



Name / Country	M1 Garand; USA
Caliber	7.62x63mm (.30-06)
Action	Semi-automatic; gas operated.
Magazine	8 round enbloc clip-charged internal magazine
Sights	Rear: windage and elevation adjustable aperture Front: wing-protected post
Sight-in	Bottom out the rear aperture, loosen the screw in the center of the elevating knob. Turn the elevating knob forward until the 300-yard index line is opposite the index line on the receiver. Turn the elevating knob forward from this point to the number of clicks equal to the 300-yard zero in elevation, less two clicks. Hold the elevating knob in position with your left hand and tighten the center screw.
Come-ups	Standard sights (non-NM): 1 MOA per click
Notes	

M1 Garand

TIPS: Hold charging handle back with “blade” of hand when pushing enbloc clip into magazine. If bolt does not fly forward when pressure is release, give it a good smack forward with the heel of your palm. To release rounds in magazine, push release lever on left rear of the receiver.

SAFETY ISSUES: *Garand thumb* – bolt will smash your thumb on charging. See procedure in TIPS to avoid.

1. MAGAZINE OUT - not applicable. Look into ejection port to ensure that enbloc clip and cartridges are not present.

2. BOLT BACK Bolt locks back on empty magazine. Releases by carefully holding charging handle back, depressing magazine follower and releasing bolt.

3. SAFETY ON – large lever pushed into trigger guard.



- 4. FLAG IN
- 5. RIFLE GROUNDED
- 6. NOBODY TOUCHING THE RIFLE

M1 Garand Tips 'n Tricks

- **Ammo compatibility** – M1 designed for 150 gr M2 ammo. Other loading can be higher pressure and damage operating rod. Use M2 equivalent and/or adjustable gas cylinder plug (Schuster's)
- **Reloading** – Bolt will likely close when pushing en bloc clip in, causing “Garand thumb”. Use bladed edge of hand to hold open bolt while pushing in clip. Bump charging handle to close bolt. Magazine cannot be “topped up”. Release unused rounds and clip by pressing clip release on left side of receiver.
- **Shooting the COF** – 2 round en bloc clips are available.
- **Position** – M1s are famous for giving “Garand Lip”. Mitigate by placing thumb straight on side of receiver, extreme turkey neck and solid cheek weld so head moves with recoil.
- **Safety** – Safety lever is convenient but finger must be in trigger guard to deactivate.



Name / Country	M14/ M1A, United States
Caliber	.308 Winchester / 7.60x51
Action	Gas Operated Semi Automatic
Magazine	Various, up to 30 rounds
Sights	Rear: Aperture Front: Post. Other sighting systems are available
Sight-in	Windage: Click Adjustable on Rear Sight, 1 MOA per click standard Elevation: Click Adjustable on Rear Sight, 1 MOA per click standard, ½ MOA on match sights
Come-ups	Start with the Standard .308, 3 – 3 – 4 - 4
Notes	The M14 / M1A is a box magazine adaptation of the M1 Garand rifle

TIPS: Bolt hold-open engages only if magazine is inserted and empty. Once the bolt hold-open is engaged, the magazine may be removed and the bolt will remain locked back, but see SAFETY ISSUES.

Bolt hold open can be activated manually.

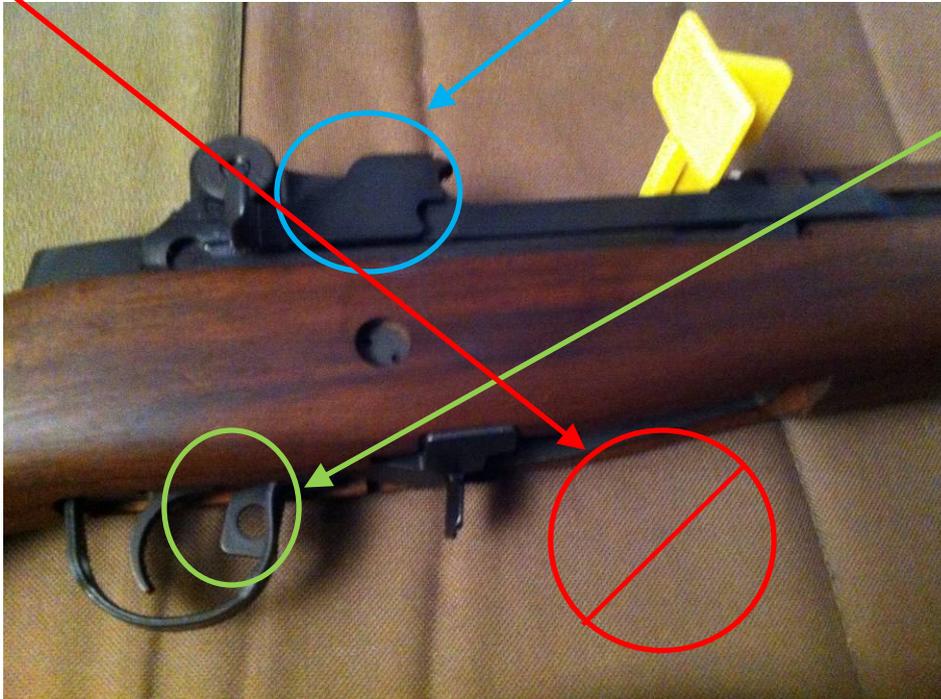
SAFETY ISSUES: When bolt is held back by bolt hold-open and the magazine has been removed, the bolt is susceptible to release and slam forward into battery if jostled during handling.

