

AUSTRALIAN Shooter Bolt-Action Rifles

FIREARM POSTER SERIES

Sights

Many rifles come fitted with iron sights - a fixed front bead or blade, and a rear-sight with U- or V-shaped recess. Larger calibre rifles are almost always fitted with iron sights as the game for which these rifles is intended is large and is confronted at close quarters. All bolt-action rifles have drilled and tapped mounting holes for telescopic sights.

The magazine

The magazine is contained within a box-like cavity that is routed out of the stock - under the receiver and just forward of the trigger assembly. The magazine follower is a plate resting on a spring that applies upward pressure to the cartridges in the magazine. When the bolt is unlocked and pulled back, a cartridge from the magazine enters the breech. Some magazines are removable - ie, they consist of an iron box that can be loaded and inserted into the rifle. Most are non-removable, but have a hinged floor plate that can be unlocked in order to remove cartridges without poking fingers down into the action. Some magazines are 'blind', which means they have no floor plate and can only be unloaded through the action.

Sizes/lengths

Actions are made in four basic sizes - depending upon the size of the cartridge for which the rifle is intended. Shorter actions are stiffer and take less time to cycle, while the long actions are necessary for some of the larger magnum and dangerous game cartridges. Some shorter actions can be 'opened up' to accept longer cartridges, but this is not recommended as it involves removal of metal from near the locking lug recess - a process that weakens the action.

Size

Size	Examples of Cartridges
Short	.222, .223, .243, 6.5x55, 7mm-08, .308
Standard/Short Magnum	.25-06, .270, .30-06, 7mm Mag, .300 Win Mag, .338 Mag, .458 Mag
Long Magnum	8mm Rem Mag, .375 H&H, .404 Jeffrey
Large Magnum	.416 Rigby, .460 Weatherby

Cartridge feeding and extraction

The majority of bolt action hunting rifles are magazine rifles - ie they have storage space for two or more cartridges and a mechanism for loading them when the bolt is cycled. The original Mauser 98 bolts were fitted with a non-rotating claw that grabbed the cartridge when it was forced up through the magazine - so it could be held securely throughout the loading process. This meant that a cartridge could not fall out of the breech if loading was done at an unusual angle. This controlled round feeding has since been copied by many manufactures and is considered superior to a simple push feed system, whereby the cartridge is simply shoved into the chamber by the forward movement of the bolt without actually being held. The feed ramp helps to guide the cartridge into the chamber. Guidance is also facilitated by a coned breech - a feature found on some actions. The coned breech is the name given to the funnel-like contour of the interior of the breech - just rearward of the barrel. The first stage of extraction begins with the lifting of the bolt handle. A camming action moves the bolt slightly rearward and pulls with great force on the shell. Once freed, the rearward throw of the bolt will bring the shell out. Extraction claws vary in size from the huge Mauser-type to smaller hooks that are barely adequate for the job.

Ejectors

The ejector is the mechanism that ejects the spent shell from the rifle. Following the shot, the bolt is unlocked and thrust rearward, bringing with it the empty shell. During this action, the shell is flung from the rifle - allowing a new cartridge to be loaded. The original Mauser 98 fixed ejector is a blade-like fixture attached to the rear of the receiver. When the bolt is drawn back, it moves past the ejector, which strikes the head of the cartridge shell and throws it from the breech and clear of the rifle. The system is very reliable, but the bolt must be drawn back completely and swiftly to impart sufficient momentum to eject the shell. Failure to do this may result in a jam. A spring ejector is a different form of ejection mechanism that uses spring pressure on a tiny plunger located in the bolt face to eject the shell. As the shell is withdrawn from the chamber it will be pressed against the receiver until it is clear, when it will be thrown from the breech. The speed at which the bolt is withdrawn will not affect the ejection process, but these mechanisms do introduce more complexity into the overall unit.

