

URGENT

MWO effective date 01 May 2002 and completion date 30 April 2005

***MWO 10-1670-293-20-2**

MODIFICATION WORK ORDER

MODIFICATION OF THE PARACHUTE, PERSONNEL, TYPE, 35-FOOT DIAMETER AND HARNES, PERSONNEL PARACHUTE

D-RING REPLACEMENT

NSN: 1670-01-262-2359 (EIC: N/A)

NSN: 1670-00-598-0751 (EIC: N/A)

NSN: 1670-01-248-9502 (EIC: N/A)

NSN: 1670-01-272-1901 (EIC: N/A)

Headquarters, Department of the Army, Washington, D.C.

01 April 2004

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. If you find any technical errors that could cause personal injury or damage to materiel, please let us know. Contact Commander, US Army Tank-automotive & Armament Command, ATTN: AMSTA-LC-CECT and report the needed corrections by telephoning DSN 256-6276 or Commercial 508-233-6276. Additionally, complete a DA Form 2028, Recommended Changes to Publications and Blank Forms, and mail to Commander, US Army Tank-automotive & Armament Command, ATTN: AMSTA-LC-CECT, Kansas Street, Natick, MA 01760. You may also submit your recommended changes by E-mail directly to amssbriml@natick.army.mil. A reply will be provided to you.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

*This MWO supercedes MWO 10-1670-293-20-2, dated 30 April 2002 (completion date 30 April 2004)

1. PURPOSE. The purpose of this Modification Work Order (MWO) is to replace the existing D-ring sewn into the personnel harness. During a dynamic torso mannequin drop test, fractures have occurred at the web bar portion of the existing D-ring causing a complete separation from the parachute harness when the reserve canopy fully inflates. Follow-on tests indicated that the web bar portion of the existing D-ring has the potential for failure under extreme load conditions. The replacement D-ring has a removable screw with synthetic locking device. Two options are available for installation. Option 1 – The new D-ring will be positioned immediately below the existing D-ring and screwed in place. The existing D-ring will be rotated upward and secured to the main lift web. Option 2 – The existing D-ring will be removed (cut off) from the harness and the new D-ring will be placed in the same location as the old D-ring and screwed in place. Option 2 is the *alternate* approved method, however. The cutting tool necessary for this alternate method will not be provided through this MWO.

2. PRIORITY. This modification is classified as URGENT.

a. Equipment in Use. All Parachute Harnesses will be modified and completed no later than the scheduled completion date. Parachute Harnesses not modified after the expiration of the MWO completion date will be reported as Non Mission Capable (NMC), in accordance with applicable Army regulations. The MWO will be applied to unserviceable material during scheduled Organizational Maintenance providing the scheduled repair renders the parachute harness Fully Mission Capable (FMC).

b. Equipment in Wholesale Depot Supply or Maintenance Activities. The MWO will be accomplished on serviceable Parachute Harnesses prior to issue and/or subsequent to the scheduled completion date.

3. END ITEM OR SYSTEM TO BE MODIFIED. This modification will apply to all Parachute Personnel, Type: 35-Foot Diameter that utilizes the Harness, Personnel, Parachute.

Table 1. End Item to be modified

Nomenclature	National Stock Number	Type and Model	CAGEC	Serial Number	Line Item Number (LIN)
Parachute, Personnel Type, 35-Foot	1670-01-262-2359	MC1-1C	81337	ALL	N67788
Parachute, Personnel Type, 35-Foot	1670-00-598-0751	MC1-1B	81337	ALL	N67788
Parachute, Personnel Type, 35-Foot	1670-01-248-9502	T-10C	81337	ALL	N67925

4. MODULES (Components, Assemblies, Subassemblies, Boards, and Cards) TO BE MODIFIED. Not applicable.

5. PART(s) TO BE MODIFIED. Harness, Personnel, Parachute.

6. APPLICATION.

- a. Time Compliance Schedule: The MWO effective date is 01 May 2002 and the completion date is 30 April 2005.
- b. Level of Maintenance: Unit Level Maintenance is the lowest level of maintenance to support this MWO.

c. Time Required: Requires two (2) people for .4 hours. A total of .4 man-hours are required for a single installation of this MWO. The estimated downtime per end item is .4 man-hours.

d. Due to the fact that this item is an ancillary item of the aerial delivery inventory, both organizational and depot maintenance of all aerial delivery equipment is completed by Military Occupational Specialty (MOS) 92R, Parachute Rigger, IAW AR 750-32.

