

ROUTINE

MWO effective date is 1 September 2001 and completion date is 15 April 2003.

MWO 9-1010-221-30-2

MODIFICATION WORK ORDER

MODIFICATION OF M203 GRENADE LAUNCHER

(NSN 1010-00-179-6447)

Headquarters, Department of the Army Washington, D.C.
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: 1010-01-435-0910. NOTE: MWO 9-1010-221-30-3 uses a different MWO Kit NSN: 1010-01-485-9560. 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.
- 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.

5. **PART(S) TO BE MODIFIED.** See Table 2.

Table 2. Parts to be Modified

NOMENCLATURE	NSN	CAGEC	PART NUMBER
Locking Bar	5340-01-440-7610	19200	12012059
Barrel Stop	3040-00-438-7375	19204	8448348
Quadrant Sight Clamp	5340-00-483-1156	19204	12002879

6. **APPLICATION.**

- a. Time Compliance Schedule: The effective date of this MWO is 1 September 2001 and its completion date is 15 April 2003.
- 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 3.

Table 3. Application Requirements

ASSEMBLY/SUBASSEMBLY	WORK FORCE/SKILLS	MAN HOURS
M203A1 Compatibility Kit	MOS: One - 45 Bravo	0.5*

*Total man-hours required for a single application of this MWO is 0.5 hours.

- d. MWOs 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: The kit listed in Table 4 is required to accomplish this MWO.

Table 4. Kits and Security Classification

Nomenclature	NSN	Part Number	CAGEC	Security Classification
M203A1 Compatibility Kit	1010-01-435-0910	12012060	19200	Unclassified

b. Contents of MWO Kit: See Table 5

Table 5. M203A1 Compatibility Kit, PN: 12012060

Nomenclature	NSN	Part Number	CAGEC	Quantity
Handguard With Leaf Sight Assembly	None	12012039/ 8448330	19200/ 19204	1
Quadrant Sight Spacer	5365-01-441-7384	12598113	19200	1
Screw, Machine	5305-00-417-5264	MS51959-34B	96906	2
Mounting Bracket Assembly	5340-01-442-0165	12957126	19200	1
Screw, Cap Socket Head	5305-01-442-0157	12957129	19200	3
Washers	5310-00-160-9817	NAS1149C0363B	80205	2

c. Bulk and Expendable Material: See Table 6.

Table 6. Bulk and Expendable Material

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

d. Parts Disposition: See Table 7 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 7. Parts Disposition.

Nomenclature	NSN	Part Number	CAGEC
Screw, Machine (2)	5305-00-455-2550	MS51959-28B	96906
Grenade Hand Guard With Attached Leaf Sight Assembly	NONE	8448377/ 8448330	19204
Mounting Bracket	5340-01-376-0876	12011998	19200
Screw, Machine (2)	5305-00-150-9212	AN502-10-8	88044

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 8.

Table 8. 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 (1010-01-435-0910).

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).
 - 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).

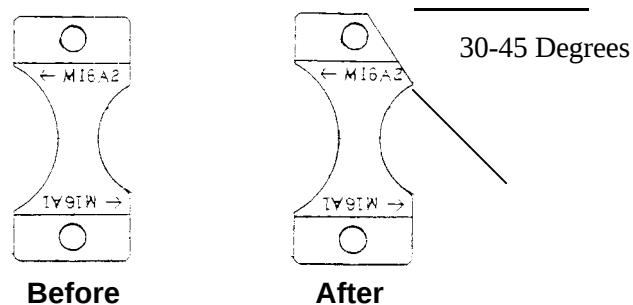
NOTE

Because of tolerance stack-ups, there is a potential interference between the M203 series receiver and the locking bar (PN: 12012059), from M4/M4A1 side sling swivel mount.

- 4) Modify locking bar (PN: 12012059), as shown in the below diagram, using a bench grinder (or belt sander). Touch up the modified surface with solid film lubricant).

WARNING

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



- 5) Reassemble side swivel mount, with the sling on the right side of the carbine, and with the modified locking bar surface down and away from the carbine barrel (TM 9-1005-319-23&P, paragraph 2-16, steps 4B thru 4D).

d. M203 Modification:

NOTE

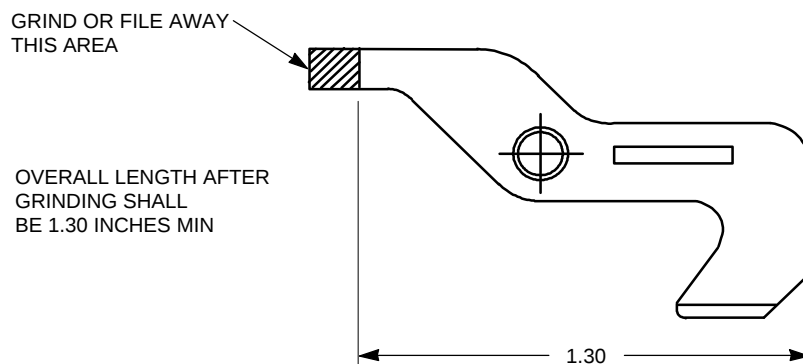
All referenced paragraphs are located in TM 9-1010-221-23&P, unless otherwise specified:

- 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.

