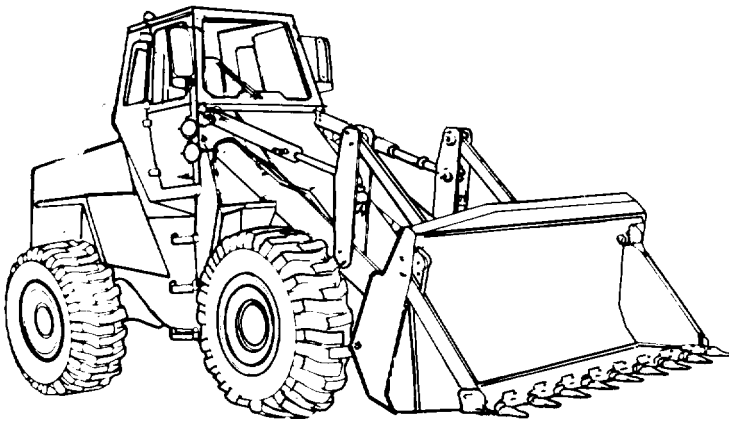
TM 5-3805-262-10

OPERATOR'S MANUAL



LOADER, SCOOP TYPE, DED
4x4, ARTICULATED FRAME STEER,
2-1/2 CUBIC YARD
(J.I.CASE MODEL MW24C)
(NSN 3805-01-150-4814)

HEADQUARTERS, DEPARTMENT OF THE ARMY

01 September 1987

WARNING

TOXIC/FLAMMABLE

Dry cleaning solvent P-D-680 used to clean parts is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes and clothes and don't breathe vapors. Do not use near open flame or excessive heat and don't smoke when using it. Failure to do so could cause serious injury. If you become dizzy while using cleaning solvent, get fresh air and medical attention immediately. If contact with skin or clothes is made, flush with large amounts of water. If contact with eyes is made, wash eyes with water and get medical aid immediately.

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellent. Don't heat container and don-t discharge starting fluid in confined areas or near open flame. Don't discard used container in an open flame. To do any of the above will cause an explosion. Don't breathe ether vapor or allow ether to come in contact with your skin. To do so will cause severe injury or death.

WARNING

HIGH VELOCITY AIR

Compressed air used for cleaning purpose will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to do so could cause serious injury to eyes and possible blindness. If you hurt your eyes or if a foreign object is blown into your eyes, seek medical attention immediately.

WARNING

FALLING EQUIPMENT

Be careful when inspecting blade cutting edges not to place any part of your body between clamshell and blade. To do so could cause serious injury if clamshell suddenly closes crushing you.

When using chain hoist to remove or install parts, be sure chain hoist is securely fastened to the part and that all slack in chain is taken up. Failure to do so could cause serious injury due to the part falling on you. If you are injured by falling equipment, obtain medical aid immediately.

WARNING

TOWING THE LOADER

Don't allow personnel in or near the loader when it is being towed with the engine stopped. To do so could cause serious injury or death.

WARNING

EXHAUST GASES CAN BE DEADLY

Exhaust gases can produce symptoms of headache, dizziness, loss of muscular control, or coma. Permanent brain damage or death can result from severe exposure. You can insure your safety by following these rules: DON'T operate the heater or engine in an enclosed area unless it is properly ventilated. DON'T drive with any of the loader's inspection plates, cover plates, or the hood off unless necessary for maintenance. If you notice exhaust odors or exposure symptoms, IMMEDIATELY VENTILATE the area.

If symptoms persist, remove the affected people and treat them:

- Expose them to fresh air.
- If necessary, give artificial respiration.
- Keep them warm.

DON'T permit physical exercise.

Refer to FM 21-11, First Aid for Soldiers, for first aid treatment of injured personnel.

WARNING

ROTATING FAN BLADES

Before adjusting position of defogger fan, be sure it is not operating. Failure to do so could cause serious injury to fingers or hand by rotating fan blade. If you injure your fingers or hand, obtain medical aid immediately.

WARNING

SAFETY HAZARD

When upper door is opened, be sure you latch it to side of cab. Failure to do so will allow door to swing back and forth causing glass to break and injuring you.

WARNING

OIL UNDER PRESSURE

Hydraulic reservoir is pressurized. Shut off engine and operate hydraulic control valves before removing hydraulic reservoir fill cap. Failure to do so could cause serious injury or death.

WARNING

NOISE HAZARD

Noise level exceeds 85 dB when operating loader with cab windows open. All personnel shall wear a hearing protective device when operating loader with windows open to prevent hearing loss.

WARNING

EXPLOSIVE HAZARD

Don't use jumper cables connected to battery terminals to start engine or charge batteries. Always use slave receptacle. Failure to do so could cause serious injury due to batteries exploding caused by improper connection of jumper cables to battery terminals.

WARNING

STEAM UNDER PRESSURE

Remove radiator cap slowly to relieve pressure before completely removing when engine is hot. Failure to do so could cause severe burns due to hot steam scalding you. If you are scalded by hot steam, seek medical aid immediately.

WARNING

Before starting engine, check and be sure that transport/service link is in released position. Failure to do so will cause loss of steering control which may result in serious injury or death and extensive property damage.

WARNING

Always use hand rails and steps when you mount or dismount loader. Don't use steering wheel or controls as a hand rail. Any other method of mounting or dismounting loader could make you slip and fall causing serious injury to yourself.

WARNING

Before starting engine, fasten your seat belt secureley and be sure parking brake is applied, transmission control lever is in neutral (N) position, and both cab doors are closed. Failure to do so could cause serious injury or death due to an accident.

WARNING

Operating on a hillside can be dangerous. Rain, snow, loose gravel, soft grounds etc., change ground conditions. Only you, the operator, can determine if your machine can be safely operated on any hillside or ramp.

WARNING

Before you operate on any hillside or ramp, always select low range and never coast down hill with transmission in neutral (N). To do so could cause you to lose control of loader and roll over causing loss of life or serious injury and extensive property damage.

WARNING

Keep loader bucket as low as possible. This low position gives better balance and permits you to see ground condition more clearly. If bucket is full and you move loader over rough terrain or terrain that can cause loader to slide, always operate loader at slow speed. Failure to do so could cause you to lose control over loader causing serious injury or loss of life and extensive property damage.

Before moving loader up ramps, remove all ice, oil or grease from ramp to prevent loader from falling and causing death or serious injury and extensive damage to loader. Tell personnel to move away from loader.

WARNING

Don't allow personnel in or near the loader when it is being towed with the engine stopped. To do so could cause serious injury or death.

WARNING

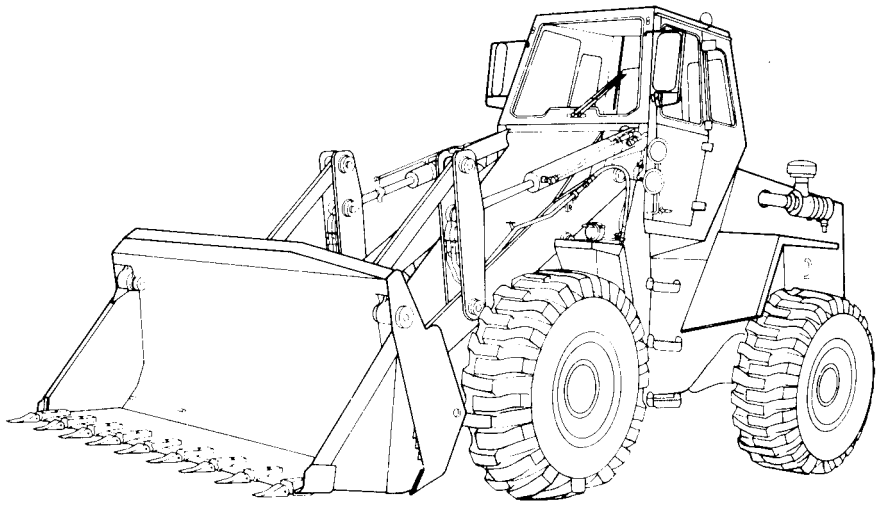
Diesel fuel is highly combustible. Do not smoke or allow open flames or sparks into the area. Death or severe injury may result if personnel fail to observe this precaution. If you are burned, obtain medical aid immediately.

WARNING

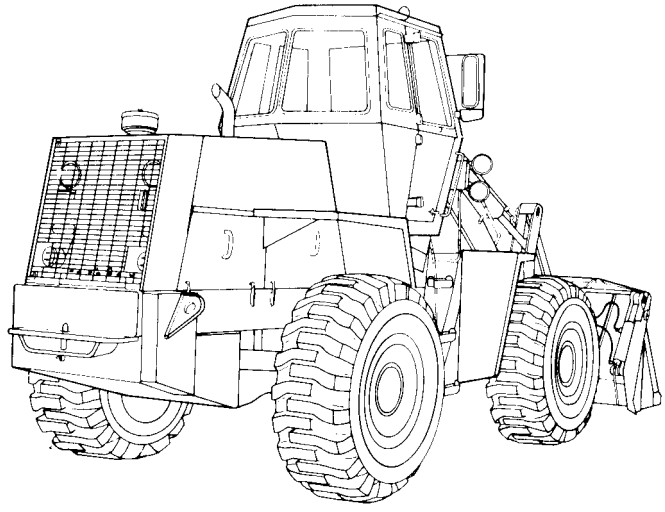
Before performing any loader maintenance that requires servicing in area between front and rear chassis, be sure that transport/service link is engaged. Failure to do so could cause serious injury or death due to chassis pivoting and crushing you when you are working in area between front and rear chassis.

WARNING

Don't depress button in center of steering wheel while operating loader. Button is not a horn button. Depressing this button causes steering wheel to collapse for shipment purposes. If you depress this button while operating loader, steering wheel will collapse. Your fingers could be crushed between steering wheel and windshield wiper motor bracket causing painful injury to fingers.



Left Front View



Right Rear View

MW24C Loader

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TECHNICAL MANUAL

Change
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 19 December 2008

OPERATOR'S MANUAL

FOR

LOADER, SCOOP TYPE, DED,
4 x 4, ARTICULATED FRAME STEER,
2-1/2 CUBIC YARD
(J.I. CASE MODEL MW24C)
(NSN 3805-01-150-4814)

TM 5-3805-262-10, 01 September 1987, is changed as follows:

1. Remove old pages and insert new pages.
2. New or changed material is indicated by a vertical bar in the margin of the page.

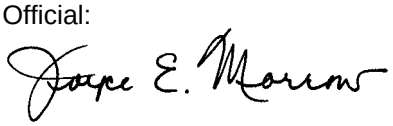
Remove Pages	Insert Pages
i/ii	A/(B blank) I/II
1-15 and 1-16	1-15 and 1-16
DA Form 2028 Sample	DA Form 2028 Sample
DA Form 2028 (3 copies)	DA Form 2028 (3 copies)

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

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0833006

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 252302, requirements for TM 5-3805-262-10.

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 02 August 1990

OPERATOR'S MANUAL

LOADER, SCOOP TYPE, DED, 4 x 4, ARTICULATED FRAME STEER, 2-1/2 CUBIC YARD (J.I. CASE MODEL MW24C) (NSN 3805-01-150-4814)

TM 5-3805-262-10, 01 September 1987, 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 and by a vertical bar adjacent to the TA number.

Remove Pages	Insert Pages
i and ii	*I and ii*
2-33 and 2-34	*2-33 and 2-34*
2-39 and 2-40	*2-39 and 2-40*

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

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

THOMAS F. SIKORA
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-25-E (Block 2302) Unit maintenance requirements for TM 5-3805-262-10.

LIST OF EFFECTIVE PAGES

Date of issue for original manual is:

Original . . . . . 01 September 1987
Change 1 . . . . . 02 August 1990
Change 2 . . . . . 19 December 2008

Total number of pages for front and rear matter is 26 and total number of pages is 198, consisting of the following:

Page No.	*Change No.	Page No.	*Change No.
Cover	0		
a to d	0		
i thru iv	0		
1-1 thru 1-14	0		
1-15	2		
1-16 thru 1-26	0		
2-1 thru 2-32	0		
2-33 and 2-34	1		
2-35 thru 2-39	0		
2-40	1		
2-41 thru 2-69/(2-70 Blank)	0		
3-1 thru 3-47/(3-48 Blank)	0		
A-1 and A-2	0		
B-1 and B-2	0		
C-1/(C-2 Blank)	0		
D-1 thru D-4	0		
INDEX 1 thru INDEX15/ (INDEX 16 Blank)	0		
DA Form 2028 Sample	2		
DA Form 2028 (three copies)	2		
Back Cover	0		

* Zero in this column indicates an original page or work package.

Technical Manual
TM5-3805-262-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 1 SEP 87

OPERATOR'S MANUAL

LOADER, SCOOP TYPE, DED, 4X4, ARTICULATED FRAME STEER, 2-1/2 CUBIC YARD
(J.I.CASE MODEL MW24c)
(NSN 3805-01-150-4814)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, or the Army Electronic Product Support (AEPS) website. The Internet address is https://aeps.ria.army.mil. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or E-mail your letter or DA Form 2028 direct to: AMSTA-LC-LMPP / TECH PUBS, TACOM-RI, 1Rock IslandArsenal, RockIsland, IL 61299-7630. The email address is ROCK-TACOM-TECH-PUBS@conus.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

HOW TO USE THIS TECHNICAL MANUAL

This manual is designed to help you operate and maintain the MW24C loader. It's divided into chapters, sections, and appendices. The chapters contain general information, operating procedures, and maintenance procedures. Chapters are divided into sections containing equipment description, principles of operation, description of operating controls and indicators, operating procedures, and troubleshooting and maintenance procedures.

Appendices contain supplemental information which you require to operate and maintain the loader.

Procedures in this manual tell you several things:

..... how to perform your PMCS and how often
..... how to start the loader including locations of all controls and indicators
..... how to operate the loader safely and efficiently
..... how to troubleshoot the loader
..... how to maintain the loader

All operating, troubleshooting, and maintenance procedures include illustrations to help you quickly locate the items on your equipment.

To quickly locate data in this manual, let's say you want to find out the function and use of the hydraulic control levers mounted-to the right of your seat. There are two ways you can locate this information.

a. Use the alphabetical index:

(1) Look on the front cover index for ALPHABETICAL INDEX.

(2) See that there is a black box drawn to the right of ALPHABETICAL INDEX.

(3) Flip through the pages starting at the back of this manual stopping at the page that has a a black box in line with the box on the front cover index. This is the alphabetical index.

(4) The alphabetical index contains subject matter listed in alphabetical sequence. Look up Hydraulic control levers or Loader controls. In some cases, subject matter may be listed in several different ways to help you locate the information. Across from these two entries you will find the page number 2-19.

(5) Turn to page 2-19 where you will find a short functional description and operation of the hydraulic control levers.

(b) Use the front cover index:

(1) Look on the front cover index for DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS.

(2) See that there is a black box drawn to the right of this entry.

(3) Flip through the pages starting at the back of this manual stopping at the page that has a a black box in line with the box on the front cover index. This is the DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS, page 2-1.

(4) Look in the section index and locate Loader Controls. It states the loader controls are provided in paragraph 2-10.

(5) Flipping through the pages, see that paragraph numbers are always located at the top of the left page. Now, go to paragraph 2-10 (page 2-21) to locate the information you want.

This manual has been designed so that you can quickly locate data you are looking for. Either look in the ALPHABETICAL INDEX for the subject matter, refer to the front cover index, table of contents, chapter index, or section index to locate the data.

CHAPTER 1

INTRODUCTION

CHAPTER OVERVIEW

The purpose of this chapter is to acquaint you with the maintenance forms, records, and reports that you must maintain for the MW24C loader, to familiarize you with the purpose and capabilities of the vehicle, and to give you a brief description of its different systems and components.

Index

Section I. GENERAL INFORMATION

NOTE

The equipment described herein is non-metric and does not require metric common or special tools; therefore, metric units are not supplied. Tactical instructions for sake of clarity will also remain non-metric.

a. Type of Manual. Operator's Manual, including operating, maintenance, and troubleshooting instructions.

b. Model Number and Equipment Name. MW24C Diesel Engine Driven, 4 by 4, Articulated Frame Steer, 2-1/2 Cubic Yard Scoop Type Loader.

1-1. SCOPE (CONT)

c. Purpose of Equipment. Loading trucks from stockpiles, stockpiling materiel, and excavating undisturbed and compacted soil. Unit also used as a clamshell to handle irregular shaped objects, as a dozer for general bulldozer work, and as a scraper.

1-2. MAINTENANCE FORMS,AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. HAND RECEIPT (–HR) MANUALS

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 5-3805-262-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned as outlined in DA PAM 310–10.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your MW24C loader needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, US Army Tank–Automotive Command, ATTN: AMSTA-MV Warren, MI 48397-5000. We'll send you a reply.

1-5. WARRANTY INFORMATION

The MW24C loader is warranted by J.I.Case Company, Racine, Wisconsin for 15 months or 1500 hours of operation, whichever occurs first. Warranty starts on the date, found in block 23, DA Form 2408-9 in the logbook. Report all defects in material or workmanship to your supervisor who will take appropriate action through your organizational shop.

1-6. ORIENTATION

The loader bucket is mounted at the front of the MW24C and the engine faces the rear. Controls for operating the bucket (lift arm, bucket tilt, clam) are located to the right when you are sitting in the operator-s seat. All references to right, left, front , or rear are from the viewpoint of the operator when he is sitting in the operator's seat.

1-7. LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
A	After
AAL	Authorized allowance list
AMP	Amperes
AR	Army regulations
ATTN	Attention
B	Before
BII	Basic issue items
BRT.	Bright
B.O.	Black out
C	Celsius
COEI	Components of end items
COMPT	Compartment
CONT	Continued
CONV	Converter
D	Daily
DA	Department of the Army
dB	Decibel
EIR	Equipment improvement recommendations
etc.	Etcetera (unspecified additional things)
F	Fahrenheit
H	High (forward)
HR	Hand receipt
L	Low (forward)
lb-ft	Pounds feet
M	Monthly
MI	Michigan
MO	Missouri
MPH	Miles per hour
N	Neutral
NEUT.	Neutral
Para	Paragraph
PMC S	Preventive maintenance checks and services
PRESS	Pressure
psi	Pounds per square inch
R	Reverse
rpm	Revolutions per minute
SER.	Service
TEMP	Temperature
TM	Technical Manual
W	Weekly

Section II. EQUIPMENT DESCRIPTION

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. Purpose of MW24C Loader. Loading trucks and railcars from stockpiles, stockpiling materiel, and excavating undisturbed and compacted soil. Unit also used as a clamshell to handle irregular shaped objects, as a dozer for general bulldozer work, and as a scraper.

b. Capabilities and Features.

(1) Two and one-half yard capacity bucket.
(2) Operates over rough terrain.
(3) Four speed ranges in forward; two speed ranges in reverse.
(4) Declutch pedal disengages transmission during loader operation to provide maximum hydraulic power when needed.
(5) Diesel engine driven.
(6) Power steering.
(7) Power assisted air over hydraulic brakes.
(8) Enclosed operator's compartment.
(9) Auxiliary steering automatically cuts-in if primary steering is disabled.
(10) Bucket height control to automatically stop loader lift arms at a preselected dump height.
(11) Bucket return-to-dig control to automatically return bucket to preselected position.
(12) Four-in-one bucket used as a scraper, blade, clamshell, or standard bucket .
(13) Ford depths up to 30 inches.
(14) Collapsible steering wheel for air transport.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

ENGINE. J.I.Case Model A504BD Diesel engine having a displacement of 504 cubic inches. Accessories mounted on and considered a part of the engine include the alternator, air compressor, starting motor, fuel injection pump, and fuel filters.

FUEL SYSTEM. Consists of fuel injectors, fuel injection pump, electric fuel pump, air cleaner, fuel filters, and cold start kit.

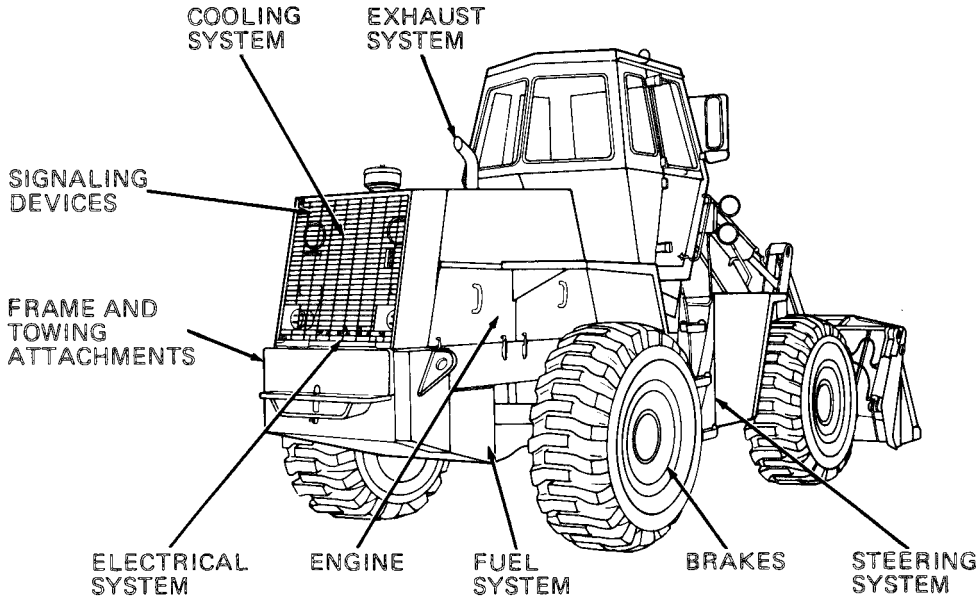
EXHAUST SYSTEM. Consists of muffler and exhaust pipe. Muffler mounted on top of engine.

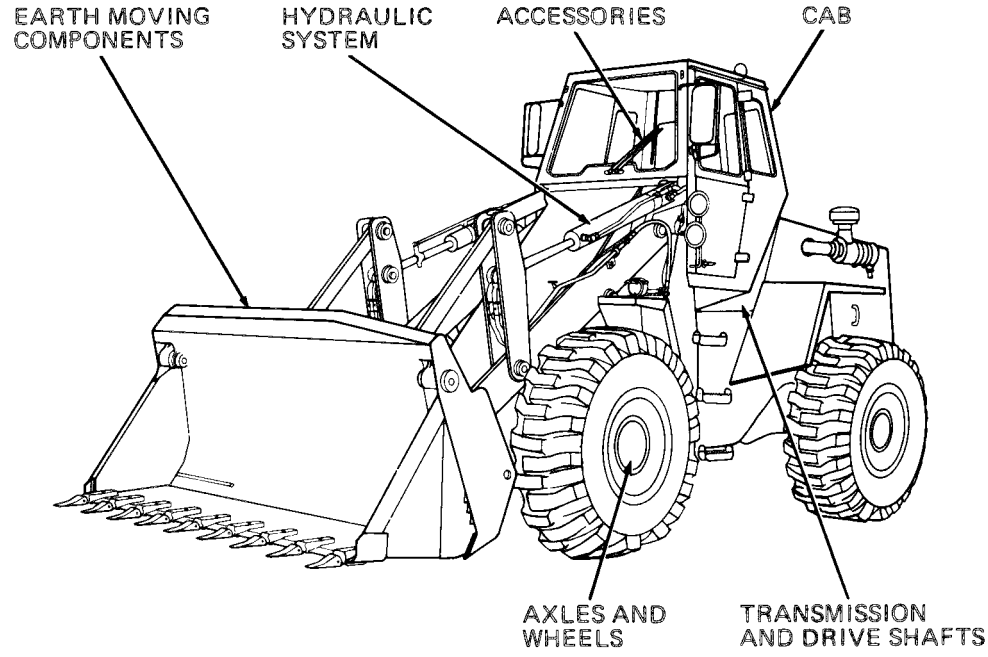
COOLING SYSTEM. Includes radiator mounted in rear of loader, thermostat and housing, engine driven water pump, and fan.

ELECTRICAL SYSTEM. 24 volt, negative ground. Includes engine driven alternator, starter motor, instrument panels, light system, and two 12 volt batteries connected in series.

BRAKES. Disk brakes, air over hydraulic. Air actuated drum type parking brake located on transmission output shaft.

STEERING SYSTEM. Consists of steering wheel, steering column and gear, and two steering cylinders. Power assist provided by hydraulic pump mounted on and driven by transmission. Also includes auxiliary steering system.





FRAME AND TOWING ATTACHMENTS. Two section frame consisting of front and rear chassis; drawbar pin located at rear of loader.

SIGNALING DEVICES. Consists of back-up alarm and turn signals. Back-up alarm located at rear of loader; sounds when transmission is shifted into reverse. Turn signals located at top of cab; turn signal switch mounted on steering column.

TRANSMISSION AND DRIVE SHAFTS. Four speeds in forward and two speeds in reverse. Has declutch feature which permits neutralizing transmission. Three drive shafts used to transmit power to front and rear axles.

AXLES AND WHEELS. Standard planetary axles; pneumatic tires.

CAB. Fully enclosed and removable for shipment purposes when necessary. With doors, windows, and front and rear windshields.

ACCESSORIES. Includes air horn and control valve, windshield washer and wiper, outside mirrors, heater, and fan defrosters.

HYDRAULIC SYSTEM. Consists of hydraulic main pump assembly/steering pump, control valve assembly, hydraulic cylinders (lift arm, bucket tilt, and clam), hydraulic reservoir, and hydraulic filter.

EARTHMOVING COMPONENTS. Includes bucket lift arms and pivot assemblies and loader bucket assembly.

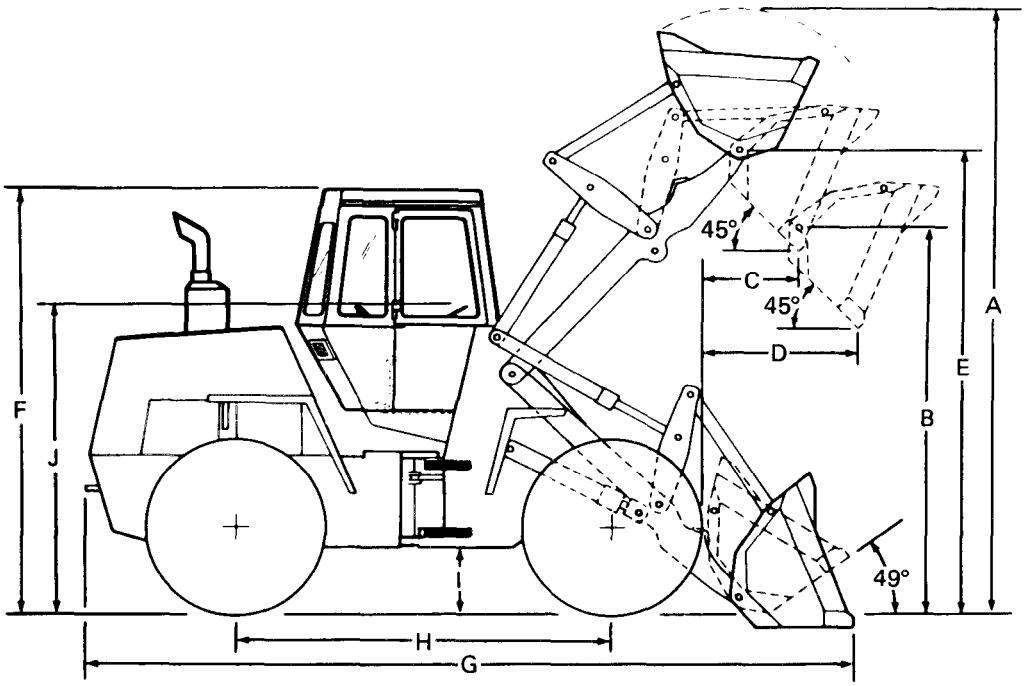
1-10. DIFFERENCES BETWEEN MODELS

There are no differences between models of the MW24C loader.

1-11. EQUIPMENT DATA

Manufacturer	J.I. Case
Model	MW24C
Dimensions and Weight	
Overall operating height (A)	16 feet, 1-1/2 inches
Dump clearance at maximum height, 45 degrees dump (B)	9 feet
Dump reach at maximum height, 45 degrees dump (C)	3 feet, 1 inch
Dump reach at 7 feet dump height, 45 degrees dump (D)	4 feet, 5 inches
Height to bucket hinge pin (E)	12 feet, 2-1/2 inches
Maximum shipping height (F)	10 feet, 10-1/2 inches
Overall length, bucket on ground (G)	22 feet, 5-1/2 inches
Overall width	94-1/2 inches
Wheel base (H)	10 feet, 1-1/2 inches
Tire tread	77 inches
Ground clearance (I)	16 inches
Height to top of steering wheel (J)	106-1/2 inches
Overall height without cab	106-1/2 inches
Width overtires	100 inches

1-11. EQUIPMENT DATA (CONT)



Dimensions and Weight (Continued)

Total weight	25,900 pounds
Front axle weight	12,750 pounds
Rear axle weight	13,150 pounds

Capacities

Cooling system	11.25 gallons
Cold weather protection	
To zero degree	2.5 gallons ethylene glycol
To -20 degrees F	3 gallons ethylene glycol
To -40 degrees F	3.75 gallons ethylene glycol
Fuel tank	58 gallons
Engine crankcase	18 quarts refill; 20 quarts with filter change
Transmission	7.5 gallons refill; 9 gallons total system capacity
Axles (each)	
Front differential carrier	26 quarts
Rear differential carrier	20 quarts
Planetary ends (each)	3.5 quarts
Hydraulic reservoir	17 gallons refill; 29 gallons total system capacity

1-11. EQUIPMENT DATA (CONT)

Loader bucket
- Width ..... 101 inches
- Rated capacity ..... 2-1/2 yards

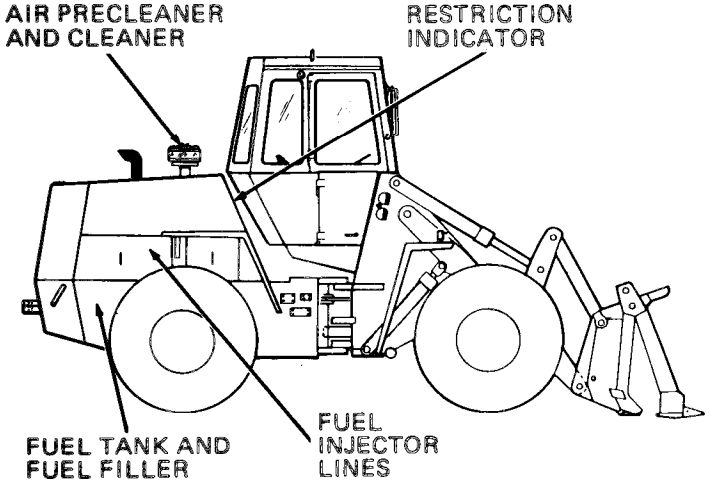
Tires
- Size ..... 20.5 X 25
- Air pressure ..... 40 psi

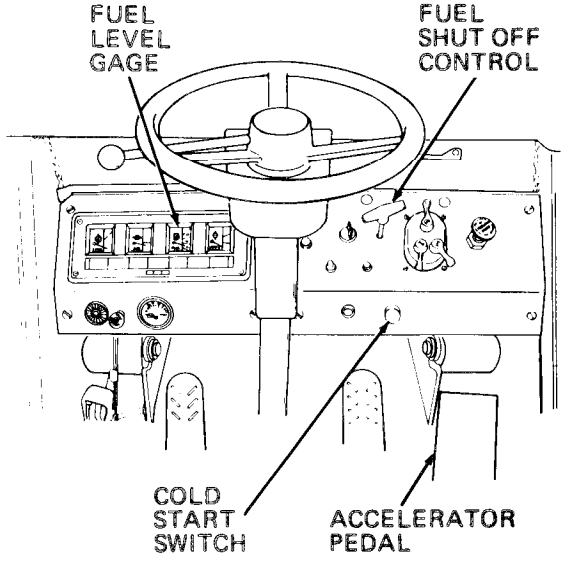
Performance speeds (MPH)
- Forward
  - 1st low range 2.6
  - 2nd low range 6.5
  - 3rd high range 11.4
  - 4th high range 22.2
- Reverse
  - 1st 3.6
  - 2nd 8.7

Military Load Classification
- Empty 13
- Loaded 21

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-12. FUELSYSTEM





AIR PRECLEANER AND CLEANER. Removes dust and dirt from air before application to engine through intake manifold. Metal shell houses replaceable inner and outer filter elements. Squeezing ends of vacuator valve (located at bottom of metal shell) releases dust and dirt from air cleaner housing.

AIR CLEANER RESTRICTION INDICATOR. Indicates restrict ion of air flow through air cleaner due to dirty or clogged filter elements. Filter elements servicing is required when red signal within indicator is in full view. After servicing filter elements, indicator is reset by depressing button on top of indicator.

FUEL TANK AND FUEL FILLER. Fuel tank holds approximately 58 gallons of Diesel fuel; located at rear of loader. Fuel filler neck and removable cap located at right rear of loader. Accessible by unlocking and removing right rear side panel. Drain plug located at bottom of fuel tank.

COLD START SWITCH. When depressed, injects ether start ing fluid into intake manifold. This switch is used to start engine in cold weather only. It operates when ignition key switch is in start position and starter is cranking.

1-12. FUEL SYSTEM (CONT)

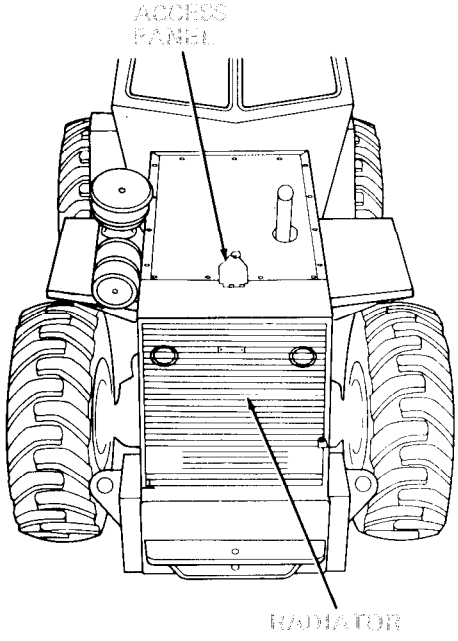
ACCELERATOR PEDAL. Depressing pedal with foot increases fuel flow and engine speed. Releasing pedal decreases fuel flow and engine speed. Pedal is spring loaded to return to low speed position when released.

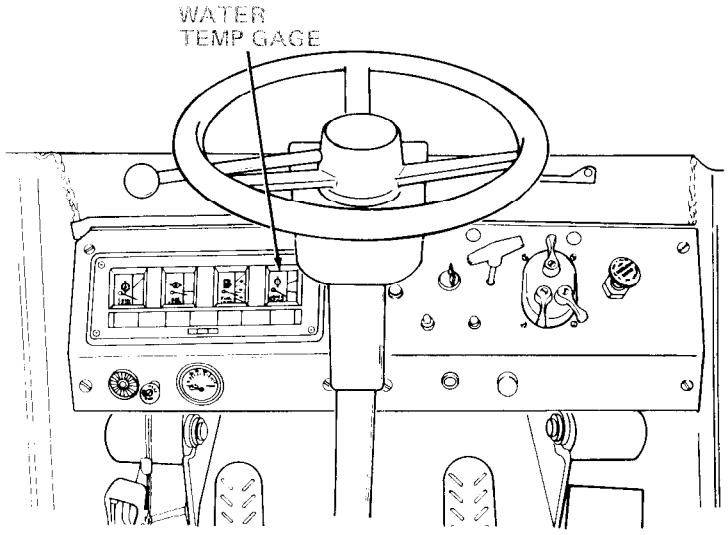
FUEL LEVEL GAGE. Electrically operated meter type. With ignition key switch in ON position, FUEL LEVEL gage indicates quantity of fuel remaining in fuel tank.

FUEL SHUT OFF CONTROL (ENGINE STOP). Cable connected to fuel injection pump fuel shut off lever. When pulled out, fuel is unable to enter fuel injection pump effectively stopping engine operation.

FUEL INJECTOR LINES. Fuel is routed to six fuel injectors from fuel injection pump through rigid metal tubes. Return (leak-off) fuel is routed through rigid metal tubes interconnecting each fuel injector back to fuel injection pump.

1-13. COOLING SYSTEM





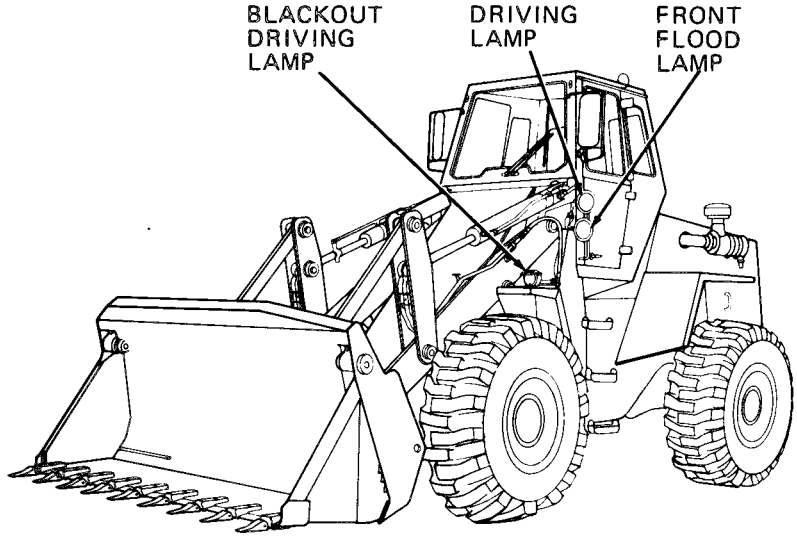
RADIATOR. Located at rear of loader. Engine coolant circulated through radiator giving up its heat to air stream developed by belt driven fan. Cooled coolant drawn from bottom of radiator by water pump and discharged into lower part of cylinder block. Radiator has oil cooler built into its bottom for cooling transmission hydraulic oil. Radiator cap accessible by unlocking and raising access panel located at top rear of loader.

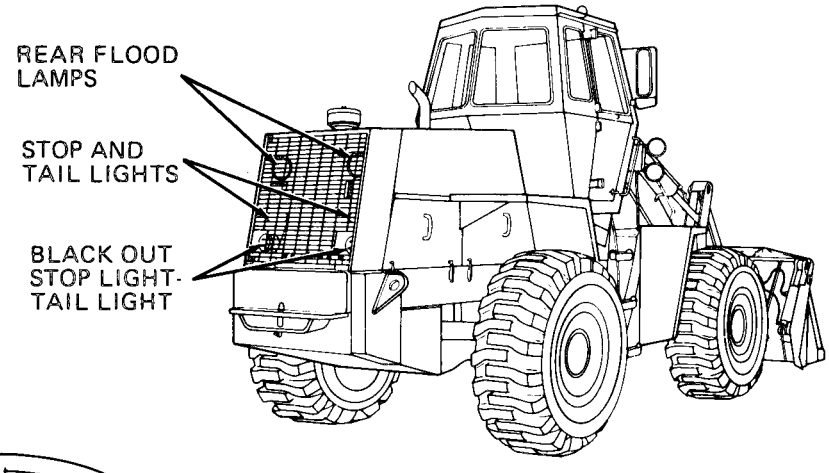
WATER TEMP GAGE. Indicates engine coolant temperature. Normal operating temperature is in green zone.

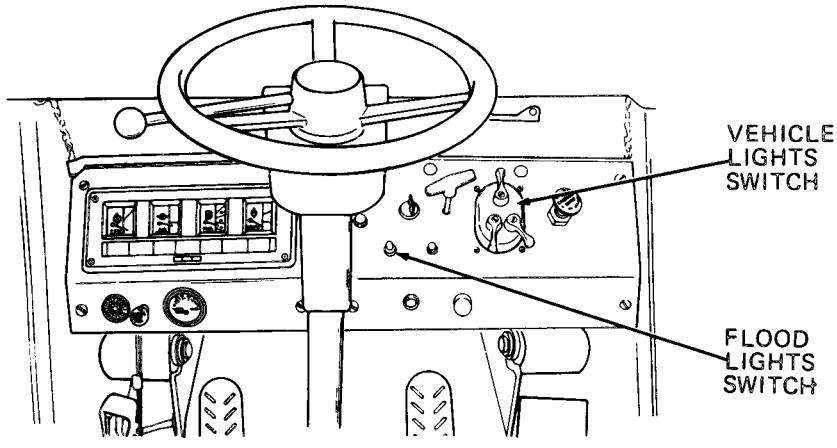
1-14. ELECTRICAL SYSTEM

a. Vehicle Lights.

VEHICLE LIGHTS SWITCH. Contains three separate switch sections used to control all vehicle lights. Ignition key switch must be turned to on position for this switch to operate.







1-14. ELECTRICAL SYSTEM (CONT)

a. Vehicle Lights (Cont).

FLOOD LIGHTS SWITCH. Independently turn front and rear flood lights on and off. Vehicle lights switch must be in SER. DRIVE position for this switch to operate.

BLACK OUT DRIVING LAMP. Mounted on left front fender. Provides forward black out illumination during tactical operations. Controlled by vehicle lights switch.

FRONT FLOOD LAMPS. Two sealed beam type lamps mounted on mounting brackets at front left and right sides of loader. Illuminate work area in front of loader. Turned on and off with FLOOD LIGHTS switch.

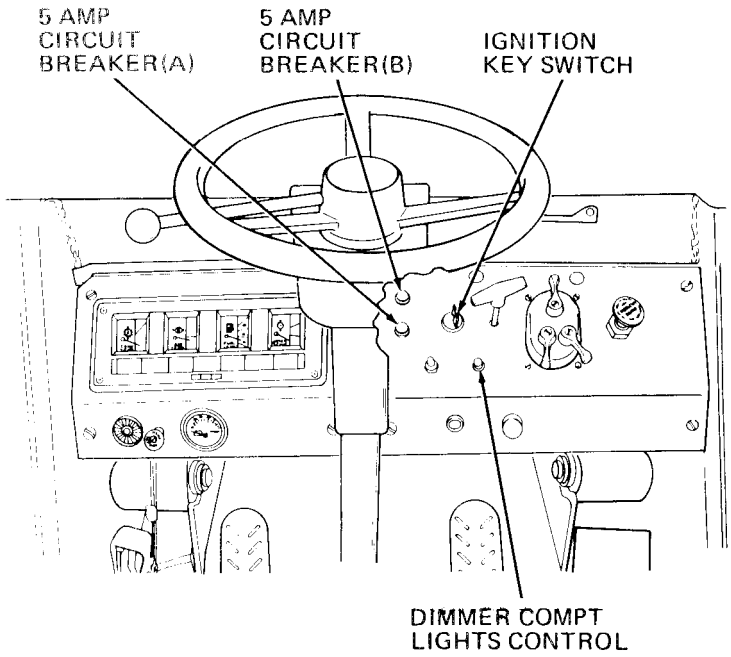
DRIVING LAMPS. Two sealed beam type lamps mounted above flood lamps at left and right sides of loader. Illuminate area in front of loader for driving at night.

REAR FLOOD LAMPS. Two sealed beam type lamps mounted on mounting brackets at rear left and right sides of loader within radiator guard and behind radiator grille. Illuminate work area in rear of loader. Turned on and off with FLOOD LIGHTS switch.

STOP AND TAIL LIGHTS. Two light assemblies mounted on brackets within radiator guard, behind radiator grille. Includes incandescent lamp and red plastic lens. Tail lights turned on by vehicle lights switch. Stop lights normally off; turned on by pressing brake treadle valve or declutch treadle valve.

BLACK OUT STOP LIGHT-TAIL LIGHT. Two light assemblies mounted in protective metal housings within radiator guard, behind radiator grille. Each assembly contains two incandescent lamps. Provide stop light and tail light illumination during tactical operations. Tail lights turned on and off by vehicle lights switch. Stop lights are normally off; turned on by pressing brake treadle valve or declutch treadle valve.

b. Switches and Circuit Breakers.



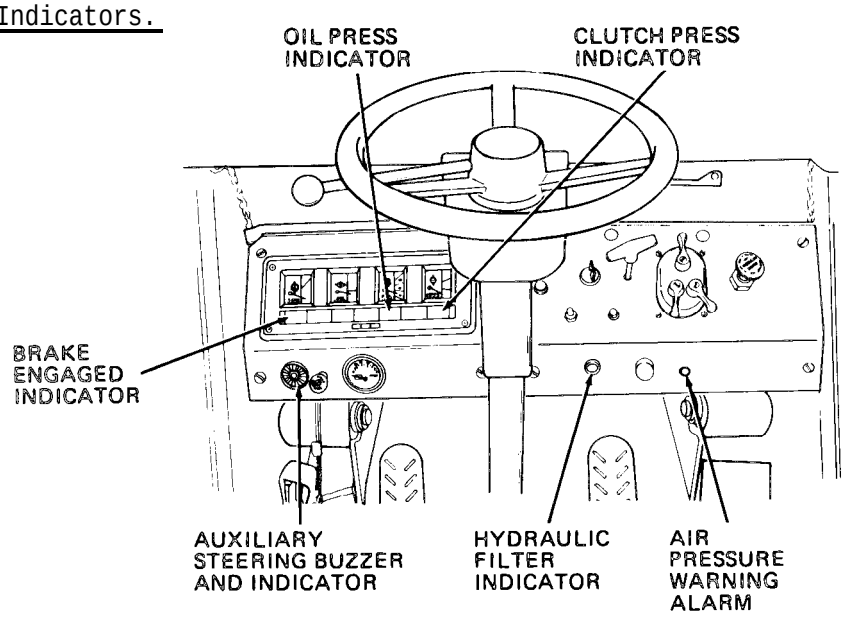
IGNITION KEY SWITCH. Four position key switch controls power to all vehicle electrical circuits.

DIMMER COMPT LIGHTS CONTROL. Rheostat. Controls brightness of left instrument panel cluster illumination lamps, voltmeter gage illumination lamp, and cab dome light.

5 AMP CIRCUIT BREAKER (A). Resettable circuit breaker. Protects auxiliary steering circuit, air brake pressure switch and buzzer, gages, warning lights, and voltmeter, cab relay solenoid, and electric fuel pump.

5 AMP CIRCUIT BREAKER (B). Resettable circuit breaker. Protects return-to-dig and bucket height control circuits.

c. Warning Indicators.



BRAKE ENGAGED INDICATOR. When lit, indicates either parking brake is engaged or brake system air pressure is too low for safe loader operation.

ENGINE OIL PRESS INDICATOR. When lit with engine operating, indicates engine oil pressure is too low and damage to engine will occur if you continue to operate engine.

