AUTO·22 FIELD SERVICE MANUAL

BROWNING®

BROWNING FIELD .22 AUTOMATIC SERVICE MANUAL

This manual is written to assist trained gunsmiths in the repair and servicing of Browning products. It should never be used by an untrained person to repair any firearm. Read the entire manual carefully and pay special attention to the portions dealing with safety.

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BROWNING FIELD SERVICE MANUAL

IMPORTANT SAFETY WARNINGS

Before carrying out any instructions given throughout this manual, be certain to read the **NOTES** and **CAUTION** notes given in regard to those instructions. Generally, these precautionary notes follow the related instructions. In any case, read all of the instructions and cautions on any step involving assembly or re-assembly before proceeding with that step.

SAFETY WARNING

Failure to obey a Safety Warning—**Caution**—may result in injuries to you or to others.

Failure to obey a **NOTE** regarding the repair process may result in incorrect procedure which could cause malfunctions and/or damage to the firearm.

CAUTIONS

1. Be certain the firearm is unloaded before proceeding with any service work.
2. Appropriate safety glasses should be worn by service personnel and bystanders when removing or reinstalling any springs or spring-loaded components.
3. As noted in the attached parts list on Page 3 some of the Browning supplied parts must be fitted by the Browning Service Department in Arnold, Missouri or by qualified gunsmiths. No other persons should attempt to fit these specific parts.
4. If for any reason it becomes necessary to load and fire this firearm, it is recommended that reference be made to the Owners Manual for proper loading, handling and safety procedures. These Owners Manuals are supplied with each new rifle and extra copies may be obtained by contacting Browning, Route # 1, Morgan, Utah 84050.
5. During disassembly it is suggested that the small springs be identified with a tag for identification during reassembly.
6. Section VII shows recommended points of lubrication.

SECTION I

GENERAL DESCRIPTION OF THE BROWNING .22 AUTOMATIC RIFLE AND MODEL/PARTS INFORMATION

The Browning .22 Automatic is a blow-back operated semi-automatic rifle. It has been manufactured in Types I through VI. Type I was an FN version marketed in Europe only. It featured a loading port in the top of the Butt Stock just forward of the comb. Types II, and III and IV, referred to as Model I, have side-of-the-stock loading ports and through-the-pistol-grip Stock Screws. Types II, III and IV differ only in the type of magazine stops except for Type IV whose Receiver is approximately ¼ inch longer than Type I, II, and III. Types V and VI, referred to as Model II, also have the longer Receiver and side-of-the-stock loading port.

Type V was created when the Outer Magazine Tube was increased in diameter to alleviate breakage at the Receiver attach point. The through-the-pistol-grip Stock Screw was also eliminated and the Stock is attached with a nut on the rear end of the Outer Magazine Tube.

NOTE: Model I (through-the-pistol-grip Stock Screws) may be modified to the Model II stock configuration.

Since special tooling and a machine shop setup is required, it is recommended this modification be accomplished at Browning, Arnold, MO.

Type VI was created in a modification to the Trigger Guard making the rails heavier. This necessitated modification to the Receiver and Breechblock to accommodate this change.

Model II (Types V and VI) rifle production started in 1963. Parts for previous types are no longer manufactured and availability of replacement parts is subject to existing inventories.

NOTE:

A. Current production Rear Sights and a Marble Front Sight with an oversize base can be used on Types II and III rifles. On Types IV, the current front and rear sights can be used.

B. The Firing Pin and spring are interchangeable between Types II through VI.

C. For additional information on parts interchangeability, refer to Section III.

SECTION II

FUNCTIONAL OPERATION

Assume the rifle is loaded and ready to fire. When the Trigger is pulled, it rotates about the Trigger Pin and lifts the rear end of the Disconnector. The Disconnector makes contact with and lifts the tail end of the Sear. The Sear rotates about its pin disengaging from the Firing Pin. Driven by the compressed Firing Pin Spring, the Firing Pin strikes and ignites the cartridge in the chamber.

As the Breechblock recoils to the rear, the Extractor starts to withdraw the empty cartridge and the forward end of the Disconnector is depressed by coming in contact with the lower rear end of the Breechblock. When the forward end of the Disconnector is fully depressed, it has rotated about its pin and disaligned its rear end from the tail end of the Sear. The Disconnector cannot regain under the Sear until the Action is cocked with the Breechblock fully forward and the Trigger released. This constitutes the disconnecting feature of the fire control system keeping the rifle from firing fully automatic if the Trigger is held to the rear.

As the Breechblock travels further to the rear, before the empty shell is fully extracted, the rear end of the Cartridge Stop is cammed out of a cutout in a rail located on the top right hand side of the Breechblock. In this fashion the Cartridge Stop is rotated about its pivot to create an interference from additional rounds being fed from the Magazine. This interference is created at the rim of the second new cartridge to be cycled into the chamber. As the Breechblock travels further to the rear, ejection occurs from the base of the empty cartridge striking against the two raised rails of the Cartridge Guide. Further travel of the Breechblock to the rear completely compresses the Firing Pin Spring, Recoil Spring and cocks the Firing System by bringing the Firing Pin's searing surface in contact with the Sear.

