

HELIOS QD KIT SUPPRESSOR MANUAL (C)

Before using this product, please take a moment to read and understand this manual. If you have any questions, please feel free to call us at any time!



PRODUCT FEATURES

- Variable Function, the only silencer in the world capable of being a standard function type silencer or a flow bypass type silencer simply by changing the front cap.
- DMLS (Direct Metal Laser Sintered – 3D Printed) Construction.
- Modularity at both ends and the best sound reduction available for its size makes it the most versatile and capable silencer available.
- Shallow taper joints are used at each threaded junction to maintain concentricity and provide superior retention.
- Comes with many feature-rich accessories with additional parts available for separate purchase depending on user needs.
- Proprietary coating prevents copper/carbon/lead/etc build up within the silencer, but the silencer can still be serviced if and when necessary.

PRODUCT SPECIFICATIONS

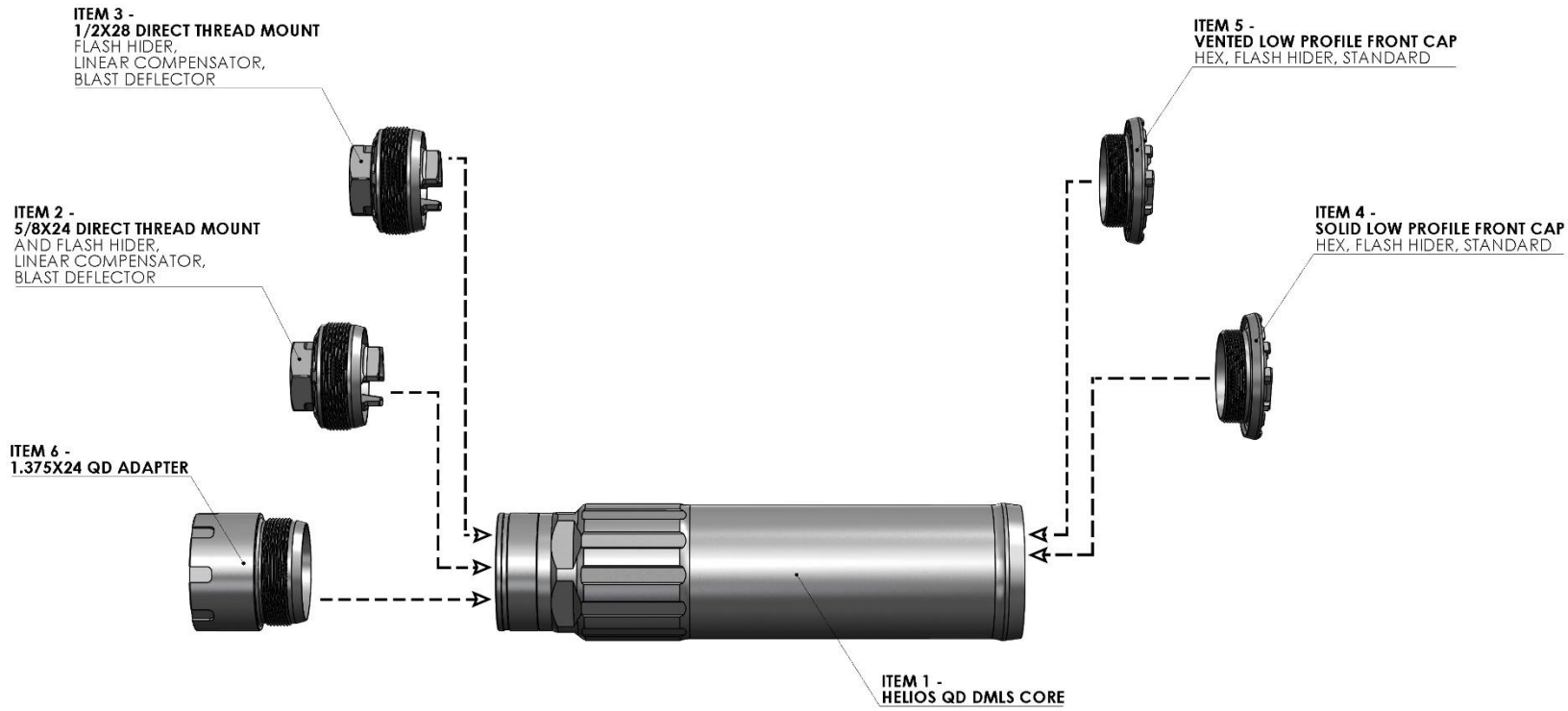
- Caliber – 5.56mm, 7.62mm Capable
- Length – 7.2" in Default Direct Thread Config
- Diameter – 1.5" at Rear, 1.75" at Front
- Weight – 20.7oz in Default Direct Thread Config

