



# SHOCKER CVO



OWNER'S MANUAL

# QUICK START

## WARNING

Velocity must be measured and adjusted to below 300 feet per second (91.4 meters per second) before each session of use.

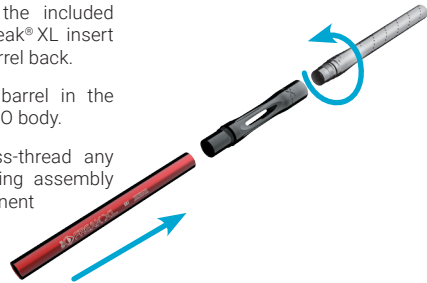
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### 01 BARREL

Assemble and install the included barrel. Make sure The Freak® XL insert is installed inside the barrel back.

Install the assembled barrel in the front of the Shocker® CVO body.

Take care not to cross-thread any barrel components during assembly or installation, as permanent damage may result.



### 02 BARREL BLOCKER & LOADER

Install a high-performance paintball loader in the locking feedneck. In order to perform its at its best, the Shocker® CVO must be consistently fed unbroken paintballs rapidly.

Slide the included barrel blocker over the end of the Shocker® CVO barrel. Sling the blocker's cords over the back of the marker and snug them tight.

The barrel blocker is a critical piece of safety equipment and must always be used when the Shocker® CVO is handled outside of an active paintball field.



### 03 TRIGGER SAFETY

The Shocker® CVO is equipped with a cross bolt trigger safety. When pressed from the left, the safety engages to prevent the trigger from being pulled. When pressed from the right, exposing the red o-ring on the left side of the grip frame, the Shocker® CVO is live and ready to fire. **The trigger safety should never be relied upon in place of a barrel blocker.**



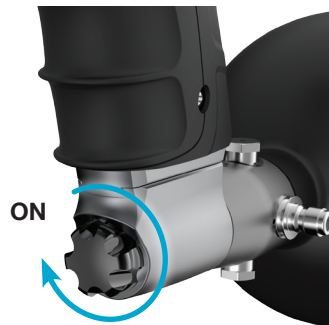
### 04 TURN ON AIR

Carefully screw a professionally filled paintball High Pressure Air (HPA) system into the Air Source Adapter (ASA).

Slowly turn the ASA knob clockwise to gently charge the Shocker® CVO with air.

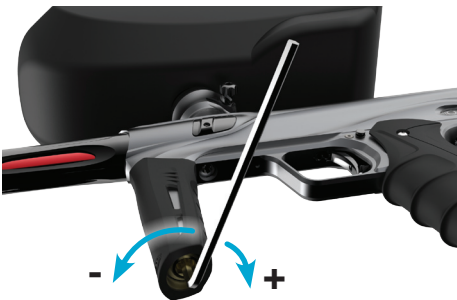
## WARNING

Turn knob slowly!  
A quick pressure surge  
may cause damage.



### 05 ADJUST VELOCITY

Velocity must be tested and adjusted at the start of each paintball session. Fill the loader with paintballs and turn it on. While wearing ASTM compliant paintball goggles in an area where all bystanders are protected, remove the barrel blocker and fire over a chronograph to measure the velocity. Using a 5/32-inch hex key, turn velocity up (clockwise) or down (counter-clockwise) as needed to meet the field's standard. After each adjustment take 2 or three shots to allow pressure to stabilize, then fire over a chronograph to check velocity. For safety and to avoid internal damage, never adjust the Shocker® CVO to fire at greater than 300 feet per second.



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### CVO SPECS

OPERATING PRESSURE	145 psi
PROPELLANT	High Pressure Air
OPERATION	Pneumatic
MODES OF FIRE	1
ANTI-CHOP SYSTEM	Low-Force Bolt
BARREL THREAD	Autococker
LUBRICANT	GR33SE™

## WARNING

- THE SHOCKER® CVO IS NOT A TOY.
- MISUSE OF THE SHOCKER® CVO MAY RESULT IN SERIOUS INJURY OR DEATH.
- EYE PROTECTION DESIGNED FOR PAINTBALL USE MUST BE WORN BY THE USER AND ANY PERSON WITHIN RANGE OF THE SHOCKER® CVO.
- SP RECOMMENDS THAT THE SHOCKER® CVO ONLY BE SOLD TO PERSONS 18 AND OLDER.
- THOROUGHLY READ THE SHOCKER® CVO OPERATION AND INSTRUCTION MANUAL BEFORE OPERATING.

**GASSING** The Shocker® CVO is equipped with a bottom-line style air source adapter (ASA). Before screwing an HPA system into the ASA, make sure the ASA is turned off by loosening the ASA knob on its front [FIG 8]. Take care not to turn the ASA knob too far.

After screwing the HPA system into the ASA, air is released into the marker by tightening the ASA knob [FIG 4]. It is important to turn the knob slowly. Once air can be heard entering the marker, wait until the hissing stops before turning the ASA knob further to fully open the HPA regulator. This will protect the internal components from a sharp rise in pressure, ensuring longer life.

**DEGASSING AND UNLOADING** After use the Shocker® CVO should be unloaded and degassed. In some jurisdictions, paintball markers are legally required to be unloaded and degassed before they are transported on public roads.

The ASA is turned off by rotating the ASA knob counter-clockwise (loosening). When the knob is twisted far enough to turn the ASA off, a small amount of air will vent from the ASA with a brief hissing sound. This is normal. Do not turn the knob any further.

**Turning off the ASA does not completely depressurize the Shocker® CVO and may leave enough gas inside the marker to fire 2 or more shots.**

In a safe area (all persons protected by paintball goggles and or netting, such as a paintball field's chronograph area) remove the loader from the Shocker® CVO.

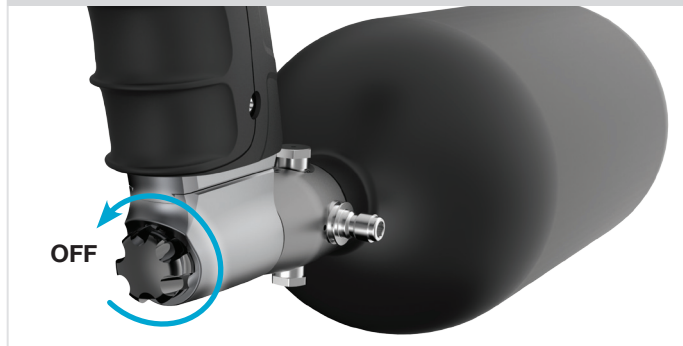
Tip the Shocker CVO® to dump any paintballs from the breech. Remove the barrel blocker and switch the safety to the live position, exposing its red o-ring. Dry-fire in a safe direction until the bolt no longer cycles with each trigger pull. Put the barrel blocker back on and unscrew the HPA system from the grip ASA.

Take care to ensure that the HPA tank does not unscrew from its regulator when unscrewing the regulator from the ASA.

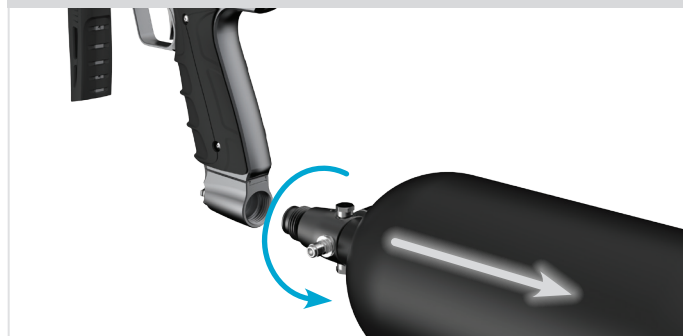
The Shocker® CVO is designed to be powered by a high-pressure compressed air (HPA) system only. Use of carbon dioxide (CO2) to power the Shocker® CVO is likely to cause damage to

**WARNING**  
Never put oil or other petroleum products in a compressed air regulator or tank—only use manufacturer specified lubricants or cleaners.

## LOOSEN ASA KNOB 06



## REMOVE HPA SYSTEM 07



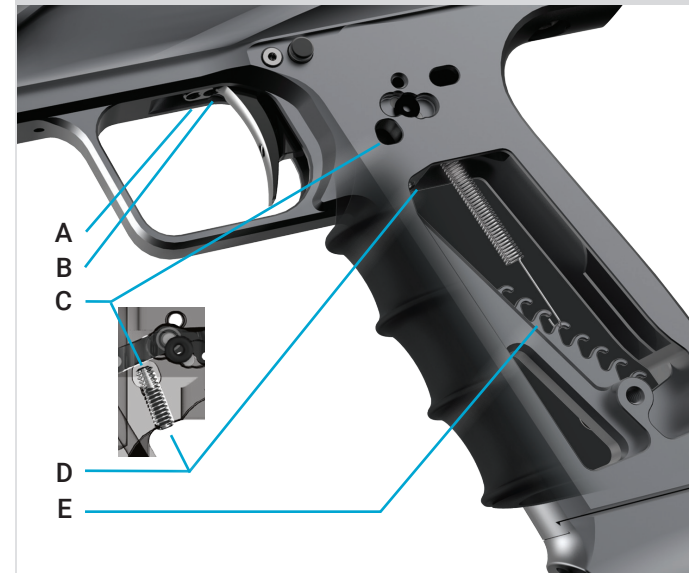
**WARNING**  
Do not to unscrew HPA tank from its regulator!

sensitive internal seals and will result in a voided warranty. HPA systems with a 3000psi or 4500psi capacity can be utilized on the Shocker® CVO. HPA systems with output pressures between 450psi and 850psi can be used with the Shocker® CVO.

An output pressure of 550psi is recommended for maximum consistency at high rates of fire. HPA systems are shipped empty, and must only be filled by properly trained personnel.

## PLEASE READ CAREFULLY

## ADJUSTMENT POINTS 08



## WARNING

After any trigger adjustments, the safety must be checked to ensure that it still performs properly. If the safety cannot be engaged, loosen either the magnetic tension or pre-travel screw.

The Shocker® CVO has four main points of trigger adjustment which may be set with a 1/16" allen key. This provides the ability to fine-tune the perfect trigger for any style of play. Every paintball player is unique with individual tastes. The Shocker® CVO trigger is easy to tailor for an ideal fit. Adjustment should only be performed with the marker unloaded and degassed.

**MAGNETIC TENSION** This set screw is located at the top of the trigger; it is the set screw closest to the trigger guard. Adjusting this set screw will alter the weight of the trigger pull. [FIG. 08 A]

# TRIGGER ADJUSTMENT

Adjusting the magnetic tension screw outward (counter-clockwise) increases the distance between the magnet and adjustment screw, and results in a lighter trigger pull. Turning the screw in provides a stronger magnetic pull allowing for a more responsive trigger return. The strongest trigger resistance is achieved when the magnetic tension screw is able to make contact with the trigger return magnet when the trigger is at rest.

**PRE-TRAVEL** This set screw is located at the top of the trigger behind the magnetic tension set screw. Adjusting this set screw will alter the forward travel of the trigger pull. [FIG.08 B] The length of the trigger pull is determined by where the trigger stops in its forward position and how far back it can be pulled.

**POST-TRAVEL** This adjustment is accessed by placing the allen wrench at a slight angle from the left hand side of the marker. [FIG. 08 D] Adjusting this set screw will alter the rearward travel length of the trigger pull. The trigger must come to a stop with the activation lever against this set-screw. [FIG. 08 C] Backing out the screw far enough to allow the CVO™ pilot valve to stop rearward motion of the trigger may result in pilot valve damage and premature leakage.

**ACTIVATION LEVER TENSION** The spring tension on the activation lever which actuates the CVO™ pilot valve is adjusted by changing which hook inside the grip frame is used for its return spring. [FIG. 08 E] Decreasing activation lever tension can lighten trigger pull, but care should be taken to any adjustment here as too little tension will result in the system not resetting consistently for follow-up shots. The Shocker CVO is factory-configured at maximum activation lever tension (third hook position down from the top). If a non-force-fed loader is used, this is the desired setting to limit rate of fire and reduce feed issues.

The trigger activation set-screw in the front face of the trigger is calibrated at the factory to compensate for manufacturing variance in the trigger body. This set-screw should not be adjusted as improper-alignment can prevent correct operation of the trigger safety and result in premature pilot valve leakage. Even if someone on the Internet says adjusting this screw will provide a better trigger pull don't do it. Just don't.

**LOADER** It is highly recommended that the Shocker® CVO be paired with a force-feed loader to obtain best performance on the field [Fig 09]. With no eyes and a modern short feed-neck, the Shocker® CVO requires fast, responsive feeding to achieve rapid rates of fire without chopping paint.

Force feed loaders can be identified by the gentle spring pressure that can be felt constantly pushing paintballs outward from their neck, even when turned on their side or upside-down. Examples of force feed loaders include Dye Rotor™, Empire Prophecy™ and Empire Halo™.

Some players may still wish to opt for loaders that are not force-feed, to reduce the risk of a jam in the loader and put less force on brittle paint. Examples of non-force-fed loaders include the Virtue Spire™, Valken VSL™, GI LVL™ and classic Viewloader Revolution™.

If using a non-force-feed loader, make sure that the Shocker® CVO Activation Tension is at its maximum (see Trigger Adjustment) and reduce bolt force with the bolt force adjustment (see QEV).

