

# LUBRICATION ORDER

## LO 9-2320-355-20

24 OCTOBER 1986

### HIAB MODEL 8108 MEDIUM MATERIAL HANDLING CRANE (MHC) FOR

M985E1 CARGO, 8 X 8

HEAVY EXPANDED MOBILITY TACTICAL TRUCK (HEMTT)

#### MODEL

#### NSN

CRANE, MEDIUM MATERIAL HANDLING 81083810-01-204-7842

TRUCK, CARGO, WITH WINCH M985E1 2320-01-194-7032

TRUCK, CARGO, WITHOUT WINCH M985E1 2320-01-194-7031

Reference: LO 9-2320-279-12, TM 9-2320-355-10, and TM 9-2320-355-24&P

**Intervals (on-condition or hard time) and the related man-hour times** are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval. On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hard time interval if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The hard time interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Hard time intervals will be applied in the event AOAP laboratory support is not available.

Intervals shown in this lubrication order are based on calendar and hourly times or calendar times and mileage. An example of a calendar and hourly lubrication interval is: **M/60HR**, in which **M** stands for monthly and **60 HR** stands for 60 hours of vehicle operation. An

example of a mileage and calendar interval is: **1.5/Q**, in which **1.5** stands for 1,500 miles (2,400 k m), and **Q** stands for quarterly (every three months). The lubrication is to be performed at whichever interval occurs first for the vehicle.

**Determination of operating hours.** The reading on the vehicle hourmeter, which is part of the tachometer in the driver's instrument panel, is the basis of all lubrication intervals that are based on hours of operation. When hour-based intervals are shown for components that are operated for only part of the vehicle operating time, use the hourmeter reading to determine the interval, because the proportions of component vs vehicle operating time have already been figured into the intervals shown in this lubrication order.

#### EXAMPLE:

Slewing housing of HIAB 8108 crane shows lubrication interval of M/60 HR. This means that the slewing housing is to

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be lubricated every month or every 60 hours of vehicle operation, whichever comes first.

### WARNING

Drycleaning solvent SD P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Do not use near open flame or excessive heat. The flash point is 100-138° F (38-59°C). If you become dizzy while using cleaning solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

**Clean fittings before lubricating.** Clean parts with drycleaning solvent SD P-D-680 or equivalent. Dry before lubricating.

Dotted arrow points indicate lubrication on both sides of the equipment.

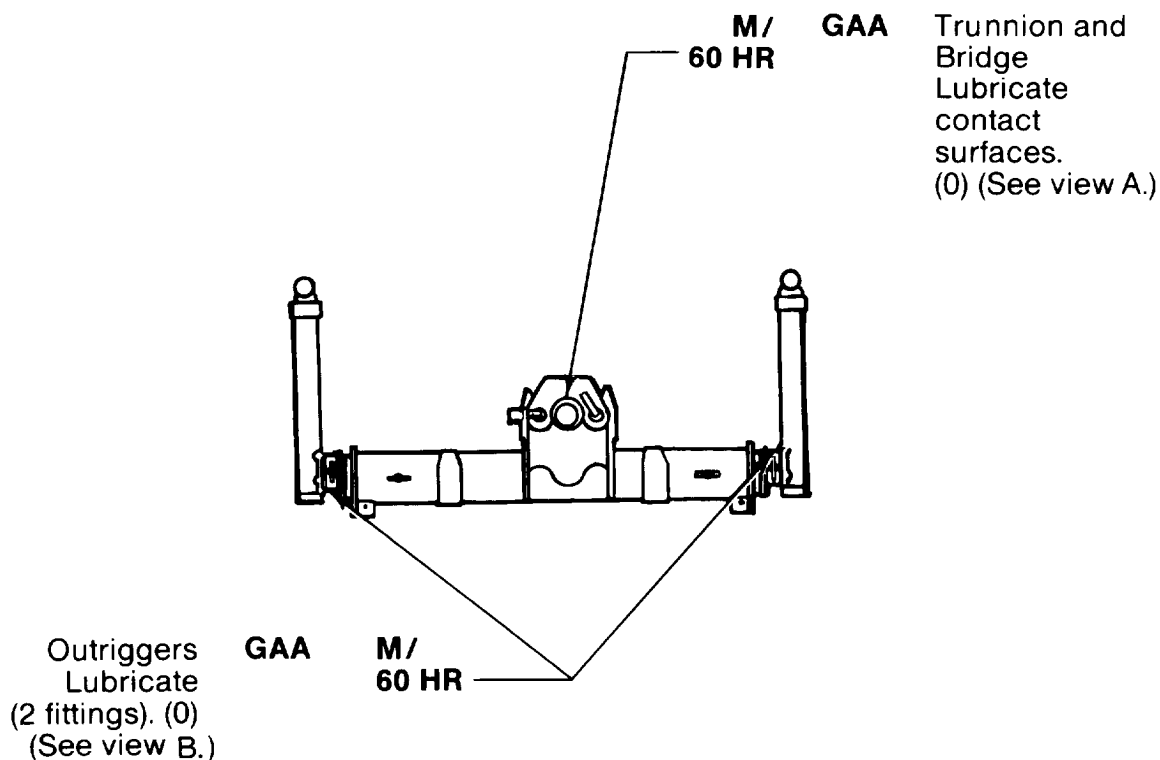
**Level of Maintenance.** The lowest level of maintenance authorized to lubricate a point is indicated by the following symbol: (O) Organizational Maintenance.