As the Breechblock travels forward under pressure from the Recoil Spring, the forward top edge of the Breechblock catches the rim of the forward most cartridge to be chambered and moves it forward against the Cartridge Guide and down past the Cartridge Guide Spring into the chamber. Approximately ⅛" from the Breechblock being fully forward, the rear end of the Cartridge Stop starts to rotate into the cutout of the rail previously mentioned allowing an additional cartridge to come forward from the Magazine, pushing the one before it into position for chambering. At approximately the same time, the forward end of the Disconnector is allowed to raise, aligning its rear end with the tail of the Sear, provided the Trigger has been fully released.

SECTION III

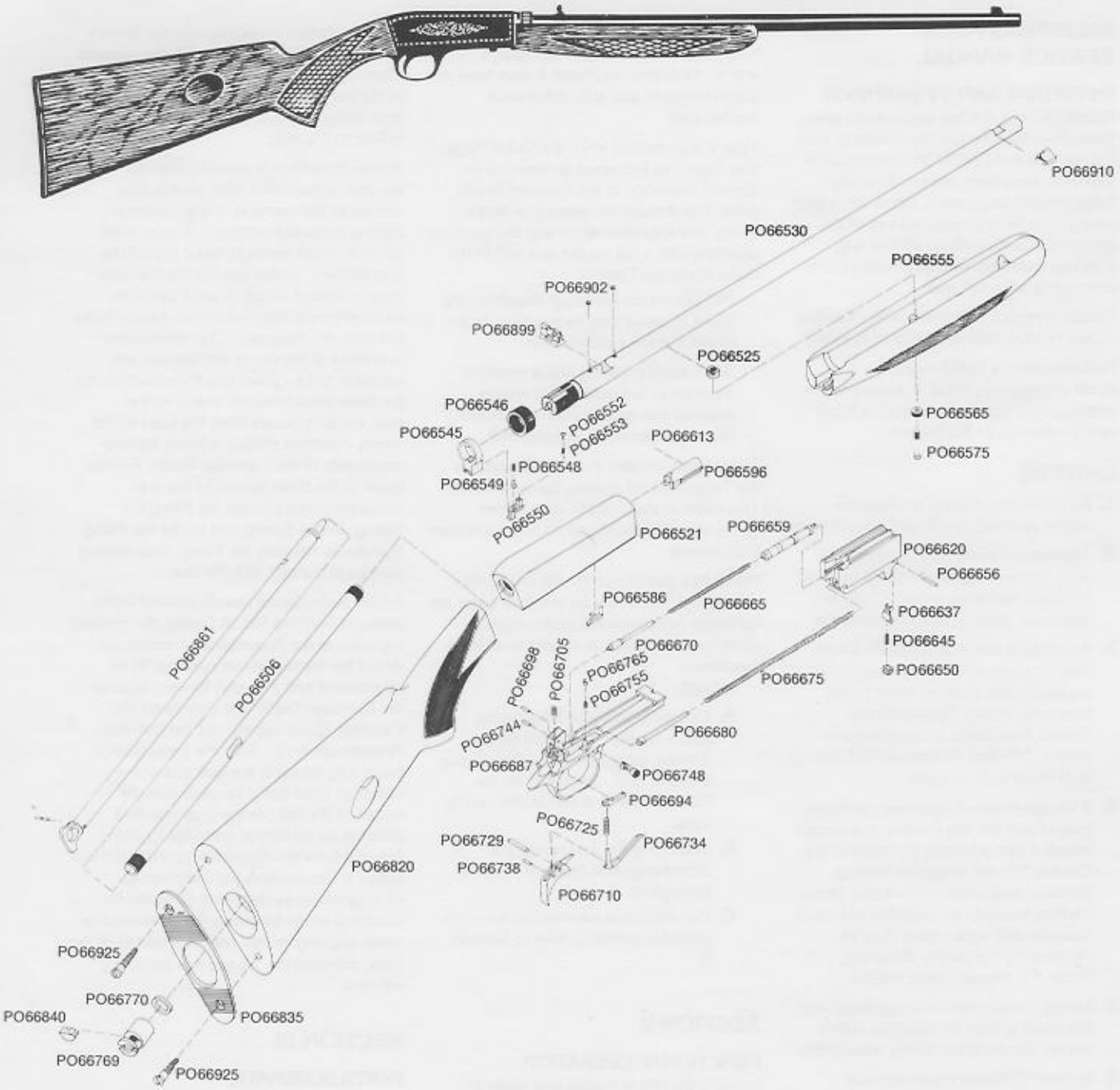
PARTS SCHEMATIC

FOOTNOTE—IMPORTANT THAT YOU READ CAREFULLY BEFORE ORDERING PARTS

MODEL I

On all Model-I rifles the butt stock is affixed to the receiver by a stock screw which runs through the pistol grip of the stock and threads into the back face of receiver. **Due to various slight modifications in this model, when ordering parts the serial number of the rifle must be supplied.** Serial number is located on mating surface of receiver—or magazine stop plate in stock—or on the under side of barrel just forward of end of forearm. **PLEASE NOTE:** The Model-I is no longer manufactured and parts availability is subject to inventories on hand.