MATERIAL SPECIFICATIONS

- Helios Core – 718 Inconel
- Default Accessories – 17-4 Stainless Steel
- Finishes – S-Line (Boron Nitride), PVD, Black Nitride



HELIOS QD KIT (COM) SUPPRESSOR PARTS DIAGRAM



GENERAL OVERVIEW

The suppression system used in the Helios QD is based on a shorter variant of CGS Hyperion Technology. Originally the Helios QD was made for left handed shooters to reduce/eliminate toxic gas in the face depending on the host firearm, then the system was adapted to and strengthened for use on the M249, MK46, and hard use SBRs. Not only can it hold up to actual ludicrous amounts of fire even on short barrels, but it is also very quiet compared to other options. In some cases, it is quieter than some other companies' fullsize rifle silencers even though the Helios QD is only 6.58" added length in its default direct thread state. CGS Group rifle silencers are the only silencers that can completely change function simply by swapping out or removing the front cap.

The Helios QD is built as a hard use, and the first of its type dual function, 5.56mm silencer that just happens to have a bore large enough to pass a 7.62mm projectile. It's a 5.56 silencer first and foremost, but with the balancing act to get it where we wanted for sound at the ear and muzzle, we settled on a bore diameter that just happens to fit 7.62mm projectiles. Using the larger bore on a 5.56mm silencer helps achieve lower ear numbers on some 5.56mm and similar semi auto hosts. The CGS Helios QD doesn't have any barrel length restrictions, is full auto rated, and can be used on rounds up to 300 Norma Magnum/300 Remington Ultra Magnum and everything between including 7.62x51, 6.5 Creedmoor, 260 Remington, 300 Blackout, 7.62x39, 6.8 SPC, 277 SIG Fury, 6 ARC, etc. If the barrel is checked and confirmed that the threads, shoulder, and bore are all concentric then you can also use up to 338 Norma Magnum/338 Lapua Magnum. The bore tapers, getting larger in diameter going forward. The larger bore also helps with unstable 5.56mm and similar bullets out of very short barrels, limiting the potential for baffle strikes. 718 Inconel is used as it outperforms every other material available at higher temperatures, especially when properly heat treated.

The CGS Helios QD Kit comes with:

CGS Helios QD Core

- 5/8 x 24 TPI Direct Thread Mount
- 1/2 x 28 TPI Direct Thread Mount
- Solid Low Profile Front Cap, Hex, Flash Hider, Standard
- Vented Low Profile Front Cap, Hex, Flash Hider, Standard
- QD Adapter Mount for 1.375 x 24 TPI pattern QDs from various companies
- Kit Case

1 - The CGS Helios QD's core is made of Direct Metal Laser Sintered (DMLS - 3D printed) heat treated 718 Inconel. The welded in serial ring/mount is heat treated 17-4 stainless steel, that part doesn't need to be 718 Inconel. The core utilizes the same Hyperion Technology that is present in all our rifle silencers, the Helios QD just has fewer baffles. The joint at the rear for the mounts and the joint at the front for the front caps both have a shallow taper at each location which will maintain concentricity and do a better job at keeping things from coming loose compared to a traditional 90 deg shoulder, and can still be disassembled with ease using common tools such as a 7/8 socket and crescent wrench. The Hyperion Tech increases sound performance significantly especially with supersonic ammo compared to everything else available while also not sacrificing subsonic performance to achieve supersonic performance. It excels at both without compromise.

