

**LUBRICATION ORDER**

19 July1984

LO 5-3810-289-12

(Supersedes LO 5-381 0-289-12-1,13 December 1 968; LO 5-3810-289-1 2-2, 1 3 December 1 968; LO5-3810-289-12-3, 13 December 1968; and LO 5-3810-289-12-4, 20 February 1970.)

**CRANE-SHOVEL, CRAWLER MOUNTED; 12 1/2 TON,  
314 CU. YD; DIESEL ENGINE DRIVEN (BUCYRUS-  
ERIE MODEL 22BM) (NSN 3810-00-869-3092)**

Reference: TM 5-3810-289-12, and FEDERAL SUPPLY CATALOG C9100-IL.

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.

**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 (on-condition or hard times).

*TOTAL MAN-HOURS		*TOTAL MAN-HOURS	
INTERVAL	MAN-HOURS	INTERVAL	MAN-HOURS
5	1.0	250	1.0
10	3.0	500	0.5
50	1.2	1000	0.5
100	0.5		

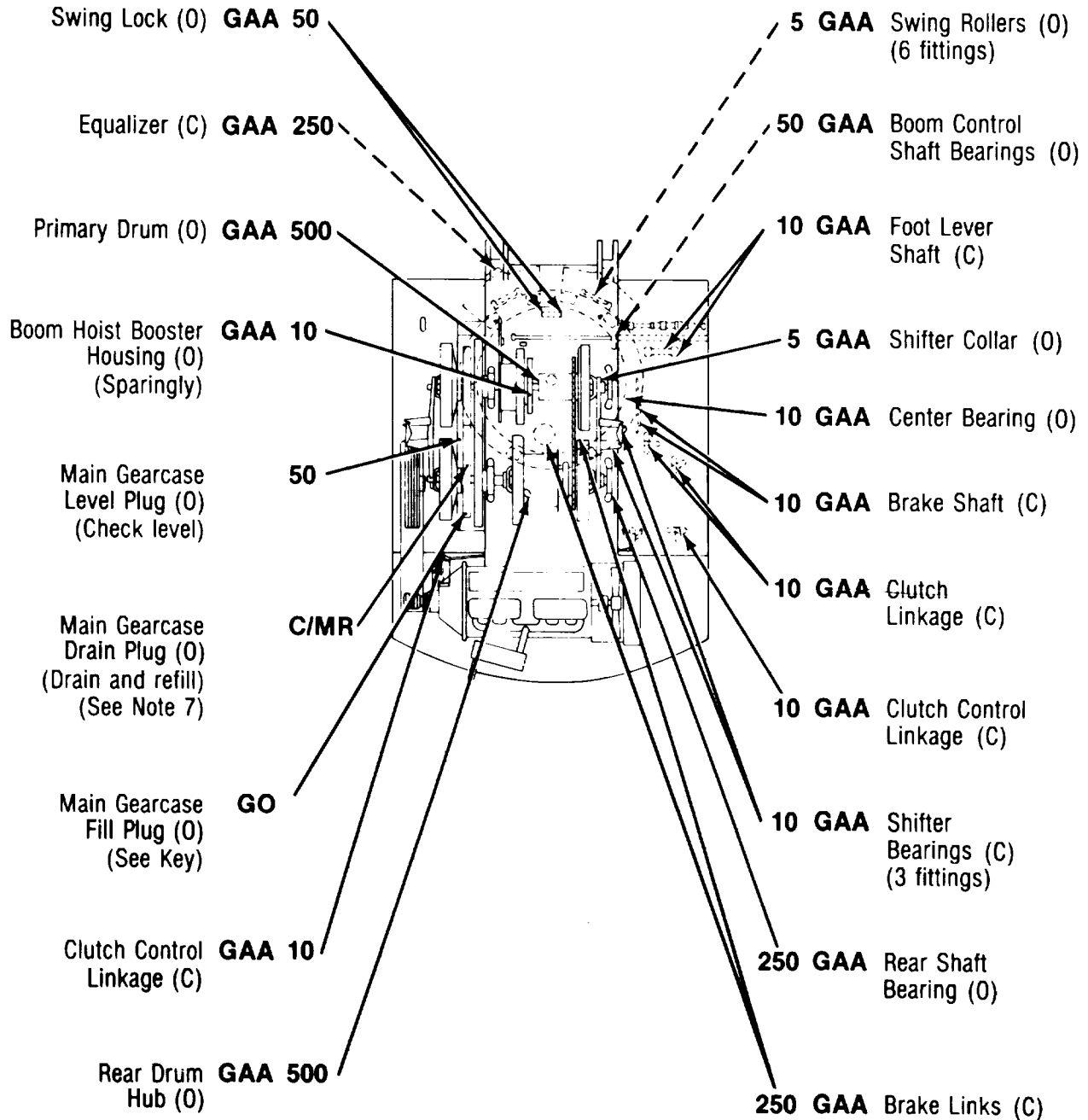
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LO 53810289-12