Refer to LO 9-2320-279-12 for lubrication instructions for the HEMTT vehicle and crane hydraulic system.

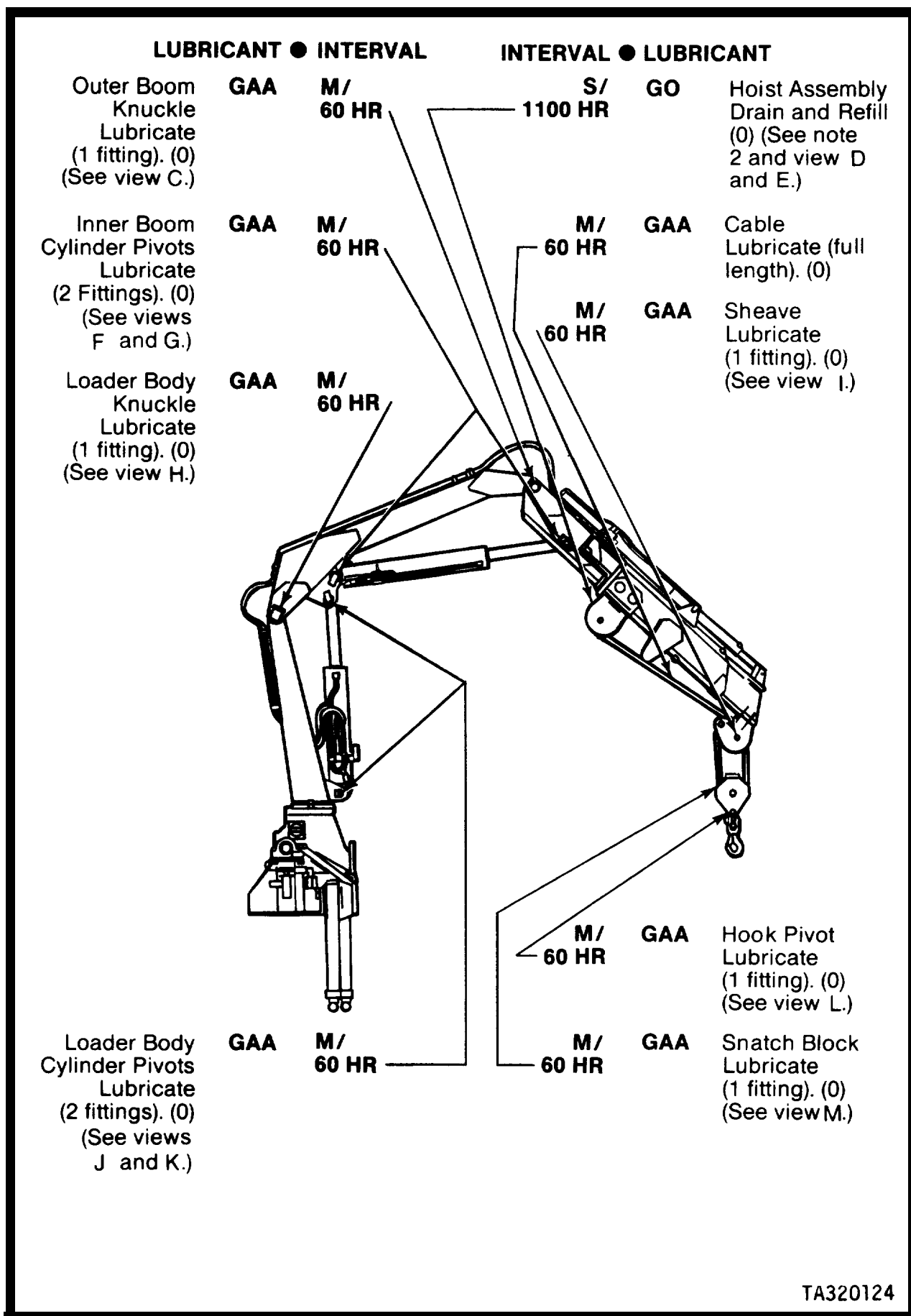
**Reporting errors and recommending improvements.** You can help improve this lubrication order. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, Michigan 48397-5000. A reply will be furnished to you.

