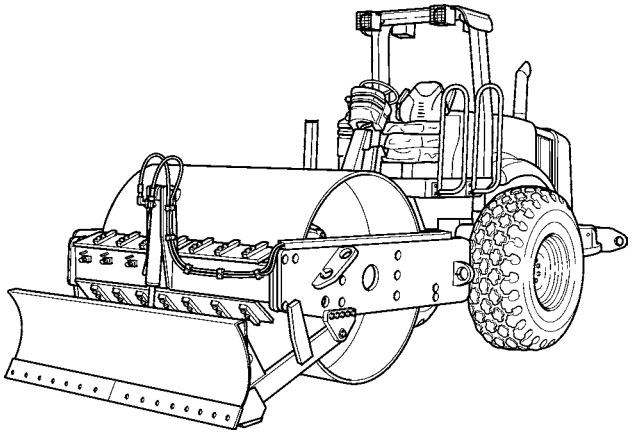
TECHNICAL MANUAL

OPERATOR'S MANUAL



ROLLER, VIBRATORY, SELF-PROPELLED, Type II

CATERPILLAR MODEL CS-563D

NSN 3895-01-456-2735

Contract No. DAAE07-98-C-S007

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY 21 SEPTEMBER 1999

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 September 2003

OPERATOR'S MANUAL
FOR
ROLLER, VIBRATORY, SELF-PROPELLED,
Type II

CATERPILLAR MODEL CS-563D

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TM 5-3895-383-10, 21 September 1999, is changed as follows:

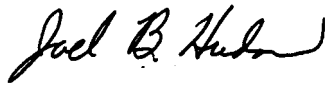
1. File this sheet in front of the manual for reference.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Minor changes to illustrations are indicated by a miniature pointing hand.
4. Illustrations that are new or that have major revisions are indicated by a vertical bar adjacent to the art.
5. Remove old pages and insert new pages as indicated below.

Remove Pages	Insert Pages
e and f	e and f
A and B	A and B
1-1 and 1-2	1-1 and 1-2
2-17 and 2-18	2-17 and 2-18
3-9 through 3-16	3-9 through 3-16
B-1 through B-2	B-1 through B-2
Back Cover	Back Cover

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0306718

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 256549 requirements for TM 5-3895-383-10.

This section contains all WARNINGS contained in the military-specific supplemental data. All warnings contained in the Commercial Off-The-Shelf (COTS) Manual are not included herein.

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Carbon monoxide is a colorless, odorless, DEADLY POISONOUS gas and when breathed deprives body of oxygen and causes SUFFOCATION. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Permanent BRAIN DAMAGE or DEATH can result from severe exposure.

The following precautions MUST be followed to ensure personnel are safe when engine is operated for any purpose.

- DO NOT operate engine of vehicle in enclosed area without adequate ventilation.
- DO NOT idle engine for long periods without ventilation.
- DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
- NEVER sleep on the Roller when the engine is idling.
- BE ALERT at all times during Roller operation for exhaust odors and exposure symptoms. If either are present, IMMEDIATELY EVACUATE AND VENTILATE the area. Affected personnel treatment shall be: expose to fresh air; keep warm, DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration and get medical attention.
- BE AWARE: neither the gas particulate filter unit nor field protection mask for nuclear-biological-chemical protection will protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION

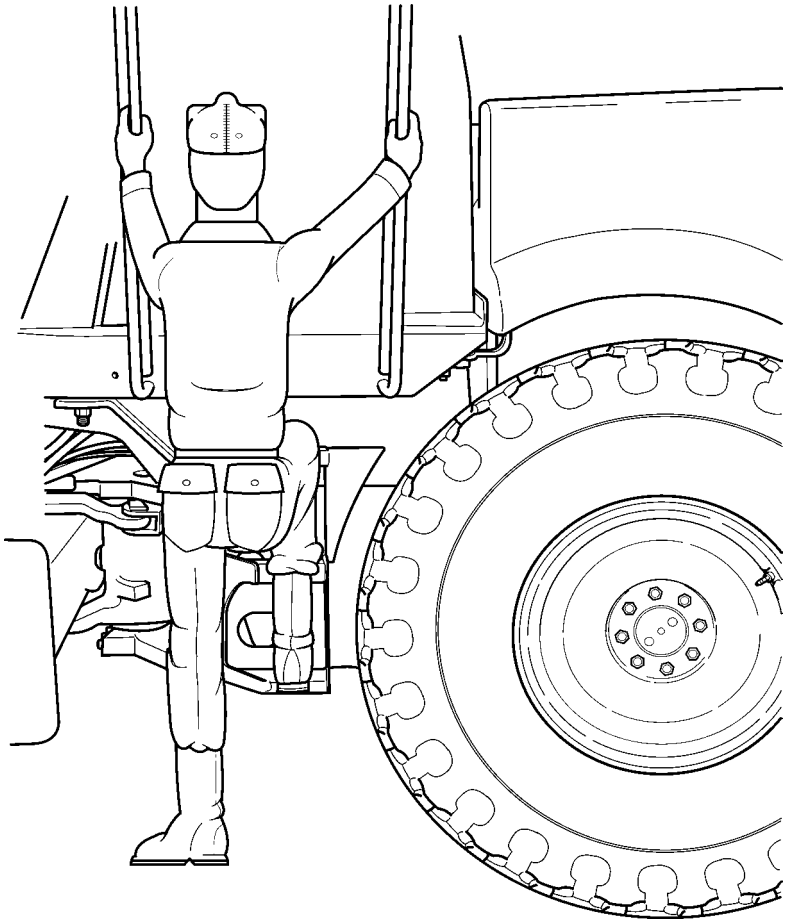
WARNING

Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working within 20 ft (6.1 m) of Roller. Personnel exposed to high noise levels shall participate in a hearing conservation program in accordance with DA Pam 40-501. Hearing loss occurs gradually but becomes permanent over time.

WARNING

Do not turn vibratory system on while Roller is standing still on a very solid surface. A loss of steering can be experienced which could result in injury to personnel.

WARNING



- Mount and dismount the Roller only where steps and/or handrails are provided.
- Clean shoes and wipe hands before climbing on Roller. Use handrails when mounting Roller.
- Inspect, clean, and have any necessary repairs made to steps prior to mounting the Roller.
- Always use “three-point contact” with Roller; face Roller when entering or leaving operator’s station. Three-point contact means that three out of four arms and legs are in contact with Roller at all times during mount and dismount.
- ROPS canopy has 55 in. (139.7 cm) clearance above operator platform at the lowest point. Use care when mounting or dismounting Roller to prevent injury to head.
- Never get on or off a moving Roller.
- Do not use any controls as handholds when you enter the operator compartment or when you exit the operator compartment.
- Never jump off the Roller.
- Do not attempt to climb on or off the Roller while carrying tools or supplies.

WARNING

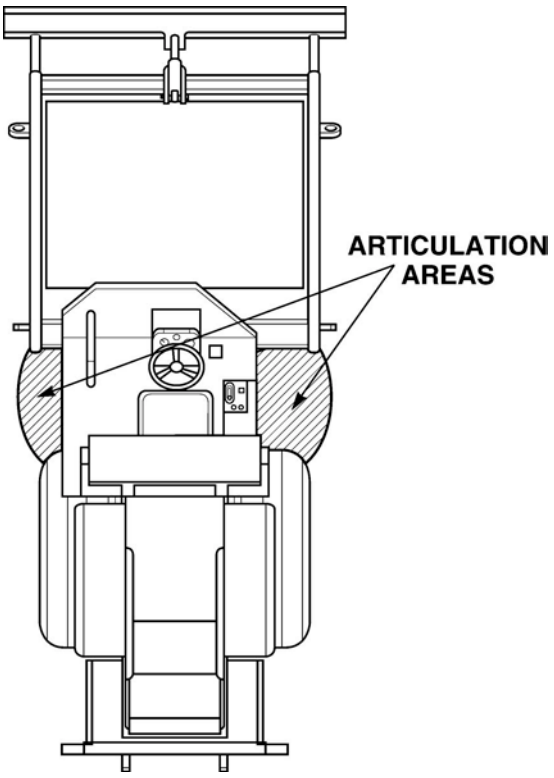
Always apply parking brake before dismounting the Roller while the engine is running. Failure to comply may result in personal injury or death.

WARNING

Water depth greater than 10 in. (254 mm) can cause personal injury and damage to the Roller. The Roller should not enter water deeper than 10 in. (254 mm).

WARNING

- There is no clearance for personnel between frame and yoke when Roller turns. Severe injury or death from crushing could occur.
- Steering frame must be locked before lifting, transporting, or servicing Roller in articulation area with engine running to prevent serious injury or death from crushing.
- Unlock steering frame before operation to prevent loss of steering that may cause serious injury or death to personnel.



WARNING

- Drycleaning Solvent (P-D-680, Type III) is TOXIC and flammable. Wear protective goggles and gloves, use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and, do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for drycleaning solvent type III is 200°F (93°C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. DO NOT use diesel fuel, gasoline, or benzene (benzol) for cleaning.
- DO NOT SMOKE when using cleaning solvent. NEVER USE IT NEAR AN OPEN FLAME. Be sure there is a fire extinguisher nearby and use cleaning solvent only in well-ventilated places.
- USE CAUTION when using cleaning solvents. Cleaning solvents evaporate quickly and can irritate exposed skin if solvents contact skin. In cold weather, contact of exposed skin with cleaning solvents can cause frostbite.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death:

- Keep at least a B-C fire extinguisher within easy reach when working with fuel or fuel system.
- When refueling, stop engine and apply parking brake. Ensure no open flame is near area. Never smoke while working with fuel. Never add fuel when engine is running. Do not have a driver seated when adding fuel.
- Ground fuel funnel or nozzle against filler neck to prevent sparks and be sure to replace fuel tank cap. After fuel is added, securely close fuel cap assembly; a loose cap assembly can cause a fuel leak or be a fire hazard.
- Never overfill the tank or spill fuel. If fuel is spilled, clean fuel up immediately. Before starting vehicle, check that no fuel is spilled on or around vehicle.

WARNING

Do not touch hot exhaust system with bare hands; injury to personnel will result.

WARNING

Do not start or move Roller while anyone is under Roller. Severe injury or death could result.

WARNING

Lock the seat into position before operating the Roller to prevent unexpected seat movement. Unexpected movement of seat can cause injury to personnel.

WARNING

Do not perform fuel/water separator checks, inspections, or draining while smoking, or when near fire or sparks. Failure to comply may cause fuel to ignite and cause injury or death to personnel or damage to Roller.

WARNING

- Ensure area around the Roller is clear of personnel before starting engine. Injury or death to personnel could result.
- Hearing protection is required for operator and also for all personnel working in and around the Roller while engine is running.

WARNING

- Roller may freewheel when brakes are released.
- Ensure path of travel is free of personnel and equipment.
- Ensure that Roller is secured (chocked or tied down) to prevent undesired movement.
- Failure to follow instructions can result in injury or death to personnel.

WARNING

Do not touch hot exhaust system with bare hands; injury to personnel will result.

WARNING

If NBC exposure is suspected, all air filter media will be handled by personnel wearing full NBC protective equipment. Consult your unit NBC NCO for appropriate handling or disposal instructions.

INSERT LATEST UPDATED PAGES/WORK PACKAGES, DESTROY SUPERSEDED DATA

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text affected by the updates is indicated by a vertical line in the outer margins of the page. Updates to illustrations are indicated by miniature pointing hands. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and updated pages/work packages are:

Original.....21 September 1999
Change 1 .....15 September 2003

TOTAL NUMBER OF PAGES IN THIS PUBLICATION FOR FRONT AND REAR MATTER IS 50 AND TOTAL NUMBER OF WORK PACKAGES IS 104 CONSISTING OF THE FOLLOWING:

Page/WP No.	*Revision No.	Page/WP No.	*Revision No.	Page/WP No.	*Revision No.
Front Cover	0	2-1 – 2-16	0	B-2	1
Title	0	2-17	1	B-3 – B-4	0
a – d	0	2-18 – 2-26	0	C-1 – C-2	0
e	1	3-1 – 3-8	0	D-1 – D-2	0
f	0	3-9 – 3-15	1	E-1 – E-16	0
A	1	3-16 – 3-22	0	Index 1 – Index 2	0
B	0	4-1 – 4-50	0	2028 Sample Front & Rear	0
i – iv	0	A-1 – A-2	0	2028 Front & Rear	0
1-1	1	B-1	0	Back Cover	1
1-2 – 1-6	0				

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

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

No. 5-3895-383-10

Washington, D.C. 21 September 1999

OPERATOR'S MANUAL

FOR

ROLLER, VIBRATORY, SELF-PROPELLED, Type II

CATERPILLAR MODEL CS-563D
NSN 3895-01-456-2735

Contract No. DAAE07-98-C-S007

REPORTING OF 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 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) web site. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ON-LINE FORMS PROCESSING section of the AEPS. 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, DA Form 2028 or DA Form 2028-2, direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. The e-mail address is amsta-ac-nml@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT)

HOW TO USE THIS MANUAL

This manual is designed to help operate and maintain the Caterpillar Model CS-563D, NSN 3895-01-456-2735, Type II Self-propelled Vibratory Roller. The Roller is a commercially available unit and is altered slightly for military use. This contains a commercial off-the-shelf (COTS) manual with supplemental data to support military-specific maintenance and operation. Listed below are some of the special features that are included to help locate and use the needed information:

Chapter One contains information specific to the military model.

Chapter Two contains the operator's Preventive Maintenance Checks and Services (PMCS) and Lubrication Instructions.

Chapter Three contains operation instructions specific to the military model.

Chapter Four is the commercial off-the-shelf manual from the manufacturer.

Appendix A lists references related to this manual.

Appendix B contains Components of End Item and Basic Issue Items Lists.

Appendix C covers an Additional Authorized List for the Roller.

Appendix D contains the Stowage and Sign Guide for the Roller.

Appendix E contains the Transportability Instructions. This appendix was added for information only and is not authorization for the operator to perform tasks or maintain additional tools on the vehicle.

An alphabetical index is provided to help locate main items in the text.

FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:

The operator shall read through this manual and become familiar with the contents before attempting to operate the Roller.

Read all WARNINGS and CAUTIONS before performing any procedure.

Any information in Chapters One, Two, and Three (Military-specific Operation) overrides any conflicting information contained in Chapter Four (manufacturer's commercial off-the-shelf manual).

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

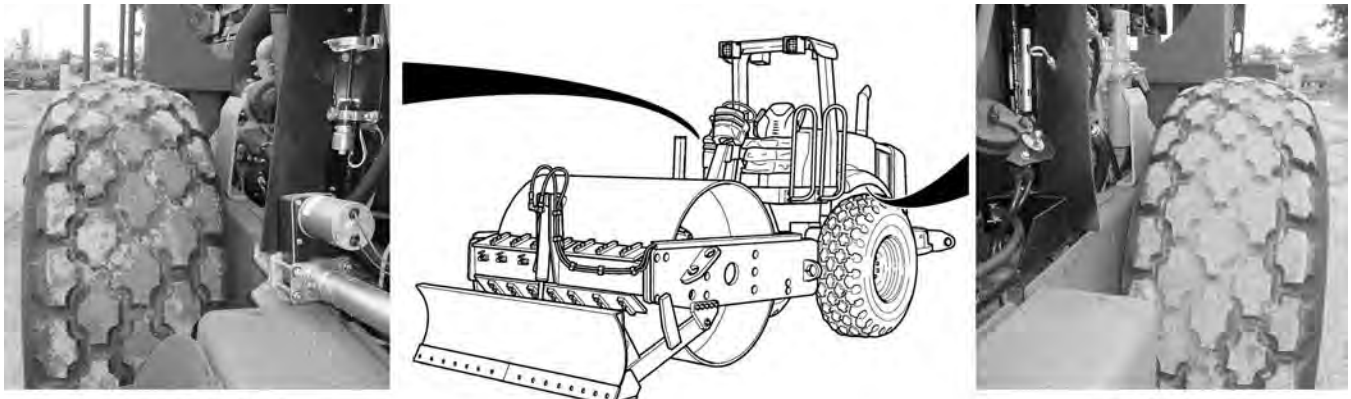
1-1. SCOPE

a. Type of Manual. Operator's Manual.

b. Model Number and Equipment Name. Caterpillar Model CS-563D, Roller, Vibratory, Self-propelled, Type II, NSN 3895-01-456-2735.

The Type II Roller is shown in Figure 1-1 (page 1-2), Figure 1-2 (page 1-2), Figure 1-3 (page 1-2), and Figure 1-4 (page 1-2).

c. The engine compartment has been modified with the addition of hood guide plates illustrated below. These plates serve as a guide to assist hood closure.



LEFT SIDE RIGHT SIDE

d. Purpose of Equipment. The Type II Self-propelled Vibratory Roller, from here on referred to as the Roller, is a self-propelled roller designed to compact soil and gravel bases for parking lots, runways, streets, roads, and highways.

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) (Maintenance Management UPDATE).

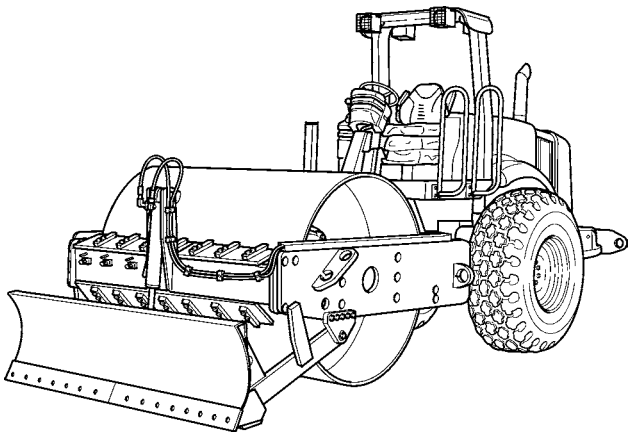


Figure 1-1. Type II
Self-propelled Vibratory Roller
Caterpillar Model CS-563D – Left Front View

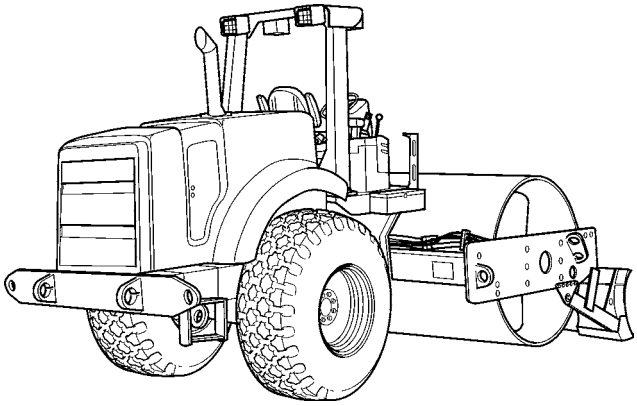


Figure 1-2. Type II
Self-propelled Vibratory Roller
Caterpillar Model CS-563D - Right Rear View

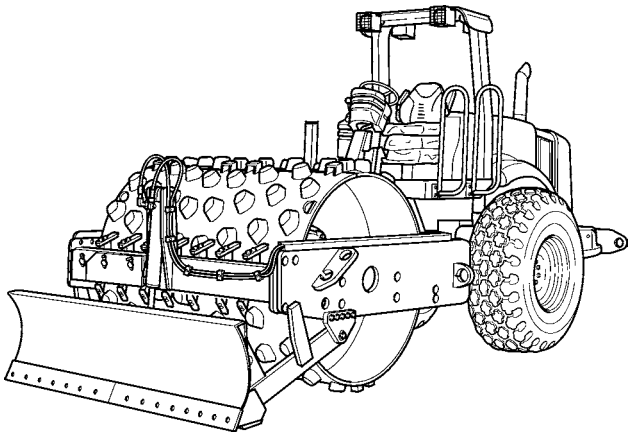


Figure 1-3. Type II
Self-propelled Vibratory Roller
(with Pad-foot Shell Installed)
Caterpillar Model CS-563D – Left Front View

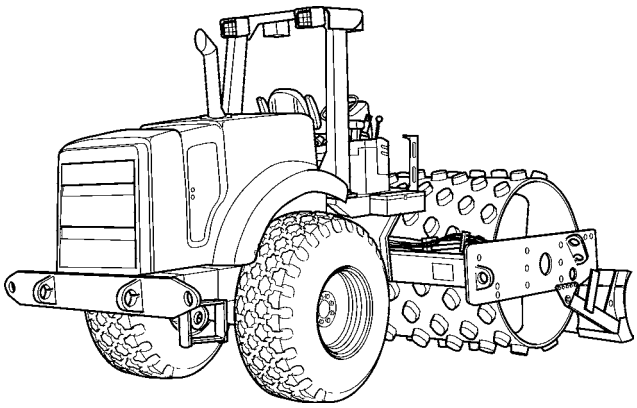


Figure 1-4. Type II
Self-propelled Vibratory Roller
(with Pad-foot Shell Installed)
Caterpillar Model CS-563D - Right Rear View

1-3. CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with the Roller be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using Standard Form 368, Product Quality Deficiency Report. Use of keywords such as “corrosion,” “rust,” “deterioration,” or “cracking” will ensure that the information is identified as a CPC problem. Submit the form to the address specified in DA PAM 738-750.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Command decision, according to the tactical situation, will determine when the destruction of the Roller will be accomplished. A destruction plan will be prepared by the using organization unless one has been prepared by a higher authority. For general destruction procedures for this equipment, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-automotive and Armaments Command).

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Roller 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 SF368 (Product Quality Deficiency Report). Mail it to us at:

Commander,
US Army Tank-automotive and Armaments Command
ATTN: AMSTA-AC-NML
Rock Island, IL 61299-7630

A reply will be furnished to you. You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail.

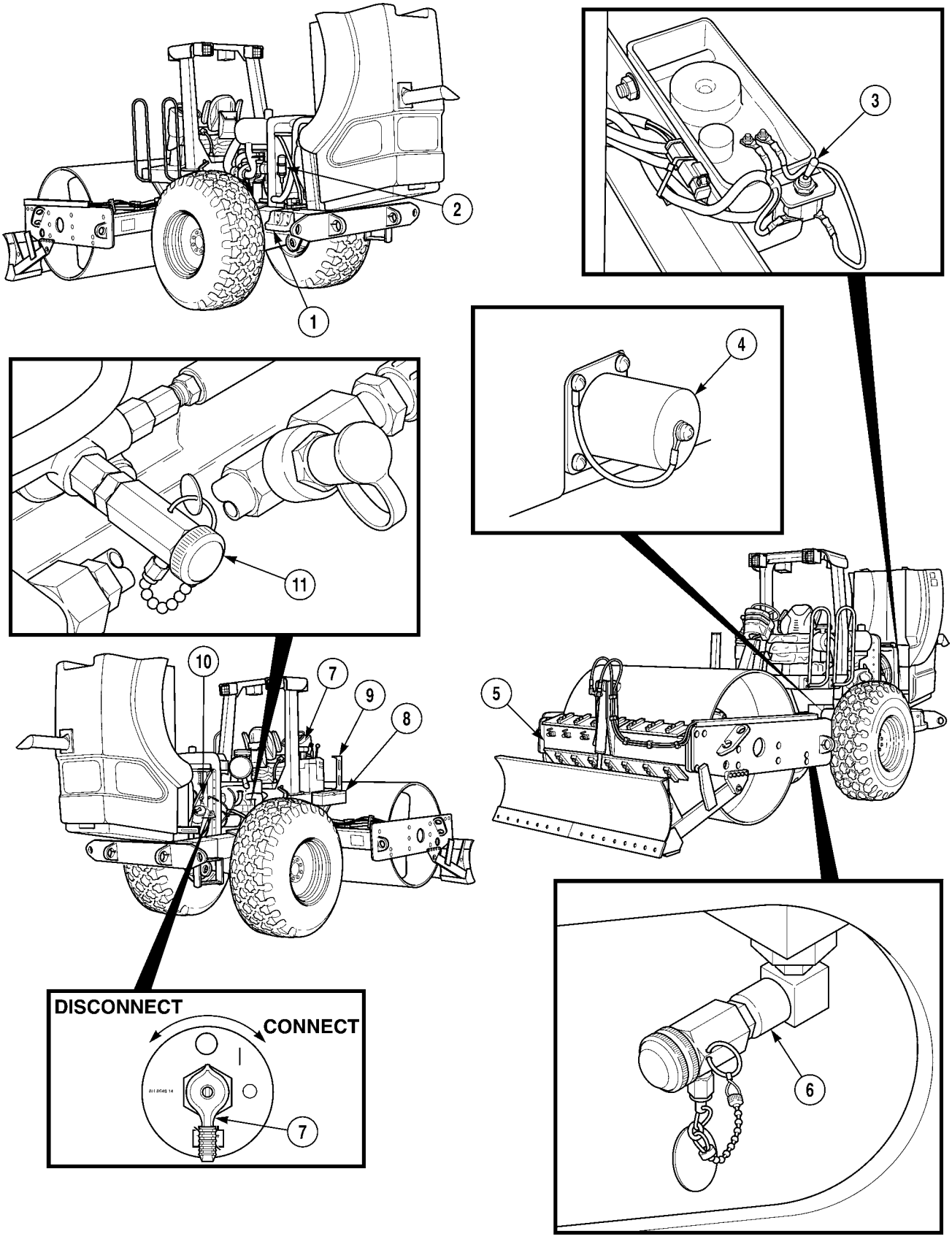
TACOM's datafax number for AMSTA-AC-NML is:

DSN 793-0726
or commercial (309) 872-0726

The e-mail address is: amsta-ac-nml@ria.army.mil

Army Electronic Product Support: http://aeps.ria.army.mil

Section II. EQUIPMENT DESCRIPTION AND DATA



1-6. LOCATION AND DESCRIPTION OF MILITARY-SPECIFIC COMPONENTS

(1) DECONTAMINATION KIT BRACKET. The decontamination kit bracket holds the NBC decontamination kit.

(2) ETHER START SYSTEM. The ether start system provides for the introduction of ether into the engine intake system to aid in starting the engine in temperatures below 32°F (0°C).

(3) BACK UP ALARM CUT-OFF SWITCH. The back-up alarm cut-off switch allows the operator to disengage the back up alarm during periods of required low noise levels.

(4) NATO CONNECTOR. The NATO connector is a standard receptacle with which one vehicle can be "jump-started" with another in the event of battery failure.

(5) UNIVERSAL BUMPER. The universal bumper provides the ability to scrape excess material from either the smooth drum or the installed pad-foot shell. When the pad-foot shell is installed, the smooth drum scraper plates are stowed on the front of the bumper.

(6) HYDRAULIC OIL SAMPLING VALVE. The hydraulic oil sampling valve provides an easy means to collect a sample of hydraulic oil for Army Oil Analysis Plan (AOAP) analysis.

(7) KEYLESS START SYSTEM. The military Roller requires no key to start the engine or engage the electrical system. Keyless switches are used for the engine start switch and the battery disconnect switch.

(8) STOWAGE BOX. The stowage box holds the tools needed for the operator to do all authorized maintenance.

(9) RIFLE MOUNTING BRACKET. The rifle mounting bracket holds the operator's weapon.

(10) MANUAL BRAKE RELEASE PUMP. The manual brake release pump and valve provide a means to release the parking brake while the engine is not running. The Roller has a hydrostatic transmission system which activates the brakes in the absence of positive hydraulic pressure. The pump provides pressure directly to the brakes for temporary release.

(11) ENGINE OIL SAMPLING VALVE. The engine oil sampling valve provides an easy means to collect a sample of engine oil for Army Oil Analysis Plan (AOAP) analysis.

CHAPTER 2

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION INSTRUCTIONS

2-1. PMCS INTRODUCTION

Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing equipment to keep it in good condition and to prevent breakdowns. As the Roller's operator, your mission is to:

Be sure to perform your PMCS each time you operate the Roller. Always do your PMCS in the same order, so it gets to be a habit. Once you've had some practice, you'll quickly spot anything wrong.

Do your BEFORE PMCS just before you operate the Roller or any of the Roller components. Pay attention to WARNINGS, CAUTIONS, and NOTES.

Do your DURING PMCS while you operate the Roller. Pay attention to WARNINGS, CAUTIONS, and NOTES.

Do your AFTER PMCS right after operating the Roller or any of the Roller components. Pay attention to WARNINGS, CAUTIONS, and NOTES.

Do your WEEKLY PMCS once a week.

Use DA Form 2404 or DA Form 5988-E (Equipment Inspection and Maintenance Worksheet) to record any faults that you don't immediately fix.

2-2. PMCS PROCEDURES

a. PMCS, Table 2-1 (Page 2-7), lists inspections and care required to keep your Roller in good operating condition. This table is set up so you can do BEFORE and AFTER PMCS while walking around the Roller.

b. The "INTERVAL" column of Table 2-1 tells you when to do a certain check or service.

c. The "PROCEDURE" column of Table 2-1 tells you how to do required checks and services. Carefully follow these instructions.

d. The "EQUIPMENT NOT READY/AVAILABLE IF:" column in Table 2-1 tells you when your Roller is non-mission capable and why the Roller cannot be used.

2-2. PMCS PROCEDURES (CONT)

e. When something looks wrong and that you cannot fix, write down the problem on your DA Form 2404 or DA Form 5988-E. IMMEDIATELY report the problem to your supervisor.

f. When you do your PMCS, you will always need a rag or two. Following are checks that are common to the entire Roller:

WARNING

- Drycleaning Solvent (P-D-680, Type III) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and, do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for drycleaning solvent type III is 200°F (93°C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. DO NOT use diesel fuel, gasoline, or benzene (benzol) for cleaning.
- DO NOT SMOKE when using cleaning solvent. NEVER USE IT NEAR AN OPEN FLAME. Be sure there is a fire extinguisher nearby and use cleaning solvent only in well-ventilated places.
- USE CAUTION when using cleaning solvents. Cleaning solvents evaporate quickly and can irritate exposed skin if solvents contact skin. In cold weather, contact of exposed skin with cleaning solvents can cause frostbite.

(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 drycleaning solvent (P-D-680, Type III) on all metal surfaces. Use soap and water when you clean rubber or plastic material.

(2) *Rust and Corrosion.* Check Roller body and frame for rust and corrosion. When any bare metal or corrosion exists, clean and apply a thin coat of oil. Report bare metal or corrosion to your supervisor.

(3) *Bolts, Nuts, and Screws.* Check all bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. When you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor.

(4) *Welds.* Look for loose or chipped paint, rust, or gaps where parts are welded together. When you find a bad weld, report it to your supervisor.

(5) *Electric Wires and Connectors.* Look for cracked, frayed, or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors. Report any damaged wires to your supervisor.

(6) *Hoses and Fluid Lines.* Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. When a leak comes from a loose fitting or connector, tighten it. Report when something is broken or worn out to your supervisor.

g. When you check for “operating conditions,” you look to see if the component is serviceable.

2-3. SHORTENED MAINTENANCE INTERVALS

Local conditions of extreme heat, dust, cold, or wetness dictate that service intervals shall be shortened.

2-4. ADDITIONAL MAINTENANCE INSPECTIONS

Additional maintenance inspections are required for the following reasons:

a. Prolonged storage. Inspect Rollers that have been stored for a period of three months or more.

b. Initial preparation upon receipt.

c. Preparation for storage.

2-5. LEAKAGE CLASSIFICATION AND DEFINITION

It is necessary for you to know how fluid leakage affects the status of the Roller. The following are types/classes of leakage an operator needs to know to be able to determine the status of the Roller. Learn these leakage definitions and remember - when in doubt, notify your supervisor.

- Equipment operation is allowable with minor leakages (Class I or II) with exception to fuel leakage. Of course, consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.
- When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.
- Any fuel leak or Class III leaks should be reported immediately to your supervisor.

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

b. CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

c. CLASS III - Leakage of fluid great enough to form drops that fall from item being checked/inspected.

2-6. GENERAL LUBRICATION INSTRUCTIONS

WARNING

Do not start or move Roller while anyone is under Roller. Severe injury or death could result.

NOTE

These instructions are mandatory.

a. Intervals. Intervals (on-condition or hard-time) and the related man-hour times are based on normal operation. The man-hour time specified is the time needed to do all the services prescribed for a particular interval. On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hard-time interval when lubricants are contaminated or when operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The calendar interval will be extended during periods of low activity. When extended, adequate preservation precautions must be taken. Hard-time intervals will be applied in the event AOAP laboratory support is not available. Hard-time intervals must be applied during the warranty period. Intervals shown in this lubrication section are based on calendar and hourly times or calendar times and mileage. An example of a calendar and hourly lubrication is: M/60 HR, in which M stands for monthly and 60 HR stands for 60 hours of Roller operation. The lubrication is to be performed at whichever interval occurs first for the Roller. Special lubrication intervals and services are shown by the use of an asterisk (*) symbol.

WARNING

- Drycleaning Solvent (P-D-680, Type III) is TOXIC and flammable. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and, do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for type III drycleaning solvent is 200°F (93°C). Failure to do so can result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. DO NOT use diesel fuel, gasoline, or benzene (benzol) for cleaning.

b. Clean Fitting Before Lubricating. Clean parts with drycleaning solvent or equivalent. Dry before lubricating.

c. Lubrication After Fording. When fording occurs, lubricate all grease fittings outside and underneath Roller.

d. Lubrication After High-Pressure Washing. After high-pressure washing, lubricate all grease fittings outside and underneath the Roller.

e. Oil Filter Statement. Oil filters shall be changed as applicable, when:

(1) They are known to be contaminated or clogged.

(2) At prescribed hard-time intervals.

f. AOAP Sampling. Engine oil shall be sampled at 50 hours of operation or 90 days, whichever occurs first, for Active Army Units. Reserve and National Guard activities will use 50 hours or 180 days, whichever occurs first, as prescribed interval. Hydraulic oil shall be sampled once a year. Sampling will be performed as prescribed by DA Pam 738-750.

g. Warranty Hard-time Statement. For equipment under manufacturers' warranty, hard-time oil service intervals shall be followed for the duration of the warranty. Intervals shall be shortened when lubricants are known to be contaminated or when operation is under adverse conditions (such as longer-than-usual operating hours, extended idling periods, and extreme dust).

h. Operator's Lubrication Requirements. The following lubrication table gives an overview of lubricants and intervals the operator will need.

Operator's Lubrication Requirements

Location	Temperature Range	Lubricant MIL Symbol (NATO Code) Specification	Capacity	Interval	Man-hour
Hydraulic oil tank	Above 0°F (-18°C)	HO, SAE 10W MIL-PRF-2104	21.1 gallons (80 liters)	Before	0.1
	-25°F (-32°C) to 0°F (-18°C)	HO, 0W20 MIL-L-46167		During	
Steering cylinder pins, steering pins, blade cylinder pins, and blade pivot pins	Above -25°F (-32°C)	GAA MIL-G-10924 MIL-G-23827	As required	W	0.1
Engine crankcase	Above 5°F (-15°C)	EO, 15W40 MIL-PRF-2104	5.3 gallons (20 liters [with filter])	After	0.1
	-25°F (-32°C) to 5°F (-15°C)	EO Sub-zero MIL-L-46167			

EO = Engine Oil GAA = Grease, Automotive and Artillery HO = Hydraulic Oil

Operator's Coolant Requirements

Location	Period	Lubricant MIL Symbol (NATO Code) Specification	Capacity	Interval	Man-hour
Cooling System	During warranty period	ELC	8 gallons (30 liters)	Before	0.1
Cooling System	After warranty expiration	A-A-52624	8 gallons (30 liters)	Before	0.1

2-7. PMCS COLUMN ENTRY EXPLANATION

a. Item No. Column. The checks and services are numbered in interval order showing a walk-around sequence around the Roller. Use these numbers in the "TM Item No." column on DA Form 2404 or DA Form 5988-E when recording faults that you don't immediately fix.

b. Interval Column. This column indicates when the lubrication, check, and/or service should be performed.

c. Man-hour Column. This column indicates the man-hours required to perform the lubrication, check, and/or service. Man-hours are stated to the nearest 10th of an hour.

d. Location, Item to be Checked or Serviced Column. The underlined items listed in this column are divided into groups indicating the portion of the equipment of which they are a part, i.e. brakes, fuel, engine. Under these groupings a few common words are used to identify the specific item being checked.

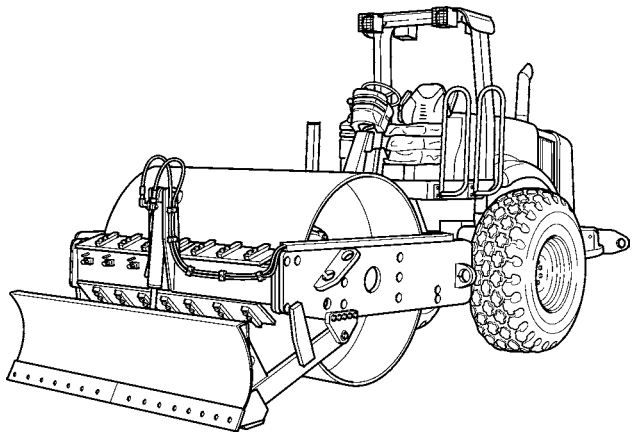
e. Procedure Column. This column contains procedures required to perform the checks and services.

f. Equipment Not Ready/Available If: Column. This column contains the criteria that cause the equipment to be classified as EQUIPMENT NOT READY/AVAILABLE because of inability to perform its primary mission. An entry in this column will:

(1) Identify conditions that make the equipment not available for readiness reporting purposes.

(2) Deny use of the equipment until corrective maintenance has been performed.

2-8. PMCS TABLE



Refer to Table 2-1 for operator/crew PMCS procedures for the Roller.

Table 2-1. Operator Preventive Maintenance Checks and Services

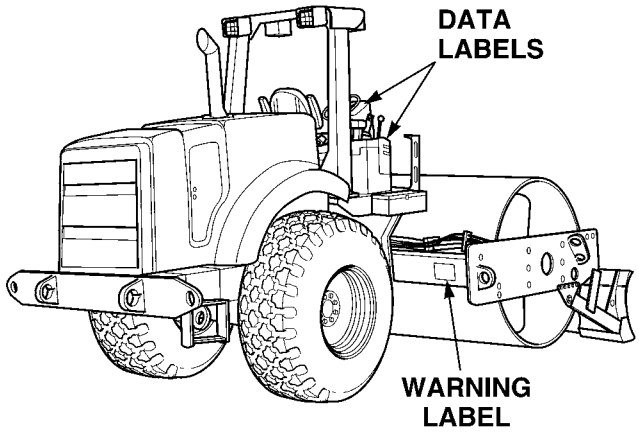
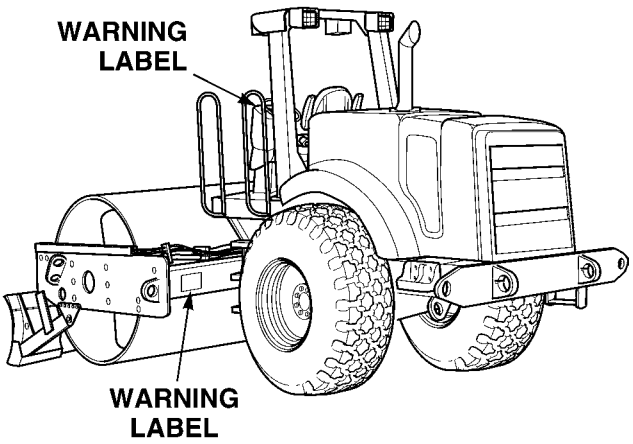
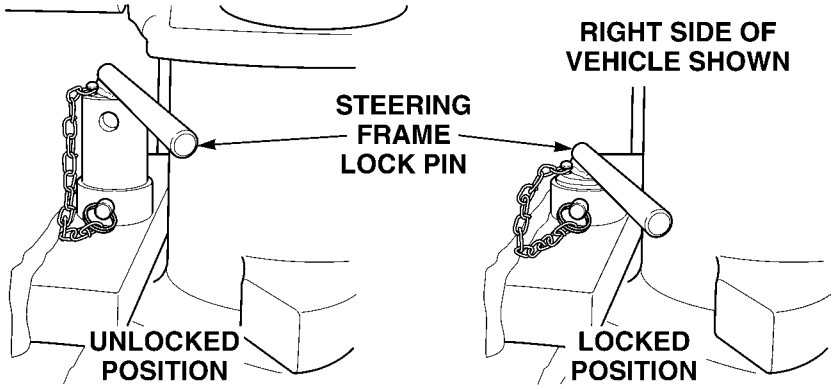
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
1	Before	0.1	Exterior of Roller	Look under Roller for signs of fluid leakage (fuel, oil, and coolant).	Any leakage of fuel or class III leakage of oil or coolant is found.
				 	
2	Before	0.1	Exterior of Roller	Check warning and data labels for damage, cleanliness, and readability.	Any WARNING labels are missing or damaged beyond readability.
					
3	Before	0.1	Steering Frame Lock Pin	Check that steering frame lock pin is in unlocked position. If steering frame lock pin is in locked position, unlock steering frame (page 3-2).	Lock pin is damaged or missing.

Table 2-1. Operator Preventive Maintenance Checks and Services - CONT.

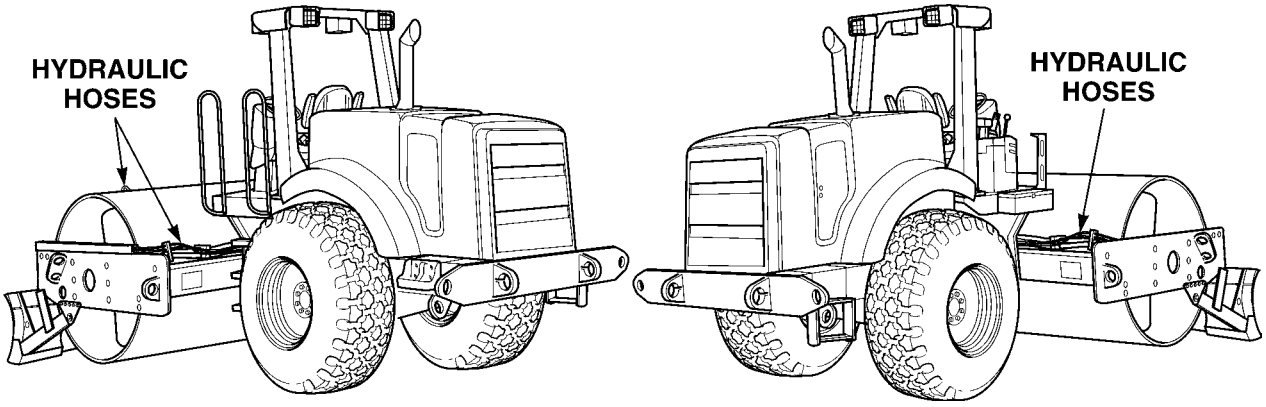
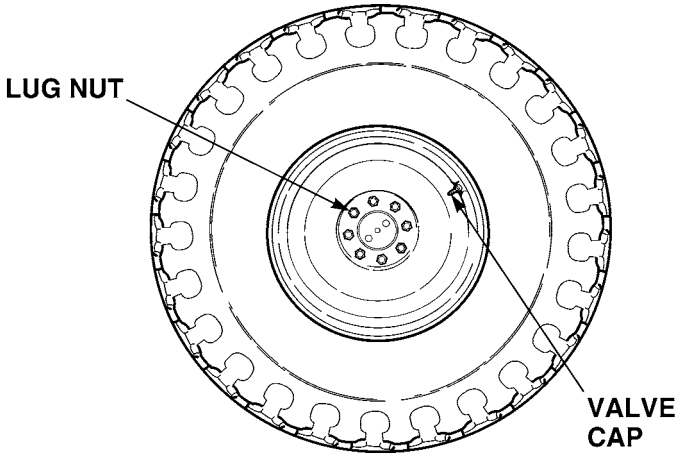
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
4	Before	0.1	Hydraulic Hoses	Check for crimped, torn, or damaged hydraulic hoses.	Hydraulic hoses are crimped, torn, or damaged.
					
