

LUBRICATION ORDER

LO 5-3805-261-12

10 November 1992

**GRADER, HEAVY, ROAD, MOTORIZED
(CATERPILLAR MODEL 130G)
(NSN 3805-01-150-4795)**

Approved for public release; distribution unlimited.

Reference: TM 53805-261-10

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

NOTE

This LO is divided into lubrication intervals. For example, when performing a daily lube, refer to page 4 through 5. Weekly, Monthly, Quarterly, Semi-Annual, Annual and irregular interval instructions are given on the following pages. These intervals are based on normal operation. You should lube more during constant use. You should also lube more if operating in harsh weather, like arctic cold or desert heat and sand. You must lube after water fording.

On the lubrication point location pictures a dash line (-----) means

there are lube points on both sides of the vehicle.

Clean parts with SOLVENT, Dry Cleaning (P-D-680, SD-II),

Before you start your lube service, observe the following:

NEVER

- a. Use wrong type lubricant.
- b. Use too much lubricant.

ALWAYS

- a. Clean grease fittings before lubrication.
- b. Use the lubrication order as your guide.
- c. Lubricate after water fording.
- d. Make sure vehicle is level when checking oil levels. **If** it isn't, you'll get Incorrect readings on dipsticks, gages, and eight gages.

Level of Maintenance will be shown in parenthesis after paragraph heading, as follows:

Operator/Crew (C)

Organizational Maintenance (O)

TOTAL MAN-HOURS

INTERVAL	MAN-HOURS
D	0.4
W	2.5
M	3.5
Q	4.0
S	4.5
A	5.0

KEY

OE/HDO Lubricating Oil, Internal Combustion Engine (MIL-L-2104)

OEA Lubricating Oil, Internal Combustion Engine, subzero (MIL-L-46167)

OHT Hydraulic Fluid (MIL-L-2104) or (MIL-L-46152)

SD-II Solvent, Dry Cleaning (P-D-680)

GO Lubricating Oil, Gear, Multi-Purpose

GGP Grease, General Purpose

MPG Grease, Multi-purpose type

PL-s Lubricating Oil, General Purpose

LSA Semifluid Lubricating Oil

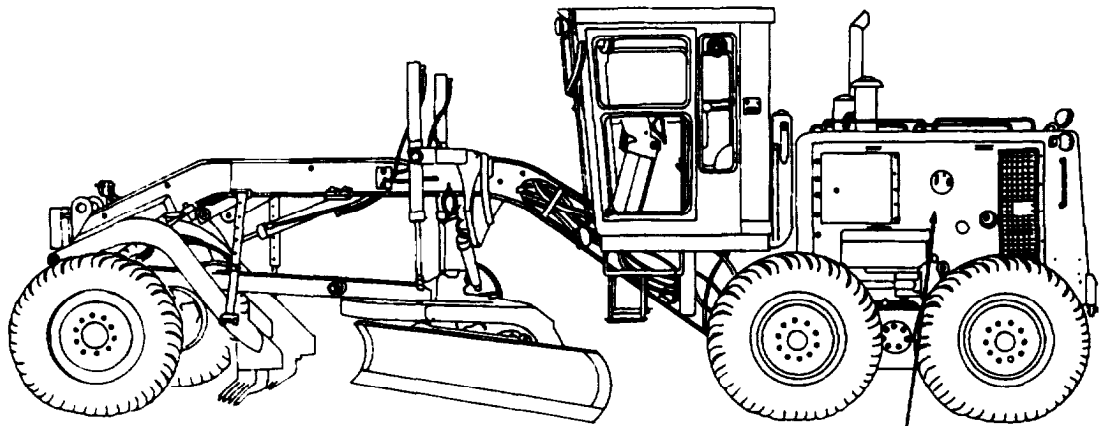
CT Corrosion Preventive Compound

GAA Grease, Automotive and Artillery (MIL-G-10924)

COMPONENT	CAPACITIES	EXPECTED TEMPERATURES		
		ABOVE +32°F (Above 0°C)	+400F to -100F (4°C to -23°C)	0°F to -65°F (-18°C to -54°C)
ENGINE CRANKCASE (Add one additional quart for filter)	5 Gals. (19 L.)	OE/HDO 30 OR 15WAO	OE/HDO 10	OEA
HYDRAULIC SYSTEM	8 Gals. (30 L.)	OE/HDO 30W	OE/HDO 10W	OEA
TANDEM DRIVE HOUSING (each)	17 Gals. (64 L.1)	OE/HDO 30W	OE/HDO 10W	OEA
TRANSMISSION, TRANSFER AND DIFFERENTIAL ROUSING	24 Gals. (91 L.1)	OE/HDO 30W	OE/HDO 10W	OEA
CIRCLE DRIVE HOUSING	2 Gals. (7 L.)	OE/HDO 30W	OE/HBO 10W	OE/HDO 10W
FRONT WHEEL SPINDLE BEARING HOUSING (each)	1 Pt. (.5 L.)	OE/HDO 30W	OE/HDO 10W	OE/HDO 10W

DAILY

Perform the following procedures each day before you operate the equipment.



ENGINE CRANKCASE
(See Note 1)

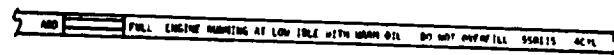
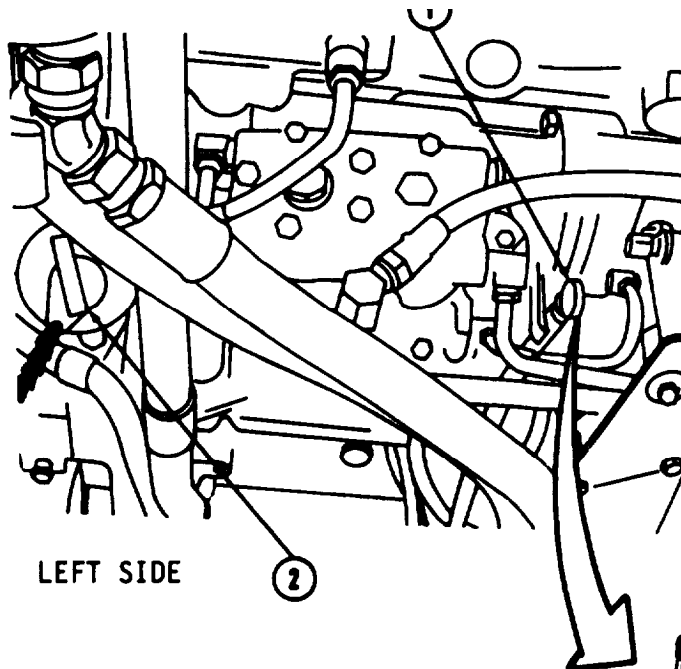
D

OE/HDO

1. ENGINE CRANKCASE (C)

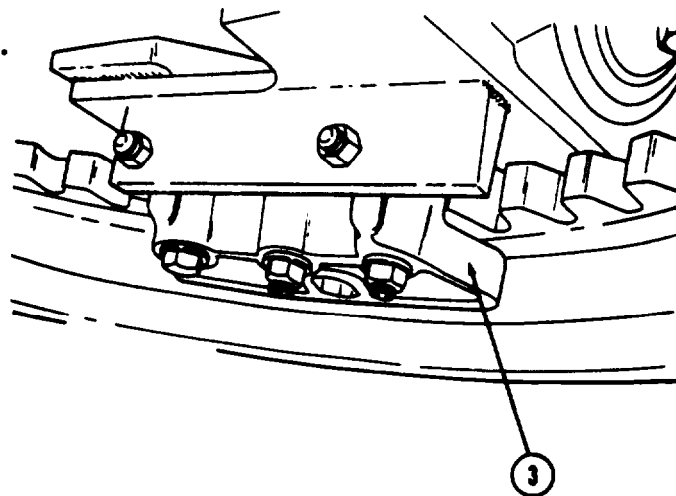
The engine oil level can be checked with engine stopped, or engine running. If oil level is checked with engine stopped, read ENGINE STOPPED side of the dipstick (1). If engine is running, read ENGINE RUNNING side of dipstick.

The crankcase oil filler cap (2) is in the engine compartment. Stop engine and remove filler cap to add oil, if necessary. Clean and install filler cap (2). Then check crankcase oil level on dipstick (1) again.



