

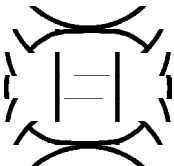
TM-M4-96D

OPERATION AND MAINTENANCE OF SOUND SUPPRESSOR MODEL M4-96D

INCLUDING ILLUSTRATED PARTS
AND SPECIAL TOOLS LIST

**Before using this suppressor,
be certain you have read and
understand this manual.**

Manufactured by



GEMTECH
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Boise, Idaho 83703

ISSUED: March 9, 2001

⚡ ⚡ ⚡ ⚡ ⚡ **WARNING** ⚡ ⚡ ⚡ ⚡ ⚡

⚡ **Because sound suppressed weapons make less noise than non-suppressed weapons, it is easy to forget that they are still firearms. It is of vital importance to remember that a sound suppressed firearm is just as dangerous as a non-suppressed one, and the same safe handling requirements apply.**

TM-M4-96D

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SOUND SUPPRESSOR MODEL
M4-96D™ (5.56mm)

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WARNING

Failure to follow installation and maintenance instructions detailed in this manual can result in potential for serious injury to the user and damage to the weapon. Firearm sound suppressors are user attached firearm muzzle devices, and as such are subject to improper attachment unless the proper procedures outlined in this manual are followed.

MANUFACTURER'S DISCLAIMER

The manufacturer is not responsible for improper usage of this product. This product is potentially dangerous, and as such it is the user's responsibility to understand and implement its proper use. If you do not understand the instructions in this manual, please contact the manufacturer for further clarification.

SAFETY NOTES

Always handle weapons in a safe manner and assume they are loaded until they have been cleared.

User installation or removal of the sound suppressor must be accomplished in accordance with the instructions contained in this book.

Any installation, or removal of the Bi-Lock Compensator mounting system must be accomplished by a qualified armorer in accordance with the instructions contained in this book.

Serious injury to the user may result from an improperly installed Bi-Lock Compensator mount and/or suppressor.

DANGER

Before performing any maintenance operation, always remove the magazine from the firearm, open the action, and visually ascertain that the chamber is empty and the weapon unloaded. Failure to do so can result in potential for serious injury to the user and others in the vicinity.

CHAPTER 1: INTRODUCTION

I GENERAL

- 1.1 Scope. This manual describes the operation, installation and maintenance of the M4-96D Sound Suppressor by the operator and qualified armorer personnel.

II DESCRIPTION AND DATA

- 1.2 Equipment Description: The M4-96D sound suppressor is a precision firearms sound suppressor designed to mount on a proprietary Bi-Lock Compensator on the M4A1 Carbine (caliber 5.56x45mm). The sound suppressor will reduce sound and flash signatures as well as recoil. Featuring a patented Bi-Lock quick detaching mounting system, the suppressor can be installed in only one rotational position and installed or removed in approximately 2-3 seconds. Through the use of a proprietary Bi-Lock Compensator mounted on the weapon, the M4-96D suppressor can be quickly interchanged between a variety of weapons chambered for the 5.56x45mm cartridge.
- 1.3 Compatibility with existing accessories: The proprietary Bi-Lock Compensator permits attachment of the standard blank firing device and the M7 bayonet. The Bi-Lock Compensator and sound suppressor do not interfere with mounting of or use of the M203 grenade launcher or the M4 rail system.

1.4 PHYSICAL SPECIFICATIONS

Length	7.77 (max) in.
Diameter	1.5 in
Weight	24.8 oz
Sound Reduction	32 dB
Operating Temperature Range	-10/+170° F
Finish	Black Oxide Coating
Material	Series 300 Stainless steel

1.5 Items Comprising a System (See also Annex)

1.5.1 Standard Equipment

Quan. Description

1	Sound Suppressor, M4-96D
1	Bi-Lock Compensator, M4-96D-1, caged type
1	Compensating Spacer, M4-W1, 0.700 in OD
1	Operation Manual TM-M4

