

ROUTINE

MWO effective date is 15 September 2001 and completion date is 15 September 2006.

MWO 9-1010-221-30-3

MODIFICATION WORK ORDER

MODIFICATION OF M203 GRENADE LAUNCHER

(NSN 1010-00-179-6447)

Headquarters, Department of the Army Washington, DC
30 September 2001

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Write a letter or complete and mail a DA Form 2028, Recommended Changes to Equipment Technical Publications to ATTN: AMSTA-LC-CI/TECH PUBS, TACOM-Rock Island, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. A reply will be provided.

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- PURPOSE.** The purpose of this modification is to convert selected M203 grenade launchers to the M203A1 configuration (NSN: 1010-01-434-9028) utilizing MWO Kit (NSN 1010-01-485-9560).
NOTE: MWO 9-1010-221-30-2 uses a different MWO Kit NSN: 1010-01-435-0910. This modification permits the transfer of the grenade launcher from an M16 series rifle to an M4 series carbine. Therefore only those M203s that will be mounted on M4 series carbines will be modified. M203s that will be retained on M16 series rifles will NOT be modified. If MWO 9-1010-221-30-2 has been applied to your weapon, you do not need to apply this MWO.
- PRIORITY.** This modification is classified ROUTINE.
- END ITEM(S) OR SYSTEM(S) TO BE MODIFIED.** See Table 1.

Table 1. End Item to be Modified.

Nomenclature	LIN	NSN	Part Number	CAGEC	Model
Grenade Launcher	L44595	1010-00-179-6447	11838703	19204	M203

- MODULE(S) (COMPONENTS, ASSEMBLIES, SUBASSEMBLIES) TO BE MODIFIED.** Not applicable.
- PART(S) TO BE MODIFIED.** See paragraph 10.

6. APPLICATION.

- a. Time Compliance Schedule: The effective date of this MWO is 15 September 2001 and its completion date is 15 September 2006.
- b. Level of Maintenance: The lowest level of maintenance authorized to apply this MWO is Direct Support.
- c. Work Force and Man-Hour Requirements for Application of this MWO to a Single Unit, End Item or System are as follows: See Table 2.

Table 2. Application Requirements

ASSEMBLY/SUBASSEMBLY	WORK FORCE/SKILLS	MAN HOURS
M203A1 Compatibility Kit	MOS: One - 45 Bravo	0.4*

*Total man-hours required for a single application of this MWO is 0.4 hours.

- d. MWO's to be Applied Prior to or Concurrently with the Application of this MWO: Not Applicable.
- e. Additional Information Deemed Necessary to Assist in the Application of this MWO:

PUBLICATION NUMBER	DATE	TITLE
TM 9-1005-319-23&P	May 1991	M16A2 Rifle and M4/M4A1 Carbine
TM 9-1010-221-10	December 1984	M203, 40MM, Grenade Launcher
TM 9-1010-221-23&P	January 1993	M203, 40MM, Grenade Launcher

7. TECHNICAL PUBLICATIONS AFFECTED/CHANGED. The following technical publications are affected or changed as a result of this MWO:

PUBLICATION NUMBER	DATE
TM 9-1005-319-23&P	May 1991
TM 9-1010-221-10	December 1984
TM 9-1010-221-23&P	January 1993

8. MWO KIT(S)/PART(S) AND THEIR DISPOSITION.

- a. Kits needed to apply this MWO: See Table 3.
- b. The Leaf Sight Assembly, PN 8448330, must be retained and attached to the new Handguard, PN 12990563, IAW TM 9-1010-221-23&P.

Table 3. Kits and Security Classification

Nomenclature	NSN	Part Number	CAGEC	Security Classification	QTY
M203A1 Compatibility Kit consisting of the following items:	1010-01-485-9560	12991506	19200	U	
Handguard Assembly	1010-01-470-7105	12990563	19200	U	1
Quadrant Sight Spacer	5365-01-441-7384	12598113	19200	U	1
Screw, Machine	5305-00-417-5264	MS51959-34B	96906	U	2
Mounting Bracket Assembly	5340-01-442-0165	12957126	19200	U	1
Screw, Cap Socket Head	5305-01-442-0157	12957129	19200	U	3
Washers	5310-00-160-9817	NAS1149C0363B	88044	U	2
Locking Bar	5340-01-474-2845	12991254	19200	U	1
Clamp, Quadrant Sight	5340-01-475-4291	12991504	19200	U	1
Bracket, Quadrant Sight	5340-01-474-9020	12991510	19200	U	1
Bushings, Half Sleeve	3120-00-438-7332	84482320	19204	U	2

c. Bulk and Expendable Material: See Table 4.

