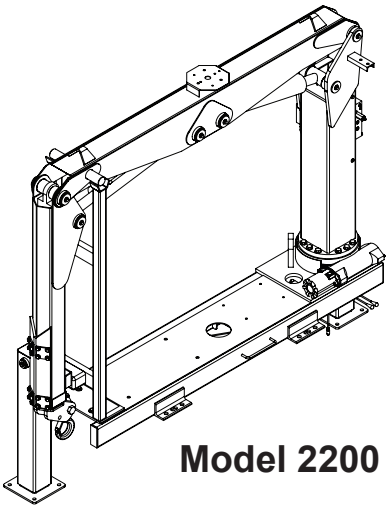
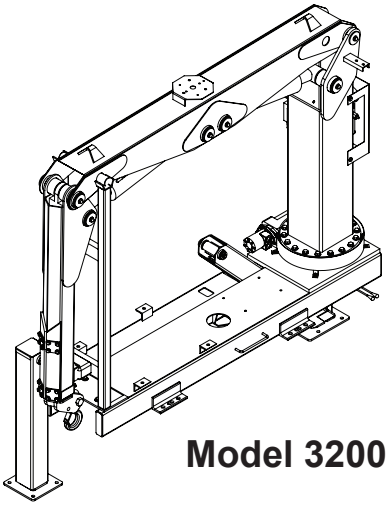
Small OTR
Service Cranes
Owner's Manual

Safety • Operation • Maintenance • Troubleshooting



Model 2200



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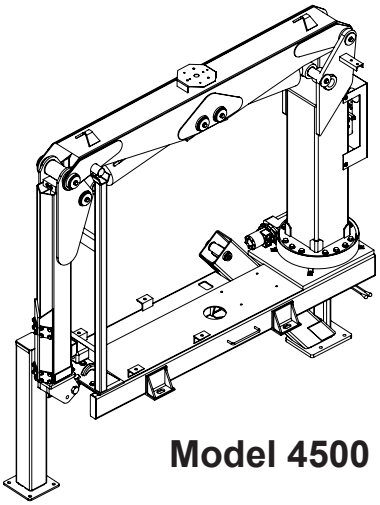

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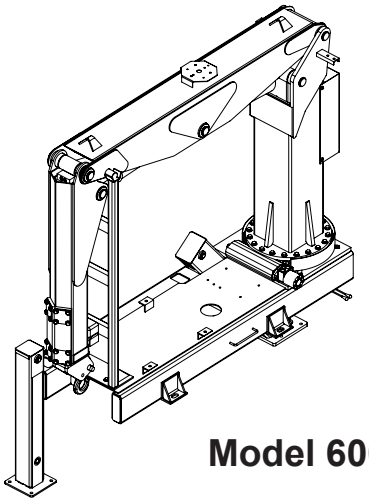

Model 6000

Notice: A copy of this manual must remain with the equipment at all times.
For a printable download copy, please visit: www.stellarindustries.com

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Rev 2
PN 89711

Serial Tag Location / P65 Warning

⚠ WARNING

Operating, maintaining, and servicing a Stellar product may expose you to chemicals including, but not limited to, engine exhaust, carbon monoxide, phthalates, and lead. These chemicals are known to the State of California to cause cancer and birth defects (or other reproductive harm). To keep your exposure to a minimum, be sure to avoid breathing exhaust and service your Stellar product in a well-ventilated area while wearing gloves or washing your hands frequently. For more information, go to www.P65Warnings.ca.gov/passenger-vehicle.

www.p65warnings.ca.gov

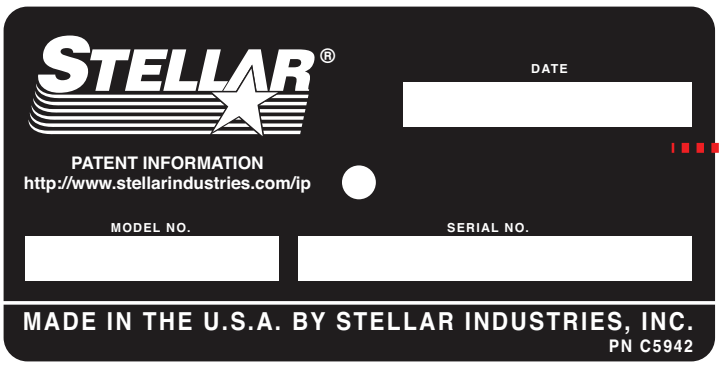
NOTICE

Cold Weather Performance

Although clear data on cold weather performance from every steel manufacturer is not available for all types and thicknesses of steel, Stellar Industries is confident that the weldments on our products will operate to 100% of their intended purpose to temperatures down to -40° F / C.

It is recommended if Stellar manufactured equipment needs to be used in temperatures below -40° F / C, the operator should pull the unit into a climate-controlled area and allow the weldments to warm up to and then maintain a temperature above this level.

Serial Tag Location



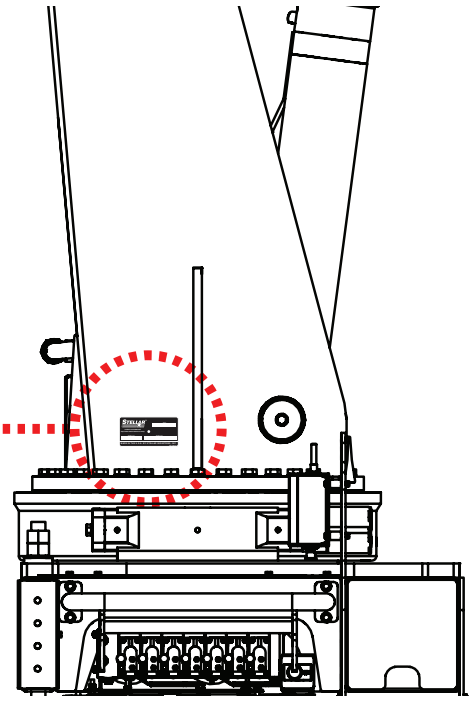


Table of Contents

Introduction

Stellar® Cranes are designed to provide safe and dependable service for a variety of operations. With proper use and maintenance, these cranes will operate at peak performance for many years.

To promote this longevity, carefully study the information contained in this manual before putting the equipment into service. Though it is not intended to be a training manual for beginners, this manual should provide solid guidelines for the safe and proper usage of the crane.

Once you feel comfortable with the material contained in this manual, strive to exercise your knowledge as you safely operate and maintain the crane. This process is vital to the proper use of the unit.

A copy of this manual is provided with every crane and can be found in the hard plastic manual case that is installed on the chassis. A copy of this manual shall remain with the crane at all times.

Throughout the manual, three signal words will be used to bring attention to important items:

NOTICE A NOTICE signal word indicates a practice not related to physical injury.

⚠WARNING A WARNING signal word indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ DANGER A DANGER signal word indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Information contained within this manual does not cover all maintenance, operating, or repair instructions pertinent to all possible situations. Please be aware that some sections of this manual contain information pertaining to Stellar® manufactured cranes in general and may or may not apply to your specific model.

This manual is not binding. Stellar Industries, Inc. reserves the right to change, at any time, any or all of the items, components, and parts deemed necessary for product improvement or commercial/production purposes. This right is kept with no requirement or obligation for immediate mandatory updating of this manual.

If more information is required or technical assistance is needed, or if you feel that any part of this manual is unclear or incorrect, please contact the Stellar Customer Service Department by phone at 800-321-3741 or email at service@stellarindustries.com.

Chapter 1 - Operations

CHAPTER CONTENTS

General Operation

Safety should be the number one thought on every operator's mind. Three factors should exist for safe operation: a qualified operator, well-maintained equipment, and the proper use of this equipment.

This chapter contains information regarding the safety and operation of Stellar® Small OTR Service Cranes and should be read and understood completely by everyone working with or near the crane before putting the unit into operation.

⚠WARNING Failure to follow operating, maintenance, or safety instructions can result in death or serious injury.

It is the responsibility of the owner to instruct the operator in the safe operation of the equipment and to provide the operator with properly maintained equipment.

⚠WARNING Stellar® Crane operators must conform to the qualifications specified in ANSI B30.5 - Chapter 5-3 Operation. Trainees or untrained persons shall be under the direct supervision of qualified persons.

Operators shall consult with the owner of the equipment regarding current safety regulations and required personal protective equipment.

Please take note that Stellar Industries, Inc. is not liable for accidents incurred by the crane because of non-fulfillment from the operator's side of current rules, laws, and regulations.

Pre-Operation Inspection

Before operating the equipment, make sure all regular maintenance has been performed. Each day, inspect the crane for all of the following:

- Vehicle for standard checks such as proper tire inflation and fluid levels.
- Parking brake operation.
- Hydraulic reservoir for proper oil level.
- Hoses and gearboxes for evidence of oil leaks.
- Crane controls for excessive wear, cleanliness and proper operation.
- Operational aids such as decals for placement and legibility.
- All securing hardware such as cotter pins, snap rings, hairpins, and pin keepers for proper installation.
- All safety guards for proper installation.

Replace/repair as necessary prior to operation. For a more detailed checklist of scheduled inspection points, refer to the Stellar® Crane Inspection Log. This document is an essential guide for the daily, monthly, quarterly and annual inspection tasks that will help maintain the quality of your Stellar product.

