PM Break in Period

Section 02-01-02

Komatsu has made every effort to make this manual as accurate as possible based on the information available at the time of publication and printing. Continuous improvement and advancement of product design may cause changes to machines, which may not have been included in this publication. Komatsu reserves the right to make changes and improvements at any time. To ensure the most current information, please contact your service center.

Table of Contents

List of Figures

Komatsu and your distributor make every effort to ensure your new machine is erected and serviced properly before it is delivered to you. However, it is ESSENTIAL that the following break-in period service procedures and training be performed before the machine is placed in service and during the break-in period. Following the break-in period, a program of regular inspection and service, per the Service Manual section titled “PREVENTIVE MAINTENANCE, BREAK-IN PERIOD” is essential to receive a long and economical service life from the machine.

NOTICE

Komatsu warranty provisions are conditional on the owner’s compliance with these break-in period service procedures and subsequent maintenance operations.

Report any operational or mechanical abnormalities to your Service Center IMMEDIATELY. Problems with the engine should be referred to the Komatsu Service Center and the engine manufacturers closest authorized service center. The machine should not be operated if any problem with the brakes, engine, or steering is noted or if any hydraulic system warning screen is activated.

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Scope of This Publication

PM BREAK IN PERIOD contains important instructions for service that must be performed from the initial commissioning of the machine to 1000 hours of service. A BREAK-IN PERIOD SERVICE PROCEDURE CHECKLIST is provided. Print the checklist from the electronic manual for use during the important break-in period.

It is ESSENTIAL for all personnel associated with the machine to become familiar with this information and the instructions contained in the other publications in this manual BEFORE operating the machine.

Safety

This publication contains special instructions that pertain to safety, operation, maintenance, and repair of the machine. Listed below are the signal words and symbols that precede these instructions and their meanings:

⚠ DANGER

- **The danger label indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

⚠ WARNING

- **The warning label indicates a hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ CAUTION

- **The caution label, used with the safety alert symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury (includes the safety alert symbol ⚠).**

CAUTION

- **The caution label (without safety alert symbol) is used to address practices not related to personal injury – only equipment damage.**

NOTICE

The NOTICE graphic is to indicate areas of importance to the reader that are not related to personal injury or machine damage.

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Safety, Warnings and Cautions

⚠ WARNING

CRUSH HAZARD

- **Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.**
- **Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Be sure all personnel are secure and in safe positions prior to doing any testing. Place signs to alert other personnel to keep a safe distance from the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.**
- **Crush hazards exist in machine pivot area and area between the tires. Do not enter these areas unless it is verified that the operator has control over the steering and that personnel locking the frame lock have good communication with the operator. Entering the pivot area and area between the tires while the machine is moving or pivoting (articulating) could cause crush hazards resulting in serious injury or death.**
- **Crush hazards exist if all personnel are not cleared from the bucket and lift arm area before using the hydraulic hoist and bucket hydraulic pressure bleed down valves to relieve pressure from the hoist and bucket circuit. Assembly must be used only when the engine is NOT running. Before using the Manual Bleed Valve Assembly, refer to "HYDRAULIC AND GREASE SYSTEMS", "MANUAL BLEED VALVE ASSEMBLY", in Section 04 of the Service Manual for additional operational and safety information. Operating the manual bleed valve may cause the lift arms and bucket to descend rapidly. All personnel around the bucket and lift arms area shall be removed from the area before operating hydraulic hoist and bucket hydraulic pressure bleed down valves. Using the hydraulic bleed down valves could result in movement of the lift arms and bucket which could cause a crush hazard resulting serious injury or death.**