5	Before	0.1	Tires and Wheels	a. Visually inspect tires for proper inflation. b. Check for obvious damage such as cuts, gouges, abrasions, cracks, damage that extends to the cord body, leaks, or bulges. c. Check for loose or missing lug nuts or broken studs. d. Check for missing valve caps.	Tires are visibly under-inflated or flat. Any tires have cuts, gouges, abrasions, cracks, damage that extends to the cord body, leaks, or bulges. One or more lug nuts are loose or missing. One or more studs are broken off.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

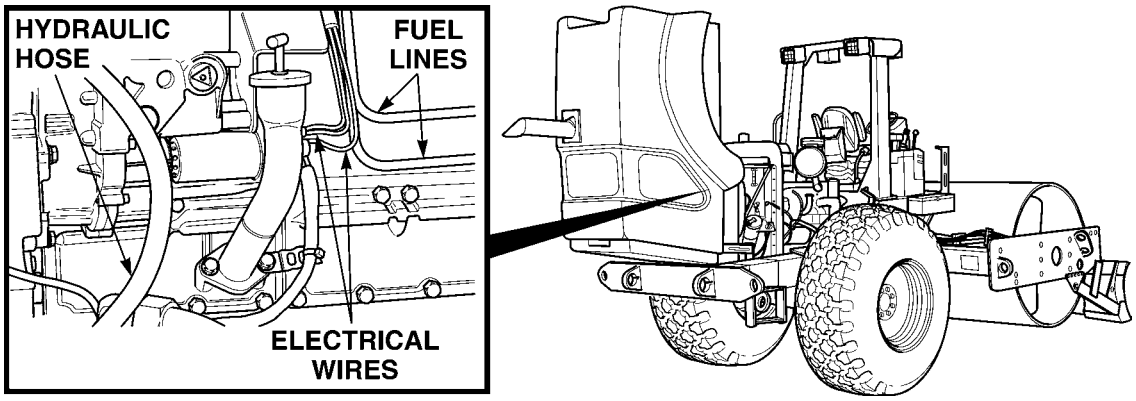
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
6	Before	0.1	Engine Right Side	Open hood assembly (Chapter 4).	
7	Before	0.1	Electrical Wires, Hydraulic Hoses, and Fuel Lines	a. Check for loose or frayed wires and loose connectors.	Wires are frayed or loose or connectors are loose.
				b. Check for crimped, torn, or damaged hydraulic hoses.	Hydraulic hoses are crimped, torn, or damaged.
				c. Check for crimped, torn, or damaged fuel lines.	Fuel lines are crimped, torn, or damaged.
				d. Check for fuel leaks.	Any fuel is leaking.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

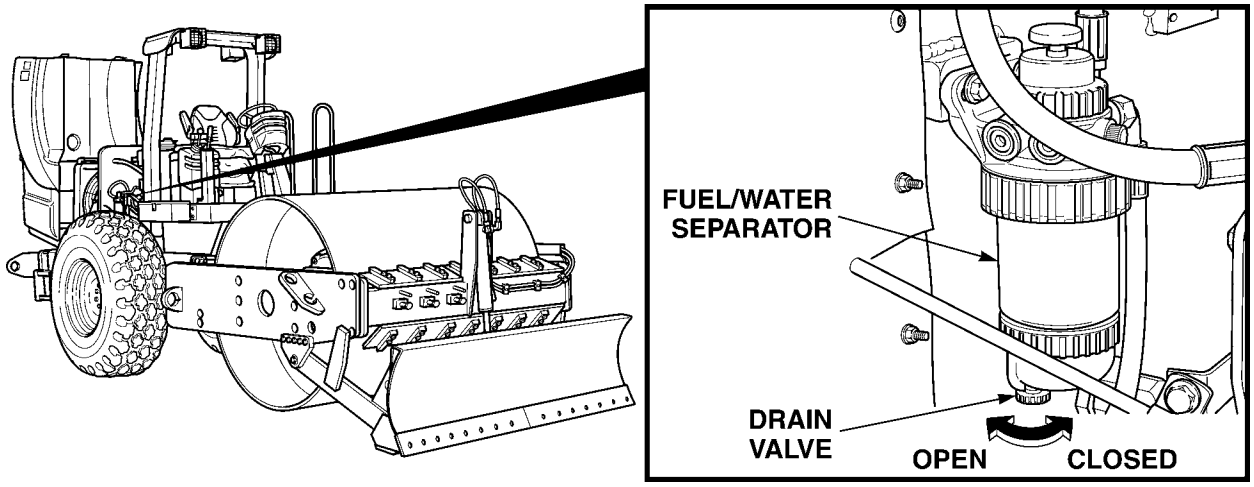
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
8	Before	0.1	Fuel/Water Separator	**WARNING** Do not perform fuel/water separator checks, inspections or draining while smoking, or when near fire or sparks. Failure to comply may cause fuel to ignite and cause injury or death to personnel or damage to Roller. **CAUTION** Operation of Roller with damaged fuel/water separator can cause engine damage. a. Check fuel/water separator for leaks or damage such as cracks. b. Place container with minimum 1 qt (1 l) capacity under fuel/water separator. c. Open drain valve and drain fluid until only fuel comes out. Close drain valve. d. Dispose of drained fluids in accordance with local regulations.	Any leakage from fuel/water separator is evident or fuel/water separator is damaged.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

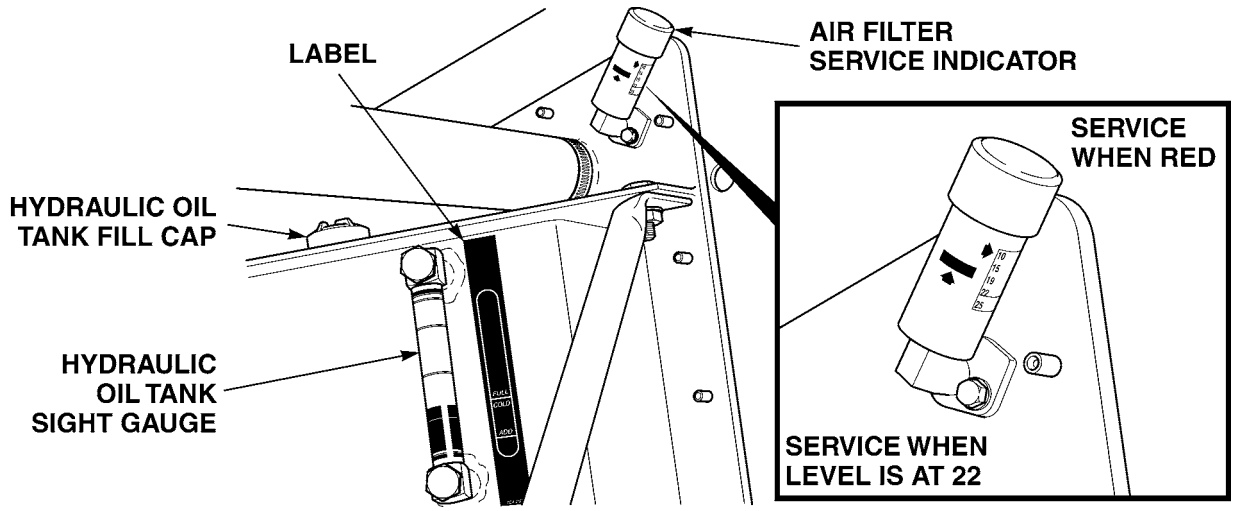
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
9	Before	0.1	Hydraulic Oil Level (Cold Oil Check)	**NOTE** • Hydraulic oil shall be checked cold and warm. • Roller must be on level surface for an accurate level reading. • Disregard markings on sight gauge. Maintain hydraulic oil level according to label markings. Check that hydraulic oil level is between the high and low marks on the label beside the hydraulic oil tank sight gauge. If level is below “LOW” level mark, fill hydraulic tank with hydraulic oil.	Hydraulic oil level is below “LOW” level mark, or above “HIGH” level mark on label.
10	Before	0.1	Air Filter Service Indicator	Check indicator viewing window and arrow while engine is shut off.	Red color appears in viewing window/arrow is at or above 22 INCHES position. Notify Unit Maintenance for air cleaner element replacement.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

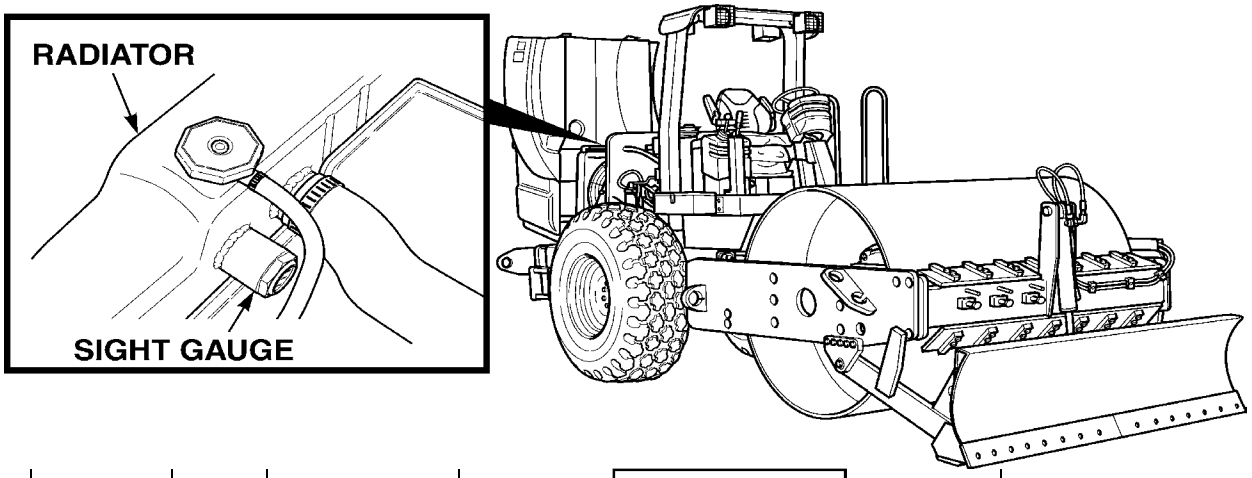
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
				WARNING At operating temperature, the engine coolant is hot and under pressure. Steam can cause personal injury. Check the coolant level only after the engine has been stopped and the fill cap is cool enough to touch with your bare hand. Remove the fill cap slowly to relieve pressure. Cooling system conditioner contains alkali. Avoid contact with the skin and eyes to prevent personal injury.	
11	Before	0.1	Coolant	Check that coolant is present in radiator sight gauge. If coolant is not present, add coolant.	Coolant level is low.
12	Before	0.1	Radiator and Hydraulic Oil Cooler	Check radiator and hydraulic oil cooler for damage, signs of leakage, and debris that can restrict air flow.	Radiator or hydraulic oil cooler is damaged, leaking, or debris is restricting air flow.
13	Before	0.1	Engine Left Side		
			Electrical Wires and Hydraulic Hoses	a. Check for loose or frayed wires and loose connectors. b. Check for crimped, torn, or damaged hydraulic hoses.	Wires are frayed or loose or connectors are loose. Hydraulic hoses are crimped, torn, or damaged.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

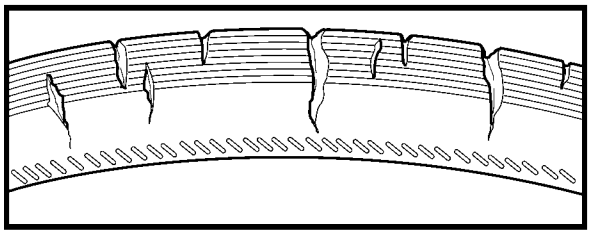
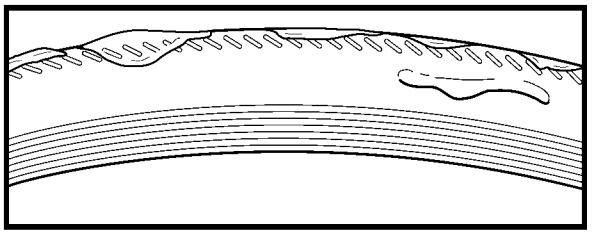
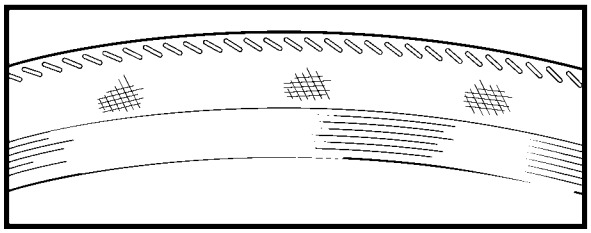
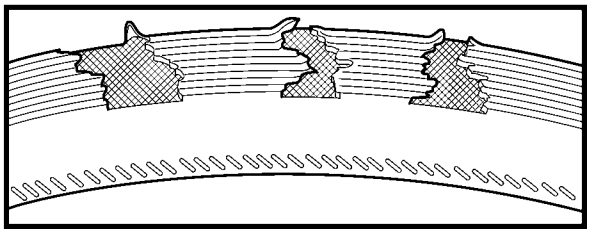
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
				It's time to replace vee belts when they are... cracked or split.  Check for cracks or splits on bottom or sides of belt. A cracked or split belt can fail at any time. greasy.  Grease buildup causes belts to soften, rot, and fail. glazed.  Belts with slick, hard sides do not function properly. This can cause the radiator or other components to overheat. peeling.  When the underside of the belts peel, it becomes uneven, causing rough operation and failure.	
14	Before	0.1	Vee Belts	a. Check for damaged or missing vee belts. b. Close hood assembly (Chapter 4).	Any vee belt is loose, missing, broken, greasy, peeling, glazed, cracked to the belt fiber, has more than one crack (1/8 inch in depth or 50% of belt thickness), or has frays more than 2 inches long.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

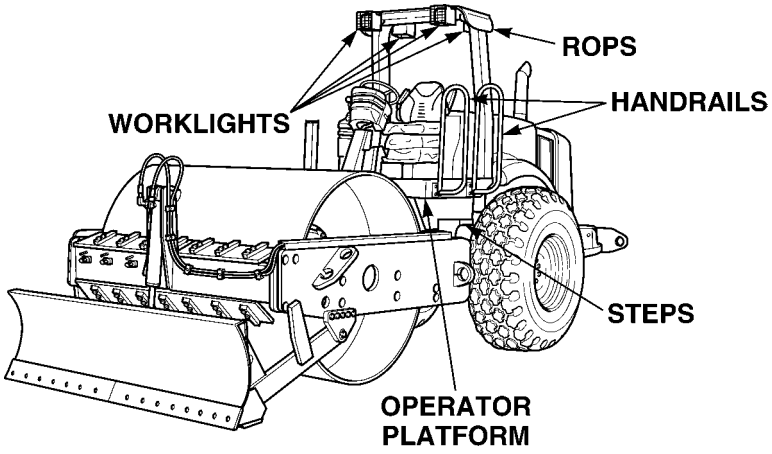
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
15	Before	0.1	Worklights	Check four worklights for broken lenses and bulbs.	Bulbs are broken.
16	Before	0.1	Steps, Operator Platform, and Handholds	a. Inspect steps and handholds for grease, dirt, mud or other foreign material that may cause dangerous climbing environment. Remove any foreign material from steps, operator platform, or handholds. b. Inspect steps, operator platform, and handholds for damage such as cracks, broken welds, and loose or missing mounting bolts and nuts.	Grease, dirt, mud or other foreign material that may cause dangerous climbing environment is present. Mounting bolts or nuts are loose or missing or steps, operator platform, or handholds are damaged.
17	Before	0.1	Driver Safety Canopy (Rollover Protection Structure [ROPS])	Check driver safety canopy (ROPS) for damage such as cracks, holes, broken welds, and loose or missing mounting bolts and nuts.	Mounting bolts or nuts are loose or missing or ROPS is damaged.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

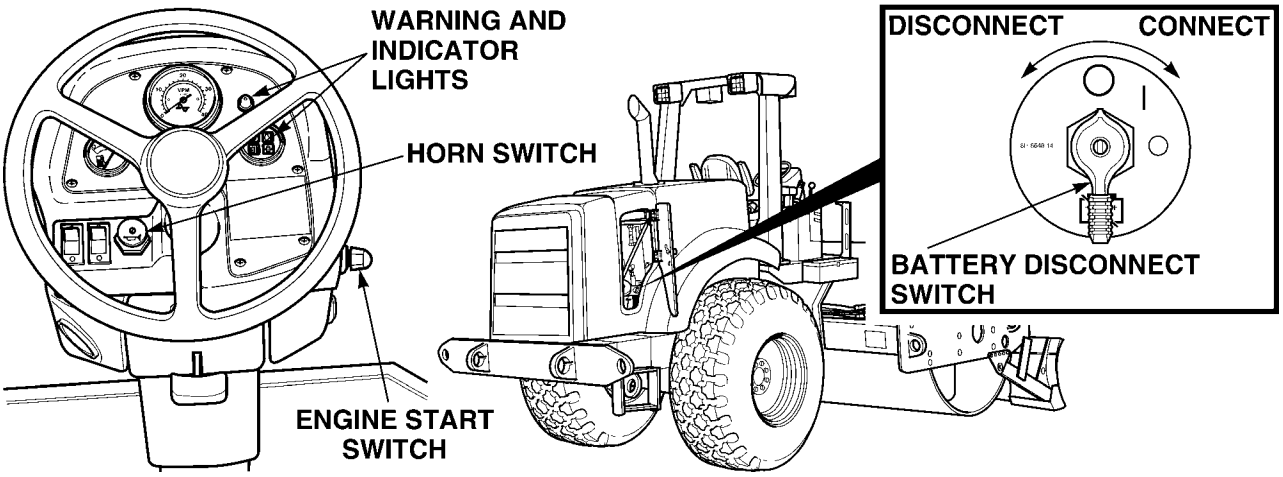
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
				WARNING • Ensure area around the Roller is clear of personnel before starting engine. Injury or death to personnel could result. • Hearing protection is required for operator and also for all personnel working in and around the Roller while engine is running.	
18	Before	0.1	Warning and Indicator Lights and Warning Horn	a. Turn on battery disconnect switch (page 3-5). **NOTE** Do not allow engine to start during this check. b. Turn engine start switch to ON position; observe warning and indicator lights. c. Return engine start switch to OFF position.	Warning and indicator lights do not illuminate.
19	Before	0.1	Horn	Check that horn sounds when horn switch is pressed.	

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

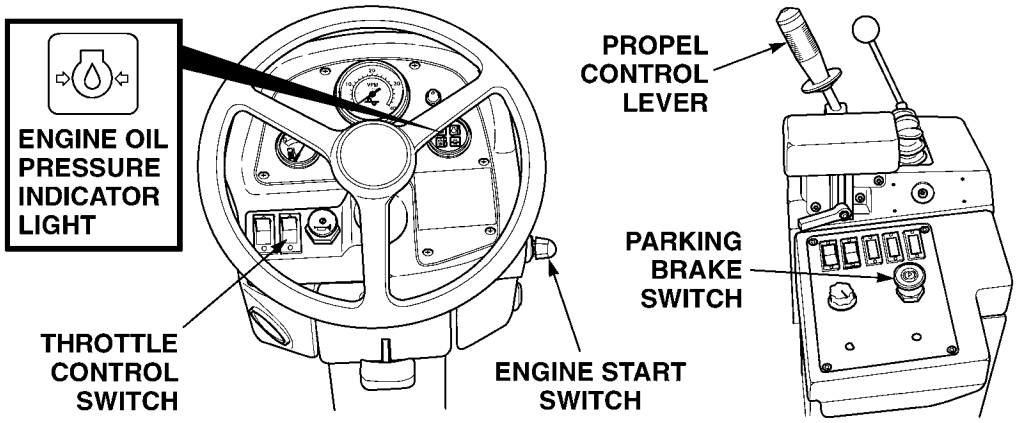
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
20	Before	0.1	Neutral Start Switch	a. Ensure that area is free of personnel and path of travel is clear. b. Pull up parking brake switch to release parking brake. c. Position propel control lever in full forward position. **NOTE** Do not allow engine to start during this check. d. Hold engine start switch in start position while moving propel control lever to full back (reverse), to full forward, and then to center (neutral/stop) position. Turn engine start switch to OFF position.	Engine attempts to start before control lever is in neutral position.
21	Before	0.1	Throttle Control Switch	a. Start engine and warm up engine (Para 3-4). **CAUTION** Keep throttle control switch in low RPM (forward) position until after engine oil pressure indicator light goes out. If light does not go out within ten seconds, notify Unit Maintenance. b. Position throttle control switch backward to high RPM and back to low RPM positions, checking for high and low engine speeds.	Throttle control switch does not change engine speed.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
22	Before	0.1	Engine	Check for excessive exhaust smoke, unusual engine noise, rough running, or misfiring engine.	Excessive exhaust smoke, unusual engine noise, rough running, or misfiring engine.
				WARNING Always apply parking brake before dismounting the Roller while the engine is running. Failure to comply may result in personal injury or death.	
23	Before	0.1	Hydraulic Oil Filter	With engine operating at high idle (throttle control switch in backward position), check that the white filter indicator is not in red zone.	White filter indicator is in the red zone.

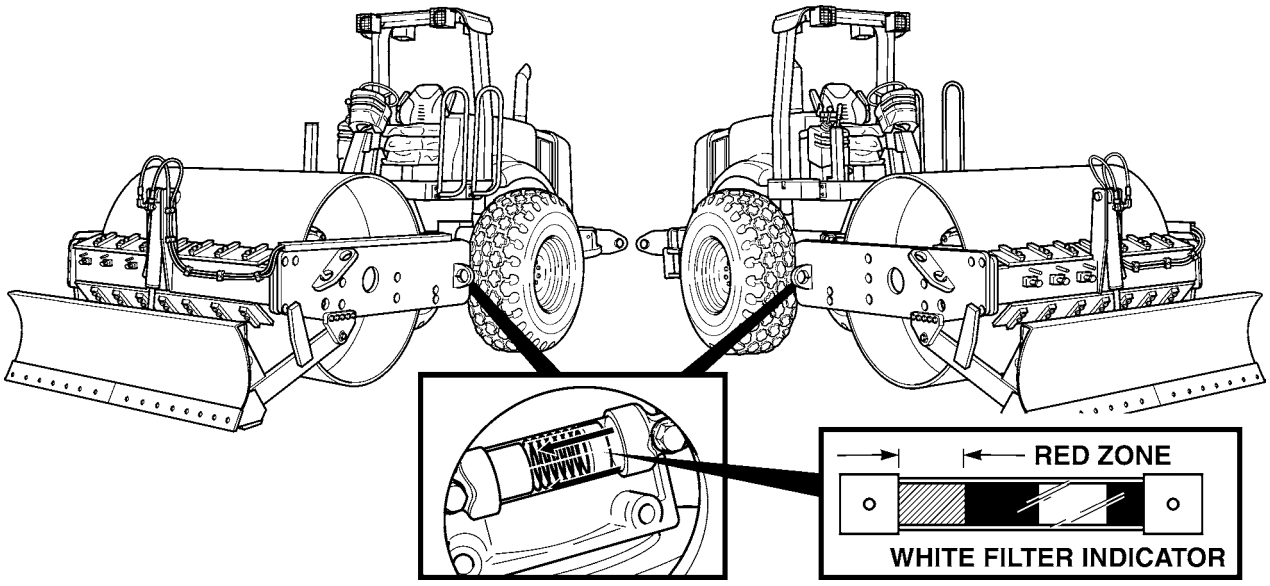


Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

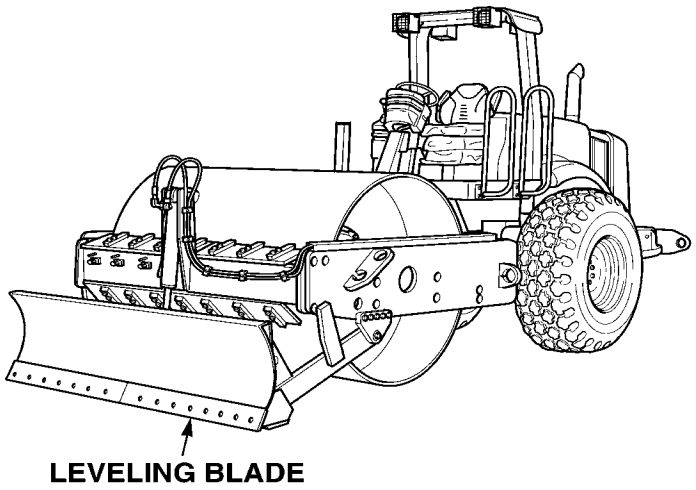
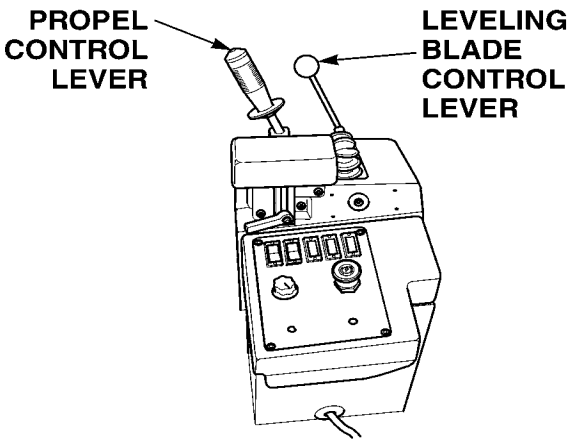
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
 					
24	Before	0.1	Leveling Blade	**NOTE** Engine must be above low idle speed to operate leveling blade. a. Move the leveling blade control lever backward to raise the blade. b. Move the leveling blade control lever to the center position to hold the blade in position. c. Move the leveling blade control lever forward to lower the blade. d. Move the leveling blade control lever backward to raise the blade to full up position.	 Leveling blade will not raise. Leveling blade will not hold. Leveling blade will not lower.
25	Before	0.1	Propel Control Lever/Back Up Alarm	a. Check that propel control lever operates smoothly without sticking or binding in forward and reverse positions. **NOTE** Back up alarm will not operate if back up alarm cutoff switch is turned OFF (Para 3-6). b. Check that back up alarm sounds when propel control lever is placed in reverse position. c. Return propel control lever to neutral position.	Propel control lever does not operate in forward or reverse position. Back up alarm does not sound while cutoff switch is turned ON.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

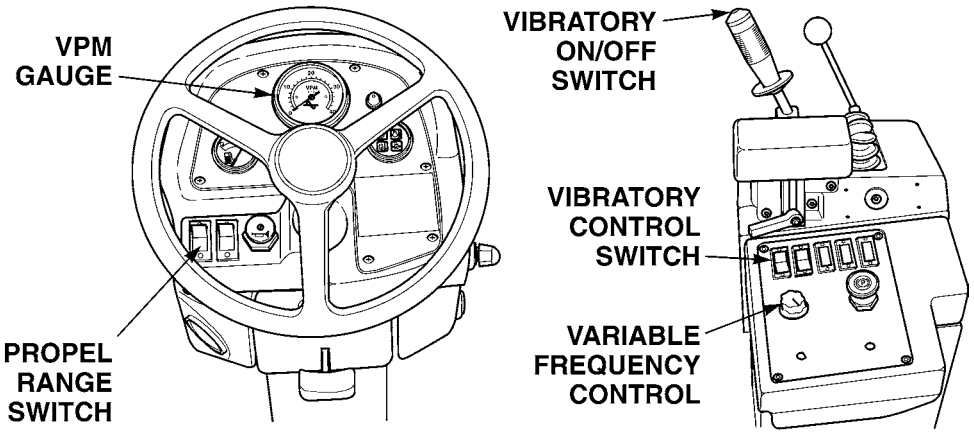
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
26	Before	0.1	Propel Speed Range Switch	Move propel speed range switch to low (back) and the high (forward) positions. **WARNING** Do not turn vibratory system on while Roller is standing still on a very solid surface. A loss of steering can be experienced which could result in injury or death to personnel.	Propulsion system does not operate or change to low (tortoise) and high (hare) propulsion mode as switch is moved.
27	Before	0.1	Vibration System	a. Move vibratory control switch to low amplitude mode. Turn vibration on/off switch on.	Vibratory system does not operate in low amplitude mode.
				b. Press vibration on/off switch to stop vibration. Move the vibratory control switch to high amplitude mode. Press vibration on/off switch to start vibration.	Vibratory system does not operate in both high and low amplitude modes.
				c. Move variable frequency control to full left and full right.	Frequency of vibration does not change.
				d. Check that VPM (Vibrations Per Minute) gauge is functioning and shows changes in vibration frequency. If VPM gauge does not properly function, contact Unit Maintenance.	VPM gauge does not operate or does not change as vibration frequency changes.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

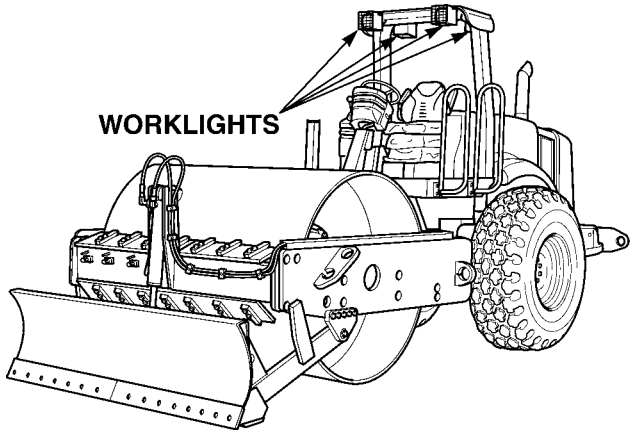
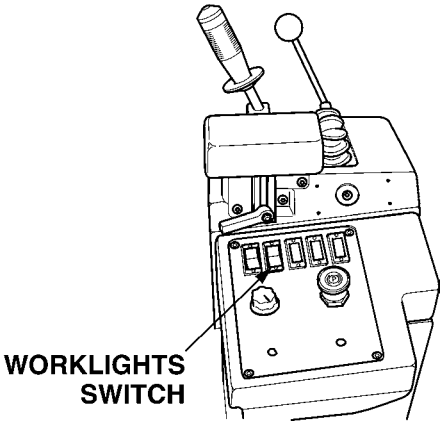
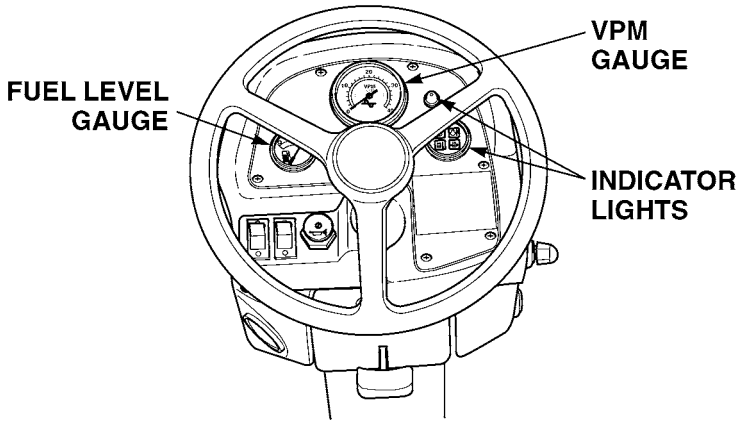
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
28	Before	0.1	Steering	Check for any unusual steering noise, binding, or difficulty in turning.	Steering binds or is unresponsive.
				 	
29	Before	0.1	Worklights	a. Move worklights switch through all positions and check that front and rear worklights illuminate. b. Turn engine off and apply parking brake, unless mission starts immediately.	Worklights do not illuminate (if operation is to occur during low light or night time).
					
30	During	0.1	Gauges	Monitor all gauges and indicator lights.	Any gauge stops working, or any indicator light comes on, during operation, shut engine OFF and notify Unit Maintenance.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

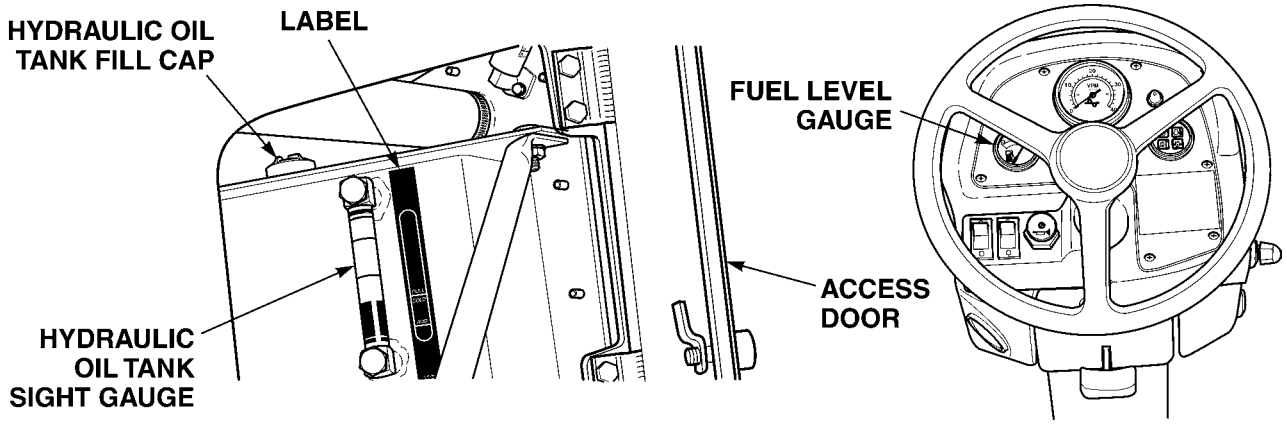
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
31	During	0.1	Hydraulic Oil Level (Warm Oil Check)	**CAUTION** Do not overfill hydraulic oil tank. Damage to hydraulic system components may occur. **NOTE** • The Roller must be parked on a level surface when checking the hydraulic oil level. • Hydraulic oil shall be checked warm and cold. Engine shall be run at least five minutes before performing warm oil check. • Disregard markings on sight gauge. Maintain hydraulic oil level according to label markings. a. Open access door assembly. b. Check that hydraulic oil level is between the high and low marks on the label beside the hydraulic oil tank sight gauge. If level is below “LOW” level mark, fill hydraulic tank with hydraulic oil (page 2-5). c. Close access door assembly.	Hydraulic oil level is below “LOW” level mark, or above “HIGH” level mark on label.
32	After	0.1	Fuel Level	Check fuel level gauge. Fill fuel tank, if level is low.	Fuel level is very low or empty.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

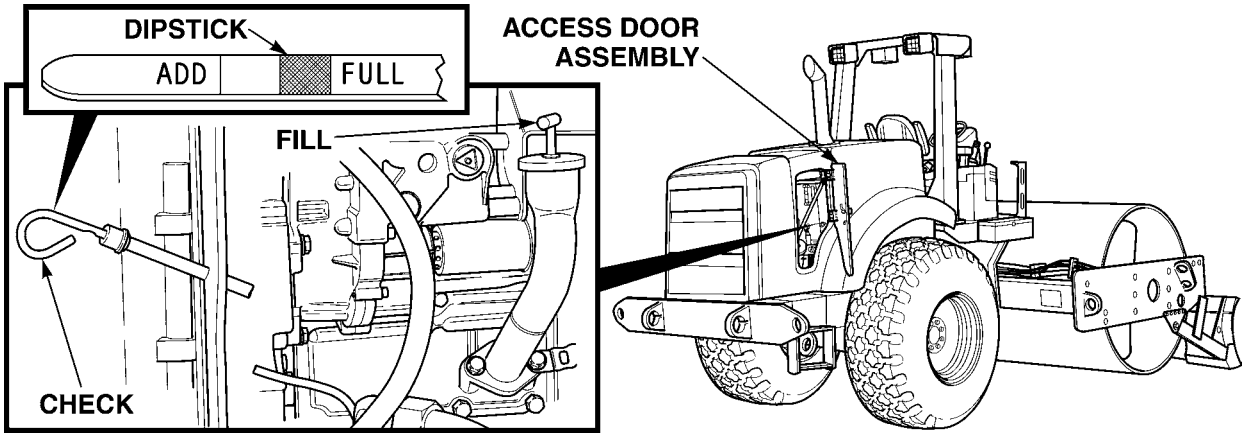
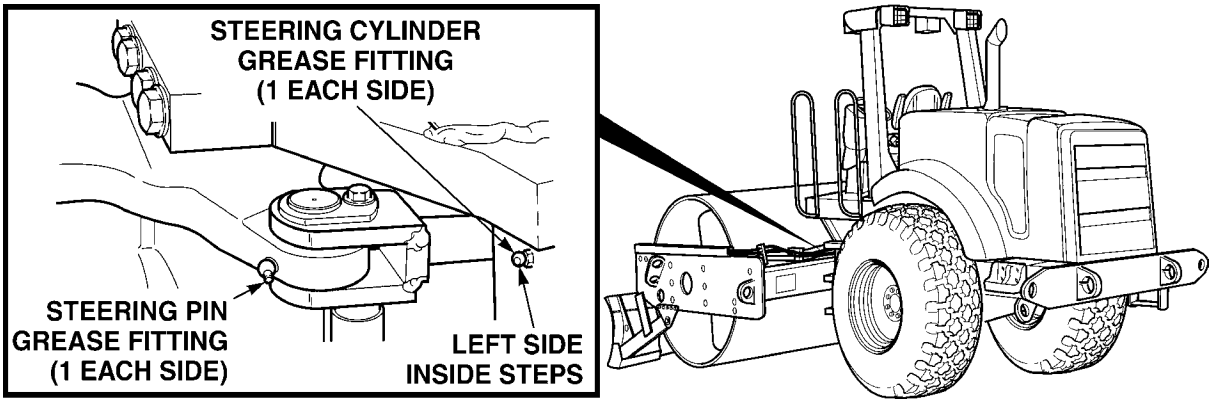
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
33	After	0.1	Engine Oil Level	a. Open access door assembly. b. Check engine oil level. If engine oil level is low, add oil (Chapter 4). c. If engine oil level is too high, notify Unit Maintenance that engine is overfilled with oil. d. Close access door assembly.	Engine oil level is low. Engine oil level is high.
					
34	Weekly	0.1	Steering Pins	Remove grease gun from stowage box. Apply grease to steering pin grease fittings.	
35	Weekly	0.1	Steering Cylinder Pins	Apply grease to steering cylinder grease fittings.	

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

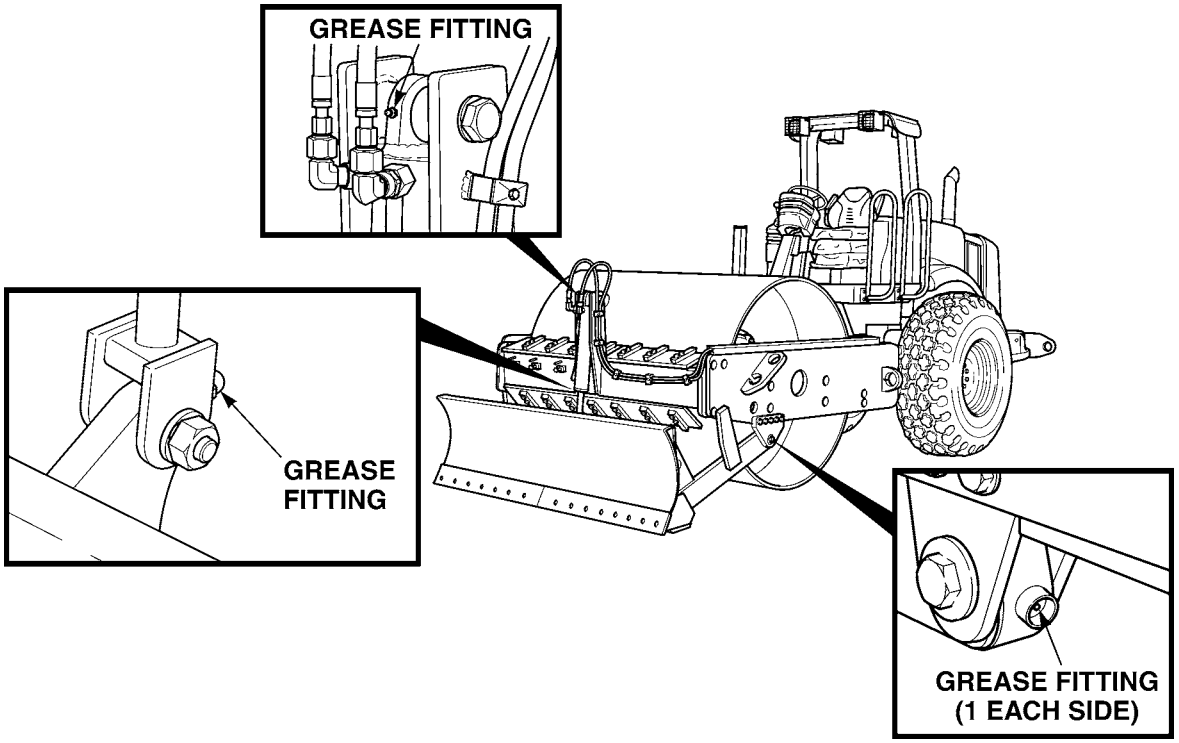
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
36	Weekly	0.1	Blade Cylinder Pivot	Apply grease to blade cylinder pivot grease fittings.	
37	Weekly	0.1	Blade Pivot	a. Apply grease to blade pivot grease fittings. b. Stow grease gun in stowage box.	