Table 4. Bulk and Expendable Material.

Nomenclature	NSN	Part Number	CAGEC	Quantity
Lubricant, Solid Film	9150-01-260-2534	MIL-L-23398	81349	As required
Wire, Non-electrical	9505-00-293-4208	MS20995C32	96906	As required

d. Parts Disposition: See Table 5 below for list of parts removed during application of this MWO. Disposition of parts is by demilitarization in accordance with DOD 4130.21-M-1.

Table 5. Parts Disposition.

Nomenclature	NSN	Part Number	CAGEC
Screw, Machine (2)	5305-00-455-2550	MS51959-28B	96906
Grenade Hand Guard	1010-00-438-7431	8448377	19204
Mounting Bracket	5340-01-376-0876	12011998	19200
Screw, Machine (2)	5305-00-150-9212	AN502-10-8	88044
Locking Bar	5340-01-440-7610	12012059	19200
Clamp, Quadrant Sight	5340-00-483-1156	12002879	19200
Bracket, Quadrant Sight	5340-01-149-1270	9346310	19200

9. SPECIAL TOOLS; TOOL KITS; JIGS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND FIXTURES REQUIRED. Special tools and tool kits required to apply this MWO are listed in Table 6.

Table 6. Special Tools and Tool Kits

Tool Kit	NSN	Part Number
Shop Set, Small Arms: Field Maintenance, Basic Less Power	4930-00-754-0664	SC 4933-95-CL-A11

10. MODIFICATION PROCEDURES.

a. Preparation:

- 1) Direct Support will receive/obtain the following items:
 - M16/M203 weapons which have a requirement for the M203 grenade launcher to be transferred to an M4 series carbine.
 - M4 series carbine.
 - M203A1 compatibility kit (1010-01-485-9560).
- 2) Perform M203 serviceability checks (TM 9-1010-221-23&P, paragraph 2-7, exclude item 2 of the PMCS table).
- 3) Perform M4/M4A1 serviceability checks (TM 9-1005-319-23&P, paragraph 2-7).
- 4) Inventory M203A1 compatibility kit. See Table 5.

b. M203 removal from M16 series Rifle:

- 1) Remove the M203 grenade launcher from the M16 series rifle (TM 9-1010-221-23&P, paragraph 2-11, steps 1-11). Disassemble Leaf Sight Assembly, PN 8448330, from Handguard.
- 2) Return M16 series rifle to original configuration in accordance with local standing operating procedures.

c. M4/M4A1 Carbine Modification:

- 1) Remove M4 carbine handguards (TM 9-1005-319-23&P, paragraph 2-16, steps 1 and 2).

NOTE

Standard carbine handguards are not used while an M203 series grenade launcher is attached to the carbine. However, units are still responsible for maintaining the complete carbine configuration. Removed handguards should be returned to the unit Property Book Officer (PBO).

- 2) Remove the sling from the front swivel (paragraph 2-11, step 2).

NOTE

The side sling swivel mount needs to be on the right side of the M4/M4A1 when mounting the M203A1 grenade launcher (to avoid interference between the sling and the M203 barrel latch).

- 3) Disassemble side swivel mount (TM 9-1005-319-23&P, paragraph 2-16, step 5A thru 5C).
- 4) Reassemble side swivel mount, with the sling on the right side of the carbine, and with the new locking bar (PN 12991254) (TM 9-1005-319-23&P, paragraph 2-16, steps 4B thru 4D).

d. M203 Modification:

NOTE

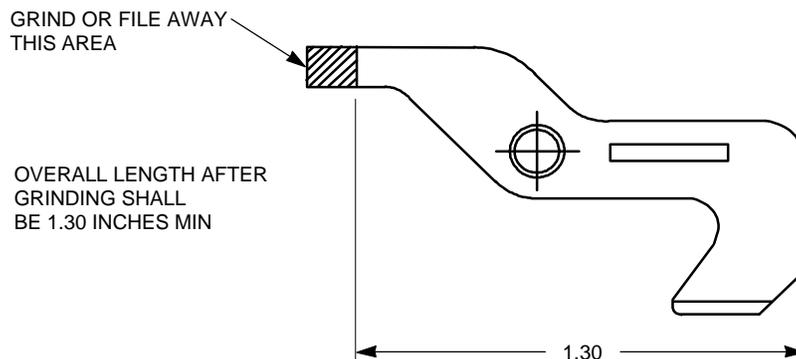
All referenced paragraphs are located in TM 9-1010-221-23&P, unless otherwise specified.