ELECTRICAL SHOCK HAZARD

- **Electrical shock hazard exists inside the axle if axle access panel on either axle is removed without locking out the electrical system. Always verify the absence of bus voltage before removing the axle access panels and touching any electrified component inside the axle. Do NOT touch the electrical cable connections inside the axle when the key switch is ON, or the generator is primed, or until five minutes after the engine has been shut down and the absence of bus voltage is verified. to lockout the electrical system, and touching electrified components inside the axle could cause electrical shock which might result in serious injury or death.**
- **Electrical shock hazards exist inside the electrical converter cabinet. NEVER open high voltage cabinet while engine is running. High voltage is present when machine is at high throttle. DO NOT ENTER the electrical converter cabinet if the engine is running. Do not enter the electrical converter cabinet if the bus voltage indicator LED's on the SR converter assemblies are illuminated. Do not touch any electrical component or assembly inside the electrical converter cabinet if the bus voltage indicator LED's on the SR converter assemblies are illuminated. Verify the absence of bus voltage before entering or reaching inside the converter cabinet. Check ALL**

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converter panel LED's for voltage before entering. Contacting the electrical connections inside the electrical cabinet while they are energized will cause a shock hazard resulting in serious injury or death.

- Electrical shock hazard exists if touching the dynamic braking grids when the generator is primed and operating. Do NOT touch the braking grids when the generator is primed or until five minutes after the engine has been shut down and the ignition switch has been turned OFF for five minutes. Contact with an energized braking grid can cause shock hazards resulting in serious injury or death.
- Electrical shock hazard exists if touching any energized electrical connection when the generator is primed and operating. Do NOT touch the braking grids when the generator is primed or until five minutes after the engine has been shut down and the ignition switch has been turned OFF for five minutes. Contact with an energized electrical connection can cause shock hazards resulting in serious injury or death.

⚠ CAUTION

BURN HAZARD

- Burn hazard exists if opening the hydraulic reservoir without first relieving air pressure in the reservoir. Hot oil could spray out if the reservoir is not depressurized before opening the filler cap. Be sure to relieve air pressure in the hydraulic reservoir before opening the filler cap. Pressure is released by operating the manual air release valve located on top of the hydraulic reservoir. Failure to relieve air pressure from the reservoir before opening the filler cap can cause burn hazards resulting in injury.

CAUTION

GENERAL TECHNICIAN ABILITIES

- ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions contained in the machine's SERVICE MANUAL. We especially draw your attention to Section 01 in the Service Manual.

LUBRICATION

- Special attention should be placed on the use of proper lubricants. For additional information, refer to information in Section 02 of the Service Manual, titled "LUBRICATION AND SERVICE".
- Those specifications cover preliminary and all subsequent preventive maintenance operations. Use lubricants and anti-freeze solutions suitable for lowest expected temperatures. Note and comply with any special instruction tags attached to the engine or other components.
- Do not mix brands of lubricants without consulting lubricant manufacturers. Damage to bearings or other components may result from the mixing of incompatible lubricants.

PNEUMATIC PRESSURE

- Be sure to relieve air pressure in the hydraulic reservoir before opening. Pressure is released by operating the manual air release valve located on top of the hydraulic reservoir.

FRAME AND ENGINE DAMAGE

- Following completion of maintenance or repair operations, to prevent equipment damage, it is critically important that:
- The frame lock be removed from the locked position and properly stowed.
- The filter purge timer switch turned to the ON position.

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CRUSH/STRUCK BY HAZARD

- **Be sure to provide adequate jacks and hoists when lifting the machine or any of its components. Be sure the machine is on an adequate surface to support its weight when jacked up. NEVER jack up the machine with the bucket/blade (as applicable) and its lift arms/support members (as applicable). For additional information, refer to Section 03 of the Service Manual.**
- **Caution should be exercised when jacking the machine. If both wheels of the oscillating axle are off the ground at the same time, the axle may swivel vertically. This is a potentially hazardous situation. Both sides of the axle should be blocked to prevent swiveling.**

ENVIRONMENTAL SPILLS

- **When taking fluid samples, always make preparations for catching/containing any fluids that can spill. Always dispose of fluids in a manner consistent with all governmental/local rules, laws, or regulations.**

NOTICE

The left or right side of the machine is determined from standing behind it or sitting in the operator cab seat, not standing in front and facing it. Engine left and right bank are determined by viewing engine from the flywheel end.

