



**Lithgow
arms™**



TOUGH
ACCURATE
RELIABLE

INSTRUCTION & SAFETY MANUAL

www.LithgowArms.com

WARNING Any operator of this rifle must read the instructions and warnings in this manual before handling or using the rifle.

LITHGOW ARMS BATTLE PROVEN SINCE 1912

This document is subject to change without notice. If in doubt, contact Lithgow Arms for any updates.

PREFACE

This manual provides the instructions for safely handling, maintaining and operating the rifle. Any user of this rifle must read and understand all these instructions before use. Failure to follow the instructions and heed the warnings in this manual may result in unintended property damage, personal injury, or death. This manual should always accompany the rifle and be transferred with it upon change of ownership.

Lithgow Arms will not be liable for any losses, costs, charges, and expenses (including any indirect, incidental, special or consequential loss, any loss of revenue, loss of profits, loss of business opportunities, loss of anticipated savings, damage to goodwill, damage to reputation and also the cost of settling any pending or threatened proceedings, including legal expenses on a solicitor and own client basis) resulting from:

- a failure to comply with the instructions and warnings in this manual; or
- the alteration or substitution of any part of this rifle; or where any repairs to the rifle are performed by anyone other than Lithgow Arms or an agent authorised by Lithgow Arms to conduct the repair.

The manual includes detailed operator instructions for the rifle and variants only. Consult relevant publications before fitting any accessories to the rifle. All the instructions refer to left and right from the operator's point of view when the rifle is held to fire.

ABOUT US

Lithgow Arms is a brand built on 100 years of weapons expertise at the small arms factory at Lithgow in New South Wales, Australia. We have proudly supported Australia's soldiers on battlefields around the world since 1912. From Gallipoli, Fromelles and Pozieres to North Africa, Borneo and Kokoda, and from Korea, Malaya and Vietnam to East Timor, Iraq and Afghanistan, Australian troops have carried weapons made in Lithgow.

Originally conceived as a factory to make and support weapons created elsewhere, Lithgow Arms has evolved over recent years into a true small arms designer and manufacturer. Our team includes local experts, people with international experience from some of the world's most renowned arms manufacturers, as well as former military personnel.

QUALITY

The rifle is designed and manufactured by Lithgow Arms, as a brand of Thales Australia.

All our products are manufactured, assembled, proofed and tested by Lithgow Arms under an AS 9001-2008 Quality Management Systems accreditation.

COMMUNITY

Thales Australia and Lithgow Arms support Soldier On. Soldier On is a not-for-profit organisation that helps serving and ex-serving men and women who are physically or psychologically affected by their service. By providing support to these individuals and their families, Soldier On enhances their rehabilitation, inspires them to work towards recovery, connects them with their broader community and empowers them through education and employment to achieve a stable and secure future. Soldier On is independent of government and collaborates with other organisations which serve as a conduit and one-stop-shop for support.

To find out more, go to www.soldieron.org.au



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1. SAFETY

1.1. Introduction

The operator is responsible at all times for the safe handling and storage of the rifle. The following general safety rules must be complied at all times. Failure to comply with these rules may result in accidental damage to property, personal injury or death.

1.2. General Safety Rules

 **WARNING** The instructions in the red warning boxes must be followed to avoid potential injuries to the operator or bystanders.

CAUTION The instructions in the orange caution boxes must be followed to avoid potential damage to the rifle.

Always be aware of the position of the muzzle and point of aim when handling the rifle.

Always be aware of the position of the safety catch when handling the rifle.

Always be aware of the presence and nature of ammunition loaded in magazines.

Always handle the rifle as though it is loaded and able to be fired.

Always handle the rifle safely and wear appropriate hearing and eye protection.

Always inspect the mechanical condition of the rifle and make sure the bore is free of obstructions before firing.

Always clean and dry the chamber, bore and bolt face of fouling and oil residue before firing.

Always keep magazines and ammunition isolated from cleaning and maintenance activities.

Always positively identify your target, and consider your target's surroundings, before taking aim and firing.

Always store the rifle and ammunition in an appropriate lawful way that prevents unintentional tampering or theft.

Only use new, clean, undamaged, factory loaded ammunition that matches the calibre marking on the side of the barrel.

- Be certain that each round you use is in the proper calibre or gauge and type for the particular firearm.

Only use high-quality, commercially-manufactured ammunition that is manufactured in accordance with C.I.P.

(Commission Internationale Permanente pour l'Epreuve des Armes à Feu portatives) or SAAMI (Sporting Arms and Ammunition Manufacturers Institute, Inc.) standards.

- The use of reloaded or remanufactured ammunition can increase the likelihood of excessive cartridge pressures, case-head ruptures or other defects in the ammunition that can cause damage to your firearm and injury to yourself or others nearby.

Never alter or modify the rifle, accessories, or ammunition in any way.

Never store the rifle whilst loaded.

Never climb a tree or cross a fence with a loaded rifle.

Never handle the rifle by the barrel while firing as the barrels get hot and can easily burn your hands.

Never lean or prop the rifle against a surface where it could topple or fall.

Never operate the rifle while under the influence of drugs or alcohol.

Never operate the rifle without thoroughly reading and understanding the operator manual.

Never operate the safety catch to confirm its position.

Never point or aim the rifle at a person, or at any object that is not a target.

Never pull the trigger until the rifle is aimed at a positively identified target and ready to be fired.

Never put your fingers inside the trigger guard when receiving the rifle, picking it up or putting it down.

Never put your trigger finger inside the trigger guard until a shot is ready to be fired.

Never shoot at a hard target or liquid surfaces, or discharge your rifle near flammable material.

Never throw, toss or drop any part of the rifle. **Always** have the rifle immediately inspected, serviced & repaired by an approved gunsmith following any handling mishap.

It is **YOUR** responsibility to know and abide by Federal, State and Local laws governing the sale, transportation and use of firearms in your area.

2. SPECIFICATIONS

2.1. Variants



Figure 1.1: LA102 CrossOver with Polymer Stock



Figure 1.2: LA102 CrossOver with Walnut Stock



Figure 1.3: LA102 CrossOver with Timber Laminated Stock



Figure 1.4: LA105 Woomera with XRAY Chassis

Product images in this manual are for illustrative purposes only and may differ from the actual product.

