ROUTINE

MWO effective date is 1 June 1993 and completion date is 31 March 1997.

MWO 9-2320-279-20-4

MODIFICATION WORK ORDER

MODIFICATION OF'M977 SERIES 8 X 8
HEAVY EXPANDED MOBILITY TACTICAL TRUCK (HEMTT)
INSTALLATION OF THE ARMY OIL ANALYSIS PROGRAM (AOAP) VALVES

MODEL	NSN	EIC
Truck, Cargo, w/WNVinch M977	2320-01-097-0260	B2D
Truck, Cargo, w/o Winch M977	2320-01-099-6426	B2G
Truck, Tank, Fuel, w/Winch M978	2320-01-097-0249	B2C
Truck, Tank, Fuel, w/oWinch M978	2320-01-100-7672	B2H
Truck, Tractor, w/Winch, w/o Crane M983	2320-01-097-0247	B2A
Truck, Wrecker, w/Winch M984	2320-01-097-0248	B2B
Truck, Wrecker, w/Winch M984A1	2320-01-195-7641	B2L
Truck, Cargo, w/Winch M985	2320-01-097-0261	B2E
Truck, Cargo, w/o Winch M985	2320-01-100-7673	B2J
Truck, Cargo, w/Winch M985E1	2320-01-194-7032	B2K

HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, DC

29 September 1993

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. If you find any mistakes or if you know 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: Commander, U.S. Army Tank-Automotive Command, Attn: AMSTA-MB, Warren, MI 48397-5000. A reply will be provided to you.

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1. **PURPOSE.** Individual Army Oil Analysis Program (AOAP) sampling valves are being added to the HEMTT engine, transmission, and steering gear assembly. Oil contained in each of these systems can be sampled at individual ports and tested per the AOAP.

2. PRIORITY. This modification is classified ROUTINE.

3. END ITEM(S) OR SYSTEM(S) TO BE MODIFIED. Refer to Table 1.

Table 1. End Item to be Modified

NOMENCLATURE	NSN	Part Number	CAGEC	Model	Serial No. Range
Truck, Cargo, w/Winch	2320-01-097-0260	XM977WW	19207	M977	
Truck, Cargo, w/o Winch	2320-01-099-6426	XM977WOW	19207	M977	
Truck, Tank, Fuel, w/Winch	2320-01-097-0249	XM978WW	19207	M978	
Truck, Tank, Fuel, w/oWinch	2320-01-100-7672	XM978WOW	19207	M978	
Truck, Tractor, w/Winch, w/o Crane	2320-01-097-0247	XM983WOC	19207	M983	26631 and below
Truck, Wrecker, w/Winch	2320-01-097-0248	XM984WW	19207	M984	
Truck, Wrecker, w/Winch	2320-01-195-7641	XM984E1WW	19207	M984A1	
Truck, Cargo, w/Winch	2320-01-097-0261	XM985WW	19207	M985	
Truck, Cargo, w/o Winch	2320-01-100-7673	XM985WOW	19207	M985	
Truck, Cargo, w/Winch	2320-01-194-7032	XM985E1WW	19207	M985E1	

4. MODULE(S) (COMPONENTS, ASSEMBLIES, SUBASSEMBLIES, BOARDS, AND CARDS) TO BE MODIFIED. The following items, whether installed or in depot stock, shall be modified.

Table 2. Assemblies to be Modified

Item Name	Part Number	CAGEC	Quantity per End Item	NSN
Diesel Engine	1319410U	45152	1	2815-01-132-1417
Transmission	1319420U	45152	1	2520-01-132-4262
Steering Gear Assembly7536824		78222	1	2530-01-153-2771

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

6. **APPLICATION.**

a. Time Compliance Schedule. The effective date of this MWO is 1June 1993 and its completion date is 31 March 1997.

b. Level of Maintenance. Modification will be accomplished by unit maintenance.

c. Applied By/Requirements.

REQUIREMENTS

WORK FORCE/SKILLS	MAN-HOURS
1 Heavy Wheeled Vehicle Mechanic (MOS 63S)	1.5 hours

d. MWO's to be applied prior to or Concurrently with this MWO. Not Applicable.

7. **TECHNICAL PUBLICATIONS AFFECTED/CHANGED.**

TM 9-2320-279-20 (Apr 1987)
TM 9-2320-279-20P (Mar 1988)
TM 9-2320-279-34 (Jun 1987)
TM 9-2320-279-34P (Mar 1988)

8. **MWO KIT(S)/PART(S) AND THEIR DISPOSITION**. All parts required to accomplish installation of this MWO are listed in Table 3. The security classification of the Kit is unclassified. Shipping data is: Weight 1.12 lbs.; the Kit measures 6" X 71/2" X 1 1/4"; its volume is 56.25 cu in.