Safety

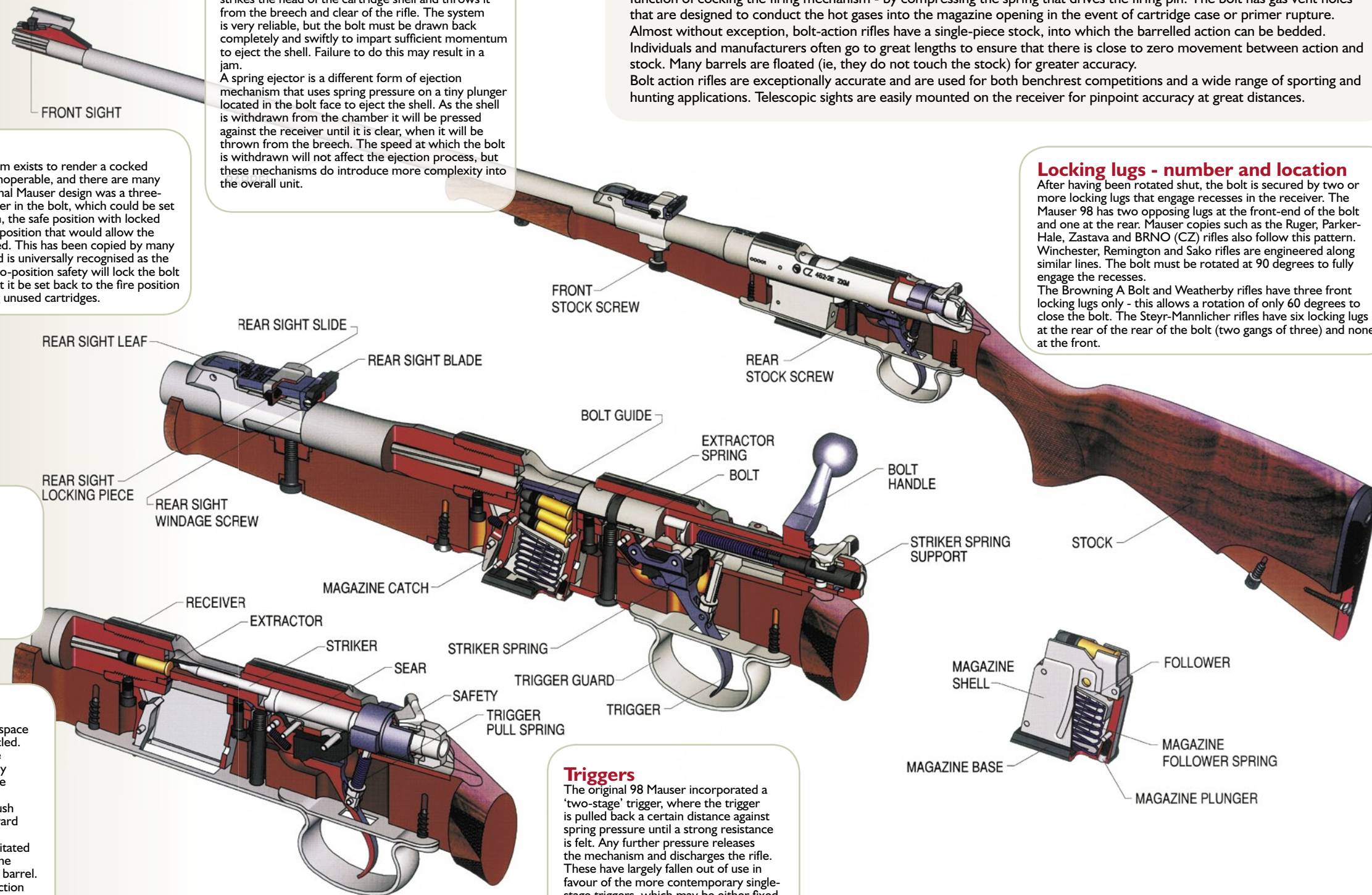
A safety mechanism exists to render a cocked rifle temporarily inoperable, and there are many designs. The original Mauser design was a three-position safety lever in the bolt, which could be set in the fire position, the safe position with locked bolt, and the safe position that would allow the bolt to be removed. This has been copied by many manufacturers and is universally recognised as the best system. A two-position safety will lock the bolt - necessitating that it be set back to the fire position prior to unloading unused cartridges.

General description

The bolt action is by far the most popular and universal mechanism for introducing and securing the cartridge in the breech. Invented in 1829 by Jean Von Dreyse and further developed by Paul Mauser from 1860, the mechanism has changed little since Mauser produced the renowned Model 1898 that was purpose-built around the German 8x57 cartridge. The action consists of a cylindrical receiver into which the breech end of the barrel is screwed. A steel bolt slides into the receiver and contains the striking mechanism. The bolt can be locked shut by moving it all the way forward, rotating it by a fraction of a full-turn. The process is reversed in order to eject a spent shell from the rifle. Lifting the bolt lever will also perform the function of cocking the firing mechanism - by compressing the spring that drives the firing pin. The bolt has gas vent holes that are designed to conduct the hot gases into the magazine opening in the event of cartridge case or primer rupture. Almost without exception, bolt-action rifles have a single-piece stock, into which the barrelled action can be bedded. Individuals and manufacturers often go to great lengths to ensure that there is close to zero movement between action and stock. Many barrels are floated (ie, they do not touch the stock) for greater accuracy. Bolt action rifles are exceptionally accurate and are used for both benchrest competitions and a wide range of sporting and hunting applications. Telescopic sights are easily mounted on the receiver for pinpoint accuracy at great distances.

Locking lugs - number and location

After having been rotated shut, the bolt is secured by two or more locking lugs that engage recesses in the receiver. The Mauser 98 has two opposing lugs at the front-end of the bolt and one at the rear. Mauser copies such as the Ruger, Parker-Hale, Zastava and BRNO (CZ) rifles also follow this pattern. Winchester, Remington and Sako rifles are engineered along similar lines. The bolt must be rotated at 90 degrees to fully engage the recesses. The Browning A Bolt and Weatherby rifles have three front locking lugs only - this allows a rotation of only 60 degrees to close the bolt. The Steyr-Mannlicher rifles have six locking lugs at the rear of the rear of the bolt (two gangs of three) and none at the front.



Triggers

The original 98 Mauser incorporated a 'two-stage' trigger, where the trigger is pulled back a certain distance against spring pressure until a strong resistance is felt. Any further pressure releases the mechanism and discharges the rifle. These have largely fallen out of use in favour of the more contemporary single-stage triggers, which may be either fixed or adjustable for release weight and length of travel.

CZ 452 ZKM