ROUTINE

MWO effective date is 1 June 1997 and its completion date is 31 May 2001.

MWO 9-2350-314-20-9

MODIFICATION WORK ORDER

MODIFICATION OF HOWITZER, MEDIUM, SELF-PROPELLED: 155MM, M109A6 (NSN 2350-01-305-0028) (EIC: 3FC)

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

22 October 1997

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. Mail your letter or DA Form 2028, Recommended Changes to Publications and Blank Forms, direct to Director, Armament and Chemical Acquisition and Logistics Activity, ATTN: AMSTA-AC-NMLI, Rock Island, IL 61299-7630. A reply will be provided to you.

1. **PURPOSE.** The pulse accumulator is mounted to the hydraulic compartment wall of the Ml09A6 Self-Propelled Howitzer with a mounting plate and two loop clamps. Fatigue has caused the current loop clamps to break. The unrestrained accumulator has damaged other hydraulic components. This MWO prescribes procedures for replacing the current mounting plate and loop clamps with a new bracket and new clamps. The new loop clamps will resist breaking better than the old ones.

2. **PRIORITY.** This modification is classified ROUTINE.

3. **END ITEM(S) OR SYSTEM(S) TO BE MODIFIED.** See Table 1.

Table 1. End Item or System to be Modified.

NOMENCLATURE	NSN	PART NO.	MODEL	CAGEC	SERIAL NO. RANGE
Howitzer, Medium, Self-Propelled: 155MM	2350-01-305-0028	12553195	Ml09A6	19200	I-570

4. **MODULE(S) (COMPONENTS, ASSEMBLIES, SUBASSEMBLIES, BOARDS, AND CARD(S) TO BE MODIFIED).** Not applicable.

5. **PARTS TO BE MODIFIED.** Not applicable.

6. **APPLICATION.**

a. Time Compliance Schedule: MWO effective date is 1 June 1997 and completion date is 31 May 2001.

b. Level of Maintenance: Unit maintenance is the lowest level of maintenance authorized to apply this MWO.

c. Work Force and Man-hour Requirements.

REQUIREMENTS

WORK FORCE/SKILLS	MAN-HOURS	MAN-HOUR W/O DISASSEMBLY
Armament Repairer (MOS 45D)	1.0 hour	.75 hour

d. MWOs to be Applied Prior to or Concurrently with this MWO. Not applicable.

e. Additional Information. None.

7. **TECHNICAL PUBLICATIONS AFFECTED/CHANGED.**
TM 9-2350-314-20-2
TM 9-2350-314-24P-2

8. **MWO KIT(S)/PART(S) AND THEIR DISPOSITION.**
a. Kit(s)/Part(s) Needed to Apply the MWO. See Table 2.

Table 2. Kits/Parts Required.

NOMENCLATURE	NSN	CAGEC	PART NO.	QTY	ITEM NO.
Washer, Lock	5310-00-637-9541	96906	MS35338-46	2	11
Mounting Plate	TBD	19200	12979847	1	13
Clamp, Loop	TBD	19200	12979848	2	14

b. Contents of MWO Kits. Not applicable

c. Bulk and Expendable Material. See Table 3

Table 3. Bulk and Expendable Material

NOMENCLATURE	NSN	CAGEC	PART NO.	QTY
Nitrogen	6830-00-292-0131	81348	BB-N-411	As Req

d. Parts Disposition. Parts no longer required are listed in Table 4 and will be disposed of per local disposal instructions.

Table 4. Parts Disposition

NOMENCLATURE	N S N	CAGEC	PART NO.	QTY	ITEM NO.
Clamp, Loop	5340-01-384-4708	19200	12927661	2	7
Mounting Plate	5340-01-384-4687	19200	12927660	1	9
Nut, Plain	5310-00-761-6882	96906	MS51967-2	4	*
Screw, Cap	5305-00-068-0508	80204	B1821BH025C 07SN	4	*
Washer, Flat	5310-00-809-4058	96906	MS27183-10	8	*
Washer, Lock	5310-00-582-5965	96906	MS35338-44	4	*
Washer, Lock	5310-00-637-9541	96906	MS35338-46	2	11

* Fasteners attaching clamp loops (7) to mounting plate (9).

9. **SPECIAL TOOLS; TOOL KITS; JIGS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT.** None.