Job Site Setup

Thoroughly plan the lift by understanding the work site area and your loads before positioning the vehicle. For a complete and detailed description of job site setup, please refer to the AEM Safety Manual (Form C-70-2). Consider the following:

- The vehicle should be positioned in an area free from bystanders and overhead obstructions. Use a signal person if necessary.
- **⚠ DANGER** Always maintain safe clearance from high voltage power lines in accordance with ANSI B30.5: 5-3.4.5 Operating Near Electric Power Lines. Death or serious injury will result from inadequate clearance if crane, load, or vehicle becomes electrically charged.
- Make certain that the vehicle is parked on stable, flat ground as close to the job as possible. The surface under the service truck must be able to support the weight of the machine and its load.
- Use wheel chocks if parking the vehicle on a slope.
- Always park the vehicle with the grade. If cross-grade parking is required, the load capacity must be decreased appropriately to mitigate tipping risk.
- Park the vehicle perpendicular and at the proper distance to the tire being serviced. The vehicle's proper distance will be determined by multiple variables and can be figured from the crane load chart, size of tire, type of service being performing, and various other factors.
- **⚠WARNING** Never begin a lift without estimating the load weight and calculating the distance and position on the capacity chart.
- Once the vehicle is properly placed, secure the work area using safety cones.
- **⚠WARNING** Do not operate the crane during electrical storms.
- In dusty work areas, every effort must be taken to keep dust and sand out of the moving parts of the machinery.
- In high humidity work areas, keep parts as dry as possible and well lubricated.

Step 1: Disengage drive axle and set the parking brake

The drive axle must be disengaged and the parking brake must be set before operating any of the equipment.

Step 2: Engage the hydraulic power source

1. Make certain that the transmission is in neutral/park.
2. Engage the hydraulic power source. If using a PTO, consult the PTO manual for specific instructions if needed. *Note: Allow the hydraulic system oil to warm before operating any of the hydraulic equipment, especially during cold weather.*

Step 3: Turn on electrical power

Locate the desired function on the switch panel inside the cab and activate to power the equipment.

Step 4: Position the stabilizers

Once the PTO is engaged, locate the street side (SS) and curb side (CS) stabilizer control handles. Push the lever down to lower or extend the corresponding stabilizer leg. When the stabilizer makes solid contact with the ground, release the control lever.

⚠WARNING Keep clear of stabilizer legs during operation. Moving stabilizers can cause serious crushing injuries. Make certain that all personnel are clear of the stabilizer and the ground contact point before operating.

⚠WARNING Do not raise the rear tires of the truck off the ground with the stabilizers. Confirm that the stabilizers are positioned on stable, flat ground and that the truck is as level as possible both front to rear and side to side. Use stabilizer pads to ensure the proper distribution of weight.

Step 5: Operate the crane

Using the Radio Remote:
To operate the crane using the radio remote control:

1. Make certain that the red e-stop button is in the up position (disengaged).

2. To start up the remote control, follow the instructions provided in the remote control manufacturer's manual.

4. To operate the crane, activate and hold the desired toggle (See Radio Remote Control page for details). The remote control units for these models operate the crane functions proportionally by using the trigger to control the oil flow entering the control valve when a specific toggle is activated. The more you engage the trigger, the faster the crane function will operate.

Note: The Radio remote control is equipped with an emergency stop button. If you encounter a situation that you need to stop the crane functionality immediately, press down on the red Emergency Stop button.

Operating the Crane:

1. Slowly pull the trigger and activate the main boom toggle up to un-stow the crane from travel position.

2. Once the crane is un-stowed, proceed with operating the proper toggles to perform the service.

Lifting the load:
Consider the following:
• When performing a lift, have the load as close to the ground as possible.

• **⚠WARNING** Never exceed manufacturer's capacity charts and ratings. These ratings are based on the machine's hydraulic, mechanical, and structural design rather than stability. If there is a tire manipulator attached to your crane, use the manipulator load chart, as the weight of the unit must be taken into account.

• Center the crane directly over the load to avoid side loading.

• Make certain that the stabilizers are positioned on flat, stable ground. If the terrain is soft or loose, stabilizer pads may be required. In icy conditions, bolts can be added to the holes in the stabilizer pads for additional traction.

• Never perform a lift that can induce a dynamic force greater than the capacity of the crane.

Step 5: Operate the crane (Cont.)

- It is the responsibility of the operator to know the weight of the handled load to avoid overloading the crane. Do not rely on the overload device to determine maximum rated loads. If the crane is picking more than the maximum rated load, the overload protection device may be malfunctioning. Discontinue use immediately and contact Stellar Customer Service for support.

- **⚠WARNING** Do not use a crane to lift personnel without factory approved lifting device.

- Do not attempt to lift fixed loads.

Moving the load:
Ensure that the load is secure and balanced before moving:

- Consult the Tire Industry Association (TIA) tire service training materials for proper tire handling.

- Be sure that the crane is level and stable before moving the load.

- Always look for any changes to the surroundings since the job site setup. Be aware of any new or missed overhead obstructions (branches, power lines, etc) and bystanders. Use a signal person if necessary.

- **⚠WARNING** Never operate the crane with personnel under any part the boom or load. Do not extend or rotate a load over anyone. Never allow personnel to place themselves under any part of the boom or load.

- **⚠WARNING** Never leave a crane load suspended or unattended.

- Do not use the boom to drag a load.

- Do not use the crane boom to push downward onto anything.

- Avoid sudden starts and stops when moving a load.

Step 6: Stow the crane

When the job is complete, use the correct toggles to bring the crane gently down onto the crane rest.

Step 7: Stow the stabilizers

Retract outriggers using the control levers or switches marked ‘outrigger’.

Step 8: Finalize Service

Finalize the service by storing the safety cones, shutting drawers and compartments, and securing the load.

Step 9: Disengage the hydraulic power source

- Disengage the hydraulic power source.
- Turn off all switches on the control panel.
- Stow the radio remote in the cab. If your truck has a docking station, secure the remote prior to leaving the work site.

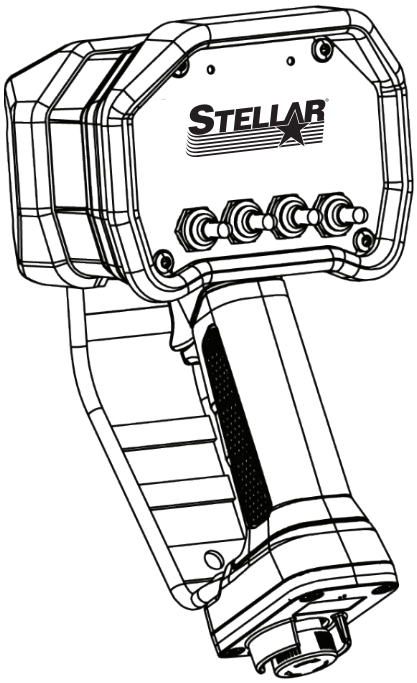
Step 10: Leave the worksite

The parking brake must be released before moving the truck.

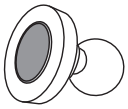
⚠WARNING Make certain that any air tanks are completely drained before moving the truck.

Radio System Components

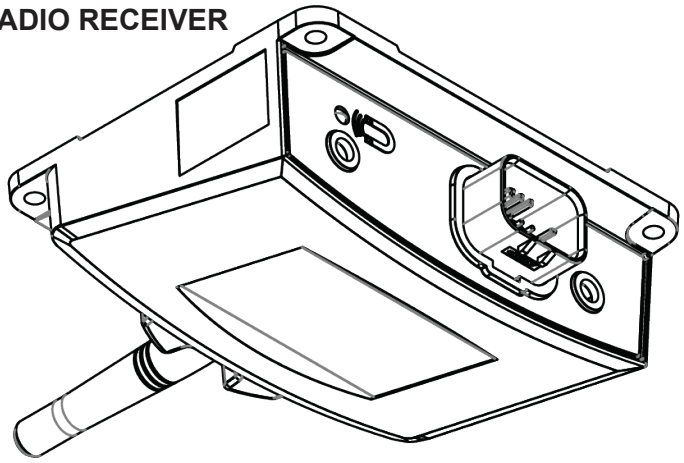
RADIO TRANSMITTER



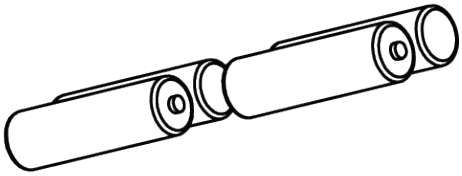
PAIRING MAGNET



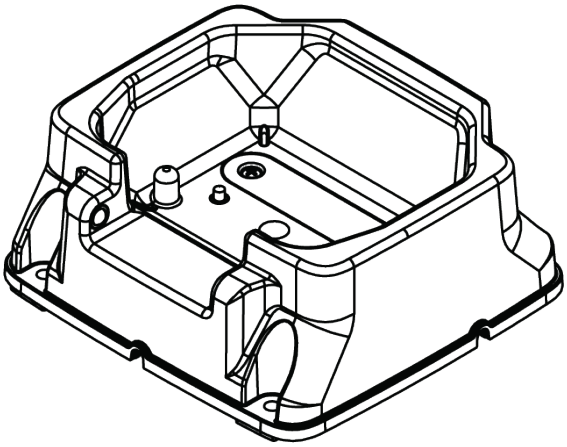
RADIO RECEIVER



RECHARGEABLE NiMH AA BATTERIES (x4)



DOCKING/CHARGING STATION



Radio Remote Control Functions

Radio Remote Control Functions

1. **Main Boom Up / Down Toggle**
   Push up to raise the main boom. Push down to lower the main boom. Must be operated in conjunction with Variable Speed Trigger to perform function.

