

Safety Devices

Build a Safer Moustrap

Definitions

Built-In Safety Device

A safety device that is permanently attached to the handgun, either during manufacture or by the user. These include such devices as loaded chamber indicators, magazine disconnectors, manual thumb safeties, transfer bars (a type of drop safety), grip safeties, built-in locks and personalized guns.

Extrinsic Safety Device

A safety device that is added externally to the handgun to provide a mechanism for storing or securing it. In order to fire the gun, the device must be physically removed from the gun, or the gun must be removed from the device. Examples include trigger locks, barrel locks and lock boxes.

Passive Safety Device

A safety device that automatically engages when the handgun is not in use, without any action by the user, and then automatically disengages to allow the gun to be discharged. Examples include magazine disconnectors, transfer bars, firing pin blocks, grip safeties and personalized guns.

Active Safety Device

A safety device that requires the user to actively engage or respond to the device for it to be effective. There are various gradations to these types of devices, from those that are totally dependent on the user, such as trigger locks, to those that act automatically but require a user to respond to the device, such as loaded chamber indicators.

External Safety Devices

Trigger Locks

Trigger locks (Figure 1) can be purchased in a variety of styles, all of which secure the handgun by immobilizing the trigger. The most common trigger lock design covers the trigger mechanism on either side with two steel or plastic blocks that lock together. The locks can be purchased in either keyed or combination styles, and are designed to allow the handgun to be transported while locked. Most trigger lock designs are easy to use; however, the owner of the handgun must actively install a trigger lock.

Some handgun owners may wish to use a trigger lock to secure a loaded gun. In such cases, the risk of unintentional discharge is significant when installing or removing a trigger

This material was graciously furnished by the Medical College of Wisconsin, Firearm Injury Center, Department of Emergency Medicine.

guard. If the trigger lock does not fit the gun properly or is improperly installed, the trigger may still be operated. When properly installed on unloaded handguns, trigger locks can reduce the risk of unintended discharge. Trigger locks prevent children of any age from using the gun, as long as the child does not have access to the key or combination.



Figure 1

Barrel and Chamber Inserts

A wide variety of handgun safety devices are manufactured that insert into the barrel or chamber of the gun and provide a physical barrier against loading the handgun. A barrel insert can be a metal rod, a plastic plug, or a plastic cable that inserts through the barrel and blocks the chamber (Figure 2). Another style of barrel insert is a plastic pin that inserts into the barrel attached to a strong rubber band which hooks around the back of the hammer, securing it in place. Chamber inserts differ from barrel inserts in that they are placed directly into the chamber rather than inserted through the barrel. They are designed to hold the action in an open position.

All of these designs are relatively easy to use and come in both locking and non-locking styles. Barrel and chamber inserts prevent unintended discharge as long as they are properly installed, because they physically prohibit a cartridge from being placed in the chamber. These devices rely on the owner to actively use

the insert. Like trigger locks, locking barrel or chamber inserts limit the unauthorized use of the handgun by children and adolescents.



Figure 2

Lockboxes

Lockboxes (Figure 3) are small, portable, safe-like boxes or cases specifically designed for the storage and/or transport of handguns. They allow easy access to the handgun and can be purchased with either keyed or combination locks. Many are designed to be permanently mounted in a variety of locations. Because they are portable, lockboxes are not as secure as an immobile safe. Lockboxes require the user to actively secure the handgun in the lockbox.

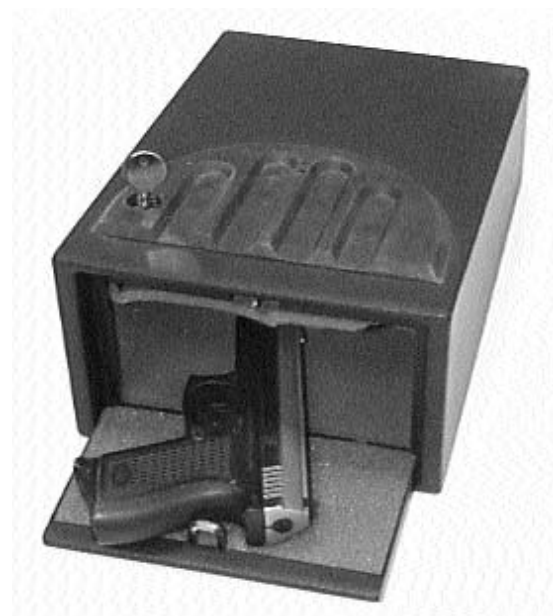


Figure 3

This information was graciously furnished by the Medical College of Wisconsin, Firearm Injury Center, Department of Emergency Medicine. For current diagrams, refer to www.mcw.edu/ufic "handgun glossary".