7. TECHNICAL PUBLICATIONS AFFECTED/CHANGED

Table 2. Technical Publications Affected/Changed

TM 10-1670-292-23&P	Unit and Intermediate Direct Support (DS) Maintenance Manual (including repair parts and special tools lists) for Parachute, Personnel Type: 35-Foot Diameter, MC1-1C/MC1-1D Troop Back Parachute Assembly
TM 10-1670-272-23&P	Unit and Intermediate Direct Support (DS) Maintenance Manual (including repair parts and special tools lists) for Parachute, Personnel Type: 35-Foot Diameter, MC1-1B/MC1-1E Troop Back Parachute Assembly
TM 10-1670-293-23&P	Unit and Intermediate Direct Support (DS) Maintenance Manual (including repair parts and special tools lists) for Parachute, Personnel Type: 35-Foot Diameter, T-10C/T-10D Troop Back Parachute Assembly

8. MWO KITS/PARTS AND THEIR DISPOSITION.

a. D-ring Kit.

b. Contents of MWO Kit: See Table 3.

Table 3. Contents of MWO Kit

Qty	Nomenclature	NSN	CAGEC	Part number
2	D-ring	N/A	81337	X11-1-4232

c. Bulk and Expendable Materials: See Table 4.

Table 4. Bulk and Expendable Materials List and Description

Nomenclature	NSN	CAGEC	Qty
Cord, Nylon, Type III	4020-00-246-0688	81349	2
Cord, Nylon, Type II (alternate)	4020-00-262-2019	81349	2

d. Parts Disposition: N/A.

9. SPECIAL TOOLS, TOOL KITS, JIGS, TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE), AND FIXTURES REQUIRED.

- (1) Screwdriver, Flat Tip, 3/8-inch Wide Tip, NSN 5120-00-237-6985
- (2) Hammer, Ball Peen, 16oz NSN 5120-01-114-5499
- (3) Punch, Center, Hardened, #10, NSN 5120-00-197-9490
- (4) Cutter, Bolt (optional), 36-inch, NSN 5110-00-188-2524
- (5) Cutter, Rotary, Electric (optional), NSN 5130-01-014-6856

10. MODIFICATION PROCEDURES. Install D-rings

a. Installation of D-rings (Option 1).

- (1) Inspect D-ring to ensure that screw pin threads are not stripped and that the synthetic locking device is present.
- (2) Cut two (2) 24-inch lengths of type II or type III nylon cord removing the core threads and lay off to the side.
- (3) Locate existing D-rings on the main lift web of the parachute harness (left and right). Rotate the D-rings upward exposing the area immediately below the existing D-ring (Figure 1).

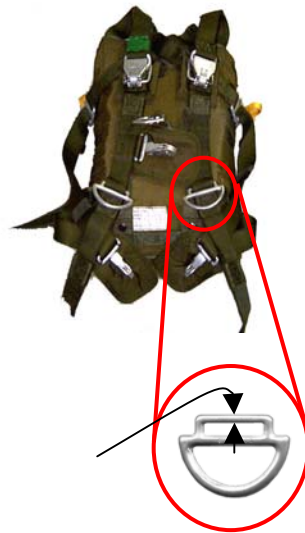


FIGURE 1

- (4) On the right or left side, locate the area immediately below the existing D-ring and position the replacement D-ring with the threaded portion to the inside, immediately below the existing D-ring but above the confluence wrap. Push the D-ring on to the main lift web until completely seated. It may be necessary to work the D-ring back and forth and up and down in the event of a tight fit (Figure 2).

