

OWNER'S MANUAL



CMMG

AR-15

5.56/.223, 300 BLK, 22 Nosler, .224 Valkyrie

Safety First

Thank you for choosing CMMG, Inc.
Please follow all instructions in this manual before operating
your new firearm.

Fundamental Firearm Safety Rules.

1. Always keep the firearm pointed in a safe direction.
2. Always keep your finger off the trigger until ready to shoot.
3. Always keep the firearm unloaded until ready to use.
4. Be sure the firearm is safe to operate.
5. Know how to use the firearm safely.
6. Use only the correct ammunition for the firearm.
7. Know the target and what is beyond.
8. Wear appropriate eye and ear protection.
9. Never use alcohol or drugs before or while shooting.
10. Store firearms so that they are not accessible to unauthorized persons.
11. Be aware that certain types of firearms and many shooting activities require additional safety precautions.

Failure to follow these rules can result in damage to property, injury or death. Always follow these instructions and carefully read and refer to this manual before loading firearm.

THIS IS *NOT* A SAFETY MANUAL

If you need assistance with the safe handling of this, or any firearm, please contact a certified firearms instructor or school.

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Please familiarize yourself with this manual and the operation of your particular firearm. To ensure that you get the best performance and reliability from your new CMMG firearm, please read through all of the procedures listed in this manual before attempting to perform any of the described actions. If any part of this manual is unclear to you, please contact us before attempting the procedure.

All complete firearms and uppers are headspaced and test fired before shipping.

Clean your firearm before using for the first time.

Unloading and Clearing Your Rifle

To unload and clear your rifle:

1. Keep your rifle pointed in a safe direction for the duration of the procedure.
2. Place your selector on "SAFE". You cannot select "SAFE" unless the hammer is cocked.
3. Depress the magazine catch button and remove the magazine.
4. Eject the chambered cartridge by retracting the charging handle until it stops. Let the ejected cartridge fall to the ground.
5. Lock the bolt open by depressing the bottom of the bolt catch. If you cannot manipulate the charging handle and the bolt catch at the same time, you can use an empty magazine, which will activate the bolt catch for you.
6. Push the charging handle forward until it clicks to re-latch the charging handle.
7. Inspect the chamber and receiver to ensure you have removed all cartridges from the action.

Your rifle is now unloaded and clear. It may now be loaded or prepped for transportation or storage.

Loading and Firing Your Rifle

To load and fire your rifle:

Begin with a rifle that has been verified to be unloaded using the preceding directions.

1. Keep your rifle pointed in a safe direction for the duration of the procedure.
2. Load your magazine with the proper cartridges. Place cartridge between the magazines feed lips and push down to seat.
3. Using firm and steady pressure insert the loaded magazine into the magazine well until the magazine catch locks the magazine in place. Do not slam the magazine into position; it will damage your magazine and rifle. Pull the magazine down to verify that it is locked in place.
4. Get into the shooting position you plan to use. Grasp the pistol grip in one hand and the handguard in the opposite hand with the buttstock to your shoulder.
5. To chamber a cartridge you may depress the bolt catch or retract the charging handle until the bolt is no longer being held by the bolt catch. Release the charging handle. Do not maintain control of the charging handle while chambering a cartridge; this will cause the rifle to miss feed.

Your rifle is now loaded.

Loading and Firing Your Rifle

continued

The following is a description of the sequence for one complete firing cycle; beginning after a cartridge is chambered. Knowing the correct function of your rifle will help you with the diagnosis of any malfunctions or failures to fire.

The trigger is pulled, releasing the hammer which strikes the firing pin. The firing pin impacts the primer in the chambered cartridge igniting the primer which ignites the powder. As the powder is burned it creates a high volume of gas, which propels the bullet down the bore of the barrel. The exhaust gas is also vented out of the bore through the barrel's gas port, into the gas block and through the gas tube and into the carrier key on the bolt carrier. The gas pushes the bolt carrier back unlocking your bolt from the barrel extension allowing the bolt carrier to recoil completely. The underside of the carrier will push the hammer down where it is caught and held by the disconnecter. The bolt will pull the spent cartridge out of the chamber and eject it from the rifle.

At full recoil the carrier has pushed the buffer and buffer spring back into the receiver extension. The magazine will present a new cartridge, which will be stripped from the magazine by the bolt as the recoil spring pushes the bolt carrier group back into battery. The new cartridge is now chambered. The fire control group will reset once you have released the trigger allowing the disconnecter to release the hammer and re-engage the trigger's sear. The rifle is ready to be fired again or put on "SAFE" and unloaded.

6. Align your sights on your target.
7. Place the selector on "FIRE"; Your rifle is now ready to shoot.
8. Squeeze the trigger until the hammer is released.