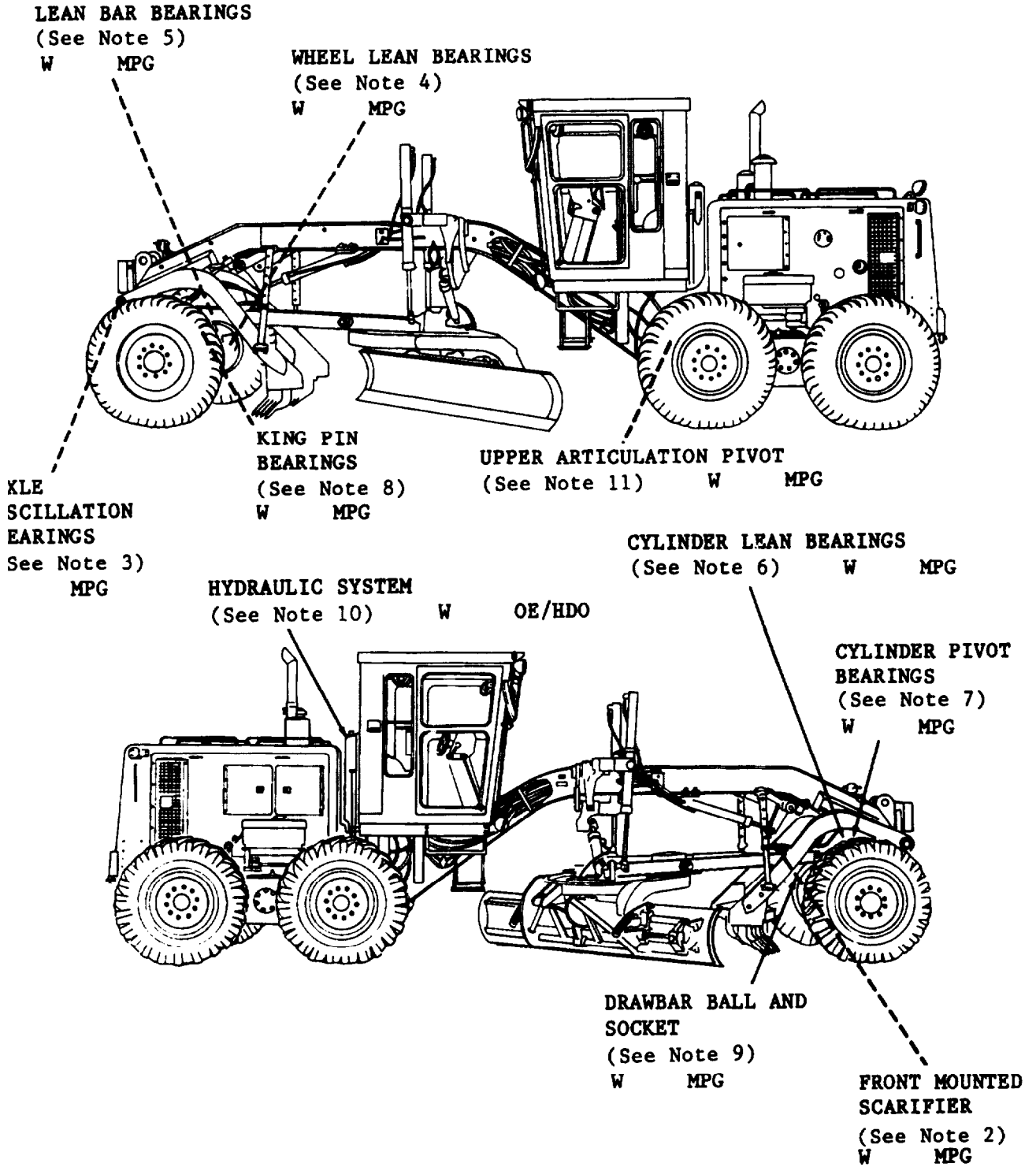
NOTE

Do not lubricate circle guide shoes (3).



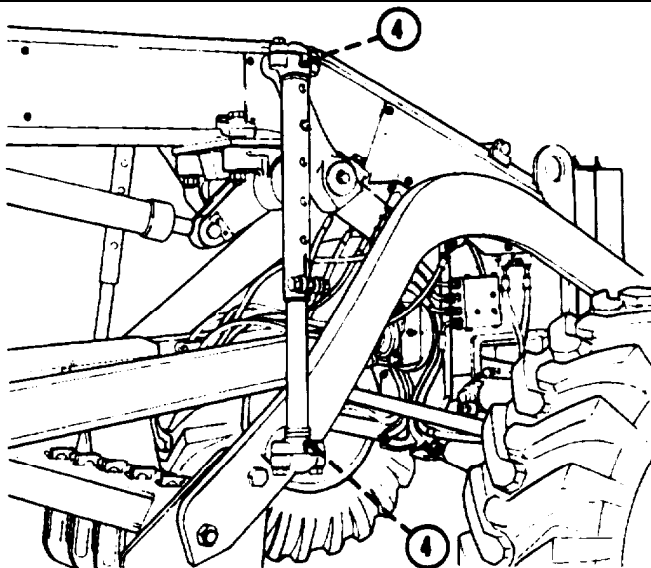
WEEKLY

Perform the following procedures weekly when you operate the equipment.



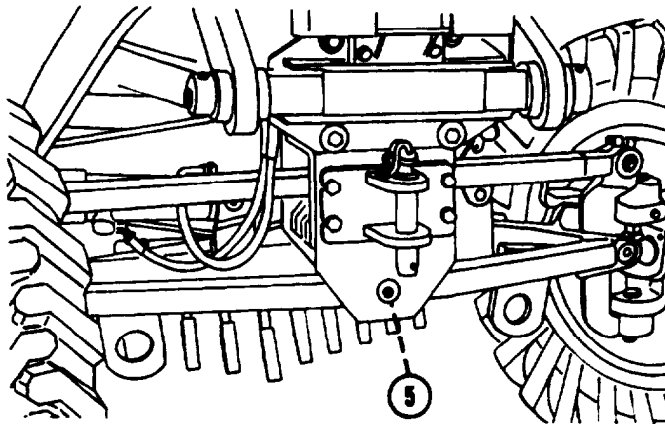
2. FRONT MOUNTED SCARIFIER (0)

Lubricate four fittings (4), two on each side of scarifier sleeves with MPG.



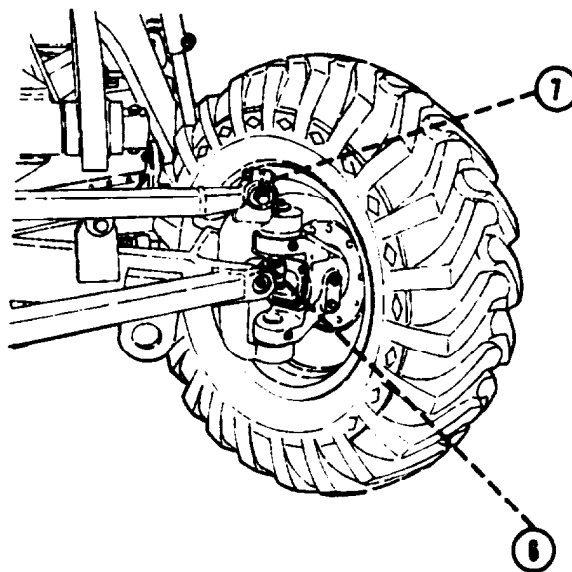
3. AXLE OSCILLATION BEARINGS (0)

Lubricate two fittings (5), one on each side with MPG.



4. WHEEL LEAN BEARINGS (0)

Lubricate four fittings (6), two on each wheel with MPG.

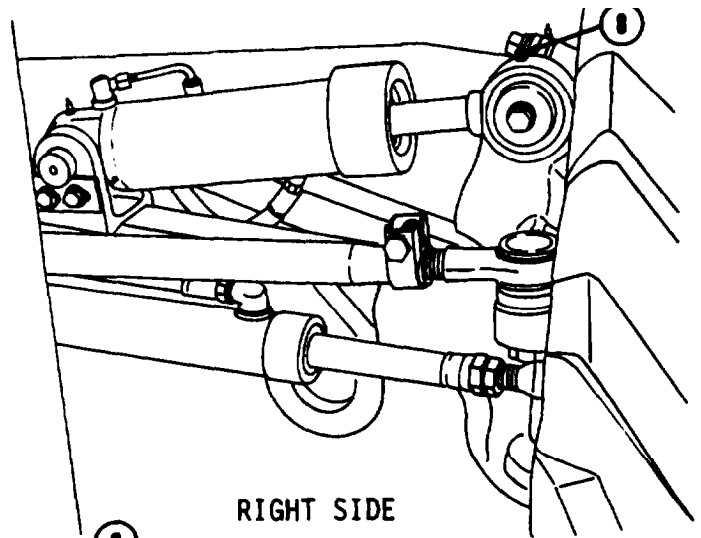


5. LEAN BAR BEARINGS (0)

Lubricate two fittings (7), one on each side with MPG.

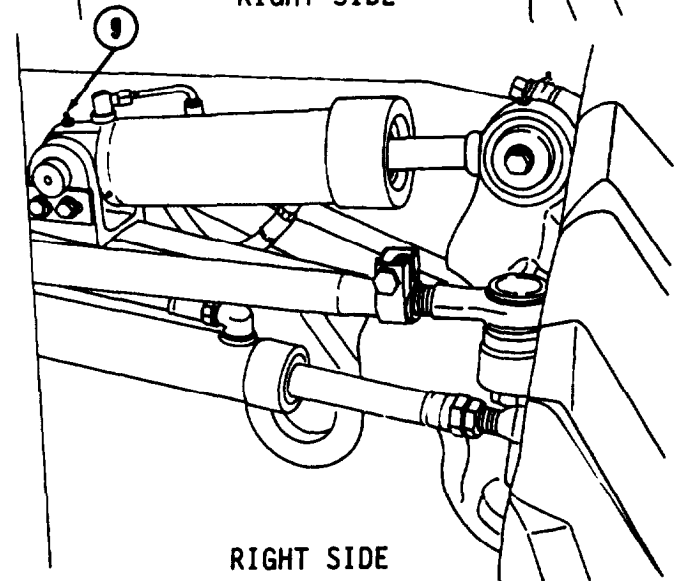
6. CYLINDER LEAN BRARINGS (0)

Lubricate one fitting (8) on cylinder with MPG.



