

LUBRICATION ORDER

19 July 984

LO 5-3810-294-12

(Supersedes LO 5-3810-294-12-1, -3, and -5, 1 April 1974, and -2 and -4, 7 February 1974)

**CRANE, TRUCK MOUNTED; 314 CU YD, 20-TON
WICLAMSHHELL, DRAGLINE AND BACKHOE
ATTACHMENTS, DED (HARNISCHFEGER CORP MODEL
M320T2) (NSN 3810-00-151-4431)**

Reference: LO 5-3810-294-10, -20, AND FEDERAL SUPPLY CATALOG C9100-IL.

Hard time intervals and the related manhour 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. 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.

WARNING

Dry cleaning fluid is flammable. Do not use near a flame or excessive heat. Use only with adequate ventilation. Avoid prolonged breathing of vapors and minimize skin contact.

Clean parts or fittings with dry cleaning solvent (SD), Type II or equivalent. Dry before lubricating. Dotted arrow shafts indicate lubrication on both sides of equipment. A dotted circle indicates a drain below. Relubricate all items found contaminated after fording or washing.

The lowest level of maintenance authorized to lubricate a point is indicated by one of the following symbols as appropriate: Operator/Crew (C); and Organizational Maintenance (O).

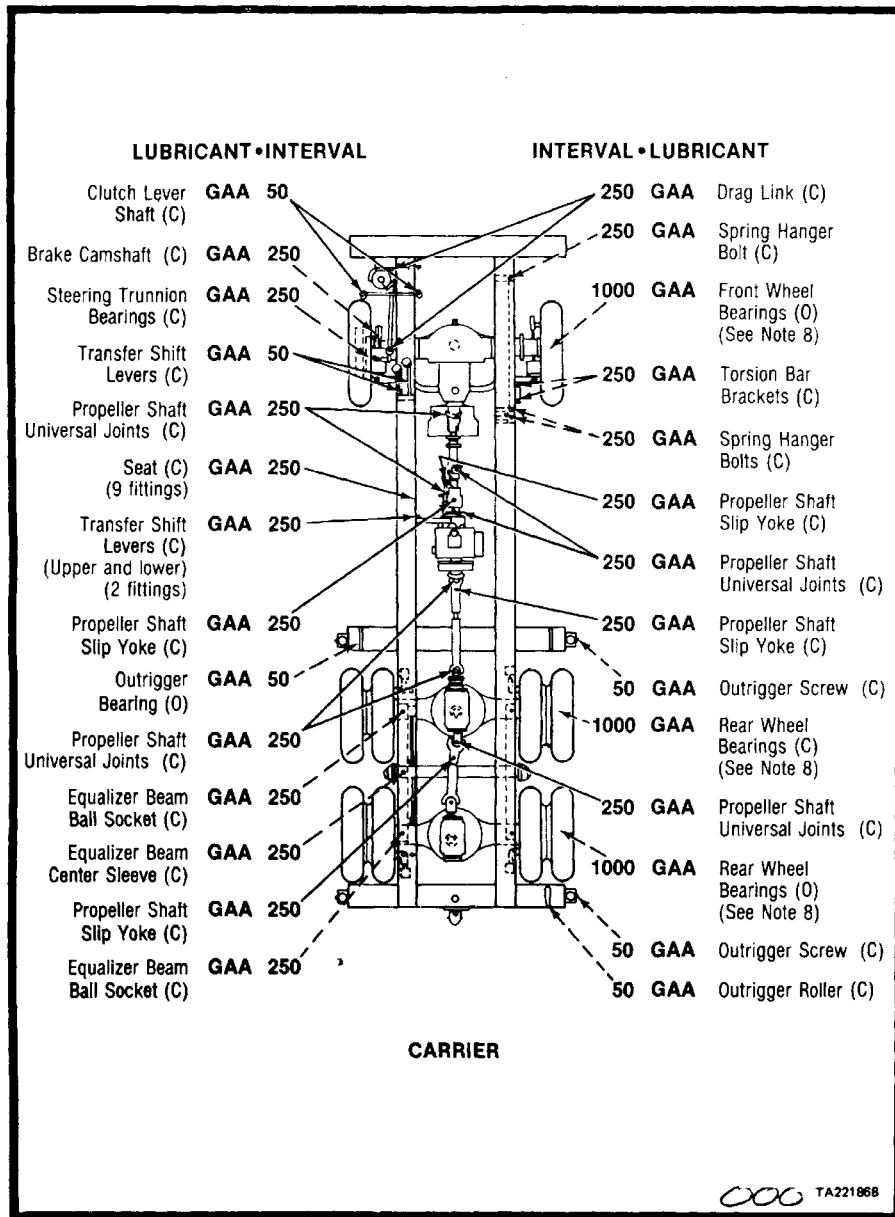
Reporting errors and recommending improvements. You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Tank-Automotive Command, ATTN: DRSTA-MB, Warren, MI 48090. A reply will be furnished to you.