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

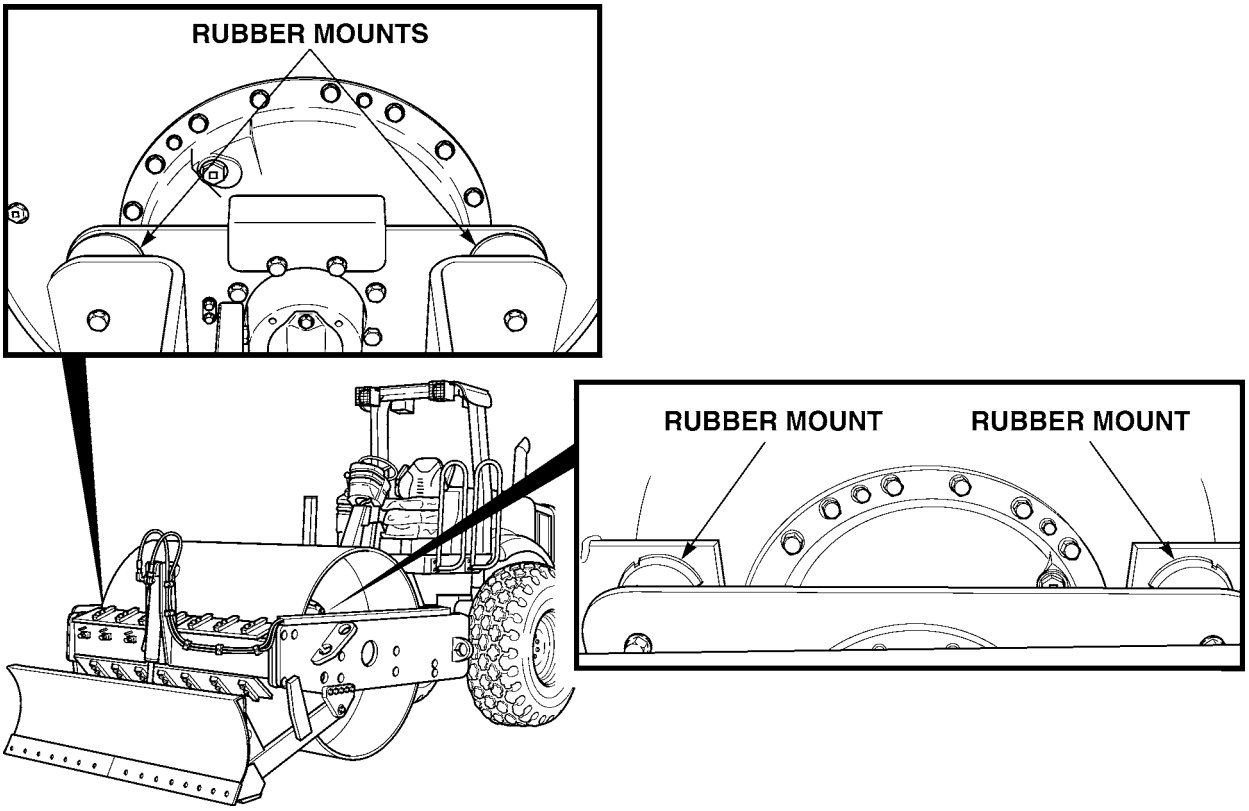
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
38	Weekly	0.1	Vibratory Drum Rubber Mounts	**NOTE** There are 10 vibratory drum rubber mounts. Six are located on the left side of the drum. Four are located on the right side of the drum. Check rubber mounts for damage, cracking, splitting, and loose mounting hardware.	Rubber mounts are damaged, cracked, split, or have loose mounting hardware.

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

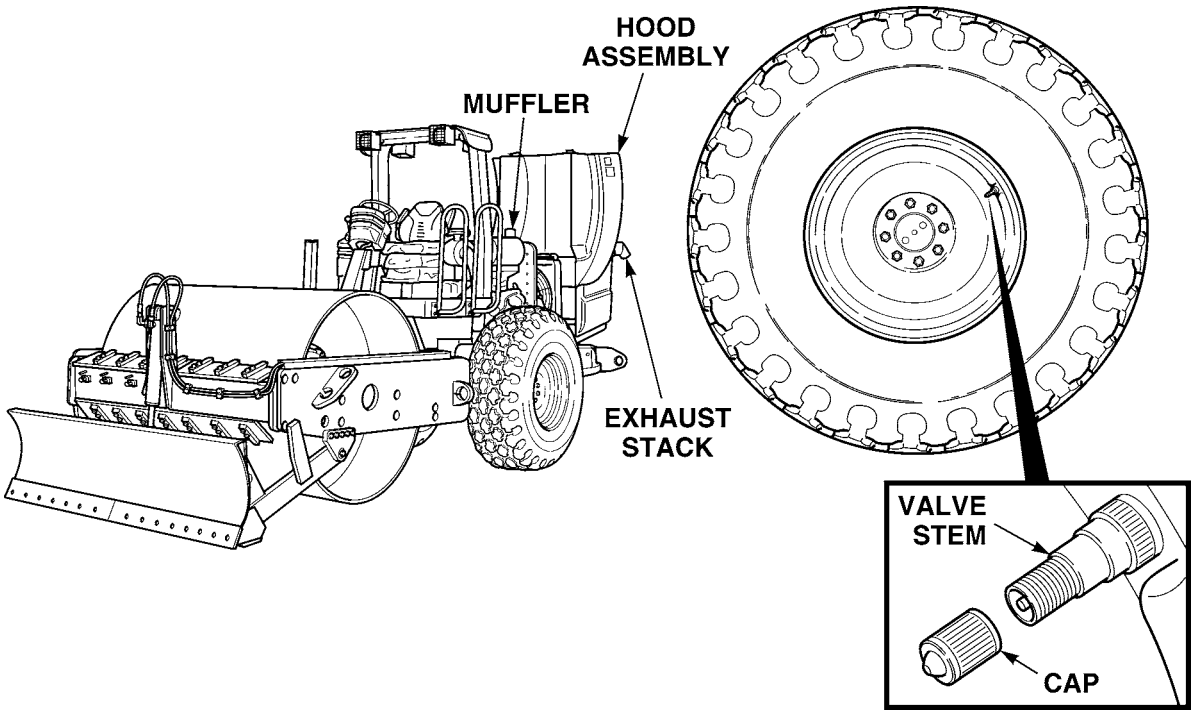
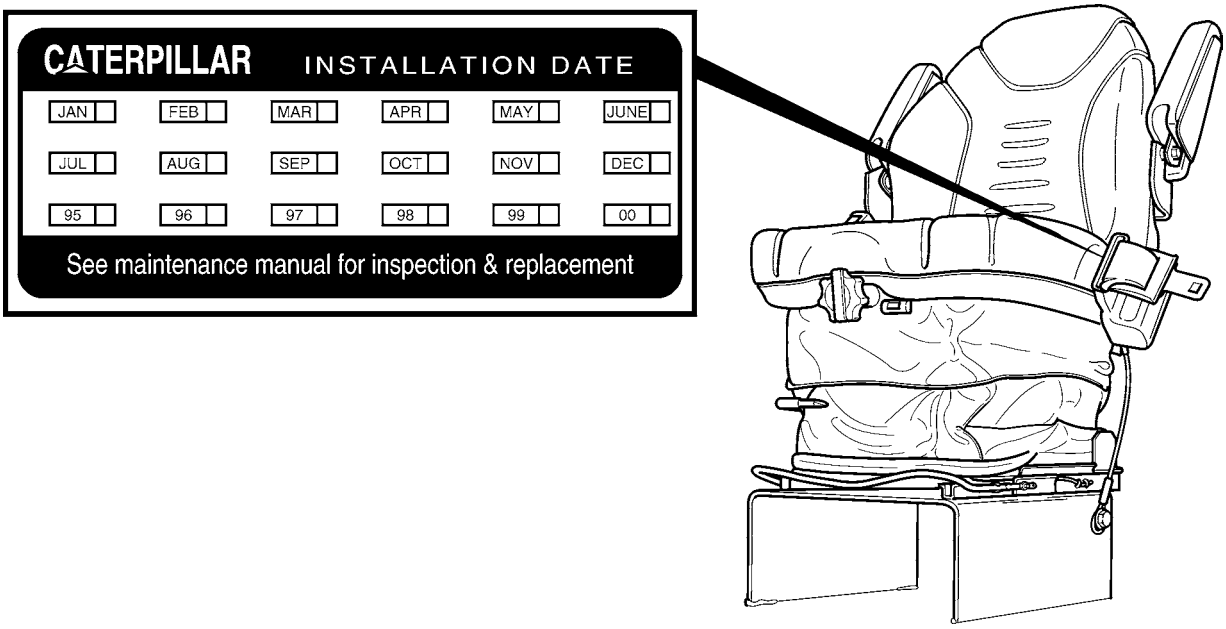
Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
39	Weekly	0.1	Muffler/ Exhaust Pipes	a. Open hood assembly (Chapter 4). b. Check muffler and exhaust system for decay, damage, and loose components. c. Close hood assembly (Chapter 4).	
40	Weekly	0.1	Tires	**WARNING** Use a self-attaching inflation chuck and stand behind the tread when inflating a tire, to prevent possible personal injury. a. Remove tire gage from stowage box. b. Remove cap from valve stem. c. Using tire pressure gage, check inflation of tires. Pressure should be: 16 psi (110 kPa) for smooth drum 12 psi (83 kPa) for pad-foot. If pressure is low, inflate tires to correct pressure. d. Install cap on valve stem. e. Stow tire pressure gage in stowage box.	Tire pressure is below 16 psi (110 kPa) for smooth drum 12 psi (83 kPa) for pad-foot

Table 2-1. Operator Preventive Maintenance Checks and Services – CONT.

Item No.	Interval	Man-hour	Item to be Checked or Serviced	Procedure	Equipment Not Ready/Available if:
					
				NOTE A punch card is attached to the left seat belt retracter to record the age of the belt for replacement at the end of three years from date of installation.	
41	Weekly	0.1	Seat Belt	a. Check seat belt for security, damage, proper operation, and expiration date.	Seat belt is missing, damaged, or three years have passed since seat belt was installed. Notify Unit Maintenance for replacement of seat belts.
				b. Inspect for loose or missing mounting hardware.	Mounting hardware is loose or missing.

CHAPTER 3

MILITARY-SPECIFIC OPERATION

Para Contents Page

Section I. OPERATION UNDER USUAL CONDITIONS

3-1. ASSEMBLY AND PREPARATION FOR USE

The Type II Roller comes fully assembled and ready for use. The pad-foot shell kit can be installed or removed as required for mission.

3-2. INITIAL ADJUSTMENTS & CHECKS

a. ***Unlock Steering Frame.***

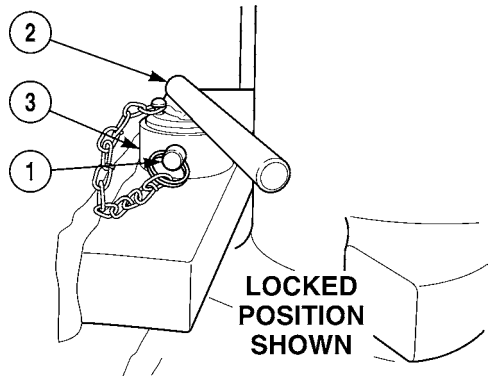
(1) Remove pin (1) from pin (2) and articulation yoke (3).

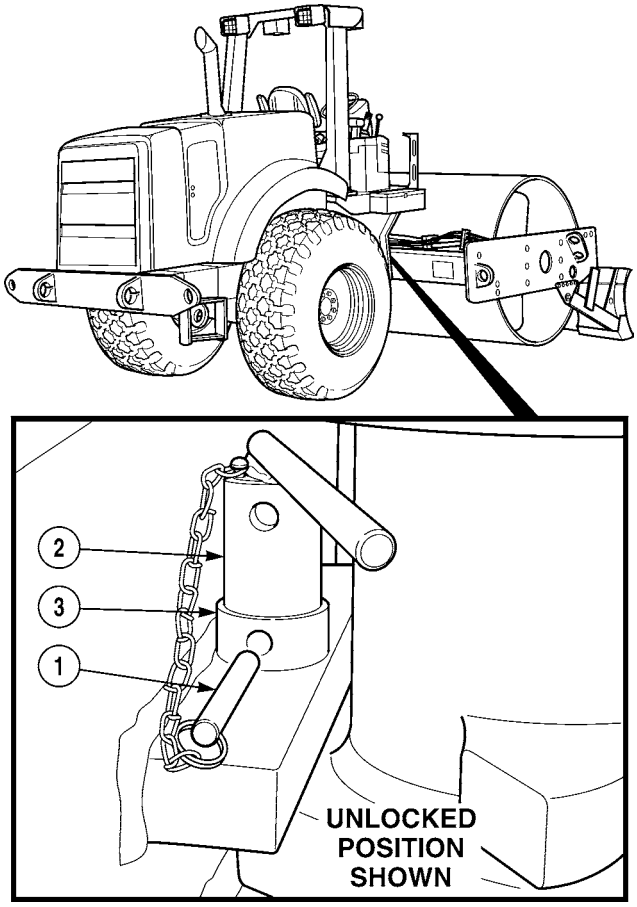
(2) Lift pin (2) and install pin (1) in articulation yoke (3) and lower hole of pin (2).

b. ***Lock Steering Frame.***

(1) Remove pin (1) from pin (2) and articulation yoke (3).

(2) Lower pin (2) and install pin (1) in articulation yoke (3) and upper hole of pin (2).





c. ***Operate Seat Belt.***

(1) *Fasten Seat Belt.*

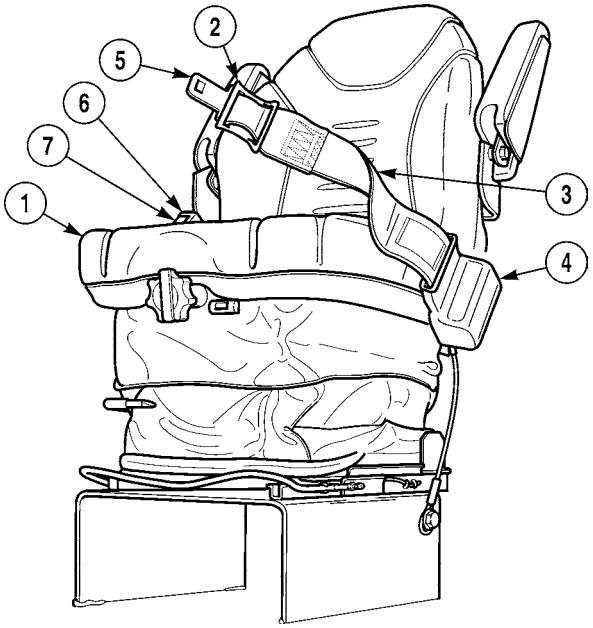
(a) Sit on seat (1), hold gripper (2), and extend seat belt (3) from retractor (4).

(b) Insert extrusion (5) into buckle (6) until securely latched.

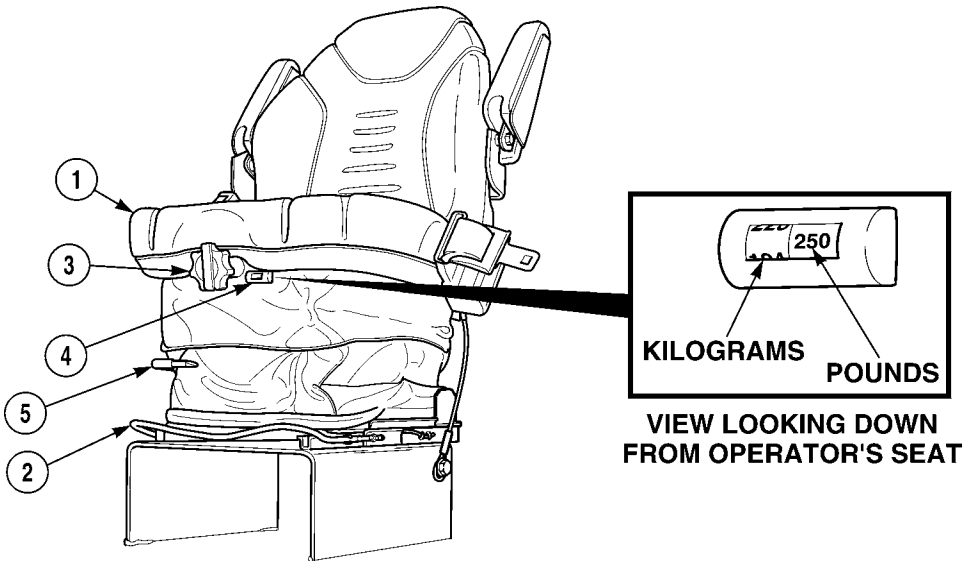
(2) *Unfasten Seat Belt.*

(a) Push button (7) and remove extrusion (5) from buckle (6).

(b) Allow seat belt (3) to slowly retract into retractor (4).



d. ***Adjust Seat.***



WARNING

Lock the seat into position before operating the Roller to prevent unexpected seat movement. Unexpected movement of seat can cause injury to personnel.

NOTE

- Adjust seat at the beginning of each shift or when changing operators.
- Adjust seat so all controls can be comfortably reached when operator's back is against seat.

(1) Sit on seat (1), facing forward with your back against seat.

(2) Move and hold fore-aft lever (2) up.

(3) Slide seat (1) forward or backward to a position where all the operator station controls can be comfortably reached.

(4) Release fore-aft lever (2) to lock seat in position. Rock back and forth to ensure seat is locked into position.

(5) Turn knob (3) until indicator (4) displays the operator's body weight.

(6) Lift lever (5) and adjust seat height to a position where all operator station controls can be comfortably reached.

(7) Release lever (5).

(8) Tilt steering wheel to the desired position (Chapter 4).

3-3. MOUNT/DISMOUNT ROLLER

WARNING

- Mount and dismount the Roller only where steps and/or handrails are provided.
- Clean shoes and wipe hands before climbing on Roller. Use handrails when mounting Roller.
- Inspect, clean, and have any necessary repairs made to steps prior to mounting the Roller.
- Always use “three-point contact” with Roller; face Roller when entering or leaving operator’s station. Three-point contact means that three out of four arms and legs are in contact with Roller at all times during mount and dismount.
- Never get on or off a moving Roller.
- Do not use any controls as handholds when you enter the operator compartment or when you exit the operator compartment.
- Never jump off the Roller.
- Do not attempt to climb on or off the Roller while carrying tools or supplies.

a. ***Mount Roller.***

(1) Stand facing the Roller (1).

WARNING

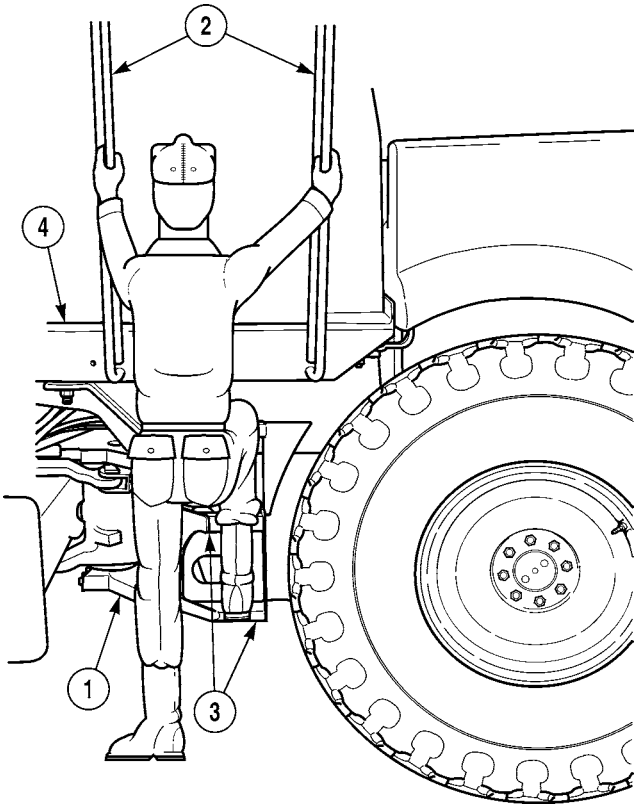
ROPS canopy has 55 in. (139.7 cm) clearance above operator platform at the lowest point. Use care when mounting or dismounting Roller to prevent injury to head.

(2) Using the handrails (2) and steps (3), climb onto the operator platform (4).

b. ***Dismount Roller.***

(1) Grasp handrails (2) and turn to face the center of the Roller (1).

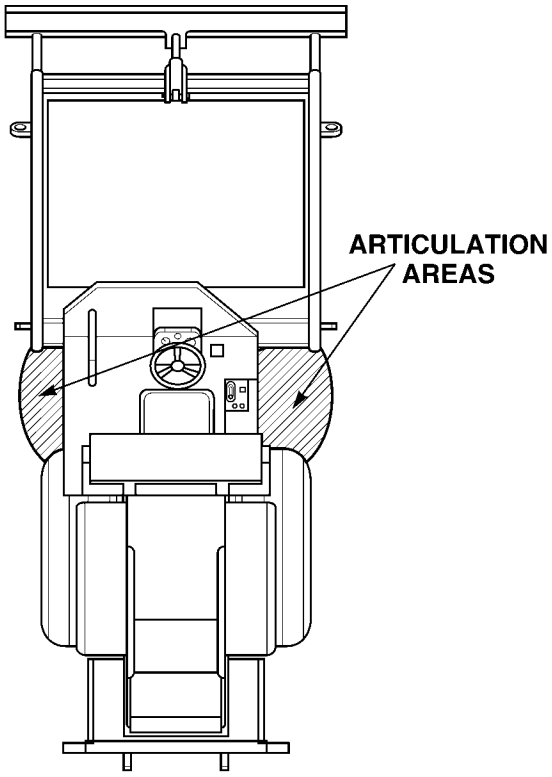
(2) Using the handrails (2) and steps (3), climb off the operator platform (4) to the ground.



3-4. OPERATE ENGINE

WARNING

- There is no clearance for personnel between frame and yoke when Roller turns. Severe injury or death from crushing could occur.
- Steering frame must be locked before lifting, transporting, or servicing Roller in articulation area with engine running to prevent serious injury or death from crushing.
- Unlock steering frame before operation to prevent loss of steering that may cause serious injury or death to personnel.
- Personnel hearing can be PERMANENTLY DAMAGED if exposed to constant high noise levels of 85 dB (A) or greater. Wear approved hearing protection devices when working within 20 ft (6.1 m) of Roller. Personnel exposed to high noise levels shall participate in a hearing conservation program in accordance with DA PAM 40-501. Hearing loss occurs gradually but becomes permanent over time.



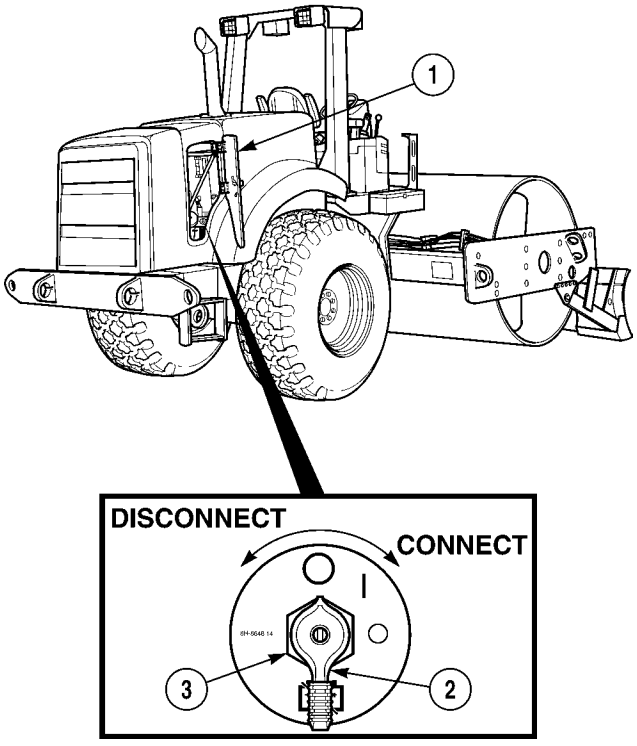
a. ***Turn ON Battery Disconnect Switch.***

WARNING

To prevent personal injury, be sure all personnel are clear of the machine. Sound the horn for several seconds before starting the engine.

NOTE

Battery disconnect switch should be turned ON at the beginning of each work day.



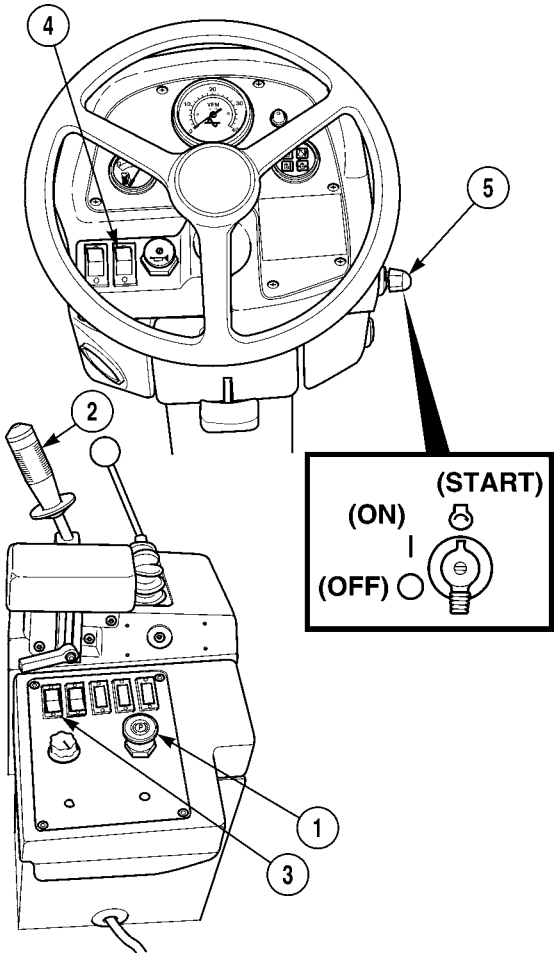
(1) Open access door (1).

(2) Turn lever (2) until battery disconnect switch (3) is in connect position.

(3) Close access door (1).

3-4. OPERATE ENGINE (CONT)

b. ***Start Engine (Above 32°F [0°C]).*** See page 3-17 for instructions for starting engine in temperatures below 32°F (0°C).



(1) Push down parking brake knob (1) to ensure parking brake is engaged.

NOTE

Engine will not start unless propel control lever is in center position.

(2) Move propel control lever (2) to the center position to ensure that propulsion system is not in forward or reverse.

(3) Rock vibratory control switch (3) to the off (center) position.

(4) Rock throttle control switch (4) to the low (hare/forward) position.

CAUTION

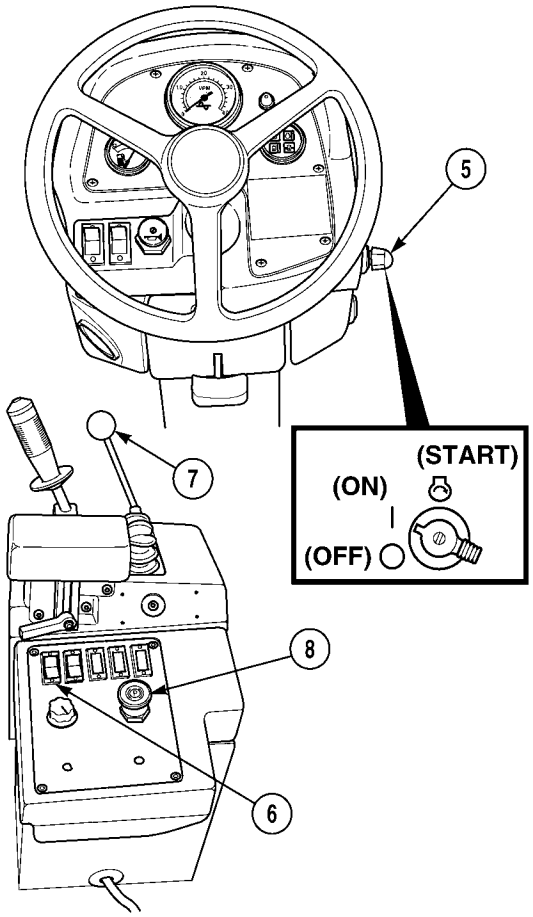
- Do not crank the engine for more than 30 seconds. Engine start switch needs to be returned to the OFF position before attempting to crank engine again. Allow the starter to cool for 2 minutes before cranking again.
- Keep engine speed low until engine oil pressure indicator light and horn go off. Stop engine if indicator light does not go off within 10 seconds. Notify Unit Level Maintenance to perform troubleshooting before restarting engine.
- Failure to keep engine speed low until engine oil pressure indicator light and horn go off can result in turbocharger damage.

(5) Turn the engine start switch lever (5) to start (full forward) position to crank the engine. Release the lever when the engine starts.

WARNING

Do not turn vibratory system on while Roller is standing still on a very solid surface. A loss of steering can be experienced which could result in injury to personnel.

(6) Ensure that the vibratory control switch (6) is turned off.



c. ***Warm Up Engine (Above 32°F [0°C]).***

(1) Allow a cold engine to warm up at low idle for at least 5 minutes. Complete warm-up requires approximately 15 minutes in temperatures above 32°F (0°C).

(2) Observe warning and indicator lights frequently during warm-up.

(3) Pull up on parking brake switch (8).

(4) Cycle all steering and propulsion controls several times to allow warm hydraulic oil to circulate through all cylinders and lines.

d. ***Shut OFF Engine.***

CAUTION

Stopping the engine immediately after it has been working under load can result in overheating and accelerated wear of the engine components. Failure to run the engine at low idle for 5 minutes after operation can cause damage to the engine.

(1) Stop the Roller, press the parking brake switch (8) down, and run the engine at low idle for 5 minutes.

NOTE

Ensure that vibratory system is turned OFF before turning engine OFF.

(2) Turn the engine start switch lever (5) back to the OFF position.

WARNING

Ensure that all personnel are clear of the roller before lowering leveling blade.

NOTE

You will feel the detente in the valve handle when you reach the “float” position.

(3) Move the leveling blade control lever (7) forward to “float” position and lower blade to the ground.

3-4. OPERATE ENGINE (CONT)

e. ***Turn OFF Battery Disconnect Switch.***

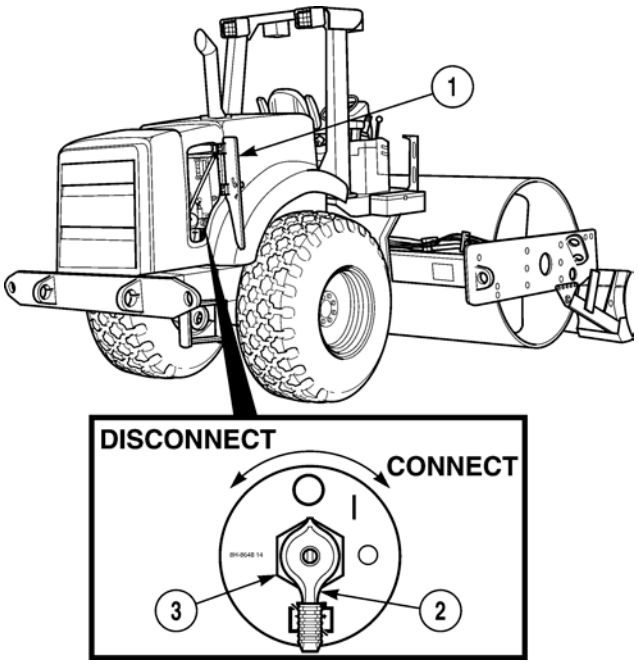
NOTE

Battery disconnect switch should be turned OFF at the end of each work day.

(1) Open access door (1).

(2) Turn lever (2) until battery disconnect switch (3) is in disconnect position.

(3) Close access door (1).



3-5. DECALS AND INSTRUCTION PLATES

Figure 3-1 shows the locations of the Roller's decals and instruction plates.

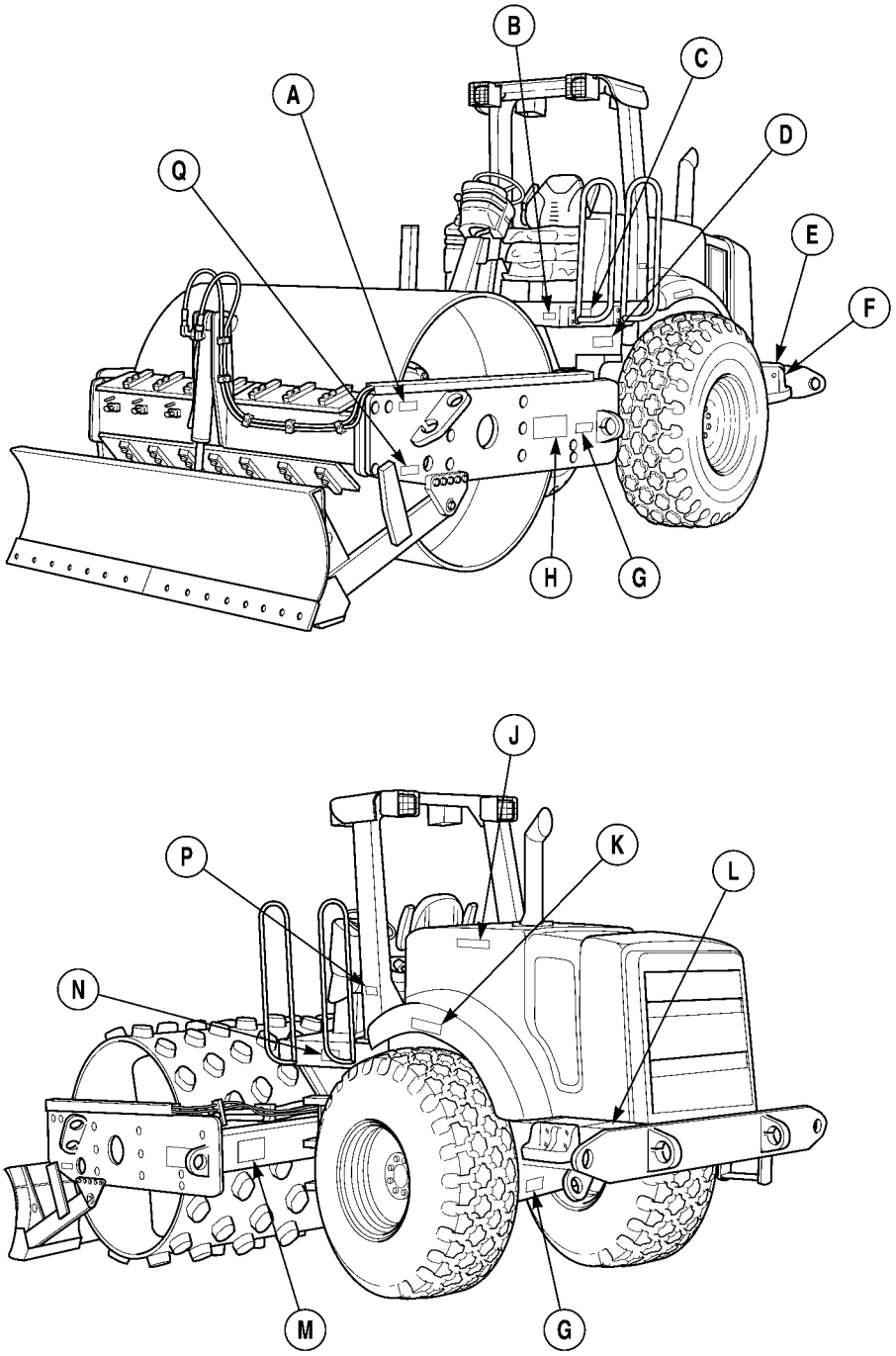


Figure 3-1. Decals and Instruction Plates (Sheet 1 of 7)

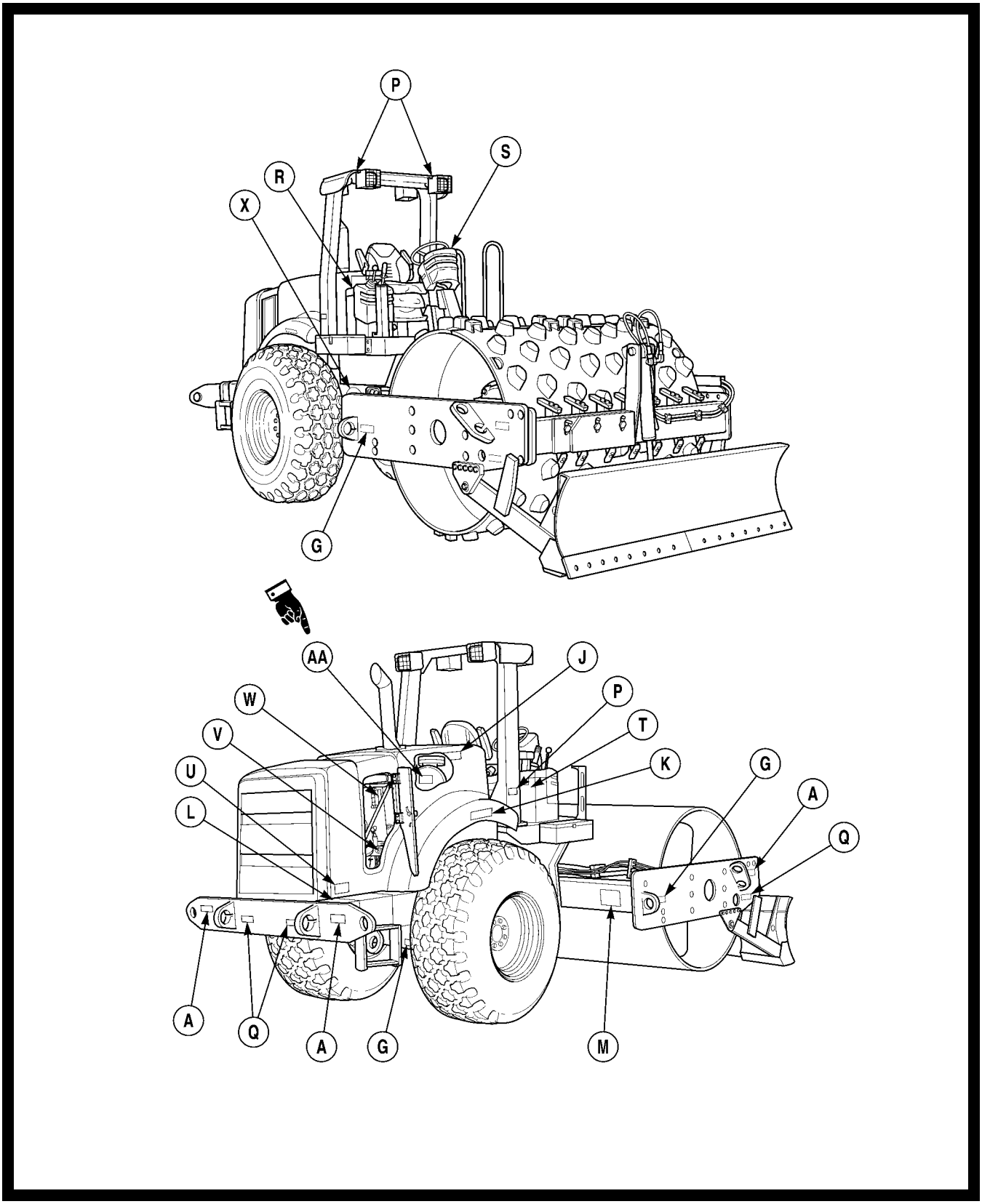


Figure 3-1. Decals and Instruction Plates (Sheet 2 of 7)

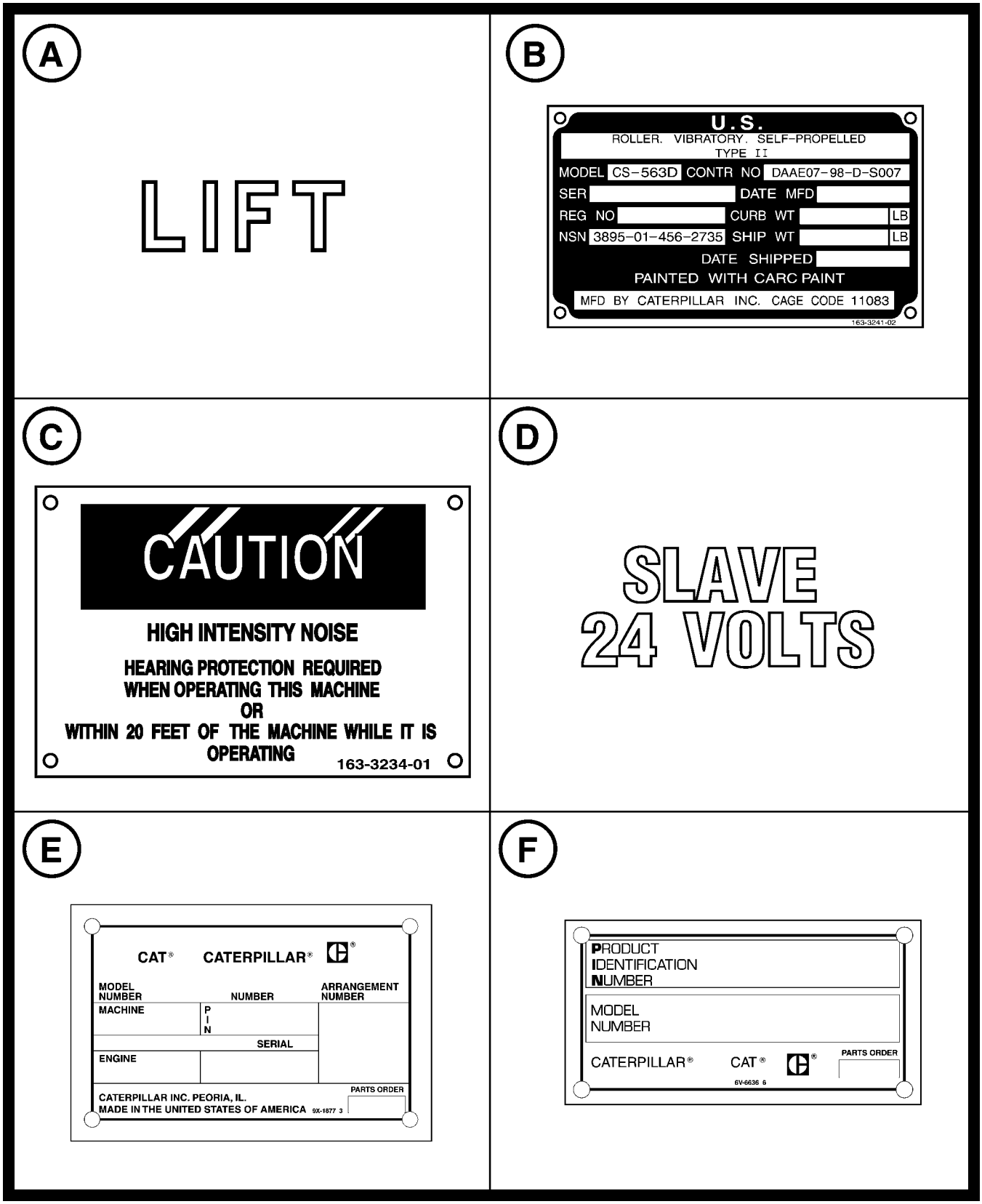


Figure 3-1. Decals and Instruction Plates (Sheet 3 of 7)

G

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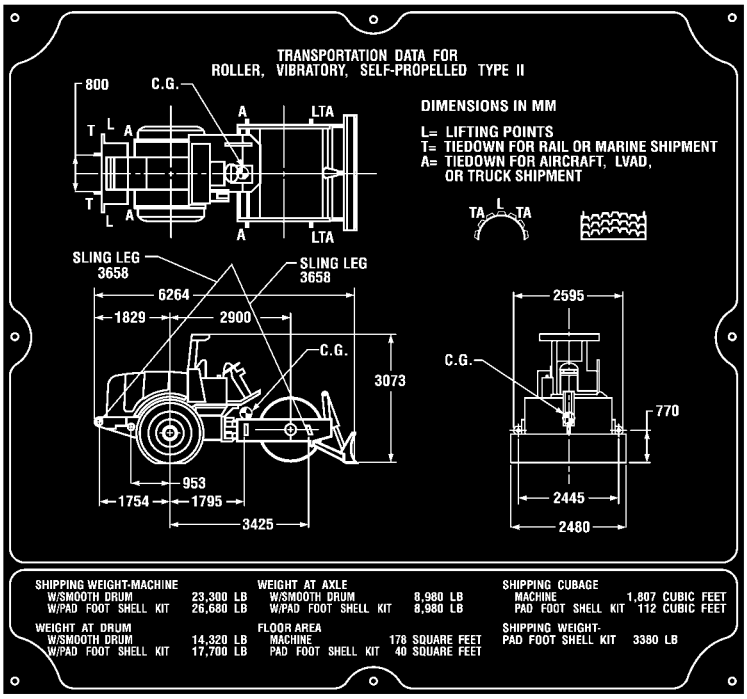

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TP-16PSI

L

WARNING

IMPROPER JUMPER CABLE CONNECTIONS CAN CAUSE EXPLOSION RESULTING IN PERSONAL INJURY.

