



SBI C-71 & ST-22

Rifle Owner's Manual · Revision 26.08



This manual covers the SBI C-71 and ST-22 rimfire rifles — semi-automatic rifles chambered in 22LR that share the same 10/22-pattern blowback platform. This manual covers safe operation, care, cleaning, and maintenance of your rifle. Where a procedure or specification is specific to one model, the applicable model is noted. Read this manual in its entirety before handling or firing your firearm.

This manual includes a complete malfunction diagnosis guide (Section 5.5) covering the four most common failure-to-feed and failure-to-eject stoppages seen in SBI C-71 & ST-22 rifles, along with their likely root causes and solutions.

WARNING

When picking up your firearm for the first time, immediately ensure you prove it is safe. Point the firearm in a safe direction, attempt to put the firearm on safe by putting the safety selector into the SAFE position. Remove the magazine and pull the bolt back into the open position. With the bolt completely to the rear, visually and physically inspect the chamber and feed path to ensure it is empty. Once you have confirmed that there are no rounds or other obstructions in the firearm, push the bolt closed. You have now made your firearm safe to handle.

New rifles: new rifles are shipped with a packing oil applied to prevent corrosion during storage and shipping. This oil is not intended as a lubricant and must be fully removed from the action and chamber before use, or feeding and ejection issues can occur. See Section 2.0, Care and Cleaning.



General Safety

Safety is your responsibility — read this section before handling your firearm

Spectre Ballistics International Inc. (SBI) has no control over the use of your firearm and shall not be responsible for injury, death, or damage to property resulting from the intentional or accidental discharge of your firearm. Safety is your responsibility, and you are required to follow the firearm safety rules at all times:

- Always treat your firearm as though it is loaded.
- Never point your firearm at anything other than the desired target.
- Keep your finger off the trigger until you are ready to shoot.
- Ensure you know what your target is and what lies beyond.

In addition to the firearms safety rules, it is your responsibility to ensure the following:

- Always wear hearing and eye protection when using your firearm.
- Always use your firearm in a well ventilated area to mitigate your exposure to lead and other contaminants.
- Visually inspect your firearm prior to use to ensure there are no obstructions or debris in the barrel, chamber, or action.
- Ensure your firearm is clean and well lubricated prior to use.
- Always carry your rifle in a way that you can control the muzzle in the event of a slip or fall.
- Always use proper, factory-made ammunition of the correct caliber, and ensure it is clean and dry.
- Never shoot directly into hard surfaces, such as rock or water, as bullets can ricochet.
- Do not perform unauthorized modifications or alterations to your firearm.
- Always store your firearm as per the applicable firearms laws and/or regulations.
- Never allow anyone to operate your firearm without reading the operator's manual first.
- Never operate your firearm under the influence of drugs or alcohol.



1 Overview

Rifle purpose, chamber, barrel, action, and trigger specifications

The SBI C-71 and ST-22 are semi-automatic rifles chambered in 22LR that share the same 10/22-pattern rimfire blowback platform. Both are compatible with all Ruger 10/22 magazines, TUF-22 magazines, and Remington 597 magazines when used with the SBI 10/22 magazine adapter.

1.1 Purpose

The SBI C-71 and ST-22 are sporting rifles that can be used for precision target shooting, small game hunting, and recreational shooting.

1.2 Chamber (C-71 / ST-22)

The SBI C-71 and ST-22 are chambered in 22LR.

1.3 Barrel (C-71 / ST-22)

The SBI C-71 and ST-22 rifles are all chambered in 22LR. All barrels feature a 1-in-16 twist rate and are compatible with all 22LR ammunition except for CCI Stinger (and similar hyper-velocity cartridges) — see Section 8.0, Recommended Ammunition.

1.4 Action (C-71 / ST-22)

The SBI C-71 and ST-22 are semi-automatic rifles built around a 10/22-pattern billet receiver. Both use a blowback system and feature a reciprocating charging handle.

1.5 Trigger (C-71 / ST-22)

The SBI C-71 and ST-22 use a Ruger BX 10/22 trigger. The trigger has a pull weight between 2-1/2 and 3 lbs.



2 Care and Cleaning

Most rimfire malfunctions trace back to a dirty action or chamber

Cleanliness is very important to the function of your C-71 or ST-22 rifle. Any failures to feed or extract rounds may be indications of a dirty chamber. An excess of dirt, powder residue, or oil in the chamber will cause malfunctions and may result in potentially dangerous cartridge case ruptures and release of hot gasses and case fragments when firing. Proper periodic maintenance is essential to the reliable functioning of any firearm. It is recommended to clean your firearm before and after every use.