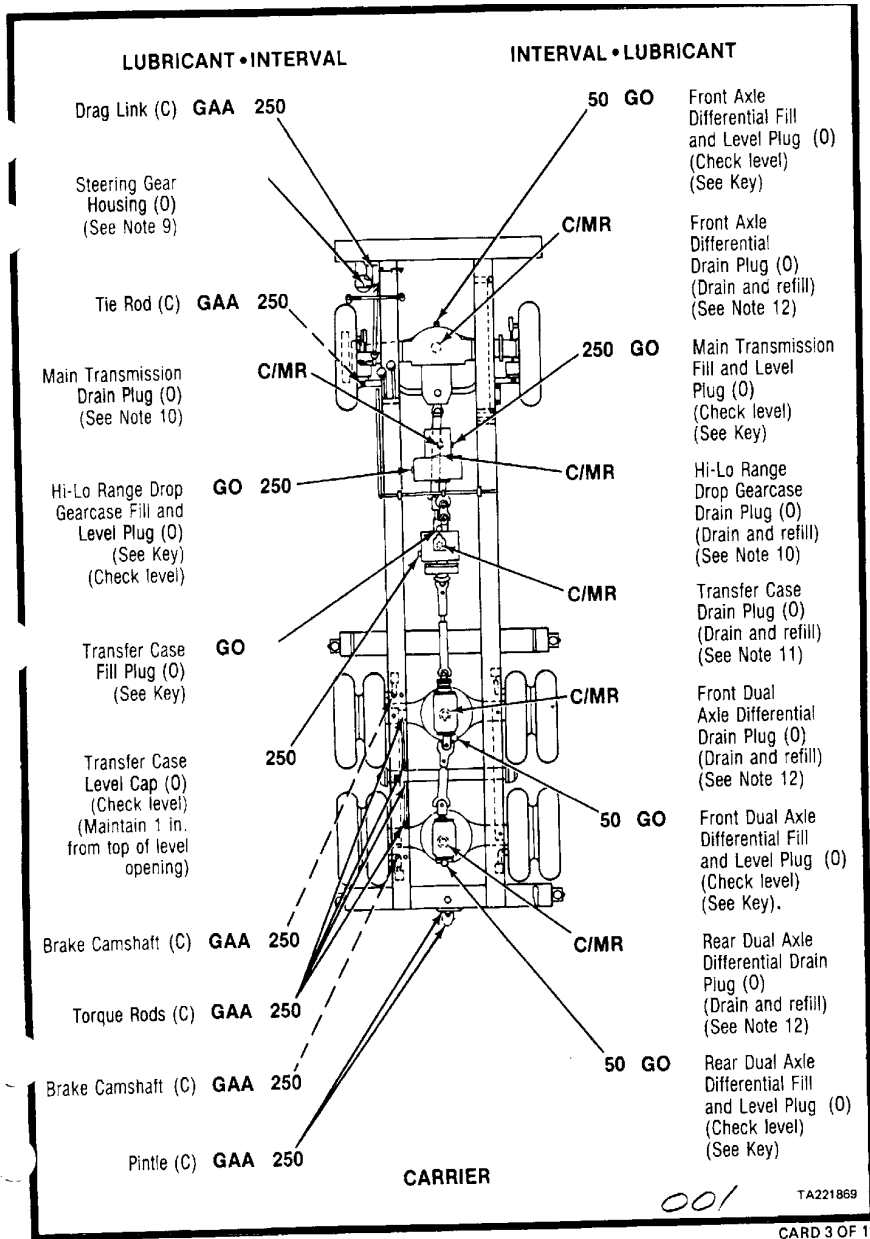
*The time specified is the time required to perform all services at the particular interval.
at the particular interval.