1. MAGAZINE OUT - Magazine
Removed from the rifle

2. BOLT BACK – Opened by moving the charging handle to the rear of the rifle and engaging the bolt hold open.

3. SAFETY ON – tab visible inside trigger guard [*Moved toward back of rifle from forward (fire) position.*]

4. FLAG IN.
5. RIFLE GROUNDED.
6. NOBODY TOUCHING THE RIFLE.



M1A Tips 'n Tricks

- **Accuracy** – M1A can be very accurate. Modifications include unitized gas systems, polished spring guide rods and glass bedding the action. Resist constant field stripping as this tends to loosen the fit of the receiver in the stock.
- **Bolt hold open** – Bolt will hold open on an empty magazine. BHO can be manually locked back by retracting the bolt and pressing in on the BHO lever on the left side of the receiver.
- **Gas system** – Gas system has a cut off valve head near the front sight on the right hand side. Valve stem has a channel that is vertical for “on” and horizontal for “off”.
- **Chinese M1S** – Norinco M1S is a Chinese knock-off of the M1A. The receivers are prized by some as they are forged (compared to a cast Springfield receiver) however the bolts are known to be soft metal. Recommend replacing the bolt with a USGI.



Name / Country	AR-15 Pattern , United States of America
Caliber	Usually .223 Remington / 5.56x45, with other calibers also
Action	Direct Impingement Semi-Automatic, Versions with proper tax stamp may be burst of fully automatic
Magazine	Magazines from 5 to 120 may be found, Single shot blocks are also available
Sights	Military Style: Rear: Aperture Front: Adjustable Post. Other sighting systems are available
Sight-in	Military Style: Windage: Click Adjustable, with Tool or Knob Elevation: Front Post and/or Rear click adjustable Military Style are normally 1MOA per Click adjustments
Come-ups	Standard 2-2-3-3 may be used as a baseline
Notes	AR-15 variants are plentiful and may be as unique in sighting system, ammunition used, and come-ups as snowflakes are.

TIPS: The bolt release can be activated by moving the rifle while it is grounded as it is on the underneath side.

SAFETY ISSUES: The standard safety indicator on the right side of AR pattern rifles is difficult to see. Ask the owner if it is possible to mark across the safe position with a “Sharpie” making a full line when in the safe position, or a broken line when in the fire position.

1. MAGAZINE OUT - Magazine Removed from the rifle if so equipped

2. BOLT BACK – Opened by moving the charging handle to the rear of the rifle and engaging the bolt hold open.

3. SAFETY ON – The Safety indicator can be difficult to see on the right side of the rifle

4. FLAG IN.
5. RIFLE GROUNDED.
6. NOBODY TOUCHING THE RIFLE.



RSO GUIDE – SAFE CONDITION

AR-15 Pattern

AR15 Tips 'n Tricks

- **Barrel** – Stock barrels/handguards are not free floated. Excessive pressure on stock sling swivel or handguard-mounted swivel from a sling will shift point of impact.
- **Trigger** – Stock trigger is heavy and gritty. It is possible to smooth the pull by polishing bearing surfaces but be careful to not break through the case hardening. There are multiple aftermarket drop in triggers for a smooth, crisp pull from \$45-\$300+
- **Ammo** – .223 and 5.56 are not interchangeable. If you have a .223 chamber, do not use 5.56 ammo, however, a 5.56 chamber will handle .223. There are slight dimensional and pressure differences.
- **Reliability** – AR15s like to run “wet” or well-lubed. If extraction problems, disassemble and clean the extractor. You may need to add an extra power spring and insert.
- **Common malfunctions** – Most are caused by magazine feed lip issues. If failure to set the bolt, cycle the bolt and discard round, rather than using the bolt forward assist. For misfeeds, reseal the magazine and cycle the bolt. For double feeds, rip out the mag and clear the feed way. For rounds stuck in the chamber, put rifle on safe, pull on the charging handle while simultaneously “pogo sticking” buttplate on the ground (watch the muzzle)



Name / Country	AKM / AK-47 / AK-74 / Various former Eastern Bloc countries
Caliber	7.62 x 39 mm
Action	Semi-automatic; gas operated. (Long-stroke piston)
Magazine	30-round detachable box is typical. Magazines are steel, polymer or bakelite.
Sights	Rear: tangent Front: hooded post, adjustable.
Sight-in	Set rear sight on "2", drift adjust front sight for windage, (Approximately .006" per MOA), & Adjust elevation @ approximately 8 minutes per turn of the front sight. (Sight moves opposite of the way you want the groups to go)
Come-ups	Front Elevation: 8 MOA per turn; Front Windage: 10 MOA per turn; Rear Elevation: Approx 3 MOA per detent out to 300m
Notes	Long magazines make prone position difficult. Multiple variations. Non-free floated barrel makes sling tension warp barrel. AK74 style muzzle brake is loud.