1.5.2 Optional Equipment

1	Bi-Lock Compensator, M4-96D-2, prong type
---	---

1.6 Consumable Items:

QUANTITY	ITEM
2-3 drops	Flexbar Rocksett ceramic adhesive
2-3 drops	Militec-1 Metal Conditioner 2-3 drops
1 cc	Lubriplate Super-Lube multipurpose synthetic-based lubricant with Teflon (cat. no. 82325)

1.7 Location and Description of Components

1.7.1 Bi-Lock Compensator: The Bi-Lock Compensator (either M4-96D-1 or M4-96D-2) is attached to the existing muzzle threads of the rifle in place of the original factory Bi-Lock Compensator. It functions as a weapon mounting device for the M4-96D sound suppressor and as a flash suppression device when the sound suppressor is not in use. Normally threaded for the M16 series weapons, it can be provided for mounting on any standard muzzle thread.

1.7.2 Compensating Spacer: The M4-W1 washer is located on the threaded barrel prior to installation of the Bi-Lock Compensator. It is to function as a compression washer and to provide a means of orienting the Bi-Lock Compensator properly.

1.7.3 Sound Suppressor: This is a device for significantly lowering the sound and flash signatures of any 5.56x45 mm firearm. Capable of handling fully automatic fire, it is specifically designed for use with the M4A1 Carbine but can be mounted on any rifle through the use of the M4-96D-1 (or -2) Bi-Lock Compensator. It is designed for one-handed mounting or dismounting on the weapon in less than 2 seconds without the use of tools.

CHAPTER 2: INSTALLATION

SECTION I: GENERAL

- 2-1 Unpacking the Suppressor. Upon receiving the suppressor kit, inventory the contents of the kit in accordance with the packing list enclosed. The packing list should supersede this manual because of the possibility of special configurations ordered by the user.
- 2.2 Tools required for installation. (See also Annex C)
1. Wrench, combination, NSN 4933-00-070-9152
 2. Wrench, torque limiting, 0-120 ft/lbs, 1/2 in drive.
- 2.3 Torque Values: Bi-Lock Compensator 50 ft/lbs

SECTION II: WEAPONS INSTALLATION INSTRUCTIONS

- 2.4 The mounting of the M4-96D-1 (or M4-96D-2) Bi-Lock Compensator on the weapon is to be performed only by a qualified armorer using the tools prescribed in this chapter. **This is a field expedient method. The preferred method is outlined in Gemtech publication TM-BILOCK. (ARMORER LEVEL)**

CAUTION

UNLOAD AND CLEAR ALL WEAPONS BEFORE BEGINNING THIS PROCEDURE! SECURE WEAPON IN A HOLDING FIXTURE. DO NOT DAMAGE THE STOCK.

- 2.5 Removal of existing Compensator. Remove existing Compensator (flash hider) from the muzzle of the weapon using the Combination Wrench (NSN 4933-00-070-9152). Remove and discard the existing compensating spacer.
- 2.6 Preparation of the barrel. The barrel must be cleaned of all dirt, grease, rust and other foreign matter using an approved solvent such as MEK (methyl ethyl ketone). Rust, if any, must be removed with a wire brush or steel wool. Do not let any solvents contact the stock or leak between the stock and the action.
- 2.7 Installation of the Bi-Lock Compensator. The desired orientation of the Bi-Lock Compensator is with the suppressor attachment lugs horizontal and the non-slotted portion of the Bi-Lock Compensator down. In-

stallation is to be performed in the following steps:

- 2.7.1 Heat the M4-W1 compensating spacer in a propane torch to delaminate the sections. Place the thickest portion of the M4-W1 compensating spacer on the barrel.
- 2.7.2 The Bi-Lock Compensator is screwed hand tight onto the muzzle threads and lightly snugged with the Combination Wrench. Note the relative position of the blank section of the bird cage and the attachment lugs.
- 2.7.3 Thin flakes of the M4-W1 compensating spacer are added as needed to obtain the correct thickness. The thick flake is the rearward most part..
- 2.7.4 The M4-W1 compensating spacer is replaced on the barrel and the M4-96D-1 Bi-Lock Compensator is reinstalled as described in *paragraph 2.7.2 above*.
- 2.7.5 This procedure in paragraphs 2.7.2 through 2.7.4. is repeated until the Bi-Lock Compensator can be torqued to the correct location.
- 2.7.6 The Bi-Lock Compensator is then removed, thoroughly degreased with MEK, and 2-3 drops of Flexbar Rocksett™ ceramic thread adhesive is placed on the treads. The Bi-Lock Compensator is then torqued into its final orientation utilizing a torque wrench and the Combination Wrench (NSN: 4933-00-070-9152). The final torque must not be less than 35 ft/lbs nor more than 45 ft/lbs.
- 2.7.7 Alignment is checked utilizing a mounted M4-96D suppressor and an alignment gauge.

SECTION III: MOUNTING and DISMOUNTING THE M4-96D SOUND SUPPRESSOR

2.8 SAFETY WARNING:

CAUTION

Before initiating Mount/Dismount Procedures, be absolutely certain that the weapon is unloaded, the magazine removed, and the bolt locked in the rear position.

- 2.8.1 Mounting: To mount and dismount the M4-96D sound suppressor on the Bi-Lock Compensator, follow the following steps, detailed in the Fig. 2.1, P. 9:

- 2.8.1.1 Place the base of the suppressor onto the Bi-Lock Compensator.
- 2.8.1.2 Rotate the suppressor until the lugs on the Bi-Lock Compensator enter the base of the suppressor. This can occur in only one position.