NOTICE

Interlock switches are located on the electrical cabinet door. If the door is opened while the machine is in high idle (generator is primed), the machine will go to low throttle.

NOTICE

After running the machine for the designated time period in the following charts, the PM program procedures should be conducted only with the machine engine shut off. This is especially significant when removing access covers to gain access to electrical components such as the drive motors.

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Service Personnel, Operator Training and Advisories

The following training should be conducted before Service Upon Receipt Procedures and machine operations are begun:

Service Personnel Training: Anyone performing service on the machine should read and understand the instructions in the SERVICE MANUAL and the engine manufacturer's owner's manual before attempting to inspect or service the machine.

Service personnel should pay special attention to Section 01 of the Service Manual (and the entire Operator Handbook). All instructions provided in those publications should be followed, as applicable.

NOTICE

Service and repair training is available through Komatsu.

CAUTION

Special attention should be placed on the use of proper lubricants. For additional information, refer to "LUBRICATION AND SERVICE" in Preventive Maintenance.

Those specifications cover preliminary and all subsequent preventive maintenance operations. Use lubricants and anti-freeze solutions suitable for lowest expected temperatures. Note and comply with any special instruction tags attached to the engine or other components.

Do not mix brands of lubricants without consulting lubricant manufacturers. Damage to bearings or other components may result from the mixing of incompatible lubricants.

NOTICE

The hydraulic pump drive (HPD) is factory equipped with synthetic oil. It is recommended that synthetic oil be used for all oil changes. For additional information, refer to MECHANICAL, "HYDRAULIC PUMP DRIVE" in the Service Manual.

Operator Training: Operators must be familiar with all aspects of machine operation and safety as listed in this SERVICE MANUAL before starting and operating the machine. Improper operation can cause injury and machine damage.

NOTICE

Special attention should be given to the operating and maintenance information from the various suppliers whose products are used on the machine. Much of this information is provided throughout the Service Manual, where appropriate, but may not include all current supplier information. For current information, contact the product supplier as appropriate.

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Break-in Period Service Procedures

⚠ WARNING

Electrical shock hazard exists inside the axle if axle access panel on either axle is removed without locking out the electrical system. Always verify the absence of bus voltage before removing the axle access panels and touching any electrified component inside the axle. Do NOT touch the electrical cable connections inside the axle when the key switch is ON, or the generator is primed, or until five minutes after the engine has been shut down and the absence of bus voltage is verified. to lockout the electrical system, and touching electrified components inside the axle could cause electrical shock which might result in serious injury or death.

⚠ WARNING

Electrical shock hazards exist inside the electrical converter cabinet. NEVER open high voltage cabinet while engine is running. High voltage is present when machine is at high throttle. DO NOT ENTER the electrical converter cabinet if the engine is running. Do not enter the electrical converter cabinet if the bus voltage indicator LED's on the SR converter assemblies are illuminated. Do not touch any electrical component or assembly inside the electrical converter cabinet if the bus voltage indicator LED's on the SR converter assemblies are illuminated. Verify the absence of bus voltage before entering or reaching inside the converter cabinet. Check ALL converter panel LED's for voltage before entering. Contacting the electrical connections inside the electrical cabinet while they are energized will cause a shock hazard resulting in serious injury or death.

NOTICE

Interlock switches are located inside the High Voltage cabinet. If the door is opened while the machine is in high idle (generator is primed), the machine will go to low throttle.

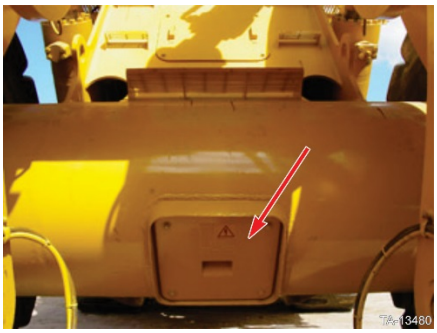

Figure 1. Shock hazards high voltage cabinet and axle

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⚠ WARNING

Electrical shock hazard exists if touching the dynamic braking grids when the generator is primed and operating. Do NOT touch the braking grids when the generator is primed or until five minutes after the engine has been shut down and the ignition switch has been turned OFF for five minutes. Contact with an energized braking grid can cause shock hazards resulting in serious injury or death.

