PREVENTATIVE MAINTENANCE GUIDE

SIGARMS Academy Staff

The following *Preventative Maintenance Guide* has been prepared to assist you in the professional care of your semiautomatic pistol.

WARNING: Individual manufacturer's instruction on the care, cleaning and lubricating of your pistol should be **strictly adhered** to. Refer to the owner's or Armorer manual specific to the weapon system being maintained for manufacturers' recommendations.

Preventative Maintenance: a systematic procedure of cleaning, inspecting, lubricating and verifying the functioning of the pistol.

Objective: establish and maintain maximum operational readiness of the user's semiautomatic pistol.

The user's role in the performance of preventative maintenance is to:

- Be sure the pistol has been safely unloaded ("check twice") and all ammunition has been removed from the work area before performing any preventative maintenance.
- Properly clean, lubricate and preserve the pistol and associated magazines each time the pistol is fired or exposed to adverse environmental conditions.
- Safely inspect, troubleshoot and perform any routine maintenance on a regular schedule.
- Safely perform a "function check" to determine operational readiness.
- Understand the agency's policy on the maintenance, repair, or replacement of unserviceable weapons.
- Understand any liability issues related to improper maintenance, unauthorized repair, or unauthorized modifications to the weapon system.
- Use the appropriate tools, lubricants and solvents in the recommended manner when performing weapon maintenance.

SAFETY WARNING: SIGARMS recommends that protective eye glasses or goggles be worn at all times when cleaning your weapon.

CLEANING EQUIPMENT

Cleaning Rod

The cleaning rod is used to push cleaning attachments, i.e., brushes, patches or jags through the barrel. The cleaning rod should be inserted from the **chamber end** of the barrel when possible. It should be long enough to pass completely through the barrel and strong enough to resist bending when pressure is applied. Cleaning rods are made from various materials: however, brass, aluminum or coated metal are the most desirable. Regardless of the type of cleaning rod selected, improper use may cause excessive wear on the barrel, especially at the muzzle end. Continual wear on the muzzle is detrimental to the accuracy of the weapon.

Bore Brush

Bore brushes can be of several types: nylon, brass or bronze, and stainless steel. The brass or bronze brush is recommended for cleaning the bore. Nylon bristles are rarely strong enough to loosen bore fouling and stainless steel bristles are overly aggressive due to their hardness. The bore brush used should be of the same caliber in size as your semiautomatic pistol. The bore brush is most effective when used with solvent.

Use a bore brush only in the barrel of the weapon; do not use it as a general-purpose scrub brush.

Do not reverse direction while the brush is actually in the barrel. Instead, push the brush slowly all the way through the barrel before reversing direction. This will maximize the cleaning potential of the bore brush, as well as maintain its usefulness over a longer period of time.

Slotted Patch Holder and Jag

These devices are used for pushing the patches through the barrel. Care should be exercised when using either to ensure that they do not mar the lands and grooves of the barrel.

The slotted tip allows the patch to be moved through the bore primarily for solvent distribution. The jag allows for a more precise fit of the patch in the bore to enhance removal of firing residue. Use the correct diameter jag to ensure a tight fit of the patch in the bore.

Patches

Patches are either round or square and should be made of soft, absorbent material. Some patches have a woven side and a fibrous side. The woven side may assist in introducing solvent into the barrel and provides a scrubbing surface, while the fibrous side may be used to remove the residue left by the solvent's chemical action. Patches may also be used to dry the bore and lightly lubricate the entire pistol.

CLEANING EQUIPMENT continued

Cleaning Solvent

There are many commercially available cleaning solvents that do an excellent job of removing both powder residue and metal fouling. Cleaning solvents should be used to loosen and remove powder residue, and copper or lead fouling. Use cleaning solvents that are manufactured for weapon use only. If a cleaning solvent is used, be sure all solvent is removed before applying any lubricant, as the solvent will reduce the effectiveness of the lubricant.

WARNING: Some cleaning solvents and treated cloths may be detrimental to the finish of your pistol. Always read the manufacturer's recommendation for use and the warning label before using.

Wet Brush

A nylon toothbrush with a lubricant, preservative or similar material to dissolve and remove firing residue can be used to clean areas of the weapon that are hard to reach. For optimum results, this brush should have bristles located at each end similar to today's issue military style brush. A moistened toothbrush works well on the interior of the frame, the underside and face of the breechblock, behind the extractor, the exterior of the slide, and any other location where firing residue may accumulate. It is not recommended that solvent be used in areas where it may collect and cannot be removed.

Dry Brush

A dry nylon brush, such as a toothbrush, makes the cleaning process easier in areas where solvent is not desired such as the grips, and when removing lint and minor fouling from the front and rear sights, trigger, etc.. Lint and fuzz that accumulates in the holster can also be removed using a dry brush. A military style brush not yet exposed to lubricant or solvent will best satisfy this requirement.

