SW370-BL-OPI-010

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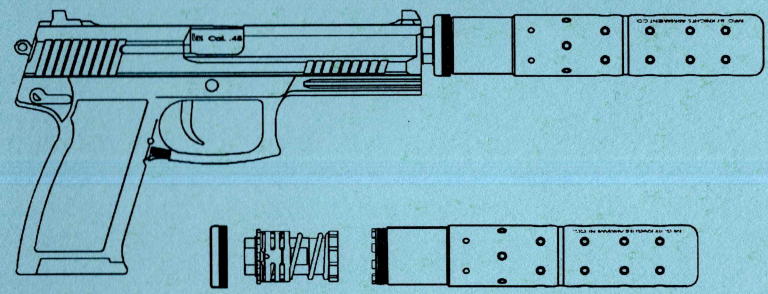
CAGE NO. 1S002

OPERATOR'S / MAINTENANCE MANUAL

SUPPRESSOR

P/N: 1S002 / 94368 NSN: 7H-1005-01-435-1917
(FOR MK23 MOD 0.45 CAL. ACP PISTOL)



Contract Number N00164-96-D-0020 Manual of 08/20/96

WARNINGS AND SAFETY PRECAUTIONS

- **Read this manual completely before handling, loading, or operating the pistol with the suppressor.**

- All suppressor mounting, dismounting, and indexing actions should be performed on unloaded and cleared pistols.

- Always wear eye protection if the situation permits. The combination of lubricant within the pistol, water placed inside the suppressor, and the back pressure created in the barrel by the suppressor action increases the likelihood of the shooter being sprayed in the face and eyes.

- Always clear the pistol before starting any procedure described in this manual. Do not squeeze the trigger until the weapon is clear.

- Treat every weapon as if it were loaded.

- Always point the pistol in a safe direction. Do not point the pistol at anything or anyone you do not want to shoot.

- To safely carry the loaded pistol, ensure that the hammer is uncocked or the manual safety lever is engaged. The pistol will fire if the trigger is pulled and the safety lever is disengaged.

- Do not place your finger on the trigger unless you are ready to fire the pistol and you are certain of your target and the area behind the target.

- Ensure that the chamber, bore and suppressor are free of obstructions before attempting to load and fire the pistol.

- Use only ammunition authorized in Chapter 4, Section 1.

- Wear eye protection and protective clothing while disassembling, assembling, or cleaning the pistol or suppressor.

- Follow the instructions contained in this manual exactly when operating the pistol with the suppressor.

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LIST OF FIGURES

(NOTE: This page intentionally left blank.)

CHAPTER 1 - INTRODUCTION

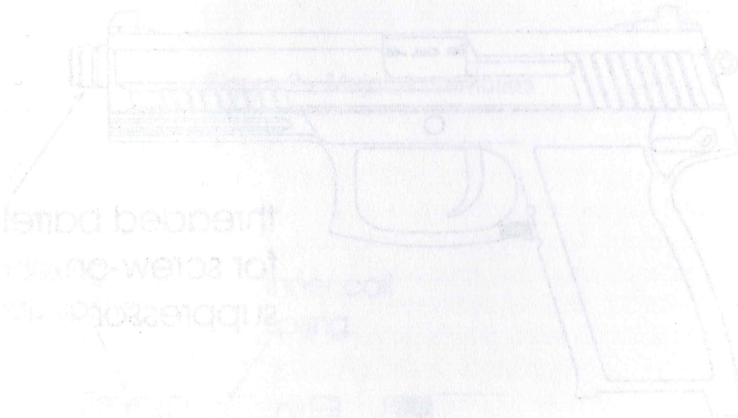
SECTION I - GENERAL INFORMATION

1.1 Scope

A. **Type of Manual:** Operator's/Maintenance Manual.

B. **Model Number and Equipment Name:** Suppressor, Part Number: 1S002 / 94368 (NSN: 7H-1005-01-435-1917) for MK23 MOD 0 Pistol, Semi-automatic, Caliber .45 ACP.

C. **Purpose of Equipment:** Provides the user with a detachable sound and flash suppressor accessory for use with the MK 23 MOD 0 Pistol, Semi-Automatic, Caliber .45 ACP. The suppressed pistol provides additional tactical flexibility, personal protection and offensive capabilities under day and night conditions.