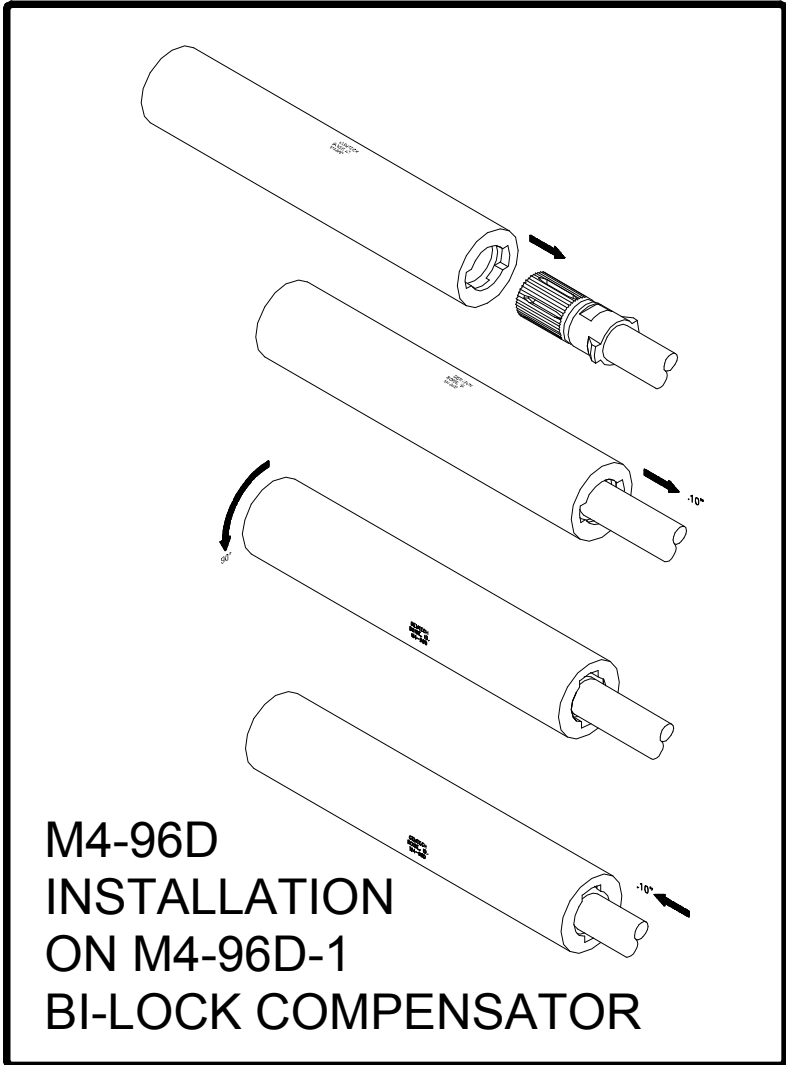


Fig. 2.1

- 2.8.1.3 Press the suppressor onto the Bi-Lock Compensator against spring tension approximately 0.2 inch until the suppressor can be rotated on the Bi-Lock Compensator.
 - 2.8.1.4 Rotate the suppressor 90 degrees counter-clockwise (with reference to the operator's viewpoint) until the Bi-Lock Compensator lugs engage in recesses in suppressor mount. Internal stops prevent over-rotation. The suppressor will snap forward approximately 0.1 inch when engaged. Gently attempt to twist the suppressor to be certain it is locked in position.
- 2.8.2 Dismounting: Dismounting is the reverse of mounting.
- 2.8.2.1 The suppressor will become dangerously hot with usage. If the suppressor must be dismounted when hot, a protective glove, such as Nomex, must be worn.
 - 2.8.2.2 Move the suppressor rearward on the Bi-Lock Compensator approximately 0.1 inch until it can be rotated.
 - 2.8.2.3 Rotate the suppressor approximately 90 degrees clockwise (with respect to the operator's viewpoint).
 - 2.8.2.4 Pull the suppressor forward clear of the weapon. Carbon buildup on the Bi-Lock Compensator can be broken loose by twisting the suppressor during removal after the mount has cleared the Bi-Lock Compensator lugs.

SECTION IV: SUPPRESSOR OPERATION

- 2.9 Operating Temperatures. During use, the M4-96D suppressor absorbs large quantities of heat from the burning propellant gases. This heat is dissipated by radiation, convection, and conduction. The heat buildup is particularly noticeable during sustained fully automatic fire, where the temperature of the suppressor can easily exceed 900°F in a short period of time. The rate of heat build-up approximates 7.5°F per round at an average rate of 2 rds/sec. The rate of cooling in the atmosphere increases slightly as the temperature differential between the suppressor and the ambient air increases. The elevated temperatures can pose a hazard to personnel and materials that may contact the suppressor when hot. Although **not** recommended, the suppressor can be cooled rapidly by immersion in a nonflammable liquid, such as water.
- 2.10 Operation under unusual conditions. The only modification to operation of the suppressor shall be to wipe mud, sand and dust off the mating parts of the Bi-Lock Compensator and suppressor mount before mounting during extreme conditions.

CHAPTER 3: MAINTENANCE INSTRUCTIONS

I PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

- 3.1 Purpose of PMCS: PMCS is performed daily while the suppressor is in use. The procedures are a systematic inspection of the system that will enable you to spot defects that might cause it to fail during a mission.
- 3.2 Frequency of performing PMCS: The frequency of performing PMCS is as follows:
 - A) Daily in use
 - B) Weekly in standby condition
 - C) Immediately after any severe shock to the weapon action.
 - D) After any maintenance to the weapon or suppressor.
- 3.3 Performance of PMCS: PMCS shall be performed in the following sequence:
 - 3.3.1 Bi-Lock Compensator: Check for cleanliness, including carbon build-up. Clean and lubricate with MILITEC-1 Metal Conditioner as necessary. See ANNEX B.
 - 3.3.2 Suppressor:
 - 3.3.2.1 Visually inspect the suppressor bore for foreign objects, including sand and mud. Rinse sand or mud out with water, draining to the rear. **Do not use soaps.** Follow any water immersion by immersion in Diesel fuel, WD-40, or other water absorbing organic solvent followed by draining. Lightly finger coat the interior of the movable sleeve in the rear of the suppressor with MILITEC-1 Metal Conditioner. Carbon buildup in the movable sleeve may be scraped with a scraper and polished with red Scotchbrite.
 - 3.3.2.2 No other cleaning of the suppressor is necessary or desirable. If solvent immersion is required, only CLP Solvent, WD-40, Diesel fuel, or a mixture of 1:3 mineral spirits and Automatic Transmission Fluid are authorized
 - 3.3.2.3 Inspect the exterior for dents and other evidence of external damage. Replace suppressor if damaged.

