

Removal of Stock Parts (Impingement System):

1. Remove the upper receiver from the lower receiver.
2. Remove the bolt carrier and charging handle from the receiver.
3. Remove the bolt from the carrier.
4. Remove the gas rings from the bolt using a thin flat edge. Set the bolt and bolt carrier aside for later installation steps.
5. Remove the top and bottom handguards from the barrel by pulling back on the delta ring and pulling the handguards apart. If you don't have standard handguards, remove any handguard(s) that might be on the rifle.
6. Use a 3/4" wrench to remove the flash suppressor or muzzle break along with the crush washer from the barrel.
7. Use a 1/8" hardened punch and a hammer to drive out the front sight pins that hold the sight assembly in place. Some rifles will have tapered pins. Check both sides of the pins to determine if one side is larger than the other and drive out from the side that is the smallest. Once both pins are removed, remove the sight assembly/gas block and gas tube from the barrel by slightly twisting the assembly from side to side as you pull it forward off the barrel. You can use a soft mallet (e.g. rubber, plastic, or brass) to tap the assembly off, if needed.
8. Remove the stock front handguard cap from the barrel

Installation of Adams Arms Retrofit Piston System Components

1. Installation of Receiver Bushing:

Install the flash suppressor onto the barrel by hand tightening it to protect the barrel threads during this step. You need to make sure that the gas tube hole inside the receiver is clean and free of debris. Stand the upper receiver on a table with the barrel pointing downward and position the upper so that the flat top picatinny rails are facing away from you. Place some type of heavy grease or preferably Vaseline onto the end of the dowel rod. Coat the outside of the bushing with the grease to help it slide into the receiver hole. Push the bushing onto the greased end of the rod with the external chamfered end of the bushing pointing away from the rod. Line up the bushing with the receiver hole and then firmly push down on the dowel rod to start the bushing. If you cannot start the bushing into the hole by using the dowel rod with hand pressure, line the bushing up with the hole to the best of your ability and then, using a metal hammer, tap the dowel rod lightly to start the bushing into the hole. **MAKE SURE TO KEEP THE ROD STRAIGHT WHILE DRIVING THE BUSHING IN!** Drive the bushing in until the top edge becomes flush with the sides of the receiver hole. Remove the flash suppressor from the barrel.

Note 1: If you plan on installing a free float handguard that does not use a delta ring, remove the delta ring now.

(The delta ring CAN be removed by using a Dremel with a cutting wheel to cut it off the barrel.) The proper way to remove the delta ring is to unscrew the barrel nut from the receiver and then remove the retaining ring from the barrel nut. The delta ring and spring can be removed from the barrel nut once the retaining ring is removed. Screw the barrel nut back on and tighten down to 30ft/lb minimum (not to exceed 80 ft/lb) to align the next slot in the barrel nut.

2. Installation of Gas Block:

If you are going to use the supplied M4 style handguards, slide the new handguard cap onto the barrel. If you plan on installing a different handguard or rail system that does not require the need of a handguard cap, DO NOT use our handguard cap.

Remove the gas plug from the gas block by pushing down on the detent button and turning the plug counter clockwise until the detent button aligns to the 9 O'clock position. Pull the gas plug out of the block.

Slide the gas block onto the barrel with the front (where the gas plug's keyway cut is located) pointing towards the end of the barrel. If it becomes difficult to move the gas block backwards you will have to slightly twist the gas block from side to side as you push it backwards. Be careful to not scratch the barrel as you move it from side to side.

Note 2: If the gas block does not slide onto the barrel you need to do the following steps to spread the gas block's legs apart:

Unscrew the gas block screws from the gas block and screw them into the opposite side of the block until the tips of the screws just enter into to the gap between both of the legs of the gas block. Find an Allen key that will slide in between the gap of the legs.

Place the long end of the Allen key in the gap making sure to point the long end towards the back of the gas block (opposite the keyway cut). The short end of the Allen key should be facing downward when the block's legs are pointing downward. You need to align the tip of the long end of the Allen key in between the screw in the back legs and the opposite back leg. The long end of the Allen key cannot extend past the back of the block.

