TRUCK, TRACTOR, M1070, 8 X 8, HEAVY EQUIPMENT TRANSPORTER (HET)

(NSN 2320-01-318-9902)

EIC:B5C

References: TM 9-2320-360-10, TM 9-2320-360-20

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this publication by calling attention to errors and by recommending improvements and by stating your reasons for the recommendations. Your letter or DA Form 2028-2, Recommended Changes to Publications and Blank Forms, should be mailed directly to Commander, U.S. Army Tank–Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished directly to you.

Maintenance Levels. This lubrication order (LO) is for operator/crew and organizational maintenance. The lowest level of maintenance authorized to lubricate a point is indicated by either operator/crew (C) or organizational (0). Operator/Crew may lubricate points authorized for organizational when authorized by organizational.

Lube Intervals. Lube intervals (on-condition or hardtime) and related man–hour times are based on normal operation. The man–hour time specified is the time needed to do all the services prescribed for a particular interval. The calendar interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Engine oil/transmission oil/hydraulic oil/steering oil must be sampled at 90-day intervals as prescribed by DA Pam 738–750. Hardtime intervals will be applied in the event AOAP laboratory support is not available. For equipment under manufacturer's warranty, hardtime oil service intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated or if operation is under adverse conditions, such as longer–than–usual operating hours, extended idling periods, or extreme dust.

Intervals shown in this LO are based on calendar times or calendar times and mileage. An example of a calendar lubrication interval is: S, in which S stands for semiannually (every six months). An example of a mileage and calendar interval is: 9/A, in which 9 stands for 9,000 mi (14,481 km), and A stands for annual (every 12 months). Perform the lubrication at whichever interval occurs first. Special lubrication intervals and services are shown by the use of asterisk (*) symbols. Notes are located on card 32.1.

Oil Filters. 011 filters shall be serviced/cleaned/changed, as applicable, when:

- They are known to be contaminated or clogged;
- Service is recommended by AOAP laboratory analysis, or;
- At prescribed hardtime intervals.

WARNING

Dry cleaning solvent(s), type II is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and don't breathe vapors. DO NOT use near open flame or excessive heat. The flash point is 100-140°F (38-60°C). If you become dizzy while using cleaning solvent, get fresh air immediately and medical aid. If contact with eyes is made, wash your eyes with water and get medical aid Immediately.

Cleaning and Fording. Clean parts with dry cleaning solvent. Dry before lubricating. After high pressure washing, lubricate all fittings and oil can points outside and underneath the HET Tractor. After fording, lubricate all fittings below fording depth and check submerged gearboxes for water. For corrosion control, refer to TM 9-2320-360-10.

Locators. Points indicated with dotted arrows are lubricated on both sides of the HET Tractor. Reference to the appropriate localized view is given after most lubrication entries. Localized views begin on card 19.

CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *1 September 1997*

LUBRICATION ORDER

TRUCK, TRACTOR, M1070, 8 X 8, HEAVY EQUIPMENT TRANSPORTER (HET)

(NSN 2320-01-318-9902)
EIC:B5C

LO 9-2320-360-12, 31 March 1994, is changed as follows:

1. Remove old cards and insert new cards as indicated below.
2. New or changed text material is indicated by a vertical bar in the margin of the card.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove Cards	Insert Cards
1 and 2	1 and 2
15 and 16	15 and 16
19 and 20	19 and 20
33 and 34	33 and 34

File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army

E. C. MEYER
General, United States Army
Chief of Staff

Official:

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

DISTRIBUTION:

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By Order of the Secretary of the Army:

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

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JOEL B. HUDSON
Administrative Assistant to the
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CHANGE
NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *1 June 1997*

LUBRICATION ORDER

TRUCK, TRACTOR, M1070, 8 X 8,
HEAVY EQUIPMENT TRANSPORTER (HET)
(NSN 2320-01-319902)
EIC:B5C

LO 9-2320-360-12, dated 31 Mar 94, is changed as follows:

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Remove Cards	Insert Cards
2.1 and 22 (blank)	2.1 and 22 (blank)
3 and 4	3 and 4
6.1 and 62 (blank)	6.1 and 62 (blank)
7 thru 12	7 thru 12
19 and 20	19 and 20
33 and 34	33 and 34

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
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LO 9-2320-360-12
C1

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *4 April 1995*

LUBRICATION ORDER

TRUCK, TRACTOR, M1070, 8 X 8,
HEAVY EQUIPMENT TRANSPORTER (HET)
(NSN 2320-01-18-9902)
EIC: B5C

LO 9-2320-360-12, **dated 31 March 1994, is changed as follows:**

1. Remove old cards and insert new cards as indicated below.

2. New or changed material is indicated by a vertical bar in the margin of the card.

3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove Cards	Insert Cards
1 and 2	1 and 2
2.1 and 2.2 (blank)	2.1 and 2.2 (blank)
9 and 10	9 and 10
13 and 14	13 and 14
31 and 32	31 and 32
33 and 34	33 and 34

By Order of the Secretary of the Army:

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

Official:

JOEL B. HUDSON
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TRUCK, TRACTOR, M1070, 8 X 8, HEAVY EQUIPMENT TRANSPORTER (HET)
(NSN 2320-01-318-9902)
EIC:B5C0.

References: TM 9-2320-360-10, TM 9-2320-360-20

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WARNING

When servicing this vehicle, performing maintenance, or disposing of materials such as engine coolant, transmission fluid, lubricants, batteries, battery acid or CARC paint, consult your Unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact the Army environmental hotline at 1-800-872-3845. Improper disposal of this material may result in damage to environment or injury to personnel.

Lube Intervals. Lube intervals shown in this LO are either on-condition or hardtime. Hardtime maintenance is done at fixed intervals such as calendar time or miles driven. On-condition maintenance is performed based on the condition of an item as seen during scheduled inspections.

An example of a hardtime calendar lubrication interval is: **S**, in which **S** stands for semiannually (every six months). An example of a hardtime mileage and calendar interval is: **9/A**, in which **9** stands for 9,000 mi (14,481 km), and **A** stands for annual (every 12 months). Perform the lubrication at whichever interval occurs first. Special lubrication intervals and services are shown by the use of asterisk (*) symbols. Notes are located on card 32.1.

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Dry cleaning solvent(s), type II is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and don't breathe vapors. DO NOT use near open flame or excessive heat. The flash point is 100-140°F (38-60°C). If you become dizzy while using cleaning solvent, get fresh air immediately and medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

Cleaning and Fording. Clean parts with dry cleaning solvent. Dry before lubricating. After high pressure washing, lubricate all fittings and oil can points outside and underneath the HET Tractor. After fording, lubricate all fittings below fording depth and check submerged gearboxes for water. For corrosion control, refer to TM 9-2320-360-10.

Locators. Points indicated with dotted arrows are lubricated on both sides of the HET Tractor. Reference to the appropriate localized view is given after most lubrication entries. Localized views begin on card 19.

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Table 1. Lubricants

	Component	Approximate Capacity	Expected Temperatures	Intervals	
Lubricating Oil, ICE, Tactical, OE/HDO (MIL–L–2104) or Lubricating Oil, ICE, Arctic, OEA (MIL–L–46167)	Engine	28 Qt (27 L)	See CHART A.	OC – ON–CONDITION D – DAILY W – WEEKLY M – MONTHLY S – SEMIANNUALLY (6 MONTHS) A – ANNUALLY 3 – 3000 MILES 6 – 6000 MILES 9 – 9000 MILES 10 – 10,000 MILES 20 – 20,000 MILES 25 – 25,000 MILES 50 – 50,000 MILES	For arctic operation, refer to FM 9–207.
	Transmission	33 Qt (31 L)	See CHART B.		
	Transfer Case	5 Qt (4 L)	See CHART C.		
	Power Steering Reservoir	16 Qt (15 L)	See CHART B.		
	Winch Hydraulic Reservoir	168 Qt (159 L)	See CHART D.		
	Oil Can Points	As required	See CHART A.		
Lubricating Oil, Gear, Multipurpose, GO (MIL–L–2105)	No. 1 Axle	15 Qt (14 L)	See CHART E.		
	No. 2 Axle	17 Qt (16 L)	See CHART E.		
	No. 3 Axle	17 Qt (16 L)	See CHART E.		
	No. 4 Axle	16 Qt (15 L)	See CHART E.		
	Planetary Wheel Ends	1.6 Qt (1.5 L)	See CHART E.		
	Main Winches Gearboxes	17 Qt (16 L)	See CHART F.		
	Auxiliary Winch Gearbox	4 Qt (4 L)	See CHART F.		
	Steering Reduction Gearbox	0.5 pt (0.251 L)	See CHART G.		

Table 2. Other Fluids

Fluid	Capacity	Temperature	
Dry Cleaning Solvent, SD–2 (P–D–680, Type II)	As required	All Temperatures	For arctic operation, refer to FM 9–207.
Antifreeze, Ethylene Glycol (MIL–A–46153)	93.8 Qt (88.8 L)	Above –50°F (–46°C)	
Antifreeze, Arctic–Type (MIL–A–11755) (Includes Arctic Kit)	112 Qt (106 L)	Use when extended periods of –40°F (–40°C) or lower are encountered.	

Table 3. Grease, Automotive and Artillery (GAA) (MIL–G–10924)

The following components are lubricated with GAA as required at all temperatures.

Propeller Shafts and U–Joints	For arctic operation, refer to FM 9–207.
Link Kits (King Pin)	
Brake Camshafts and Slack Adjusters	
Spring Eye Pins	
Pintle Hook	
Steering System (Pitman Arms, Steering Gears, Drag Links, Steering Shafts)	
Tire Davit	
Fifth Wheel Plate/Ramps	
Fifth Wheel Lubrication Fittings	
Tie Rod Ends	

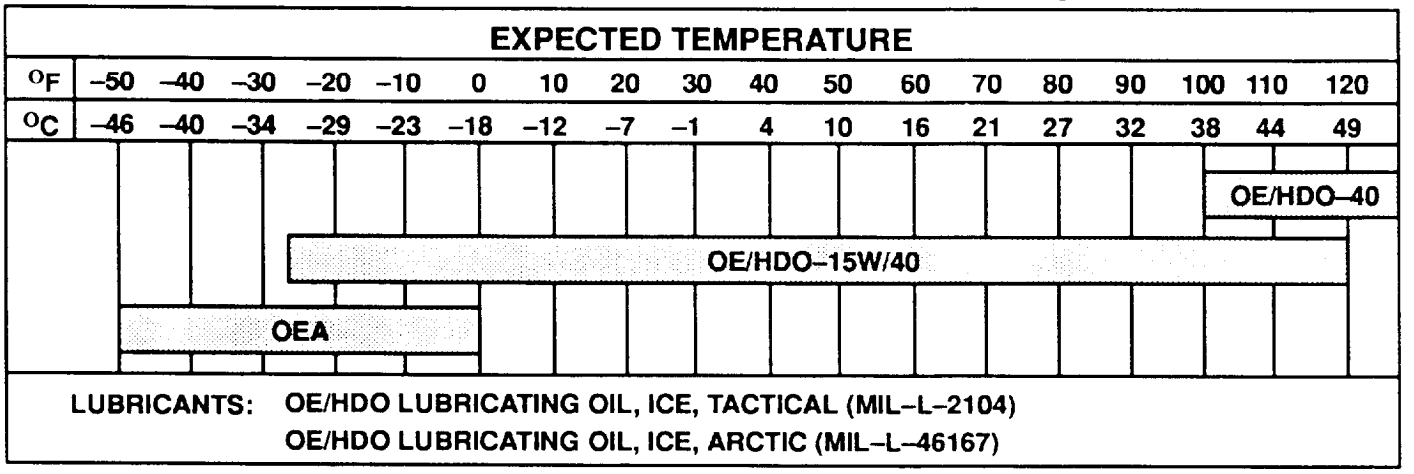
Table 4. Total Man–Hours* Required for Service

TRUCK, TRACTOR, M1070	
OC	1.1
D	0.2
W	1.0
S	0.5
A	2.9
3/S	4.0
6/S	0.9
9/S	0.6
25/S	0.4
9/A	0.3
20/A	4.8
50/A	0.6

* The man–hours shown above have been established on an individual basis and, accordingly, are not applicable at maintenance facilities where production line methods are employed.

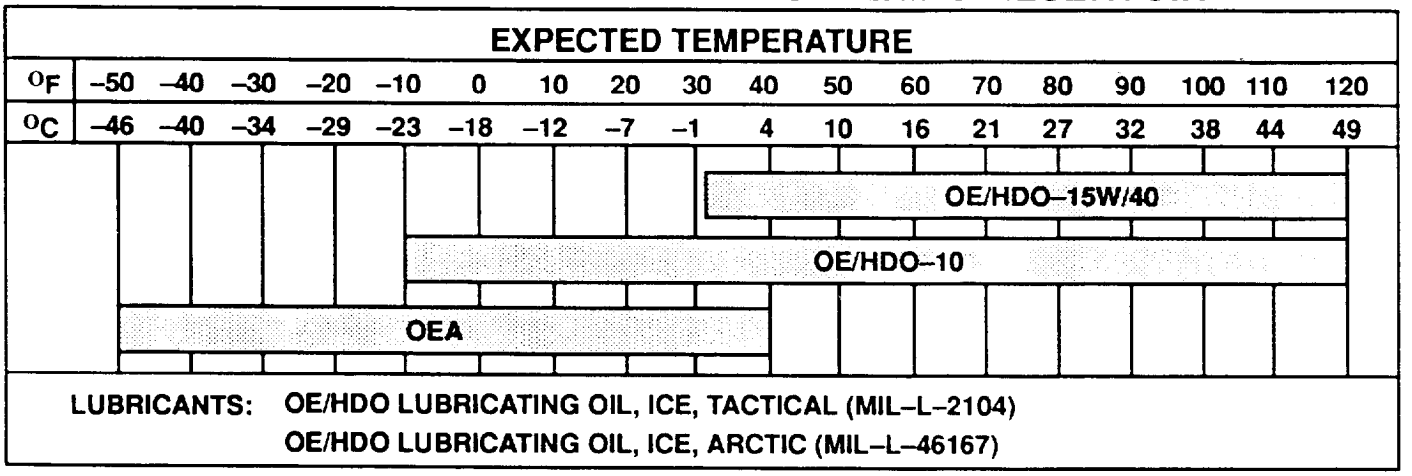
LO 9-2320-360-12

CHART A. ENGINE AND OIL CAN POINTS



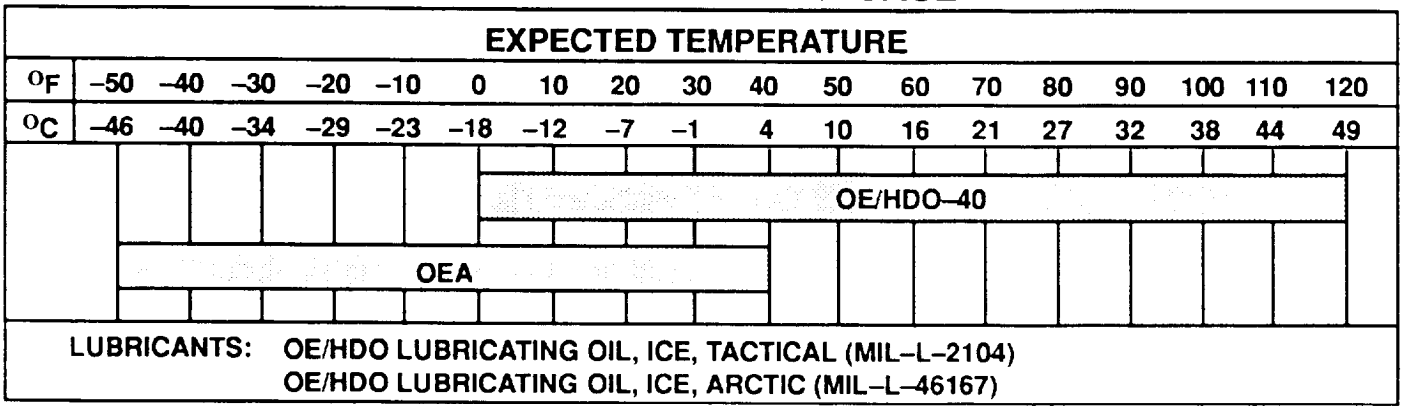
LUBRICANTS: OE/HDO LUBRICATING OIL, ICE, TACTICAL (MIL–L–2104)
OE/HDO LUBRICATING OIL, ICE, ARCTIC (MIL–L–46167)

CHART B. TRANSMISSION AND STEERING RESERVOIR



LUBRICANTS: OE/HDO LUBRICATING OIL, ICE, TACTICAL (MIL–L–2104)
OE/HDO LUBRICATING OIL, ICE, ARCTIC (MIL–L–46167)

CHART C. TRANSFER CASE



LUBRICANTS: OE/HDO LUBRICATING OIL, ICE, TACTICAL (MIL–L–2104)
OE/HDO LUBRICATING OIL, ICE, ARCTIC (MIL–L–46167)