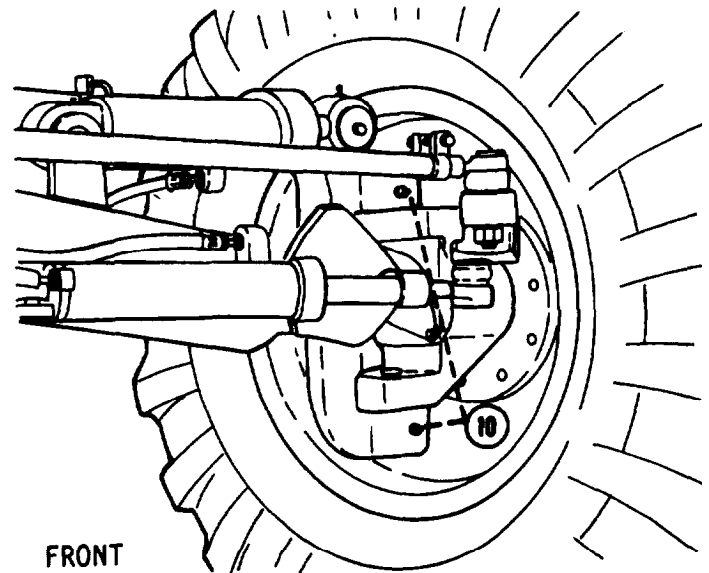
7. CYLINDER PIVOT BEARINGS (0)

Lubricate one fitting (9) on cylinder with MPG.



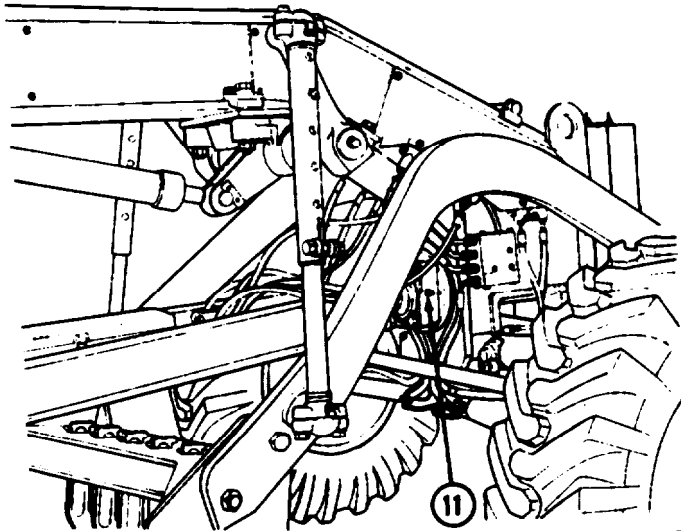
8. KING PIN BEARINGS (0)

Lubricate four fittings (10), two on each side with MPG.



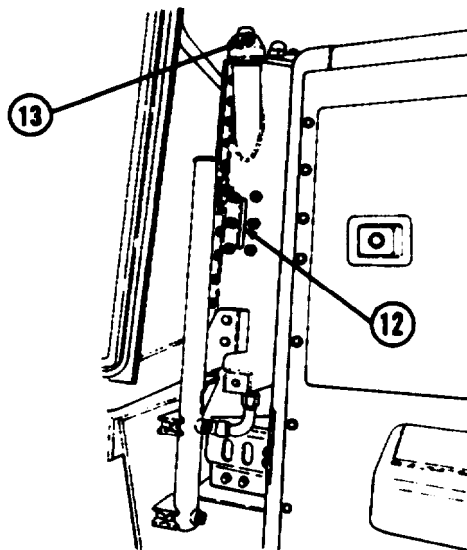
9. DRAWBAR BALL AND SOCKET (0)

Lubricate one fitting (11) with MPG.



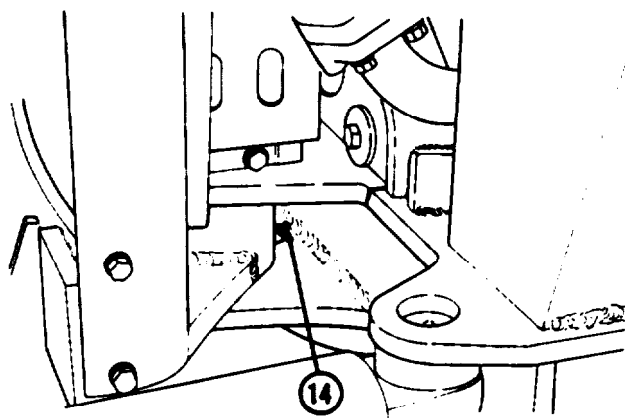
10. HYDRAULIC SYSTEM (0)

Before checking hydraulic fluid level, park vehicle on level ground and turn engine off. Check fluid level on sight gage (12). Maintain level between ADD and FULL marks. If necessary, remove filler cap (13) and add fluid. Clean cap (13) before installing.



11. UPPER ARTICULATION PIVOT (0)

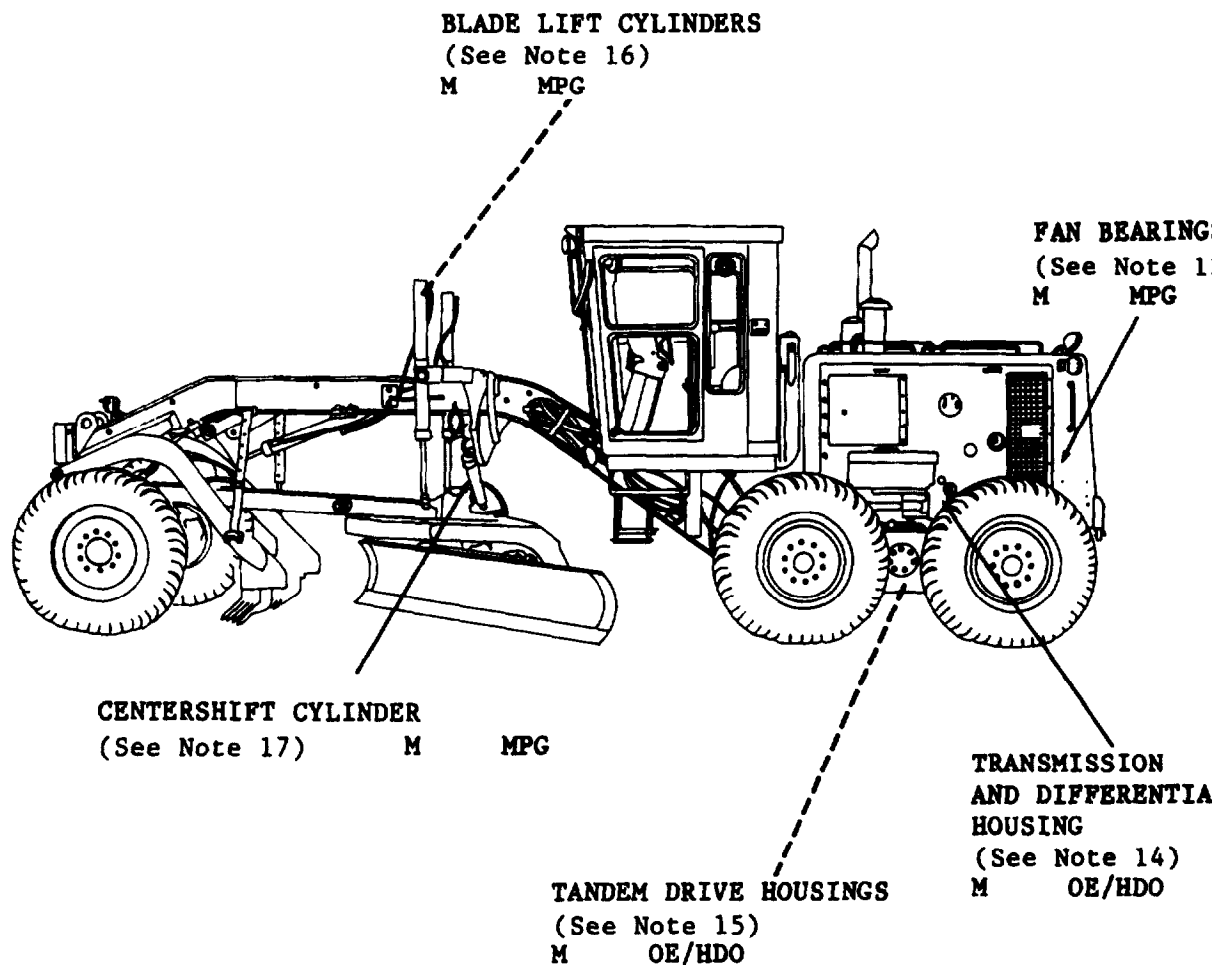
Lubricate one fitting (14) with MPG.



RIGHT SIDE

MONTHLY

Perform the following procedures monthly when you operate the equipment.

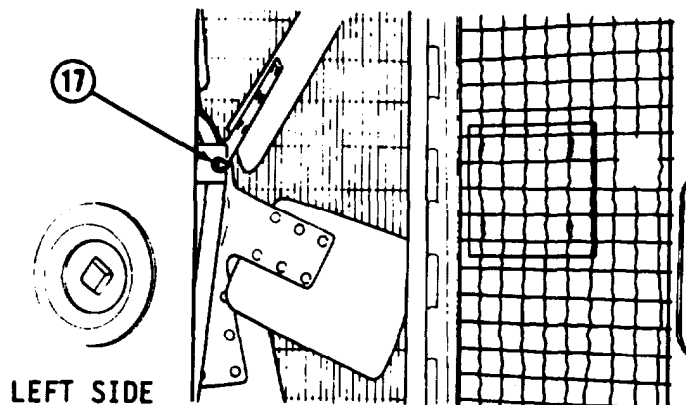


1. FANBEABINGS (0)

2

Lubricate one fitting (17) with MPG.