New rifles: new rifles are shipped with a packing oil applied to prevent corrosion during storage and shipping. This oil is not intended as a lubricant and must be fully removed from the action and chamber before use, or feeding and ejection issues can occur.

Cleaning frequency: depending on the ammunition used, quickly running a bore snake down the barrel every 200–300 rounds may be required for optimal reliability. A full cleaning as described in Section 2.3 is recommended every 1,000 rounds.

Increased Care in Adverse Conditions

Dusty and Sandy Areas

- Clean the firearm before and after firing and/or at least once per day.
- Reduce excess lubrication to avoid dust, dirt, or sand sticking to the lubrication and causing additional friction and wear in the moving parts.
- Keep the firearm covered whenever possible.

High Humidity or Wet Conditions

- Clean the firearm before and after firing and/or at least once per day.
- Keep steel parts well oiled and inspect for rust daily.
- After handling, wipe the firearm down with an oiled cloth to remove precipitates, which will accelerate corrosion.
- Enhanced attention to cleaning and lubrication is required to prevent corrosion issues in marine environments.

Freezing Temperatures

- Clean the firearm before and after firing and lubricate sparingly.
- Cycle the firearm frequently to prevent freezing.

2.1 Lubricants and Solvents

Any number of lubricating and/or off-the-shelf gun cleaning oils, greases, or solvents can be used on your C-71 or ST-22.

Recommended products: Hoppe's No. 9 (solvent) and Ballistol (oil). Other quality cleaning products may work as well.

Do not use lubricants containing graphite, as graphite can cause damage to aluminum alloys.



2.2 Field Stripping (C-71)

In order to properly clean your firearm, it must be field stripped. "Field stripped" is the term for when the bolt is removed from the action for cleaning. This is the minimum level of disassembly required to properly clean your firearm.

ST-22 owners: the numbered steps below describe field stripping for the C-71 chassis variants. Refer to the ST-22 supplement to this manual for ST-22 field stripping instructions.

Always begin a field strip by proving the firearm safe and engaging the safety. Always wear eye protection and gloves when field stripping your firearm.

- 1 Once you have ensured your firearm and surroundings are safe and clear of ammunition, place the Safety Selector into the "SAFE" position. Ensure the bolt is forward and not held back with the bolt catch.
- 2 *For models Apex Match and Apex Target with Spectre Chassis only:* using two 2.5mm L-keys, loosen and remove one of the two M4x8mm screws that are threaded into the RSS threaded pin and slide the threaded receiver pin out.
- 3 Remove the 3/4" #12-24 screw from the front take-down hole using the 5/32" L-key.
- 4 Remove the barrel receiver from the Spectre Chassis or Hogue Stock, taking care not to lose any of the trigger pins or the RSS threaded pin.
- 5 Remove the remaining trigger pin(s): one remaining for Apex Match and Apex Target with the Spectre Chassis, and two remaining for Apex Sport and Apex Alpine with the Hogue Stock.
- 6 Remove the Spectre Viton Buffer from the receiver.
- 7 Remove the BX trigger from the receiver, being careful not to dry fire when the trigger is removed from the receiver.
- 8 With the barreled receiver turned upside down, rear of the receiver towards you and the bolt visible, fully retract the charging handle and lift up on the front of the bolt to tilt it out of the receiver.
- 9 Once the bolt is removed, slowly allow the charging handle to slide forward in a controlled manner, and remove the charging handle from the receiver by sliding it out handle-first from the ejection port.
- 10 With this step the firearm is now field stripped and ready for routine cleaning.



2.3 Cleaning

Now that you have field stripped your firearm, you can begin to clean. Most rimfire malfunctions trace back to a dirty action or chamber, so work through each step below in order.

1 Clean the action, guide rod, spring, and bolt

Clean these parts well with solvent, paying special attention to the bolt face, and remove all carbon and lead buildup.

2 Clean the chamber

Use a copper brush and solvent. A copper brush with a brass rod is ideal. **Never use a steel brush in the chamber or bore.** A rimfire-specific chamber brush removes the carbon ring that ordinary cleaning misses; grease and carbon accumulation in the chamber can interfere with proper feeding of cartridges from the magazine.