CHART D. WINCH HYDRAULIC RESERVOIR

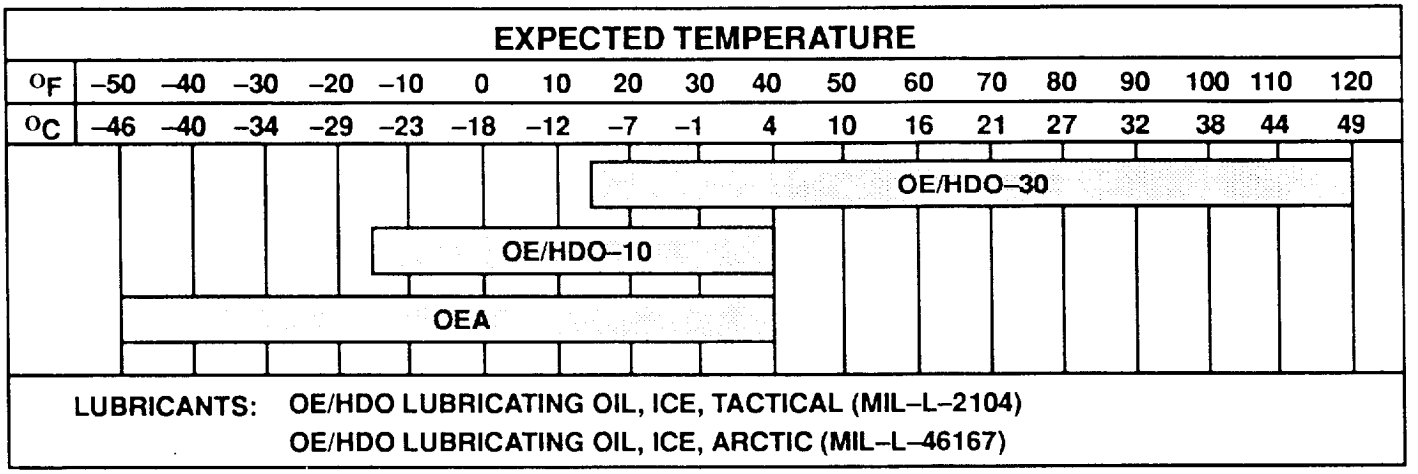


CHART E. AXLES

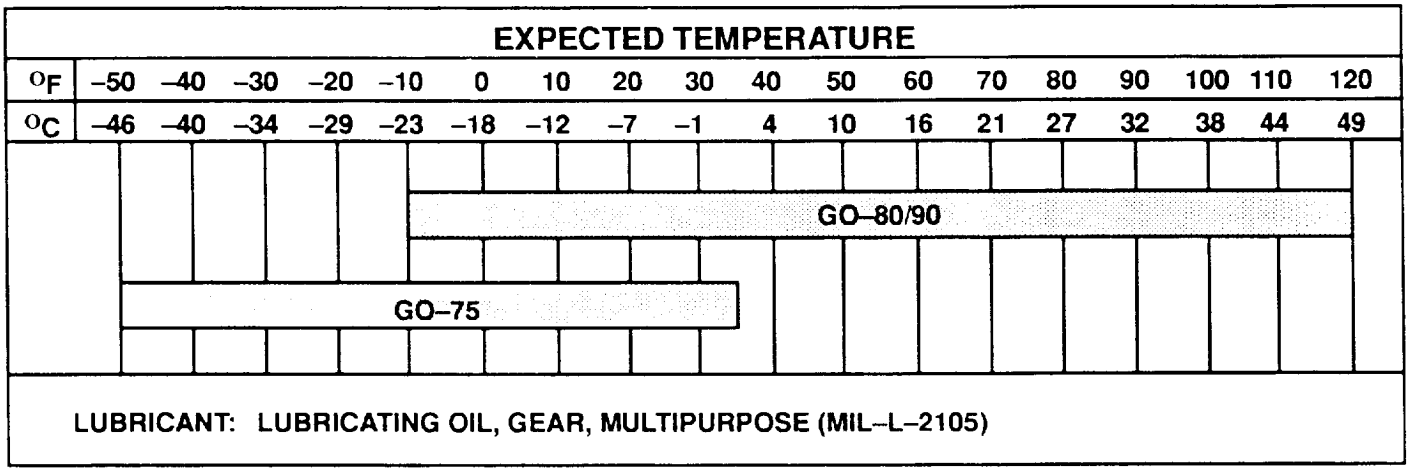


CHART F. WINCH GEARBOXES

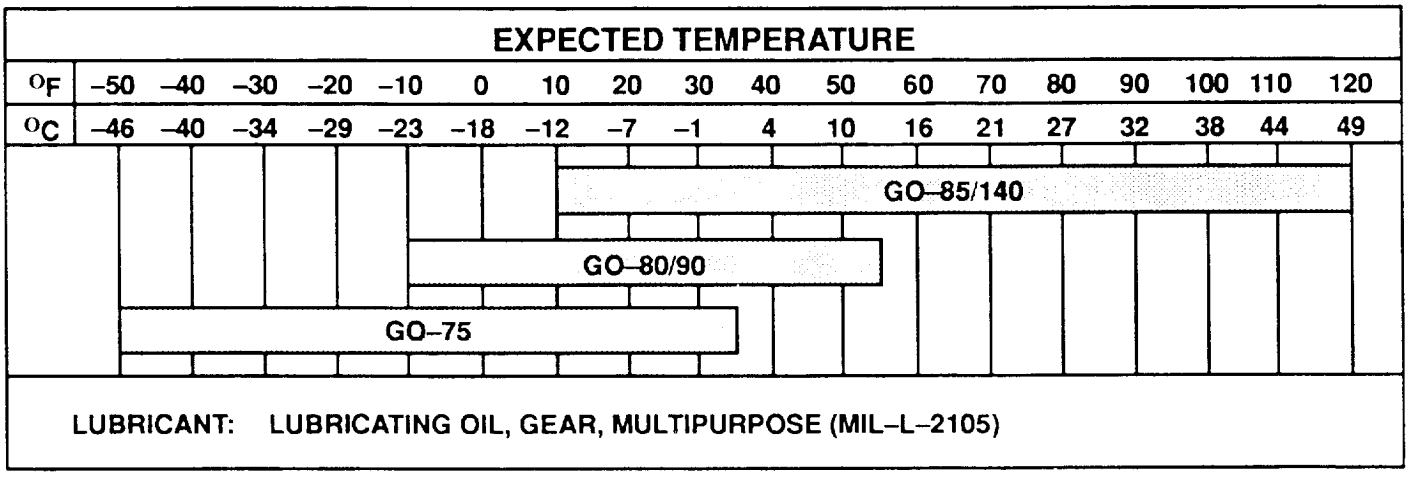
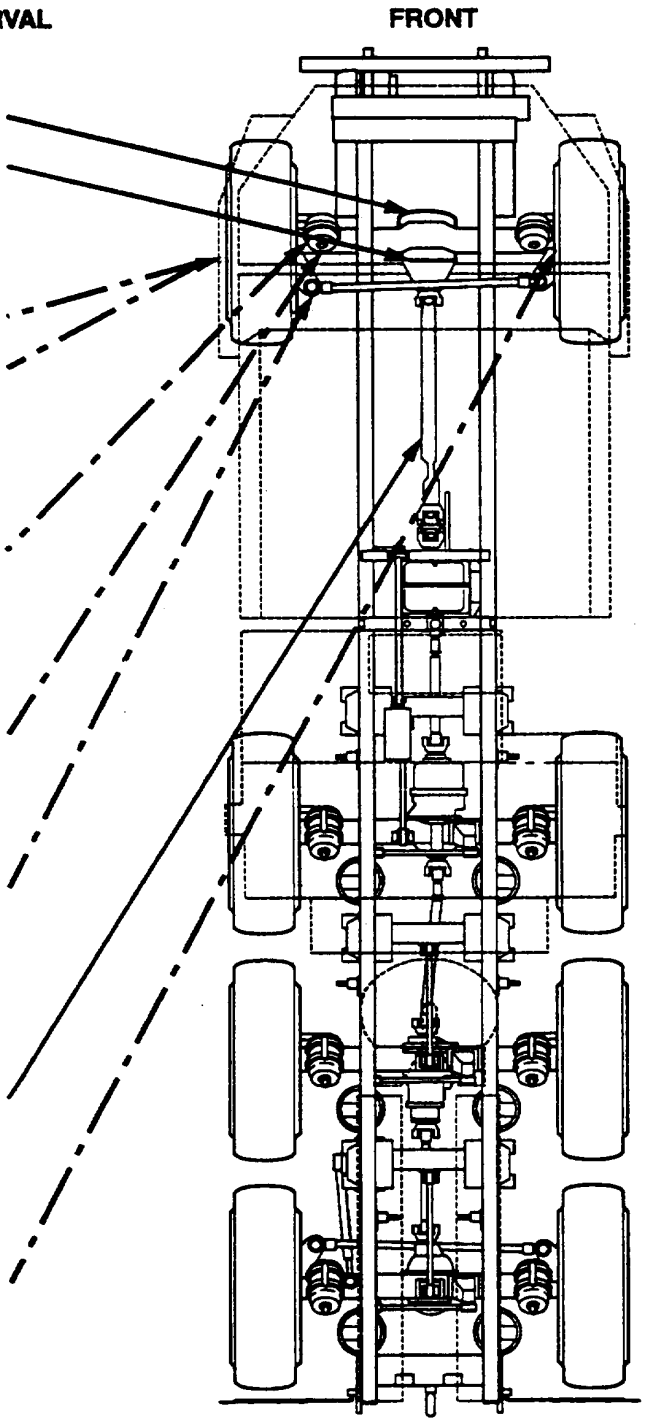


CHART G. STEERING REDUCTION GEARBOX

EXPECTED TEMPERATURE																		
°F	–50	–40	–30	–20	–10	0	10	20	30	40	50	60	70	80	90	100	110	120
°C	–46	–40	–34	–29	–23	–18	–12	–7	–1	4	10	16	21	27	32	38	44	49
	GO–75																	

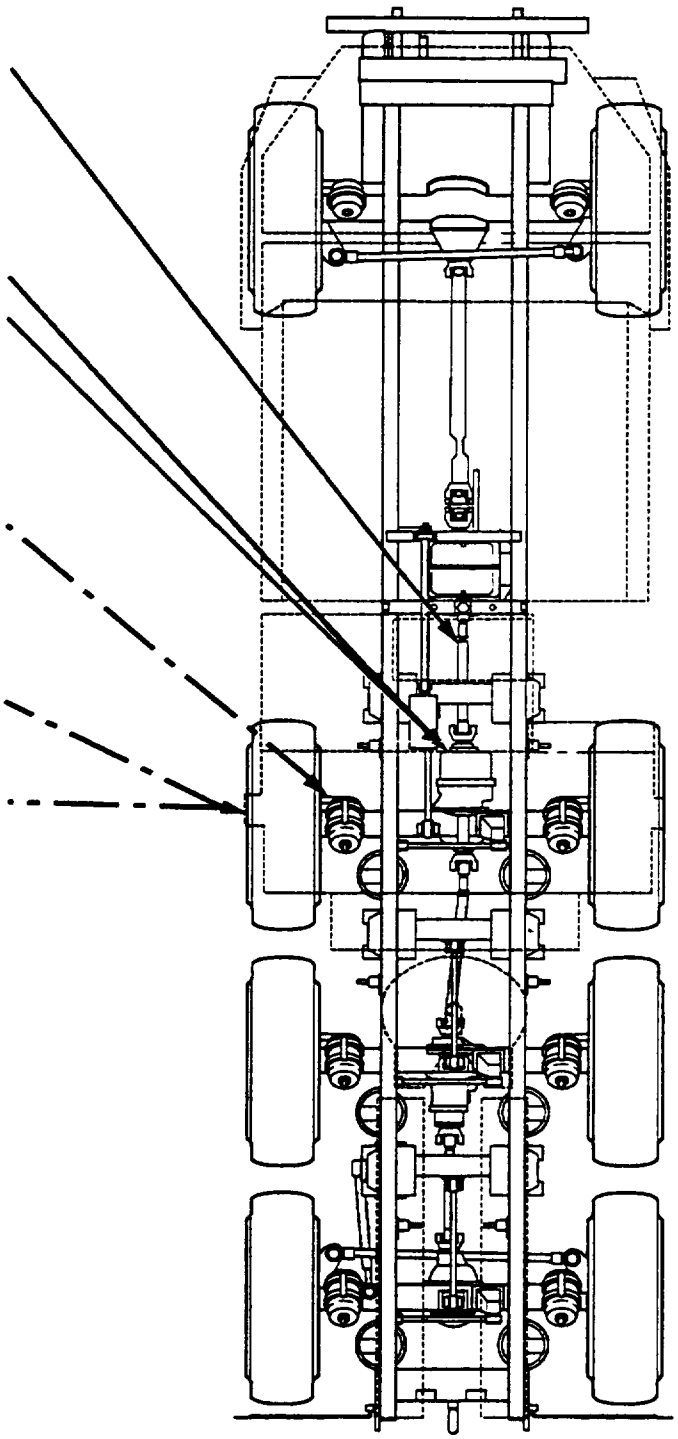
LUBRICANTS: LUBRICATING OIL, GEAR, MULTIPURPOSE (MIL–L–2105)

	LUBRICANT	• INTERVAL
Differential		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See notes 1, 8a, and 8b and view A.)	GO	20/A
Planetary Wheel Ends		
Check and fill. (O)	GO	3/S
Drain and refill. (See note 1, 8a, 8b, and view B.)	GO	20/A
Brake Camshaft and Slack Adjuster		
Lubricate. (7 fittings) (O) (See notes 2a and 2d and view C.)	GAA	3/S
Link Kit (King Pin)		
Lubricate. (1 fitting per kit) (O) (See note 2i and view C.)	GAA	3/S
Tie Rod Ends		
Lubricate. (1 fitting per tie rod end) (O) (See note 2h and view D.)	GAA	3/S
Propeller Shaft and Universal Joints		
Lubricate. (3 fittings) (O) (See notes 2a, 2b, and 2c and views E and F.)	GAA	3/S
Constant Velocity Joints		
Lubricate. (1 fitting per joint) (O) (See notes 2a and 2b and view C.)	GAA	3/S



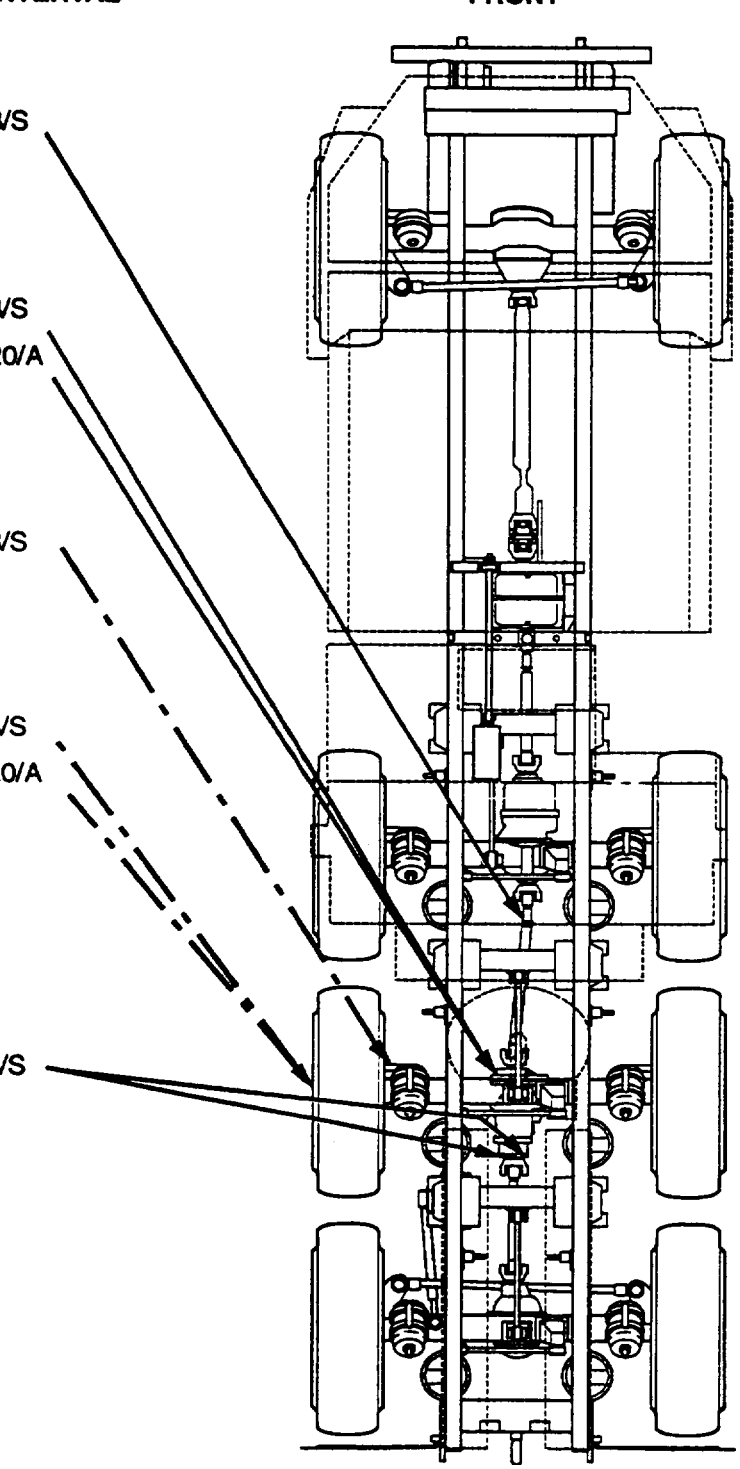
NO. 1 AXLE

	LUBRICANT	INTERVAL
Propeller Shaft and Universal Joints		
Lubricate. (3 fittings) (O) (See notes 2a, 2b, 2c, and views E and F.)	GAA	3/S
Differential		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See notes 1, 8a, 8c, and view G.)	GO	20/A
Brake Camshaft and Slack Adjuster		
Lubricate. (4 fittings) (O) (See notes 2a, 2d, and view H.)	GAA	3/S
Planetary Wheel Ends		
Check and fill. (O) (See note 1, 8a, 8c, and view B.)	GO	3/S
Drain and refill. (O) (See note 8b and view B.)	GO	20/A



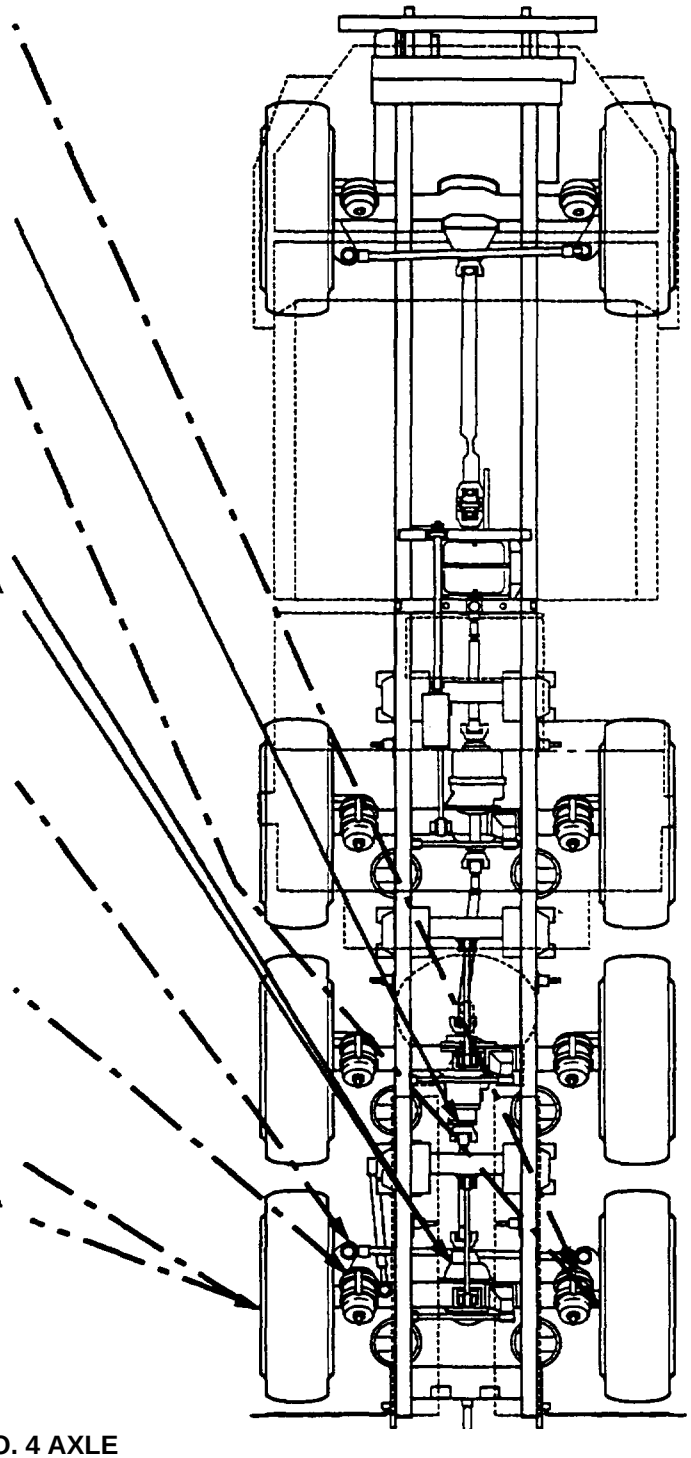
NO. 2 AXLE

	LUBRICANT	INTERVAL
Propeller Shaft and Universal Joints		
Lubricate. (3 fittings) (O) (See notes 2a, 2b, 2c, and views E and F.)	GAA	3/S
Differential		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See notes 1, 8a, 8c, and view I.)	GO	20/A
Brake Camshaft and Slack Adjuster		
Lubricate. (4 fittings) (O) (See notes 2a, 2d, and view H.)	GAA	3/S
Planetary Wheel Ends		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See note 1, 8a, 8c, and view B.)	GO	20/A
Output Shaft Bearings		
Lubricate. (2 fittings) (O) (See view I.)	GAA	3/S