AKM / AK-47 / AK-74 (multiple other designations)

TIPS: Rifle does not have a bolt hold open (BHO). Some safety levers are modified with a cutout to engage charging handle and hold bolt back.

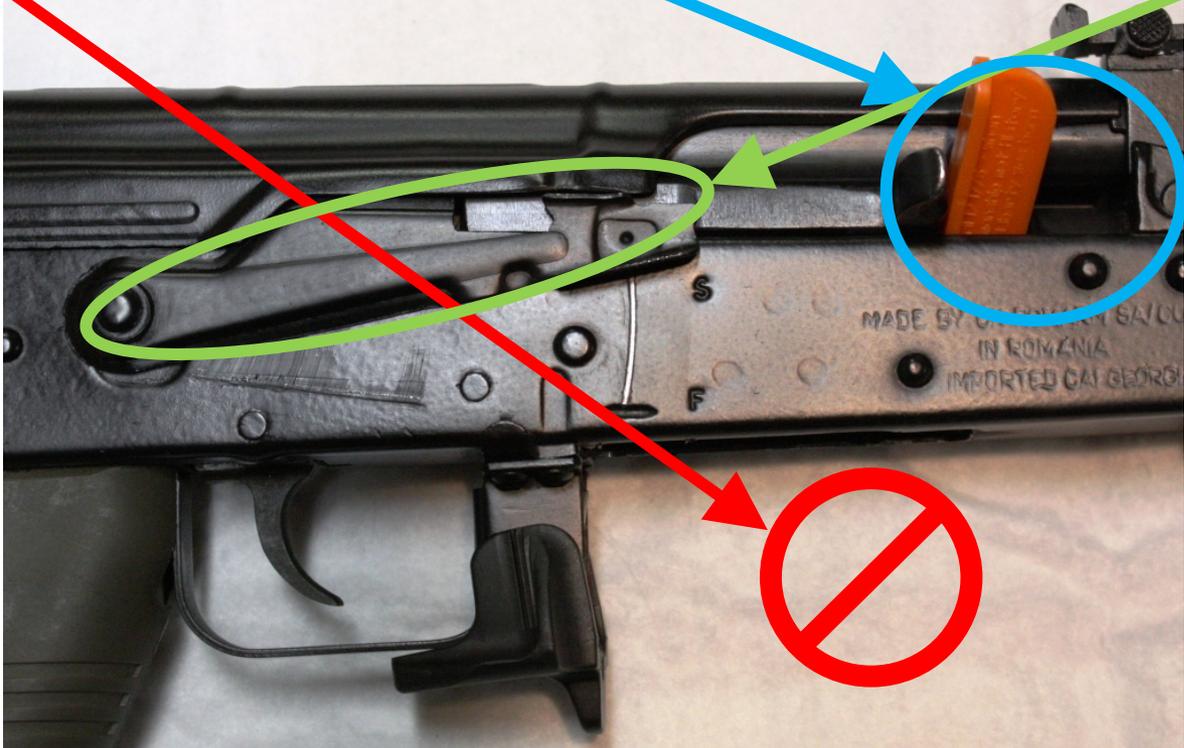
SAFETY ISSUES: None noted.

1. MAGAZINE OUT - removed, not present. [Push forward magazine release lever, located in front of trigger guard]

2. BOLT BACK (eased forward on chamber flag) [See Tips]

3. SAFETY ON – large lever on right side of receiver flipped up to block travel of charging handle.

- 4. FLAG IN
- 5. RIFLE GROUNDED
- 6. NOBODY TOUCHING THE RIFLE



RSO GUIDE – SAFE CONDITION

AKM / AK-47 / AK-74 (multiple other designations)

AKM/AK47 Tips 'n Tricks

- **Trigger** – Most less expensive AK clones have “trigger slap”, where the trigger moves as the bolt cycles. It can be painful to the trigger finger. Replace with a TAPCO G2 trigger or consult the internet on how to grind off the offending bump.
- **Sights** – Stock sights are difficult to see. Tech Sights and others make replacement aperture sights. Less expensive clones can also have canted sights, making sight changes difficult.
- **Magwell** – Converted clones can have poorly dimensioned magwells, allowing excessive mag movement and misfeeds.
- **Mounts** – Do not trust most dust cover optics mounts. The dust cover does not reseal in exactly the same spot each time, making return to zero impossible. Stick with mounts off the side rail or those that index from the rear sight.
- **Barrel** – Barrels are not free floated. Excessive pressure on handguard from a sling will shift point of impact.