CARD 1 OF 11

**LUBRICANT • INTERVAL**

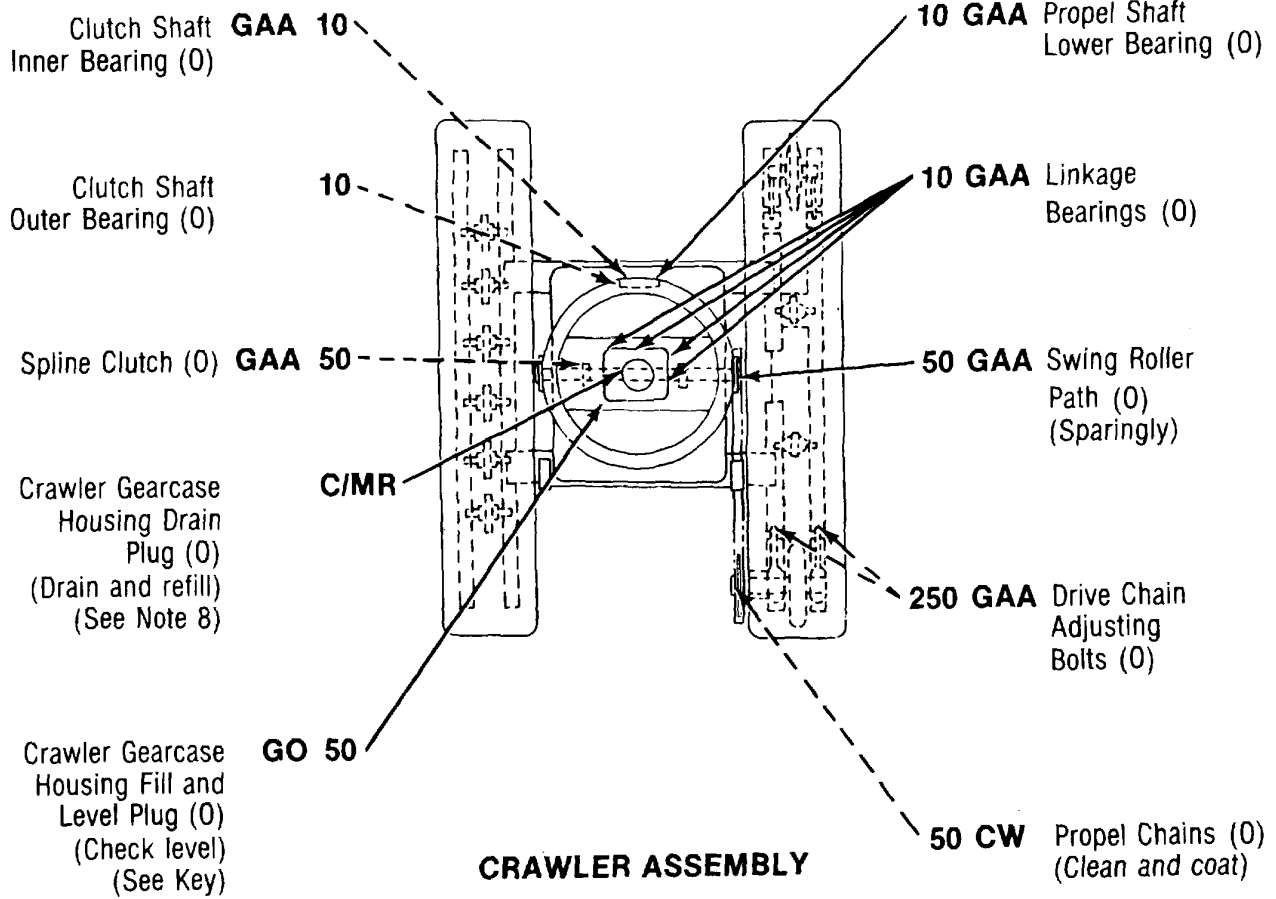
**INTERVAL • LUBRICANT**



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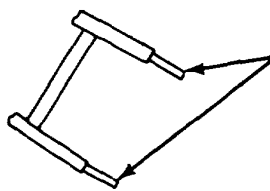