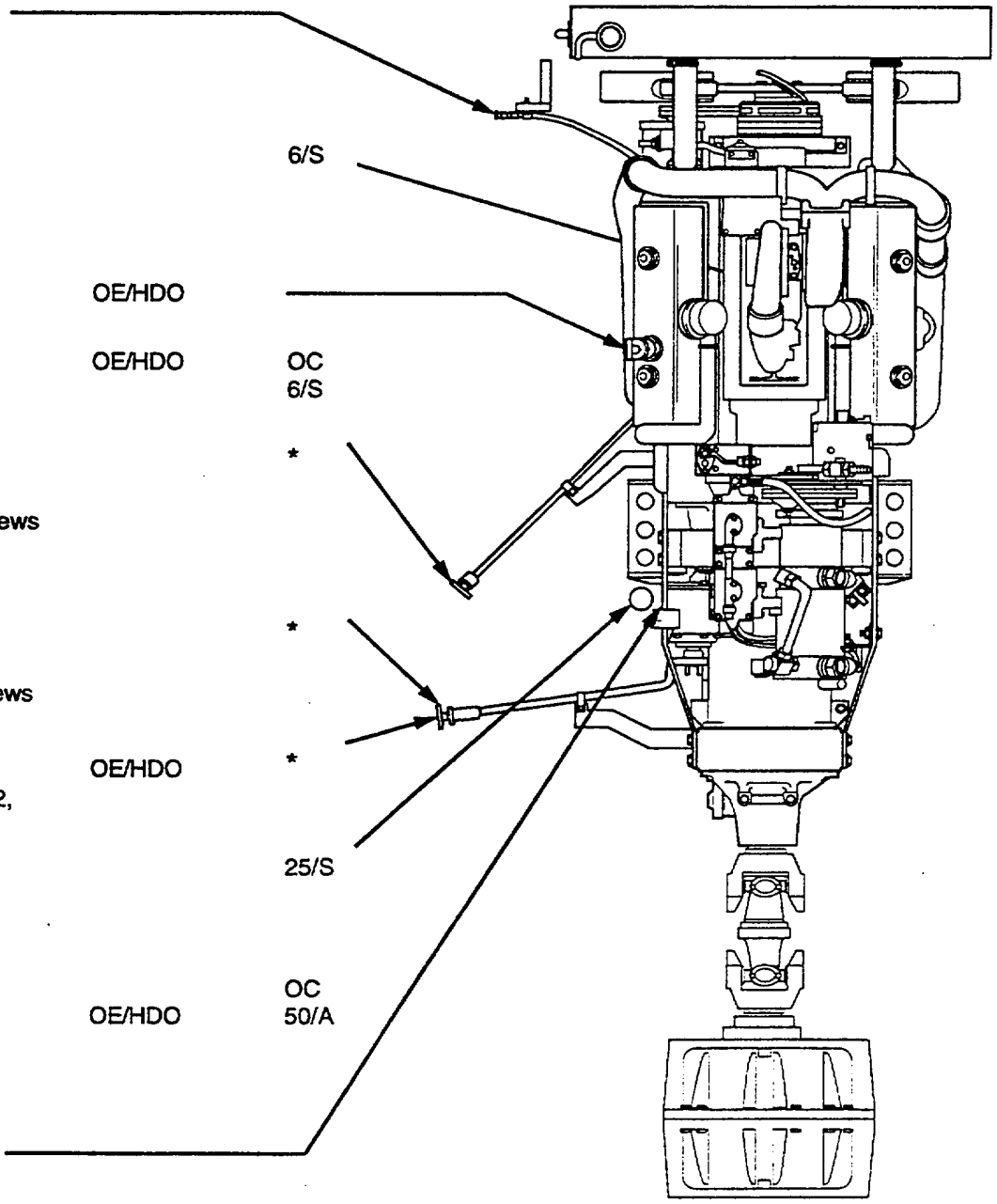
NO. 3 AXLE

	LUBRICANT	• INTERVAL
Link Kit (King Pin)		
Lubricate. (1 fitting per kit) (O) (See note 2i and view C.)	GAA	3/S
Propeller Shaft and Universal Joints		
Lubricate. (3 fittings) (O) (See notes 2a, 2b, 2c, and views E and F.)	GAA	3/S
Constant Velocity Joints		
Lubricate. (1 fitting per joint) (O) (See notes 2a, 2b, and view C.)	GAA	3/S
Differential		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See notes 1, 8a, 8b, and view J.)	GO	20/A
Tie Rod Ends		
Lubricate. (1 fitting per tie rod end) (O) (See note 2h and views D and K.)	GAA	3/S
Brake Camshaft and Slack Adjuster		
Lubricate. (4 fittings) (O) (See notes 2a, 2d, and view C.)	GAA	3/S
Planetary Wheel Ends		
Check and fill. (O)	GO	3/S
Drain and refill. (O) (See note 1, 8a, 8b, and view B.)	GO	20/A



NO. 4 AXLE

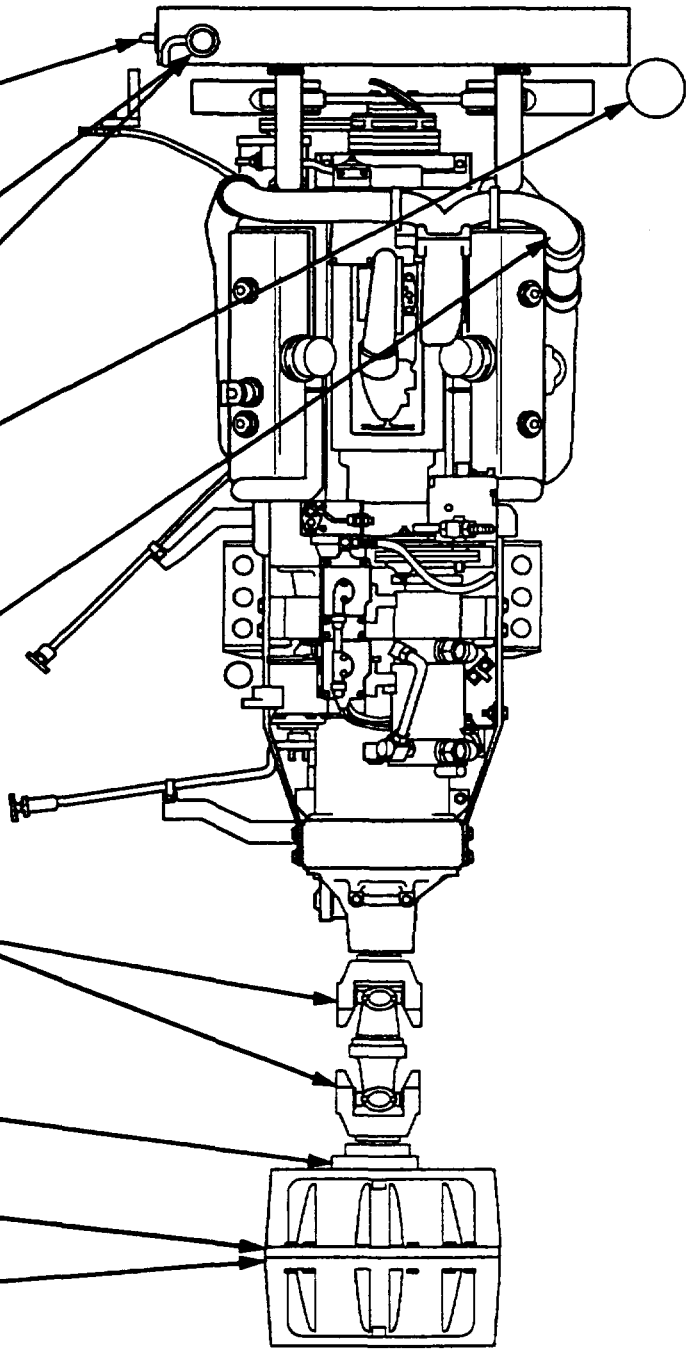
	LUBRICANT	INTERVAL
Engine Oil Sampling Valve		
Take AOAP sample. (O) (See note 5 and view L.)		
Engine Oil Filter		
Replace. (O) (See note 3d and view O.)		6/S
Engine Crankcase		
Fill at filler cap. (C) (See note 3c4.)	OE/HDO	
Drain and refill. (O) (See notes 1, 3c2, 3c3, 5, and view N.)	OE/HDO	OC 6/S
Check oil level at dipstick. (C) (See note 3c1, 11, views BB and M.)		*
Transmission		
Check oil level at dipstick. (C) (See note 3b1, 11, views BB and M.)		*
Fill at dipstick tube. (C) (See notes 1, 3b2, and view M.)	OE/HDO	*
Replace external filter. (O) (See note 3b3 and view M.)		25/S
Drain and refill. (O) (See notes 1, 5, and views M and P.)	OE/HDO	OC 50/A
Transmission Oil Sampling Valve		
Take AOAP sample. (O) (See note 5 and view M.)		



*After operation.

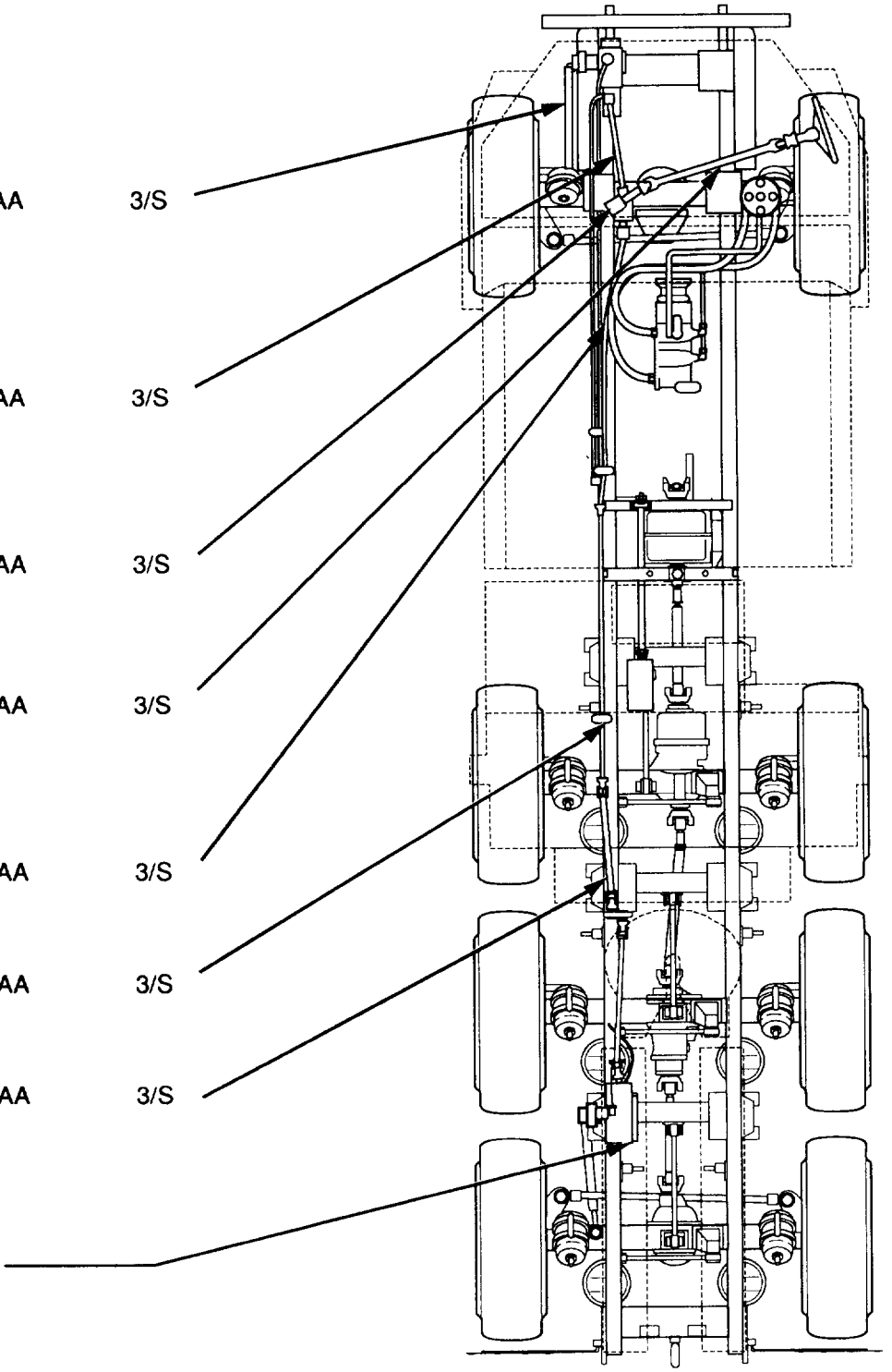
ENGINE, TRANSMISSION, TRANSFER CASE, AND COOLING SYSTEM

	LUBRICANT	•	INTERVAL
Cooling System			
Check coolant level. (C) Fill at filler cap. (C) (See note 3a1 and view Q.)	*		D
Check coolant condition. (O) (See note 3a1 and view Q.)	*		S
Drain, flush, and fill coolant. (O) (See note 3a3 and view Q.)	*		BI
Replace coolant filter (O) (See note 3a2 and view R.)			9/S
Secondary Fuel Filter			
Change element. (O) (See view S.)			6/S
Propeller Shaft			
Lubricate. (O) (3 fittings) (See notes 2a, 2b, 2c, and views E and F.)	GAA		3/S
Speedo Adapter			
Lubricate. (O) (1 fitting) (See view T.)	GAA		3/S
Transfer Case			
Check and refill. (O) (See view U.)	OE/HDO		3/S
Drain and refill. (O) (See notes 1, 4, and view U.)	OE/HDO		9/A



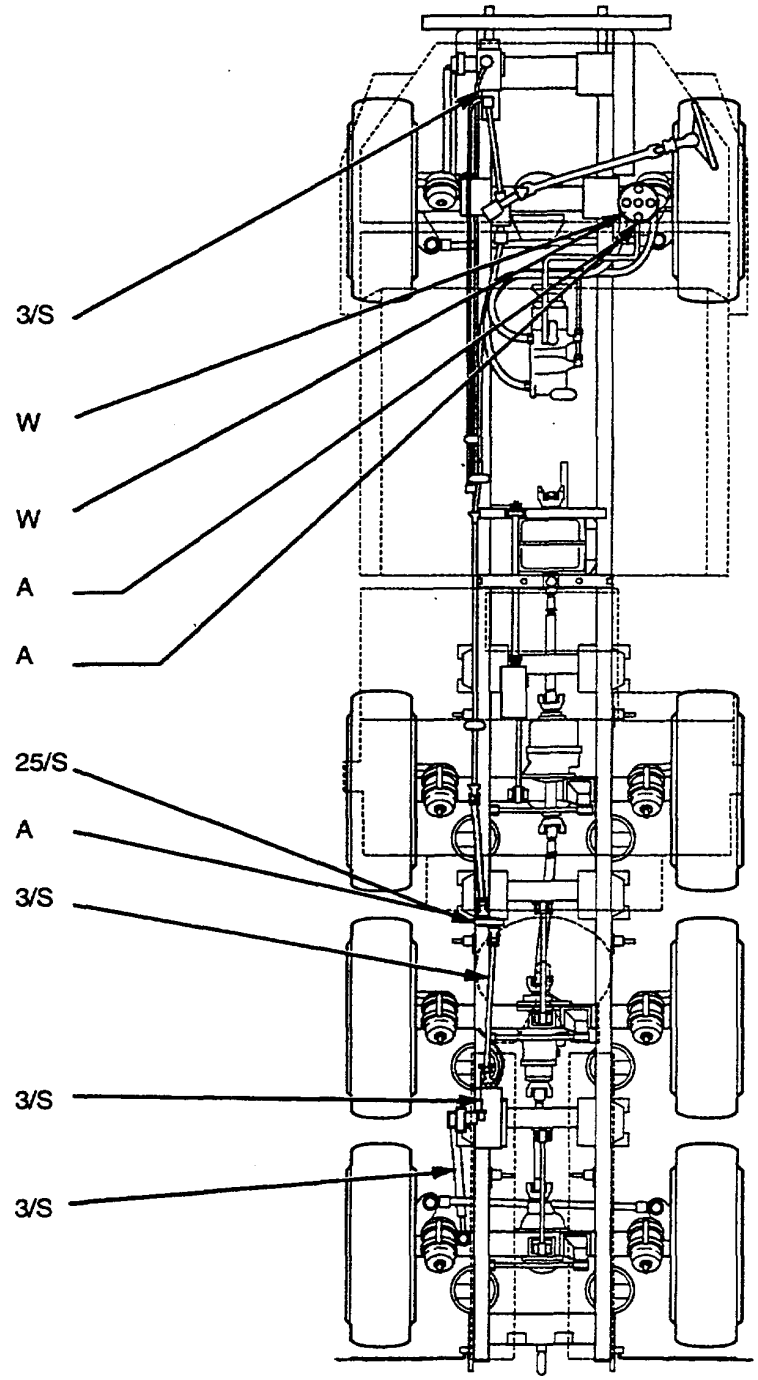
* See table 2 for recommended temperature ranges applicable to MIL-A-46153 and MIL-A-11755.

