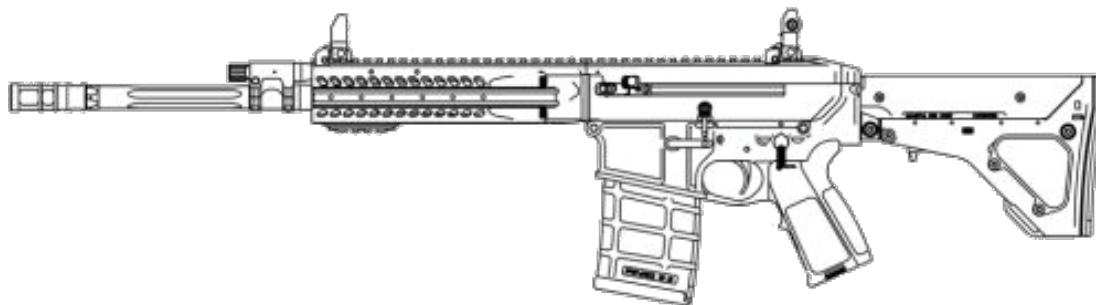


F&D DEFENSE

PRECISION TACTICAL RIFLES

OPERATOR'S MANUAL



FD308

FD338



WARNING! This manual contains important safety information that will allow safe operation of F&D rifles. Read the entire manual prior to operation, disassembly or assembly of the rifle. Keep this manual with your rifle for the entirety of ownership and please transfer this manual to the new owner if you sell the rifle.

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Dedication

**To those who said you're not intelligent enough.
To those who said you're not skilled enough.
To those who said you don't have the credentials.
To those who said you don't have the education.
To those who said you don't have the passion.
To those who said you don't have the dedication.
To those who said you don't have the perseverance.
To those who said you're too broke.
To those who said no one will agree with you.
To those who said you can't make it.
To those who built their empire on your back.**

These world-class products are dedicated to all the individuals who chose to stand in your way. To these individuals, a special kind of gratitude is given. Because without them, there would be no incentive to dig in and drive harder. –cvh

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About F&D Defense LLC

F&D is an owner-operated company dedicated to manufacturing the absolute highest quality tactical rifles for intermediate to advanced shooters. Our designs and manufacturing, processes, and inspection procedures far exceed standard industry requirements; and with a unique consolidation of design, industrial, and manufacturing engineering capabilities F&D surpasses military & aerospace standards for producing exceptional defense products.

Built from the ground up with only \$500 in pocket and without any outside investment, control, or influence, F&D has become a multi-million dollar powerhouse of innovation, design, and manufacturing capabilities within just a few short years. F&D has grown to now serve the tactical firearms market as the underdog with skill, talent, and drive to aggressively challenge and often surpass its competitors in design, quality, performance, and pricing.

F&D goes to extraordinary measures to ensure not only its designs are functional but also tested and proven under various conditions. F&D's lifetime warranty proves our commitment to the end user. Over the years we have purchased black rifles from many manufacturers and have been disappointed in various aspects. No rifle will be shipped from F&D that is unable to pass our sub-MOA accuracy and operational standards.

About this Operator's Manual

As an intermediate or advanced shooter, sections of this manual may seem trivial or common-sense; however, some subject matters presented here are not obvious since several features on the FD platform substantially deviate from the traditional AR design. Therefore, it is important to read this manual thoroughly and completely before operating or maintaining an F&D rifle.

This manual provides instructions for the operation and maintenance of your F&D rifle. Read the entire manual before the operating the firearm. Your attention to the safe and responsible use of this firearm will dictate the success and well being of the operator and those around you. Your warranty may be voided by incorrect maintenance and/or other mishandling of this firearm; therefore, it is essential that you thoroughly follow this manual's instructions, even when particular instructions may seem contradictory to common practice.

It is the owner's responsibility to assure that all federal, state, and local laws are complied with regarding the purchase, ownership, operation, and storage of this firearm.

This manual will be revised occasionally on an "as-needed" basis. F&D will make the latest revised manual available on its website at www.fd-defense.com/support. Before using this manual, it is highly suggested you verify that you are using the latest revision.

Safety Information and Warnings

- Always treat the firearm as if it were loaded and charged.**
- Be aware of the direction your rifle is pointed in at all times.**
- Until you are ready to fire, keep the safety selector on SAFE at all times, especially when the firearm is loaded and charged.**
- Until you are ready to fire your rifle, keep your finger off the trigger.**
- Only load your rifle when you are ready to operate.**
- Know your target and more importantly, what is in the area of your target.**
- Become familiar with your rifle before operation.**
- Before firing your rifle, inspect it for damages or safety issues.**
- Keep firearms in a safe place and away from unauthorized users.**
- Never store your ammunition in the same place as your rifle.**
- See the ammunition section of this manual to ensure you are using correct ammunition.**
- Use only high quality factory ammunition that is clean and in good condition.**
- Inspect barrel markings for the proper type of ammunition to use in your firearm.**
- Only use your firearm for legal purposes.**
- Wear eye and hearing protection when shooting and around others who are shooting.**
- Do not modify or alter your firearm in any way unless authorized to do so by F&D.**
- Never fully disassemble your firearm unless authorized to do so by F&D.**
- Do not use any substance that may alter you physically or mentally while operating or maintaining your firearm.**
- Ensure the barrel bore is free from all obstructions before shooting your firearm.**
- The firearm will fire without a magazine installed, ensure you clear the chamber in accordance with the instructions in this manual prior to assuming the chamber is cleared.**

In the event of malfunction stop and review the procedures in this manual. If you cannot or do not feel comfortable or safe resolving the issue please contact F&D for assistance.

Description of the F&D Series of Rifles

The FD platform is a patent pending gas-hybrid operated rifle, custom fit with matched receiver sets, matched gas system, matched action components, and comes with a 5R Bartlein cut rifled barrel and Geissele National Match or Super Semi-Auto Enhanced trigger. All configurations are available in both piston and direct impingement variations, and are easily convertible between the two. F&D rifles are available in a number of primary configurations to fulfill a variety of needs, as follows:

FD308 Platform

FD308-18: Chambered in 308 Winchester with an 18" barrel; ideal for engaging targets up to 800 yards. **Advantage:** ammo availability, and easy to develop custom loads, with a wide range of reloading materials, components, and bullet styles.

FD308-22: Chambered in 308 Winchester with a 22" barrel; ideal for engaging targets up to 1,000 yards. **Advantage:** same as above with extended range and more custom load flexibility.

FD260: Chambered in 260 Remington with a 22" barrel; ideal for engaging targets up to 1,200 yards. **Advantage:** carries more energy than 308 Win at distance, but uses the same magazine and internal components.

FD65C: Chambered in 6.5mm Creedmoor with a 22" barrel; ideal for engaging targets up to 1,200 yards. **Advantage:** same as above, however this specialty cartridge allows greater flexibility for custom load development than the 260 Remington.

FD338 Platform

FD338-22: Chambered in 338 Lapua Magnum with an 22" barrel; ideal for engaging targets up to 1,500 yards. **Advantage:** extreme range capability, standardized long-range cartridge, easy to develop custom loads, with a wide range of reloading materials, components, and bullet styles.

FD338-25: Chambered in 338 Lapua Magnum with an 25" barrel; ideal for engaging targets up to 1,700 yards. **Advantage:** same as above with extended range and more custom load flexibility.

FD458: Chambered in 458 F&D with an 18" barrel; ideal for engaging targets up to 800 yards using subsonic ammunition. **Advantage:** allows the operator to accurately engage targets beyond acoustic signature recognition.



Unique Features of F&D Rifles

Charging System



FD platform rifles incorporate a unique charging system built around a sliding rod instead of a sliding rail system. This allows the mechanical system to operate smoother, more reliably, and easier to maintain than all other charging systems. The handle has a consumable bronze wear-pad between it and the upper receiver, which eliminates wear to the upper receiver and charging handle. The system was

designed so that the bronze will impregnate into the upper receiver's anodizing, thus providing long-term protection to both components. The charging handle is held forward by two high-strength permanent magnets; one is located in the charging rod, and one in the upper



receiver. The Forearm contains a setscrew that will allow adjustment of the upper receiver magnet in order to make solid contact with the charging rod magnet, while ensuring the two magnets are not slamming together. This is preset from the factory, but may need calibration from time to time. The front of the charging handle should maintain a gap with the upper receiver between (.002"-.005") as shown in the picture to the left; a set-point which allows a piece of paper to freely pass through the gap is sufficient calibration.