2. **Outer Boom Up / Down Toggle**
   Push up to raise the outer boom. Push down to lower the outer boom. Must be operated in con junction with Variable Speed Trigger to perform function.

3. **Extension In / Out Toggle**
   Push up to extend the extension. Push down to retract the extension. Must be operated in con junction with Variable Speed Trigger to perform function.

4. **Rotate Clockwise / Counterclockwise**
   Push up to rotate the boom clockwise. Push down to rotate the boom counterclockwise. Must be operated in conjunction with Variable Speed Trigger to perform function.

5. **Battery Charging Indicator**
   Indicator will stay on when battery is being charged in docking station or with tethered extension cable. When the battery is fully charged it will turn off. The Battery Charging Indicator will blink while checking the batteries and may stay blinking if an issue with the batteries is found.

6. **Variable Speed Trigger**
   Use in conjunction with a crane control toggle. Press up or down on a toggle and squeeze the trigger to activate the function. The further the trigger is pressed in, the faster the function will operate.

7. **Stop Button**
   The Radio remote control is equipped with an “all functions” stop button. If a situation arises that requires the immediate stoppage of crane functionality, push in the RED Stop button. The stop button is also used to turn off the remote when not in use. To resume operation, twist the Stop Button clockwise to release it. Press any toggle to activate a function to ”wake up” the transmitter.

8. **Battery Access Cover**
   Four (4) AA NiMH rechargeable batteries are stored in the handle and can be accessed by removing the four (4) screws at the bottom of the handle.

9. **Quick Hang Magnetic Back**
   A series of magnets are integrated into the back housing of the radio remote. These magnets allow you to temporarily attach the radio to metal surfaces for your convenience. Do not leave it hanging there, especially during transport. Always return your radio remote to its docking station for transport, storage, and charging.

10. **Tethered Cable Port and Cap**
    There is a port on the back of the radio remote in the event you need to connect a tethered extension cable to control the crane without a wireless signal or charge the remote while in use.

Radio Remote Control Functions

11. Charging Contact Points

The two charging contact points for the radio remote are located on the back and attached to the docking station when docked. Keep them clean from debris and ensure they are not covered by tape or other adhesives. This ensures good contact to the docking station for proper charging.

12. Quick Belt Holster

A Quick Belt Holster is a specialized holder designed to secure a radio remote control at the operator's waist. It attaches to a belt and provides quick, easy access to the remote, ensuring the operator can control the crane without fumbling or reaching for the device. The holster is typically made from durable, impact-resistant material to withstand heavy-duty environments and features a clip to keep the remote secure but accessible. This allows for safe and efficient operation, giving the operator hands free mobility and quick access to controls when needed.

13. Status Indicator

The indicator will illuminate green / amber / red colors and patterns (solid state, flashing, etc.) to indicate various statuses.

Stop Mode

All Functions Stop Button

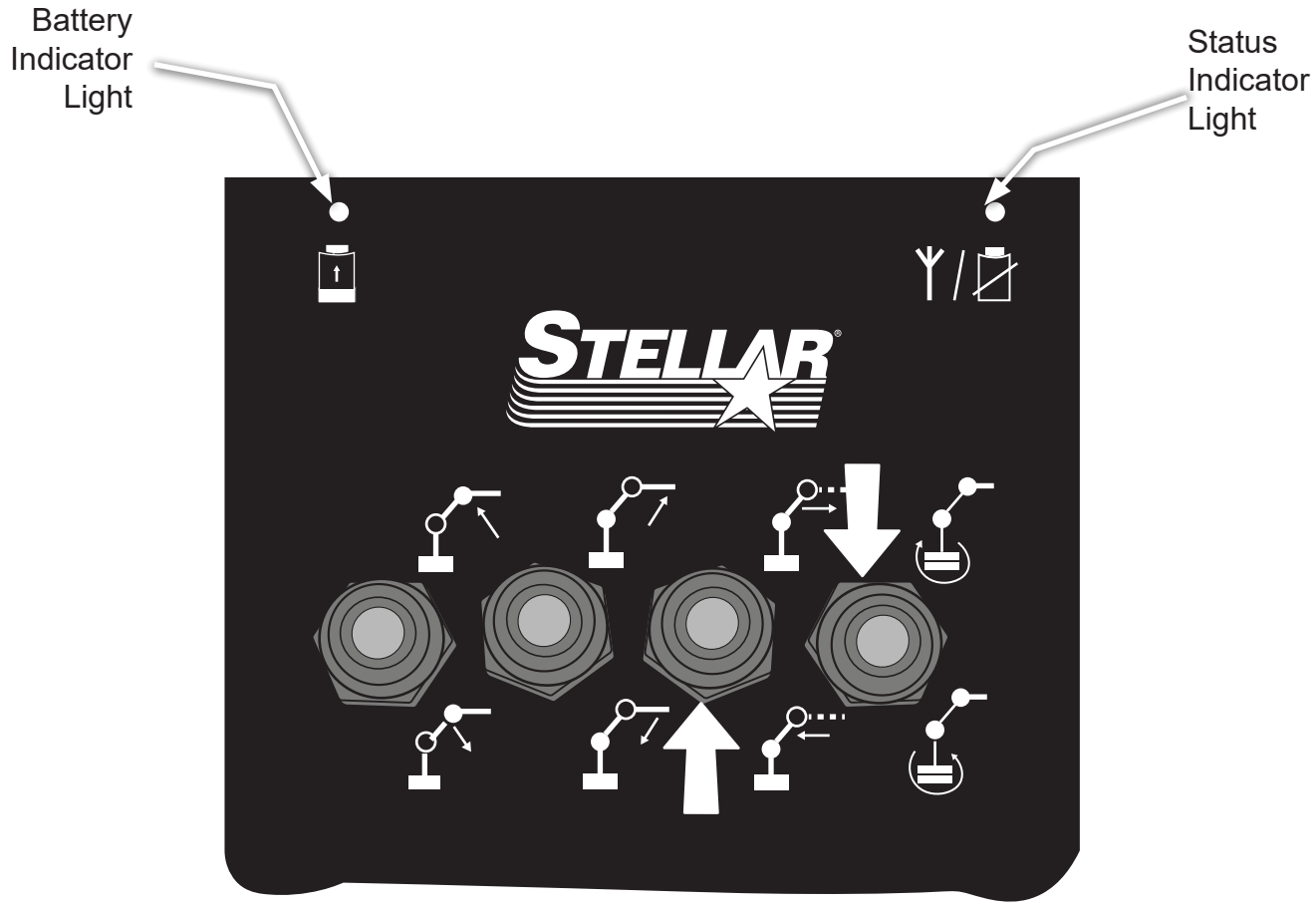
- **Function:** When pressed in, the red button cuts off power or disables controls to all crane functions (lifting, lowering, rotating, etc.), putting the crane into a safe, inactive state. It also can be used to turn the remote off after finishing a job.
- **Purpose:** It's designed to be used in emergencies, or if there's any risk to safety, such as equipment malfunction, unexpected obstruction, or hazard to personnel.
- **Location:** The red button at the bottom of the radio remote handle, often labeled with "All Functions Stop" or "Emergency Stop."

NOTE:
To resume operation, twist the red stop button clockwise to reactivate the transmitter and toggle up / down on any switch. If you try to activate the controller with a toggle switch while in stop mode, the ***Status Indicator LED*** *will turn to a solid green for the length of time the toggle is pressed. Once released, the LED will turn off.*

Sleep Mode

The sleep mode is a power-saving feature that automatically deactivates the remote after three (3) minutes of inactivity. This feature helps conserve battery life, as it reduces power consumption when the remote is not actively being used. Press any toggle switch to reactivate the remote control.

