

# Pre-operation Inspection



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## Do Not Operate Unless:

- You learn and practice the principles of safe machine operation contained in this operator's manual.

1 Avoid hazardous situations.

### **2 Always perform a pre-operation inspection.**

**Know and understand the pre-operation inspection before going on to the next section.**

3 Always perform function tests prior to use.

4 Inspect the workplace.

5 Only use the machine as it was intended.

## Fundamentals

It is the responsibility of the operator to perform a pre-operation inspection and routine maintenance.

The pre-operation inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests.

The pre-operation inspection also serves to determine if routine maintenance procedures are required. Only routine maintenance items specified in this manual may be performed by the operator.

Refer to the list on the next page and check each of the items and locations for modifications, damage or loose or missing parts.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications. After repairs are completed, the operator must perform a pre-operation inspection again before going on to the function tests.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

## PRE-OPERATION INSPECTION

## Pre-operation Inspection

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- Be sure that the operator's, safety and responsibilities manuals are complete, legible and in the storage container located on the platform.
- Be sure that all decals are legible and in place. See Decals section.
- Check for hydraulic oil leaks and proper oil level. Add oil if needed. See Maintenance section.
- Check for battery fluid leaks and proper fluid level. Add distilled water if needed. See Maintenance section.

Check the following components or areas for damage, modifications and improperly installed or missing parts:

- Electrical components, wiring and electrical cables
- Hydraulic power unit, tank, hoses, fittings, cylinders and manifolds
- Drive and turntable motors and drive hubs
- Boom wear pads
- Tires and wheels
- Limit switches, alarms and horn
- Nuts, bolts and other fasteners
- Platform entry mid-rail bar or gate

Check entire machine for:

- Crack in welds or structural components
- Dents or damage to machine
- Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.
- Be sure that both battery packs are in place, latched and properly connected.
- After you complete your inspection, be sure that all compartment covers are in place and latched.

# Maintenance



## Observe and Obey:

- ☑ Only routine maintenance items specified in this manual shall be performed by the operator.
- ☑ Scheduled maintenance inspections shall be completed by qualified service technicians, according to the manufacturer's specifications and the requirements specified in the responsibilities manual.

## Maintenance Symbols Legend

### NOTICE

The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appear at the beginning of a maintenance procedure, it conveys the meaning below.



Indicates that tools will be required to perform this procedure.



Indicates that new parts will be required to perform this procedure.

## Check the Hydraulic Oil Level



Maintaining the hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil levels can damage hydraulic components. Daily checks allow the inspector to identify changes in oil level that might indicate the presence of hydraulic system problems.

- 1 Be sure that the boom is in the stowed position.
- 2 Check the hydraulic oil level.
- ⦿ Result: The hydraulic oil level should be at the FULL mark on the dipstick or visible in the sight glass or between the FULL and ADD marks on the hydraulic tank.
- 3 Add hydraulic oil if necessary.

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### Hydraulic Oil Specifications

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Hydraulic oil type	Refer to machine decal
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## MAINTENANCE

## Check the Batteries



Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions.

**▲WARNING** Electrocuting hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

**▲WARNING** Bodily injury hazard. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

**NOTICE** Perform this test after fully charging the batteries.

- 1 Put on protective clothing and eye wear.
- 2 Be sure that the battery cable connections are tight and free of corrosion.
- 3 Remove the battery vent caps.
- 4 Check the battery acid level. If necessary, replenish with distilled water to the bottom of the battery fill tube. Do not overfill.
- 5 Install the vent caps.

## Scheduled Maintenance

Maintenance performed quarterly, annually and every two years must be completed by a person trained and qualified to perform maintenance on this machine according to the procedures found in the service manual for this machine.

Machines that have been out of service for more than three months must receive the quarterly inspection before they are put back into service.

# Function Tests



## Do Not Operate Unless:

- ☑ You learn and practice the principles of safe machine operation contained in this operator's manual.
  - 1 Avoid hazardous situations.
  - 2 Always perform a pre-operation inspection.
  - 3 Always perform function tests prior to use.**
- Know and understand the function tests before going on to the next section.**
  - 4 Inspect the workplace.
  - 5 Only use the machine as it was intended.

## Fundamentals

The function tests are designed to discover any malfunctions before the machine is put into service. The operator must follow the step-by-step instructions to test all machine functions.