Sealed Charging System

For suppressed operation, the charging rod also incorporates an o-ring to completely seal all back-pressure exhaust gasses from venting out rearward towards the shooter's face. The o-ring needs to be oiled or lightly greased occasionally in order to avoid undesirable friction during charging.



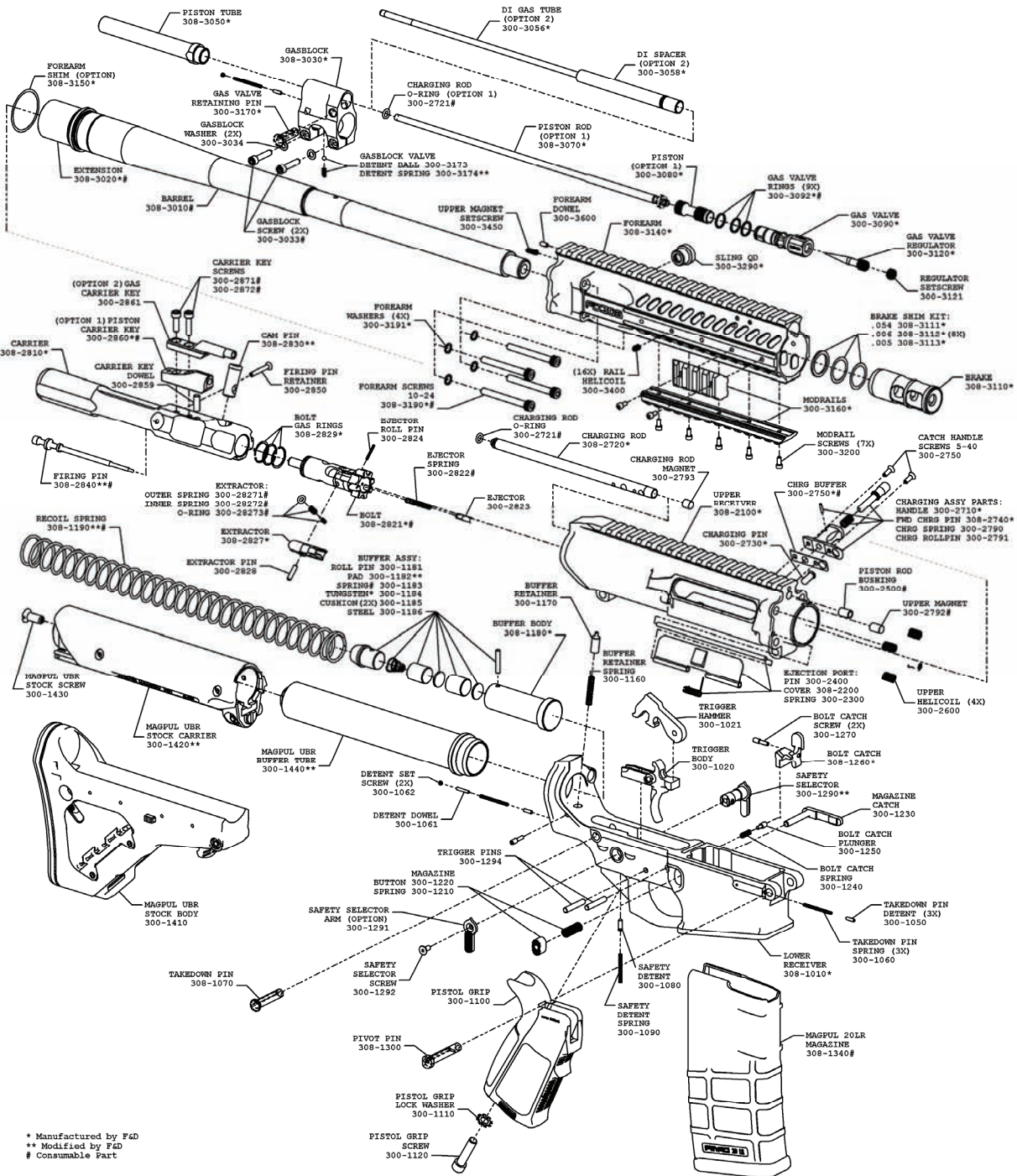
Buffer-Recoil System

F&D has designed and manufactures a specific buffer/recoil spring combination for use in its rifles to accomplish greater accuracy and reliability across a broad range of ammunition loads and pressures. **Buffers from other manufacturers will not work properly with the FD308 and may cause damage to and/or decreased performance of the rifle.** If you need a different buffer configuration, perhaps to due the requirement to run a specific load and pressure, please seek F&D assistance before experimenting in order to avoid warranty termination.

Barrel Attachment

F&D incorporates a unique barrel attachment method that does not utilize a traditional barrel nut. The design provides several advantages such as: compacting the overall rifle configuration, reducing weight, increased ergonomics, and increasing barrel retention force and consistency. The lower profile gas system configuration provides a lower optics-to-barrel height and allows more convenient shooter posture.

Illustrated Parts Breakdown



* Manufactured by F&D
 ** Modified by F&D
 # Consumable Part

Specifications

Caliber: FD260: .260 Remington
FD65C: 6.5mm Creedmoor
FD308: .308 Winchester
FD338: .338 Lapua Magnum
FD458: .458 FnD
Note: See barrel markings to determine what type of ammunition the firearm requires.

Empty Weight: FD260: 11.4 lbs
FD65C: 11.4 lbs
FD308-18: 10.1 lbs
FD308-22: 11.4 lbs
FD338-22: 12.5 lbs
FD338-25: 13.2 lbs
FD458: 11.0 lbs (without suppressor)

Length: FD260: 43-1/4"
FD65C: 43-1/4"
FD308-18: 36-3/4"
FD308-22: 43-1/4"
FD338-22: 44-7/8"
FD338-25: 47-7/8"
FD458: 38-3/4" (without suppressor)

Barrel: Cut rifled, 5R, Stainless
FD260: 22" 8.5 twist
FD65C: 22" 8.5 twist
FD308: 18" & 22" 10 twist
FD338: 22" & 25" 9.5 twist
FD458: 18" 10 twist

Magazine Capacity: FD260: 20 round
FD65C: 20 round
FD308: 20 round
FD338: 10 & 14 round
FD458: 10 & 14 round

Max Range: FD260: 1,200 yards
FD65C: 1,200 yards
FD308-18: 800 yards
FD308-22: 1,000 yards
FD338-22: 1,500 yards
FD338-25: 1,700 yards
FD458: 800 yards (subsonic)

Basic Operating Cycle

Firing:	When the trigger is depressed, the sear is disengaged from the hammer, allowing the hammer to be driven by the hammer spring to strike the firing pin. The firing pin strikes the cartridge primer, firing the chambered round.
Unlocking:	Propellant gasses are tapped off at the gas port and travel through the gas block and gas valve to the piston. This gas drives the piston cup back from the gas valve nozzle, in turn driving the piston rod to push the carrier key. This initiates a rearward movement of the bolt carrier group. As the bolt carrier travels to the rear, the cam pin rotates the bolt, thus unlocking it from the barrel extension.
Extraction:	As the bolt carrier group continues through the recoil stroke, the expended cartridge is drawn from the chamber by the extractor.
Ejection:	Once the expended cartridge is clear of the chamber, it is ejected from the weapon by a spring loaded ejector.
Charging:	As the bolt carrier group continues to the rear, it charges the hammer, which is initially retained by a disconnecter. As the shooter disengages the trigger, the disconnecter releases the hammer allowing it to be captured by the trigger. This is known as a "reset".
Feeding:	The recoil stroke concludes when the buffer halts the bolt carrier group. The recoil spring, compressed during the recoil stroke, drives the bolt carrier group forward, commencing the counter-recoil stroke. As the bolt carrier returns forward the next round is stripped from the top of the magazine and directed into the chamber by feed ramps in the extension.
Chambering:	As the bolt carrier group continues the counter-recoil stroke, the round is seated in the chamber.
Locking:	As the bolt carrier group completes the counter recoil stroke, the bolt rotates, locking into the barrel extension. The bolt carrier group is now again in battery and the rifle is charged and ready for firing the next round.