2.2. Technical Data

	LA102 CrossOver				LA105 Woomera	
	223 Remington	243 Winchester	6.5 Creedmoor	308 Winchester	6.5 Creedmoor	308 Winchester
Length	1067-1087 mm (Polymer adjustable) 1077 mm (Timber)				1105 mm (XRAY Chassis*) optional butt spacers up to 3 x 9.5mm additional optional muzzle brake 43mm additional	
Weight	3.5 kg (Polymer and Walnut) 3.7 kg (Laminate)				4.9 kg (XRAY Chassis*)	
Barrel	Proprietary, military grade steel, cold hammer forged. Medium varmint weight, target crowned. Coated in Cerakote™.					
Length	560 mm				607mm	
Rifling	6 grooves 1 : 9" (228 mm) right hand twist	6 grooves 1 : 10" (254 mm) right hand twist	6 grooves 1 : 8" (203.2mm) right hand twist	4 grooves 1 : 11" (279 mm) right hand twist	6 grooves 1 : 8" (203.2mm) right hand twist	4 grooves 1 : 10" (254 mm) right hand twist
Muzzle Thread	M14 x 1 right hand or 5/8"-24 UNEF right hand or 1/2-28 UNEF right hand				5/8"-24 UNEF right hand	
Receiver	High tensile steel with plate recoil lug. Coated in Cerakote™.					
Top Rail	Picatinny rail 0 MOA				Picatinny rail 20 MOA	
Stock	Floated design with three sling studs Available in polymer, walnut and laminate.				XRAY Chassis - Floated design with fore sling stud and rear QD Cup	
Length of Pull	338-358 mm (Polymer adjustable) 348 mm (Timber)				328 mm (XRAY Chassis*) optional butt spacers up to 3 x 9.5mm additional)	
Trigger	Single stage, three way adjustable for weight, sear engagement and draw length. .					
Trigger Force	1.5 kg initial factory setting. 0.75 kg — 1.9 kg Available Trigger Force adjustment range					
Safety	Three position, bolt shroud mounted, rotating safety catch with indicator. Safety catch over-cocks and blocks the firing pin and disconnects the trigger. Settings; FIRE, SAFE with bolt locked and SAFE with bolt unlocked.					
Magazine	Removable, single stack box magazine, polymer construction.				Removable, double stack box magazine, metal construction	
Capacity	4 rounds	3 rounds	3 rounds	3 rounds	10 rounds	
Note: * XRAY Chassis are designed and manufactured by Kinetic Research Group, LLC (KRG) krg-ops.com						

3. DESCRIPTION

3.1. Introduction

The Australian-made LA102 CrossOver & LA105 Woomera are tough and versatile rifles with modern styling, outstanding accuracy and great reliability. It is designed to excel at a variety of shooting disciplines and reflects the military weapons heritage of Lithgow Arms.

The LA102 CrossOver synthetic stock is made from the same high strength reinforced nylon as the Australian Defence Force's assault rifle and features an integral trigger guard. The length of pull is adjustable on polymer stocks. A full length Picatinny rail is attached to the receiver body to mount sights. The military grade barrel is cold hammer forged while the action is made from hardened, nitride treated high tensile steel to ensure long life and precision performance. The trigger weight is adjustable and the bolt-mounted safety lever retracts and blocks the firing pin for ultimate rifle system safety. All LA102 CrossOver & LA105 Woomera rifles are manufactured, assembled and tested at Lithgow Arms in Australia.

3.2. External Components

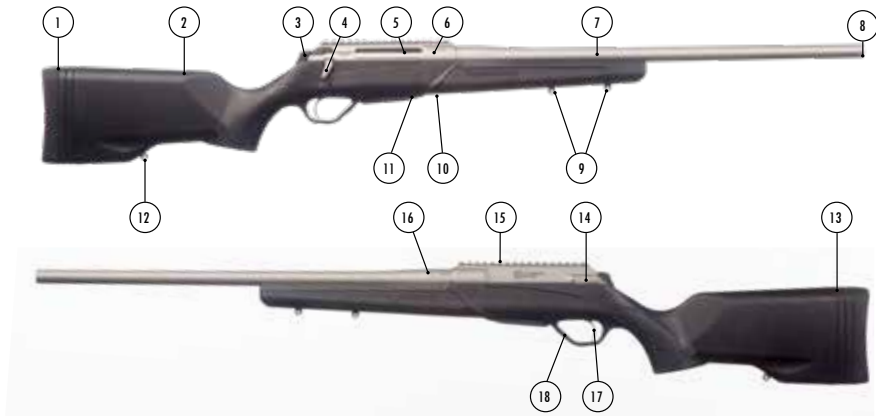


Figure 2.1: Rifle Components (LA102 CrossOver with Polymer Stock shown)



Figure 2.2: Rifle Components (LA105 Woomera with XRAY Chassis shown)

No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
1	RECOIL PAD	9	FORWARD SLING STUDS	17	TRIGGER
2	STOCK	10	MAGAZINE RELEASE	18	TRIGGER GUARD
3	SAFETY CATCH	11	MAGAZINE	19	CHEEK RISER *
4	BOLT HANDLE	12	REAR SLING STUD	20	MUZZLE BRAKE (LA105 optional)
5	BOLT	13	RECOIL PAD SPACER	21	FORE-END *
6	SERIAL NUMBER	14	BOLT STOP	22	GRIP PANELS *
7	BARREL	15	ACCESSORY RAIL	23	BAG RIDER *
8	MUZZLE THREAD	16	CALIBRE DESIGNATION	24	QD CUP MOUNT *

* DENOTES SOME OPTIONAL ACCESSORIES AVAILABLE ON SOME MODELS SPECIFIC TO THE XRAY CHASSIS

4. CLEARING THE RIFLE OF AMMUNITION

4.1. Introduction



WARNING

Always assume a rifle is loaded. Always check for the presence of ammunition by clearing the rifle.

Always clear the rifle:

- a. whenever it is picked up
- b. whenever it is offered to or received from another person
- c. whenever you arrive at or leave a range
- d. before stripping it
- e. when unloading it
- f. whenever there is any doubt about its condition.

4.2. Procedure



WARNING

Never perform a closed action de-cock on a loaded rifle. The firing pin may contact the base of the loaded round and cause the rifle to fire.

To clear the Rifle:

- a. Set the safety catch to safe (Figure 3) by rotating the catch fully backwards, completely obscuring the red indicator.
- b. If a magazine is fitted, remove it. Grasp the magazine and depress the magazine catch. Withdraw the magazine from the rifle (Figure 4.1 & 4.2).



Figure 3: Safety catch set to safe



Figure 4.1: Magazine Removal
(LA102 CrossOver with Polymer Stock Shown)



Figure 4.2: Magazine Removal
(LA105 Woomera with XRAY Chassis Shown)

- c. Rotate the bolt handle upwards 60° and draw the cocking handle back to the bolt stop (Figure 5).



Figure 5: Bolt Unlock

- d. Inspect the face of the bolt, the chamber and the body of the rifle (Figure 6), to make sure that no ammunition is present.

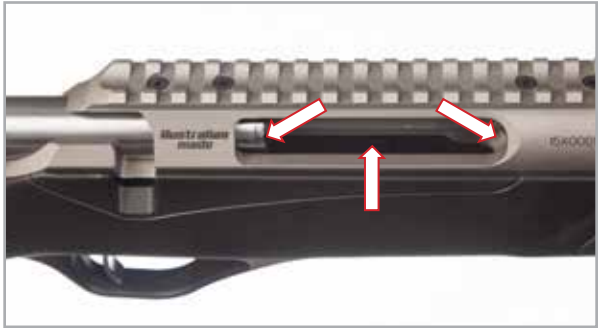


Figure 6: Inspection

- e. With the rifle pointed in a safe direction, set the safety catch to Fire (Figure 7) by rotating it fully forwards, exposing the red indicator.



Figure 7: Safety catch set to Fire

- f. Squeeze and hold the trigger. Close the action by sliding the bolt handle forwards and rotating the handle downwards 60° (closed action de-cock). Release the trigger.

5. BASIC HANDLING

5.1. Introduction

This section provides an introduction to the rifle control features and describes their operation.

5.2. Bolt

The rifle is fitted with a 60° rotating, three lug, front locking bolt — with a spring loaded claw extractor and post ejector. The bolt rotation on opening cocks the firing pin.

Operating the Bolt. To open the action, rotate the bolt handle upwards 60° and draw the bolt handle to the rear (Figure 8). To close the action, slide the bolt handle forward and rotate the handle downwards 60° (Figure 9).