Screwdriver

A screwdriver of proper size should be used for tightening all screws. Correct blade size prevents mutilation of screw head slots. For best results, the blade must fit the slot snugly in both width and length.

Cleaning Cloth

A clean, absorbent, lint free cloth is necessary for cleaning the weapon and protecting it from hard surfaces during the cleaning process. Cheese cloth is one of the most widely recommended. Too often the effort to keep the weapon clean is defeated by the contamination of dirt, grease, fouling, etc., from a soiled cloth. Once the cloth becomes soiled discard it.

A mechanical stoppage while firing is less likely to occur if a clean lint free cloth is used.

CLEANING EQUIPMENT continued

Treated Cloth

There are a number of separate applications for the treated cloth. This makes it extremely important to read the instructions on the packaging concerning both use and storage. The most widely used cloths are impregnated with a finish preservative. Silicon, microscopic solids, or petroleum-based substances are used to cover surface areas of pistols to prevent deterioration of the finish due to oxidation and corrosion.

Other types of cloths are designed for lead removal in the bore as well as fouling accumulation elsewhere. These cloths may be harmful to the weapons finish and should only be used following the manufacturer's recommendations.

Air Hose

Advantages

- Excellent for blowing out dirt particles or excess cleaning solvent from areas hard to reach with the soft brush or cloth.
- Excellent for blowing out holster and magazine pouches.

Air Hose

Disadvantages

- May blow solvent, dirt particles or lubricants into the face, the pores of the skin, or the clothing of the user or other persons.
- Dirt particles may be blown back into the mechanism rather than out, contributing to a stoppage.
- Condensation may accumulate in the air tank and hose, which, in turn, will introduce moisture to the surfaces being cleaned causing rust (consider using dry air).
- Pressurized air blows contaminants back into the breathable air and over all exposed surfaces in the immediate area.
- Can be detrimental to hearing. Air-hose nozzles should be OSHA approved for noise reduction.
- Ear protection may be required depending on the number of air-hoses being used at one time.

WARNING: Continuous dipping of pistols into strong chemical solutions, such as a part cleaner, and then blowing the mechanisms dry with an air hose will remove the protective lubricants from the pistols, particularly the internal parts. This will require an armorer to completely disassemble the pistol to inspect and lubricate the entire weapon.

Lubrication

The purpose of lubricating a pistol is to provide a molecular barrier between metal parts to reduce friction and prevent solidification of firing residue. A lubricant/preservative is used to maintain the integrity of the finish through a similar molecular barrier between the pistol's surface area and its environment. Semiautomatic pistols require lubrication in order to ensure consistent, reliable functioning. Conversely, excessive lubrication may affect reliable function of the weapon. Excessive lubrication is recognized as lubricant moving on the weapon under the influence of gravity. Manufacturer's guidelines on lubrication should be strictly adhered to. The specifics of the guidelines may be found in the owner's manual, Armorer manual or through correspondence with the manufacturer.

Environmental extremes such as coastal salt air, humidity and broad shift in temperatures expose unprotected metal to attack, requiring frequent attention with a lubricant/preservative versus a desert environment where the natural attraction of dust and grit to the lubricant becomes a negative factor.

Lubricant/preservative products are available in a number of different consistencies that range from grease, to liquid, to dry, all of which have application. Be sure you read the manufacturer's directions for use and evaluate your own needs pertaining to the actual application of the pistol.

A weapon is not considered properly lubricated unless the lubricant’s presence can be visually and physically verified by the operator.

CLEANING AND LUBRICATION PROCEDURES

Frame

Use a nylon brush with a lubricant, preservative or similar material to dissolve and remove any firing residue in or on the frame. Pay particular attention to the magazine well, frame rails, and surfaces that interlock with the barrel. Once the frame is clean it should be lubricated by saturating a cleaning patch with a lubricant/preservative and wiping all exposed metallic surfaces. Give emphasis to lubricating the frame rails and the surfaces that interlock with the barrel. Wipe exterior of the frame with a clean patch to remove any excess lubrication.

Barrel

Thoroughly clean the barrel using a bore brush of the correct diameter that has been moistened with cleaning solvent. Use a cleaning rod long enough to reach all the way through the bore. The brush should pass completely through the barrel, starting from the chamber end, at least ten (10) times in a reciprocating fashion. Emphasis should be placed on the cartridge seat located at the forward edge of the chamber. Cleaning the cartridge seat can be enhanced by twisting the cleaning rod and turning the brush while it rests against the forward edge of the chamber.