AKM / AK-47 / AK-74 (multiple other designations)



Standard model



Appleseed LTR model

Name / Country	Marlin 795/ United States
Caliber	.22 LR
Action	Semi-automatic; blowback.
Magazine	10-round detachable box.
Sights	Iron <i>Appleseed LTR model:</i> Tech sights, aperture rear, post front.
Sight-in	Windage and elevation: adjust rear sight. <i>Appleseed LTR model:</i> Tech sights, adjust both windage and elevation on rear sight.
Come-ups	N/A.
Notes	<p>Last shot bolt hold-open engages automatically after firing last shot. Press down on the bolt release lever on the right side of the receiver to close the bolt (there is no “slingshot” feature). Pressing down on the bolt release lever will close the bolt regardless of the presence of a magazine, and regardless of whether a magazine is prepped or empty. Lifting up on the bolt release lever will manually lock the bolt back. Also see “Tips” regarding a second hold-open.</p> <p>There is a great difference of opinion among experienced Appleseeders on dry-firing this rifle. Some report problems with peened breech faces and broken firing pins, others indicate they have had not seen breech face peening although dry firing many times and value the dry fire practice enough that they are willing to replace a broken firing pin. Become informed and make your own educated decision.</p>

MARLIN 795

TIPS: There is a second bold hold open—the bolt handle. If the bolt is retracted and the handle is pushed in (toward the left side of the rifle), it will lock the bolt back and it will not be released by the bolt release lever. A shooter might inadvertently activate this feature.

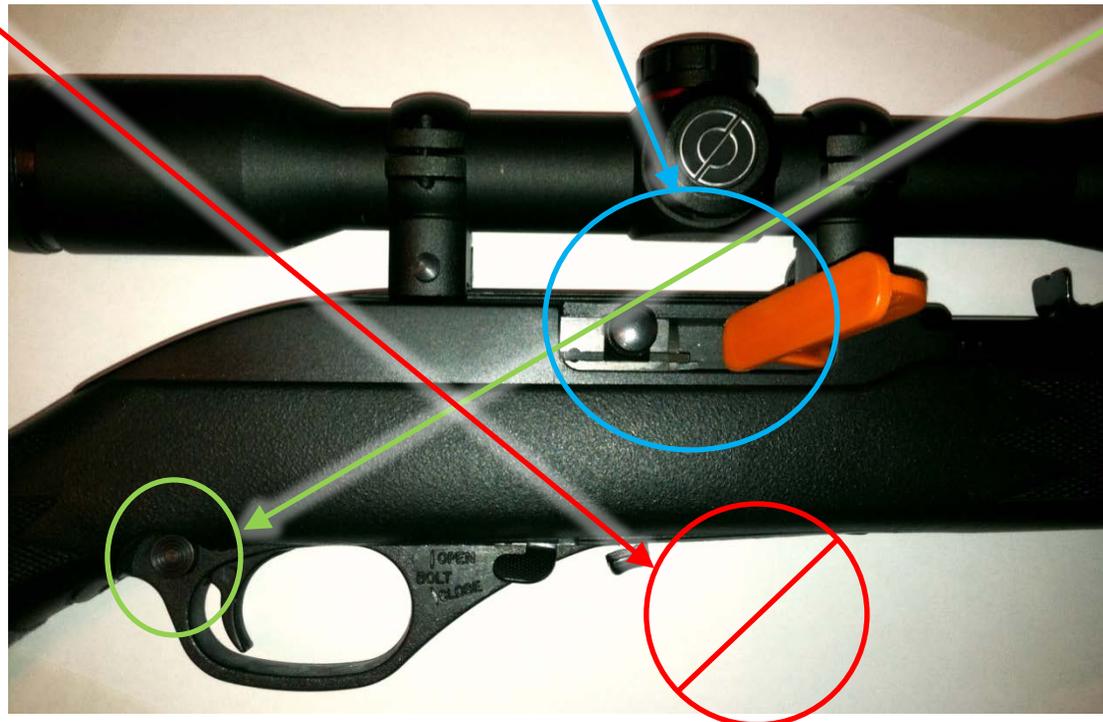
There is a magazine safety; the rifle will not fire (or dry fire) unless a magazine is in place.

SAFETY ISSUES: None.

1. MAGAZINE OUT - removed, not present.
[Press up and back on catch located forward of trigger guard and remove magazine.]