Figure 8: Opening the Action



Figure 9: Closing the Action

Firing Pin Indicator. The bolt has a red firing pin indicator that allows the operator to see whether the rifle is cocked. When it is cocked, the red indicator will be visible at the back of the bolt shroud (Figure 10). When it is uncocked or has been fired, the red indicator will be inside the shroud (Figure 11).



Figure 10: Rifle Cocked



Figure 11: Rifle Uncocked or Fired

Fitting and Removing the Bolt. To install the bolt, position the head of the bolt in the receiver. Align the bolt handle with the slot in the receiver and slide the bolt handle forward. **Note — you do not need to depress the bolt stop when installing the bolt.**



WARNING

If the rifle doesn't fire after pulling the trigger, wait at least one minute before removing the bolt and unload the rifle with extreme care as described in Section 6.5.

To remove the bolt, open the action and press inwards on the bolt stop (Figure 12). Draw the bolt backwards and free from the receiver (Figure 13).



Figure 12: Bolt Stop



Figure 13: Bolt Removal



WARNING

Never perform a closed action de-cock on a loaded rifle. Remove the magazine and all rounds, as the firing pin may contact the base of the loaded round and cause the rifle to fire.

De-cocking the Bolt. The bolt de-cocking steps allows for the firing pin to be released forward within the bolt, while cycling the action. To de-cock the bolt, cycle the action by lifting the bolt handle upwards and fully extracting the bolt back from the receiver. Then squeeze and hold the trigger while sliding the bolt handle forward, and rotating the handle downwards 60° (closed action de-cock). Release the trigger.

5.3. Safety Catch



WARNING

If you pull the trigger while disengaging the safety catch on a rifle that is loaded and cocked, the rifle will fire.

The safety catch is a rotating, three position, bolt shroud mounted lever type that can only be engaged when the firing pin is cocked.

Safe (bolt unlocked). Safety catch fully rearward. In the Safe position (Figure 14), the safety mechanism over-cocks and blocks the firing pin — preventing the rifle from firing if the trigger is pulled. The bolt is unlocked and can be opened.

Safe (bolt locked). Safety catch in centre position. In the Safe (bolt locked) position (Figure 15), the safety mechanism over-cocks and blocks the firing pin, preventing the rifle from firing if the trigger is pulled. The bolt is locked and cannot be opened.



Figure 14: Safety Catch set to Safe (Bolt Unlocked)



Figure 15: Safety Catch set to Safe (Bolt Locked)

Note – Safe (bolt locked) will not be referred to again within this manual. All reference to ‘Safe’ is safety catch fully rearward, bolt unlocked condition (Figure 14).

Note – with the catch set to Safe, the trigger will move freely.

Position 3 - Fire. Safety catch fully forwards (Figure 16). In the Fire position, the trigger action is restored.

A red indicator is visible on the left hand side of the catch. The bolt is unlocked and can be opened.



Figure 16: Safety catch set to Fire

5.4. Trigger



WARNING

Adjusting the trigger mechanism settings may reduce the reliability and safety of the trigger. Poorly adjusted trigger mechanisms may be dangerous and cause the rifle to fire accidentally.

CAUTION

Lithgow Arms does not recommend disassembling the trigger mechanism. The trigger mechanism is assembled and tested at the factory to ensure safe and reliable firing. Modifications to the trigger mechanism will void the rifle warranty.

The rifle is fitted with a single stage adjustable trigger that has been set, tested and sealed at Lithgow Arms.

The trigger has been designed and qualified to exceed international SAAMI standards.

5.5. Magazine



WARNING

Several magazine types are compatible between different rifles and different calibres. Do not fill magazines with mixed calibre rounds. Only use magazines that have been approved for use with your Lithgow Arms rifle model. Take care when using compatible magazines between Lithgow Arms rifles of differing calibre so as to not load incorrect rounds.

Refer to the technical data table on Page 7 to reference the type and capacity of magazine for your model rifle.

Magazine Filling.



WARNING

Carefully inspect each cartridge before it is loaded in the magazine. Be certain the cartridge cases are not split, deformed, or the cartridges do not possess any other dents or defects (this applies even to factory ammunition). **DO NOT** fire old (age over 10 years) ammunition in this firearm. Primers, powder, cartridge cases, & bullets can deteriorate with time and cause damage to the firearm, or injury to the shooter or others. **DO NOT** ever shoot with steel jacketed bullets!

To fill the magazine, press the base of each round into the magazine platform in front of the magazine lips and slide the round back to the cartridge stop (Figure 17). Press down on the previously loaded round and slide the next round into the magazine in the same way.

Note – 223 Remington LA102 CrossOver Rifles are supplied with magazines that will accept four rounds.

LA102 CrossOver Rifles are supplied with 308 Winchester magazines will accept three rounds for rifles chambered as 308 Winchester or 243 Winchester or 6.5 Creedmoor.

LA105 Woomera Rifles are supplied with 308 Winchester magazines that will accept ten rounds for rifles chambered as 308 Winchester or 6.5 Creedmoor.

Emptying Magazines. To empty a filled magazine press the base of a loaded round forwards until the round falls free of the magazine (Figure 18). Repeat until the magazine is emptied.



Figure 17: Magazine Filling by Hand



Figure 18: Emptying Magazines

Fitting a Magazine. Insert the magazine into the rifle and press upwards until you hear the click of the magazine catch (Figure 19.1 & 19.2). Check that the magazine is properly secured in the rifle by trying to remove the magazine without activating the magazine release catch.

Removing a Magazine. Grasp the magazine and depress the magazine release catch with the index finger of the same hand. Withdraw the magazine from the rifle (Figure 20.1 & 20.2).



Figure 19.1: Fitting a Magazine
(LA102 Crossover with Polymer Stock Shown)



Figure 20.1: Removing a Magazine
(LA102 Crossover with Polymer Stock Shown)



Figure 19.2: Fitting a Magazine
(LA105 Woomera with XRAY Chassis Shown)



Figure 20.2: Removing a Magazine
(LA105 Woomera with XRAY Chassis Shown)

5.6. Accessory Rail

Some Lithgow Arms rifles are supplied with an optional Picatinny accessory rail screw-mounted to the top of the receiver (Figure 21.1 /21.2) for use with sights and accessories. Refer to the technical data table on Page 7 to reference the rail type for your model rifle. Please consult accessory suppliers manual for approved compatibility and correct instructions on mounting and aligning sights or targeting accessories.



Figure 21.1: Accessory Rail (LA102 Crossover shown)



Figure 21.2: Accessory Rail (LA105 Woomera shown)

5.7. Length of Pull Adjustment

Some Lithgow Arms model rifles have optional adjustment in the length of pull. Rifles with adjustment available will include recoil pad spacers. Refer to the technical data table on Page 7 to reference the length of pull options available for your model rifle.

To adjust the length of pull, remove the two screws from within the recoil pad (Figure 22). LA102 CrossOver models require a No 2 Phillips head screw driver. Remove or add spacers as desired and reassemble. Tighten the screws. ONLY use a manual screw driver for tightening the recoil pad screw.

Refer to the instruction manual provided online by the OEM of the XRAY Chassis, Kinetic Research Group, LLC (KRG) at krg-ops.com to adjust the XRAY Chassis length of pull.