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Boom Point (C) **GAA 10**  
(3 fittings)



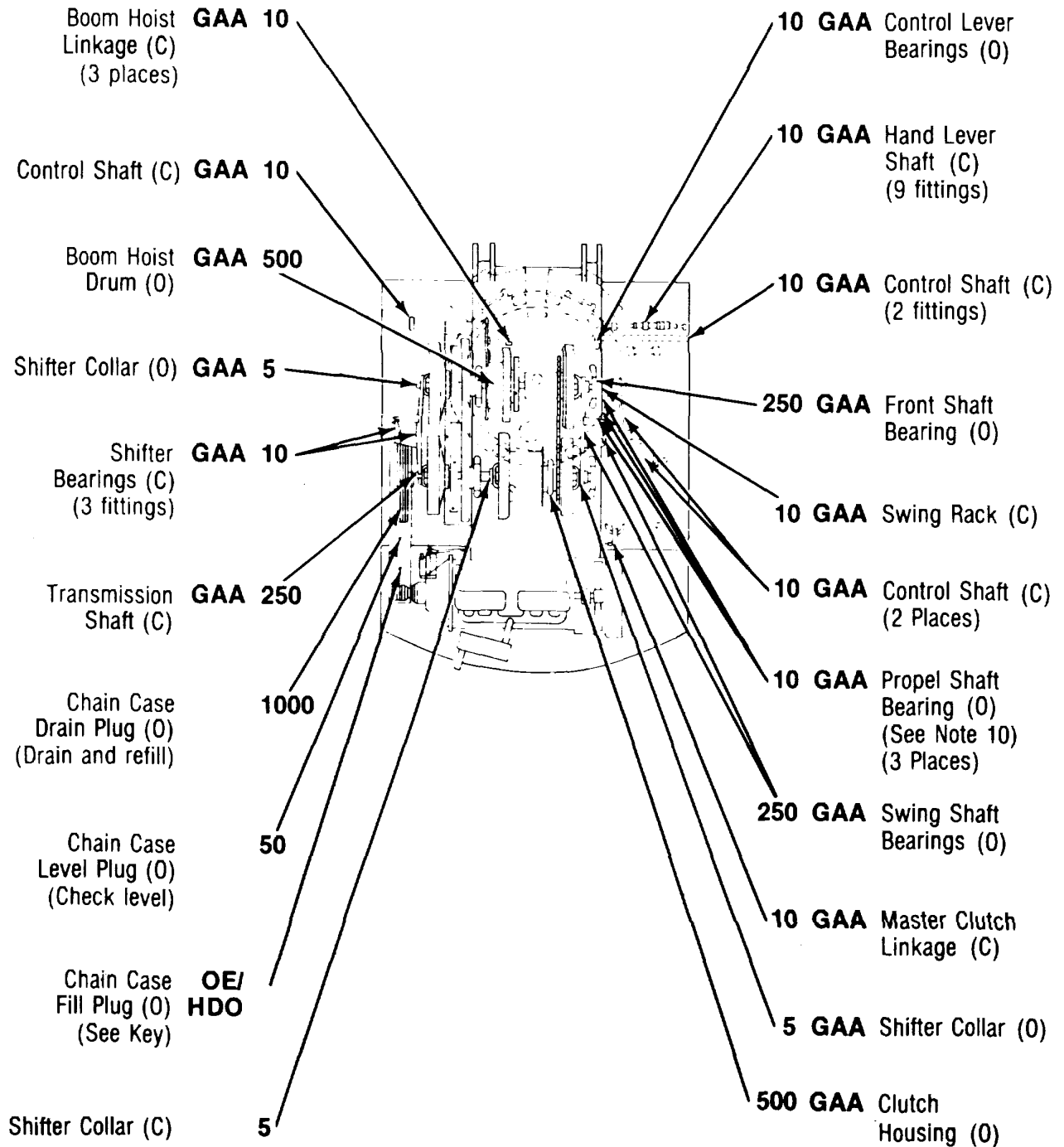
**10 GAA** Boom Foot Bushings (C)