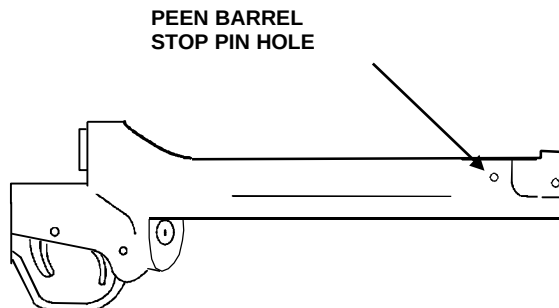


- b) File burrs and sharp edges from barrel stop.
- c) Touch up area of bare metal with solid film lubricant (appendix D, item 11).
- d) Reassemble barrel stop in M203 receiver (paragraph 3-10, step 14).

NOTE

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

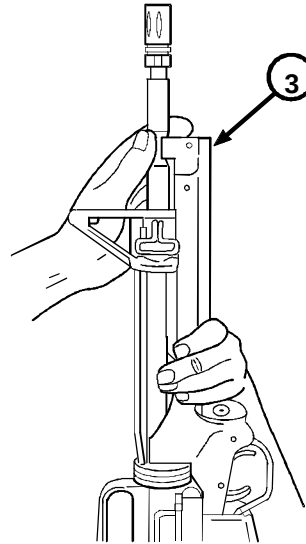
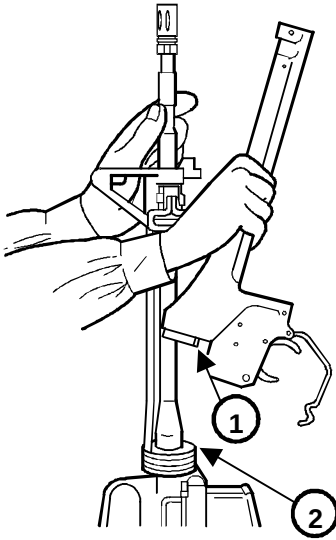
- 3) Using a center punch, peen metal over barrel stop pin holes in receiver. See illustration below. One stake each side of receiver is required to retain barrel stop pin.



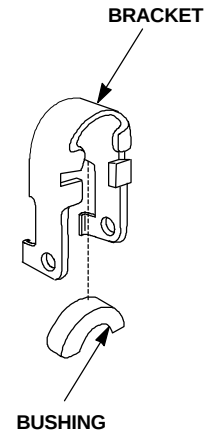
- 4) Mark the M203 receiver with permanent letters and numbers using 1/8" metal stamping dies. Stamp "A1" immediately after the existing "M203", such that it reads "M203A1". Be careful **NOT** to stamp the "A1" beside the weapon serial number!

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

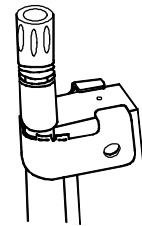
- 1) For proper alignment, ensure the receiver assembly is centered under the barrel of the carbine. Align spring pin (1) with notch in barrel nut (2). Be sure spring pin is fully seated in notch of barrel nut. Seat the M203 receiver assembly (3) onto the carbine.



- 2) Install bushing half into mounting bracket assembly.

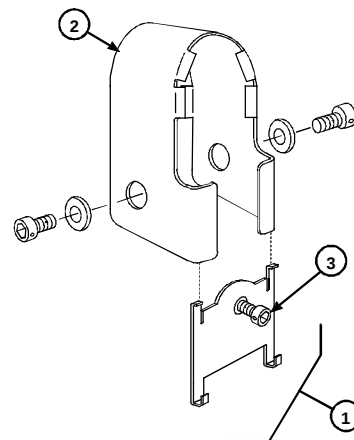


- 3) Position mounting bracket over carbine barrel in the step down area between muzzle and front sight with the flanges toward the muzzle.



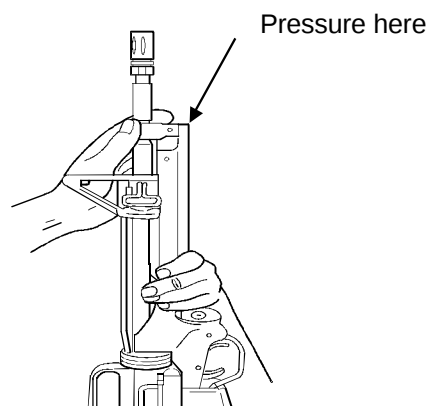
- 4) Rotate mounting bracket upward or side ways and insert other bushing half between M203A1 receiver and M4/M4A1 carbine barrel.

- 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.

