Daytona Gun Airsoft Installation Manual: VFC HK416A5

Contents

Basic Information 4
Introduction 4
For the User 4
Copyright 4
What You Need 5
Disassembling Your Donor Body 6
A Note Before Starting 6
How to Disassemble Your Donor 6
Primary Disassembly 6
Disassembling the Lower Receiver 6
Disassembling the Upper Receiver 12
What to Keep and What to Set Aside 17
Installing the Daytona Kit 18
Inside the Box 18
Assembling the Inner Barrel Group 19
Inner Barrel Assembly: 19
Hop Up Chamber Assembly 19
Assembling and Modifying the Air Valve 21
Modifying the Upper Receiver for Assembly 22
Removing the Rear Takedown Pin Hole 22
Creating the Hop Up Adjustment Hole 23
Modifying the Hop Up Chamber 25
Modifying the Gas Piston 27
Modifying the Charging Handle 28
Assembling the Upper Receiver 29
Modifying the Lower Receiver for Assembly 31
Creating Space for the Air Valve 31
Creating the Airline Hole 32
Creating the Disassembly Notch 33
Modifying the Pistol Grip 34
Modifying the Bolt Catch Assembly 35
Assembling the Lower Receiver 36

Installing the Trigger Chassis and Selector Lever 36
Installing the Pistol Grip and Selector Detent 39
Installing the Buffer Tube Assembly 40
Final Assembly 42

Basic Information

Introduction

When properly installed, your Daytona Airsoft Systems (DGA) recoil kit provides you the ability to experience heavy recoil with no cooldown, and without expensive, heavy gas magazines to keep serviced, or batteries to keep charged.

Please note that the DGA VFC M4/416/M27 kit has been designed to fit and function within VFC AR-15 and AR-15-derived GBB bodies only. While it may be possible to modify the kit and/or the donor of a similar spec rifle from another brand, this is neither recommended nor supported and will likely require additional fitting and tuning beyond what this manual specifies.

For the User

This guide assumes some technical knowledge and ability on the part of the installer. If you are not familiar with how various airsoft systems operate, and if you have never disassembled/built an airsoft gun before, you should consider having your local gun tech do the install for you.

Copyright

What You Need

In order to install the DGA kit into your donor body, you will need the following tools:

Necessary:

- 5mm hex wrench
- 3mm hex wrench
- 2.5mm hex wrench
- 2mm hex wrench
- 0.9mm hex wrench
- 3mm drill bit
- 10.5mm drill bit
- Flathead screwdriver
- Philips-head screwdriver – small like for eyeglasses
- Hammer
- Armorer's wrench
- Needle-nose pliers
- Small pin punch
- Semi-permanent thread lock, such as Loctite 243
- Power drill
- Vise or clamp
- AEG inner barrel
- Cotton swabs
- Propane torch

Helpful:

1. Rubber mallet
2. Drill press
3. Deburring tools
4. Center punch

Disassembling Your Donor Body

A Note Before Starting

If you have already taken apart your donor body, or if you are already familiar with disassembling a VFC HK416A5 GBBR, you can skip to the section of this manual dealing with installing the DGA kit.

How to Disassemble Your Donor

Primary Disassembly

1. Punch out the takedown and pivot pins using the pin punch.

2. Pull the upper receiver up and off of the lower receiver.

Disassembling the Lower Receiver

1. Twist the storage cap on the bottom of the pistol grip counter-clockwise to remove it.
2. Pull the pistol grip base plate up and out of the pistol grip.

3. Remove the bolt holding the pistol grip to the lower receiver using a 5mm hex wrench.

4. Slide the pistol grip down and off slowly, making sure to retrieve the selector detent and detent spring from the right side of the receiver.

5. Press down on the recoil buffer retainer with a pin punch to release the recoil buffer and spring. Put your thumb over the recoil buffer to keep it from shooting out from the receiver.

6. Punch out the pin retaining the bolt catch and pull the bolt catch up and out of the receiver.

7. Unscrew the set screw retaining the magazine catch using the 0.9mm hex wrench and remove the magazine catch assembly from the receiver.

8. Unscrew the bolt retaining the valve knocker assembly using the 2mm hex wrench and pull the assembly up out of the receiver.

9. Unscrew the set screw holding the right-hand fire selector lever to the receiver using the 0.9mm hex wrench and remove the lever.