**BOOM**

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Pawl Bearings (0) **GAA 10**

**10 GAA** Take-up  
Tumbler (0)

Lower Idlers (0) **GAA 10**  
(See Note 10)

**10 GAA** Adjusting  
Bolt (0)

**10 GAA** Top Idlers (0)  
(See Note 10)

Inner Bearing (0) **GAA 10**  
(See Note 10)

**10 GAA** Outer Bearing (0)  
(See Note 10)

**CRAWLER ASSEMBLY**

Bridle (C) **GAA 10**  
(4 fittings)

**10 GAA** Yoke (C)  
(5 fittings)

A-Frame (C) **GAA 10**  
(2 fittings)

**BOOM**

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TA221792

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Crankcase Breather (O)  
(Remove, clean, re-oil, and install)  
**OE/ HDO 100**

Oil Filters (O)  
(Replace element)  
(See Notes 1 and 6)  
**OC or 100**

Crankcase Oil Level Gage (C)  
(Check level)  
(See Note 4)  
**10**

Crankcase Oil Fill Cap (C)  
(See Key)  
**CAUTION:**  
When OEA oil is used the level will be checked more often.  
**OE/ HDO**

Crankcase Oil Drain Plug (O)  
(Drain and refill)  
(See Notes 1 and 5)  
**OC or 100**

**100 GAA** Fan Pulley (O)  
(See Note 12)

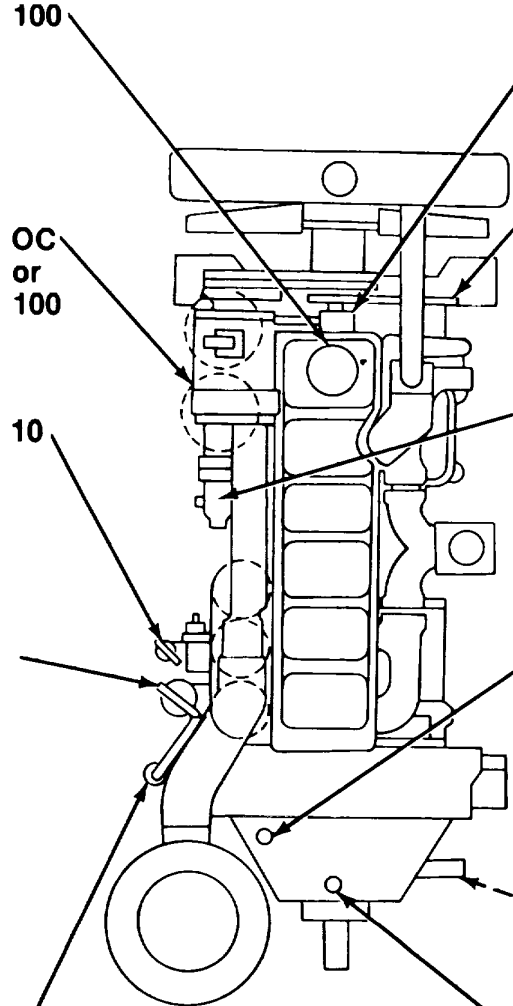
**10 GAA** Water Pump Bearing (C)  
(Sparingly)