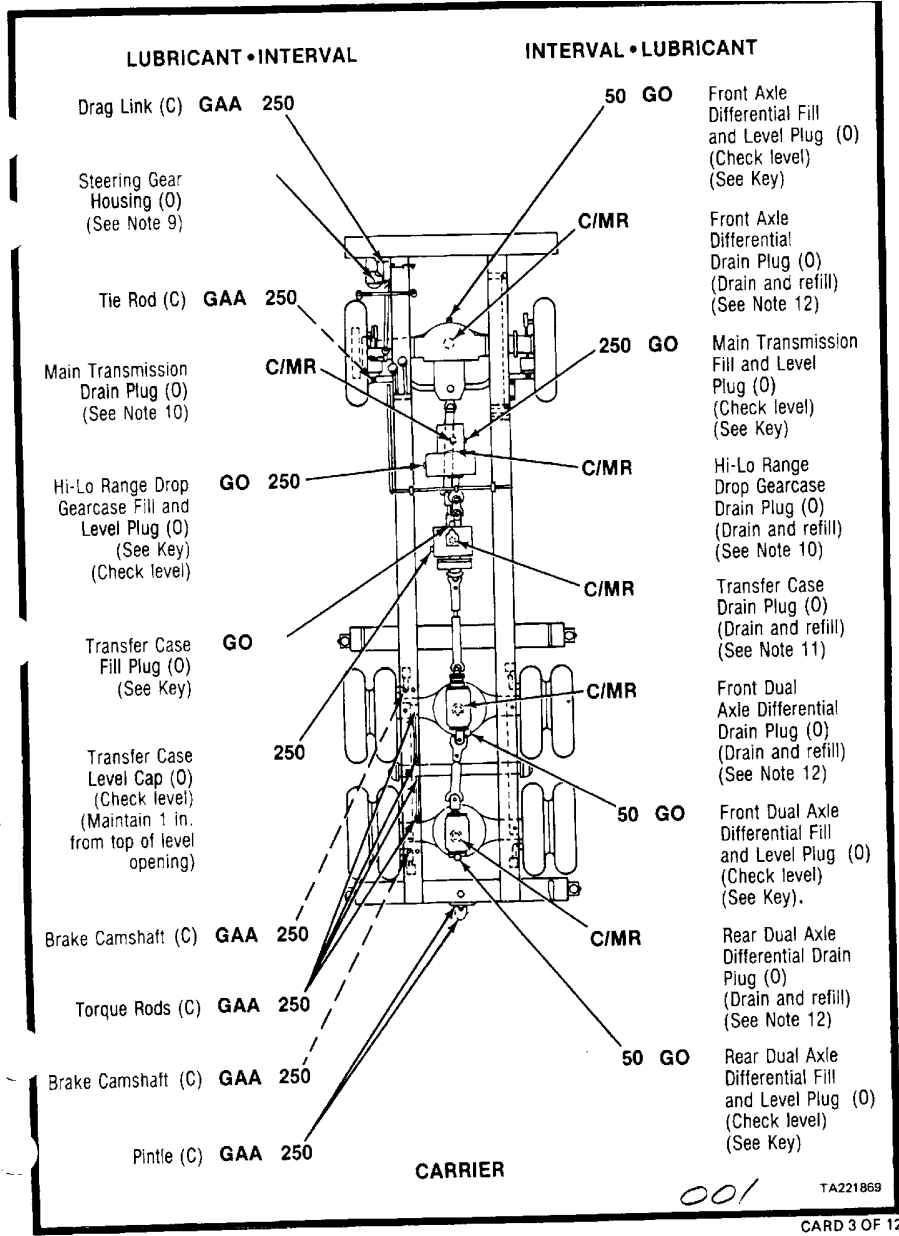
*TOTAL MAN-HOURS		TOTAL MAN-HOURS	
INTERVAL	MAN-HOURS	INTERVAL	MAN-HOURS
5	1.0	250	2.8
10	2.5	500	0.6
50	2.8	1000	3.0
100	1.2		