Figure 2. Shock hazards braking grids

⚠ WARNING

Electrical shock hazard exists if touching any energized electrical connection when the generator is primed and operating. Do NOT touch the braking grids when the generator is primed or until five minutes after the engine has been shut down and the ignition switch has been turned OFF for five minutes. Contact with an energized electrical connection can cause shock hazards resulting in serious injury or death.

⚠ WARNING

Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.

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⚠ WARNING

Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Be sure all personnel are secure and in safe positions prior to doing any testing. Place signs to alert other personnel to keep a safe distance from the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.

Crush hazards exist in machine pivot area and area between the tires. Do not enter these areas unless it is verified that the operator has control over the steering and that personnel locking the frame lock have good communication with the operator. Entering the pivot area and area between the tires while the machine is moving or pivoting (articulating) could cause crush hazards resulting in serious injury or death.

⚠ WARNING

Crush hazards exist if all personnel are not cleared from the bucket and lift arm area before using the hydraulic hoist and bucket hydraulic pressure bleed down valves to relieve pressure from the hoist and bucket circuit. Assembly must be used only when the engine is NOT running. Before using the Manual Bleed Valve Assembly, refer to "HYDRAULIC AND GREASE SYSTEMS", "MANUAL BLEED VALVE ASSEMBLY", in Section 04 of the Service Manual for additional operational and safety information. Operating the manual bleed valve may cause the lift arms and bucket to descend rapidly. All personnel around the bucket and lift arms area shall be removed from the area before operating hydraulic hoist and bucket hydraulic pressure bleed down valves. Using the hydraulic bleed down valves could result in movement of the lift arms and bucket which could cause a crush hazard resulting serious injury or death.

a. Operate the machine a minimum of 10 hours in non-material handling operations before placing in normal service.

b. Motors, planetary drives, and hydraulic pump gearbox should be checked for overheating and oil leaks.

c. From the first day the machine is put in service, perform OPERATOR'S DAILY OR PRE-SHIFT WALK-AROUND INSPECTION, per the instructions in PREVENTIVE MAINTENANCE, "PM-MODULAR PM SCHEDULES" in the Service Manual.

d. Torque wheel bolts after the first two hours of operation and again after the next six and fourteen hours of operation and then at 100 hours of operation. Check wheel bolt torque after each 500 hours of operation thereafter.

e. Check components lubricated by the automatic lubrication system daily for a "wet" look of fresh grease to ensure the automatic lubrication system is operating properly. Refer to Section 04-02, "GREASE SYSTEM", of the Service Manual for additional information.

f. Check torque on ball cap capscrews after the first 2, 6, 14, 100, 250, and 500 hours of operation. Check torque every 500 hours thereafter. Refer to correct torque sequence and torque values for the ball joints, located in Section 03-05, "BALLS, CAPS AND PINS" of the Service Manual.

g. Perform dial indicator inspections of the ball caps after the initial 100, 250, 500, 1000 and 2000 hours. Perform dial indicator inspections after each 2000 hours thereafter. Refer to Section 03-05, "BALLS, CAPS AND PINS" of the Service Manual for instructions on conducting dial indicator inspections of the ball joints.

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h. Check torque on torque nuts on Roll Over Protective Structure (ROPS) after initial 250 hours of operation and every 500 hours thereafter — should be 114 ft. lbs. (154.6 N•m) per bolt (lubricated with 30W motor oil). Refer to text “STRUCTURAL” in Section 03 of the Service Manual for torque pattern of torque nut.

i. Take oil analysis samples from hydraulic pump gearbox after the initial 500 hours of operation and every 500 hours thereafter. Change filter after initial 500 hours of operation and every 1500 hours thereafter.