2. BOLT BACK (locked back by bolt hold open)
[See Tips]

3. SAFETY ON – button safety at rear of trigger guard projecting. *[Press from left side of rifle toward right side of rifle to engage]*



4. FLAG IN.
5. RIFLE GROUNDED.
6. NOBODY TOUCHING THE RIFLE.

RSO GUIDE – SAFE CONDITION

MARLIN 795

Marlin 795 Tips 'n Tricks

Mags are not “drop free”—this can be improved several ways described in threads on the forum, including polishing the magazine and mag well; making the magazines more uniform; and disabling the magazine safety.

AQT tip—for the fastest magazine change, remove and insert the magazine straight in line with its long axis, just the way it looks, at a little angle from the vertical. If you tip it forward or back it tends to bind.

Check the scope!—the scope rail is marginal; scopes tend to work loose. If a shooter suddenly worsens, check to see if the scope mounts have slipped or loosened from the rail.

Keep it clean!—somewhat prone to failures to extract when a round is chambered but not discharged (such as when cease fire is called before a shooter finishes a string of fire). Let the bolt slam forward (don't ride it) and pull it back; repeat. Keeping the extractor and breech clean may help reduce the problem.



Standard model



Heavy barrel model

Name / Country	Remington 597 / United States
Caliber	.22 LR, .22 WMR, .17 HMR-- <i>see Safety Issues for .17 HMR</i>
Action	Semi-automatic; blowback.
Magazine	10-round detachable box. (8-round in .17 HMR and .22 WMR)
Sights	Rear: notch, adjustable. Front: post, fixed
Sight-in	Windage: adjustable on rear sight Elevation: adjustable on rear sight. There are different styles of rear sights but all are adjustable in windage and elevation.
Come-ups	N/A.
Notes	<p>Last shot bolt hold-open engages automatically after firing last shot. There <u>is</u> a “slingshot” feature to release the hold-open; pull the bolt to the rear and release it (it works if the magazine is prepped or if the magazine is removed; if an empty magazine is in the rifle it will continue to engage the hold open).</p> <p>New magazines are sometimes difficult to insert 10 rounds. Insert as many rounds as you can and let it sit overnight or longer, and you should be able to finish the job. The magazine will load more easily with use.</p>

REMINGTON 597

TIPS: The bolt hold open can be manually engaged by 1) holding back the bolt, 2) carefully inserting the index finger into the magazine well and pressing up on the internal lever on the left side and 3) easing the bolt forward until it engages.

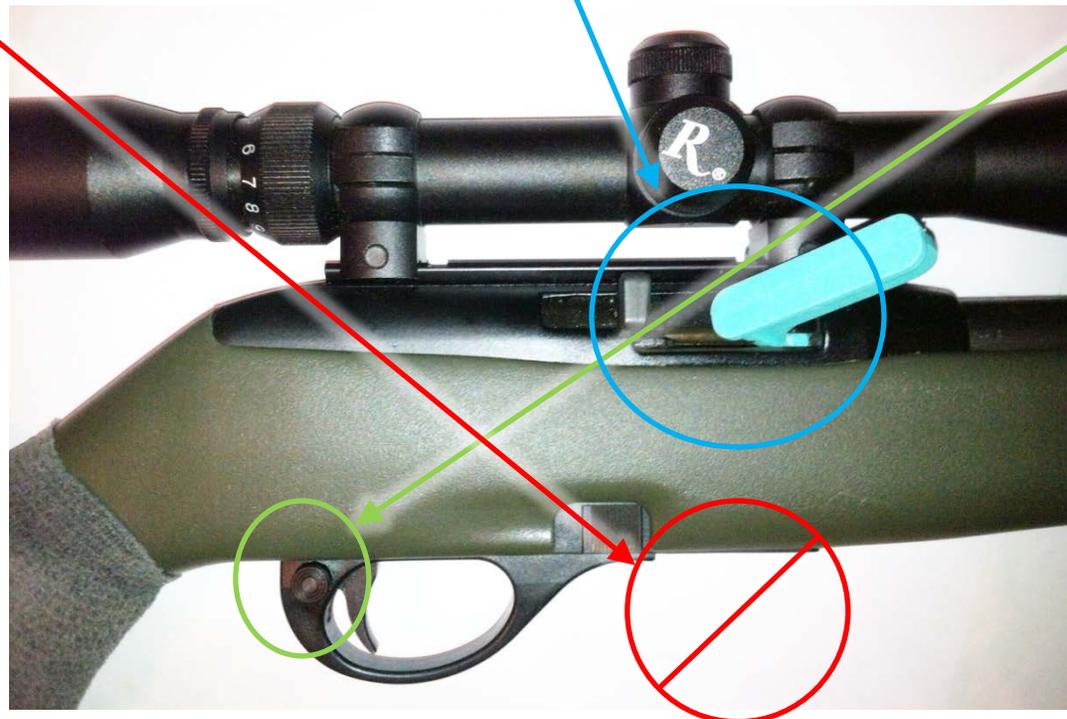
An empty mag will prevent the LSHO from releasing, which is a problem in "ball and dummy".