10. Pull the fire selector assembly out from the left side of the receiver.

    - It is easiest to do if you cock the hammer and use a finger to pull the full auto sear away from the lever. You can then rotate the selector assembly one way and then the other while pulling to remove it more easily.

11. Punch out the pin retaining the full auto sear and remove it and the sear from the receiver.

12. Pull the trigger so that the hammer moves to its upper position.
13. Punch out the pin retaining the hammer and remove the hammer and spring from the receiver.

14. Punch out the pin retaining the trigger and remove the trigger and spring from the receiver.

15. Loosen the castle nut on the buffer tube using the armorer's wrench.
    - You may find it easiest to remove the stock and put the buffer tube in a vise.

16. Break the superglue holding the buffer tube in the lower receiver using a propane torch.
    - This is likely best done with the lower receiver clamped in a vise.
    - Be cautious with the torch, both to avoid injury and damage to the receiver's finish.

17. Unscrew the buffer tube from the lower. Depress the recoil buffer lock with a pin punch to allow rotation.

18. Remove the recoil buffer lock using needle-nose pliers.
19. Remove the takedown pin detent and spring from the rear of the receiver.

20. Remove the takedown pin from the lower receiver.

Disassembling the Upper Receiver

1. Undo the bolt at the rear of the handguard using either a flathead screwdriver or a wrench.

2. Slide the handguard forward and off the upper receiver.
3. Unscrew the set screw at the bottom of the flash hider using the 1.5mm hex driver.
    - If you have a US version with an orange muzzle device, you will likely need to heat up the set screw and the muzzle device in order to remove them.

4. Unscrew the set screw in the bottom of the gas block with the 2mm hex driver.

5. Unscrew and remove the outer barrel extension from the end of the barrel.

6. Punch out the pin at the bottom rear corner of the gas block.

7. Unscrew the set screw in the gas adjustment knob with the 1.5mm hex driver.

8. Pull the gas adjustment knob forward off the gas block.

9. Pull the gas block off the outer barrel.
10. Remove the mock piston assembly from the receiver.

11. Loosen the barrel nut with an armorer wrench and unscrew it from the upper receiver.

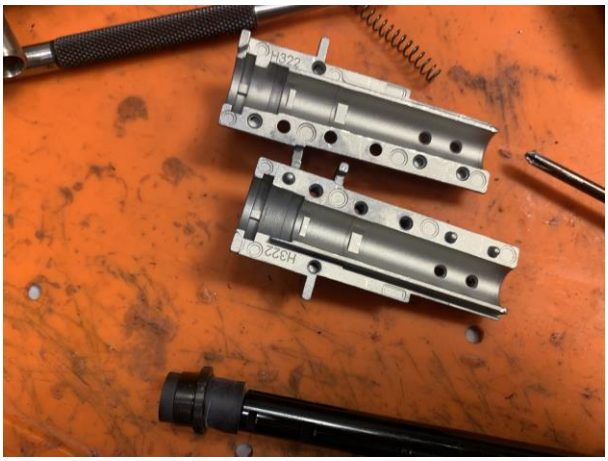
12. Pull the entire barrel assembly forward out of the upper receiver.

13. Unscrew the 6 screws in the hop up chamber and outer barrel with the Phillips-head driver.

14. Pull the inner barrel and chamber out of the outer barrel.
15. Remove the chamber adapter from the hop up chamber. Use a punch if it is difficult.

16. Remove the remaining screw in the hop up chamber using the Phillips-head driver.

17. Remove the inner barrel assembly from the chamber.



What to Keep and What to Set Aside

Now that you've disassembled your donor, you likely have several piles of parts. For the most part, you need only a few of the original internal components.

Keep the following:

- All body components (receiver, barrel, buffer tube, stock, etc.)
- Gas piston components, gas block, muzzle device
- Hop up chamber and hardware
- Body pins, detents, springs
- Selector levers
- Trigger
- Trigger pin
- Bolt catch and pin
- Magazine release

Installing the Daytona Kit

Inside the Box

If you haven't already, open the box containing the kit. Remove the packing materials and lay everything out.

Your kit should contain the following items:

- Complete buffer spring assembly
- Hop up chamber with feed tube
- Barrel ring and c-clip
- DGA Standard hop up rubber
- Air valve with air line
- Trigger chassis with screw
- Complete bolt carrier assembly
- Trigger sear

Compare the contents of your package with the above list and the image below. If you believe you are missing any parts, please contact DGA for assistance.