II TROUBLESHOOTING

3.4 General troubleshooting information

3.4.1 This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the suppressor. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections that will help to determine probable causes and corrective action to take. Perform the tests/inspections and corrective actions in the order listed.

3.4.2 This manual cannot list all possible malfunctions that may occur, or all possible tests or inspections and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, the suppressor should be serviced at the DEPOT level.

3.5 TROUBLESHOOTING PROCEDURES

3.5.1 Bi-Lock Compensator loose or mis-oriented

Re-install with new compensating spacer M4-W1 (ARMORER)

3.5.2 Bi-Lock Compensator damaged due to external abuse.

Replace Bi-Lock Compensator (ARMORER)

3.5.3 Suppressor will not fit on Bi-Lock Compensator

Clean Bi-Lock Compensator and mating surface inside suppressor mount, lubricate with MILITEC-1. Light oil or motor oil can be used if MILITEC-1 is not available. (USER)

3.5.4 Failure to lock in position: Suppressor mount spring will not maintain tension to keep suppressor firmly on the Bi-Lock Compensator.

See Annex D. Disassemble and clean rear mount, lubricate with high temperature bearing grease (LUBRIPLATE 82325), and replace seals as necessary. (DEPOT)

3.5.5 Suppressor housing dented or damaged

Replace suppressor

III MAINTENANCE PROCEDURES

3.6 Scope of operator maintenance. Operator maintenance consists of external inspection of components of the suppressor for serviceability and

cleaning. Maintenance instructions covered elsewhere in this manual (e.g., PMCS, troubleshooting) are not repeated in this section. Specifically refer to paragraph 3.3.2 and its subparagraphs.

- 3.7 Scope of Armorer's Maintenance: Armorer's maintenance shall consist of the installation, adjusting, and replacement of the Bi-Lock Compensator.
- 3.8 Scope of Depot Maintenance: Depot maintenance shall include disassembly of the suppressor rear mount for lubrication or replacement of parts authorized in the maintenance allocation chart in Annex D.
- 3.9 Cleaning and lubrication. The operator is responsible for keeping the suppressor and Bi-Lock Compensator clean and serviceable. Consumable cleaning and lubricating items are listed in ANNEX B. Cleaning and lubrication procedures are outlined earlier in this chapter (PCMS and Troubleshooting) and will not be repeated.
- 3.10 Inspection. Inspection procedures are considered a part of preventive maintenance (PCMS) and trouble-shooting.
- 3.11 **Destruction and disposal:** Destruction of the M4-96D suppressor may be necessary to prevent its capture, utilization, or examination by hostile personnel. Techniques of disposal and destruction vary with circumstances, time available, and resources. Total destruction is preferable, as it prevents disclosure of the technology to the enemy.
 - 3.11.1 Disposal at sea. The suppressor will rapidly sink to the depths of the sea, making recovery impractical.
 - 3.11.2 Total destruction on land. This can be accomplished through the use of thermite grenades or high explosives. If time permits, the suppressor can be sawed into several pieces and the pieces scattered and/or buried over a wide area.
 - 3.11.3 Partial destruction on land. The suppressor can be made unusable by means of small arms fire.