SECTION II - SUPPRESSOR DESCRIPTION

1.2 Nomenclature

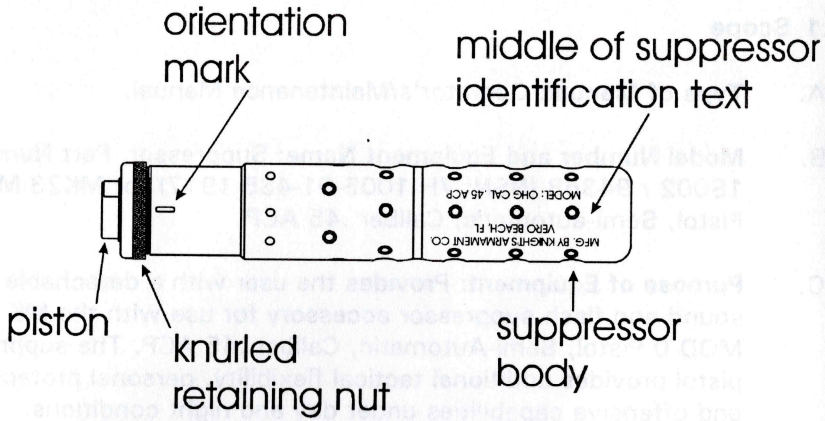


Figure 1 - Pistol and Suppressor

1.2 Nomenclature (continued)

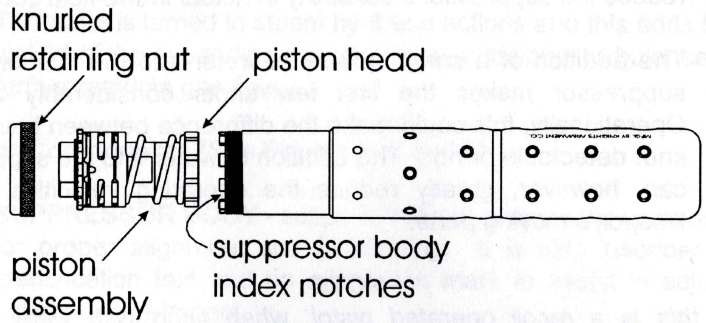


Figure 2 - Major Assemblies

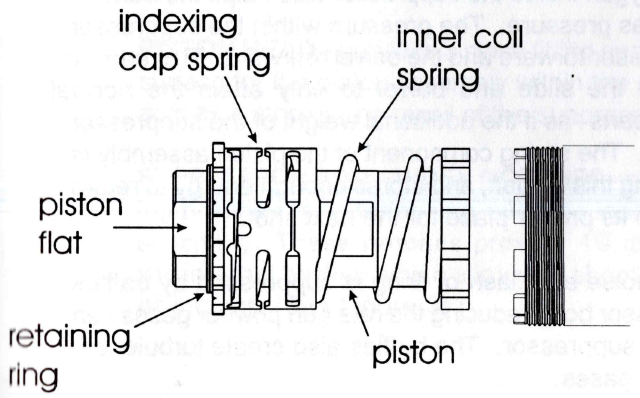


Figure 3 - Piston Assembly (detail)

1.3 Principle of Operation

A. The suppressor is designed to reduce muzzle noise and flash when using both M1911 ball and +P ammunition, however, the supersonic crack that will be detected when firing +P ammunition will greatly reduce the suppressor's suitability in actual in-the-field scenarios.

B. The addition of a small amount of water into the interior of the suppressor makes the first few shots considerably quieter. Operationally, this could make the difference between having the shot detectable or not. The addition of water into the suppressor can, however, greatly reduce the operating velocities of the weapon's moving parts.

NOTE

Since this is a recoil operated pistol, when firing with water in the suppressor, be sure to support the pistol as rigidly as practical so as to assure reliable semi-automatic functioning.

C. How it Works.

1. Starting with the bullet having been accelerated by the burning gun powder just as it leaves the barrel, the bullet un-plugs from the barrel and enters the suppressor. Rapidly expanding gun powder gases, and grains of powder, also enter and continue expanding and burning within the suppressor body creating an over-pressure situation. Any oxygen inside the suppressor also helps the burning and build-up of gas pressure. The pressure within the suppressor drives the suppressor forward and the barrel rearward. This energy is used to force the slide and barrel to only attain the normal velocity of these parts--as if the additional weight of the suppressor was not attached. The spring component of the piston assembly is compressed during this motion, and stores enough energy to return the suppressor to its proper place for the next shot.

2. The muzzle noise and flash of firing is suppressed by baffles within the suppressor body reducing the rate gun powder gases can pass through the suppressor. The baffles also create turbulence, and help cool the gases.

The noise and flash that these gases make as they exit from the suppressor is directly related to the pressure at the muzzle of the suppressor. Placing water inside the suppressor helps reduce the flow of gasses by reducing their temperature and expansion (and thus the pressure).

The water is turned to steam by these actions and this adds to the weight of the expanding gases, causes additional turbulence, and further restricts gas flow.

1.4 Major Components (See Figures 1, 2 and 3)

A. **SUPPRESSOR BODY -** supports internal suppressor components for proper alignment and functioning. It is also inscribed with identification text and an orientation mark to assist in adjusting bullet point-of-impact.

B. **PISTON -** provides threads for attachment of suppressor to the threaded barrel of the pistol and a replaceable, inner "o" ring seal. It also supports the indexing cap and inner coil spring of the piston assembly during recoil.

C. **KNURLED RETAINING NUT -** retains piston assembly in suppressor body. Provides a gripping surface to check tightness of suppressor assembly and provide for disassembly/assembly.

(See Figure 2)

D. **PISTON HEAD -** provides a close fitting and center support bearing surface for the piston assembly within the suppressor body. Also acts as a stop during recoil of the suppressor.

E. **SUPPRESSOR BODY INDEX NOTCHES** - provides 10 corresponding notches for interlocking with the indexing cap of the piston assembly. These notches provide 10 discrete orientations of the internal baffles which allow the shooter to adjust their point-of-impact. (See Figure 3)

F. **INDEXING CAP** - provides 10 indexing tabs which interlock to the notches of the suppressor body. The cap also provides a close fitting and center support bearing surface for the piston assembly at the rear of the suppressor body. Also acts as a buffering spring during final recoil of the suppressor.

G. **INNER COIL SPRING** - controls initial recoil and final return to battery of the suppressor.

H. **PISTON FLAT** - maintains a consistent position for the indexing cap. It also provides the user an orientation reference point for re-indexing the suppressor body after suppressor field stripping or disassembly.

1.5 Technical Specifications: MODEL:
CAL .45 ACP, SUPPRESSOR

* Caliber:	.45 ACP (Automatic Colt Pistol)
* Construction:	Stainless Steel
* Weight:	1 lb. (.454 kg)
* Length:	7.5 in. (191 mm)
* Diameter:	1.38 in. (35.0 mm)
* Overall Length with pistol attached:	16.58 in. (421 mm)
* Overall Weight with loaded pistol (12 rds M1911 Ball):	4.23 lbs. (1.92 kg)

CHAPTER 2 - OPERATING INSTRUCTIONS

SECTION I - SERVICE UPON RECEIPT OF MATERIAL

2.1 Initial Inspection. Upon receipt of the suppressor, it should be inspected to ensure it was received in proper working order.

Step	Action	Reference
1	Remove suppressor and items from container.	
2	Remove packing material.	
3	Check for missing items.	
4	Field strip suppressor and inspect for: Missing parts. Proper assembly.	para. 3.3
5	Clean, dry, and lubricate (if necessary)	para. 3.9, 3.11
6	Assemble.	para. 3.6
7	Function check.	para. 3.7, 3.8

SECTION II - GENERAL DESCRIPTION

2.2 Description. The suppressor screws onto the barrel of the MK 23 MOD 0 Pistol, Semi-Automatic, Caliber .45 ACP to act as a large volume expansion chamber which helps quiet noise at the muzzle during firing. The forward portion of the suppressor contains a number of internal baffles which are welded in place. The baffles are not removable. The rear area of the suppressor contains a removable piston assembly which allows the suppressor body to recoil and thereby assist in reliable functioning of the pistol. The suppressor will function with +P ammunition, however, the supersonic crack of that projectile will be easy to detect. Lower velocity M1911 Ball ammunition will provide much improved performance, especially if a small amount of water has been placed inside the suppressor body.