### LUBRICANT ● INTERVAL

### INTERVAL ● LUBRICANT

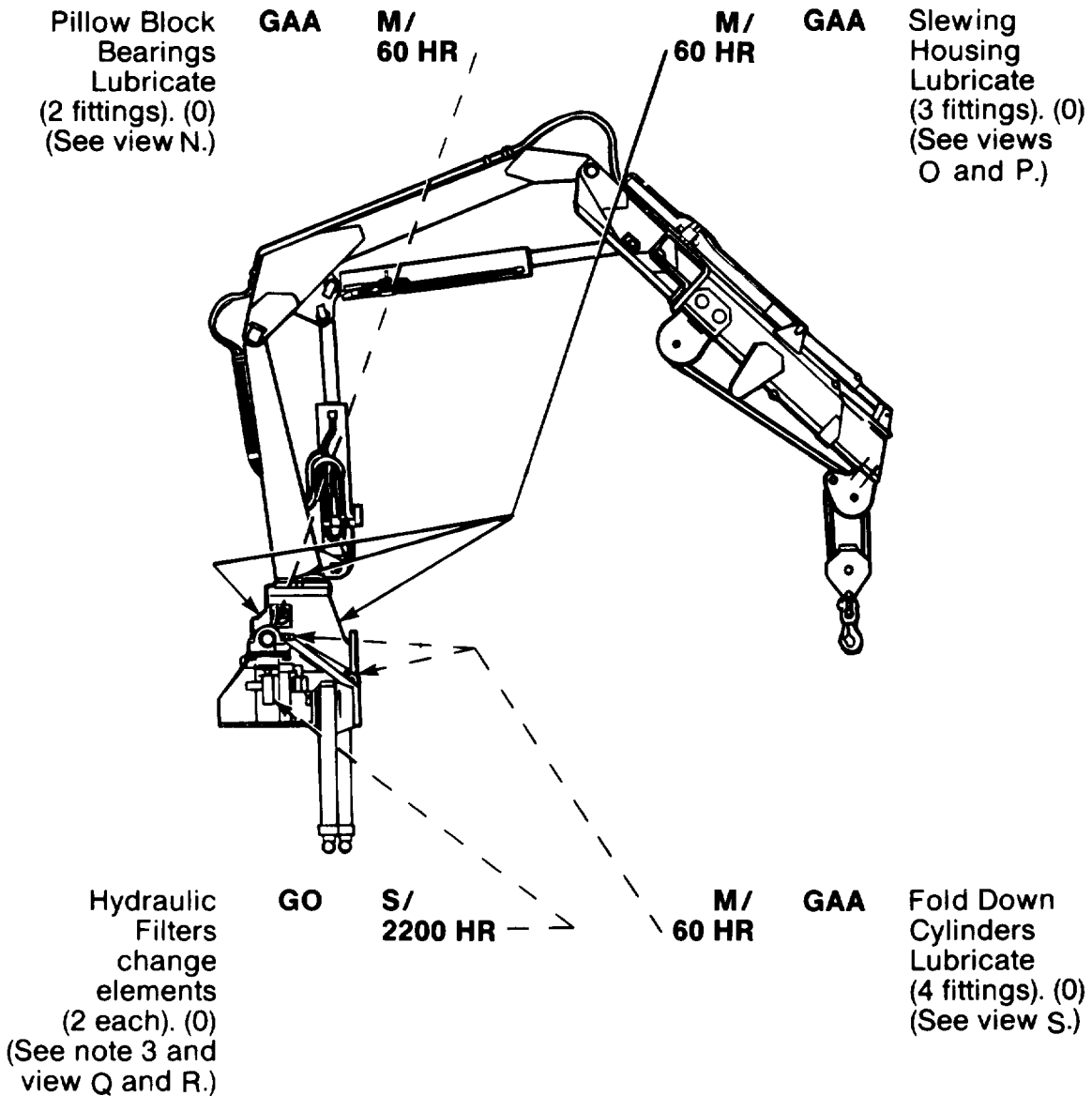


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**LUBRICANT ● INTERVAL**

**INTERVAL ● LUBRICANT**



*TOTAL MAN-HR		*TOTAL MAN-HR	
INTERVAL	MAN-HR	INTERVAL	MAN-HR
60	0.5	2200	0.5
1100	2.0		

\*The time specified is the time required to perform all services at the particular hard time interval.