3 Run patches down the barrel

Run a solvent-wetted patch down the bore several times, followed by dry patches to mop up excess solvent and residue and to check for remaining fouling. Cleaning from either the chamber end or the muzzle end is acceptable, as long as a brass rod and copper brush/jag are used — no damage will occur either way. Bore fouling can contribute to reduced accuracy.

4 Wipe down all surfaces

Wipe all surfaces clean with a cloth, then wipe all surfaces with a patch or cloth that has been very lightly oiled.

Note: only a light application of oil is needed to provide adequate lubrication of moving parts and to prevent rust. Excess accumulations of oil tend to attract dust and dirt and may congeal in cold weather, which can interfere with the safe and reliable functioning of the rifle. Do not use lubricants containing graphite, as graphite can cause damage to aluminum alloys.

2.4 Lubrication

1 Lightly grease riding surfaces on the bolt and recoil rod.

2 Apply a light, even coat of oil to the action, bolt, guide rod, spring, and other moving parts before reassembly. The trigger, hammer, bolt face, and chamber should be cleaned, but any oil or grease should be wiped off immediately.



2.5 Assembly (C-71)

After cleaning and lubricating, the rifle is ready to reassemble. The numbered steps below describe reassembly for the C-71; refer to the ST-22 supplement to this manual for ST-22 assembly instructions.

Always begin assembly by proving the firearm safe. Always wear eye protection and gloves when assembling your firearm.

- 1 Insert the charging handle in through the ejection port and seat the end of the recoil rod into the detent in the receiver.
- 2 With the barreled receiver turned upside down and the rear of the receiver towards you, fully retract the charging handle and insert the bolt with the firing pin face down by placing the rear of the bolt in first, tilting the bolt front down, and seating it into the charging handle until the front of the bolt is below the guide rail of the receiver.
- 3 Allow the charging handle and bolt to slide forward in a controlled manner.
- 4 Insert the Spectre Viton Buffer into the receiver.
- 5 Insert the BX trigger and align the trigger pin holes.
- 6 Insert the trigger pin(s): only the forward trigger pin at this stage for Apex Match and Apex Target with the Spectre Chassis; both trigger pins at this stage for Apex Sport and Apex Alpine with the Hogue Stock.
- 7 Insert the barrel receiver into the Spectre Chassis or Hogue Stock and install the 3/4" #12-24 screw into the front take-down hole using the 5/32" L-key.
- 8 *For models Apex Match and Apex Target with Spectre Chassis only:* install the threaded receiver pin and, using two 2.5mm L-keys, tighten the two M4x8mm screws into the threaded receiver pin.



3 Function Test

Verify safety and trigger operation after assembly, with the magazine removed

Prove the firearm safe prior to function test.

- Put the safety selector on "SAFE" and squeeze the trigger. The hammer should not operate.
- Put the safety selector on "FIRE" and squeeze the trigger. The hammer should strike the firing pin.
- Cycle the action fully and repeat.

4 Safety Selector

Locating and confirming the position of the safety

When the safety is pressed to the right and the red line is not visible in the safety button, it is on "SAFE". Always attempt to place the firearm safety into "SAFE" when loading, unloading, handling, or not ready to fire.



5 Firearm Operation

Proving safe, loading, making ready, and unloading the C-71 & ST-22

The operation of this firearm should only be performed by persons who are trained to do so. The operational instructions in this manual are a guide for safe use but are not meant to replace the requirement of formal training.

5.1 Proving the Firearm Is Safe

Making or proving the firearm “SAFE” is a technique that ensures there are no rounds or other obstructions in the chamber or magazine of the firearm so it can be handled and/or transported safely.

- 1 Assume the firearm is always loaded and maintain safe muzzle control.
- 2 Engage the safety if possible.
- 3 Keep your finger off the trigger.
- 4 Remove the magazine.
- 5 Pull the charging handle rearward.
- 6 Visually and physically check to ensure that the chamber and feed path are clear of any ammunition.

5.2 Loading

Loading is the term used to describe when the magazine is inserted into the magwell of the rifle.

- 1 Prove the firearm is safe as per Section 5.1.
- 2 With the firearm pointed in a safe direction, push the magazine (bullets facing forward) into the magazine well until the magazine catch engages with a positive click.
- 3 Pull down on the magazine to ensure it is locked in place properly.