BATTERIES MAY BE LOCATED IN SEPARATE COMPARTMENTS. WHEN USING JUMPER CABLES, ALWAYS CONNECT POSITIVE (+) CABLE TO POSITIVE (+) TERMINAL OF BATTERY CONNECTED TO STARTER SOLENOID AND NEGATIVE (-) CABLE FROM EXTERNAL SOURCE TO STARTER NEGATIVE (-) TERMINAL (IF MACHINE NOT EQUIPPED WITH STARTER NEGATIVE TERMINAL, CONNECT TO ENGINE BLOCK.) FOLLOW PROCEDURE IN THE OPERATION MANUAL.

6V-4611 4

M

WARNING

NO CLEARANCE FOR PERSON IN THIS AREA WHEN MACHINE TURNS. SEVERE INJURY OR DEATH FROM CRUSHING COULD OCCUR.

CONNECT STEERING FRAME LOCK BETWEEN FRONT AND REAR FRAMES BEFORE LIFTING, TRANSPORTING , OR SERVICING MACHINE IN ARTICULATION AREA.

DISCONNECT LOCK AND SECURE BEFORE RESUMING OPERATION.

5P-7244 4

Figure 3-1. Decals and Instruction Plates (Sheet 4 of 7)

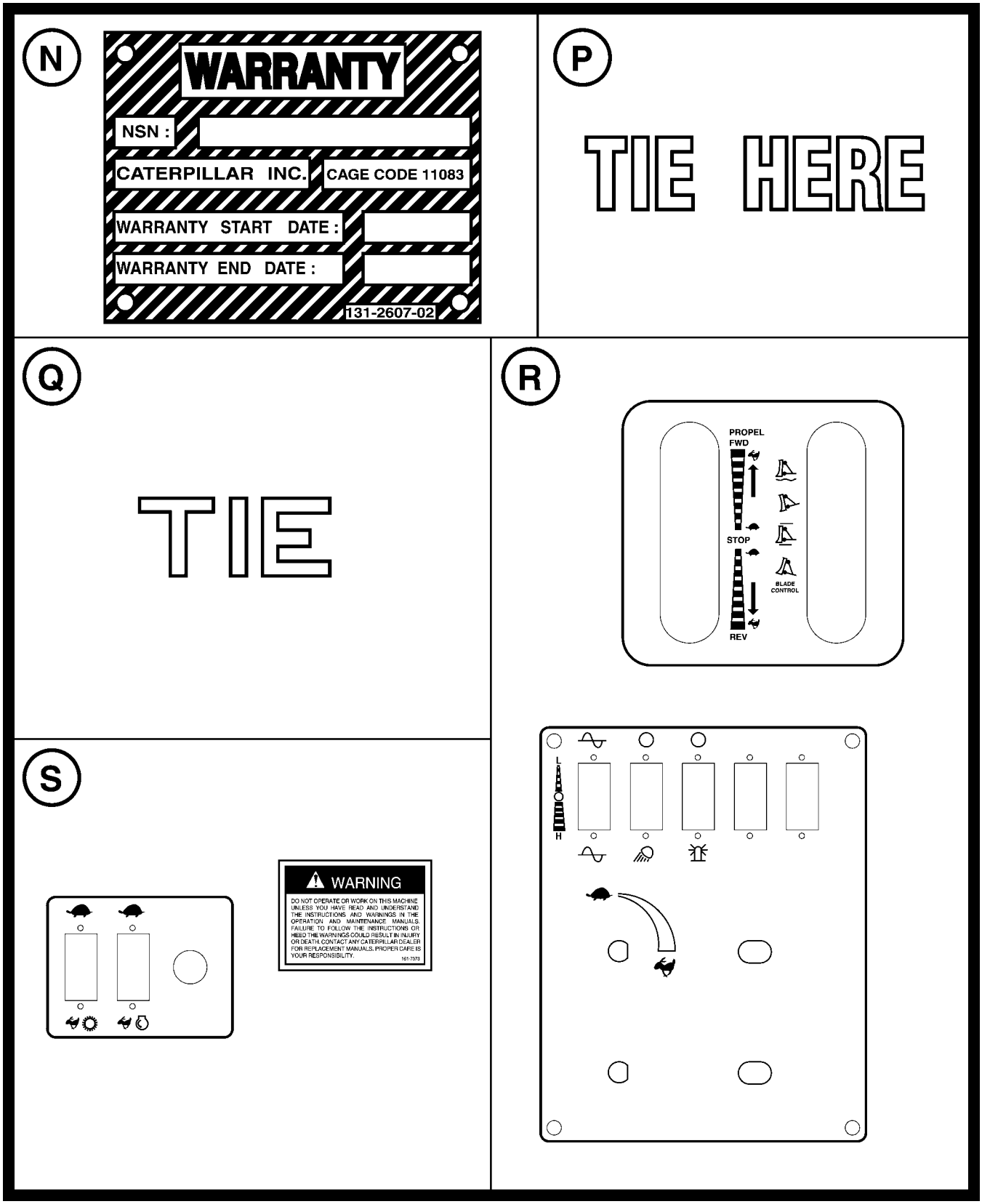


Figure 3-1. Decals and Instruction Plates (Sheet 5 of 7)

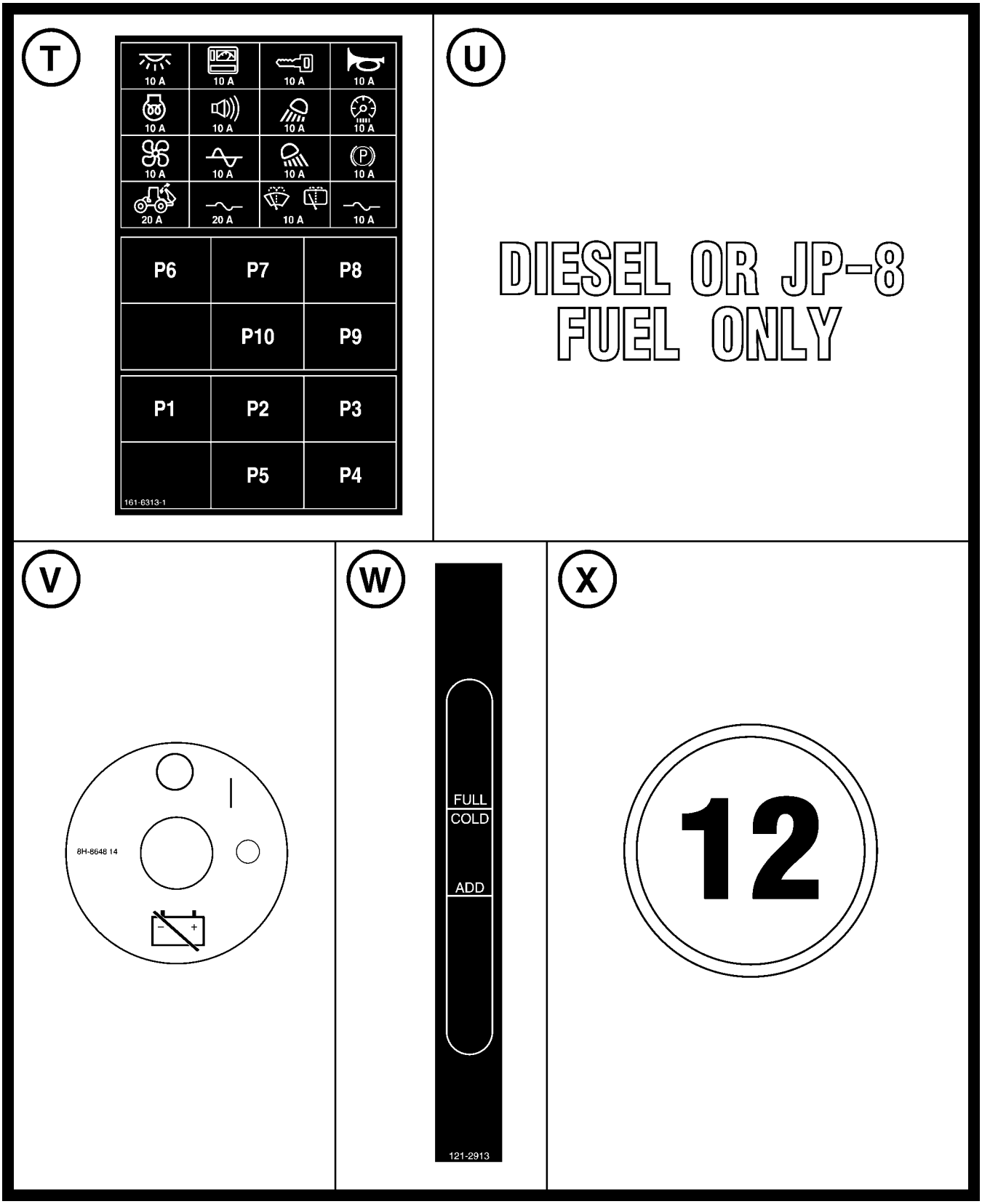


Figure 3-1. Decals and Instruction Plates (Sheet 6 of 7)

AA

WARNING

IF NBC EXPOSURE IS SUSPECTED ALL AIR FILTER MEDIA WILL BE HANDLED BY PERSONNEL WEARING FULL NBC PROTECTIVE EQUIPMENT. SEE OPERATOR/MAINTENANCE MANUAL.

7690-01-114-3702

Figure 3-1. Decals and Instruction Plates (Sheet 7 of 7)

3-6. OPERATE BACK-UP ALARM MANUAL OVERRIDE SWITCH

WARNING

Back-up alarm must be active at all times other than low-level noise periods as directed by your commanding officer. Back-up alarm must be turned back on immediately after low-level noise restriction is lifted by your commanding officer.

(1) Raise hood (1), (Chapter 4).

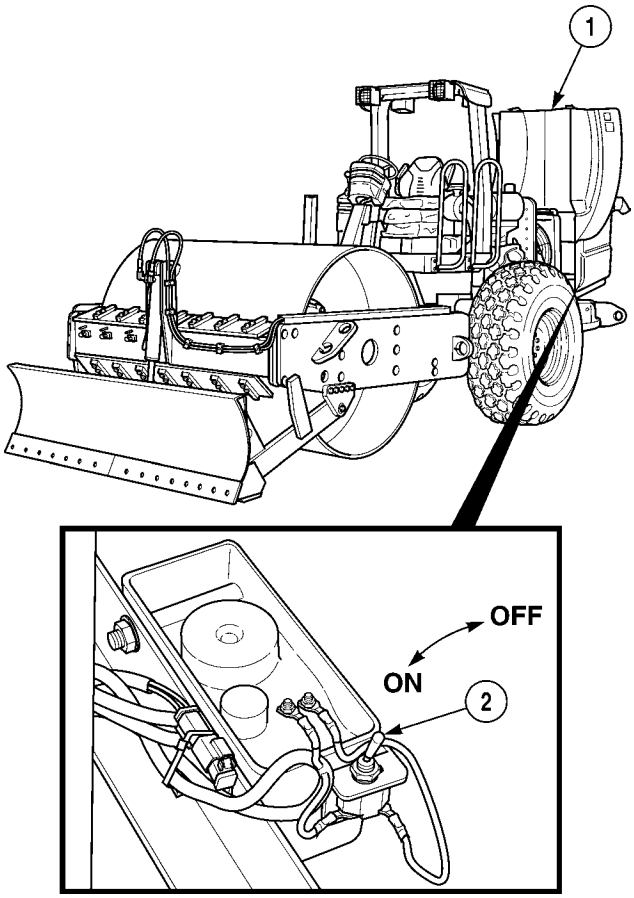
NOTE

Perform Step (2) or Step (3) as required for mission.

(2) Position back-up alarm manual override switch (2) in the down position to override the backup alarm.

(3) Position back-up alarm manual override switch (2) in the down position to override the back-up alarm.

(4) Lower hood (1), (Chapter 4).



Section II. OPERATION UNDER UNUSUAL CONDITIONS

3-7. UNUSUAL ENVIRONMENT AND WEATHER

a. ***Operation in Extreme Heat.***

CAUTION

- Operating during periods of extreme heat (ambient temperatures above 100°F [38°C]) can cause the Roller engine and hydraulic systems to overheat. Engine temperatures above 230°F (110°C) and hydraulic oil temperatures above 250°F (121°C) can cause damage to engine and hydraulic system components. Check engine coolant temperature warning light and hydraulic oil temperature warning light often during periods of extreme heat to prevent damage to engine and hydraulic components.
- Gaskets and seals are more likely to leak when engine and hydraulic system operating temperatures are high. Check engine and hydraulic oil levels more often during periods of extreme heat to prevent damage to engine and hydraulic system components. Check for leaks around gaskets, seals, and fittings more often.

(1) Check engine oil level and monitor engine coolant temperature warning light.

(2) Check hydraulic oil level and monitor hydraulic oil temperature warning light.

(3) If conditions described in Steps (1) and (2) exist, stop Roller and allow engine to run at idle for a few minutes to cool down. When warning lights have gone out, resume operation as necessary.

(4) Perform operator PMCS more often than normal (pages 2-7 through 2-26).

(5) Do not fill fuel tank completely. Extreme heat will cause fuel to expand and overflow.

(6) Ensure that water is free as possible of mineral deposits before adding coolant mixture to radiator. Local desert water sources have high mineral deposits that will clog radiator.

(7) Ensure that water/antifreeze mixture is 50/50. This mixture raises the coolant boiling point to help prevent overheating.

(8) High temperatures can damage hoses. Check radiator, fuel, and lubricant hoses for leaks around fittings and notify Unit Maintenance to replace all damaged hoses

b. ***Operation In Extreme Dust.*** The Roller normally operates in dusty conditions and PMCS instructions are designed to handle these conditions. However, in deserts, dust conditions are more extreme and certain checks and services shall be made more often than normal.

(1) Check air restriction indicator more often to ensure air cleaner is not becoming clogged.

(2) Check and drain fuel/water separator.

(3) Closely monitor all gauges and warning lights to ensure Roller is not affected by dusty conditions.

(4) Park Roller in sheltered area out of wind. If a sheltered area is not available, park Roller facing into wind to prevent dust from blowing into radiator and causing damage.

CAUTION

Blowing dust and sand can scratch glass surfaces. When the Roller is not being operated, glass surfaces must be covered for protection.

(5) Cover instrument panel, service hour meter, air restriction indicator, hydraulic oil level indicator, radiator sight guage, fuel tank fill cap, hydraulic oil tank fill cap, and worklights when Roller is parked for extended periods of time in extremely dusty conditions.

(6) Cover exhaust outlet to prevent dust from blowing into exhaust system causing damage to turbocharger.

(7) Cover open space in fuel tank fill hole when adding diesel fuel or JP-8 to fuel tank.

c. ***Operation in Extreme Cold.*** By nature of its purpose, the Roller will not usually be operated in extremely cold temperatures. When the Roller will be required to operate during temperatures below 32°F (0°C), the following instructions shall be observed:

(1) *Start-Up and Operation.*

(a) Remove all ice and snow from Roller as soon as possible.

(b) Prepare Roller for operation in severe cold temperatures according to FM 9-207, FM 31-70, FM 31-71, and FM 21-305 as necessary.

(c) Drain water from fuel/water separator. Dispose of drained fluids in accordance with local regulations.

(d) Start engine and allow engine to warm up for at least 15 minutes to reach normal operating temperature before beginning any operation.

1 Push parking brake knob (1) down to ensure parking brake is engaged.

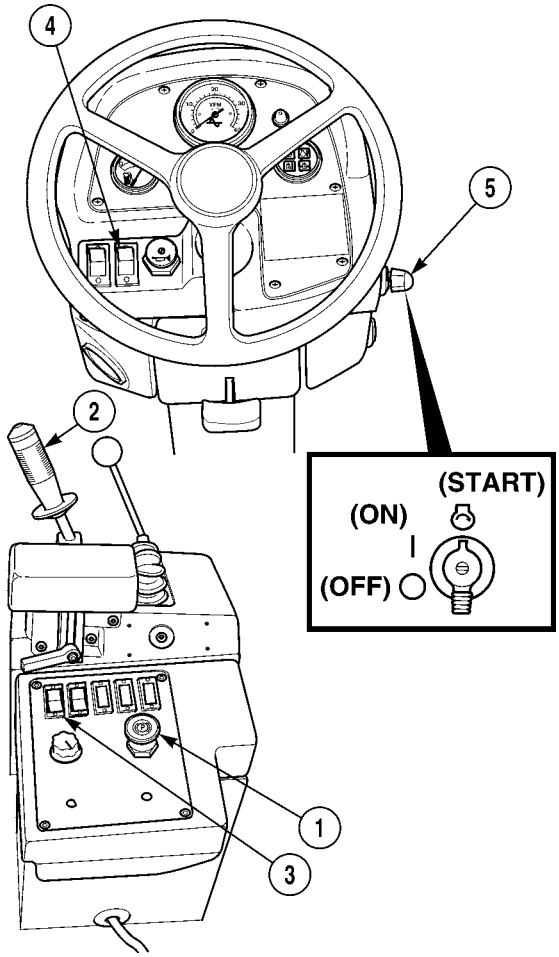
NOTE

Engine will not start unless propel control lever is in center position.

2 Move propel control lever (2) to the center position to ensure that propulsion system is not in forward or reverse.

3 Rock vibratory control switch (3) to the OFF (center) position.

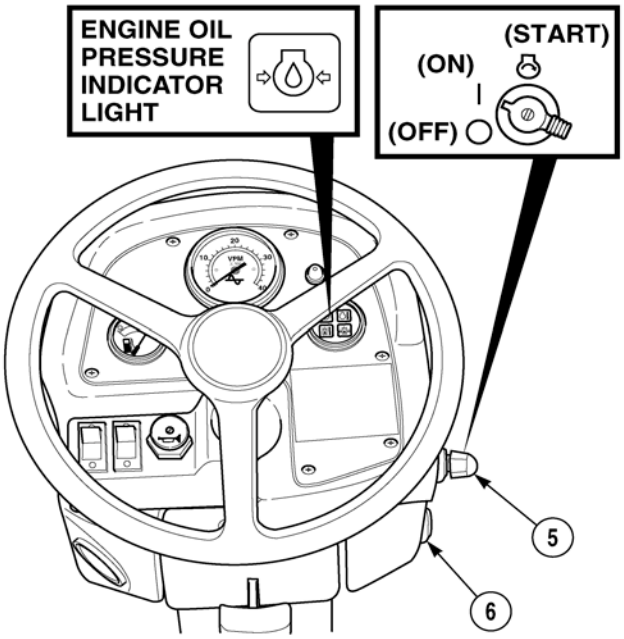
4 Rock throttle control switch (4) backward to the low RPM position.



3-7. UNUSUAL ENVIRONMENT AND WEATHER (CONT)

CAUTION

- Do not crank the engine for more than 30 seconds. Engine start switch needs to be returned to the OFF position before attempting to crank engine again. Allow the starter to cool for 2 minutes before cranking again.
- Keep engine speed low until engine oil pressure indicator light and horn go off. Stop engine if indicator light does not go off within 10 seconds. Notify Unit Level Maintenance to perform troubleshooting before restarting engine.
- Failure to keep engine speed low until engine oil pressure indicator light and horn go off can result in turbocharger damage.



5 Turn engine start switch lever (5) to start (full forward) position to crank the engine. Release the lever when the engine starts.

CAUTION

- Use ether for cold starting purposes only.
- Inject ether only while cranking engine or until engine is running smoothly during initial start-up.
- Use ether sparingly. Excessive ether injection without cranking can cause piston and ring damage.
- Wait approximately 2 seconds between ether injections.
- After cranking engine for 30 seconds, allow starter to cool for minimum of 2 minutes before cranking again.
- Turbocharger damage may result if the engine speed is not kept low until the engine oil pressure light goes out.

6 While engine is cranking, press and release the ether starting aid switch (6).

7 Press and release the ether starting aid switch (6) every 2 seconds until the engine starts.

WARNING

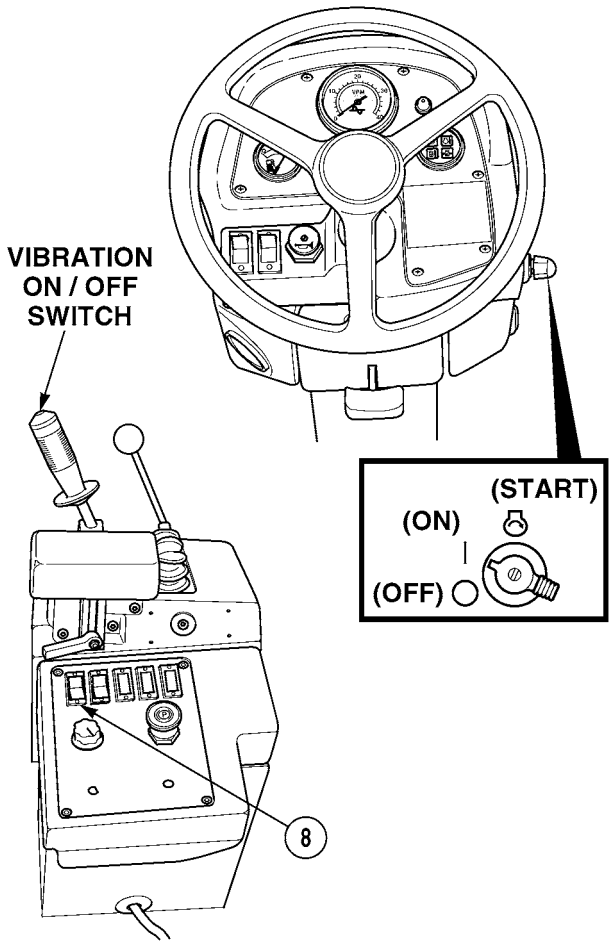
Do not turn vibratory system on while Roller is standing still on a very solid surface. A loss of steering can be experienced which could result in injury to personnel.

NOTE

The vibration on/off switch turns the vibratory system on by pressing once or off by pressing again. There is no way to tell if the vibratory system is on or off when the engine is not running and on/off switch (8) is in high or low position.

8 Ensure that the vibration control switch (8) is turned off (center position).

(e) Watch fuel and warning lights closely. Stop Roller, turn engine off, and notify Unit Maintenance when any unusual readings occur.



(2) *Engine Warm-up.*

(a) Allow a cold engine to warm up at low idle for at least 15 minutes. Complete warm up requires approximately 30 minutes in temperatures below 32°F (0°C). In temperatures below 0°F (-18°C), or if hydraulic functions are sluggish, more time may be required.

(b) Observe warning and indicator lights frequently during warm-up.

(c) If engine begins to miss during warm-up period, shut engine off, wait 2 minutes, and restart.

(d) Cycle all steering and propulsion controls several times to allow warm hydraulic oil to circulate through all cylinders and lines.

(3) *Shut Down.*

(a) Park Roller in sheltered area out of wind. If a sheltered area is not available, park Roller so it faces into wind to prevent wind from blowing into radiator and causing damage.

(b) Drain fuel/water separator before filling tank to prevent any water in fuel from freezing. This will also prevent clogging of fuel filter. Dispose of drained fluids in accordance with local regulations.

3-8. FORDING

a. ***Introduction.*** This paragraph provides instructions for driving the Roller through water and across streams. Although the Roller is not intended to be driven through water, there may be situations where fording is required.

b. ***Fording Instructions.***

WARNING

Water depth greater than 10 in. (254 mm) can cause personal injury and damage to the Roller. The Roller should not enter water deeper than 10 in. (254 mm).

(1) Ensure that depth of water at fording site is not more than 10 in. (254 mm).

(2) Ensure that bottom of fording site is firm enough that 10 in. (254 mm) maximum fording depth will not be exceeded and the Roller will not become stuck.

(3) Stop Roller at edge of water.

(4) Ensure that engine has been operating properly before entering water.

(5) Slowly drive Roller into water.

(6) Drive Roller slowly through water.

(7) If engine stops, immediately attempt to restart engine.

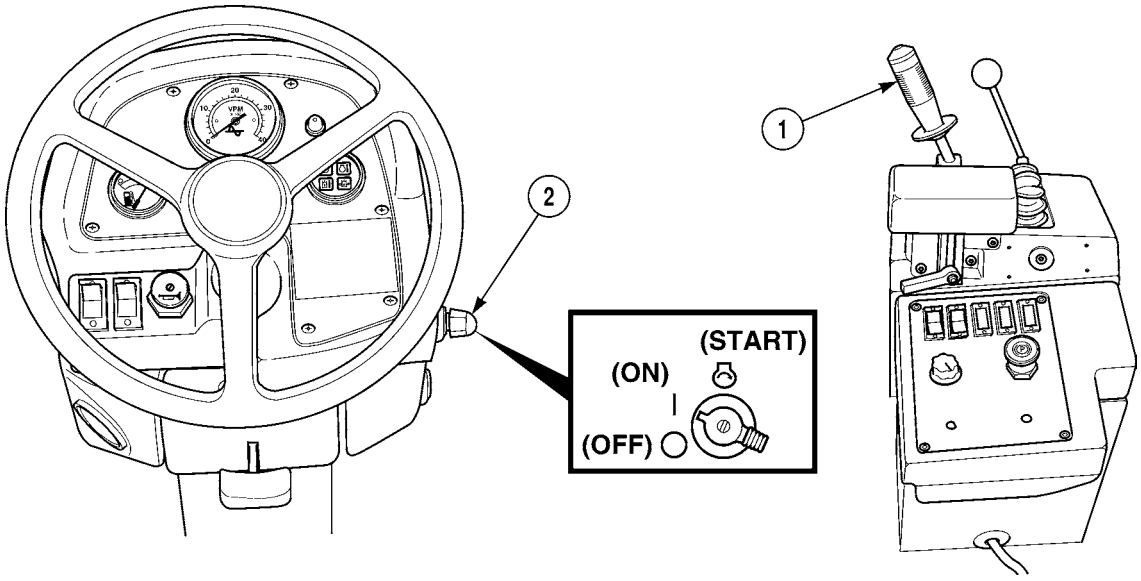
(8) If engine will not start, dismount Roller, and contact Unit Maintenance to manually release brake and tow Roller from water.

(9) If Roller enters water deeper than 10 in. (254 mm), do the following:

(a) Stop the Roller.

(b) Slowly back Roller out of water.

3-9. EMERGENCY PROCEDURES



a. ***Emergency Shutdown.***

(1) Stop Roller by moving propel control lever (1) to the center (neutral) position.

(2) Turn engine start switch lever (2) fully back. This will shut down power to all systems at once.

(3) In case of electrical failure, see "Stopping the Engine if an Electrical Malfunction Occurs" (page 4-42).

b. ***Manual Release of Parking Brakes.*** The brakes of the Roller are automatically engaged when the propel control lever is in the neutral position or the engine is not running. Contact Unit Maintenance to manually release brakes. Information about manual release of parking brakes is provided in Appendix E.

c. ***Tilt Hood.*** In the case of electrical malfunction, the hood may be tilted manually (Chapter 4).

3-10. SLAVE START ROLLER

Slave Start Roller.

CAUTION

Do not allow vehicles to touch during slave starting. Damage to vehicles' electrical systems may result.

NOTE

Slave starting is a two person task.

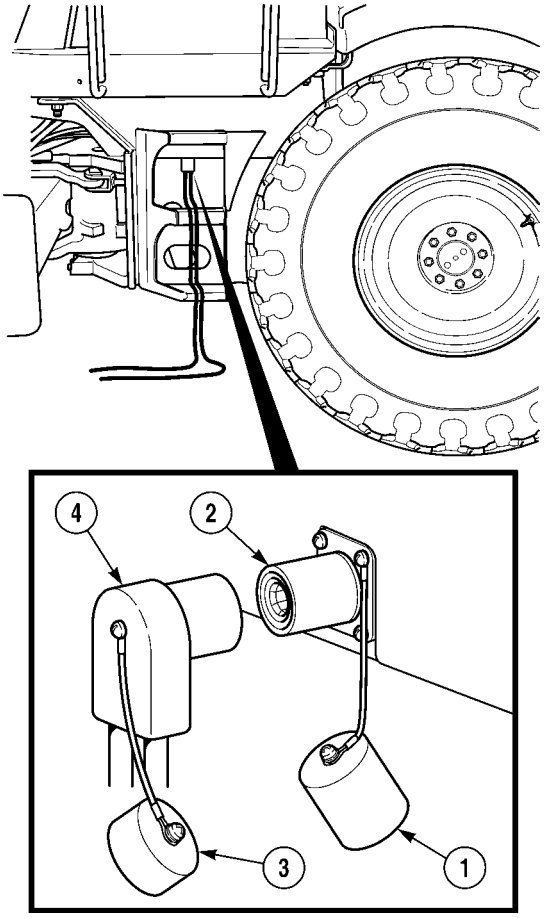
(1) Start other vehicle which has a good charging system and battery (refer to other vehicle's Operator's Manual).

(2) Move other vehicle into position beside Roller so NATO slave receptacles on other vehicle and Roller are side by side.

(3) Shut OFF other vehicle (refer to other vehicle's Operator's Manual).

3-10. SLAVE START ROLLER (CONT)

(4) Remove caps (1) from NATO receptacles (2) on other vehicle and Roller.



WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

Ensure connectors and receptacles are free of dirt, sand, and debris.

(5) If equipped, remove caps (3) from NATO slave cable connector (4).

(6) Plug NATO slave cable connector (4) into NATO receptacle on other vehicle and Roller.

(7) Start other vehicle (refer to other vehicle's Operator's Manual).

(8) Operate other vehicle at high idle (refer to other vehicle's Operator's Manual) while attempting to start Roller engine. Ensure battery disconnect switch is turned on (page 3-5).

(9) When Roller engine is running smoothly, remove NATO slave cable connectors (4) from NATO receptacles (2) of other vehicle and Roller.

(10) If equipped, install caps (3) on NATO slave cable connectors (4).

(11) Install caps (1) on NATO receptacles (2) of other vehicle and Roller.

(12) Move and park other vehicle (refer to other vehicle's Operator's Manual).

(13) Shut off other vehicle (refer to other vehicle's Operator's Manual).

3-11. NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES

The Decontamination Kit bracket is mounted on the rear of the Roller. Refer to TM 3-4230-214-12&P for operation of Decontamination Kit.

CHAPTER 4

Operation & Maintenance Manual

CS-563D Vibratory Compactor

1SZ1-UP

Important Safety Information

Most accidents involving product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or other persons.

The hazards are identified by the “Safety Alert Symbol” and followed by a “Signal Word” such as “DANGER”, “WARNING” or “CAUTION”. The Safety Alert “WARNING” label is shown below.

The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

Operations that may cause product damage are identified by “NOTICE” labels on the product and in this publication.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique not specifically recommended by Caterpillar is used, you must satisfy yourself that it is safe for you and others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures you choose.

The information, specifications, and illustrations in this publication are on the basis of information available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service given to the product. Obtain the complete and most current information before you start any job. Caterpillar dealers have the most current information available. For a list of the most current publication form numbers available, see the Service Manual Contents Microfiche, REG1139F.

Table of Contents

Information Section

Safety Section

Product Information Section

Operation Section

Foreword

Literature Information

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety information, operation instructions, transportation information, lubrication information and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please consult your Caterpillar dealer for the latest available information.

Safety

The Safety Section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance and repair on this machine.

Operation

The operation information is a reference for the new operator and a refresher for the experienced one. This section includes a discussion of gauges, switches, machine controls, attachment controls, transportation and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating and stopping the machine.

Operating techniques outlined in the operation and maintenance manual are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

California Proposition 65

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.

Safety Section

Safety Signs and Labels

SMCS Code: 7000; 7405

There are several specific safety signs on your machine. The exact location of the safety signs and the description of the hazard are reviewed in this section. Please take the time in order to become familiar with the safety signs.

Make sure that you can read all of the safety signs. Clean the safety signs or replace the safety signs if you cannot read the words on the safety signs. Clean the safety signs or replace the safety signs if you cannot view the pictures on the safety signs.

If a safety sign is damaged or missing, the safety sign must be replaced. If a safety sign cannot be read, the safety sign must be replaced. If a safety sign is located on a part that has been replaced, a new safety sign must be placed on the new part. Consult your Caterpillar dealer for new safety signs.

⚠ WARNING

Do not operate this machine unless you have read and understand the instructions and warnings in the Operation and Maintenance Manual.

Failure to follow the instructions or heed the warnings could result in injury or death.

Contact any Caterpillar dealer for replacement manuals. Proper care is your responsibility.

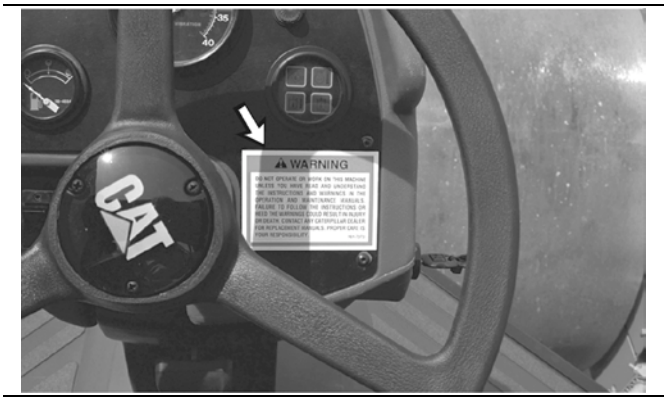


Illustration 1

This safety sign is located on the operator console.

⚠ WARNING

No clearance for a man in this area when the machine turns. Severe Injury or death from crushing could occur.

Install the steering frame lock pin into the locked position before lifting the machine, transporting the machine on another vehicle, or performing service near the center of the machine.

Disengage the steering lock pin from articulation joint and store in retainer before resuming operation or the machine will not steer.

Illustration 2

This safety sign is located in the steer pivot on both sides of the yoke.

⚠ WARNING

Improper jump start cable connections can cause an explosion resulting in personal injury.

Batteries may be located in separate compartments. When using jump start cables, always connect the positive (+) to the positive (+) terminal of the battery that is connected to the starter solenoid and the negative (–) cable from the source to the negative (–) terminal of the starter (If the machine is not equipped with a starter negative terminal, connect the negative (–) cable to the engine block). Follow the procedure in the Operation and Maintenance Manual.

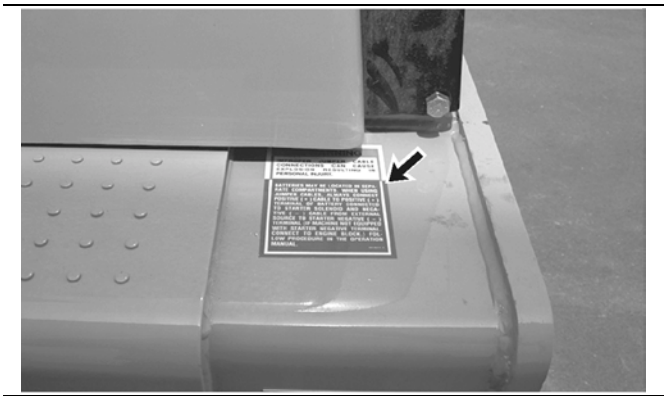


Illustration 3

This safety sign is located at the rear of the machine on both sides of the machine. The safety signs are located near the battery compartments.

⚠ WARNING

The protection offered by this ROPS will be impaired if the ROPS has been subjected to any modification, structural damage, or has been involved in an overturn accident. This ROPS must be replaced after a roll-over. Seat belts must be worn while operating the vehicle.

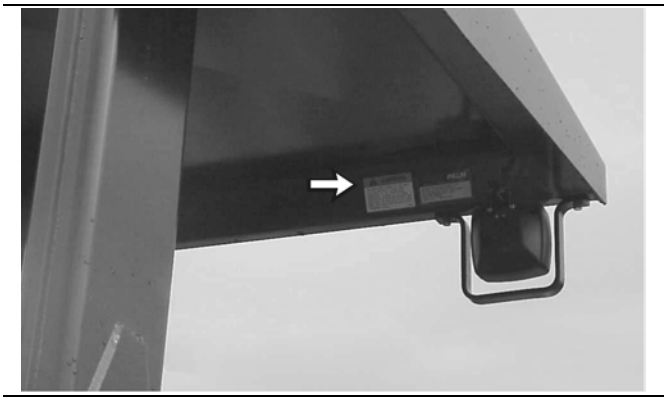


Illustration 4

This safety sign is located on the ROPS.

General Hazard Information

SMCS Code: 7000

Attach a Special Instruction, SEHS7332, "Do Not Operate" warning tag or a similar warning tag to the start switch or to the controls before you service the machine or before you repair the machine. These warning tags are available from your Caterpillar dealer.

Know the width of your equipment in order to maintain proper clearance when you operate the machine near fences or near boundary obstacles.

Wear a hard hat, protective glasses, and other protective equipment, as required.

Do not wear loose clothing or jewelry that can snag on controls or on other parts of the machine.

Make sure that all protective guards, and all covers are secured in place on the machine.

Keep the machine free from foreign material. Remove debris, oil, tools, and other items from the deck, from walkways, and from steps.

Secure lunch boxes, tools, and other loose items that are not a part of the machine.

Know the appropriate work site hand signals and the personnel that are authorized to give the hand signals. Accept hand signals from one person only.

Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.

Discard any drained fluids and discard any filter elements according to local regulations.

Clean up all spills immediately.

Obey all local regulations for the disposal of liquids.

Use all cleaning solutions with care. Report all necessary repairs.

Do not allow unauthorized personnel on the machine.

Unless you are instructed otherwise, perform the maintenance under the following conditions:

- The machine is parked on level ground.
- The attachment controls are in the LOWER position.
- The transmission control is in the NEUTRAL position.
- The parking brake is engaged.
- The engine is stopped.
- The engine start switch is turned off.
- The battery disconnect switch is in the OFF position.

Pressure Air

Pressure air can cause personal injury. When pressure air is used for cleaning, wear a protective face shield, protective clothing and protective shoes.

The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi).

Fluid Penetration

Always use a board or cardboard when you check for a leak. Leaking fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Asbestos Information

Caterpillar equipment and replacement parts that are shipped from Caterpillar are asbestos free. Caterpillar recommends the use of only genuine Caterpillar replacement parts. Use the following guidelines when you handle any replacement parts that contain asbestos or when you handle asbestos debris.

Use caution. Avoid inhaling dust that might be generated when you handle components that contain asbestos fibers. Inhaling this dust can be hazardous to your health. The components that may contain asbestos fibers are brake pads, brake bands, lining material, clutch plates, and some gaskets. The asbestos that is used in these components is usually encased in a resin or the asbestos is sealed. Unless the airborne dust that contains asbestos is generated, the normal handling of asbestos is not hazardous.

If dust, which may contain asbestos, is present, there are several guidelines that should be followed.

Never use compressed air for cleaning. Avoid brushing materials that contain asbestos or grinding materials that contain asbestos. Use a wet method to clean up asbestos debris. A vacuum that is equipped with the high efficiency particulate air filter (HEPA filter) can also be used.

Use exhaust ventilation on permanent machining jobs.

Wear an approved respirator if there is no other way to control the dust.

Comply with applicable rules and regulations for the work place. In the USA, use Occupational Safety and Health Administration requirements. These OSHA requirements can be found in “29 CFR 1910.1001”.

Obey environmental regulations for disposal of asbestos.

Stay away from areas that might have asbestos particles in the air.

Crushing Prevention and Cutting Prevention

SMCS Code: 7000

Illustration 5

Install the steering frame lock link between the front frame and the rear frame before you lift the machine and before you transport the machine on another vehicle. Also install the steering frame lock link before you perform maintenance near the center of the machine.

Support the blade properly when you perform work beneath the blade. Do not depend on the hydraulic cylinders in order to support the equipment. An attachment can fall if a control lever is moved or if a hydraulic line breaks.

Unless you are instructed otherwise, never attempt adjustments while the machine is moving or while the engine is running.

Whenever there are attachment control linkages, the clearance in the linkage area will change with movement of the attachment.

Stay clear of all rotating parts and all moving parts.

Keep objects away from moving fan blades. The fan blades will throw objects and the fan blades can cut objects.

Do not use a wire cable that is kinked or frayed. Wear gloves when you handle wire cable.

When you strike a retainer pin, the retainer pin might fly out. The loose retainer pin can injure personnel. Make sure that there are no people in the area when you strike a retainer pin. To avoid injury to your eyes, wear protective glasses when you strike a retainer pin.

Chips or other debris may fly off objects when you strike the objects. Make sure that no one will be injured by flying debris before you strike any object.

Rollover Protective Structure (ROPS) or Falling Object Protective Structure (FOPS)

These structures are secured to the machine above the operator compartment and around the operator compartment.

In order to avoid the possible weakening of the ROPS/FOPS structure, consult your Caterpillar dealer before you alter the structures. Do not alter the structure by welding on the structure. Do not alter the structure by cutting the structure. Do not alter the structure by adding weight to the structure. Do not alter the structure by drilling holes in the structure.

Any alteration that is not specifically authorized by Caterpillar invalidates the Caterpillar certification for the ROPS or for the FOPS. The protection that is offered by the ROPS will be impaired if the ROPS has structural damage. Damage to the structure can be caused by an overturn or by falling objects.

Do not mount items (fire extinguishers, first aid kits, work lights, etc.) by welding any brackets to the ROPS or by drilling holes in the ROPS. See your Caterpillar dealer for mounting guidelines.

Burn Prevention

SMCS Code: 7000

Coolant

When the engine is at operating temperature, the engine coolant is hot and the engine coolant is under pressure. The radiator and all lines to the heaters or to the engine contain hot coolant or steam. Any contact with hot coolant or with steam can cause severe burns.

Only check the coolant level after the engine has been stopped. Make sure that the radiator cap is cool before you remove the radiator cap with your bare hand. Remove the radiator cap slowly in order to relieve pressure.

Cooling system conditioner contains alkali. Alkali can cause personal injury. Do not allow alkali to contact the skin, the eyes, or the mouth.

Allow cooling system components to cool before you drain the cooling system.

Oils

Hot oil and components can cause personal injury. Do not allow hot oil or components to contact the skin.

When the hydraulic system is at operating temperature, the hydraulic oil is hot and the hydraulic oil is under pressure.

Remove the hydraulic tank filler cap only after the engine has been stopped. Make sure that the hydraulic tank filler cap is cool before you remove the hydraulic tank filler cap with your bare hand. Remove the hydraulic tank filler cap slowly in order to relieve pressure.