Figure 22: Length of Pull Adjustment

5.8. Threaded Barrel & Muzzle Brake Accessories



WARNING

Muzzle Brakes that are supplied with Lithgow Arms Rifles are designed specifically for each calibre. Incorrect fitment, use of incompatible muzzle devices, or interchanging muzzle devices between rifles can be a serious hazard and may cause serious injury, rifle damage and void product warranty.

Lithgow Arms Rifles that are supplied with a threaded muzzle allow for the fitment of compatible muzzle devices and accessories. Refer to the correct installation procedures when fitting a compatible muzzle device.

When not in use, the muzzle threads are protected by a threaded cap. Select models are supplied with a Muzzle Brake included. In all cases when fitting the thread cap or muzzle devices, they should be checked to ensure they are fully and tightly assembled completely onto the thread, the barrel is free of obstruction and any additional thread clamping devices such as screws are sufficiently tightened. Never operate a rifle with a loosely fitted muzzle device.

Inspect threads and muzzle devices for wear, distortion or damage and have repaired/replaced before use if defects could obstruct the barrel. Ensure thread caps and muzzle devices are not cross-threaded when fitted or include foreign bodies that may obstruct the barrel. Avoid striking objects with the muzzle devices or resting them against the ground/walls to reduce wear, prevent obstructions or loss in performance.

Fitting a muzzle brake when supplied with rifle.

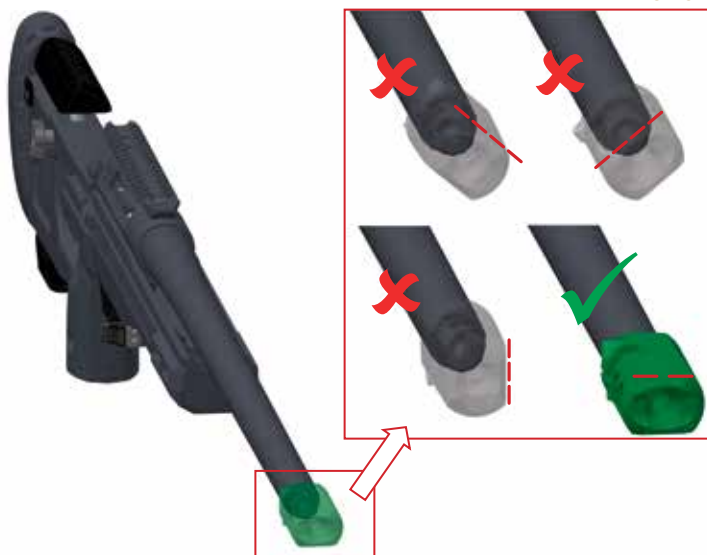
- Make sure the rifle is cleared and safety is on, as shown (See also section 5.3, page 12 & Figure 14)
- Remove bolt assembly as shown in section 5.2 (See page 11 & Figure's 12 & 13)
- Remove magazine and any ammunition as shown in section 4.2 (See page 9 & Figures 4.1 - 4.2)
- Remove the barrel cap by unscrewing as shown below.



- Always check the muzzle brake prior to fitment to ensure the calibre marking matches the calibre of the rifle. For example: a muzzle brake marked '6.5' should only be used together as supplied with 6.5 Creedmoor rifles.
- Screw the muzzle brake completely onto the full thread of the barrel muzzle. Rotate the muzzle brake backwards on the thread less than 1 full turn so as to align the calibre marking facing upwards horizontal.
- Use the supplied clamping screws and lock the Muzzle Brake position by tightening the screw to approx 3Nm (26.5 in lbs) of torque.



Muzzle Brake and clamping screw



Front of rifle

6. FIRING PROCEDURES

6.1. Introduction

This section provides a detailed description of how to load and fire the rifle.



WARNING

- Inspect the bore to make sure it is clear of obstructions before firing the rifle.
- Only use new, clean, undamaged, factory loaded ammunition that matches the calibre marking on the side of the barrel.
- Only use ammunition manufactured to industry specifications: CIP or SAAMI® standards.
- Be certain that each round you use is in the proper calibre or gauge and type for the particular firearm.
- The use of reloaded or remanufactured ammunition can increase the likelihood of excessive cartridge pressures, case-head ruptures or other defects in the ammunition that can cause damage to your firearm and injury to yourself or others nearby.
- Always wear hearing and eye protection when firing the rifle to prevent injury.

CAUTION

Clean and dry the chamber, bore and bolt face of fouling and oil residue before firing.

6.2. Loading

Set the safety catch to Safe. Fit a magazine containing appropriate ammunition into the rifle, and press until you hear the click of the magazine catch.

6.3. Chambering and Cocking

Cycle the action by opening and fully drawing back the bolt and re-closing. The bolt head will strip a round of ammunition from the magazine and push it into the chamber.

6.4. Firing

When you are ready to fire:

- a. shoulder the rifle
- b. take aim at the target
- c. set the safety catch to Fire
- d. slowly squeeze the trigger until the rifle fires.



WARNING

If the rifle doesn't fire after pulling the trigger, wait at least one minute and unload the rifle with extreme care as described in Section 6.5.

To load another round, cycle the action by opening and fully drawing back the bolt and re-closing.

6.5. Unloading

To unload and clear the rifle:

- a. if the firing pin is still cocked, set the safety catch to Safe (see Figure 14)
- b. if a magazine is fitted, remove it
- c. open the action
- d. inspect the face of the bolt, the chamber and the body of the rifle to make sure that no ammunition is present
- e. with the rifle pointed in a safe direction, set the safety catch to Fire
- f. squeeze and hold the trigger. Close the action by sliding the bolt handle forward and rotating the handle downwards 60° (closed action de-cock)
- g. release the trigger.

7. MAINTENANCE

WARNING



- Unload and clear the rifle before doing any maintenance activities.
- Isolate loaded magazines and ammunition from the maintenance activities.
- Wear suitable eye protection & protective gloves when disassembling spring loaded components.

Periodic maintenance **MUST** be carried out at least once a year or more frequently under heavy use or in severe conditions. Moreover, periodic maintenance is recommended if the rifle is to be stored for a prolonged period. If it is necessary to replace any parts, use **ONLY** original factory spare parts.

Owners are responsible for recording evidence of maintenance and repairs to support the product warranty, & to accompany this manual when transferring ownership.

CAUTION

- Many components of the rifle are surface treated and coated to decrease surface friction, resist corrosion and aid cleaning. If you do not follow the instructions in this section you may irreparably damage these surfaces and reduce the reliability and performance of the rifle.
- Only use appropriately sized, high quality cleaning equipment in good condition to clean the rifle.
- Overtightening screws will damage threads and may irreparably damage the rifle.
- Never use abrasive cleaning products to clean the rifle.

7.1. Introduction

Reliability and performance of your rifle is directly related to its cleanliness and preparedness for fire. Cleaning your rifle provides you the opportunity to closely examine the rifle components to identify wear or damage, and fix potential problems before use.

7.2. Bolt Sub-Assembly

WARNING



- Bolt components are under spring tension and may eject when disassembled..
- Wear suitable eye protection & protective gloves when disassembling spring loaded components.

Disassembly. Press and hold the shroud latch (Figure 23). Rotate the bolt shroud clock-wise until it disengages from the bolt body (Figure 24). Components are under tension and will try to eject into your hands. Separate the shroud from the firing pin and cocking piece sub-assembly.