The Hyperion Tech also reduces blowback and toxic gases blown back at the shooter, allows the system overall to be much stronger by immediately venting the blast chamber and reintroducing it later in the stack thereby reducing pressure and heat and more evenly distributing it to prevent hot spots, and also will eliminate, or on super short barrels with damaging cartridges like a 5.5" 5.56mm, will significantly reduce particle erosion compared to any other traditional silencer design currently available leading to a far longer service life.

The Helios core's dual functionality allows the user to change the function of the silencer completely simply by swapping out the front cap for a different one. For example, the Solid Low Profile Front Cap that comes in the kit will allow the silencer to act as a really good traditional silencer, and the Vented Low Profile Front Cap that comes in the kit will allow the silencer to act as a "flow bypass" type silencer. For bolt action rifles and for many semi auto hosts the Standard front cap is ideal as bolt actions don't have gas blowback issues through the ejection port and most semi auto hosts are helped already by the larger bore which already reduces gas blowback and reduces ear sound very well while maintaining great 1m left of muzzle sound reduction, specifically if they're 5.56mm or similar hosts. On bolt guns the performance is amazing. Even on a

bolt gun adding only 6.58" to overall length the Helios QD will even outperform many other companies' full size 7.62mm rifle silencers.

For over gassed hosts and for those people using semi auto hosts that prioritize preventing toxic gases from being blown back into the shooters face to a more significant degree and/or for people that don't want to deal with changing their gas system or other system modifications, then the Vented front cap is ideal. The Vented cap will help reduce ear sound in some instances depending on the host and ammo, but is primarily geared toward limiting gas blowback and further limiting the effect the silencer has on host firearm function and will increase the sound at the muzzle. When compared to an unsuppressed host, the Vented cap on the Helios QD will maintain the default bolt velocity or limit the bolt velocity increase to ~1-7% depending on the host firearm, gas system/setting, and cartridge. In the future there will be other vented front caps with smaller/fewer vent holes which will allow the user to tune the silencer to their exact host and their needs/wants.

Thanks to the DMLS manufacturing process and finish machining, the inner bore diameter and the outer tube diameter are all perfectly concentric by default. This translates to the taper joints at both ends which ensures that any current and future accessories made for the front end or the back end of the Helios QD are always going to be concentric to the bore. The silencer is also coated internally with S-Line which will prevent fouling build up. This is a proprietary Dynamic Compound Deposition process used to apply Boron Nitride on every internal surface. It is a myth that rifle silencers "self-clean" regardless of who makes the silencer (NOTE A). The exterior is coated with DLC. In total there are three coatings applied including a nitride layer. The exterior of the core features a 1.5" hex for a crescent wrench and the rear caps and front caps have a 7/8" hex for crescent or open end wrenches and are wide enough to use with most wrenches.

As said before, the Helios QD doesn't have a minimum barrel length and it's very full auto rated. The Helios QD silencer is pretty much impossible to kill by any conventional or realistic method.

On 5 MAR 2020, Maxim Defense did two SOCOM firing tables back to back on their PDX in 5.56 with a 5.5" barrel and the CGS Helios QD installed, and the Helios QD didn't have any issues and didn't negatively impact the host firearm. It was even in its direct thread configuration with the Solid front cap, not the Vented cap, and it didn't back off the barrel, the direct thread shoulder joint to the silencer didn't come loose, and the front cap joint to the silencer didn't come loose either.

SOCOM Firing Table (all mags fired immediately back to back, whole cycle repeated a second time after allowing Helios QD to cool to ambient):

Mag 1 - 1rd per Second - 30rds
Mag 2 - 2rds per Second - 30rds
Mag 3 - 1rd per Second - 30rds
Mag 4 - 3-5rd Bursts - 30rds
Mag 5 - 1rd per Second - 30rds
Mag 6 - 2rds per Second - 30rds
Mag 7 - 1rd per Second - 30rds
Mag 8 - Full Auto Mag Dump - 30rds

Total Rounds Fired - 240rds

Since the test was done twice, that's 480rds through a 5.5" 5.56mm host in a very short amount of time. To put it into perspective how tortuous that test is, muzzle pressure of 5.56mm out of a 5.5" barrel is around 23,000 PSI compared to a 10" barrel which is 12,140 PSI or a 16" barrel which is 7430 PSI.