**250 GAA** Throttle Push-Pull Cable (C)

**50 GAA** Clutch Throwout Bearing (C)  
(Sparingly)

**50 GAA** Clutch Throwout Shaft (C)

**100 GAA** Clutch Shaft Bearing (C)  
(Sparingly)



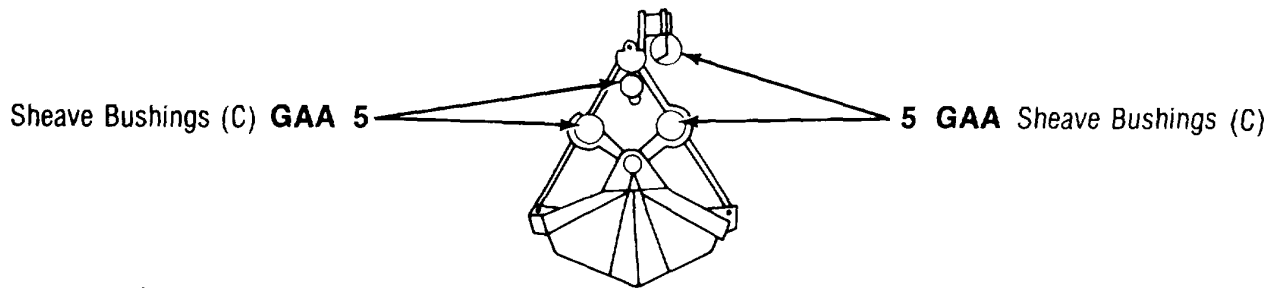
**ENGINE**

009

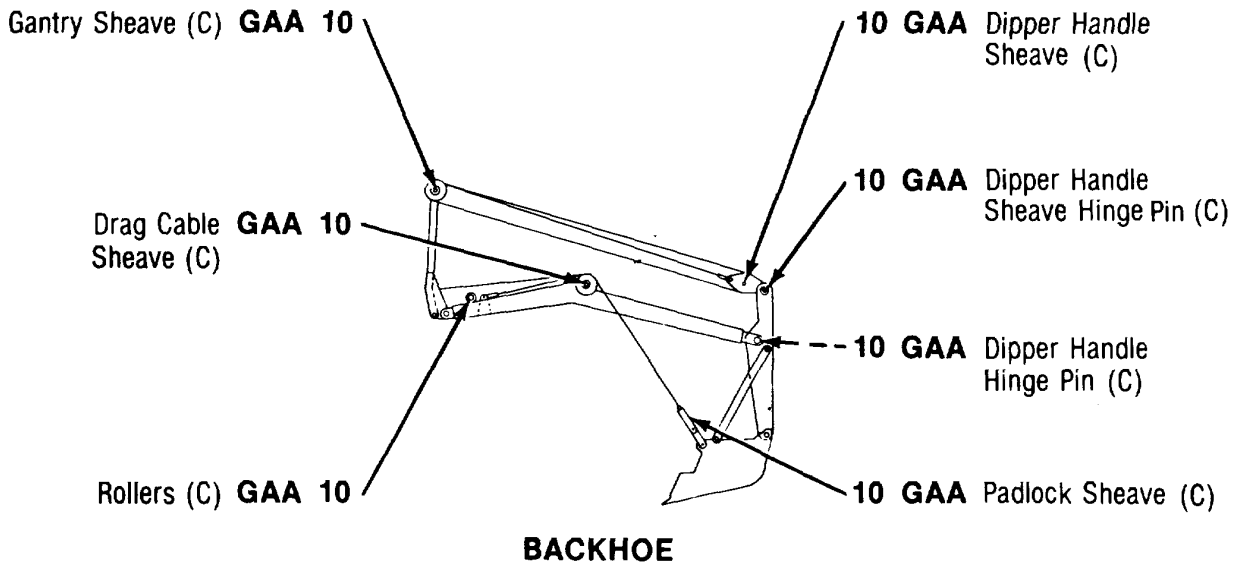
