station 4
 - c. Primer station locator tab (MF-13) not adjusted properly — tab should not allow the case to move out but should not press against the case.
 - d. Worn primer slide (PR-01) — oblong hole
 - e. Chipped primer seating punch (PR-05)
3. Jams in the primer system:
 - a. High anvils in certain primers
 - b. Primer angle lever (PR-03) not adjusted properly — not centering under the primer magazine to receive new primer — see pages 4 and 5
 - c. Primer debris jamming primer seating punch (PR-05) — condition will be that punch has not fully retracted and it is jammed upward, holding the primer slide (PR-01) from returning; easy way to clear is to use an allen wrench (short angle), punching down on the primer tappet (PR-08) vigorously, this will operate the primer seating punch (PR-05) up and down, eventually clearing it of debris, while doing this, hold primer slide in toward center of machine.

- d. Ringed primer with new primer jammed half-way into case — simple way to clear is to loosen lock screw (TH08) which enables you to loosen shellplate nut (MF03) about $\frac{3}{4}$ of a turn loose; this gives you enough clearance between shellplate (MF02) and half seated new primer to finish indexing shellplate (MF02) to Station 5, where it then can be removed from the machine; make sure to readjust shellplate nut (MF03) and tighten lock screw (TH08); reorientate all cartridges in machine.
NOTE: With .223 only it is permissible to simply tear the jammed case out of the primer station.

Station 5 — Powder Charging

1. Crushing cases:
 - a. Locator tab (MF05) not adjusted properly — too loose or too tight.
2. Spilling Powder:
 - a. In pistol you can spill powder only by slamming the handle up against the stop — the cure is simple, be more gentle.
 - b. In rifle calibers, three things will cause powder to spill.
 - (1) The sliding powder funnel (PM-13) is jamming in the "up" position.
 - (2) The powder funnel (PM-13) is clogging with powder that is sticking to lube residue of over-lubed cases.
 - (3) You are stroking the machine too fast — not giving the powder time to flow into the case.

Station 7 — Bullet Seating

1. Erratic seating of bullet — high and low:
 - a. Build-up of residue (shavings) — clean seat die
 - b. Factory bullets having erratic dimensions
 - c. Improper seating plug and/or seating plug not vented type.

Station 8 — Taper or Roll Crimping

1. Erratic crimping or taper crimping
 - a. Length of cartridge cases erratic
 - b. Improperly made or worn out die
- Warning: Too much taper crimp will reduce bullet diameter and screw up accuracy