Clearing Your Weapon



Note: You will not be able to engage the safety selector to the “SAFE” position if the rifle is not already charged, as it will remain in the “FIRE” position. If the rifle is already charged you should engage the safety selector to the “SAFE” position at this time.

With no magazine installed, pull the charging handle rearward. You may grasp the handle under-handed with your pinky finger or over-handed with your index finger. Ensure no optics mounts or other accessory mounts interfere with the charging process, otherwise you can easily injure your fingers.



Note: You do not need to press the forward assist button to charge the rifle.

While the charging handle is partially pulled rearward, look into the chamber to ensure there is no cartridge. Keep your finger off the trigger and out of the trigger guard area during this process.

With no magazine installed, allow the charging handle forward.



Your weapon is now cleared and safe for disassembly, maintenance, cleaning, and storage.

The rifle will now be charged and you should engage the safety selector to the “SAFE” position at this time.

Basic Disassembly



Clear your weapon. Pull the charging handle back and ensure the chamber is empty. Once verified empty, allow charging handle to slide bolt carrier group forward.



Disengage the takedown pin by pressing with your finger or a crimped bullet and sliding to its fully open position.



The upper group will be allowed to pivot. Note: Unlike other AR10 style rifles, there is no concern with damaging the port cover on F&D rifles during pivoting, so the port cover can remain open.



Remove the bolt carrier group simply by pulling it rearward from the upper group. Note: Unlike other AR10 style rifles, the charging handle will not interfere with removal and installation of the carrier group.



To remove the lower group from the upper group, disengage the pivot pin by pressing with your finger or a crimped bullet and sliding to its fully open position. The lower group will then be completely disconnected from the upper group.



Once the two groups are separated be careful with the components as they may damage each other if knocked together.

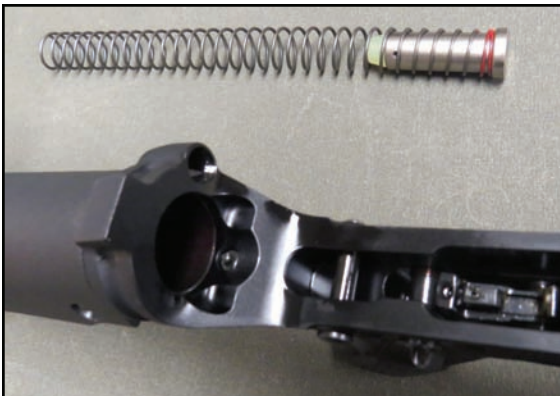
Basic Disassembly (cont.)



To remove the buffer assembly, press the buffer retainer pin down with your fingernail or a crimped bullet tip.



This will then allow the buffer assembly and recoil spring to be removed from the buffer tube. **Note:** Be careful that the buffer assembly does not spring out with enough force to damage or ding other components on the rifle.



To reinstall the buffer assembly and recoil spring you do not need to push down the buffer retainer pin, as the spring and buffer body will automatically push it down.

Basic Operation



Without a magazine installed, pre-charge the rifle and engage the bolt catch as shown.



To charge the rifle and load a round into the chamber, press the bolt catch button. Ensure the rifle is pointed in a safe direction and away from objects that could otherwise cause bullet ricochet into an unsafe area.



Only after a target is acquired and the rifle is pointed in a safe direction, turn the safety selector to the "FIRE" position. At this time you may engage the trigger.



Load a magazine. Note: F&D rifles are designed with a snug fit on Magpul magazines, and you may need to snap the bottom with the palm of your hand in order to fully engage.



The rifle is now charged with a live round in the chamber. Until you are ready to engage targets, the safety selector should be set to the "SAFE" position and your finger should be off the trigger and out of the trigger guard area.



Once a firing session is complete, to drop the magazine press the magazine release button as shown in the picture above. The magazine will normally fall out under its own weight, so be careful that it does not become damaged or lost when falling.

Basic Operation (Forward Assist)

The forward assist will rarely, if ever, need to be employed in most operating environments. Forward assist is a standard feature found on Mil-Spec rifles due its added reliability when regular required cleaning and maintaining of the rifle is not available, or when using ammunition that may have greater head-spacing variations. It may also be used to quietly chamber a round.



To employ the forward assist feature, use the base of your pointer finger to engage the forward assist button.



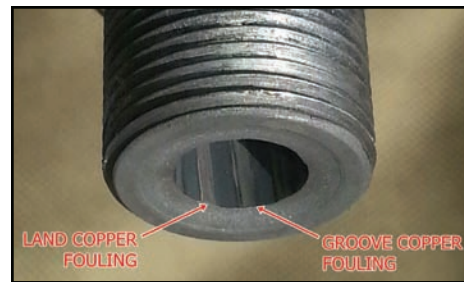
Once the forward assist button is engaged, use your thumb to push the charging handle forward. This will manually force the bolt carrier assembly forward.

Breaking In Your Rifle Barrel

F&D rifles are fitted with a precision stainless barrel. The bore is uncoated, hand-lapped and polished for increased accuracy potential. Even a small amount of copper fouling on rifling lands or grooves can turn accuracy from 1.0 MOA to 3.0 MOA within only a few rounds fired. **In order to maximize long-term performance it is required that the owner follow the break-in procedure as specified below and then continue maintaining the barrel as needed.**

Standardized Break-in Schedule:

- B1)** Remove the muzzle device if one is installed.
 - B2)** Run one oil patch and two dry patches prior to shooting.
 - B3)** Fire one initial test round. (Federal GMM 168-175gr preferred for testing)
 - B4)** Inspect bore at the muzzle for any copper tinted sign of fouling. If there is a clear indication of copper fouling, proceed to step 4 and the cleaning procedure. Otherwise, continue firing FGMM test rounds until a copper tint becomes apparent within the bore at the muzzle. Note: use an appropriate light source held at an angle that will allow you to clearly see any discoloration in the bore at the muzzle.
 - B5)** Clean bore after each shot 1 through 10. (10 total rounds fired)
 - B6)** Clean bore after each 5th shot, ten times. (60 total rounds fired)
 - B7)** Clean bore after each 20th shot, five times. (160 total rounds fired)
- Note:** This schedule must be adjusted if negative copper fouling remains prevalent.



Cleaning Procedure:

- C1)** Using a quality rotating cleaning rod with a bronze or brass brush installed, wrap a cloth patch around the brush and soak with Sweet's 7.62 bore cleaner or other relatively aggressive copper solvent such as Hoppe's No. 9. Inserting the swab setup into the chamber end, run back and forth in the bore for several minutes, using slow complete strokes. Ensure the soaked cloth does not get removed during this process. You may find that an undersized brush and thicker or layered cloth to be more useful for the application of solvent.
 - C2)** Allow barrel to sit for 5-8 minutes. Do not allow aggressive ammonia-based solvent to remain in barrel bore longer than 10 minutes.
 - C3)** Repeat C1 until copper tint is no longer apparently noticeable within the bore at the muzzle end.
 - C4)** Once copper is removed, run a swab soaked with Hoppe's #9 back and forth through the bore, starting from the chamber end. This will neutralize the copper solvent and prevent chemical etching of the bore.
 - C5)** Once the bore is neutralized, run a dry swab back and forth through the bore, starting from the chamber end, until the dry patches come out clean.
 - C6)** Run an oil patch through the bore with a jag, starting from the chamber end.
 - C7)** Run a dry patch through the bore with a jag, starting from the chamber end
- Note:** If all copper cannot be removed via the steps above, additional steps can be taken using abrasives pastes, polishing compounds, and fine grades of Scotchbrite in combination with the above procedures. Contact F&D for further instructions if necessary. Wash the bronze or brass brush thoroughly to remove any remaining solvent before storage in order to preserve the life of the brush.

Barrel Break-In (cont.)

Storage:

The barrel on your F&D rifle is made from 416 Stainless, that does NOT mean the material will not corrode. Take time to occasionally check the inside and outside of the barrel for pitting corrosion, and keep the exterior and interior lightly oiled during storage.