Figure 23: Shroud Latch



Figure 24: Bolt Shroud Removal

Cleaning. Oil the bolt assembly components to loosen foreign material. Wipe the components clean with a lightly oiled section of gun cleaning cloth. Remove any stubborn fouling by scrubbing with a nylon brush.

Inspection. Inspect the following surfaces for signs of damage, cracks, chips or burring:

- a. firing pin nose (Figure 25)
- b. cocking piece safety camming post (Figure 26)
- c. cocking piece sear interface (Figure 27).



Figure 25: Firing Pin Nose



Figure 26: Safety Camming Post



Figure 27: Sear Interface

Assembly. Fit the firing pin and cocking piece sub-assembly to the shroud and place it into the bolt body. Align the lug on the shroud with the matching cut-out in the back of the bolt body. Press and hold the shroud latch. Press the shroud into the bolt body and rotate the shroud in an anti-clockwise direction (Figure 28). Rotate it until the shroud latch locks into the notch in the bolt body (Figure 29).



Figure 28: Bolt Shroud Insertion



Figure 29: Shroud Latch

7.3. Stock

Disassembly (LA102 CrossOver). Remove the bolt from the rifle. Remove the two M6 cap head screws from the underside of the rifle using a 5 mm hex key (Figure 30). Separate the barrel receiver sub-assembly and recoil lug from the stock.

Disassembly (LA105 Woomera). Refer to the instruction manual provided online by the OEM of the XRAY Chassis, Kinetic Research Group, LLC (KRG) at krg-ops.com for disassembly instructions. Remember to check on how to Re-Assemble prior to Disassembly



Figure 30: Stock Disassembly
(LA102 CrossOver shown)

Cleaning. Clean polymer stocks using a nylon bristle brush to remove foreign material. Wipe clean using a dry gun cleaning cloth. Remove any heavy soiling with a mix of water and dishwashing detergent. Thoroughly dry the components before reassembly. Clean timber stocks with a damp lint free cloth.

Assembly (LA102 CrossOver). Fit the recoil lug to the stock with the scalloped end upper most. Fit the barrel receiver assembly to the stock, aligning the recoil lug with the cut-out in the underside of the receiver. Replace the two M6 screws (note the longer screw is at the rear) by firstly lightly tightening the rear screw, then the front screw. Check the action is sitting central to the stock. Once correctly positioned, tighten the rear screw first and ensure both screws are evenly tightened to 5 Nm (44.3 in lbs) on Polymer Stock and 3.5 Nm (31 in lbs) on Timber Laminate and Walnut Stocks. Finally check the barrel is free floating and re-adjust as needed.

Assembly (LA105 Woomera). Refer to the instruction manual provided online by the OEM of the XRAY Chassis, Kinetic Research Group, LLC (KRG) at krg-ops.com for re-assembly instructions.

7.4. Trigger



WARNING

Rifles with a misaligned or loose trigger mechanism must be returned to a gunsmith for inspection & repair. Incorrectly fitted trigger mechanisms may be dangerous & could cause the rifle to fire accidentally.

CAUTION

Lithgow Arms does not recommend disassembling or separating the trigger mechanism from the receiver. The trigger mechanism is fitted to the receiver at the factory to ensure safe and reliable firing.

Removing the trigger mechanism will void the rifle warranty.

Cleaning. Wipe the components clean with a lightly oiled section of gun cleaning cloth. Remove any stubborn fouling by scrubbing with a nylon brush.

Inspection. Remove the rifle stock and inspect the following:

- Check the alignment marks on the receiver and trigger mechanism body are still aligned (Figure 31) and the trigger mechanism is secure against the receiver.
- Check the cocking piece interface that is visible in the receiver bore, is free from damage, cracks, chips or burring.



Figure 31: Trigger Mechanism Alignment



WARNING

Adjusting the trigger mechanism settings may reduce the reliability and safety of the trigger. Poorly adjusted trigger mechanisms may be dangerous and cause the rifle to fire accidentally.

Trigger Adjustment. Lithgow Arms recommends that only suitably experienced and competent gunsmiths attempt to alter the factory set trigger mechanism settings.

The trigger action may be adjusted by trigger weight, sear engagement, & trigger over travel (Figure 32) without disassembly.

No.	DESCRIPTION
1	TRIGGER OVER TRAVEL
2	TRIGGER WEIGHT
3	SEAR ENGAGEMENT

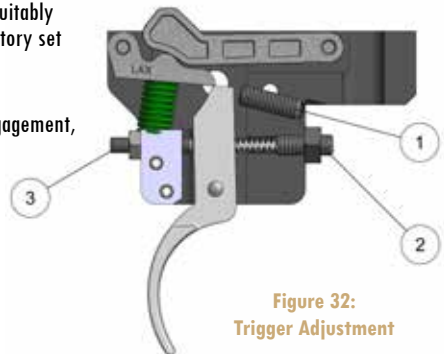


Figure 32:
Trigger Adjustment

7.5. Barrel and Receiver



WARNING

Before cleaning the rifle, always check that it is unloaded (empty cartridge chamber, empty receiver, remove the magazine). Remove the bolt & inspect the firearm by looking through the ejection port & checking the chamber is empty.

Routine cleaning should always take place right after use of the rifle (even without shooting). Maintenance should not be neglected as corrosion can begin within 24 hours if the rifle is not cleaned after use. Ensure the rifle is fully supported during cleaning to avoid drops or falls.

Use only high quality gun oil & cleaning solvent that cleans, lubricates and preserves (CLP).

The recommended oil & cleaning solvent for the rifle is Break Free® CLP® Cleaner Lubricant & Protectant.

Routine cleaning procedure is done as follows:

1. Ensure that the rifle is unloaded and remove the bolt and magazine
2. Clean dust, carbon and fouling from the external surfaces of the barrel & receiver using a lightly oiled section of gun cloth. Remove any stubborn fouling by scrubbing with a nylon brush.
3. Clean the chamber with an appropriate sized swab and lightly oiled section of gun cleaning cloth fitted to a handle. Wipe the chamber clean. To loosen stubborn material, lightly scrub the chamber walls with oil using an appropriate sized chamber brush. Once all foreign material is removed, wipe the chamber clean with a lightly oiled gun cloth.
4. Clean the barrel bore using an appropriate sized swab and lightly oiled section of gun cleaning cloth fitted to either a bore string, or smooth sturdy & straight cleaning rod. Push the cleaning rod or pull the bore string through the bore from chamber to muzzle end. To loosen stubborn material, use an appropriate sized and oiled bore brush fitted to the cleaning rod or bore string. Repeat until foreign material is removed
5. We also recommend to patch the rifle from chamber to muzzle, by passing each patch through the barrel only once until the patch comes out clean and dry.
6. After the chamber and bore is clean, patch through with a clean patch with 2 or 3 drops of lubricant

7.6. Lubrication

CAUTION

- Over lubricating the rifle will reduce performance and may cause malfunctions.
- Clean and dry the chamber, bore and bolt face of fouling and oil residue before firing.

The recommended lubricating oil for the rifle is Break Free® CLP® Cleaner Lubricant & Protectant.

Normal Conditions. The rifle should be only sparingly lubricated during maintenance activities. Apply lubrication only at the following quantities & locations:

a. Metal Surfaces	light film of oil only
b. Extractor Slot	one drop of oil
c. Ejector	one drop of oil

7.7. Storage

Once cleaned and lubricated, store your rifle in a clean and dry environment. Store and secure the rifle and ammunition separately in accordance with statutory state or territory laws to prevent unintentional tampering or theft. Keep all rifles and ammunition out of reach and sight of children.