10. MODIFICATION PROCEDURES.

a. Removal of Loop Clamps and Mounting Plate

WARNING

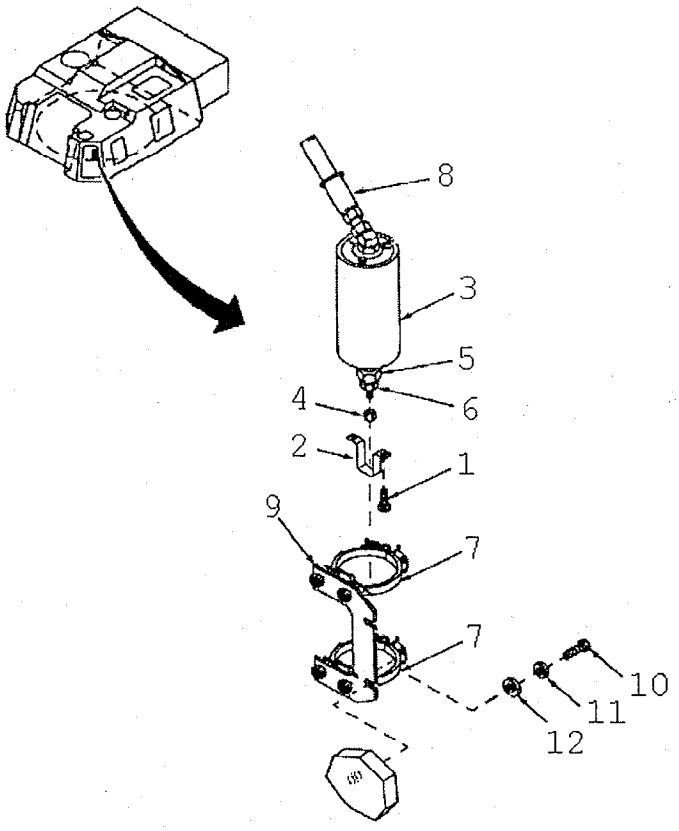
- Before beginning this modification, verify that the MASTER power switch is in the OFF position and the battery ground leads are disconnected. Failure to switch the MASTER power switch OFF and disconnect the battery ground leads can lead to serious personal injury if the pulse accumulator or tools contact electrical terminals located in the hydraulic compartment.

- Hydraulic system pressure is 1925 ± 50 psi. Do not loosen, remove, or torque hydraulic components when the hydraulic system is pressurized. Discharge the system pressure before performing any modification or maintenance procedures. Failure to discharge the system pressure could result in serious injury to personnel. Refer to TM 9-2350-314-20-2-2, paragraph 18-1, for discharging the hydraulic system. Wear gloves and goggles to prevent personal injury.

(1) Open the hydraulic compartment access door.

WARNING

The pulse accumulator is charged to 900 ± 50 psi. Use caution when relieving pressure. Wear gloves and goggles to prevent personal injury.



(2) Remove two screws (1) and guard (2) from pulse accumulator (3).

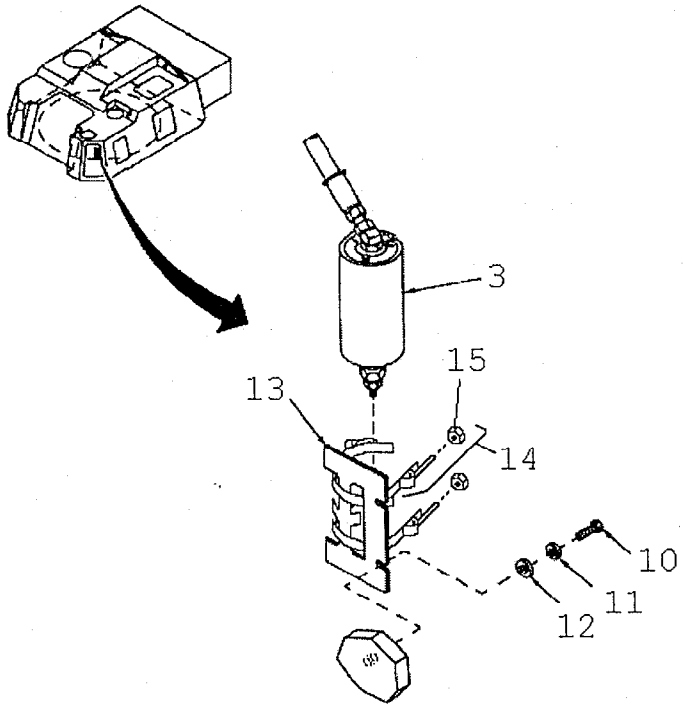
(3) Remove valve cap (4) from charging valve (5), and slowly turn the charging nut valve (6) counterclockwise to relieve nitrogen pressure in pulse accumulator (3). After the pulse accumulator is discharged, thread the valve cap back on the charging valve.