Ammunition notice: only load your firearm with clean, high quality, factory-made ammunition. Do not load ammunition that is dirty, wet, corroded, or damaged. Should you encounter issues with an ammunition, try a different brand — see Section 8.0, Recommended Ammunition — and contact Spectre Ballistics International Inc. directly. SBI specifically dismisses any responsibility for any damage or injury caused in connection with, or as a result of, the use of any non-factory ammunition. Any damage caused by non-factory-made ammunition voids all warranties. Only use ammunition that complies with SAAMI or similar specifications.

Do not use CCI Stinger or similar hyper-velocity ammunition with your C-71 or ST-22 rifle.



5.3 Ready

Ready, or “making ready,” is the term used to describe when a round is chambered.

- 1 Ensure the magazine is seated properly.
- 2 Charge the action completely rearward using the charging handle located on the right side of the rifle.
- 3 Release the charging handle completely and allow the bolt to chamber a round entirely under its own force.
- 4 Place the rifle on safe. The rifle is now “READY.”

5.4 Unloading

- 1 Attempt to place the safety selector on SAFE. The hammer needs to be cocked back in order to be placed on SAFE.
- 2 Push forward on the magazine release and remove the magazine.
- 3 Charge the action completely rearward with the charging handle.
- 4 Press the bolt catch located in front of the trigger to lock the action open.
- 5 Observe the feed path, chamber, and bore is clear of cartridges.



5.5 Immediate Action on Malfunction

A malfunction is a failure of the firearm to function correctly. Malfunctions are caused by procedural or mechanical failures of the firearm, magazine, operator, or ammunition. Rimfire semi-automatics are simple blowback actions, but that simplicity means feeding and ejection reliability depends heavily on a clean action, healthy springs, a good magazine, and quality ammunition — most malfunctions trace back to fouling or a worn/damaged magazine before anything more serious. Proper care, cleaning, and maintenance can mitigate mechanical malfunctions and identify problems before they occur.

If a firearm fails to fire: stop shooting and keep the rifle pointed at the target for 60 seconds in case of hang fire.

After you wait 60 seconds, inspect your firearm. Check for unusual chambering, misfire, failure to extract, unburned powder residue, or an abnormal sounding and/or unusual feeling shot. Sometimes improper ammunition and/or chambering leads to a projectile not exiting the barrel after firing. Firing a round into a blocked barrel is extremely dangerous and can cause serious injury and/or death.

Initial Corrective Action

- 1 Unload the rifle and make it SAFE.
- 2 Check to ensure the previous cartridge was extracted properly.
- 3 Check to ensure a new cartridge was pushed into the chamber.
- 4 Check the magazine to ensure that it is fully seated and locked in place while firing.
- 5 Examine the action and chamber of the firearm for any signs of failure.
- 6 If a live round or empty casing is in the receiver or chamber, remove the magazine.
- 7 Clear any obstruction.
- 8 Check to see if the magazine is empty. Change the magazine if required.
- 9 Re-aim and continue firing. If the firearm fails to fire, take further corrective action.

Diagnosing Feed and Eject Stoppages

Rimfire semi-automatics are simple blowback actions, but that simplicity means feeding and ejection reliability depends heavily on a clean action, healthy springs, a good magazine, and quality ammunition. The four stoppages below cover the great majority of cycling issues seen in the field on C-71 & ST-22 rifles. Work through the root causes in order — most malfunctions trace back to fouling or a worn/damaged magazine before anything more serious.

New rifles: new rifles are shipped with a packing oil applied to prevent corrosion during storage and shipping. This oil is not intended as a lubricant and must be fully removed from the action and chamber before use, or the issues described below can occur. See Section 2.0, Care and Cleaning.



A Failure to Eject

Spent case is caught sideways in the ejection port



Spent case tipped sideways and jammed in the ejection port after firing.

LIKELY ROOT CAUSES

- Chamber, bolt face, or extractor claw fouled with carbon/lead buildup, causing the case rim to slip out of the extractor's grip mid-cycle
- Weak, worn, chipped, or broken extractor (or a fatigued extractor spring) that can't hold the rim long enough for the ejector to strike it squarely
- Insufficient bolt velocity/energy — excess oil/grease drag or a short-stroking action from low-powered ammunition
- Out-of-spec or damaged case rims (thin, split, or crushed rims common in some bulk-pack ammunition) that tear free of the extractor early
- An optic, scope rail, or mount that overhangs or narrows the ejection port, physically deflecting the case as it exits

SOLUTIONS

- Field-strip and clean the bolt face, extractor hook, ejector, and chamber throat; a rimfire-specific chamber brush removes the carbon ring that ordinary cleaning misses
- Inspect the extractor for chips or rounded hooks and the extractor spring for proper tension; replace if worn
- Switch to a different ammunition brand/lot to rule out oversized, thin-rimmed, or underpowered cartridges
- Check that no optic, rail extension, or mount intrudes into the ejection path; reposition or use a lower-profile mount if it does

B Failure to Feed

Round is only partway into the chamber



Round stopped partway into the chamber, bolt not fully forward.