7.8. Operational changes or damages

If you notice any damage to your firearm or changes in the way the firearm functions, **STOP SHOOTING IMMEDIATELY!** You should take the firearm to an authorized gunsmith or ship it to the manufacturer/importer if you notice any of the following; damage to the firearm, the functioning of the trigger mechanism has changed, the firearm suffers from misfires, the safety does not operate, the firearm produces cartridge malfunctions or damages ammunition (punctured primers, bulged or ruptured case) or a changed sound when firing. Never ship a loaded firearm.



WARNING

If the rifle doesn't fire after pulling the trigger, wait at least one minute and unload the rifle with extreme care as described in the corresponding section.

8. WARRANTY

8.1. Consumer Guarantees under Australian Consumer Law – Clause 1

Lithgow Arms rifles come with guarantees under Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the rifle repaired or replaced if it fails to be of acceptable quality and the failure does not amount to a major failure.

8.2. Lithgow Arms Warranty – Clause 2

In addition to consumer guarantees under Australian Consumer Law, we will repair all defects in material and workmanship detected in your Lithgow Arms rifle, and notified to us, during the period of 12 months from the date of purchase (warranty period).

Our warranty will not apply, to the extent permitted under Australian Consumer Law, if Lithgow Arms identifies that:

- You have used the Lithgow Arms rifle for a purpose for which it was not designed.
- You have not operated or maintained your Lithgow Arms rifle in accordance with this manual.
- You have caused the defect by modifying, enhancing or making additions to your Lithgow Arms rifle using non-Lithgow Arms parts or accessories.
- You have dismantled your Lithgow Arms rifle not in accordance with this manual.
- You have not stored your Lithgow Arms rifle in accordance with our recommended instructions or in a suitable environment.
- Your Lithgow Arms rifle has incurred normal fair wear and tear when being used or handled for its purpose.
- You have not registered your rifle with Lithgow Arms in accordance with Clause 3.
- You have not made a claim to Lithgow Arms under this warranty during the warranty period.
- You have not returned your Lithgow Arms rifle to us in accordance with our instructions in Clause 4.

8.3. Product Registration – Clause 3

To activate the warranty under Clause 2, you must register your LA102 CrossOver or LA105 Woomera rifle at www.LithgowArms.com during the warranty period and provide all the mandatory information requested for product registration.

8.4. Making a Warranty Claim – Clause 4

To make a warranty claim, please complete the warranty claim form on our support webpage at www.lithgowarms.com

After submitting a warranty claim form we will contact you to discuss resolution of your concern. If required, we will provide instructions for the return, shipment and repair of your Lithgow Arms rifle.

You may contact us via email using info@LithgowArms.com or telephone using +61 (0)2 6352 9900 by phone.

9. EXPLODED DIAGRAMS AND SPARE PARTS

9.1. Parts Diagrams

The following exploded diagrams are provided to assist owners identify faults and should be used as a guide in ordering replacement parts. Exact configuration of spare parts or kits pending availability and may differ from these illustrations.



Figure 33: LA102 CrossOver Stocks

No.	DESCRIPTION	No.	DESCRIPTION
1	STOCK LA102 POLYMER	9	STOCK LA102 WALNUT
2	PLATE, RECOIL LA102		STOCK LA102 LAMINATE
3	STUD SLING LA101	10	STUD SLING LONG
4	SCREW SOC HD CAP M6 X 30L	11	TRIGGER GUARD LA102
5	SCREW SOC HD CAP M6 X 35L	12	RECOIL PAD
6	GRIP CAP STOCK LA101	13	SCREW RECOIL PAD RETAINING LA102 TIMBER
7	SPACER RECOIL PAD LA102	14	SCREW RECOIL PAD RETAINING LA102 POLYMER
8	RECOIL PAD ASSEMBLY LA102		

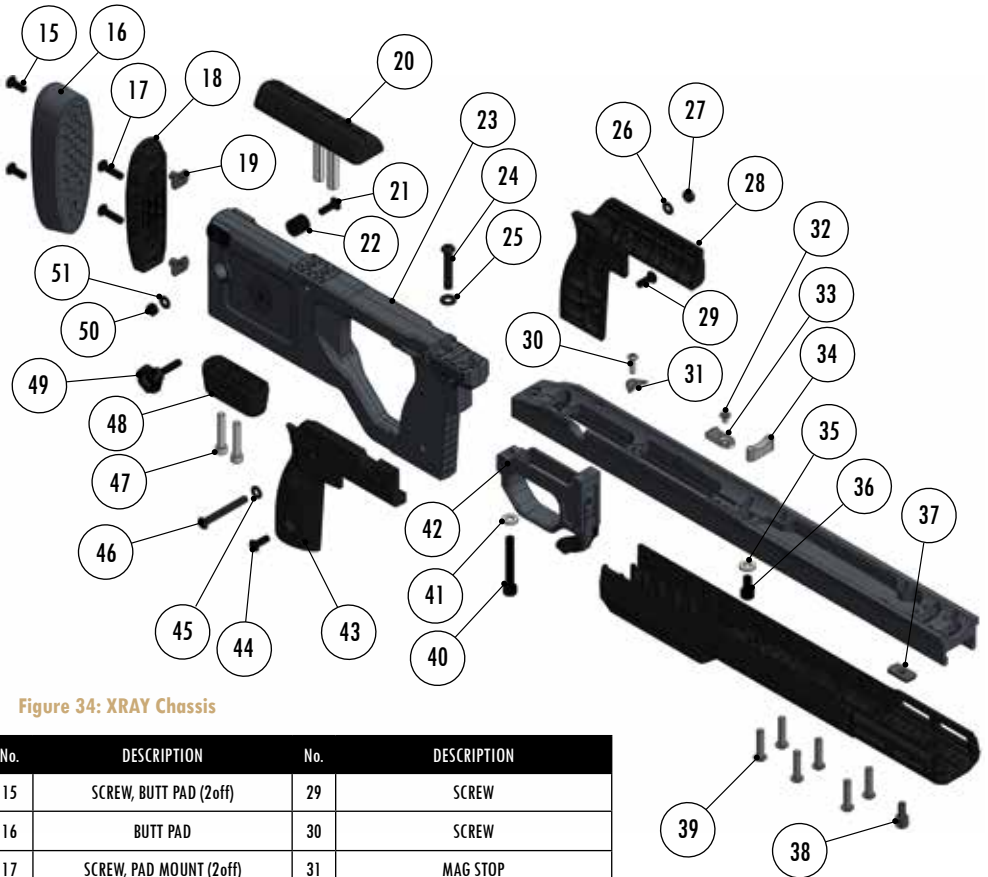


Figure 34: XRAY Chassis

No.	DESCRIPTION	No.	DESCRIPTION	No.	DESCRIPTION
15	SCREW, BUTT PAD (2off)	29	SCREW	43	GRIP PANEL, RIGHT
16	BUTT PAD	30	SCREW	44	SCREW2
17	SCREW, PAD MOUNT (2off)	31	MAG STOP	45	WASHER
18	PAD MOUNT	32	SCREW	46	SCREW
19	FLANGED NUT (2off)	33	RAMP	47	SCREW
20	CHEEK RISER ASSEMBLY	34	PLATE, RECOIL LA105	48	BAG RIDER
21	SCREW, QD CUP	35	WASHER	49	THUMB SCREW, CHEEK RISER ADJUST
22	QD CUP	36	SCREW	50	NUT
23	BUTT FRAME	37	NUT, FLAT	51	WASHER
24	SCREW	38	STUD, SLING (XRAY)		
25	WASHER	39	SCREW		
26	WASHER	40	SCREW		
27	NUT	41	WASHER		
28	GRIP PANEL, LEFT	42	TRIGGER GUARD & MAG LATCH ASSY		

For more detail on the X-Ray Chassis construction, assembly, adjustment and maintenance refer to Kinetic Research Group, LLC (KRG) at krg-ops.com.