When a handgun is properly secured in a lockbox, it is virtually impossible to unintentionally discharge the weapon. A lockbox effectively prevents the unauthorized use of the gun by children of any age, as long as the child does not have access to the key or combination. The lockbox is the device most often recommended by police to prevent unauthorized access to a handgun.

Built-In Safety Devices

Loaded Chamber Indicators

A loaded chamber indicator (Figure 4) is a small device found on some pistols that displays a warning when the chamber contains a cartridge. These were first developed for use in the early 1900s by European handgun manufacturers. Often the chamber indicator is a small pin that is built into the mechanism of the pistol. When a cartridge is in the chamber, at the action is closed, the pin protrudes from the top, back, or side of the gun.



Figure 4

Loaded chamber indicators have the potential to reduce unintended discharges when the user is unaware that a pistol is loaded. The user, however, must be aware that the pistol has the indicator, be able to recognize it when displayed, and respond appropriately to the information. While the device acts passively, its

effectiveness may be limited by the human response. The effectiveness of this response is limited by the small size of the indicator, the potential for damage to the indicator, and the user's level of handgun education. Loaded chamber indicators do not prevent the unauthorized use of the handgun. These devices are not found on revolvers and are found only on a limited number of pistol models. At the present time, no industry standard regulates the design or availability of loaded chamber indicators on handguns.

Manual Thumb Safeties

Located on the side of the handgun (Figure 5), manual thumb safeties are intended to reduce the unintentional discharge of the weapon during normal use. Generally found only on pistols, these safeties can operate in several ways. Depending on the design, engagement of the safety mechanism may lock the slide, move the firing pin out of reach of the hammer, insert a block between the hammer and firing pin, or lock the hammer. In the locked position, all manual thumb safeties, if functioning properly, prevent the handgun from discharging when the trigger is pulled.

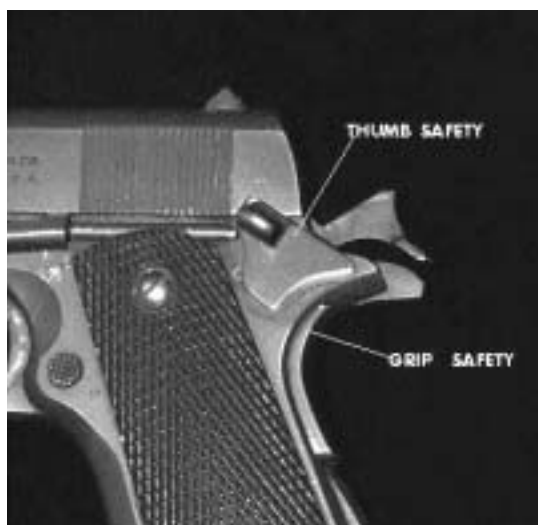


Figure 5

This material was graciously furnished by the Medical College of Wisconsin, Firearm Injury Center, Department of Emergency Medicine. For current diagrams of safety features, refer to www.mcw.edu/fic.

There is no industry standard for thumb safety design. Nonetheless, virtually all pistols produced have some type of manual thumb safety. Double action-only pistols and revolvers do not usually include this device.

A manual thumb safety is easy to use in the context of normal handgun operation, requiring only a single digit to operate. However, these safeties are active devices, requiring the user to engage the mechanism. A manual thumb safety can be easily disengaged by children and adolescents or unintentionally disengaged by the user. Its effectiveness in preventing the unauthorized use of the handgun or an unintended discharge is limited.

Grip Safeties

Grip safeties (Figure 5 above) were originally designed in the 1880s. To discharge a handgun equipped with a grip safety, the safety lever, located on the front or back of the grip, must be compressed. When holding the handgun in a normal shooting position, the safety lever is compressed by the fingers or palm (depending on the design) of the shooter's hand, unlocking the trigger. If the shooter releases the lever, the locking mechanism automatically re-engages.

Grip safeties are passive devices and do not hinder the use of the handgun by adults. When the gun is not being held by the grip, the grip safety reduces the risk of unintended discharge. These devices have been promoted as a means of childproofing handguns. In theory, children do not have the strength, coordination, or hand size to compress the safety lever and pull the trigger at the same time. For young children with small, weak hands, this theory may be accurate. With the use of two hands, however, some children may be able to discharge a handgun with a grip safety. For adolescents, a grip safety does not limit the use of the handgun.