Barrel Life

Rapid fire substantially decreases the life and accuracy of F&D's precision stainless barrels. It is highly recommended to maintain restraint in engaging in such activity. F&D's recommended cooling period guidelines are as follows:

Sustained Fire:

20 Round Rapid: Never, unless your barrel is already 4000-5000 rounds old.

10 Round Rapid: Avoid, let cool for at least 12 minutes

5 Round Rapid: Cool for at least 8 minutes

3 Round Rapid: Cool for at least 4 minutes

1 Round per 20 seconds: Continuous

Grouping:

1 Round per 10 seconds x 5 Rounds: Cool for at least 2 minutes

1 Round per 5 seconds x 5 Rounds: Cool for at least 4 minutes

1 Round per 1 second x 5 Rounds: Cool for at least 6 minutes

Ultimate barrel life is primarily a consideration of each shooter and how he operates and maintains his rifle, as well as the type/quality of ammunition used. F&D guarantees that each rifle can perform under 1.0 MOA from the factory. While the personnel of F&D regularly group less than .5 MOA with test rifles, there is no guarantee that each operator will be able to do the same due to the numerous factors of accuracy, particularly in gas-guns.

Gas System and Settings



This section reviews the adjustment procedure for F&D's proprietary patent-pending gas system. To open the gas valve retaining pin, use a crimped bullet to slide the pin over to the open position. This will allow rotation of the gas valve to any desired primary settings and will allow removal of the gas valve and other gas system components. The setting that is positioned upward is the setting applied to the gas system.

Note: Each setting may shift the Point of Impact.

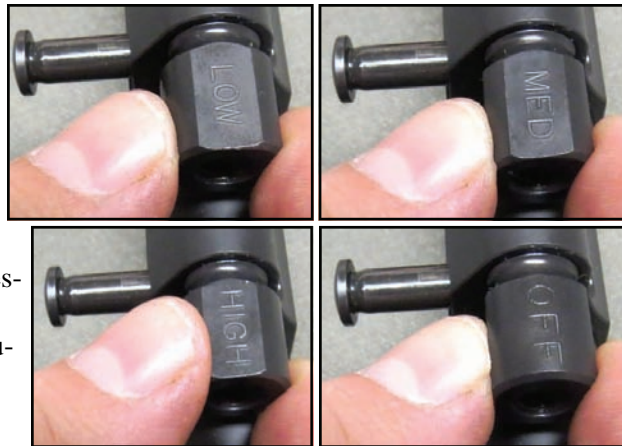
Gas-Valve Primary Settings:

HIGH - for low pressure ammo or for direct impingement operation, generally not for use with a suppressor.

MED - for medium pressure ammo without a suppressor or low pressure rounds with a suppressor.

LOW - for low-high pressure ammo with a suppressor.

OFF - cancels the cyclic action for maximum accuracy and velocity.



An internal ball detent will assist in rotational clocking of the gas valve at 90 degree increments. Once a primary gas setting is established, close the retaining pin in order to lock the gas valve. **Note:** See the maintenance section regarding the cleaning and inspection of the gas system components.



The gas-valve regulating needle is adjusted with a 5/32" allen wrench (preferably an extended ball driver style). First, remove the setscrew that locks the regulating needle in place. **Note:** Check the tightness of this set screw occasionally for looseness. If necessary, apply Loctite 246 to these threads in order to prevent loosening.

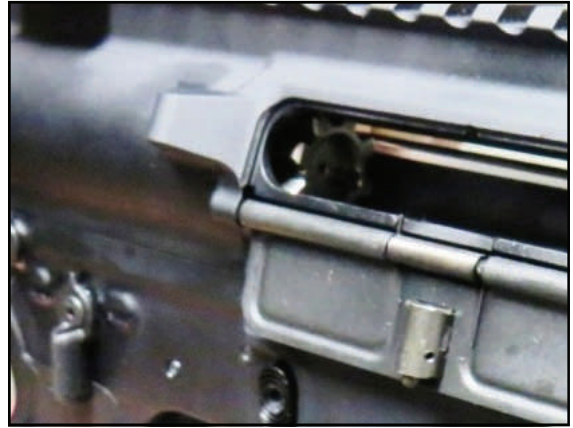


F&D determines the regulating needle adjustment by counting the number of turns from the bottomed-out position. Factory default setting is **three turns** out, which works well for a decent range of loads and operating pressures. Closing or opening the needle will effect all gas valve primary settings, but each turn will effect them to a different degree.



Gas System and Settings (cont.)

For advanced tuning it is recommended to maintain a log of successful settings per each ammunition load and operating pressure. The goal of advanced tuning is to find a “sweet-spot” primary and regulator needle setting combination that will provide the minimal amount of recoil necessary to maintain consistent ejection patterns. Once broken-in and consistent ejection patterns are established and the remainder of the rifle is in good operating condition, then primary accuracy variables are reduced to ammunition selection (or load development), and shooter technique. Reinstall the locking set screw once a satisfactory regulating needle position is established.



In tuning the rifle for precision shooting, the recoil rate should be just fast enough to lightly kiss the bottom of the stock/buffer tube while ensuring the bolt catch consistently locks back the bolt carrier group after firing the last round in the magazine. To find this minimal setting, load only one round in the magazine at a time and start with the gas valve primary setting on MED, with the regulating needle only one turn from bottom. After each successive round fired, rotate the regulating needle out half a turn until the bolt catch consistently locks the bolt carrier group back, as shown in the picture above.

Note: All gas system components are corrosion resistant high-temperature stainless or NP3-Plus coated tool steel, therefore seizing will be minimized. However, the gas system should still be cleaned and oil regularly in order to keep carbon particle build-up & hot-bonding potential to a minimum. Ensure the gas-valve sealing ring gaps alternate, as to not allow gas and carbon particle leakage through the rings. This will keep the system cleaner and more efficient for a higher number of rounds fired.

Maintenance (general)

The following maintenance routines are established for attaining optimum performance from F&D rifles. The below recommended schedules in no way imply that any particular operating environment and ammunition loads could not go much longer in between maintenance and cleaning sessions. As such, it is also possible to encounter operating environments and ammunition loads that may require more frequent cleaning and maintenance sessions. The below recommended schedules are to serve as “rule of thumb”. However, abject failure or neglect to perform maintenance when needed may void the rifle’s warranty and cause an unsafe operating environment.

Barrel

An F&D barrel should be cleaned in accordance with instructions on page 14. Once the break-in period has been accomplished and copper fouling is brought to an acceptable level, barrel cleaning should be performed on an “as-needed” basis. Many barrels perform best 100 or more rounds after cleaning, while others may perform best only within 40 rounds or less after cleaning. All barrels will react differently due to ambient operating temperature, metallurgy of bullets, bore size, powder burn efficiency, and the abrasiveness of powder being used. Note: Always check for obstructions in the bore prior to shooting, as used patches or other cleaning items may be inadvertently left in the barrel. **Note:** the 416 stainless steel barrel CAN corrode when not preserved properly, particularly when contact is made with certain types of elements (galvanic corrosion). During prolonged storage, run an oil patch through the bore. Repeat F&D’s standard cleaning process prior to the next shooting session. The external of the barrel is coated with a ceramic high temperature paint; as such, any traditional cleaning process will work well.

Action Components

F&D action components (bolt carrier group, extension) should be cleaned and oiled after each daily use or 200 rounds fired, whichever comes first. For suppressed operation, this schedule should be reduced to 100 rounds fired. The cleaning process consists of removing carbon deposits from all action components and interior of the upper receiver with a lightweight gun oil such as RemOil. Prior to reassembly, apply KG4 or similar medium weight gun oil in accordance with instructions on page 19.

Gas System Components

F&D gas system components (gas valve, piston, piston rod) should be cleaned and oiled after each daily use or 100 rounds fired, whichever comes first. For suppressed operation, this schedule should be reduced to 50 rounds fired. The cleaning process consists of removing carbon deposits from all gas system components with a lightweight gun oil such as RemOil. Prior to reassembly, apply Shell Rotella T in accordance with instructions on page 20. Heated ultrasonic cleaning, while using an appropriate solution and concentration for the materials being cleaned, is the best way to remove carbon deposits from gas system components.