A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service. Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

After repairs are completed, the operator must perform a pre-operation inspection and function tests again before putting the machine into service.

- 1 Select a test area that is firm, level and free of obstruction.

## At the Ground Controls

- 2 Turn the key switch to ground control.
- 3 Pull out the red Emergency Stop button to the on position.
- ⊙ Result: The beacon (if equipped) should flash.

### Test Emergency Stop

- 4 Push in the red Emergency Stop button to the off position.
- ⊙ Result: All ground and platform control functions should not operate.
- 5 Pull out the red Emergency Stop button to the on position.

## FUNCTION TESTS

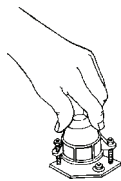
**Test the Boom Functions**

- 6 Do not hold the function enable switch to either side. Attempt to activate each boom and platform function toggle switch.
- ⦿ Result: All boom and platform functions should not operate.
- 7 Hold the function enable switch to either side and activate each boom and platform function toggle switch.
- ⦿ Result: All boom and platform functions should operate through a full cycle. The descent alarm (if equipped) should sound while the boom is lowering.

Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the primary boom is raised past the drive speed limit switch.

**Test the Tilt Sensor**

- 8 Pull out the platform red Emergency Stop button to the on position. Turn the key switch to platform control.
- 9 Open the ground control side turntable cover and locate the tilt sensor next to the function manifold.
- 10 Press down one side of the tilt sensor.
- ⦿ Result: The alarm, located in the platform, should sound.

**Test Auxiliary Controls**

- 11 Turn the key switch to ground control.
- 12 Simultaneously hold the auxiliary power switch on and activate each boom function toggle switch.

Note: To conserve battery power, test each function through a partial cycle.

- ⦿ Result: All boom functions should operate.
- 13 Turn the key switch to platform control.

**At the Platform Controls****Test Emergency Stop**

- 14 Push in the platform red Emergency Stop button to the off position.
- ⦿ Result: All platform control functions should not operate.

**Test the Horn**

- 15 Pull out the red Emergency Stop button to the on position.
- 16 Push the horn button.
- ⦿ Result: The horn should sound.

**Test the Foot Switch**

- 17 Do not press down the foot switch. Activate each machine function.
- ⦿ Result: The machine functions should not operate.

## FUNCTION TESTS

### Test Machine Functions

- 18 Move the lift/drive select switch to the lift position (if equipped).
  - 19 Press down the foot switch.
  - 20 Activate each machine function toggle switch.
- ⦿ Result: All boom/platform functions should operate through a full cycle.

Note: Control the speed of boom functions by adjusting the boom function speed controller. Drive and steer functions are not affected by the boom function speed controller.

Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the primary boom is raised past the drive speed limit switch.

### Test the Steering

- 21 Move the lift/drive select switch to the drive position (if equipped).
  - 22 Press down the foot switch.
  - 23 Depress the thumb rocker switch on top of the drive control handle in the direction identified by the blue triangle on the control panel.
- ⦿ Result: The steer wheels should turn in the direction that the blue triangles point on the drive chassis.
- 24 Depress the thumb rocker switch in the direction identified by the yellow triangle on the control panel.
- ⦿ Result: The steer wheels should turn in the direction that the yellow triangles point on the drive chassis.

### Test Drive and Braking

- 25 Move the lift/drive select switch to the drive position (if equipped).
  - 26 Press down the foot switch.
  - 27 Slowly move the drive control handle in the direction indicated by the blue arrow on the control panel until the machine begins to move, then return the handle to the center position.
- ⦿ Result: The travel alarm should sound. The machine should move in the direction that the blue arrow points on the drive chassis, then come to an abrupt stop.
- 28 Slowly move the drive control handle in the direction indicated by the yellow arrow on the control panel until the machine begins to move, then return the handle to the center position.
- ⦿ Result: The travel alarm should sound. The machine should move in the direction that the yellow arrow points on the drive chassis, then come to an abrupt stop.

Note: The brakes must be able to hold the machine on any slope it is able to climb.