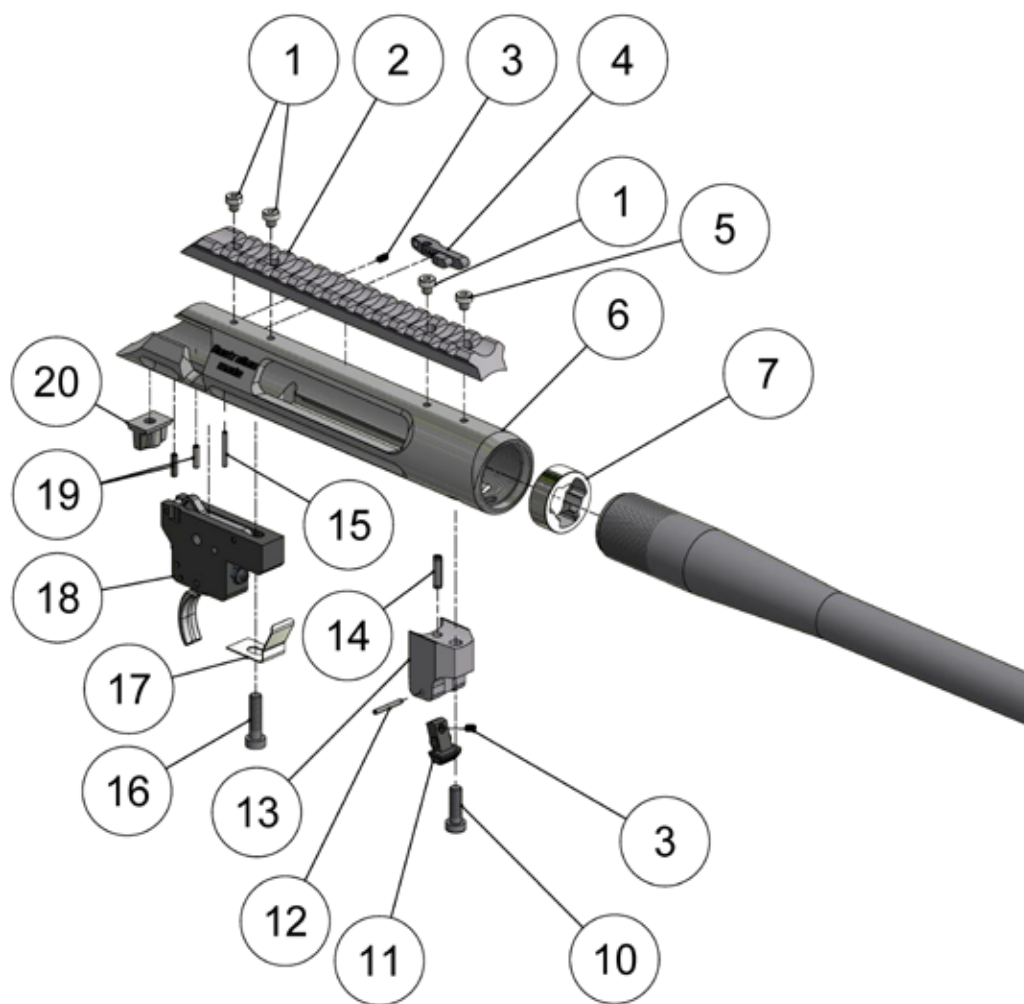
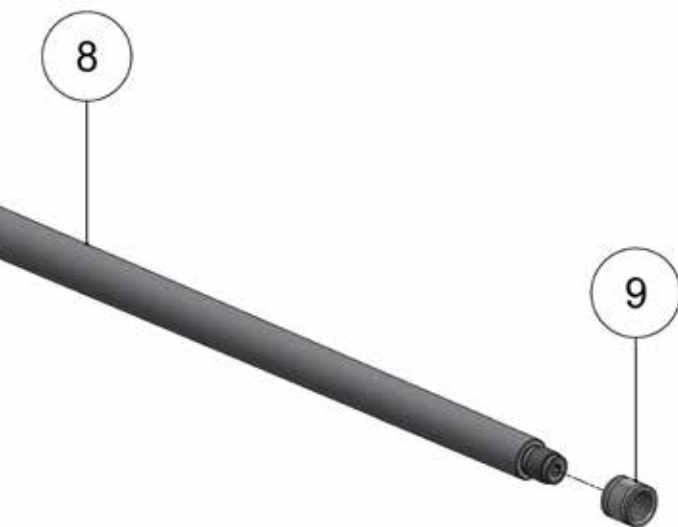


Figure 35: Barrel & Receiver

INSTRUCTION & SAFETY MANUAL

No.	DESCRIPTION	No.	DESCRIPTION
1	SCREW SOC LOW CAP M4 x 8L	12	PIN STRAIGHT HEADLESS DIA 2 X 16L (LA102 ONLY)
2	RAIL LA102	13	WELL MAGAZINE (LA102 ONLY)
	RAIL 20MOA LA105	14	PIN 4MM X 14MM COIL H DUTY LA102
3	SPRING LATCH MAGAZINE		PIN 4MM X 10MM COIL H DUTY LA105
4	STOP BOLT	15	PIN STRAIGHT HEADLESS DIA 1.5 X 16L
5	SCREW SOC LOW CAP M4 x 6L	16	SCREW SOC LOW HD CAP M5 X 0.8-20L
6	RECEIVER	17	SPRING RETAINING MAGAZINE (LA102 ONLY)
7	BUSH LOCKING		WASHER LA105 (NOT SHOWN)
8	BARREL	18	TRIGGER ASSEMBLY
9	BARREL CAP	19	PIN SPRING DIA 2.5 X 10L
10	SCREW SOC LOW CAP M5 X 20L (LA102 ONLY)	20	LUG RECOIL (10.6mm LA102)
11	LATCH MAGAZINE (LA102 ONLY)		LUG RECOIL (8mm LA105)