Using the 5/32" Allen key/socket, slightly tighten the screws while you hold the Allen key in place. Tighten both screws until they are just snug on the Allen key. You need to adjust the screws so the gas block will slide onto the barrel, but will **NOT** twist from side to side unless manual force is applied. Continue with the installation, skipping step "e". ***Be sure to see **Note 5**.

- d. Slide the gas block half way onto the gas block location of the barrel (the barrel shoulder).
- e. Tighten the gas block screws with just enough pressure that still allows you to move the block from side to side on the barrel. This will allow you to align the gas block using the piston rod. However, you want the block to stay stationary on the barrel without any manual force.
- f. Remove the spring and bushing from the drive rod.
- g. Slide the carrier (without the bolt installed) into the receiver pushing it all the way forward.
- h. Use your fingers to push and hold the carrier against the barrel extension.
- i. Slide the narrow part of the rod into the front of the gas block without the spring and bushing attached.
- j. Make sure the delta ring hole is lined up with the groove in the barrel nut and the receiver hole.
- k. Slide the tip of the rod into the delta ring and receiver hole.
- l. While pushing the carrier all the way forward into the receiver, slide the rod into the receiver until it touches the carrier key.
- m. Insert the gas plug into the gas block. As you slide the gas plug into the gas block, make sure the gas plug enters into the drive rod sleeve.
- n. Push the detent button in and turn the gas plug clockwise until the detent button locates the 12 O'clock position. Hold the upper with the barrel pointing up. Use your fingers to push and hold the carrier all the way forward into the receiver as though in battery to fire.

Note 3: It is easier to complete the remainder of the gas block installation if it is tight enough to not move back and forth (towards or away from the receiver) unless you slightly twist the block from side to side as you push or pull the gas block. If it moves forward or back without having to twist it, tighten it until it requires twisting to move.

o. While you continue to hold the carrier in the receiver, work the gas block down towards the receiver until the space between the end of the sleeve and the back part of the gas block is approximately between .015" and .025".

(If you continue to move the gas block down towards the receiver it will start to push the carrier down. The rod will push on the carrier key, which will move the carrier out of battery away from the barrel extension. If you push the carrier up into the receiver as you move the block away from the receiver the carrier will move back into battery. You want to make sure that the carrier is pushed all the way forward against the barrel extension and the space between the sleeve and the back of the gas block is between .015" and .025".)

Note 4: If you have a flat top upper receiver, you can use the picatinny rail on the receiver to help align the gas block. Hold the receiver downward at a 45 degree angle and look down the receiver's picatinny rail. Visually align the gas block's picatinny rail to the upper receiver's picatinny rail by slightly twisting the gas block from side to side. Be sure that you do not move the gas block forward or back when you twist the block to align it. Align to the best of your ability by sight.

o. Lay the upper on a table with the picatinny part of the gas block standing up. Keep your fingers on the back of the bolt carrier making sure to keep it into full forward battery. Try to move the drive rod back and forth. It is important to continue to push the carrier into the receiver. As you push on the carrier, push the detent button of the gas plug down as you slowly turn the gas plug counter clockwise. As you push on the carrier, you want to make sure that the carrier does not move forward when the gas plug moves forward out of the gas block. If you feel the carrier move forward, you want to the gas block a forward to obtain the proper spacing. If you have to move the gas block make sure it is aligned properly (see **Note 4**).

If you have to move the gas block forward, push the gas plug back in the block; align it to the 12 O'clock position and remove it again checking to see if the carrier moves forward. The goal is to position the gas block so the rod can move back and forth slightly when the gas plug is at the 12 O'clock position and the carrier is pushed all the way forward into battery. If the handguard cap is loose after the gas block location is found, do not worry; once the handguards are installed they will hold the cap tight.

Barrel Warning: We have experienced situations where barrel manufacturers have cut barrels out of the commercial Mil-Spec tolerances. If the gas block will not go back far enough to get the .015" to .025" space on the rod then the barrel might be cut out of the proper tolerance (shoulder cut too far forward). If this is the case, you can either have the barrel shoulder cut back towards the barrel extension (receiver) or buy a properly cut barrel.

Note 5: If using an Allen key to separate gas block's legs: As you keep the block in position, slowly unscrew the cap screws and remove the Allen key. Screw the cap screws in the standard direction.

p. Slowly tighten the cap screws on the gas block while you hold the proper alignment position for the gas block.