NOTE: Always clean the barrel from the chamber end when possible. Allow the cleaning solvent sufficient time in the barrel for the chemical action to dissolve the fouling. Read and apply the solvent manufacturer's recommendations.

CLEANING AND LUBRICATION PROCEDURES continued

Replace the bore brush with a slotted patch holder or jag and affix a clean, dry patch. For maximum effect the cleaning patches should fit the bore snugly. Push the patch slowly and carefully through the barrel. Repeat this process with clean patches until the barrel is clean and dry. Brush any remaining residue from the barrel giving specific attention to the feed ramp and chamber mouth areas.

Most manufacturers recommend that the barrel be lubricated on its interior and exterior for friction reduction and surface preservation. This may be accomplished by saturating a cleaning patch with a lubricant/preservative and wiping all surfaces of the barrel. Finish the barrel by pushing a final clean, tight fitting patch through the bore to remove any excess lubricant, which may contribute to ammunition failure.

Recoil spring and guide

The recoil spring and guide may be cleaned and lubricated by the operator either separated or together. In either case firing residue should be brushed from the surface areas of both parts. Lubrication is accomplished by saturating a cleaning patch with an appropriate lubricant/preservative and wiping down all exposed surfaces of the recoil spring and guide.

Slide

Clean the interior and exterior of the slide with a nylon brush and an appropriate lubricant/preservative to dissolve and remove all firing residue. The slide rails and locking surfaces should be thoroughly cleaned as should the breech face (SPECIAL ATTENTION MUST BE GIVEN TO CLEANING THE EXTRACTOR). Foreign material and firing residue around the breech face and extractor can cause extraction related stoppages as well as failures to feed. After cleaning, wipe all exposed surfaces of the slide with a lubricant/preservative-saturated patch. Wipe the exterior surfaces of the slide with a clean patch to remove any excess material.

Magazine

The magazine is easily disassembled and may be cleaned with a nylon brush and/or soft lint free cloth. In addition, the metal surfaces may be treated lightly with a commercially available lubricant/preservative. Finalize the cleaning and lubrication by wiping all surfaces with a clean cloth. This will prevent ammunition contamination, but allow the metal surfaces to be protected from the environment.

NOTE: The pistol is not considered clean "unless the magazine is clean also".

Operator Responsibilities

It is the weapon operator's responsibility to maintain the weapon in a state of maximum operational readiness. This requires cleaning and lubrication at regular intervals. Frequent checks by visually and physically verifying the operational state of the weapon should be performed between maintenance intervals.

CLEANING AND LUBRICATION PROCEDURES continued

Holster and Magazine Pouches

Holster, magazine pouches and ancillary equipment should be inspected regularly to assure serviceability. Inspect for:

1. Safety/retention devices that retain and release correctly (snaps, velcro or inserts).

2. Accumulation of lint, dirt, oil, or other foreign material.

3. Overall appearance and shape, inside and outside.

4. Moisture build up.

NOTE: Separate pistol from the holster and magazines from the pouch regularly. This will help the holster and pouch to dry out and not trap moisture. This also provides an opportunity for regular visual inspection.

You should use the air hose here (dry air) to blow out pouches and holster. A clean dry cloth would be sufficient when compressed air is unavailable.

INSPECTION

Be sure that the pistol is safely unloaded ("check twice") before inspection. The following should be part of that inspection:

Sights

Are they properly configured and positioned correctly?

Do they fit tight on the slide?

Barrel

Is it clean? Barrel and chamber should be inspected for fouling and other firing residue that may be accumulating.

Is the feed ramp smooth and contoured correctly?

Are there pits inside the barrel? Pits may weaken the metal and allow gas to escape around the bullet reducing accuracy and velocity.

The crown/muzzle end of the barrel should be inspected for wear, nicks or any damage that could affect accuracy.

Does it match the slide and frame by proper fit and/or serial number?

Recoil Spring and Guide

Inspect the spring for straightness, continuity of the wire wraps, equal separation of the individual coils and proper fit on the recoil spring guide.

Inspect the spring guide for smoothness, straightness and flange integrity.

INSPECTION continued

Frame/Slide

Inspect the frame and slide for the appropriate serial numbers.

Check the sights for visible damage and proper fit in the dovetails of the slide.

Verify that there are no abnormally protruding pins from the slide or frame.

Visually check for cracks, excessive wear or stress marks.

Verify that all screws are in place and tight.

Check the grips for proper fit and damage.

FUNCTION INSPECTION

Safety is the first order of priority when performing a function check.

A function check is used to verify the proper working order of all mechanical features of an unloaded firearm. This may be accomplished by proper weapon handling and the removal of all ammunition from the work area. Check the firearms and the work area a second time before proceeding.

The magazine, frame and slide will be checked simultaneously.