Assembling the Inner Barrel Group

Remember that you will need an AEG-spec inner barrel. This is not supplied with the kit. You cannot use the GBB-spec stock inner barrel from the donor body; the DGA hop up rubber, barrel ring, and c-clip are designed for use with AEG inner barrels only.

Inner Barrel Assembly:

1. Slide the Daytona hop up bucking onto the correct end of the inner barrel.
2. Slide the barrel ring onto the barrel from the muzzle end of the inner barrel. Make certain that the slot for the c-clip faces the muzzle end.
3. Push the barrel ring down so that the opening on the bucking end slides over the lip of the hop up bucking.
    - Sometimes you may find it difficult to slide the barrel ring down the barrel, over the bucking, or both. Careful removal of some of the inner material of the barrel ring with a file and/or drill can be done to correct the spacing. This issue is most common on aftermarket barrels, which often have a slightly larger outer diameter than a stock brass barrel.
4. Align the notches on the inner barrel with the opening of the barrel ring.
5. Place the c-clip into the c-clip slot on the barrel ring and tap it down. This is best done with a rubber mallet.

Hop Up Chamber Assembly

1. Remove all set screws from the hop up chamber using the 2mm and 2.5mm hex wrenches.
2. Place a drop or two of thread lock onto the threads for the hop up adjustment screw.
3. Screw the hop up adjustment screw back into place using the 2.5mm hex wrench. Look into the inside of the chamber and keep turning the screw until you see it protrude into the chamber.
4. Absorb the excess thread lock on the bottom of the adjustment screw with a cotton swab.
5. Back the adjustment screw up so that it no longer protrudes into the chamber.
6. Clean any excess thread lock on top of the screw as well as in and on the

chamber with cotton swabs or paper towels.

7. Push the inner barrel group into the chamber, leading with the bucking. Make certain that the window of the inner barrel faces upwards.
    - Do not shove or force the inner barrel group into the chamber. Too much force can deform the bucking, leading to jams, feeding issues, and poor accuracy.
8. Apply some hop up using the 2.5mm hex wrench while looking down the barrel. Apply enough so that you can clearly see the protrusion of the mound into the chamber.
9. Rotate the barrel clockwise or counterclockwise until the mound is dead center within the chamber.
10. Apply thread lock to the two set screw holes on either side of the chamber.
11. Insert and tighten the set screws using the 2mm hex wrench to lock the inner barrel group in place within the hop up chamber.
12. Unscrew the feed tube from the chamber.

Assembling and Modifying the Air Valve

The air valve comes out of the box with a valve stem return spring installed. This can be left installed for a stiffer trigger pull. DGA recommends removing the return spring to soften the trigger pull.

1. Remove the air line and fitting from the air valve. This needs to be removed in order to test fit the valve in the receiver.
2. Unscrew the cover on the back of the air valve using the flat head screwdriver.
3. Dump the small internal spring out of the valve.

4. Screw the cover back into place. Tighten it down. Do not apply thread lock, as the o-ring provides an adequate seal as well as locking force.

Modifying the Upper Receiver for Assembly

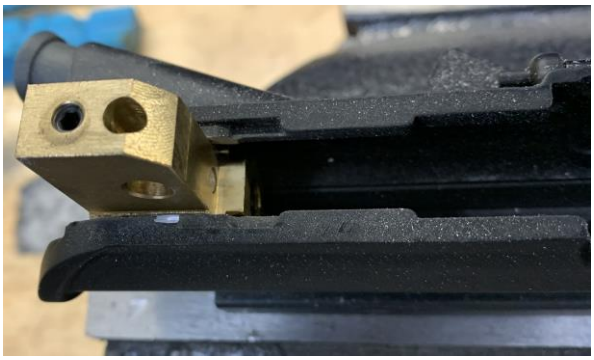
This section of the manual provides instructions on the cuts required to the upper and lower receiver, as well as creating the hop up adjustment hole.

Removing the Rear Takedown Pin Hole

DGA kits installed in the any VFC GBBR body require the rear hole on the upper receiver be removed in order to create space for the air valve. Because of this, the gun will come apart and go together more like an AEG M4, with the receivers sliding against each other rather than pivoting into position.

1. Place the upper receiver upside-down into a bench vise.
    - A riser rail or similar attached to the upper receiver can be the vise point here, eliminating the possibility of cosmetic damage to your upper.
2. Cut through all of the material on one side of the takedown pin hole using a rotary tool and cutoff wheel.