ANNEX A: WARRANTY**WARRANTY STATEMENT**

The Magnuson-Moss Act (Public Law 93-637) does not require any seller or manufacturer of a consumer product to give a written warranty. It does provide that if a written warranty is given, it must be designated as "full" or as "limited" and sets minimum standards for a "full" warranty.

GEMTECH has elected not to provide any written warranty, either "limited" or "full," rather than to attempt to comply with the provisions of the Magnuson-Moss Act and the regulations issued thereunder.

There are certain implied warranties under state law with respect to sales of consumer goods. As the extent and interpretation of these implied warranties varies from state to state, you should refer to your state statutes.

GEMTECH certifies that all sound suppressors manufactured by them are free of defects in materials or workmanship, and that they meet manufacturing specifications at the time of manufacture. Gemtech disavows responsibility for damages resulting from neglect, abuse, misuse, or acts of war.

GEMTECH denies any liability resulting from the use, abuse, or criminal misuse of this product.

ANNEX B: SPECIAL TOOLS AND SUPPLIES LIST

QUAN.	PART No. and/or DESCRIPTION
1	NSN: 4933-00-070-9152, Wrench, Combination
1	Wrench, Torque Limiting, 0-120 ft/lbs, 1/2 in drive
1	Flexbar Rocksett™ ceramic thread locking adhesive (2-3 drops)
1	Tube lubricating grease, Lubriplate Super-Lube multipurpose synthetic-based lubricant with Teflon (cat. no. 82325)
1	Dispenser, MILITEC-1 metal conditioner
1	"O" ring, Viton, 1-3/8 inch OD, 1/16 inch thick
1	"O" ring, Viton, 1-1/4 inch OD, 3/32 inch thick

ANNEX C:

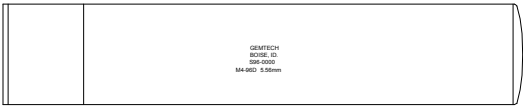

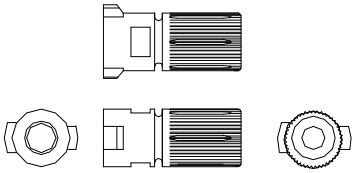
<p>COMPONENTS OF A SYSTEM and ILLUSTRATED PARTS LIST</p>	
<p>QUAN.</p>	<p>PART No. and DESCRIPTION</p>
<p>1</p>	 <p>M4-96D: Sound Suppressor</p>
<p>1</p>	 <p>M4-W1: Compensating Spacer</p>
<p>1</p>	 <p>M4-96D-1: Bi-Lock Compensator</p>

Fig. B.1

ANNEX D: (DEPOT LEVEL SERVICE)**REAR MOUNT DISASSEMBLY:**

- 4.1 The M4-96D suppressor is a sealed unit and cannot be totally disassembled other than by the manufacturer. Attempting to do so will void the warranty and may permanently damage the suppressor.
- 4.2 The mount can be partially disassembled if necessary to replace the Viton "O" rings in the mount or to service the movable sleeve. This may become necessary if the suppressor has been soaked in solvents known to damage Viton.
- 4.3 The rear plate of the suppressor will unscrew, permitting removal of the sleeve and mounting springs. If stuck, the sleeve can be removed easily with a slide-hammer type bearing puller. The mounted Bi-Lock compensator may be used as a wrench. The "O" ring inside the body can be picked out with a dental pick.
- 4.4 The outside of the sleeve must be cleaned thoroughly. Carbon may be scraped off with a scraper and then polished with Scotchbrite moistened in Milatec-1 or WD-40.
- 4.5 When replacing "O" rings, use only Viton of the sizes specified in the drawing below. Do not use conventional black neoprene "o" rings.
- 4.6 Reassemble the mount after coating the "O" ring bearing surfaces with a small quantity of Permatex Super-Lube synthetic lubricant. Do not substitute other greases. Secure the rear plate hand tight. The manufacturer recomends against thread sealants, although a single drop of Loctite 292 (wicking) can be used if necessary.
- 4.7 No other disassembly is possible.