2.3 Operation and Characteristics

WARNING

All suppressor mounting, dismounting, and indexing actions should be performed on unloaded and cleared pistols.

WARNING

Before mounting the suppressor on the barrel, visually check the bore of the suppressor to ensure it is free of obstructions.

A. **Dry Operation -** No water placed in suppressor. With slide forward, hold pistol muzzle up by grasping the pistol slide firmly with one hand. Mount the rear end of the suppressor over the barrel threads with the other hand, and tighten firmly in a clockwise direction. Pistol may now be loaded and fired in its normal manner.

NOTE

Properly attaching the suppressor normally requires 3½ turns after the threads on the barrel engage those of the suppressor. Learn to sense proper engagement, this could become a critical factor when attaching suppressor in the dark.

B. **Wet Operation -** Water placed in suppressor. Water is best placed in the suppressor before it is mounted on the pistol. The amount of water is not critical. Simply submerging the suppressor or pouring water in from a canteen until the suppressor's interior is soaked is sufficient. When the suppressor appears soaked, remove from water and shake-out excess gently. Mount suppressor to pistol as in Dry Operation.

WARNING

Always wear eye protection if the situation permits. The combination of lubricant within the pistol, water placed inside the suppressor, and the back pressure created in the barrel by the suppressor action increases the likelihood of the shooter being sprayed in the face and eyes.

C. **After Mounting System Check -** With suppressor fully hand tightened on the pistol barrel, attempt to pull suppressor body forward slightly. You should be able to note how the suppressor body moves forward slightly in relation to the piston, but only against the strong action of the piston assembly spring.

2.4 Cycle of Operation

Starting with the bullet having been accelerated by the burning gun powder just as it leaves the barrel, the bullet un-plugs from the barrel and enters the suppressor. Rapidly expanding gun powder gases, and grains of powder, also enter and continue expanding and burning within the suppressor body creating an over-pressure situation. Any oxygen inside the suppressor also helps the burning and build-up of gas pressure. The pressure within the suppressor drives the suppressor forward and the barrel rearward. This energy is used to force the slide and barrel to only attain the normal velocity of these parts--as if the additional weight of the suppressor was not attached. The spring component of the piston assembly is compressed during this motion, and stores enough energy to return the suppressor to its proper place for the next shot.

2.5 Safety Features

Using the suppressor on the MK 23 MOD 0 Pistol does not change any of the Safety Features as listed in Par. 2.5 of the pistol's Operator's Manual (SW370-BD-OPI-010).

SECTION III - OPERATION UNDER NORMAL CONDITIONS

NOTE

Refer to CHAPTER 2, SECTION III of the pistol Operator's Manual (SW370-BD-OPI-010 for pistol clearing, loading, and unloading procedures.

2.6 Clearing Procedures

A. Clear pistol of any ammunition.

B. With slide forward, unscrew suppressor.

C. Visually inspect bore of suppressor for any obstructions.

2.7 Readying the Suppressor for Use

With slide forward, hold pistol muzzle up by grasping the pistol slide firmly with one hand. Mount the rear end of the suppressor over the barrel threads with the other hand, and tighten firmly in a clockwise direction. Pistol may now be loaded and fired in its normal manner.

NOTE

The suppressor will perform its function better when used wet.

SECTION IV - OPERATION UNDER UNUSUAL CONDITIONS

NOTE

Unusual conditions are defined as any climatic condition requiring special maintenance of the suppressor. Perform the maintenance outlined for the climate that most applies to your operational area. Refer to paragraph 3.11 of this Manual for lubrication instructions.

2.8 Extreme Cold

A. When operating suppressor in extremely cold climates, clean and lubricate the suppressor at room temperature if possible.

B. Apply a light coat of LAW to the outside surfaces of the piston, indexing cap spring, and to the inside of the suppressor body which corresponds to the piston assembly.

C. To prevent freezing, keep the suppressor covered when moving from a warm to a cold area. This will allow gradual cooling.

D. Do not use water in the suppressor. Keep the suppressor dry.

E. Do not lay a hot or warm suppressor in snow or ice.

F. Always keep snow out of the suppressor's bore. If snow should get in the suppressor, clear the bore with a cleaning rod.

2.9 Hot, Wet Climates

A. Perform maintenance more frequently. Inspect and clean the close fitting surfaces of the knurled retaining nut, piston, and indexing cap spring for smooth operation more often.

B. Clean parts with CLP, wipe dry. Apply a medium covering of TW-25B grease or CLP to the close fitting surfaces of the piston, and indexing cap spring. Also, lightly lube the inside of the suppressor body which corresponds to the piston assembly.

NOTE

TW-25B is the preferred lubricant for the suppressor because it creates less smoke than CLP, especially if the suppressor is used wet.

C. Always keep mud out of the suppressor. If mud should get into the suppressor, clean the suppressor in water after clearing the bore with a cleaning rod.

2.10 Hot, Dry Climates

A. Dust and sand will get into the suppressor and may cause malfunctions and excessive wear on component contact surfaces during firing. Keep suppressor covered when possible.

B. Keep the threaded hole of the piston, and all exposed surfaces clean and dry. Use only a light lube of TW-25B to close fitting surface of the indexing cap spring.

2.11 Heavy Rain and Water Operations - All Climates

A. Perform maintenance in accordance with the appropriate climatic conditions.

B. TW-25B is the preferred lube, especially for wet environments.

SECTION V - INDEXING SUPPRESSOR TO SIGHTS

2.12 Initial Start Point. With the suppressor firmly tightened on the barrel, and the tabs of the indexing cap spring engaged in the suppressor body index notches, note the relationship of the Suppressor Orientation Mark and the Middle of the Suppressor Identification Text (as illustrated in Figure 4) with the pistol's front sight. This should "more or less" be your initial start point for checking the suppressor's point-of-impact.

NOTE

Be sure of your ammunition and pistol's point-of-impact, without suppressor attached, before indexing suppressor with live fire. Support the pistol firmly from your most stable shooting position.

2.13 Adjusting Initial Start Point

A. With the suppressor firmly tightened on the barrel, hold pistol muzzle up by grasping the suppressor with one hand, and loosening the knurled retaining nut approximately 3 full turns with the thumb and forefinger of the other hand. **Do not rotate the retaining nut off the suppressor body.**

B. Slide the thumb and forefinger off the retaining nut and firmly grasp the pistol's slide. The suppressor body should now move back and forth freely of the piston assembly approximately 1/8th inch (3 mm). The suppressor should also be able to rotate easily on the piston when it is held forward.