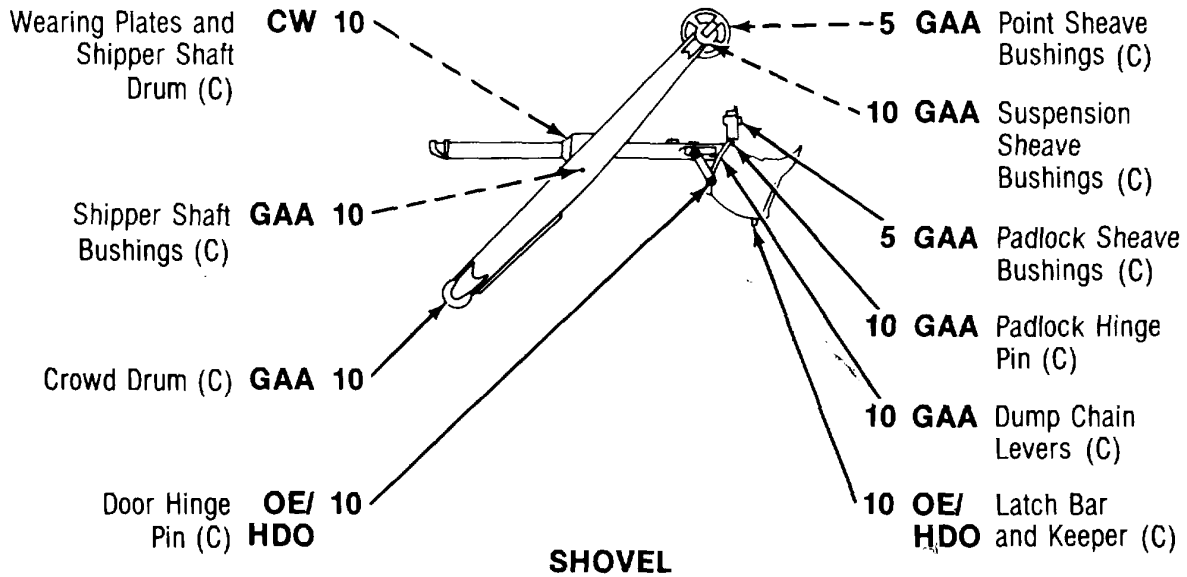
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**CLAM SHELL BUCKET**



005

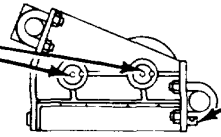
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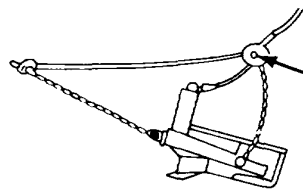
INTERVAL • LUBRICANT