2/3 - The direct thread mounts are made of heat treated PVD 17-4 stainless steel. These have a wide 7/8" hex on the rear so most common size wrenches can easily get on there without damaging the barrel it's mounted to regardless of how wide that barrel is at the shoulder. They also have a 3/4" hex on the opposite side so in the very unlikely event the direct thread mount somehow comes loose from the silencer core, especially when mounted under a rail, the direct thread mount can be easily removed from the barrel separately using a socket or a wrench. Another feature built into the direct thread mounts is that the 3/4" hex on the front end has an effective miniature built-in flash hider for if the silencer is removed but the direct thread mount stays on the barrel if a small flash hider feature is still needed. It's a military related feature and

allows some of the extra parts in the kit to pull double duty since it's acting as a standalone flash hider/linear compensator/blast diverter. In the future we will offer lighter weight versions of the direct thread mounts without the flash hider feature, to include titanium versions, and will also make some of them with the SIG 25 deg taper for better compatibility with their products and for those that like to use that feature on their direct thread configs, and some to further reduce OAL.

4/5 - The different front caps, as talked about in Section 1, will change the function of the silencer entirely depending on which one is installed. In the future there will be different vented front caps which will have different numbers of vents and different sizes of vents. There will also be a version with a long central flash hider which will also have peripheral flash hidere for each coaxial vent hole to help alleviate peripheral flash that plagues the single function flow bypass silencers currently available. The default Vented front cap is on the extreme end of venting for the widest performance gap and as a result muzzle sound reduction will be affected negatively.

6/7 - The QD Adapter for 1.375 x 24 TPI pattern QD mounts will allow the Helios QD to adapt to any company's QD mount that is compatible with that system. The CGS QD Adapter still interfaces with the shallow taper on the Helios core. Since all the 1.375x24 pattern QDs from other companies sit on a normal 90 degree shoulder there are no worries about anything coming loose. Obviously when you install a 1.375x24 pattern QD you lose the benefit of the better concentricity that the QD Adapter taper joint provides for, but no big deal there as that already applies to every silencer available that has that compatibility. CGS will be releasing a 1.375x24 TPI pattern QD in the future and since it'll be unique to us we will be able to maintain the concentricity benefit when used on the Helios QD but will also still be compatible with other companies 1.375x24 TPI compatible silencers. The hook wrench (coming soon) will be included in Helios QD Kits which can interface with the notches on the exterior of the QD adapter for those people that don't already have a hook wrench that can do that job. The QD adapter is long by default to be compatible with everything currently made by default. When installing a QD mount to the CGS QD Adapter, install the QD mount to the CGS QD Adapter first, and then installed the CGS QD Adapter to the Helios QD core.

8 - The SKB Hard Case will fit all the current Helios QD parts in the kit and there's some extra room for storage when future accessories are released.

OVERALL LENGTH (including direct thread rear hex and Low Profile Front Cap front hex) - 7.2"

ADDED LENGTH (same config, assuming .625" barrel threads) - 6.58"

CORE ASSEMBLY WEIGHT (whatever accessories are chosen will add to this) - 16.9oz

DIAMETER - 1.75" (on main body) 1.5" (on rear body)

REAR CAP HEX - EXTERIOR 7/8", INTERIOR 3/4"

FRONT CAP HEX - EXTERIOR 7/8"

NOTE A / CLEANING - All rifle silencers will build up fouling over time, regardless of what manufacturers choose to tell consumers. It is an internet myth that rifle silencers don't need to be cleaned, there is an abundance of actual physical evidence from many companies in the silencer industry that rifle silencers do accumulate fouling (copper/lead/carbon/etc) and that they do need to be cleaned as that fouling can lead to significant weight gain, significant sound increase, flash performance reduction, and in some cases accuracy reduction. It is best practice to weigh the silencer and record the base weight prior to use. Then every 1-3000rds weigh it again and see how much build up it has inside. After an ounce or so builds up then clean it according to the manufacturer's instructions. The S-Line internal coating used in all CGS rifle silencers prevents most build up from occurring in the first place, which is something that nearly all silencers do not have. Cleaning of the Helios QD can be accomplished when needed by dunking the core in solvent for 24-48hrs and then draining it. You can then shoot a mag through it (using the Vented front cap or no front cap installed) to remove whatever fouling is loose. Repeat as needed. But chances are you will not get any meaningful build up over the course of tens of thousands of rounds thanks to the internal S-Line coating.