	LUBRICANT	INTERVAL
No. 1 Axle Drag Link Lubricate. (2 fittings) (O) (See note 2a and view V.)	GAA	3/S
Front Steering Shaft Lubricate. (3 fittings) (O) (See note 2a and view W.)	GAA	3/S
Top Steering Shaft No. 1 Lubricate. (3 fittings) (O) (See note 2a and view X.)	GAA	3/S
Steering Column Linkage Lubricate. (1 fitting) (O) (See note 2a and view Y.)	GAA	3/S
Rear Steering Shaft No. 1 Lubricate. (3 fittings) (O). (See note 2a and view Z.)	GAA	3/S
Rear Steering Shaft No. 3 Lubricate. (2 fittings) (O) (See note 2a and view AA.)	GAA	3/S
Rear Steering Shaft No. 4 Lubricate. (3 fittings) (O) (See note 2a and views AB and AX.)	GAA	3/S
Steering Oil Sampling Valve Take AOAP sample. (O) (See note 5 and view AD.)		

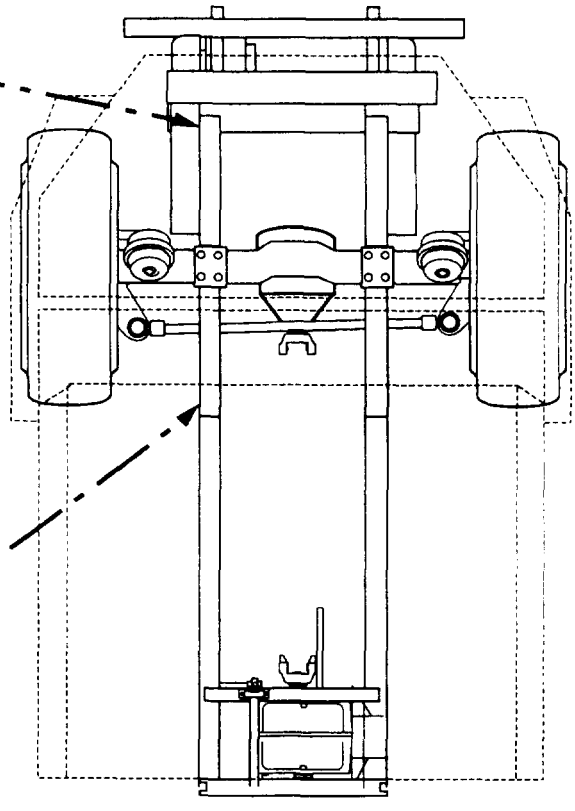


STEERING SYSTEM

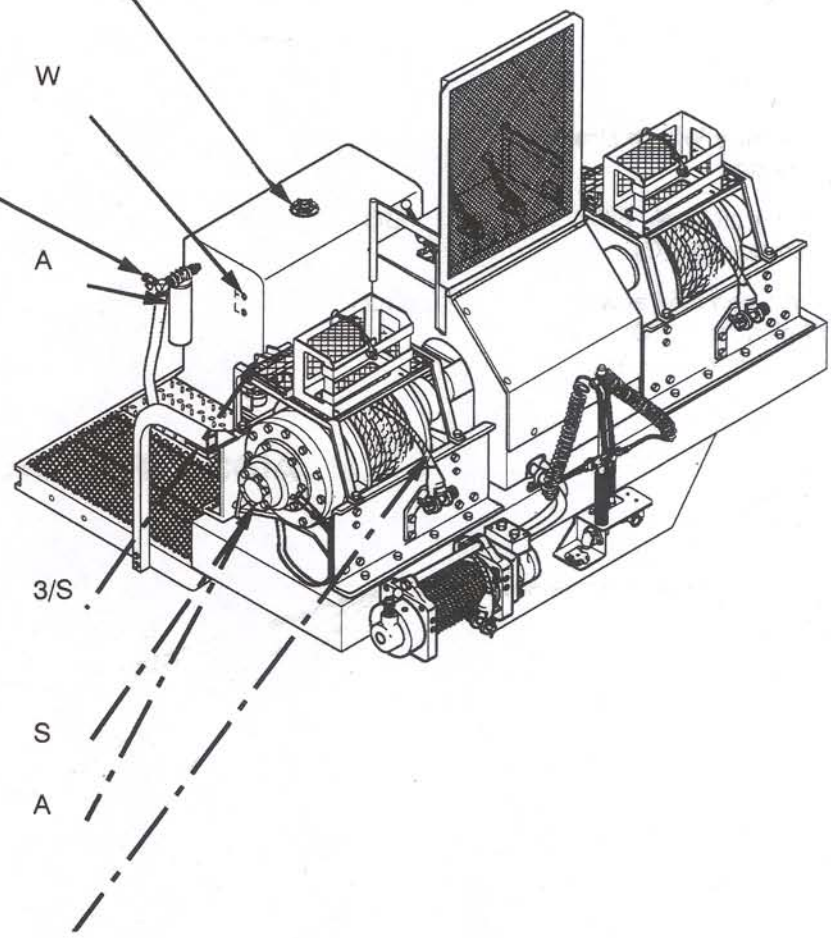
	LUBRICANT	• INTERVAL
Front Steering Gear		
Lubricate. (O) (See note 2a and view AE.)	GAA	3/S
Steering Reservoir		
Check fluid level on dipstick. (C) (See note 11, views AF and BB.)		W
Fill to full level on dipstick. (C)	OE/HDO	W
Drain reservoir. Replace filter. (O) (See view AG.)	OE/HDO	A
Refill. (O) (See view AF.)	OE/HDO	A
Steering Reduction Gearbox		
Check and fill. (O) (See view AZ.)	GO	25/S
Drain and refill. (O) (See view AZ.)	GO	A
Steering Shaft No. 5	GAA	3/S
Lubricate. (3 fittings) (O) (See note 2a and views AC and AY.)		
Rear Steering Gear		
Lubricate. (O) (See note 2a and view AH.)	GAA	3/S
No. 4 Axle Drag Link		
Lubricate. (2 fittings) (O) (See note 2a and view AI.)	GAA	3/S



	LUBRICANT	• INTERVAL
Spring Link		
Lubricate. (1 fitting per pivot) (O) (See note 2a and view AJ.)	GAA	3/S
Spring Hanger		
Lubricate. (2 fittings per pivot) (O) (See notes 2a, 2g, and views AK and AL.)	GAA	3/S

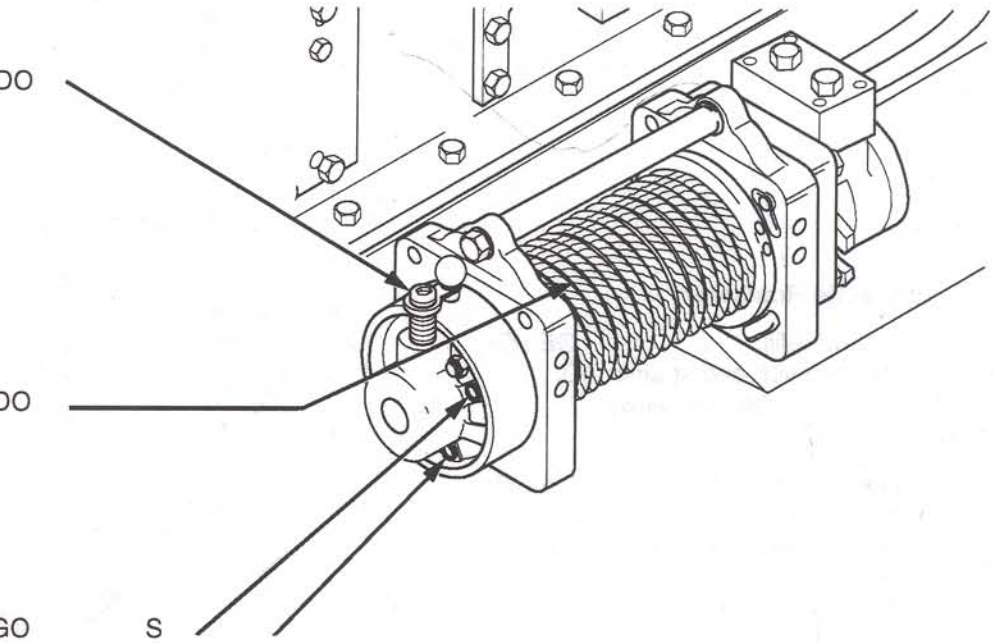


	LUBRICANT	• INTERVAL
Hydraulic Reservoir		
Drain and refill. Clean reservoir and strainer. (O) (See notes 1, 9e, and views AN and AO.)	OE/HDO	A
Check fluid level at sight glasses. (C) Fill as required to full level on sight glass. (C) (See and view AM.)	OE/HDO	W
Replace filter. (O) (See note 9e and view AM.)		A
Winch Hydraulic Oil Sampling Valve		
Take AOAP sample. (O) (See notes 5, 9a, and view AM.)		
Cable Hold Downs		
Lubricate. (1 fitting) (O) (See note 2a and view AP.)	GAA	3/S
Drum Gearboxes		
Check oil level and fill as required. (O)	GO	S
Drain and refill. (O) (See notes 1, 9b, 9d, 9e, and views AQ and BA.)		A
Winch Cables		
Clean and oil cables after each use. (C)	OE/HDO	



WINCH

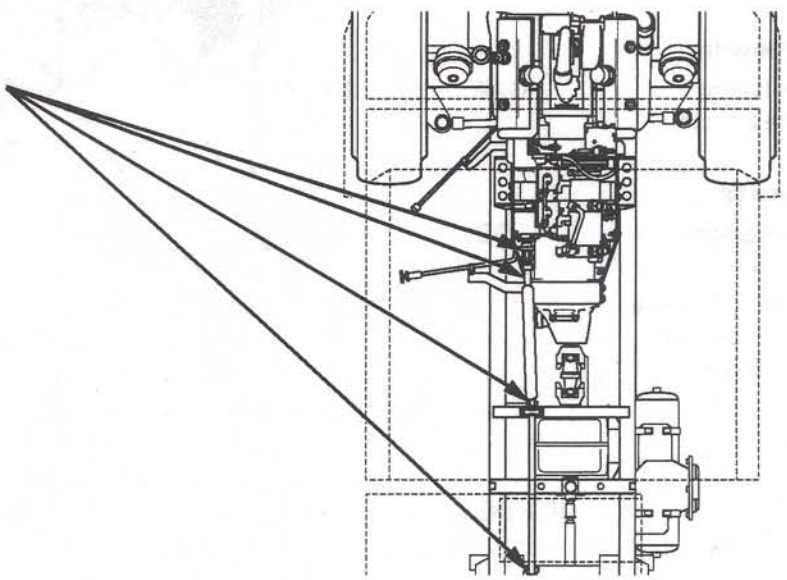
	LUBRICANT	• INTERVAL
Manual Kickout Lever		
Lubricate pivot point with oil. (C) (See note 7.)	OE/HDO	
Auxiliary Winch Cable		
Clean and oil cable after each use. (C)	OE/HDO	
Auxiliary Winch Drum Gearbox		
Check oil level. Fill as required. (O)	GO	S
Drain and refill at winch fill plug level. (O) (See note 1 and view AR.)	GO	A



AUXILIARY WINCH

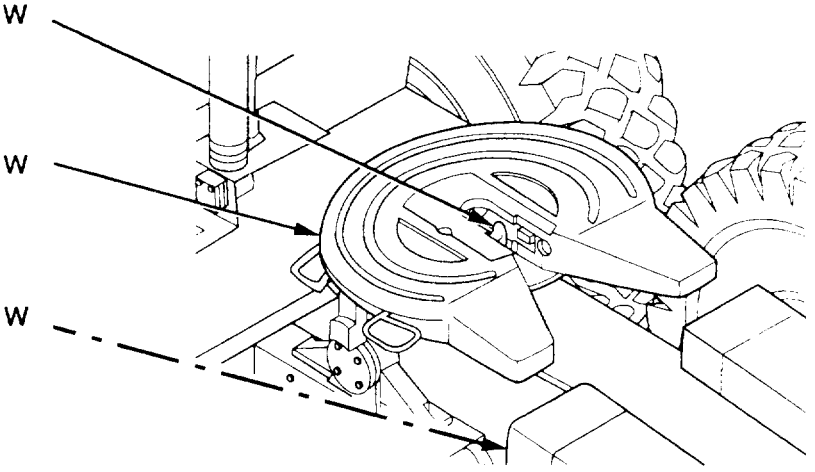
PTO Shafts and Universal Joints

(See note 9c.)

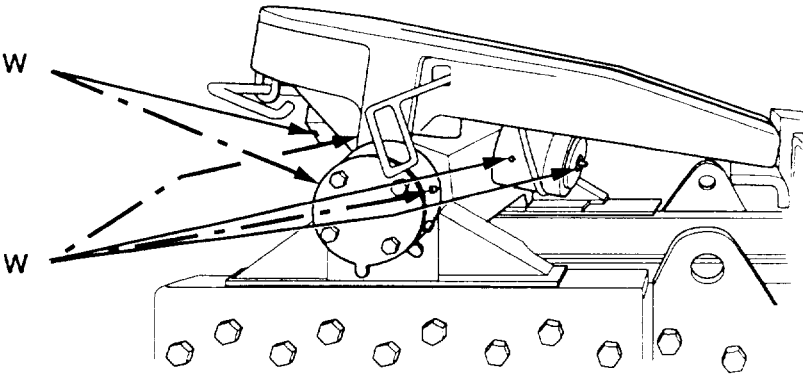


WINCH DRIVE

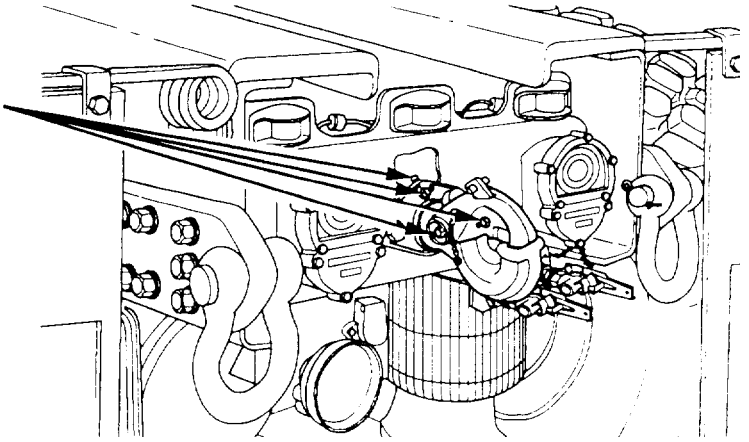
	LUBRICANT	• INTERVAL
Fifth Wheel Jaws		
Clean and coat with grease. (C) (See note 6.)	GAA	W
Fifth Wheel Plate		
Clean and coat with grease. (C) (See note 6.)	GAA	W
Fifth Wheel Ramps		
Clean and coat with grease. (C) (See note 6.)	GAA	W



Fifth Wheel Locking Linkage and Lube Fittings		
Oil all pivot points, springs, and locking linkage. (C) (See notes 6, 7, and views AS, AT, AU, and AV.)	OE/HDO	W
Lubricate. (9 fittings) (C) (See note 6 and views AS, AT, AU, and AV.)	GAA	W

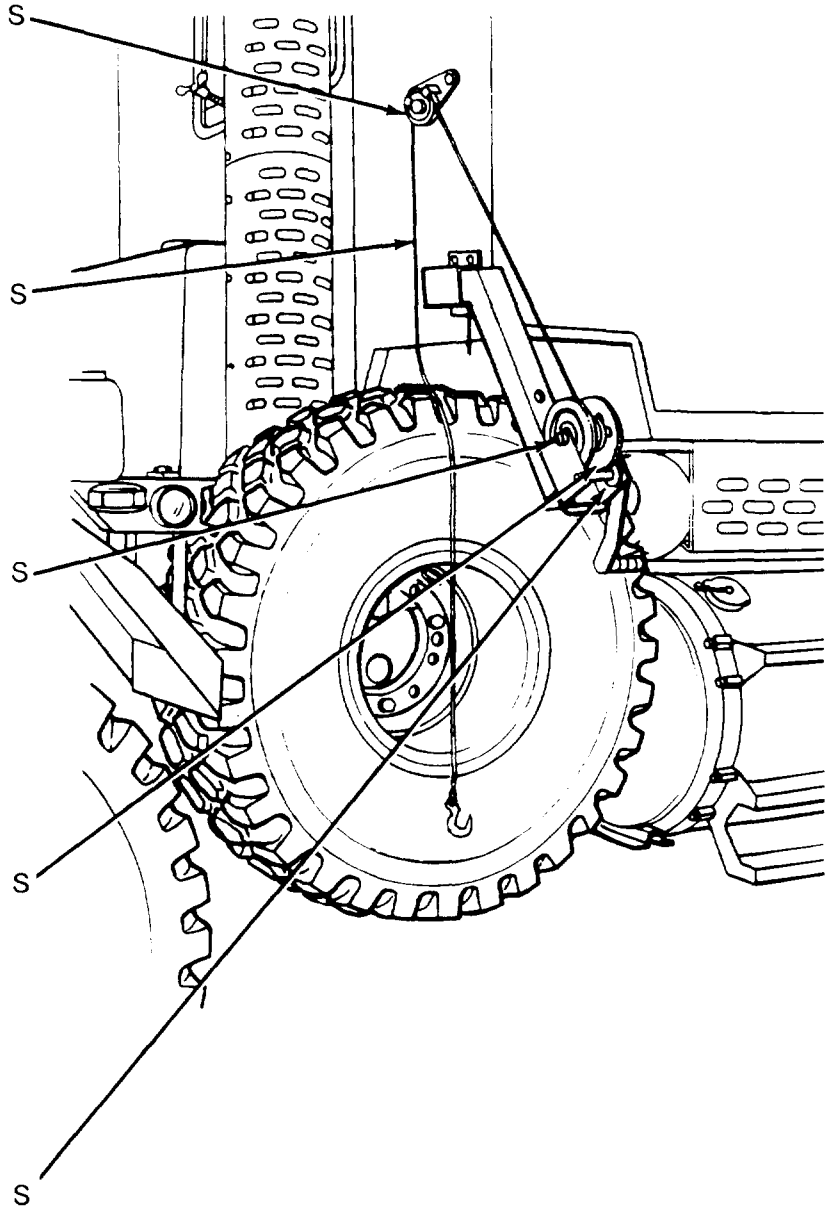


Pintle Hook		
Lubricate. (4 fittings) (O) (See note 2f.)	GAA	3/S



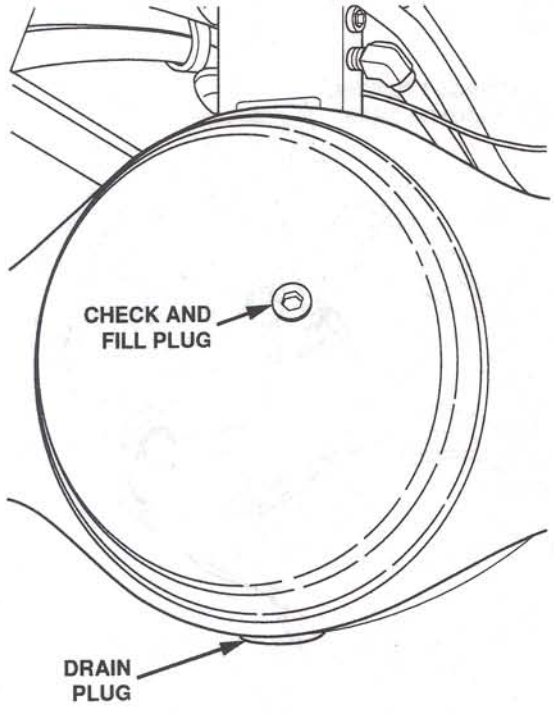
FIFTH WHEEL AND PINTLE

	LUBRICANT	• INTERVAL
Pulley Lubricate with oil. (O) (See note 7.)	OE/HDO	S
Cable Unreel, clean, and apply light coat of oil (O). (See note 10.)	OE/HDO	S
Reel and Reel Shaft Lubricate with oil. (O) (See notes 7, 10, and view AW.)	OE/HDO	S
Gears of Reel and Ratchet Apply light coat of grease. (O) (See note 10 and view AW.)	GAA	S
Bushings of Crank and Ratchet Shaft Lubricate with oil. (O) (See notes 7, 10, and view AW.)	OE/HDO	S