CLUTCH PRESS INDICATOR. Will light if declutch treadle valve is pressed with engine operating, if transmission converter oil pressure is too low, or if parking brake is engaged. If transmission converter oil pressure is too low, continued loader operation will damage transmission.

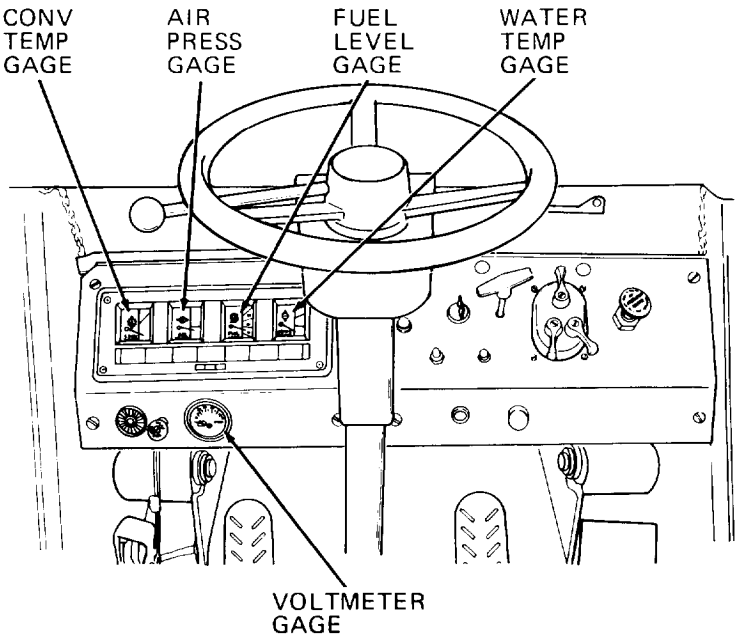
AIR PRESSURE WARNING ALARM. Sounds when brake system air pressure is too low for safe loader operation.

HYDRAULIC FILTER INDICATOR. When lit, indicates hydraulic filters (steering and hydraulic system) require replacement.

AUXILIARY STEERING BUZZER AND INDICATOR. Buzzer sounds and indicator lights warning operator that hydraulic pump has failed and auxiliary steering system has been energized and is now operating. If this happens, you must stop loader operation and notify next higher maintenance level.

1-14. ELECTRICAL SYSTEM (CONT)

d. Gages.



CONV TEMP GAGE. Indicates operating temperature of transmission torque converter. Normal temperature is in green area of gage.

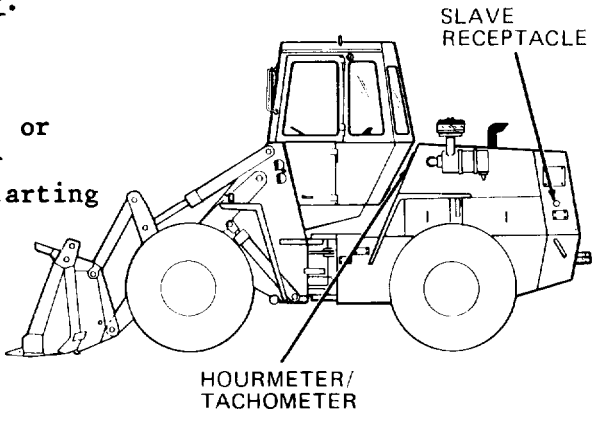
AIR PRESS GAGE. Indicates brake system air pressure. Air pressure is normal when pointer is in green area of gage.

FUEL LEVEL GAGE. Indicates amount of fuel in fuel tank.

WATER TEMP GAGE. Indicates temperature of engine coolant. Coolant temperature is normal when pointer is in green area of gage.

VOLTMETER GAGE. Indicates voltage level of batteries. Voltage is normal when pointer indicates 24 volts 22 volts with ignition key switch in on position.

e. Slave Receptacle and Hourmeter/Tachometer.



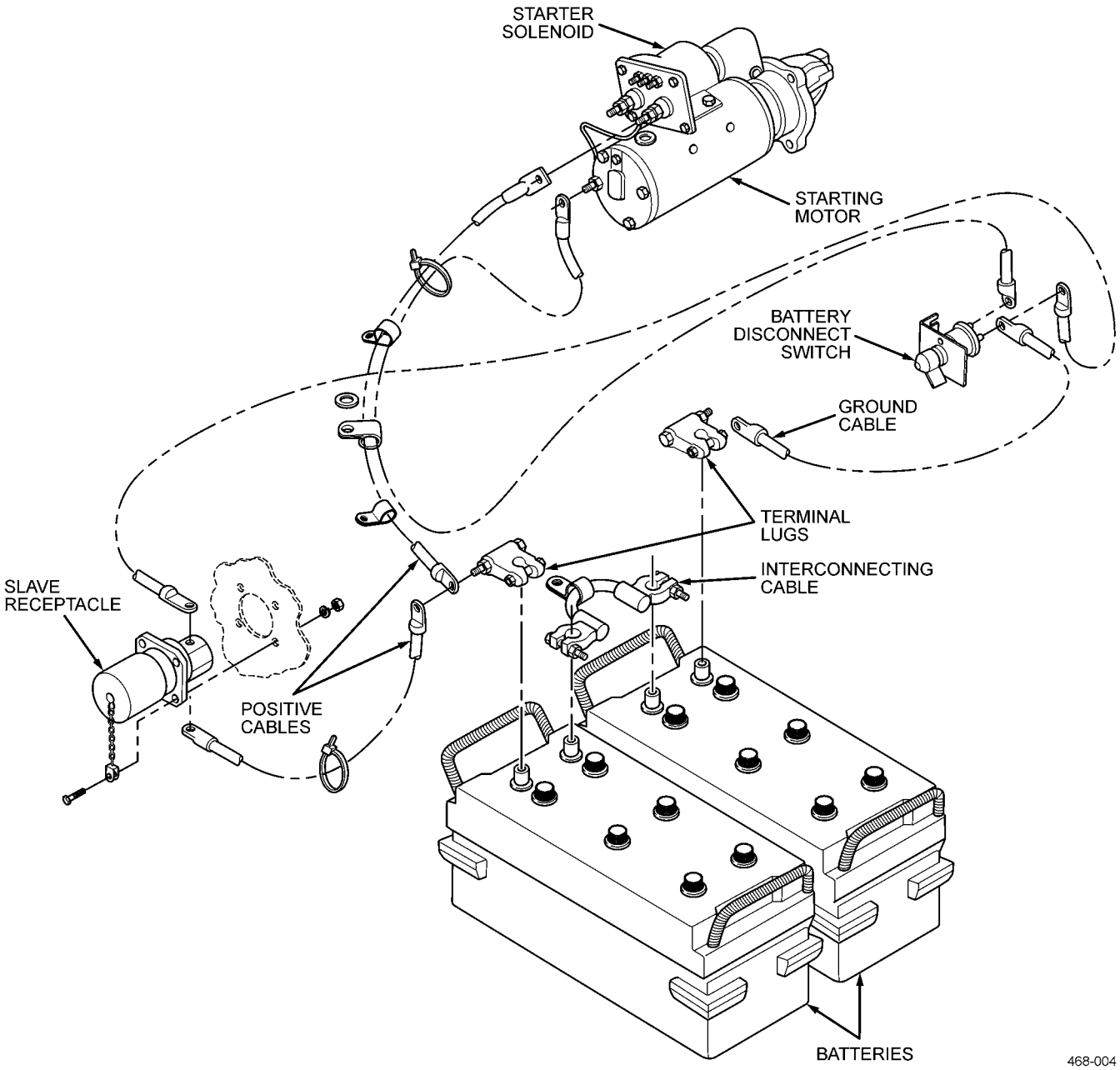
SLAVE RECEPTACLE. Permits charging of batteries or slave starting of engine from an external power source. Also provides power source for slave starting other equipment. 24 volt negative ground.

HOURMETER/TACHOMETER. Indicates engine operating time in hours and tenths of hours and engine rpm. Connected by drive cable to engine tachometer drive.

f. Batteries and Cables.

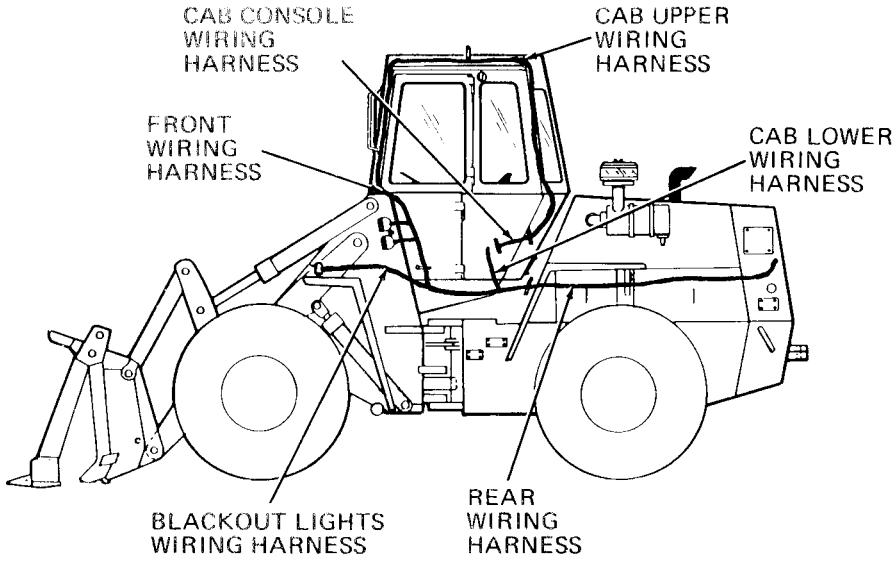
BATTERY CABLES. Six cables used. Battery interconnecting cable connects first battery negative terminal to second battery positive terminal. Ground cables connected between second battery negative post, battery disconnect switch, and negative terminal of slave receptacle. A separate ground cable connects from output of battery disconnect switch to the starter motor terminal. Ground cables connected at battery terminal by terminal lug. Positive cable connected between first battery positive terminal, starter solenoid, and slave receptacle positive terminal. Positive cables connected at battery terminal by terminal lug.

BATTERY DISCONNECT SWITCH. Isolates ground from electrical system when turned off. Slave receptacle remains connected to negative battery terminal. Battery disconnect switch provides ground to the electrical system when energized.



1-14. ELECTRICAL SYSTEM (CONT)

g. Wiring Harnesses.



FRONT WIRING HARNESS. Interconnects front driving lamps and flood lamps, black out driving lamps, left and right instrument panels, turn signal lamps, return-to-dig circuit, bucket height control circuit, control valve solenoids, and hydraulic filter switch. Multi–pin connector mates with associated connector on rear harness.

REAR WIRING HARNESS. Interconnects engine and transmission sending units, rear flood lamps, stop and tail lights, black out stop light-tail light, back-up alarm, and starter and cab relay solenoids and associated circuit breakers. Multi-pin connector mates with associated connector on front harness.

BLACKOUT LIGHTS WIRING HARNESS. Interconnects front wiring harness to blackout driving lamp mounted on left front fender and blackout stop lights-tail lights mounted at rear of loader. Connection between wiring harnesses accomplished by block-type connectors.

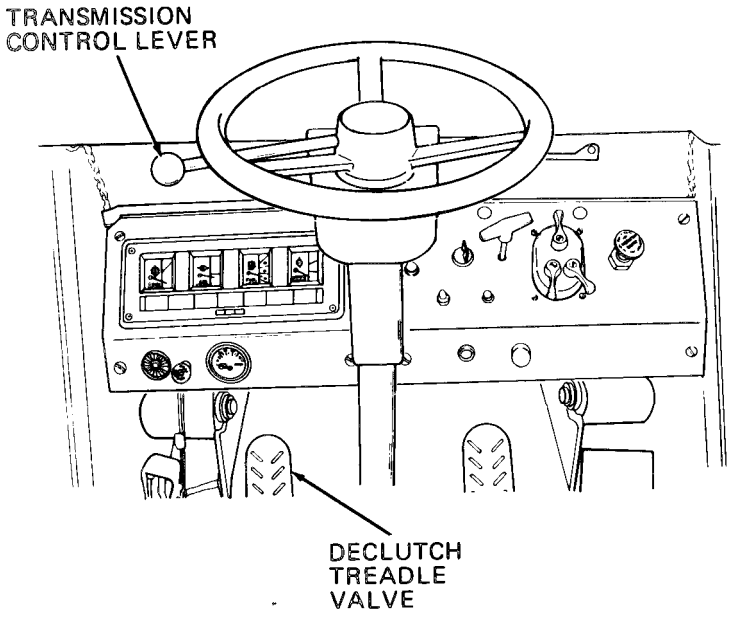
CAB UPPER WIRING HARNESS. Interconnects cab console wiring harness to cab dome light, defroster fans, defogger, and turn signal lamp assemblies. Cab upper wiring harness connector is mounted on cab wall just behind cab console. Connection between wiring harnesses accomplished by block–type connectors.

CAB LOWER WIRING HARNESS. Interconnects front wiring harness to cab console wiring harness and to circuit breakers mounted on cab switch panel. Connection between wiring harnesses accomplished by block-type connectors.

CAB CONSOLE WIRING HARNESS. Interconnects cab upper wiring harness to cab lower wiring harness and switches mounted on cab switch panel. Connection to cab upper wiring harness accomplished by block-type connector; connection to cab lower wiring harness accomplished by bullet terminals.

1-15. TRANSMISSION AND DRIVE SHAFTS

a. Transmission Controls.



TRANSMISSION CONTROL LEVER. Selects one of four positions: low range forward, high range forward, neutral, and low range reverse.

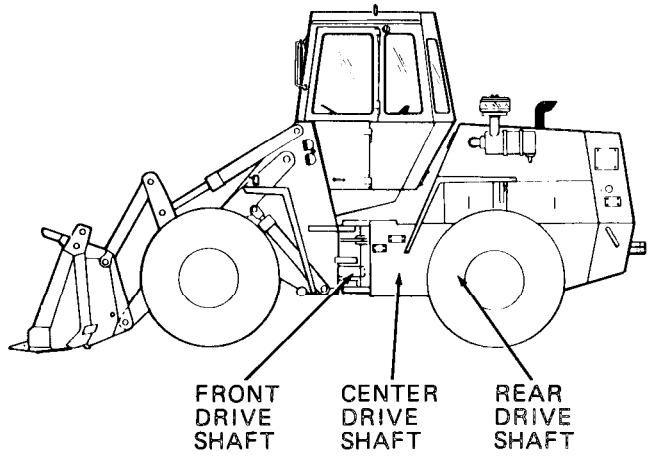
DECLUTCH TREADLE VALVE. Applies service brakes, lights stop lights at rear of loader, disengages transmission, and lights CLUTCH PRESS indicator. Used to disengage transmission to provide maximum hydraulic power for loader operation.

b. Drive Shafts.

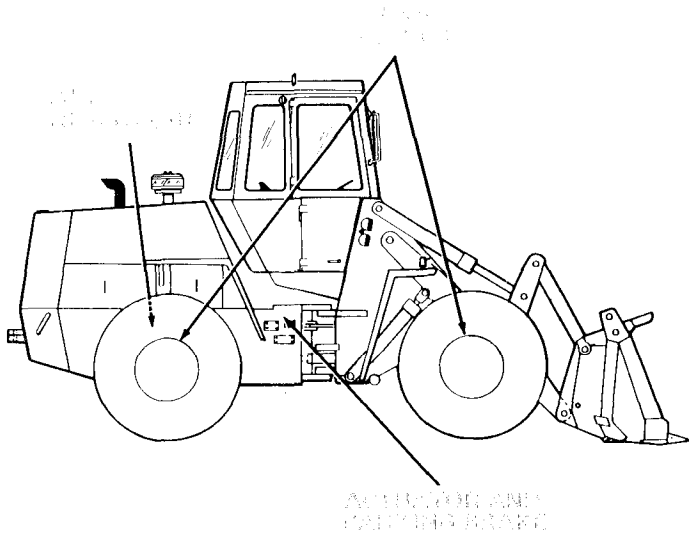
FRONT DRIVE SHAFT. Connected between center drive shaft and front axle. Connected to front axle yoke by universal joint and to center drive shaft by yoke with internal splines. Rear of front drive shaft supported by a bearing.

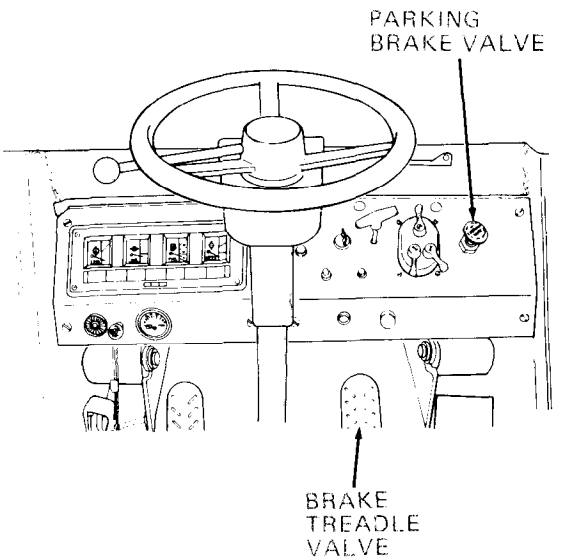
CENTER DRIVE SHAFT. Connected between transmission output shaft and front drive shaft. Connection accomplished by universal joints.

REAR DRIVE SHAFT. Connected between transmission output shaft and rear axle by universal joints.



1-16. BRAKES





PARKING BRAKE VALVE. Controls flow of air to actuator. Pushing knob in applies air pressure to actuator in turn releasing parking brake. Pulling knob out releases air pressure applied to actuator. Large spring in actuator then moves piston causing linkage and lever in parking brake to force brake shoes against brake drum.

ACTUATOR. Located left side of loader. Includes large spring and piston. When air pressure applied by parking brake valve, it pushes against piston and compresses spring in turn releasing parking brake. When air pressure released, large spring forces piston to move and apply parking brake.

PARKING BRAKE. Mounted on transmission output shaft. Drum type parking brake prevents axles and wheels from rotating when applied.

BRAKE TREADLE VALVE. Depressing treadle valve applies air pressure to brake actuators. This in turn applies hydraulic pressure to brake calipers mounted on each wheel end and applying brake pads to disks mounted on wheel ends to stop loader. Brake actuators consist of an air chamber and hydraulic master cylinder. Also turns on stop or black out stop lights as determined by position of vehicle lights switch. Brake system is air over hydraulic.

SERVICE BRAKES. Disk brakes mounted on each wheel end.

AIR RESERVOIR. Mounted at right side of loader. Air from air compressor routed to and stored in air reservoir until required by air system components.

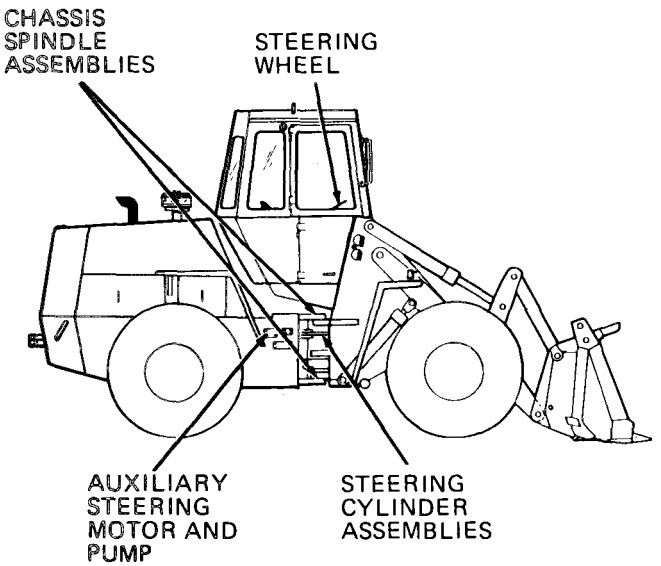
1-17. STEERING SYSTEM

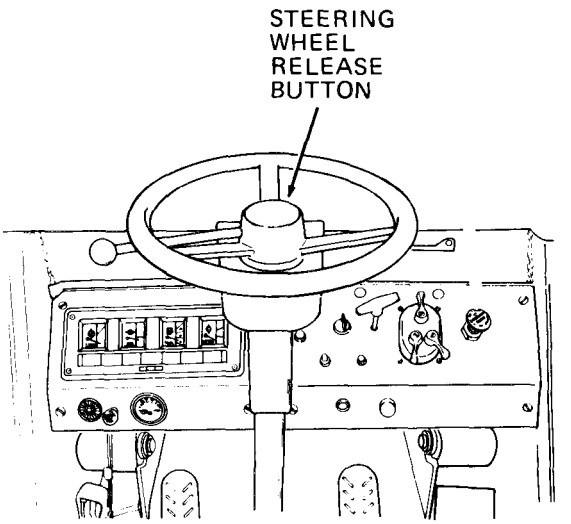
STEERING WHEEL. Connected to steering column and steering gear. Steering column and steering gear control flow of hydraulic oil to and from steering cylinder assemblies. Power assist provided by hydraulic pump mounted on transmission for reduced steering wheel turning effort when engine is running. Collapsible steering wheel column allows for reduction in height for transport operations by depressing button in center of steering wheel under cover.

STEERING CYLINDER ASSEMBLIES. Two hydraulic cylinders, one mounted on each side of loader. Cylinder housings attached to front chassis and cylinder rods attached to rear chassis. Cylinder rods extend or retract as steering wheel is turned, forcing front chassis to pivot about chassis spindle assemblies.

CHASSIS SPINDLE ASSEMBLIES. Heavy duty spindles mounted in thrust bearings and located at top and bottom of chassis connection points. Secure front chassis to rear chassis and allow front chassis to pivot and steer loader.

AUXILIARY STEERING MOTOR AND PUMP. Mounted on left side of loader. Provides emergency hydraulic power for steering loader if hydraulic pump fails. Consists of hydraulic pump driven by electric motor. Electric motor automatically operates if main hydraulic pump fails and auxiliary steering warning buzzer sounds when motor turns on. If you crank starter motor with SHUT OFF control pulled out then release ignition key switch, you will hear auxiliary steering motor and pump start to operate. If this happens, turn ignition key switch to off position to stop auxiliary steering motor and pump.





1-18. FRAME AND TOWING ATTACHMENTS

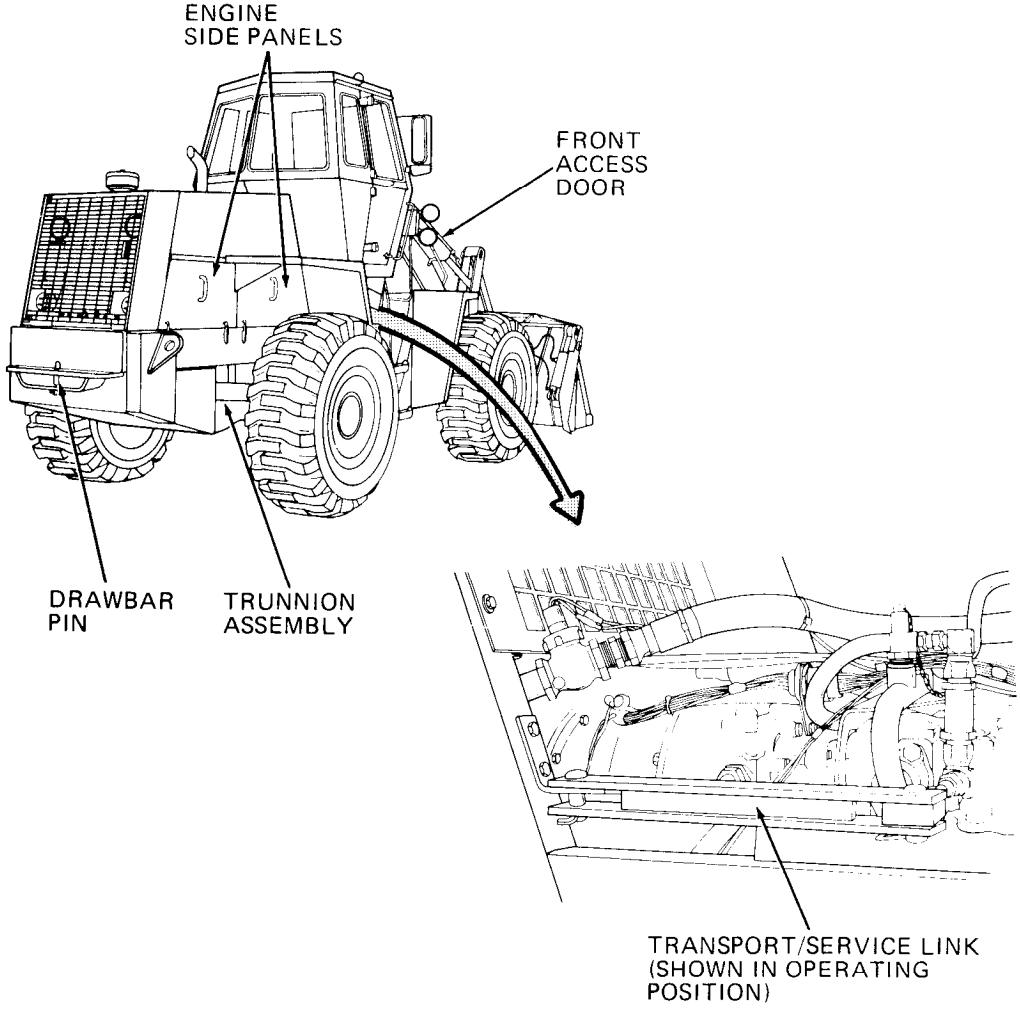
ENGINE SIDE PANELS. Constructed of sheet metal. Secured to rear chassis by latches: two for each panel. Provide access to engine compartment.

DRAWBAR PIN. Constructed of heavy steel. Provides means of attaching pintle hook or drawbar for towing loader or using loader as tow vehicle.

TRUNNION ASSEMBLY. Rear axle mounted on trunnion assembly providing rear axle oscillation. Allows rear chassis to pivot when operating over rough terrain.

TRANSPORT/SERVICE LINK. Constructed of heavy gage steel. Must be in operating position during loader operation. Prevents loader from pivoting therefore no steering control when in engaged position. Must be in engaged position when personnel are working in area between front and rear chassis, when loader is being airlifted or transported, or loader is jacked up.

FRONT ACCESS DOOR. Constructed of sheet metal. Provides access to hydraulic reservoir and windshield washer reservoir. Hydraulic reservoir sight gage located just below access door.

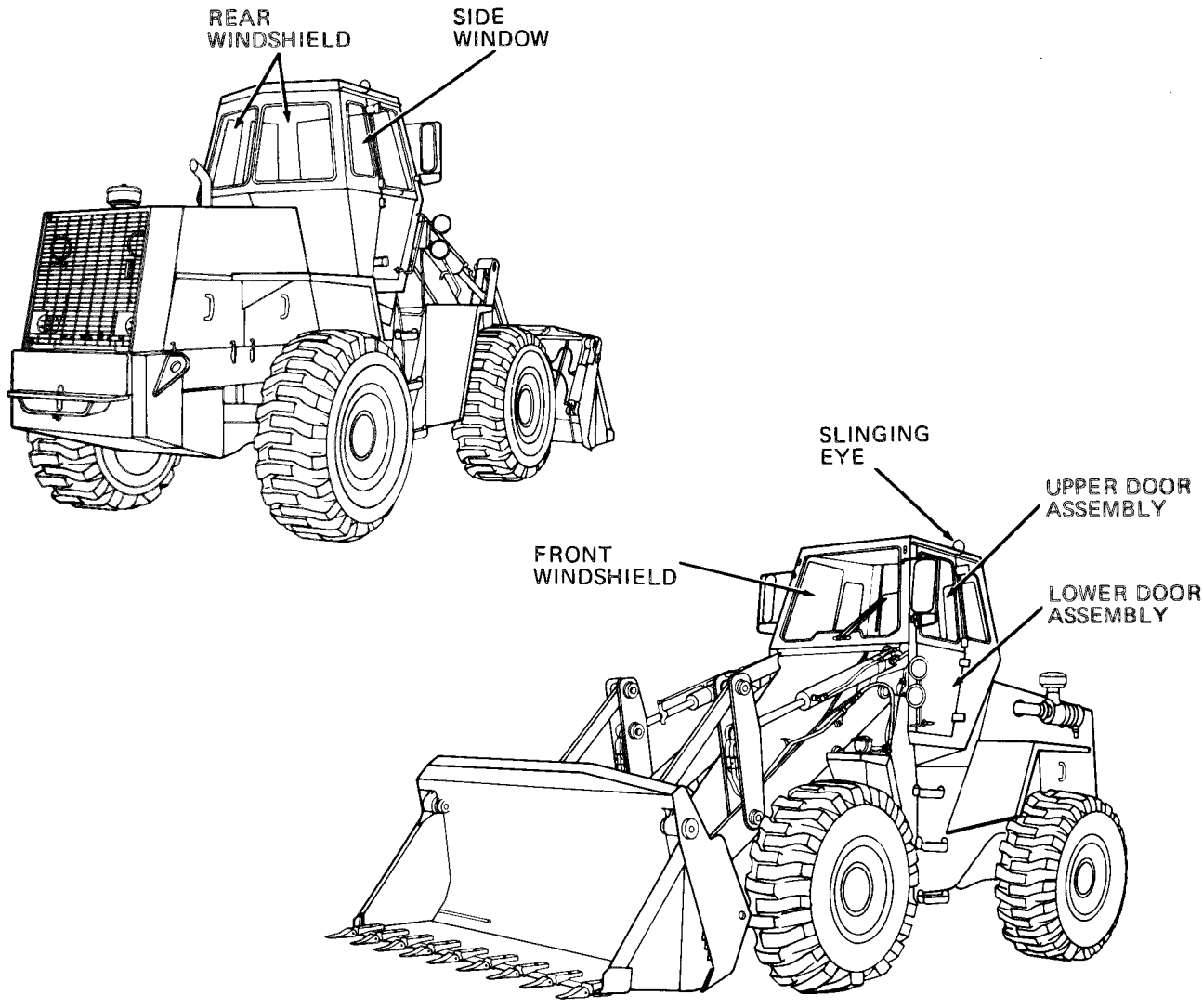


1-19. CAB

WINDSHIELDS AND SIDE WINDOWS. Front windshield, rear windshields, and two side windows provide operator with a 360 degree field of vision.

DOOR ASSEMBLIES. Two door assemblies. Each door assembly consists of an upper and a lower door assembly. Upper door assembly can be unlatched from lower door assembly and latched in full open position. Upper door assembly includes glazing.

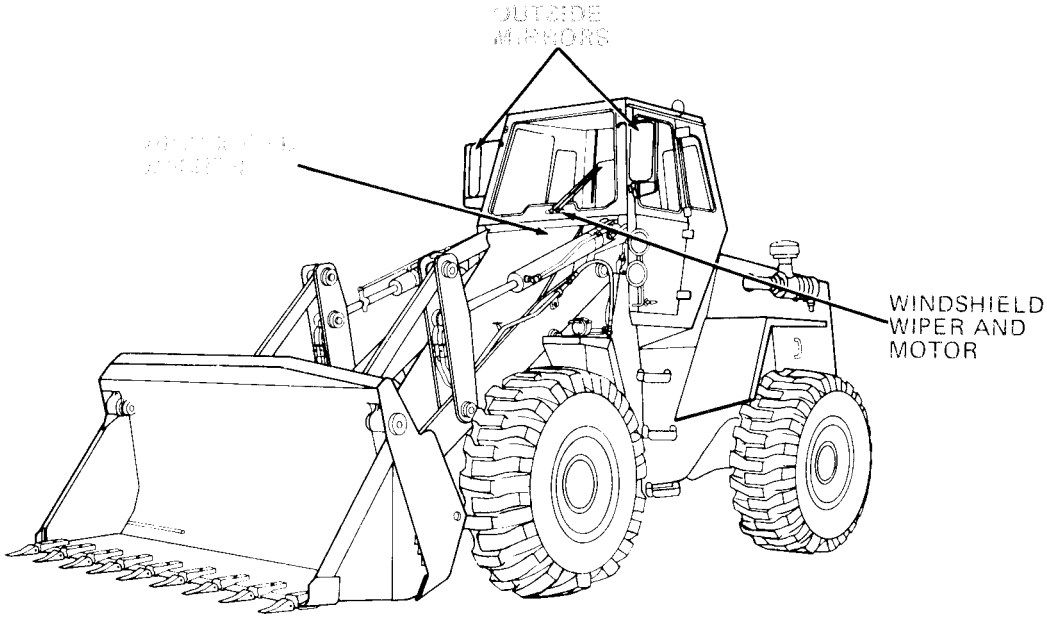
SLINGING EYES. Two slinging eyes located at top of cab to aid in cab removal and installation.

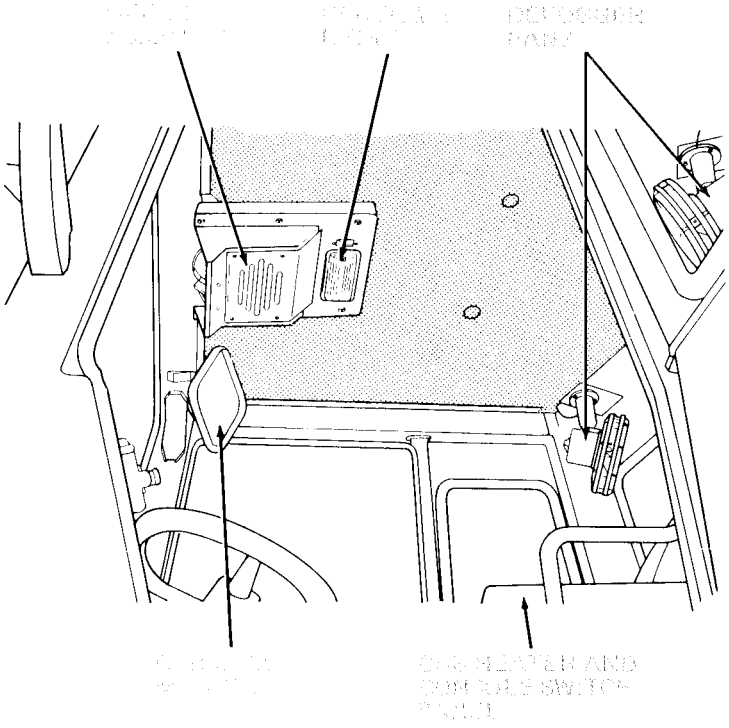


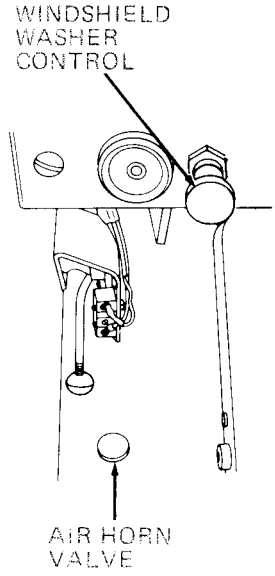
1-20. ACCESSORIES

WINDSHIELD WASHER. Front windshield washer. Air actuated. Nozzle mounted just below front windshield. Depressing control located on left instrument panel applies air pressure to fluid reservoir in turn forcing fluid from reservoir through hose to spray out nozzle onto windshield.

OUTSIDE MIRRORS. One mounted on each side of cab. Easily adjusted by operator.







CAB INSIDE MIRROR. Mounted inside cab, right side.

WINDSHIELD WIPER AND MOTOR. Electric motor driven wiper. Wiper motor mounted directly behind wiper arm.

DEFROSTER ASSEMBLY. Mounted at cab ceiling. Directs air over front windshield to clear windshield of fog.

CAB DOME LIGHT. Located behind defogger assembly. Includes on-off switch. provides illumination for cab. Brightness controlled by DIMMER COMPT LIGHTS control mounted on right instrument panel and vehicle lights switch auxiliary switch. Vehicle lights switch main switch and auxiliary switch must be in any position other than OFF for this light to operate.

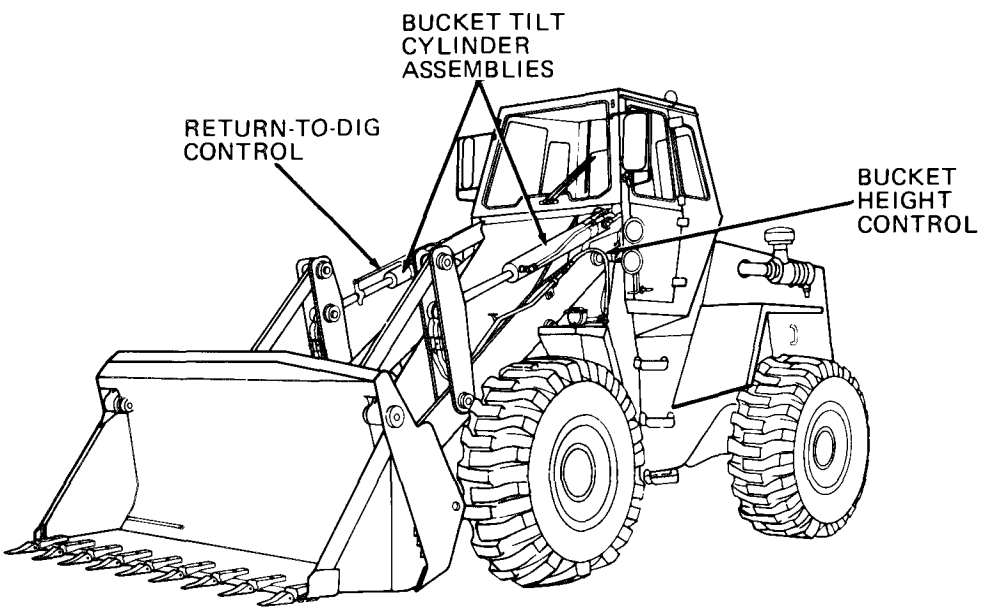
DEFOGGER FANS. Two fans. Mounted above and to sides of rear windshield. Each fan includes LOW-OFF-HIGH switch and is directionally adjustable to direct airflow over rear windshields.

CAB HEATER. Located to left of operator's seat. Utilizes heat from engine coolant to heat cab. Includes electric motor driven fan.

CONSOLE SWITCH PANEL. Contains switches and circuit breakers for defroster, heater fan, and front wiper circuits.

AIR HORN. Air horn valve located on cab deck to left of declutch treadle valve. Depressing valve routes air Pressure to air horn causing diaphragm to vibrate sounding air horn. Air horn located on left side of front chassis beneath cab.

1-21. HYDRAULIC SYSTEM

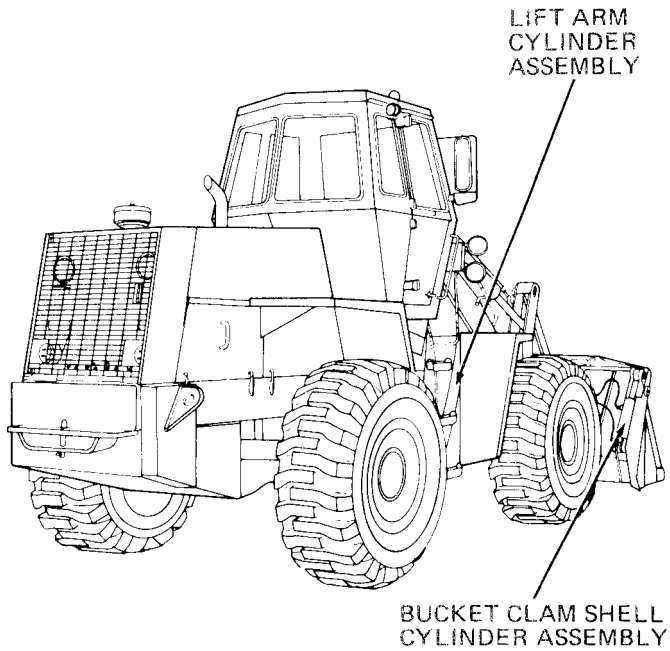


1-21 HYDRAULIC SYSTEM (CONT)

RETURN-TO-DIG CONTROL. Returns bucket to digging position after it has been dumped. Operator adjusted control.

BUCKET HEIGHT CONTROL. Automatically stops loader lift arms at an operator selected dump height.

BUCKET TILT CYLINDER ASSEMBLIES. Two used. Position bucket for digging, scraping, dumping, etc.



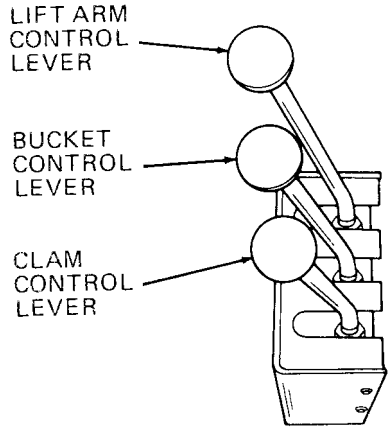
LIFT ARM CYLINDER ASSEMBLIES. Two used. Raise or lower bucket.

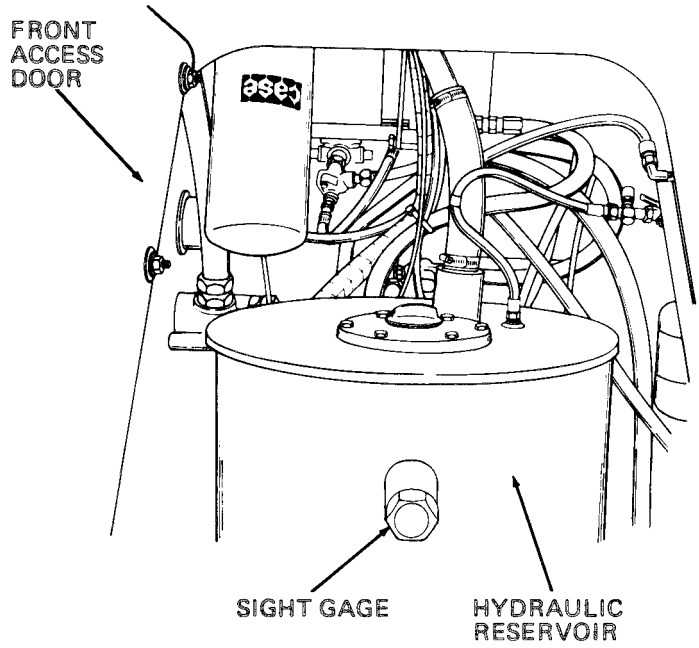
BUCKET CLAMSHELL CYLINDER ASSEMBLIES. Two used. Open or close bucket clamshell.

LIFT ARM CONTROL LEVER. Controls raising and lowering of bucket.

BUCKET CONTROL LEVER. Controls dumping of bucket and tilting bucket for carrying a load.

CLAM CONTROL LEVER. Controls opening and closing of bucket clamshell. Placing control lever in HOLD position will cause bucket clamshell to hold its position.

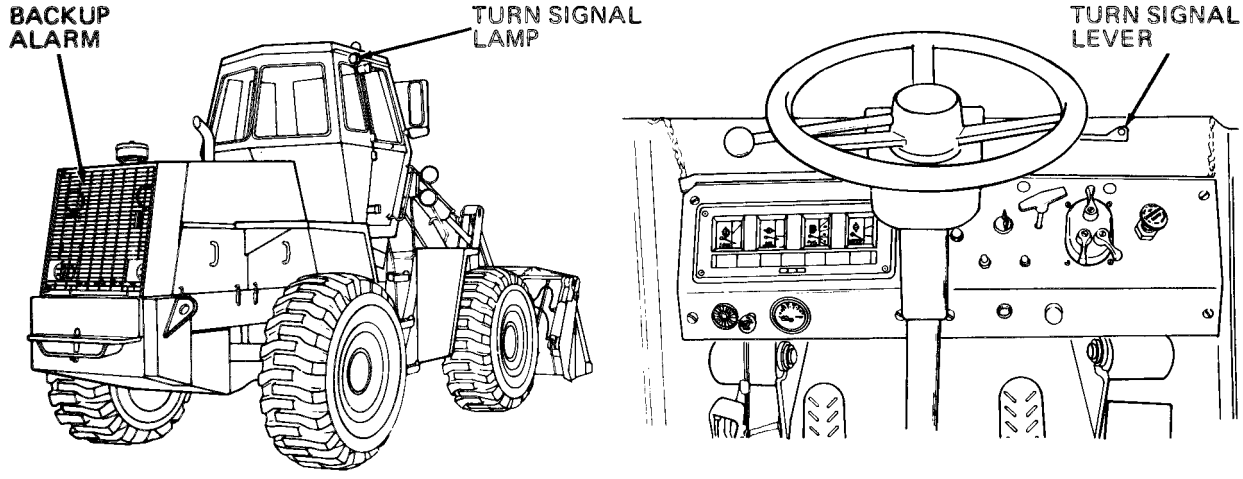




HYDRAULIC RESERVOIR. Located behind front access door. Oil filler cap located at top of reservoir.

SIGHT GAGE. Located at front of loader. Oil level must be seen in sight gage. If oil level is not seen, hydraulic oil must be added.

1-22. SIGNALING DEVICES

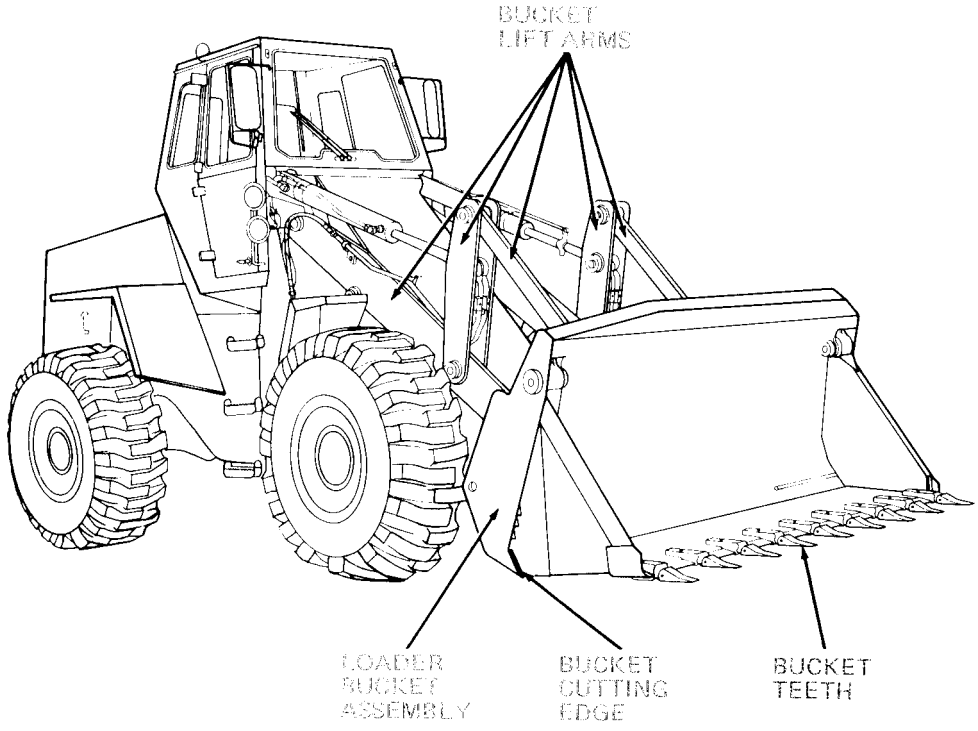


BACK-UP ALARM. Electrically operated alarm located at rear of loader behind radiator grille. Sounds distinctive warning whenever transmission control lever is placed in reverse (R) position. Ignition key switch must be turned to on position before back-up alarm will sound.