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## KEY

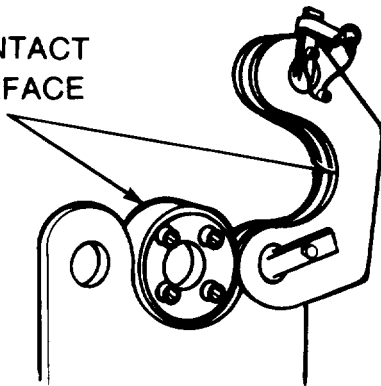
LUBRICANTS	CAPACITIES	EXPECTED TEMPERATURES			INTERVALS
		Above +15°F (Above -9°C)	+40°F to -15°F (+4°C to -26°C)	+40°F to -65°F (+4°C to -54°C)	
<b>GAA</b> (MIL-G-10924) Grease Automotive and Artillery  All Grease Points		ALL TEMPERATURES			Intervals given are in hours of normal operation.
<b>GO</b> MIL-L-2105 Gear Oil Hoist Assembly	1 qt (0.95L)	<b>GO 80/90</b> (0-226)	<b>GO 75</b> (0-186)		

For arctic operation refer to FM 9-207.

See notes 1 and 4

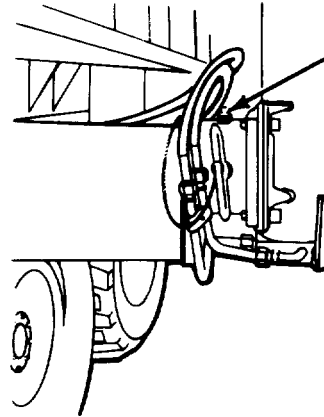
**(A)**

CONTACT  
SURFACE



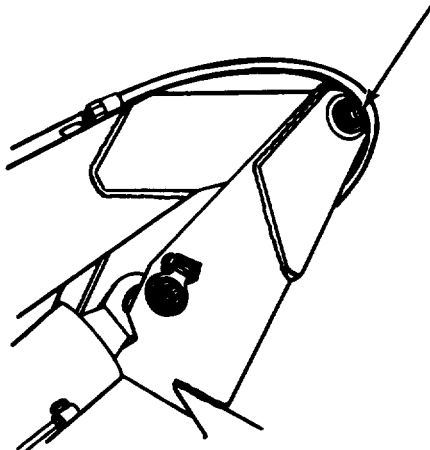
**(B)**

LUBE  
FITTING



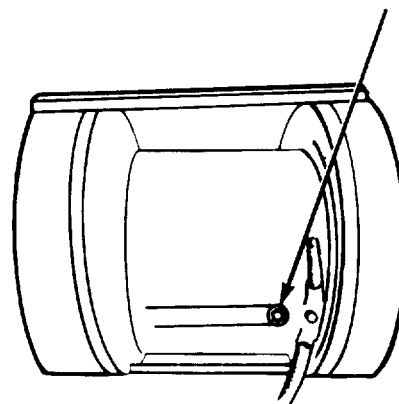
**(C)**

LUBE  
FITTING



**(D)**

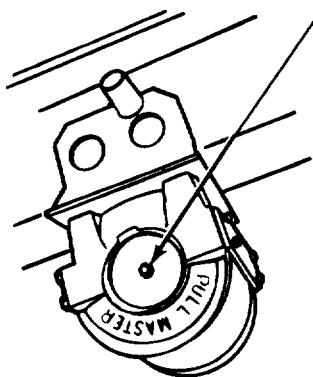
DRAIN  
PLUG



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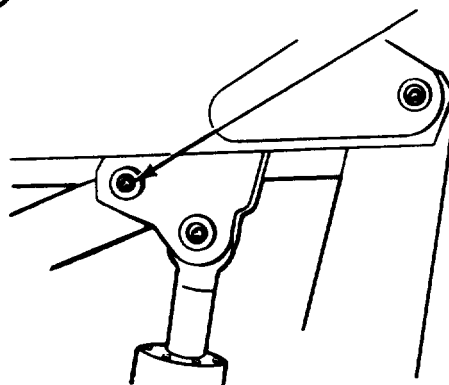
(E)