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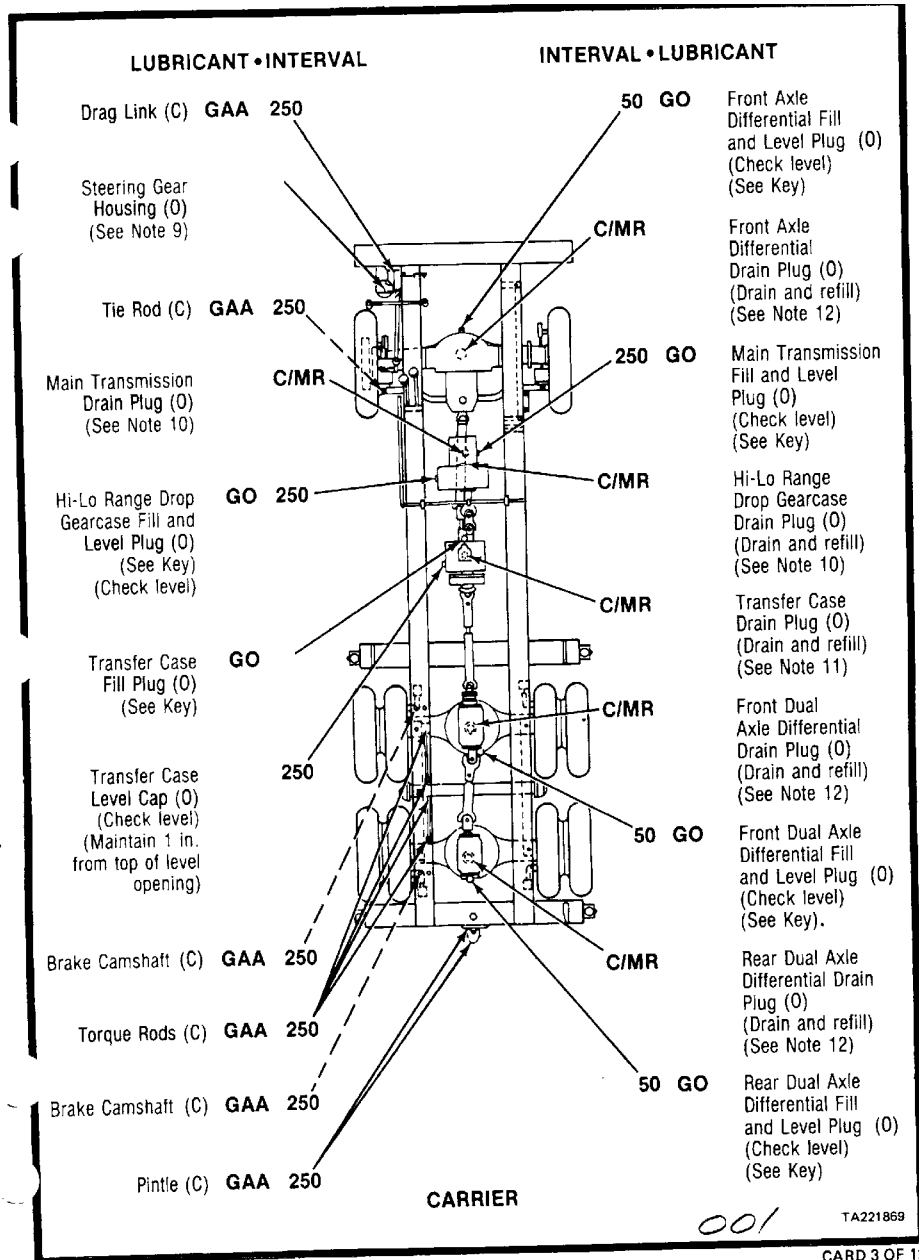