Table 3. Army Oil Analysis Program (AOAP) VALVE PARTS.

Item Name	Part Number	CAGEC	Quantity per End Item	NSN
AOAP Kit Includes:	57K1164	19207	1	2590-01-293-8294
Sampling valve (high-pressure)	P59-500	91816	1	4820-01-120-4532
Street elbow	MS39230-15	96906	1	4730-01-244-6013
Tee	203104-4-6S	01276	1	4730-01-244-7673
45-degree elbow	2088-6-6S	01276	1	4730-01-200-5615
Adapter	2018-4-6S	01276	1	4730-01-244-4670
Reducer bushing	8925325	72582	1	4730-01-216-3331
Sampling valve (low-pressurre)	M81940/2-1	01276	1	4820-01-298-8416
Antiseizing tape	417043-2	96214	1	8030-00-889-3535

9. **SPECIAL TOOLS; JIGS; TEST MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND FIXTURES REQUIRED**. Not applicable.

10**. MODIFICATION PROCEDURES.**

a. Engine Oil Sampling Valve Installation.

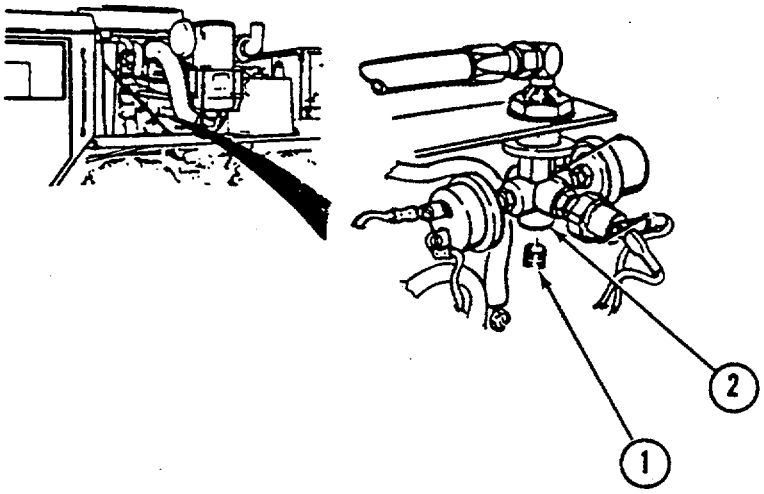

Figure 1. Oil Sending Unit Housing.

(1) Open driver's side engine cover and remove engine cover side panel.

(2) Remove plug (1) from oil sending unit housing (2). Discard plug.

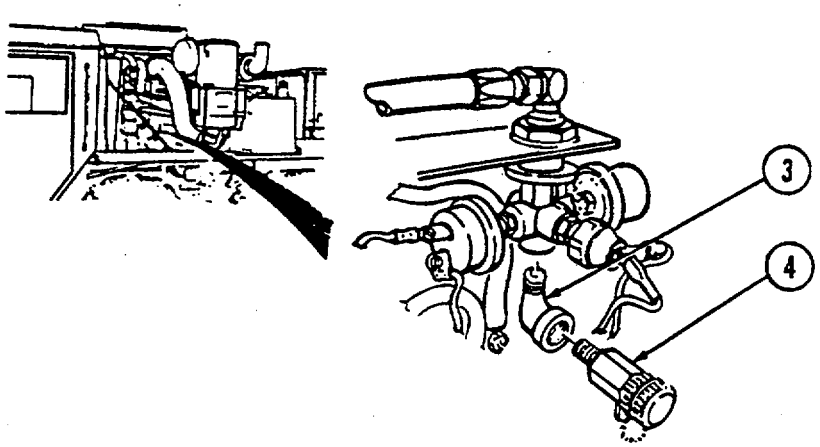

Figure 2. Engine Oil Sampling Valve Installation.

NOTE
Low-pressure sampling valve has marking M81940/2-1 permanently marked on it.

(3) Apply antiseizing tape and install elbow (3) and low-pressure sampling valve (4) in oil sending unit housing.

(4). Install engine cover side panel and close engine cover.

b. Transmission Oil Sampling Valve Installation.