Disassembly Instructions

Before disassembling your rifle please unload and clear your rifle as described in the unloading directions.

1. Reverify your rifle is unloaded and return the bolt and carrier into battery.
2. Partially push the rear take down pin and the front pivot pin from left so they are not captured by the detents that retain them in the receiver in the closed position. Use a delrin take down pin punch if needed.
3. Pull the rear take down pin the rest of the way to the right side of the lower receiver until it engages the detent that holds the pin in the open position.
4. Pivot the lower receiver away from the upper receiver.
5. Pull the front pivot pin the rest of the way to the right side of lower receiver until it engages the detent that holds the pin in the open position.
6. The upper and lower receivers are now separated; set the upper receiver aside.

Disassembly Instructions

continued

8. Remove the buffer and buffer spring from the lower receiver by depressing the buffer detent. Maintain tension on the buffer face while removing; it is under pressure from the recoil spring. You may need to hold the hammer down to allow the buffer and spring to be removed from receiver extension.
9. Set the lower receiver, buffer and recoil spring aside and pick the upper receiver back up.
10. Pull the charging handle to rear and remove bolt and carrier assembly. Set the bolt and carrier assembly aside.
11. Remove the charging handle by pulling it backwards until it is aligned with the key way. The charging handle may now be lifted from the upper receiver.
12. Set the upper receiver and the charging handle aside and pick the bolt carrier assembly back up.
13. Remove the firing pin retaining pin from the left side of the bolt carrier group. You may use a small screwdriver or punch to hook the loop the end of the firing pin retaining pin makes.
14. Tilt bolt face up and remove firing pin from the rear of the bolt carrier.
15. Push bolt into the carrier until it rotates and comes to a stop (in battery position).
16. Turn cam pin 90° and lift it out from bolt and carrier.
17. Pull bolt forward out of carrier. Set the carrier aside.
18. With a punch, remove the extractor pin from the bolt assembly. Slight pressure applied to the extractor will ease removal of the extractor pin.

Disassembly Instructions

continued

19. Remove the extractor. The extractor spring and elastomer insert should be captured in the extractor; do not remove the spring and elastomer from the extractor.

Your rifle is now field stripped for cleaning.

Do not disassemble your firearm any further than described. Any maintenance that requires further disassembly should be performed by CMMG or a qualified gunsmith.

Basic Care and Maintenance

Proper maintenance will ensure you get the best performance from your firearm. High quality cleaning products will ensure that you get your rifle clean quickly and without damage to your firearm. The Mil-Spec cleaning kit is great for field use, but a good set of cleaning tools and a one-piece cleaning rod will make your task easier at home. There are also many excellent cleaning products available to shooters today. We do not recommend any specific brand, so use what you like. Just make sure that it is safe to use on the parts you are cleaning.

Upper Maintenance

1. Use cleaning fluid on the bore and chamber, the gas tube, the upper receiver and barrel assembly, locking lugs and all areas of powder fouling, corrosion, dirt or dust.
2. Install the chamber brush on the cleaning rod, dip the brush in cleaning fluid and insert it into the chamber and locking lugs. Clean by pushing and twisting the cleaning rod.
3. Install the bore brush on the complete cleaning rod. Dip the brush in cleaning fluid. Run the rod through the chamber and flash suppressor or muzzle brake several times.
4. Take the bore brush off the rod and install a swab holder and a swab. Apply cleaning fluid to the swab; then run it through the chamber and out the flash suppressor (if applicable). To remove carbon build up, let the solvent sit, then wipe clean. Wipe the bore dry by running clean swabs all the way through from the chamber to the flash suppressor.

Upper Maintenance

continued

5. Once the patches come out dry they should be clean. If not repeat steps 3 and 4.
6. Use a worn out bore brush to clean the outside surface of the protruding gas tube. NOTE: Heat will discolor your gas tube, do not try to remove this discoloration.
7. Wipe the charging handle with a patch dipped in solvent; wipe off solvent with a dry cloth.
8. Inspect the upper assembly for any worn, broken or damaged parts. Replace any faulty parts with quality replacement parts.
9. Lightly lubricate the bore and chamber, outer surface of the barrel and front sight or gas block, under the handguard and the charging handle.
10. With a lubricated swab, run the rod from the receiver to the flash suppressor or muzzle brake. Do not over lubricate.
11. Lubricate the locking lugs.
12. Reassemble upper.

Bolt and Carrier Maintenance

WARNING: Never interchange bolts between rifles.