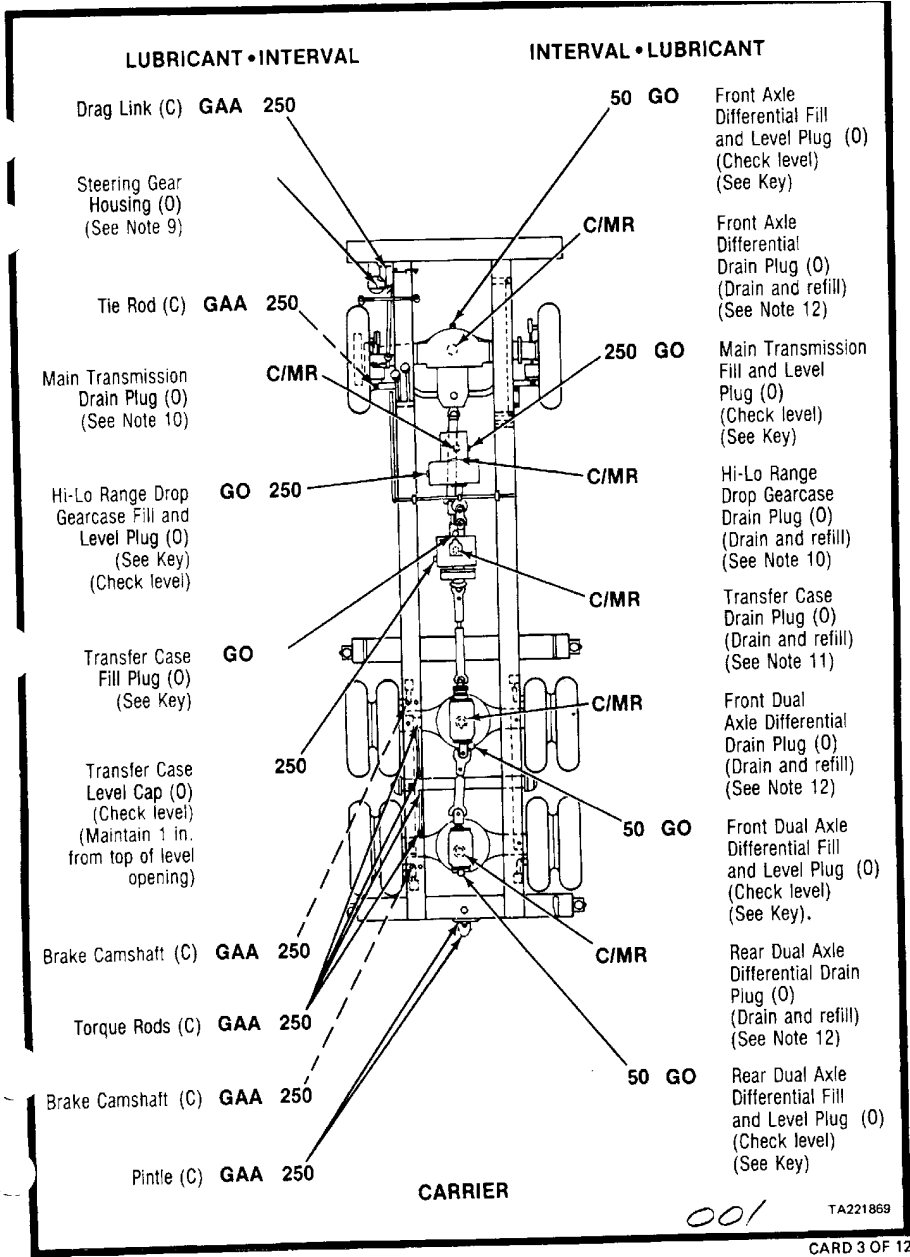


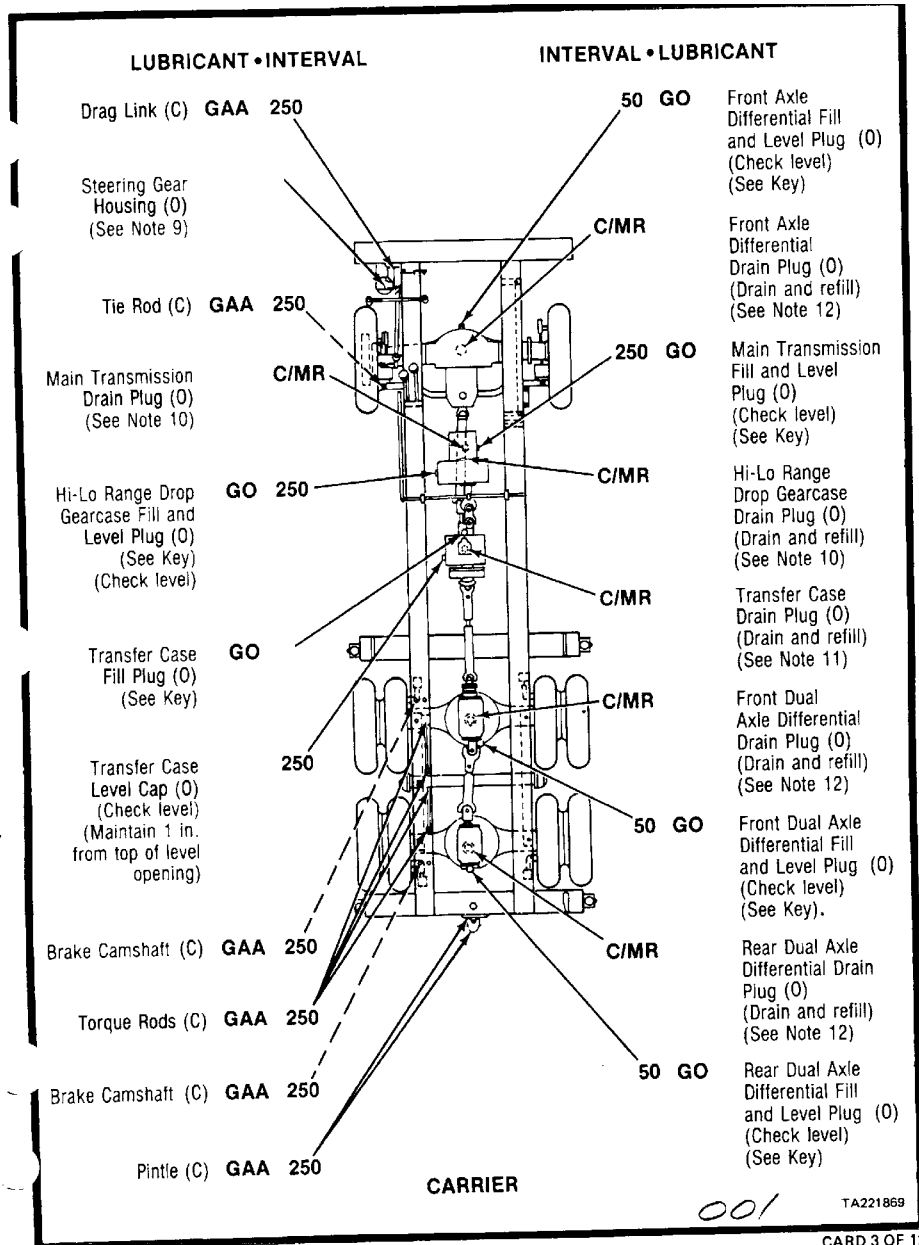


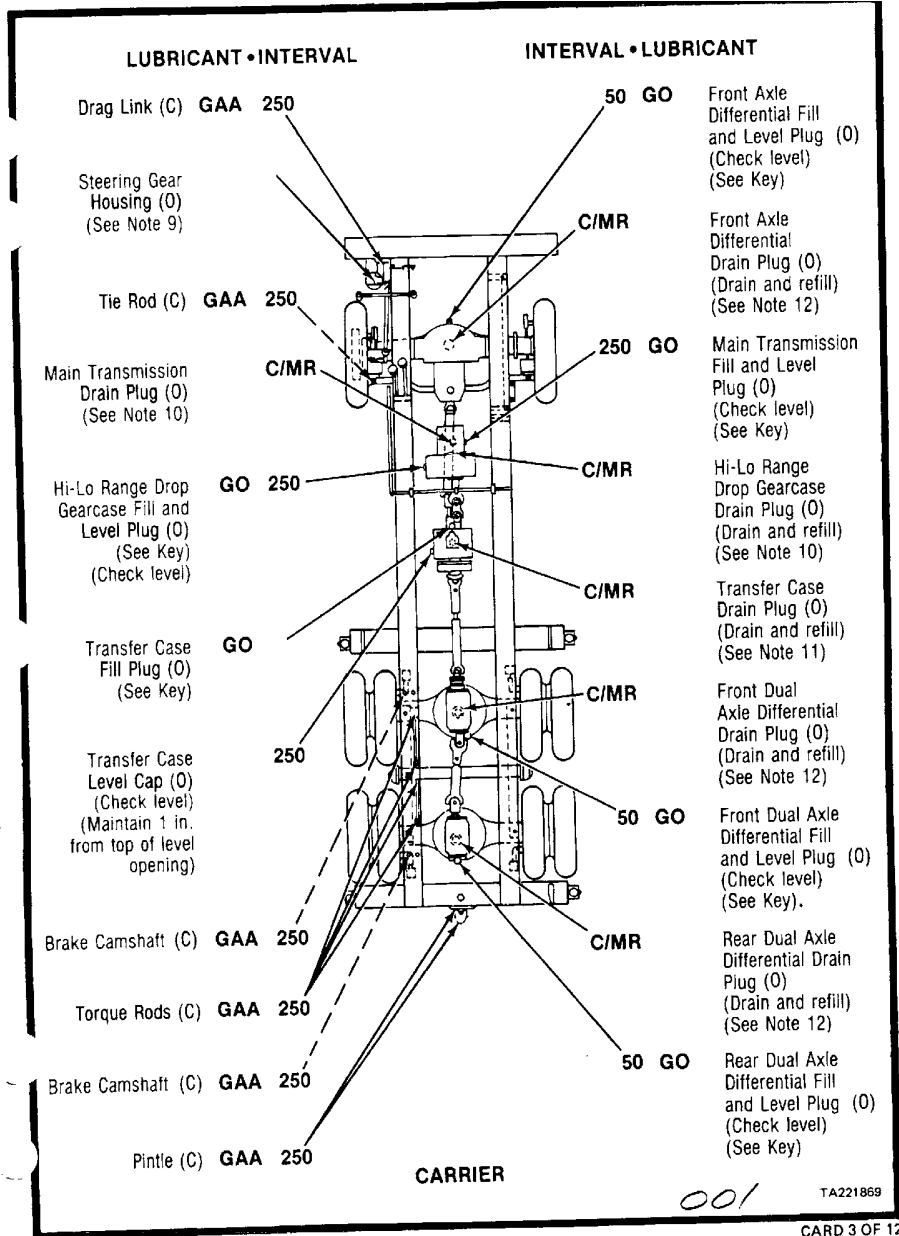
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* KEY -

LUBRICANTS	CAPACITY	EXPECTED TEMPERATURES			INTERVALS
		Above + 15°F (Above -9°C)	+ 40° to -15°F (+ 4° to -26°C)	+ 40° to -65°F (+ 4° to -54°C)	
OE/ HDO - Lubricating Oil, Internal Combustion Engine, Tactical Service OEA - Lubricating Oil, Internal Combustion, Arctic - Carrier Engine Crankcase W/Filters - Crane Engine Crankcase W/Filters - Oil Can Points (See Note 2)	12 qts. (11.35 L) 9 qts. (8.5 L)	OE/HDO 30	OE/HDO 10	OEA (See Note 1)	C/MR - Condition Monitor Intervals given are in hours of normal operation.
- Carrier Engine Air Cleaner - Crane Engine Air Cleaner - Hydraulic Steering Reservoir	2-1/4 qts. (2.1L)				
GO - Lubricating Oil, Gear, Multipurpose - Front Axle Differential - Dual Axle Differentials - Main Transmission - Crane Engine Transmission	11 qts. (10.4 L) 11 qts. ea (10.4 L) 8 qts. (7.56 L)	GO 80W/90	GO 80W/90	GO 75W	

For Arctic operation refer to FM 9-207

*See Note 16 for lubricant specification number.