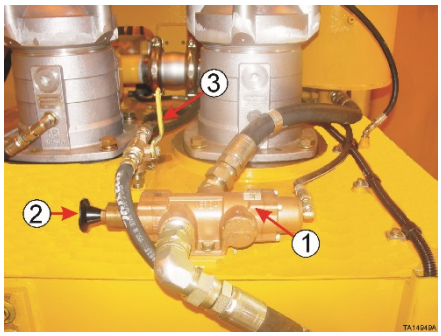
j. Take oil sample from hydraulic reservoir for lubricating oil analysis after initial 500 hours of operation and every 500 hours thereafter. **Use caution not to allow contamination to enter the hydraulic reservoir when collecting the sample.** Replace hydraulic filters after initial 500 hours of operation and every 1500 hours thereafter. Refer to text “HYDRAULIC SYSTEMS”, in Section 04 of the Service Manual for additional information.

k. Perform Power Unit Vibration Test and Generator Bearing Temperature Test initial 500 hour interval and every 500 hours thereafter (refer to text “GENERATOR” in Section 06 of the Service Manual).

l. Monthly downloads of LINCSII® computer system operational and load weigh data must be submitted to the Komatsu Product Support Department. Failure to deliver these monthly reports may adversely affect warranty disposition. Contact your authorized Komatsu distributor for assistance in this matter.

⚠ CAUTION

Burn hazard exists if opening the hydraulic reservoir without first relieving air pressure in the reservoir. Hot oil could spray out if the reservoir is not depressurized before opening the filler cap. Be sure to relieve air pressure in the hydraulic reservoir before opening the filler cap. Pressure is released by operating the manual air release valve located on top of the hydraulic reservoir. Failure to relieve air pressure from the reservoir before opening the filler cap can cause burn hazards resulting in injury.



1) Automatic air release valve

2) Reset button

3) Manual air release valve

Figure 3. Hydraulic reservoir air release valves

NOTICE

Use the BREAK-IN PERIOD SERVICE PROCEDURE CHECKLIST (following) to ensure no items are overlooked. Retain a copy of it in the machine’s permanent file to document customer’s responsibilities for warranty requirements.

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Break-in Period Service Procedures from Commissioning to 1000 Hours

The BREAK-IN PERIOD SERVICE PROCEDURES CHECKLIST is provided for the owner to use during the machine's break-in period to ensure no items of maintenance that are critical to the machine's initial services are overlooked.

Keep a copy of the form and the OPERATOR'S DAILY OR PRE-SHIFT WALK-AROUND INSPECTION forms, (located in Section 01 of the Service Manual) completed during the service upon receipt period, in the machine's permanent file, to document customer responsibilities for warranty requirements. Following the initial 500 hour servicing of the machine, use the MODULAR PREVENTIVE MAINTENANCE SCHEDULES (POST BREAK-IN PERIOD).

Break-in Period Service Procedures Checklist from Commissioning to 1000 Hours

Machine:	**Date:**	**Completed By:**

		OK	**Needs Attention**
10-Hour non-material handling break-in period operations			
a.	Operate in non-material handling operations for 10 hours. For additional information, refer to Section 01 of the Service Manual.		
1.	Torque wheel bolts after first two hours of operation.		
2.	Torque wheel bolts again after first six and fourteen hours of operation and then at 100 hours of operation.		
3.	Check for hydraulic leaks after first 10 hours of operation.		
4.	Check hydraulic pump drive gearbox for leaks - check all gasketed areas.		
Operator's Daily Inspection			
Perform OPERATOR'S DAILY OR PRE-SHIFT WALK-AROUND INSPECTION*. * Requires machine operation during some of the procedures.			
Monthly			
Submit LINCS® computer system operating and load weight data to Komatsu Product Support Department in Longview, Texas.			

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Preventive Maintenance Program Initial 10 Hour, 150 Hour, 250 Hour, and 500 Hour Inspections and Service

NOTICE

Refer to LUBRICATING OIL ANALYSIS, for instructions regarding initial 500-hour oil sampling.