1. Clean all parts and outer surfaces of the bolt carrier assembly with a swab saturated with cleaning fluid.
2. Clean the bolt carrier key with a worn bore brush dipped in cleaning fluid and dry with a pipe cleaner.
3. Remove carbon deposits and dirt from the locking lugs with a cleaning brush dipped in cleaning fluid.
4. Clean the areas behind the bolt rings and under the lip of the extractor.
5. Use a punch to press the ejector in repeatedly to remove accumulated brass shavings from the ejector hole and assure the ejector moves freely. Be careful not to damage bolt with punch.
6. Inspect the bolt assembly for cracks or fractures, especially in the cam pin hole area. Inspect the firing pin retaining pin for bends, breaks or dents. Inspect the bolt cam pin for cracks or chips. Inspect the firing pin for bends, cracks, or a sharp, chipped or blunted tip.
7. Lubricate the bolt carrier, bolt, cam pin, firing pin and firing pin retaining pin. Be sure to coat the inner and outer surfaces and the cam pin area of the bolt carrier. Place one drop of lubricant inside the key. Flush the ejector with lubricant and cycle the plunger enough to ensure the ejector spring is well lubricated.
8. Reassemble bolt and carrier.

Lower Maintenance

1. Remove any dirt or debris from the trigger group with a cleaning brush and/or cotton swab dipped in cleaning fluid.
2. Remove powder fouling, corrosion and dirt from the lower receiver with a cleaning brush and/or cotton swab dipped in cleaning fluid.
3. Clean the buffer, recoil spring and inside of the lower receiver with a cleaning brush and/or cotton swab dipped in cleaning fluid.
4. Examine the lower receiver assembly for any worn, broken or damaged parts. Replace any faulty parts with quality replacement parts.
5. Lightly lubricate the lower receiver and the internal parts of the lower receiver assembly.
6. Reassemble the lower receiver.

Reassembly Instructions

1. Insert extractor and spring assembly into bolt by pushing extractor assembly down and aligning the pivot hole in the extractor with the hole in bolt and insert extractor pin. If the spring comes loose, seat the large end of spring in the extractor.
2. Stagger the bolt rings to prevent gas loss. Not required if equipped with one piece gas ring.
3. Slide bolt assembly into bolt carrier assembly with extractor claw on the carrier's right side.
4. Align the bolt's cam pin hole with the carriers cam pin slot. Insert bolt cam pin and rotate it 90°.
5. Insert firing pin in opening at the rear of the bolt carrier and seat. You may need to rotate the cam pin into alignment to allow the firing pin to seat.
6. Pull bolt assembly forward and replace firing pin retaining pin. When correctly installed the firing pin will not fall from the bolt carrier assembly and cannot be removed.
7. Install charging handle assembly into upper receiver. Leave the charging handle halfway out of the receiver.
8. Install the bolt carrier assembly. The bolt must be extended from bolt carrier so the cam pin will not prevent the bolt carrier groups installation.
9. Push charging handle assembly and bolt carrier assembly together into upper receiver.
10. Reinstall the buffer and spring into the lower receiver.
11. The hammer must be cocked and the selector lever must be on SAFE before installing the upper onto the lower.

Reassembly Instructions

continued

12. With the bolt carrier in battery, close ejection port cover.
13. Align the pivot pin holes and push pivot pin in.
14. Pivot the lower receiver towards the upper receiver. When aligned push in take down pin.
15. Perform the function check on your rifle.

Function Check

**TO AVOID ACCIDENTAL FIRING, BE SURE MAGAZINE IS REMOVED
AND CHAMBER IS EMPTY**

1. Pull charging handle assembly to rear and release.
2. Place selector lever on SAFE. Squeeze trigger. Hammer should not fall.
3. Place selector lever on FIRE. Squeeze trigger. Hammer should fall.
4. Hold trigger to the rear. Cycle the action. Release trigger. You should hear a click as you release the trigger as the disconnector hands the hammer off to the the trigger.
5. Squeeze trigger again. Hammer should fall.

If your rifle fails any of these tests check your assembly. If the rifle will not pass these checks and it has been assembled properly, contact CMMG or a qualified gunsmith for assistance.

Troubleshooting

Selector will not engage “SAFE”.

UNLOAD Rifle First.

Inspect for	Resolution
Fire control group is not cocked.	Fire control must be cocked.
Primer in fire control group.	Remove and discard.
Selector frozen on “FIRE”.	Disassemble, Clean, Lubricate and assemble correctly.
Magazine fails to lock into magazine well.	
Inspect for	Resolution
Dirty or corroded magazine catch.	Disassemble, Clean, Lubricate and assemble correctly.
Worn or broken magazine catch.	Replace magazine catch.
Defective magazine.	Replace magazine.
Defective magazine catch spring.	Replace magazine catch spring.

Troubleshooting

continued

Ammunition will not feed into chamber.

UNLOAD Rifle First.