F&D External Cleaning

Clean external components of F&D rifles using light gun oil (RemOil or similar) on all anodized aluminum, steel, and stainless steel parts. Spray RemOil works well when using a lint-free cloth to work the oil into the surface of components and removing excess oil from over-spray.

Maintenance (bolt carrier group)



Use a crimped bullet tip to remove the firing pin retainer. Using a razor blade you may adjust the fit of the retainer pin by flaring the slot.



Once the retainer pin is removed, the firing pin will drop from the assembly. Tap the assembly in the orientation shown above if the firing pin does not freely fall from the bolt carrier group.



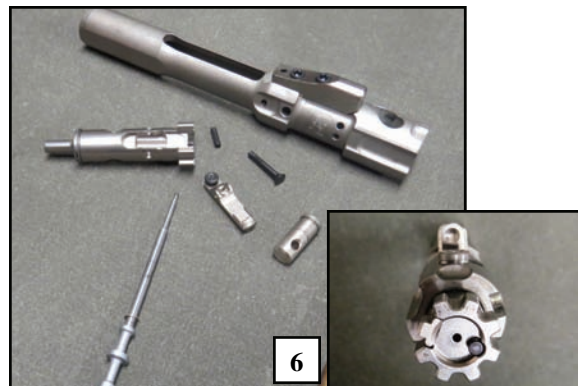
Remove the cam pin.



Remove the bolt assembly from the carrier.



Use the firing pin to remove the extractor pin. At this time, inspect the firing pin for bending, damage or deformation to the spherical surface of the primer striking tip, and excessive mushrooming on the hammer strike face.



Reassemble the bolt carrier group in the reverse order it was assembled. **Note:** shim washers may be installed on the firing pin, as shown in the above picture, which will allow the ability to attain a desired depth in which the firing pin engages the primer.

Important: Install the bolt with the extractor at 11 o'clock position as shown in the inset picture above .

Maintenance (gas system)



As described in the gas valve settings section on page 17, disengage the gas valve retaining pin by sliding to its fully open position. Now the gas valve is free to be rotated or removed from the gas block. If, after extended periods of sustained fire the gas valve becomes seized, apply a carbon-binding penetrating oil and allow to soak for



Once the gas valve is removed, you may apply any carbon remover solvent, brake cleaner, carburetor cleaner, or employ an ultrasonic cleaner with appropriate solution to remove any excess carbon build-up. The 9 gas-sealing rings will minimize the amount of carbon build-up in areas that would otherwise cause seizing of the gas valve. Upon reinstallation, ensure each gas-ring gap is misaligned with the adjacent gap. Also ensure the gas rings are not damaged or overlapping each other.



Remove the upper group from the lower group, then remove the bolt carrier assembly. This will provide access to the piston rod (or direct impingement gas tube) from inside the upper receiver.



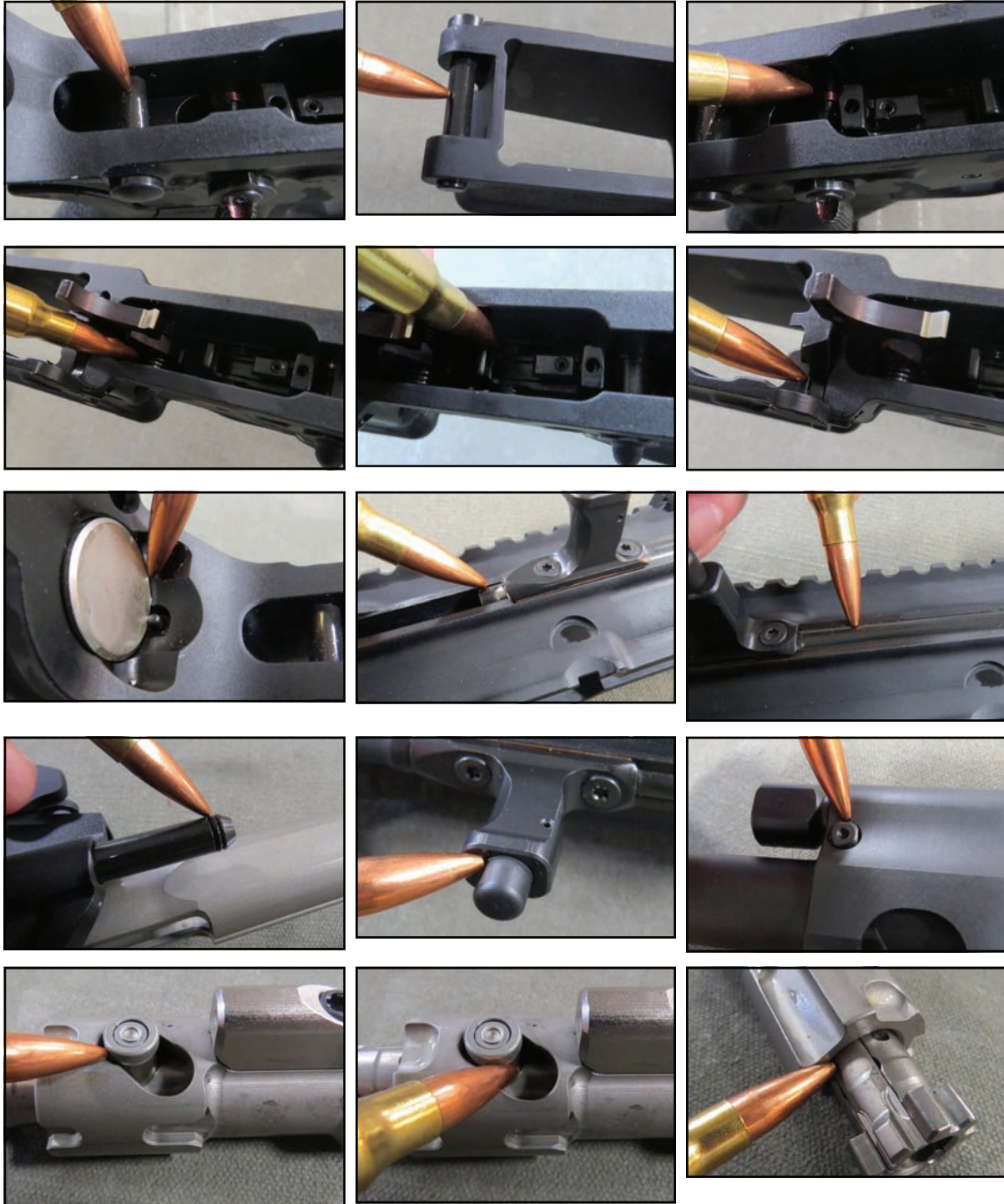
Slide the piston rod (or direct impingement gas tube) towards the muzzle end of the rifle. The piston will then be pushed out of the gas block, ensure you catch the piston as it comes out to avoid losing or damaging it.



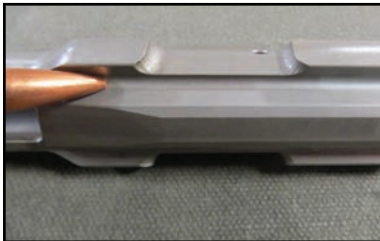
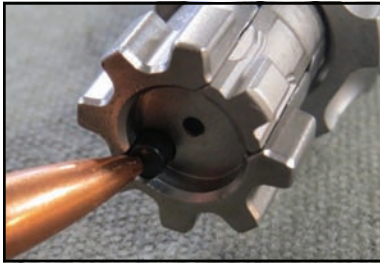
While most medium weight gun oils are sufficient, F&D recommends Shell Rotella T lubricating oil on all gas-system components. Rotella binds to carbon particles and helps prevent seizing of components. Most oil will get blown out of the gas system, but after repeated use the oil will seep into the surface of the components and prevent hot-bonding. Liberally apply Rotella to the piston, piston rod, outside surfaces of the gas valve, and to the retainer pin. Reinstall these components in the order they were removed. Provide care with reinstalling the gas valve so that the gas rings do not become damaged, which may require some wiggling or repositioning of the gas-rings as appropriate.

Maintenance (lubrication)

The following pictures will identify common lubrication points on FD platform rifles. F&D recommends KG4 as an all-purpose wicking medium-weight lubrication oil. For each symmetrical component identified below, oil should be applied to both sides of the part or hinge-point.