SAFETY ISSUES: The .17 HMR version is subject to a manufacturer's recall, indicating that .17 HMR ammunition is not safe for use in autoloading rifles. Privately make certain a student with a .17 HMR is aware of the recall; offer a loaner if possible. If the student wishes to shoot the .17, have them sign a special waiver and place them at the right end of the line so in the event of an out-of-battery discharge the ejection port is not facing another shooter.

1. **MAGAZINE OUT** - removed, not present.
[Slide catch located forward of trigger guard to the rear and remove magazine.]

2. **BOLT BACK** (locked back by bolt hold open)
[See Tips]

3. **SAFETY ON** – button safety at rear of trigger guard projecting. [Press from left side of rifle toward right side of rifle to engage]



4. **FLAG IN.**
5. **RIFLE GROUNDED.**
6. **NOBODY TOUCHING THE RIFLE.**

RSO GUIDE – SAFE CONDITION

REMINGTON 597

Remington 597 Tips 'n Tricks #1

Squeeze the trigger, not the magazine—if having difficulty inserting 10 rounds into the magazine, make certain you are holding the magazine by the sides, not the bottom. There is a little play between the bottom and the rest of the magazine, so pressing up on the bottom can slightly reduce the space available for the 10th round.

Bolt back—sometimes if the bolt is closed, it is hard to seat a magazine prepped with 10 rounds—it requires compressing the magazine spring even more. Usually it can be seated with a sharp tap. Or, lock back the bolt before inserting the magazine, and the problem goes away.

Safety first!—there is a safety brief on the .17 HMR issue on the Appleseed forum under “Instructor Info / Internal Announcements / Safety Brief on 17HMR for all Volunteers”. The .17 HMR model has been recalled and discontinued.

Accuracy tip—the barrel channel is not free floated but it does not take much work to make it so.

Watch the reassembly!—extremely easy field stripping and reassembly, removing two screws at front and rear of the action. The screws are different lengths and are not interchangeable—the rear screw is longer. They will seem to work but the longer rear screw will bottom out in the front threads before clamping the assembly together, leading to poor accuracy.

Remington 597 Tips ‘n Tricks #2

Watch the reassembly, #2!—the bolt rides on two guide rods and does not contact the receiver. When the guide rods are removed and replaced, they should only be finger tight—when the action is replaced in the stock they are up against the stock and cannot back out. Over-tightening the guide rods can lead to bowing the rods and result in malfunctions.

Hey, (ball and) dummy!—removing the LSHO finger from a spare magazine would allow it to function for “ball and dummy” drills, but would disable the automatic LSHO feature when that magazine is used.

Mag design changes—there have been three generations of factory magazines; 1st and 2nd generation magazines were reported to have reliability issues. 3rd generation magazines are identified by a number 10 in a circle and are considered more reliable.

Dry firing—older models with chisel-shaped firing pin mightpeen the breech face during dry firing. Newer models have rounded firing pins and should be OK. The manual advises against “excessive” dry firing.



Name / Country	Ruger 10/22 - US
Caliber	.22 LR
Action	Semi-automatic; blowback
Magazine	Various magazines, 10- and 25-round magazine are factory, various capacity magazines aftermarket
Sights	Ruger bead and slide elevation flip up rear are standard; Tech Sights; various scopes
Sight-in	Stock sights: Front sight non-adjustable, rear sight has a sliding scale for elevation, dovetail drift for windage, no standard "clicks".
Come-ups	Stock rear sight is drift and sliding scale adjustable. Tech Sights are adjustable 1 MOA per detent for front and ~5/8 MOA per click for rear.
Notes	Bull barrel Target models, takedown, "Mannlicher", "tactical" and various wood and synthetic stocked models exist. 16" and 18" barrels.

TIPS: Bolt is difficult to lock back or release with stock bolt hold open lever. Must pull bolt back and push in on the top of the lever to lock and the bottom of the lever to release. Some magazines do not drop free and stock magazine release button is difficult to press. Stock triggers are gritty and heavy.