Inspect for	Resolution
Magazine not fully seated.	Seat magazine with firm pressure.
Too many cartridges in magazine.	Remove excess cartridges.
Incorrect caliber cartridges.	Replace with correct caliber cartridges.
Carbon in chamber, carrier key or on gas tube.	Clean.
Dirt, corrosion, or carbon build-up in barrel locking lugs.	Clean locking lugs on barrel and bolt.
Dirty or defective magazine.	Clean and lubricate or replace.
Dirty or corroded ammo.	Clean ammo.
Damaged ammo.	Replace ammo.

Troubleshooting

continued

Failure to FIRE

UNLOAD Rifle First.

Inspect for	Resolution
Selector on "SAFE".	Move Selector to "FIRE".
Selector frozen on "SAFE".	Disassemble, Clean, Lubricate and assemble correctly.
Excess fouling or carbon on firing pin or in firing pin recess.	Disassemble, Clean, Lubricate and assemble correctly.
Excess oil in firing pin recess.	Remove excess oil with pipe cleaner.
Improper assembly of firing pin.	Assemble correctly.
Hammer spring installed incorrectly	Assemble correctly.
Weak or broken hammer spring.	Replace hammer spring.
Broken Firing pin or hammer.	Replace firing pin or hammer.
Defective ammunition.	Remove discard, and replace.
Bolt not locked in battery.	Extract cartridge, clean rifle.

Troubleshooting

continued

Failure to Extract

UNLOAD Rifle First.

Inspect for	Resolution
Fouling or carbon in chamber.	Clean the rifle.
Fouling or carbon in extractor tip or recess.	Clean the rifle.
Damaged or missing extractor spring.	Replace spring.
Damaged or missing extractor spring insert.	Replace insert.
Dirty or corroded ammunition.	Remove, discard, and replace.
Frozen or worn extractor	Disassemble and clean or replace.
Restricted buffer assembly.	Disassemble and clean.
Restricted movement of bolt carrier group.	Remove, clean, and lube. When reinstalling the bolt carrier group check to insure it moves freely in the upper receiver.

Troubleshooting

continued

Bolt Fails to Lock Open on Last Round

Inspect for	Resolution
Dirt, corrosion, or carbon build-up in bolt and carrier.	Clean.
Dirt, corrosion, or carbon build-up in barrel locking lugs.	Clean.
Ejector frozen.	Clean and oil.
Defective magazine.	Replace.
Dirty or corroded bolt catch.	Clean or replace.
Burred or broken bolt.	Contact a qualified gunsmith.
Rifle recoil spring in carbine stock.	Install correct spring. Carbine spring should be 38 coils versus 43 for the A1 or A2 rifle.
Gas system is short stroking.	See section on short stroking.
Short Stroking	
Inspect for	Resolution
Gaps in gas rings not staggered	Stagger gas rings.
Gas rings worn.	Replace gas rings.
Carbon or dirt in carrier or on outside of gas tube.	Clean rifle.
Obstruction inside carrier key.	Remove obstruction and clean.
Weak or reloaded ammunition.	Use new factory ammunition.
Dirty rifle.	Clean rifle.
Improper lubrication.	Lubricate generously.
Loss of gas power.	Clean entire gas path.
Defective magazine.	Replace magazine.

Troubleshooting

continued

Cartridge Jammed in Action

Inspect for	Immediate Action
Cartridge jammed between bolt and magazine or feed ramps.	1. Remove magazine.
Bolt Over Base Failure.	2. Pull back and hold charging handle to the rear.
Double feed.	3. With the rifle positioned muzzle up; strike the buttstock on the ground.
Spent casing lodged between bolt and charging handle.	4. The impact should dislodge the bolt and allow it to be locked open with the bolt catch. 5. Remove and discard damaged casings or cartridges. 6. Inspect the rifle for damage.

Warning: If this procedure fails to resolve the jam, do not attempt to disassemble the rifle. Consult a qualified gunsmith.

LIFETIME QUALITY GUARANTEE

CMMG, Inc. will guarantee its products against defects in material or workmanship. CMMG, Inc. will repair, replace or substitute part(s) (at CMMG, Inc. discretion) at no charge to the customer if a defect in material or workmanship is found. All service work must be carried out by CMMG, Inc. Please provide a copy of the Invoice or Proof of Purchase when requesting service or repair work.

Notice:

All CMMG firearms are designed to function with a wide variety of factory loaded ammunition and undergo rigorous testing prior to release to ensure reliability and durability. Because CMMG relies on factory ammunition for testing, we cannot guarantee reliable function with handloads or re-

All Virtual Patent Marking information can be found at:
<https://www.cmmginc.com/patents/>



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WARNING!

This product can expose you to chemicals including Cadmium, Lead, Cyanide Salts, or Nickel which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

WWW.CMMGINC.COM