(continued on page 4)



IMPORTANT:
READ CAREFULLY BEFORE ORDERING PARTS

MODEL I–On all Model-I rifles the butt stock is affixed to the receiver by a stock screw which runs through the pistol grip of the stock and threads into the back face of receiver. **Due to slight modifications in this model, the serial number of your rifle must be supplied when ordering parts.** Serial number is located on mating surfacing of receiver–or magazine stop plate in stock–or on the under side of the barrel just forward of end of forearm. *PLEASE NOTE: Model-I and Model II are no longer manufactured and parts availability is subject to inventories on hand.*

MODEL II–On all Model-II rifles the butt stock is affixed to the receiver by a slotted stock nut. This stock nut threads onto the outer magazine tube #PO66506. Serial number is located on under side of barrel just forward of end of forearm.

Schematic is provided for parts identification only and should not be used as a guide to assemble guns.

22 Caliber Automatic Rifle (Short-Long Rifle) Grade I

PART NO.	PART NAME	Model I (See Footnote)	Model II (See Footnote)
PO66506	Magazine Tube Outer 22L&S		X
**PO66520	Receiver—Grade I-22S		X
**PO66521	Receiver—Grade I-22L		X
PO66525	Forearm Retaining Stud 22L&S	X	X
PO66530	Barrel 22L	X	X
PO66531	Barrel 22S	X	X
PO66545	Barrel Lock Ring 22L&S	X	X
PO66546	Barrel Adjusting Ring 22L&S	X	X
PO66548	Barrel Lock Spring 22L&S	X	X
PO66549	Barrel Lock Spring Plunger 22L&S	X	X
PO66550	Barrel Lock 22L&S	X	X
PO66552	Barrel Adj. Ring Follower 22L&S	X	X
PO66553	Barrel Adj. Ring Follower Spring 22L&S	X	X
PO66555	Forearm—Grade I-22L&S	X	X
PO66565	Forearm Escutcheon 22L&S	X	X
PO66575	Forearm Screw 22L&S	X	X
PO66586	Cartridge Stop 22L&S	X	X
PO66596	Cartridge Guide 22L	X	X
PO66603	Cartridge Guide 22S	X	X
PO66613	Cartridge Guide Spring 22L&S	X	X
PO66620	Breechblock 22L	X	X
PO66624	Breechblock 22S	X	X
PO66637	Extractor 22L&S	X	X
PO66645	Extractor Spring 22L&S	X	X
PO66650	Extractor Spring Retainer 22L&S	X	X
PO66656	Extractor Spring Retainer Pin 22L&S	X	X
PO66659	Firing Pin 22L&S	X	X
PO66665	Firing Pin Spring 22L&S	X	X
PO66670	Firing Pin Spring Guide 22L&S	X	X
PO66675	Recoil Spring 22L&S	X	X
PO66680	Recoil Spring Guide 22L&S	X	X
PO66687	Trigger Guard—Grade I-22L&S	X	X
*PO66694	Sear 22L&S	X	X
PO66698	Sear Pin 22L&S	X	X
PO66705	Sear Spring 22L&S	X	X
*PO66710	Trigger—Right Hand—Grade I-22L&S	X	X
*PO66712	Trigger—Left Hand—Grade I-22L&S	X	X
PO66725	Trigger Spring 22L&S	X	X
PO66729	Trigger Pin 22L&S	X	X
*PO66734	Disconnector 22L&S	X	X
PO66738	Disconnector Pin 22L&S	X	X
PO66744	Sear Spring Pin 22L&S	X	X
①*PO66748	Safety Right & Left Hand 22L&S	X	X
PO66755	Safety Spring 22L&S	X	X
PO66765	Safety Spring Plunger 22L&S	X	X
PO66769	Stock Nut 22L&S		X
PO66770	Stock Nut Washer 22L&S		X
PO66810	Butt Stock—Grade I-22L&S	X	
PO66820	Butt Stock—Grade I-22L&S		X
PO66825	Butt Stock Screw Escutcheon 22L&S	X	
*PO66835	Butt Plate 22L&S		X
PO66925	Butt Plate Screw 22L&S	X	X
PO66838	Magazine Tube Stop Spring	X	
PO66840	Magazine Tube Stop Spring 22L&S		X
PO66861	Magazine Assembly 22L	X	X
PO66862	Magazine Assembly 22S	X	X
PO66875	Magazine Tube Stop Plate 22L&S	X	
PO66885	Magazine Tube Stop Plate Screws 22L&S	X	
PO66899	Rear Sight Assembly—Folding Leaf-22L&S	X	X
PO66900	Sight Slot Blank Special Size 22L&S	X	X
PO66902	Scope Mount Base Filer Screws	X	X
PO66910	Front Sight—Gold Bead-22L&S	X	X

**Indicates parts must be fitted by Browning Service Department or qualified qualified gunsmith.*

***Part may be purchased only by holders of current valid Federal Firearms Licenses.*

① To convert to left hand safety install the #PO66712 Left Hand Trigger and reverse safety.

NOTE: Unless otherwise indicated, part is interchangeable between gauges/calibers.

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① To convert to left hand safety install the #PO66712 Left Hand Trigger and reverse safety.

NOTE: Unless otherwise indicated, part is interchangeable between gauges/calibers.

MODEL II

On all Model-II rifles the butt stock is affixed to the receiver by a slotted stock nut. This stock nut threads onto the outer magazine tube #PO66506. Serial number is located on under side of barrel just forward of end of forearm.

Schematic is provided for parts identification only and should not be used as a guide to assemble guns.

