CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C.
10 November 1995

LUBRICATION ORDER
FOR
RECOVERY VEHICLE, FULL-TRACKED
MEDIUM, M88A1
(2350-00-1 22-6826)

LO 9-2350-256-12, 28 February 1986, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. File this change sheet in the front of the publication for reference purposes.

Remove pages	*Insert pages*
Card 1 of 38 thru Card 14 of 38	Card 1 of 38 thru Card 14 of 38
Card 33 of 38 thru Card 37 of 38	Card 33 of 38 thru Card 37 of 38

By Order of the Secretary of the Army:

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

Official:
Yvonne M. Harrison
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Administrative Assistant to the
Secretary of the Army
01032

DISTRIUBTION:
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LUBRICATION ORDER

LO 9-2350-256-12

28 February 1986 (Supersedes LO 9-2350-256-12 July 1976)

RECOVERY VEHICLE, FULL-TRACKED MEDIUM, M88A1 (2350-00-122-6826)

Intervals (on-condition or hard lime) 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 if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer-than-usual oper-sting 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 solvent, type II used to clean parts, is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 138°F (58.8°C).

NOTE

Always install dust caps on fittings after lubrication procedures.

Clean parts with dry-cleaning solvent, type II (SD-2) or equivalent. Dotted arrow points indicate lubrication on both sides of the equipment. 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) directly to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-MMAA, Warren, MI 48397-5000. A reply will be furnished to you.

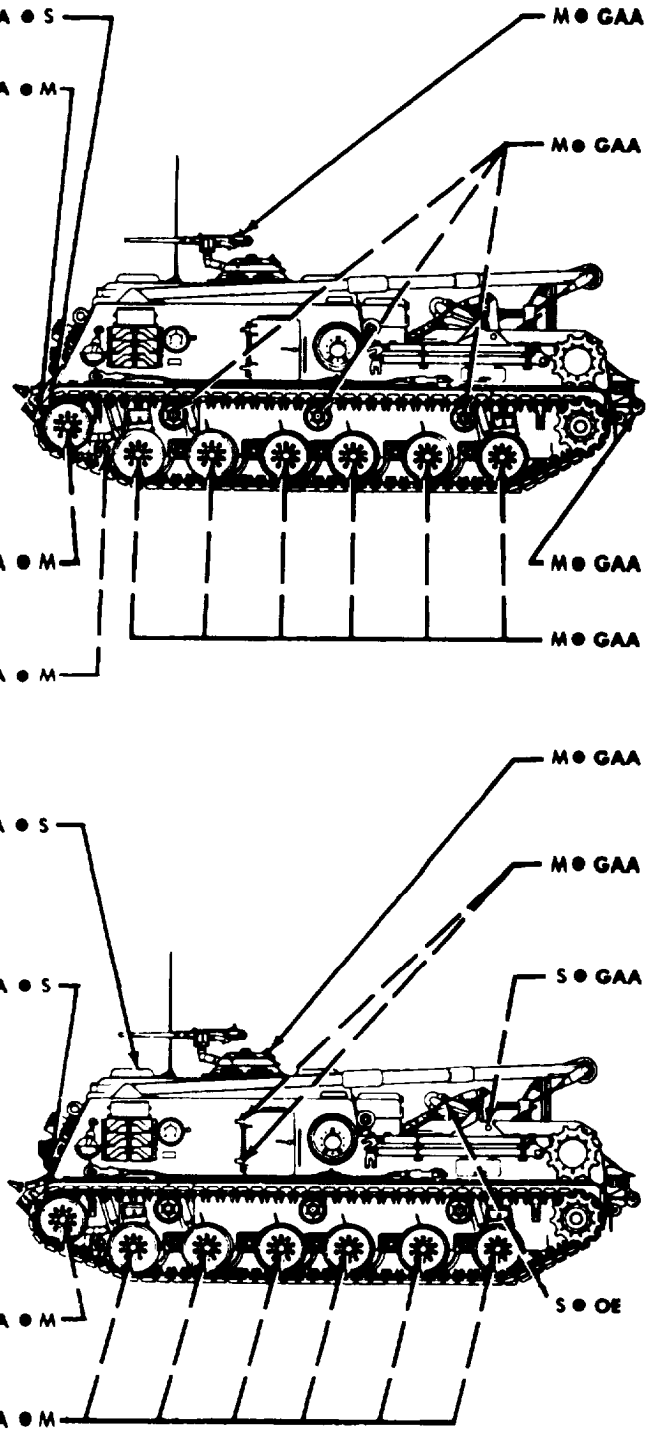
TOTAL MAN-HOURS	
INTERVALS	MAN-HOURS
D	7.3
M	11.3
S	9.0
A	1.0
OC	5.8
After fording	24.0

*If AOAP support is not available and hard-time Intervals are used, 2 man-hours will be required for each 25-hour period or monthly (whichever comes first); additionally, semiannual labor requirements wiII Increase by 2.5 man-hours.

SERVICE FROM CREW COMPARTMENT

LUBRICANT●INTERVAL

INTERVAL●LUBRICANT



Bearing Plate (See note 7 and view F) (O)

Spade Release Mechanism (See note 3 and view B) (O)

Compensating Idler Wheel Arm Bearings (See note 8 and view G) (O)

Track Adjusting Link (See note 4 and view C) (O)

Hoist Winch Cable Roller Bearings (See note 6 and view E) (O)

Main Winch Cable Roller (See note 13 and view L) (O)

Compensating Idler Wheel Bearings (See note 2 and view A) (O)

Roadwheel Bearings (See note 9 and view H) (O)

0.50-Caliber Machine Gun, Flexible M2 (See note 10 and view I) (O)

Track Support Rollers (See note 11 and view J) (O)

Towing Pintle (See note 12 and view K) (O)

Roadwheel Arm Bearings (See note 5 and view D) (O)

Commander's Cupola Hold-Open Latch (See note 14 and view M) (O)

Personnel Door Torsion Bar (See note 15 and view N) (O)

Boom Lever Pin (See note 16 and view O) (O)

Boom Stayline Cables (See note 17 and view P) (O)

TA171786

SERVICE FROM CREW COMPARTMENT

LUBRICANT • INTERVAL

Spade Cylinder Pins (See note 18 and view Q) (O)

Boom Cylinder Pin (See note 19 and view R) (O)

Spade Cylinder Pins (See note 18 and views Q through T) (O)

Hoist Winch Gear Case Fill and Level (See note 20 and view V) (O)

Breather Cap-Hoist Winch Gear Case (See note 21 and view V) (O)

Hoist Winch Cable (See note 23 and view X) (O)

Hoist Winch Gear Case Drain (See note 22 and view W) (O)

INTERVAL • LUBRICANT

Spade Link Pin (See note 24 and view Y) (O)

Boom Foot Pivot Pin (See note 25 and view Z) (O)

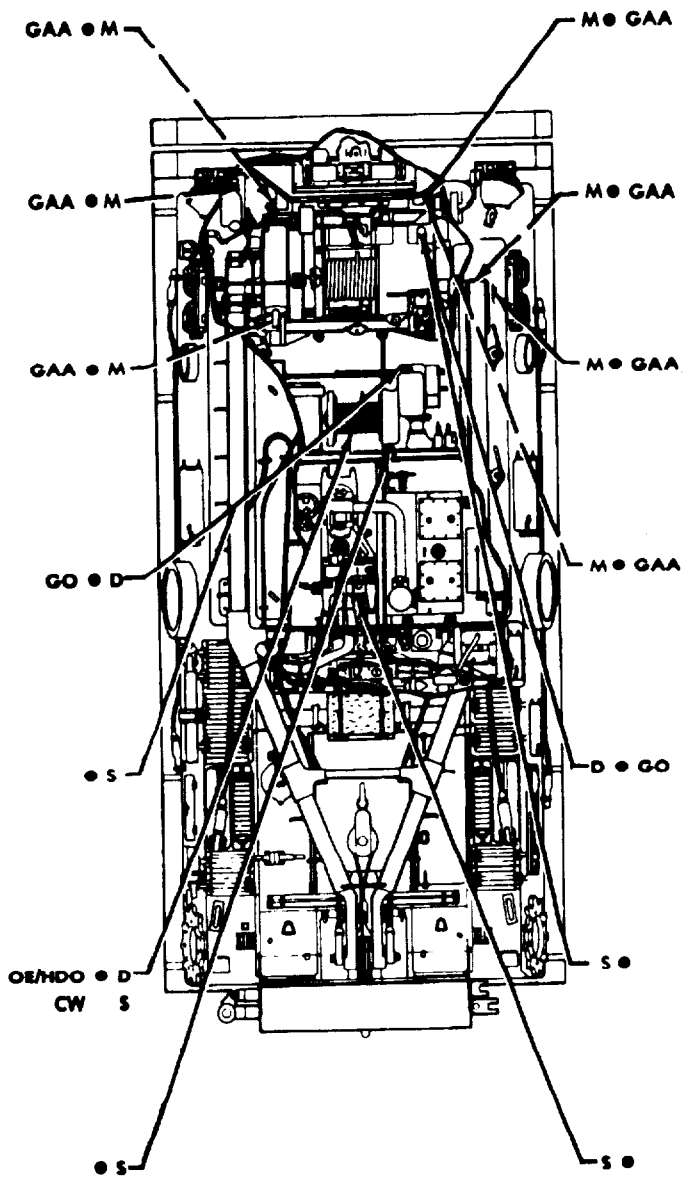
Boom Pivot Pin (See note 26 and view AA) (O)

Main Winch Level Winder Guide (See note 27 and view AB) (O)

Main Winch Gear Case Fill and Level (See note 28 and view AC) (O)

Breather Cap-Main Winch Gear Case (See note 29 and view AC) (O)

Mechanical Transmission Oil Filter (See note 30 and view AD) (O)



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SERVICE FROM CREW COMPARTMENT

LUBRICANT ● INTERVAL | **INTERVAL ● LUBRICANT**

Hydraulic Reservoir Drain (See note 31 and view AE) (O)

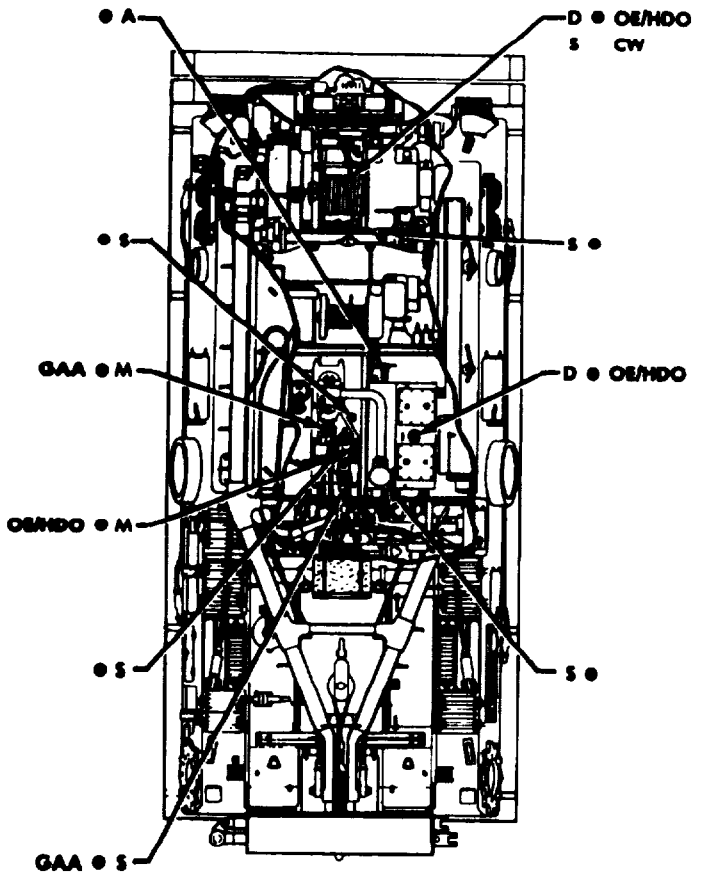
Mechanical Transmission Drain (See note 32 and view AF) (O)

Mechanical Transmission and Hydraulic Pump Shaft Coupling (See note 33 and view AG) (O)

Mechanical Transmission Fill and Level (See note 34 and view AH) (O)

Breather Cap-Mechanical Transmission (See note 35 and view AH)(O)

Mechanical Transmission Shaft Universal Joint (See note 36 and view AI) (O)



Main Winch Cable (See note 37 and view AJ) (C)

Main Winch Gear Case Drain (See note 38 and view AK) (O)

Hydraulic Reservoir Fill and Level (See note 39 and view AL) (O)

Hydraulic Reservoir Filter (See note 40 and view AM) (O)

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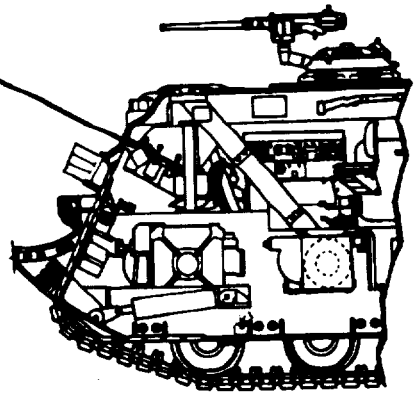
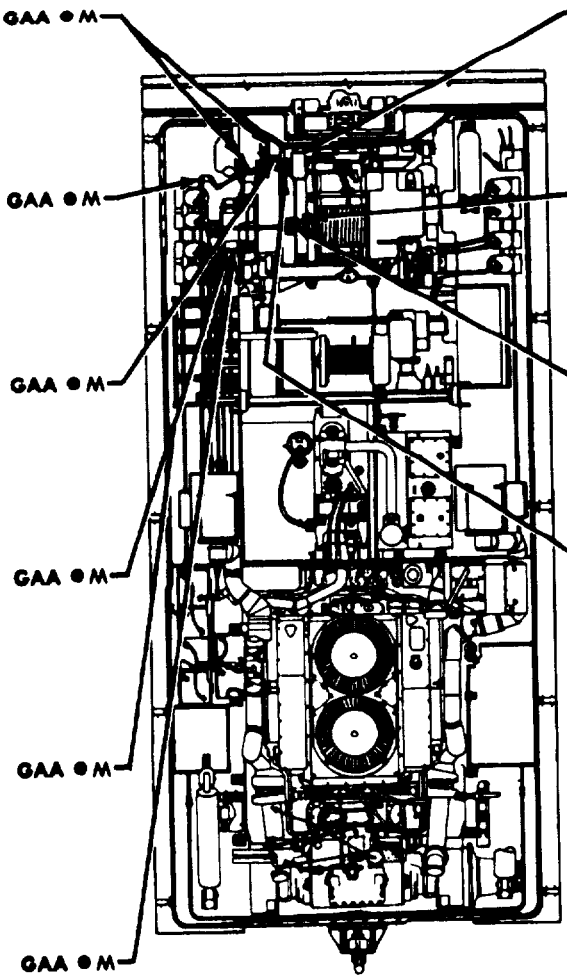
SERVICE FROM CREW COMPARTMENT

LUBRICANT●INTERVAL **INTERVAL●LUBRICANT**





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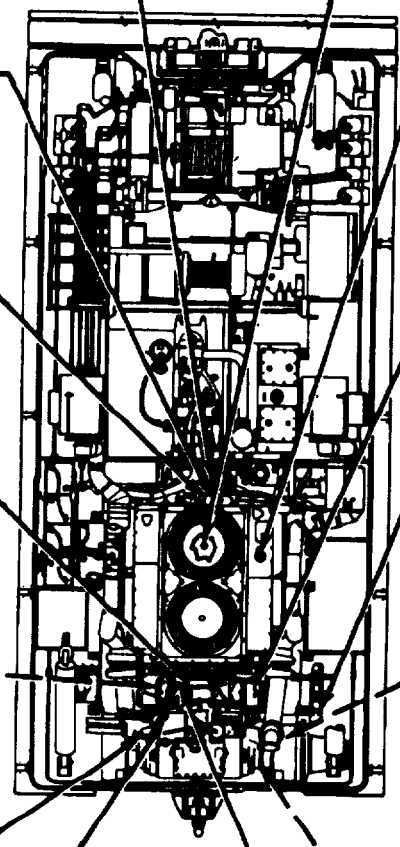
SERVICE FROM ENGINE COMPARTMENT



LUBRICANT • INTERVAL		INTERVAL • LUBRICANT	
Mechanical Transmission Shaft Universal Joint (See note 52 and view AY) (O)	GAA • M	OC or S •	Main Engine Crankcase Drain (See note 59 and view BE) (C)
Main Engine Oil Filter (See note 53 and view AZ) (O)	• OC or M	D •	Main Engine Crankcase Level (See note 60 and view BF) (C)
Main Engine On-Condition AOAP (See note 54 and view AZ) (O)	• OC or 25H or M	• OE/HDO	Main Engine Crankcase Fill (See note 60 and view BG) (C)
Transmission Drain (See note 55 and view BA) (C)	• OC or S	S • GAA	Fuel Transfer Pump (See note 61 and view BH) (O)
Transmission Oil Filters (See note 56 and view BB) (O)	• OC or M	M • GAA	Brake Slack Adjuster Lever (See note 62 and view BI) (O)
Brake Air Valve Linkage Bracket (see note 64 and BJ) (O)	GAA • M	OC or S •	Output Reduction Drives-Drain (See note 63 and view BI) (O)
Transmission Fill and Level (See note 58 and view BD) (C)	OE/HDO • D	OC or • 25H or M	Transmission On-Condition AOAP (See note 57 and view BC) (O)

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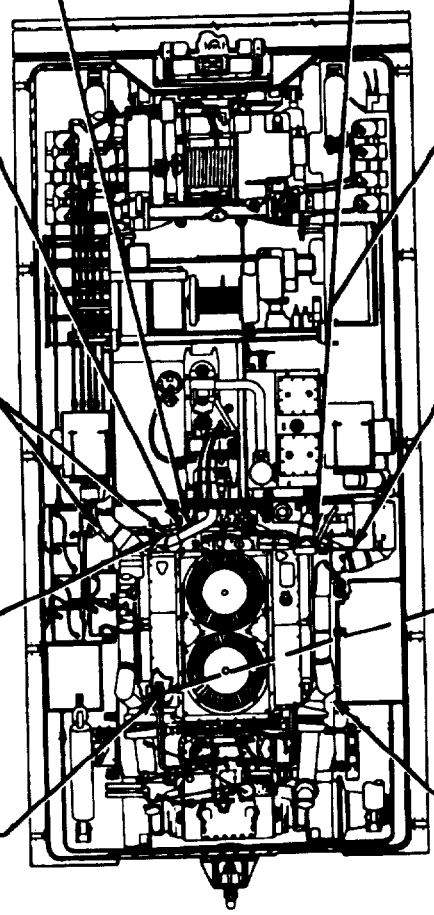
SERVICE FROM ENGINE COMPARTMENT

LUBRICANT ● INTERVAL | **INTERVAL ● LUBRICANT**



Accelerator Linkage Bell Crank (See note 65 and view BK) (O) — GAA ● M

Accelerator Linkage Pillow Block (See note 65 and view BK) (O) — GAA ● M

Service Brake Linkage Lever (See note 66 and view BL) (O) — GAA ● M

Service Brake Linkage Shaft (See note 67 and view BM) (O) — GAA ● M

Service Brake Linkage Bell Crank (See note 68 and view BN) (O) — GAA ● M

S or 100H ● — Auxiliary Power Unit Chaincase Drain (See note 69 and view BO) (C)

D ● OE/HDO — Auxiliary Power Unit Chaincase Fill and Level (See note 70 and view BO) (C)

OC or S ● — Auxiliary Power Unit Engine Filter (See note 71 and view BP)

M ● GAA — Service Brake Linkage Pillow Block (See note 68 and view BN) (O)

M ● GAA — Service Brake Linkage Shaft (See note 72 and view BQ) (O)