Relieve all pressure in the air system, in the oil system, in the fuel system, or in the cooling system before you disconnect any lines, fittings or related items.

Batteries

Batteries give off flammable fumes which can explode.

Do not smoke while you are observing the battery electrolyte levels.

Electrolyte is an acid. Electrolyte can cause personal injury. Do not allow electrolyte to contact the skin or the eyes.

Always wear protective glasses when you work on batteries.

Fire Prevention and Explosion Prevention

SMCS Code: 7000

All fuels, most lubricants, and some coolant mixtures are flammable.

Fuel that is leaking, fuel that is spilled onto hot surfaces, and fuel that is spilled onto electrical components can cause a fire.

Do not smoke while you refuel or while you are in a refueling area.

Do not smoke in battery charging areas or in areas that are used to store flammable material.

Batteries can be installed in separate compartments. When you use jump start cables, always connect the positive "(+)" cable to the positive "(+)" terminal of the battery that is connected to the starter solenoid. Connect the negative "(–)" cable from the external source to the negative "(–)" terminal of the starter.

NOTE: If the starter is not equipped with a negative "(–)" terminal, connect the cable to the engine block.

See the Operation Section of this manual for specific starting instructions.

Clean all electrical connections and tighten all electrical connections. Check the electrical wires daily for loose wires or for frayed wires. Tighten all loose wires before you operate the machine. Repair all frayed wires before you operate the machine.

Store all fuels and lubricants in properly marked containers and away from all unauthorized persons.

Store all oily rags or other flammable material in a protective container.

Do not weld pipes that contain flammable fluids or tubes that contain flammable fluids. Do not flame cut pipes that contain flammable fluids or tubes that contain flammable fluids. Clean the pipes or tubes thoroughly with nonflammable solvent before you weld the pipes or tubes or you flame cut the pipes or tubes.

Remove all flammable materials (fuel, oil, debris, etc.) before the flammable materials accumulate on the machine.

Do not expose the machine to flames or to brush that is burning.

Shields protect hot exhaust components from oil spray or fuel spray. Make sure that the shields are installed correctly in case a line, a tube, or a seal fails.

Fire Extinguisher

Make sure that a fire extinguisher is on the machine. Make sure that you are familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher. Obey the recommendations on the instruction plate.

Ether

Do not spray ether into an engine when you use thermal starting aid to start the engine.

Ether is poisonous and flammable. Inhaling ether vapors can cause personal injury. Do not allow ether to contact your skin repeatedly. Use ether only in well-ventilated areas. Do not smoke while you replace ether cylinders. Use ether carefully to avoid fires. Do not store ether cylinders in living areas or in the operator's compartment.

Do not store ether cylinders in direct sunlight or at temperatures above 49°C (120°F). Discard ether cylinders in an approved place. Do not puncture ether cylinders. Do not burn ether cylinders. Keep ether cylinders out of the reach of unauthorized personnel.

Lines, Tubes and Hoses

Do not bend high pressure lines. Do not strike high pressure lines. Do not install bent lines, bent tubes, or bent hoses. Do not install damaged lines, damaged tubes, or damaged hoses.

Repair loose lines, loose tubes, and loose hoses. Repair damaged lines, damaged tubes, and damaged hoses. Leaks can cause fires. See your Caterpillar dealer for repair or for replacement parts.

Check lines, tubes and hoses carefully. Do not use your bare hand to check for leaks. Use a board or cardboard to check for leaks. See Operation and Maintenance Manual, “Fluid Penetration”, for more details. Tighten all connections to the recommended torque.

Replace the parts if any of the following conditions are present:

- The end fittings are damaged or leaking.
- The outer covering is chafed or cut.
- The wire shield is exposed.
- The outer covering is ballooning locally.
- The flexible part of the hose is kinked or crushed.
- The armoring is embedded in the outer cover.
- The end fittings are displaced.

Make sure that all clamps, guards, and heat shields are installed correctly. During machine operation, this will help to prevent vibration, the rubbing between parts, and excessive heat.

Fire Extinguisher Location

SMCS Code: 7000; 7419

The fire extinguisher should be mounted in a location on the platform. This is the recommended location. Do not weld the ROPS in order to install the fire extinguisher. Also, do not drill holes in the ROPS in order to mount the fire extinguisher on the ROPS.

If the fire extinguisher is mounted on the ROPS, strap the mounting plate to a leg of the ROPS. If the weight of the fire extinguisher is more than 4.5 kg (10 lb), mount the fire extinguisher as low as possible on one leg. Do not mount the fire extinguisher on the upper one-third area of the leg.

Tire Explosion Prevention

SMCS Code: 7000

Explosions of air inflated tires have resulted from heat-induced gas combustion inside the tires. Explosions can be caused by heat that is generated by welding, by heating rim components, by external fire, or by excessive use of brakes.

A tire explosion is much more violent than a blowout. The explosion can propel the tire, the rim components, and the axle components as far as 500 m (1500 ft) or more from the machine. Both the force of the explosion and the flying debris can cause property damage, personal injury, or death.

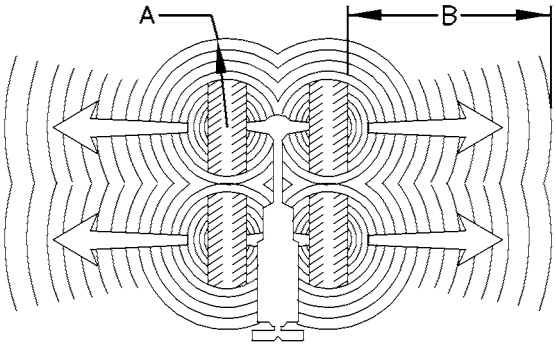


Illustration 6

(A) At least 15 m (50 ft)
(B) At least 500 m (1500 ft)

Do not approach a warm tire. Maintain a minimum distance, as shown. Stay outside the shaded area in Illustration 9.

Dry nitrogen gas is recommended for inflation of tires. If the tires were originally inflated with air, nitrogen is still preferred for adjusting the pressure. Nitrogen mixes properly with air.

Nitrogen inflated tires reduce the potential of a tire explosion because nitrogen does not aid combustion. Nitrogen helps to prevent oxidation of the rubber, deterioration of rubber, and corrosion of rim components.

To avoid overinflation, proper nitrogen inflation equipment and training in the usage of the equipment are necessary. A tire blowout or a rim failure can result from improper equipment or from misused equipment.

When you inflate a tire, stand behind the tread and use a self-attaching chuck.

Servicing tires and rims can be dangerous. Only trained personnel that use proper tools and proper procedures should perform this maintenance. If correct procedures are not used for servicing tires and rims, the assemblies could burst with explosive force. This explosive force can cause serious personal injury or death. Carefully obey the specific instructions from your tire dealer.

Electrical Storm Injury Prevention

SMCS Code: 7000

When lightning is striking in the vicinity of the machine, the operator should never attempt the following procedures:

- Mount the machine.
- Dismount the machine.

If you are in the operator's station during an electrical storm, stay in the operator's station. If you are on the ground during an electrical storm, stay away from the vicinity of the machine.

Mounting and Dismounting

SMCS Code: 7000

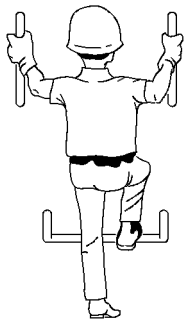


Illustration 7

Mount the machine and dismount the machine only at locations that have steps and/or handholds. Before you mount the machine, clean the steps and the handholds. Inspect the stairs and handholds. Make any necessary repairs.

Face the machine whenever you mount the machine and whenever you dismount the machine.

Maintain a three-point contact with the steps and with handholds.

NOTE: Three-point contact can be two feet and one hand. Three-point contact can also be one foot and two hands.

Never mount a moving machine. Never dismount a moving machine. Never jump off the machine.

Do not carry tools or supplies when you try to mount the machine or when you try to dismount the machine. Use a hand line to pull equipment onto the platform.

Do not use any controls as handholds when you enter the operator compartment or when you exit the operator compartment.

Before Starting Engine

SMCS Code: 1000; 7000

Make sure that the steering frame lock link is stored in the unlocked position. The steering frame lock link must be removed in order to steer the machine. Start the engine only from the operator compartment. Never short across the starter terminals or across the batteries. Shorting could damage the electrical system by bypassing the engine neutral start system.

Inspect the condition of the seat belt and of the mounting hardware. Replace any parts that are worn or damaged. Regardless of appearance, replace the seat belt after three years of use. Do not use a seat belt extension on a retractable seat belt.

Make sure that the machine is equipped with a lighting system that is adequate for the job conditions. Make sure that all machine lights are working properly. Before you start the engine and before you move the machine, make sure that no one is underneath the machine, around the machine, or on the machine. Make sure that that area is free of personnel.

Engine Starting

SMCS Code: 1000; 7000

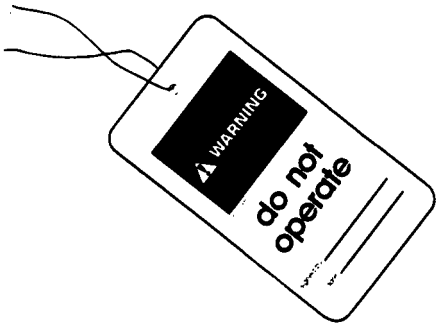


Illustration 8

Do not start the engine or move any controls if there is a "Do Not Operate" or similar warning tag attached to the start switch or controls.

Move the parking brake switch to the "ON" position.

Start the engine and operate the engine in a well-ventilated area. In an enclosed area, vent the exhaust to the outside.

Before Operating Machine

SMCS Code: 7000

Clear all personnel from the machine and from the area.

Clear all obstacles that are in the path of the machine. Beware of hazards such as wires, ditches, etc.

Make sure that the machine horn, the backup alarm (if equipped) and all other warning devices are working properly.

Fasten the seat belt securely.

Machine Operation

SMCS Code: 7000

Only operate the machine while you are in a seat. The seat belt must be fastened while you operate the machine. Only operate the controls while the engine is running.

While you operate the machine slowly in an open area, check for proper operation of all controls and all protective devices.

Before you move the machine, you must be satisfied that no one will be endangered.

Do not allow riders on the machine unless the machine has the following equipment:

- additional seat
- additional seat belt

Note any needed repairs during machine operation. Report any needed repairs.

Carry attachments approximately 40 cm (15 inches) above ground level. Do not go close to the edge of a cliff, an excavation, or an overhang.

If the machine begins to sideslip downward on a grade, immediately remove the load and turn the machine downhill.

Avoid any conditions that can lead to tipping the machine. The machine can tip when you work on hills, on banks and on slopes. Also, the machine can tip when you cross ditches, ridges or other unexpected obstructions.

Avoid operating the machine across the slope. When possible, operate the machine up the slopes and down the slopes.

Maintain control of the machine. Do not overload the machine beyond the machine capacity.

Be sure that the hitches and the towing devices are adequate.

Only connect the trailing equipment to a drawbar or to a hitch.

Never straddle a wire rope cable. Never allow other personnel to straddle a wire rope cable.

Before you maneuver the machine, make sure that no personnel are between the machine and the trailing equipment. Block up the hitch of the trailing equipment in order to align the hitch with the drawbar. Maneuver the machine. Connect the machine to the trailing equipment.

Know the maximum dimensions of your machine.

Machine Parking

SMCS Code: 7000

Park on a level surface. If you must park on a grade, chock the machine's wheels.

Move the propel control lever to the NEUTRAL position. Engage the parking brake.

Lower all attachments to the ground.

Stop the engine.

Turn the engine start switch to the OFF position.

Turn the battery disconnect switch to the OFF position. This will prevent drainage of the battery. A battery short circuit, any current draw from certain components, and vandalism can cause drainage of the battery.

Equipment Lowering with Engine Stopped

SMCS Code: 7000

Make sure that all personnel are clear of the machine before lowering the blade.

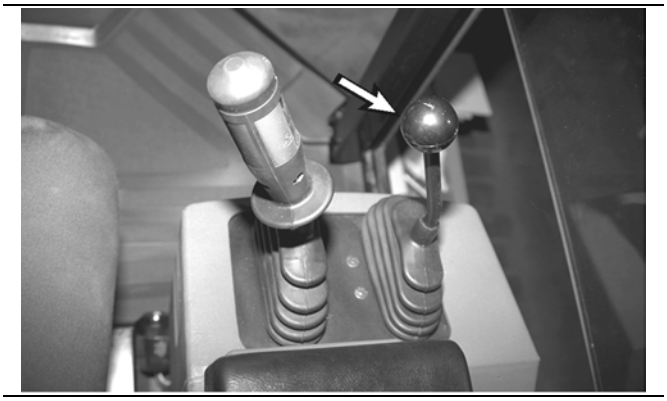


Illustration 9

Move the control for the leveling blade forward to the LOWER position. Hold the control in the LOWER position until the blade is on the ground.

Sound Information and Vibration Information

SMCS Code: 7000

The operator sound exposure Leq (equivalent sound pressure level) measured according to the work cycle procedures specified in "ANSI/SAE J1166May90" is 89.8 dB(A).

The operator sound pressure level measured according to the procedures specified in “SAE J919Apr95" is 89.6 dB(A), with the machine in middle gear range and moving.

The exterior sound pressure level for the standard machine measured at a distance of 15 m (49.2 ft) according to the test procedures specified in "SAE J88Apr95", middle gear range, moving and the vibratory system is set to high amplitude, is 76.3 dB(A).

The operator sound pressure level is 86 dB(A) measured according to the static test procedures and conditions specified in "ISO 6394-1985E".

The exterior sound power level is 102 dB(A) measured according to the static test procedures and conditions specified in "ISO 6393-1985E".

Vibration Level

The hands and arms exposed to a weighted root mean square acceleration that is less than 2.5 m/sec^2.

The whole body is exposed to a weighted root mean square acceleration that is less than 0.572 m/s^2.

Measurements are obtained on a representative machine using the procedures in the following standards:

- "ISO 2631/1”
- "ISO 5349"
- "SAE J1166"

Steering Frame Lock

SMCS Code: 7000; 7506

⚠ WARNING

No clearance for person in this area when machine turns. Severe injury or death from crushing could occur.

Install the steering frame lock pin between the front frame and the rear frame before you lift the machine and before you transport the machine on another vehicle. Also install the steering frame lock pin before you perform maintenance near the center of the machine.

In order to install the steering frame lock pin, the machine must be in the straight ahead position.

1. Apply the parking brake.

2. Turn the engine start switch to the OFF position.

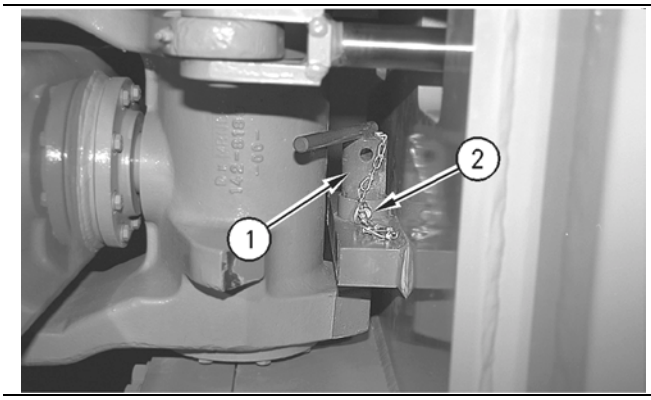


Illustration 10

3. After the machine has been moved into position, install the steering frame lock pin. The pin will hold the front frame and the rear frame rigid. Remove the pin (2). Lower the steering frame lock pin (1). Reinstall the pin (2).

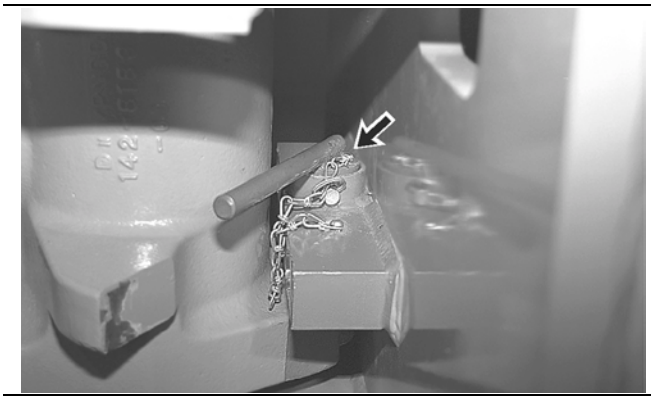


Illustration 11

The steering frame lock pin is in the locked position.

4. In order to unlock the steering frame, reverse the steps that are used to lock the steering frame.

Product Information Section

Machine General Information

Welding on Machines and Engines with Electronic Controls

SMCS Code: 1000; 7000

Proper welding procedures are necessary in order to avoid damage to the electronic controls and to the bearings. The following steps should be followed in order to weld on a machine or an engine with electronic controls.

1. Turn off the engine.

2. Turn the battery disconnect switch to the OFF position. If there is no battery disconnect switch, remove the negative battery cable at the battery.

3. Clamp the ground cable from the welder to the component that will be welded. Place the clamp as close as possible to the weld. Make sure that the electrical path from the ground cable to the component does not go through any bearing. Use this procedure in order to reduce the possibility of damage to the following components:

- Bearings of the drive train
- Hydraulic components
- Electrical components
- Other components of the machine

NOTICE

Do NOT use electrical components (ECM or ECM sensors) or electronic component grounding points for grounding the welder.

4. Protect any wiring harnesses from the debris which is created from welding. Protect any wiring harnesses from the splatter which is created from welding.

5. Use standard welding procedures in order to weld the materials together.

Specifications and Model Views

Model View Illustrations

SMCS Code: 7000

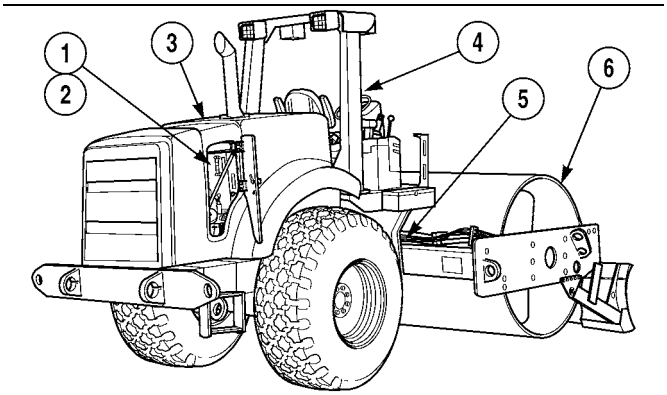


Illustration 12

(1) hydraulic tank
(2) fuel tank
(3) engine compartment
(4) operator compartment
(5) steering pivot
(6) vibratory drum

Shipping Specifications

SMCS Code: 7000

Table 1

CS-563D Vibratory Compactor (Smooth Drum)	
Weight (w/o cab)	10 964 kg (24171 lb)
Weight (w/cab)	11 734 kg (25869 lb)
Length (maximum)	5510 mm (18 ft 1 in)
Width (across tires)	2150 mm (7 ft 1 in)
Height (w/o cab)	3040 mm (10 ft 0 in)
Height (w/cab)	3040 mm (10 ft 0 in)

Table 2

CP-563D Vibratory Compactor (Padded Drum)	
Weight (w/o cab)	11 795 kg (26004 lb)
Weight (w/cab)	12 565 kg (27701 lb)
Weight (w/o cab, w/o blade)	11 260 kg (24824 lb)
Length (maximum, w/blade)	6045 mm (19 ft 10 in)
Width (across blade)	2440 mm (8 ft 1 in)
Width (across tires)	2165 mm (7 ft 1 in)
Height (w/o cab)	3100 mm (10 ft 2 in)
Height (w/cab)	3100 mm (10 ft 2 in)

NOTE: Appendix E contains military-specific shipping specifications.

Product Identification Information

Product Identification Number, Serial Number and EU's CE Plate Locations

SMCS Code: 1000; 7000

The Product Information Number (PIN) is used to identify a powered machine that is designed for an operator to ride.

Products such as earthmoving equipment that are not designed for an operator to ride are identified by Serial Numbers. Also, most major attachments are identified by Serial Numbers.

For quick reference, record the identification numbers in the spaces below the illustrations.

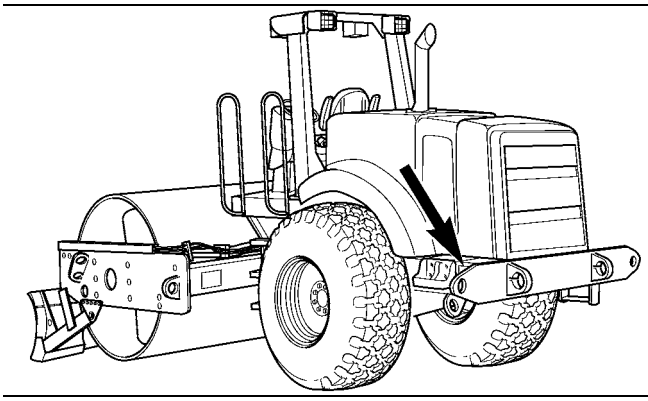


Illustration 13

Machine PIN _____

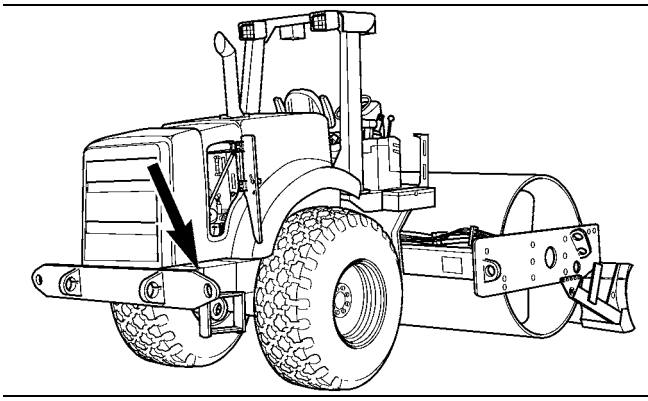


Illustration 14

Service Information Number Plate (SIN) _____

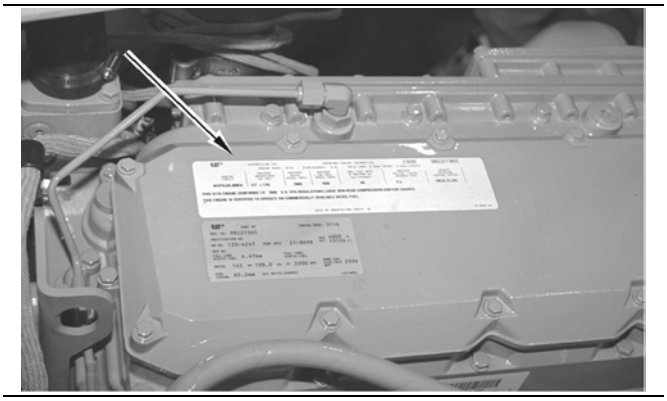


Illustration 15

Engine Serial Number _____

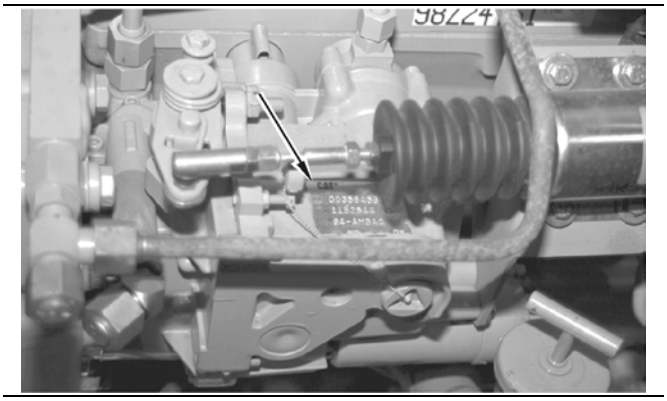


Illustration 16

Governor Information Plate _____

Certification Plate (CE)

The Certification Plate is on machines that are going into the European Union. The Certification Plate is on machines that are going into a country that has adopted the standards of the European Union.

Certification Plate

PIN _____

Model _____

Power (kW) _____

Weight (kg) _____

Operation Section

Monitoring Systems Features

Battery Disconnect Switch

SMCS Code: 1411

Illustration 17

The battery disconnect switch is located at the rear of the machine. Open the access door on the right side of the hood in order to access the battery disconnect switch.

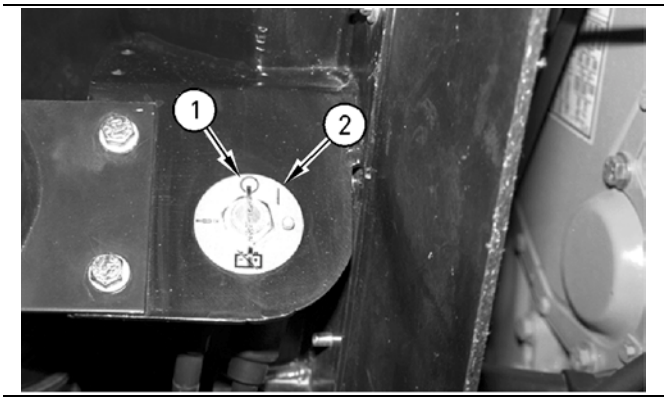


Illustration 18

OFF - In order to deactivate the electrical system, turn the switch to the OFF position (1).

ON - To activate the electrical system, turn the switch in a clockwise direction. The switch must be in the ON position (1) in order to start the engine.

The functions of the battery disconnect switch and the engine start switch are different. When the battery disconnect switch is turned to the OFF position, the entire electrical system is disabled. When the engine start switch is turned to the OFF position, the battery remains connected to the electrical system.

Turn off the battery disconnect switch when you exit the machine overnight or when you exit the machine for an extended period of time. Also, turn off the battery disconnect switch when you service the electrical system.

NOTICE

Never move the battery disconnect switch to the OFF position while the engine is operating. Serious damage to the electrical system could result.

Engine Start Switch

SMCS Code: 1416

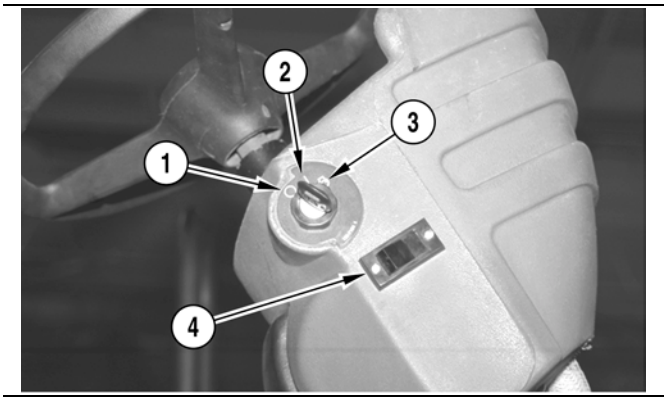


Illustration 19

OFF - In order to disconnect the electrical power to the engine and to the machine, turn the switch in a counterclockwise direction to the OFF position (1). Turn the switch to the OFF position (1) before trying to restart the engine. Turn the switch to the OFF position (1) in order to stop the engine.

ON - In order to activate the cab circuits, turn the switch to the ON position (2). When the switch is released from the START position (3), the switch will return to the ON position (2).

START - Turn the engine start switch to the START position (3) in order to crank the engine. Release the switch soon as the engine starts.

NOTE: If the engine does not start, return the switch to the OFF position before returning to the START position.

For more information, refer to page 3-1.

The ether starting aid switch (4) can be briefly pressed to inject ether into the engine while cranking.

Alert Indicators

SMCS Code: 7450; 7451

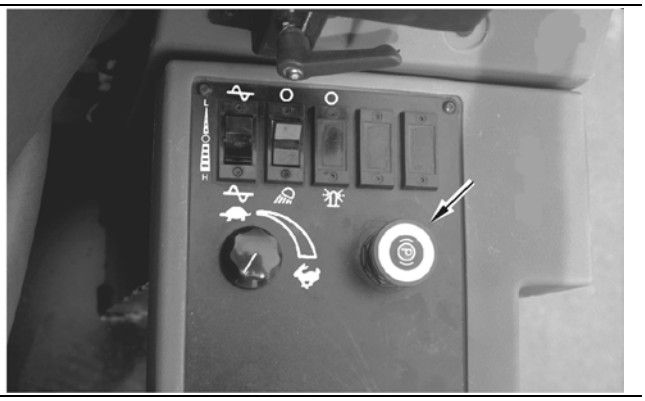
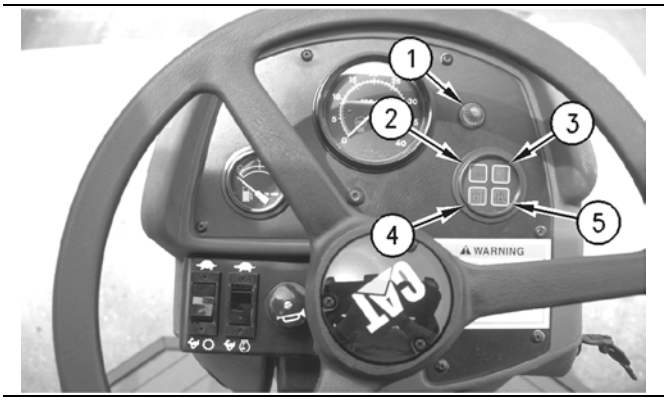


Illustration 20

Parking Brake - The parking brake switch will illuminate when the parking brake is applied. The light will remain illuminated if the parking brake switch is pulled up in order to release the brake and the propel lever is not in the STOP position. In order to move the machine, the propel lever must be in the STOP position before the parking brake is released.



Alternator (1) - The lamp illuminates when the alternator is malfunctioning. If the indicator illuminates, stop the machine in a safe area. Investigate the cause of the problem. Check for a loose belt or a broken belt. Repair the problem before using the machine.

Engine Oil Pressure (2) - The light illuminates when the engine oil pressure is low or there is a malfunction of the system.

If the engine oil pressure light illuminates and there is an audible alarm, stop the engine. Investigate the cause of the alarm. Do not operate the machine until the cause of the alarm has been repaired.

Engine Coolant Temperature (3) - The light indicates overheating of the engine coolant or a malfunction of the system.

If the light for the engine coolant temperature illuminates and there is an audible alarm, stop the machine in a convenient area. Investigate the cause of the alarm. Do not operate the machine until the cause of the alarm has been repaired.

Hydraulic Oil Temperature (4) - The light will illuminate if the hydraulic oil in the hydraulic tank is too hot.

If the light for the hydraulic temperature illuminates, stop the machine. Move the throttle switch to low idle. Allow the machine to idle for a few minutes. Resume using the machine if the temperature returns to the normal temperature. If the temperature remains above normal, stop the machine. Investigate the cause of the alarm. Do not operate the machine until the cause of the alarm has been repaired.

Hydraulic Oil Pressure (5) - The light indicates low hydraulic oil pressure.

If the light illuminates and an audible alarm sounds, stop the machine. Check the indicators on the propel filter and the vibratory filter. If necessary, change the filters. Investigate the system for other problems if changing the filters does not correct the problem. Do not operate the machine until the problem has been repaired.

Gauges

SMCS Code: 7450; 7451

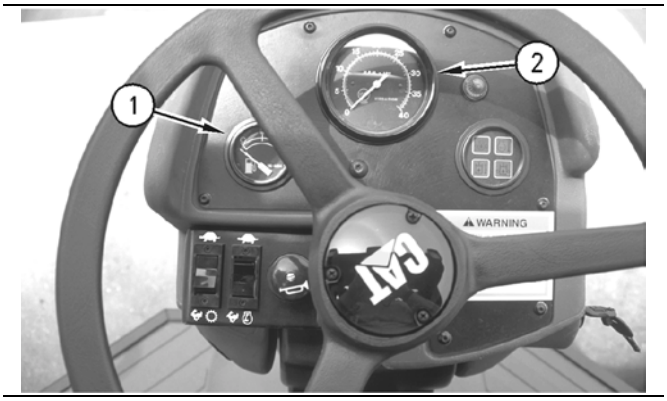


Illustration 21

Fuel Level (1) - The fuel level gauge indicates the amount of diesel fuel in the fuel tank.

VPM Meter (If Equipped)

Vibration per Minute Meter (2) - The meter indicates the vibrations per minute of the vibratory drum. If the machine is not equipped with a variable vibration control knob, the drum frequency is 1965 vibrations per minute (VPM). If the machine is equipped with a variable vibration control knob, the drum frequency should be set from 1400 VPM to 1965 VPM.

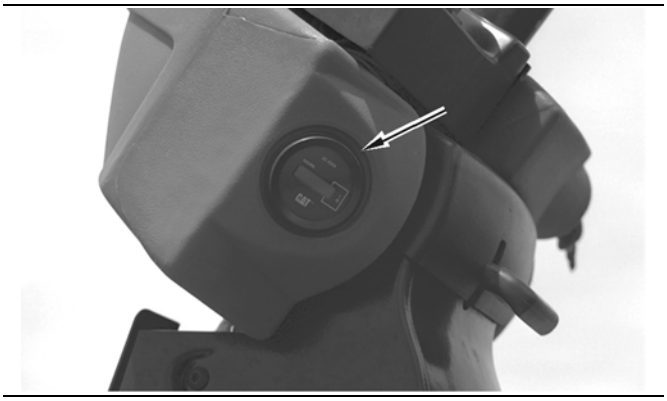


Illustration 22

Service Hour Meter (3) - The "service hour meter" indicates the number of hours that the engine has been in operation. In order to determine the service hour maintenance intervals, use the service hour meter.

Lights Switches

SMCS Code: 1435

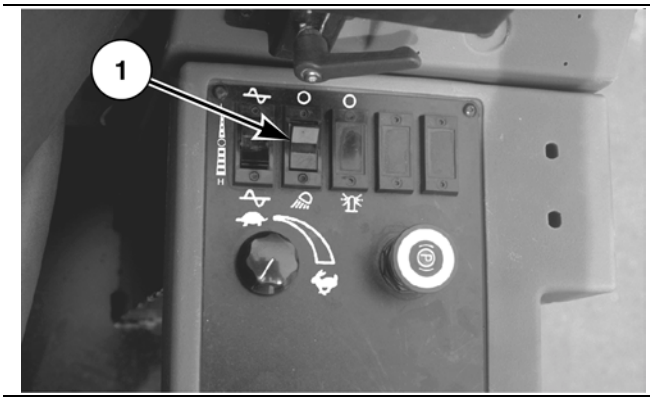


Illustration 23

Light Switch (1) - Rock the switch forward in order to turn on the front floodlights. Rock the switch to the center in order to turn off the floodlights. Rock the switch rearward in order to turn on the front and the rear floodlights.

Horn

SMCS Code: 7402

Illustration 24

Horn - Push the horn switch in order to sound the horn. Use the horn to alert personnel or signal personnel.

Seat Belt Adjustment

Illustration 29

The seat belt is retractable. In order to secure the belt in the buckle, pull the belt until there is enough length in order to latch the belt into the buckle. In order to release the belt, push the button on the top of the buckle.

Backup Alarm

SMCS Code: 7406

Illustration 25

Backup Alarm - The backup alarm will sound when the propel lever is in the REVERSE position. The backup alarm alerts any personnel that the machine is backing up.

The backup alarm is on the rear of the machine.

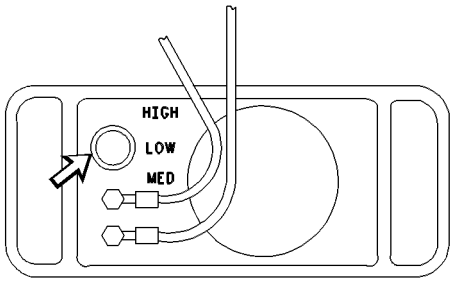


Illustration 26

A three-position adjustment knob on the back of the backup alarm regulates the volume level of the backup alarm. The alarm settings are HIGH, LOW, and MEDIUM.

The three-position adjustment knob is set to the HIGH setting when the machine is shipped from the factory. The three-position adjustment knob should remain at the HIGH setting unless the job site requires a lower volume level.

Suspension Seat

SMCS Code: 7324

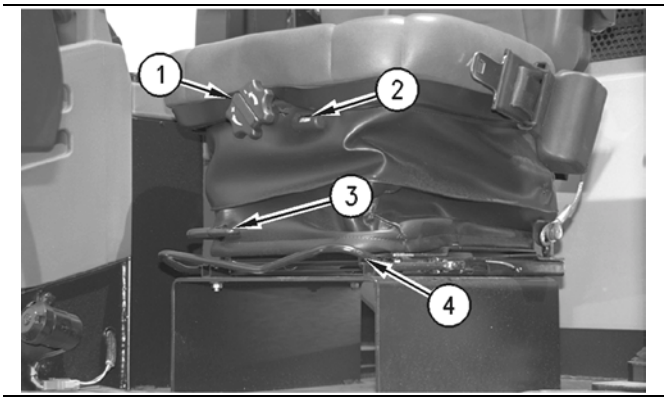


Illustration 27

In order to adjust the stiffness of the suspension of the seat, turn the knob (1). Turn the knob (1) clockwise in order to increase the stiffness of the suspension of the seat. Turn the knob (1) counterclockwise in order to decrease the stiffness of the suspension of the seat. The amount of weight will be displayed on the readout (2).

In order to adjust the height of the seat, hold the lever (3) and move the seat to the desired position. In order to lock the seat in the desired position, release the lever (3).

In order to move the seat forward, pull the lever (4) upward and hold the lever (4). In order to move the seat rearward, pull the lever (4) upward and hold the lever (4). Move the seat to the desired position. In order to lock the seat in the desired position, release the lever (4).

Seat Belt (Retractable)

SMCS Code: 7327

This machine was shipped from Caterpillar with a seat belt that was installed at the factory. The seat belt was installed by meeting the specifications in "SAE J386, JUN85" for a construction machine and in "SAE J386, JUN1993". Consult your Caterpillar dealer for all replacement parts.

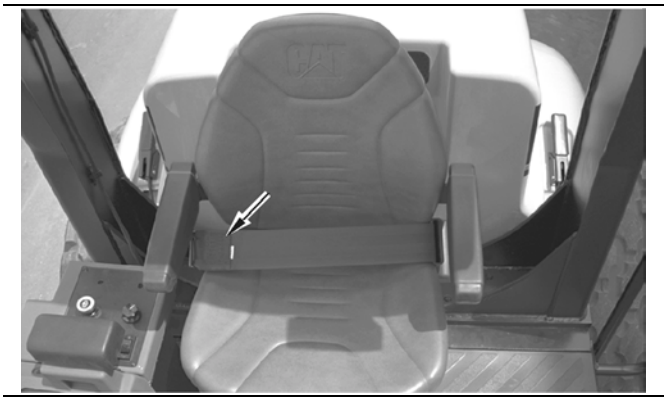


Illustration 28

Always check the condition of the seat belt and of the mounting hardware before you operate the machine.

Regardless of appearance, replace the seat belt after every three years of use. A date label for determining the age of the seat belt is attached to each seat belt.

Inspect the seat belt for wear or for damage. Inspect the webbing for wear and for fraying.

Check for a buckle that is worn or damaged. Check the anti-creep slide that is mounted on each half of the seat belt. Replace the seat belt, the buckle, or the slides if the seat belt, the buckle, and the slides are worn or damaged.

Inspect the seat belt mounting hardware. Replace any hardware that is damaged or worn. Keep the mounting bolts tight.

If the bolt and the nut that holds the two parts of the seat belt mounting hooks together are not correctly installed, the hooks can separate. The separation of the hooks will allow the seat belt to separate from the seat belt mounting.

Inspect the hooks on each half of the seat belt in order to make sure that the bolt and the nut are correctly installed.

Remove the old bolt and the old nut if the bolt and the nut are not correctly installed. Install a new bolt and a new nut.

Machine Controls

Parking Brake Control

SMCS Code: 4284

NOTICE

Do not engage the parking brake while the machine is moving unless an emergency exists.

The use of the parking brake as a service brake in regular operation causes severe damage to the parking brake system.

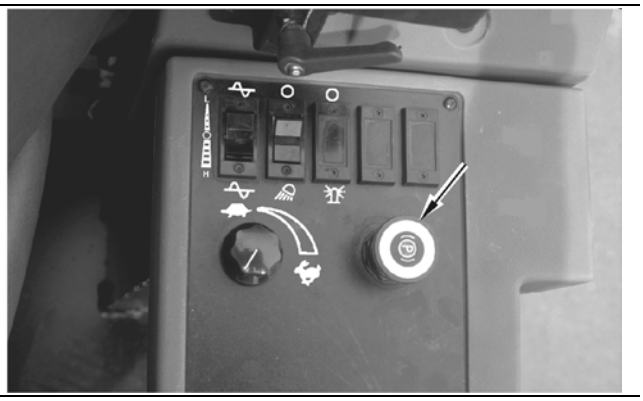


Illustration 30

Parking Brake - The parking brake control is located on the operator console.

In order to apply the parking brake, push the knob downward.

In order to release the parking brake, pull the knob upward.

NOTE: In order to propel the machine, the propel lever must be in the STOP position before you release the parking brake.

Propel Control

SMCS Code: 3209; 7451

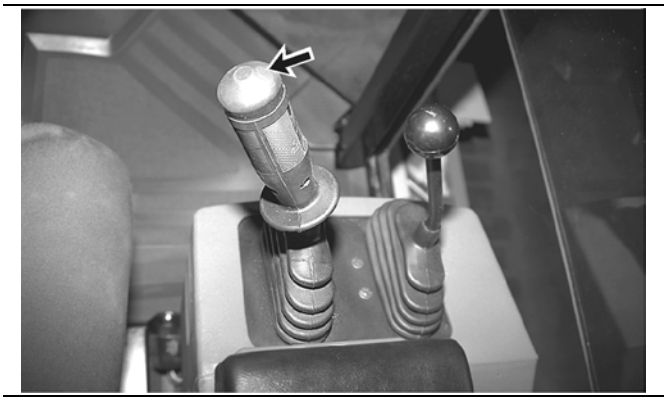


Illustration 31

FWD - Push the lever away from the operator in order to move the compactor forward. In order to cause the machine to move faster, push the lever farther.

STOP - Move the lever to the center STOP position in order to stop the machine.

REV - Pull the lever toward the operator in order to move the machine in reverse. In order to cause the machine to move faster, pull the lever farther.

Propel Speed Range Control

SMCS Code: 1435

NOTICE
Stop the machine before changing the speed range. Do not change the speed range while the machine is moving.

Illustration 32

Propel Speed Range Control - The propel speed range control is located to the left of the steering wheel. The control allows the machine operation in the "HIGH" range or the "LOW" range.

LOW - In order to place the machine in “LOW" range, rock the propel speed range control forward. "LOW" range reduces the overall speed of the machine. This increases the operator control.

HIGH - In order to place the machine in "HIGH" range, rock the propel speed range control rearward. "HIGH" range increases the speed of the machine. "HIGH" range is used to move the machine from one job site to another job site.

NOTE: In order to operate the vibratory system, the propel speed range control must be placed in the "LOW" range.

Throttle Control

SMCS Code: 1265; 1276

Illustration 33

Throttle Control - The throttle control is a two-position switch. Use the switch to control the engine speed (rpm).