LIKELY ROOT CAUSES

- Carbon ring or lead fouling built up at the chamber throat, narrowing the opening so the round can't seat fully
- Excess friction or dirt on the bolt, robbing it of the forward energy needed to fully chamber the round
- Bolt binding due to dirt or lack of lubrication, causing it to stop short before the round is fully chambered

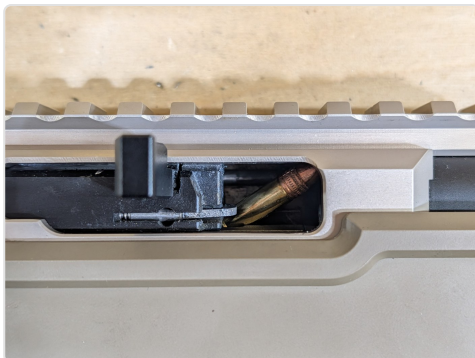
SOLUTIONS

- Clean the chamber thoroughly with a rimfire chamber brush and solvent to remove the carbon ring, then dry and lightly oil
- Clean and apply a light film of lubricant to the bolt
- Try quality, consistent ammunition — some blowback 22LR actions are sensitive to inconsistent bulk-pack rounds



C Failure to Feed

Round is nose-up in the action and not feeding into the chamber



Cartridge tipped nose-up in the action instead of feeding level into the chamber.

LIKELY ROOT CAUSES

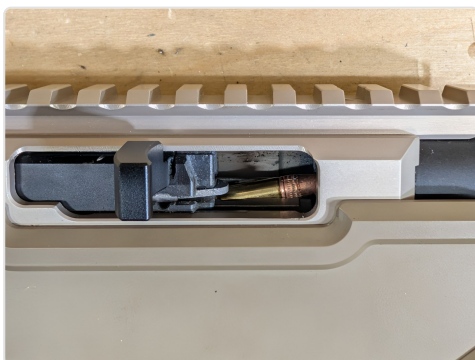
- Ammunition-related issues are by far the most common cause — an oversized, out-of-spec, or oddly profiled bullet nose that doesn't align properly as it feeds, or inconsistent bulk-pack ammunition
- A defective magazine (rarely the cause, but possible) — a damaged, worn, or incompatible aftermarket magazine, or a weak/damaged magazine spring or follower that doesn't hold the round level as the bolt strips it forward
- Magazine not fully seated/locked into the magazine well, letting the round present at the wrong angle

SOLUTIONS

- Try a different ammunition brand or lot first — this resolves the great majority of nose-up feed issues on these rifles
- If the issue persists across multiple ammunition types, inspect the magazine for damage, wear, or a weak spring/follower, and try a factory magazine to rule out a defective unit
- Reseat the magazine fully and confirm it locks positively into the magazine well

D Failure to Feed

Round is nose-down and stuck in the magazine



Cartridge tipped nose-down, binding inside the magazine instead of rising to be stripped by the bolt.

LIKELY ROOT CAUSES

- Ammunition-related issues are the most common cause — an oversized, out-of-spec, or oddly profiled bullet nose that doesn't align properly as it feeds, or inconsistent bulk-pack ammunition
- A dirty or fouled magazine interior or magazine well — carbon, lead, or grease buildup preventing the round stack from rising and presenting correctly, similar to the chamber/bolt fouling that causes Item B
- A dirty action causing the bolt to cycle too slowly to properly strip and control the round as it comes off the magazine
- A defective or incorrectly assembled magazine (rarely the cause, but possible) — a weak or damaged spring, a tilted or damaged follower, a dented/deformed magazine body, or the magazine's internal components reassembled incorrectly after cleaning/disassembly

SOLUTIONS

- Try a different ammunition brand or lot first — this resolves the great majority of nose-down feed issues on these rifles
- Clean the magazine interior and magazine well to remove carbon, lead, and grease buildup
- Clean and lightly lubricate the action if it's fouled or cycling sluggishly
- If the issue persists across multiple ammunition types, inspect the magazine spring, follower, and body for damage, confirm it was reassembled correctly if it had been taken apart, and try a factory magazine to rule out a defective unit



General note: the majority of rimfire cycling issues are resolved by (1) cleaning the chamber, bolt face, and action, and (2) replacing a worn or damaged magazine. If stoppages continue after working through the steps above, have the rifle inspected by a qualified gunsmith.