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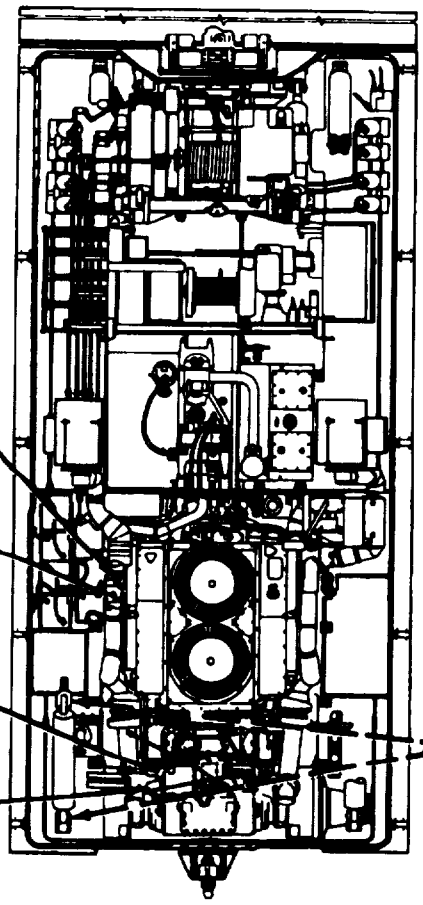
SERVICE FROM ENGINE COMPARTMENT

LUBRICANT ● INTERVAL **INTERVAL ● LUBRICANT**



Shifting Linkage Bell Crank (See note 74 and view BS) (O) — GAA ● M

Steering Linkage Bell Crank (See note 73 and view BR) (O) — GAA ● M

Shifting Linkage Bell Crank (See note 74 and view BS) (O) — GAA ● M

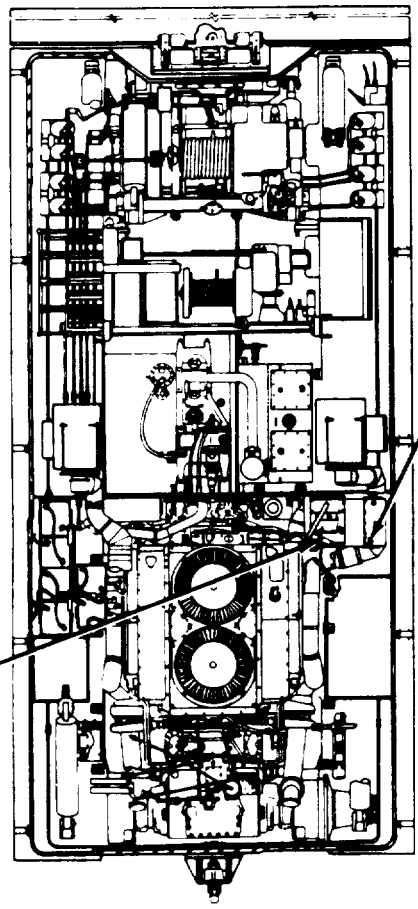
Steering Linkage Bell Crank (See note 73 and view BR) (O) — GAA ● M

S ● GAA — Rear Boom Lever Cylinder Pins (See note 75 and view BT) (O)

TA171792

SERVICE FROM APU COMPARTMENT

LUBRICANT ● INTERVAL | **INTERVAL ● LUBRICANT**



● S or 100 H — Auxiliary Power Unit Crankcase Drain (See note 76 and view BP) (O)

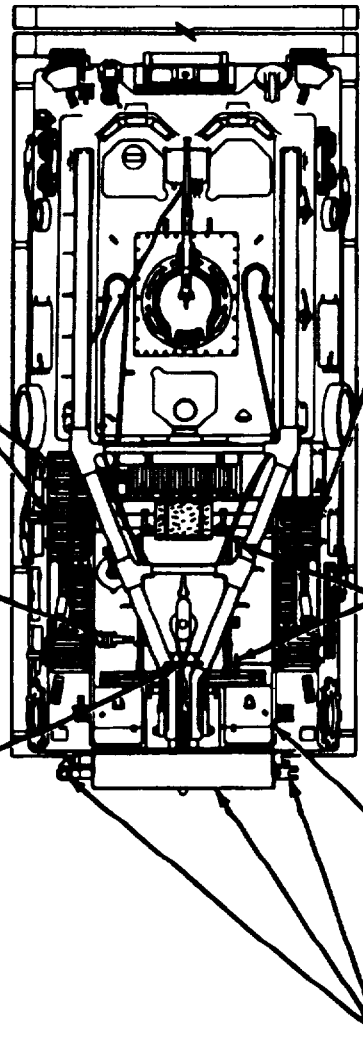
● D OE/HDO — Auxiliary Power Unit Crankcase Fill and Level (See note 77 and view BU) (C)

TA171793

OIL CAN POINTS — EXTERIOR

LUBRICANT ● INTERVAL

INTERVAL ● LUBRICANT



Grille Door Hinges and Retaining Bolts (See note 79 and view BV) (C)

PL-S ● M

Vise (See note 79 and view BW) (C)

PL-S ● S

Boom Lockpin (see note 79 and view BX((C)

PL-S ● M

M ● PL-S

Grille Door Hinges and Retaining Bolts (See note 79 and view BY) (C)

M ● PL-S

Latches - Top (See note 79 and view BZ) (C)

M ● PL-S

Exhaust Deflector Pivot Pin and Hinges (See note 79 and view CA) (C)

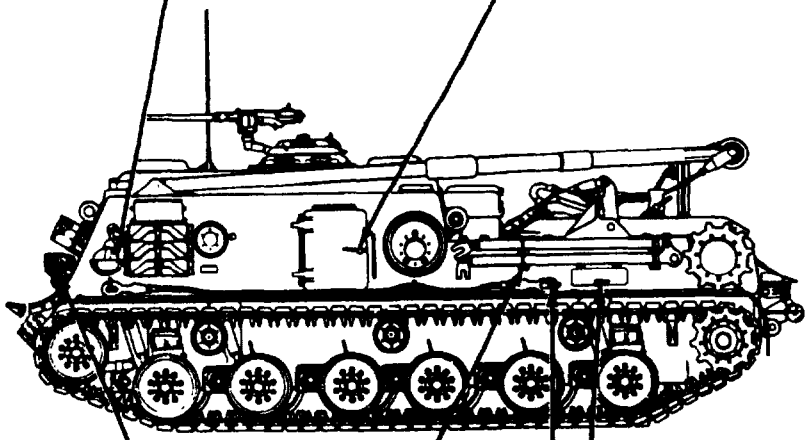
M ● PL-S

Pivot Pin (See note 79 and view CB) (C)

TA171794

OIL CAN POINTS — EXTERIOR

LUBRICANT ● INTERVAL **INTERVAL ● LUBRICANT**



Snatch Block (See note 79 and view CC) (C) — PL-S ● M

M ● PL-S — Door Latch (See note 79 and view CF) (C)

Headlamp Removal Nut (See note 79 and view CD) (C) — PL-S ● S

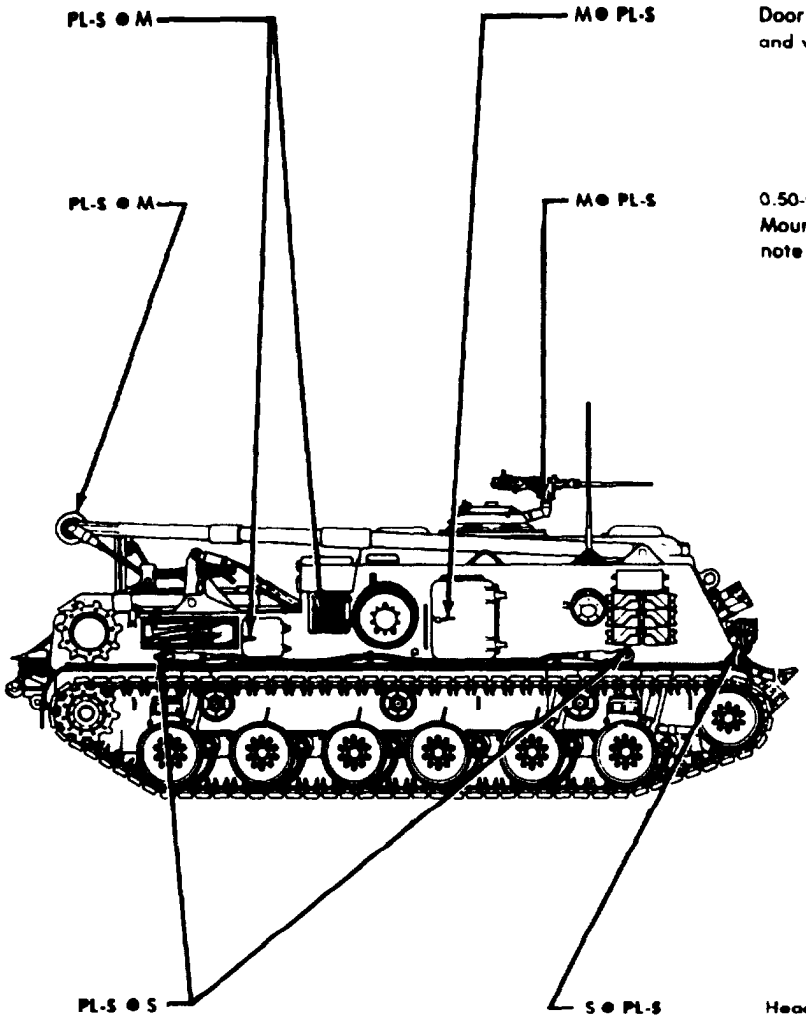
M ● PL-S — Door-Latch (See note 79 and view CG) (C)

On-Vehicle Stowage Clamps (See note 79 and view CE) (C) — PL-S ● S

S ● PL-S — On-Vehicle Stowage Clamps (See note 79 and view CH) (C)

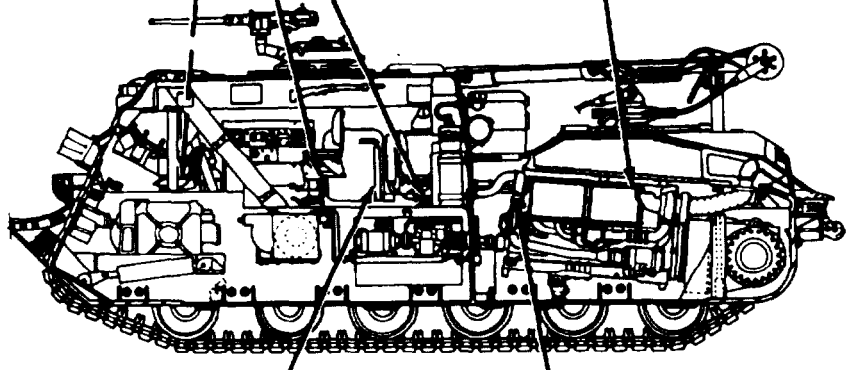
TA171795

OIL CAN POINTS — EXTERIOR



OIL CAN POINTS — INTERIOR

LUBRICANT●INTERVAL **INTERVAL●LUBRICANT**



Seat Moving Parts (See note 79 and view CO) (C)

Boom Limit Valve Actuating Arm Shaft (See note 79 and view CQ) (C)

Side Door Lockpin (See note 79 and view CR) (C)

Manual Fuel Shutoff Linkage (See note 79 and view CP) (C)

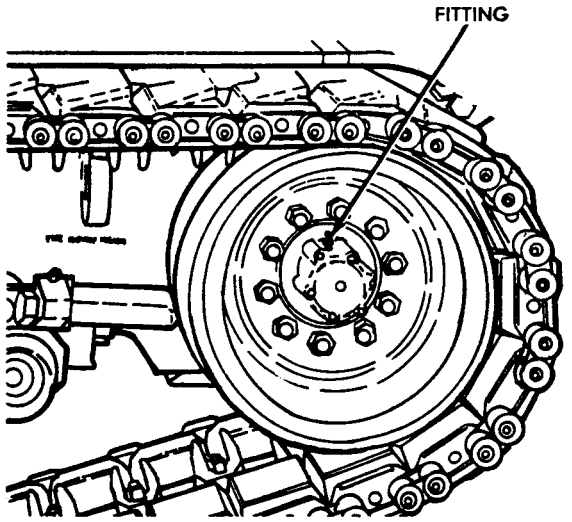
TA171797

LUBRICANTS		CAPACITIES	EXPECTED TEMPERATURES For Arctic Operation, Refer to FM 9-207			INTERVALS
			Above 15°F (Above −9°C)	+40°F to −10°F (+4°C to −23°C)	0°F to −65°F (−18°C to −54°C)	
GAA MILG-10924	—GREASE, Automotive and Artillery All grease points	AS REQUIRED	ALL TEMPERATURES			
GO MIL-L-2105 or GOS MIL-L-10324	—LUBRICATING OIL, Gear, Multipurpose —LUBRICATING OIL, Gear, Subzero		GO 90	GO 90	GOS	Intervals Are As Follows: OC — As Directed by AOAP Laboratory H — Hours D — Daily; Days M — Monthly S — Semiannually
	Hoist Winch Gear Case	3 gal. (11.36 L)				
	Main Winch Gear Case	11 gal. (41.64 L)				
OE/HDO MIL-L-21040 or OEA MIL-L-46167	—LUBRICATING OIL, Internal Combustion Engine, Tactical Service —LUBRICATING OIL, Internal Combustion Engine, Arctic					
	Boom Stayline Cables Hoist Winch Cable Main Winch Cable	AS REQUIRED	OE/HDO-10	OE/HDO-10	OEA	
	Mechanical Transmission	1 gal. (3.79 L)				
	Hydraulic Reservoir	95 gal. (359.58 L)				
	Transmission	17 gal. (64.35 L)				
	Main Engine Crankcase	16.5 gal. (62.45 L)	OE/HDO-30	OE/HDO-10	OEA	
	APU Chaincase	1 qt. (0.95 L)				
	APU Engine Crankcase	3.5 qt. (3.31 L)				
PL-S VV-L-800	—LUBRICATING OIL, General Purpose, Preservative All oil can points	AS REQUIRED	ALL TEMPERATURES			
CW VV-L-751	—LUBRICATING OIL, Chain, Wire Rope, Exposed Gear Hoist Winch Cable Main Winch Cable	AS REQUIRED	CW-IIC	CW-IIB	CW-IIA	

TA171798

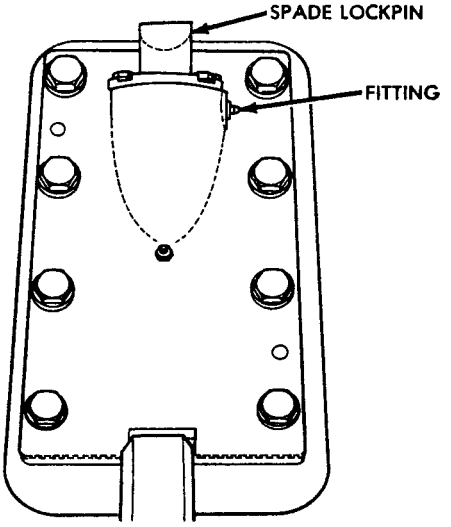
A

COMPENSATING IDLER WHEEL BEARINGS



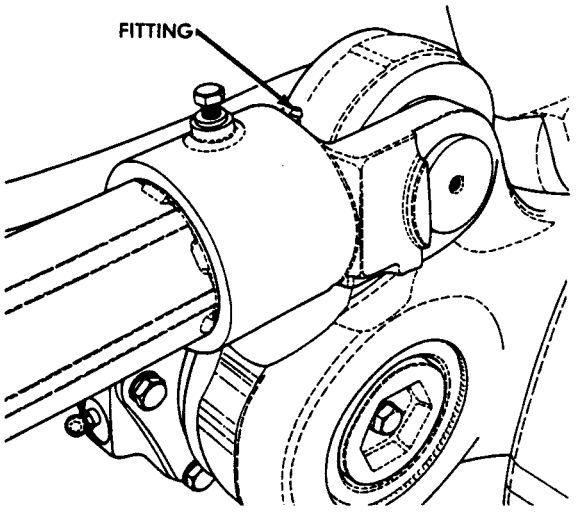
B

SPADE RELEASE MECHANISM



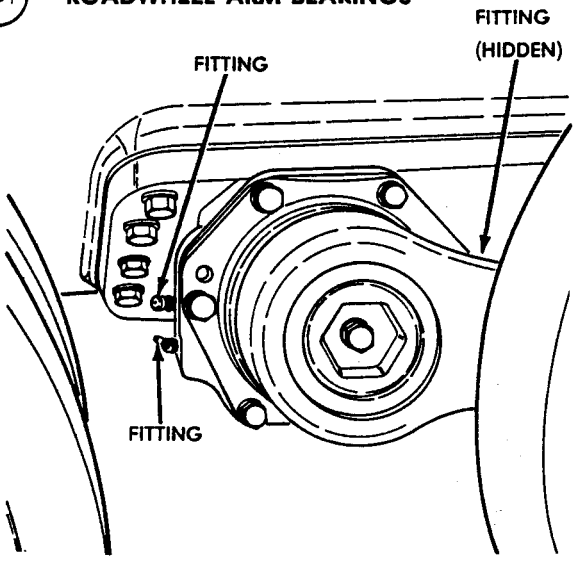
C

TRACK ADJUSTING LINK



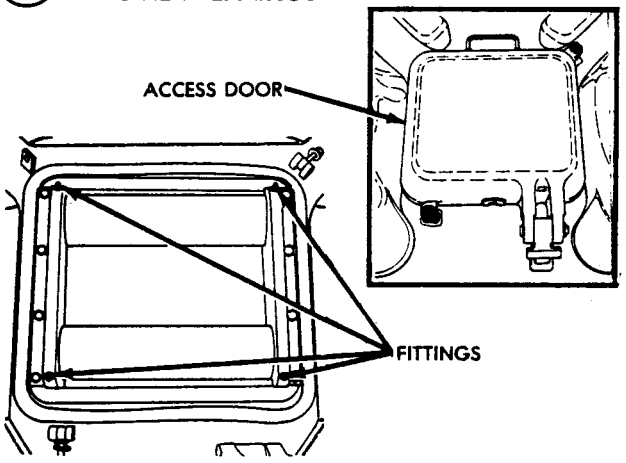
D

ROADWHEEL ARM BEARINGS



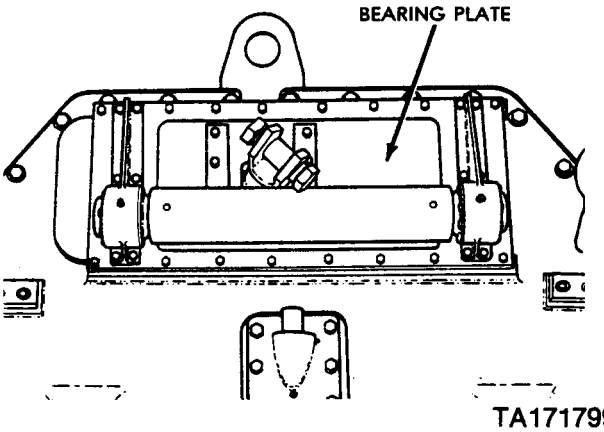
E

HOIST WINCH CABLE ROLLER BEARINGS



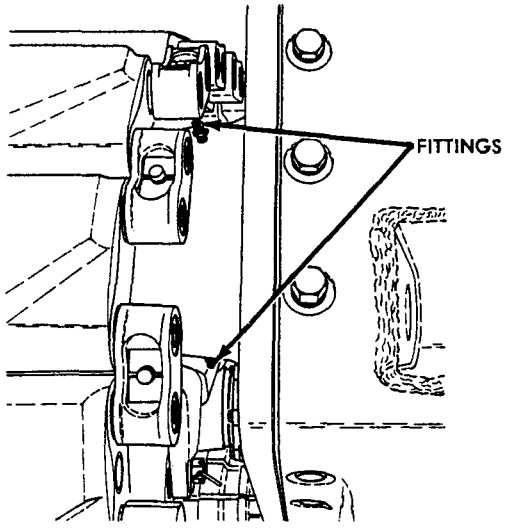
F

BEARING PLATES

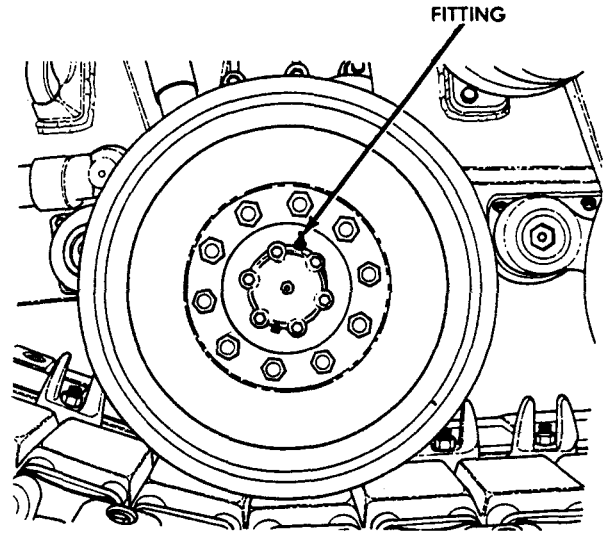


TA171799

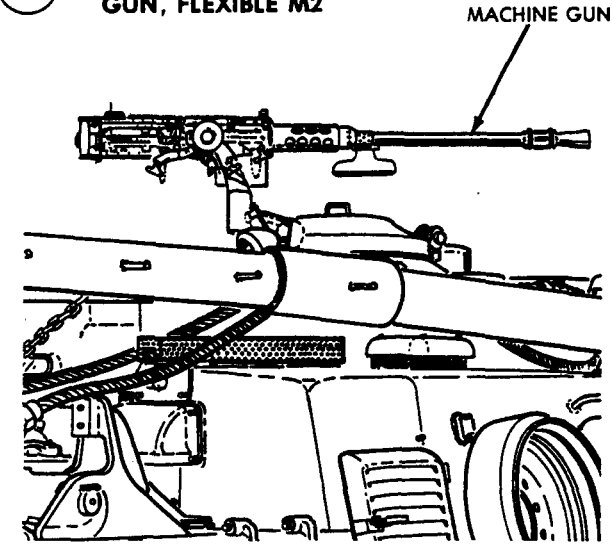
G **COMPENSATING IDLER WHEEL ARM BEARINGS**