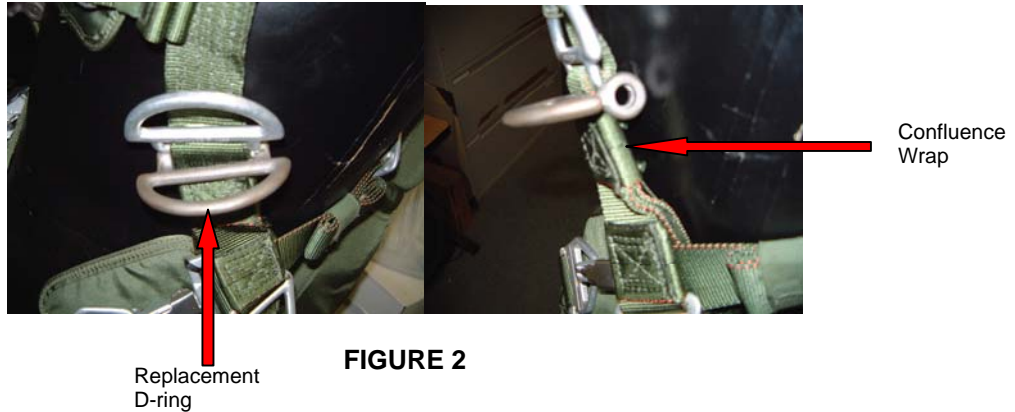


FIGURE 2

CAUTION

Once screw pin is seated and staked, it will not be removed due to the synthetic locking device being compromised.

NOTE

Slotted end of screw must face to the outside.

(5) With the slotted end of the bolt to the outside of the parachute harness, feed the screw pin from the outside to the inside through the un-threaded hole to the threaded hole and completely screw in the screw pin. It is recommended that a screwdriver blade the width of the screw pin be used for better leverage and proper seating. Remember, the screw pin contains a synthetic locking device and you must insure you completely seat the screw pin (Figure 3).

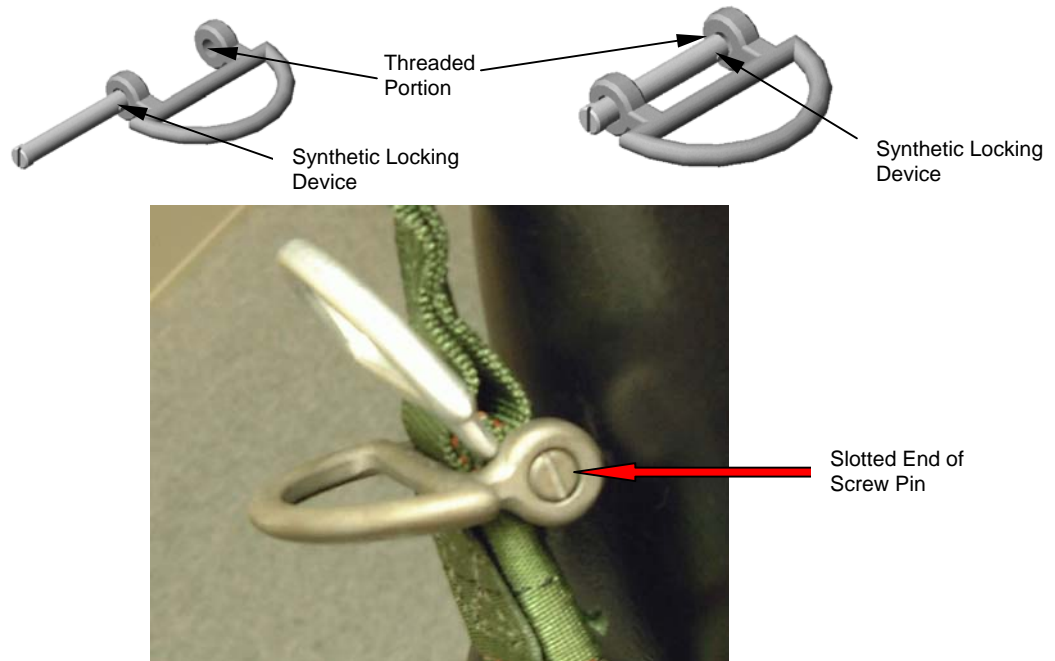


FIGURE 3

(6) Using a flat solid surface, position the tip of the center punch 90 degrees away from (or perpendicular to) the screw pin slot between the screw pin head and the body.

(7) Strike punch with hammer to cause a dimple and a slight flow of metal that will further retain the screw pin as required (Figure 4).