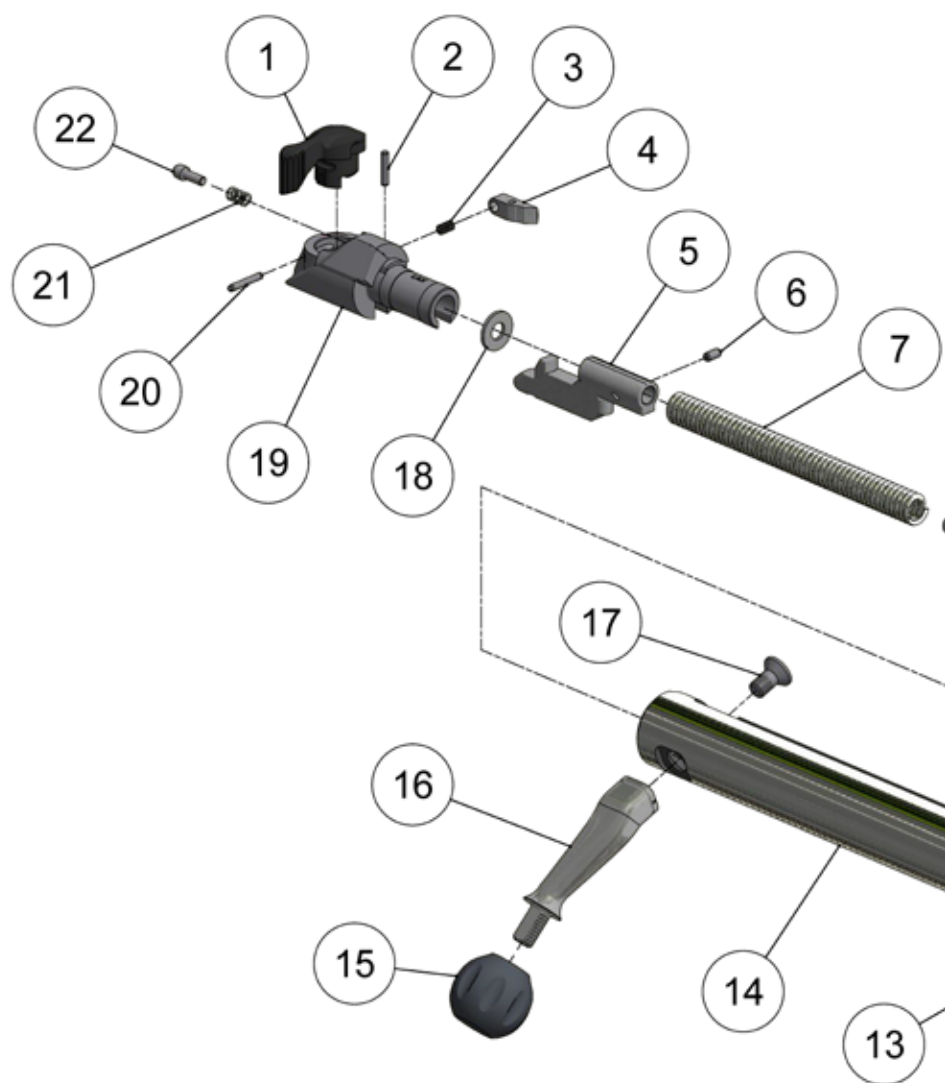
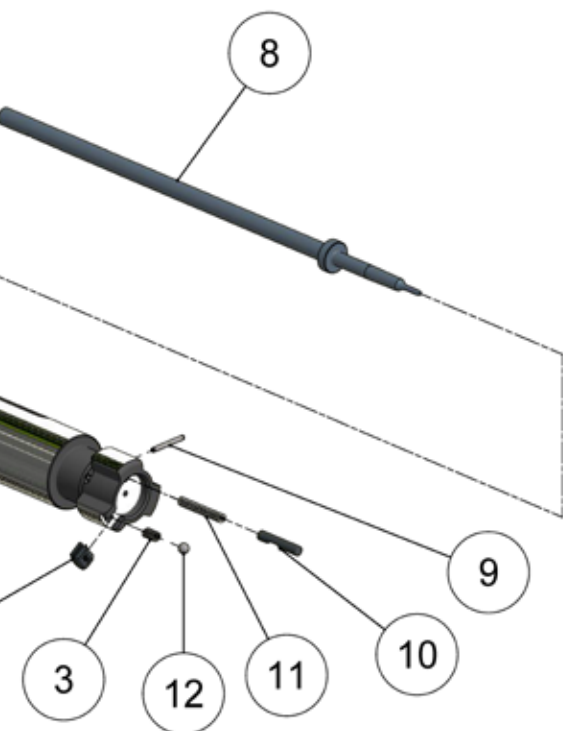


Figure 36: Bolt Sub-Assembly

No.	DESCRIPTION	No.	DESCRIPTION
1	LEVER SAFETY	13	EXTRACTOR
2	PIN STRAIGHT HEADLESS DIA 2 X 10	14	BOLT LA102 223 REM
3	SPRING EXTRACTOR		BOLT 308 Win/243 Win/6.5 Creedmoor
4	LATCH SHROUD	15	KNOB BOLT
5	PIECE COCKING	16	HANDLE BOLT
6	PIN STRAIGHT HEADLESS DIA 2.5 X 5	17	SCREW SOC COUNTERSUNK, M5 X 10L
7	SPRING FIRING PIN	18	WASHER FLAT DIA 5
8	PIN FIRING	19	SHROUD BOLT
9	PIN COIL DIA 1.5 X 12L	20	PIN SPRING DIA 2X12L
10	EJECTOR	21	SPRING PLUNGER
11	SPRING EJECTOR	22	PLUNGER
12	BEARING BALL DIA 3		



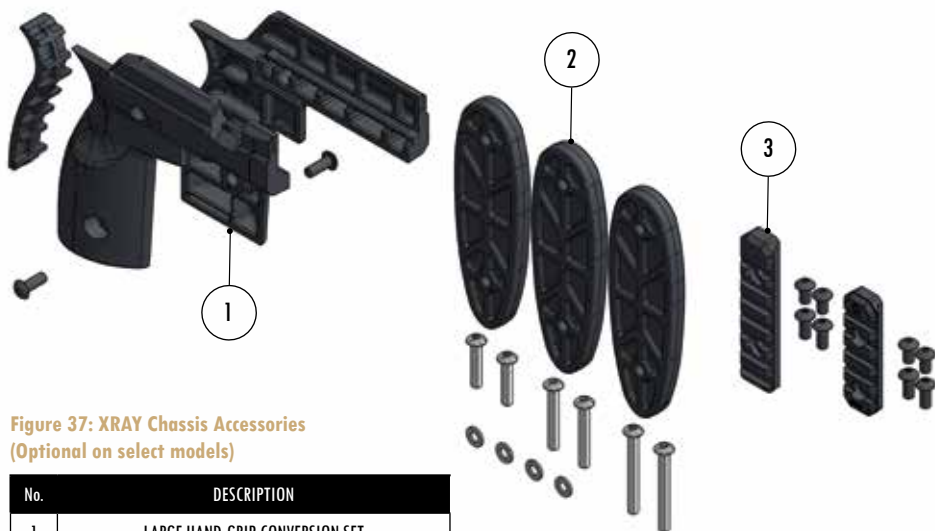


Figure 37: XRAY Chassis Accessories
(Optional on select models)

No.	DESCRIPTION
1	LARGE HAND-GRIP CONVERSION SET
2	3pc BUTT SPACER KIT WITH INCREMENTAL SCREWS
3	RAIL KIT (7 SLOT & 5 SLOT WITH SCREWS)

For more detail on the installation and assembly of XRAY Chassis accessories, refer to Kinetic Research Group, LLC (KRG) at krg-ops.com



Figure 38: Magazines

No.	DESCRIPTION	No.	DESCRIPTION
1	MAGAZINE ASSY LA102 Crossover 308 Win / 243 Win / 6.5 Creedmoor	2	MAGAZINE ASSY LA102 CrossOver 223 REM
		3	MAGAZINE ASSY LA105 Woomera 308 Win / 6.5 Creedmoor

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