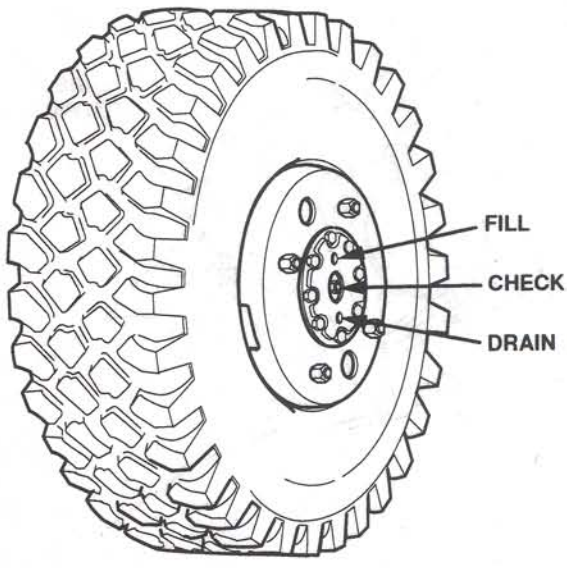
SPARE TIRE DAVIT

A



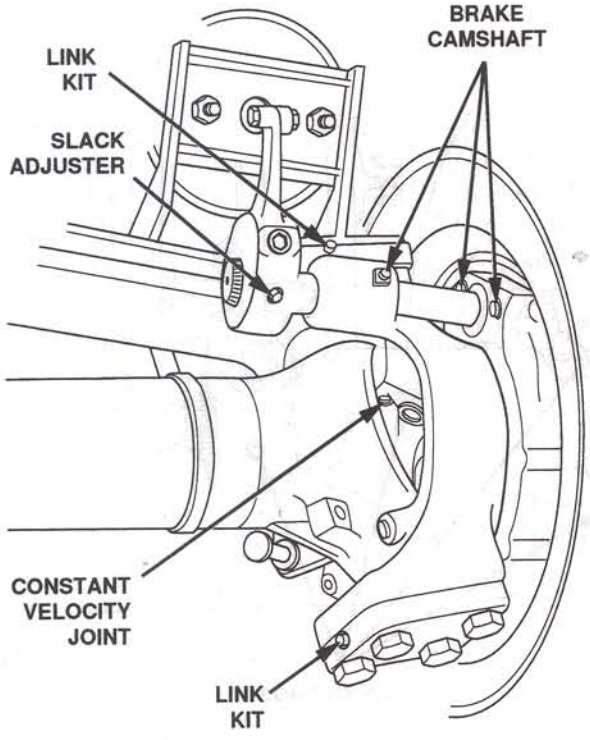
NO. 1 AXLE DIFFERENTIAL

B



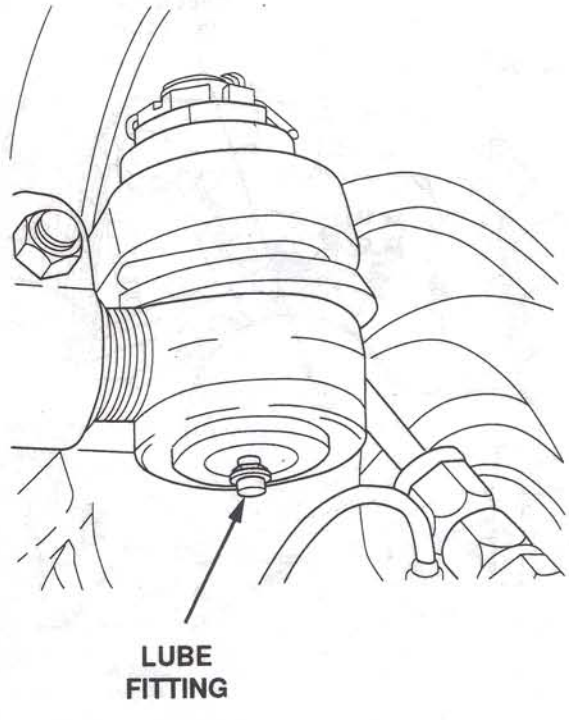
PLANETARY WHEEL END

C



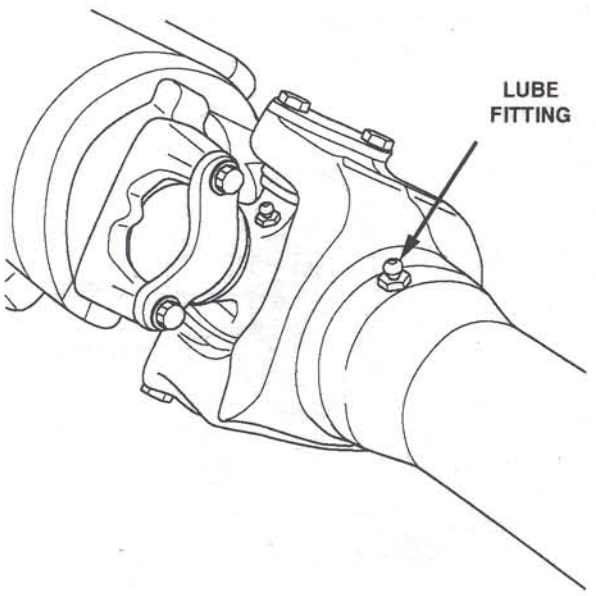
CV JOINT, LINK KIT, BRAKE CAMSHAFT, AND TYPICAL SLACK ADJUSTER

D



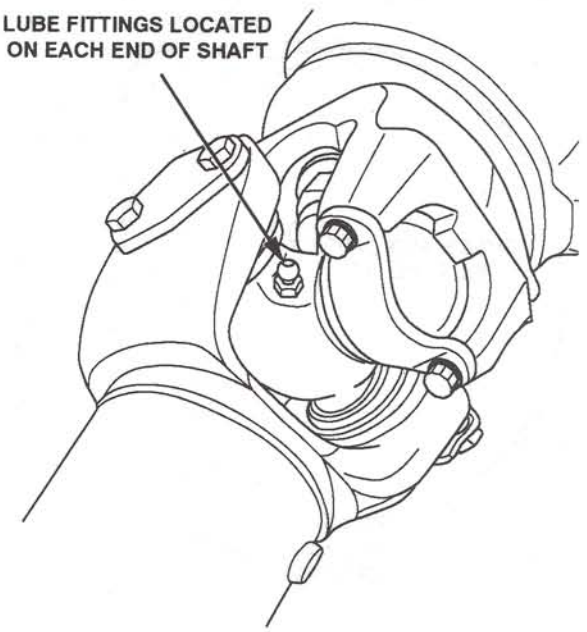
TYPICAL TIE ROD END

E



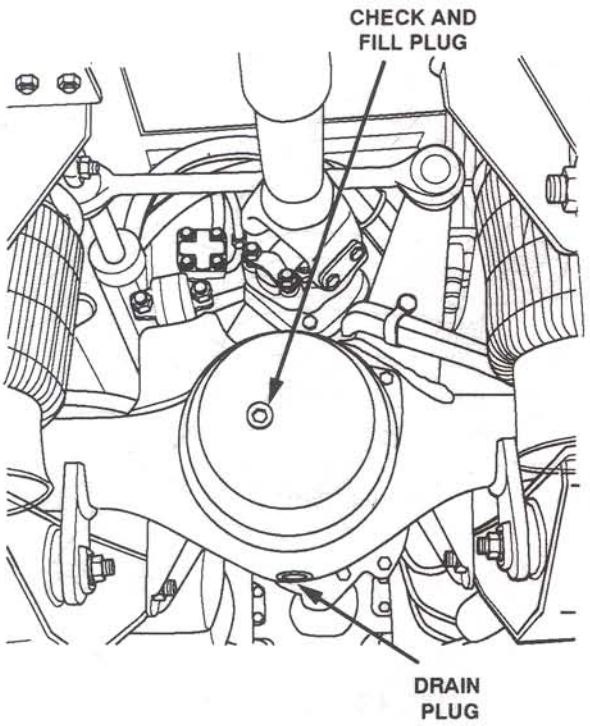
TYPICAL PROPELLER SHAFT

F



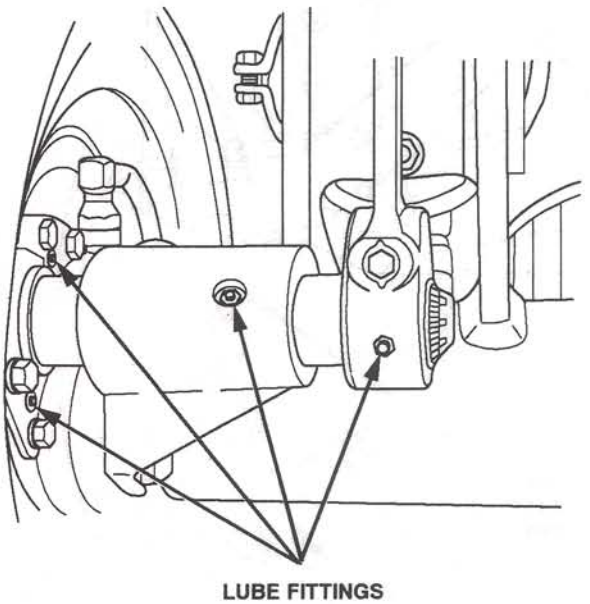
TYPICAL UNIVERSAL JOINT

G



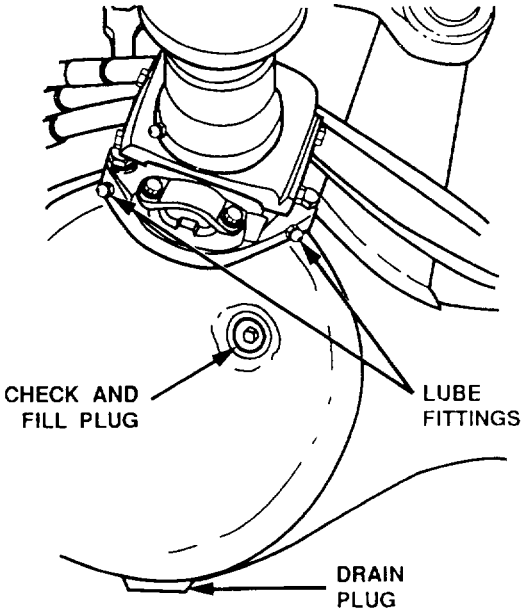
NO. 2 AXLE DIFFERENTIAL

H



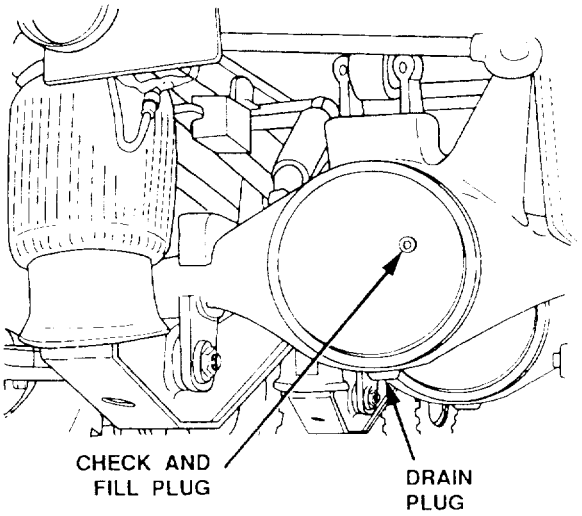
TYPICAL NO. 2 AXLE AND NO. 3 AXLE SLACK ADJUSTER AND BRAKE CAMSHAFT

I



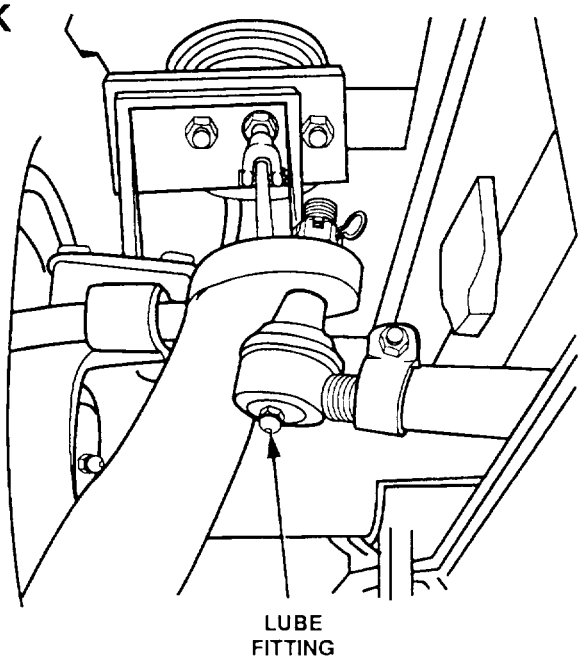
NO. 3 AXLE DIFFERENTIAL

J



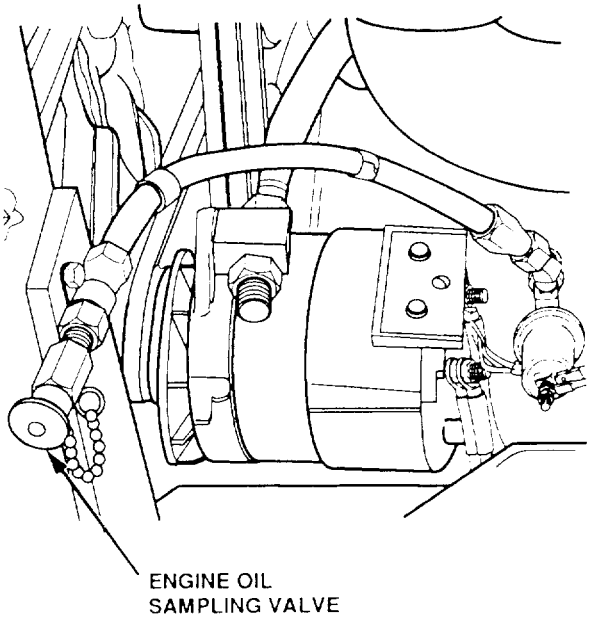
NO. 4 AXLE DIFFERENTIAL

K



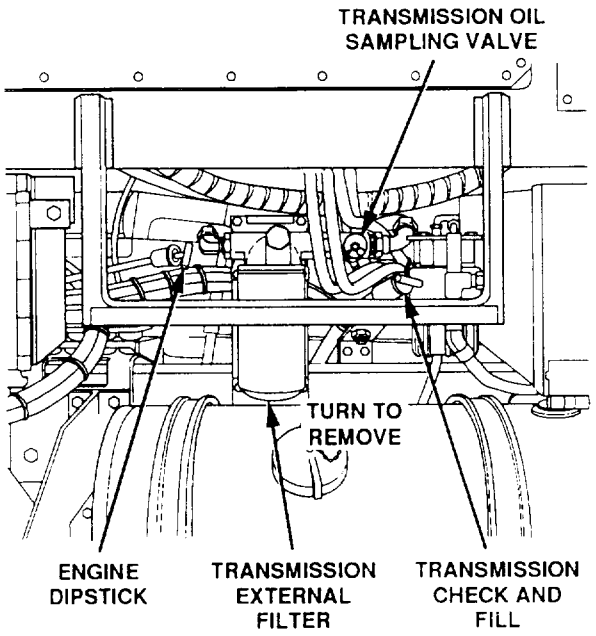
NO. 4 AXLE STEERING ARM AND TIE ROD END

L



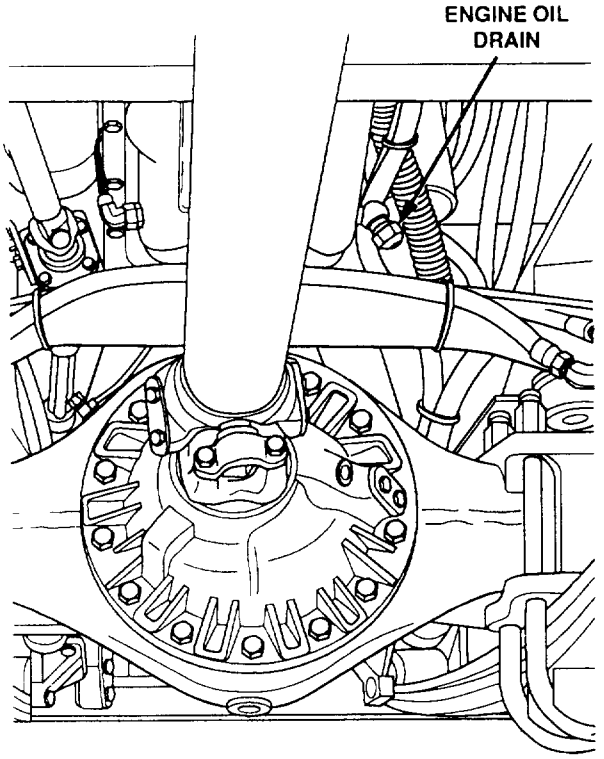
ENGINE OIL SAMPLING VALVE

M



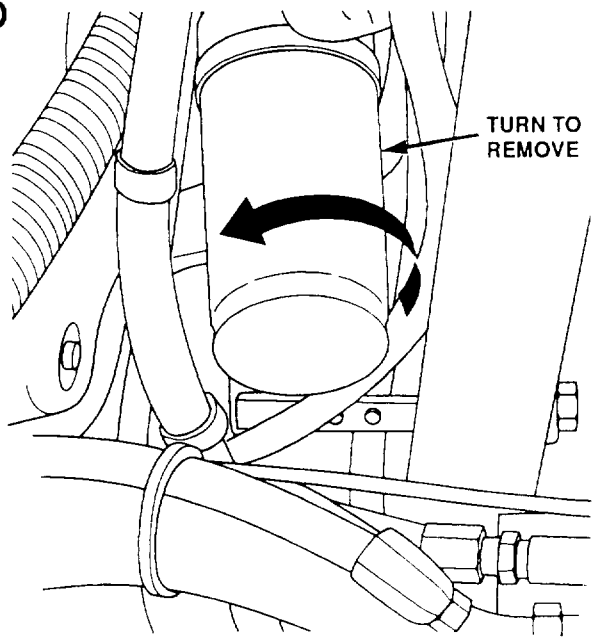
ENGINE DIPSTICK, TRANSMISSION OIL

N



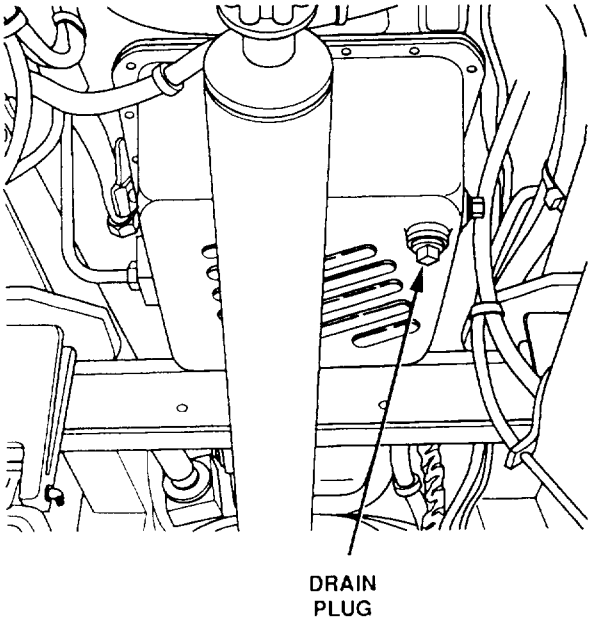
ENGINE CRANKCASE DRAIN PAN

O



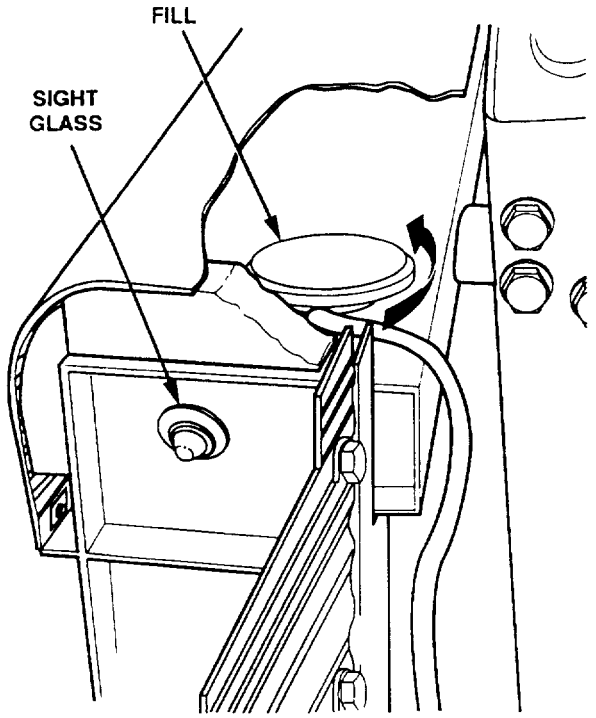
ENGINE OIL FILTER

P



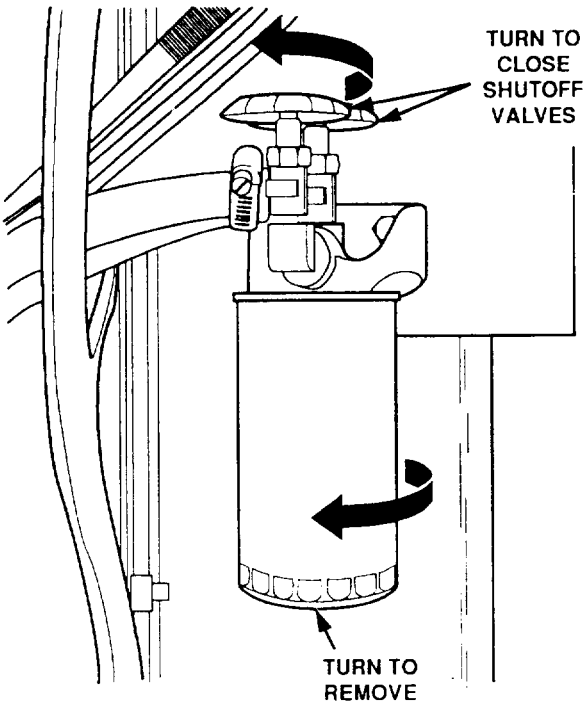
TRANSMISSION DRAIN PLUG

Q



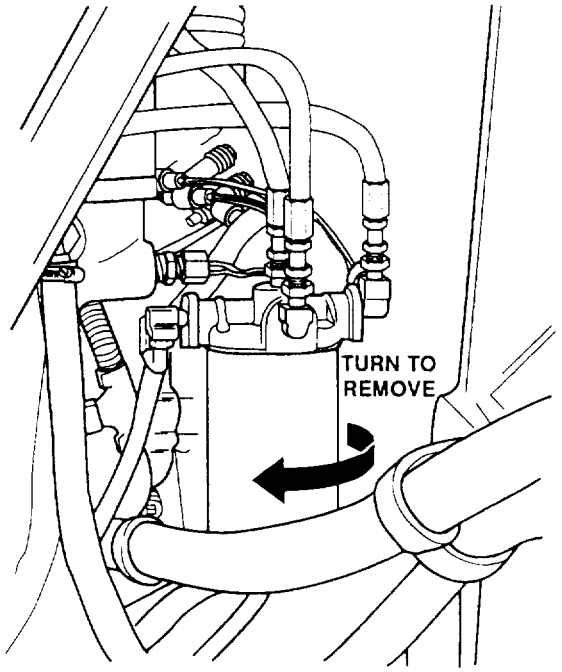
RADIATOR FILLER CAP

R



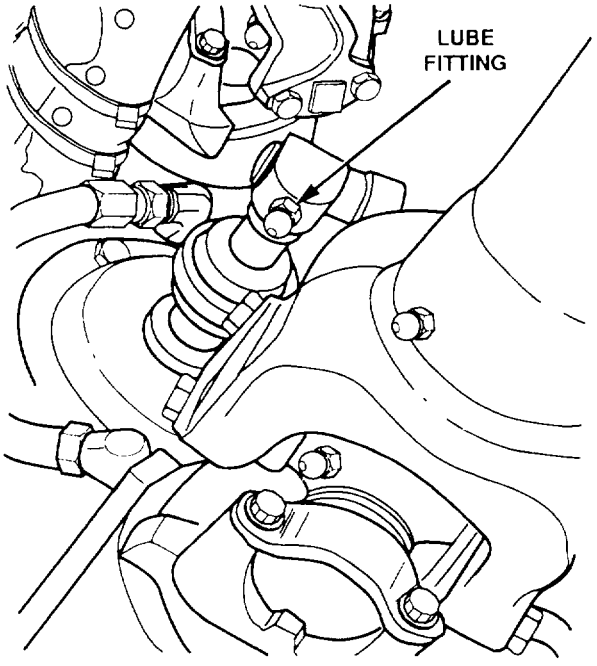
COOLING SYSTEM FILTER

S



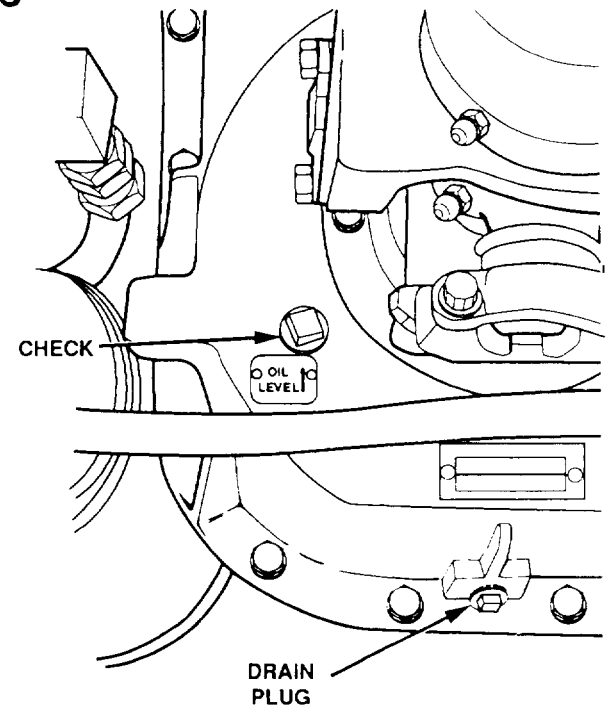
SECONDARY FUEL FILTER

T



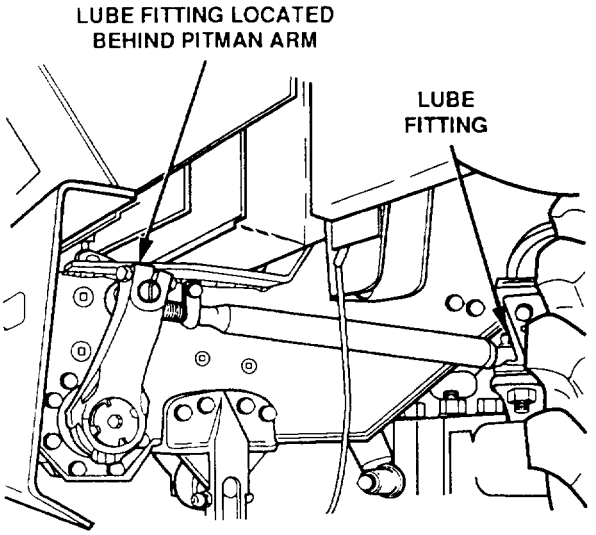
SPEEDO ADAPTER

U



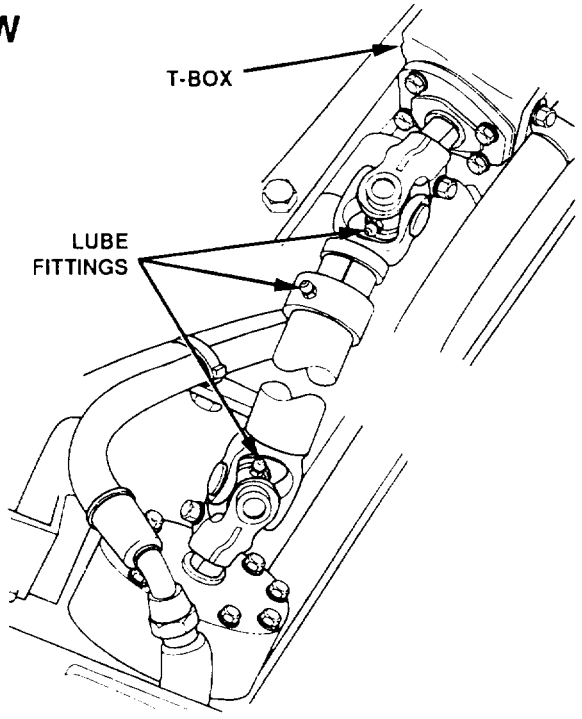
TRANSFER CASE

V



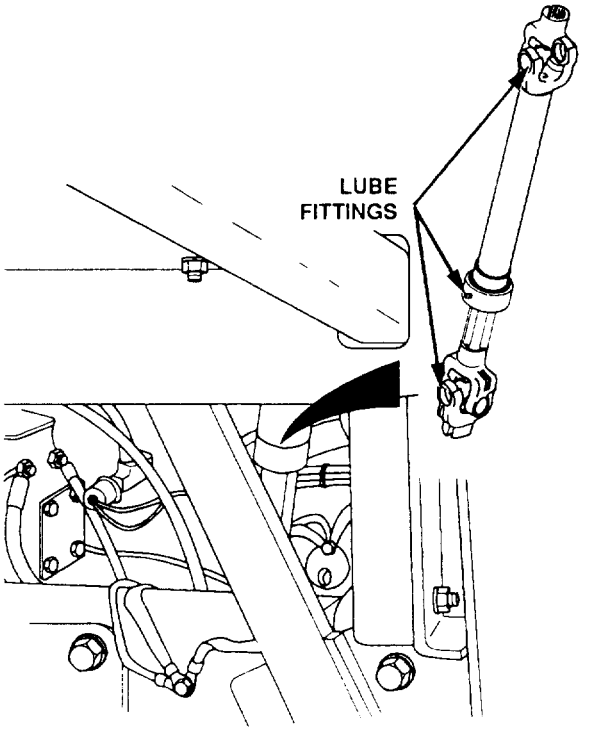
NO. 1 AXLE DRAG LINK

W



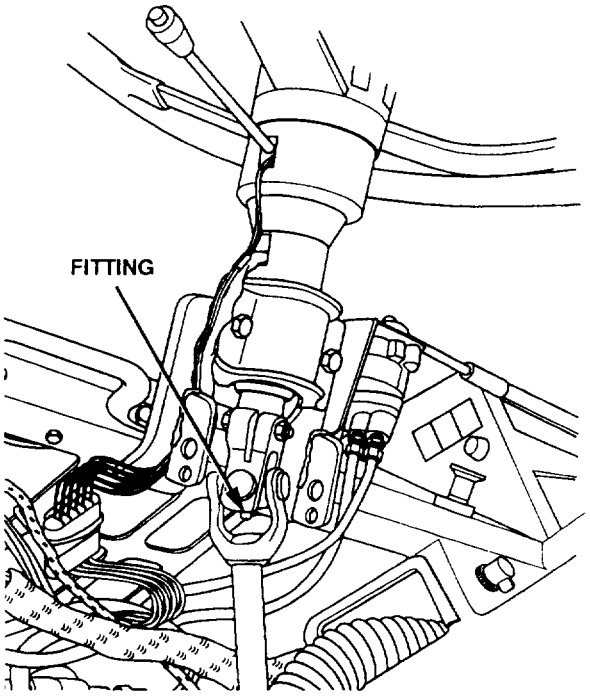
FRONT STEERING SHAFT

X



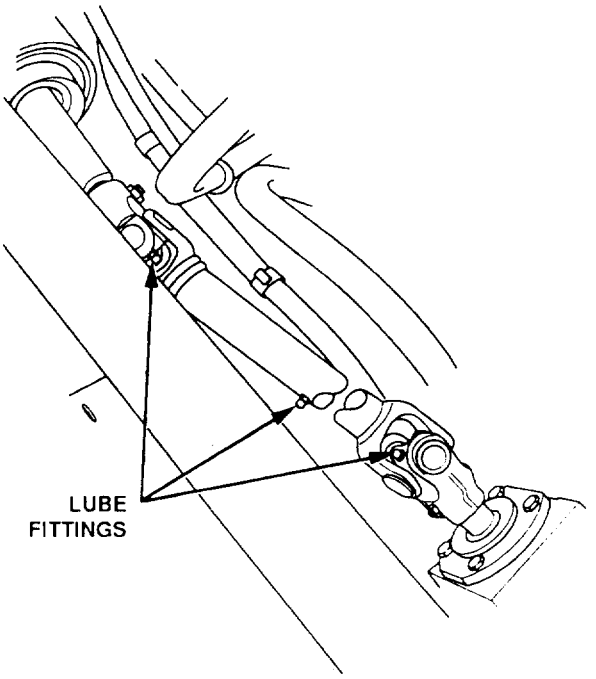
TOP STEERING SHAFT NO. 1

Y



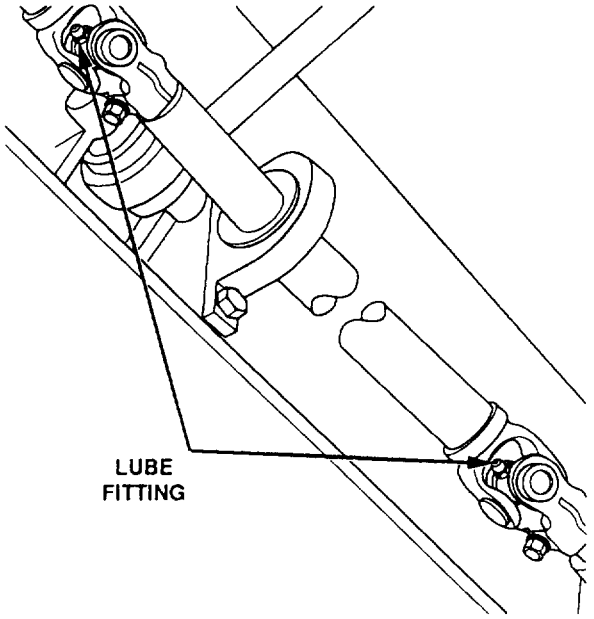
STEERING COLUMN

Z



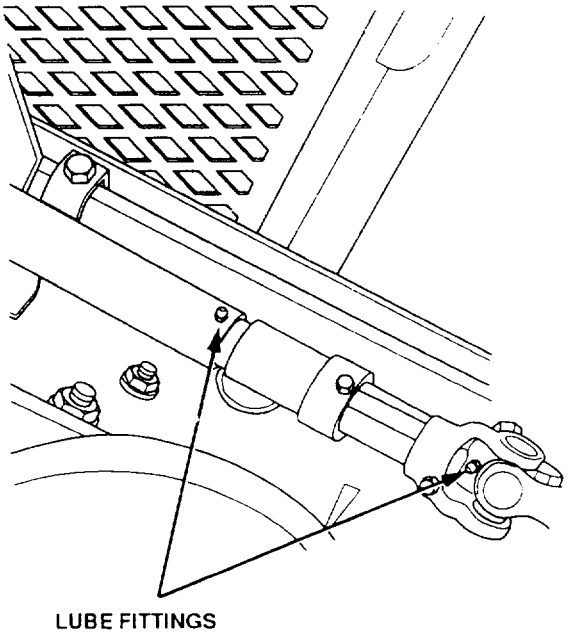
REAR STEERING SHAFT NO. 1

AA



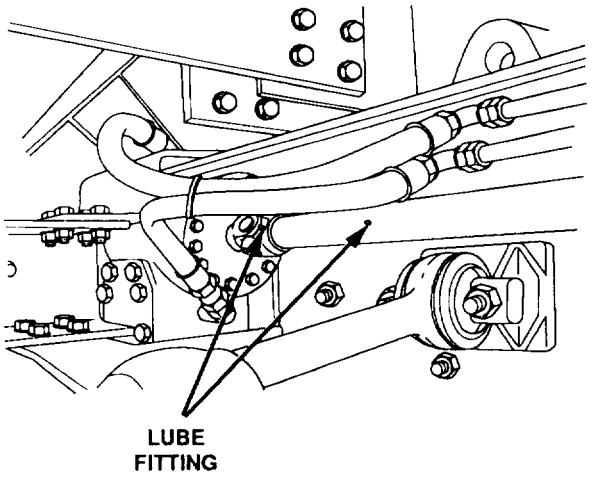
REAR STEERING SHAFT NO. 3

AB



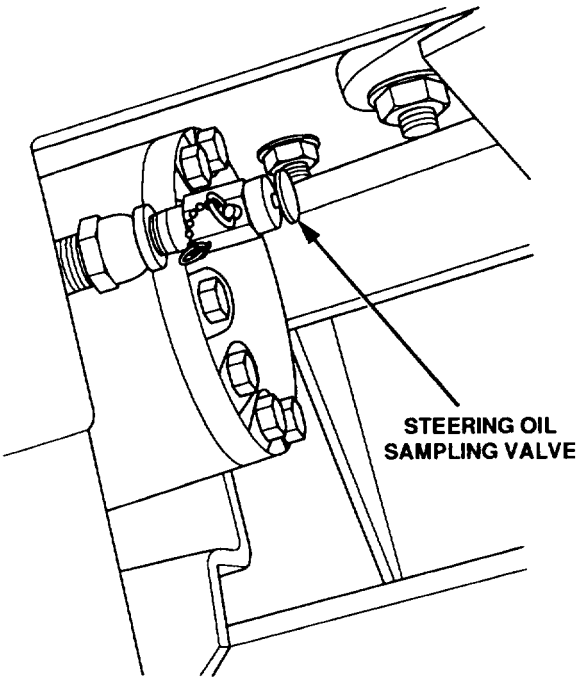
REAR STEERING SHAFT NO. 4

AC



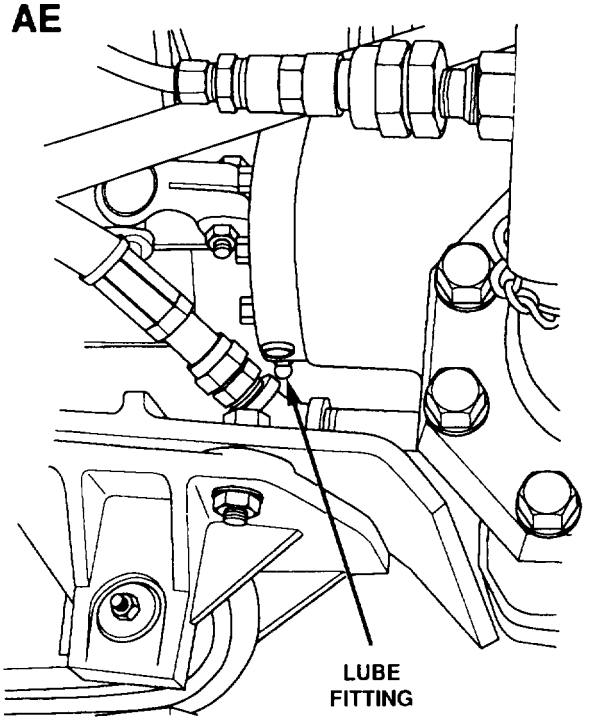
REAR STEERING SHAFT NO. 5

AD



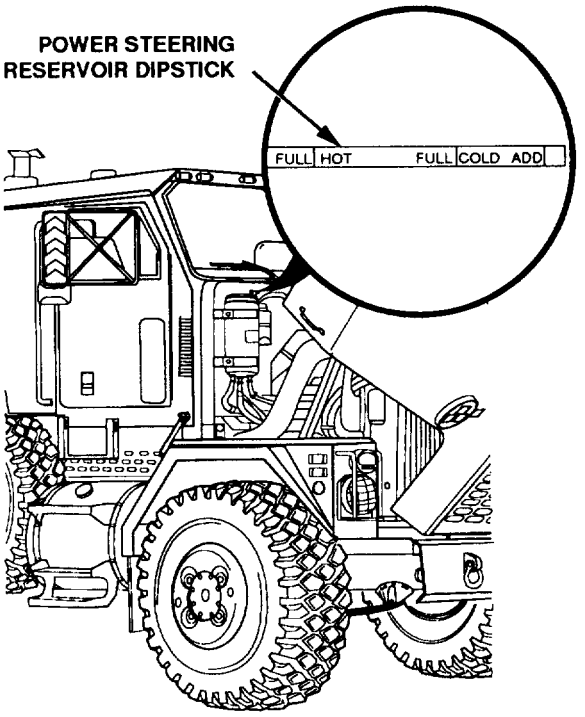
STEERING OIL SAMPLING VALVE

AE



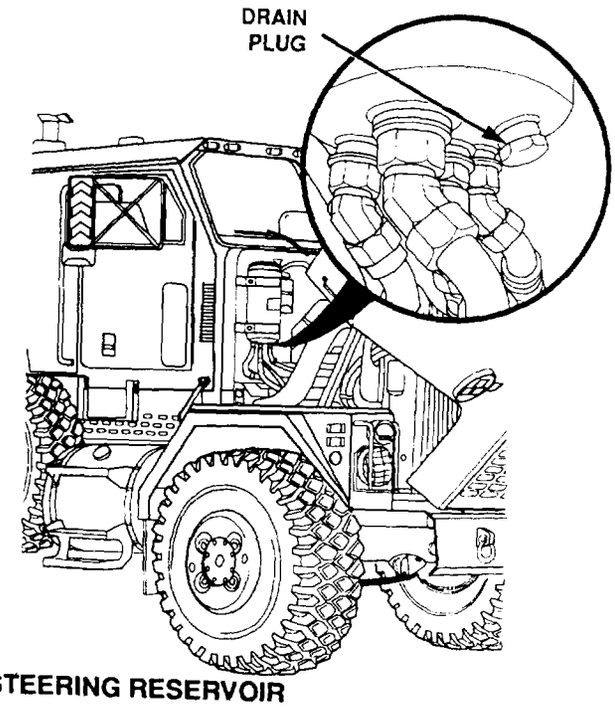
FRONT STEERING GEAR

AF



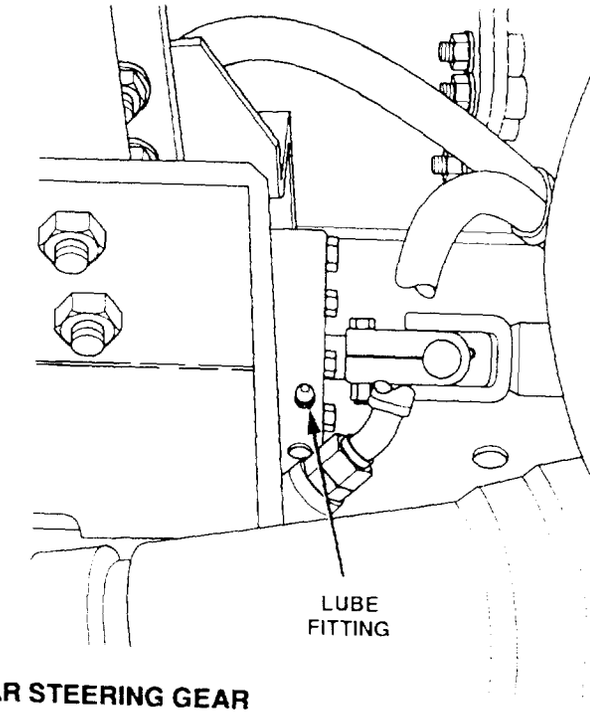
STEERING RESERVOIR

AG



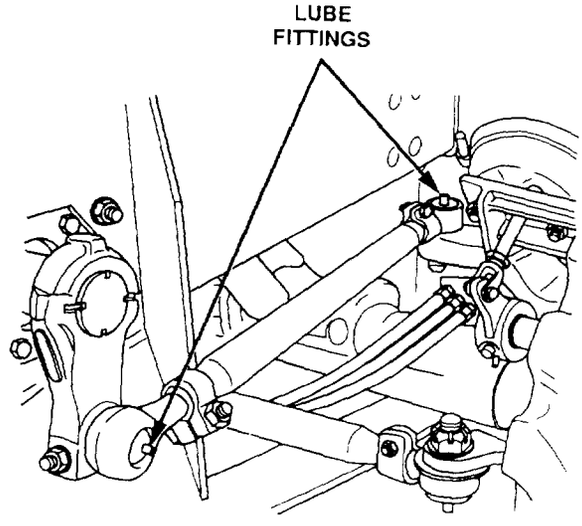
STEERING RESERVOIR

AH



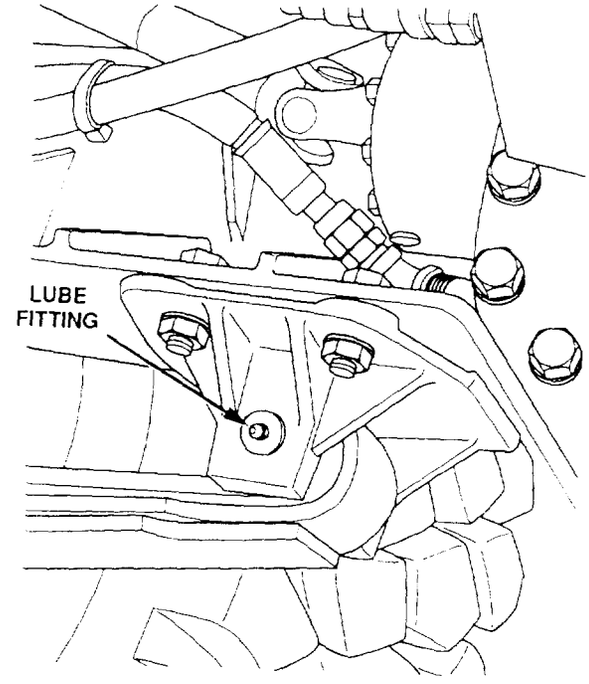
REAR STEERING GEAR

AI



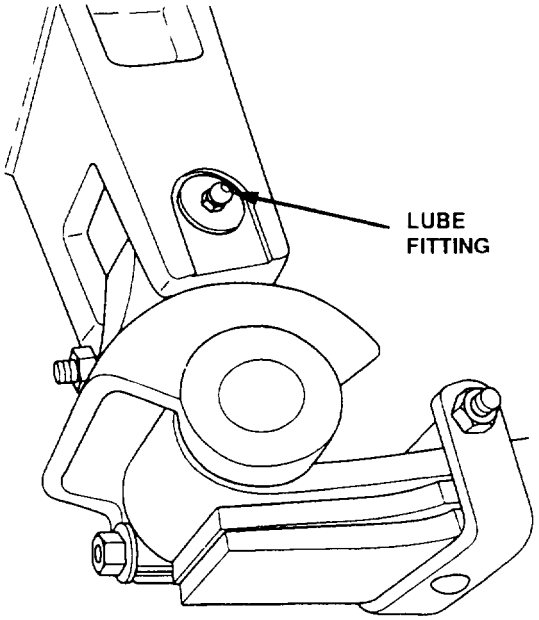
NO. 4 AXLE DRAG LINK

AJ



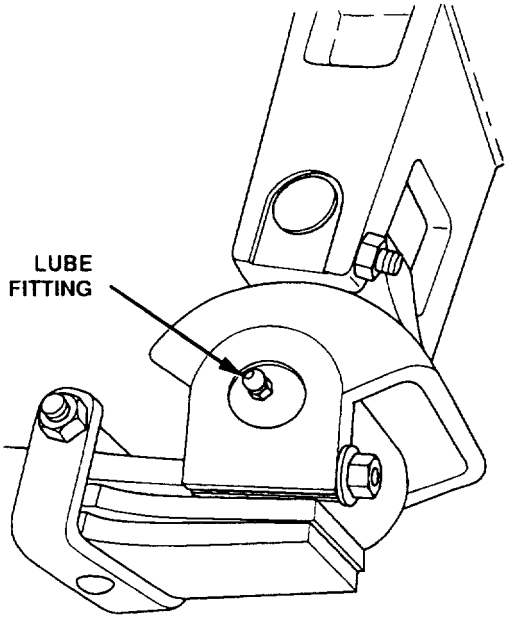
SPRING LINK

AK



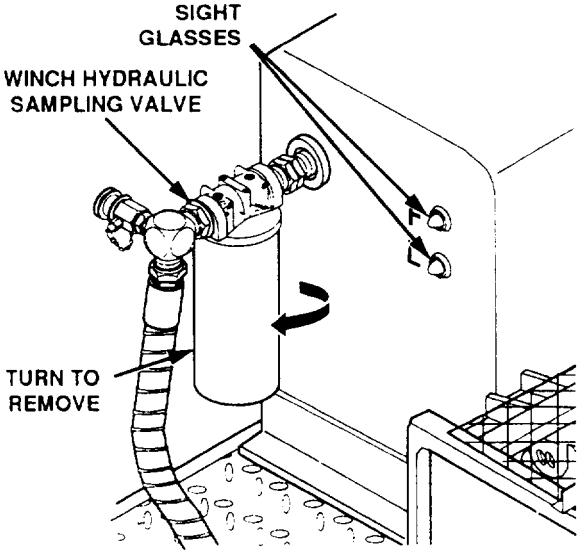
SPRING HANGER

AL



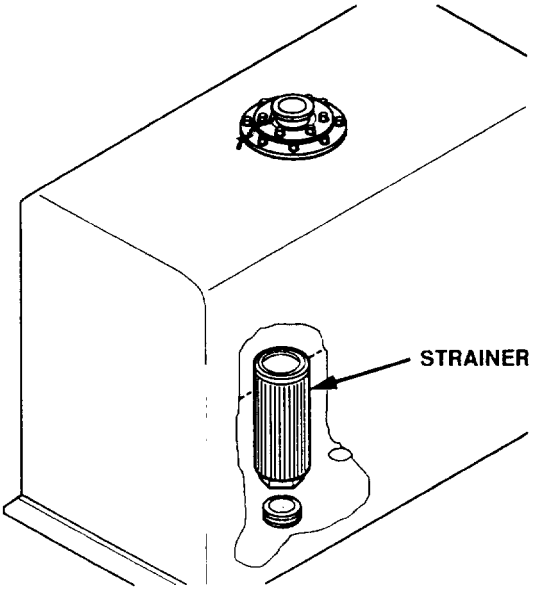
SPRING HANGER

AM



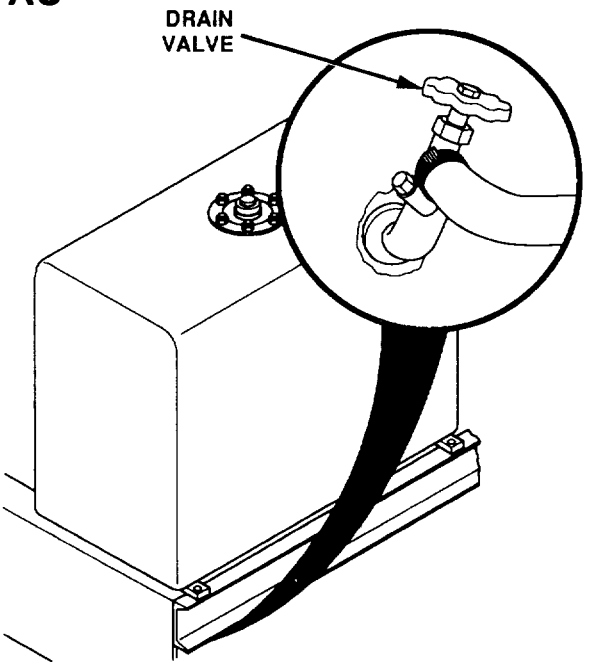
WINCH HYDRAULIC FILTER, SAMPLING VALVE, AND RESERVOIR SIGHT GLASS

AN



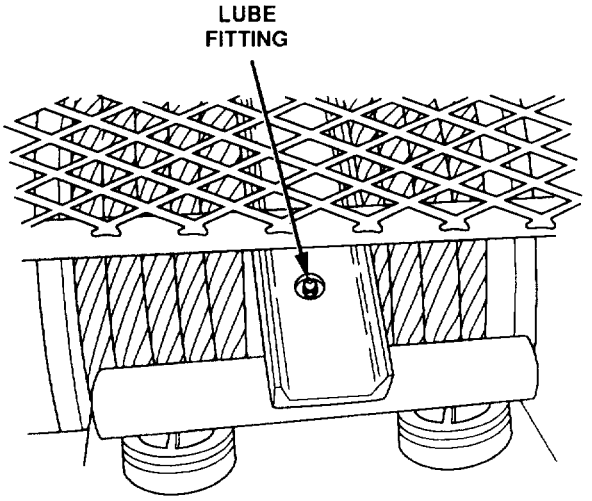
WINCH RESERVOIR STRAINER

AO



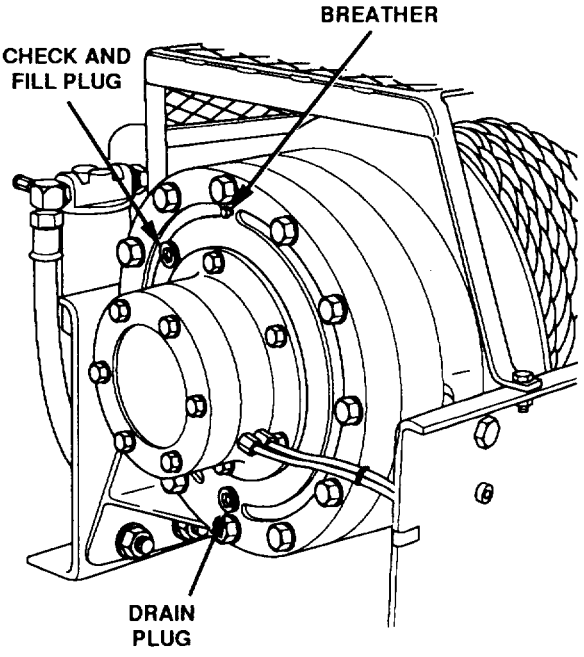
WINCH RESERVOIR

AP



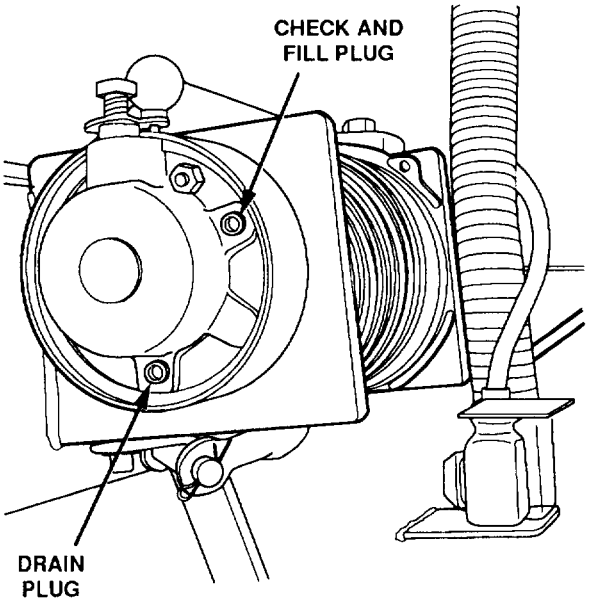
CABLE HOLD DOWNS

AQ



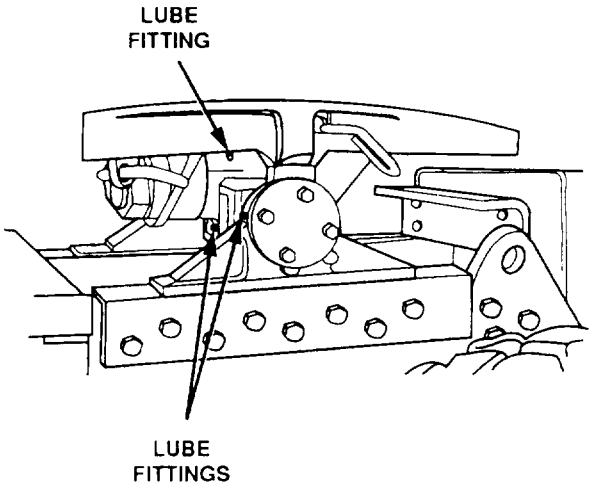
DRUM GEAR BOXES

AR