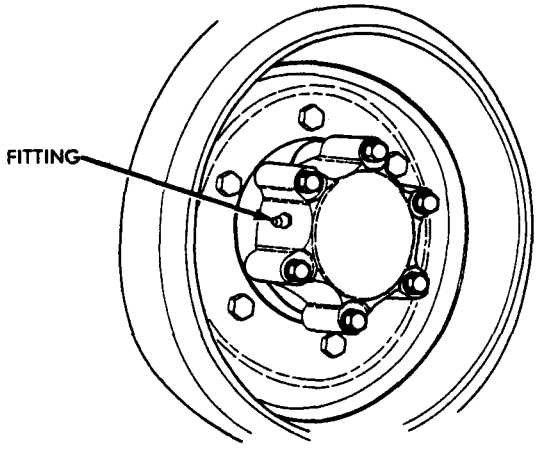
H **ROADWHEEL BEARINGS**



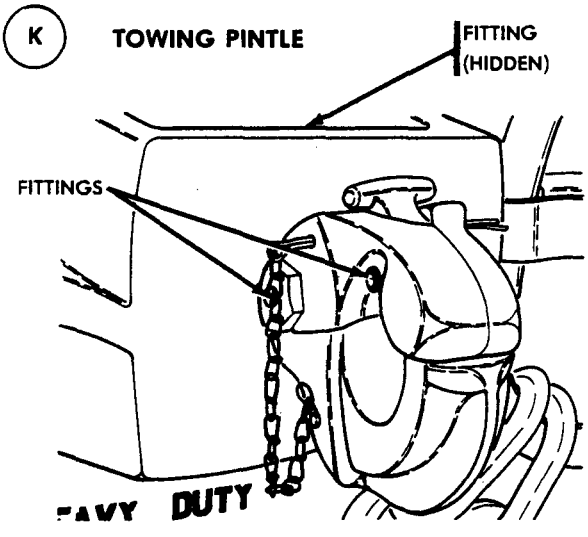
I **0.50-CALIBER MACHINE GUN, FLEXIBLE M2**



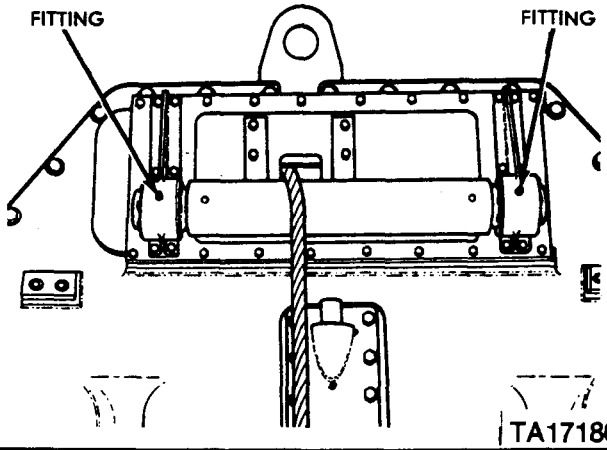
J **TRACK SUPPORT ROLLER**



K **TOWING PINTLE**



L **MAIN WINCH CABLE ROLLER**



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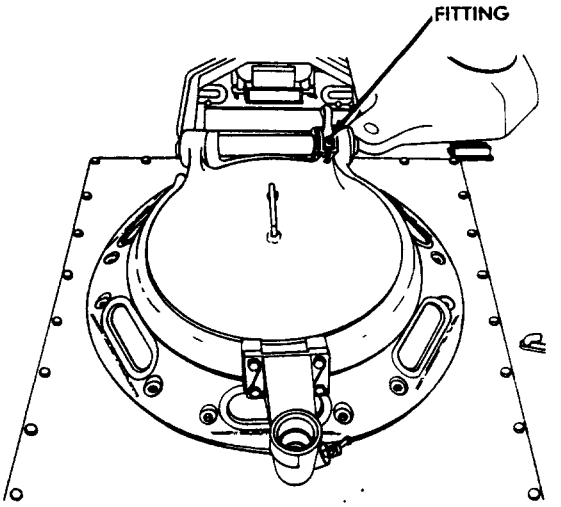
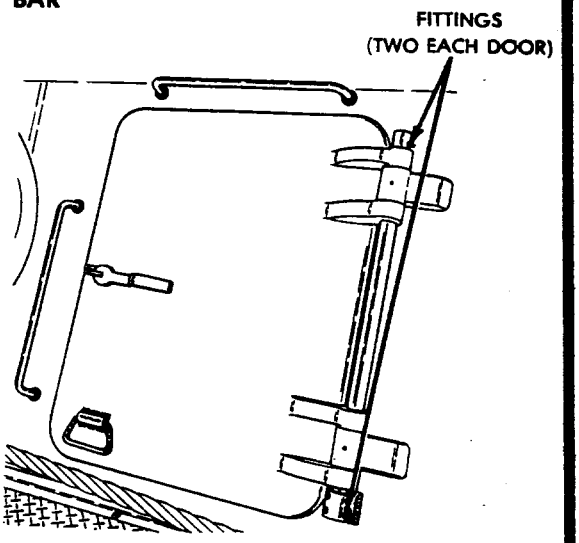
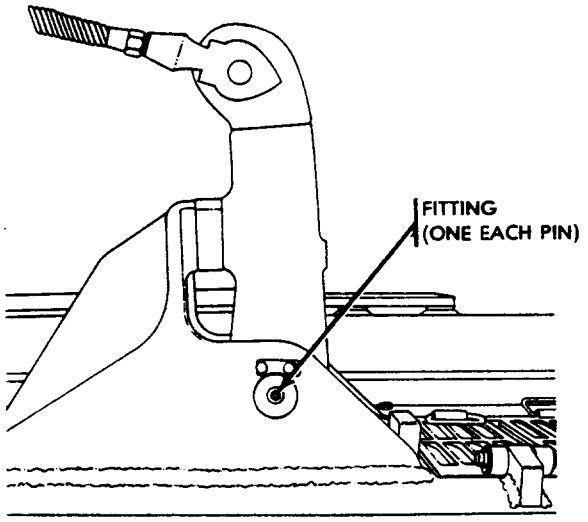
M **COMMANDER'S CUPOLA HOLD-OPEN LATCH**