SECTION IV

DISASSEMBLY

1. HAND DISASSEMBLY

A. *Inner Magazine*—Remove the Inner Magazine Tube Assembly by turning it from horizontal (locked) position ¼ turn in either direction and pulling it to the rear until it catches against the Magazine Tube Stop. Give the Inner Magazine Tube Assembly an additional ¼ turn and withdraw it from the Stock.

B. *Barrel/Forearm Assembly*—Hold the rifle in the inverted position and push the Barrel Lock forward. Draw the Breechblock approximately ½" to the rear with the thumb while gripping the Receiver with one hand and the Forearm with the other as shown in Figure #1.

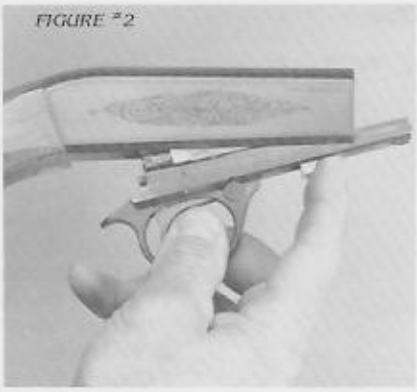
FIGURE #1

NOTE: Do not grip the Receiver by the Stock or breakage to the stock could result.

Give the Barrel ¼ turn clockwise and separate the two pieces.

C. *Trigger Guard & Breechblock Assembly*—Remove the Trigger Guard & Breechblock Assembly by pushing it forward approximately 1¼" and pulling it out of the Receiver at the rear end as shown in Figure #2.

FIGURE #2



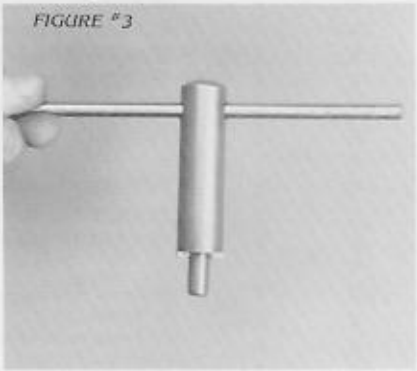
2. DISASSEMBLY WITH TOOLS

A. BUTT STOCK REMOVAL

MODEL I

Remove the Stock Screw (located in the bottom of the pistol grip) with a ¼" blade screwdriver to permit removal of the Butt Stock.

FIGURE #3



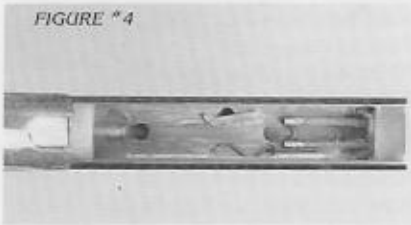
MODEL II

Use a special tool such as shown in Figure #3, and remove the Stock Nut, spring and washer to permit removal of the Butt Stock.

B. RECEIVER ASSEMBLY DISASSEMBLY

(a) *Cartridge Guide Spring*—Place a blade screwdriver at the rear of the Cartridge Guide Spring (Figure #4) and pry it out of its slot in the top of the Receiver.

FIGURE #4



CAUTION: ***When removing the spring, retain it with a finger to prevent it from flying out of the Receiver.***

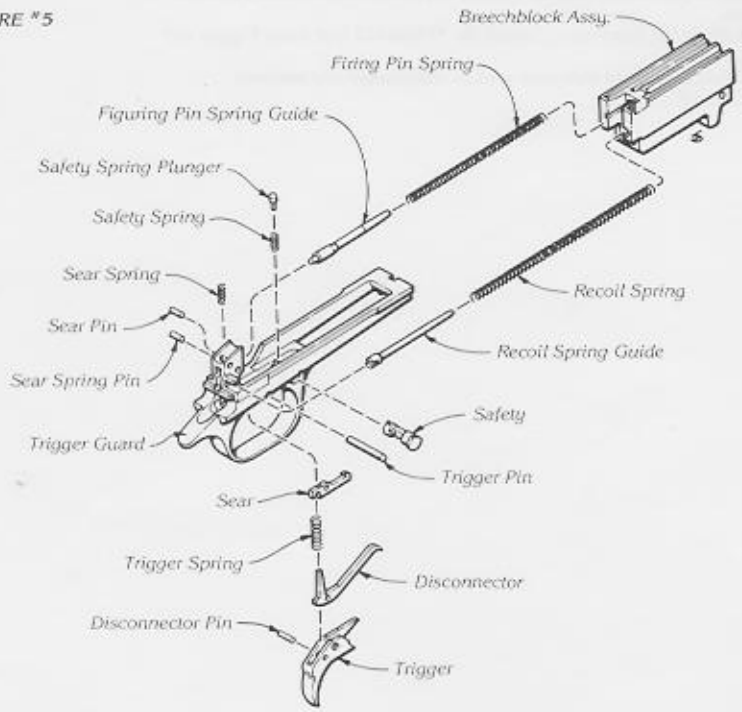
(b) *Cartridge Guide*—Remove the Cartridge Guide (Figure #4) by pushing it forward to disengage its side rails from slots in the Receiver.

(c) *Cartridge Stop*—The Cartridge Stop (Figure #4) may be removed by lifting it out of the Receiver with a pair of needle-nose pliers.

(d) *Outer Magazine Tube*—The only part remaining in the Receiver is the Outer Magazine Tube. Its removal should not be necessary.