	10 Hours		150 Hours		250 Hours		500 Hours	
	OK	**Needs Attention**	**OK**	**Needs Attention**	**OK**	**Needs Attention**	**OK**	**Needs Attention**
a. Check drivers, hydraulic system, and hydraulic pump drive gearbox for oil leaks.								
b. Drain and refill drivers with new oil.								
c. **Hydraulic system and hydraulic pump drive gearbox:** Replace filters. **NOTICE** **Bleed hydraulic pumps following filter replacement. For additional information, refer to Section 04 of the Service Manual.**								
d. Take oil samples for oil analysis.								
e. Check ROPS torque nuts [114 ft.-lbs. (154.6 N•m) lubed per bolt].								

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Ball Joint Preventive Maintenance Program
Initial 2, 6, 14, 100, 500, and 1000 Hour Inspections

NOTICE

Dial indicator inspections of the ball joints requires operational tests of the machine. Refer to text "BALLS, CAPS AND PINS" in Section 03 of the Service Manual for specifications, instructions, and safety precautions for inspecting the ball joints.

	2 Hours		6 Hours		14 Hours		100 Hours		250 Hours		500 Hours		1000 Hours	
	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention
a. Check torque on ball cap bolts.														
1. Lift arms/ Supporting members														
(a) Right														
(b) Left														
2. Hoist cylinders														
(a) Right														
(b) Left														
3. Middle pivot														
(a) Upper														
(b) Lower														

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	2 Hours		6 Hours		14 Hours		100 Hours		250 Hours		500 Hours		1000 Hours	
	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention	OK	Needs Attention
4. Rear axle pivot														
(a) Front														
(b) Rear														
b. Perform dial indicator inspections of the ball joints														
1. Lift arms/ Supporting members														
(a) Right														
(b) Left														
2. Hoist cylinders														
(a) Right														
(b) Left														
3. Middle pivot														
(a) Upper														
(b) Lower														
4. Rear axle pivot														
(a) Front														
(b) Rear														

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Initial 500 Hour Electrical PM

(will require energized and non-energized tests and inspections)

	OK	Needs Attention
a. Check Batteries:		
1. Check terminal posts and clamps.		
2. Check wires for chafing.		
3. Check electrolyte level.		
4. Clean battery tops.		
b. Cab Electrics:		
1. Heater/air conditioner:		
(a) Check blower speeds and operation.		
(b) Check vent operation.		
(c) Check air conditioner controls operation.		
2. Check to ensure that warning lights and buzzer operate for a few seconds when key switch is turned on.		
3. Check operation of all lights (driving, working and interior).		
4. Check direction control switch (FNR) operation.		
c. Power Cables.		
1. Check cables from back of SR High Voltage cabinet to generator.		
2. Check battery cable to starter.		
d. Braking Grid Resistors.		
1. Clean. If steam cleaning or using air to clean, be careful not to damage the mica on the mounts.		
2. Check the resistors to ensure they are secure and not warped or burned.		
3. Check the mounting structure to ensure the bolts are secure.		
4. Check the wiring harness and connections.		
e. Generator:		
1. Check to ensure external wiring to the generator is secure.		
2. Check cables going to electrical cabinet for proper insulation and retention.		
3. Check bearings for grease leaking.		

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Initial 500 Hour Service

	Item to Check	OK	Needs Attention
a.	Change hydraulic pump drive gearbox filter. Refill gearbox. Be sure to use correct oil when refilling. **NOTE**: Five gallons of synthetic oil is furnished with the machine for refilling.		
b.	Take oil sample from hydraulic reservoir for oil analysis. Use caution not to allow contamination to enter the hydraulic reservoir when collecting the sample.		
c.	Check torque on Roll Over Protective Structure torque nuts — should be 114 ft. lbs. (154.6 N•m) per bolt (lubricated with lubricant from Super Bolt Company -- (JL-G) Komatsu P/N 427-3753). DO NOT use any other lubricant.		

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