LOW - In order to decrease the engine speed to low speed, rock the switch forward to the LOW position.

HIGH - In order to increase the engine speed to high speed, rock the switch rearward to the HIGH position.

NOTE: In order to start the vibratory system, the throttle control must be placed in the HIGH position.

Vibratory Amplitude Control

SMCS Code: 6605; 6606; 6645

NOTICE
Stop the vibratory system completely before changing the vibratory amplitude selection.

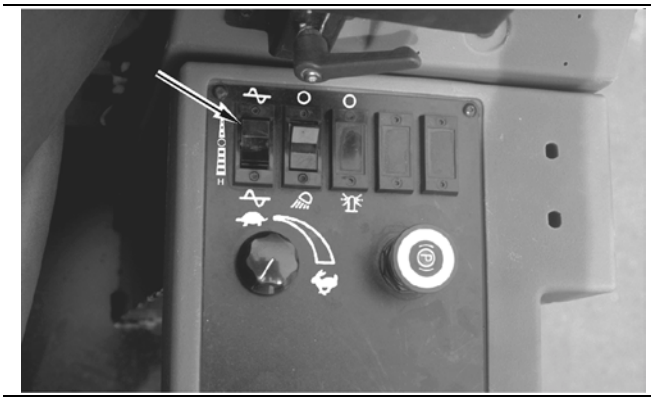


Illustration 34

The vibratory amplitude control is located on the operator console to the right of the seat. The control is used to select high amplitude or low amplitude.

LOW - In order to achieve LOW amplitude, rock the vibratory control forward.

OFF - In order to turn the vibratory system OFF, move the switch to the center position.

HIGH - In order to achieve HIGH amplitude, rock the vibratory control rearward.

Vibratory On/Off Control

SMCS Code: 1408

NOTICE
The bearings in the vibratory reservoir for the weight shaft are lubricated by rotating the drum assembly. Turning the vibratory system on with the machine not propelling may shorten the vibratory bearing life.

Illustration 35

NOTICE
Do not operate the vibratory system when the machine is not moving. Damage to the vibratory weight system bearings can occur due to reduced lubrication.

The switch on the propel lever controls the operation of the vibration system.

ON - To turn on the vibration system, press the switch.

OFF - To stop the vibration system, press the switch again.

NOTE: To start the vibratory system, the engine must be running at high idle.

NOTE: To start the vibratory system, the vibratory amplitude control must be set to high amplitude or low amplitude. The amplitude must be set before the vibratory system can be started with the vibratory control.

NOTE: In order to operate the vibratory system, the propel speed range control must be placed in the "LOW" range.

Vibration Control

SMCS Code: 1408

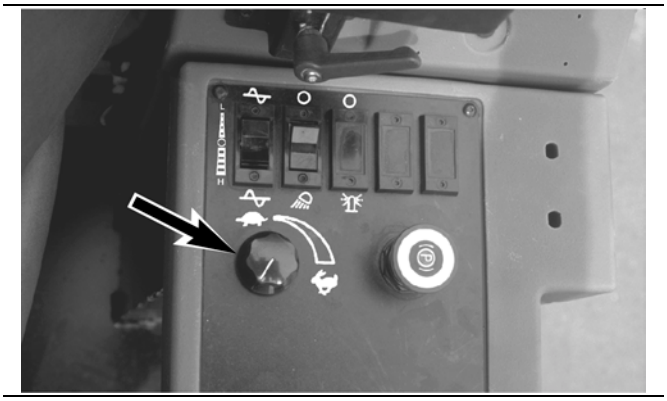


Illustration 36

In order to increase the frequency of the drum vibration, rotate the knob clockwise. In order to reduce the frequency of the drum vibration, rotate the knob counterclockwise. The drum vibration can be varied from 1400 to 1965 vibrations per minute (VPM).

Steering Wheel

SMCS Code: 4309; 4343

Illustration 37

The steering wheel controls the directional steering of the machine. The machine will turn in the same direction as the steering wheel is turned.

Raise the steering frame lock pin. Lock the pin into the RAISED position. This will allow you to steer the machine.

LEFT TURN - Move the steering wheel counterclockwise in order to steer the machine to the left. Turn the steering wheel farther in order to achieve a more acute turn.

RIGHT TURN - Move the steering wheel clockwise in order to steer the machine to the right. Turn the steering wheel farther in order to achieve a more acute turn.

Steering Wheel Tilt Control

SMCS Code: 4310; 4338

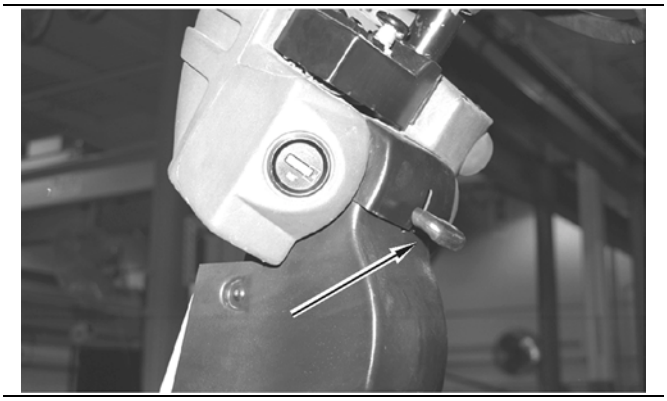


Illustration 38

In order to tilt the steering wheel, pull up on the lever. Hold the lever up, and adjust the steering wheel to the desired position. In order to lock the steering wheel in place, release the lever.

Leveling Blade Control

SMCS Code: 5063

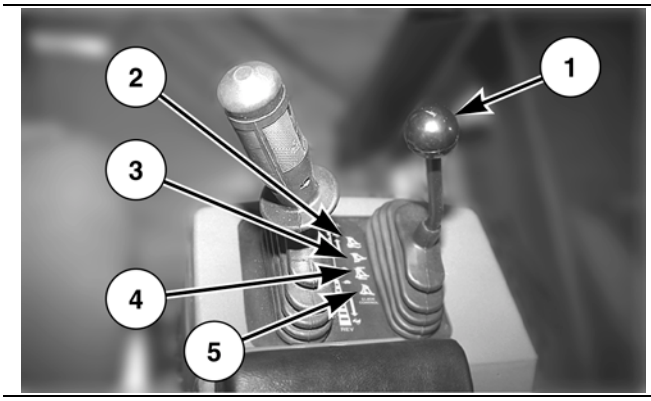


Illustration 39

The control for the leveling blade (1) is used to adjust the height of the leveling blade.

FLOAT (2) - Push the lift lever forward into the float detent. The leveling blade will adjust to the contour of the ground when the lift lever is in the FLOAT position.

The lift lever will remain in the FLOAT position until the lift lever is manually pulled out of the float detent. The lift lever will then return to the HOLD position.

LOWER (3) - Push the lift lever forward in order to lower the leveling blade. The lift lever will return to the HOLD position when you release the lift lever. The leveling blade will remain in the selected position.

HOLD (4) - When you release the lift lever from the RAISE position or from the LOWER position, the lift lever will return to the HOLD position.

RAISE (5) - Pull back the lift lever in order to raise the leveling blade. The lift lever will return to the HOLD position when you release the lift lever. The leveling blade will remain in the selected position.

Steering Frame Lock

SMCS Code: 7506

⚠ WARNING

No clearance for person in this area when machine turns. Severe injury or death from crushing could occur.

Install the steering frame lock pin between the front frame and the rear frame before you lift the machine and before you transport the machine on another vehicle. Also install the steering frame lock pin before you perform maintenance near the center of the machine.

In order to install the steering frame lock pin, the machine must be in the straight ahead position.

1. Apply the parking brake.

2. Turn the engine start switch to the OFF position.

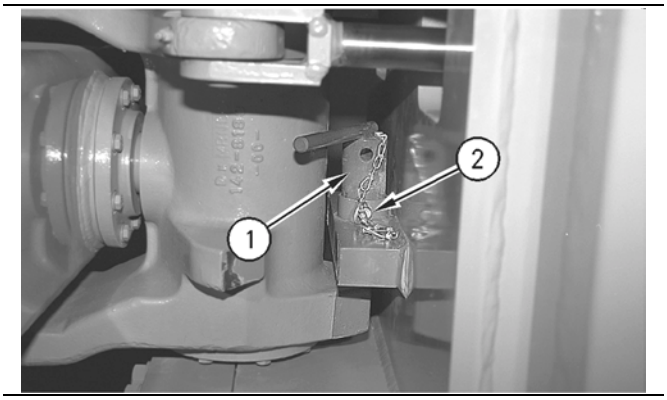


Illustration 40

3. After the machine has been moved into position, install the steering frame lock pin. The pin will hold the front frame and the rear frame rigid. Remove the pin (2). Lower the steering frame lock pin (1). Reinstall the pin (2).

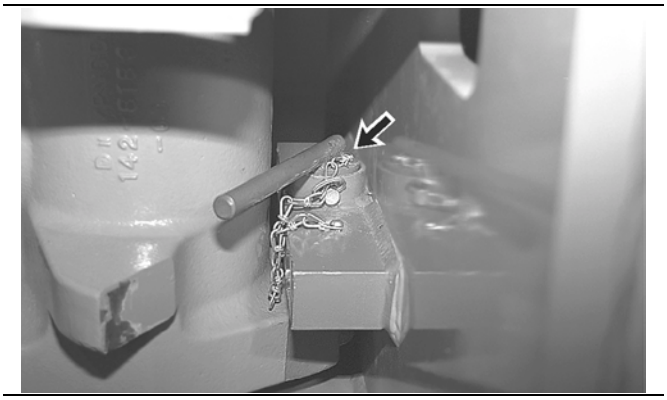


Illustration 41

4. In order to unlock the steering frame, reverse the steps that are used to lock the steering frame.

Tilt Hood

SMCS Code: 1427; 7251-T2; 7251

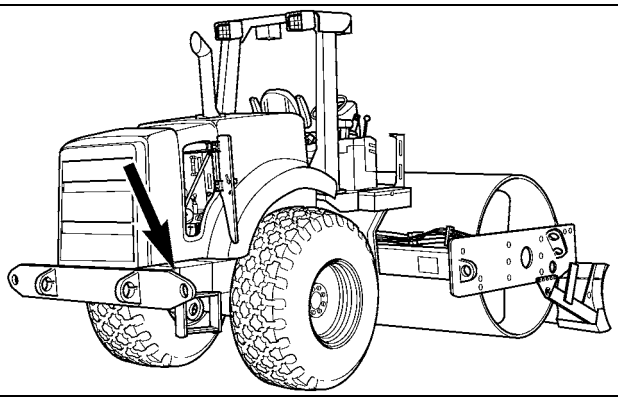


Illustration 42

The hood must be raised in order to access the engine compartment. The switch that controls the hood is located on the right rear of the machine.

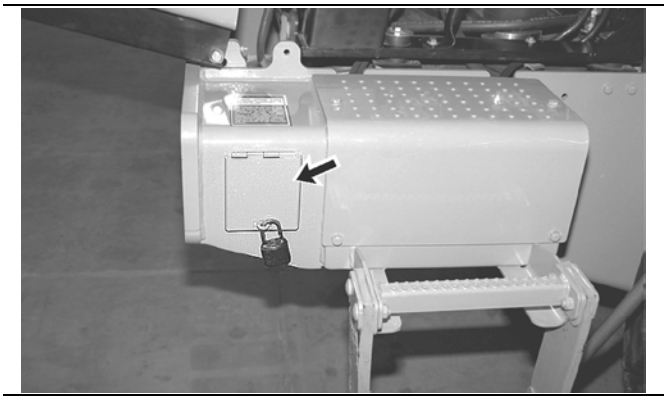


Illustration 43

1. Open the access door.

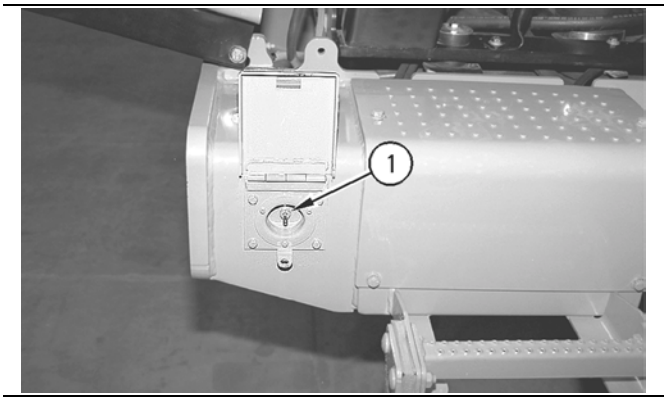


Illustration 44

2. Push the toggle switch (1) upward in order to raise the hood. Raise the hood to the desired height or raise the hood to the fully opened position. Release the toggle switch. The toggle switch will return to the neutral position.

3. Push the toggle switch (1) downward in order to lower the hood. Hold the toggle switch in position until the hood is closed. Release the toggle switch. The toggle switch will return to the neutral position.

Manual Operation

Use a wrench to turn the lift motor in order to raise the hood manually and lower the hood manually.

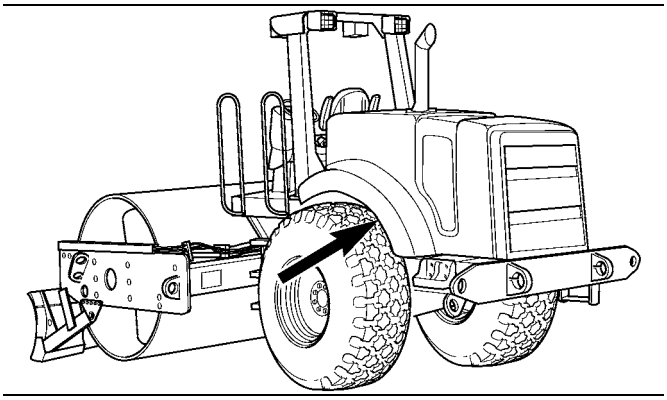


Illustration 45

1. The access hole is located on the left side inner fender.

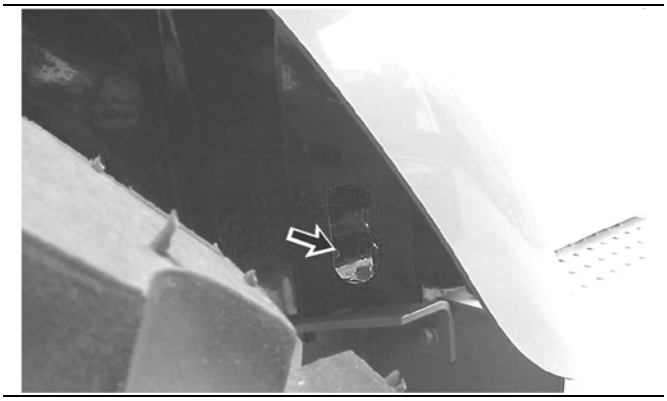


Illustration 46

2. Insert a socket wrench through the hole and onto the shaft of the lift motor. Turn the wrench clockwise in order to raise the hood. Turn the wrench counterclockwise in order to lower the hood.

Engine Starting

Starting with Jump Start Cables

SMCS Code: 1000; 7000

⚠ WARNING

Batteries give off flammable fumes that can explode resulting in personal injury.

Prevent sparks near the batteries. They could cause vapors to explode. Do not allow the jump start cable ends to contact each other or the machine.

Do not smoke when checking battery electrolyte levels.

Electrolyte is an acid and can cause personal injury if it contacts skin or eyes.

Always wear eye protection when starting a machine with jump start cables.

Improper jump start procedures can cause an explosion resulting in personal injury.

Always connect the battery positive (+) to battery positive (+) and the battery negative (–) to battery negative (–).

Jump start only with an energy source with the same voltage as the stalled machine.

Turn off all lights and accessories on the stalled machine. Otherwise, they will operate when the energy source is connected.

NOTICE

When starting from another machine, make sure that the machines do not touch. This could prevent damage to engine bearings and electrical circuits.

Turn on (close) the battery connect switch prior to the boost connection to prevent damage to electrical components on the stalled machine.

Severely discharged maintenance free batteries do not fully recharge from the alternator after jump starting. The batteries must be charged to proper voltage with a battery charger. Many batteries thought to be unusable are still rechargeable.

This machine has a 24 volt starting system. Use only the same voltage for jump starting. Use of a higher voltage damages the electrical system.

Refer to Special Instruction, Battery Test Procedure, SEHS7633, available from your Caterpillar dealer, for complete testing and charging information.

Use of Jump Start Cables

When the auxiliary starting receptacles are not available, use the following procedure:

1. Determine the reason that the engine will not crank. Refer to Special Instruction, SEHS7768 on the use of **6V-2150** Starting Charging Analyzer Group. The procedure is applicable even if the machine does not have a diagnostic connector.

2. On the stalled machine, place the transmission direction control in the NEUTRAL position. Engage the parking brake. Lower all attachments to the ground. Move all controls to the HOLD position.

3. Turn the engine start switch to OFF on the stalled machine. Turn off all accessories.

4. Turn on the battery disconnect switch on a stalled machine.

5. Move the boost machine so that the cables can reach the stalled machine. **DO NOT ALLOW THE MACHINES TO CONTACT EACH OTHER.**

6. Stop the engine on the boost machine. If you are using an auxiliary power source, turn off the charging system.

7. Check the battery caps for correct placement and for correct tightness. Make these checks on both machines. Make sure that the batteries in the stalled machine are not frozen. Check the batteries for low electrolyte.

8. Connect the positive jump start cable to the positive cable terminal of the discharged battery.

   Do not allow positive cable clamps to contact any metal except for battery terminals.

NOTE: Batteries in series may be in separate compartments. Use the terminal that is connected to the starter solenoid. This battery is normally on the same side of the machine as the starter.

9. Connect the positive jump start cable to the positive terminal of the boost source. Use the procedure from Step 8 in order to determine the correct terminal.

10. Connect one end of the negative jump start cable to the negative terminal of the electrical source.

11. Make the final connection. Connect the negative cable to the frame of the stalled machine. Make this connection away from the battery, the fuel, the hydraulic lines, or moving parts.

12. Start the engine on the boost machine. If you are using an auxiliary power source, energize the charging system on the auxiliary power source.

13. Wait for a minimum of two minutes while the batteries in the stalled machine partially charge.

14. Attempt to start the stalled engine. Refer to Operation and Maintenance Manual, “Engine Starting".

15. Immediately after you start the stalled engine, disconnect the jump start cable from the BOOST SOURCE.

16. Disconnect the other end of this cable from the stalled machine.

17. When the engine is running and the charging system is operating, determine the cause of the failure of the charging system of the stalled machine.

Starting with Auxiliary Start Receptacle

SMCS Code: 1000; 7000

Some products may be equipped with auxiliary starting receptacles as a standard part. All other machines can be equipped with a receptacle from parts service. Then, a permanent receptacle is always available for jump starting.

Two cable assemblies are also available in order to jump start the stalled machine from another machine that is also equipped with this receptacle or with an auxiliary power pack. Your Caterpillar dealer can provide the correct cables for your application.

1. Make the initial determination of the machine's failure to crank. Refer to Spec.ial Instruction, SEHS7768, "Use of 6V-150 Starting Charging Analyzer Group". The procedure is applicable even if the machine does not have a diagnostic connector.

2. Move the transmission of the stalled machine into neutral. Engage the parking brake. Lower the attachment to the ground. Move all controls to the HOLD position.

3. Turn the engine start switch on the stalled machine to the OFF position. Turn off all accessories.

4. Turn on the battery disconnect switch on the stalled machine.

5. Move the machine that is being used as a power source so that the jump start cables can reach the stalled machine. **Do not allow the machines to contact each other.**

6. Stop the engine on the machine that is being used as a power source. If you are using an auxiliary power source, turn off the charging system.

7. On the stalled machine, connect the appropriate jump start cable to the auxiliary starting receptacle.

8. Connect the other end of the jump start cable to the auxiliary starting receptacle that is on the power source.

9. Start the engine on the machine that is being used as a power source. If you are using an auxiliary power source, energize the charging system on the auxiliary power source.

10. Wait for a minimum of two minutes while the batteries in the stalled machine partially charge.

11. Attempt to start the stalled engine. Refer to Operation and Maintenance Manual, "Starting Above O°C".

12. Immediately after you start the stalled engine, disconnect the jump start cable from the machine that is being used as a power source.

13. Disconnect the other end of the jump start cable from the stalled machine.

14. When the engine is running and the charging system is in operation, conclude the failure analysis on the starting charging system of the stalled machine, as required.

Machine Operation

Machine Operation Information

SMCS Code: 7000

⚠ WARNING

Shutting off the engine will result in loss of steering.

⚠ WARNING

Personal injury or death can result from sudden machine movement.

Sudden movement of the machine can cause injury to persons on or near the machine.

To prevent injury or death, make sure that area around the machine is clear of personnel and obstructions before operating the machine.

For maximum braking control, steering control, and propel control, operate the engine at full throttle. Operating the engine at less than full throttle will adversely affect response.

Before you start down a grade, select a safe propel range. Do not change the propel speed range control while you go downhill.

In order to go up a grade, use the same propel range that was used to go down the grade.

1. The operator seat must be adjusted.

2. Fasten the seat belt.

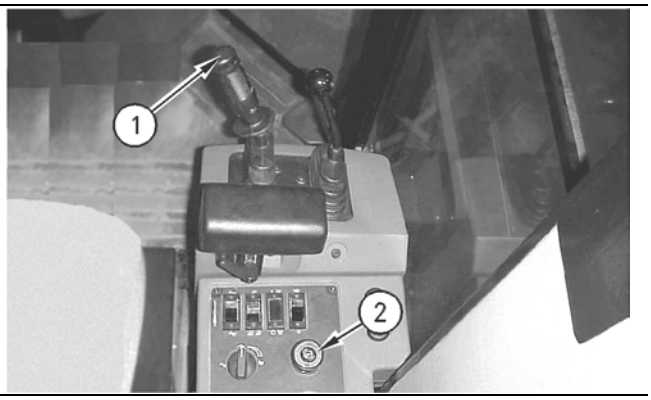


Illustration 47

3. In order to release the parking brake, pull the parking brake control knob (2) upward.

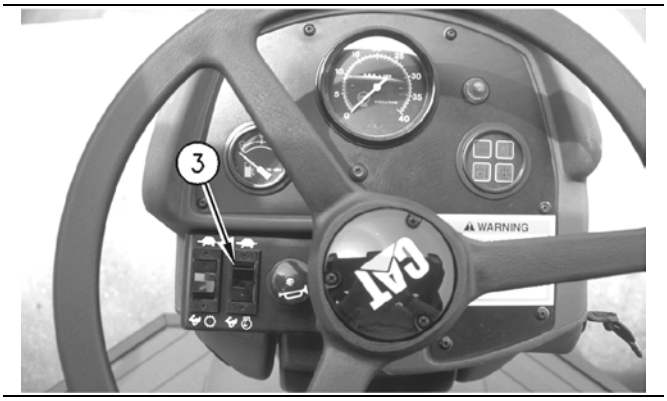


Illustration 48

4. Move the throttle control (3) to the HIGH RPM position.

5. In order to raise the leveling blade (if equipped), move the control to the RAISE position.

6. In order to move in the desired direction, move the propel control lever (1) to the FWD or the REV position. The machine will travel faster as you move the propel control away from the STOP position.

Parking Brake

SMCS Code: 7000

NOTICE

Do not engage the parking brake while the machine is moving unless an emergency exists.

The use of the parking brake as a service brake in regular operation causes severe damage to the parking brake system.

Illustration 49

Parking Brake - The parking brake control is located on the operator console.

In order to apply the parking brake, push the knob downward.

In order to release the parking brake, pull the knob upward.

NOTE: In order to propel the machine, the propel lever must be in the STOP position before you release the parking brake.

Changing Engine Speed

SMCS Code: 1000; 7000

Illustration 50

The throttle control is used to control the engine speed (rpm).

In order to increase the engine speed, rock the control rearward.

In order to reduce the engine speed, rock the control forward.

Changing Speed and Direction

SMCS Code: 1000; 7000

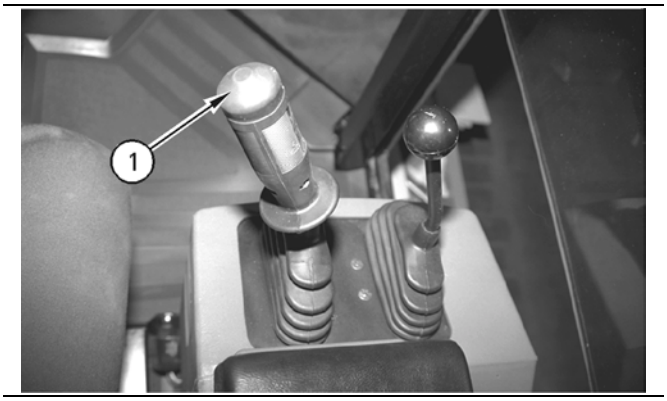


Illustration 51

Illustration 52

While the machine is in motion, there are restrictions when you can shift. Before you change the propel speed range control (2), the propel lever (1) must be in the STOP position. The machine must be stopped.

Vibratory System

SMCS Code: 5622; 6606; 6645

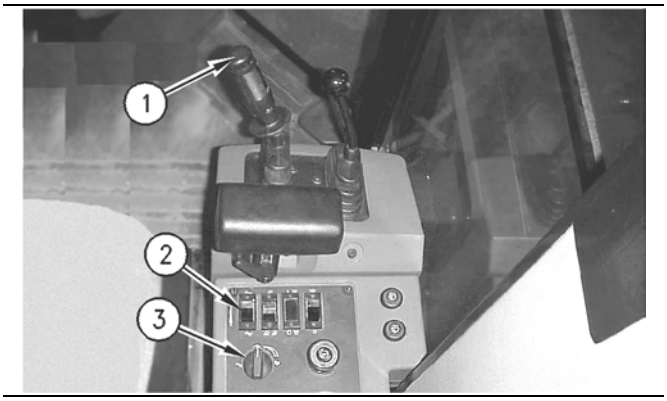


Illustration 53

Vibratory On/Off Control

Machines are equipped with a lockout for the vibratory system. The lockout will prevent the operator from starting the vibratory system when the machine is in the HIGH propel range. When the machine is equipped with the lockout, place the propel speed range control into the LOW propel range.

The switch (1) on the propel lever controls the operation of the vibration system.

ON - In order to turn on the vibration system, press the switch (1).

OFF - In order to stop the vibration system, press the switch (1) again.

NOTE: In order to start the vibratory system, the engine must be running at high idle.

NOTE: In order to start the vibratory system, the vibratory amplitude control must be set to high amplitude or low amplitude. The amplitude must be set before the vibratory system can be started with the vibratory control.

Vibratory Amplitude Control

NOTE: Machines that are equipped with the lockout for the vibratory system must be set to the LOW range in order to start the vibratory system.

The vibratory amplitude control is located on the operator console to the right of the seat. The control is used to select one of three settings: low amplitude, high amplitude, and off.

LOW - To achieve LOW amplitude, rock the vibratory control (2) forward.

OFF - To stop the vibration system, rock the vibratory control (2) to the CENTER position.

HIGH - To achieve HIGH amplitude, rock the vibratory control (2) rearward.

Variable Vibration Control Knob

The variable vibration control knob (3) is used to vary the frequency of the drum vibration. Rotate the knob in a clockwise direction in order to increase the drum vibration. Rotate the knob in a counterclockwise direction in order to reduce the frequency of the drum vibration. The drum vibration can be varied from 1400 to 1965 vibrations per minute (VPM).

Operating Techniques

Operating Technique Information

SMCS Code: 7000

⚠ WARNING

Operate the engine at full rpm for maximum braking, steering and propel control response. Operation below full throttle will adversely affect response.

When climbing a steep grade, the propel control lever must be moved SLOWLY in order to avoid engine stall and possible loss of machine control.

NOTICE

Release the parking brake before operating the machine. Failure to release the parking brake before operating the machine will damage the parking brake and could result in a runaway machine.

Attain the desired travel speed before you engage the vibratory system. In order to achieve optimum compaction, low range should be used.

Avoid using the leveling blade (if equipped) as a plow or as a digging device. Machine damage can occur.

Stop the vibration system when you travel over concrete or pavement that is hard.

NOTICE

The bearings in the vibratory reservoir for the weight shaft are lubricated by rotating the drum assembly. Turning the vibratory system on with the machine not propelling may shorten the vibratory bearing life.

Begin the first pass of the compaction along the side of the work. Gradually make subsequent passes toward the center. Overlap the previous pass by 200 mm (7.87 inch) in order to eliminate uncompacted areas.

NOTICE

Before changing the vibratory amplitude selection, the system must be completely stopped.

Vibratory Operation

High Amplitude

In order to increase the total dynamic force of the vibration cycle, place the vibratory system in high amplitude. In order to increase the height of the drum movement, place the vibratory system in high amplitude.

High amplitude is used in the following situations:

- In order to meet the requirements of density, the job site requires higher compacting force.
- In order to compact material with a depth of 254 mm (10.0 inch) or more, use high amplitude.

NOTE: Once you have achieved the desired density of the material, high amplitude can cause the material to break down.

NOTE: Every job site is different due to the various conditions of the soil. Moisture content and the type of material vary from job site to job site. In order to determine the amplitude that is needed, establishing a test location at each job site is recommended.

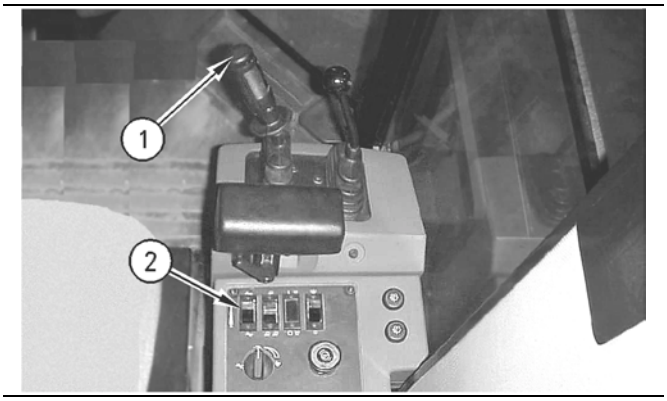


Illustration 54

1. In order to place the vibratory system in high amplitude, rock the vibratory control (2) rearward.
2. Move the propel lever to the FWD position or the REV position.
3. Start the vibratory system by pressing the vibratory on/off control (1). The control is located on the top of the propel lever.

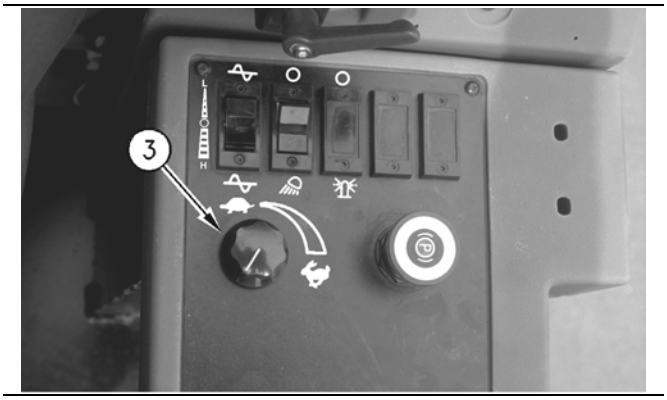


Illustration 55

4. If the machine is equipped with a variable vibration control knob (3), adjust the frequency of the vibration to the desired level by rotating the knob.

5. In order to stop the vibratory system, press the vibratory on/off control (1).

NOTE: If the drum separates from the material that is being compacted, you should select low amplitude.

6. Return the propel control to the STOP position.

Low Amplitude

In order to decrease the total dynamic force of vibration cycle, place the vibratory system in low amplitude. In order to decrease the height of the drum movement, place the vibratory system in low amplitude.

Low amplitude is used in the following situations:

- If any decoupling occurs and you have not reached soil density, use low amplitude.
- The thickness of the material is less than 254 mm (10.0 inch).
- Objects such as sewer systems or water systems may be damaged due to the higher forces of high amplitude.

1. In order to place the vibratory system in low amplitude, rock the vibratory control (3) forward.

2. Move the propel lever to the FWD position or the REV position.

3. Start the vibratory system by pressing the vibratory on/off control (1). The control is located on the top of the propel lever.

4. If the machine is equipped with a variable vibration control knob (3), adjust the frequency of the vibration to the desired level by rotating the knob.

5. In order to stop the vibratory system, press the vibratory on/off control (1).

6. Return the propel control the STOP position.

Machine Parking

Stopping the Machine

SMCS Code: 7000

NOTICE

Park the machine on a level surface. If it is necessary to park on a grade, securely block the tires and the drum.

Do not apply the parking brake while the machine is moving unless an emergency exists.

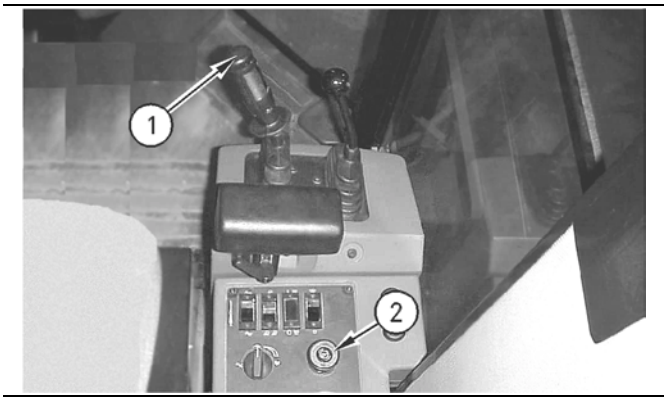


Illustration 56

1. Move the propel control (1) to the STOP position.

2. Apply the parking brake. Push the parking brake control (2) inward.

Illustration 57

3. Rock the throttle control (3) forward to the LOW position.

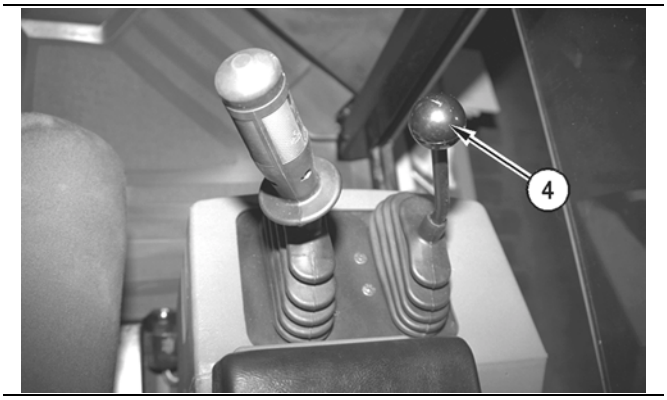


Illustration 58

4. Move the control (4) for the leveling blade (if equipped) to the LOWER position. Lower the blade to the ground.

Freezing Conditions

If freezing conditions are expected, the tires and the drum should be cleaned of mud and dirt. Park the machine on wood planks.

Stopping the Engine if an Electrical Malfunction Occurs

SMCS Code: 1000; 7000

Turn the engine start switch to the OFF position. If the engine does not stop, perform the following procedure.

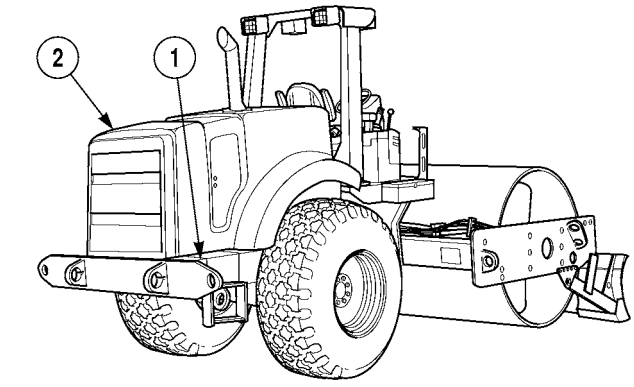


Illustration 59

1. To gain access to the engine compartment, use switch (1) to lift the hood (2).

   If switch (1) does not lift the hood, refer to the Operation and Maintenance Manual, "Tilt Hood".

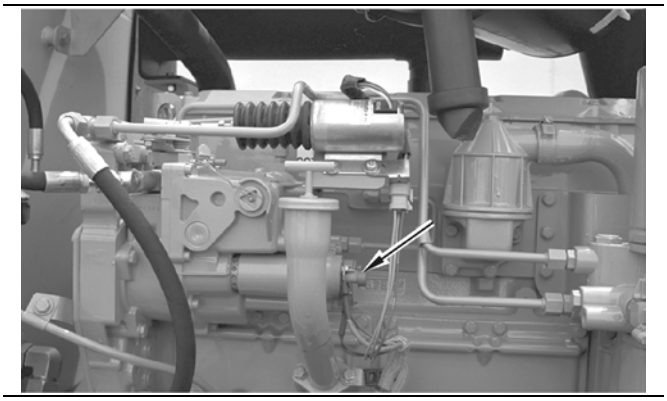


Illustration 60

2. In order to stop the engine, push the end of the fuel control solenoid inward.

NOTE: Do not operate the machine until the cause of the problem is corrected.

Leaving the Machine

SMCS Code: 7000

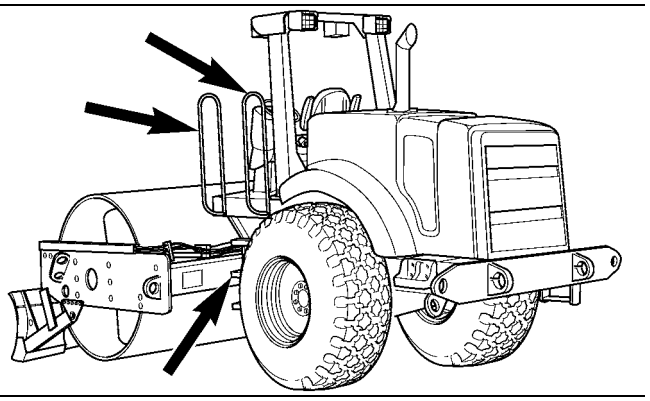


Illustration 61

1. Use the steps and the handholds in order to dismount the machine. Face the machine in order to dismount the machine.

2. Inspect the engine compartment for debris. Clean any debris from the engine compartment in order to avoid a fire. Clean any paper from the engine compartment in order to avoid a fire.

3. If the machine is being parked for an extended period of time, turn the disconnect switch for the battery to the OFF position.

4. Close all access covers and doors. Install vandalism protection locks.

Transportation Information

NOTE: Appendix E contains transportation information for the military models.

Shipping the Machine

SMCS Code: 7000; 7500

Table 4

CS-563D Vibratory Compactor (Smooth Drum)	
Weight (w/o cab)	10 964 kg (24171 lb)
Weight (w/cab)	11 734 kg (25869 lb)
Length (maximum)	5510 mm (18 ft 1 in)
Width (across tires)	2150 mm (7 ft 1 in)
Height (w/o cab)	3040 mm (10 ft 0 in)
Height (w/cab)	3040 mm (10 ft 0 in)

Table 5

CP-563D Vibratory Compactor (Padded Drum)	
Weight (w/o cab)	11 795 kg (26004 lb)
Weight (w/cab)	12 565 kg (27701 lb)
Weight (w/o cab, w/o blade)	11 260 kg (24824 lb)
Length (maximum, w/blade)	6045 mm (19 ft 10 in)
Width (across blade)	2440 mm (8 ft 1 in)
Width (across tires)	2165 mm (7 ft 1 in)
Height (w/o cab)	3100 mm (10 ft 2 in)
Height (w/cab)	3100 mm (10 ft 2 in)

Investigate the travel route for overpass clearances. Make sure that there is adequate clearance for the machine that is being transported.

Remove ice, snow, or other slippery material from the loading dock and from the truck bed before you load the machine onto the transport machine. Removing ice, snow, or other slippery material will help to prevent the machine from slipping in transit.

NOTE: Obey all laws that govern the characteristics of a load (height, weight, width, and length). Observe all regulations that govern wide loads.

When you move the machine to a colder climate, make sure that the cooling system has the proper antifreeze.

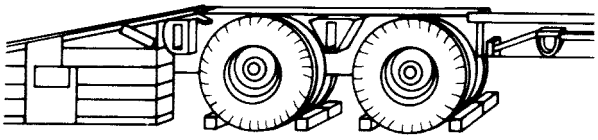


Illustration 62

1. Before you load the machine, chock the trailer wheels or the rail car wheels, as shown.

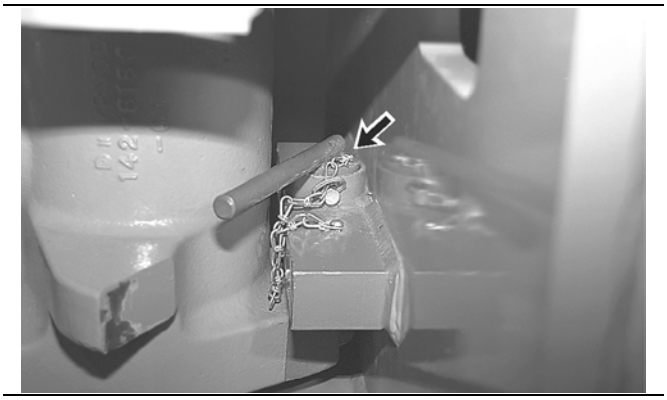


Illustration 63

2. After the machine has been moved into position, install the steering frame lock pin. The pin will hold the front frame and the rear frame rigid.

   Refer to the Operation and Maintenance Manual, "Steering Frame Lock", for further information.

3. Lower the leveling blade (if equipped).

4. Apply the parking brake.

5. Turn the engine start switch to the OFF position.

6. Inflate the tires to 138 kPa (20 psi) for shipping.

7. Block the machine, and tie down the machine. Refer to the Operation and Maintenance Manual, "Lifting and Tying Down the Machine", for more information.

8. Turn the disconnect switch for the battery to the OFF position.

9. Lock the doors and the access covers. Attach any vandalism protection. Install the cover on the console. Cover the operator seat.

NOTICE

Rotation of the turbocharger without engine operation can result in damage to the turbocharger.

Cover the exhaust opening or secure the rain cap in order to prevent the turbocharger from windmilling in transit.

10. Cover the exhaust opening or secure the rain cap in order to prevent the turbocharger from windmilling in transit.

11. To protect the cooling systems, mix the solution of antifreeze and water. The solution should provide protection to the lowest expected outside temperature. Drain the excess coolant into a suitable container.

12. Perform a walk-around inspection and measure the fluid levels in the various compartments.

13. Travel at a moderate speed. Observe all speed limitations when you are roading the machine.

Consult your Caterpillar dealer for shipping instructions for your machine.

Roading the Machine

SMCS Code: 7000; 7500

NOTE: Before roading the machine, consult your tire dealer for recommended tire pressures and speed limitations.

Inflate the tires to the correct pressure.

The performance of the tires on the machine are specified by a rating of ton-kilometer per hour (ton-mile per hour). Consult your tire dealer for the specification of the tires on your machine. Observe the specified ton-kilometer per hour (ton-mile per hour) of the tires.

Perform a walk around inspection of the machine. Measure the fluid levels in the various compartments.

Check with the proper officials in order to obtain the required licenses.

Install any required flags, signals, or lights.

Travel at a moderate speed. Observe all speed limitations when you road the machine.