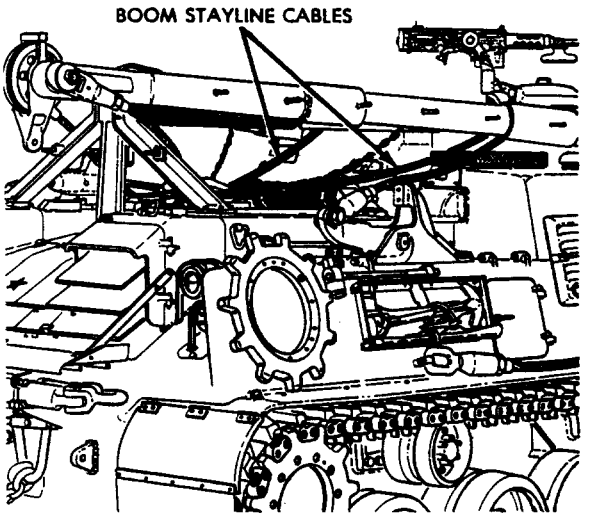
N **PERSONNEL DOOR TORSION BAR**



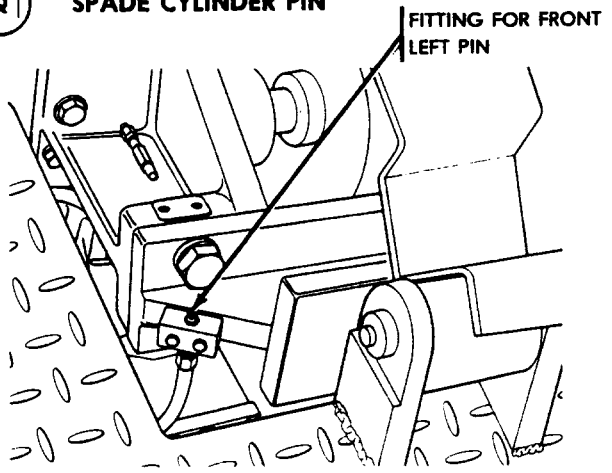
O **BOOM LEVER PIN**



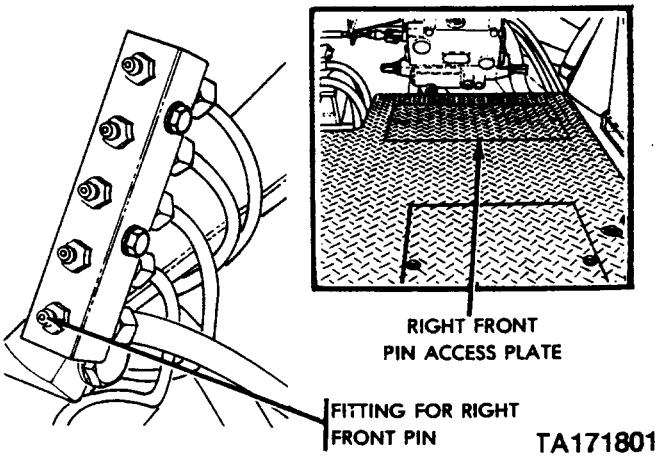
P **BOOM STAYLINE CABLES**



Q **SPADE CYLINDER PIN**

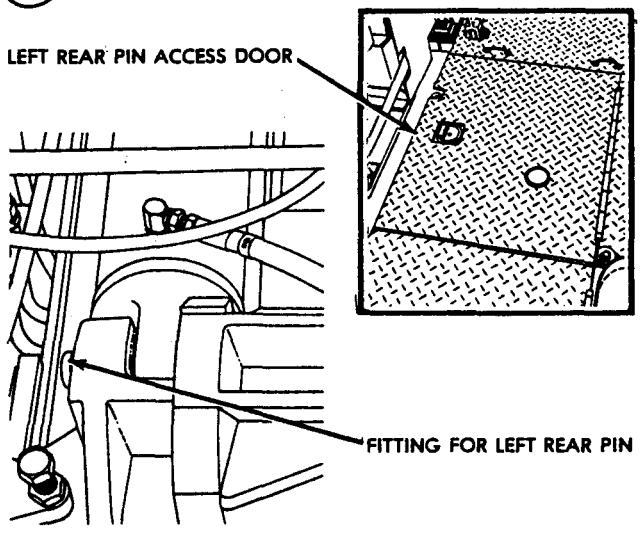


R **SPADE CYLINDER PIN**

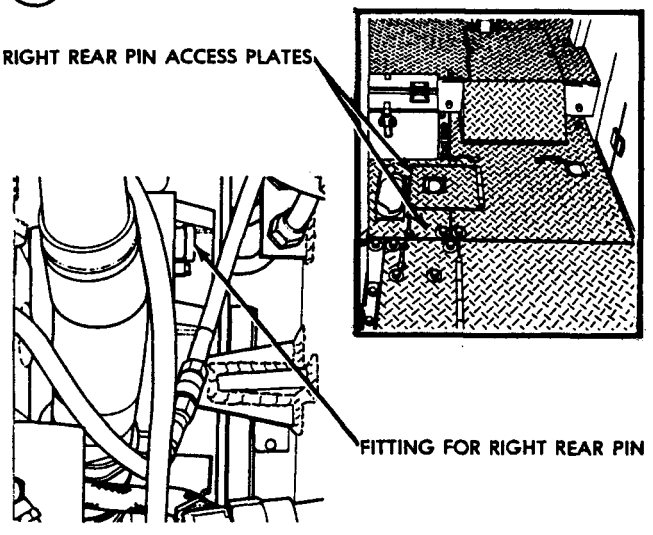


TA171801

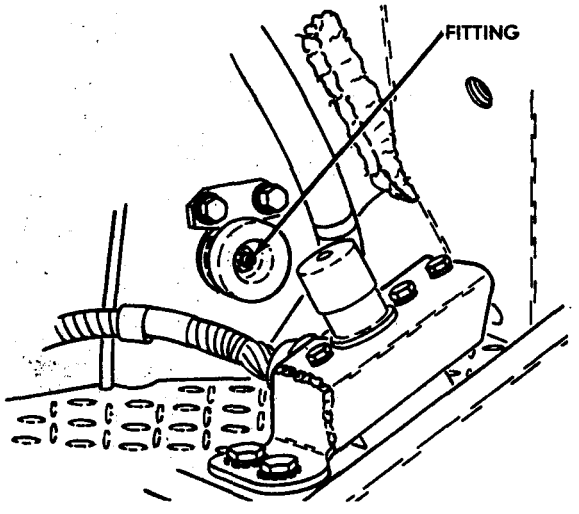
S SPADE CYLINDER PIN



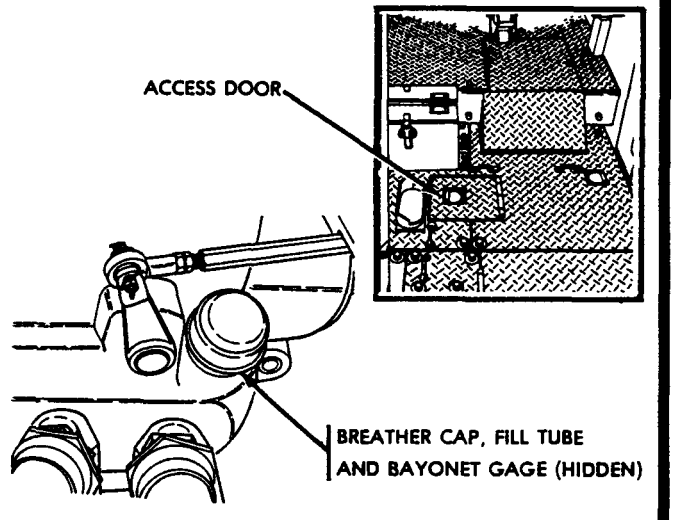
T SPADE CYLINDER PIN



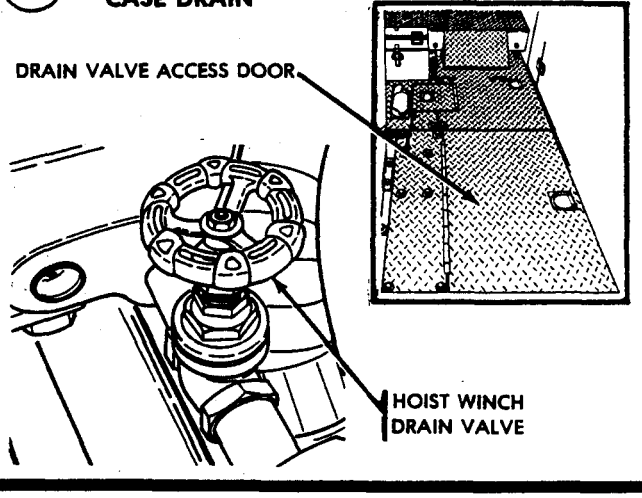
U BOOM CYLINDER PIN



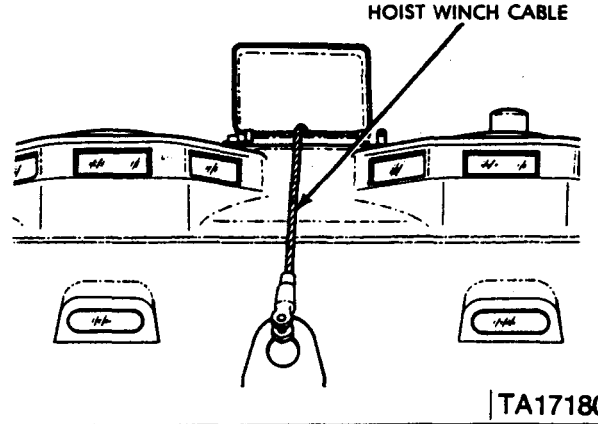
V HOIST WINCH BREATHER CAP, FILL TUBE AND LEVEL CHECK



W HOIST WINCH GEAR CASE DRAIN

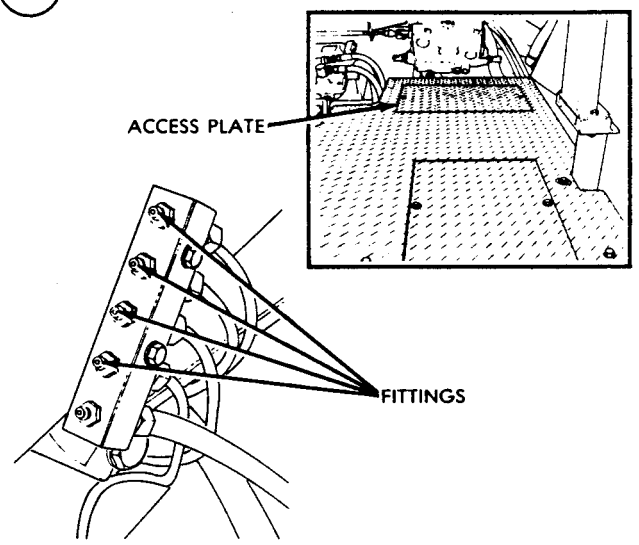


X HOIST WINCH CABLE

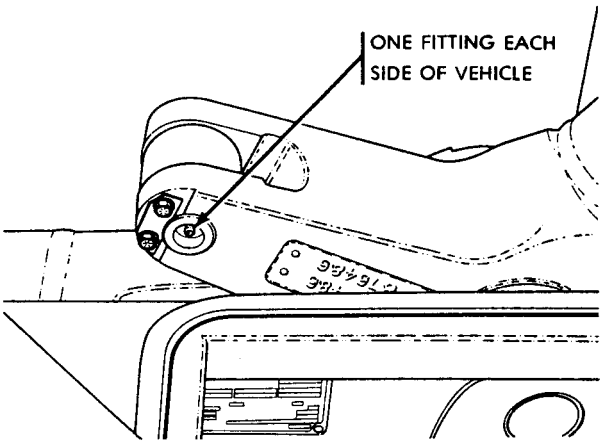


TA171802

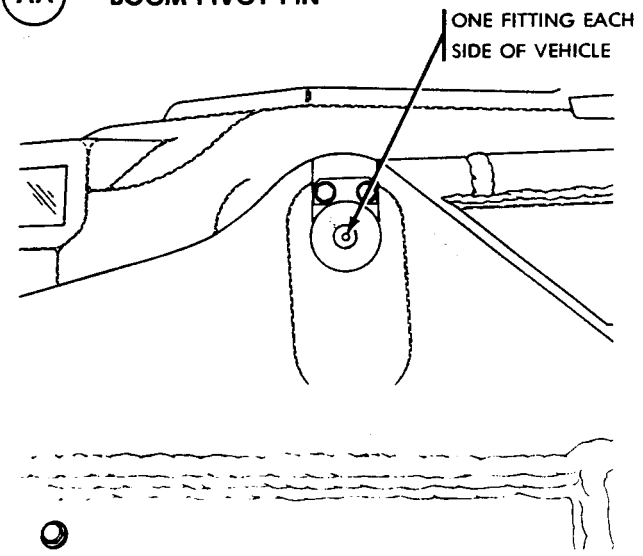
(Y) **SPADE LINK PIN**



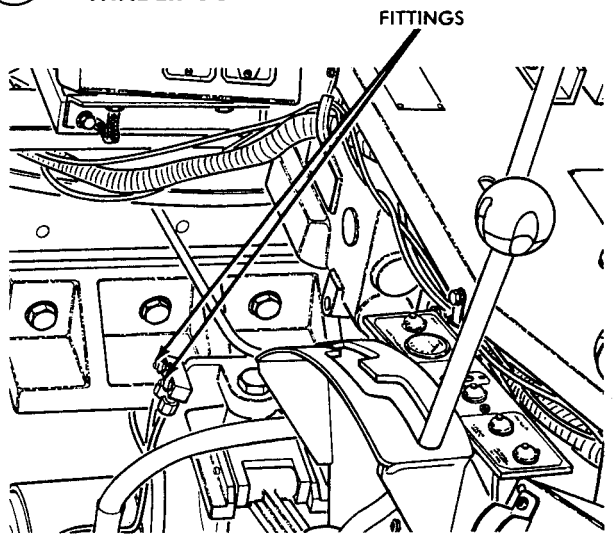
(Z) **BOOM FOOT PIVOT PIN**



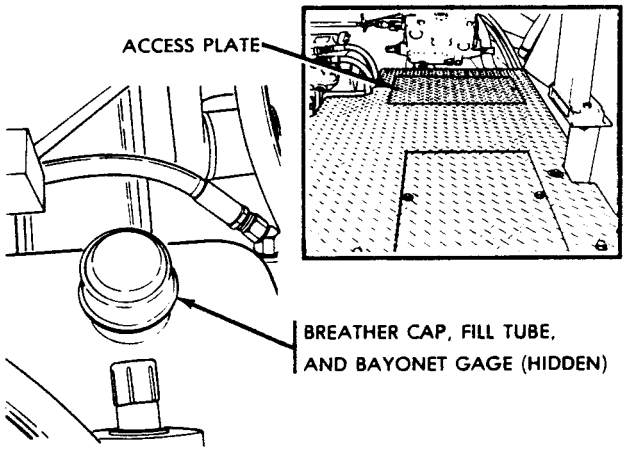
(AA) **BOOM PIVOT PIN**



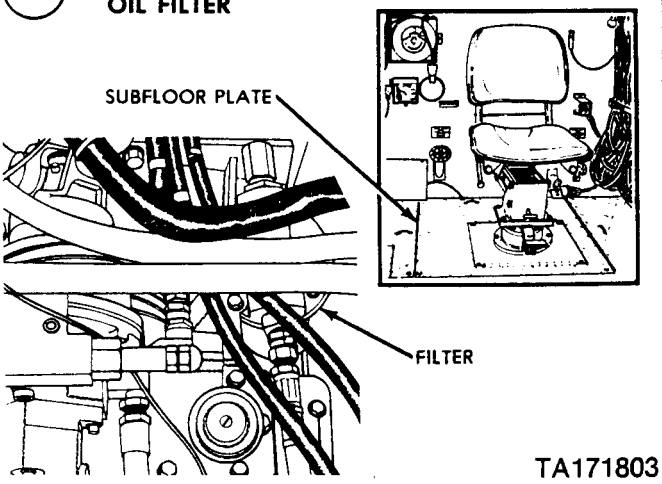
(AB) **MAIN WINCH LEVEL WINDER GUIDE**



(AC) **MAIN WINCH GEAR CASE BREATHER CAP, FILL TUBE, AND LEVEL CHECK**

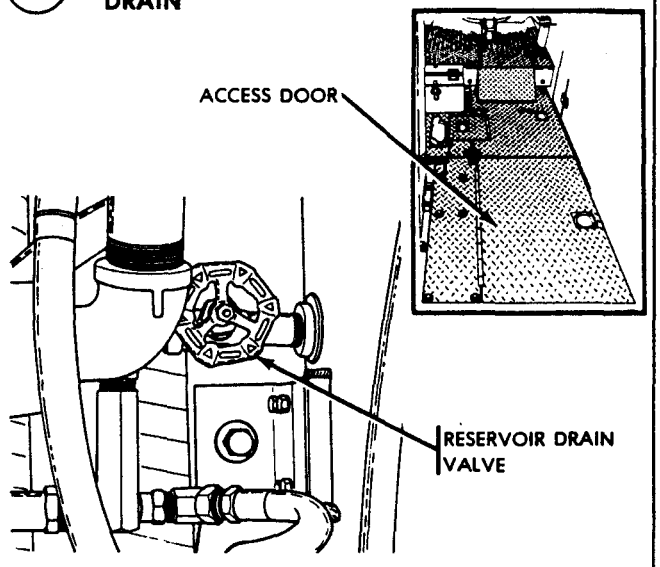


(AD) **MECHANICAL TRANSMISSION OIL FILTER**

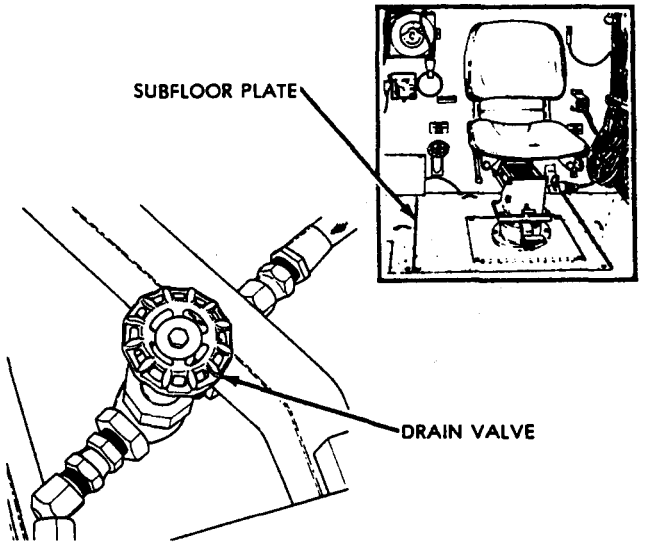


TA171803

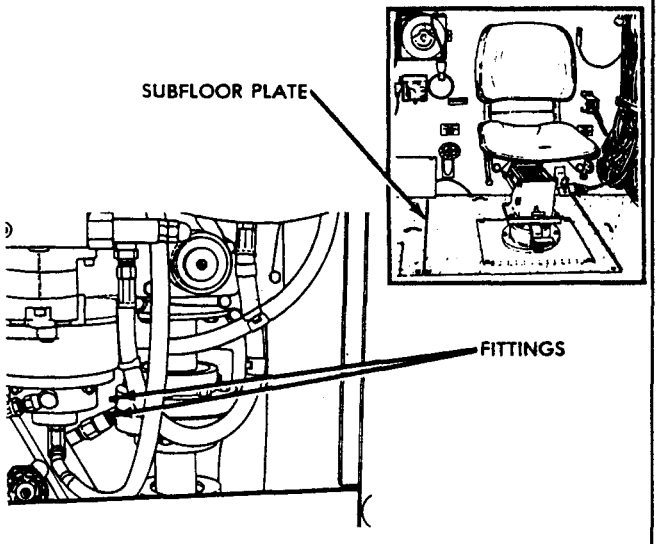
AE **HYDRAULIC RESERVOIR DRAIN**



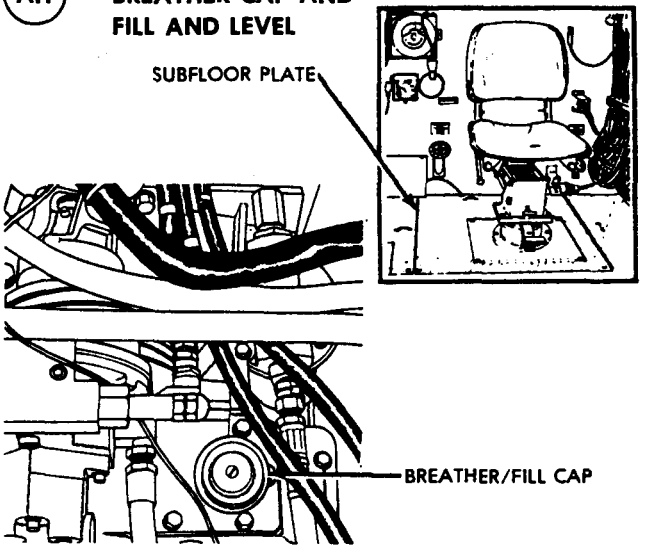
AF **MECHANICAL TRANSMISSION AND OIL COOLER DRAIN**



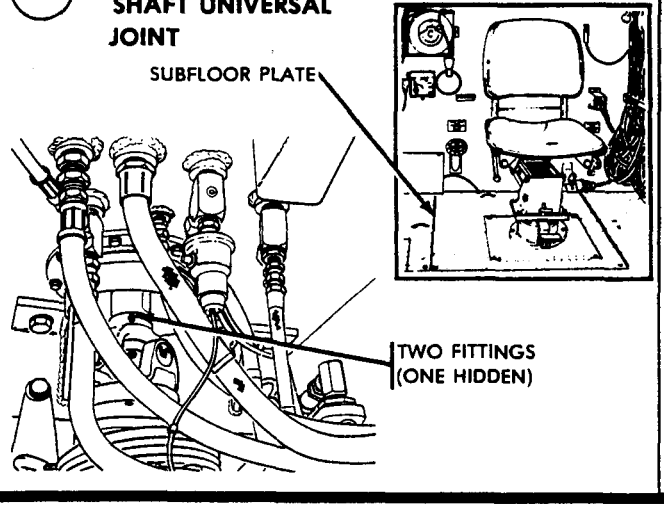
AG **MECHANICAL TRANSMISSION AND HYDRAULIC PUMP SHAFT COUPLING**



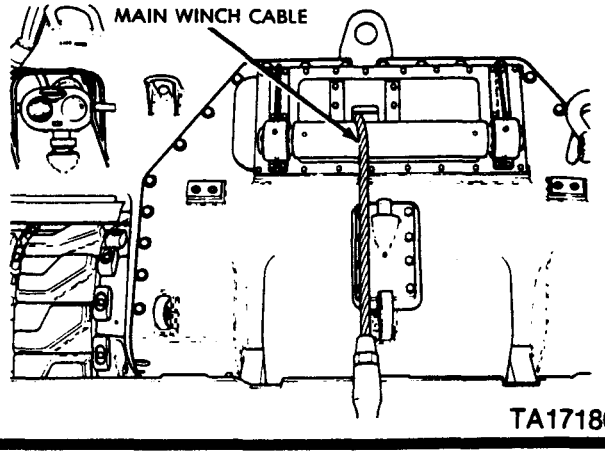
AH **MECHANICAL TRANSMISSION BREATHER CAP AND FILL AND LEVEL**



AI **MECHANICAL TRANSMISSION SHAFT UNIVERSAL JOINT**

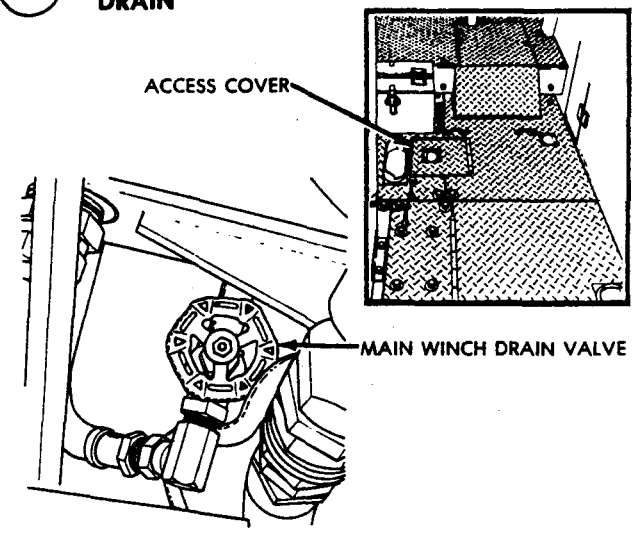


AJ **MAIN WINCH CABLE**

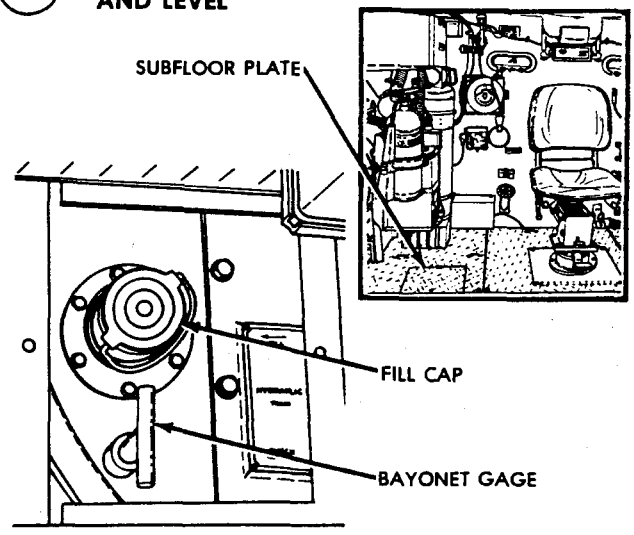


TA171804

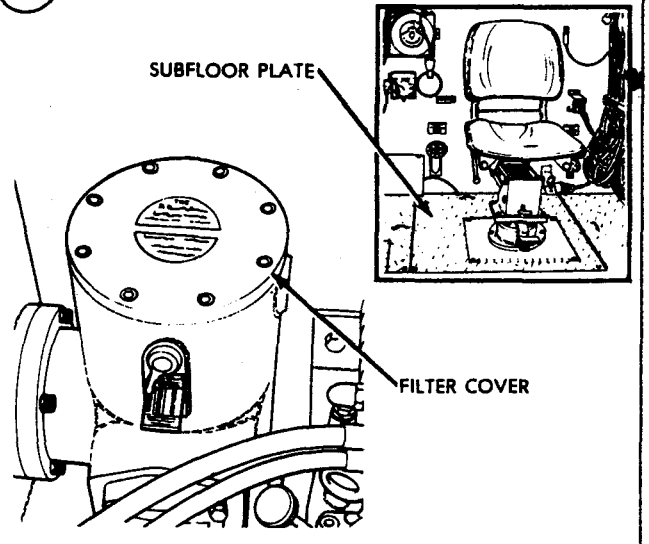
AK MAIN WINCH GEAR CASE DRAIN



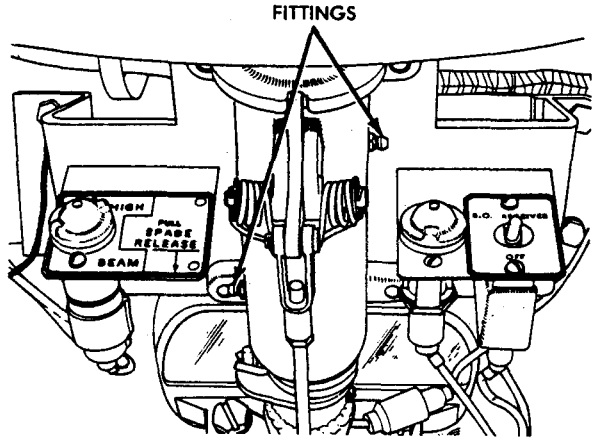
AL HYDRAULIC RESERVOIR FILL AND LEVEL



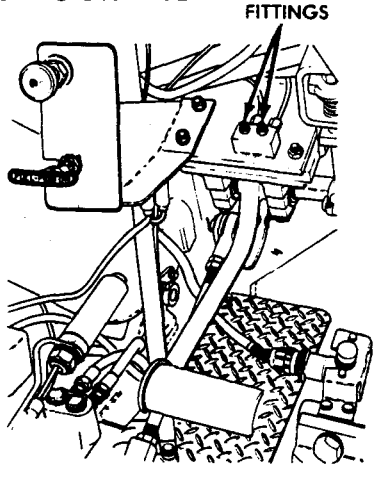
AM HYDRAULIC RESERVOIR FILTER



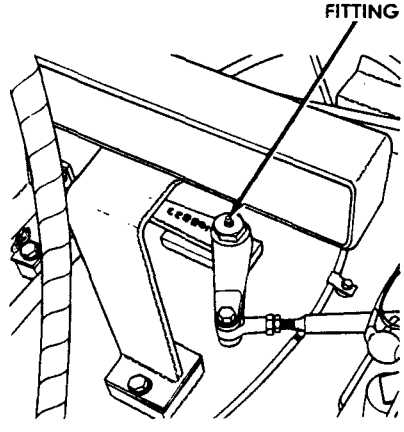
AN STEERING CONTROL ASSEMBLY



AO STEERING LINKAGE

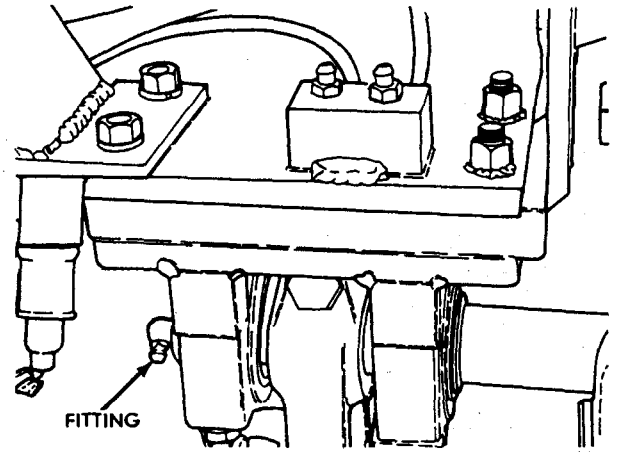


AP STEERING LINKAGE BELLCRANK ASSEMBLY

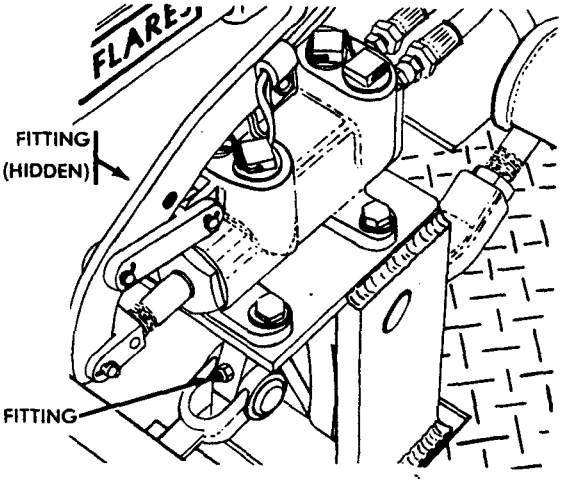


TA171805

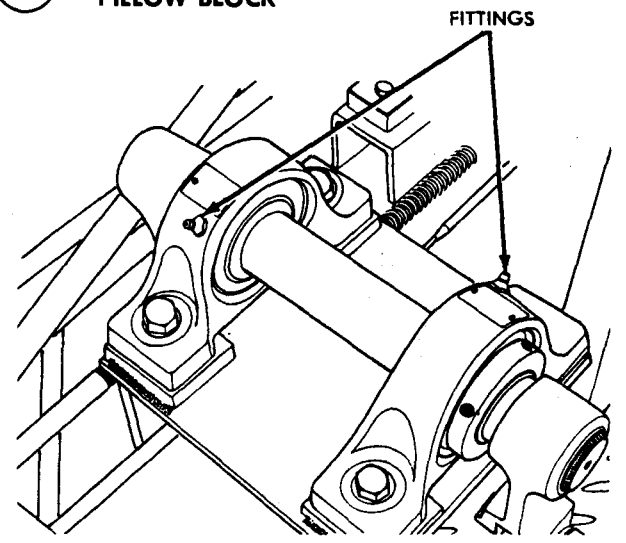
(AQ) **SERVICE BRAKE PEDAL**



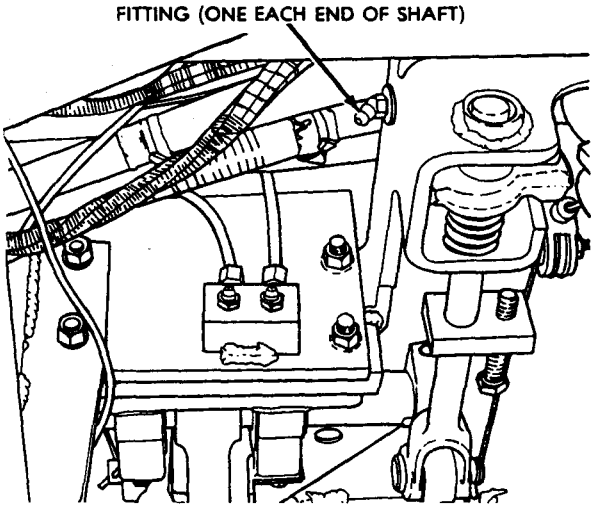
(AR) **SERVICE BRAKE LINKAGE**



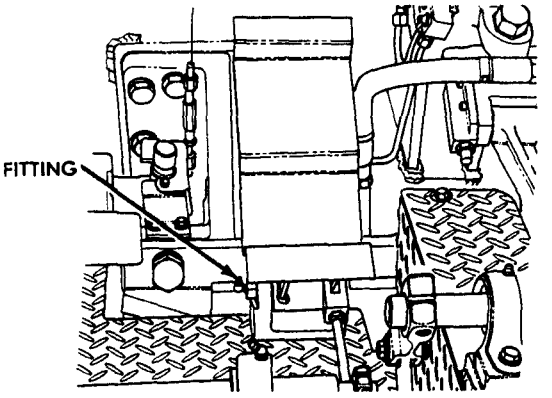
(AS) **SERVICE BRAKE LINKAGE PILLOW BLOCK**