- 1) Disassemble the barrel stop from the M203 receiver (paragraph 3-10, step 1).
- 2) Modify barrel stop, as follows:

WARNING

Use safety goggles when grinding. Grinding may cause injury to eyes.

- a) Grind or file excess material from barrel stop as shown in illustration.

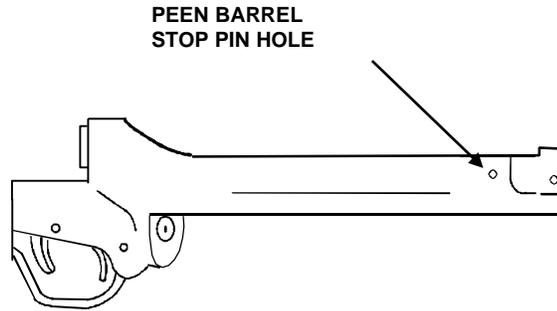


- b) File burrs and sharp edges from barrel stop.
- c) Touch up area of bare metal with solid film lubricant (appendix D, item 11).
- d) Reassemble barrel stop in M203 receiver (paragraph 3-10, step 14).

NOTE

The M203A1 handguard assembly does not cover and hold the barrel stop pin like the old M203 handguard did.

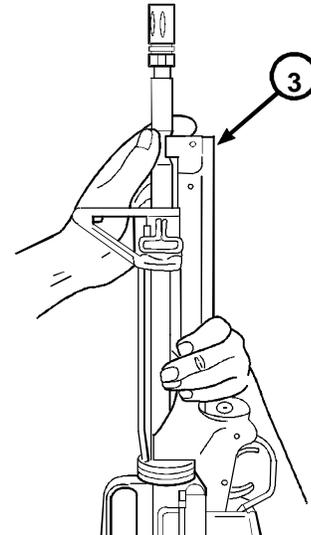
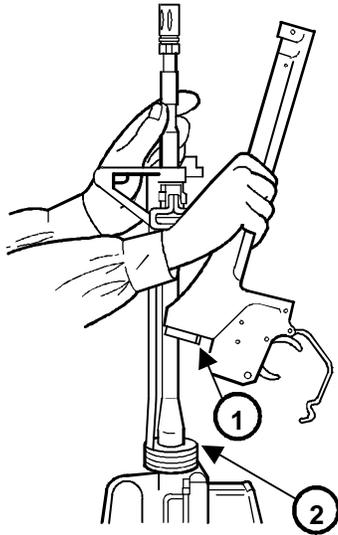
- 3) Using a center punch, peen metal over barrel stop pin holes in receiver. See illustration below. One stake each side of receiver is required to retain barrel stop pin.



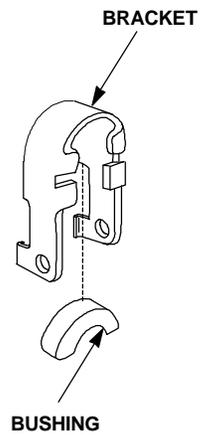
- 4) Mark the M203 receiver with permanent letters and numbers using 1/8" metal stamping dies. Stamp "A1" immediately after the existing "M203", such that it reads "M203A1". Be careful **NOT** to stamp the "A1" beside the weapon serial number!

e. Installation of M203A1 Grenade Launcher onto the M4/M4A1 Carbine:

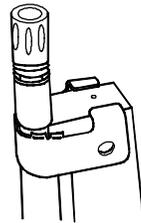
- 1) For proper alignment, ensure the receiver assembly is centered under the barrel of the carbine. Align spring pin (1) with notch in barrel nut (2). Be sure spring pin is fully seated in notch of barrel nut. Seat the M203 receiver assembly (3) onto the carbine.



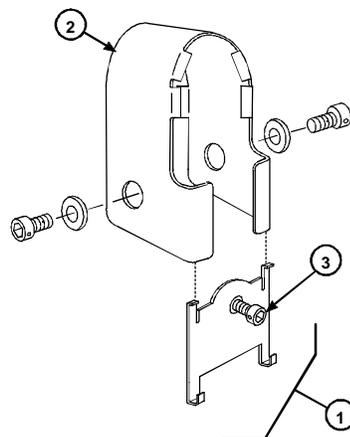
- 2) Install bushing half into mounting bracket assembly.