FILL  
PLUG



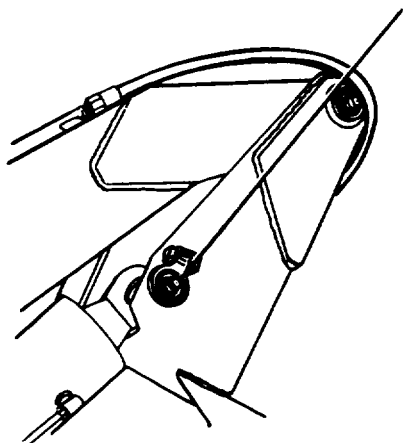
(F)

LUBE  
FITTING



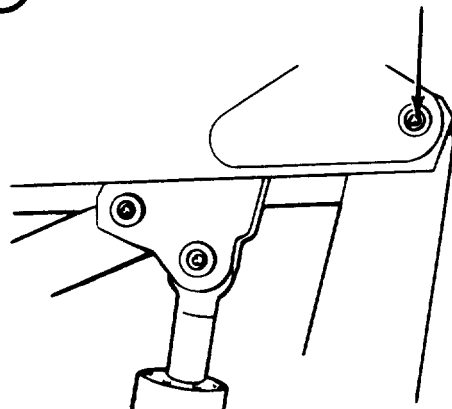
(G)

LUBE  
FITTING



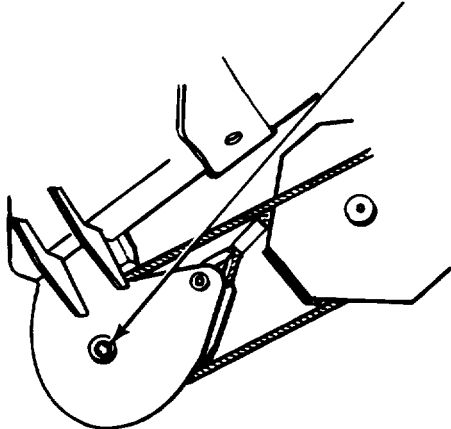
(H)

LUBE  
FITTING



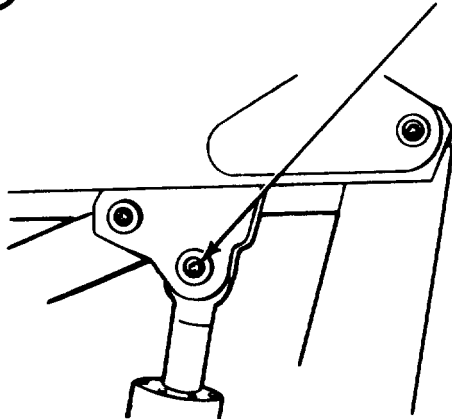
(I)

LUBE  
FITTING



(J)

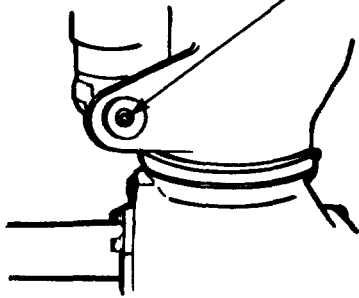
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FITTING



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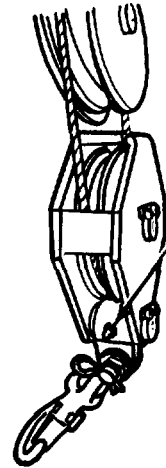
(K)

LUBE  
FITTING



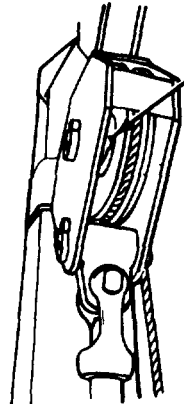
(L)

LUBE  
FITTING



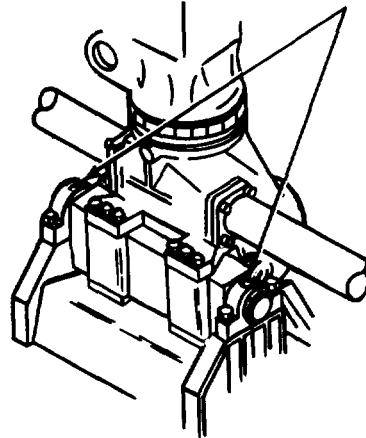
(M)