13. TRANSMISSION AND DIFFERENTIAL HOUSING (0)

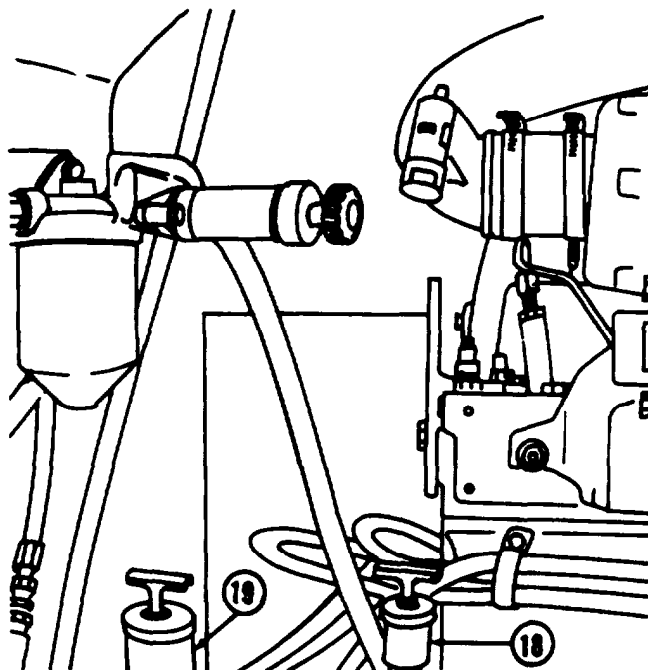


NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground and parking brake applied before performing this procedure.

With engine running and oil at operating temperature, check oil level on transmission dipstick (18). If necessary, remove filler cap (19) and add oil. Maintain oil level within the OPERATING RANGE.

With engine stopped, Oil cool and machine on level ground, maintain oil level at top or slightly above top of OPERATION RANGE on dipstick.

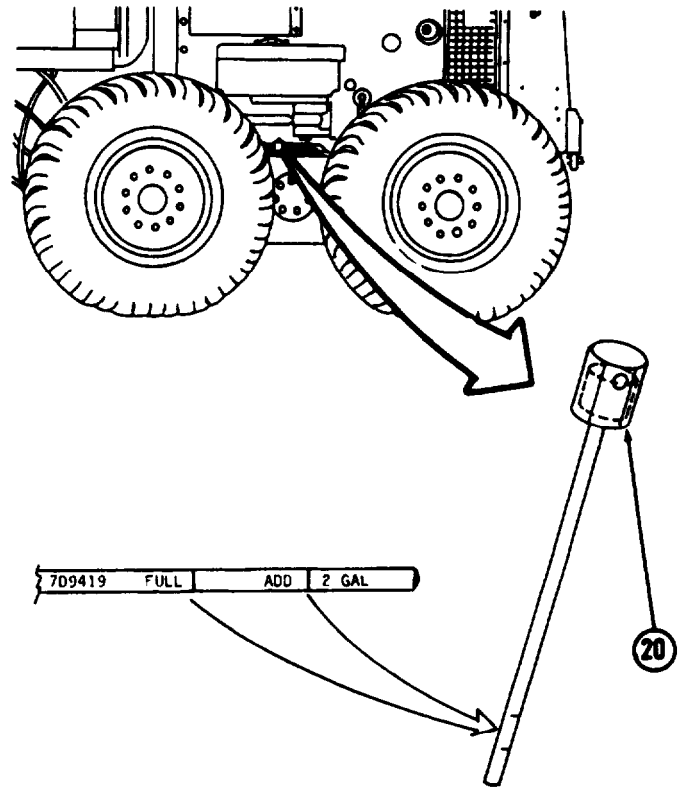


14. TANDEM DRIVE HOUSINGS (0)

NOTE

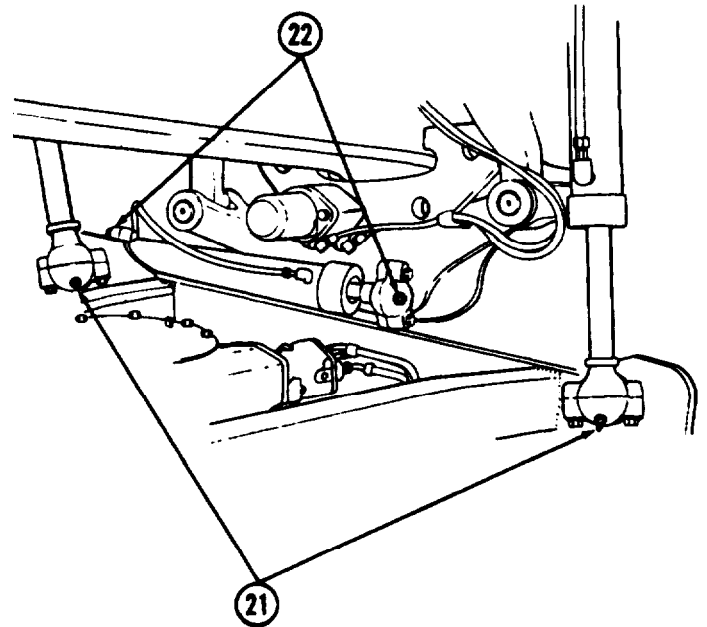
The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

Check oil level when dipstick (20) has been screwed down finger tight and then removed. If necessary, add oil until level is at FULL mark. Repeat this procedure for the tandem drive housing on the other side of the vehicle.



15. BLADE LIFT CYLINDERS (0)

Lubricate two fittings (21), one on each cylinder with MPG.



16. CENTERSHIFT CYLINDER (0)

Lubricate two fittings (22) with MPG.

17. ENGINE CRANKCASE AND OIL FILTER

(0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. Use care when draining hot oil and changing filters.

Place suitable container under drain valve (15). Open valve and allow oil to drain. Close drain valve.

WARNING

TOXIC/FLAMMABLE

Dry cleaning solvent (P-D-680) used to clean parts is toxic and flammable. Use only in well ventilated areas. Wear protective goggles and gloves. Do not smoke or allow open flames or sparks in areas where cleaning solvent is used or stored. Avoid contact with eyes, skin or clothing. If contact is made, flush with cold water and seek medical attention. If you become dizzy while using cleaning solvent, get fresh air immediately.

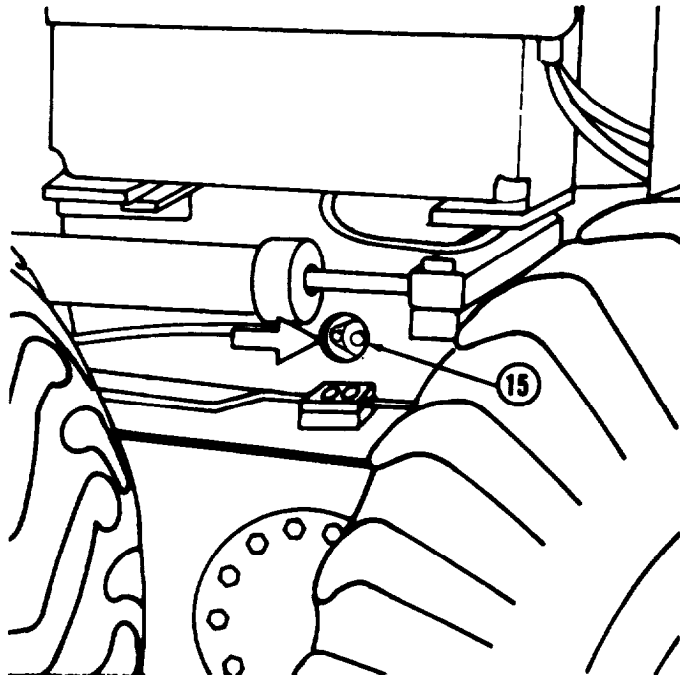
Remove used filter (16). Clean filter base with SD-II. Be sure all of old seal is removed.

CAUTION

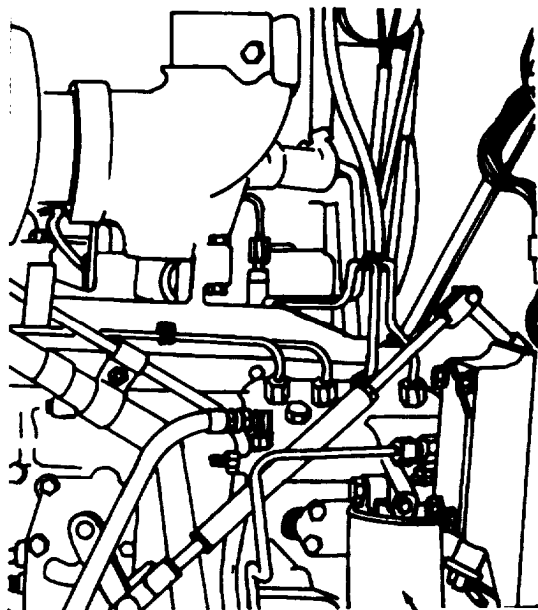
Do not overtighten the filter.