## FUNCTION TESTS

**Test Limited Drive Speed**

- 29 Move the lift/drive select switch to the lift position (if equipped).
- 30 Press down the foot switch.
- 31 Raise the primary boom 1 foot / 30 cm.
- 32 Move the lift/drive select switch to the drive position (if equipped).
- 33 Slowly move the drive control handle to the full drive position.
- ⦿ Result: The maximum achievable drive speed with the primary boom raised should not exceed 1 foot / 30 cm per second.
- 34 Move the lift/drive select switch to the lift position (if equipped).
- 35 Lower the boom to the stowed position.
- 36 Raise the secondary boom 1 foot / 30 cm.
- 37 Move the lift/drive select switch to the drive position (if equipped).
- 38 Slowly move the drive control handle to the full drive position.
- ⦿ Result: The maximum achievable drive speed with the secondary boom raised should not exceed 1 foot / 30 cm per second.
- 39 Move the lift/drive select switch to the lift position (if equipped).
- 40 Lower the boom to the stowed position.
- 41 Extend the primary boom 1 foot / 30 cm.
- 42 Move the lift/drive select switch to the drive position (if equipped).
- 43 Slowly move the drive control handle to the full drive position.
- ⦿ Result: The maximum achievable drive speed with the primary boom extended should not exceed 1 foot / 30 cm per second.

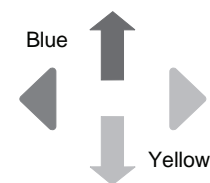
If the drive speed with the primary boom raised or extended or the secondary boom raised exceeds 1 foot / 30 cm per second, immediately tag and remove the machine from service.

**Test the Drive Enable System**

- 44 Move the lift/drive select switch to the lift position (if equipped).
  - 45 Press down the foot switch and retract the primary boom to the stowed position.
  - 46 Rotate the turntable until the boom moves past one of the non-steer wheels.
  - ⦿ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown.
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- 47 Move the lift/drive select switch to the drive position (if equipped).
  - 48 Move the drive control handle off center.
  - ⦿ Result: The drive function should not operate.
  - 49 Hold the drive enable toggle switch up or down and slowly move the drive control handle off center.
  - ⦿ Result: The drive function should operate.

Note: When the drive enable system is in use, the machine may drive in the opposite direction that the drive and steer control handle is moved.

Use the color-coded direction arrows on the platform controls and the drive chassis to identify the direction of travel.





## FUNCTION TESTS

**Test the Lift/Drive Select Function  
(CE models)****Machines with lift/drive select switch:**

- 50 Move the lift/drive select switch to the lift position.
- 51 Press down the foot switch.
- 52 Move the drive control handle off center.
  - ⦿ Result: No drive functions should operate.
- 53 Activate each boom function toggle switch.
  - ⦿ Result: All boom functions should operate.
- 54 Move the lift/drive select switch to the drive position.
- 55 Press down the foot switch.
- 56 Activate each boom function toggle switch.
  - ⦿ Result: No boom functions should operate.
- 57 Move the drive control handle off center.
  - ⦿ Result: The drive functions should operate.

**Machines without lift/drive select switch:**

- 58 Press down the foot switch.
- 59 Move the drive control handle off center and activate a boom function toggle switch.
  - ⦿ Result: No boom functions should operate. The machine will move in the direction indicated on the control panel.

**Test Auxiliary Controls**

- 60 Move the lift/drive select switch to the appropriate position (if equipped).
- 61 Press down the foot switch.
- 62 Simultaneously hold the auxiliary power switch on and activate each function control handle or toggle switch.

Note: To conserve battery power, test each function through a partial cycle.

- ⦿ Result: All boom, steer and drive functions should operate.

# Workplace Inspection



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## Do Not Operate Unless:

- You learn and practice the principles of safe machine operation contained in this operator's manual.

- 1 Avoid hazardous situations.
- 2 Always perform a pre-operation inspection.
- 3 Always perform function tests prior to use.

### 4 Inspect the workplace.

**Know and understand the workplace inspection before going on to the next section.**

- 5 Only use the machine as it was intended.

## Fundamentals

The workplace inspection helps the operator determine if the workplace is suitable for safe machine operation. It should be performed by the operator prior to moving the machine to the workplace.

It is the operator's responsibility to read and remember the workplace hazards, then watch for and avoid them while moving, setting up and operating the machine.

## Workplace Inspection

Be aware of and avoid the following hazardous situations:

- drop-offs or holes
- bumps, floor obstructions or debris
- overhead obstructions and high voltage conductors
- hazardous locations
- inadequate surface support to withstand all load forces imposed by the machine
- wind and weather conditions
- the presence of unauthorized personnel
- other possible unsafe conditions
- Determine the slope of any surface in the path of travel on the job site