**FEEDNECK ADJUSTMENT** Although the size of loader feednecks is standardized within the paintball industry, there are typically small variances in diameter between manufacturers, and even between different loaders of the same model type.

The Shocker® CVO is equipped with an adjustable feedneck ensuring that it can securely grip loaders with a wide range of feedneck sizes. The feedneck's clamping mechanism is best adjusted with the clamp lever open.

Simply turning the clamp lever will close down or open up the clamp mechanism. Finer adjustments can be made by twisting the thumbwheel [Fig 10]. Test fit after adjustment. The feedneck should have a firm grip on the loader, but the lever should not be difficult to close or open.

## 09 LOADER



## 10 FEEDNECK CLAMP ADJUSTER



PLEASE READ CAREFULLY

PLEASE READ CAREFULLY

## BOLT FORCE ADJUSTMENT 11



**QEV ADJUSTMENT** Bolt closing force has a significant impact on how a paintball marker fires, both in terms of the marker's ability to handle paintballs and felt recoil. This is extremely important in a mechanical marker like the Shocker® CVO. Without anti-chop eyes, low bolt force becomes more important to reliable operation. The quick exhaust valve (QEV) in the Shocker® CVO air manifold includes an adjustment screw that can be used to restrict air flow in front of the bolt's sail, providing a wide adjustment range over bolt closing force.

The bolt force adjustment screw [FIG. 11] is set with a 1/16" hex wrench through a small hole in the top of the grip frame, just in front of the trigger guard. As with trigger adjustment, a ball-end hex wrench will allow easier access to this adjustment screw. When the screw is backed out all the way out (counter-clockwise) the exhaust air flow path is wide open, providing minimal air resistance against the closing bolt for the fastest possible firing rates.

Turning the bolt-force adjustment screw in (clockwise) creates a smaller path for air to escape. As a result, a pocket of air acts as a cushion to balance against the air pushing the bolt to its forward position. With a decreased net force pushing it forward, the bolt closes more slowly.

A fast moving bolt has the obvious advantage of being able to fire at a faster rate, while a slower bolt reduces recoil for improved accuracy and reduced breakage of thin-shelled brittle tournament grade paintballs.

# BOLT CLEANING

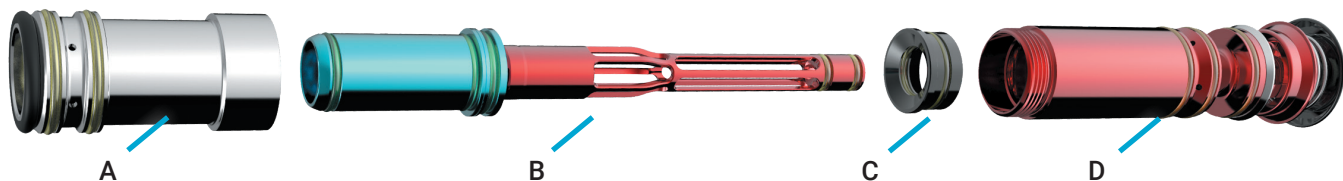
The Shocker® CVO utilizes a spool valve design which combines its bolt with its main exhaust valve for a system that uses few parts for efficient performance with few possible failure points. Occasionally the bolt system may need to be cleaned. It also should be lubricated after each day's use as regular maintenance. No tools are required for this procedure.

**REMOVAL** With the Shocker® CVO unloaded and degassed, pressing on the bolt release latch [FIG. 12] will cause the end-cap to pop out. In its extended position, the end-cap serves as a handle to pull the entire bolt assembly from the marker body as a single unit [FIG. 13].

**CLEANING** Unscrewing the firing can [FIG. 15A] from the main chamber [FIG. 15D] provides access to the bolt [FIG. 15B] for cleaning and inspection. All parts of the bolt assembly should be wiped free from paint or other debris with a soft cloth. All o-rings should be inspected for tears, flat spots or other visible damage and replaced if necessary. Before re-assembly all o-rings should be greased lightly with GR33SE™. The outer surface of the bolt's mid-section should also receive a very light coat of GR33SE™. Oil or other lubricants may cause damage and should not be used.

**REASSEMBLY** Care should be taken when re-assembling the valve assembly. The greased parts should not be set on a dirty surface where they will pick up dust or sand particles that can prevent o-rings from obtaining a good seal. With the bolt placed in the chamber guide [FIG. 15C] and the chamber guide seated in the main chamber, the firing can should be screwed gently into place. The complete bolt assembly can then be pushed into the body of the Shocker® CVO until the latch mechanism makes an audible click, locking everything in place with the rear cap flush against the body.

## 15 BOLT ASSEMBLY COMPONENTS



PLEASE READ CAREFULLY

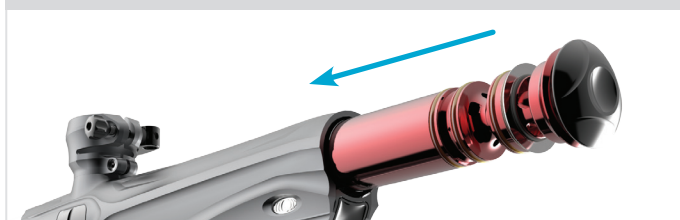
## 12 RELEASE LATCH



## 13 BOLT ASSEMBLY REMOVAL

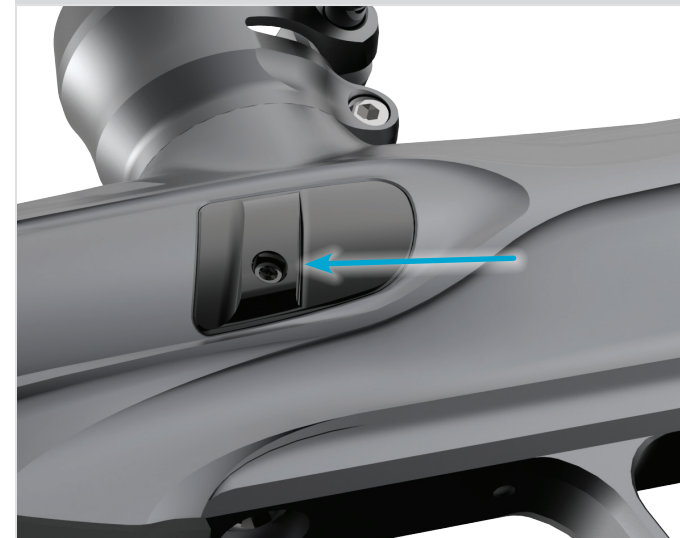


## 14 INSTALLING BOLT ASSEMBLY

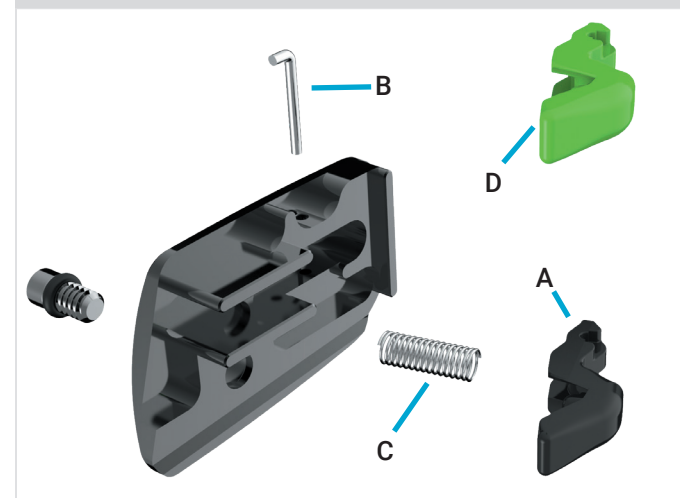


PLEASE READ CAREFULLY

## RELEASE LATCH 16



## DETENT REMOVAL 17



# DETENTS

**DETENTS** The ball detents in the Shocker® CVO prevent double-feeding and subsequent chopping of paintballs by preventing them from rolling forward until they are pushed into the barrel by the bolt. Optional low-profile green detents [FIG. 17D] may be installed for better reliability with extremely large or out of round paint.

Each detent extends into the breech under spring pressure until it is pushed out of the way by the paintball and bolt during the firing cycle. If a paintball is broken in the marker, or dirt is able to get in through the feedneck, the ball detents can become stuck, either not extending into the breech to do their job, or stuck in the breech, blocking proper bolt movement. In either case, cleaning the detent system is a simple process.

**DETENT CLEANING** With the marker unloaded and degassed, a 5/64-inch hex key can be used to unscrew the detent cover screws [FIG. 16]. Finger pressure against the detent from inside the breech is enough to unseat the detent covers so they can be removed from either side of the Shocker® CVO. This will allow access to the detents [FIG. 17A] for inspection and cleaning. Cotton or foam swabs are ideal for cleaning the small nooks in and around the detent. In severe cases, the detent may need to be removed from the detent cover by pulling the hooked top of the detent hinge pin with an o-ring pick [FIG. 17B] while taking care not to lose the detent or spring [FIG. 17C] when they are released and lifted away. Cleaning the detent assembly is all that is needed for routine maintenance. Do not lubricate the detent or the detent cover screw o-ring. The o-ring must provide friction to lock the screw in place, and grease will gum up the detent. Care should be taken not to cross-thread or over-tighten the detent cover screw as this may cause permanent damage to the Shocker® CVO body.

**ASA KNOB** The ASA Knob may occasionally need to be removed for cleaning or lubrication, especially if the Shocker® CVO has taken a hard dive into a muddy or sandy bunker, driving debris into the ASA around its knob. As with all maintenance, this must be done only with the Shocker® CVO unloaded and degassed.

Unscrew the ASA Knob, as if turning the air supply off, but continue unscrewing until the knob comes free of the ASA [FIG 18].

The screw threads of the ASA may be lubricated with GR33SE™, but only place an extremely thin layer of GREASE™ on the pin. Excess grease can clog the ASA's filter. Take care when reinstalling the ASA knob, to be sure it is not cross-threaded.

**ASA POSITION** The ASA position may be adjusted to achieve a custom balance or fit with different air systems. To move the ASA, remove the ASA knob, and use a 3/32-inch hex key to loosen the ASA lock screw [FIG 19] one-half turn. Slide the ASA to the desired position, then lock it in place by tightening the ASA lock screw. Reinstall the ASA knob.

**REMOVAL** To remove the ASA, follow the ASA position directions, but further loosen the ASA lock screw until it allows the ASA to slide free of the grip frame. When reinstalling the ASA, very lightly lubricate the air rail seal assembly face with GREASE™ and press it into the frame with thumb pressure to make sure it sits flush with the rail. Slide the ASA forward until it is flush with the front of the grip frame, then tighten the ASA lock screw.

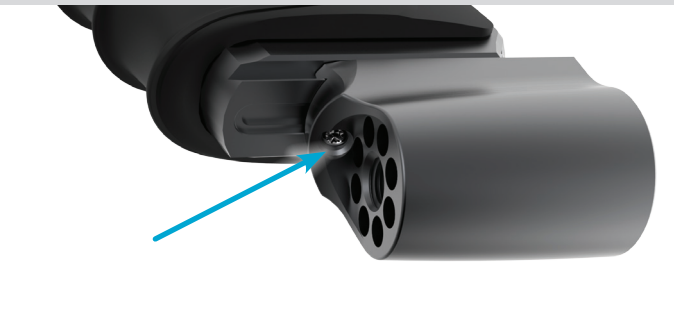
**DISASSEMBLY** Full disassembly is only necessary to replace a leaking pin o-ring. This is accomplished by using a 7/64-inch hex wrench to unscrew the stainless nut from the back of the ASA. Seated in the front of the stainless nut is the ASA pin o-ring. This should be inspected and replaced if it shows any signs of wear or damage.

## PLEASE READ CAREFULLY

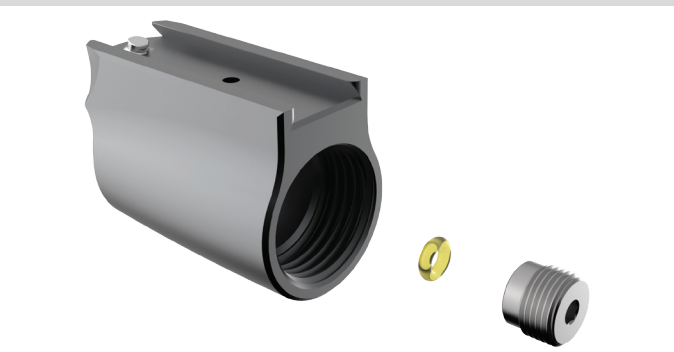
## 18 ASA KNOB



## 19 ASA LOCK SCREW



## 20 ASA DISASSEMBLY

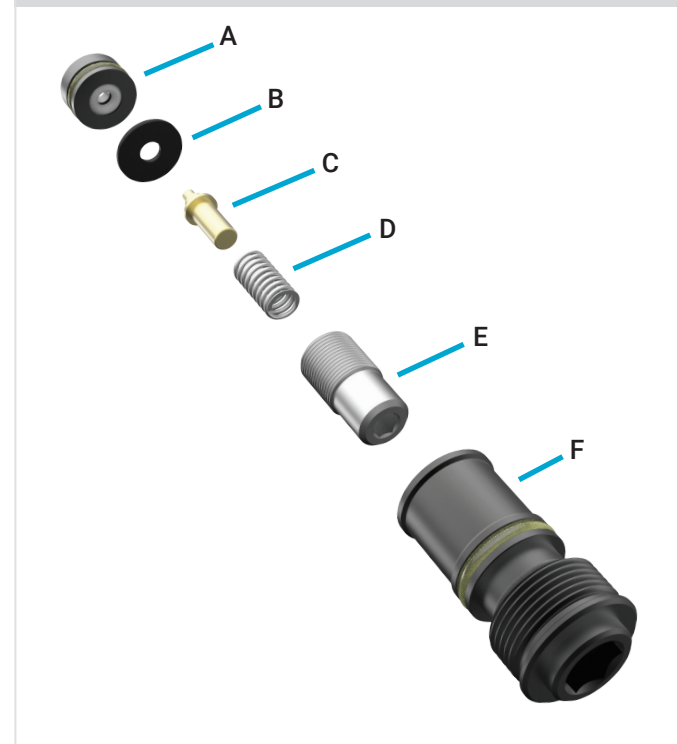


## PLEASE READ CAREFULLY

## SPRING PLATFORM 21



## SPRING PLATFORM ASSEMBLY 22



## REGULATOR

Removal of the regulator's internal components is an advanced maintenance procedure that should only be performed when needed to repair a leak or lubricate seals if velocity becomes inconsistent with fresh, good quality paint and a clean bolt assembly.