LUBE  
FITTING



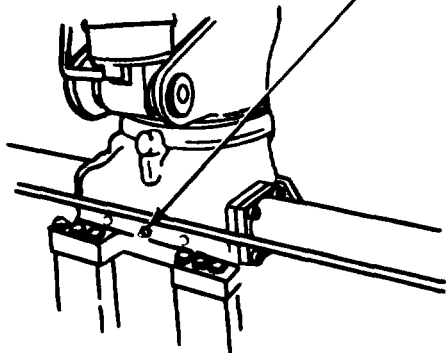
(N)

LUBE  
FITTING



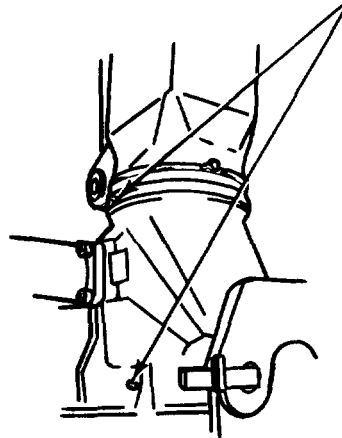
(O)

LUBE  
FITTING



(P)

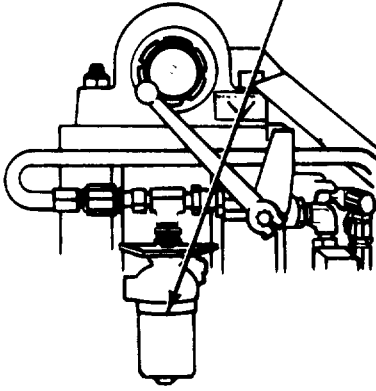
LUBE  
FITTING



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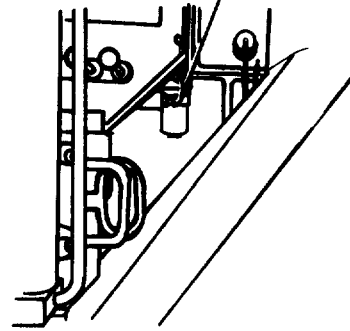
Q

PRIMARY  
FILTER



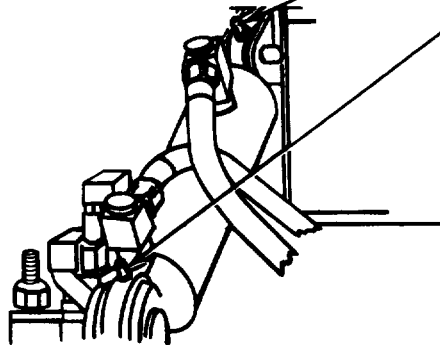
R

SECONDARY  
FILTER



S

LUBE  
FITTING



TA320129

**NOTES:**

**1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F (-23°C).** Remove lubricants prescribed in the key for temperatures above -10°F (-23°C) and refill with lubricant specified for the range of + 40° F (4°C) to -65°F (-54°C).

**2. HOIST ASSEMBLY.** Unwind cable from hoist to expose drain plug and drain the hoist. Fill with 1 quart (0.95L) of GO to level of plug.

**3. HYDRAULIC FILTERS.** Change filter every 2200 hours or semiannually. Remove filter element, clean filter housing, and install new filter element and packing. Operate crane and check for leaks.

**4. GRADE 85W-140 (GO 85/140)** maybe used when expected temperatures are above +10°F (-12°C). NATO code for GO 85/140 is 0-228.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

By Order of the Secretary of the Army

Official:

**JOHN A. WICKHAM, JR.**  
*General United States Army*  
*Chief of Staff*

**R.L. DILWORTH**  
*Brigadier General United States Army*  
*The Adjutant General*

**Distribution**

To be distributed in accordance with DA Form 12-38, organizational Maintenance requirements for Truck Cargo, 10-Ton, 8x8, Heavy Expanded Mobility Tactical Truck HEMTT Controls and Equipment for M985E1 only.

TA320130

# RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE  
DOPE ABOUT IT ON THIS FORM.  
CAREFULLY TEAR IT OUT, FOLD IT  
AND DROP IT IN THE MAIL.

## SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE  
NO.

PARA-  
GRAPH

FIGURE  
NO.

TABLE  
NO.

IN THIS SPACE, TELL WHAT IS WRONG  
AND WHAT SHOULD BE DONE ABOUT IT.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS  
ARE OBSOLETE.

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

## 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 cu. feet

## Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
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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