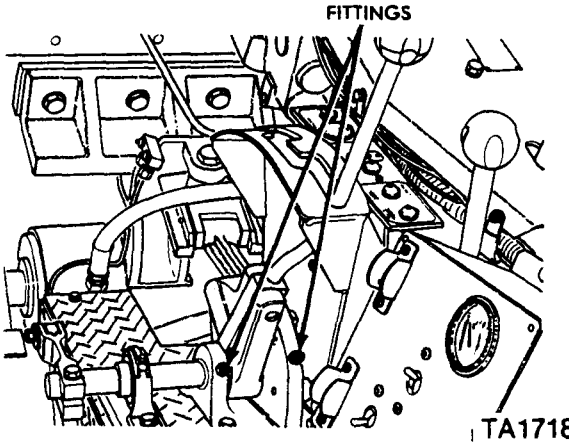
(AT) **SERVICE BRAKE SHAFT**



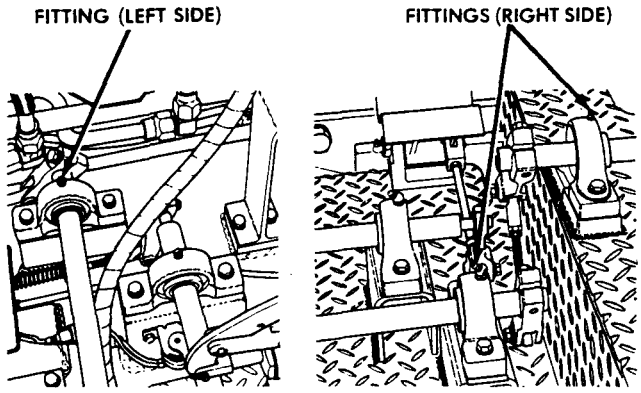
(AU) **ACCELERATOR PEDAL ASSEMBLY**



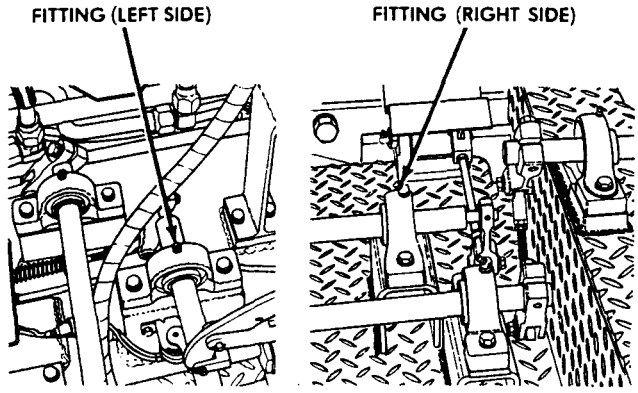
(AV) **SHIFTING CONTROL ASSEMBLY**



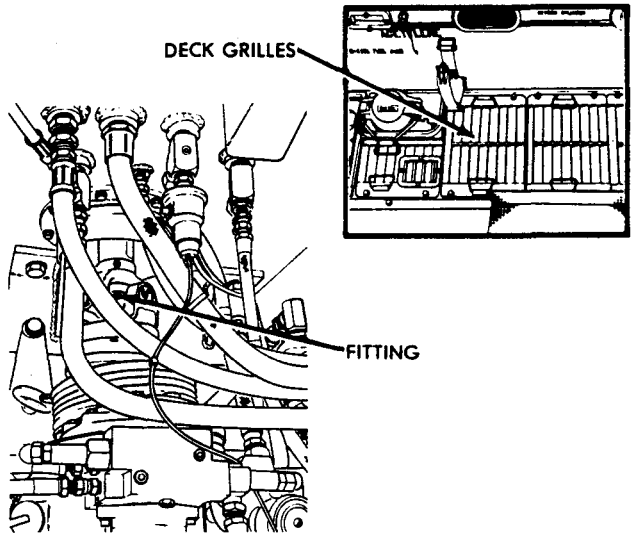
(AW) SHIFTING LINKAGE PILLOW BLOCKS



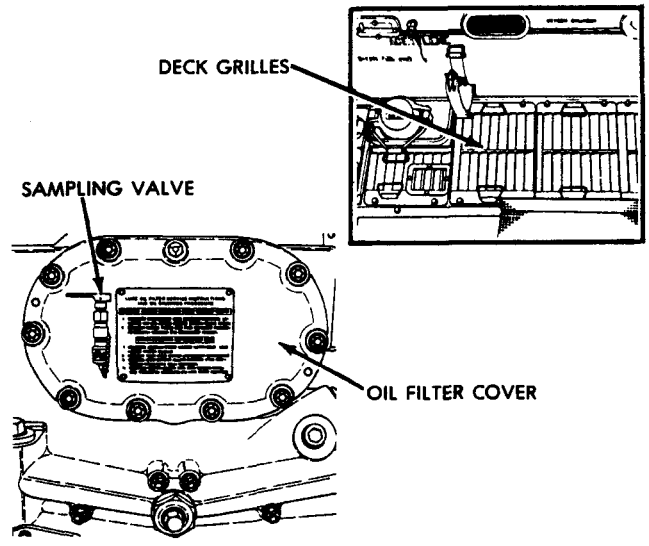
(AX) ACCELERATOR LINKAGE PILLOW BLOCKS



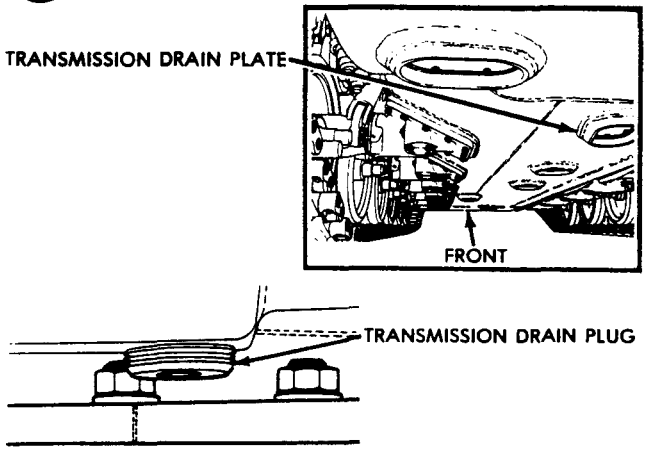
(AY) MECHANICAL TRANSMISSION SHAFT UNIVERSAL JOINT



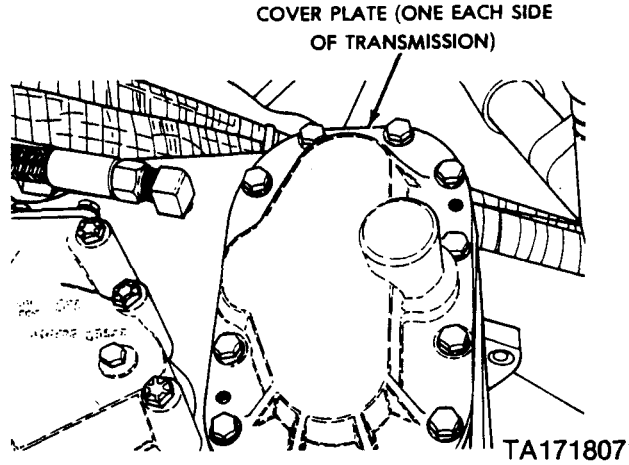
(AZ) MAIN ENGINE OIL FILTER AND ON-CONDITION AOAP



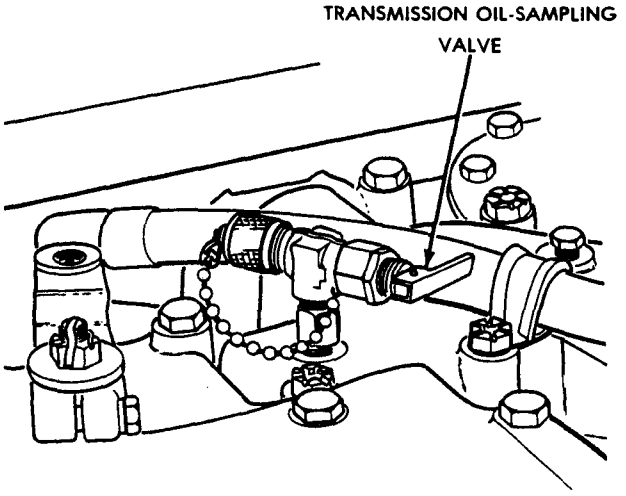
(BA) TRANSMISSION DRAIN



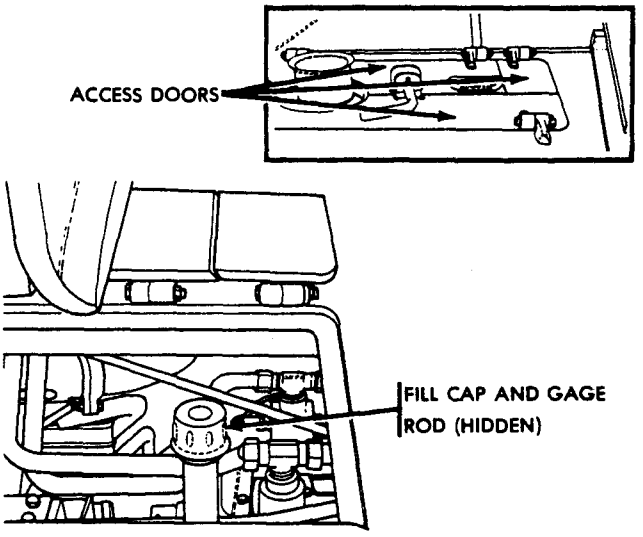
(BB) TRANSMISSION OIL FILTERS (RIGHT AND LEFT)



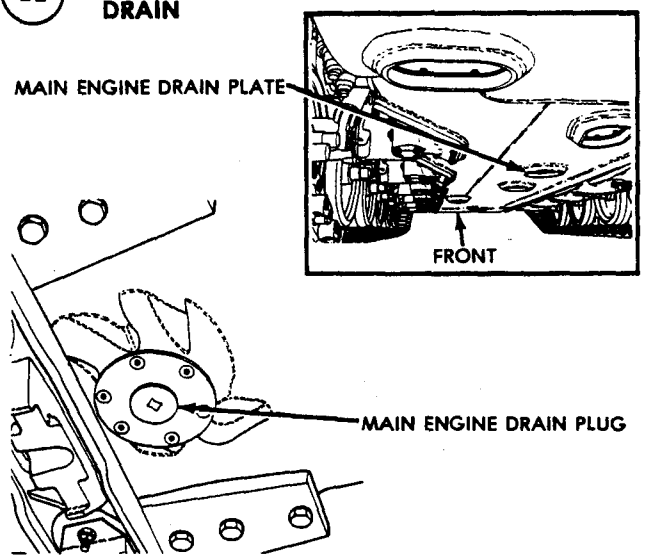
BC TRANSMISSION ON-CONDITION AOAP



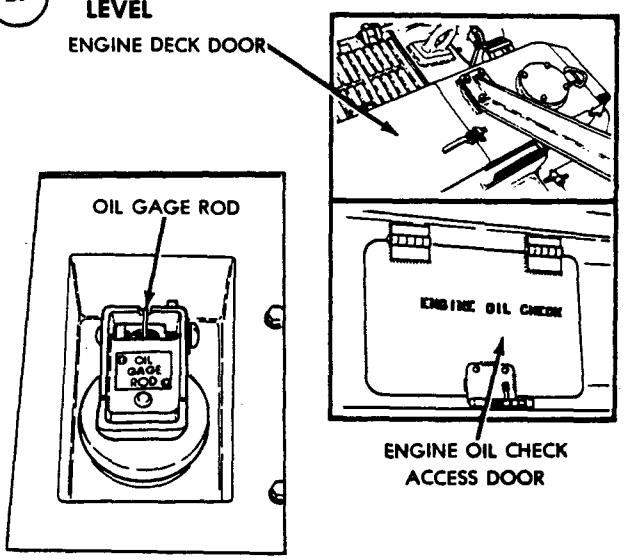
BD TRANSMISSION FILL AND LEVEL



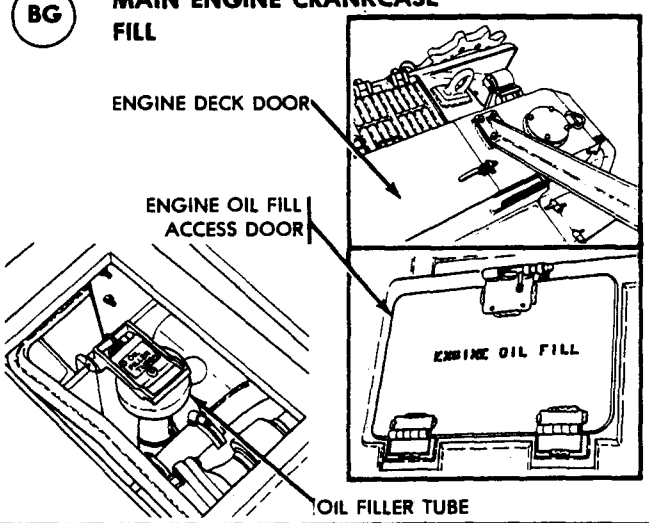
BE MAIN ENGINE CRANKCASE DRAIN



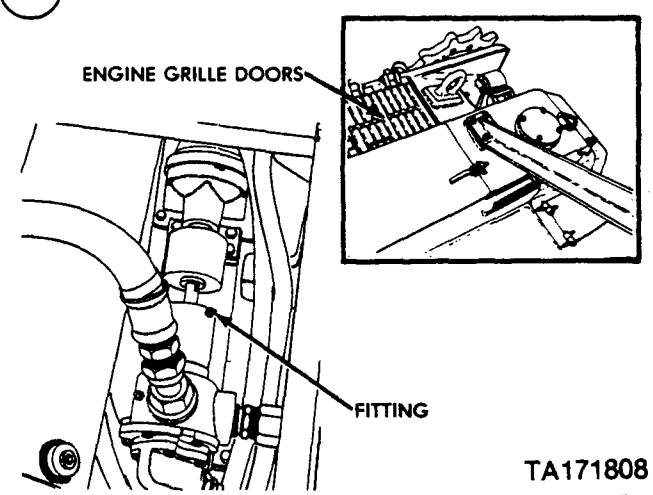
BF MAIN ENGINE CRANKCASE LEVEL



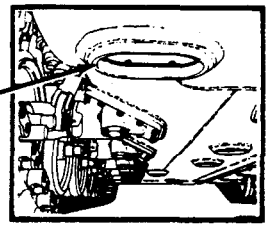
BG MAIN ENGINE CRANKCASE FILL

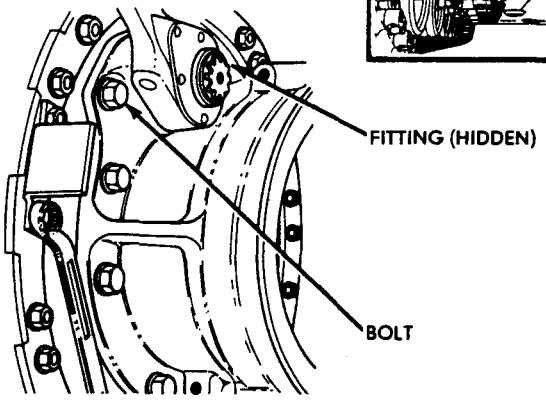


BH FUEL TRANSFER PUMP

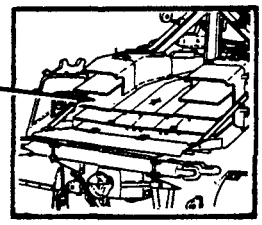


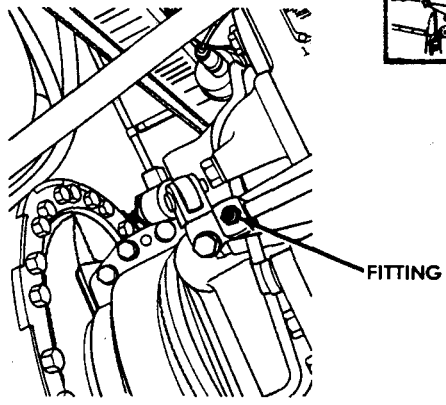
BI **BELL CRANK AND SLACK ADJUSTER LEVER AND OUTPUT REDUCTION DRIVES**



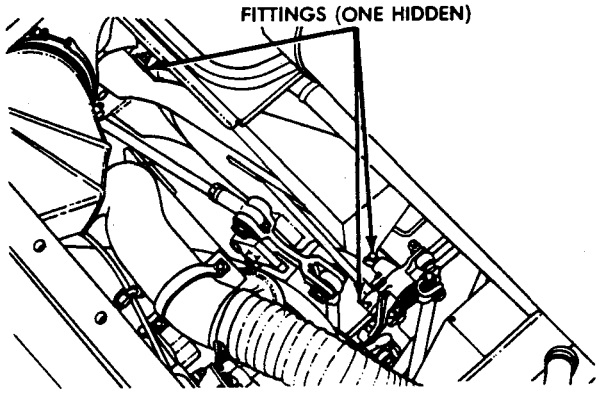


BJ **BRAKE AIR VALVE LINKAGE BRACKET**

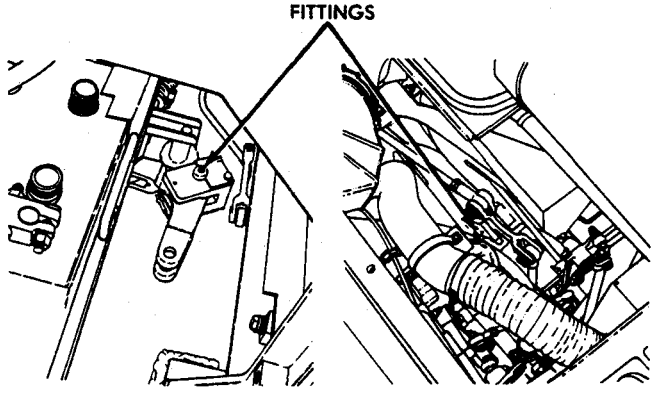




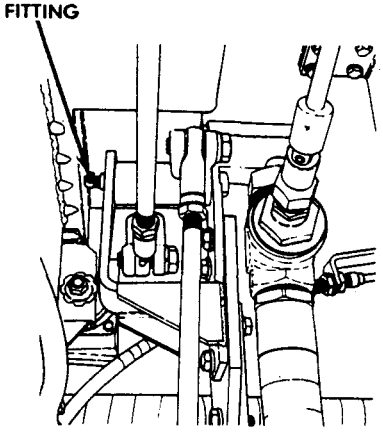
BK **ACCELERATOR LINKAGE BELL CRANK AND PILLOW BLOCK**