ASSEMBLY

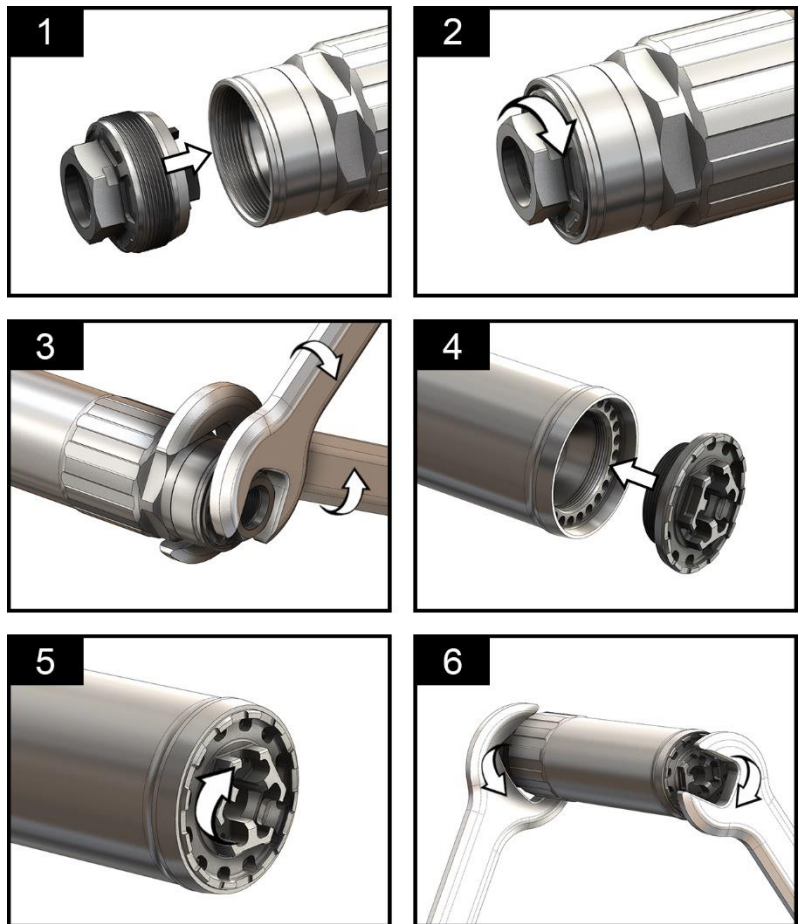
Prior to use, ensure all taper shoulders are clean, threads are greased, and that components are properly shouldered against their corresponding surfaces and tightly secured to correct torque values. Rear Caps should be tightened to the Helios Core at 25-30ft/lb. Front Caps should be tightened to the Helios Core at 20-25ft/lb.

1. Remove the magazine from the firearm, then visually and manually check and clear the action and chamber of the firearm. Make sure the host firearm is unloaded at all times.
2. Thread the Direct Thread Rear Cap of choice into the rear of the Helios Core until hand tight. **(Image 1-2)**
3. Using a torque wrench on either the 1.5" wrench flats of the Helios Core or the 7/8" wrench flats on the Rear Cap, and while holding the other part with another wrench, tighten together until 25-30ft/lbs is achieved. **(Image 3)**
4. Thread the Front Cap of choice into the front of the Helios Core until hand tight **(Images 4-5)**
5. Using a torque wrench on either the 1.5" wrench flats of the Helios Core or the 7/8" wrench flats on the Front Cap, and while holding the other part with another wrench, tighten together until 20-25ft/lbs is achieved. **(Images 6)**

NOTE:

If the suppressor parts appear to be misaligned when assembled, stop the installation process and contact **CGS**. Use of the suppressor if not properly assembled can cause damage to the suppressor and firearm and could cause injury to the shooter.