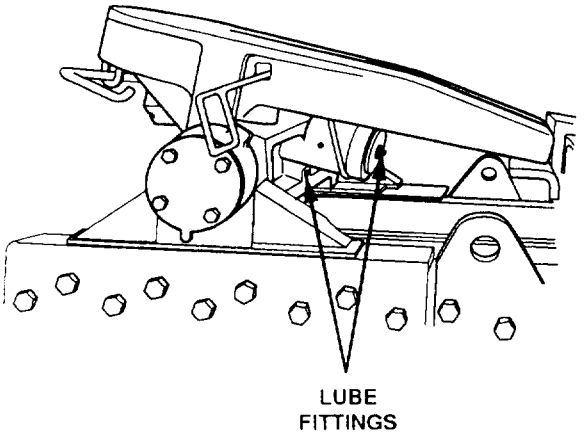
AUXILIARY WINCH

AS



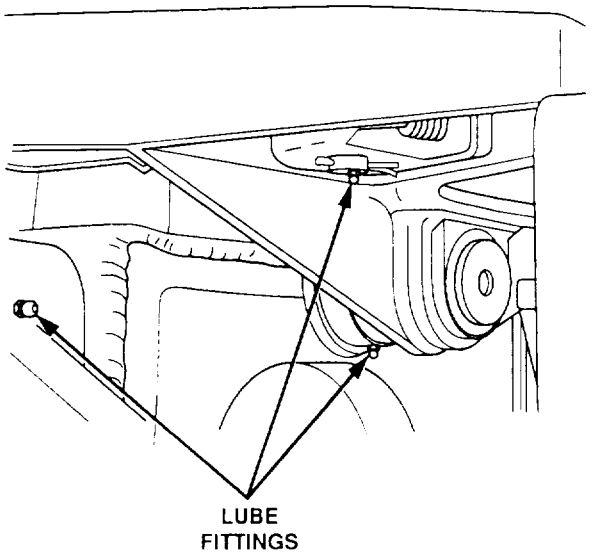
FIFTH WHEEL

AT



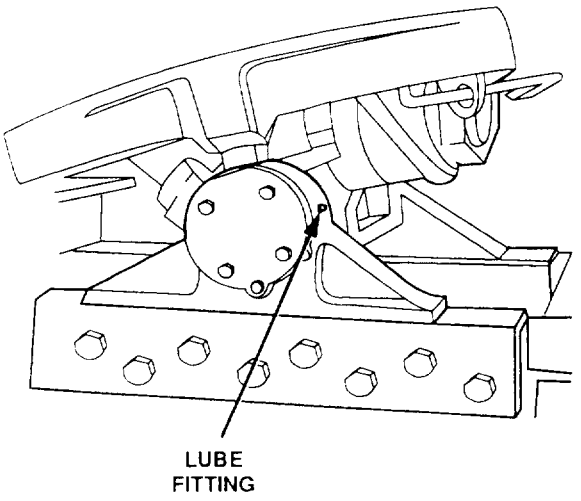
FIFTH WHEEL

AU



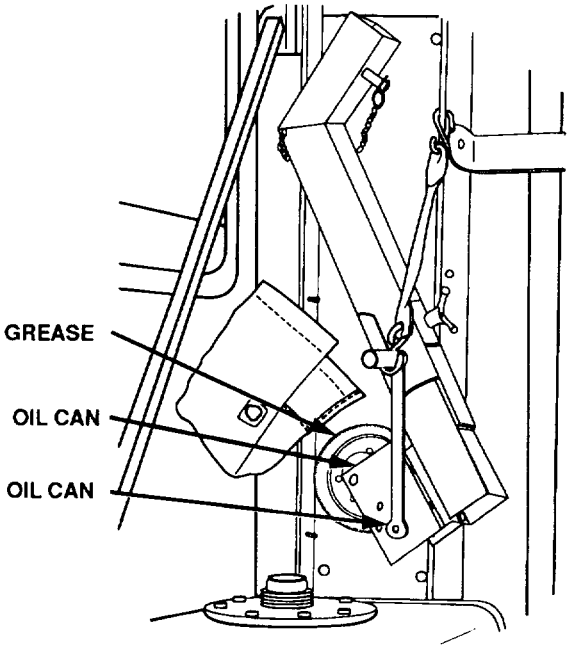
FIFTH WHEEL

AV



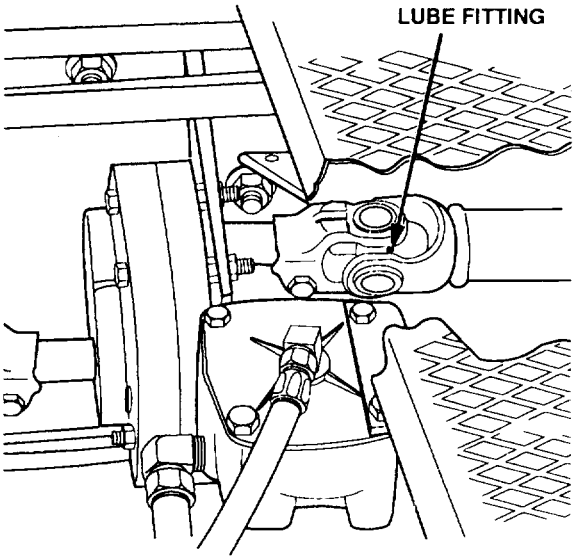
FIFTH WHEEL

AW



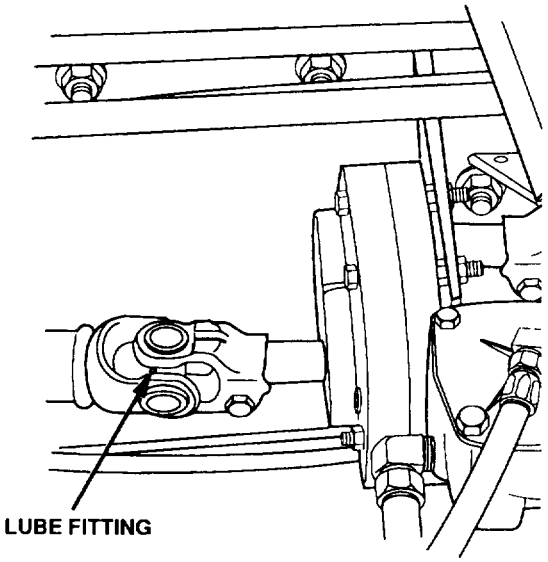
SPARE TIRE DAVIT

AX



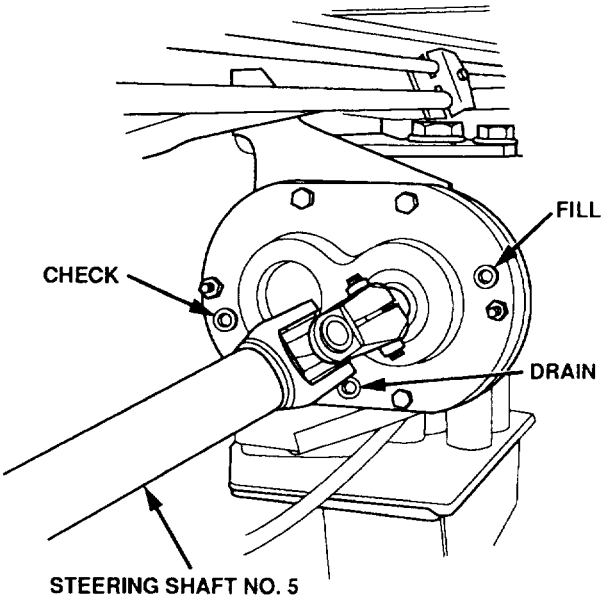
STEERING SHAFT NO. 4

AY



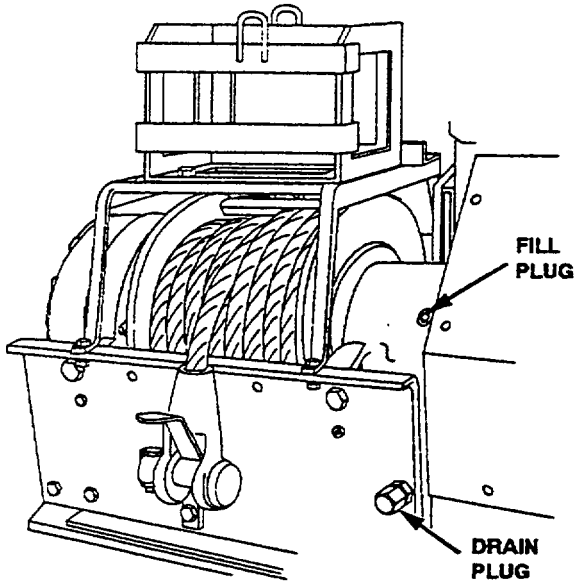
STEERING SHAFT NO. 5

AZ



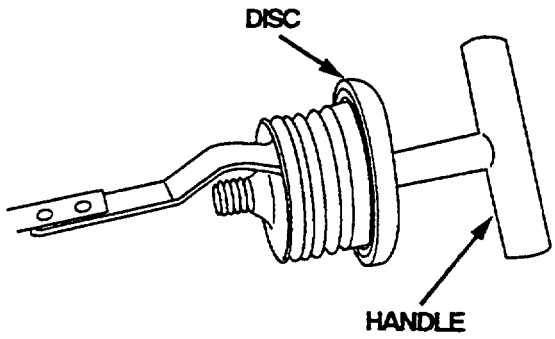
STEERING REDUCTION GEARBOX

BA



MAIN WINCH MOTOR END

BB



TYPICAL DIPSTICK

NOTES

1. COLD TEMPERATURE OPERATION. For operation of equipment in expected temperatures continuously below 0°F (18°C), remove lubricants prescribed in the key for temperatures above 0°F (-18°C). Relubricate as specified in the key for temperatures 0 to -50°F(-18 to -46°C).

2. CHASSIS.

a. Purging of Lubricant. When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.

WARNING

Do not start engine or move HET Tractor when anyone is under vehicle or working on brake lines. Severe injury or death could result.

b. Universal Joints. Use the proper lubricant to purge all four bearing seals at each universal joint. Purging flushes abrasive contaminants from each bearing and ensures all four bearings are filled properly. Pop the seals; these seals are made to be popped.

If any seal fails to purge, move propeller shaft from side-to-side while applying gun pressure. This allows greater clearance on thrust end of bearing that is not purging. if seals still do not purge, rock HET Tractor by starting engine, releasing parking brakes, putting transmission in D or R, and allowing HET Tractor to roll. This removes the wind up in the drive line and allows for a greater clearance on the thrust end of the universal joint. Because of the design of the universal joint seal, there will occasionally be one or more bearing seals that may not purge. Seal tension then has to be released. The procedure for releasing seal tension is as follows:

NOTE

Universal joint may have one or two grease fittings. If there are two fittings, grease either fitting. It is not necessary to grease both fittings.

Loosen bolts holding bearing assembly that does not purge to release seal tension. It maybe necessary to loosen bearing assembly approximately 1/16 in. (0,16 cm) minimum. If loosening does not result in purging, remove bearing assembly to determine cause of blockage.

c. Propeller Shaft Slip Joints. When lubricating spline end of propeller shafts, apply grease to spline fitting until lubricant appears at pressure relief hole. Cover hole with finger and continue adding grease until it appears at sleeve yoke seal.

WARNING

Purged grease must be cleaned from brake camshaft. Failure to comply may cause brake lining contamination and brake failure, resulting in serious injury or death.

d. Camshaft Bushings. Care must be exercised when lubricating camshaft bushings. Grease contacting brake linings will damage linings and cause possible safety problems.

e. Severe Operating Conditions. When HET Tractor is operating under severe conditions, lubricate propeller shafts and universal joints every 50 hours.