C. While pulling the suppressor forward, rotate the suppressor body as if tightening it to the barrel until the orientation mark is in its desired location, "more or less" on-line with the front sight, and pull suppressor rearward 1/8th inch (3 mm). You should feel the tabs of the piston assembly's indexing cap spring engaging the suppressor body index notches as you pull back and rotate slightly.

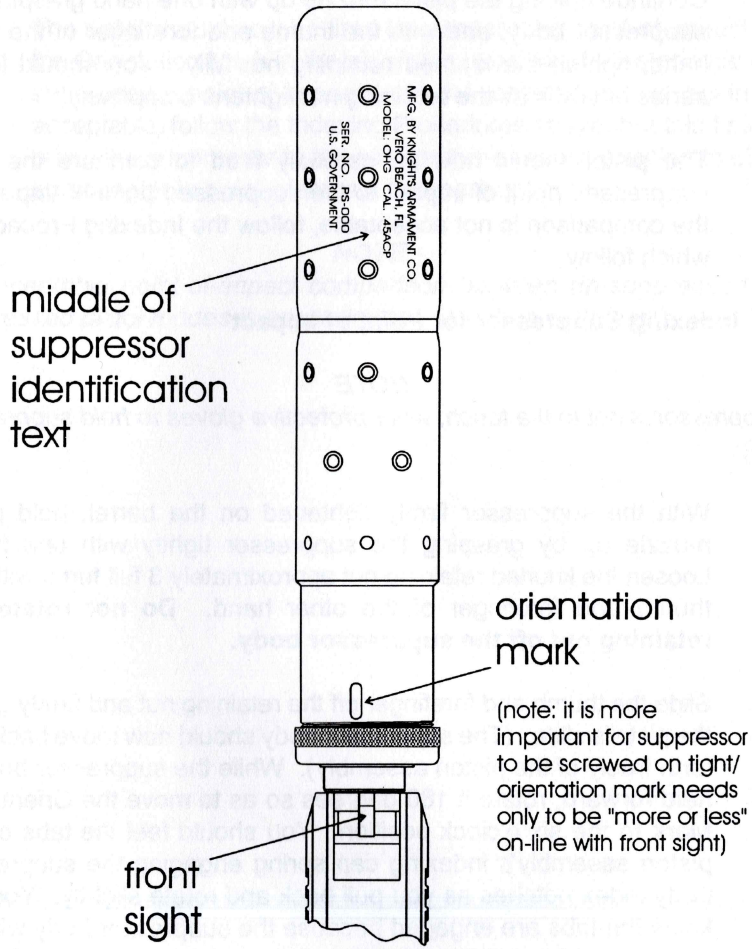


Figure 4 - Indexing Initial Start Point

You will know the tabs are engaged because the suppressor body will not rotate free of the piston when it is held rearward and the tabs are engaged.

D. Continue holding the pistol muzzle up with one hand grasping the suppressor body, and with the thumb and forefinger of the other hand, tighten the knurled retaining nut fully. You should feel a series of clicks as the retaining nut tightens completely.

E. The pistol should now be carefully fired to compare the non-suppressed point-of-impact to the suppressed point-of-impact. If the comparison is not acceptable, follow the Indexing Procedures which follow.

2.14 Indexing Suppressor for Point of Impact

NOTE

If suppressor is hot to the touch, wear protective gloves to hold suppressor tightly.

A. With the suppressor firmly tightened on the barrel, hold pistol muzzle up by grasping the suppressor tightly with one hand. Loosen the knurled retaining nut approximately 3 full turns with the thumb and forefinger of the other hand. **Do not rotate the retaining nut off the suppressor body.**

B. Slide the thumb and forefinger off the retaining nut and firmly grasp the pistol's slide. (The suppressor body should now move back and forth freely of the piston assembly). While the suppressor body is held forward, rotate it 180 degrees so as to move the Orientation Mark to the six o'clock position. You should feel the tabs of the piston assembly's indexing cap spring engaging the suppressor body index notches as you pull back and rotate slightly. You will know the tabs are engaged because the suppressor body will not rotate free of the piston when it is held rearward and the tabs are engaged.

C. Continue holding the pistol muzzle up with one hand grasping the suppressor body, and with the thumb and forefinger of the other hand, fully tighten the knurled retaining nut. You should feel a series of clicks as the retaining nut tightens completely.

NOTE

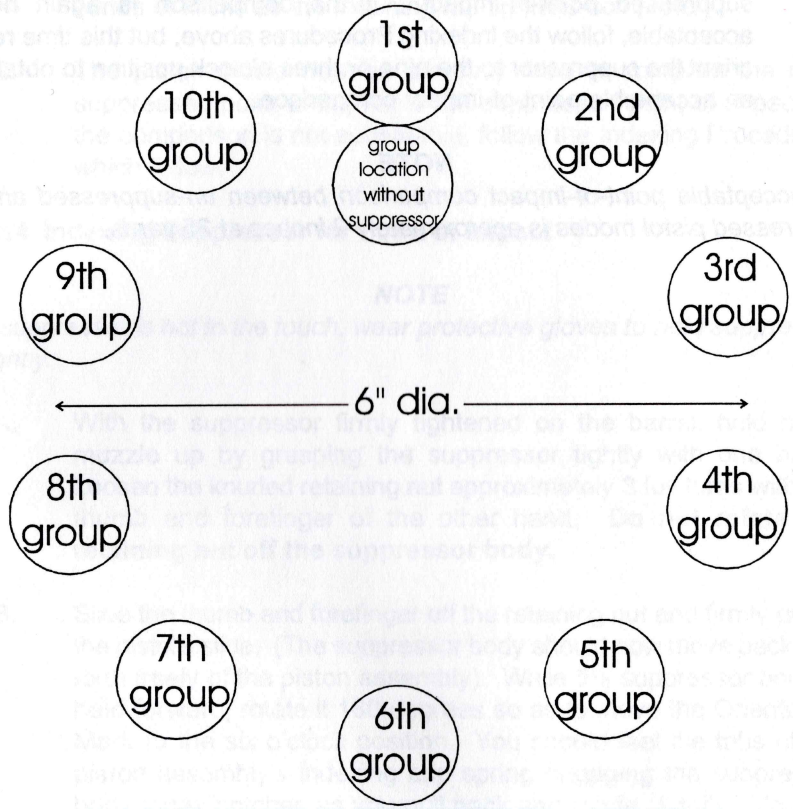
Feeling the clicks as the knurled retaining nut is tightened or loosened is important. If these clicks are not detectable, the retaining ring may loosen during recoil.