(4) Loosen the screw and release the latch on each loop clamp (7).

(5) With hose (8) still connected, remove pulse accumulator (3) from loop clamps (7). Support the pulse accumulator while mounting plate (9) and loop clamps (7) are replaced.

(6) Remove two screws (10), two lockwashers (11), two flat washers (12), and mounting plate (9), with loop clamps (7) still attached, from the hydraulic compartment wall. Set the two lock washers and mounting plate, with two loop clamps still attached, aside for disposition per para 8.

b. Installation of New Loop Clamps and New Mounting Plate



(1) Fasten mounting plate (13) to the hydraulic compartment wall with two screws (10), two new lockwashers (11), and two flat washers (12).

(2) Open each loop clamp (14) by removing nut (15).

(3) Guide loop clamps (14) through mounting plate (13)

(4) Position the pulse accumulator (3) in place on mounting plate (13).

(5) Fasten each loop clamp (14) around the pulse accumulator (3) with nut (15). Tighten the nut on each loop clamp.

(6) Service pulse accumulator (3) IAW TM 9-2350-314-20-2-2, paragraph 28-12.

(7) Reconnect the battery ground leads.

(8) Recharge the hydraulic system IAW TM 9-2350-314-20-2-2, paragraph 18-l.

11. **CALIBRATION REQUIREMENTS.** Not applicable.

12. **WEIGHT AND BALANCE DATA.** Weight and balance are not significantly affected.

13. **QUALITY ASSURANCE REQUIREMENTS.**

WARNING

Hydraulic fluid under pressure can penetrate the skin or damage eyes. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your hand. Wear safety goggles for protection. If fluid enters your skin or eye, get immediate medical attention.

a. Inspect for leaking hydraulic fluid between the top of the pulse accumulator, the elbow, and the hose. Any leaks are cause for rejection.

b. Inspect the installation for conformance to the MWO.

4. **RECORDING AND REPORTING OF THE MODIFICATION.**

a. Records and Reports.

(1) Record the modification on DA Form 2408-5, Equipment Modification Record, IAW DA Pamphlet 738-750, The Army Maintenance Management System (TAMMS).

(2) Complete DA Form 2407, Maintenance Request, IAW DA Pamphlet 738-750, TAMMS. Forward the NMP copy to: Director, Armament and Chemical Acquisition and Logistics Activity, ATTN: AMSTA-AC-NMR, Rock Island, IL 61299-7630. Forward the organizational copy as directed by the local commander.

b. Marking Equipment. Not applicable.

c. Identification Data. Not applicable,

15. **MATERIEL CHANGE (MC) NUMBER.** This MWO is authorized by MC Number 1-81-05-1002.

16. **MODIFICATION IDENTIFICATION.** This modification has been performed if mounting plate, PN 12979847, is installed in the hydraulic compartment.

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
03959

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

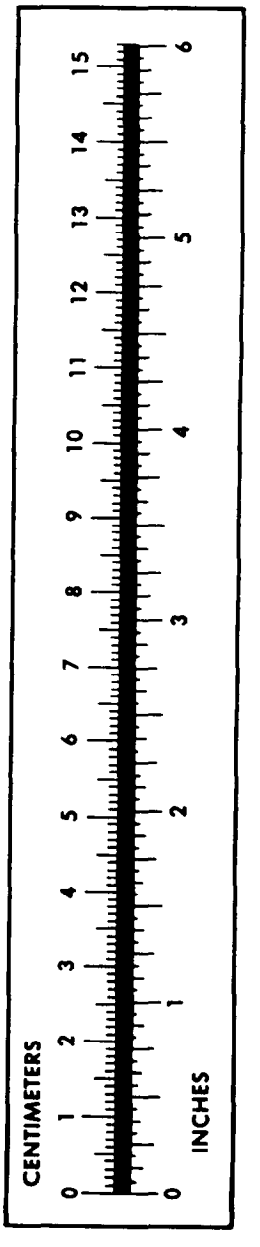
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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