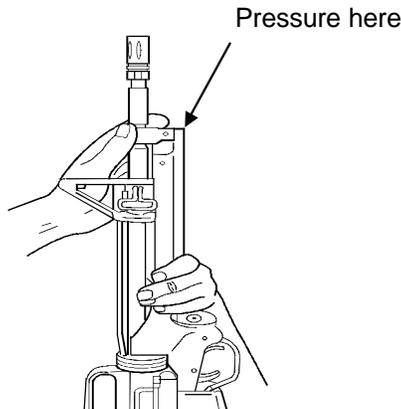
- 3) Position mounting bracket over carbine barrel in the step down area between muzzle and front sight with the flanges toward the muzzle.



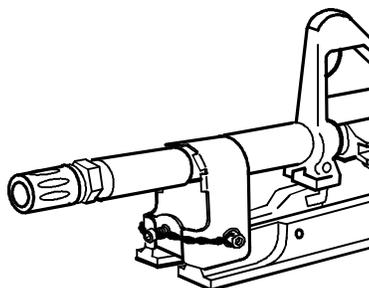
- 4) Rotate mounting bracket upward or side ways and insert other bushing half between M203A1 receiver and M4/M4A1 carbine barrel.
- 5) Insert bracket clamp assembly (1) into mounting bracket (2) behind the mounting bracket flange, with the rounded portion of bracket clamp assembly toward carbine barrel, and slide the bracket clamp assembly in until the bracket clamp assembly tabs hook underneath the mounting bracket flange.



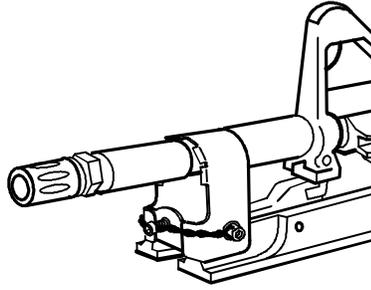
- 6) Firmly seat the M203 onto the carbine by applying pressure in the area shown. Place a small block of wood on the bottom front edge of the M203 receiver (away from the front mounting bracket assembly). Then tap the top of the wood block with a small hammer.
- 7) Lift up on bracket clamp assembly to avoid binding and align screw holes in receiver assembly and mounting bracket. Install two washers, two socket head screws and tighten snug by hand.



- 8) Tighten in the bracket clamp assembly screw (3) until the bracket clamp (1) is snug against the mounting bracket flange, then tighten it an additional 3/4 turn. There should be a slight bow (approximately 1/16") in the center of the bracket clamp. **DO NOT OVER-TIGHTEN.**
- 9) Fully tighten the two screws on the side of the receiver.
- 10) Check installation of the M203A1 receiver assembly as follows:
 - a) The movement from side to side should not exceed 1/8 inch left or right of center. Total movement cannot exceed 1/4 inch.
 - b) Check forward and rearward movement of M203A1 receiver. No forward or backward movement is allowed.
 - c) If excess movement exists, loosen side screws and repeat steps 6-9 above.
- 11) Engage trigger guard (paragraph 2-11, step 16).
- 12) Install locking wire (paragraph 2-11, steps 17a thru 17c).
 - a) Twist wire strands together in either right-hand or left-hand direction. Begin at the socket head screw until the twisted wire reaches an appropriate hole in the bracket clamp assembly screw. Insert locking wire through one of the bracket clamp assembly screw holes.



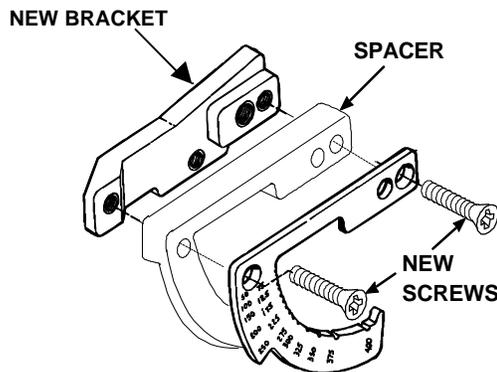
- b) Twist wire in same direction used in step "a" until one strand of wire can be inserted through socket head screw on other side of receiver and pull wire tight.
- c) Continue with paragraph 2-11, steps 17g - 19.



13) Assemble Leaf Sight Assembly, PN 8448330 to Handguard, PN 12990563, IAW TM 9-1010-221-23&P. Install new handguard with attached leaf sight assembly (paragraph 2-11, step 22). If difficulty is experienced installing the handguard and sight assembly onto the M4 carbine, two persons shall be utilized (one person pulling down the M4 slip ring and the other inserting the handguard).

f. Quadrant Sight Modification & Installation.