D. The pistol should now be fired to compare the point-of-impact with the Orientation Mark in the six o'clock position, to the original non-suppressed point-of-impact. If the comparison is again not acceptable, follow the Indexing Procedures above, but this time re-orient the suppressor to the nine or three o'clock position to obtain an acceptable point-of-impact comparison.

NOTE

An acceptable point-of-impact comparison between un-suppressed and suppressed pistol modes is approximately 2 inches at 25 yards.

1st group: suppressor is fully tight on barrel,
and orientation mark is more or less aligned with front sight



6th group: suppressor is fully tight on barrel,
and orientation mark is more or less in the six o'clock position

Figure 5 - Typical Indexing Point-of-Impact Shifts

SECTION VI - MALFUNCTIONS AND STOPPAGES

2.15 Immediate Action. If the pistol experiences malfunctions with the suppressor attached, follow Immediate Action for the pistol as outlined in paragraph 2.15 of the pistol Operator's Manual (SW370-BD-OPI-010 first. Immediate Action is the action performed immediately by the firer any time there is an unscheduled or unanticipated interruption of the pistol's cycle of operation.

NOTE

Immediate action should be practiced to the point that it occurs as a reflex action.

Suppressor induced malfunctions are most probably caused by:

A. Loosening of the suppressor on the barrel.

B. Loosening of the knurled retaining nut to a point where it strikes the end of the recoil guide rod during firing.

WARNING

During Immediate Action, make certain the pistol is pointed in a safe direction at all times.

Loose Suppressor - tighten suppressor on the barrel threads.

Loose Knurled Retaining Nut - hold suppressor firmly in one hand while keeping it pointed towards the target, with other hand, grasp knurled retaining ring and tighten.

NOTE

Be sure not to loosen suppressor from barrel while tightening knurled retaining ring.

2-16 Remedial Action. Remedial Action is the action performed to remedy the problem and place the suppressor back into operation after Immediate Action has been performed once and proves ineffective.

A. **Clear the pistol!**
B. Remove and replace suppressor with a spare if possible.
C. If suppressor may not be replaced, field strip suppressor and check for missing parts, proper assembly, and for any obstructions.

If suppressor continues to cause pistol malfunctions, return suppressor to armorer.

CHAPTER 3 - MAINTENANCE INSTRUCTIONS

SECTION I - TOOLS AND EQUIPMENT

3.1 Tools and Equipment Required. At a minimum, you will require the following materials to maintain the suppressor.

- Pistol cleaning rod assembly
- 18 mm round wire brush
- Nylon toothbrush
- Stainless steel toothbrush
- 1¼" (30 mm) round wire brush with handle
- Empty 35 mm film roll container
- Powder Solvent (Shooter's Choice or Hoppee's)
- .45 caliber cleaning patches
- Absorbent cotton rag
- .45 cal. bore brush
- Tweezers
- Small pocket knife blade

SECTION II - PMS CHECKS & MAINTENANCE PROCEDURES

3.2 General. This PMS section lists those required checks and services to be performed by personnel who operate the suppressor. This section includes the services required to prepare the suppressor for operation, to check the suppressor during operation, and to ensure proper function after maintenance.

Before performing any PMS procedures, ensure that the pistol log book has been updated with the **correct suppressed round count noted**, and any PMS procedures documented. If your suppressor fails to operate, refer to the Troubleshooting Table in Section III.

WARNING

Before starting an inspection procedure CLEAR THE PISTOL! Inspect the chamber to ensure that it is empty. Do not keep live ammunition near maintenance or work areas.

NOTE

Before starting any PMS procedure ensure that the pistol log book has been updated with the correct suppressed round count noted, and any PMS performed documented.

3.3 Disassembly (Field Stripping)

A. With slide forward, hold pistol muzzle up by grasping the pistol slide firmly with one hand. With the other hand, remove the suppressor by rotating it in a counter-clockwise direction. Continue rotating suppressor until it is free of the threaded barrel.

B. Place the pistol in your holster or out of the way.

NOTE

Note and remember the position of the Piston Flat in relation to the Orientation Mark engraved on the Suppressor Body. Maintaining this relationship during reassembly will maintain the established indexed point-of-impact.

C. Rotate the knurled retaining nut free of the suppressor body.

D. Pull the piston assembly free of the suppressor body.

NOTE

Routine Field Stripping is now complete. Continue with disassembly procedures only if detail disassembly is required.

NOTE

If piston assembly can not be removed easily, attach the field stripped pistol barrel to the piston and use the barrel's extra leverage to pull the piston assembly free. If possible, use a vice with padded jaws to secure the barrel. Soaking the suppressor overnight in about 2" (5 cm) of bore solvent may also help in removal. Difficult removal indicates a lack of routine cleaning and lubrication.

CAUTION

Do not fire suppressor with knurled retaining ring removed in an attempt to free the piston assembly, you may lose or damage the suppressor body.

3.4 Detailed Disassembly

A. Piston Assembly **(refer to Figure 8).**

TOOLS REQUIRED: Tweezers
Small pocket knife blade

PART NUMBER	NOMENCLATURE		REMARKS
• (7)	Inner "O" Ring	1.	Insert tweezers into rear of piston (6), and wedge one end under the "o" ring (7).
		2.	Grasp and remove "o" ring (7) with tweezers, by lifting and pulling.(See Figure 7 for detail of inner "o" ring recess.)

PART NUMBER	NOMENCLATURE		REMARKS
• (3)	Retaining Ring	1.	Place piston (6) down on a hard surface (workbench) with the cap spring (4) pointing up. (See NOTE at the beginning of paragraph 3.5)
• (4)	Cap Spring	2.	Push down on cap spring (4), to depress inner coil spring (5) slightly and reduce pressure on retaining ring (3) from below.
• (5)	Inner Coil Spring	3.	Wedge the tip of a small pen knife under the top coil end of the retaining ring (3), and by using a twisting motion, pry the coil end from its groove in the piston (6).
		4.	Carefully work the knife blade between the first and second coils while allowing the retaining ring (3) to "snake" from the groove and up/off of the piston body.
		5.	As the bottom end of the retaining ring (3) clears the groove, relieve downward pressure on the cap spring (4) and lift it from piston (6).
		6.	Lift inner coil spring (5) from piston.