3. Rotate the receiver in the vise for the best angle and cut through the material on the other side of the pin hole.
    - You can use a file or other tool to soften the edges created by the cut.
4. Test fit the air valve to make certain it can now fit in the open space. Remove more material if it cannot. Remove the upper from the vise.



Creating the Hop Up Adjustment Hole

1. Put the two halves of the hop up chamber back together using at least two of the Phillips-head screws.

2. Place the chamber into the upper receiver and install the barrel ring. Tighten it down with the armorer's wrench.

3. Install the handguard.

4. Clamp the upper receiver in a mill or vise.
5. Use a center punch to mark the spot where the upper receiver and handguard meet. This should be on the anti-rotation tab of the handguard.

6. Drill the hop up adjustment hole using the mark made above and a drill bit at least 3mm in diameter. This is best done with a mill, but can also be done with a power drill.

7. Disassemble the upper receiver.

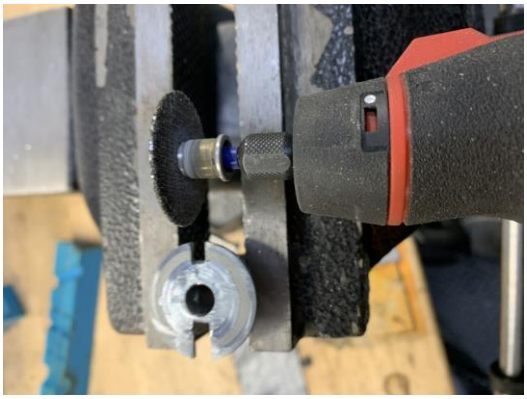
Modifying the Hop Up Chamber

The original hop up chamber is required on the 416A5 in order to install the outer barrel. This separates it from the other VFC kits, where you do not need to perform this modification.

1. Place the hop up chamber in a lathe or vise so that the rear of the chamber can be accessed.

2. Use a lathe or rotary tool to remove all of the chamber material up to the flange. The rear surface should be flat.

3. Use a rotary tool or file to cut another notch in the flange opposite the one already there.



4. Drill out the rear hole of the hop up chamber using so that it can properly close around the inner barrel. You will need to choose a bit that is at least slightly wider than the outer diameter of your inner barrel.

Modifying the Gas Piston

This section is only necessary is you want to reinstall your donor's mock piston system for cosmetic reasons. If you aren't going to install it, you can move on to the next section.

1. Clamp the piston in a vise so that the rear portion that enters the receiver is accessible.

2. Cut the rear section off at the flared-out portion of the rod.

Modifying the Charging Handle

1. Place your charging handle on the DGA bolt assembly to see how much material needs to be removed to allow the handle to slide back to engage the cocking portion of the carrier.

2. Cut the charging handle use a mill, rotary tool, or file to remove the excess material.
3. Test-fit the charging handle on the carrier and continue to remove material until the handle can slide back for proper engagement.
    - Be careful to not remove too much material; this could result in inconsistent function of the charging handle.

Assembling the Upper Receiver

1. Insert the original modified hop up chamber into the outer barrel.
2. Slide the DGA inner barrel group into the hop up chamber and outer barrel. Reinstall any available screws using the Phillips-head driver.

3. Slide the barrel assembly into the upper receiver and tighten down the barrel nut using the armorer's wrench.

4. Reinstall the modified gas piston and the gas block. You can also reinstall the barrel extension and muzzle device. You can reverse the instructions from the disassembly portion of this manual if the process is unclear.

5. Reinstall the handguard.
6. Apply some thread lock to the threads of the feed tube and screw it into place on the bottom of the DGA hop up chamber.
    - You can take some time now to check the vertical alignment of the chamber. If you need to adjust it, you can remove the handguard and loosen the barrel nut to allow some play in the assembly.

7. Install the charging handle and DGA bolt carrier.

Modifying the Lower Receiver for Assembly

The lower receiver of the VFC donor body must have material removed from both the front and the rear to accommodate the DGA trigger chassis, the air valve, and the ability to assemble and disassemble the upper and lower receivers with the kit fully installed.

This is best accomplished using an endmill, but can be done with hand tools such as a rotary tool and electric drill. The following instructions are created with an endmill.