Sheave Bushing (C) **GAA 5**

**5 GAA** Guide Roller Bushing (C)

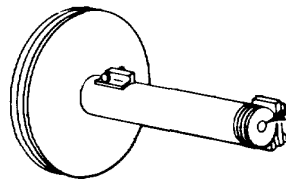


**DRAGLINE FAIRLEAD**



**5 GAA** Dump Sheave (C)

**DRAGLINE BUCKET**

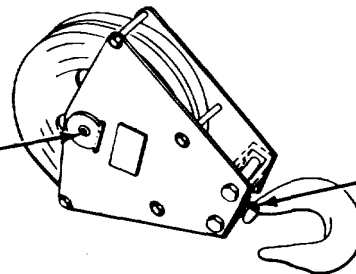


**250 GO** Tagline Fill and Level Plug (0)  
(Check level)  
(See Key) (See Note 11)

**TAGLINE UNIT**

Sheave Bushing (C) **GAA 10**

**10 GAA** Swivel (C)



**HOOK BLOCK**

006

TA221795



\* 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)	
<b>OE/ HDO</b> - Lubricating Oil, Internal Combustion Engine, Tactical Service  <b>OEA</b> - Lubricating Oil, Internal Combustion, Arctic  - Engine Crankcase  - Oil Can Points (See Note 3)  - Chain Case	20 qts. (18.9 L)     3 qts. (2.83 L)	OE/HDO 30	OE/HDO 10	OEA (See Note 2)	C/MR - Condition Monitor OC - On Condition (AOAP)   Intervals given are in hours of normal operation.
<b>CW</b> - Lubricating Oil, Chain, Wire Rope, Exposed Gear		CW-IIC	CW-IIB	CW-IIA	
<b>GO</b> - Lubricating Oil, Gear, Multipurpose  - Main Gearcase  - Crawler Gearcase  - Tagline	32 qts. (30.27 L)  2 qts. (1.9 L)  4 qts. (3.78 L)	GO 80W/90	GO 80W/90	GO 75W	
<b>GAA</b> - Grease, Automotive and Artillery		ALL TEMPERATURES			

For Arctic Operation refer to FM 9-207

\* See Note 13 for lubricant specification number.

## NOTES:

1. ARMY OIL ANALYSIS PROGRAM (AOAP). For Active Army units, obtain samples from engine and automatic transmission every 50 hours of operation 60 days (whichever comes first). Reserve and National Guard activities will use 50 hours or 120 days as the prescribed sample intervals. Reserve and National Guard equipment in frequent use during active training period will adhere to the schedule for Active Army units. As a minimum, one sample from each unit's two week active training period will be submitted for each item of equipment. Send these samples to the nearest AOAP laboratory. Refer to TB 43-0210 for sampling instructions. When or if AOAP laboratory support is unavailable, hard time intervals will apply.

### NOTE

- Do not hold oil samples. Submit oil samples as soon as they have been taken.
- Seasonal oil changes will be made due to expected temperatures. (See Key).

2. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -150F (-260C). Remove lubricants prescribed in Key for temperatures above -15°F (-260C). Relubricate with lubricants specified in Key for temperatures below -15°F (-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.

3. OIL CAN POINTS. Each 50 hours lubricate yoke pins, pivot pins, door hinges and fasteners, clutch pedal linkage, transmission shift linkage, and clevises and all exposed adjusting threads with OE/HDO.

4. CRANKCASE OIL LEVEL HOT OR COLD CHECK. 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).

5. CRANKCASE DRAIN. Oil is to be changed each time an engine oil change is directed by AOAP laboratory. When AOAP laboratory support is not available, change oil each 100 hours. Drain when lubricant is warm.

6. ENGINE OIL FILTERS. Filters are to be replaced each time an engine oil change is directed by AOAP laboratory. After installing new filter elements, fill crankcase, operate engine 5 minutes, check housing for leaks, check crankcase oil level and bring to full mark. When AOAP laboratory support is not available install new filter elements each 100 hours.

7. MAIN GEARCASE. Check level e 50 hours. 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 level plug opening.

8. CRAWLER GEARCASE. Check level each 50 hours. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for 5 minutes, check for leaks and bring oil level to level plug opening.

9. CABLES. Each 50 hours, clean and coat all cables with CW except those coming in contact with dirt or excavated material.

10. CRAWLER. When traveling long distances, lubricate every 2 hours.

11. TAGLINE HOUSING. Check level each 250 hours, fill to plug opening.

12. FAN PULLEY. Remove plug, insert fitting. Lubricate and reinstall plug.

TA221797

**NOTES - CONTINUED:**

**13. 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
CW	VV-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 10-20 Ton, Crane-Shovel, Crawler.

TA221798

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