DISASSEMBLY OF THE PISTON ASSEMBLY IS NOW COMPLETE.

DISASSEMBLY OF THE SUPPRESSOR IS NOW COMPLETE.

3.5 Reassembly—Detailed

NOTE

It is a good idea to wear a leather glove when depressing the cap spring and using a small pen knife blade to disengage/remove the retaining ring. The leather will protect your fingers from the cap spring tabs as you push down and hold against the stiff inner coil spring.

General

- Unless otherwise directed, reassembly of parts and major groups is to be carried out in reverse order of disassembly.
- Read through the entire disassembly and reassembly procedure before attempting it.
- After assembling a part or series of parts, check for the appropriate function of that feature, such as:
  - Free movement
  - No movement
  - Presence of spring tension
  - Proper positioning or alignment
  - All parts are present, e.g., "o" rings
  - Smooth engagement between threaded parts
- As you assemble and disassemble the weapon, always look closely at each part or component for any signs of damage or incipient failure, such as:
  - Excessive wear
  - Cracks
  - Burrs, dents, bends
  - Absence of protective finish
- Always conduct a **Hand Function Check** (as described in paragraph 3.7 of this Manual), and test fire the suppressor, if possible, after reassembly.

Reassembly—Detailed (Part Numbers refer to Figure 8) - continued

ITEM: Piston Assembly

TOOLS REQUIRED: Tweezers
Small Pen Knife

PART NUMBER	NOMENCLATURE		REMARKS
• (7)	Inner "O" Ring	1.	Place the ring (7) into the recess area of the piston (6) with the tweezers.
		2.	Using the tweezers, gently guide the "o" ring fully into its recess. (See Figure 7 for detail of inner "o" ring recess.)
• (3)	Retaining Ring	1.	Place piston (6) down on a hard surface with the threaded end of the bore pointing up.
• (4)	Cap Spring		
• (5)	Inner Coil Spring	2.	Place inner coil spring (5) over piston (6).
		3.	Place cap spring (4) over inner coil spring (5), align the cap spring's bore flat with that of the piston's body, and push down firmly against the spring resistance of the inner coil spring (5). (See NOTE at the beginning of paragraph 3.5)
		4.	Push down on cap spring (4), until retaining ring groove is exposed.
		5.	Place retaining ring (3) on piston.

PART NUMBER	NOMENCLATURE		REMARKS
• (3)	Retaining Ring	6.	Wedge the tip of a small pen knife blade between the bottom coil end of the retaining ring (3), and by using the blade to push the coil end down, slide the end down the piston so that it enters the piston groove. (At this point downward pressure on the cap spring (4) may be relaxed - the end of the coil should temporarily hold the cap spring in place. This allows you to change your grip.)
• (4)	Cap Spring		
• (5)	Inner Coil Spring		
		7.	Carefully work the knife blade through the first and second coils while using downward pressure from the knife blade to "snake" the retaining ring (3) down and fully into its groove.

DETAILED REASSEMBLY OF THE PISTON ASSEMBLY IS NOW COMPLETE.

OPERATOR SHOULD NOW COMPLETELY REASSEMBLE SUPPRESSOR AS IN PARAGRAPH 3.6 (From Field Strip).

3.6 Reassembly—From Field Strip

A. Insert piston assembly while maintaining the relationship noted earlier between the position of the Piston Flat and the Orientation Mark engraved on the Suppressor Body. Push in fully, ensuring the indexing cap spring tabs fully seat in their corresponding suppressor body index notches.

B. Replace knurled retaining ring and tighten firmly. Note a series of clicks as the ring completes its final rotation. Double check the desired relationship of the piston assembly and suppressor body for indexed point-of-impact.

NOTE

Operator reassembly of the suppressor is now complete, but not finished without a hand function check as described in paragraph 3.7 of this Manual.

3.7 Hand Function Check. With suppressor fully hand tightened on the pistol barrel, attempt to pull suppressor body forward slightly. You should be able to note how the suppressor body moves forward slightly in relation to the piston, but only against the strong action of the piston assembly spring.

3.8 Function Firing. If any corrective action was accomplished, the suppressor shall be function fired with a full magazine prior to being cleaned and returned to service.

3.9 Cleaning— performed after each firing (during continuous firing, suppressor should be cleaned every 500 rounds), or every 90-days, or after any exposure to harsh environmental conditions such as salt, fog, sand, dust, mud, water, etc.

Normal Cleaning -

1. **Clear the pistol!**
2. Remove suppressor.
3. Field strip suppressor.

A. **Clean Piston Assembly -**

1) Place piston assembly (piston head first) in empty 35 mm film container or other similar small container. Pour good quality bore solvent (such as Shooter's Choice or Hoppee's) through the threaded hole until the container is nearly full. **Place this where it can not be tipped over and spilled, and/or the piston assembly roll off the work surface and become dented by falling on a hard surface.**

CAUTION

Do not drop or otherwise allow the piston assembly to become dented or deformed. It is designed to fit very precisely into the bore of the suppressor body in order to maximize the suppressor's performance. Do not use abrasives, sand paper, electric tools with wire wheels, or cutting tools on its "baby smooth" suppressor bore surface.

2) When the piston has soaked for awhile, remove it from the solvent and brush the outside surfaces and springs clean with the stainless steel toothbrush. The large diameter smooth bore at the piston head should be cleaned with a hand held 18 mm round wire brush.

3) Clean the internal threads of the piston assembly with the small end of the nylon toothbrush, **being careful not to dislodge or remove the inner "o" ring seal.**

4) Rinse piston assembly in clean solvent and wipe dry. In particular, dry the inner "o" ring. The "o" ring **should not** be subsequently lubed.

B. **Clean Suppressor Body -**

1) Using the stainless steel toothbrush and a good quality bore solvent (such as Shooter's Choice or Hoppee's) thoroughly scrub the large diameter inside bore of the suppressor body that normally contains the piston assembly by hand. If possible, try and prevent solvent from running down into the welded-in baffle area by keeping the muzzle pointed up or horizontal.