- 1) Disassemble quadrant sight (paragraph 2-13, steps 1 and 2).
- 2) Disassemble range quadrant (paragraph 2-14). Set aside two short machine screws, old bracket & old clamp for disposition per paragraph 8d of MWO.
- 3) Install quadrant sight spacer, PN 12598113, between range quadrant and new bracket, using two new machine screws, PN MS51959-34B.



- 4) Reassemble quadrant sight assembly, with new clamp (paragraph 2-13, steps 4 and 5).
- 5) Reinstall the quadrant sight to the M4 carbine handle.

g. Final Assembly.

- 1) Install M203 barrel (paragraph 2-11, steps 20 and 21).
- 2) Install sling in front swivel (paragraph 2-11, step 23).

- h. Function check the M203A1, in accordance with TM 9-1010-221-10, page 3-13.
- i. Re-zero the M4/M4A1 carbine, because grenade launcher installation will change zero.

11. CALIBRATION REQUIREMENTS. Not applicable.

12. WEIGHT AND BALANCE DATE. Not applicable.

13. QUALITY ASSURANCE REQUIREMENTS. Not applicable.

14. RECORDING AND REPORTING OF THE MODIFICATION.

a. Records and reports. The organization responsible for MWO application, will report application information as follows:

- 1) Reporting will be accomplished by electronic means. MWO application information can be input directly into the Modification Management Information System (MMIS) over the Internet. If Internet is not available, recording will be on a 3.5-inch disk, which will be mailed to the MMIS administrator (see paragraph 14a(4) below). Entry into the MMIS system is password protected. New users can register on-line at <http://65.196.121.253/mwo/>. Passwords are normally approved and issued within 48 hours.
- 2) Submission will be comprised of the 15 data elements listed in Table 7. Elements 1, 2, 6, 7, 8 & 12 are given for this MWO (as shown). The person reporting the MWO data, will acquire the remaining elements (3, 4, 5, 9, 10, 11, 13, 14 & 15), and input all 15 into MMIS.

Table 7. Modification Management Information System Input Data

Data Element		Input Data
1)	MCN	1-97-05-7925
2)	MWO Number	9-1010-221-30-3
3)	UIC (BN level)	
4)	Unit Name	
5)	Unit Location	
6)	NSN of End Item (Old)	1010-00-179-6447
7)	NSN of End Item (New)	1010-01-434-9028
8)	Registration Number	N/A
9)	Date of Application	
10)	Man-Hours Required for Application	
11)	Applied by (name)	
12)	Software Version	N/A
13)	Serial Numbers (M203/M203A1)	
14)	Your e-mail address	
15)	Comments	

- 3) If any of these data elements are not available, or if no record is found, one of the following will be entered for that element.
 - a) N/A - not applicable.
 - b) N/R - no record found.

- 4) For off-line reporting, the 3.5 inch disk shall be mailed to the following address:

ATTN: AMSTA-LC-CIPWM
TACOM-Rock Island
1 Rock Island Arsenal
Rock Island, IL 61299-7630

- 5) Property Book Officers (PBO) shall begin reporting grenade launchers, which have been modified in accordance with this MWO, as the M203A1 model (LIN: L46007/NSN: 1010-01-434-9028). It is required that the Army Small Arms Registry at LOGSA will be notified through your local Unique Item Tracking (UIT) Serialization Officer (SO) of conversion from the old NSN to the new NSN. The PBO can identify, if unknown, their local UIT SO by contacting LOGSA via email at: uit@logsa.army.mil.

- b. Marking equipment. M203 receivers shall be stamped with "A1" immediately after the existing "M203" marking, as specified above in paragraph 10d(4).

- c. Identification data: See Table 8.

Table 8. Identification

	Before Modification	After Modification
Nomenclature	Launcher, Grenade, 40mm	Launcher, Grenade, 40mm
Model No.	M203	M203A1
CAGEC/Part No.	19204/8448300	19200/12982965
NSN	1010-00-179-6447	1010-01-434-9028
Line Item Number (LIN)	L44595	L46007

- 15. MATERIEL CHANGE (MC) NUMBER.** This MWO is authorized by MC number 1-97-05-7925.

- 16. MODIFICATION IDENTIFICATION.** Modified grenade launcher receivers will have "A1" stamped immediately after the "M203", as discussed in paragraphs 10d(4) and 14b.

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON

*Administrative Assistant to the
Secretary of the Army*

0113102

ERIC K. SHINSEKI
*General, United States Army
Chief of Staff*

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