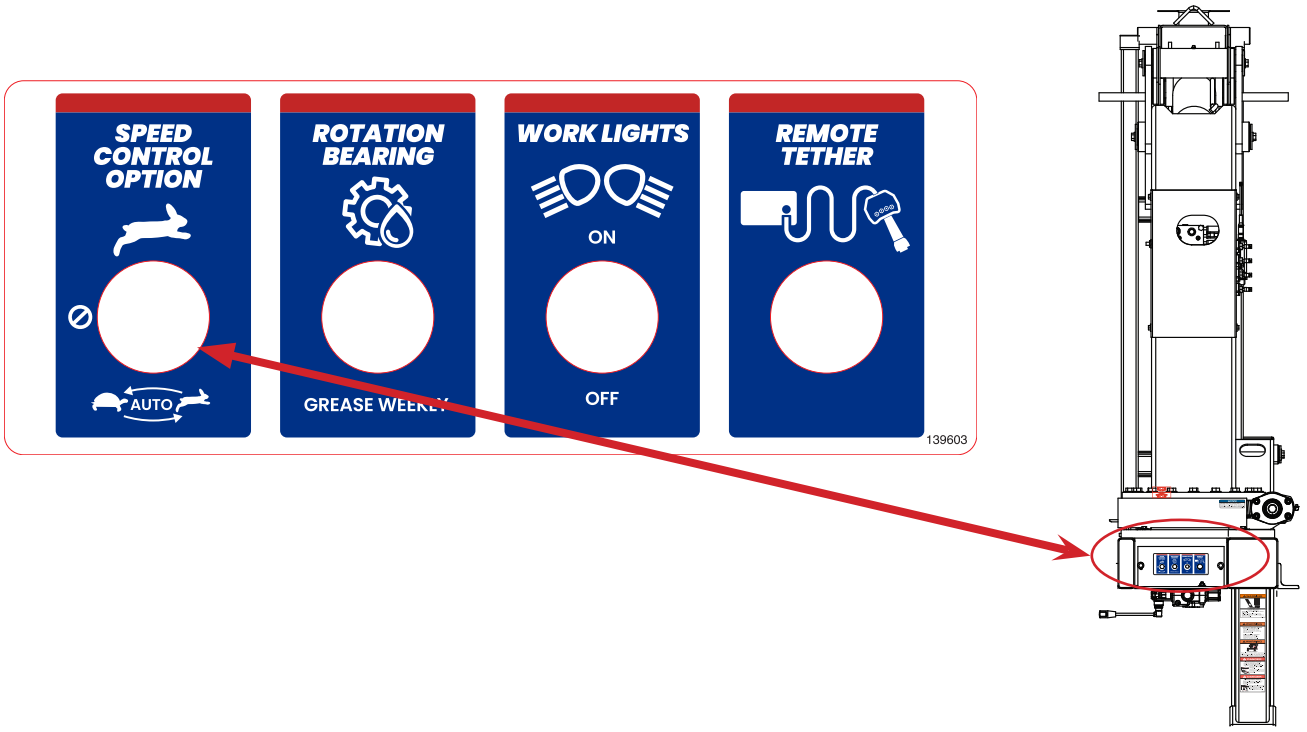
Lock Mode



- **Function:** This function is activated if **Extension Out (Toggle Up)** and **Crane CCW Rotation (Toggle Down)** are pressed for three (3) seconds after startup.
- **Purpose:** To prevent unauthorized use.

NOTES:
No other toggle switches can be active during this time period. Once the unit is locked, the Status Indicator LED will be flashing alternately between green and red on the display, and all communication with the receiver is stopped. The remote remains locked even if restarted, the only way to unlock it is to shut down the remote and restart and repeat the same combination of Extension Out and Crane CCW Rotation.

Auto Speed Control



Engine Speed: High

- **Function:** Activate toggle switch by pressing to the up position. Engine speed will remain on high until Speed Control is manually turned off.
- **Purpose:** When the engine increases it's RPM, the crane functions will operate faster.

Engine Speed: Normal Operation

- **Function:** Engine Speed Normal Operation.
- **Purpose:** The engine is operating at normal RPM resulting in normal speed of crane functions.

Engine Speed: Auto

- **Function:** Activate the toggle switch by pressing to the down position. The crane controller will automatically ramp the engine speed up to high idle only while the crane is actively being operated. During periods of inactivity the engine speed will be returned to low idle.
- **Purpose:** Having the crane controller automatically idle up or down the engine RPM only when the crane is in use will help to conserve fuel and be a quieter operation.

NOTE: This allows your Speed Control functions to act in different ways, depending on your preferences.

Test Mode

The small tire crane remote has a built in feature for internal system information called Test Mode. While speaking with a Stellar Customer Service Representative, you might be asked to put your remote into Test Mode to diagnose your system. When entering Test Mode all crane communication is stopped with the receiver. Once Test Mode is entered, the system must be restarted to operate normally again by pressing the red stop button to turn it off and then twisting the red stop button and pressing any toggle switch to turn on.

- **Function:** To enter **Test Mode**, press **Main Boom Up** (Toggle up) at least 10 times within 10 seconds after startup. The remote will vibrate indicating it is in Test Mode.
- **Purpose:** Troubleshooting the Radio Remote with Stellar Industries Customer Support Representative as it will confirm if the lights and switches are operational.

NOTE:

*The remote will vibrate indicating it is in **Test Mode**. The Status Indicator light will not flash green in test mode as this LED is used as an indicator to test the remote switches. **Main Boom** Up / Down if working the LED will flash Status Indicator green once when the toggle is pressed. Same with **Boom Extension** In / Out and **Crane Rotation** CW / CCW.*

NOTE:

***Outer Boom** Up will vibrate the remote if working and **Outer Boom** Down will flash the Status Indicator once. The variable speed trigger will turn the Status Indicator LED red. The less the trigger is pressed in the slower the LED will flash red. The more the trigger is pressed in, the faster the LED will flash red. If the trigger is pressed in all the way the LED will stay a solid red until released.*

System Error Notifications

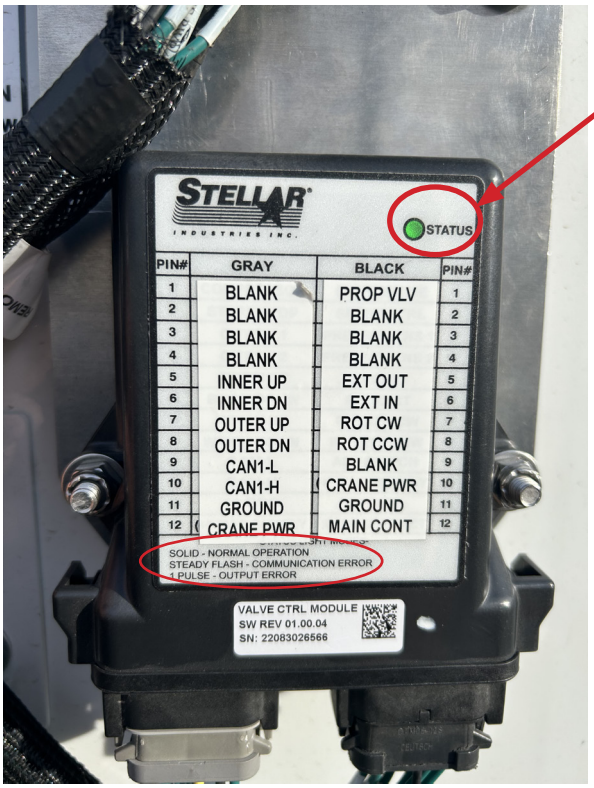
The Main Controller is located on the mast of the crane. The main controller is equipped with green LED labeled “Status”. Some of the system notifications below might be displayed after startup. Others can appear during operation if the condition develops.

Normal Operation

- **Purpose:** If communication to the main controller is operating normally, the Status LED on the main controller will be solid green.

NOTE:

This is NOT the same light on the remote Status light on the main controller be a solid green.



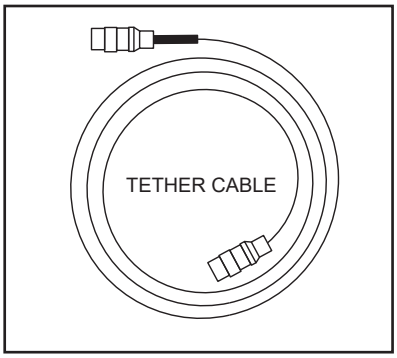
Status LED Light

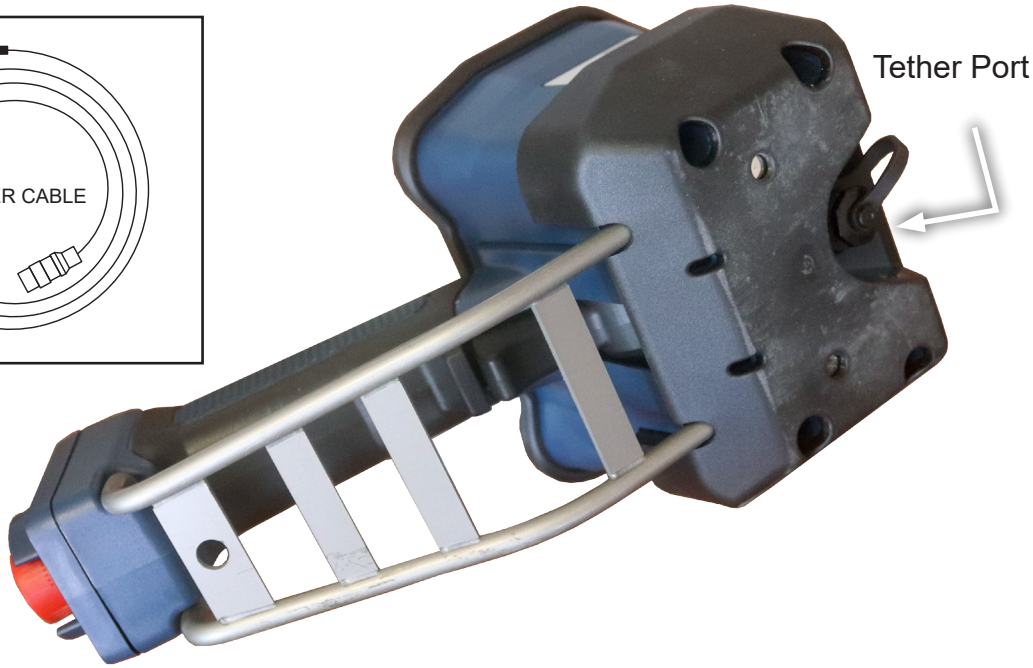
Output Error

- **Purpose:** If the main controller experiences an output error, the green LED Status light on the main controller will pulse once.