f. Pintle Hook Plate Lubrication Fitting. Can be on any side.

g. Spring Hangers. If spring hanger pin does not accept grease, relieve load on spring pin by jacking HET Tractor up by frame rails as close to spring pin as possible. If spring pin still fails to take grease, notify direct support maintenance to remove spring pin and/or bushing and replace if necessary.

h. Tie Rod Ends. Apply grease pressure until new grease is seen purging from the boot area.

i. Link Kit (King Pin). Apply lubricant to fitting until lubricant is visible at inner seal.

3. ENGINE, TRANSMISSION, AND HYDRAULIC SYSTEM.

a. Cooling System Service

(1) See TM 9-2320-360-10. Coolant level should be visible in sight glass.

(2) Close two shutoff valves above coolant filter before replacing coolant filter. Turn two valve handles clockwise to close valve.

(3) Refer to cooling system service (TM 9-2320-360-20) for instructions on draining and flushing of engine coolant.

b. Transmission

(1) Operate engine 1 minute at 1000 RPM, idle until engine temperature reaches 60-120°F (16-49°C). With engine idling, check transmission dipstick.

(2) Add oil If oil level is on or below COLD/ADD line. Approximately 1 qt (0.9 L) of oil is required to bring oil level from bottom of COLD/ADD line to middle of COLD/ADD line. See TM 9-2320-360-20.

(3) Fill oil filter 2/3 full before installing on transmission.

c. Crankcase

(1) Check oil level with HET Tractor parked on level ground and after the engine has been turned off approximately 15 minutes.

WARNING

Use caution when draining hot oil. It may burn exposed skin and cause injury to personnel. If injured, personnel should seek medical attention immediately.

(2) Drain crankcase when hot.

(3) Do not overfill crankcase.

(4) Gradually fill crankcase with oil until oil reaches full mark on dipstick.

NOTE

Oil used to fill oil filter 2/3 full is included in 28 qt approximate capacity of engine.

d. Engine Oil Filter. Fill oil filter 2/3 full before installing on engine. After installing new filter element, fill crankcase, operate engine 5 minutes and check housing for leaks. Shut down engine, check crankcase level and bring to full mark.

4. TRANSFER CASE. Fill transfer case to level even with bottom of fill hole.

5. ARMY OIL ANALYSIS PROGRAM (AOAP). Refer to TB 43-0210 for sampling requirements.

a. After expiration of warranty, active Army units will send an oil sample to an AOAP laboratory for analysis every 90 days. Reserve and National Guard activities will send an oil sample to an AOAP laboratory for analysis every 120 days.

b. Intervals for sampling as well as draining and refilling lubricants may be changed by an AOAP laboratory.

c. If AOAP laboratory support is not available, drain and refill crankcase oil every 6000 mi (9654 km) or semiannually, whichever comes first. Drain and refill transmission oil every 50,000 mi (80,467 km) or annually, whichever comes first. Drain and refill steering reservoir annually. Drain and refill hydraulic oil reservoir annually.