Alternate back and forth as you tighten the screws. *** If you tighten the cap screws too hard and fast you will twist the gas block out of alignment. ***

q. Completely tighten the gas block cap screws and repeat step "o".

r. Remove the gas plug and rod from the gas block. Slide the spring and bushing onto the rod and reinstall into the block.

s. Install the crush washer and flash suppressor/muzzle break onto the barrel. Tighten down the break.

t. Place the bolt spring on back of the bolt and put the bolt in the Adams Arms one piece bolt carrier and reassemble the carrier.

3. Installation of Handguards:

Push the front of the bottom handguard into the bottom of the handguard cap. Make sure the front of the bottom handguard fits under the two notches on the inside of the handguard cap. Stand the upper receiver up on a table with the barrel facing upwards. As you push the bottom handguard into the handguard cap, pull down on the delta ring and push the handguard onto the barrel nut. Let go of the delta ring when the handguard is in place.

Push the front of the top handguard into the handguard cap. Pull the delta ring back and push the top handguard onto the barrel nut. Let go of the delta ring when the handguard is in place.

Installation is complete.

Gas Position Setting and Carrier Timing:

We recommend using FMJ Winchester White Box or Federal M193 ammo for gas setting testing.

Our piston system was designed for rifles that were built to mil-spec; most importantly, rifles that have their gas port hole drilled to mil-spec. Because of manufacturers' differences in gas port hole size, our piston system was designed with three different gas settings. These settings are found on the gas block. Looking at the front of the gas block you will see four different grooves where the detent button in the gas plug will fit once the plug is installed in the gas block. The groove at the 9 O'clock position is the insertion groove. The groove at the 12 O'clock position is the full gas setting (as pictured). The 1 O'clock position is the lower gas setting. The 3 O'clock position is the off setting. If the manufacturer of your rifle drilled the gas port hole to the mil-spec size (size changes depending on barrel length), the full gas setting should work best for the proper cycling of our system (proper velocity of the bolt carrier). Some manufacturers drill the gas port hole size out larger than mil-spec. They do this in order to get more gas (than is required) running through the impingement system so there is no chance of the rifle not working with weak pressured or non-brass ammo. If your rifle is made by one of these manufacturers, then our system will cycle faster (high carrier velocity) than what is the proper velocity.

The way to determine if your rifle is cycling too fast or slow is to watch where the spent round casings are landing after ejection. If the case is bouncing off the case deflector and landing at 12:30 to 2 O'clock then the carrier is moving at too high of a velocity. You would need to turn the system down to the lower gas setting. You want your cases to eject at 2:30 to 4 O'clock. Ejection at 4 O'clock (as pictured) should be a forceful ejection and not a lob. A short lob at 4 O'clock is too slow of a carrier velocity. The low gas setting may be used for suppressors if needed. The off gas setting will shut off the system and stop the cycling of the rifle.

Full Auto Fire:

There have been situations where we have experienced carrier bounce during full auto fire. Carrier bounce is caused by the carrier moving too fast as it moves forward into battery (too high of a velocity), where the carrier hits the barrel extension and bounces off the extension (out of battery) as the hammer is hitting the firing pin. When the carrier is out of battery, the firing pin cannot hit the primer to ignite the propellant. When you experience carrier bounce, the rifle will stop running during firing; the hammer will be forward with a live round in the chamber. If you look at the round in the chamber you will usually see light primer strikes.

We recommend an H2 buffer if you are firing full auto. If you experience carrier bounce while using an H2 buffer, you may need to use a heavier buffer. Buffers are made with different weights that are denoted on the face of the buffer from lightest to heaviest: nothing on face, H, H2, H3, and X. Enidine buffers are about the same weight as an H3.

Maintenance and Cleaning:

Our system, by design, is self-cleaning. If the parts build up with carbon, you may use any kind of weapon cleaning solvent or oil to wipe the parts clean. If you find areas that don't come clean with weapon solvent or oil, you may use an edged pick, knife, or other sharp object to scrape any excess carbon off the parts. You do not have to worry about scraping the parts clean; we use a Melonite process to coat the parts which is almost impossible to scratch.

For more detailed instructions go to <http://adamsarms.net/images/InstructionsRevised4-12-10.pdf>

****Please visit our website at AR15FIX.com for warranty and return information. Rev.

4/12/2010