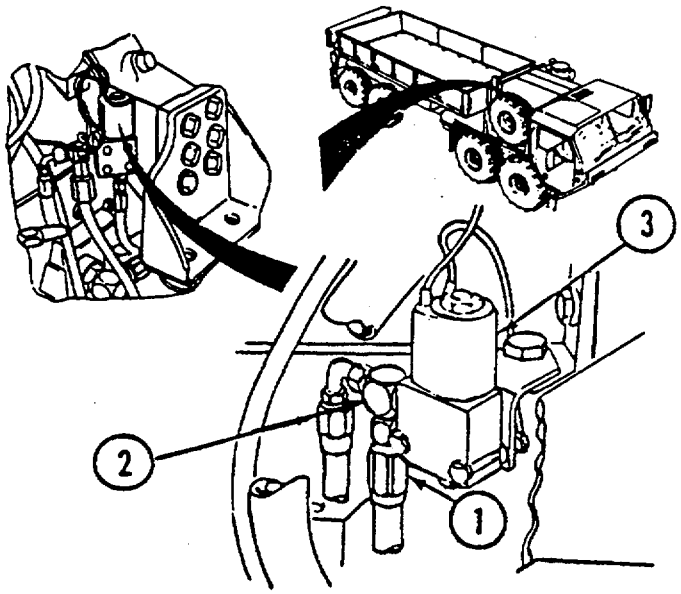

Figure 3. Transmission Solenoid.

(1) Disconnect hydraulic hose (1) from tee (2) on transmission solenoid (3).

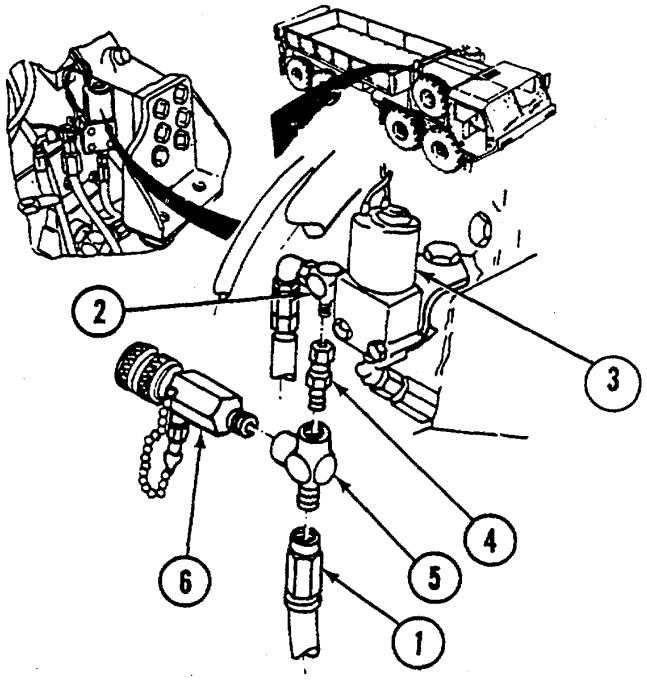

Figure 4. Transmission Oil Sampling Valve Installation.

(2) Apply antizeizing tape and install adapter (4), tee (5), and low-pressure valve (6) on tee (2) of transmission solenoid (3).

(3) Connect hydraulic hose (1) to tee (5).

c. Hydraulic Oil Sampling Valve Installation.

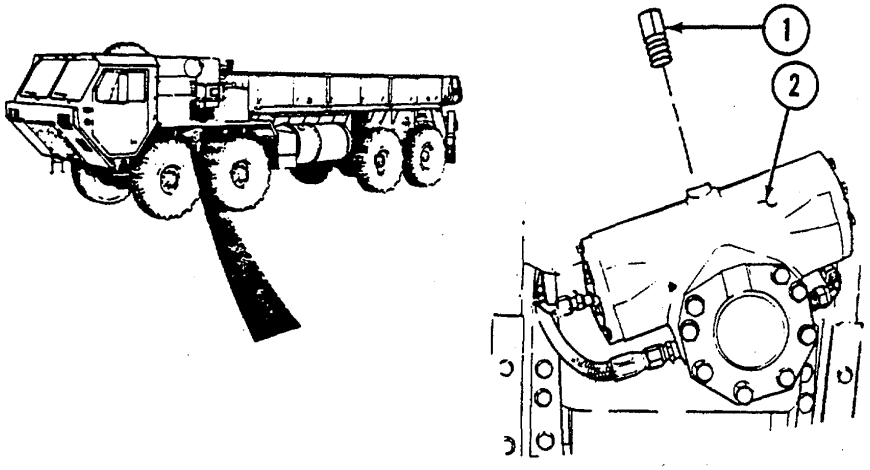

Figure 5. Slave Steering Gear.