**SPRING PLATFORM REMOVAL** With the Shocker® CVO unloaded and degassed, use a 5/16-inch hex key to unscrew the spring platform base [FIG. 21] from the vertical regulator portion of the marker's body. If the hex key cannot fit far enough into the spring platform to get a good grip, use a 5/32-inch hex key to turn the velocity adjuster inward (counter-clockwise, it is reverse threaded) to expose more of the hexagonal flats in the spring platform. The adjuster spring is now attached to the back of the reg piston (VRG205) and will not drop freely.

**SPRING PLATFORM ASSEMBLY** Additional parts will come out, stacked inside the spring platform. These include the spring guide [FIG. 22A], regulator washer [FIG. 22B], relief valve [FIG. 22C], relief valve spring [FIG. 22D] and velocity adjuster [FIG. 22E]. The spring guide acts as a positioning seat for the regulator spring. The velocity adjuster is the base on which the spring guide sits. Turning the velocity adjuster changes the elevation of the spring platform to put more or less pressure on the regulator spring, ultimately determining the gas pressure inside the Shocker® CVO. The relief valve is a miniature, non-adjustable regulator that vents air out through the middle of the velocity adjuster if the Shocker® CVO is in danger of becoming over-pressurized.

**REGULATOR PISTON** Reach inside with an o-ring pick or needle nose pliers and pull the piston out by its spring to pull the regulator piston out [FIG. 23]. This is a difficult step. Patience and a gentle hand are required to achieve success. Take care not to slip and scratch the inner walls of the regulator body, as this may cause non-repairable leaks that will prevent the regulator from working correctly.

Removal of the regulator's internal components is an advanced maintenance procedure that should only be performed when needed to repair a leak or lubricate seals if velocity becomes inconsistent with fresh, good quality paint and a clean bolt assembly.

**SPRING PLATFORM REMOVAL** With the Shocker® CVO unloaded and degassed, use a 5/16-inch hex key to unscrew the spring platform base [FIG. 22F] from the vertical regulator portion of the marker's body. If the hex key cannot fit far enough into the spring platform to get a good grip, use a 5/32-inch hex key to turn the velocity adjuster inward (counter-clockwise, it is reverse threaded) to expose more of the hexagonal flats in the spring platform. The adjuster spring is now attached to the back of the reg piston (VRG205) and will not drop freely.

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### 23 PISTON REMOVAL



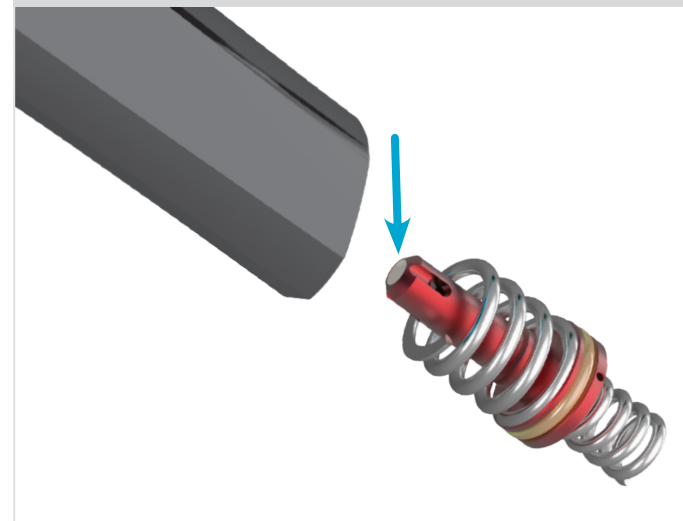
PLEASE READ CAREFULLY

PLEASE READ CAREFULLY

### REGULATOR BASE 24



### REGULATOR SEAT 25



**REGULATOR BASE** Unscrew the regulator base from inside the regulator body with a 1/4-inch hex key. Once it is completely unscrewed, the regulator base [FIG 24] will need to be pulled from the regulator body with an o-ring pick, as was done with the regulator piston. Take great care not to scratch the regulator face, the flat surface surrounding the small opening in the center of the regulator base.

**INSPECTION** Carefully inspect and clean all removed components. Any seals or o-rings which show signs of wear or have dents or tears must be replaced. Pay special attention to the regulator seat, the small seal pressed into the tip of the regulator piston [FIG 25]. This seal, like many of the o-rings is a wear item and will eventually need to be replaced. A small, light circular depression in the regulator seat from where it presses up against the face in the regulator base is normal and not a problem. A deep circular depression, or chips or tears which are not a part of that circular imprint will lead to leaks and are a sign that the seal must be replaced. When replacing the regulator seat, take care not to misplace the regulator tip filter which sits below the regulator seat.

**LUBRICATION** Use GR33SE™ to lightly lubricate all o-rings except the o-ring inside the spring platform. This o-ring must provide friction to keep the velocity adjuster locked in to its setting. Do not lubricate the regulator seat in the tip of the piston.

**REASSEMBLY** The regulator components are reinstalled in the reverse order of disassembly. Both the regulator base and spring platform must be screwed in all the way for proper regulator operation. When testing the Shocker CVO after performing regulator maintenance, always wear paintball eye and face protection, even if only dry firing with no paintballs.

## GRIP FRAME

Removal of the grip frame is an advanced maintenance procedure that should only be performed when needed to repair a leak or replace a damaged component.

**RUBBER GRIP** The wrap-around grip must be removed to make some trigger adjustments, or to be replaced with custom grips. This is achieved by using a 5/64-inch hex key. The grip frame is compatible with grips that fit a M1911 pistol, allowing the Shocker® CVO to use a wide variety of flat panel or wrap-around style custom grips.

**GRIP FRAME** It is not necessary to remove the rubber grip before separating the grip frame from the Shocker® CVO body, but it can help make sure all parts are correctly aligned when reinstalling.

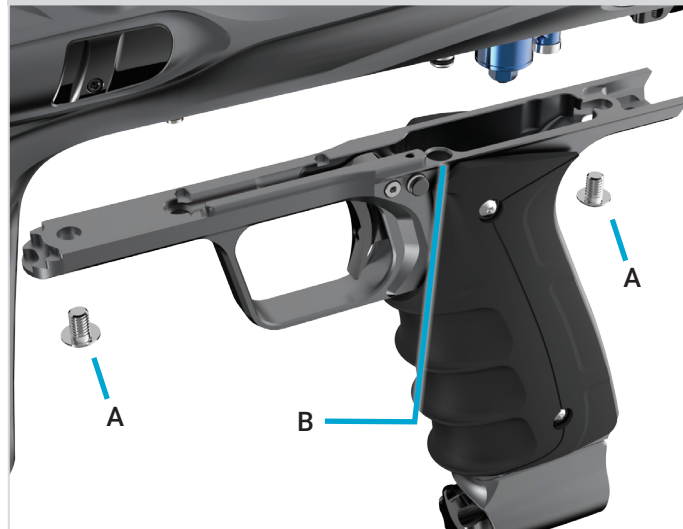
Grip the top edge of the rubber foregrip and pull it down an inch, or completely remove it from the Shocker® CVO so that it does not interfere with alignment of the grip frame to the body when reinstalling.

Before removing the grip frame, the bolt assembly must be removed from the Shocker® CVO. Use a 1/8-inch hex key to remove the front and rear grip frame screws [FIG. 26A]. Gently slide the grip frame away from the receiver. A small metal mesh filter screen (FLT006) sits inside the grip frame's air outlet just behind the pushbutton safety [FIG. 26B]. Take care not to drop or lose this filter, it is necessary to trap fine dust that could cause the pilot valve to stick or leak. If the filter is lost, obtain a replacement as soon as possible.

**REASSEMBLY** Reassembling the grip frame to the body is a reverse of the removal process. Make sure the air filter is in the grip frame and clean and inspect the gas-through seal [FIG. 27], lightly lubricating it with GR33SE™. Make certain the short arm of the QEV pin [FIG. 31C] is on the right side of the marker, facing forward so that it will line up with its slot in the grip frame.

PLEASE READ CAREFULLY

### 26 GRIP FRAME



### 27 GAS-THRU SEAL



PLEASE READ CAREFULLY

### TRIGGER 28



**TRIGGER** The Shocker® CVO pivots on a pair of bearing sets nested onto a low friction pin. The grip frame will need to be removed from the body in order to provide access for trigger removal. Using a 1/16-inch hex wrench, unscrew and remove the trigger pivot pin [FIG. 28] and the trigger may be removed from the top of the grip by pivoting it around the safety while sliding it up and out.



# PILOT VALVE

**PILOT VALVE** Disassembly of the pilot valve should only be performed when necessary for repair. The internal parts of the pilot valve are small and fragile and must be handled with care. If necessary, use a magnifying glass to inspect and work with these parts.

After removing the grip frame from the body use a 1/4-inch wrench to unscrew the valve cap. The pilot valve's upper o-ring [FIG. 29] will remain seated inside the valve body, and it may be removed with an o-ring pick. Inspect, clean and if necessary replace this o-ring. Like the other o-rings in the pilot valve, the upper o-ring should be very lightly lubricated with GR33SE™.

An o-ring pick can be used to remove the pin cage [FIG. 30E] from the pilot valve cap. The pin cage keeps the upper o-ring seated. The valve pin [FIG. 30D] is held in place by its clip [FIG. 30A] and spring [FIG. 30B]. To remove it, pry the clip loose from the pin with an o-ring pick, taking care to retain both parts. The pin may then be removed from the opposite side so that the lower o-ring [FIG. 30C] may be cleaned, inspected and if necessary replaced. Clean and inspect the valve pin to be sure it is not bent, and has a smooth surface with no chips around the edge of its top end or where it steps from a larger to smaller diameter in its middle.

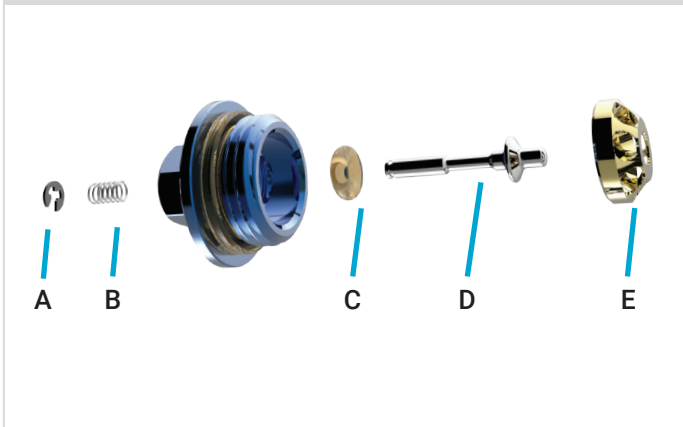
The valve cap's outer o-ring should also be cleaned, inspected and if necessary replaced when the valve is apart.

Reassembly of the pilot valve is done in the reverse order of disassembly. Take care not to apply excessive bending stress on the valve pin when reattaching its clip.