Tethered Radio Transmitter / Receiver Pair Procedure

⚠WARNING **DO NOT USE ALKALINE BATTERIES IN THE REMOTE WHILE CHARGING (DOCK OR TETHERED). THIS WILL DAMAGE THE REMOTE AND WILL VOID THE WARRANTY.**





1. Remote turned off and Stop Released (keep the receiver on the crane on).
2. Connect Tether Cord, usually found behind the seat inside the cab.
3. Attach one end of the extension cable to the tether port. The cable is keyed to be installed in one orientation only. Take care not to crossthread plastic threads of data port.
4. Activate pairing on the remote, press the **Main Boom Up** and **Extension In** and hold for at least six (6) seconds. After six (6) seconds of holding the switches pairing mode of remote is entered indicated by Status Indicator on the remote slowly blink amber.

NOTE:

While tethered, the extension cable will also supply power to recharge the remote's NiMH batteries. Extra caution about the lift area should be exercised while tethered. While the remote is using the tether cord, all wireless communication is eliminated.

If pairing successful:

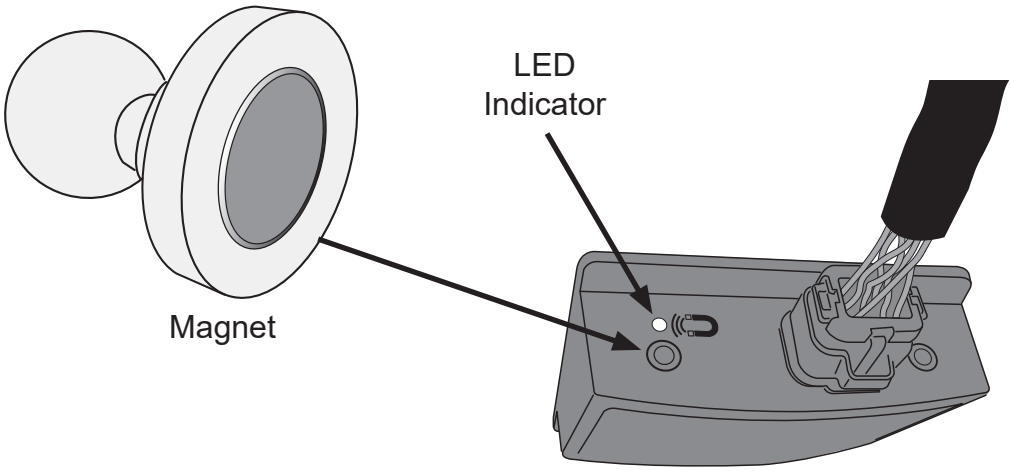
- *Status Indicator on the remote will be Solid Amber*
- *Power cycle receiver on the crane*
- *Power off remote*
- *Remove tether cord*
- *Power on the remote, link is established between the remote and receiver on the crane if the Status Indicator light on the remote is flashing green.*

If Pairing Fails

- *If pairing is not completed within five (5) seconds pairing has failed.*
- *Procedure needs to be performed again.*

Wireless Transmitter / Receiver Pair Procedure

1. Remote turned off and Stop Released.
2. Receiver turned off.
3. Power Receiver on and set magnet close to magnetic sensor until Orange LED starts to flash quickly on the receiver, then remove magnet. Orange LED on the receiver will start to flash slowly; Now the transmitter is in pairing mode.



4. Activate pairing on the remote, (press the Main Boom toggle Up and the Extension In toggle and hold active for at least six (6) seconds. After six seconds of holding the switches pairing mode of remote is entered indicated by LED for Status Indicator flashing amber.

If pairing successful:

- Status Indicator LED will be Solid Amber on the remote
- Power cycle the receiver on the crane
- Power off remote
- Power on the remote, link is established between the remote and receiver on the crane if the Status Indicator light on the remote is flashing green.

NOTE:

Confirm a safe desired function activates to double check you are in control of the intended machine

If Pairing Fails

- If pairing is not completed within five (5) seconds pairing has failed. Procedure needs to be performed again.

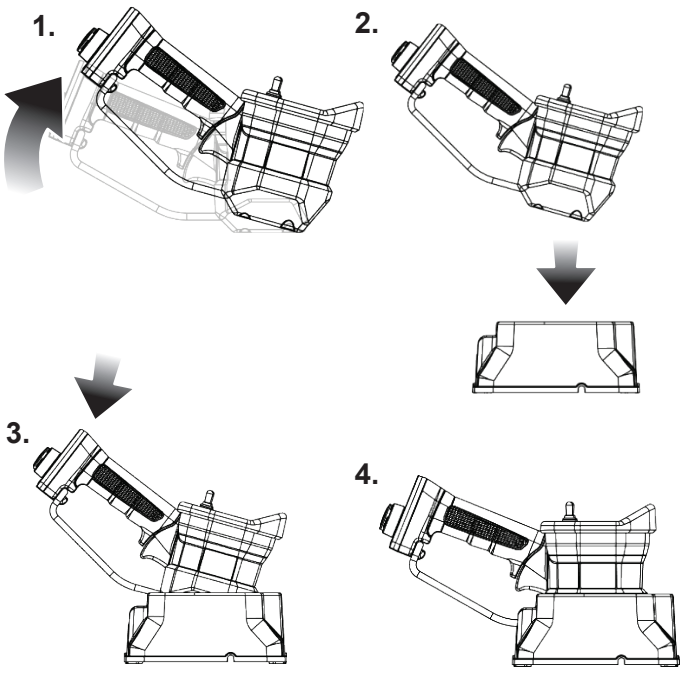
Charging and Battery Features

The radio remote docking station also serves as a charger for the rechargeable battery. It is important to return the remote to the docking station to keep the battery charged between jobs.

Follow the instructions below to correctly mount the transmitter in the docking station.

1. Tilt the transmitter slightly forward. There is a locking mechanism preventing the transmitter to be mounted in the docking station if it is on a flat angle.
2. While titled, place the transmitter in the docking station.
3. Push down on the handle slightly to engage the locking mechanism.
4. ***NOTE: When the parking brake is disengaged without the remote properly stowed in the dock, a reminder alarm will sound on the dock for up to 30 seconds or until the remote is placed correctly into the dock. This is to help ensure the remote isn't forgotten and to let the user know the remote is properly in the dock. Follow the instructions below to correctly remove the transmitter from the docking station.***

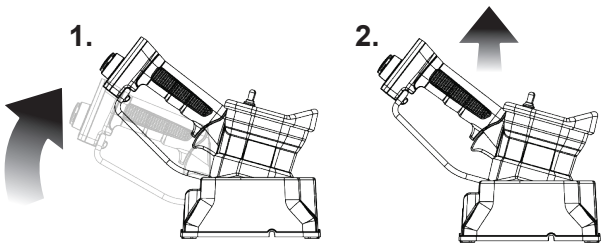
Docking Transmitter



Follow the instructions below to correctly remove the transmitter from the docking station.

1. Tilt the transmitter upwards.
2. Lift the transmitter straight up to completely remove it from the docking station.

Undocking Transmitter



NOTICE *The locking mechanism is engaged when the transmitter is mounted and can only be disengaged by tilting it upwards. Do not try to remove the transmitter from the docking station by pulling it downwards or vertically in any direction.*

⚠WARNING **DO NOT USE ALKALINE BATTERIES IN THE REMOTE WHILE CHARGING (DOCK OR TETHERED). THIS WILL DAMAGE THE REMOTE AND WILL VOID THE WARRANTY.**

Charging Feedback

The remote is equipped with an LED for showing the state of charging of the transmitter on the docking station. This LED has 3 states:

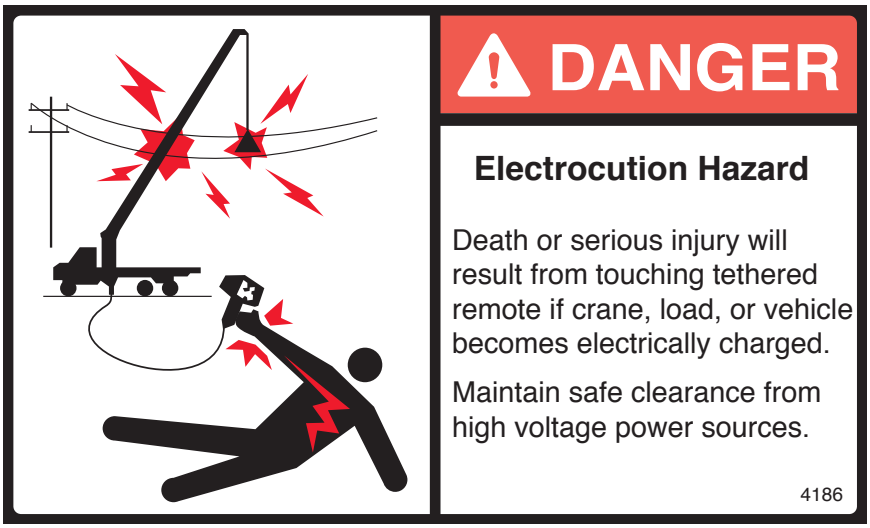
- **On:** Charging in process.
- **Off:** Charging cycle complete.
- **Blinking:** Charging qualification while blinking, the charging system is analyzing the type and condition of batteries mounted in the transmitter. If it detects healthy NiMH batteries, it will proceed with a charge cycle.