C. TRIGGER GUARD & BREECHBLOCK ASSEMBLY DISASSEMBLY (Figure #5)

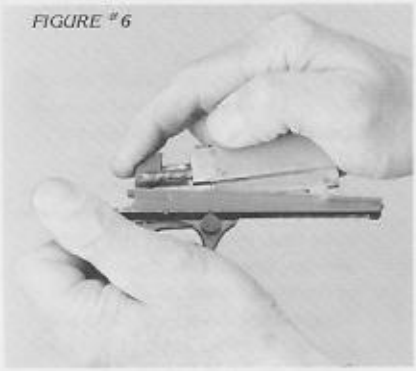
FIGURE #5



(a) *Recoil Spring*—With safety off, pull trigger which allows firing pin to travel forward. Grip assembly in left hand, with right hand over Breechblock as shown in Figure #6 push Breechblock rearward until it can be lifted out of Trigger Guard, and then slowly relieve the spring tension by allowing the Breechblock Assembly to move forward.

CAUTION: *Use extreme care not to let the Recoil Spring and guide fly out and cause injury.*

FIGURE #6



(b) *Firing Pin Spring*—Lower the Firing Pin by placing the Safety to the "OFF" position and pulling the Trigger. Using the index finger and thumb compress the Firing Pin Spring with the Firing Pin Spring Guide and remove after lifting slightly the rear end of the Breechblock.

CAUTION: *Use care not to let the spring and guide fly out of the Breechblock and cause injury.*

(c) *Breechblock Assembly*—The Breechblock may now be lifted off the Trigger Guard.

(d) *Sear Assembly*—With a 1/16" punch remove the Sear Spring Pin located at the top of the rear housing of the Trigger Guard and remove the Sear Spring.

CAUTION: *Use care not to let the spring fly out of the housing.*

NOTE: As disassembly progresses it is suggested that the small springs be identified with a tag to aid in identification during reassembly.

Next remove the Sear Pin and Sear.

(e) *Trigger Assembly*—With a 3/32" punch remove the Trigger Pin.

Push upward on the Trigger and remove it along with the Disconnector and spring attached. (Figure #7)

FIGURE #7

NOTE: It is recommended the Disconnector not be removed from the Trigger unless replacement is necessary.

D. SAFETY REMOVAL

(a) With the Trigger and Disconnector removed, place the Trigger Guard in a padded vise in an upright, horizontal position. With a 1/16" punch depress the Safety Spring Plunger and press the Safety toward the "ON SAFE" position so the Safety Spring and plunger will remain depressed by pressure from the Safety.

With the aid of a blade screwdriver keep downward pressure on the Safety at the left side of the slot inside the Trigger Guard. Keeping the Safety Spring and plunger depressed in this manner with punch, push the Safety out of the Trigger Guard by pushing toward the "ON SAFE" position.

CAUTION: *Do not allow the Safety Spring and plunger to fly out of the Trigger Guard and cause injury.*

Remove the Safety Spring and plunger.

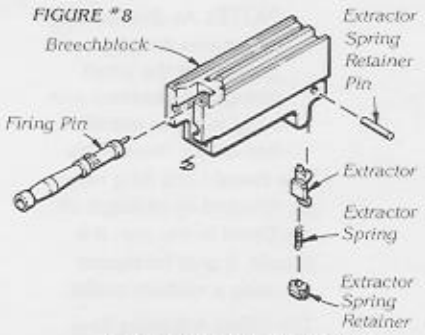
NOTE: As disassembly progresses it is suggested that the small springs be identified with a tag to aid in identification during reassembly.

E. BREECHBLOCK ASSEMBLY DISASSEMBLY (Figure #8)

(a) *Firing Pin*—Withdraw the Firing Pin from the Breechblock.

(b) *Extractor*—With a 3/32" punch remove the Extractor Spring Retainer Pin, Extractor Spring Retainer, spring and extractor.

FIGURE #8



NOTE: As disassembly progresses it is suggested that the small springs be identified with a tag to aid in identification during reassembly.

F. BARREL ASSEMBLY DISASSEMBLY

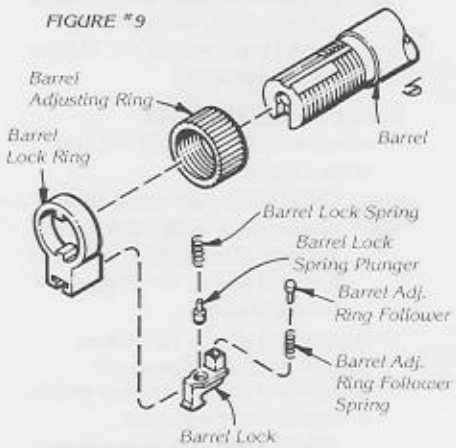
(a) *Forearm*—Remove the Forearm Screw with a blade screwdriver and lift the Forearm off the Barrel.

(b) *Sights & Forearm Retaining Stud*—If necessary, the sights may be driven out of their dovetail slots from left to right as well as the Forearm Retaining Stud.

NOTE: Referenced left to right orientation is with the Barrel horizontal and with the sights or stud on top.

G. BARREL LOCK ASSEMBLY DISASSEMBLY (Figure #9)

FIGURE #9



(a) **STYLES I-IV**

Remove the Barrel Lock, Barrel Lock Spring and plunger by pushing the Barrel Lock toward the muzzle.