29 PILOT VALVE O-RING



30 PILOT VALVE



PLEASE READ CAREFULLY

PLEASE READ CAREFULLY

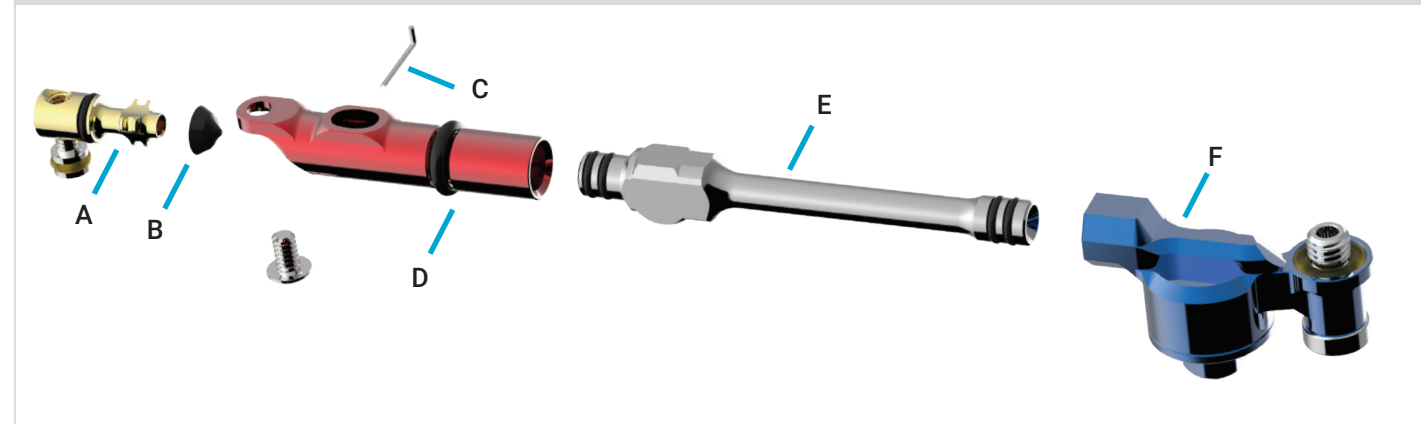
**BOLT CONTROL MANIFOLD** The bolt control manifold [FIG. 31E] connects the supply of regulated compressed air to the pilot valve and the forward control section of the bolt assembly. At the front of the bolt control manifold is the rebuildable quick exhaust valve (QEV) [FIG. 31D] that vents air from the control section when the bolt closes to fire the Shocker® CVO.

Using a 1/16-inch hex key, remove the QEV mount screw [FIG. 32A]. Using a 1/8-inch hex key unscrew the gas-thru bolt [FIG. 32B] from the manifold inlet at the rear.

Once removed, the bolt control assembly may be further disassembled as needed for repair. The QEV slides off of the manifold. The QEV may be disassembled by removing its pin [FIG. 31C], sliding out the QEV core [FIG. 31A] and pushing the QEV diaphragm [FIG. 31B] out with a 1/16-inch hex key. The bolt control manifold [FIG. 31E] slides out of the pilot valve [FIG. 31F].

The trigger return magnet is secured in the bolt control manifold by dimpling the aluminum manifold body with a hardened steel punch. It is non-removable.

31 MANIFOLD ASSEMBLY

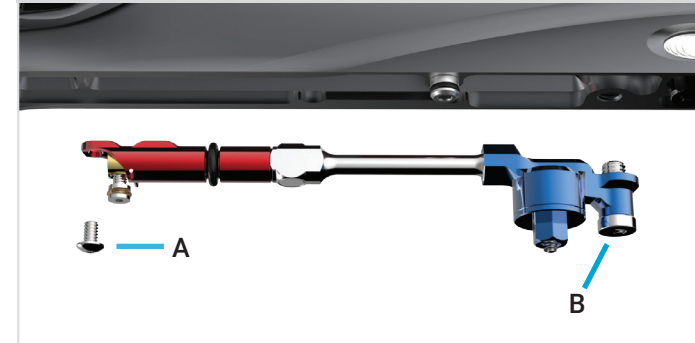


# BOLT CONTROL

**REASSEMBLY** Before reassembly, lubricate o-rings very sparingly with GR33SE™. Excess lubricant can clog small gas paths in the pilot valve or QEV, preventing proper operation. Do not lubricate the QEV diaphragm.

Reassemble in reverse order of removal and disassembly. When reassembling, be sure the cone in the center of the QEV diaphragm is pointed back, toward the pilot valve.

32 REMOVE MANIFOLD ASSEMBLY



**AIR LEAKS OUT THROUGH THE VELOCITY ADJUSTER.**

- Damaged or worn seal in spring platform assembly causing continuous leak - Inspect clean and if necessary replace o-rings and relief valve seal from spring platform assembly following the instructions in the Regulator section of this manual.
- Damaged or worn regulator piston or regulator base o-rings or regulator seat causing intermittent leak - Damaged components causing the regulator to "run hot" will result in the relief valve repeatedly venting excess pressure through the velocity adjuster. Inspect, clean and if necessary replace all regulator o-rings and seals.
- Visit [shockerpaintball.com](http://shockerpaintball.com) for leak point images to identify cause of leak.

**AIR LEAKS OUT THROUGH THE MIDDLE REGULATOR VENT HOLE.**

- One of the following o-rings is damaged or worn: regulator piston o-ring, inner or lower outer regulator base o-ring - Clean inspect and if necessary replace bad o-rings following the instructions in the Regulator section of this manual.
- Visit [shockerpaintball.com](http://shockerpaintball.com) for leak point images to identify cause of leak.

**AIR LEAKS OUT THROUGH THE TOP REGULATOR VENT HOLE.**

- One of the upper two regulator base o-rings is damaged or worn - Clean inspect and if necessary replace bad o-rings following the instructions in the Regulator section of this manual.
- Visit [shockerpaintball.com](http://shockerpaintball.com) for leak point images to identify cause of leak.

**AIR LEAKS OUT THROUGH THE LOWER REGULATOR VENT HOLE.**

- Damaged or worn outer spring platform o-ring - Clean, inspect and if necessary replace the outer spring platform o-ring following the instructions in the Regulator section of this manual.
- Visit [shockerpaintball.com](http://shockerpaintball.com) for leak point images to identify cause of leak.

**THE TRIGGER DOES NOT MOVE WHEN PULLED.**

- Trigger is out of adjustment - Adjust the trigger following the instructions in the Trigger Adjustment section of this manual
- Loosen trigger pivot pin slightly.

**GRIP FRAME WILL NOT FIT CORRECTLY TO BODY.**

- QEV pin incorrectly aligned – Make sure the pin locking the QEV body in place (see bolt control section of manual) is correctly aligned. If it is pushed too far into the QEV, it will extend out the other side and interfere with a ridge in the grip frame.
- Trigger too far forward. The spring pressure of the activation lever will push and lock the trigger into a forward position that prevents the grip frame from fitting to the body. Reset the activation lever and hold the trigger in place following the instructions in the grip frame section of this manual.

**SHOCKER® CVO SUFFERS FROM FIRST SHOT DROP OFF.**

- Shocker® CVO fires at a low velocity or will not fire on the first trigger pull after sitting still for a few minutes, but fires at proper velocity on all subsequent shots, this first shot drop off may be caused by dirt or under-lubrication. Degas, disassemble, clean and inspect the bolt assembly following the instructions in the Bolt Cleaning section of this manual.

**SHOCKER® CVO IS BREAKING PAINT IN THE BREECH OR BARREL.**

- Paint is too large for barrel - Check paint to barrel fit and if necessary switch to a larger bore Freak™ insert or smaller paint.
- Paint is inconsistent in size or shape - Old paint or paint that is lumpy and out of round will not shoot well. Switch to fresh, good quality paintballs.
- Turn bolt speed adjust screw in all the way (clockwise) to slow down forward bolt speed.
- Ball detents are damaged or dirty - Inspect and clean the ball detents as described in the Ball Detent section of this manual.
- Paint is brittle - Decreasing the bolt closing force will adapt the Shocker® CVO to be extra gentle with brittle paintballs. See the QEV Adjustment section of this manual.
- Loader is too slow - Upgrade to a force-feed loader or increase the activation lever tension to its maximum setting (see trigger adjustments).

**WHEN GASSED UP, THE BOLT IMMEDIATELY CLOSSES.**

- Trigger is stuck in the firing position – Make sure that debris or dirt has not jammed the trigger into the firing position. Clean as needed to resolve.
- Trigger is mis-adjusted and is not releasing the pilot valve – Make sure the trigger moves forward far enough to allow the front of the activation lever to rise, releasing the pilot valve. See the trigger adjustment section of this manual.
- QEV diaphragm is damaged or stuck open – See the bolt control section of this manual.
- Pilot valve is leaking internally – Make sure pilot valve pin is straight and unblemished, and that the lower internal pilot valve o-ring is in good repair. See the pilot valve section of this manual.

**AIR LEAKS DOWN THE BARREL WHEN GASSING UP.**

- One or more o-rings in the bolt system are damaged or worn
- Clean and inspect, following the instructions in the Bolt Cleaning section of this manual. Pay special attention to the inner o-ring of the chamber guide [FIG. 18C].

**WHEN GASSED UP AIR LEAKS FROM THE BOTTOM OF THE GRIP FRAME.**

- One of the o-rings or face seal of the air rail seal assembly is damage, dirty or missing. Inspect, clean and if necessary replace these seals. See the ASA section of this manual.

**SHOCKER® CVO WILL NOT FIRE WHEN TRIGGER IS PULLED.**

- System is not pressurized with air – See the quick start section of this manual.
- Safety is engaged – See the quick start section of this manual.
- Trigger is not engaging activation lever – See the trigger adjustment section of this manual.
- Activation lever is stopped by post travel adjustment screw before pilot valve is actuated – See the trigger adjustment section of this manual.

**WHEN GASSED UP AIR LEAKS FROM BETWEEN THE GRIP FRAME AND BODY.**

- Manifold assembly o-rings may be damaged or worn - Inspect, clean and if necessary replace o-rings in the manifold assembly following the instructions in the Bolt Control section of this manual.
- Gas through seal is damaged or worn - Inspect, clean and if necessary replace the gas-through seal following the instructions in the Grip Frame section of this manual.
- Grip frame is not fully seated into body - Check to make sure the grip frame is fully seated in the body. An improperly positioned QEV pin may prevent the grip frame from fully seating.

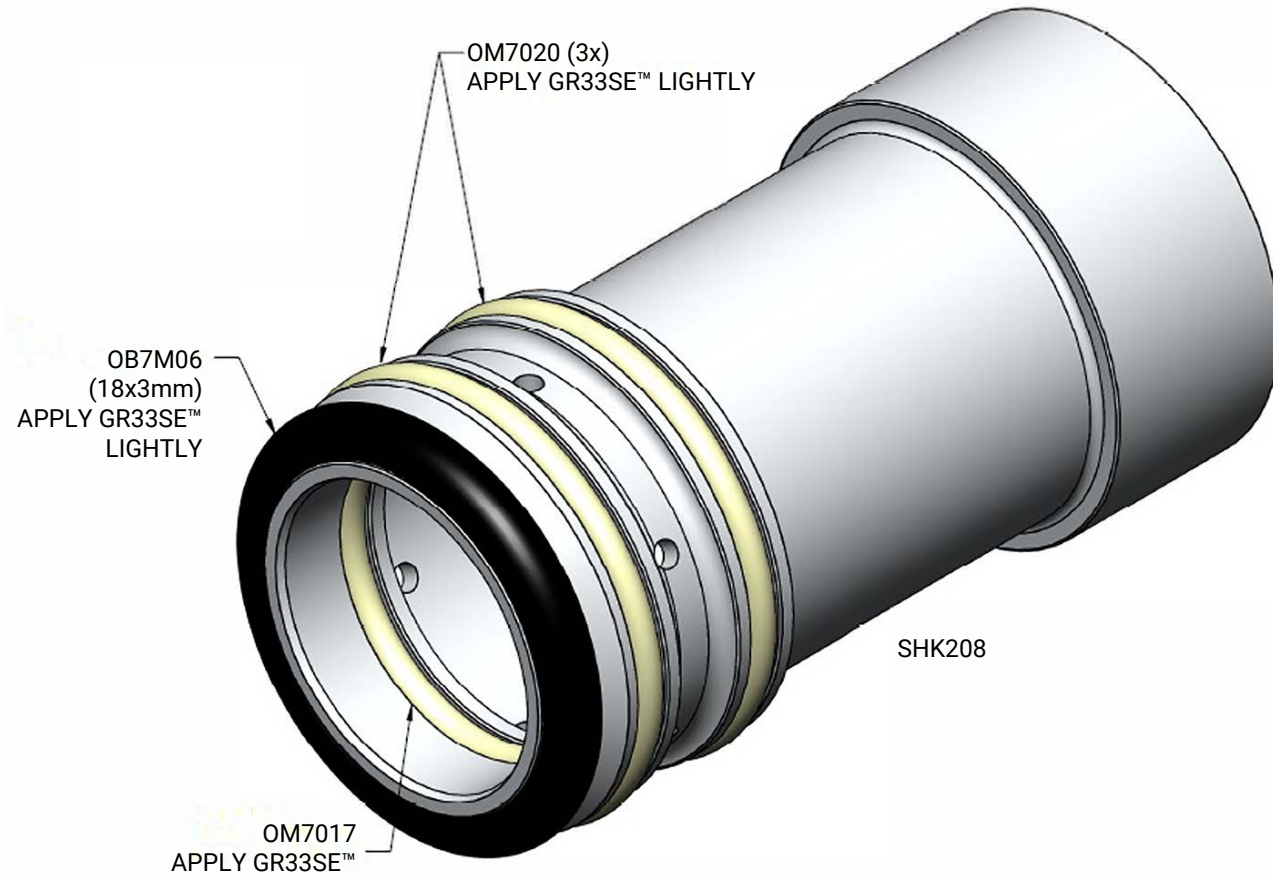
**WHEN GASSED UP, LITTLE OR NO AIR SEEMS TO BE GETTING TO THE SHOCKER®.**

- Bolt cannot move - Follow the Bolt Cleaning section of this manual to clean and inspect the o-rings of the bolt system.
- Filter is clogged – see the grip frame removal section of this manual to locate and inspect the filter at the gas through port.