If you experience loosening of threaded joints during shooting it is recommended to degrease the threads and use a quality thread locker such as Vibra-Tite 123.



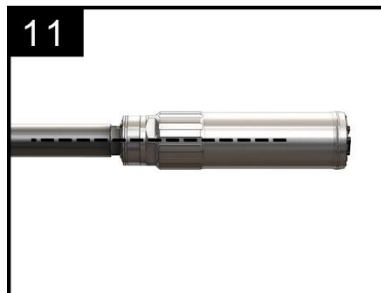
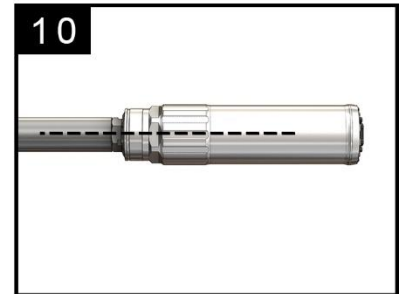
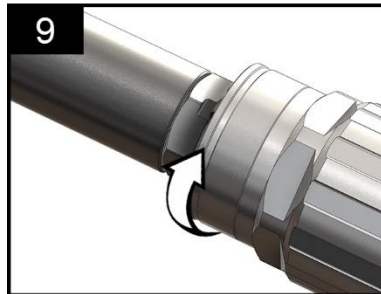
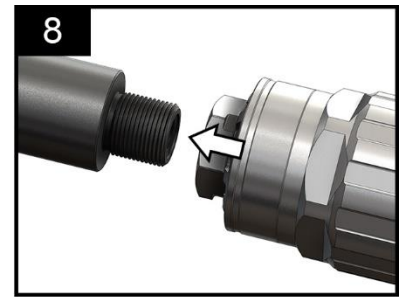
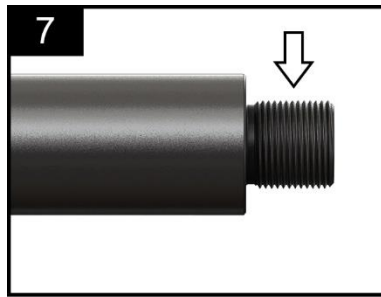
INSTALLATION

1. Remove the magazine from the firearm, then visually and manually check and clear the action and chamber of the firearm. Make sure the host firearm is unloaded at all times.
2. Check the barrel threads to ensure they are clean and free of debris. **(Image 7)**
3. Thread the assembled Helios QD clockwise onto the barrel threads, being careful not to cross thread, until hand tight and secure against the shoulder of the barrel. Depending on the length of the host firearm barrel threads, the Helios QD will shoulder on either the shoulder behind the threads or the shoulder on the muzzle. **(Image 8-9)**
4. For normal use, very hand tight will do. For extended or hard use, torque the Helios QD using the 7/8" wrench flats on the Rear Cap to the barrel threads to 25-30ft/lbs while using an armorers tool such as the Geissele Reaction Rod to prevent tweaking or damage to the host firearm gas system or barrel assembly.
5. Visually inspect that the suppressor is mounted straight to the centerline of the bore. Ensure that it is not tilted or canted in any way, and that it is fully shouldered and secure on the barrel. **(Images 10-11)**

NOTE:

If the suppressor appears to be misaligned, stop the installation process and contact CGS.

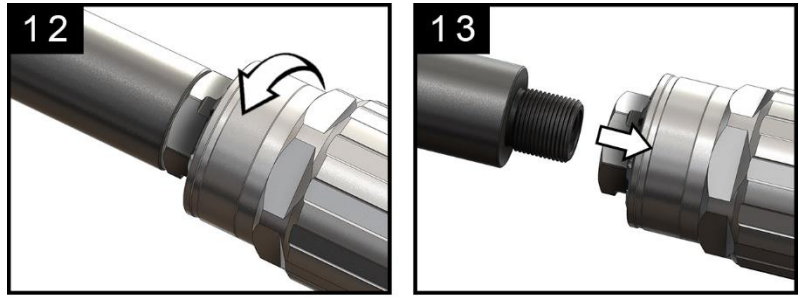
Use of the suppressor if not properly mounted will cause damage to the suppressor and firearm and could cause injury to the shooter.