NOTE

The filter may have index marks spaced 90 degrees apart. These marks should be used when tightening a new filter an additional 3/4 turn more.



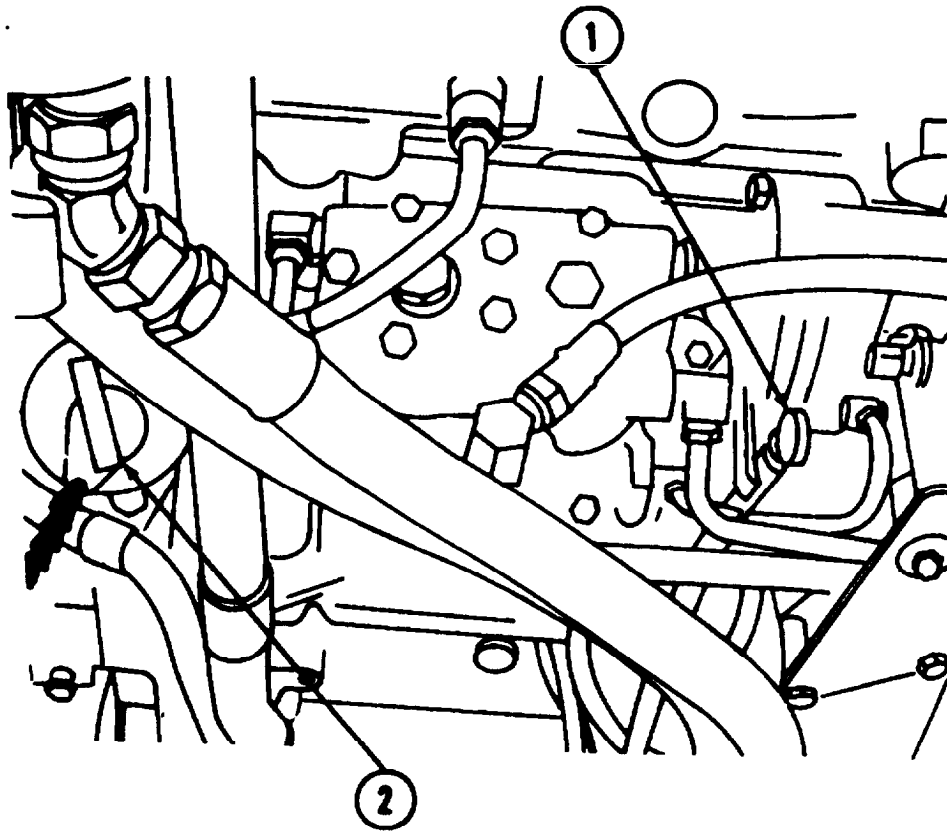
RIGHT SIDE



RIGHT SIDE

Coat new seal with clean engine oil. Install new filter by hand. When the seal contacts the filter base, tighten an additional 3/4 turn.

Remove oil filler cap (2) and fill crankcase with clean oil. Check oil level on ENGINE STOPPED side of dipstick (1). Clean and install filler cap. Start engine and inspect for oil leaks. When oil reaches operating temperature, check oil level on ENGINE RUNNING side of dipstick (1). If necessary, remove filler cap and add oil until level is at FULL mark. Install cap and stop engine.



21. HYDRAULIC TANK FILTERS AND SCREEN (0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. At operating temperature, the hydraulic tank is hot and under pressure. Remove filler cap ONLY when engine is stopped and cap is cool enough to touch with your hand. Remove filler cap slowly to relieve pressure.

NOTE

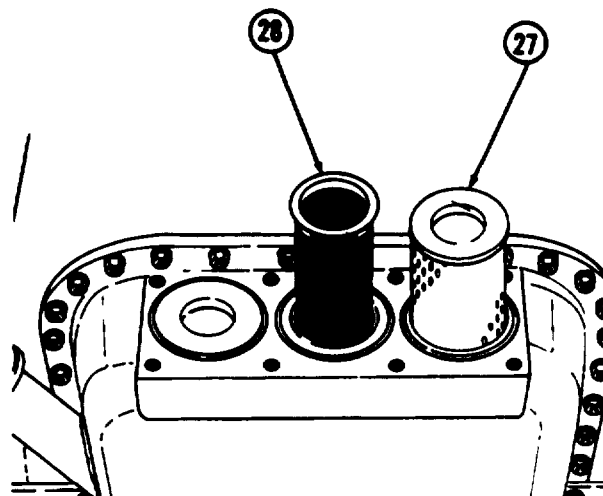
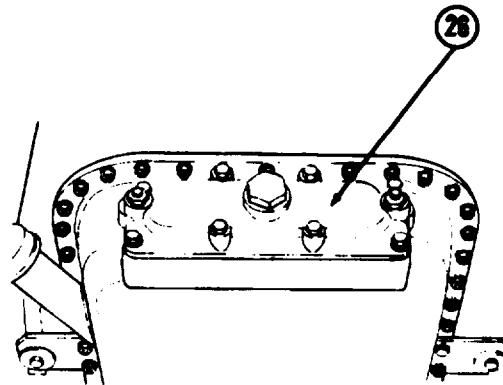
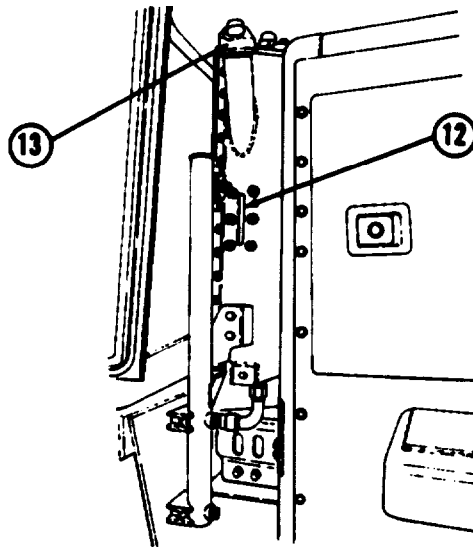
The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

Remove filler cap (13) slowly to relieve any pressure in tank. Remove attaching hardware and manifold (26). Remove two used filter elements (27) and discard. Remove screen (28).

WARNING

TOXIC/FLAMMABLE

Dry cleaning solvent (P-D-680) used to clean parts is toxic and flammable. Use only in well ventilated areas. Wear protective goggles and gloves. Do not smoke or allow open flames or sparks in areas where cleaning solvent is used or stored. Avoid contact with eyes, skin, and clothing. If contact is made, flush with cold water and seek medical attention. If you become dizzy while using cleaning solvent, get fresh



WARNING

COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Clean all parts with SD-II. Dry thoroughly with compound air.

Install two new filter elements (27) and clean screen (28). Install manifold (26) and attaching hardware. Install filler cap (13).

Start engine and operate at low idle to fill filters. Check for leaks. Stop engine and check fluid level on sight gage (12). If necessary, add fluid to FULL level.

22. TRANSMISSION AND DIFFERENTIAL HOUSING (0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. Use care when draining hot oil and changing filters and strainers.

NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

The following procedure is for the lower strainer assembly. The procedure for the upper strainer assembly is identical.

Place a suitable container under lower strainer assembly. Remove attaching hardware, lower strainer cover (29) and gasket. Discard gasket. Approximately 1-1/2 gallons of oil will drain from this point. Remove strainer (30) and magnet

(31).

WARNING

TOXIC/FLAMMABLE

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WARNING

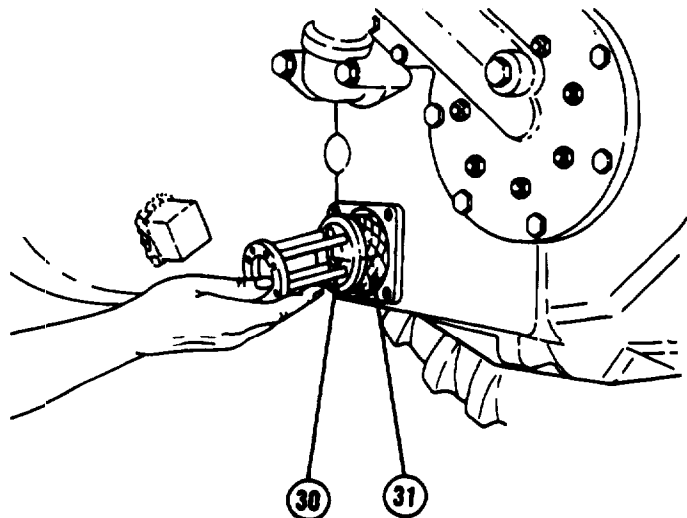
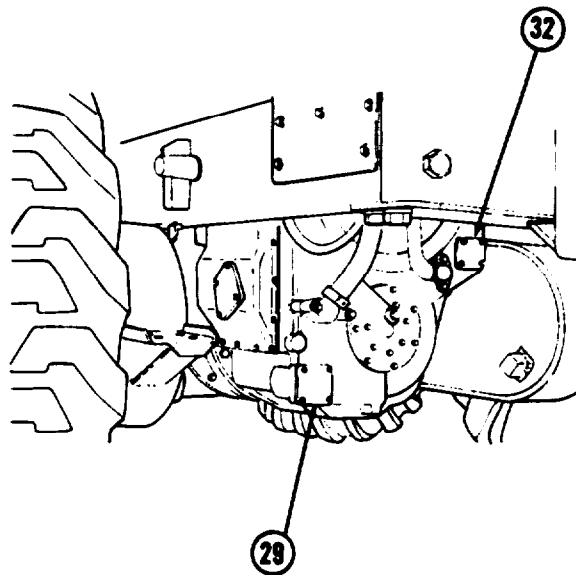
COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles, shield, gloves, etc.)