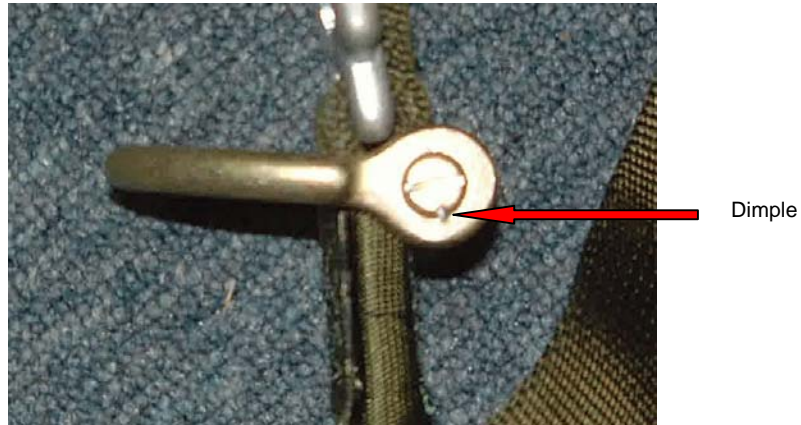


FIGURE 4

b. Secure Original D-ring to the Main Lift Web.

(1) Retrieve one length of type II or type III nylon cord. Route one end of the type II or type III nylon cord from top to bottom twice around the curved portion of the D-ring. Route the opposite end behind the main lift web, below the chest strap, and from top to bottom, pass the running end twice around the curved portion of the D-ring. Pull on both running ends ensuring the routed portions are pushed as high as possible on curved portion of the D-ring. Pass both running ends behind the main lift web and below the chest strap. Push the D-ring against the main lift web. Secure them with a surgeon's knot locking-knot with overhand knots in the running ends. Trim the ends to 2-inches (Figure 5).

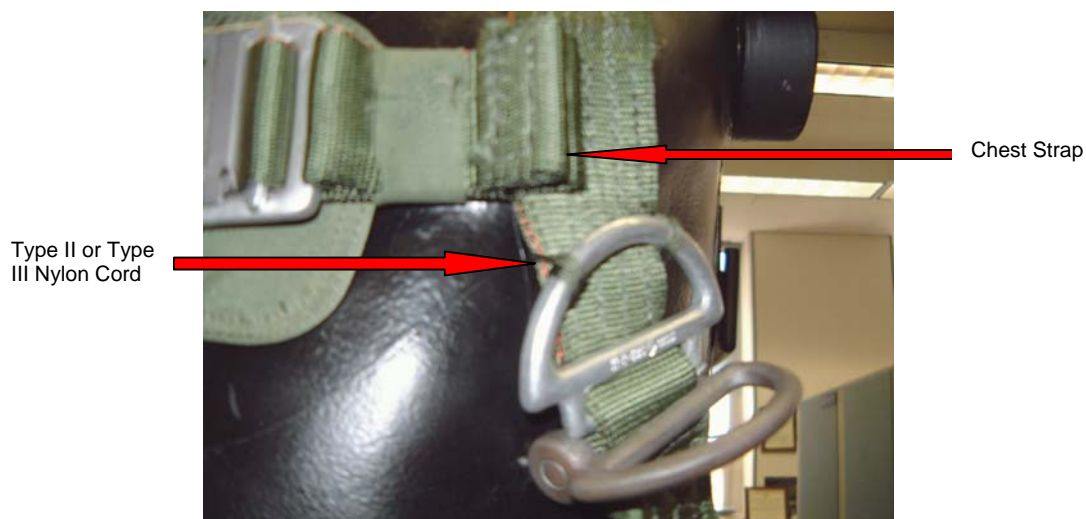


FIGURE 5

(2) Repeat steps 10 a. through b. for the opposite side.

(3) **Record completed MWO on DA Form 3912, Army Parachute Log Record Book.**

Installation of D-rings (Option 2).

(1) Inspect D-ring in accordance with 10a. (1) above.

(2) Locate the existing D-rings on the main lift web of the parachute harness (either left or right). Position the D-ring in such a way as to expose the web bar leg and secure in a vise or other securing device (Figure 6).