CAUTION: *Do not let the spring and plunger fly out of the Barrel Lock while removing.*

NOTE: As disassembly progresses it is suggested that the small springs be identified with a tag to aid in identification during reassembly.

The Barrel Lock Ring may be removed by sliding it off the Barrel to the rear. If it is tight, it may be tapped off using a rawhide mallet.

The Barrel Adjusting Ring may be removed by unscrewing it from the Barrel.

(b) STYLES V-VI

The disassembly procedure is the same as for Style I through IV. However, these two styles contain two followers and springs that are not captivated after disassembly of the Barrel locking mechanism and are easily lost.

CAUTION: *Use care not to let the springs and plungers fly out during disassembly.*

SECTION V

REASSEMBLY

1. SAFETY

Place the Trigger Guard in a padded vise and insert the Safety Spring and plunger into position with a pair of needlenose pliers.

A. RIGHT HAND SAFETY

Insert the Safety from the right side of the Trigger Guard.

CAUTION: *This must be in conjunction with a right hand Trigger. (Extended arm on the forward end of the Trigger on the left side.)*

B. LEFT HAND SAFETY

Insert the Safety from the left side of the Trigger Guard.

CAUTION: *This must be in conjunction with a left hand Trigger. (Extended arm on the forward end of the Trigger on the right side.)*

With the aid of a 1/16" punch, depress the Safety Spring and plunger and insert the Safety so that it extends over the plunger.

CAUTION: *Use care not to let the spring and plunger fly out of the Trigger Guard.*

Keeping the insertion orientation of the Safety, depress the plunger by applying downward pressure on the Safety with a blade screwdriver. With the plunger depressed with the Safety, insert the Safety fully into the "OFF" position.

2. TRIGGER ASSEMBLY (Reference Figure # 5)

Insert the Trigger Assembly down from the top of the Trigger Guard. Place the Trigger Spring over the rear end of the Disconnector. Compress the Trigger Spring slightly, position it under the housing at the rear of the Trigger Guard and allow the rear end of the Disconnector to position itself forward of the back surface of the rear housing.

Align the Trigger Pin holes making sure the forward end of the Trigger is not positioned above the forward end of the Trigger slot.

Install the Trigger Pin and see that the Trigger is free to rotate when pulled.

Install the Sear and Sear Pin.

CAUTION: *Stake the Sear Pin sufficiently on both sides of the Trigger Guard housing to prevent it from becoming loose.*

Install the Sear Spring and Sear Spring Pin.

CAUTION: *Stake the Sear Spring Pin sufficiently on both sides of the Trigger Guard housing to prevent it from becoming loose.*

3. BREECHBLOCK ASSEMBLY (Reference Figure # 8)

Place the Extractor, spring and retainer in the Breechblock in that order. Align the holes of the Breechblock and retainer with a 3/32" punch and install the Retaining Pin positioning it flush.

Install the Firing Pin in the Breechblock aligning the guide on the left side of the Firing Pin with the slot in the Breechblock.

Position the Breechblock on the Trigger Guard rails. Install the Firing Pin Spring and guide positioning the rear end of the guide in the hole of the rear housing just above the Sear.

CAUTION: *Use care not to let the spring and guide fly out of the Breechblock.*

Insert the Recoil Spring and its guide in the hole on the right rear of the Breechblock. Compress the Recoil Spring on its guide while at the same time feeding both parts into the hole of the Breechblock.

Position the rear end of the guide on its holding lug at the rear end of the Trigger Guard with the aid of a small punch.

CAUTION: *Use extreme care not to let the spring and guide fly out of the Breechblock.*

4. TRIGGER AND SAFETY INSTALLATION INSPECTION PROCEDURE

A. Keeping downward pressure on the Breechblock, force it to the rear of the Trigger Guard to cock the Firing Pin and slowly let the Breechblock return to the forward position. Place the Safety to the "OFF" position and slowly pull the Trigger to only partially disengage the Sear and Firing Pin. Release the Trigger and observe the Sear and Firing Pin searing surfaces regain to full engagement. If they do not, replace the Sear and/or Firing Pin and Sear Spring.

B. Cock the Firing Pin and with the Safety in the "OFF" position measure the Trigger pull. Browning specifies a Trigger pull of 4 to 5½ lbs.

C. With the Firing Pin cocked, work the Safety back and forth and observe that it detents positively into the "ON" and "OFF" positions. Measure the actuating force to be between 3 and 4 lbs. If it is measured to be less, replace parts as necessary to correct. A suggested method of measurement is to place the Trigger Guard Assembly in a vise and use a spring scale with a hook end as shown in Figure # 10.

FIGURE # 10

D. Cock the mechanism and place the Safety to the "OFF" position. Slightly pull the Trigger and observe approximately 0.012" to 0.014" clearance between the rear end of the Disconnector and the Sear. If this clearance does not exist, adjustment may be made by removing a small amount of material at the rear end of the Disconnector.

E. With the Firing Pin cocked, place the Safety to the "ON SAFE" position. Pull the Trigger and observe approximately 0.008" to 0.010" travel of rear end of Disconnector toward the contacting surface of the Sear. If this travel/clearance does not exist, remove the Trigger and remove a small amount of material from the Trigger surface that contacts the Safety.

CAUTION: *The clearance between the Safety and Trigger must be less than the clearance between the rear*

end of the Disconnector and the Sear.