Maintenance (lubrication cont.)



Matched Components

Some components on F&D rifles are “matched” - meaning that a very specific tolerance is required in order to ensure proper fit and function. These components must only be exchanged or serviced by gunsmiths authorized by F&D to perform the work, or performed directly by F&D personnel. A parts and/or service charge may be required depending if warranty service applies to the issue. Such matched components include the following:

Gas Valve / Gas Block:

The gas valve and gas block are matched together at the retainer pin. Replacing either component may require a proper re-matched component. By sending the failed or damaged component to F&D, an appropriate match can be identified and a replacement sent to the customer for reinstall. In some instances both components must be replaced if a match is not already in stock at F&D.

Bolt / Barrel:

The bolt and barrel are matched together by a determination of headspace tolerance. Replacing either component may require a proper re-matched component. By sending both components to F&D, an appropriate match can be identified and a replacement sent to the customer for reinstall.

Buffer Tube / Lower Receiver:

The buffer tube and lower receiver are matched together by a determination of a clearance cut into the buffer tube that must align with the charging rod hole after being threaded onto the lower receiver. If either component must be replaced, both components must be sent to F&D for direct factory service. A qualified gunsmith may also perform the work to a new buffer tube if a proper coating is applied (flat black cerakote or hardcoat anodizing) after modification. This process is required if the end user wishes to replace the existing stock with one that uses a different buffer tube. Many aftermarket stocks will not work with the F&D charging rod design. In this case, contact F&D for options.

Charging Rod / Upper Receiver:

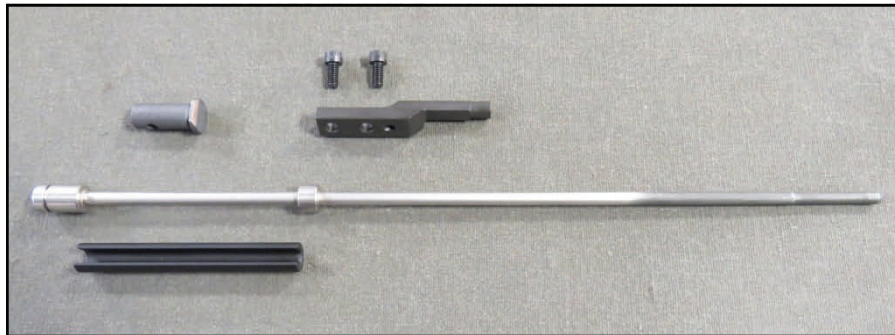
The charging rod and upper receiver are matched together at the charging handle. Replacing either component may require a proper re-matched component. By sending the failed or damaged component to F&D, a match can be identified and a replacement sent to the customer for reinstall. In some instances both components must be replaced if a match is not already in stock at F&D.

Direct Impingement Conversion

F&D offers a Direct Impingement conversion kits for specialty applications and for those few individuals who are not sold on the piston concept. Through years of extensive testing, F&D has found that there is no accuracy advantage of DI over piston. However, there can be other advantages of DI in regards to bolt-unlock timing and a slight advantage of allowing more flexibility for custom load development. DI requires much more gas flow through the system than does F&D's patent pending piston system, thus counteracts any advantage of less moving mass.

It is highly recommended to run F&D's piston setup whenever employing the use of a suppressor. When operating with a suppressor in this configuration, bolt-unlock time is extended, gas usage is minimize, barrel harmonics are tamed, and the system runs much cleaner than in the DI configuration.

- DI Gas Tube
- DI Gas Tube Spacer
- Cam Pin
- DI Carrier Key
- Carrier Key Screws
(2x 3/8" long)



Install the DI gas tube and spacer into the gas block assembly as shown. Reinstall the gas valve assembly per the maintenance instructions.

Note: If a DI gas tube assembly is installed onto a piston bolt carrier group setup the rifle will not function correctly, but will be able to be assembled and fired. If the DI gas tube spacer is not installed, the DI gas tube will bend in between the two brazed collars and may cause a reliability and disassembly issue.

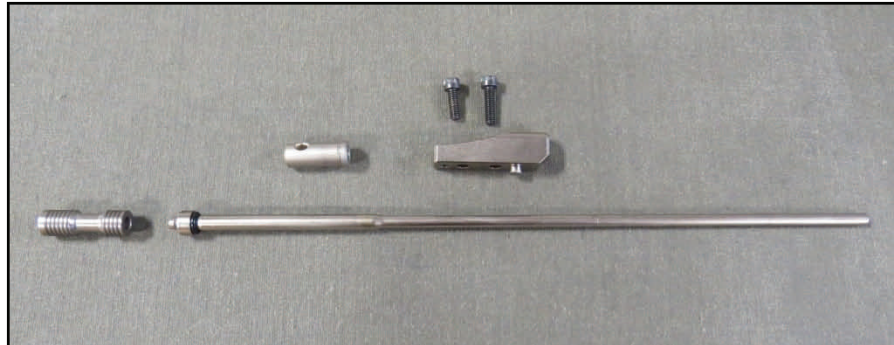


Install the DI carrier key as shown, with two 3/8" long screws. Torque value for these screws are found on the Torque Values section of this manual. Only the regular style cam-pin functions properly with the F&D DI setup. Reinstall the remaining components per the maintenance section of this manual.

Direct Impingement Conversion (cont.)

When converting back to F&D's piston setup, the following illustrations and instruction apply:

- Piston
- Piston Rod
- Roller Cam Pin
- Piston Carrier Key
- Carrier Key Screws (1/2" and 5/8" long)



Install the piston rod and piston into the gas block assembly as shown. Apply Shell Rotella T lubricating oil per the maintenance instructions. Reinstall the gas valve assembly per the maintenance instructions.

Note: If a piston and piston rod is installed onto a DI bolt carrier group setup the rifle will not function or assemble correctly and may cause damage to components upon attempted assembly.

Install the piston carrier key as shown, with the 5/8" long screw in the hole closer to the bolt and the 1/2" long screw in the hole further from the bolt. Torque value for these screws are found on the Torque Values section of this manual. The roller style cam-pin functions best with the F&D piston setup. Reinstall the remaining components per the maintenance section of this manual.

Critical Torque Values

The below fasteners require a specific torque value applied in order to provide maximum service life and safe operation. Inspection on the torque value for these screws should be performed upon every 500 rounds fired. Contact F&D for replacement or backup screws if necessary.



Forearm Interface Screws:
Torque value: 75 in-lbs
Replacement: Grade 8 or better, 10-24 UNC x 1-3/4" long (FD308) or 2" long (FD338); minimum 180ksi tensile strength, Unbrako recommended, 5/32" hex drive.
Utica torque wrench model: CH-150
Utica 5/32" hex adapter part: HX102



Gas Block Screws:
Torque value: 55 in-lbs
Replacement: Grade 8 or better, 8-32 UNC x 3/4" long; minimum 150ksi tensile strength, Camcar Textron recommended, IP25 torx-plus drive.

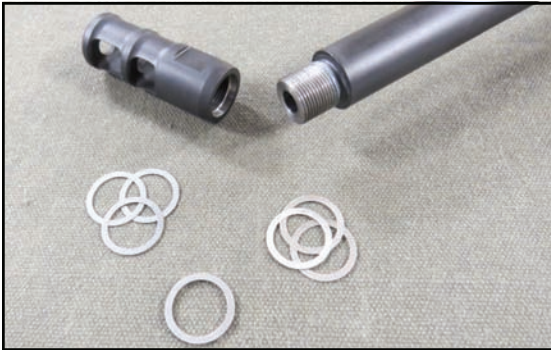


Charging Handle Screws:
Torque value: 25 in-lbs
Replacement: Grade 8 or better, 5-40 UNC x 3/8" long; minimum 150ksi tensile strength, Camcar Textron recommended, IP10 torx plus drive.