Tethering Features

Radio Remote Tethered Extension Cable
While tethered, the extension cable will also supply power to recharge the remote's NiMH rechargeable batteries. Extra caution about the lift area should be exercised while tethered While the remote is using the tether cord, all wireless communication is eliminated.

1. Locate the extension cable tether. Most likely it is in the cab behind the seat.
2. Remove cap from tether port on back of remote.
3. Attach one end of the extension cable to the tether port. The cable is keyed to be installed in one orientation only. Take care not to cross-thread plastic threads of data port.
4. Attach the other end of the extension cable.

⚠WARNING **DO NOT USE ALKALINE BATTERIES IN THE REMOTE WHILE CHARGING (DOCK OR TETHERED). THIS WILL DAMAGE THE REMOTE AND WILL VOID THE WARRANTY.**



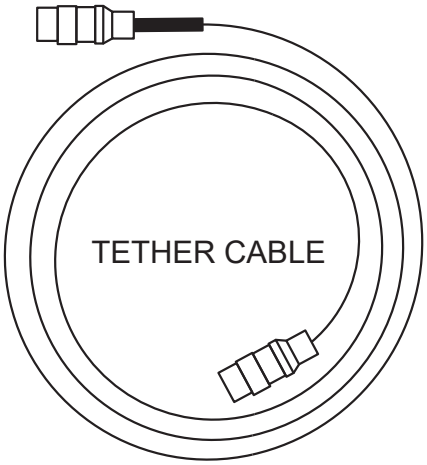
⚠ DANGER

Electrocution Hazard

Death or serious injury will result from touching tethered remote if crane, load, or vehicle becomes electrically charged.

Maintain safe clearance from high voltage power sources.

4186

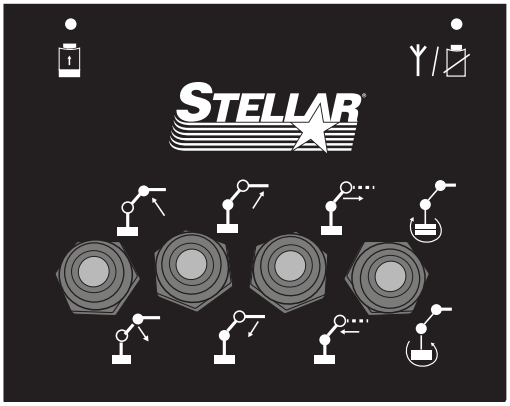


Low Battery Indicator

If the rechargeable batteries drop below a 25% charge, the “Status Indicator” light will blink red. Recharge your remote or replace the batteries with NiMH rechargeable batteries as soon as you can.

⚠WARNING

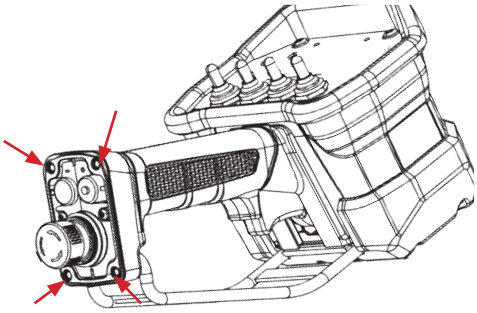
DO NOT USE ALKALINE BATTERIES IN THE REMOTE WHILE CHARGING (DOCK OR TETHERED). THIS WILL DAMAGE THE REMOTE AND WILL VOID THE WARRANTY.



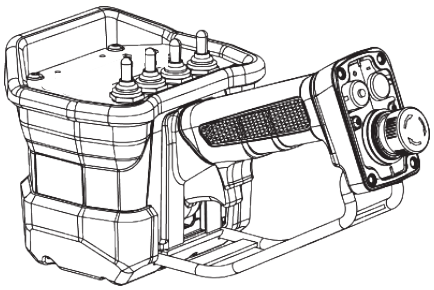
BATTERY POWER

Radio Remote NiMH Battery Replacement

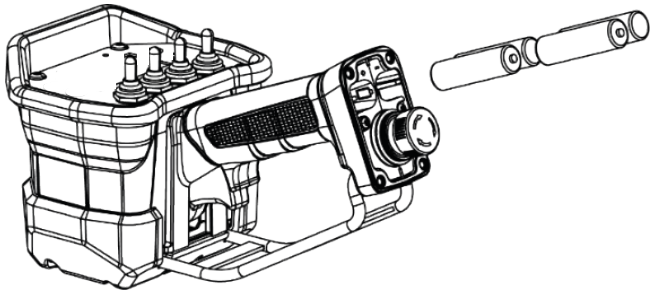
Occasionally the rechargeable battery pack in the handheld transmitter may need to be replaced. Four (4) AA rechargeable NiMH batteries are located in the handle portion of the radio transmitter. Remove the four screws on the bottom plate to access the battery compartment. The tether cord can also be used to charge batteries and operate the crane if needed.



Battery orientation is displayed inside the cover. Follow the instructions below to correctly change the batteries.



1. Use a hex key or screwdriver with an Allen bit (size H3) to remove the four (4) screws at the end of the handle.
2. Remove the lid.
3. Check the gasket for dirt and / or damage. Always clean a dirty gasket or replace it if it is damaged.
4. Change the batteries.
5. Make sure the gasket is tightly and correctly fitted before putting the lid back on.
6. Put the lid back on and use a screwdriver / hex key to tighten the screws.



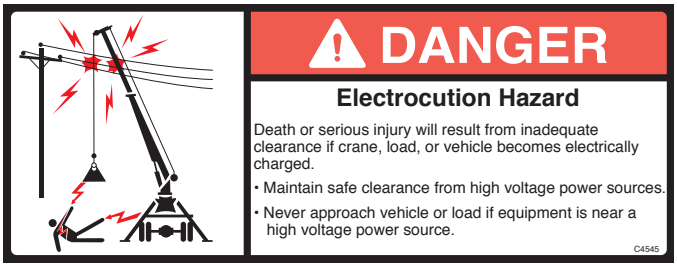
Safety Decals of Note

Safety decals serve to inform the viewer of the hazard type, how to avoid the hazard, and the consequences of not avoiding the hazard.

Decals are considered safety equipment. They must be maintained, as would other safety devices. All safety instruction plates, notices, capacity charts and any other decal applied to the crane or service body must be kept legible and in good condition. Replace any decals that are missing, damaged, or illegible.

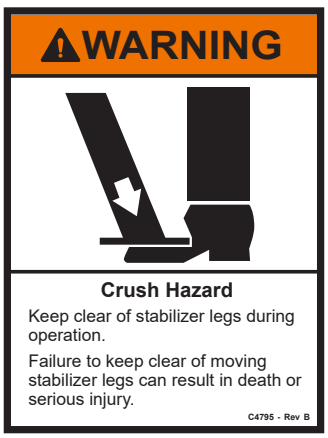
Detailed below are a number of key safety decals related to this equipment. Use the decal placement drawing in the Installation, Assembly Drawings, and Parts Manual to note the actual location of the safety decals on the equipment.

Body/Chassis



Decal Part Number: C4545
Decal Location: Four corners of the body/chassis
Hazard Type: Electrocution Hazard
Consequences: Will result in death or serious injury.
Avoidance: Maintain safe clearance from high voltage power sources. Never approach vehicle or load if equipment is near a high voltage power source.

Stabilizers



Decal Part Number: C4795
Decal Location: Each stabilizer leg
Hazard Type: Crush Hazard
Consequences: Can result in death or serious injury.
Avoidance: Keep clear of stabilizer legs during operation.

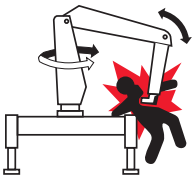
⚠WARNING

Untrained Operator Hazard

Read and understand all manuals and safety signs before operating or servicing this equipment.

Failure to follow operating, maintenance, or safety instructions can result in death or serious injury.

⚠WARNING



Crush Hazard

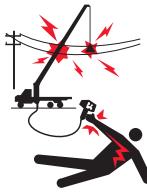
Keep clear of crane during operation.

Failure to keep clear of moving crane can result in death or serious injury.

⚠ DANGER

Electrocution Hazard

Death or serious injury will result from touching tethered remote if crane, load, or vehicle becomes electrically charged.

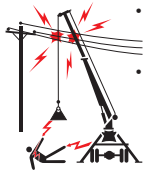


Maintain safe clearance from high voltage power sources.

⚠ DANGER

Electrocution Hazard

Death or serious injury will result from inadequate clearance if crane, load, or vehicle becomes electrically charged.



- Maintain safe clearance from high voltage power sources.
- Never approach vehicle or load if equipment is near a high voltage power source.

85504

Decal Part Number: 85504
Decal Location: Each stabilizer leg
Hazard Type: Multiple
Consequences: Multiple
Avoidance: Multiple

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Chapter 2 - Maintenance

CHAPTER CONTENTS

General Maintenance Guidelines

Maintenance is an important part of extending the life of any Stellar® Crane. Performing key maintenance items on a scheduled program will prevent unnecessary downtime.