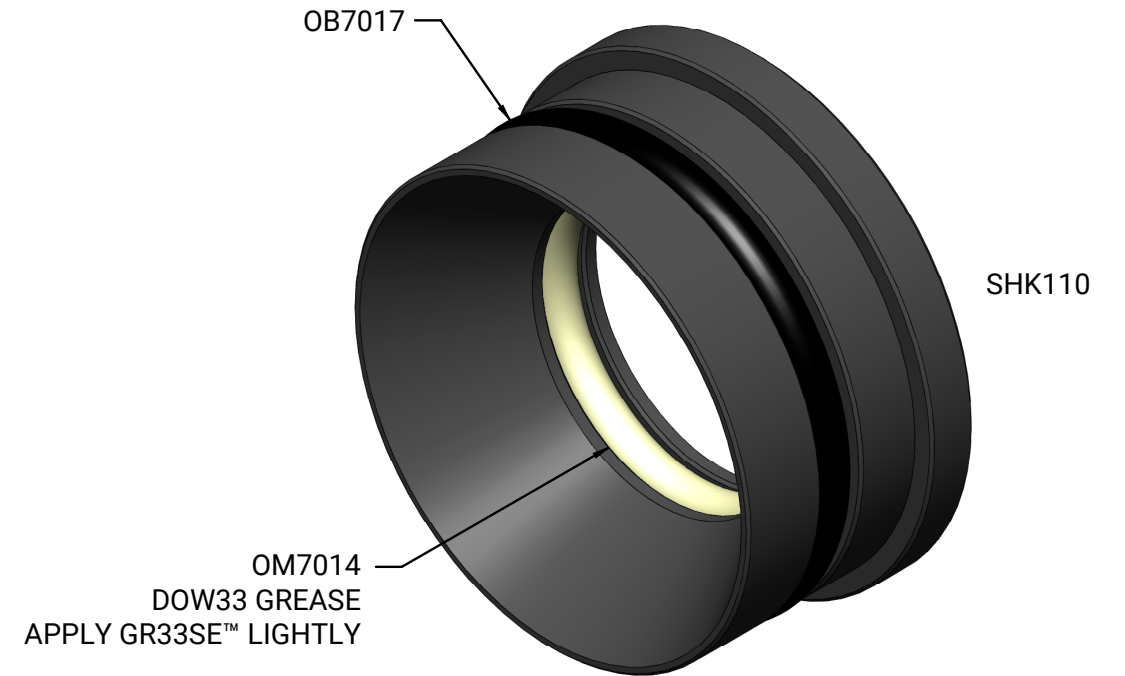
**BOLT ASSEMBLY WILL NOT SLIDE SMOOTHLY INTO BODY OR LOCK IN PLACE.**

- O-rings are damaged or un-seated - Follow the bolt cleaning procedure and make sure all o-rings are in good condition and properly seated. Also make sure there is no debris inside the body. Pressing the bolt release button before the Shocker® CVO has been de-gassed is a common cause of un-seated o-rings and should be avoided.