Clean strainer and magnet with SD-II. Dry thoroughly with compressed air.

Install clean strainer and magnet. Install new gasket, lower strainer cover (29) and attaching hardware.

Repeat procedure for upper strainer assembly (32).



23. TRANSMISSION AND DIFFERENTIAL HOUSING FILTER (0)

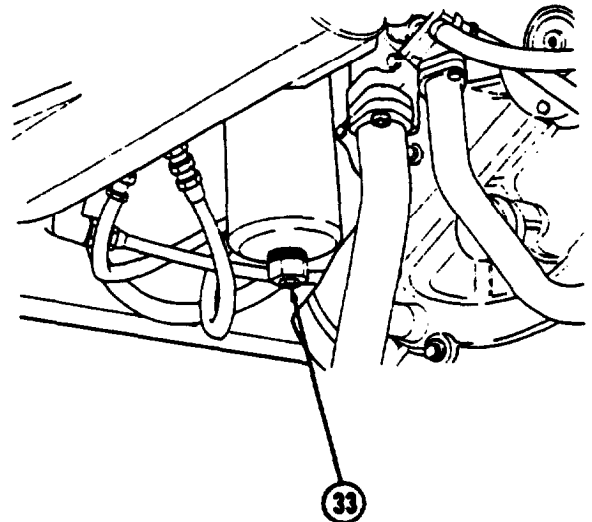
WARNING

Hot oil can cause burns and SERIOUS INJURY. Use care when draining hot oil and changing filters and strainers.

NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

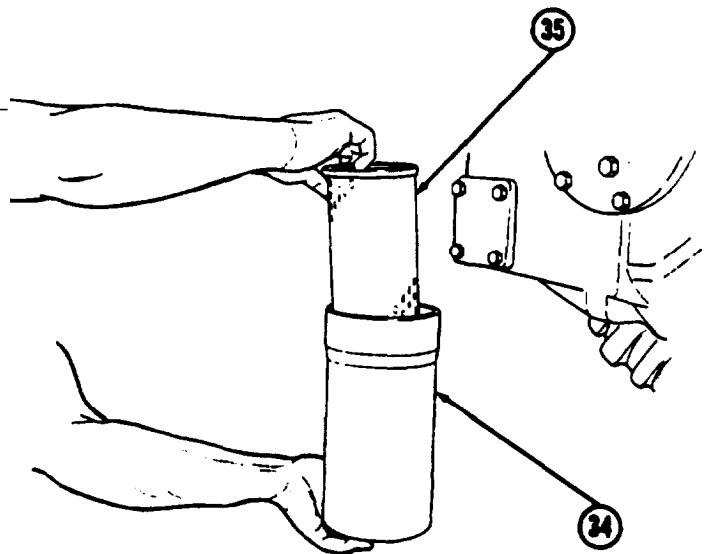
Place suitable container under filter housing. Remove plug (33) and allow oil to drain. Remove housing (34) and filter element (35). Remove filter element from housing and discard.



WARNING

TOXIC/FLAMMABLE

Dry cleaning solvent (P-D-680) used to clean parts is toxic and flammable. only in well areas. Wear protective goggles and gloves. Do not smoke or allow open flames or sparks in areas where cleaning solvent is used or stored. Avoid contact with eyes, skin, and clothing. If contact is made, flush with cold water and seek medical attention. become dizzy while cleaning solvent, get fresh air immediately.



WARNING

COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Clean filter housing and base with SD-II. Dry thoroughly with compressed air.

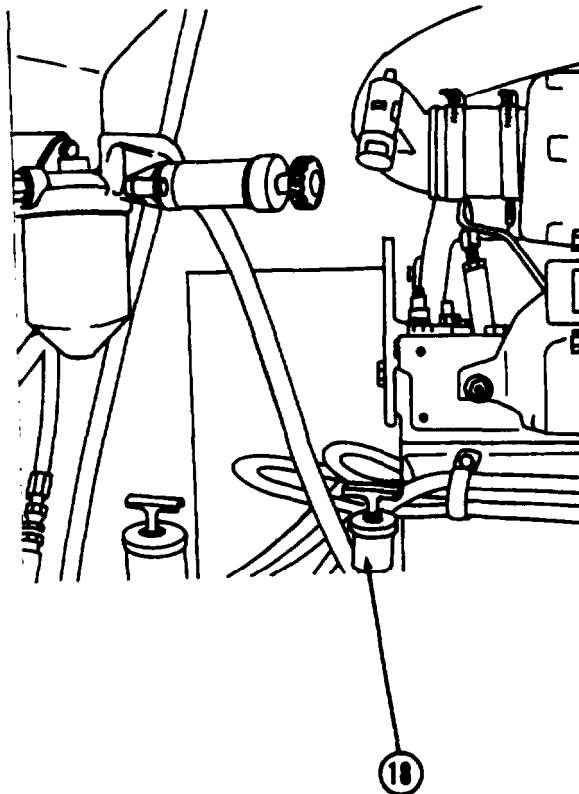
Install new filter element in housing.

CAUTION

Do not tighten with nut on bottom of housing.

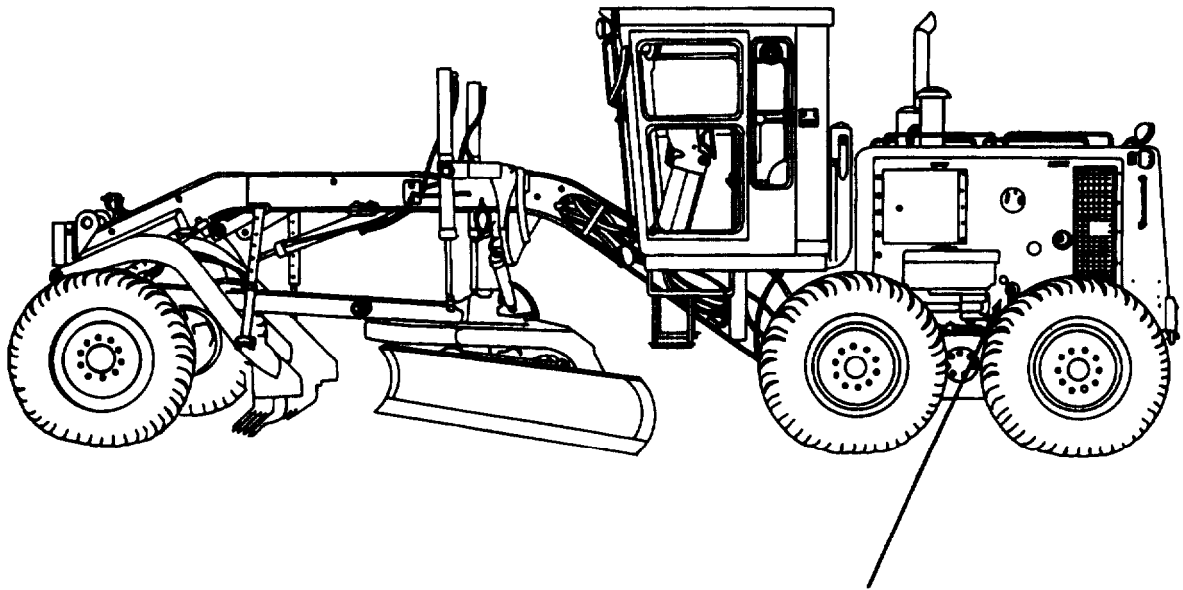
Install filter housing. Band tighten only. Turn one additional 3/4 turn after filter housing contacts bare.

Start engine. When oil is at operating temperature, check oil level on transmission dipstick (18). Oil level should be in OPERATING RANGE. Add oil, if necessary. Inspect for leaks. Stop engine.



SEMI-ANNUALLY

Perform the following operations after 1000 hours of operation, or semi-annually, whichever comes first.



**TRANSMISSION AND
DIFFERENTIAL HOUSING**
(See Note 24)
S OE/HDO

24. TRANSMISSION AND DIFFERENTIAL Housing (0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. Use care when draining hot oil and changing filters and strainers.