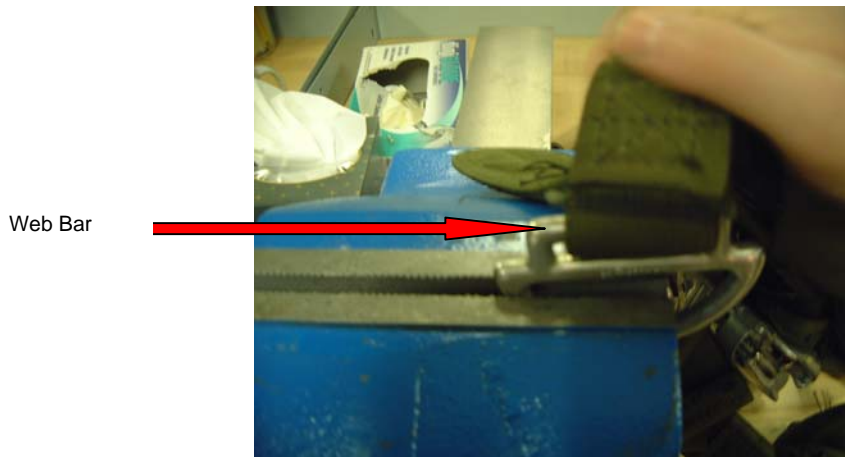


FIGURE 6

(3) Cut off the existing D-ring. Cut the web bar in such a way that allows you to remove the web bar from within the harness material. Exercise extreme caution while cutting the web bar so as to avoid cutting the harness material (Figure 7).



FIGURE 7

- (4) Remove the old D-ring by cutting the web bar leg on each side of the D-ring.
- (5) Position the replacement D-ring in the same location as the one removed with the threaded portion to the inside.
- (6) With the slotted end of the bolt to the outside of the parachute harness, feed the screw pin of the replacement D-ring through the harness material (in the exact location as the old D-ring web bar) from the outside to the inside through the un-threaded hole to the threaded hole and completely screw in the screw pin. It is recommended that a screwdriver blade the width of the screw pin be used for better leverage and proper seating. Remember, the screw pin contains a synthetic locking device and you must insure you completely seat the screw pin (Figure 8).



FIGURE 8

CAUTION

Once the screw pin is seated and staked, it will not be removed (due to the synthetic locking device becoming compromised).

NOTE

Slotted end of screw must face to the outside.

(7) Using a flat solid surface, position the tip of the center punch 90 degrees away from (or perpendicular to) the screw pin slot between the screw pin head and the body (Figure 9).



FIGURE 9

(8) Strike punch with hammer to cause a dimple and a slight flow of metal that will further retain the screw pin as required (Figure 10).



FIGURE 10

(9) Repeat steps 10c. (1) through (8) for the opposite side.

(10) **Record completed MWO on DA Form 3912, Army Parachute Log Record Book.**

c. Maintenance Instructions

The various Maintenance Levels are as follows:

- (1) "C"--Operator or crew maintenance
- (2) "O"--Unit maintenance

Table 5. Maintenance Allocation Chart for Harness Assembly

Components/Assembly	Maintenance Function	Maintenance Level		Tools/Equipment
		"C"-Operator	"O"-Organization	
Harness, Assembly	Repair		0.5	See Section 9 in this MWO
	Replace		0.4	See Section 9 in this MWO

Maintenance Level Column

The work time figure represents the average time required to restore an item (assembly, subassembly or component) to a serviceable condition under typical field operating conditions.

Tools/Equipment Column

See Section 9, Special Tools, Tool Kits, Jigs, Test, Measurement And Diagnostic Equipment (TMDE), and Fixtures Required, in this MWO.

11. CALIBRATION REQUIRED. N/A.

12. WEIGHT AND BALANCE DATA. N/A.

13. QUALITY ASSURANCE REQUIREMENTS. Qualified personnel will accomplish inspection of the completed MWO application for full compliance with the technical requirements of the instructions.

14. RECORDING AND REPORTING OF THE MODIFICATION RECORDS AND REPORT FORMS.

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

MWO application information can be input directly into the Modification Management Information System (MMIS) over the Internet. Entry into the MMIS system is password protected. New users can register on-line at <https://www.mmis.army.mil>. Passwords are normally approved and issued within 48 hours.

Elements 1,2,6 and 9 are given for this MWO (as shown). The person reporting the MWO data will acquire the remaining data elements and input all nine into MMIS.