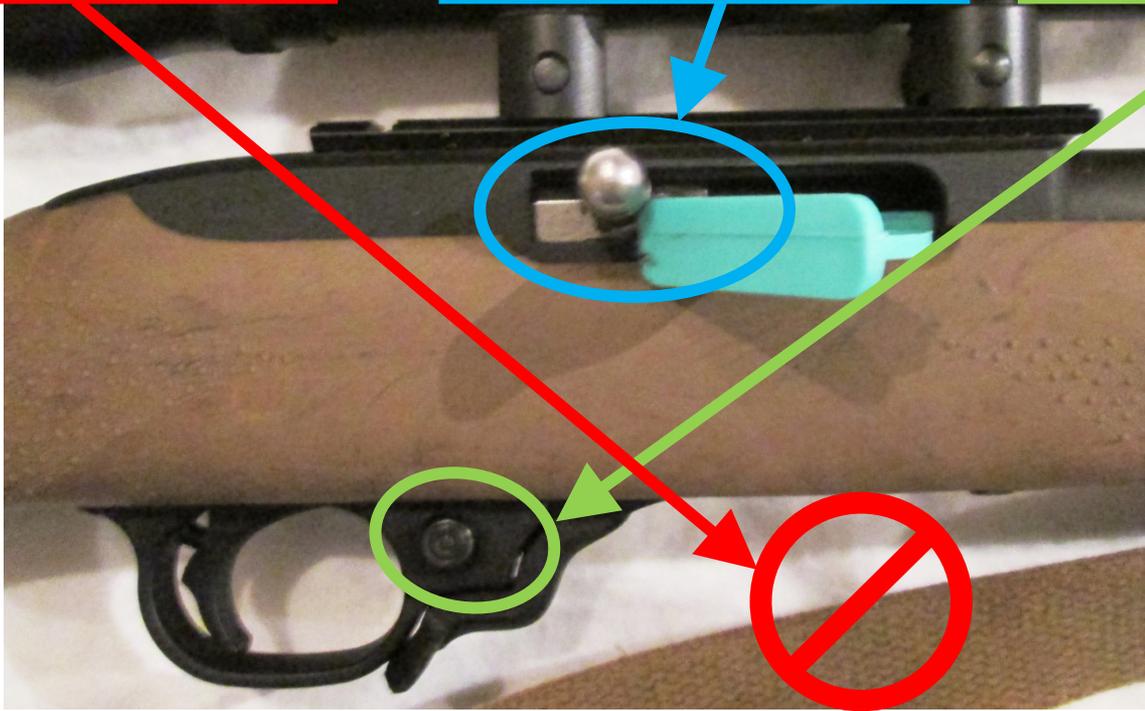
SAFETY ISSUES: Stock magazines are flush mounted and difficult to see if they are ejected from rifle.

1. MAGAZINE OUT - removed, not present. [Push magazine release lever, located in front of and above trigger]

2. BOLT BACK - Locked to rear using bolt hold open lever

3. SAFETY ON – safety on is with button protruding up on the ejection port side of the rifle.

- 4. FLAG IN
- 5. RIFLE GROUNDED
- 6. NOBODY TOUCHING THE RIFLE

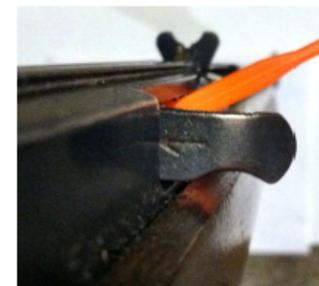


10/22 Tips and Trick

- **BHO** - Bolt is difficult to lock back or release with stock bolt hold open lever. Must pull bolt back and push in on the top of the lever to lock and the bottom of the lever to release. Recommend replacement with “auto-bolt” which can be purchased or made by filing off the “nipple” in the heart shaped hole in the BHO lever.
- **Mag Release** - Some magazines do not drop free and stock magazine release button is difficult to press. Recommend
- **Triggers** - Stock triggers are gritty and heavy. A \$35 addition of a Volquartsen target hammer will smooth it and bring it down to ~3.5 lbs.
- **Accuracy issues** – Most 10/22s are accurate. Check stock retention screw for tightness. Check scope rail screws, scope ring screws for tightness. Use blue loctite.
- **Reliability** – 10/22s are generally reliable and stock magazines are “bulletproof”. If issues, check for dirty magazines. Aftermarket magazines are often poor quality. A little lube on the top and bottom of the bolt goes a long way.



Name / Country	Marlin Model 60 / United States
Caliber	.22 (short, long or long rifle)
Action	Semi-automatic; recoil-operated.
Magazine	Tubular magazine, typically 17 round or 15 round capacity, loads through port near muzzle.
Sights	Rear: open sight, adjustable for elevation. Front: ramp.
Sight-in	Windage: drift front sight on some specimens; not possible on others. Elevation: adjust rear sight.
Come-ups	N/A.
Notes	<p>Pull the bolt back and press the bolt handle to the left to activate the bolt hold open. (This feature is usually but not always present.) See photo at right; note arrow on bolt handle showing direction to press bolt handle to activate the bolt hold open.</p> <p>Early models do not have a last-round hold open; more recent models have this feature.</p> <p>There are many similar models, made under a number of trade names, most prominently "Glenfield".</p>