The magazine should be inspected as previously described for serviceability. The first step in the function inspection is to insert the magazine into the pistol, ensuring interlock with the magazine catch. The automatic lock back of the slide is verified by pulling the slide completely to the rear to verify proper engagement of the magazine follower and slide catch lever.

The magazine should fall free from the pistol of its own weight when the magazine catch is depressed. This verifies the correct relationship of the magazine, magazine catch and frame of the pistol.

The slide should spring forward without hesitation as the slide catch lever is depressed. This verifies correct engagement and release of the slide catch lever in the arresting notch of the slide. Additionally, it checks that the slide moves freely on the frame and that the recoil spring has the strength to close the action.

Moderate thumb or finger pressure should be exerted on the spur of the hammer while in a cocked state in an attempt to push it forward. The hammer should remain cocked. This shows that correct hammer/sear engagement is being maintained.

If the pistol is so equipped, check the decocking lever by thumbing it in the appropriate direction and visually observing the hammer as it moves forward to its rest position. This verifies the action of the decocking lever.

The double action function of the pistol may be checked with the hammer starting forward in the rest position. By pulling the trigger and observing the hammer, the

FUNCTION INSPECTION continued
cocking and releasing of the hammer should be accomplished with one full compression of the trigger. This verifies that the pistol may be fired from its normal rest position.

One of the internal safeties found on all semiautomatic firearms is the disconnector. The disconnector may be checked by depressing the trigger and holding it to the rear while retracting and releasing the slide. The trigger should have to be released forward in order to allow the firing of the next cartridge. Another way of checking the disconnector is to retract the slide until the barrel and slide are no longer locked together. Movement of the trigger should have no effect on the hammer.

What has been accomplished in performing these operations is to verify that the pistol will only fire one shot per pull of the trigger and that it will not fire in an unlocked condition.

If the pistol has single action capabilities, cocking the hammer and then releasing the hammer by pulling the trigger ensures that the single action function of the pistol is working, as it should.

A firing pin function check may be incorporated into the overall weapon inspection. First force the firing pin forward. No protrusion should be observed at the breech face. Next operate the firing pin blocking mechanism to release the firing pin. The firing pin should now protrude through the breech face when forced forward. The firing pin spring is tested for strength by releasing the safety mechanism and then firing pin. After the firing pin resets itself force it forward to ensure its interlock with the safety mechanism.

AMMUNITION
Ammunition should be inspected for the following:

- Overall length of the cartridge
- Bullet seating: tightness and depth
- Deformed or inverted bullet
- Defective jacket or core
- Crimp in the mouth of the case
- Damage to the cartridge case
- Condition of the extraction groove

- Condition of the case rim
- Condition of the primer
- Corrosion or discoloration

AMMUNITION - continued

Consideration should be given to replacing duty ammunition at least semi-annually or at each qualification or training session. Job conditions and climate may require a more frequent replacement.

CAUTION: Continuous loading and unloading the same cartridge into your pistol may cause the bullet to work loose from the cartridge case causing an unintentional stoppage in the cycle of operation. In order to avoid this, rotate your ammunition regularly.

The recommended procedure for loading magazines with service/street ammunition is as follows:

1. Go to a safe, authorized loading area.
2. Visually inspect the ammunition that will be loaded into and carried with the weapon.
3. With the pistol disassembled and the barrel out of the weapon, drop each cartridge into the chamber, making sure that it drops in easily and fully seats. Then invert the barrel allowing the cartridge to drop from the chamber into the hand. This proves proper fit of each cartridge into the chamber of the pistol that it will be used in. Immediately return any cartridges that do not pass this inspection to the issuing authority for safe disposal.
4. Load your magazine to capacity with the inspected ammunition.
5. Load your pistol and top off the magazine with an inspected cartridge.

This procedure will eliminate the possibility of having rounds in your magazine which will not chamber.

WARNING: Ammunition should be kept clean and dry at all times. Never lubricate or oil ammunition. Immediately replace any ammunition that has been in contact with solvent, spray lubricant or oil. Solvent and oil can penetrate the sealant around the primer, contaminating the priming compound and creating a potential for misfire.

The definition for preventative maintenance may be applied to any piece of equipment. Most manufacturers will indicate, however, that a majority of pistol problems occur primarily to improperly cleaned or improperly lubricated pistols. The most prevalent secondary problem is unsatisfactory ammunition. Each of these problems can be eliminated by educating the field user and enforcing preventative maintenance policies.

For your well-being and that of your fellow officers, keep your pistol at maximum operational readiness. Be prepared by being ready. Be safe.

SIGARMS SAFETY NOTE:
When handling your semiautomatic pistol while cleaning - loading - unloading- performing function checks etc., keep it pointed in a safe direction.