CAUTION: *The .22 Auto, like any semi-automatic rifle, by its very nature will accumulate debris rather rapidly if not cleaned frequently. If there is very little or no clearance between the contacting surface of the Trigger and Safety, accumulated debris between the forward end of the Trigger and Trigger Guard may cause interference between the Safety and Trigger. This may make it difficult to place the Safety to the "ON SAFE" position.*

5. RECEIVER ASSEMBLY

(Reference Figure # 4)

Place the Cartridge Guide into position from the forward end of the Receiver with the open end of the Cartridge Guide to the rear.

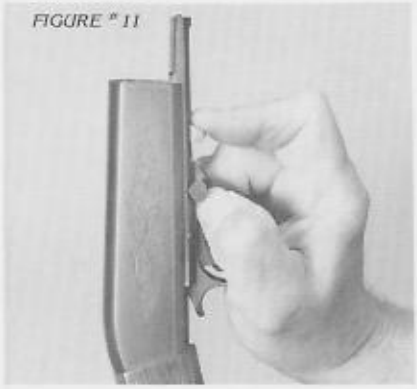
NOTE: Make sure the Cartridge Guide is seated fully to the rear.

Engage the front end of the Cartridge Guide Spring in the Cartridge Guide. Engage the rear end of Cartridge Guide Spring in the recess in the top of the Receiver with the aid of a blade screwdriver.

CAUTION: *Use care not to let the spring fly out of the Receiver.*

Install the Cartridge Stop with the aid of needlenose pliers. With the Receiver Assembly in one hand and the Trigger Guard Assembly in the other, draw back the Breechblock with the index finger and insert the Trigger Guard Assembly in the Receiver as shown in Figure # 11.

FIGURE # 11



Draw the Trigger Guard Assembly back into position and release the Breechblock.

Position the Butt Stock on the Receiver and install its attaching devices.

NOTE: Make sure the stock attaching devises (screw or nut) are tightened down firmly to prevent the stock from turning and breaking at the Trigger Guard.

6. BARREL ASSEMBLY

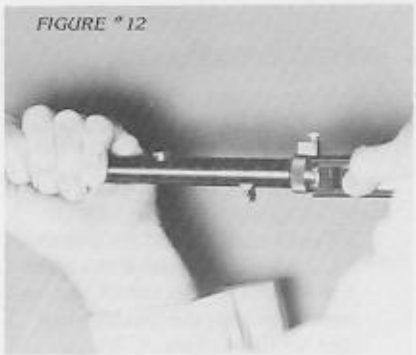
Grip barrel horizontally in a padded vise positioning the sight dovetail on top of the Barrel. Install both front and rear sights from right to left. Rotate Barrel 180° so that Forearm Retaining Stud dovetail is on top of Barrel and install Forearm Retaining Stud from right to left.

Placing the beveled end of the ring forward, screw the Barrel Adjusting Ring on the Breech end of the Barrel as far as it will go.

With the protrusions of the Barrel Lock Ring pointing toward the muzzle, install the ring on the Barrel. If necessary, use a rawhide mallet and drive it flush against the Barrel Adjusting Ring.

Hold the Receiver inverted in one hand and the Barrel in the other. Withdraw the Breechblock with the thumb and insert the Barrel fully into the Receiver with the orientation shown in Figure # 12.

FIGURE # 12



Align the threads of the Receiver and the Barrel to mesh. While holding the Breechblock to the rear, turn the Barrel 90° clockwise to the Receiver toward final position.

CAUTION: ***The Barrel must be positioned to the Receiver so when they are in final position, less than one Barrel thread width exists between the Barrel breech and the end of the Cartridge Guide. The Barrel cannot be positioned too far into the Receiver but it can be positioned too far outward resulting in a gap between the Forearm and Receiver after final assembly.***

After the Barrel is aligned with the Receiver, release the Breechblock and let the Extractor fall into the Barrel Extractor slots.

Turn the Receiver counterclockwise to the Barrel until it is stopped by the Extractor interfering with the side of the Barrel Extractor slots.

With the Barrel in this position (off center) finger tighten the Barrel Adjusting Ring firmly against the Barrel Lock Ring.

Next, turn the Receiver clockwise to the Barrel to tighten and align the slots in the Receiver and Barrel Lock Ring. This can best be accomplished if the Barrel is held securely in a padded vise.

7. BARREL LOCK ADJUSTMENT AND FINAL ASSEMBLY.

If at this point the Barrel is loose, adjust the Barrel Lock Ring counterclockwise, if too tight, clockwise.

NOTE: Adjustment at this point should be only one or two notches in the Barrel Lock Ring one way or the other. Adjusted properly, there should be no noticeable play between the Barrel and Receiver.

After the Barrel and Receiver are tight together in proper alignment, assemble the Barrel Lock, springs and plunger. Position the rear end of the Forearm to the Barrel Lock, press the Forearm into position and install the Forearm Screw.

Cycle the Action, Trigger and Safety to make sure assembly is proper.

Install the Inner Magazine Tube.