REMOVAL

CAUTION! Do not attempt to remove the suppressor if it is hot.

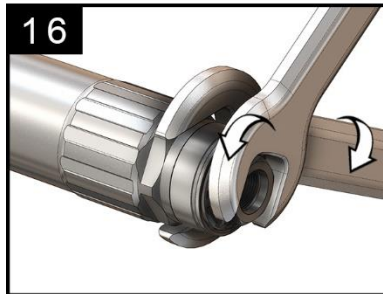
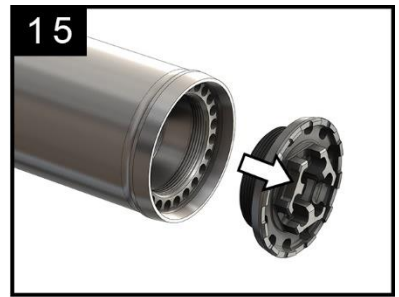
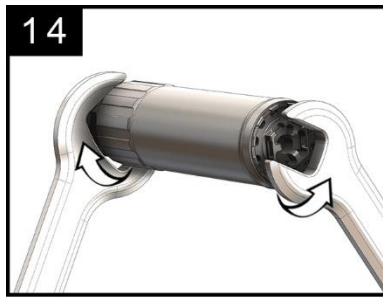
1. Remove the magazine from the firearm, then visually and manually check and clear the action and chamber of the firearm. Make sure the host firearm is unloaded at all times.
2. Rotate the suppressor counterclockwise until it has been removed from the muzzle of the firearm. If the suppressor is difficult to remove, use a wrench on the 7/8" wrench flats of the Rear Cap and unscrew the Helios QD while using an armorers tool such as the Geissele Reaction Rod to prevent damage to the host firearm gas system or barrel assembly. **(Images 12-13)**



DISASSEMBLY

1. With the suppressor removed from the firearm and using a 7/8 wrench or socket, unscrew the Front End Cap and remove it from the suppressor while holding the Helios Core with a 1.5" wrench. (Images 14-15)
2. With the suppressor removed from the firearm and using a 7/8 wrench or socket, unscrew the Rear End Cap and remove it from the suppressor while holding the Helios Core with a 1.5" wrench. (Images 16-17)

The suppressor is now completely disassembled and ready for cleaning.



CLEANING NOTES:

- 1) Only clean if actually necessary, when more than 1-2 ounces of weight has been added to the base recorded weight prior to use.
- 2) If cleaning becomes necessary, dunk the Helios Core in a stainless steel/Inconel safe solvent for 24-48 hours.
- 3) After the soak time has elapsed, assemble the Helios QD and ensure all taper shoulders are clean, threads are greased, and that components are properly shouldered against their corresponding surfaces and tightly secured to correct torque values.
- 4) Ensure the suppressor has drained completely and fire ~10rds through it with the Vented Front Cap installed. This will blow out any excess solvent. Installed desired front cap after this process is complete.

ASSEMBLY OF THE QD ADAPTER

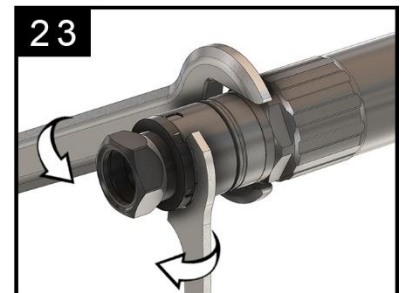
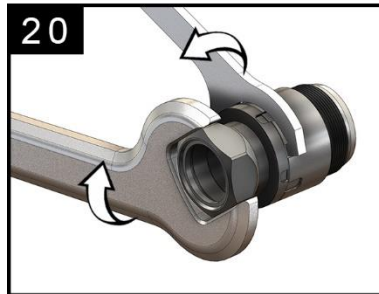
Prior to use, ensure all taper shoulders are clean, threads are greased, and that components are properly shouldered against their corresponding surfaces and tightly secured to correct torque values. Rear Caps should be tightened to the Helios Core at 25-30ft/lb. Front Caps should be tightened to the Helios Core at 20-25ft/lb.