No.	Data Element	Input Data
1	Materiel Change Number	1-01-08-0003
2	MWO Number	10-1670-293-20-2
3	Unit Identification Code	
4	NSN of the End Item	
5	Serial Number	N/A
6	Registration Number	N/A
7	Date of Application	
8	Hours required for Application	
9	Software Version	N/A

15. MATERIEL CHANGE (MC) NUMBER:

This MWO is authorized by MC Number 1-01-08-0003.


16. MODIFICATION IDENTIFICATION:

The replacement D-rings coupled with the existing D-rings will be secured to the main lift web. The D-ring in the kit will be bronze color versus the silver finish on the current D-ring.

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:


JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0407010

Distribution: To be distributed in accordance with initial distribution number (IDN) 256744 requirements for MWO 10-1670-293-20-2.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: amssbriml@natick.army.mil

Subject: DA Form 2028

1. From: Joe Smith
2. Unit: home
3. Address: 4300 Park
4. City: Hometown
5. St: MO
6. Zip: 77777
7. Date Sent: 19-OCT-93
8. Pub no: 55-2840-229-23
9. Pub Title: TM
10. Publication Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. Submitter FName: Joe
14. Submitter MName: T
15. Submitter LName: Smith
16. Submitter Phone: 123-123-1234
17. Problem: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. Text:

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE 21 October 2003
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) COMMANDER U.S. ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND ATTN: AMSSB-RIM-L KANSAS STREET NATICK, MA 01760-5052						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>) <i>PFC Jane Doe</i> <i>CO A 3rd Engineer BR</i> <i>Ft. Leonardwood, MO 63108</i>	
PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 10-1670-296-23&P				DATE 30 October 2002	TITLE Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems		
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
	0036 00-2				1	<i>In table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MD ZZ not MD 22.</i> <i>Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MD ZZ code symbol.</i>	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE Jane Doe, PFC				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 508-233-4141		SIGNATURE Jane Doe <i>Jane Doe</i>	

TO: <i>(Forward direct to addressee listed in publication)</i> COMMANDER U.S. ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND ATTN: AMSSB-RIM-L KANSAS STREET NATICK, MA 01760-5052	FROM: <i>(Activity and location) (Include ZIP Code)</i> <i>PFC Jane Doe</i> <i>CO A 3rd Engineer BR</i> <i>Ft. Leonardwood, MO 63108</i>	DATE 21 October 2003
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PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER TM 10-1670-296-23&P	DATE 30 October 2002	TITLE Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
0066 00-1					4			<i>Callout 16 in figure 4 is pointed to a <u>D-Ring</u>. In the Repair Parts List key for figure 4, item 16 is called a <u>Snap Hook</u>. Please correct one or the other.</i>

SAMPLE

PART III – REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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<p align="center">RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</p> <p>For use of this form, see AR 25-30; the proponent agency is ODISC4.</p>						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) Commander, U.S. Army Tank-automotive & Armament Command ATTN: AMSTA-LC-CECT, Kansas Street Natick, MA 01760-5052						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER MWO 10-1670-293-20-2						DATE February 29, 2004	TITLE Modification of the Parachute, Personnel, Type 35-Foot Diameter and Harness, Personnel Parachute, D-Ring Replacement
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i>	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
----------------------------------------------------------------	---------------------------------------------------------	------

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER				DATE			TITLE	
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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<p align="center">RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</p> <p>For use of this form, see AR 25-30; the proponent agency is ODISC4.</p>						Use Part II (<i>reverse</i>) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: (<i>Forward to proponent of publication or form</i>) (<i>Include ZIP Code</i>) Commander, U.S. Army Tank-automotive & Armament Command ATTN: AMSTA-LC-CECT, Kansas Street Natick, MA 01760-5052						FROM: (<i>Activity and location</i>) (<i>Include ZIP Code</i>)	
PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER MWO 10-1670-293-20-2						DATE February 29, 2004	TITLE Modification of the Parachute, Personnel, Type 35-Foot Diameter and Harness, Personnel Parachute, D-Ring Replacement
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE	

TO: <i>(Forward direct to addressee listed in publication)</i>	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
----------------------------------------------------------------	---------------------------------------------------------	------

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER				DATE			TITLE	
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 dekagram = 10 grams = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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