1-22. SIGNALING DEVICES (CONT)

TURN SIGNALS. Two turn signal lamps located at top left and right of cab. Turn signal lever mounted on steering column. Moving turn signal lever away from you causes left turn signal lamp to flash on and off indicating left turn. Lever must be manually returned to center position after turn is completed. Moving lever towards you causes right turn signal lamp to flash on and off indicating right turn.

1-23. EARTHMOVING COMPONENTS



BUCKET LIFT ARMS AND PIVOT ASSEMBLIES. Provides the means of raising/lowering bucket and tilting bucket.

LOADER BUCKET ASSEMBLY. Includes bucket and clam. Bucket cutting edge consists of three cutting edges bolted to bucket. Nine tooth assemblies bolted to clam cutting edge. Clam cutting edge welded to clam.

CHAPTER 2

OPERATING INSTRUCTIONS

CHAPTER OVERVIEW

The purpose of this chapter is to familiarize you with the equipment so that you can operate it safely, efficiently, and effectively.

Index

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

12-1. INSTRUMENT PANELS

a. Right Instrument Panel.

(1) Circuit Breakers.

5 AMP CIRCUIT BREAKER

Resettable circuit breaker; reset by pressing button.

Button pops out when circuit breaker blows.

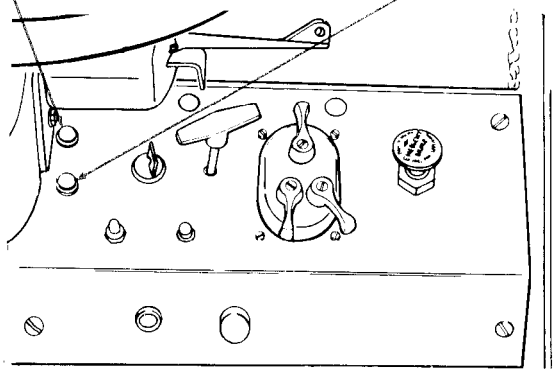
Protects HYDRAULIC FILTER warning indicator and switches and bucket height and return-to-dig control circuits.

5 AMP CIRCUIT BREAKER

Resettable circuit breaker; reset by pressing button.

Button pops out when circuit breaker blows.

Protects auxiliary steering control circuit, air brake pressure switch and buzzer, gages, warning indicators located on left instrument panel, cab relay solenoid, and electric fuel pump.



2-1. INSTRUMENT PANELS (CONT)

a. Right Instrument Panel (Cont).

(2) Engine Switches.

IGNITION KEY SWITCH

Four position key switch.

First unmarked position (key turned counterclockwise): Applies power to: vehicle lights switch enabling lights to be turned on; auxiliary steering control circuit; low air pressure warning circuit sounding warning buzzer; gages; and left instrument panel warning indicators turning them on; and electric fuel pump.

Off position (key straight): Electrical system off.

On position (key turned to first clockwise position): Applies power to: vehicle lights switch enabling lights to be turned on; auxiliary steering control circuit; low air pressure warning circuit sounding warning buzzer; gages; left instrument panel warning indicators turning them on; electric fuel pump; and return-to-dig and bucket height control circuits.

Start position (key turned to extreme clockwise position, spring loaded return): Applies power to return-to-dig and bucket height control circuits; cranks starter motor to start engine, momentarily turns on HYDRAULIC FILTER warning indicator, and applies power to COLD START switch.

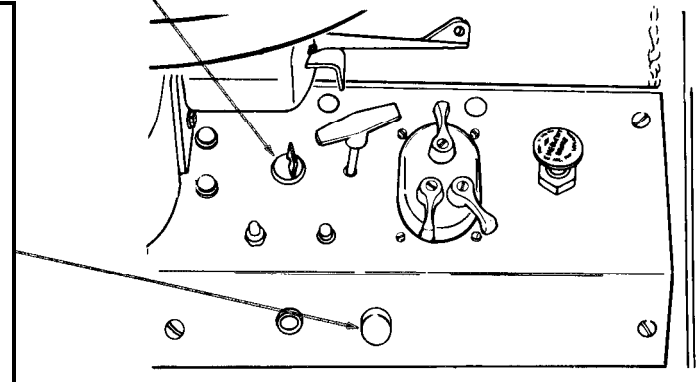
COLD START SWITCH

Aids in starting engine when temperature is 40 degrees or less.

WARNING

Starting fluid is toxic and highly flammable. Use caution when handling.

Pushbutton switch: Operates only when ignition key switch is cranking starter. Pressing switch energizes solenoid valve installed on cold start container allowing starting fluid to enter intake manifold.



2-1. INSTRUMENT PANELS (CONT)

a. Right Instrument Panel (Cont).

(3) Flood Lights Switch and Warning Indicator.

FLOOD LIGHTS SWITCH

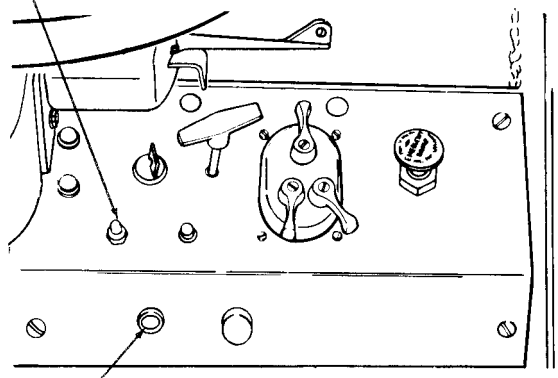
Two position toggle switch.

On position (right position): Turns on front and rear flood lamps.

NOTE

Main switch on vehicle lights switch must be in SER. DRIVE position for this switch to operate.

Off position (left position): Turns off front and rear flood lamps.



HYDRAULIC FILTER WARNING INDICATOR

Indicator light.

Turns on momentarily when first starting engine indicating bulb is okay.

During operation, turns on indicating hydraulic filters are clogged and require replacement.

2-1. INSTRUMENT PANELS (CONT)

a. Right Instrument Panel (Cont).

(4) Vehicle Lights Switch.

MAIN SWITCH

Five position switch section.

B.O. MARKER: Black out tail lights lit. Stoplights will light when brake treadle valve is pressed.

B.O. DRIVE: Black out tail lights and blackout drivinglamp lit. Stop lights will lightwhenbrake treadle valve is pressed.

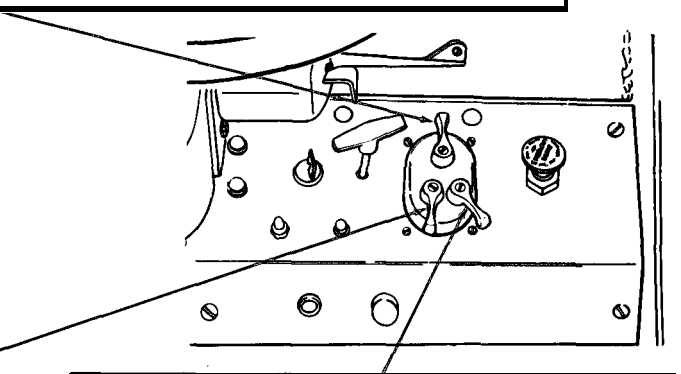
OFF (Unmarked): All lamps off.

STOP LIGHT Stop lights will light when brake treadle valve is depressed. Turn signals can be turned on.

SER DRIVE: Tail lights and front driving lamps lit. Stop lights will light when brake treadle valve is pressed. Turn signals and flood lights can be turned on.

NOTE

Ignition key switch must be in extreme counterclockwise position or on position for vehicle lights switch to operate.



AUXILIARY SWITCH

Four position switch section.

PANEL BRT.: Gage lights brightly lit and cab dome light can be turned on.

DIM: Gage lights dimly lit and cab dome light can be turned on.

OFF (unmarked): Panel and tail lights off.

PARK: Service tail lights lit (main switch in SER DRIVE position) and gage lights dimly lit and cab dome light can be turned on. Black out tail lights lit (main switch in B.O. DRIVE or B.O. MARKER position).

NOTE

Main switch section must be in any position other than OFF for auxiliary switch section to operate.

MECHANICAL LOCK

Spring loaded switch section.

LOCK (unmarked): Main switch can only be placed in B.O. MARKER position; all other positions locked out.

UNLOCKED: Enables main switch to be placed in B.O. DRIVE, STOP LIGHT, or SER DRIVE POSITION.

To operate, hold lever in UNLOCK position and move main switch lever to desired position.

2-1. INSTRUMENT PANELS (CONT)

a. Right Instrument Panel (Cont).

(5) Other Controls and Indicator.

SHUT OFF CONTROL

Fuel shut off control; engine stop.

Cable connected to fuel injection pump fuel shut off lever.

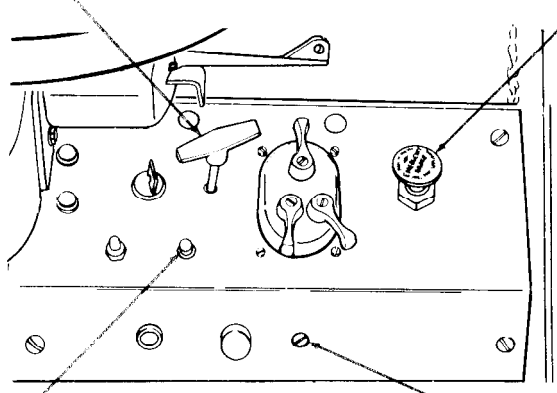
Pull out to stop engine. After engine has stopped, push control in. Control must be pushed in all the way in order to start engine.

PARKING BRAKE CONTROL

Pull on, push off control.

Applies parking brake.

Pulling knob out applies parking brake. Pushing knob in releases parking brake. When parking brake applied, BRAKE ENGAGED and CLUTCH PRESS warning indicators on left instrument panel will be lit.



DIMMER COMPT LIGHTS CONTROL

Rheostat control.

Controls brightness of gage lights and cab dome light (auxiliary switch in any position other than OFF). Turn control to extreme counterclockwise position for brightly lit lights. Turn control clockwise to decrease brightness. Extreme clockwise position turns lights off.

AIR PRESSURE WARNING ALARM

Audible alarm.

Sounds when engine is first started until air pressure reaches approximately 65 psi at which time it will turn off. During operation, sounds to warn operator that there is not enough air pressure to continue operating loader safely.

2-1. INSTRUMENT PANELS (CONT)

b. Left Instrument Panel.

(1) Warning Indicators.

BRAKE ENGAGED

Warning indicator light.

Turns on indicating there is low or no air pressure in brake system. Will also turn on when parking brake control is pulled out indicating parking brake is applied.

OIL PRESS

Warning indicator light.

Turns on indicating there is no oil pressure or low oil pressure in the engine. Will also turn on if engine is stopped and ignition key switch is turned to on position indicating bulb is okay. If this indicator turns on when engine is running, turn engine off and check engine oil level. If engine oil level is okay, do not start engine; notify organizational level maintenance.

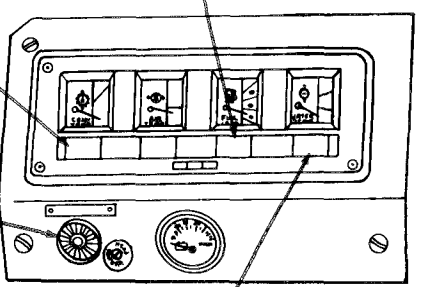
AUXILIARY STEERING

Audible warning indicator and light.

Buzzer sounds and lamp turns on indicating steering system is not operating and that auxiliary steering system is operating. If buzzer sounds and/or lamp turns on, stop loader immediately and notify organizational maintenance.

NOTE

The auxiliary steering system is only used for a short period of time if steering system doesn't operate. When actuated, this system will allow you to steer the loader with hydraulic power until the loader can be stopped. After stopping loader, be sure you turn ignition key switch to off position and apply parking brake as soon as possible. If you fail to do this, you will cause damage to auxiliary steering electric motor and discharge the batteries.



CLUTCH PRESS

Warning indicator light.

Turns on indicating there is no oil pressure or low oil pressure in the transmission torque converter. Will also turn on if engine is stopped and ignition key switch is turned to on position indicating bulb is okay, if engine is running and declutch treadle valve is pressed, and if parking brake is applied. If this indicator turns on with engine running and declutch treadle valve is not depressed, and stays on for more than 60 seconds, stop engine and notify organizational maintenance.

2-1. INSTRUMENT PANELS (CONT)

b. Left Instrument Panel.

(2) Gages.

CONV TEMP GAGE

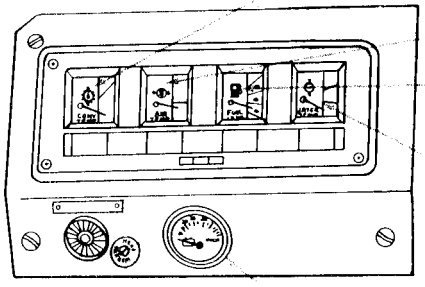
Indicates transmission torque converter temperature.

Normal operating temperature indication is in green area of gage. If gage pointer goes into red area, select a lower transmission speed. If pointer remains in red area, stop operation, move transmission control lever in neutral (N) position, and run engine at full throttle. If this does not reduce temperature indication, stop engine and check transmission oil level. If oil level is okay, check radiator for obstructions.

AIR PRESS GAGE

Indicates brake system air pressure.

Normal air pressure indicated when pointer is in green area of gage. If air pressure decreases and pointer goes into red area, warning buzzer will sound alerting you of this condition. If air pressure continues to decrease, parking brake will automatically engage.



FUEL LEVEL GAGE

Indicates amount of fuel in fuel tank.

VOLTMETER GAGE

Indicates voltage level of batteries.

Voltage is normal when pointer indicates 24 volts. If pointer indicates below 22 volts, battery charge is too low for continued operation or alternator is not charging batteries. If pointer is indicating above 30 volts and you know that batteries were not weak, alternator is over charging batteries. If this condition continues, damage to batteries will result. Report these problems to organizational maintenance.

WATER TEMP GAGE

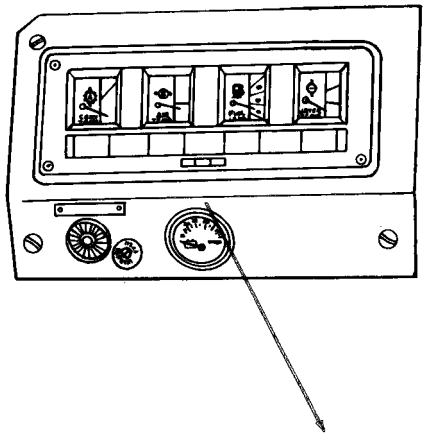
Indicates temperature of coolant in engine cooling system.

Normal coolant temperature indicated when gage pointer is in green area. If pointer goes into red area, stop engine and check radiator coolant level or for radiator obstructions.

2-1. INSTRUMENT PANELS (CONT)

b. Left Instrument Panel.

(3) Windshield Washer Control.



WINDSHIELD WASHER CONTROL
Push on control. Controls flow of washer solvent sprayed on windshield. Push control in to spray washer solvent on windshield; release to stop spray.

2-2. CONSOLE SWITCH PANEL

a. Switches and Control.

DEFROSTER SWITCH

Two position rotary switch.

ON: Turns on defroster motor located above front windshield to defog front windshield.

OFF: Turns off defroster motor.

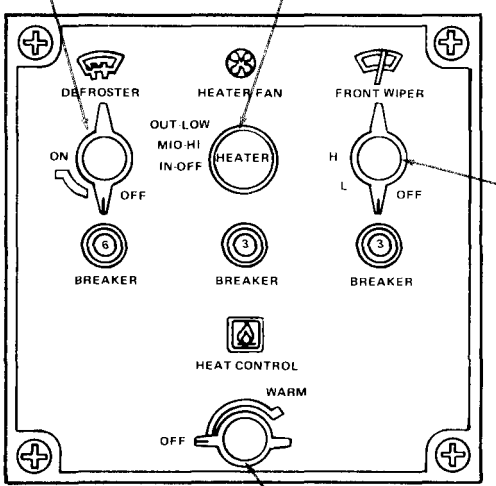
HEATER FAN SWITCH

Three position pull on - push off switch.

OUT - LOW (switch shaft pulled completely out): Heater fan operates at low speed. Heater fan draws air over heater core where it is heated then expelled out heater console.

MID - HI (switch shaft pulled out to first detent position): Heater fan operates at high speed.

IN - OFF (switch shaft pushed in): Heater fan off.



FRONT WIPER SWITCH

Three position rotary switch.

H (high): Front windshield wiper motor operates at high speed.

L (low): Front windshield wiper motor operates at low speed.

OFF: Front windshield wiper motor off.

HEAT CONTROL

Rotary control. Clockwise rotation increase; counterclockwise rotation decrease.

Controls flow of engine cooling system coolant through heater core. For maximum heat, turn control completely clockwise to WARM position. To turn off heat, turn control to OFF position.

WARM: Valve completely open allowing maximum flow of engine coolant through heater core.

OFF: Valve closed; flow of engine coolant through heater core blocked.

2-2. CONSOLE SWITCH PANEL (CONT)

b. Circuit Breakers.

6 AMP CIRCUIT BREAKER

Resettable circuit breaker; reset by pressing button.

Button pops out when circuit breaker blows.

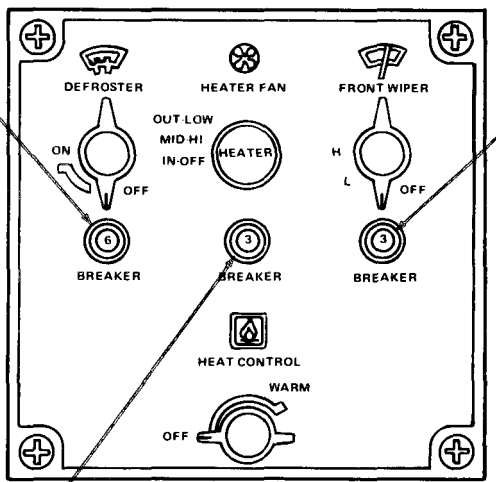
Protects defroster and defogger fans circuits.

3 AMP CIRCUIT BREAKER

Resettable circuit breaker; reset by pressing button.

Button pops out when circuit breaker blows.

Protects front windshield wiper circuit.



3 AMP CIRCUIT BREAKER

Resettable circuit breaker; reset by pressing button.

Button pops out when circuit breaker blows.

Protects heater fan circuit.

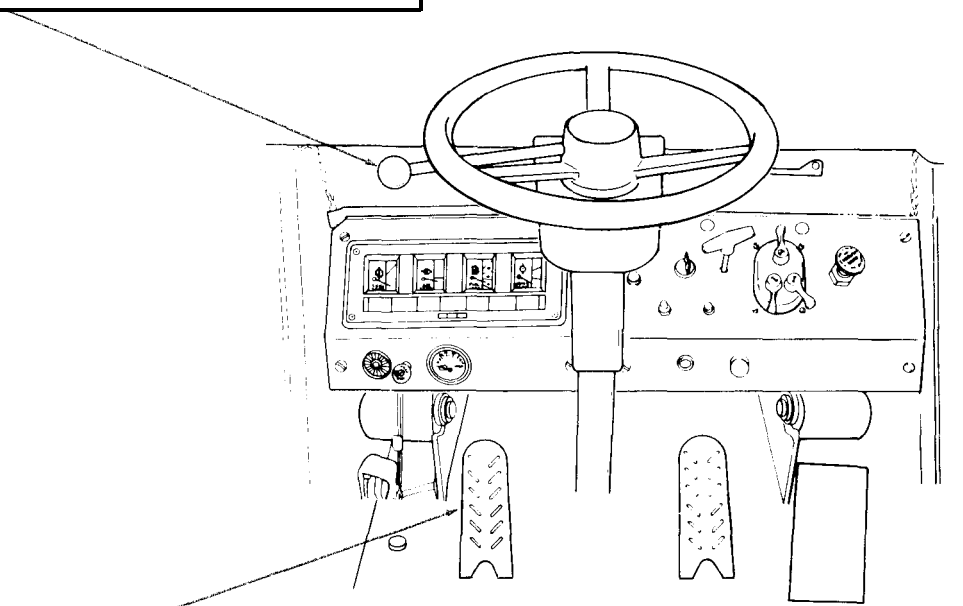
2-3. TRANSMISSION CONTROLS

TRANSMISSION CONTROL LEVER

Selects direction and drive speeds (in forward).

Rearmost position is reverse (R), next position is neutral (N), third position is low range forward (F), and forwardmost position is high range forward (H). To go from low range forward (F) to high range forward (H), you must lift control lever up then push it forward. When control lever is in reverse (R) position, back-up alarm at rear of loader will sound.

Control lever must be in neutral (N) to start engine.



DECLUTCH TREADLE VALVE

Neutralizes transmission, applies service brakes and turns on stop lights and CLUTCH PRESS warning indicator.

Use to provide maximum engine power to increase loader hydraulic system power for raising bucket. Move loader into stockpile. When engine speed decreases, press declutch treadle valve to disengage transmission, then press accelerator pedal to increase engine rpm providing maximum engine power to loader hydraulic system to quickly raise bucket.

2-4. BRAKE AND THROTTLE CONTROLS

STEERING WHEEL

Steers loader by moving front chassis on pivot pins.

Turn clockwise for right turn. Turn counterclockwise for left turn.

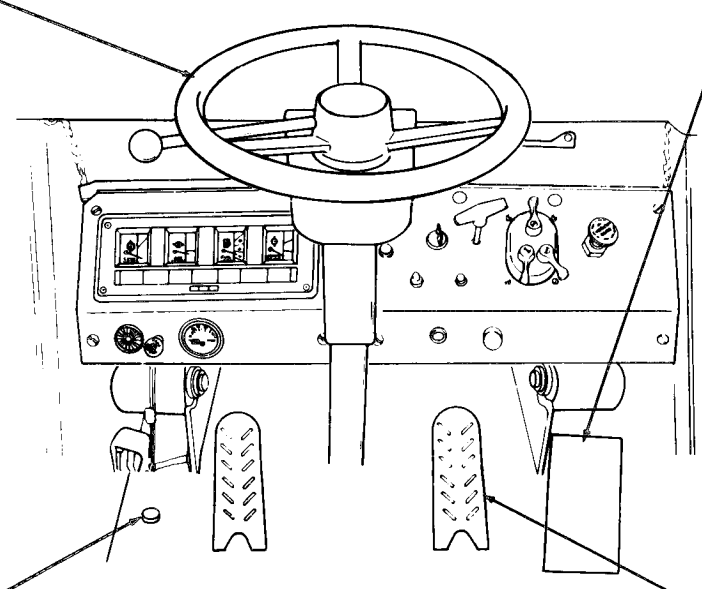
WARNING

Do not depress button in center of steering wheel; it is not a horn button. Depressing this button causes steering wheel to collapse for shipment purposes. If you depress this button while operating loader, steering wheel will collapse. Your fingers could be crushed between steering wheel and windshield wiper motor bracket.

ACCELERATOR PEDAL

Increases/decreases engine speed.

Depressing pedal increases engine rpm; releasing pedal decreases engine rpm.



HORN VALVE

Actuates air horn.

Press button with foot to sound air horn.

SERVICE BRAKE TREADLE VALVE

Applies service brakes.

Depress treadle valve to apply brakes. With vehicle lights switch main switch in any position other than OFF, stop lights will turn on.

2-5. TURN SIG NALS AND FLASHER

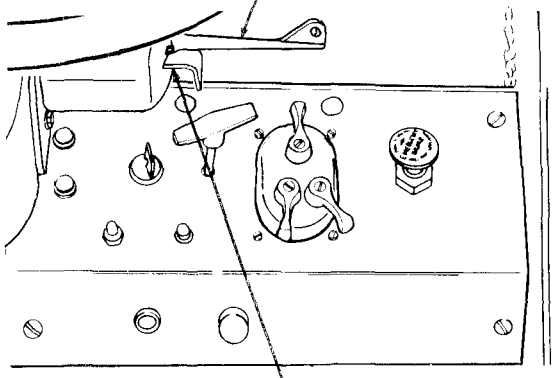
TURN SIGNAL SWITCH

Three position switch with indicator.

Lever in forward position (away from you): Lamp assembly mounted at top left of cab flashes on and off signaling left turn. Bulb located in turn signal switch will also flash on and off. You must return lever to center position after you have completed the turn to stop lamp assembly from flashing.

Lever in center position: Turn signals off.

Lever in rearward position (toward you): Lamp assembly mounted at top right of cab flashes on and off signaling right turn. Bulb located in turn signal switch will also flash on and off. You must return lever to center position after you have completed the turn to stop lamp assembly from flashing.



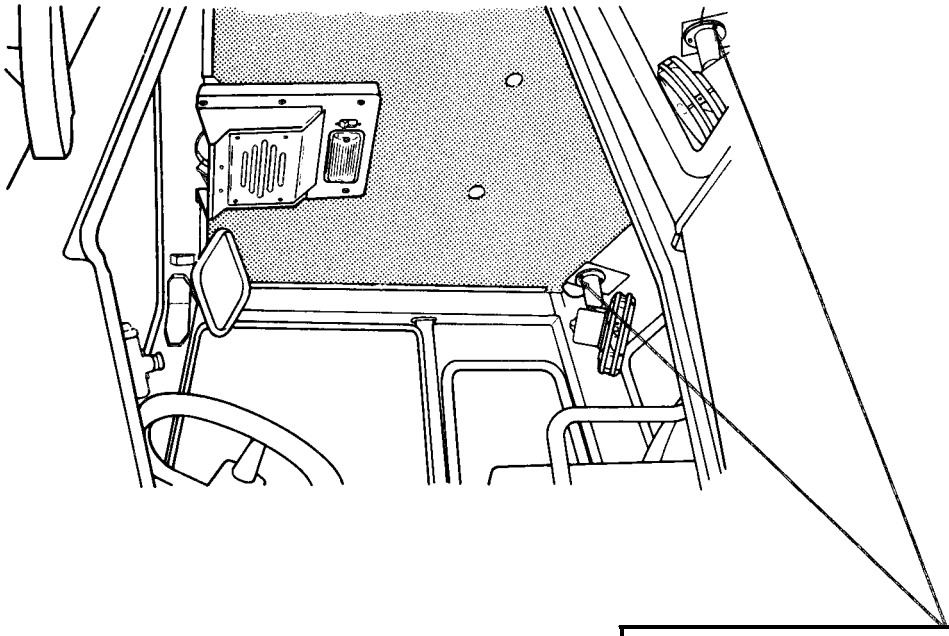
HAZARD CONTROL

Pull on control.

On (pull out): Pull control out to the right. Lamp assemblies mounted at top left and right of cab will flash on and off. Bulb located in turn signal switch will also flash on and off.

Off: Turn off flashing lamp assemblies by pulling turn signal switch lever down or up.

2-6. REAR WINDSHIELD DEFOGGER FANS



ON-OFF SWITCH

Three position rocker switch.

LOW: Fan motor operates at low speed.

OFF: Turns off power to fan motor.

HIGH: Fan motor operates at high speed.

To adjust position of defogger fans, grasp motor with your hands and firmly move into desired position.

WARNING

Before adjusting position of defogger fan, be sure it is not operating. Failure to do so could cause serious injury to fingers or hand by rotating fan blade. If you injure your fingers or hand, obtain medical aid immediately.

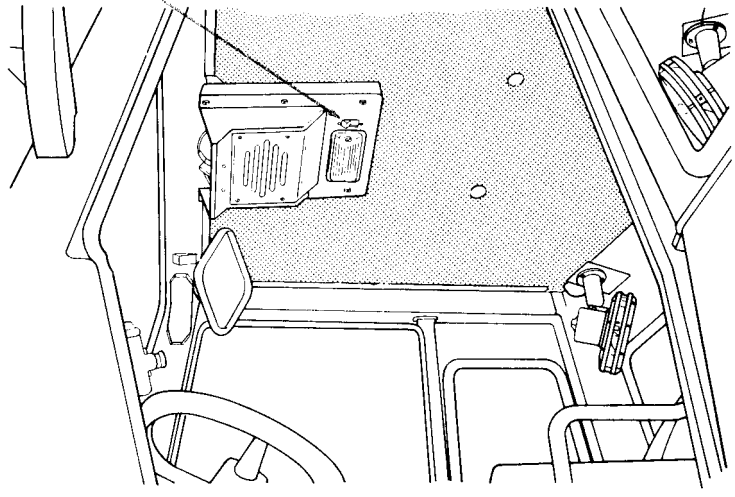
2-7. DOME LIGHT SWITCH]

ON-OFF SWITCH

Two position rocker switch.

ON: Turns cab dome light on. Vehicle lights switch main and auxiliary switches must be in any position other than OFF for this switch to operate dome light. Brightness of cab dome light controlled by DIMMER COMPT LIGHTS control.

OFF: Turns off cab dome light.



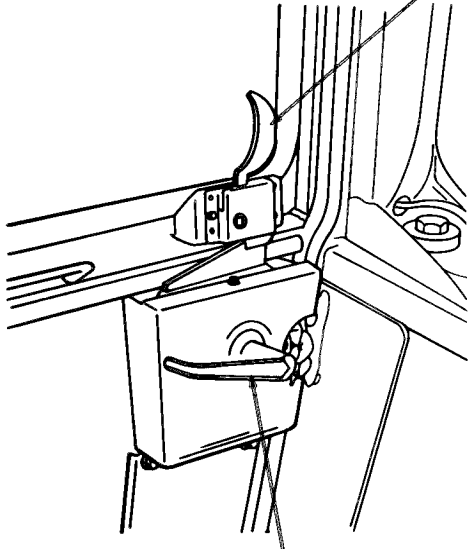
2-8. UPPER AND LOWER DOOR LATCHES

Releases upper door enabling it to be swung open.

WARNING

When upper door is opened, be sure you latch it to side of cab. Failure to do so will allow door to swing back and forth causing glass to break and injuring you.

Move latch handle towards rear of cab to release latch. When upper door is released and opened, you must latch it to side of cab to prevent injury to yourself and damaging it.

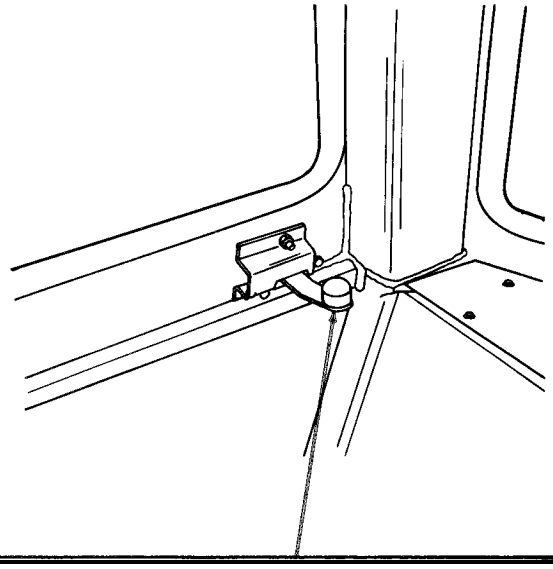


DOOR LATCH

Latches door in closed position.

To open latch, push latch handle down until latch clears door striker, swing door open, then release latch handle.

To latch door, push latch handle down, gently but firmly close door, and release handle. Check that latch engages door striker.



CAB LATCH

Latches upper door in open position.

To latch upper door to side of cab, release upper door latch. Swing upper door open all the way. Move cab latch handle towards front of loader and gently but firmly push upper door against side of cab and move cab latch handle to engage bracket on exterior of upper door.

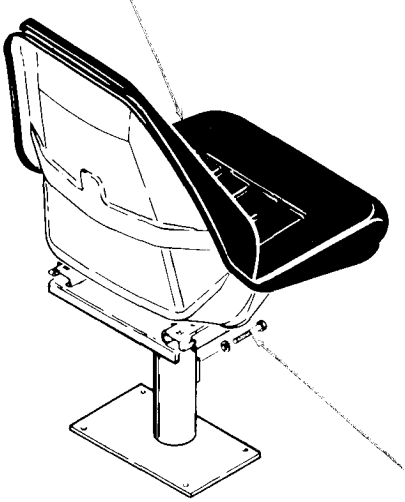
Move latch handle towards front of loader to release upper door.

2-9. OPERATOR'S SEAT

FORE AND AFT ADJUSTMENT LEVER

Releases seat for fore and aft adjustment and locks seat in position.

Sit in seat, move lever to left to release seat for adjustment and then move forward or rearward until seat is at desired position.



HEIGHT ADJUSTMENT

Releases seat for height adjustment.

Loosen bolt just enough to be able to raise or lower seat. Raise seat by grasping seat bottom and raise until desired height is obtained. Lower seat by firmly pushing down on seat with your hands until desired height is obtained. Tighten bolt securely after adjusting its height.

2-10. LOADER CONTROLS

LIFT ARM CONTROL LEVER

Four position control lever. Controls flow of hydraulic oil to lift cylinder assemblies.

FLOAT: Bucket follows contour of ground. Used only when bucket is on ground and you want it to follow the shape of the ground. It causes oil to flow between ends of lift cylinder assemblies only.

LOWER: Lowers bucket as long as control lever is in this position.

NEUT.: Bucket held in position.

RAISE: Raises bucket to desired height until returned to NEUT. or until height selected by bucket height control is reached.

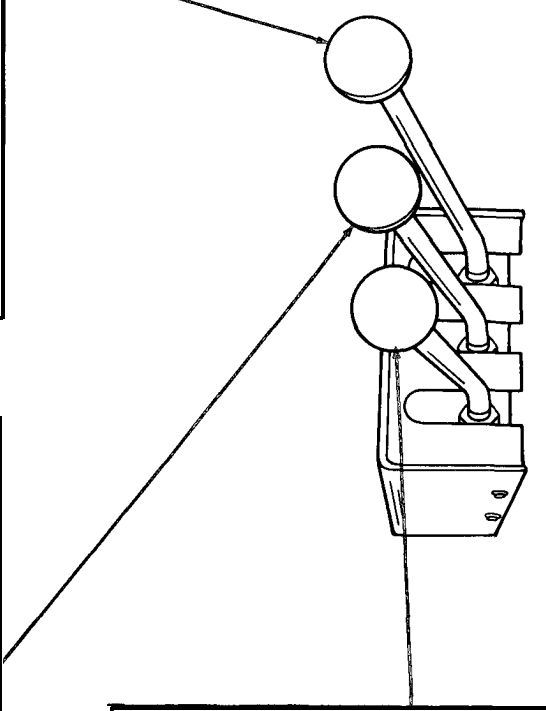
BUCKET CONTROL LEVER

Three position control lever. Controls bucket position for dumping or carrying a load.

DUMP: Bucket will be quickly positioned to dump a load.

NEUT.: Bucket held in position.

CROWD: Bucket rolls back until control lever returned to NEUT. position. Use to position bucket for carrying a load.



CLAM CONTROL LEVER

Three position control lever. Controls clam opening or closing.

OPEN: Opens clam until control lever placed in HOLD position or clam opened to maximum position.

HOLD: Holds clam in position.

CLOSE: Closes clam until control lever placed in HOLD position or clam completely closed.

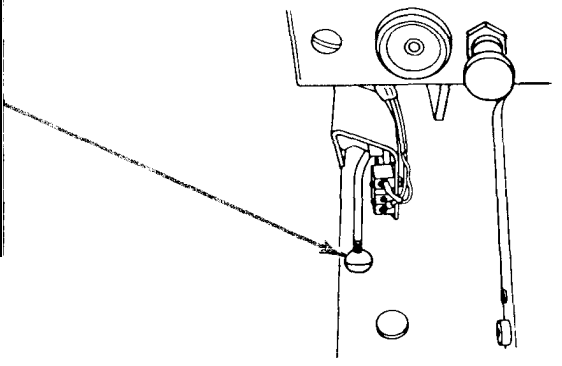
2-10. LOADER CONTROLS (CONT)

BUCKET HEIGHT CONTROL

Automatically stops loader lift arms at a preselected dump height.

Use this control when loading trucks, rail cars, hoppers, etc.

Refer to page 2-45 for adjustment.



BUCKET LEVEL INDICATOR

Tube with rod telescoping in and out. Located on right bucket tilt cylinder assembly.

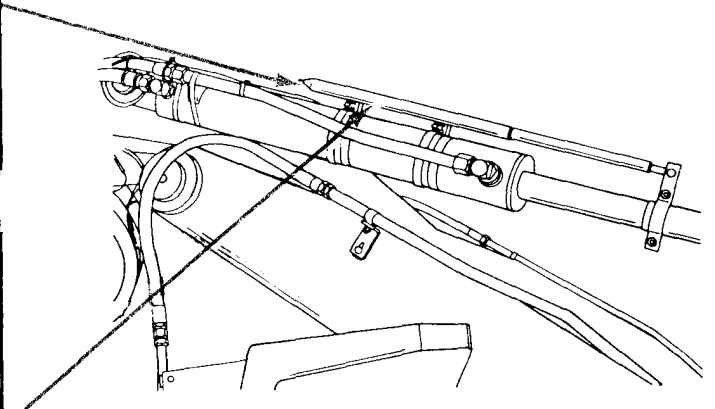
When end of rod is one inch out of tube, bottom of bucket is level with ground or bucket has returned to position selected by return-to-dig control.

RETURN-TO-DIG CONTROL

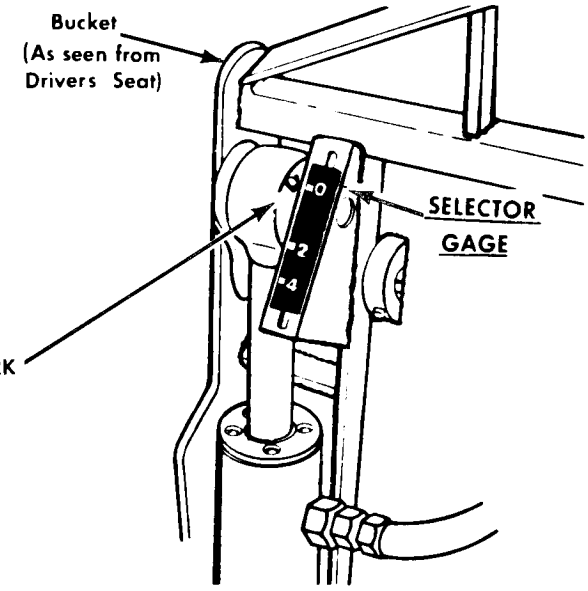
Automatically returns bucket to digging position preset by this control.

Used in conjunction with BUCKET control lever in CROWD position and LIFT ARM control lever in FLOAT position.

Refer to page 2-46 for adjustment.



2-10. LOADER CONTROLS (CONT)



SELECTOR GAGE

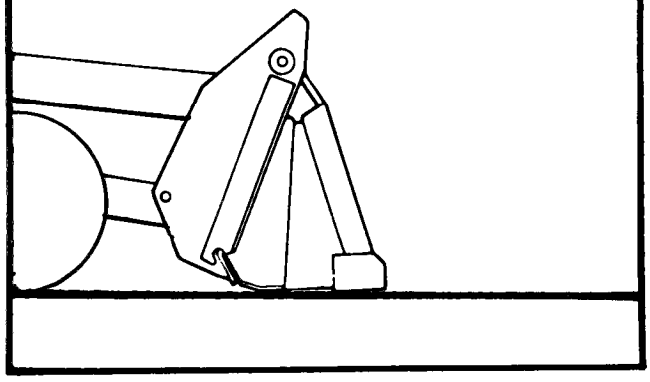
Bucket can be used for scooping, scraping, dozing, or clamshell operations.

Selector Gage is used to show bucket positions.

STANDARD BUCKET

Selector Gage=0

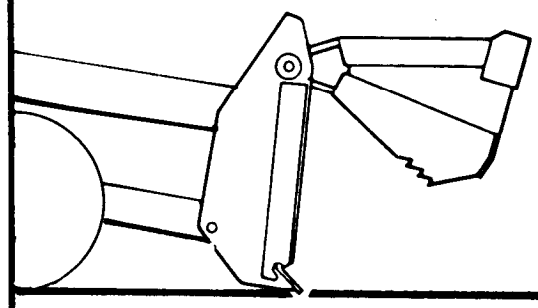
Level Indicator= Rod is one inch out of tube.



DOZING

Selector Gage - Reading is off gage.

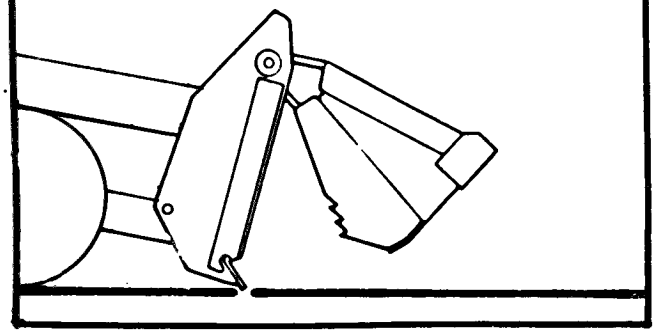
Level Indicator - Rod is four to five inches out of tube.



SCRAPING

Selector Gage - Between 2 and 4.

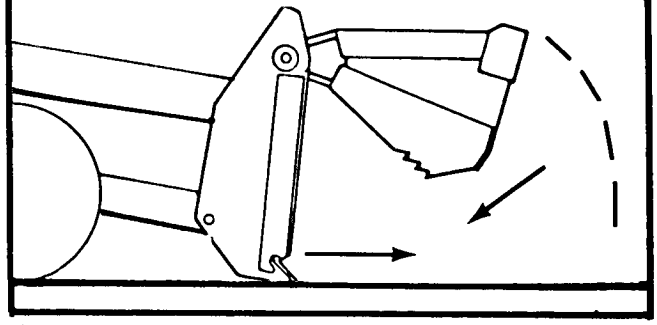
Level Indicator - Rod is one inch inside of tube.



CLAMSHELL

Selector Gage - Reading is off gage.

Level Indicator - Rod nipple is just out of tube approximately one inch. Start clamshell operation with the blade covering 2/3 the height of the object. The clam is then rolled forward and closed.



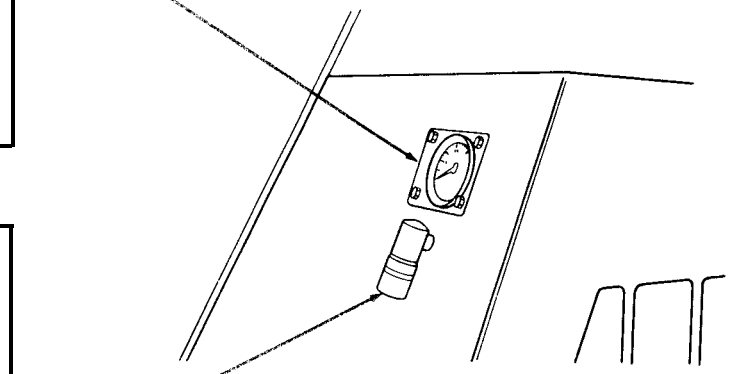
2-11. EXTERNALLY MOUNTED CONTROLS AND INDICATORS

HOURMETER/TACHOMETER

Connected to engine tachometer drive.

HOURMETER: Indicates cumulative number of engine operating hours. Connected to engine tachometer drive and operates only when engine is operating. Records up to 9999.9 hours.

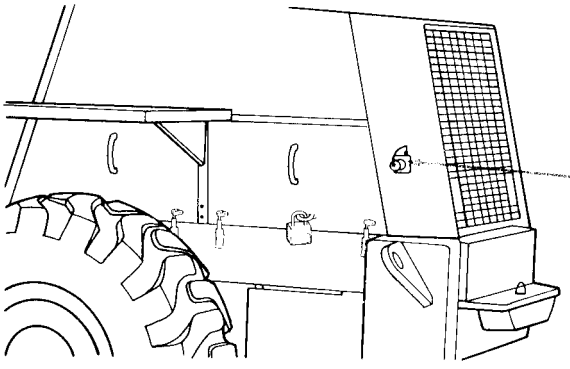
TACHOMETER: Indicates engine speed in revolutions per minute (rpm). Each short mark on gage equals 50 rpm; each long mark equals 100 rpm.



AIR CLEANER RESTRICTION INDICATOR

Indicates air cleaner filter elements require servicing.

Factory set to signal when air cleaner filter elements require servicing. Red signal indicator inside indicator gradually rises as air flow decreases due to dirt particles trapped in elements. When red signal is fully exposed, it is locked in position. After servicing filter elements, indicator is reset by pressing top of indicator.

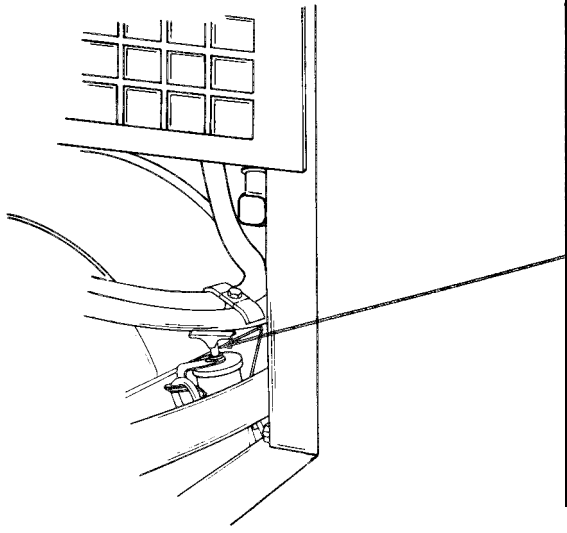


SLAVE RECEPTACLE

Permits charging of batteries or slave starting of engine from an external power source. Also provides a power source for charging/slaving other equipment.

+24 volts negative ground available at this receptacle.

2-12. OTHER OPERATOR'S CONTROLS AND INDICATORS



TRANSMISSION OIL LEVEL DIPSTICK AND FILL

Indicates transmission oil level.

Oil level shall be between FULL and ADD marks with CONV TEMP gage indicating in green zone and engine operating at idle speed.