6. FIFTH WHEEL. Clean and coat more often when HET Tractor is operated in sandy or dusty conditions. Lubricate daily under severe operating conditions.

7. OIL LUBRICATION POINTS. Lubricate doors, side panels, hood hinges, locks, latches, and pivot points every 3000 mi (4800 km) or semiannually.

8. AXLES.

a. Axles. Change lubricant in new or rebuilt axles no sooner than 500 mi (805 km) and no later than 1000 mi (1609 km). Following initial drain, change lubricant every 20,000 mi (32,187 km) or each year of service, whichever comes first. During all lubricant changes, remove metal particles from magnetic drain plugs.

b. Axles no. 1 and 4 (steering axles).

(1) Initial fill of the axle differentials is made at the axle housing plug. Fill differential housing to a level even with the bottom of the fill plug hole.

(2) Initial fill of the planetary wheel end level is made at the planetary fill hole. Fill slowly through the 3/4 in. (19 mm) fill hole until oil runs out the center check location.

(3) Scheduled oil checks will be made at these same locations.

c. Axles no. 2 and 3 (non-steering axles).

(1) The planetary wheel ends should be filled first, then the axle differential.

(2) Initial fill of the planetary wheel end level is made at the planetary fill hole. Fill slowly through the 3/4 in. (19 mm) fill hole until oil runs out the center check location.

(3) Initial fill of the axle differentials is made at the axle housing plug. Fill differential housing to a level even with the bottom of the fill plug hole.

(4) Scheduled oil level checks will be made only at the axle housing and not at the planetary wheel ends. The planetary wheel ends and the axle housing share the same axle lubricant and will seek the same level. As a result, no checks should be made at the wheel end after the initial fill/check.

9. WINCH.

a. If hydraulic system oil becomes contaminated, immediately change oil and filter.

b. Winch kickout controls should be actuated several times during draining and filling of drum gearboxes to allow oil to exchange in kickout cavity.

c. PTO propshafts are permanently lubricated and cannot be lubricated.

d. The motor end and gearbox end must be drained and refilled individually.

e. Change the winch hydraulic oil, filter, and gear oil in new or rebuilt winches after 6 weeks or 6-10 winch pulls.

10. SPARE TIRE DAVIT. Spare tire davit should be mounted in operating position to perform lubrication.

11. DIPSTICK REMOVAL/INSTALLATION.

CAUTION

Do not attempt to remove dipstick without first loosening handle. Failure to comply may damage dipstick.

NOTE

Engine, transmission and power steering reservoir dipsticks are removed and installed the same way.

a. Loosen dipstick by turning handle counter-clockwise until disc turns freely.

b. Remove dipstick from dipstick tube.

c. Install dipstick in dipstick tube.

NOTE

Maintain inward pressure on dipstick while tightening.

d. Turn handle clockwise until disc does not turn freely.

e. Turn handle clockwise an additional two turns to secure dipstick in tube.

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:

Chief of Staff, United States Army

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PIN: 072618-003