Tube-Fed

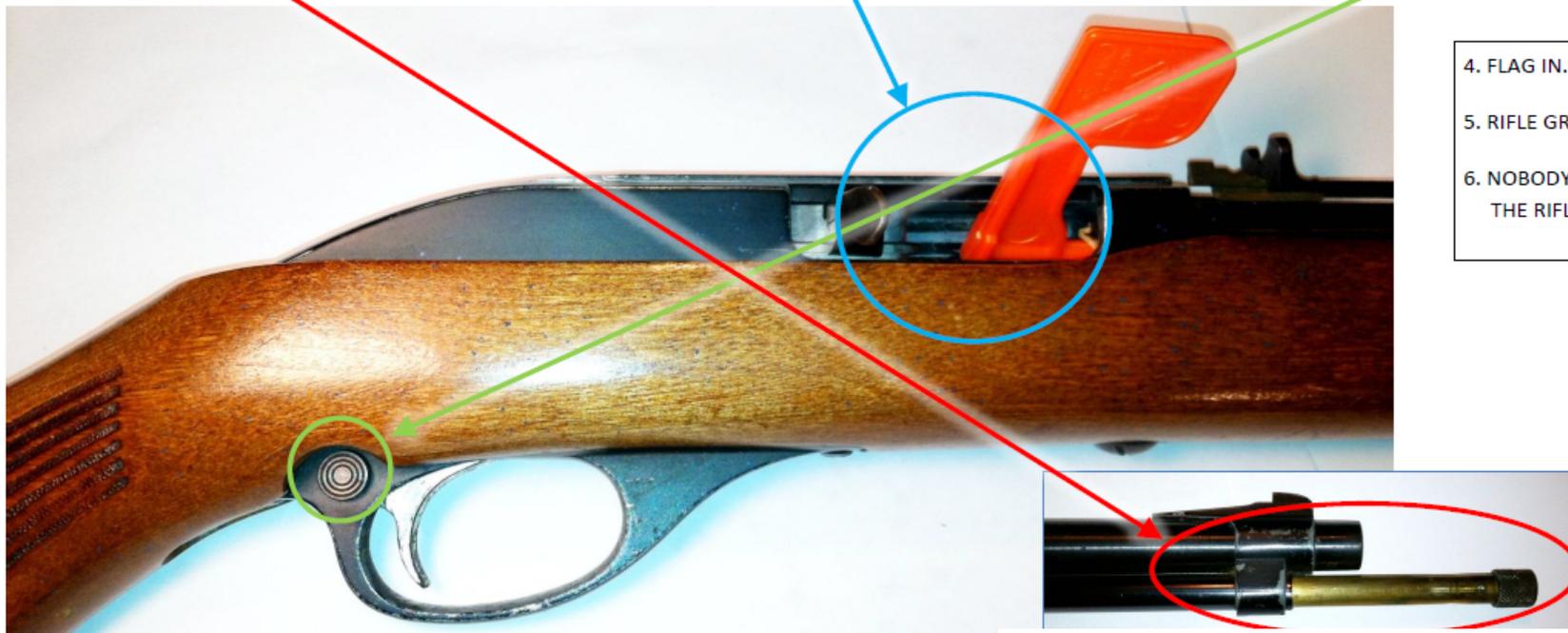
TIPS: Engage bolt hold-open, if present, by drawing the bolt to the rear and pressing in on the bolt handle.

SAFETY ISSUES: To unload the magazine, with the safety on and the muzzle in a safe direction, cycle the bolt until the magazine and chamber are both confirmed empty. (Removing the magazine tube and “dumping” rounds requires placing the shooter’s hand near or in front of the muzzle with a round in the chamber.)

1. MAGAZINE OUT - tube pulled out several inches or removed completely.

2. BOLT BACK (eased forward on chamber flag if bolt hold-open not present) [See Tips]

3. SAFETY ON – cross-bolt pressed to right, button visibly raised [Press from left side of rifle to the right to engage]



- 4. FLAG IN.
- 5. RIFLE GROUNDED.
- 6. NOBODY TOUCHING THE RIFLE.

RSO GUIDE – SAFE CONDITION

Tube-Fed

Tube-Fed Tips ‘n Tricks (COF Procedure)

- **Loading** – Use a “slurpie straw” or other small diameter tube as a speed-loading tool

Shooting a Course of Fire

1. **“...your preparation period has ended!”**
 - Safety on
 - Kneel or sit
 - Insert chamber flag
 - Load the appropriate number of rounds* in the magazine and lock the tube plunger in place
(11 in stages 2&3)
2. **“LOAD!”**
 - Remove chamber flag
 - Insert a round into the chamber
3. **“With Safeties On, STAND!”**
 - Finish prepping and lock plunger in place
 - Insert chamber flag
 - Safety on
 - Stand
4. **“FIRE!”**
 - Transition into position (stages 2&3)
 - Remove chamber flag
 - Operate bolt
 - Safety off
 - Begin firing: AQT stages 2&3: fire 2 rounds, eject one, continue firing.
5. **“Unload and Clear!” (Safe Rifle)**
 - Safety on
 - Keep the plunger in place
 - Actuate the bolt until all rounds have been ejected and the follower is visible
 - Extend the plunger a few inches from the tube
 - Insert chamber flag