When you travel a long distance, stop the machine after 30 minutes.

In order to allow the tires to cool, stop the machine for 30 minutes.

In order to allow the components to cool, stop the machine for 30 minutes.

Lifting and Tying Down the Machine

SMCS Code: SMCS Code: 7000; 7500

NOTICE

Improper lifting or tiedowns can allow load to shift and can cause injury and damage.

For the military model specifications of the machine, refer to Appendix E.

Use properly rated cables and properly rated slings in order to lift the machine.

Position the crane or the lifting device in order to lift the machine in a level position.

The width of the spreader bar must be sufficient to prevent the lifting cables or the lifting straps from contacting the machine.

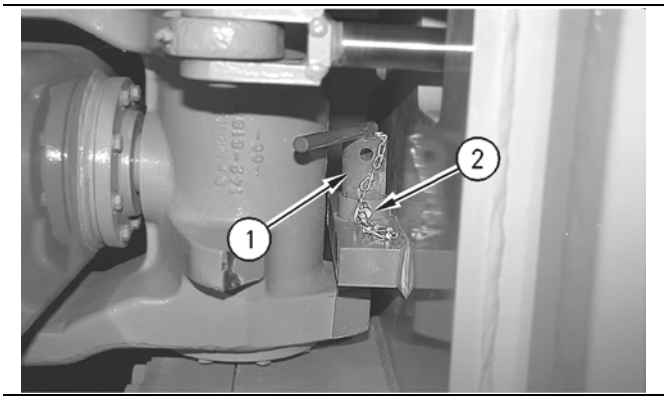


Illustration 64

The steering frame lock pin in the raised position.

1. In order to hold the yoke rigid, install the steering frame lock pin (1). Remove the retaining pin (2).

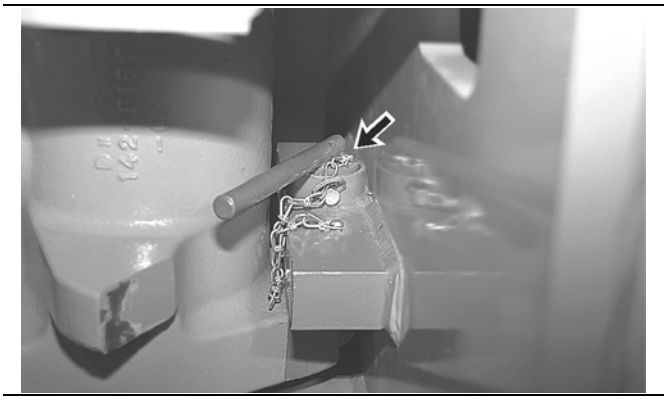


Illustration 65

The steering frame lock pin is in the locked position.

2. Lower the steering frame lock pin (2) into the proper position. Reinstall the retaining pin (1).

Illustration 66

3. Attach two lifting cables to the rear of the machine. There is one lifting eye on each side of the rear of the machine. The lifting eyes are identified by a “LIFT” stencil.

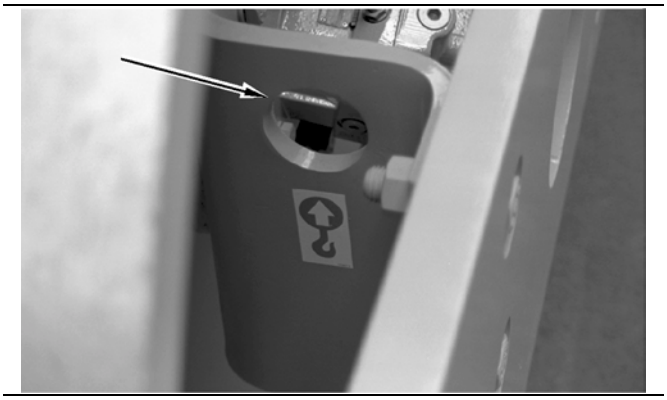


Illustration 67

4. Attach two lifting cables to the front of the machine. There is one eye on each side of the front of the machine. The lifting eyes are identified by a “LIFT” stencil.

5. Connect the four lifting cables to the spreader bars. The spreader bars must be centered over the machine.

6. Lift the machine and move the machine.

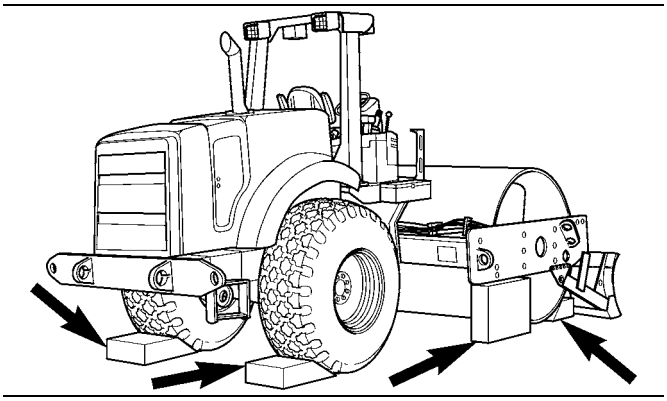


Illustration 68

NOTICE

Failure to support yoke before tying roller down may cause damage to rubber mounts between drum and yoke.

7. When the machine is positioned, place blocks in front of the drum. When the machine is positioned, place the blocks behind the tires. Support the drum yoke with suitable blocks or jack stands.

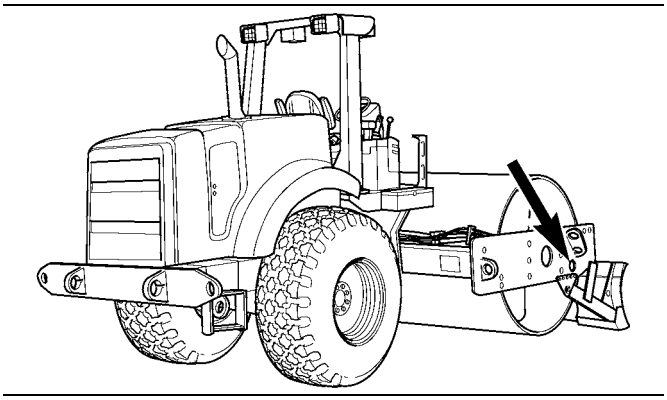


Illustration 69

Illustration 70

8. Secure the machine by using the tie-down positions. The positions are identified on the machine by a “TIE DOWN” stencil.

9. Refer to the Operation and Maintenance Manual, "Shipping the Machine", for more information.

Towing Information

Towing the Machine

SMCS Code: 7000

⚠ WARNING

Improper hookup and towing is dangerous and could result in injury or death to yourself or others.

The towing connection must be rigid, or towing must be done by two machines of the same size or larger than the towed machine. Connect a machine on each end of the towed machine.

Be sure that all necessary repairs and adjustments have been made before a machine that has been towed to a service area, is put back into operation.

These towing instructions are for moving a disabled machine for a short distance at low speed. Move the machine at a speed of 2 km/h (1.2 mph) or less to a convenient location for repair. These instructions are only for emergencies. Always haul the machine if long distance moving is required.

Shielding must be provided on both machines. This will protect the operator if the tow line or the tow bar breaks.

Do not allow an operator to be on the machine that is being towed unless the operator can control the steering and/or the braking.

Before towing, make sure that the tow line or the tow bar is in good condition. Make sure that the tow line or the tow bar has enough strength for the towing procedure that is involved. The strength of the towing line or of the tow bar should be at least 150 percent of the gross weight of the towing machine. This is true for a disabled machine that is stuck in the mud and for towing on a grade.

Keep the tow line angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.

Quick machine movement could overload the tow line or the tow bar. This could cause the tow line or the tow bar to break. Gradual, steady machine movement will be more effective.

Normally, the towing machine should be as large as the disabled machine. Make sure that the towing machine has enough brake capacity, enough weight, and enough power. The towing machine must be able to control both machines for the grade that is involved and for the distance that is involved.

You must provide sufficient control and sufficient braking when you are moving a disabled machine downhill. This may require a larger towing machine or additional machines that are connected to the rear. This will prevent the machine from rolling away out of control.

All situation requirements cannot be listed. Minimal towing machine capacity is required on smooth, level surfaces. On inclines in poor condition or on surfaces in poor condition, maximum towing machine capacity is required.

Attach the towing device and the machine before you release the brakes.

Consult your Caterpillar dealer for towing a disabled machine.

Running Engine

If the engine is running, the machine can be towed for a short distance under certain conditions. The power train and the steering system must be operable.

The operator must steer the machine that is towed in the direction of the tow line.

Ensure that all instructions in this section are followed carefully. Ensure that all instructions in this section are followed exactly.

Stopped Engine

⚠ WARNING

Shutting off the engine will result in the loss of machine steering.

When the engine is stopped, additional steps may be required before the machine is towed. In order to avoid damaging the power train, the steering system, and the brakes, which may be inoperable, additional steps may be required.

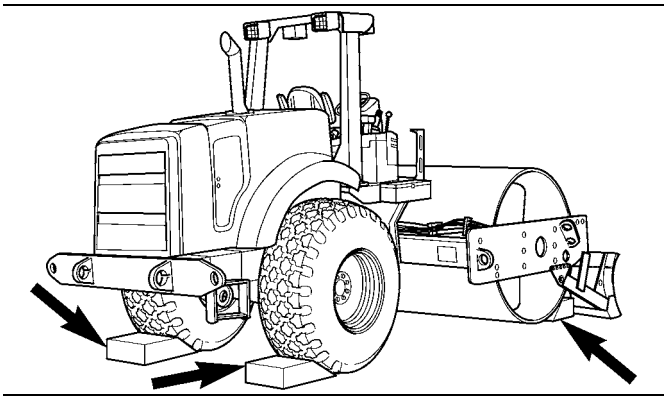


Illustration 71

1. Block the drum and block the tires securely in order to prevent the movement of the machine. Do not remove the blocking until the tow vehicle has been positioned and the tow lines are in place.

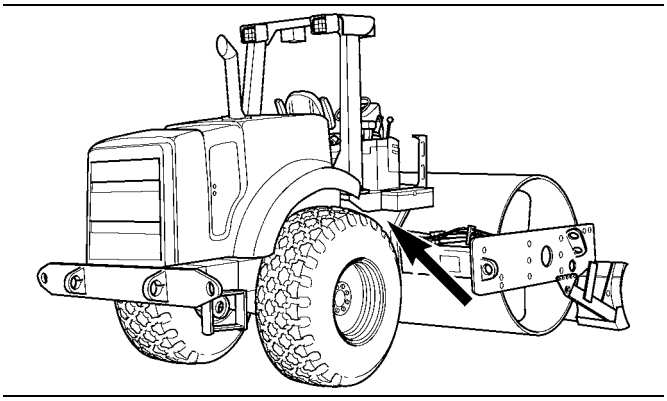


Illustration 72

2. There are two side panels, one on the right side of the cab and one on the left side of the cab. Remove the side panels in order to gain access to the valves on the propel pump.

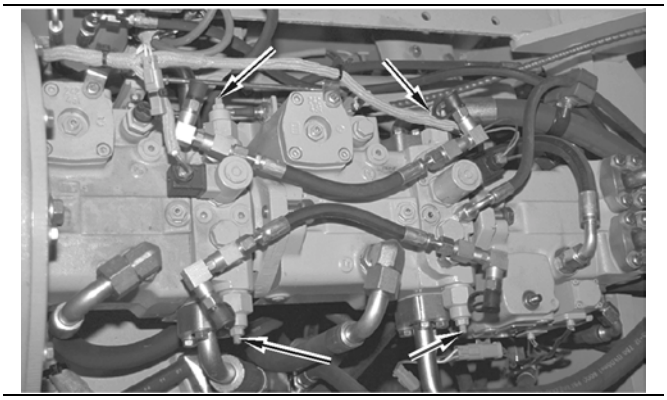


Illustration 73

3. There are two valves on each propel pump.

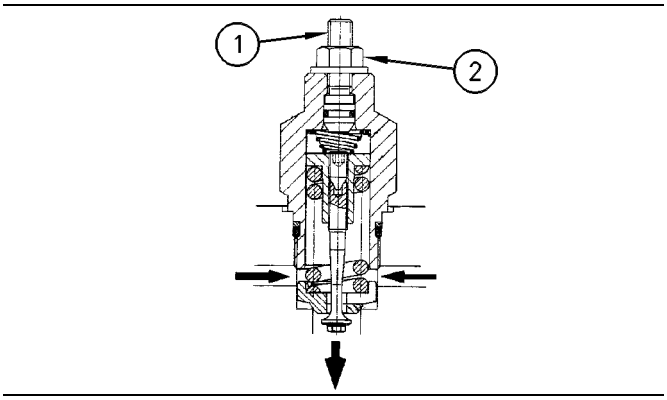


Illustration 74

NOTE: Do not tighten the adjusting screw. Tightening the adjusting screw will damage the spring that is inside of the valve.

4. Loosen the jam nuts (2) by two turns. Screw the adjusting screw inward until the jam nut contacts the valve. Count the number of turns as you turn the screw inward. Make a note of the number of turns.

5. Manually release the parking brake. Refer to the Operation and Maintenance Manual, "Parking Brake Manual Release" for more information.

NOTICE

Release the parking brake to prevent excessive wear and damage to the braking system when towing.

The procedure for manual release of the parking brake is outlined in the Operation and Maintenance Manual, "Parking Brake Manual Release".

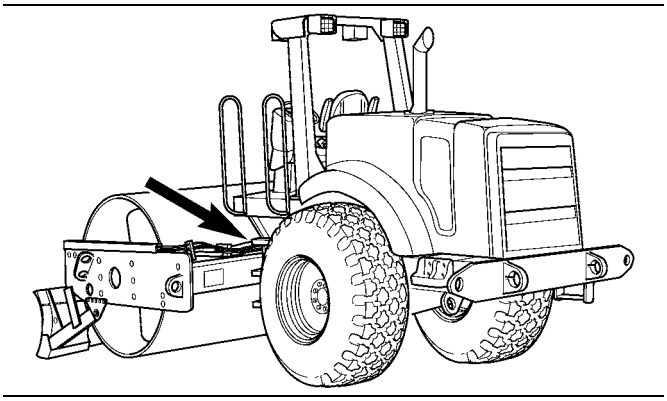


Illustration 75

1. Disconnect the cylinders for steering from the yoke. Secure the cylinders to the main frame of the machine.

2. Attach the tow lines to the disabled machine.

3. Attach the tow line to the tow vehicle.

4. Remove the blocks from the drum and the tires.

5. Slowly tow the disabled machine.

6. After you tow the disabled machine, turn the screws (1) outward to the prior position. Tighten the jam nuts (2).

7. Remove all tooling that was used to release the parking brake. Install the brake line.

8. Connect the steering cylinders to the yoke.

Parking Brake Manual Release

SMCS Code: 4267; 7000

⚠ WARNING

Personal Injury or death can result from a brake malfunction. Do not operate the machine if the brake was applied due to a malfunction of the brake system.

Correct any problem before attempting to operate the machine.

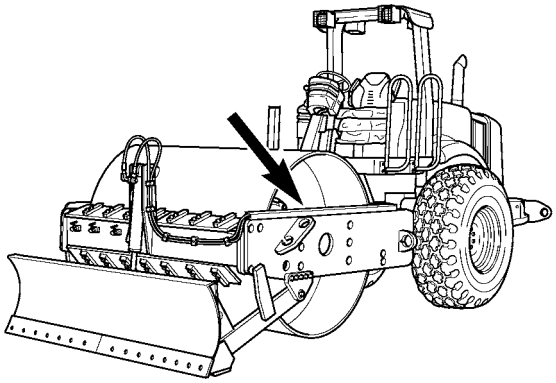
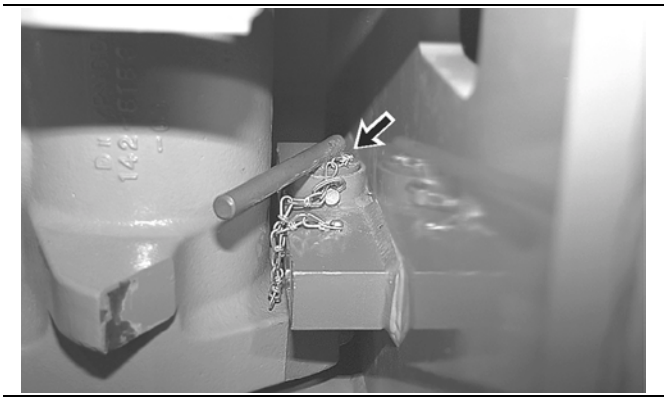


Illustration 76

NOTE: The parking brake is located on the gear reducer for the drum.

1. In order to prevent the machine from moving, block the drum and block the tires securely.



2. In order to hold the front frame and the rear frame rigid, install the steering frame lock pin.

3. The brakes can be released with the manual parking brake pump. See page E-6 for instructions.

Engine Oil Level – Check

SMCS Code: 1348-535-FLV

NOTICE

Do not under fill or overfill engine crankcase with oil. Either condition can cause engine damage.

Stop the engine in order to check the oil level. DO NOT check the oil level when the engine is running.

Park the machine on a level surface.

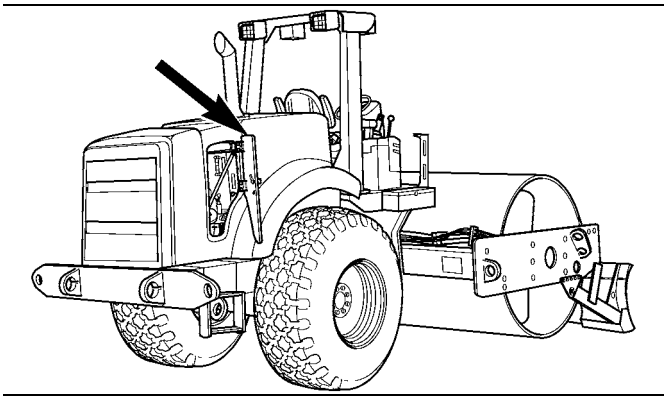


Illustration 77

1. Open the engine compartment access door.

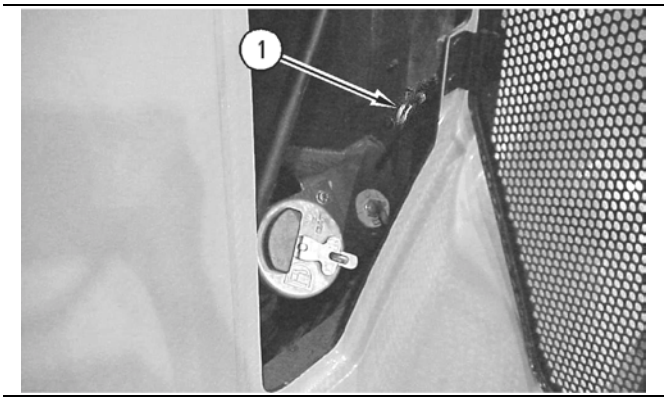


Illustration 78

2. Remove the dipstick (1). Wipe the dipstick with a clean cloth. Insert the dipstick. Remove the dipstick and note the oil level. Insert the dipstick.

NOTE: Refer to page 2-5 for the correct amount of oil that is used when the oil is changed. The correct amount of oil determines the correct level of the oil in the FULL range on the dipstick.

NOTICE

Do not overfill the crankcase. The oil level must not reach the top of the FULL range mark or above the FULL range mark.

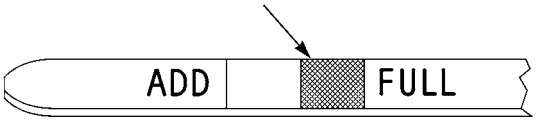


Illustration 79

3. Maintain the oil level on the dipstick between the FULL RANGE mark and the ADD OIL mark. Add oil if the oil level is too low.

NOTE: Operating your engine with the oil level above the FULL mark in the FULL range could cause the crankshaft to dip into the oil. This could result in excessively high operating temperatures. The high operating temperatures could result in reduced lubricating characteristics of the oil. This could cause damage to the bearings and loss of engine power.

Add the Engine Oil

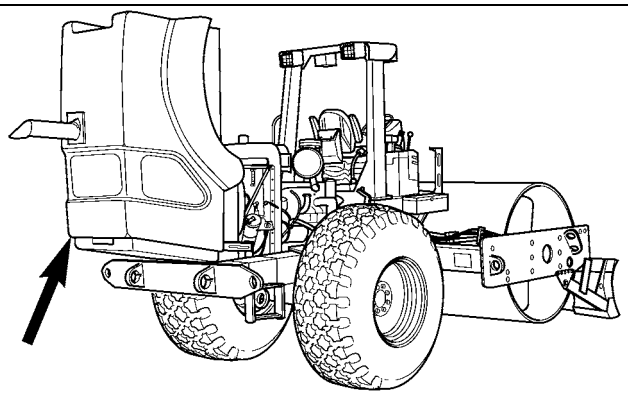


Illustration 80

1. Open the engine compartment.

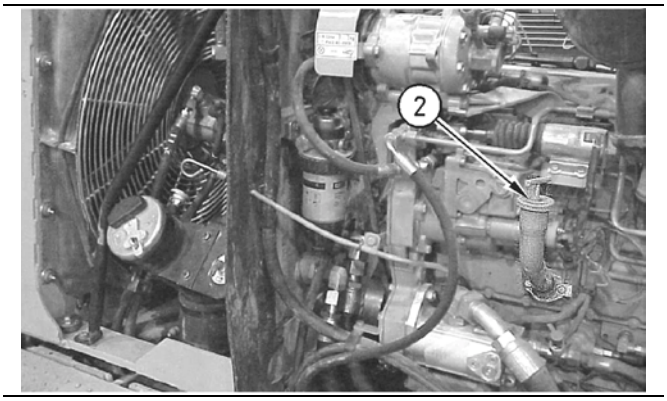


Illustration 81

2. Remove the oil filler plug (2).

3. Add the oil.

4. Clean the oil filler plug. Install the oil filler plug.

5. Close the engine compartment.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists forms, field manuals, technical manuals, and other publications either referenced in this manual or which apply to the operation and maintenance of the Roller. Web sites which may be useful are also included in this appendix.

A-2. DEPARTMENT OF THE ARMY PAMPHLETS

Consolidated Index of Army Publications and Blank Forms ..... DA Pam 25-30
Using Unit Supply System (Manual Procedures) ..... DA Pam 710-2-1
The Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

A-3. FORMS

Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Recommended Changes to Equipment Technical Publications ..... DA Form 2028-2
Organizational Control Record for Equipment ..... DA Form 2401
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Equipment Inspection and Maintenance Worksheet (Electronic) ..... DA Form 5988E
Maintenance Request ..... DA Form 2407
Preventive Maintenance Schedule and Record ..... DD Form 314
Product Quality Deficiency Report (NSN 7540-00-105-0078) ..... SF 368

A-4. FIELD MANUALS

NBC Contamination Avoidance ..... FM 3-3
NBC Protection ..... FM 3-4
NBC Decontamination ..... FM 3-5
NBC Handbook ..... FM 3-7
Camouflage ..... FM 20-3
Operation and Maintenance of Ordnance Materiel in Extreme Cold Weather (0° to -65°F) ..... FM 9-207
Recovery and Battlefield Damage Assessment and Repair ..... FM 9-43-2
Soldier's Manual for First Aid ..... FM 21-11
Basic Cold Weather Manual ..... FM 31-70
Northern Operations ..... FM 31-71
Army Motor Transport Units and Operators ..... FM 55-30
Strategic Deployment by Surface Transportation ..... FM 55-65
Desert Operations (How to Fight) ..... FM 90-3
Operational Symbols ..... FM 101-5-1
Manual for Wheel Vehicle Driver ..... FM 21-305

A-5. SUPPLY BULLETIN

Storage Serviceability Standard - Tracked Vehicles,
Wheeled Vehicles, and Component Parts ..... SB 740-98-1

A-6. TECHNICAL BULLETINS AND MANUALS

Equipment Improvement Report and Maintenance Digest (US Army Tank-automotive and Armaments Command) Tank-Automotive Equipment ..... TB 43-001-39-Series
Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment ..... TB 43-0209
Maintenance in the Desert ..... TB 43-0239
Standards for Overseas Shipment or Domestic Issue of Special Purpose Equipment ..... TB 9-2300-281-35
Preparation of Hazardous Materials for Military Air Shipment ..... TM 38-250/AFR 71-4
Inspection, Care, and Maintenance of Antifriction Bearings ..... TM 9-214
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Items Including Chemicals ..... TM 9-247
Operator's Unit, Direct Support, and General Support Maintenance Manual for Care, Maintenance, Repair, and Inspection of Pneumatic Tires and Inner Tubes ..... TM 9-2610-200-14
Operator, Unit, Direct Support, and General Support Maintenance Manual for Lead Storage Batteries ..... TM 9-6140-200-14
Painting Instructions for Field Use ..... TM 43-0139
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use ..... TM 750-244-6

A-7. OTHER PUBLICATIONS

Army Logistics Readiness and Sustainability ..... AR 700-138
Abbreviations and Acronyms ..... ASME Y14.38M
Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items) ..... CTA 50-970

A-8. WEB SITES

Military Traffic Management Command (MTMC) ..... http://www.tea.army.mil
Logistical Support Activity (LOGSA) ..... http://www.logsa.army.mil
US Army Tank-automotive and Armaments Command (TACOM) ..... http://www.tacom.army.mil

APPENDIX B

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

Section I. INTRODUCTION

B-1. SCOPE

This appendix lists components of the end item and basic issue items for the Roller to help you inventory the items for safe and efficient operation of the equipment.

B-2. GENERAL

The Components of End Item (COEI) and Basic Issue Items (BII) Lists are divided into the following sections:

a. ***Section II, Components of End Item.*** This listing is for information purposes only, and is not authority to requisition replacements. These items are part of the end item. As part of the end item, these items shall be with the end item when issued or transferred between property accounts. COEI are transferred between property accounts. Illustrations are furnished to help you find and identify the items.

b. ***Section III, Basic Issue Items (BII).*** These essential items are required to place the Roller in operation, operate the Roller, and to do emergency repairs. Although shipped separately packaged, BII must be with the Roller during operation and when the Roller is transferred between property accounts. This list is your authority to request/requisition BII for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

B-3. EXPLANATION OF COLUMNS

a. ***Column (1), Illus Number.*** This column gives you the number of the item illustrated.

b. ***Column (2), National Stock Number.*** This column identifies the item's stock number to be used for requisitioning purposes.

c. ***Column (3), Description CAGEC and Part Number.*** This column identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number.

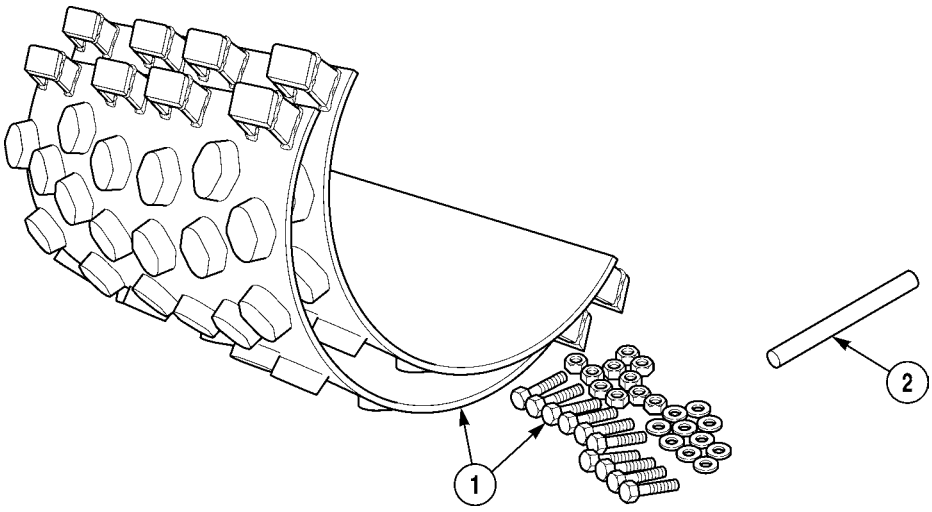
d. ***Column (4), Usable On Code.*** This column gives you a code if the item you need is not the same for different models of equipment. Codes used are:

Usable on Code	Model
All	Type II

e. ***Column (5), U/M (Unit of Measure).*** This column indicates how the item is issued for the National Stock Number shown in column two.

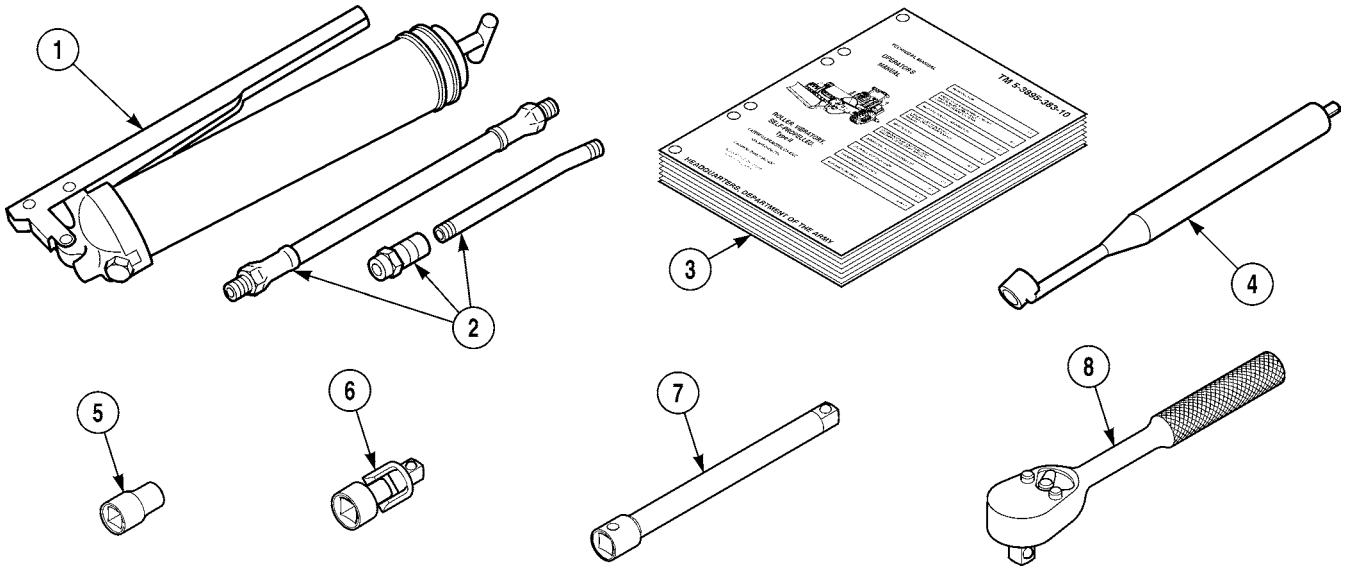
f. ***Column (6), Qty Rqd.*** This column indicates the quantity required.

Section II. COMPONENTS OF END ITEM



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) Usable On Code	(5) U/M	(6) Qty Rqd
1		Pad-foot Shell Kit, (11083) 161-6123	All	EA	1
		Kit Includes:			
	3895-01-474-1919	Pad-foot Shells (2), (11083) 159-1437			
	5306-01-471-5264	Bolts (8), (11083) 8T-6381 (M20 x 2.5 x 120 mm)			
	5305-01-471-4490	Bolts (2), (11083) 8T-4187 (M20 x 2.5 x 80 mm)			
	4730-01-471-4845	Locknuts (10), (11083) 6V-7688			
	5310-01-471-4476	Nuts (8), (11083) 8T-4131			
	5310-01-429-2862	Washers (4) (11083) 8T-5439			
	5310-01-471-4482	Washers (24), (11083) 8T-4123			
2	4320-01-471-4237	Hand Pump Handle (stowed inside access door, near hand pump), part of hand pump, (11083) 156-3435	All	EA	1

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) Usable On Code	(5) U/M	(6) Qty Rqd
1	4930-00-253-2478	Lubricating Gun, Hand, (11083) 8F9866	All	EA	1
2	4930-00-497-5926	Coupling, Grease Gun, (11083) 9F2636 (Part of 8F9866)	All	EA	1
3	TM 5-3895-383-10	Operator's Manual	All	EA	1
4	4910-01-326-7247	Gage, Tire Pressure, Self-contained (30428) 6637A24	All	EA	1
5	5120-01-430-7809	Wrench, Socket, 11mm, 3/8 in. Drive, (11083) 1U7845	All	EA	1
6	5120-01-435-6912	Universal Joint, 3/8 in. Drive, (11083) 1U7158	All	EA	1
7	5120-01-435-6910	Extension, 6 in., 3/8 in. Drive, (11083) 1U7156	All	EA	1
8	5120-00-451-1391	Handle, Ratchet, 3/8 in. Drive, (11083) 1U7148	All	EA	1

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists additional items that you are authorized for the support of the Roller.

C-2. GENERAL

This list identifies items that do not have to accompany the Roller and that do not have to be turned in with it. These items are authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING

National Stock Numbers, description, and quantities are provided to help you identify and request the additional items you require to support this equipment. If the required item differs for different models of this equipment, see the "Usable On Code" column for the applicable model or codes. Codes used are:

Usable on Code	Model
All	All

C-4. EXPLANATION OF COLUMNS

a. ***Column (1), National Stock Number.*** This column identifies the stock number of the item to be used for requisitioning purposes.

b. ***Column (2), Description CAGEC and Part Number.*** This column identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number.

c. ***Column (3), Usable on Code.*** This column identifies the Usable on Code of the item.

d. ***Column (4), U/M (Unit of Measure).*** This column indicates how the item is issued for the National Stock Number shown in column one.

e. ***Column (5), Qty Auth.*** This column indicates the quantity authorized for each Roller.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description CAGEC and Part Number	(3) Usable on Code	(4) U/M	(5) Qty Auth
4210-00-889-2221	Extinguisher, Fire (88193) 0E915	ALL	ea	1
2910-00-646-9727	Cylinder, Engine Starting (11083) 7N296 (Ether canister for starting below 32°F [0°C])	ALL	ea	1

APPENDIX D

STOWAGE AND SIGN GUIDE

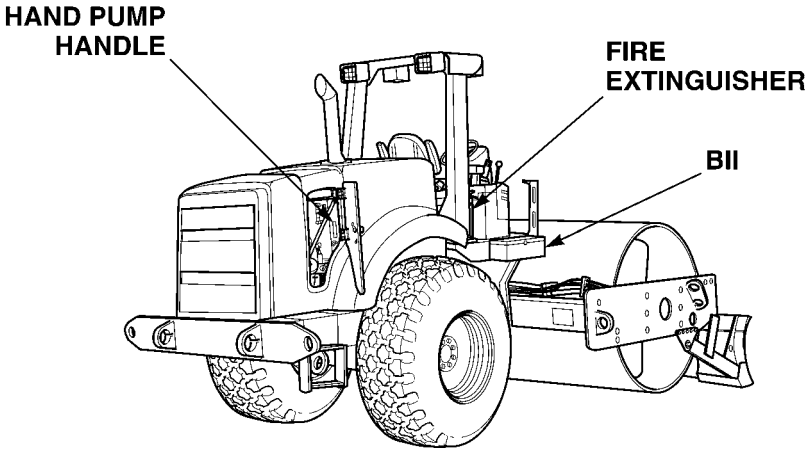
D-1. SCOPE

This appendix shows the location for stowage of equipment and material required to be carried on the Roller.

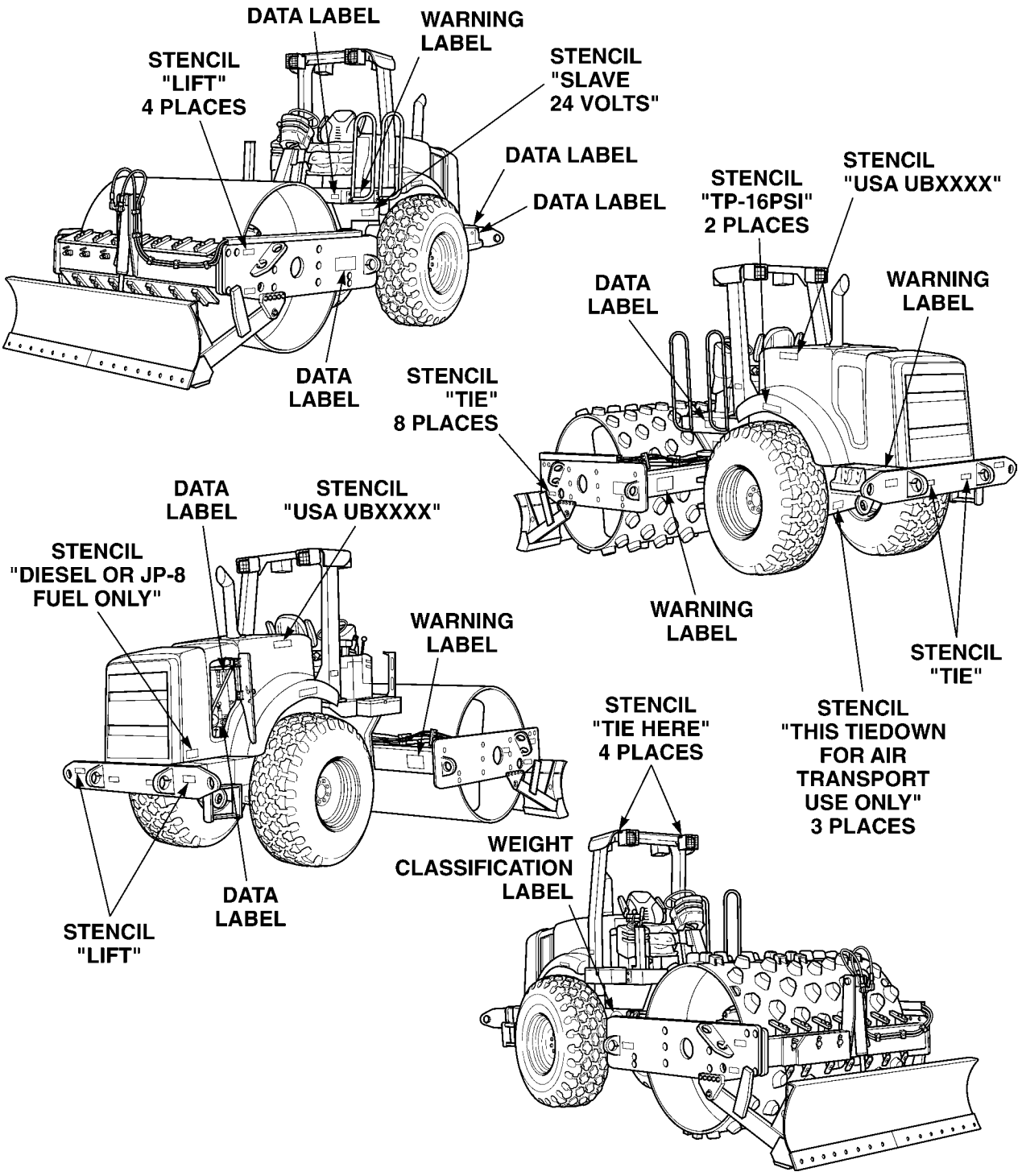
D-2. GENERAL

The equipment stowage locator is designed to help inventory items required for safe and efficient operation. This equipment locator is representative of BII and applicable AAL stowage on the Roller.

D-3. STOWAGE LOCATIONS



D-4. SIGN GUIDE



APPENDIX E

TRANSPORTABILITY INSTRUCTIONS

E-1. GENERAL

a. Purpose. This appendix was added for information only and is not authorization for the operator to perform tasks or maintain additional tools on the Roller.

This appendix is for transportation officers and other personnel responsible for safe transportation of the Roller. Data is provided for planning and executing movement of the Roller worldwide. Physical characteristics of the Roller, safety precautions, technical data on transport modes, and lifting and tiedown procedures are also included in this appendix.

The major dimensions and weights given in this manual are US customary and equivalent SI (metric) units. Approximate values appear in parentheses following the customary-unit value.

b. Related Publications. Additional information on transport procedures can be found in:

- FM 55-65, Strategic Deployment by Surface Transportation.
- TB 9-2300-281-35, Standards for Overseas Shipment or Domestic Issue of Special Purpose Equipment.
- TM 38-250/AFR 71-4, Preparation of Hazardous Materials for Military Air Shipment.

c. Related Websites.

- Military Traffic Management Command (MTMC) http://www.tea.army.mil
- Logistical Support Activity (LOGSA) http://www.logsa.army.mil

E-2. SAFETY

a. General. Although the Roller has no special hazardous or dangerous characteristics during exposure to normal transportation environments, several general safety considerations and precautions are important.

(1) Check the entire Roller to ensure loose items are properly secured.

(2) Have fire extinguishers readily available when operating the Roller.

(3) Make sure only qualified personnel operate the Roller.

(4) Never permit riders. This is a one-person machine.

(5) Do not leave the Roller unattended while the engine is running.

(6) Do not allow the Roller to exceed 3 miles per hour during loading and unloading operations.

(7) Do not drive the Roller on public highways without the appropriate safety equipment.

(8) Adhere to all local, state, federal, and host-nation safety laws and regulations applying to commercial carriers.

b. Hazardous Material Considerations. The basic Roller does not contain hazardous material. Regulations or transportation procedures covering diesel-fuel-powered vehicles and ether canisters will apply.

E-3. EQUIPMENT DESCRIPTION

The Roller is a standard commercial product (Caterpillar CS-563D) that has been slightly modified to provide a roller suitable for air transportation. As provided, the Roller also meets MIL-STD-209H requirements for crane lift and helicopter, highway, rail, and marine transportation. Major modifications to the standard machine include lift and tie points, CARC paint, NATO starting receptacle, decontamination apparatus bracket, rifle bracket, keyless ignition, and a cut-out switch for the backup alarm. The machines will be provided with a leveling blade and a Padfoot Shell Kit (PFSK). The Roller is fully transportable in either configuration. Some sectionalization is required for shipment in C-130 and C-141 aircraft.

E-4. MODES OF TRANSPORTATION

a. Highway. The Roller is not suitable for self-transportation on highways. The Roller may be towed short distances when disabled (see Chapter 4 for preparation and procedures). The Roller is suitable, as provided, for transportation on M916/M870 and M920/M870 truck/trailer combinations. Roller tiedown points are compatible with those on the M870 trailer. The leveling blade must be removed for unrestricted travel on U.S. Highways. For unrestricted road transportation in the EC (Economic Community/Europe) the leveling blade, ROPS, and exhaust stack must be removed.

b. Rail. This machine is transportable by rail on both CONUS and NATO rail systems. Tiedown patterns and data are provided for shipment on general purpose cable tie cars and chain tie cars.

c. Oceans and Waterways.

(1) This machine can be shipped overseas in volume (unit) shipments. On-deck storage is permissible, however, some preparation to prevent corrosion damage is required depending upon the length of time the machine is to be exposed to marine environment (corrosive spray/atmosphere). See your local Caterpillar Dealer if there is any question as to proper procedure.

(2) This machine is transportable on break-bulk, roll-on/roll-off, LASH, SEABEE, waterway barge, or boat.

d. Air. This machine is air transportable on C-130, C-141, C-5A, and C-17 aircraft. The ROPS, leveling blade, and exhaust stack must be removed for shipment on C-130 and C-141 aircraft.