Before performing any maintenance to the crane, consider the following:

- **⚠WARNING** Only qualified service personnel are to perform maintenance on the crane. Never modify or alter any of the equipment, whether mechanical, electrical, or hydraulic, without explicit approval from Stellar Industries.
- Position the crane where it will be out of the way of other operations or vehicles in the area.
- Stow the boom fully to prevent uncontrolled movement.
- Place all controls in the off position and secure operating features from inadvertent motion. Follow all company directed lockout/tagout procedures.
- Before any service or repair is performed, disengage the hydraulic power source and shut off the engine.
- Allow systems to cool before performing any maintenance.
- Before performing any maintenance on electrical components, disconnect the power source.
- Before performing any maintenance on hydraulic components, relieve hydraulic oil pressure from all hydraulic circuits. Move pedals and control levers repeatedly through their operating positions to relieve all pressures.
- **⚠WARNING** Do not disconnect hydraulic hoses while there is still pressure in those components.
- **⚠WARNING** Do not touch or grab any hoses that could be under pressure.
- Replace parts with Stellar® approved parts only.
- Keep the crane and service body clean and free from grease build-up, oil and dirt to prevent slippery conditions.
- Label or tag parts when disassembling.
- Immediately repair or have repaired any components found to be inadequate.

Basic Crane Maintenance Schedule*

MAINTENANCE OPERATION	DAILY	WEEKLY	MONTHLY	HOURLY
CHECK HYDRAULIC RESERVOIR OIL LEVEL	X			
GREASE ROTATION GEAR INNER RACE BEARINGS		X		
GREASE ROTATION GEAR WORM DRIVE BEARINGS			3-MONTHS	
GREASE ROTATION GEAR OPEN GEAR TEETH.			X	
GREASE ALL CYLINDER PIVOT POINTS			X	
DRAIN AND REPLACE HYDRAULIC OIL				6500
TIGHTEN ALL HYDRAULIC LINES.			6-MONTHS	

*

For a more detailed outline of scheduled inspection points, refer to the Stellar® Crane Inspection Log. The Stellar® Crane Inspection Log is an essential guide for the daily, monthly, quarterly and annual inspection tasks that will help maintain the quality of your Stellar product.

Hydraulic Oil/Filter Maintenance

Stellar Industries recommends the first filter change to occur after the first 250 hours of service. The second, and every subsequent change, should occur after every 1,000 hours of service. By following these guidelines, the hydraulic oil should last up to 6,500 hours.

Note: These recommendations are based on normal working parameters. If operating in less than favorable conditions excessive dust, moisture, etc.), be sure to check the filter gauge often for filter change notice.

Washing the Crane

Important: Prior to washing the Stellar crane, all electrical components must be covered to prevent any water from being injected into the plastic housing. Avoid any direct water pressure to any of the electrical components.

Paint Maintenance

Touch up any chips or scratches to prevent further paint damage.

PTO and Pump Maintenance

Every six (6) months, remove the hydraulic pump from the PTO and lubricate the splines using Stellar PN 20885. Failure to lubricate shaft splines will cause damage to the PTO and Hydraulic pump.

Rotation Gear Bearing Maintenance

Rotation Worm Gear and Open Gear Teeth

Use a heavy Moly Lube grease (Stellar PN 4460) to lubricate the worm gear and open gear teeth of the rotation bearing. Slowly rotate the crane while pumping the grease between the worm and rotation gear. This should be greased every month or sooner depending on the usage of the crane. Another way of applying the grease would be to remove the gear guard and brush the Molube grease between the gear teeth of the rotation bearing.

NOTICE Do not lubricate the worm and rotation gear teeth with EP2 grease. EP2 grease will wipe the Molube grease clean causing excessive wear.

Worm Gear Bearings and Races

Apply three (3) pumps of EP2 grease to the two grease zerks located on the side of the Rotation Gear bearing; every three months. After adding the EP2 grease, rotate the crane fully.

Inner Gear Bearing Race

The grease zerk for the inner race bearing is located on the compartment drip tray. The inner race will need to be lubricated with EP2 Grease weekly. The first week grease the inner race bearing at the one (1), three (3), five (5), seven (7), nine (9), and eleven (11) o'clock positions. The following week, grease the inner race bearing in the two (2), four (4), six (6), eight (8), ten (10) and twelve (12) o'clock positions. Rotate lubrication points every week.

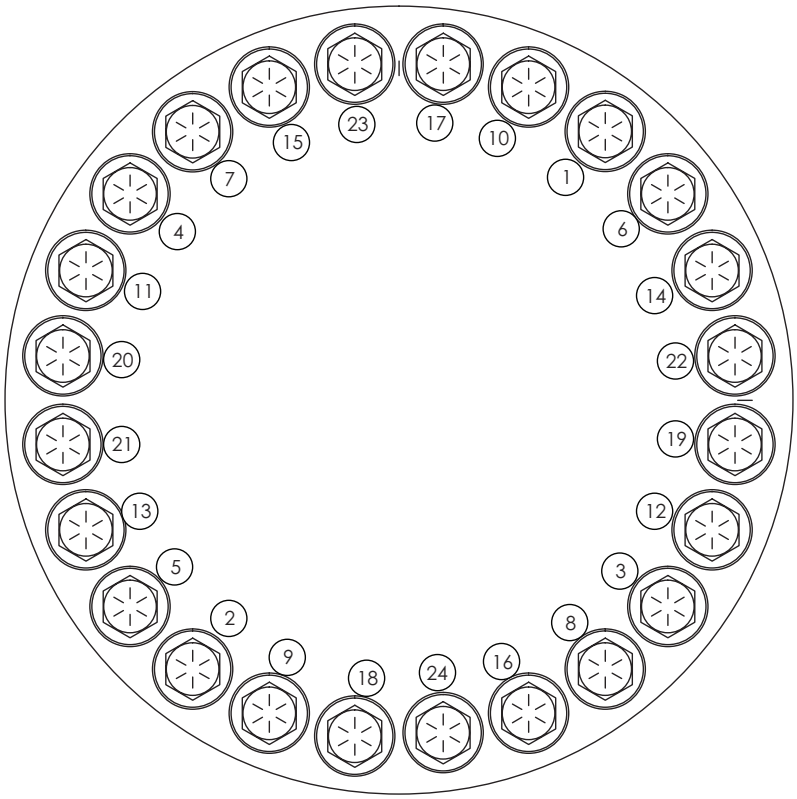
Gear-Bearing Bolt Maintenance

Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing.

⚠WARNING Anytime a torqued gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size.

NOTICE Always use Red Loctite Threadlocker sealant to secure the new bolt.

Rotation Gear Bearing Thread Tightening Procedure



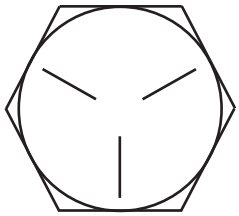
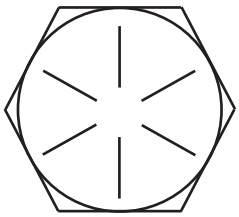
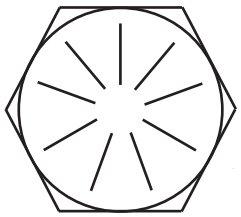
Step 1: Refer to the Torque Data Chart on the previous page to determine the proper torque value based on the size of bolt used.

Step 2: Torque all bolts to approximately 40% of the specified torque value using the tightening sequence shown above. Note: The number of bolts may be different than shown in the diagram but the sequence will work using the same pattern in relation to Bolt #1.

Step 3: Torque all bolts to 75% of the specified torque value using the tightening sequence shown above.

Step 4: Torque all bolts to the listed torque value using the tightening sequence shown above.

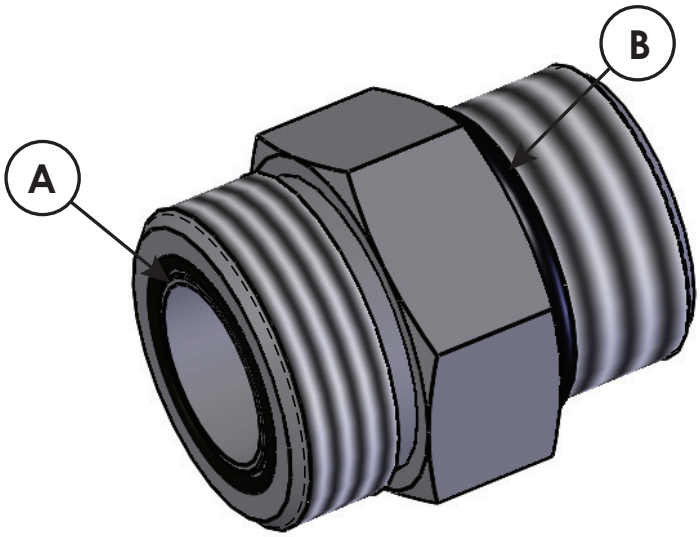
Torque Data Chart

		GRADE 5		GRADE 8		GRADE 9
						
SIZE (DIA-TPI)	**BOLT DIA (INCHES)**	**PLAIN (FT-LB)**	**PLATED (FT-LB)**	**PLAIN (FT-LB)**	**PLATED (FT-LB)**	**PLATED (FT-LB)**
5/16-18	0.3125	17	13	25	18	22
3/8-16	0.3750	31	23	44	33	39
7/16-14	0.4375	49	37	70	52	63
1/2-13	0.5000	75	57	105	80	96
9/16-12	0.5625	110	82	155	115	139
5/8-11	0.6250	150	115	220	160	192
3/4-10	0.7500	265	200	375	280	340
7/8-9	0.8750	395	295	605	455	549
1-8	1.000	590	445	910	680	823
1 1/8-7	1.1250	795	595	1290	965	1167
1 1/4-7	1.2500	1120	840	1815	1360	1646
1 3/8-6	1.3750	1470	1100	2380	1780	2158
1 1/2-6	1.500	1950	1460	3160	2370	2865