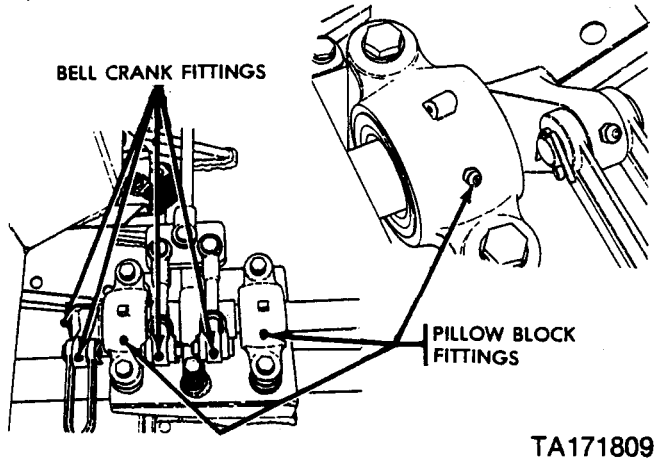
BL **SERVICE BRAKE LINKAGE LEVER**



BM **SERVICE BRAKE LINKAGE SHAFT**

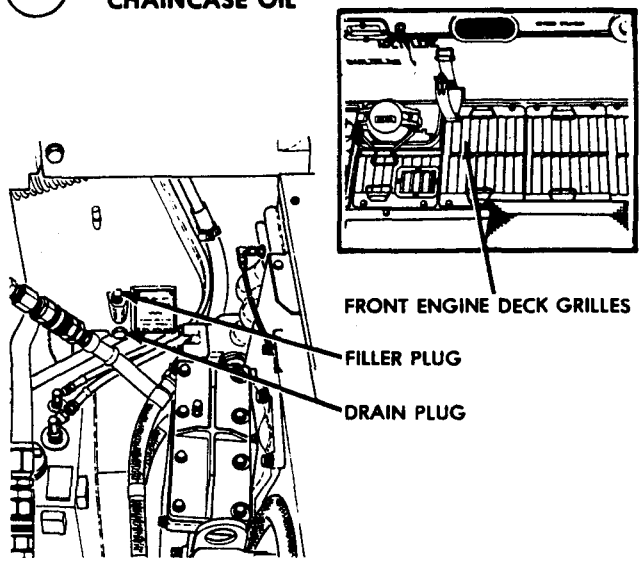


BN **SERVICE BRAKE LINKAGE, BELL CRANK AND PILLOW BLOCK**

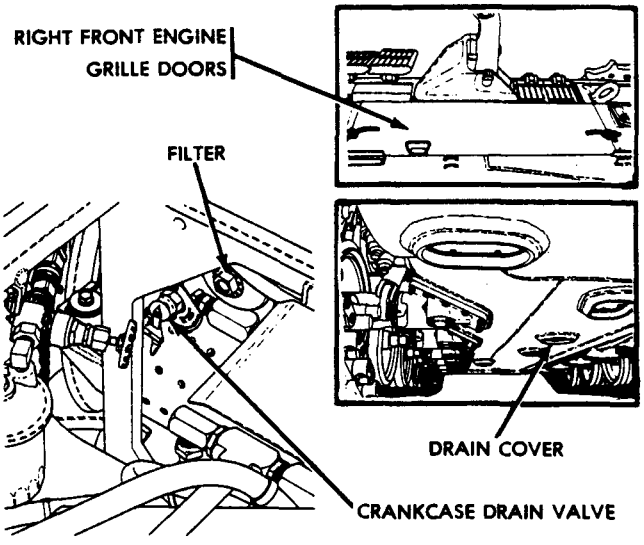


TA171809

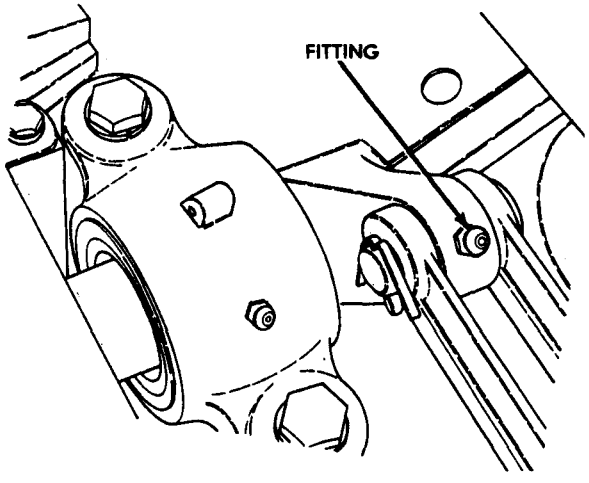
BO AUXILIARY POWER UNIT CHAINCASE OIL



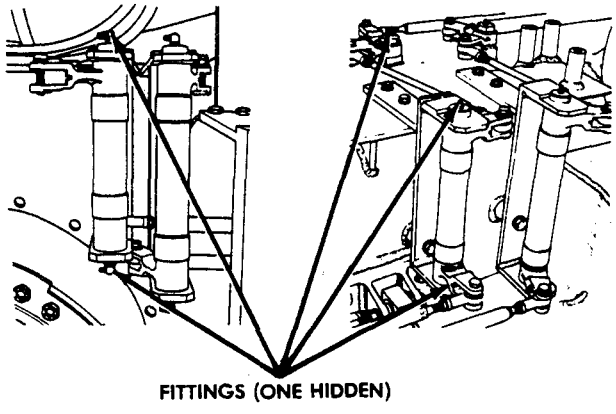
BP AUXILIARY POWER UNIT ENGINE OIL FILTER AND CRANKCASE DRAIN



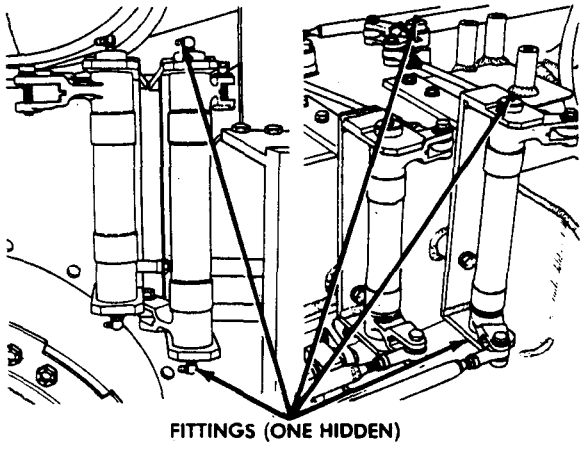
BQ SERVICE BRAKE LINKAGE SHAFT



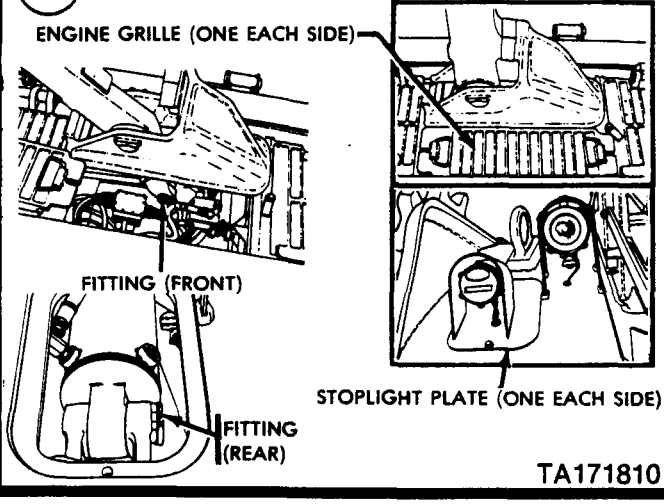
BR STEERING LINKAGE BELL CRANK



BS SHIFTING LINKAGE BELLCRANK

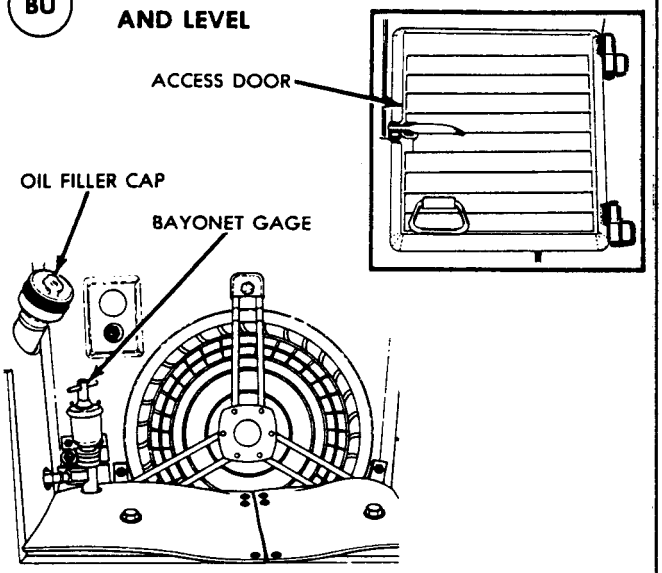


BT BOOM LEVER CYLINDER PINS

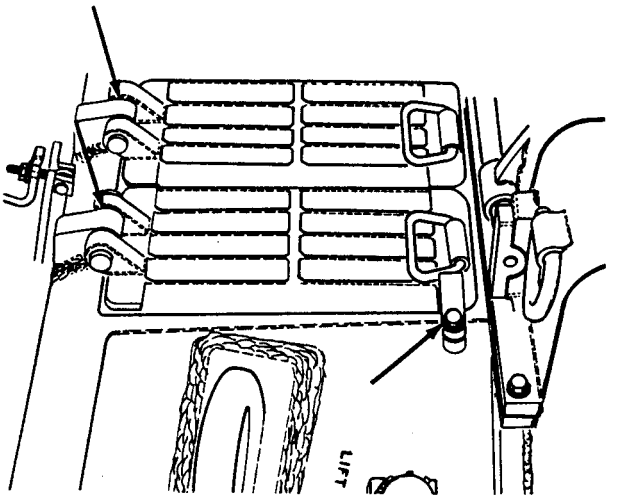


TA171810

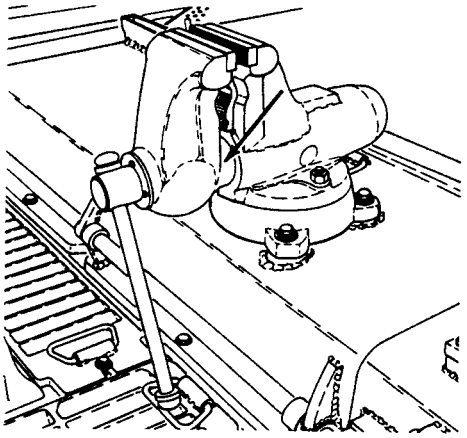
BU AUXILIARY POWER UNIT FILL AND LEVEL



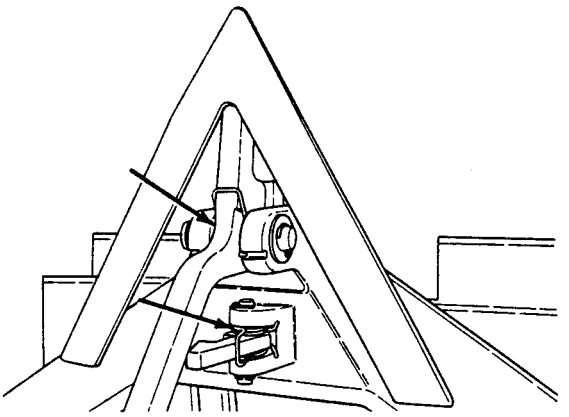
BV GRILLE DOOR HINGES AND RETAINING BOLTS



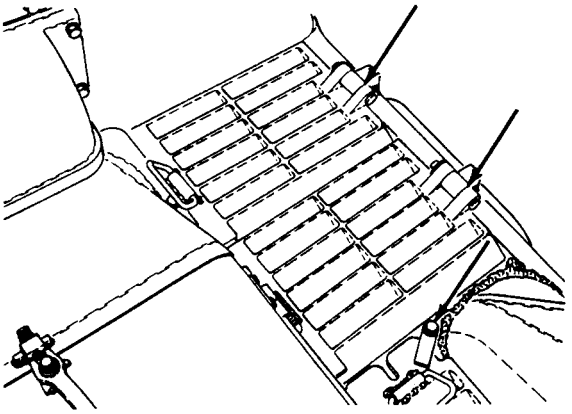
BW VISE



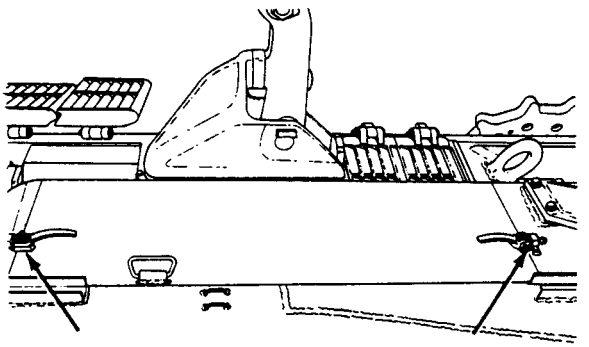
BX BOOM LOCKPIN



BY GRILLE DOOR HINGES AND RETAINING BOLTS

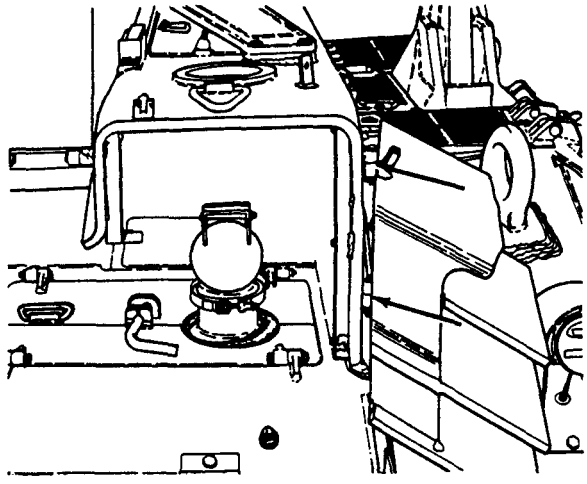


BZ LATCHES

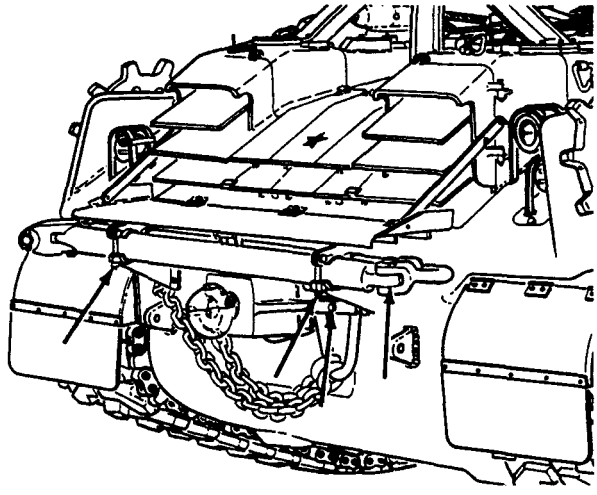


TA171811

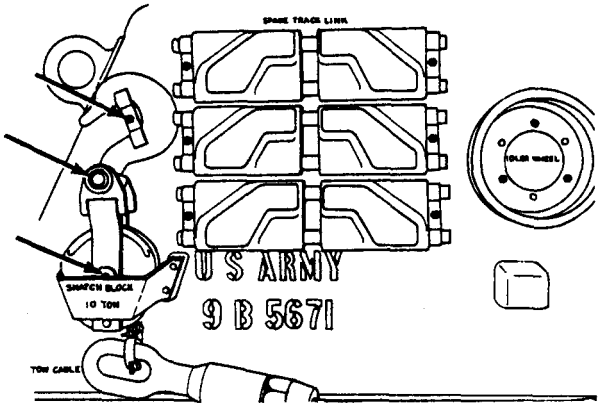
CA **EXHAUST DEFLECTOR PIVOT PIN AND HINGES**