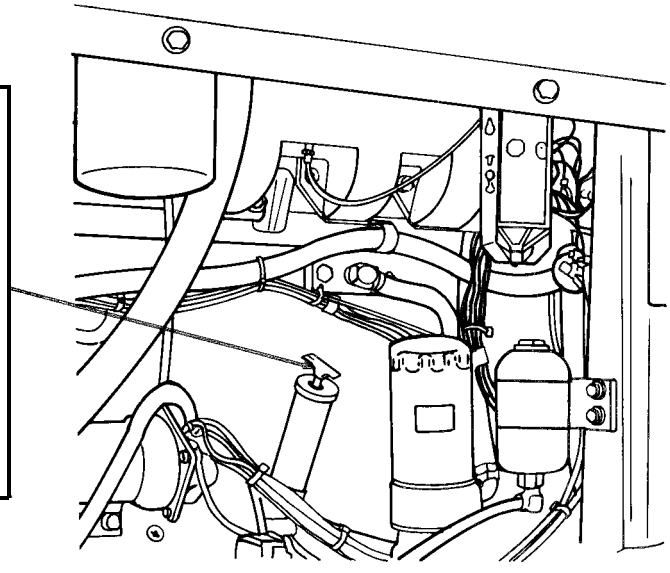
Unlock dipstick, turn handle counterclockwise several turns, then pull up to remove. Be sure dipstick is fully seated when reinstalling it, turn handle clockwise to tighten, then lock it.

ENGINE OIL LEVEL DIPSTICK AND FILL

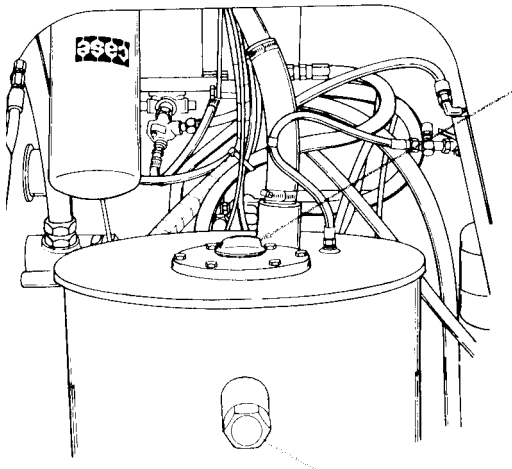
Indicates engine oil level.

Oil level shall be between ADD and FULL marks on dipstick.

Turn handle on dipstick counterclockwise several turns, then pull up to remove. Install dipstick and turn handle clockwise to tighten.



2-12. OTHER OPERATOR'S CONTROLS AND INDICATORS (CONT)



HYDRAULIC RESERVOIR FILL

Located behind front access door.

WARNING

Hydraulic reservoir is pressurized. Shut off engine before removing hydraulic reservoir fill cap. Failure to do so could cause serious injury or death.

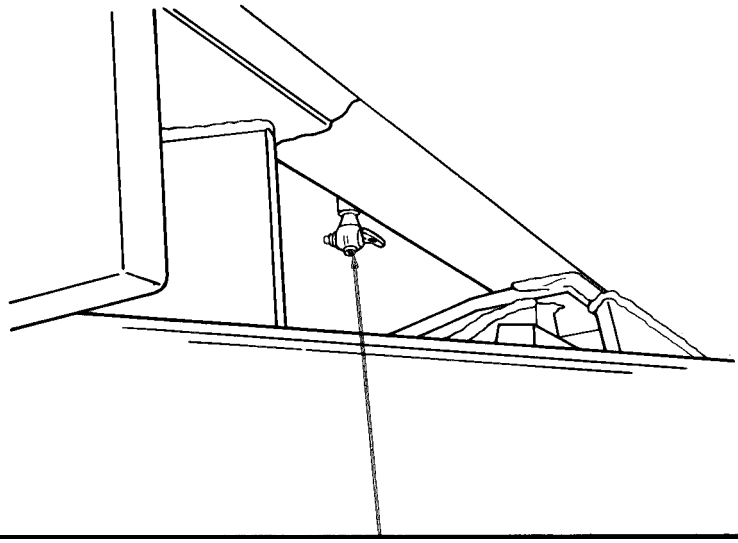
With engine off, unlock and open front access door. Use clean cloth to clean area around fill cap. Remove fill cap and add hydraulic oil until oil level can be seen in sight gage window. Reinstall fill cap and tighten securely by hand.

HYDRAULIC RESERVOIR OIL LEVEL SIGHT GAGE

Indicates hydraulic system oil level.

Oil level shall be seen in sight gage with engine off, loader parked on level surface, and bucket lowered to ground.

2-12. OTHER OPERATOR'S CONTROLS AND INDICATORS (CONT)



AIR RESERVOIR DRAIN VALVE

Located at right rear side of loader. Enables draining of water from air reservoir.

With engine off, slowly open drain valve and drain water from air reservoir. Tighten drain valve securely after all water is drained.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-13. GENERAL

Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your loader. They are reports to organizational maintenance and to your Commander. And they are a checklist for you when you want to know what is wrong with the loader after its last use, and whether those faults have been fixed. For the information you need on forms and records, see DA PAM 738-750.

2-14. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

a. The item numbers of table 2-1 indicate the sequence the PMCS are to be performed. This column should be used as the source of item numbers for the TM Number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

b. BEFORE - Checks and services performed prior to the equipment leaving its containment area or performing its intended mission.

c. DURING - Checks begin when the equipment is being used in its intended mission.

d. AFTER - Checks and services begin when the equipment is taken out of its mission mode or returned to its containment area.

e. Do your weekly (W) PREVENTIVE MAINTENANCE weekly.

f. Do your monthly (M) PREVENTIVE MAINTENANCE once a month.

g. If something doesn't work, troubleshoot it with the instructions in this manual or notify your supervisor.

h. Always do your PREVENTIVE MAINTENANCE in the same order, so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.

i. If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to organizational maintenance RIGHT Now.

j. When you do your PREVENTIVE MAINTENANCE take along the tools you need to make all the checks. You always need a rag *or* two.

2-14. PREVENTIVE MAINTENANCE CHECKS AND SE RVICES(CONT)

WARNING

Dry cleaning solvent P-D-680 used to clean parts is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes and clothes and don't breathe vapors. Do not use near open flame or excessive heat and don't smoke when using it. Failure to do so could cause serious injury. If you become dizzy while using cleaning solvent, get fresh air and medical attention immediately. If contact with skin or clothes is made, flush with large amounts of water. If contact with eyes is made, wash eyes with water and get medical aid immediately.

WARNING

Compressed air used for cleaning purpose will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to do so could cause serious injury to eyes and possible blindness. If you hurt your eyes or if a foreign object is blown into your eyes, seek medical attention immediately.

(1) Keep it clean: Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (P-D-680) to clean metal surfaces. Use soap and water when you clean rubber or plastic material.

(2) Bolts, nuts, and screws: Check that they are not loose, missing, bent or broken. You can-t try them all with a tool of course, but look for chipped paint, bare metal or rust around bolt heads. If you find one you think is loose, tighten it, or report it to organizational maintenance if you can-t tighten it.

(3) Welds: Look for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld , report it to organizational maintenance.

(4) Electric wires and connectors: Look for cracked or broken insulation, bare wires and loose or broken connectors. Tighten loose connectors and make sure that the wires are in good shape.

(5) Hoses and fluid lines: Look for wear, damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to organizational maintenance.

k. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn them and be familiar with them and REMEMBER - when in doubt, notify your supervisor.

2-14. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Leakage definitions for Crew/Operator PMCS

Class I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

Class II Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected.

Class III Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

CAUTION

Equipment operation is allowable with minor leakages (class I or II). Of course, consideration must be given to the fluid capacity in the system/item being checked/inspected. When in doubt, notify your supervisor.

Class III leaks should be corrected immediately or reported to your supervisor or organizational maintenance.

Table 2-1. Preventive Maintenance Checks and Services

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
						IMPORTANT: PERFORM WEEKLY AS WELL AS BEFORE OPERATION PMCS IF: 1. YOU ARE THE ASSIGNED OPERATOR AND HAVE NOT OPERATED THE LOADER SINCE THE LAST WEEKLY. 2. YOU ARE OPERATING THE LOADER FOR THE FIRST TIME. NOTE-NEW LOADERS Have the following two operations performed by organizational maintenance at 20 hours to comply with warranty. 1. Replace engine oil and filter. 2. Replace steering and hydraulic system filters.	
1	●					Loader Pivot Pins. Lubricate 22 lube fittings (1) using GAA. Refer to LO 5-3805-262-12 as necessary.	
2	●					Rear Axle Trunnion Pivots. Lubricate two lube fittings (2) using GAA. Refer to LO 5-3805-262-12 as necessary.	

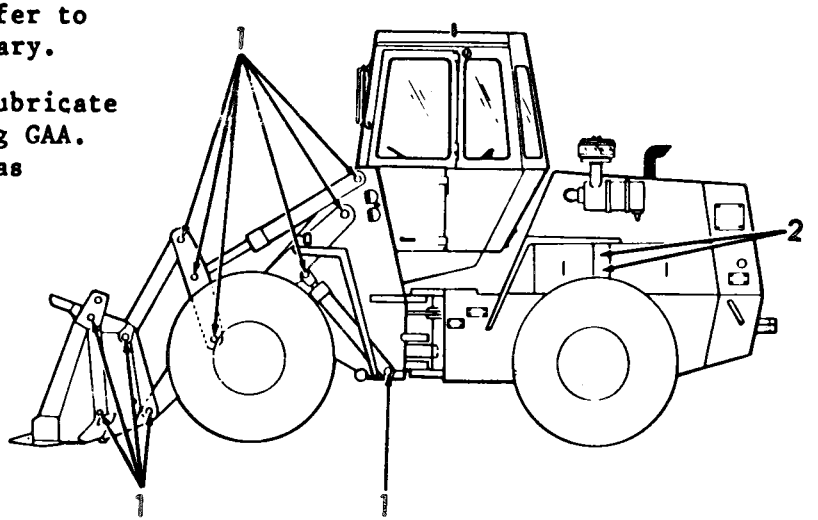
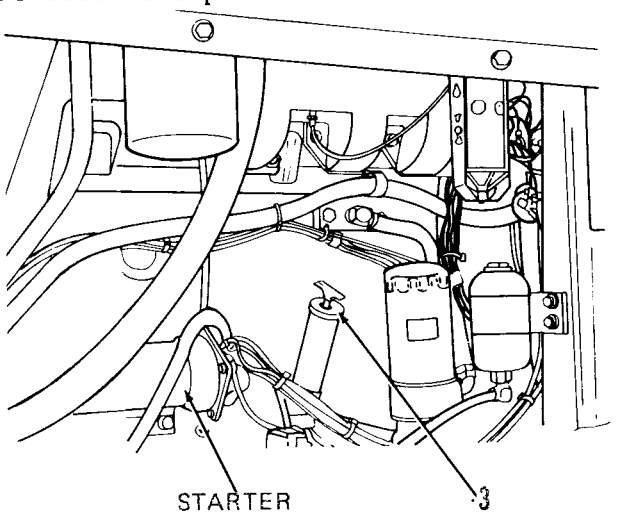


Table 2-1. Preventive Maintenance Checks and Services - Continued

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
3	●					Engine Oil Level. Unlock and remove engine left side front panel. Turn dipstick (3) handle counterclockwise several turns, then pull up to remove. Check level on dipstick. Level shall be between ADD and FULL marks on dipstick. Add oil as necessary to bring level up. Reinstall dipstick and turn clockwise several turns. Reinstall and lock engine left side panel.	

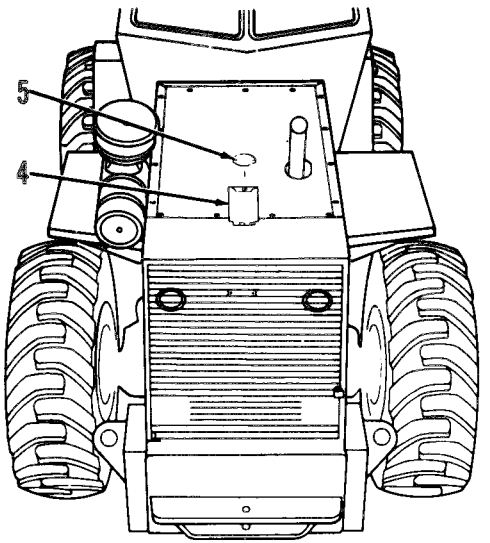


WARNING

When doing the following, slowly loosen radiator cap to relieve pressure before completely removing when engine is hot. Failure to do so could cause severe burns due to hot steam scalding you. If you are scalded by hot steam, seek medical aid immediately.

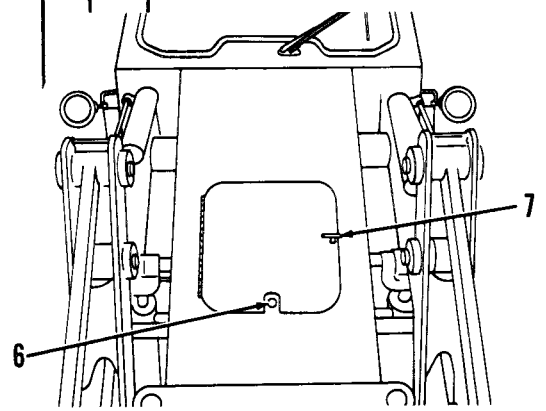
4 ●

Coolant Level. Unlock radiator cap access panel (4). Slowly loosen then remove radiator cap (5). Check that coolant is one to two inches below radiator filler neck. Add coolant as necessary. Reinstall radiator cap. Close and lock radiator cap access panel.



5 ●

Hydraulic System Oil Level. With loader parked on level surface, bucket lowered to ground, and engine off, check hydraulic oil level (OE/HDO-10) in sight gage (6). Oil level should be seen in sight gage. If oil level is not seen in sight gage, unlock and open front access door (7). Loosen and remove fill cap (8). Add oil until level is seen in sight gage. Reinstall fill cap (8) and tighten securely. Check for loose or missing attaching hardware. Close and lock front access door (7). On cold check, oil level should not be higher than 1/4 of sight gage.



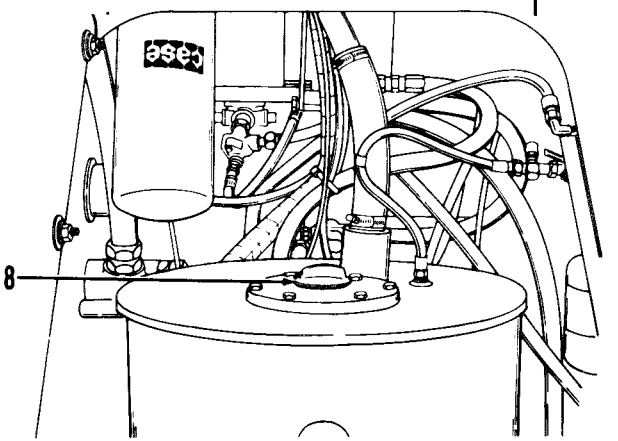
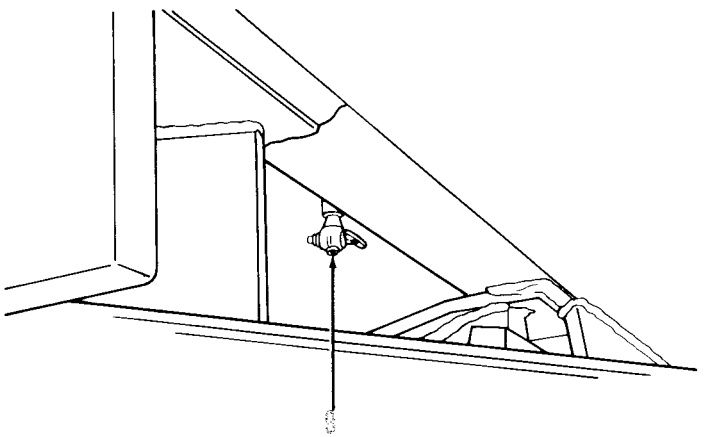
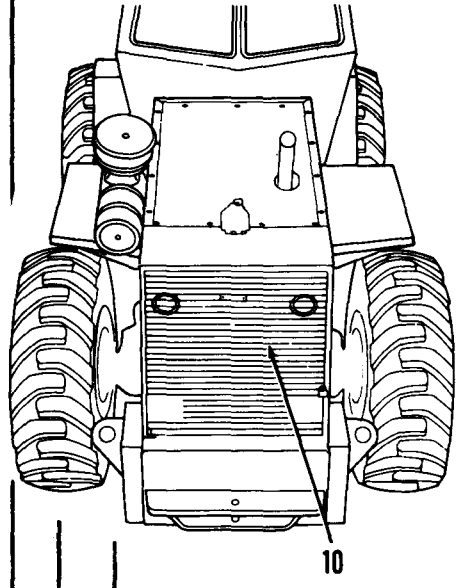


Table 2-1. Preventive Maintenance Checks and Services - Continued

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
6						Air Reservoir. At right side of loader, just above rear axle, slowly open air reservoir drain valve (9) and drain water. Close air reservoir drain valve securely after all water has drained. 	
7						Tires/Wheels. Check tires for wear, nails and foreign objects, loose or missing lug nuts, cuts, and correct pressure (40 psi). NOTE Have organizational maintenance check torque of lug nuts of a new loader after first hour, first five hours, first 10 hours, first 20 hours, and first 50 hours. After that, check every 50 hours until lug nuts remain tight. If a wheel is removed, check torque of lug nuts every 50 hours until they remain tight. Lug nuts shall be tightened to 340 to 420 lb-ft.	Tire with less than 1/4 inch tread or cuts that show tire cord which would result in tire failure during operation. One or more tires flat or missing.

8	●				Loader Exterior. a. Check for leaks (oil, fuel, hydraulic fluid, or coolant) or appearance of leaks. Especially under the loader. b. Check roll over protective structure (ROPS) for damage or loose mounting.	Class III leakage. Cracks, welds, buckled or split seams and loose or missing mounting bolts.
9	●				Battery Cables. Open radiator grille (10) at rear of loader. Check battery cables (11) for corrosion at connection to battery terminals (12). Check cables for cracked or chafed insulation and frayed or broken strands of wire. Check for missing or broken battery caps.	
10	●				Wiring Harnesses. Visually check wiring harnesses and connections for frayed or broken wires.	



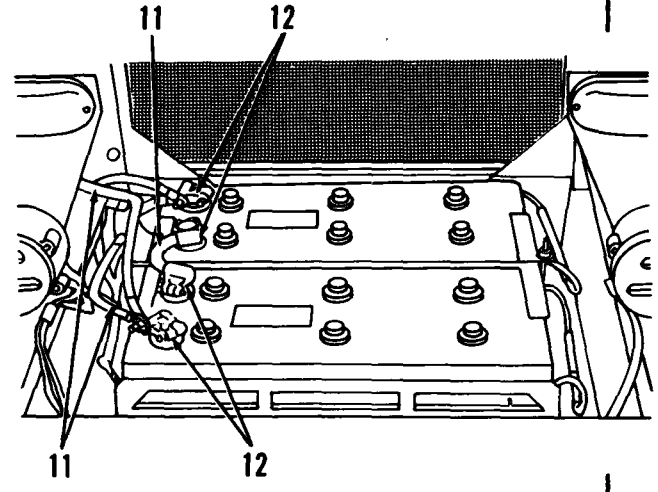
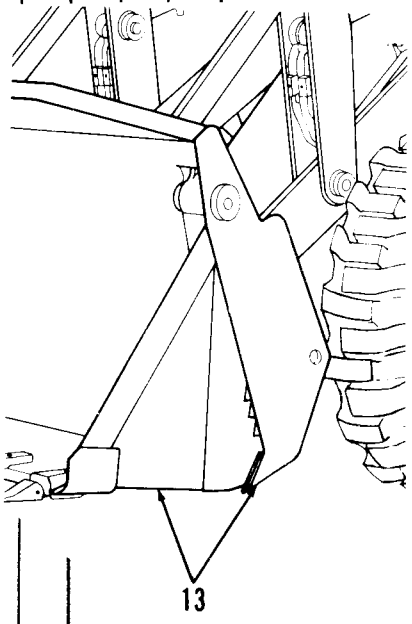
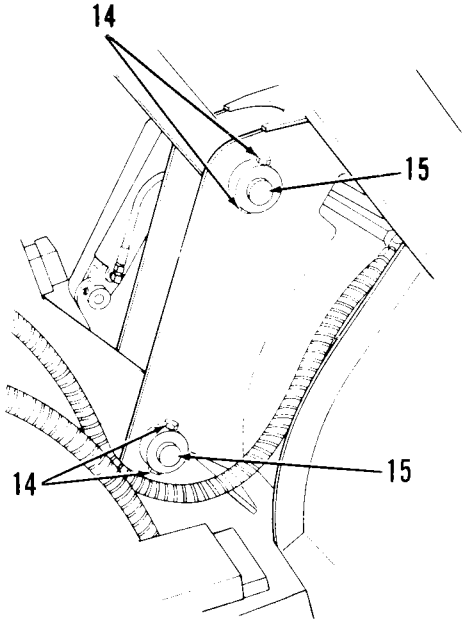


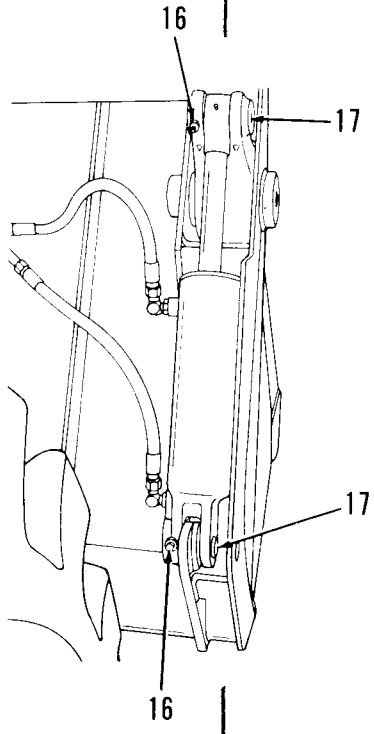
Table 2-1. Preventive Maintenance Checks and Services - Continued

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
11	●					Loader Bucket Assembly. Visually check blade and clam assembly (13) for cracks, breaks, or broken welds. Check that hardware (14) securing bucket pins (15) are tight and not loose. Check that hardware (16) securing bucket clamshell cylinder assemblies pins (17) are tight and not loose.	Cracks, breaks. Hardware loose or missing.



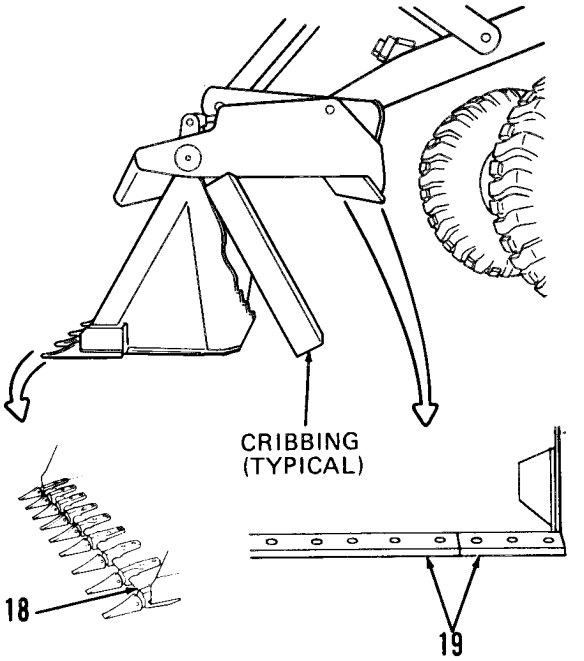




WARNING

Be careful when performing following procedure not to place any part of your body between clamshell and blade. To do so could cause serious injury if clamshell suddenly closes crushing you.

12	●					Cutting Edges. Visually check clam cutting edge (18) for breaks, and nicks. Start engine and operate at idle speed. Raise bucket four feet off ground by placing LIFT ARM control lever in RAISE position then return it to NEUT. Put CLAM control lever in OPEN position and open bucket clamshell completely. Roll bucket forward using BUCKET control lever in DUMP position. Lower bucket to ground until clamshell is on ground. Put cribbing between clamshell and blade as shown. Turn off engine and relieve hydraulic pressure by operating all control levers. Check blade cutting edges (19) for looseness indicating missing or loose mounting hardware. Check blade cutting edges (19) for cracks, breaks, and nicks. Start engine, raise bucket, remove cribbing, and return bucket to normal position. Turn off engine.
13	●					Clamshell Teeth Assemblies. Check that tooth points (20) are present. Check tooth points for cracks, breaks, or nicks. Check that tooth shanks (21) are securely mounted and not loose.
14	●					Fire Extinguisher. Check availability of fire extinguisher (if authorized locally) and proper pressure (indicator in green zone).



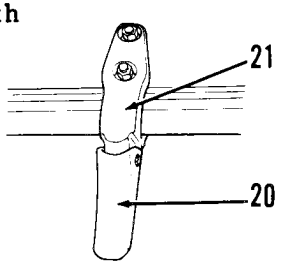
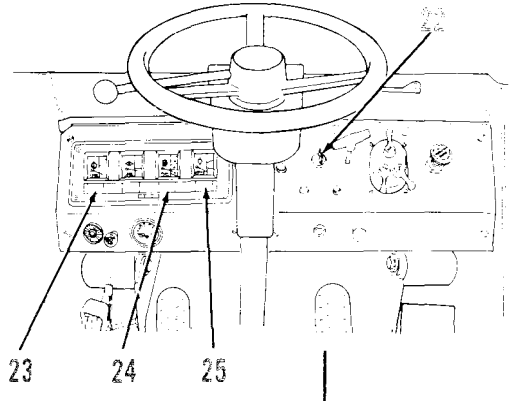


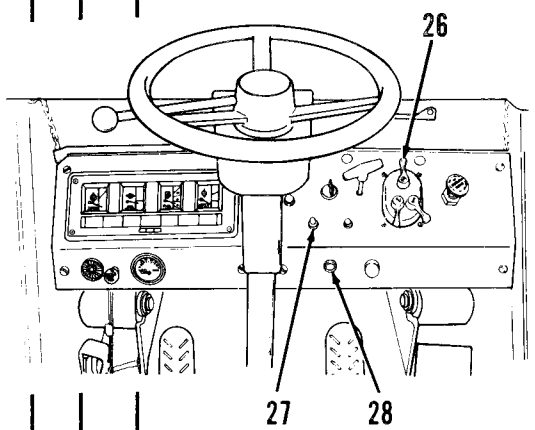
Table 2-1. Preventive Maintenance Checks and Services - Continued

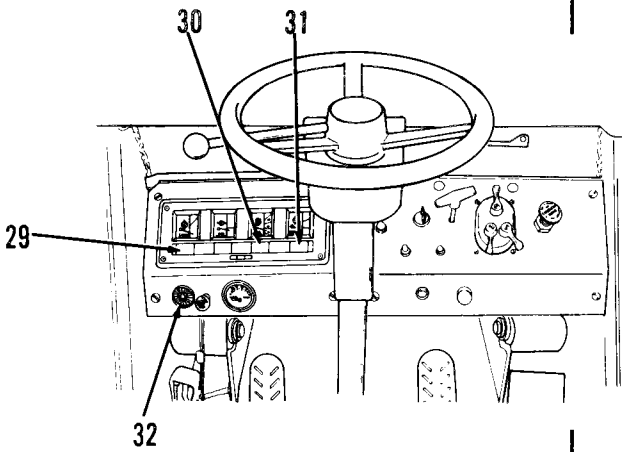
B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
15	●					Warning Indicator Lights. Turn ignition key switch (22) counterclockwise to first position. Check that BRAKE ENGAGED (23), OIL PRESS (24), and CLUTCH PRESS (25) warning indicators turn on. Check that air pressure warning alarm sounds. Turn ignition key switch to off position.	
16	●					Seat Belt. Check that seat belt is securely mounted, material is not frayed, and latch is operable.	
17	●	●				Lights. Put vehicle lights switch main switch (26) in SER DRIVE position. Check that driving, tail, turn signal, and hazard lights work. Put FLOOD LIGHTS switch (27) in on position. Check that front and rear flood lights work. Depress brake treadle valve and check that stop lights work. Put vehicle lights switch main switch (26) and FLOOD LIGHTS switch (27) in OFF position. Put vehicle lights switch main switch (26) in B.O. DRIVE position. Check that black out tail lights and driving lamp work. Put vehicle lights switch main switch (26) in OFF position.	



18	●	●			HYDRAULIC FILTER Warning Indicator. Check that light (28) turns on momentarily when cranking engine. **NOTE** If HYDRAULIC FILTER warning indicator comes on during operation, finish shift and have filters replaced before further operation.	
19	●	●			Warning Indicator Lights. Check that BRAKE ENGAGED (29), OIL PRESS (30), CLUTCH PRESS (31), and AUXILIARY STEERING (32) indicator and buzzer do not turn on.	BRAKE ENGAGED, OIL PRESS, CLUTCH PRESS, and AUXILIARY STEERING lights on during operation.
20	●	●			Gages. Check that CONV TEMP (33), AIR PRESS (34), and WATER TEMP (35) gages indicate in green area. Check that voltmeter gage (36) indicates 22 to 30 volts.	Gages do not indicate in green area.





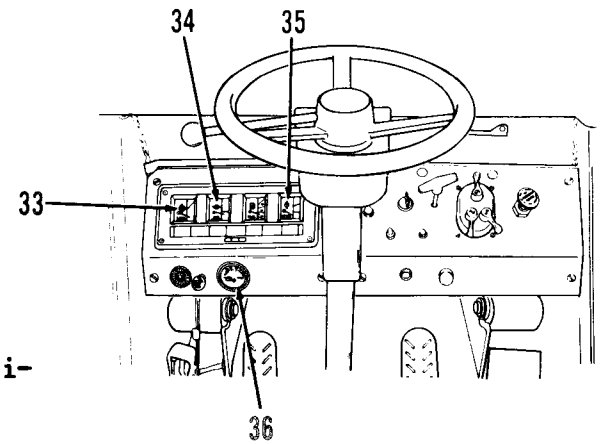
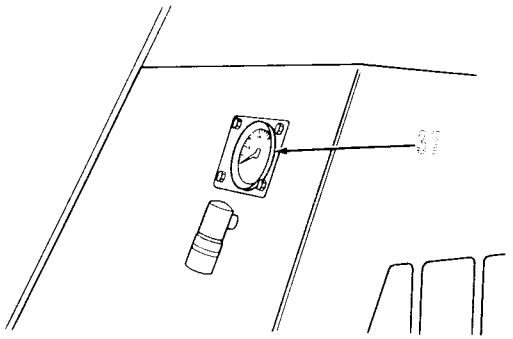


Table 2-1. Preventive Maintenance Checks and Services - Continued

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
							
21	◎	◎				Tachometer/Hourmeter. Check that tachometer and hourmeter (37) are operating.	
22	◎	◎				Accelerator. Check that accelerator operates smoothly.	Pedal sticks.
23	◎	◎				Transmission Control Lever. Check that transmission control lever operates smoothly and correct gear and range are engaged.	Transmission does not operate.
24	◎					Parking Brake Control. Check that brake holds loader.	
25	●	●				Service Brakes. Check that service brakes stop loader.	Service brake doesn't stop loader.
26	●	●				Back up Alarm. Check that alarm sounds when transmission control lever placed in reverse (R).	

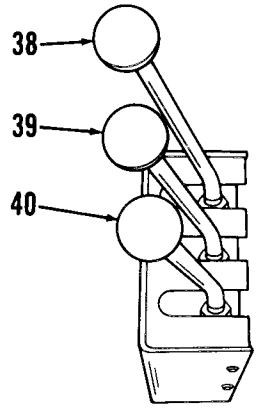
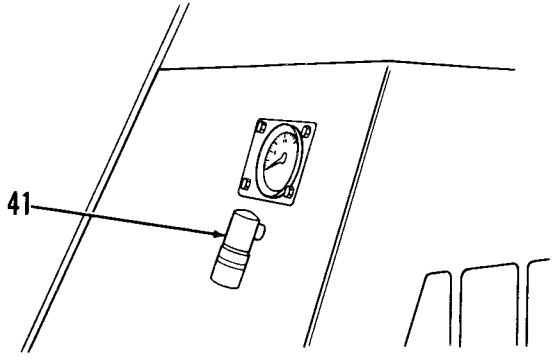
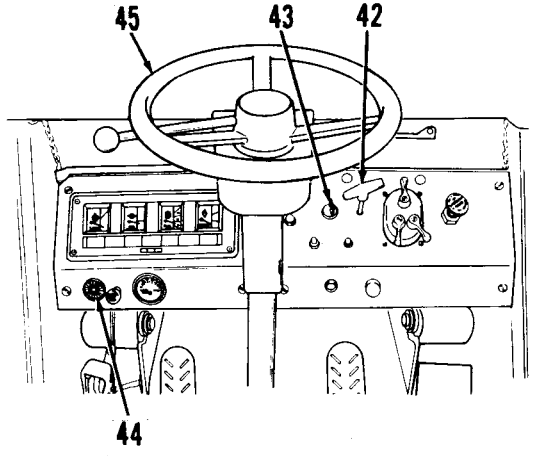
27	●	●				Loader Controls. Operate LIFT ARM (38), BUCKET (39), and CLAM (40) control levers and check that movement is smooth and immediate.		Any function fails to operate or is erratic.
28	●	●				Restriction Indicator. Check restriction indicator (41). Have air cleaner filter elements serviced if indicator shows red.		

Table 2-1. Preventive Maintenance Checks and Services - Continued

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
29	●					Auxiliary Steering. Start engine and operate at idle speed for several minutes. Pull SHUT OFF control (42) out to stop engine but don't turn ignition key switch (43) to off position. Check that AUXILIARY STEERING buzzer sounds and warning indicator (44) turns on. Check that steering wheel (45) can be turned easily. Turn ignition key switch to off position. Don't allow auxiliary steering motor and pump to operate more than 30 seconds.	
30	●					Transmission Oil Level. Turn engine off and pull up on parking brake control (46). Place transmission control lever (47) in neutral (N) position. Move transport/service link (48) to engaged position to keep loader straight and prevent it from pivoting. Start engine and operate at idle speed. Unlock and remove transmission dipstick (49) and check oil level. If oil level is not between ADD and FULL marks on dipstick with transmission at operating temperature, add	



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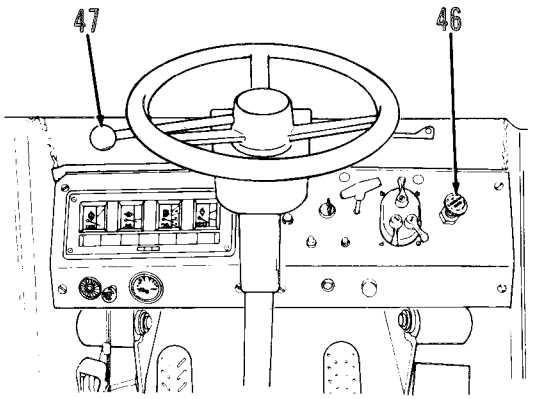
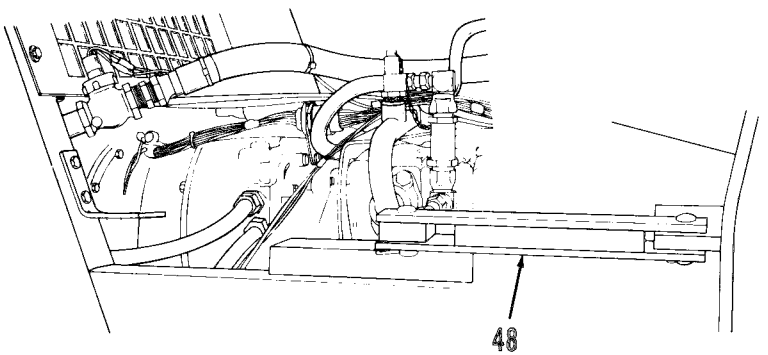
oil until oil level is at FULL mark. Reinstall and lock dipstick. Turn engine off and move transport/service link to operating position.

WARNING

Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control.





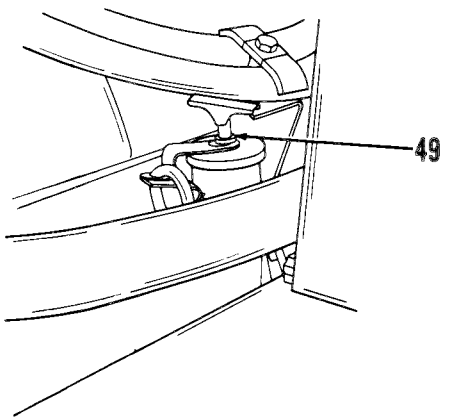
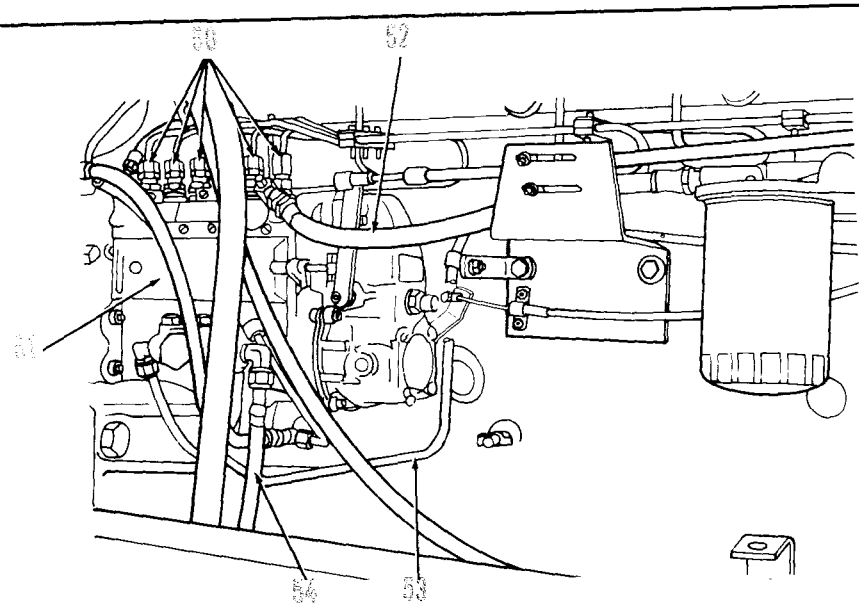
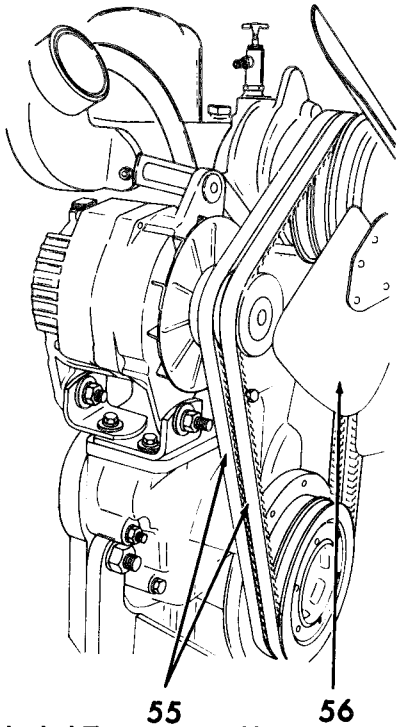
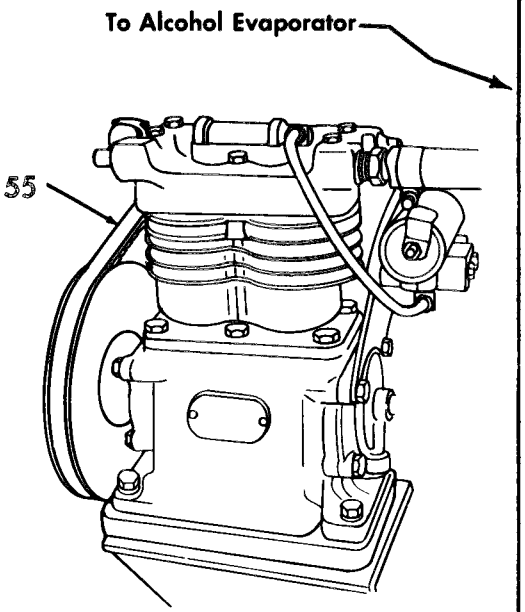


Table 2-1. Preventive Maintenance Checks and Services - Continued

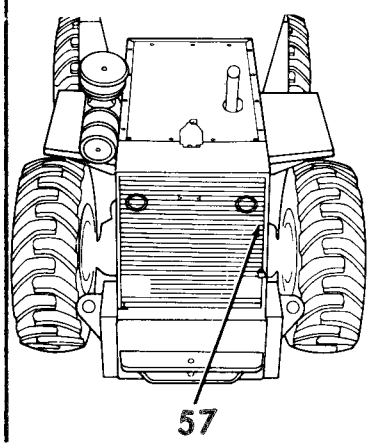
B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
							
31	●					Fuel Injector Lines (External). Unlock and remove engine rear right side panel. Check fuel injector lines (50) connections at fuel injection pump (51) for fuel leakage. Check hose (52) and tube (53) connections at fuel injection pump and fuel filters for fuel leakage. Check fuel inlet hose (54) connection at fuel transfer pump for fuel leakage. Check for water or sediment in fuel sediment bowl. If sediment is apparent, report to organizational maintenance. Reinstall and lock engine right side panel.	Fuel lines leaking.
32				●		Drive Belts. Unlock and remove engine rear side panels. Check drive belts (55) for frayed or damaged condition. Check fan (56) for bent or damaged blades.	One or more belts are broken or missing.





33		●	Alcohol Evaporator. Check if alcohol level in plastic jar is at least 1/3 full. Inspect parts for deformation, cracks, or breaks. To add alcohol, loosen and remove plastic jar. Fill 2/3 full with methanol alcohol. Reinstall and lock engine rear side panels.	
		●	Batteries. Open radiator grill (57). Inspect batteries (58) electrolyte level. If electrolyte level is low, notify organizational maintenance level.	Battery cracked or missing.



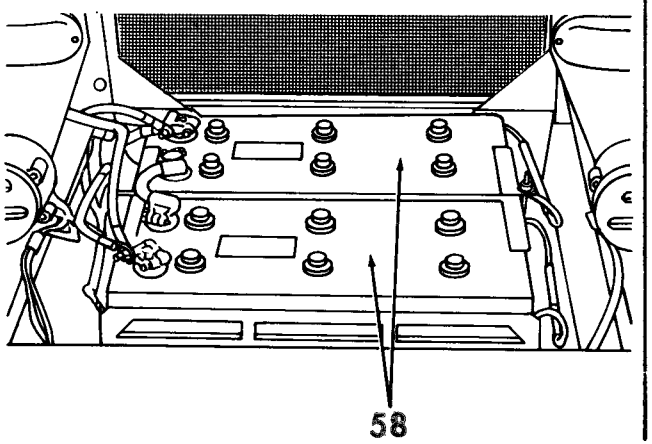
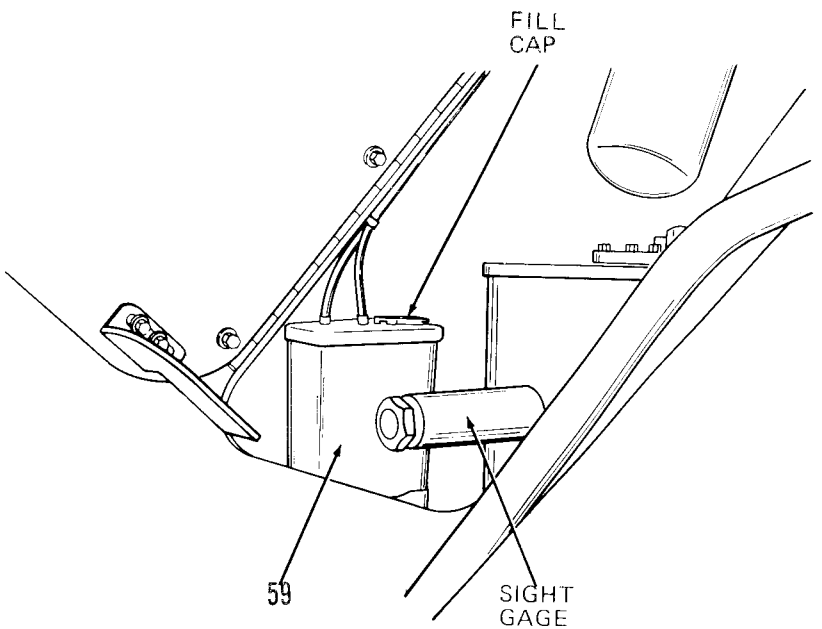


Table 2-1. Preventive Maintenance Checks and Services

B - Before D - During A - After W - Weekly M-Monthly

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check For And Have Repaired, Filled or Adjusted As Needed	Equipment is Not Ready/ Available If:
34				●		Drive Shafts. Check drive shaft universal joints for loose mounting hardware. Check drive shafts for wear or damage by grasping drive shaft with both hands and trying to rotate it. Wear or damage is indicated by excessive movement of drive shaft in any direction.	Mounting hardware loose or missing, or drive shaft damaged.
35				●		Windshield Washer Reservoir. Unlock and open front access door. Check fluid level in reservoir (59). To add fluid, pull up on fill cap. Reinstall fill cap. Close and lock front access door.	



Section III. OPERATION UNDER USUAL CONDITIONS

2-15. INITIAL CHECKS

Refer to current lubrication order and lubricate loader. Refer to page 2-29 and perform before operation PMCS.

2-16. ADJUSTMENTS

a. Bucket Height Control Adjustment. This control automatically stops loader bucket at a dump height that you select. Use this control when you are loading trucks, hoppers, rail cars, etc. This control consists of a control lever located under the left instrument panel and a microswitch mounted on bracket next to control lever.

(1) Lift bucket height control lever all the way up.

WARNING

Noise level exceeds 85 dB when operating loader with cab windows open. All personnel shall wear a hearing protective device when operating loader with windows open to prevent hearing loss.

(2) Start engine.

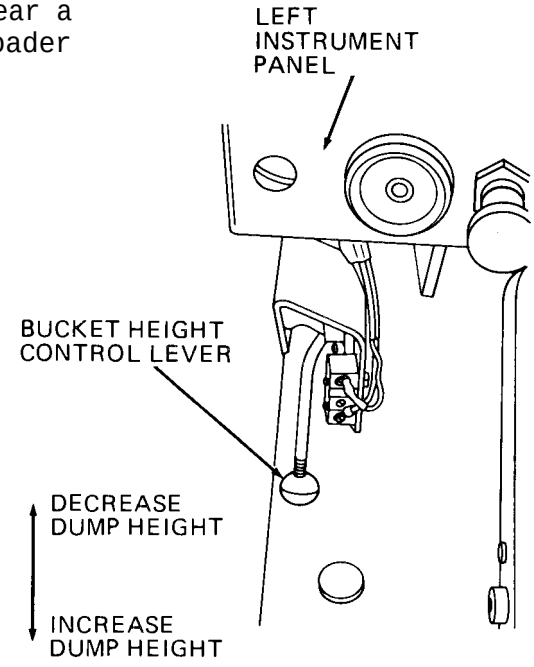
(3) Use LIFT ARM control lever in RAISE to raise bucket to desired height. Return control lever to NEUT. position when desired height obtained.