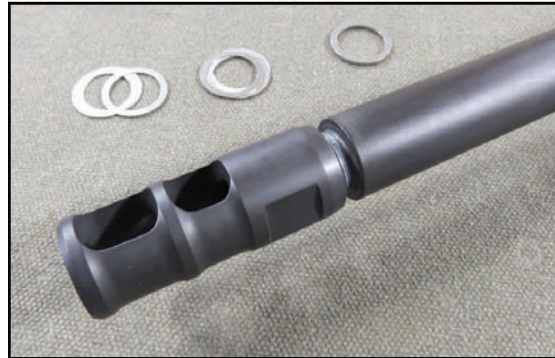


Piston Key Screws:
Torque value: 55 in-lbs
Replacement: Grade 8 or better, 8-32 UNC x 1/2" & 5/8" long; minimum 150ksi tensile strength, Camcar Textron recommended, IP25 torx-plus drive. Inspect the key for any bending, lifting, or other deformation. **Note:** These screws are "once-only" use.

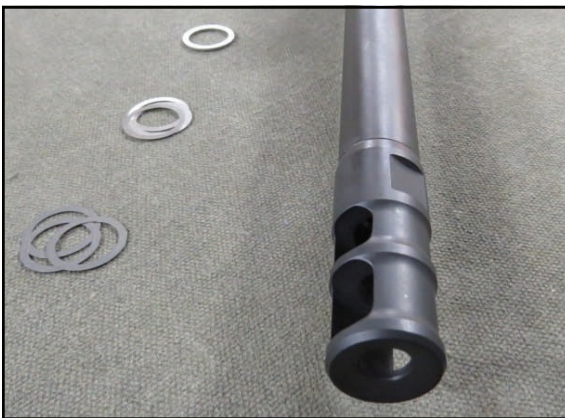
Muzzle Device



Shims are required in order to attain a desired clocking angle for brake-style muzzle devices. Contact F&D for a shim kit if necessary, which will allow clocking for and device on any F&D rifle. The kit consists of one .046", three .005", and three .006" shims.



Thread the muzzle device onto the barrel without any shims and tighten as you would for general operation. This will provide an indication of the required amount of angle the shims need to reverse-clock the muzzle device.



Once an angle is established, divide it by 360 and multiply by thread pitch (.0417).

Above Example: if the muzzle device needs to be reverse clocked 45 degree: $45/360 = .125$
Multiple this result with the thread pitch of .0417 as follows: $.125 * .0417 = .005$ "

The result of this calculation provides the shim value needed in order to reverse clock the muzzle device to the desired angle.

Alternatively, .001" shim value equals approximately 15 degrees of muzzle device rotation.



Once a shim value is determined, remove the device and apply 246 Loctite to the muzzle threads then reinstall the muzzle device and tighten until the desired alignment is attained.



The muzzle device should now be clocked horizontally as shown above within approximately 5-10 degrees.

Trigger Adjustment

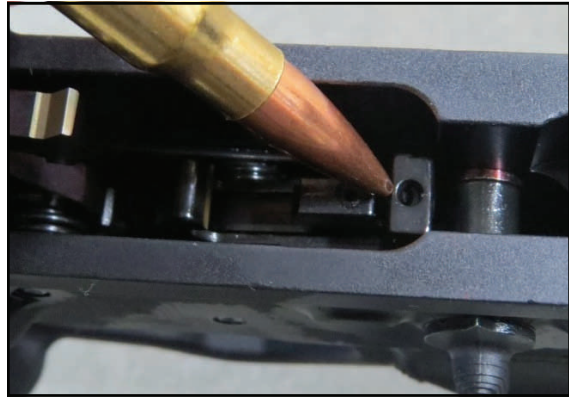
F&D supplies a Geissele Automatics installation/user manual with each rifle. The instructions below are a brief outline of procedures to adjust Geissele triggers, and is not intended to be an all-inclusive substitute for instructions provided by Geissele. Triggers installed in new F&D rifles are factory preset from Geissele and no further adjustment has been performed by F&D. For advanced shooters who desire a finely tuned trigger setup, the below procedures will provide basic guidance to accomplish this.

Turn the sear adjustment screw counter-clockwise until no second stage exists. Repeatedly cock the hammer and pull the trigger in order to get a feeling of when the second stage drops off. See picture below and hold the hammer back in this manner throughout the procedure so the hammer does not strike and damage the lower receiver.



If the trigger feels “notchy” as it comes to the second stage there is not enough sear engagement, therefore you must turn the sear adjustment screw another 5-10 degrees clockwise or until the notchy feeling is eliminated.

Alternatively, if the second stage shows any “creep” before releasing, the sear adjustment screw can be turned 5-10 degrees counter-clockwise or until this effect is removed.



Once no second stage exists, rotate the sear adjustment screw clockwise while repeatedly cocking the hammer and pulling the trigger. Only 10 degree turns are required during this process.

When the second stage engages, turn the sear adjustment screw clockwise 1/4 of a turn to establish the “initial sear setting point”.

Note: Insufficient sear engagement will cause inconsistent operation and may wear the sear ledges more quickly. There are also additional adjustments available on Geissele triggers such as: weight adjustment of the first stage, weight adjustment of the second stage, and over-travel adjustment. Please see the Geissele manual or contact Geissele for instructions.

Magazine Catch Adjustment

FD308 platform rifles are designed by default for a snug fit using Magpul Gen2 magazines. Some manufacturers of magazines design the magazine catch window with various tolerances, which may make your third party magazine fit too tight or too loose. Even Gen3 and new 10-round magazines by Magpul will fit slightly different from part to part.



By default, the FD308 magazine catch will be as tight as it ever needs to be for all styles, makes, and suppliers of 308 magazines. This means you may trim your magazine catch arm to accomplish any desired fit for any magazine or combination of magazines.

Note: While it is recommended that the end-user experiment by gradually modifying his own magazine catch, F&D will supply pre-modified magazine catch arms upon request.

Suppressor Usage

The F&D line of rifles were specifically designed for optimal performance when used in conjunction with quality suppressors. As such, the high degree of adjustability and other features of the FD platform lends itself to an ideal platform for finely tuned suppressed operations.

Suppressor Type

While many suppressor options are now available to the end-user, F&D recommends fixed threaded suppressor devices, or adapter-style suppressors only with positive locking and concentric mounting features. There should be absolutely no slack or slop in the mounting features of the suppressor device as this will cause a degradation in accuracy and/or consistency and could cause damage to the suppressor which may also lead to an unsafe operating condition.

Harmonics

A properly mounted suppressor will tend to tame harmonic patterns of F&D barrels when the gas system is tuned appropriately. Likewise, the effects of tuning the gas system will be more apparent when operating with a suppressor.

F&D gas system

The FD rifle platform utilizes a patent-pending infinitely adjustable hybrid gas system that will allow adjustment of port gas flow from zero flow to over-gassed and everything in between. Because adding a suppressor dramatically increases the duration of port pressure, a lower primary gas valve setting is necessary in order to maintain reliable and consistent operation. Further advanced tuning via the regulating needle is possible which will effect harmonic patterns and increase accuracy on a given load without requiring significant hand-load development.

Warnings

- The suppressor will quickly heat up after repeated rounds fired, be cautious when handling.

- An improperly mounted suppressor may cause projectiles to be fired very far off target, be cautious in not only where your rifle is pointed but also where your projectiles are actually landing.

- An improperly mounted suppressor may also cause baffle-strikes, where the projectile comes into contact with baffles inside the suppressor. This causes damage to the suppressor and separation of the projectile and substantial flight-path deviation.

- Do not use soft-tip (lead-tipped) ammunition with a suppressor. The lead tip may vaporize inside the suppressor due to supersonic pressures, and causes projectile separation which may result in baffle strikes and damage the suppressor.

Optics & Mounting

Mounting options

- F&D recommends solid single-unit mounts that are retained onto the picatinny rail via a screw-driven wedge-clamp.
- Avoid using thin-based cantilever type mounts.
- Avoid quick detach style mounts
- Do not use cam-driven wedge style mounts that rotate or slide against and deform the picatinny rail. Warranty will not cover damage to the upper or forearm due to cam-driven mounts.
- Avoid mounts that contain mechanisms that protrude from the left side of the mount, as these will interfere with the charging operation and may cause injury to your fingers during the charging procedure.
- The forearm picatinny is only for mounting secondary accessories such as thermal & night vision units, forward holographic sights, flashlights, etc.
- Do not position an optics mount partially on the forearm picatinny and partially on the upper receiver picatinny. The entire mount should be positioned only on the upper receiver picatinny. This requirement is due to the forearm and upper receiver vibrating at different frequencies while firing and can cause unnatural stresses within optics if mounted in this manner.