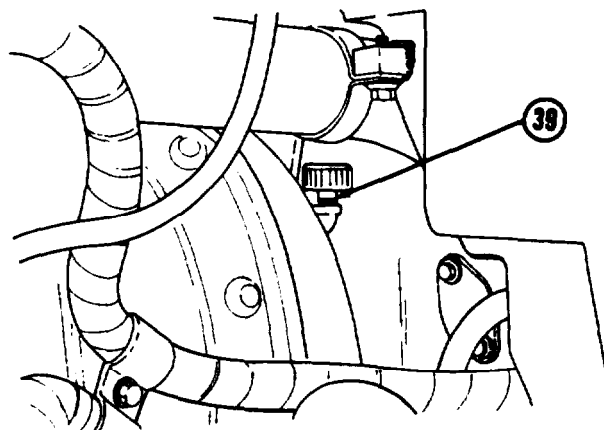
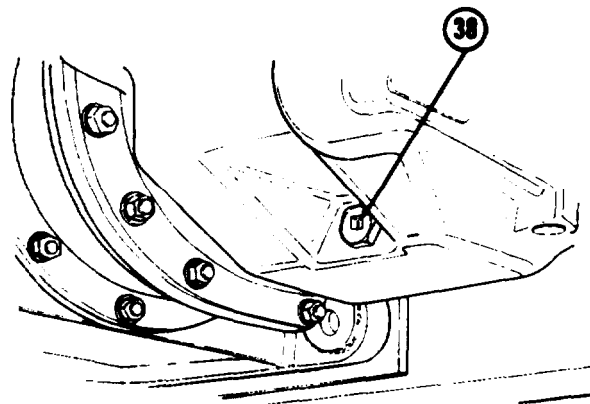
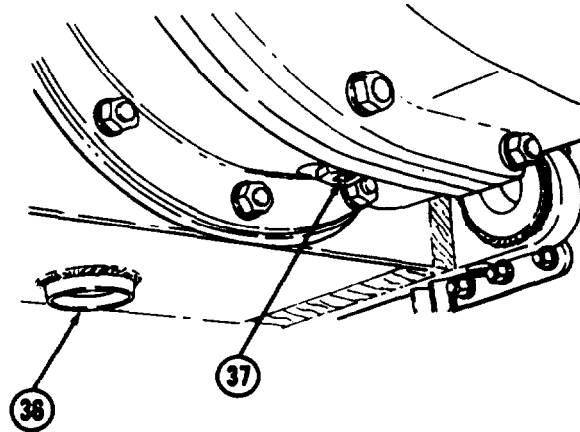
NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

Place a suitable container under differential case. Remove drain plug (36) and allow oil to drain. Place container under transfer case. Remove drain plug (37) and allow oil to drain. Place container under transmission case. Remove drain plug (38) and allow oil to drain.

Clean strainer and magnet assemblies (see Note 22). Replace filter element (see Note 23).

Remove and discard breather (39). Install new breather.



WARNING

TOXIC/FLAMMABLE

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COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Clean all plugs in SD-II. Dry thoroughly with compressed air.

Install drain plugs (36,37 and 38).

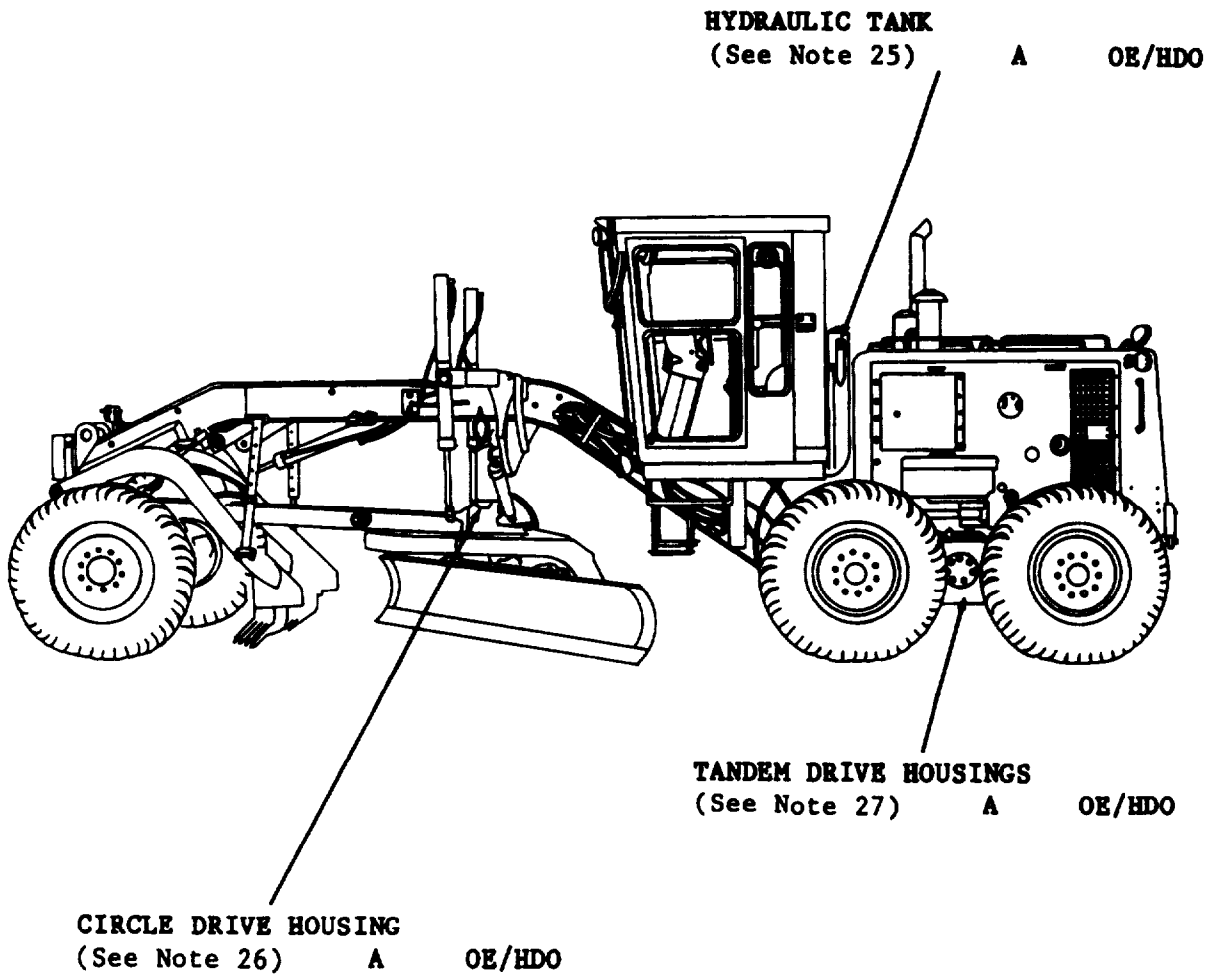
Remove filler cap (19) and fill transmission with oil. Fill capacity is approximately 24 gallons. This also fills the differential and transfer case.

Start engine and operate vehicle for a few minutes to fill system. Inspect for leaks.

Stop engine and check oil level on dipstick (18). Add oil if necessary.

ANNUALLY

Perform the following operations after 2000 hours of operation, or annually, whichever occurs first.



25. HYDRAULIC TANK (0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. At operating temperature, the hydraulic tank is hot and under pressure. Remove filler cap ONLY when engine is stopped and cap is cool enough to touch with your hand. Remove filler cap slowly to relieve pressure.

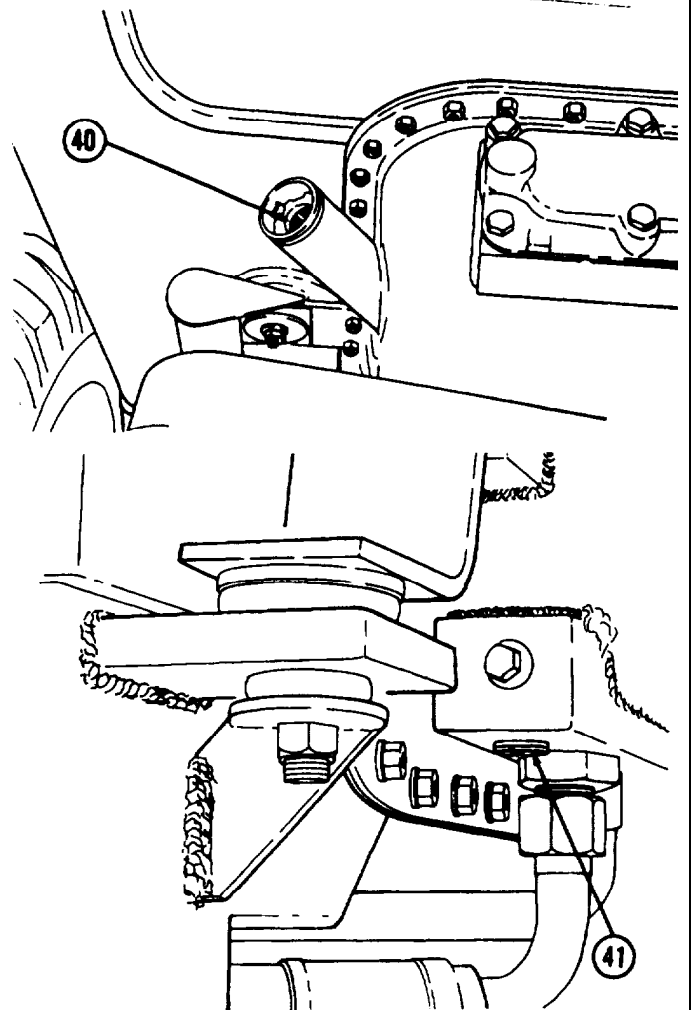
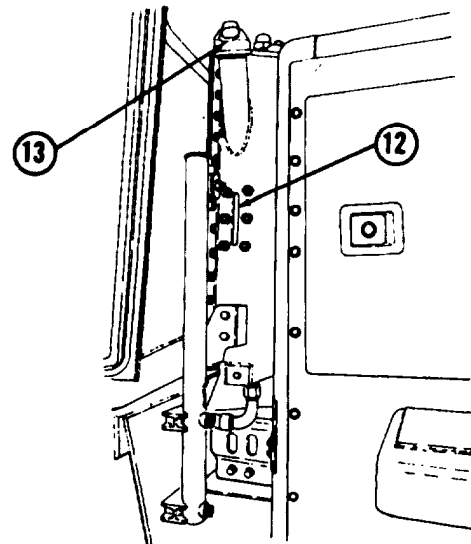
NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

Remove filler cap (13) slowly to relieve pressure.