2) **The bottom inside corner of this area is the most critical area to keep free of carbon build-up and firing residue**. A large diameter (30mm) round wire brush is provided to clean this area, AFTER THE WIRE TOOTHBRUSH HAS CLEANED WHAT IT CAN REACH FIRST, use the round 30mm wire brush to clean the bottom inside corner by rotating it clockwise. **Do not push this brush into the baffles because the brush's end bristles will bend and quickly become ineffective it cleaning the inside corner.** Do not use abrasives, sand paper,

electric tools with wire wheels, or cutting tools — you will degrade the "baby smooth" finish and close fit between the inside of the suppressor bore and the indexing cap spring.

3) Wipe suppressor dry with a rag when clean.

4) Assemble a dry .45 caliber bore brush to the pistol's bore rod and push it completely through the bore area of the forward baffles several times. Then wipe this area dry with bore cleaning patches.

5) Clean the tabs and threaded areas of the suppressor body with the nylon toothbrush and solvent. Wipe dry with a rag when clean.

NOTE

If solvent or other material which may cause smoke when the suppressor is fired has entered the baffle area, rinse the clean suppressor body in warm soapy water and rinse thoroughly in fresh water. Shake excess water from suppressor body.

CAUTION

Do not drop or otherwise allow the disassembled suppressor body to become dented or deformed, especially in the index notch area. These notches are designed to fit very precisely with the piston assembly in order to maximize the suppressor's performance.

c. **Clean Knurled Retaining Ring Body -**

1) Using the nylon toothbrush and a good quality bore solvent (such as Shooter's Choice or Hoppee's) thoroughly scrub the retaining ring surfaces, particularly the threaded area. Wipe dry with a rag when clean.

3.10 Inspection

During and after cleaning the operator should inspect the suppressor and its components for any irregularities that may cause problems during operation. If any potential deficiencies are noted, they should be corrected immediately and/or brought to the attention of the unit armorer.

A. Visually inspect suppressor and its components for:

1. Damaged or missing parts (e.g., inner "o" ring of piston assembly)
2. Improper assembly or function
3. Absence of free movement (e.g., piston within piston assembly)
4. Absence of spring tension (e.g., piston assembly)
5. Uncustomary looseness
6. Parts exhibiting signs of cracks, burrs, dents, or obvious signs of damage, stress, incipient failure.

NOTE

Pay particular attention to signs of cracking around the indexing cap spring body and its numerous slots and relief cuts. Note also that the cap spring body and its corresponding "bore" surface within the suppressor body are "baby smooth".

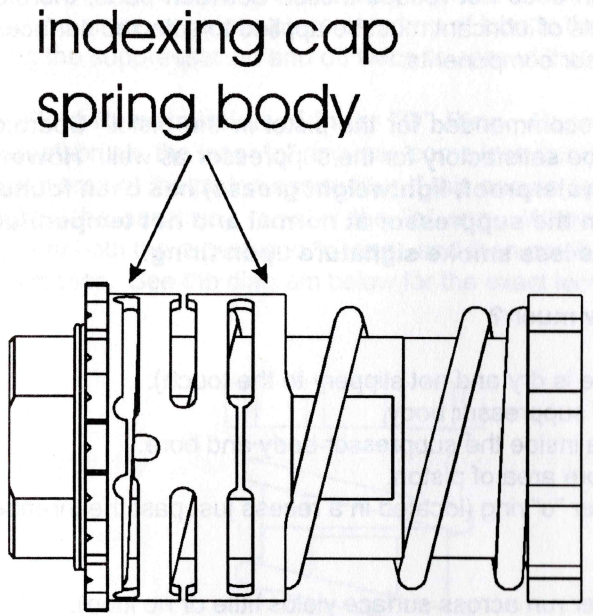


Figure 6 - Indexing Cap Spring Body

7. Presence of clicks as the knurled retaining nut rotates against the rear of the indexing cap spring.
8. General overall cleanliness.
9. Presence of proper lubrication (do not lube inner "o" ring of piston assembly).
10. Presence of corrosion or degradation of surface finish.

3.11 Lubrication

The base materials for the suppressor and its components are manufactured from corrosive resistant steels (commonly referred to as stainless steel). Where appropriate, their surfaces have a special surface treatment that will additionally resist corrosion from exposure to salt water and other forms of moisture. However, this surface finish does not reduce friction between parts, therefore, small amounts of lubricant must be applied to selected surfaces of the suppressor components.

Lubricants recommended for the pistol in the pistol Operator's Manual will be satisfactory for the suppressor as well. **However, TW-25B (a waterproof, lightweight grease) has been found to work best in the suppressor at normal and hot temperatures and produce less smoke signature upon firing**.

A. **Where and how much?**

No Lube - (surface is dry and not slippery to the touch):

- Outside of suppressor body.
- Baffle area inside the suppressor body and bore.
- Smooth bore area of piston.
- Piston's inner "o" ring (located in a recess just past the threaded area).

Light Lube - (finger run across surface yields little or no lube):

- Knurled retaining ring.
- Threaded area of piston bore.
- Piston head.

Medium Lube - (finger run across surface yields some lube, but lube does not run down surface when held in vertical position).

- Close fitting surfaces of the piston, and indexing cap spring.
- Inner coil spring.
- Inside suppressor body, but only the smooth, large diameter area which corresponds to the piston assembly.

Heavy Lube - (lube runs down surface when held in a vertical position)

NO HEAVY LUBE IS REQUIRED ON THE SUPPRESSOR.

B. Re-application. Reapply lubricant periodically during firing as it burns off from the heat of firing. Suppressors/suppressed weapons generate more smoke and noxious gases, especially when over lubricated, so go easy with the lube. **Suppressed weapon firing also causes the weapon and magazine to become dirtier faster, so more frequent cleaning may be required.** Application of lubricant to the close fitting surfaces of the piston, inner coil spring, and indexing cap spring works best using a shaving brush or soft nylon tooth brush. An alternative method of lubing the inner threaded area of the piston bore is to place one drop of lube to the barrel threads and rotating the suppressor on and off twice to spread it evenly.