(4) Turn off engine.

(5) Push bucket height control lever down until you hear microswitch make a sound.

(6) Start engine.

(7) Use LIFT ARM control lever in LOWER to lower bucket to ground.



2-16. ADJUSTMENTS (CONT)

a. Bucket Height Control Adjustment (Cont).

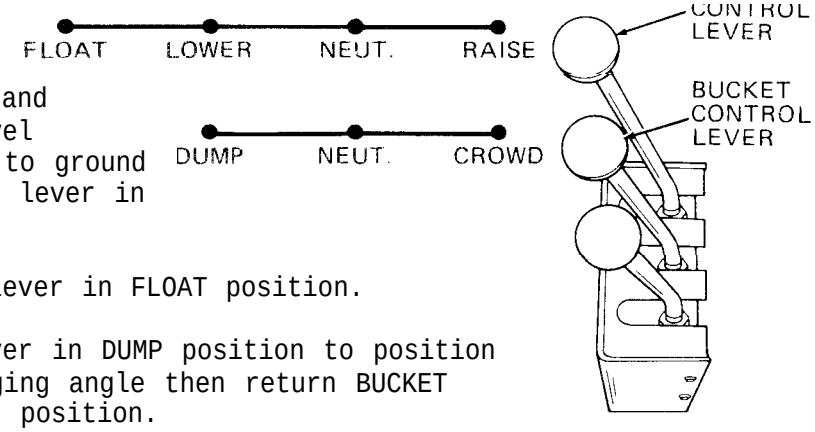
(8) Put LIFT ARM control lever in RAISE position. Magnetic detent in control valve will hold LIFT ARM control in RAISE position until bucket is at height set in step (3) above.

(9) Check if bucket is at desired dump height. Small adjustments can be made by pushing bucket height control lever down to increase dump height or lifting bucket height control lever to decrease dump height.

(lo) Lower bucket to ground using LIFT ARM control lever in LOWER position. Return LIFT ARM control lever to NEUT. after bucket is on ground.

(11) Turn off engine.

b. Return-To-Dig Control Adjustment. This control automatically returns bucket to digging position. It consists of a rod, tube, and a microswitch mounted on right bucket tilt cylinder assembly.



(1) With engine operating and loader parked on a level surface, lower bucket to ground using LIFT ARM control lever in LOWER .

(2) Put LIFT ARM control lever in FLOAT position.

(3) Use BUCKET control lever in DUMP position to position bucket at desired digging angle then return BUCKET control lever to NEUT. position.

(4) Turn off engine.

(5) Loosen two nuts and capscrews on clamps securing tube and microswitch to right bucket tilt cylinder assembly.

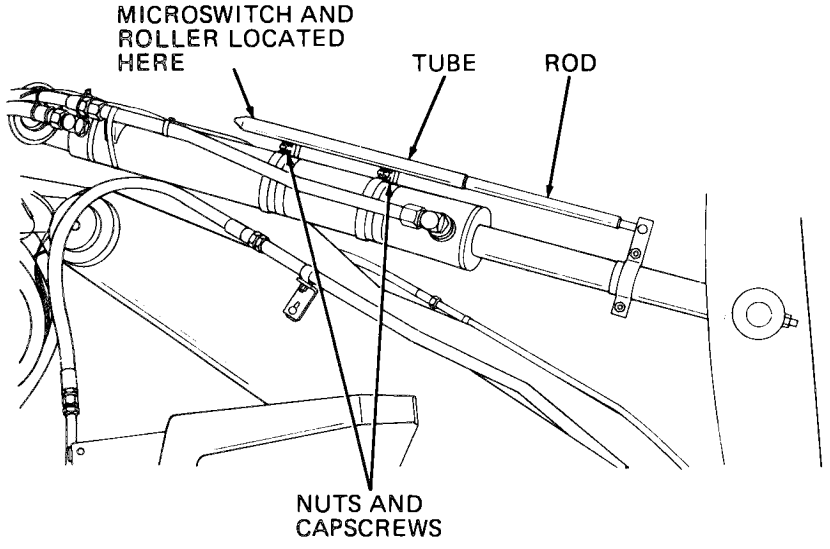
(6) Move tube off rod until microswitch roller is not touching rod.

(7) Move tube onto rod until microswitch roller is touching rod and you hear a noise from microswitch.

(8) Tighten two capscrews and nuts on clamps. Don’t let tube and microswitch move.

2-16. ADJUSTMENTS (CONT)

b. Return-To-Dig Control Adjustment (Cont).



(9) Use LIFT ARM control lever in RAISE position and raise bucket to full height or height set with bucket height control and dump bucket using BUCKET control lever in DUMP position.

(lo) Put BUCKET control lever in CROWD position and LIFT ARM control lever in FLOAT position. Bucket will roll back and lower to ground. Return LIFT ARM control lever to NEUT. position.

(11) Check digging angle of bucket. If desired digging angle of bucket is not obtained, repeat steps (2) through (11) above.

2-17. OPERATING PROCEDURES

WARNING

Don't use jumper cables connected to battery terminals to start engine or charge batteries. Always use slave receptacle. Failure to do so could cause serious injury due to batteries exploding caused by improper connection of jumper cables to battery terminals.

a. Starting the Engine.

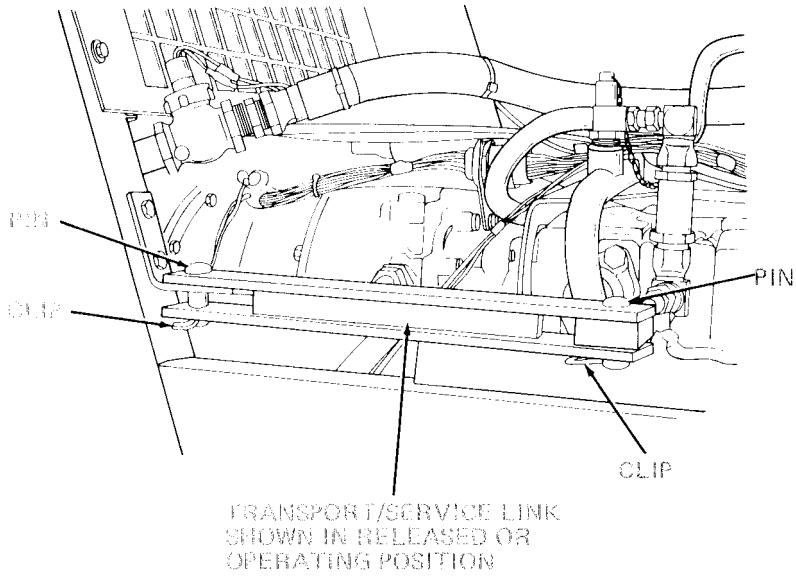
WARNING

Before starting engine, check and be sure that transport/service link is in released position. Failure to do so will cause loss of steering control which may result in serious injury or death and extensive property damage.

(1) Release transport/service link by removing two clips securing pins. Pull tie bar pins from chassis. Remove transport/service link and install in released position as shown. Reinstall pins and secure with clips.

2-17. OPERATING PROCEDURES (CONT)

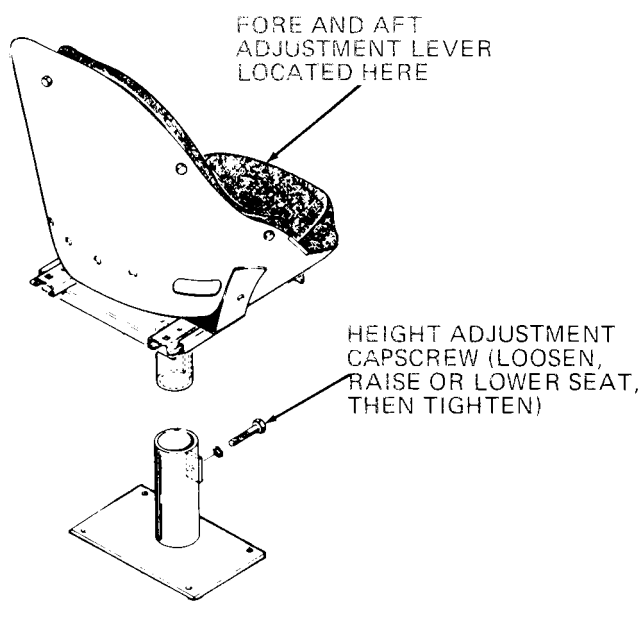
a. Starting the Engine (Cont).



Always use hand rails and steps when you mount or dismount loader. Don-t use steering wheel or controls as a hand rail. Any other method of mounting or dismounting loader could make you slip and fall causing serious injury to yourself.

(2) Mount loader and sit in operator's seat.

(3) If necessary, adjust height of seat. If necessary to adjust fore and aft position of seat, move adjustment lever to left to release seat then move seat forward or backward as necessary.



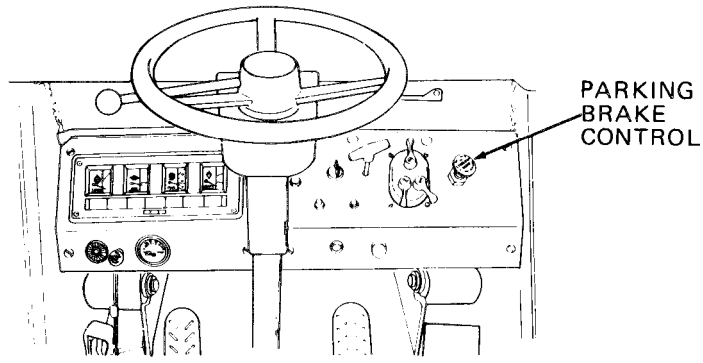
(4) Close both cab doors.

(5) Fasten your seat belt.

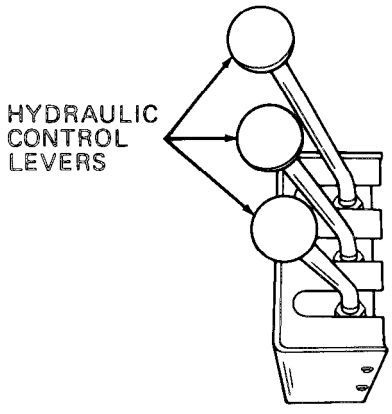
2-17. OPERATING PROCEDURES (CONT)

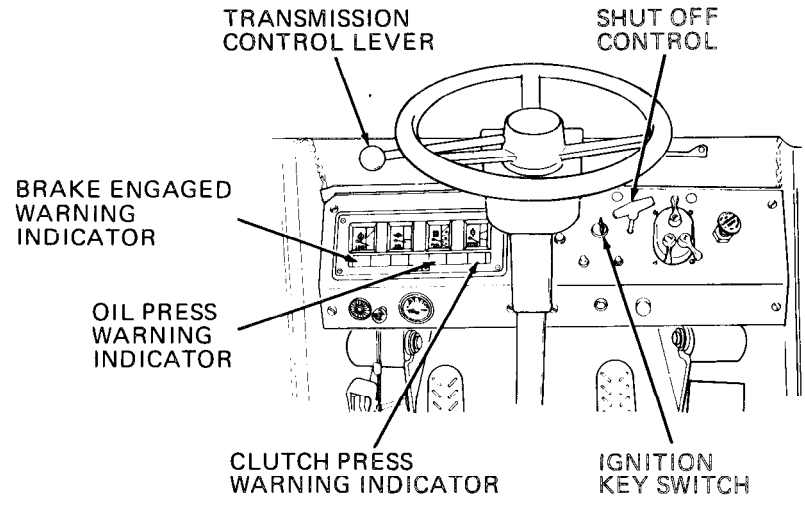
a. Starting the Engine (Cont).

(6) Pull up on parking brake control to apply parking brake.



(7) Check and ensure that hydraulic control levers are in NEUT. or HOLD positions.





(8) Check and ensure that SHUT OFF control is pushed completely in.

(9) Place transmission control lever in neutral (N) position.

WARNING

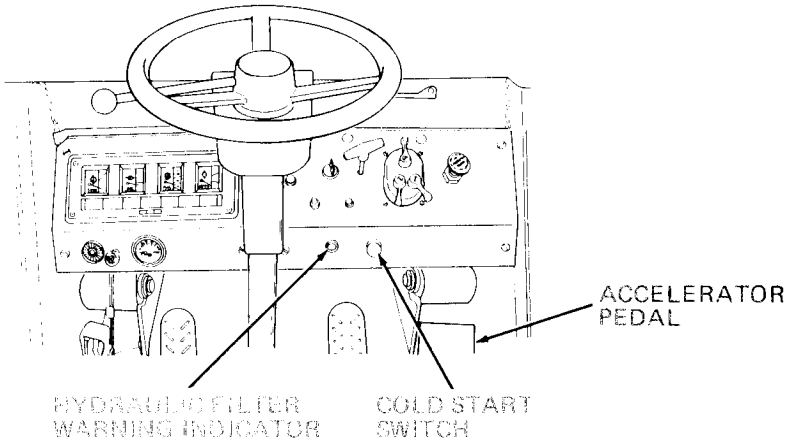
Before starting engine, fasten your seat belt securely and be sure parking brake is applied, transmission control lever is in neutral (N) position, and both cab doors are closed. Failure to do so could cause serious injury or death due to an accident.

(10) Insert key into ignition key switch. Turn key to first position clockwise (on position). Note that warning indicators (BRAKE ENGAGED, OIL PRESS, and CLUTCH PRESS) turn on and air pressure warning alarm sounds.

(11) Push accelerator pedal down approximately one to two inches.

2-17. OPERATING PROCEDURES (CONT)

a. Starting the Engine (Cont).



CAUTION

Don't operate starter motor more than 30 seconds . Wait at least three minutes before cranking to allow batteries to recuperate and starter motor to cool. Failure to do so could cause damage to starter motor.

(12) Turn ignition key switch to second clockwise position (start). Starter motor will crank engine. Note that HYDRAULIC FILTER warning indicator turns on.

Starting fluid is toxic and highly flammable. Container is pressurized to act as an expellent. Don't heat container and don't discharge starting fluid in confined areas or near open flame. Don't discard used container in an open flame. To do any of the above will cause an explosion. Don't breathe ether vapor or allow ether to come in contact with your skin. To do so will cause severe injury or death.

(13) If temperature is below 40 degrees, use COLD START switch. With starter motor cranking engine, push and release COLD START switch two times.

(14) When engine starts, release ignition key switch; it will return to first clockwise position. See that HYDRAULIC FILTER warning indicator turns off.

CAUTION

If OIL PRESS warning indicator does not turn off within ten to 15 seconds after starting engine, turn off engine and check cause.

(15) Check instrument panel indicators and gages for proper indication:

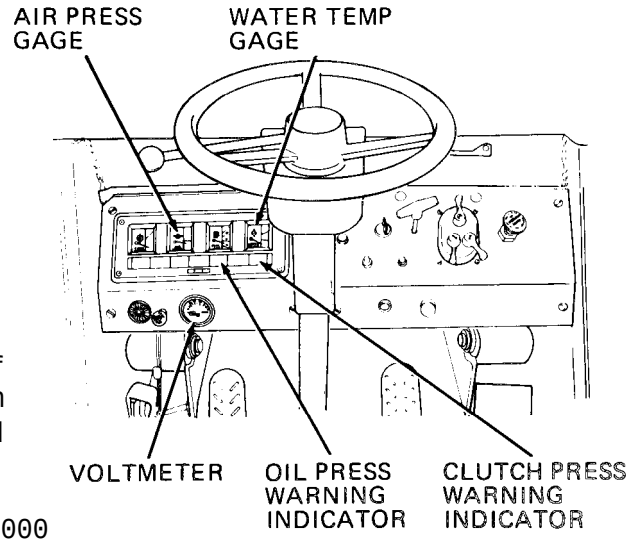
(a) Ten to 15 seconds after engine starts, check that OIL PRESS warning indicator turns off. If it does not turn off, stop engine and investigate cause.

2-17. OPERATING PROCEDURES (CONT)

a. Starting the Engine (Cont).

(b) Check that AIR PRESS gage pointer indicates in green zone and air pressure warning alarm stops sounding. If AIR PRESS gage pointer does not indicate in green zone after 30 to 45 seconds, stop engine and check cause.

(c) Check that VOLTMETER gage indicates between 22 to 30 volts. If normal VOLTMETER gage indication is not seen, turn off engine and check cause.



(16) Operate engine at approximately 1000 rpm until WATER TEMP gage pointer indicates in green area.

CAUTION

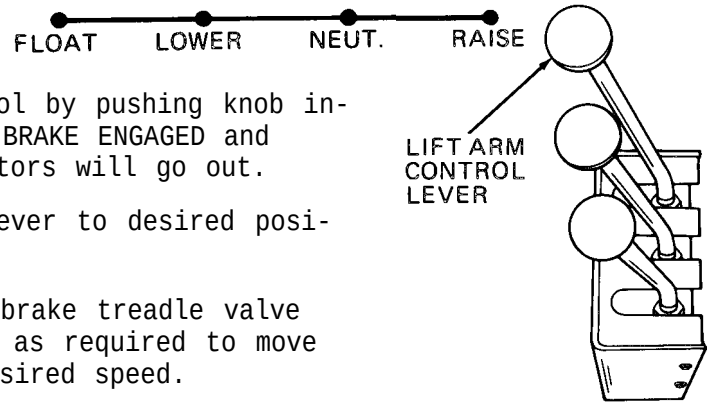
Don-t operate engine at idle speed for long periods of time. Long periods at idle speed will cause acids and deposits to fom in engine from low operating temperatures.

b. Starting the Loader.

(1) Operate LIFT ARM control lever and raise bucket no less than 12 inches from ground.

(2) Put vehicle lights switch main switch lever in STOP LIGHT position.

(3) Press brake treadle valve.



(4) Release PARKING BRAKE control by pushing knob inward as far as it will go. BRAKE ENGAGED and CLUTCH PRESS warning indicators will go out.

(5) Move transmission control lever to desired position.

(6) Release foot pressure from brake treadle valve and press accelerator pedal as required to move loader and accelerate to desired speed.

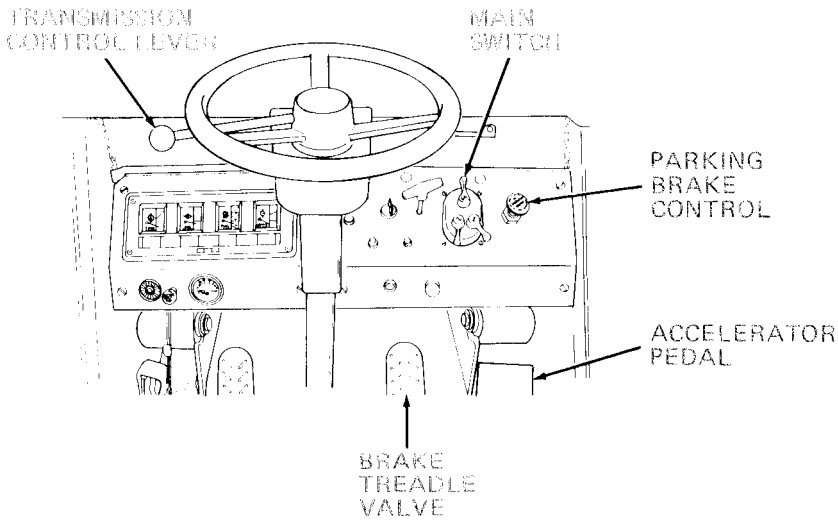
(7) Use following guide lines for transmission shifting:

CAUTION

Shifting from high range forward (H) to low range forward (L) at a ground and engine speed higher than 1/4 throttle will damage transmission. Shifting from high range forward (H) to reverse (R) when loader is moving will also damage transmission.

2-17. OPERATING PROCEDURES (CONT)

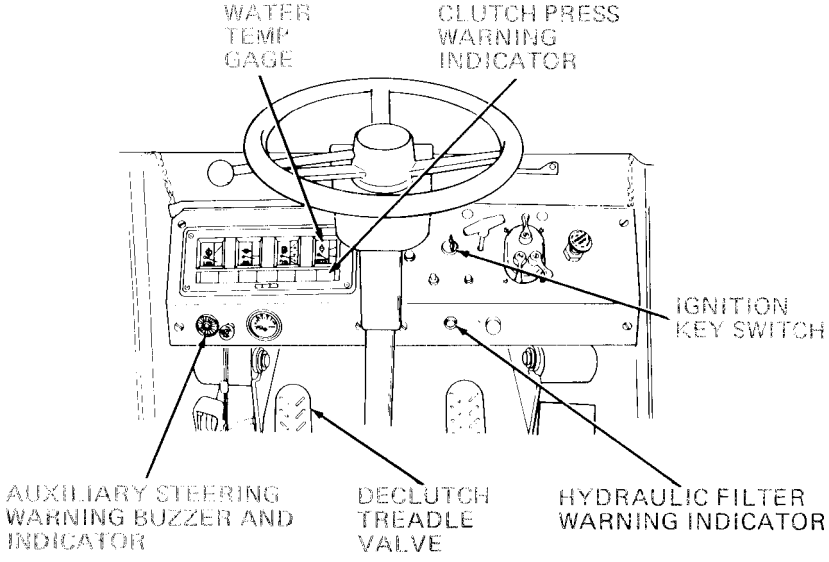
b. Starting the Loader (Cont).



(a) High Range Forward (H) - Use this range to move loader from one location to another. Don't shift from high range (H) to low range (L) until ground and engine speed is approximately 1/4 throttle, or less. Don't shift from high range forward (H) to reverse (R) if loader is moving.

(b) Low Range Forward (L) - You can shift from low range forward (L) to high range forward (H) at any speed. Reduce engine and ground speed to approximately 1/2 throttle before shifting from low range forward (L) to reverse (R).

(c) Reverse (R) - You can shift from reverse (R) to low range forward (L) at any speed. Reduce engine and ground speed to approximately 1/2 throttle before shifting from reverse (R) to low range forward (L).



2-17. OPERATING PROCEDURES (CONT)

b. Starting the Loader (Cont).

(8) The declutch treadle valve can be used during operation in any speed range. The declutch treadle valve when pressed will disengage the transmission and apply service brakes. It is used when maximum power to loader is needed. Use the declutch treadle valve to quickly raise bucket when filled by pressing treadle valve and pressing accelerator pedal to increase engine rpm.

(9) Check CLUTCH PRESS warning indicator on left instrument panel. This indicator will turn on when declutch treadle valve is pressed. If this indicator is flashing on and off or is on steadily and declutch treadle valve is not pressed, stop engine and notify organizational maintenance.

(10) Check CONV TEMP gage on left instrument panel. If gage pointer indicates in red area, select a lower transmission speed. If pointer remains in red area, stop operation, move transmission control lever to neutral (N) position, and operate engine at full throttle for several minutes. If this does not reduce temperature indication, stop engine and check transmission oil level.

(11) Check WATER TEMP gage on left instrument panel. If gage pointer indicates in red area, stop engine and check radiator coolant level.

(12) If low air pressure warning buzzer sounds, stop operation immediately. When air pressure gets below a safe level, parking brake will engage automatically.

(13) If AUXILIARY STEERING warning buzzer sounds and warning indicator turns on, stop operation and turn off engine immediately. Be sure to turn ignition key switch to off position. Notify organizational maintenance immediately.

(14) If HYDRAULIC FILTER warning indicator turns on during operation, continue operation and notify organizational maintenance at end of work shift.

c. Stopping the Loader.

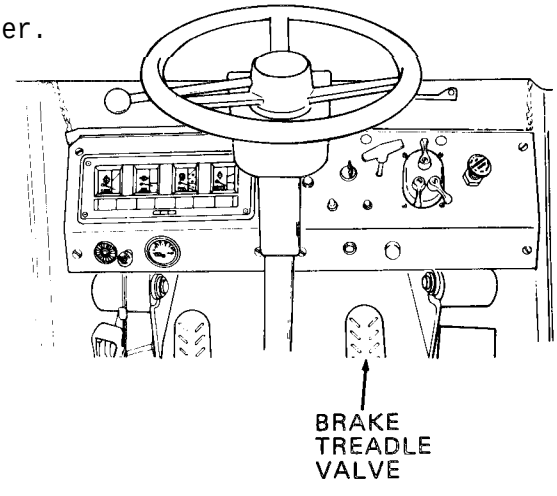
(1) Press brake treadle valve to stop loader.

(2) Use LIFT ARM control lever placed in LOWER position to lower bucket to ground then return control lever to NEUT. position.

(3) Put transmission control lever in neutral (N) position.

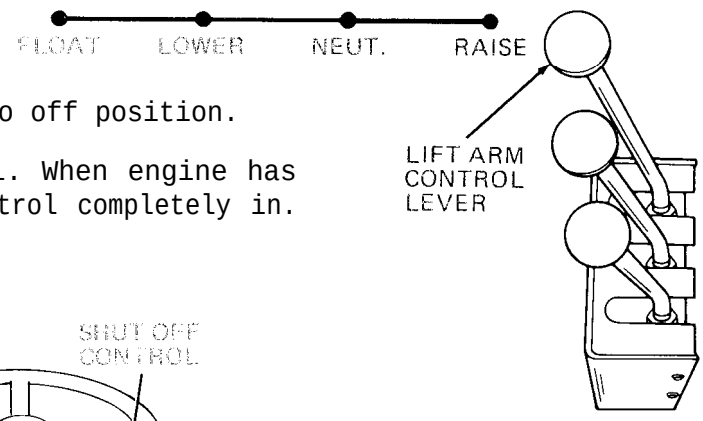
(4) Pull up on PARKING BRAKE control knob to engage parking brake.

(5) Operate engine at idle speed for approximately two minutes.



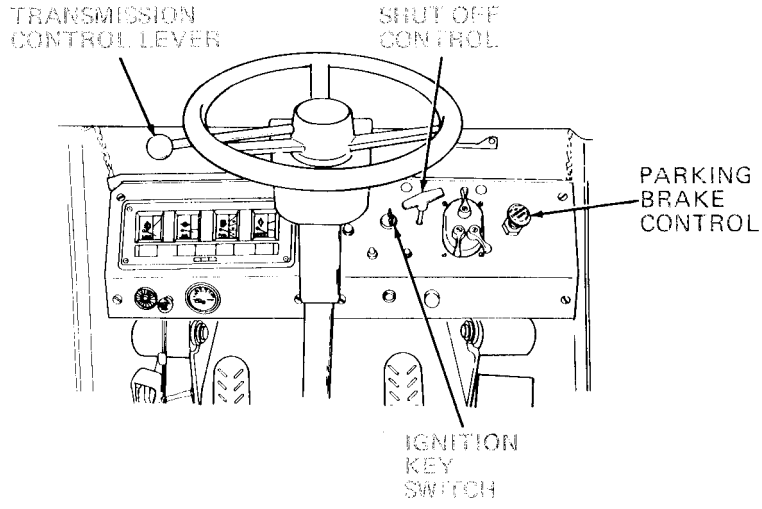
2-17. OPERATING PROCEDURES (CONT)

c. Stopping the Loader (Cont).



(6) Turn ignition key switch to off position.

(7) Pull out SHUT OFF control. When engine has stopped, push shut off control completely in.



d. Operating the Loader.

(1) Excavating.

WARNING

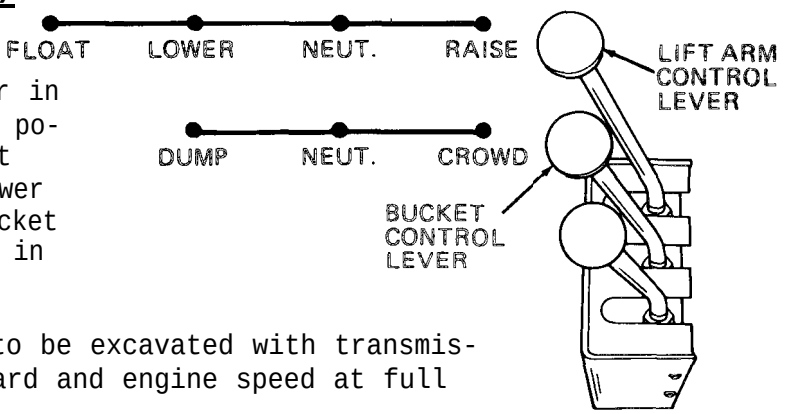
Operating on a hillside can be dangerous. Rain, snow, loose gravel, soft ground , etc., change ground conditions. Only you, the operator, can determine if your machine can be safely operated on any hillside or ramp.

Before you operate on any hillside or ramp, always select low range and never coast down hill with transmission in neutral (N). To do so could cause you to lose control of loader and roll over causing loss of life or serious injury and extensive property damage.

(a) Use LIFT ARM control lever to raise bucket approximately 12 inches above ground.

2-17. OPERATING PROCEDURES (CONT)

d. Operating the Loader (Cont).



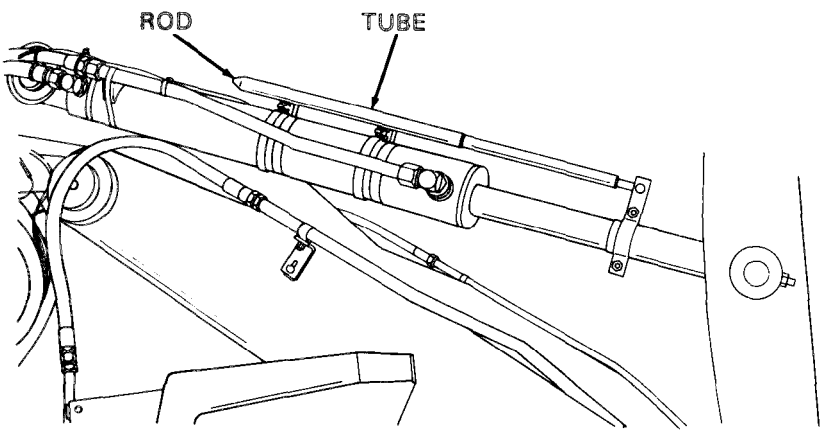
(b) Use BUCKET control lever in DUMP position to adjust position of bucket so that bucket front edge is lower than rear of bucket. Bucket teeth will help you dig in this type of operation.

(c) Move loader into area to be excavated with transmission in low range forward and engine speed at full throttle.

(d) Use LIFT ARM control lever to lower bucket to ground. When bucket is at desired depth, move LIFT ARM control lever to NEUT. position and continue to move loader forward.

(e) When bucket is full, use BUCKET control lever in CROWD position to roll bucket back and fill it with excavated material. You lose time when material is pushed in front of bucket.

(2) Loading Loose Material.



(a) Use bucket level indicator to ensure that bottom of bucket is level with ground. When end of rod is one inch out of tube, bottom of loader bucket is level with ground.

(b) Put LIFT ARM control lever in FLOAT and move loader into material.

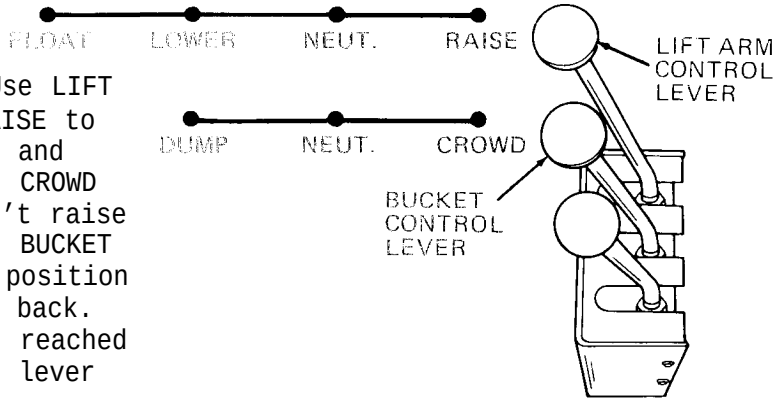
(c) When speed of loader starts to decrease, press declutch treadle valve and accelerator pedal, put LIFT ARM and BUCKET control levers in RAISE and CROWD positions, respectively, to raise and rollback loader bucket.

2-17. OPERATING PROCEDURES (CONT)

d. Operating the Loader (Cont),

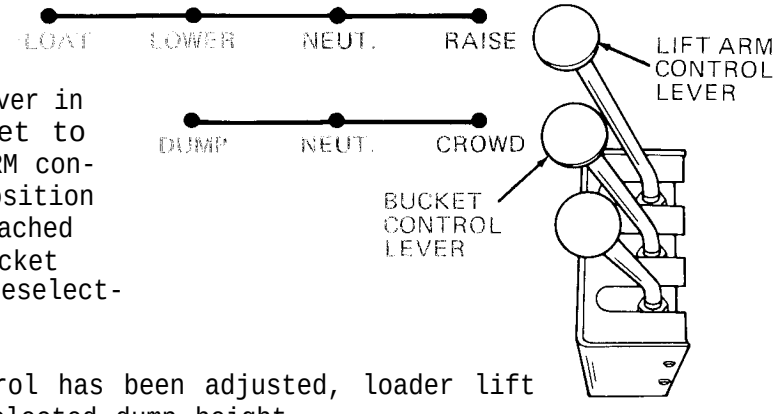
WARNING

Keep loader bucket as low as possible. This low position gives better balance and permits you to see ground condition more clearly. If bucket is full and you move loader over rough terrain or terrain that can cause loader to slide, always operate loader at slow speed. Failure to do so could cause you to lose control over loader causing serious injury or loss of life and extensive property damage.



(3) Transporting a Load. Use LIFT ARM control lever in RAISE to raise bucket off ground and BUCKET control lever in CROWD to rollback bucket. Don't raise bucket too high. Return BUCKET control lever to NEUT. position after bucket has rolled back. After desired height is reached return LIFT ARM control lever to NEUT. position.

(4) Dumping the Bucket.



(a) Use LIFT ARM control lever in RAISE to raise bucket to height . Return LIFT ARM control lever to NEUT. position when dump height is reached unless you have set bucket height control to a preselected dump height.

(b) If bucket height control has been adjusted, loader lift arm will stop at preselected dump height.

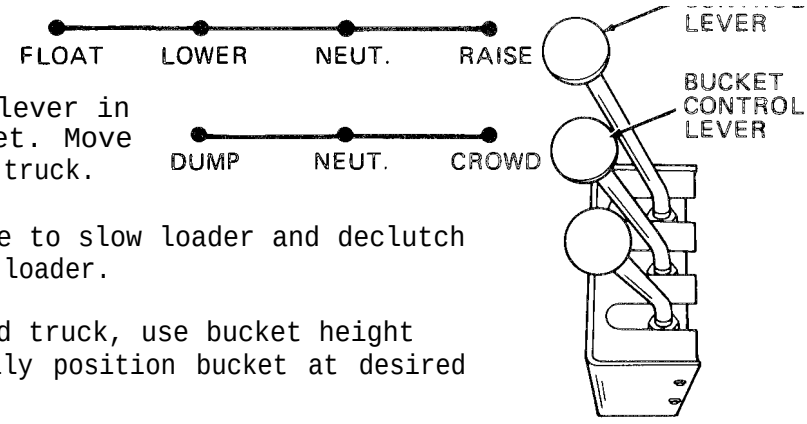
(c) Dump bucket using BUCKET control lever in DUMP.

(d) Use return-to-dig to automatically return bucket to position for next load. Do this by putting BUCKET control lever in CROWD and LIFT ARM control lever in FLOAT. Loader bucket will automatically roll back and lower to ground. Put LIFT ARM control lever in NEUT. after bucket is on ground.

2-17. OPERATING PROCEDURES (CONT)

d. Operating the Loader (Cont).

(5) Truck Loading.



(a) Use LIFT ARM control lever in RAISE to raise bucket. Move loader toward side of truck.

(b) Use brake treadle valve to slow loader and declutch treadle valve to stop loader.

(c) As you move load toward truck, use bucket height control to automatically position bucket at desired dump height.

(d) Dump load into truck by using BUCKET control lever in DUMP .

(e) Use return-to-dig to position bucket for next cycle. Do this by using LIFT ARM control lever in FLOAT and BUCKET control lever in CROWD. Bucket will automatically rollback and lower to ground.

(f) After bucket is on ground, return LIFT ARM control lever to NEUT.

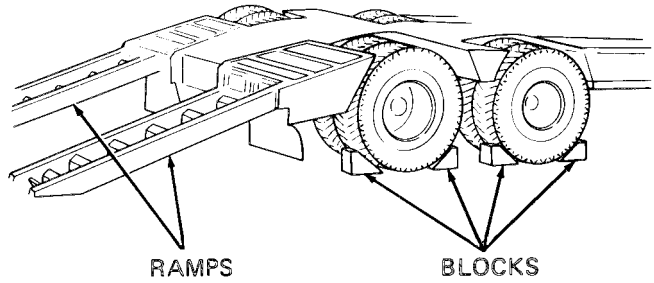
2-18. PREPARATION FOR MOVEMENT

a. Driving. The loader may be moved under its own power without any special preparation or may be transported on a suitable truck and flatbed trailer. If transported on a flatbed trailer:

(1) Place blocks at front and rear of each trailer wheel.

WARNING

Be sure ramp is securely fastened to flat bed trailer to prevent personnel injury and damage to equipment.



(2) Place ramps between flat bed trailer and ground.

WARNING

Before moving loader up ramps, remove all ice, oil or grease from ramp to prevent loader from falling and causing death or serious injury and extensive damage to loader. Tell personnel to move away from loader.

NOTE

Ramps shall not provide a grade of more than 40 percent.

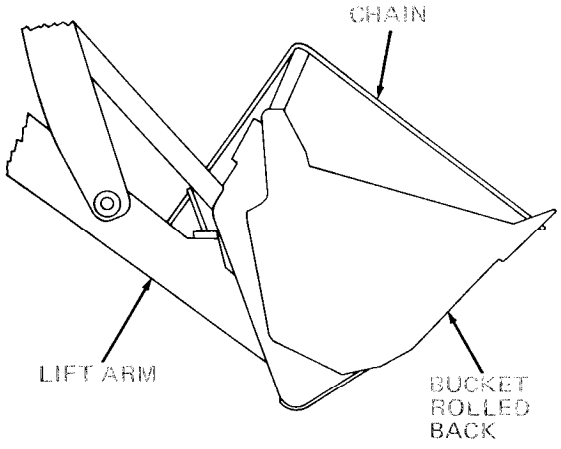
2-18. PREPARATION FOR MOVEMENT (CONT)

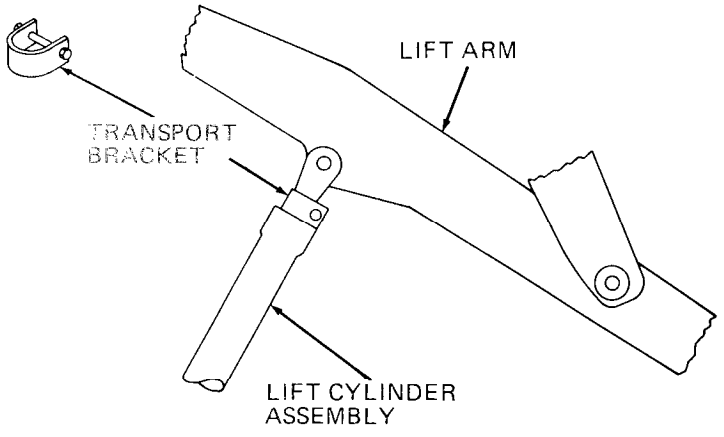
a. Driving (Cont).

(3) Start engine and raise bucket one foot off ground using LIFT ARM control lever in RAISE position then return to NEUT. position.

(4) Using BUCKET control lever in CROWD position, rollback bucket completely then return BUCKET control lever to NEUT. position.

(5) Secure bucket assembly in rollback position using 12 foot length of chain with a hook on each end. Position one chain hook on center bucket tooth and lift arm brace as shown.





(6) Install transport bracket, stored in tool box, on either lift cylinder assembly rod and secure using capscrew and nut.

(7) Turn off engine.

CAUTION

When performing following step, be sure that engine is off. Failure to do so will cause damage to transport bracket and lift cylinder assembly, and may distort bucket lift arms.

(8) Place LIFT ARM control lever in LOWER position and slowly lower bucket. Lift cylinder assembly rod will retract and bucket will lower until rod eye is resting on transport bracket.

(9) Start engine and slowly move loader up ramps and position on flat bed trailer.

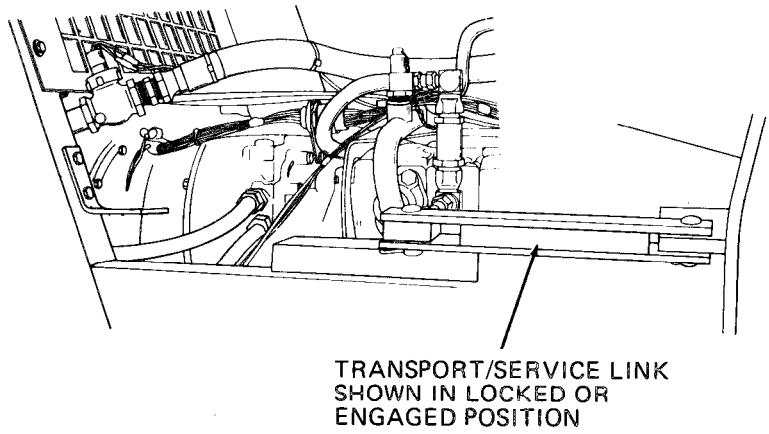
(10) Pull up on parking brake control to apply parking brake, and turn off engine. Remove key from ignition key switch.

(11) Place transport/service link in locked position.

(12) Make sure transmission and hydraulic control levers are in their neutral positions.

2-18. PREPARATION FOR MOVEMENT (CONT)

a. Driving (Cont).



(13) Place blocks at front and rear of each tire.

(14) Install chain tiedowns at rear of front and rear chassis to fasten loader to trailer.

(15) Place a cover such as heavy paper over exhaust pipe and use tape to keep it in place.

(16) Measure from ground to highest point of loader. Clearance height of loader must be known when driving under overpasses so as not to damage loader. Tell transport driver of clearance height.

b. Towing the Loader. If loader is disabled, you must determine if it can be moved without further damage. If possible, have loader repaired at job location. If loader cannot be repaired at job location, and if a transport trailer is available, park trailer as close to loader as possible. This will shorten towing distance.

WARNING

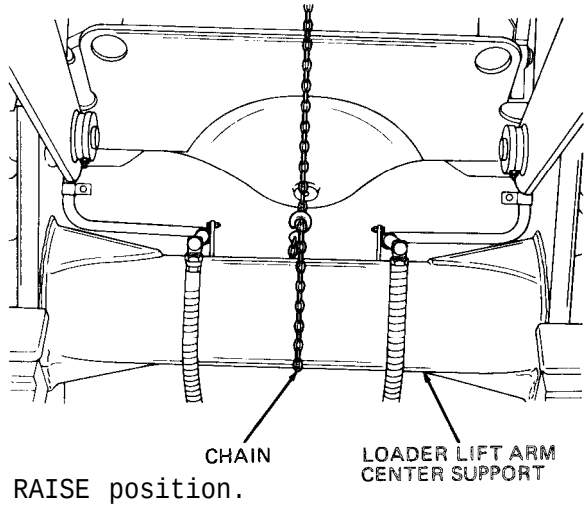
Don't allow personnel in or near the loader when it is being towed with the engine stopped. To do so could cause serious injury or death.

NOTE

If engine cannot be started go to step (1) below; if engine can be started, go to step (2) below.

(1) If engine cannot be started, raise loader bucket one foot above ground as follows:

(a) Attach a chain hoist or other suitable lifting device to loader lift arm center-support.



(b) Pull LIFT ARM control lever back to RAISE position.

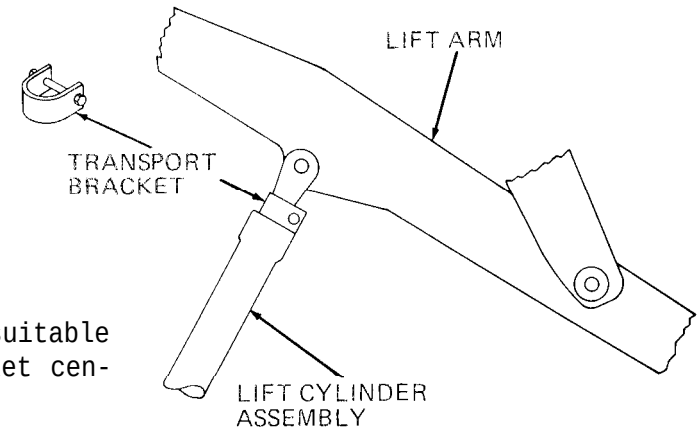
2-18. PREPARATION FOR MOVEMENT (CONT

b. Towing the Loader (Cont).

(c) Raise loader lift arms using chain hoist or lifting device.

(d) Install transport bracket, stored in tool box, on either lift cylinder assembly rod and secure using capscrew and nut.

(e) Place LIFT ARM control lever in LOWER position. Lift cylinder assembly rod will retract and bucket will lower until rod eye is resting on transport bracket.



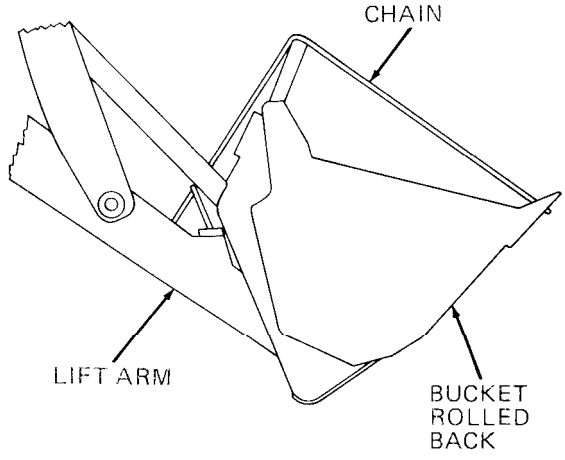
(f) Attach chain hoist or other suitable lifting device to loader bucket center tooth.

(g) Place BUCKET control lever in CROWD position and use chain hoist to roll bucket back.

(h) Secure bucket assembly in rollback position using 12 foot length of chain with a hook on each end. Position one chain hook on center bucket tooth and lift arm brace as shown. Place BUCKET control lever in NEUT. position.

(i) Disconnect chain hoist or lifting device from loader bucket.