Remove retaining ring and screen (40).

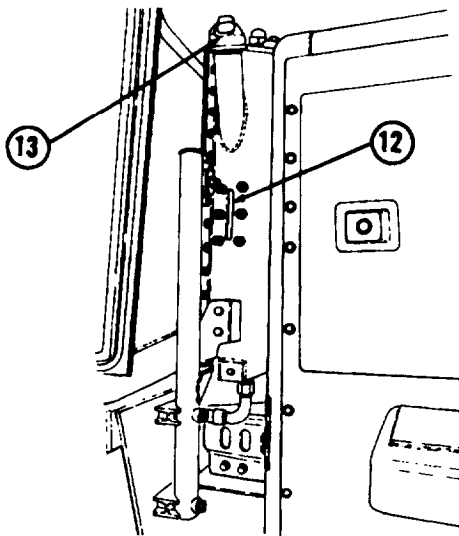
Place a suitable container under hydraulic tank. Remove drain plug (41) and allow fluid to drain.



WARNING

TOXIC/FLAMMABLE

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WARNING

COMPRESSED AIR HAZARD

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Clean retaining ring, screen and plug in SD-IX. Dry thoroughly with compressed air.

Install drain plug. Install screen and retaining ring.

Fill hydraulic tank. Fill capacity is approximately 8 gallons.

Install filler cap (13). Start engine and inspect for leaks.

Stop engine and check fluid level on sight gage (12). If necessary, add fluid. Level of fluid should be at FULL mark.

26. CIRCLE DRIVE HOUSING (0) ANNUALLY (Cont)

NOTE

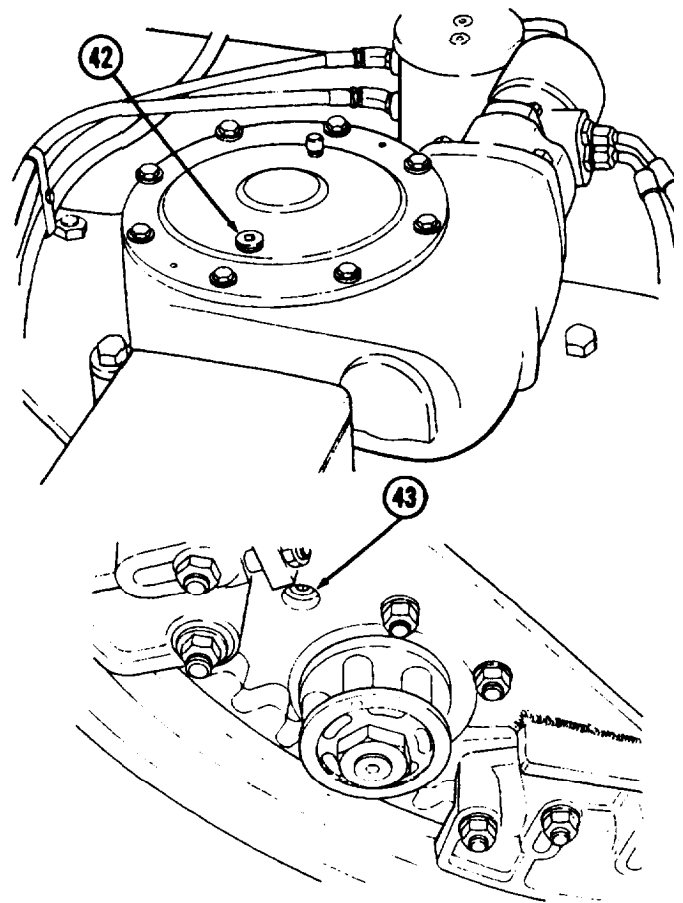
The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

Remove fill plug (42). Place a suitable container under circle drive housing. Remove drain plug (43) and allow oil to drain.

Install drain plug. Fill circle drive housing with oil. Fill capacity is 2 gallons. Install fill Plug.

Start engine and operate vehicle for a few minutes. Inspect for leaks.

stop engine and check lubricant level. Oil level must be within 1 inch of bottom of fill port. Add oil, if necessary.



27. TANDEM DRIVE HOUSINGS (0)

WARNING

Hot oil can cause burns and SERIOUS INJURY. Use care when draining hot oil.

NOTE

The vehicle must be parked on level ground with all equipment lowered to the ground, engine off and parking brake applied before performing this procedure.

The following procedure is for the right tandem housing. The procedure for the left tandem housing is identical.

Remove dipstick (20). Place a suitable container under right tandem housing. Remove drain plug (44) and allow oil to drain.

Dry cleaning solvent (P-D-680) used to clean parts is toxic and flammable. Use only in well ventilated areas. Wear protective goggles and gloves. Do not smoke or allow open flames or sparks in areas where cleaning solvent is used or stored. Avoid contact with eyes, skin, and clothing. If contact is made, flush with cold water and seek medical attention. If you become dizzy while using cleaning solvent, get fresh air immediately.

WARNING

COMPRESSED AIR HAZARD

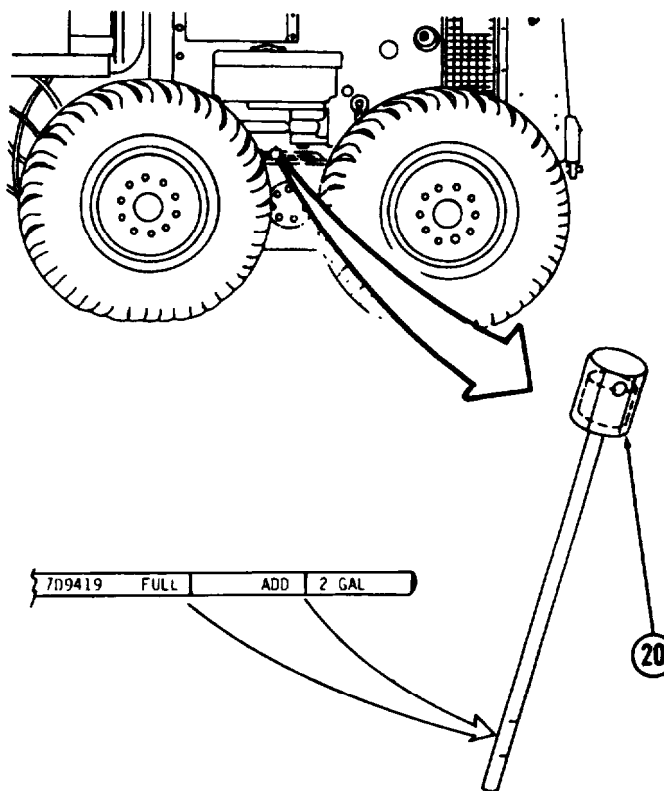
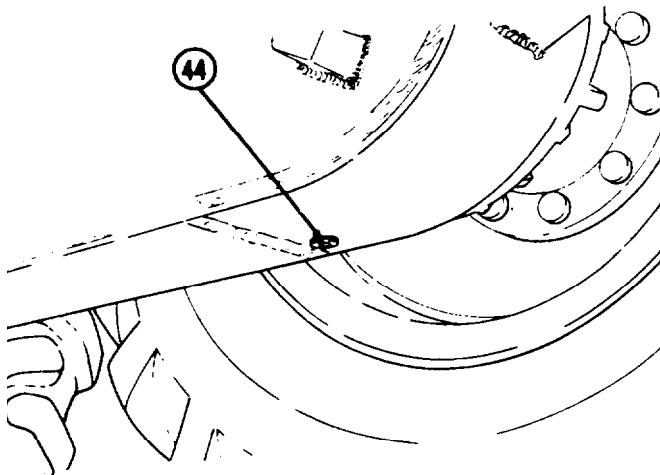
Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Clean breather and plug with SD-II. Dry thoroughly with compressed air.

Install drain plug. Fill housing with oil. Fill capacity is 17 gallons.

Start engine and operate vehicle for a few minutes. Inspect for leaks.

Stop engine and check tandem drive oil level. Maintain oil level between ADD and FUEL on dipstick (20). Add oil if necessary.



NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTBACTED COLD TEMPERATURES BELOW -10°F (-23°C). Remove lubricants prescribed in the key for temperatures above -10°F (123°C). Clean parts with dry cleaning solvent. Relubricate with lubricants specified in the key for temperatures 0°F to -65°F.

2. OIL FILTER. After installing new filter element, fill crankcase, operate engine 5 minutes and check housing for leaks. Check crankcase oil level and bring to FULL mark. Oil filter replacement interval shall align with on-condition AOAP analysis or hard time oil change requirement. Replace at hard time regardless of oil analysis results.

3. OIL CAN POINTS. Every 100 hours lubricate the door hinges, latches, control linkages and all exposed adjusting threads with OE-HDO.

4. CRANKCASE. Check crankcase level with the engine in a static condition.

5. CRANKCASE OIL. A sample of the oil shall be sent to an AOAP laboratory for snalysis at an intervsl of 50 hours or 60 days. Refer to TB 43-0210 for sampling requirements.

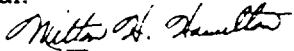
6. When AOAP laboratory support is not available, drain and refill crankcase oil at 250 service hours or every three months, whichever comes first.

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:

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

Official:



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

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Distribution:

To be distributed in accordance with DA Form 12-25-E, Block No. 5954, Operator maintenance requirements for LO 5-3805-261-12.