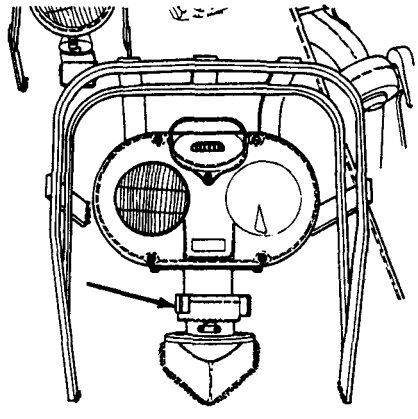
CB **PIVOT PINS**



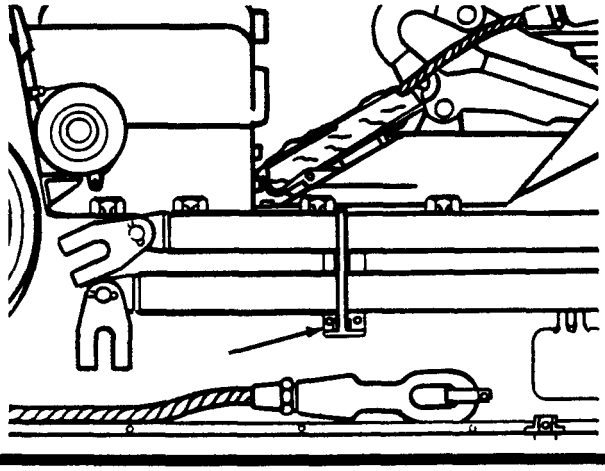
CC **SNATCH BLOCKS**



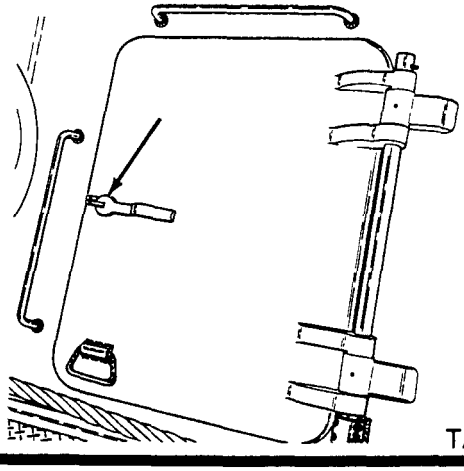
CD **HEADLAMP REMOVAL NUT**



CE **ON-VEHICLE STOWAGE CLAMPS**

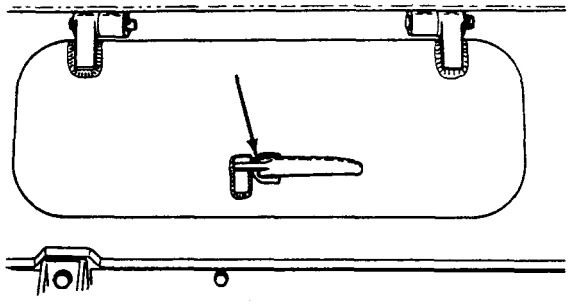


CF **DOOR LATCH**

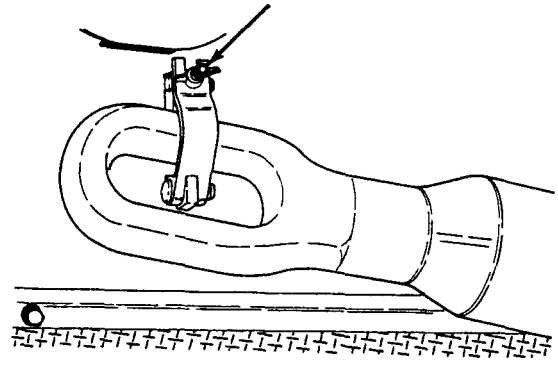


TA171812

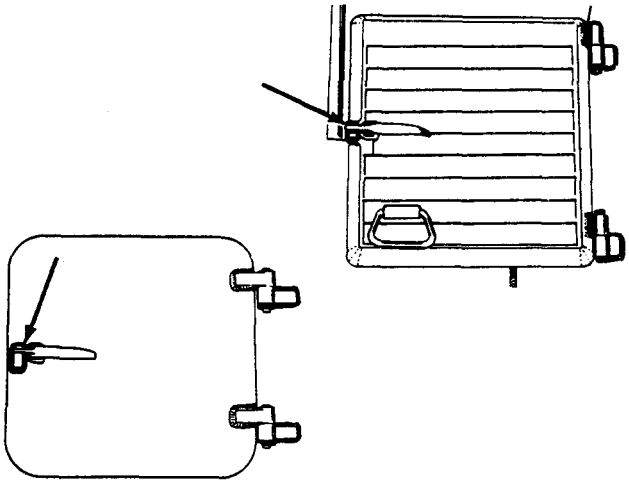
(CG) **DOOR LATCH**



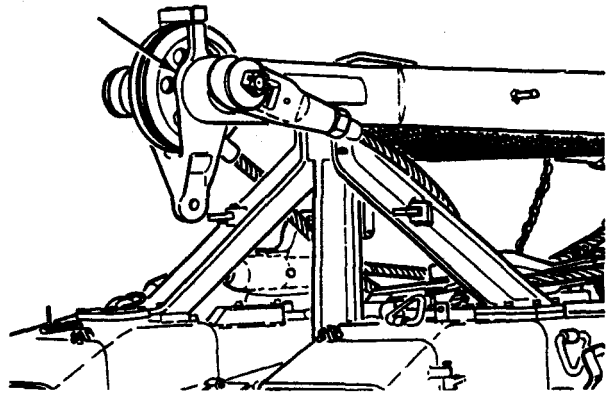
(CH) **ON-VEHICLE STOWAGE CLAMPS**



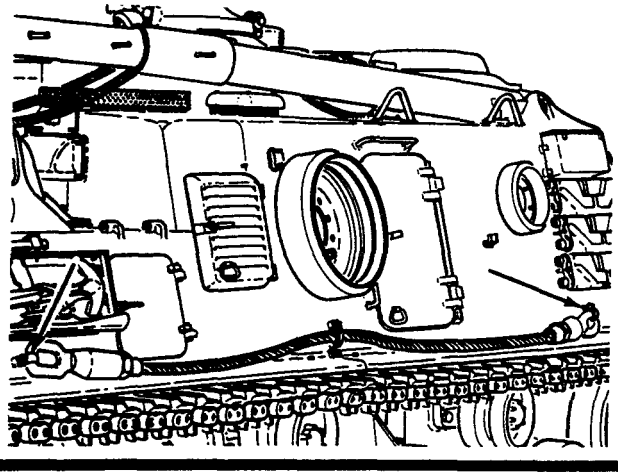
(CI) **DOOR LATCHES**



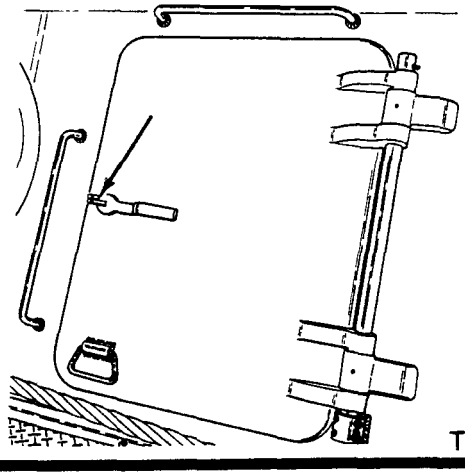
(CJ) **SHEAVE**



(CK) **ON-VEHICLE STOWAGE CLAMPS**

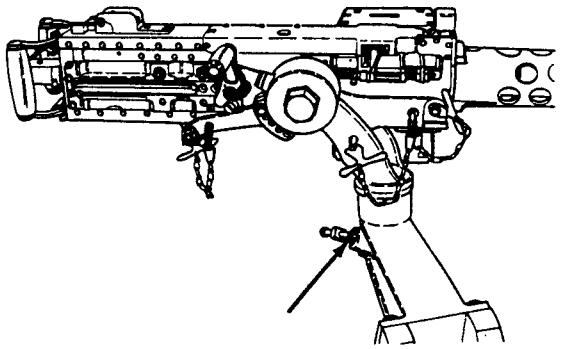


(CL) **DOOR LATCH**

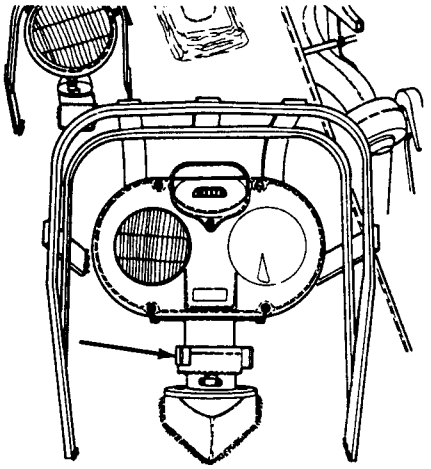


TA171813

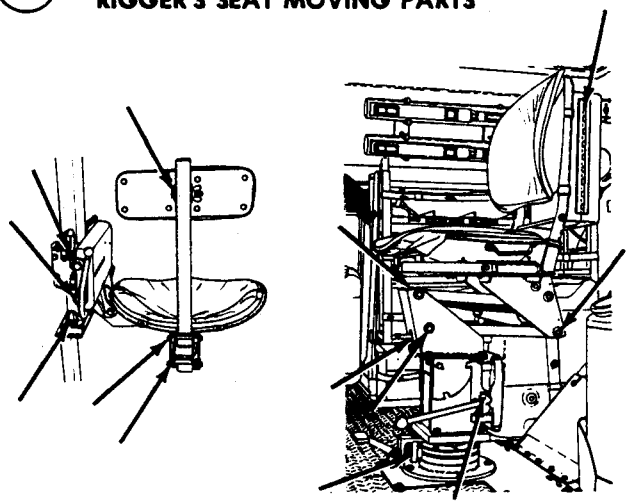
(CM) **CAL. .50 MACHINE GUN MOUNT TRAVERSE LOCK**



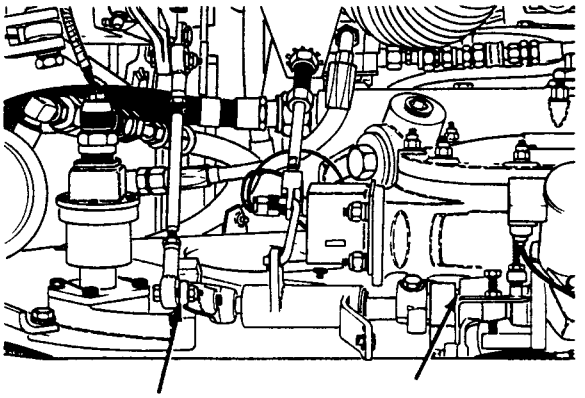
(CN) **HEADLAMP REMOVAL NUT**



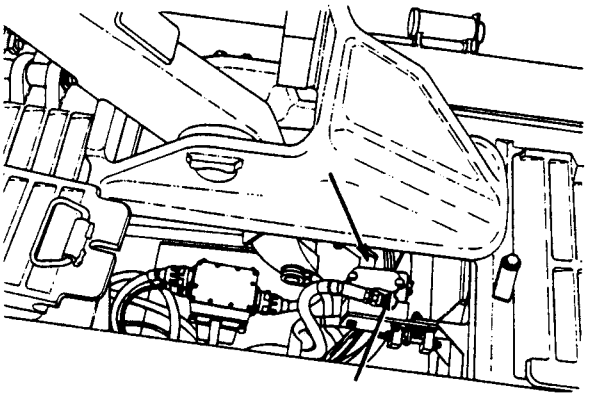
(CO) **DRIVER'S MECHANIC'S RIGGER'S SEAT MOVING PARTS**



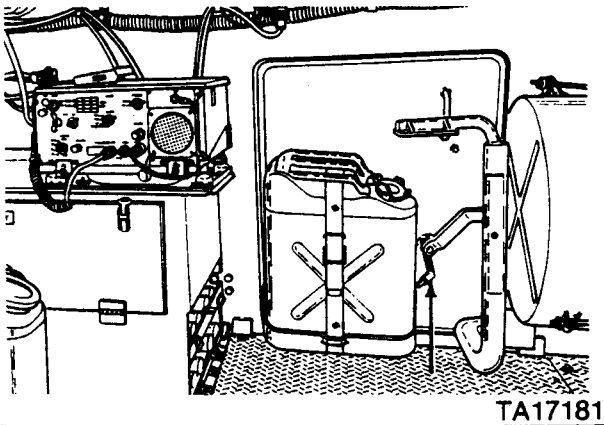
(CP) **MANUAL FUEL SHUTOFF LINKAGE**



(CQ) **BOOM LIMIT VALVE ACTUATING ARM SHAFT**



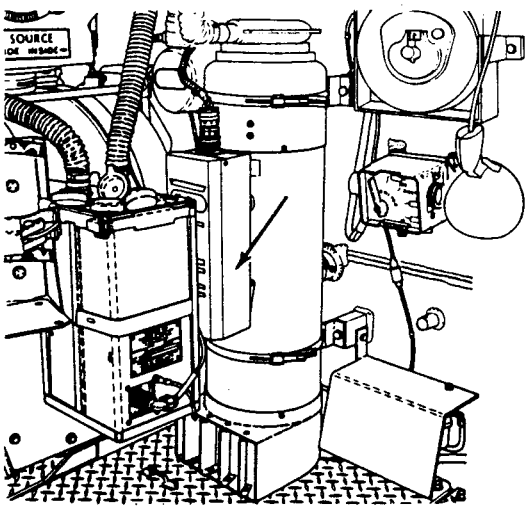
(CR) **SIDE DOOR LOCKPIN**



TA171814

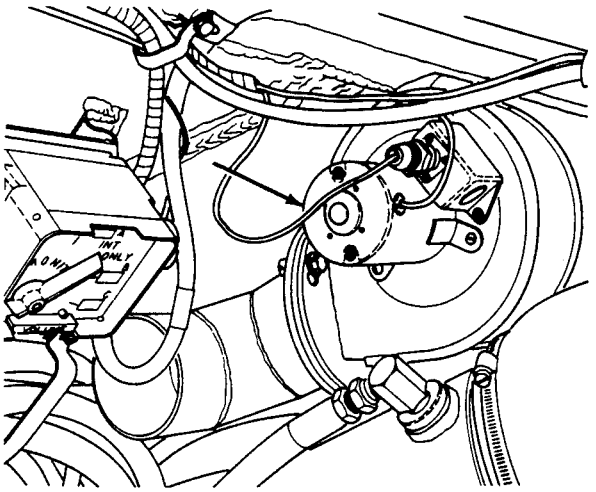
CS

PERSONNEL HEATER MOTOR
DO NOT LUBRICATE



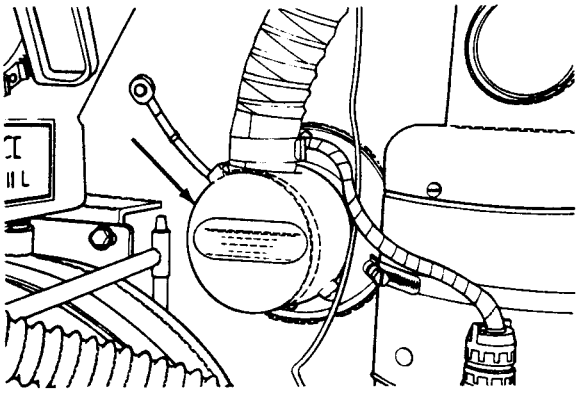
CS

VENTILATING BLOWER MOTOR
DO NOT LUBRICATE



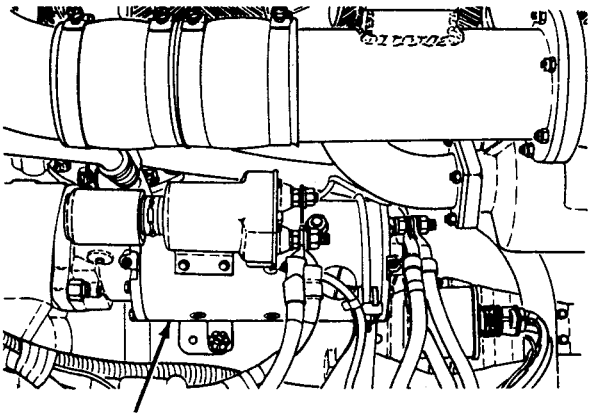
CS

AUXILIARY POWER UNIT
AIR CLEANER
DO NOT LUBRICATE



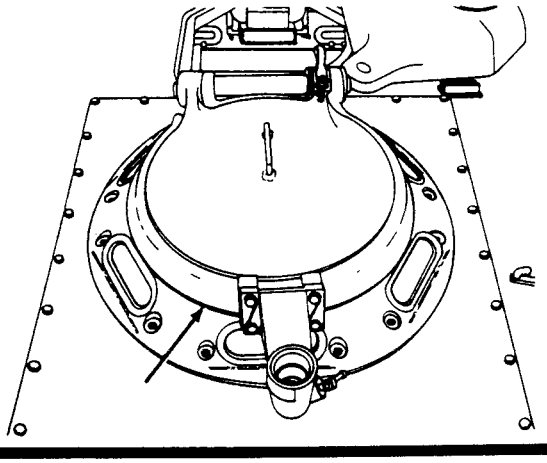
CT

STARTER
LUBRICATE AT ASSEMBLY



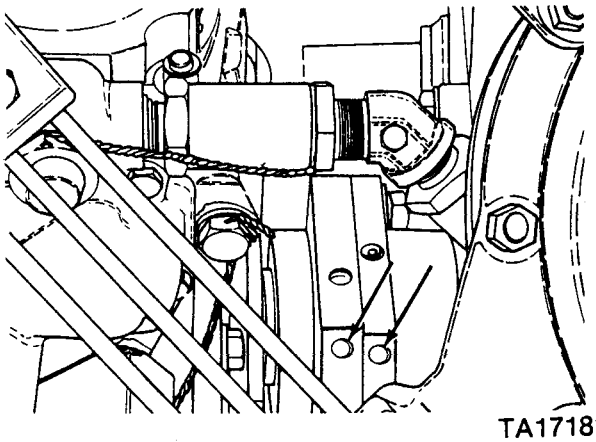
CT

COMMANDER'S CUPOLA
LUBRICATE AT ASSEMBLY



CT

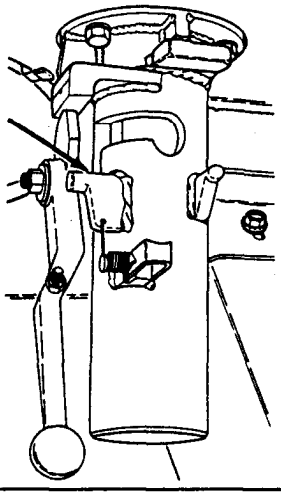
FUEL INJECTOR DRIVE
COUPLING
LUBRICATE AT ASSEMBLY



TA171815

CT

DRIVER AND MECHANIC HATCH MECHANISM LUBRICATE AT ASSEMBLY



TA171816

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F (-23°C). Remove lubricants prescribed in key for temperatures above -10°F (-23°C). Clean parts with drycleaning solvent, type II (SD-2) or equivalent. Relubricate with lubricants specified in the key (card 14) for temperatures of 0°F to -65°F (-18°C to -50°C).

2. COMPENSATING IDLER WHEEL BEARINGS. If vehicle is without grease fittings, remove plug and insert fitting. Lubricate with GAA through fitting. Remove fitting and install plug.

3. SPADE RELEASE MECHANISM. Clean and coat exposed part of spade lockpin with GAA. Use a hand grease gun to pump grease into fitting on right side of pin housing.

4. TRACK ADJUSTING LINK. Lubricate with GAA through fitting.

5. ROADWHEEL ARM BEARINGS. Lubricate with GAA through three fittings on each roadwheel arm.

6. HOIST WINCH CABLE ROLLER BEARINGS. Open hoist winch cable access cover and lubricate with GAA through four fittings Close access cover.

7. BEARING PLATE. Clean and coat plate with GAA.

8. COMPENSATING IDLER WHEEL ARM BEARINGS. Lubricate with GAA through fitting.

9. ROADWHEEL BEARINGS. Lubricate with GAA through six fittings at each side.

10. 0.50 CALIBER MACHINE GUN, FLEXIBLE, M2. Lubricate with GAA (refer to TM 9-1005-213-10).

11. TRACK SUPPORT ROLLERS. Lubricate with GAA through three fittings on each wheel.

12 TOWING PINTLE. Lubricate with GAA through three fittings.

13. MAIN WINCH CABLE ROLLER Lubricate with GAA through two fittings

14. COMMANDER'S CUPOLA HOLD-OPEN LATCH Lubricate with GAA through fitting at end of pivot pin

15. PERSONNEL DOOR TORSION BAR. Lubricate with GAA through four fittings

16. BOOM LEVER PIN. Lubricate with GAA through fitting.

WARNING

Never handle cable with bare hands. Broken or frayed wire strands can cause severe cuts Always wear protective (leather) gloves when handling cable

17. BOOM STAYLINE CABLES. Clean and oil with OE. If cable has not been used within a six-month period, clean entire cable and brush soak it with OE. Wipe cable to remove excess oil. Coat cable with CW.

18. SPADE CYLINDER PINS. Remove eight screws, four flat washers, eight lockwashers, and remove subfloor plates Lubricate with GAA through fitting at front of each cylinder and fitting at rear of each cylinder Install subfloor plates and Install four flat washers, eight lockwashers and eight screws.

19. BOOM CYLINDER PIN Lubricate with GAA through fitting.

20. HOIST WINCH GEAR CASE FILL AND LEVEL. Open access door. Remove bayonet gage and check to see that 011 level IS not below ADD mark on the gage rod. If necessary, add GO (see temperature table on card 14) up to FULL mark. Close access door.

21. BREATHER CAP - HOIST WINCH GEAR CASE. Open access door. Remove breather cap and clean it with dry-cleaning solvent (SD-2). Install breather cap. Close access door.

22. HOIST WINCH GEAR CASE DRAIN.

NOTE

Drain oil from hoist winch gear case when oil is at operating temperature.

Open access door. Place a suitable receiving container of three-gallon capacity under oil outlet. Open hull drain valves; then open hoist winch drain valve. After oil has drained, close hoist winch valve; then close hull drain valve. Refill hoist winch gear case with appropriate weight of oil (see note 20 and table on card 14). Close access door.

WARNING

Never handle cable with bare hands. Broken or frayed wire strands can cause severe cuts. Always wear protective (leather) gloves when handling cable.

23. HOIST WINCH CABLE.

(a) DAILY, if winch has been used, clean cable and oil with OE.

(b) SEMIANNUALLY. Unwind and clean entire cable. Brush soak cable with OE and wipe to remove excess oil. Coat and drain cable with CW before rewinding cable.

24. SPADE LINK PIN. Remove two screws and two lockwashers, and remove subfloor plate. Lubricate with GAA through fittings. Install subfloor plate and install two lockwashers and two screws.