NOTE:
When using the torque data in the chart, the following rules should be observed:

- Bolt manufacturer's particular specifications should be consulted when provided.
- Flat washers of equal strength must be used.
- All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
- Torque values specified are for bolts with residual oils or no special lubricants applied.
- Torque values for socket-head capscrews are the same as for grade 8 capscrews.
- Do not use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.
- Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.
- Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.
- Tighten plastic insert or crimped steel-type lock nuts to approximately 110 percent of the dry torque values shown in the chart below, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value. ***Note: "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without lubrication. Tighten lubricated bolts to approximately 80% of dry bolts.***

Face Seal/O-Ring Size Chart



Hose Size	Fitting Size	Face Seal (A) Stellar® PN	O-ring Boss (B) Stellar® PN
1/4"	#4	C2027	D1245
3/8"	#6	C2028	D1246
1/2"	#8	C2029	D1247
5/8"	#10	32223	D1248
3/4"	#12	D1244	D1249
1"	#16		D1250

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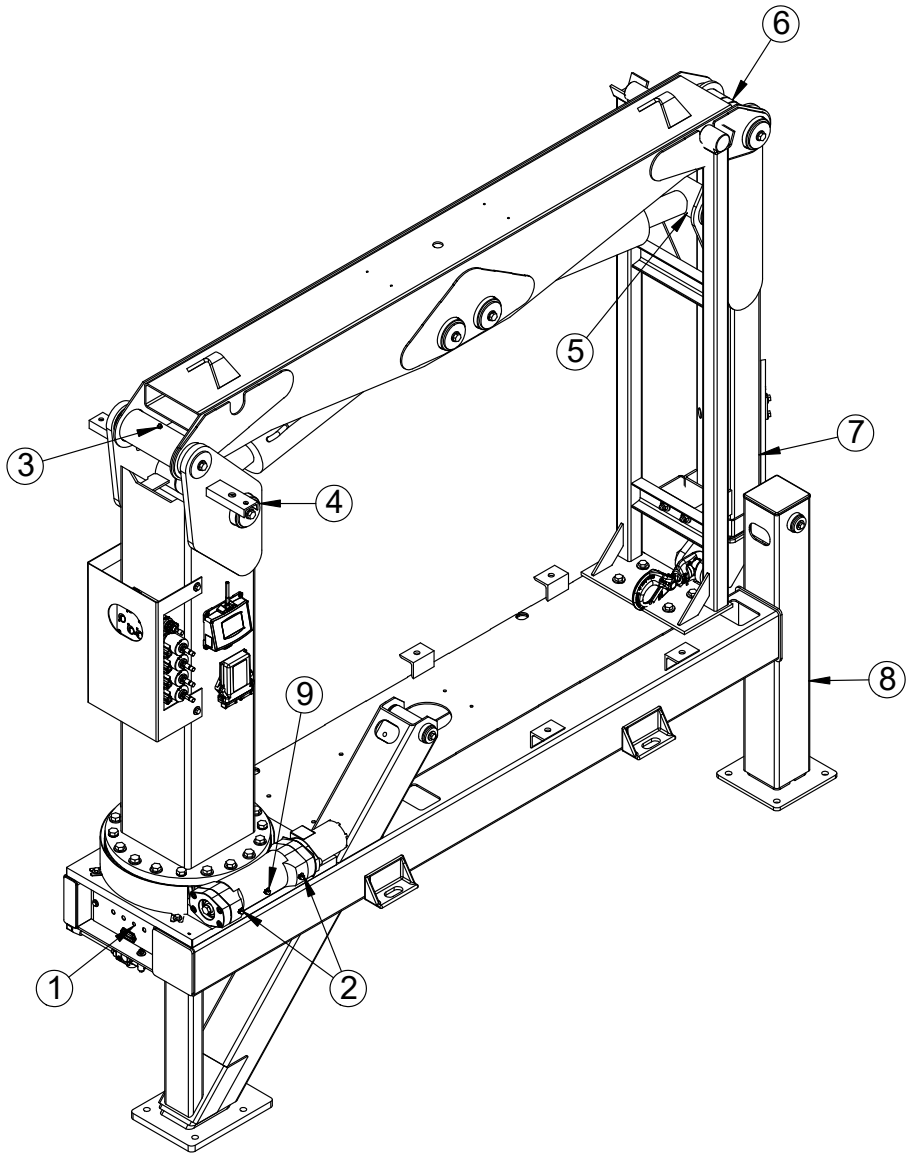
Lubrication Recommendations

CRANE LUBRICATION		
COMPONENT	**LOCATION**	**RECOMMENDATION**
HYDRAULIC SYSTEM	RESERVOIR	RBELOW –5˚F HIGH VI, LOW POUR, ISO 22, AW HYDRAULIC OIL
		-5˚F TO 90˚F HIGH VI, LOW POUR, ISO 32, AW HYDRAULIC OIL
		ABOVE 90˚F ISO 46, AW HYDRAULIC OIL
OPEN GEAR TEETH	CRANE ROTATION GEAR	MOLY GREASE 936SF HEAVY (STELLAR PN 4460)
WORM DRIVE BEARINGS (INCLUDING TURNTABLE BEARING INNER RACE)	CRANE ROTATION GEAR, INSIDE CRANE COMPARTMENT	EP2 LITHIUM COMPLEX GREASE (STELLAR PN 78090)
CYLINDERS	CRANE PIVOT AREAS	EP2 LITHIUM COMPLEX GREASE (STELLAR PN 78090)
CRANE PINS & BUSHINGS	CRANE PIVOT POINTS	EP2 LITHIUM COMPLEX GREASE (STELLAR PN 78090)
WEAR PAD LUBRICATION	N EXTENSION BOOMS	SYNTHETIC LUBRICANT CONTAINING TEFLON®
COMPRESSOR LUBRICATION		
COMPONENT	**LOCATION**	**RECOMMENDATION**
RECIPROCATING SINGLE STAGE	COMPRESSOR CRANKCASE	ISO 100 COMPRESSER OIL
RECIPROCATING DOUBLE STAGE	COMPRESSOR CRANKCASE	ISO 100 COMPRESSER OIL
SCREW COMPRESSOR	COMPRESSOR CRANKCASE	-15˚F TO 86˚F SYNTHETIC PERFORMING ISO 32 COMPRESSER OIL
		-23˚F TO 100˚F SYNTHETIC PERFORMING ISO 46 COMPRESSER OIL
		32˚F TO 113˚F SYNTHETIC PERFORMING ISO 68 COMPRESSER OIL

Lubrication Points - 2200-6000 Models



LUBRICATION POINTS	
ITEM	**DESCRIPTION**
1	GREASE(EP2) BEARING INNER RACE
2	GREASE(EP2) WORM BEARINGS - 2 PLACES
3	GREASE(EP2) MAIN BOOM PIVOT PIN
4	GREASE(EP2) MAIN CYLINDER PINS - BOTH ENDS OF CYLINDER
5	GREASE(EP2) OUTER CYLINDER PINS - BOTH ENDS OF CYLINDER
6	GREASE(EP2) OUTER BOOM PIVOT PIN
7	GREASE (SEE LUBR. RECOMMENDATIONS) EXTENSION BOOM
8	GREASE(SEE LUBR. RECOMMENDATIONS) STABILIZER EXTENSION TUBES
9	GREASE(MOLY 936SF HEAVY) WORM & OPEN GEAR TEETH
REV. B REQ887 REF:14182	

NOTES:
3200 MODEL SHOWN, APPLICABLE TO 2200-6000.

Washing the Crane:

New Paint Care and Cleaning Procedures during Initial Ownership and Beyond

	0 to 30 days past manufacturing date	30 to 60 days past manufacturing date	After 60 days past manufacturing date	Any day paint surface is hot due to exposure to daylight
Water-only Rinse to Clean	• low pressure • no soap			
Wax			✓	✗
Handheld Pressure Washer			• distance > 4 inches • pressure < 1700 psi • water temp < 120° F • neutral pH detergent	✗
Automated Wash System			• pressure < 1700 psi • water temp < 120° F • neutral pH detergent • non-abrassive brushes	✗

General Crane Washing Instructions

Follow the parameters above while washing the crane at least once per week, especially when exposed to a dusty, acidic, or alkaline environment. This will maximize durability of the paint, wiring, and rubber material by removing corrosive substances collected from roads or job sites. When washing the crane, avoid direct water spray toward electrical components such as floodlights, radio remote receivers, the VEC center, and areas of the crane which may have rock chips. Avoid the use of stiff bristles. Use of a soft cloth or felt brush is recommended.

Although contact with anti-freeze, gasoline, hydraulic fluid, oil, or windshield washer fluid is expected with this type of equipment, washing these products from your paint surface in a timely manner will greatly enhance the life of your paint finish. Some compounds could be especially damaging to the paint finish and should be removed as soon as possible by rinsing with warm water at a minimum.

NOTICE Exposure time causing potential paint damage by hydraulic fluid and oil is reduced if the paint surface is hot.

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