Creating Space for the Air Valve

1. Place the lower receiver in a mill or vise.
2. Mill out or remove all the material at the rear of the receiver in front of the buffer tube opening using a bit approximately 12.5mm wide.
    - You can check to see which bit will fit best between the two sides of the takedown pin supports.

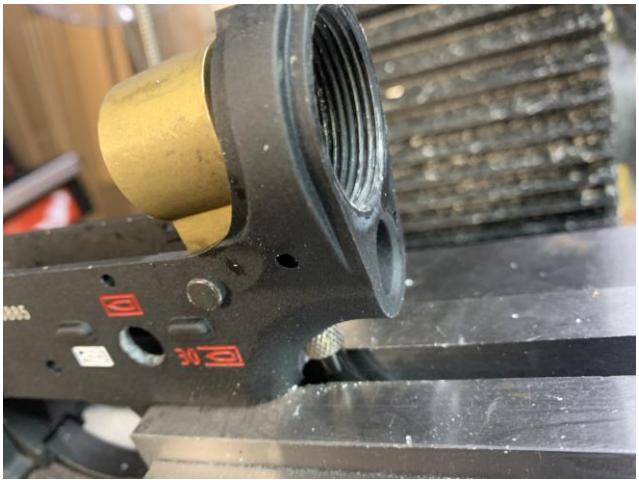
3. Check the fit by placing the air valve into the lower receiver and attempting to push the takedown pin into place.
    - Continue removing material until you can get the pin into the air valve. Ensure that the air valve has a small amount of front-to-back play.

Creating the Airline Hole

This guide is created using the recommended grip path for the airline rather than the receiver endplate path. If you intend on using the endplate path, you can disregard the instructions for modifying the pistol grip. You will have to instead drill a hole beneath the buffer tube opening wide enough to accept the airline adaptor once attached to the air valve.

1. Measure the distance between the middle of the airline and takedown pin holes on the DGA air valve. This should be 8mm.
2. Mark the equivalent position in your lower receiver.

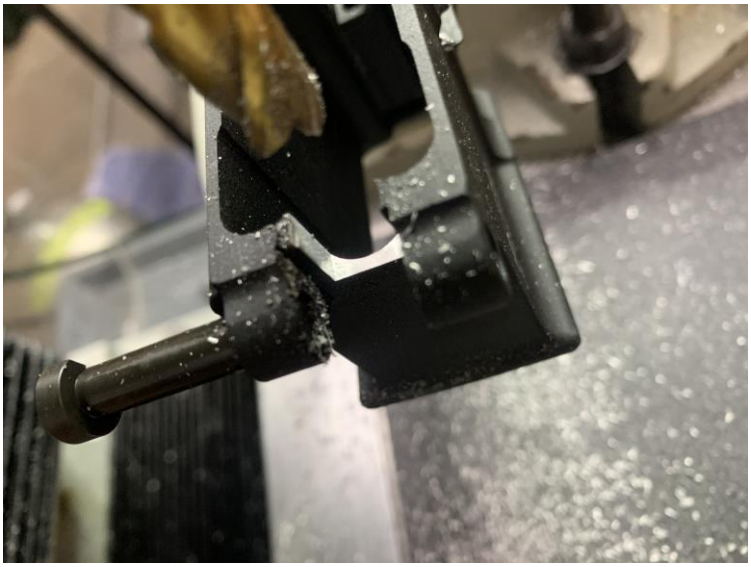
3. Drill out the hole for the airline and adaptor using a 12.5mm bit.
4. Install the airline onto the air valve and test fit it in your lower receiver. Ensure that the valve still has some small amount of front-to-back play.



Creating the Disassembly Notch

In order to take your DGA HK416A5 apart and then reassemble it, you need to make a notch at the front of the lower receiver through which the feed tube may pass.

- Drill or mill out the front of the lower receiver using a bit that is wider than the feed tube (such as a 12.5mm)
    - The notch should extend down to the bottom of the flanges for the pivot pin.



Modifying the Pistol Grip

1. Place the pistol grip facing top up in a vise.
2. Create a pilot divot or hole using a center punch at the rearmost portion of the grip not counting the beavertail.