25. BOOM FOOT PIVOT PIN. Raise boom and lubricate with GAA through fitting.

26. BOOM PIVOT PIN. Lubricate with GAA through fitting.

27. MAIN WINCH LEVEL WINDER GUIDE. Lubricate with GAA through two fittings.

28. MAIN WINCH GEAR CASE FILL AND LEVEL. Remove two screws and two lockwashers, and remove subfloor plate. Before operation, remove breather cap and bayonet gage. Check to see that oil level is to the FULL mark on gage. If level is below FULL mark, add oil (see table on card 14 for capacity and type) until oil level rises to FULL mark. Install bayonet gage and cap, Install subfloor plate and install two screws and lockwashers.

29. BREATHER CAP - MAIN WINCH GEAR CASE. Remove two screws and two lockwashers, and remove subfloor plate Remove breather cap and clean it with dry-cleaning solvent (SD-2). Install breather cap. Install subfloor plate, and install two screws and lockwashers.

30. MECHANICAL TRANSMISSION OIL FILTER. Remove four screws, four flat washers and four lockwashers, and remove subfloor plate Remove filter from mechanical transmission. Clean filter with dry-cleaning solvent (SD-2) and install filter. Install subfloor plate, and install four screws, four flat washers and four lockwashers,

31. HYDRAULIC RESERVOIR DRAIN. Open access door. Before draining hydraulic system, warm hydraulic fluid by idling main engine at 675 rpm for 5 minutes with main hydraulic pump engaged and all hydraulic levers in neutral. Shut down engine and open hull drain valves. Open hydraulic reservoir drain valve, After reservoir is drained, close hydraulic reservoir drain valve and hull drain valves. Refill reservoir (see note 39).

NOTE

Each time hydraulic oil is changed, hydraulic reservoir filter should be serviced (see note 40).

Close access door.

32. MECHANICAL TRANSMISSION DRAIN. Remove two screws, two flat washers and two lockwashers, and remove subfloor plate. Drain oil from mechanical transmission semiannually or every 1500 miles. Start main engine to operate transmission until warm. Shut down engine and open hull drain valve. Open mechanical transmission and oil tooter drain valve. After oil has drained, close mechanical transmission and oil cooler drain valve, and close hull drain valves. Fill mechanical transmission (see note 34). Install subfloor plate, two screws, two flat washers and two lockwashers.

33. MECHANICAL TRANSMISSION AND HYDRAULIC PUMP SHAFT COUPLING, Remove two screws, two flat washers and two lockwashers, and remove subfloor plate. Lubricate with GAA through two fittings. Install subfloor plate and two screws, flat washers and lockwashers.

34. MECHANICAL TRANSMISSION FILL AND LEVEL. Remove two screws, two flat washers and two lockwashers, and remove subfloor plate. Before operation, remove cap and bayonet gage. Check that oil level is to the FULL mark on gage. If necessary, fill mechanical transmission with oil (see table on card 14 for capacity and type) until FULL mark is reached. Start main engine to operate mechanical transmission for a few minutes. Stop engine and check oil Ievel again. Add oil, if necessary. Install subfloor plate, two screws, two flat washers and two lockwashers.

35. BREATHER CAP - MECHANICAL TRANSMISSION. Remove two screws, two flat washers and two lockwashers, and remove subfloor plate. Remove breather cap, and clean it with drycleaning solvent (SD-2). Install cap. Install subfloor plate and two straws, two flat washers and two lockwashers.

36. MECHANICAL TRANSMISSION SHAFT UNIVERSAL JOINT. Remove four screws, four flat washers and four lockwashers, and remove subfloor plate, Remove boot and rotate joint as necessary to obtain access to two grease fittings. Lubricate with GAA through fittings. Install boot and subfloor plate, and install four screws, four flat washers and four lockwashers.

WARNING

Never handle cable with bare hands. Broken or frayed wire strands can cause severe cuts. Always wear protective (leather) gloves when handling cable.

37. MAIN WINCH CABLE.

(a) DAILY, if winch has been used, clean cable and oil with OE.

(b) SEMIANNUALLY. Unwind and clean entire cable. Brush soak cable with OE and wipe to remove excess oil. Coat winch drum with CW before rewinding cable. Rewind cable.

38. MAIN WINCH GEAR CASE DRAIN, Open access cover. Operate main winch to warm oil to operating temperature. Shut down all systems, Open hull drain valves and open main winch drain valve. After draining, close main winch drain valve and hull drain valves, Refill main winch (see note 28) with oil (see table on card 14 for capacity and type). Close access cover.

39. HYDRAULIC RESERVOIR FILL AND LEVEL. Remove two screws, two flat washers and two lockwashers, and remove subfloor plate. Before operation, remove bayonet gage and check that oil level in the reservoir measures up to the FULL mark, If necessary, remove fill cap and add oil (see table on card 14 for capacity and type) until oil level reaches FULL on bayonet gage. Install bayonet gage and fill cap. Operate hydraulic system until hydraulic oil reaches operating temperature. Shut down all systems and check oil level again. Add oil, if necessary Install subfloor plate and install two screws, two flat washers and two lockwashers.

40. HYDRAULIC RESERVOIR FILTER. Remove four screws, four flat washers and four lockwashers, and remove subfloor plate under rigger's seat. Remove eight screws in filter cover, and remove cover. Remove filter element and clean it with &y-cleaning solvent (SD-2); then dry with low pressure compressed air. Remove preformed gasket from between cover and filter element. Discard used gasket and install new gasket. Install filter element, filter cover and eight attaching screws. Operate hydraulic system and check for leaks. Shut down system and install subfloor plate, four screws, four flat washers and four lockwashers,

41. STEERING CONTROL ASSEMBLY, Lubricate with GAA through two fittings.

42. STEERING LINKAGE. Lubricate with GAA through two fittings,

43. STEERING LINKAGE BELL CRANK ASSEMBLY, Lubricate with GAA through fitting.

44. SERVICE BRAKE PEDAL. Lubricate with GAA through fitting.

45. SERVICE BRAKE LINKAGE. Lubricate with GAA through fitting.

46. SERVICE BRAKE LINKAGE PILLOW BLOCK. Lubricate with GAA through three fittings.

47. SERVICE BRAKE SHAFT. Lubricate with GAA through two fittings.

48. ACCELERATOR PEDAL ASSEMBLY, Lubricate with GAA through fitting.

49. SHIFTING CONTROL ASSEMBLY. Lubricate with GAA through two fittings.

50. SHIFTING LINKAGE PILLOW BLOCK. Lubricate with GAA through three fittings.

51. ACCELERATOR LINKAGE PILLOW BLOCK. Lubricate with GAA through two fittings.

52. MECHANICAL TRANSMISSION SHAFT UNIVERSAL JOINT, Remove front engine deck grille and lubricate universal joint with GAA through fitting. Install front engine deck grille,

53. MAIN ENGINE OIL FILTER. Remove front engine deck grille, Remove oil filter cover and remove elements, Discard removed elements and install new elements. Install oil filter cover and front

engine deck grille.

54. ARMY OIL ANALYSIS PROGRAM (AOAP) - MAIN ENGINE. For active units, obtain oil samples from engine every 25 hours of operation or 30 days (whichever comes first). Send these samples to nearest AOAP laboratory. Refer to TB 43-0210 for sampling instructions. If or when AOAP laboratory support is unavailable, hard-time intervals will apply.

55. TRANSMISSION DRAIN.

NOTE

- Drain oil only when hot after operation.
- New transmissions are filled with preservative oil which should be drained after 100 miles (or 10 hours) of operation. Refill with proper grade of lubricant (see table on card 14 and note 58). After 500 miles, again drain and fill.
- Periodically, a sample of oil shall be sent to the AOAP laboratory for analysis. Oil is to be drained at intervals determined by oil analysis. See note 54 and TB 43-0210 for details.
- When AOAP laboratory support is not available, drain and refill transmission oil at 1500 miles or semiannually.
- Coordinate any seasonal change of oil weight with this service.

Remove six bolts and six lockwashers that secure transmission drain plate to bottom of hull. Remove drain plate and gasket. Remove drain plug to drain transmission.

NOTE

If transmission is to be flushed, drain output reduction drives in accordance with note 63.

Clean drain plug with dry-cleaning solvent (SD-2). Install plug after transmission is fully drained. Fill transmission with lubricant (see note 58). Check that no 011 seeps around drain plug, and install gasket, drain plate and SIX attaching bolts and lockwashers

56. TRANSMISSION OIL FILTERS. Open rear engine deck grille exhaust deflector and grille. Remove left and right cover plates and remove four elements (two under each plate). Clean elements and covers with dry-cleaning solvent (SD-2). Install elements and install left and right covers. Close rear engine deck grille exhaust deflector and grille.

57. ARMY OIL ANALYSIS PROGRAM (AOAP) - TRANSMISSION. For active units, obtain oil samples from transmission every 25 hours of operation or 30 days (whichever comes first). Send these samples to the nearest AOAP laboratory. Refer to TB 43-0210 for sampling instructions, If or when AOAP laboratory support is unavailable, hard-time intervals will apply.

58. TRANSMISSION FILL AND LEVEL. Open rear engine deck grille exhaust deflector and grille. Remove gage rod (dipstick) from transmission tube. Wipe rod, then reinsert it. Remove rod again. If oil shows on oil level gage, it is safe to start engine. If oil does not show on gage rod, add oil until visible on rod. Set vehicle parking brake. With shift selector set to neutral range, start engine. Allow engine to run at 1200 to 1600 rpm for 2 to 3 minutes.

WARNING

Transmission may be hot after operation. Use caution when reaching into engine/transmission compartment.

Stop engine. Wait 3 to 5 minutes; then check oil level again. Add or drain oil until oil level measures between ADD and FULL marks (see table on card 14 for capacity).

NOTE

If vehicle has been operating for a period of time sufficient to warm oil to 180°F to 200° F, oil level should be at, or above, FULL mark. This is a normal condition and is due to expansion of the oil.

Install oil gage rod and close rear engine deck grille exhaust deflector and grille.

59. MAIN ENGINE CRANKCASE DRAIN.

NOTE

- Drain oil only when hot after operation.
- Periodically, a sample of oil shall be sent to AOAP laboratory for analysis. Oil is to be drained at intervals determined by oil analysis. See note 54 and TB 43-0210 for details
- When AOAP laboratory support is not available, drain and refill engine oil at 1500 miles, 150 hours or semiannually if OE/HDO is used (750 miles, 75 hours if OEA is used).
- Coordinate any seasonal change of oil weight with this service.

Park vehicle on level ground. Remove oil cooler vent capscrew and open oil filter drain valve. Remove six screws and six lockwashers that secure engine drain plate to bottom of hull. Remove drain plate and gasket. Remove drain plug to drain engine. Clean drain plug with dry-cleaning solvent (SD-2). Install plug after engine is fully drained. Install oil cooler vent capscrew and close oil filter drain valve.

CAUTION

Before refilling, replace oil filter elements (note 53).

Refill crankcase (see note 60). Check that no oil seeps around drain plug. Install gasket, engine drain plate and six attaching bolts and lockwashers.

60. MAIN ENGINE CRANKCASE FILL AND LEVEL. Raise engine deck door and access doors. Before starting engine, check OIL GAGE ROD (dipstick) to see that oil level is up to or above the ENGINE STOPPED, SAFE TO START mark. If necessary, add oil (see table on card 14 for type) to bring level up to or above ENGINE STOPPED, SAFE TO START mark before starting engine. Set parking brakes, and with selector lever in PARK position, start engine. Run engine 5 or 6 minutes at 1000 to 2000 rpm to warm engine oil to operating temperature. Reduce engine idle to 675 to 725 rpm. Add oil to bring level up to FULL mark on gage.

61. FUEL TRANSFER PUMP. Raise engine grille doors and lubricate with GAA through fitting.

62. BRAKE SLACK ADJUSTER LEVER. Remove six screws and six lockwashers which secure brake adjustment access cover to bottom of hull. Remove access cover and gasket. Lubricate brake slack adjuster lever with GAA through fitting. Install gasket, access cover and six screws and lockwashers. Repeat procedure for other side of vehicle.

63. OUTPUT REDUCTION DRIVES—DRAIN.

NOTE

Each time transmission is drained, approximately five gallons of oil remain in each output reduction assembly. Drain this oil each time transmission is flushed.

Remove six screws and six lockwashers which secure brake adjustment access cover to bottom of hull. Remove access cover and gasket. Remove bolt located at bottom centerline of saddle mounting face (this is the same bolt that secures end of brake stop to assembly). After oil has drained, install bolt. Install gasket, access cover, and six screws and lockwashers. Repeat procedure for other side of vehicle.

64. BRAKE AIR VALVE LINKAGE BRACKET. Open rear engine deck grille exhaust deflector and grille. Lubricate linkage with GAA through fitting. Close rear engine deck grille exhaust deflector and grille.

65. ACCELERATOR LINKAGE BELL CRANK AND PILLOW BLOCK. Each time engine is removed, lubricate with GAA through bell crank fitting and two pillow block fittings.

66. SERVICE BRAKE LINKAGE LEVER. Each time main engine is removed, lubricate lever with GAA through two fittings.

67. SERVICE BRAKE LINKAGE SHAFT. Each time main engine is removed, lubricate shaft with GAA through fitting.

68. SERVICE BRAKE LINKAGE BELL CRANK AND PILLOW BLOCKS. Each time main engine is removed, lubricate bell cranks through four fittings and lubricate pillow blocks through three fittings. Use GAA as lubricant.

69 AUXILIARY POWER UNIT (APU) CHAINCASE DRAIN.

WARNING

APU engine is hot after operation. Use caution when reaching into the APU compartment.

NOTE

- Drain oil only when hot after operation.
- Coordinate any seasonal change of oil weight with this service.

Remove front engine deck grilles. Position container (1-quart minimum capacity) under chaincase drain plug to receive drained oil. Remove drain plug and clean it with dry-cleaning solvent (SD-2). After oil has drained, install drain plug. Fill chaincase in accordance with note 70. Install front engine deck grilles.

70 AUXILIARY POWER UNIT (APU) CHAINCASE FILL AND LEVEL

WARNING

APU engine is hot after operation. Use caution when reaching into the APU compartment. Do not check level of the oil until engine is cool.

Remove front engine deck grille. Remove filler plug. Check that oil level at fill hole reaches bottom of threads. If necessary, add oil to chaincase through fill hole until oil level reaches threads (see table on card 14 for required oil type and capacity). Install filler plug and install front engine deck grille.

71 AUXILIARY POWER UNIT (APU) ENGINE OIL FILTER.

WARNING

APU engine is hot after operation. Use caution when reaching into APU compartment.

NOTE

Oil filter should be changed each time the APU engine crankcase oil is changed. Filter should be replaced more frequently when operating in extremely dusty environments.

Open right front engine grille door. Remove oil filter with a wrench and discard filter. Lightly lubricate gasket of replacement filter and tighten it until gasket contacts base, then tighten filter an additional one-half turn.

NOTE

Do not overtighten filter.

Start APU engine (TM 9-2350-256-10) and check for oil leaks around filter gasket. Tighten filter as necessary if leakage occurs. Close right front engine grille door.

72. SERVICE BRAKE LINKAGE SHAFT. Each time main engine is removed, lubricate with GAA through fitting.

73. STEERING LINKAGE BELL CRANK. Each time main engine IS removed, lubricate with GAA through five fittings.

74. SHIFTING LINKAGE BELL CRANK. Each time main engine is removed, lubricate with GAA through five fittings.

75. REAR BOOM LEVER CYLINDER PINS. Open engine grilles and remove stoplight plate. Lubricate with GAA through front fittings (accessible through grille) and rear fittings (through stoplight access)

76. AUXILIARY POWER UNIT (APU) CRANKCASE DRAIN.

WARNING

APU engine IS hot after operation. Use caution when reaching into APU compartment

NOTE

- Drain oil only when hot after operation
- Coordinate any seasonal change of 011 weight with this servce.

Remove the SIX screws and SIX lockwashers which secure hull draln cover to bottom of hull Remove dram plate. Open right front engine grille door Open APU crankcase drain valve When oil has drained from crankcase, close drain valve Close right front engine grille door, Refill engine crankcase with proper grade of oil (see note 77 and table on card 14). Start APU engine (TM 9-2350 -256-10) and check for 011 leaks past drain valve (indicated by oil dripping from drain hose) If oil leak IS present. double check that drain valve handle is closed securely Notify organizational maintenance if leakage persists. Install engine drain cover at bottom of hull and Install six lockwashers and screws

77. AUXILIARY POWER UNIT (APU) CRANKCASE FILL AND LEVEL

WARNING

APU engine IS hot after operation Use caution when reaching into the APU compartment

Open side APU access door. Remove bayonet gage and wipe it with a clean rag, Insert bayonet gage and remove It again. Observe the oil level indicated on the bayonet gage. If 011 level reads below full (F) mark, remove oil filler cap and add oil until level rises to full (F) mark (see key on card 14 for required oil type) Install bayonet gage and filler cap, and close side APU access door.

78. LUBRICATION AFTER FORDING OPERATIONS As soon as possible after any fording operation in water of 12 inches or more, lubricate all chassis points to cleanse bearings of water or grit. Also lubricate any other points requiring maintenance after fording If vehicle has been in deep water for a considerable length of time, or was submerged beyond Its fording capabllties, the following precautions must be taken as soon as practicable to avoid damage to engine and other vehicle components:

(a) Perform a complete lubrication service.

(b) Check auxiliary power unit, main engine and transmission for presence of water or sludge in oil. If found, drain and flush transmission with PE-1 Lubricating Oil, Internal Combustion engine, and drain and flush engines with OE-30 Lubricating Oil, Internal Combustion engine. If PE-1 is not available, flush transmission with OE-10, Lubricating Oil, Internal Combustion engine. Before refilling with clean oil, remove, clean and install transmission oil filters (see note 56). Replace engine oil filter elements (see note 53).

(c) Check lubricant in hydraulic reservoir and winch gear cases for evidence of water or sludge contamination. If there is evidence of contamination, drain and refill with correct lubricant.

79. OIL CAN POINTS. Monthly lubricate all pivot points, headlamp removal nut, 0.50-caliber machine gun mount traverse lock, side door Iockpin, seat moving parts, engine throttle control linkage latches, grille door hinges and retaining bolts, pivot pins, boom Iockpin, on-vehicle stowage clamps, vise turn screw, exhaust deflector pivot pin and hinges, snatch blocks, sheaves, and boom limit valve actuating arm shaft. Use Lubricating Oil, General Purpose, PL-S.

80. DO NOT LUBRICATE personnel heater motor, ventilating blower motor, auxiliary power unit air cleaner (see view CS).

81. LUBRICATE AT ASSEMBLY BY FIELD OR DEPOT MAINTENANCE UNITS starter, commander's cupola, fuel injector drive coupling, and driver's, rigger's and mechanic's hatch mechanisms (see view CT).

82. Copy of this lubrication order will remain with the equipment at all times; instructions contained herein are mandatory and supersede all conflicting lubrication instructions dated prior to this LO.

By Order of the Secretory of the Army:

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

MILDRED E. HEDBERG
Brigadier General, United States Army
The Adjutant General

Distrlbutlon shall be in accordance with DA Form 12-37 requirements for Recovery Vehicle, M88A1, Medium.

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THE METRIC SYSTEM AND EQUIVALENTS

NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

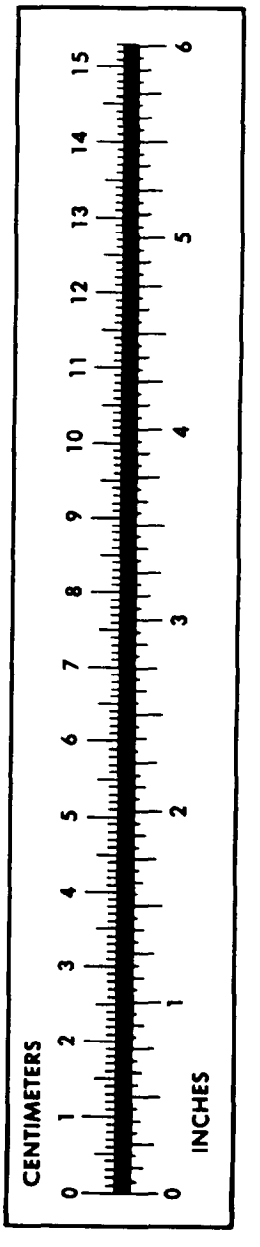
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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