Optics

The FD platform comprises the highest quality auto-loading rifles manufactured today. As such, a similarly high quality optics setup should be used in order to attain the level of performance expected from the rifle. Please contact F&D for recommendations if necessary.

Hand-Load Information

It is recognized and accepted that many F&D customers will choose to hand-load their own ammunition. Information provided by F&D on how to hand-load ammunition or what components to use does not substitute for qualified procedures as prescribed by SAAMI guidelines, as well as specifications & guidelines provided by manufacturers and suppliers of powder, primer, bullet, brass, and reloading equipment. Many more factors than can be covered in this manual influence the safe and reliable procedure for making and using effective hand-loaded ammunition. F&D will not honor claims to personal injury or damage to the firearm resulting from the use of hand-loaded ammunition.

Trouble-Shooting

<u>Issue</u>	<u>Cause</u>	<u>Remedy</u>
Won't Fire	<ol style="list-style-type: none"> 1) Safety selector on SAFE 2) Improper assembly of firing pin or shim washers 3) Defective Ammo 4) Carbon build-up around firing pin 	<ol style="list-style-type: none"> 1) Position to FIRE 2) See parts breakdown [pg. 7] 3) Remove and discard 4) Clean
Won't Feed	<ol style="list-style-type: none"> 1) Dirty or corroded ammo 2) Dirty magazine 3) Defective magazine 4) Too many rounds in magazine 5) Restricted buffer assembly or action 6) Magazine not fully seated 7) Insufficient gas flow 	<ol style="list-style-type: none"> 1) Clean or replace 2) Clean 3) Replace 4) Take out excess 5) Take out buffer and spring, clean & inspect 6) Adjust magazine catch 7) Adjust gas valve regulator
Won't Extract	<ol style="list-style-type: none"> 1) Broken extractor spring 2) Dirty or corroded ammo 3) Carbon build-up in chamber 4) Carbon in extractor recess lip 5) Insufficient gas flow 6) Missing piston and/or piston rod 	<ol style="list-style-type: none"> 1) Contact F&D 2) Remove. Push stuck round with plastic cleaning rod. Be careful not to damage rifling 3) Clean chamber 4) Clean extractor 5) Adjust gas valve regulator 6) Install piston and/or piston rod
Won't Chamber	<ol style="list-style-type: none"> 1) Dirty or corroded ammo 2) Damaged ammo casing 3) Carbon build-up in chamber 	<ol style="list-style-type: none"> 1) Clean or replace 2) Replace ammo 3) Clean chamber
Won't Lock	<ol style="list-style-type: none"> 1) Dirt, corrosion, or carbon buildup in barrel locking lugs 2) Frozen extractor 3) Restricted bolt movement 4) Restricted buffer assembly 	<ol style="list-style-type: none"> 1) Clean lugs 2) Remove and clean 3) Remove and clean 4) Remove, clean, and lubricate carrier group
Bolt Won't Unlock	<ol style="list-style-type: none"> 1) Dirty chamber 2) Damaged ammo casing 3) Damaged extractor 4) Over-pressure ammo 5) Excessive gas flow 	<ol style="list-style-type: none"> 1) Clean chamber 2) Remove and discard 3) Remove and replace 4) Discontinue use of this ammo 5) Adjust gas valve regulator
Double Feed	<ol style="list-style-type: none"> 1) Defective magazine 2) Excessive gas flow 3) Defective ammo 	<ol style="list-style-type: none"> 1) Replace 2) Adjust gas valve regulator 3) Remove and discard
Safety Selector Binds	<ol style="list-style-type: none"> 1) Needs oil 	<ol style="list-style-type: none"> 1) Lubricate with a gun lubricant
Gas Valve Binds	<ol style="list-style-type: none"> 1) Needs oil or anti-seize 	<ol style="list-style-type: none"> 1) Lubricate with a gun lubricant, penetrating oil, or anti-seize

Trouble-Shooting (cont.)

<u>Issue</u>	<u>Cause</u>	<u>Remedy</u>
Short Recoil	1) Gaps in bolt rings 2) Carbon or dirt 3) Insufficient gas flow	1) Stagger ring gaps 2) Clean 3) Adjust gas valve regulator
Bolt Fails to Lock After Last Round	1) Dirty or corroded bolt catch 2) Fault magazine 3) Insufficient gas flow	1) Clean 2) Replace 3) Adjust gas valve regulator
Bolt Carrier “Hung Up”	1) Casing fails to eject or jams next round.	1) Drop magazine and charge rifle, engage bolt catch to hold bolt carrier group back. Allow casing or cartridge to drop.

Warranty & Service

Limited

F&D guarantees and warrants that the enclosed firearm was manufactured free of defects in material, workmanship and mechanical function. This warranty agreement confers the right to have the subject firearm or its parts repaired, adjusted or replaced as F&D determines is necessary and to pay transportation and insurance charges for return of the subject firearm to owner. Defects in material and workmanship claims apply only to factory built products; third party products are subject to that manufacturer's warranty and must be claimed through that company.

Transferable

This warranty constitutes the exclusive remedies of any authorized customer, as well as its successors.

Lifetime Term

This warranty relating to the above described warranty applies for the lifetime of the product.

Exclusions

Except as otherwise provided, the buyer agrees that this warranty is voided and F&D is not liable if the product has been damaged by: accident or neglect, careless handling, abuse or misuse, firing with an obstruction in the barrel, damage through failure to provide reasonable or necessary maintenance, or any use that may be determined as unreasonable by F&D. Unauthorized repair, adjustment, alteration or modification; defective, low quality, hand-loaded, or otherwise improper use of non-standard ammunition permanently voids this warranty. The limited warranty does not apply to normal wear and tear of parts listed as such on the illustrated parts breakdown shown within this user manual.

Accuracy depends on various factors such as bullet weight, type, quality, powder load and type, operator technique, proper maintenance of action components and sights/scopes, environmental conditions and ammunition, among several other variables; therefore, F&D does not guarantee or warrant a specific group size or "MOA" to the customer as an operator; but rather through a standardized setup and procedure system operated and regulated by F&D. All F&D rifles are guaranteed capable of 1.0 MOA accuracy or better upon initial delivery from the factory.

F&D firearms are manufactured to perform properly with the original parts as designed. Your rifle is a complex, dynamic assembly with parts that must relate correctly to each other for proper and safe operation. Assembling a rifle incorrectly or with improper, modified or other manufacturers' parts can result in damaged, personal injury or death from the firearm's malfunction. A qualified gunsmith should work on your rifle or at least check any work not performed by a gunsmith prior to use. Failure to properly follow the user manual for maintenance and operation of your F&D firearm could void the warranty partially or entirely. It's the customer's responsibility to acquire the latest version user manuals from F&D and apply the manuals' instructions accordingly.

Components

See the illustrated parts breakdown shown on page 7 of this manual. Items listed as "consumable" are not warranted from damage or inoperability due to normal use and wear, but can be purchased as replacement or backup items from F&D. Components listed as "manufactured" or "modified" by F&D are warranted free from defect for the lifetime of the rifle through F&D, and replacement parts may be purchased directly from F&D.

Warranty & Service (cont.)

Procedures

In the event warranty or repair work is required on your F&D product, email F&D at info@fd-defense.com for an RMA number and retrieve an Return Material Authorization form here: . When returning a product to F&D for repair or replacement, it is required to print and complete the RMA Form and send in to F&D with your returned item. Product shipment to F&D must be paid for and insured by the customer to:

F&D Defense LLC
RMA #XXXXXX
3522 Loop 337, Suite 105
New Braunfels, Tx. 78130

F&D will cover the return shipping cost for all eligible claims. In the event of ineligible repairs and prior to shipping from F&D, the product owner must submit to F&D the return shipping costs (including insurance) within 30 days after email notification of warranty ineligibility, otherwise the product is subject to claim of ownership by F&D. If repairs are performed by F&D outside the limits of the specified warranty, F&D will charge and collect its normal shop-rate for labor at the rate of \$90/hr and the cost of parts prior to returning the product. You will be allowed the opportunity to waive repair service prior to F&D performing any repair work.