1. Remove the magazine from the firearm, then visually and manually check and clear the action and chamber of the firearm. Make sure the host firearm is unloaded at all times.
2. Thread the compatible 1.375x24 pattern QD of choice into the rear of the CGS QD Adapter until hand tight. **(Image 18-19)**
3. Using a torque wrench on the hex tool feature of the chosen 1.375x24 pattern QD, if it allows, and using the Hook Wrench in the provided slots in the CGS QD Adapter, tighten together until 25ft/lb is achieved, or the torque value as stated by the manufacturer of the compatible QD device. **(Image 20)**
4. Thread the CGS QD Adapter assembly into the rear of the CGS QD Adapter until hand tight. **(Image 21-22)**
5. Using a torque wrench on the 1.5" wrench flats of the Helios Core and while using the Hook Wrench in the provided slots in the CGS QD Adapter, tighten together until 25ft/lbs is achieved. **(Image 23)**

NOTE:

If the suppressor parts appear to be misaligned when assembled, stop the installation process and contact **CGS**. Use of the suppressor if not properly assembled can cause damage to the suppressor and firearm and could cause injury to the shooter.

If you experience loosening of threaded joints during shooting it is recommended to degrease the threads and use a quality thread locker such as Vibra-Tite 123.



MAINTENANCE

1. It is recommended that the suppressor be weighed prior to use and recorded, and at intervals of 1000-3000 rounds depending on the ammunition being used record the weight and round count. Once the Helios QD is an extra ounce or two over the base weight, it is a good time to clean the silencer. Only clean if actually necessary.
2. If cleaning becomes necessary, disassemble, and dunk the Helios Core in a stainless steel/Inconel safe solvent for 24-48 hours.
3. After the soak time has elapsed, assemble the Helios QD and ensure all taper shoulders are clean, threads are greased, and that components are properly shouldered against their corresponding surfaces and tightly secured to correct torque values.
4. Ensure the suppressor has drained completely and fire ~10rds through it with the Vented Front Cap installed. This will blow out any excess solvent. Installed desired front cap after this process is complete.
5. Do not use a bore patch or jag to clean the suppressor.
6. After cleaning a light coating of grease should be applied the threads, and all taper shoulders should be cleaned.

WARNINGS AND DISCLAIMERS

- Always practice the basic rules of firearms safety when using the suppressor.
- Silencers may loosen during firing. It is important that you frequently verify that your suppressor is securely tightened during use. It is recommended that you check for tightness every 30 rounds and use gloves or another barrier to ensure you are not burned.
- **CGS** is not responsible or liable for damages or injuries resulting from the improper use of this product; it is the user's responsibility to read and completely understand the instructions in this manual before using this product.

AMMUNITION RECOMMENDATIONS

- The Helios QD was designed for semi and full auto firing of factory 5.56mm, 7.62mm, 6mm, 6.5mm, 6.8mm, 7.62x39, 300 AAC Blackout and similar ammunition only. Contact **CGS** regarding other types of ammunition.
- We recommend the use of high quality factory loaded ammunition with this product for best sound performance, accuracy, and reliability.
- Suppressors are designed to attenuate the muzzle blast of a firearm, but they do not alter or suppress the sonic crack caused by supersonic projectiles as they break the sound barrier. Subsonic ammunition may be used.

WARRANTY

Subject to restrictions, CGS warrants this suppressor to be free from any manufacturing defects for life. In the unlikely event that you received a defective product, **CGS** will repair or replace the suppressor; it is at the discretion of CGS to determine if a particular defect or condition is covered by this warranty.

If a repair is necessary, please contact CGS at Sales@CGSGroup.com for a CGS representative to make arrangements for the proper and legal return of the product.

Please do not ship anything to CGS without first contacting CGS.

CGS Group, LLC

Customer Service

Sales@CGSGroup.com

© 2019 CGS Group LLC. All rights reserved.