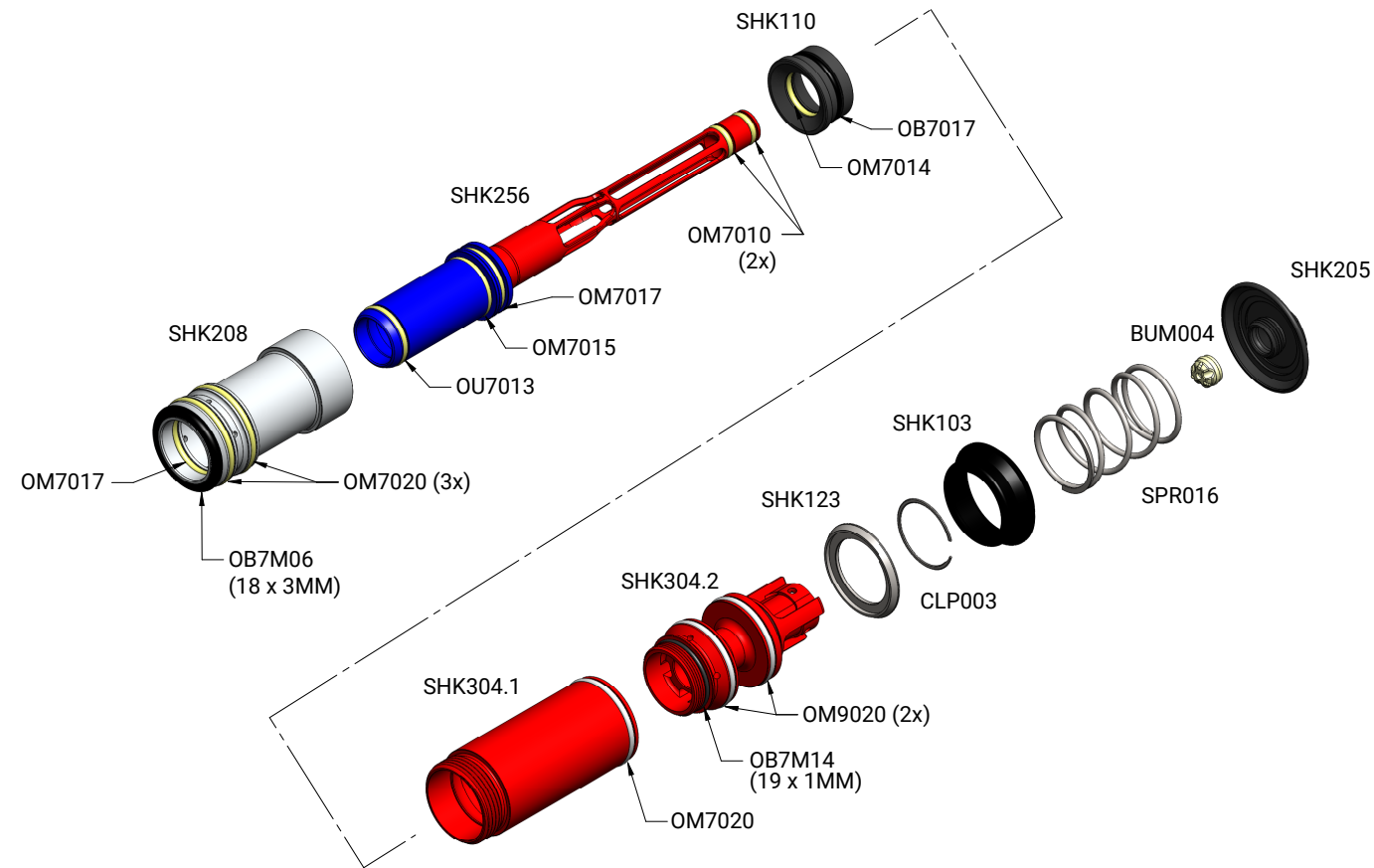
FIRING CAN



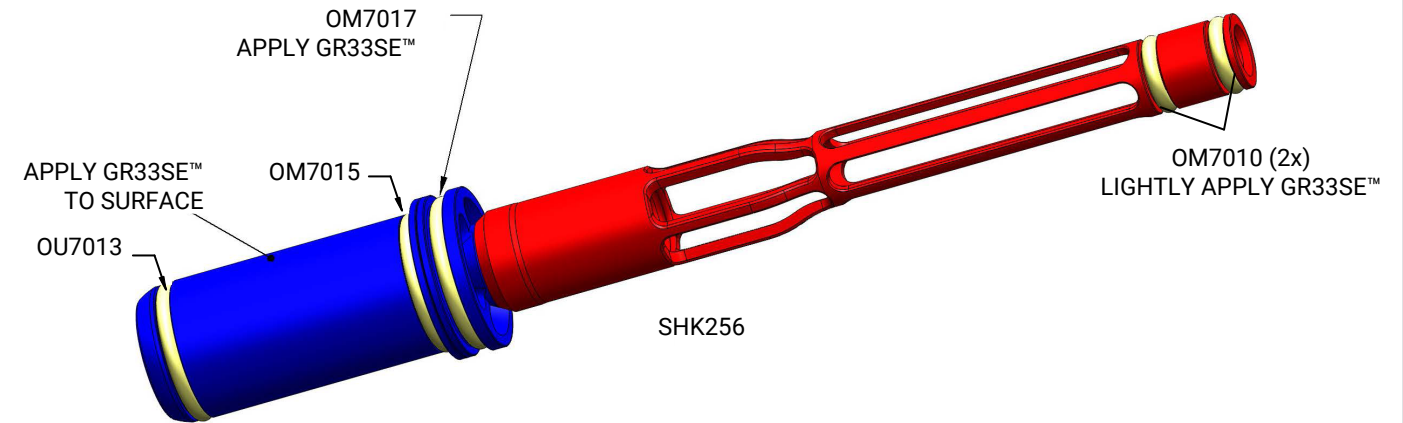
CHAMBER GUIDE



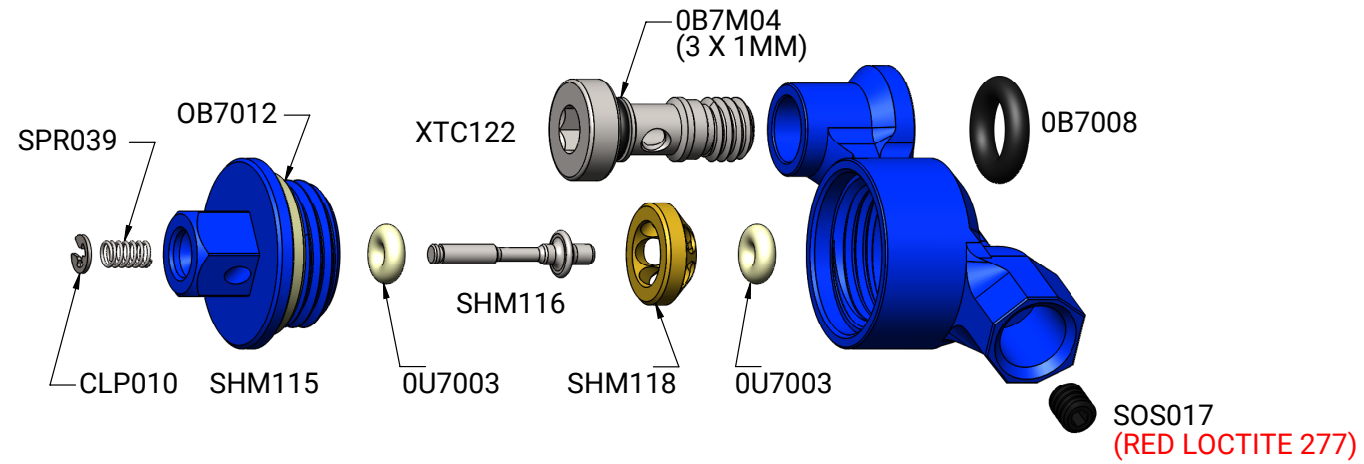
MAIN CHAMBER



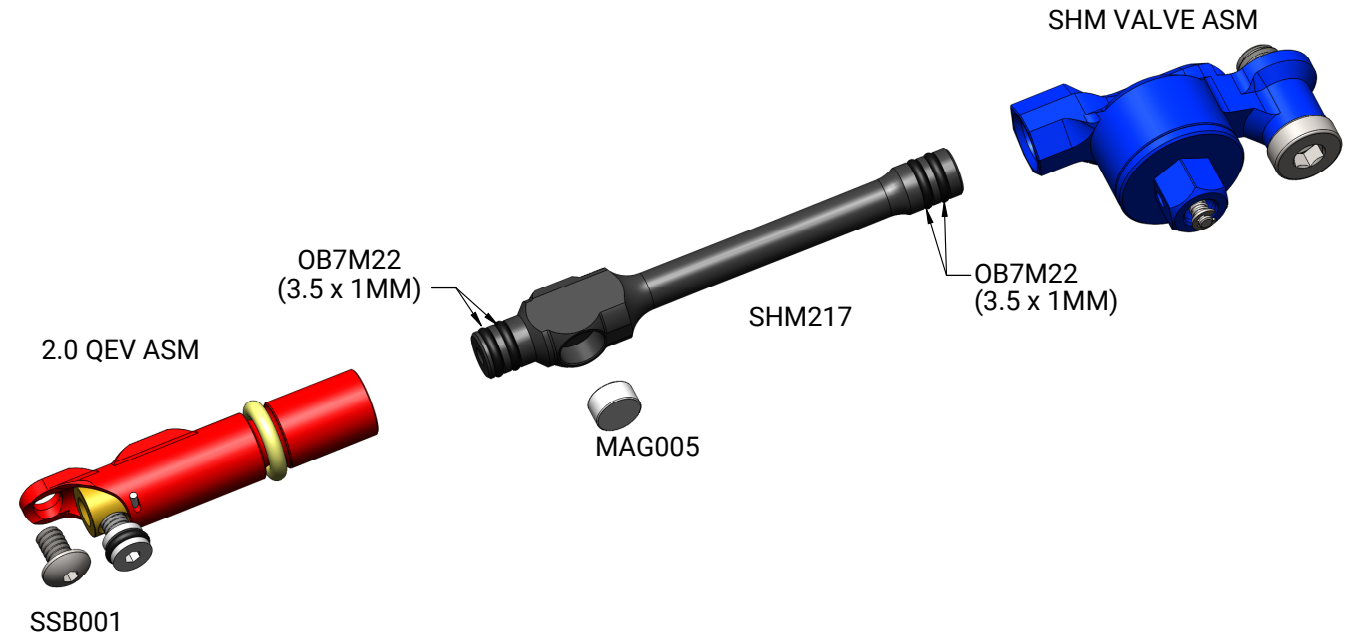
BOLT



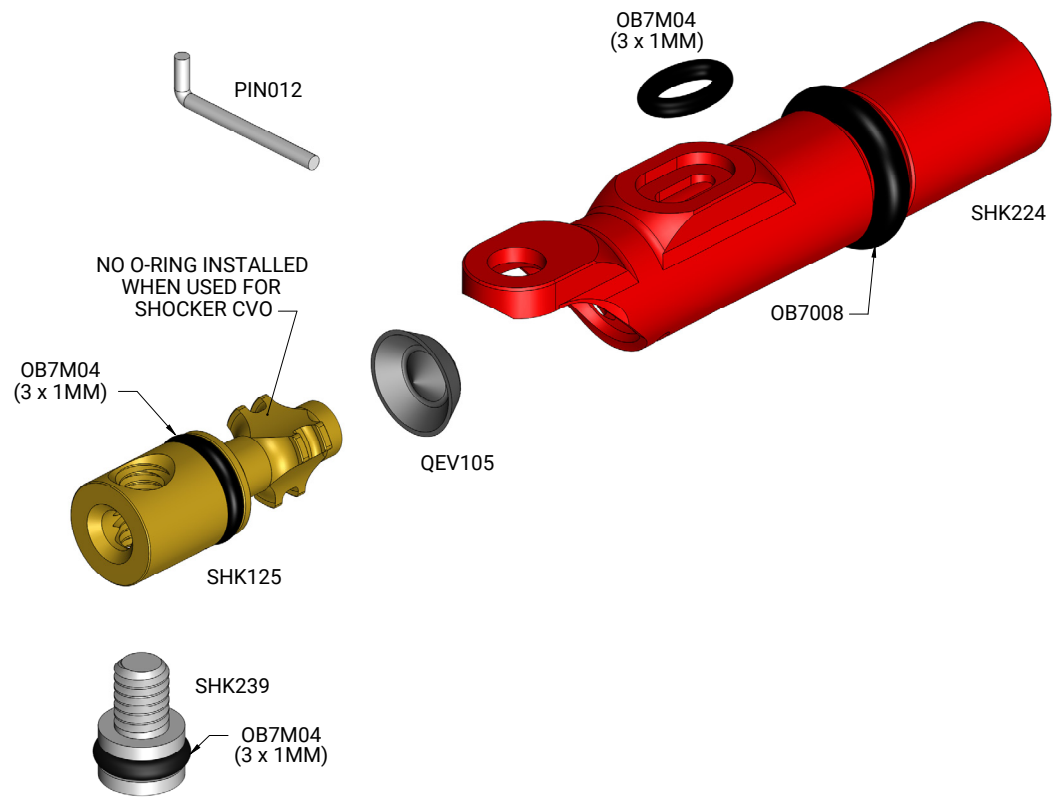
VALVE MANIFOLD



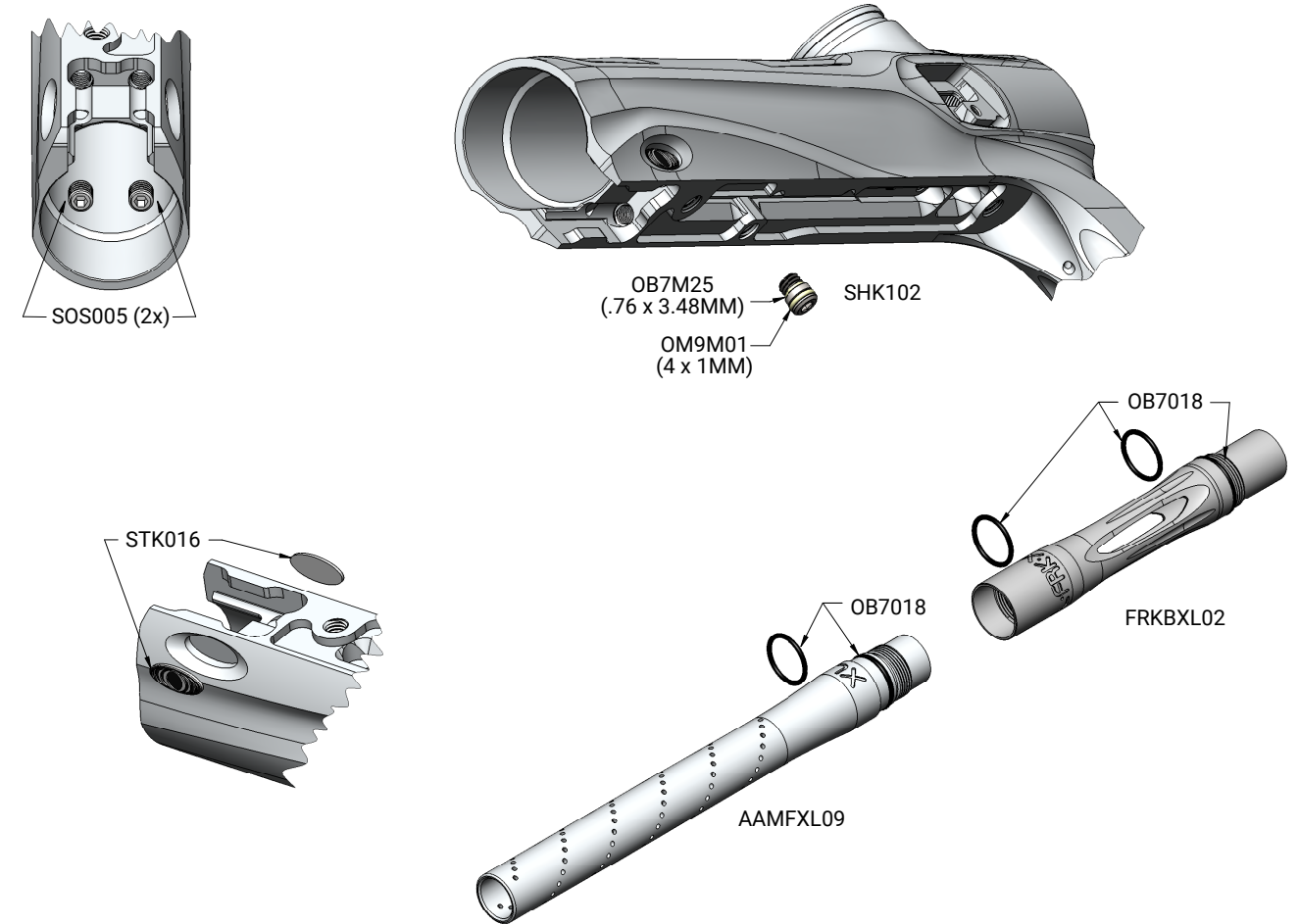
BOLT CONTROL MANIFOLD



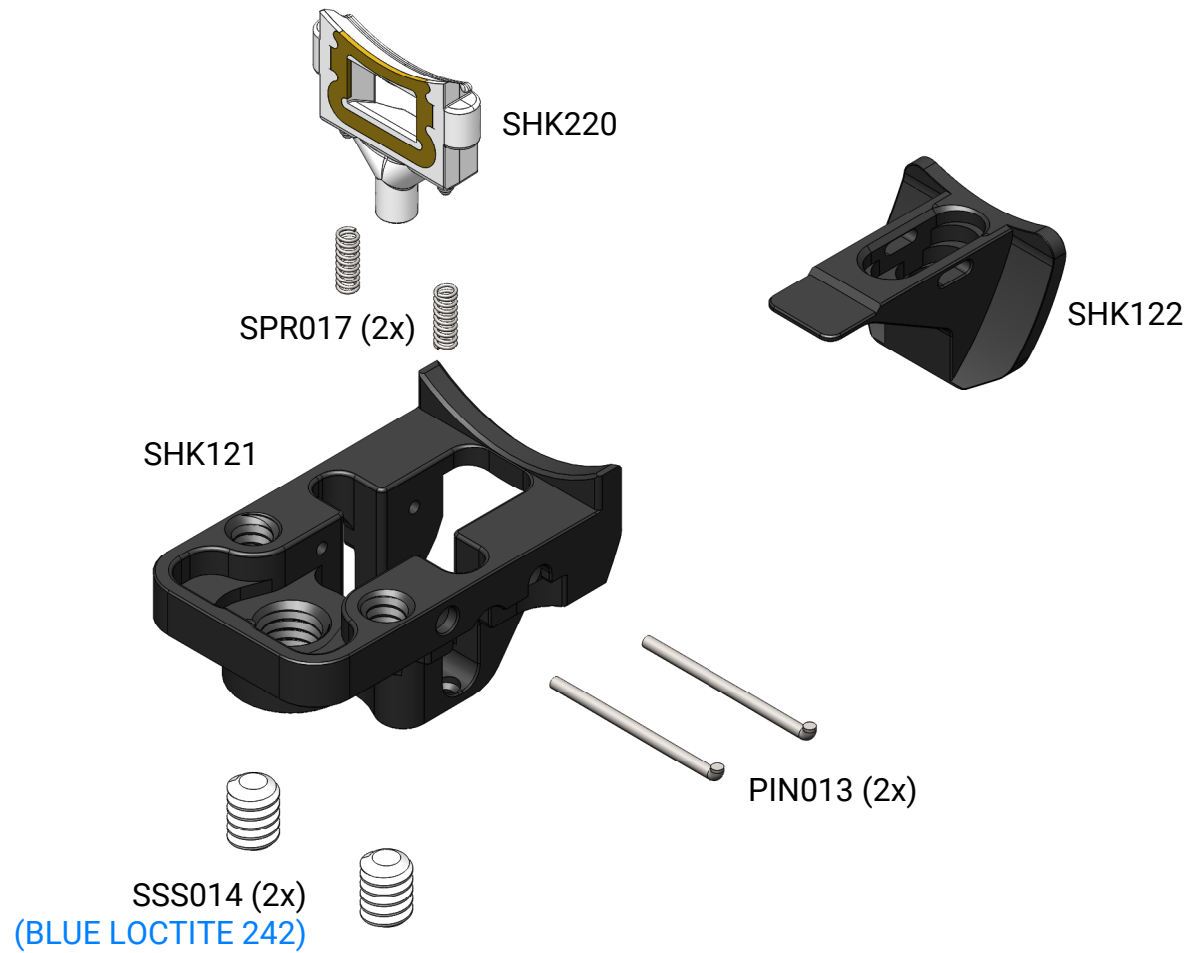
QEV ASSEMBLY



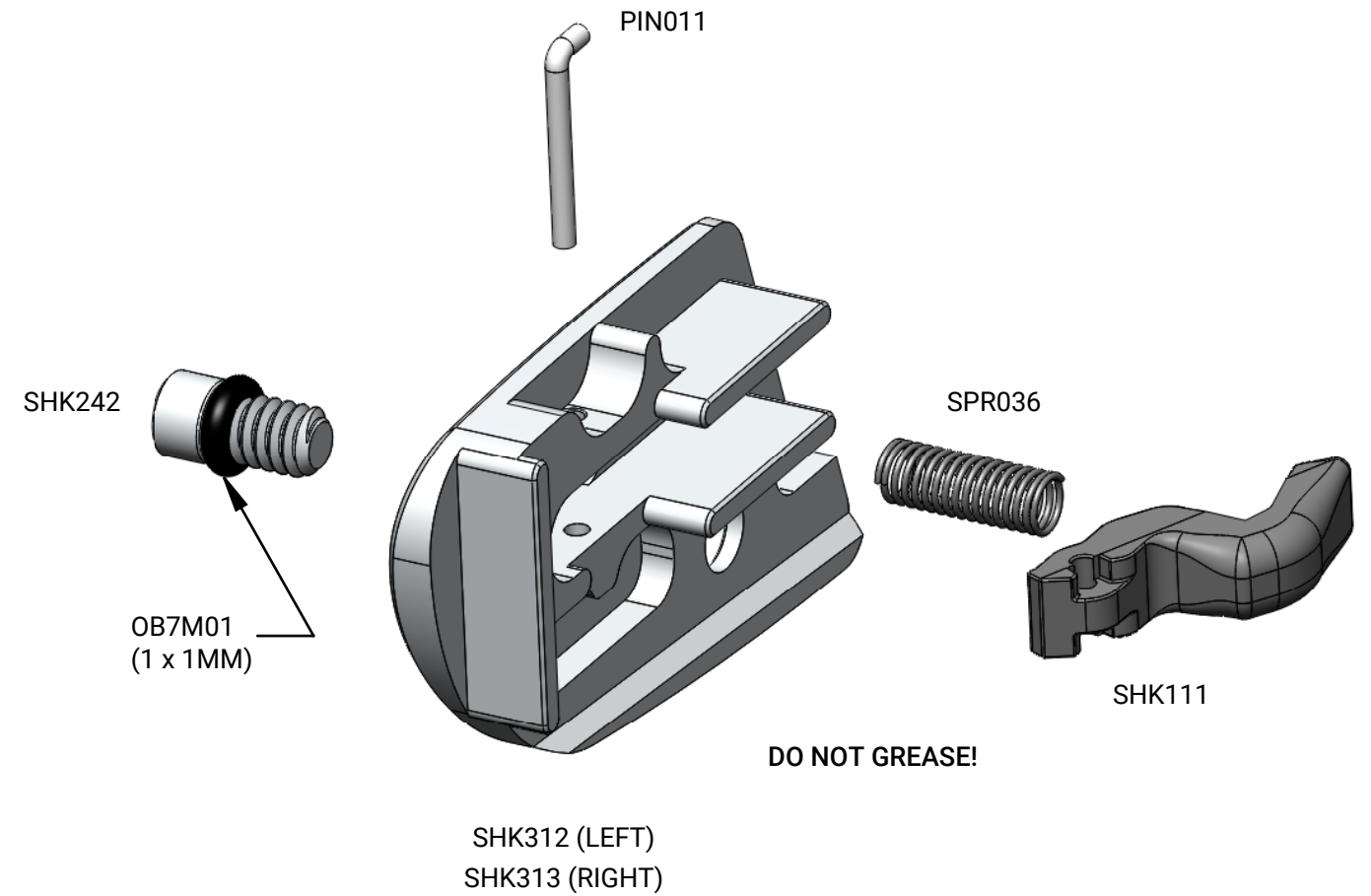
BODY SCREWS AND BARREL



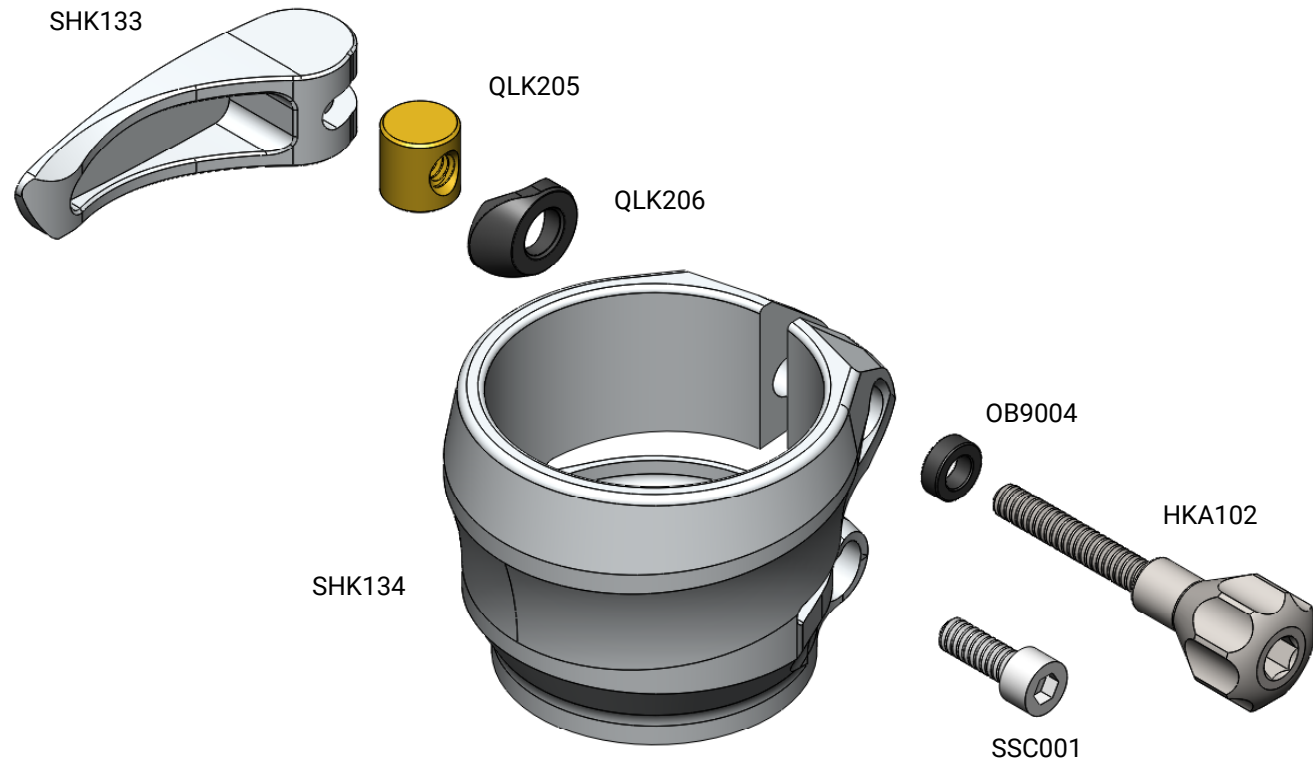
LATCH ASSEMBLY



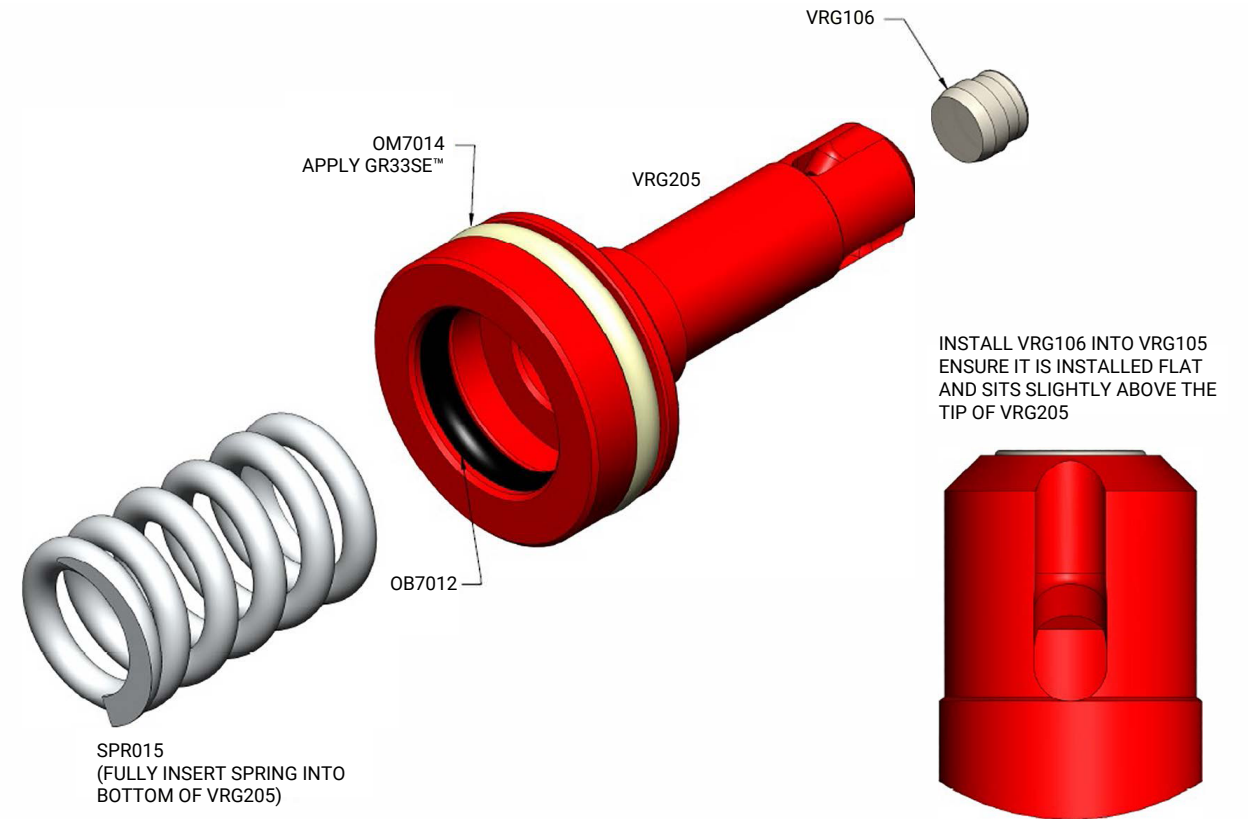
DETENT COVER



CLAMPING FEEDNECK

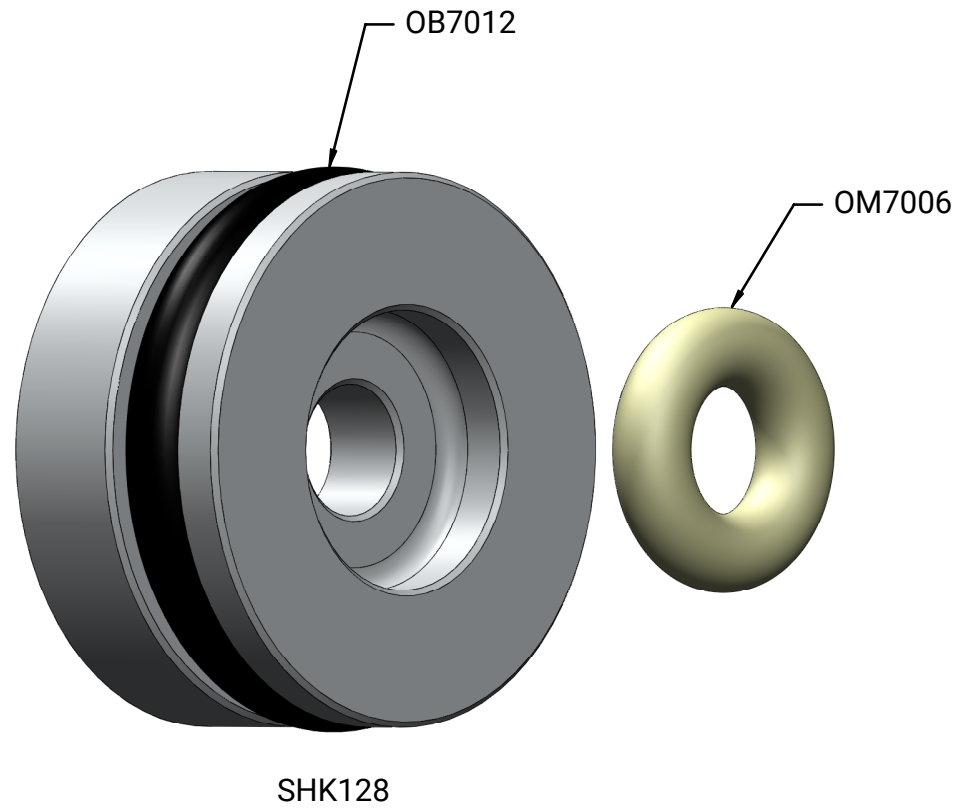


REGULATOR PISTON

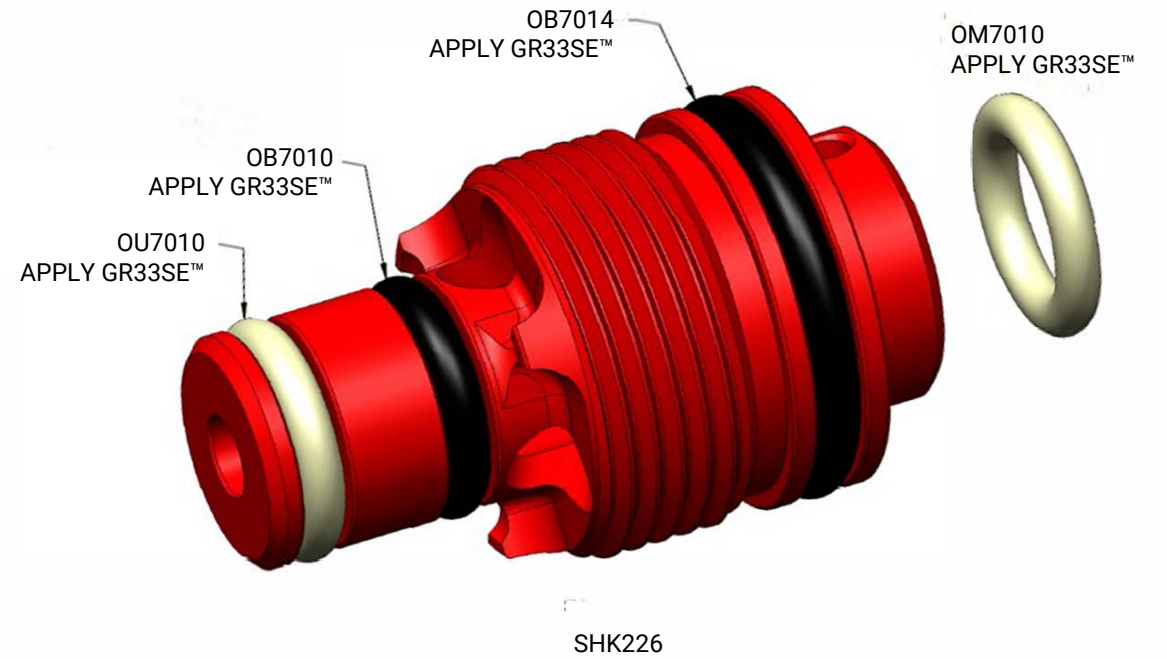




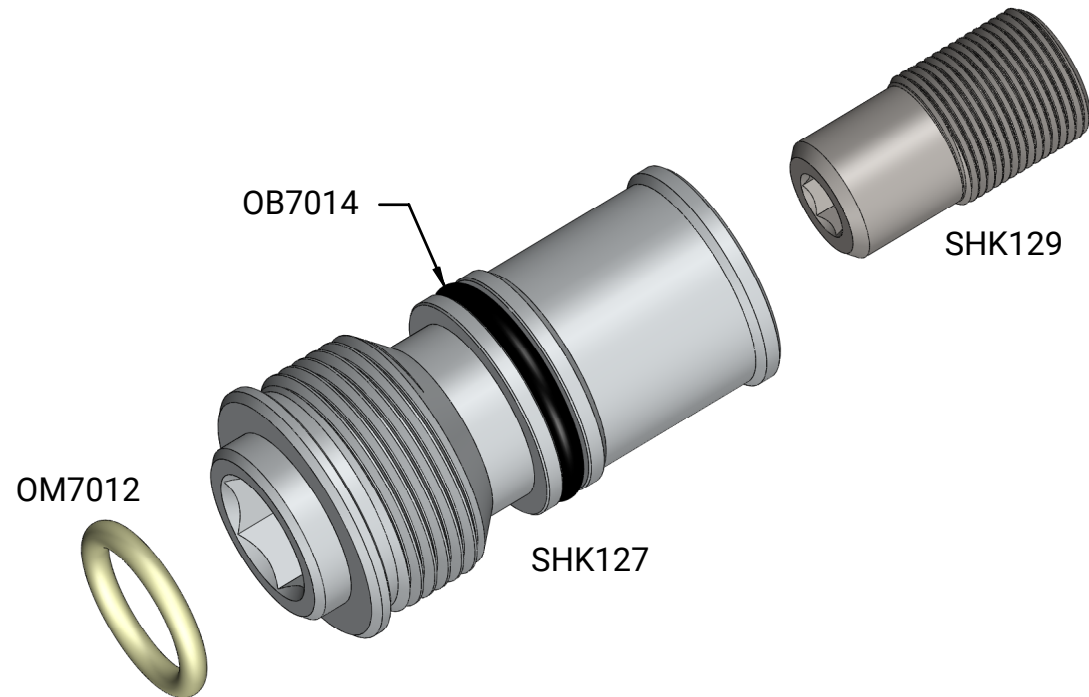
SPRING GUIDE



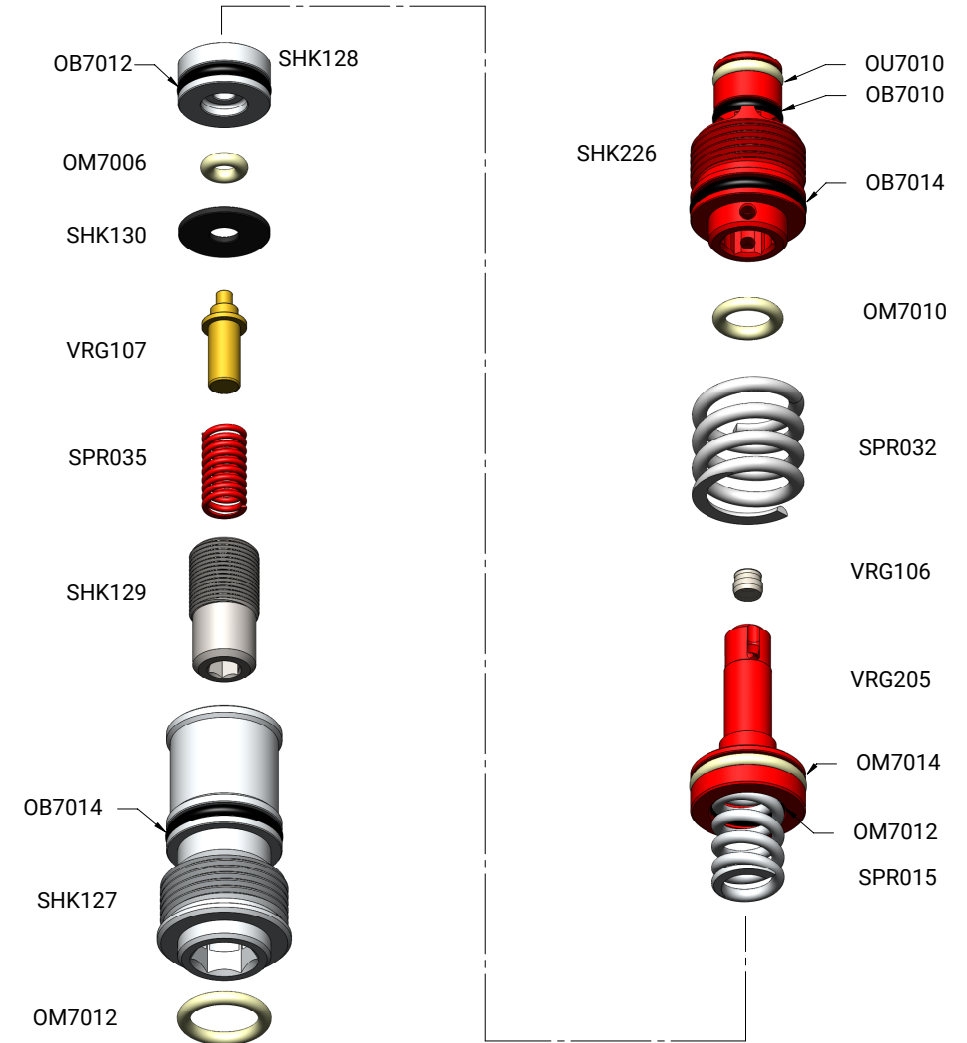