3.12 Field Reinstallation of Inner "O" Ring. During cleaning with the nylon toothbrush, the inner "o" ring may come lose from its recess within the threaded area of the piston assembly. If this occurs and an armorer is not available, the user may reinstall the "o" ring. When required, the user should dry both the recess and "o" ring, and then carefully push the "o" ring into its recess. See the diagram below for the exact location of the "o" ring:

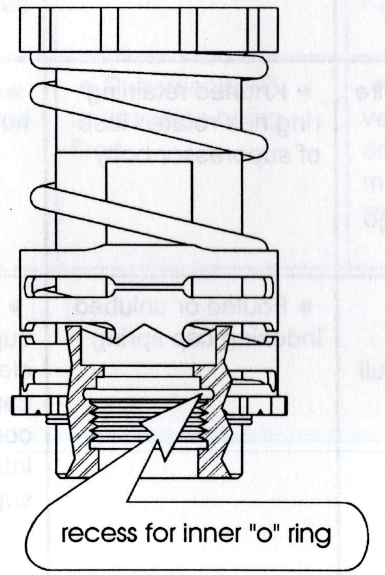


Figure 7 - Inner "O" Ring Recess

SECTION III - TROUBLESHOOTING PROCEDURES

3.13 Troubleshooting Procedures - Suppressor

PROBLEM	SYMPTOM/CAUSE	REMEDY
1. Suppressor is difficult to screw on to barrel	• Dirty pistol barrel or suppressor piston threads • Damaged pistol barrel threads • Damaged piston assembly threads	• Clean threads with nylon tooth brush • Return pistol to armorer for repair • Return suppressor to armorer for repair
2. Suppressor does not pass "After Mounting System Check" (Par. 2.3.C)	• Fouled piston assembly	• Field strip suppressor and clean/lube piston assembly
3. Pistol does not fire (during the locking step, pistol slide requires manual assistance to fully go into battery)	• Knurled retaining ring has rotated lose of suppressor body	• Tighten retaining nut fully
4. During index firing, suppressor body is difficult to pull from engagement with indexing cap spring and rotate to new indexed positions	• Fouled or unlubed indexing cap spring	• Field strip suppressor and clean/lube indexing cap spring and corresponding interior surface of suppressor body

PROBLEM	SYMPTOM/CAUSE	REMEDY
5. When shooting with the suppressor, point-of-impact shift is unacceptable.	• During reassembly from field strip, the indexed relationship between the Orientation Mark and the Piston Flat was not reestablished	• If relationship is remembered, reestablish and confirm. If not, re-index suppressor and note relationship for future reference
6. Suppressor rotates lose during firing	• Oily inner "o" ring • Missing "o" ring	• Wipe the end of the barrel and the "o" ring dry, if looseness reoccurs, have "o" ring replaced • Return suppressor to armorer for repair
7. Muzzle report is louder than expected with suppressor in place	• Supersonic +P ammunition being fired	• Switch to standard velocity M1911 Ball ammunition for the most quiet muzzle report

3.14 Parts Listing (Suppressor Assembly Part Number: 7022409)

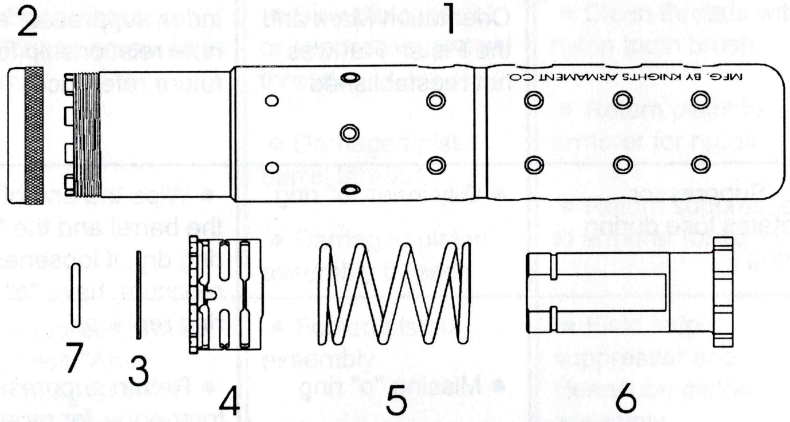


Figure 8 - Exploded Parts Diagram

Parts Listing for SOF Offensive Handgun Suppressor

Position Number	Item Description	Part Number
1	body core assembly	7022402
2	retaining nut	7022408
3	ring, retaining	MA4016-21 (AMS-5866)
4	cap spring	7022403
5	inner coil spring	7022404
6	piston	7022405
7	inner "o" ring	M25988/3-015 (MIL-R-25988/3, Class 1, Grade 60 Compound)

CHAPTER 4 - AMMUNITION

4.1 Selection

WARNING
Fire only Caliber .45 ACP (Automatic Colt Pistol) ammunition through the Suppressor that is authorized for use by your command.

The Suppressor was designed to operate best with one of these approved types of .45 ACP caliber ammunition:

A. M1911 (standard velocity) 230 grain[1] Ball (NALC A475) ammunition.

B. Commercially manufactured 185 grain +P (high velocity[2]) Jacketed Hollow Point (JHP) ammunition.

DO NOT USE -

- Reloaded, or military surplus (foreign or outdated) ammunition.
- Ammunition loaded in aluminum cartridge cases.
- Dirty or corroded ammunition.
- Ammunition assembled with corrosive primer and/or gun powder.
- Ammunition assembled with the bullet pushed into the cartridge case, i.e., past where the bullet is normally crimped.

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[1]"Grain" is a very small unit of weight. For example, it requires 7,000 grains to equal one pound.

[2]"High velocity" in this case also means supersonic, or simply more than 1,000 feet (305 meters) per second.

- Ammunition exposed to contaminants, e.g., oil, grease, water, or direct sunlight. When operationally required however, remove contaminants if possible before use and cool down ammunition exposed to direct sunlight or heat.

WARNING
Exposing ammunition to sources of heat could raise the chamber pressure of the cartridge above safe limits

For the best performance in terms of sound suppression when utilizing this suppressor on the SOF Offensive Handgun, it is recommended that only the M1911 Ball cartridge be used. Its muzzle velocity of 886 fps (270 m/s) does not exceed the speed of sound (1000 fps). This cartridge may commonly be referred to as a "subsonic" round.

Use of the +P cartridges through the suppressor is safe, but they will produce a loud supersonic "crack" as the 185 grain +P round produces a muzzle velocity of approximately 1,160 fps (354 m/s). This cartridge may be commonly referred to as a "supersonic" round.