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LUBRICANTS	CAPACITY	EXPECTED TEMPERATURES			INTERVALS
		Above +15°F (Above -9°C)	+40° to -15°F (+4° to -26°C)	+40° to -65°F (+4° to -54°C)	
GO - Hi-Lo Range Drop Gearcase - Transfer Case - Gear and Chain Case - Tagline	4 qts. (3.78 L) 8-1/2 qts. (8 L) 72 qts. (68.11 L) 4 qts. (3.78 L)	GO 80W/90 GO 85W/140	GO 80W/90	GO 75W	For Arctic operation refer to FM 9-207 C/MR - Condition Monitor Intervals given are in hours of normal operation.
BFS - Brake Fluid, Silicone, Automotive - Hydraulic Control Reservoir	3 qts. (2.83 L)	ALL TEMPERATURES			
CW - Lubricating Oil, Chain, Wire Rope, Exposed Gear		CW-IIB	CW-IIB	CW-IIB	
GAA - Grease, Automotive and Artillery		ALL TEMPERATURES			

*See Note 16 for lubricant specification number.

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -15°F (-26°C). Remove lubricants prescribed in Key for temperatures above -150F (-260C). Relubricate with lubricants specified in Key for temperatures below -150F (-260C). If OEA lubricant is required to meet the temperature ranges prescribed in the Key, OEA lubricant is to be used in place of OE/HDO-10 lubricant for all temperature ranges where OE/HDO-10 is specified in the Key.

2. OIL CAN POINTS. Each 50 hours lubricate accelerator shaft, governor linkage, air brake treadle roller and hinge pin, clutch pedal linkage, door latches

and hinges, yoke pins and clevises, springs, fasteners and all exposed adjusting threads with OE/HDO, except those adjusting threads coming in Contact with excavated material.

3. CRANKCASE OIL LEVEL HOT OR COLD CHECK (CARRIER AND CRANE). Cold engine, oil level should be at high mark on dipstick. Hot engine, oil level must be between high and low marks on dipstick (allow to set 5 minutes before checking).

4. CRANKCASE OIL (CARRIER AND CRANE). Oil is to be changed each 100 hours. Drain when lubricant is warm.

NOTES - CONTINUED:

5. ENGINE OIL FILTER (CARRIER AND CRANE). Each 100 hours, remove filter element, clean housing and install new filter element. After installing new filter element, fill crankcase, operate engine for 5 minutes, check housing for leaks, check crankcase oil level and bring to "FULL" mark.

6. AIR CLEANER (CARRIER AND CRANE). Each 10 hours, refill reservoir to level mark. Each 50 hours disassemble entire unit, clean, re-oil and assemble.

7. TRANSMISSION (CRANE ENGINE). Each 50 hours check level. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level to fill and level plug opening.

8. FRONT AND REAR WHEEL BEARINGS. Each 1000 hours, remove wheels, clean and inspect all parts, replace damaged or worn parts, repack bearings and assemble.

9. STEERING GEAR HOUSING. Serviced by direct support maintenance at time of overhaul. Repack with GAA.

10. MAIN TRANSMISSION/HI-LO RANGE DROP GEARCASE. Each 250 hours check level. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level to fill and level plug opening.

11. TRANSFER CASE. Each 250 hours check level. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level 1 inch from top of level opening.

12. FRONT AXLE DIFFERENTIAL/FRONT AND REAR DUAL AXLE DIFFERENTIAL. Each 50 hours check level. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level to fill and level , plug opening.

13. GEAR AND CHAIN CASE. Each 50 hours check level. Change gear lubricant only when required by maintenance repair a action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level to level plug opening.

14. CABLES. Each 50 hours clean and coat all cables with OE/HDO, except those coming in constant contact with dirt or excavated material.

15. TAGLINE. Keep tagline housing 112 full of GO. Do not overfill.

16. LUBRICANTS. The following is a list of lubricants with military symbols and applicable specification numbers.

OE/HDO	MIL-L-2104
GO	MIL-L-2105
GAA	MIL-G-10924
OEA	MIL-L-46167
BFS	MIL-B-46176
CW	W-L-751
(SD), Type II	P-D-680

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:

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

OFFICIAL:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with. DA Form 12-25B, Operator and Organizational Maintenance requirements for Truck Mounted Cranes.

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PUBLICATION DATE

PUBLICATION TITLE

BE EXACT... PIN-POINT WHERE IT IS

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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 2028-2
1 JUL 79

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.