(1) Remove plug (1) from slave steering gear assembly (2). Discard plug.

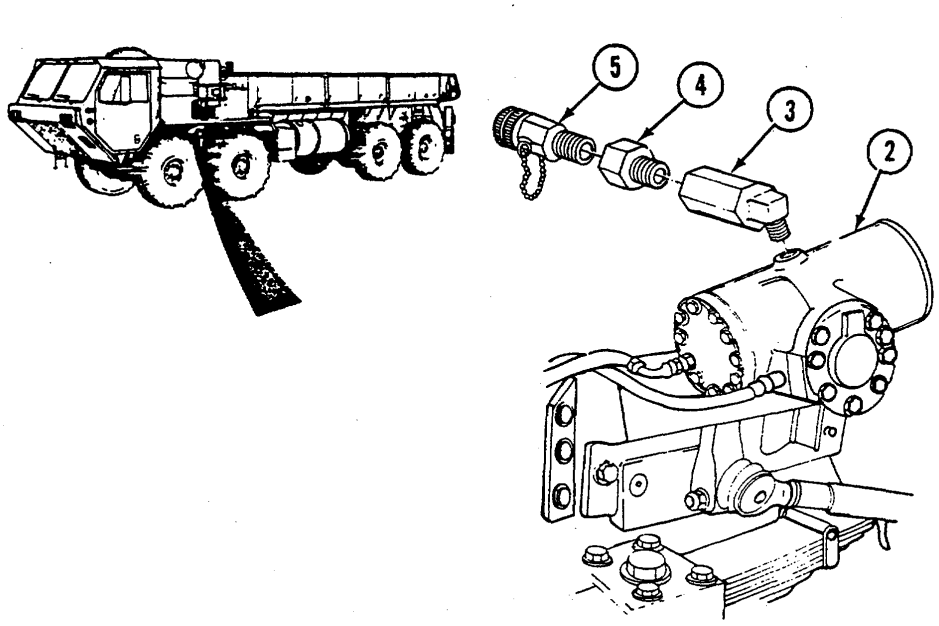

Figure 6. Slave Steering Gear Oil Sampling Valve installation.

(2) Apply antizeizing tape and install 45-degree elbow (3), reducer bushing (4), and high-pressure sampling valve (5) on slave steering gear assembly (2).

d. Follow-on Maintenance. Test performance of newly installed valves in accordance with LO 9-2320-279-12.

11. CALIBRATION REQUIREMENTS. Not applicable.

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

13. QUALITY ASSURANCE REQUIREMENTS. Not applicable.

14. RECORDING AND REPORTING OF THE MODIFICATION.

a. Records and Reports: Record the modification in accordance with AR 750-10, DA PAM 738-750, DA PAM 738-751, and TB 9-1100-803-15.

b. Marking Equipment: Not applicable.

c. Identification Data: Not applicable.

15. MATERIAL CHANGE (MC) NUMBER. This MWO is authorized by MC number 1-87-06-4137.

16. MODIFICATION IDENTIFICATION. The installation of the engine oil sampling valve, transmission oil sampling valve, and the slave steering gear sampling valve is illustrated in *Figures 2, 4, and 6,* respectively.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
05197

Distribution:

To be distributed in accordance with DA Form 12-38-E, Block No. 0977, maintenance requirements for MWO 9-2320-279-20-4.

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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

WEIGHTS

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

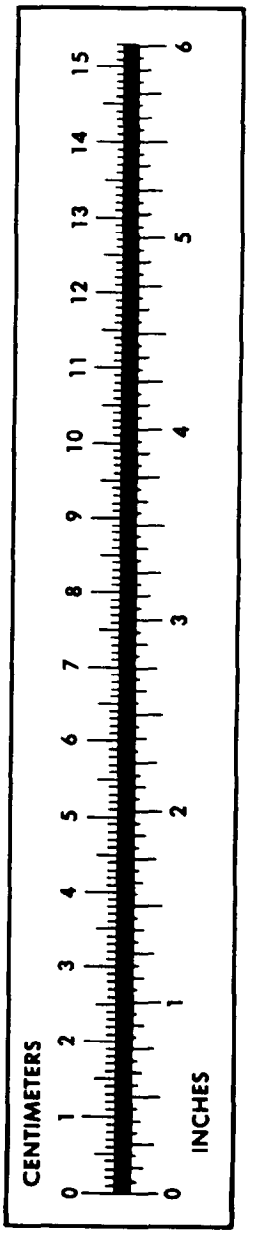
TEMPERATURE

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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