REGULATOR BASE



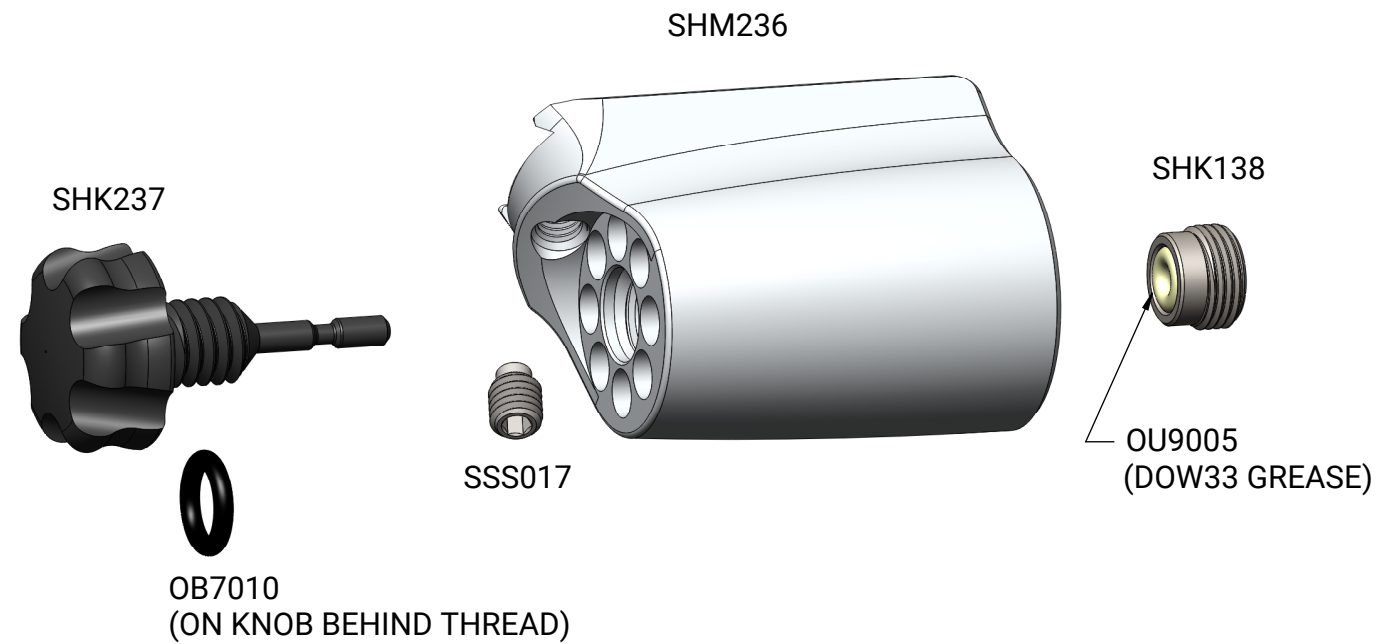
SPRING PLATFORM BASE



REGULATOR SPRINGS



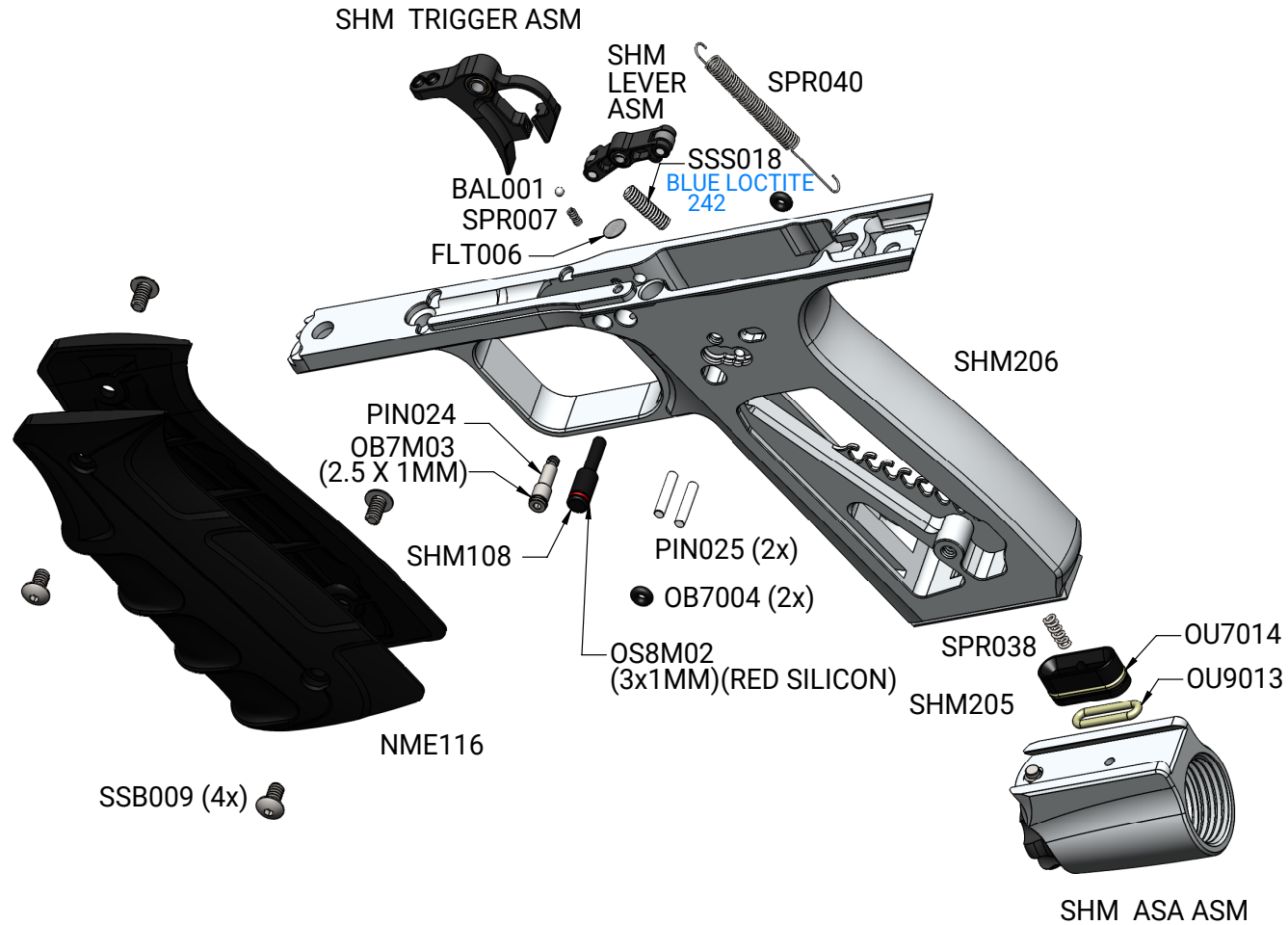
BOTTOM LINE ASA



TRIGGER



GRIP FRAME



TECH SUPPORT

Our Technical Support Department is open Monday through Friday, from 10am to 6pm EST, and can be reached at 724-520-8690. Additional support and downloadable product manuals are available through our web site: [www.shockerpaintball.com](http://www.shockerpaintball.com).

Shocker Paintball warrants to initial retail purchaser that the Shocker® CVO paintball marker is free from defects in materials and workmanship for one year from date of purchase. This warranty is limited to the repair or replacement of defective parts with the customer to pay shipping costs. Disposable wear items (o-rings, spings, seals, screws, rubber grips, etc.) are not warranted. This warranty does not cover surface damage (scratches and nicks) damage resulting from misuse, improper disassembly, reassembly or attempts to drill holes or otherwise modify the marker. Trigger alteration of any kind may result in serious injury and will void the warranty. The only authorized lubricant for the Marker is Dow 33 based lubricant (GR33SE™). Use of any other lubricant may invalidate warranty. This warranty is effective only if the customer registers the product online at [shockerpaintball.com](http://shockerpaintball.com) within 30 days of purchase. Warranty is non-transferrable.



**SP**

[WWW.SHOCKERPAINTBALL.COM](http://WWW.SHOCKERPAINTBALL.COM)

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