E-5. TRANSPORTATION REQUIREMENTS

a. Specialized Service and Equipment. No specialized railcars, truck trailers, handling equipment, shock mitigation systems or spreader bars are required for transportation of the Roller. Use of slings less than 12 feet (3.7 m) in length may result in contact with the Roller and possible damage to the Roller or slings.

b. Shock and Vibration. There are no shock or vibration considerations for listed forms of transportation.

c. Special Requirements for Shipment.

(1) There are no temperature limits for listed forms of transportation.

(2) There are no pressure limits for listed forms of transportation.

(3) No power sources are required for listed forms of transportation.

(4) There are no humidity control requirements for listed forms of transportation.

(5) There are no other special requirements for shipment by any of the listed methods of transportation.

d. Speed Requirements. The maximum speed of the machine in a self-propelled mode is 8.0 mph (13 km/h). The machine should not be towed at speeds in excess of 1.2 mph (2km/h).

e. Hazardous Material. The Type II Vibratory Roller, as provided, is not classified as Hazardous material.

f. Sectionalization.

(1) Sectionalization is required for the Type II Vibratory Rollers when transported in C-130 and C-141 aircraft.

(2) For shipment in C-130 and C-141 aircraft the ROPS, leveling blade, and exhaust stack must be removed.

(3) For unrestricted EC (Economic Community/Europe) road transportation the leveling blade, ROPS, and exhaust stack must be removed.

(4) For unrestricted U.S. road transportation the leveling blade must be removed.

(5) Tools and equipment required to remove/install the ROPS are:

(a) Lifting Device – 396 lb (180 kg) capacity

(b) Sockets – 30 mm, 46 mm

(c) Wrenches – 30 mm, 46 mm

(d) Breaker Bar

(e) Torque Wrench

(f) Link Bracket

(6) Tools required to remove the exhaust stack are:

(a) Socket – 18 mm

(b) Wrench – 18 mm

(7) Tools and equipment required to remove/install the leveling blade are:

(a) Lifting Device – 1,350 lb (612 kg) capacity

(b) Sockets – 30 mm, 36 mm, 1-7/8 inch

(c) Wrenches – 30 mm, 36 mm, 1-7/8 inch

(d) Breaker Bar

(e) Torque Wrench

(8) Time to remove/install ROPS, leveling blade, and exhaust stack depends upon number of personnel available and their level of experience. A minimum of two man-hours (one hour clock time) for two experienced personnel plus operator, for lifting device, is estimated.

E-6. SPECIFICATION AND DIMENSIONS

a. Standard Configuration, Pad-foot Shell Kit. CS-563D, 100% fuel, leveling blade, and ROPS.

(1) Operating Weight: 26,805 lb (12159 kg)

(2) Shipping Weight: 26,680 lb (12102 kg)

(3) Weight at Axle: 8,980 lb (4073 kg)

(4) Weight at Drum: 17,700 lb (8029 kg)

(5) Weight at Each Tire: 4,490 lb (2037 kg)

(6) Tire Pressure: 12 PSI (83 kPa)

(7) Tire Footprint: 275 in^2 ($1km^2$) (approximately 10.5 [266.7 mm] X 14.75 in [374.65 mm])

(8) Ground Pressure at Tires: 16.32 PSI (112.52 kPa) (Shipping Weight)

(9) Ground Pressure at Drum – Line Contact: 213.4 Pounds per Linear Inch (PLI) (Operating Weight)

b. Standard Configuration, Smooth Drum. CS-563D, 100% fuel, leveling blade, and ROPS.

(1) Operating Weight: 23,425 lb (10625 kg)

(2) Shipping Weight: 23,300 lb (10568 kg)

(3) Weight at Axle: 8,980 lb (4073 kg)

(4) Weight at Drum: 14,320 lb (6495 kg)

(5) Weight at Each Tire: 4,490 lb (2037 kg)

(6) Tire Pressure: 16 PSI (110 kPa)

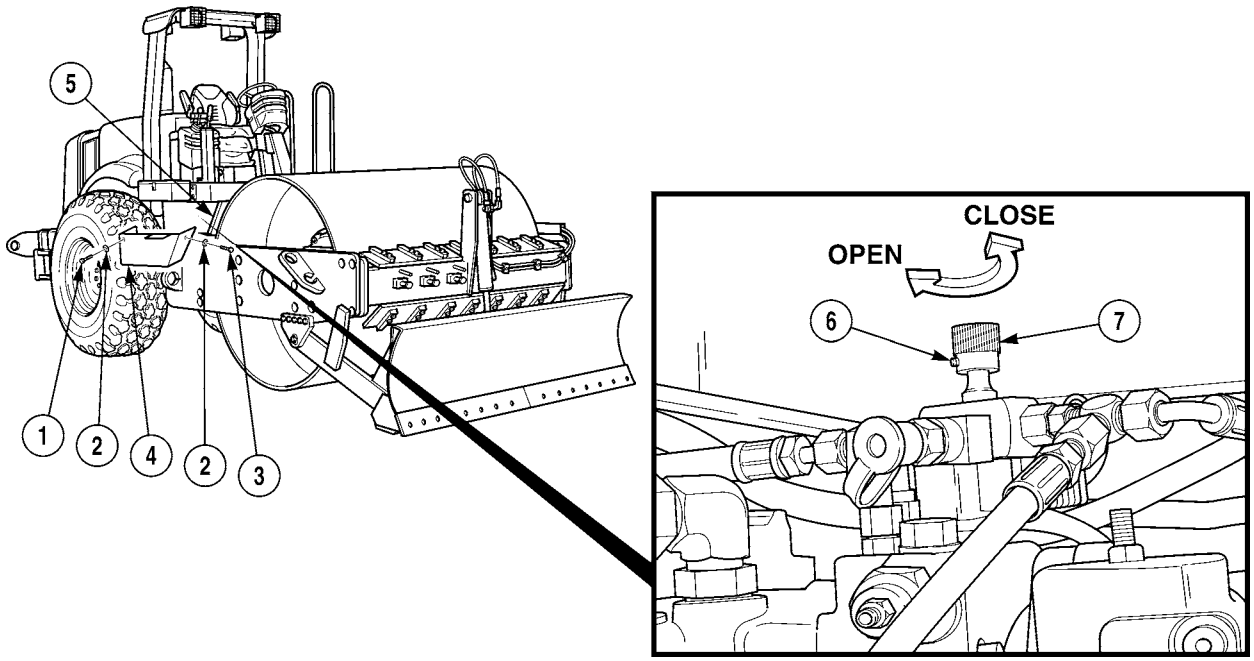
(7) Tire Footprint: 275 in^2 ($1km^2$) (approximately 10.5 in. [266.7 mm] X 14.75 in. [374.65 mm])

(8) Ground Pressure at Tires: 16.32 PSI (112.52 kPa) (Shipping Weight)

(9) Ground Pressure at Drum – Line Contact: 173.2 PLI (Operating Weight).

E-7. MANUAL BRAKE RELEASE

a. Release.



WARNING

- Roller may freewheel when brakes are released.
- Ensure path of travel is free of personnel and equipment.
- Ensure that Roller is secured (chocked or tied down) to prevent undesired movement.
- Failure to follow instructions can result in injury or death to personnel.

NOTE

The brakes are locked in the absence of positive hydraulic oil pressure (for example, when the engine is not running). The manual brake release hand pump provides the hydraulic oil pressure needed to release the brakes.

(1) Chock drum and wheels or tie down Roller to prevent undesired movement.

(2) Remove two screws (1), washers (2), screws (3), washers (2), and panel (4) from frame (5).

(3) Loosen setscrew (6) and turn knob (7) to full right to close needle valve.

(4) Tighten screw (6).

E-7. MANUAL BRAKE RELEASE (CONTD)

(5) Open access door (8).

(6) Remove handle (9) from clamp (10).

(7) Insert handle (9) in hand pump (11).

CAUTION

Do not over-pressurize brake system. Only about 2 pumps are required. Over-pressurization can damage seals in brake system.

NOTE

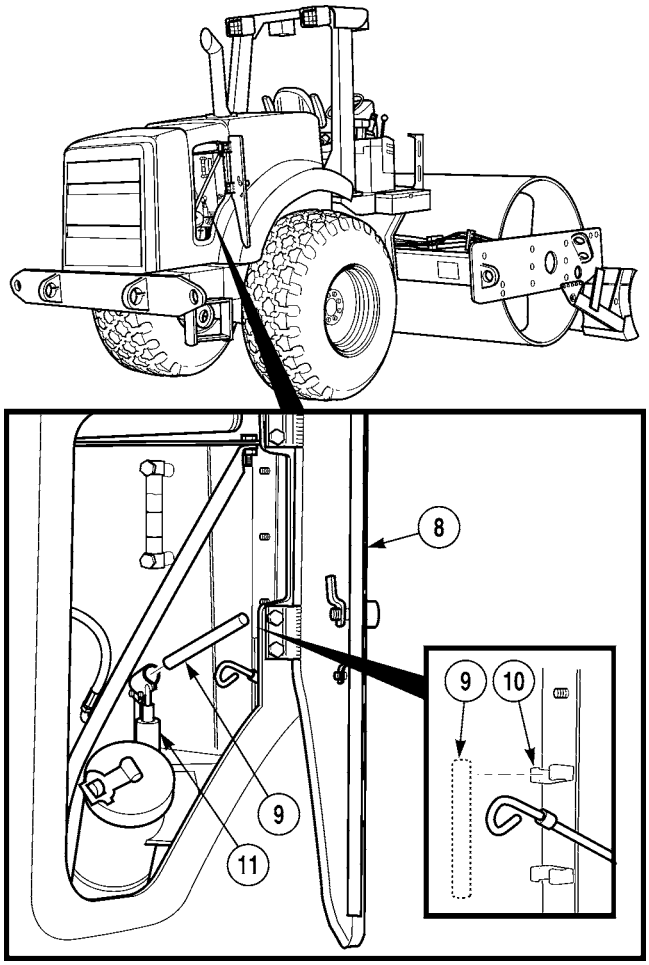
Pumping action will become difficult as the parking brake begins to release.

(8) Move handle (9) up and down to pump fluid to release parking brake.

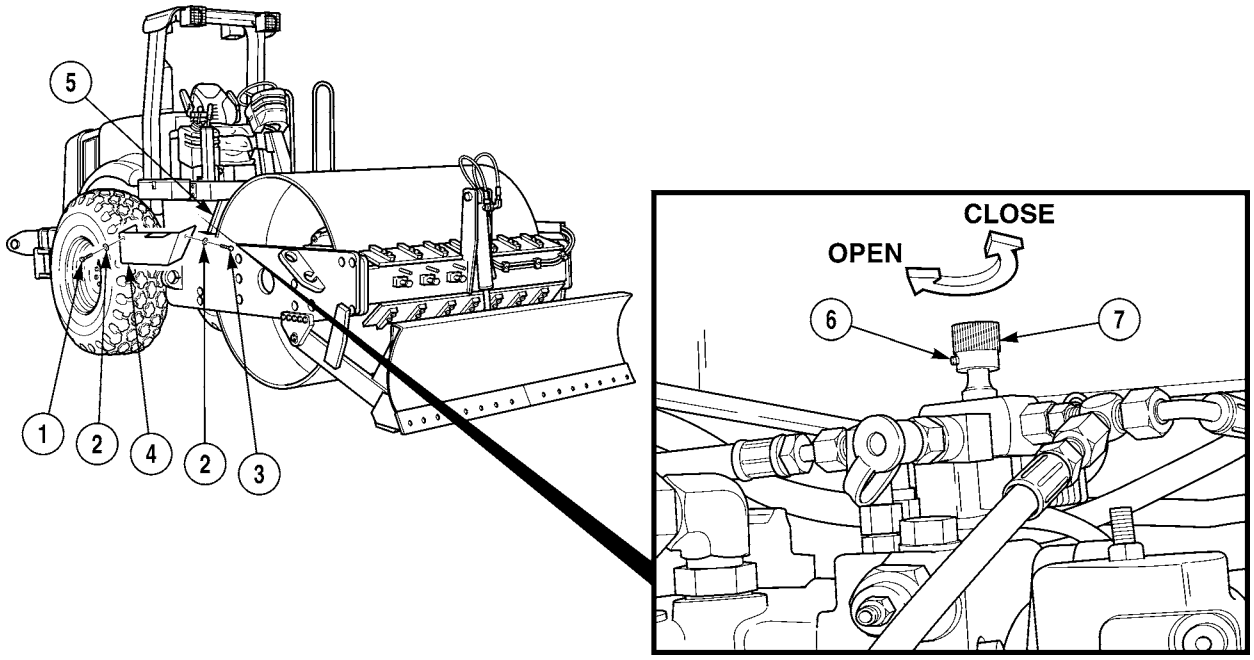
(9) Remove handle (9) from hand pump (11).

(10) Place handle (9) in clamp (10).

(11) Close access door (8).



b. Reset.



(1) Loosen setscrew (6) and turn knob (7) to full left to open needle valve.

(2) Tighten setscrew (6).

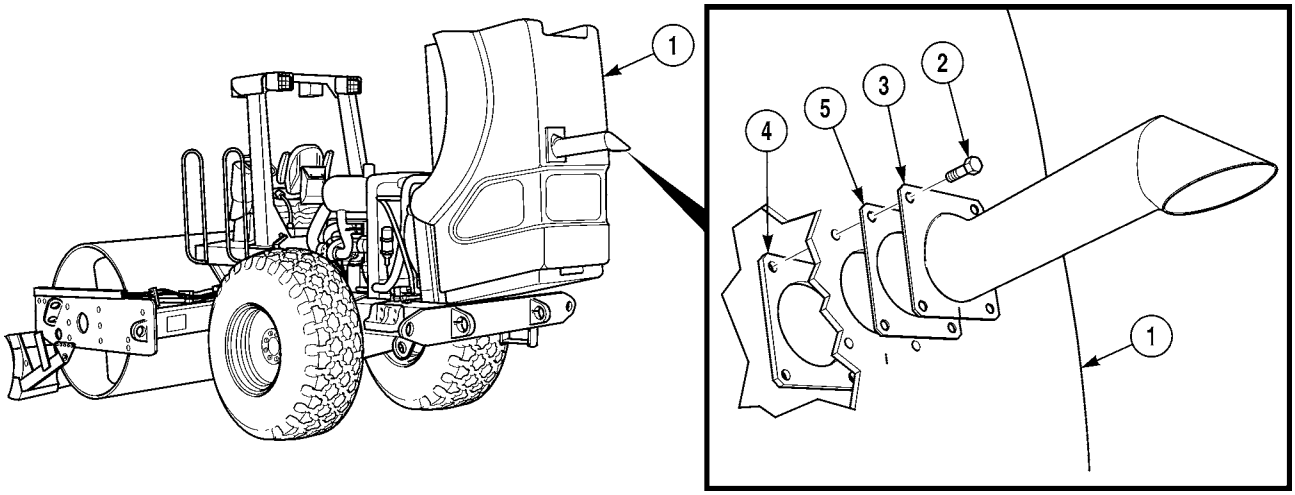
(3) Install panel (4) on frame (5) with four washers (2), two screws (3), and two screws (1).

(4) Remove chocks or tie-downs.

END OF TASK.

E-8. EXHAUST STACK REPLACEMENT

a. Removal.



WARNING

Do not touch hot exhaust system with bare hands; injury to personnel will result.

(1) Allow exhaust system to fully cool.

(2) Open hood (1) (Chapter 4).

(3) Remove four bolts (2), exhaust stack (3), plate (4), and gasket (5) from hood (1).

b. Installation.

NOTE

Exhaust stack must be installed with opening facing rear of Roller.

(1) Insert plate (4) through hole in hood (1) and align bolt holes. Hold in place.

(2) Position gasket (5).

(3) Have assistant hold exhaust stack (3) and align one set of mating holes in exhaust stack (3) and hood (1).

(4) Install one bolt (2) through exhaust stack (3), gasket (5), hood (1), and plate (4). Snug, but do not tighten bolt.

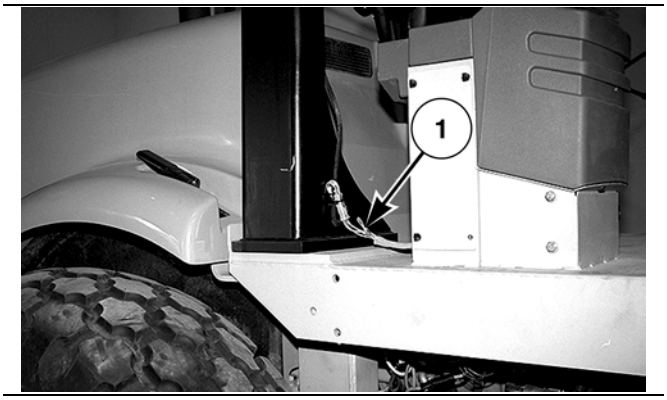
(5) Install three bolts (2) through exhaust stack (3), gasket (5), hood (1), and plate (4). Tighten all four bolts.

(6) Close hood (1) (Chapter 4).

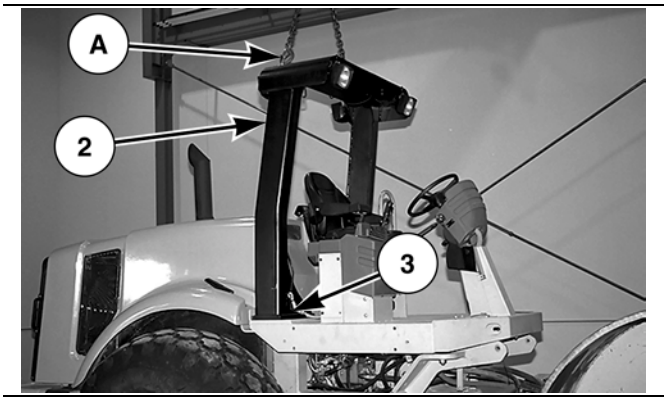
END OF TASK.

E-9. ROPS REPLACEMENT

Tools Needed		A
138-7575	Link Bracket	1



1. Disconnect electrical connector (1).



2. Attach a hoist and Tooling (A) to ROPS (2) as shown.

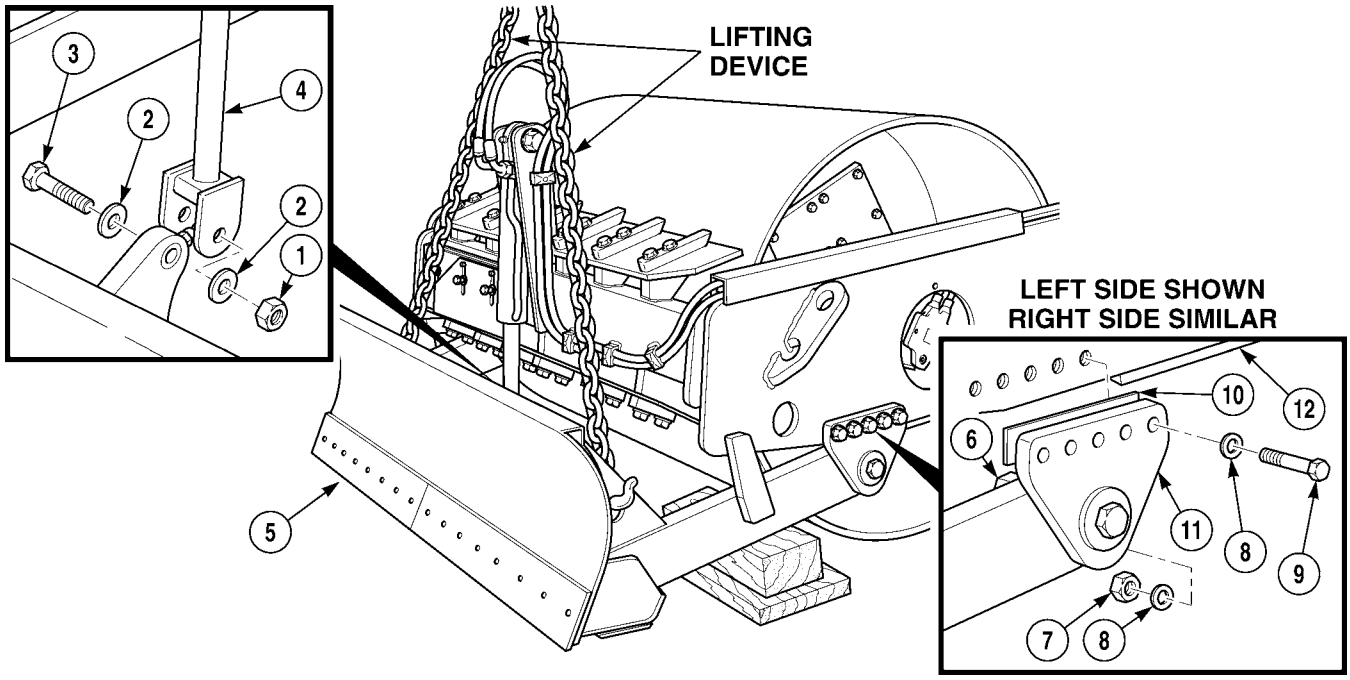
3. Remove 12 bolts (3) (six from each side), and remove ROPS (2) from the machine. The weight of the ROPS is 180 kg (396 lb).

NOTE: For installation of the ROPS, reverse the removal steps.

E-10. LEVELING BLADE REPLACEMENT

Personnel Required
Two

Equipment Condition
Blade lowered (TM 5-3895-383-10)
Engine OFF (TM 5-3895-383-10)
Drum and wheels chocked



a. Removal.

(1) Remove locknut (1), washer (2), bolt (3), washer (2), and cylinder rod (4) from blade assembly (5). Discard locknut

WARNING

- Blade assembly weighs 1350 lbs (612 kg). Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Do not allow heavy components to swing while hanging by lifting device. Equipment may strike personnel and cause serious injury or death.
- Exercise extreme caution when working near a cable or chain under tension. A snapped cable, shifting or swinging load may result in injury or death to personnel.

(2) Attach a lifting device with minimum 1350 lbs (612 kg) capacity to blade assembly (5). Snug lifting device to support blade assembly.

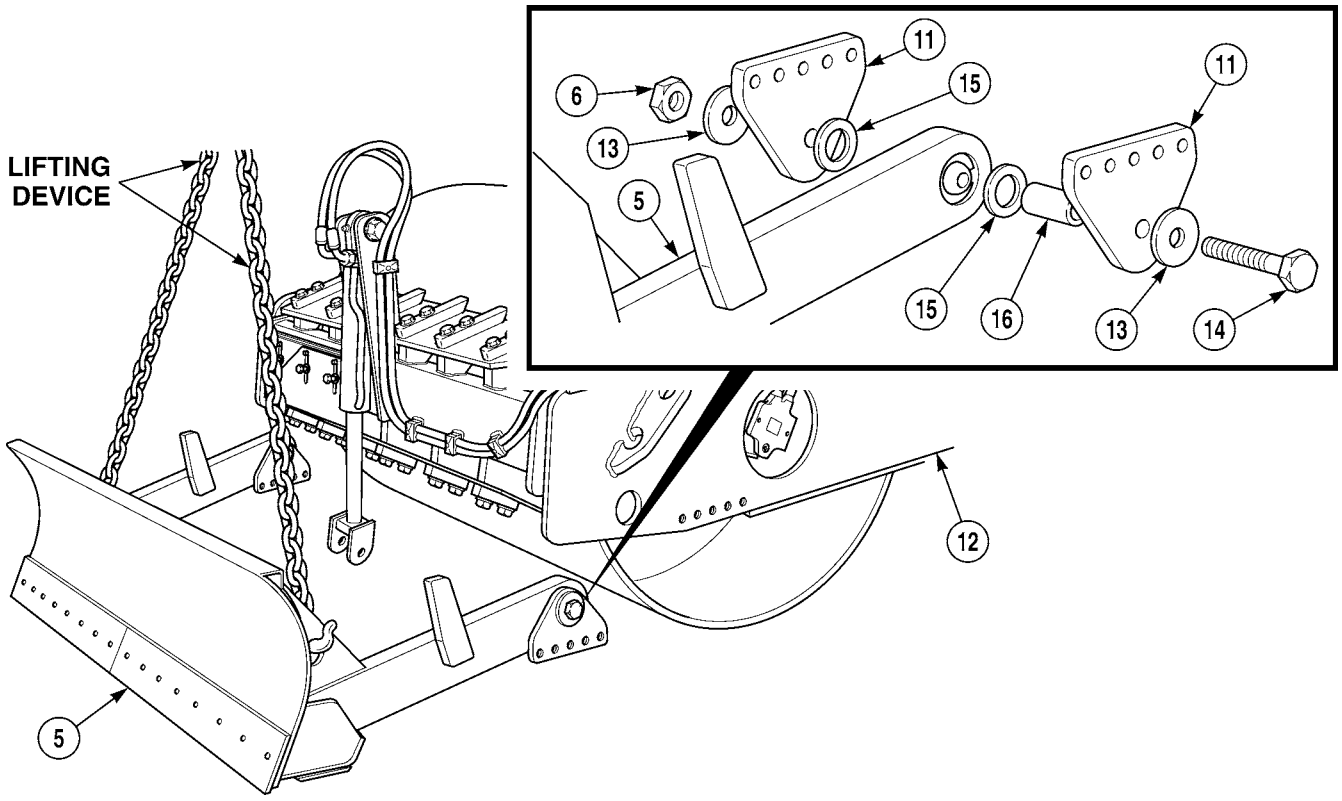
(3) Support each side of blade assembly (5) with wooden blocks.

(4) Loosen, but do not remove, two locknuts (6).

NOTE

- Shims may be present on left, right, both, or neither side(s).
- Plates will pivot down when bolts are removed.

(5) Remove ten locknuts (7), washers (8), bolts (9), shims (10), and washers (8) from four plates (11) and yoke (12).



(6) Remove two locknuts (6), washers (13), bolts (14), washers (13), four plates (11), spacers (15), and two bushings (16) from blade assembly (5).

WARNING

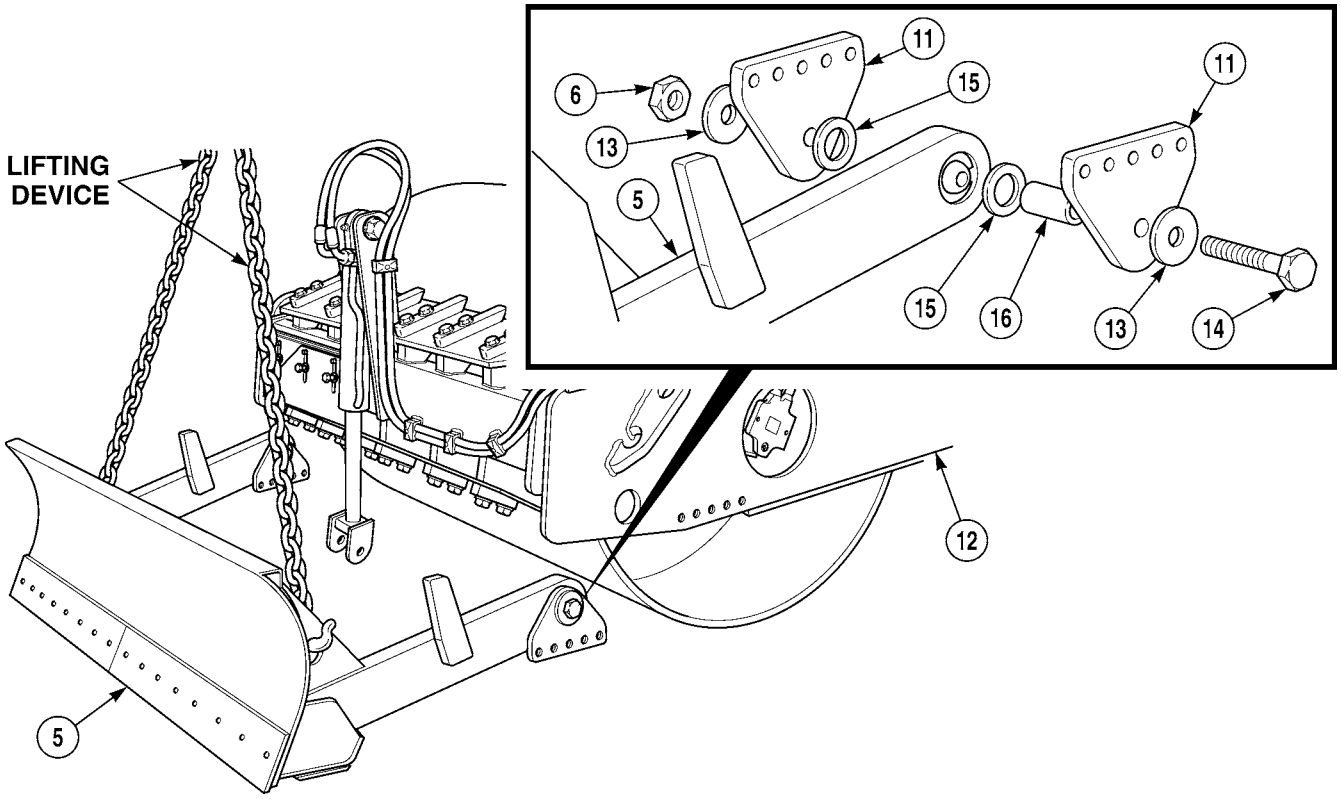
- Blade assembly weighs 1350 lbs (612 kg). Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Do not allow heavy components to swing while hanging by lifting device. Equipment may strike personnel and cause serious injury or death.

(7) Exercise extreme caution when working near a cable or chain under tension. A snapped cable, shifting or swinging load may result in injury or death to personnel.

(8) Using lifting device, remove blade assembly (5) from yoke (12).

(9) Place blade assembly (5) on stable surface capable of supporting minimum of 1350 lbs (612 kg).

b. Installation.



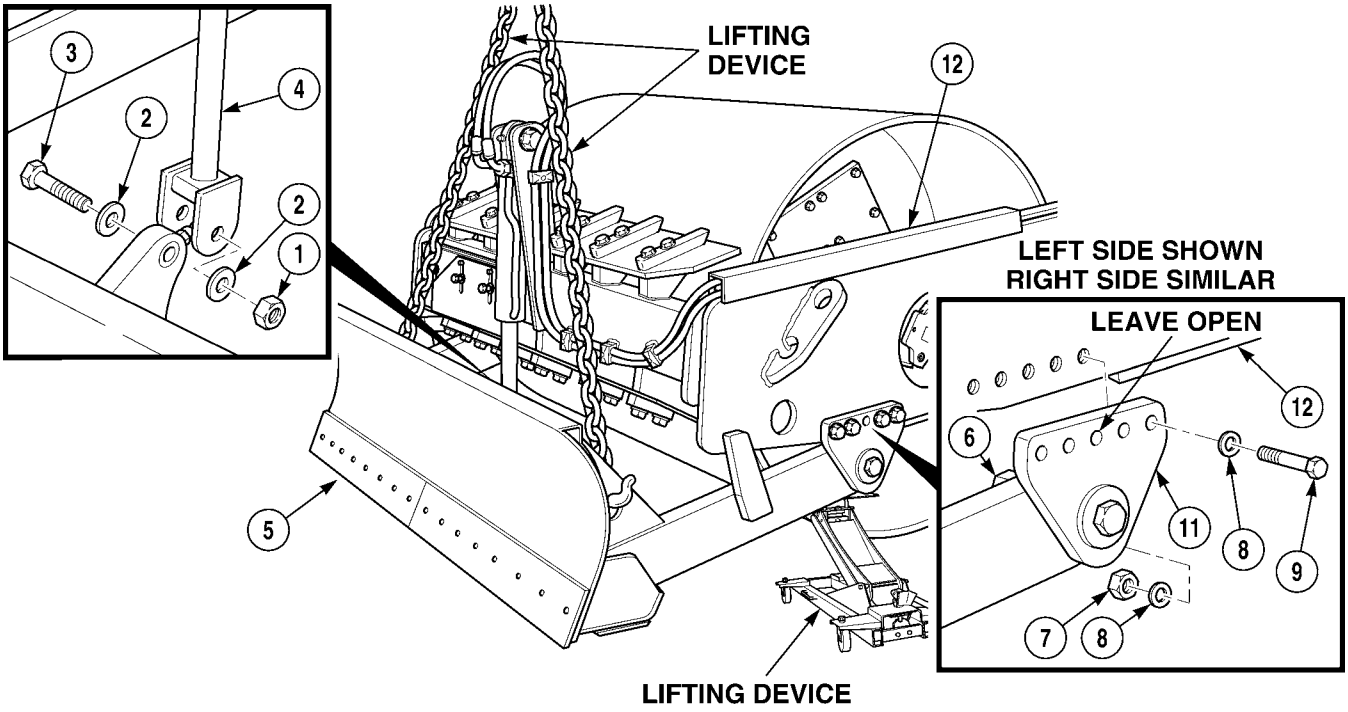
WARNING

- Blade assembly weighs 1350 lbs (612 kg). Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Do not allow heavy components to swing while hanging by lifting device. Equipment may strike personnel and cause injury or death.
- Exercise extreme caution when working near a cable or chain under tension. A snapped cable, shifting or swinging load may result in injury or death to personnel.

(10) Attach a lifting device with minimum 1350 lbs (612 kg) capacity to blade assembly (5).

(11) Using lifting device, position blade assembly (5) in yoke (12).

(12) Install two bushings (16), four spacers (15), plates (11), two washers (13), bolts (14), washers (13), and locknuts (6) in blade assembly (5).



(13) Install cylinder rod (4) on blade assembly (5) with washer (2), bolt (3), washer (2), and nut (1). Tighten nut to 340 lb-ft (460 N·m).

(14) Attach a lifting device to end of blade assembly (5) and align ten holes in two plates (11) with holes in yoke (12).

WARNING

- Blade assembly weighs 1350 lbs (612 kg). Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Do not allow heavy components to swing while hanging by lifting device. Equipment may strike personnel and cause serious injury or death.

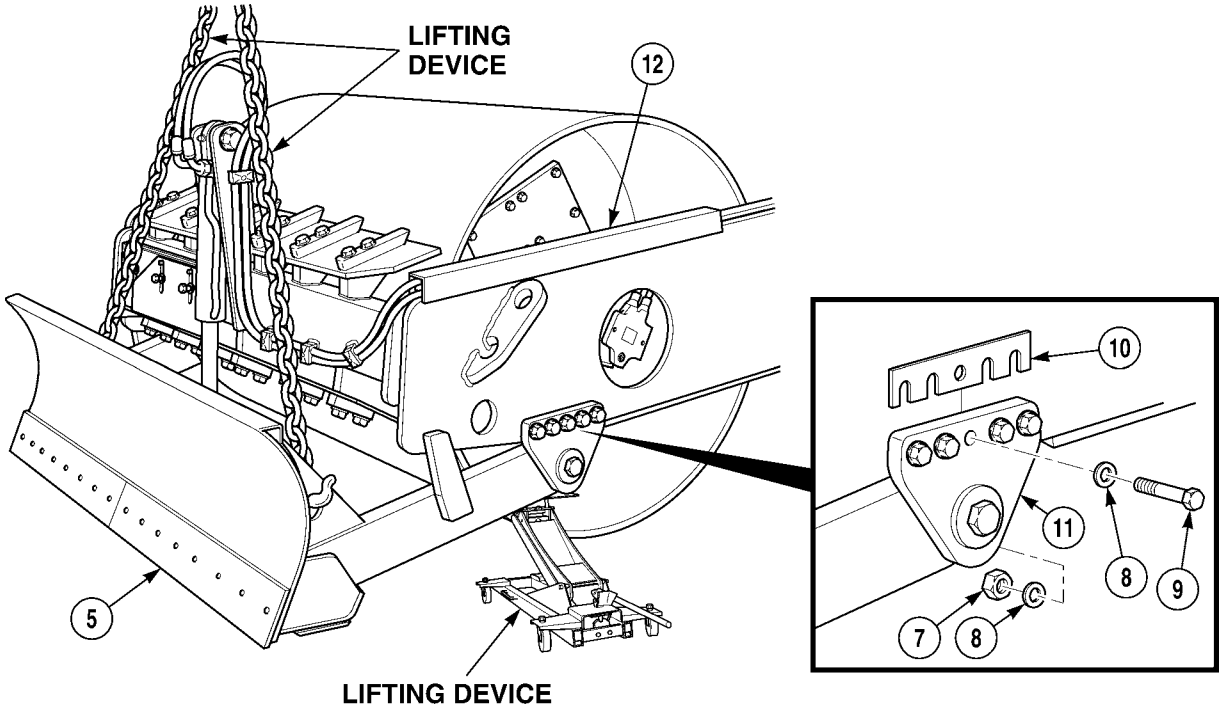
(15) Exercise extreme caution when working near a cable or chain under tension. A snapped cable, shifting or swinging load may result in injury or death to personnel.

NOTE

Center hole should be left open for addition of shims later.

(16) Install eight washers (8), bolts (9), washers (8) and nuts (7) in plates (11), and yoke (12). Snug, but do not tighten nuts.

(17) Tighten two nuts (6) to 340 lb-ft (460 N·m).



NOTE

- Shims are required if gap between plates and yoke is greater than 2mm.
- Blade arms should be centered on yoke.

(18) Determine amount of shims required to center blade assembly (5) on yoke (12).

(19) Loosen eight nuts (7) only enough to allow shims (10) to be added.

(20) Install shims (10) between plates (11) and yoke (12).

(21) Install two washers (8), bolts (9), washers (8) and nuts (7) in plates (11), and yoke (12).

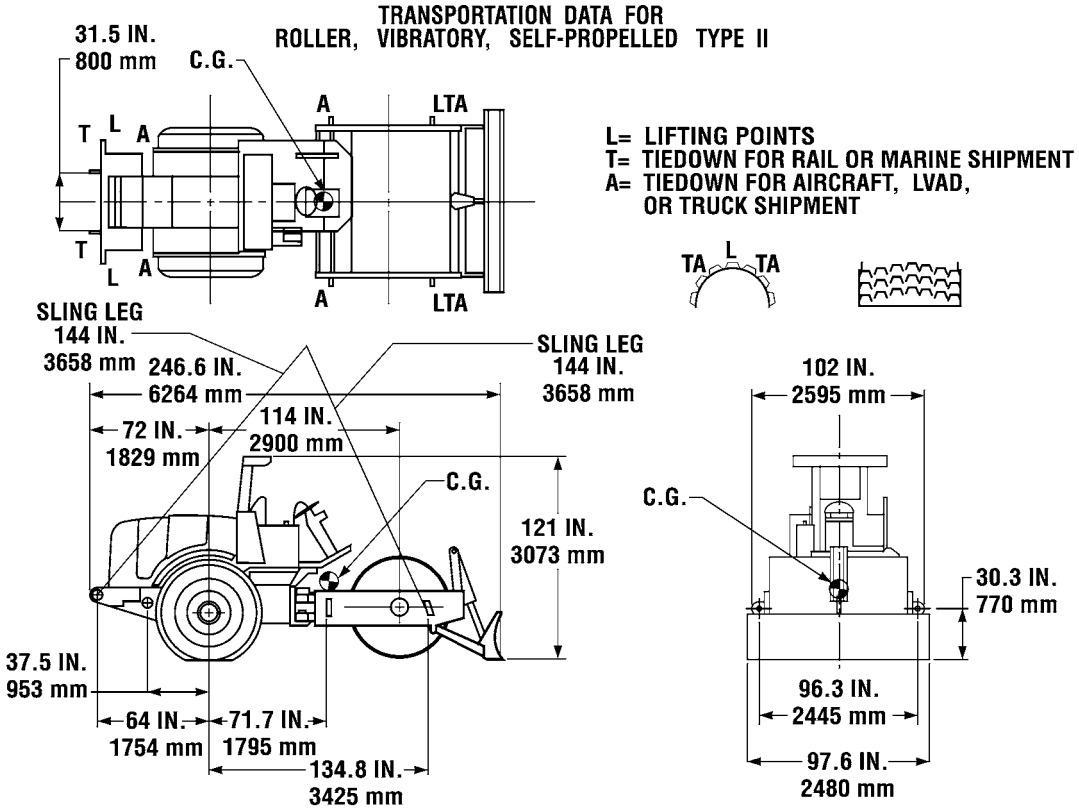
(22) Tighten ten nuts (7) to 340 lb-ft (460 N·m).

(23) Remove lifting devices.

NOTE

Follow-on Maintenance: Remove chocks.

END OF TASK



SHIPPING WEIGHT-MACHINE			
W/SMOOTH DRUM	23,300 LB	10568 kg	
W/PAD FOOT SHELL KIT	26,680 LB	12102 kg	
WEIGHT AT DRUM			
W/SMOOTH DRUM	14,320 LB	6495 kg	
W/PAD FOOT SHELL KIT	17,700 LB	8029 kg	

WEIGHT AT AXLE			
W/SMOOTH DRUM	8,980 LB	4073 kg	
W/PAD FOOT SHELL KIT	8,980 LB	4073 kg	
FLOOR AREA			
MACHINE	178 SQ. FT.	16.5 SQ. METERS	
PAD FOOT SHELL KIT	40 SQ. FT.	3.7 SQ. METERS	

SHIPPING CUBAGE		
MACHINE	1,807	CUBIC FEET
PAD FOOT SHELL KIT	112	CUBIC FEET
SHIPPING WEIGHT-		
PAD FOOT SHELL KIT	3380 LB	1533 kg

Figure E-1. Shipping Data, Type II

ALPHABETICAL INDEX

N

O

P

R

S

T

U

V

W

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army

9920206

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TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (IMPRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT:

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 3-4230-209-10		Decontaminating Apparatus Power Driven, Skid-Mounted: 500-Gallon, M12A1

BE EXACT...PINPOINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
1-3	1-6		
3-1	3-3		
3-18	3-10		

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Tank unit illustration shows suction hose item #3 as two hoses coupled together. Reason: suction hose is now one hose.

Text refers to cleaning solvent item 7, App. D in Expendable Supplies Section. Reason: Should be item 10, App. D.

Blender hose illustration is not accurate as shown. Reason: Blender hose should show quick-disconnect couplings at both ends.

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER	SIGN HERE:
SSG. TED RYBA 671-3681	SSG Ted Ryba

DA FORM 1 JUL 79 2028-2

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SAMPLE

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RECOMMENDED CHANGES TO EQUIPMENT PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (IMPRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT:

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5-3895-383-10		Roller, Vibratory, Self-propelled, Type II, Caterpillar Model CS-563D

BE EXACT...PINPOINT WHERE IT IS				IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	

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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

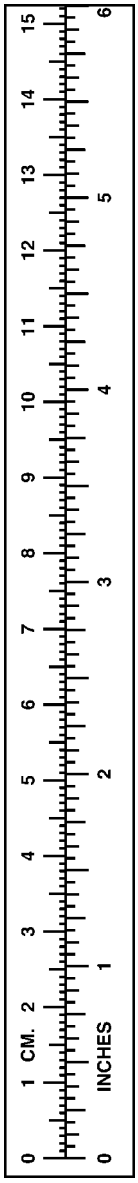
TEMPERATURE

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
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/Sq 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
Sq Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Sq 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 Sq Inch	0.145
Km per Liter	Miles per Gallon	2.354
Km per Hour	Miles per Hour	0.621



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