(j) Go to step (3) below.



(2) If engine can be started:

(a) Start engine and raise bucket one foot off ground using LIFT ARM control lever in RAISE position then return to NEUT. position.

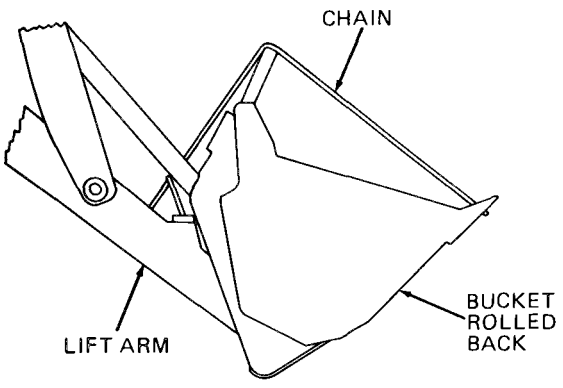
(b) Using BUCKET control lever in CROWD position, rollback bucket completely then return BUCKET control lever to NEUT. position.

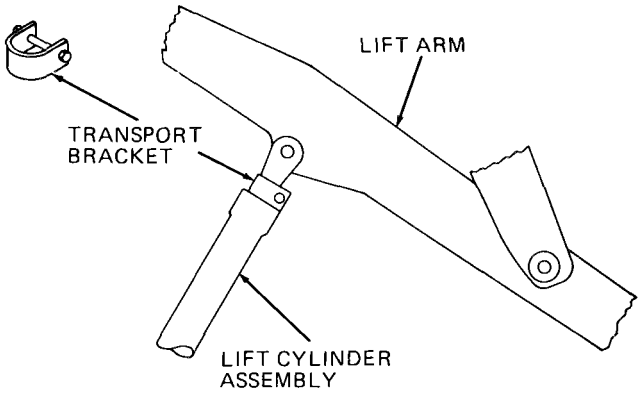
(c) Secure bucket assembly in rollback position using 12 foot length of chain with a hook on each end. Position one chain hook on center bucket tooth and lift arm brace as shown.

(d) Install transport bracket, stored in tool box, on either lift cylinder assembly rod and secure using capscrew and nut.

2-18. PREPARATION FOR MOVEMENT (CONT)

b. Towing the Loader (Cont).





(e) Turn off engine.

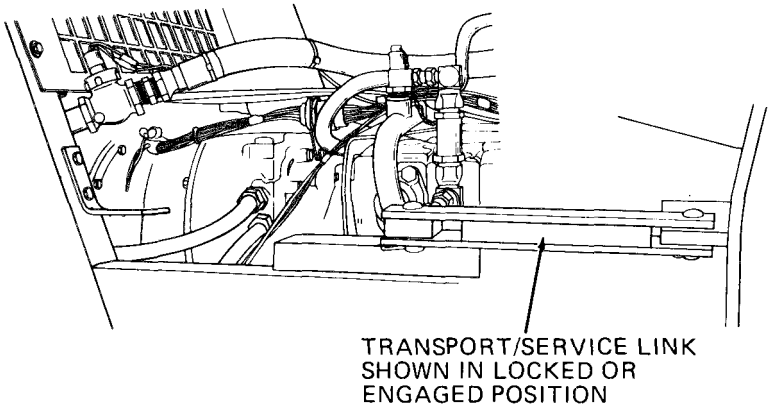
CAUTION

When performing following step, be sure that engine is off. Failure to do so will cause damage to transport bracket and lift cylinder assembly, and may distort bucket lift arms.

(f) Place LIFT ARM control lever in LOWER position and slowly lower bucket. Lift cylinder assembly rod will retract and "bucket will lower until rod eye is resting on transport bracket.

(g) Go to step (3) below.

(3) Place transport/safety link in locked position. If loader is turned to one side and engine is inoperable:



(a) Clear personnel from area.

(b) Pull SHUT OFF control all the way out.

(c) Turn ignition key switch to start position and at the same time turn steering wheel. When loader is straight, install transport/safety link. Don't operate starter motor more than 30 seconds at a time without allowing two minutes for it to cool.

(d) Place ignition key switch in off position.

2-18. PREPARATION FOR MOVEMENT (CONT)

b. Towing the Loader (Cont).

(4) At rear of loader, remove clip from drawbar pin and remove drawbar pin.

(5) Position rigid drawbar in location shown and secure using drawbar pin and clip.

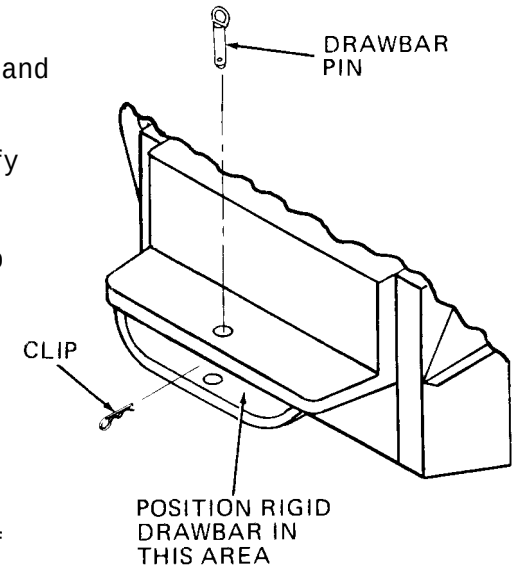
(6) Remove front and rear drive shafts (notify organizational maintenance).

(7) Attach a second unit, such as a dozer, to rear of loader as close as possible.

NOTE

If front or rear axle failure is suspected, notify organizational maintenance to remove axle shafts before moving loader.

(8) Tow disabled loader at a maximum speed of five miles per hour.

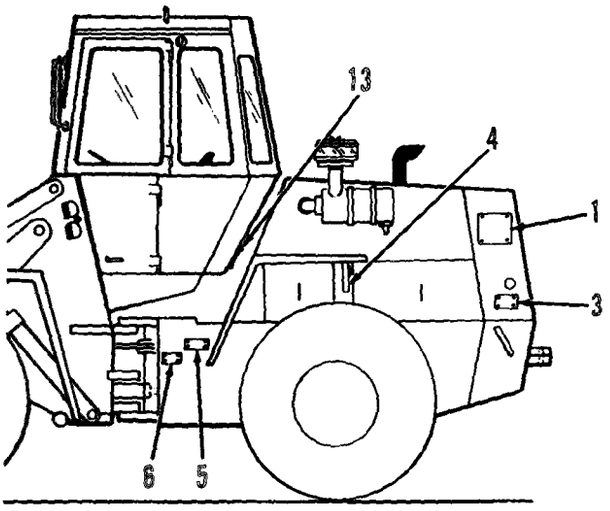


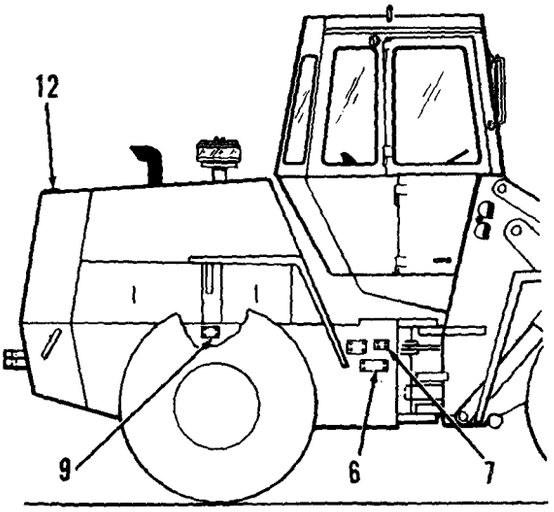
c. Preparation for Air Transport. The loader can be air transported in C-130, C-141, and C5A aircraft with cab removed to reduce loader height to 106.5 inches. All removed parts shall be palletized for air transport with the loader. Preparation is an organizational maintenance task.

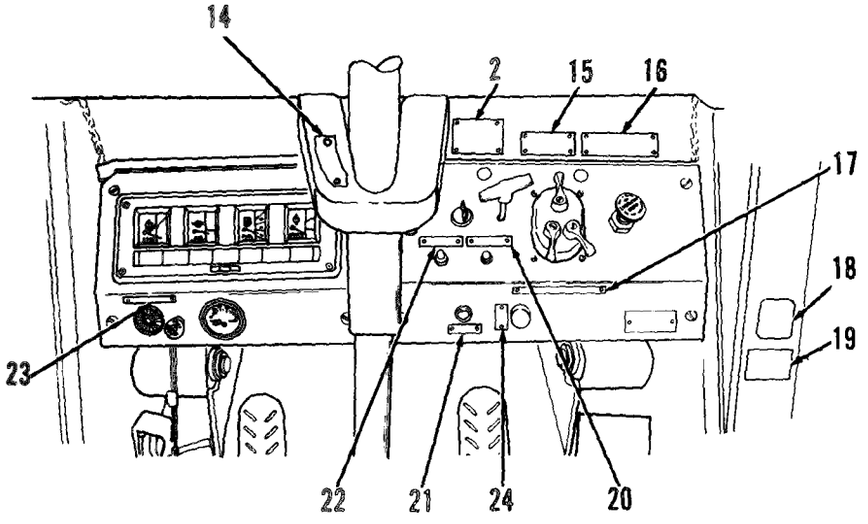
2-19. OPERATING INSTRUCTIONSON DECALS AND IDENTIFICATION PLATES

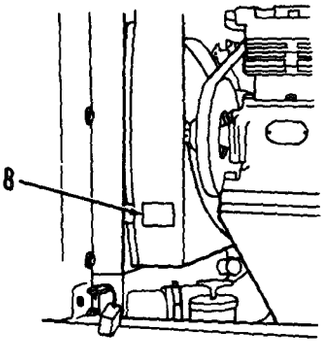
Following illustrations show location of decals and identification plates containing operating or servicing instructions and warnings and their contents.

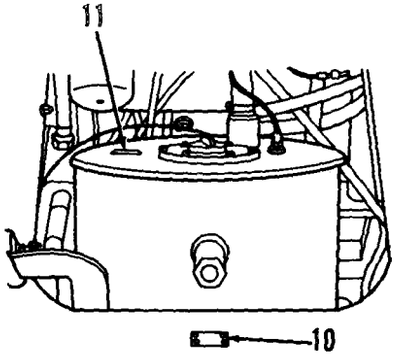
2-19. OPERATING INSTRUCTIONS ON DECALS AND IDENTIFICATION PLATES (CONT)



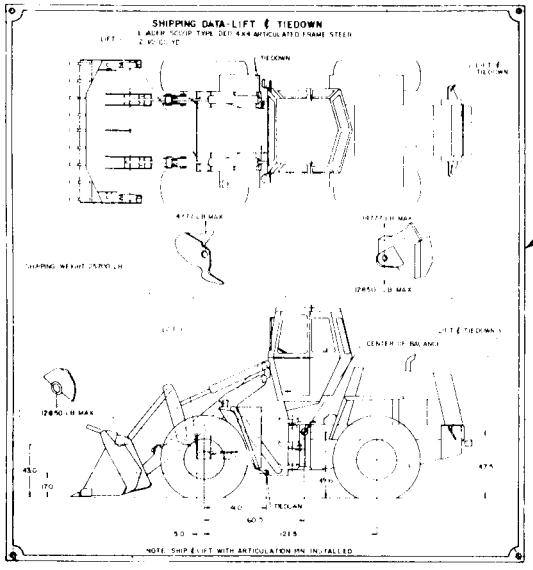








2-19. OPERATING INSTRUCTIONS ON DECALS AND IDENTIFICATION PLATES (CONT)



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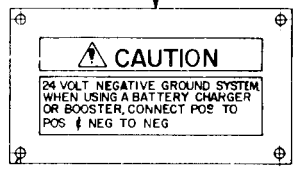

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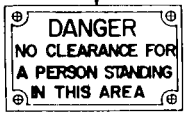

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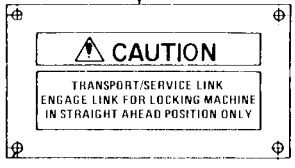

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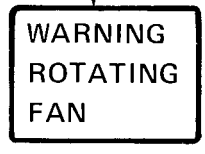

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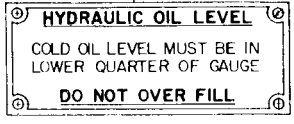

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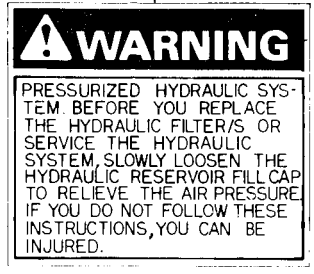

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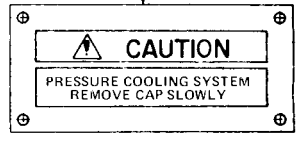

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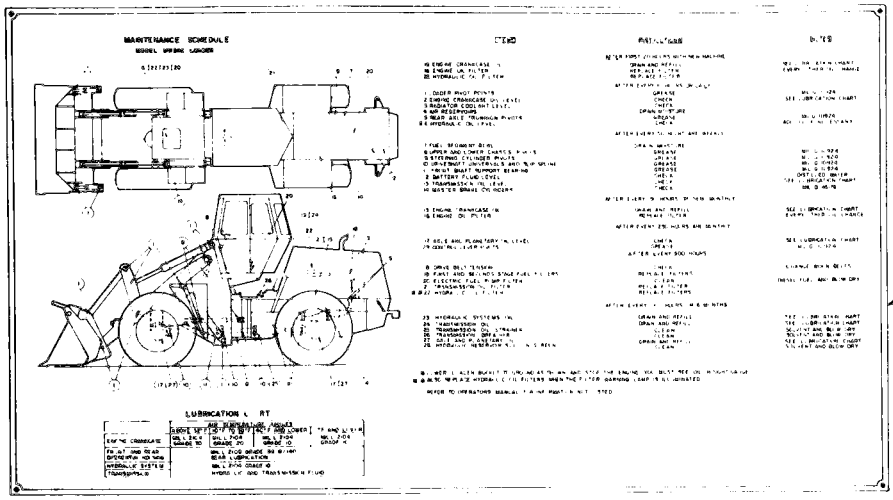
2-19. OPERATING INSTRUCTIONS ON DECALS AND IDENTIFICATION PLATES (CONT)



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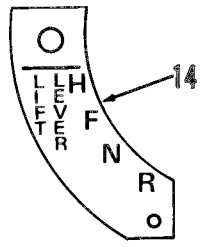

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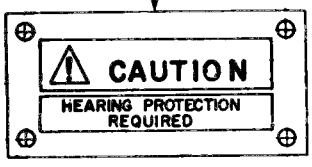

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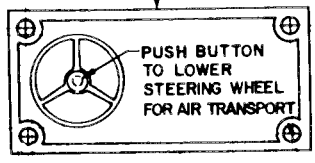

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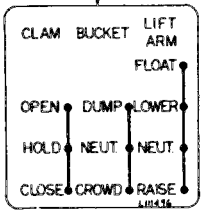

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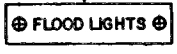

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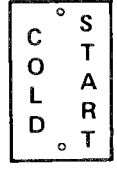


Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-20. OPERATION IN UNUSUAL WEATHER

a. Extreme Cold.

(1) General. Extensive preparation of the loader is required when extreme cold weather is anticipated. Extreme cold causes lubricants to thicken or congeal, presents a risk of freezing batteries and diminishes their electrical efficiency, can crack electrical insulation to cause short circuits, prevents fuel from vaporizing readily to form the combustible mixture necessary for starting, and causes various materials to become hard, brittle, and easily damaged. You must make sure the cooling system has been filled with the appropriate anti-freeze solution to protect the system against sub-freezing temperatures.

(2) Cooling System. Before the cooling system is drained and filled, inspect the system for leaks and general condition. All deteriorated or damaged hoses must be replaced. Make sure that all clamps are tight and that drain cocks are properly closed. When anti-freeze is added to the cooling system, be sure ample space is allowed for the required amount of anti-freeze. Be sure you operate the engine for 15 minutes to allow the solution to properly mix.

(3) Lubrication. Be sure that the correct grade of lubricant is applied to the lubrication points. If necessary, drain and refill if the lubricant grade is not correct for cold weather operation.

(4) Fuel System. Be sure precautions are taken to eliminate water and moisture from the fuel system by draining and flushing the fuel tank, and draining off any water from the fuel tank and filters at the end of each day's operation, replacing the fuel filter elements, and completely filling the fuel tank after each operating period to avoid water condensation. The fuel tank must not be allowed to remain partially empty over long periods of time and all ice and snow must be completely removed from around the filler opening before refilling the fuel tank.

(5) Air System. At beginning and end of daily operation, drain water and sediment from the air reservoir.

(6) Engine Operation.

(a) Use the cold weather starting aid to start the engine.

2-20. OPERATION IN UNUSUAL WEATHER (CONT)

a. Extreme Cold (Cont).

(b) Run the engine at reduced speed only long enough to circulate the oil through the engine, then increase speed and warm-up the engine. Low idling speeds during extremely cold temperature can result in incomplete combustion and heavy deposit formations on the valves.

(c) Cover the radiator if necessary to bring engine up to operating temperature.

(7) At Halt or Parking.

(a) Park loader in sheltered place if possible. Close cab doors and windows to protect accessories and controls from ice and snow.

(b) Run loader onto planks to prevent tires from freezing to ground. Block up bucket.

(c) Be sure you clean wet snow or mud from tires and cylinders before it freezes.

(d) In extremely cold weather, remove the batteries and store them in a moderately warm area. Reinstall the batteries just before starting the engine.

b. Extreme Heat.

(1) General. Check temperature gages and lights frequently for indication of overheating. Allow engine to idle slowly when it is overheated until temperature is reduced indicated by gage pointer dropping into the green zone.

(2) Cooling System.

(a) Drain, flush, and refill cooling system.

(b) Check coolant level at frequent intervals and keep radiator cap tight.

(c) Be sure that radiator is free of bugs, dust, and other foreign matter.

(d) Check drive belts tension frequently.

(3) Lubrication. Lubricate the loader with correct grade of lubricants in accordance with the lubrication chart. Change filter elements at shorter intervals than normal.

(4) Air Cleaner. Service air cleaner at shorter than normal intervals.

(5) At Halt or Parking. Park the loader in a shaded area if possible.

2-20. OPERATION IN UNUSUAL WEATHER (CONT)

c. Rainy or Humid Conditions. Keep loader protected when not in use. Dry off seat and wiring to prevent formation of mildew. Keep fuel tank full. Service filters more frequently than normal. Keep all moving parts well lubricated.

2-21. OPERATION IN DUSTY OR SANDY AREAS

a. General. Sand and dust are abrasive and can cause wear on many parts of the loader. Airborne sand and dust can clog the radiator and air cleaner.

b. Cooling System. Be sure you check the radiator frequently and keep air passages open.

c. Air Cleaner. Reduce service intervals for the air cleaner and clean the air cleaner as often as necessary.

d. Lubrication. Lubricate the loader at more frequent intervals. Clean all fittings and lubrication openings thoroughly before lubricating to prevent entry of dust or sand with the lubricant. Take care to prevent contamination of lubricants with dust or sand.

e. At Halt. When the loader is not in use, close cab windows and doors, and utilize what ever means are available to protect the engine compartment from the entry of wind blown dust or sand.

f. Bucket Lift Arms and Pivot Assemblies. Periodically check sliding mating parts for build–up of dust, dirt, or sand. Use a wire brush to remove dust, dirt, or sand build-up.

2-22. OPERATION IN SALT WATER AREAS

Keep loader as clean as possible; after use, wash with fresh water. Keep all lubrication points lubricated. Keep all wiring and connections clean and free from corrosion.

2-23. OPERATION AT HIGH ALTITUDES

Keep a constant watch on coolant level. Add coolant if necessary. Keep close watch on engine instruments during operation.

NOTE

Engine will operate at less than peak performance at high altitude.

2-24. OPERATION IN SNOW

Keep fuel tank full and snow and ice away from fuel filler when servicing the loader. Close cab windows and doors to keep snow from operating controls and indicators and from operator’s seat.

2-25. FORDING

The loader may safely be subjected to depths up to 30-inches. Observe the following when fording any body of water:

a. Before Fording . Check depth of the water, allowing for the consistency of the bottom. Don-t attempt to ford even the narrowest stream more than 30-inches deep. Make sure the engine is operating at full efficiency before fording.

b. During Fording. Shift the transmission in low speed range and speed up the engine to minimize the danger of stalling. Enter the water slowly to minimize surges of backwash into the engine compartment. Speed must not exceed three to four mph. If stalling or complete submersion occurs, notify higher level of maintenance.

c. After Fording. Lubricate the loader completely; as soon as possible, after fording.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

CHAPTER OVERVIEW

The purpose of this chapter is to provide you with lubrication instructions, troubleshooting procedures, and maintenance procedures to help you keep your equipment in good operating condition.

Index

Section I. LUBRICATION INSTRUCTIONS

3-1. GENERAL LUBRICATION INFORMATION

This section contains general lubrication instructions in addition to those contained in the lubrication order.

3-2. LUBRICATION INFORMATION

a. Care of Lubricants. Keep all lubricants in clean, closed containers and store in a dry area away from external heat. Don't allow dust, dirt, or other foreign matter to mix with lubricants during storage or use. Keep all lubrication equipment clean and ready for use.

b. Cleaning. Keep all external parts that do not require lubrication free of lubricants. Wipe all dirt and other foreign matter from lubrication points using a clean cloth. Clean caps, covers, and plugs and surrounding area before removing them from the loader. Clean lubrication points after lubrication to prevent accumulation of foreign matter.

c. Points of Lubrication. Refer to the lubrication order for lubrication points, and intervals of lubrication.

3-3. LUBRICATION REQUIREMENTS

a. For lubrication under normal conditions, refer to the lubrication order.

3-3. LUBRICATION REQUIREMENTS (CONT)

b. For instructions on lubrication in weather below zero degree F (-18 degrees C), refer to FM 9-207.

c. For lubrication before and after fording, refer to TM 9-238.

d. After operating in dusty or sandy conditions, clean and inspect all lubrication points. Lubricate loader in accordance with lubrication order.

Section II. TROUBLESHOOTING PROCEDURES

TROUBLESHOOTING SYMPTOM INDEX

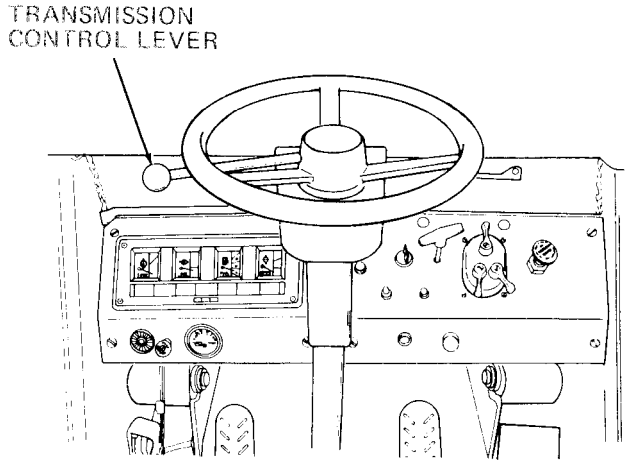
3-4. GENERAL

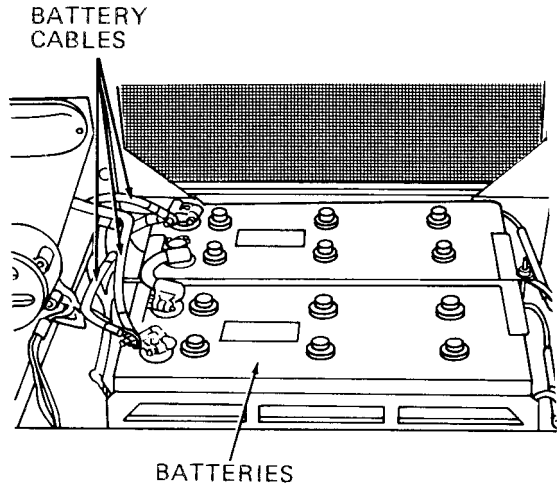
a. The troubleshooting table (paragraph 3-5) lists common malfunctions which you may find during operation of the loader. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all possible malfunctions that may occur or all tests, inspections, and corrective actions. If a malfunction is not listed (except when malfunctions and causes are obvious), or is not corrected by listed corrective actions, notify higher level maintenance.

3-5. TROUBLESHOOTING TABLE

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. ENGINE WILL NOT CRANK
Step 1. Check that transmission control lever is in N (neutral) position. a. If transmission control lever is in any position other than N (neutral), place it in N (neutral) position. b. If transmission control lever is in N (neutral) position, go to step 2 below.
Step 2. Open radiator grille at rear of loader. Check for loose, corroded, or damaged battery cables and connections. a. If battery cable connections are loose, notify organizational maintenance. b. If battery cables or connections are corroded or damaged, notify organizational maintenance. c. If battery cables are okay, go to step 3 below.



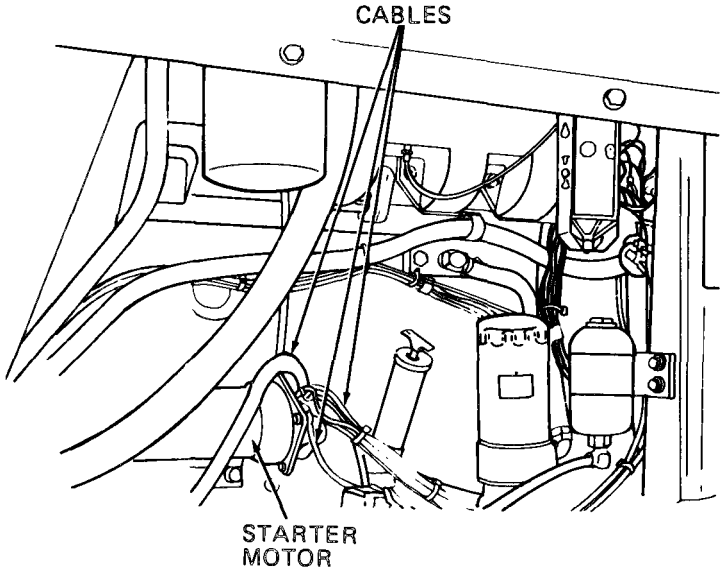


3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK (CONT)

Step 3. Unlock and remove engine front left side panel. Check cable connections at starter motor for looseness.



a. If cable connections at starter motor are loose, notify organizational maintenance.

b. If cable connections are not loose, notify organizational maintenance.

2. ENGINE HARD TO START OR WILL NOT START

Step 1. Check if there is fuel in fuel tank.

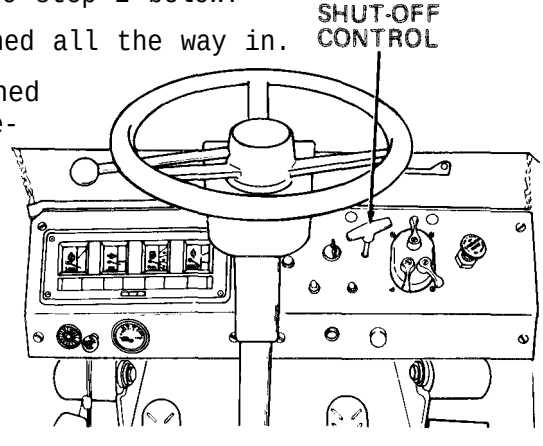
a. If fuel tank is empty, fill with proper grade of diesel fuel.

b. If fuel tank is not empty, go to step 2 below.

Step 2. Check that SHUT OFF control is pushed all the way in.

a. If SHUT OFF control is not pushed completely in, push in completely.

b. If SHUT OFF control is pushed completely in, go to step 3 below.



3-5. TROUBLESHOOTING TABLE (CONT)

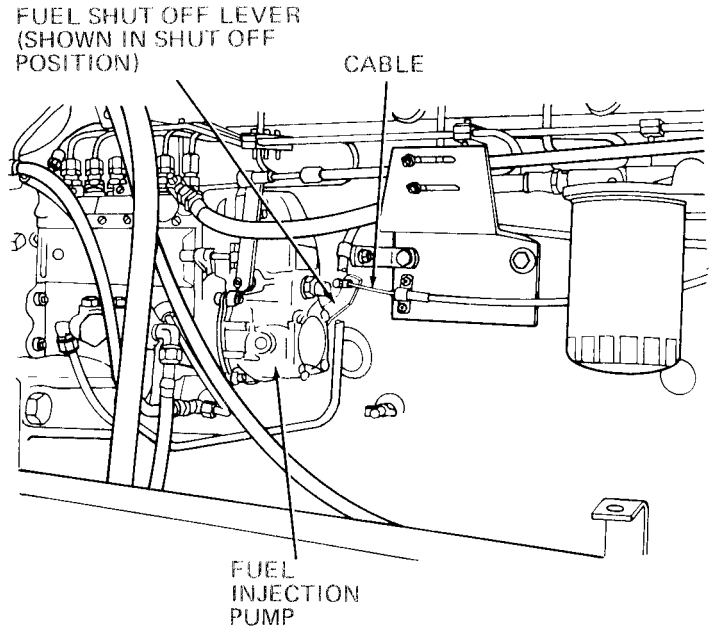
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. ENGINE HARD TO START OR WILL NOT START (CONT)

Step 3. Unlock and remove engine rear right side panel.
While an assistant pushes and pulls SHUT OFF control, check at fuel injection pump that fuel shut off lever moves back and forth.

a. If fuel shut off lever moves back and forth, go to step 4 below.

b. If fuel shut off lever does not move, notify organizational maintenance.



Step 4. Tell assistant to push fuel SHUT OFF control all the way in.
Check at fuel injection pump that fuel shut off lever moves behind fuel injection pump.
Tell assistant to start engine while you grasp fuel shut off lever and move it towards rear of loader.
Engine should start.

a. If engine starts, notify organizational maintenance to adjust SHUT OFF control.

b. If engine does not start, go to step 5 below.

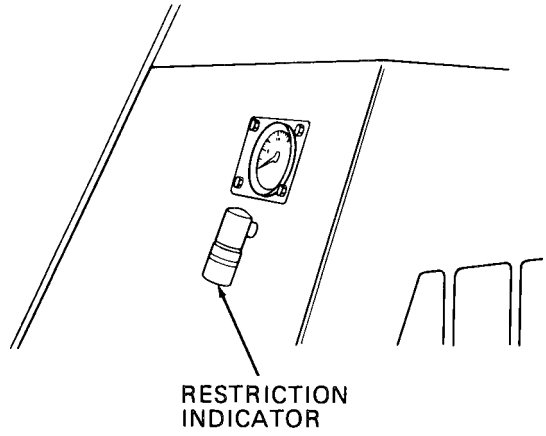
3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. ENGINE HARD TO START OR WILL NOT START (CONT)

Step 5. Check if restriction indicator red band is visible.

a. If red band is visible, press reset button on top of indicator and check that red band disappears from view. (If red band does not disappear from view, notify organizational maintenance that restriction indicator is defective.) Crank engine and check if red band reappears; if red band is visible, service air cleaner.

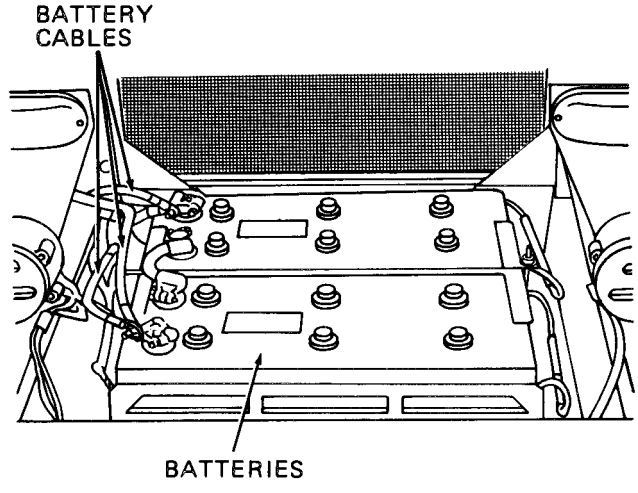


b. If red band is not visible, go to step 6 below.

Step 6. Unlock and open radiator grille at rear of loader. Check for loose, corroded, or damaged battery cables and connections.

a. If battery cable connections are loose, notify organizational maintenance.

b. If battery cables or connections are corroded or damaged, notify organizational maintenance.



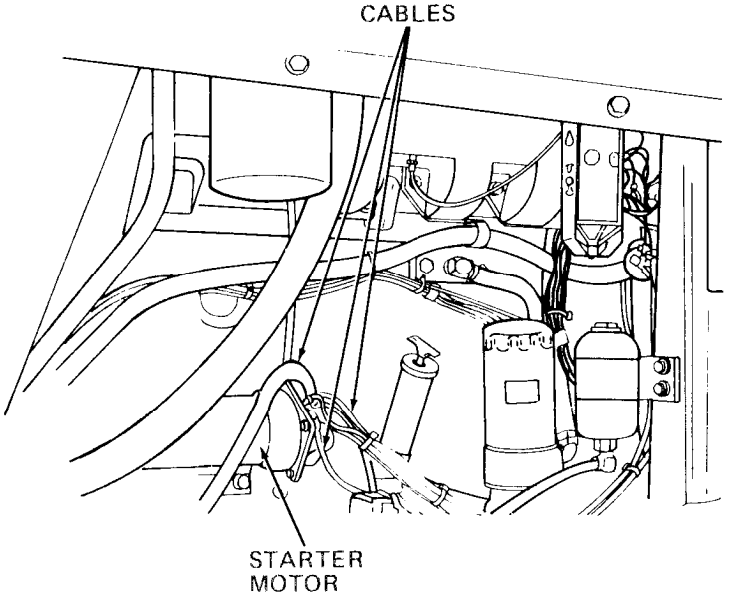
c. If battery cables are okay, go to step 7 below.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. ENGINE HARD TO START OR WILL NOT START (CONT)

Step 7. Unlock and remove engine front left side panel. Check cable connections to starter motor for looseness.



a. If cable connections at starter motor are loose, notify organizational maintenance.

b. If cable connections are not loose, go to step 8 below.

Step 8. Check for incorrect or contaminated fuel in fuel tank.

Notify organizational maintenance.

3. ENGINE STARTS BUT WILL NOT RUN

Step 1. Check fuel supply.

a. If fuel supply is low, fill fuel tank with correct grade of fuel.

b. If fuel supply is okay, go to step 2 below.

Step 2. Check that SHUT OFF control is pushed all the way in.

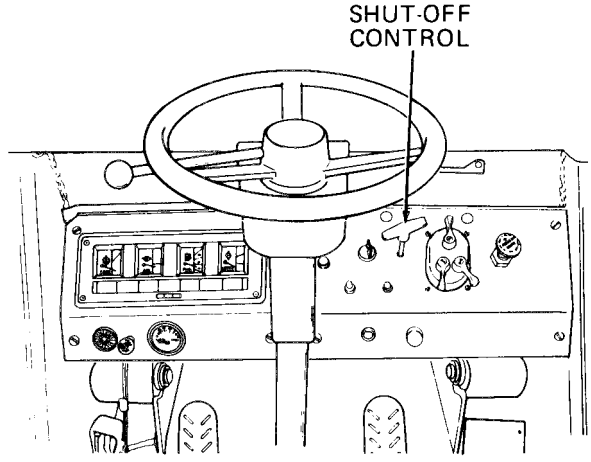
a. If SHUT OFF control is not pushed completely in, push in completely.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

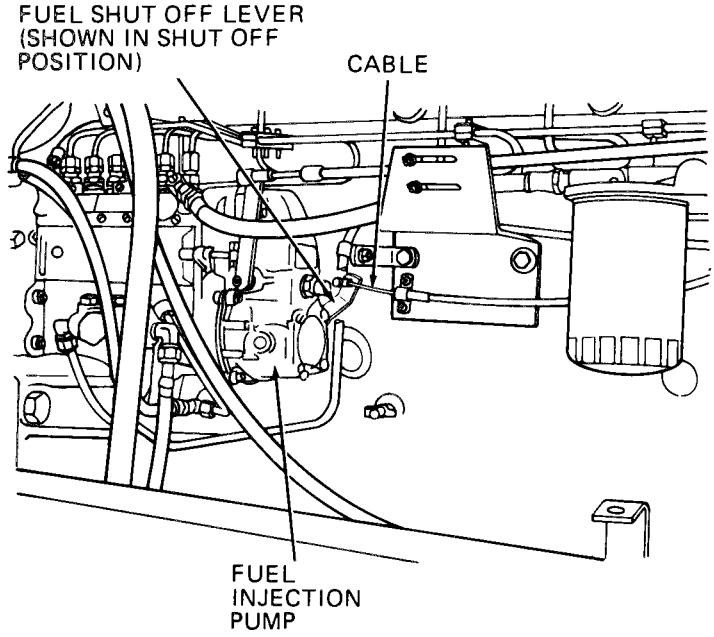
3. ENGINE STARTS BUT WILL NOT RUN (CONT)

Step 2. (Continued)



b. If SHUT OFF control is pushed completely in, go to step 3 below.

Step 3. Unlock and remove engine rear right side panel. While an assistant pushes and pulls SHUT OFF control, check at fuel injection pump that fuel shut off lever moves back and forth.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE STARTS BUT WILL NOT RUN (CONT)

Step 3. (Continued]

a. If fuel shut off lever moves back and forth, go to step 4 below.

b. If fuel shut off lever does not move, notify organizational maintenance.

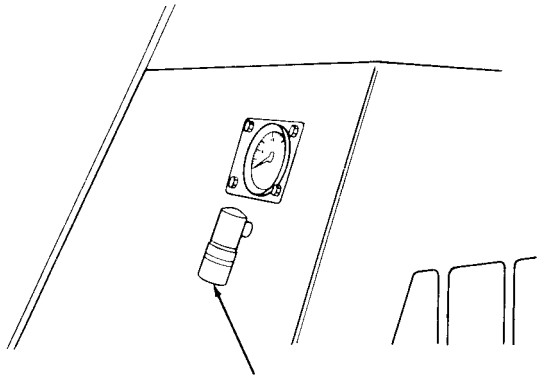
Step 4. Tell assistant to push fuel SHUT OFF control all the way in.
Check at fuel injection pump that fuel shut off lever moves behind fuel injection pump.
Tell assistant to start engine while you grasp fuel shut off lever and move it towards rear of loader.
Engine should start.

a. If engine starts, notify organizational maintenance to adjust SHUT OFF control.

b. If engine does not start, go to step 5 below.

Step 5. Check if restriction indicator red band is visible.

a. If red band is visible, press reset button on top of indicator and check that red band disappears from view. (If red band does not disappear from view, notify organizational maintenance that restriction indicator is defective.)
Crank engine and check if red band reappears; if red band is visible, service air cleaner.



b. If red band is not visible, go to step 6 below.

Step 6. Check fuel injector lines for fuel leaks.

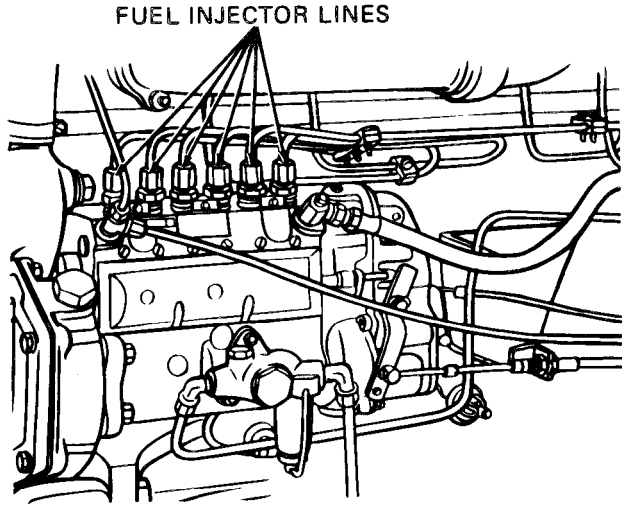
a. If fuel injector lines are leaking, notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE STARTS BUT WILL NOT RUN (CONT)

Step 6. (Continued)



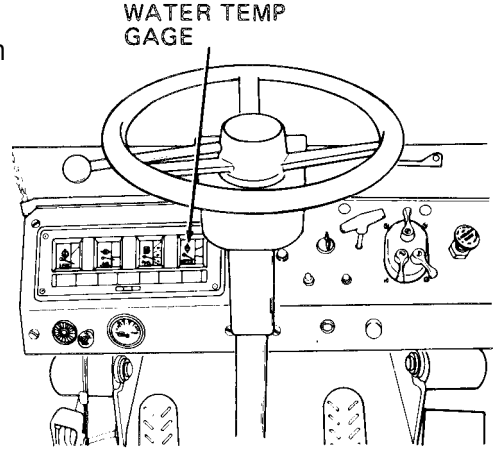
b. If fuel injector lines are not leaking, go to step 7 below.

Step 7. Check for incorrect or contaminated fuel in fuel tank (notify organizational maintenance).

Notify organizational maintenance.

4. ENGINE DOES NOT FIRE CORRECTLY (LOW AND HIGH RPM)

Step 1. Check if WATER TEMP gage pointer is in green area of gage.



a. If WATER TEMP gage pointer is not in green area of gage, operate engine at approximately 1000 rpm until gage pointer indicates in green area.
If after several minutes, WATER TEMP gage pointer does not start to move into green area, notify organizational maintenance (thermostat must be tested).

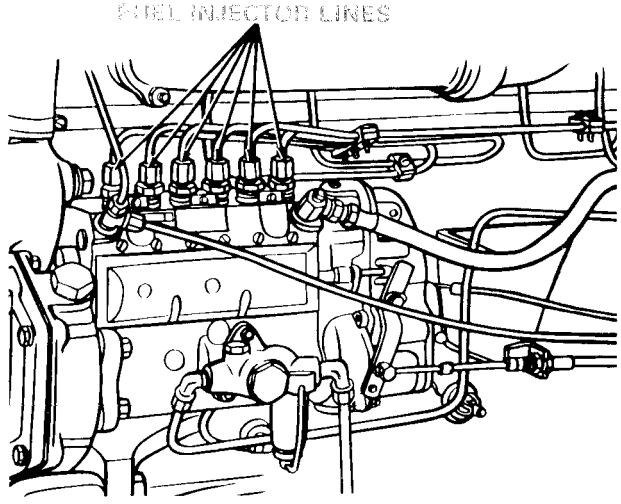
b. If WATER TEMP gage pointer is in green area of gage, go to step 2 below.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. ENGINE DOES NOT FIRE CORRECTLY (LOW AND HIGH RPM) (CONT)

Step 2. Unlock and remove engine rear right side panel. Check fuel injector lines for fuel leakage.



a. If fuel leakage is seen, notify organizational maintenance.

b. If fuel leakage is not seen, go to step 3 below.

Step 3. Check for incorrect or contaminated fuel in fuel tank.

Notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

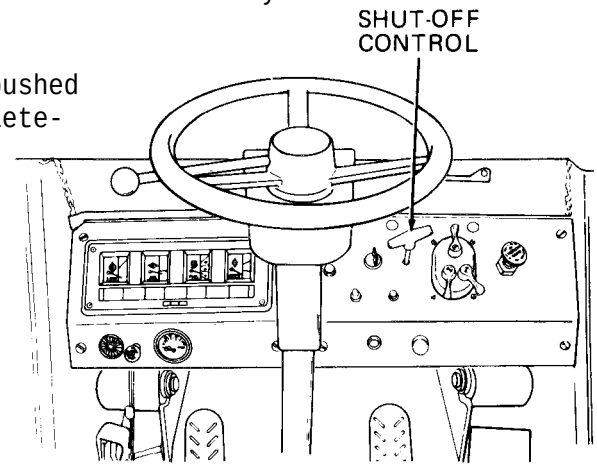
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. ENGINE STALLS FREQUENTLY OR LACKS POWER

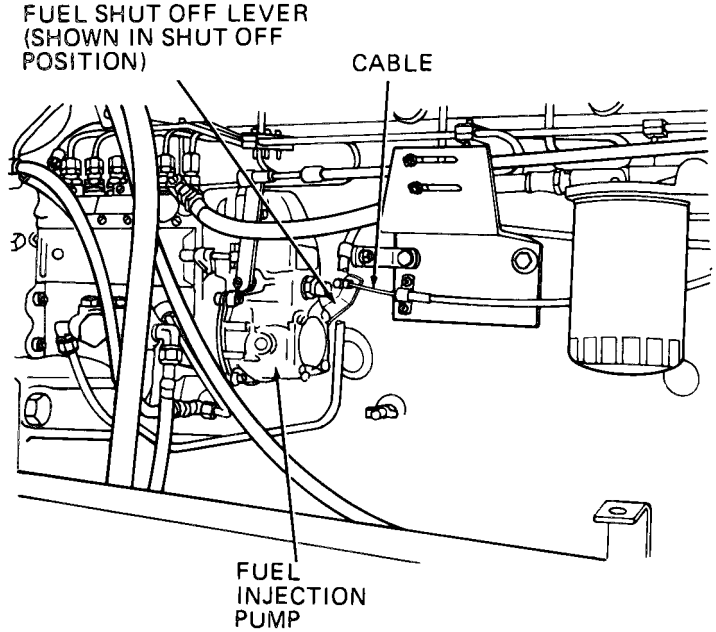
Step 1. Check that SHUT OFF control is pushed all the way in.

a. If SHUT OFF control is not pushed completely in, push in completely.

b. If SHUT OFF control is pushed completely in, go to step 2 below.



Step 2. Unlock and remove engine rear right side panel.
Turn off engine and check and ensure that SHUT OFF lever is completely pushed in.
At fuel injection pump, try to move fuel shut off lever further to rear of loader.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. ENGINE STALLS FREQUENTLY OR LACKS POWER (CONT)

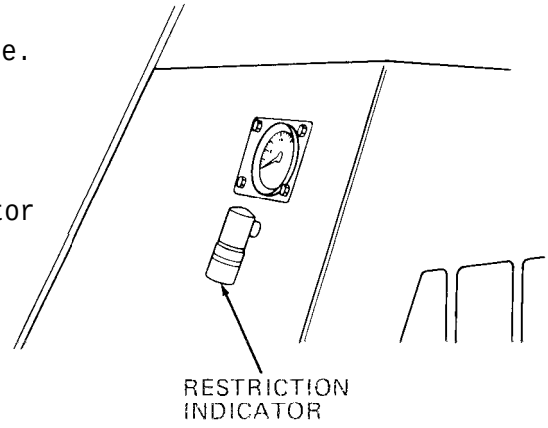
Step 2. (Continued)

a. If fuel shut off lever can be moved further to rear of loader, notify organizational maintenance to adjust SHUT OFF control cable.

b. If fuel shut off lever can not be moved any further, go to step 3 below.