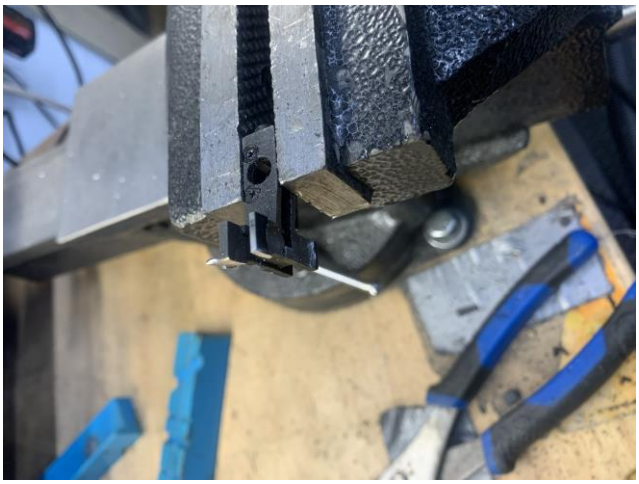
3. Drill a hole wide enough to accept the airline in the marked spot using a half inch step drill.

Modifying the Bolt Catch Assembly

Please note these instructions are for the V3 version of the VFC 416A5. If you have an earlier version of the rifle, you will need to modify the bolt catch assembly such that it doesn't interfere with the installation and travel of the DGA bolt carrier assembly.

1. Remove the bolt catch and magazine catch assemblies from the lower receiver. You will need a narrow punch, a 2mm hex driver, and a 0.9mm hex driver.

2. Place the bolt catch assembly into a vise.
3. Cut all the high points off of the assembly using a rotary tool or similar.



4. Place the bolt catch lever into a vise.
5. Cut the middle arm off the lever so that it cannot be pushed upwards by an inserted magazine.
6. Reinstall the assembly and lever into your lower receiver.

Assembling the Lower Receiver

Installing the Trigger Chassis and Selector Lever

1. Place the DGA trigger sear into the VFC trigger and drop the assembly into the lower receiver.

2. Reinstall the VFC trigger pin.

3. Slide the trigger chassis down into the lower receiver. It may be easier if you push the semi and auto sears backwards to provide clearance for the trigger.

4. Install the included bolt in the left-side full auto sear hole of the lower receiver using the 2mm driver.

5. Lift up the full auto sear arm and push the VFC selector into the selector hole. This may be easier if the left-side selector lever is installed onto the selector.
6. Push the full auto sear down onto the selector firmly and rotate the selector from the safe to semi positions repeatedly to create a mark on the selector.

7. Pull the selector assembly out of the lower receiver and place it in a vise with the mark you made pointing upwards.
8. Use a rotary tool or file to create a shallow notch on the selector where you made the mark.

9. Reinstall the selector into the lower receiver. Rotate the selector into the semi position. Check to make sure that the full auto lever does not engage the valve knocker in the semi position. You may find this easier with the air valve installed.

10. Install the air valve assembly if you did not do so for the previous step. Push the takedown pin into place.
11. Install the ambidextrous selector lever.

Installing the Pistol Grip and Selector Detent

1. Drop the selector detent and spring into the lower receiver.

2. Slide the pistol grip up onto the grip flange on the lower receiver, ensuring that the detent spring does not get caught and bent or twisted.
3. Reinstall and tighten the pistol grip bolt.

Installing the Buffer Tube Assembly

1. Place the VFC buffer tube into a vise.
2. Cut the locating flange off the tube so that the threaded end is now flush using a rotary tool.

3. Slide the DGA recoil buffer into the VFC buffer tube with the wider end facing outwards.

4. Drop the takedown pin detent and spring into the hole at the rear of the lower receiver.

5. Screw the buffer tube and end plate into the lower receiver until the recoil buffer assembly touches the air valve without pushing the valve forward.

6. Tighten the castle nut using the armourer wrench.

Final Assembly

1. Ensure that all remaining rifle furniture (stock, handguard) have been reinstalled.
2. Push the pivot pin into its disassembly position if you have not done so already.
3. Slide the upper receiver onto the lower receiver much as you would with an AEG M4. Ensure that the rare of the DGA bolt carrier slides into the semi-circular slot on the air valve.
4. Push the pivot pin back into its closed position.

Congratulations, you have completed all major installation steps for the DGA VFC HK416A5 Kit.

If you haven't already, you should lubricate the moving parts of the engine. DGA recommends *GetSome* brand lubricant, available from our website.

If you encountered any issues during your install, or your gun is not working correctly, please reach out to DGA Support.

Please check the website for more guides on troubleshooting and maintenance.

We also invite you to join the Daytona Airsoft Systems Group on Facebook to speak directly with other DGA enthusiasts as well as DGA employees.