Magazine Disconnectors (Magazine Safeties)

A magazine disconnecter is a passive mechanical locking device that is designed

to prevent the unintended discharge of the weapon when the magazine is removed from the pistol. Like the loaded chamber indicator, the magazine disconnecter was originally developed in the early 1900s by European gun manufacturers. When a magazine is not fully inserted into the gun, the linkage between the trigger and the hammer release is disconnected. This prevents the pistol from being fired, even if a cartridge is in the chamber.

If a pistol is always handled with the magazine removed until the user is ready to shoot, then a magazine disconnecter may reduce the risk of unintended discharge. However, the magazine disconnecter may increase the risk of unintended discharge if the user is not familiar with its operation. An inexperienced user may insert an empty magazine into the pistol, disengaging the safety, and mistakenly assume that the gun is unloaded, even though it contains a cartridge in the chamber. For young children, storage of the gun without a magazine prevents unauthorized usage; however, older children can easily disengage the safety by reinserting the magazine. These devices are found only on a limited number of pistol models.

Drop Safety

Drop safeties or hammer blocks (Figure 6) are designed to passively or actively prevent the unintentional discharge of the handgun if it is dropped on the hammer. On revolvers and pistols without drop safeties or with actively engaged safeties, the hammer in the uncocked position can rest directly on the firing pin. A blow to the hammer, such as when the revolver or pistol falls out of a pocket or holster, transfers energy through the hammer to the firing pin and onto the cartridge, causing it to discharge.

Drop safeties come in a variety of designs depending on the manufacturer, with many designs having been developed for revolvers in the 1880s. In some revolver designs, a transfer bar inserts between the hammer and firing pin only when the trigger is pulled. Without the transfer bar in place, the hammer cannot contact the firing pin.

For pistols, there are various types of firing pin blocks which act as a drop safety preventing the firing pin from striking the cartridge until the trigger is pulled.

Drop safety designs are generally passive, and are designed to automatically prevent unintended discharges due to dropping of the handgun. Some revolvers and pistols have active hammer blocks that prevent the hammer from striking the firing pin, yet need to be actively engaged by the user.

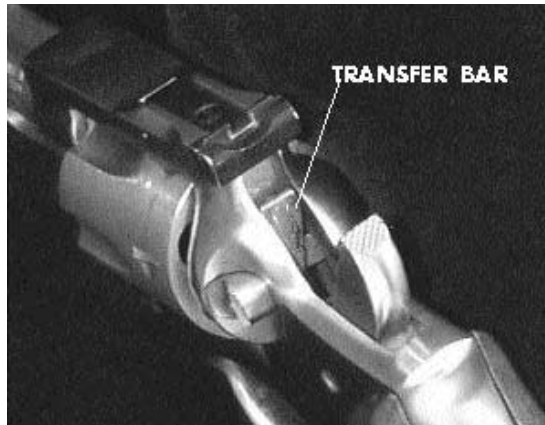


Figure 6

Built-In Locks

Some types of handguns are manufactured with grip-mounted locks that disable the action. These types of locks can also be added by the owner (Figure 7). Found in both keyed and combination styles, built-in locks prevent the handgun from being fired by someone other than the person who has access to the combination or key. The mechanisms vary depending on the type of lock. One device locks the manual thumb safety in the engaged position, while another type internally secures the hammer. Most handguns currently available in the consumer market do not come equipped with built-in locks. After-market kits can be purchased allowing both pistol and revolver owners to retrofit their weapons.

A built-in lock can be easy to use. When properly engaged, it limits discharge by

unauthorized persons. The handgun cannot be discharged when the lock is engaged, and most locks are difficult to unknowingly disengage. Once the lock has been disengaged, however, anyone can use the handgun.



Figure 7

Personalized Handguns

A personalized handgun (Figure 8) is a relatively new type of handgun that prevents anyone other than an authorized user from firing the gun. These personalized handguns are modifications of standard revolvers or pistols in which a magnetic or electronic lock has been built into the grip of the gun. When the owner is not holding the handgun, the passive built-in locking device automatically secures the trigger, preventing the handgun from being fired. The owner of the personalized weapon wears an identifying magnetic ring or radio transmitter bracelet. When placed next to the grip of the handgun in the proper orientation, the ring or bracelet unlocks the trigger. The grip is customized to perfectly fit the owner's hand, allowing for easy alignment of the ring or bracelet.

Because a personalized handgun can discharge only when being held in the proper orientation by the owner, this system can reduce discharge by unauthorized persons such as children, adolescents and illegal owners. Personalized guns, however, are not yet available in the consumer market.



Figure 8

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