Step 3. Check if restriction indicator red band is visible.

a. If red band is visible, press reset button on top of indicate. and check that red band disappears from view. (If red band does not disappear from view, notify organizational maintenance that restriction indicator is defective.)
Crank engine and check if red band reappears; if red band is visible, service air cleaner.



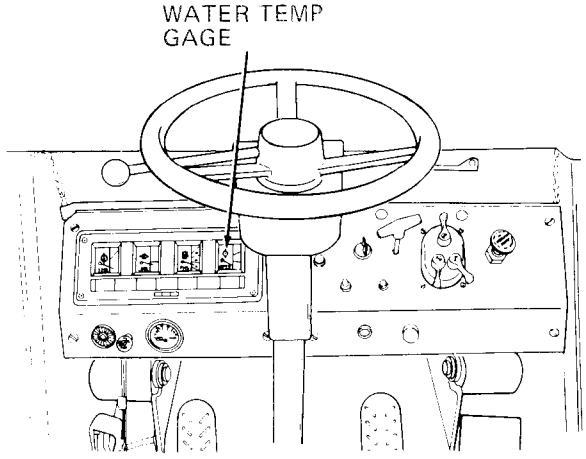
b. If red band is not visible, go to step 4 below.

Step 4. Check WATER TEMP gage for high coolant temperature.

a. If WATER TEMP gage indicates high coolant temperature, notify organizational maintenance (mechanical drag exists).

b. If WATER TEMP gage indicates normal coolant temperature, go to step 5 below.

c. If WATER TEMP gage indicates below normal coolant temperature, notify organizational maintenance (water thermostat must be tested).

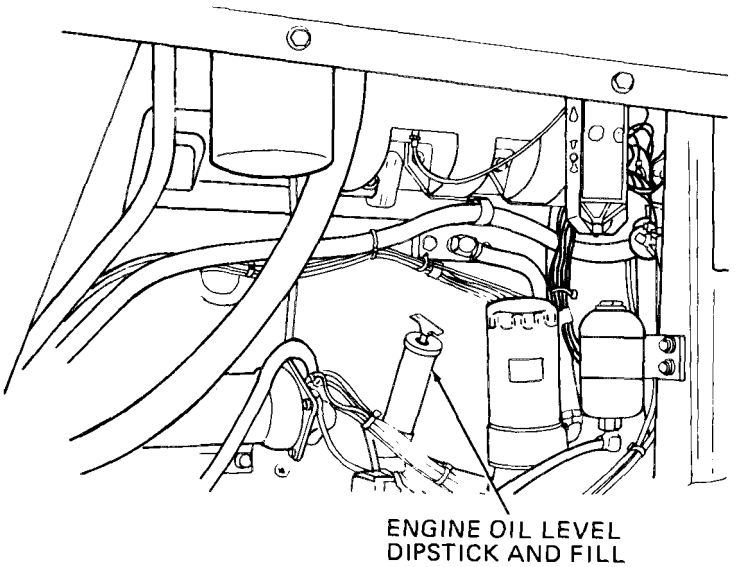


3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. ENGINE STALLS FREQUENTLY OR LACKS POWER (CONT)

Step 5. Remove engine front left side panel.
Check engine oil level for level exceeding full mark on dipstick.



a. If oil level is above dipstick full mark, notify organizational maintenance to drain oil.

b. If oil level is okay, go to step 6 below.

Step 6. Check for fuel contamination and condensation in fuel tank.

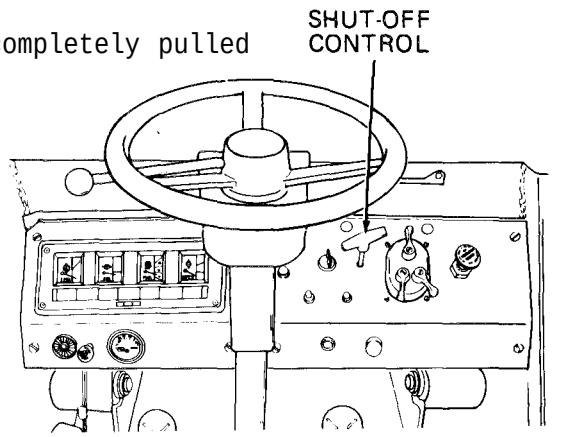
Notify organizational maintenance.

6. ENGINE WILL NOT SHUT DOWN

Step 1. Check if fuel SHUT OFF control is completely pulled out

a. If fuel SHUT OFF control is not pulled out completely, pull out completely to stop engine.

b. If fuel SHUT OFF lever is pulled out completely and engine is still operating, go to step 2 below.

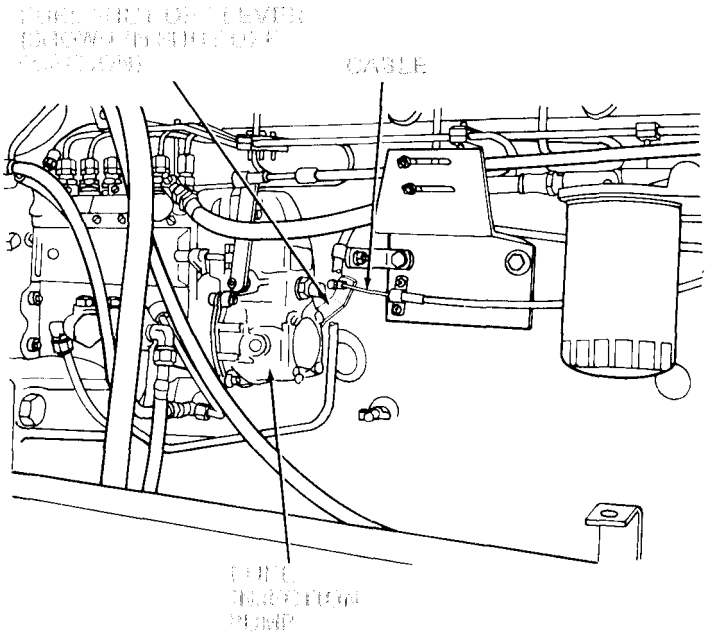


3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. ENGINE WILL NOT SHUT DOWN (CONT)

Step 2. Unlock and remove engine rear right side panel. Check if cable is connected to fuel shut off lever and if lever is in position shown.



Move fuel injection pump shut off lever to position shown. Notify organizational maintenance to check connection of cable to fuel injection pump fuel shut off lever.

7. EXCESSIVE OIL CONSUMPTION

Step 1. Check ground under loader for oil leaks from engine oil filter or oil pan.

a. If oil leaks are observed, notify organizational maintenance.

b. If oil leaks are not observed, go to step 2 below.

Step 2. Try to determine what weight oil is used in engine crankcase (refer to LO 5-3805-262-12 for correct weight oil to be used).

a. If too light of an engine oil is used, notify organizational maintenance to drain and refill engine crankcase with correct weight oil (refer to LO 5-3805-262-12).

b. If weight of engine oil is okay, go to step 3 below.

3-5. TROUBLESHOOTING TABLE (CONT)

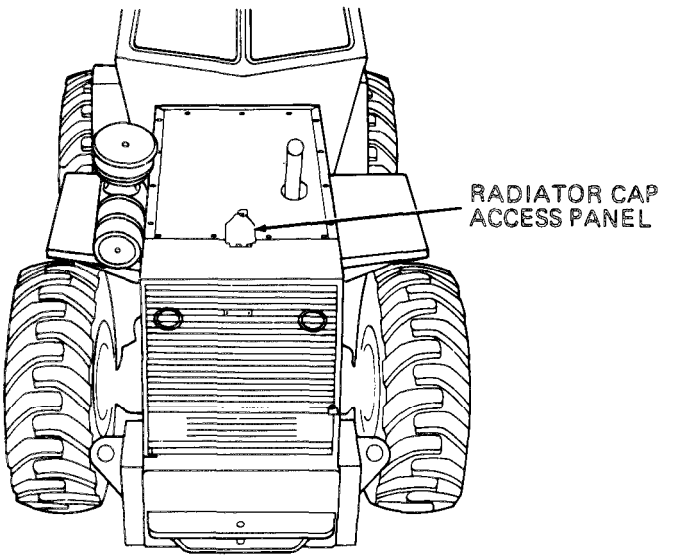
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. EXCESSIVE OIL CONSUMPTION (CONT)

Step 3. Unlock and open radiator cap access panel.

WARNING

Remove radiator cap slowly to relieve pressure before completely removing when engine is hot. Failure to do so could cause severe bums due to hot steam scalding you. If you are scalded by hot steam, seek medical aid immediately.



Remove radiator cap and inspect coolant for lubricating oil contaminant ion.

a. If coolant is contaminated with oil, notify organizational maintenance (engine oil cooler must be repaired or replaced).

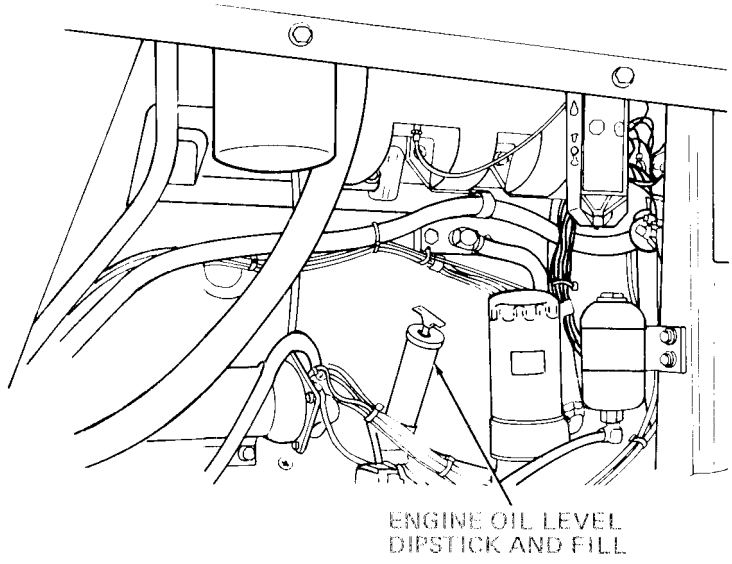
b. If coolant is not contaminated with oil, notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

8. LOW ENGINE OIL PRESSURE (ENGINE OIL PRESSURE WARNING INDICATOR LIGHTS)

Step 1. Unlock and remove engine front left side panel. Check engine oil level.



a. Add engine oil if oil level is not between dipstick full and add marks.

b. If oil level is okay, go to step 2 below.

Step 2. Check engine oil for dirty condition by removing dipstick, wiping between thumb and forefinger and noting if oil feels gritty and looks dirty.

a. If oil feels gritty and looks dirty, notify organizational maintenance to drain oil, replace oil filter, and refill with oil.

b. If oil is okay, go to step 3 below.

Step 3. Try to determine what weight oil is used in engine crankcase (refer to LO 5-3805-262-12 for correct weight oil to be used).

a. If too light of an engine oil is used, notify organizational maintenance to drain and refill engine crankcase with correct weight oil (refer to LO 5-3805-262-12).

b. If weight of engine oil is okay, go to step 4 below.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

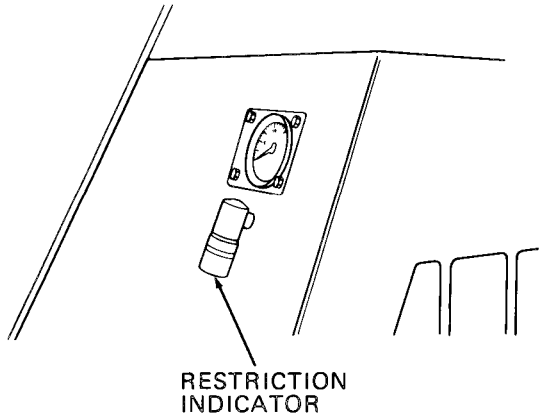
8. LOW ENGINE OIL PRESSURE (ENGINE OIL PRESSURE WARNING INDICATOR LIGHTS) (CONT)

Step 4. Check ground under loader for oil leaks from engine oil filter or oil pan.

Notify organizational maintenance.

9. EXCESSIVE FUEL USAGE

Step 1. Check if restriction indicator red band is visible.



a. If red band is visible, press reset button on top of indicator and check that red band disappears from view. (If red band does not disappear from view, notify organizational maintenance that restriction indicator is defective.)
Crank engine and check if red band reappears; if red band is visible, service air cleaner.

b. If red band is not visible, go to step 2 below.

Step 2. At bottom of fuel tank, check for fuel leaks.

a. If fuel tank is leaking fuel, notify organizational maintenance (fuel tank must be replaced).

b. If fuel tank is not leaking fuel, go to step 3 below.

3-5. TROUBLESHOOTING TABLE (CONT)

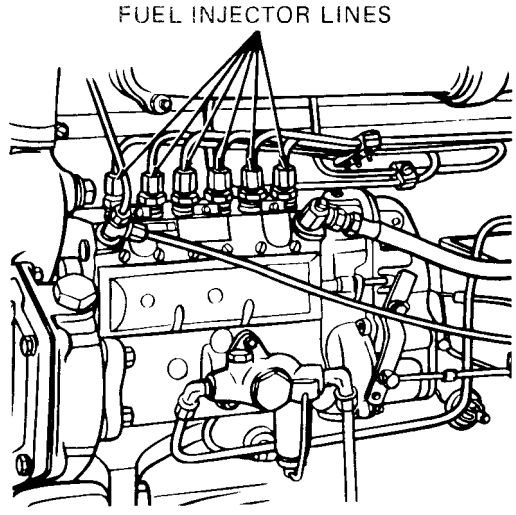
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. EXCESSIVE FUEL USAGE (CONT)

Step 3. Unlock and remove engine rear right side panel.
Inspect fuel injector lines for fuel leaks.

a. If fuel injector lines are leaking, notify organizational maintenance.

b. If fuel injector lines are okay, notify organizational maintenance.

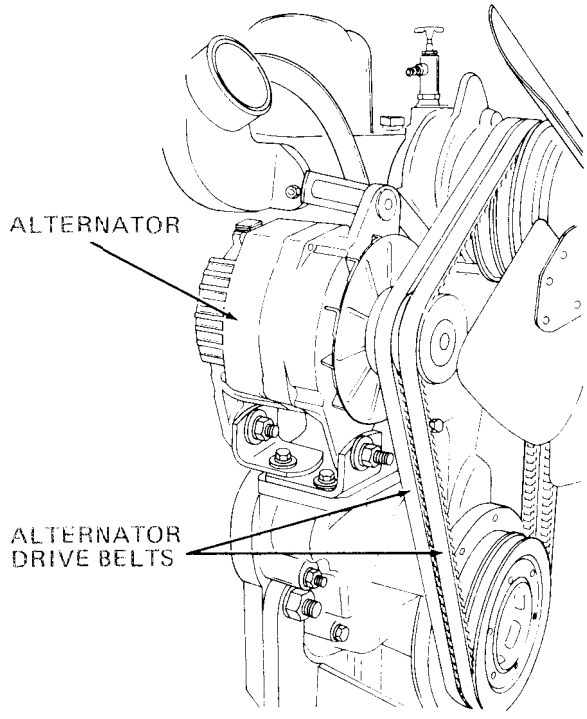


10. ENGINE OVERHEATS (WATER TEMP GAGE INDICATES IN RED ZONE)

Step 1. Turn engine off.
Unlock and remove engine rear left side panel.
Check alternator drive belts for loose condition.
Press drive belts in approximate center with your hand.
Drive belts should not depress more than 1/2 inch approximately.

a. If you are able to depress alternator drive belts more then 1/2 inch, notify organizational maintenance to adjust drive belts.

b. If alternator drive belts are okay, go to step 2 below.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

10. ENGING OVERHEATS (WATER TEMP GAGE INDICATES IN RED ZONE) (CONT)

Step 2. Unlock and remove engine rear right side panel.
Check radiator hoses at radiator top and bottom for leakage.

a. If radiator hoses are leaking, notify organizational maintenance (hoses must be replaced).

b. If radiator hoses are okay, go to step 3 below.

Step 3. Open radiator grille at rear of loader.
Inspect radiator for coolant leakage, damaged fins, or debris on fins.

a. If radiator is leaking or fins are damaged, notify organizational maintenance.

b. If debris is on radiator fins, remove debris.

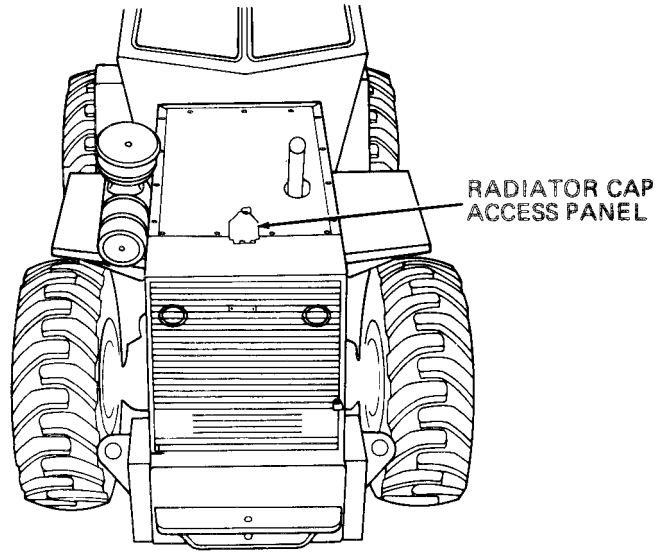
C. If radiator is okay, go to step 4 below.

Step 4. Unlock and open radiator cap access panel at top of loader.

WARNING

Remove radiator cap slowly to relieve pressure before completely removing when engine is hot. Failure to do so could cause severe burns due to hot steam scalding you. If you are scalded by hot steam, seek medical aid immediately.

Slowly loosen and remove radiator cap.
Check that coolant level is between one to two inches below radiator filler neck.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

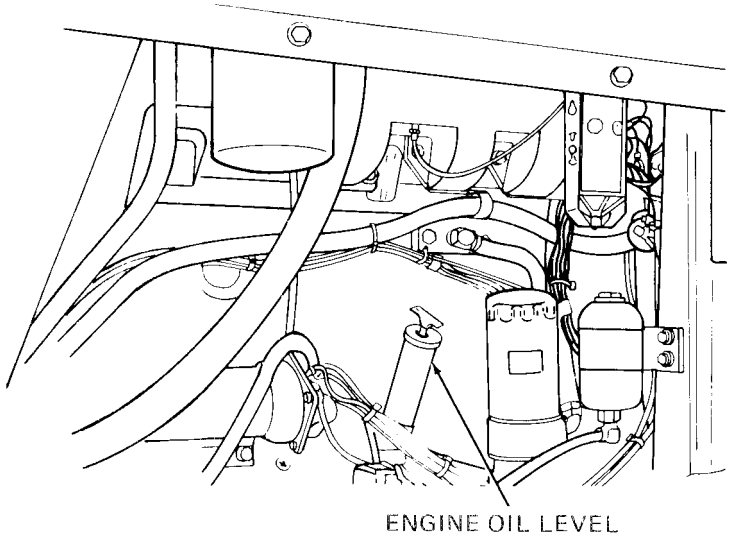
10. ENGINE OVERHEATS (WATER TEMP GAGE INDICATES IN RED ZONE) (CONT)

Step 4. (Continued)

a. If coolant level is below two inches of radiator filler neck, add coolant.

b. If coolant level is okay, go to step 5 below.

Step 5. Unlock and remove engine front left side panel. Check engine oil level.



a. Add engine oil if oil level is not between dipstick full and add marks.

b. If oil level is okay, go to step 6 below.

Step 6. Check for fuel contamination and condensation in fuel tank (notify organizational maintenance).

Notify organizational maintenance.

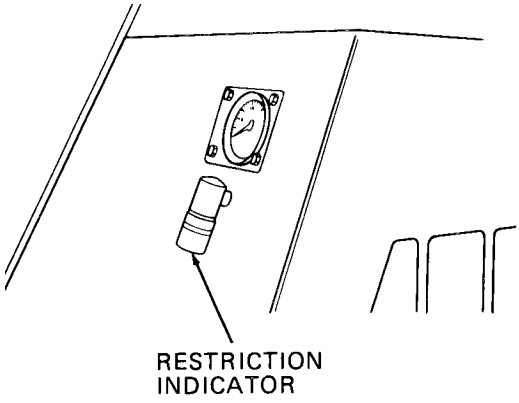
3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

11. EXCESSIVE ENGINE EXHAUST SMOKE

Step 1. Check if restriction indicator red band is visible.

a. If red band is visible, press reset button on top of indicator and check that red band disappears from view. (If red band does not disappear from view, notify organizational maintenance that restriction indicator is defective.)
Crank engine and check if red band reappears; if red band is visible, service air cleaner.



b. If red band is not visible, go to step 2 below.

Step 2. Check if fuel tank contains proper grade of fuel (notify organizational maintenance).

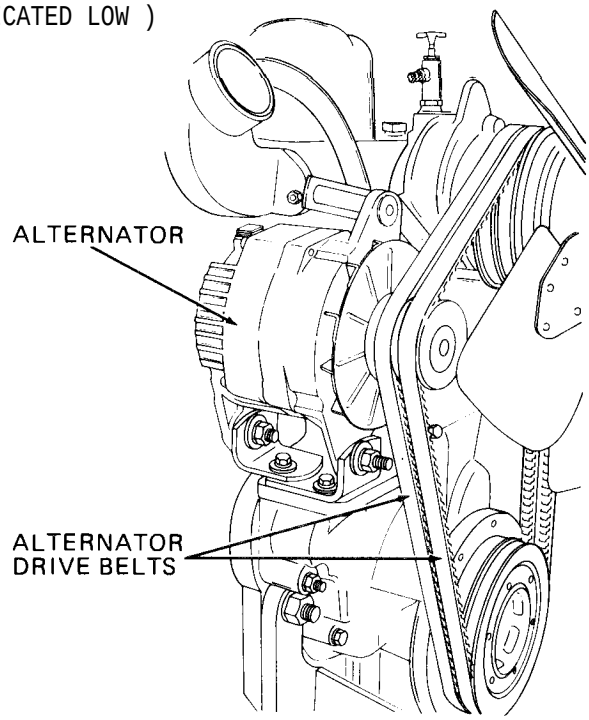
Notify organizational maintenance.

12. BATTERIES FAIL TO MAINTAINE CHARGE (VOLTMETER INDICATED LOW)

Step 1. Turn engine off.
Unlock and remove engine rear left side panel.
Check alternator drive belts for loose condition.
Press drive belts in approximate center with your hand.
Drive belts should not depress more than 1/2 inch approximately.

a. If you are able to depress alternator drive belts more than 1/2 inch, notify organizational maintenance to adjust drive belts.

b. If alternator drive belts are okay, go to step 2 below.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12. BATTERIES FAIL TO MAINTAIN CHARGE (VOLTMETER INDICATES LOW) (CONT)

Step 2. Check for loose wire connection at rear of alternator.

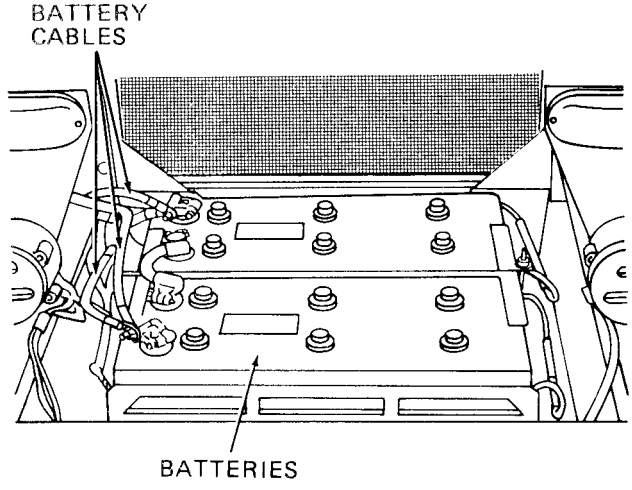
a. If wire connection is loose at rear of alternator, notify organizational maintenance.

b. If alternator connections are okay, go to step 3 below.

Step 3. Open radiator grille at rear of loader. Check for loose battery cables or dirty connections at battery terminals.

a. If battery cables are loose, dirty or corroded, notify organizational maintenance.

b. If battery cables are not loose and connections are not dirty or corroded, notify organizational maintenance.



13. BATTERIES REQUIRE FREQUENT FILLING

If batteries require frequent filling, notify organizational maintenance.

14. TRANSMISSION OVERHEATS (CONV TEMP GAGE INDICATES IN RED ZONE)

Step 1. Place transmission control lever in lower speed range. Check if CONV TEMP gage pointer remains in red zone.

a. If pointer remains in red zone, go to step 2 below.

b. If pointer goes into green zone, continue operation of loader.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

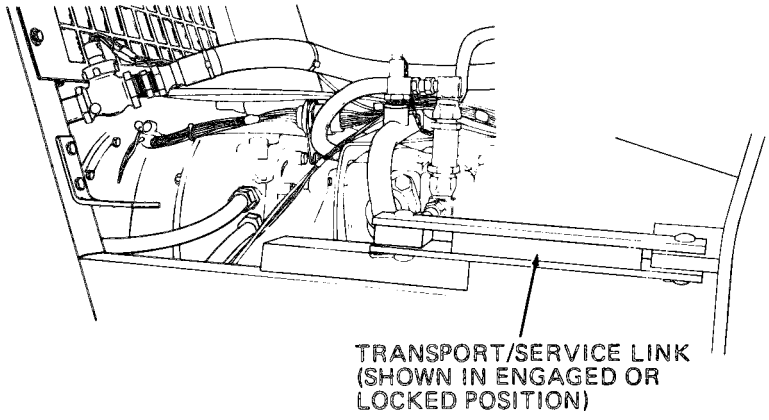
14. TRANSMISSION OVERHEATS (CONV TEMP GAGE INDICATES IN RED ZONE) (CONT)

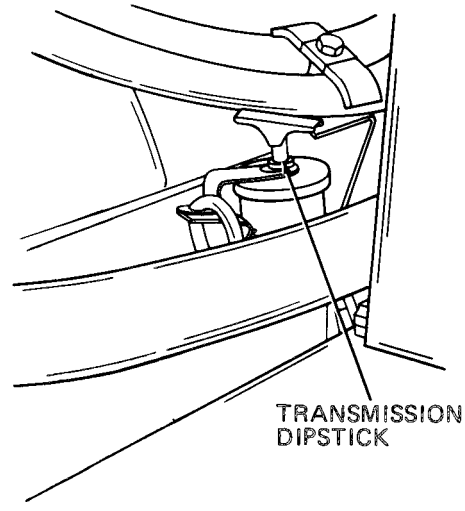
Step 2. Stop loader operation, move transmission control lever to N (neutral) position and operate engine at full throttle.
Check that CONV TEMP gage pointer moves into green zone of gage.

a. If CONV TEMP gage pointer remains in red zone, go to step 3 below .

b. If CONV TEMP gage pointer goes into green zone, continue loader operation.

Step 3. Turn off engine and pull up on parking brake control.
Place transmission control lever in N (neutral) position.
Move transport/service link to engaged position.
Start engine and operate at idle speed.
Unlock and remove transmission dipstick.
Check that oil level is between dipstick full and add marks.





a. If oil level is below dipstick add mark, add oil to transmission (refer to LO 5-3805-262-12).

b. If oil level is above dipstick full mark, notify organizational maintenance to drain excess oil.

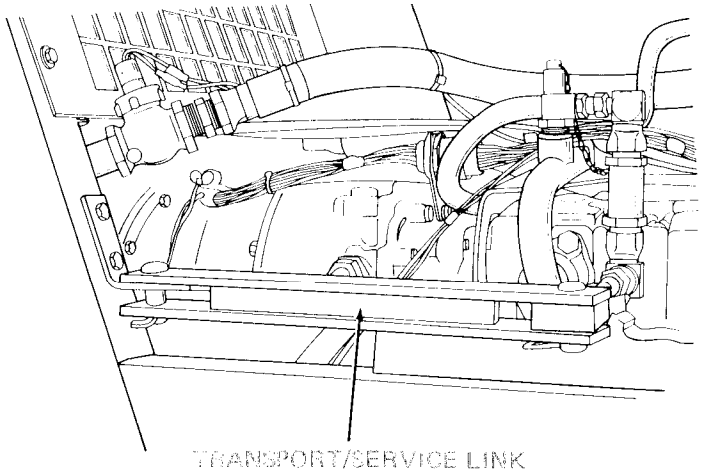
c. If oil level is okay, install and lock transmission dipstick. Return transport/service link to operating position.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

14. TRANSMISSION OVERHEATS (CON TEMP GAGE INDICATES IN RED ZONE) (CONT)

Step 3. (Continued)



WARNING

Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control.

Turn off engine.
Go to step 4 below.

Step 4. Open radiator grille at rear of loader.
Inspect radiator for coolant leakage, damaged fins, or debris on fins.

a. If radiator is leaking or fins are damaged, notify organizational maintenance.

b. If debris is on radiator fins, remove debris.

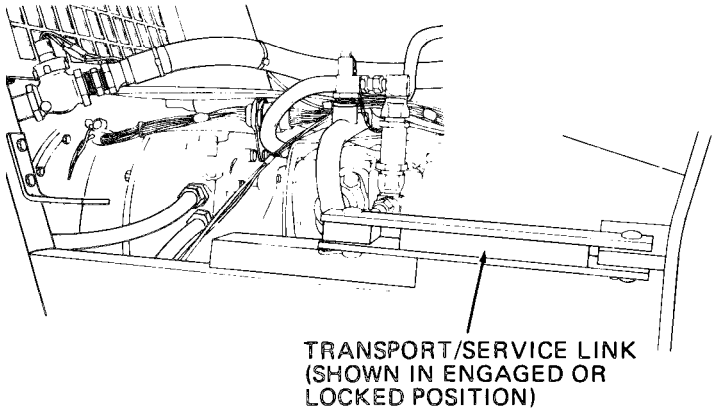
c. If radiator is okay, notify organizational maintenance.

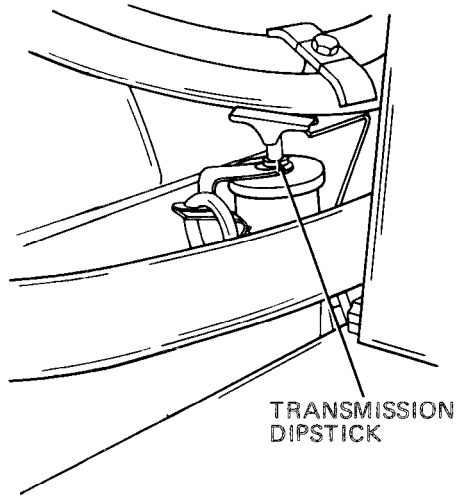
3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

15. LOW TRANSMISSION OIL PRESSURE (CLUTCH PRESS WARNING INDICATOR LIGHTS)

Turn off engine and pull up on parking brake control.
Place transmission control lever in N (neutral) position.
Move transport/service link to engaged position.
Start engine and operate at idle speed.
Unlock and remove transmission dipstick.
Check that oil level is between dipstick full and add marks.





a. If oil level is below dipstick add mark, add oil to transmission (refer to LO 5-3805-262-12).

b. If oil level is above dipstick full mark, notify organizational maintenance to drain excess oil.

c. If oil level is okay, install and lock transmission dipstick. Move transport/service link to operating position.

WARNING

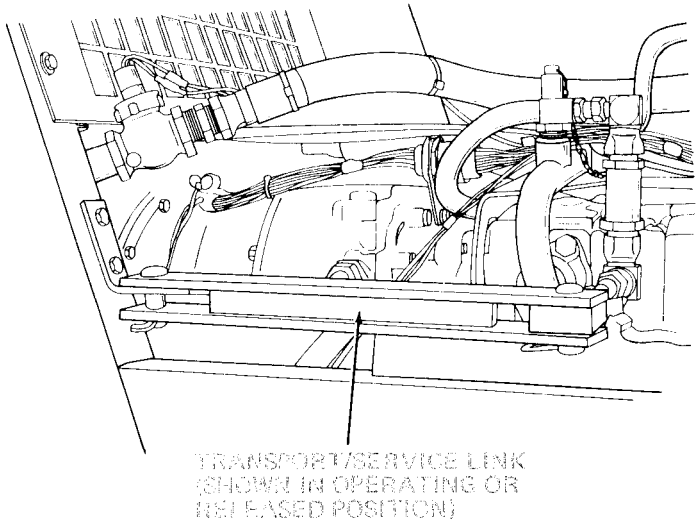
Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control.

Turn off engine.
Notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

15. LOW TRANSMISSION OIL PRESSURESURE(CLUTCHRESSWARNING INDICATOR LIGHTS) (CONT)



16. EXCESSIVE DRIVE SHAFTS NOISE

Turn off engine.
Inspect drive shafts for wear or damage.
Grasp drive shaft with both hands and try to rotate it. Wear or damage is indicated by movement of drive shaft in any direction.

a. If drive shaft movement is seen indicating wear or damage, notify organizational maintenance.

b. If drive shafts are okay, check for loose mounting hardware; notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

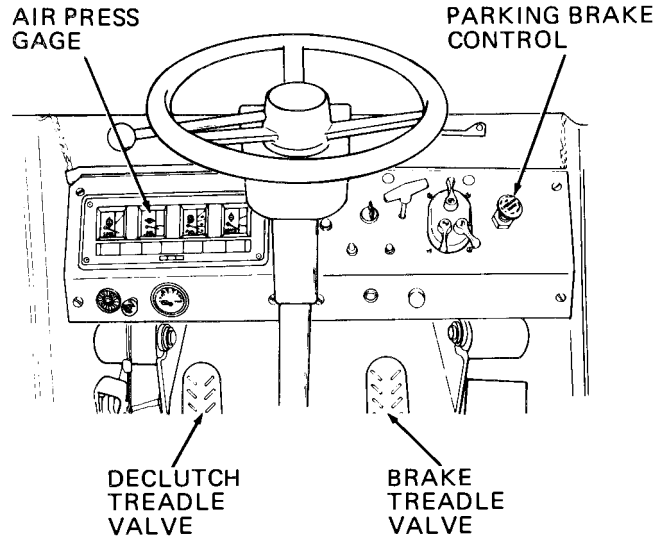
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

17. PARKING BRAKE DOES NOT HOLD

Step 1. Start and operate engine at 1000 rpm until AIR PRESS gage pointer indicates in green area.
Push in and momentarily hold in knob of parking brake control.
Release parking brake control knob.
Check that parking brake control knob stays in and parking brake is released.

a. If parking brake control knob does not stay in or parking brake does not release, notify organizational maintenance (parking brake control must be removed and repaired).

b. If parking brake control knob stays in and parking brake is released, go to step 2 below.



Step 2. Turn off engine.
Depress brake treadle valve and declutch treadle valve until AIR PRESS gage pointer is approximately 1/4 inch into red zone.
Check that parking brake control knob comes out and parking brake engages.

a. If parking brake valve knob does not come out or parking brake does not engage, notify organizational maintenance (parking brake control must be removed and repaired).

b. If parking brake valve knob came out and parking brake engaged, no further action is required.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

18. SERVICE BRAKES UNEVEN OR ERRATIC

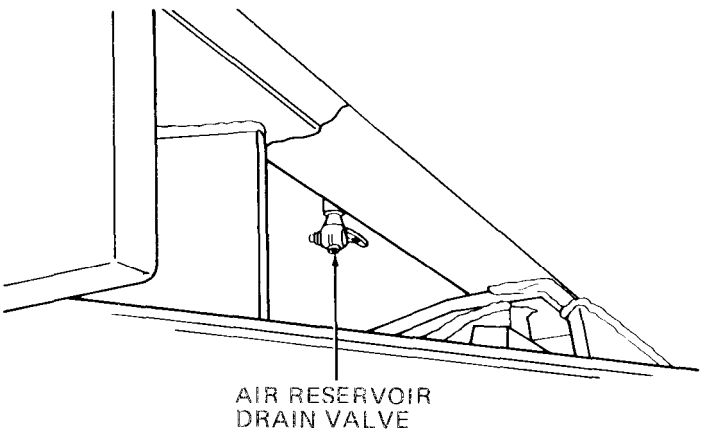
Check that tires are inflated to 40 psi.

a. If tires are not properly inflated, notify organizational maintenance.

b. If tires are inflated to 40 psi, notify organizational maintenance.

19. LOW AIR PRESSURE (AIR PRESS GAGE INDICATES IN RED ZONE AND BUZZER SOUNDS)

Check if air reservoir drain valve is open.



a. If drain valve is open, close it.

b. If drain valve is closed, notify organizational maintenance.

20. TIRES WEAR RAPIDLY OR UNEVENLY

Check that tires are inflated to 40 psi.

a. If tires are not properly inflated, notify organizational maintenance.

b. If tires are inflated to 40 psi, notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. STEERING SYSTEM NOT OPERATING PROPERLY

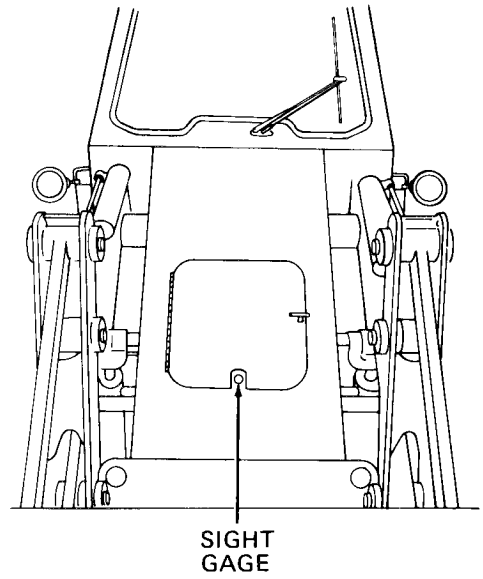
WARNING

Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control..

Step 1. Park loader on level surface, lower bucket to ground, turn off engine, and pull up on parking brake control. Check hydraulic oil level in sight gage in front of loader. Oil level must be seen in sight gage.

a. If oil level is not seen in sight gage, add hydraulic oil (refer to LO 5-3805-262-12).

b. If oil level is seen in sight gage, go to step 2 below.



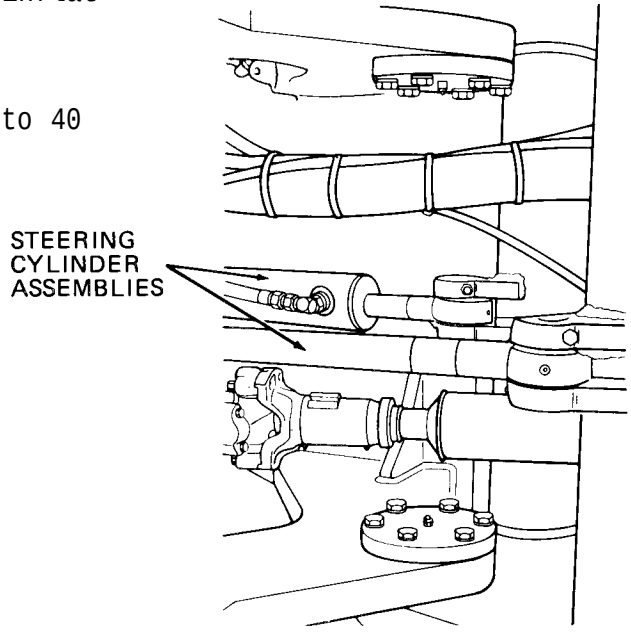
Step 2. Check that all tires are inflated to 40 psi.

a. If tires are not properly inflated, notify organizational maintenance.

b. If all tires are inflated to 40 psi, go to step 3 below.

Step 3. Start engine and turn loader completely to right. Check steering cylinder assemblies for oil leakage.

Notify organizational maintenance.



3-5. TROUBLESHOOTING TABLE (CONT)

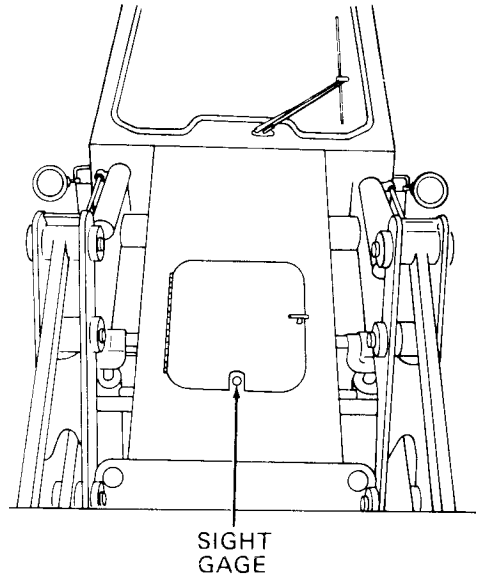
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

22. LIFT ARMS DO NOT OPERATE PROPERLY

Step 1. Park loader on level surface, lower bucket to ground, turn off engine, and pull up on parking brake control. Check hydraulic oil level in sight gage in front of loader. Oil level must be seen in sight gage.

a. If oil level is not seen in sight gage, add hydraulic oil (refer to LO 5-3805-262-12).

b. If oil level is seen in sight gage, go to step 2 below.



Step 2. Inspect bucket lift arm pivot pins and bushings for wear or damage.

a. If pivot pins or bushings are worn or damaged, notify organizational maintenance.

b. If pivot pins and bushings are not worn or damaged, go to step 3 below.

Step 3. Check if bucket lift arm pivots are adequately lubricated.

a. If pivots are not adequately lubricated, lubricate (refer to LO 5-3805-262-12) .

b. If pivots are adequately lubricated, notify organizational maintenance.

3-5. TROUBLESHOOTING TABLE(CONT)

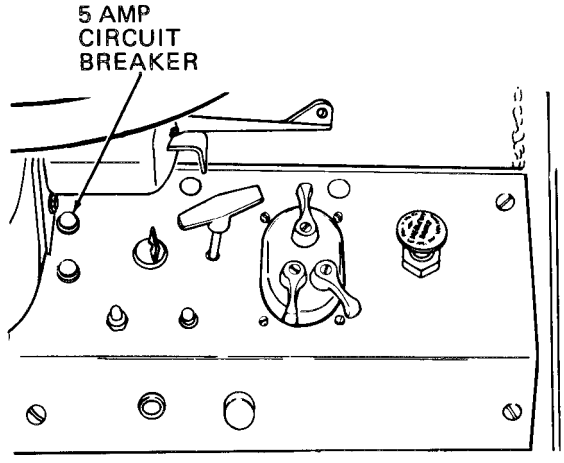
MALFUNTION
TEST OR INSPECTION
CORRECTIVE ACTION

23. RETURN-TO-DIG AND BUCKET HEIGHT CONTROL CIRCUITS DO NOT OPERATE

NOTE

Refer to pages 2-45 and 2-46 and adjust bucket height control and return-to-dig control.

Step 1. Press top most 5 AMP circuit breaker on right instrument pane 1.
Start engine and place LIFT ARM control lever in RAISE position.
Check if 5 AMP circuit breaker button pops out when bucket reaches preselected height.

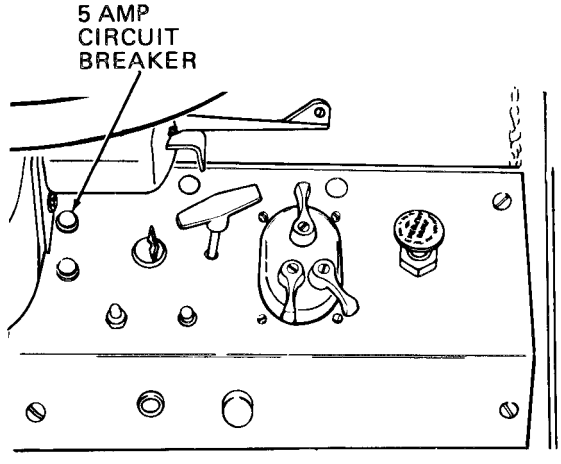


a. If circuit breaker button popped when bucket reached preselected height, lower bucket to ground.
Notify organizational maintenance (short circuit exists in bucket height control circuit).

b. If circuit breaker button did not pop, and desired dump height was not obtained, readjust bucket height control (page 2-45).

c. If circuit breaker button did not pop, go to step 2 below.

Step 2. With bucket at preselected height, put BUCKET control lever in CROWD and LIFT ARM control lever in FLOAT.
Check if 5 AMP circuit breaker button pops out when bucket reaches desired digging or rollback angle.
Put LIFT ARM control lever in NEUT. position when bucket is on ground.



3-5. TROUBLESHOOTING TABLE (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

23. RETURN-TO-DIG AND BUCKET HEIGHT CONTROL CIRCUITS DO NOT OPERATE (CONT)

Step 2. (Continued)

a. If 5 AMP circuit breaker button popped when bucket reached desired digging or rollback angle, notify organizational maintenance (short circuit exists in return-to-dig control circuit).

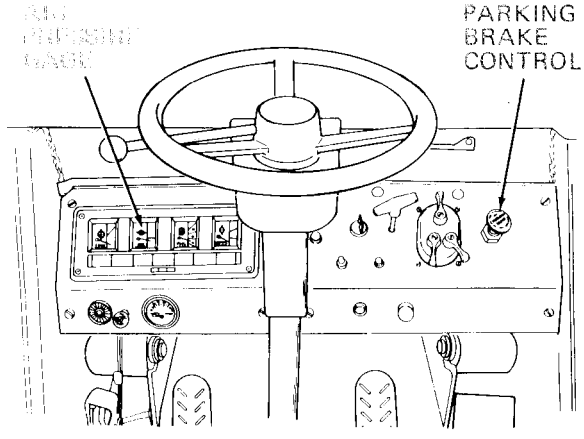
b. If 5 AMP circuit breaker did not pop, and desired digging or rollback angle was not obtained, readjust return-to-dig control (page 2-46).

24. LOADER WILL NOT MOVE

Step 1. Check if parking brake control knob is pulled out.

a. Push in parking brake control knob if pulled out.

b. If parking brake control knob is not pulled out, go to step 2 below.



Step 2. Check if air pressure builds to normal operating pressure (AIR PRESS gage pointer indicates in green zone).

a. If air system pressure is low, go to MALFUNCTION 19 above.

b. If air system pressure is normal, notify organizational maintenance.

Section III. MAINTENANCE PROCEDURES

3-6. INTRODUCTION

This section provides maintenance procedures consisting of inspections and servicing of the various components and/or systems to be performed by the operator as authorized in the Maintenance Allocation Chart.

3-7. INSPECTION

a. Fuel Injector Lines.