6 Magazines

10/22-pattern magazine compatibility

C-71 and ST-22 rifles do not include a magazine. You must provide your own magazine. C-71 and ST-22 rifles use 10/22-pattern magazines, including but not limited to:

- Ruger 10/22 BX-1 Rotary Magazines
- Ruger 10/22 BX-15 / BX-25 Magazines
- Butler Creek Ruger 10/22 Magazines
- TUF-22 Magazines
- SBI Ruger 10/22 Magazine Adapter and Remington 597 Magazines

For maximum reliability, accuracy, and performance we recommend using Ruger 10/22 BX-1 Rotary Magazines. A damaged, worn, or incompatible aftermarket magazine — or a weak spring or follower — is a common root cause of failure-to-feed stoppages; see Section 5.5, Immediate Action on Malfunction.

Warning: you are responsible to ensure compliance with all magazine regulations in your jurisdiction.

7 Break-In Procedure

Approximately 250 rounds are required for smooth, reliable operation

From the factory, your rifle requires a break-in procedure to ensure reliable and smooth operation. Your C-71 or ST-22 rifle has been test fired, however it has not been broken in.

- 1 Clean excess packing oil from the new rifle — see Section 2.0, Care and Cleaning.
- 2 Acquire 250+ rounds of 36 to 40 grain copper-plated ammunition rated below 1300 fps. Federal Champion 36gr Copper-Plated HP is a recommended break-in ammunition — see Section 8.0.
- 3 Using a Ruger BX-1 magazine, load and fire 50 rounds.
- 4 Clean the bore using a brush or bore snake.
- 5 Wipe excess oil and fouling from the action.
- 6 Fire the remaining 200 rounds.

Over the course of the break-in procedure you will see an improvement in smoothness, accuracy, and reliability.



8 Recommended Ammunition

Ammunition choice is the single biggest factor in reliable cycling

The C-71 and ST-22 rifles are high-end premium rifles and require quality made factory ammunition. Do not use old, dirty, corroded, wet, or damaged ammunition. Only use ammunition that complies with SAAMI or similar specifications.

Not recommended: Winchester and Remington ammunition — not just their bulk-pack lines, but all 22LR ammunition from these brands — is not recommended for use in these rifles. In testing and field experience, these loads are disproportionately associated with failure-to-feed and failure-to-eject issues.

Do not use hyper-velocity ammunition (rated above 1300 fps), including CCI Stinger and similar cartridges. These loads can cycle the action too fast and too hard, which may cause the same failure-to-feed and failure-to-eject issues.

The three ammunition types below have shown consistently reliable performance and are recommended as a starting point:

Lapua SK .22 LR

40gr Lead Round Nose
1056 fps
500-round tin

CCI Blazer .22 LR

38gr Lead Round Nose
1235 fps
425-round pack

Federal Champion .22 LR

36gr Copper-Plated HP
1260 fps
525-round value pack (recommended
break-in ammo)

Other ammunition may function well in these rifles — every rifle and magazine combination has its own preferences. Users should test several types of ammunition to find what works best for their individual rifle. Rimfire ammunition is also sensitive to environmental conditions: temperature, humidity, and storage conditions can all affect how consistently a given load cycles, so a round that runs reliably on one day may behave differently under different conditions.



9 Warranty

Visit SpectreBallistics.com for warranty information.

10 Replacement Parts

In the event you lose or damage part of your rifle, spare replacement parts are available from SpectreBallistics.com or authorized dealers. Only use genuine SBI or SBI-authorized parts on your rifle.

11 Contact Information

Mailing Address

Spectre Ballistics International Inc.
PO Box 3602 LCD MAIN,
Sherwood Park, Alberta, Canada, T8H 2T4

Notice: do not send firearms, parts, or other packages to the above address without prior authorization and instruction from Spectre Ballistics International Inc. All unsolicited packages will not be accepted.

Email Address

info@spectreballistics.com

Emails will be replied to in the order received. Emails requesting information already covered by this document will not be replied to.