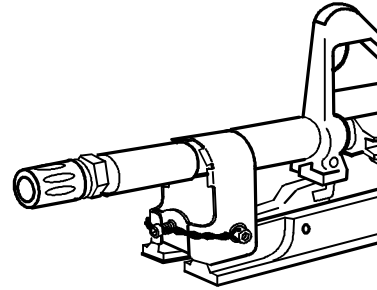
- 7) Lift up on bracket clamp assembly to avoid binding and align screw holes in receiver assembly and mounting bracket. Install two washers, two socket head screws and tighten snug by hand.



- 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 $\frac{3}{4}$ turn. There should be a slight bow (approximately $\frac{1}{16}$ ") 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.
- The movement from side to side should not exceed $\frac{1}{8}$ inch left or right of center. Total movement cannot exceed $\frac{1}{4}$ inch.
 - Check forward and rearward movement of M203A1 receiver. No forward or backward movement is allowed.
 - 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.

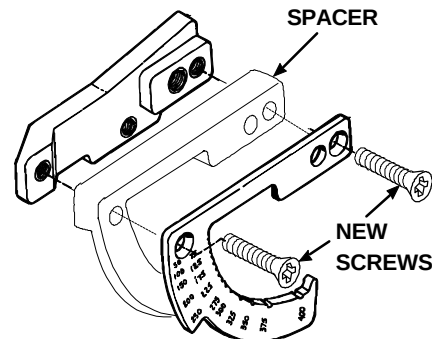


13) Install new handguard and leaf sight assembly, PN 12012040 (paragraph 2-11, step 22). If difficulty is experienced installing the handguard and sight assembly onto the M4 carbine, two persons shall be utilized (one person pulling down the M4 slip ring and the other inserting the handguard).

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 machine screws for disposition per paragraph 8d of MWO.

- 3) Install quadrant sight spacer, PN 12598113, between range quadrant and bracket assembly. Reassemble range assembly quadrant using 2 new machine screws, PN MS51959-34B.



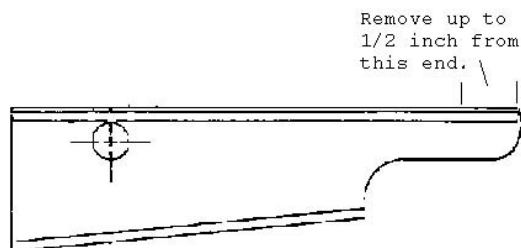
- 4) Reassemble quadrant sight assembly (paragraph 2-13, steps 4 and 5).

NOTE

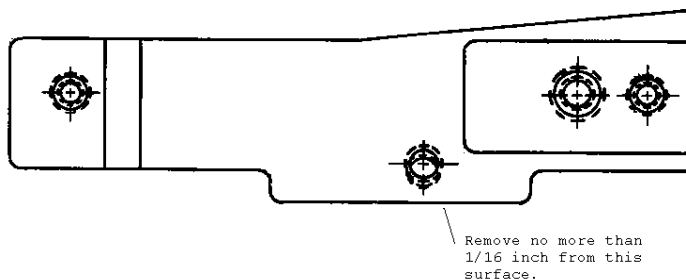
Some difficulty may be experienced getting the quadrant sight to properly mount on the M4 carrying handle. Grind-to-fit actions may be required.

- 5) Install quadrant sight assembly (paragraph 2-11, step 24). If the quadrant sight will not properly clamp to the handle, modify the quadrant sight clamp (PN: 12002879) as follows:

- a) File, cut or grind away the MINIMUM amount needed but not to exceed 1/2 inches from the front of the quadrant sight clamp as shown in the illustration below.



- b) File burrs and sharp edges from the clamp.
- c) Touch the area of bare metal with solid film lubricant.
- d) Reinstall the quadrant sight to the M4 carbine handle.
- e) If you are still unable to install the quadrant sight, modify the underside of the plastic quadrant bracket assembly, (P/N 9346310) by removing no more than 1/16 inch of material, as shown below.



- f) If you break through the threaded hole, discard the quadrant bracket assembly and procure a new part from supply and start over.

NOTE

The above quadrant sight grind-to-fit procedures will allow the quadrant sight assembly to move toward the front of the carbine carrying handle. This forward movement alleviates the fit problem. However, moving the quadrant sight forward, potentially creates another problem, which is interference between the new quadrant sight spacer and the M4 carrying handle knob.

- g) If the quadrant sight spacer is contacting the M4 carrying handle knob, remove the quadrant sight, and grind a chamfer on the quad sight spacer. Touch up ground surface with solid film lubricant.

- h) Once a reasonable fit is established between quadrant sight assembly and the carbine, tighten the quadrant sight thumb screw, securing it on the 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 9. 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 9. Modification Management Information System Input Data

	Data Element	Input Data
1	MCN	1-97-05-7925
2	MWO Number	9-1010-221-30-2
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 (PBOs) 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(9).

c. Identification data: See Table 10.

Table 10. 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*

0113101

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

DISTRIBUTION: To be distributed in accordance with the initial distribution requirements for IDN: 401187, requirements for MWO 9-1010-221-30-2.

PIN: 079028-000