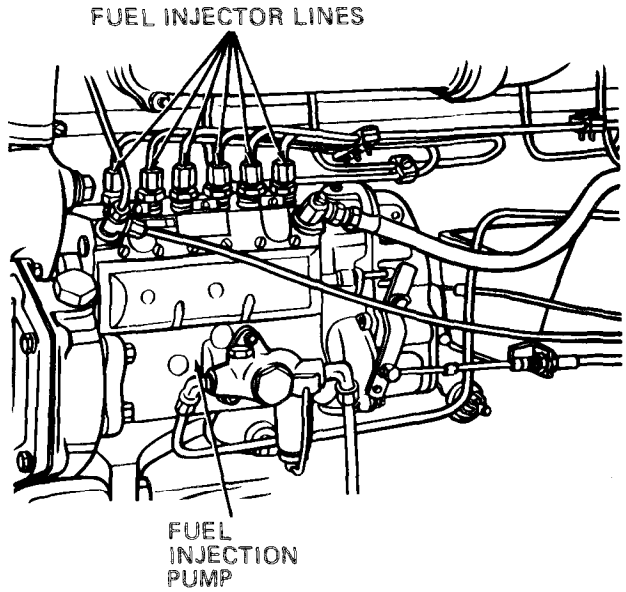
(1) Unlock and remove engine front right side panel (under fender).

(2) Start engine and operate at idle speed for three minutes then turn off engine.

(3) Inspect fuel injector lines at fuel injection pump and at fuel injectors for fuel leaks.

(4) If fuel leakage is observed, notify organizational maintenance.

(5) Install and lock engine right side panel.



3-7. INSPECTION (CONT)

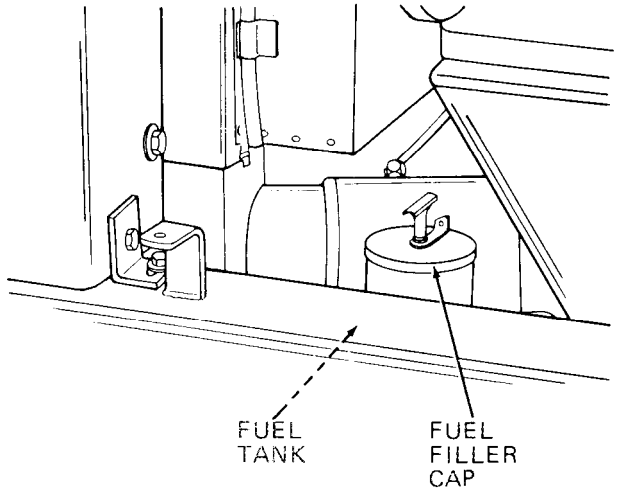
b. Fuel Tank.

(1) Unlock and remove engine rear right and left side panels.

(2) Inspect fuel tank for cracks and broken welds. Notify organizational maintenance if any of these conditions are seen (fuel tank must be replaced).

(3) Check beneath fuel tank for signs of fuel leakage indicating cracks or holes in fuel tank. Notify organizational maintenance if any of these conditions are seen (fuel tank must be replaced).

(4) Install and lock engine rear side panels.



c. Radiator Assembly.

(1) Open radiator grille at rear of loader.

(2) Inspect radiator for coolant leakage, damaged fins, or debris on fins. Remove debris as necessary. If coolant leakage or damaged fins are seen, notify organizational maintenance (radiator must be removed and replaced).

(3) Close radiator grille.

(4) Unlock and open radiator cap access panel.

(5) Check that radiator cap is tight. If necessary, tighten radiator cap.

(6) Close and lock radiator cap access panel.

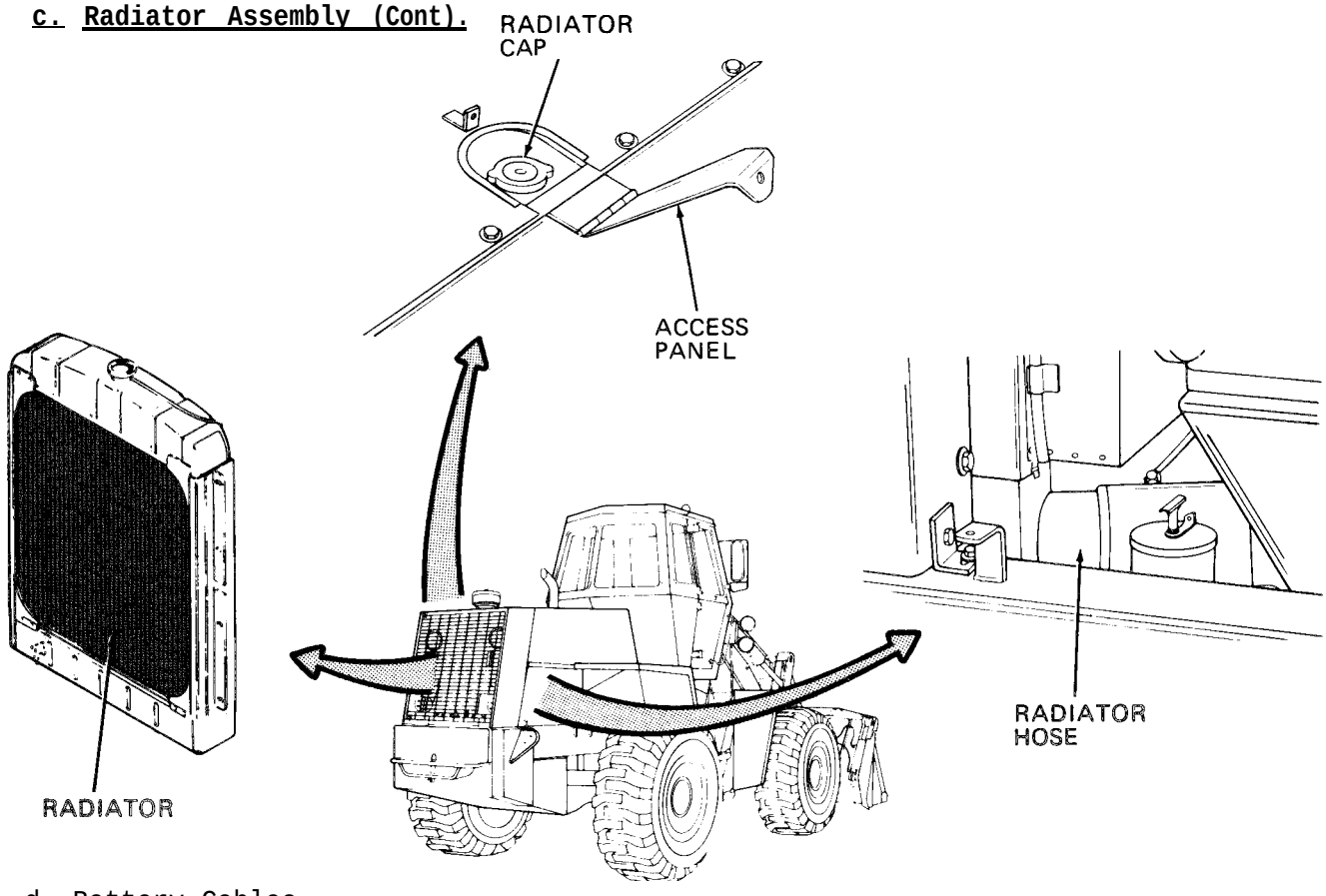
(7) Unlock and remove engine rear right and left side panels.

(8) At top and bottom of radiator, check radiator hoses for coolant leaks, cracks, or chafing. If any of these conditions are seen, notify organizational maintenance (hoses must be replaced).

(9) Install and lock engine rear right and left side panels.

3-7. INSPECTION (CONT)

c. Radiator Assembly (Cont).



d. Battery Cables.

(1) Open radiator grille at rear of loader.

(2) Check for loose, corroded, or damaged battery cables and connections. If any of these conditions are seen, notify organizational maintenance (battery cables must be removed).

(3) Inspect battery terminals for looseness or corrosion buildup. If any of these conditions are seen, notify organizational maintenance (terminals must be tightened and cleaned).

(4) Inspect batteries for electrolyte leaks or cracks. If any of these conditions are seen, notify organizational maintenance (batteries must be replaced).

(5) Close radiator grille.

3-7. INSPECTION (CONT)

e. Wiring Harnesses. Inspect exposed wiring and connections for frayed or broken wires and cracked or broken wire insulation. If any of these conditions are seen, notify organizational maintenance (wiring must be repaired).

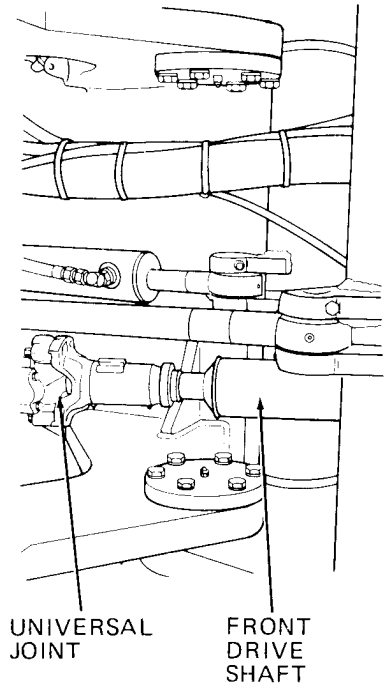
f. Drive Shafts.

(1) Start engine and operate at idle speed.

(2) Turn loader fully right or left to gain access to front drive shaft. Turn off engine.

(3) Pull up on parking brake control knob to apply parking brake.

(4) Grasp and try to rotate each drive shaft; check for movement indicating wear or damage. Check that universal joints mounting hardware are not loose. If any of these conditions are seen, notify organizational maintenance (drive shaft must be removed and replaced).



g. Loader Bucket Assembly.

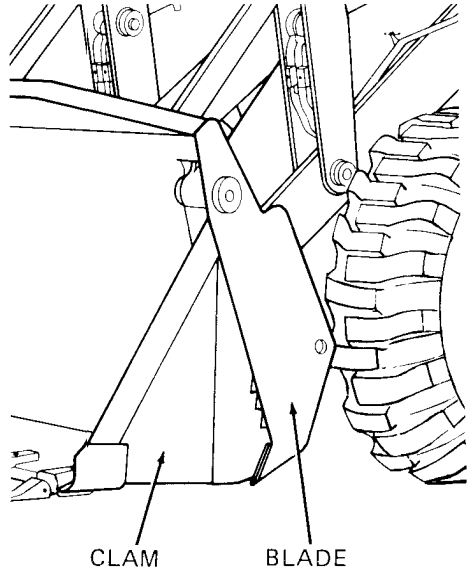
NOTE

If any of the following conditions are seen, notify organizational maintenance (must be corrected).

(1) Inspect blade and clam assembly for cracks, breaks, or broken welds.

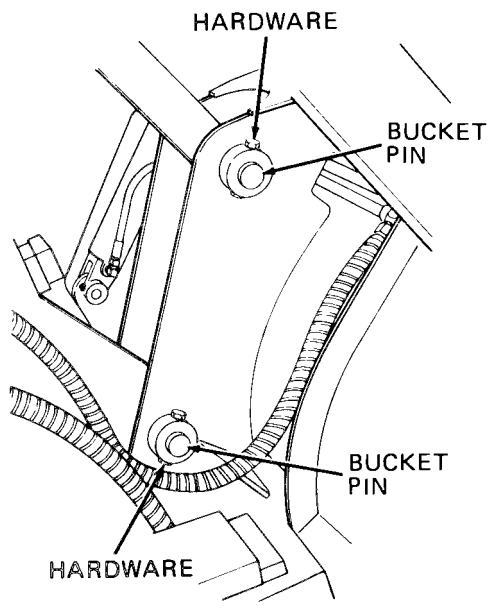
(2) Check that hardware securing bucket pins are tight and not loose.

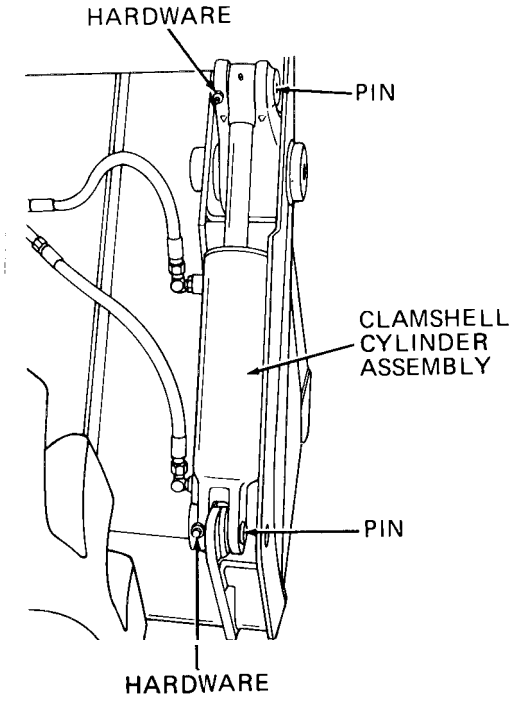
(3) Check that hardware securing bucket clamshell cylinder assemblies pins are tight and not loose.



3-7. INSPECTION (CONT)

g. Loader Bucket Assembly (Cont).





h. Bucket Cutting Edge Assemblies.

NOTE

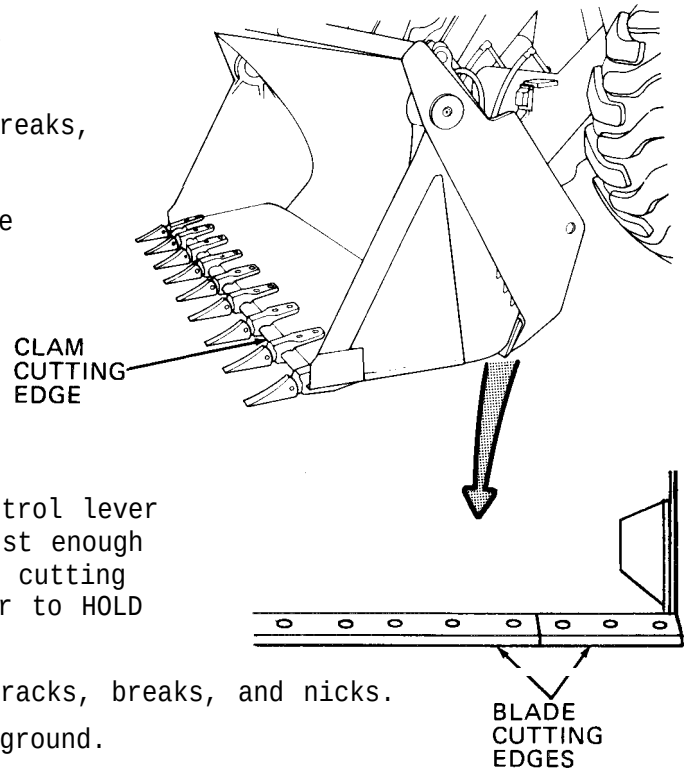
If any of the following conditions are seen, notify organizational maintenance (must be corrected).

(1) Inspect clam cutting edge for breaks, cracks, or nicks.

(2) Start engine and operate at idle speed.

(3) Raise bucket off ground two or three inches by operating LIFT ARM control lever in RAISE then returning it to NEUT. position.

(4) Open clam by operating CLAM control lever in OPEN until clam is opened just enough for you to visually check blade cutting edges. Return CLAM control lever to HOLD position.



(5) Check blade cutting edges for cracks, breaks, and nicks.

(6) Close clam and lower bucket to ground.

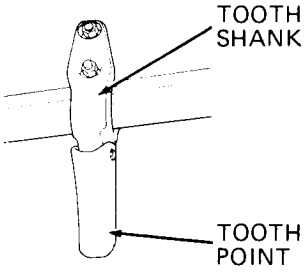
(7) Turn off engine.

3-7. INSPECTION (CONT)

i. Clamshell Teeth Assemblies.

NOTE

If any of the following conditions are seen, notify organizational maintenance (must be corrected).



(1) At clamshell, check that tooth points are present. Check tooth points for cracks, breaks, or nicks.

(2) Check that tooth shanks are securely mounted and not loose.

13-8. SERVICING I

a. Air Cleaner.

NOTE

Element assemblies should be serviced whenever restriction indicator red band is in view.

(1) Precleaned Servicing.

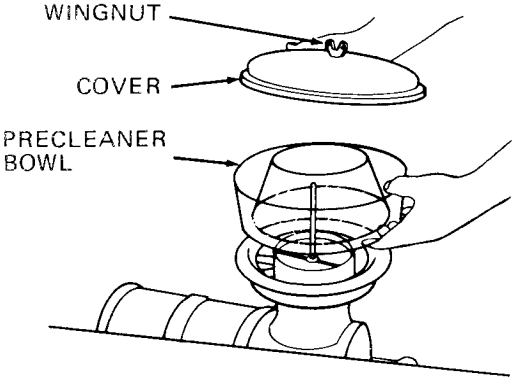
(a) Loosen cover wingnut, then remove cover and wingnut.

(b) Remove precleaned bowl.

(c) Dump any dust and for dirt contained in precleaned bowl.

(d) Wash precleaned bowl in solution of water and general purpose detergent. Dry using clean cloth.

(e) Install precleaned bowl on air cleaner body .



(f) Install cover and wingnut; hand tighten cover wingnut securely.

(2) Element Assemblies Servicing.

(a) Loosen cover wingnut and remove cover assembly with wingnut attached.

(b) Loosen and remove nut assembly.

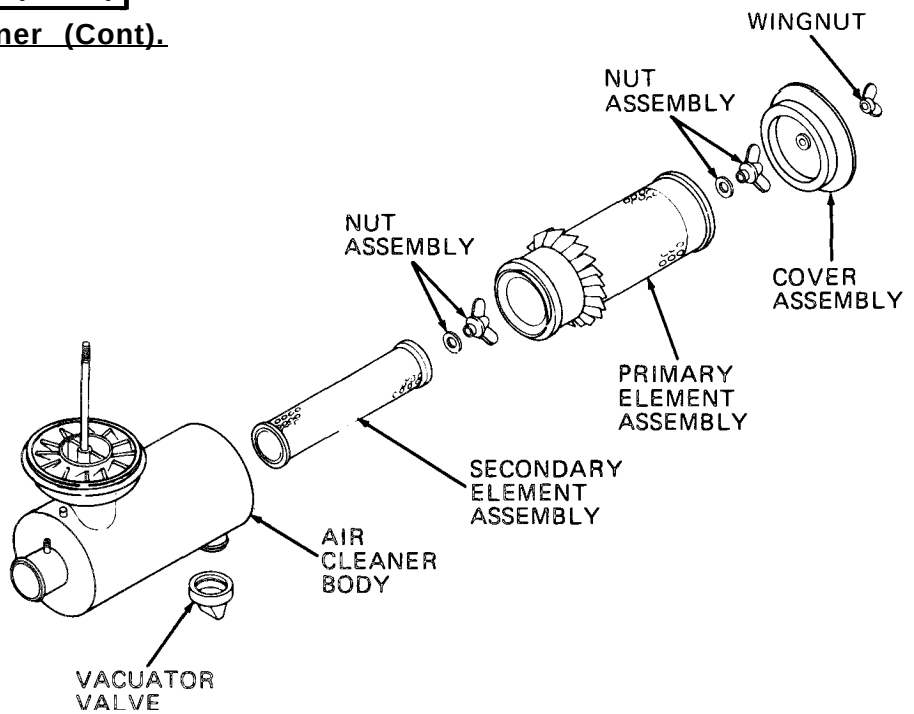
(c) Remove primary element assembly.

(d) Loosen and remove nut assembly.

(e) Remove secondary element assembly.

3-8. SERVICING (CONT)

a. Air Cleaner (Cont).



Grasp vacuator valve and pull off air cleaner body. Dump any dust or dirt in vacuator valve.

CAUTION

Don't use compressed air to dry primary element assembly. To do so may cause damage to primary element assembly.

NOTE

Don't clean secondary element assembly. Secondary element assembly shall be replaced every third servicing of primary element assembly, when secondary element assembly is more than two years old (date of manufacture is stamped on top of secondary element assembly), when it is damaged, or when red band in restriction indicator stays in view after primary element assembly has been cleaned or replaced.

(g) Wash primary element assembly using general purpose detergent. Allow primary element assembly to air dry.

(h) Check for holes in primary element assembly. Check if metal covering is bent. If holes in element are apparent or if metal covering is bent, install new primary element assembly.

NOTE

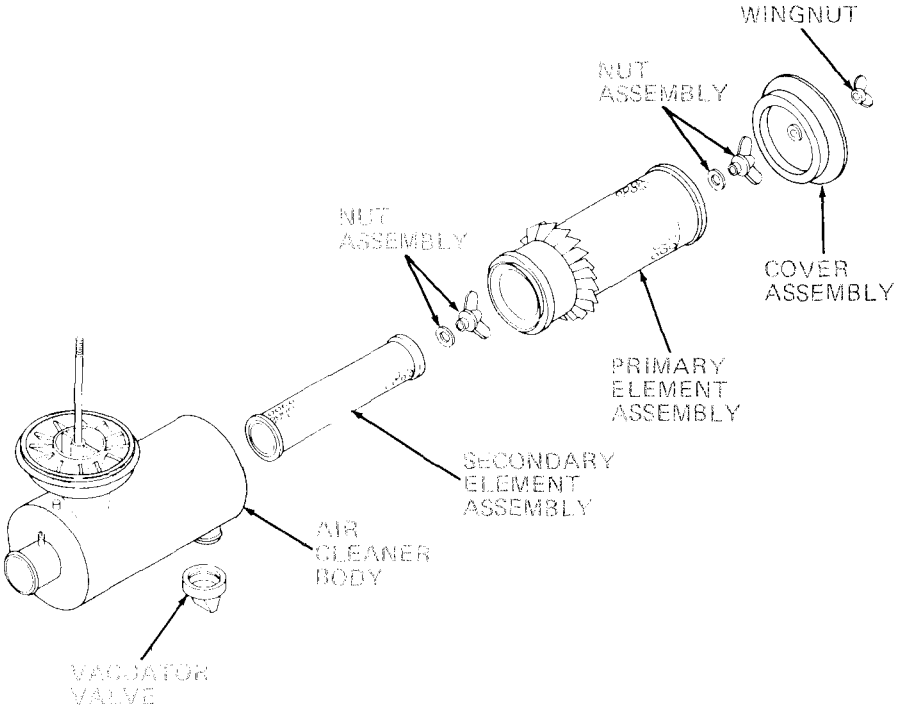
Clean primary element assembly using compressed air not exceeding 30 psi.

Inspect new primary element assembly as described in step (2)(h) above; if new primary element assembly is damaged, replace it.

3-8. SERVICING (CONT)

a. Air Cleaner (Cont).

(2) Element Assemblies Servicing (Cont).



(i) Clean vacuator valve using general purpose detergent. Dry using clean cloth.

(j) Using a clean cloth dampened with water and general purpose detergent, wipe inside of air cleaner body. Dry using clean, dry cloth.

(k) Reinstall vacuator valve on air cleaner body.

(l) Install secondary element assembly; secure using nut assembly.

(m) Install primary element assembly; secure using nut assembly.

(n) Install cover assembly and tighten cover wingnut securely.

(o) Press reset button on top of restriction indicator and check that red band disappears from view. Crank engine and check if restriction indicator red band comes into view. If red band is in view, repeat steps (2)(a) through (2)(e) above and replace secondary element assembly.

3-8. SERVICING (CONT)

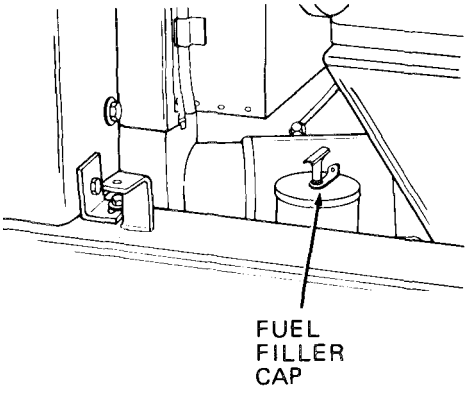
b. Fuel Tank.

NOTE

Add diesel fuel to fuel tank whenever FUEL LEVEL gage indicates level is low .

(1) Unlock and remove engine rear right side pane 1.

(2) Loosen and remove fuel filler cap.



WARNING

Diesel fuel is highly combustible. Do not smoke or allow open flames or sparks into the area. Death or severe injury may result if personnel fail to observe this precaution. If YOU are burned, obtain medical aid immediately.

(3) Fill fuel tank using correct grade diesel fuel.

(4) Install and tighten fuel filler cap.

(5) Install and lock engine rear right side panel.

c .Air Reservoir.

NOTE

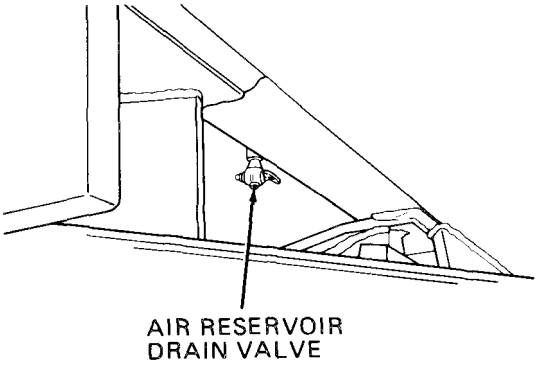
Drain water from air reservoir every 10 hours of operation or every day, whichever occurs first.

(1) Find air reservoir drain valve, located above rear axle, right side.

(2) Open air reservoir drain valve.

(3) Allow water to drain.

(4) Close air reservoir drain valve.



3-8. SERVICING (CONT)

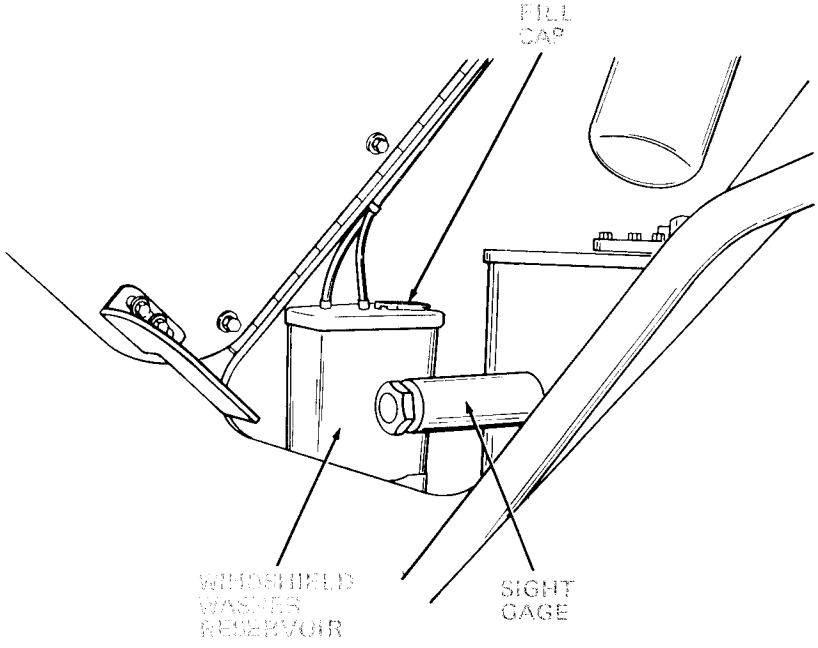
d. Checking Tires Air Pressure.

(1) Remove valve cap from tire.

(2) Use tire pressure gage and check that tire pressure is 40 psi.

(3) Reinstall valve cap.

e. Windshield Washer Reservoir.



(1) At front of loader, unlock and open front access door.

(2) Open fluid reservoir fill cap by firmly pulling up until cap snaps open.

(3) Fill fluid reservoir with washer fluid until fluid level is 1/4 inch from top of reservoir.

(4) Close fluid reservoir fill cap by firmly pressing downward until cap snaps into position.

(5) Close and lock front access door.

3-9. REMOVAL ANDINSTALLATION

a. Transport/Service Link.

WARNING

Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control.

Before performing any loader maintenance that requires servicing in area between front and rear chassis, be sure that transport/service link is engaged. Failure to do so could cause serious injury or death due to chassis pivoting and crushing you when you are working in area between front and rear chassis.

(1) To move transport/service link to locked or engaged position:

(a) Remove two clips securing pins in position.

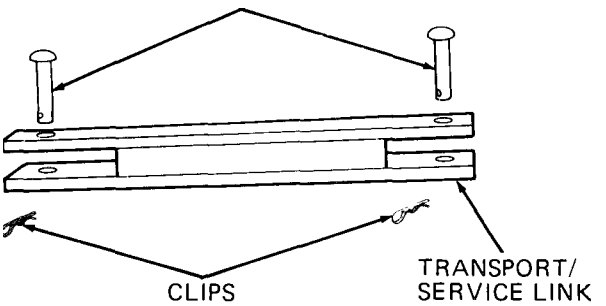
(b) Remove two pins.

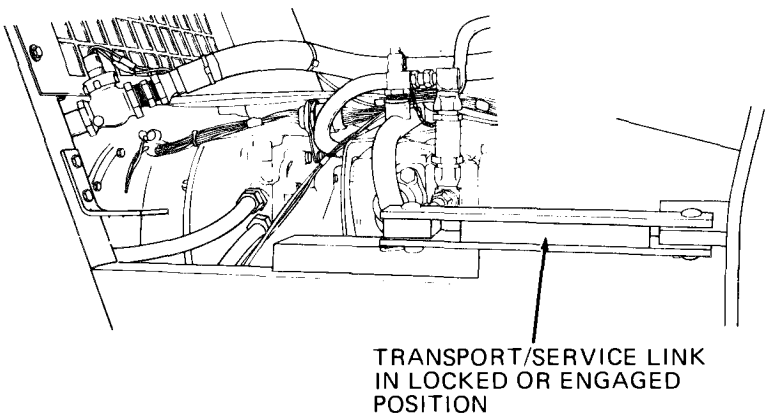
(c) Remove transport/service link.

(d) Position transport/service link between welded block on rear chassis and welded block on front chassis.

(e) Install two pins.

(f) Install two clips on pins.





3-9. REMOVAL AND INSTALLATION (CONT)

a. Transport/Service Link (Cont).

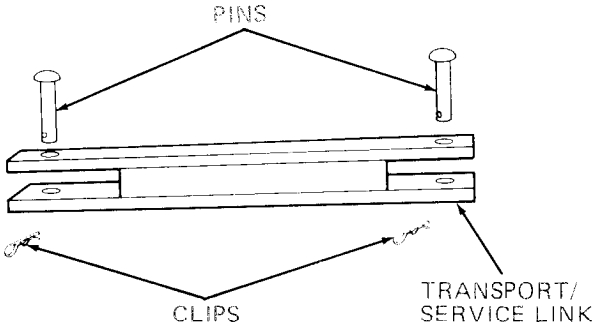
(2) To move transport/service link to operating or released position:

(a) Remove two clips securing pins in position.

(b) Remove two pins.

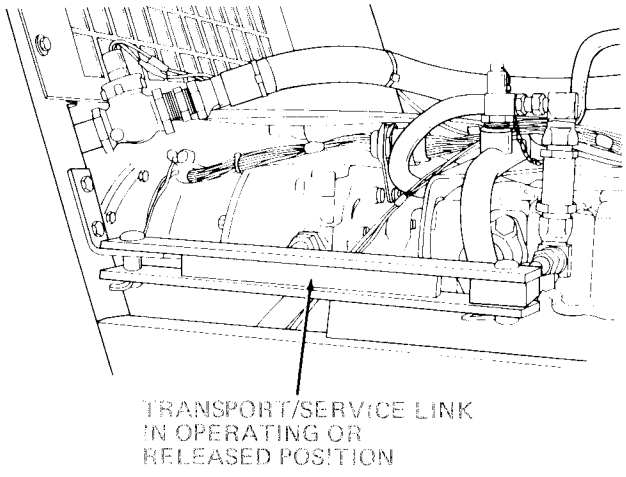
(c) Remove transport/service link.

(d) Position transport/service link between welded block on rear chassis and welded bracket just to side of and below hydraulic cooler on rear chassis.



(e) Install two pins.

(f) Install two clips on pins.



Be sure transport/service link is disengaged before driving vehicle. Failure to do so could cause serious injury or death due to loss of steering control.

Before performing any loader maintenance that requires servicing in area between front and rear chassis, be sure that transport/service link is engaged. Failure to do so could cause serious injury or death due to chassis pivoting and crushing you when you are working in area between front and rear chassis.

3-9. REMOVAL AND INSTALLATION (CONT)

b. Engine Side Panels.

(1) Removal.

NOTE

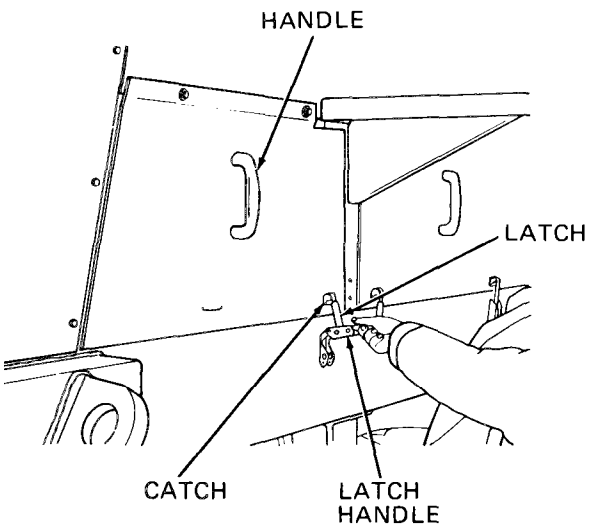
Removal procedure for any one engine front or rear, right or left side panel is the same as described below.

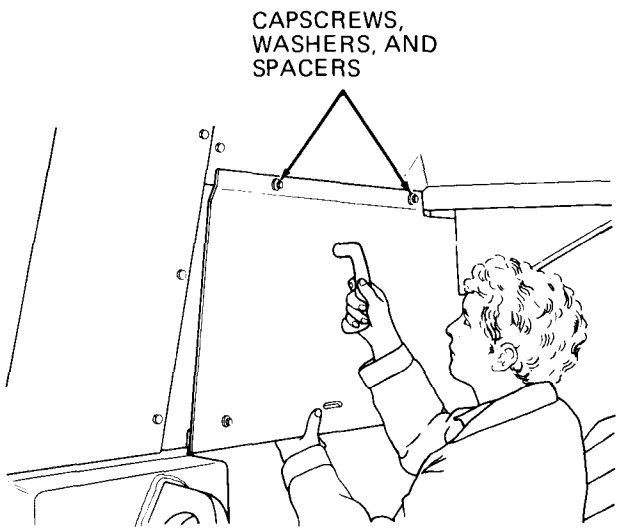
(a) Unlock and remove lock securing engine side panel.

(b) Pull up on latch handle to disengage latch from engine side panel catch.

(c) Grasp engine side panel handle and pull out bottom of engine side panel. Then, lift engine side panel up over spacers, washers, and capscrews at upper edge of mounting area.

(d) Remove engine side panel from loader.





(2) Installation.

(a) Grasp engine side panel handle and raise engine side panel into position.

(b) Using two holes at engine side panel upper edge, hang engine side panel on two spacers at upper edge of mounting area, then firmly push bottom of engine side panel inward.

(c) Pull latch handle upward then engage latch with catch on engine side panel. Push down on latch handle to secure engine side panel.

(d) Install lock.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms and publications pertinent to the major item material and associated equipment.

A-2. PUBLICATIONS INDEX

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this manual.

DA PAM 310-1	Consolidated Index of Army Publications and Forms

A-3. FORMS

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2062	Hand Receipt/Annex Number
DA Form 2402	Exchange Tag
DA Form 2404	Equipment Inspection and Maintenance Work Sheet
DA Form 2406	Material Condition Status Report
DA Form 2407	Maintenance Request
DA Form 2408-9	Equipment Control Record
DA Form 2408-20	Oil Analysis Log
DD Form 314	Preventive Maintenance Schedule and Record
SF 368	Quality Deficiency Report

A-4. FIELD MANUALS

FM 9-207	Operation and Maintenance of Ordnance Material in Cold Weather (0 degrees F to -65 degrees F)
FM 20	Camouflage
FM 21-11	First Aid for Soldiers
FM 21-40	NBC (Nuclear, Biological, and Chemical) Defense
FM 21-305	Manual for Wheeled Vehicle Driver
FM 31-70	Basic Cold Weather Manual
FM 31-71	Northern Operations
FM 55-30	Driver Selection and Training (Wheeled Vehicles)
FM 90-3	Desert Operations
FM 90-5	Jungle Operations
FM 90-6	Mountain Operations
FM 90-13	River Crossing Operations

A-5. TECHNICAL MANUALS

TM 5-3805-262-20	Organizational Maintenance: Loader Scoop Type MW24C
TM 5-3805-262-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List: Loader, Scoop Type, MW24C

A-5. TECHNICAL MANUALS (CONT)

TM 5-3805-262-34	Direct Support and General Support Maintenance: Loader, Scoop Type MW24C
TM 9-6140-200-14	Operation and Organizational Maintenance Manual for Lead Acid Storage Batteries
TM 9-8000	Principles of Automotive Vehicles
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-6	Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use
TM 750-254	Cooling Systems: Tactical Vehicles

A-6. TECHNICAL BULLETINS

TB 9-2300-422-20	Security of Tactical Wheeled Vehicles
TB 43-0001-39	Equipment Improvement Report and Maintenance Digest
TB 750-651	Use of Antifreeze Solutions, and Cleaning Compounds in Engine Cooling Systems
TB 43-0210	NonAeronautical Equipment Army Oil Analysis Program

A-7. OTHER PUBLICATIONS

DA PAM 738-750	The Army Maintenance Management System (TAMMS)
LO 5-3805-262-12	Lubrication Order: Loader, Scoop Type, MW24C
TM 5-3805-262-10HR	Hand Receipt: Loader, Scoop Type, MW24C

A-8. ARMY REGULATIONS

AR 310-2	Identification and Distribution of DA Publications and Issue of Agency and Command Administration Publications
AR 310-25	Dictionary of United States Army Terms
AR 385-40	Accident Reporting and Records
AR 385-55	Prevention of Motor Vehicle Accidents

APPENDIX B

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

Section I. INTRODUCTION

B-1. SCOPE

This appendix lists components of end item and basic issue items for the MW24C loader to help you inventory items required for safe and efficient operation.

B-2. GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II - Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III -Basic Issue Items. These are the minimum essential items required to place the MW24C loader in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged BII must be with the loader during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OFCOLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column 1 - Illustration Number (Illus number). This column indicates the number of the illustration in which the item is shown.

b. Column 2 -National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column 3 - Description. Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

d. Column 4 - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column 5 - Quantity Required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

(1) Illus number	(2) National stock number	(3) Description FSCM and part number	Usable on code	(4) U/M	(5) Qty reqd
		TRANSPORT BRACKET (10988) L114543		EA	1
		BOLT (10988) 13-680		EA	1
		NUT (96906) MS51967-8		EA	1

Section III. BASIC ISSUE ITEMS

(1) Illus number	(2) National stock number	(3) Description FSCM and part number	Usable on code	(4) U/M	(5) Qty reqd
	7520-00-559-9618	CASE, MAINTENANCE MANUAL (81349) MIL-E-11743		EA	1
	9905-00-565-6267	KIT, VEHICLE WEIGHT CLASSIFICATION SIGN (81337) 6-1-2248		EA	1

APPENDIX C

ADDITIONAL AUTHORIZATION LIST (AAL) ITEMS

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists additional items you are authorized for support of the MW24C loader.

C-2. GENERAL

This list identifies items that do not have to accompany the MW24C loader and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support the equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description FSCM and Part Number / Usable on code	(3) U/M	(4) Qty. auth.
4210-00-889-2221	EXTINGUISHER, FIRE (58536) A-A-393	EA.	1
4910-00-204-3170	GAGE, TIRE PRESSURE (53477) 7188BH	EA	1
4930-00-253-2478	LUBRICATING GUN, HAND (36251) 1142	EA	1
5120-00-223-7397	PLIERS, SLIP JOINT (56161) 1051 0983	EA	1
5120-00-234-8913	SCREWDRIVER, CROSS TIP #2 (96906) MS15224-5	EA	1
5120-00-278-1283	SCREWDRIVER, FLAT TIP 6 INCHES (19207) 4151104	EA	1
5120-00-449-8083	WRENCH, ADJUSTABLE, 10 INCHES (11083) 1B7536	EA	1
5120-00-895-9568	WRENCH, BOX AND OPEN END 7/16 INCH (81348) GGG-W-645	EA	1
5120-00-895-9570	WRENCH, BOX AND OPEN END 9/16 INCH (81348) GGG-W-645	EA	1
5120-00-224-3153	WRENCH, BOX, 3/8 AND 7/16 INCH (47805) WBG1214	EA	1
5120-00-224-3154	WRENCH, BOX, 1/2 AND 9/16 INCH (18949) G2042	EA	1

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the MW24C loader. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OFCOLUMNS

a. Column 1 - Item Number. This number is assigned to each entry in the listing.

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item. The symbol designation is as follows:

c ..... Operator/Crew

c. Column 3 - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4 - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column 5 - Unit of Measure (tJ/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by an alphabetical abbreviation (QT, GAL.). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item number	(2) Leve l	(3) National stock number	(4) Descript ion	(5) U/M
1	C		ANTIFREEZE: ethylene glycol, inhibited, heavy duty, single package (81349) MIL-A-46153	
		6850-00-181-7929	1 Gallon Container	GAL .
		6850-00-181-7933	5 Gallon Container	GAL .
2	C		BRAKE FLUID: silicone, automotive, all weather, operational and preservative (81349) MIL-B-46176	
		9150-01-102-9455	1 Gallon Can	GAL .
		9150-01-123-3152	5 Gallon Can	GAL .
3	C		CLEANING COMPOUND: windshield washer (81348) O-C-1901	
		6850-00-926-2275	1 Pint	PT
4	C		DETERGENT: non sudsing, general purpose, liquid (80244) MIL-D-16791 Type 1	
		7930-00-282-9699	1 Gallon Container	GAL
5	C		DRY CLEANING SOLVENT: (81348) P-D-680, Type II	
		6850-00-110-4498	1 Pint Can	PT
		6850-00-274-5421	5 Gallon Drum	GAL .
6	C		FUEL OIL: diesel, regular, DF-2 (81348) VV-F-800	
		9140-00-286-5295	5 Gallon Can	GAL .
7	C		FUEL OIL: diesel, winter, DF-1 (81348) VV-F-800	
		9140-00-286-5287	5 Gallon Drum	GAL .

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item number	(2) Level	(3) National stock number	(4) Description	(5) U/M
8	C		FUEL OIL: diesel, arctic, DF-A (81348) VV-F-800	
		9140-00-286-5282	5 Gallon Drum	GAL.
9	C		GREASE: automotive and artillery (81349) MIL-G-10924	
		9150-00-935-1017	14 Ounce Cartridge	OZ
		9150-00-190-0904	1-3/4 Pound Can	LB
10	C		LUBRICATING OIL: gear, multipurpose, GO 85/140 (81349) MIL-L-2105	
		9150-00-035-5392	1 Quart Can	QT
		9150-01-035-5396	5 Gallon Can	GAL.
11	C		LUBRICATING OIL: general purpose, preservative, PL-S (81348) VV-L-800	
		9150-00-231-6689	1 Quart Can	QT
12	C		LUBRICATING OIL: internal combustion engine, arctic, OEA (81349) MIL-L-46167	
		9150-00-402-4478	1 Quart	QT
		9150-00-402-2372	5 Gallon Drum	GAL.
13	C		LUBRICATING OIL: internal combustion engine, tactical service, OE/HDO 10 (81349) MIL-L-2104	
		9150-00-189-6727	1 Quart Can	Qt
		9150-00-186-6618	5 Gallon Drum	GAL.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST {CONT)

(1) Item number	(2) Leve 1	(3) Nat ional stock number	(4) Descript ion	(5) U/M
14	C		LUBRICATING OIL: internal combustion engine, tactical service, OE/HDO 30 (81349) MIL-L-2104	
		9150-00-186-6681	1 Quart Can	QT
		9150-00-188-9858	5 Gallon Drum	GAL .
		9150-00-189-6729	55 Gallon Drum	GAL .
15	C		RAG: wiping, cotton and cotton-synthenic (58356) A-A-531	
		7920-00-205-1711	50 Pound Bale	LB
			ALCOHOL, METHANOL (81340) 0-M-232	
16	C	6810-00-597-3608	1 Gallon Can	Gal
		6810-00-275-6010	5Gallon Can	Gal

ALPHABETICAL INDEX

ALPHABETICAL INDEX (CONT)

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ALPHABETICAL INDEX (CONT)

By Order of the Secretary of the Army

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R.L. DILWORTH
Brigadier General United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-25A, Operator's Maintenance requirements for Scoop Loader, Diesel, 4 X 4, 2-1/2 CY, Model MW24C.

U.S GOVERNMENT PRINTING OFFICE: 1987 742-019/60157

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

10 October 1987

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*

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Rock Island, IL 61299-7630

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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3805-262-10	01 Sep 87	Operator Manual for Loader, Scoop Type, DED, 4 X 4, Articulated Frame Steer, 2 ½ Cubic Yard, J.I. Case Model MW24C

ITEM	PAGE	PARA-	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON
	0017 00-2					Part number supplied for item 2 is incorrect.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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PUBLICATION NUMBER	DATE	TITLE
TM 5-3805-262-10	01 Sep 87	Operator Manual for Loader, Scoop Type, DED, 4 X 4, Articulated Frame Steer, 2 ½ Cubic Yard, J.I. Case Model MW24C

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3805-262-10	01 Sep 87	Operator Manual for Loader, Scoop Type, DED, 4 X 4, Articulated Frame Steer, 2 ½ Cubic Yard, J.I. Case Model MW24C

ITEM	PAGE	PARA-	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward direct to addressee listed in publication)*	FROM: *(Activity and location) (Include ZIP Code)*	DATE
AMSTA-LC-LMPP/TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630		

PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 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

1 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

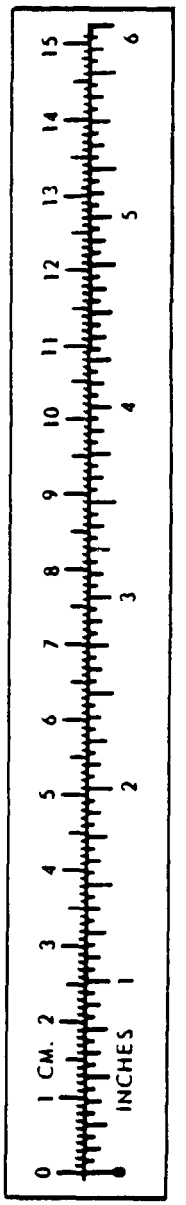
TEMPERATURE

$\frac{5}{9}(°F - 32) = °C$
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
$\frac{9}{5}(°C + 32) = °F$

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
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	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
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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