SECTION VI

TROUBLE SHOOTING/POSSIBLE CAUSES

1. POOR ACCURACY

A. Loose Barrel.

B. Damaged crown

2. LOOSE BARREL

A. Improperly adjusted Barrel Adjusting Ring.

B. Missing Barrel Adjusting/Locking parts, springs and/or plungers.

3. BARREL LOCK WILL NOT SLIDE INTO POSITION

A. Burrs in the Barrel Lock Ring.

B. Missing Barrel Adjusting Ring Follwer and binding on the spring.

C. Teeth of the Barrel Adjusting Ring and Barrel Lock not aligning or improper assembly.

4. GAP BETWEEN THE FOREARM & RECEIVER AND/OR RIFLE RUPTURES CASES

A. Barrel assembled too far out of the Receiver.

5. CARTRIDGES DO NOT FEED PROPERLY

A. Protruded end of the Cartridge Guide Spring too short or too long. If it is too short, the nose of the cartridge will drop down on its own

and jam the action. If it is too long, it will catch and hold the cartridge not allowing the Breechblock to go forward.

B. Cartridge Guide loose in the Receiver. Either replace the Cartridge Guide or stake the Receiver lightly on each side of the Cartridge Guide to tighten.

C. Rusted, weak or broken Magazine Tube Spring.

D. Burrs inside the Outer Magazine where it adjoins the Receiver. Use reamer.

E. Burrs in the cartridge hole in the Receiver forward of the Outer Magazine Tube. Use same reamer as for the Outer Magazine Tube.

F. Improper radius on the top of the post on the Trigger Guard and the rim of the cartridges bind there. Remove any burrs and polish the surface.

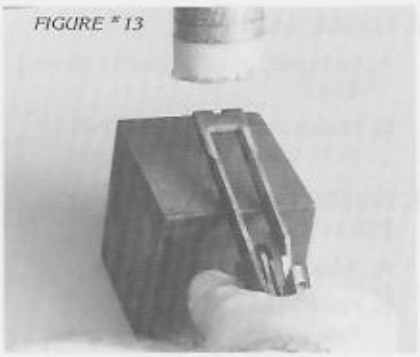
G. Worn, missing or improperly fitted Cartridge Stop.

H. Broken Outer Magazine Tube.

I. Bent or dented Inner Magazine Tube.

J. A loose fitting Breechblock that is not contacting the rim of the cartridge being chambered. To correct this condition the Trigger Guard rails may be sprung so as to make the Breechblock ride higher in the Receiver. This may be accomplished by light tapping on the Receiver rails with a rawhide mallet as shown in Figure #13.

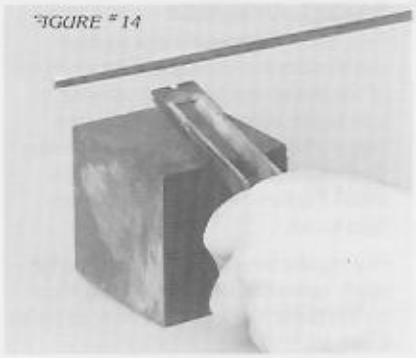
FIGURE #13



Next, check the rails of the Trigger Guard with a straight edge to see that a slight arc has been put into them. If it is difficult to install the Trigger Guard into the Receiver after springing, it may be necessary to slightly relieve the forward edge of the rails as shown in Figure #14.

If after reassembly the Breechblock is binding in the Receiver a small amount of material may be removed from the top of the Breechblock at the points of interference. Or, it may be necessary to slightly relieve the arc placed into the Trigger Guard rails.

FIGURE #14



Do not file the rails straight across the top, but tilt the file and remove material only on the outer edges as shown.

K. Trigger pull too light causing the Sear to disengage the Firing Pin. The protruding Firing Pin will interfere with the cartridge being chambered. Replace the Firing Pin and/or Sear (See Section V, Para. 4, Trigger and Safety Installation Inspection Procedure.)

6. BINDING BREECHBLOCK

A. Pressure at the rear of the Trigger Guard where it fits the stock (rare occasion). Relieve wood under the Trigger Guard Tang.

B. Disconnector protruding too high in front interfering with the Breechblock. Check the bevel at the lower rear end of the Breechblock and/or replace and refit the Disconnector. (See Section V, Para. 4, Trigger Safety Installation Inspection Procedure.)

C. Recoil Spring Guide not aligning with its hole in the Breechblock. Remove a small amount of metal from either the top or bottom of the holding lug on the Trigger Guard Assembly.

D. Breechblock binding on the housing that it straddles at the rear of the Trigger Guard. Generally caused by the Sear Pin working loose. Restake the Sear Pin.

7. MISFIRES

A. Weak Firing Pin Spring.

B. Dirt accumulation at the bottom of the Firing Pin hole in the Breechblock.

C. Improperly adjusted Barrel Adjusting Ring.

D. Firing Pin binding in the Breechblock due to burrs. Polish the Firing Pin.

E. Disconnector not contacting the Sear when the Trigger is pulled.

8. FAULTY EJECTION

A. Fired cartridges being pre-ejected off the protruded end of the Cartridge Guide Spring. This may occur if the protruded end of the spring rides too high in the Cartridge Guide. Replace the Cartridge Guide Spring.

B. Rails or guiding surfaces of the Cartridge Guide are rough or too wide apart. Replace the Cartridge Guide.

9. FAULTY EXTRACTION

A. Collection of foreign matter behind the Extractor.

B. Broken Extractor.

C. Worn or missing Extractor Spring.

SECTION VII

RECOMMENDED POINTS OF LUBRICATION

A light application of Browning Gun Oil is recommended in the following areas during reassembly.

1. Barrel Lock Assembly
2. Safety
3. Lightly on all exposed metal surfaces
4. Breechblock